

# AB-050-FX3-U

V850ES/Fx3 Starter Board

All information contained in these materials, including products and product specifications, represents information on the product at the time of publication and is subject to change by Renesas Electronics Corp. without notice. Please review the latest information published by Renesas Electronics Corp. through various means, including the Renesas Technology Corp. website (http://www.renesas.com).

### Notice

- All information included in this document is current as of the date this document is issued. Such
  information, however, is subject to change without any prior notice. Before purchasing or using
  any Renesas Electronics products listed herein, please confirm the latest product information with
  a Renesas Electronics sales office. Also, please pay regular and careful attention to additional
  and different information to be disclosed by Renesas Electronics such as that disclosed through
  our website.
- Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other
  intellectual property rights of third parties by or arising from the use of Renesas Electronics
  products or technical information described in this document. No license, express, implied or
  otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of
  Renesas Electronics or others.
- 3. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part.
- 4. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
- 5. When exporting the products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You should not use Renesas Electronics products or the technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations.
- 6. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
- 7. Renesas Electronics products are classified according to the following three quality grades: "Standard", "High Quality", and "Specific". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below. You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application categorized as "Specific" without the prior written consent of Renesas Electronics. Further, you may not use any Renesas Electronics product for any application for which it is not intended without the prior written consent of Renesas Electronics. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for an application categorized as "Specific" or for which the product is not intended where you have failed to obtain the prior written consent of Renesas Electronics.

- 8. The quality grade of each Renesas Electronics product is "Standard" unless otherwise expressly specified in a Renesas Electronics data sheets or data books, etc.
  - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots.
  - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti- crime systems; safety equipment; and medical equipment not specifically designed for life support.
  - "Specific": Aircraft; aerospace equipment; submersible repeaters; nuclear reactor control systems;medical equipment or systems for life support (e.g. artificial life support devices or systems), surgical implantations, or healthcare intervention (e.g. excision, etc.), and any other applications or purposes that pose a direct threat to human life.
- 9. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
- 10. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
- 11. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
- 12. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written consent of Renesas Electronics.
- 13. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.
  - (Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority- owned subsidiaries.
  - (Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

## **General Precautions in the Handling of MPU/MCU Products**

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

### 1. Handling of Unused Pins

Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

### 2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not quaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

## 3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

### 4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

#### 5. Differences between Products

Before changing from one product to another, i.e. to one with a different part number, confirm that the change will not lead to problems.

The characteristics of MPU/MCU in the same group but having different part numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different part numbers, implement a system-evaluation test for each of the products.



# **Regional Information**

Some information contained in this document may vary from country to country. Before using any Renesas Electronics product in your application, please contact the Renesas Electronics office in your country to obtain a list of authorized representatives and distributors. They will verify:

- Device availability
- Ordering information
- Product release schedule
- Availability of related technical literature
- Development environment specifications (for example, specifications for third-party tools and components, host computers, power plugs, AC supply voltages, and so forth)
- Network requirements

In addition, trademarks, registered trademarks, export restrictions, and other legal issues may also vary from country to country.

Visit

http://www.renesas.com

to get in contact with your regional representatives and distributors.

### **Preface**

Readers This manual is intended for users who want to understand the functions of the

concerned microcontrollers.

Purpose This manual presents the hardware manual for the concerned microcontrollers.

**Organisation** This system specification describes the following sections:

Pin function

CPU function

Internal peripheral function

Module instances These microcontrollers may contain several instances of a dedicated module.

In general the different instances of such modules are identified by the index "n",

where "n" counts from 0 to the number of instances minus one.

Legend Symbols and notation are used as follows:

Weight in data notation:
 Left is high order column, right is low order

column

Active low notation: xxx (pin or signal name is over-scored) or

/xxx (slash before signal name) or

\_xxx

Memory map address:
 High order at high stage and low order at

low stage

Note Additional remark or tip

Caution Item deserving extra attention

Numeric notation Binary: xxxx or xxxB

Decimal: xxxx

Hexadecimal xxxxH or 0x xxxx

Numeric prefixes representing powers of 2 (address space, memory capacity):

K (kilo):  $2^{10} = 1024$ 

M (mega):  $2^{20} = 1024^2 = 1,048,576$ 

G (giga):  $2^{30} = 1024^3 = 1,073,741,824$ 

Register contents X, x = don't care

Diagrams Block diagrams do not necessarily show the exact wiring in hardware but the

functional structure. Timing diagrams are for functional explanation purposes only,

without any relevance to the real hardware implementation.

AB-050-FX3-U Introduction

### How to Use This Manual

### (1) Purpose and Target Readers

This manual is designed to provide the user with an understanding of the hardware functions and electrical characteristics of the MCU. It is intended for users designing application systems incorporating the MCU. A basic knowledge of electric circuits, logical circuits, and MCUs is necessary in order to use this manual. The manual comprises an overview of the product; descriptions of the CPU, system control functions, peripheral functions, and electrical characteristics; and usage notes.

Particular attention should be paid to the precautionary notes when using the manual. These notes occur within the body of the text, at the end of each section, and in the Usage Notes section.

The revision history summarizes the locations of revisions and additions. It does not list all revisions. Refer to the text of the manual for details.

The following documents apply to the xxx/xx Group. Make sure to refer to the latest versions of these documents. The newest versions of the documents listed may be obtained from the Renesas Electronics Web site.

| Document<br>Type                 | Description                                                                                                                                                                                                                                       | Document<br>Title                               | Document No.       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------|
| Data Sheet                       | Hardware overview and electrical characteristics                                                                                                                                                                                                  | xxx/xx Group<br>Datasheet                       | R01DSxxxxEJxxxx    |
| User's<br>manual for<br>Hardware | Hardware specifications (pin assignments, memory maps, peripheral function specifications, electrical characteristics, timing charts) and operation description.  Note: Refer to the application notes for details on using peripheral functions. | xxx/xx User's<br>manual for<br>Hardware         | This User's manual |
| User's<br>manual for<br>Software | Description of CPU instruction set                                                                                                                                                                                                                | xxx/xx Series User's manual for Software        | R01USxxxxEJxxxx    |
| Application<br>Note              | Information on using peripheral functions and application examples. Sample programs. Information on writing programs in assembly language and C.                                                                                                  | Available from Renesas<br>Electronics Web site. |                    |
| Renesas<br>Technical<br>Update   | Product specifications, updates on documents, etc.                                                                                                                                                                                                |                                                 |                    |

AB-050-FX3-U Introduction

# (2) List of Abbreviations and Acronyms

All trademarks and registered trademarks are the property of their respective owners.

# **Table of Contents**

| Chapter 1      | Introduction                            | 10 |
|----------------|-----------------------------------------|----|
| Chapter 2      | Board description                       | 11 |
| 2.1 Ove        |                                         |    |
| 2.1.1          | Electrical Area                         | 11 |
| 2.1.2          | Functional Area                         | 12 |
| 2.1.3          | Connecting both areas                   | 12 |
| 2.2 Res        | et 13                                   |    |
| 2.3 NW         | ire connection                          | 13 |
| 2.4 PG-        | FP4 connection                          | 13 |
| 2.5 RS-        | 232 / LIN                               | 14 |
| 2.6 CAN        | N 18                                    |    |
| Chapter 3      | Mounting the FK3 device on the board    | 19 |
| Chapter 4      | Connecting the Power Supply             | 20 |
| Chapter 5      | UART / LIN CAN DSUB connectors          | 21 |
| •              | RT / LIN connectors                     | 21 |
| 5.2 CAN        | l connectors                            | 21 |
| Chapter 6      | Mounting other Fx3 devices on the board | 23 |
| 6.1 Mou        | Inting devices                          |    |
| 6.1.1          | Mounting a FE3 device                   |    |
| 6.1.2          | Mounting a FF3 device                   | 24 |
| 6.1.3          | Mounting a FG3 device                   |    |
| 6.1.4          | Mounting a FJ3 device                   |    |
|                | connection                              |    |
| 6.2.1          | Power supply pins                       |    |
| 6.2.2          | REGC pin                                |    |
| 6.2.3<br>6.2.4 | X1, X2 pinsXT1, FLMD0                   |    |
|                | ctional pin connection                  |    |
| 6.3.1          | Jumper overview                         |    |
| 6.3.2          | Testpoints                              |    |
| 6.3.3          | Reset signal                            |    |
| 6.3.4          | NWIRE signals                           |    |
| 6.3.5          | Flash Programming interface             |    |
| 6.3.6          | CAN interface                           | 32 |
| 6.3.7          | UARTD interface                         | 34 |
| Chapter 7      | Revision History                        | 35 |
| Chapter 8      | Schematic                               | 36 |

AB-050-FX3-U Introduction

# **Chapter 1** Introduction

The AB-050-FX3-U is designed as a simple and easy to use Starter Board to support users with the first steps when starting with the Fx3-Series family.

The Starter Board is prepared to hold a V850ES/FK3 device (uPD70F3385). As the largest device of the Fx3-Series the FK3 offers the complete range of all Fx3 peripherals. Therefore software development for all other Fx3-Series devices is possible as well. Due to the software compatibility between the different family members porting of SW from FK3 to smaller devices is possible with only minimum efforts.

Mounting other members of the Fx3-Series on the board also is possible, at the cost of manual replacement of components and rewiring of signals.

With the NWire Debug interface and the Flash Programming interface for the RENESAS PG-FP4 Flash Programmer the standard RENESAS programming interfaces are directly available.

To enable further application development the board features drivers for five high speed CAN interfaces, eight RS-232 interfaces and eight LIN bus interfaces.

With on-board voltage regulator and reset generator a simple external DC power supply is sufficient to operate the board.

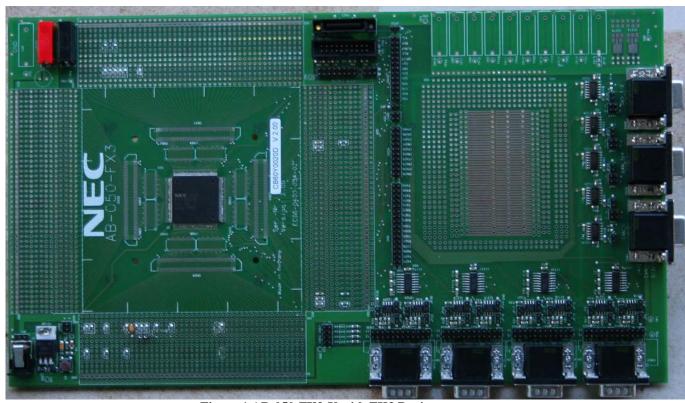


Figure 1 AB-050-FX3-U with FK3 Device

# **Chapter 2** Board description

### 2.1 Overview

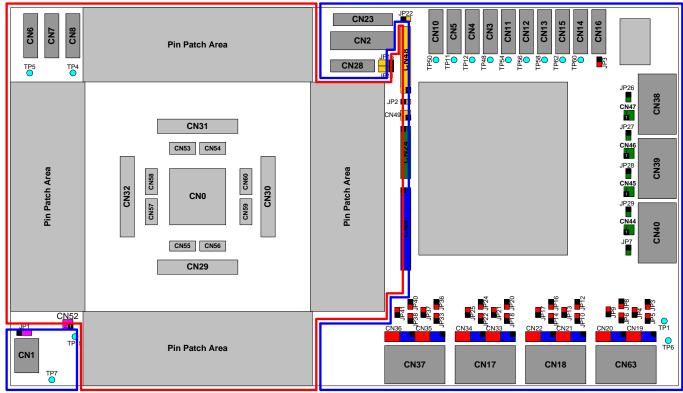


Figure 2-1 Board overview

Basically the board is divided into two areas, an 'Electrical Area' and a 'Functional Area'.

In Figure 2-1 the Electrical Area is surrounded in by a red line and the Functional Area is surrounded by a blue line.

### 2.1.1 Electrical Area

In the center of the Electrical Area a 180 pin SMD pad field is located that any of the F-Series devices can be assembled to.

On each side of the Device Pad Field a Pin Patch Area is located. In this patch area access is given to each pin of the device

- VDD
- VSS

Further more SMD and through hole components can directly be soldered onto the Pin Patch Area to allow simple networks to be easily built up.

The circuitry available at each pin inside the Pin Patch Area is described in the figure below:

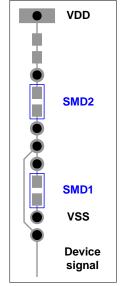


Figure 2-2 Pin Patch Area

A component assembled to the SMD1 field will therefore be connected between the device pin and VSS.

A component assembled to the SMD2 field will be connected between the device pin and VCC.

### 2.1.2 Functional Area

The Functional Area holds the drivers for RS-232, LIN bus and CAN. Additionally other patch areas are available as well to directly assemble LEDs, PowerDrivers and connectors to the board.

#### Note:

For detailed information about the operation of the used RS-232, LIN bus and CAN drivers refer to the related datasheets of those devices.

## 2.1.3 Connecting both areas

The Electrical and Functional Areas are not connected to one another except by a common VSS plane. Nevertheless by use of Jumpers a signal connection between the Electrical Area and the Functional Area is possible.

The following signals are available on the related jumper fields:

| Signal                 | Jumper |
|------------------------|--------|
| _Reset                 | CN52   |
| VDD                    | CN49   |
| Flash programming (PG- | CN48   |
| FP4)                   | JP2    |
| NWIRE                  | CN48   |
| UARTDn (n=07)          | CN9    |
| CANn (n=04)            | CN24   |

Table 2-1 Overview of functional signals

### 2.2 Reset

A simple Reset Generator using analog circuitry is available.

To connect the on-board Reset generator to the FK3 device close CN52 3-4.

If an external Reset signal shall be connected to the board the following setup must be used:

- Use TP15 to physically connect the external reset signal.
- Close CN52 1-2 to connect the external reset signal to the FK3 device.
- Open CN52 3-4 to disconnect the onboard Reset circuitry from the device.

### 2.3 NWire connection

The NWire debug cable from a RENESAS Debug Tool (e.g. MiniCube) can be connected to CN2.

Additionally a KEL connector (CN23) is available to connect third party NWire Debug Tools.

The following jumpers on CN48 must be closed in order to physically connect the NWire signals from CN2 to the corresponding pins of the FK3 device:

| Signal   | CN48 Pin<br>number |
|----------|--------------------|
| SCK      | 9 – 10             |
| DCK      | 11 – 12            |
| DMS      | 13 – 14            |
| DDI      | 15 – 16            |
| DRST     | 17 – 18            |
| RES      | 19 – 20            |
| FLMD0    | 21 – 22            |
| DDO      | 23 – 24            |
| T 11 0 0 | CNIAO NI I         |

Table 2-2 CN48 – Nwire

Additionally JP2 must be closed.

### 2.4 PG-FP4 connection

The programming cable of the PG-FP4 Flash programmer can be connected to CN28.

To program the device via the CSI interface the following jumpers must be closed:

| Connector | Pin number |
|-----------|------------|
| JP15      | 2-3        |
| JP11      | 2 – 3      |
| CN48      | 5 – 6      |
| CIN46     | 7 – 8      |

Table 2-3 FP4 (CSI) Jumpers

To program the device via the UART interface the following jumpers must be closed:

| Connector | Pin number     |
|-----------|----------------|
| JP15      | 1 – 2          |
| JP11      | 1 – 2          |
| CN48      | 1 – 2<br>3 – 4 |

Table 2-4 FP4 (UART) Jumpers

For Flash programming using the PG-FP4 device power can either be supplied by the PG-FP4 or by the AB-050-FX3.

- For PG-FP4 power supply open JP2.
- For AB-050-FJ3 power supply close JP2.

If the clock supply for PG-FP4 programming is not on board, close CN48 Pins 25-26 to supply the clock from PG-FP4.

### 2.5 RS-232 / LIN

Close CN49 1 - 2 and 3 - 4 to supply power to RS-232 / LIN bus drivers.

For the LIN bus drivers additionally a VBAT voltage must be supplied. This voltage must be in a range of 5V to 12V.

For the exact specification refer to the Datasheet of the LIN Drivers.

To supply VBAT to the board use either of the two connections:

- Use TP1
- Close JP19 and use Cn16

Close the following jumpers on CN9 to physically connect the UARTD signals from the Electrical Area to the Functional Area.

| Signal  |      | CN9 Pin # |
|---------|------|-----------|
| UARTD0  | TXD0 | 1 – 2     |
| UAKIDU  | RXD0 | 3 – 4     |
| UARTD1  | TXD1 | 5 - 6     |
| UAKIDI  | RXD1 | 7 - 8     |
| UARTD2  | TXD2 | 9 – 10    |
| UARIDZ  | RXD2 | 11 – 12   |
| UARTD3  | TXD3 | 13 – 14   |
|         | RXD3 | 15 – 16   |
| UARTD4  | TXD4 | 17 – 18   |
| UAKT D4 | RXD4 | 19 – 20   |
| UARTD5  | TXD5 | 21 – 22   |
|         | RXD5 | 23 – 24   |
| UARTD7  | TXD6 | 25 – 26   |
|         | RXD6 | 27 – 28   |

| UARTD6 | TXD7 | 29 – 30 |
|--------|------|---------|
| UAKIDO | RXD7 | 31 – 32 |

Table 2-5 UARTDn signal jumpers

To connect the RS-232 / LIN bus driver signals to the RS-232 / LIN bus connecters close the following jumpers:

| Signal |      | Connector | Pin # |
|--------|------|-----------|-------|
|        | TXD0 |           | 1 – 2 |
| UARTD0 | RXD0 | CN19      | 3 - 4 |
|        | GND  |           | 5 – 6 |
|        | TXD1 |           | 1 – 2 |
| UARTD1 | RXD1 | CN20      | 3 - 4 |
|        | GND  |           | 5 – 6 |
|        | TXD2 |           | 1 – 2 |
| UARTD2 | RXD2 | CN21      | 3 – 4 |
|        | GND  |           | 5 – 6 |
|        | TXD3 |           | 1 – 2 |
| UARTD3 | RXD3 | CN22      | 3 – 4 |
|        | GND  |           | 5 – 6 |
|        | TXD4 | _         | 1 – 2 |
| UARTD4 | RXD4 | CN33      | 3 – 4 |
|        | GND  |           | 5 – 6 |
|        | TXD5 |           | 1 – 2 |
| UARTD5 | RXD5 | CN34      | 3 – 4 |
|        | GND  |           | 5 – 6 |
|        | TXD6 |           | 1 – 2 |
| UARTD6 | RXD6 | CN35      | 3 – 4 |
|        | GND  |           | 5 – 6 |
|        | TXD7 |           | 1 – 2 |
| UARTD7 | RXD7 | CN36      | 3 – 4 |
|        | GND  |           | 5 – 6 |

Table 2-6 RS-232 signal jumpers

To connect the LIN bus driver signals to the related RS-232/LIN bus connector close the following jumpers:

| Sig    | ınal | Connector | Pin #          |
|--------|------|-----------|----------------|
|        | 12V  |           | 7 – 8          |
| LIN0   | LIN  | CN19      | 9 – 10         |
|        | GND  |           | 11 –           |
|        | GND  |           | 12             |
|        | 12V  |           | 7 – 8          |
| LIN1   | LIN  | Į         | 9 – 10         |
|        | GND  | CN20      | 11 –<br>12     |
|        | 12V  |           | 7 – 8          |
| LIN2   | LIN  | CN21      | 9 – 10         |
| LINZ   | CND  | CINZI     | 11 –           |
|        | GND  |           | 12             |
|        | 12V  |           | 7 – 8          |
| LIN3   | LIN  | CN22      | 9 – 10         |
| LING   | GND  |           | 11 –           |
|        |      |           | 12             |
|        | 12V  | CN33      | 7 – 8          |
| LIN4   | LIN  |           | 9 – 10         |
|        | GND  |           | 11 –<br>12     |
|        | 12V  |           | 7-8            |
| 1 1515 | LIN  | ĺ         | 9 – 10         |
| LIN5   | GND  | CN34      | 11 –           |
|        | GND  |           | 12             |
|        | 12V  |           | 7 – 8          |
| LIN6   | LIN  | CN35      | 9 – 10         |
| LINO   | GND  | 01100     | 11 –           |
|        | 12V  |           | 12             |
|        | LIN  |           | 7 - 8 $9 - 10$ |
| LIN7   | LIIN | CN36      | 11 –           |
|        | GND  |           | 11 –           |
| ]      |      |           |                |

Table 2-7 LIN bus signal jumpers

To enable the LIN drivers (IC218, IC219, IC172, IC221, IC217, IC223, IC228, IC229) the NSLP pin of the drivers must be pulled high. To do so a Jumper is available to connect the pin to VDD.

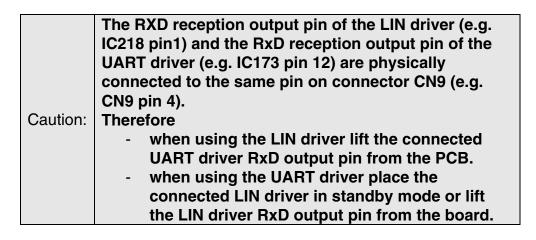
| LIN     | NSLP   |
|---------|--------|
| channel | Jumper |
| 0       | JP3    |
| 1       | JP8    |
| 2       | JP12   |
| 3       | JP16   |
| 4       | JP20   |
| 5       | JP24   |
| 6       | JP40   |
| 7       | JP36   |

The RxD pin of the LIN driver (pin #1) is an open drain output. The necessary pull-up resistor in order to interface to the Fx3 device is not assembled on the board. To enable operation of the RxD signal

- either connect an appropriate pull up resister to the related RxD input pin of the LIN channel, or
- enable the internal Pull-Up resistors available in the Fx3 devices for each LIN input pin.

The corresponding input pin for each RxD pin can be found in Table 6-11.

For additional information on the LIN driver refer to its User's Manual / Datasheet.



### 2.6 CAN

Close CN49 1 - 2 and 3 - 4 to supply power to the CAN drivers.

Close the following jumpers to physically connect the devices CAN signals to the CAN interface drivers located on the Functional Area of the board:

| Signal           |       | CN24 Pin<br># |
|------------------|-------|---------------|
| CAN0             | CTXD0 | 1 – 2         |
| CANO             | CRXD0 | 3 – 4         |
| CAN1             | CTXD1 | 5 - 6         |
|                  | CRXD1 | 7 - 8         |
| CAN2             | CTXD2 | 9 – 10        |
| CANZ             | CRXD2 | 11 – 12       |
| CAN3             | CTXD3 | 13 – 14       |
|                  | CRXD3 | 15 – 16       |
| T 11 40 CAN ' 1' |       |               |

Table 2-8 CAN signal jumpers

# Chapter 3 Mounting the FK3 device on the board

The AB-050-FX3-U boards is shipped with a mounted V850ES/FK3 device. Nevertheless, if mounting of another V850ES/FK3 device is required at a later time the following guideline is supplied:

To mount a FK3 device on the AB-050-FX3-U place the package in the top right corner of the SMD area.

As the FK3 with 176 pins is placed on an SMD area with 180 pins 4 pads will not be used. Due to the alignment of the device in the top right corner two pads in the lowest line and two pads in the left most line remain empty. Therefore align pin 1 of the device with pin 2 of the SMD pad area.

For details see Figure 3-1 and Figure 3-2.

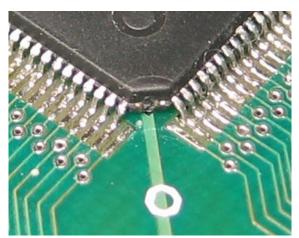


Figure 3-1 FK3 device mounting (1)

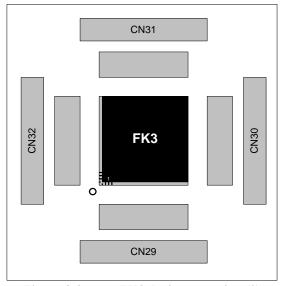


Figure 3-2 FK3 device mounting (2)

# **Chapter 4** Connecting the Power Supply

Power can be supplied to the board either

- · by directly supplying the device operating voltage, or
- via the onboard 7805 type voltage regulator.

### **Direct voltage supply:**

A direct supply of the device operating voltage can either be implied by using CN7 to connect VCC (typical +5V for Fx3 devices) and CN8 to connect VSS (0V), or by using CN1.

As the supplied voltage is directly connected to the device the input voltage must not exceed the specified power supply voltage range of the assembled device.

Close JP1 1-2 when directly supplying the devices voltage.

### Voltage regulator supply:

Use CN1 to supply a stabilized voltage of 6V - 12V to the board. The on board 7805 type regulator will generate the 5V supply of the board.

Close JP1 2-3 when using the on board voltage regulator.

# Caution: On CN1 the inner pin connects to VSS and the outer pin connects to VCC.

Applying a voltage to the device outside the specified device operating voltage range may damage the device!

# Chapter 5 UART / LIN CAN DSUB connectors

To physically connect the Starter Board to other UART / LIN / CAN devices DSUB type connectors are available..

## 5.1 UART / LIN connectors

To interface the AB-050-FX3-U board to external to UART / LIN devices a 9 pin male D-SUB connector is supplied for each of the eight available UART / LIN interfaces.

The signal layout of the UART/LIN DSUB connector can be seen in Table 5-1.

| Male D-SUB,<br>9pin | Function             |
|---------------------|----------------------|
| 1                   | n/c                  |
| 6                   | n/c                  |
| 2                   | RS-232 TxD           |
| 7                   | LIN                  |
| 3                   | RS-232 Rxd or<br>GND |
| 8                   | n/c                  |
| 4                   | n/c                  |
| 9                   | +12V                 |
| 5                   | GND                  |

Table 5-1 UART / LIN DSUB connectors

Figure 5-1 displays the assignment of each DSUB connector to its related peripheral:

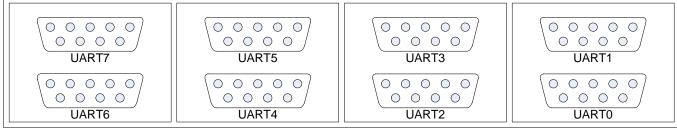


Figure 5-1 UART / LIN DSUB connectors

### 5.2 CAN connectors

To interface the AB-050-FX3-U board to external CAN devices a 9 pin female D-SUB connector is supplied for each of the five available CAN interfaces.

The pin functions of the CAN DSUB connectors can be seen in Table 5-2.

| Female D-<br>SUB, 9pin | Function          |
|------------------------|-------------------|
| 1                      | n/c               |
| 6                      | GND               |
| 2                      | CANL              |
| 7                      | CANH              |
| 3                      | GND (if jumpered) |
| 8                      | n/c               |
| 4                      | n/c               |
| 9                      | n/c               |
| 5                      | n/c               |

Table 5-2 CAN DSUB connectors

Figure 5-2 displays the assignment of each DSUB connector to its related peripheral:

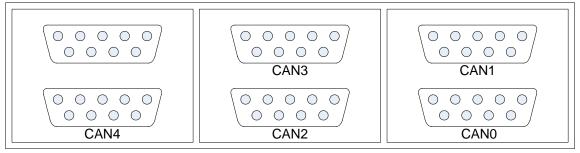


Figure 5-2 CAN DSUB connector

# Chapter 6 Mounting other Fx3 devices on the board

Even though the AB-050-FX3-U is prepared for operation of the FK3 device also other devices of the Fx3-Line can be mounted on the board.

Besides mounting the new device to the board

- the components in the Pin Patch Area must be replaced according to the pin layout of the new device and
- the signals between the device pins and the jumpers connecting the Electrical Area and the Functional Area must wired manually.

Therefore the following changes must be applied:

# 6.1 Mounting devices

First the device must be mounted to the PCB. The alignment of the different Fx3-family devices is explained below.

### 6.1.1 Mounting a FE3 device

To mount a FE3 device on the AB-050-FX3-U place the package in the lower left corner of the SMD area but do not use the two pins most in the corner. Place pin 1 of the device on pin 2 of the SMD area.

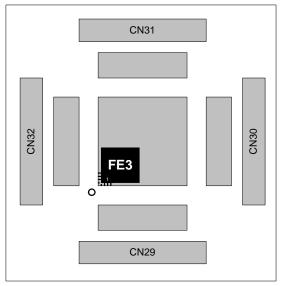


Figure 6-1 Mounting a FE3 device

## 6.1.2 Mounting a FF3 device

To mount a FF3 device on the AB-050-FX3-U place the package in the lower left corner of the SMD area but do not use the two pins most in the corner. Place pin 1 of the device on pin 2 of the SMD area.

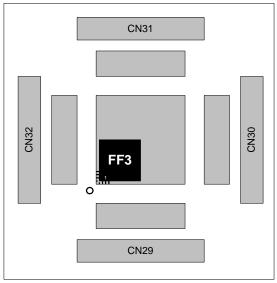


Figure 6-2 Mounting a FF3 device

## 6.1.3 Mounting a FG3 device

To mount a FF3 device on the AB-050-FX3-U place the package in the lower left corner of the SMD area. Place pin 1 of the device on pin 1 of the SMD area.

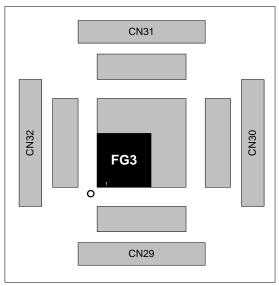


Figure 6-3 Mounting a FG3 device

# 6.1.4 Mounting a FJ3 device

To mount a FJ3 device on the AB-050-FX3-U place the package in the lower left corner of the SMD area. Place pin 1 of the device on pin 1 of the SMD area.

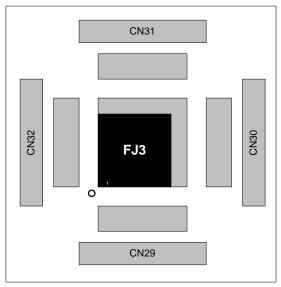


Figure 6-4 Mounting a FJ3 device

## 6.2 Pin connection

### 6.2.1 Power supply pins

Connect the devices power supply pins to the related power lines using the available SMD pads in the Pin Patch Areas.

Refer to the Fx3 User's Manual and Table 6-1 for the location of the VDD and VSS pins on the different devices.

Connect the VDD and VSS pins in the Pin Patch Areas like this:

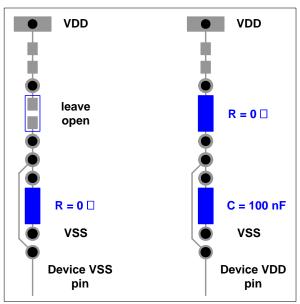


Figure 6-5 Device power supply

To connect the devices VSS pins to the VSS lane of the board place a 0 Ohm resistor on the SMD1 pad.

| Signal | Fx3 pinning |     |     |     |     |  |  |
|--------|-------------|-----|-----|-----|-----|--|--|
|        | FE3         | FF3 | FG3 | FJ3 | FK3 |  |  |
| VSS    | 6           | 11  | 11  | 11  | 11  |  |  |
| VSS1   | n/a         | n/a | n/a | n/a | 124 |  |  |
| AVSS   | 2           | 2   | 2   | 2   | 2   |  |  |
| AVSS1  | n/a         | n/a | n/a | n/a | 46  |  |  |
| EVSS   | 32          | 30  | 33  | 33  | 28  |  |  |
|        | n/a         | n/a | n/a | n/a | 76  |  |  |
| BVSS   | n/a         | n/a | 69  | 103 | 127 |  |  |

Table 6-1 VSS signal connection

To connect the devices VDD pins to the VDD lane of the board place a 0 Ohm resistor on the SMD2 pad and place a 100 nF buffering capacitor on the SMD1 pad.

| Cianal | Fx3 pinning |     |     |     |     |  |  |  |
|--------|-------------|-----|-----|-----|-----|--|--|--|
| Signal | FE3         | FF3 | FG3 | FJ3 | FK3 |  |  |  |
| VDD    | 4           | 9   | 9   | 9   | 9   |  |  |  |
| VDD1   | n/a         | n/a | n/a | n/a | 126 |  |  |  |
| AVREF0 | 1           | 1   | 1   | 1   | 1   |  |  |  |
| AVREF1 | n/a         | n/a | n/a | n/a | 45  |  |  |  |
|        | 33          | 31  | 34  | 34  | 47  |  |  |  |
| EVDD   | n/a         | n/a | 5   | 5   | 5   |  |  |  |
|        | n/a         | n/a | n/a | n/a | 77  |  |  |  |
| BVDD   | n/a         | n/a | 70  | 104 | 128 |  |  |  |

Table 6-2 VDD signal connection

## 6.2.2 REGC pin

A buffering capacitor between the devices REGC pin(s) and VSS should be placed. Assemble the capacitor to the SMD1 pad field.

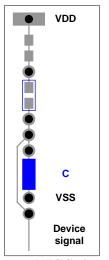


Figure 6-6 REGC pin components

Refer to the Fx3 User's Manual and Table 6-3 for the location of the RECC pin on the different devices.

| Signal | Fx3 pinning |     |     |     |     |  |  |
|--------|-------------|-----|-----|-----|-----|--|--|
| Signal | FE3         | FF3 | FG3 | FJ3 | FK3 |  |  |
| REGC   | 5           | 10  | 10  | 10  | 10  |  |  |
| REGC1  | n/a         | n/a | n/a | n/a | 125 |  |  |

Table 6-3 REGC signal connection

# 6.2.3 X1, X2 pins

An external oscillator can be connected to the X1 and X2 pins of the device. Connect the oscillator between the X1 and X2 pins and place a small capacitor on the SMD1 areas of those pins.

For size of the capacitor refer to the oscillator manufacturer specification / recommendation.

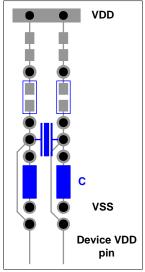


Figure 6-7 X1, X2 pin components

Refer to the Fx3 User's Manual and Table 6-4 for the location of the X1 and X2 pins on the different devices.

| Signal | Fx3 pinning |     |     |     |     |  |  |
|--------|-------------|-----|-----|-----|-----|--|--|
| Signal | FE3         | FF3 | FG3 | FJ3 | FK3 |  |  |
| X1     | 7           | 12  | 12  | 12  | 12  |  |  |
| X2     | 8           | 13  | 13  | 13  | 13  |  |  |

Table 6-4 X1, X2 signal connection

### 6.2.4 XT1, FLMD0

A pull-down resistor should be connected to input pins XT1 and FLMD0.

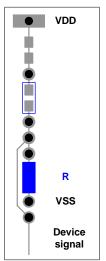


Figure 6-8 Pins with Pull-Down

Refer to the Fx3 User's Manual and Table 6-5 for the location of the XT1 and FLMD0 pins on the different devices.

| Signal | Fx3 pinning |     |     |     |     |  |  |
|--------|-------------|-----|-----|-----|-----|--|--|
| Signai | FE3         | FF3 | FG3 | FJ3 | FK3 |  |  |
| XT1    | 10          | 15  | 15  | 15  | 15  |  |  |
| FLMD0  | 3           | 8   | 8   | 8   | 8   |  |  |

Table 6-5 XT1, FLMD0 signal connection

## 6.3 Functional pin connection

As the routing of the functional signals (Reset, UARTDn, CANn, NWIRE and FP4) between the device SMD pad area and the Jumpers connecting the Electrical Area and Functional Area is based on the FK3 device, the routing of those signals for other Fx3 devices must be place manually.

To do so, connect a wire between the device pin (e.g. from one of the through holes in the Pin Patch areas) and the functional side of the related signal jumper.

Caution: Do not close the related Jumpers of any of the newly routed signals as this can lead to a direct connection between different device pins.

Be aware that no further disconnection by the use of jumpers between the Electrical Area and Functional Area is possible after wiring the signals for other than FK3 devices.

# 6.3.1 Jumper overview

The location of all jumpers located on the board can be seen in the Figure 6-9. Pin 1 of each Jumper field is marked with a black square.

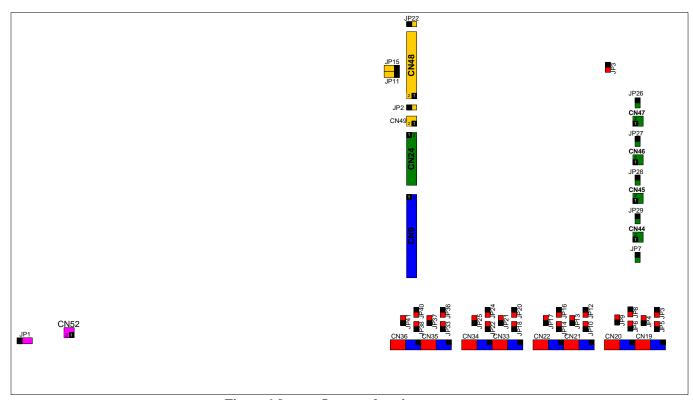


Figure 6-9 Jumpers location

The different jumper groups are highlighted in different colours according to their related functionality:

| Jumper colour | Related functionality       |  |  |
|---------------|-----------------------------|--|--|
| Yellow        | NWire Debug interface and   |  |  |
| reliow        | Flash programming interface |  |  |
| Green         | CAN interface signals       |  |  |
| Blue          | RS-232 interface signals    |  |  |
| Red           | LIN bus interface signals   |  |  |
| Magenta       | Power supply and Reset      |  |  |

Table 6-6 **Colours of Jumper functionality** 

# 6.3.2 Testpoints

The available Test Points can be seen in

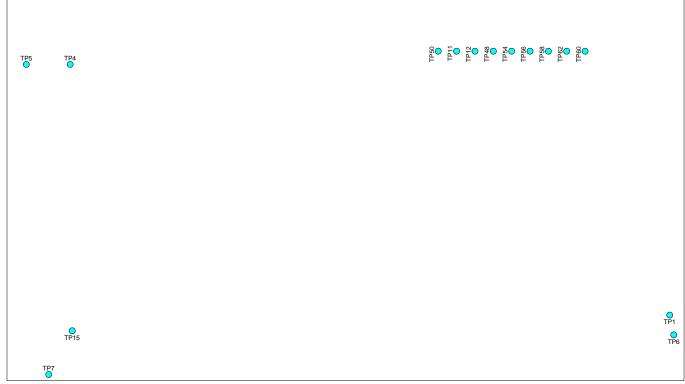


Figure 6-10 **Test Point location** 

# 6.3.3 Reset signal

To connect the RESET signal place a wire according to the table below:

|        | Fx3 pin number |     |     |     |     |               |
|--------|----------------|-----|-----|-----|-----|---------------|
| Signal | FE3            | FF3 | FG3 | FJ3 | FK3 | pin<br>number |
| Reset  | 9              | 14  | 14  | 14  | 14  | 4             |

Table 6-7 **Reset signal connection** 

# 6.3.4 NWIRE signals

To connect the NWIRE signals place wires according to the table below:

|        |     | CN48 |     |     |     |               |
|--------|-----|------|-----|-----|-----|---------------|
| Signal | FE3 | FF3  | FG3 | FJ3 | FK3 | pin<br>number |
| DCK    | 34  | 36   | 41  | 41  | 60  | 11            |
| DMS    | 35  | 37   | 42  | 42  | 61  | 13            |
| DDI    | 30  | 34   | 39  | 39  | 58  | 15            |
| DRSTZ  | 17  | 17   | 20  | 20  | 21  | 17            |
| RESET  | 9   | 14   | 14  | 14  | 14  | 19            |
| FLMD0  | 3   | 8    | 8   | 8   | 8   | 21            |
| DDO    | 31  | 35   | 40  | 40  | 59  | 23            |

Table 6-8 NWire interface signals

# 6.3.5 Flash Programming interface

To connect the Flash Programming signals place wires according to the table below:

| Signal | Fx3 pin number |     |     |     |     |        |  |
|--------|----------------|-----|-----|-----|-----|--------|--|
| Signal | FE3            | FF3 | FG3 | FJ3 | FK3 | number |  |
| TxD    | 22             | 22  | 25  | 25  | 26  | 1      |  |
| RxD    | 23             | 23  | 26  | 26  | 47  | 3      |  |
| SIB    | 19             | 19  | 22  | 22  | 23  | 5      |  |
| SOB    | 20             | 20  | 23  | 23  | 24  | 7      |  |
| SCK    | 21             | 21  | 24  | 24  | 25  | 9      |  |

Table 6-9 Flash programming jumper settings

## 6.3.6 CAN interface

To connect the CAN interface signals place wires according to the table below:

| Cianal |        | Fx3 pin number |        |        |        |        |  |  |
|--------|--------|----------------|--------|--------|--------|--------|--|--|
| Signal | FE3    | FF3            | FG3    | FJ3    | FK3    | number |  |  |
| CTXD0  | 25 (*) | 25 (*)         | 28 (*) | 28 (*) | 49 (*) | 2      |  |  |
| CIADO  | 18     | 18             | 21     | 21     | 22     | 2      |  |  |
| CRXD0  | 26 (*) | 26 (*)         | 29 (*) | 29 (*) | 50 (*) | 4      |  |  |
| CKADO  | 16     | 7              | 19     | 19     | 20     | 4      |  |  |
| CTXD1  | n/a    | n/a            | 31     | 31     | 52     | 6      |  |  |
| CRXD1  | n/a    | n/a            | 32     | 32     | 53     | 8      |  |  |
| CTXD2  | n/a    | n/a            | n/a    | 67 (*) | 48 (*) | 10     |  |  |
| CIADZ  | n/a    | n/a            | n/a    | 71     | 92     | 10     |  |  |
| CRXD2  | n/a    | n/a            | n/a    | 68 (*) | 49 (*) | 12     |  |  |
| CRADZ  | n/a    | n/a            | n/a    | 72     | 93     | 12     |  |  |
| CTXD3  | n/a    | n/a            | n/a    | 50     | 69     | 14     |  |  |
| CRXD3  | n/a    | n/a            | n/a    | 51     | 70     | 16     |  |  |
| CTXD4  | n/a    | n/a            | n/a    | n/a    | 104    | 18     |  |  |
| CRXD4  | n/a    | n/a            | n/a    | n/a    | 105    | 20     |  |  |

Table 6-10 CAN jumper settings
(\*) Compatible pinning to the corresponding Fx2 device.

## 6.3.7 UARTD interface

To connect the UARTD interface signal place wires according to the table below:

| Cianal |      | CN9   |     |        |        |     |
|--------|------|-------|-----|--------|--------|-----|
| Signal | FE3  | FF3   | FG3 | FJ3    | FK3    | CN9 |
| TxD0   | 22   | 22    | 25  | 25     | 26     | 5   |
| RxD0   | 23   | 23 26 |     | 26     | 27     | 7   |
| TxD1   | 36   | 38    | 43  | 61     | 82     | 1   |
| RxD1   | 37   | 39    | 44  | 62     | 83     | 3   |
| TxD2   | n/a  | n/a   | 35  | 54     | 28     | 9   |
| RxD2   | n/a  | n/a   | 36  | 55     | 29     | 11  |
| TxD3   | n/a  | n/a   | 23  | 60 (*) | 81 (*) | 13  |
| IXD3   | II/a | II/a  | 23  | 23     | 24     | 13  |
| RxD3   | n/a  | n/a   | 22  | 59 (*) | 80 (*) | 15  |
| KXD3   | II/a | II/a  | 22  | 22     | 23     | 15  |
| TxD4   | n/a  | n/a   | 58  | 76     | 97     | 17  |
| RxD4   | n/a  | n/a   | 57  | 75     | 96     | 19  |
| TxD5   | n/a  | n/a   | n/a | 73     | 94     | 21  |
| RxD5   | n/a  | n/a   | n/a | 74     | 95     | 23  |
| TxD6   | n/a  | n/a   | n/a | n/a    | 64     | 25  |
| RxD6   | n/a  | n/a   | n/a | n/a    | 65     | 27  |
| TxD7   | n/a  | n/a   | n/a | n/a    | 78     | 29  |
| RxD7   | n/a  | n/a   | n/a | n/a    | 79     | 31  |

Table 6-11 UARTD jumper settings
(\*) Compatible pinning to the corresponding Fx2 device.

AB-050-FX3-U Revision History

# **Chapter 7** Revision History

| Version | Chapter                        | Comment                                           |
|---------|--------------------------------|---------------------------------------------------|
| 1.0     |                                | Initial release                                   |
|         | 6.2.1 - 6.2.4<br>6.3.3 - 6.3.7 | Added pin tables for the different devices        |
| 1.1     | All                            | Modified / expanded text                          |
|         | 6                              | Added chapter 'Cautions'                          |
|         | 7                              | Added chapter 'Revision History'                  |
| 1.2     | 5                              | Added chapter for cable description               |
| 1.2     | 2.5                            | Added information on LIN operation                |
| 2.0     |                                | Update for V2.0 revision of the AB-050-FX3 board. |
| 2.1     |                                | Updated naming of board to AB-050-FX3-U           |
| ۷.۱     | 2.5                            | Added Caution on UART / LIN driver usage          |
| 2.2     | All                            | Update for new document number                    |

AB-050-FX3-U Schematic

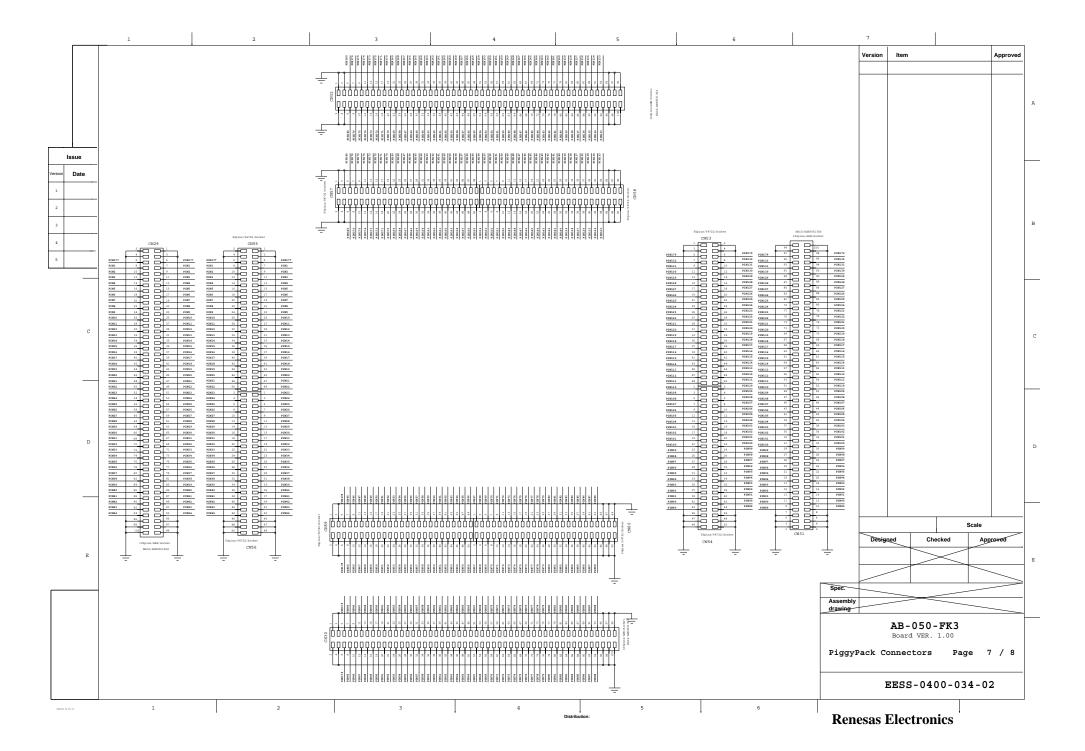
# **Chapter 8** Schematic

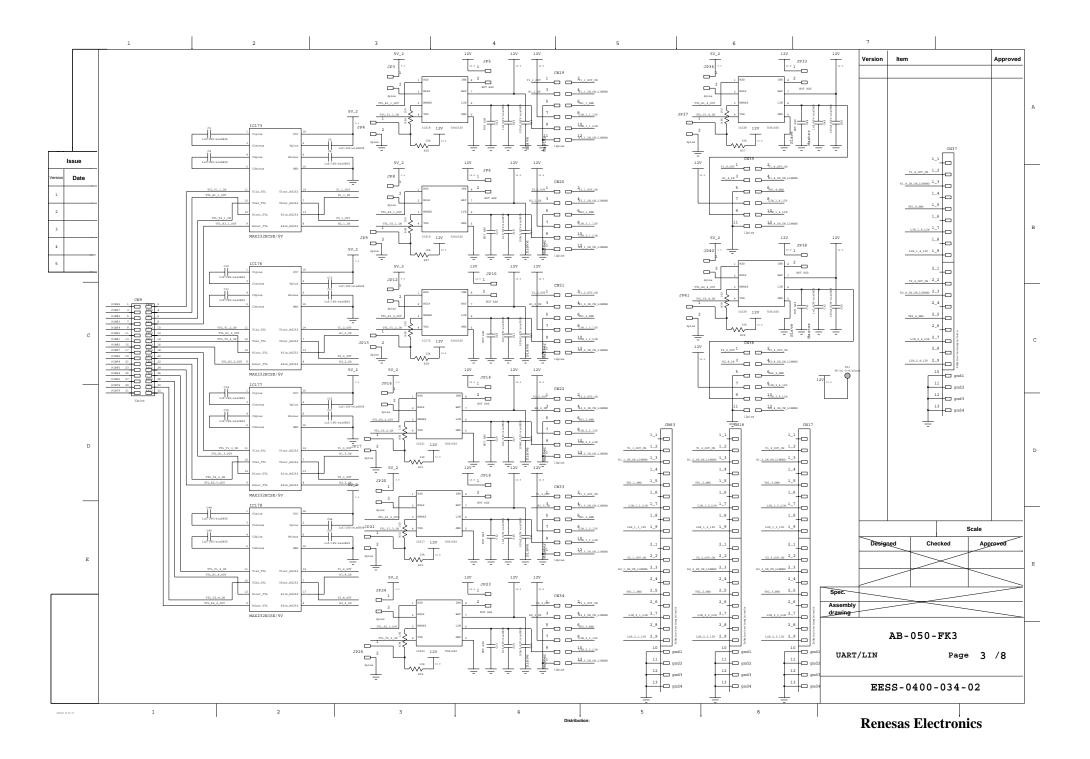
|                  | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           | 2                                  |                           | 3     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5         |                                               | 6       |      |          | 7        |         |         |          |          |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------|---------|------|----------|----------|---------|---------|----------|----------|
|                  | 1 1 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                    | 1070                      |       | I I Icee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |         | 7000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           | 1 1 1028                                      |         |      |          | Version  | Item    |         | Approve  | bd       |
|                  | 1 LVbb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN1      | 1 2                                | LVbb                      | PIN21 | 1 LV20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN41     | 1 2     | LVDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN61     | 1 LVDD                                        | PIN     | W81  |          | 1        |         |         |          | _        |
|                  | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4pt                                |                           |       | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3         | 41      | and pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3         | 4pins                                         | h110    |      |          |          |         |         |          |          |
|                  | 2 ogggetotor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN2      | -                                  |                           | PIN22 | 1 compactor 2 magains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN42     |         | oppositor<br>compositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN62     | 1 -00000<br>2 -00000                          | ctor    | 182  |          |          |         |         |          |          |
|                  | 4ping                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ) Y       | 4pt                                | Min ng                    |       | 4ping                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3         | 41      | 4 Shb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3         | 4pins                                         | 1.      |      |          |          |         |         |          |          |
|                  | 1 come otox toppers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN3      |                                    | oranaci or                | PIN23 | 1 companion 2 comp | PIN43     | 1 2     | oppositor<br>regions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN63     |                                               | etor PI | 183  |          |          |         |         |          |          |
|                  | 4ptna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4pt                                | We PIN 2                  |       | 4ptna<br>1001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN 3     | 4       | 4 Mb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2         | 9h<br>4p ns                                   | PIN 3   |      |          |          |         |         |          |          |
| Issue            | 1 oppostox                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PIN4      | 1 1 -                              |                           | PIN24 | 1 00000 ctox 2 100000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN44     |         | oppositor<br>retain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN64     | 1 00000<br>2 negan                            | ctor PI | 184  |          |          |         |         |          |          |
| Version Date     | 18h<br>4pins<br>205                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN       | 4pt                                | Man Pin 2                 |       | 40 ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     |         | Mb Pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2         | 4p ms                                         | PIN 3   |      |          |          |         |         |          |          |
| 1                | 1 commentor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN5      | 1                                  | oppositor                 | PIN25 | 1 compactor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | pin45     |         | oppmentor<br>negans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN65     | _1                                            | rtor PI | 185  |          |          |         |         |          |          |
|                  | 4 tho                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4pL                                |                           |       | 4 tho                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4       | Mb Phs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3         | 2 1966#1<br>40 109<br>40 109                  | PIN 3   |      |          |          |         |         |          |          |
| 2                | 1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN6      | 1                                  | ocquector                 | PIN26 | 1 compactor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN46     |         | none na                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN66     | 1023<br>1 00000<br>2 10000                    | rtor pr | 186  |          |          |         |         |          |          |
| 3                | 4ptins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN       | 4p                                 |                           |       | 2 mpeeus 500 4pens 1000 1000 1000 1000 1000 1000 1000 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN 3     | 4       | TORREST ICLA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3         | 9h<br>4p ns                                   | PIN 3   |      |          |          |         |         |          |          |
| 4                | 1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN7      | <u></u>                            | oppositor                 | PIN27 | 1084<br>1 coppertor<br>2 nggess                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN47     | 1 1     | opppertor<br>nggens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN67     | 1034<br>1 00000<br>2 00000                    | otor PI | 407  |          |          |         |         |          |          |
| 5                | 4p ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4pt                                | ngana PIN 3               |       | 4ptna<br>icss                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN 3     | 4       | regions in the second s | DIN 3     | 965<br>4p ng<br>1036                          | PIN 3   |      |          |          |         |         |          |          |
|                  | 1 0046<br>1 00000 otox<br>2 00000 ii                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN8      | 1                                  | connector                 |       | 1 cass 1 coppertor 2 magess                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>=</b>  |         | opppertor<br>recent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | 1 1035                                        | itor    | -0.0 |          |          |         |         |          |          |
|                  | 2 negatin<br>42 ins<br>40 ins<br>1247                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3     | 4pt                                | npages PIN 3              | PIN28 | 2 none m<br>500<br>4pkns<br>1066                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN PIN48 |         | rotens i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN68     | 2 neces<br>4 Mb<br>4p ne<br>1 2246            |         | N88  |          |          |         |         |          | Ì        |
|                  | 1 comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                    |                           |       | 1 companior 2 markets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>=</b>  |         | icis<br>commentor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           | 1 0000                                        |         | -0.0 |          |          |         |         |          |          |
|                  | 2 nggan<br>68h<br>4pins<br>1048                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN9      | 2<br>4p                            | nggans pin 2              | PIN29 | 2 ngcens<br>45%<br>4pkna<br>1047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN PIN49 |         | rotens :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN69     | 2 recen<br>58b<br>4Ptns<br>1027               | PIN 3   | 189  |          |          |         |         |          |          |
| c                | 1 came otox                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |                                    |                           |       | 1 compactor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>=</b>  | 1       | TC17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           | 1 1037<br>1 10988                             | otor    |      |          |          |         |         |          |          |
|                  | 2 = 0000 H<br>40 lins<br>40 lins<br>1049                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN 2     | 4 <sup>4</sup> 4pL                 |                           | PIN30 | 2 mpoess<br>5%b<br>4pkns<br>10%s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN PIN50 |         | recens :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN70     | 2 recen<br>5th<br>4p ing<br>1238              | PIN PI  | 190  |          |          |         |         |          |          |
|                  | 1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           | 1 1 1                              | orement or                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\exists$ |         | Pens<br>ICIS<br>Commentor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | $\exists$ |                                               | stor    |      |          |          |         |         |          |          |
|                  | 2 1900 mg 4 1800 mg 1050                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN 2     | 4 <sup>4</sup> / <sub>4</sub> pi.  | nggann pin                | PIN31 | 2 mpters 4 total 4 pters 4 total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN PIN51 | -   -   | retern 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN71     | 1 come<br>2 regen<br>4 Shb<br>4 pt.ns         | PIN 3   | N91  |          |          |         |         |          |          |
|                  | 1 management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | _         | 1                                  | oppositor                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\exists$ | 1 2     | TC19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | $\exists$ |                                               | stor    |      |          |          |         |         |          |          |
|                  | l les                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN PIN12 | 4<br>4pt                           | DODGE PIN                 | PIN32 | 2 oppositor special de la constant d | PIN PIN52 | - +     | recens i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN72     | 2 1900 1                                      | PIN PI  | 192  |          |          |         |         |          |          |
|                  | 4p mg 1051  1 000000 ctor 100000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | -                                  |                           |       | 4ptns 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | _         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u></u>   | 4p ng 1040                                    |         |      |          |          |         |         |          |          |
|                  | 2 1900mm<br>4 1800<br>4 100 100 100 100 100 100 100 100 100 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN PIN13 | 2<br>4pt                           |                           | PIN33 | 2 1950er#<br>400<br>401<br>1091                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN PIN53 | -       | oppgetor regam  Web                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN73     | 2 19660<br>4 1960<br>4 1960<br>4 1960<br>1041 | PIN 3   | N93  |          |          |         |         |          |          |
| D                | 4ptns<br>1052<br>1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           | 4pL                                | DS<br>1072<br>Commentor   |       | 4ptns 1091  1 coppector 1098 1098 1098 1098 1098 1098 1098 1098                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\equiv$  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _         | 4ptns<br>1041<br>1 00000                      | rtor    |      |          |          |         |         |          |          |
|                  | 2 1999811<br>4 180<br>4 1903                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN 2     | 2<br>4pt                           |                           | PIN34 | 2 npeens 65b 4ptns 1092                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN PIN54 | - +     | oppositor toppositor toppositor toppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PIN74     | 2 recen<br>556<br>4p na<br>1042               | PIN PI  | 194  |          |          |         |         |          |          |
|                  | 4ptns<br>1053<br>1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |                                    |                           |       | 4ptns<br>1c92<br>1 coppector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | _         |         | Pens<br>1022<br>oppnector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | _         | 4ptng<br>1042<br>1 00000                      | ttor    |      |          |          |         |         |          |          |
|                  | 2 notes and the second  | PIN 2     | 2<br>4pt                           |                           | PIN35 | 2 notes and 4 february 100 to  | PIN PIN55 |         | Pana<br>Pana<br>Pana                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN75     | 2 negen<br>68to<br>4ptna<br>100               | PIN 3   | N95  |          |          |         |         |          |          |
| _                | 4pins<br>1054                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _         |                                    | connector                 |       | 4pins<br>1092                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $\dashv$  | 41      | plns<br>1023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u> </u>  | 4ptns<br>106                                  | otor    |      |          |          |         |         |          |          |
|                  | appears  app | PIN PIN16 | 2<br>4pt                           | notate to                 | PIN36 | 2 nggan<br>1960<br>4 puns<br>204                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN 2     | - + -   | ngcens<br>4 Sto<br>Phone<br>1024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN76     | 2 1984<br>4 1984<br>4 19 199<br>107           | PIN 3   | 196  |          |          |         |         |          |          |
|                  | 4pins<br>toss                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _         | -                                  |                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\exists$ | 41      | Pins<br>1024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | _         |                                               | ttor    |      |          |          |         |         | Scale    |          |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN PIN17 | 2<br>4 <sup>4</sup> / <sub>2</sub> |                           | PIN37 | 2 roggestor roggess 4 thm 4 thm 1006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN PIN57 | - + - 2 | commentor rectans 4 Mb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN77     | 1 come<br>2 neten<br>4pins<br>10s             | PIN 3   | x97  |          | Design   | ied     | Checked | Approved |          |
| E                | 4Ptns<br>ICS6<br>1 opperator<br>2 negans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           | 4pt                                | DS<br>1076<br>consector   |       | 4ptns<br>1css                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _         | 49      | Ptns<br>1025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | _         |                                               | otor    |      |          |          |         |         |          |          |
|                  | 2 2 200 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN PIN18 | 2<br>4pt                           | ognasotor<br>nppans yzs 2 | PIN38 | 2 coppeter 2 rotes 4 the 4ptns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN 3     | - +     | opppertor toppertor topper | PIN78     | 2 reter<br>2 reter<br>4 ptn<br>4 ptn<br>100   | PIN 3   | 198  |          | K.Hes    | se e    |         | S.Gupta  | _        |
|                  | 4pins<br>1057                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _         |                                    |                           |       | 4pins<br>icse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $\exists$ |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _         |                                               | rtor .  |      | Spec.    |          |         |         |          | _        |
|                  | 1 opper on or 2 opper on or 4p on or 100 opper or 10 | PIN PIN19 | 2<br>4pt                           |                           | PIN39 | 1 000000000000000000000000000000000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN PIN59 | - + -   | oppositor<br>regame<br>4 Mb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN79     | 1 00000<br>2 00000<br>550<br>4pins<br>1010    | PIN PI  | ¥99  | Assembly |          | $\geq$  | <       |          | $\dashv$ |
|                  | 4plins<br>ISSS<br>1 Component                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _         | 4pE                                |                           |       | 4pina<br>1007<br>1 copperctor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $\exists$ |         | ping<br>TC27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u> </u>  | 4pling<br>2010                                | rtor    |      | drawing  |          |         |         |          | _        |
|                  | 2 1956##<br>4 1860<br>4 2 kms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN PIN20 | 2<br>4pt                           | ACC hTR 3                 | PIN40 | 2 sqtass<br>4 ptns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN PIN60 |         | nggans i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PINSO 3   | 2 reter<br>4 Mb<br>4p ng                      | PIN 3   | X100 |          |          | 7 E _ 0 | 50-FK3  |          |          |
|                  | 4ptns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           | 4p <b>L</b>                        | ng                        |       | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           | 41      | pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                                               | 5V      |      |          |          | AD-U    | JU-FKJ  |          |          |
|                  | notame<br>ER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |                                    | notaes<br>FR              |       | EOTAER<br>FU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |         | notass<br>NV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           | notas                                         | 1.0     |      | Sheet1   |          |         | Page    | 4/8      |          |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                    |                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           | 1                                             |         |      |          | EES      | S-040   | 0-034-  | 02       |          |
| MERINAA NE NY NY | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           | 2                                  |                           |       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4         |         | Distribution:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5         |                                               | 6       |      |          | <b>D</b> | T       | la at   |          |          |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                    |                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                               |         |      |          | Ken      | esas E  | lectron | ICS      |          |

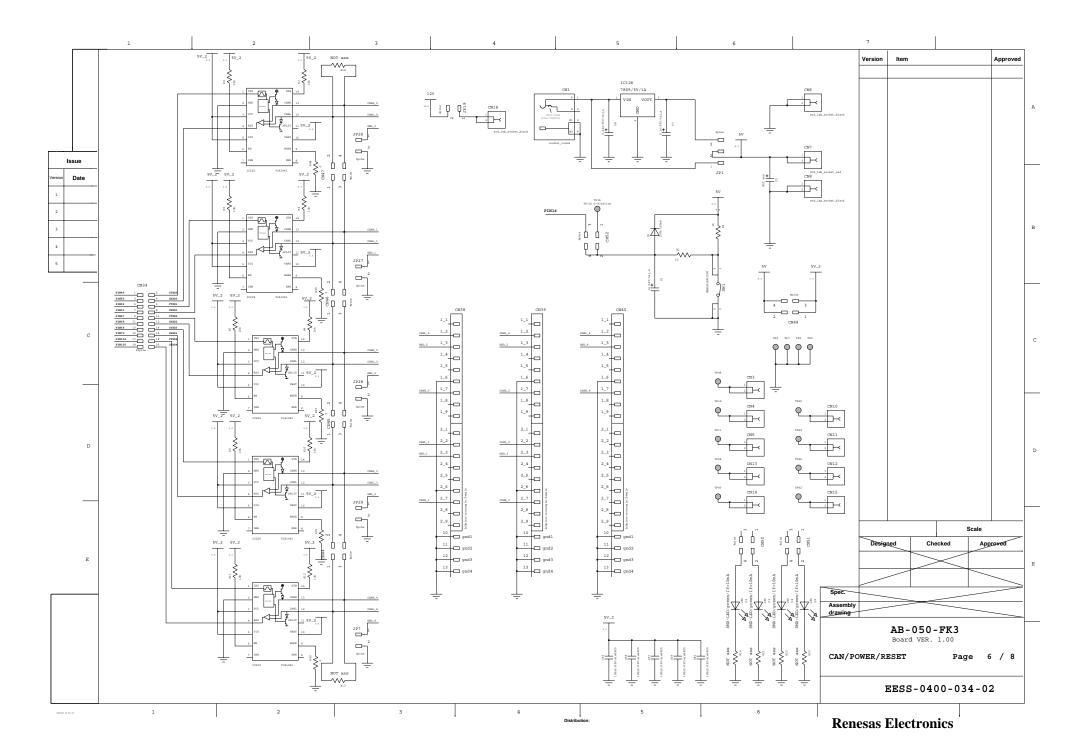
|                      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5          | 6                                 |                                           |                       | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |          |          |   |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|---|
|                      | 10138                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 1 10151                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        | 1 10179                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            | 10171                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                           |                       | Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Item      |          | Approved |   |
|                      | 1 LWnb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN160 | 1 LVDb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN121 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN101     | 1 LWDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN180     |                                   |                                           |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 4 000<br>4ptns<br>10117                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        | 4pens<br>icis2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2      | 1 LVeb vec ess 1 Print P | 1          | 4p ng<br>10140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1          | ipin<br>1 m                       | 1plin                                     | 1pin                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 ogggetor<br>2 nggens PIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PIN159 | 2 00000 PIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN122 | 1 ocquesoror ocquesor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN PIN102 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN PIN179 | 1                                 | 1 no                                      | 1 10                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | i |
|                      | 4pins<br>10136                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 4p ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ⊒'         | 4ptns<br>10141                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | connector                         | commector                                 | notass                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 2 000000 PIN 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN158 | 1 compettor pin Fig.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN123 | 2 00000 tor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN PIN103 | 1 competer and a comp | PIN178     | 10116<br>10116                    | 201<br>20121                              | icios<br>1pin         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 4ptns<br>icuss                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4ptns<br>10154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4ptns<br>1c182                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _          | 4ptns<br>10142                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | ipin n                            | 1pin<br>1                                 | 1 10                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| Issue                | 1 occupator<br>2 ngcass PIN 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN157 | 2 ngcass PIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN124 | 1 consector notes to the sector notes to the s | PIN PIN104 | 1 oppositor 2 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN PIN177 | connector                         | commector                                 | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | _ |
| Version Date         | 4puns<br>12134                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4pins<br>ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | 4 <sup>d</sup> ns ress                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | =          | 4 <sup>6</sup> Mbb 4p ns 10142                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _          | notaes<br>EN<br>ICLL7             | EN IC122                                  | notama<br>EM<br>IC104 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| 1                    | 2 1988 P210 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN156 | a commerciar primary p | PIN125 | 1 opposes 1 oppo | PIN PIN105 | 1 oppmentor regents 4 Drs 12144                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN PIN176 | 1pin                              | 1pin<br>1                                 | 1pin<br>1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| 2                    | 4ptns<br>20133                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4ptns<br>ress<br>2 opposetor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\exists$  | 1 oggangetor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            | connector                         | compector                                 | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| 3                    | 2 negans PIN 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN155 | 2 nggans pin<br>45 lins<br>10157                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN126 | 1 oppgetor nggens  4pt ng Totas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN 2      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN PIN175 | notaes<br>EN                      | notaes<br>EN                              | notaes<br>ES          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | E |
| 4                    | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PIN154 | 2 000000000000000000000000000000000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN127 | TC185                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN107     | 1 oppmentor peters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN174     | 1pin                              | 1pin<br>1                                 | icios<br>1pin         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| 5                    | 2 ngeans 910 2 40ks 40ks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PINISA | 4 mgcans pin 4 mg Lotse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2      | 4 pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN 2      | 4pins<br>10146                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN 2      | 1 ===                             | 1 no                                      | 1 20                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 ogenetor<br>2 ngtens P10 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN153 | 10158<br>1 openactor<br>negame 930                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN128 | 1 00000 ctor 2 10000 ctor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PIN108     | 1 oppmentor agent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PIN173     | connector                         | compector                                 | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 4ptns<br>12c130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1      | 4pins<br>20187                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN 3      | 40 ins<br>1047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN 1      | 19                                | XX                                        | EE 10106              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 oppositor<br>2 negame Pin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN152 | 2 Oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN129 | 1 ocquestor management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN109     | 1 commentor<br>2 negans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN172     | icis<br>1pin<br>1                 | 1plin<br>1                                | 1pin<br>1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 4 Mb 4 ns 10129                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 40 ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2      | 4p ng<br>10188                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1          | 4p ng                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1          | connector                         | commector                                 | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| С                    | 1 ogggettor PIN 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PIN151 | 1 oppositor property print                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PIN130 | 1 opposis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PIN PIN110 | 1 oppositor appara                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN PIN171 | notaes<br>ESC110                  | motamus<br>RMC107                         | DOCAMB<br>EH          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | ( |
|                      | 4pins<br>1c128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | •      | 4p ns<br>reiss                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ⊒*         | 4p ins<br>10149                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u>_</u>   | ipin                              | 1plin<br>1                                | icioi<br>1pin         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 ogggetor<br>2 nggans PIN 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN150 | 1 Oppmentor PIN PIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN131 | opperor opper 4 Photos opper o | PIN PIN111 | 1 oppositor 2 nggans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN PIN170 | connector                         | connector                                 | 1 80                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| _                    | 40 ns<br>10127                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 2 ngcans PIN 4860 4pkms 20162                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 4p ns<br>1c190                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _          | 2 nggans<br>38to<br>4pt ng<br>20150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | notaes<br>EX                      | notame<br>EN                              | consector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 oppose of or 2 name of the State of S | PIN149 | 2 000000 PIN KE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN132 | 1 oppositor 2 mpgans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN PIN112 | 1 opposetor 2 negans KH.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN PIN169 | 1pin                              | 1pin                                      | notaes<br>EX          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | _ |
|                      | 4p ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 4p ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | =          | 40 ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _          | 1                                 | 1 no                                      | 10109                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 oppose PIN 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1999 2 1 | PIN148 | 1 cpqmector 2 mpgass PIN - Em 4Pins 12144                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PIN133 | 1 oppositor opposit Man 4ptns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PIN PIN113 | 1 opposes 2 opposes 68b 4 pins 12220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN PIN168 | connector                         | notass                                    | 1pin<br>1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
| D                    | 4pins<br>Icas4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4pkns<br>10164<br>1 000000000<br>2 nggans 910                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 4ping Icisa Icisa  1 connector connector connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | 151                               | 10112<br>1plin                            | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | т |
|                      | 2 negans pin 2 4 filto 4 filing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PIN147 | 2 nggans pin<br>4 disa<br>4 pins<br>1046                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN134 | 2 notes: 44 ns 42 ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN 2      | 1 competer or a speak as 4 May 10210                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PIN 2      |                                   | 1pin<br>1                                 | DOCAME<br>EN<br>TOTAL |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 cose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN146 | 1 Consector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN135 | 1 00000 tor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <u> </u>   | 1 connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN166     |                                   | compector                                 | 10114<br>1pin<br>1    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 2 nggans pin 2<br>48to<br>4Pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NINIAP | 4 Mb 4pens 91N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | VINI35 | 2 1955411<br>4 1955<br>4 1951<br>10194                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN 3      | 2 nggans<br>4 Mto<br>4 p t ns<br>10211                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN 3      |                                   | notama<br>EN                              | connector             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 COSE  1 COSESCION DO DE LOS DEL LOS DE LOS DE LOS DEL | PIN145 | 1 oppositor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN136 | 1 commenter 2 commenter 2 commenter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN116     | 1 oppmentor negans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN165     |                                   | 1plin                                     | notass<br>EN          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          | _ |
|                      | 4p ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | appears pin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1      | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN        | 40 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PIN 3      |                                   | 1 nc                                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          | <u> </u> |   |
|                      | 1 oppositor 210 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PIN141 | 2 occupantor pin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PIN137 | 1 ocquestor management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PIN117     | 1 commenter<br>2 negans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PIN164     |                                   | connector                                 | 1pin                  | - Contract of the contract of | 01        | Scale    |          |   |
| _                    | 4 Mb 4 ns 10200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 4ping<br>10168                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2      | 4pins<br>10194                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1          | 40 ng<br>10212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1          |                                   | ZN.                                       | 1                     | Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ned Che   | cked App | otoxed   |   |
| E                    | 1 ogggettor PIN 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PIN142 | 2 pagagetor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PIN138 | 1 ocquestor opposis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN PIN118 | 1 comment or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN PIN163 |                                   |                                           | notans                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | $\sim$   |          | E |
|                      | 4p ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 4pma                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1      | 4pins<br>10197                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | 4p ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                           | KH .                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 000000 ctor PIN 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PIN143 | 1 compettor 2 nggans PIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PIN139 | 2 00000 ctor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN PIN119 | 1 competer and page a | PIN PIN162 |                                   |                                           | Spec.                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 4p ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 4ptns<br>10170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 4p ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _          | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _          | 10175 I<br>50 m · 4 50 m          | n 4 4                                     | Assembl<br>drawing    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      | 1 oppositor<br>2 nappass PIN 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PIN144 | 1 oppositor<br>2 magains 930                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN140 | 2 000000 tor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PIN PIN120 | 1 oppositor negame                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PIN PIN161 | 65 in 4 65 in 5 2 2 2 2 4 6 2 2 2 | 1 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AB-050    | 1 EE2    |          | _ |
|                      | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 4pens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | 4pins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5V         | connector c                       | omector                                   |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AD-030    | -FK3     |          |   |
|                      | notaes<br>NE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | notaes<br>EX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | not ass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            | notass<br>ER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3.35 0     | ER E                              | я                                         | She                   | et2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           | Page 1   | /8       |   |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                           |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u> </u>   |                                   |                                           |                       | EES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SS-0400-  | 034-02   |          |   |
| AMBRIDAD, DE DESS AT | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5          |                                   | 6                                         |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |   |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        | ,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | Distribution:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                           |                       | Rene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | esas Elec | ctronics |          |   |

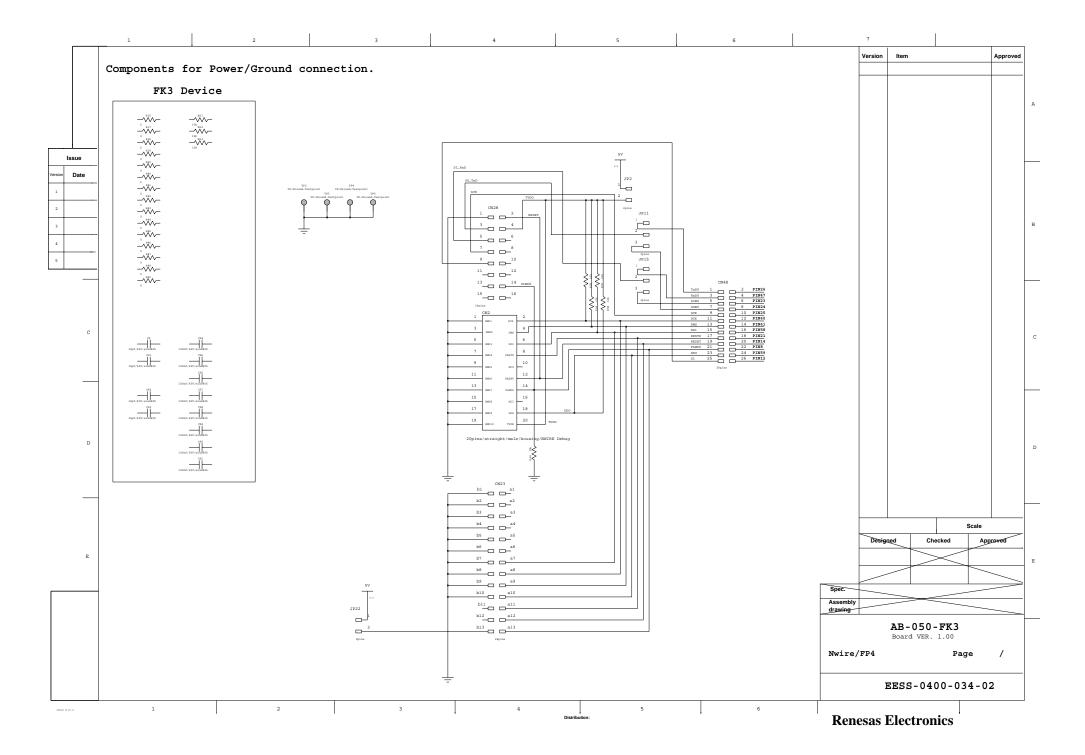
|                    | 1 |                      | 2                                                                  | 3                                                     | 4                                                     | 5                                               | 6                                                  |                                  | 7                |                     |          | _  |
|--------------------|---|----------------------|--------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|----------------------------------|------------------|---------------------|----------|----|
|                    |   |                      |                                                                    |                                                       |                                                       |                                                 |                                                    |                                  | Version          | Item                | Approved | _] |
|                    |   | IN180                | IN176 IN174 IN174 IN172 IN172 IN171 IN170 IN169 IN168              | IN166<br>IN163<br>IN162<br>IN161<br>IN160             | IN159 IN158 IN157 IN155 IN154 IN153 IN151 IN151 IN151 | IN148 IN147 IN146 IN146 IN144 IN143 IN143 IN141 | IN140<br>IN139<br>IN137<br>IN136<br>IN135<br>IN136 | IN133                            |                  |                     |          | -  |
|                    |   | Δ.                   |                                                                    |                                                       |                                                       |                                                 |                                                    | Δ.                               |                  |                     |          |    |
|                    |   | 180                  | 176<br>175<br>174<br>173<br>172<br>171<br>171<br>170<br>169<br>168 | 166<br>163<br>163<br>160<br>160                       | 159<br>156<br>157<br>154<br>153<br>153<br>151<br>150  | 148<br>148<br>145<br>143<br>141<br>141          | 136<br>136<br>136<br>136                           | 133                              |                  |                     |          | A  |
|                    |   | PIN177 177<br>PIN1 1 | 177 177 177 177 177 177 177 177 177 177                            | 165<br>165<br>163<br>163                              | 159<br>159<br>156<br>157<br>151<br>153<br>150         | 149<br>146<br>145<br>145<br>142                 | 140<br>139<br>138<br>138<br>136<br>136             |                                  |                  |                     |          |    |
|                    |   | PIN2 2               | 2                                                                  |                                                       |                                                       |                                                 |                                                    | 132 PIN132<br>131 PIN131         |                  |                     |          |    |
| Issue              | - | PIN3 3               | 3                                                                  |                                                       |                                                       |                                                 |                                                    | 130 PIN130                       |                  |                     |          |    |
| Version Date       | - | pin4 4               | 4                                                                  |                                                       |                                                       |                                                 |                                                    | 129 PIN129<br>128 PIN128         |                  |                     |          |    |
| 1                  | - | pin6 6               | 6                                                                  |                                                       |                                                       |                                                 |                                                    | 127 PIN127                       |                  |                     |          |    |
| 2                  | - | PIN7 7               | 7                                                                  |                                                       |                                                       |                                                 |                                                    | 126 PIN126                       |                  |                     |          |    |
|                    | - | PIN9 9               | 9                                                                  |                                                       |                                                       |                                                 |                                                    | 125 PINI25                       |                  |                     |          | В  |
|                    | - | PIN10 10<br>PIN11 11 | 10                                                                 |                                                       |                                                       |                                                 |                                                    | 123 PIN123                       |                  |                     |          |    |
| 4                  |   | PIN11 11<br>PIN12 12 | 11                                                                 |                                                       |                                                       |                                                 |                                                    | 122 PIN122<br>121 PIN121         |                  |                     |          |    |
| 5                  |   | PIN13 13             | 13                                                                 |                                                       |                                                       |                                                 |                                                    | 120 PIN120                       |                  |                     |          |    |
|                    | 1 | PIN14 14<br>PIN15 15 | 14                                                                 |                                                       |                                                       |                                                 |                                                    | 119 PIN119                       |                  |                     |          |    |
|                    |   | PIN16 16             | 15                                                                 |                                                       |                                                       |                                                 |                                                    | 118 116 PINI16<br>117 PINI17     |                  |                     |          |    |
|                    |   | PIN17 17             | 17                                                                 |                                                       |                                                       |                                                 |                                                    | 116 PIN116                       |                  |                     |          |    |
| С                  |   | PIN18 18<br>PIN19 19 | 18                                                                 |                                                       | 902                                                   |                                                 |                                                    | 115 PIN115<br>114 PIN114         |                  |                     |          | c  |
|                    |   | PIN20 20             | 20                                                                 |                                                       |                                                       |                                                 |                                                    | 113 PIN113                       |                  |                     |          |    |
|                    |   | PIN21 21<br>PIN22 22 | 21                                                                 |                                                       | multi176qfp_05                                        |                                                 |                                                    | 112 PIN112                       |                  |                     |          |    |
|                    | - | PIN23 23             | 23                                                                 |                                                       |                                                       |                                                 |                                                    | 111 PINIII                       |                  |                     |          |    |
|                    |   | PIN24 24             | 24                                                                 |                                                       |                                                       |                                                 |                                                    | 109 PIN109                       |                  |                     |          |    |
|                    |   | PIN25 25<br>PIN26 26 | 25                                                                 |                                                       |                                                       |                                                 |                                                    | 108 108 PIN108<br>107 107 PIN107 |                  |                     |          |    |
|                    |   | PIN27 27             | 27                                                                 |                                                       |                                                       |                                                 |                                                    | 106 PIN106                       |                  |                     |          |    |
| D                  |   | PIN28 28<br>PIN29 29 | 1 28                                                               |                                                       |                                                       |                                                 |                                                    | 105 PIN105<br>104 PIN104         |                  |                     |          | D  |
|                    |   | PIN30 30             | 30                                                                 |                                                       |                                                       |                                                 |                                                    | 103 PIN103                       |                  |                     |          |    |
|                    |   | PIN31 31<br>PIN32 32 | 31                                                                 |                                                       |                                                       |                                                 |                                                    | 102 PIN102                       |                  |                     |          |    |
|                    |   | PIN32 32<br>PIN33 33 | 33                                                                 |                                                       |                                                       |                                                 |                                                    | 101 PIN101<br>100 PIN100         |                  |                     |          |    |
|                    |   | PIN34 34             | 34                                                                 |                                                       |                                                       |                                                 |                                                    | 99 PIN99                         |                  |                     |          |    |
|                    |   | PIN35 35<br>PIN36 36 | 35                                                                 |                                                       |                                                       |                                                 |                                                    | 98 PIN98<br>97 PIN97             |                  | Se                  | icale    |    |
|                    |   | PIN37 37             | E                                                                  |                                                       |                                                       |                                                 |                                                    | 96 PIN96                         | Desig            | ned Checked         | Approved | ]  |
| E                  |   | PIN38 38             | E 33                                                               |                                                       |                                                       |                                                 |                                                    | 95 PIN95                         |                  |                     |          | E  |
|                    |   | PIN39 39<br>PIN40 40 | ři                                                                 |                                                       |                                                       |                                                 |                                                    | 94 PIN94<br>93 PIN93             |                  |                     |          |    |
|                    | - | PIN41 41             | 41                                                                 |                                                       |                                                       |                                                 |                                                    | 92 PIN92                         | Spec.            |                     |          | 1  |
|                    |   | PIN42 42<br>PIN43 43 | 3 42                                                               |                                                       |                                                       |                                                 |                                                    | 91 PIN91<br>90 PIN90             | Assembly drawing |                     |          |    |
|                    |   | PIN44 44             | 78 45 46 47 48 49 50 51 52 53                                      | 54 55 56 57 58 59 60 e                                | 61 62 63 64 65 66 67 68 69 70 71                      | 72 73 74 75 76 77 78 79 8                       | 80 81 82 83 84 85 86 87                            | 89 PIN89                         |                  | አው_በ5በ_ <b>፫</b> ፫3 |          |    |
|                    |   | 178                  | 46 46 48 48 48 48 48 48 48 48 48 48 48 48 48                       | 55 58 52 58 60 60 60 60 60 60 60 60 60 60 60 60 60    | 63 63 63 770 770 771 771 771 771 771 771 771 771      | 73 74 74 76 76 79 78 79 80 80                   | 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8              | 88                               |                  | AB-050-FK3          |          |    |
|                    |   | _                    |                                                                    |                                                       |                                                       |                                                 |                                                    |                                  | Multi QFP176     | Footprint Page      | 2 /8     |    |
|                    |   | PIN178               | PIN46  PIN46  PIN47  PIN48  PIN50  PIN51  PIN52                    | PINSS PINSS PINSS PINSS PINSS PINSS PINSS PINSS PINSS | PIN62 PIN63 PIN64 PIN65 PIN66 PIN66 PIN67 PIN69 PIN71 | PIN73 PIN74 PIN75 PIN76 PIN76 PIN77 PIN78 PIN80 | PIN81 PIN82 PIN83 PIN84 PIN86 PIN86 PIN86          | 99                               |                  |                     |          | -  |
|                    |   |                      |                                                                    |                                                       |                                                       |                                                 |                                                    | 1                                | EE:              | SS-0400-034-0       | )2       |    |
| SHEEDAD DE BYDY DY | 1 |                      | 2                                                                  | 3                                                     | 4                                                     | 5                                               |                                                    | 6                                |                  |                     |          | J  |
|                    |   | ,                    | ,<br>                                                              |                                                       |                                                       | Distribution:                                   | •                                                  |                                  | Ren              | esas Electroni      | cs       |    |

|                    | 1 |                      | 2                                                                                                                                | 3                                                           |                                         | 4                                   |                         | 5                                       |                                         | 6                            | 7           |                            |           |   |
|--------------------|---|----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------|-------------------------------------|-------------------------|-----------------------------------------|-----------------------------------------|------------------------------|-------------|----------------------------|-----------|---|
|                    |   | 0                    | 9 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8                                                                                          | 2 3 4 6 2 0                                                 | 8 2 9 9                                 | 2 3 4                               | 8 4 9                   | 3 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 8 2 9                                   | w 00                         | Version     | Item                       | Approved  | Ŀ |
|                    |   | PIN18                | PINITA PINITA PINITA PINITA PINITA PINITA PINITA PINITA PINITE                                                                   | PINI6 | PINIS<br>PINIS<br>PINIS<br>PINIS        | PINIS PINIS PINIS PINIS PINIS PINIS | PINI4<br>PINI4<br>PINI4 | PIN14 PIN14 PIN14 PIN14                 | PINI3 PINI3 PINI3 PINI3 PINI3           | PINIS                        |             |                            |           | - |
|                    |   |                      |                                                                                                                                  |                                                             |                                         |                                     |                         |                                         |                                         |                              |             |                            |           |   |
|                    |   | PIN177 177           | 176<br>173<br>173<br>173<br>170<br>170<br>169                                                                                    | 169 169 169 169 169 169 169 169 169 169                     | 159                                     | 151<br>151<br>150<br>150<br>149     | 146                     | 143<br>142<br>141<br>140                | 136                                     | 7 C 179 PIN179               |             |                            |           | A |
|                    |   | pin1 1               | 12,0 87<br>17,1 87<br>17,1 17,1 17,1 17,1 17,1 17,1 17,1 17,                                                                     | 164<br>165<br>163<br>164<br>167<br>167<br>167               | 158<br>158<br>157<br>156                | 154                                 | 148                     | 144                                     | 138 137 136 136                         | 132 PIN132                   |             |                            |           |   |
|                    |   | PIN2 2               | 2                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 131 PIN131                   |             |                            |           |   |
| Issue              |   | pin3 3<br>pin4 4     | 3                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 130 PIN130<br>129 PIN129     |             |                            |           |   |
| Version Date       |   | PINS 5               | 5                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 128 128 PIN128               |             |                            |           |   |
| Date               |   | PIN6 6               | 6                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 127 PIN127                   |             |                            |           |   |
| 1                  |   | PIN7 7               | 7                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 126 PIN126<br>125 PIN125     |             |                            |           |   |
| 2                  |   | PIN9 9               | 9                                                                                                                                |                                                             |                                         |                                     |                         |                                         |                                         | 124 PIN124                   |             |                            |           |   |
| 3                  |   | PIN10 10<br>PIN11 11 | - 10                                                                                                                             |                                                             |                                         |                                     |                         |                                         |                                         | 123 PIN123                   |             |                            |           | В |
| 4                  |   | PIN11 11<br>PIN12 12 | 11                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 122 PIN122<br>121 PIN121     |             |                            |           |   |
| 5                  |   | PIN13 13             | 13                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 120 PIN120                   |             |                            |           |   |
|                    |   | PIN14 14<br>PIN15 15 | - 14                                                                                                                             |                                                             |                                         |                                     |                         |                                         |                                         | 119 PIN119                   |             |                            |           |   |
|                    |   | PIN15 15<br>PIN16 16 | 15                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 118 PIN118<br>117 PIN117     |             |                            |           |   |
|                    |   | PIN17 17             | - 17                                                                                                                             |                                                             |                                         |                                     |                         |                                         |                                         | 116 PIN116                   |             |                            |           |   |
|                    |   | PIN18 18<br>PIN19 19 | - 18                                                                                                                             |                                                             | 801                                     |                                     |                         |                                         |                                         | 115 PIN115                   |             |                            |           |   |
| c                  |   | PIN20 20             | 19                                                                                                                               |                                                             | qfp180_0                                | 5                                   |                         |                                         |                                         | 114 113 PINITA               |             |                            |           | С |
|                    |   | PIN21 21             | 21                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 112 PIN112                   |             |                            |           |   |
|                    |   | PIN22 22<br>PIN23 23 | 22                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 111 PIN111                   |             |                            |           |   |
| -                  |   | PIN23 24             | 24                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 110 PINITO                   |             |                            |           |   |
|                    |   | PIN25 25             | 25                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 108 108 PIN108               |             |                            |           |   |
|                    | , | PIN26 26             | 26                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 107 PIN107                   |             |                            |           |   |
|                    |   | PIN27 27<br>PIN28 28 | 28                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 106 106 PIN106<br>105 PIN105 |             |                            |           |   |
| D                  |   | PIN29 29             | - 29                                                                                                                             |                                                             |                                         |                                     |                         |                                         |                                         | 104 PIN104                   |             |                            |           | D |
|                    |   | PIN30 30<br>PIN31 31 | 30                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 103 103 PIN103<br>102 PIN102 |             |                            |           |   |
|                    |   | PIN31 31<br>PIN32 32 | 31                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 101 PINIO1                   |             |                            |           |   |
|                    |   | PIN33 33             | 33                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 100 PIN100                   |             |                            |           |   |
|                    |   | PIN34 34<br>PIN35 35 | 34                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 99 PIN99<br>98 PIN98         |             |                            |           |   |
|                    |   | PIN36 36             | 35                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 97 PIN97                     |             |                            | Scale     | 1 |
|                    |   | PIN37 37             | 7.6                                                                                                                              |                                                             |                                         |                                     |                         |                                         |                                         | 96 PIN96                     | Design      | ned Checked                | Approved  | - |
| E                  |   | PIN38 38<br>PIN39 39 | 38                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 95 PIN95<br>94 PIN94         |             |                            |           | E |
|                    |   | PIN40 40             | 40 35                                                                                                                            |                                                             |                                         |                                     |                         |                                         |                                         | 93 PIN93                     |             |                            |           | 7 |
|                    |   | PIN41 41             | 14                                                                                                                               |                                                             |                                         |                                     |                         |                                         |                                         | 92 PIN92                     | Spec.       |                            |           | ≥ |
|                    |   | PIN42 42<br>PIN43 43 | 24 22                                                                                                                            |                                                             |                                         |                                     |                         |                                         |                                         | 91 91 PIN91<br>90 PIN90      | Assembly    |                            |           | - |
|                    |   | PIN44 44             | 178 45 46 47 48 49 50 51 52 5                                                                                                    | 3 54 55 56 57 58 59 60 61                                   | 62 63 64 65 66                          | 67 68 69 70 71 7                    | 2 73 74 75 76           | 77 78 79 80 8                           |                                         | 89 PIN89<br>87 88            | drawing     |                            |           | 1 |
|                    |   | 178                  | 45<br>46<br>47<br>47<br>49<br>49<br>49<br>49<br>40<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50 | 54<br>55<br>56<br>58<br>59<br>60<br>60                      | 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 69 69 71 72 72                      | 7.4                     | 77 78 79 80 81                          | 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 |                              |             | AB-050-FK3 Board VER. 1.00 |           |   |
|                    |   |                      |                                                                                                                                  |                                                             |                                         |                                     |                         |                                         |                                         |                              | QFP180 Foot |                            | ige 5 / 8 |   |
|                    |   | 2IN178               | PIN46 PIN46 PIN47 PIN48 PIN50 PIN50 PIN51 PIN53                                                                                  | PINS4 PINS6 PINS6 PINS7 PINS8 PINS9 PINS9 PINS9             | PIN63 PIN64 PIN65 PIN65                 | PIN68 PIN69 PIN70 PIN71             | PIN73<br>PIN74<br>PIN75 | PIN78 PIN78 PIN80 PIN80                 | PIN83 PIN84 PIN85 PIN86 PIN86           | PIN88                        | 2           |                            | J / °     |   |
|                    |   |                      |                                                                                                                                  |                                                             |                                         |                                     |                         |                                         |                                         | [ " ]                        | 1           | EESS-0400-0                | 34-02     | - |
|                    |   |                      |                                                                                                                                  | I                                                           |                                         |                                     |                         |                                         |                                         |                              |             |                            | -1 04     |   |
| SHEEMAN DE STOU ST | 1 | 1                    | 2                                                                                                                                | 3                                                           | I                                       | 4                                   | Distribution:           | 5                                       |                                         | 6                            | Reno        | ا<br>esas Electroi         | nics      |   |









AB-050-FX3-U

