User's Manual

32

SH726B CPU Board

# R0K5726B0C000BR

## User's Manual

Renesas 32-Bit RISC Microcomputer
SuperH™ RISC engine Family / SH7260 Series



Renesas Electronics
www.renesas.com

Rev.1.00 Mar. 2013

# Notice

1. 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.
2. 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.
3. 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.
4. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from such alteration, modification, copy or otherwise misappropriation of Renesas Electronics product.
5. Renesas Electronics products are classified according to the following two quality grades: “Standard” and “High Quality”. The recommended applications for each Renesas Electronics product depends on the product’s quality grade, as indicated below.

   “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 etc.

   “High Quality”: Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; and safety equipment etc.

   Renesas Electronics products are neither intended nor authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems, surgical implantations etc.), or may cause serious property damages (nuclear reactor control systems, military equipment etc.). 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 for which it is not intended. 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 which the product is not intended by Renesas Electronics.
6. 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.
7. 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 systems manufactured by you.
8. 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.
9. 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. You should not use Renesas Electronics products or 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. When exporting the Renesas Electronics 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.
10. It is the responsibility of the buyer or distributor of Renesas Electronics products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the contents and conditions set forth in this document, Renesas Electronics assumes no responsibility for any losses incurred by you or third parties as a result of unauthorized use of Renesas Electronics products.
11. This document may not be reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. 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.

(2012.4)

WEEE Directive

Renesas development tools and products are directly covered by the European Union's Waste Electrical and Electronic Equipment, (WEEE), Directive 2002/96/EC.
As a result, this equipment, including all accessories, must not be disposed of as household waste but through your locally recognised recycling or disposal schemes.
As part of our commitment to environmental responsibility Renesas also offers to take back the equipment and has implemented a Tools Product Recycling Program for customers in Europe. This allows you to return equipment to Renesas for disposal through our approved Producer Compliance Scheme.
To register for the program, click here "http://www.renesas.com/weee".

This page is intentionally left blank.

# About This Manual

## 1. Purpose and Target Readers

This manual is designed to provide the user with an understanding of the functions and operating specifications of this CPU board. A basic knowledge of electrical circuits, logical circuits, and microcomputers (MCUs) is necessary in order to use this manual.

This manual is composed of an overview of the CPU board; its functional and operating specifications.

| |
|---|
| Carefully read all notes described in the body of text in the manual. |

| |
|---|
| The Revision History summarizes the modifications and additions to the previous versions. Refer to the text of the manual for details. |

The following documents apply to the SH726B CPU Board R0K5726B0C000BR.

| Document Type | Description | Document Title | Document No. |
|---|---|---|---|
| User's Manual | Describes functions (devices, memory maps, electrical characteristics), and operating specifications (connectors, and switches) | SH726B CPU Board R0K5726B0C000BR User's Manual | This publication |
| Installation Manual | Describes how to set up hardware and software | SH726B CPU Board R0K5726B0C000BR Installation Manual | R20UT0603EJ |

The following documents apply to the SH726B 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 website.

| Document Type | Description | Document Title | Document No. |
|---|---|---|---|
| User's manual: Hardware | Hardware specifications (pin assignments, memory maps, peripheral function specifications, electrical characteristics, timing charts) and operation description<br>Note: The method for using peripheral functions is described in the application notes. | SH726A Group, SH726B Group User's manual: Hardware | R01UH0202EJ |
| Software manual | Description of CPU instruction set | SH-2A, SH2A-FPU Software manual | R01US0031EJ |
| Application note | Applications, sample programs | Available from the Renesas Electronics website. | |
| Renesas technical update | Product specifications, updates on documents, etc. | | |

## 2. Frequently Used Abbreviations and Acronyms

| | |
|---|---|
| ACIA | Asynchronous Communication Interface Adapter |
| bps | Bits per second |
| CRC | Cyclic Redundancy Check |
| DMA | Direct Memory Access |
| DMAC | Direct Memory Access Controller |
| GSM | Global System for Mobile Communications |
| Hi-Z | High Impedance |
| IEBus | Inter Equipment bus |
| I/O | Input/Output |
| IrDA | Infrared Data Association |
| LSB | Least Significant Bit |
| MSB | Most Significant Bit |
| NC | Non-Connection |
| PLL | Phase Locked Loop |
| PWM | Pulse Width Modulation |
| SFR | Special Function Registers |
| SIM | Subscriber Identity Module |
| UART | Universal Asynchronous Receiver/Transmitter |
| VCO | Voltage Controlled Oscillator |

# Table of Contents

# 1. Overview

## 1.1 Overview

The R0K5726B0C000BR is a CPU Board to evaluate functions and performance of the Renesas electronics Corp. RISK microcomputer, SH726B, and to develop and evaluate application software. The features of the SH726B CPU Board are described below.

- Generally includes a 16MB SDRAM (16-bit bus connection) and two 16MB serial flash memories.
- Generally includes an RS-232C connector, a USB connector, a CAN connector and an SD card slot as the SH726B peripheral function interfaces.
- Includes audio interfaces such as an audio DAC and an audio CODEC, and a CD deck interface and a character type LCD module connector, which enable advanced development for audio system.
- The USB connector generally includes series A receptacles. This board has a Mini-B receptacle in substrate configuration that can be mounted for evaluation of the USB host/function module.
- Generally includes a LAN connector to enable software development and evaluation using the Ethernet.
- Generally includes sixteen key input switches (4 pieces×4 AD input) which can be used as user interfaces.
- The pins for the SH726B on-chip peripheral function are connected to the Renesas starter kit (RSK) common ring connector and application headers, which enable timing evaluation for the peripheral devices using measurement hardware, and development for adequate expansion board.
- Enables to connect the on-chip emulator E10A-USB (Renesas Electronics Corp.).

## 1.2 System Configuration

Figure 1.1 shows the R0K5726B0C000BR System Configuration.

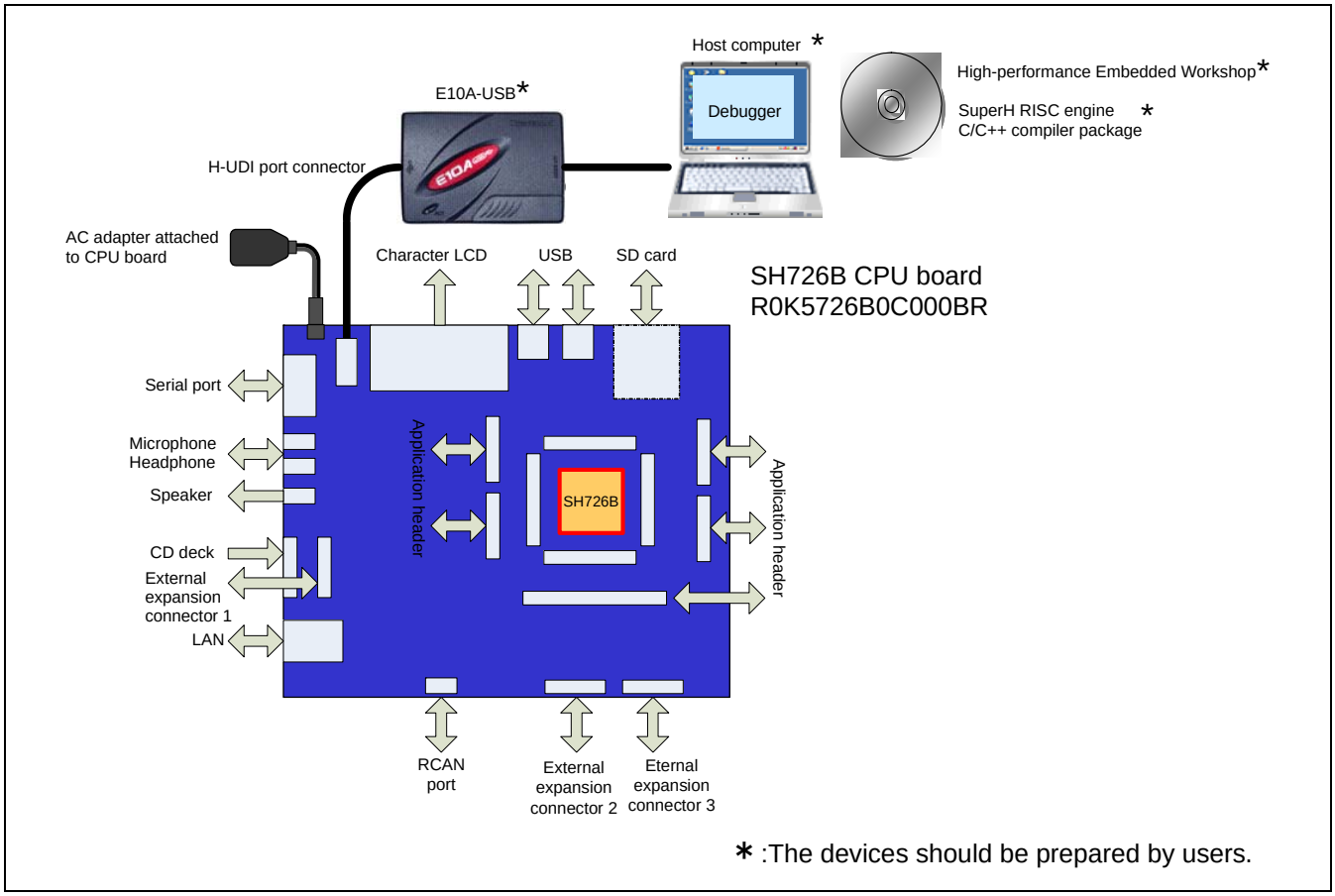



**Figure 1.1 R0K5726B0C000BR System Configuration**

## 1.3 External Specification

Table 1.1 lists the R0K5726B0C000BR External Specifications.

**Table 1.1 R0K5726B0C000BR External Specifications**

| Item | Description |
|---|---|
| CPU | SH726B<br>• Input (XIN) clock: 12MHz<br>• CPU clock (Iϕ): Up to 216MHz<br>• Bus clock (Bϕ): Up to 72MHz<br>• Peripheral clock (Pϕ): Up to 36MHz<br>• On-chip memory<br>High-speed on-chip RAM 64KB<br>Large capacity on-chip RAM: 125MB<br>Operand cache: 8KB<br>• Power voltage:<br>- Internal: 1.25V<br>- I/O: 3.3V<br>• 144-pin QFP 0.5mm pitch (package code: PLQP0144KA-A) |
| Memories | • SDRAM: 16MB<br>• Serial flash memories: 16MB×2 |
| Connectors | • Common ring connector (all CPU signals), optional<br>• Application header (bus, I/O, VCC and GND), optional<br>• Serial port connector (D-sub 9-pin)<br>• CAN port connector (3-pin, pin header)<br>• Character LCD interface connector (14-pin)<br>• USB series A receptacle×2, included as standard<br>(Mini-B receptacle is available only for the port 0)<br>• LAN connector (RJ-45)<br>• SD card slot<br>• CD deck connector<br>• External expansion connector, optional<br>• Line-out pin jack (HP and SPK)<br>• Mic-in pin jack<br>• DC power jack |
| LEDs, Potentiometer | • Power LED: 1<br>• User LEDs: 4<br>• Potentiometer (10KΩ): 1 |
| Switches, Jumper | • Reset switch: 1<br>• User switches: 3 (NMI, IRQ2 (connectable to ACTRG#), and PINT7) |
| Board specification | • Dimensions: 150mm×180mm<br>• Mounting form: 4-layer, double-sided<br>• Number of board: 1 |

## 1.4 Exterior Appearance

Figure 1.2 shows the R0K5726B0C000BR Exterior Appearance.

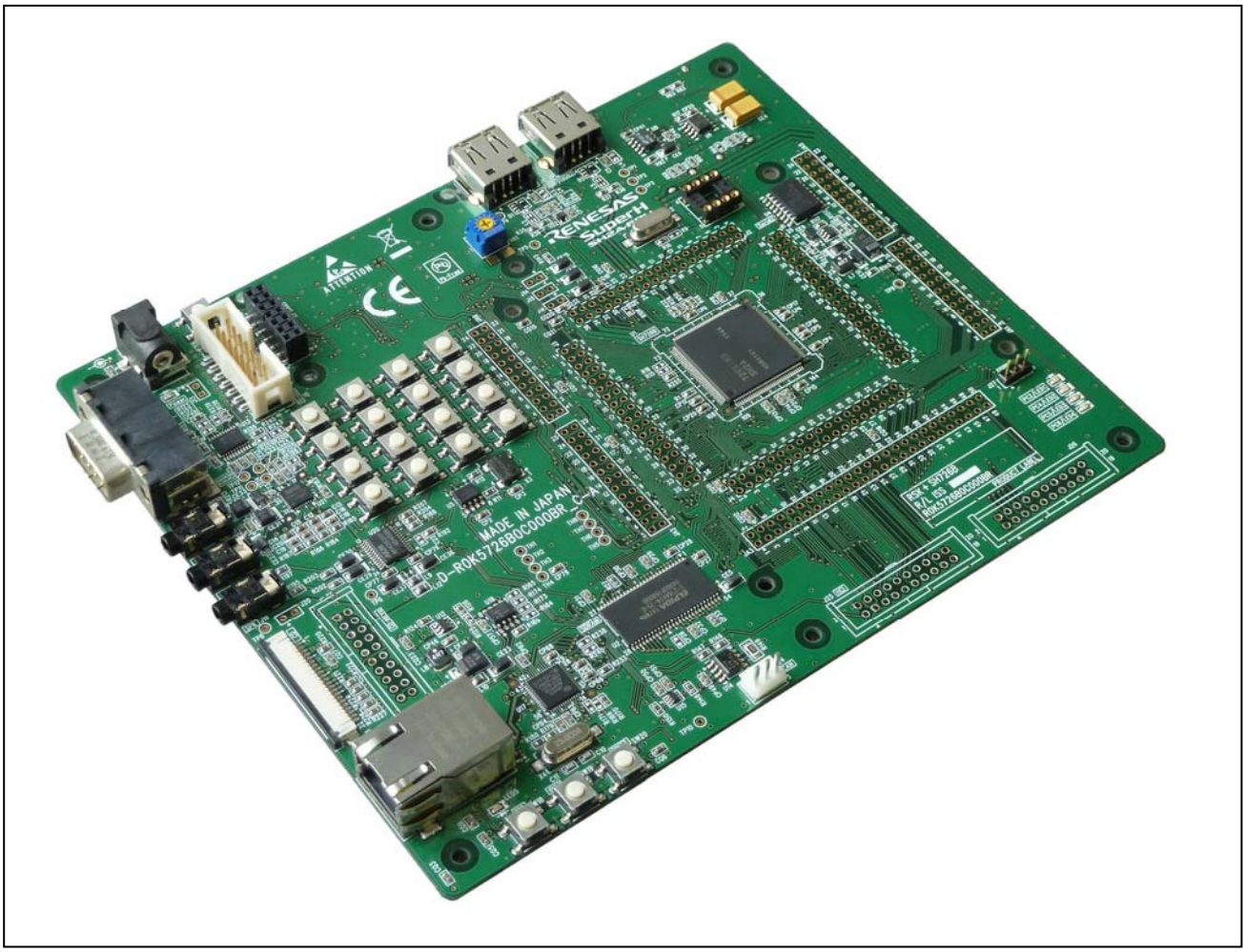



**Figure 1.2 R0K5726B0C000BR Exterior Appearance**

## 1.5 Block Diagram

Figure 1.3 shows the R0K5726B0C000BR Block Diagram.

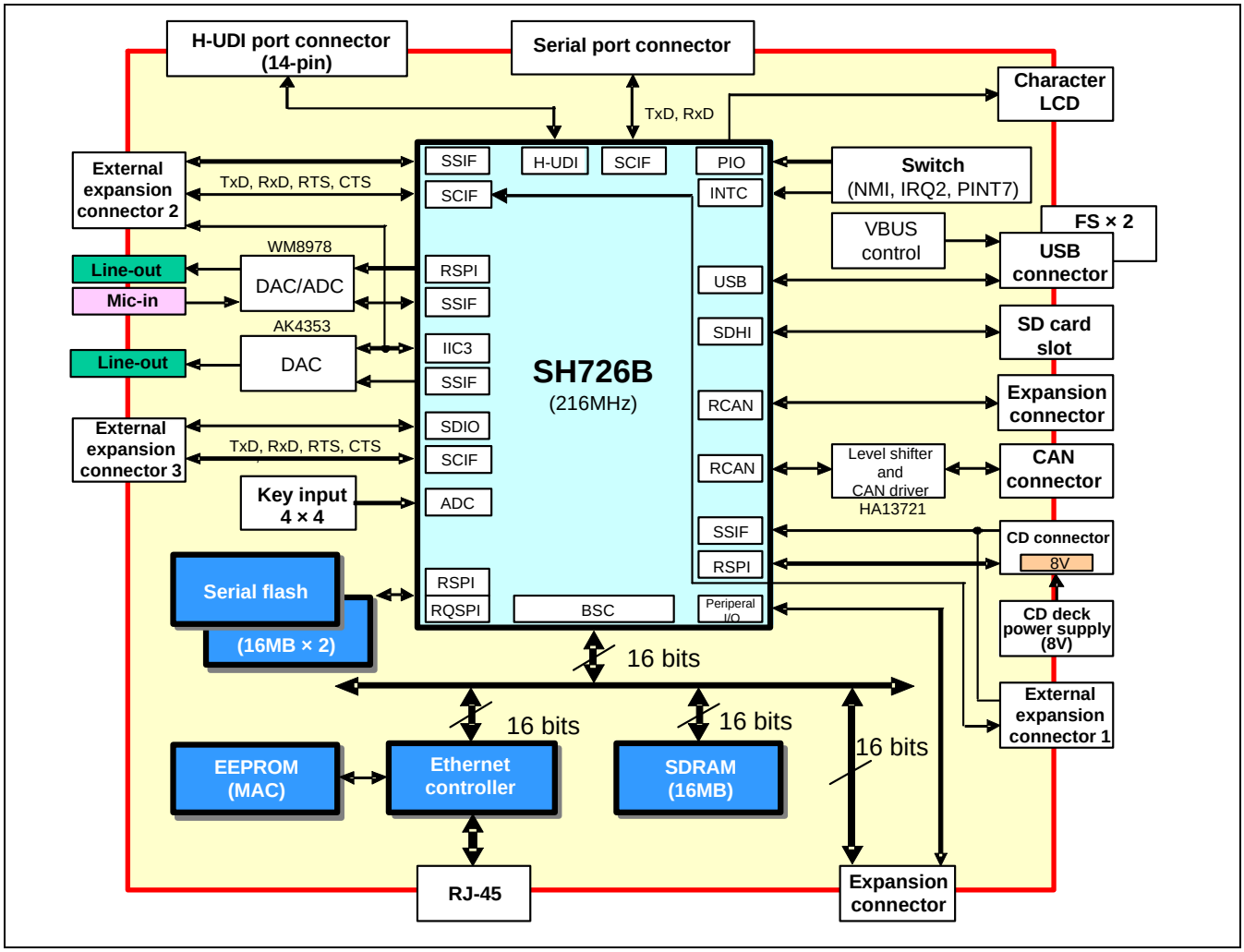



**Figure 1.3 R0K5726B0C000BR Block Diagram**

## 1.6 Parts Layout

Figure 1.4 shows the R0K5726B0C000BR Parts Layout.

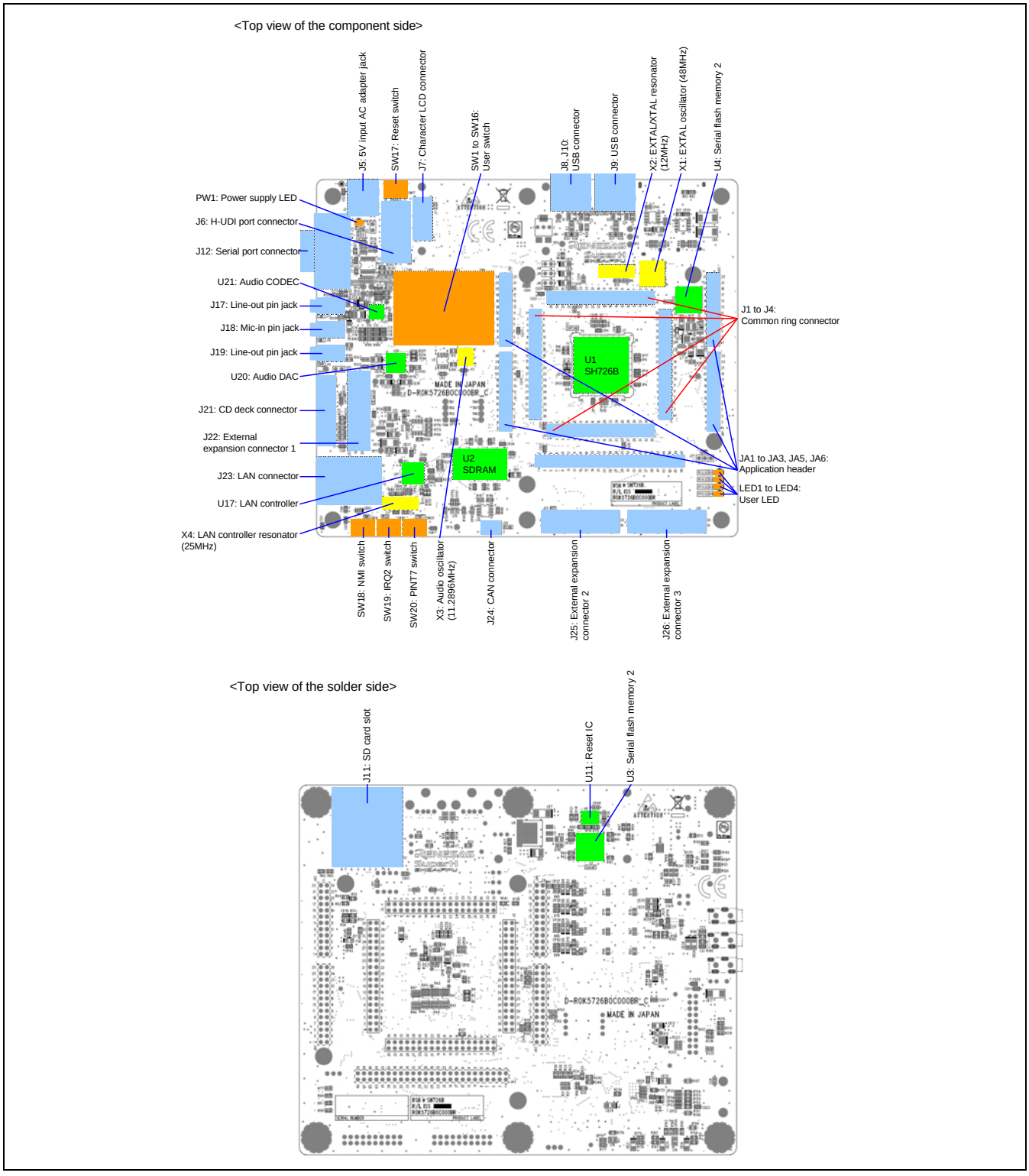



**Figure 1.4 R0K5726B0C000BR Parts Layout**

Table 1.2 lists the R0K5726B0C000BR Main Parts.

**Table 1.2 R0K5726B0C000BR Main Parts**

| Part No. | Part name | Model (Manufacturer) | Recommended optional parts |
|---|---|---|---|
| U1 | CPU | SH726B (Renesas) | |
| U2 | SDRAM | EDS1216AATA (Elpida) | |
| U3, U4 | Serial flash memory | S25FL129P (Spansion) | |
| U17 | LAN controller | LAN9211 (SMSC) | |
| U13 | RS-232C transceiver | MAX3222CPW (TI) | |
| U14 | CAN transceiver | HA13721RPJE (Renesas) | |
| U9 | 3.3V regulator | LMS1587CS-ADJ (NS) | |
| U10, U12 | 1.25V and 1.8V regulator | LM2734XMK (NS) | |
| U11 | Reset IC | RNA51957BFP (Renesas) | |
| X2 | XIN resonator (crystal) | HCM49-12.000MABJ (Citizen) | |
| X1 | XIN oscillator (with socket) | Optional | SG-8002DC (Epson) |
| J1 to J4 | Common ring connector | Optional | 18 pins×dual row pin header |
| JA1, JA2 | Application header | Optional | 13 pins×dual row pin header |
| JA3 | Application header | Optional | 25 pins×dual row pin header |
| JA5, JA6 | Application header | Optional | 12 pins×dual row pin header |
| J5 | DC power jack | KLDX-SMT2-0202-A (Kycon) | |
| J6 | H-UDI port connector (14-pin) | HTST-107-01-L-DV (Samtec) | |
| J23 | LAN connector (RJ-4) | J3011G21DNL (Pulse) | |
| J8, J9 | USB series A receptacle | UBA-4R-D14T-4D (JST) | |
| J10 | USB Mini-B receptacle | Optional | 54819-0572 (MOLEX) |
| J11 | SD card slot | DM1B-DSF-PEJ (HRS) | |
| J12 | Serial port connector | 154188 (ERNI) | |
| J24 | CAN port connector | B3P-SHF-1AA (JST) | |
| J7 | Character LCD connector | SSM-107-LM-DV-P (Samtec) | |
| J13 to J16, J20 | External power supply connector | Optional | A2-2PA-2.54DSA (HRS) |
| PW1 | Power LED | Blue | |
| LED1 to LED4 | User LED | Green, Orange, Red, Red | |
| VR1 | Potentiometer | CT-6ETV10KΩ (Nidec Copal) | |
| SW17 | Reset switch | B3S-1000 (Omron) | |
| SW18 to SW20 | NMI, IRQ2, PINT7 switch | B3S-1000 (Omron) | |
| X4 | LAN controller resonator | HCM49-25.000MABJ (Citizen) | |
| X3 | Audio oscillator | SG8002JF_11.2896MHz | |
| J17, J19 | Line-out pin jack | HSJ1456-010320 (Hosiden) | |
| J18 | Mic-in pin jack | HSJ1456-010320 (Hosiden) | |
| J21 | CD deck connector | IMSA-9617S-22 (IRISO Electronics) | |
| J22, J25, J26 | External expansion connector | Optional | TST-110-01-T-D (Samtec) |

## 1.7 Memory Map

Figure 1.5 shows the R0K5726B0C000BR Memory Mapping.

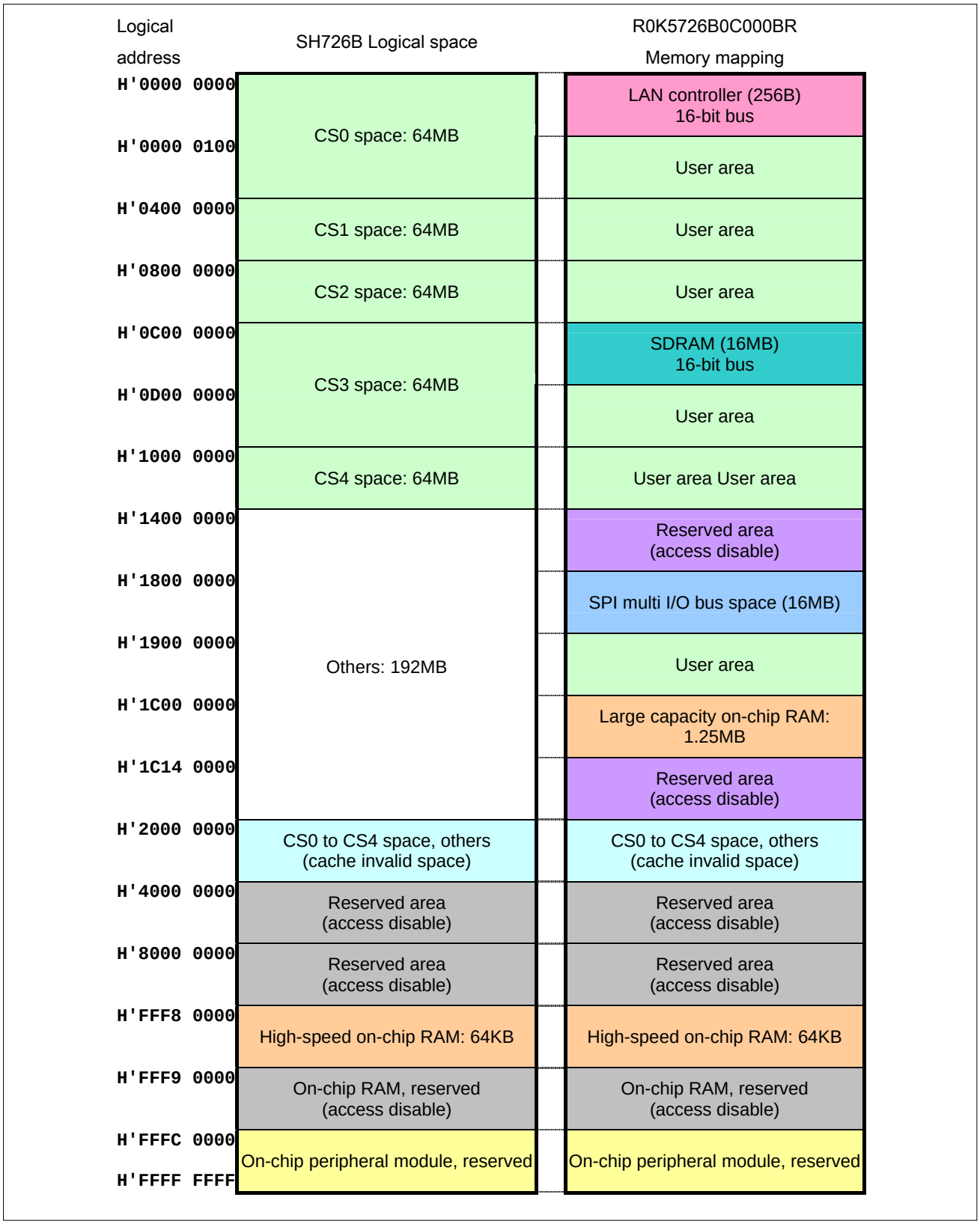



**Figure 1.5 R0K5726B0C000BR Memory Mapping**

## 1.8 Absolute Maximum Ratings

Table 1.3 lists the R0K5726B0C000BR Absolute Maximum Ratings.

**Table 1.3 R0K5726B0C000BR Absolute Maximum Ratings**

| Symbol | Item | Rated value | Remarks |
|---|---|---|---|
| 5VCC | 5V system power supply voltage | -0.3V to 6.0V | Vss reference |
| 3VCC *1 | 3.3V system power supply | -0.3V to 4.0V | Vss reference |
| AVCC *2 | Analog 3.3V system power supply voltage | -0.3V to 4.0V | AVss reference |
| 1.25VCC *3 | 1.25V system power supply | -0.3V to 1.7V | Vss reference |
| $T_{opr}$ | Operating ambient temperature *4 | 0°C to 50°C | Do not expose to condensation or corrosive gases. |
| $T_{stg}$ | Storage ambient temperature *4 | -10°C to 60°C | Do not expose to condensation or corrosive gases. |

[Notes] *1. Scale when providing 3.3V system power supply directly from the external power supply connector.
*2. Scale when providing analog 3.3V system power supply directly from the external power supply connector.
*3. Scale when providing 1.25V system power supply directly from the external power supply connector.
*4. The ambient temperature is the air temperature immediate to the board.

## 1.9 Operating Conditions

Table 1.4 lists the R0K5726B0C000BR Operating Conditions.

**Table 1.4 R0K5726B0C000BR Operating Conditions**

| Symbol | Item | Rated value | Remarks |
|---|---|---|---|
| 5VCC | 5V system power supply voltage | 4.75V to 5.25V | Vss reference |
| 3VCC *1 | 3.3V system power supply | 3.15V to 3.45V | Vss reference |
| AVCC *2 | Analog 3.3V system power supply voltage | 3.15V to 3.45V | Vss reference |
| 1.25VCC *3 | 1.25V system power supply | 1.19V to 1.31V | Vss reference |
| - | Maximum consumption voltage super | Up to 1.5A | Total of 5V, 3.3V, and 1.25V power supplies |
| $T_{opr}$ | Operating ambient temperature *4 | 0°C to 40°C | Do not expose to condensation or corrosive gases. |

[Notes] *1. Scale when providing 3.3V system power supply directly from the external power supply connector.
*2. Scale when providing analog 3.3V system power supply directly from the external power supply connector.
*3. Scale when providing 1.25V system power supply directly from the external power supply connector.
*4. The ambient temperature is the air temperature immediate to the board.

This page intentionally left blank.

# 2. Functional Specification

## 2.1 Functions Overview

Table 2.1.1 lists the R0K5726B0C000BR Function Modules.

**Table 2.1.1 R0K5726B0C000BR Function Modules**

| Section | Function | Description |
|---|---|---|
| 2.2 | CPU | SH726B<br>• Input (XIN) clock: 12MHz<br>• Bus clock: Up to 72MHz<br>• CPU clock: Up to 216MHz |
| 2.3 | Memory | On-chip memory<br>• High-speed on-chip RAM: 64KB<br>• Large capacity on-chip RAM: 1.25MB<br>SDRAM: 16MB<br>• Elpida EDS1216AATA-75E×1<br>Serial flash memory: 16MB<br>• Spansion S25FL129P×2 |
| 2.4 | USB Interface | Connects the SH726B USB 2.0 host/function module to the USB connecter. |
| 2.5 | Serial Port Interface | Connects the SH726B FIFO on-chip serial communication interface (SCIF) to the serial port connector. |
| 2.6 | I/O Port | Connects the SH726B I/O ports to the LED, the A/D converter and the user switches (4×4). |
| 2.7 | Interrupt Switch | Connects the SH726B NMI pin, IRQ2 pin and PINT7 pin to the push switch. |
| 2.8 | Clock Module | Controls the system clock<br>Controls the peripheral I/O clock |
| 2.9 | Reset Module | Executes reset control for the device embedded in the R0K5726B0C000BR. |
| 2.10 | Power Module | Controls the R0K5726B0C000BR system power supply. |
| 2.11 | H-UDI | Connects the SH726B user debug interface to the H-UDI port connector. |
| 2.12 | CAN Interface | Connects the SH726B controller area network (RCAN) to the CAN transceiver. |
| 2.13 | Character LCD Module | Connects the SH726B I/O ports to the character LCD module. |
| 2.14 | Audio Module | Connects the SH726B to the D/A converter and the audio CODEC.<br>- includes a 96KHz 24-bit D/A converter<br>- includes a stereo with speaker driver |
| 2.15 | CD Deck Interface | Connects the SH726B Renesas serial peripheral interface (RSPI) and the serial sound interface (SSIF) to the CD deck. |
| 2.16 | SD Card Interface | Connects the SH726B SD host interface (SDHI) to the SD card slot. |
| 2.17 | LAN Interface | Connects the SH726B to the Ethernet controller. |
| 2.18 | External Expansion Connector 1 (J22) Interface | Connects the SH726B FIFO on-chip serial communication interface (SCIF), the serial sound interface (SSIF) and the general purpose port to the external expansion connector 1 (J22). |
| 2.19 | External Expansion Connector 2 (J25) Interface | Connects the SH726B FIFO on-chip serial communication interface (SCIF), the serial sound interface (SSIF), the I2C bus interface (IIC3) and the general purose port to the external expansion connector 2 (J25). |
| 2.20 | External Expansion Connector 3 (J26) Interface | Connects the SH726B FIFO on-chip serial communication interface (SCIF) and the general purpose port to the external expansion connector 3 (J26). |
| - | Operating Specifications | Chapter 3 describes the details of connectors, switches and LEDs. |

## 2.2 CPU

### 2.2.1 SH726B Overview

The R0K5726B0C000BR includes a 32-bit RISC microcomputer, SH726B which runs at a maximum CPU clock frequency of 216MHz.

### 2.2.2 SH726B Pin Functions

Table 2.2.1 to Table 2.2.5 list the SH726B pin functions used on the R0K5726B0C000BR.

**Table 2.2.1 SH726B Pin Functions (1)**

| Pin No. | Pin name | Function | Description | Expansion connector | Remarks |
|---|---|---|---|---|---|
| 1 | PD14 / D14 / SD_D3 | D14 | Data bus | JA3-35 | |
| 2 | PD15 / D15 / SD_D2 | D15 | Data bus | JA3-36 | |
| 3 | PVcc | | | | |
| 4 | PB1 / A1 / SSISCK3 | A1 | Address bus | JA3-2 | |
| 5 | Vss | | | | |
| 6 | PB2 / A2 / SSIWS3 | A2 | Address bus | JA3-3 | |
| 7 | PB3 / A3 / SSIDATA3 | A3 | Address bus | JA3-4 | |
| 8 | PB4 / A4 / CTS0# | A4 | Address bus | JA3-5 | |
| 9 | PJ6 / SD_D3 / CS4# / RxD1 / AUDATA2 | SD_D3 | Connected to the SD card slot | JA2-8 | |
| | | RxD1 | Connected to the external expansion connector 1 (J22) | | |
| 10 | PJ7 / SD_D2 / BS# / TxD1 / AUDATA3 | SD_D2 | Connected to the SD card slot | JA2-6 | |
| | | TxD1 | Connected to the external expansion connector 1 (J22) | | |
| 11 | PVcc | | | | |
| 12 | PB5 / A5 / RTS0# | A5 | Address bus | JA3-6 | |
| 13 | Vss | | | | |
| 14 | PB6 / A6 / SCK0 / SSISCK2 | A6 | Address bus | JA3-7 | |
| 15 | Vcc | | | | |
| 16 | PB7 / A7 / RxD0 | A7 | Address bus | JA3-8 | |
| 17 | PB8 /A8 / TxD0 | A8 | Address bus | JA3-9 | |
| 18 | PB9 / A9 / SCK1 / SSIWS2 | A9 | Address bus | JA3-10 | |
| 19 | PJ8 / TIOC3A / A23 / SCK2 / SSISCK2 / TEND0 | SSISCK2 | Connected to the D/A converter (AK4353) | JA6-3 | |
| 20 | PJ9 / TIOC3B / A24 / RxD2 / SSIWS2 / DREQ0 | SSIWS2 | Connected to the D/A converter (AK4353) | JA2-13<br>JA6-1 | |
| 21 | PJ10 / TIOC3C / A25 / TxD2 / SSIDATA2 / DACK0 | SSIDATA2 | Connected to the D/A converter (AK4353) | JA6-2 | |
| 22 | PVcc | | | | |
| 23 | PB10 / A10 / RxD1 | A10 | Address bus | JA3-11 | |
| | | RxD1 | Connected to the external expansion connector 2 (J25) | | |
| 24 | Vss | | | | |
| 25 | PB11 / A11 / TxD1 | A11 | Address bus | JA3-12 | |
| | | TxD1 | Connected to the external expansion connector 2 (J25) | | |
| 26 | Vcc | | | | |
| 27 | PB12 / A12 / SCK2 / SSIDATA2 | A12 | Address bus | JA6-10<br>JA3-13 | |
| 28 | PB13 / A13 / RxD2 | A13 | Address bus | JA6-7 | |
| | | RxD2 | Connected to the external expansion connector 3 (J26) | JA3-14 | |

: 3.3V system power supply, : 1.25V system power supply, : GND

**Table 2.2.2 SH726B Pin Functions (2)**

| Pin No. | Pin name | Function | Description | Expansion connector | Remarks |
|---|---|---|---|---|---|
| 29 | PB14 / A14 / TxD2 | A14 | Address bus | JA6-8 | |
| | | TxD2 | Connected to the external expansion connector 3 (J26) | JA3-15 | |
| 30 | PB15 / A15 / RSPCK0 / TIOC0B | RSPCK0 | Connected to the serial flash memory 2, the CD deck interface and the audio CODEC (WM8978) | JA2-9<br>JA3-16 | |
| 31 | PB16 / A16 / SSL00 / TIOC1B | SSL00 | Connected to the serial flash memory 2 as a select signal | JA2-19<br>JA3-37 | |
| 32 | PB17 / A17 / MOSI0 / TIOC2B | MOSI0 | Connected to the serial flash memory 2, the CD deck interface and the audio CODEC (WM8978) | JA3-38 | |
| 33 | PB18 / A18 / MISO0 / TIOC3B | MISO0 | Connected to the serial flash memory 2, the CD deck interface and the audio CODEC (WM8978) | JA3-39 | |
| 34 | PVcc | | | | |
| 35 | PB19 / A19 / SSISCK0 / TIOC0C | SSISCK0 | Connected to the audio CODEC (WM8978) | JA2-23<br>JA3-40 | |
| 36 | Vss | | | | |
| 37 | PB20 / A20 / SSIWS0 / TIOC0D | SSIWS0 | Connected to the audio CODEC (WM8978) | JA3-41 | |
| 38 | PB21 / A21 / SSIRxD0 / TIOC3C | SSIRxD0 | Connected to the audio CODEC (WM8978) | JA3-42 | |
| 39 | PB22 / A22 / SSITxD0 TIOC3D | SSITxD0 | Connected to the audio CODEC (WM8978) | JA3-43 | |
| 40 | PK0 / SCK3 / RTC_X1 | PK0 | Connected to the PDN# of D/A converter (AK4353) | JA6-11 | |
| 41 | PK1 / TxD3 / RTC_X2 | TxD3 | Connected to the serial port connector | JA6-9 | |
| 42 | PF6 / IRQ2 / RxD3 | IRQ2 | Connected to the interrupt switch | JA2-7 | |
| 43 | PF7 / IRQ3 / RxD4 | PF7 | Connected to the audio CODEC (WM8978) as a select signal | | |
| 44 | PVcc | | | | |
| 45 | CKIO | CKIO | Connected to CLK pin of the SDRAM | JA3-44 | |
| 46 | Vss | | | | |
| 47 | RES# | RES# | Reset input | JA2-1 | |
| 48 | Vss | | | | |
| 49 | PLLVcc | | | | |
| 50 | NMI | NMI | Non-maskable interrupt | JA2-3 | |
| 51 | Vcc | | | | |
| 52 | EXTAL | EXTAL | Connects the 12MHz crystal resonator | JA2-2 | |
| 53 | XTAL | XTAL | | | |
| 54 | Vss | | | | |
| 55 | PG2 / DM1 / PINT2 | DM1 | USB channel 1 differential signal D- data | | |
| 56 | PG3 / DP1 / PINT3 | DP1 | USB channel 1 differential signal D+ data | | |
| 57 | Vss | | | | |
| 58 | PVcc | | | | |
| 59 | PG0 / DM0 / PINT0 | DM0 | USB channel 0 differential signal D- data | | |
| 60 | PG1 / DP0 / PINT1 | DP0 | USB channel 0 differential signal D+ data | | |
| 61 | ASEMD# | ASEMD# | ASE mode select | | |
| 62 | PH0 / AN0 / IRQ0 / VBUS | VBUS | VBUS input | JA1-9 | |
| 63 | PH1 / AN1 / IRQ1 / RxD0 | AN1 | Connected to the analog input of key matrix | JA1-10 | |
| 64 | PH2 / AN2 / IRQ2 / WAIT# | AN2 | Connected to the analog input of key matrix | JA1-11<br>JA3-45 | |
| 65 | PH3 / AN3 / IRQ3 | AN3 | Connected to the analog input of key matrix | JA1-12 | |
| 66 | PH4 / AN4 / PINT4 / RxD1 | AN4 | Connected to the analog input of key matrix | JA2-9<br>JA5-1 | |

: 3.3V system power supply, : 1.25V system power supply, : GND

**Table 2.2.3 SH726B Pin Functions (3)**

| Pin No. | Pin name | Function | Description | Expansion connector | Remarks |
|---|---|---|---|---|---|
| 67 | PH5 / AN5 / PINT5 / RxD2 | PINT5 | Ethernet controller interrupt input | JA2-23<br>JA5-2 | |
| 68 | AVss | | | JA1-6 | |
| 69 | PH6 / AN6 / PINT6 / RxD3 | RxD3 | Connected to the serial port connector | JA5-3<br>JA6-12 | |
| 70 | AVcc | | | | |
| 71 | PH7 / AN7 / PINT7 / RxD4 | PINT7 | Connected to the CD deck interface and the external expansion connector 1 (J22) | JA5-4 | |
| 72 | AVref | AVref | ADC analog reference voltage | JA1-7 | |
| 73 | TRST# | TRST# | Initialization signal input port | | |
| 74 | ASEBRKAK#/ASEBRK# | ASEBRKAK#/ ASEBRK# | Break mode acknowledge/Break request | | |
| 75 | TD0 | TD0 | Test data output | | |
| 76 | TD1 | TD1 | Test data input | | |
| 77 | TMS | TMS | Test mode select | | |
| 78 | TCK | TCK | Test clock | | |
| 79 | AUDIO_X2 | AUDIO_X2 | Open | | |
| 80 | AUDIO_X1 | AUDIO_X1 | Connects the audio external clock | | |
| 81 | PVcc | | | | |
| 82 | PF0 / RSPCK0 / SPBCLK | PF0 | Connected to the character LCD module | JA1-15 | |
| | | SPBCLK | Connected to the serial flash memory 1 | | |
| 83 | Vss | | | | |
| 84 | PF1 / SSL00 / SPBSSL | PF1 | Connected to the character LCD module | JA1-16 | |
| | | SPBSSL | Connected to the serial flash memory 1 | | |
| 85 | PF2 / MOSI0 / SPBMO_0/SPBIO0_0 | PF2 | Connected to the character LCD module | JA1-17 | |
| | | SPBMO_0 / SPBIO0_0 | Connected to the serial flash memory 1 | | |
| 86 | PF3 / MISO0 / SPBMI_0/SPBIO1_0 | PF3 | Connected to the character LCD module | JA1-18 | |
| | | SPBMI_0/ SPBIO1_0 | Connected to the serial flash memory 1 | | |
| 87 | PJ11 / TIOC3D / IRQ0 / SCK4 / CRx0 / IERxD / RSPCK2 | PJ11 | Connected to the CD deck interface as a select signal | JA1-23<br>JA2-14 | |
| 88 | PJ12 / SSISCK3 / A0 / TxD4 / CTx0 / IETxD / SSL20 | SSISCK3 | Connected to the CD deck interface and the external expansion connector 1 (J22) | JA3-1 | |
| 89 | PVcc | | | | |
| 90 | PF4 / SPBIO2_0 | PF4 | Connected to the character LCD module | JA1-19 | |
| | | SPBIO2_0 | Connected to the serial flash memory 1 | | |
| 91 | Vss | | | | |
| 92 | PF5 / SPBIO3_0 | PF5 | Connected to the character LCD module | JA1-20 | |
| | | SPBIO3_0 | Connected to the serial flash memory 1 | | |
| 93 | Vcc | | | | |
| 94 | PA0 / MD_CLK | PA0 | Connected to the test pin (TH3) | | |
| | | MD_CLK | Connected to the DIPSW as a clock mode input | | |
| 95 | PA1 / MD_BOOT | PA1 | D+ pull-up resistor control pin while the USB channel 0 function is in operation | | |
| | | MD_BOOT | Connected to the DIPSW as a boot mode input | | |
| 96 | PJ13 / SSIWS3 / IRQ1 / RxD4 / CRx1 / CRx0/CRx1 / MOSI2 | SSIWS3 | Connected to the CD deck interface and the external expansion connector 1 (J22) | JA5-8 | |
| | | CRx1 | Connected to the CAN transceiver | | |

: 3.3V system power supply, : 1.25V system power supply, : GND

**Table 2.2.4 SH726B Pin Functions (4)**

| Pin No. | Pin name | Function | Description | Expansion connector | Remarks |
|---|---|---|---|---|---|
| 97 | PJ14 / SSIDATA3 / WDTOVF# / CTx1 / CTx0&CTx1 / MISO2 | SSIDATA3 | Connected to the CD deck interface and the external expansion connector 1 (J22) | JA2-5<br>JA5-7 | |
| | | CTx1 | Connected to the CAN transceiver | | |
| 98 | PJ0 / SD_CD / IRQ4 | PJ0 | Connected to the external expansion connector 1 (J22) | JA5-9 | |
| | | SD_CD | Connected to the SD card slot | | |
| 99 | PC0 / CS0# / TIOC4A / AUDIO_XOUT | CS0# | Connected to the Ethernet controller | JA2-15<br>JA3-27 | |
| 100 | PVcc | | | | |
| 101 | PC1 / RD# / TIOC4B / SPDIF_IN | RD# | Connected to the Ethernet controller | JA2-17 | |
| | | PC1 | Connected to the external expansion connector 3 (J26) | JA3-25 | |
| 102 | Vss | | | | |
| 103 | PC2 / RD/WR# / TIOC4C / SPDIF_OUT | RD/WR# | Connected to the SDRAM | JA2-16 | |
| | | PC2 | Connected to the external expansion connector 3 (J26) | JA3-26 | |
| 104 | Vcc | | | | |
| 105 | PC3 / WE0# /DQML / TIOC4D | WE0# /DQML | Connected to the SDRAM | JA2-18 | |
| | | PC3 | Connected to the external expansion connector 3 (J26) | JA3-48 | |
| 106 | PC4 / WE1#/DQMU / WDTOVF# | WE1#/DQMU | Connected to the SDRAM | JA3-47 | |
| | | PC4 | Connected to the external expansion connector 3 (J26) | | |
| 107 | PC5 / RAS# / IRQ4 / CRx0 / IERxD | RAS# | Connected to the SDRAM | JA5-6 | |
| | | CRx0 | Connected to the JA connector | JA3-50 | |
| | | PC5 | Connected to the external expansion connector 3 (J26) | | |
| 108 | PC6 / CAS# / IRQ5 / CTx0 / IETxD | CAS# | Connected to the SDRAM | JA5-5 | |
| | | CTx0 | Connected to the JA connector | JA3-49 | |
| | | PC6 | Connected to the external expansion connector 3 (J26) | | |
| 109 | PE0 / SCL0 / IRQ0 | PE0 | Enable signal of the character LCD | | |
| 110 | PE1 / SDA0 / IRQ1 | PE1 | Connected to the CD deck interface and the external expansion connector 1 (J22) | | |
| 111 | PE2 / SCL1 / AUDIO_CLK | AUDIO_CLK | Connected to the external expansion connector 2 (J25) | | |
| 112 | PE3 / SDA1 / ADTRG# | PE3 | Connected to the CD deck interface and the external expansion connector 1 (J22) | JA1-8 | |
| 113 | PE4 / SCL2 / TCLKA | SCL2 | Connected to the D/A converter (AK4353) and the external expansion connector 2 (J25) | JA2-21 | |
| 114 | PE5 / SDA2 / TCLKB | SDA2 | Connected to the D/A converter (AK4353) and the external expansion connector 2 (J25) | JA2-22 | |
| 115 | PE6 / SCL3 / TCLKC | SCL3 | Connected to the test pin (TH6) | JA1-26<br>JA2-25 | |
| 116 | PE7 / SDA3 / TCLKD | SDA3 | Connected to the test pin (TH7) | JA1-25<br>JA2-26 | |
| 117 | PC7 / CKE / IRQ6 / CRx1 / CRx0/CRx1 | PC7 | Connected to the external expansion connector 2 (J25) | JA3-46 | |
| | | CKE | Connected to the SDRAM | | |
| 118 | Vss | | | | |
| 119 | PVcc | | | | |
| 120 | PC8 / CS3# / IRQ7 / CTx1 / CTx0&CTx1 | CS3# | Connected to the SDRAM | JA3-45 | |
| 121 | PD0 / D0 / SSISCK1 / SIOFSCK / SPBMO_1/SPBIO0_1 | D0 | Data bus | JA3-17 | |
| | | SSISCK1 | Connected to the external expansion connector 2 (J25) | | |
| 122 | PD1 / D1 / SSIWS1 / SIOFSYNC / SPBMI_1/SPBIO1_1 | D1 | Data bus | JA3-18 | |
| | | SSIWS1 | Connected to the external expansion connector 2 (J25) | | |

: 3.3V system power supply, : 1.25V system power supply, : GND

**Table 2.2.5 SH726B Pin Functions (5)**

| Pin No. | Pin name | Function | Description | Expansion connector | Remarks |
|---|---|---|---|---|---|
| 123 | PD2 / D2 / SSIRxD1 / SIOFRxD / SPBIO2_1 | D2 | Data bus | JA3-19 | |
| | | SSIRxD1 | Connected to the external expansion connector 2 (J25) | | |
| 124 | PJ1 / SD_WP / CS2# / IRQ5 / AUDIO_XOUT | PJ1 | Connected to the external expansion connector 1 (J22) | JA5-10 JA3-28 | |
| | | SD_WP | Connected to the SD card slot | | |
| 125 | PJ2 / SD_D1 / IRQ6 / AUDCK | PJ2 | Connected to the external expansion connector 1 (J22) | JA1-21 | |
| | | SD_D1 | Connected to the SD card slot | | |
| 126 | PVcc | | | | |
| 127 | PD3 / D3 / SSITxD1 / SIOFTxD / SPBIO3_1 | D3 | Data bus | JA3-20 | |
| | | SSITxD1 | Connected to the external expansion connector 2 (J25) | | |
| 128 | Vss | | | | |
| 129 | PD4 / D4 / RSPCK1 / SCK3 / CTS1# | D4 | Data bus | JA3-21 | |
| | | CTS1# | Connected to the external expansion connector 2 (J25) | | |
| 130 | Vcc | | | | |
| 131 | PD5 / D5 / SSL10 / TxD3 / RTS1# | D5 | Data bus | JA3-22 | |
| | | RTS1# | Connected to the external expansion connector 2 (J25) | | |
| 132 | PD6 / D6 / MOSI1 / SCK4 / CTS2# | D6 | Data bus | JA3-23 | |
| | | CTS2# | Connected to the external expansion connector 3 (J26) | | |
| 133 | PJ3 / SD_D0 / IRQ7 / AUDSYNC# | PJ3 | Connected to the exernal expansion connector 1 (J22) | JA1-22 | |
| | | SD_D0 | Connected to the SD card slot | | |
| 134 | PJ4 / SD_CLK / CS1# / AUDATA0 | SD_CLK | Connected to the SD card slot | JA2-11 | |
| 135 | PJ5 / SD_CMD / SCK1 / AUDATA1 | SD_CMD | Connected to the SD card slot | JA2-10 | |
| | | SCK1 | Connected to the external expansion connector 1 (J22) | | |
| 136 | PVcc | | | | |
| 137 | PD7 / D7 / MISO1 / TxD4 / RTS2# | D7 | Data bus | JA3-24 | |
| | | RTS2# | Connected to the external expansion connector 3 (J26) | | |
| 138 | Vss | | | | |
| 139 | PD8 / D8 / SD_CD / TIOC0A | D8 | Data bus | JA2-7 JA3-29 | |
| 140 | PD9 / D9 / SD_WP / TIOC1A | D9 | Data bus | JA2-23 JA3-30 | |
| 141 | PD10 / D10 / SD_D1 / TIOC2A | D10 | Data bus | JA2-20 JA3-31 | |
| 142 | PD11 / D11 / SD_D0 / TIOC3A | D11 | Data bus | JA6-13 JA3-32 | |
| 143 | PD12 / D12 / SD_CLK / IRQ2 | D12 | Data bus | JA3-33 | |
| 144 | PD13 / D13 / SD_CMD / IRQ3 | D13 | Data bus | JA3-34 | |

: 3.3V system power supply, : 1.25V system power supply, : GND

### 2.2.3 R0K5726B0C000BR Module Combination Availability

Table 2.2.6 list the R0K5726B0C000BR Module Combination Availability. The symbol of "Y" on the table indicates that both modules can be used in combination, and the "N" indicates that combination use is not available.

**Table 2.2.6 R0K5726B0C000BR Module Combination Availability**

| | | | R0K5726B0C000BR | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SH726B Peripheral function | Module name | SDRAM | Serial flash memory 1 | Serial flash memory 2 | USB | Serial port | User switch (4×4) | LED (×4) | NMI switch | IRQ2 switch | H-UDI (14-pin) | CAN transceiver | Character LCD module | D/A converter (AK4353) | Audio CODEC (WM8978) | CD deck interface*3 | SD card | LAN interface | External extpansion connector 1*3 | External expansion connector 2 | External expansion connector 3 |
| R0K5726B0C000BR | BSC | SDRAM | | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N |
| | SPIBSC | Serial flash memory 1 (U3) | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | *1 | Y | Y | Y | Y | Y | Y | Y | Y |
| | RSPI_0 | Serial flash memory 2 (U4) | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | *2 | *2 | Y | Y | Y | Y | Y |
| | USB | USB | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | SCIF_3 | Serial port | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | ADC | User Switch (4×4) | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | I/O port | LED (×4) | N | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | INTC | NMI switch | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | INTC | IRQ2 switch | Y | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | H-UDI | H-UDI (14-pin) | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | RCAN_1 | CAN transceiver | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | N | Y | Y | N | Y | Y |
| | I/O port | Character LCD module | Y | *1 | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y | Y |
| | IIC3_2, SSIF_2 | D/A converter (AK4353) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | Y | Y | Y | Y | Y | Y |
| | RSPI_0, SSIF_0 | Audio CODEC (WM8978) | Y | Y | *2 | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | N | Y | Y | Y | Y |
| | RSPI_0, SSIF_3 | CD deck interface*3 | Y | Y | *2 | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | | Y | Y | N | Y | Y |
| | SDHI | SD card | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | | Y | N | Y | Y |
| | BSC | LAN interface | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | Y | N | N |
| | SCIF_1, SSIF_3 | External expansion connector 1 *3 | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | N | N | Y | | Y | Y |
| | SCIF_1, SSIF_1, IIC3_2 | External expansion connector 2 | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | | Y |
| | SCIF_2 | External expansion connector 3 | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | |

*1: Either one can be use.
*2: Make sure the select signal is under the software control when these devices are used together.
*3: A zero-ohm resistor must be mounted when using the CD deck interface or the external expansion connector 1.

### 2.2.4 SH726B Multiplexed Pins

Table 2.2.7 to Table 2.2.18 list the SH726B multiplexed pins functions used for the R0K5726B0C000BR.
The initial values of these pins are set to port input pins. The MD bit of the port control register must be set to use the peripheral functions (except I/O ports).

**Table 2.2.7 SH726B Multiplexed Pins Functions (BSC1)**

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| BSC | CS0# | PCCR0 | PC0MD[1:0] = B'01 | PC0 / **CS0#** / TIOC4A / AUDIO_XOUT |
| | CS3# | PCCR2 | PC8MD[2:0] = B'001 | PC8 / **CS3#** / IRQ7 / CTx1 / CTx0&CTx1 |
| | RD# | PCCR0 | PC1MD[1:0] = B'01 | PC1 / **RD#** / TIOC4B / SPDIF_IN |
| | WE0#/DQMLL | PCCR0 | PC3MD[1:0] = B'01 | PC3 / **WE0#/DQMLL** / TIOC4D |
| | WE1#/WE#/DQMLU | PCCR1 | PC4MD[1:0] = B'01 | PC4 / **WE1#/DQMLU** / WDTOVF# |
| | RAS# | PCCR2 | PC5MD[2:0] = B'001 | PC5 / **RAS#** / IRQ4 / CRx0 / IERxD |
| | CAS# | PCCR2 | PC6MD[2:0] = B'001 | PC6 / **CAS#** / IRQ5 / CTx0 / IETxD |
| | CKE | PCCR2 | PC7MD[2:0] = B'001 | PC7 / **CKE** / IRQ6 / CRx1 / CRx0/CRx1 |
| | RD/WR# | PCCR0 | PC2MD[1:0] = B'01 | PC2 / **RD/WR#** / TIOC4C / SPDIF_OUT |
| | A14 | PBCR3 | PB14MD[1:0] = B'01 | PB14 / **A14** / TxD2 |
| | A13 | PBCR3 | PB13MD[1:0] = B'01 | PB13 / **A13** / RxD2 |
| | A12 | PBCR3 | PB12MD[1:0] = B'01 | PB12 / **A12** / SCK2 / SSIDATA2 |
| | A11 | PBCR2 | PB11MD[1:0] = B'01 | PB11 / **A11** / TxD1 |
| | A10 | PBCR2 | PB10MD[1:0] = B'01 | PB10 / **A10** / RxD1 |
| | A9 | PBCR2 | PB9MD[1:0] = B'01 | PB9 / **A9** / SCK1 / SSIWS2 |
| | A8 | PBCR2 | PB8MD[1:0] = B'01 | PB8 / **A8** / TxD0 |
| | A7 | PBCR1 | PB7MD[1:0] = B'01 | PB7 / **A7** / RxD0 |
| | A6 | PBCR1 | PB6MD[1:0] = B'01 | PB6 / **A6** / SCK0 / SSISCK2 |
| | A5 | PBCR1 | PB5MD[1:0] = B'01 | PB5 / **A5** / RTS0# |
| | A4 | PBCR1 | PB4MD[1:0] = B'01 | PB4 / **A4** / CTS0# |
| | A3 | PBCR0 | PB3MD[1:0] = B'01 | PB3 / **A3** / SSIDATA3 |
| | A2 | PBCR0 | PB2MD[1:0] = B'01 | PB2 / **A2** / SSIWS3 |
| | A1 | PBCR0 | PB1MD[1:0] = B'01 | PB1 / **A1** / SSISCK3 |
| | D15 | PDCR3 | PD15MD[1:0] = B'01 | PD15 / **D15** / SD_D2 |
| | D14 | PDCR3 | PD14MD[1:0] = B'01 | PD14 / **D14** / SD_D3 |
| | D13 | PDCR3 | PD13MD[1:0] = B'01 | PD13 / **D13** / SD_CMD / IRQ3 |
| | D12 | PDCR3 | PD12MD[1:0] = B'01 | PD12 / **D12** / SD_CLK / IRQ2 |
| | D11 | PDCR2 | PD11MD[1:0] = B'01 | PD11 / **D11** / SD_D0 / TIOC3A |
| | D10 | PDCR2 | PD10MD[1:0] = B'01 | PD10 / **D10** / SD_D1 / TIOC2A |
| | D9 | PDCR2 | PD9MD[1:0] = B'01 | PD9 / **D9** / SD_WP / TIOC1A |
| | D8 | PDCR2 | PD8MD[1:0] = B'01 | PD8 / **D8** / SD_CD / TIOC0A |
| | D7 | PDCR1 | PD7MD[2:0] = B'001 | PD7 / **D7/** MISO1 / TxD4 / RTS2# |
| | D6 | PDCR1 | PD6MD[2:0] = B'001 | PD6 / **D6** / MOSI1 / SCK4 / CTS2# |
| | D5 | PDCR1 | PD5MD[2:0] = B'001 | PD5 / **D5** / SSL10 / TxD3 / RTS# |
| | D4 | PDCR1 | PD4MD[2:0] = B'001 | PD4 / **D4** / RSPCK1 / SCK3 / CTS1# |
| | D3 | PDCR0 | PD3MD[2:0] = B'001 | PD3 / **D3** / SSITxD1 / SIOFTxD / SPBIO3_1 |
| | D2 | PDCR0 | PD2MD[2:0] = B'001 | PD2 / **D2** / SSIRxD1 / SIOFRxD / SPBIO2_1 |
| | D1 | PDCR0 | PD1MD[2:0] = B'001 | PD1 / **D1** / SSIWS1 / SIOFSYNC / SPBMI_1/SPBIO1_1 |
| | D0 | PDCR0 | PD0MD[2:0] = B'001 | PD0 / **D0** / SISCK1 / SIOFSCK / SPBMO_1/SPBIO0_1 |

Note: Bold letters indicate setting function.

### Table 2.2.8 SH726B Multiplexed Pins Functions (INTC)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| INTC | IRQ2 | PFCR1 | PF6MD[1:0] = B'10 | PF6 / **IRQ2** / RxD3 |
| | PINT5 | PHCR1 | PH5MD[1:0] = B'10 | PH5 / AN5 / **PINT5** / RxD2 |
| | PINT7 | PHCR1 | PH7MD[1:0] = B'10 | PH7 / AN7 / **PINT7** / RxD4 |

Note: Bold letters indicate setting function.

### Table 2.2.9 SH726B Multiplexed Pins Functions (SCIF)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| SCIF | SCK1 | PJCR1 | PJ5MD[1:0] = B'11 | PJ5 / SD_CMD / **SCK1** |
| | RxD1 | PJCR1 | PJ6MD[1:0] = B'11 | PJ6 / SD_D3 / CS4# / **RxD1** |
| | | PBCR2 | PB10MD[1:0] = B'10 | PB10 / A10 / **RxD1** |
| | TxD1 | PJCR1 | PJ7MD[1:0] = B'11 | PJ7 / SD_D2 / BS# / **TxD1** |
| | | PBCR2 | PB11MD[1:0] = B'10 | PB11 / A11 / **TxD1** |
| | CTS1# | PDCR1 | PD4MD[2:0] = B'100 | PD4 / D4 / RSPCK1 / SCK3 / **CTS1#** |
| | RTS1# | PDCR1 | PD5MD[2:0] = B'100 | PD5 / D5 / SSL10 / TxD3 / **RTS1#** |
| | RxD2 | PBCR3 | PB13MD[1:0] = B'10 | PB13 / A13 / **RxD2** |
| | TxD2 | PBCR3 | PB14MD[1:0] = B'10 | PB14 / A14 / **TxD2** |
| | CTS2# | PDCR1 | PD6MD[2:0] = B'100 | PD6 / D6 / MOSI1 / SCK4 / **CTS2#** |
| | RTS2# | PDCR1 | PD7MD[2:0] = B'100 | PD7 / D7 / MISO1 / TxD4 / **RTS2#** |
| | RxD3 | PHCR1 | PH6MD[1:0] = B'11 | PH6 / AN6 / PINT6 / **RxD3** |
| | TxD3 | PKCR0 | PK1MD = 1 | PK1/RTC_X2 / **TxD3** |

Note: Bold letters indicate setting function.

### Table 2.2.10 SH726B Multiplexed Pins Functions (IIC3)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| IIC3 | SDA3 | PECR1 | PE7MD[1:0] = B'01 | PE7 / **SDA3** / TCLKD |
| | SCL3 | PECR1 | PE6MD[1:0] = B'01 | PE6 / **SCL3** / TCLKC |
| | SDA2 | PECR1 | PE5MD[1:0] = B'01 | PE5 / **SDA2** / TCLKB |
| | SCL2 | PECR1 | PE4MD[1:0] = B'01 | PE4 / **SCL2** / TCLKA |

Note: Bold letters indicate setting function.

### Table 2.2.11 SH726B Multiplexed Pins Functions (RCAN)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| RCAN | CTx0 | PCCR2 | PC6MD[2:0] = B'011 | PC6 / CAS# / IRQ5 / **CTx0** / IETxD |
| | CRx0 | PCCR2 | PC5MD[2:0] = B'011 | PC5 / RAS# / IRQ4 / **CRx0** / IERxD |
| | CTx1 | PJCR4 | PJ14MD[2:0] = B'100 | PJ14 / SSIDATA3 / WDTOVF# / **CTx1** / CTx0&CTx1 / MISO2 |
| | CRx1 | PJCR3 | PJ13MD[2:0] = B'100 | PJ13 / SSIWS3 / IRQ1 / RxD4 / **CRx1** / CRx0/CRx1 / MOSI2 |

Note: Bold letters indicate setting function.

### Table 2.2.12 SH726B Multiplexed Pins Functions (RSPI)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| RSPI | MISO0 | PBCR4 | PB18MD[1:0] = B'10 | PB18 / A18 / **MISO0** / TIOC3B |
| | MOSI0 | PBCR4 | PB17MD[1:0] = B'10 | PB17 / A17 / **MOSI0** / TIOC2B |
| | SSL00 | PBCR4 | PB16MD[1:0] = B'10 | PB16 / A16 / **SSL00** / TIOC1B |
| | RSPCK0 | PBCR3 | PB15MD[1:0] = B'10 | PB15 / A15 / **RSPCK0** / TIOC0B |

Note: Bold letters indicate setting function.

### Table 2.2.13 SH726B Multiplexed Pins Functions (SPIBSC)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| RQSPI | SPBIO3_0 | PFCR1 | PF5MD[1:0] = B'10 | PF5 / **SPBIO3_0** |
| | SPBIO2_0 | PFCR1 | PF4MD[1:0] = B'10 | PF4 / **SPBIO2_0** |
| | SPBMI_0/SPBIO1_0 | PFCR0 | PF3MD[1:0] = B'10 | PF3 / MISO0 / **SPBMI_0/SPBIO1_0** |
| | SPBMO_0/SPBIO0_0 | PFCR0 | PF2MD[1:0] = B'10 | PF2 / MOSI0 / **SPBMO_0/SPBIO0_0** |
| | SPBSSL | PFCR0 | PF1MD[1:0] = B'10 | PF1 / SSL00 / **SPBSSL** |
| | SPBCLK | PFCR0 | PF0MD[1:0] = B'10 | PF0 / RSPCK0 / **SPBCLK** |

Note: Bold letters indicate setting function.

### Table 2.2.14 SH726B Multiplexed Pins Functions (SDHI)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| SDHI | SD_D2 | PJCR1 | PJ7MD[1:0] = B'01 | PJ7 / **SD_D2** / BS# / TxD1 |
| | SD_D3 | PJCR1 | PJ6MD[1:0] = B'01 | PJ6 / **SD_D3** / CS4# / RxD1 |
| | SD_CMD | PJCR1 | PJ5MD[1:0] = B'01 | PJ5 / **SD_CMD** / SCK1 |
| | SD_CLK | PJCR1 | PJ4MD[1:0] = B'01 | PJ4 / **SD_CLK /** CS1# |
| | SD_D0 | PJCR0 | PJ3MD[1:0] = B'01 | PJ3 / **SD_D0** / IRQ7 |
| | SD_D1 | PJCR0 | PJ2MD[1:0] = B'01 | PJ2 / **SD_D1** / IRQ6 |
| | SD_WP | PJCR0 | PJ1MD[2:0] = B'001 | PJ1 / **SD_WP** / CS2# / IRQ5 / AUDIO_XOUT |
| | SD_CD | PJCR0 | PJ0MD[1:0] = B'01 | PJ0 / **SD_CD** / IRQ4 |

Note: Bold letters indicate setting function.

### Table 2.2.15 SH726B Multiplexed Pins Functions (SSIF)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| SSIF | SSITxD0 | PBCR5 | PB22MD[1:0] = B'10 | PB22 / A22 / **SSITxD0** / TIOC3D |
| | SSIRxD0 | PBCR5 | PB21MD[1:0] = B'10 | PB21 / A21 / **SSIRxD0** / TIOC3C |
| | SSIWS0 | PBCR5 | PB20MD[1:0] = B'10 | PB20 / A20 / **SSIWS0** / TIOC0D |
| | SSISCK0 | PBCR4 | PB19MD[1:0] = B'10 | PB19 / A19 / **SSISCK0** / TIOC0D |
| | SSITxD1 | PDCR0 | PD3MD[2:0] = B'010 | PD3 / D3 / **SSITxD1** / SIOFTxD / SPBIO3_1 |
| | SSIRxD1 | PDCR0 | PD2MD[2:0] = B'010 | PD2 / D2 / **SSIRxD1** / SIOFRxD / SPBIO2_1 |
| | SSIWS1 | PDCR0 | PD1MD[2:0] = B'010 | PD1 / D1 / **SSIWS1** / SIOFSYNC / SPBMI_1/SPBIO1_1 |
| | SSISCK1 | PDCR0 | PD0MD[2:0] = B'010 | PD0 / D0 / **SSISCK1** / SIOFSCK / SPBMO_1/SPBIO0_1 |
| | SSIDATA2 | PJCR2 | PJ10MD[2:0] = B'100 | PJ10 / TIOC3C / A25 / TxD2 / **SSIDATA2** / DACK0 |
| | SSIWS2 | PJCR2 | PJ9MD[2:0] = B'100 | PJ9 / TIOC3B / A24 / RxD2 / **SSIWS2** / DREQ0 |
| | SSISCK2 | PJCR2 | PJ8MD[2:0] = B'100 | PJ8 / TIOC3A / A23 / SCK2 / **SSISCK2** / TEND0 |
| | SSIDATA3 | PJCR4 | PJ14MD[2:0] = B'001 | PJ14 / **SSIDATA3** / WDTOVF# / CTx1 / CTx0&CTx1 / MISO2 |
| | SSIWS3 | PJCR3 | PJ13MD[2:0] = B'001 | PJ13 / **SSIWS3** / IRQ1 / RxD4 / CRx1 / CRx0/CRx1 / MOSI2 |
| | SSISCK3 | PJCR3 | PJ12MD[2:0] = B'001 | PJ12 / **SSISCK3** / A0 / TxD4 / CTx0 / IETxD / SSL20 |

Note: Bold letters indicate setting function.

### Table 2.2.16 SH726B Multiplexed Pins Functions (ADC)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| ADC | AN4 | PHCR1 | PH4MD[1:0] = B'01 | PH4 / **AN4** / PINT4 / RxD1 |
| | AN3 | PHCR0 | PH3MD[1:0] = B'01 | PH3 / **AN3** / IRQ3 / |
| | AN2 | PHCR0 | PH2MD[1:0] = B'01 | PH2 / **AN2** / IRQ2 / WAIT# |
| | AN1 | PHCR0 | PH1MD[1:0] = B'01 | PH1 / **AN1** / IRQ1 / RxD0 |

Note: Bold letters indicate setting function.

### Table 2.2.17 SH726B Multiplexed Pins Functions (USB)

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| USB | VBUS | PHCR0 | PH0MD[1:0] = B'11 | PH0 / AN0 / IRQ0 / **VBUS** |
| | DP1 | PGCR0 | PG3MD[1:0] = B'01 | PG3 / **DP1** / PINT3 |
| | DM1 | PGCR0 | PG2MD[1:0] = B'01 | PG2 / **DM1** / PINT2 |
| | DP0 | PGCR0 | PG1MD[1:0] = B'01 | PG1 / **DP0** / PINT1 |
| | DM0 | PGCR0 | PG0MD[1:0] = B'01 | PG0 / **DM0** / PINT0 |

Note: Bold letters indicate setting function.

**Table 2.2.18 SH726B Multiplexed Pins Functions (PORT)**

| Peripheral function | Pin name | SH726B port control register | | SH726B Multiplexed pin name |
|---|---|---|---|---|
| | | Register name | MD bit setting value | |
| PORT | PA1 | - | -*1 | **PA1** / MD_BOOT |
| | PA0 | - | -*1 | **PA0** / MD_CLK |
| | PC7 | PCCR2 | PC7MD[2:0] = B'000 | **PC7** / CKE / IRQ6 / CRx1 / CRx0/CRx1 |
| | PE0 | PECR0 | PE0MD[1:0] = B'00 | **PE0** / SCL0 / IRQ0 |
| | PE1 | PECR0 | PE1MD[1:0] = B'00 | **PE1** / SDA0 / IRQ1 |
| | PE3 | PECR0 | PE3MD[1:0] = B'00 | **PE3** / SDA1 / ADTRG# |

*1: Always general purpose I/O function when RES# = H

Note: Bold letters indicate setting function.

## 2.3 Memory

The R0K5726B0C000BR includes the SH726B on-chip RAM, an external serial flash memory, and an external SDRAM. The details are described as follows.

### 2.3.1 SH726B On-Chip RAM

The SH726B includes a high-speed accessible 64KB high-speed on-chip RAM and a 1.25MB large capacity on-chip RAM (128KB is shared with the RAM for data-retention).

### 2.3.2 SDRAM Interface

The R0K5726B0C000BR generally includes one external SDRAM (listed in Table 2.3.1). The SDRAM is controlled by the bus state controller (BSC) embedded in the SH726B.
On the R0K5726B0C000BR, only 16-bit bus is accessible.
Figure 2.3.1 shows the SDRAM Block Diagram.

**Table 2.3.1 SDRAM Overview**

| Spec. | Contents |
|---|---|
| Part number | EDS1216AATA-75E |
| Composition | 16MB (16 bit bus width)×1 |
| Capacity | 16MB |
| Access time | 7.5ns |
| CAS latency | 2 (when system clock is 72MHz) |
| Refresh interval | 4096 refresh cycles every 64ms |
| Low address | A11-A0 |
| Column address | A8-A0 |
| Bank counts | 4-bank operation controlled by BA0 and BA1 |

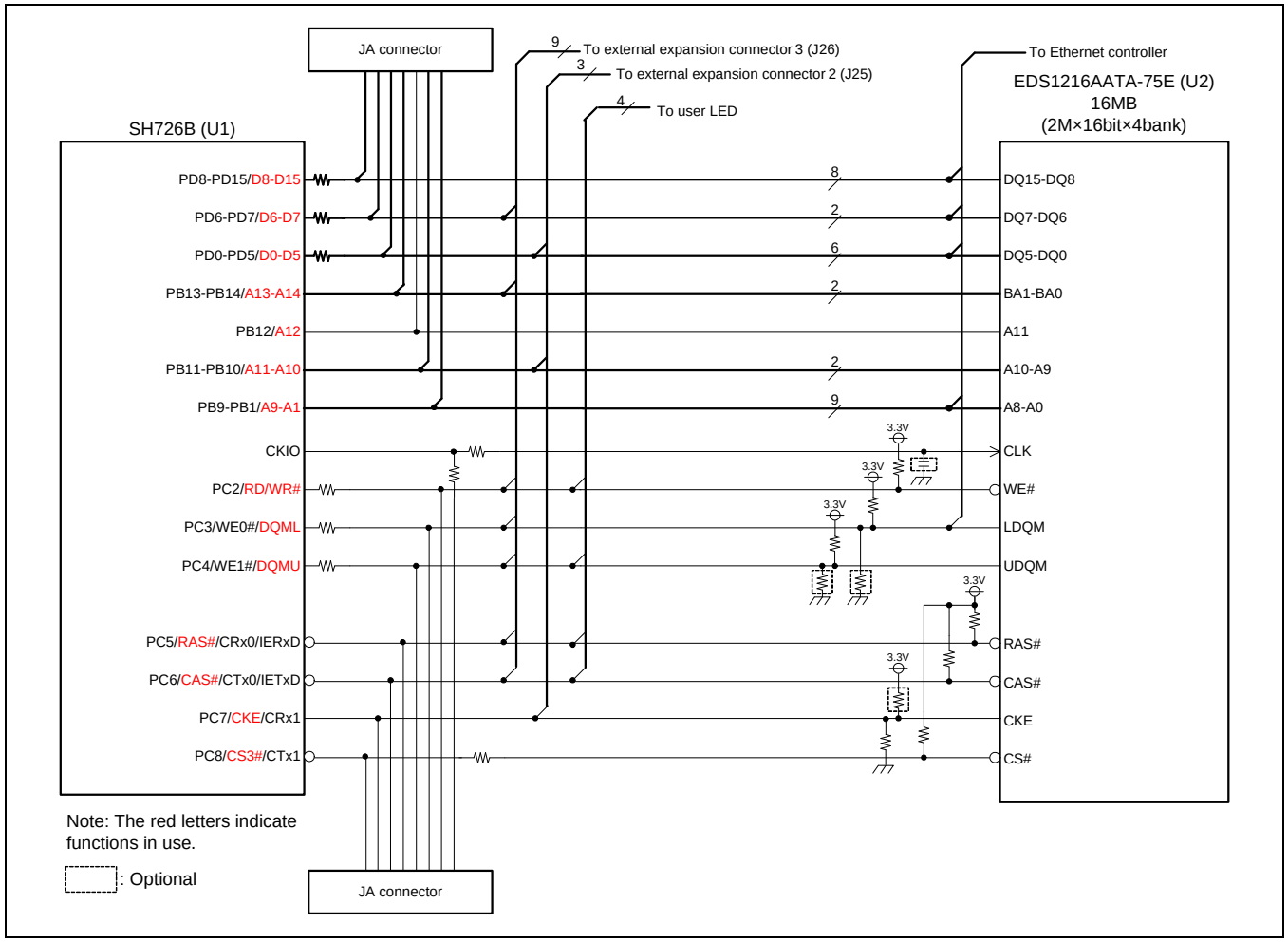



**Figure 2.3.1 SDRAM Block Diagram**

Figure 2.3.2 shows the Example of SDRAM Single Read/Write Timing, and Table 2.3.2 lists the bus state controller setting when the SH726B bus clock runs at the frequency of 72MHz.

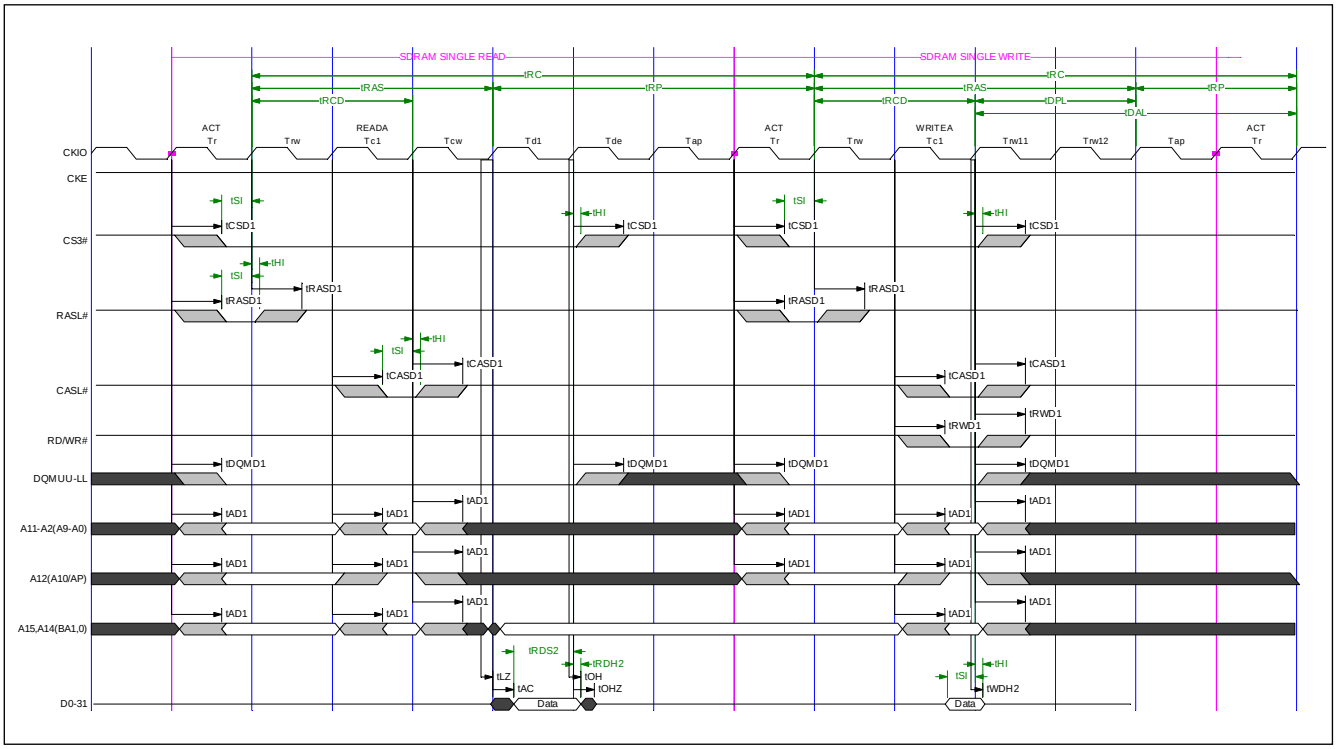



**Figure 2.3.2 Example of SDRAM Single Read/Write Timing**

**Table 2.3.2 Bus State Controller Setting (SDRAM Read/Write)**

| User area | Target device | Bus state controller setting |
|---|---|---|
| CS3 | EDS1216AATA-75E | CS3 space bus control register (CS3BCR):<br>Initial value: H'36DB 0400, Recommended setting value: H'0000 4400<br>- Memory specification:<br>TYPE[2:0] = B'100; SDRAM<br>- Data bus width specification<br>BSZ[1:0] = B'10; 16 bit bus width<br>CS3 space weight control register (CS3WCR):<br>Initial value: H'0000 0500, Recommended setting value: H'0000 2892<br>- Wait cycles for precharge completion:<br>WTRP[1:0] = B'01; 1 cycle<br>- ACTV command→number of wait cycles between READ (A)/WRIT (A) commands:<br>WTRCD[1:0] = B'10; 2 cycles<br>- Area 3 CAS latency:<br>A3CL[1:0] = B'01; 2 cycles<br>- Wait cycles for precharge operation:<br>TRWL[1:0] = B'10; 2 cycles<br>- REF command/self-refresh cancellation→number of idle cycles between ACTV/REF/MRS commands:<br>WTRC[1:0] = B'10; 5 cycles<br>SDRAM control register (SDCR):<br>Initial value: H'0000 0000, Recommended setting value: H'0000 0809<br>- Refresh control:<br>RFSH = B'1; Execute refresh<br>- Refresh control:<br>RMODE = B'0; Auto refresh<br>- Bank active mode:<br>BACTV = B'0; Auto precharge mode<br>- Area 3 low address bits:<br>A3ROW[1:0] = B'01; 12 bits<br>- Area 3 column address bits:<br>A3COL[1:0] = B'01; 9 bits<br>Refresh timer control/status register (RTCSR):<br>Initial value: H'0000 0000, Recommended setting value: H'A55A 0010<br>- Clock select:<br>CKS[2:0] = B'010; Bϕ/16<br>- Times of refreshes:<br>RRC[2:0] = B'000; 1 time<br>Refresh time constant register (RTCOR):<br>Initial value: H'0000 0000, Recommended setting value: H'A55A 0046<br>- The interval of refresh request when the clock select is set as Bϕ/16 is described as follows.<br>1 cycle: 222nsec (72MHz/16=4.5MHz)<br>Interval of refresh request for this SDRAM: 15.625μsec/cycle<br>15.625μsec /222nsec = 70 (0x46) cycles/times of refreshes |

### 2.3.3 Serial Flash Memory Interface

The R0K5726B0C000BR generally includes two serial flash memories (listed in Table 2.3.3). The Renesas serial peripheral interface (RSPI) or the SPI multi I/O bus controller (SPIBSC) which is embedded in the SH726B control the serial flash memories. In boot mode 1, the data (program) of serial flash memory 1 will be read.
The serial flash memory 1 and 2 should be accessed by using the SPIBSC and the RSPI respectively. The RSPI will be used for the serial flash memory 1 only when booting. After boot completed, the serial flash memory 1 should be accessed by using the SPIBSC.
Both of the serial flash memory 1 and 2 share the data pins with other devices. While the serial flash memories are not accessed, the pins of SSL00 and SPBSSL should not be asserted.
Figure 2.3.3 shows the Serial Flash Memory Interface Block Diagram.

**Table 2.3.3 Serial Flash Memory Overview**

| Parts No. | Model No. | Connection interface for SH726B | Capacity | Package |
|---|---|---|---|---|
| U3 | S25FL129P | 6-wire system serial (SPIBSC) | 16MB | 16-pin SOIC |
| U4 | S25FL129P | 4-wire system serial (RSPI) | 16MB | 16-pin SOIC |

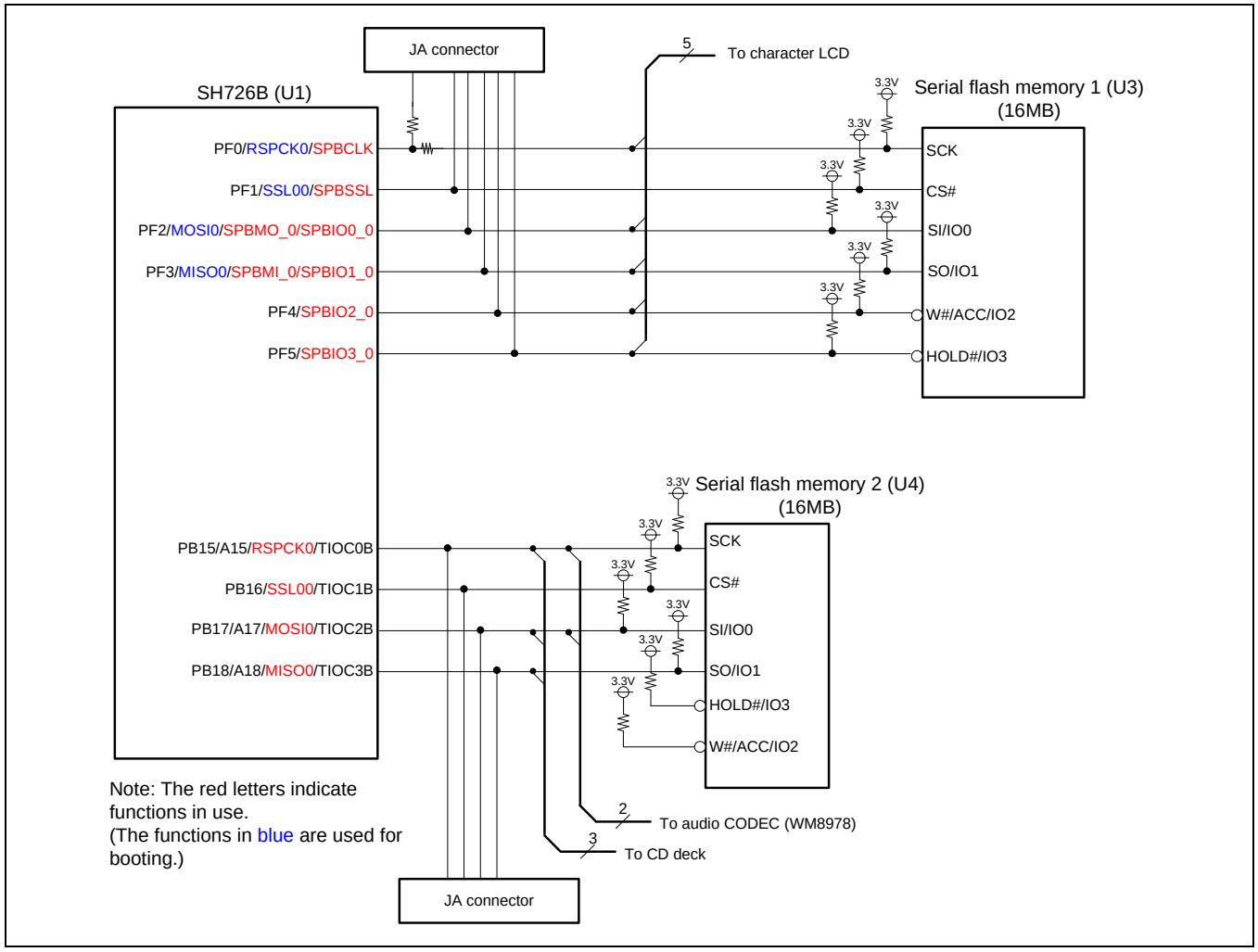



**Figure 2.3.3 Serial Flash Memory Interface Block Diagram**

## 2.4 USB Interfaces

The R0K5726B0C000BR generally includes two USB series A receptacles as USB connector. The board has a Mini-B receptacle that can be mounted in the channel 0 in its substrate configuration for the purpose of USB host/function module evaluation. When mounting the Mini-B receptacle, the USB series A receptacle must be removed, and the pull-up/down resistor must be changed for mounting.
Figure 2.4.1 shows the USB Interface Block Diagram.

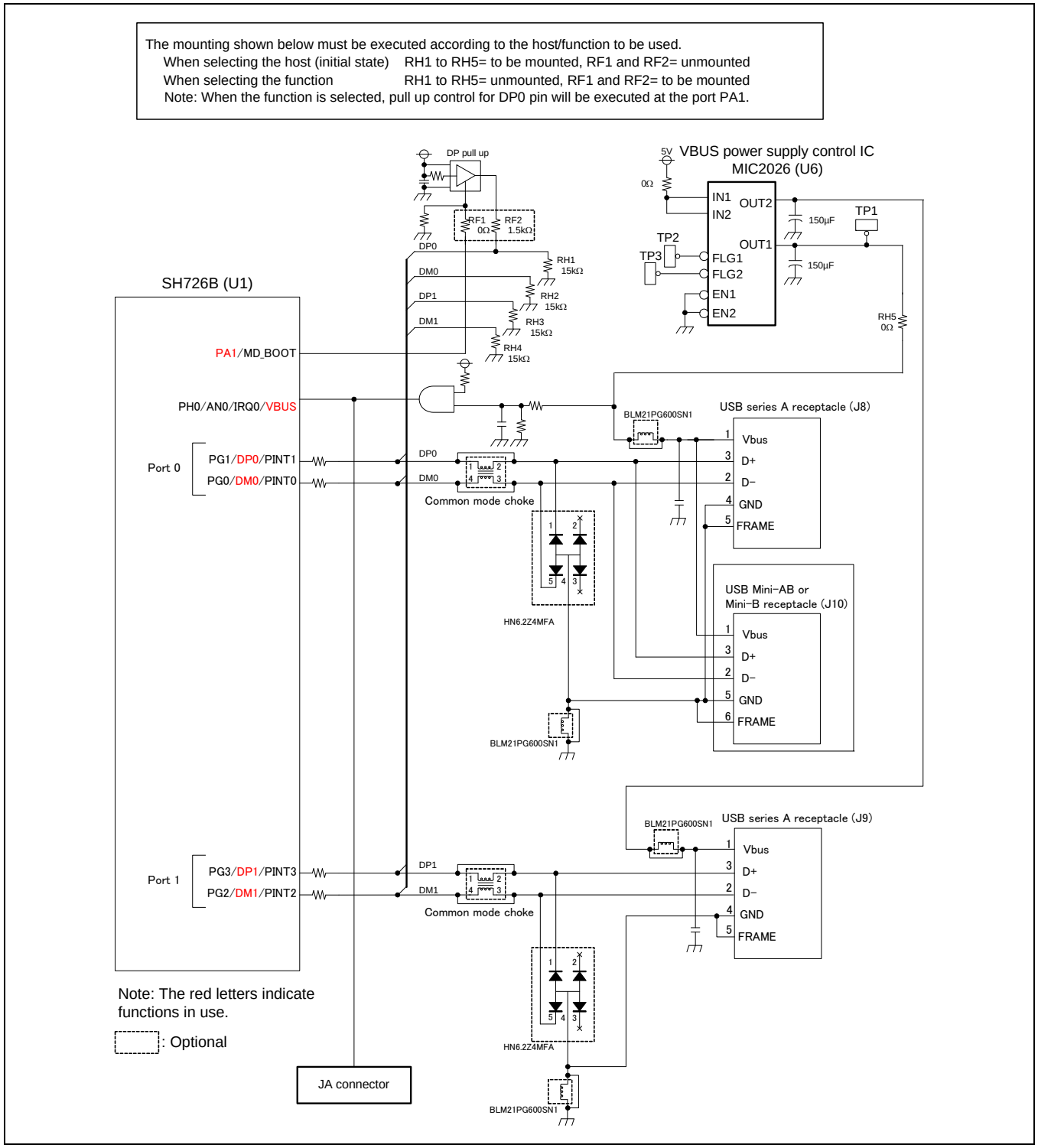



**Figure 2.4.1 USB Interface Block Diagram**

## 2.5 Serial Port Interface

The SH726B embeds a FIFO on-chip serial communication interface (SCIF). On the R0K5726B0C000BR, the SH726B SCIF channel 3 is connected to the D-sub 9-pin connector via the RS-232C driver IC.
Figure 2.5.1 shows the Serial Port Interface Block Diagram.

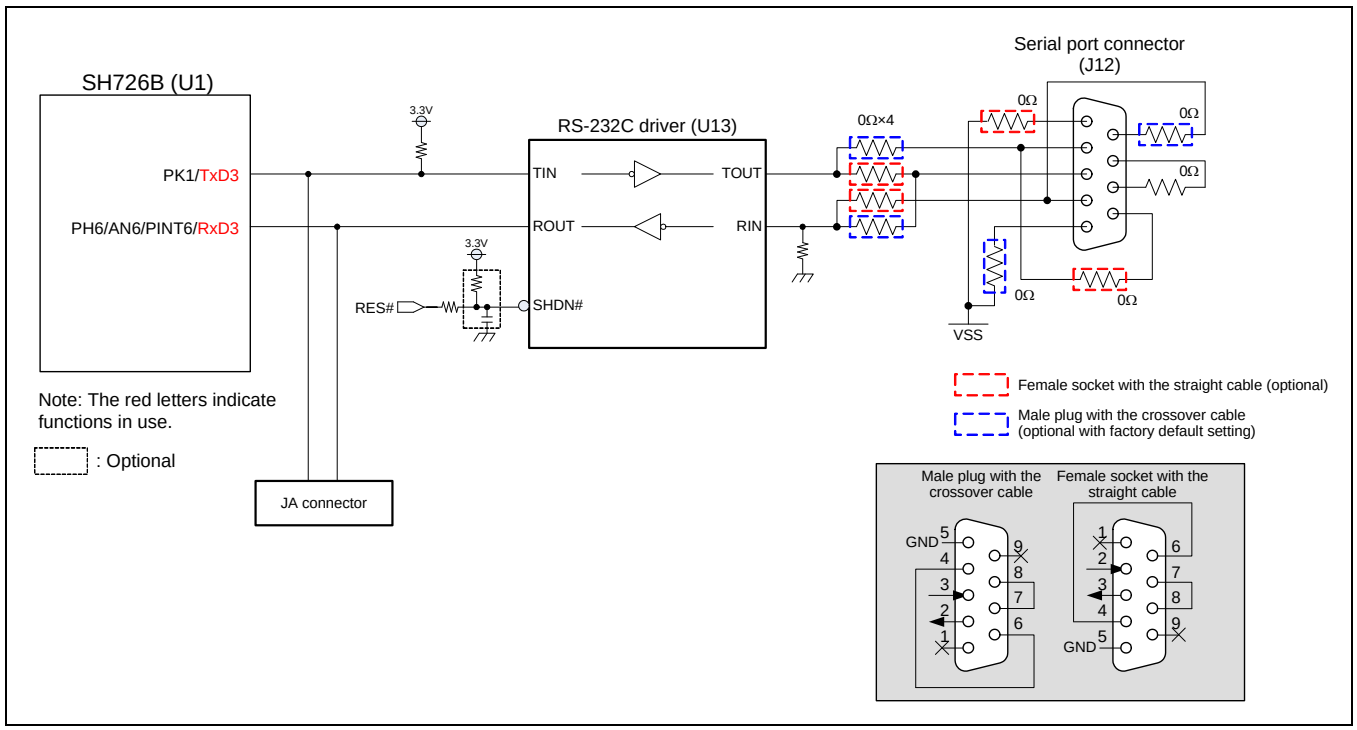



**Figure 2.5.1 Serial Port Interface Block Diagram**

## 2.6 I/O Ports

On the R0K5726B0C000BR, the SH726B I/O ports are connected to the switches and LEDs.
The port PH1 to PH4 can be used as analog input pins (AN1 to AN4).
Figure 2.6.1 shows the I/O Port Block Diagram.

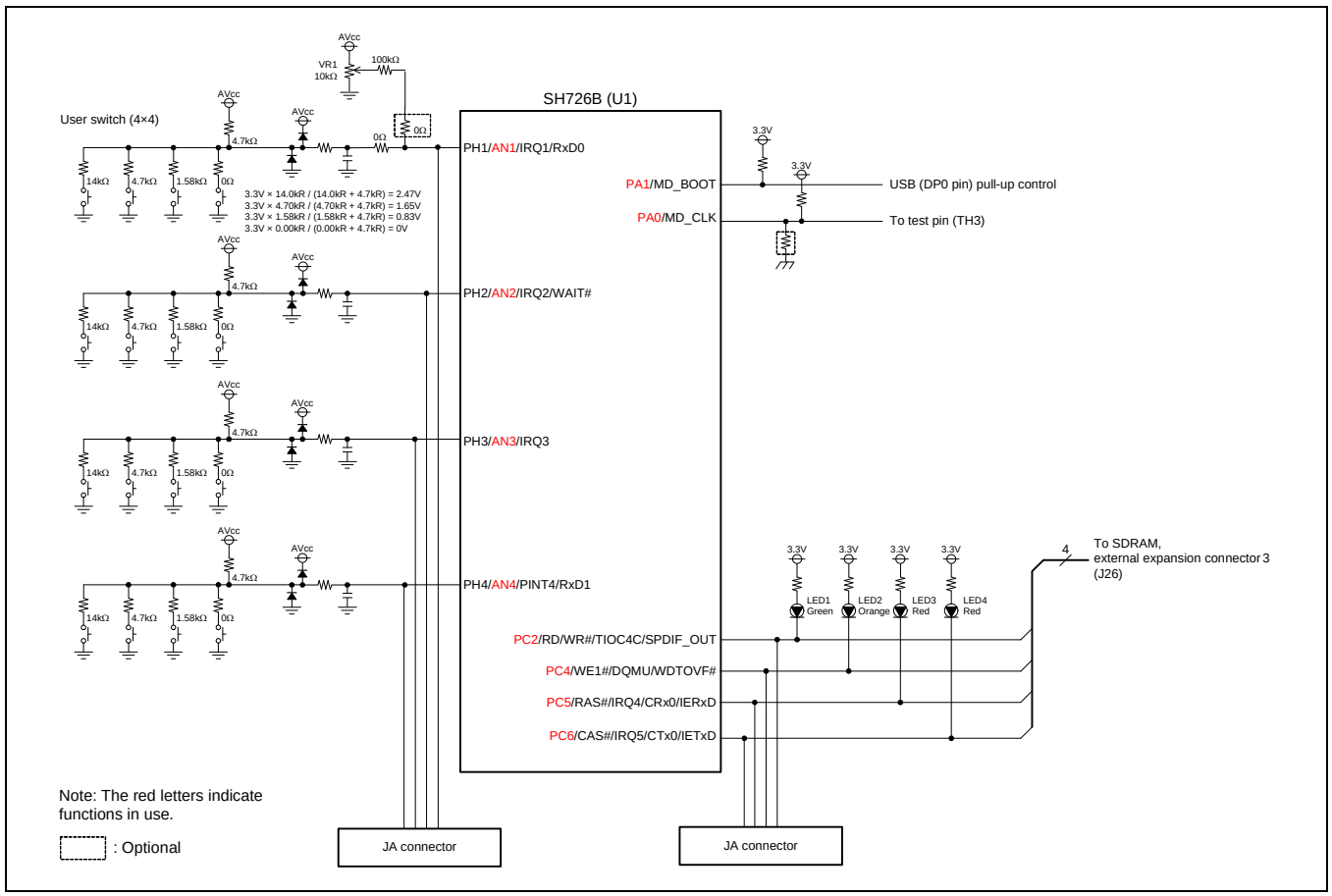



**Figure 2.6.1 I/O Port Block Diagram**

## 2.7 Interrupt Switches

The R0K5726B0C000BR include two types of push switches for interrupt signal input; the NMI switch and the IRQ2 switch), and a push switch for test signal; the Test switch.
The Test switch is left open to be connected to any other pins. The Test switch and the IRQ2 switch can be connected to the PINT7 pin and the ADTRG# pin respectively by mounding a zero-ohm resistor.
Figure 2.7.1 shows the Interrupt Switch Block Diagram.

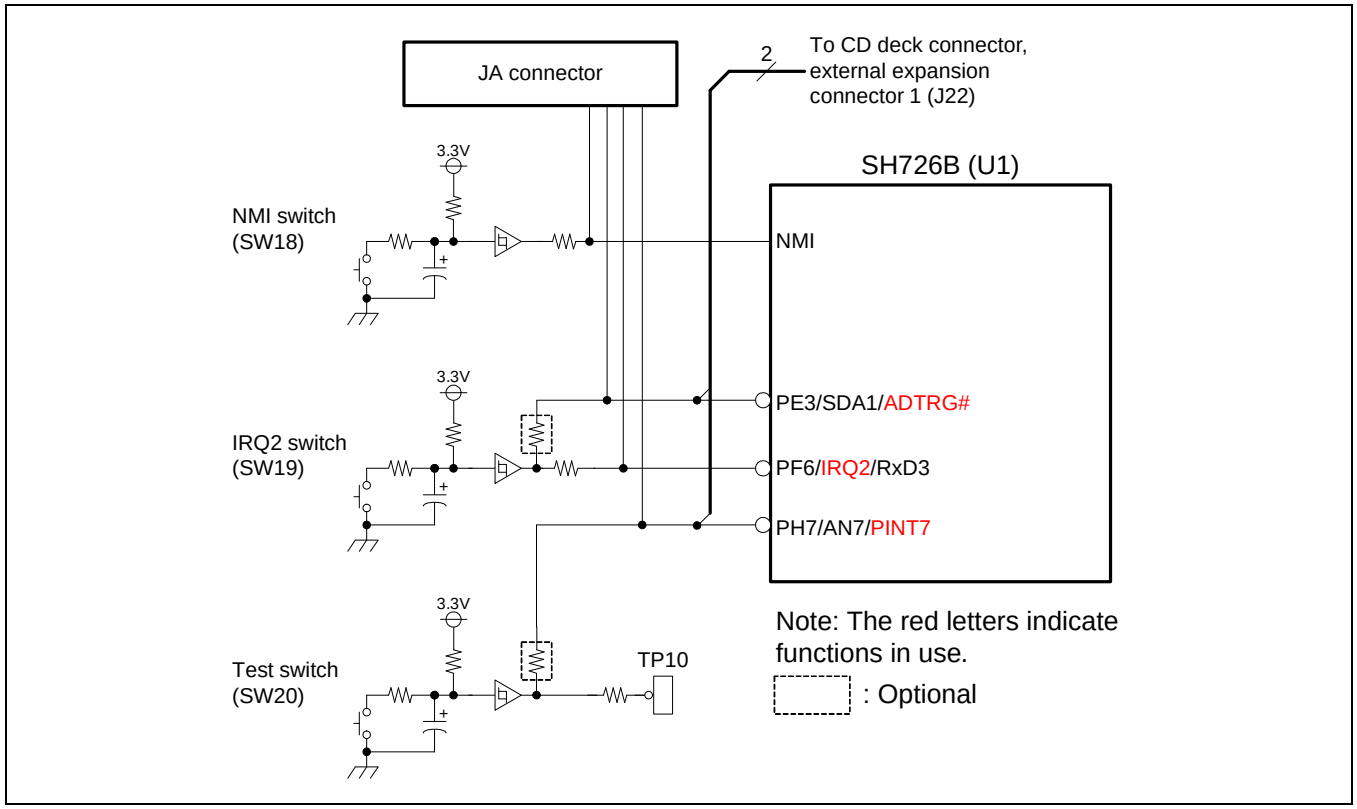



**Figure 2.7.1 Interrupt Switch Block Diagram**

## 2.8 Clock Modules

The following two types of clocks are input in the SH726B on the R0K5726B0C000BR.

- SH726B input clock : 12MHz
- SH726B audio clock : 11.2896MHz

Figure 2.8.1 shows the Clock Module Block Diagram.

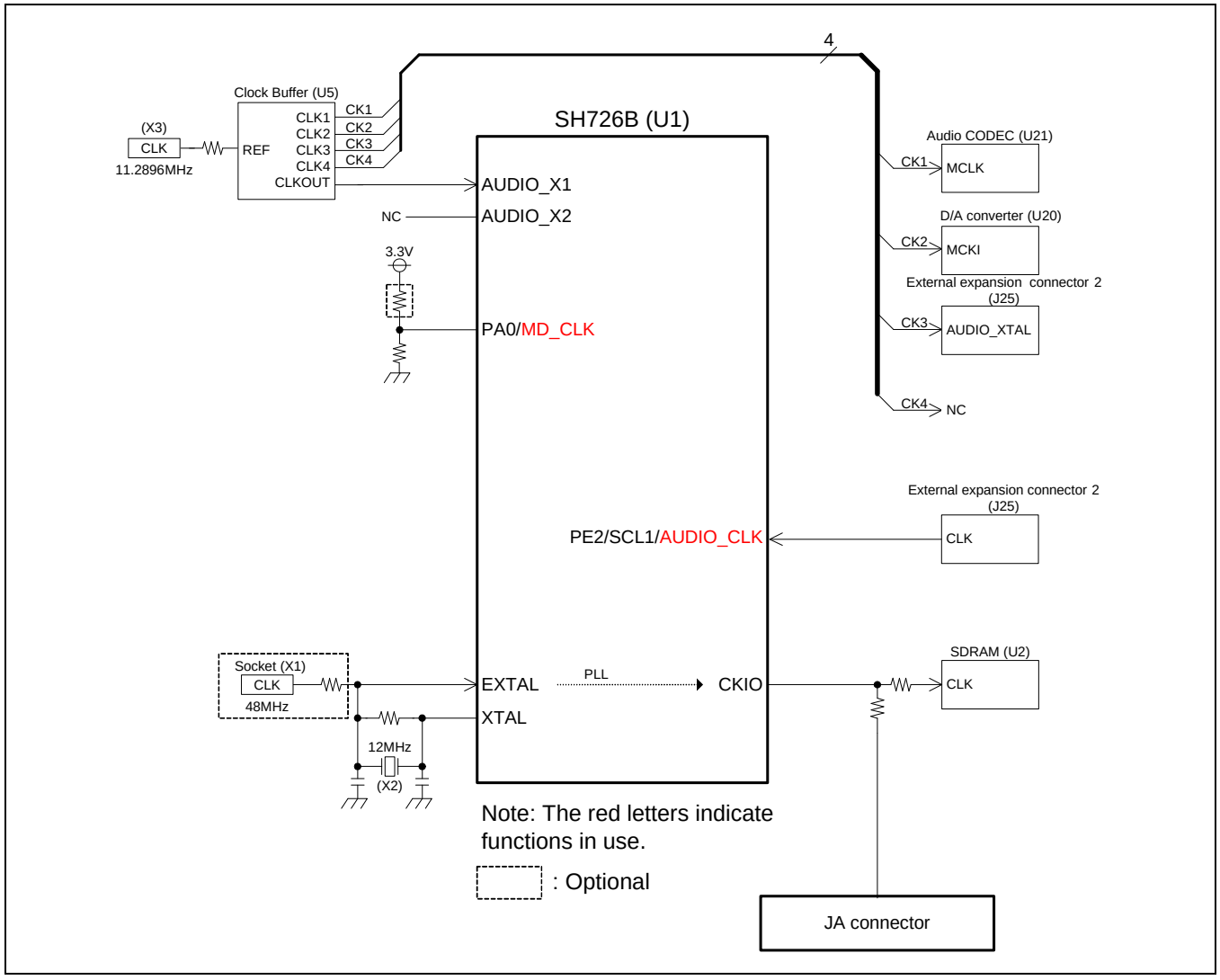



**Figure 2.8.1 Clock Module Block Diagram**

## 2.9 Reset Modules

On the R0K5726B0C000BR, the reset IC controls the reset signals connected to the SH726B, the Ethernet controller, the RS-232C driver and other peripheral I/O pins.
The system reset has two types of resets; the power on reset and the reset by switch.
Figure 2.9.1 shows the Reset Module Block Diagram.

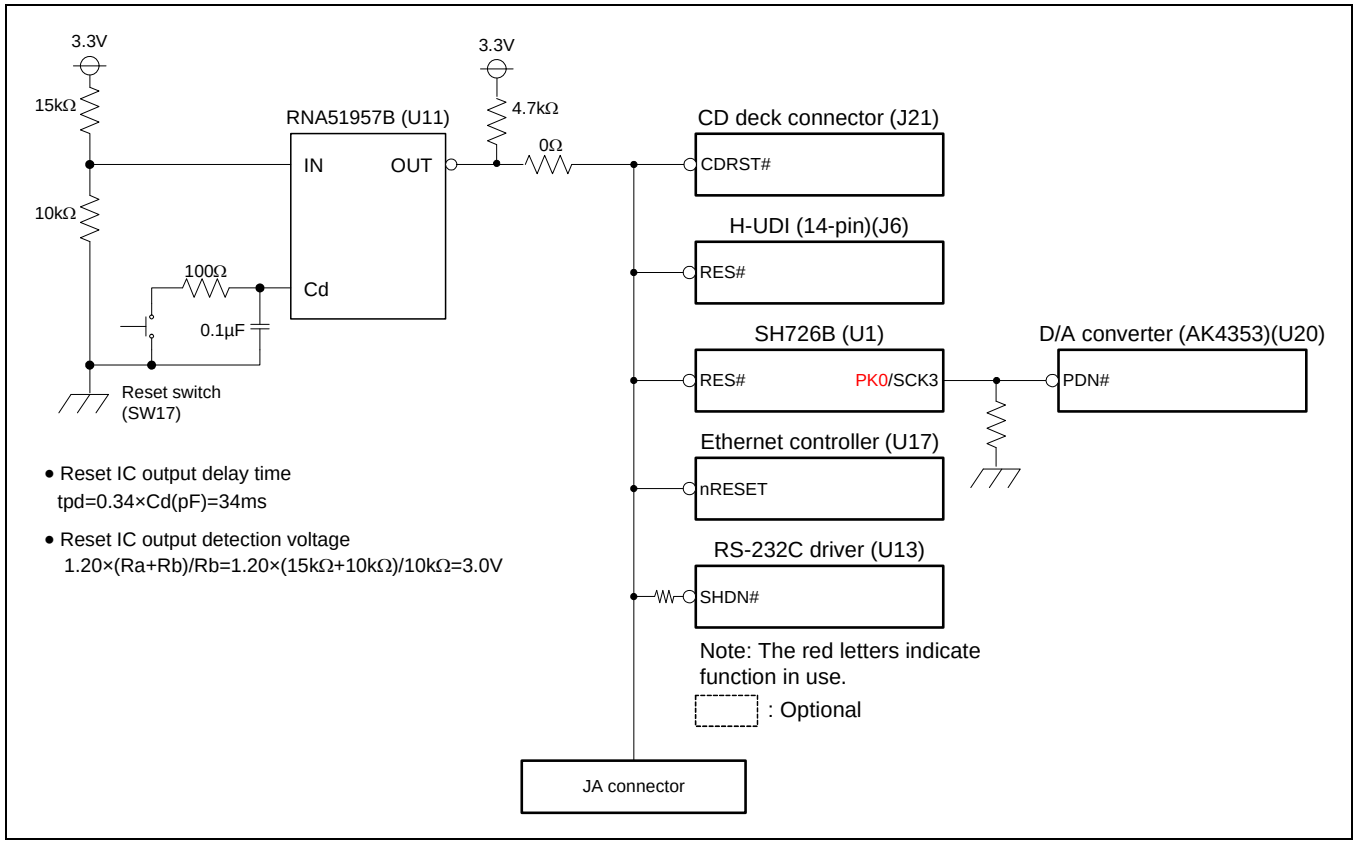



**Figure 2.9.1 Reset Module Block Diagram**

## 2.10 Power Modules

On the R0K5726B0C000BR, the regulator generates 3.3V, 1.8V and 1.25V by using the 5V power supply. The power of 8V for the CD deck is supplied from the external power source.
This board has a configuration which allows the I/O power supply (3.3), the A/D converter power supply (3.3V) and the internal power supply (1.25V) for the SH726B to be supplied from external sources.
Figure 2.10.1 shows the Power Supply Module Block Diagram.

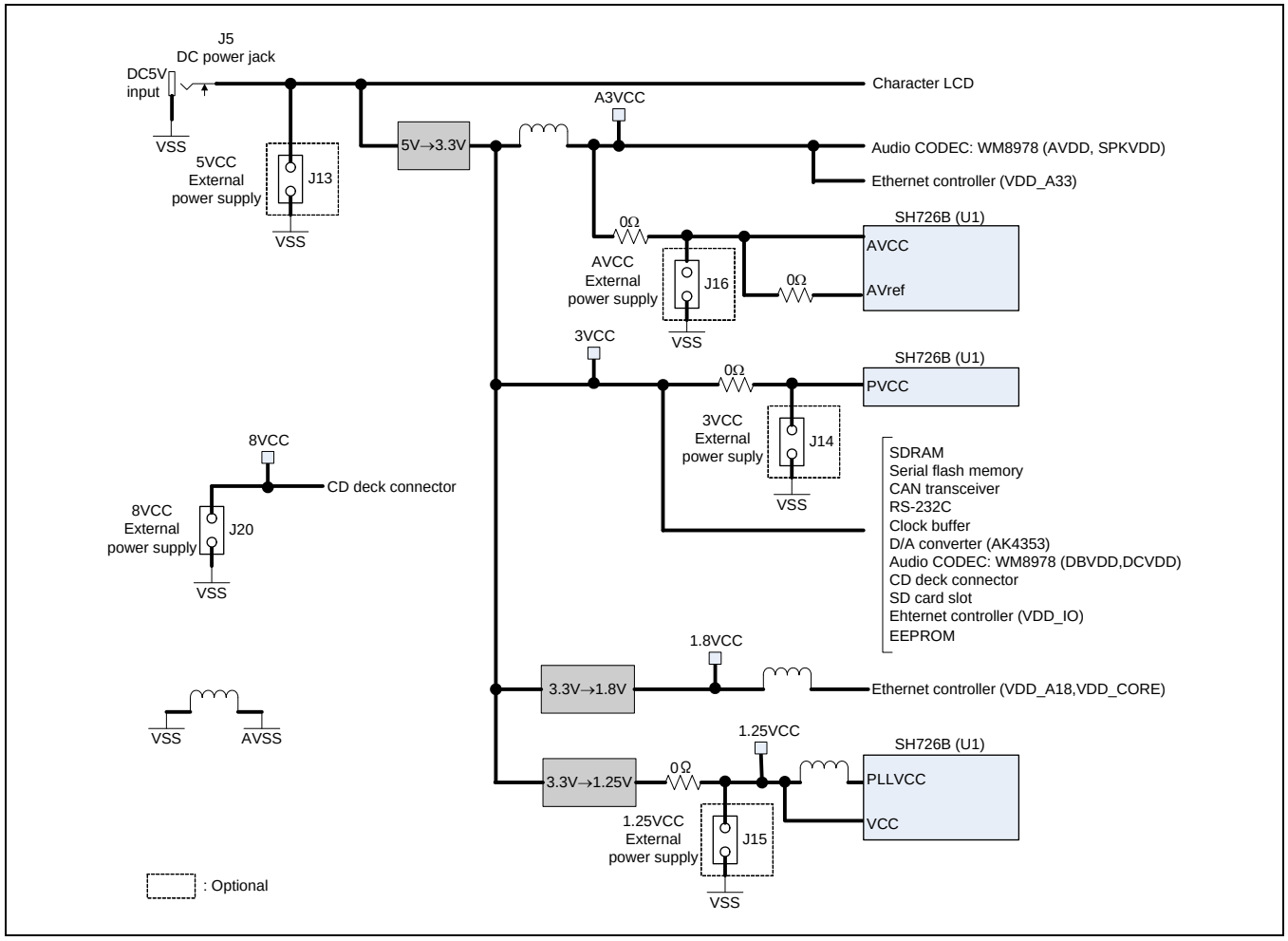



**Figure 2.10.1 Power Supply Module Block Diagram**

## 2.11 H-UDI

The R0K5726B0C000BR includes a 14-pin H-UDI port connector to connect with the E10A-USB. The AUD function cannot be used.
Figure 2.11.1 shows the H-UDI Block Diagram.

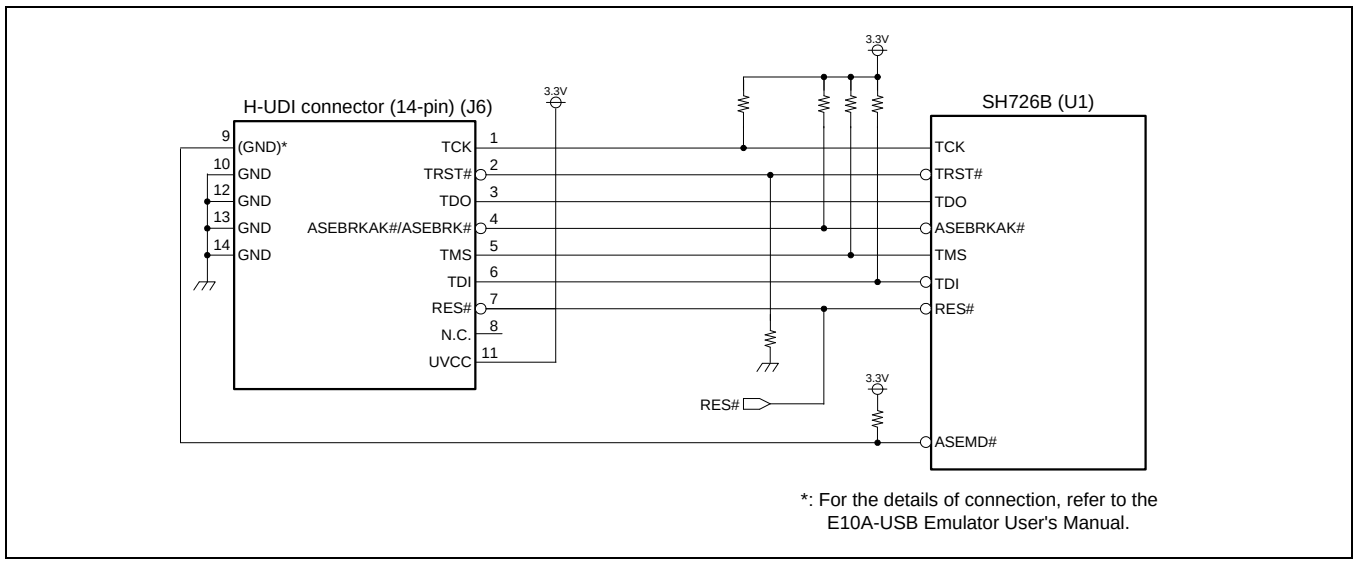



**Figure 2.11.1 H-UDI Block Diagram**

## 2.12 CAN Interface

The R0K5726B0C000BR includes a CAN transceiver IC, and enables CAN communication by using the CAN port connector.
The port PC5 and PC6 are connected to the JA connector. The CAN communication for two channels can be executed by setting these pins to the RCAN channel 0. In this case, the SDRAM and the user LED cannot be used.
Figure 2.12.1 shows the CAN Interface Block Diagram.

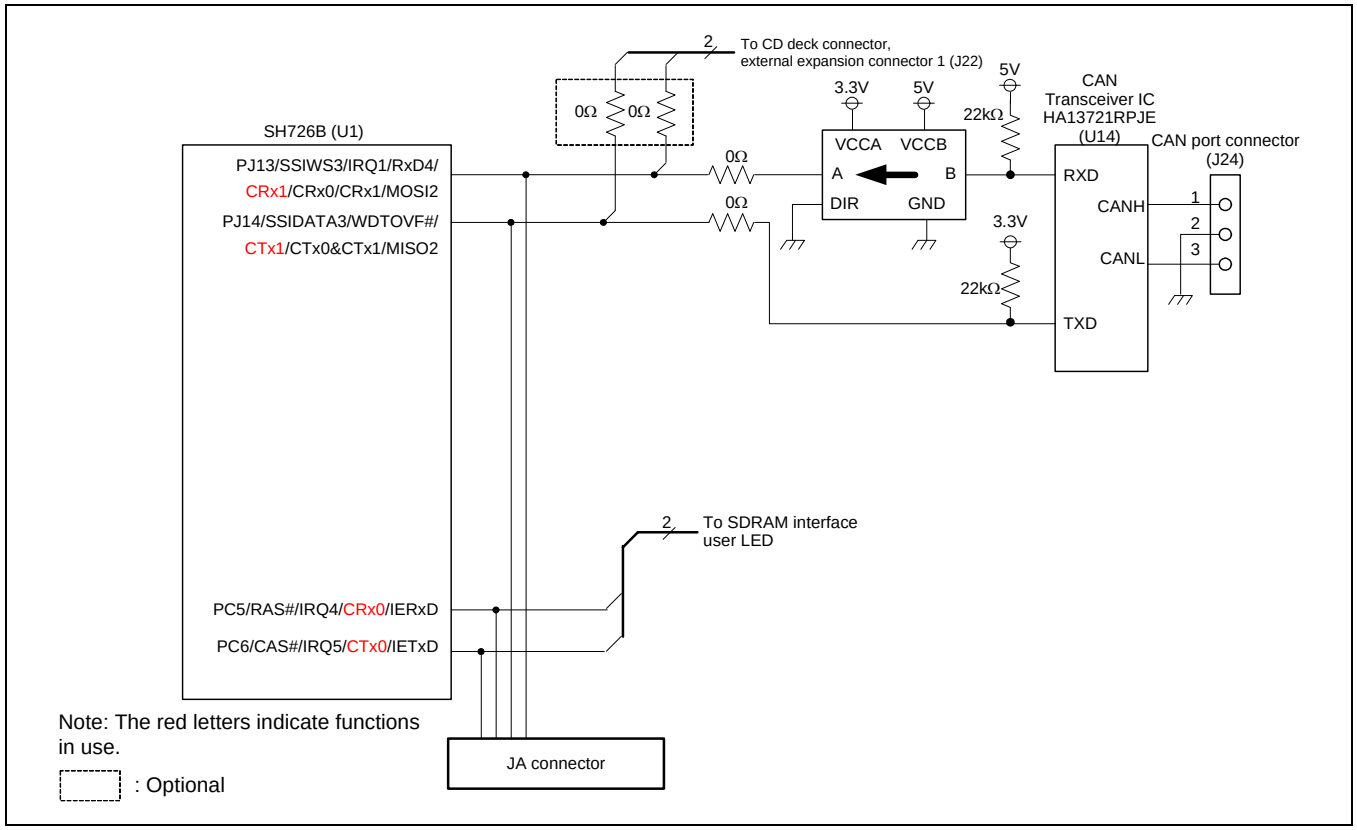



**Figure 2.12.1 CAN Interface Block Diagram**

## 2.13 Character LCD Module

The R0K5726B0C000BR includes a 14-pin character LCD module.
The character LCD is controlled by using the SH726B PE0, P0, and PF2 to PF5. The pins of PF0 and PF2 to PF5 are shared with the serial flash memory 1 on the board. The character LCD and the serial flash memory 1 cannot be used at the same time.
Figure 2.13.1 shows the Character LCD Module Block Diagram.

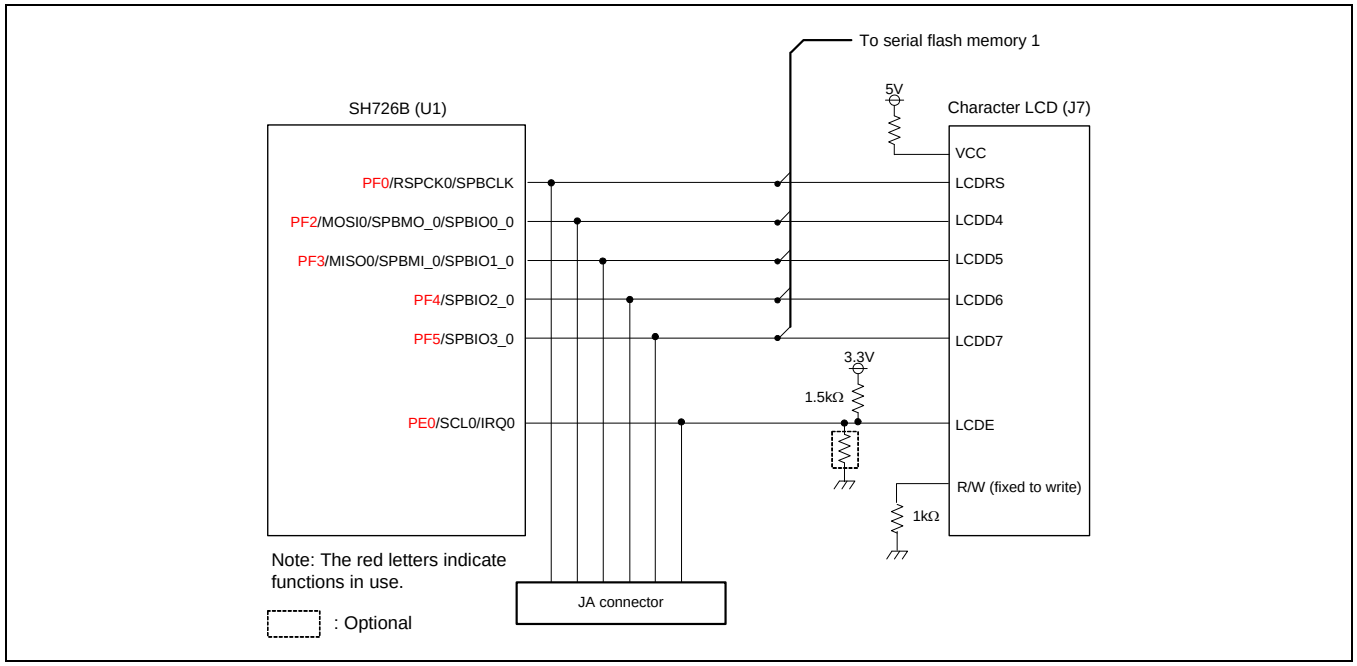



**Figure 2.13.1 Character LCD Module Block Diagram**

## 2.14 Audio Modules

The R0K5726B0C000BR includes a 96KHz 24-bit D/A converter with DIT, AK4353 by Asahi Kasei Microdevices Corp., and a stereo CODEC with speaker driver, WM8978 by Wolfson Microelectronics.

<AK4353 D/A converter>
Controlled by the SH726B IIC3, SSIF, and I/O ports.

- SH726B IIC3 (channel 2) : Accesses to the AK4353 register to set up functions such as initialization of the AK4353, data format, and attenuator setting
- SH726B SSIF (channel 2) : Outputs audio data
- SH726B I/O ports (PK0) : AK4353 power down is set at "Low" level, AK4353 power down is cancelled at "High" level

Figure 2.14.1 shows the D/A Converter Block Diagram.

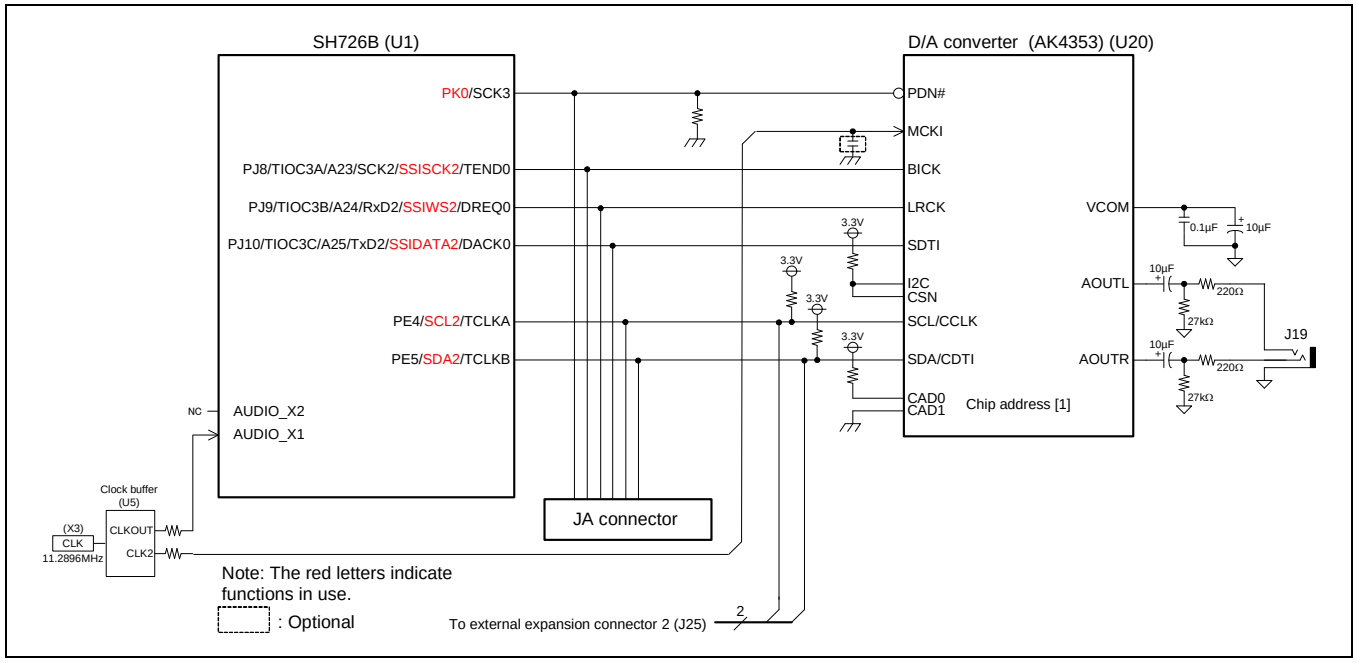



**Figure 2.14.1 D/A Converter Block Diagram**

<WM8978 Audio CODEC>
Controlled by the SH726B RSPI, SSIF, and I/O ports.

- SH726B RSPI (channel 0) : Accesses the WM8978 register to initialize the WM8979 and set the data format
- SH726B I/O port (PF7) : Outputs select signals when using the WM8978 SPI in three-wire more (MODE= 'H')
- SH726B SSIF (channel 0) : Inputs and outputs audio data

The RSPI channel 0 is also used for the serial flash memory 2 and the CD deck interface on the R0K5726B0C000BR. When accessing to the audio CODEC, the select signal should be output at the port PF7.
Figure 2.14.2 shows the Audio CODEC Block Diagram.

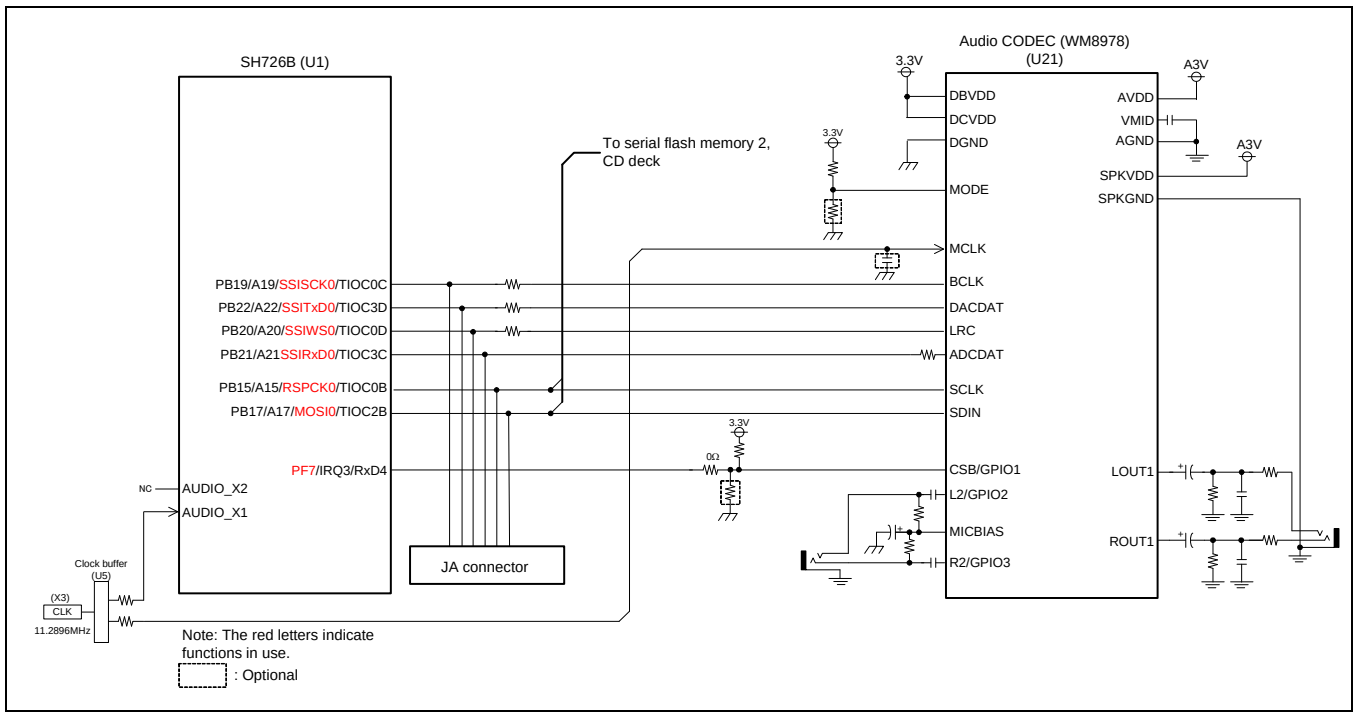



**Figure 2.14.2 Audio CODEC Block Diagram**

## 2.15 CD Deck Interface

The R0K5726B0C000BR includes a CD deck interface connector. The CD deck is controlled by the serial sound interface (SSIF) embedded in the SH726B and the Renesas serial peripheral interface (RSPI) and the general purpose I/O ports.
The SSIF channel 3 (PJ13 and PJ14) is shared with the CAN transceiver. When using the CD deck interface, the zero-ohm resistor should be changed. The CD deck interface and the CAN transceiver cannot be used at the same time.
The RSPI channel 0 is also used to control the serial flash memory 2 and the audio CODEC on the R0K5726B0C000BR. When accessing to the CD deck interface, the select signal should be output at the port PJ11.
The CD deck interface and the external expansion connector 1 (J22) cannot be used at the same time.
Figure 2.15.1 shows the CD Deck Interface Block Diagram.

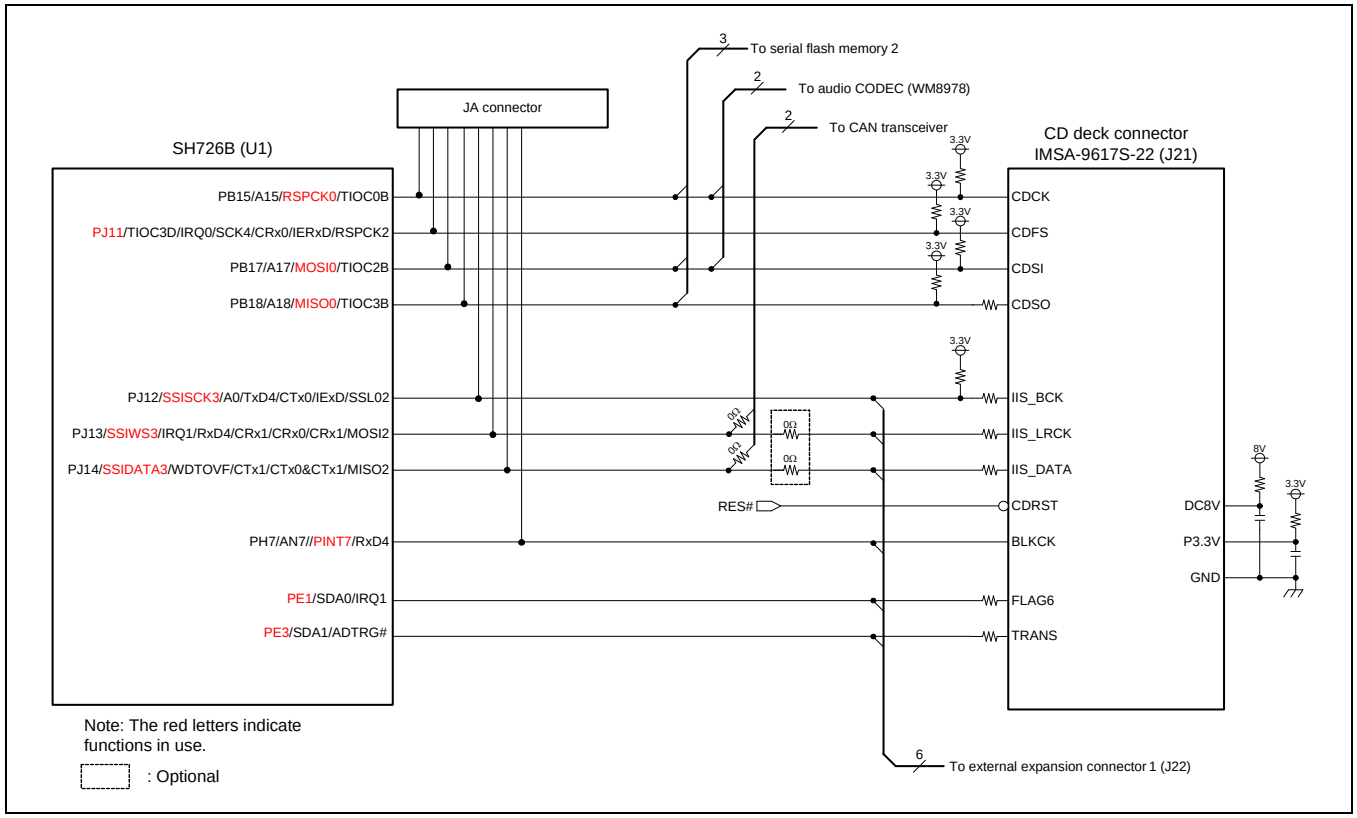



**Figure 2.15.1 CD Deck Interface Block Diagram**

## 2.16 SD Card Interface

The R0K5726B0C000BR includes an SD card slot which connects the SD host interface (SDHI) embedded in the SH726B and the SD card slot.
The SDHI pins are connected to the external expansion connector 1 (J22). When using the SD card interface, the external expansion connector 1 (J22) interface cannot be used.
Figure 2.16.1 shows the SD Card Interface Block Diagram.

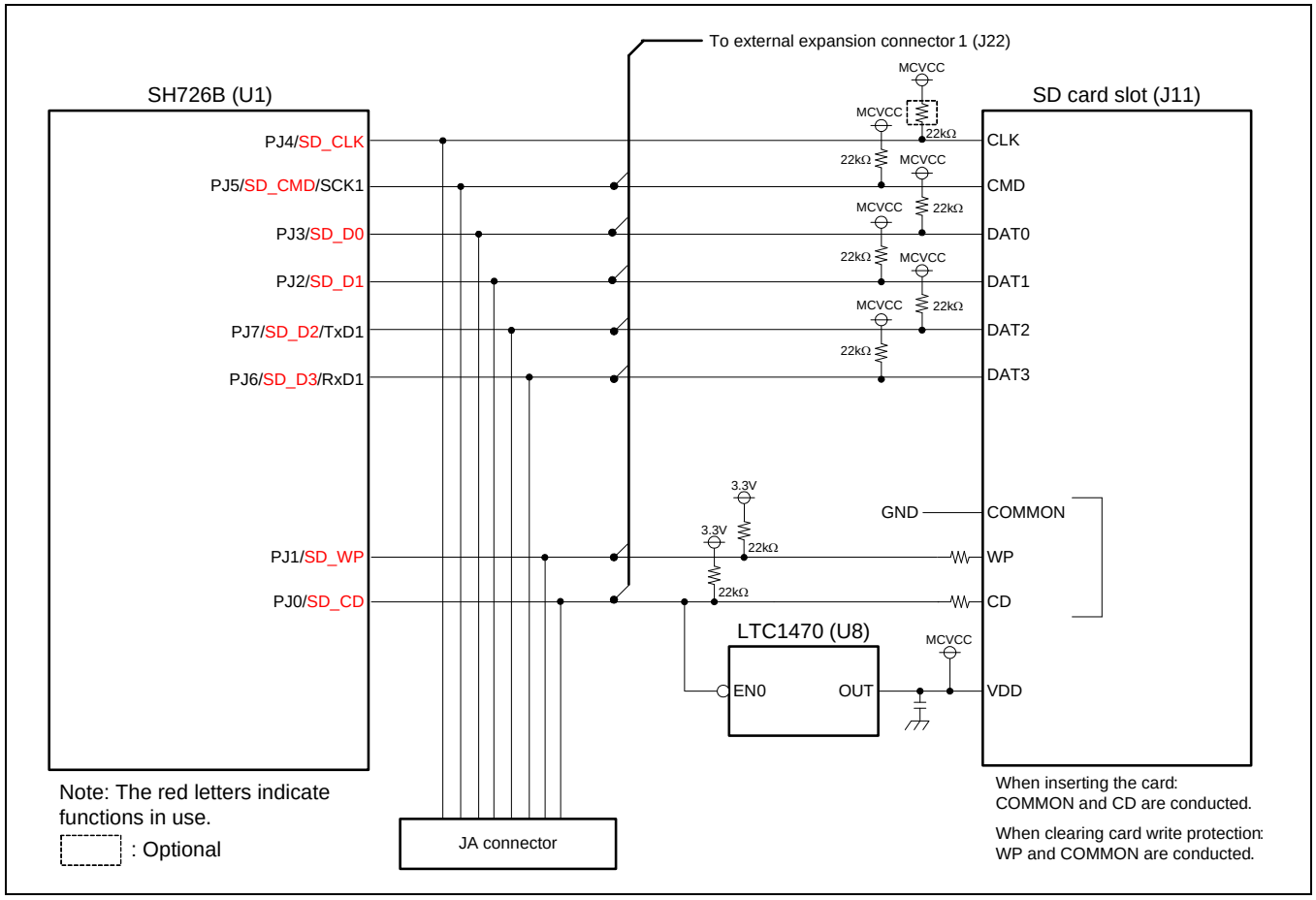



**Figure 2.16.1 SD Card Interface Block Diagram**

## 2.17 LAN Interface

The R0K5726B0C000BR includes an Ethernet controller, LAN9211 by SMSC, which enables the Ethernet communication with the SH726B bus state controller (BSC).
Figure 2.17.1 shows the LAN Interface Block Diagram.

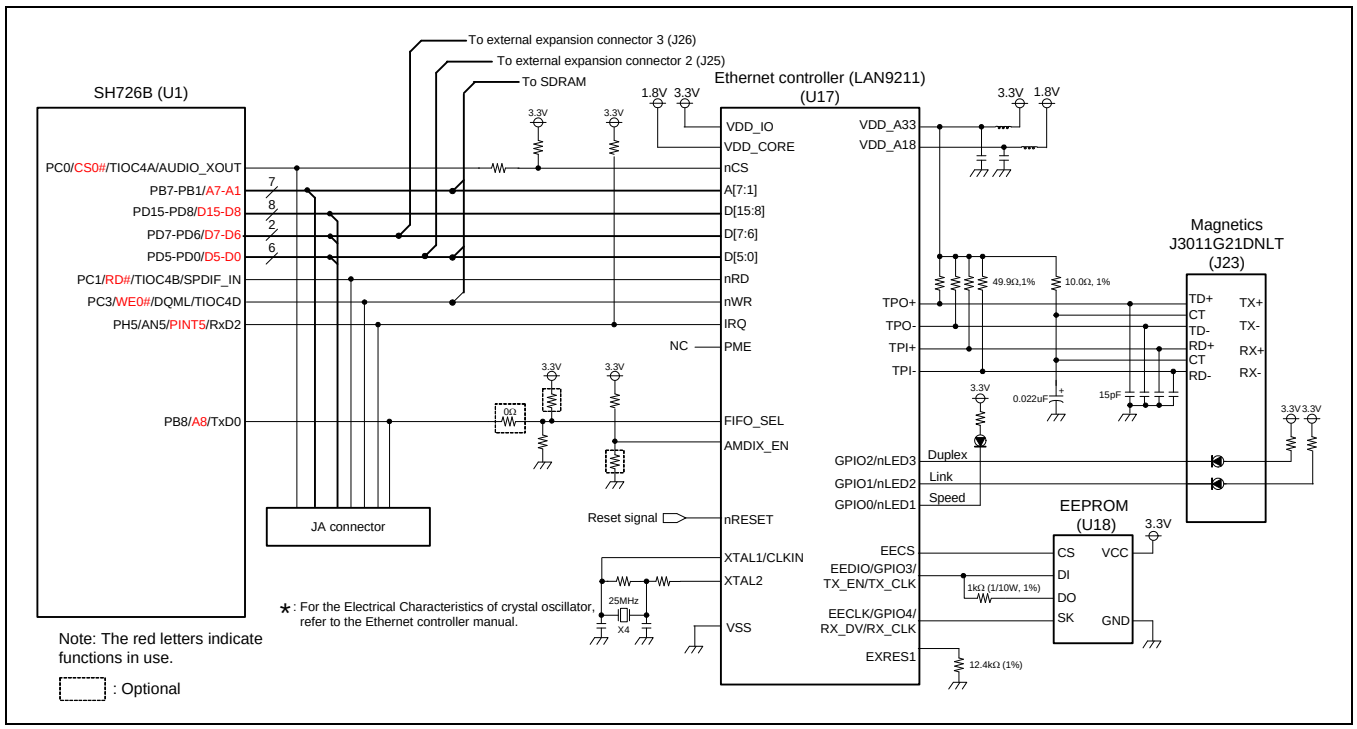



**Figure 2.17.1 LAN Interface Block Diagram**

## 2.18 External Expansion Connector 1 (J22) Interface

The R0K5726B0C000BR has the pattern that enables an external expansion connector 1 (J22) to be mounted, and connects the SH726B serial communication interface (SCIF), the serial sound interface (SSIF) and the general purpose I/O port.
The pins of the SCIF channel 1 are shared with the SD card interface. The SD card interface and the external expansion connector 1 (J22) cannot be used at the same time.
The SSIF channel 3 (PJ13 and PJ14) are shared with the CAN transceiver. When using the external expansion connector 1 (J22) interface, the zero-ohm resistor should be changed. The external expansion connector 1 (J22) interface and the CAN transceiver cannot be used at the same time. The CD deck interface and the external expansion connector 1 (J22) interface cannot also be used at the same time.
Figure 2.18.1 shows the External Expansion Connector 1 (J22) Interface Block Diagram.

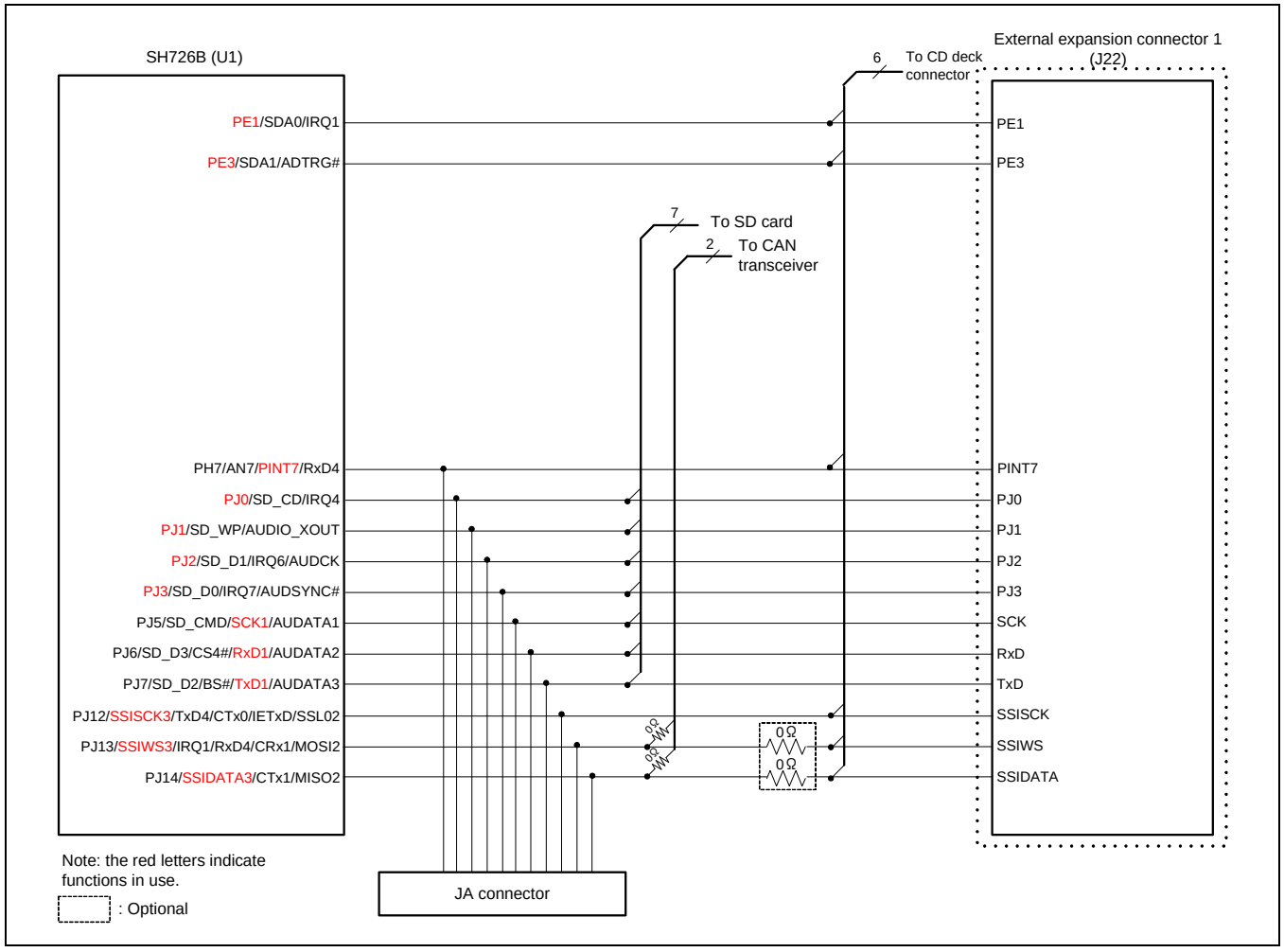



**Figure 2.18.1 External Expansion Connector 1 (J22) Interface Block Diagram**

## 2.19 External Expansion Connector 2 (J25) Interface

The R0K5726B0C000BR has the pattern that enables an external expansion connector 2 (J25) to be mounted, and connects the SH726B serial communication interface (SCIF), the serial sound interface (SSIF) and the I2C bus interface 3 (IIC3). The pins of the SCIF channel 1 and the SSIF channel 1 are shared with the SDRAM. The SDRAM and the external expansion connector 2 (J25) interface cannot be used at the same time.
Figure 2.19.1 shows the External Expansion Connector 2 (J25) Interface Block Diagram.

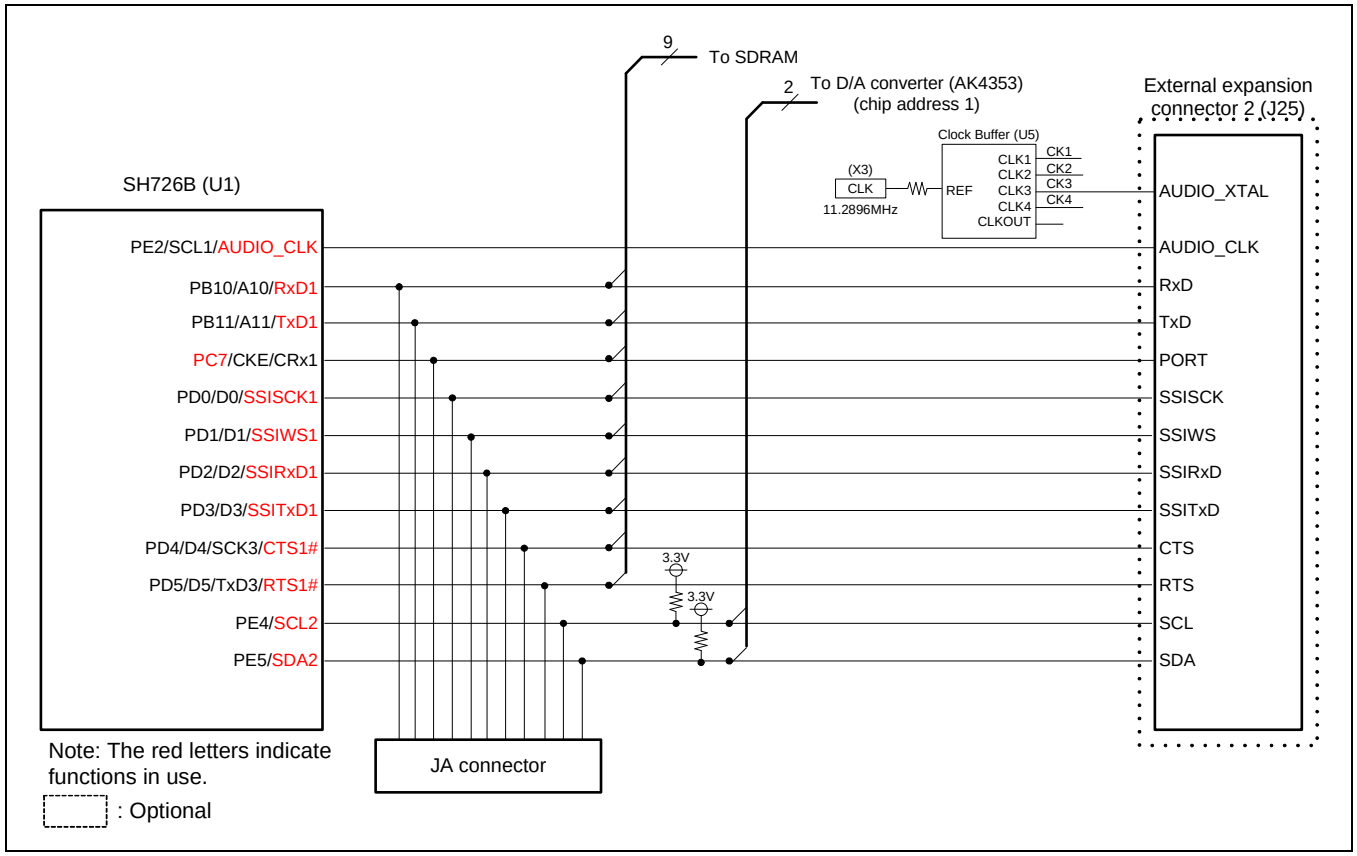



**Figure 2.19.1 External Expansion Connector 2 (J25) Interface Block Diagram**

## 2.20 External Expansion Connector 3 (J26) Interface

The R0K5726B0C000BR has the pattern that enables an external expansion connector 3 (J26) to be mounted, and connects the SH726B serial communication interface (SCIF) and the general purpose I/O ports (PC1 to PC6).
The pins of the SCIF channel 2 and the port C are shared with the SDRAM and the LAN interface. The SDRAM or the LAN interface and the external expansion connector 3 (J26) interface cannot be used at the same time.
Figure 2.20.1 shows the External Expansion Connector 3 (J26) Interface Block Diagram.

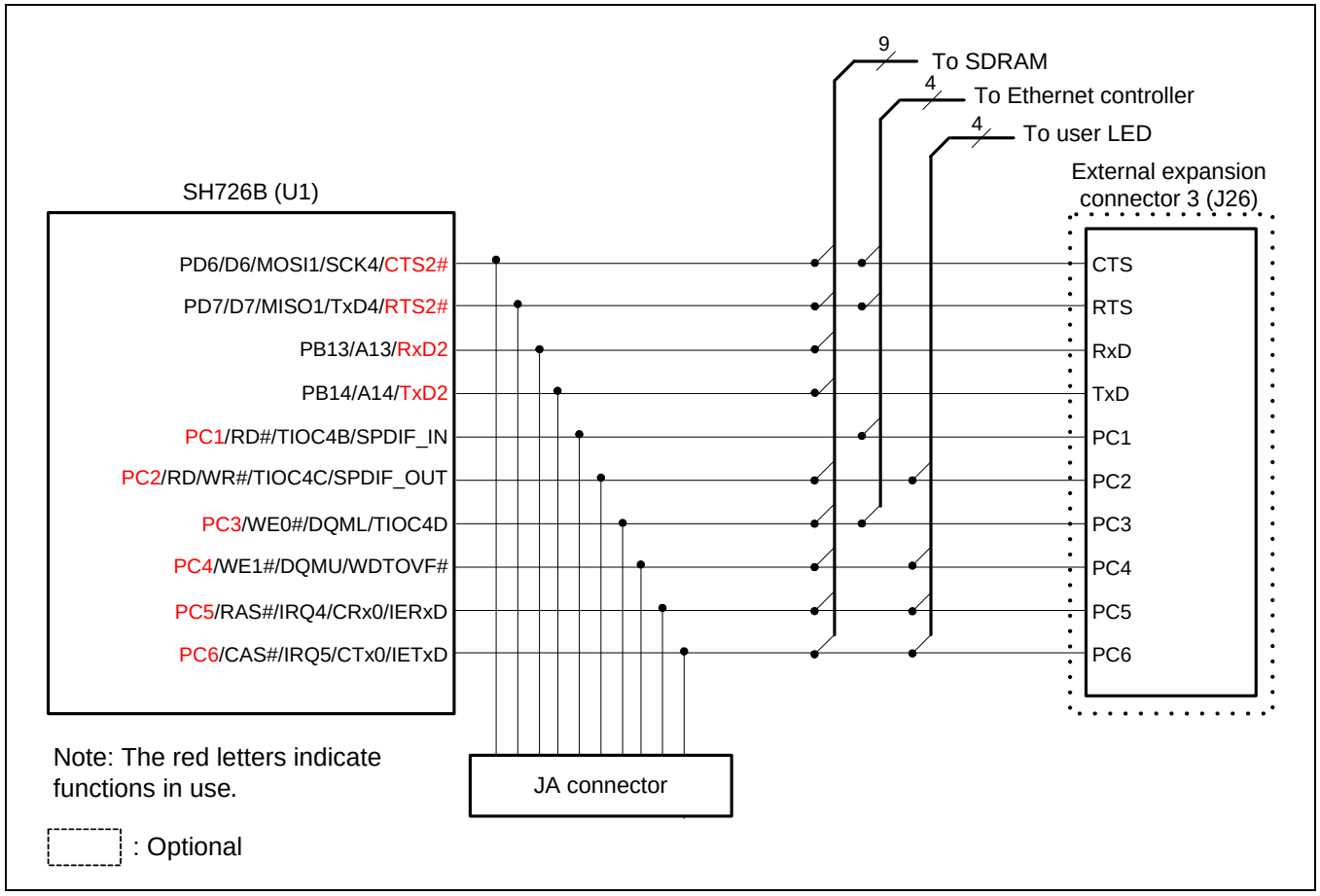



**Figure 2.20.1 External Expansion Connector 3 (J26) Interface Block Diagram**

This page intentionally left blank.

# 3. Operational Specification

## 3.1 Connector Overview

Figure 3.1 shows the R0K5726B0C000BR Connector Assignments.

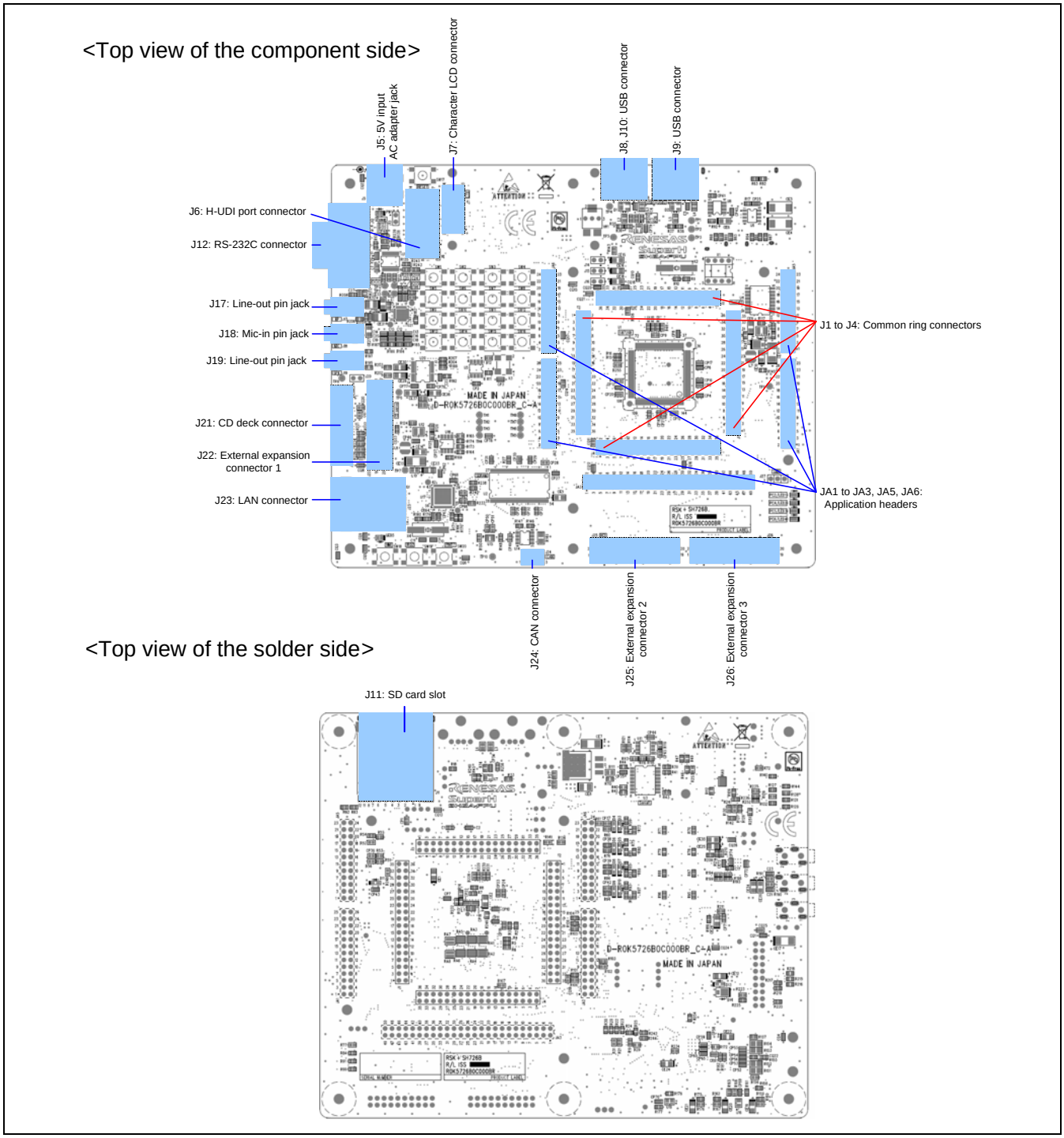



**Figure 3.1 R0K5726B0C000BR Connector Assignments**

### 3.1.1 Application Headers (JA1, JA2, JA3, JA5 and JA6)

The R0K5726B0C000BR includes through-holes for mounting application headers (JA1, JA2, JA3, JA5 and JA6) connected to the SH726B I/O ports. These application headers can be used by connecting to an expansion board when mounting standard MIL connectors.
Figure 3.2 shows the Application Header Pin Assignments (Top View of the Component Side).

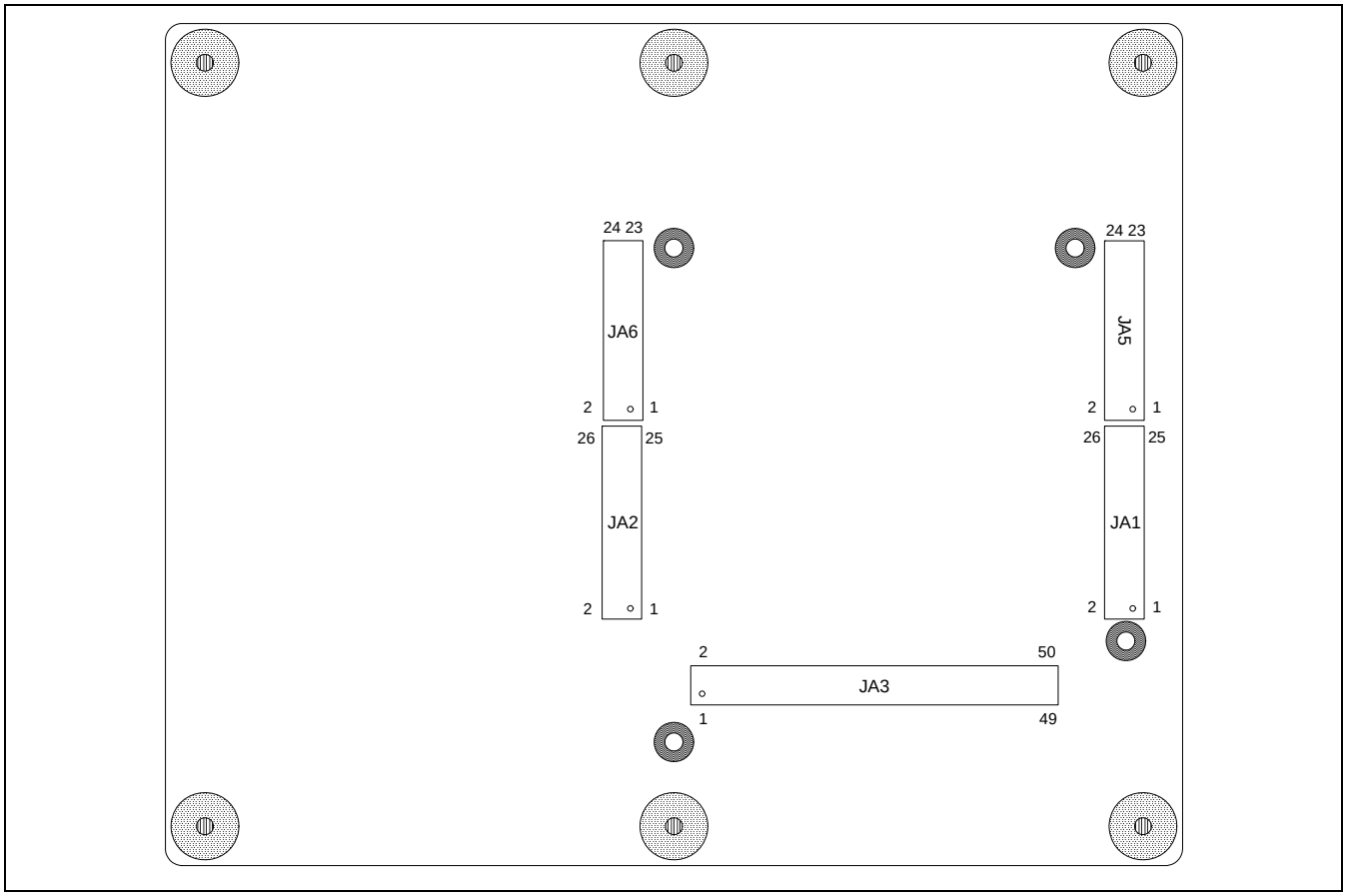



**Figure 3.2 Application Header Pin Assignments (Top View of the Component Side)**

Table 3.1 lists the Application Header (JA1) Pin Descriptions.

**Table 3.1 Application Header (JA1) Pin Descriptions**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 1 | 5VCC | 5VCC |
| 2 | GND | GND |
| 3 | 3VCC | 3VCC |
| 4 | GND | GND |
| 5 | AVcc | AVcc |
| 6 | AVss | AVss |
| 7 | AVref | AVref |
| 8 | PE3/SDA1/ADTRG# | ADTRG# |
| 9 | PH0/AN0/IRQ0/VBUS | AN0 |
| 10 | PH1/AN1/IRQ1/RxD0 | AN1 |
| 11 | PH2/AN2/IRQ2/WAIT# | AN2 |
| 12 | PH3/AN3/IRQ3 | AN3 |
| 13 | NC | - |
| 14 | NC | - |
| 15 | PF0/RSPCK0/SPBCLK | PF0 |
| 16 | PF1/SSL00/SPBSSL | PF1 |
| 17 | PF2/MOSI0/SPBMO_0/SPBIO0_0 | PF2 |
| 18 | PF3/MISO0/SPBMI_0/SPBIO1_0 | PF3 |
| 19 | PF4/SPBIO2_0 | PF4 |
| 20 | PF5/SPBIO3_0 | PF5 |
| 21 | PJ2/SD_D1/IRQ6/AUDCK | PJ2 |
| 22 | PJ3/SD_D0/IRQ7/AUDSYNC# | PJ3 |
| 23 | PJ11/TIOC3D/IRQ0/SCK4/CRx0/IERxD/RSPCK2 | IRQ0 |
| 24 | NC | - |
| 25 | PE7/SDA3/TCLKD | SDA3 |
| 26 | PE6/SCL3/TCLKC | SCL3 |

Table 3.2 lists the Application Header (JA2) Pin Descriptions.

**Table 3.2 Application Header (JA2) Pin Descriptions**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 1 | RESET | |
| 2 | EXTAL | EXTAL |
| 3 | NMI | NMI |
| 4 | GND | GND |
| 5 | PJ14/SSIDATA3/WDTOVF#/CTx1/CTx0&CTx1/MISO2 | WDTOVF# |
| 6 | PJ7/SD_D2/BS#/TxD1/AUDATA3 | TxD1 |
| 7 | PF6/IRQ2/RxD3,<br>PD8/D8/SD_CD/TIOC0A | IRQ2,<br>TIOC0A |
| 8 | PJ6/SD_D3/CS4#/RxD1/AUDATA2 | RxD1 |
| 9 | PH4/AN4/PINT4/RxD1,<br>PB15/A15/RSPCK0/TIOC0B | PINT4,<br>TIOC0B |
| 10 | PJ5/SD_CMD/SCK1/AUDATA1 | SCK1 |
| 11 | PJ4/SD_CLK/CS1#/AUDATA0 | PJ4 |
| 12 | NC | - |
| 13 | PJ9/TIOC3B/A24/RxD2/SSIWS2/DREQ0 | TIOC3B |
| 14 | PJ11/TIOC3D/IRQ0/SCK4/CRx0/IERxD/RSPCK2 | TIOC3D |
| 15 | PC0/CS0#/TIOC4A/AUDIO_XOUT | TIOC4A |
| 16 | PC2/RD/WR#/TIOC4C/SPDIF_OUT | TIOC4C |
| 17 | PC1/RD#/TIOC4B/SPDIF_IN | TIOC4B |
| 18 | PC3/WE0#/DQML/TIOC4D | TIOC4D |
| 19 | PB16/A16/SSL00/TIOC1B | TIOC1B |
| 20 | PD10/D10/SD_D1/TIOC2A | TIOC2A |
| 21 | PE4/SCL2/TCLKA | TCLKA |
| 22 | PE5/SDA2/TCLKB | TCLKB |
| 23 | PH5/AN5/PINT5/RxD2,<br>PD9/D9/SD_WP/TIOC1A,<br>PB19/A19/SSISCK0/TIOC0C | PINT5,<br>TIOC1A,<br>TIOC0C |
| 24 | NC | - |
| 25 | PE6/SCL3/TCLKC | TCLKC |
| 26 | PE7/SDA3/TCLKD | TCLKD |

Table 3.3 and Table 3.4 list the Application Header (JA3) Pin Descriptions.

**Table 3.3 Application Header (JA3) Pin Descriptions (1)**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 1 | PJ12/SSISCK3/A0/TxD4/CTx0/IETxD/SSL20 | A0 |
| 2 | PB1/A1/SSISCK3 | A1 |
| 3 | PB2/A2/SSIWS3 | A2 |
| 4 | PB3/A3/SSIDATA3 | A3 |
| 5 | PB4/A4/CTS0# | A4 |
| 6 | PB5/A5/RTS0# | A5 |
| 7 | PB6/A6/SCK0/SSISCK2 | A6 |
| 8 | PB7/A7/RxD0 | A7 |
| 9 | PB8/A8/TxD0 | A8 |
| 10 | PB9/A9/SCK1/SSIWS2 | A9 |
| 11 | PB10/A10/RxD1 | A10 |
| 12 | PB11/A11/TxD1 | A11 |
| 13 | PB12/A12/SCK2/SSIDATA2 | A12 |
| 14 | PB13/A13/RxD2 | A13 |
| 15 | PB14/A14/TxD2 | A14 |
| 16 | PB15/A15/RSPCK0/TIOC0B | A15 |
| 17 | PD0/D0/SSISCK1/SIOFSCK/SPBMO_1/SPBIO0_1 | D0 |
| 18 | PD1/D1/SSIWS1/SIOFSYNC/SPBMI_1/SPBIO1_1 | D1 |
| 19 | PD2/D2/SSIRxD1/SIOFRxD/SPBIO2_1 | D2 |
| 20 | PD3/D3/SSITxD1/SIOFTxD/SPBIO3_1 | D3 |
| 21 | PD4/D4/RSPCK1/SCK3/CTS1# | D4 |
| 22 | PD5/D5/SSL10/TxD3/RTS1# | D5 |
| 23 | PD6/D6/MOSI1/SCK4/CTS2# | D6 |
| 24 | PD7/D7/MISO1/TxD4/RTS2# | D7 |
| 25 | PC1/RD#/TIOC4B/SPDIF_IN | RD# |
| 26 | PC2/RD/WR#/TIOC4C/SPDIF_OUT | RD/WR# |
| 27 | PC0/CS0#/TIOC4A/AUDIO_XOUT | CS0# |
| 28 | PJ1/SD_WP/CS2#/IRQ5/AUDIO_XOUT | CS2# |
| 29 | PD8/D8/SD_CD/TIOC0A | D8 |
| 30 | PD9/D9/SD_WP/TIOC1A | D9 |
| 31 | PD10/D10/SD_D1/TIOC2A | D10 |
| 32 | PD11/D11/SD_D0/TIOC3A | D11 |
| 33 | PD12/D12/SD_CLK/IRQ2 | D12 |
| 34 | PD13/D13/SD_CMD/IRQ3 | D13 |
| 35 | PD14/D14/SD_D3 | D14 |
| 36 | PD15/D15/SD_D2 | D15 |

**Table 3.4 Application Header (JA3) Pin Descriptions (2)**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 37 | PB16/A16/SSL00/TIOC1B | A16 |
| 38 | PB17/A17/MOSI0/TIOC2B | A17 |
| 39 | PB18/A18/MISO0/TIOC3B | A18 |
| 40 | PB19/A19/SSISCK0/TIOC0C | A19 |
| 41 | PB20/A20/SSIWS0/TIOC0D | A20 |
| 42 | PB21/A21/SSIRxD0/TIOC3C | A21 |
| 43 | PB22/A22/SSITxD0/TIOC3D | A22 |
| 44 | CKIO | CKIO |
| 45 | PC8/CS3#/IRQ7/CTx1/CTx0&CTx1,<br>PH2/AN2/IRQ2/WAIT# | CS3#,<br>WAIT# |
| 46 | PC7/CKE/IRQ6/CRx1/CRx0/CRx1 | CKE |
| 47 | PC4/WE1#/DQMU/WDTOVF# | WE1#,<br>DQMU |
| 48 | PC3/WE0#/DQML/TIOC4D | WE0#,<br>DQML |
| 49 | PC6/CAS#/IRQ5/CTx0/IETxD | CAS# |
| 50 | PC5/RAS#/IRQ4/CRx0/IERxD | RAS# |

Table 3.5 lists the Application Header (JA5) Pin Descriptions.

**Table 3.5 Application Header (JA5) Pin Descriptions**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 1 | PH4/AN4/PINT4/RxD1 | AN4 |
| 2 | PH5/AN5/PINT5/RxD2 | AN5 |
| 3 | PH6/AN6/PINT6/RxD3 | AN6 |
| 4 | PH7/AN7/PINT7/RxD4 | AN7 |
| 5 | PC6/CAS#/IRQ5/CTx0/IETxD | CTx0 |
| 6 | PC5/RAS#/IRQ4/CRx0/IERxD | CRx0 |
| 7 | PJ14/SSIDATA3/WDTOVF#/CTx1/CTx0&CTx1/MISO2 | CTx1 |
| 8 | PJ13/SSIWS3/IRQ1/RxD4/CRx1/CRx0/CRx1/MOSI2 | CRx1 |
| 9 | PJ0/SD_CD/IRQ4 | IRQ4 |
| 10 | PJ1/SD_WP/CS2#/IRQ5/AUDIO_XOUT | IRQ5 |
| 11 | NC | - |
| 12 | NC | - |
| 13 | NC | - |
| 14 | NC | - |
| 15 | NC | - |
| 16 | NC | - |
| 17 | NC | - |
| 18 | NC | - |
| 19 | NC | - |
| 20 | NC | - |
| 21 | NC | - |
| 22 | NC | - |
| 23 | NC | - |
| 24 | NC | - |

Table 3.6 lists the Application Header (JA6) Pin Descriptions.

**Table 3.6 Application Header (JA6) Pin Descriptions**

| Pin No. | Signal name | Function in use |
|---|---|---|
| 1 | PJ9/TIOC3B/A24/RxD2/SSIWS2/DREQ0 | DREQ0 |
| 2 | PJ10/TIOC3C/A25/TxD2/SSIDATA2/DACK0 | DACK0 |
| 3 | PJ8/TIOC3A/A23/SCK2/SSISCK2/TEND0 | TEND0 |
| 4 | NC | - |
| 5 | - | RS232TX |
| 6 | - | RS232RX |
| 7 | PB13/A13/RxD2 | RxD2 |
| 8 | PB14/A14/TxD2 | TxD2 |
| 9 | PK1/TxD3/RTC_X2 | TxD3 |
| 10 | PB12/A12/SCK2/SSIDATA2 | SCK2 |
| 11 | PK0/SCK3/RTC_X1 | SCK3 |
| 12 | PH6/AN6/PINT6/RxD3 | RxD3 |
| 13 | PD11/D11/SD_D0/TIOC3A | TIOC3A |
| 14 | NC | - |
| 15 | NC | - |
| 16 | NC | - |
| 17 | NC | - |
| 18 | NC | - |
| 19 | NC | - |
| 20 | NC | - |
| 21 | NC | - |
| 22 | NC | - |
| 23 | - | 5VCC |
| 24 | - | GND |

### 3.1.2 Common Ring Connectors (J1, J2, J3 and J4)

The R0K5726B0C000BR has through-holes (J1, J2, J3 and J4) for mounting common ring connectors which are connected to all signals of the SH726B. The through-holes can be connected to a standard MIL connector, and also used for monitoring the SH726B signals.
Figure 3.3 shows the Common Ring Connector Pin Assignments (Top view of the component side), and Table 3.7 to Table 3.10 list the Common Ring Connector Pin Descriptions.

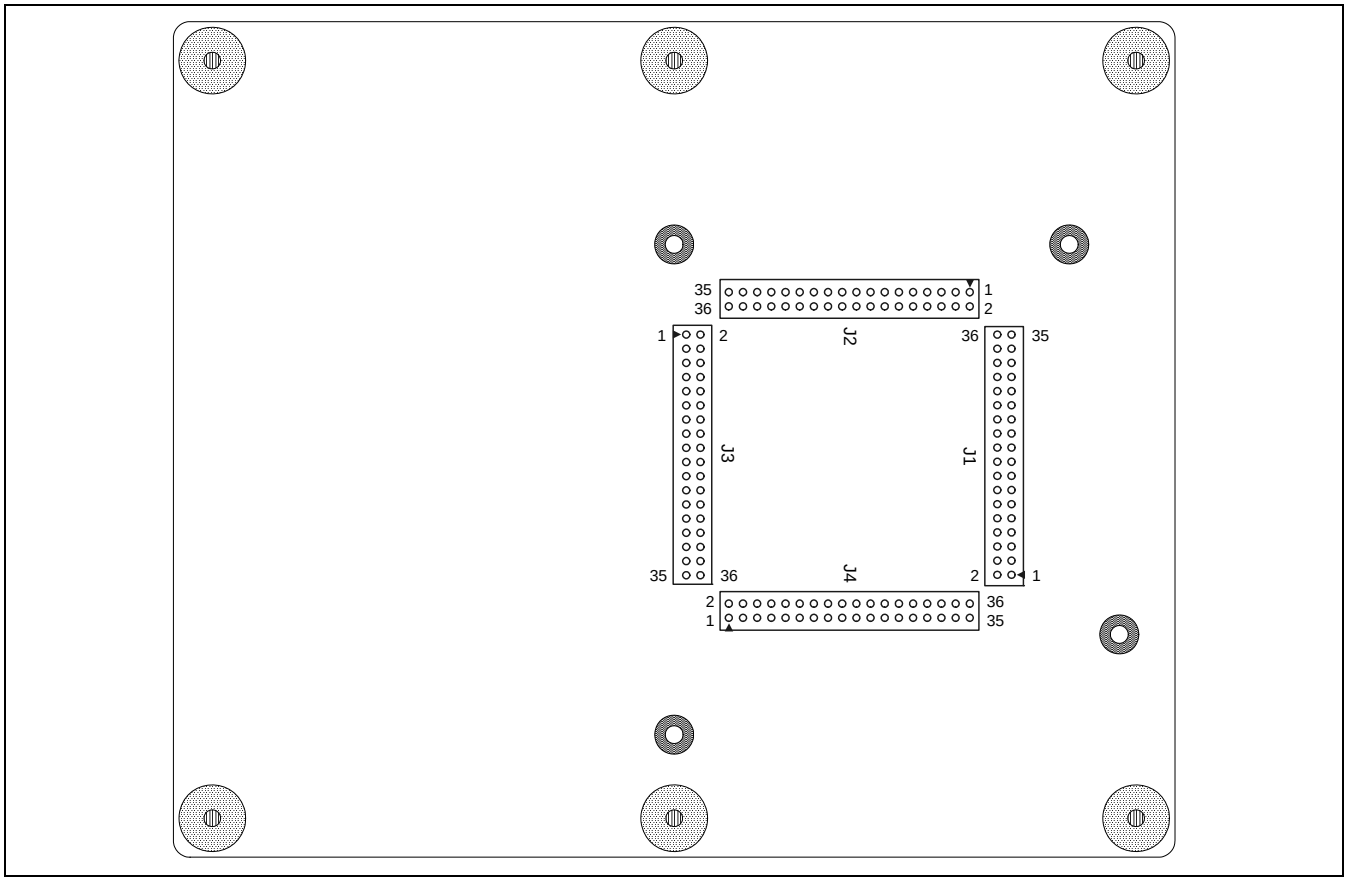



**Figure 3.3 Common Ring Connector Pin Assignments (Top view of the component side)**

**Table 3.7 Common Ring Connector (J1) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | PD14/D14/SD_D3 | 2 | PD15/D15/SD_D2 |
| 3 | PVcc | 4 | PB1/A1/SSISCK3 |
| 5 | Vss | 6 | PB2/A2/SSIWS3 |
| 7 | PB3/A3/SSIDATA3 | 8 | PB4/A4/CTS0# |
| 9 | PJ6/SD_D3/CS4#/RxD1/AUDATA2 | 10 | PJ7/SD_D2/BS#/TxD1/AUDATA3 |
| 11 | PVcc | 12 | PB5/A5/RTS0# |
| 13 | Vss | 14 | PB6/A6/SCK0/SSISCK2 |
| 15 | Vcc | 16 | PB7/A7/RxD0 |
| 17 | PB8/A8/TxD0 | 18 | PB9/A9/SCK1/SSIWS2 |
| 19 | PJ8/TIOC3A/A23/SCK2/SSISCK2/TEND0 | 20 | PJ9/TIOC3B/A24/RxD2/SSIWS2/DREQ0 |
| 21 | PJ10/TIOC3C/A25/TxD2/SSIDATA2/DACK0 | 22 | PVcc |
| 23 | PB10/A10/RxD1 | 24 | Vss |
| 25 | PB11/A11/TxD1 | 26 | Vcc |
| 27 | PB12/A12/SCK2/SSIDATA2 | 28 | PB13/A13/RxD2 |
| 29 | PB14/A14/TxD2 | 30 | PB15/A15/RSPCK0/TIOC0B |
| 31 | PB16/A16/SSL00/TIOC1B | 32 | PB17/A17/MOSI0/TIOC2B |
| 33 | PB18/A18/MISO0/TIOC3B | 34 | PVcc |
| 35 | PB19/A19/SSISCK0/TIOC0C | 36 | Vss |

**Table 3.8 Common Ring Connector (J2) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | PB20/A20/SSIWS0/TIOC0D | 2 | PB21/A21/SSIRxD0/TIOC3C |
| 3 | PB22/A22/SSITxD0/TIOC3D | 4 | PK0/SCK3/RTC_X1 |
| 5 | PK1/TxD3/RTC_X2 | 6 | PF6/IRQ2/RxD3 |
| 7 | PF7/IRQ3/RxD4 | 8 | PVcc |
| 9 | CKIO | 10 | Vss |
| 11 | RES# | 12 | Vss |
| 13 | PLLVcc | 14 | NMI |
| 15 | Vcc | 16 | EXTAL *1 |
| 17 | XTAL *1 | 18 | Vss |
| 19 | PG2/DM1/PINT2 *1 | 20 | PG3/DP1/PINT3 *1 |
| 21 | Vss | 22 | PVcc |
| 23 | PG0/DM0/PINT0 *1 | 24 | PG1/DP0/PINT1 *1 |
| 25 | ASEMD# | 26 | PH0/AN0/IRQ0/VBUS |
| 27 | PH1/AN1/IRQ1/RxD0 | 28 | PH2/AN2/IRQ2/WAIT# |
| 29 | PH3/AN3/IRQ3 | 30 | PH4/AN4/PINT4/RxD1 |
| 31 | PH5/AN5/PINT5/RxD2 | 32 | AVss |
| 33 | PH6/AN6/PINT6/RxD3 | 34 | AVcc |
| 35 | PH7/AN7/PINT7/RxD4 | 36 | AVref |

[Note] *1: These pins are connected to through-holes via zero-ohm resistor (Not installed by default)

**Table 3.9 Common Ring Connector (J3) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | TRST# | 2 | ASEBRKAK#/ASEBRK# |
| 3 | TDO | 4 | TDI |
| 5 | TMS | 6 | TCK |
| 7 | AUDIO_X2 *1 | 8 | AUDIO_X1 *1 |
| 9 | PVcc | 10 | PF0/RSPCK0/SPBCLK |
| 11 | Vss | 12 | PF1/SSL00/SPBSSL |
| 13 | PF2/MOSI0/SPBMO_0/SPBIO0_0 | 14 | PF3/MISO0/SPBMI_0/SPBIO1_0 |
| 15 | PJ11/TIOC3D/IRQ0/SCK4/CRx0/IERxD/ RSPCK2 | 16 | PJ12/SSISCK3/A0/TxD4/CTx0/IETxD/SSL20 |
| 17 | PVcc | 18 | PF4/SPBIO2_0 |
| 19 | Vss | 20 | PF5/SPBIO3_0 |
| 21 | Vcc | 22 | PA0/MD_CLK |
| 23 | PA1/MD_BOOT | 24 | PJ13/SSIWS3/IRQ1/RxD4/CRx1/ CRx0/CRx1/MOSI2 |
| 25 | PJ14/SSIDATA3/WDTOVF#/CTx1/ CTx0&CTx1/MISO2 | 26 | PJ0/SD_CD/IRQ4 |
| 27 | PC0/CS0#/TIOC4A/AUDIO_XOUT | 28 | PVcc |
| 29 | PC1/RD#/TIOC4B/SPDIF_IN | 30 | Vss |
| 31 | PC2/RD/WR#/TIOC4C/SPDIF_OUT | 32 | Vcc |
| 33 | PC3/WE0#/DQML/TIOC4D | 34 | PC4/WE1#/DQMU/WDTOVF# |
| 35 | PC5/RAS#/IRQ4/CRx0/IERxD | 36 | PC6/CAS#/IRQ5/CTx0/IETxD |

[Note] *1: These pins are connected to through-holes via zero-ohm resistor (Not installed by default)

**Table 3.10 Common Ring Connector (J4) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | PE0/SCL0/IRQ0 | 2 | PE1/SDA0/IRQ1 |
| 3 | PE2/SCL1/AUDIO_CLK | 4 | PE3/SDA1/ADTRG# |
| 5 | PE4/SCL2/TCLKA | 6 | PE5/SDA2/TCLKB |
| 7 | PE6/SCL3/TCLKC | 8 | PE7/SDA3/TCLKD |
| 9 | PC7/CKE/IRQ6/CRx1/CRx0/CRx1 | 10 | Vss |
| 11 | PVcc | 12 | PC8/CS3#/IRQ7/CTx1/CTx0&CTx1 |
| 13 | PD0/D0/SSISCK1/SIOFSCK/SPBMO_1/ SPBIO0_1 | 14 | PD1/D1/SSIWS1/SIOFSYNC/SPBMI_1/ SPBIO1_1 |
| 15 | PD2/D2/SSIRxD1/SIOFRxD/SPBIO2_1 | 16 | PJ1/SD_WP/CS2#/IRQ5/AUDIO_XOUT |
| 17 | PJ2/SD_D1/IRQ6/AUDCK | 18 | PVcc |
| 19 | PD3/D3/SSITxD1/SIOFTxD/SPBIO3_1 | 20 | Vss |
| 21 | PD4/D4/RSPCK1/SCK3/CTS1# | 22 | Vcc |
| 23 | PD5/D5/SSL10/TxD3/RTS1# | 24 | PD6/D6/MOSI1/SCK4/CTS2# |
| 25 | PJ3/SD_D0/IRQ7/AUDSYNC# | 26 | PJ4/SD_CLK/CS1#/AUDATA0 |
| 27 | PJ5/SD_CMD/SCK1/AUDATA1 | 28 | PVcc |
| 29 | PD7/D7/MISO1/TxD4/RTS2# | 30 | Vss |
| 31 | PD8/D8/SD_CD/TIOC0A | 32 | PD9/D9/SD_WP/TIOC1A |
| 33 | PD10/D10/SD_D1/TIOC2A | 34 | PD11/D11/SD_D0/TIOC3A |
| 35 | PD12/D12/SD_CLK/IRQ2 | 36 | PD13/D13/SD_CMD/IRQ3 |

### 3.1.3 DC Power Jack (J5)

The R0K5726B0C000BR includes a DC power jack (J5).
Figure 3.4 shows the DC Power Jack (J5) Pin Assignments. Table 3.11 lists the DC Power Jack (J5) Pin Descriptions.

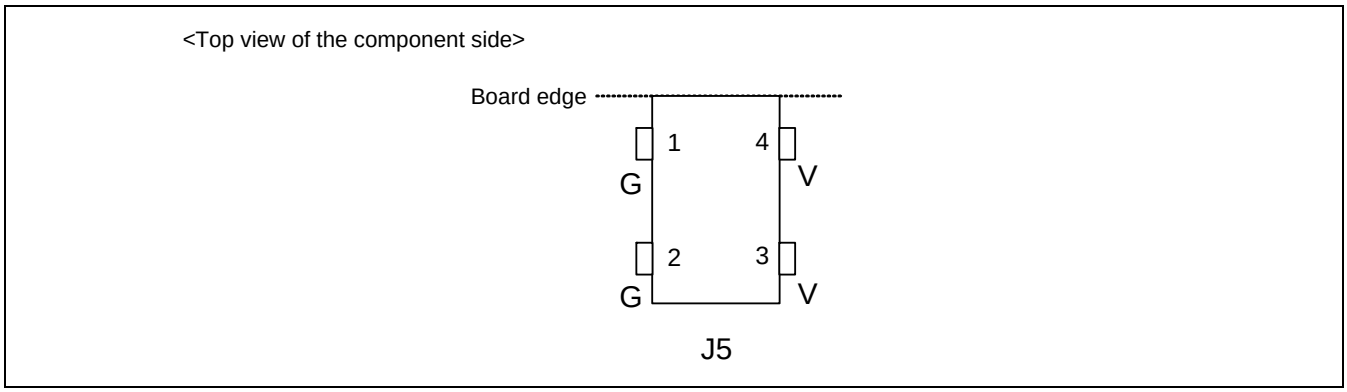



**Figure 3.4 DC Power Jack (J5) Pin Assignments**

**Table 3.11 DC Power Jack (J5) Pin Descriptions**

| Pin No. | Signal name |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | +5V |
| 4 | +5V |

### 3.1.4 H-UDI Port Connector (J6)

The R0K5726B0C000BR includes a14-pin H-UDI port connector (J6) to connect the E10A-USB emulator.
Figure 3.5 shows the H-UDI Port Connector (J6) Pin Assignments, and Table 3.12 lists the 14-pin H-UDI Port Connector (J6) Pin Descriptions.

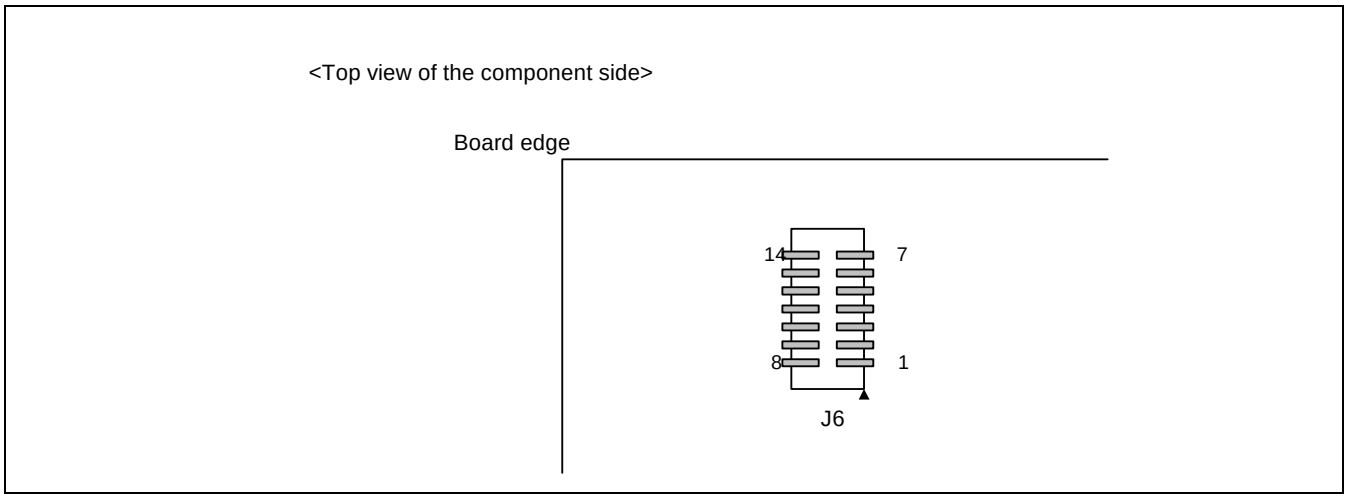



**Figure 3.5 H-UDI Port Connector (J6) Pin Assignments**

**Table 3.12 14-pin H-UDI Port Connector (J6) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | TCK | 8 | NC |
| 2 | TRST# | 9 | ASEMD# |
| 3 | TDO | 10 | GND |
| 4 | ASEBRKAK#/ASEBRK# | 11 | +3.3V |
| 5 | TMS | 12 | GND |
| 6 | TDI | 13 | GND |
| 7 | RES# | 14 | GND |

### 3.1.5 Character LCD connector (J7)

The R0K5726B0C000BR includes a character LCD connector (J7).
Figure 3.6 shows the Character LCD Connector (J7) Pin Assignments, and Table 3.13 lists the Character LCD Connector (J7) Pin Descriptions.

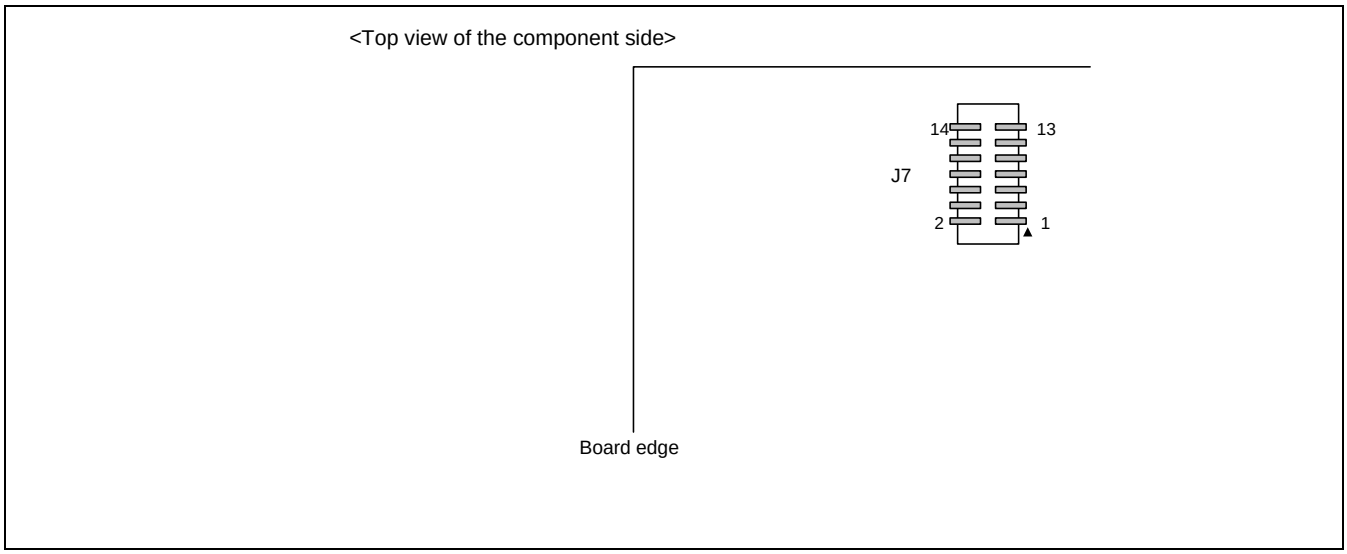



**Figure 3.6 Character LCD Connector (J7) Pin Assignments**

**Table 3.13 Character LCD Connector (J7) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | GND | 2 | +5V |
| 3 | NC | 4 | LCDRS (**PF0**/RSPCK0/SPBCLK) |
| 5 | LCDR/W (pull down with 1kΩ) | 6 | LCDE (**PE0**/SCL0/IRQ0) |
| 7 | NC | 8 | NC |
| 9 | NC | 10 | NC |
| 11 | LCDD4 (**PF2**/MOSI0/SPBMO_0/SPBIO0_0) | 12 | LCDD5 (**PF3**/MISO0/SPBMI_0/SPBIO1_0) |
| 13 | LCDD6 (**PF4**/SPBIO2_0) | 14 | LCDD7 (**PF5**/SPBIO3_0) |

Notes: Bold letter indicates setting functions.

### 3.1.6 USB Connector (J8, J9 and J10)

The R0K5726B0C000BR includes two Series A receptacles (J8 and J9). Also, it has a pattern which enables a Mini-B receptacle to be mounted.
When mounting the Mini-B receptacle, the series A receptacle (J8) should be removed, and a resistor is required to be reconnected. For more details, please refer to Chapter2, Figure2.4.1. Regarding to the implementable mini-B receptacle parts, please refer to Chapter 1, Table 1.2.
Figure 3.7 shows the Series A Receptacles (J8, J9) Pin Assignments. Table 3.14 and Table 3.15 list the pin descriptions for the series A receptacles and the Mini-B receptacle respectively.

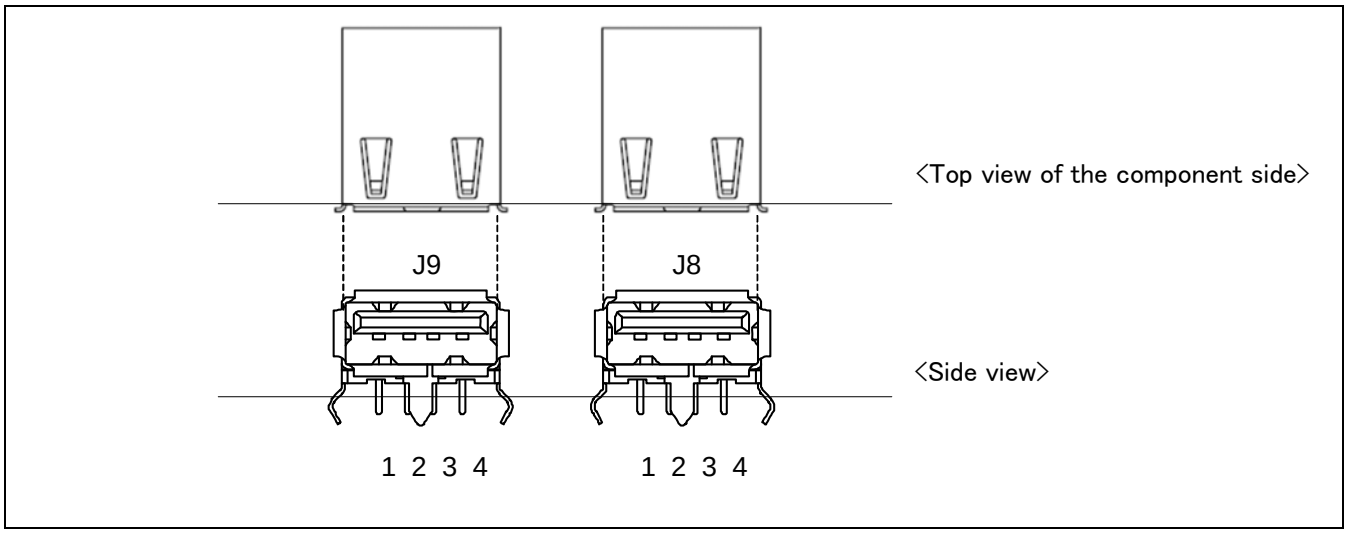



**Figure 3.7 Series A Receptacles (J8, J9) Pin Assignments**

**Table 3.14 Series A Receptacles (J8, J9) Pin Descriptions**

| Pin No. | Signal name |
|---|---|
| 1 | VBUS (PH0/AN0/IRQ0/**VBUS**) |
| 2 | DM (J8: PG0/**DM0**/PINT0, J9: PG2/**DM1**/PINT2) |
| 3 | DP (J8: PG1/**DP0**/PINT1, J9: PG3/**DP1**/PINT3) |
| 4 | GND |

Notes: Bold letter indicates setting functions.

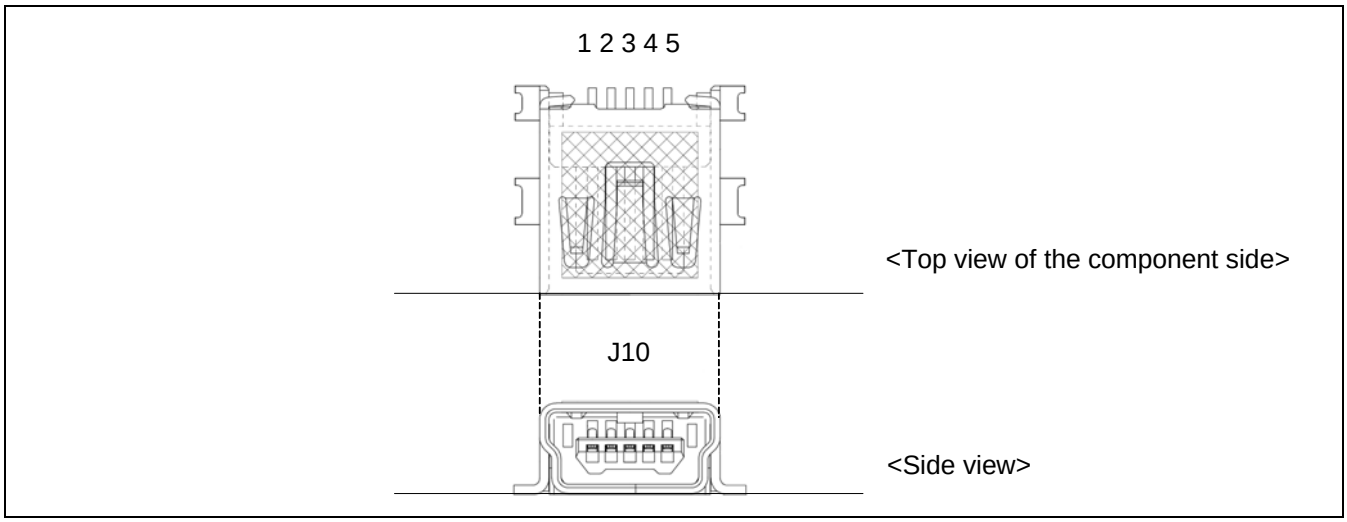



**Figure 3.8 Mini-B Receptacle (J10) Pin Assignments**

**Table 3.15 Mini-B Receptacle (J10) Pin Descriptions**

| Pin No. | Signal name |
|---|---|
| 1 | VBUS (PH0/AN0/IRQ0/**VBUS**) |
| 2 | DM (PG0/**DM0**/PINT0) |
| 3 | DP (PG1/**DP0**/PINT1) |
| 4 | ID (connected to a test pin TP4) |
| 5 | GND |

Notes: Bold letter indicates setting functions.

### 3.1.7 SD Card Slot (J11)

The R0K5726B0C000BR includes an SD card slot (J11).
Figure 3.9 shows the SD Card Slot (J11) Pin Assignments. Table 3.16 lists the SD Card Slot (J11) Pin Descriptions.

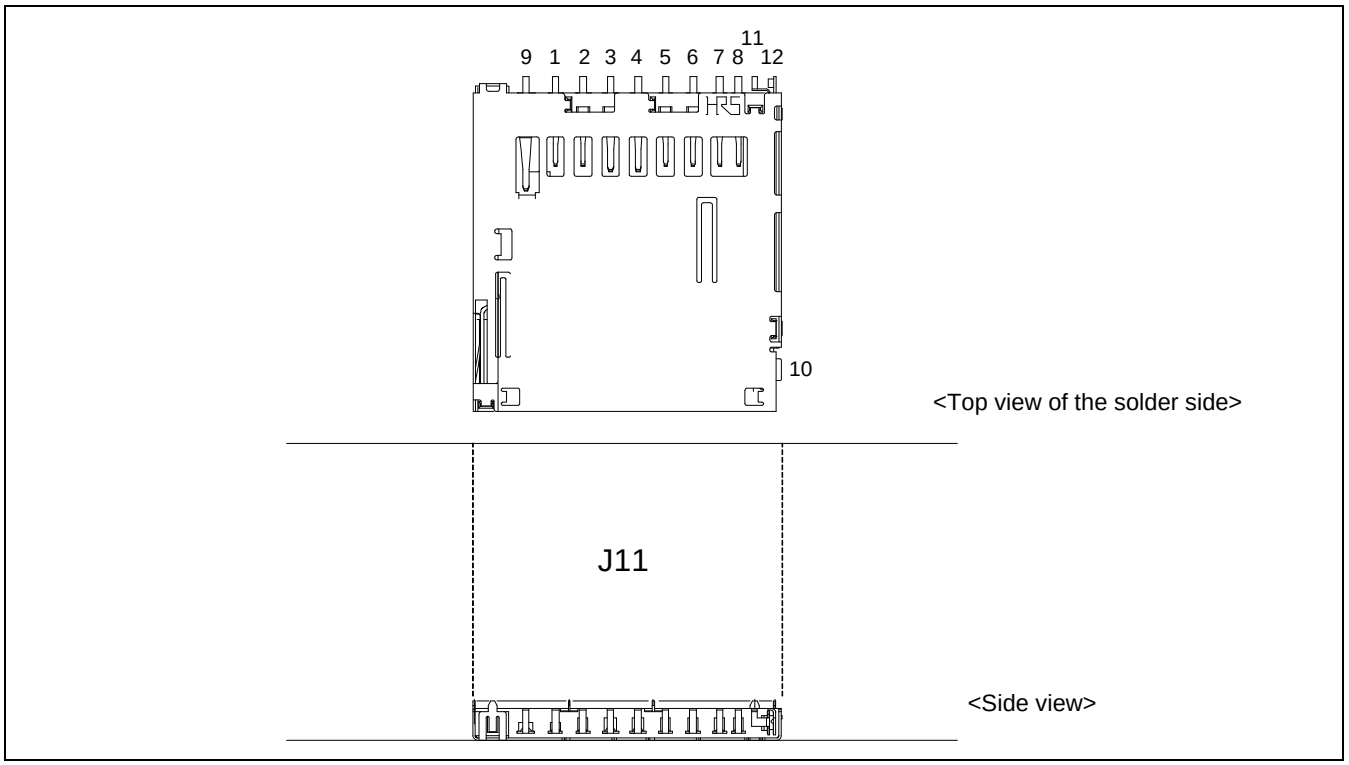



**Figure 3.9 SD Card Slot (J11) Pin Assignments**

**Table 3.16 SD Card Slot (J11) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | DAT3 (PJ6/**SD_D3**/CS4#/RxD1/AUDATA2) | 2 | CMD (PJ5/**SD_CMD**/SCK1/AUDATA1) |
| 3 | GND | 4 | +3.3V |
| 5 | CLK (PJ4/**SD_CLK**/CS1#/AUDATA0) | 6 | GND |
| 7 | DAT0 (PJ3/**SD_D0**/IRQ7/AUDSYNC#) | 8 | DAT1 (PJ2/**SD_D1**/IRQ6/AUDCK) |
| 9 | DAT2 (PJ7/**SD_D2**/BS#/TxD1/AUDATA3) | 10 | WP (PJ1/**SD_WP**/CS2#/IRQ5/AUDIO_XOUT) |
| 11 | CD (PJ0/**SD_CD**/IRQ4) | 12 | COMMON (GND) |

Notes: Bold letter indicates setting functions.

### 3.1.8 Serial Port Connector (J12)

The R0K5726B0C000BR includes a serial port connector (J12).
The cable connection to the serial port connector (J12) can be changed by shifting the zero-ohm resistor between a male crossover connector and a female straight connector. The resistor is mounted by default to switch the crossover cable connection of the male connector.
Figure 3.10 shows the Serial Port Connector (J12) Pin Assignments. Table 3.17 lists the Serial Port Connector (J12) Pin Descriptions.

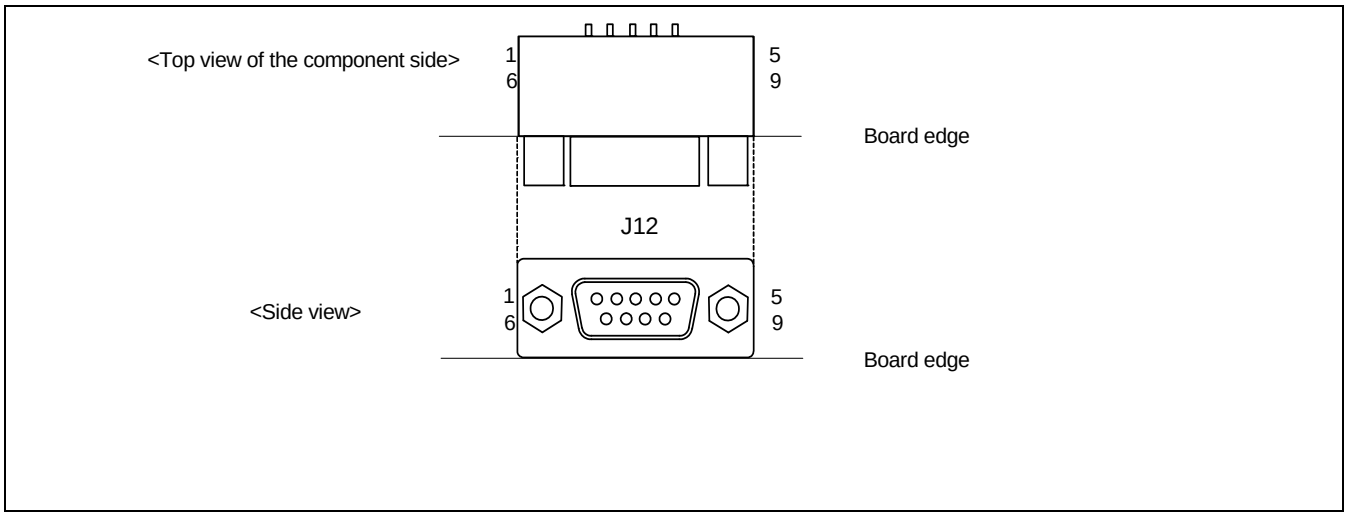



**Figure 3.10 Serial Port Connector (J12) Pin Assignments**

**Table 3.17 Serial Port Connector (J12) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | NC | 6 | DSR |
| 2 | RXD (PH6/AN6/PINT6/**RxD3**) | 7 | RTS |
| 3 | TXD (PK1/**TxD3**/RTC_X2) | 8 | CTS |
| 4 | DTR | 9 | NC |
| 5 | GND | | |

Notes: Bold letter indicates setting functions.

The pins between 4 and 6, and the pins between 7 and 8 use loop back connection.

### 3.1.9 External Power Supply Connectors (J13, J14, J15, J16 and J20)

The R0K5726B0C000BR includes external power supply connectors to apply 5V digital, 3.3V digital, 3.3V analog and 1.25V digital power from external source directly without using the DC power jack (J5). The connectors from J13 to J16 are not included by default.
The R0K5726B0C000BR can be operated by supplying 5V power from the external power supply connector (J13) instead of the DC power jack (J5) in a default setting. Additionally, it is possible to supply 3.3V digital, 1.25V digital and 3.3V analog power from the external power supply connectors (J14, J15 and J16) by changing the zero-ohm resistor connection to operate the R0K5726B0C000BR. The external power supply connector (J20) is required to be supplied 8V digital power for a CD deck.
Figure 3.11 shows the External Power Supply Connectors (J13 to J16 and J20) Pin Assignments. Table 3.18 to Table 3.22 lists the External Power Supply Connectors (J13 to J16 and J20) Pin Descriptions.

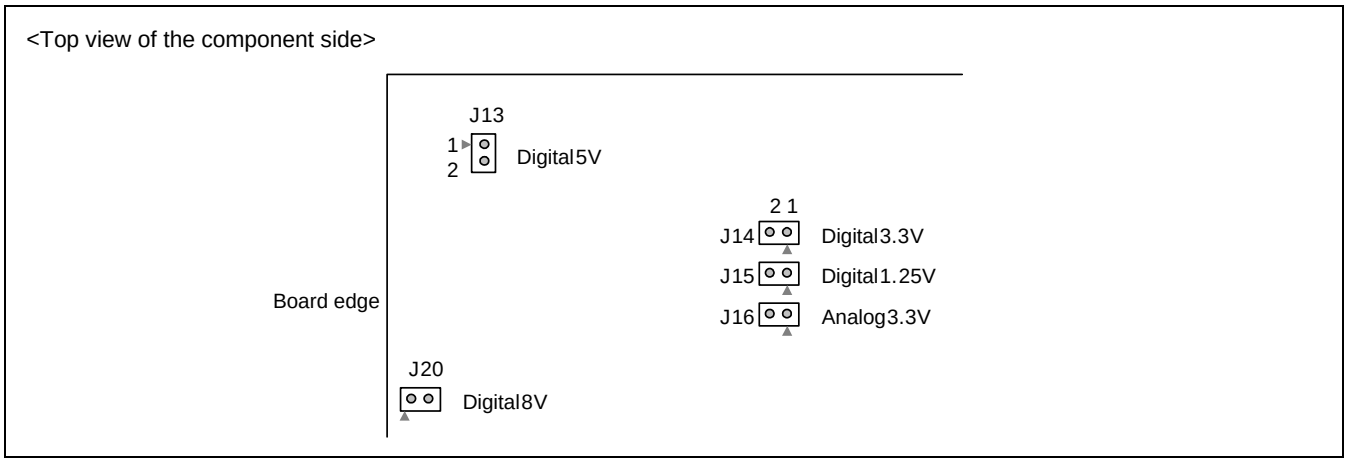



**Figure 3.11 External Power Supply Connectors (J13 to J16 and J20) Pin Assignments**

**Table 3.18 External Power Supply Connector (J13) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | 5VCC | 2 | GND |

Note: When supplying 5VCC from the external power supply connector (J13), please do not use the DC power jack (J5). If J5 and J13 are used for power supply at the same time, the R0K5726B0C000BR may be destroyed.

**Table 3.19 External Power Supply Connector (J14) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | 3VCC | 2 | GND |

Note: When supplying 3VCC from the external power supply connector (J14), make sure that the zero-ohm resistor R143 is removed. If J14 supplies power without removing R143, the R0K5726B0C000BR may be destroyed.

**Table 3.20 External Power Supply Connector (J15) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | 1.25VCC | 2 | GND |

Note: When supplying 1.25VCC from the external power supply connector (J15), make sure that the zero-ohm resistor R145 is removed. If J15 supplies power without removing R1435, the R0K5726B0C000BR may be destroyed.

**Table 3.21 External Power Supply Connector (J16) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | AVcc | 2 | GND |

Note: When supplying AVcc from the external power supply connector (J16), make sure that the zero-ohm resistor R134 is removed. If J16 supplies power without removing R134, the R0K5726B0C000BR may be destroyed.

**Table 3.22 External Power Supply Connector (J20) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | 8VCC | 2 | GND |

### 3.1.10 Line-out Pin Jacks (J17 and J19)

The R0K5726B0C000BR includes line-out pin jacks (J17 and J19).
Figure 3.12 shows the Line-out Pin Jacks (J17 and J19) Pin Assignment. Table 3.23 lists the Line-out Pin Jacks (J17 and J19) Pin Descriptions.

<Top view of the component side>

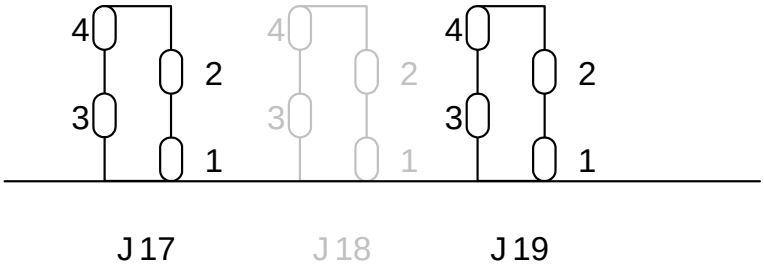



**Figure 3.12 Line-out Pin Jacks (J17 and J19) Pin Assignment**

**Table 3.23 Line-out Pin Jacks (J17 and J19) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | GND | 2 | AOUTL (D/A converter analog output L pin) |
| 3 | AOUTR (D/A converter analog output R pin) | 4 | NC |

### 3.1.11 Microphone Input Pin Jack (J18)

The R0K5726B0C000BR includes a microphone-input pin jack (J18).
Figure 3.13 shows the Microphone Input Pin Jack (J18) Pin Assignments. Table 3.24 lists the Microphone Input Pin Jack (J18) Pin Descriptions.

<Top view of the component side>

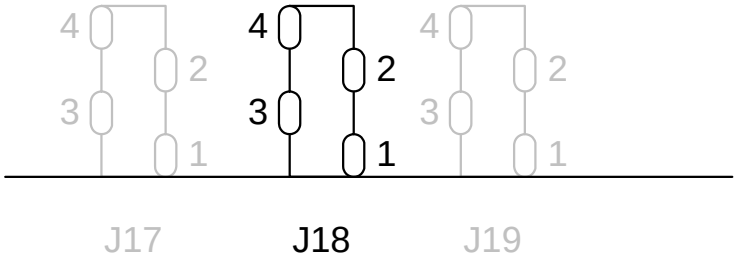



**Figure 3.13 Microphone Input Pin Jack (J18) Pin Assignments**

**Table 3.24 Microphone Input Pin Jack (J18) Pin Descriptions**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | GND | 2 | AOUTL (D/A converter analog output L pin) |
| 3 | AOUTR (D/A converter analog output R pin) | 4 | NC |

### 3.1.12 CD Deck Connector (J21)

The R0K5726B0C000BR includes a flexible CD connector.
Figure 3.14 shows the CD Deck Flexible Connector (J21) Pin Assignments. Table 3.25 lists the CD Deck Flexible Connector (J21) Pin Descriptions.

<Top view of the component side>

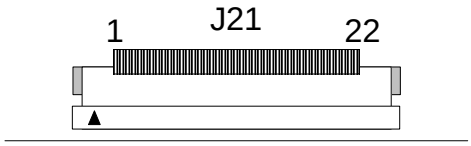



**Figure 3.14 CD Deck Flexible Connector (J21) Pin Assignments**

**Table 3.25 CD Deck Flexible Connector (J21) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | +8V | 4 | +8V |
| 5 | FLAG6 (**PE1**/SDA0/IRQ1) | 6 | NC |
| 7 | CDRST (connects reset IC output) | 8 | GND |
| 9 | +3.3V | 10 | +3.3V |
| 11 | GND | 12 | CDFS (**PJ11**/TIOC3D/IRQ0/SCK4/CRx0/ IERxD/RSPCK2) |
| 13 | CDSI (PB17/A17/**MOSI0**/TIOC2B) | 14 | CDCK (PB15/A15/**RSPCK0**/TIOC0B) |
| 15 | CDSO (PB18/A18/**MISO0**/TIOC3B) | 16 | NC |
| 17 | IIS_BCK (PJ12/**SSISCK3**/A0/TxD4/CTx0/ IETxD/SSL20) | 18 | IIS_LRCK (PJ13/**SSIWS3**/IRQ1/RxD4/CRx1/ CRx0&CRx1/MOSI2) |
| 19 | IIS_DATA (PJ14/**SSIDATA3**/WDTOVF/CTx1/ CTx0&CTx1/MISO2) | 20 | BLKCK (PH7/AN7/**PINT7**/RxD4) |
| 21 | TRANS (**PE3**/SDA1/ADTRG#) | 22 | NC |

Note: Bold letter indicates setting functions.

### 3.1.13 LAN Connector (J23)

The R0K5726B0C000BR includes a LAN connector (J23).
Figure 3.15 shows the LAN Connector (J23) Pin Assignments, and Table 3.26 lists the LAN Connector (J23) Pin Descriptions.

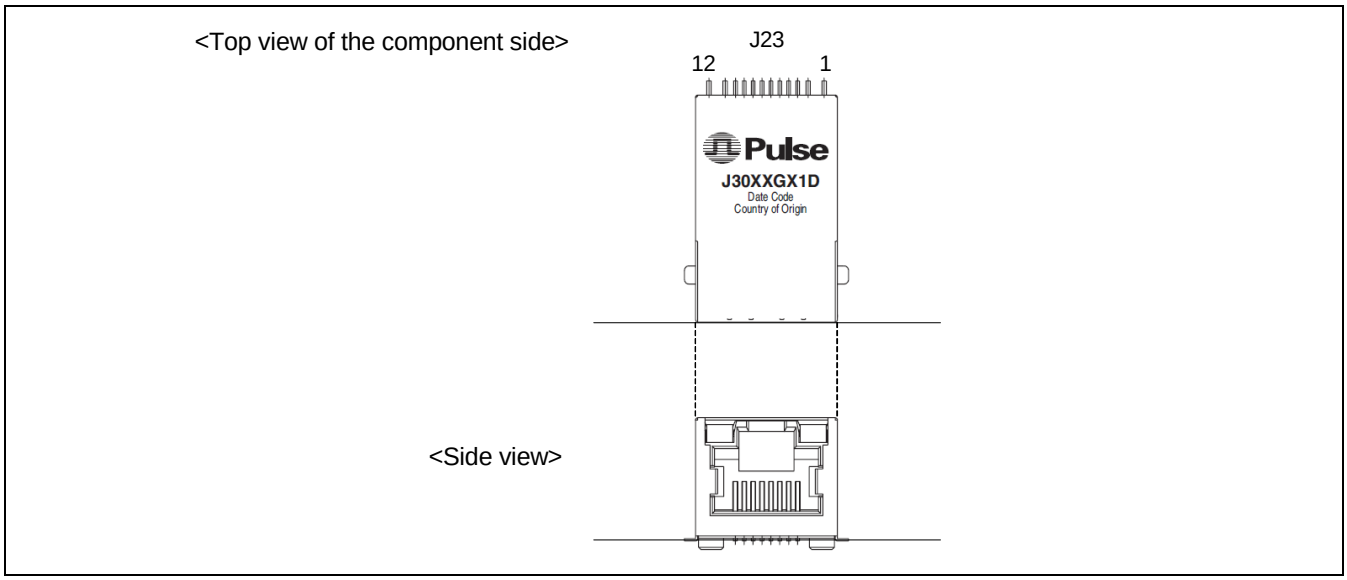



**Figure 3.15 LAN Connector (J23) Pin Assignments**

**Table 3.26 LAN Connector (J23) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | TX+ | 2 | TX- |
| 3 | RX+ | 4 | NC |
| 5 | NC | 6 | RX- |
| 7 | NC | 8 | NC |
| 9 | LED1-K | 10 | LED1-A |
| 11 | LED2-K | 12 | LED2-A |

### 3.1.14 CAN Port Connector (J24)

The R0K5726B0C000BR includes a CAN port connector (J24) for CAN transmit and receive.
Figure 3.16 shows the CAN Port Connector (J24) Pin Assignments, and Table 3.27 lists the CAN Port Connector (J24) Pin Descriptions.

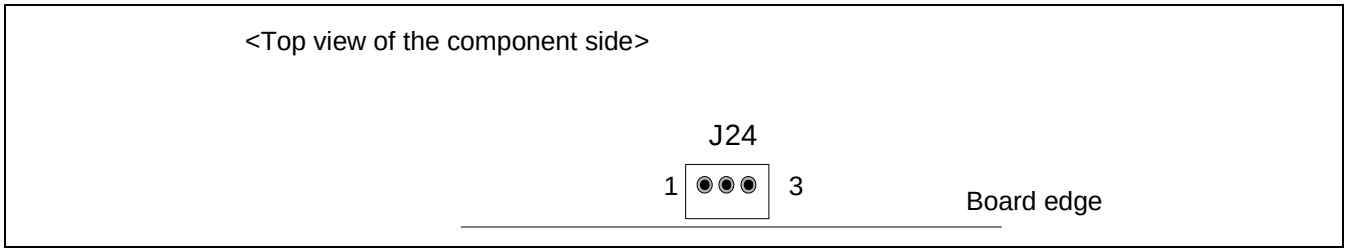



**Figure 3.16 CAN Port Connector (J24) Pin Assignments**

**Table 3.27 CAN Port Connector (J24) Pin Descriptions**

| Pin No. | Signal name |
|---|---|
| 1 | CANH |
| 2 | GND |
| 3 | CANL |

### 3.1.15 External Expansion Connector 1 (J22)

The R0K5726B0C000BR includes a through-hole to mount an external expansion connector 1 (J22). Figure 3.17shows the External Expansion Connector 1 (J22) Pin Assignments, and Table 3.28 lists the External Expansion Connector 1 (J22) Pin Descriptions.

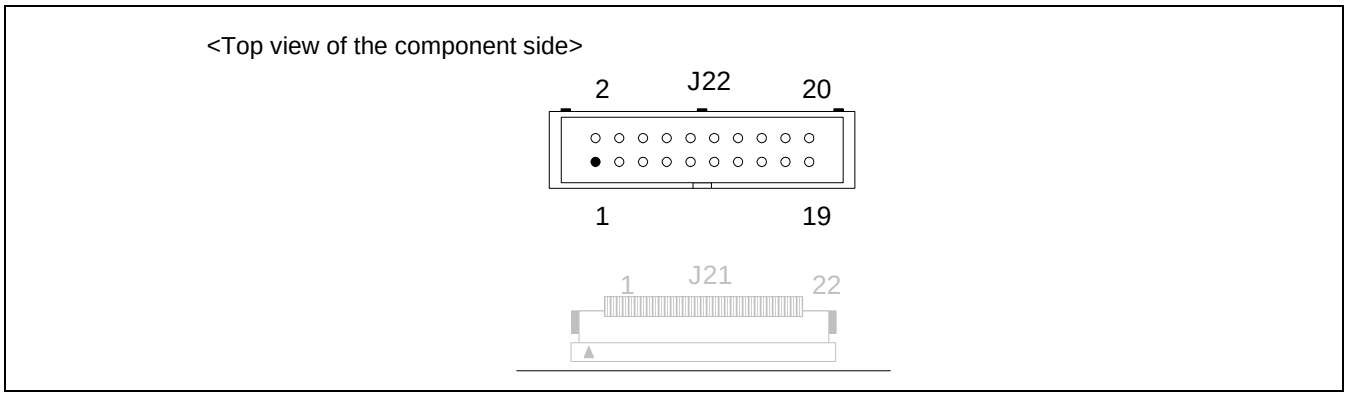



**Figure 3.17 External Expansion Connector 1 (J22) Pin Assignments**

**Table 3.28 External Expansion Connector 1 (J22) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | +5V | 4 | General purpose port (**PJ0**/SD_CD/IRQ4) |
| 5 | General purpose port (**PE1**/SDA0/IRQ1) | 6 | General purpose port (**PJ1**/SD_WP/CS2#/IRQ5/AUDIO_XOUT) |
| 7 | General purposeport (**PJ3**/SD_D0/IRQ7/AUDSYNC# ) | 8 | General purpose port (**PJ2**/SD_D1/IRQ6/AUDCK) |
| 9 | +3.3V | 10 | +3.3V |
| 11 | GND | 12 | General purpose port (**PJ11**/TIOC3D/IRQ0/SCK4/ CRx0/IERxD/RSPCK2) |
| 13 | TxD (PJ7/SD_D2/BS#/**TxD1**/AUDATA3) | 14 | SCK (PJ5/SD_CMD/**SCK1**/AUDATA1) |
| 15 | RxD (PJ6/SD_D3/CS4#/**RxD1**/AUDATA2) | 16 | SSISCK (PJ12/**SSISCK3**/A0/TxD4/CTx0/ IETxD/SSL20) |
| 17 | SSIWS (PJ13/**SSIWS3**/IRQ1/RxD4/CRx1/ CRx0&CRx1/MOSI2) | 18 | SSIDATA (PJ14/**SSIDATA3**/WDTOVF/CTx1/ CTx0&CTx1/MISO2) |
| 19 | Interrupt input (PH7/AN7/**PINT7**/RxD4) | 20 | General purpose port (**PE3**/SDA1/ADTRG#) |

Notes: Bold letter indicates setting functions.

### 3.1.16 External Expansion Connector 2 (J25)

The R0K5726B0C000BR includes a through-hole to mount an external expansion connector 2 (J25).
Figure 3.18 shows the External Expansion Connector 2 (J25) Pin Assignments, and Table 3.29 lists External Expansion Connector 2 (J25) Pin Descriptions.

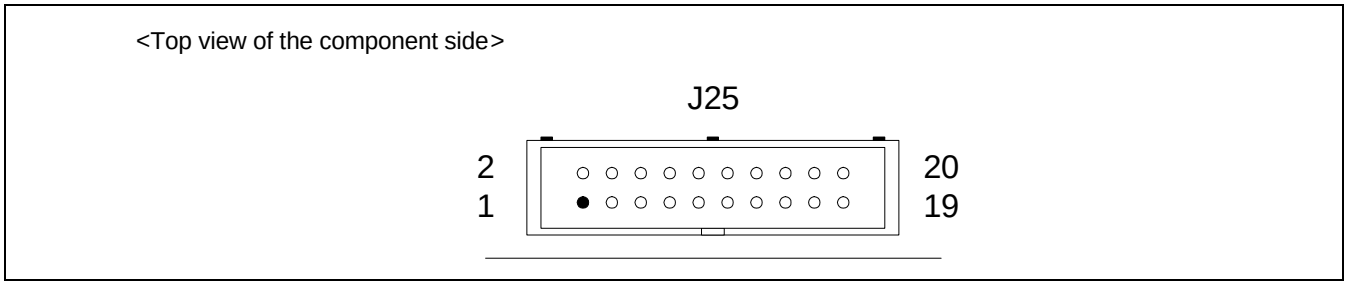



**Figure 3.18 External Expansion Connector 2 (J25) Pin Assignments**

**Table 3.29 External Expansion Connector 2 (J25) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | AUDIO_XOUT | 2 | GND |
| 3 | GND | 4 | AUDIO_CLK (PE2/SCL1/**AUDIO_CLK**) |
| 5 | SCL (PE4/**SCL2**/TCLKA) | 6 | +3.3V |
| 7 | SDA (PE5/**SDA2**/TCLKB) | 8 | General purpose port (**PC7**/CKE/IRQ6/CRx1/CRx0/CRx1) |
| 9 | +3.3V | 10 | SSISCK (PD0/D0/**SSISCK1**/SIOFSCK/ SPBMO_1/SPBIO0_1) |
| 11 | SSIWS (PD1/D1/**SSIWS1**/SIOFSYNC/ SPBMI_1/SPBIO1_1) | 12 | SSIRxD (PD2/D2/**SSIRxD1**/SIOFRxD/SPBIO2_1) |
| 13 | SSITxD (PD3/D3/**SSITxD1**/SIOFTxD/SPBIO3_1) | 14 | +5V |
| 15 | +5V | 16 | CTS (PD4/D4/RSPCK1/SCK3/**CTS1#**) |
| 17 | RTS (PD5/D5/SSL10/TxD3/**RTS1#**) | 18 | RxD (PB10/A10/**RxD1**) |
| 19 | TxD (PB11/A11/**TxD1**) | 20 | GND |

Notes: Bold letter indicates setting functions.

### 3.1.17 External Expansion Connector 3 (J26)

The R0K5726B0C000BR includes a through-hole to mount an external expansion connector 3 (J26).
Figure 3.19 shows the External Expansion Connector 3 (J26) Pin Assignments, and Table 3.30 lists the External Expansion Connector 3 (J26) Pin Descriptions.

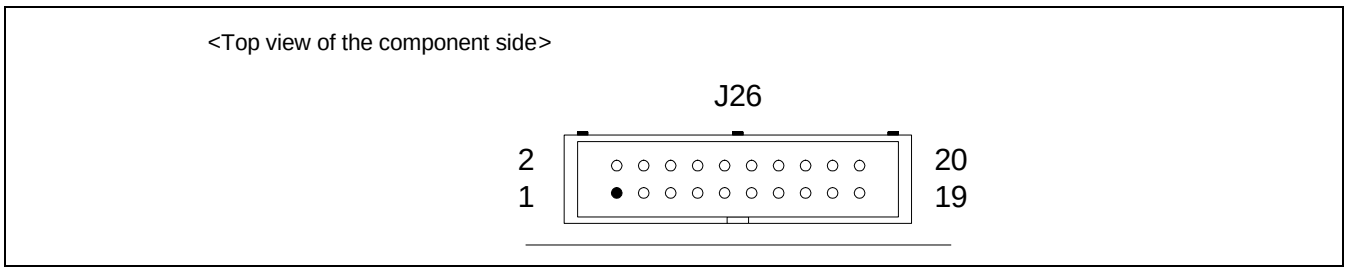



**Figure 3.19 External Expansion Connector 3 (J26) Pin Assignments**

**Table 3.30 External Expansion Connector 3 (J26) Pin Descriptions**

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | General purpose port (**PC6**/CAS#/IRQ5/CTx0/IETxD) | 4 | General purpose port (**PC5**/RAS#/IRQ4/CRx0/IERxD) |
| 5 | General purpose port (**PC4**/WE1#/DQMU/WDTOVF#) | 6 | General purpose port (**PC3**/WE0#/DQML/TIOC4D) |
| 7 | General purpose port (**PC2**/RD/WR#/TIOC4C/SPDIF_OUT) | 8 | General purpose port (**PC1**/RD#/TIOC4B/SPDIF_IN) |
| 9 | +3.3V | 10 | +3.3V |
| 11 | CTS (PD6/D6/MOSI1/SCK4/**CTS2#**) | 12 | RTS (PD7/D7/MISO1/TxD4/**RTS2#**) |
| 13 | RxD (PB13/A13/**RxD2**) | 14 | TxD (PB14/A14/**TxD2**) |
| 15 | +5V | 16 | +5V |
| 17 | NC | 18 | NC |
| 19 | NC | 20 | NC |

Notes: Bold letter indicates setting functions.

## 3.2 Operation Parts Layout

The R0K5726B0C000BR includes a push switch, LEDs and a potentiometer as operation parts.
Figure 3.20 shows the R0K5726B0C000BR Operation Parts Layout.

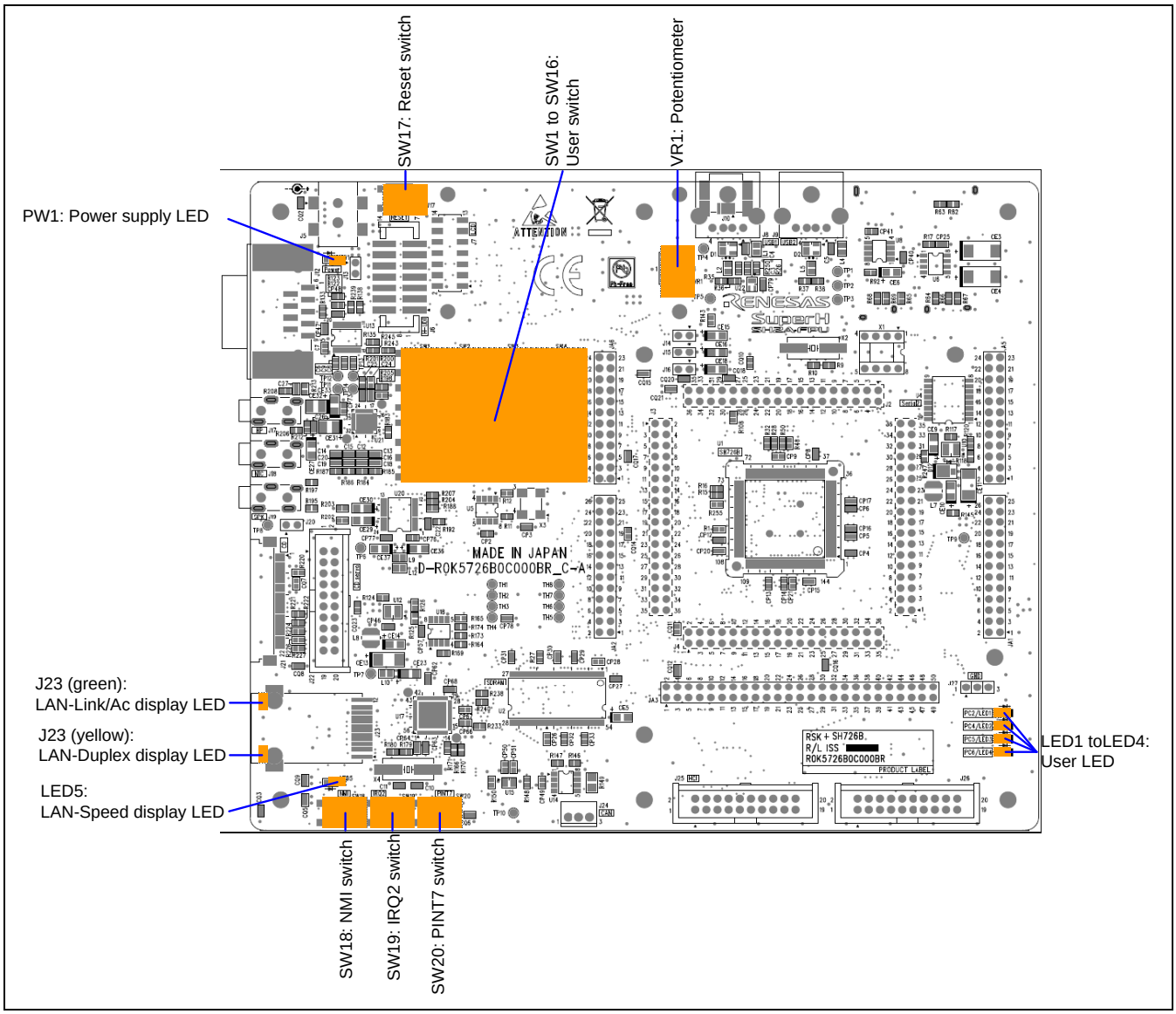



**Figure 3.20 R0K5726B0C000BR Operation Parts Layout**

### 3.2.1 Push Switches

The R0K5726B0C000BR includes twenty push switches.
Table 3.31 lists the R0K5726B0C000BR push switches.

**Table 3.31 R0K5726B0C000BR push switches**

| No. | Function | Remarks |
|---|---|---|
| SW1-16 | Key input switch | Refer to Chapter 2.6 for the details |
| SW17 | Reset switch | Refer to Chapter 2.9 for the details |
| SW18 | NMI switch | Refer to Chapter 2.7 for the details |
| SW19 | IRQ2 switch | Refer to Chapter 2.7 for the details |
| SW20 | PINT7 switch | Refer to Chapter 2.7 for the details |

### 3.2.2 LEDs

The R0K5726B0C000BR includes eight LEDs.
Table 3.32 lists the R0K5726B0C000BR LEDs.

**Table 3.32 R0K5726B0C000BR LEDs**

| No. | Color | Function |
|---|---|---|
| PW1 | Blue | Power supply LED (lights up when 5V power is supplied) |
| LED1 | Green | User LED (lights up when PC2 outputs low level signal) |
| LED2 | Orange | User LED (lights up when PC4 outputs low level signal) |
| LED3 | Red | User LED (lights up when PC5 outputs low level signal) |
| LED4 | Red | User LED (lights up when PC6 outputs low level signal) |
| LED5 | Red | LAN Speed display LED (lights up in 100Mbps communication) |
| J23 (yellow) | Yellow | LAN Duplex display LED (lights up in full duplex communication) |
| J23 (green) | Green | LAN Link/Activity display LED (lights up when linking and communicating) |

### 3.2.3 Potentiometer

The R0K5726B0C000BR includes a potentiometer for evaluating AN1 input.
Table 3.33 lists the Potentiometer model. Please refer to the data sheet issued by the manufacturer for more details.

**Table 3.33 Potentiometer**

| No. | Model | Manufacturer |
|---|---|---|
| VR1 | CT-6ETV10KΩ | NIIDEC COPAL ELECTRONICS CORPORATION |

## 3.3 Dimensions

Figure 3.21 and Figure 3.22 show the dimensions of top views of the component side on the R0K5726B0C000BR. Figure 3.23 shows the dimension of perspective view of the component side.

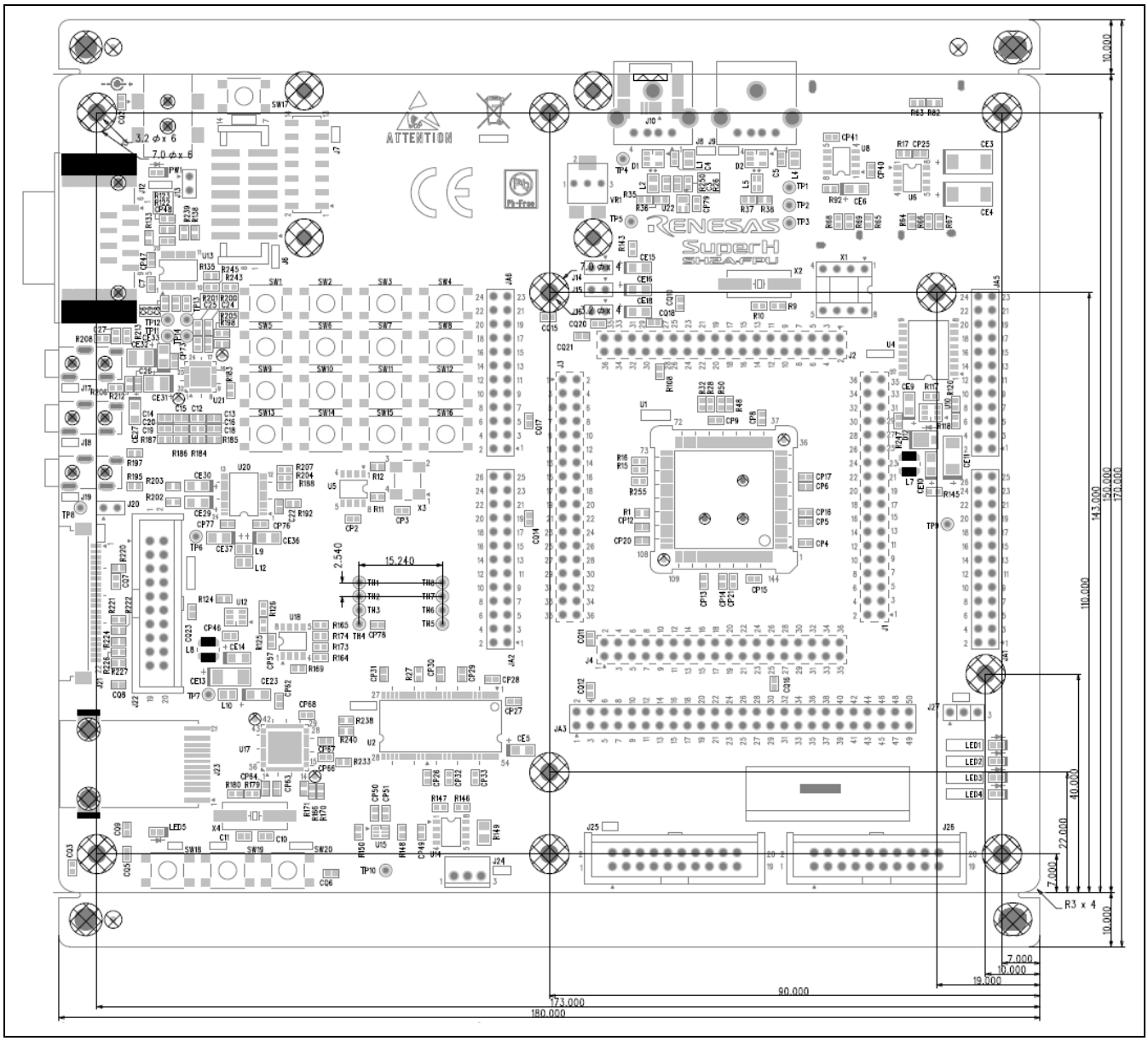



**Figure 3.21 R0K5726B0C000BR Dimension 1 (Top view of the component side)**

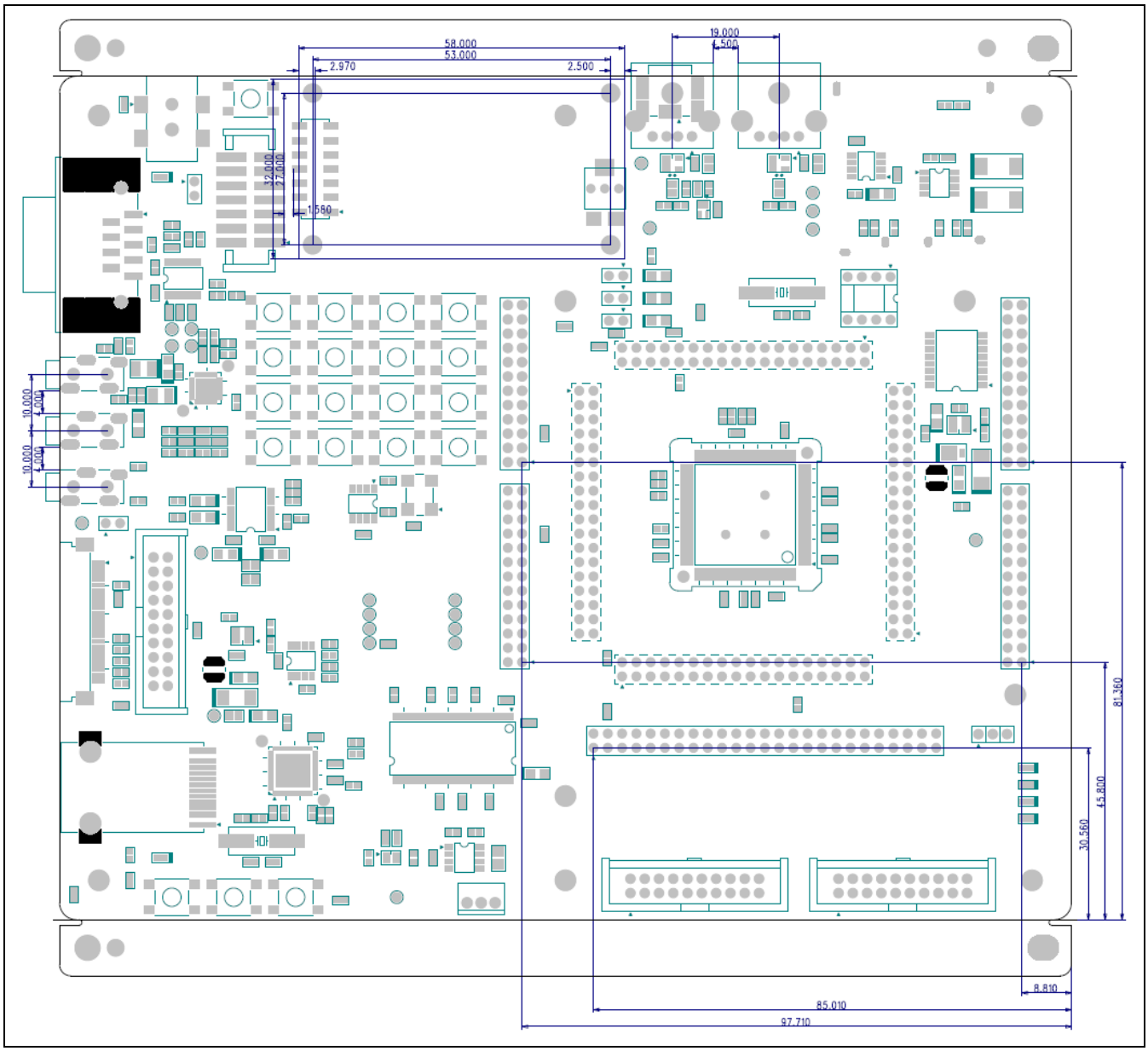



**Figure 3.22 R0K5726B0C000BR Dimensions 2 (Top view of the component side)**

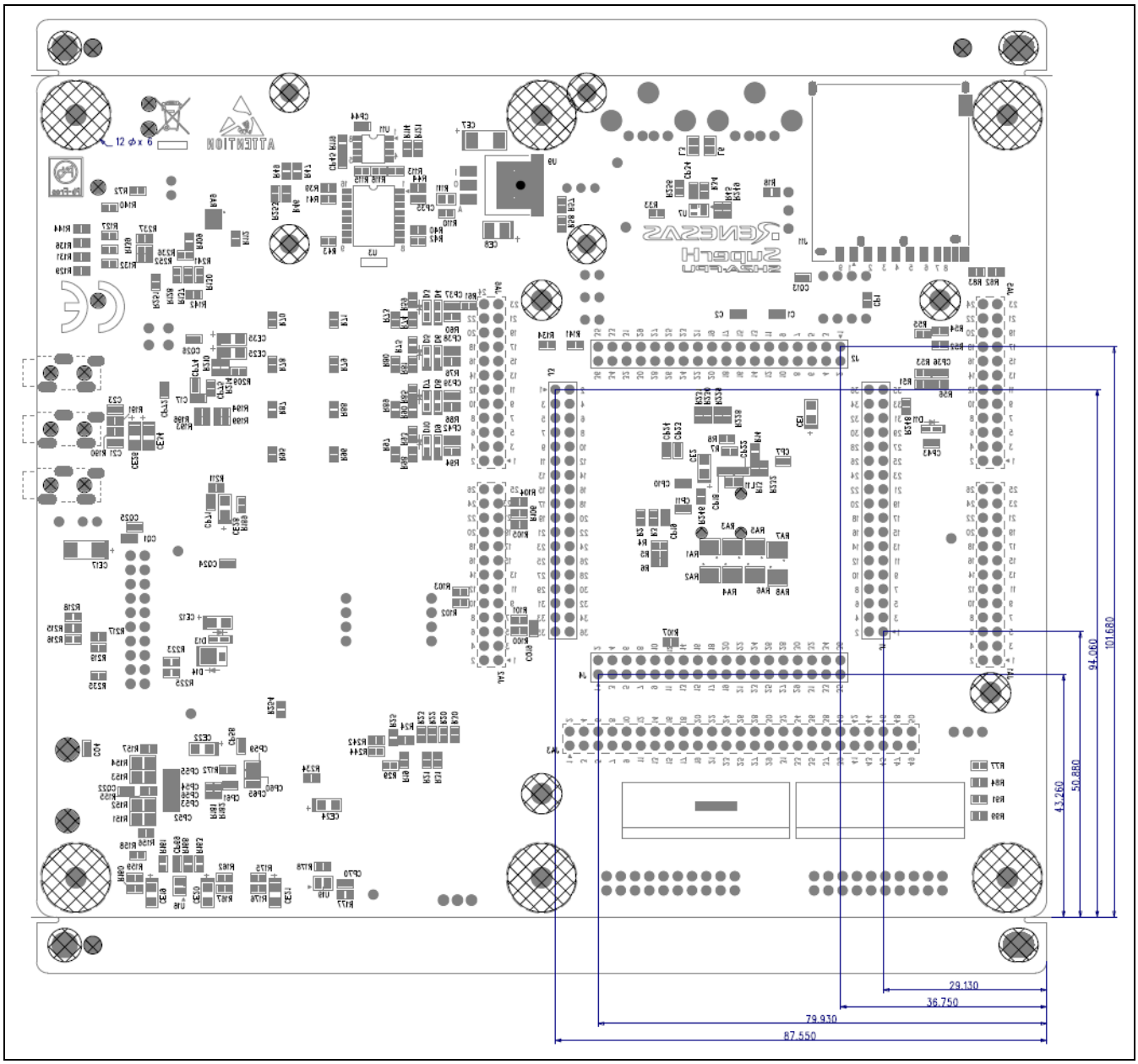



**Figure 3.23 R0K5726B0C000BR Dimensions 3 (Perspective view of the component side)**

This page intentionally left blank.

# Appendix R0K5726B0C000BR Schematics

# SH726B CPU board R0K5726B0C000BR SCHEMATICS



**Note:**

Digital GND (GND)

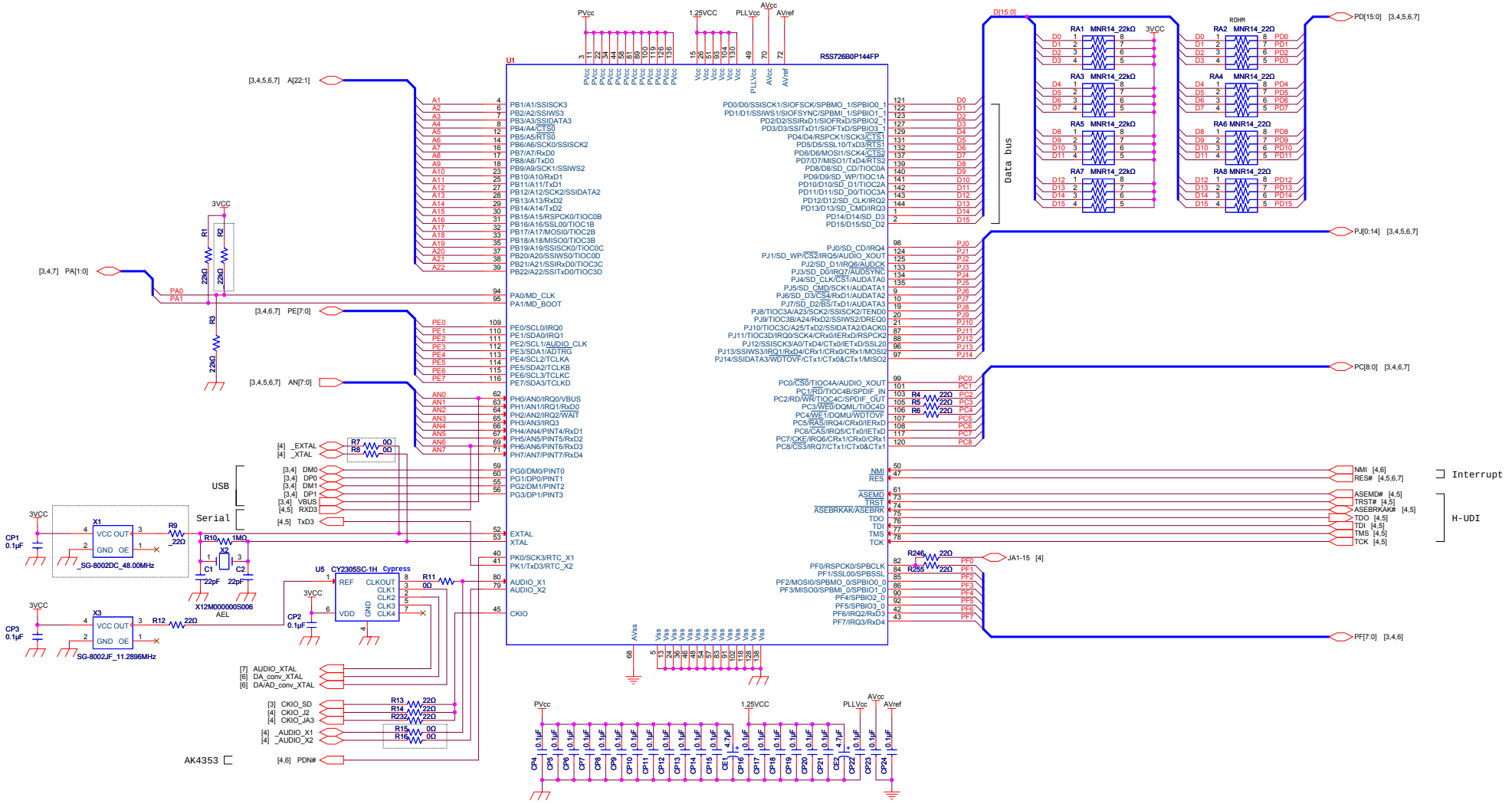
Analog GND (AVss)

Not mounted

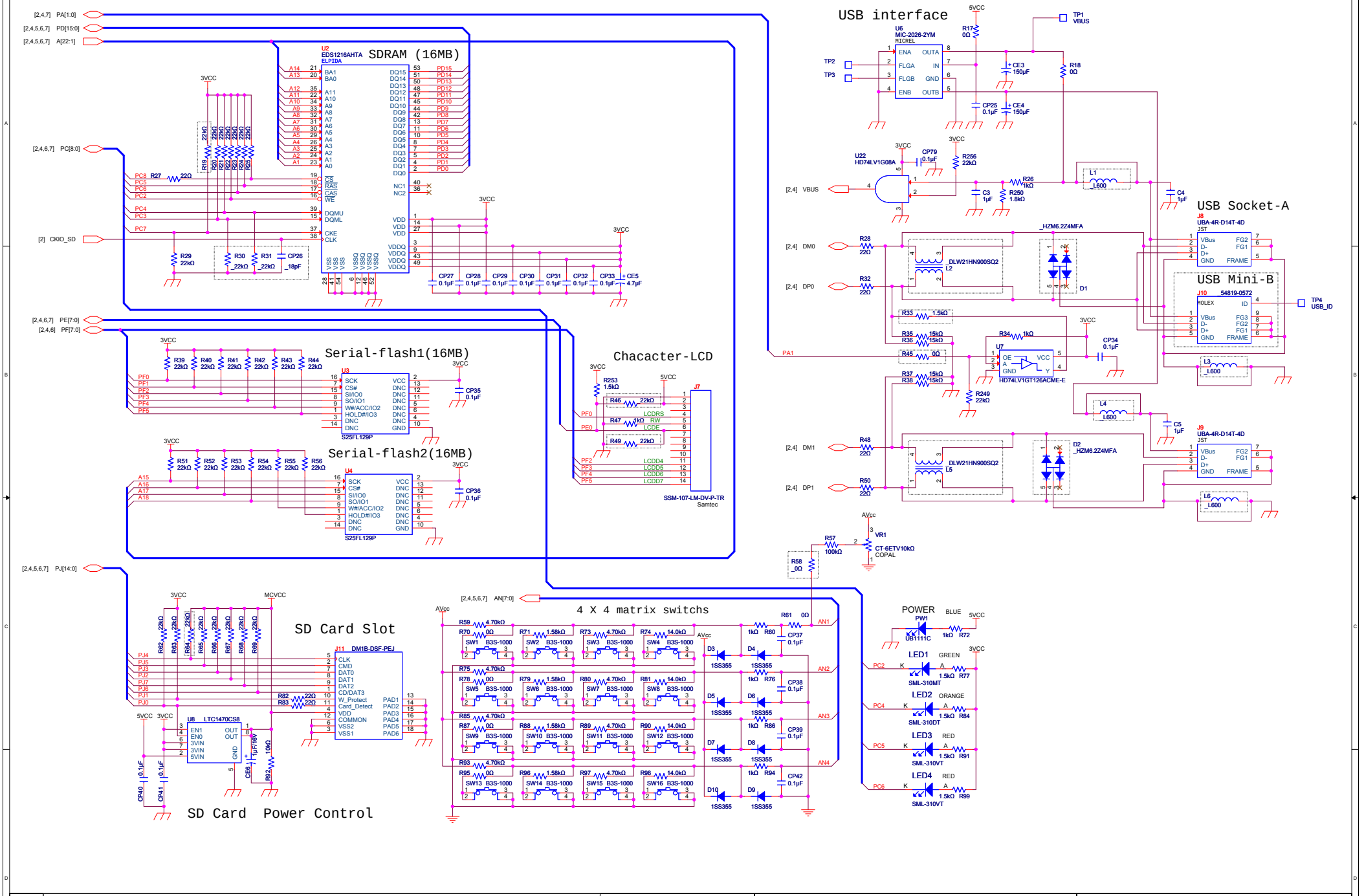
5VCC = Digital 5V
3VCC = Digital 3.3V
PVcc = 3.3V for CPU
1.2VCC = 1.25V
1.25VCC = 1.25V for CPU
PLLVcc = 1.25V for PLL
AVcc = Analog 3.3V
AVref = 3.3V for ADC Voltage Reference
A3VCC = Analog 3.3V for WM8978
8VCC = 8V for CD Drive

R = Fixed Resistors
RA = Resistor Array
C = Ceramic Caps
CE = Tantalum Electrolytic Caps
CP = Decoupling Caps
L = Inductor

| CHANGE | | | Renesas Solutions Corp. | | | | R0K5726B0C000BR |
|---|---|---|---|---|---|---|---|
| | | SCALE | DRAWN | CHECKED | DESIGNED | APPROVED | INDEX ( 1 / 7 ) |
| | | DATE 13-02-19 | | | | | D-R0K5726B0C000BR_C-A-R03 |

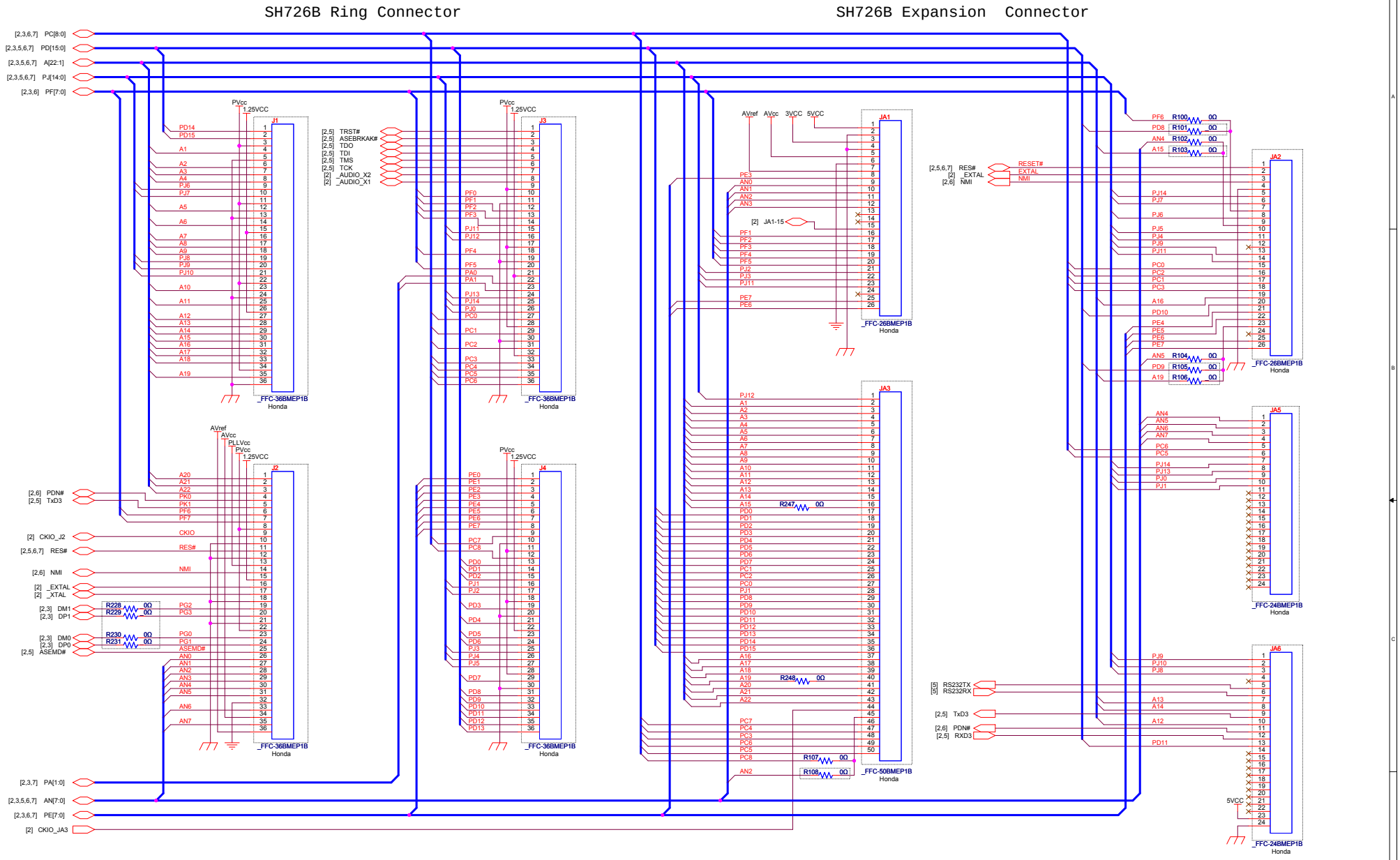



| | | | | | |
|---|---|---|---|---|---|
| CHANGE | | | Renesas Solutions Corp. | | R0K5726B0C000BR |
| | | | DRAWN / CHECKED / DESIGNED / APPROVED | | CPU SH726B, Clock ( 2 / 7 ) |
| | | SCALE | | | D-R0K5726B0C000BR_C-A-R03 |
| | | DATE | 13-02-19 | | |

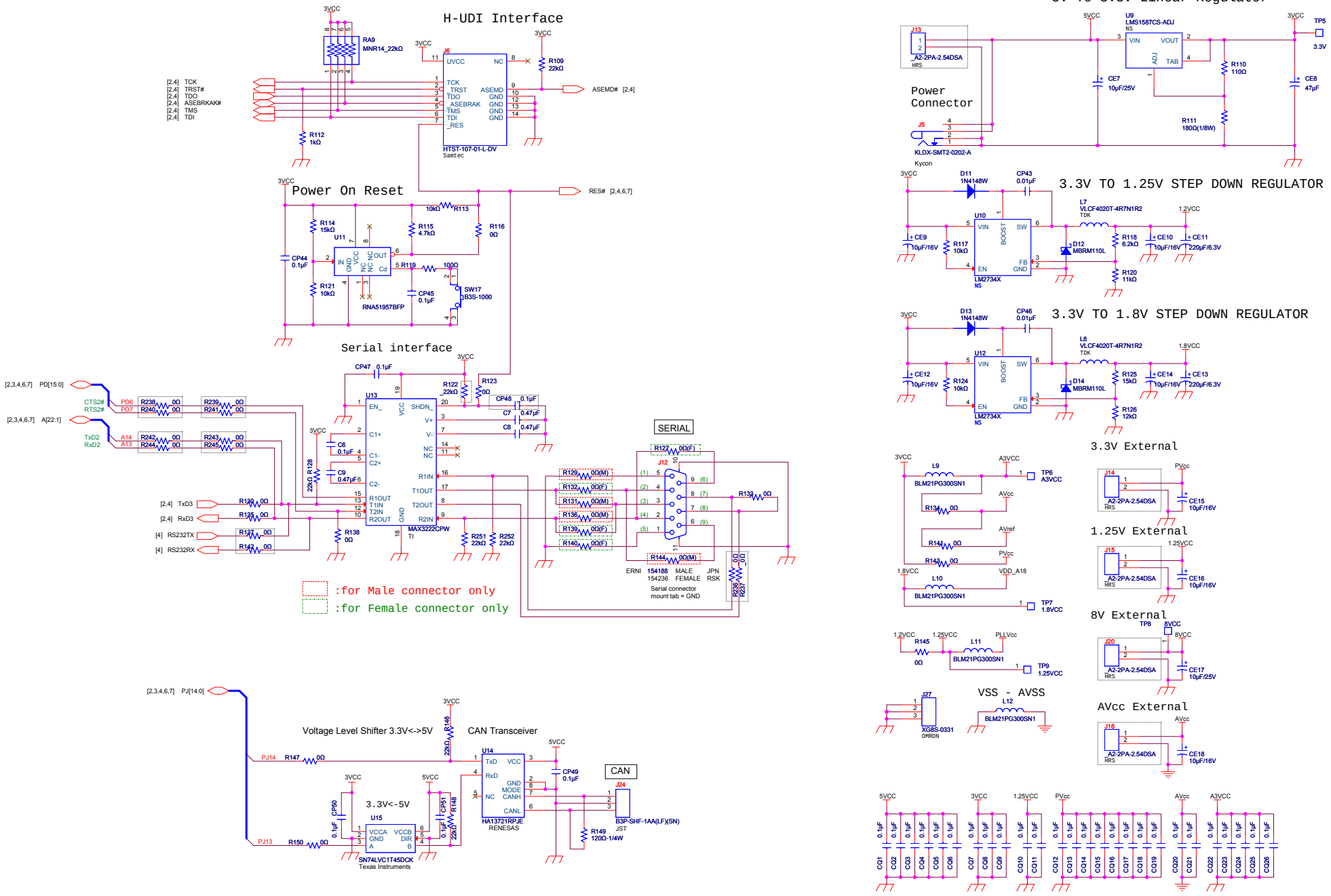



CHANGE

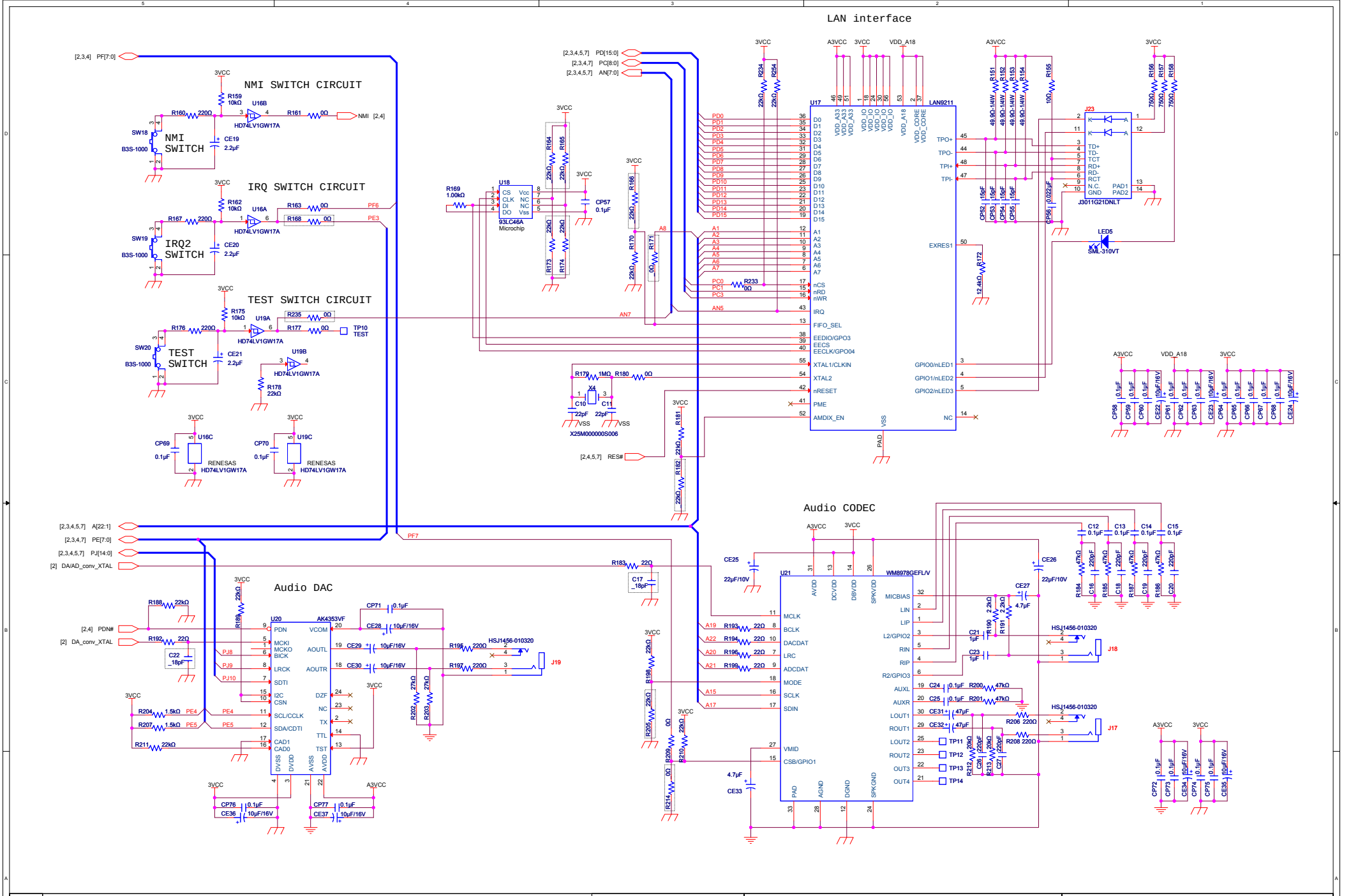
| | | | |
|---|---|---|---|
| SCALE | | Renesas Solutions Corp. | R0K5726B0C000BR |
| DATE | 13-02-19 | DRAWN / CHECKED / DESIGNED / APPROVED | Memory, Character LCD, USB Port ( 3 / 7 ) |
| | | | D-R0K5726B0C000BR_C-A-R03 |



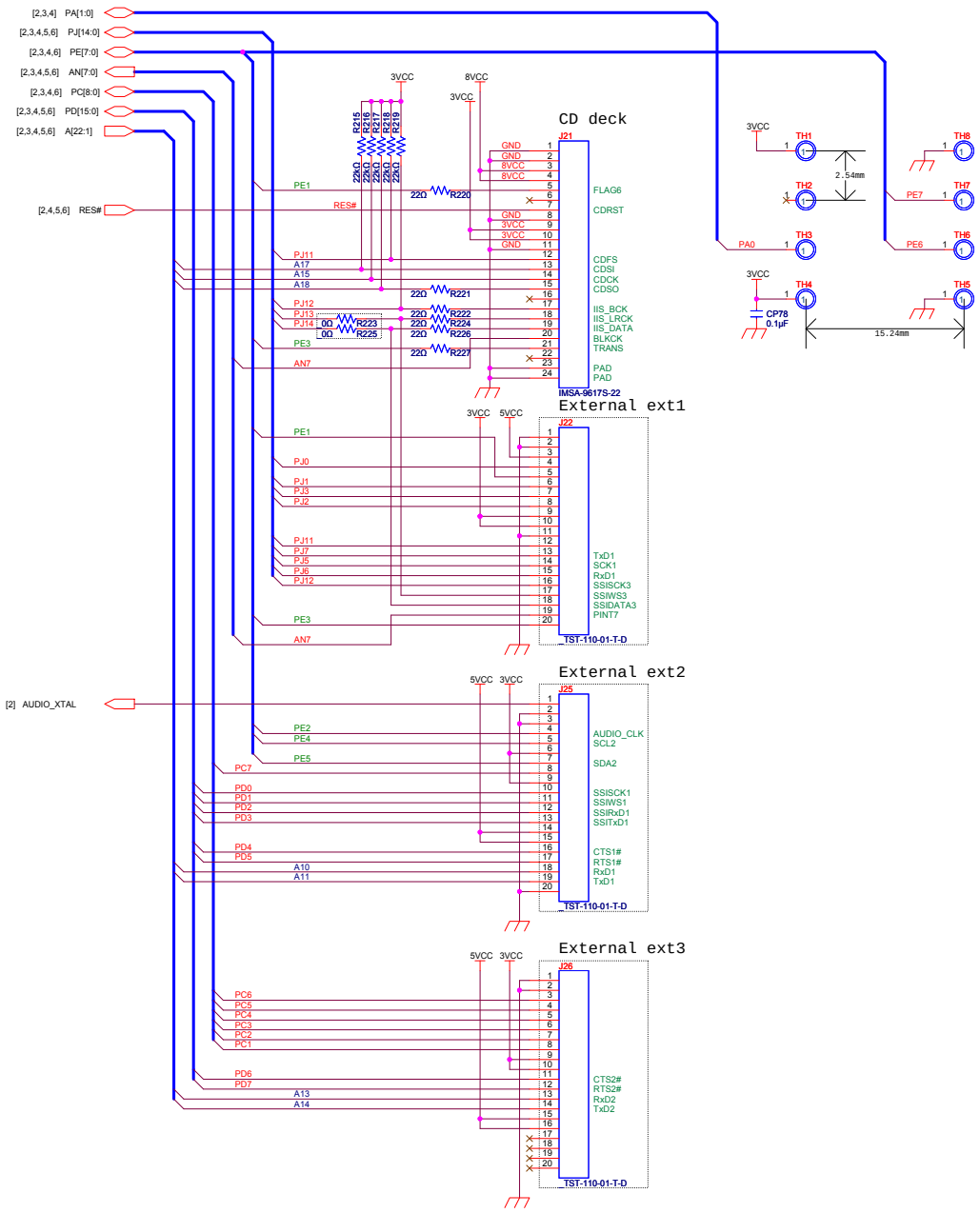

| CHANGE | | SCALE | | Renesas Solutions Corp. | | | | R0K5726B0C000BR | |
|---|---|---|---|---|---|---|---|---|---|
| | | DATE | 13-02-19 | DRAWN | CHECKED | DESIGNED | APPROVED | Ext. Connector | ( 4 / 7 ) |
| | | | | | | | | D-R0K5726B0C000BR_C-A-R03 | |




| | | | | | |
|---|---|---|---|---|---|
| CHANGE | | | Renesas Solutions Corp. | | R0K5726B0C000BR<br>H-UDI,Power, Reset, Serial, CAN ( 5 / 7 ) |
| | | | DRAWN | CHECKED / DESIGNED / APPROVED | D-R0K5726B0C000BR_C-A-R03 |
| | | SCALE | | | |
| | | DATE | 13-02-19 | | |




| | | | | | |
|---|---|---|---|---|---|
| CHANGE | | | Renesas Solutions Corp. | | R0K5726B0C000BR |
| | | | DRAWN | CHECKED / DESIGNED / APPROVED | Switch, LAN ,Audio ( 6 / 7 ) |
| | | SCALE | | | D-R0K5726B0C000BR_C-A-R03 |
| | | DATE | 13-02-19 | | |




| CHANGE | | SCALE | | DATE 13-02-19 | Renesas Solutions Corp. | | | | R0K5726B0C000BR<br>CD, External Connector ( 7 / 7 ) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | DRAWN | CHECKED | DESIGNED | APPROVED | D-R0K5726B0C000BR_C-A-R03 |

| REVISION HISTORY | SH726B CPU Board R0K5726B0C000BR User's Manual |
|---|---|

| Rev. | Date | Description | |
|---|---|---|---|
| | | Page | Summary |
| 1.00 | Mar. 12, 2013 | – | First edition |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

SH726B CPU Board R0K5726B0C000BR User's Manual

Publication Date: Rev.1.00 Mar. 12, 2013
Published by: Renesas Electronics Corporation

**SALES OFFICES** Renesas Electronics Corporation http://www.renesas.com

Refer to "http://www.renesas.com/" for the latest and detailed information.


**Renesas Electronics America Inc.**
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

**Renesas Electronics Canada Limited**
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

**Renesas Electronics Europe Limited**
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

**Renesas Electronics Europe GmbH**
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

**Renesas Electronics (China) Co., Ltd.**
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

**Renesas Electronics (Shanghai) Co., Ltd.**
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

**Renesas Electronics Hong Kong Limited**
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

**Renesas Electronics Taiwan Co., Ltd.**
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

**Renesas Electronics Singapore Pte. Ltd.**
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

**Renesas Electronics Malaysia Sdn.Bhd.**
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

**Renesas Electronics Korea Co., Ltd.**
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141



Colophon 1.3

# SH726B CPU Board
# R0K5726B0C000BR
# User's Manual

Renesas Electronics Corporation

R20UT0601EJ0100