REV	REF	DATE	DRAWN BY
1.00	Release	01.10.2019	KOS

Renesas Starter Kit+ for RX72M
CPU Board Schematics

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18	Ethernet PHY(0)
19	Ethernet PHY(1)
20	Ethernet Connector

Note:

C : Capacitor
D : Diode
J : Connector, Jumper
L : Inductor
LED : Light Emitting Diode
MR : Resistor Array
PWR : Power Jack
R : Fixed Resistor
RES : Reset Switch
RV : Potentiometer
SW : Switch
T : Test Point
U : Integrated Circuit
X : Crystal, Oscillator

* "DNF" marking means that component is not fitted by default.
**The following off-page connectors used in this schematics do not indicate the signal direction.

Board Code:

RTK5572MNDC00000BE : RSK+RX72M MP Board
RTK5572MNHC00000BE : RSK+RX72M MP Board (Encryption version)

Abbreviations:

CAN : Controller Area Network
IIC : Philips(TM) Inter-Integrated Circuit Connection Bus
LED : Light Emitting Diode
MCU : Microcontroller Unit
PSU : Power Supply Unit
RSK : Renesas Starter Kit
USB : Universal Serial Bus
SDHI : SD (Secure Digital) Host Interface
DSMIF : Delta Sigma Modurator Interface

REE Drawing No. D016462_04

Renesas Electronics Corporation		
Title: RSK+RX72M [Index]		
Size	Document Number R20UT4390EG0100	Rev 1.00
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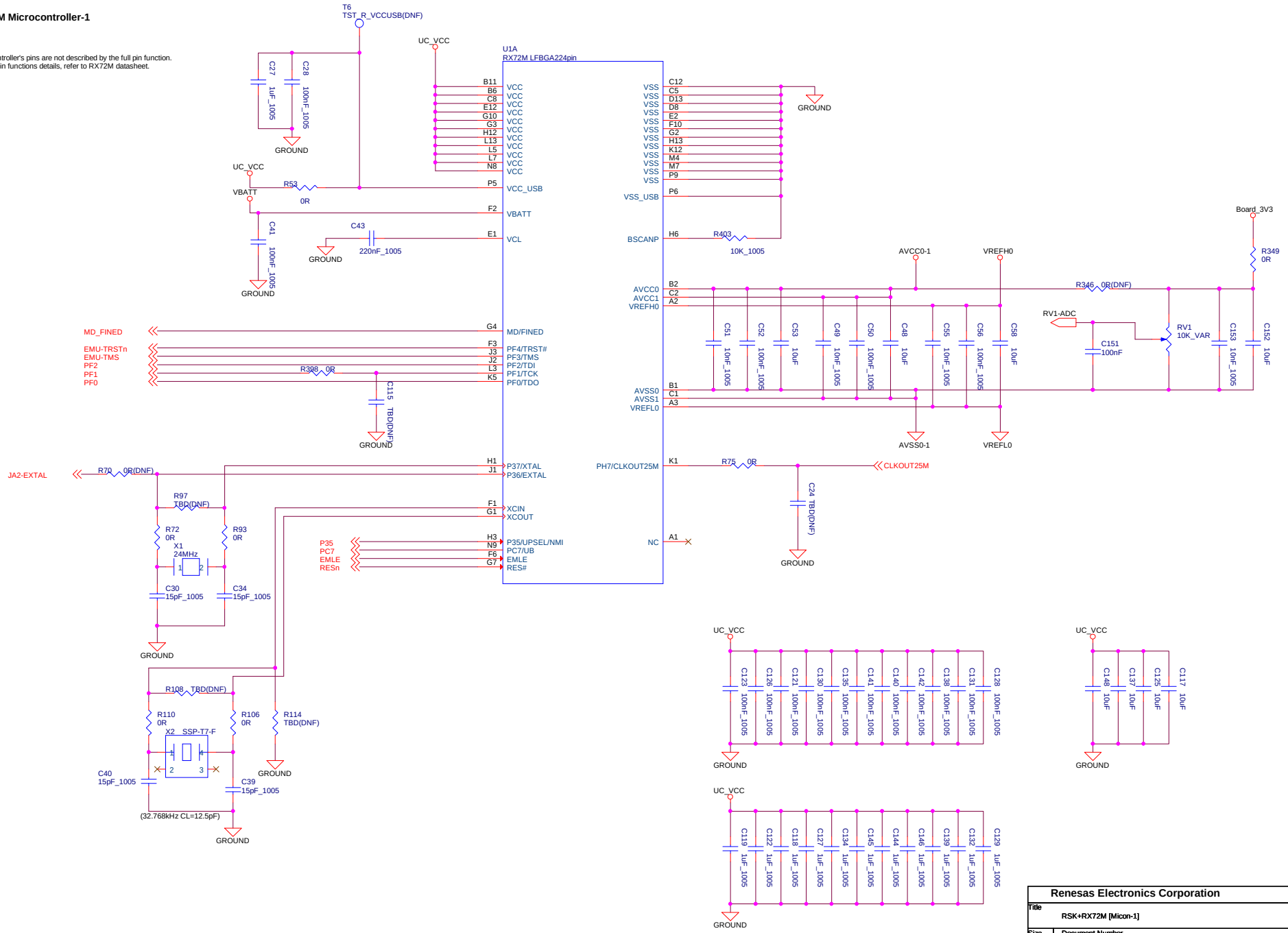
RX72M Microcontroller-1

Note:

Microcontroller's pins are not described by the full pin function.
For full pin functions details, refer to RX72M datasheet.

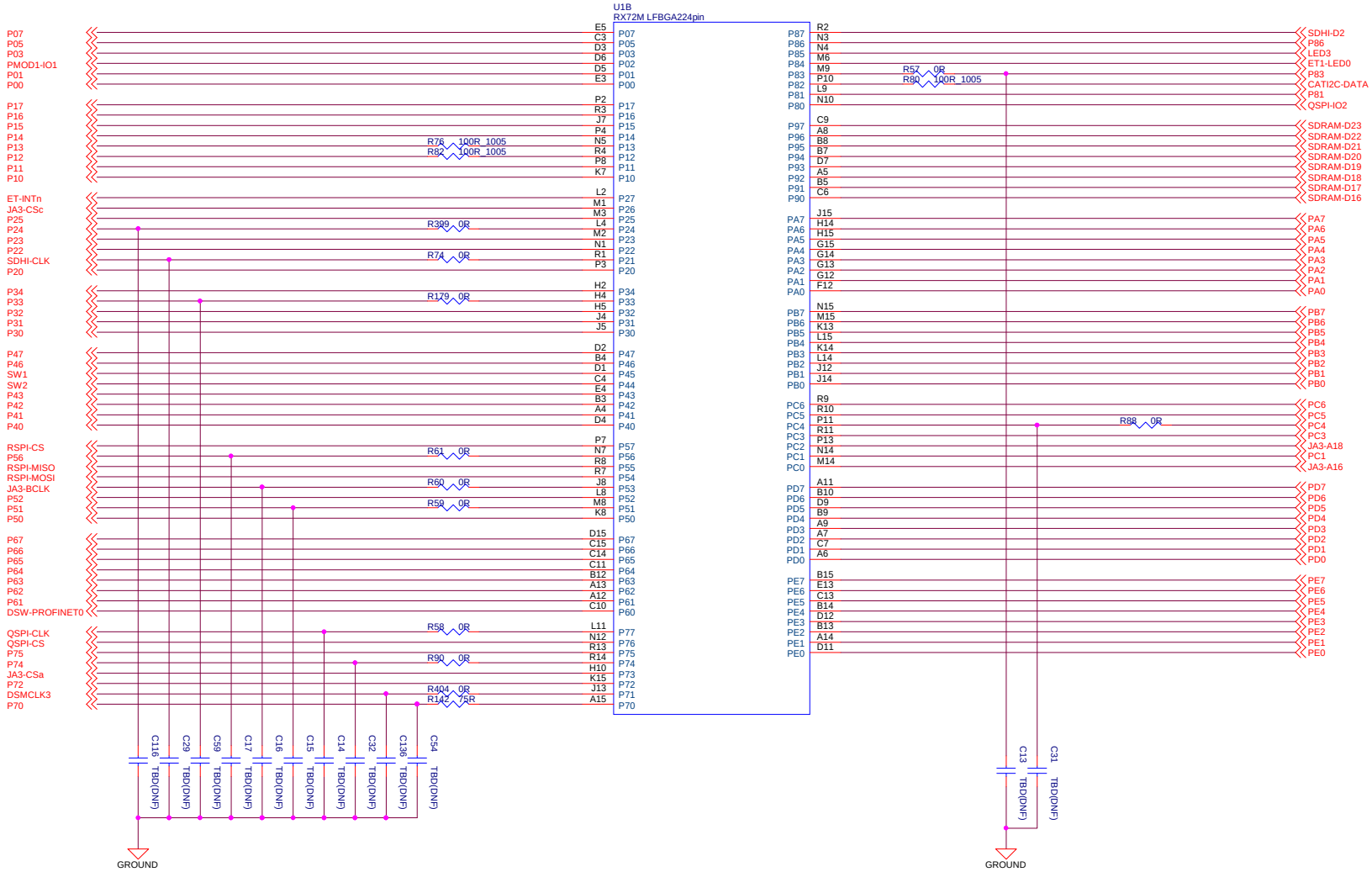


Renesas Electronics Corporation		
Title	RSK+RX72M [Micon-1]	
Size	Document Number R20UT4390EG0100	Rev 1.00
Date: Tuesday, October 01, 2019	Sheet 2 of 20	

RX72M Microcontroller-2

Note:

Microcontroller's pins are not described by the full pin function.
For full pin functions details, refer to RX72M datasheet.



Renesas Electronics Corporation		
Title: RSK+RX72M [Micon-2]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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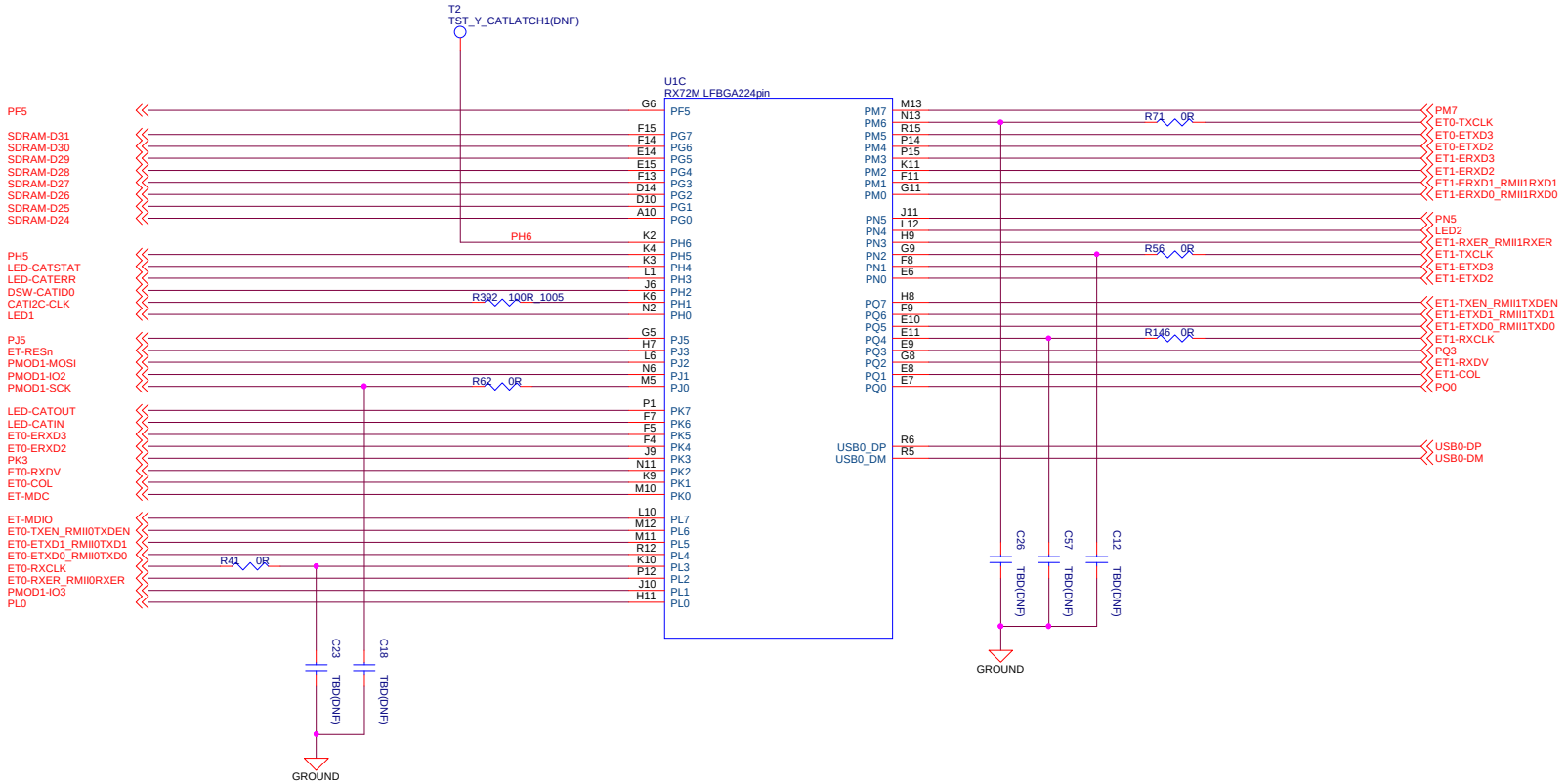
RX72M Microcontroller-3

Note:

Microcontroller's pins are not described by the full pin function.
For full pin functions details, refer to RX72M datasheet.



Renesas Electronics Corporation		
Title: RSK+RX72M [Micon-3]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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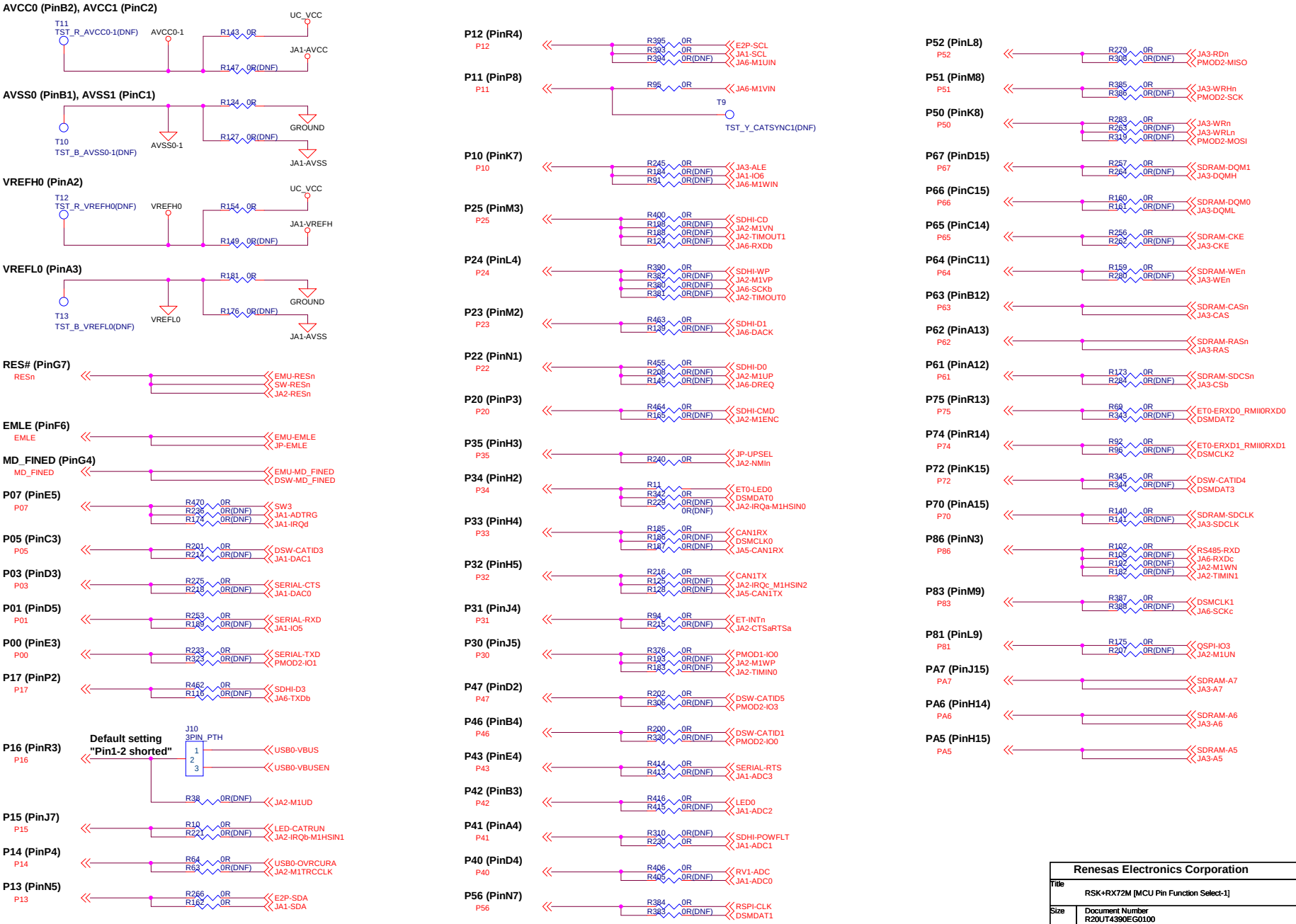
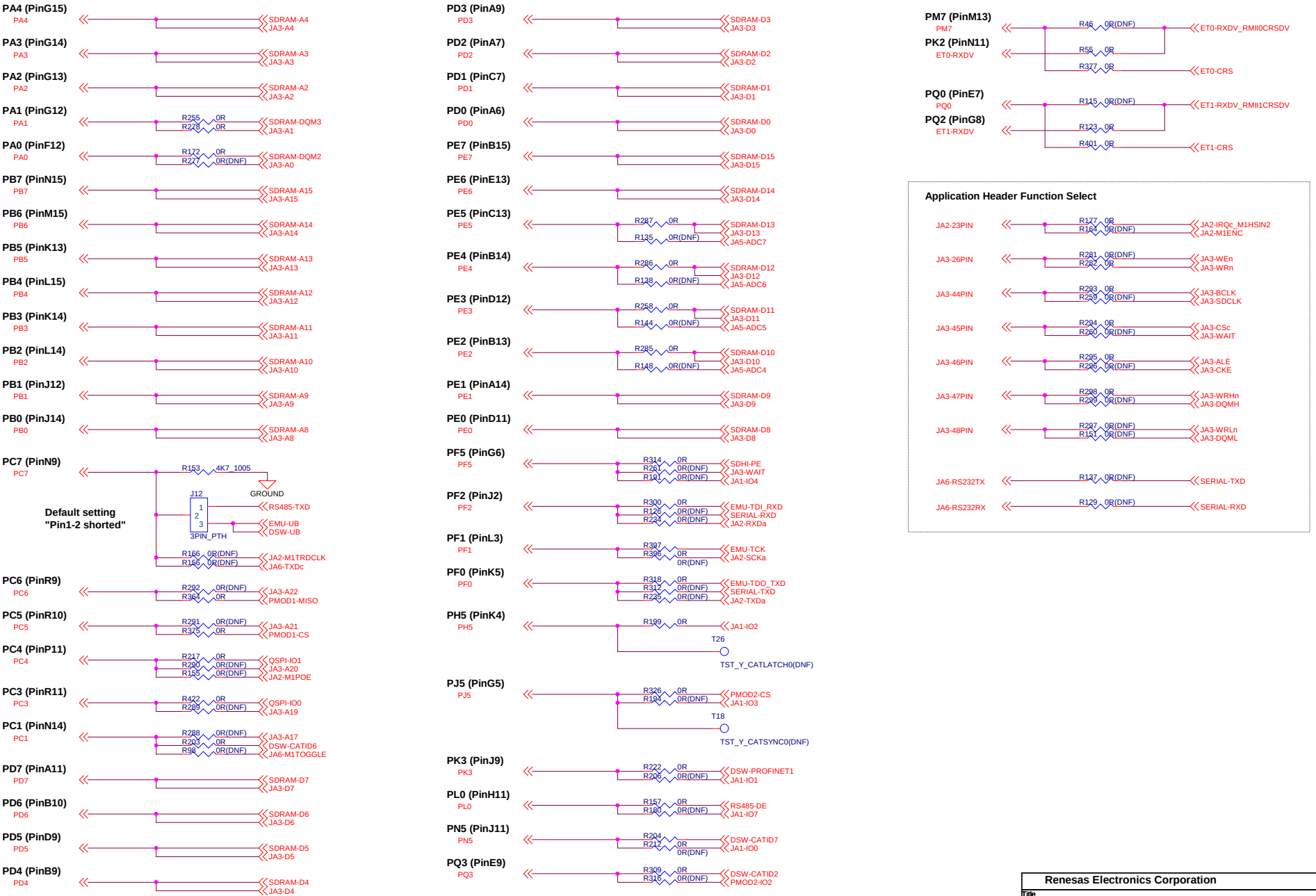
MCU Pin Function Select-1



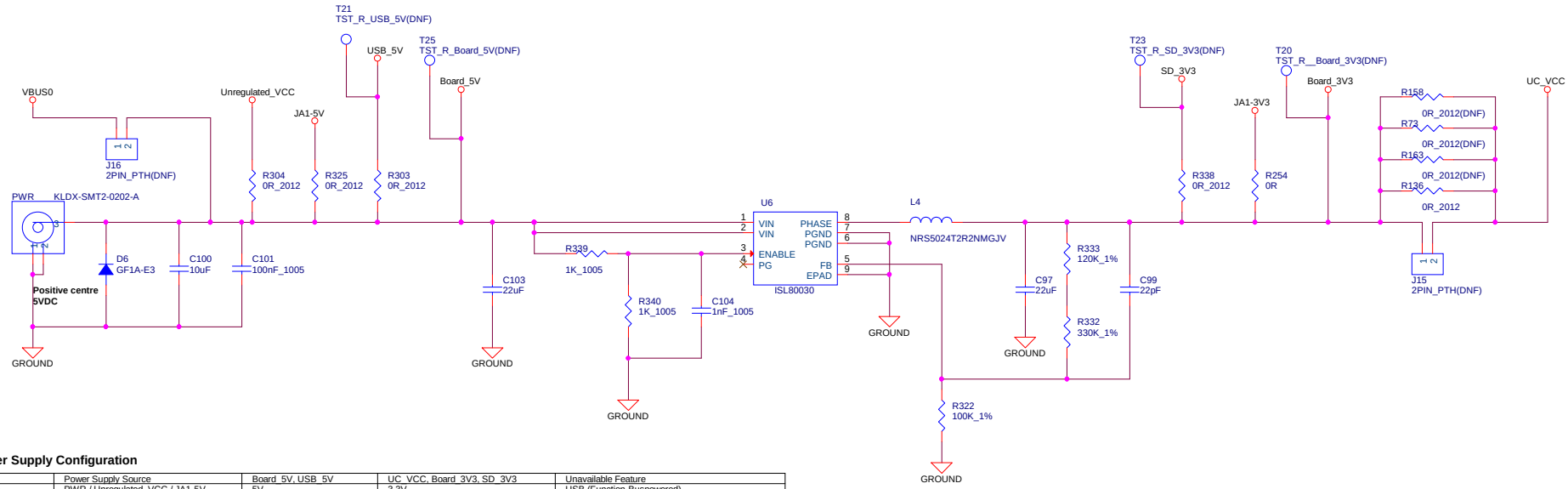
Renesas Electronics Corporation	
Title	RSK+RX72M [MCU Pin Function Select-1]
Size	Document Number R20UT4390EG0100 — Rev 1.00
Date:	Tuesday, October 01, 2019 — Sheet 5 of 20

MCU Pin Function Select-2



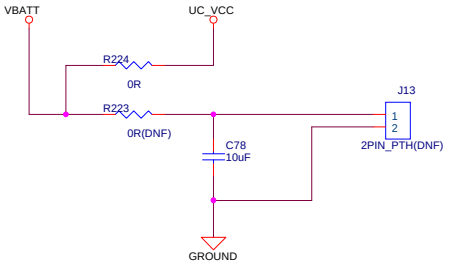
Renesas Electronics Corporation		
Title: RSK+RX72M [MCU Pin Function Select-2]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
Date: Tuesday, October 01, 2019	Sheet 6 of 20	

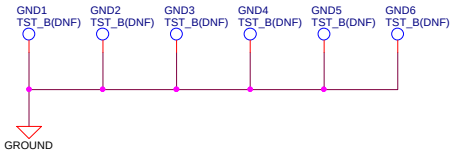
Power Supply Unit



Power Supply Configuration

J16	Power Supply Source	Board_5V, USB_5V	UC_VCC, Board_3V3, SD_3V3	Unavailable Feature
open	PWR / Unregulated_VCC / JA1-5V	5V	3.3V	USB (Function-Buspowered)
shorted pin	VBUS	5V	3.3V	USB (Host), USB (Function-Selfpowered)





Renesas Electronics Corporation		
Title: RSK+RX72M [PSU]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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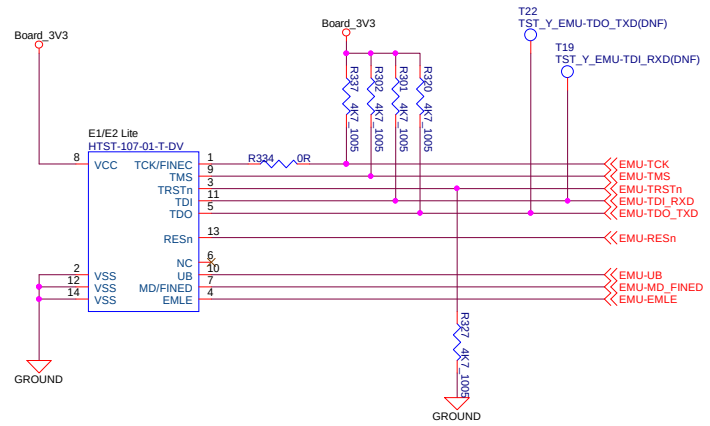
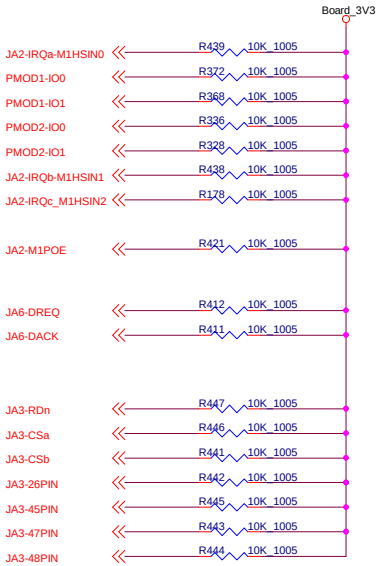
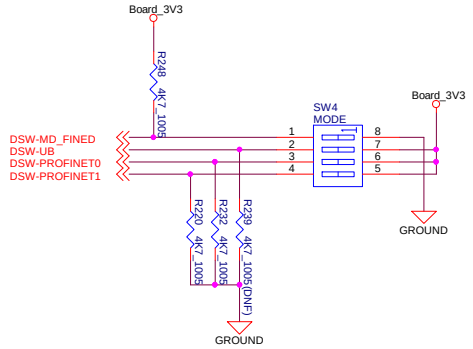
E1/E2 Lite Emulator Interface



Option pull-up resistor



MCU & Emulator Mode Setting

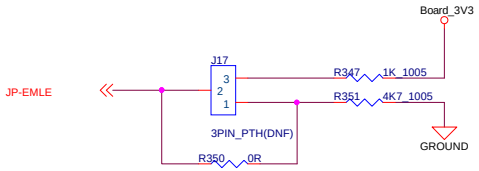


MCU Operating Mode Configuration

SW4 Pin1	SW4 Pin2	J14	Operating Mode
OFF	Don't care	Don't care	Single Chip Mode
ON	OFF	Don't care	SCI Boot Mode
ON	ON	Open	USB Boot Mode (Bus Powered)
ON	ON	Shorted Pin	USB Boot Mode (Self Powered)

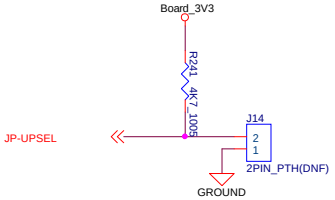
Default setting of SW4.

SW4	Default
Pin1	OFF
Pin2	OFF
Pin3	OFF
Pin4	OFF



Emulator Configuration

J17	Emulator Configuration
Shorted Pin1-2	E1/E2 Lite normal debugging Microcontroller single operation (without emulator)
Shorted Pin2-3	E1/E2 Lite debugging with Hot plug-in
All open	DO NOT SET



Power Configuration for USB Boot Mode

J14	Power Configuration
Open	Bus Powered
Shorted	Self Powered

Renesas Electronics Corporation		
Title: RSK+RX72M [E1/E2 Lite, MCU & Emulator Mode Setting, Pull-up resistors]		
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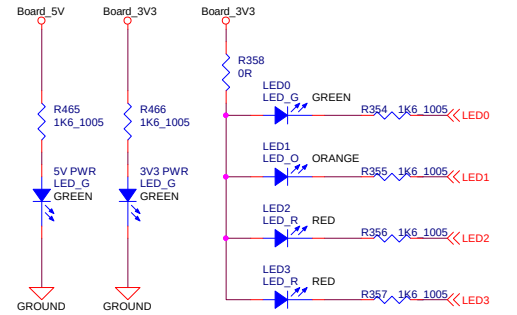
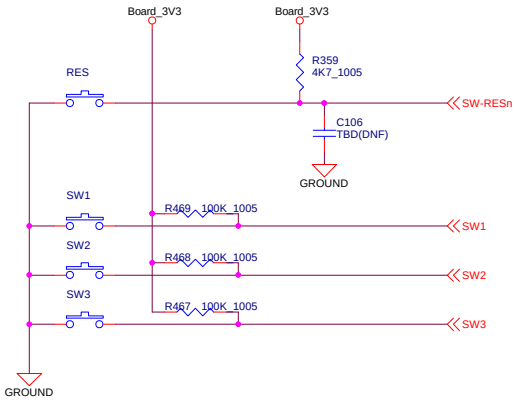
Switches, LEDs, RESET





Renesas Electronics Corporation		
Title: RSK+RX72M [RESET, Switches, LEDs]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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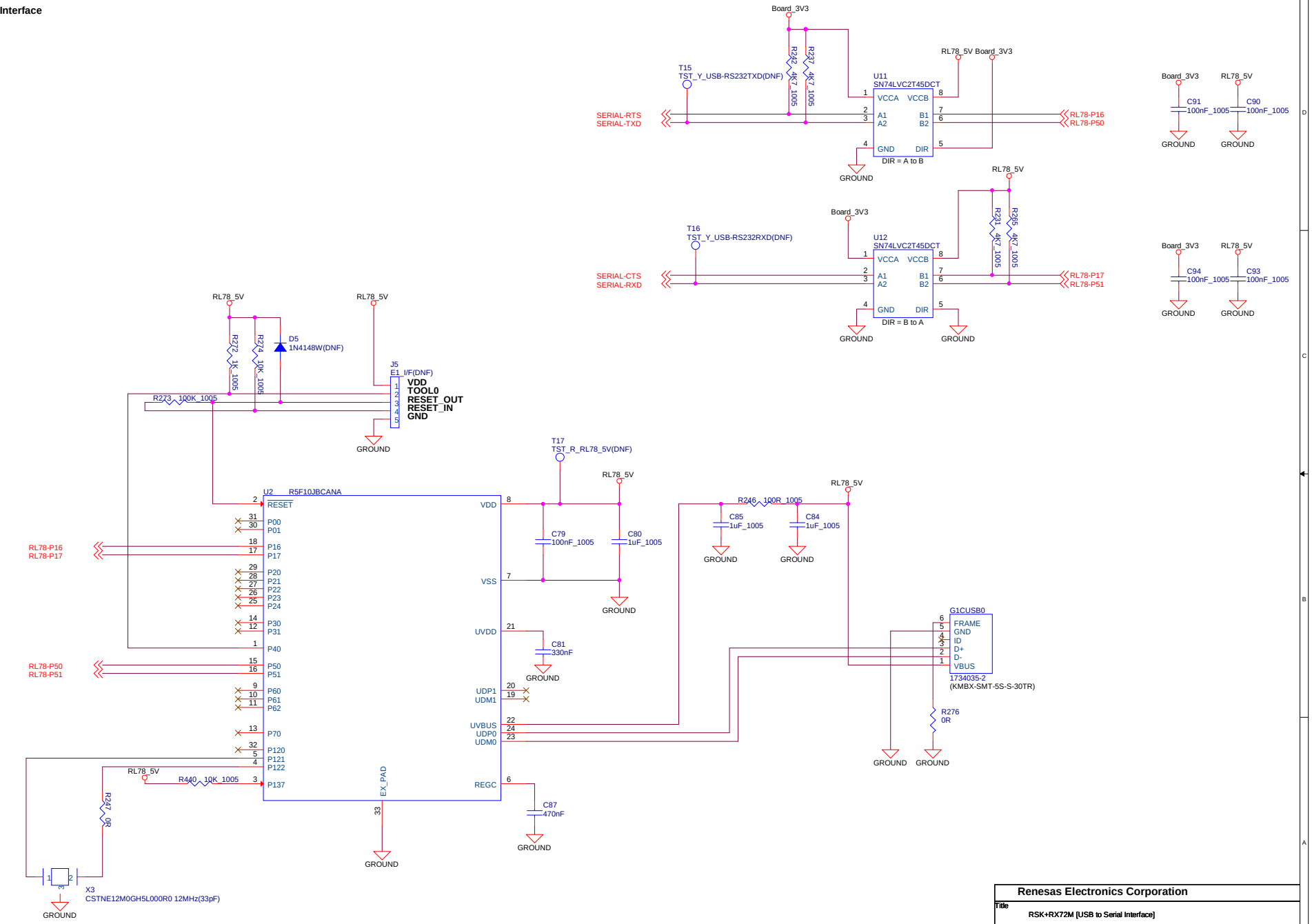
USB to Serial Interface



Renesas Electronics Corporation		
Title: RSK+RX72M [USB to Serial Interface]		
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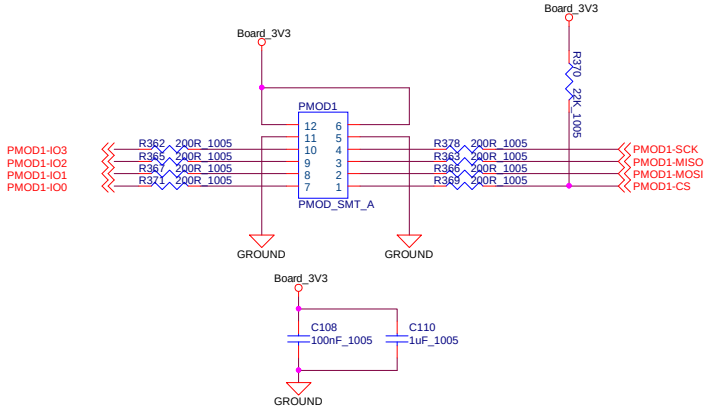
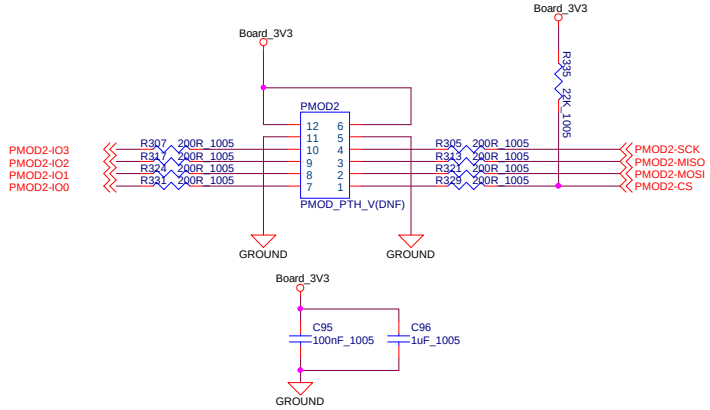
Pmod connectors

PMOD1: Angle type connector

PMOD2: Vertical type connector (spare)

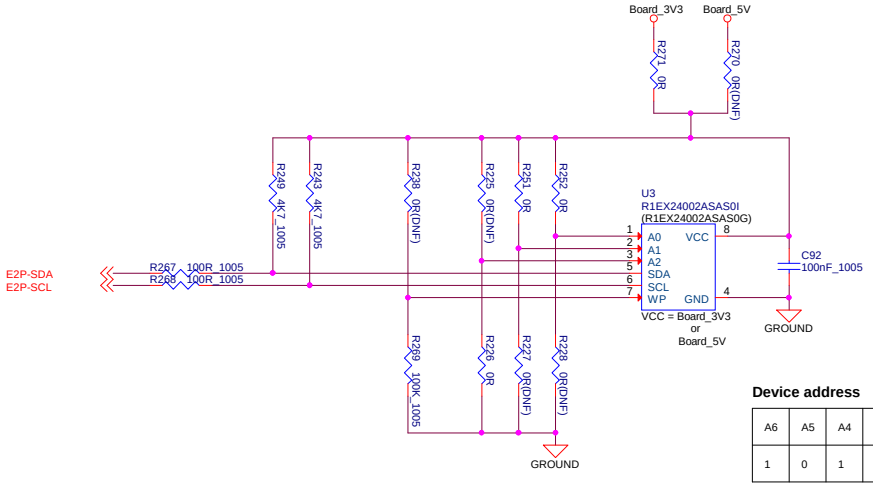




IIC EEPROM(2Kbits) - RIIC

Warning:

NEVER FIT R271 and R270 simultaneously.



Device address

A6	A5	A4	A3	A2	A1	A0
1	0	1	0	0	1	1

Renesas Electronics Corporation		
Title: RSK+RX72M [Pmod, IIC EEPROM]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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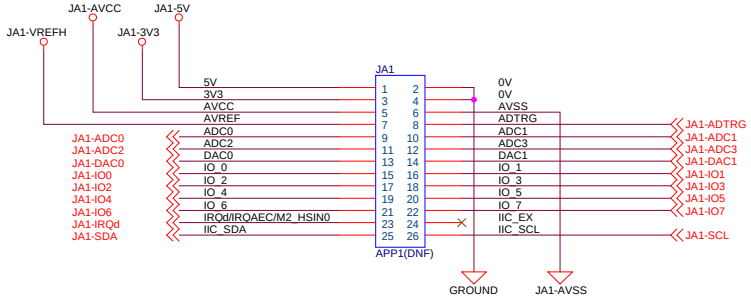
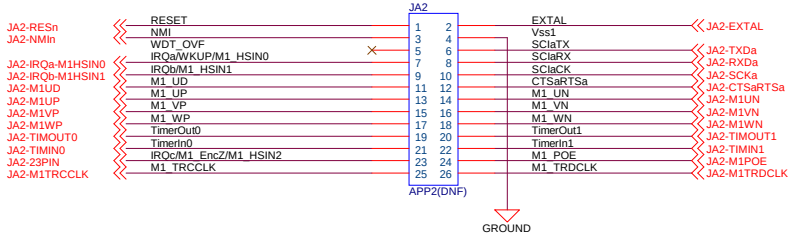
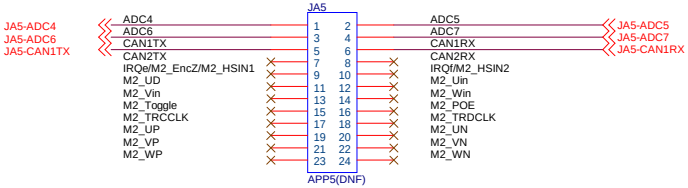
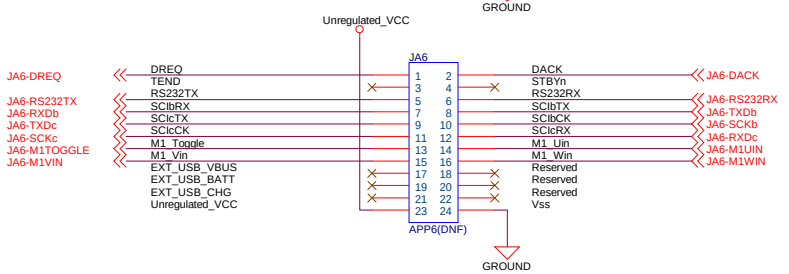
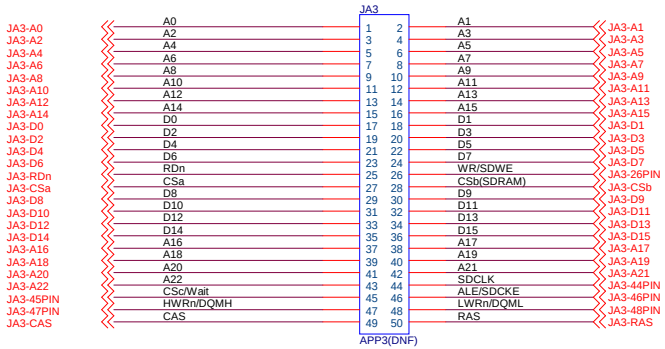
Application Headers











Renesas Electronics Corporation		
Title: RSK+RX72M [Application Headers]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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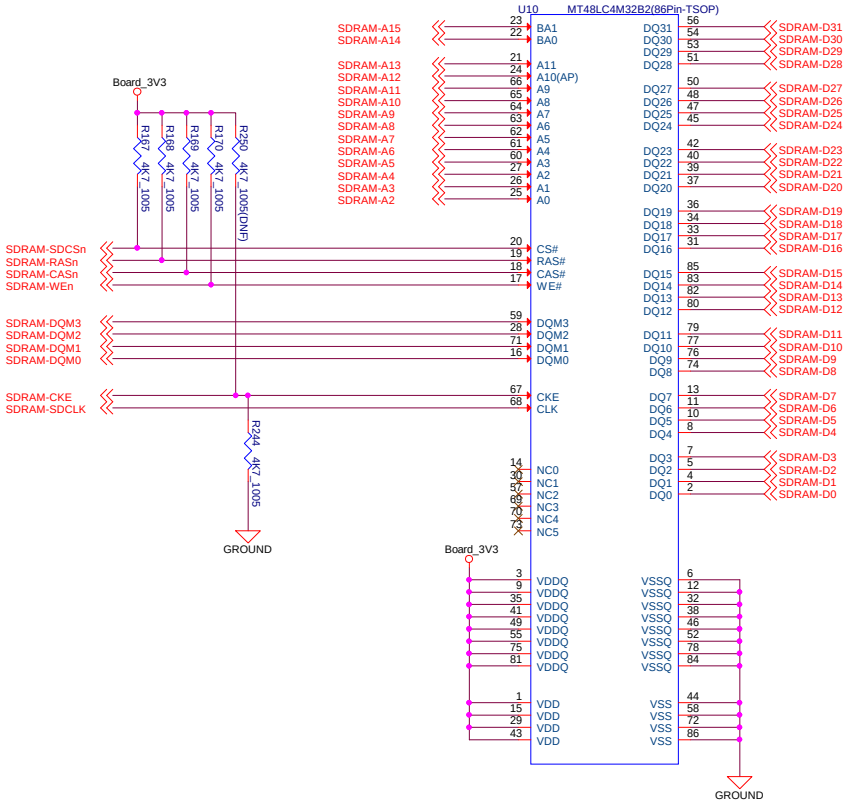
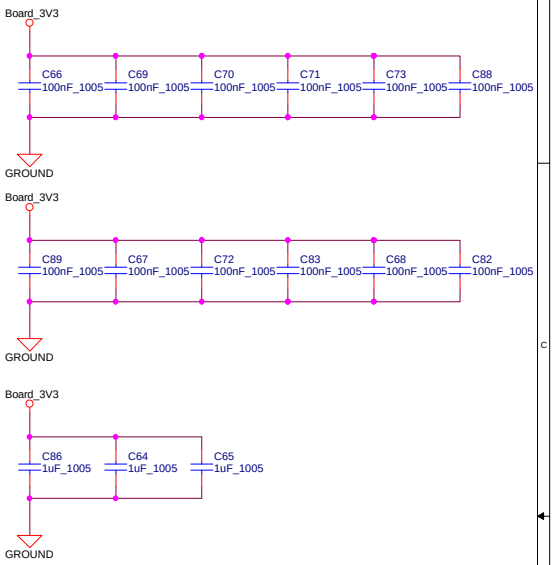
SDRAM(128Mbits)





Renesas Electronics Corporation		
Title: RSK+RX72M [On-board SDRAM]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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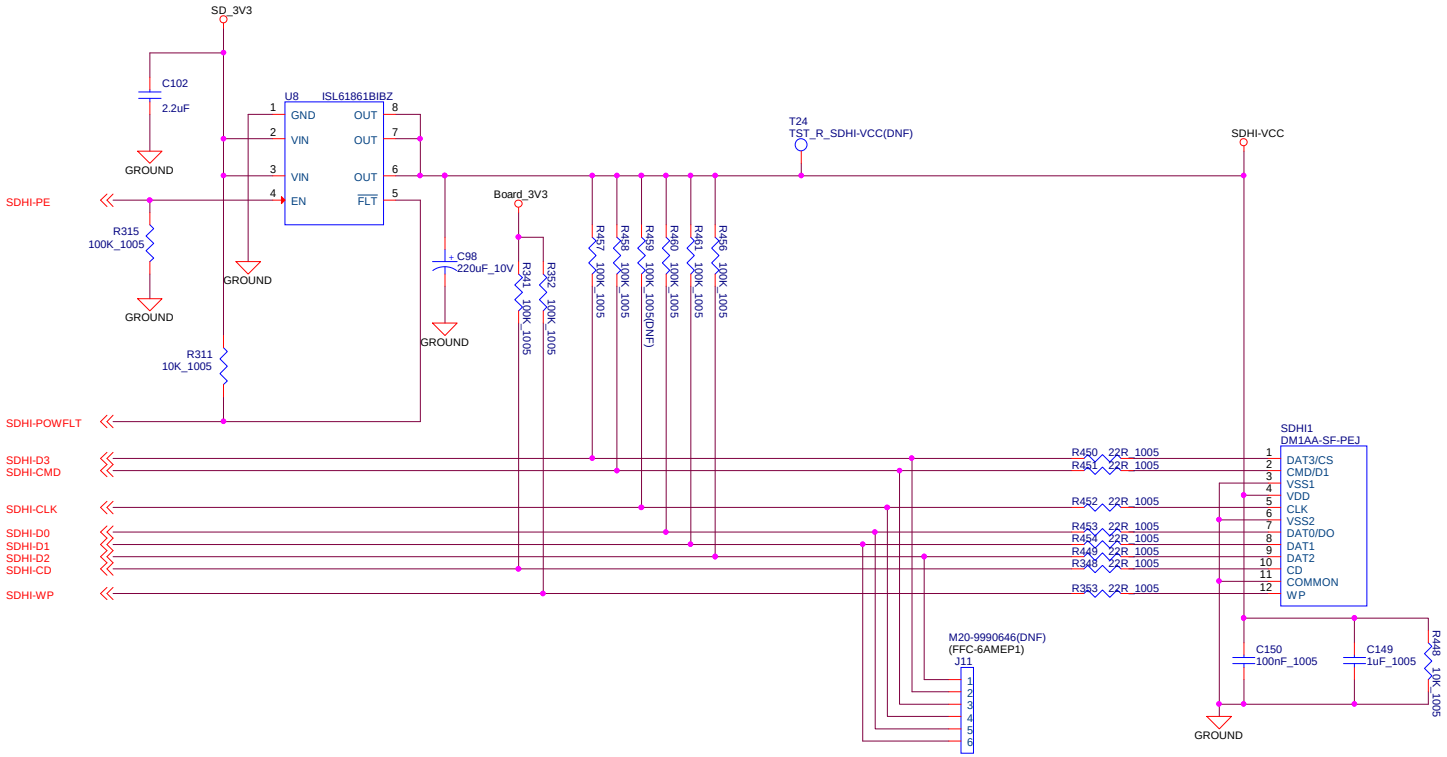
SDHI



Renesas Electronics Corporation		
Title: RSK+RX72M [SDHI]		
Size	Document Number R20UT4390EG0100	Rev 1.00
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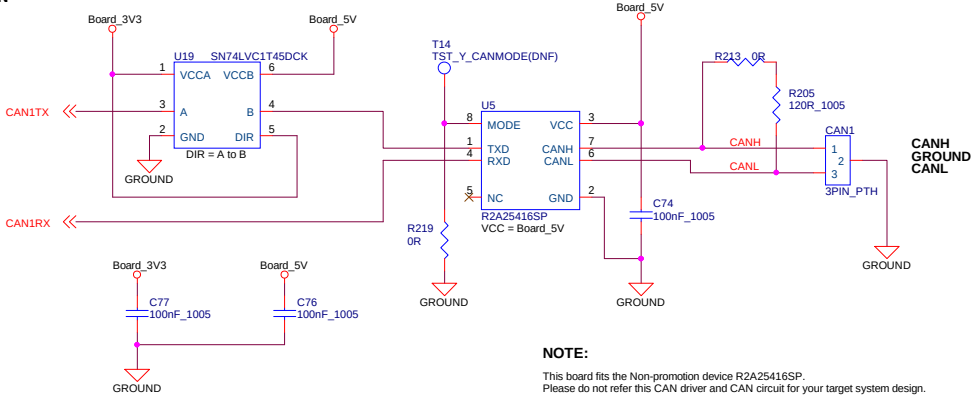
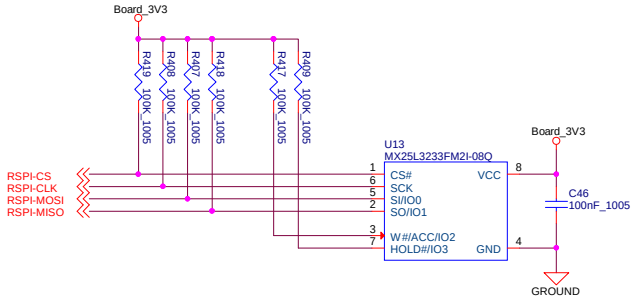
CAN



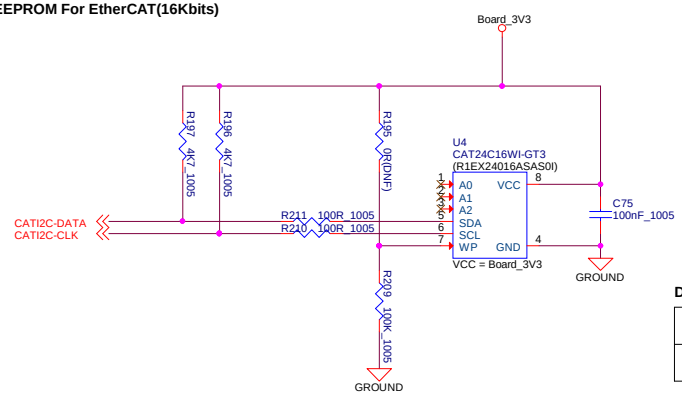
NOTE:

This board fits the Non-promotion device R2A25416SP.
Please do not refer this CAN driver and CAN circuit for your target system design.

RSPI- SPI Serial Flash(32Mbits)



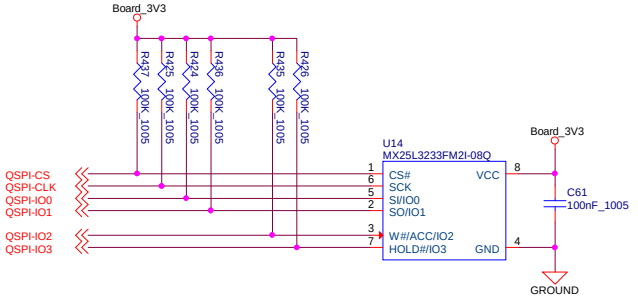
Serial EEPROM For EtherCAT(16Kbits)



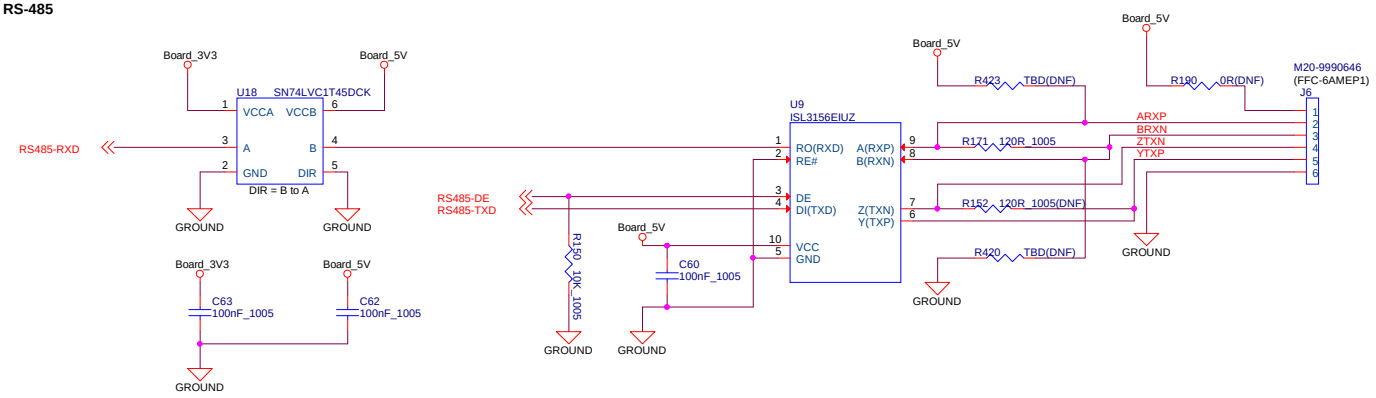
Device address

A6	A5	A4	A3	A2	A1	A0
1	0	1	0	x	x	x

QSPI- SPI Serial Flash(32Mbits)



RS-485



Renesas Electronics Corporation		
Title	RSK+RX72M [CAN, RSPI, QSPI, IIC EEPROM(For EtherCAT), RS-485]	
Size	Document Number R20UT4390EG0100	Rev 1.00
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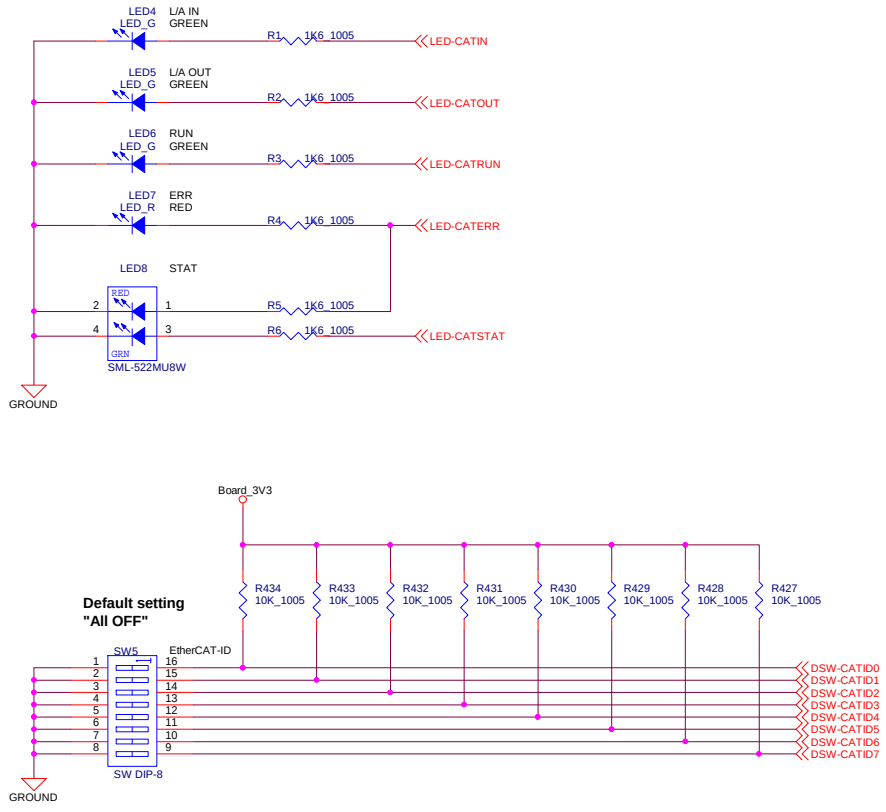
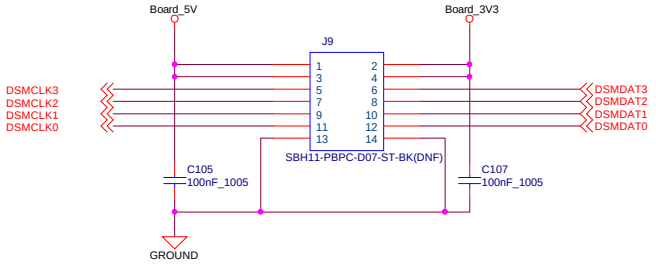
EtherCAT-LEDs, EtherCAT-ID



DSMIF



Renesas Electronics Corporation		
Title: RSK+RX72M [EtherCAT-ID, EtherCAT-LED, DSMIF]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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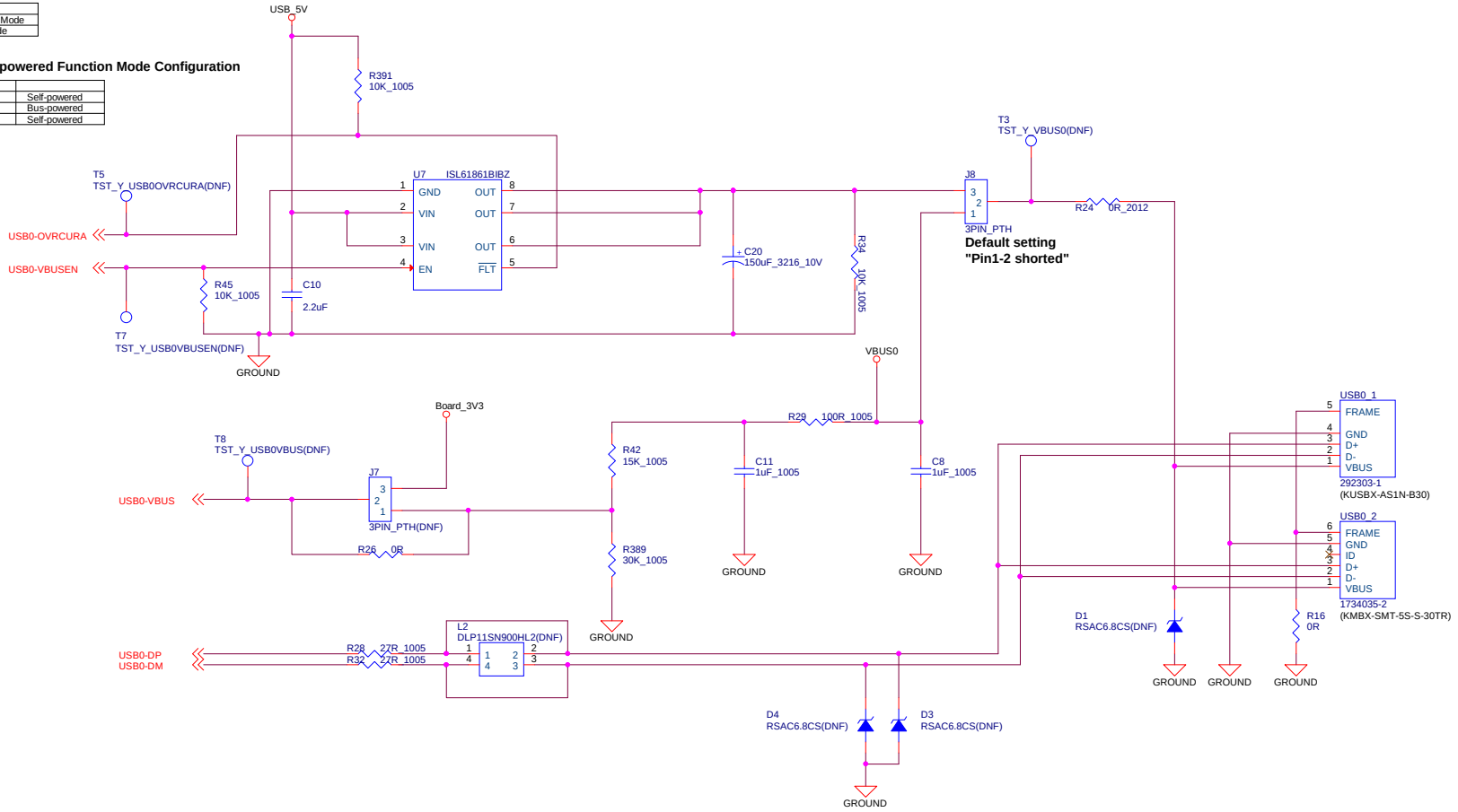
USB0 Host/Function

USB0 Host/Function Select

J8	
1-2 shorted	Function Mode
2-3 shorted	Host Mode

Self-powered/Bus-powered Function Mode Configuration

J7	R26	
1-2 shorted	Remove	Self-powered
2-3 shorted	Remove	Bus-powered
Open	Fit	Self-powered



Renesas Electronics Corporation		
Title: RSK+RX72M [USB0 Host/Function]		
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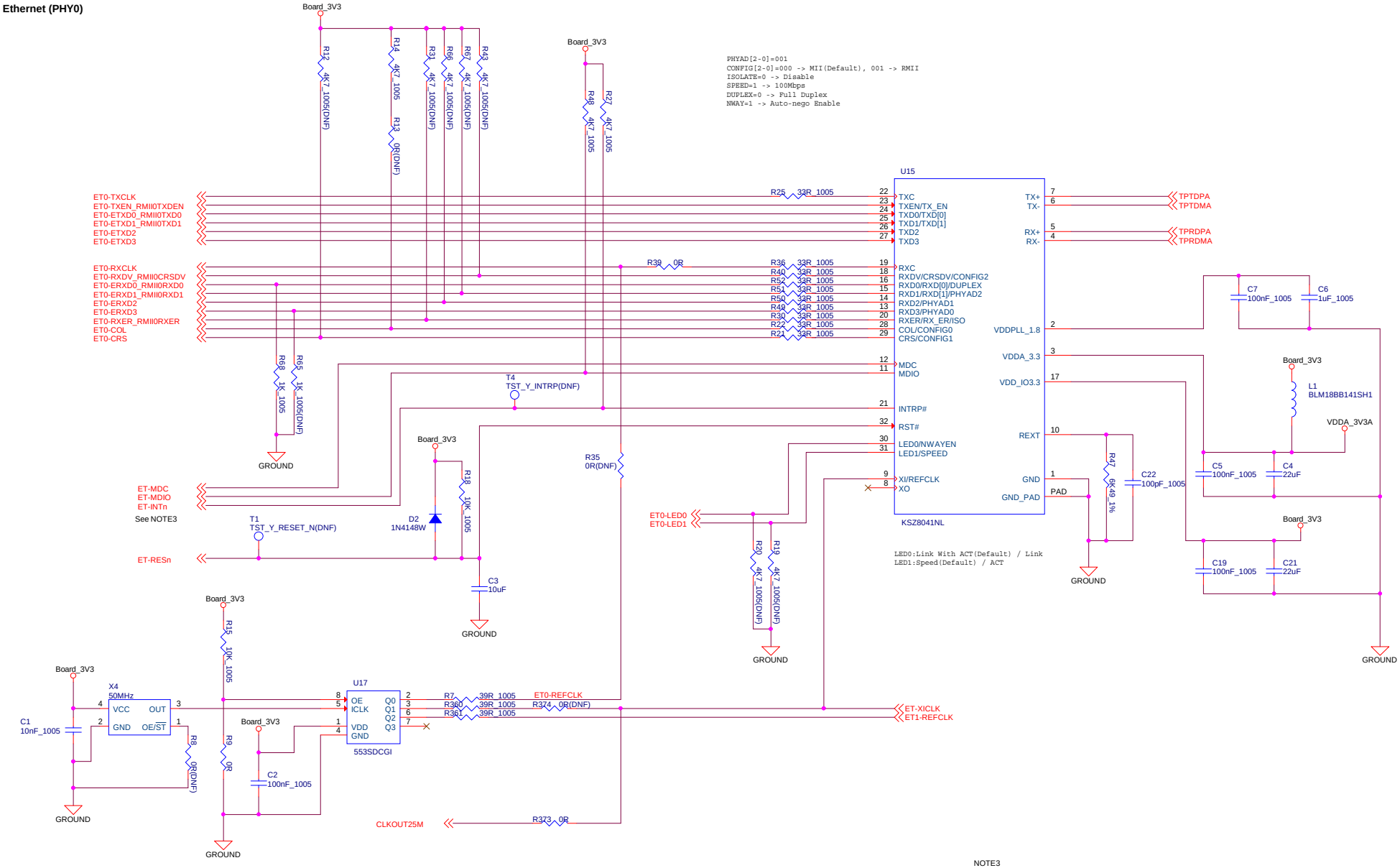
Ethernet (PHY0)



PHY Mode	R35, R374, R103, R13, R78, R46, R115	R9, R39, R373, R109, R55, R377, R123, R401
MII (Default)	DNF	Fit
RMII	Fit	DNF

NOTE1: R103, R109, R78 Refers to page 19.
NOTE2: R46, R55, R377, R115, R123, R401 Refers to page 6.

NOTE3
The PHY interrupt is connected to IRQ1 and CATIRQ.
IRQ1 and CATIRQ can't be locked exclusively by hardware.
Therefore only enable one of the interrupts.

Renesas Electronics Corporation

Title	RSK+RX72M [Ethernet PHY(0)]	
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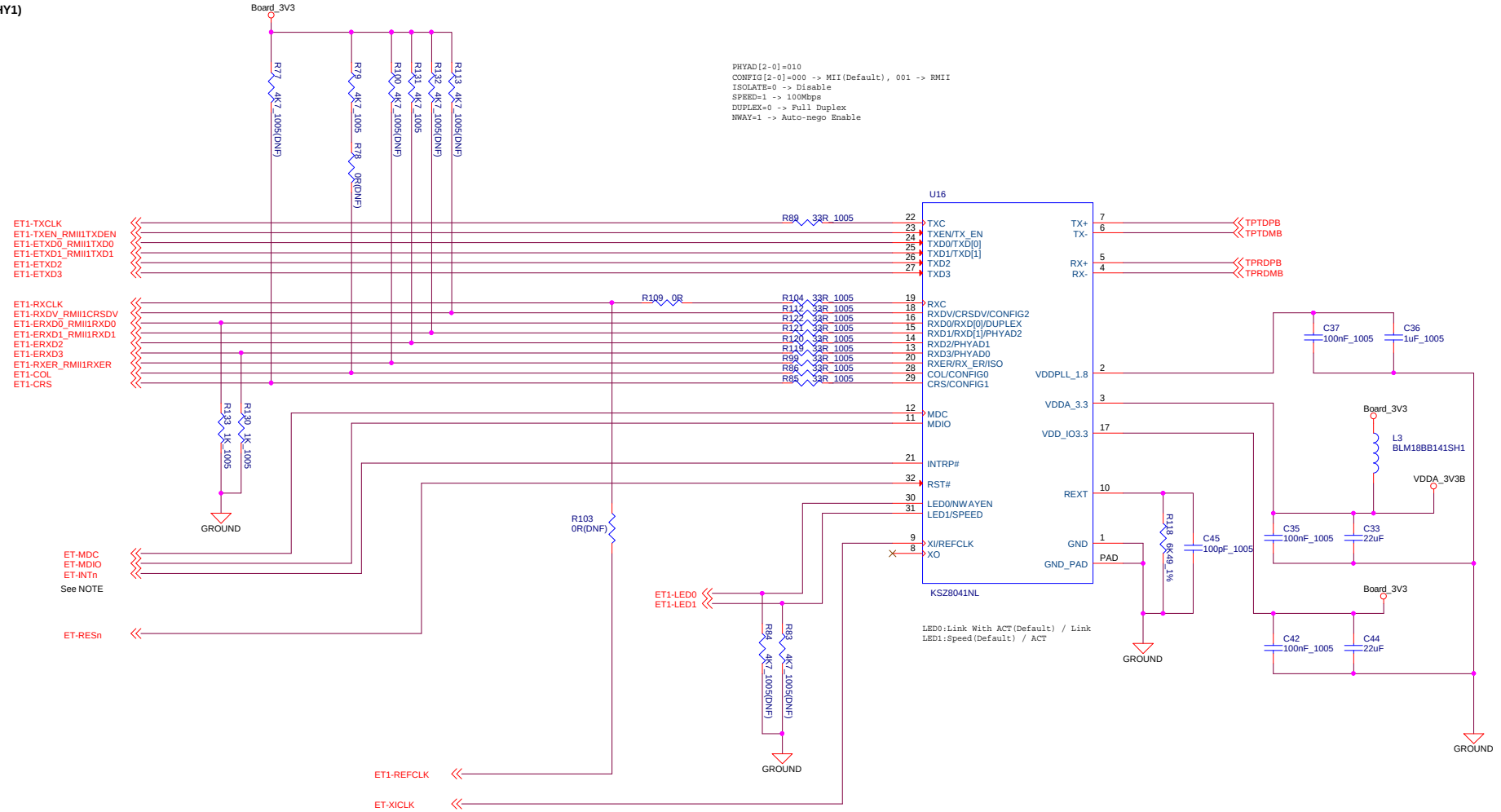
Ethernet (PHY1)



NOTE
The PHY interrupt is connected to IRQ1 and CATIRQ.
IRQ1 and CATIRQ can't be locked exclusively by hardware.
Therefore only enable one of the interrupts.

Renesas Electronics Corporation		
Title: RSK+RX72M [Ethernet PHY(1)]		
Size	Document Number: R20UT4390EG0100	Rev: 1.00
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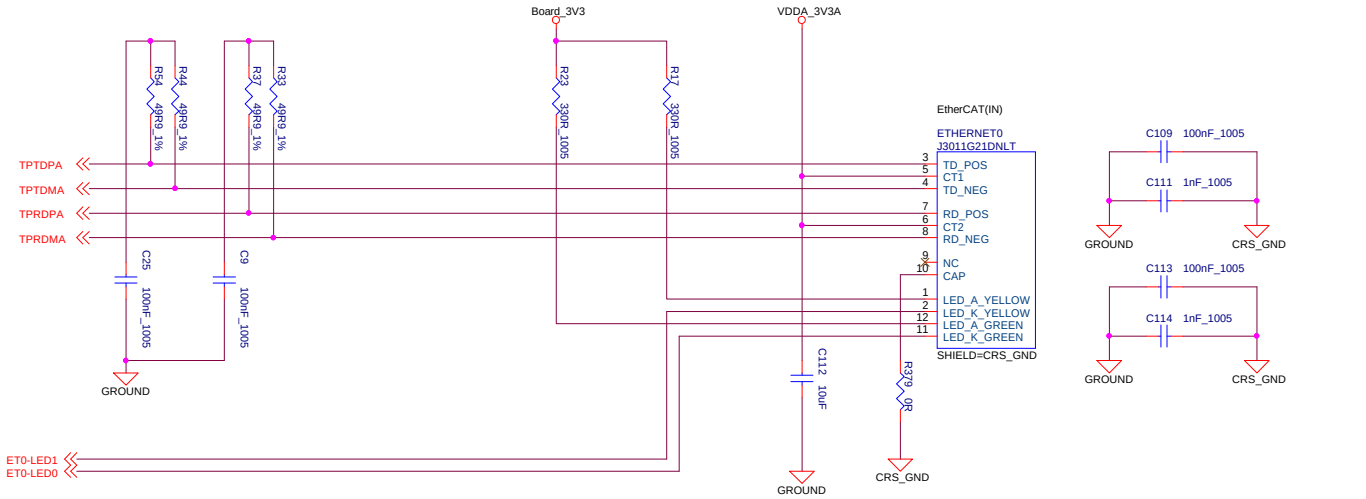
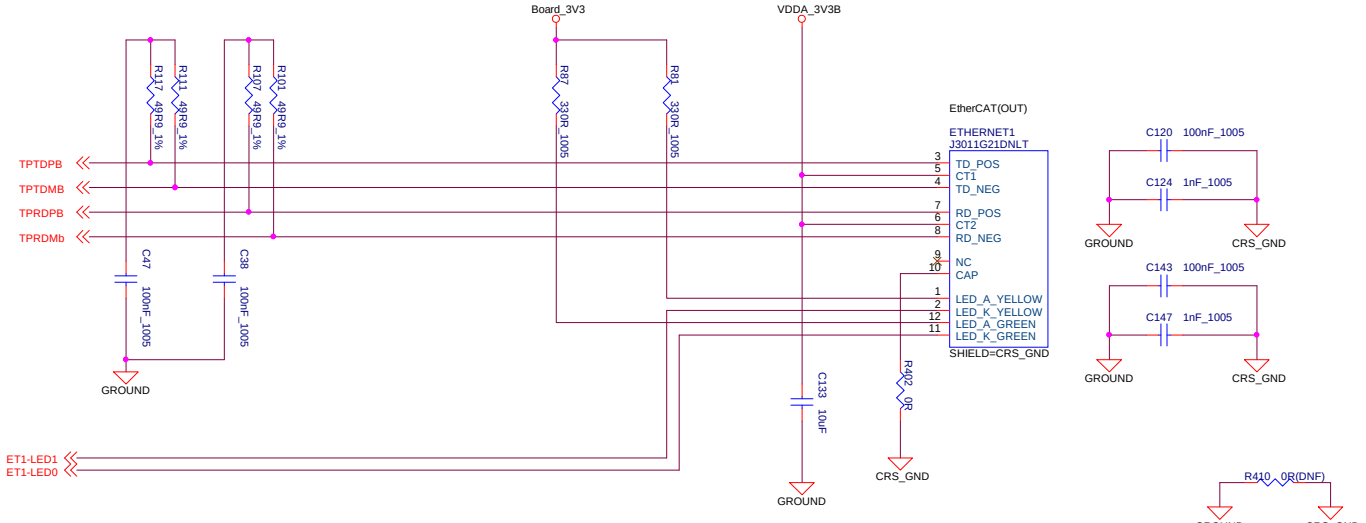
Ethernet (RJ45)





Renesas Electronics Corporation		
Title: RSK+RX72M [Ethernet RJ45]		
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Revision History

REV	DATE	PAGE	DESCRIPTION
1.00	01.10.2019	---	1st release edition.

Renesas Electronics Corporation		
Title: RSK+RX72M [Revision History]		
Size	Document Number R20UT4390EG0100	Rev 1.00
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