

# Renesas Starter Kit+ for RX64M CPU Board Schematics

REV	REF	DATE	DRAWN BY
1.00	Release	24.07.2014	YOJ

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**Note:**

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

\* "DNF" marking means that component does not fit by default.

**Board Code:**

R0K50564MC010BE : RX64M Micon does not support Trusted Memory

R0K50564MC000BE : RX64M Micon supports Trusted Memory

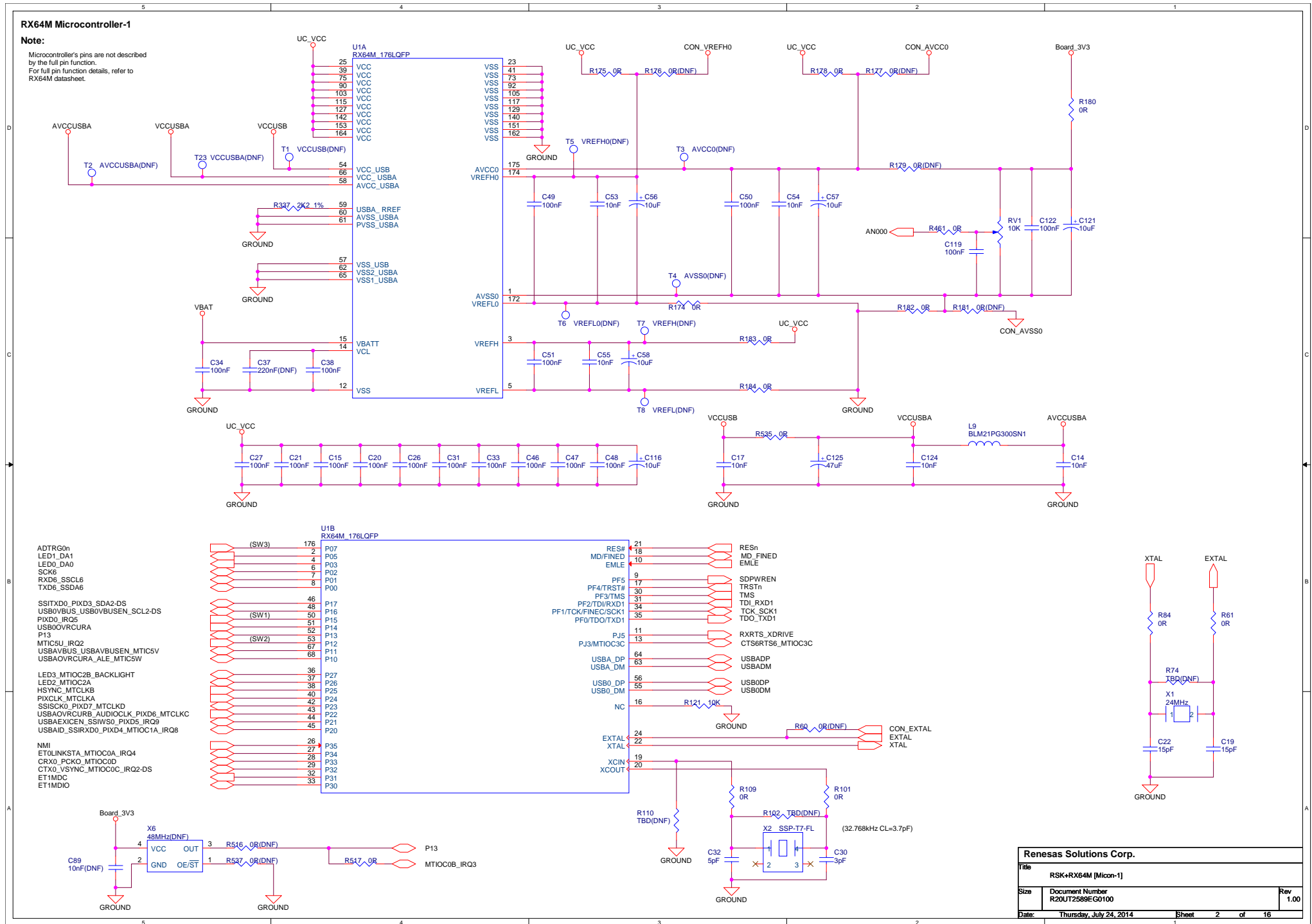
REEL Drawing No. D012412\_04

Renesas Solutions Corp.			
Title RSK+RX64M [Index]			
Size	Document Number R20UT2589EG0100	Rev 1.00	
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**RX64M Microcontroller-1**

**Note:**

Microcontroller's pins are not described by the full pin function.  
For full pin function details, refer to RX64M datasheet.



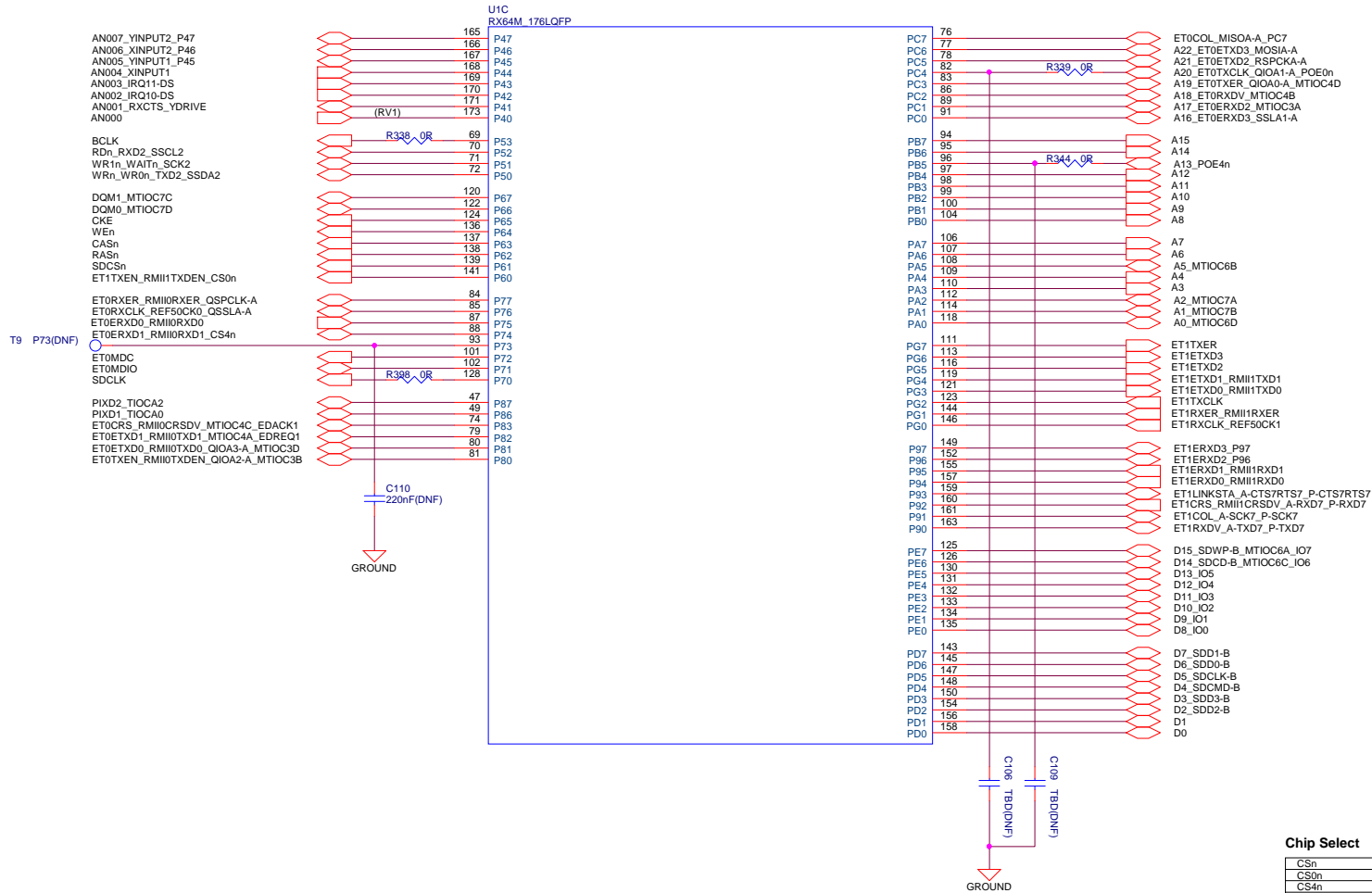
- ADTRG0n
- LED1\_DA1
- LED0\_DA0
- SCK6
- RXD6\_SSCL6
- TXD6\_SSDA6
- SSITXD0\_PIXD3\_SDA2-DS
- USB0VBUS\_USB0VBUSEN\_SCL2-DS
- PIXD0\_IRQ5
- USB0OVRCURA
- P13
- MTIC5U\_IRQ2
- USBAVBUS\_USBAVBUSEN\_MTI0C5V
- USBAOVRCURA\_ALE\_MTI0C5W
- LED3\_MTI0C2B\_BACKLIGHT
- LED2\_MTI0C2A
- HSYNC\_MTCLKB
- PIXCLK\_MTCLKA
- SSISCK0\_PIXD7\_MTCLKD
- USBAOVRCUR6\_AUDIOCLK\_PIXD6\_MTCLKC
- USBAEXICEN\_SSIW50\_PIXD5\_IRQ3
- USBAID\_SSIWXD0\_PIXD4\_MTI0C1A\_IRQ8
- NMI
- ET0LINKSTA\_MTI0C0A\_IRQ4
- CRX0\_PCK0\_MTI0C0D
- CTX0\_VSYNC\_MTI0C0C\_IRQ2-DS
- ET1MDC
- ET1MDIO

<b>Renesas Solutions Corp.</b>		
Title: <b>RSK+RX64M [Micon-1]</b>		
Size:	Document Number:	Rev:
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# RX64M Microcontroller-2

## Note:

Microcontroller's pins are not described by the full pin function.  
For full pin function details, refer to RX64M datasheet.



### Chip Select

CSn	Interface
CS0n	Application Header (JA3)
CS1n	Application Header (JA3)
SDCSn (CS1n)	On-board SDRAM (BD_SDCSn) / Application Header JA3 (CON_SDCSn)

### RSPI Slave Select

SSL	Interface
SSLA1-A	On-board SPI Serial Flash

### QSPI Slave Select

QSSL	Interface
QSSLA-A	On-board QSPI Serial Flash (BD_QSPCLK-A) / TFT Header (TFT_QSPCLK-A)

### Renesas Solutions Corp.

Title		
RSK+RX64M [Micon-2]		
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MCU Pin Function Select-1

Default setting of DIP Switches.

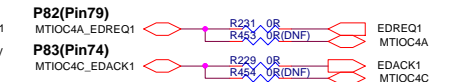
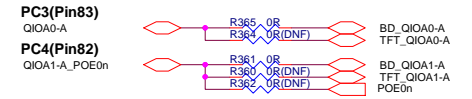
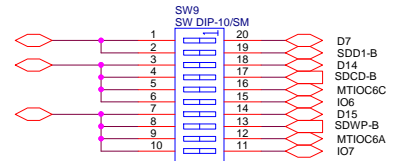
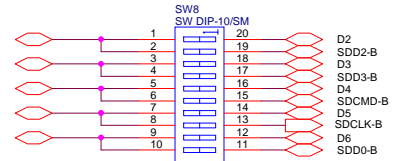
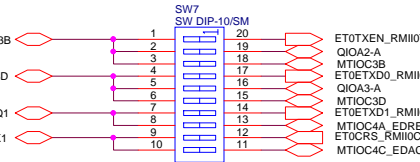
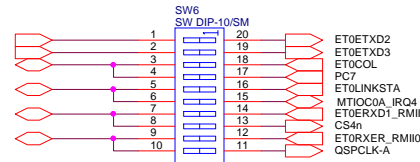
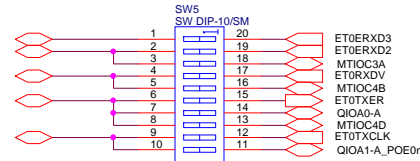
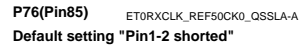
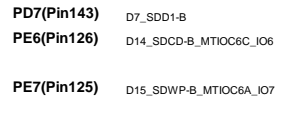
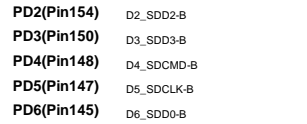
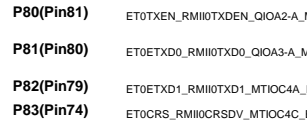
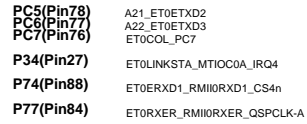
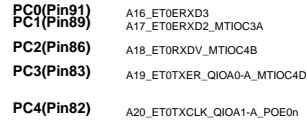
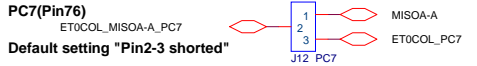
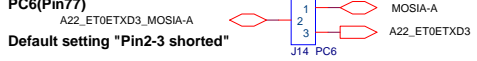
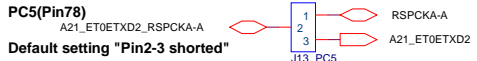
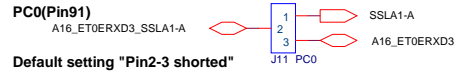
SW5	Default
Pin1	ON
Pin2	ON
Pin3	OFF
Pin4	ON
Pin5	OFF
Pin6	ON
Pin7	OFF
Pin8	OFF
Pin9	ON
Pin10	OFF

SW6	Default
Pin1	ON
Pin2	ON
Pin3	ON
Pin4	OFF
Pin5	ON
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	ON
Pin10	OFF

SW7	Default
Pin1	ON
Pin2	OFF
Pin3	OFF
Pin4	ON
Pin5	OFF
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	ON
Pin10	OFF

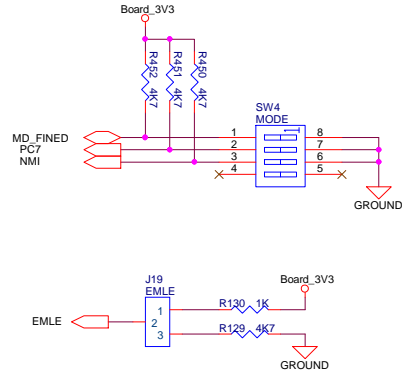
SW8	Default
Pin1	ON
Pin2	OFF
Pin3	ON
Pin4	OFF
Pin5	ON
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	ON
Pin10	OFF

SW9	Default
Pin1	ON
Pin2	OFF
Pin3	ON
Pin4	OFF
Pin5	OFF
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	OFF
Pin10	OFF





### MCU & Emulator Mode Setting



### MCU Operating Mode Configuration

SW4 Pin1	SW4 Pin2	Operating Mode
OFF	Don't care	Single Chip Mode
ON	ON	Boot Mode (SCI)
ON	OFF	User Boot Mode USB Boot Mode

### Power Configuration for USB Boot Mode

SW4 Pin3	Power Configuration
OFF	Bus Powered
ON	Self Powered

### Default setting of SW4.

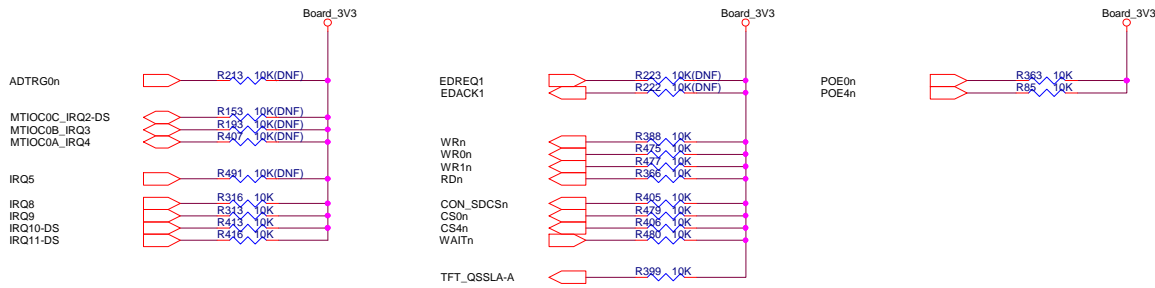
SW4	Default
Pin1	OFF
Pin2	OFF
Pin3	OFF
Pin4	OFF

### Emulator Configuration

J19	Emulator Configuration
Shorted Pin1-2	E1 debugging with Hot plug-in
Shorted Pin2-3	E1 normal debugging
all open	Microcontroller single operation (without E1/E20)
	DO NOT SET

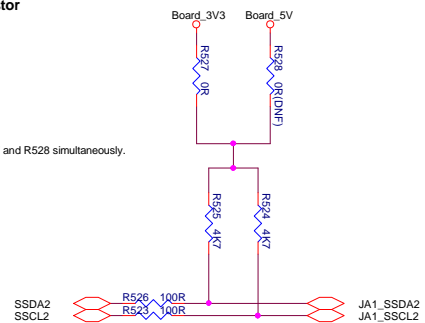
Default setting of J19 "Pin2-3 shorted"

### Option pull-up resistor

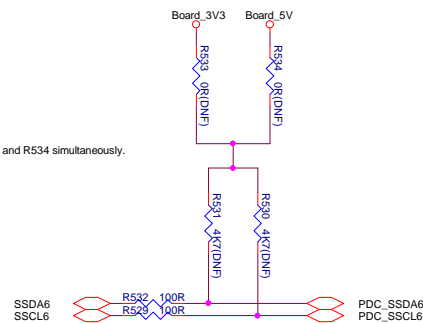


### Simple IIC pull-up resistor

**Warning:**  
NEVER FIT R527 and R528 simultaneously.



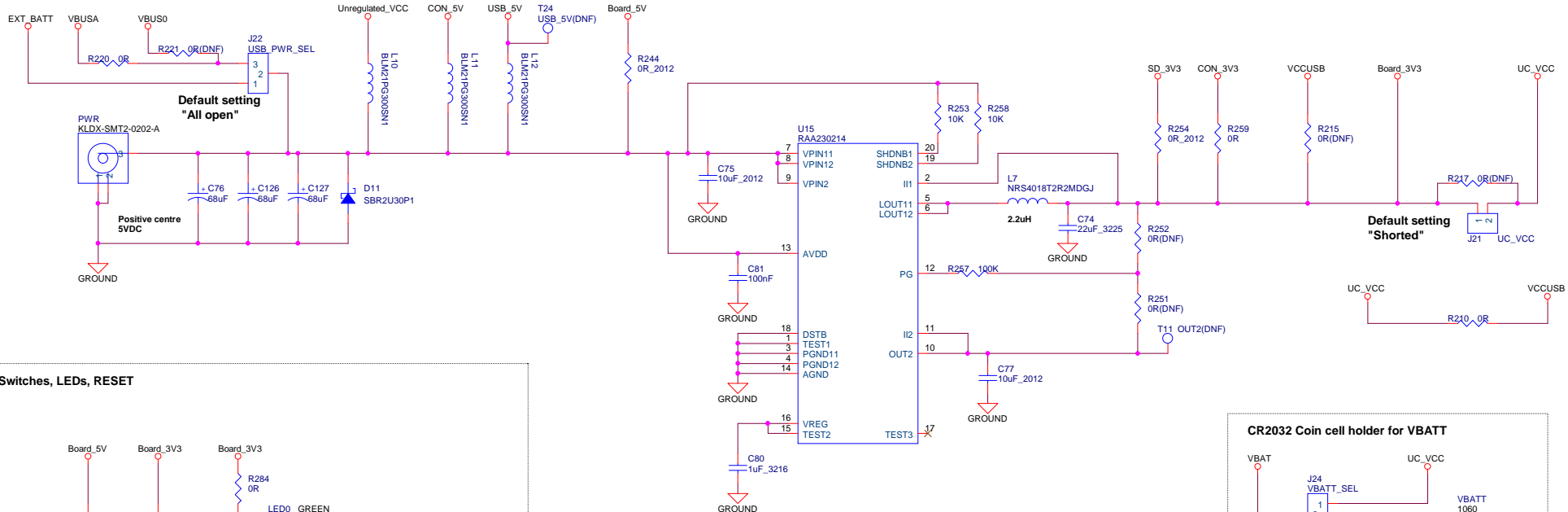
**Warning:**  
NEVER FIT R533 and R534 simultaneously.



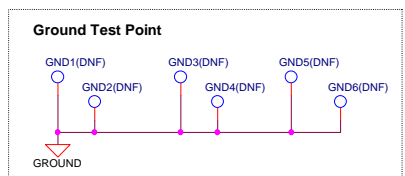
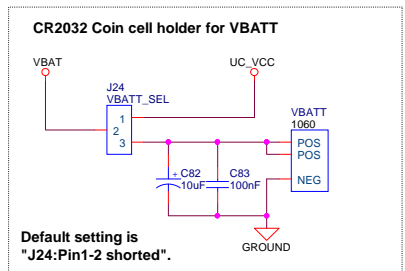
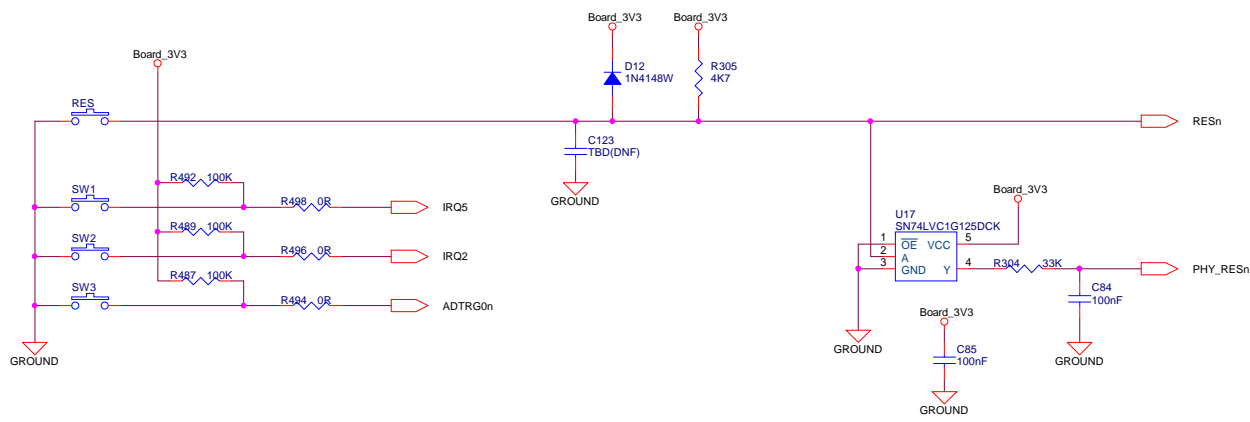
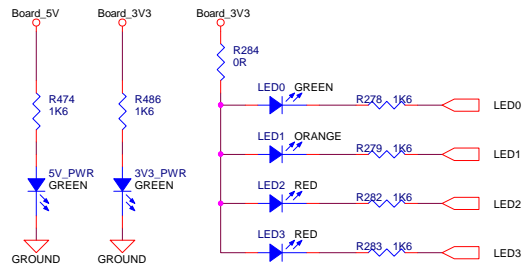
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Title		
RSK+RX64M [MCU & Emulator Mode Setting]		
Size	Document Number	Rev
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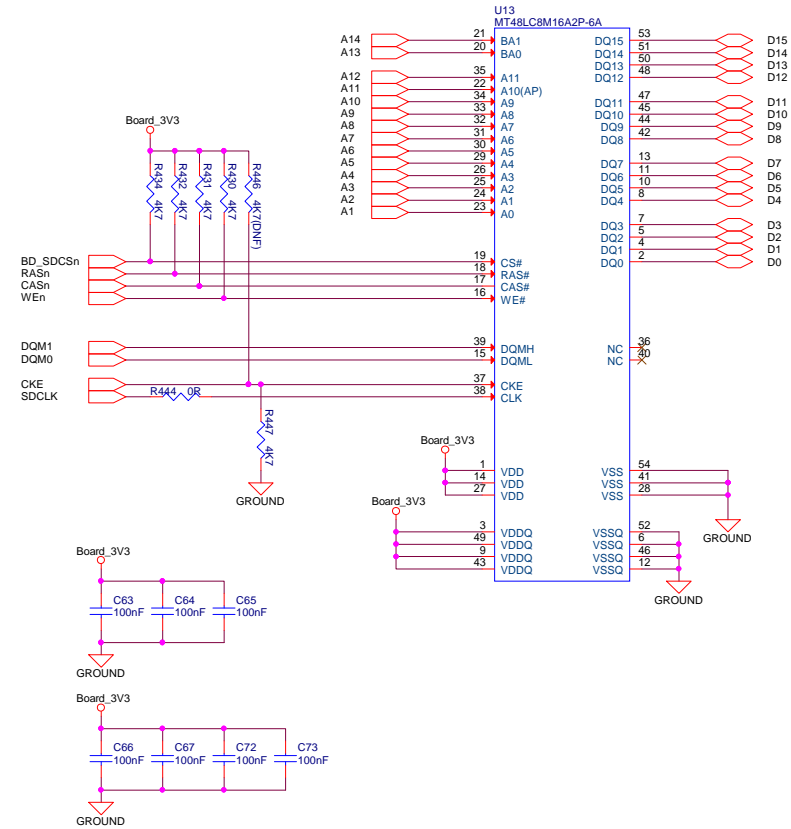
**Power Supply Unit**



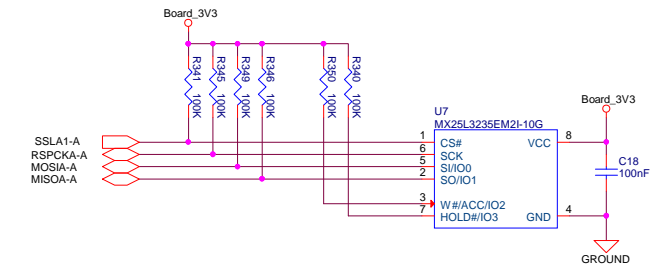
**Switches, LEDs, RESET**



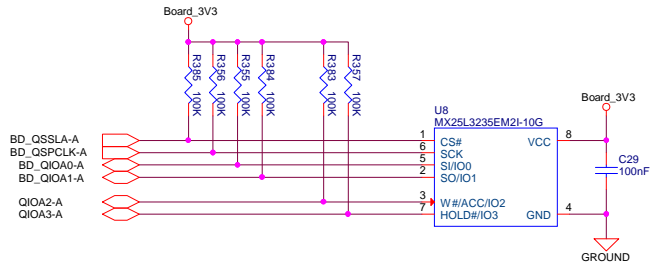
**SDRAM(128Mbits)**



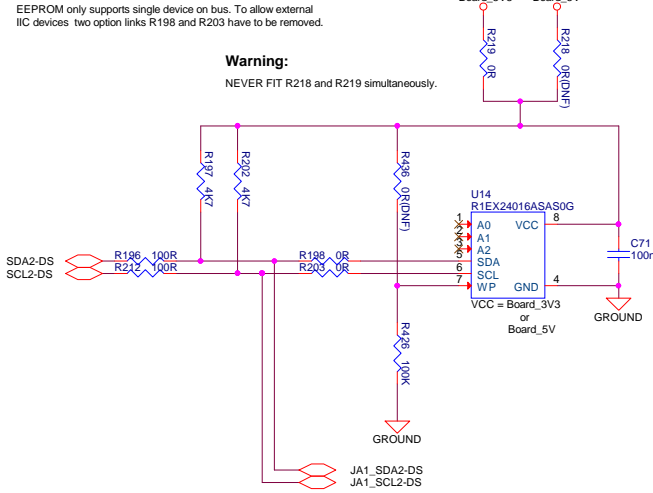
**RSPI- SPI Serial Flash(32Mbits)**



**QSPI- SPI Serial Flash(32Mbits)**



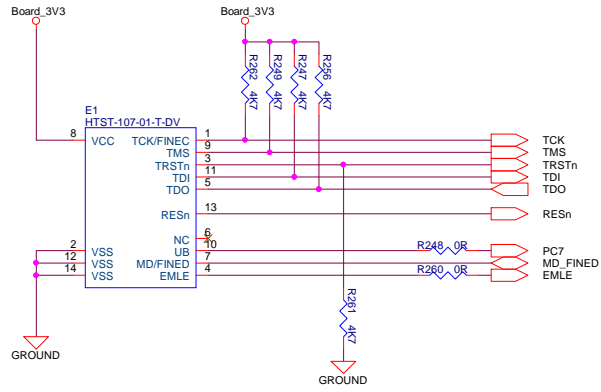
**RIIC- Serial EEPROM(16Kbits)**



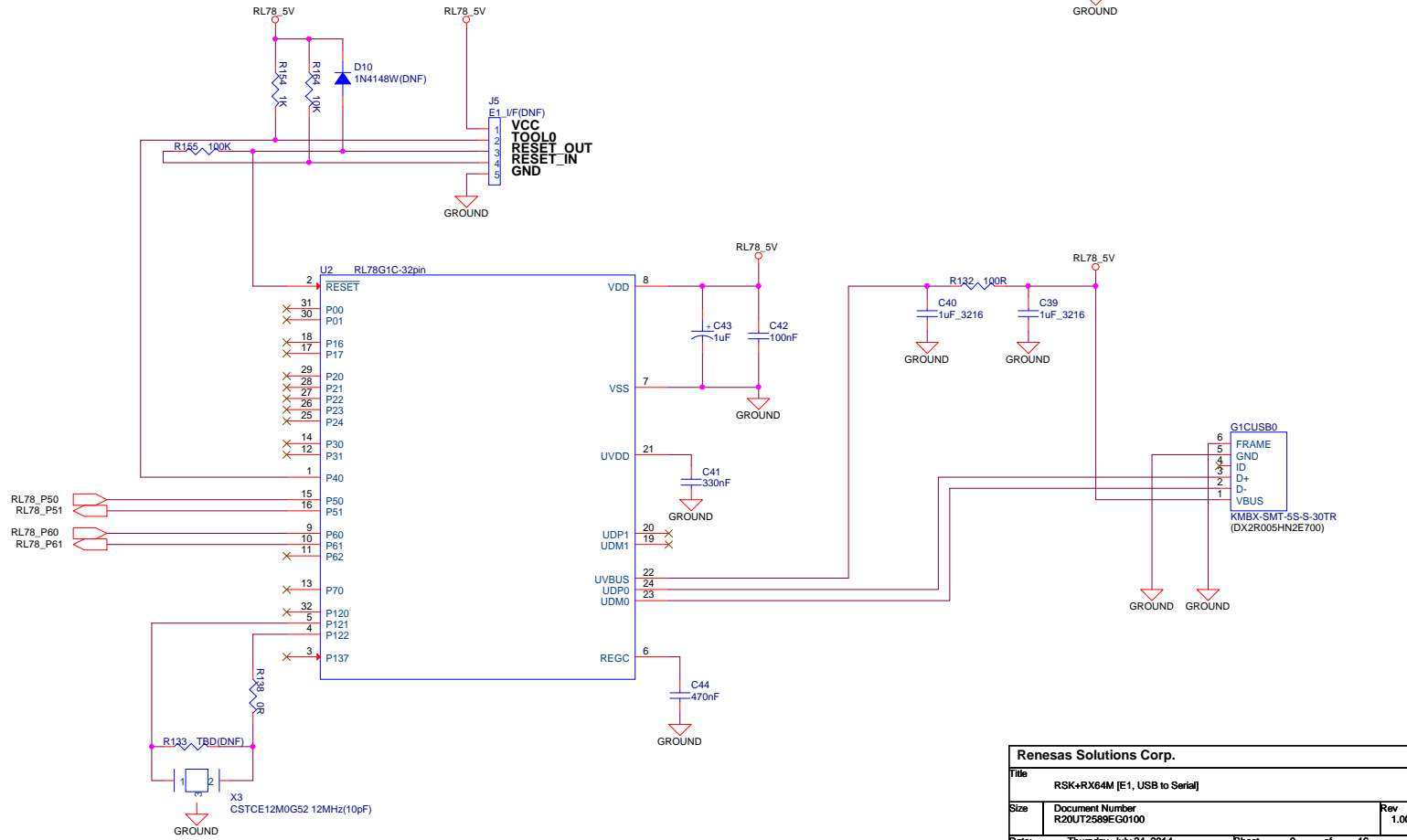
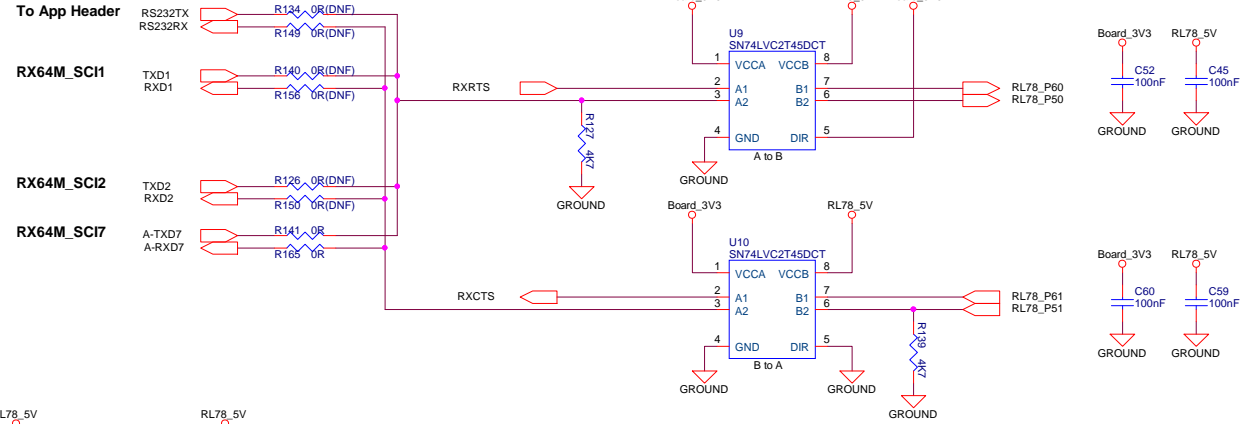
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Title: RSK+RX64M [On-board Memory]		
Size: R20UT2589EG0100	Document Number: R20UT2589EG0100	Rev: 1.00
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E1 Emulator Interface

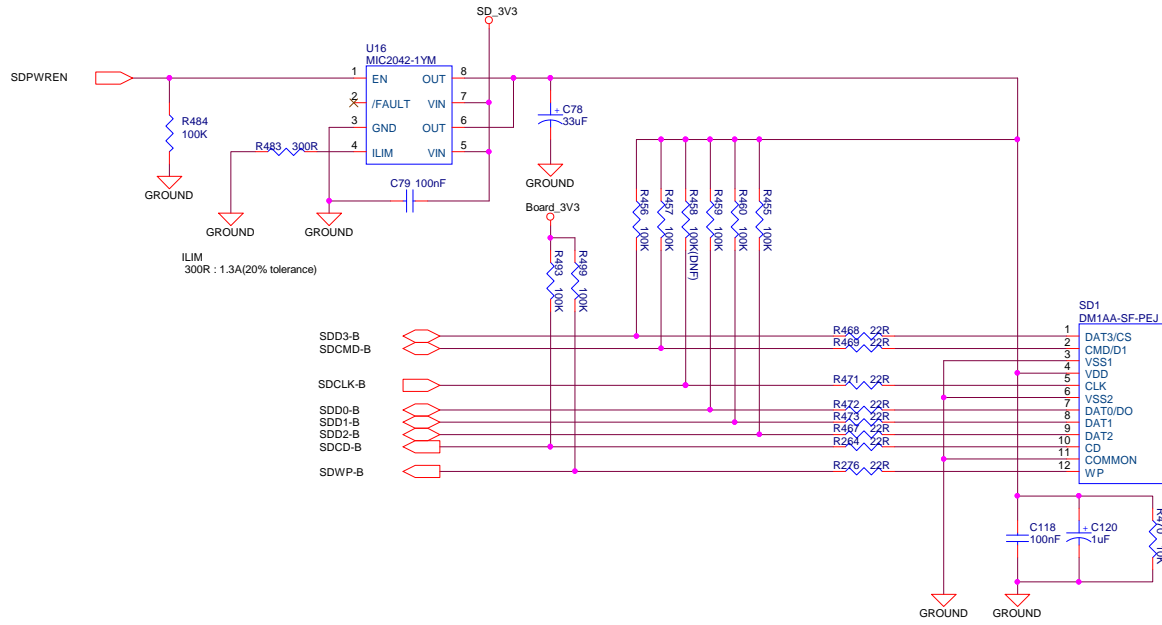


USB to Serial Interface

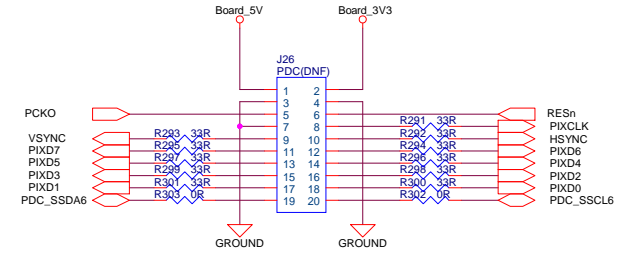


<b>Renesas Solutions Corp.</b>		
Title: RSK+RX64M [E1, USB to Serial]		
Size: R20UT2589EG0100	Document Number: R20UT2589EG0100	Rev: 1.00
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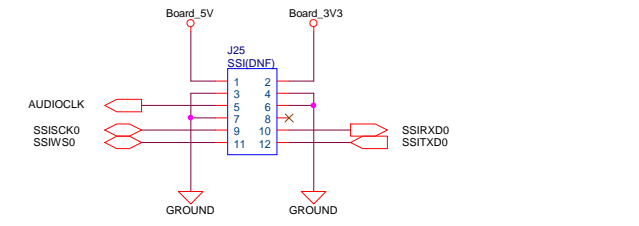
**SD Slot**



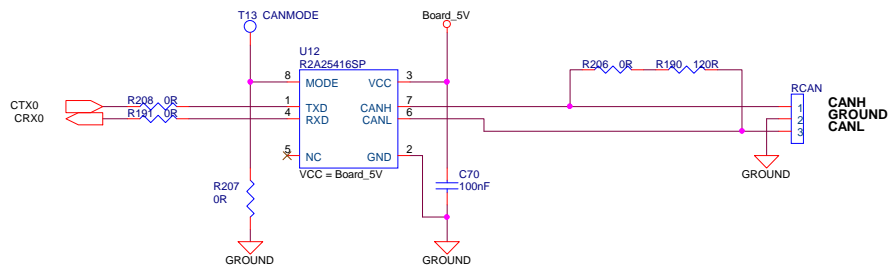
**PDC**



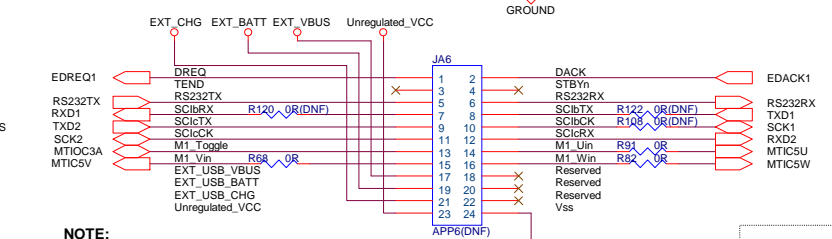
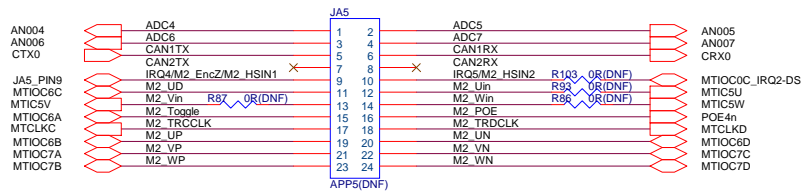
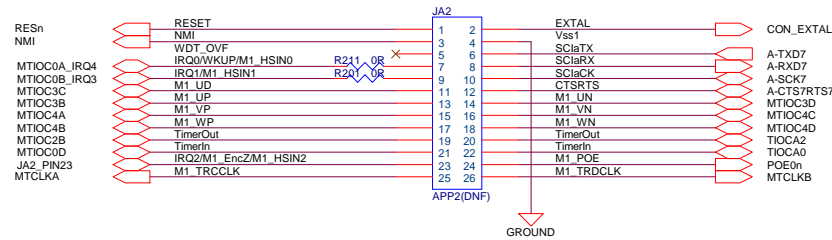
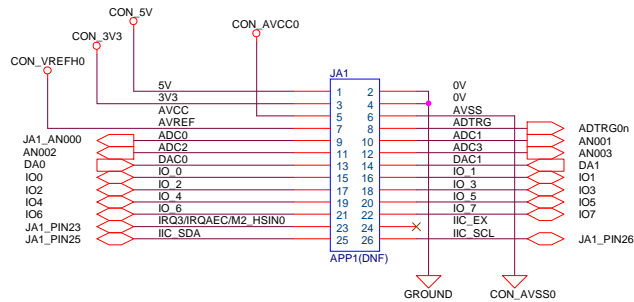
**SSI**



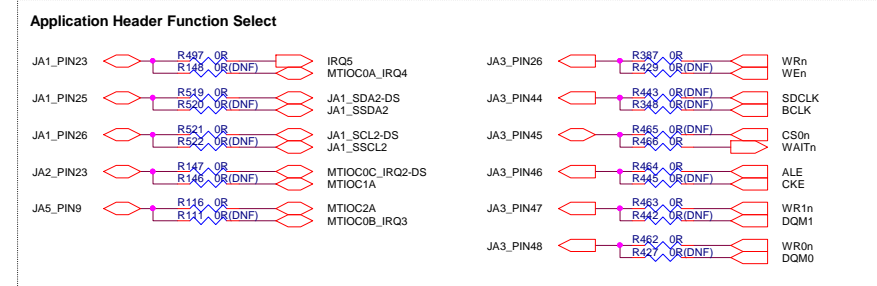
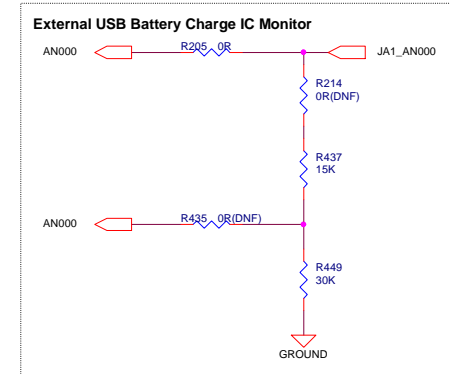
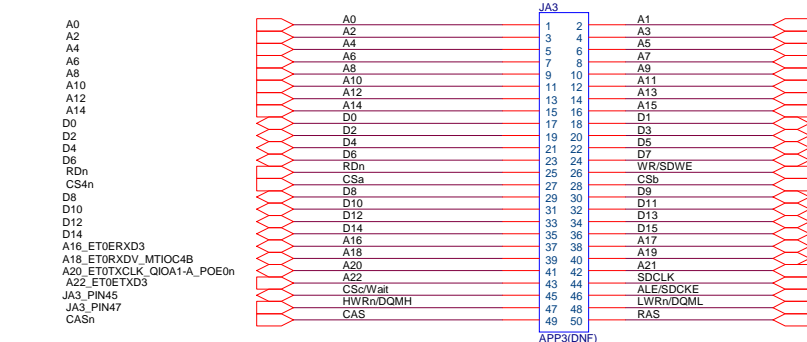
**RCAN**



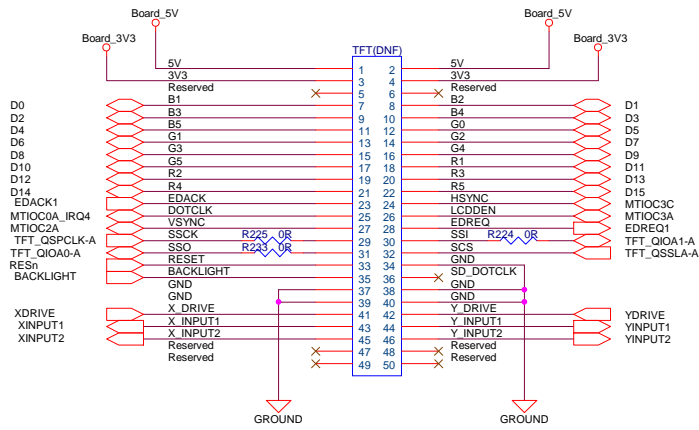
### Application Headers



**NOTE:**  
EXT\_USB\_BATT, EXT\_USB\_CHG and EXT\_USB\_VBUS are not standard RSK App Header Specification.  
These headers are special function for USB Battery Charge.

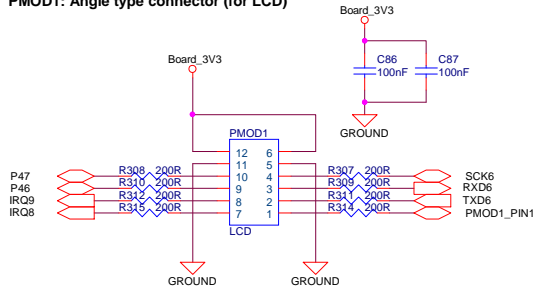


**LCD Direct Drive Header (TFT)**

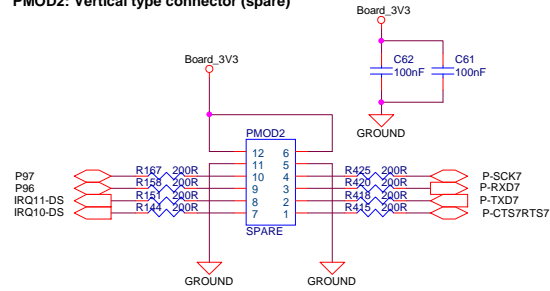


**Pmod connectors**

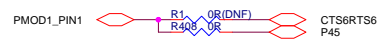
**PMOD1: Angle type connector (for LCD)**



**PMOD2: Vertical type connector (spare)**



**Pmod Function Select**



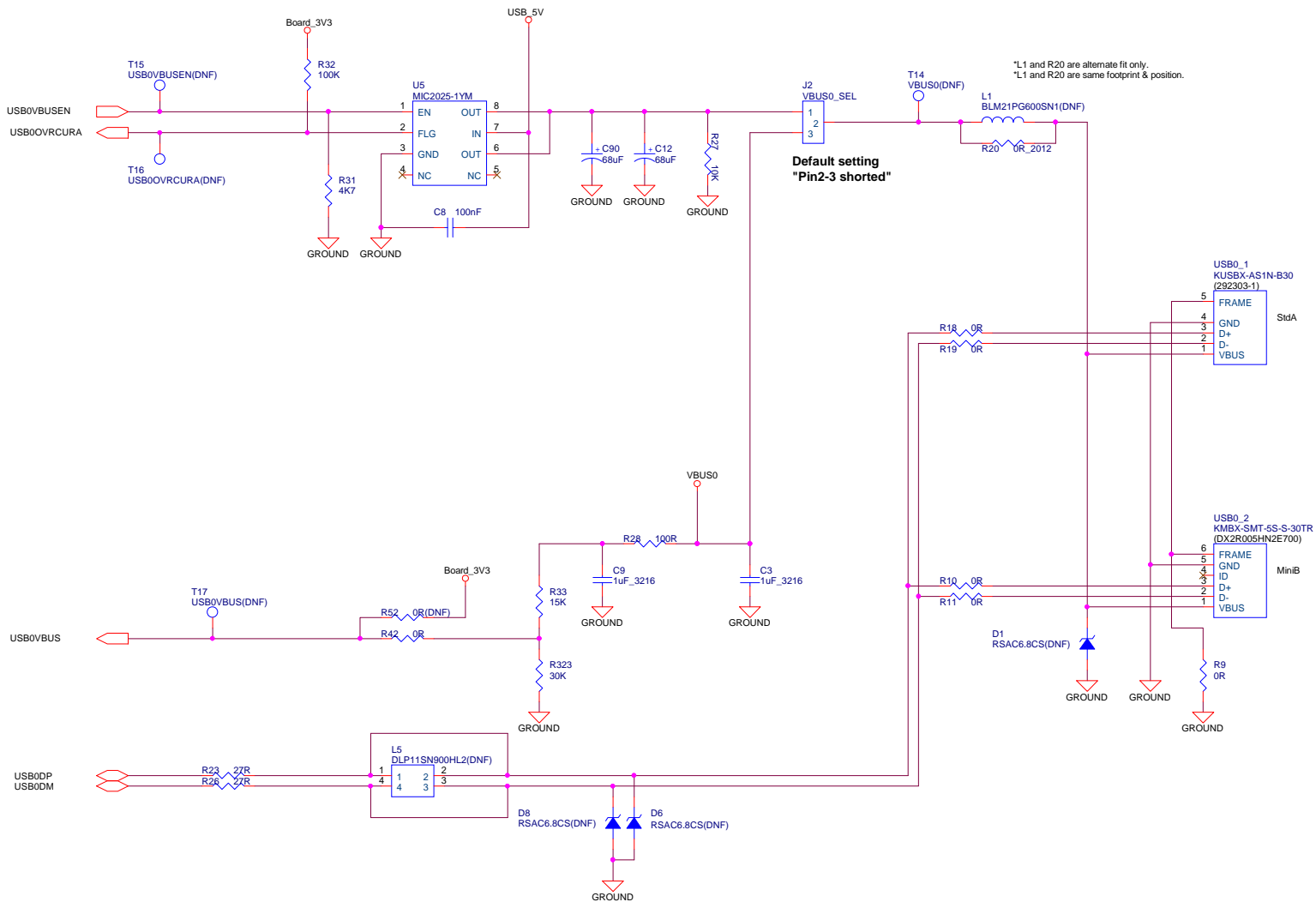
USB0 Host/Function

Self-powered/Bus-powered Configuration for Function Mode

R42	R52	
Fit	Remove	Self-powered
Remove	Fit	Bus-powered

USB0 Host/Function Select

J2	
1-2 shorted	Host Mode
2-3 shorted	Function Mode



**USBA Host/Function/OTG**

**Note:**  
In order to fit the another RX device, USB connector silkscreen of this board differs from the parts reference on this schematic.

Parts Reference on schematic Board Silkscreen  
 USBA\_1 USBH\_1  
 USBA\_2 USBH\_2  
 USBA\_3 USBH\_3

**Note:**  
Please transose to 0R resistor instead of diodes D2 and D13, when a voltage level is not enough by the voltage drops resulting from diodes.

**Self/Bus Power Configuration for Function Mode**

J8	
1-2 shorted	Bus-powered
2-3 shorted	Self-powered

**USBA Host/Function/OTG Select**

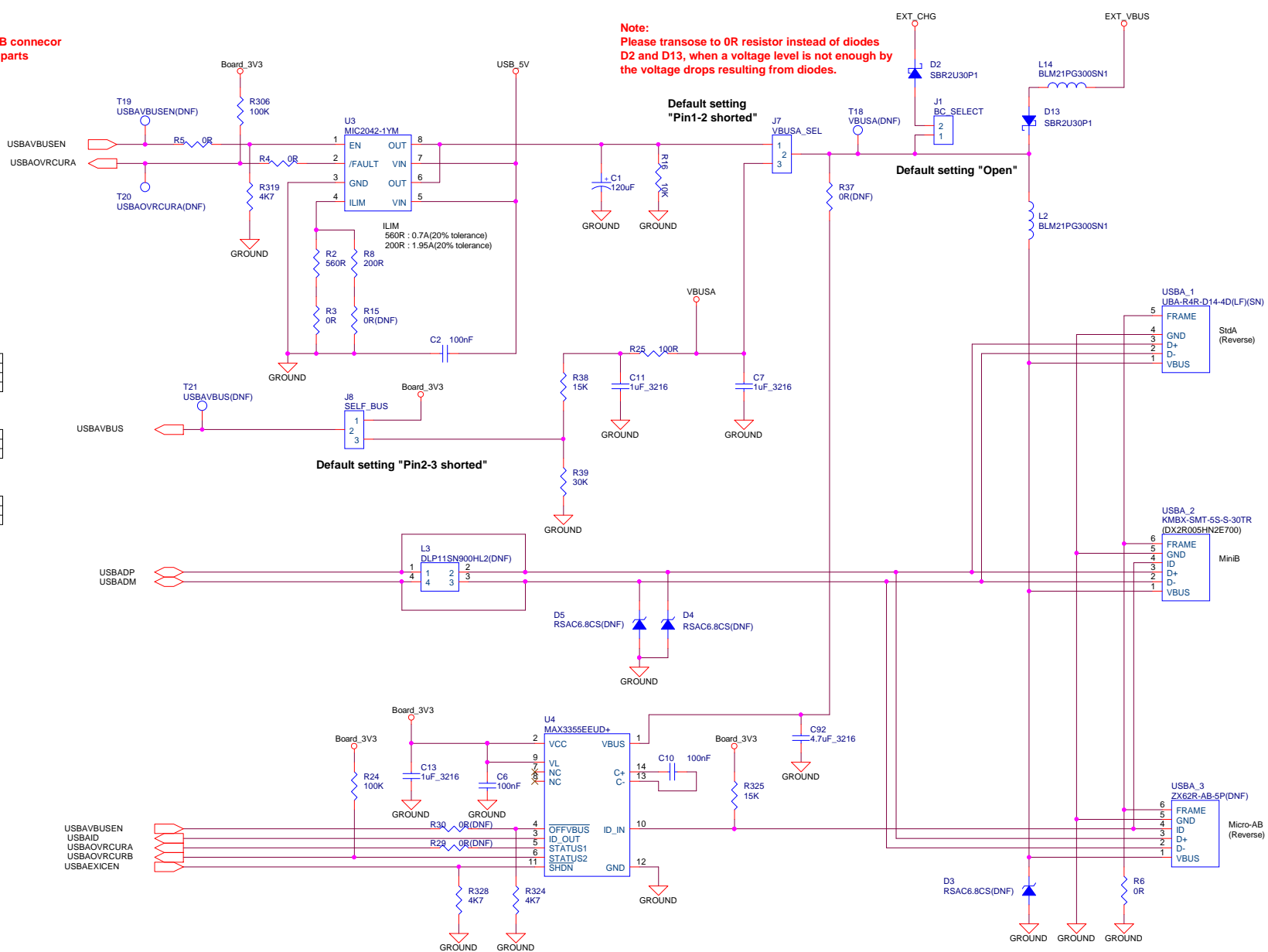
J7	R37	
1-2 shorted	Remove	Host Mode
2-3 shorted	Remove	Function Mode
All open	Fit	OTG Mode

**USBAOVRCURA Select**

R4	R29	
Fit	Remove	Host Mode
Remove	Fit	OTG Mode

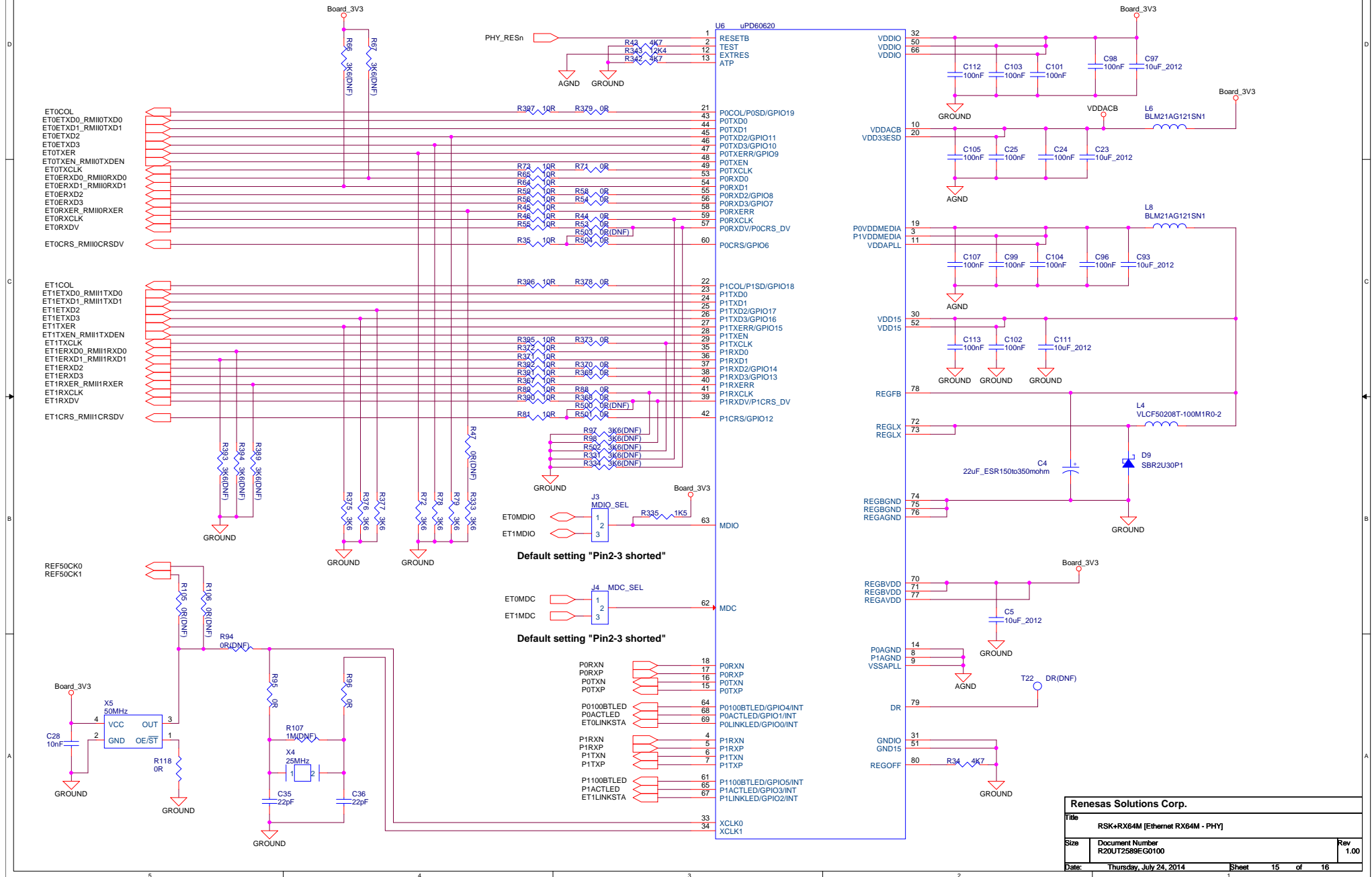
**USBAVBUSEN Select**

R5	R30	
Fit	Remove	Host Mode
Remove	Fit	OTG Mode

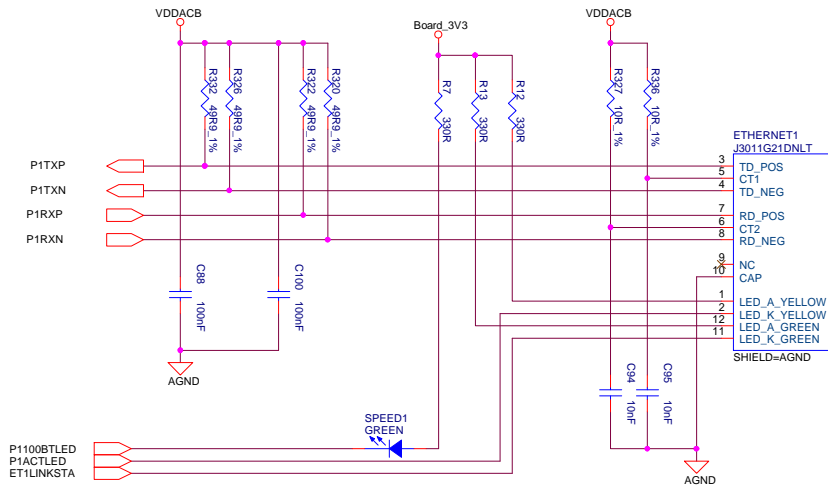
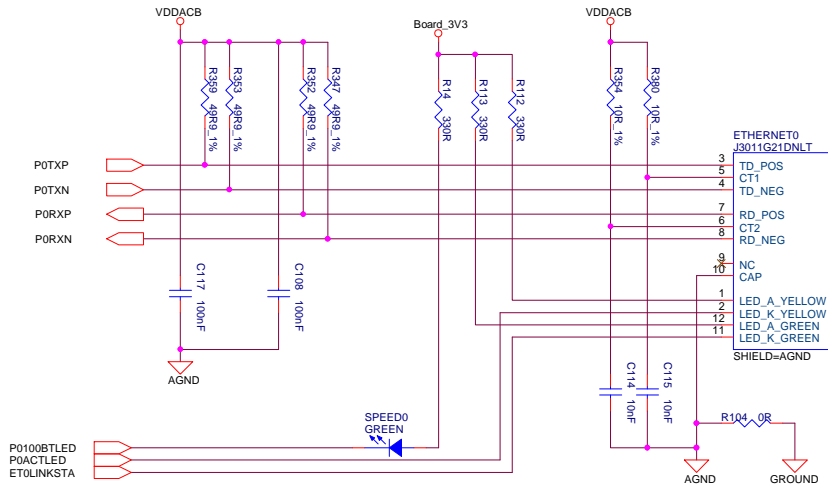


Ethernet RX64M(MAC) - PHY

**Note:**  
 This board fits the Non-promotion device uPD60620.  
 Please do not refer this Ethernet circuit for your target system design.



Ethernet RJ45



Renesas Solutions Corp.		
Title RSK+RX64M [Ethernet RJ45]		
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# Revision History

REV	DATE	PAGE	DESCRIPTION
1.00	24.07.2014	---	1st release edition.

<b>Renesas Solutions Corp.</b>			
Title			
RSK+RX64M [Revision History]			
Size	Document Number	Rev	
	R20UT2589EG0100	1.00	
Date:	Thursday, July 24, 2014	Sheet	X of X