

REV	REF	DATE	DRAWN BY
1.00	Release	31.1.2020	KOS

# Renesas Solution Starter Kit for RX23W CPU Board Schematics

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### 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 indicated the signal direction.



### Abbreviations:

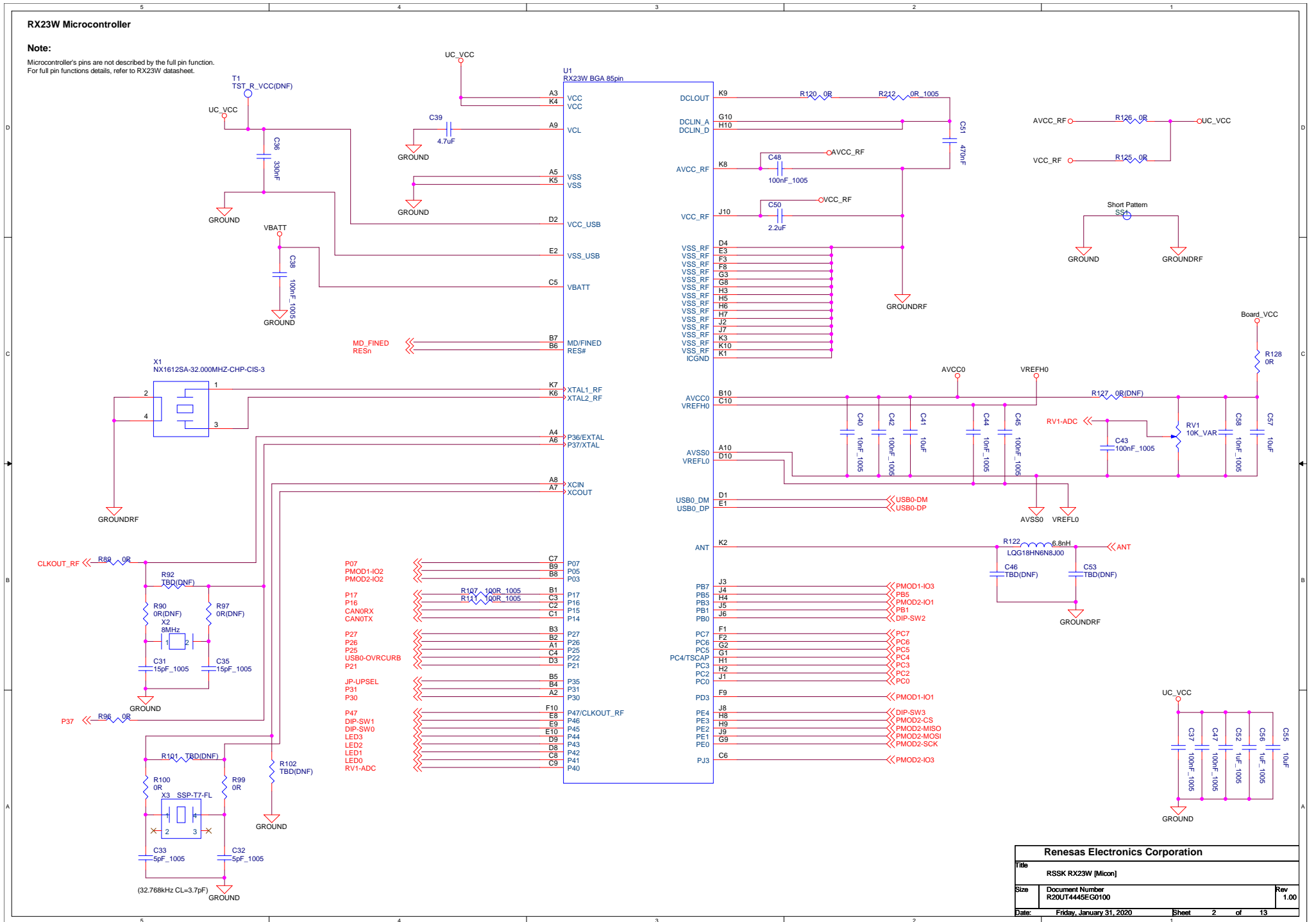
**CAN** : Controller Area Network  
**IIC** : Philips(TM) Inter-Integrated Circuit Connection Bus  
**LED** : Light Emitting Diode  
**MCU** : Microcontroller Unit  
**N/A** : Not Applicable  
**PSU** : Power Supply Unit  
**RSSK** : Renesas Solution Starter Kit  
**USB** : Universal Serial Bus

REEL Drawing No. D016502\_04

Renesas Electronics Corporation		
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# RX23W Microcontroller

**Note:**  
Microcontroller's pins are not described by the full pin function.  
For full pin functions details, refer to RX23W datasheet.



MCU Pin Function Select

AVCC0(PinB10)



AVSS0(PinA10)



VREFH0(PinC10)



VREFL0(PinD10)



RES#(PinB6)



MD\_FINED(PinB7)



P07(PinC7)



P17(PinB1)



P16(PinC3)



P27(PinB3)



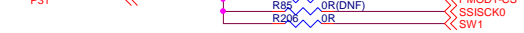
P26(PinB2)



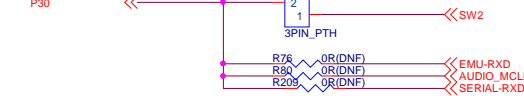
P25(PinA1)



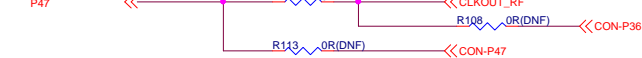
P31(PinB4)



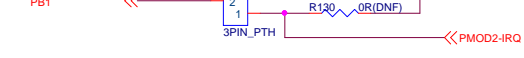
P30(PinA2)



P47(PinF10)



PB1(PinJ5)



PB5(PinJ4)



PC7(PinF1)



PC6(PinF2)



PC5(PinG2)



PC4(PinG1)



PC3(PinH1)



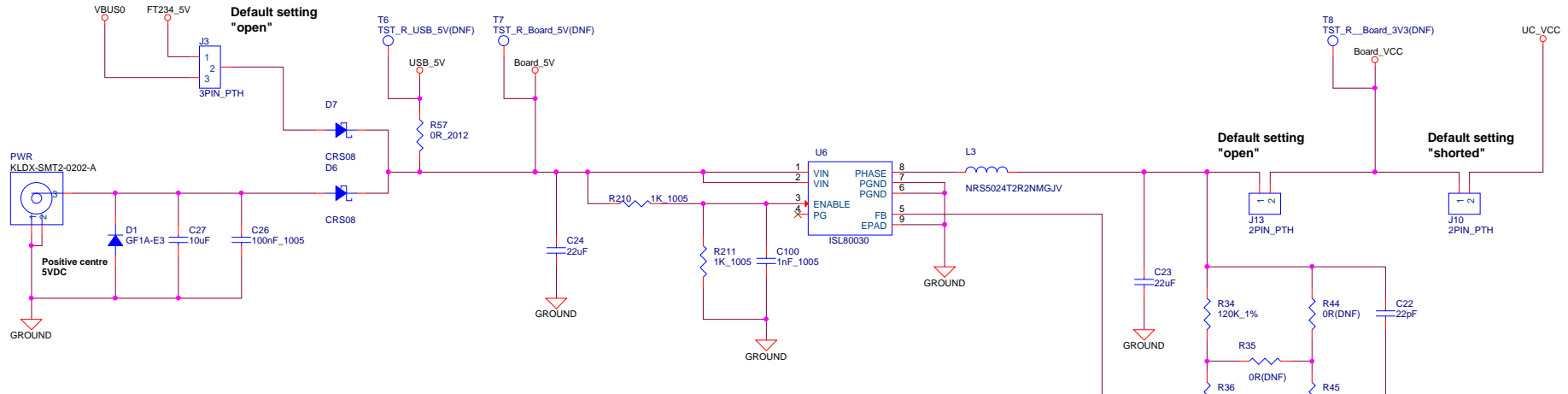
PC2(PinH2)



PC0(PinJ1)



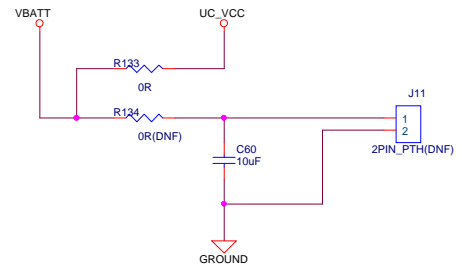
**Power Supply Unit**



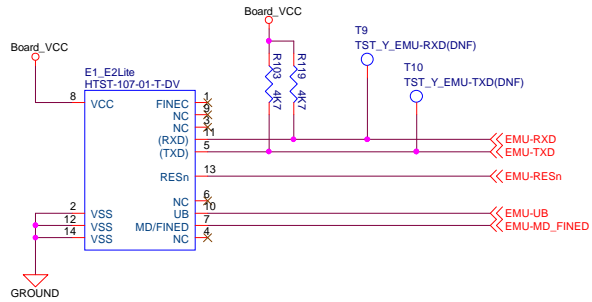
**Power Supply Configuration**

Power Supply Source	Conditions						Board_5V	Board_VCC	Unavailable Feature		
	J3	J13	J10	J5	J4	R37	R44	R35			
E2 Lite / E1(3V3)	Open	Open	Shorted	1-2 Shorted	1-2 Shorted	Fit	DNF	DNF	N / A	3.3V	USB(Host)(Function-Buspowered), CAN_5V Interface EEPROM
PWR	Open	Shorted	Shorted	2-3 Shorted	don't care	Fit	DNF	DNF	5V	3.3V	USB(Function-Buspowered)(Function-Selfpowered)
	Open	Shorted	Shorted	1-2 Shorted	1-2 Shorted	Fit	DNF	DNF	5V	3.3V	USB(Host)(Function-Buspowered)
USBD_2	Open	Shorted	Shorted	don't care	don't care	DNF	Fit	DNF	5V	1.8V	USB(AH) Function_LED_PWMOD
	2-3 Shorted	Shorted	Shorted	1-2 Shorted	2-3 Shorted	Fit	DNF	DNF	5V	3.3V	USB(Host)(Function-Selfpowered)
USBCN0	1-2 Shorted	Shorted	Shorted	1-2 Shorted	1-2 Shorted	Fit	DNF	DNF	5V	3.3V	USB(Host)(Function-Buspowered)

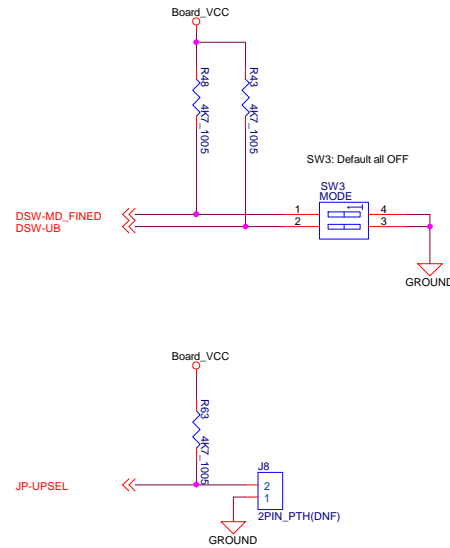
Note1: Do not use 5V Interface Pmods.  
 Note2: J4, J5 Refers to page 10.



### E1/E2 Lite



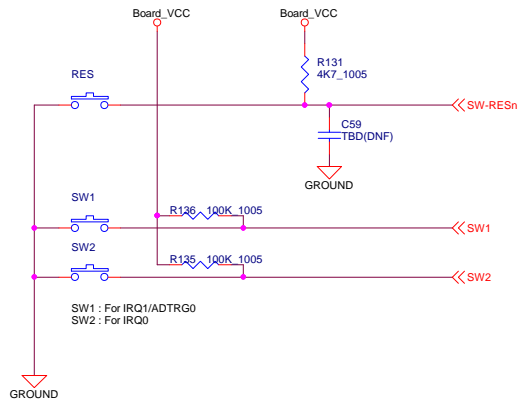
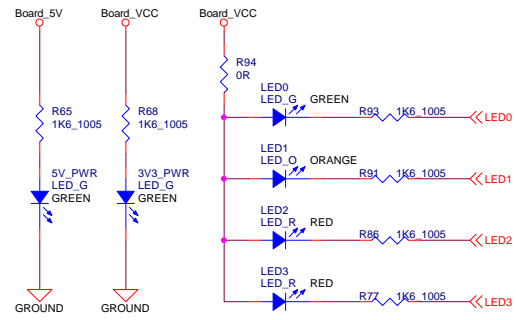
### MCU & Emulator Mode Setting



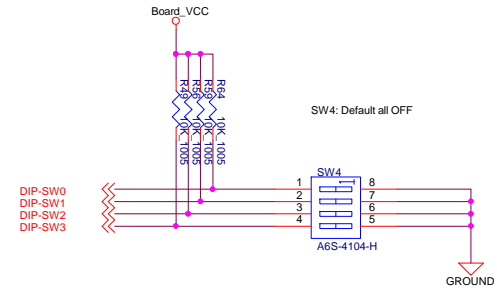
### MCU Operating Mode Configuration

SW3 Pin1	SW3 Pin2	J8	Operating Mode
OFF	Don't care	Don't care	Single Chip Mode
OFF	OFF	Don't care	FINE Boot 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)

### Switches, LEDs, RESET



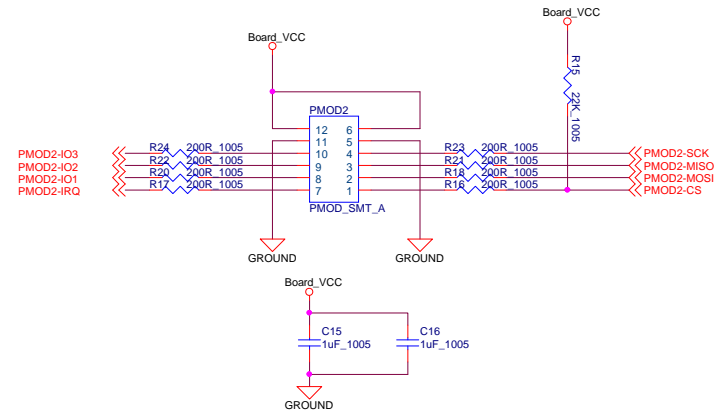
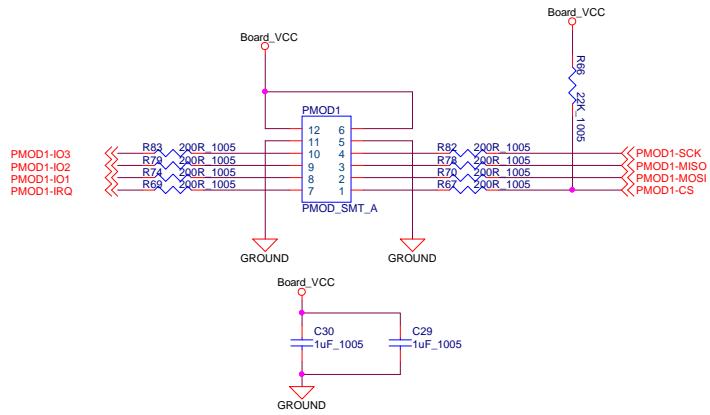
### DIP-Switch



<b>Renesas Electronics Corporation</b>		
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Pmod connectors

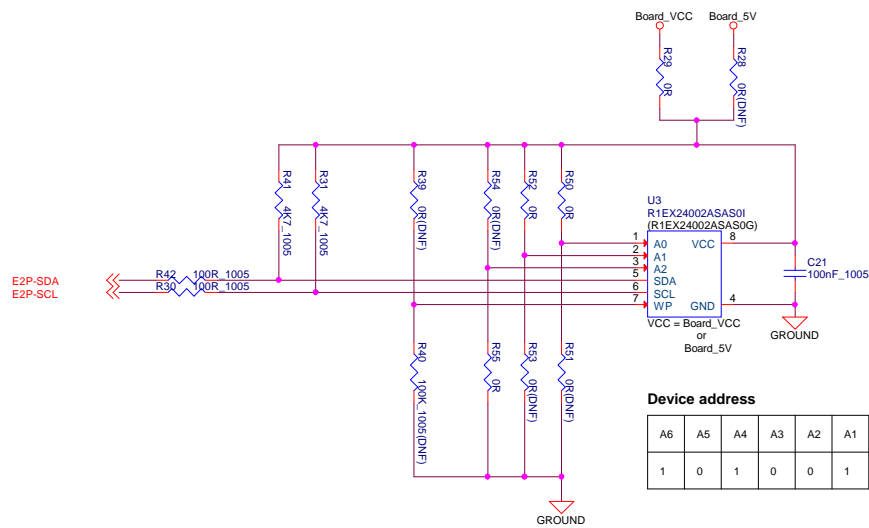
PMOD1: Angle type connector  
 PMOD2: Angle type connector



IIC EEPROM(2Kbits) - RIIC

Warning:

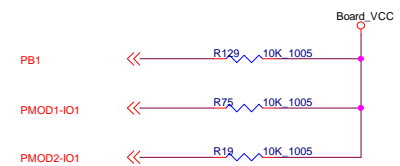
NEVER FIT R29 and R28 simultaneously.



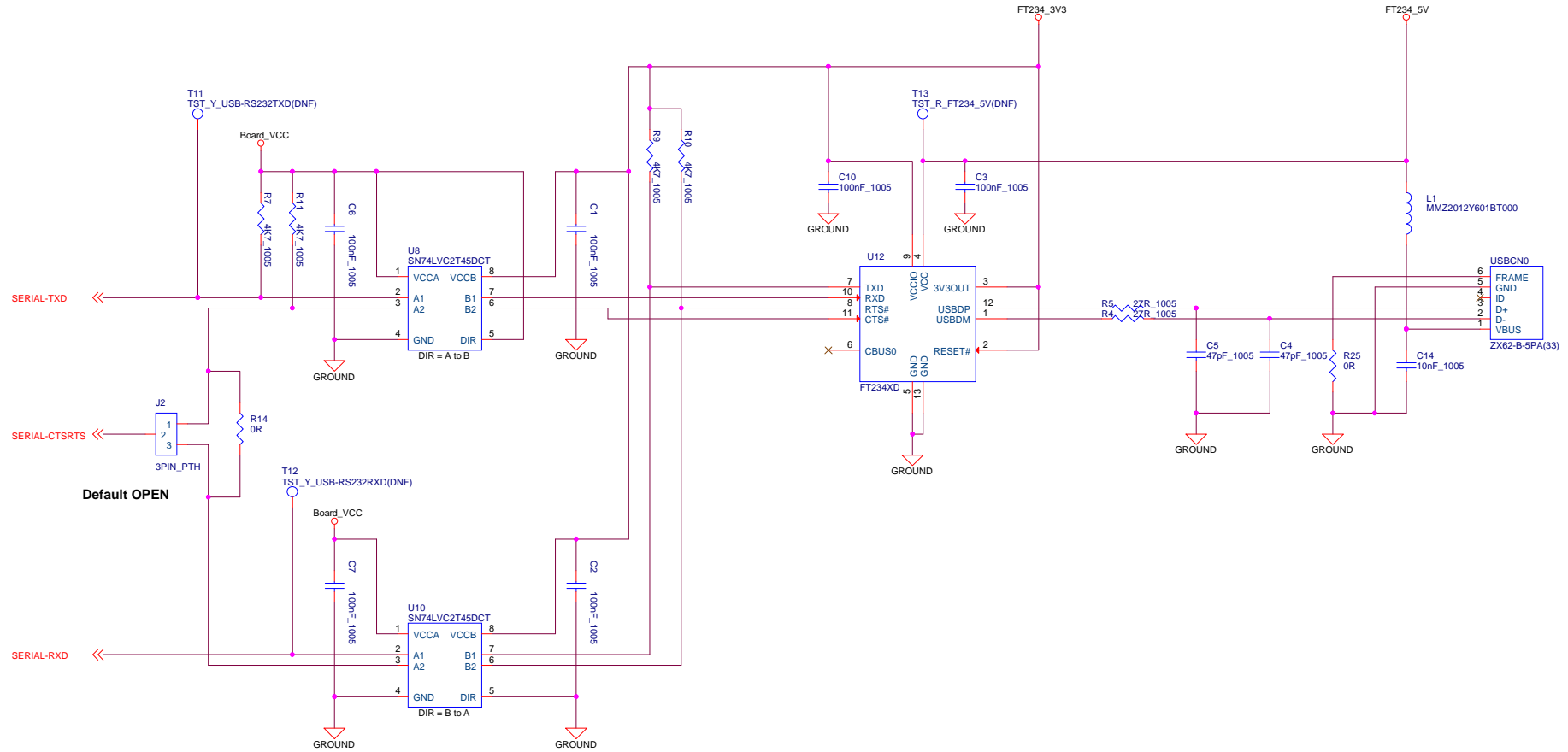
Device address

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

Option pull-up resistor

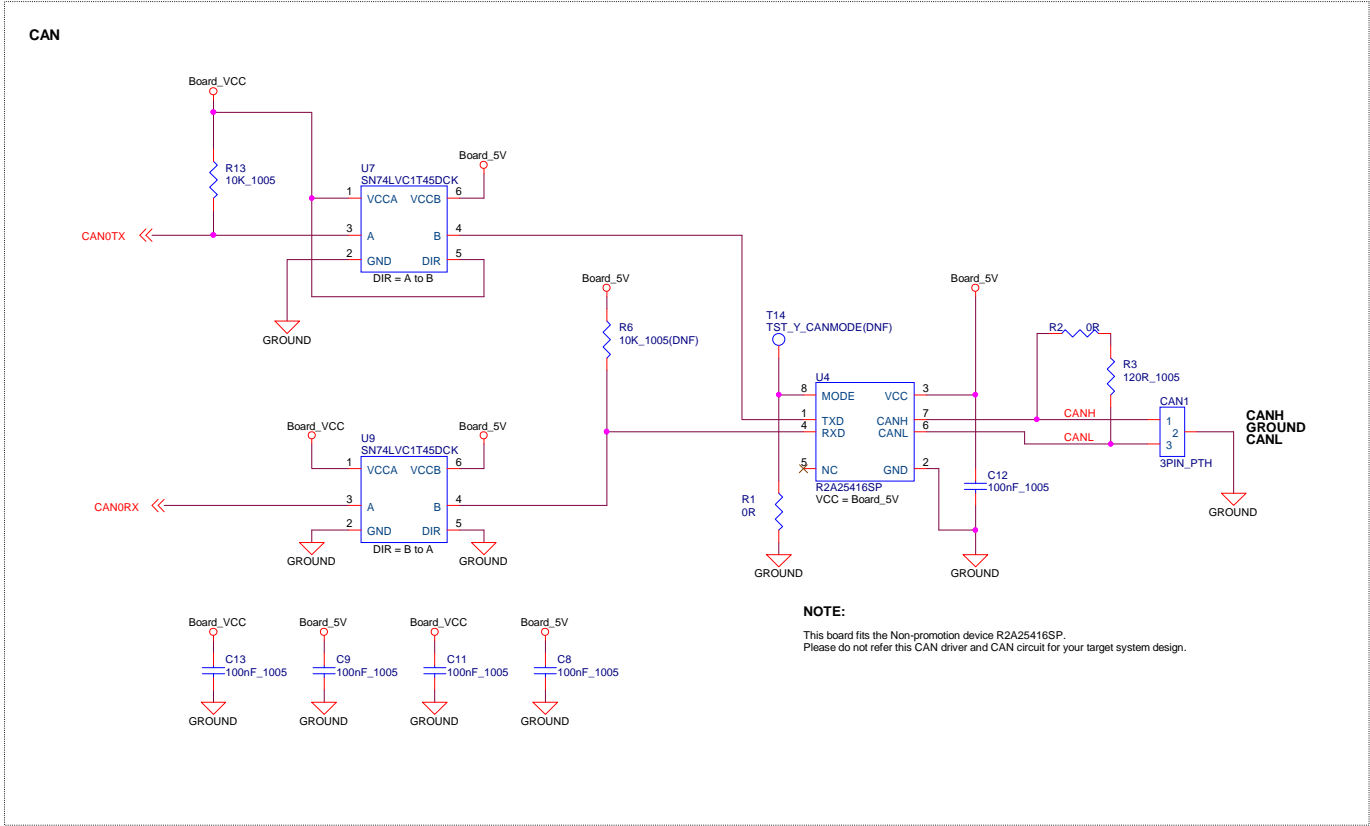


USB to Serial Interface



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Title: RSK RX23W [USB to Serial Interface]		
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**NOTE:**  
 This board fits the Non-promotion device R2A25416SP.  
 Please do not refer this CAN driver and CAN circuit for your target system design.

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**USB0 Host/Function**

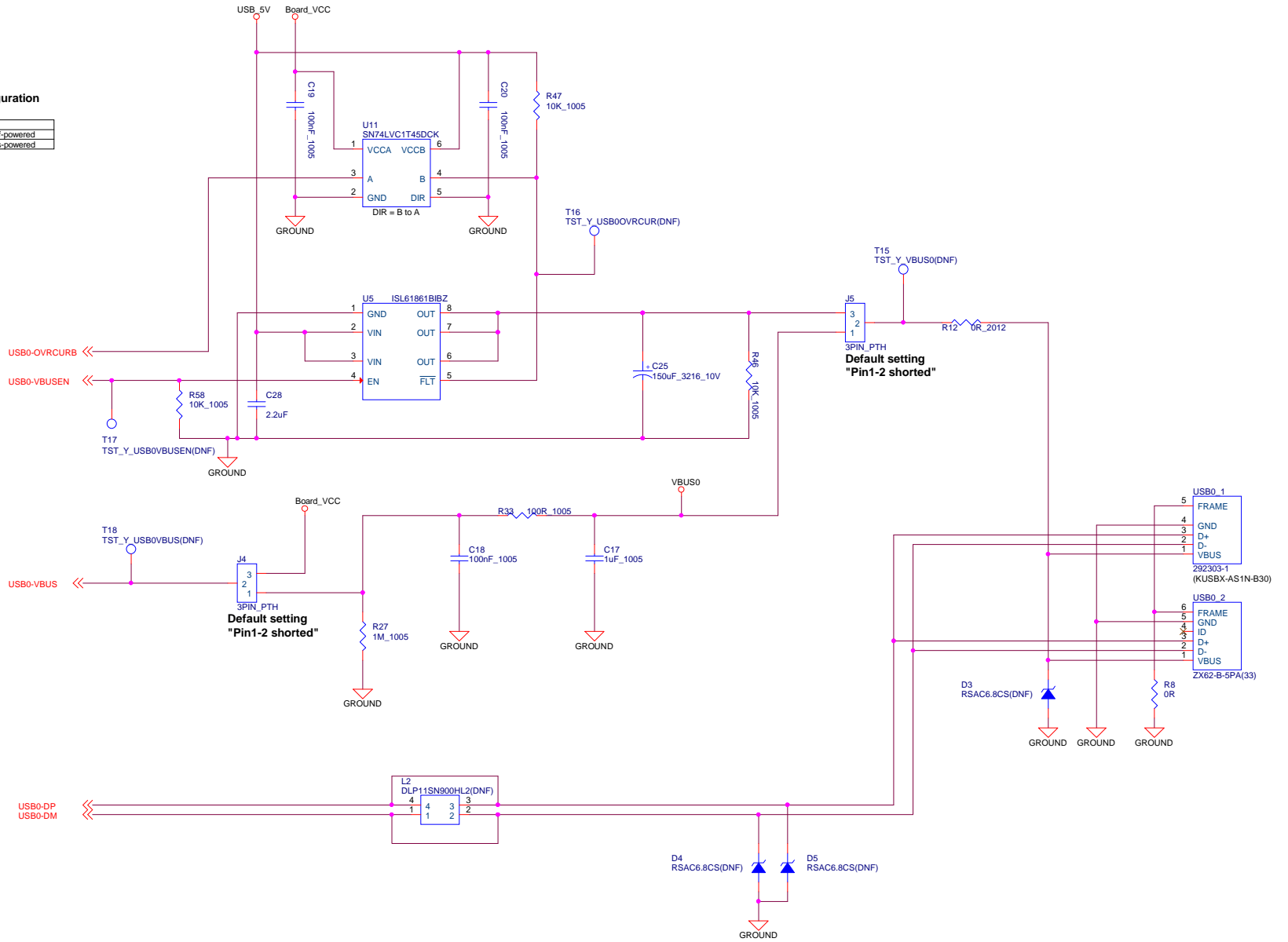
**USB0 Host/Function Select**

J3	Function Mode
1-2 shorted	Function Mode
2-3 shorted	Host Mode

**Self-powered/Bus-powered Configuration for Function Mode**

J3	J4	Self-powered
1-2 shorted or Open	1-2 shorted	Self-powered
2-3 shorted	2-3 shorted	Bus-powered

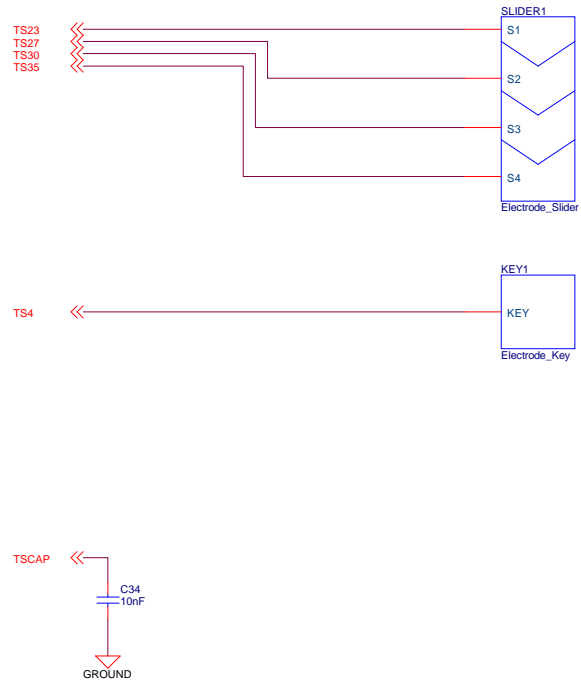
Note: J3 Refers to page4.



### Touch Interface

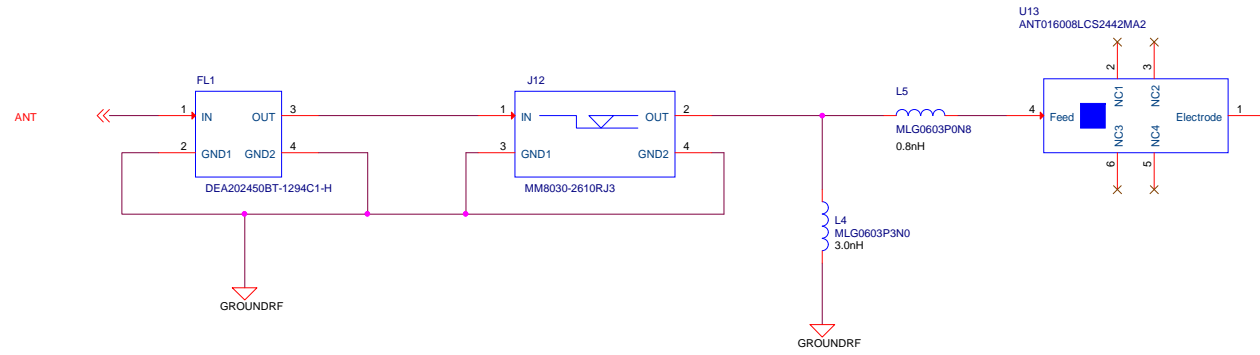
#### Note:

Touch signals require careful route pattern.  
For technical design information, please refer to application note 'CTSU Basis of Cap touch detection' (R30AN0218EJ).



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2.4GHz Antenna



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Microcontroller Pin Headers

P07      << P07 ⊖ C7 pin  
 PMOD1-IO2 << P05 ⊖ B9 pin  
 PMOD2-IO2 << P03 ⊖ B8 pin  
 SSITXD0 << P17 ⊖ B1 pin  
 P16      << P16 ⊖ C3 pin  
 CAN0RX << P15 ⊖ C2 pin  
 CAN0TX << P14 ⊖ C1 pin  
 SSIWS0 << P27 ⊖ B3 pin  
 SSIRXD0 << P26 ⊖ B2 pin  
 CON-P25 << P25 ⊖ A1 pin  
 USB0-OVRCURB << P22 ⊖ C4 pin  
 P21      << P21 ⊖ D3 pin  
 P37      << P37 ⊖ A6 pin  
 CON-P36 << P36 ⊖ A4 pin  
 JP-UPSEL << P35 ⊖ B5 pin  
 SSISCK0 << P31 ⊖ B4 pin  
 AUDIO\_MCLK << P30 ⊖ A2 pin

CON-P47 << P47 ⊖ F10 pin  
 DIP-SW1 << P46 ⊖ E8 pin  
 DIP-SW0 << P45 ⊖ E9 pin  
 LED3 << P44 ⊖ E10 pin  
 LED2 << P43 ⊖ D9 pin  
 LED1 << P42 ⊖ D8 pin  
 LED0 << P41 ⊖ C8 pin  
 RV1-ADC << P40 ⊖ C9 pin  
 PMOD1-IO3 << PB7 ⊖ J3 pin  
 PB5      << PB5 ⊖ J4 pin  
 PMOD2-IO1 << PB3 ⊖ H4 pin  
 PB1      << PB1 ⊖ J5 pin  
 DIP-SW2 << PB0 ⊖ J6 pin  
 PC7      << PC7 ⊖ F1 pin  
 PC6      << PC6 ⊖ F2 pin  
 CON-PC5 << PC5 ⊖ G2 pin  
 CON-PC4 << PC4 ⊖ G1 pin  
 CON-PC3 << PC3 ⊖ H1 pin  
 CON-PC2 << PC2 ⊖ H2 pin  
 CON-PC0 << PC0 ⊖ J1 pin

PMOD1-IO1 << PD3 ⊖ F9 pin  
 DIP-SW3 << PE4 ⊖ J8 pin  
 PMOD2-CS << PE3 ⊖ H8 pin  
 PMOD2-MISO << PE2 ⊖ H9 pin  
 PMOD2-MOSI << PE1 ⊖ J9 pin  
 PMOD2-SCK << PE0 ⊖ G9 pin  
 PMOD2-IO3 << PJ3 ⊖ C6 pin

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# Revision History

REV	DATE	PAGE	DESCRIPTION
1.00	31.1.2020	---	1st release edition.

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