

REV	REF	DATE	DRAWN BY
1.00	Release	31.1.2020	KOS

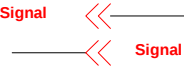
Renesas Solution Starter Kit for RX23W CPU Board Schematics

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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.



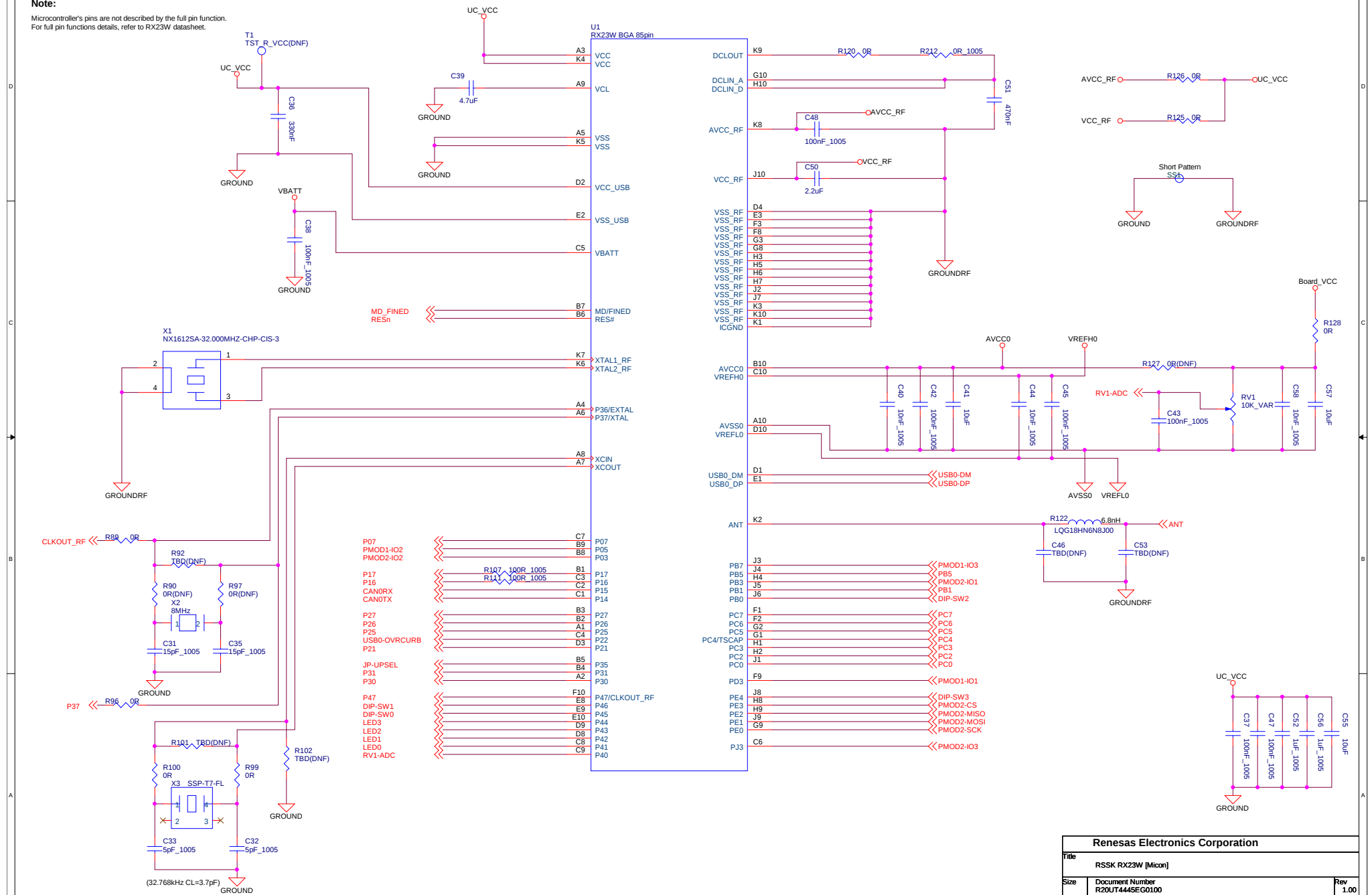
Abbreviations:

- 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

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

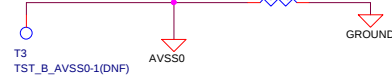


MCU Pin Function Select

AVCC0(PinB10)



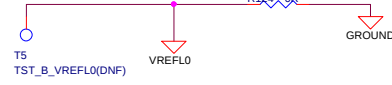
AVSS0(PinA10)



VREFH0(PinC10)



VREFL0(PinD10)



RES#(PinB6)



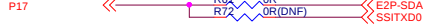
MD_FINED(PinB7)



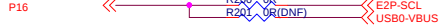
P07(PinC7)



P17(PinB1)



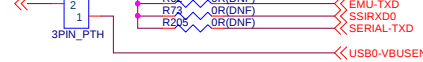
P16(PinC3)



P27(PinB3)



P26(PinB2)



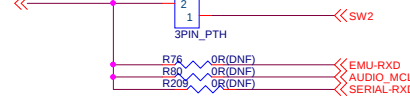
P25(PinA1)



P31(PinB4)



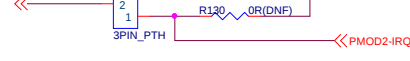
P30(PinA2)



P47(PinF10)



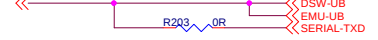
PB1(PinJ5)



PB5(PinJ4)



PC7(PinF1)



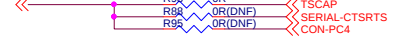
PC6(PinF2)



PC5(PinG2)



PC4(PinG1)



PC3(PinH1)



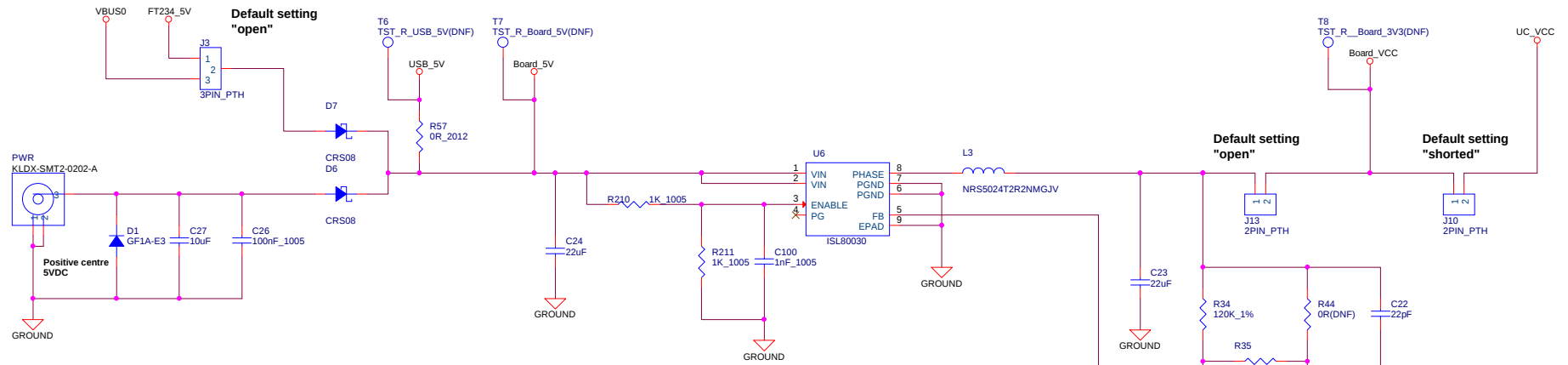
PC2(PinH2)



PC0(PinJ1)



Power Supply Unit

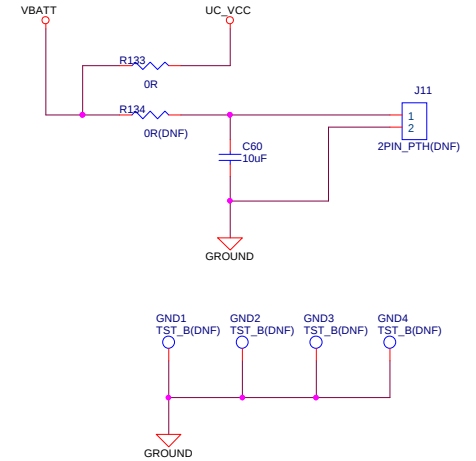


Power Supply Configuration

Power Supply Source	J3	J13	J10	J5	J4	R37	R44	R35	Board_5V	Board_VCC	Unavailable Feature
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	1-2 Shorted	1-2 Shorted	Fit	DNF	DNF	5V	3.3V	USB(Function-Buspowered)(Function-Selfpowered)
USB0_2	Open	Shorted	Shorted	don't care	don't care	DNF	Fit	DNF	5V	3.3V	USB(Host)(Function-Buspowered)
USBCN0	2-3 Shorted	Shorted	Shorted	1-2 Shorted	2-3 Shorted	Fit	DNF	DNF	5V	3.3V	USB(All Function), LED, PMOD
	1-2 Shorted	Shorted	Shorted	1-2 Shorted	1-2 Shorted	Fit	DNF	DNF	5V	3.3V	USB(Host)(Function-Selfpowered)

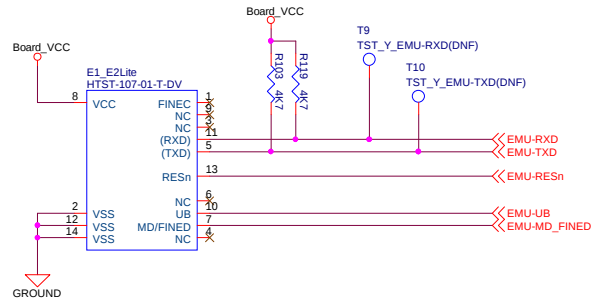
Note1: Do not use 5V Interface Pmods.
Note2: J4, J5 Refers to page 10.

<- Default

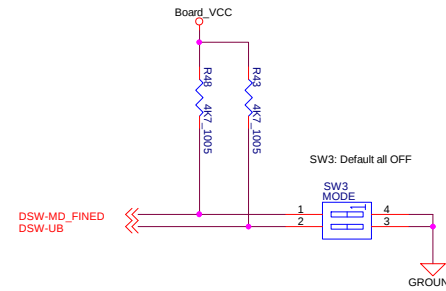


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E1/E2 Lite

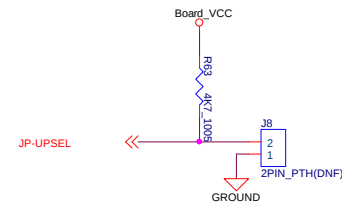


MCU & Emulator Mode Setting

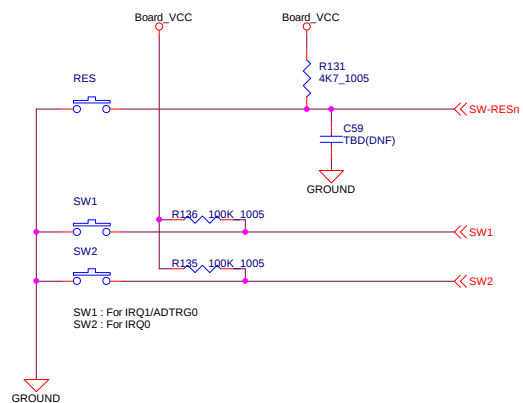
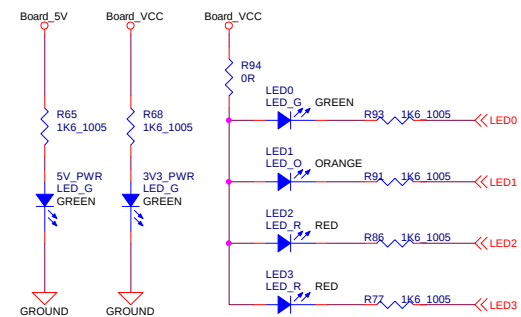


MCU Operating Mode Configuration

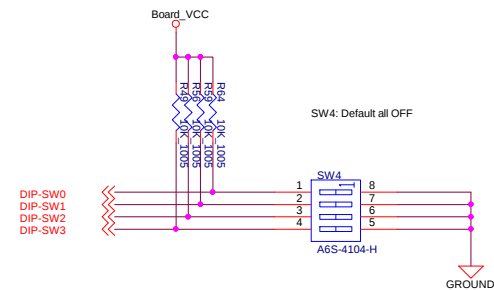
SW3 Pin1	SW3 Pin2	J8	Operating Mode
OFF	Don't care	Don't care	Single Chip Mode
OFF	OFF	Don't care	FINE Boot Mode
ON	OFF	Don't care	SCI Boot Mode
ON	ON	Open	USB Boot Mode (Bus Powered)
ON	ON	Shorted Pin	USB Boot Mode (Self Powered)



Switches, LEDs, RESET



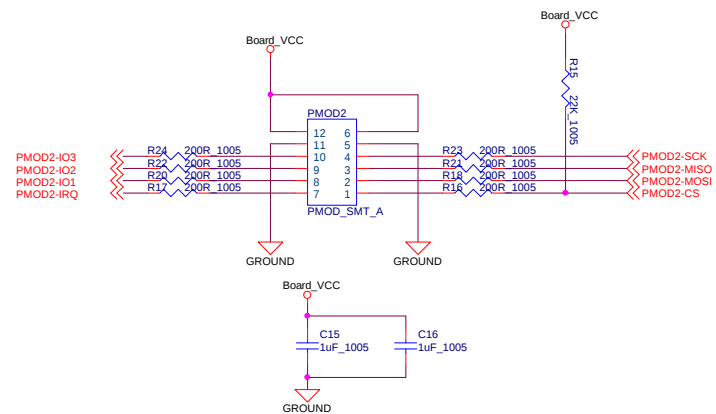
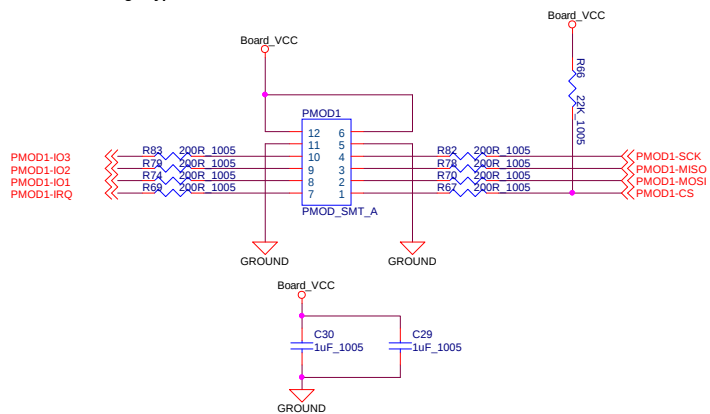
DIP-Switch



Pmod connectors

PMOD1: Angle type connector

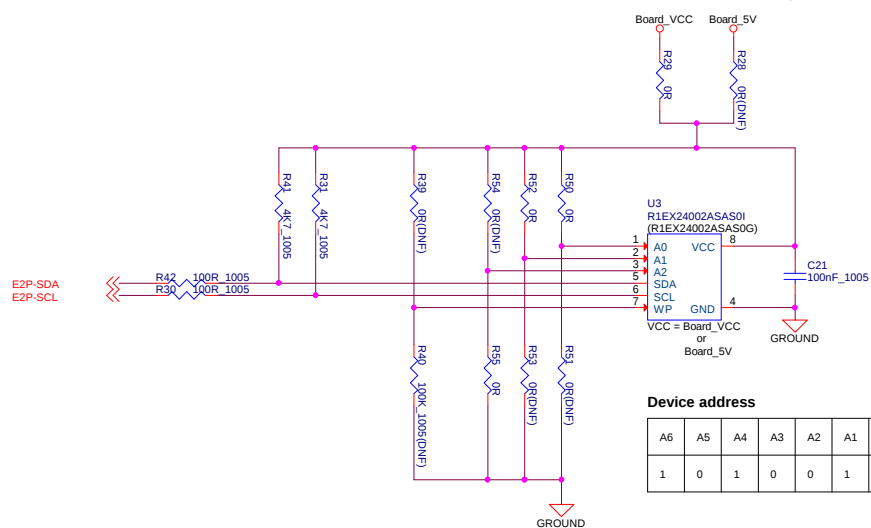
PMOD2: Angle type connector



IIC EEPROM(2Kbits) - RIIC

Warning:

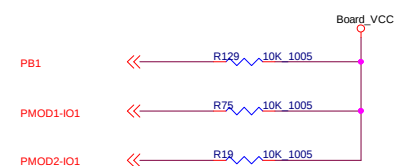
NEVER FIT R29 and R28 simultaneously.



Device address

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

Option pull-up resistor



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RSSK RX23W [Pmod, IIC EEPROM, Pull-up resistors]			
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USB to Serial Interface

Components:

- U8, U10:** SN74LVC2T45DCT (Level Shifters)
- U12:** FT232RL (USB-to-RS-232)
- U13:** USB-to-UART Bridge
- Passive Components:** Resistors (R1-R14), Capacitors (C1-C7), Inductor (L1)
- Connectors:** J2 (3PIN_PTH), T11, T12, T13

Power and Grounding:

- Board_VCC:** Main power supply for the level shifters.
- FT232_3V3, FT232_5V:** Power for the FT232RL.
- GROUND:** Common ground for the circuit.

Signal Connections:

- SERIAL-TXD, SERIAL-RXD:** RS-232 signals.
- SERIAL-CTSRTS:** Flow control signals.
- USBCN0:** USB connector pins (FRAME, GND, ID, D+, D-, VBUS).

Notes:

- DIR = A to B (for U8)
- DIR = B to A (for U10)
- Default OPEN (for J2)

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CAN

Board_VCC

R13 10K_1005

CAN0TX <<

U7 SN74LVC1T45DCK

VCCA VCCB

1 6

3 4

2 5

DIR = A to B

GROUND

Board_5V

Board_VCC

U9 SN74LVC1T45DCK

VCCA VCCB

1 6

3 4

2 5

DIR = B to A

GROUND

Board_5V

GROUND

CAN0RX <<

Board_5V

R6 10K_1005(DNF)

T14 TST_Y_CANMODE(DNF)

U4

MODE VCC

1 3

4 7

TXD RXD CANH CANL

5 2

NC GND

R2A25416SP

VCC = Board_5V

R1 0R

GROUND

Board_5V

R2 0R

R3 120R_1005

CAN1

1 2 3

3PIN_PTH

CANH GROUND CANL

C12 100nF_1005

GROUND

Board_VCC

C13 100nF_1005

GROUND

Board_5V

C9 100nF_1005

GROUND

Board_VCC

C11 100nF_1005

GROUND

Board_5V

C8 100nF_1005

GROUND

NOTE:

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

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

USB0 Host/Function

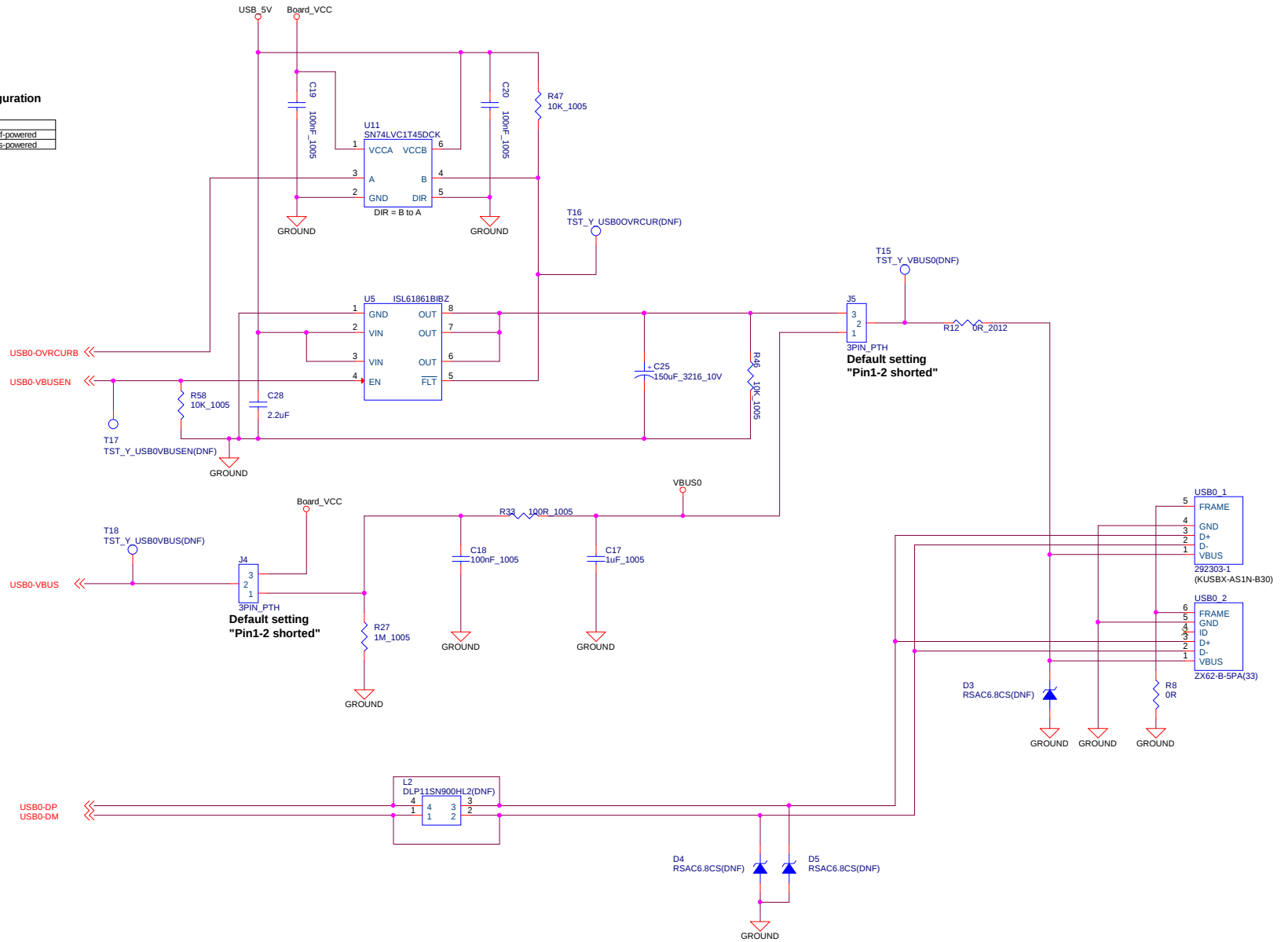
USB0 Host/Function Select

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

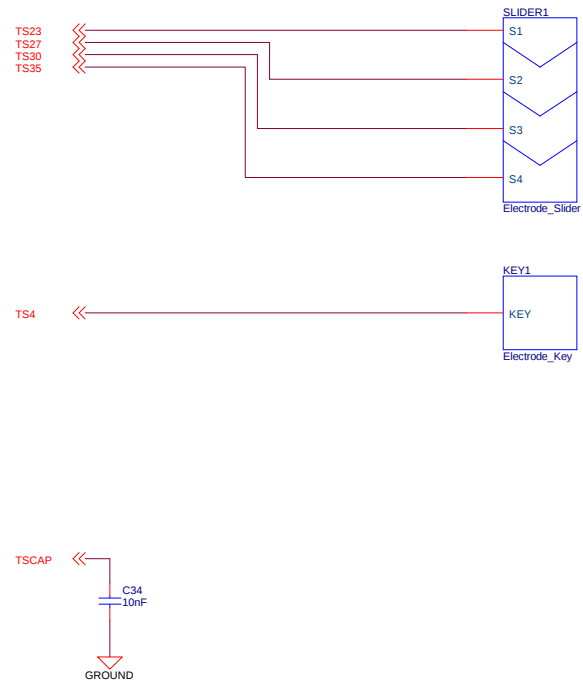
Note: J3 Refers to page4.



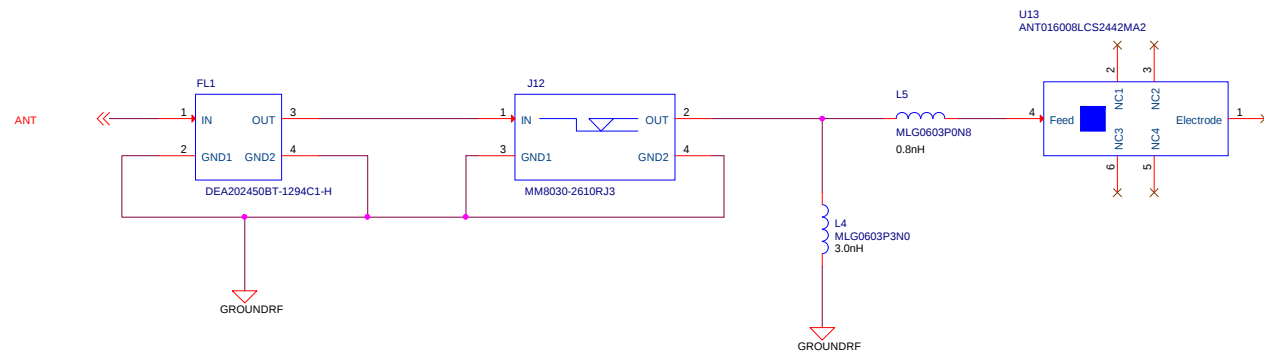
Touch Interface

Note:

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



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

Revision History

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1.00	31.1.2020	---	1st release edition.