

Renesas Starter Kit for RX72T CPU Board Schematics

REV	REF	DATE	DRAWN BY
1.00	New	07.12.2018	KOS
2.00	Release (TRAC #242)	18.03.2019	KOS

SHEET	DESCRIPTION
1	INDEX
2	RX72T MCU
3	MCU Pin Function Select
4	PSU
5	E1/E2 Lite Emulator, MCU & Emulator Mode Setting, Pull-up Resistors
6	Reset, Switches, LEDs
7	USB to Serial Interface
8	Pmod Interface, IIC EEPROM
9	Application Headers
10	MCU Pin Headers
11	CAN, LIN
12	USB0 Host/Function

Note:

C : Capacitor
D : Diode
R : Fixed Resistor
RV : Potentiometer
MR : Resistor Array
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 is not fitted by default.

Board Code:

RTK5572TKCC00000BE : RSKRX72T MP Board
 RTK5572TKCC00010BE : RSKRX72T MP Board (Encrypted version)

Abbreviations:

CAN : Controller Area Network
IIC : Philips(TM) Inter-Integrated Circuit Connection Bus
LED : Light Emitting Diode
LIN : Local Interconnect Network
MCU : Microcontroller Unit
PSU : Power Supply Unit
RSK : Renesas Starter Kit
USB : Universal Serial Bus

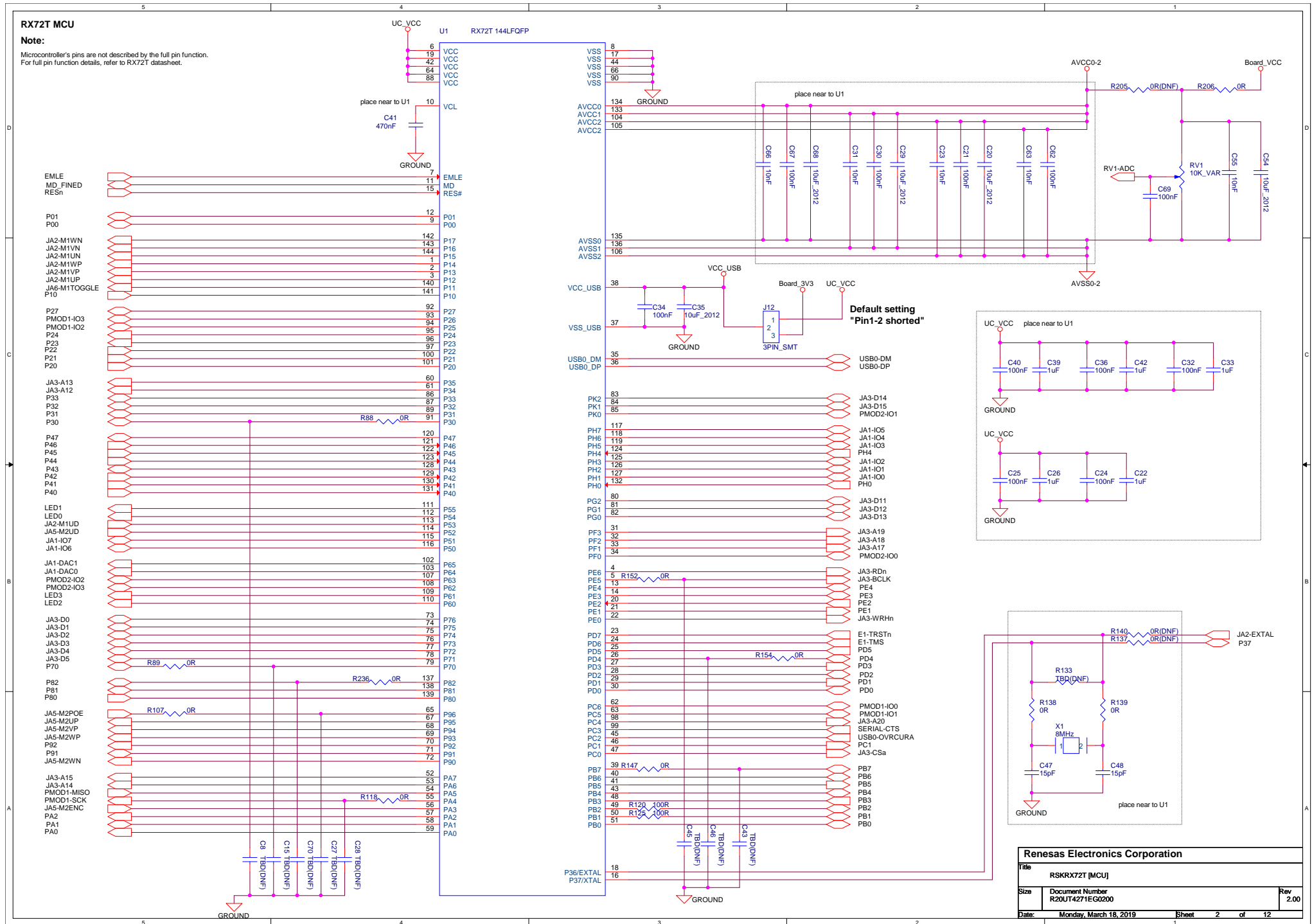
REEL Drawing No. D016172_04

Renesas Electronics Corporation			
Title		RSKRX72T [Index]	
Size	Document Number	Rev	
	R20UT4271EG0200	2.00	
Date:	Monday, March 18, 2019	Sheet	1 of 12

RX72T MCU

Note:

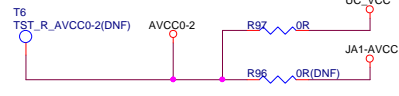
Microcontroller's pins are not described by the full pin function.
For full pin function details, refer to RX72T datasheet.



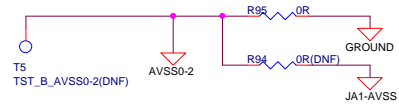
Renesas Electronics Corporation		
Title: RSKRX72T [MCU]		
Size: R20UT4271EG0200	Document Number: R20UT4271EG0200	Rev: 2.00
Date: Monday, March 18, 2019	Sheet: 2 of 12	

MCU Pin Function Select

AVCC0(Pin134), AVCC1(Pin133), AVCC2(Pin104,105)



AVSS0(Pin135), AVSS1(Pin136), AVSS2(Pin106)



RES#(Pin15)



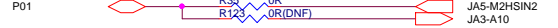
EMLE(Pin7)



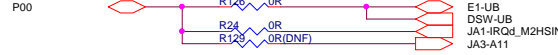
MD_FINED(Pin11)



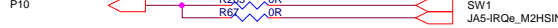
P01(Pin12)



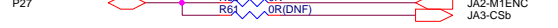
P00(Pin9)



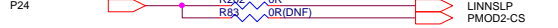
P10(Pin141)



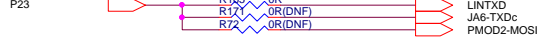
P27(Pin92)



P24(Pin95)



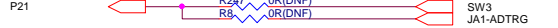
P23(Pin96)



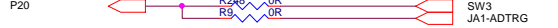
P22(Pin97)



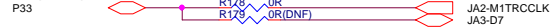
P21(Pin100)



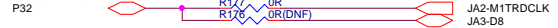
P20(Pin101)



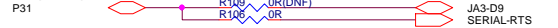
P33(Pin86)



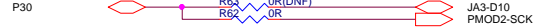
P32(Pin87)



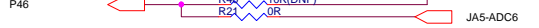
P31(Pin89)



P30(Pin91)



P46(Pin121)



P45(Pin122)



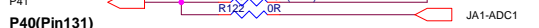
P44(Pin123)



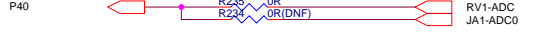
P42(Pin129)



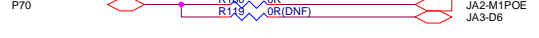
P41(Pin130)



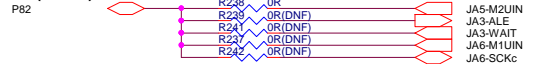
P40(Pin131)



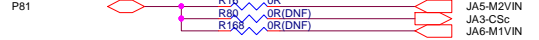
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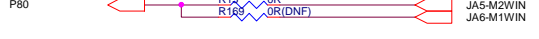
P82(Pin137)



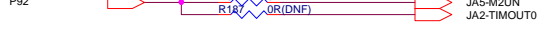
P81(Pin138)



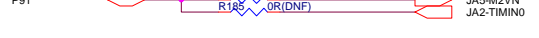
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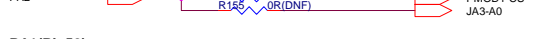
P92(Pin70)



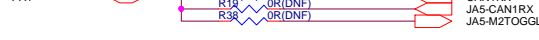
P91(Pin71)



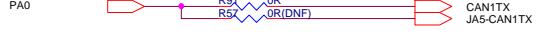
PA2(Pin57)



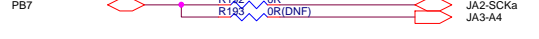
PA1(Pin58)



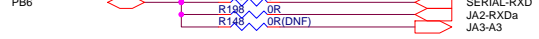
PA0(Pin59)



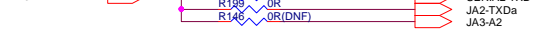
PB7(Pin39)



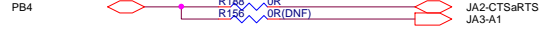
PB6(Pin40)



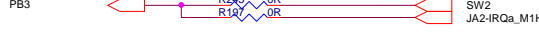
PB5(Pin41)



PB4(Pin43)



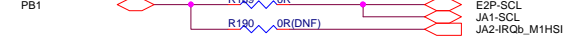
PB3(Pin48)



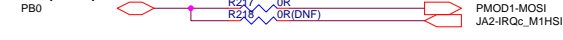
PB2(Pin49)



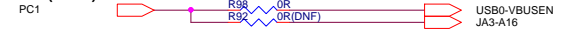
PB1(Pin50)



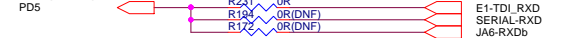
PB0(Pin51)



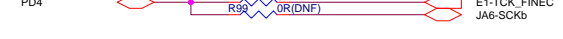
PC1(Pin46)



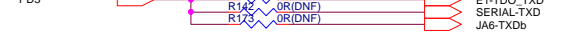
PD5(Pin25)



PD4(Pin26)



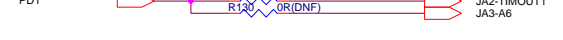
PD3(Pin27)



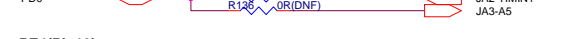
PD2(Pin28)



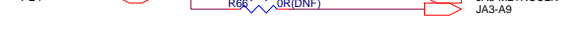
PD1(Pin29)



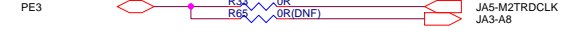
PD0(Pin30)



PE4(Pin13)



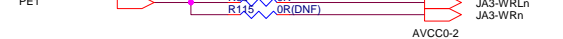
PE3(Pin14)



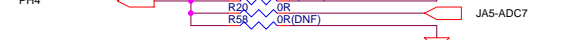
PE2(Pin20)



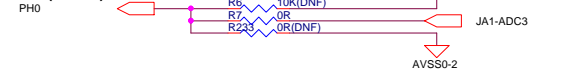
PE1(Pin21)



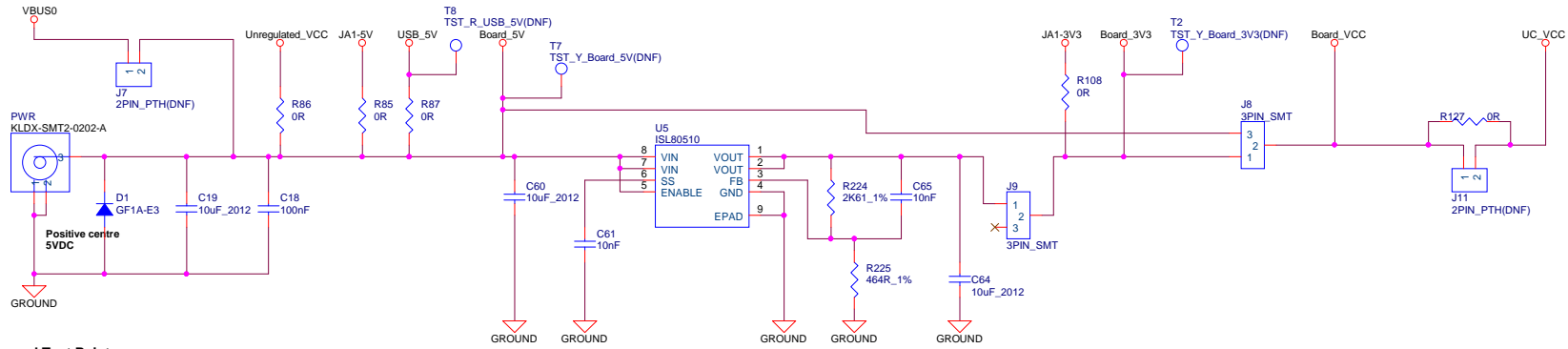
PH4(Pin124)



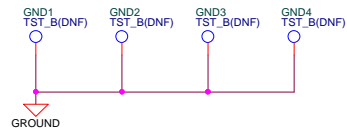
PH0(Pin132)



Power Supply Unit



Ground Test Point



Power Supply Configuration

J7	J8	J9	J12	Power Supply Source	VCC_USB	Board_VCC / UC_VCC	Board_5V	Unavailable Feature
open	2-3 shorted	2-3 shorted	1-2 shorted	E2Lite / E1(3.3V)	3.3V	3.3V	3.3V	CAN_LIN_5V Interface Pmods, USB(Host)(Function-Buspower), 5V Interface EEPROM
open	2-3 shorted	1-2 shorted	2-3 shorted	E1(5V)	3.3V	5V	5V	Pmod LCD and other 3V3 Interface Pmods, USB(Host)(Function-Buspower)
open	2-3 shorted	2-3 shorted	1-2 shorted	E1(5V) / PWR / Unregulated_VCC / JA1-5V	5V	5V	5V	Pmod LCD and other 3V3 Interface Pmods, USB(Host)(Function-Buspower, Selfpower), 3V3 Interface EEPROM
open	1-2 shorted	1-2 shorted	1-2 or 2-3 shorted	PWR / Unregulated_VCC / JA1-5V	3.3V	3.3V	5V	5V Interface Pmods, USB(Function-Buspower)
open	2-3 shorted	1-2 shorted	2-3 shorted	PWR / Unregulated_VCC / JA1-5V	3.3V	5V	5V	Pmod LCD and other 3V3 Interface Pmods, USB(Function-Buspower)
shorted pin	1-2 shorted	1-2 shorted	1-2 or 2-3 shorted	VBUS	3.3V	3.3V	5V	5V Interface Pmods, USB(Host)(Function-Selfpower)
shorted pin	2-3 shorted	1-2 shorted	2-3 shorted	VBUS	3.3V	5V	5V	Pmod LCD and other 3V3 Interface Pmods, USB(Host)(Function-Selfpower)

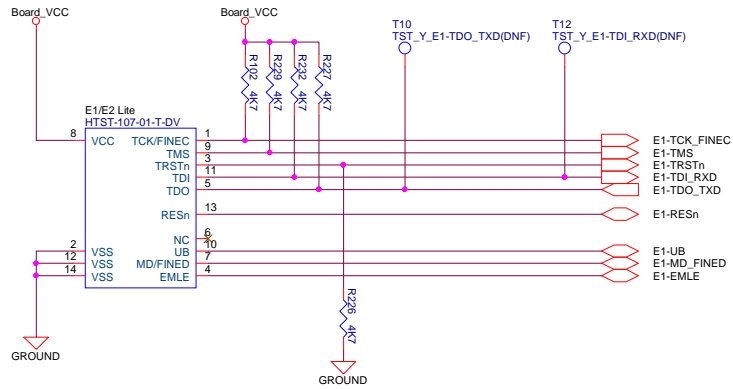
Note1: USB-Selfpower at J14(2-3) or Fit R162
USB-Buspower at J14(1-2) and DNF R162

Note2: 3V3 Interface EEPROM at Fit R28, DNF R51
5V Interface EEPROM at DNF R28, Fit R51 (When 3.3V power is supplied from E2Lite or E1, It becomes 3.3V interface.)

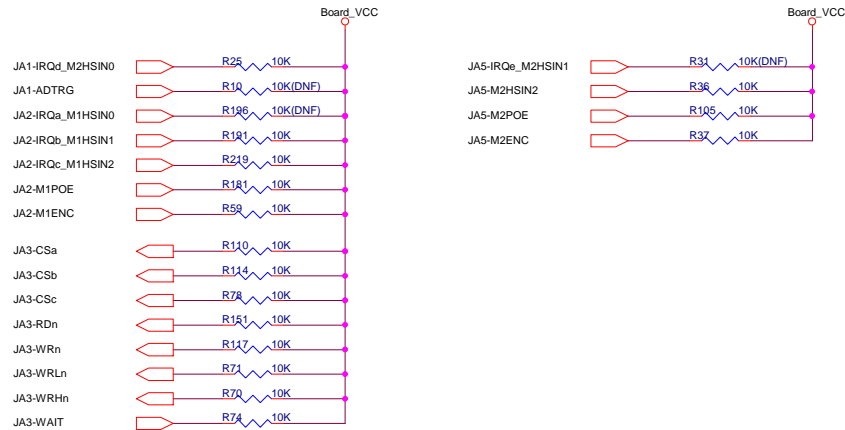
Note3: When 3.3V power is supplied from E2Lite or E1, 3.3V is supplied to 5V power line on the circuit.

<- Default Settings

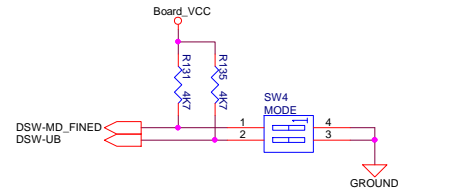
E1/E2 Lite Emulator Interface



Pull-up resistors

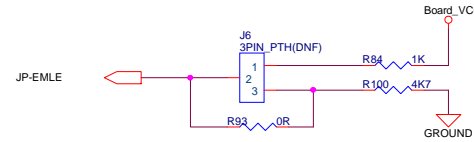


MCU & Emulator Mode Setting



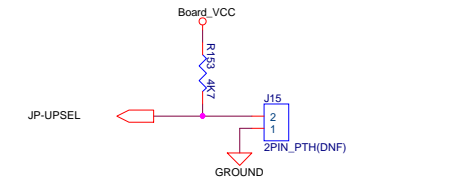
MCU Operating Mode Configuration

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



Emulator Configuration

J6	Emulator Configuration
Shorted Pin1-2	E1/E2 Lite debugging with Hot plug-in
Shorted Pin2-3	E1/E2 Lite normal debugging
All open	Microcontroller single operation (without emulator)
	DO NOT SET



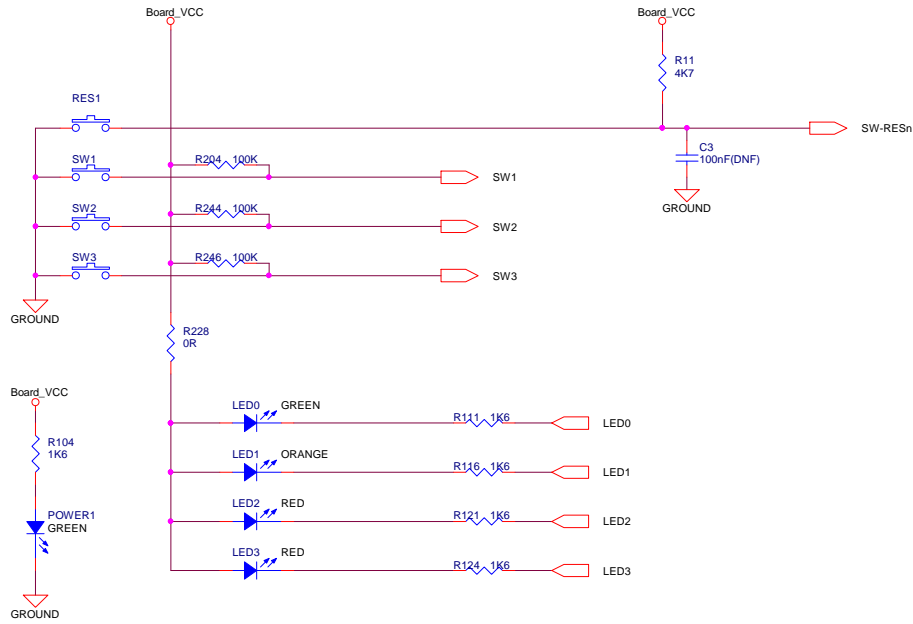
Power Configuration for USB Boot Mode

J15	Power Configuration
Open	Bus Powered
Shorted	Self Powered

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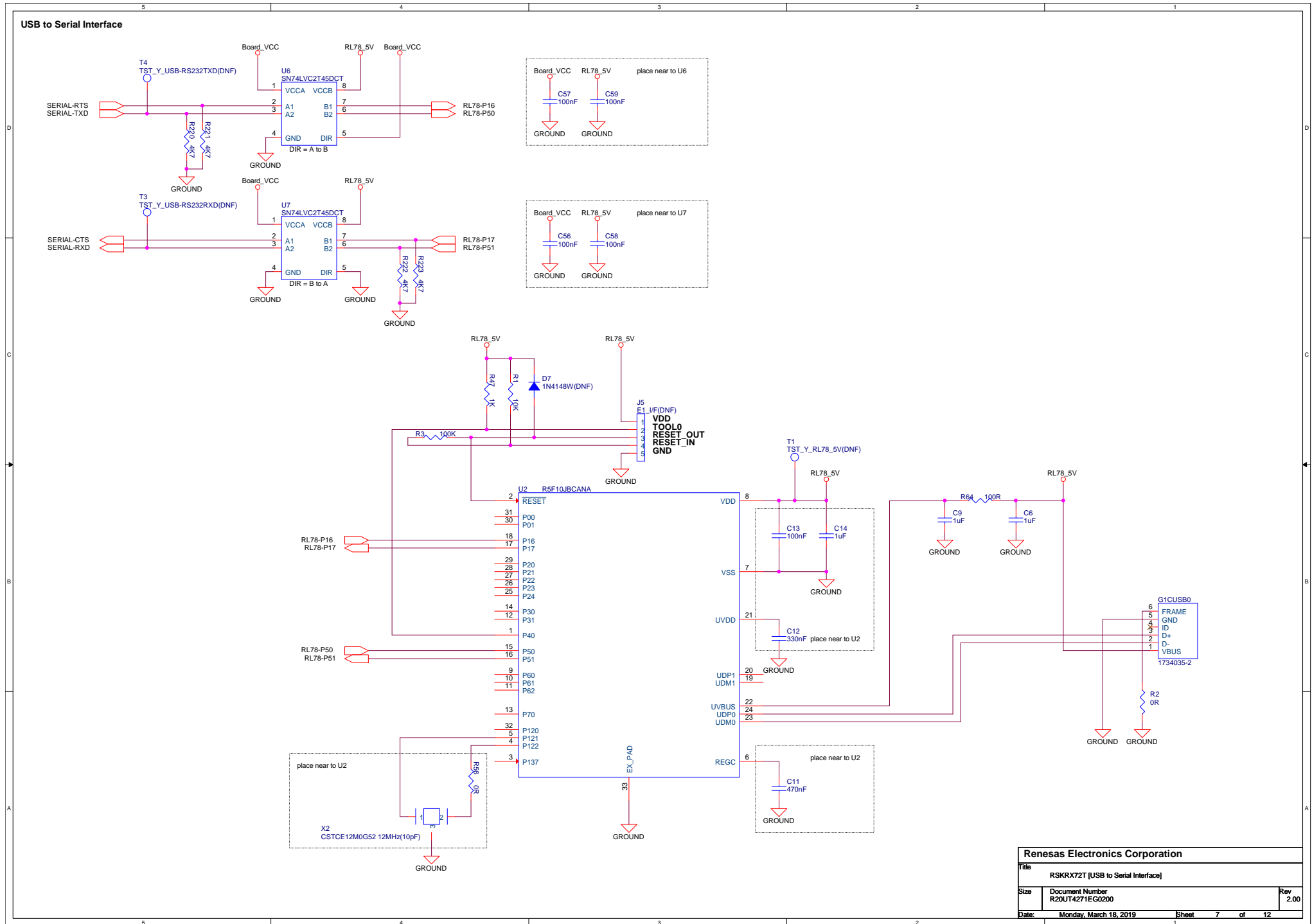
Title			RSKR727 [E1/E2 Lite, MCU & Emulator Mode Setting, Pull-up resistors]		
Size	Document Number	R20UT4271EG0200		Rev	2.00
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Reset, Switches, LEDs



Renesas Electronics Corporation		
Title RSKRX72T [Reset, Switches, LEDs]		
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USB to Serial Interface



Renesas Electronics Corporation		
Title RSKRX72T [USB to Serial Interface]		
Size	Document Number R20UT4271EG0200	Rev 2.00
Date: Monday, March 18, 2019	Sheet 7	of 12

Pmod Interface

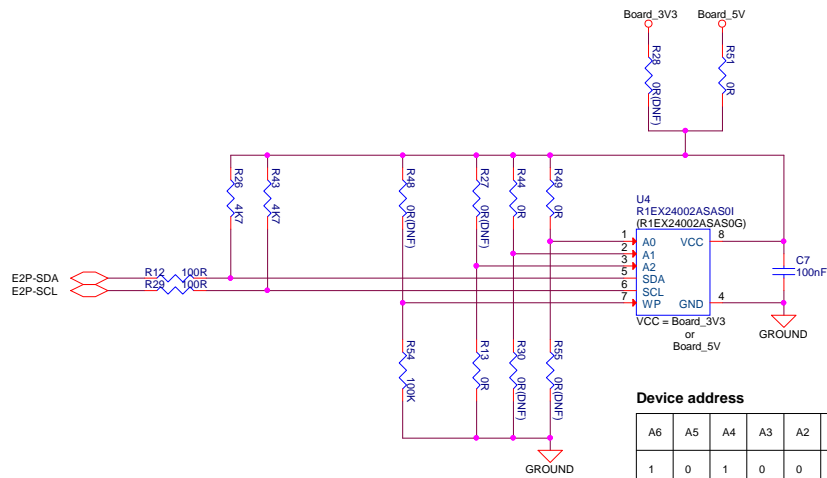
PMOD1: Angle type connector
PMOD2: Vertical type connector (spare)



IIC EEPROM(2Kbits) - RIIC

Warning:

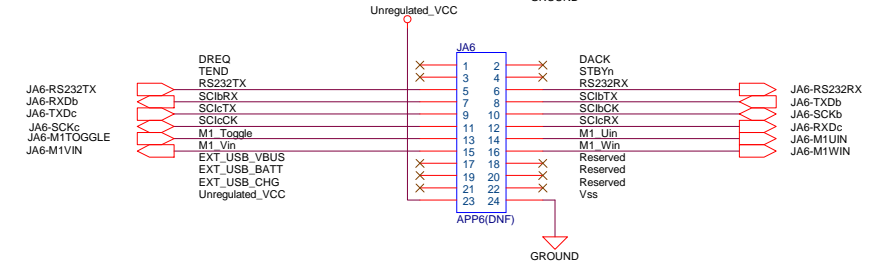
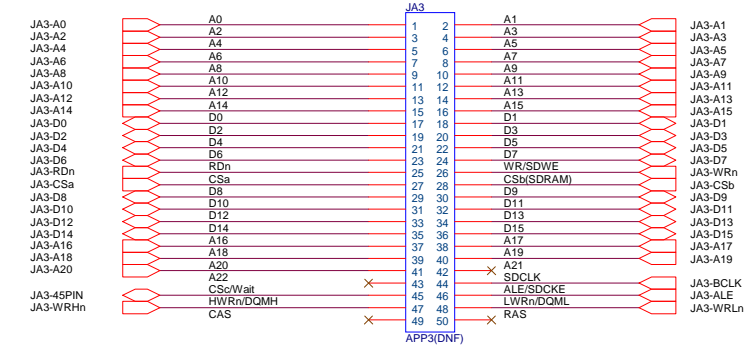
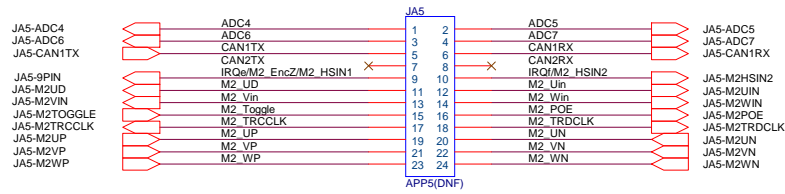
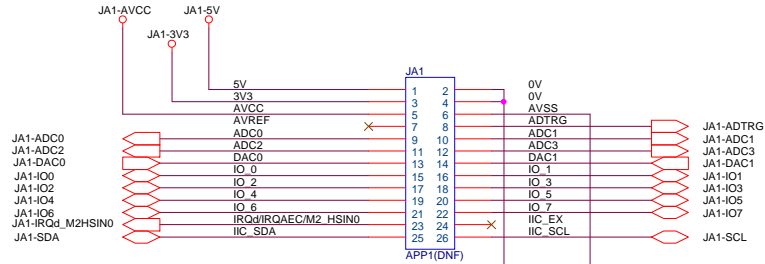
NEVER FIT R28 and R51 simultaneously.



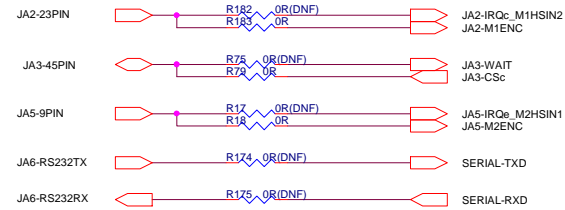
Device address

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

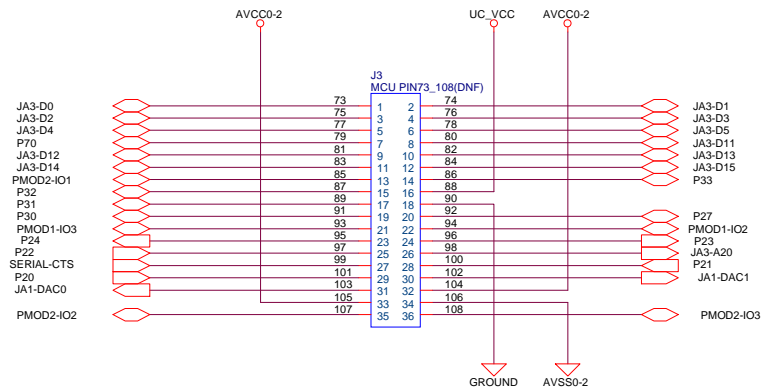
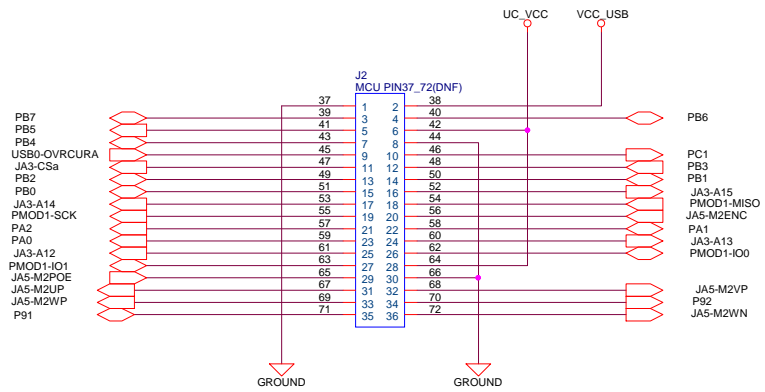
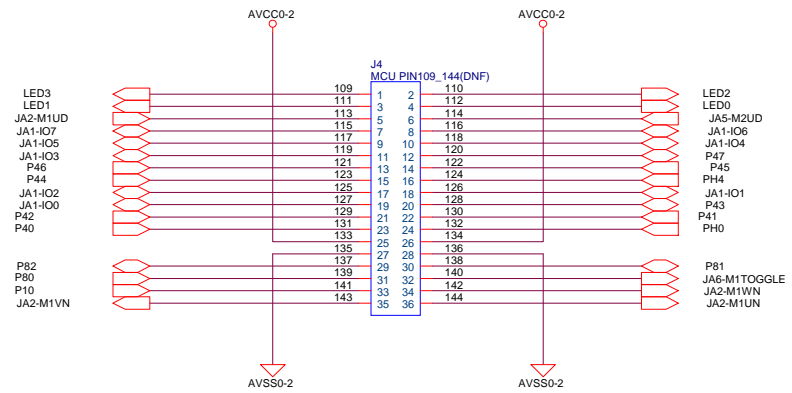
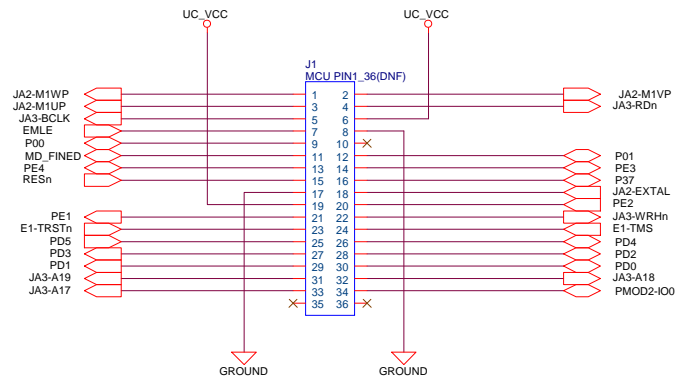
Application Headers



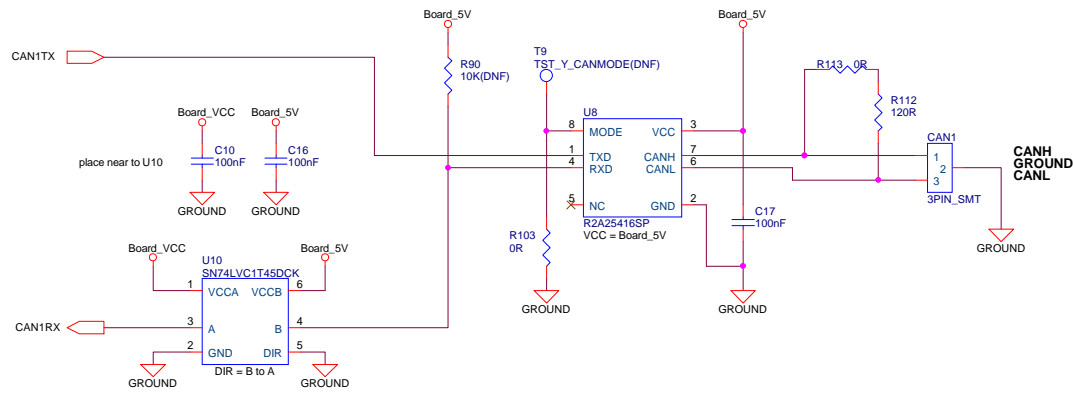
Application Header Function Select



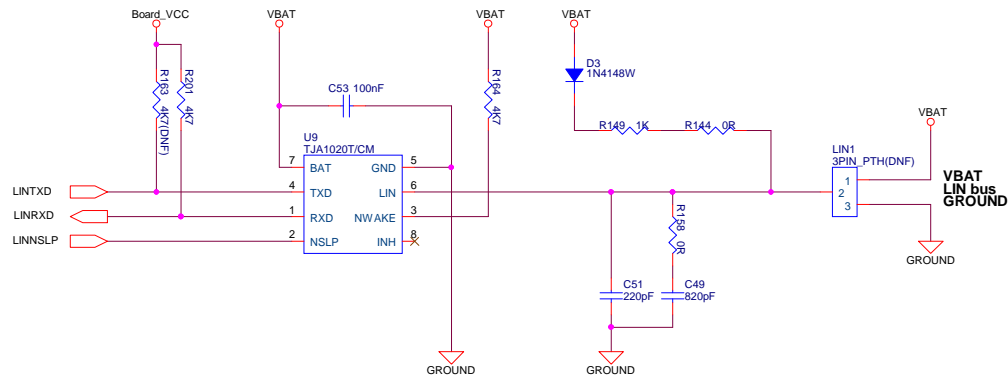
MCU Pin Headers



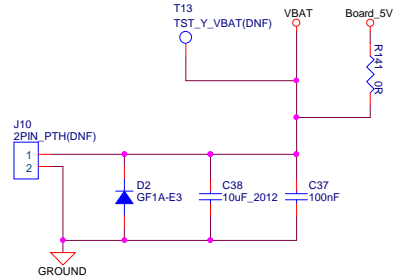
CAN



LIN



VBAT Supply



LIN Mode Configuration

	Fit	Remove
Master	R144, R158	---
Slave	---	R144, R158

Warning:
Remove R141 if VBAT > 5V is possible.

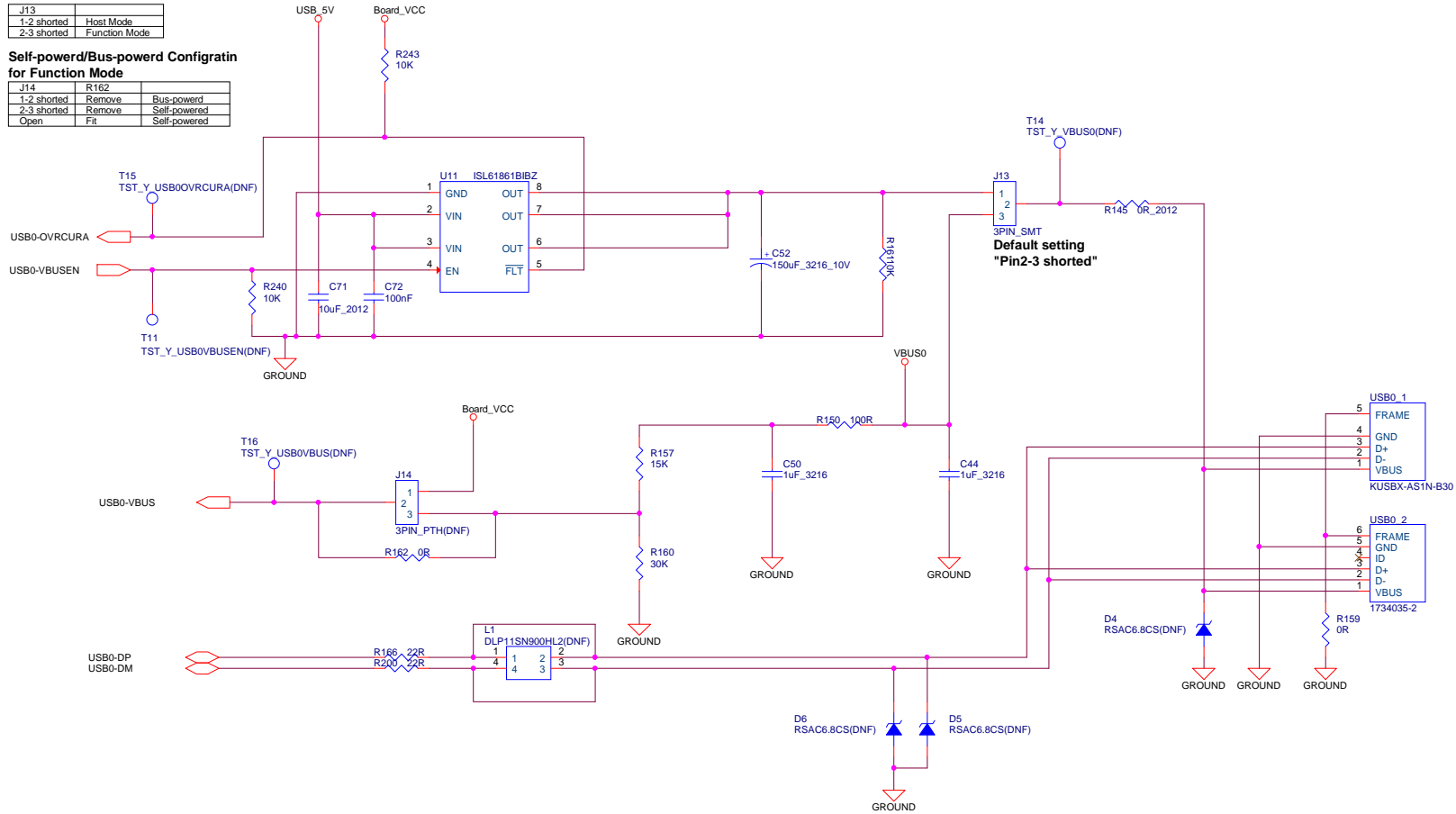
USB0 Host/Function

USB0 Host/Function Select

J13		
1-2 shorted	Host Mode	
2-3 shorted	Function Mode	

Self-power/Bus-powered Configuratin for Function Mode

J14	R162	
1-2 shorted	Remove	Bus-powered
2-3 shorted	Remove	Self-powered
Open	Fit	Self-powered



Revision History

REV	DATE	SHEET	DESCRIPTION
1.00	07.12.2018	ALL	New
2.00	18.03.2019	ALL	1st release edition.
		1	Adds Board Code (Encrypted version).
		2	Changes U1 name.
		4	Fix Power Supply Configuration Table.
			Changes NOTE2.
			Adds NOTE3.
		8	Change status R28 -> R28(DNF), R51(DNF) -> R51
			Changes Device Address in U4. (A7 -> A6)

Renesas Electronics Corporation			
Title RSKRX72T [Revision History]			
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