

# Renesas Starter Kit+ for RX671 CPU Board Schematics

| REV  | REF     | DATE       | DRAWN BY |
|------|---------|------------|----------|
| 1.00 | Release | 22.06.2021 | YCI      |

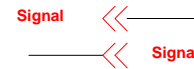
| SHEET | DESCRIPTION                        |
|-------|------------------------------------|
| 1     | INDEX                              |
| 2     | RX671 Microcontroller-1            |
| 3     | RX671 Microcontroller-2            |
| 4     | MCU Pin Function Select-1          |
| 5     | MCU Pin Function Select-2          |
| 6     | PSU                                |
| 7     | E2 Lite Emulator, MCU Mode Setting |
| 8     | Reset, Switches, LEDs              |
| 9     | USB to Serial Interface            |
| 10    | Pmod Interface, IIC EEPROM         |
| 11    | Application Headers                |
| 12    | SDRAM                              |
| 13    | SDHI                               |
| 14    | CAN, RSPI, QSPI                    |
| 15    | USB (Host / Function)              |
| 16    | Touch Interface                    |
| 17    | SSI, Audio Interface               |

## Note:

**C** : Capacitor  
**D** : Diode  
**FB** : Ferrite Beads  
**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:

RTK55671EHC00000BE : RSK+RX671 MP Board (Encryption version)

## Abbreviations:

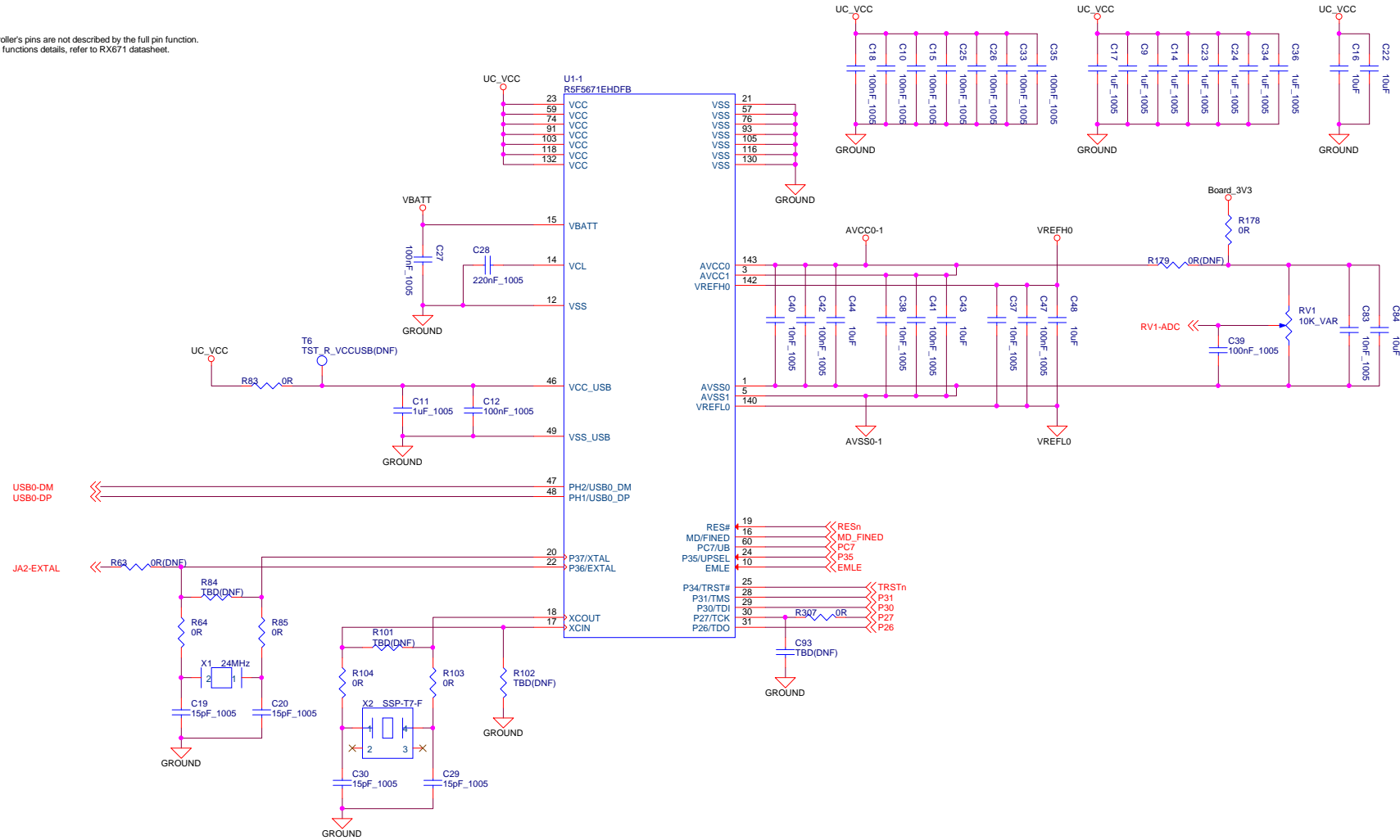
**CAN** : Controller Area Network  
**IIC** : Philips(TM) Inter-Integrated Circuit Connection Bus  
**LED** : Light Emitting Diode  
**MCU** : Microcontroller Unit  
**PSU** : Power Supply Unit  
**RSK** : Renesas Starter Kit  
**SDHI** : SD Host Interface  
**SSI** : Serial Sound Interace  
**USB** : Universal Serial Bus

REE Drawing No. D017772\_04

|                                 |                                 |       |         |
|---------------------------------|---------------------------------|-------|---------|
| Renesas Electronics Corporation |                                 |       |         |
| Title RSK+RX671 [Index]         |                                 |       |         |
| Size                            | Document Number R20UT4878EG0100 | Rev   | 1.00    |
| Date:                           | Tuesday, June 22, 2021          | Sheet | 1 of 17 |

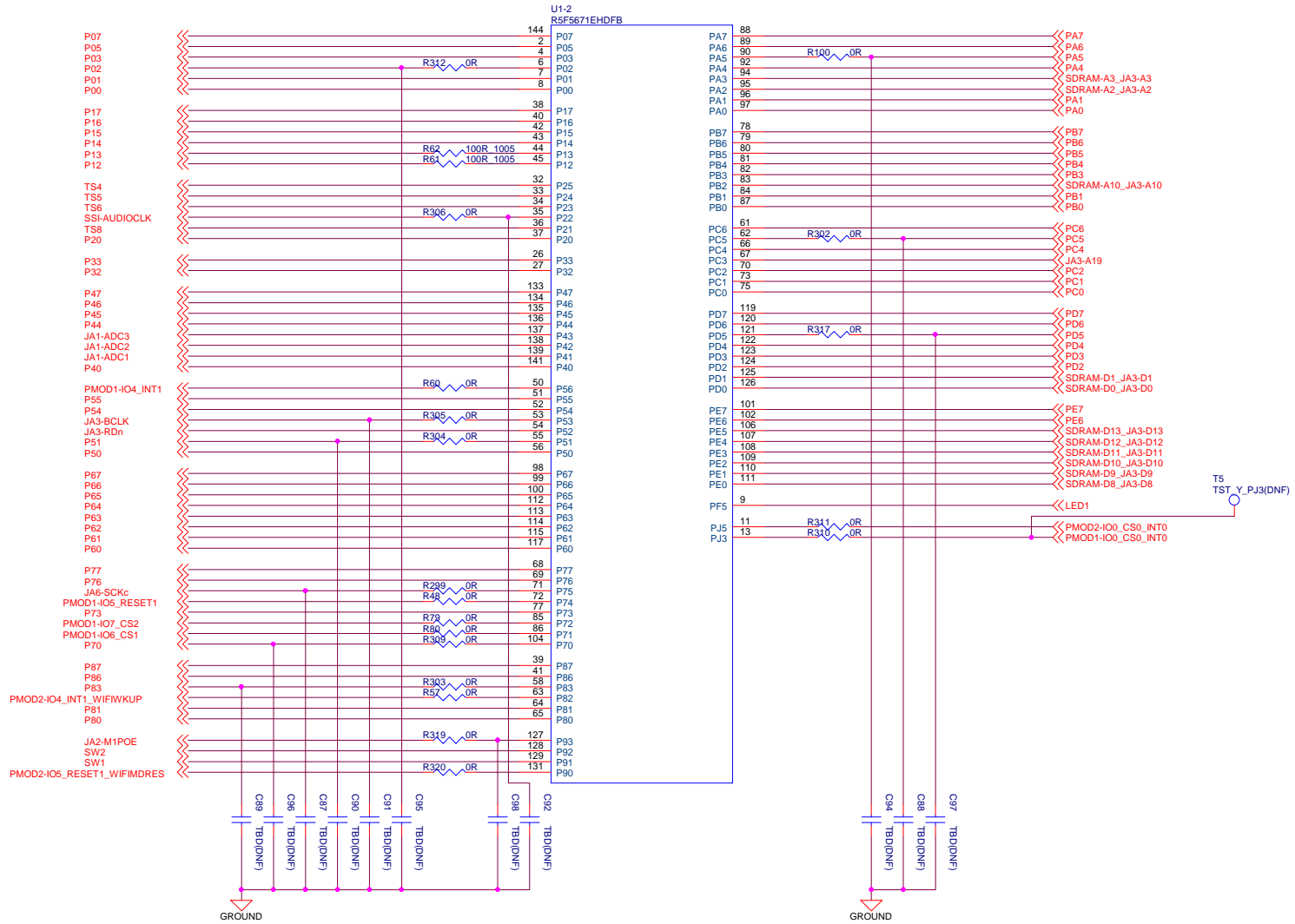
**RX671 Microcontroller-1**

**Note:**  
 Microcontroller's pins are not described by the full pin function.  
 For full pin functions details, refer to RX671 datasheet.



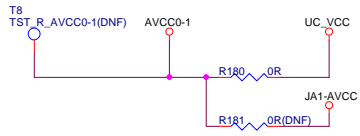
**RX671 Microcontroller-2**

**Note:**  
 Microcontroller's pins are not described by the full pin function.  
 For full pin functions details, refer to RX671 datasheet.

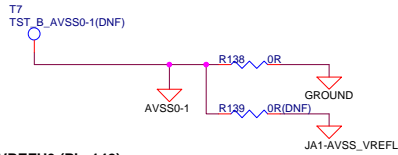


MCU Pin Function Select-1

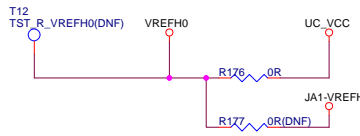
AVCC0 (Pin 143), AVCC1 (Pin 3)



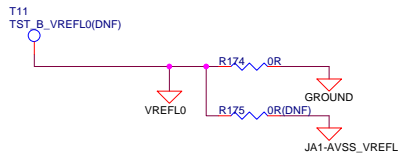
AVSS0 (Pin 1), AVSS1 (Pin 5)



VREFH0 (Pin 142)



VREFL0 (Pin 140)



P07 (Pin 144)



P05 (Pin 2)



P03 (Pin 4)



P02 (Pin 6)



P01 (Pin 7)



P00 (Pin 8)



P17 (Pin 38)



P16 (Pin 40)

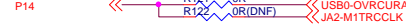


Default setting  
"Pin1-2 shorted"

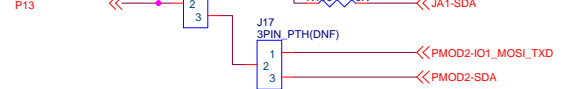
P15 (Pin 42)



P14 (Pin 43)



P13 (Pin 44)



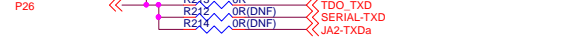
P12 (Pin 45)



P27 (Pin 30)



P26 (Pin 31)

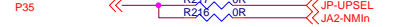


P20 (Pin 37)



Default setting  
"Pin1-2 shorted"

P35 (Pin 24)



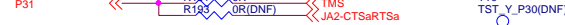
P33 (Pin 26)



P32 (Pin 27)



P31 (Pin 28)



P30 (Pin 29)



P47 (Pin 133)



P46 (Pin 134)



P45 (Pin 135)



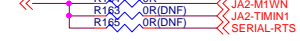
P44 (Pin 136)



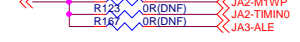
P40 (Pin 141)



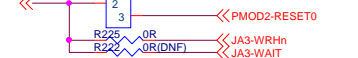
P55 (Pin 51)



P54 (Pin 52)



P51 (Pin 55)



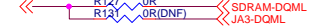
P50 (Pin 56)



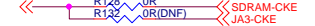
P67 (Pin 98)



P66 (Pin 99)



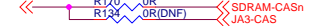
P65 (Pin 100)



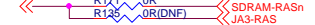
P64 (Pin 112)



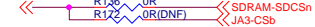
P63 (Pin 113)



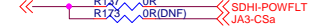
P62 (Pin 114)



P61 (Pin 115)



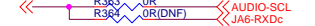
P60 (Pin 117)



P77 (Pin 68)



P76 (Pin 69)



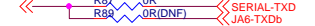
P73 (Pin 77)



P70 (Pin 104)



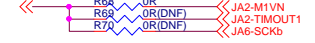
P87 (Pin 39)



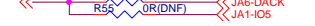
P86 (Pin 41)



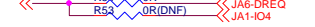
P83 (Pin 58)



P81 (Pin 64)



P80 (Pin 65)

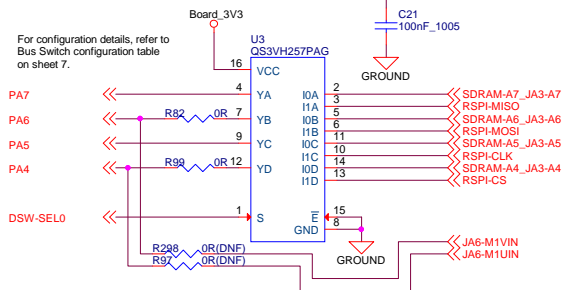


|   |                                 |               |
|---|---------------------------------|---------------|
| Renesas Electronics Corporation             |                                 |               |
| Title RSK+RX671 [MCU Pin Function Select-1] |                                 |               |
| Size  | Document Number R20UT4878EG0100 | Rev 1.00      |
| Date:                                       | Tuesday, June 22, 2021          | Sheet 4 of 17 |

MCU Pin Function Select-2

PA7 (Pin 88), PA6 (Pin 89)  
PA5 (Pin 90), PA4 (Pin 92)

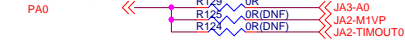
For configuration details, refer to Bus Switch configuration table on sheet 7.



PA1 (Pin 96)



PA0 (Pin 97)



PB7 (Pin 78)



PB6 (Pin 79)



PB5 (Pin 80)



PB4 (Pin 81)



PB3 (Pin 82)



PB1 (Pin 84)



PB0 (Pin 87)



PC7 (Pin 60)



PC6 (Pin 61)



PC5 (Pin 62)



PC4 (Pin 66)



PC2 (Pin 70)



PC1 (Pin 73)

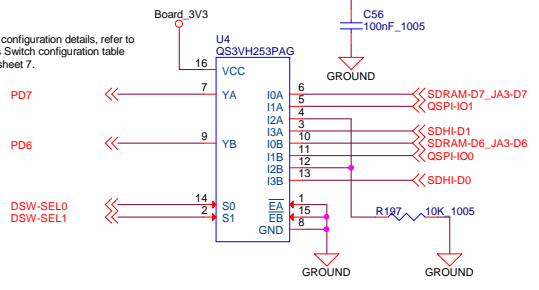


PC0 (Pin 75)



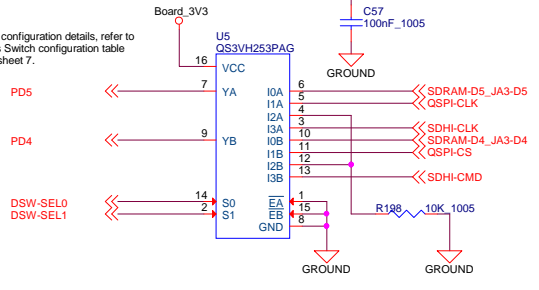
PD7 (Pin 119), PD6 (Pin 120)

For configuration details, refer to Bus Switch configuration table on sheet 7.



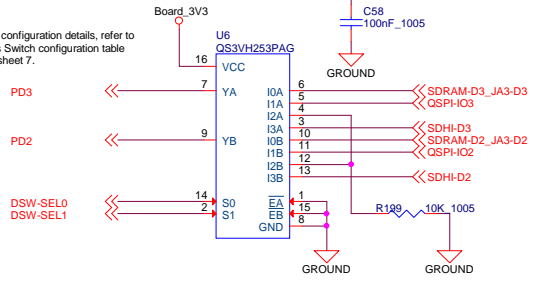
PD5 (Pin 121), PD4 (Pin 122)

For configuration details, refer to Bus Switch configuration table on sheet 7.



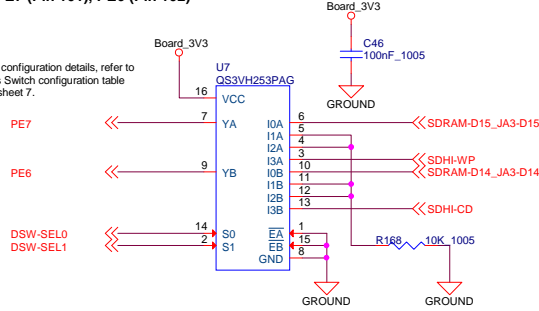
PD3 (Pin 123), PD2 (Pin 124)

For configuration details, refer to Bus Switch configuration table on sheet 7.



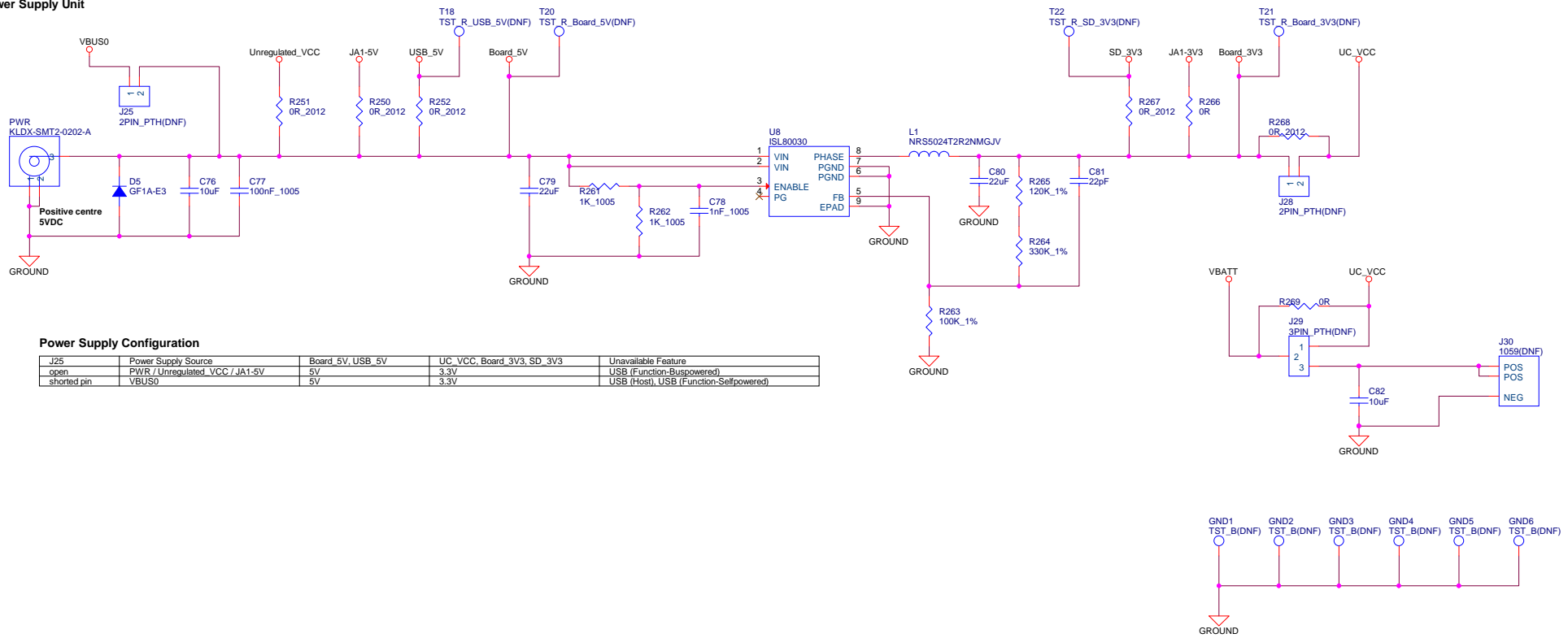
PE7 (Pin 101), PE6 (Pin 102)

For configuration details, refer to Bus Switch configuration table on sheet 7.



P50 = JA3-WRn / JA3-WRLn

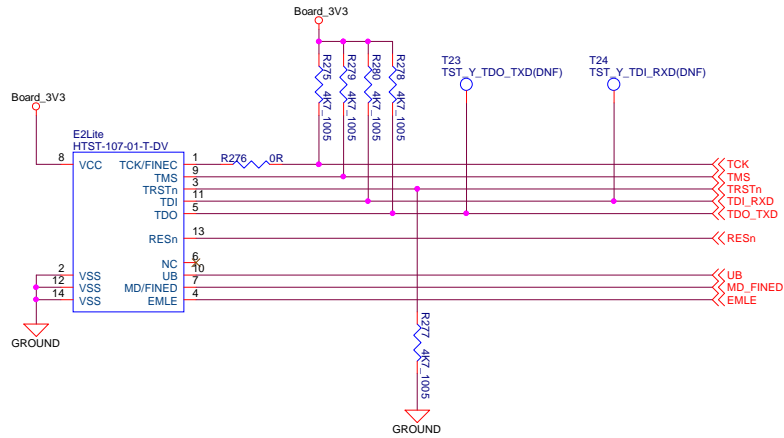
**Power Supply Unit**



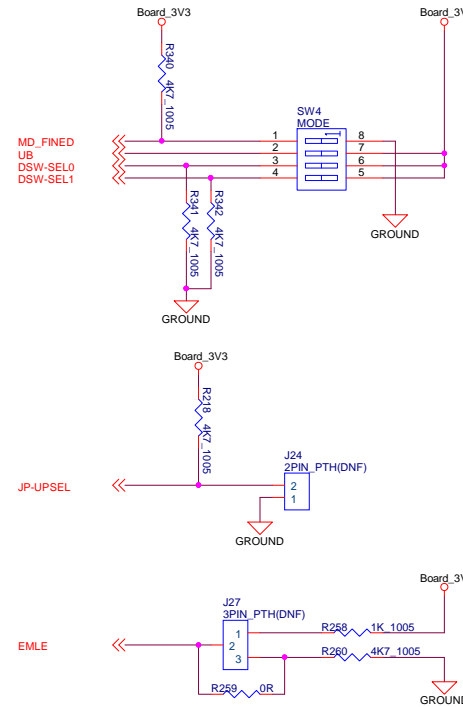
**Power Supply Configuration**

| J25         | 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 | VBUS0                          | 5V               | 3.3V                      | USB (Host), USB (Function-Selfpowered) |

### E2 Lite Emulator Interface



### MCU Mode Setting



Default setting of SW4: all OFF

#### MCU Operating Mode Configuration

| SW4 Pin1 | SW4 Pin2   | J24         | 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) |

#### Bus Switch Select Configuration

| SW4 Pin3 | SW4 Pin4 | Available Feature   |
|----------|----------|---------------------|
| OFF      | OFF      | SDRAM               |
| ON       | OFF      | RSPI_QSPI           |
| OFF      | ON       | N/A (DO NOT SELECT) |
| ON       | ON       | RSPI_SDHI           |

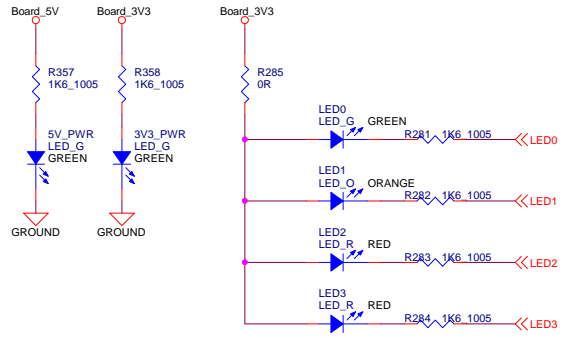
#### Emulator Configuration

| J27            | Emulator Configuration                              |
|----------------|---|
| Shorted Pin1-2 | E2 Lite debugging with Hot plug-in                  |
| Shorted Pin2-3 | E2 Lite normal debugging                            |
| All open       | Microcontroller single operation (without emulator) |
|                | DO NOT SET  |

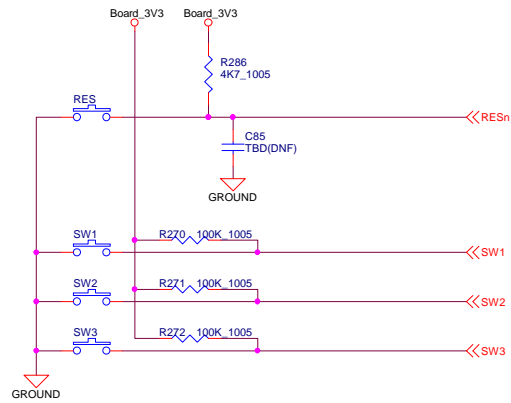
### Renesas Electronics Corporation

|       |                        |       |                                       |
|-------|------------------------|-------|---------------------------------------|
| Title |                        |       | RSK+RX671 [E2 Lite, MCU Mode Setting] |
| Size  | Document Number        | Rev   |                                       |
|       | R20UT4878EG0100        | 1.00  |                                       |
| Date: | Tuesday, June 22, 2021 | Sheet | 7 of 17                               |

**LEDs**



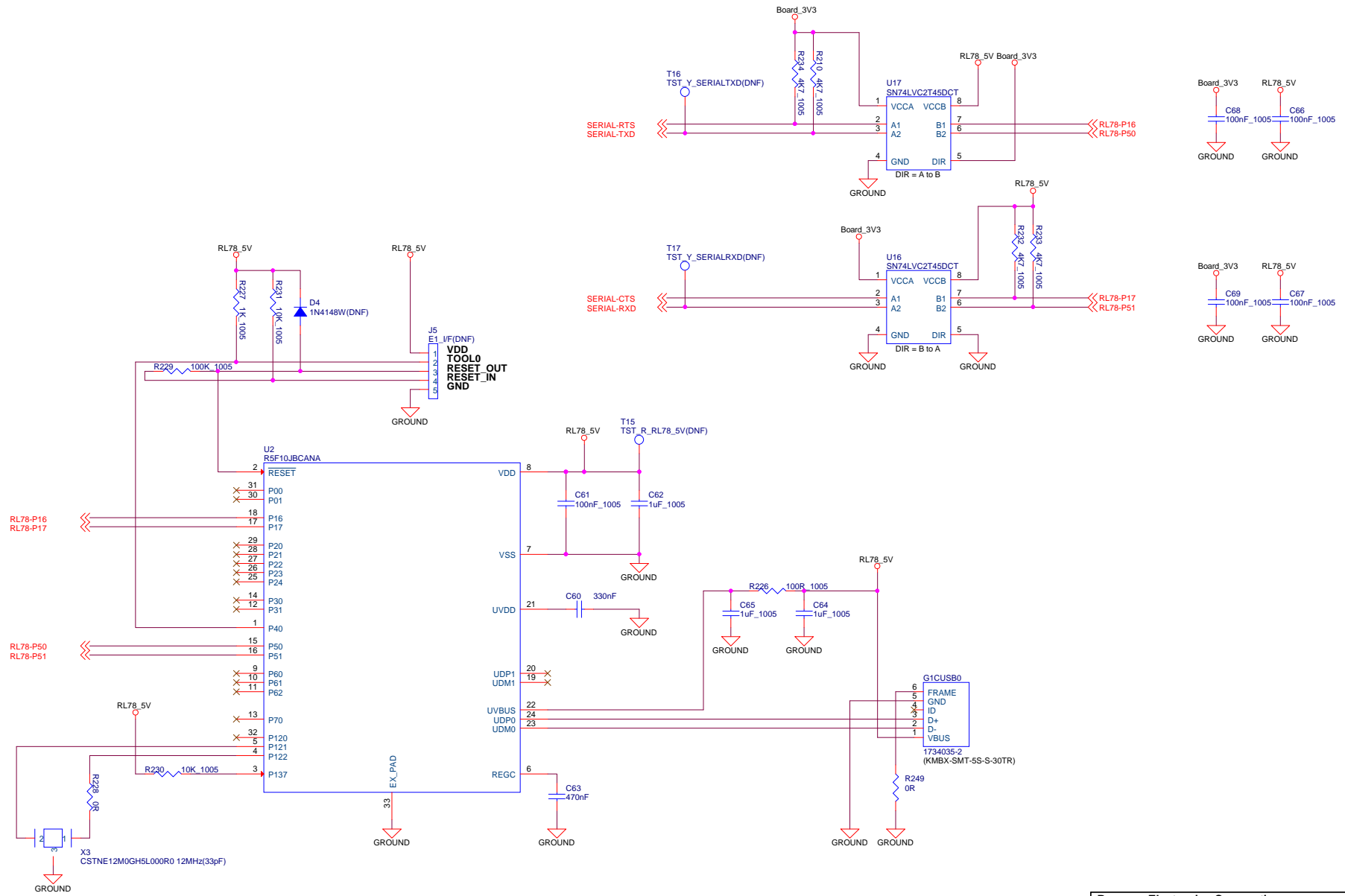
**Switches, RESET**



|   |                                 |               |
|---|---------------------------------|---------------|
| Renesas Electronics Corporation         |                                 |               |
| Title RSK+RX671 [RESET, Switches, LEDs] |                                 |               |
| Size                                    | Document Number R20UT4878EG0100 | Rev 1.00      |
| Date:                                   | Tuesday, June 22, 2021          | Sheet 8 of 17 |

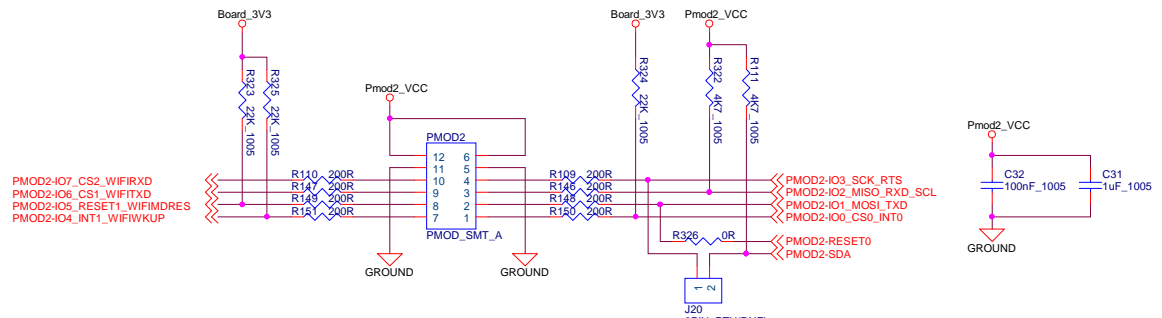
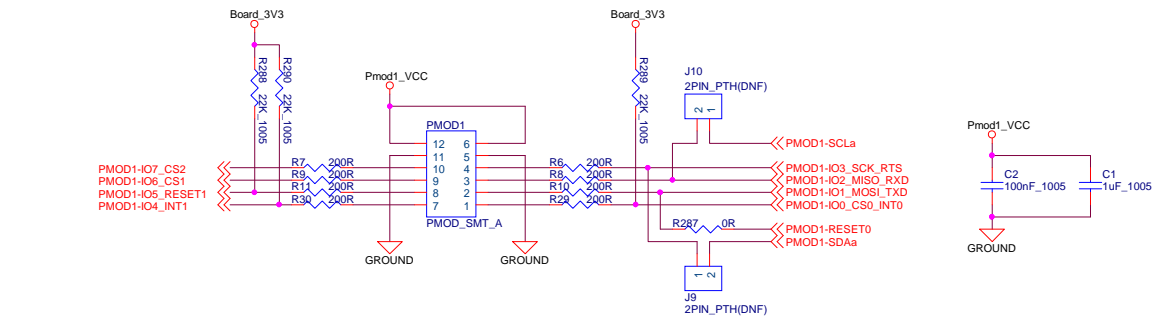
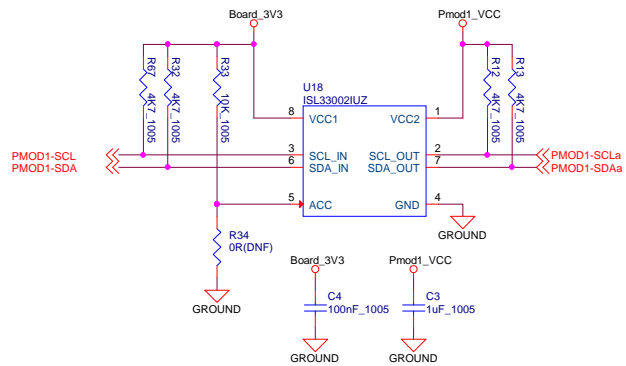
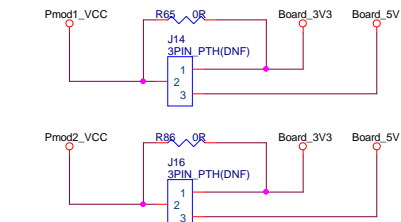


USB to Serial Interface



|  |                                  |           |
|--|----------------------------------|-----------|
| Renesas Electronics Corporation            |                                  |           |
| Title: RSK+RX671 [USB to Serial Interface] |                                  |           |
| Size: R20UT4878EG0100                      | Document Number: R20UT4878EG0100 | Rev: 1.00 |
| Date: Tuesday, June 22, 2021               | Sheet: 9                         | of 17     |

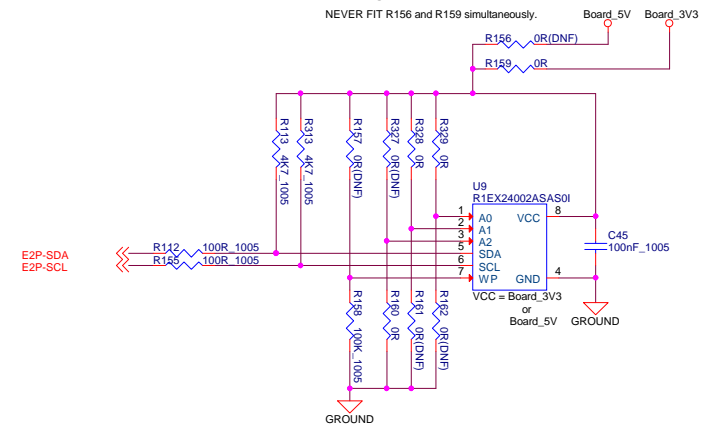
**Pmod Interface**



**IIC EEPROM(2Kbits)**

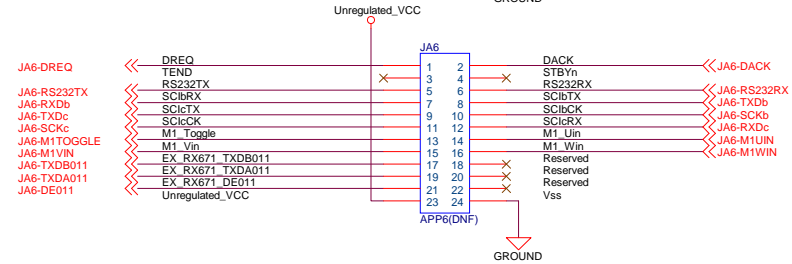
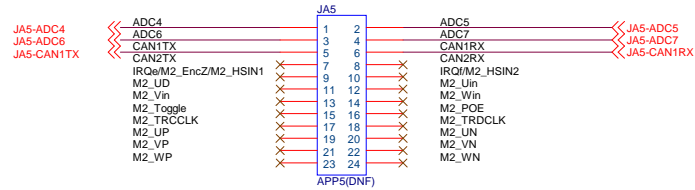
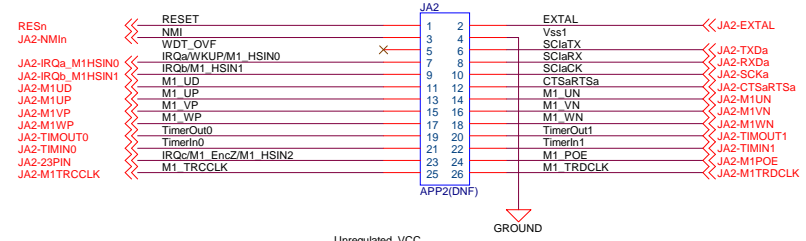
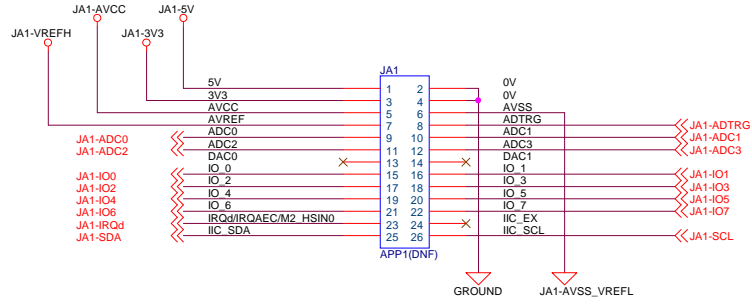
**Warning:**

NEVER FIT R156 and R159 simultaneously.

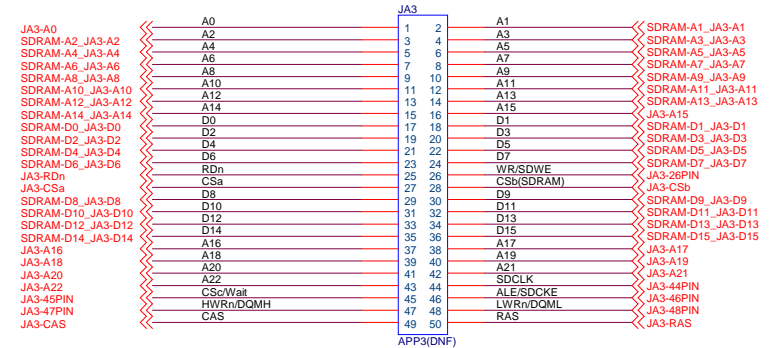
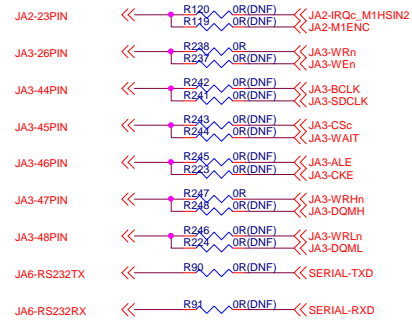


|                                     |                                  |                 |
|-------------------------------------|----------------------------------|-----------------|
| Renesas Electronics Corporation     |                                  |                 |
| Title: RSK+RX671 [Pmod, IIC EEPROM] |                                  |                 |
| Size:                               | Document Number: R20UT4878EG0100 | Rev: 1.00       |
| Date:                               | Tuesday, June 22, 2021           | Sheet: 10 of 17 |

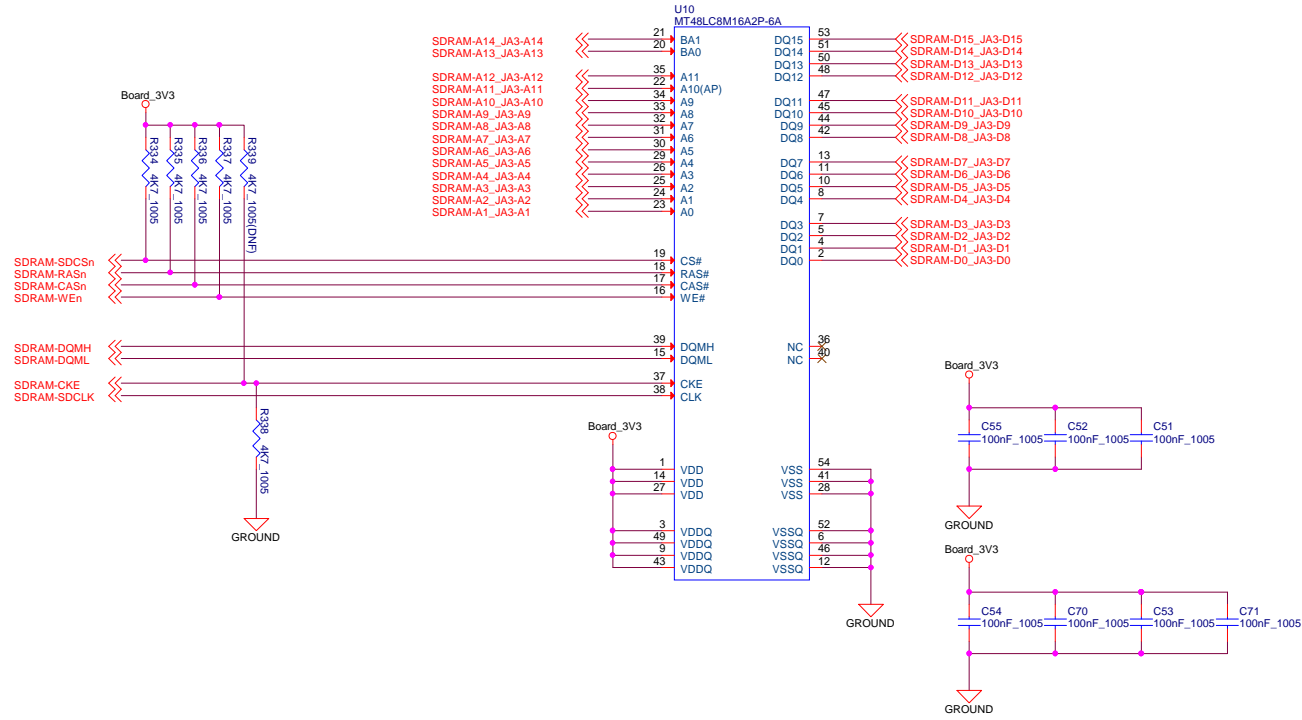
### Application Headers



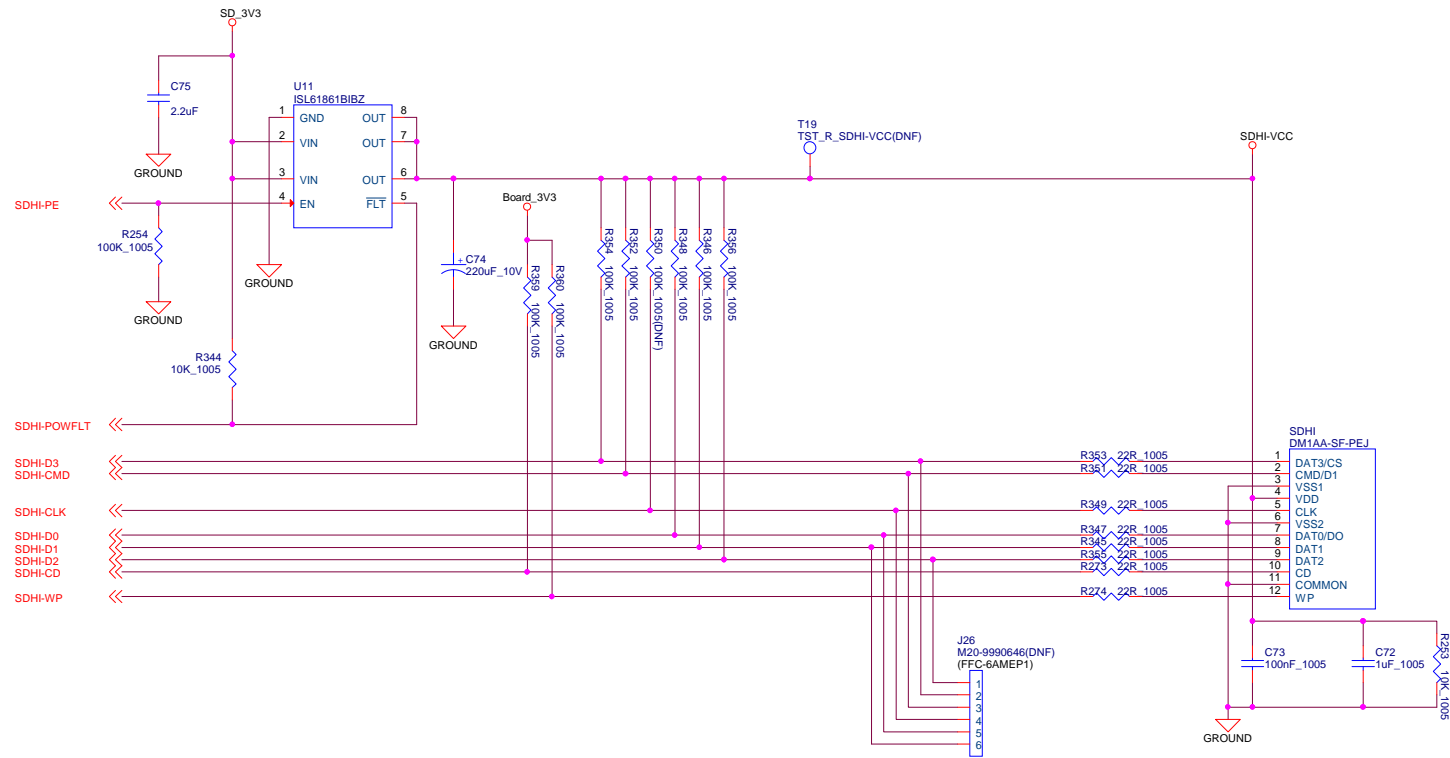
### Application Header Function Select



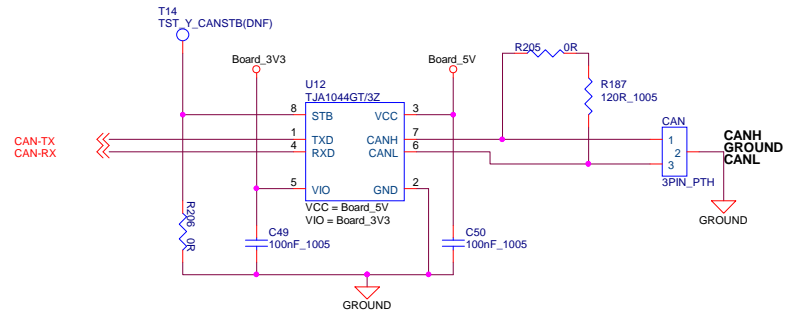
SDRAM(128Mbits)



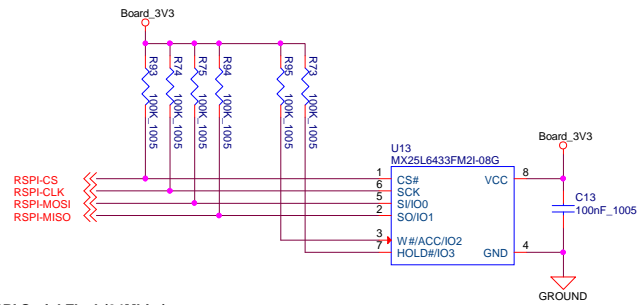
SDHI



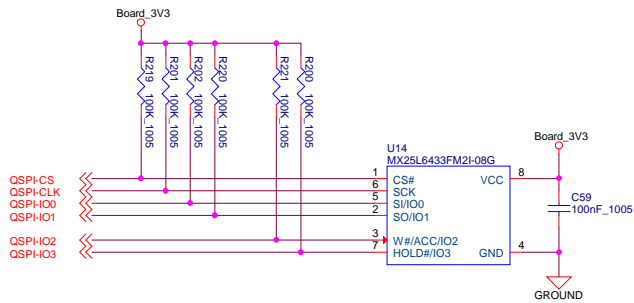
**CAN**



**RSPI- SPI Serial Flash(64Mbits)**



**QSPI- SPI Serial Flash(64Mbits)**



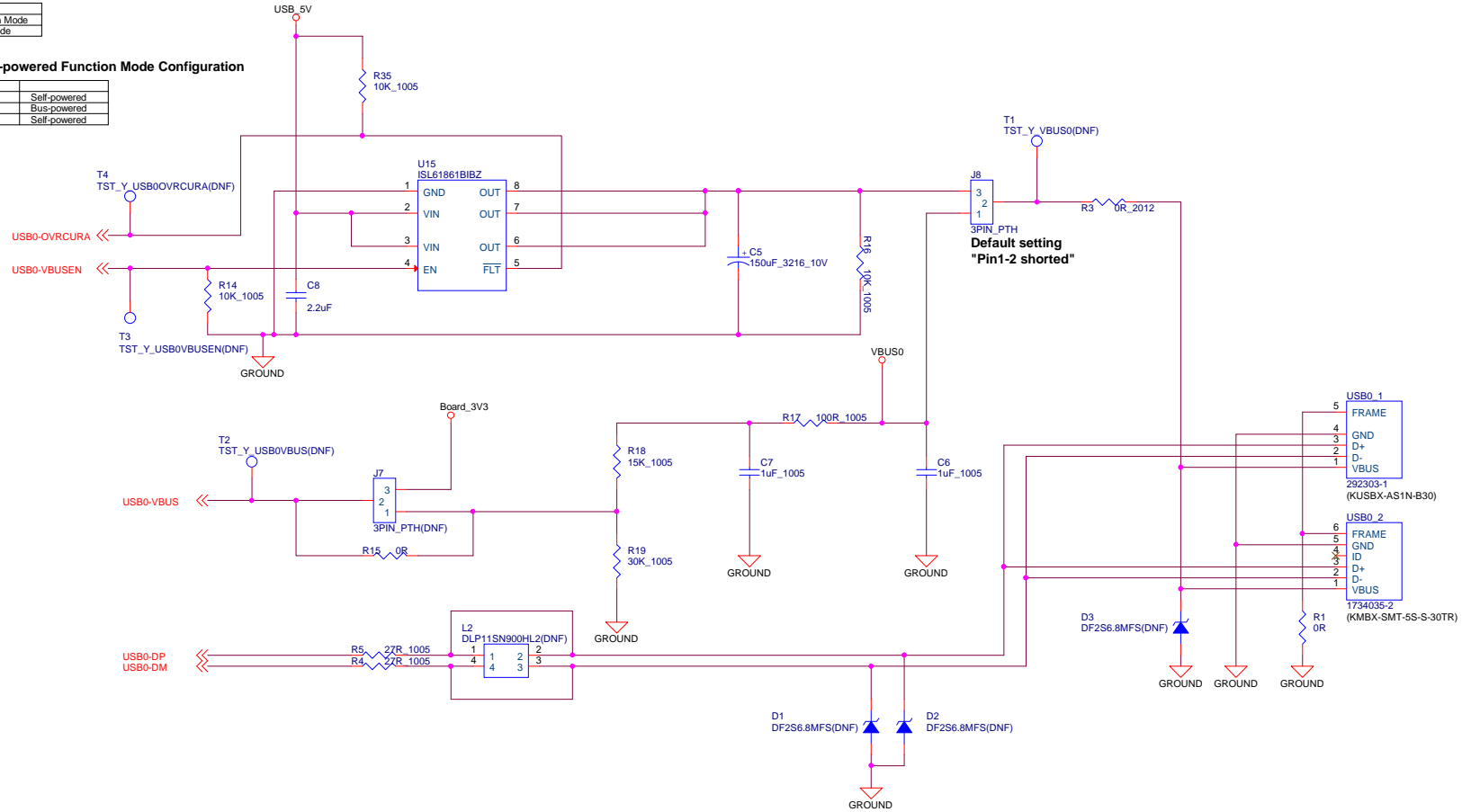
# USB0 Host/Function

## USB0 Host/Function Select

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

## Self-powered/Bus-powered Function Mode Configuration

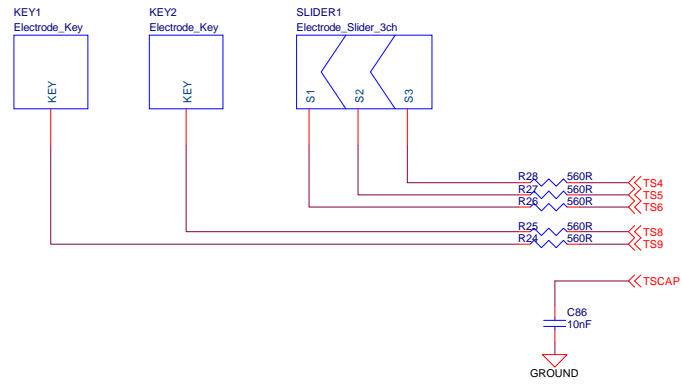
| J7          | R15    | Self-powered |
|-------------|--------|--------------|
| 1-2 shorted | Remove | Self-powered |
| 2-3 shorted | Remove | Bus-powered  |
| Open        | Fit    | Self-powered |



## 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).

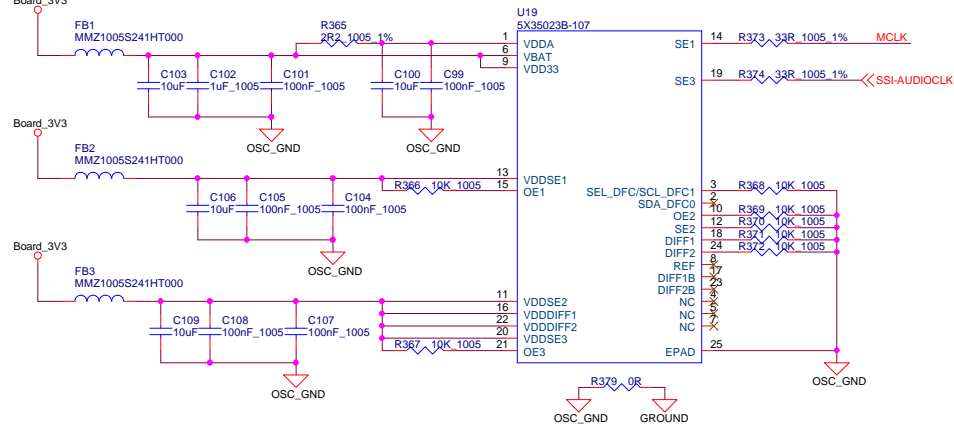


|                                   |                                 |       |          |
|-----------------------------------|---------------------------------|-------|----------|
| Renesas Electronics Corporation   |                                 |       |          |
| Title RSK+RX671 [Touch Interface] |                                 |       |          |
| Size                              | Document Number R20UT4878EG0100 | Rev   | 1.00     |
| Date:                             | Tuesday, June 22, 2021          | Sheet | 16 of 17 |

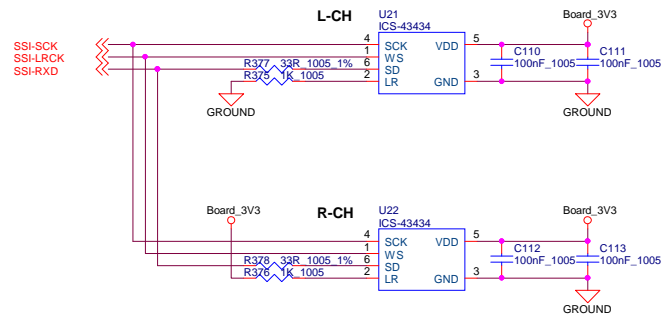


**SSI, Audio Interface**

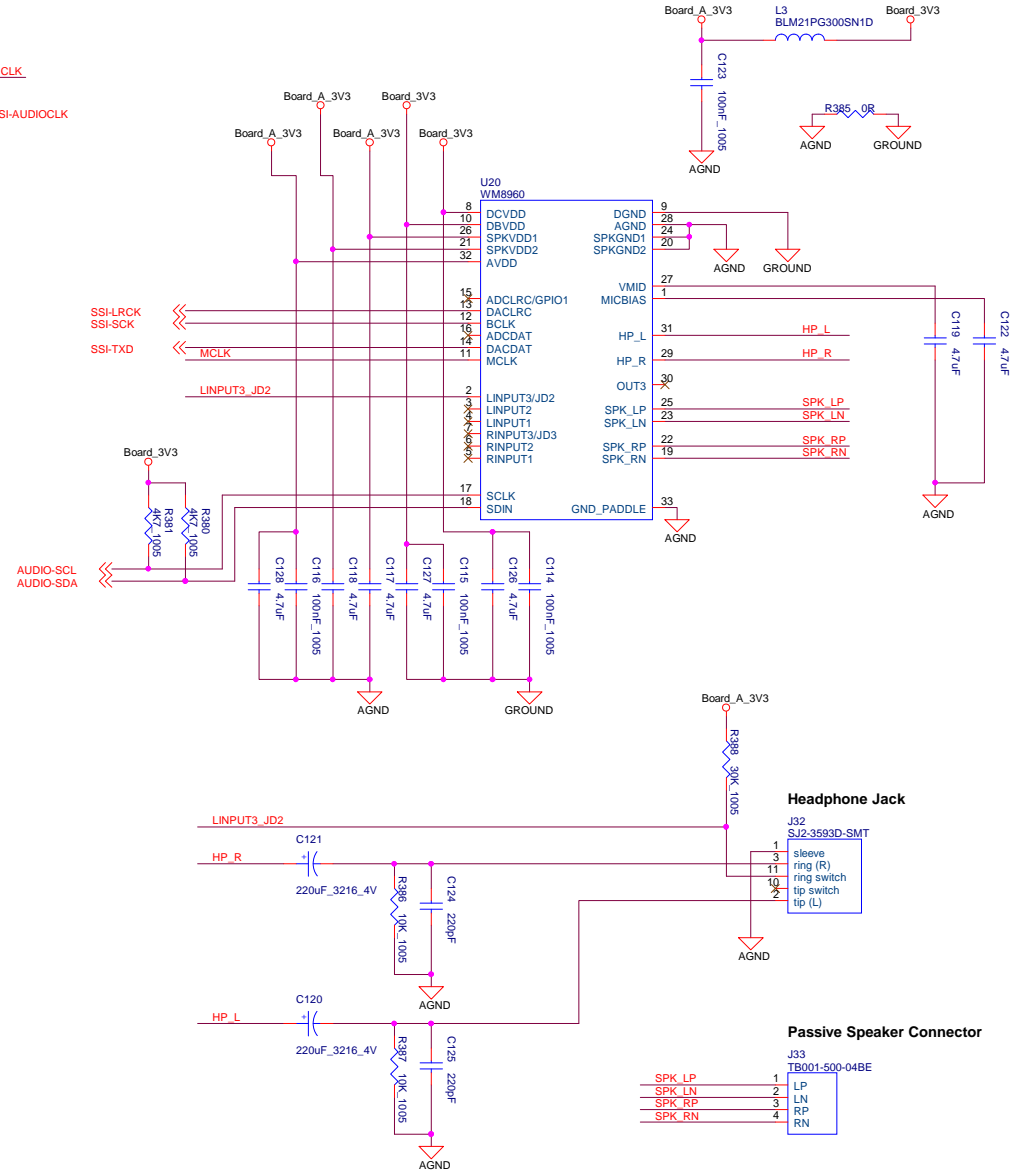
**Clock Generator**



**Microphone**



**Audio codec**



# Revision History

| REV  | DATE       | SHEET | DESCRIPTION          |
|------|------------|-------|----------------------|
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