Renesas Starter Kit+ for RX65N
CPU Board Schematics

REV	REF	DATE	DRAWN BY
1.00	Release	31.05.2016	YOI

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 is not fitted by default.

Board Code:

RTK500565NC00000BE : RSK+RX65N MP board

REEL Drawing No. D014352_04

Renesas System Design Co., Ltd.		
Title: RSK+RX65N [Index]		
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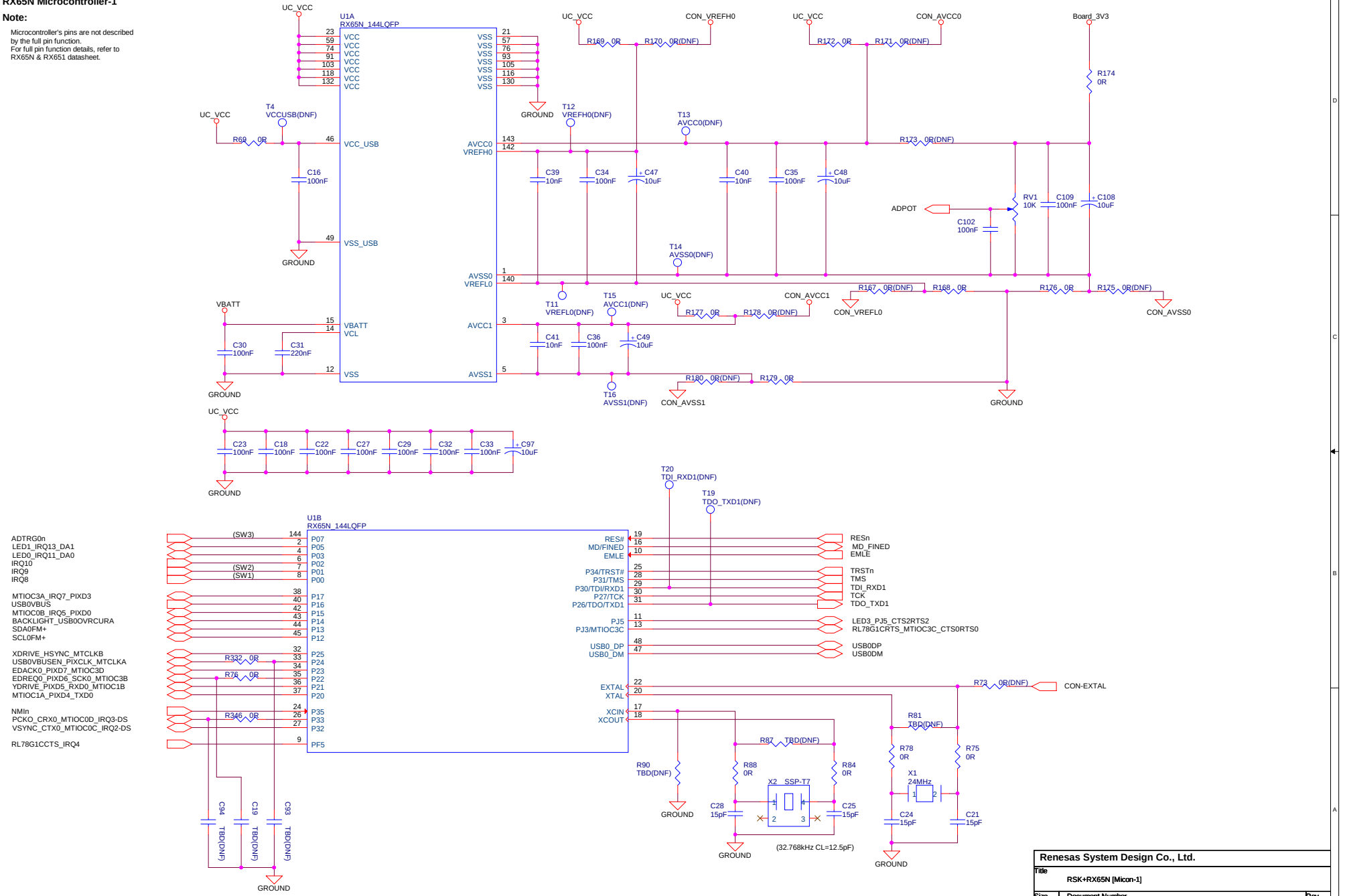
RX65N Microcontroller-1

Note:

Microcontroller's pins are not described by the full pin function.
For full pin function details, refer to RX65N & RX651 datasheet.



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [Micon-1]		
Size	Document Number: R20UT3557EG0100	Rev: 1.00
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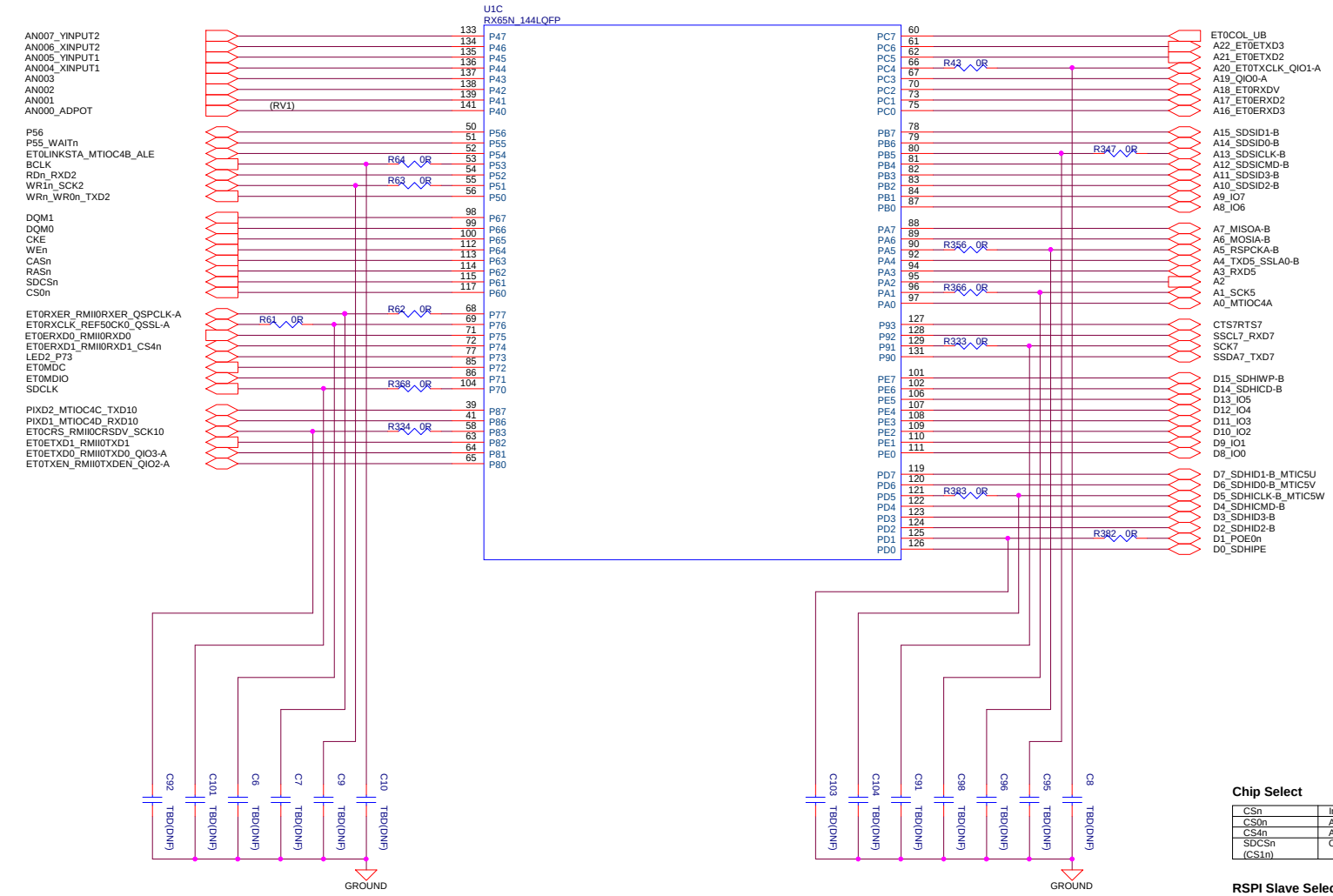
RX65N Microcontroller-2

Note:

Microcontroller's pins are not described by the full pin function.
For full pin function details, refer to RX65N & RX651 datasheet.



Chip Select

CSn	Interface
CS0n	Application Header (JA3)
CS4n	Application Header (JA3)
SDCSn (CS1n)	On-board SDRAM (BD-SDCSn) / Application Header JA3 (CON-SDCSn)

RSPI Slave Select

SSL	Interface
SSLA0-B	On-board SPI Serial Flash

QSPI Slave Select

QSSL	Interface
QSSL-A	On-board QSPI Serial Flash (BD-QSSL-A) / TFT Header (TFT-QSSL-A)

Renesas System Design Co., Ltd.		
Title: **RSK+RX65N [Micon-2]**		
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MCU Pin Function Select-1

Default setting of DIP Switches.

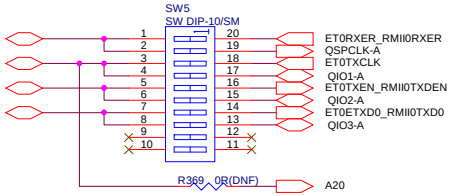
SW5	Default
Pin1	ON
Pin2	OFF
Pin3	ON
Pin4	OFF
Pin5	ON
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	OFF
Pin10	OFF

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

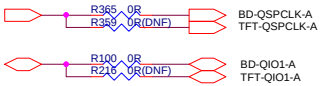
SW7	Default
Pin1	ON
Pin2	OFF
Pin3	ON
Pin4	OFF
Pin5	ON
Pin6	OFF
Pin7	ON
Pin8	OFF
Pin9	ON
Pin10	OFF

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

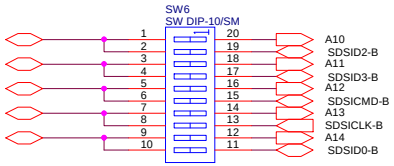
P77(Pin68) ET0RXER_RMII0RXER_QSPCLK-A
PC4(Pin66) A20_ET0TXCLK_QIO1-A
P80(Pin65) ET0TXEN_RMII0TXDEN_QIO2-A
P81(Pin64) ET0ETXD0_RMII0TXD0_QIO3-A



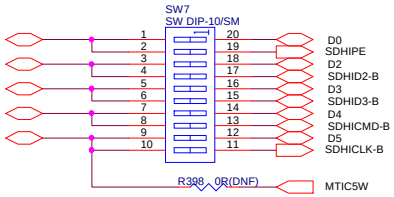
P77(Pin68) QSPCLK-A
PC4(Pin66) QIO1-A



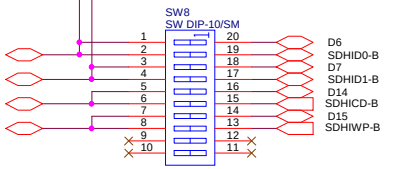
PB2(Pin83) A10_SDSID2-B
PB3(Pin82) A11_SDSID3-B
PB4(Pin81) A12_SDSICMD-B
PB5(Pin80) A13_SDSICLK-B
PB6(Pin79) A14_SDSID0-B



PD0(Pin126) D0_SDHIPE
PD2(Pin124) D2_SDHID2-B
PD3(Pin123) D3_SDHID3-B
PD4(Pin122) D4_SDHICMD-B
PD5(Pin121) D5_SDHICLK-B_MTIC5W



PD6(Pin120) D6_SDHID0-B_MTIC5V
PD7(Pin119) D7_SDHID1-B_MTIC5U
PE6(Pin102) D14_SDHICD-B
PE7(Pin101) D15_SDHIWP-B



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [MCU Pin Function Select-1]		
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MCU Pin Function Select-2

P03(Pin4)
LED0_IRQ11_DA0

P05(Pin2)
LED1_IRQ13_DA1

P14(Pin43)
BACKLIGHT_USB0OVRCURA

P15(Pin42)
MTIOC0B_IRQ5_PIXD0

P17(Pin38)
MTIOC3A_IRQ7_PIXD3

P20(Pin37)
MTIOC1A_PIXD4_TXD0

P21(Pin36)
YDRIVE_PIXD5_RXD0_MTIOC1B

P22(Pin35)
EDREQ0_PIXD6_SCK0_MTIOC3B

P23(Pin34)
EDACK0_PIXD7_MTIOC3D

P24(Pin33)
USB0VBUSEN_PIXCLK_MTCLKA

P25(Pin32)
XDRIVE_HSYNC_MTCLKB

P26(Pin31)
TDO_TXD1

P30(Pin29)
TDI_RXD1

P32(Pin27)
VSYNC_CTX0_MTIOC0C_IRQ2-DS

P33(Pin26)
PCKO_CRX0_MTIOC0D_IRQ3-DS

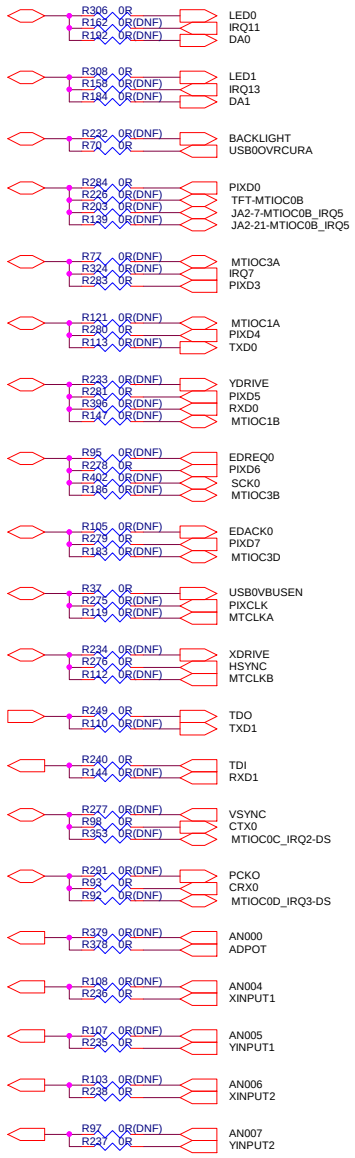
P40(Pin141)
AN000_ADPOT

P44(Pin136)
AN004_XINPUT1

P45(Pin135)
AN005_YINPUT1

P46(Pin134)
AN006_XINPUT2

P47(Pin133)
AN007_YINPUT2



P50(Pin56)
WRn_WR0n_TXD2

P51(Pin55)
WR1n_SCK2

P52(Pin54)
RDn_RXD2

P54(Pin52)
ET0LINKSTA_MTIOC4B_ALE

P55(Pin51)
P55_WAITn

P61(Pin115)
SDCSn

P73(Pin77)
LED2_P73

P74(Pin72)
ET0ERXD1_RMII0RXD1_CS4n

P76(Pin69)
ET0RXCLK_REF50CK0_QSSL-A
Default setting "Pin2-3 shorted"

P83(Pin58)
ET0CRS_RMII0CRSDV_SCK10

P86(Pin41)
PIXD1_MTIOC4D_RXD10

P87(Pin39)
PIXD2_MTIOC4C_TXD10

P90(Pin131)
SSDA7_TXD7

P92(Pin128)
SSCL7_RXD7

PA0(Pin97)
A0_MTIOC4A

PA1(Pin96)
A1_SCK5

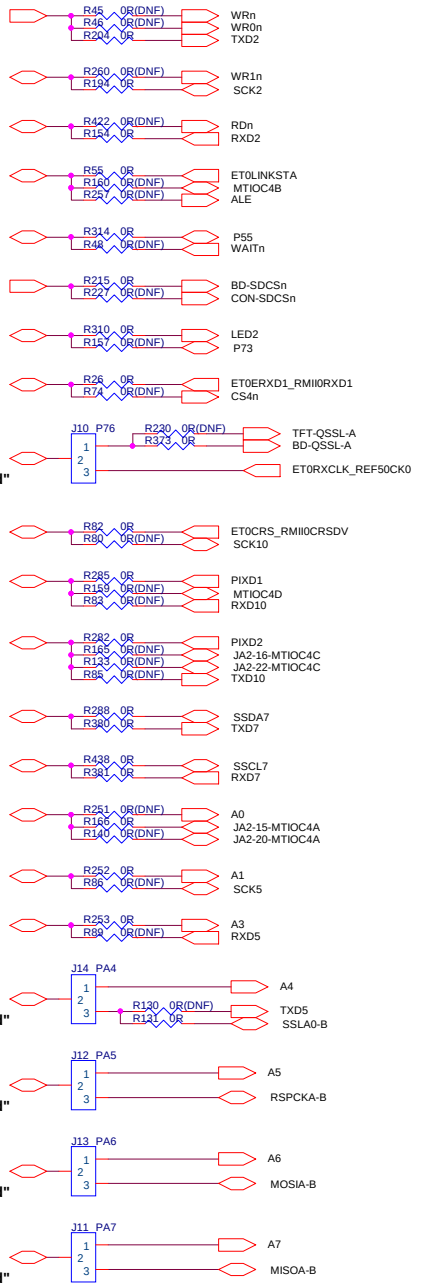
PA3(Pin94)
A3_RXD5

PA4(Pin92)
A4_TXD5_SSLA0-B
Default setting "Pin1-2 shorted"

PA5(Pin90)
A5_RSPCKA-B
Default setting "Pin1-2 shorted"

PA6(Pin89)
A6_MOSIA-B
Default setting "Pin1-2 shorted"

PA7(Pin88)
A7_MISOA-B
Default setting "Pin1-2 shorted"



PB0(Pin87)
A8_IO6

PB1(Pin84)
A9_IO7

PB7(Pin78)
A15_SDSID1-B

PC0(Pin75)
A16_ET0ERXD3

PC1(Pin73)
A17_ET0ERXD2

PC2(Pin70)
A18_ET0RXDV

PC3(Pin67)
A19_QIO0-A

PC5(Pin62)
A21_ET0ETXD2

PC6(Pin61)
A22_ET0ETXD3

PC7(Pin60)
ET0COL_UB

PD1(Pin125)
D1_POE0n

PE0(Pin111)
D8_IO0

PE1(Pin110)
D9_IO1

PE2(Pin109)
D10_IO2

PE3(Pin108)
D11_IO3

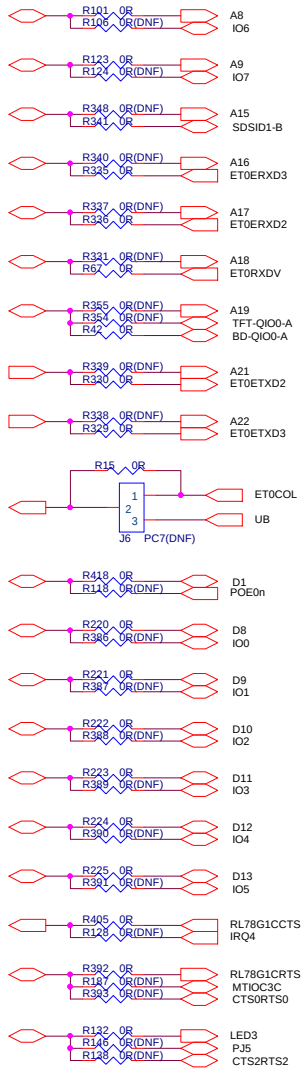
PE4(Pin107)
D12_IO4

PE5(Pin106)
D13_IO5

PF5(Pin9)
RL78G1CCTS_IRQ4

PJ3(Pin13)
RL78G1CRTS_MTIOC3C_CTS0RTS0

PJ5(Pin11)
LED3_PJ5_CTS2RTS2



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [MCU Pin Function Select-2]		
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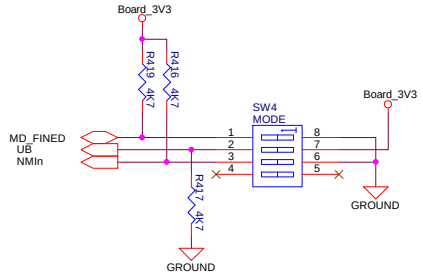
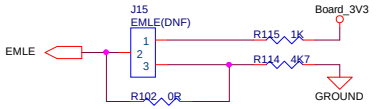
MCU & Emulator Mode Setting





MCU Operating Mode Configuration

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

Power Configuration for USB Boot Mode

SW4 Pin3	Power Configuration
OFF	Bus Powered
ON	Self Powered

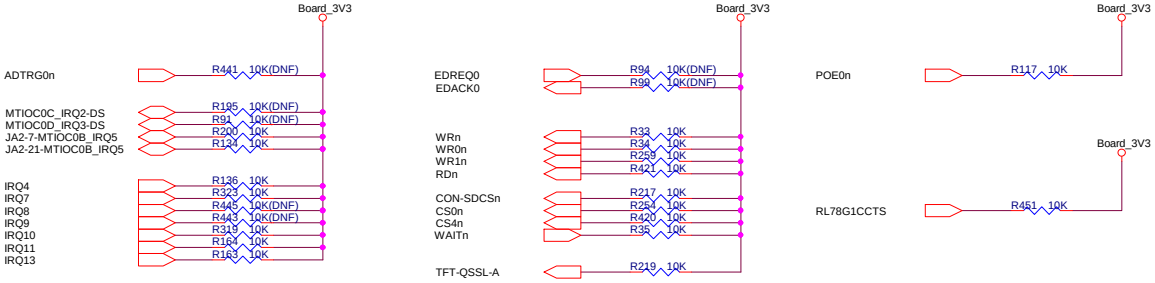
Default setting of SW4.

SW4	Default
Pin1	OFF
Pin2	OFF
Pin3	OFF
Pin4	OFF

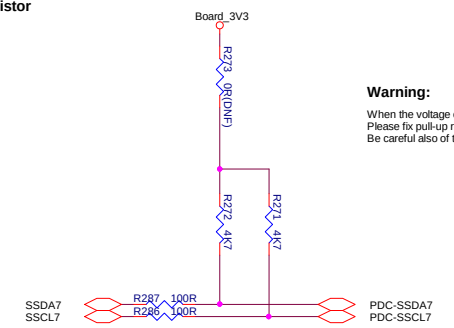
Emulator Configuration

J15	Emulator Configuration
Shorted Pin1-2	E1 debugging with Hot plug-in
Shorted Pin2-3	E1 normal debugging Microcontroller single operation (without E1/E20)
all open	DO NOT SET

Option pull-up resistor



Simple IIC pull-up resistor



Warning:

When the voltage of your PDC target system differs from this board, please do not fit resistor R273.
Please fix pull-up resistor on your PDC target system.
Be careful also of the warning message of the PDC interface on Page10.

Renesas System Design Co., Ltd.		
Title: RSK+RX65N [MCU & Emulator Mode Setting]		
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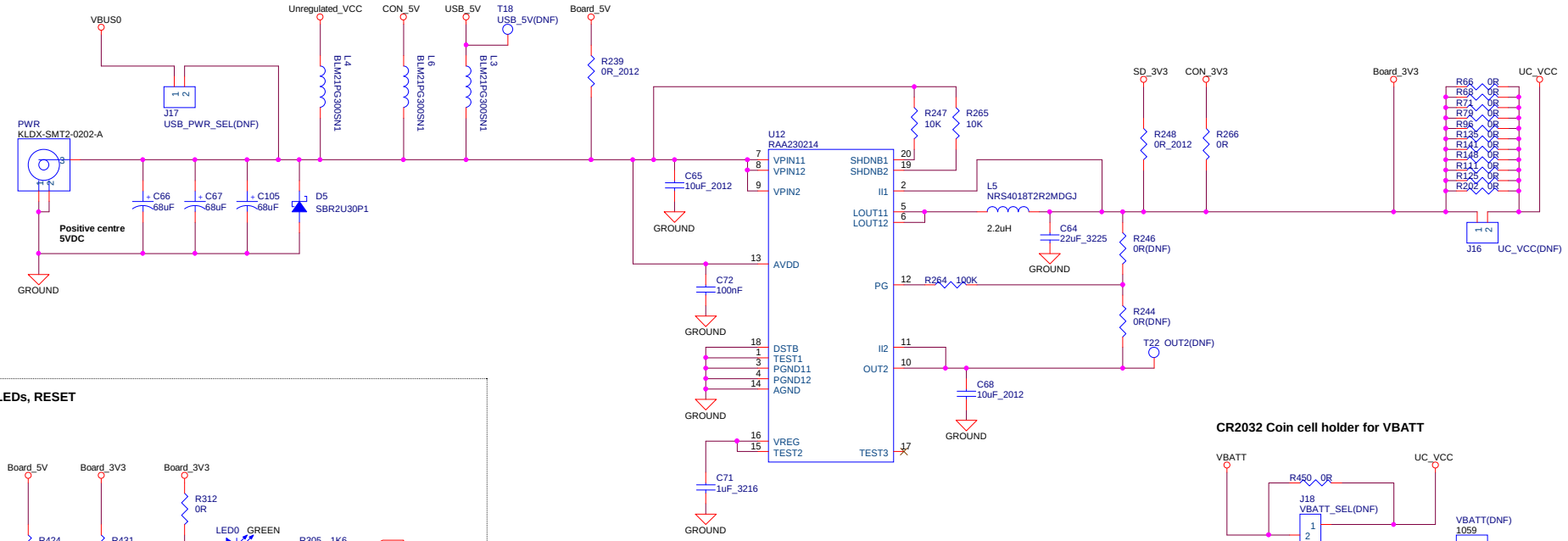
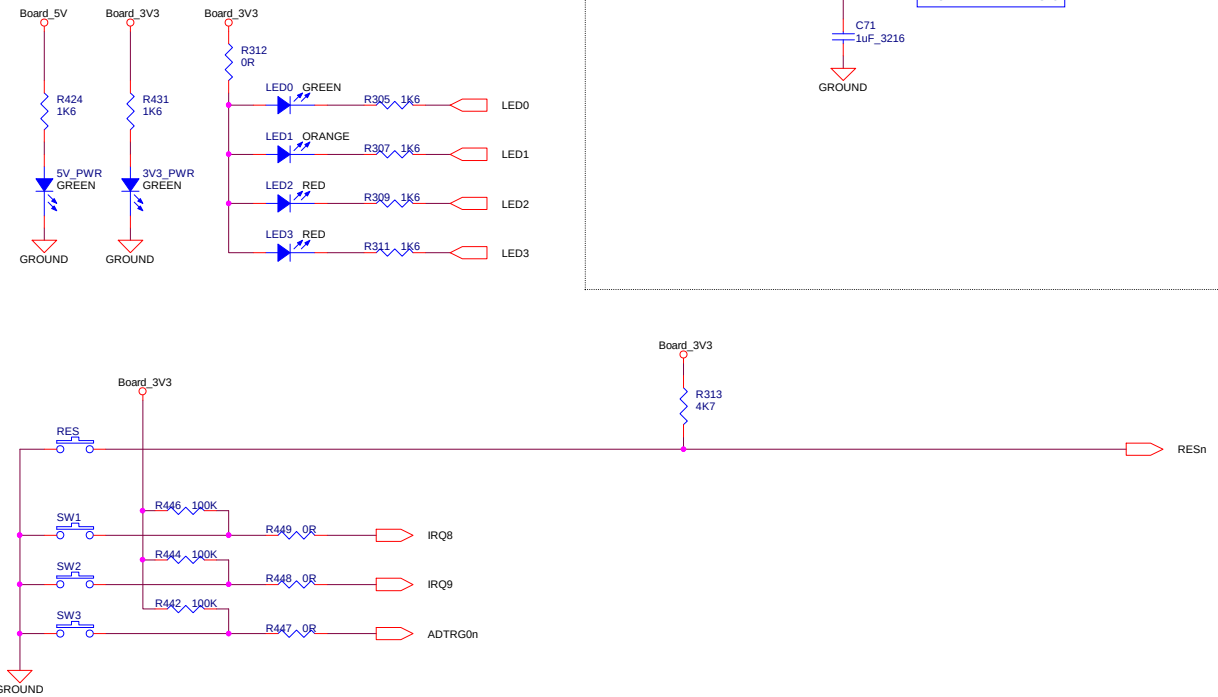
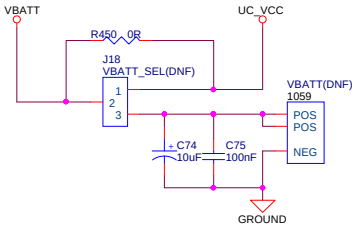
Power Supply Unit



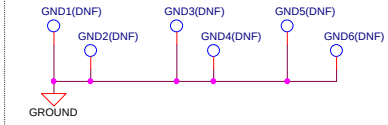
Switches, LEDs, RESET



CR2032 Coin cell holder for VBATT



Ground Test Point



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [PSU, Reset, Switches, LEDs]		
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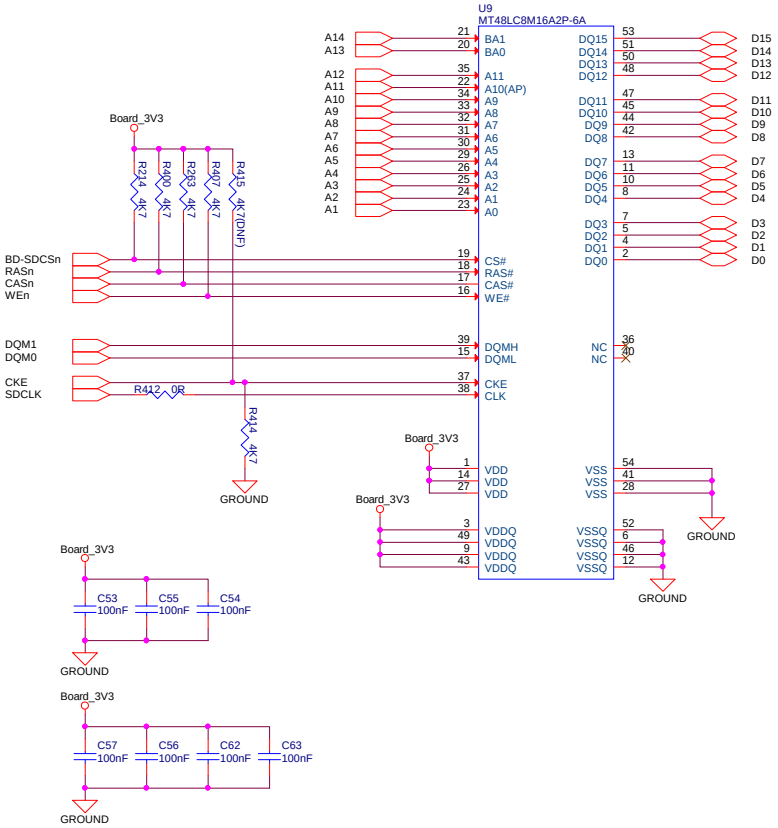
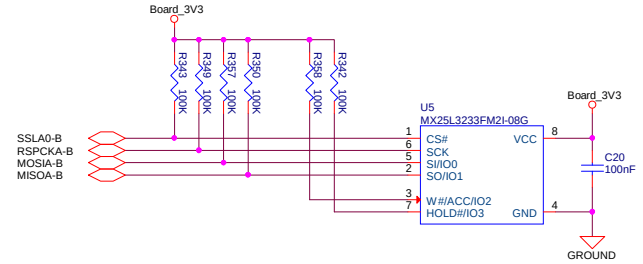
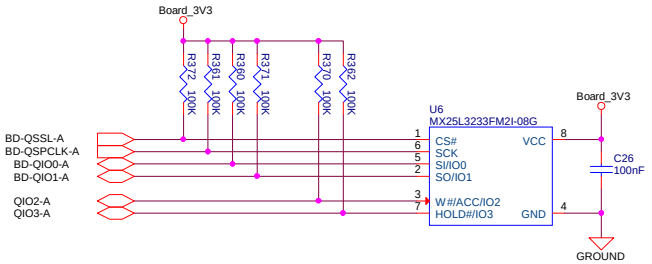
SDRAM(128Mbits)



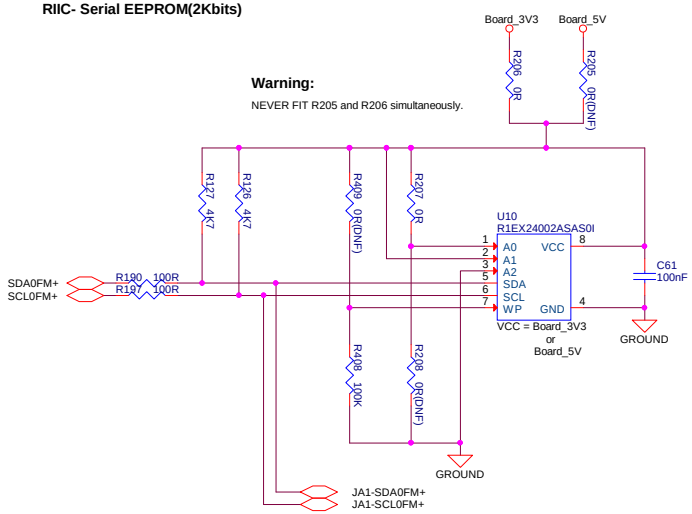
RSPI- SPI Serial Flash(32Mbits)



QSPI- SPI Serial Flash(32Mbits)



RIIC- Serial EEPROM(2Kbits)



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [On-board Memory]		
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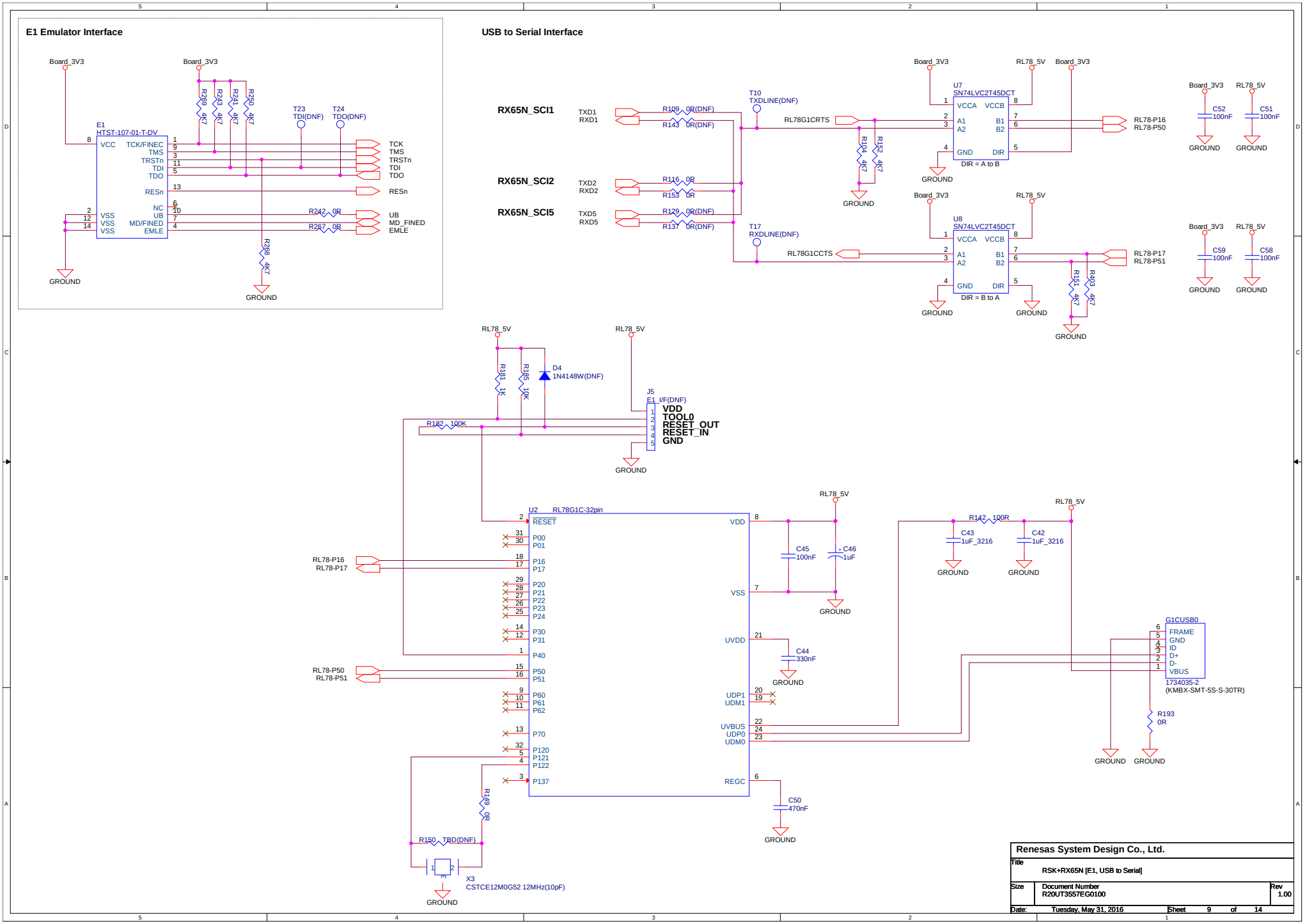
E1 Emulator Interface
USB to Serial Interface
Board_3V3
GROUND
E1
HTST-107-01-T-DV
VCC
TCK/FINEC
TMS
TRSTn
TDI
TDO
RESn
NC
VSS
UB
MD/FINED
EMLE
R239 4K7
R243 4K7
R241 4K7
R250 4K7
R268 4K7
T23
TDI(DNF)
T24
TDO(DNF)
TCK
TMS
TRSTn
TDI
TDO
RESn
UB
MD_FINED
EMLE
R242 0R
R267 0R
RX65N_SCI1
RX65N_SCI2
RX65N_SCI5
TXD1
RXD1
TXD2
RXD2
TXD5
RXD5
R109 0R(DNF)
R143 0R(DNF)
R116 0R
R153 0R
R129 0R(DNF)
R137 0R(DNF)
T10
TXDLINE(DNF)
T17
RXDLINE(DNF)
RL78G1CRTS
RL78G1CCTS
R104 4K7
R152 4K7
R151 4K7
R403 4K7
U7
SN74LVC2T45DCT
U8
SN74LVC2T45DCT
VCCA
VCCB
A1
A2
GND
DIR
B1
B2
DIR = A to B
DIR = B to A
RL78_5V
RL78-P16
RL78-P50
RL78-P17
RL78-P51
C52 100nF
C51 100nF
C59 100nF
C58 100nF
R191 1K
R195 10K
D4
1N4148W(DNF)
R182 100K
J5
E1_I/F(DNF)
VDD
TOOL0
RESET_OUT
RESET_IN
GND
U2
RL78G1C-32pin
RESET
P00
P01
P16
P17
P20
P21
P22
P23
P24
P30
P31
P40
P50
P51
P60
P61
P62
P70
P120
P121
P122
P137
VDD
VSS
UVDD
UDP1
UDM1
UVBUS
UDP0
UDM0
REGC
C45 100nF
C46 1uF
C44 330nF
C50 470nF
R142 100R
C43 1uF_3216
C42 1uF_3216
G1CUSB0
FRAME
GND
ID
D+
D-
VBUS
1734035-2
(KMBX-SMT-5S-S-30TR)
R193 0R
R149 0R
R150 TRD(DNF)
X3
CSTCE12M0G52 12MHz(10pF)
Renesas System Design Co., Ltd.
Title
RSK+RX65N [E1, USB to Serial]
Size
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1.00
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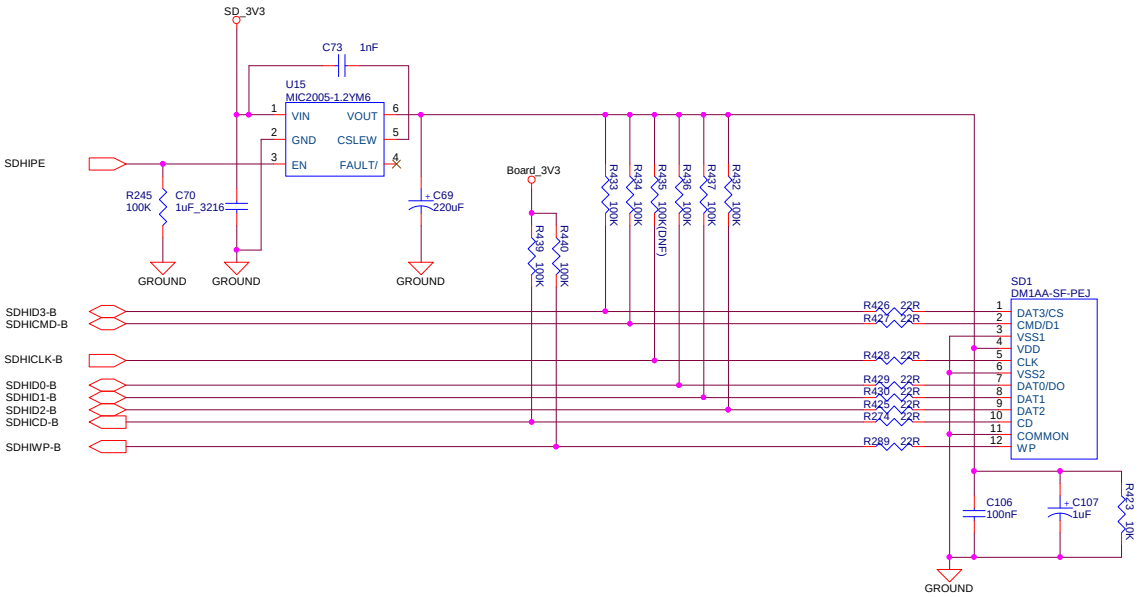
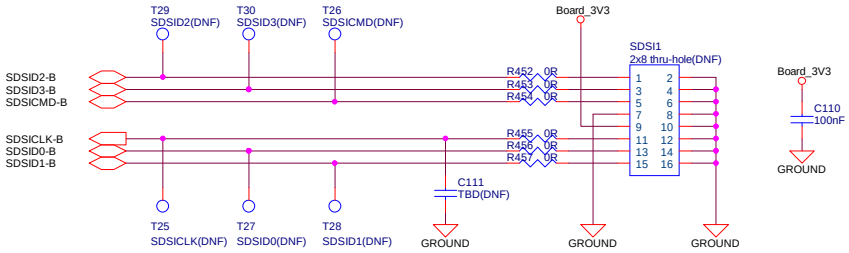
SDHI



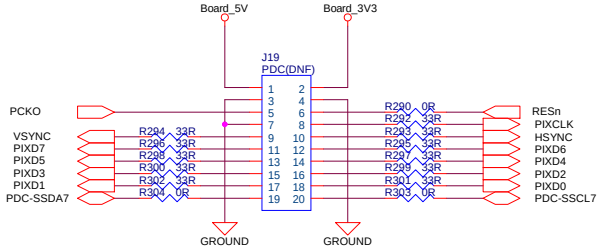
SDSI



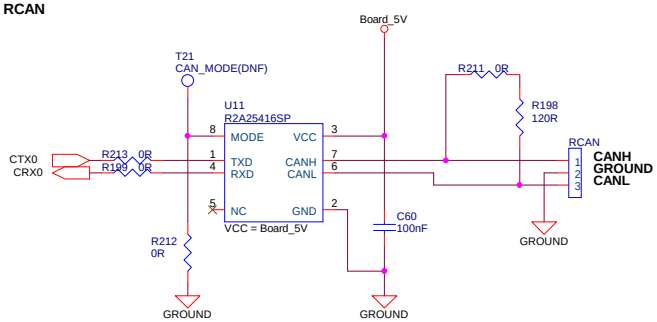
PDC

Warning:

When the voltage of your PDC target system differs from this board,
please do not supply a board power to your system directly.
Be careful also of the warning message of the Simple IIC interface on Page6.



RCAN



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [SDHI, SDSI, RCAN, PDC Interface]		
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Renesas System Design Co., Ltd.		
Title: RSK+RX65N [Application Headers]		
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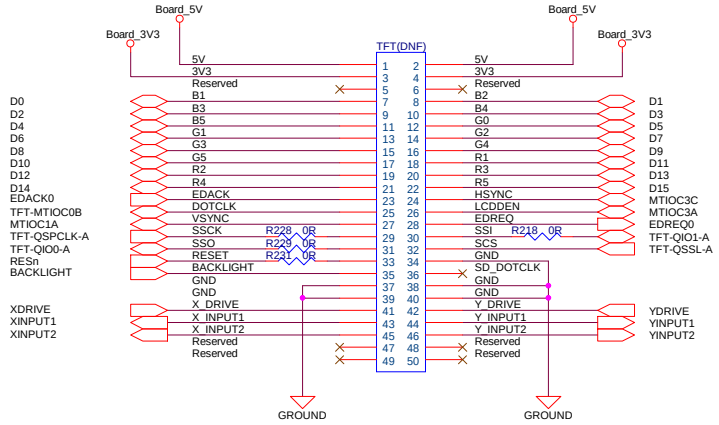
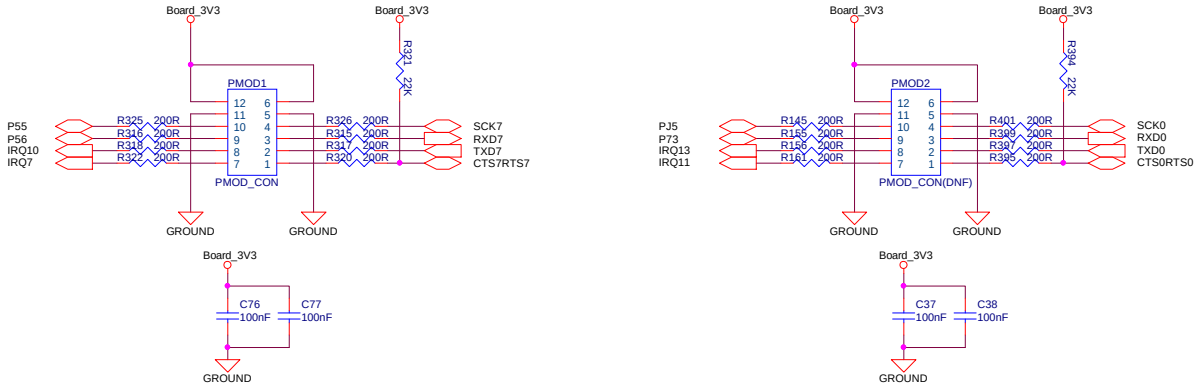
LCD Direct Drive Header (TFT)



Pmod connectors

PMOD1: Angle type connector

PMOD2: Vertical type connector (spare)



Renesas System Design Co., Ltd.		
Title: RSK+RX65N [TFT, Pmod]		
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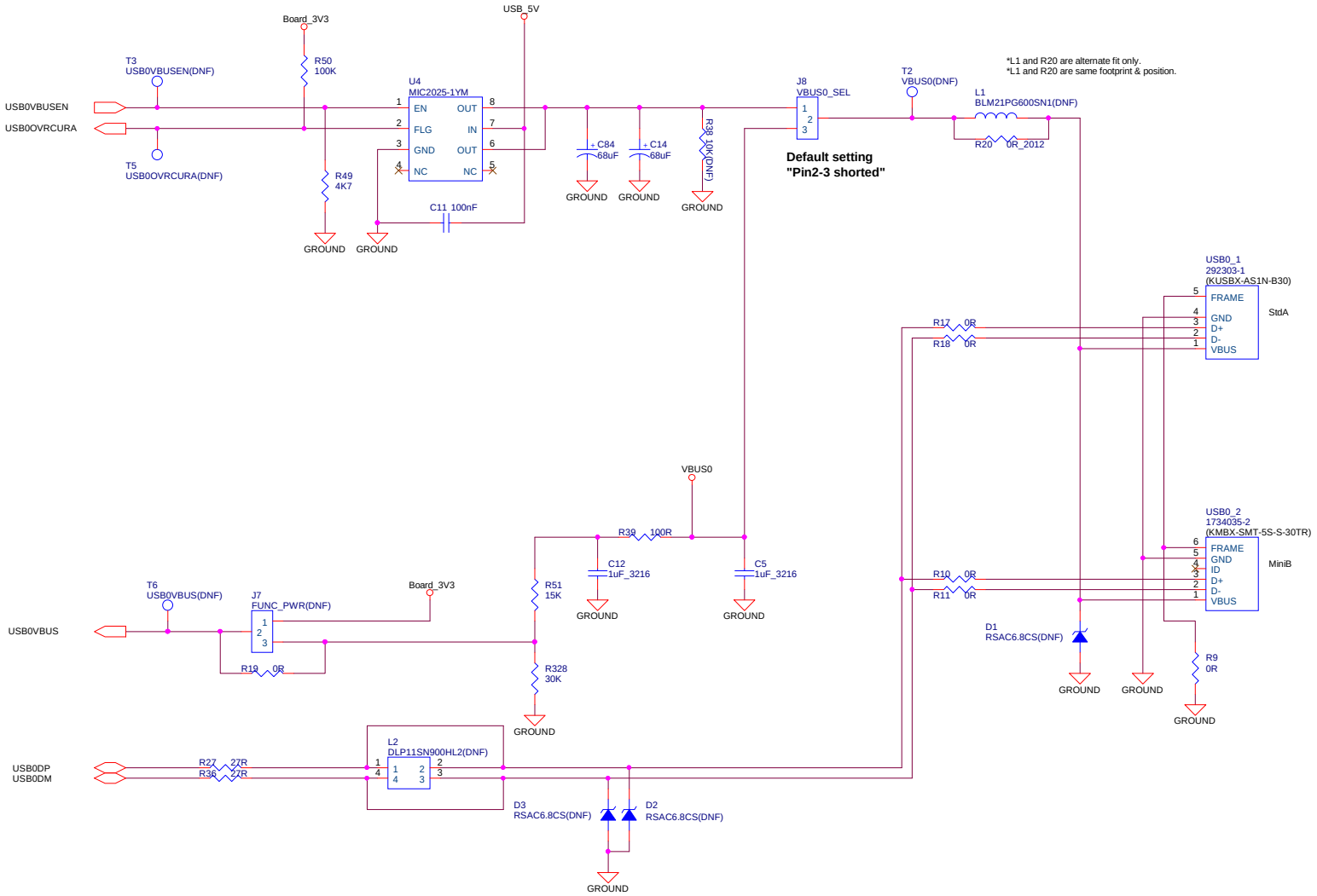
USB0 Host/Function

USB0 Host/Function Select

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

Self-powered/Bus-powered Configuration for Function Mode

J7	R19	
1-2 shorted	Remove	Bus-powered
2-3 shorted	Remove	Self-powered
Open	Fit	Self-powered



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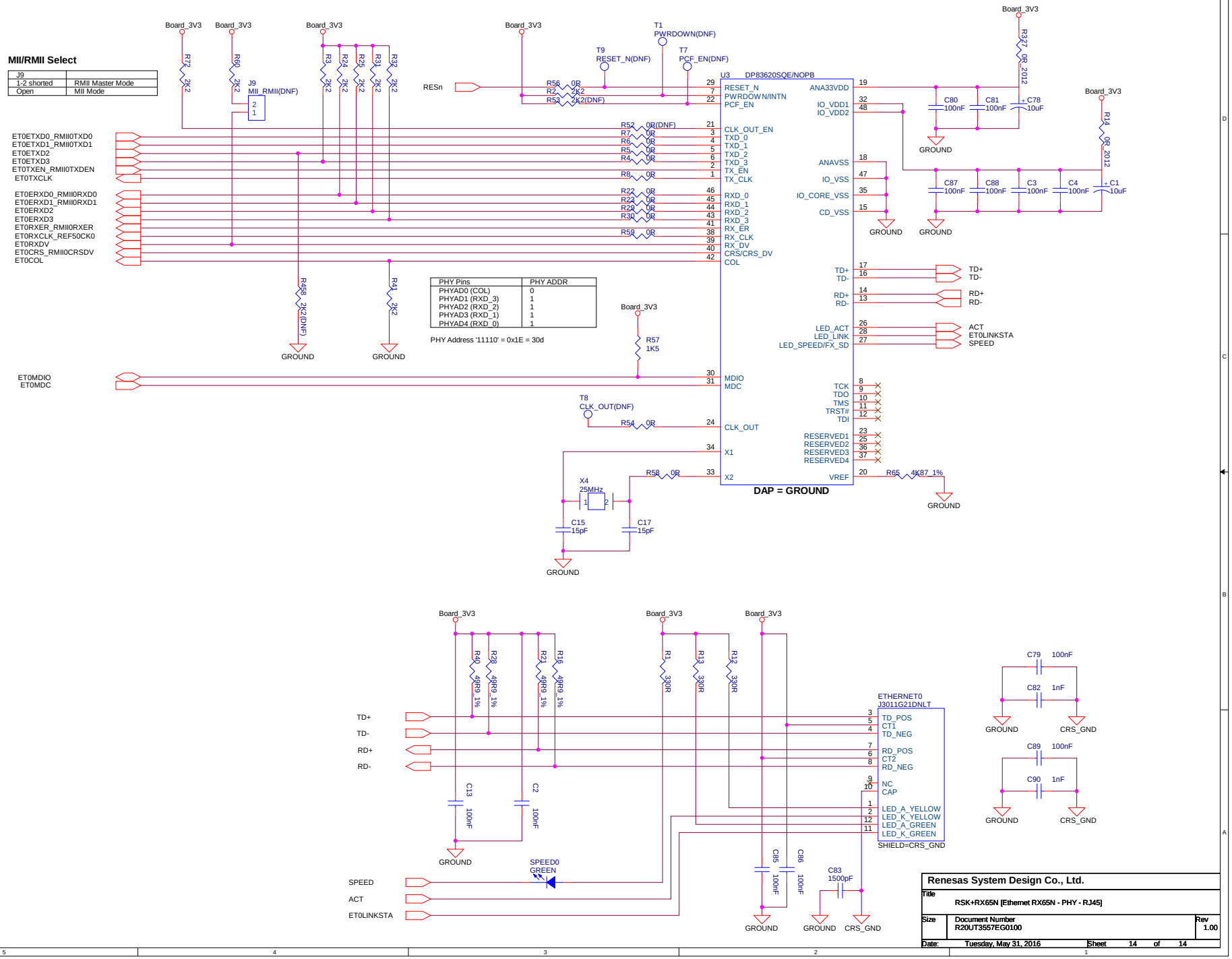
Ethernet



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Revision History

REV	DATE	PAGE	DESCRIPTION
1.00	31.05.2016	---	1st release edition.

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