Renesas Starter Kit+ for RX63N
CPU Board Schematics

REV	REF	DATE	DRAWN BY
A1	Prototype	24.01.2011	YOI
A2	Prototype	18.02.2011	YOI
A3	Prototype	10.03.2011	YOI
1.00	TRAC#2286	21.02.2012	YOI
2.00	TRAC#2432	10.05.2012	YOI
2.10	TRAC#2432, #2720 Release	21.08.2012	YOI
2.20	TRAC#2932 Release	15.11.2012	YOI

PAGE	DESCRIPTION
1	INDEX
2	RX63N Microcontroller-1
3	RX63N Microcontroller-2, MCU & Emulator Mode Setting
4	MCU Pin Function Select
5	On-board Memory-1
6	On-board Memory-2
7	PSU, RESET, Switches, LEDs
8	E1 & E20 Emulator, Serial Port
9	Application Headers, Header Function Select
10	CAN, Generic LCD (TFT) Connector, Debug LCD
11	USB
12	Ethernet

Note:

R : Fixed Resistor
RV : Potentiometer
U : Integrated Circuit
X : Crystal
RES : Reset Switch
SW : Switch
LED : Light Emitting Diode
PWR : Power Jack
J : Connector, Jumper

* "DNF" marking means that component does not fit by default.

Board Variation:

R0K50563NC000BE : MP Product

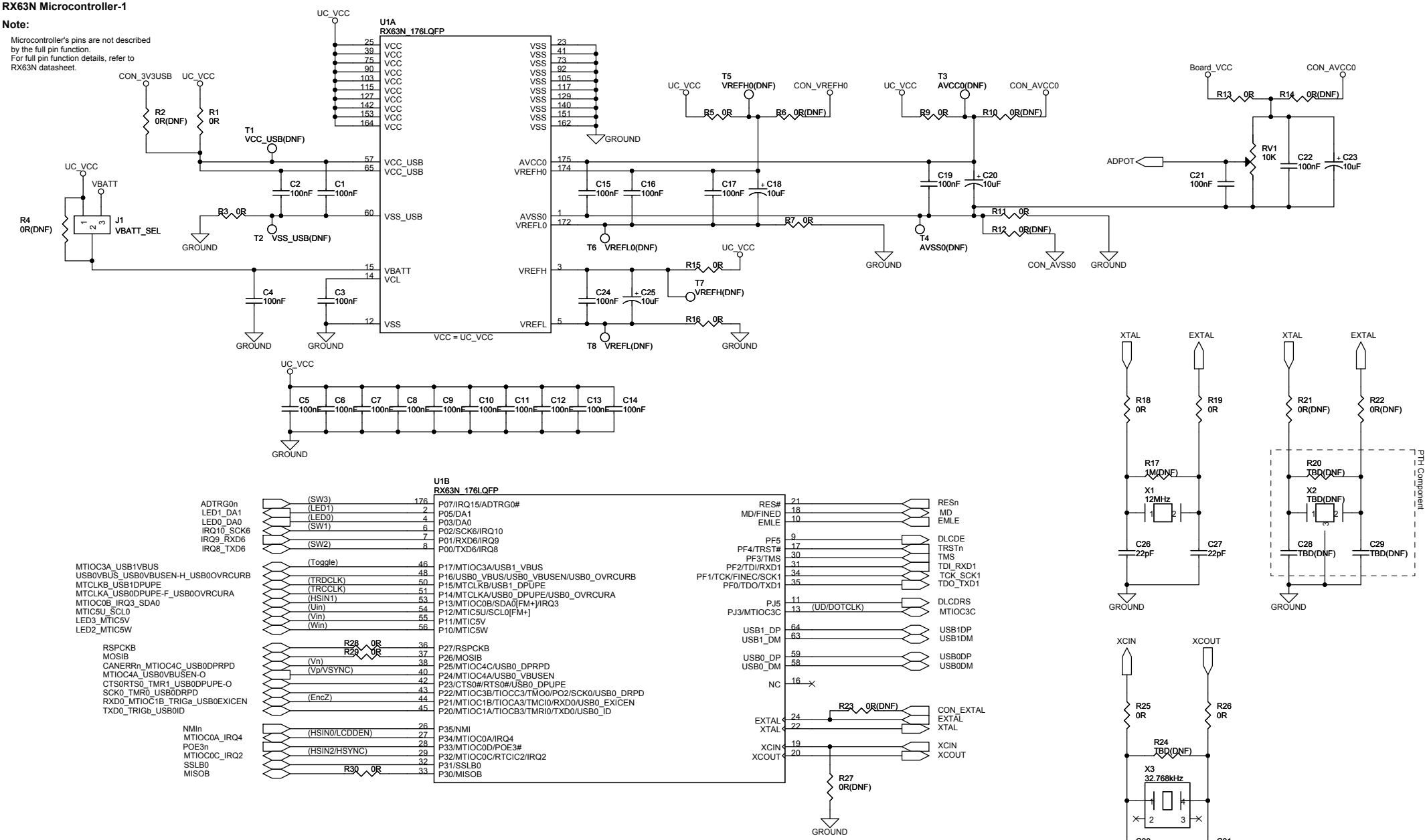
REEL Drawing No. D010172_04

Renesas Solutions Corp.		
Title	RSK+RX63N [INDEX]	
Size	Document Number R20UT0437EG0220	Rev 2.20
Date: Thursday, November 15, 2012	Sheet 1 of 12	

RX63N Microcontroller-1

Note:

Microcontroller's pins are not described by the full pin function.
For full pin function details, refer to RX63N datasheet.



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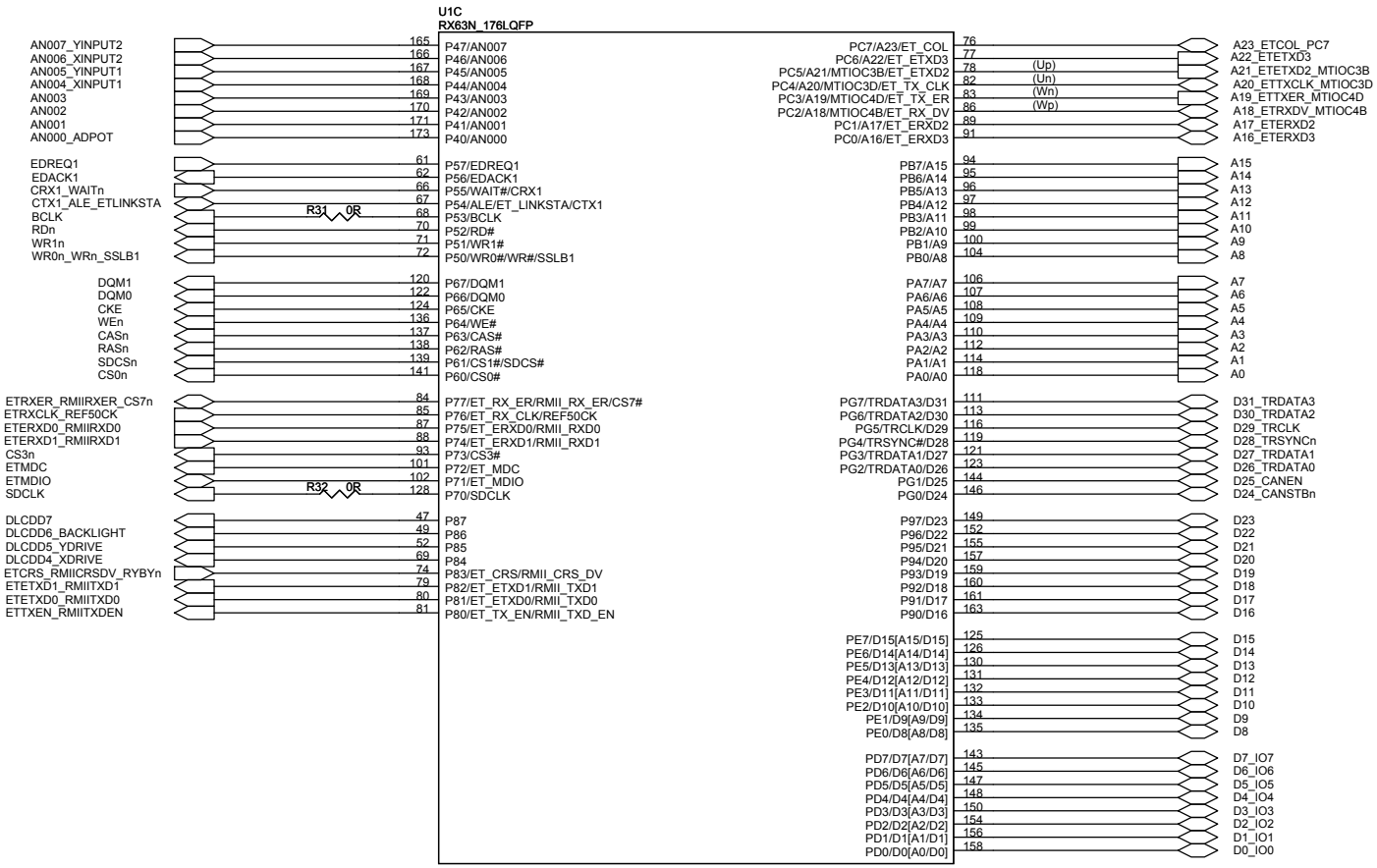
Title	RSK+RX63N [Micon-1]
Size	Document Number R20UT0437EG0220 — Rev 2.20
Date:	Thursday, November 15, 2012 — Sheet 2 of 12

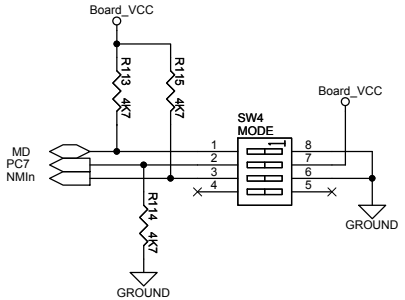
RX63N Microcontroller-2

Note:

Microcontroller's pins are not described by the full pin function.
For full pin function details, refer to RX63N datasheet.



MCU & Emulator Mode Setting

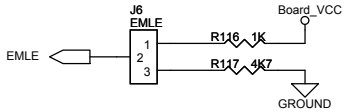


MCU Operating Mode Configuration

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

Power Configuration for USB Boot Mode

SW4 Pin3	Power Configuration
OFF	Bus Powered
ON	Self Powered



Emulator Configuration

J6	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

Chip Select

CSn	Interface
CS0n	On-board NOR Flash (BD_CS0n) / Application Header JA3 (CON_CS0n)
CS3n	Application Header (JA3)
CS7n	On-board NOR Flash (CS7n)
SDCSn (CS1n)	On-board SDRAM (BD_SDCSn) / Application Header JA3 (CON_SDCSn)

RSPI Slave Select

SSL	Interface
SSLB0	On-board SPI Serial Flash
SSLB1	Generic LCD Connector (TFT)

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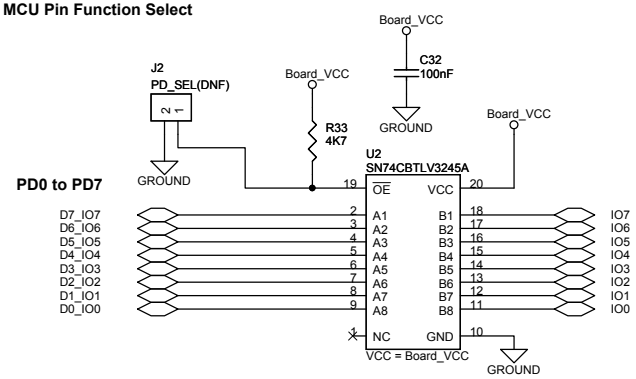
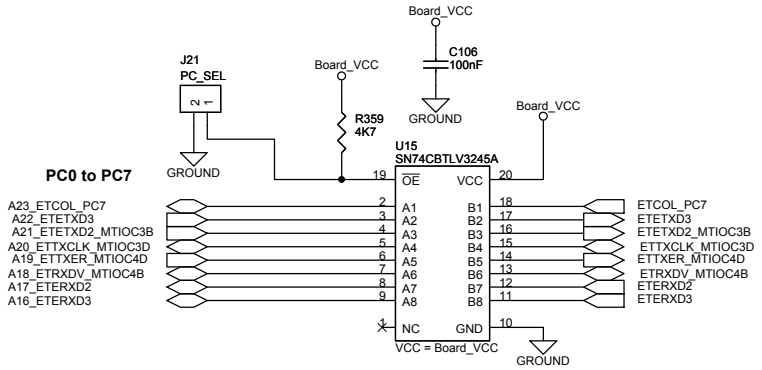
Title: RSK+RX63N [Micon-2, MCU & Emulator Mode Setting]		
Size	Document Number: R20UT0437EG0220	Rev: 2.20
Date: Thursday, November 15, 2012	Sheet 3 of 12	

MCU Pin Function Select





P00
IRQ8_TXD6 — R34 0R, R35 0R(DNF) — IRQ8, TXD6

P01
IRQ9_RXD6 — R36 0R, R37 0R(DNF) — IRQ9, RXD6

P02
IRQ10_SCK6 — R38 0R, R39 0R(DNF) — IRQ10, SCK6

P03
LED0_DA0 — R40 0R, R41 0R(DNF) — LED0, DA0

P05
LED1_DA1 — R42 0R, R43 0R(DNF) — LED1, DA1

P10
LED2_MTIC5W — R44 0R, R45 0R(DNF) — LED2, MTIC5W

P11
LED3_MTIC5V — R46 0R, R47 0R(DNF) — LED3, MTIC5V

P12
MTIC5U_SCL0 — R48 0R, R49 0R(DNF) — SCL0, MTIC5U

P13
MTIOC0B_IRQ3_SDA0 — R50 0R(DNF), R51 0R(DNF), R52 0R — MTIOC0B, IRQ3, SDA0

P14
MTCLKA_USB0DPUPE-F_USB0OVRCURA — R53 0R(DNF) — MTCLKA; J3 P14 (1, 2, 3): *F — USB0DPUPE-F, *H/O — USB0OVRCURA

P15
MTCLKB_USB1DPUPE — R54 0R(DNF), R55 0R — MTCLKB, USB1DPUPE

P16
USB0VBUS_USB0VBUSEN-H_USB0OVRCURB — J4 P16 (1, 2, 3): *F — USB0VBUS, *H — USB0VBUSEN-H, *O — USB0OVRCURB; R56 0R(DNF)

P17
MTIOC3A_USB1VBUS — R57 0R(DNF), R58 0R — MTIOC3A, USB1VBUS

P20
TXD0_TRIGb_USB0ID — R59 0R, R60 0R(DNF), R61 0R(DNF) — TXD0, TRIGb, USB0ID

P21
RXD0_MTIOC1B_TRIGa_USB0EXICEN — R62 0R, R63 0R(DNF), R64 0R(DNF), R65 0R(DNF) — RXD0, MTIOC1B, TRIGa, USB0EXICEN

P22
SCK0_TMR0_USB0DRPD — R66 0R, R67 0R(DNF), R68 0R(DNF) — SCK0, TMR0, USB0DRPD

P23
CTS0RTS0_TMR1_USB0DPUPE-O — R69 0R, R70 0R(DNF), R71 0R(DNF) — CTS0RTS0, TMR1, USB0DPUPE-O

P24
MTIOC4A_USB0VBUSEN-O — R72 0R, R73 0R(DNF) — MTIOC4A, USB0VBUSEN-O

P25
CANERRn_MTIOC4C_USB0DPRPD — R74 0R, R75 0R(DNF), R76 0R(DNF) — CANERRn, MTIOC4C, USB0DPRPD

P32
MTIOC0C_IRQ2 — R77 0R, R78 0R(DNF) — MTIOC0C, IRQ2

P34
MTIOC0A_IRQ4 — R81 0R, R82 0R(DNF) — MTIOC0A, IRQ4

P40
AN000_ADPOT — R83 0R(DNF), R84 0R — AN000, ADPOT

P44
AN004_XINPUT1 — R85 0R(DNF), R86 0R — AN004, XINPUT1

P45
AN005_YINPUT1 — R87 0R(DNF), R88 0R — AN005, YINPUT1

P46
AN006_XINPUT2 — R89 0R(DNF), R90 0R — AN006, XINPUT2

P47
AN007_YINPUT2 — R91 0R(DNF), R92 0R — AN007, YINPUT2

P50
WR0n_WRn_SSLB1 — R93 0R(DNF), R94 0R, R95 0R — WR0n, WRn, SSLB1

P54
CTX1_ALE_ETLINKSTA — R96 0R, R97 0R(DNF), R98 0R(DNF) — CTX1, ALE, ETLINKSTA

P55
CRX1_WAITn — R99 0R, R100 0R(DNF) — CRX1, WAITn

P60
CS0n — R360 0R, R361 0R(DNF) — BD_CS0n, CON_CS0n

P61
SDCSn — R101 0R, R102 0R(DNF) — BD_SDCSn, CON_SDCSn

*P61 can be used also as CS1n.

P77
ETRXER_RMIIRXER_CS7n — R365 0R, R366 0R(DNF) — ETRXER_RMIIRXER, CS7n

P83
ETCRS_RMIICRSDV_RYBYn — R367 0R, R368 0R(DNF) — ETCRS_RMIICRSDV, RYBYn

PC2
ETRXDV_MTIOC4B — R105 0R, R106 0R(DNF) — ETRXDV, MTIOC4B

PC3
ETTXER_MTIOC4D — R107 0R, R108 0R(DNF) — ETTXER, MTIOC4D

PC4
ETTXCLK_MTIOC3D — R109 0R, R110 0R(DNF) — ETTXCLK, MTIOC3D

PC5
ETETXD2_MTIOC3B — R111 0R, R112 0R(DNF) — ETETXD2, MTIOC3B

PC7
ETCOL_PC7 — J5 PC7 (1, 2, 3) — ETCOL, PC7

PF0
TDO_TXD1 — R184 0R, R185 0R — TDO, TXD1

PF1
TCK_SCK1 — R186 0R, R187 0R(DNF) — TCK, SCK1

PF2
TDI_RXD1 — R188 0R, R189 0R — TDI, RXD1

Board_VCC

ADTRG0n — R356 4K7(DNF)

IRQ10 — R345 4K7(DNF)
IRQ9 — R346 4K7
IRQ8 — R357 4K7(DNF)
IRQ4 — R347 4K7
IRQ3 — R348 4K7
IRQ2 — R358 4K7

POE3n — R349 4K7

WR0n — R350 4K7
WR1n — R351 4K7

SSLB1 — R352 4K7

CON_SDCSn — R353 4K7
CS3n — R354 4K7

WAITn — R355 4K7

CON_CS0n — R362 4K7

EDREQ1 — R363 4K7(DNF)
EDACK1 — R364 4K7(DNF)

PG0
D24_CANSTBn — R371 0R — CANSTBn

PG1
D25_CANEN — R372 0R — CANEN

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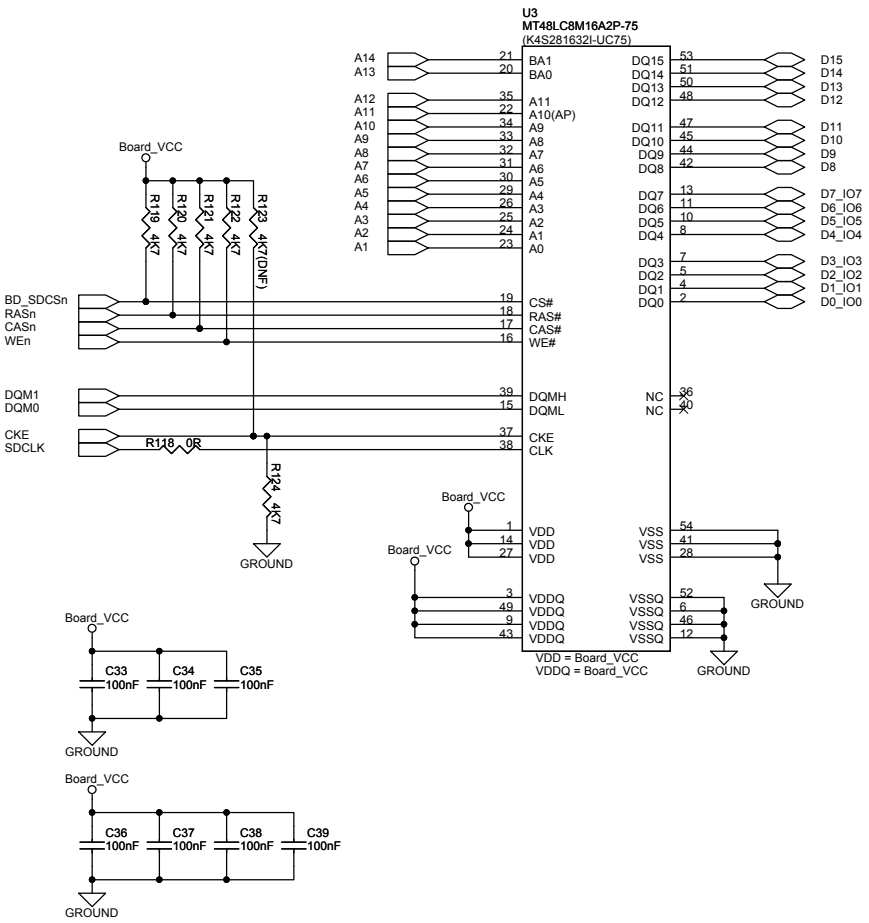
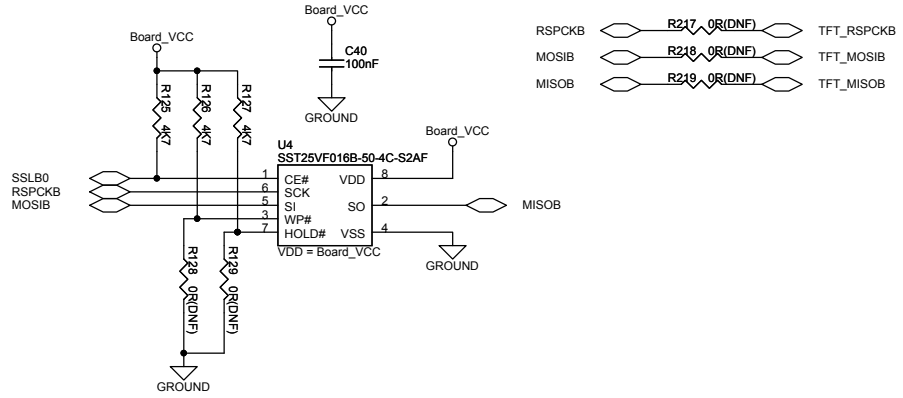
Title	RSK+RX63N [MCU Pin Func Select]
Size	Document Number R20UT0437EG0220 — Rev 2.20
Date:	Thursday, November 15, 2012 — Sheet 4 of 12

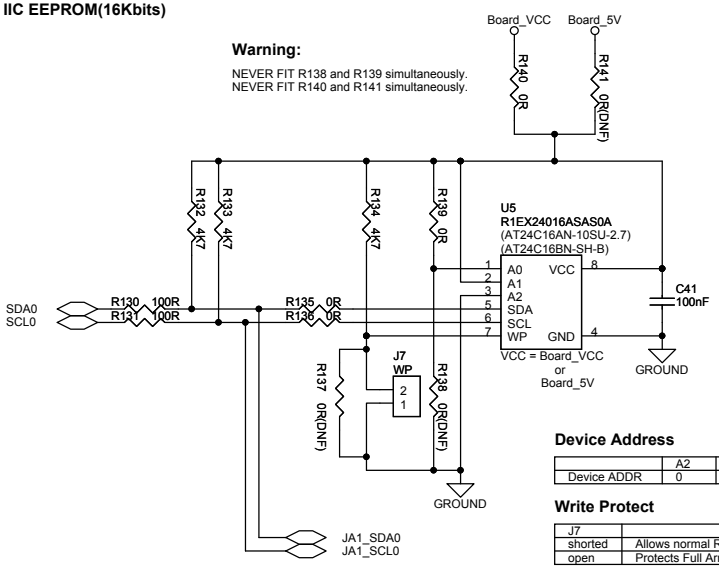
SDRAM(128Mbits)



SPI Serial Flash(16Mbits)



IIC EEPROM(16Kbits)



Warning:

NEVER FIT R138 and R139 simultaneously.
NEVER FIT R140 and R141 simultaneously.

Device Address

	A2	A1	A0
Device ADDR	0	1	1

Write Protect

J7	
shorted	Allows normal Read/Write operations
open	Protects Full Array

[Initial setting for J7]
J7: shorted

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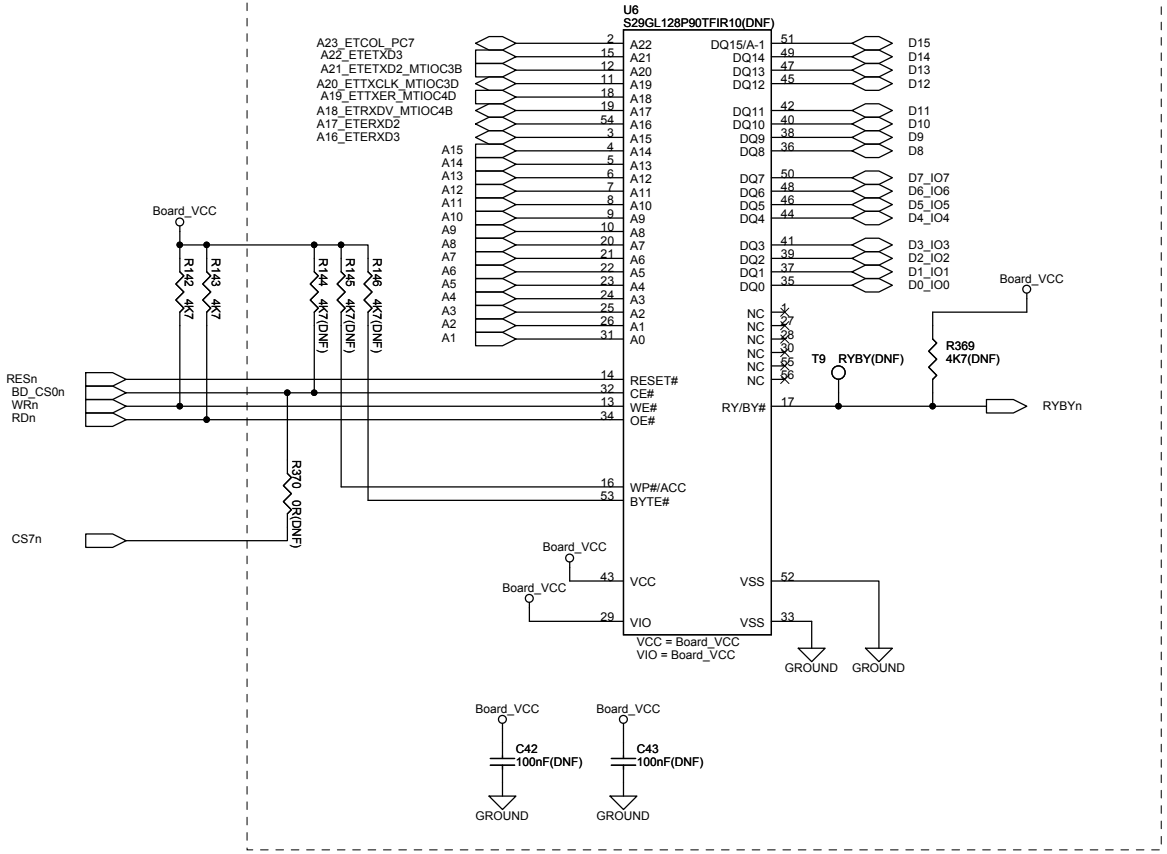
Title: RSK+RX63N [On-board Memory-1]			
Size	Document Number R20UT0437EG0220		Rev 2.20
Date: Thursday, November 15, 2012	Sheet 5 of 12		

NOR-Flash(128Mbits)

Circuit not Fitted on RSK+RX63N CPU Board.
(Only Special Prototype Board)



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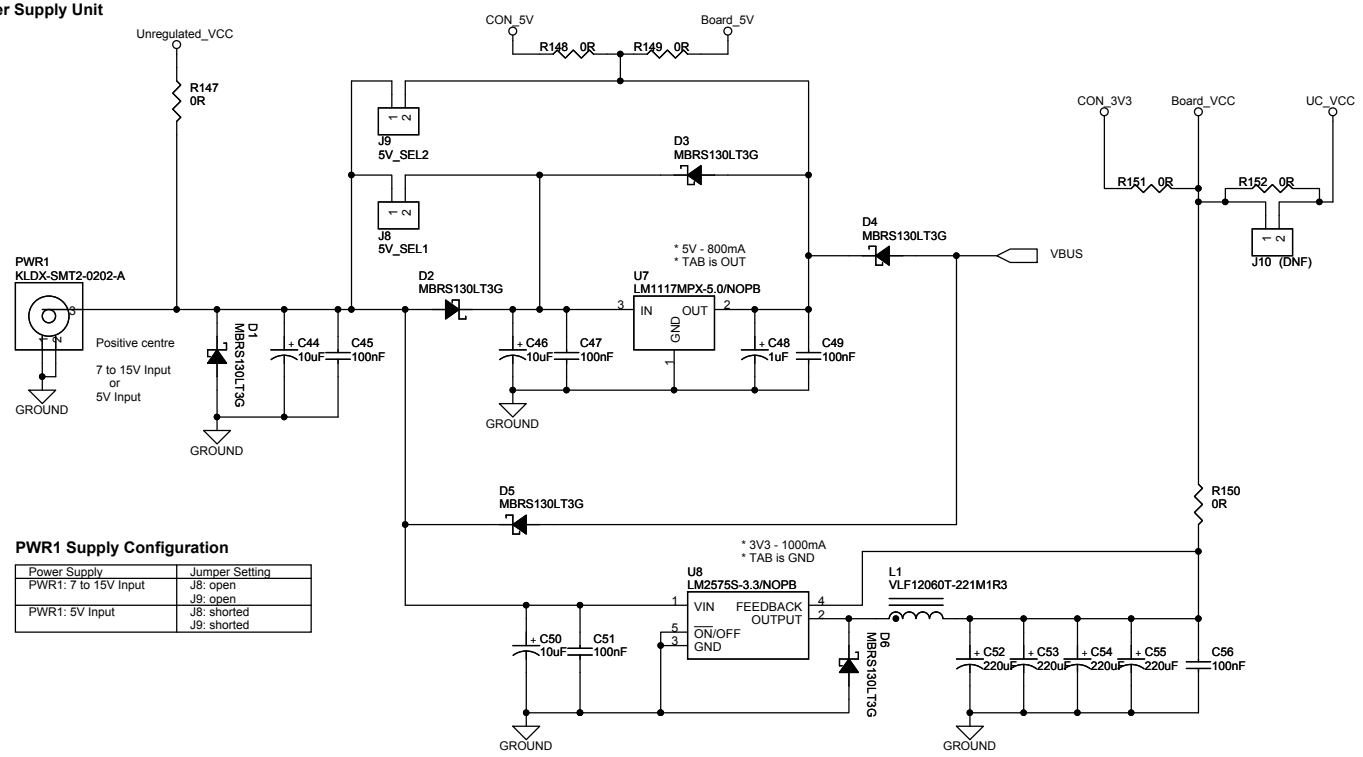
Title: RSK+RX63N [On-board Memory-2]		
Size	Document Number R20UT0437EG0220	Rev 2.20
Date: Thursday, November 15, 2012	Sheet 6 of 12	

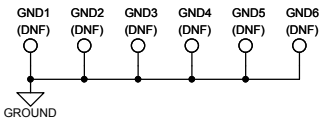
Power Supply Unit



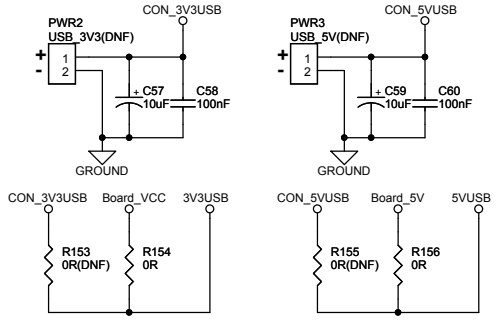
PWR1 Supply Configuration

Power Supply	Jumper Setting
PWR1: 7 to 15V Input	J8: open J9: open
PWR1: 5V Input	J8: shorted J9: shorted

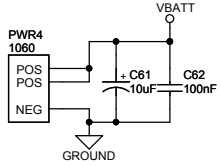
Ground Test Point



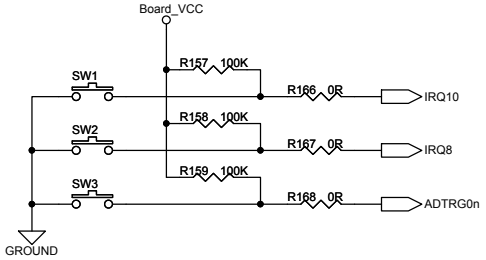
External USB Power Supply



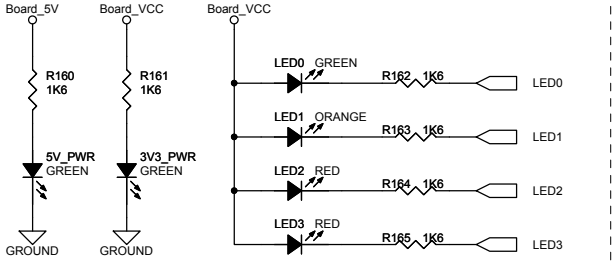
CR2032 Coin cell holder for VBATT



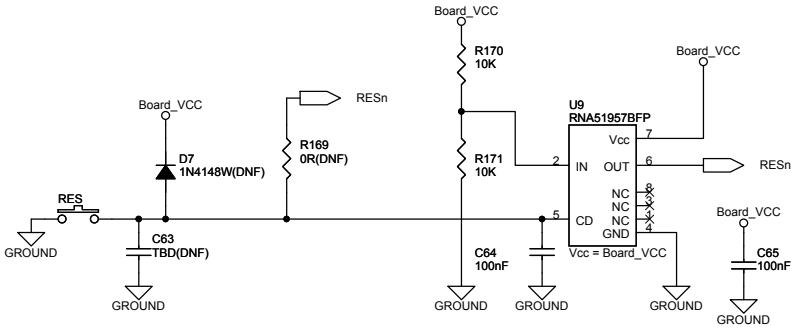
User Switches



Power & User LEDs



RESET Circuitry



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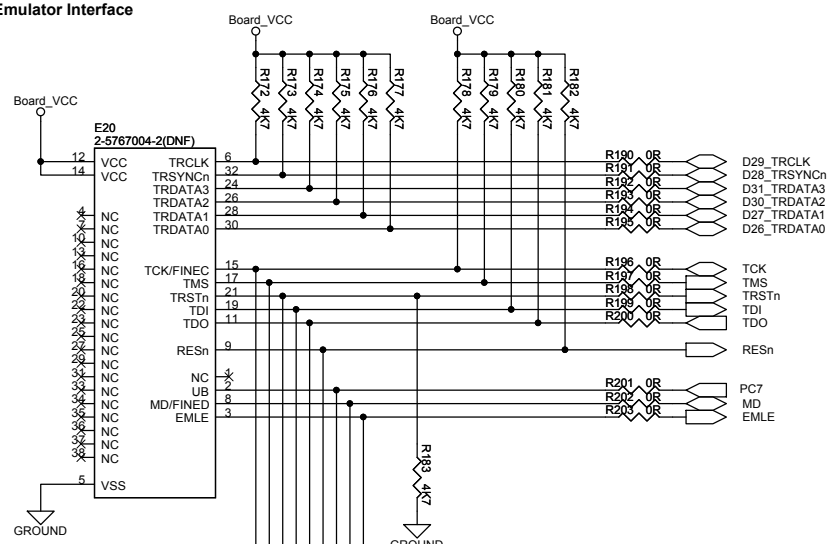
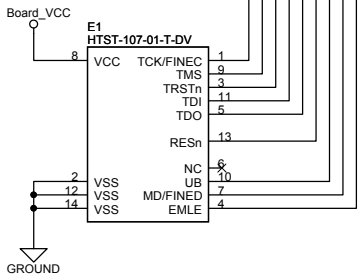
Title	RSK+RX63N [PSU, RESET, Switches, LEDs]
Size	Document Number R20UT0437EG0220 — Rev 2.20
Date:	Thursday, November 15, 2012 — Sheet 7 of 12

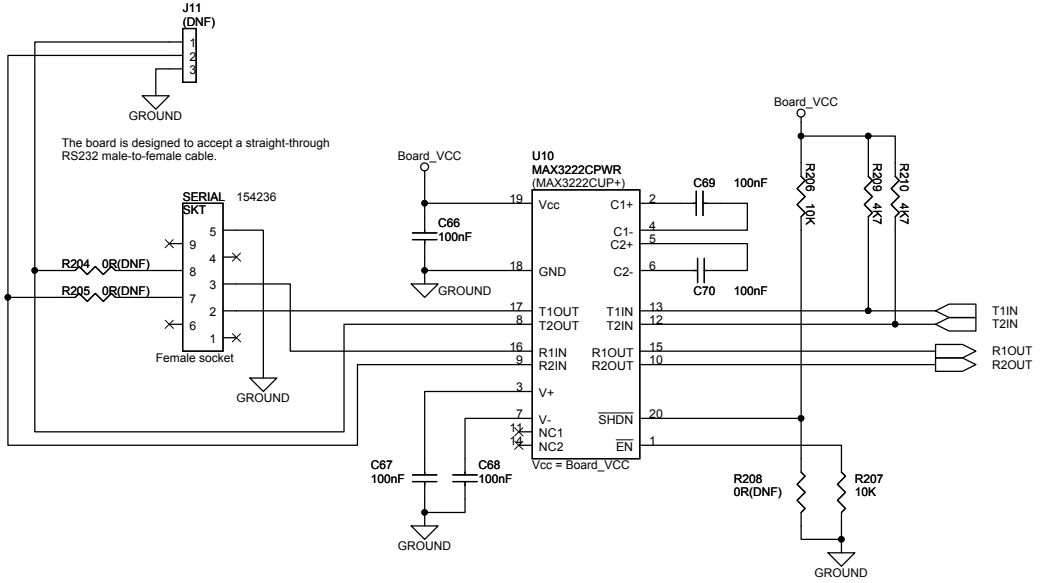
E20 Emulator Interface

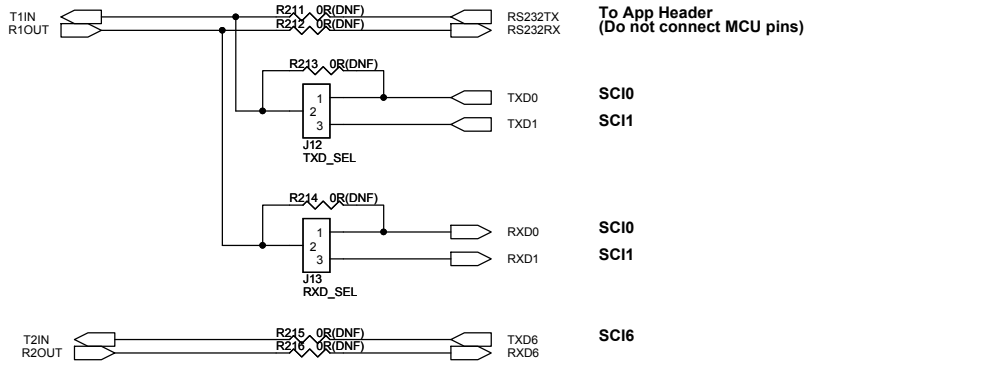


E1 Emulator Interface



Serial Port





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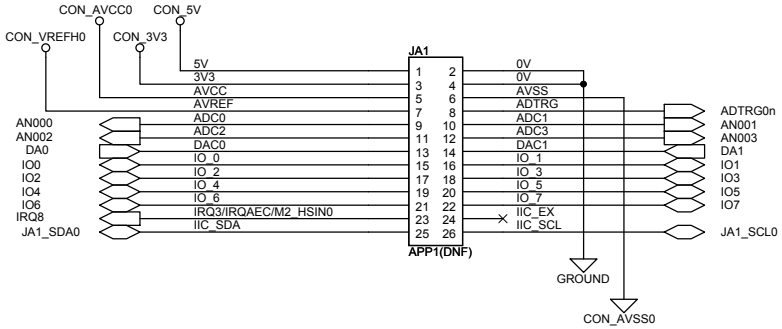
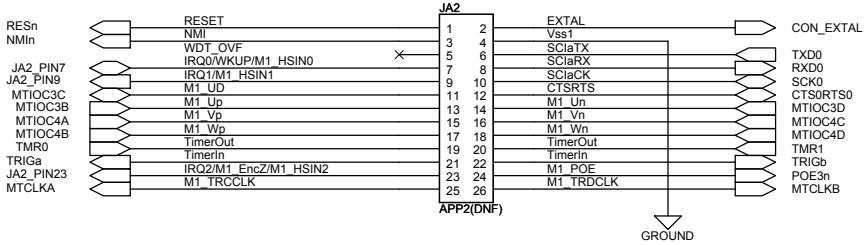
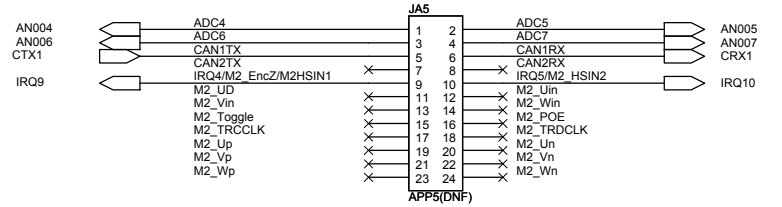
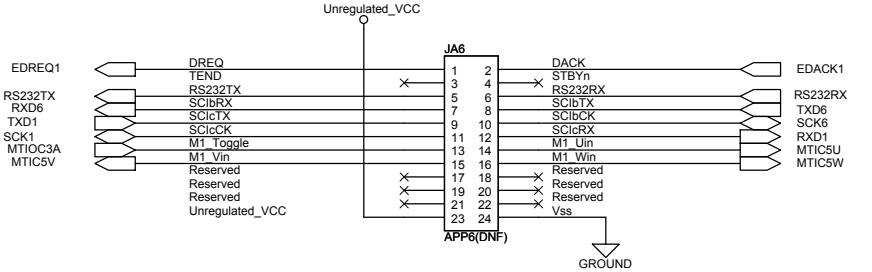
Title: RSK+RX63N [E1, E20, Serial Port]		
Size	Document Number: R20UT0437EG0220	Rev: 2.20
Date: Thursday, November 15, 2012	Sheet 8 of 12	

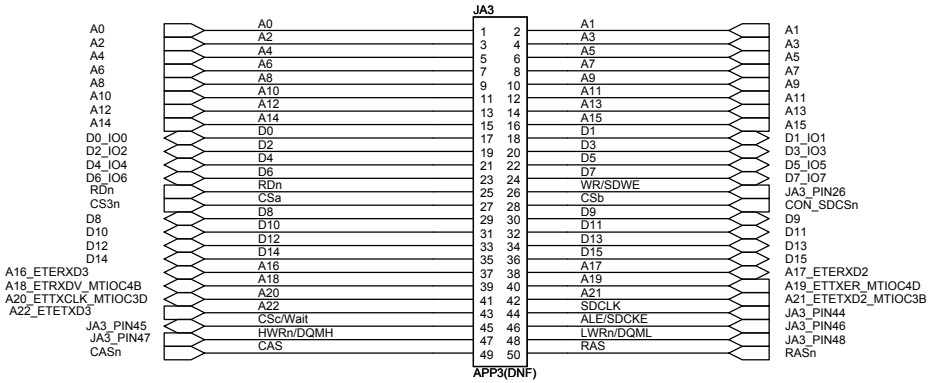
Application Headers



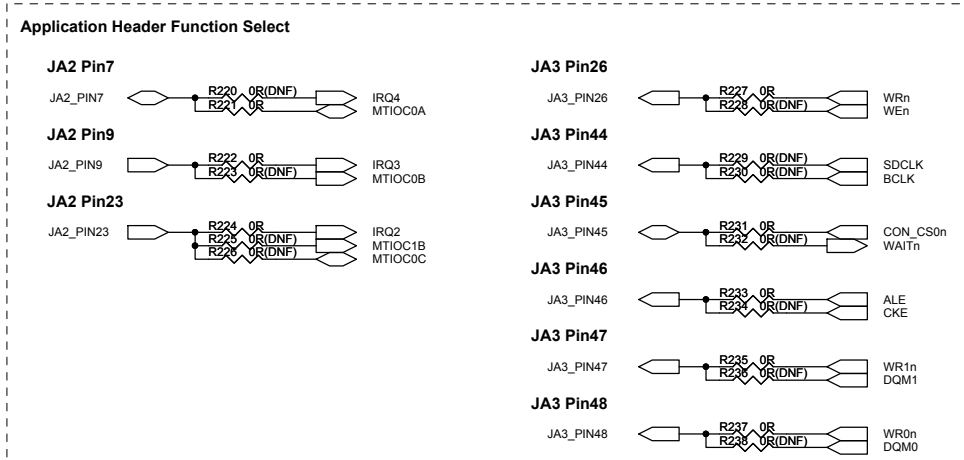








Application Header Function Select



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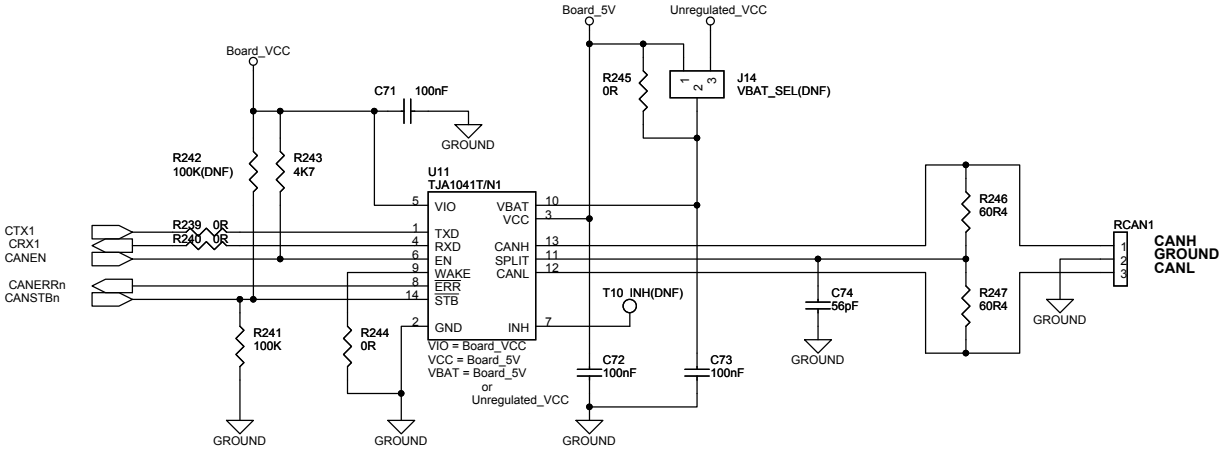
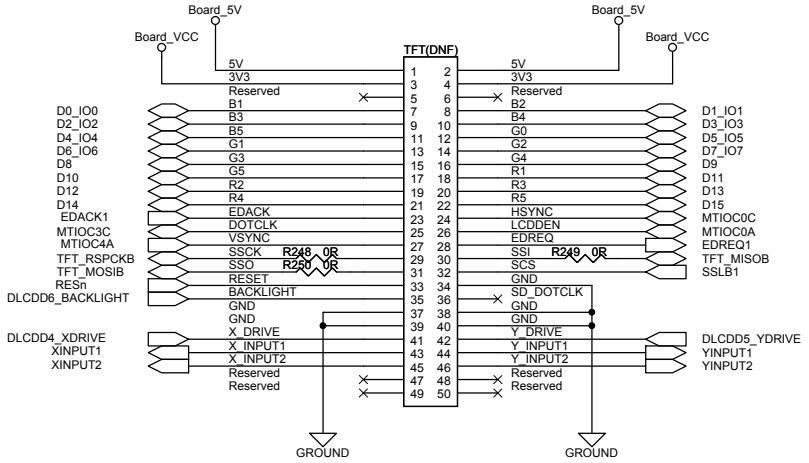
Title: RSK+RX63N [Application Headers, Header Func Select]		
Size	Document Number: R20UT0437EG0220	Rev: 2.20
Date: Thursday, November 15, 2012	Sheet 9 of 12	

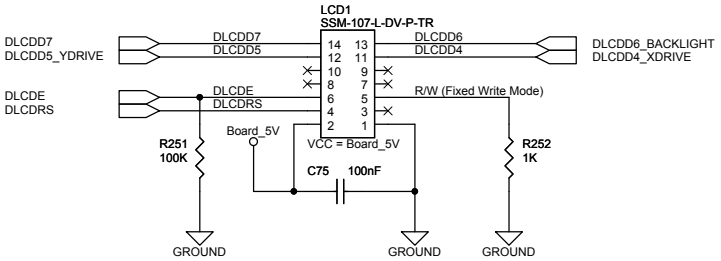
RCAN



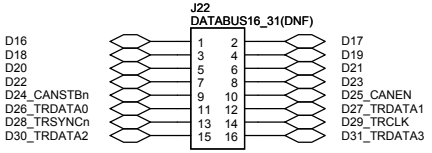
Generic LCD Connector (TFT)



Debug LCD



Data Bus Connector (bit16 to bit31)



Renesas Solutions Corp.		
Title: RSK+RX63N [CAN, Generic LCD Connector, Debug LCD]		
Size	Document Number: R20UT0437EG0220	Rev: 2.20
Date: Thursday, November 15, 2012	Sheet 10 of 12	

OTG Power IC SHDN Configuration

R258	
Fit	Shutdown and reduce supply current
Remove	OTG normal operation

VBUS0 Self-powered/Bus-powered Configuration for Function Mode

J17	J20	
1-2 shorted	1-2 shorted (via R281)	Bus-powered
2-3 shorted (via R265)	All open	Self-powered

VBUS1 Self-powered/Bus-powered Configuration for Function Mode

J19	J20	
1-2 shorted	2-3 shorted	Bus-powered
2-3 shorted (via R272)	All open	Self-powered

VBUS0 Host/Function/OTG Select

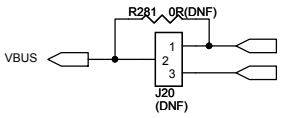
J18	R269	
1-2 shorted	Remove	Host Mode
2-3 shorted	Remove	Function Mode
All open	Fit	OTG Mode

USB0DPRPD, DRPD Pulldown Configuration

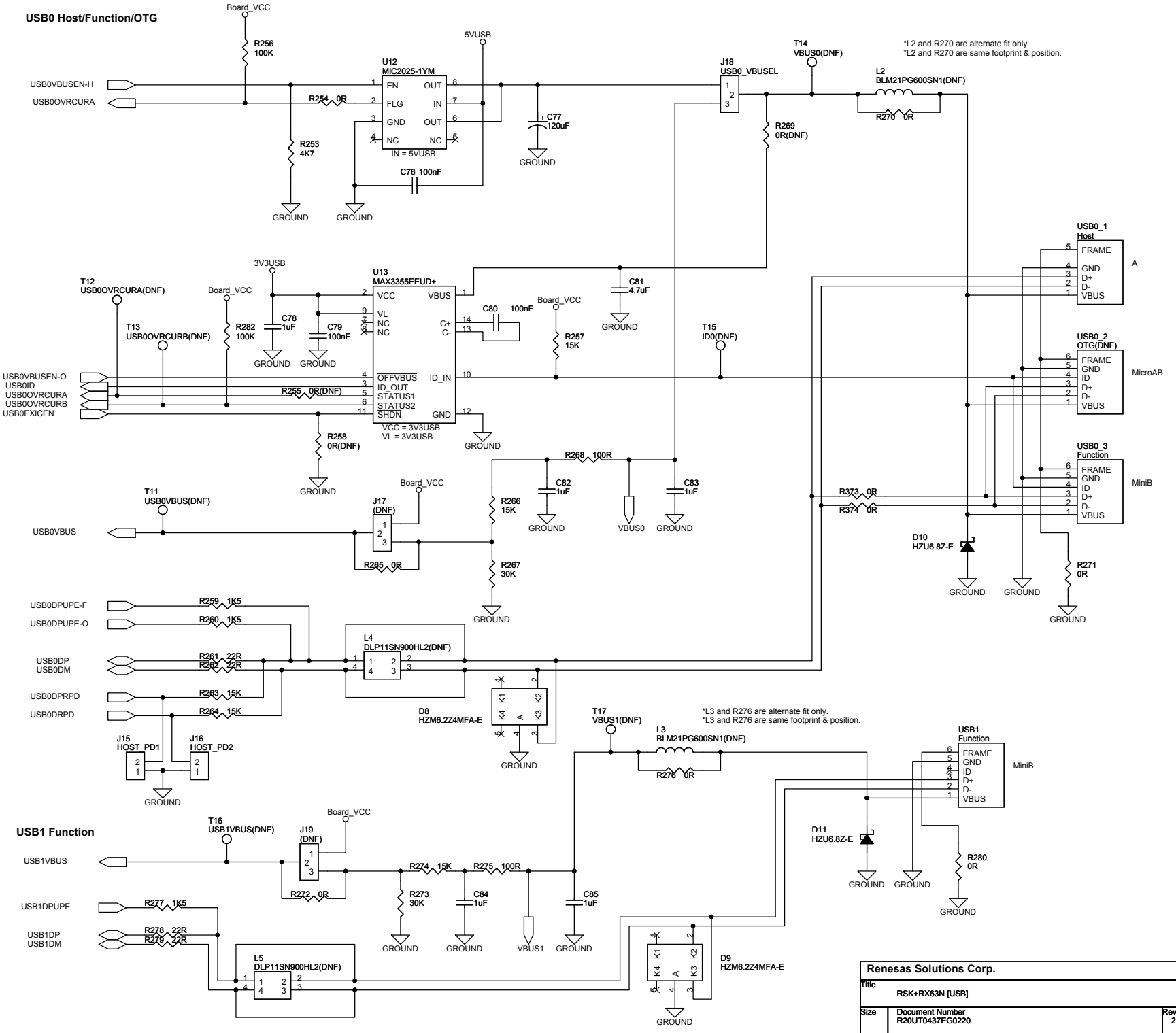
J15	J16	
Open	Open	Function Mode OTG Mode
Shorted	Shorted	Host Mode

USB0OVRCURA Select

R254	R255	
Fit	Remove	Host Mode
Remove	Fit	OTG Mode



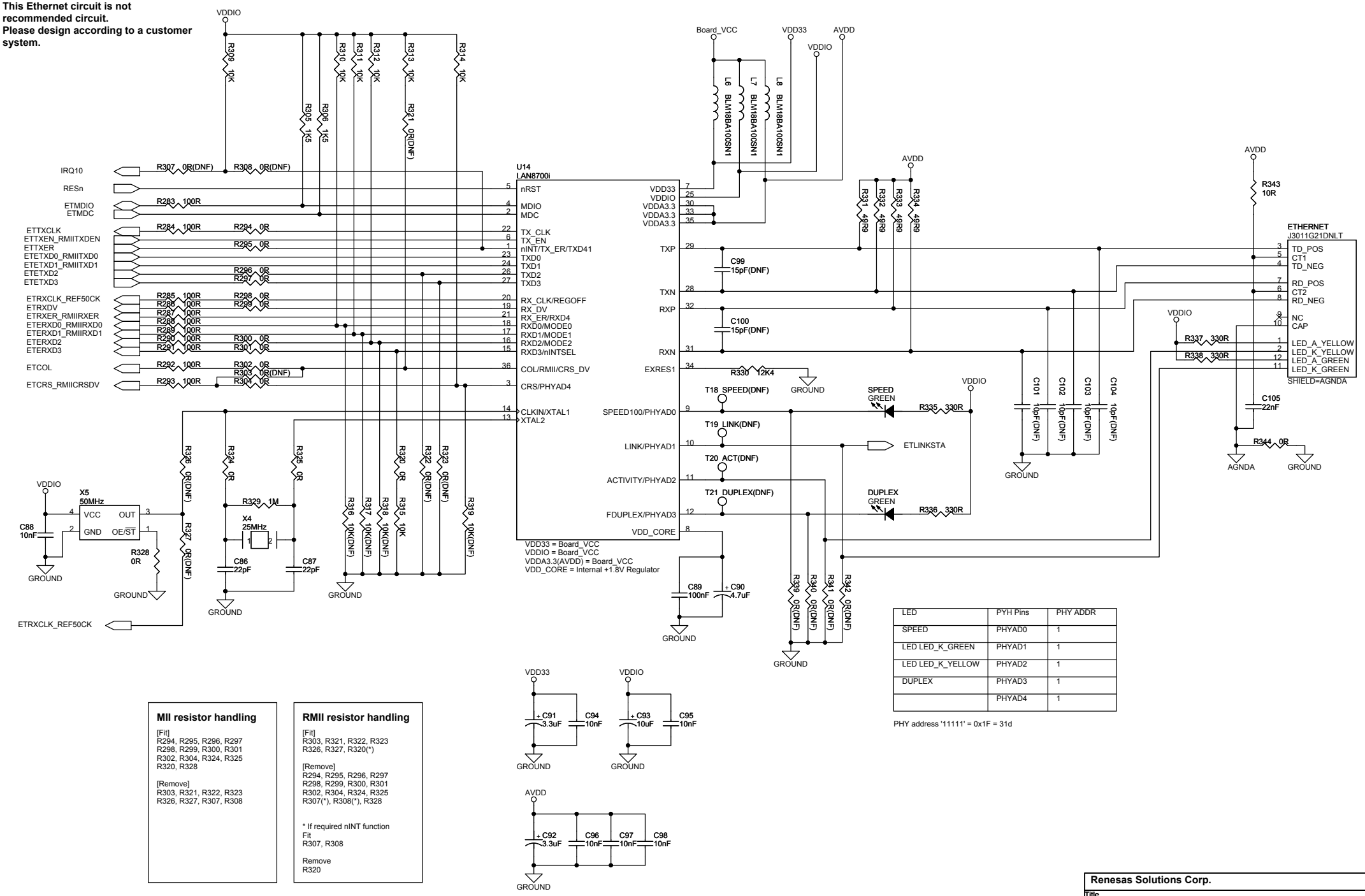
USB0 Host/Function/OTG



Renesas Solutions Corp.	
Title	RSK+RX63N [USB]
Size	Document Number R20UT0437EG0220 — Rev 2.20
Date:	Thursday, November 15, 2012 — Sheet 11 of 12

Ethernet

This Ethernet circuit is not recommended circuit.
Please design according to a customer system.



LED	PYH Pins	PHY ADDR
SPEED	PHYAD0	1
LED LED_K_GREEN	PHYAD1	1
LED LED_K_YELLOW	PHYAD2	1
DUPLEX	PHYAD3	1
	PHYAD4	1

PHY address '11111' = 0x1F = 31d

MII resistor handling

[Fit]
R294, R295, R296, R297
R298, R299, R300, R301
R302, R304, R324, R325
R320, R328

[Remove]
R303, R321, R322, R323
R326, R327, R307, R308

RMII resistor handling

[Fit]
R303, R321, R322, R323
R326, R327, R320(*)

[Remove]
R294, R295, R296, R297
R298, R299, R300, R301
R302, R304, R324, R325
R307(*), R308(*), R328

* If required nINT function
Fit
R307, R308

Remove
R320

Renesas Solutions Corp.		
Title: RSK+RX63N [Ethernet]		
Size	Document Number R20UT0437EG0220	Rev 2.20
Date: Thursday, November 15, 2012	Sheet 12 of 12	