Intel Chief River BlOCK DIAGRAM

NEC RR3 BLOCK DIAGRAM 15.6"

01

POWER

SYSTEM RESET CIRCUIT

REGULATOR
+1.8V_RUN
+0.75V_DDR_VTT
+VCCSA

POWER SW
+3V_S5/+5V_S5
+3V_LAN
+3V_RUN/+5V_RUN

DC/DC
+VCC_CORE
+3VPCU/+5VPCU
+1.5V_SUS/+0.75V_DDR_VTT
+1.05V_RUN
+VCC_GFX_CORE

CPU
IvyBridge
35W
37.5mm X 37.5mm
(rPGA 989)
PAGE 5~7

SYSTEM MEMORY

Channel A
DDR3 SO-DIMM PAGE 13
DDR3 1600 MT/s 1.5V

Channel B
DDR3 SO-DIMM PAGE 13
DDR3 1600 MT/s 1.5V

2.7GT/s FDI
5GT/s DMI X 4

Mobile Intel PCH
PantherPoint
HM76
mBGA 989
(25mm X 25mm)
PAGE 8~12

2.5" HDD PAGE 18 — SATA0 6GB /S
mSATA PAGE 21 — SATA1 6GB /S
ODD (Tray) PAGE 18 — SATA3 3GB /S
USB Conn. x 4 Left * 2 / Right * 2 PAGE 16 — USB3.0

INT DUAL CHANNEL LVDS → LVDS Conn.(15.6") PAGE 14
INT HDMI → HDMI Conn. PAGE 15
INT CRT → CRT PAGE 15

PCIE x1 Port6 → Giga LAN Realtek RTL8111F 48pin-QFN 6 x 6mm PAGE 17 → TRANFORMER PAGE 17 → RJ45 PAGE 17

PCIE x1 Port3 → CardBus Ricoh R5U242A 144 pin CSP 9 x 9mm PAGE 25~26 → SD slot / PCMCIA Type II x1 PAGE 26

PCIE x1 Port2 → Mini Card WLAN PAGE 21

USB2.0 Port10 → USB2.0 x1 PAGE 16
USB2.0 Port9 → Web Camera
USB2.0 Port12

SPI → Flash ROM 8 Mbytes PAGE 23

LPC Interface → NPC985 EC Package : LQPF128 PAGE 23
- PS/2 → Touch Pad PAGE 20, K/B PAGE 20
- FAN PAGE 24

LPC Interface → NCT5577D Super IO PAGE 17
- UART → Serial Conn. PAGE 24

LPC Interface → TPM Conn. PAGE 16

HDA → Audio Codec Realtek ALC282 48pin 6 x 6mm PAGE 22 Stereo
- HP Jack PAGE 22
- MIC Jack PAGE 22
- SPEAKER 1W+1W PAGE 22

TP BTN/B Conn. PAGE 16
USB/B Conn. PAGE 16
PWR/B Conn. PAGE 16

Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	BLOCK DIAGRAM	ES1

Date: Wednesday, March 06, 2013 Sheet 1 of 35

Table of Contents

PAGE	DESCRIPTION
01	Schematic Block Diagram
02	Front Page
03	SMBUS Address
04	Power Sequence
05-07	CPU Ivy/Sandy Bridge 35W
08-12	PCH PantherPoint
13	DDRIII SO-DIMM(204P) X2
14	LCD CONN
15	CRT CONN/HDMI CONN
16	TPM/LED/USB/LED CONN
17	GLAN RTL8111F/RJ45/Transformer
18	HDD/ODD/NUT
19	USB CONN
20	KB/TOUCH PAD/LED
21	MINI-Card (WLAN)/mSATA
22	CODEC (ALC282)
23	EC (NPC985)
24	FAN/Thermal sensor/Serial Port/Super IO
25~26	Card Bus (R5U242)
27	3VPCU&RVCC5(PM6686)
28	+VCCSA/VCC1.8
29	1.5VSUS/VTT_MEM
30	+VCC_CORE(ISL95836)
31	+1.05V(G5602R41U)
32	Thermal Protection
33	AD IN/BAT IN
34	CHARGER(BD8617MUV-E2)
35	Power Tree

RR3 Power Rails

Power	Voltage	S0	S3	S4	S5	Ctl Signal
+3VPCU	3.3V	V	V	V	V	51427ALDO5
+5VPCU	5V	V	V	V	V	51427ALDO5
+15VPCU	15V	V	V	V	V	51427ALDO5
+3V_LAN	3.3V	V	NOTE 1	NOTE 1	NOTE 1	LAN_ON_D
+3V_S5	3.3V	V	V	NOTE 2	NOTE 2	S5_ON
+5V_S5	5V	V	V	NOTE 2	NOTE 2	S5_ON
+1.5V_SUS	1.5V	V	V			SLP_S4#
+VDDR_REF_CPU	0.75V	V				+1.5V
+0.75V_DDR_VTT	0.75V	V				SLP_S3#
+5V_RUN	5V	V				RUN_ON
+3V_RUN	3.3V	V				RUN_ON
+1.5V	1.5V	V				SLP_S3#
+1.05V	1.05V	V				+3V_RUN
+1.8V	1.8V	V				1.05V_PCH_PWRGD
+VCCSA	By VID	V				VCCSA_EN
+VCC_CORE	By VID	V				IMVP_VR_ON

NOTE 1:ON/OFF ACCORDING TO WOL FUNCTION SETTING

NOTE 2:ON FOR WAKE UP FUNCTION ENABLE DURING S4/S5

Reference data sheet

02

Design Guide

471984_471984_Chief_River_DG_Rev_2.0.pdf

CPU

473716_473716_IVB_EDS_Mobile_Rev2_1.pdf

PCH

474146_474146_PPT_EDS_Rev2_1.pdf

Audio

ALC282_DataSheet_0.82

Card Bus

R5U242A -datasheet

LAN

RTL8111F-CG_Datasheet_1.7

EC

NPCE985x_995x_Rev0.7_DS_Quanta

Check list

460603_CR_SCH_CHKLST_Rev2p0

Super IO

NCT5577D Datasheet V1_2

USB Re-driver

PS8713_DS_Ver1.0_20120511_Quanta

Quanta Computer Inc.

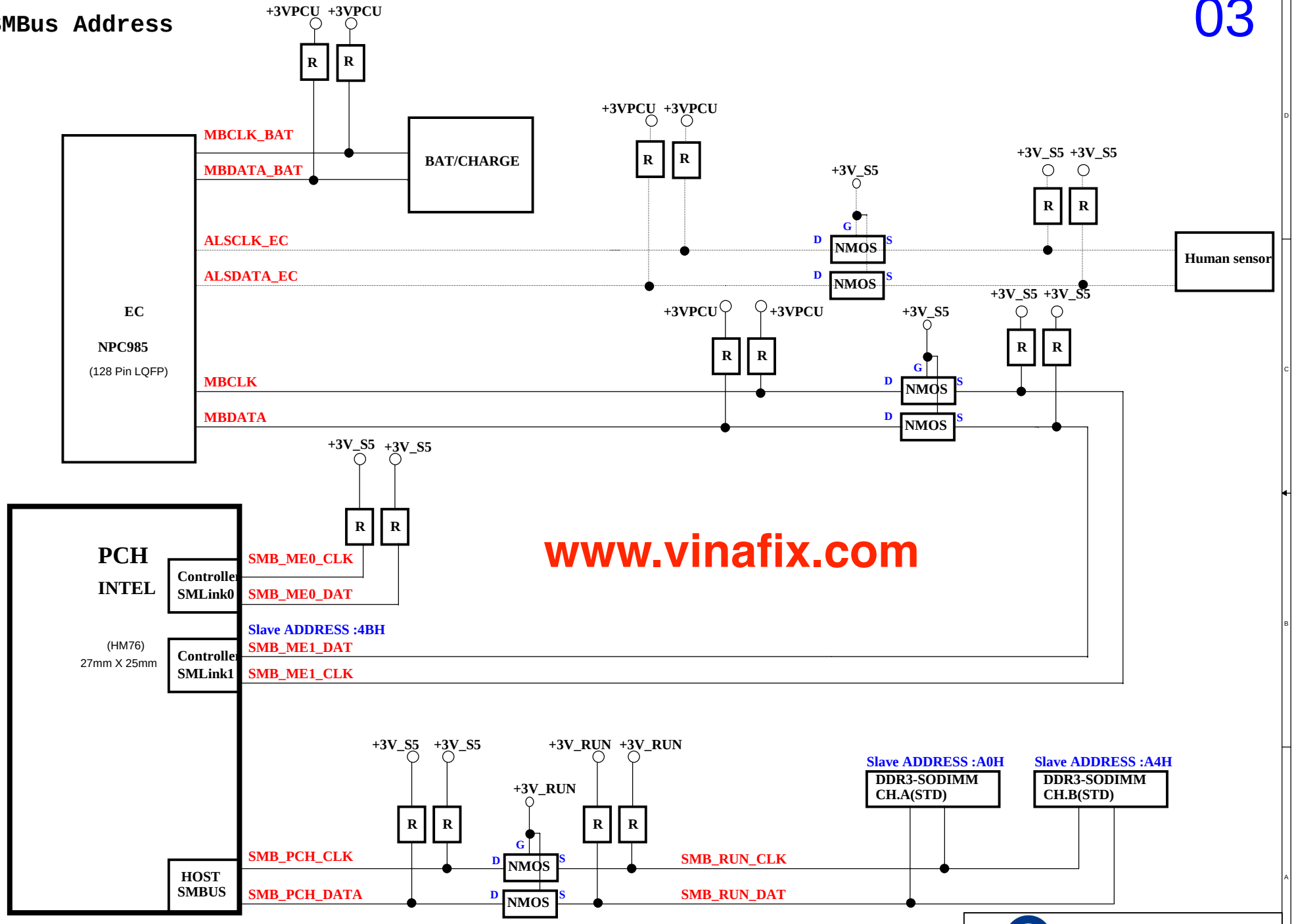
PROJECT : RR3

Size	Document Number	Rev
	Frontpage	ES1

Date: Wednesday, March 06, 2013 Sheet 2 of 35

RR3 SMBus Address

03



www.vinafix.com

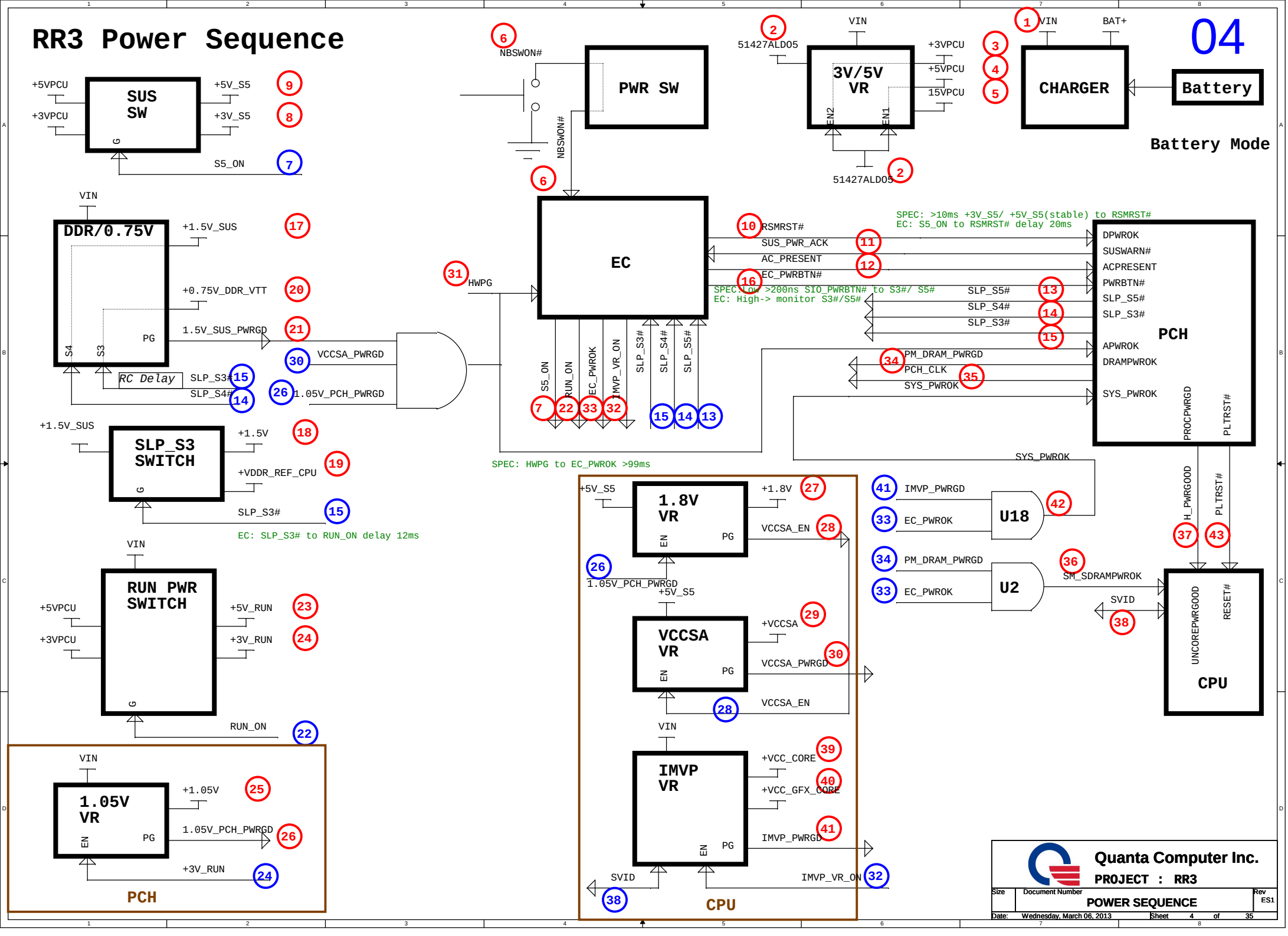
Quanta Computer Inc.

PROJECT : RR3

Size	Document Number	Rev
	SM BUS	ES1

Date: Wednesday, March 06, 2013 Sheet 3 of 35

RR3 Power Sequence

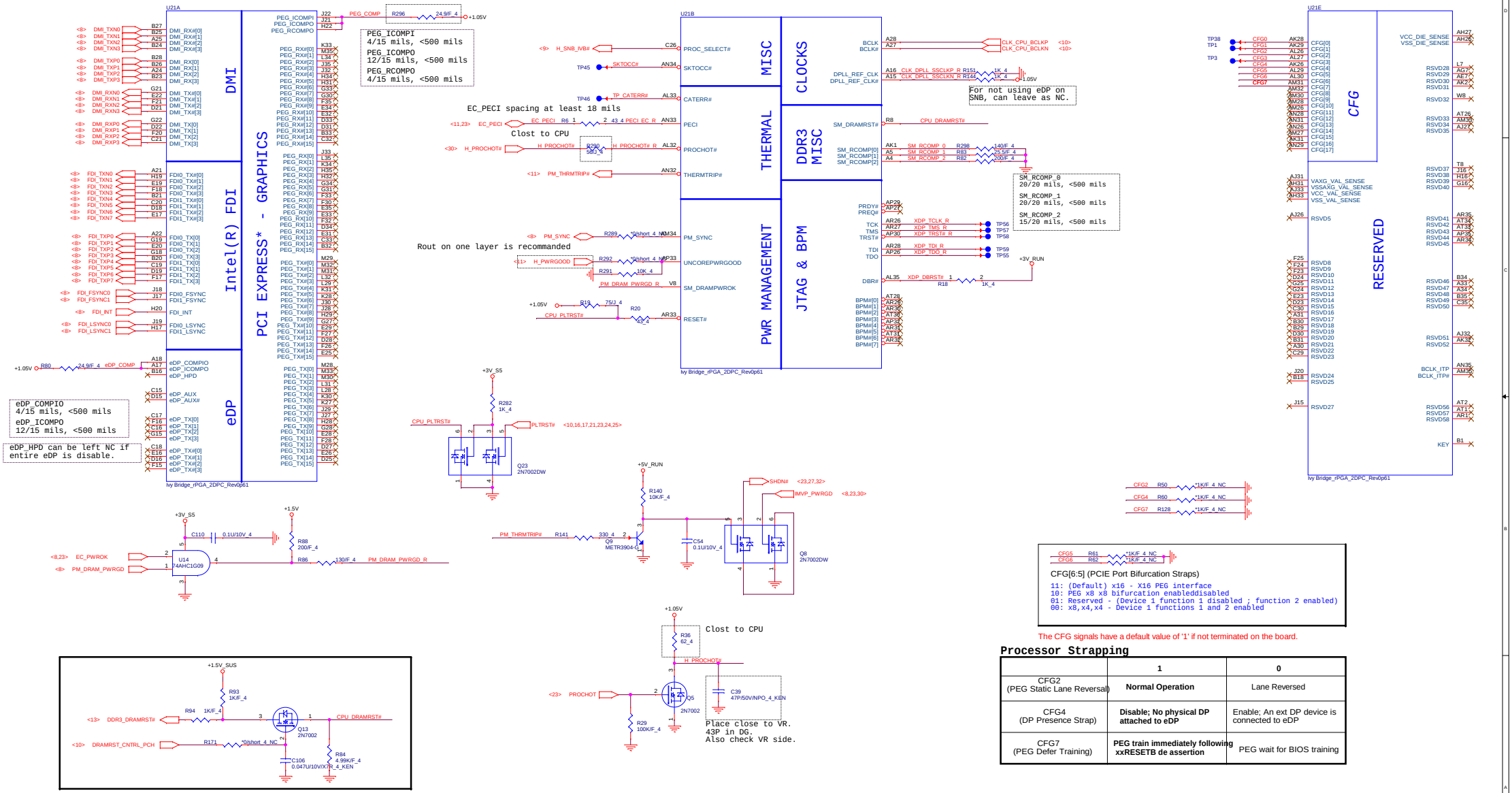


Quanta Computer Inc.	
PROJECT : RR3	
Size	Document Number: POWER SEQUENCE — Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 4 of 35

IVYB 1/4(HOST&PCIE&CFG)

Ivy Bridge Processor (CLK,MISC,JTAG)

Ivy Bridge Processor (RSVD, CFG)



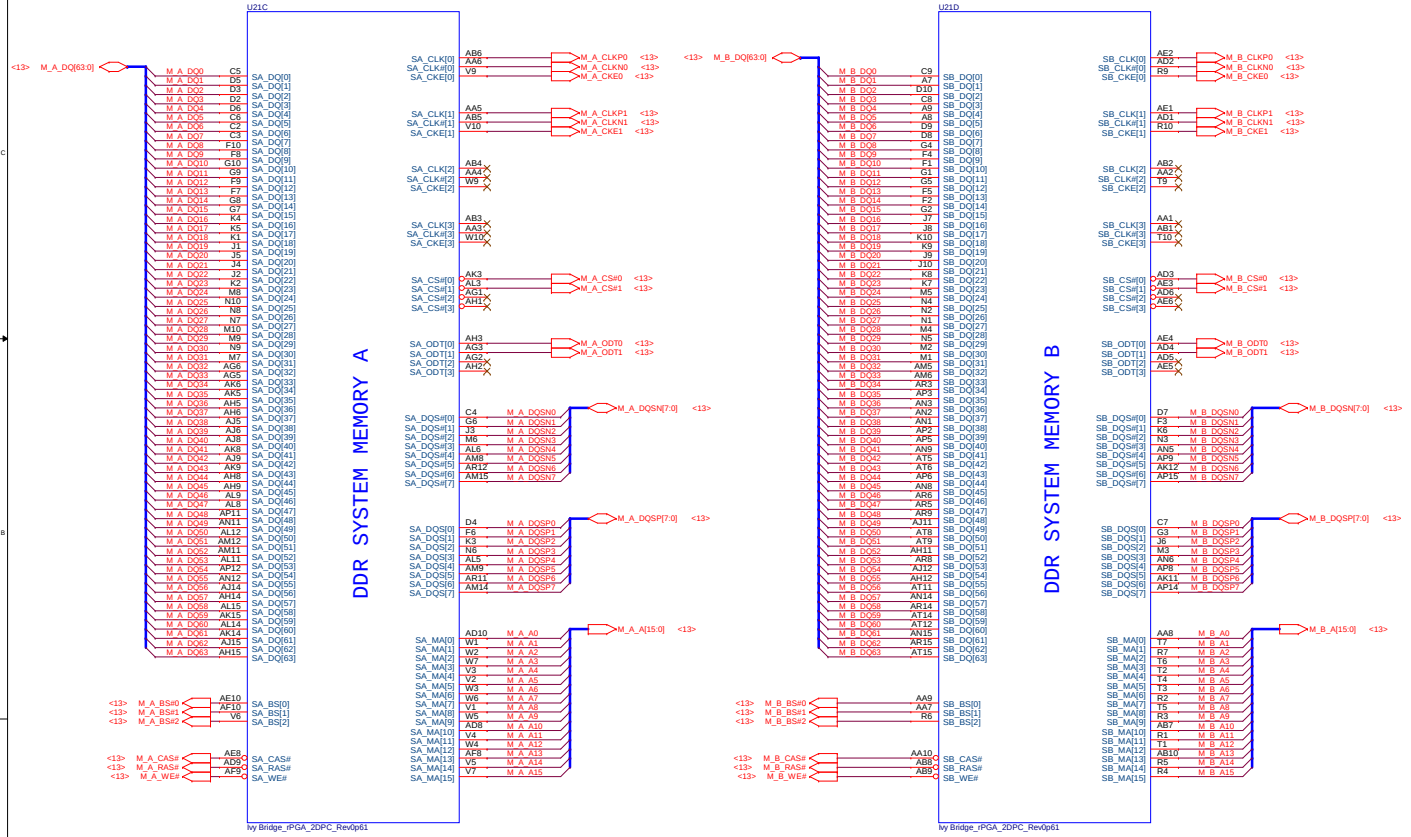
Processor Strapping

	1	0
CFG2 (PEG Static Lane Reversal)	**Normal Operation**	Lane Reversed
CFG4 (DP Presence Strap)	**Disable; No physical DP attached to eDP**	Enable; An ext DP device is connected to eDP
CFG7 (PEG Defer Training)	**PEG train immediately following xxRESETB de assertion**	PEG wait for BIOS training

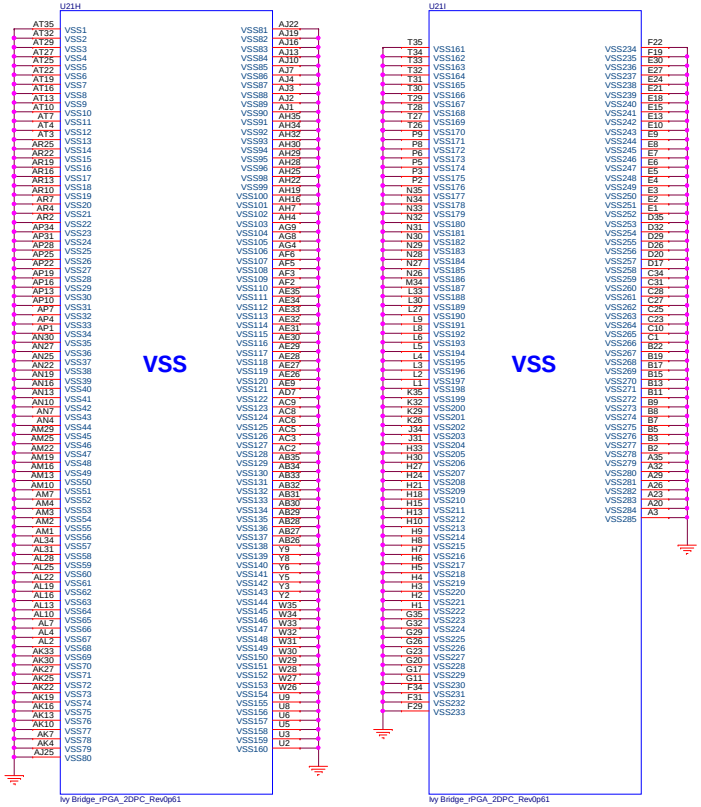
Quanta Computer Inc.	
PROJECT : RR3	
Size	Document Number: SNB 1/3(HOST&PCIE&CFG) — Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 5 of 35

IVYB 2/3(DDR3 I/F&GND)

Ivy Bridge Processor (DDR3)



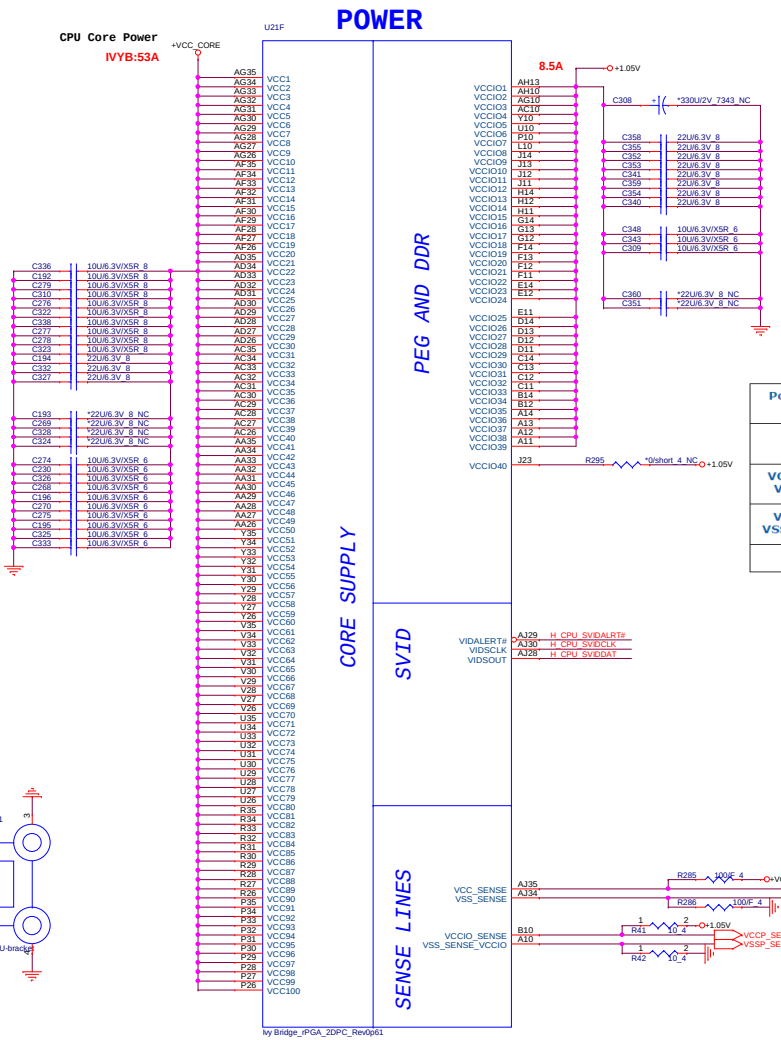
Ivy Bridge Processor (GND)

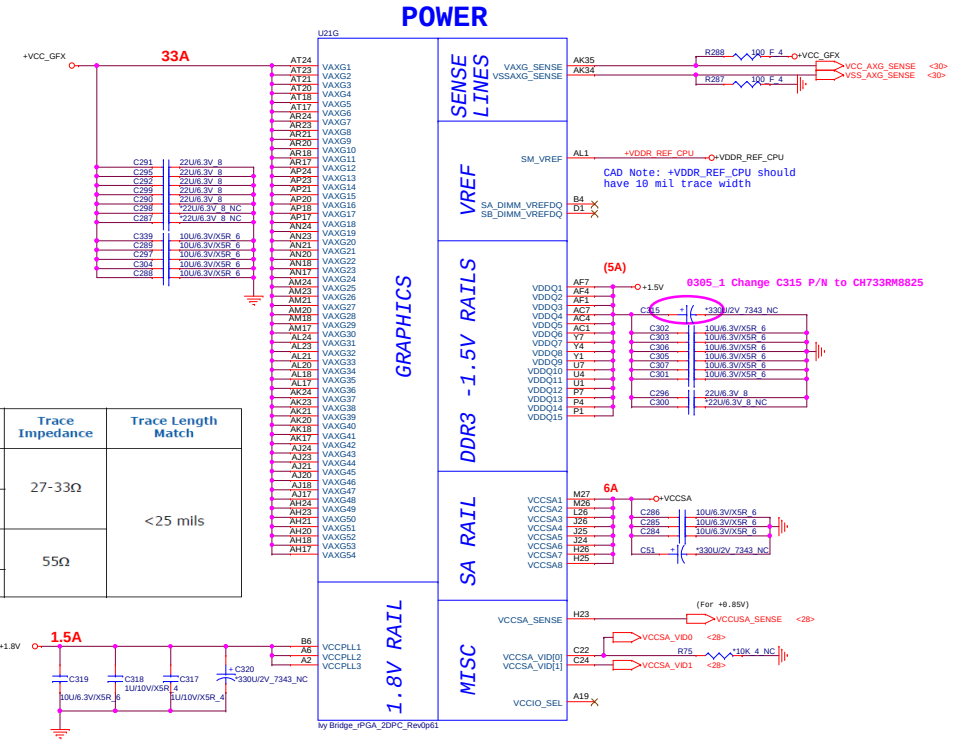


Quanta Computer Inc.			
PROJECT : RR3			
Size	Document Number		Rev
	IVYB 2/3(DDR3 I/F&GND)		ES1
Date: Wednesday, March 06, 2013		Sheet 6 of 35	

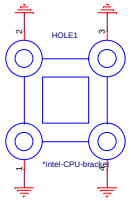
Ivy Bridge Processor (POWER)

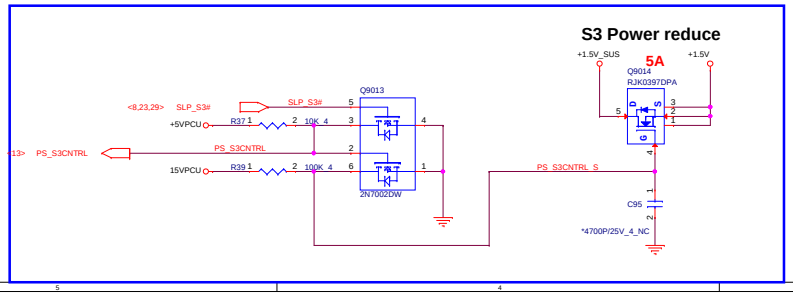
Ivy Bridge Processor (GRAPHIC POWER)

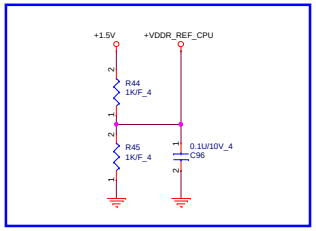


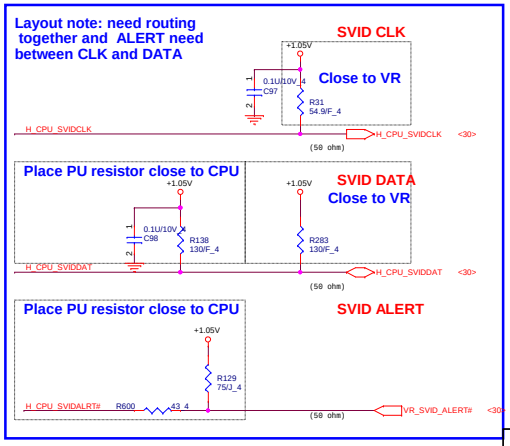


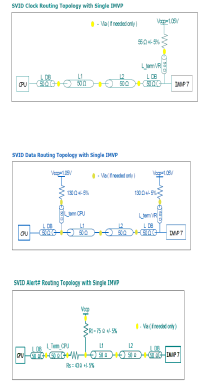
Power Rail Sense Line	R1, R2	Trace Impedance	Trace Length Match
VCC_SENSE / VSS_SENSE	100Ω	27-33Ω	<25 mils
VCCAXG_SENSE / VSSAXG_SENSE	100Ω		
VCCIO_SENSE / VSS_SENSE_VCCIO	10Ω	55Ω	
VCCSA	100Ω		











Quanta Computer Inc.

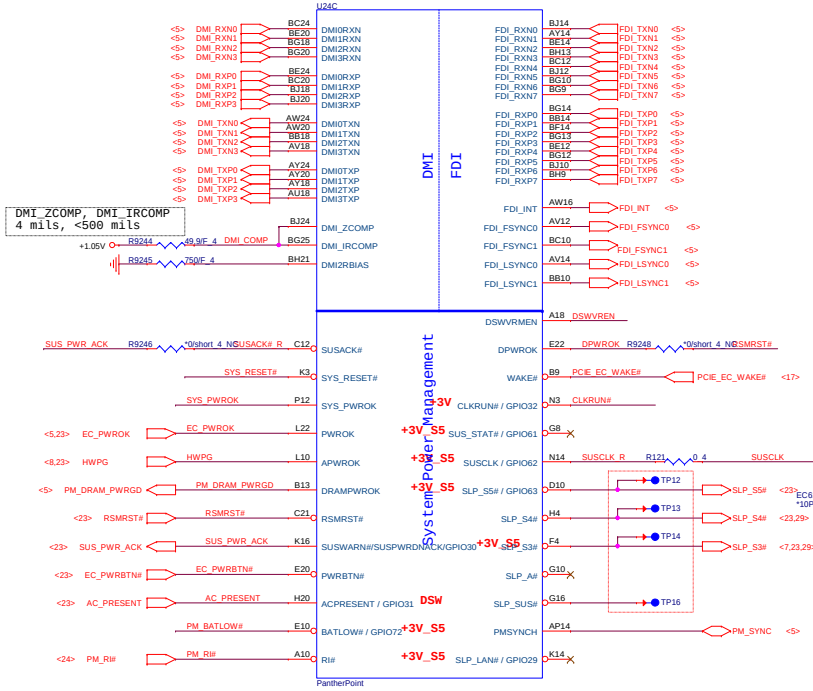
PROJECT : RR3

Size	Document Number	Rev
	IVYB 3/3(POWER)	ES1

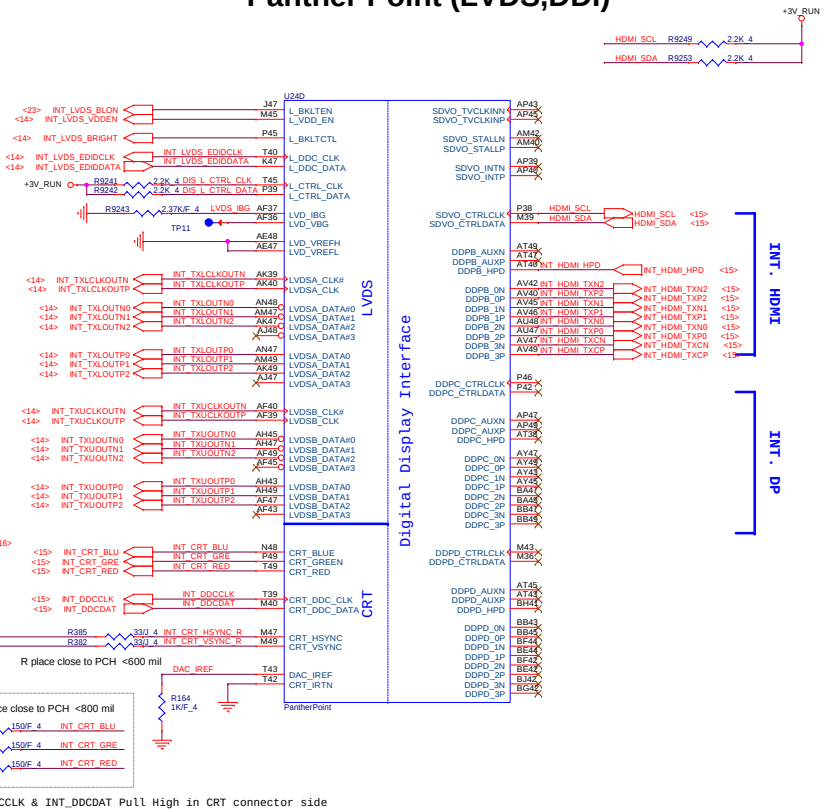
Date: Wednesday, March 06, 2013 Sheet 7 of 35

PCH 1/5 (DMI/FDI/VIDEO)

Panther Point (DMI,FDI,PM)

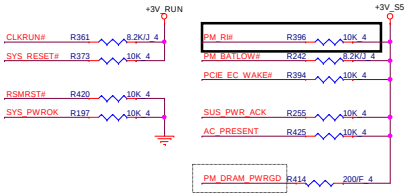


Panther Point (LVDS,DDI)



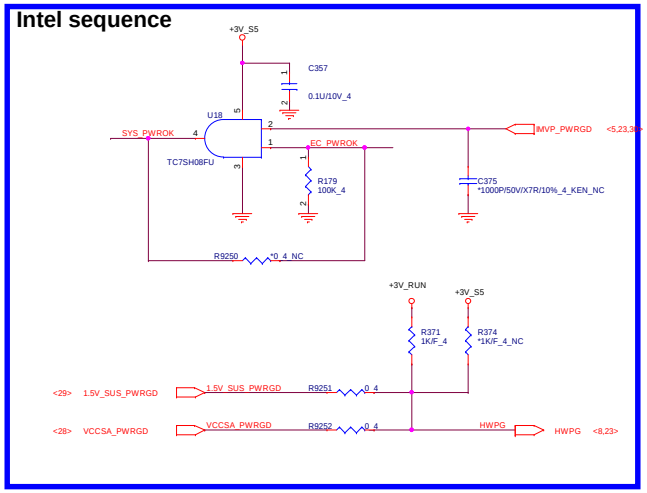
Note: INT_DDCCLK & INT_DDCDAT Pull High in CRT connector side

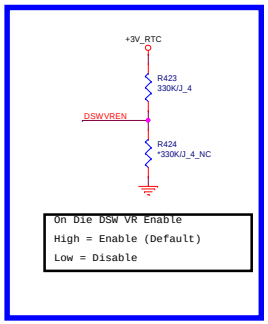
PCH Pull-high/low(CLG)



This segment should less than 500 mils.

Intel sequence






```
----- No Deep S4/S5, No ME ------
#SYS_RESET: Like DT reset button, NC.
#SYS_PWROK: The latest PWROK means all power in platform is stable,
After getting this signql, PCH prepares to deliver PLT_RST#.
#PWROK: All power in platform except to VCC_CORE and VCC_GFX_CORE is stable
#APWROK: Can be the same as SLP_S3 PWR stable if ME is not implemented.
#DRAMPWROK: Indicates RAM power is stable, go after the PWROK is high and
can be set time by register.
#:SUSWARN#/SUSPWRDNACK: Asserted by the PCH on behalf of the Intel ME when it
does not require the PCH Suspend well to be powered. WHAT DOES IT MEAN??
#:DPWROK: Connect to RSMRST#
#:SLP_SUS#: NC
#:SLP_A#: Can the same as or earlier than SLP_S3#, Connect to SLP_S3#
#:SLP_LAN#: Can be the same as or earlier than SLP_A#.
#:SUS_ACK#: Tell PCH that got the massage of entering Deep S4/S5 or not.
```

Quanta Computer Inc.
PROJECT : RR3

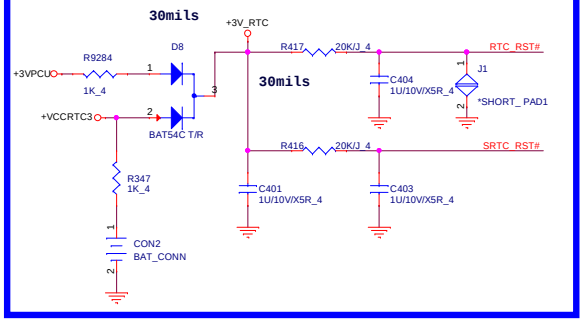
Size	Document Number	Rev
	PCH 1/5 (DMI/FDI/VIDEO)	ES1
Date: Wednesday, March 06, 2013	Sheet 8 of 35	

PCH 2/5(SATA/RTC/HDA/LPC)

Panther Point (HDA,JTAG,SATA)

09

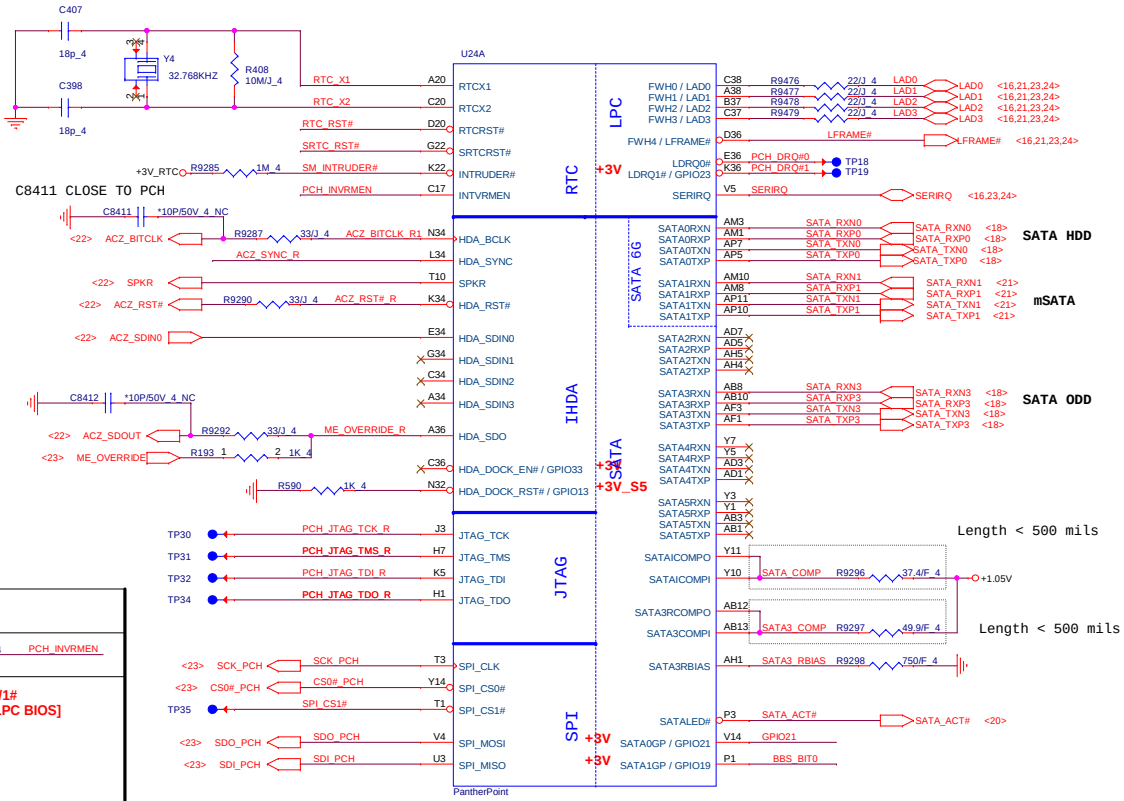
RTC Circuitry (RTC)
(non Rechargable BATT)



PCH Strap Table

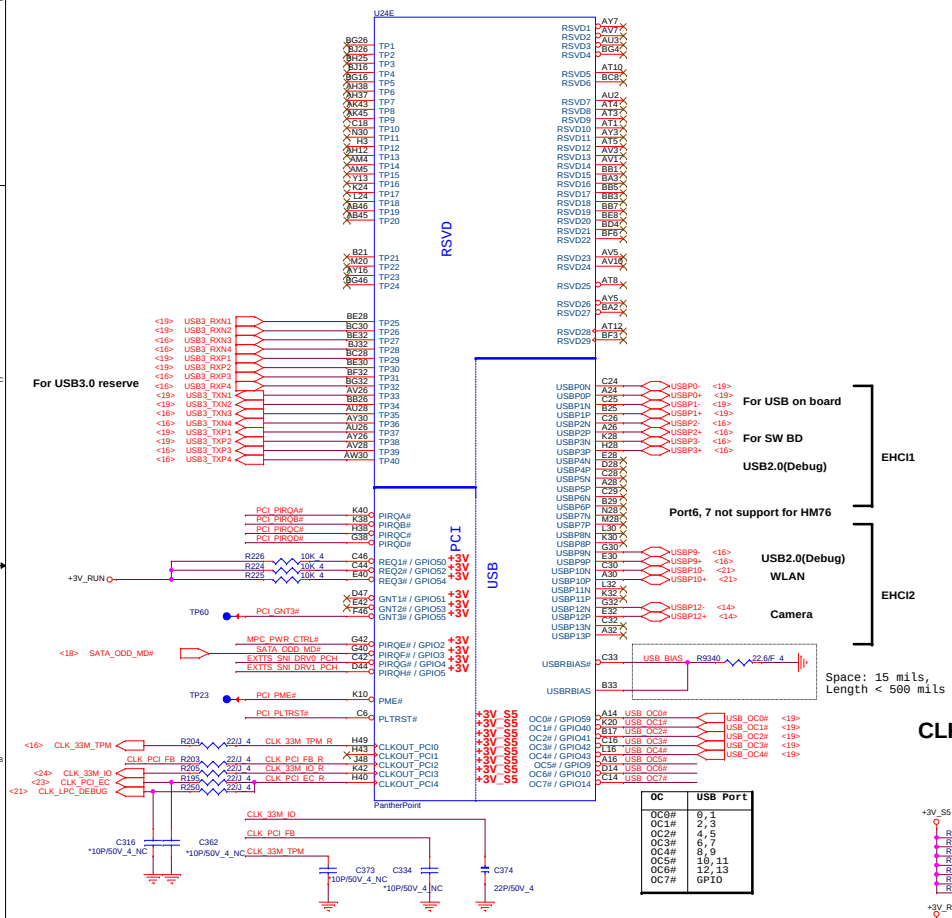
Pin Name	Strap description	Sampled	Configuration
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK	
HDA_SDO	Flash Descriptor Security	PWROK	1= Override 0 = Default (weak pull-down20K)
DF_TVS	DMI/FDI Termination voltage	PWROK	0 = Set to Vss for Ivy Bridge 1 = Set to Vcc for Sandy Bridge (weak pull-down 20K)
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)
HDA_SYNC	On-Die PLL VR Voltage Select	RSMRST	0 = Support by 1.8V (weak pull-down) 1 = Support by 1.5V

GNT1#	GNT0#	Boot Location
1	1	SPI *
0	0	LPC



Quanta Computer Inc.	
PROJECT : RR3	
Size	Document Number: PCH 2/5(SATA/RTC/HDA/LPC) — Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 9 of 35

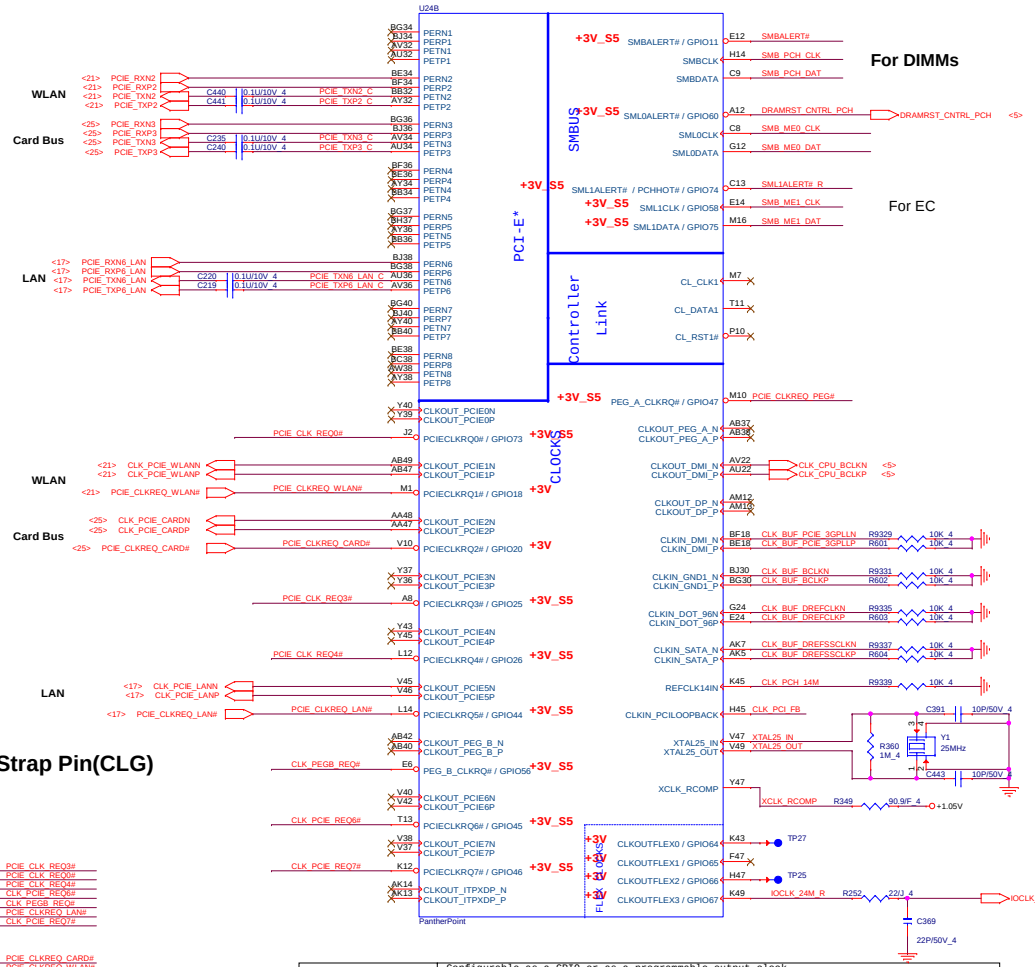
Panther Point-M (PCI,USB,NVRAM)



OC	USB Port
OC0#	0,1
OC1#	2,3
OC2#	4,5
OC3#	6,7
OC4#	8,9
OC5#	10,11
OC6#	12,13
OC7#	GPIO

MPC Switch Control	
MPC_PWR_CTRL#	Low = MPC ON High = MPC OFF (Default)

Panther Point-M (PCI-E,SMBUS,CLK)

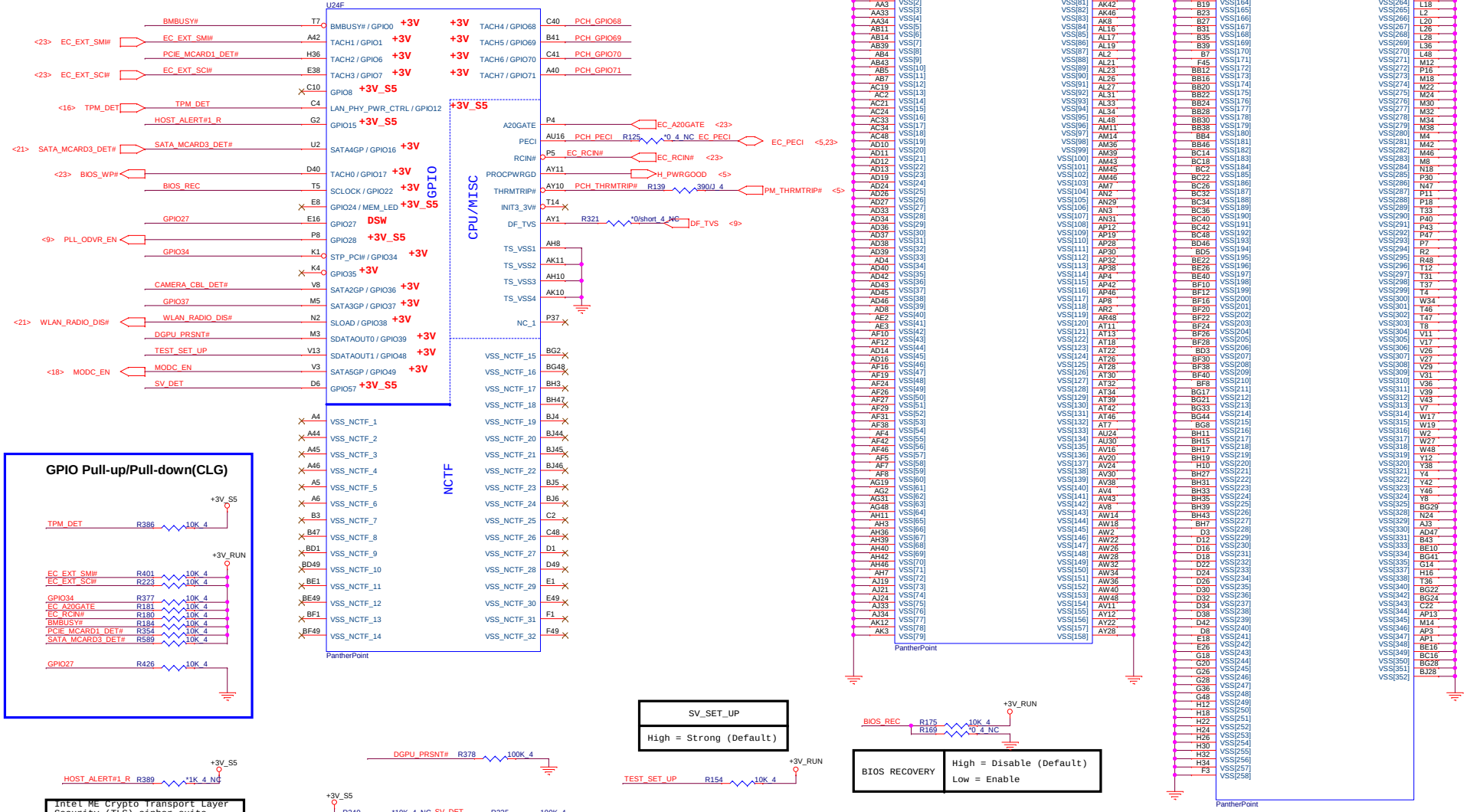


	Configurable as a GPIO or as a programmable output clock which can be configured as one of the following:
CLKOUTFLEX0 /GPIO64	• 33 /27 /48/ 14.318 MHz / DC Output logic '0'
CLKOUTFLEX1 /GPIO65	unsupported clock output value (Default) / 27/ 14.318 MHz output to SIO/EC /48/24 MHz
CLKOUTFLEX2 /GPIO66	• 33/25/27/48/24/14.318 MHz / DC Output logic '0'
CLKOUTFLEX3 /GPIO67	• 27/14.318 output to SIO/48/24 MHz (Default)

PCH 4/5(GPIO/CPU/STRAP/GND)

Panther Point (GPIO,VSS_NCTF,RSVD)

Panther Point (GND)



GPIO Pull-up/Pull-down(CLG)

SV_SET_UP
High = Strong (Default)

BIOS RECOVERY	High = Disable (Default) Low = Enable

Intel ME Crypto Transport Layer Security (TLS) cipher suite
Low = Disable (Default)
High = Enable

MFG-TEST

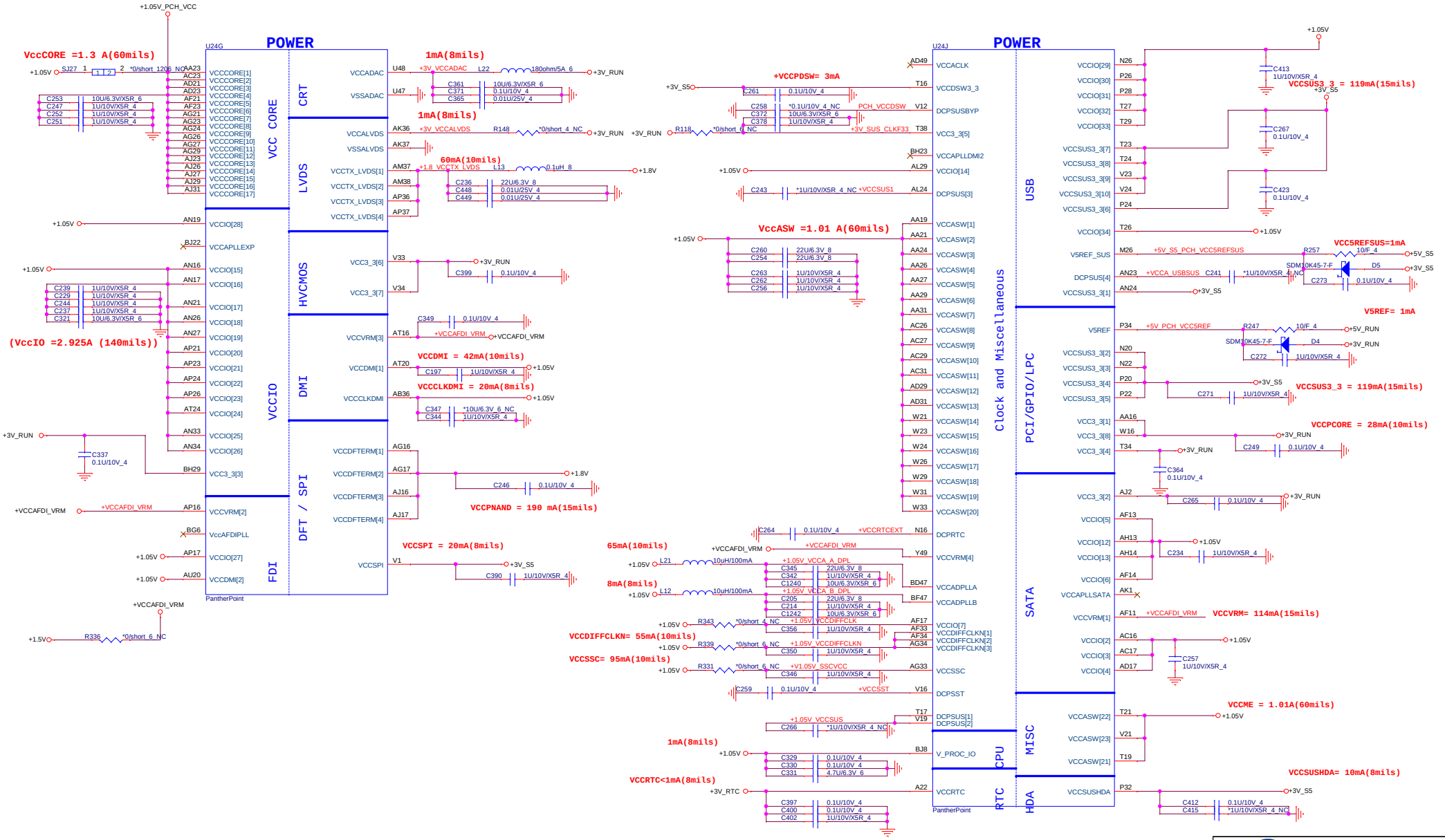
FDI TERMINATION VOLTAGE OVERRIDE	LOW - Tx, Rx terminated to same voltage

DMI TERMINATION VOLTAGE OVERRIDE	Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (DEFAULT)

Quanta Computer Inc. PROJECT : RR3			
Size	Document Number: PCH 4/5(GPIO/CPU/STRAP/GND)		Rev ES1
Date: Wednesday, March 06, 2013	Sheet 11 of 35		

Panther POINT (POWER)

Panther Point-M (POWER)



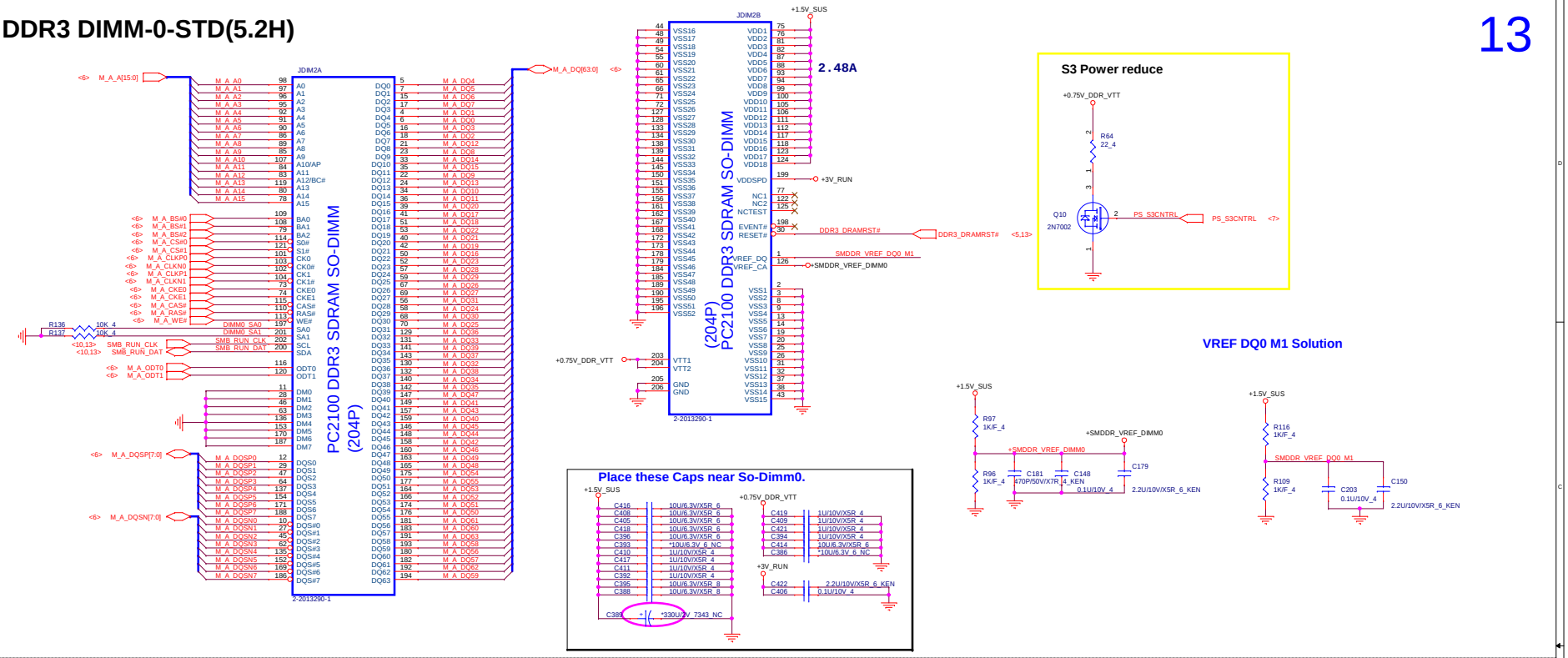
Quanta Computer Inc.

PROJECT : RR3

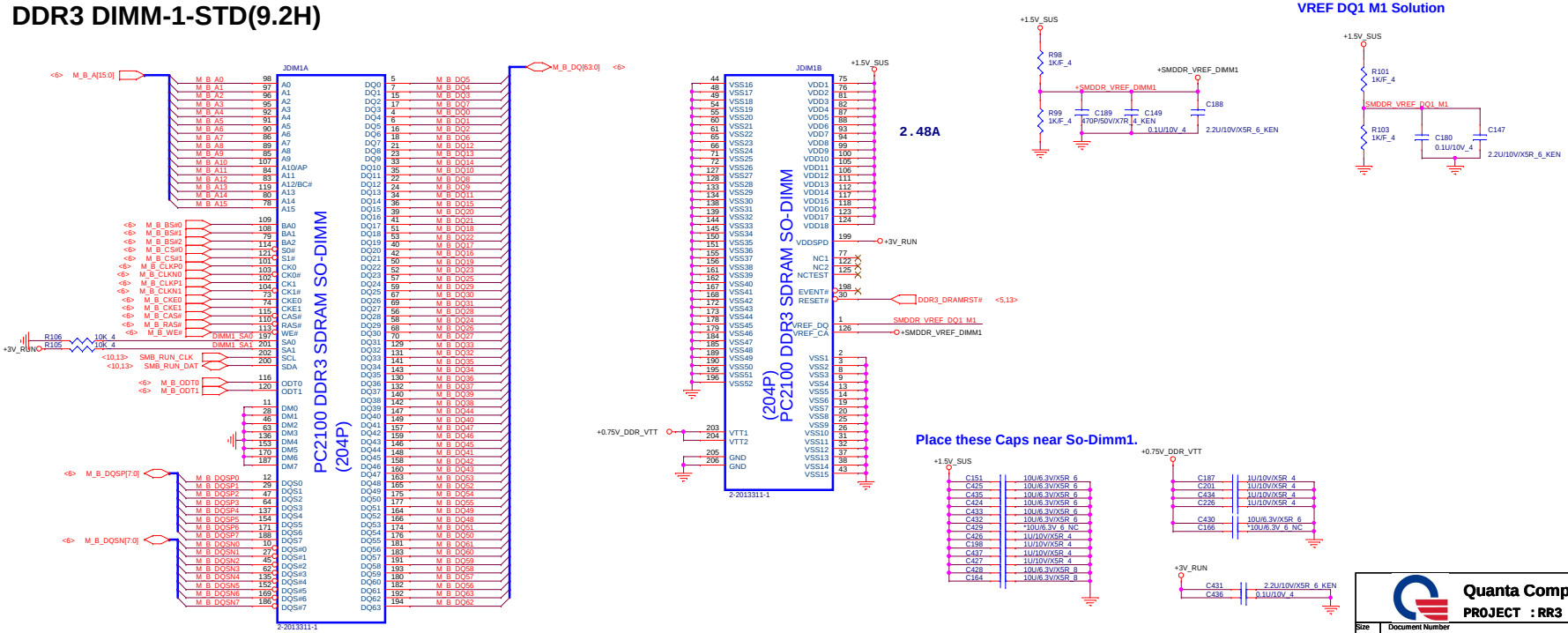
Size	Document Number	Rev
	PCH 5/5(POWER)	ES1

Date: Wednesday, March 06, 2013 Sheet 12 of 35

DDR3 DIMM-0-STD(5.2H)

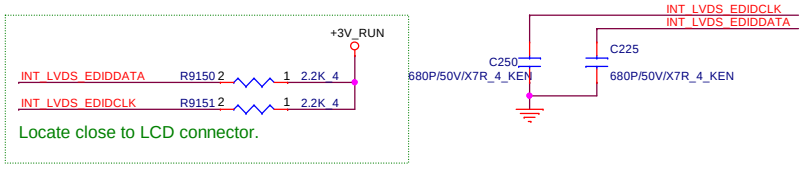


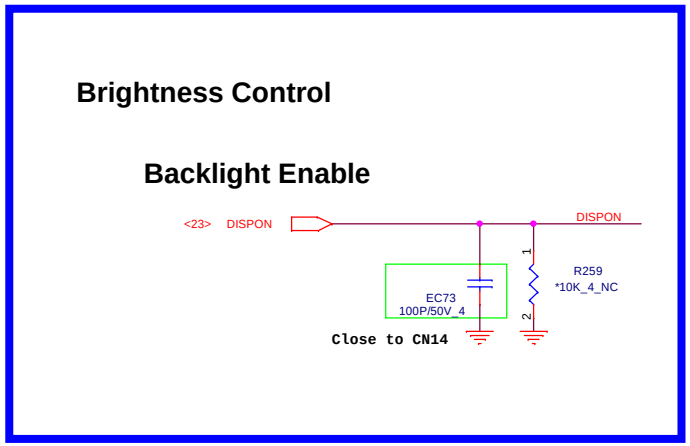
DDR3 DIMM-1-STD(9.2H)

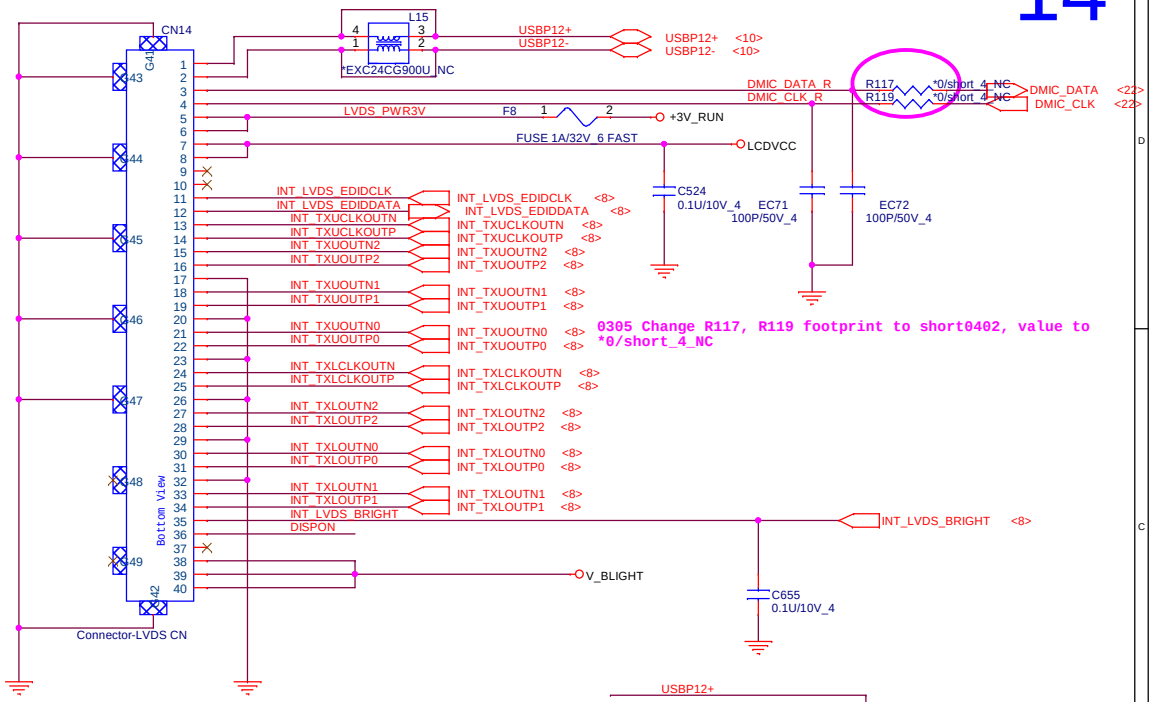


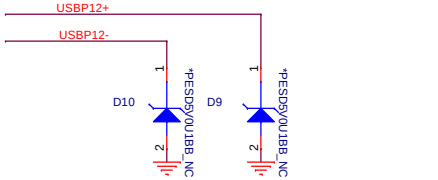
Quanta Computer Inc.			
PROJECT : RR3			
Size	Document Number		Rev
	DDR3 DIMM		ES1
Date: Wednesday, March 06, 2013	Sheet 13 of 35		

LCD Panel(LVDS)



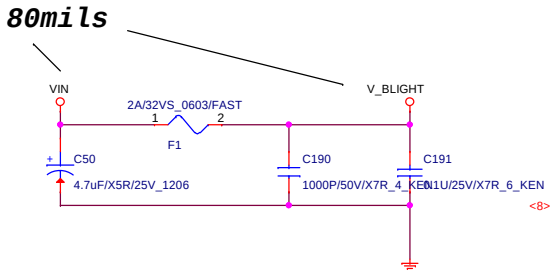




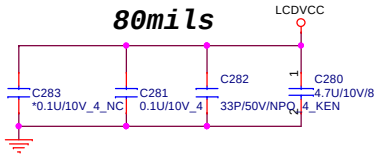


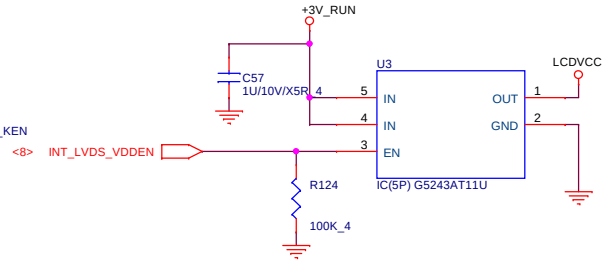
LCD Panel BACKLIGHT POWER

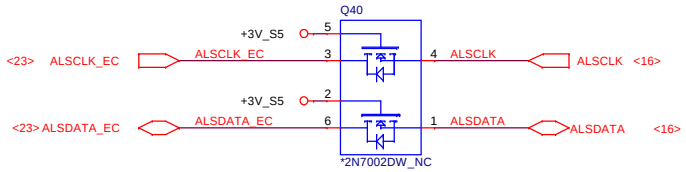
Fuse Rating =
IR(max) / (0.75* 0.75) =0.47A / 0.5625 = 0.8355A



LCD Panel POWER SWITCH(LVDS)







Quanta Computer Inc.		
PROJECT : RR3		
Size	Document Number: LCD/LED Panel	Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 14 of 35	

CRT CONN/DDC LEVEL SHIFT

Fuse Rating =
IR(max) / (0.75* 0.75) =0.05A / 0.5625 = 0.089A

40mils

+5V_RUN — F4 0.5A/6V/POLY_12 — D3 B240A-13-F — C59 0.1U/10V_4 — 5V_CRT2

<8> INT_CRT_RED — L3 BLM15BA470SS1D — CRT_RED_L — R51 150/F_4 — C60 22P/50V_4
<8> INT_CRT_GRE — L4 BLM15BA470SS1D — CRT_GRE_L — R52 150/F_4 — C61 22P/50V_4
<8> INT_CRT_BLU — L5 BLM15BA470SS1D — CRT_BLU_L — R53 150/F_4 — C62 22P/50V_4
C63 10P/50V_4 — C64 10P/50V_4 — C65 10P/50V_4

CN4 — CRT_CONN

U5 CM2009
5V_CRT2 — VCC_SYNC
+3V_RUN — C66 0.22U/10V/X5R_6 — VCC_DDC
5V_CRT2 — VCC_VIDEO
CRT_RED_L — VIDEO_1
CRT_GRE_L — VIDEO_2
CRT_BLU_L — VIDEO_3
GND
SYNC_OUT2 — CRT_VSYNC_Q — R54 47/F_4 — CRT_VSYNC_R — L6 BLM18BA220SN1D — CRT_VSYNC_L
SYNC_OUT1 — CRT_HSYNC_Q — R55 47/F_4 — CRT_HSYNC_R — L7 BLM18BA220SN1D — CRT_HSYNC_L
BYP
SYNC_IN2 — INT_CRT_VSYNC — <8> INT_CRT_VSYNC
SYNC_IN1 — INT_CRT_HSYNC — <8> INT_CRT_HSYNC
DDC_IN1 — INT_DDCCLK — <8> INT_DDCCLK
DDC_IN2 — INT_DDCDAT — <8> INT_DDCDAT
DDC_OUT1 — CRTDCLK
DDC_OUT2 — CRTDDAT
5V_CRT2 — R56 2.7K/J_4 — R57 2.7K/J_4
C67 10P/50V_4 — C68 10P/50V_4
C69 10P/50V_4 — C70 10P/50V_4
+5V_RUN — C71 0.1U/10V_4
+3V_RUN — C72 0.1U/10V_4
+3V_RUN — INT_DDCCLK — R130 2.2K_4 — INT_DDCDAT — R132 2.2K_4

HDMI

+5V_RUN — D42 SDM10K45-7-F — D43 SDM10K45-7-F — +5V_HDMIF1_D35 — +5V_HDMIF1_D — RP26 2.2KX2

CN22 HDMI Female TYPE A
HDMI_TX2+_C — HDMI_TX2-_C — HDMI_TX1+_C — HDMI_TX1-_C — HDMI_TX0+_C — HDMI_TX0-_C — HDMI_CLK+_C — HDMI_CLK-_C
GND — 22 — 23

+5V_HDMI — HDMIF1 1206L110THYR — +5V_HDMIF1 — HDMI_HPD

Q9009 2N7002 — HDMI_SCL — +3V_RUN — HDMI_SCL_Q
Q9010 2N7002 — HDMI_SDA — HDMI_SDA_Q

+5V_RUN — Q38 AO6402A — +5V_HDMI
<27> MAIND — R599 0_4 — C654 *0.1U/25V_4_NC

HDMI_SCL_Q — HDMI_SDA_Q
D18 *PESD5V0U1BB_NC — D19 *PESD5V0U1BB_NC

<8> INT_HDMI_TXP2 — INT_HDMI_TXP2 — C8487 0.1U/10V_4 — HDMI_TX2+_R
<8> INT_HDMI_TXN2 — INT_HDMI_TXN2 — C8488 0.1U/10V_4 — HDMI_TX2-_R
<8> INT_HDMI_TXP1 — INT_HDMI_TXP1 — C8489 0.1U/10V_4 — HDMI_TX1+_R
<8> INT_HDMI_TXN1 — INT_HDMI_TXN1 — C8490 0.1U/10V_4 — HDMI_TX1-_R
<8> INT_HDMI_TXP0 — INT_HDMI_TXP0 — C8491 0.1U/10V_4 — HDMI_TX0+_R
<8> INT_HDMI_TXN0 — INT_HDMI_TXN0 — C8492 0.1U/10V_4 — HDMI_TX0-_R
<8> INT_HDMI_TXCP — INT_HDMI_TXCP — C8493 0.1U/10V_4 — HDMI_CLK+_R
<8> INT_HDMI_TXCN — INT_HDMI_TXCN — C8494 0.1U/10V_4 — HDMI_CLK-_R
<8> HDMI_SCL — HDMI_SCL
<8> HDMI_SDA — HDMI_SDA

+3V_RUN — R502 1M_4 — R501 *100K_4_NC — Q34 2N7002 — R503 20K/J_4
<8> INT_HDMI_HPD
D17 *PESD5V0U1BB_NC — C438 0.1U/10V_4

+HDMI_LS
R9494 680/F_4 — HDMI_TX2+_R
R9495 680/F_4 — HDMI_TX2-_R
R9496 680/F_4 — HDMI_TX1+_R
R9497 680/F_4 — HDMI_TX1-_R
R9498 680/F_4 — HDMI_TX0+_R
R9499 680/F_4 — HDMI_TX0-_R
R9500 680/F_4 — HDMI_CLK+_R
R9501 680/F_4 — HDMI_CLK-_R

+3V_RUN — R9540 1K_4 — Q9011 2N7002 — R9502 1M_4

EL53 EXC24CG900U — HDMI_TX2-_R — HDMI_TX2+_R — HDMI_TX2-_C — HDMI_TX2+_C
EL55 EXC24CG900U — HDMI_TX1+_R — HDMI_TX1-_R — HDMI_TX1+_C — HDMI_TX1-_C
EL54 EXC24CG900U — HDMI_TX0+_R — HDMI_TX0-_R — HDMI_TX0+_C — HDMI_TX0-_C
EL56 EXC24CG900U — HDMI_CLK+_R — HDMI_CLK-_R — HDMI_CLK+_C — HDMI_CLK-_C

HDMI_TX2+_C — R8 *120_4_NC 1% — HDMI_TX2-_C
HDMI_TX0+_C — R11 *120_4_NC 1% — HDMI_TX0-_C
HDMI_TX1+_C — R9 *120_4_NC 1% — HDMI_TX1-_C
HDMI_CLK+_C — R10 *120_4_NC 1% — HDMI_CLK-_C

0220 Add R9540(CS21002JB34) for customer request

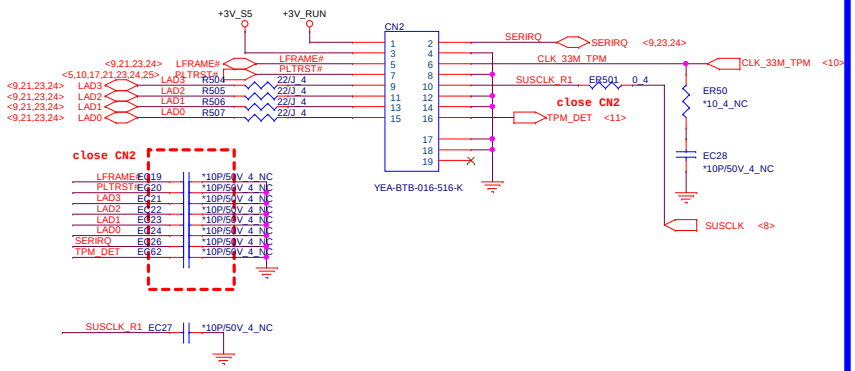
U1 *PUSB3F4-TBR_NC
HDMI_CLK+_C — 1- — NC — 10 HDMI_CLK+_C
HDMI_CLK-_C — 2 — 1+ — NC — 9 HDMI_CLK-_C
3 — GND
HDMI_TX0-_C — 4 — 2- — NC — 7 HDMI_TX0-_C
HDMI_TX0+_C — 5 — 2+ — NC — 6 HDMI_TX0+_C

U2 *PUSB3F4-TBR_NC
HDMI_TX1-_C — 1- — NC — 10 HDMI_TX1-_C
HDMI_TX1+_C — 2 — 1+ — NC — 9 HDMI_TX1+_C
3 — GND
HDMI_TX2+_C — 4 — 2- — NC — 7 HDMI_TX2+_C
HDMI_TX2-_C — 5 — 2+ — NC — 6 HDMI_TX2-_C

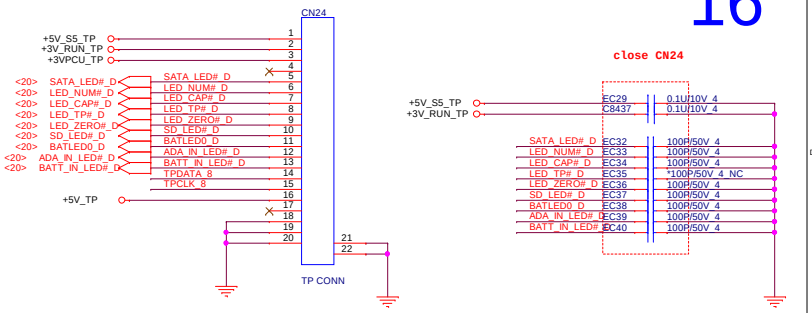
Quanta Computer Inc.
PROJECT : RR3

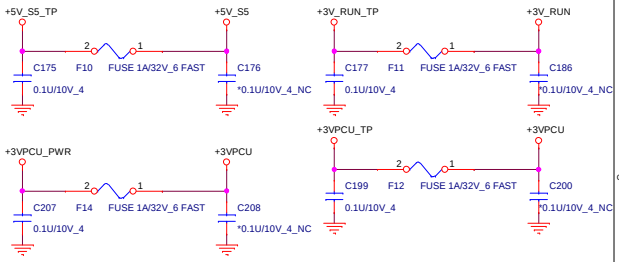
Size	Document Number	Rev
	CRT CONN/DDC LEVEL SHIFT	ES1
Date: Wednesday, March 06, 2013	Sheet 15 of 35	

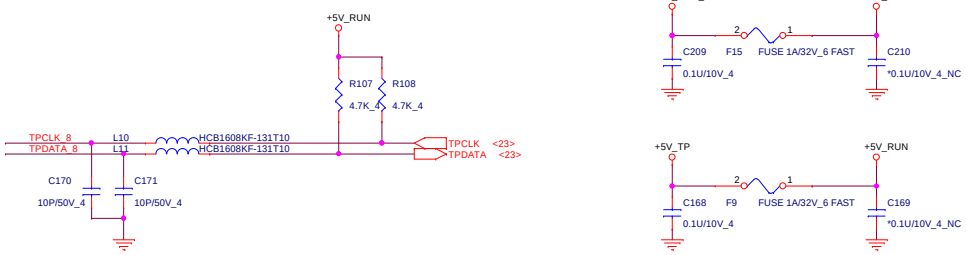
TPM on MB side



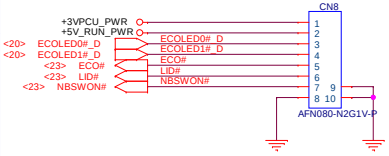
TP Button Board CONN

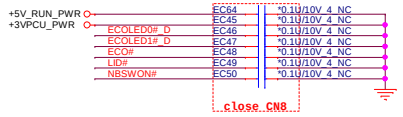




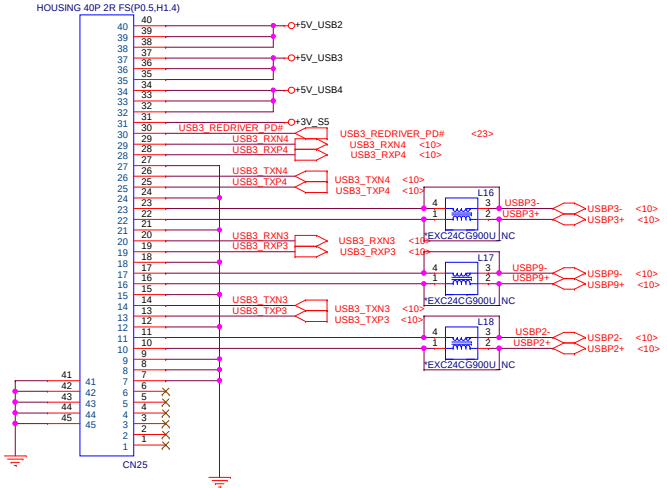


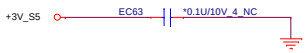
POWER BUTTON Conn



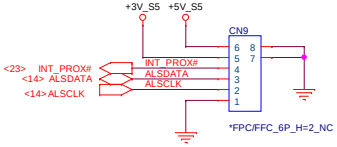


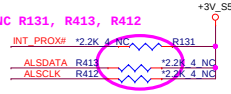
USB Board BTB Connector





Human sensor connector

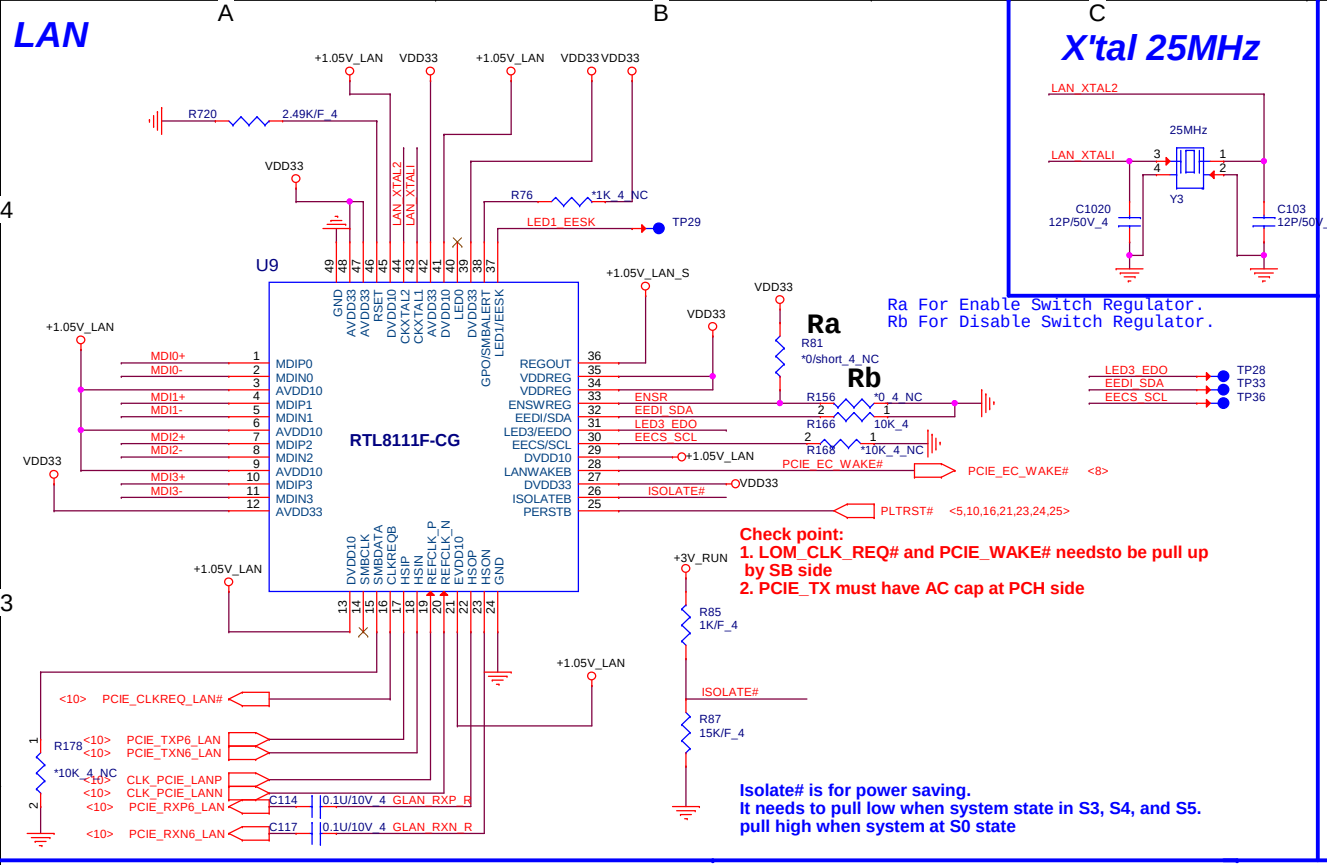




Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	BTB CONN	ES1
Date: Wednesday, March 06, 2013	Sheet 16 of 35	

LAN



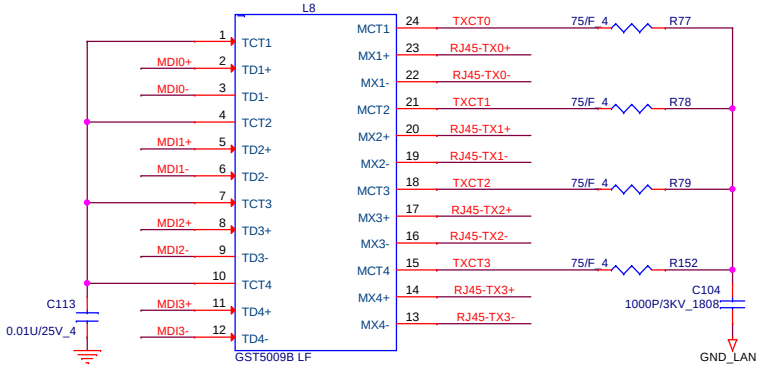
Check point:
1. LOM_CLK_REQ# and PCIE_WAKE# needsto be pull up by SB side
2. PCIE_TX must have AC cap at PCH side

Isolate# is for power saving.
It needs to pull low when system state in S3, S4, and S5.
pull high when system at S0 state

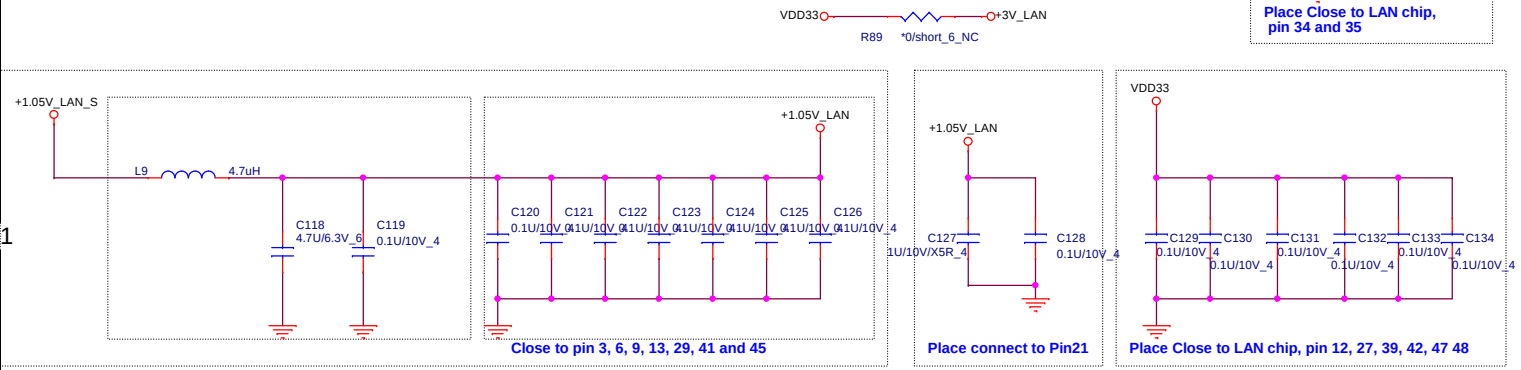
X'tal 25MHz

Ra For Enable Switch Regulator.
Rb For Disable Switch Regulator.

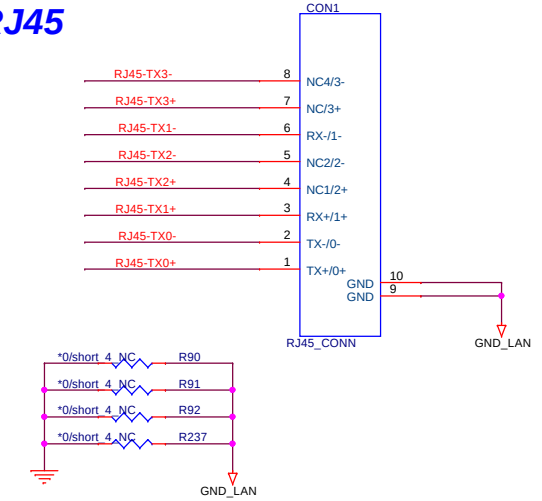
10/100/1000 Transformer



LAN Power

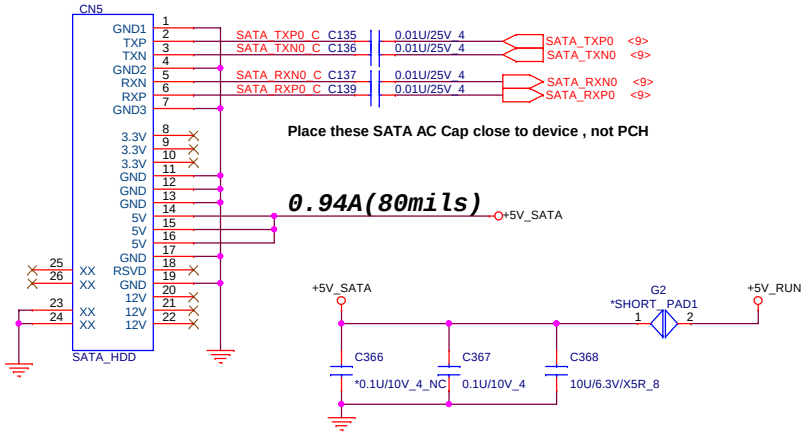


RJ45

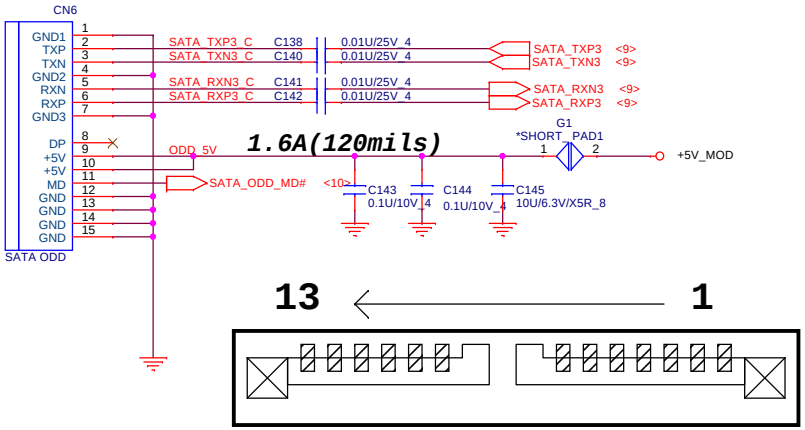


Quanta Computer Inc. PROJECT : RR3			
Size	Document Number		Rev
	LAN_RTL8111E-GR/RJ45		ES1
Date: Wednesday, March 06, 2013	Sheet 17	of 35	

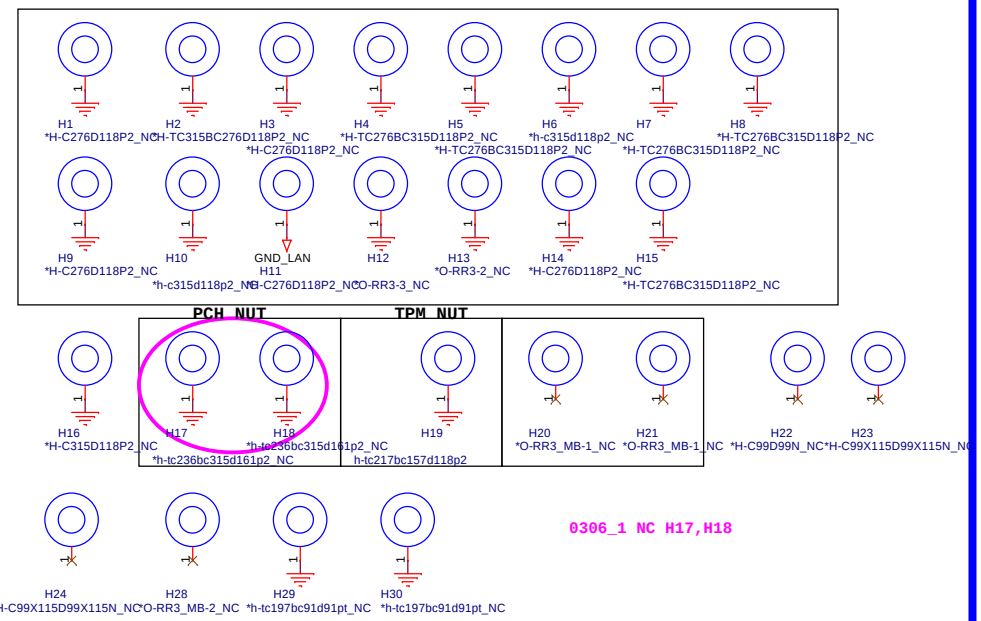
2.5" SATA HDD



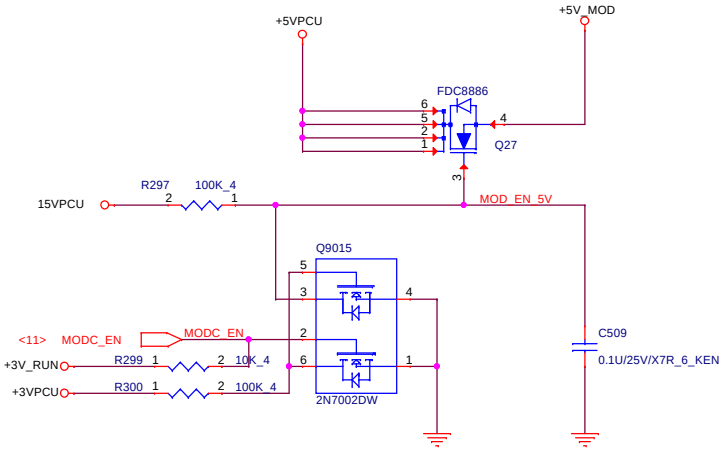
SATA ODD



Screw



Support Zero power ODD



Quanta Computer Inc.

PROJECT : RR3

Size	Document Number	Rev
	HDD/ ODD/HOLE	ES1

Date: Wednesday, March 06, 2013 Sheet 18 of 35

USB 3.0 on board x2

I continuous 1A
OC 1.5A

+5V_S5_USB — F2 2A/6VF_POLY — +5V_USB0
C173 0.1U/10V_4
R183 33K_4
<10> USB_OC0#
R182 47K/F_4

U13 *IP4220CZ6_NC
USBP0+ / USBP1+ / USBP0- / USBP1- / +5V_S5

0221 Change F2,F3,F5,F6,F7 P/N to DK200TPU008
0226 Change F2,F3,F5,F6,F7 P/N to DK200TPU013

U15 PUSB3F4-TBR
USB3_TXP1_C / USB3_TXN1_C / USB3_RXP1 / USB3_RXN1

USB3.0
+5V_USB0
<10> USBP0- / USBP0+ — L19 — *EXC24CG900U_NC — LP5
USB3_RXN1 / USB3_RXP1 — *EXC24CG900U_NC
USB3_TXN1 C255 0.1U/10V_4 — USB3_TXN1_C
USB3_TXP1 C248 0.1U/10V_4 — USB3_TXP1_C — LP6 — *EXC24CG900U_NC
CN16 USB3.0 CONN
VBUS / D- / D+ / GND / SSRX- / SSRX+ / SSTX- / SSTX+ / GND
USB2.0 / USB 3.0

+5V_USB0
C158 0.1U/10V_4
C159 150U/10V
+5V_S5 — EC51 — *0.1U/10V_4_NC

I continuous 1A
OC 1.5A

+5V_S5_USB — F3 2A/6VF_POLY — +5V_USB1
C174 0.1U/10V_4
R185 33K_4
<10> USB_OC1#
R189 47K/F_4

U16 PUSB3F4-TBR
USB3_TXP2_C / USB3_TXN2_C / USB3_RXP2 / USB3_RXN2

USB3.0
+5V_USB1
<10> USBP1- / USBP1+ — L20 — *EXC24CG900U_NC — LP9
USB3_RXN2 / USB3_RXP2 — *EXC24CG900U_NC
USB3_TXN2 C363 0.1U/10V_4 — USB3_TXN2_C
USB3_TXP2 C370 0.1U/10V_4 — USB3_TXP2_C — LP8 — *EXC24CG900U_NC
CN18 USB3.0 CONN
VBUS / D- / D+ / GND / SSRX- / SSRX+ / SSTX- / SSTX+ / GND
USB2.0 / USB 3.0

+5V_USB1
C182 0.1U/10V_4
C172 150U/10V

+5V_S5_USB — Q36 AO4468 — +5VPCU
15VPCU — R592 100K_4
Q37 2N7002DW
<23> USB_EN — USB_EN — R593 10K_4 — +3VPCU — R594 100K_4
C653 0.1U/25V/X7R_6_KEN

+5V_S5_USB — Q9017 2N7002DW
R9543 22_6
<23> USB_EN — USB_EN
VIN — R9541 1M_4
R9542 1M_4

0220 Add Q9017(BAM70020003), R9541,R9542(CS51002JB21),
R9543(CS03303J941)
0226 Change R9543 P/N to CS02203J945

I continuous 1A
OC 1.5A

+5V_S5_USB — F5 2A/6VF_POLY — +5V_USB2
C2 0.1U/10V_4
R1 33K_4
<10> USB_OC2# — USB_OC2#
R2 47K/F_4

I continuous 1A
OC 1.5A

+5V_S5_USB — F6 2A/6VF_POLY — +5V_USB3
C3 0.1U/10V_4
R4 33K_4
<10> USB_OC3# — USB_OC3#
R3 47K/F_4

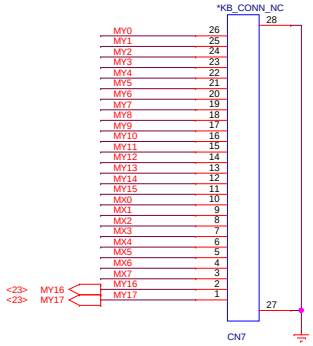
I continuous 1A
OC 1.5A

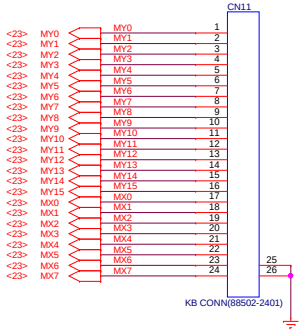
+5V_S5_USB — F7 2A/6VF_POLY — +5V_USB4
C4 0.1U/10V_4
R7 33K_4
<10> USB_OC4# — USB_OC4#
R5 47K/F_4

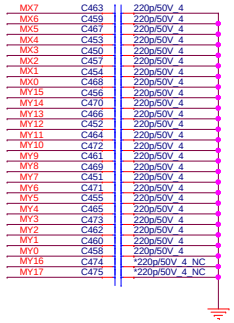
Quanta Computer Inc.
PROJECT : RR3

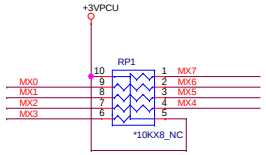
Size	Document Number	Rev
	USB port	ES1
Date: Wednesday, March 06, 2013	Sheet 19 of 35	

Keyboard(KBC)





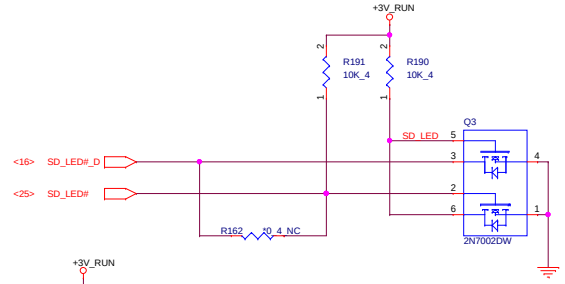




LED

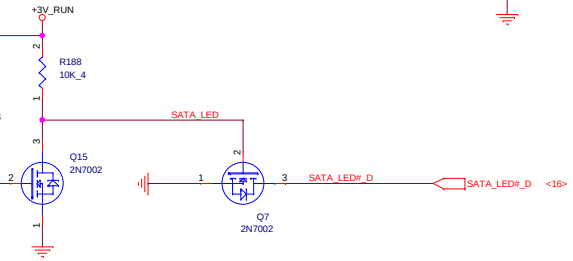
20

SD LED



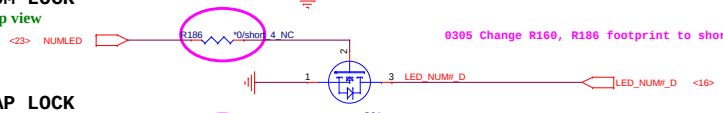
HDD/ODD

Top view



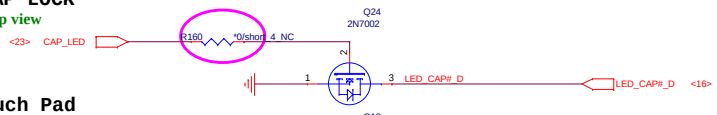
NUM LOCK

Top view



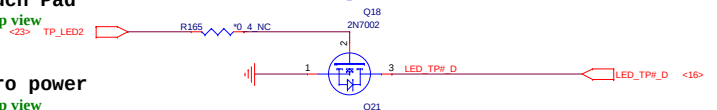
CAP LOCK

Top view



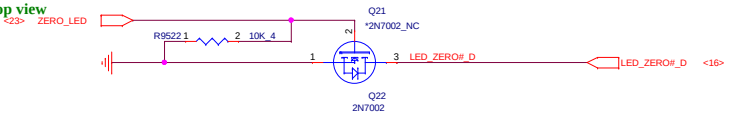
Touch Pad

Top view



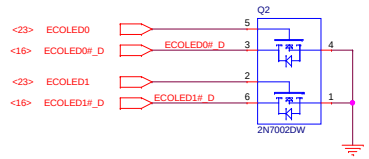
Zero power

Top view



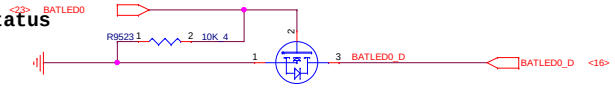
ECO button

Top view



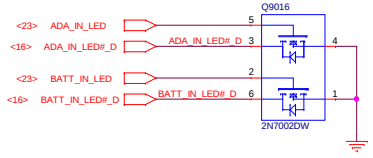
Battery Status

Top view



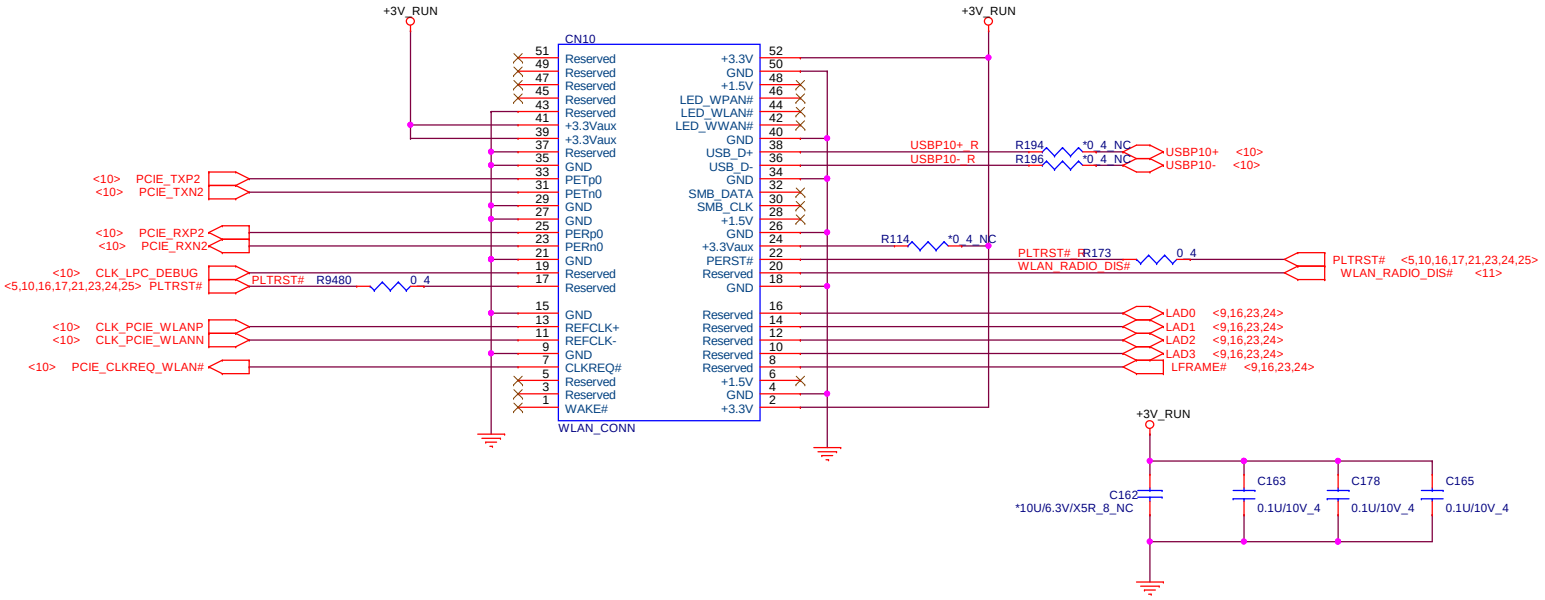
Power Status

Top view

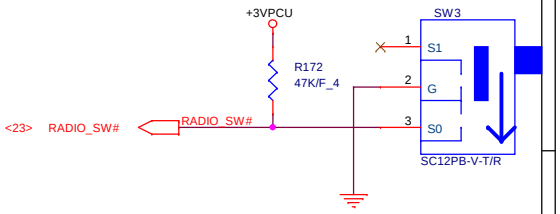


Quanta Computer Inc.		
PROJECT : RR3		
Size	Document Number: KB/TP/LED	Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 20 of 35	

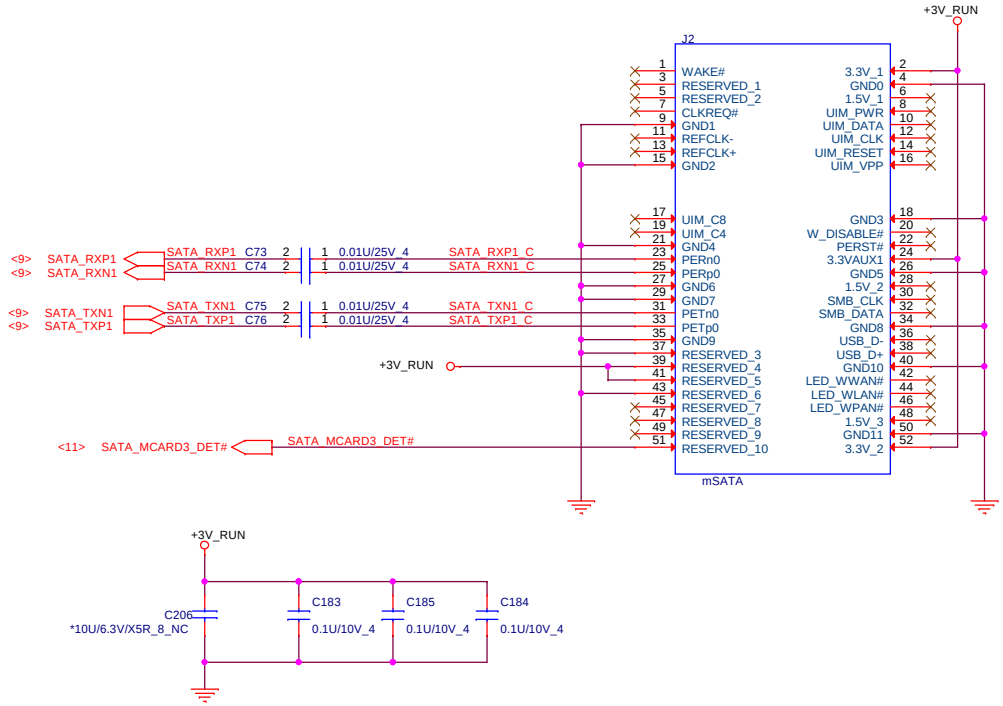
MINI CARD (WLAN)



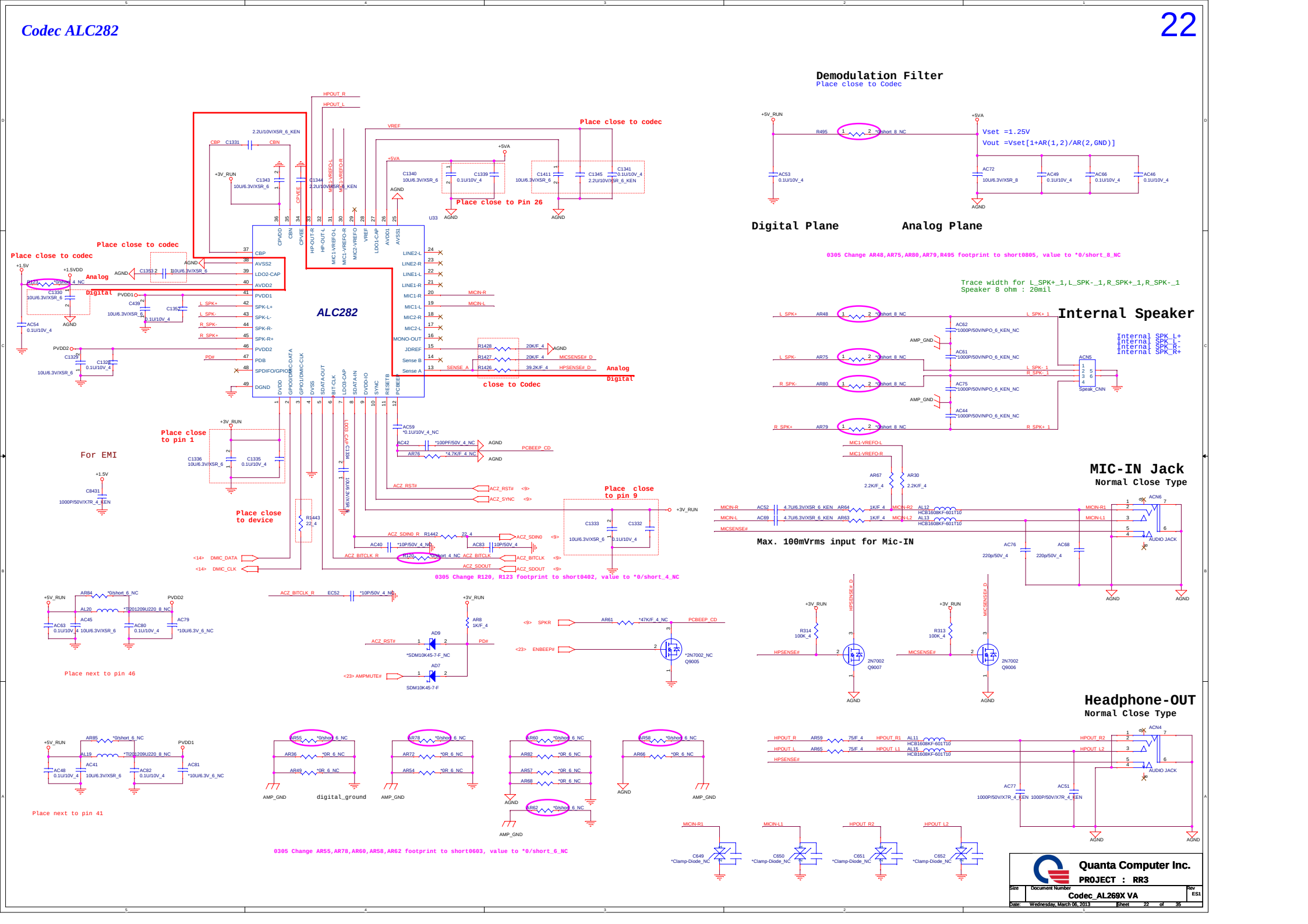
Radio wave SW

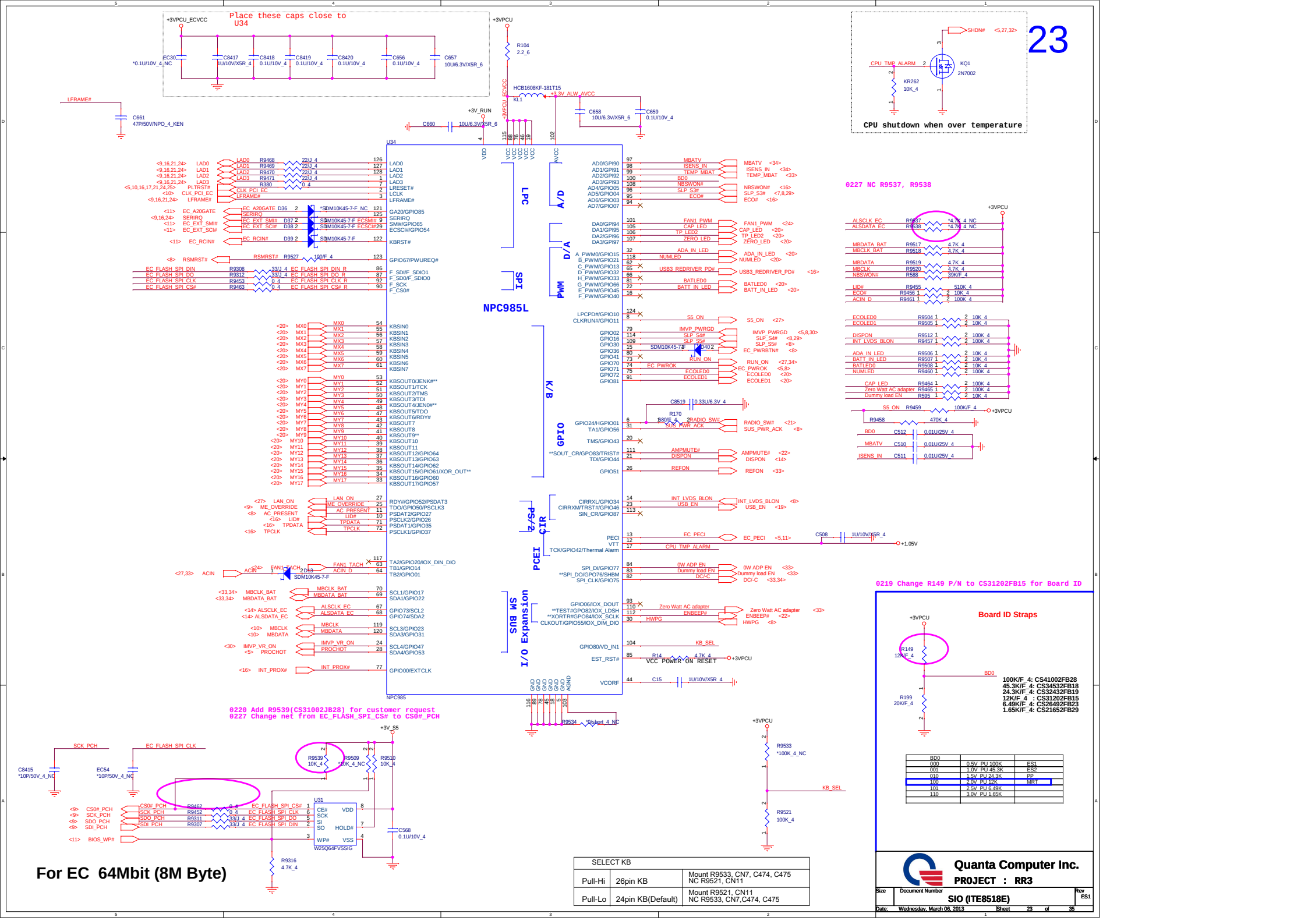


mSATA Connector

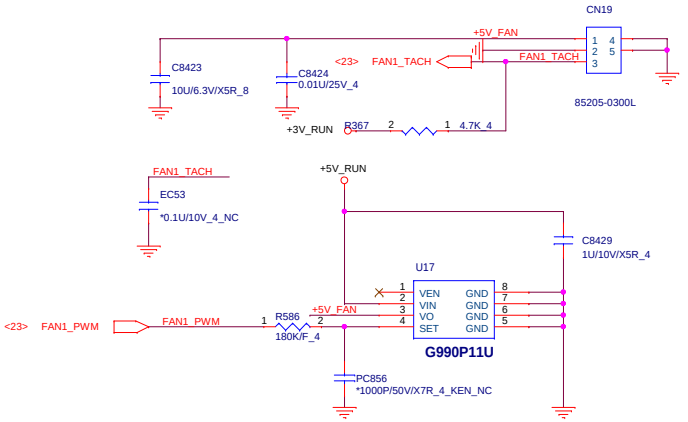


Quanta Computer Inc.		
PROJECT : RR3		
Size	Document Number: MINI CARD(WLAN)	Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 21 of 35	

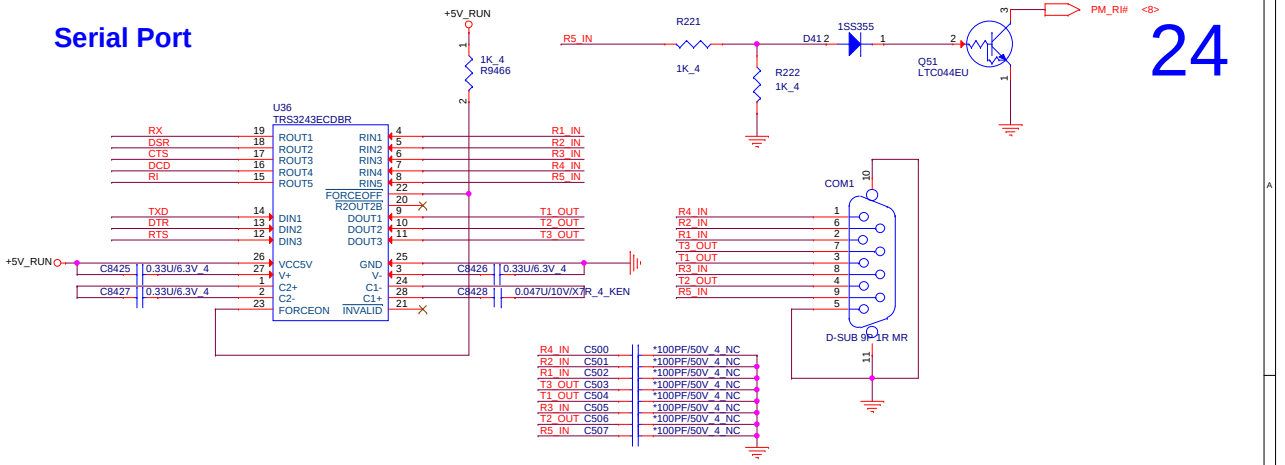

Demodulation Filter
Place close to Codec
Vset =1.25V
Vout =Vset[1+AR(1,2)/AR(2,GND)]
Digital Plane
Analog Plane
0305 Change AR48,AR75,AR80,AR79,R495 footprint to short0805, value to *0/short_8_NC
Trace width for L_SPK+_1,L_SPK-_1,R_SPK+_1,R_SPK-_1
Speaker 8 ohm : 20mil
Internal Speaker
Internal SPK_L+
Internal SPK_L-
Internal SPK_R-
Internal SPK_R+
ALC282
Place close to codec
Analog
Digital
close to Codec
Place close to Pin 26
MIC-IN Jack
Normal Close Type
Max. 100mVrms input for Mic-IN
Headphone-OUT
Normal Close Type
For EMI
Place close to pin 1
Place close to device
Place close to pin 9
Place next to pin 46
Place next to pin 41
0305 Change R120, R123 footprint to short0402, value to *0/short_4_NC
0305 Change AR55,AR78,AR60,AR58,AR62 footprint to short0603, value to *0/short_6_NC
Quanta Computer Inc.
PROJECT : RR3
Codec_AL269X VA
Wednesday, March 06, 2013
Sheet 22 of 35


Place these caps close to U34
+3VPCU_ECVCC
+3VPCU
EC30 *0.1U/10V_4_NC
C8417 1U/10V/X5R_4
C8418 0.1U/10V_4
C8419 0.1U/10V_4
C8420 0.1U/10V_4
C656 0.1U/10V_4
C657 10U/6.3V/X5R_6
R104 2.2_6
HCB1608KF-181T15
KL1
+3.3V_ALW_AVCC
+3VPCU_ECVCC
C658 10U/6.3V/X5R_6
C659 0.1U/10V_4
+3V_RUN
C660 10U/6.3V/X5R_6
LFRAME#
C661 47P/50V/NPO_4_KEN
U34
NPC985L
LPC
A/D
D/A
PWM
SPI
K/B
GPIO
PS/2
CIR
PCEI
SM BUS
I/O Expansion
NPC985
SHDN# <5,27,32>
CPU_TMP_ALARM
KQ1 2N7002
KR262 10K_4
CPU shutdown when over temperature
23
0227 NC R9537, R9538
0219 Change R149 P/N to CS31202FB15 for Board ID
Board ID Straps
R149 12K/F_4
R199 20K/F_4
100K/F_4: CS41002FB28
45.3K/F_4: CS34532FB18
24.3K/F_4: CS32432FB19
12K/F_4 : CS31202FB15
6.49K/F_4: CS26492FB23
1.65K/F_4: CS21652FB29
BD0 000 0.5V PU 100K ES1
001 1.0V PU 45.3K ES2
010 1.5V PU 24.3K PP
100 2.0V PU 12K MRT
101 2.5V PU 6.49K
110 3.0V PU 1.65K
0220 Add R9539(CS31002JB28) for customer request
0227 Change net from EC_FLASH_SPI_CS# to CS0#_PCH
For EC 64Mbit (8M Byte)
U31 W25Q64FVSSIG
SELECT KB
Pull-Hi 26pin KB Mount R9533, CN7, C474, C475 NC R9521, CN11
Pull-Lo 24pin KB(Default) Mount R9521, CN11 NC R9533, CN7,C474, C475
Quanta Computer Inc.
PROJECT : RR3
SIO (ITE8518E)
Size Document Number Rev ES1
Date: Wednesday, March 06, 2013 Sheet 23 of 35

CPU FAN CTRL

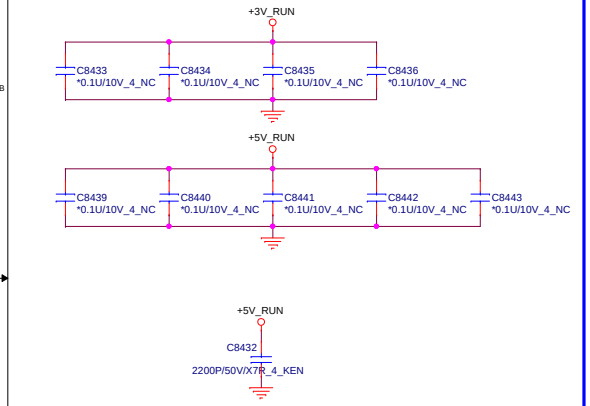


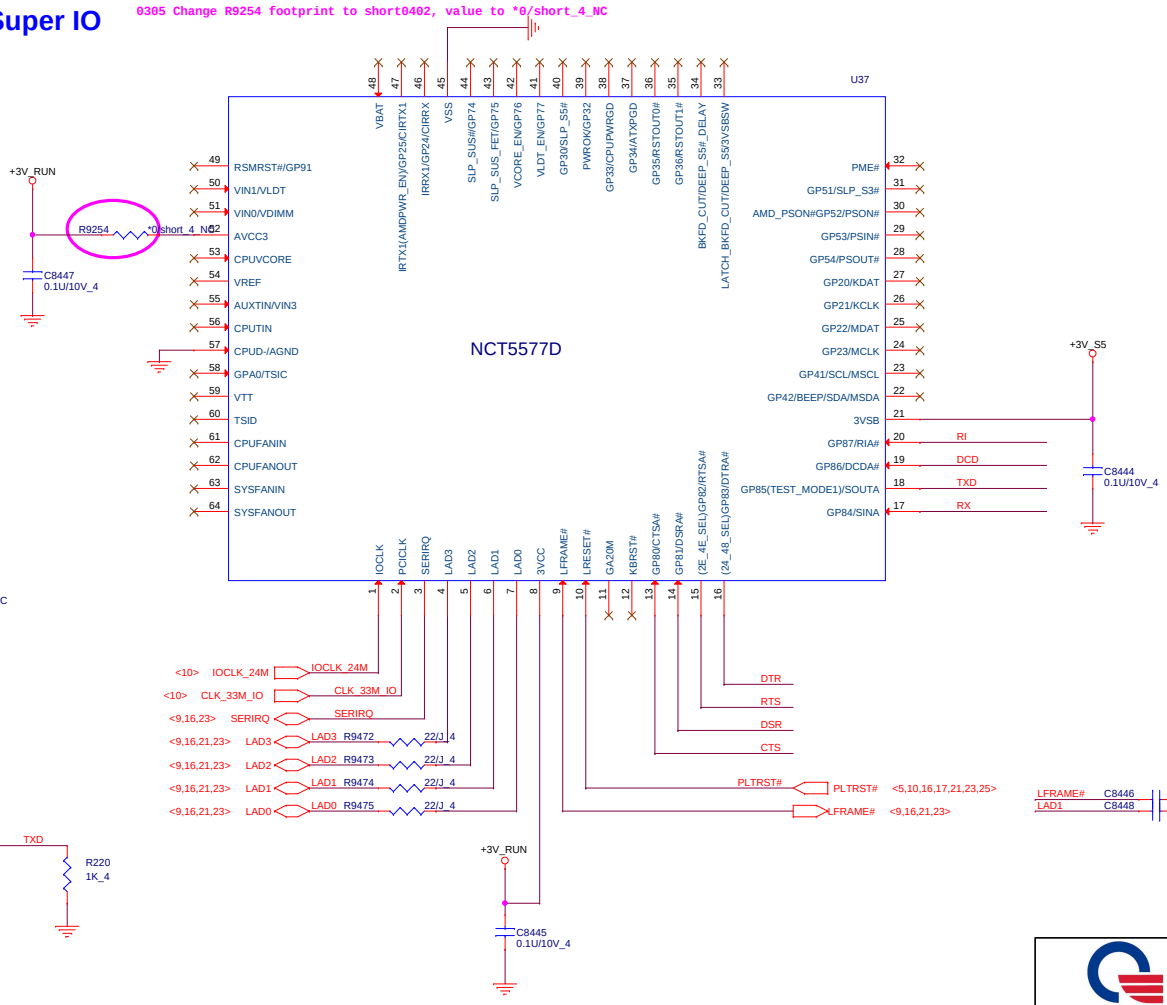
Serial Port

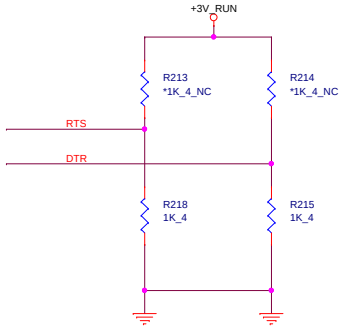


Super IO

0305 Change R9254 footprint to short0402, value to *0/short_4_NC







TXD R220 1K_4

PIN	Name	0	1
15	RTS	2E	4E
16	DTR	24MHz	48MHz
18	TXD	DISABLE	ENABLE

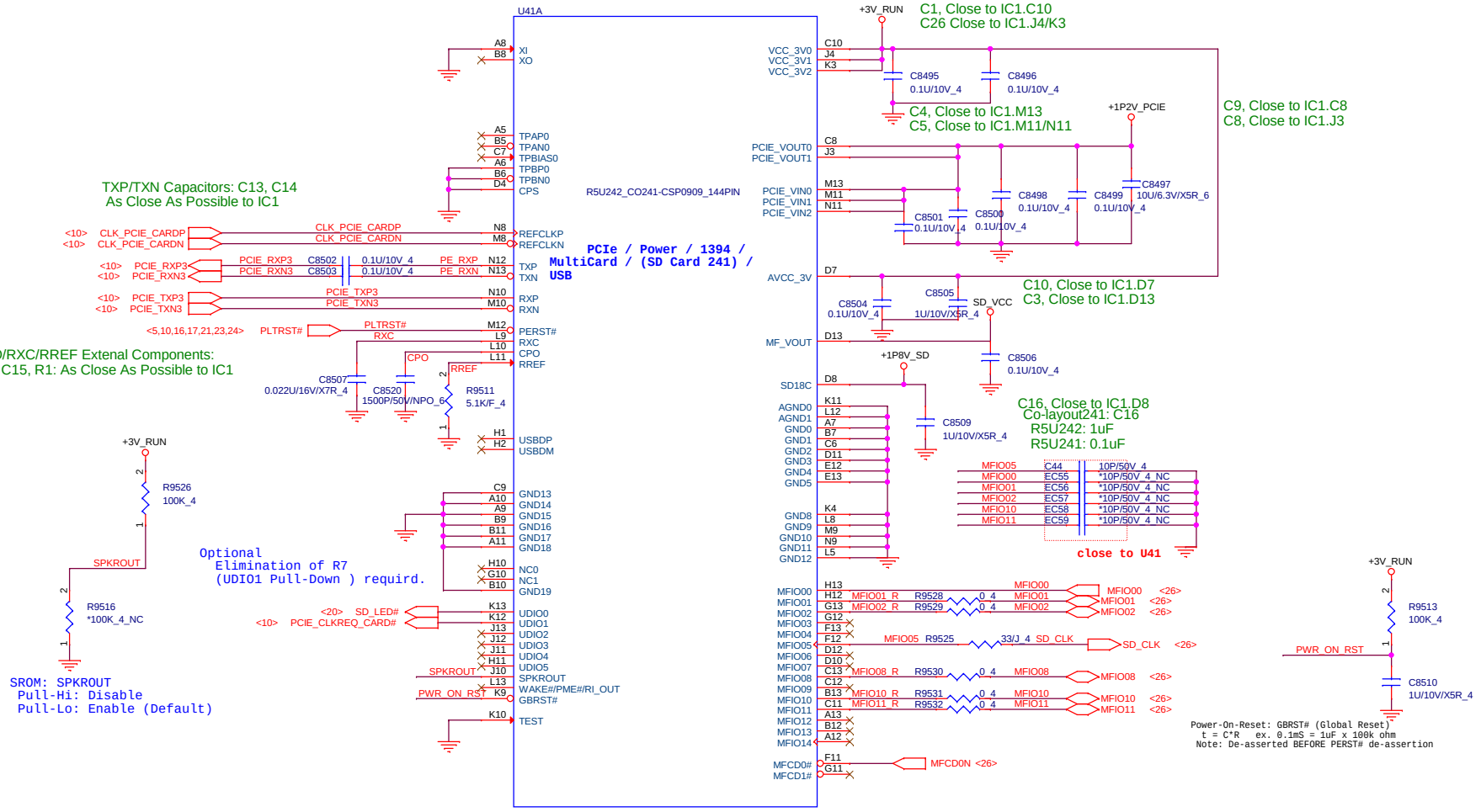
+3V_RUN C8445 0.1U/10V_4

Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	FAN	ES1

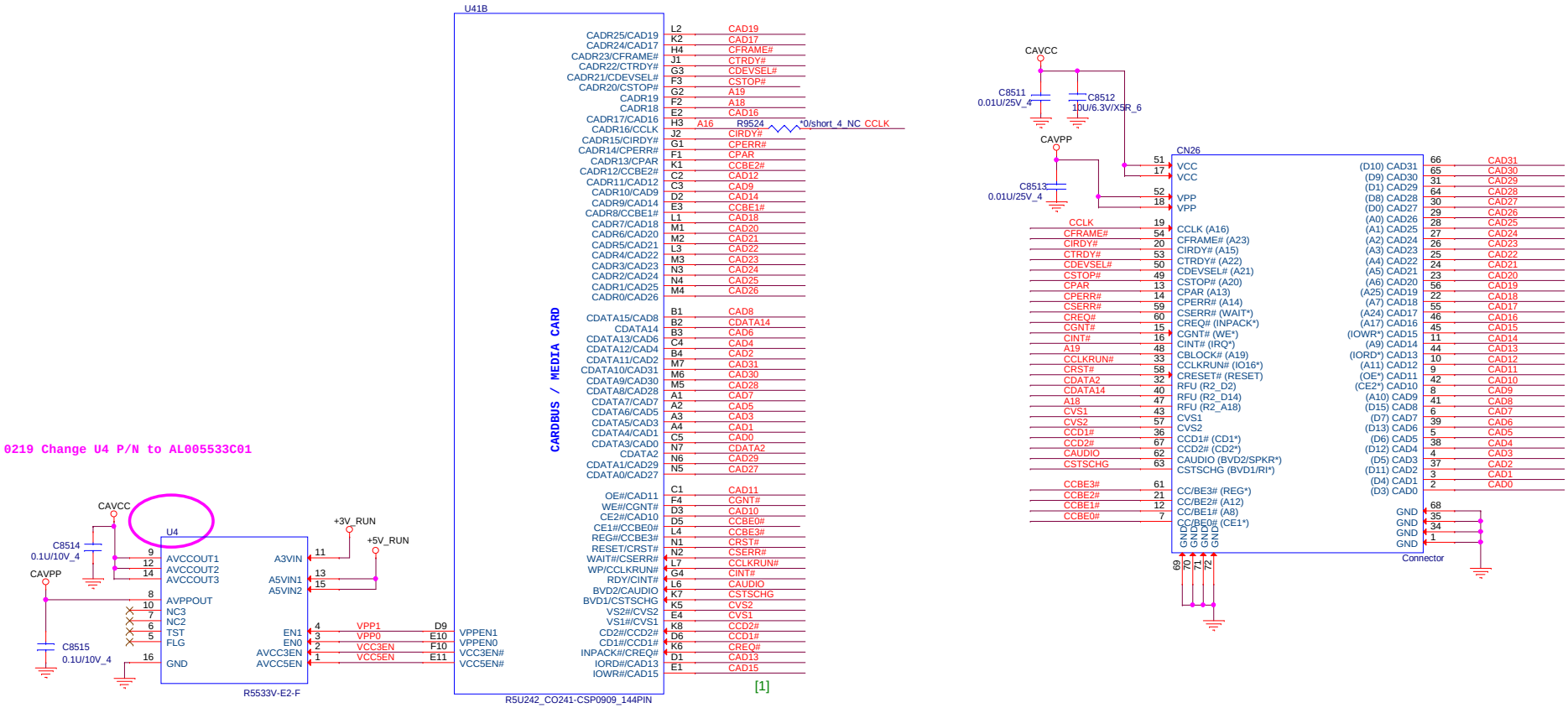
Date: Wednesday, March 06, 2013 Sheet 24 of 35

Card Bus



Quanta Computer Inc.			
PROJECT : RR3			
Size	Document Number		Rev
	CARD BUS 1/2(R5U242)		ES1
Date: Wednesday, March 06, 2013	Sheet 25 of 35		

0219 Change U4 P/N to AL005533C01

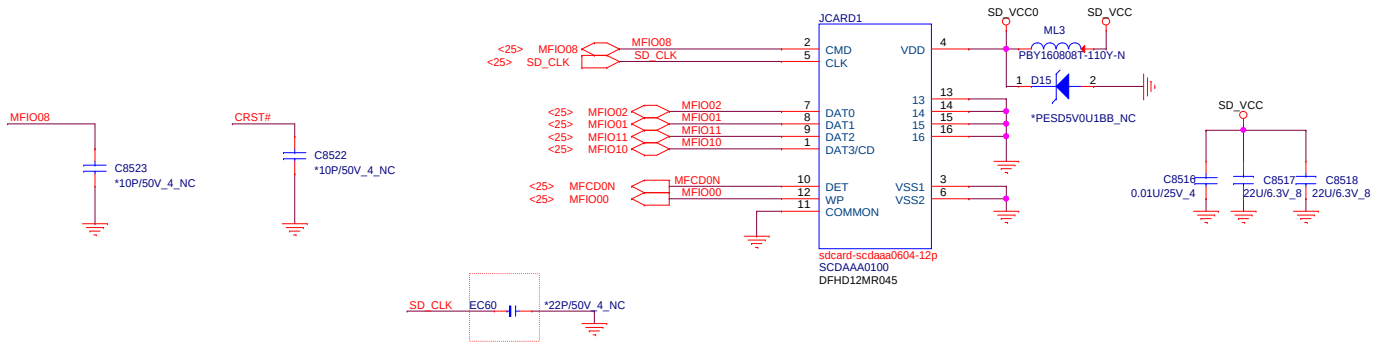


[1]: USB DP/DM PAIR: 90 ohm Differential Impedance

[2] R28: Close to IC1, CLK Series Termination Resistor

[3] C34,C36: Close to PCCARD_SLOT

U1.9 (SD_CLK): Mount at trace end to avoid signal refrection.



MFIO Pin Assignment Table

MFIO	SD8	XD	MS8
00	WP	D7	BS
01	D1	D6	-
02	D0	D5	D1
03	D7	D4	-
04	D6	D3	D5
05	**CLK**	D2	D0
06	-	D1	-
07	D5	D0	D4
08	CMD	WP#	D2
09	D4	WE#	D6
10	D3	ALE	D3
11	D2	CLE	-
12	-	CE#	-
13	-	RE#	D7
14	-	R/B#	**CLK**

Quanta Computer Inc.

PROJECT : RR3

Size	Document Number	Rev
	CARD BUS 2/2(R5U242)	ES1

Date: Wednesday, March 06, 2013 Sheet 26 of 35

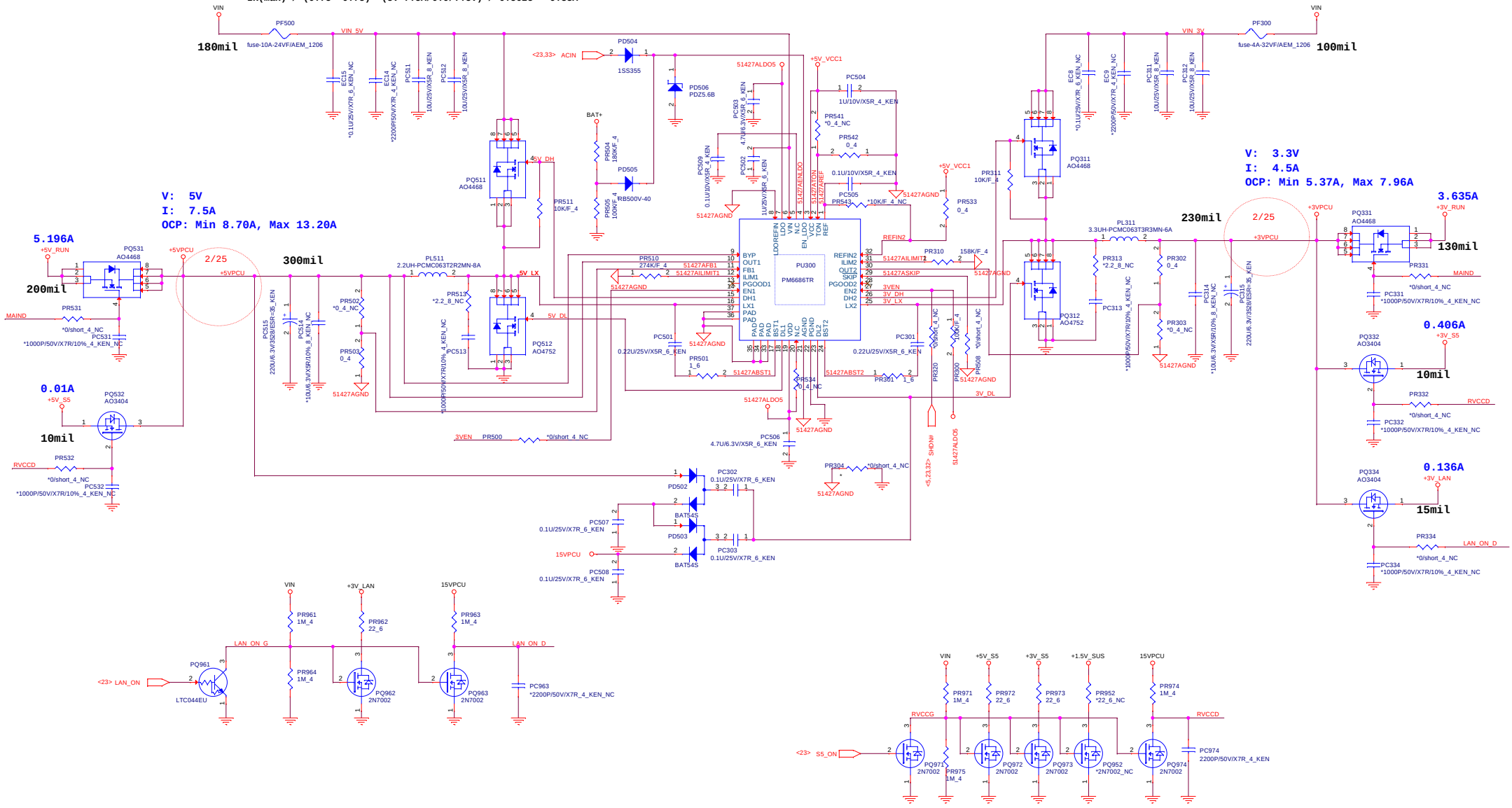
3.3V & 5V

Fuse Rating =
IR(max) / (0.75* 0.75) =(5V*7.5A/0.9/7.5V) / 0.5625 = 9.88A

Fuse Rating =
IR(max) / (0.75* 0.75) =(3.3V*4.5A/0.9/7.5V) / 0.5625 = 3.91A

V: 5V
I: 7.5A
OCP: Min 8.70A, Max 13.20A

V: 3.3V
I: 4.5A
OCP: Min 5.37A, Max 7.96A



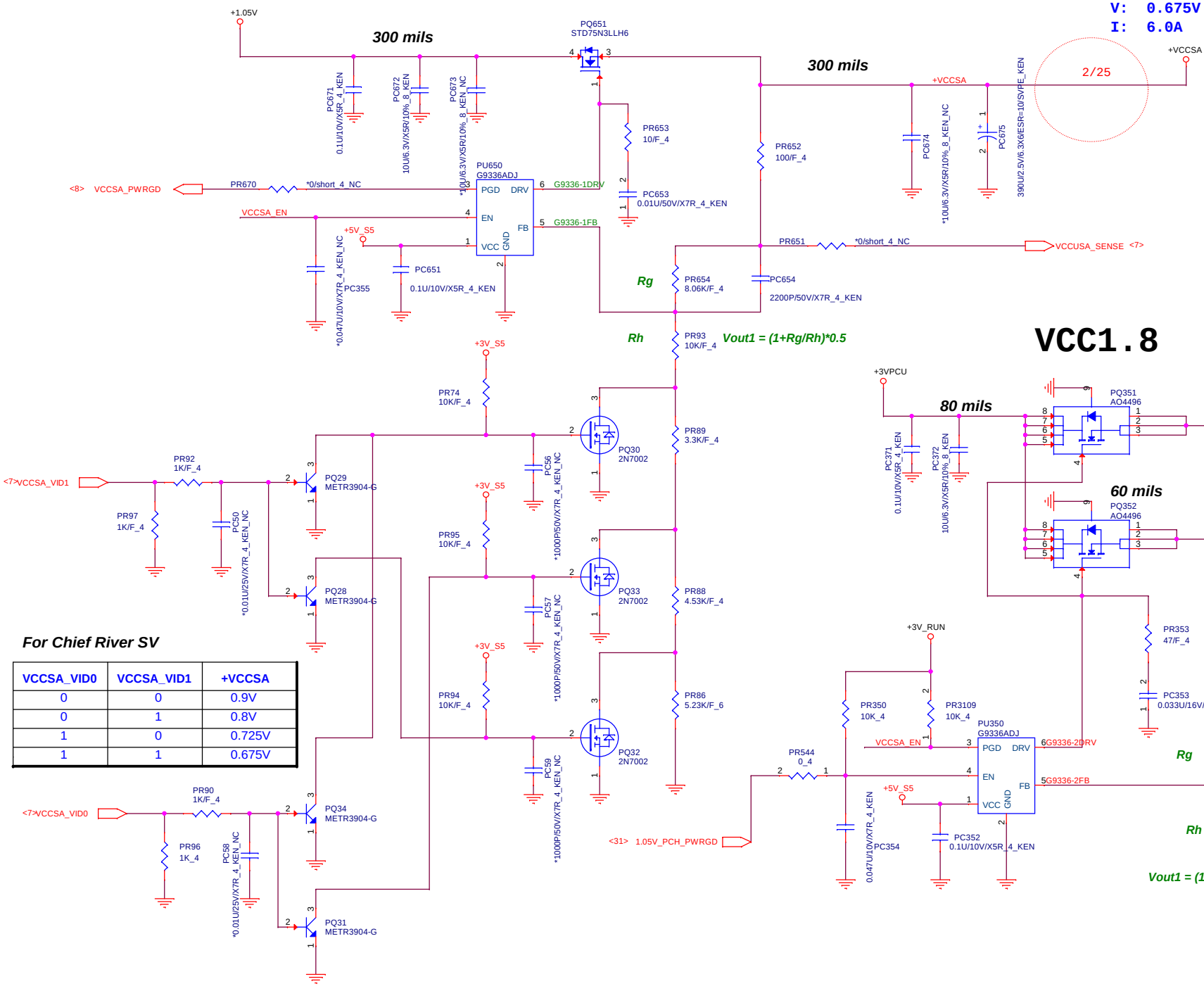
Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	3VPCU&5VPCU(PM6686TR)	ES1

Date: Wednesday, March 06, 2013 Sheet 27 of 35

+VCCSA

V: 0.675V to 0.9V
I: 6.0A

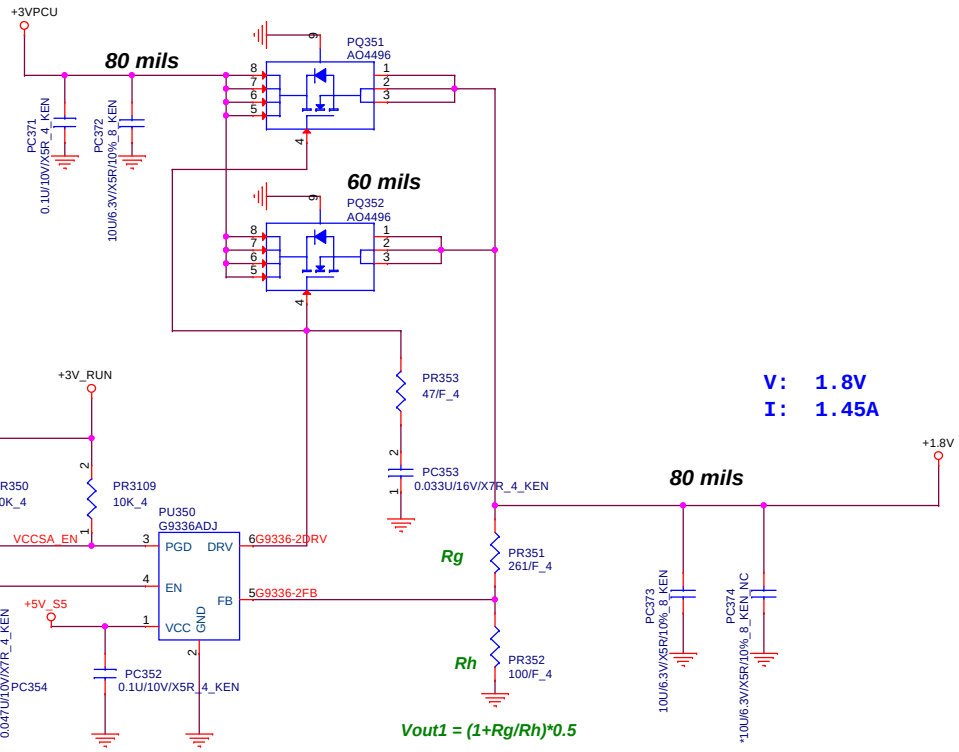


For Chief River SV

VCCSA_VID0	VCCSA_VID1	+VCCSA
0	0	0.9V
0	1	0.8V
1	0	0.725V
1	1	0.675V

VCC1.8

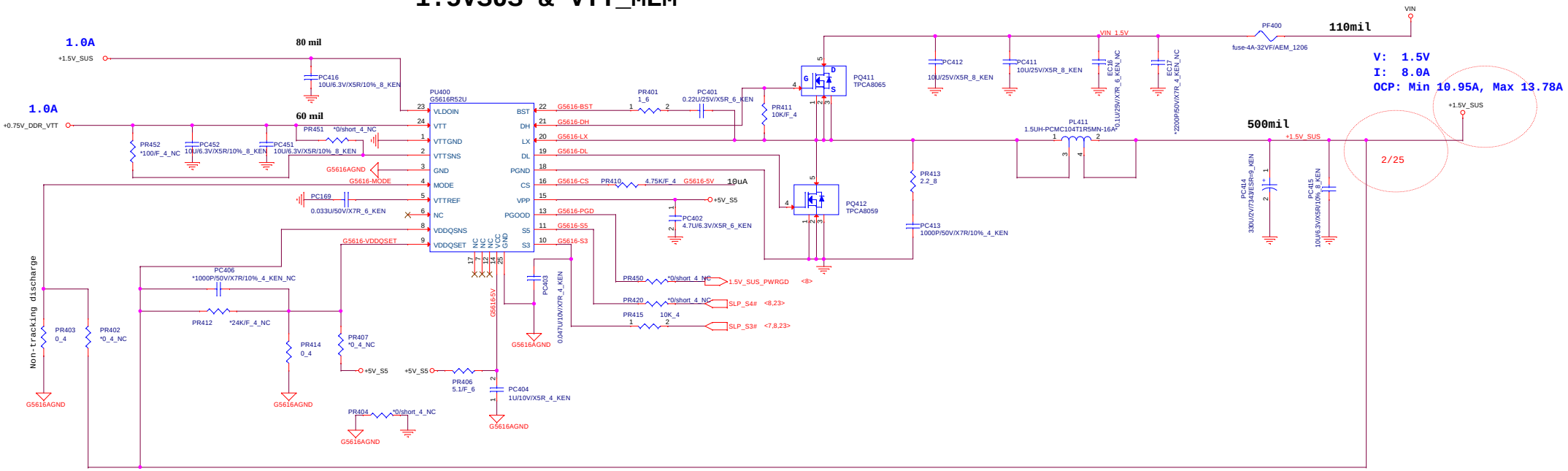
V: 1.8V
I: 1.45A



Quanta Computer Inc.	PROJECT : RR3	
Size	Document Number: POWER +VCCSA/VCC1.8V	Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 28 of 35	

1.5VSUS & VTT_MEM

Fuse Rating =
IR(max) / (0.75* 0.75) =(1.5V*8A/0.9/7.5V)/ 0.5625
= 3.16A



MODE	DISCHARGE MODE
+5V	No discharge
+1.35V	Tracking discharge
GND	Non-tracking discharge

VDDQSET	VDDQ(V)	VTTREF & VTT	NOTE
GND	1.5 fixed	VDDQSNS/2	DDR3
5V	1.8 fixed	VDDQSNS/2	DDR2
FB-Resistor	Adjustable	VDDQSNS/2	1.2V<VDDQ<3V

VTT = VTTREF = VDDQSNS/2 = 0.675V

STATE	S3	S5	1.5VSUS	VTTREF	VTT
S0	1	1	on	on	on
S3	0	1	on	on	off
S4/S5	0	0	off	off	off

Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	POWER 1.5VSUS/VTT_MEM	ES1

Date: Wednesday, March 06, 2013 Sheet 29 of 35

Fuse Rating =
IR(max) / (0.75* 0.75) =(1.23V*21.5A/0.9/7.5V) / 0.5625 = 6.97A

V:0V to 1.23V
I:33A max for GT2
I:21.5A TDC for GT2
OCP: Min 39.78A, Max 43.21A

Fuse Rating =
IR(max) / (0.75* 0.75) =
(1.05V*32A/0.9/7.5V) / 0.5625= 8.85A

Due to the PL111, PL121 and PL211 EOD, change to PCME103T-R36MSR.

V:0.3V to 1.23V
I:53A, Max
I:32A, TDC
OCP:Min 64.31A, Max 69.86A

GFX_CORE LL: -3.9mV/A for GT2

Parallel

Fsw Setting=300KHz

Place NTC close to the GFX_CORE inductor

Place NTC close to the VCORE Hot-Spot.

Parallel

Place NTC close to the GFX_CORE Hot-Spot.

VCORE LL: -1.9mV/A

Place NTC close to the VCORE inductor of phase 1

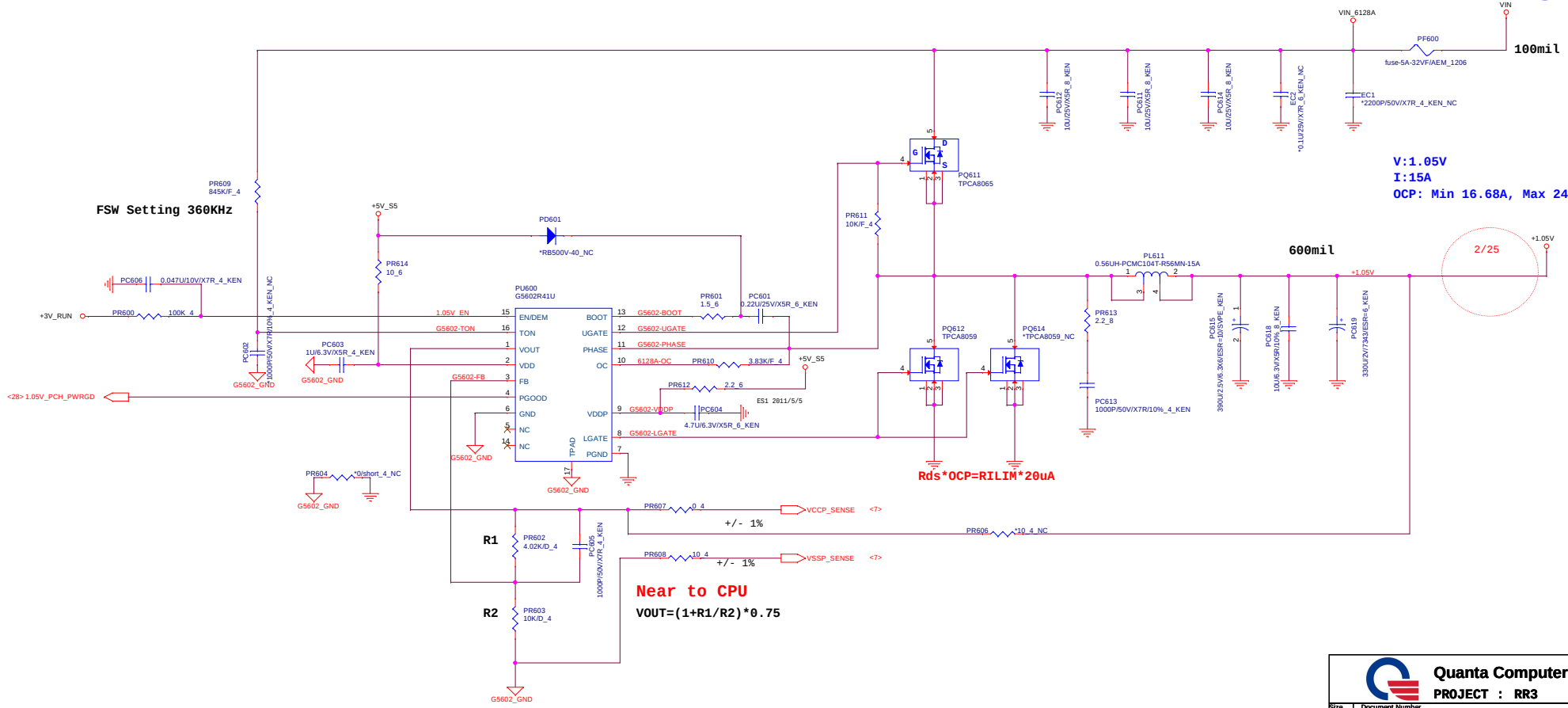
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	POWER +VCC_CORE (ISL95836)	ES1
Date: Wednesday, March 06, 2013	Sheet 30 of 35	

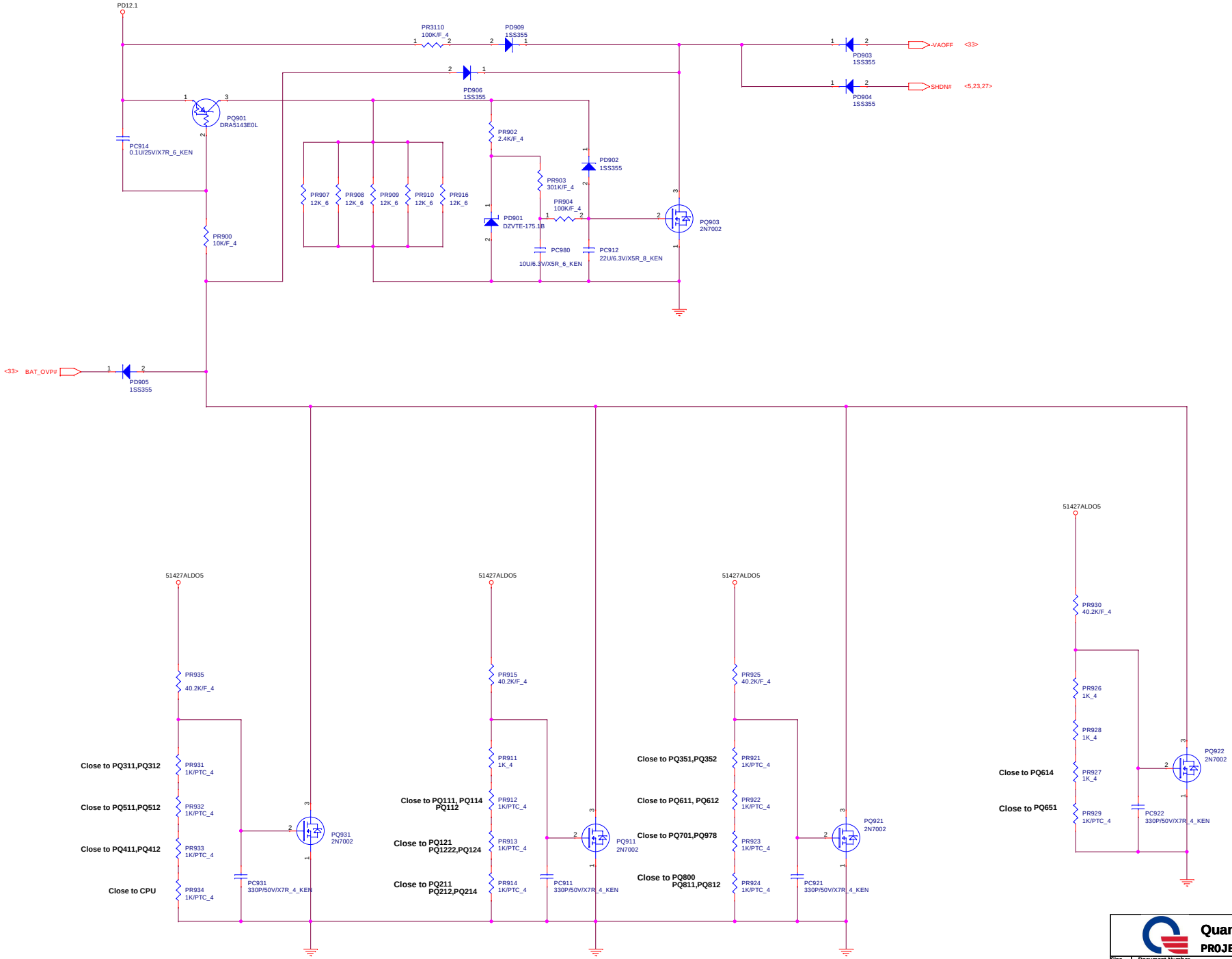
+1.05V / 15.0A

Fuse Rating =
IR(max) / (0.75* 0.75) =(1.05V*15/0.9/7.5V) / 0.5625
= 4.15A



Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	POWER +1.05V(G5602R41U_15A)	ES1
Date: Wednesday, March 06, 2013	Sheet 31 of 35	



Quanta Computer Inc.

PROJECT : RR3

Size	Document Number	Rev
	POWER Thermal Protection	ES1

Date: Wednesday, March 06, 2013 Sheet 32 of 35

AC ADAPTOR IN CONN

Fuse Rating =
IR(max) / (0.75* 0.75) =4.74A / 0.5625 = 8.427A

240mil

Support Zero Watt AC adapter

Adapter UVP

Max UVP Threshold VA+
=17.12V
Typ UVP Threshold VA+
=16.46V
Min UVP Threshold VA+
=15.41V

40mil

BATTERY OVP

Latched until remove both BAT and ADP

(Typ) trip point of BAT+=13.81V
(Max) trip point of BAT+=14.11V
(Min) trip point of BAT+=13.51V

AR1 Battery Connector

Fuse Rating =
IR(max) /(0.75*0.75) = 75W/7.5V / 0.5625 =17.78A

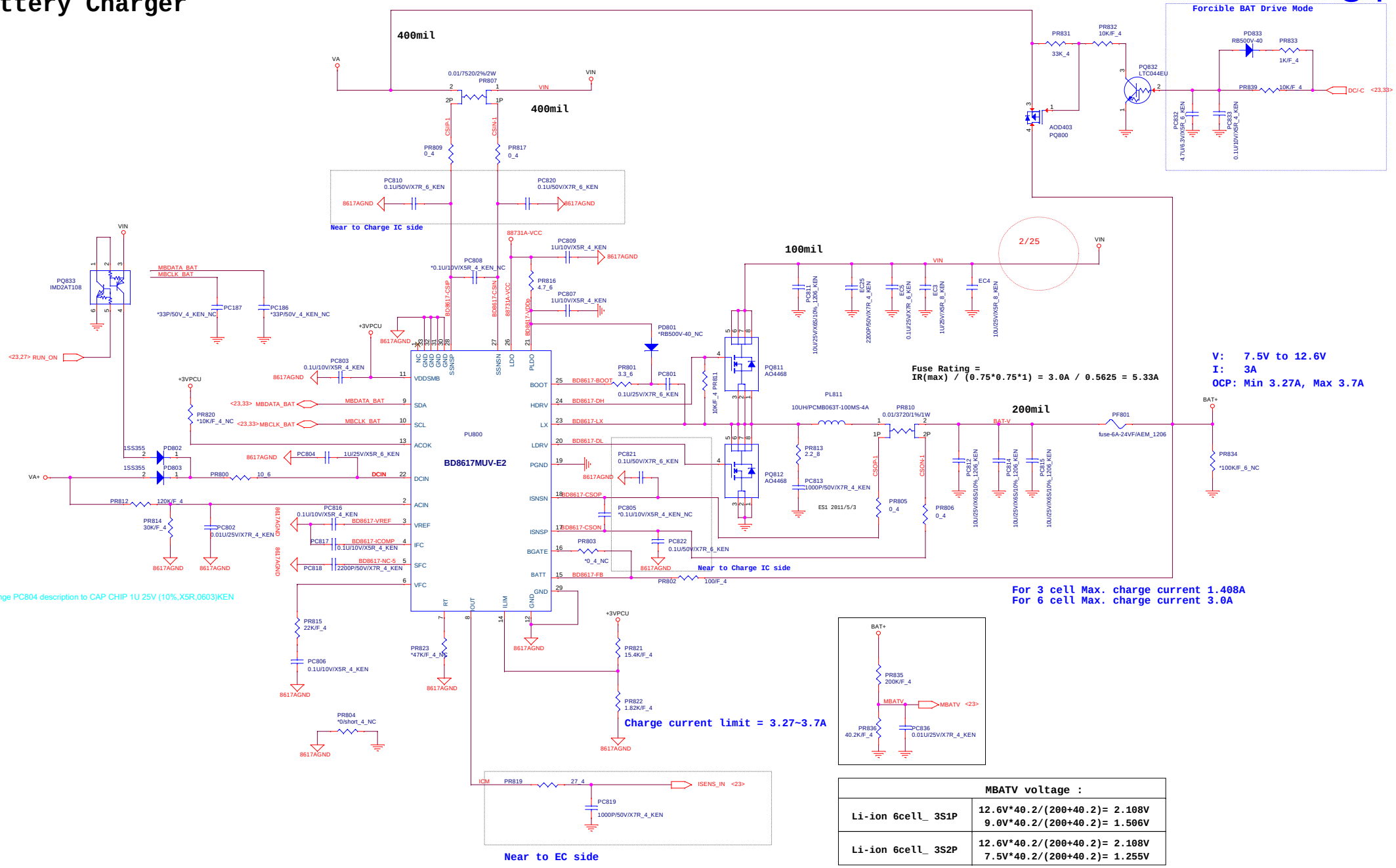
400mil

TEMP_MBAT voltage :		
	System Off	System On
Battery	0V	1.6V
Adapter	3.3V	3.3V
Battery+Adapter	1.6V	1.6V

	REFON Status
Adapter Only	HI
Adapter+Battery	HI
Battery+Power On	HI

Quanta Computer Inc.
PROJECT : RR3
Size | Document Number: POWER ADP IN / BAT IN | Rev: ES1
Date: Wednesday, March 06, 2013 | Sheet 33 of 35

Battery Charger

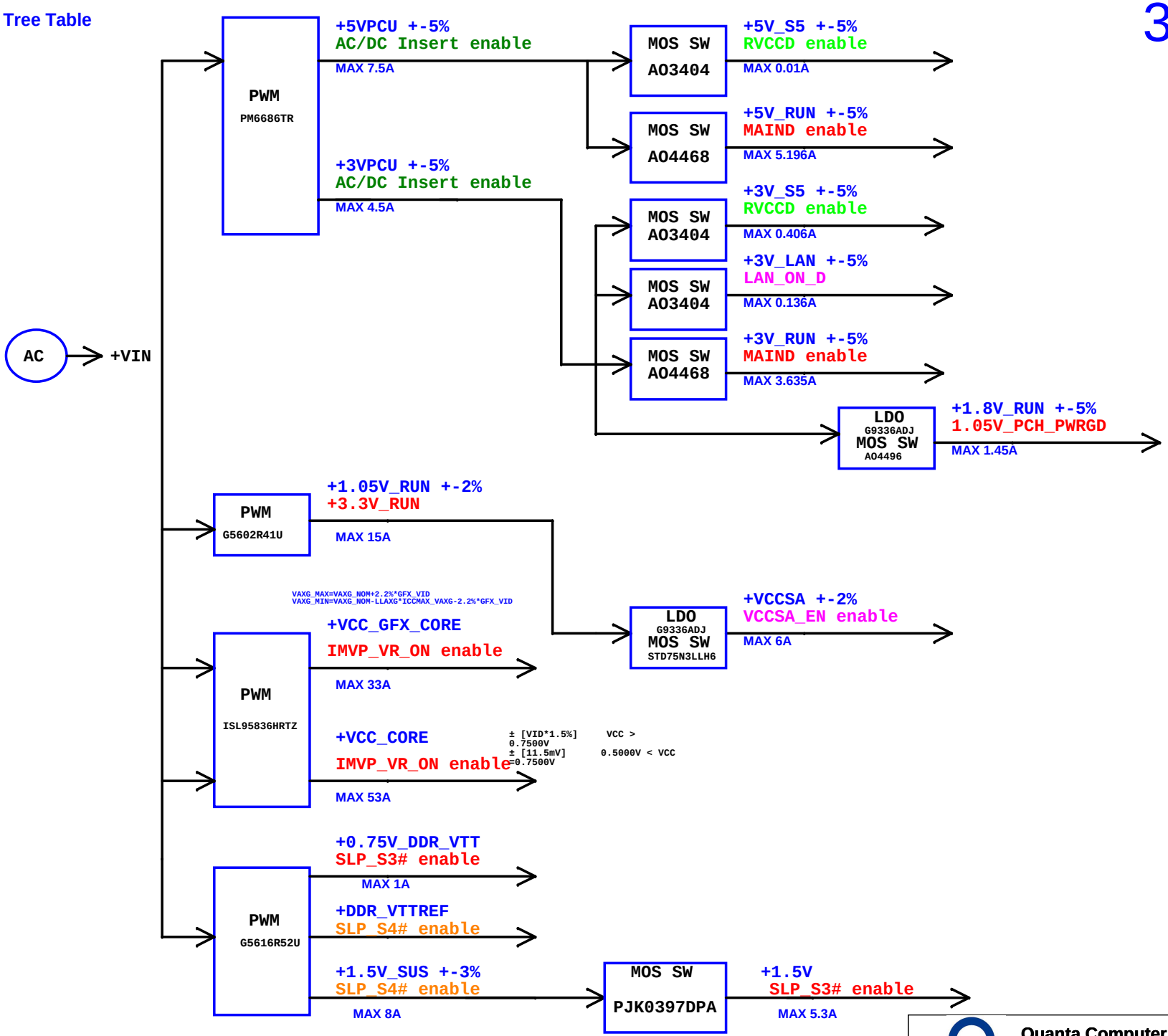


MBATV voltage :	
Li-ion 6cell_ 3S1P	12.6V*40.2/(200+40.2)= 2.108V 9.0V*40.2/(200+40.2)= 1.506V
Li-ion 6cell_ 3S2P	12.6V*40.2/(200+40.2)= 2.108V 7.5V*40.2/(200+40.2)= 1.255V

Quanta Computer Inc.
PROJECT : RR3

Size	Document Number	Rev
	POWER CHARGER (BD8617MUV-E2))	ES1
Date: Wednesday, March 06, 2013	Sheet 34 of 35	

Power Tree Table



Quanta Computer Inc.		
PROJECT : RR3		
Size	Document Number: Power Tree	Rev: ES1
Date: Wednesday, March 06, 2013	Sheet 35 of 35	