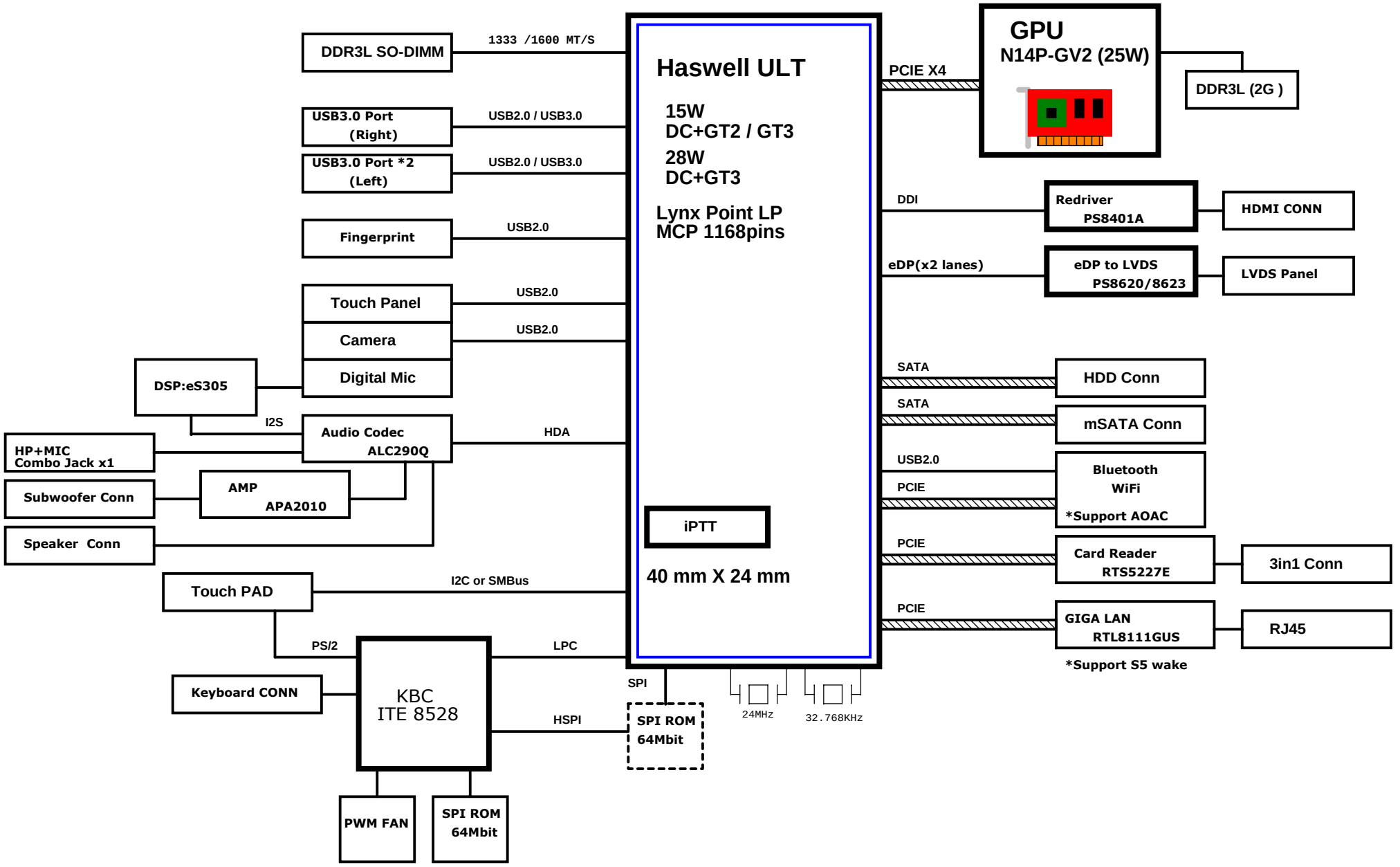
JW8B/C BLOCK DIAGRAM



Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	Block Diagram	A

Date: Friday, May 10, 2013 Sheet 1 of 57

HSIO Port	USB3.0	PCIE	SATA
1	USB3.0_1 CN6		
2	USB3.0_2 CN4		
3	USB3.0_3 CN5	PCIE1 X	
4	USB3.0_4 X	PCIE2 Card Reader	
5		PCIE3 GIGA LAN	
6		PCIE4 WIFI	
7		PCIE5 GPU 4X	
8		PCIE5 GPU 4X	
9		PCIE5 GPU 4X	
10		PCIE5 GPU 4X	
11		PCIE6 X	SATA3 X
12		PCIE6 X	SATA2 mSATA
13		PCIE6 X	SATA1 HDD
14		PCIE6 X	SATA0 X

PCIE CLK
CLK0 X
CLK1 Card Reader
CLK2 GIGA LAN
CLK3 WIFI
CLK4 GPU 4X
CLK5 X

USB2.0
USB2.0_0 CN4
USB2.0_1 CN6
USB2.0_2 CN5
USB2.0_3 Finger Print
USB2.0_4 Camera
USB2.0_5 eTP
USB2.0_6 Blue Tooth
USB2.0_7 Touch Screen

Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	PORT ASSIGNMENT	A

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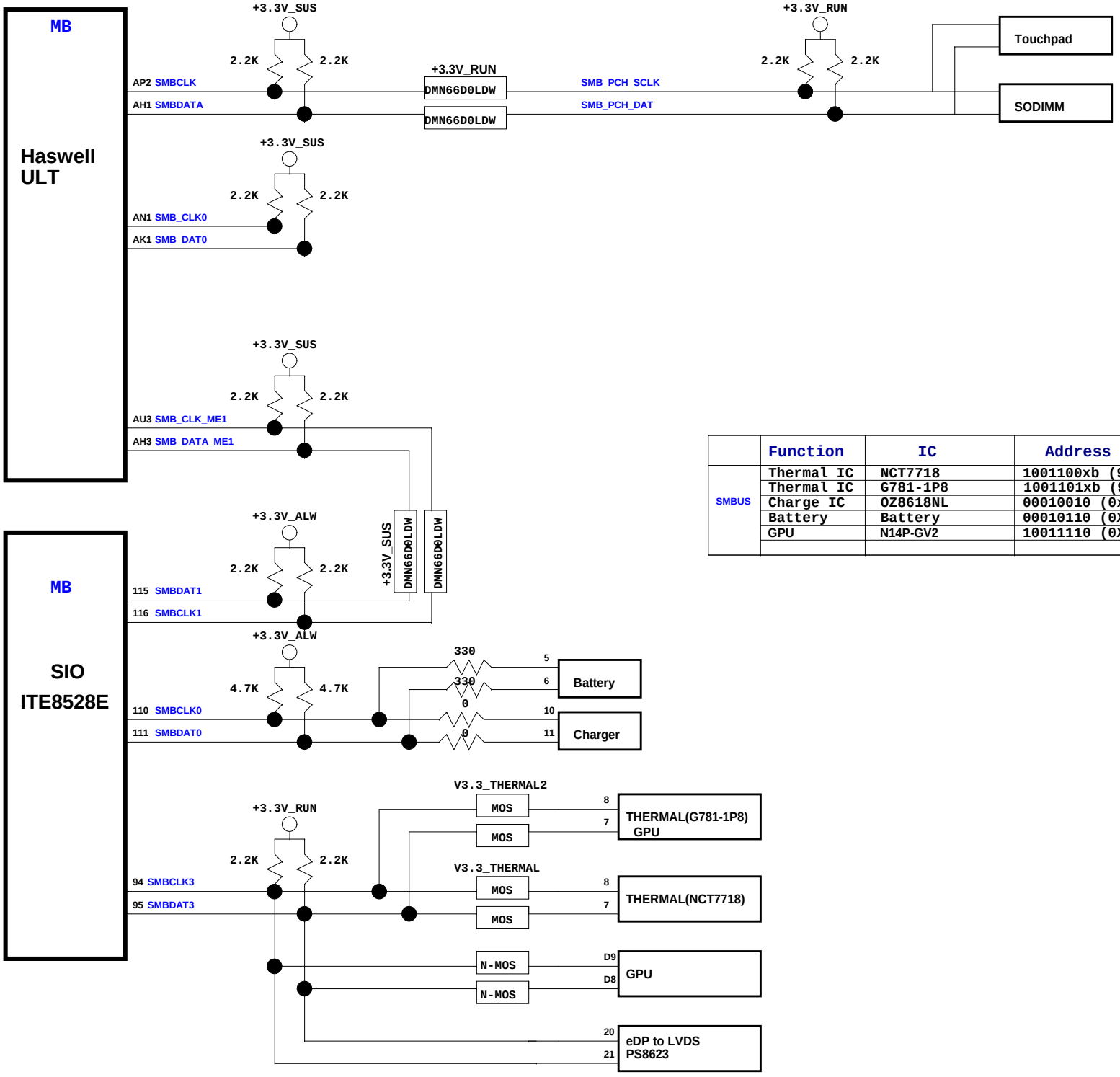

	Function	IC	Address
SMBUS	Thermal IC	NCT7718	1001100xb (98h)
	Thermal IC	G781-1P8	1001101xb (9Ah)
	Charge IC	OZ8618NL	00010010 (0x12h)
	Battery	Battery	00010110 (0X16h)
	GPU	N14P-GV2	10011110 (0X9Eh)

Quanta Computer Inc.
PROJECT : JW8B

Size	Document Number	Rev
	SMBUS	A

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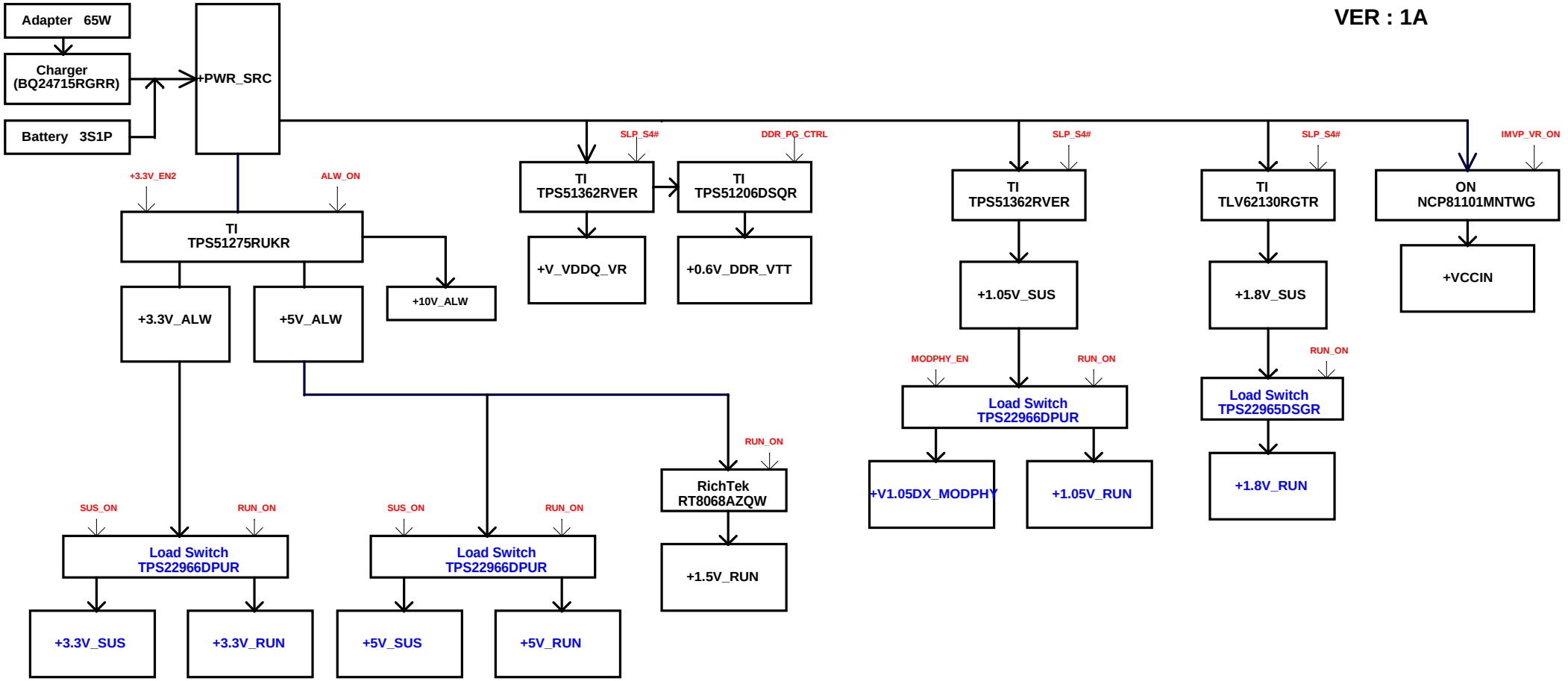
VER : 1A



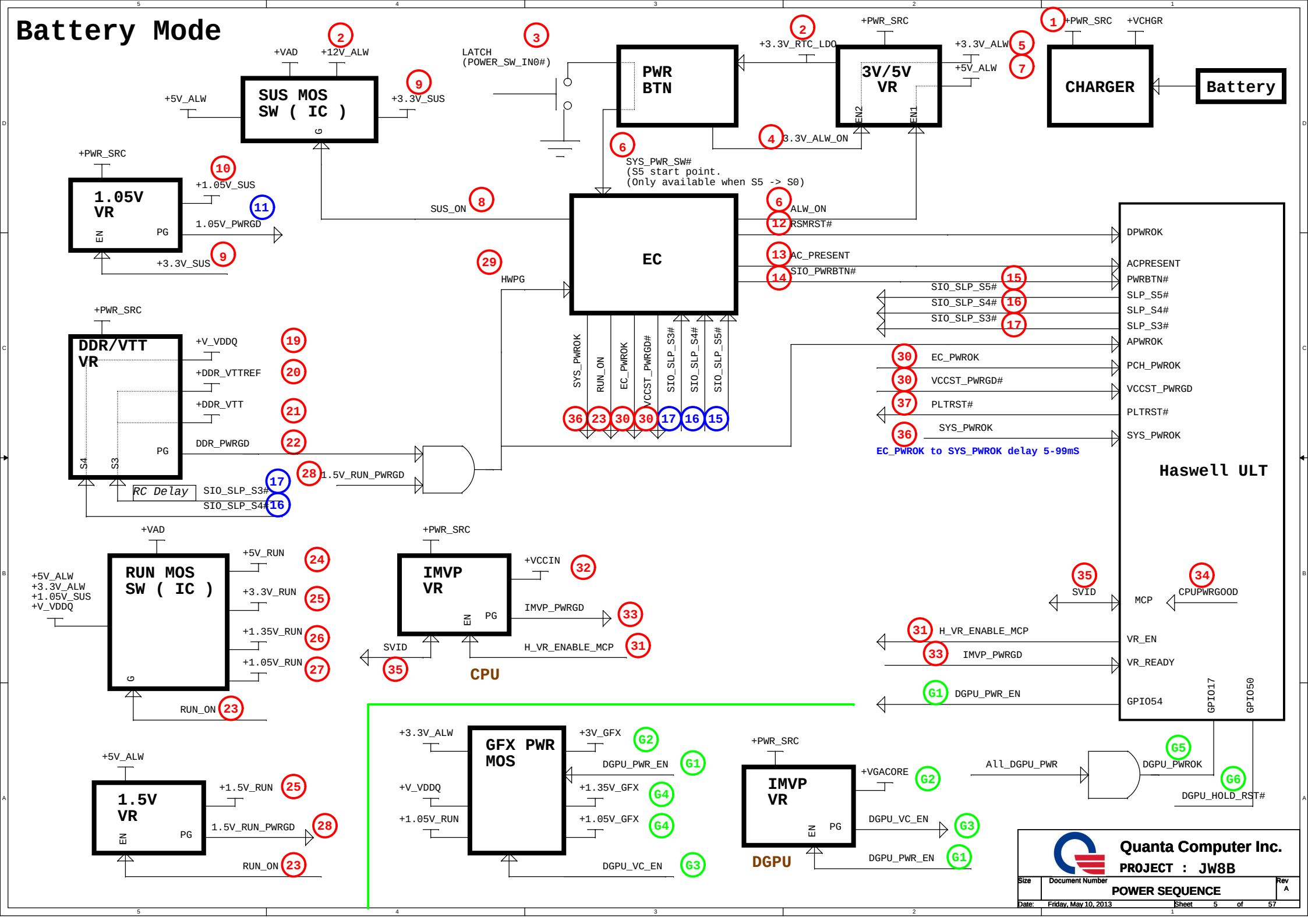
Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	Power Block Diagram	A

Date: Friday, May 10, 2013 Sheet 4 of 57

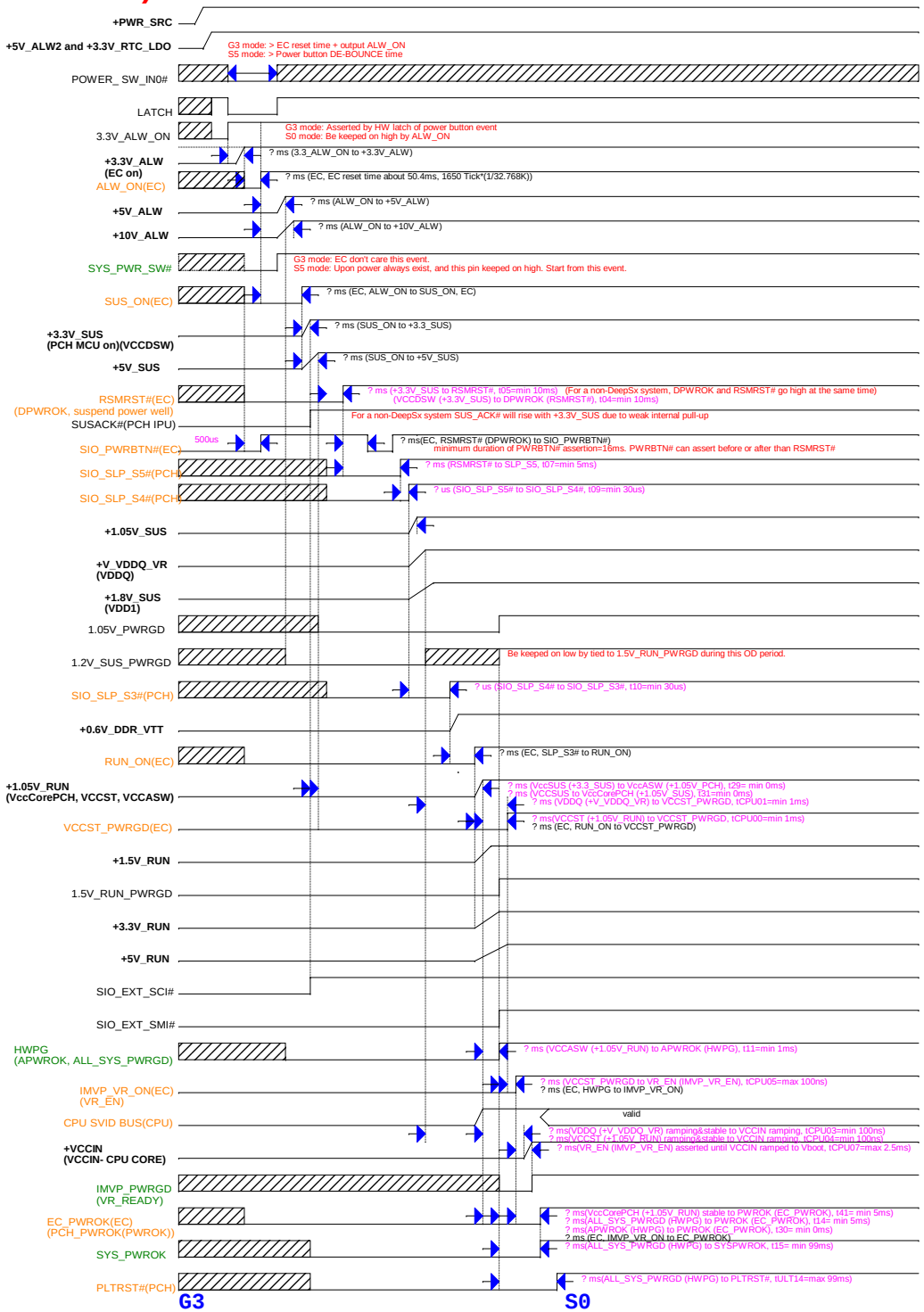
Battery Mode



Quanta Computer Inc.	PROJECT : JW8B
Size	Document Number: POWER SEQUENCE
Rev	A
Date: Friday, May 10, 2013	Sheet 5 of 57

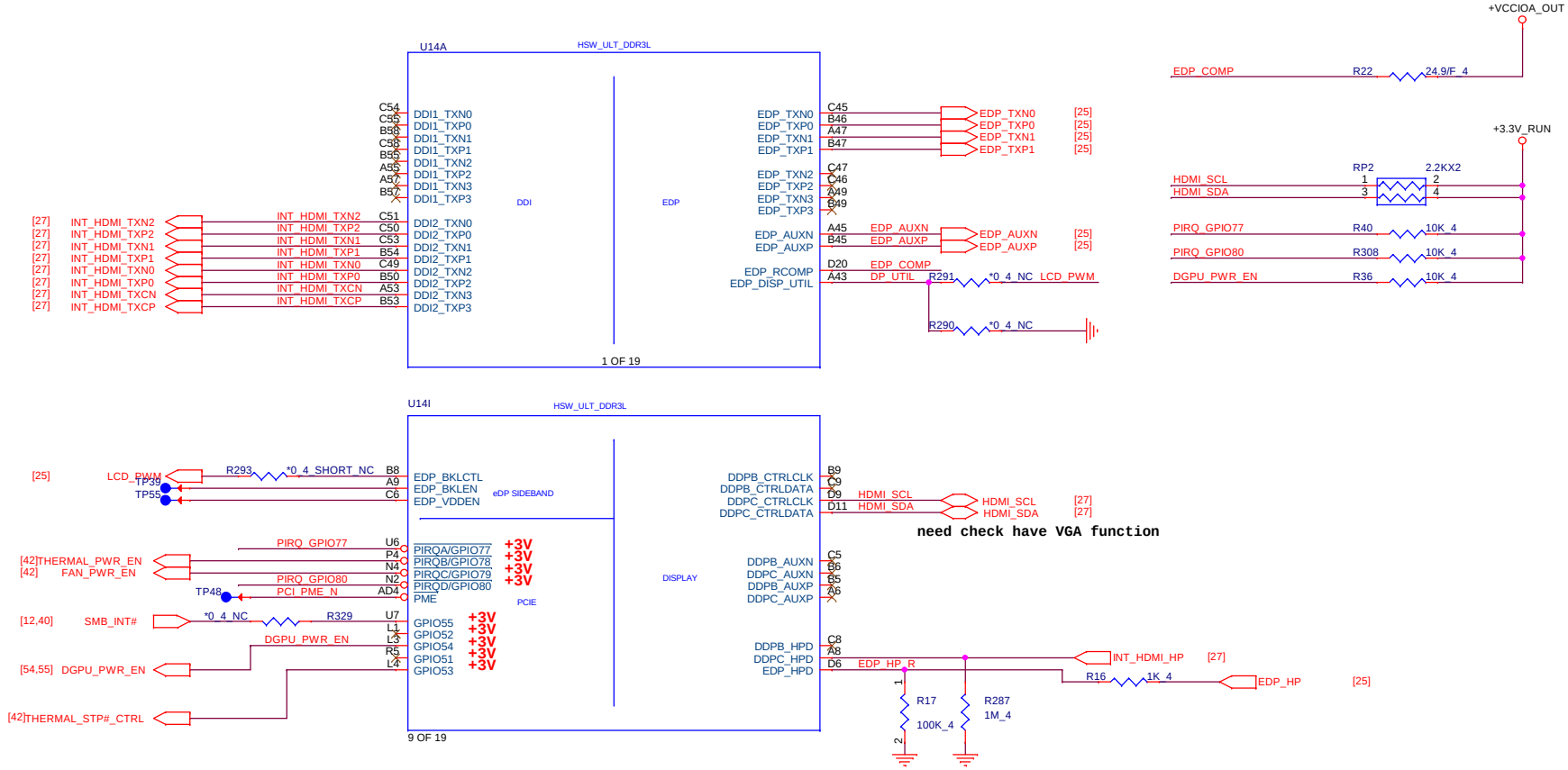
Power Sequence (G3 to S0)

Shark Bay ULT PSS, 490828, Rev1.1



Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number: G3 to S0	Rev: A
Date: Friday, May 10, 2013	Sheet 6 of 57	

Haswell ULT (DISPLAY)



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	Haswell ULT 1/12		A
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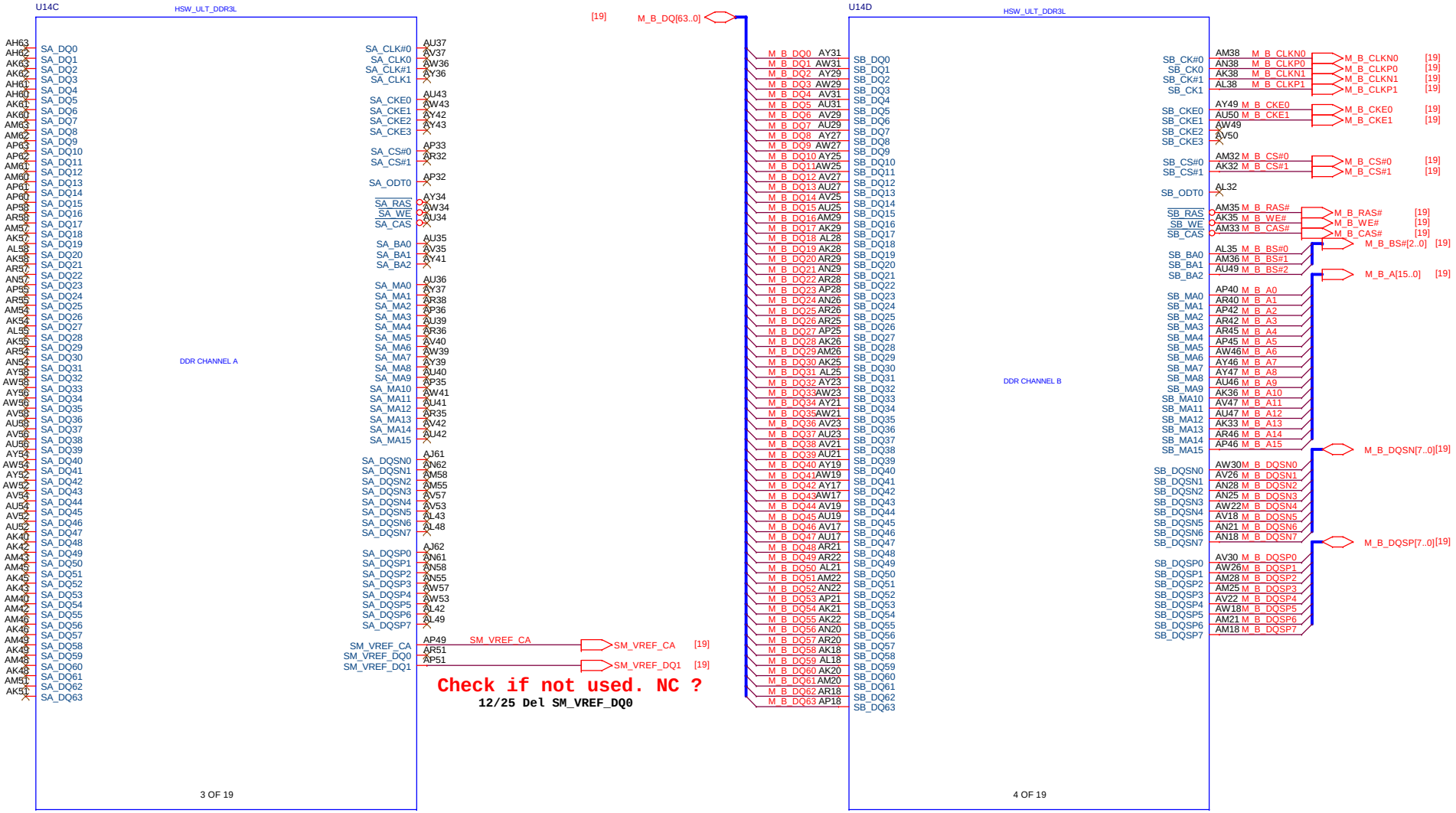
Haswell ULT (DDR3L)



Quanta Computer Inc.		
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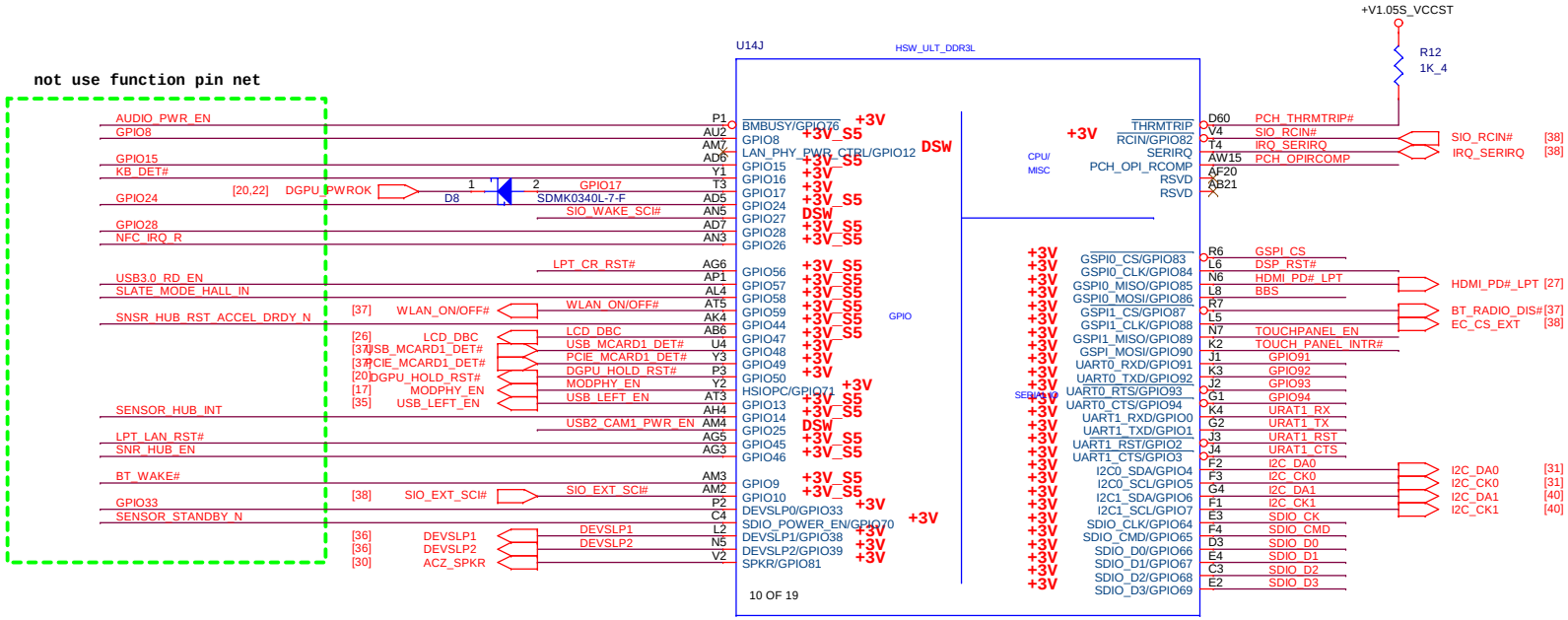
Hasswell ULT(GPIO,LPIO,MISC)

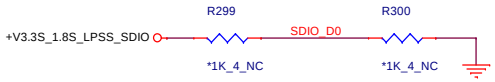


No Reboot Strap(GPIO81)	
NC	Default
PU	EN

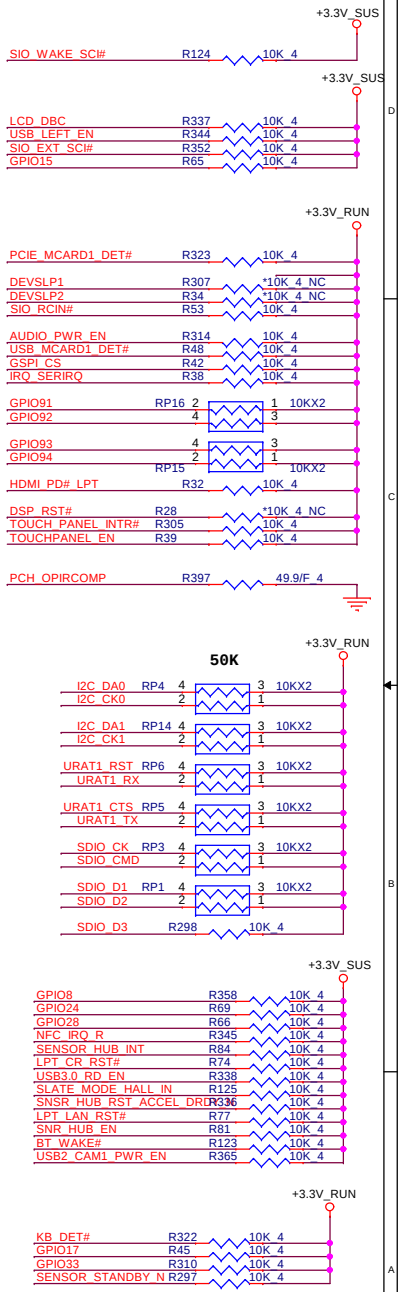
GPIO86:Boot BIOS Strap Bit	
PU	LPC
PD	SPI (Default IPD)

TLS CONFIDENTIALITY STRAP(GPIO15)	
NC	Default
PU	EN

GPIO66 : Top-Block Swap	
R1547	ENABLE
R1547_NC	DISABLE(Default)



GPIO Pull-up/Pull-down(CLG)



Quanta Computer Inc.

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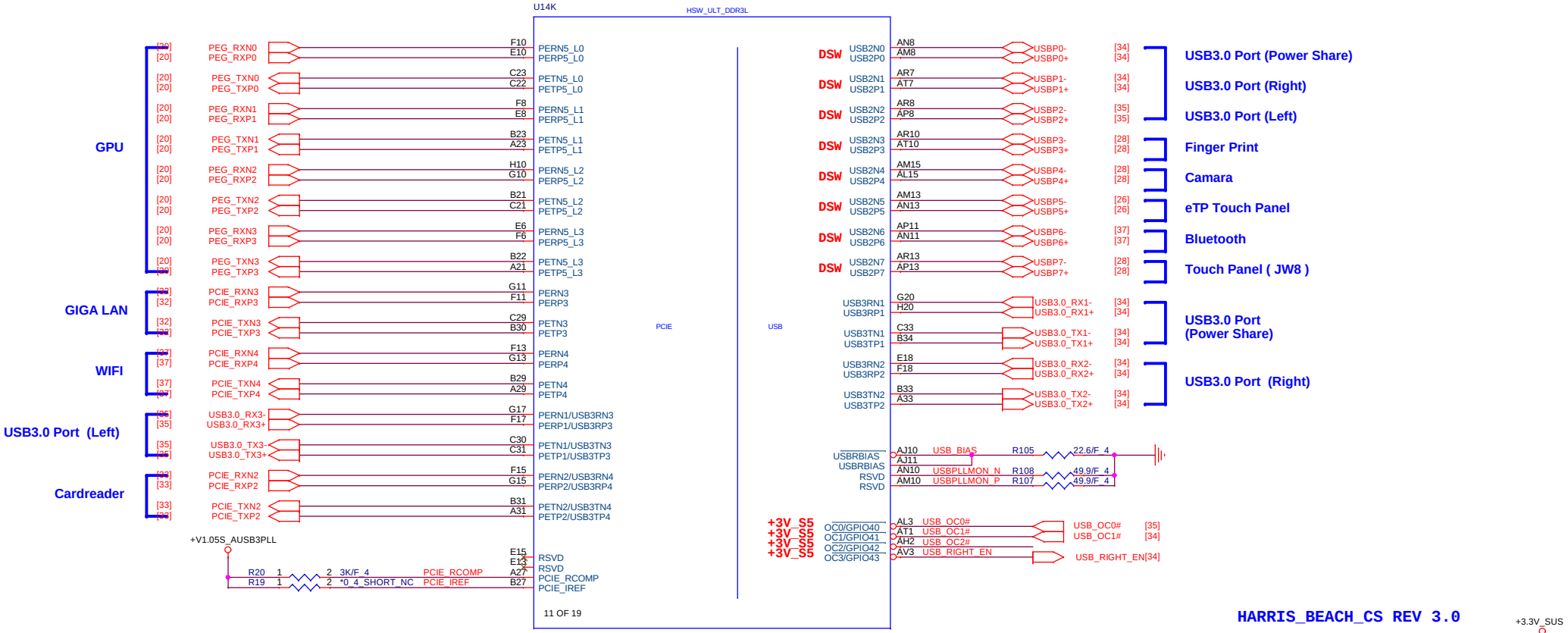
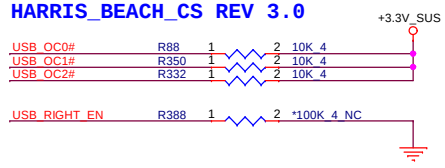
Haswell ULT (PCIE,USB)



HARRIS_BEACH_CS REV 3.0



Quanta Computer Inc.		
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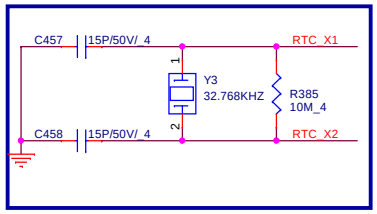
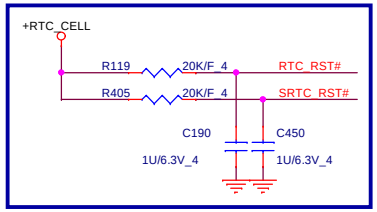
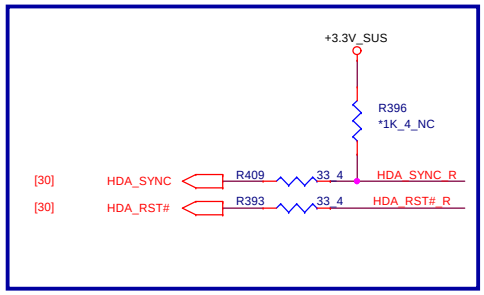
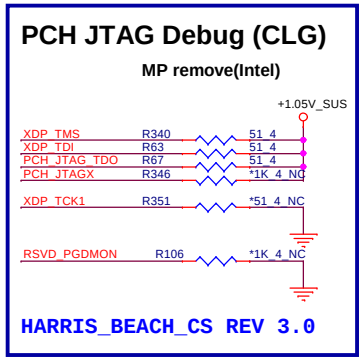
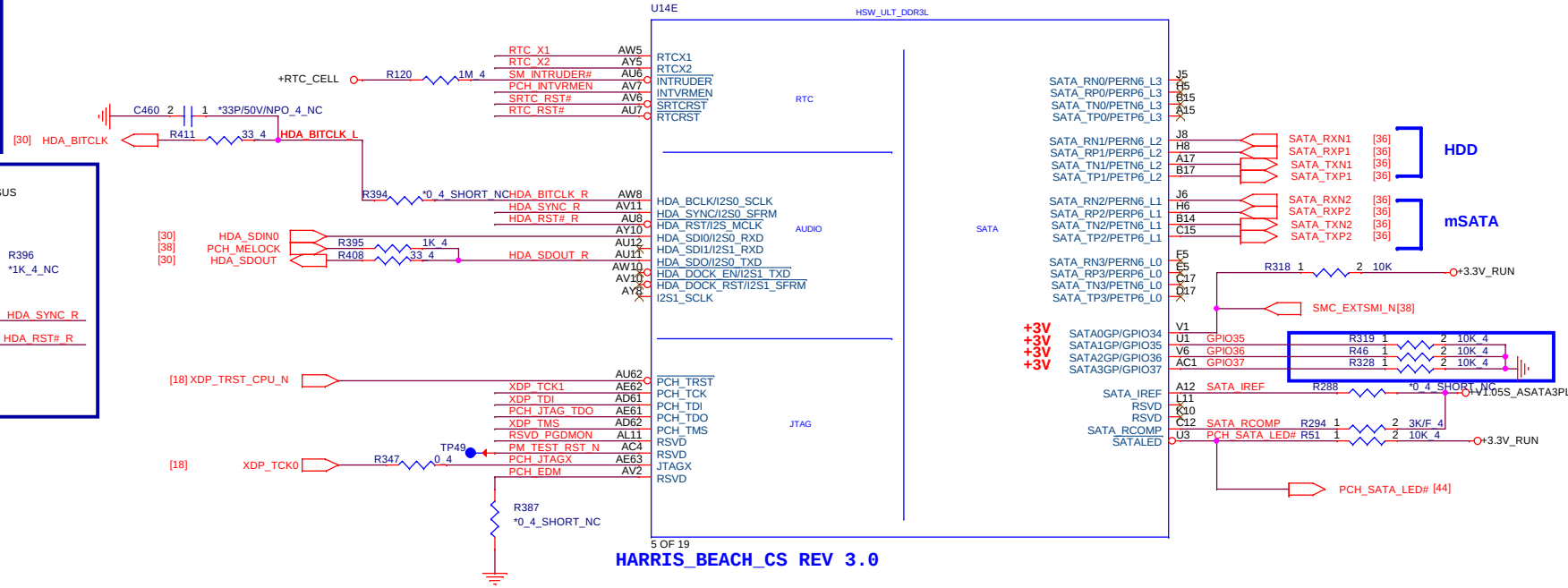
Haswell ULT (RTC, HDA, JTAG, SATA)











DFXTESTMODE
HIGH - DFXTESTMODE DISABLED(DEFAULT)
LOW - DFXTESTMODE ENABLED

PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	note
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	
HDA_SDO	Flash Descriptor Security Override / Intel ME Debug Mode	PWROK	0 = Security Effect (Int PD) 1 = Can be Override	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+RTC_CELL R407 *330K_4_NC PCH_INTVRMEN R392 330K_4

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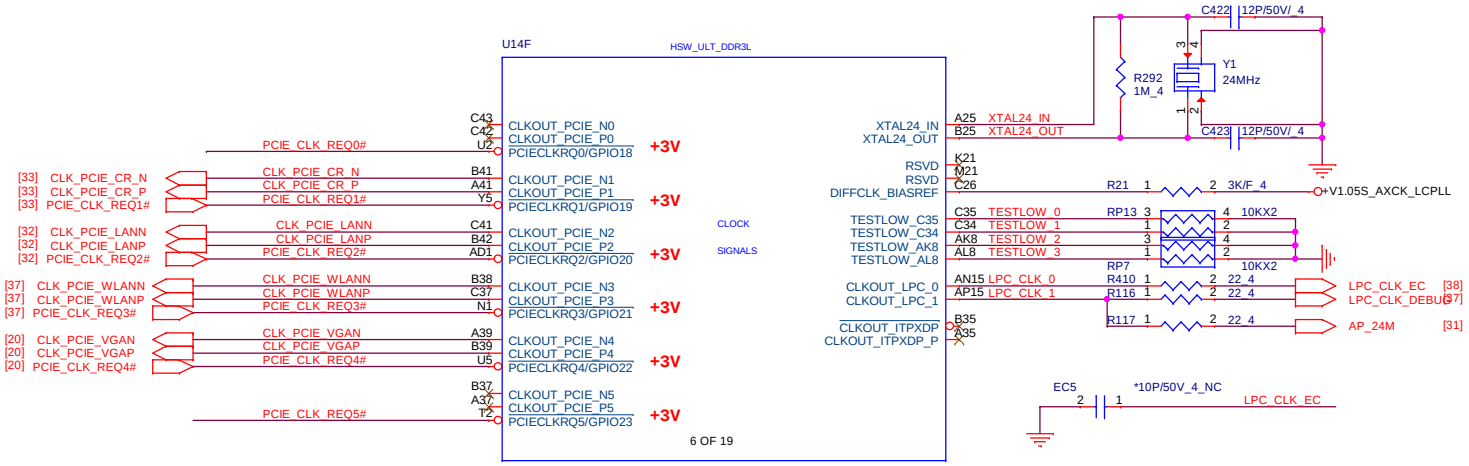
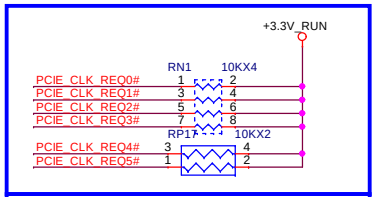
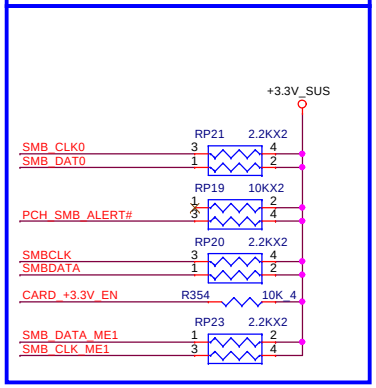
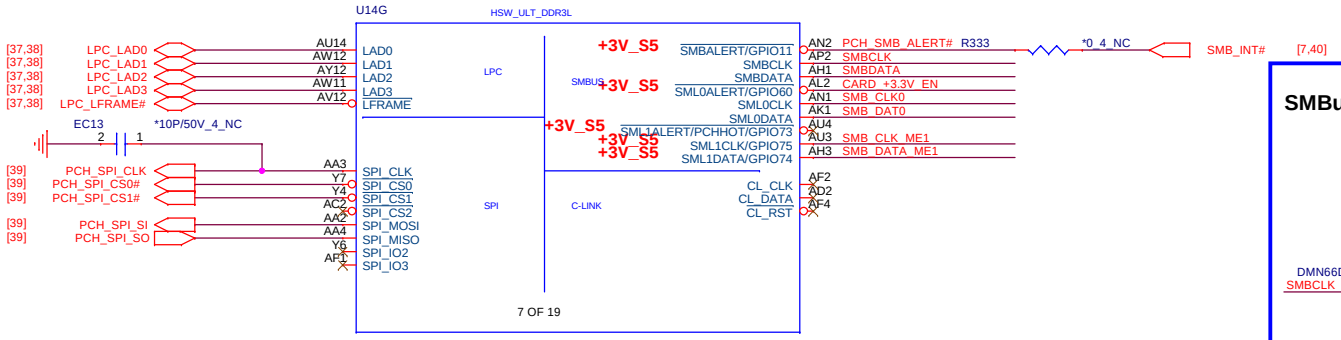
Haswell ULT (CLK)

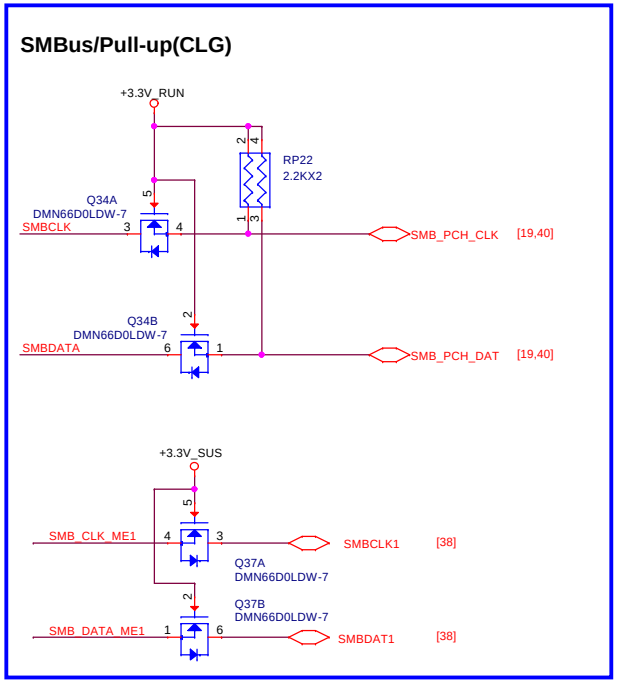






Haswell ULT (LPC/SPI/SMB/CLINK)





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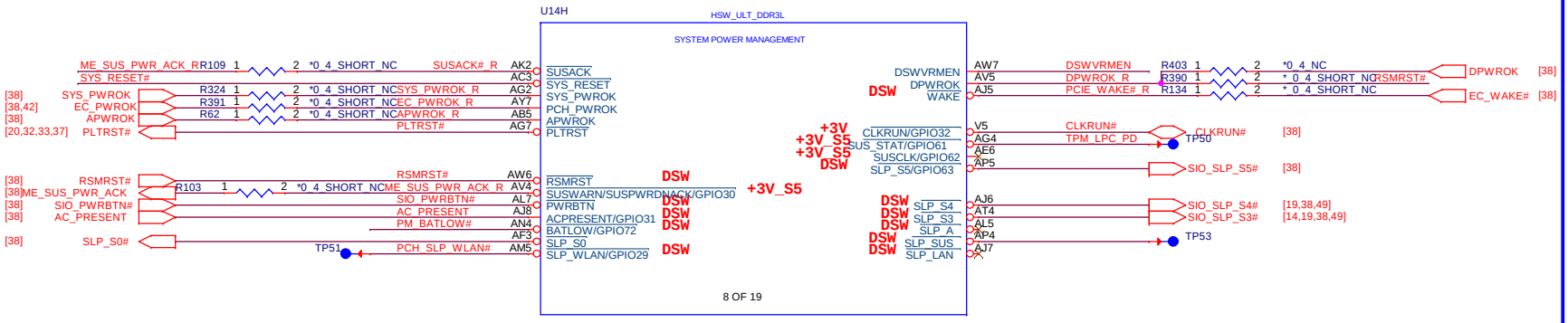
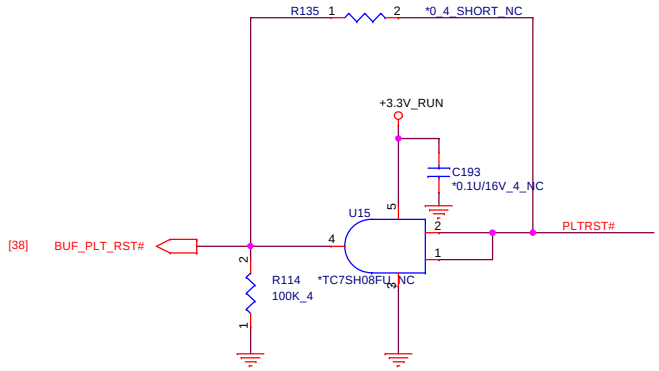
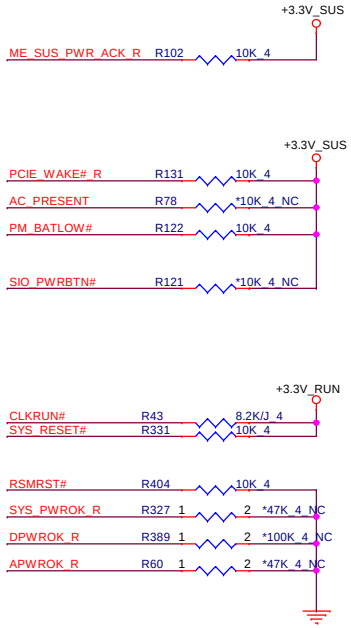
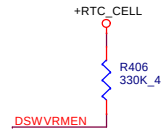
Haswell ULT (SYSTEM POWER MANAGEMENT)





PCH Pull-high/low(CLG)





On Die DSW VR Enable
High = Enable (Default)
Low = Disable

Quanta Computer Inc.

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Haswell ULT MCP(POWER)

CPU VDDQ

Haswell ULT 15W : 4.2A

6X10UF MLCC
4X2.2UF MLCC

+V_VDDQ_CPU

C455 10U/6.3V_6
C456 10U/6.3V_6
C451 10U/6.3V_6
C452 10U/6.3V_6
C453 10U/6.3V_6
C454 10U/6.3V_6

C143 1U/6.3V_4
C144 1U/6.3V_4
C145 1 2 0.1U/16V_4
C146 1 2 0.1U/16V_4

+V1.05S_VCCST

R14 10K_4

VCCST_PWRGD_L

[38] VCCST_PWRGD# — Q6 2N7002W

[52] IMVP_PWRGD — D1 SDMK0340L-7-F — R491 1K_4

C197 0.1U/16V_4

+V1.05S_VCCST — R15 *10K_4_NC VR_READY

+3.3V_RUN — R9 *10K_4_NC H_VR_ENABLE_MCP

+V1.05S_VCCST

+1.05V_RUN — R54 1 2 *0_8_SHORT_NC — +V1.05S_VCCST

+V_VDDQ_CPU

+VCCIN

+VCCIOA_OUT

+VCCIO_OUT

VCCSENSE

[52] H_VR_ENABLE_MCP — R18 1 2 10K_4 — VR_READY

[52] VR_SVID_CLK

H_CPU_SVIDALRT#
VR_SVID_CLK
VR_SVID_DATA
H_VR_ENABLE_MCP
VR_READY
FIVR_EN_BUF

TP45 MCP_RSVD_69
TP47 MCP_RSVD_70
TP40 MCP_RSVD_71
TP43 MCP_RSVD_72

+V1.05S_VCCST

+VCCIN

U14L — HSW_ULT_DDR3L

L59	RSVD		
J59	RSVD		
AH26	VDDQ		
AJ31	VDDQ		
AJ33	VDDQ		
AJ37	VDDQ		
AN33	VDDQ	1.4A	
AP43	VDDQ		
AR48	VDDQ		
AY35	VDDQ		
AY40	VDDQ		
AY44	VDDQ		
AY50	VDDQ		
F59	VCC		
N58	RSVD		
AC58	RSVD		
E63	VCC_SENSE		
AB22	RSVD		
A59	VCCIO_OUT		
E20	VCCIOA_OUT		
AD23	RSVD		
AA23	RSVD		
AE59	RSVD		
L62	VIDALERT		
N63	VIDSCLK		
L63	VIDSOUT		
B59	VCCST_PWRGD		
F60	VR_EN		
C59	VR_READY		
D63	VSS		
H59	PWR_DEBUG		
P62	VSS		
P60	RSVD_TP		
P61	RSVD_TP		
N59	RSVD_TP		
N61	RSVD_TP		
T59	RSVD		
AD60	RSVD		
AD59	RSVD		
AA59	RSVD		
AE60	RSVD		
AC59	RSVD		
AG58	RSVD		
U59	RSVD		
V59	RSVD		
AC22	VCCST		
AE22	VCCST		
AE23	VCCST		
AB57	VCC		
AD57	VCC		
AG57	VCC		
C24	VCC		
C28	VCC		
C32	VCC		

HSW ULT POWER

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C36	VCC		
C40	VCC		
C44	VCC		
C48	VCC		
C52	VCC		
C56	VCC		
E23	VCC		
E25	VCC		
E27	VCC		
E29	VCC		
E31	VCC		
E33	VCC		
E35	VCC		
E37	VCC		
E39	VCC		
E41	VCC		
E43	VCC		
E45	VCC		
E47	VCC		
E49	VCC		
E51	VCC		
E53	VCC		
E55	VCC		
E57	VCC		
F24	VCC		
F28	VCC		
F32	VCC		
F36	VCC		
F40	VCC		
F44	VCC	32A	
F48	VCC		
F52	VCC		
F56	VCC		
G23	VCC		
G25	VCC		
G27	VCC		
G29	VCC		
G31	VCC		
G33	VCC		
G35	VCC		
G37	VCC		
G39	VCC		
G41	VCC		
G43	VCC		
G45	VCC		
G47	VCC		
G49	VCC		
G51	VCC		
G53	VCC		
G55	VCC		
G57	VCC		
H23	VCC		
J23	VCC		
K23	VCC		
K57	VCC		
L22	VCC		
M23	VCC		
M57	VCC		
P57	VCC		
U57	VCC		
W57	VCC		

CPU VCC

1/21: 22Ux23 --> 10Ux23

Haswell ULT 15W : 32A

23 X 22UF(0805 MLCC)

+VCCIN

C106 10U/6.3V_6
C83 10U/6.3V_6
C94 10U/6.3V_6
C107 10U/6.3V_6
C123 10U/6.3V_6
C132 10U/6.3V_6
C148 10U/6.3V_6
C72 10U/6.3V_6
C77 10U/6.3V_6
C76 10U/6.3V_6
C119 10U/6.3V_6
C158 10U/6.3V_6
C70 10U/6.3V_6
C75 10U/6.3V_6
C62 10U/6.3V_6
C82 10U/6.3V_6
C97 10U/6.3V_6
C71 10U/6.3V_6
C79 10U/6.3V_6
C69 10U/6.3V_6
C78 10U/6.3V_6
C63 10U/6.3V_6
C74 10U/6.3V_6
C73 10U/6.3V_6

C49 1 2 100P/50V_4
C51 1 2 100P/50V_4
C50 1 2 100P/50V_4
C52 1 2 100P/50V_4

R304 100/F_4 — +VCCIN

VCCSENSE — VCCSENSE [52]

FIVR_EN_BUF — R37 150_6 — +V1.05S_VCCST

SVID ALERT

+V1.05S_VCCST — R313 75_4
+VCCIO_OUT — R321 *75_4_NC

H_CPU_SVIDALRT# — R312 43_4 — VR_SVID_ALERT#[52]

SVID DATA

+V1.05S_VCCST — R320 130_4
+VCCIO_OUT — R316 *130_4_NC

VR_SVID_DATA — VR_SVID_DATA [52]

S3 Power reduce

+V_VDDQ — R440 *ShortPAD_NC — +V_VDDQ_CPU

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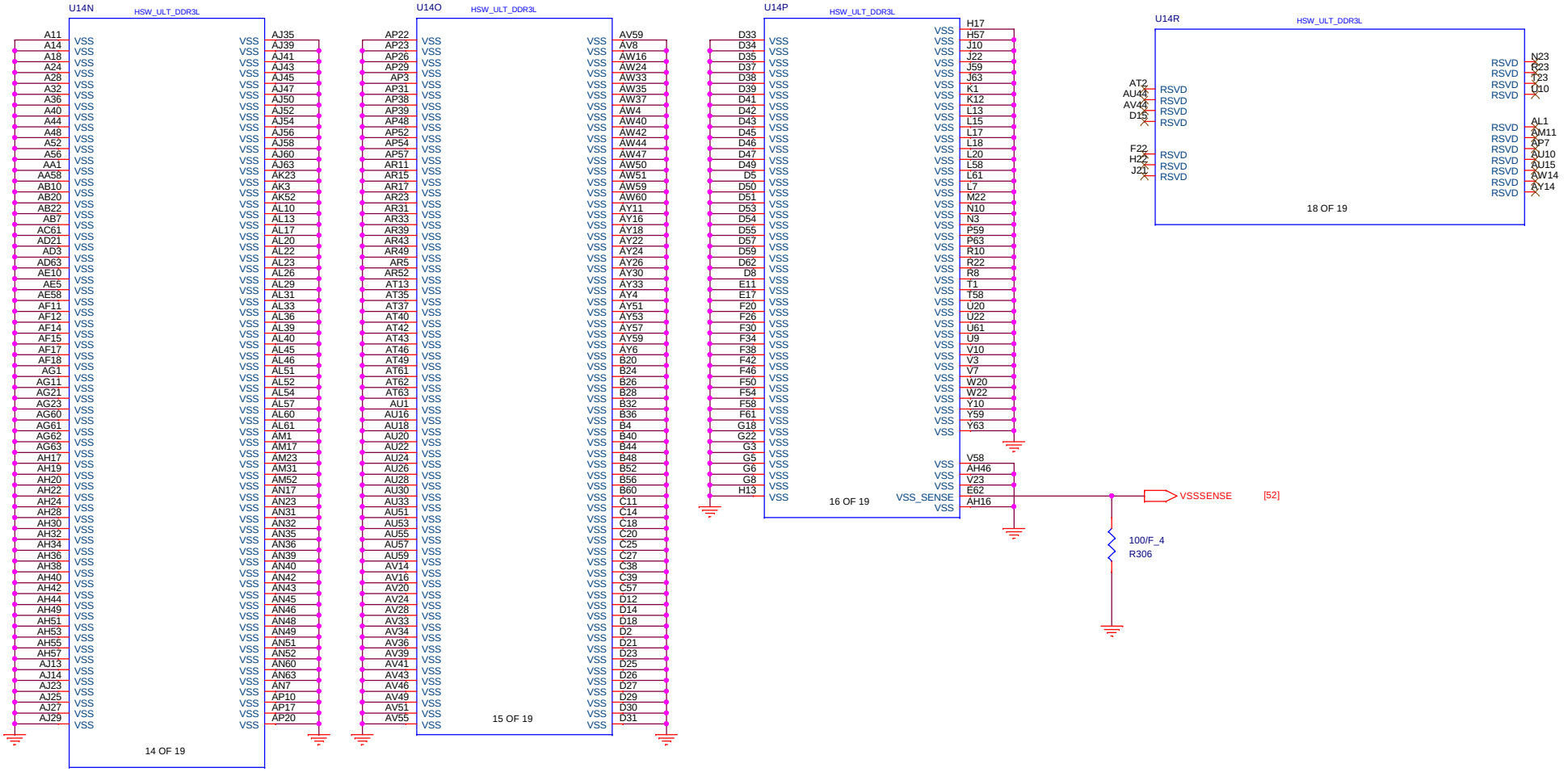
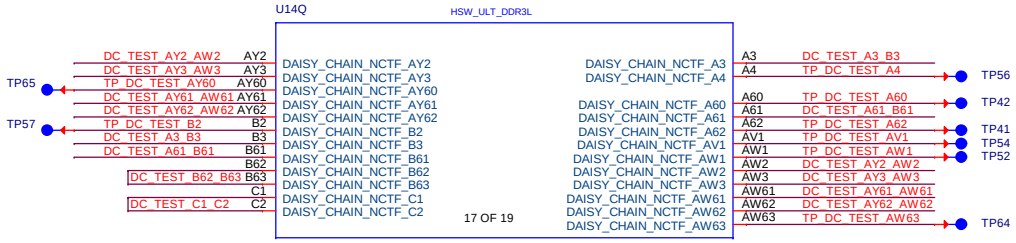
Haswell ULT (GND)





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	Haswell ULT 9/12	A

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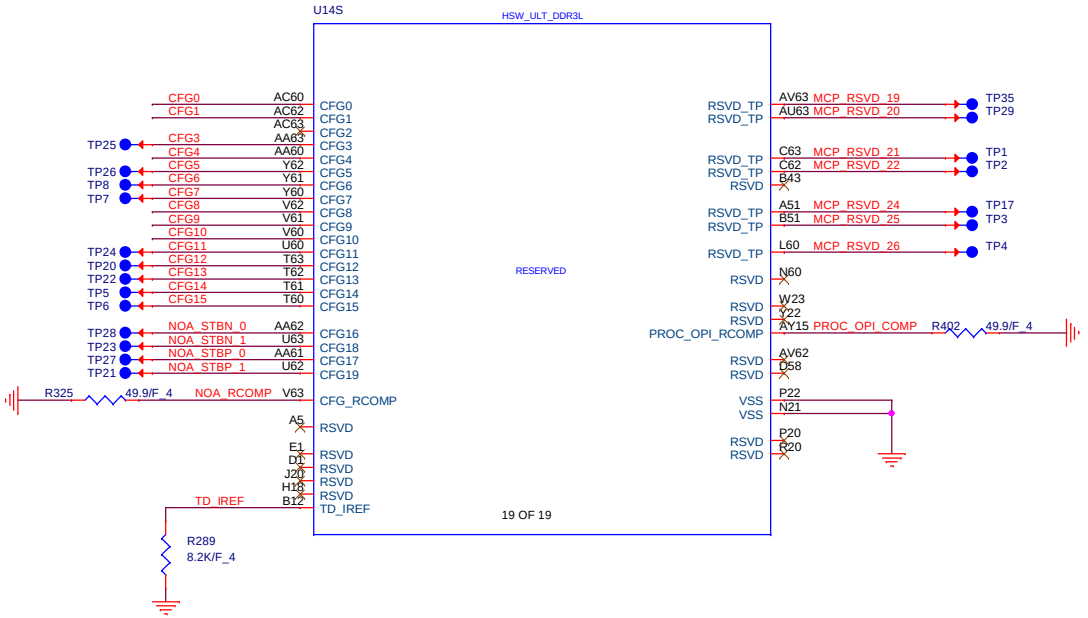
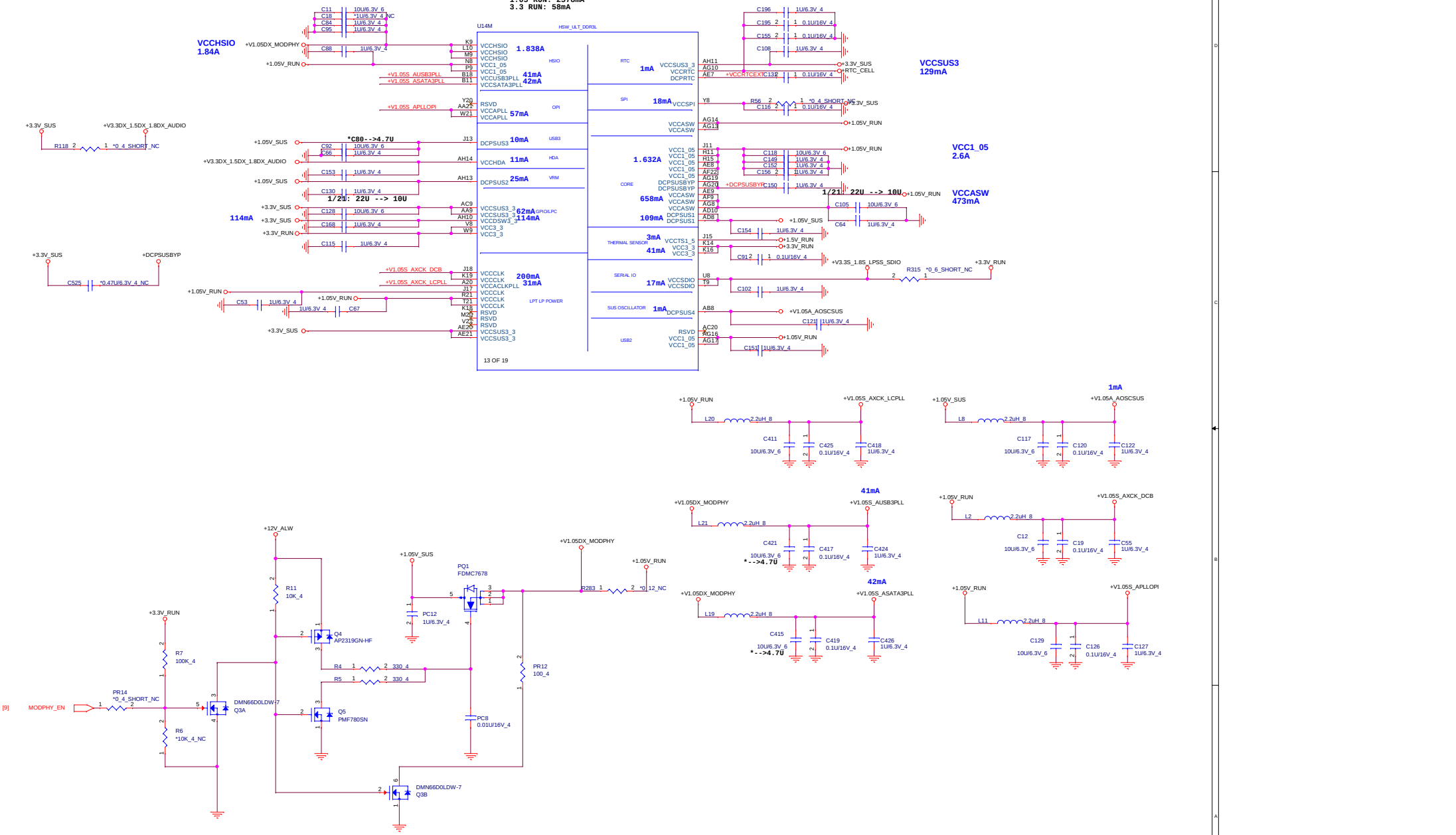


Processor Strapping

	1	0	
CFG0 EAR-STALL/NOT STALL RESET SEQUENCE AFTER PCU PLL IS LOCKED	(DEFAULT) NORMAL OPERATION; NO STALL	STALL	CFG0 R339 *1K_4_NC
CFG1 PCH/ PCH LESS MODE SELECTION	(DEFAULT) NORMAL OPERATION	PCH-LESS MODE	CFG1 R334 *1K_4_NC
CFG3 PHYSICAL_DEBUG_ENABLED (DFX PRIVACY)	DISABLED NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT	ENABLED AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT	CFG3 R330 *1K_4_NC
CFG4 DISPLAY PORT PRESENCE STRAP	DISABLED NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT	ENABLED AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT	CFG4 R61 1K_4
CFG 8 ALLOW THE USE OF NOA ON LOCKED UNITS	DISABLED(DEFAULT); IN THIS CASE, NOA WILL BE DISABLED IN LOCKED UNITS AND ENABLED IN UN-LOCKED UNITS	ENABLED; NOA WILL BE AVAILABLE REGARDLESS OF THE LOCKING OF THE UNIT	CFG8 R326 *1K_4_NC
CFG9 NO SVID PROTOCOL CAPABLE VR CONNECTED	VRS SUPPORTING SVID PROTOCOL ARE PRESENT	NO VR SUPPORTING SVID IS PRESENT. THE CHIP WILL NOT GENERATE (OR RESPOND TO) SVID ACTIVITY	CFG9 R58 *1K_4_NC
CFG10 SAFE MODE BOOT	POWER FEATURES ACTIVATED DURING RESET	POWER FEATURES (ESPECIALLY CLOCK GATINE ARE NOT ACTIVATED	CFG10 R57 *1K_4_NC

Haswell ULT PCH(POWER)

3.3 SUS: 205mA
1.05 SUS: 2066mA
1.05 RUN: 2578mA
3.3 RUN: 58mA



Quanta Computer Inc.
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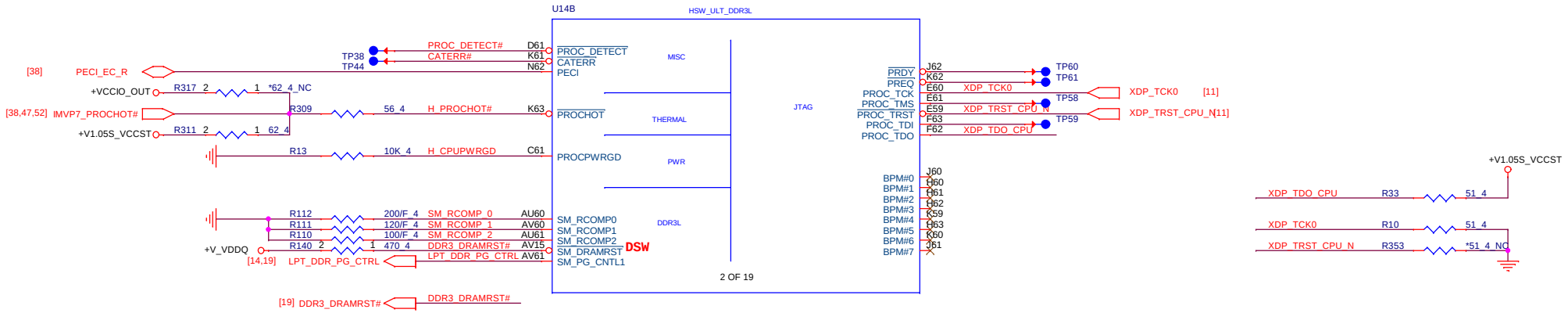

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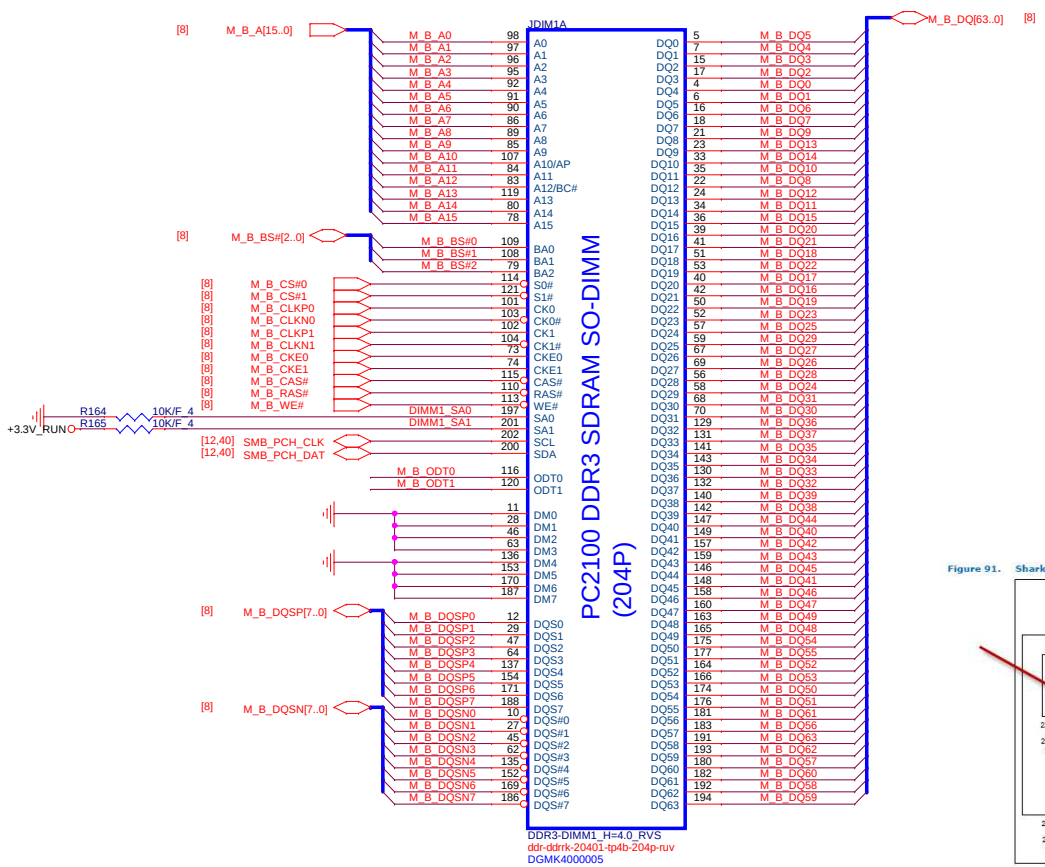


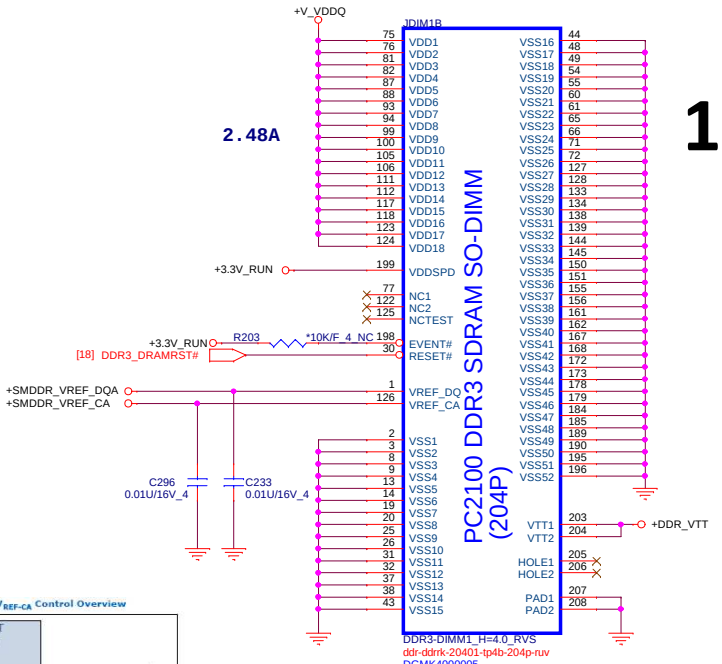
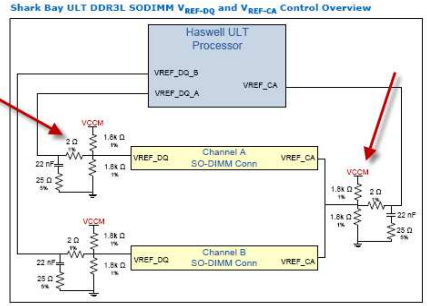
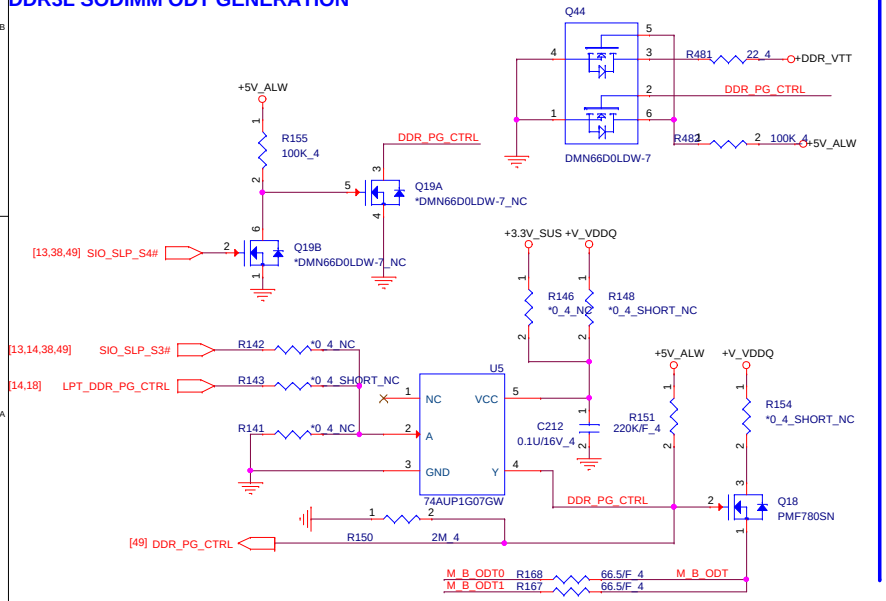


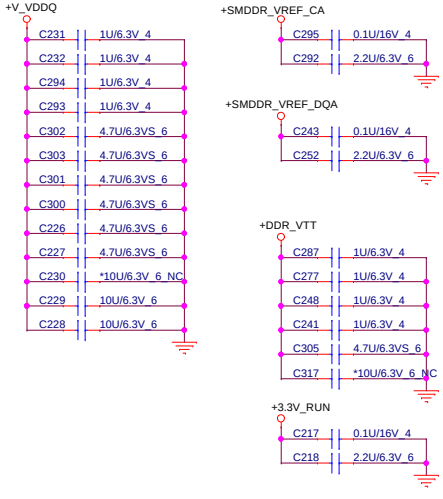
Figure 91. Shark Bay ULT DDR3L SODIMM V_{REF-DQ} and V_{REF-CA} Control Overview

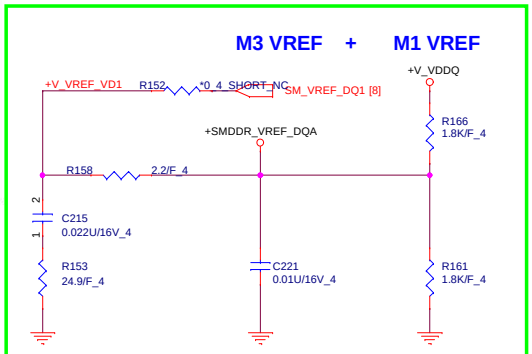


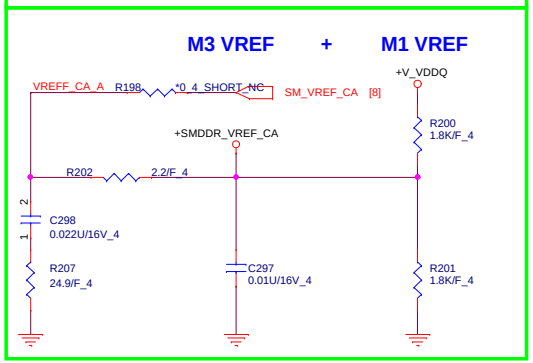
DDR3L SODIMM ODT GENERATION



Place these Caps near So-Dimm1.







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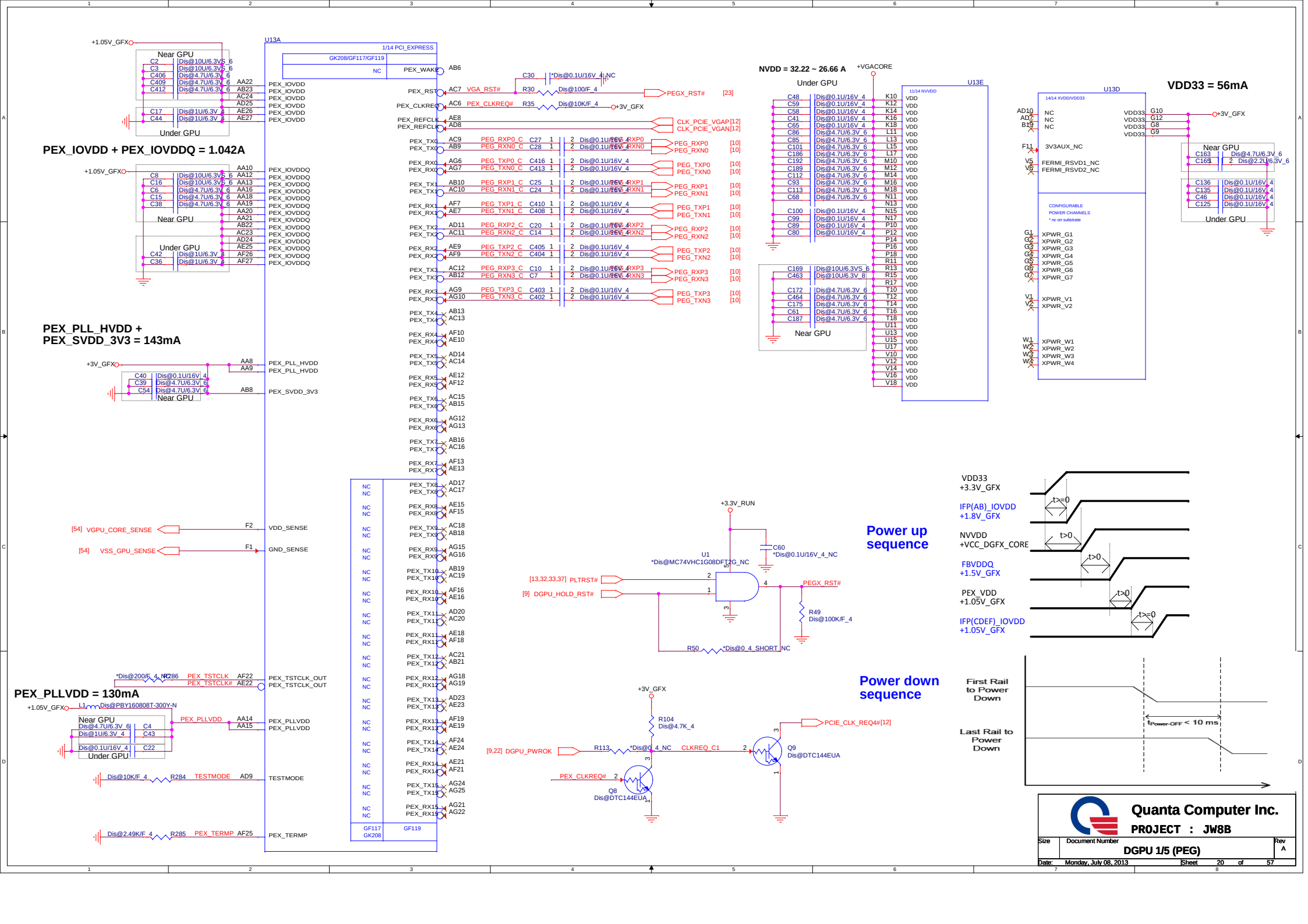
PEX_IOVDD + PEX_IOVDDQ = 1.042A
PEX_PLL_HVDD +
PEX_SVDD_3V3 = 143mA
PEX_PLLVDD = 130mA
NVDD = 32.22 ~ 26.66 A
VDD33 = 56mA
Power up sequence
Power down sequence
Quanta Computer Inc.
PROJECT : JW8B
DGPU 1/5 (PEG)
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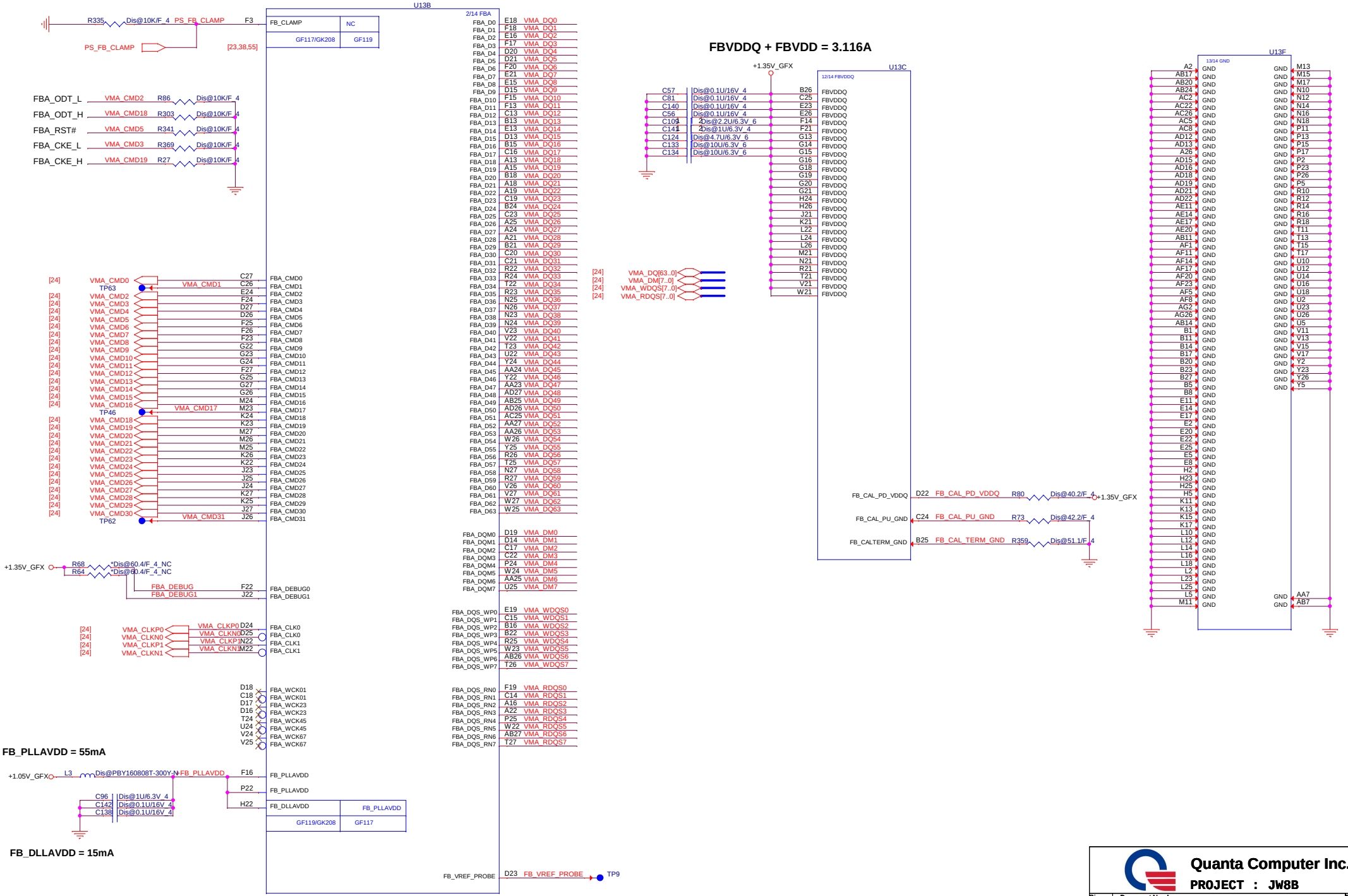
U13B
2/14 FBA
R335 Dis@10K/F_4 PS_FB_CLAMP F3
PS_FB_CLAMP [23,38,55]
FB_CLAMP NC
GF117/GK208 GF119
FBA_ODT_L VMA_CMD2 R86 Dis@10K/F_4
FBA_ODT_H VMA_CMD18 R303 Dis@10K/F_4
FBA_RST# VMA_CMD5 R341 Dis@10K/F_4
FBA_CKE_L VMA_CMD3 R369 Dis@10K/F_4
FBA_CKE_H VMA_CMD19 R27 Dis@10K/F_4
FBA_D0 E18 VMA_DQ0
FBA_D1 F18 VMA_DQ1
FBA_D2 E16 VMA_DQ2
FBA_D3 F17 VMA_DQ3
FBA_D4 D20 VMA_DQ4
FBA_D5 D21 VMA_DQ5
FBA_D6 F20 VMA_DQ6
FBA_D7 E21 VMA_DQ7
FBA_D8 E15 VMA_DQ8
FBA_D9 D15 VMA_DQ9
FBA_D10 F15 VMA_DQ10
FBA_D11 F13 VMA_DQ11
FBA_D12 C13 VMA_DQ12
FBA_D13 B13 VMA_DQ13
FBA_D14 E13 VMA_DQ14
FBA_D15 D13 VMA_DQ15
FBA_D16 B15 VMA_DQ16
FBA_D17 C16 VMA_DQ17
FBA_D18 A13 VMA_DQ18
FBA_D19 A15 VMA_DQ19
FBA_D20 B18 VMA_DQ20
FBA_D21 A18 VMA_DQ21
FBA_D22 A19 VMA_DQ22
FBA_D23 C19 VMA_DQ23
FBA_D24 B24 VMA_DQ24
FBA_D25 C23 VMA_DQ25
FBA_D26 A25 VMA_DQ26
FBA_D27 A24 VMA_DQ27
FBA_D28 A21 VMA_DQ28
FBA_D29 B21 VMA_DQ29
FBA_D30 C20 VMA_DQ30
FBA_D31 C21 VMA_DQ31
FBA_D32 R22 VMA_DQ32
FBA_D33 R24 VMA_DQ33
FBA_D34 T22 VMA_DQ34
FBA_D35 R23 VMA_DQ35
FBA_D36 N25 VMA_DQ36
FBA_D37 N26 VMA_DQ37
FBA_D38 N23 VMA_DQ38
FBA_D39 N24 VMA_DQ39
FBA_D40 V23 VMA_DQ40
FBA_D41 V22 VMA_DQ41
FBA_D42 T23 VMA_DQ42
FBA_D43 U22 VMA_DQ43
FBA_D44 Y24 VMA_DQ44
FBA_D45 AA24 VMA_DQ45
FBA_D46 Y22 VMA_DQ46
FBA_D47 AA23 VMA_DQ47
AD27 VMA_DQ48
AB25 VMA_DQ49
FBA_D50 AD26 VMA_DQ50
AC25 VMA_DQ51
AA27 VMA_DQ52
AA26 VMA_DQ53
FBA_D54 W26 VMA_DQ54
FBA_D55 Y25 VMA_DQ55
FBA_D56 R26 VMA_DQ56
FBA_D57 T25 VMA_DQ57
N27 VMA_DQ58
R27 VMA_DQ59
V26 VMA_DQ60
V27 VMA_DQ61
FBA_D62 W27 VMA_DQ62
FBA_D63 W25 VMA_DQ63
FBA_DQM0 D19 VMA_DM0
FBA_DQM1 D14 VMA_DM1
FBA_DQM2 C17 VMA_DM2
FBA_DQM3 C22 VMA_DM3
FBA_DQM4 P24 VMA_DM4
FBA_DQM5 W24 VMA_DM5
FBA_DQM6 AA25 VMA_DM6
FBA_DQM7 U25 VMA_DM7
FBA_DQS_WP0 E19 VMA_WDQS0
FBA_DQS_WP1 C15 VMA_WDQS1
FBA_DQS_WP2 B16 VMA_WDQS2
FBA_DQS_WP3 B22 VMA_WDQS3
FBA_DQS_WP4 R25 VMA_WDQS4
FBA_DQS_WP5 W23 VMA_WDQS5
FBA_DQS_WP6 AB26 VMA_WDQS6
FBA_DQS_WP7 T26 VMA_WDQS7
FBA_DQS_RN0 F19 VMA_RDQS0
FBA_DQS_RN1 C14 VMA_RDQS1
FBA_DQS_RN2 A16 VMA_RDQS2
FBA_DQS_RN3 A22 VMA_RDQS3
FBA_DQS_RN4 P25 VMA_RDQS4
FBA_DQS_RN5 W22 VMA_RDQS5
FBA_DQS_RN6 AB27 VMA_RDQS6
FBA_DQS_RN7 T27 VMA_RDQS7
FB_VREF_PROBE D23 FB_VREF_PROBE TP9
[24] VMA_CMD0 C27 FBA_CMD0
TP63 VMA_CMD1 C26 FBA_CMD1
[24] VMA_CMD2 E24 FBA_CMD2
[24] VMA_CMD3 F24 FBA_CMD3
[24] VMA_CMD4 D27 FBA_CMD4
[24] VMA_CMD5 D26 FBA_CMD5
[24] VMA_CMD6 F25 FBA_CMD6
[24] VMA_CMD7 F26 FBA_CMD7
[24] VMA_CMD8 F23 FBA_CMD8
[24] VMA_CMD9 G22 FBA_CMD9
[24] VMA_CMD10 G23 FBA_CMD10
[24] VMA_CMD11 G24 FBA_CMD11
[24] VMA_CMD12 F27 FBA_CMD12
[24] VMA_CMD13 G25 FBA_CMD13
[24] VMA_CMD14 G27 FBA_CMD14
[24] VMA_CMD15 G26 FBA_CMD15
[24] VMA_CMD16 M24 FBA_CMD16
TP46 VMA_CMD17 M23 FBA_CMD17
[24] VMA_CMD18 K24 FBA_CMD18
[24] VMA_CMD19 K23 FBA_CMD19
[24] VMA_CMD20 M27 FBA_CMD20
[24] VMA_CMD21 M26 FBA_CMD21
[24] VMA_CMD22 M25 FBA_CMD22
[24] VMA_CMD23 K26 FBA_CMD23
[24] VMA_CMD24 K22 FBA_CMD24
[24] VMA_CMD25 J23 FBA_CMD25
[24] VMA_CMD26 J25 FBA_CMD26
[24] VMA_CMD27 J24 FBA_CMD27
[24] VMA_CMD28 K27 FBA_CMD28
[24] VMA_CMD29 K25 FBA_CMD29
[24] VMA_CMD30 J27 FBA_CMD30
TP62 VMA_CMD31 J26 FBA_CMD31
+1.35V_GFX R68 *Dis@60.4/F_4_NC
R64 *Dis@60.4/F_4_NC
FBA_DEBUG F22 FBA_DEBUG0
FBA_DEBUG1 J22 FBA_DEBUG1
[24] VMA_CLKP0 D24 FBA_CLK0
[24] VMA_CLKN0 D25 FBA_CLK0
[24] VMA_CLKP1 N22 FBA_CLK1
[24] VMA_CLKN1 M22 FBA_CLK1
D18 FBA_WCK01
C18 FBA_WCK01
D17 FBA_WCK23
D16 FBA_WCK23
T24 FBA_WCK45
U24 FBA_WCK45
V24 FBA_WCK67
V25 FBA_WCK67
FB_PLLAVDD = 55mA
+1.05V_GFX L3 Dis@PBY160808T-300Y-N FB_PLLAVDD F16 FB_PLLAVDD
P22 FB_PLLAVDD
C96 Dis@1U/6.3V_4
C142 Dis@0.1U/16V_4
C138 Dis@0.1U/16V_4
H22
FB_DLLAVDD FB_PLLAVDD
GF119/GK208 GF117
FB_DLLAVDD = 15mA
FBVDDQ + FBVDD = 3.116A
U13C
12/14 FBVDDQ
+1.35V_GFX
C57 Dis@0.1U/16V_4
C81 Dis@0.1U/16V_4
C140 Dis@0.1U/16V_4
C56 Dis@0.1U/16V_4
C109 Dis@2.2U/6.3V_6
C141 Dis@1U/6.3V_4
C124 Dis@4.7U/6.3V_6
C133 Dis@10U/6.3V_6
C134 Dis@10U/6.3V_6
B26 C25 E23 E26 F14 F21 G13 G14 G15 G16 G18 G19 G20 G21 H24 H26 J21 K21 L22 L24 L26 M21 N21 R21 T21 V21 W21
FBVDDQ
[24] VMA_DQ[63..0]
[24] VMA_DM[7..0]
[24] VMA_WDQS[7..0]
[24] VMA_RDQS[7..0]
FB_CAL_PD_VDDQ D22 FB_CAL_PD_VDDQ R80 Dis@40.2/F_4 +1.35V_GFX
FB_CAL_PU_GND C24 FB_CAL_PU_GND R73 Dis@42.2/F_4
FB_CALTERM_GND B25 FB_CALTERM_GND R359 Dis@51.1/F_4
U13F
13/14 GND
A2 AB17 AB20 AB24 AC2 AC22 AC26 AC5 AC8 AD12 AD13 A26 AD15 AD16 AD18 AD19 AD21 AD22 AE11 AE14 AE17 AE20 AB11 AF1 AF11 AF14 AF17 AF20 AF23 AF5 AF8 AG2 AG26 AB14 B1 B11 B14 B17 B20 B23 B27 B5 B8 E11 E14 E17 E2 E20 E22 E25 E5 E8 H2 H23 H25 H5 K11 K13 K15 K17 L10 L12 L14 L16 L18 L2 L23 L25 L5 M11
GND
M13 M15 M17 N10 N12 N14 N16 N18 P11 P13 P15 P17 P2 P23 P26 P5 R10 R12 R14 R16 R18 T11 T13 T15 T17 U10 U12 U14 U16 U18 U2 U23 U26 U5 V11 V13 V15 V17 Y2 Y23 Y26 Y5
AA7 AB7
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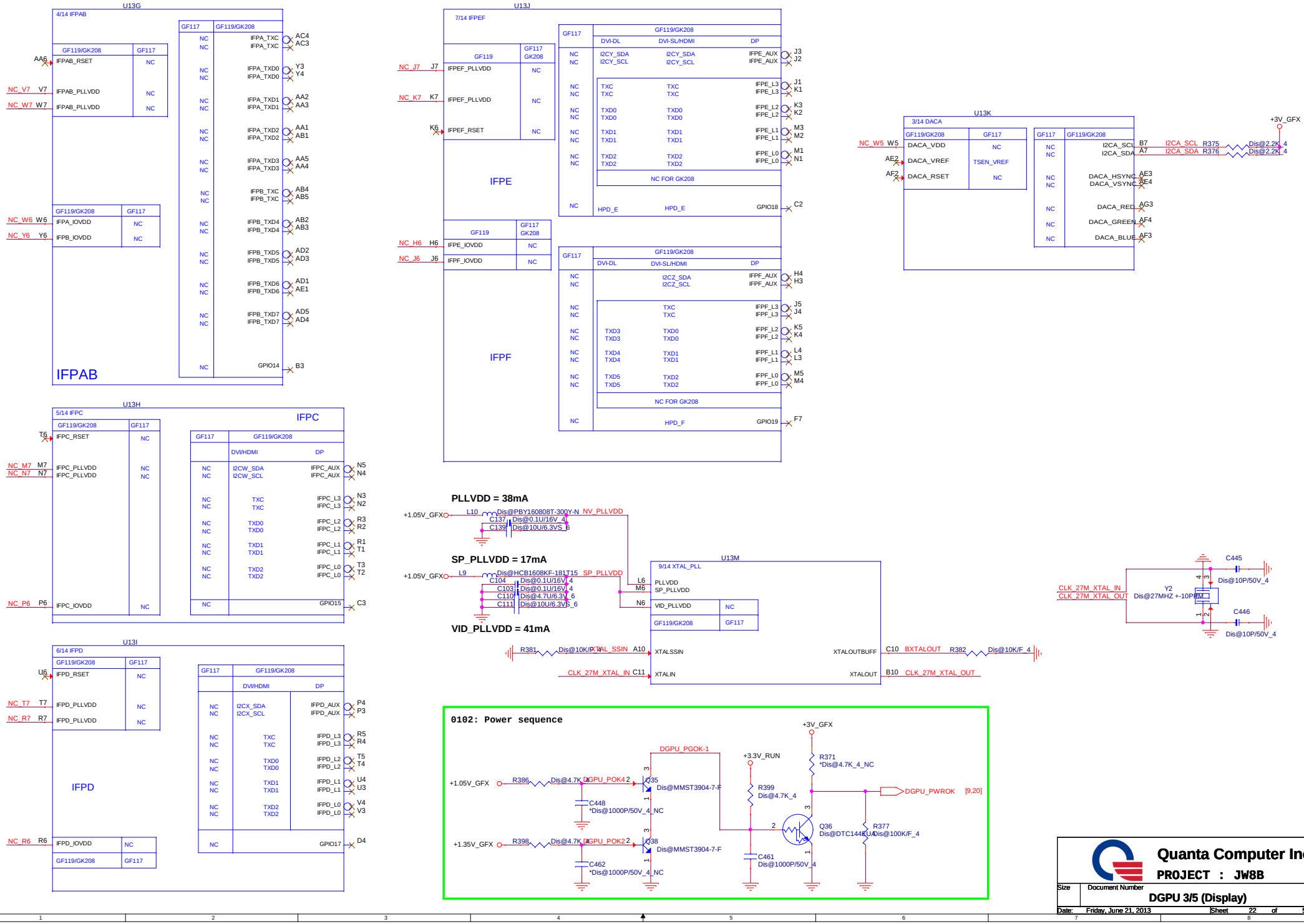
U13G
4/14 IFPAB
IFPAB
U13J
7/14 IFPEF
IFPE
IFPF
U13K
3/14 DACA
U13H
5/14 IFPC
IFPC
U13I
6/14 IFPD
IFPD
PLLVDD = 38mA
SP_PLLVDD = 17mA
VID_PLLVDD = 41mA
U13M
9/14 XTAL_PLL
0102: Power sequence
Quanta Computer Inc.
PROJECT : JW8B
DGPU 3/5 (Display)
Date: Friday, June 21, 2013
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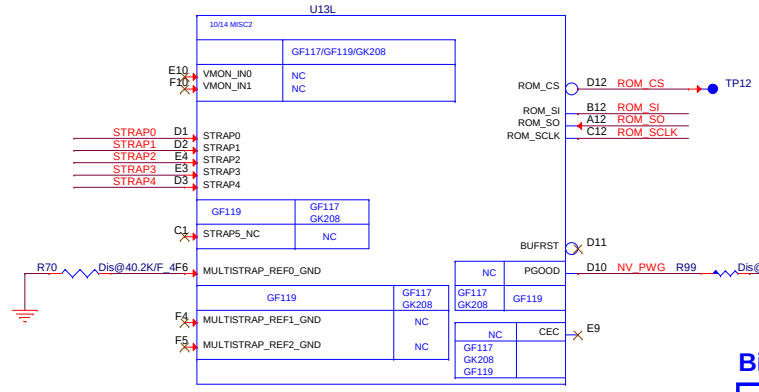
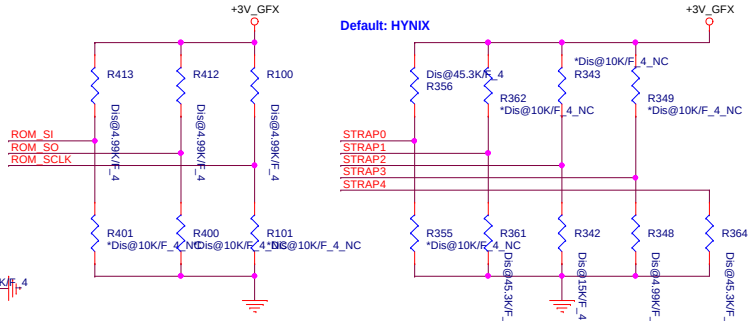
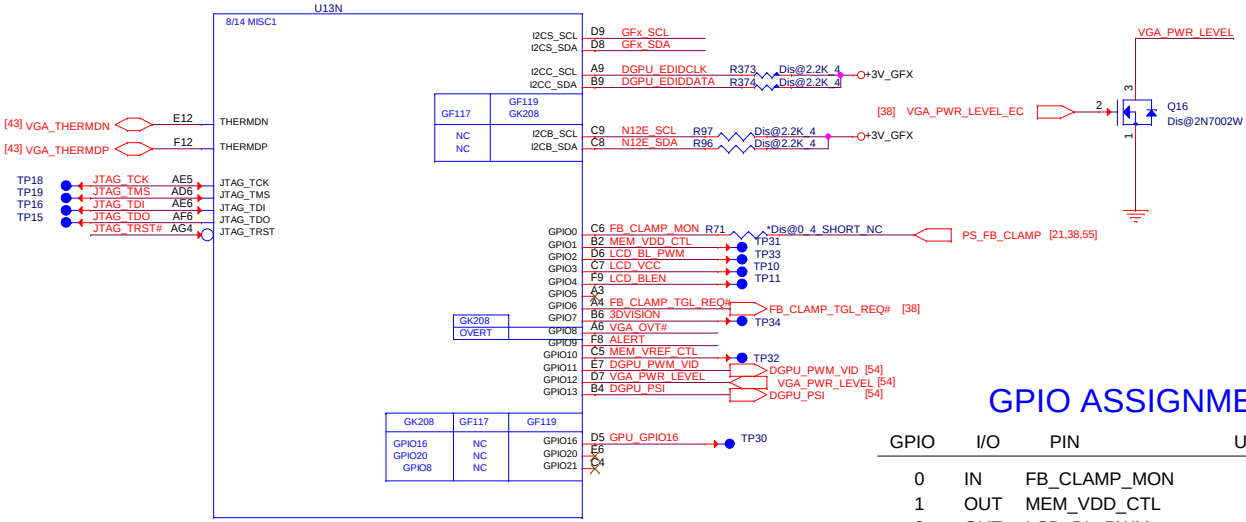


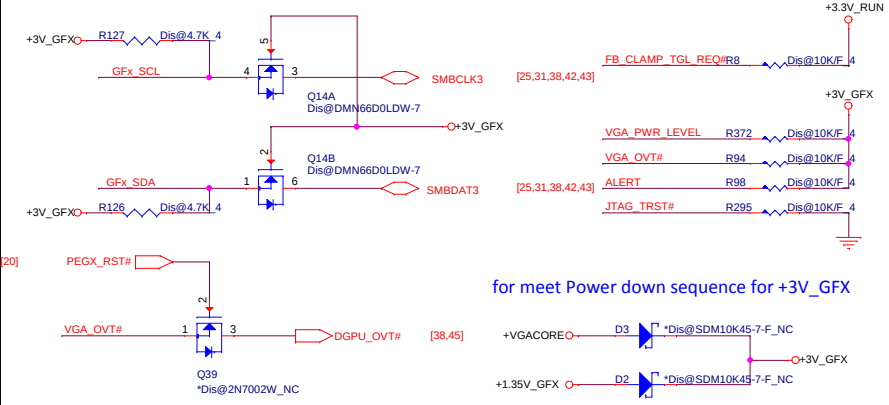


4.99K: CS24992FB00 RES CHIP 4.99K 1/16W +-1% (0402)
45K: CS34502FB00 RES CHIP 45K 1/16W +-1%(0402)
15K: CS31502FB24 RES CHIP 15K 1/16W +-1% (0402)
30.1K: CS33012FB18 RES CHIP 30.1K 1/16W +-1%(0402)
34.8K : CS33482FB22 RES CHIP 34.8K 1/16W +-1% (0402)

Binary Strap Mode Mapping

Strap Pin name	Strap Mapping	Resistance	Note
ROM_SCLK	PCI_DEVID[4] SUB_VENOOR PCI_DEVID[5] PEX_PLL_EN	5Kohm , H	1000 , SUB: no Video BIOS
ROM_SI	RAM_CFG[2] RAM_CFG[1] RAM_CFG[0]	5Kohm , H	4.99K 1000 --> Micron MT41K128M16JT-107G:K (Default) 30.1K 1101 --> Micron MT41K256M16HA-107G:E 34.8K 1110 --> Hynix H5TC4G63AFR-11C
ROM_SO	FB[1] FB[0] SMB_ALT_ADDR VGA_DEVICE	5Kohm , H	1000 , FB: 256 MB (Default) SMB:0x9E
STRAP0	User strap [3:0]	45Kohm , H	1111 , EDID is used
STRAP1	3GIO_CFG[3:0]	45Kohm , D	1111 , USER defined
STRAP2	PCI_DEVID[3:0]	15Kohm , D	010010 , N14P-GV2
STRAP3	SOR[3:0]_EXPOSED	5Kohm , D	0000 , IFPx port not use
STRAP4	RESERVED PCIE_SPEED_GEN3 PCIE_MAX_SPEED DP_PLL_VDD33V	45Kohm , D	0111 , PCIE GEN3 setting





for meet Power down sequence for +3V_GFX

GPIO ASSIGNMENTS (GB2-64)

GPIO	I/O	PIN	USAGE
0	IN	FB_CLAMP_MON	FB Clamp monitor
1	OUT	MEM_VDD_CTL	MEMORY VDD ID
2	OUT	LCD_BL_PWM	LCD BACKLIGHT PWM
3	OUT	LCD_VCC	PANEL POWER ENABLE
4	OUT	LCD_BLEN	PANEL BACKLIGHT ENABLE
5		RESERVE	
6	OUT	FB_CLAMP_TGL_REQ#	# --> FB Clamp toggle request
7	OUT	3DVision	3D VISION LEFT/RIGHT VISION
8	I/O	OVERT	ACTIVE LOW THERMAL OVER TEMP
9	I/O	ALERT	ACTIVE LOW THERMAL ALERT
10	OUT	MEM_VREF_CTL	MEMMORY VREF CONTROL
11	OUT	PWM_VID	GPU Core VDD PWM control
12	IN	PWR_LEVEL	Power Detect ,HIGH=AC, LOW=DC
13	OUT	PSI	Phase Shedding
14	IN	HPD_A	HOT PLUG DETECT FOR IFPAB
15	IN	HPD_C	HOT PLUG DETECT FOR IFPC
16	OUT	FRM_LCK	MEMMORY VDD CONTROL
17	IN	HPD_D	HOT PLUG DETECT FOR IFPD
18	IN	HPD_E	HOT PLUG DETECT FOR IFPE
19	IN	HPD_F or HPD_B	HOT PLUG DETECT FOR IFPF
20/21		RESERVE	

VRAM Configuration Table

RAMCFG [3:0]	DESCRIPTION	Vendor	DELL P/N	QCI P/N
0000 1000 0x8	MT41K128M16JT-107G:K (FCBGA)(96P)	Micron	NA	AKD5DGSTL00
1101 0xD	MT41K256M16HA-107G:E	Micron	NA	AKD5PGSTL00
1110 0xE	H5TC4G63AFR-11C	Hynix	NA	AKD5PGWTW05

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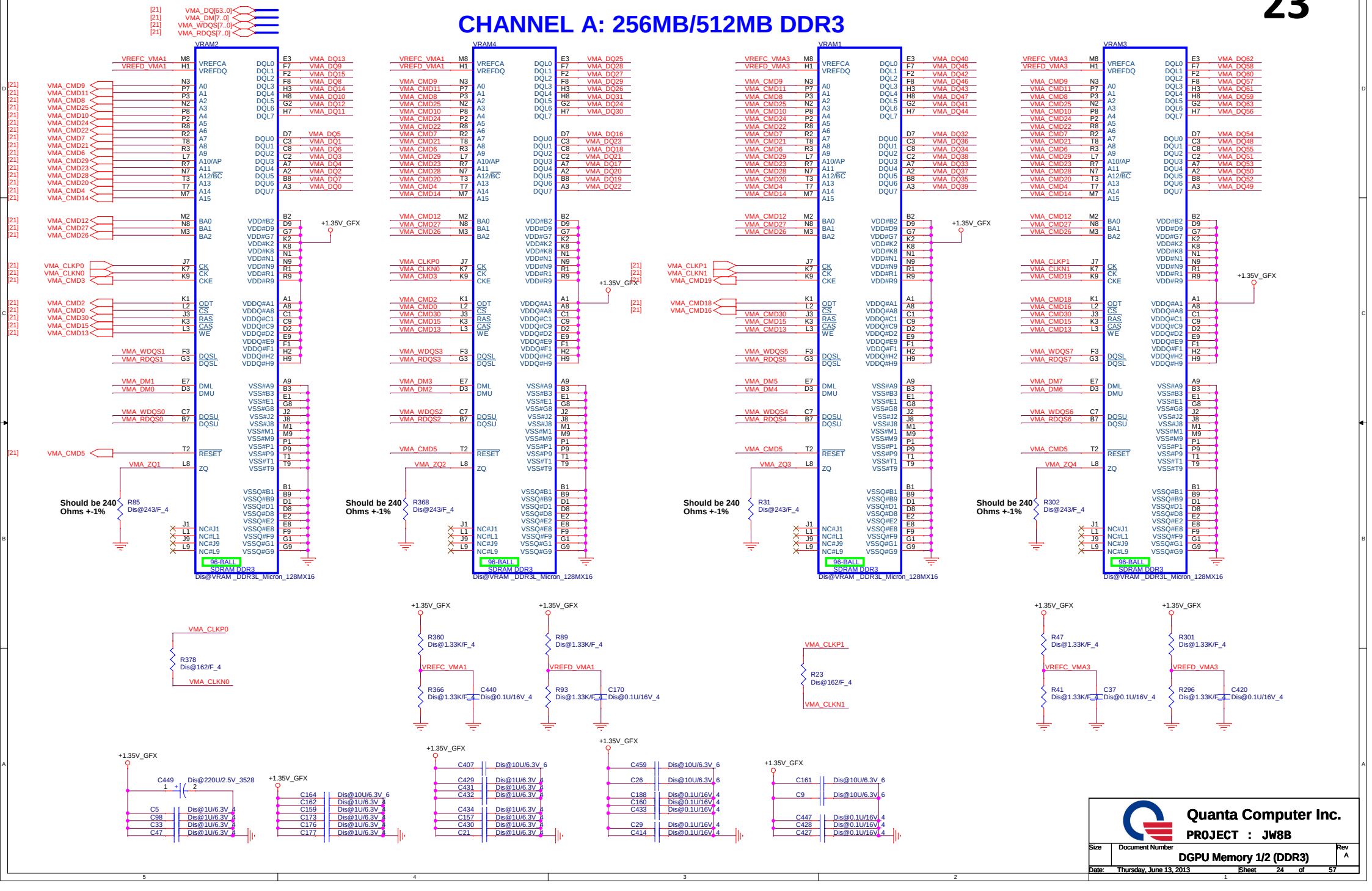
CHANNEL A: 256MB/512MB DDR3



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Size	Document Number	Rev
	DGPU Memory 1/2 (DDR3)	A

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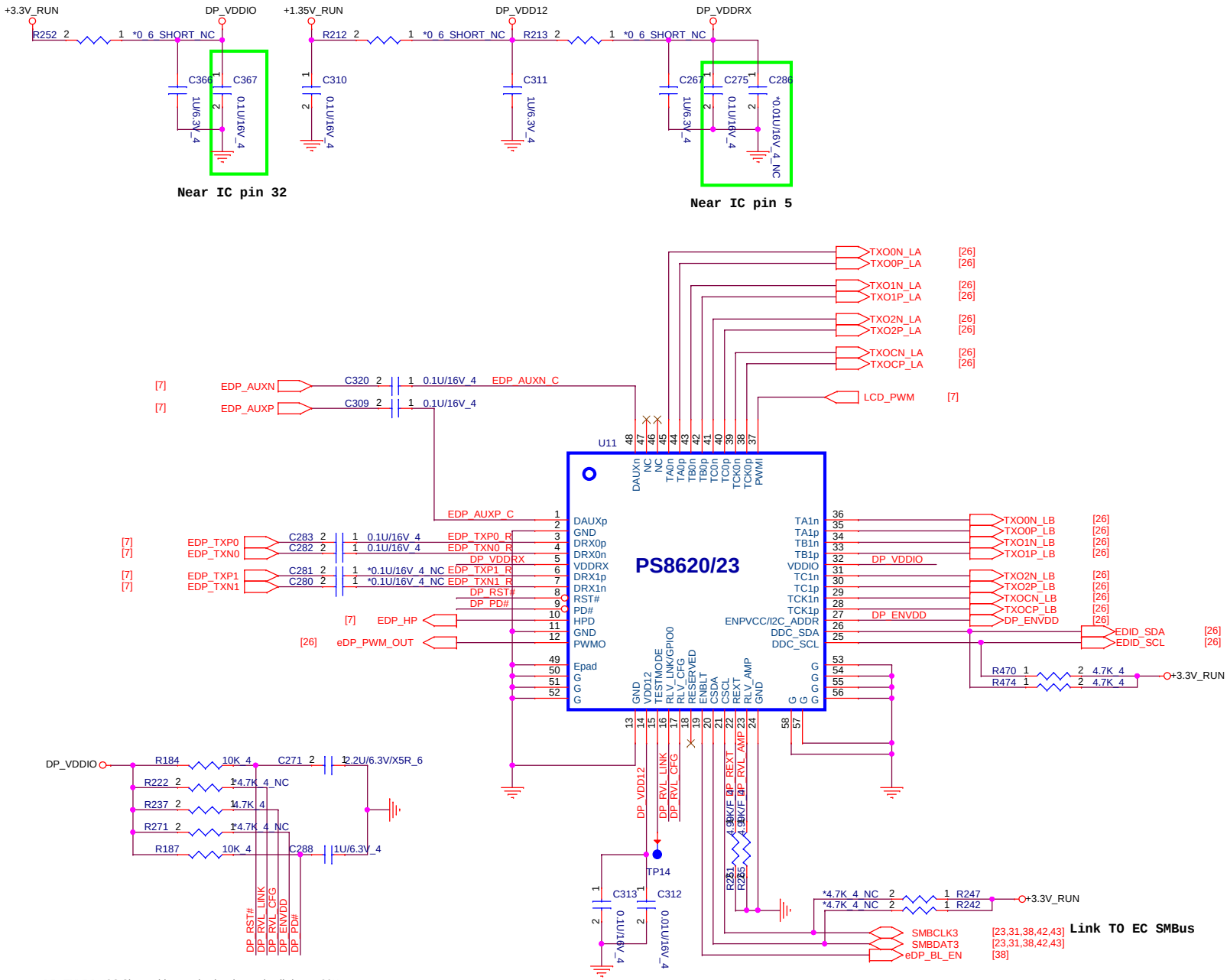

DP_ENVDD: I2C Slave address selection, internal pull-down ~80K
L: 0x10h~0x1Fh
H: 0x90h~0x9Fh

DP_RVL_LINK: LVDS single link or dual link selection, internal pull-down ~80K
L: Single link LVDS
H: Dual link LVDS

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	eDP to LVDS (PS8620/23)	A
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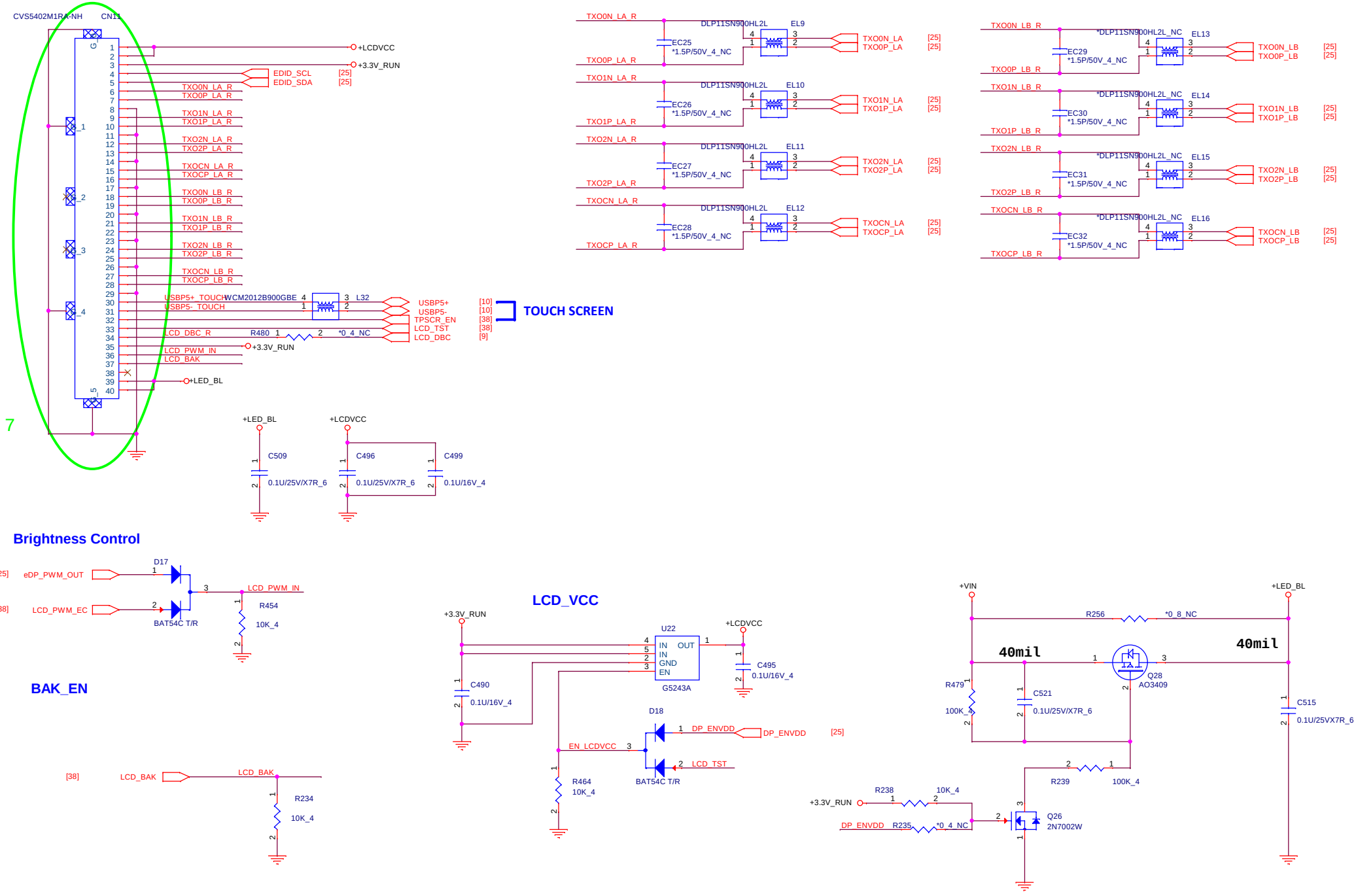

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Quanta Computer Inc.			
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	LVDS CONN		A
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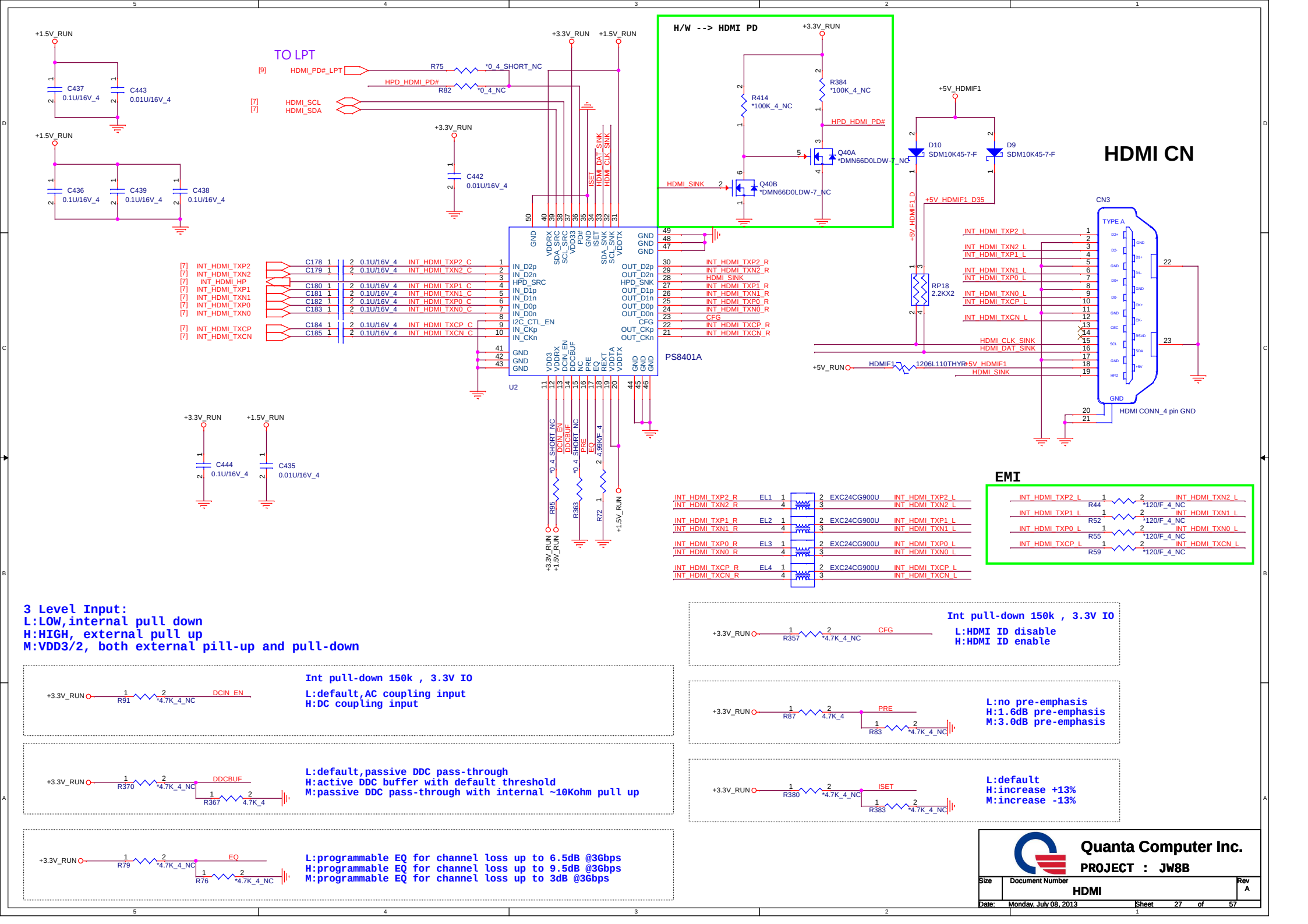
TO LPT
H/W --> HDMI PD
HDMI CN
EMI
PS8401A
U2
HDMI CONN_4 pin GND
3 Level Input:
L:LOW,internal pull down
H:HIGH, external pull up
M:VDD3/2, both external pill-up and pull-down
Int pull-down 150k , 3.3V IO
L:default,AC coupling input
H:DC coupling input
Int pull-down 150k , 3.3V IO
L:HDMI ID disable
H:HDMI ID enable
L:no pre-emphasis
H:1.6dB pre-emphasis
M:3.0dB pre-emphasis
L:default,passive DDC pass-through
H:active DDC buffer with default threshold
M:passive DDC pass-through with internal ~10Kohm pull up
L:default
H:increase +13%
M:increase -13%
L:programmable EQ for channel loss up to 6.5dB @3Gbps
H:programmable EQ for channel loss up to 9.5dB @3Gbps
M:programmable EQ for channel loss up to 3dB @3Gbps
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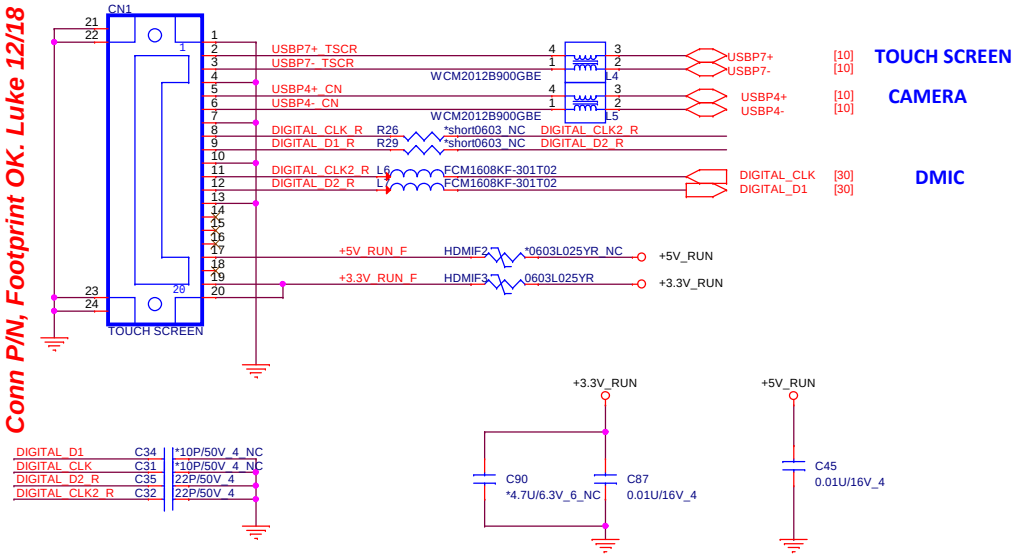
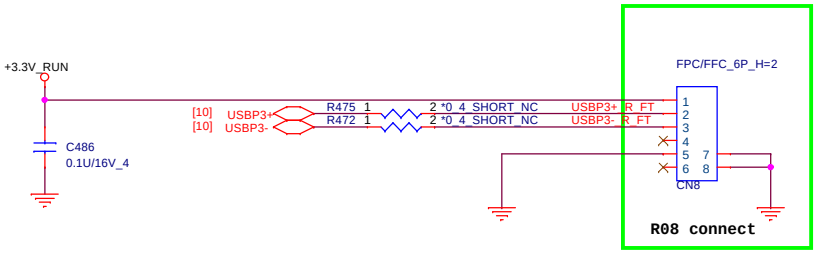
CAMERA / DMIC



Fingerprint



Quanta Computer Inc.		
PROJECT : JW8B		
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Mini-PCIE

H15
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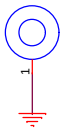

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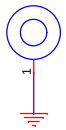
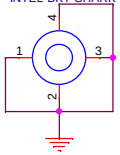


CPU BKT

H8
*INTEL-BKT-SHARK-ULT



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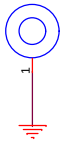

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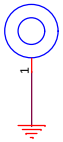

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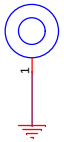

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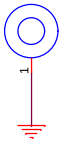

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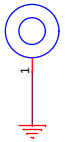

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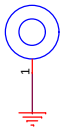

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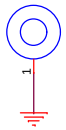

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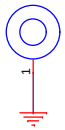

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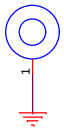

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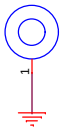

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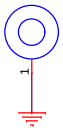

H1
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H2
*h-c59d59n

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Size Custom	Document Number <Doc>	Rev A
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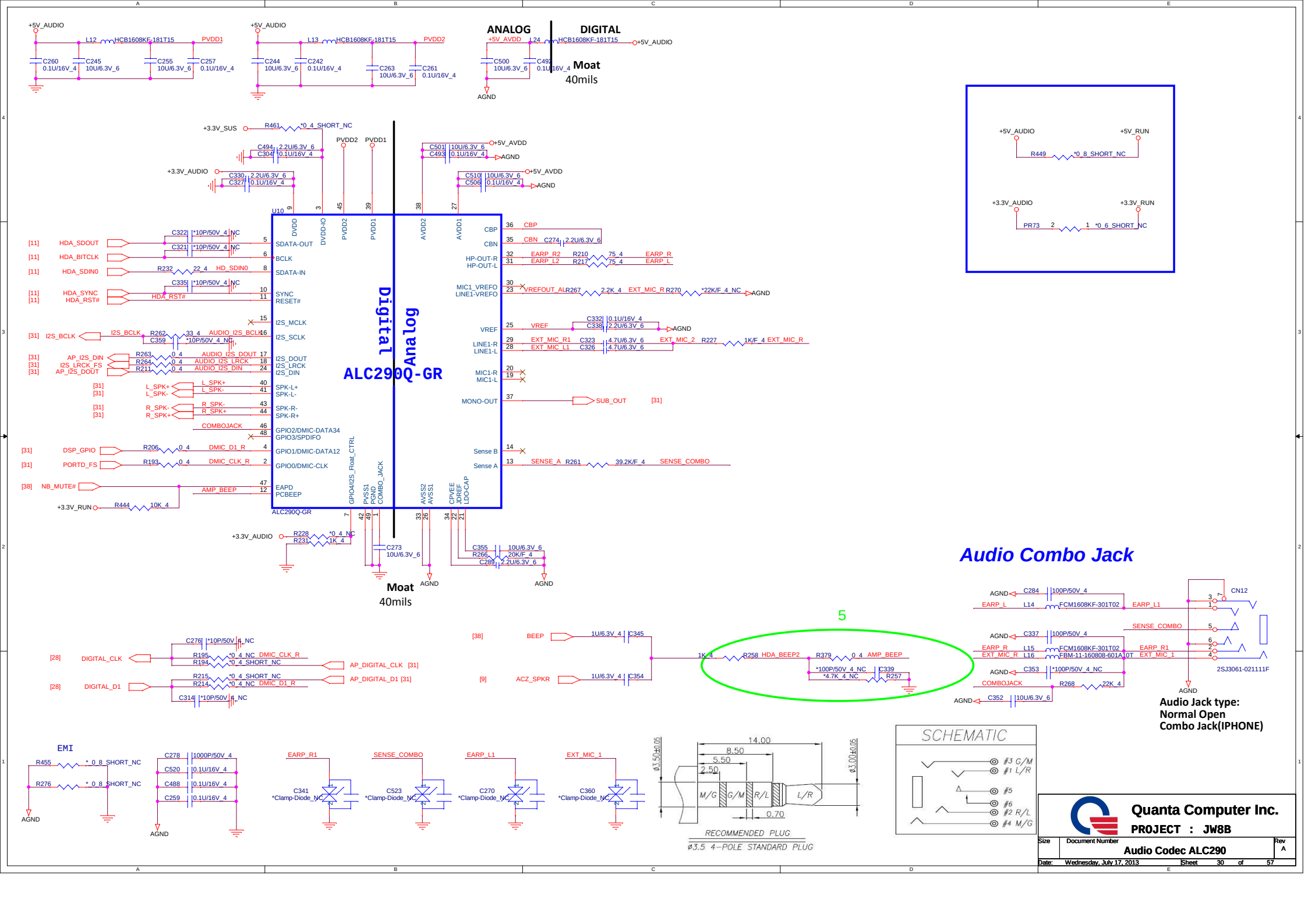
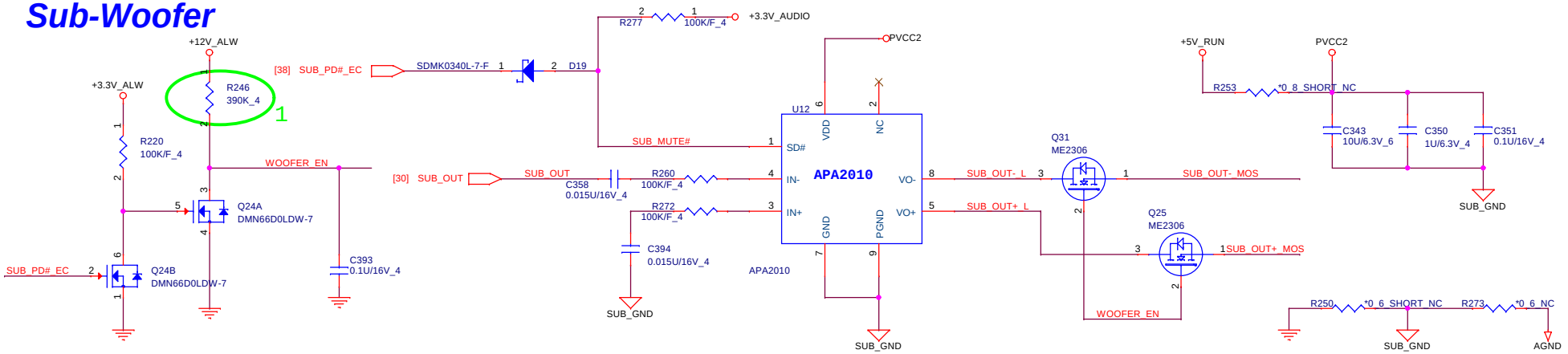
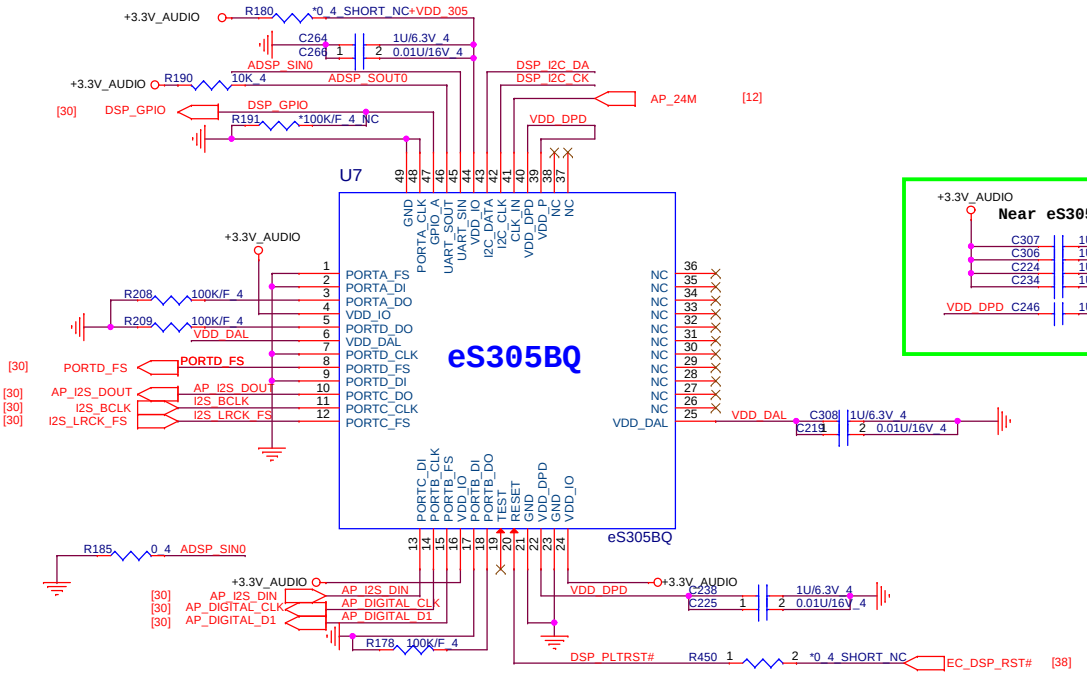
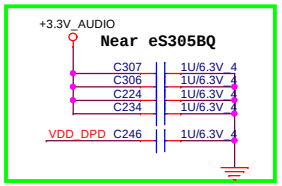

ANALOG
DIGITAL
Moat
40mils
ALC290Q-GR
Analog
Digital
Moat
40mils
Audio Combo Jack
Audio Jack type:
Normal Open
Combo Jack(IPHONE)
EMI
SCHEMATIC
Quanta Computer Inc.
PROJECT : JW8B
Audio Codec ALC290
Wednesday, July 17, 2013

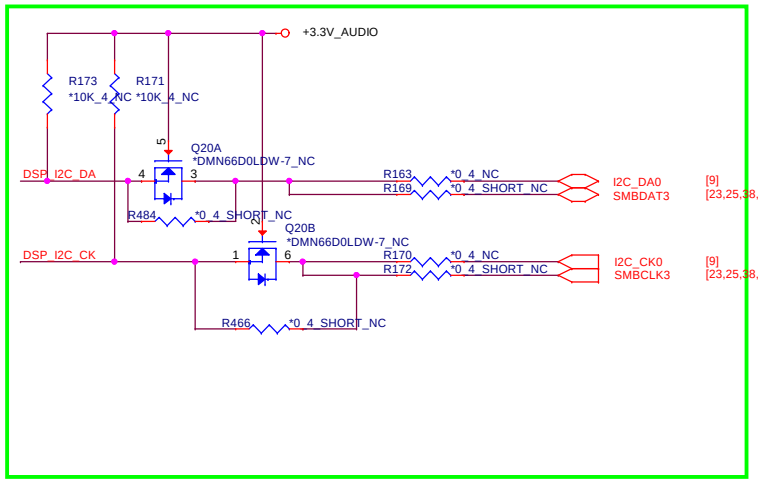
Sub-Woofer



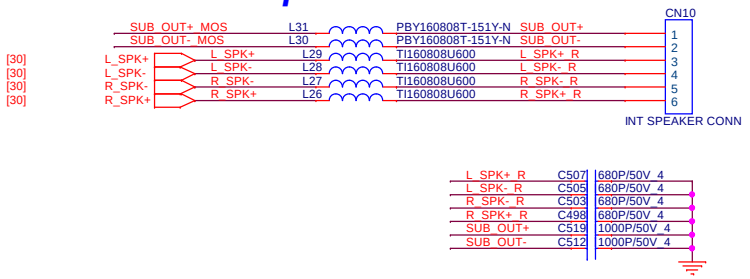
Audio Processor







Int. Speaker



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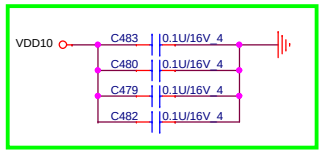
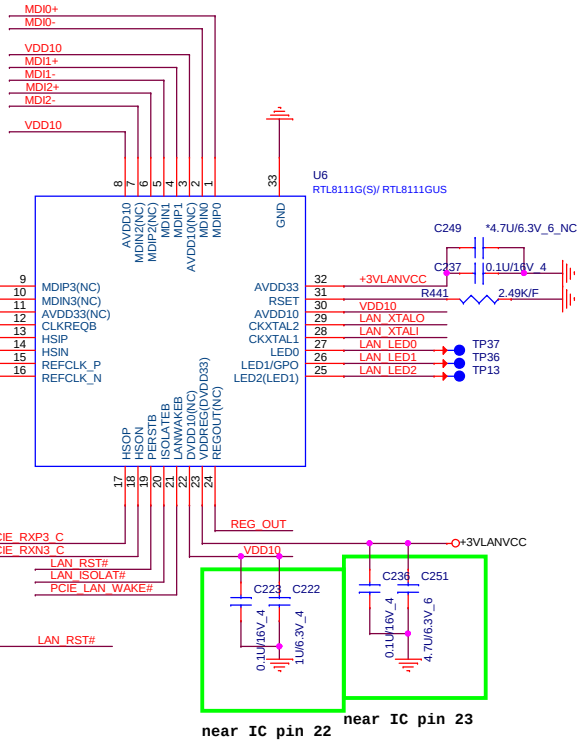
JW8 have support S5 wave up

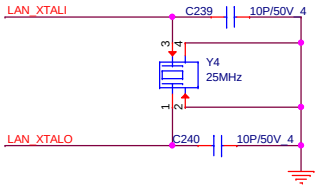
Each CAP near IC pin 3 , 8 , 22 , 30

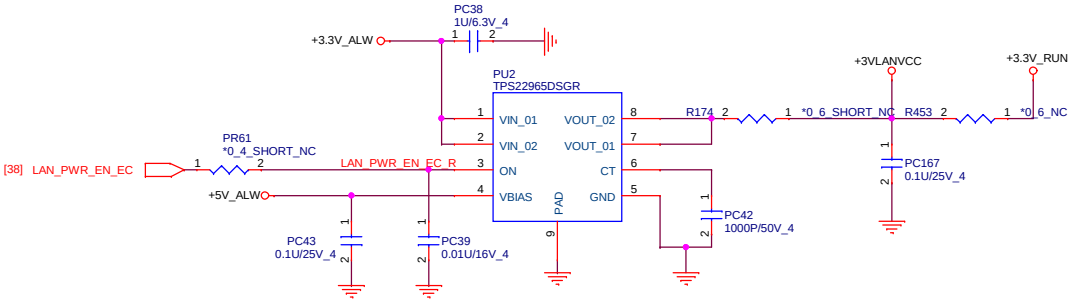


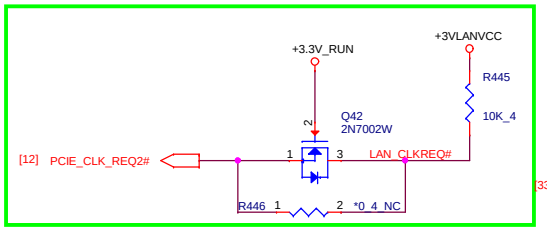


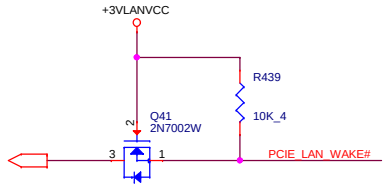
near IC pin 22

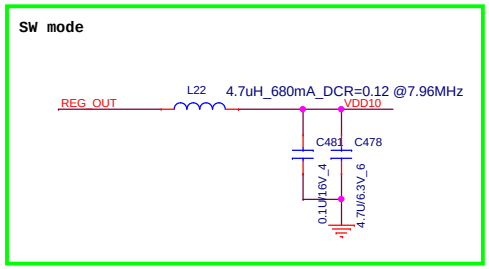
near IC pin 23

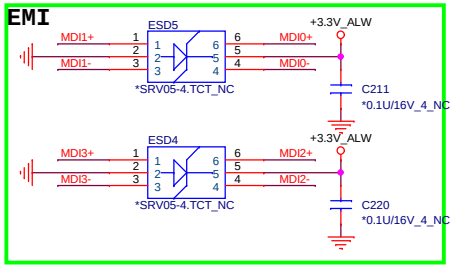


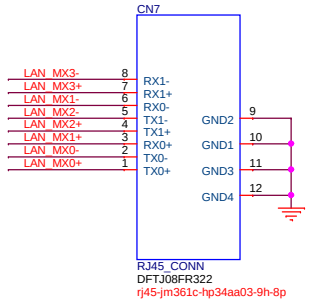


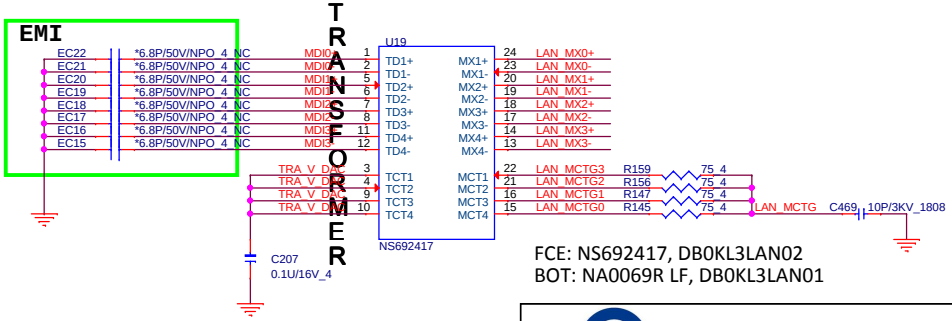












FCE: NS692417, DB0KL3LAN02
BOT: NA0069R LF, DB0KL3LAN01

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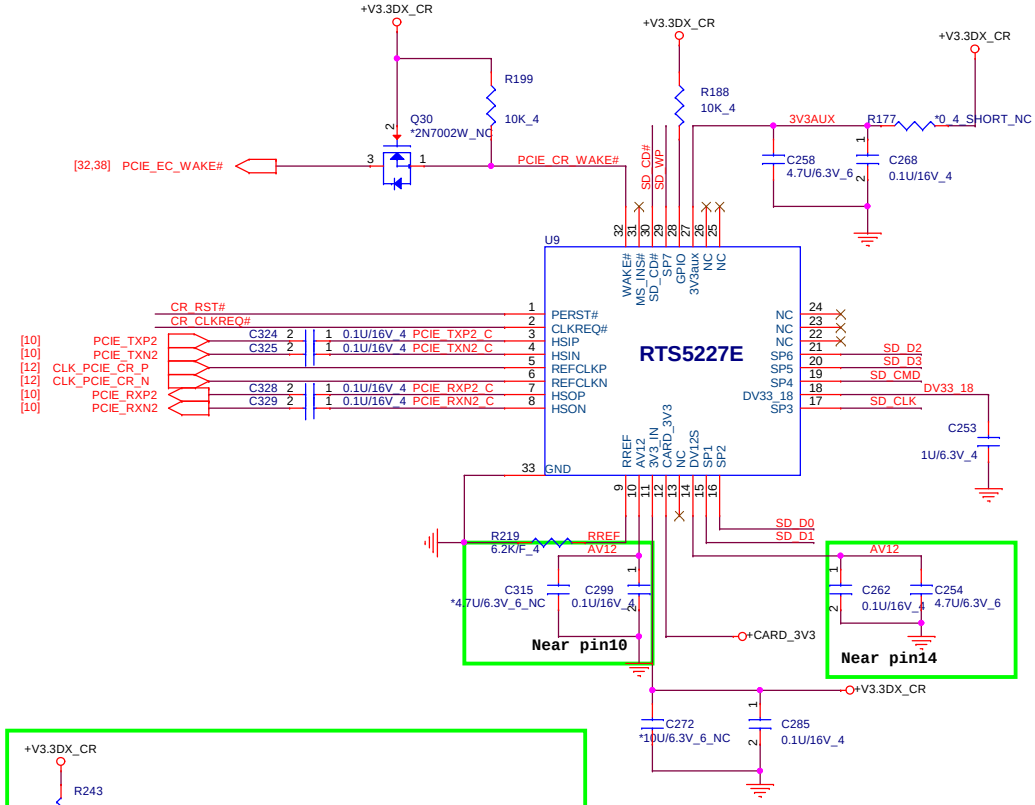
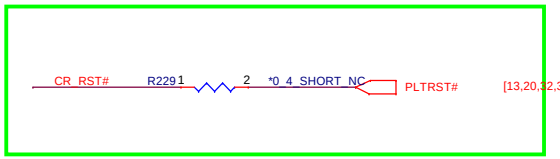
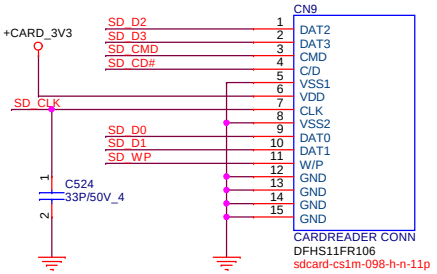
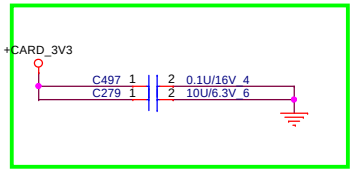
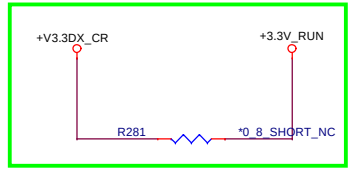




SD / MMC CARD READER







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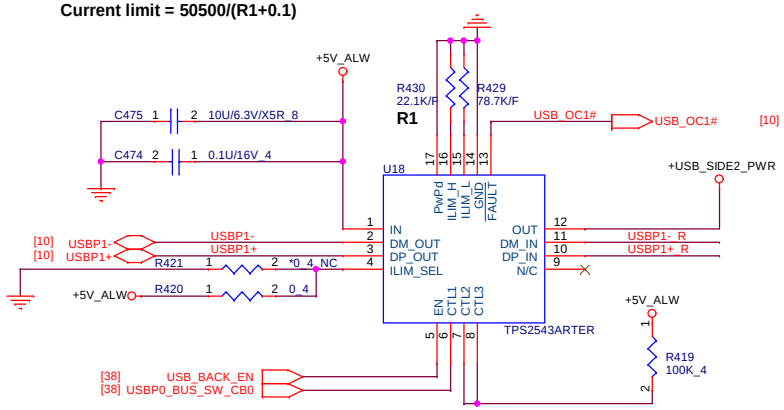
USB3.0 Power Share

USB Power share

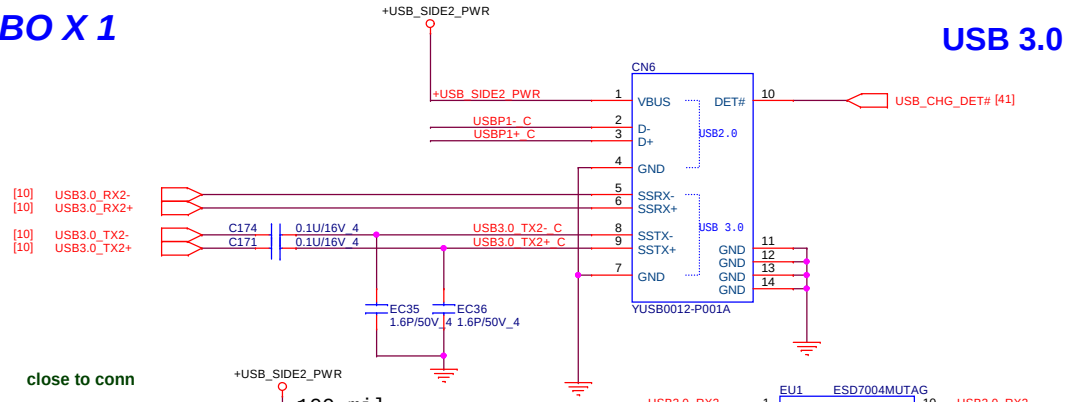
USBP0_BUS_SW_CB0	Mode
Low	DCP, Auto-detect
High	CDP, BC Spec 1.2

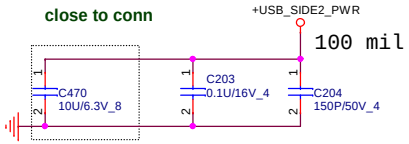
	R1	mA	
OC limitation	100k ohm	504	
	22.1k ohm	2274	Applied Now

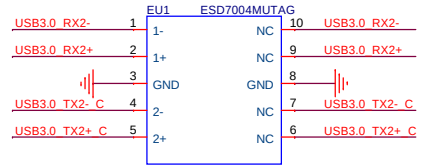
Current limit = 50500/(R1+0.1)

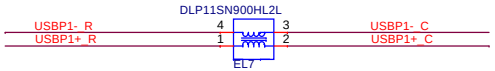


USB3.0/2.0 COMBO X 1



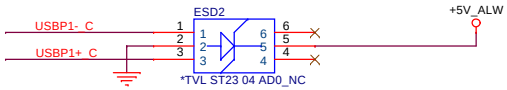






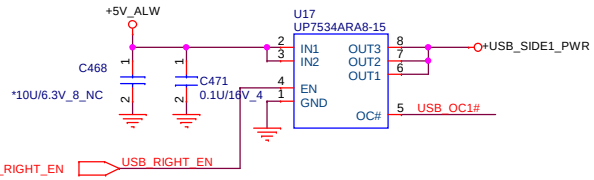
ESD Function

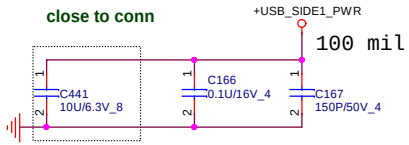
Place ESD diodes as close as USB connector.

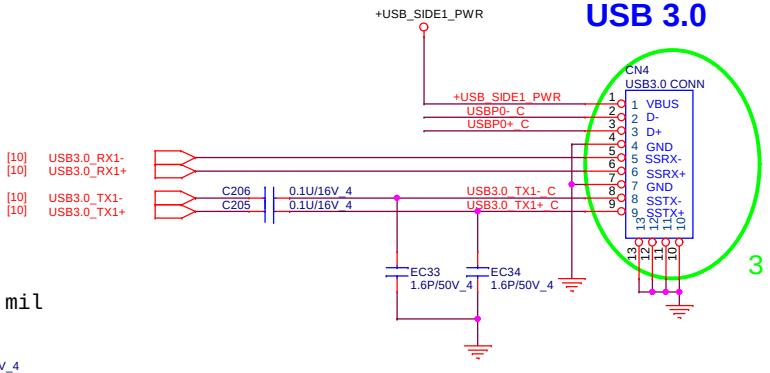


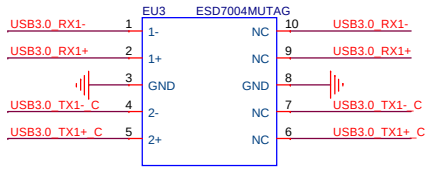
USB3.0/2.0 COMBO

I continuous 1.5A
OC 2.0A M13 Request



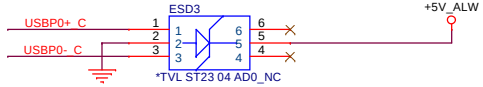






ESD Function

Place ESD diodes as close as USB connector.



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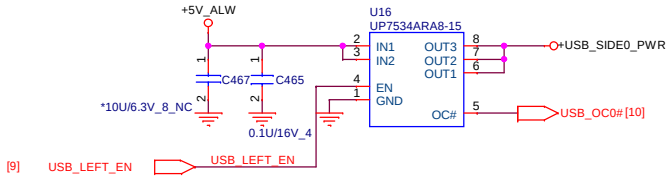
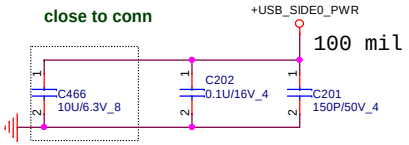
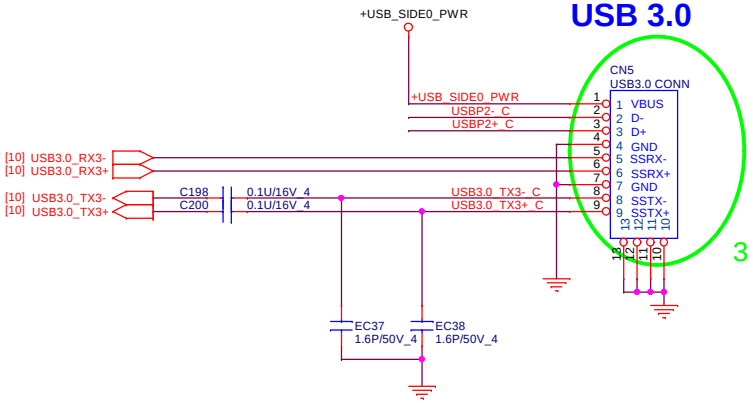
I continuous 1.5A
OC 2.0A M13 Request

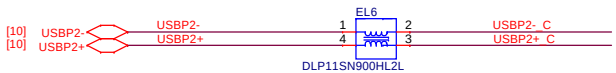


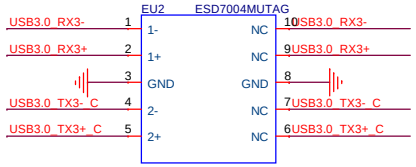
close to conn



USB 3.0

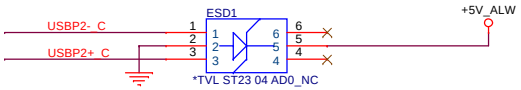






ESD Function

Place ESD diodes as close as USB connector.



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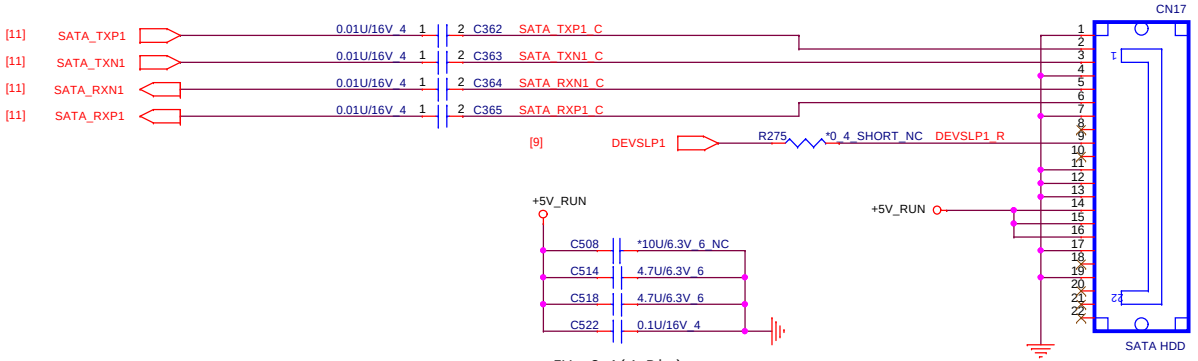
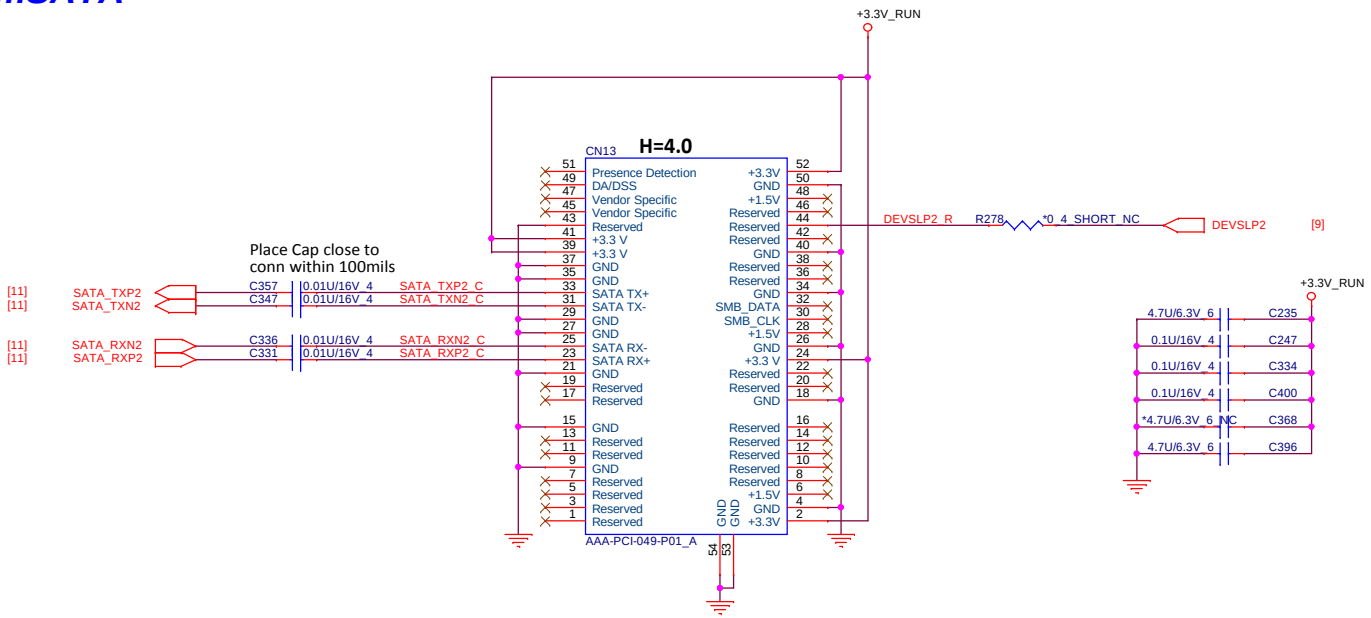
SATA HDD Connector



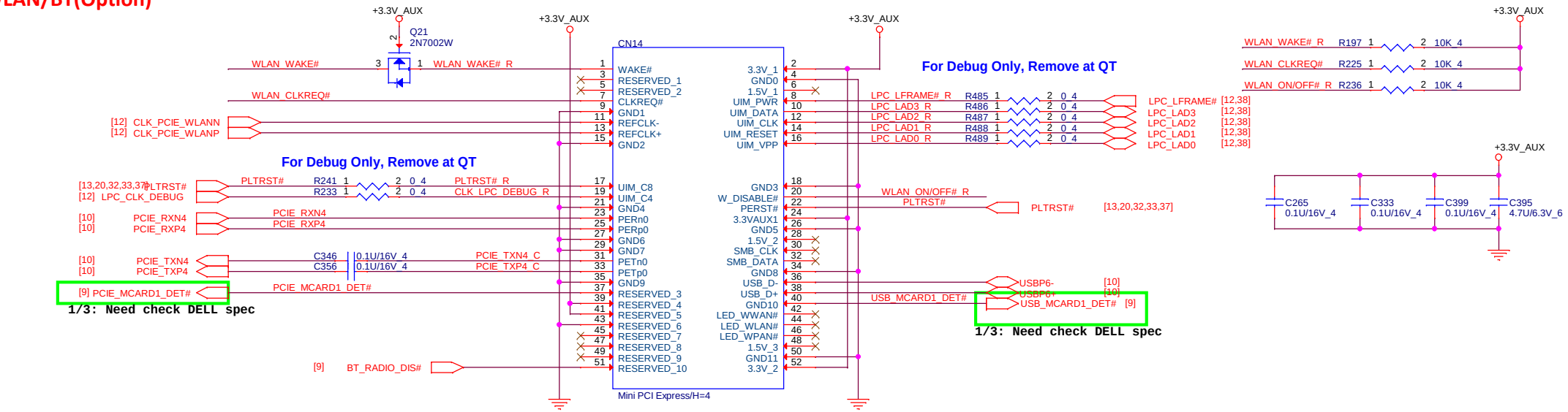
+5V: 2 A(4 Pin)
+3V: 2 A(4 Pin)
Gnd : (5 Pin)

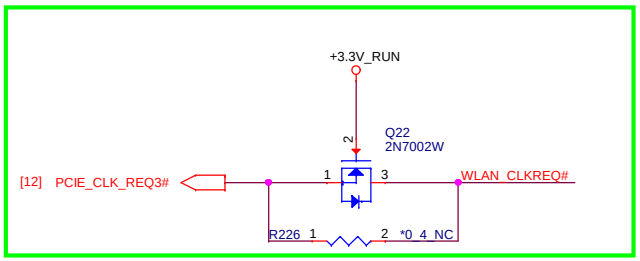
mSATA

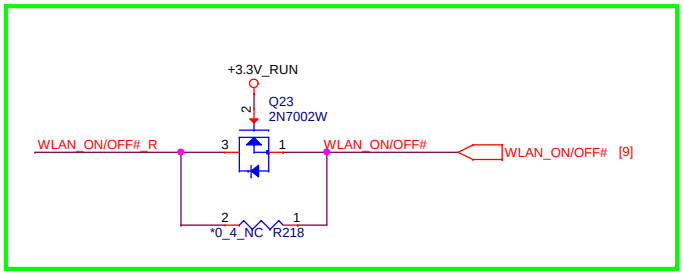


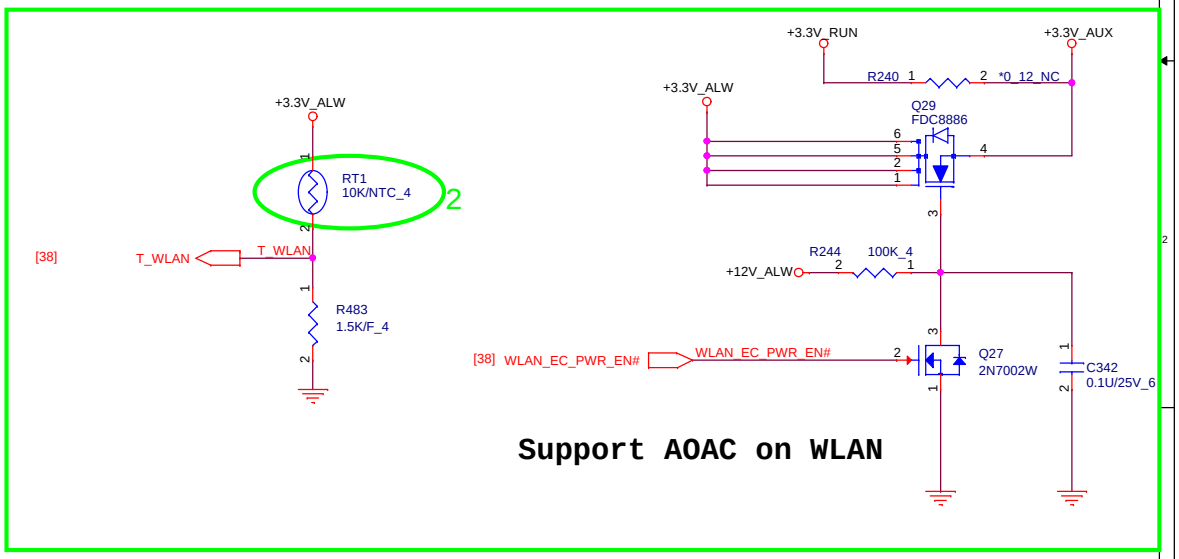
Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number: SATA HDD/mSATA/EMI	Rev A
Date: Monday, July 08, 2013	Sheet 36 of 57	

Mini Card
WLAN/BT(Option)









Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number	Rev
	WLAN/BT	A
Date: Monday, July 08, 2013	Sheet 37 of 57	

Place these caps close to ITE8528.

IT8528

U23
IT8528

Board ID Straps

BD0		
000	0.5V_PU 100K	UMA
001	1.0V_PU 45.3K	DIS
010	1.5V_PU 24.3K	UMA 28W
100	2.0V_PU 12K	DIS 28W
101	2.5V_PU 6.49K	
110	3.0V_PU 1.65K	
111	0V_NO PU	

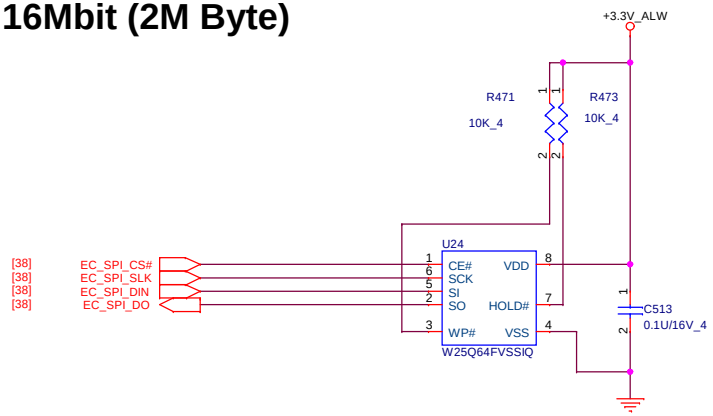
BD1		
000	0.5V_PU 100K	SSI (X00)
001	1.0V_PU 45.3K	PT (X01)
010	1.5V_PU 24.3K	ST (X02)
100	2.0V_PU 12K	QT (AQQ)
101	2.5V_PU 6.49K	
110	3.0V_PU 1.65K	WIN8.1 (ST)
111	0V_NO PU	WIN8.1 (QT)

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

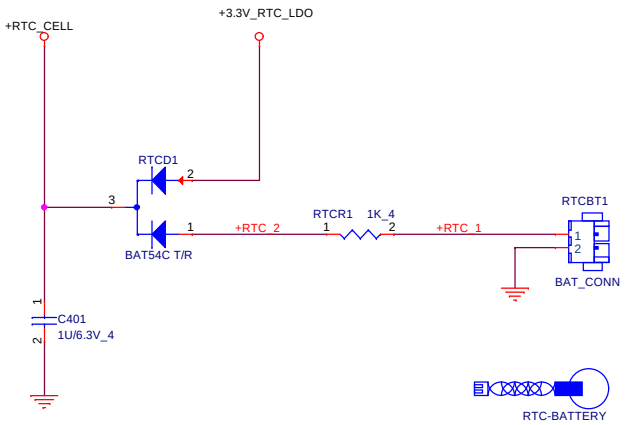
Quanta Computer Inc.
PROJECT : JW8B

Size	Document Number	Rev
	SIO (ITE8528H)	A
Date: Wednesday, July 17, 2013	Sheet 38 of 57	

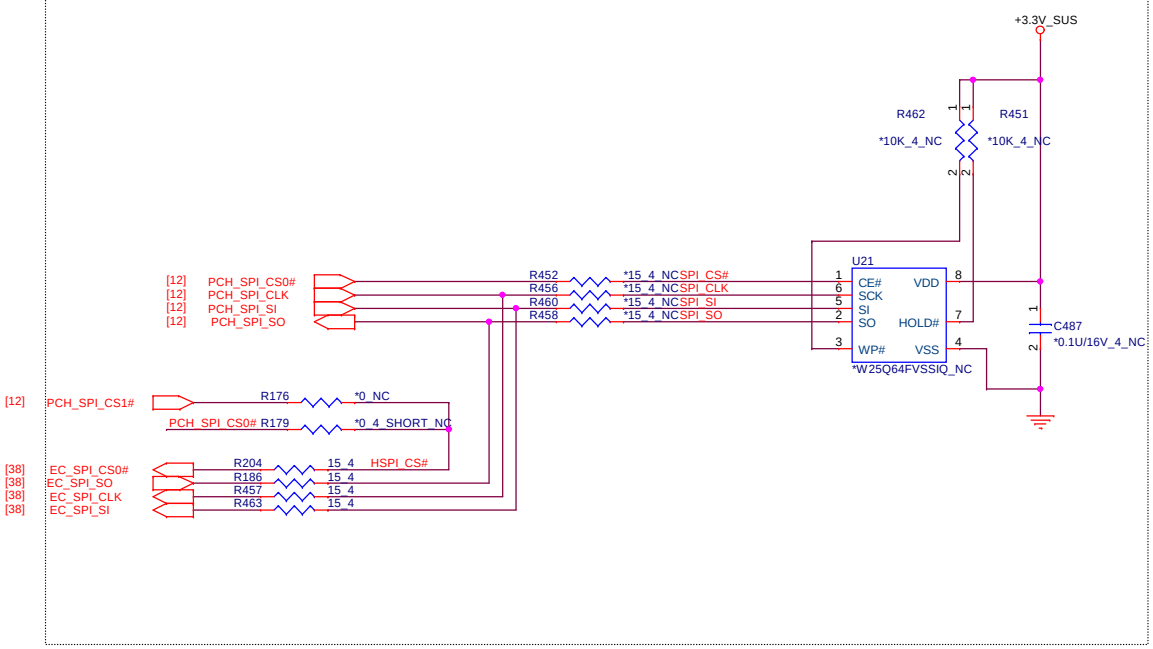
For EC 16Mbit (2M Byte)



RTC BATTERY



For PCH 64Mbit (8M Byte)



Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	FLASH / RTC	A

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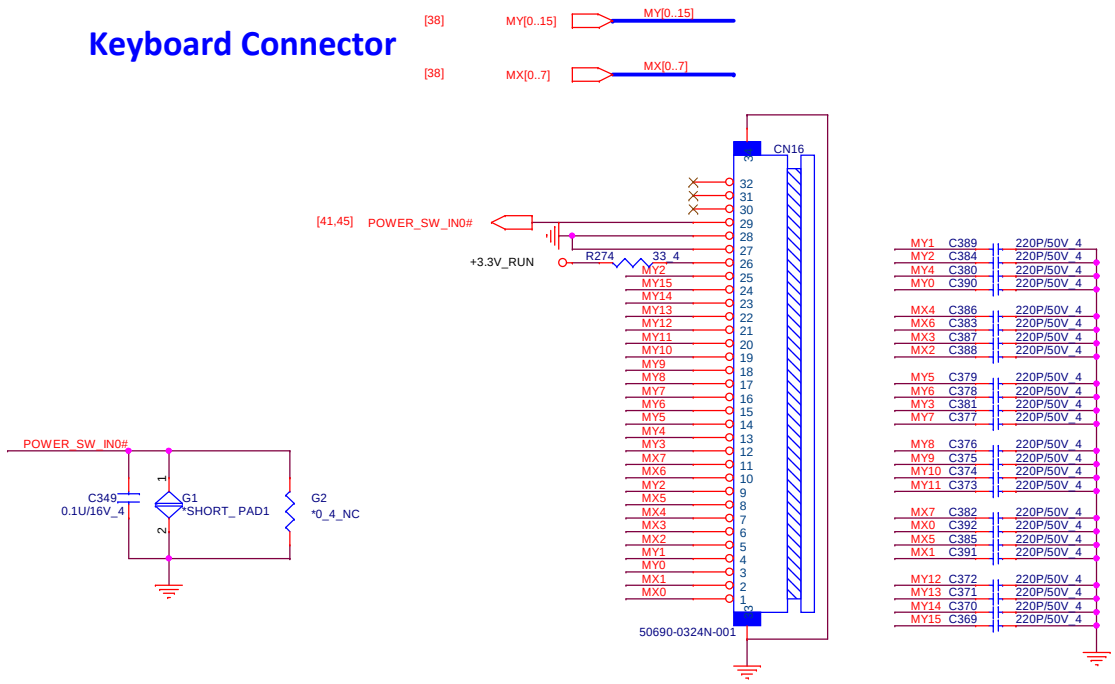
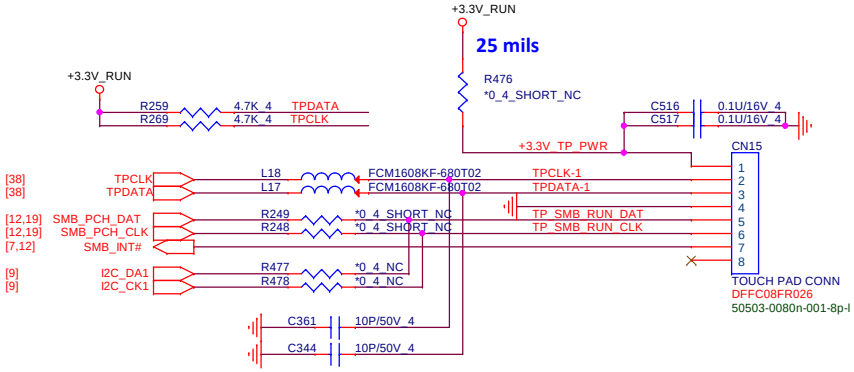
Keyboard Connector



Touch Pad Connector



Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	KB/CLK Gen/FAN/TP	A

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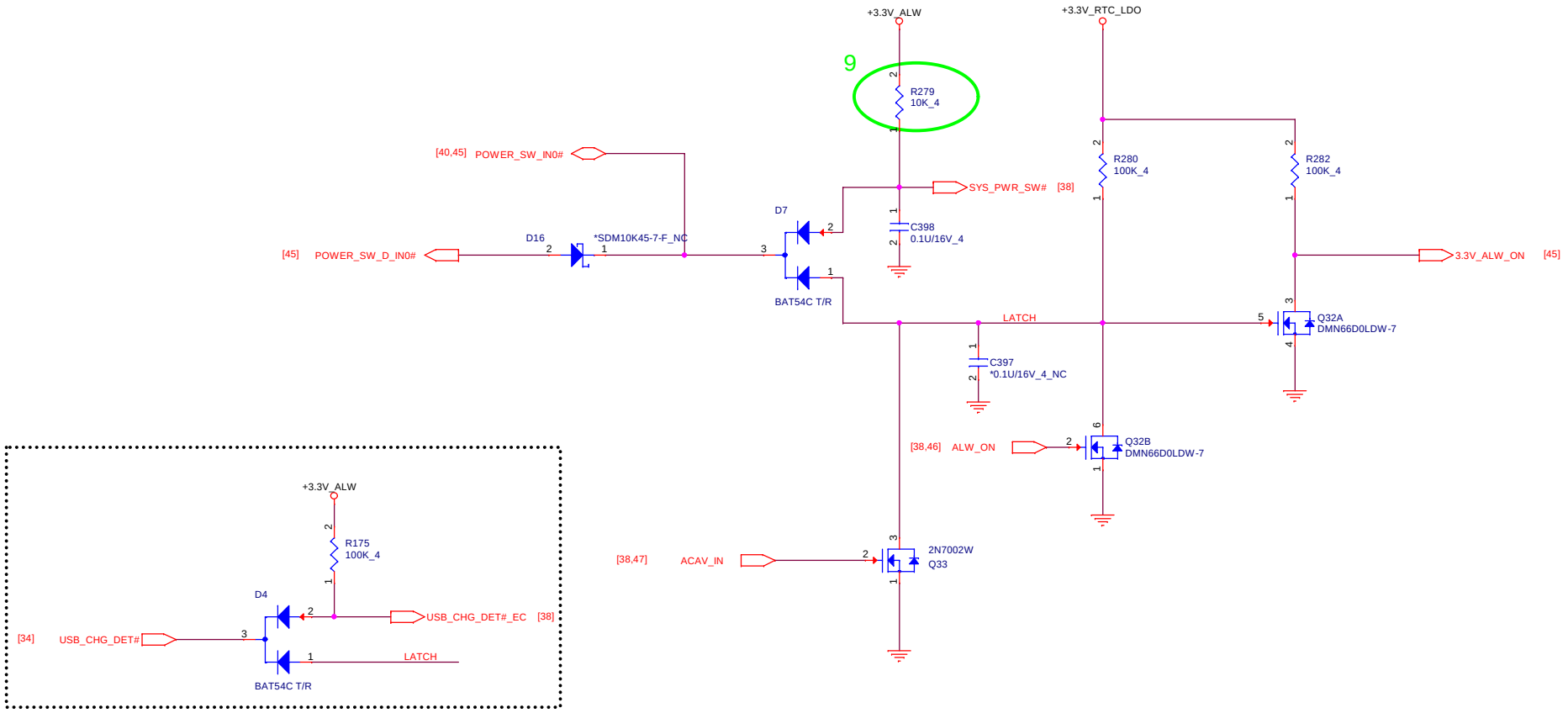
3VALW ON POWER LOGIC



Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number: 3VALW ON POWER LOGIC	Rev A
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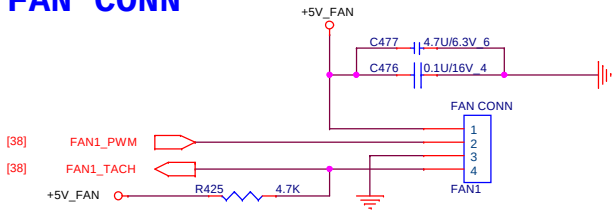
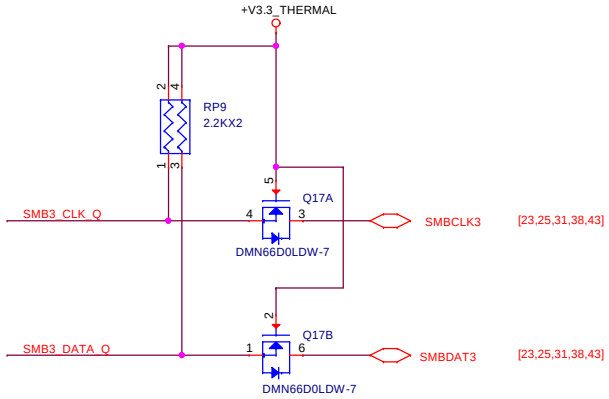
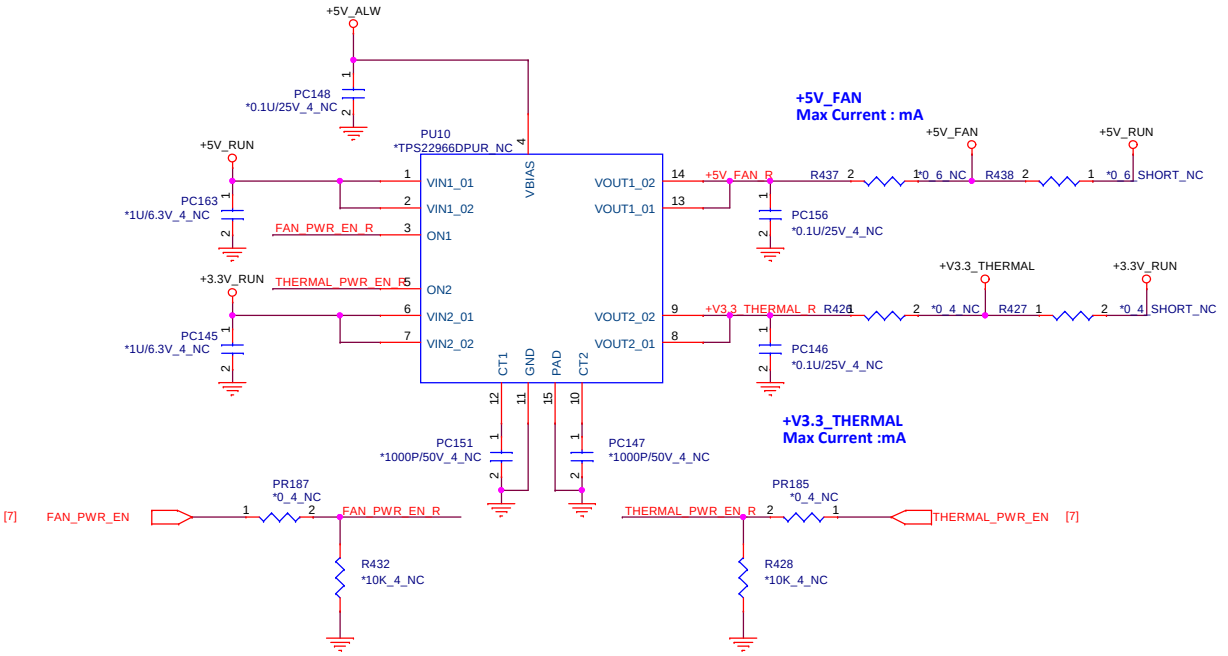
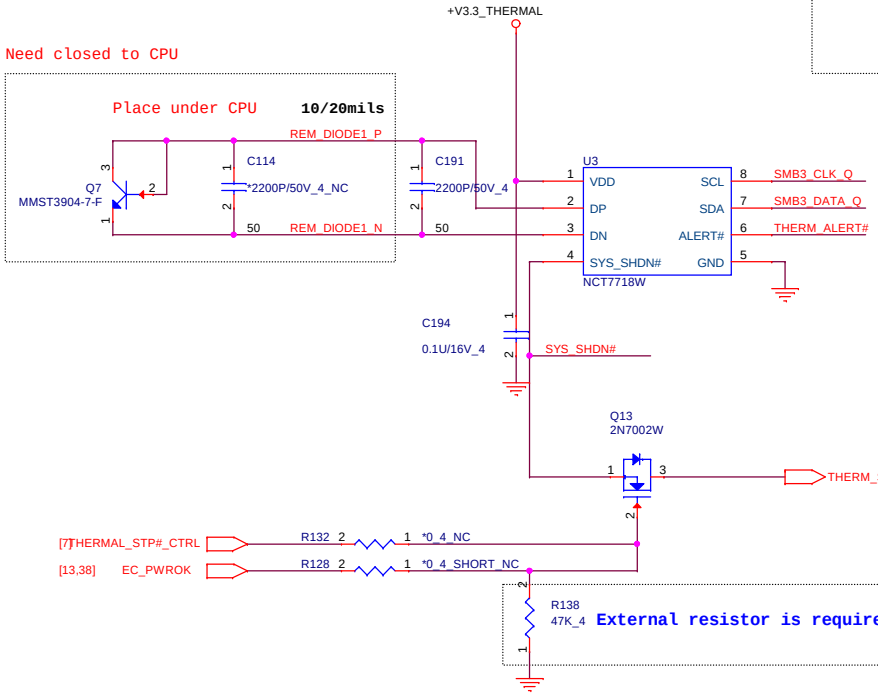
FAN CONN

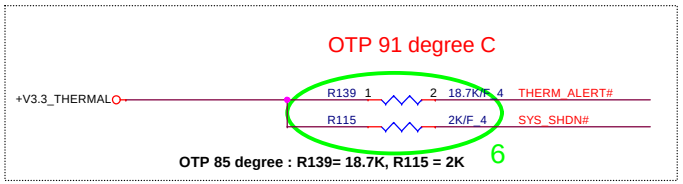






THERMAL IC





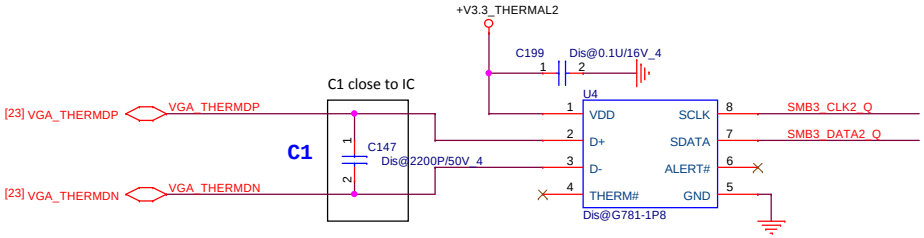
SYS_SHD# / ALERT#	2K	7.5K	10.5K	14K	18.7K
2K	77'C	87'C	97'C	107'C	117'C
7.5K	79'C	89'C	99'C	109'C	119'C
10.5K	81'C	91'C	101'C	111'C	121'C
14K	83'C	93'C	103'C	113'C	123'C
18.7K	85'C	95'C	105'C	115'C	125'C

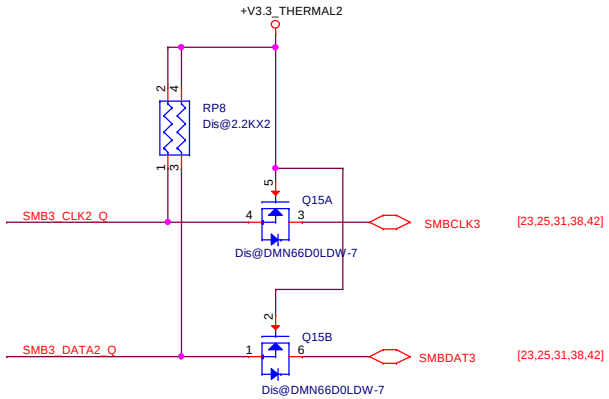
Quanta Computer Inc.
PROJECT : JW8B

Size	Document Number	Rev
	FAN & THERMAL	A
Date: Wednesday, July 17, 2013	Sheet 42 of 57	

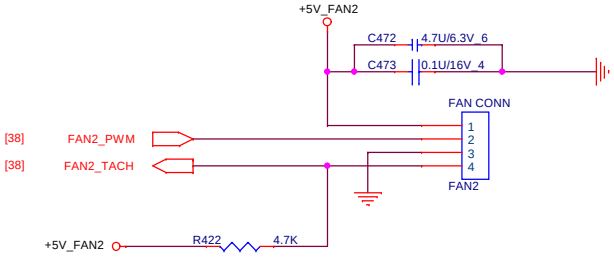
For GPU use

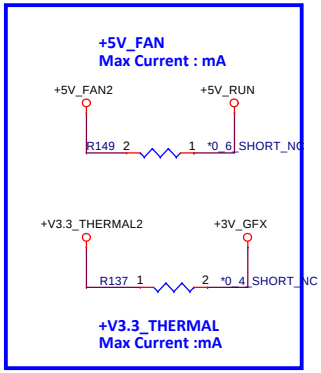
G781-1P8
SMBus address is 1001101xb (9Ah) (x is R/W bit).





FAN CONN



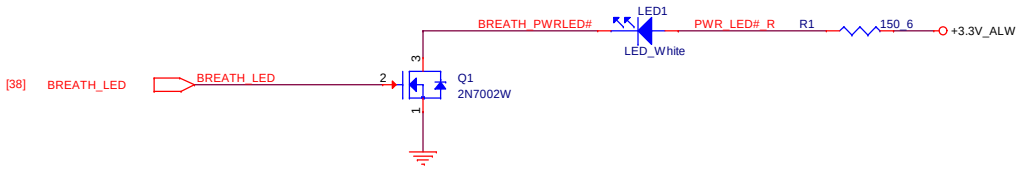


Quanta Computer Inc.
PROJECT : JW8B

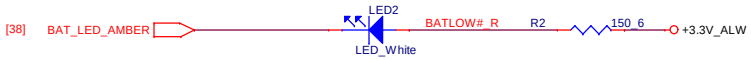
Size	Document Number	Rev
	Thermal GPU	A
Date: Monday, July 08, 2013	Sheet 43 of 57	

LED Status

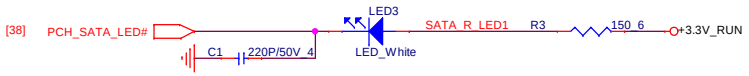
System status LED



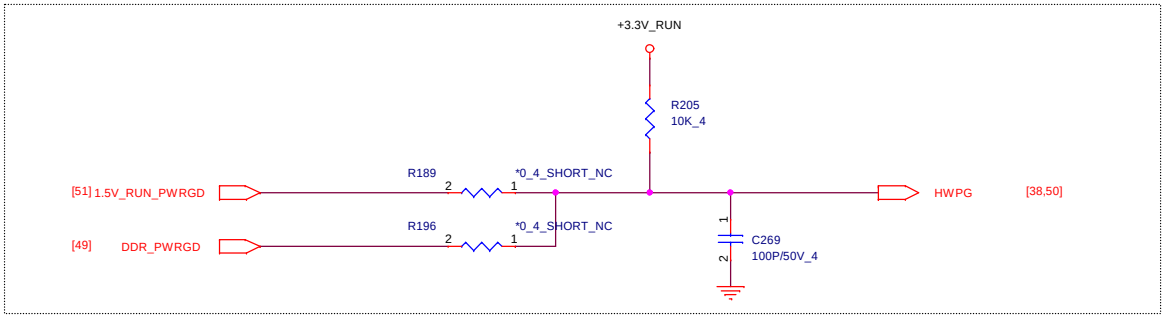
Battrey charger LED

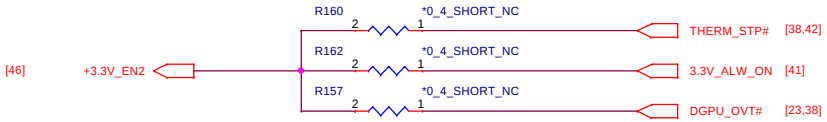


HDD access LED

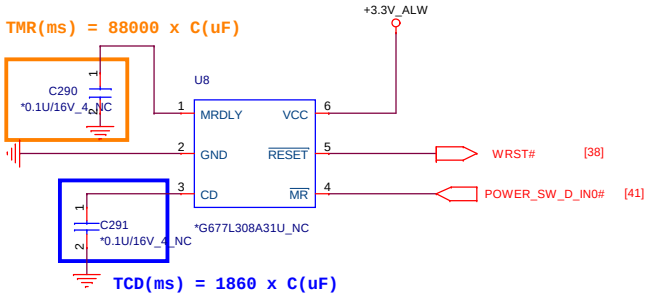


Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number: LED	Rev: A
Date: Friday, May 10, 2013	Sheet 44 of 57	





HW reset IC



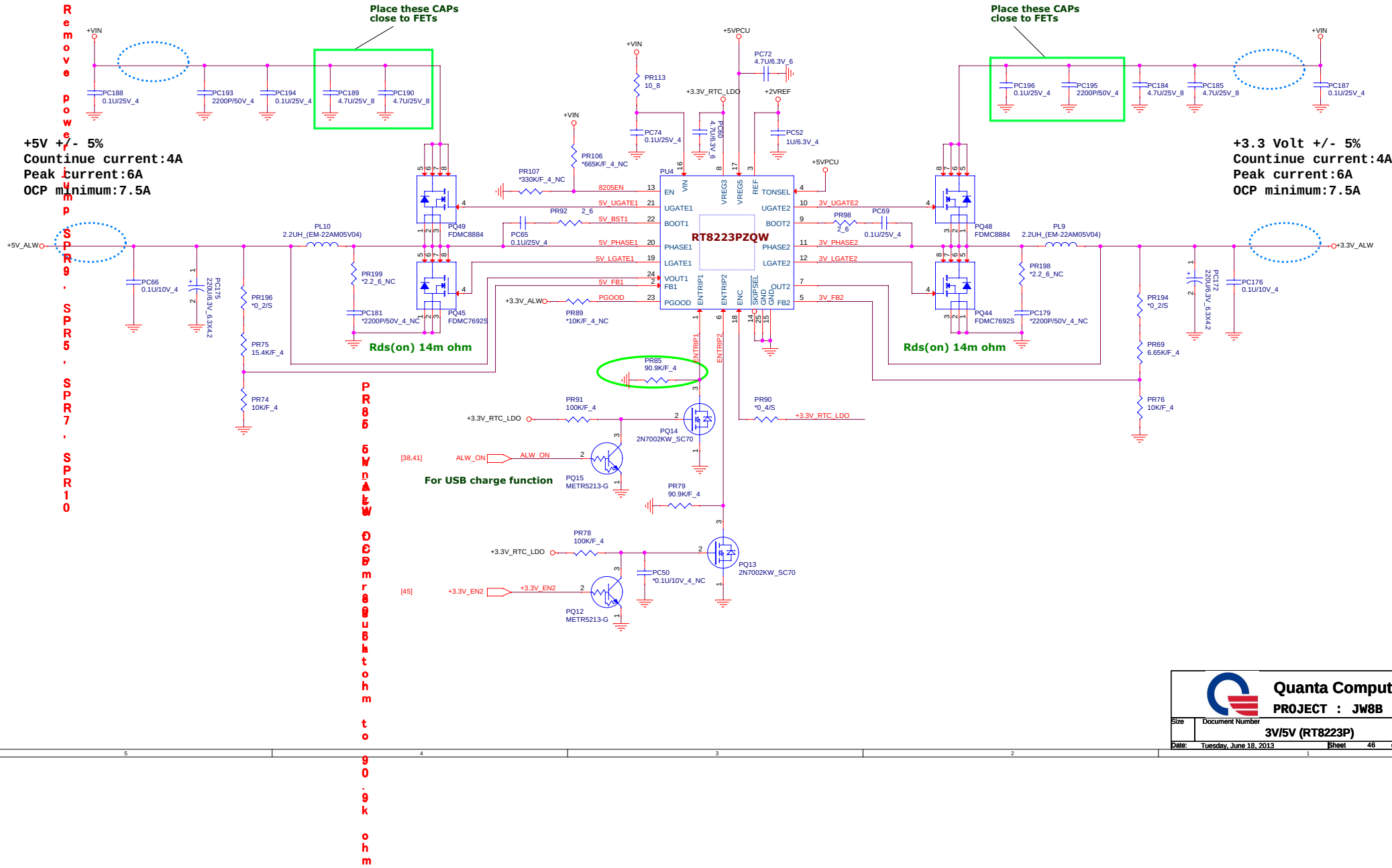
Quanta Computer Inc.

PROJECT : JW8B

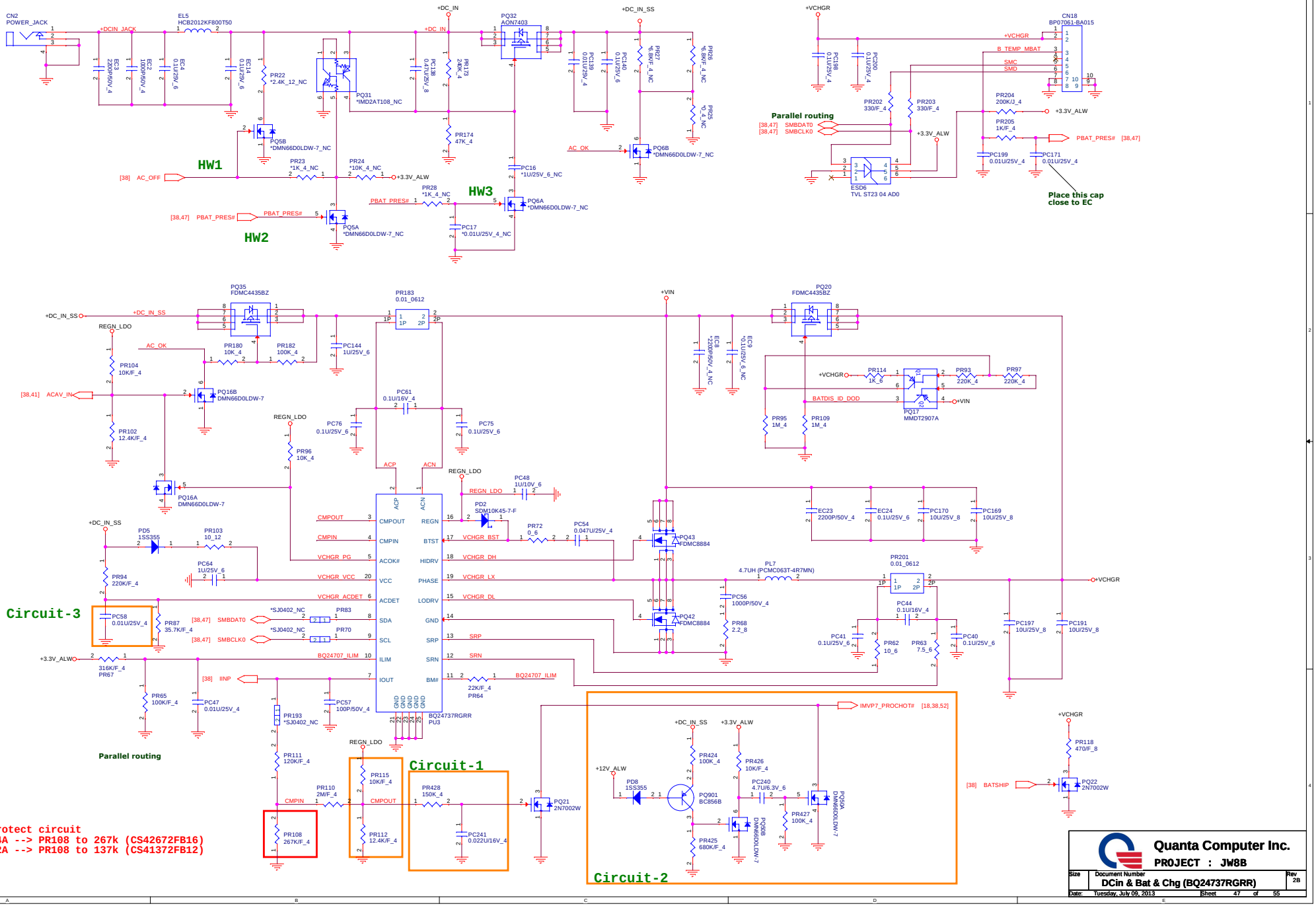
Size	Document Number	Rev
	System Reset Circuit	A

Date: Monday, July 08, 2013 Sheet 45 of 57

DC/DC +3V_ALW/+5V_ALW/+5V_ALW2 /+15V_ALW



Quanta Computer Inc.		
PROJECT : JW8B		
Size	Document Number	Rev 1A
	3V/5V (RT8223P)	
Date: Tuesday, June 18, 2013	Sheet 46 of 57	


CN2
POWER_JACK
+DCIN_JACK
EL5
HCB2012KF800T50
+DC_IN
PQ32
AON7403
+DC_IN_SS
PR22
*2.4K_12_NC
PQ31
*IMD2AT108_NC
PR173
240K_4
PR174
47K_4
PC16
*1U/25V_6_NC
PQ5B
*DMN66D0LDW-7_NC
PQ6B
*DMN66D0LDW-7_NC
AC_OK
HW1
[38] AC_OFF
PR23
*1K_4_NC
PR24
*10K_4_NC
+3.3V_ALW
HW3
PR28
*1K_4_NC
PBAT_PRES#
PQ6A
*DMN66D0LDW-7_NC
PC17
*0.01U/25V_4_NC
[38,47] PBAT_PRES#
HW2
PQ5A
*DMN66D0LDW-7_NC
+VCHGR
CN18
BP07061-BA015
B_TEMP_MBAT
SMC
SMD
Parallel routing
[38,47] SMBDAT0
[38,47] SMBCLK0
PR202
330/F_4
PR203
330/F_4
PR204
200KJ_4
PR205
1K/F_4
PBAT_PRES# [38,47]
PC199
0.01U/25V_4
PC171
0.01U/25V_4
ESD6
TVL ST23 04 AD0
Place this cap
close to EC
PQ35
FDMC4435BZ
PR183
0.01_0612
PQ20
FDMC4435BZ
+VIN
REGN_LDO
AC_OK
PR180
10K_4
PR182
100K_4
PC144
1U/25V_6
[38,41] ACAV_IN
PR104
10K_4
PR102
12.4K/F_4
PQ16B
DMN66D0LDW-7
PQ16A
DMN66D0LDW-7
PC61
0.1U/16V_4
PC76
0.1U/25V_6
PC75
0.1U/25V_6
PR96
10K_4
ACP
ACN
PC48
1U/10V_6
PD2
SDM10K45-7-F
PR72
0_6
PC54
0.047U/25V_4
PQ43
FDMC8884
PQ42
FDMC8884
PL7
4.7UH (PCMC063T-4R7MN)
PC56
1000P/50V_4
PR68
2.2_8
EC8
*2200P/50V_4_NC
EC9
*0.1U/25V_6_NC
EC23
2200P/50V_4
EC24
0.1U/25V_6
PC170
10U/25V_8
PC169
10U/25V_8
PR114
1K_6
PR93
220K_4
PR97
220K_4
PR95
1M_4
PR109
1M_4
BATDIS_ID_DOD
PQ17
MMDT2907A
PR201
0.01_0612
PC44
0.1U/16V_4
PC41
0.1U/25V_6
PR62
10_6
PR63
7.5_6
PC40
0.1U/25V_6
PC197
10U/25V_8
PC191
10U/25V_8
PD5
1SS355
PR103
10_12
PC64
1U/25V_6
PR94
220K/F_4
Circuit-3
PC58
0.01U/25V_4
PR87
35.7K/F_4
*SJ0402_NC
PR83
PR70
[38,47] SMBDAT0
[38,47] SMBCLK0
CMPOUT
CMPIN
ACOK#
VCC
ACDET
SDA
SCL
ILIM
IOUT
REGN
BTST
HIDRV
PHASE
LODRV
GND
SRP
SRN
BM#
VCHGR_PG
VCHGR_VCC
VCHGR_ACDET
VCHGR_BST
VCHGR_DH
VCHGR_LX
VCHGR_DL
BQ24707_ILIM
BQ24737RGRR
PU3
+3.3V_ALW
316K/F_4
PR67
PR65
100K/F_4
PC47
0.01U/25V_4
[38] IINP
PR193
*SJ0402_NC
PC57
100P/50V_4
22K/F_4
PR64
Parallel routing
PR111
120K/F_4
PR110
2M/F_4
PR108
267K/F_4
PR115
10K/F_4
PR112
12.4K/F_4
Circuit-1
PR428
150K_4
PC241
0.022U/16V_4
PQ21
2N7002W
IMVP7_PROCHOT# [18,38,52]
+12V_ALW
PD8
1SS355
PR424
100K_4
PR426
10K/F_4
PC240
4.7U/6.3V_6
PQ901
BC856B
PQ39A
PQ39B
DMN66D0LDW-7
PR427
100K_4
PR425
680K/F_4
Circuit-2
PR118
470/F_8
[38] BATSHIP
PQ22
2N7002W
Adaptor protect circuit
65W - 4.34A --> PR108 to 267k (CS42672FB16)
90W - 5.62A --> PR108 to 137k (CS41372FB12)
Quanta Computer Inc.
PROJECT : JW8B
Size
Document Number
DCin & Bat & Chg (BQ24737RGRR)
Rev
2B
Date: Tuesday, July 09, 2013
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Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	NC	A

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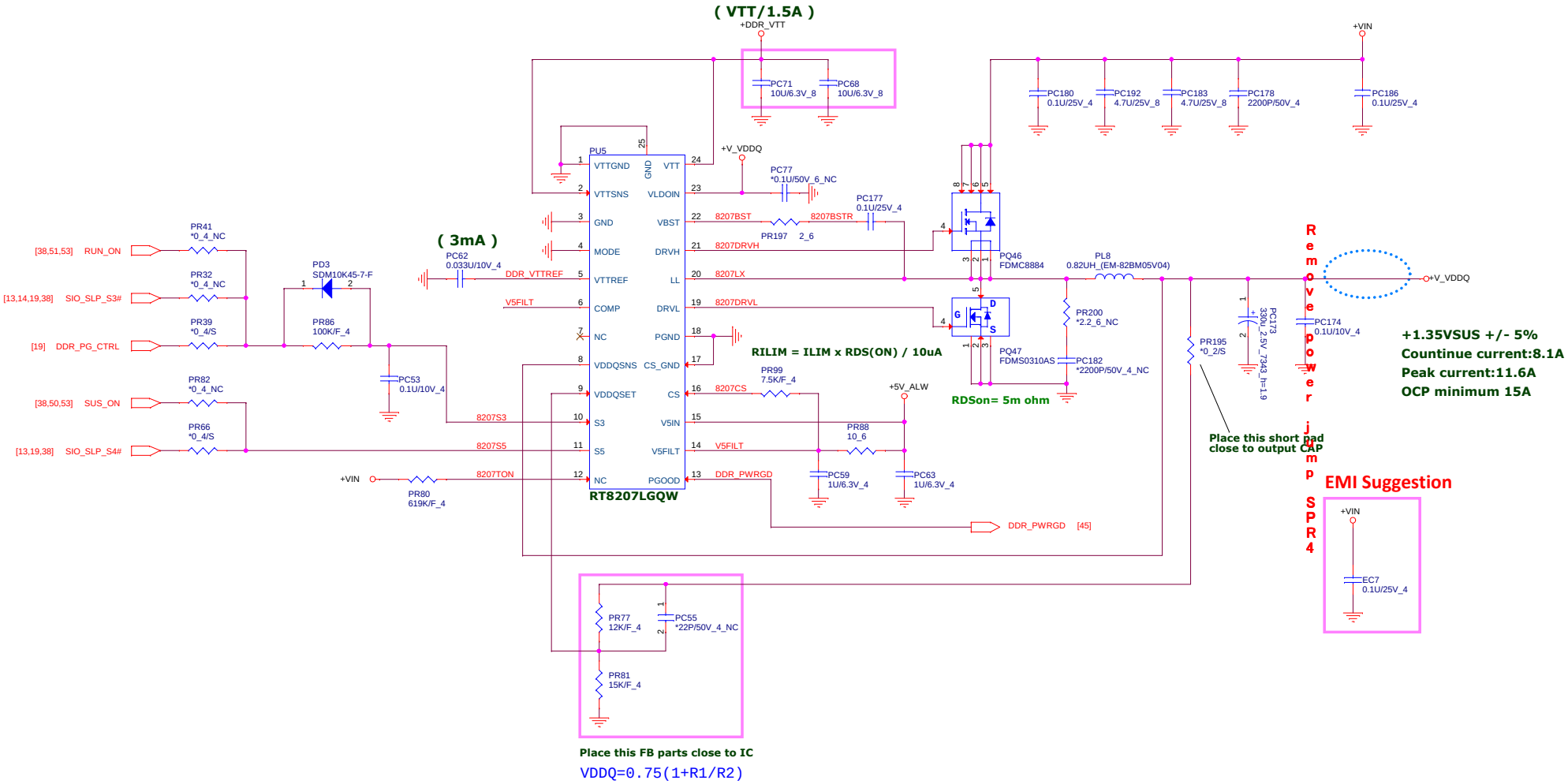
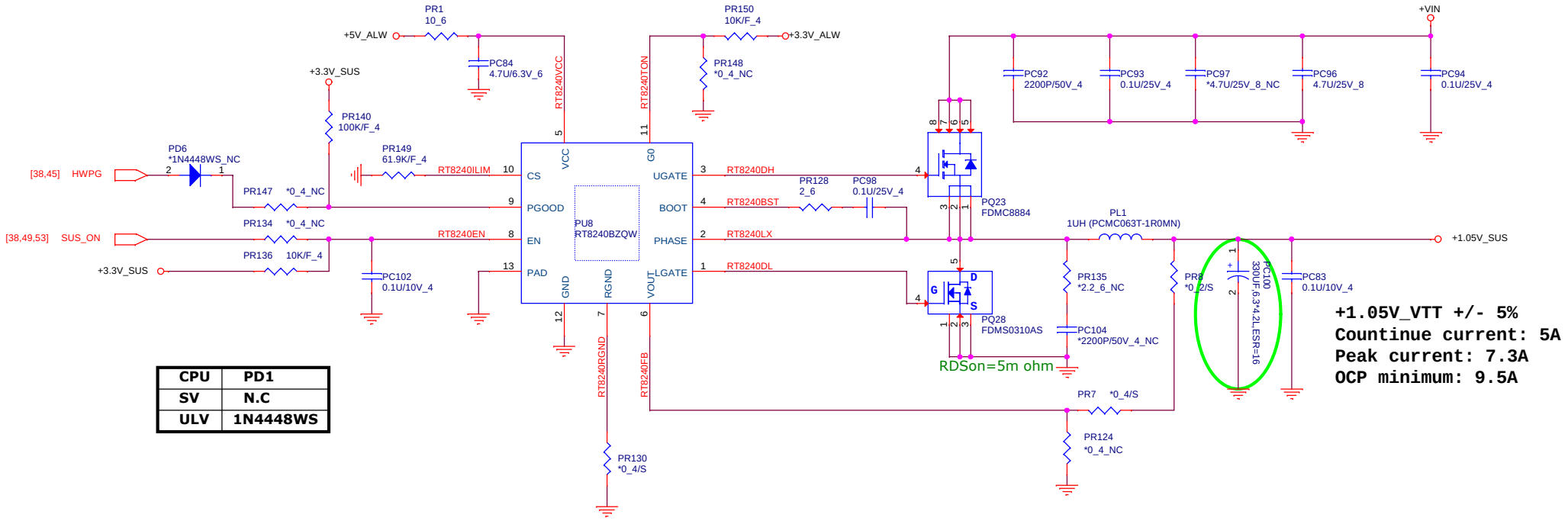


Quanta Computer Inc.			
PROJECT : JW8B			
Size	Document Number		Rev
	DDR3L VDDQ(RT8207LGQW)		1A
Date: Tuesday, July 09, 2013		Sheet 49 of 55	

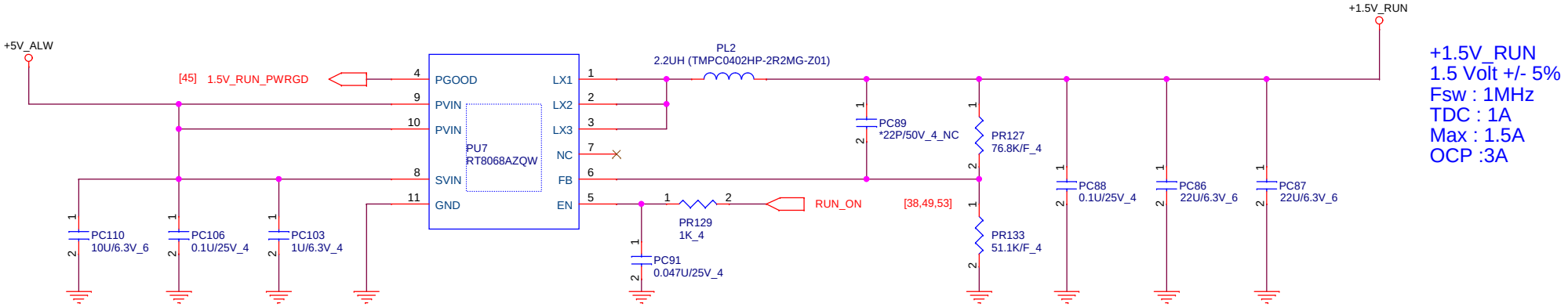


CPU	PD1
SV	N.C
ULV	1N4448WS

+1.05V_VTT +/- 5%
Countinue current: 5A
Peak current: 7.3A
OCP minimum: 9.5A

Quanta Computer Inc.
PROJECT : JW8B

Size	Document Number	Rev
	+1.05V_SUS (RT8240BZQW)	1A
Date: Tuesday, July 09, 2013	Sheet 50 of 55	



+1.5V_RUN
1.5 Volt +/- 5%
Fsw : 1MHz
TDC : 1A
Max : 1.5A
OCP :3A

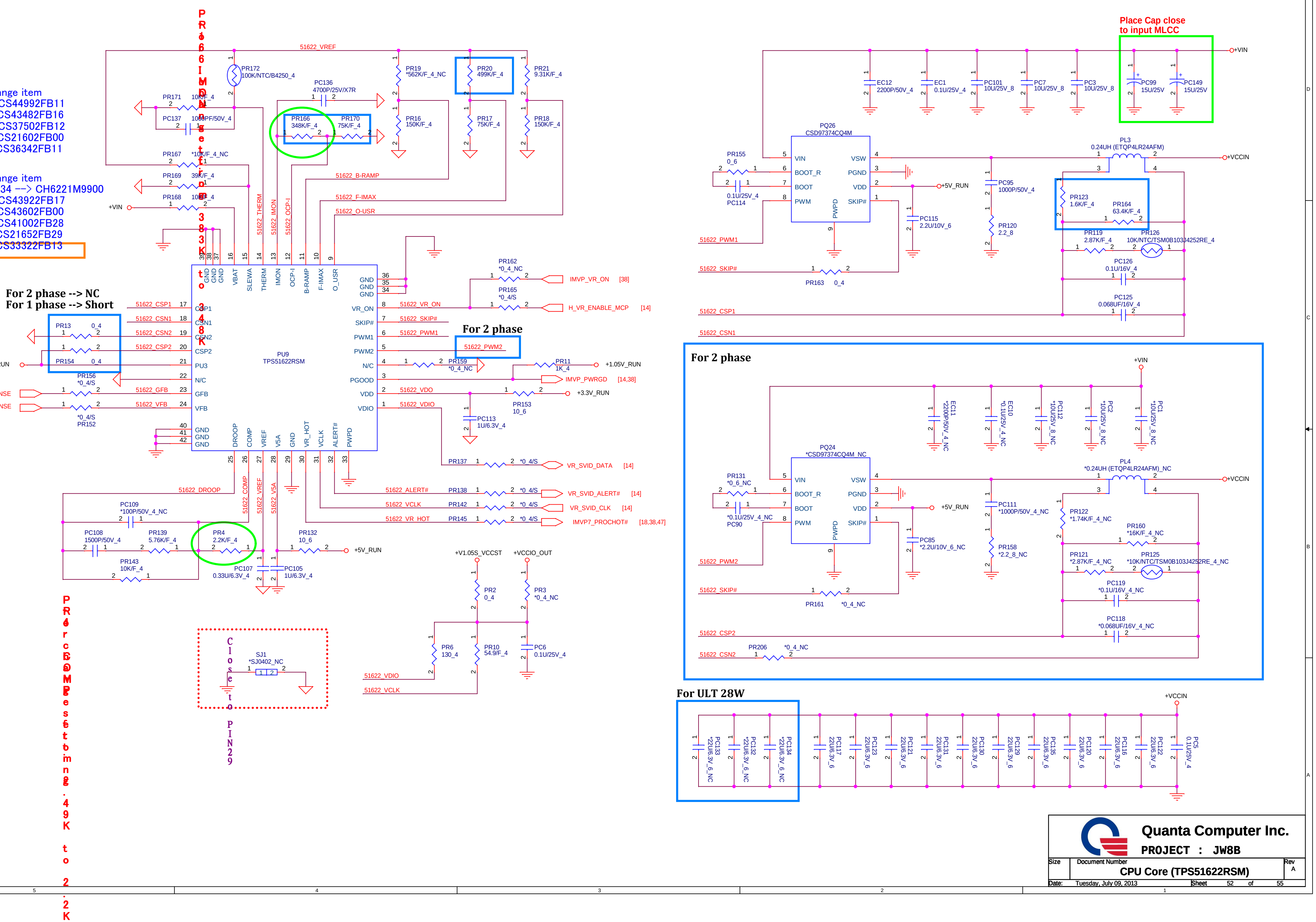
Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	+1.5V_RUN (RT8068AZQW)	1A
Date: Tuesday, July 09, 2013	Sheet 51 of 57	

For 15W 1phase change item
PR20 499k --> CS44992FB11
PR166 348k --> CS43482FB16
PR170 75k --> CS37502FB12
PR123 1.6k --> CS21602FB00
PR164 63.4k --> CS36342FB11

For 28W 1phase change item
PC132, PC133, PC134 --> CH6221M9900
PR20 392k --> CS43922FB17
PR166 360k --> CS43602FB00
PR170 100k --> CS41002FB28
PR123 1.65k --> CS21652FB29
PR164 33.2k --> CS33322FB13



For 2 phase --> NC
For 1 phase --> Short
For 2 phase
For ULT 28W
Place Cap close to input MLCC
PU9
TPS51622RSM
PQ26
CSD97374CQ4M
PQ24
*CSD97374CQ4M_NC
PL3
0.24UH (ETQP4LR24AFM)
PL4
*0.24UH (ETQP4LR24AFM)_NC
51622_VREF
51622_B-RAMP
51622_F-IMAX
51622_O-USR
51622_THERM
51622_IMON
51622_OCP-I
51622_CSP1
51622_CSN1
51622_CSP2
51622_CSN2
51622_GFB
51622_VFB
51622_VR_ON
51622_SKIP#
51622_PWM1
51622_PWM2
51622_VDO
51622_VDIO
51622_DROOP
51622_COMP
51622_V5A
51622_ALERT#
51622_VCLK
51622_VR_HOT
IMVP_VR_ON [38]
H_VR_ENABLE_MCP [14]
IMVP_PWRGD [14,38]
VR_SVID_DATA [14]
VR_SVID_ALERT# [14]
VR_SVID_CLK [14]
IMVP7_PROCHOT# [18,38,47]
[15] VSSSENSE
[14] VCCSENSE
+VIN
+VCCIN
+5V_RUN
+3.3V_RUN
+1.05V_RUN
+V1.05S_VCCST
+VCCIO_OUT
PR166 change to 383K
PR4 change to 2.49K to 2.2K
For CMC reset timing
Close to PIN29
SJ1
*SJ0402_NC

Quanta Computer Inc.

PROJECT : JW8B

Size	Document Number	Rev
	CPU Core (TPS51622RSM)	A

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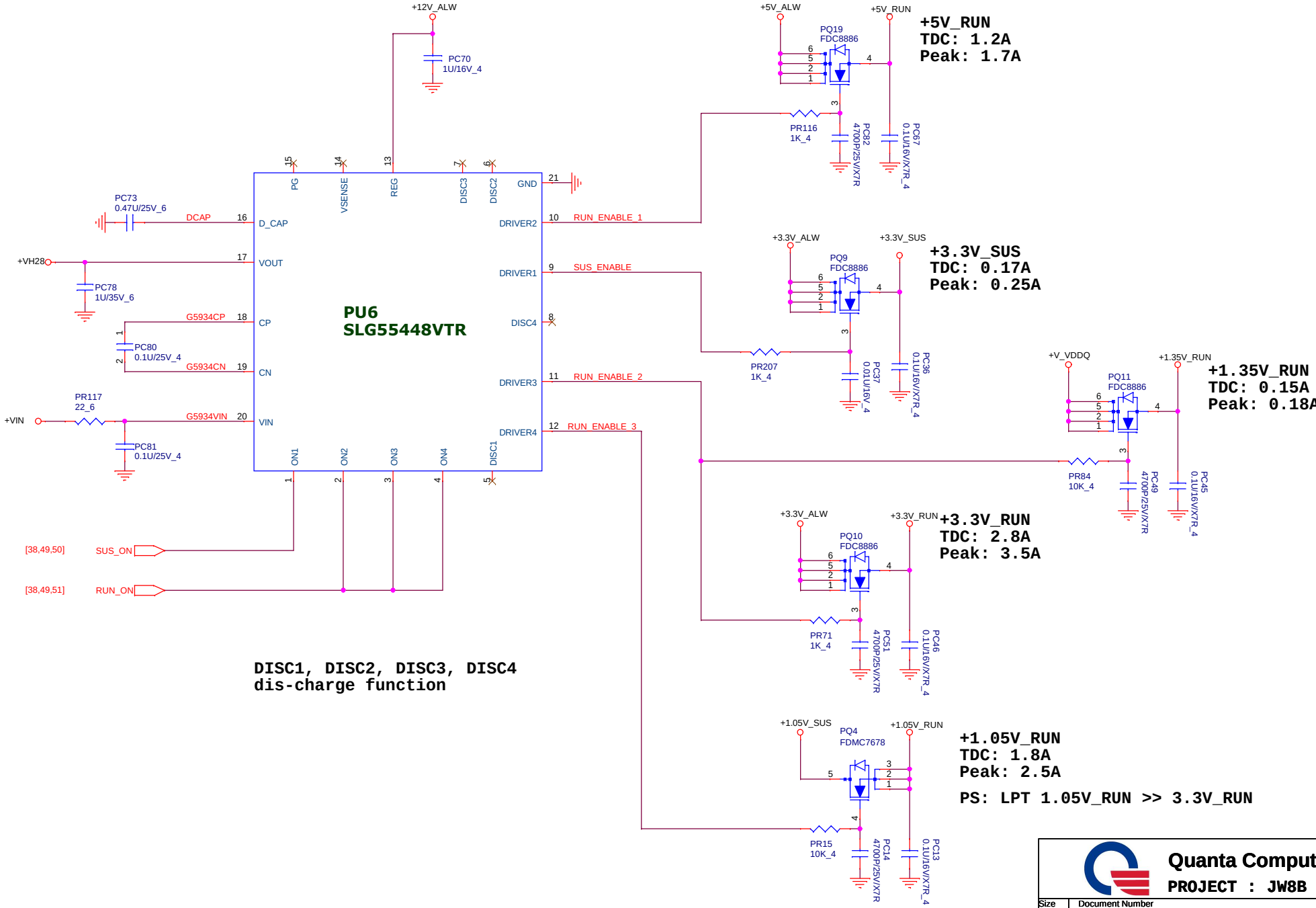

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PROJECT : JW8B

Size	Document Number	Rev
	SUS_RUN Power Switch	1A
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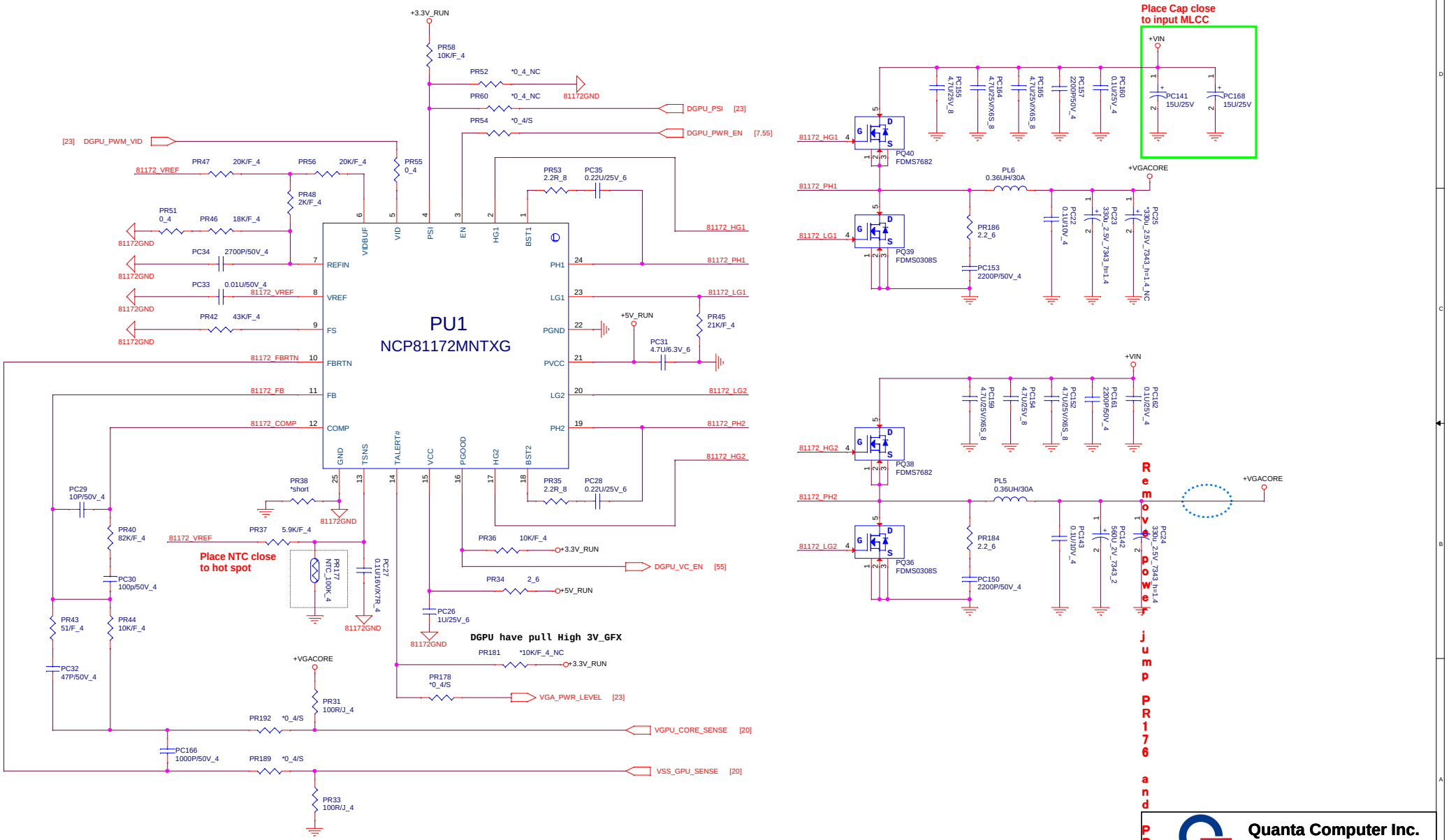
+3.3V_RUN
PR58 10K/F_4
PR52 *0_4_NC
PR60 *0_4_NC
81172GND
PR54 *0_4/S
DGPU_PSI [23]
DGPU_PWR_EN [7,55]
[23] DGPU_PWM_VID
PR47 20K/F_4
PR56 20K/F_4
81172_VREF
PR55 0_4
PR48 2K/F_4
PR51 0_4
PR46 18K/F_4
PC34 2700P/50V_4
PC33 0.01U/50V_4
PR42 43K/F_4
PR53 2.2R_8
PC35 0.22U/25V_6
81172_HG1
81172_PH1
81172_LG1
PR45 21K/F_4
PC31 4.7U/6.3V_6
+5V_RUN
81172_FBRTN
81172_FB
81172_COMP
81172_LG2
81172_PH2
81172_HG2
PU1
NCP81172MNTXG
VIDBUF
VID
PSI
EN
HG1
BST1
REFIN
VREF
FS
FBRTN
FB
COMP
PH1
LG1
PGND
PVCC
LG2
PH2
GND
TSNS
TALERT#
VCC
PGOOD
HG2
BST2
PC29 10P/50V_4
PR38 *short
PR40 82K/F_4
PR37 5.9K/F_4
PR36 10K/F_4
+3.3V_RUN
DGPU_VC_EN [55]
PR34 2_6
+5V_RUN
Place NTC close to hot spot
PR177 NTC_100K_4
PC27 0.1U/16V/X7R_4
PC30 100p/50V_4
PR43 51/F_4
PR44 10K/F_4
PC32 47P/50V_4
PC26 1U/25V_6
DGPU have pull High 3V_GFX
PR181 *10K/F_4_NC
PR178 *0_4/S
VGA_PWR_LEVEL [23]
+VGACORE
PR31 100R/J_4
PR192 *0_4/S
VGPU_CORE_SENSE [20]
PC166 1000P/50V_4
PR189 *0_4/S
VSS_GPU_SENSE [20]
PR33 100R/J_4
Place Cap close to input MLCC
+VIN
PC155 4.7U/25V_8
PC154 4.7U/25V/X6S_8
PC185 4.7U/25V/X6S_8
PC157 2200P/50V_4
PC160 0.1U/25V_4
PC141 15U/25V
PC168 15U/25V
PQ40 FDMS7682
PL6 0.36UH/30A
PR186 2.2_6
PC153 2200P/50V_4
PC22 0.1U/10V_4
PC23 330u_2.5V_7343_h=1.4
PC25 *330u_2.5V_7343_h=1.4_NC
PQ39 FDMS0308S
PC159 4.7U/25V/X6S_8
PC154 4.7U/25V_8
PC152 4.7U/25V/X6S_8
PC161 2200P/50V_4
PC162 0.1U/25V_4
PQ38 FDMS7682
PL5 0.36UH/30A
PR184 2.2_6
PC150 2200P/50V_4
PC143 0.1U/10V_4
PC142 560U_2V_7343_2
PC24 330u_2.5V_7343_h=1.4
PQ36 FDMS0308S
Remove power jump PR176 and PR30
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PROJECT : JW8B
Size
Document Number
+VGA CORE (NCP3218G)
Rev 3A
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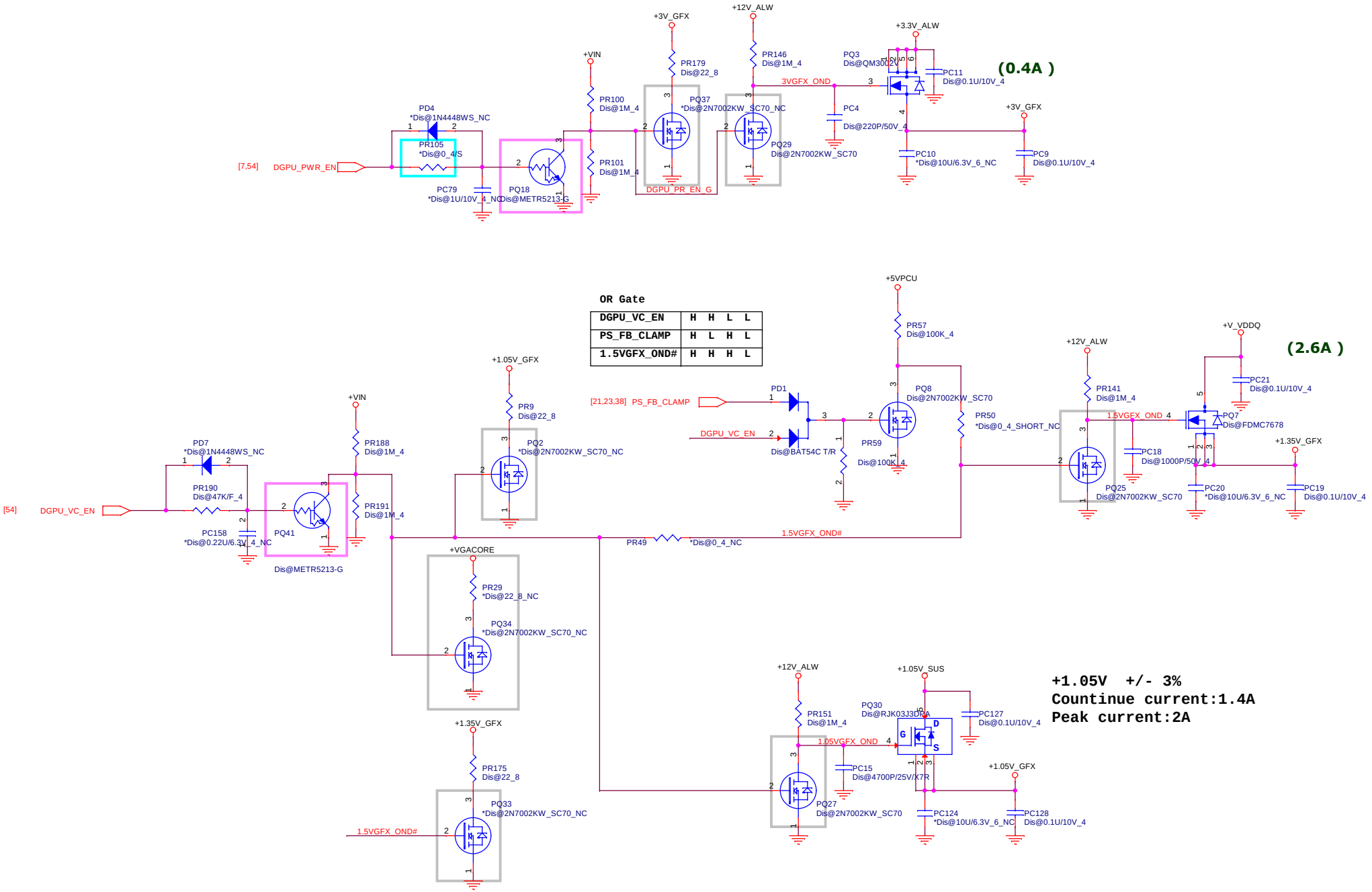

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