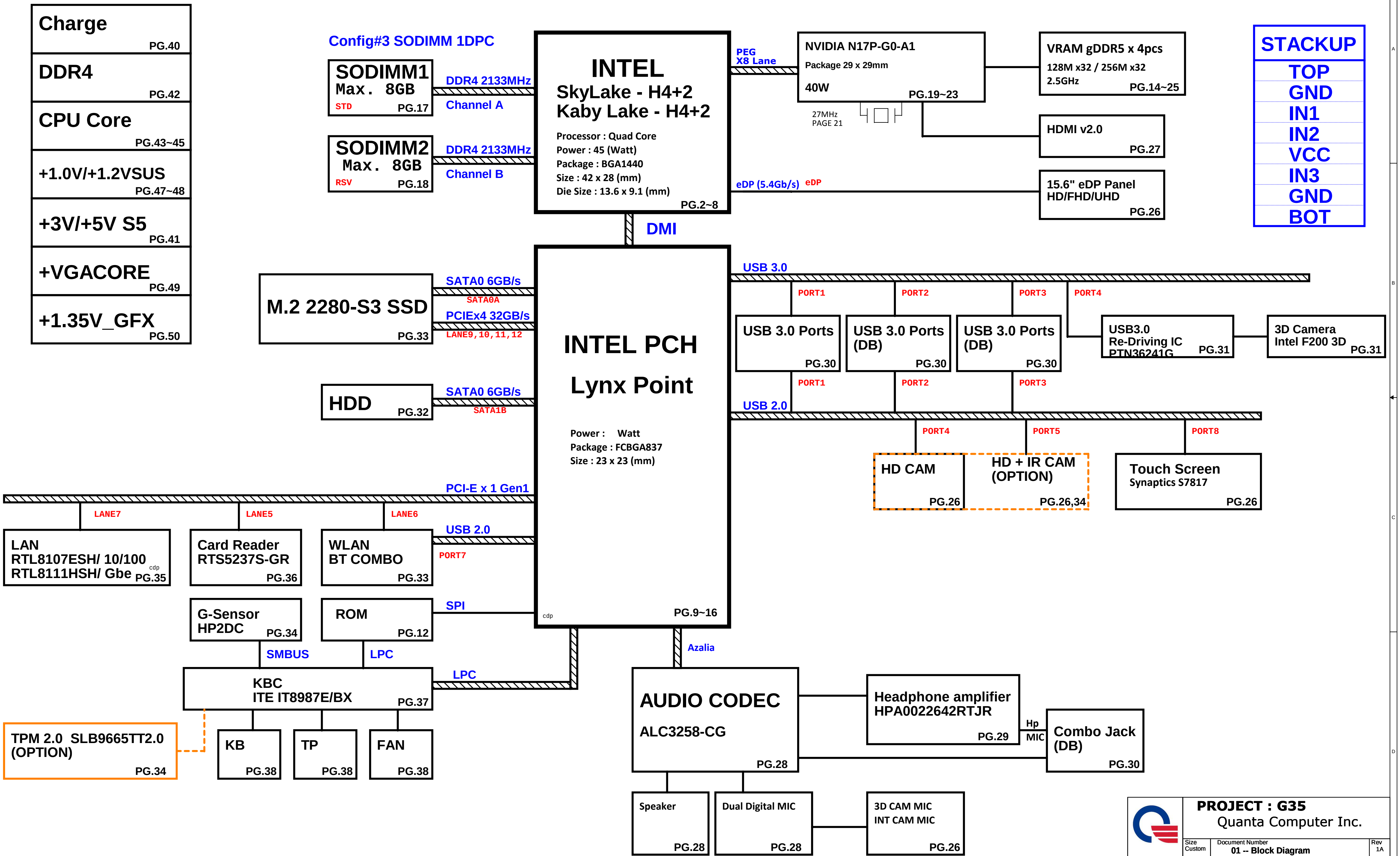
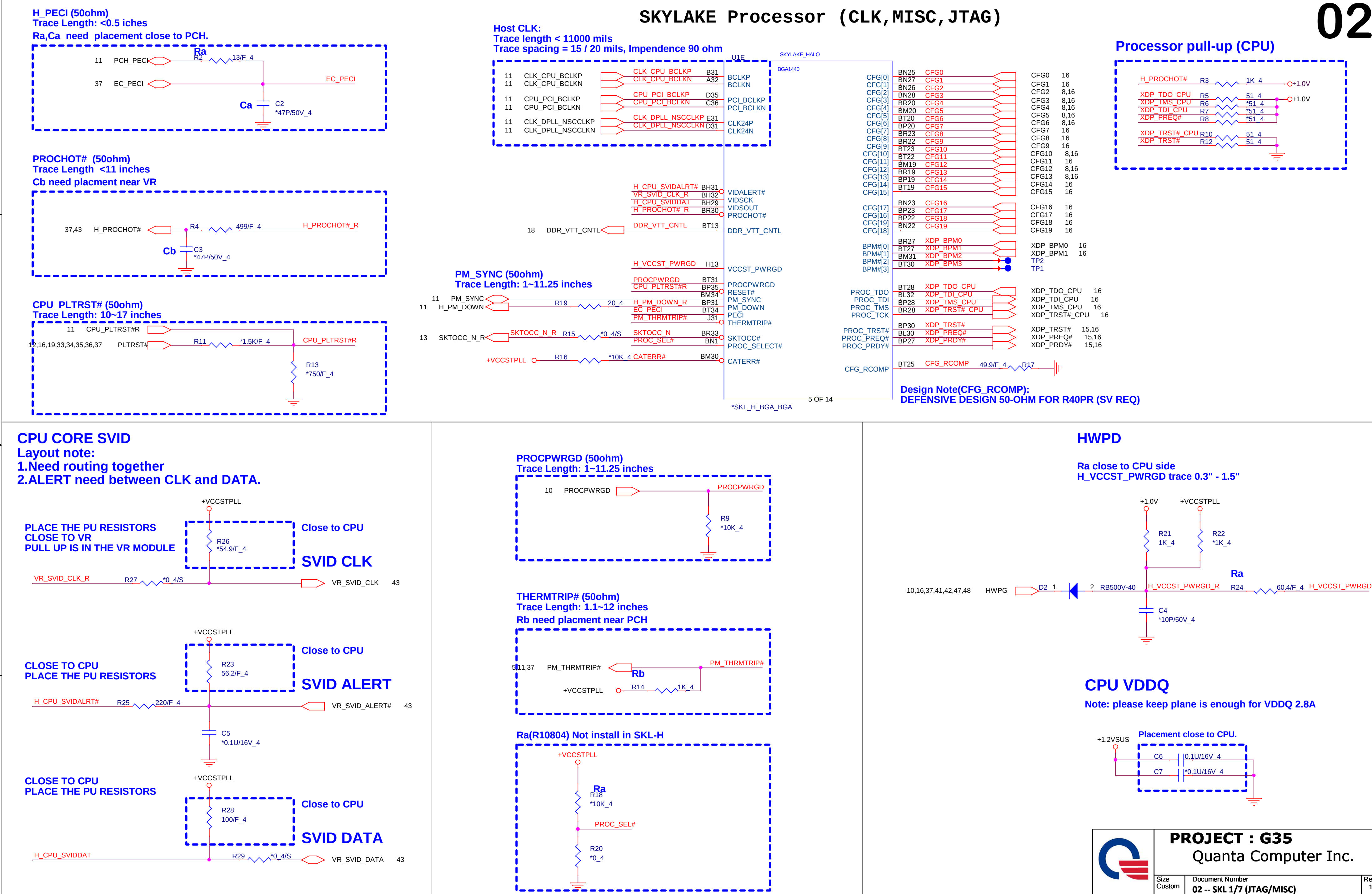
POWER PAVILION Trifle INTEL SKL / KABY -H SYSTEM DIAGRAM



PROJECT : G35	Quanta Computer Inc.	
Size: Custom	Document Number: 01 -- Block Diagram	Rev: 1A
Date: Tuesday, June 07, 2016	Sheet 1 of 52	

SKYLAKE Processor (CLK,MISC,JTAG)

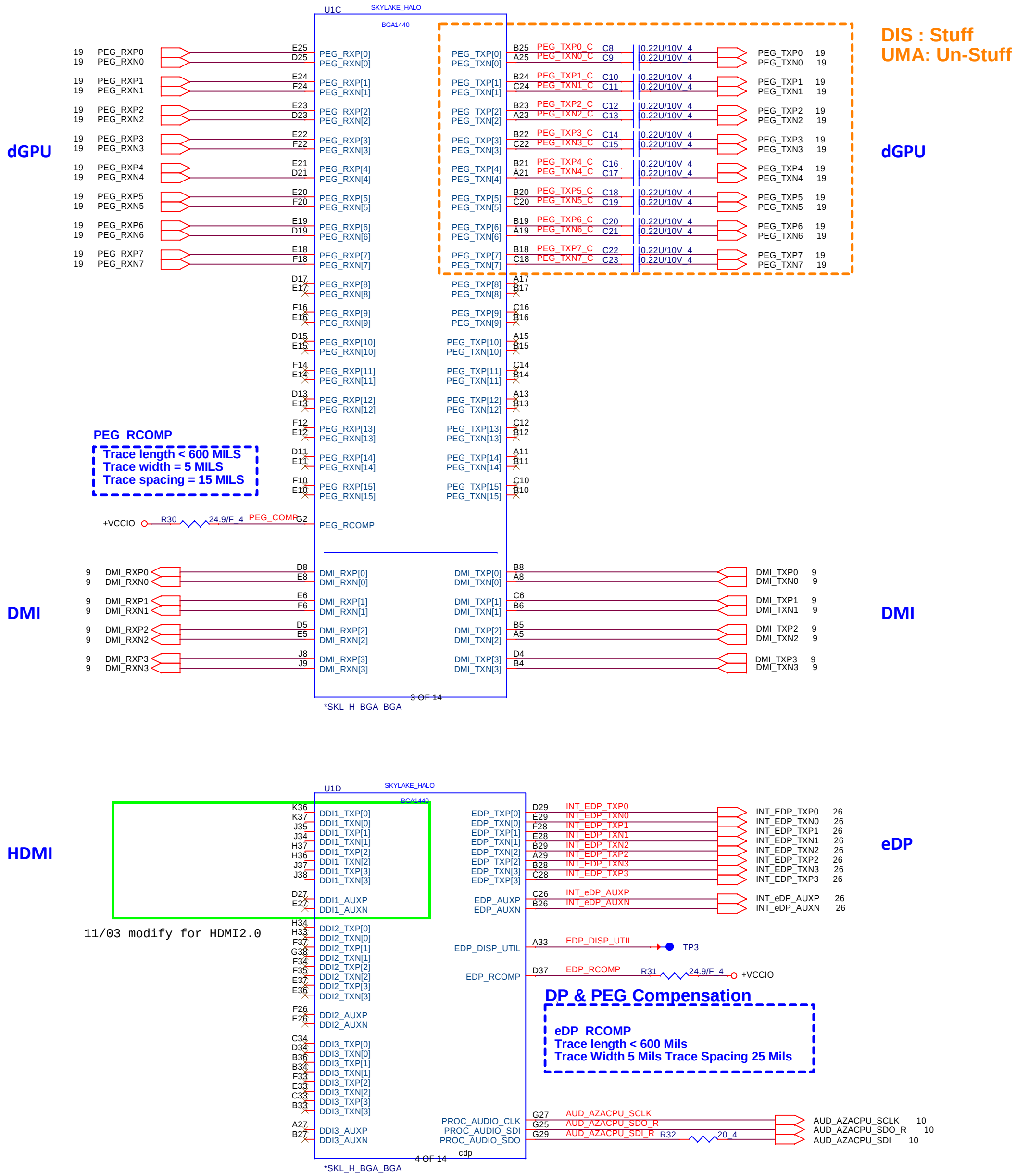


PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	02 -- SKL 1/7 (JTAG/MISC)	1A

Date: Tuesday, June 07, 2016 | Sheet 2 of 52

SKYLAKE Processor (DMI,PEG,FDI)



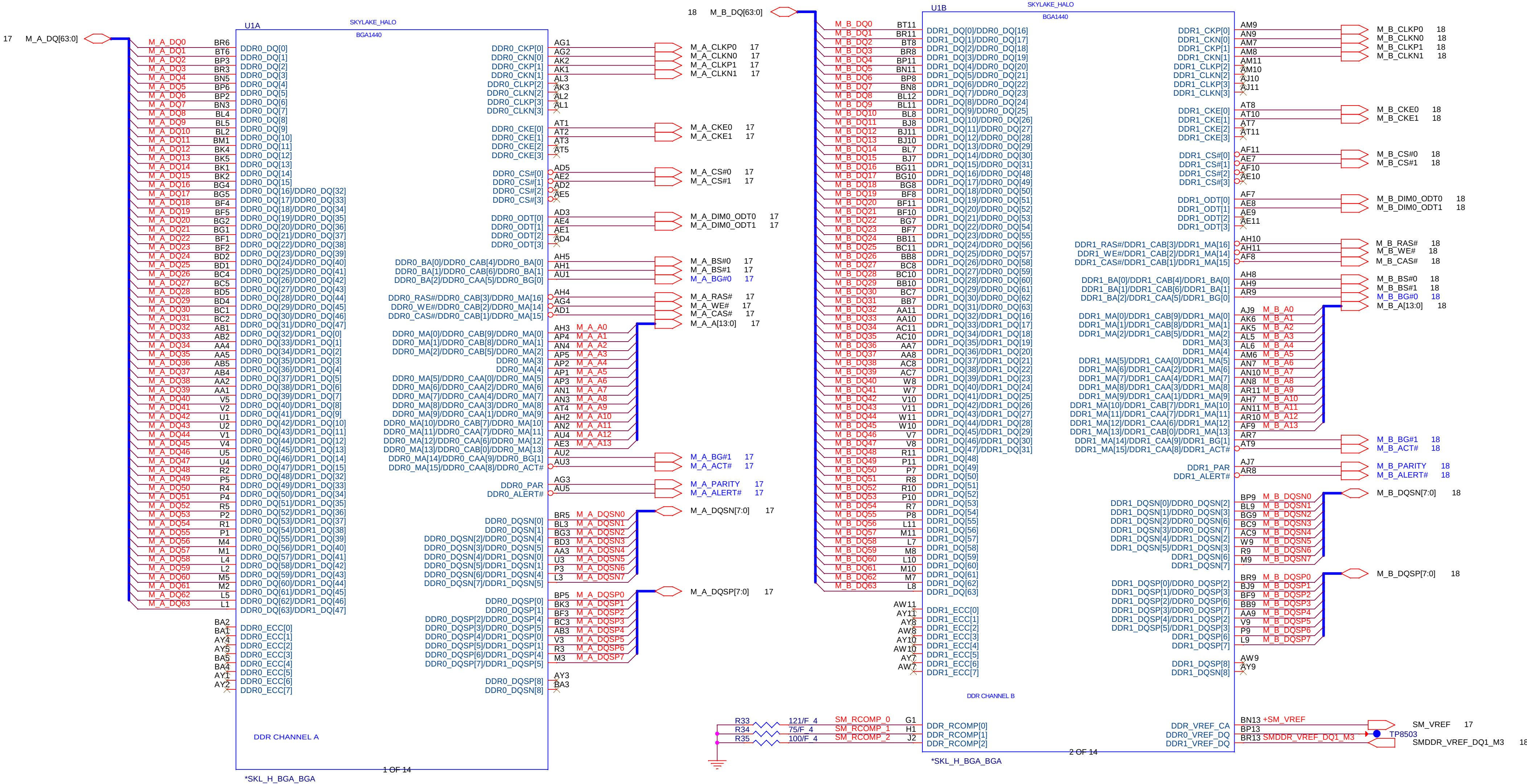
PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	03 -- SKL 2/7 (DMI/EDP/PEG)	1A

Date: Tuesday, June 07, 2016 | Sheet 3 of 52

SKYLAKE Processor (DDR4)



PROJECT : G35

Quanta Computer Inc.

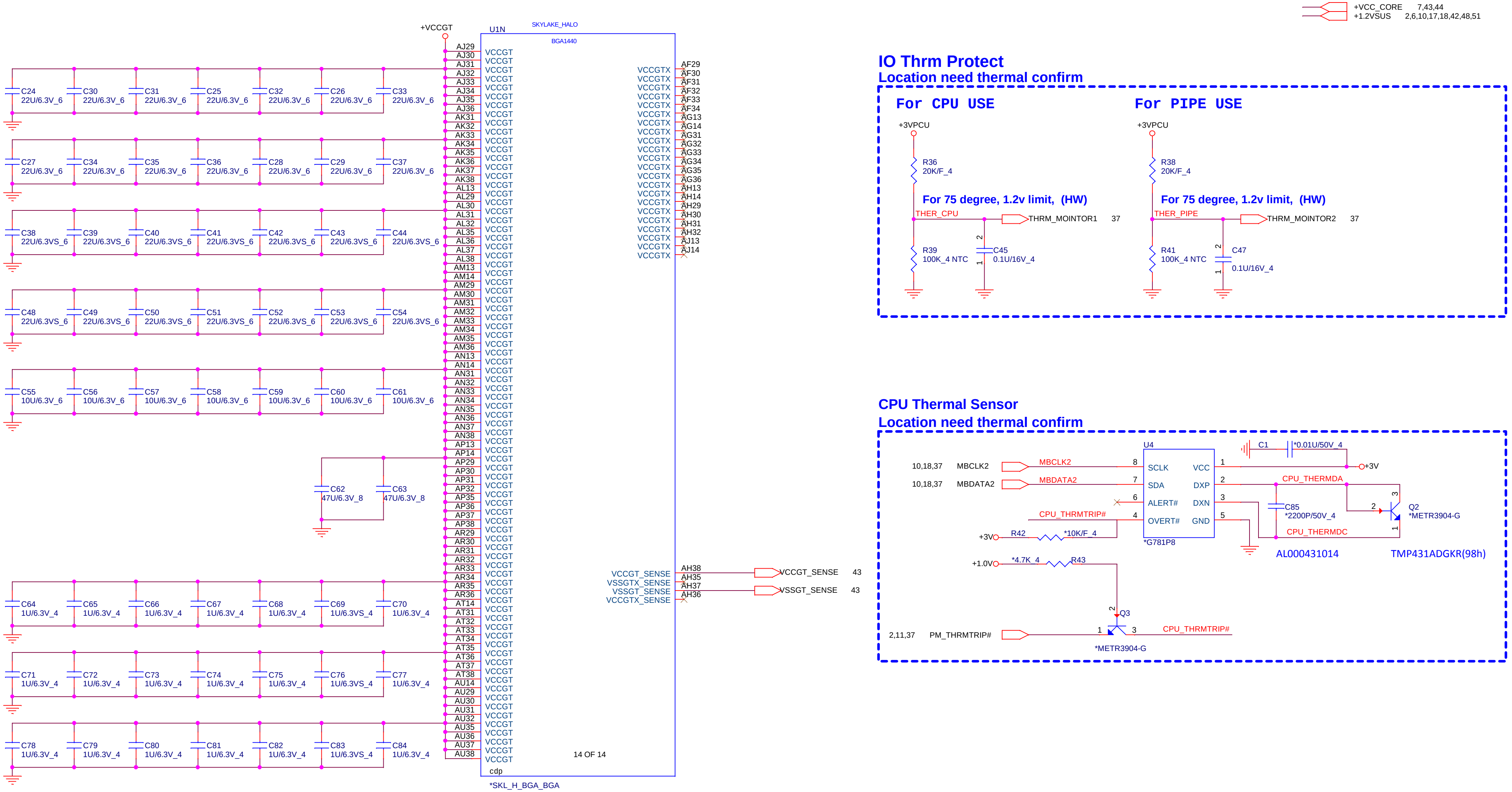
Size	Document Number	Rev
Custom	04 -- SKL 3/7 (DDR4 I/F)	1A

Date: Tuesday, June 07, 2016 Sheet 4 of 52

SKYLAKE Processor (POWER)

05

Follow SKL H EDS page 133 to 45W(GT2): +VCCGT=55A

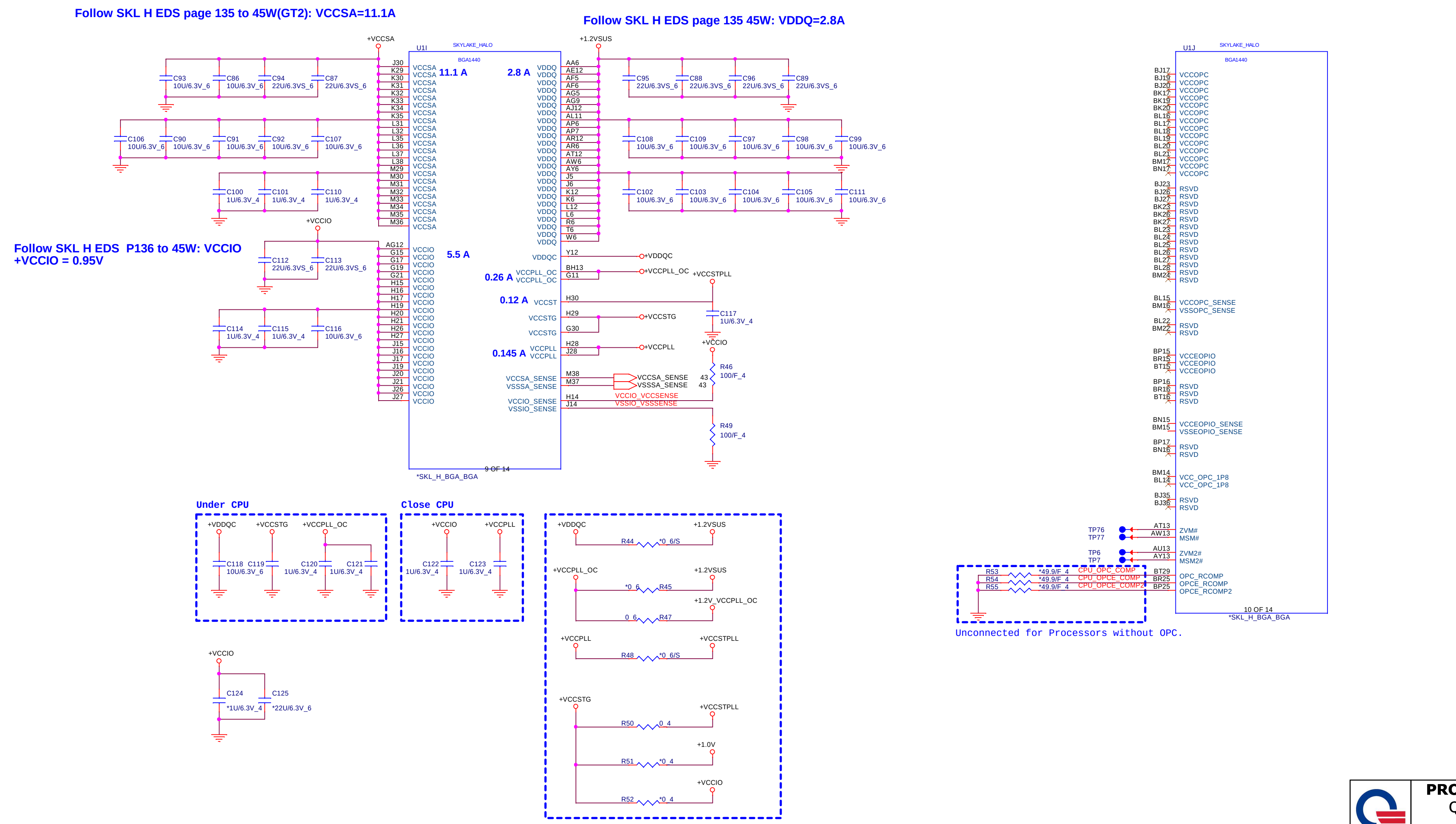


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	05 -- SKL 4/7 (POWER)	1A

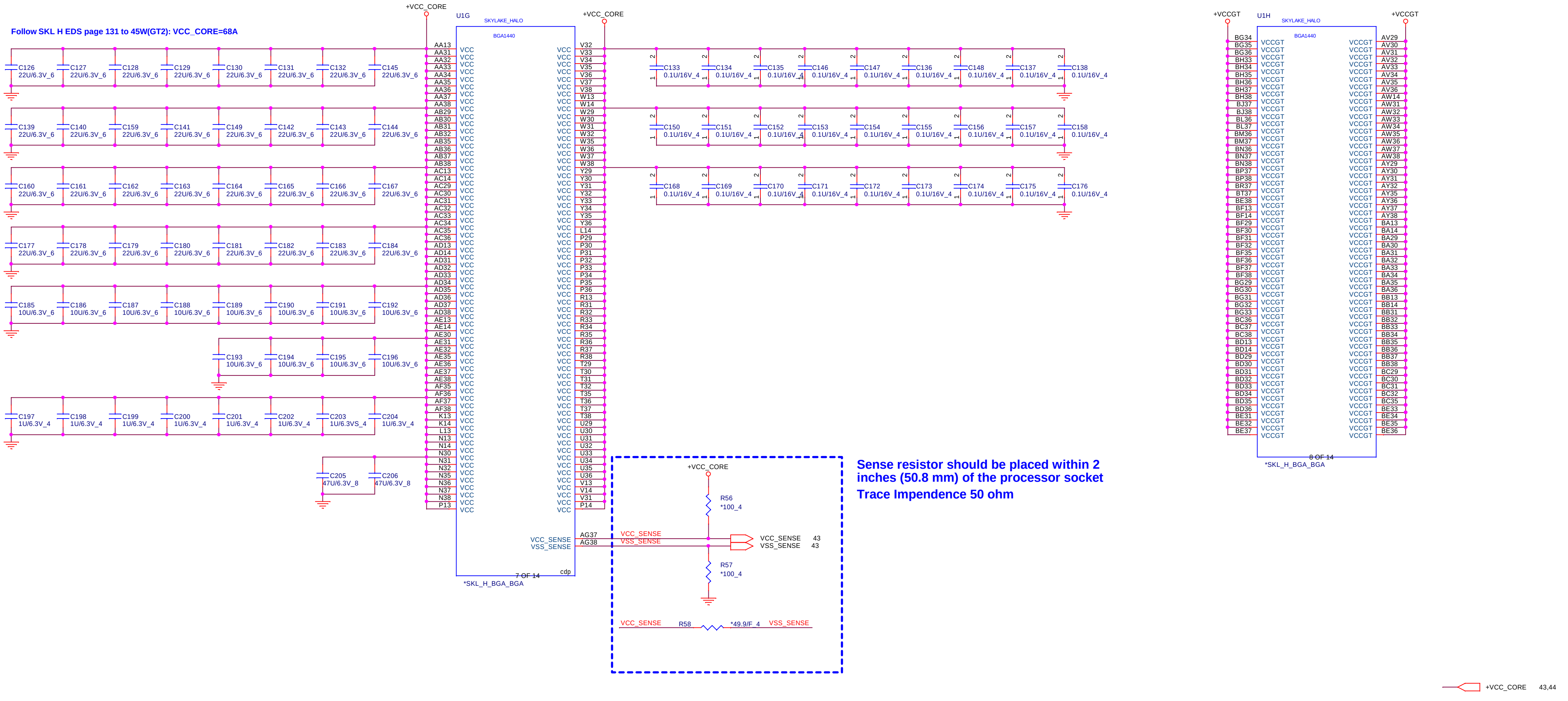
Date: Tuesday, June 07, 2016 Sheet 5 of 52



PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	06 -- SKL 5/7 (POWER&GND)	1A

Date: Tuesday, June 07, 2016 Sheet 6 of 52

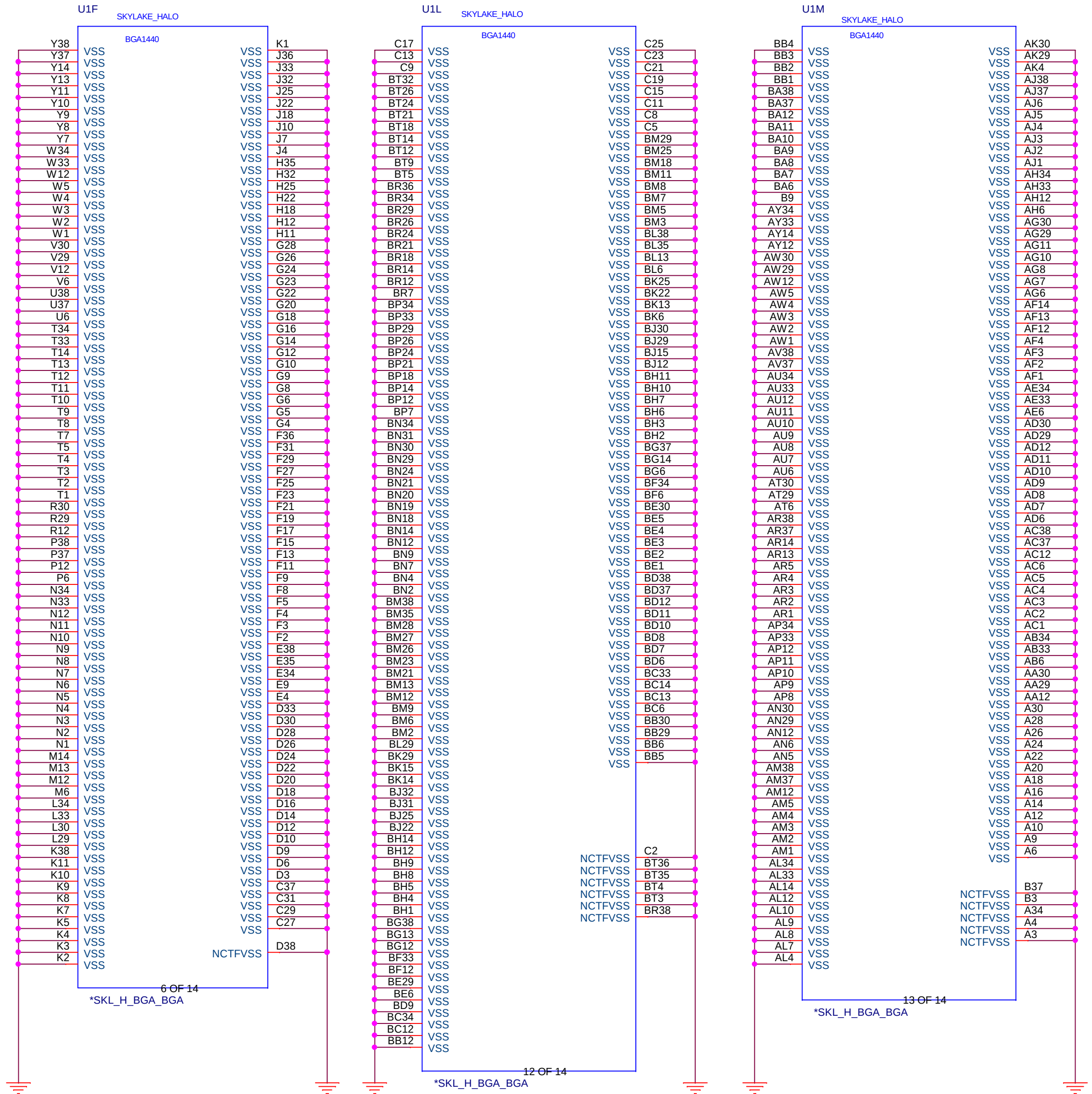


PROJECT : G35
Quanta Computer Inc.

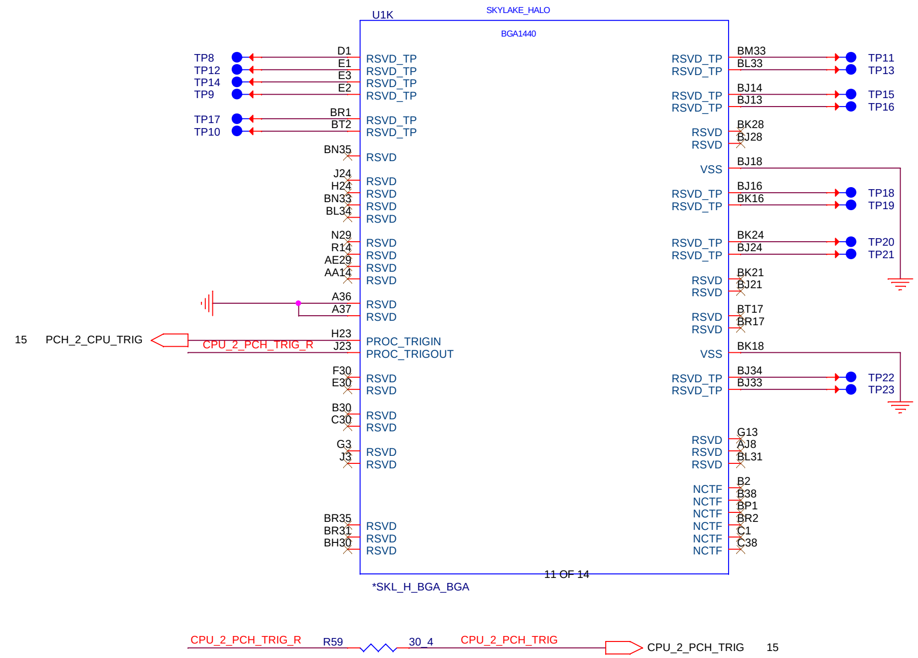
Size	Document Number	Rev
Custom	07 -- SKL 6/7 (POWER&GND)	1A

Date: Tuesday, June 07, 2016 | Sheet 7 of 52

SKL-HProcessor (GND)



SKL-H Processor (RESERVED, CFG)

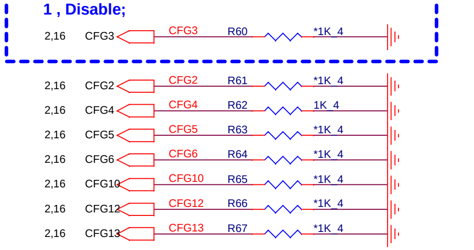


Processor Strapping

The CFG signals have a default value of '1' if not terminated on the board.

0 Enable; SET DFX ENABLED BIT IN DEBUG

1 , Disable;

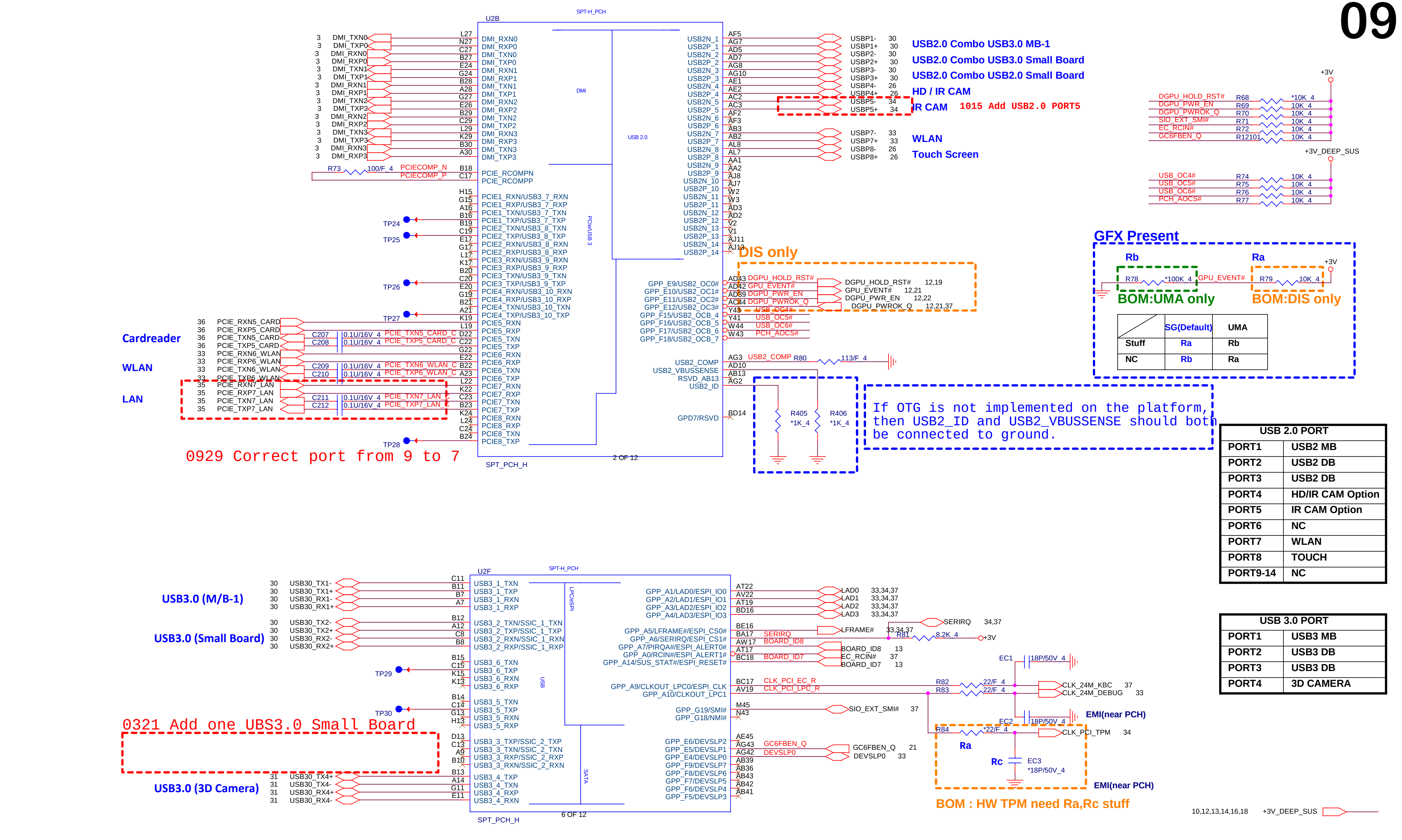


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	08 -- SKL 7/7 (GND)	1A

Date: Tuesday, June 07, 2016 Sheet 8 of 52



	SG(Default)	UMA
Stuff	Ra	Rb
NC	Rb	Ra

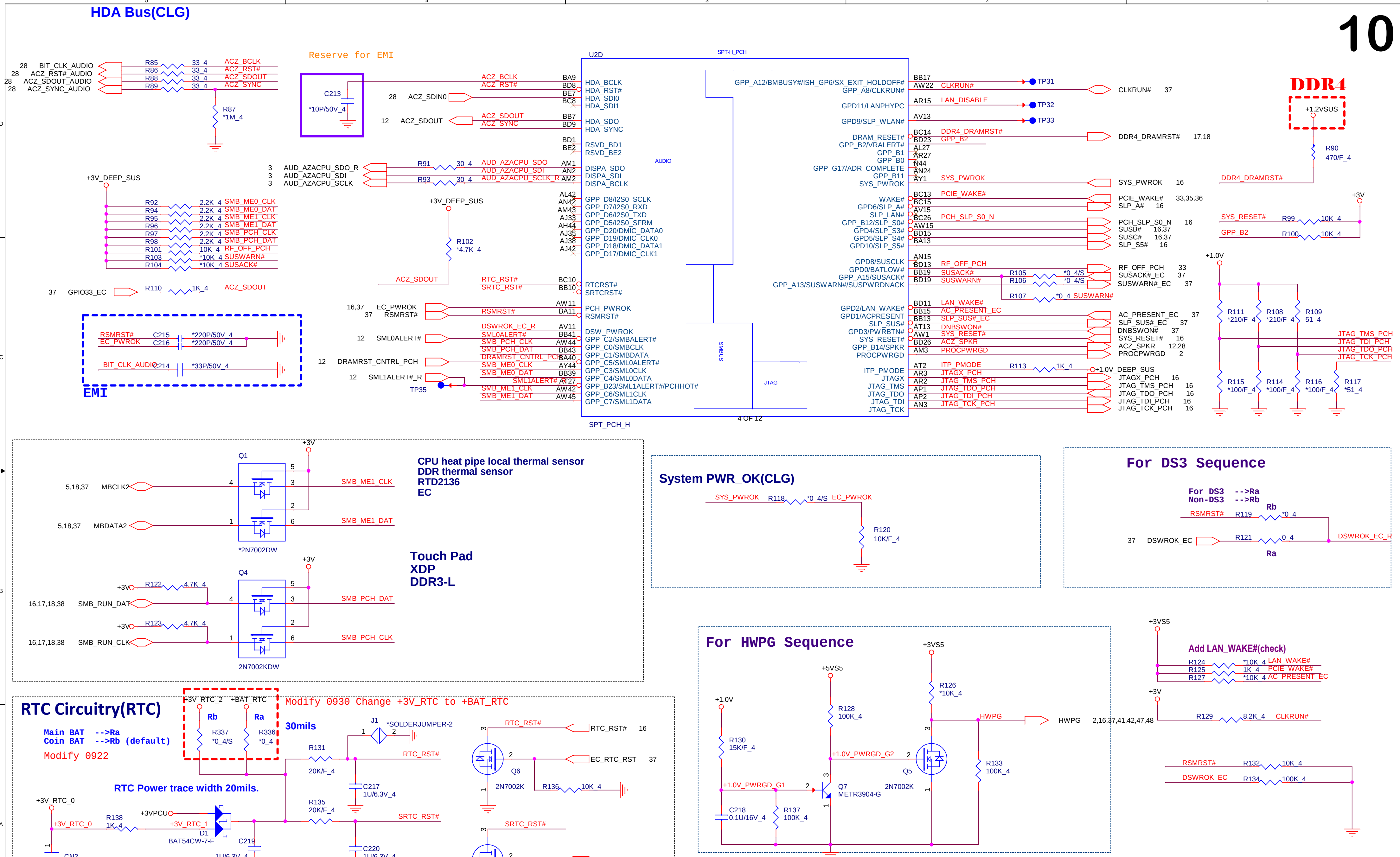
USB 2.0 PORT	
PORT1	USB2 MB
PORT2	USB2 DB
PORT3	USB2 DB
PORT4	HD/IR CAM Option
PORT5	IR CAM Option
PORT6	NC
PORT7	WLAN
PORT8	TOUCH
PORT9-14	NC

USB 3.0 PORT	
PORT1	USB3 MB
PORT2	USB3 DB
PORT3	USB3 DB
PORT4	3D CAMERA

PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	09 -- PCH 1/7 (DMI/USB/PCIE)	1A

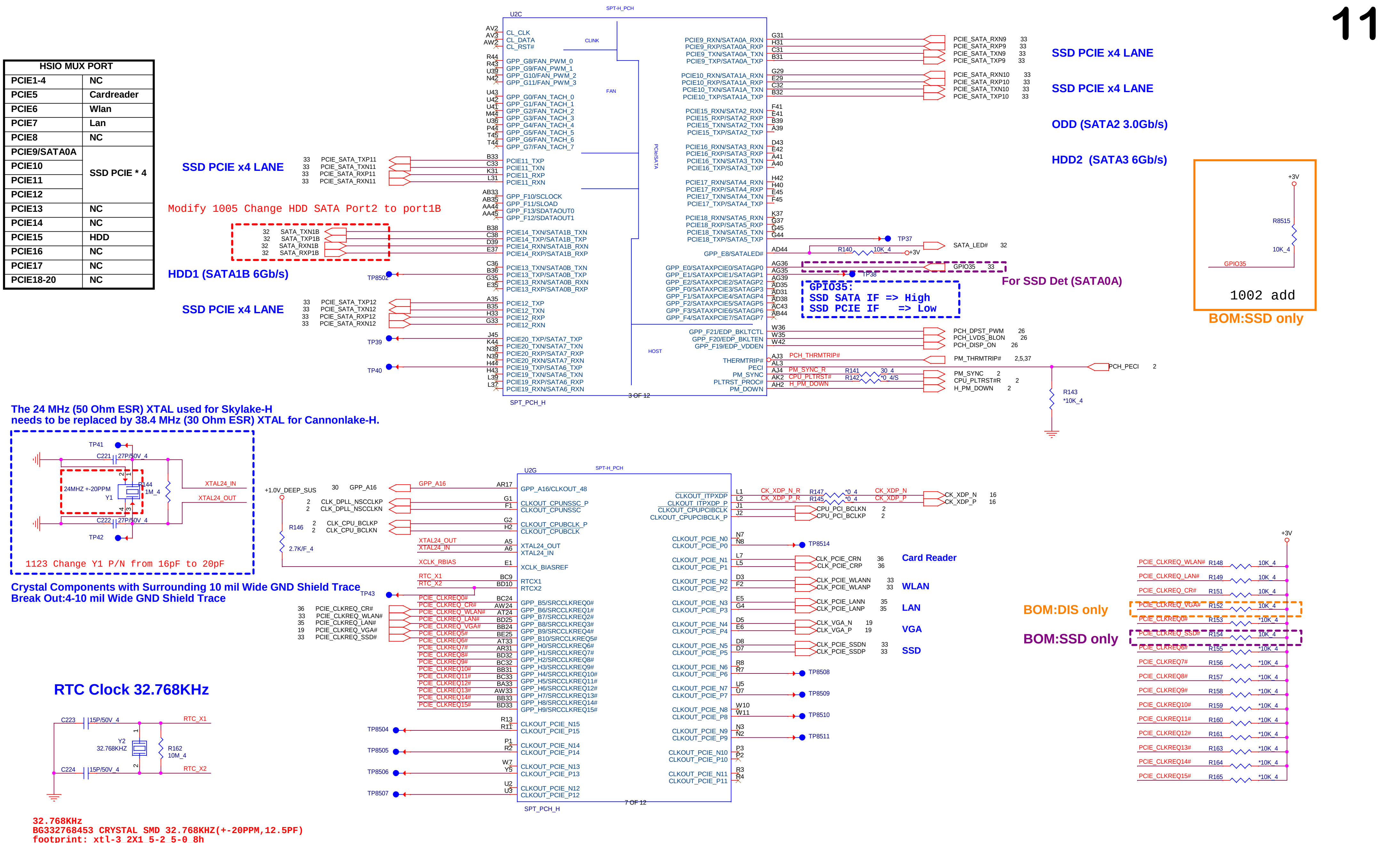


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	10 -- PCH 2/7 (HDA/SMBUS)	1A

Date: Tuesday, June 07, 2016 Sheet 10 of 52



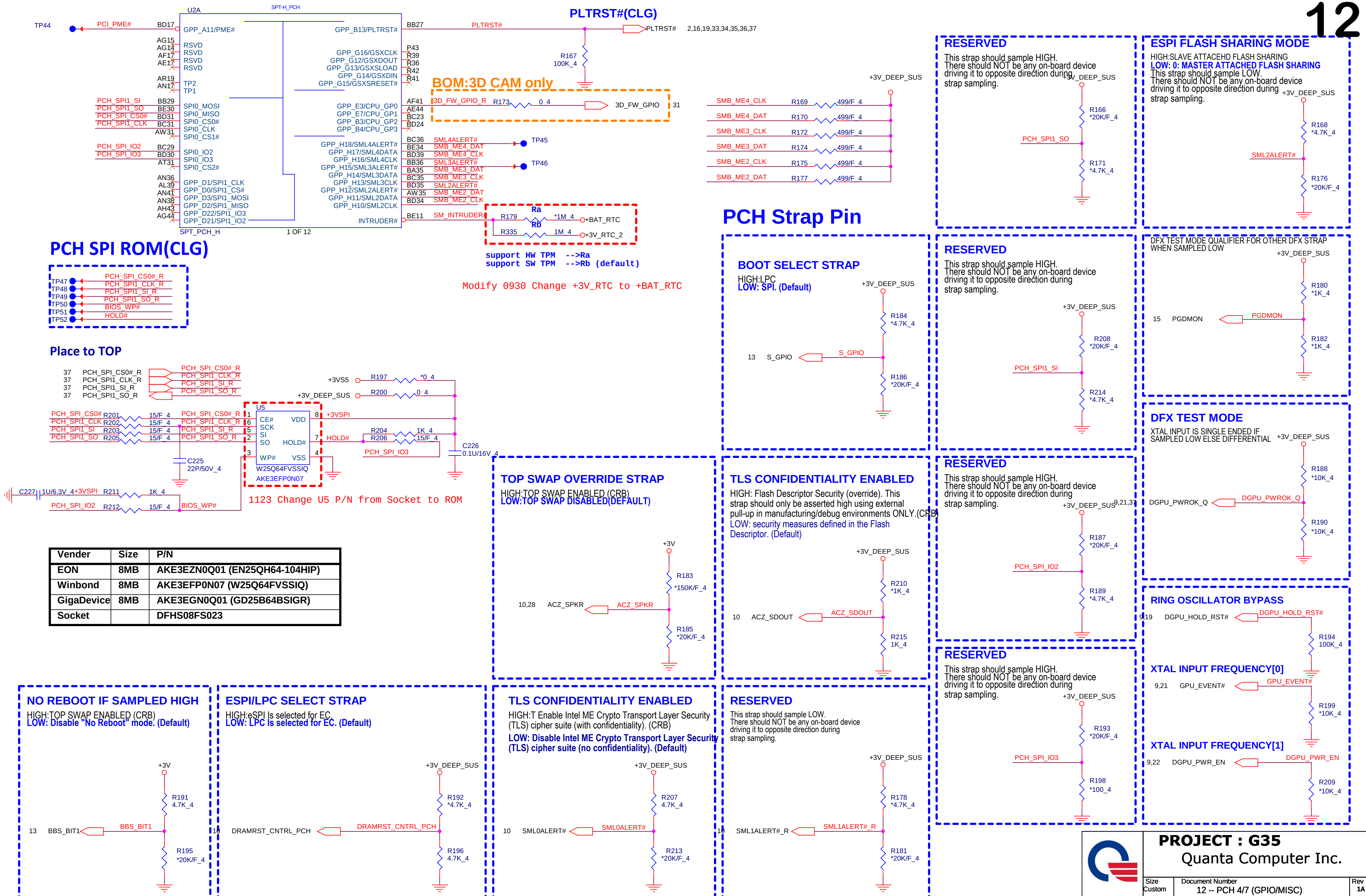
HSIO MUX PORT	
PCIE1-4	NC
PCIE5	Cardreader
PCIE6	Wlan
PCIE7	Lan
PCIE8	NC
PCIE9/SATA0A	SSD PCIE * 4
PCIE10	
PCIE11	
PCIE12	
PCIE13	NC
PCIE14	NC
PCIE15	HDD
PCIE16	NC
PCIE17	NC
PCIE18-20	NC

PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	11 -- PCH 3/7 (SATA/LPC/CLK)	1A

Date: Tuesday, June 07, 2016 Sheet 11 of 52



Vender	Size	P/N
EON	8MB	AKE3EZN0Q01 (EN25QH64-104HIP)
Winbond	8MB	AKE3EFP0N07 (W25Q64FVSSIQ)
GigaDevice	8MB	AKE3EGN0Q01 (GD25B64BSIGR)
Socket		DFHS08FS023

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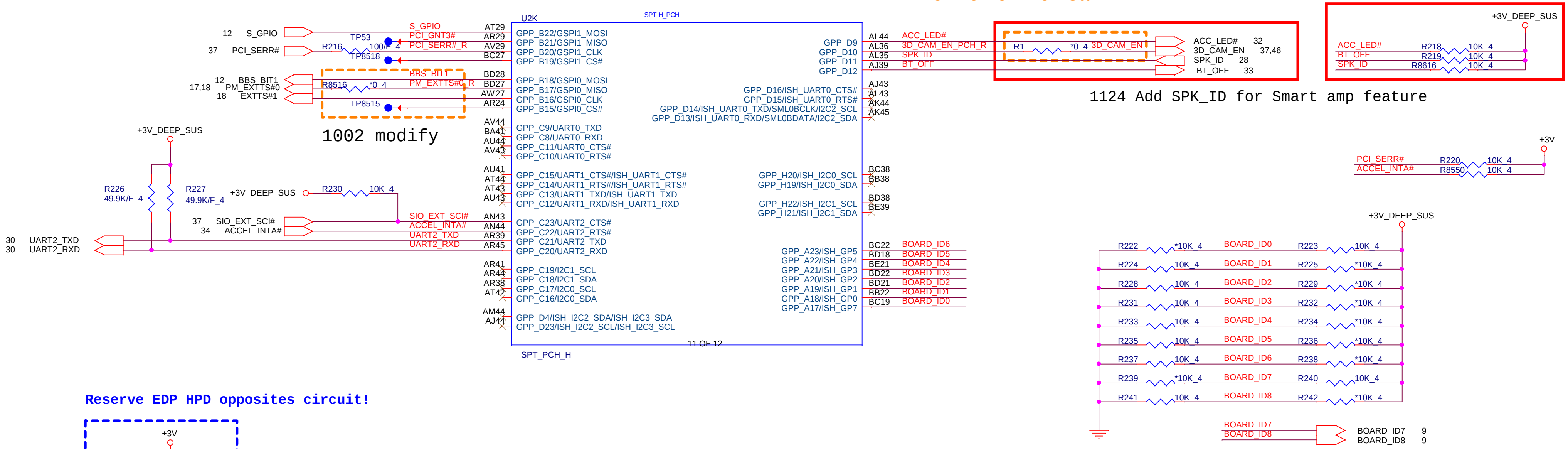
Quanta Computer Inc.

Size	Document Number	Rev
Custom	12 -- PCH 4/7 (GPIO/MISC)	1A

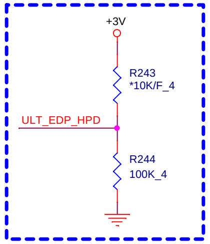
Date: Tuesday, June 07, 2016 Sheet 12 of 52

9,10,12,14,16,18 +3V_DEEP_SUS

3D CAMERA
BOM: 3D CAM Un-Stuff

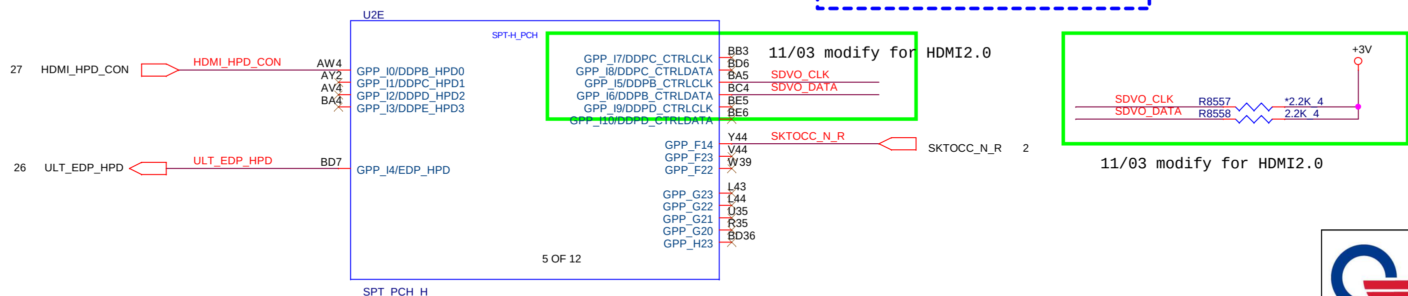


Reserve EDP_HPD opposites circuit!



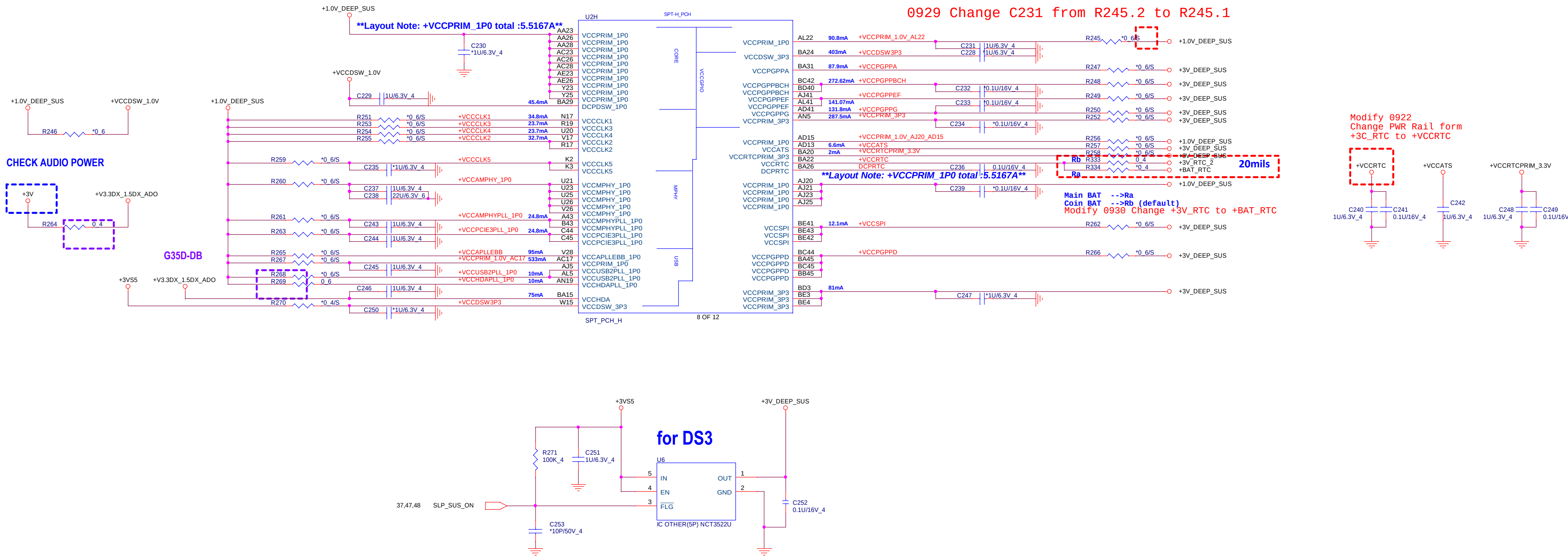
Model	BOARD_ID[8:7] ID8;ID7	BOARD_ID[6:5] ID6;ID5	Board ID [4:3] ID4;ID3		BOARD_ID[2:1] ID2;ID1	BOARD_ID0 ID0
Definition	01 SKL H 10 KBL H *RSV	00 Reserve	ID4 Reserve	ID3 0 Nvidia 1 AMD	00 15" 01 17" 10 17" SP	0 : UMA 1 : DIS

This signal has a weak internal pull-down.
0 = Port C and D is not detected.
1 = Port C and D is detected.



PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	13 -- PCH 5/7 (GPIO)	1A



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	14 -- PCH 6/7 (POWER)	1A

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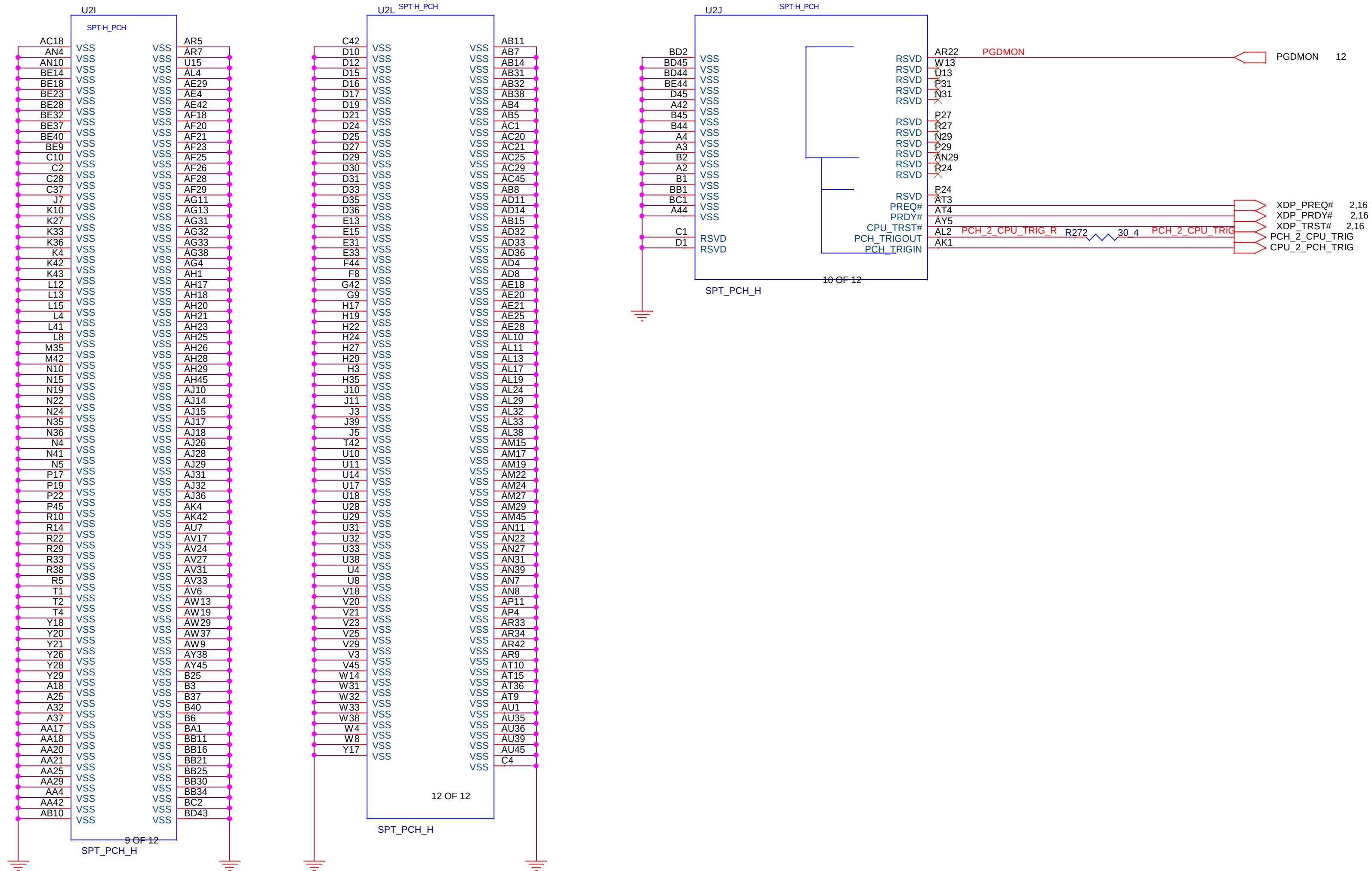
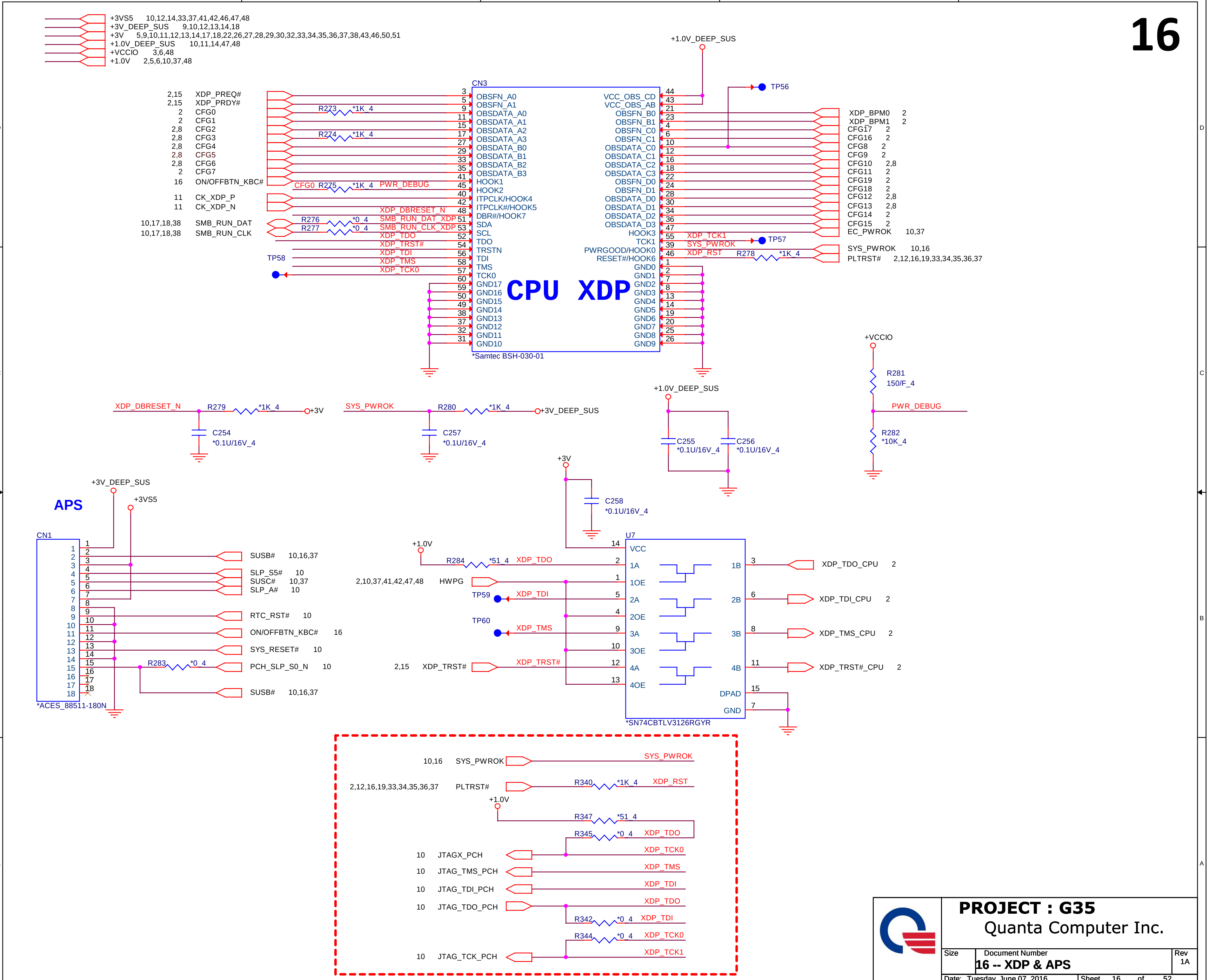


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	15 -- PCH 7/7 (GND)	1A

Date Tuesday, June 07, 2016 Sheet 15 of 52

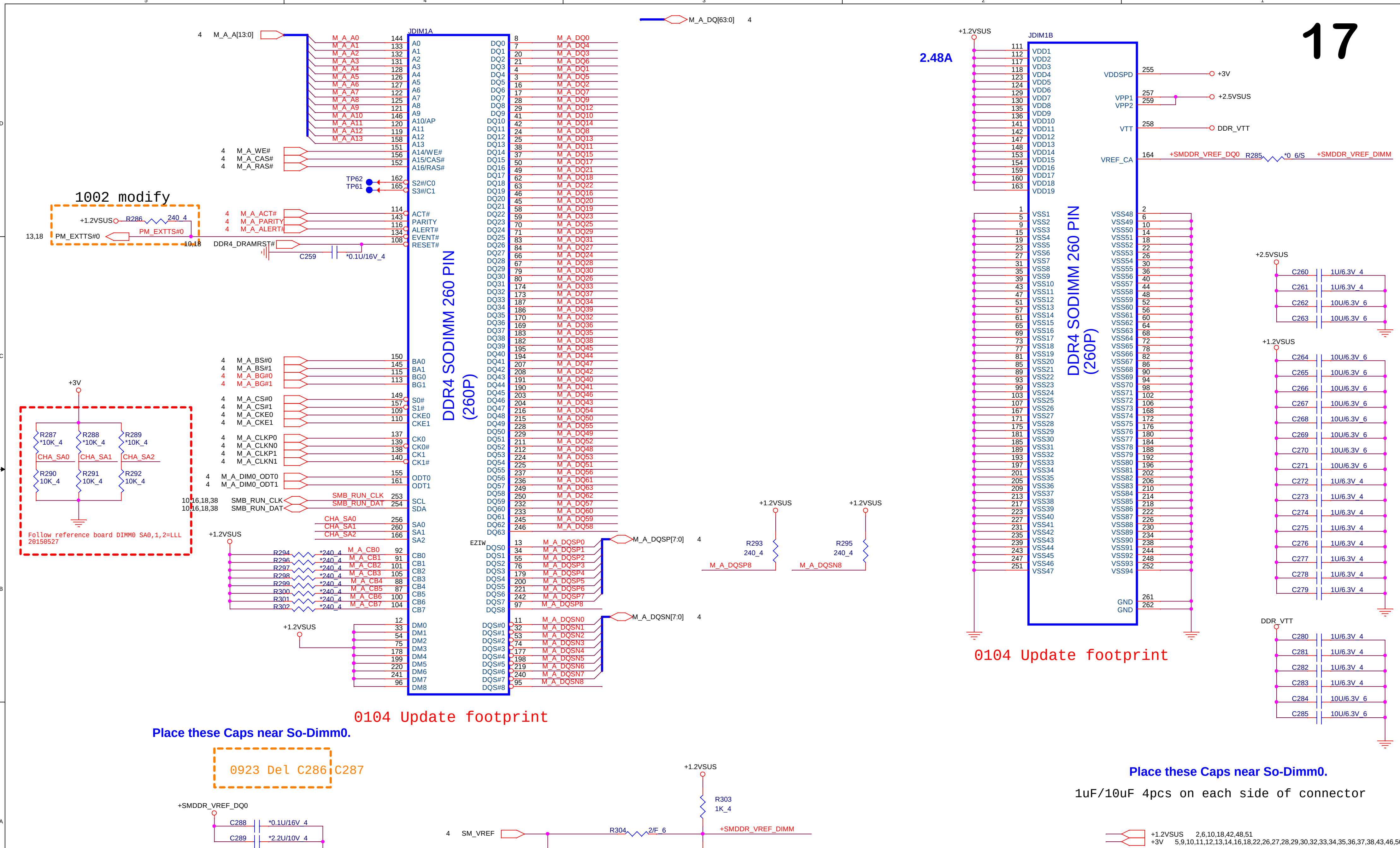


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
	16 -- XDP & APS	1A

Date: Tuesday, June 07, 2016 | Sheet 16 of 52



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	17 -- DDR4 DIMM0-STD(4.0H)	1A

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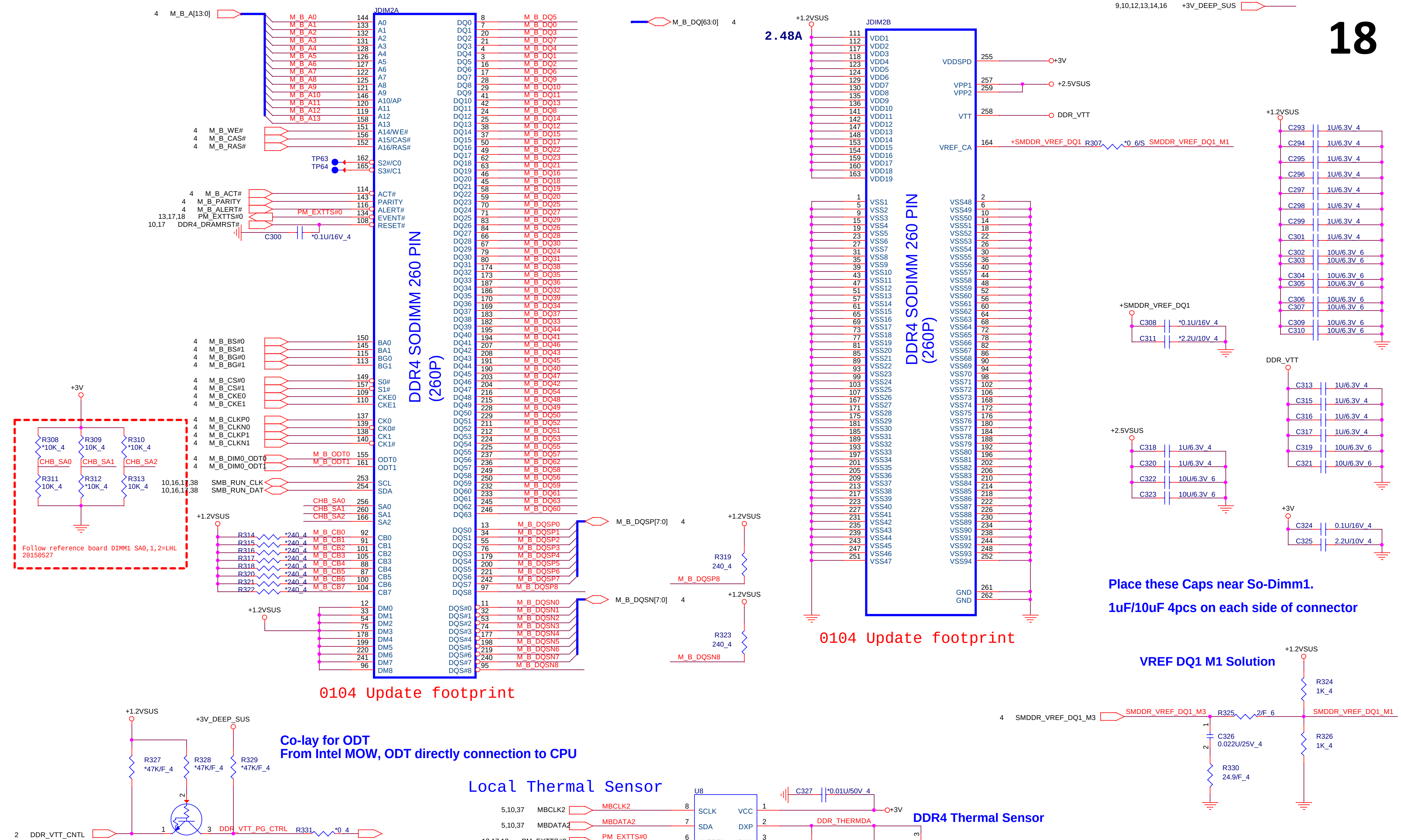
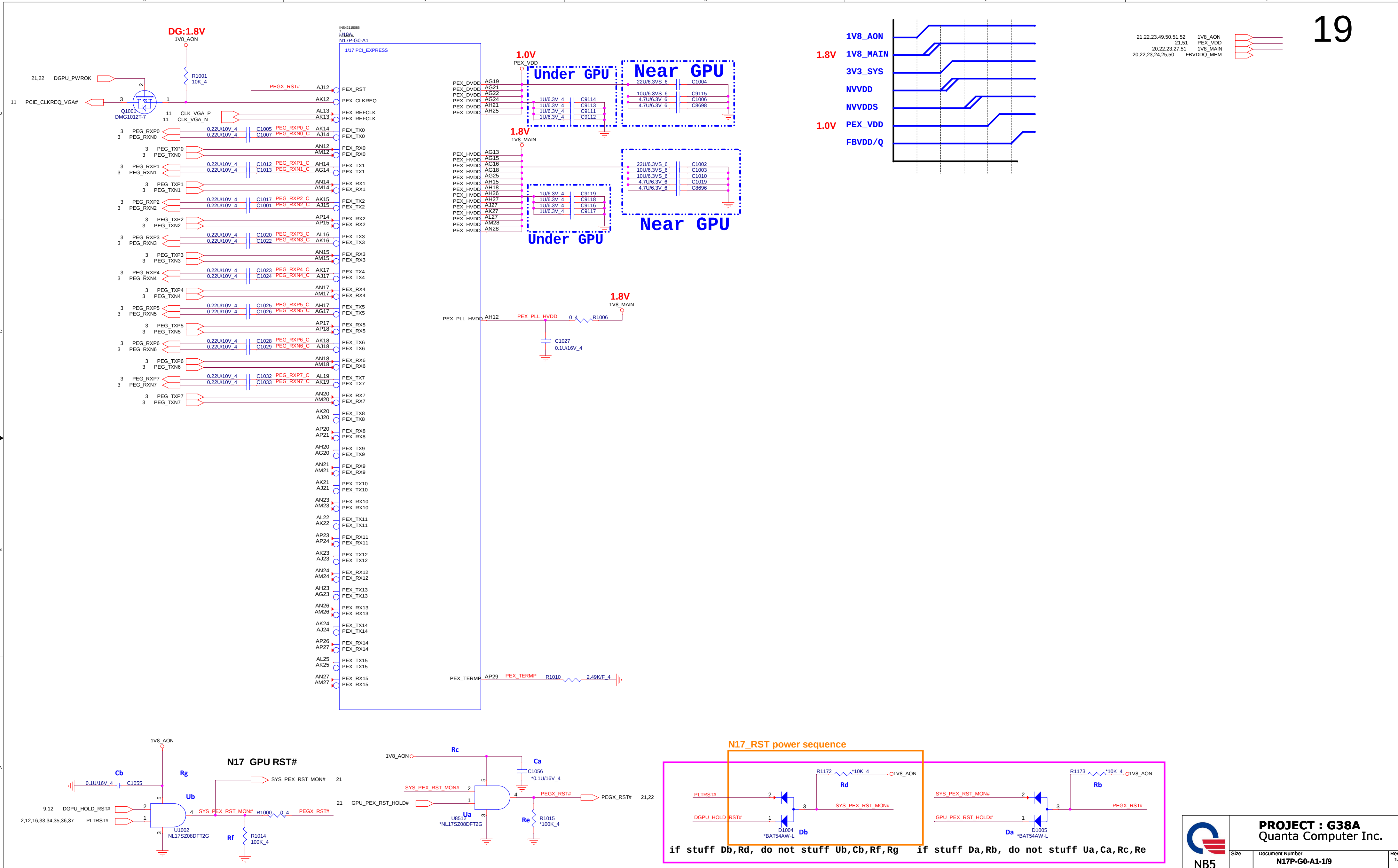


PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	18 -- DDR4 DIMM1-RVS(4.0H)	1A

Date: Tuesday, June 07, 2016 | Sheet 18 of 52



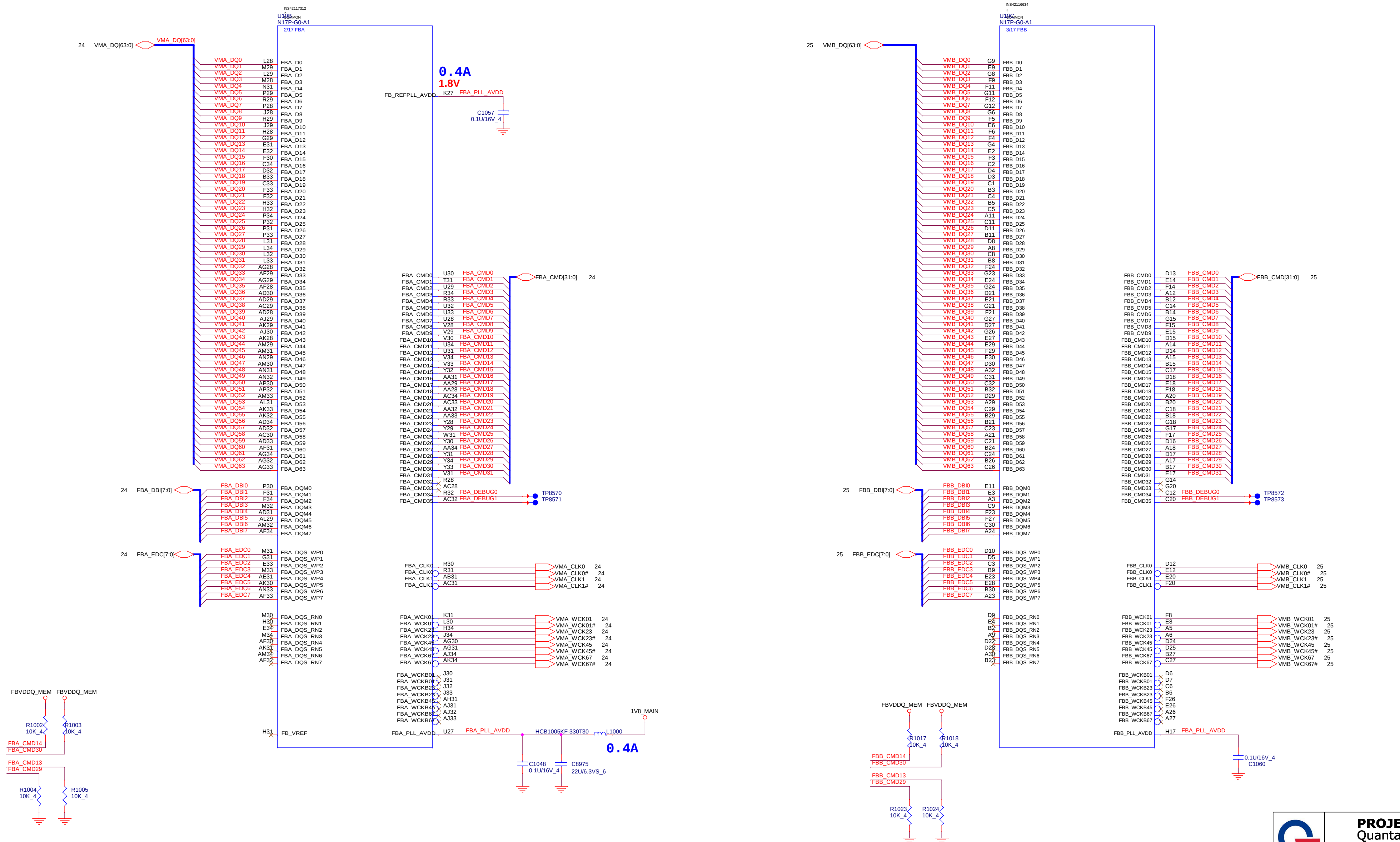
PROJECT : G38A

Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	N17P-G0-A1-1/9	1A

Date: Tuesday, June 07, 2016 Sheet 19 of 52



PROJECT : G38A
Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	N17P-G0-A1-2/9	1A

Date: Tuesday, June 07, 2016 Sheet 20 of 52

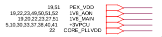


Table 14.2 GPIO Descriptions for GB4C-128 Packages

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
GPIO0	NVVDD_PWM_VID	O	PWM Output to control NVVDD	0 to1V8 PWM output
GPIO1	GC6M: GC6_FB_EN	O	FB Enable for GC6 2.1	Open Source 10 KΩ pull-down
GPIO2	GC6M: GPU_EVENT#/ WAKE*	I	GPU wake signal for GC6 2.1	10KΩ pull-up to 1V8_AON, unless driven actively.
GPIO3	NVVDD_SRAM_PWM	O	PWM output to control the SRAM power supply	0 to 1V8 output
GPIO4	GC6M:1V8_MAIN_EN	O	GPU power sequencing for GC6 2.1	Open Drain 10KΩ pull-up to 1V8_AON
GPIO5	FRM_LCK	I	Active low Frame Lock	Open Drain 1V8 pull-up to 1V8AON

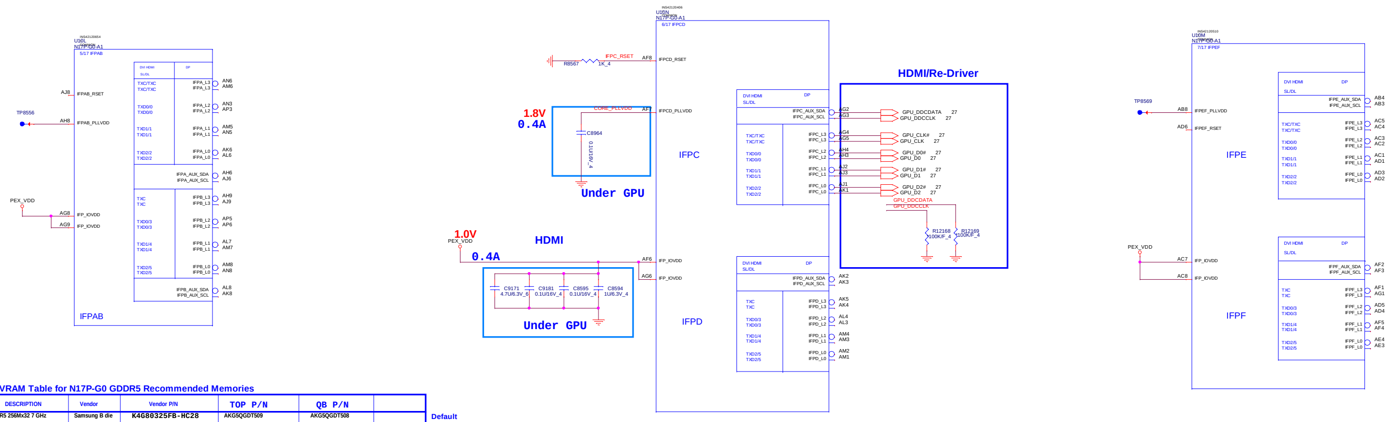
Table 14.2 GPIO Descriptions for GB4C-128 Packages (Continued)

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
GPIO6	NVVDD_PSI	O	Phase Shedding (see Section 14.3.3)	10 kΩ pull-up to 1V8_AON to enable multiple phases
GPIO7	LCD_BL_PWM	O	Panel Backlight enable	100 kΩ pull-down
GPIO8	MEM_VDD_CTL	O	Memory voltage control	Pull-up/pull-down to set the FBVDD/Q power-on voltage
GPIO9	THERM_ALERT	I/O	Active Low Thermal Alert	Open Drain 10 kΩ pull-up to 1V8_AON
GPIO10	MEM_VREF_CTL	O	Memory VREF Control	100 kΩ pull-down
GPIO11	LCD_VDD Quadro:Power_Brake#	O	Panel Power enable	100 kΩ pull-down
GPIO12	PWR_LEVEL	I	AC power detect or power supply overdraw input	100 kΩ pull-up to 1V8_AON
GPIO13	LCD_BLEN	O	LCD Panel Backlight Enable	Panel Backlight Enable
GPIO14	HPD_IFPA	I	Hot Plug Detect for IFPA	Inverted input. See Figure 14.5
GPIO15	HPD_IFPB	I	Hot Plug Detect for IFPB	Inverted input. See Figure 14.5
GPIO16	GC6M: SYS_PEX_RST_MON#	O	System side PCIe reset monitor	10 kΩ pull-up to 1V8_AON unless actively driven
GPIO17	HPD_IFPD	I	Hot Plug Detect for IFPD	Inverted input. See Figure 14.5
GPIO18	HPD_IFPE	I	Hot Plug Detect for IFPE	Inverted input. See Figure 14.5
GPIO19	3D Vision	O	3D Vision L/R Signal	100 kΩ pull-down
GPIO20	GC5_MODE			
GPIO21	UNUSED	I/O		
GPIO22	UNUSED	I/O		

Table 14.2 GPIO Descriptions for GB4C-128 Packages (Continued)

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
GPIO23	GC6M: GPU_PEX_RST_HOLD#	O	GPU PCIe self-reset control	Open Drain 10 kΩ pull-up to a gated 3V3
GPIO24	HPD_IFPF	I	Hot plug detect for IFPF	Inverted input. See Figure 14.5
GPIO25	UNUSED			
GPIO26	UNUSED			
GPIO27	HPD_IFPC	I	Hot plug detect for IFPC	Inverted input. See Figure 14.5

GPIO Number	GPIO Name	I/O	Functional Description	I/O Termination
OVERT	OVERT	I/O	Catastrophic Over Temperature	100 kΩ pull-up to 3V3_AON

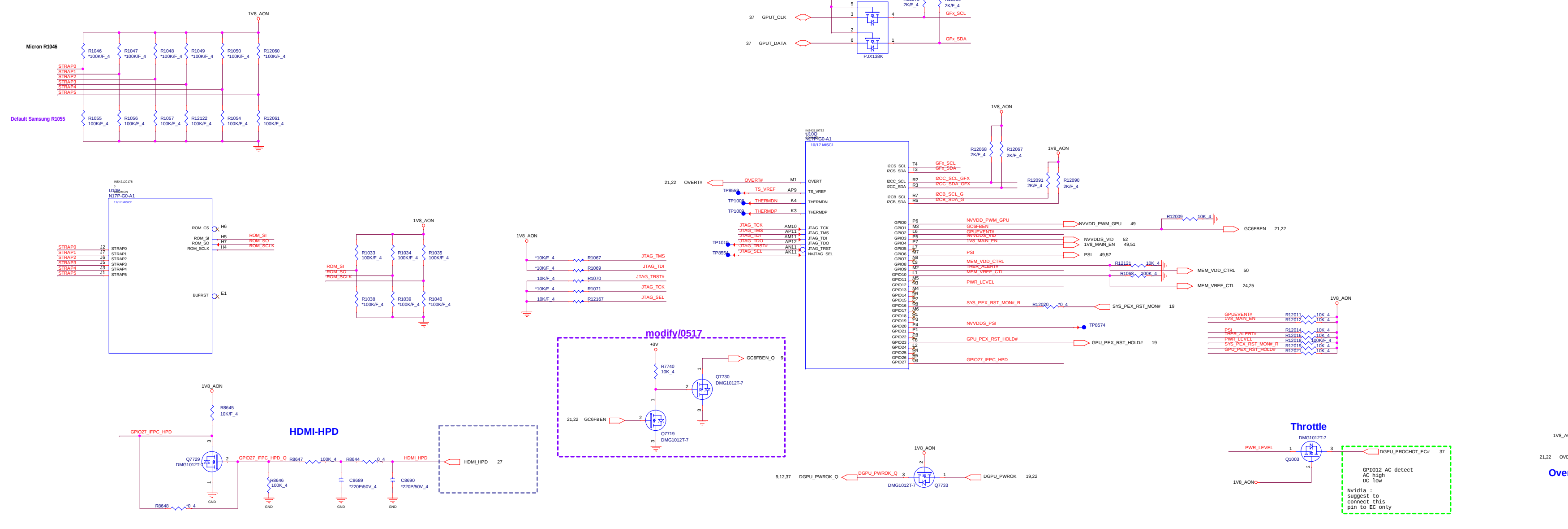


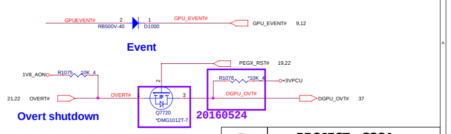
STRAP[2:0] VRAM Table for N17P-G0 GDDR5 Recommended Memories

RAMCFG [2:0]	DESCRIPTION	Vendor	Vendor P/N	TOP P/N	QB P/N	
0x0	GDDR5 256Mx32 7 GHz	Samsung B die	K4G80325FB-HC28	AKG5QGDT509	AKG5QGDT508	
0x1	GDDR5 256Mx32 7 GHz	Micron A die	MT51J256M32HF-70:A	AKG5QGUTL07	AKG5QGUTL06	
0x2	GDDR5 256Mx32 7 GHz	Hynix M die	H5GC8H24MJR-R0C			
	GDDR5 128Mx32 7 GHz	Samsung E die	K4G41325FE-HC28	AKG5PGUT502	AKG5PGUT501	
	GDDR5 128Mx32 7 GHz	Micron A die	EDW4032BABG-70-F-R	AKG5PW0TL08	AKG5PW0TL07	
	GDDR5 128Mx32 7 GHz	Hynix A die	H5GC4H24AJR-R0C	AKG5PWUTW26	AKG5PWUTW25	

Default

	Vender	Size	P/N
N16E-GX	WINBOND	8Mb	AKE5EZN0N00 (W25Q64FWSSIG)
N16E-GT	Giga device	1Mb	





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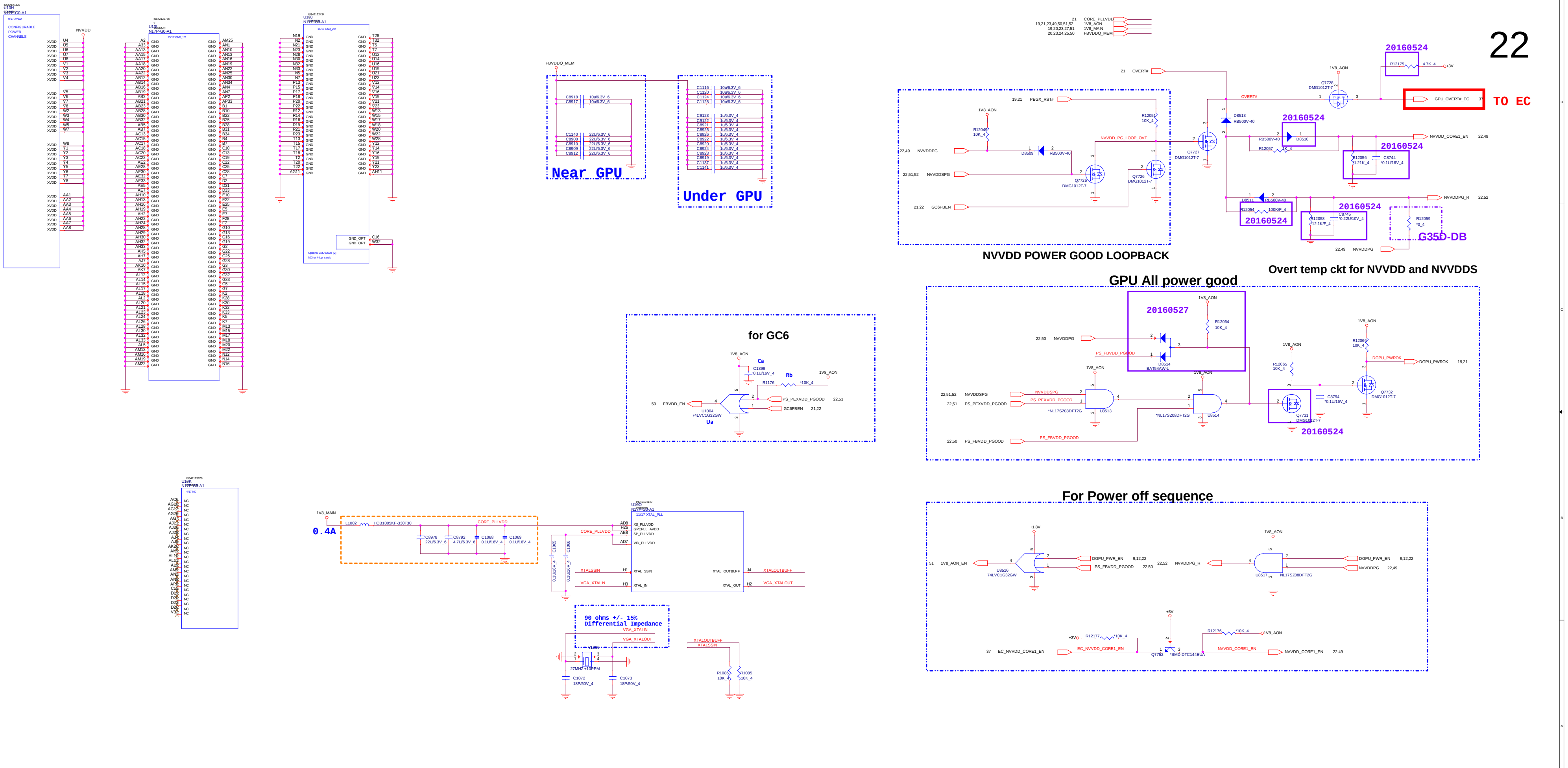
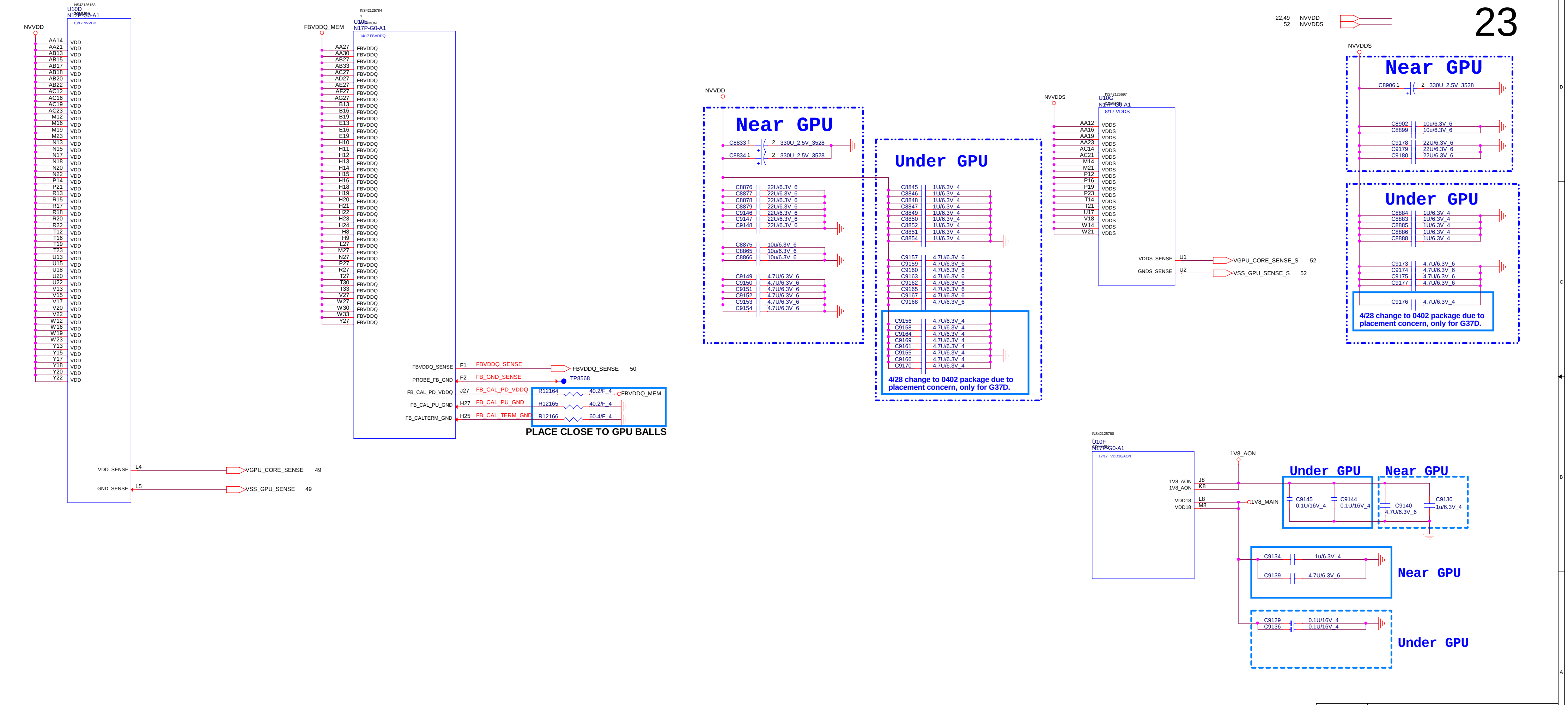
Quanta Computer Inc.

NB5	Size: Custom	Document Number: N17P-G0-A1-3/9	Rev: 1A
	Date: Tuesday, June 14, 2016	Sheet 21 of 52	



PROJECT : G38A	Quanta Computer Inc.
NB5	Document Number: N17P-G0-A1-4/9
Date: Tuesday, June 07, 2016	Sheet 22 of 52
Rev 1A	



NB5	**PROJECT : G38A** Quanta Computer Inc.
Size: Custom	Document Number: N17P-G0-A1-5/9 — Rev 1A
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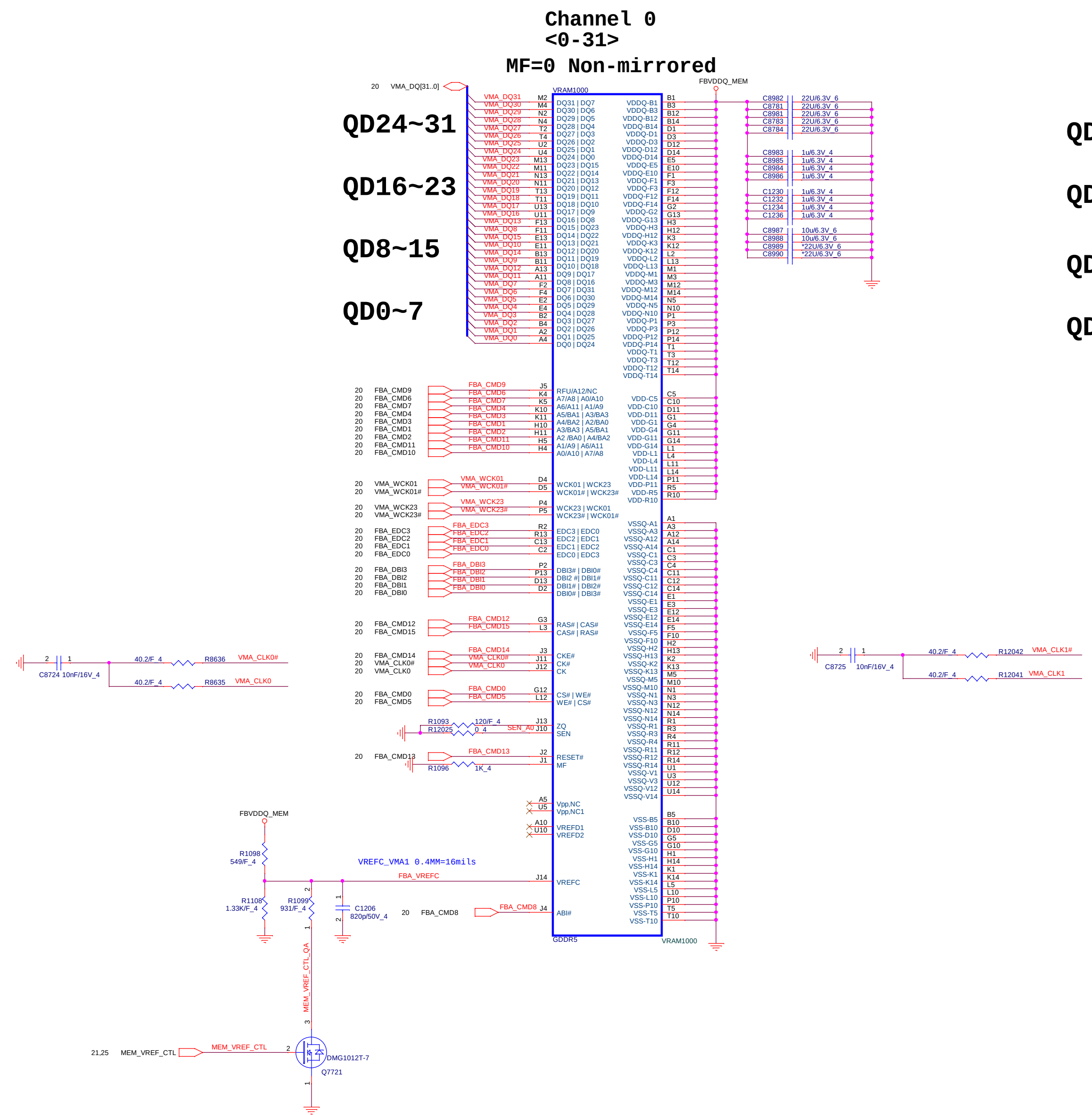
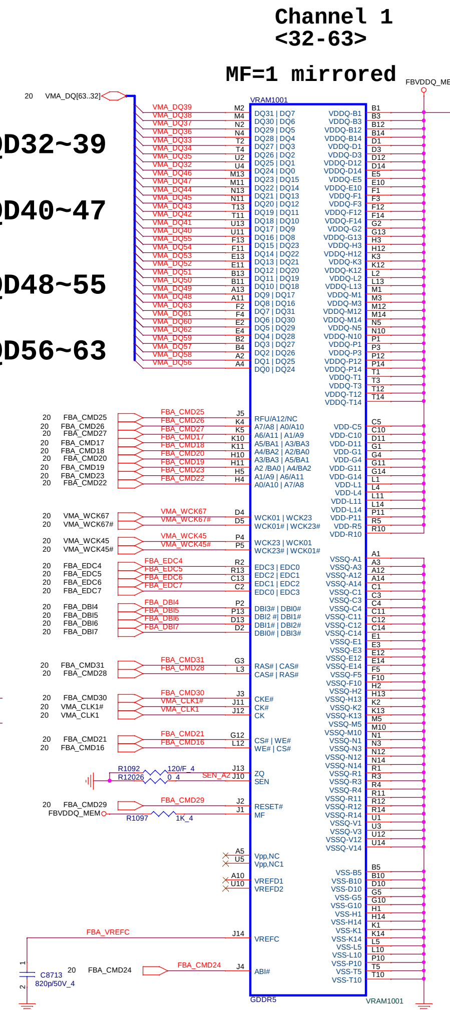
CHANNEL A: 2G/4G GDDR5





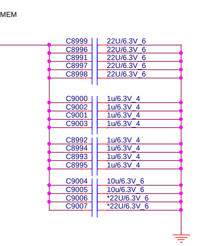


Table 9.4 GDDR5 Command Mapping (GB4C-128 & GB2C-64 packages)

Command Ball on GPU: For DRAM(s) tied to DQ[31:0]	Command Ball on GPU: For DRAM(s) tied to DQ[63:32]	DRAM Signal Definition
FBA_CMD0	FBA_CMD16	CS*
FBA_CMD1	FBA_CMD17	A3_BA3
FBA_CMD2	FBA_CMD18	A2_BA0
FBA_CMD3	FBA_CMD19	A4_BA2
FBA_CMD4	FBA_CMD20	A5_BA1
FBA_CMD5	FBA_CMD21	WE*
FBA_CMD6	FBA_CMD22	A7_A8
FBA_CMD7	FBA_CMD23	A6_A11
FBA_CMD8	FBA_CMD24	ABI*
FBA_CMD9	FBA_CMD25	A12_RFU
FBA_CMD10	FBA_CMD26	A0_A10
FBA_CMD11	FBA_CMD27	A1_A9
FBA_CMD12	FBA_CMD28	RAS*
FBA_CMD13	FBA_CMD29	RST*
FBA_CMD14	FBA_CMD30	CKE*
FBA_CMD15	FBA_CMD31	CAS*

Table 9.5 GDDR5 DEBUG Command Lines

Command Ball on GPU	DRAM Signal Definition
FBA_CMD32 (do not connect to DRAM)	(not used)
FBA_CMD33 (do not connect to DRAM)	(not used)
FBA_CMD34 (do not connect to DRAM)	DEBUG0
FBA_CMD35 (do not connect to DRAM)	DEBUG1

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Quanta Computer Inc.
NB5

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CHANNEL B: 2G/4G GDDR5

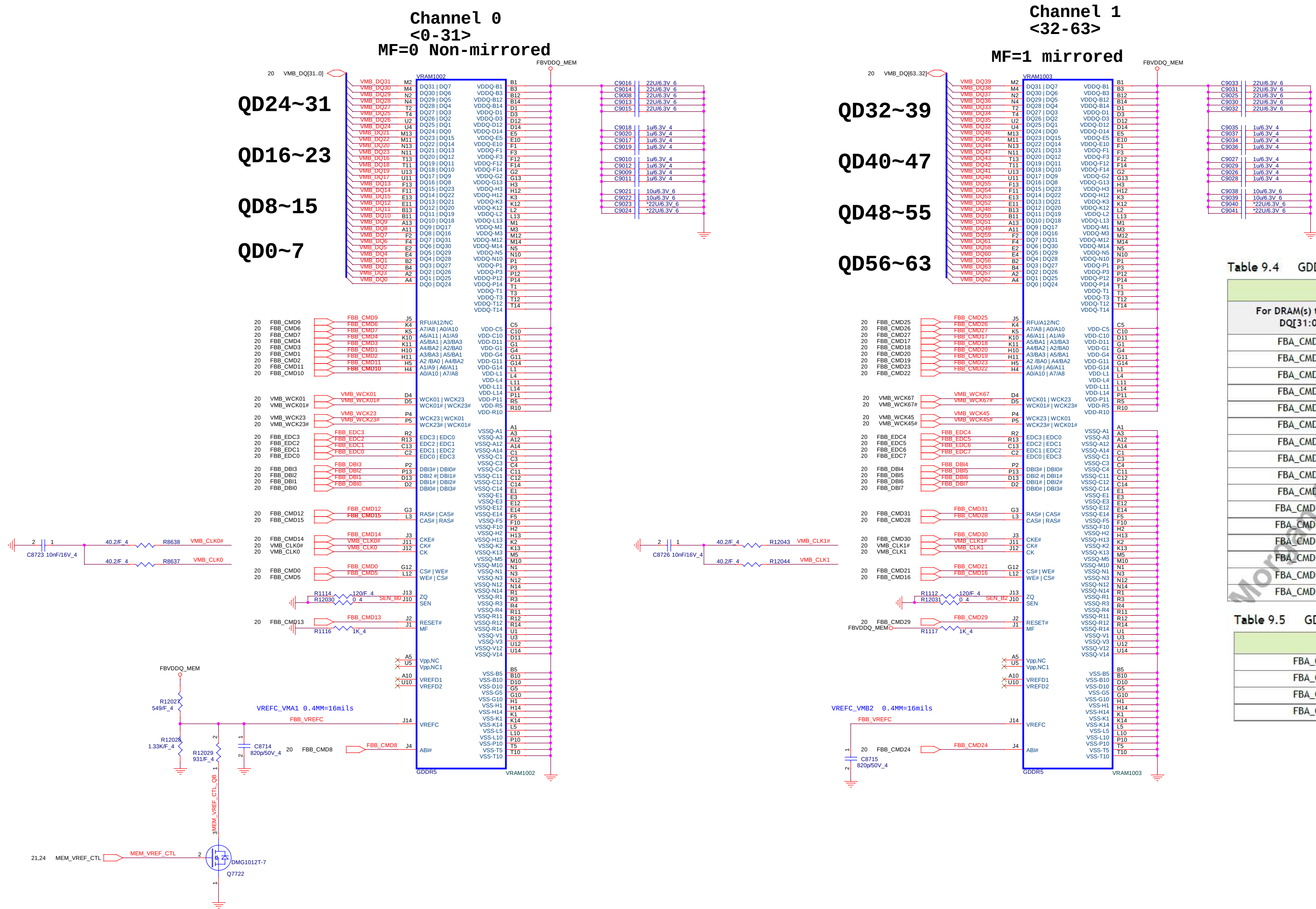
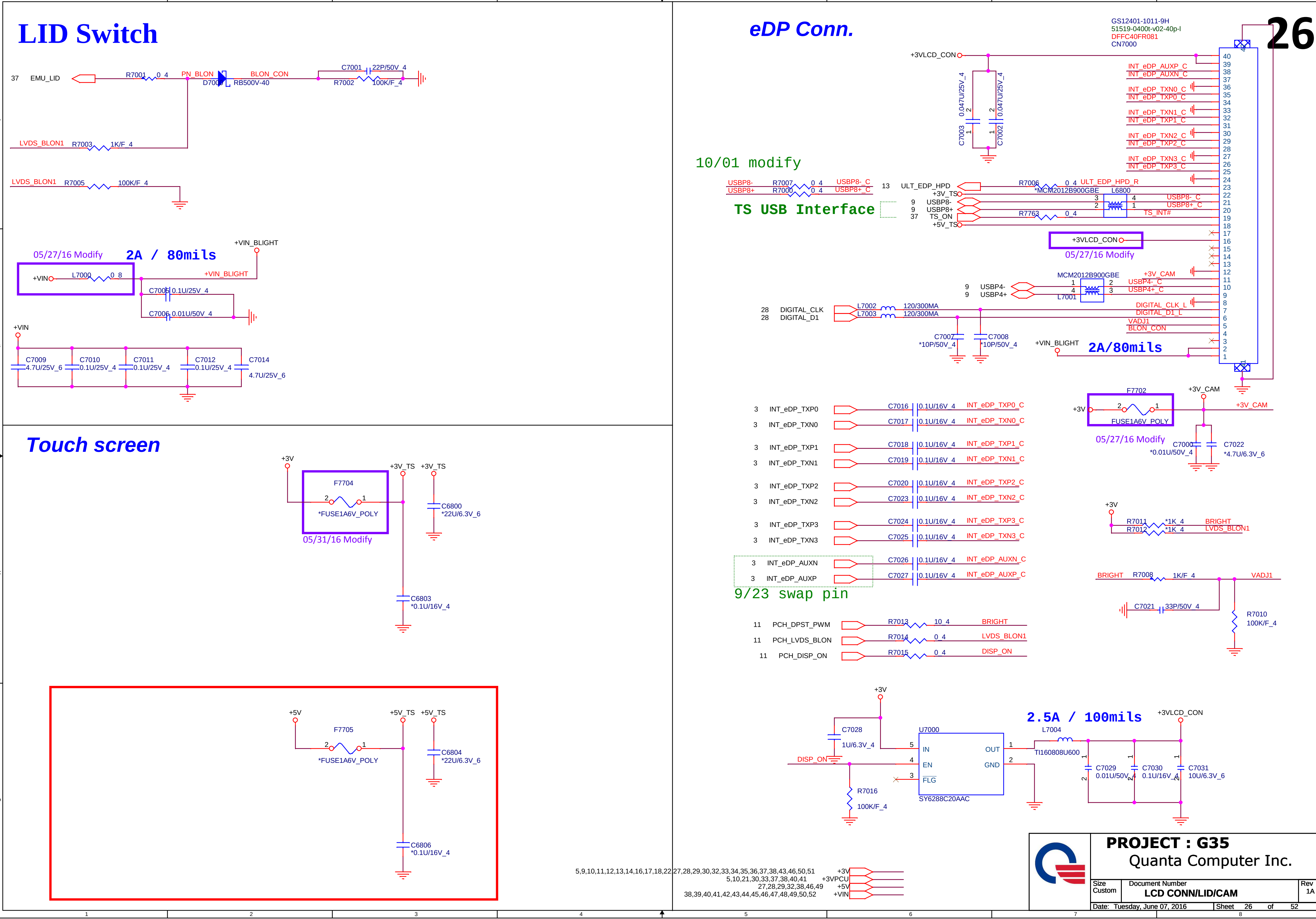


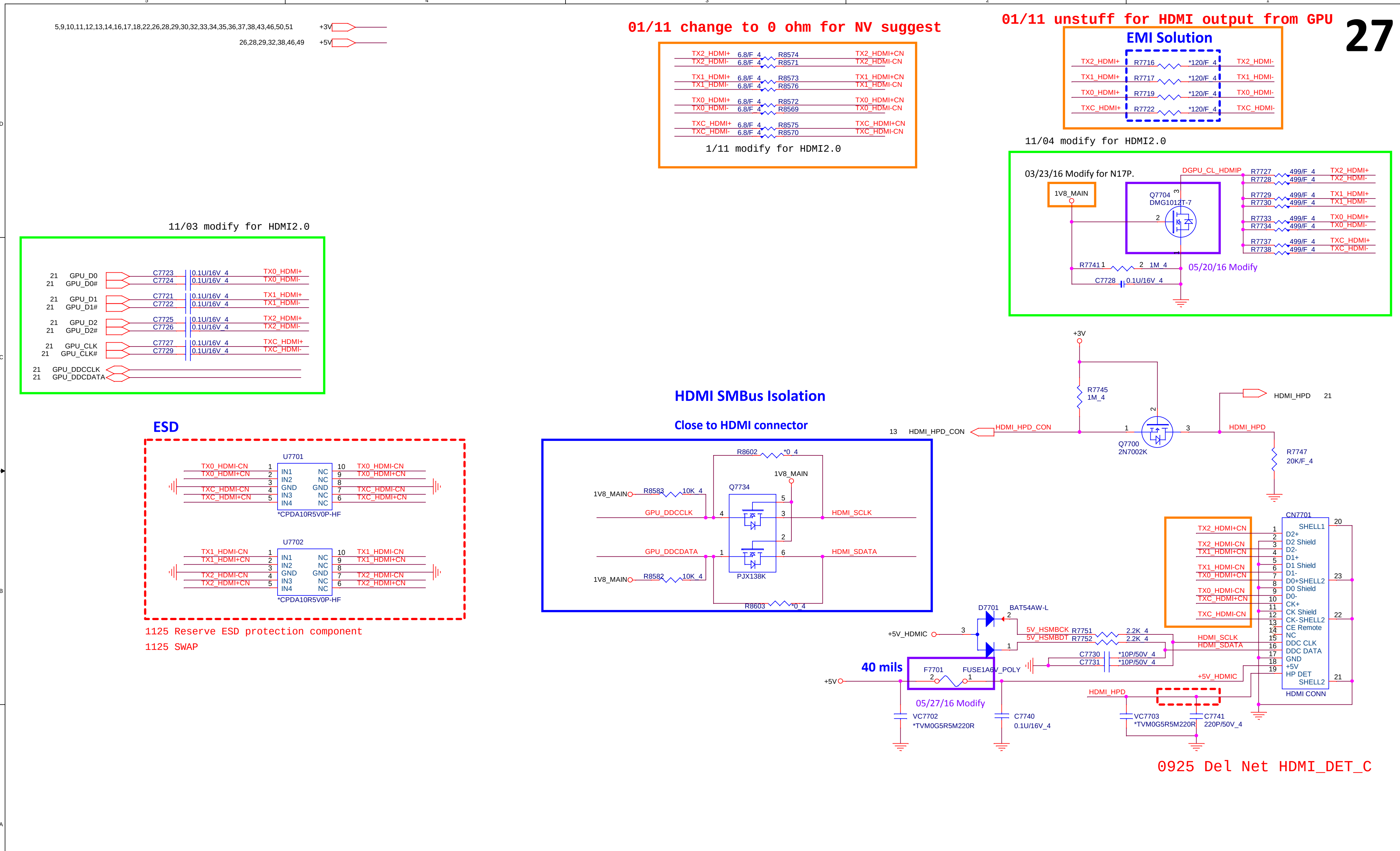
Table 9.4 GDDR5 Command Mapping (GB4C-128 & GB2C-64 packages)

Command Ball on GPU: For DRAM(s) tied to DQ[31:0]	Command Ball on GPU: For DRAM(s) tied to DQ[63:32]	DRAM Signal Definition
FBA_CMD0	FBA_CMD16	CS*
FBA_CMD1	FBA_CMD17	A3_BA3
FBA_CMD2	FBA_CMD18	A2_BA0
FBA_CMD3	FBA_CMD19	A4_BA2
FBA_CMD4	FBA_CMD20	A5_BA1
FBA_CMD5	FBA_CMD21	WE*
FBA_CMD6	FBA_CMD22	A7_A8
FBA_CMD7	FBA_CMD23	A6_A11
FBA_CMD8	FBA_CMD24	ABI*
FBA_CMD9	FBA_CMD25	A12_RFU
FBA_CMD10	FBA_CMD26	A0_A10
FBA_CMD11	FBA_CMD27	A1_A9
FBA_CMD12	FBA_CMD28	RAS*
FBA_CMD13	FBA_CMD29	RST*
FBA_CMD14	FBA_CMD30	CKE*
FBA_CMD15	FBA_CMD31	CAS*

Table 9.5 GDDR5 DEBUG Command Lines

Command Ball on GPU	DRAM Signal Definition
FBA_CMD32 (do not connect to DRAM)	(not used)
FBA_CMD33 (do not connect to DRAM)	(not used)
FBA_CMD34 (do not connect to DRAM)	DEBUG0
FBA_CMD35 (do not connect to DRAM)	DEBUG1


LID Switch
37 EMU_LID
R7001 0_4
PN_BLON
D7001 RB500V-40
BLON_CON
C7001 22P/50V_4
R7002 100K/F_4
LVDS_BLON1 R7003 1K/F_4
LVDS_BLON1 R7005 100K/F_4
05/27/16 Modify
2A / 80mils
+VIN_BLIGHT
+VIN L7000 0_8
C7005 0.1U/25V_4
C7006 0.01U/50V_4
+VIN
C7009 4.7U/25V_6
C7010 0.1U/25V_4
C7011 0.1U/25V_4
C7012 0.1U/25V_4
C7014 4.7U/25V_6
Touch screen
+3V
F7704 *FUSE1A6V_POLY
05/31/16 Modify
+3V_TS
C6800 *22U/6.3V_6
C6803 *0.1U/16V_4
+5V
F7705 *FUSE1A6V_POLY
+5V_TS
C6804 *22U/6.3V_6
C6806 *0.1U/16V_4
eDP Conn.
GS12401-1011-9H
51519-0400t-v02-40p-l
DFFC40FR081
CN7000
+3VLCD_CON
C7003 0.047U/25V_4
C7002 0.047U/25V_4
10/01 modify
USBP8- R7007 0_4 USBP8-_C
USBP8+ R7000 0_4 USBP8+_C
TS USB Interface
13 ULT_EDP_HPD
R7006 0_4 ULT_EDP_HPD_R
*MCM2012B900GBE L6800
+3V_TS
9 USBP8-
9 USBP8+
37 TS_ON R7763 0_4 TS_INT#
+5V_TS
05/27/16 Modify
INT_eDP_AUXP_C
INT_eDP_AUXN_C
INT_eDP_TXN0_C
INT_eDP_TXP0_C
INT_eDP_TXN1_C
INT_eDP_TXP1_C
INT_eDP_TXN2_C
INT_eDP_TXP2_C
INT_eDP_TXN3_C
INT_eDP_TXP3_C
MCM2012B900GBE L7001
9 USBP4-
9 USBP4+
+3V_CAM
USBP4-_C
USBP4+_C
28 DIGITAL_CLK L7002 120/300MA
28 DIGITAL_D1 L7003 120/300MA
DIGITAL_CLK_L
DIGITAL_D1_L
VADJ1
BLON_CON
C7007 *10P/50V_4
C7008 *10P/50V_4
+VIN_BLIGHT
2A/80mils
3 INT_eDP_TXP0 C7016 0.1U/16V_4 INT_eDP_TXP0_C
3 INT_eDP_TXN0 C7017 0.1U/16V_4 INT_eDP_TXN0_C
3 INT_eDP_TXP1 C7018 0.1U/16V_4 INT_eDP_TXP1_C
3 INT_eDP_TXN1 C7019 0.1U/16V_4 INT_eDP_TXN1_C
3 INT_eDP_TXP2 C7020 0.1U/16V_4 INT_eDP_TXP2_C
3 INT_eDP_TXN2 C7023 0.1U/16V_4 INT_eDP_TXN2_C
3 INT_eDP_TXP3 C7024 0.1U/16V_4 INT_eDP_TXP3_C
3 INT_eDP_TXN3 C7025 0.1U/16V_4 INT_eDP_TXN3_C
3 INT_eDP_AUXN C7026 0.1U/16V_4 INT_eDP_AUXN_C
3 INT_eDP_AUXP C7027 0.1U/16V_4 INT_eDP_AUXP_C
9/23 swap pin
11 PCH_DPST_PWM R7013 10_4 BRIGHT
11 PCH_LVDS_BLON R7014 0_4 LVDS_BLON1
11 PCH_DISP_ON R7015 0_4 DISP_ON
F7702 FUSE1A6V_POLY
+3V
+3V_CAM
05/27/16 Modify
C7000 *0.01U/50V_4
C7022 *4.7U/6.3V_6
R7011 *1K_4 BRIGHT
R7012 *1K_4 LVDS_BLON1
BRIGHT R7008 1K/F_4 VADJ1
C7021 33P/50V_4
R7010 100K/F_4
C7028 1U/6.3V_4
DISP_ON
R7016 100K/F_4
U7000 SY6288C20AAC
IN OUT EN GND FLG
2.5A / 100mils
L7004 TI160808U600
+3VLCD_CON
C7029 0.01U/50V_4
C7030 0.1U/16V_4
C7031 10U/6.3V_6
5,9,10,11,12,13,14,16,17,18,22,27,28,29,30,32,33,34,35,36,37,38,43,46,50,51 +3V
5,10,21,30,33,37,38,40,41 +3VPCU
27,28,29,32,38,46,49 +5V
38,39,40,41,42,43,44,45,46,47,48,49,50,52 +VIN
PROJECT : G35
Quanta Computer Inc.
Size Custom
Document Number LCD CONN/LID/CAM
Rev 1A
Date: Tuesday, June 07, 2016
Sheet 26 of 52

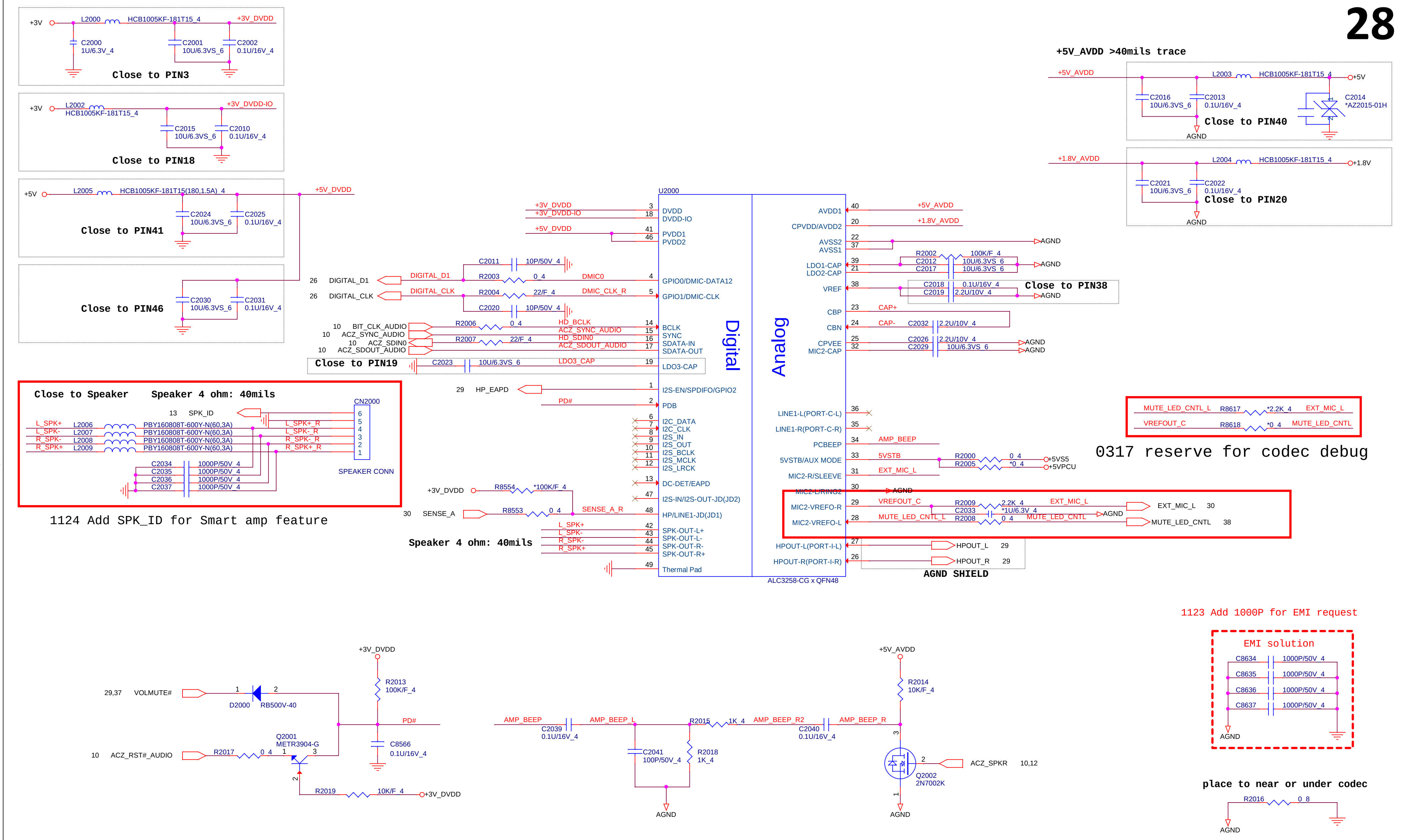


PROJECT : G35

Quanta Computer Inc.

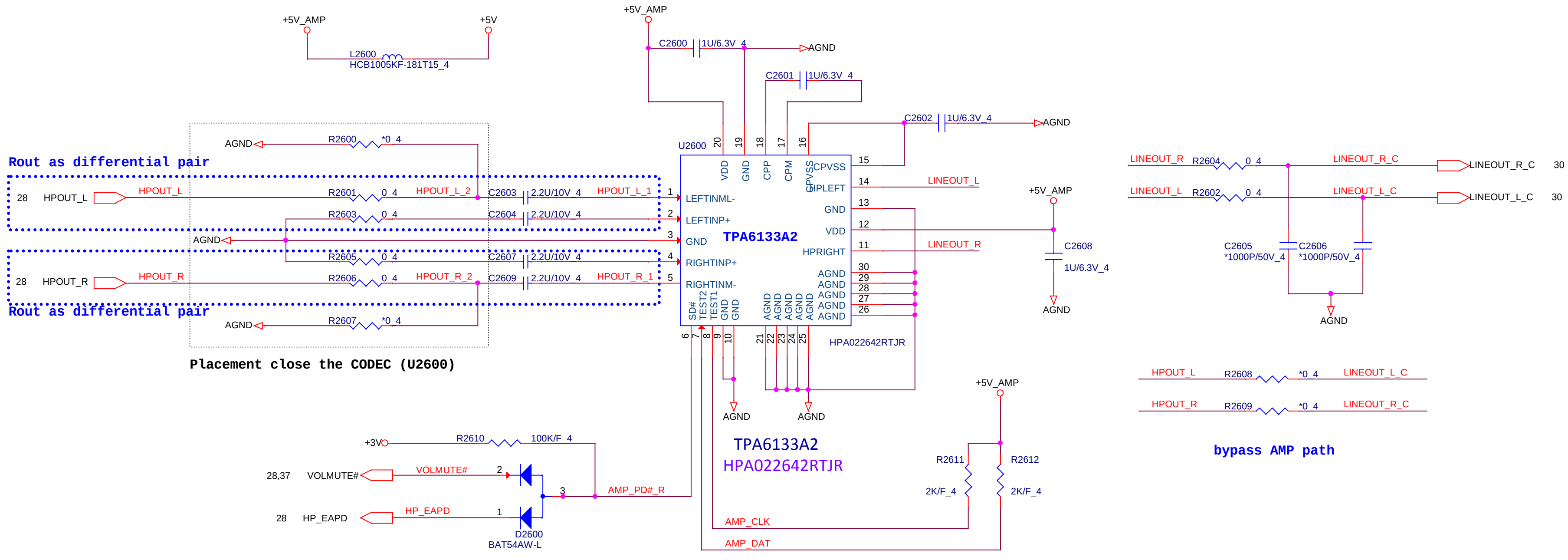
Size	Document Number	Rev
Custom	27 -- HDMI/HDMI REDRIVER	1A

Date: Tuesday, June 07, 2016 Sheet 27 of 52

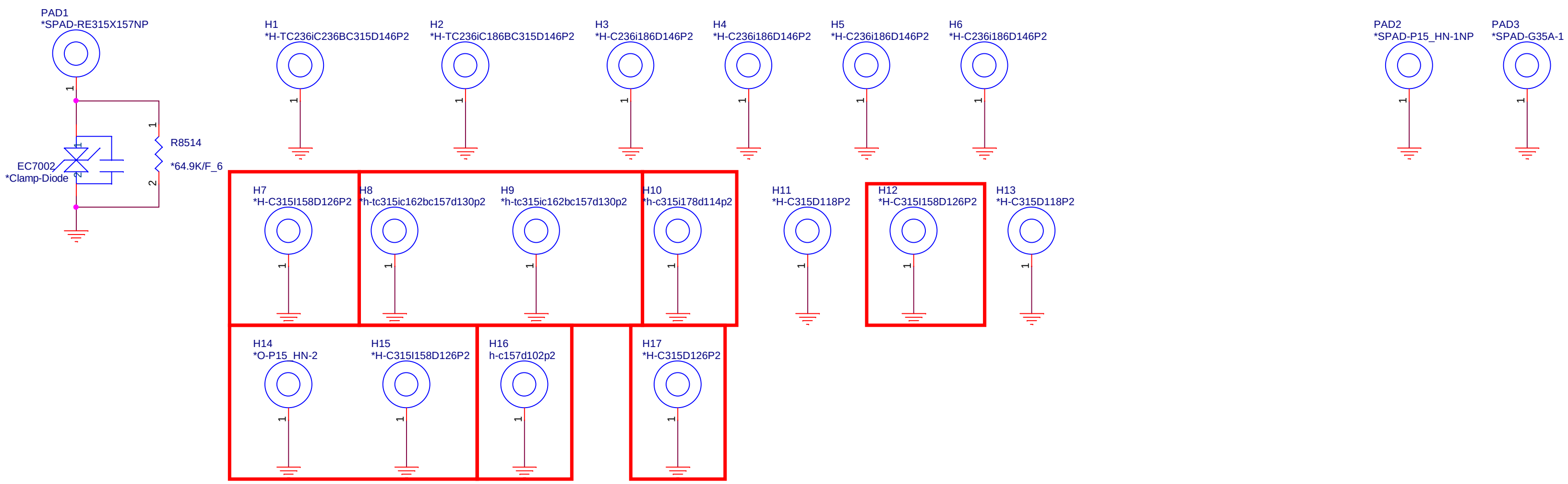


Close to PIN3
Close to PIN18
Close to PIN41
Close to PIN46
Close to PIN19
Close to Speaker
Speaker 4 ohm: 40mils
1124 Add SPK_ID for Smart amp feature
Speaker 4 ohm: 40mils
+5V_AVDD >40mils trace
Close to PIN40
Close to PIN20
Close to PIN38
0317 reserve for codec debug
AGND SHIELD
1123 Add 1000P for EMI request
EMI solution
place to near or under codec
U2000
ALC3258-CG x QFN48
Digital
Analog
SPEAKER CONN
CN2000
L2000 HCB1005KF-181T15_4
L2002 HCB1005KF-181T15_4
L2005 HCB1005KF-181T15(180,1.5A)_4
L2003 HCB1005KF-181T15_4
L2004 HCB1005KF-181T15_4
+3V_DVDD
+3V_DVDD-IO
+5V_DVDD
+5V_AVDD
+1.8V_AVDD
DVDD
DVDD-IO
PVDD1
PVDD2
GPIO0/DMIC-DATA12
GPIO1/DMIC-CLK
BCLK
SYNC
SDATA-IN
SDATA-OUT
LDO3-CAP
I2S-EN/SPDIFO/GPIO2
PDB
I2C_DATA
I2C_CLK
I2S_IN
I2S_OUT
I2S_BCLK
I2S_MCLK
I2S_LRCK
DC-DET/EAPD
I2S-IN/I2S-OUT-JD(JD2)
HP/LINE1-JD(JD1)
SPK-OUT-L+
SPK-OUT-L-
SPK-OUT-R-
SPK-OUT-R+
Thermal Pad
AVDD1
CPVDD/AVDD2
AVSS2
AVSS1
LDO1-CAP
LDO2-CAP
VREF
CBP
CBN
CPVEE
MIC2-CAP
LINE1-L(PORT-C-L)
LINE1-R(PORT-C-R)
PCBEEP
5VSTB/AUX MODE
MIC2-R/SLEEVE
MIC2-L/RING2
MIC2-VREFO-R
MIC2-VREFO-L
HPOUT-L(PORT-I-L)
HPOUT-R(PORT-I-R)
DIGITAL_D1
DIGITAL_CLK
BIT_CLK_AUDIO
ACZ_SYNC_AUDIO
ACZ_SDIN0
ACZ_SDOUT_AUDIO
HP_EAPD
SENSE_A
SPK_ID
MUTE_LED_CNTL_L
VREFOUT_C
EXT_MIC_L
MUTE_LED_CNTL
HPOUT_L
HPOUT_R
VOLMUTE#
ACZ_RST#_AUDIO
ACZ_SPKR
AMP_BEEP
AMP_BEEP_L
AMP_BEEP_R2
AMP_BEEP_R
PD#
D2000 RB500V-40
Q2001 METR3904-G
Q2002 2N7002K
AGND

Head Phone out



HOLE



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	29-- HP AMP HPA022642RTJR	1A

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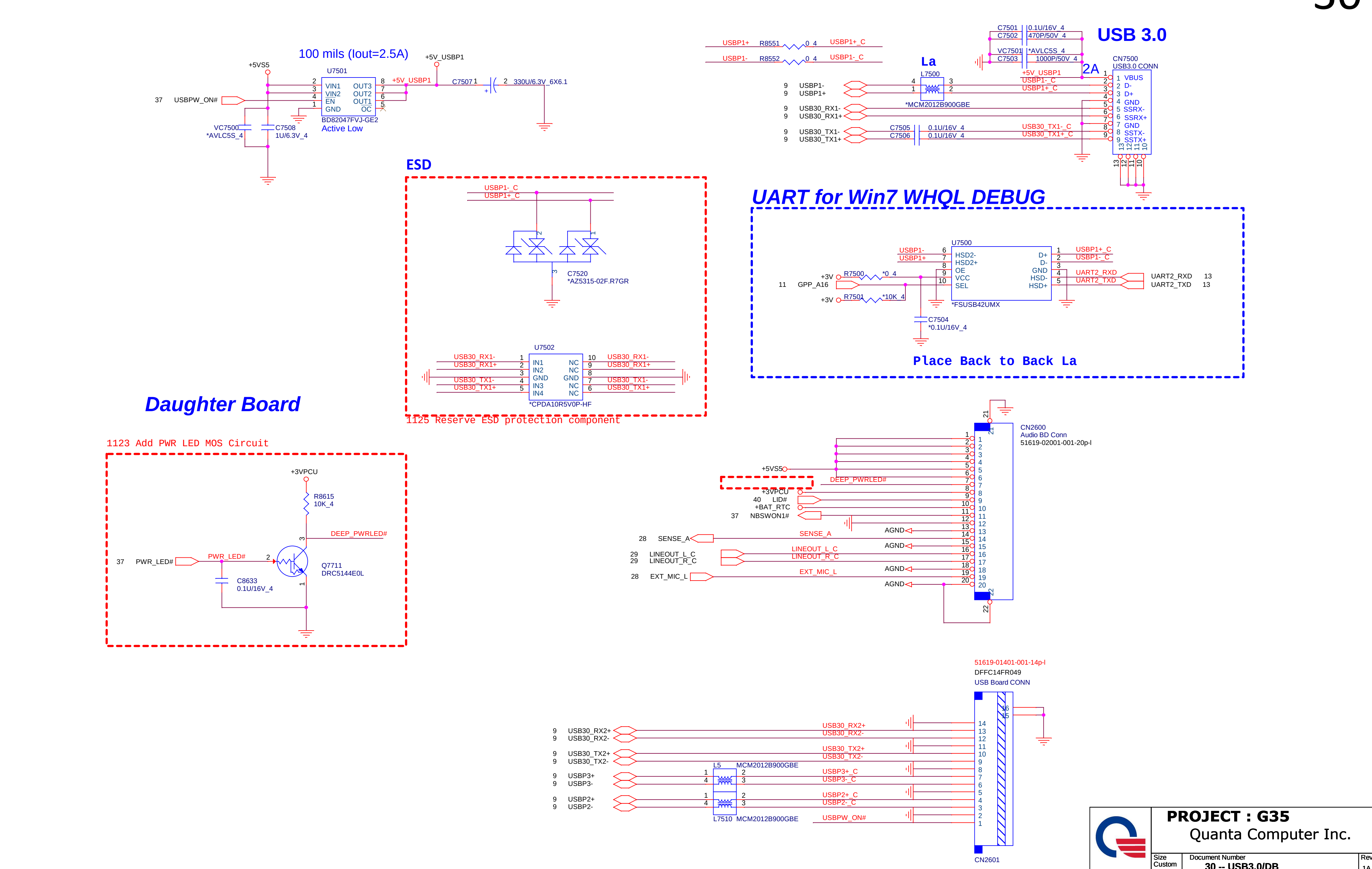
USB 2.0/3.0 Combo



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	30 -- USB3.0/DB	1A

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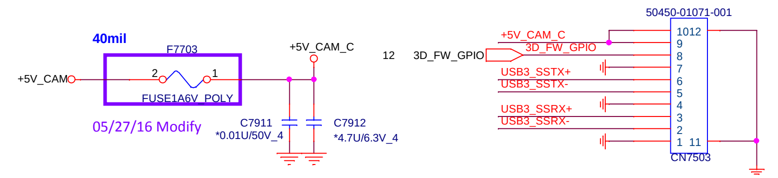
3D CAMERA

10/08 3D Camera MIC combine in LCD CONN

3D Camera Conn.

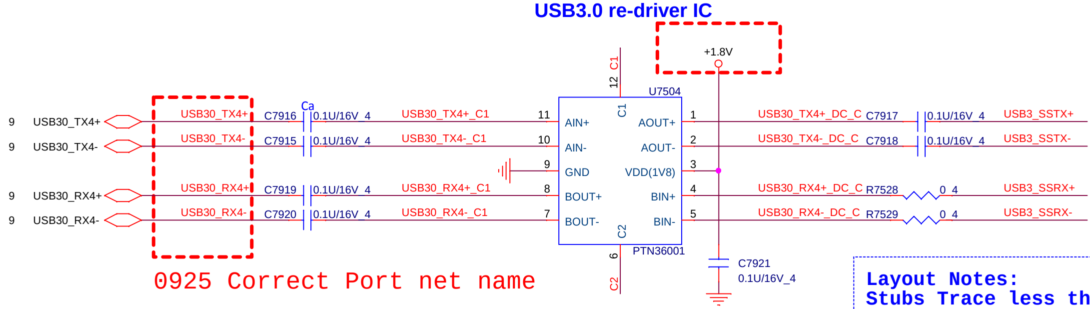


USB3.0

USB3.0 Re-driver IC

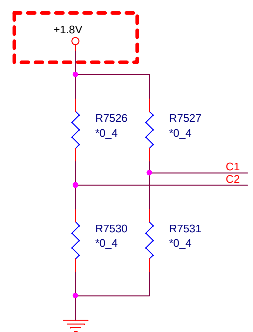
1123 Change UB3 re driver power rail
from +1.8V_DEEP_SUS to +1.8V

USB3.0 re-driver IC



0925 Correct Port net name

1123 Change UB3 re driver power rail
from +1.8V_DEEP_SUS to +1.8V



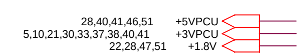
Layout Notes:
Stubs Trace less than 150mil

Table 4. C1 pin controls long/medium/short traces

State	Channel type	Pin C1 state	Channel B	Channel A	
			EQ[1]	DE[2]	OS[3]
H	Long	H	9 dB	–5.3 dB	1.1 V
high-Z	Medium	high-Z	6 dB	–3.1 dB	1.0 V
L	Short	L	3 dB	0 dB	0.9 V

Table 5. C2 pin controls long/medium/short traces

State	Channel type	Pin C2 state	Channel A	Channel B	
			EQ[1]	DE[2]	OS[3]
H	Long	H	9 dB	–5.3 dB	1.1 V
high-Z	Medium	high-Z	6 dB	–3.1 dB	1.0 V
L	Short	L	3 dB	0 dB	0.9 V

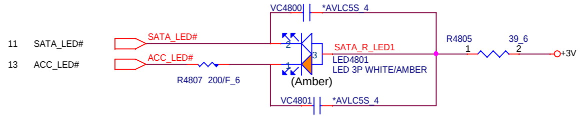


PROJECT : G35
Quanta Computer Inc.

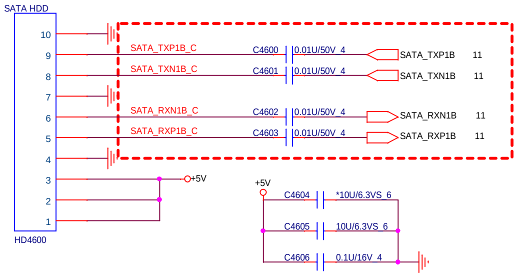
Size	Document Number	Rev
Custom	31 -- 3D CAM/REDRIVER	1A

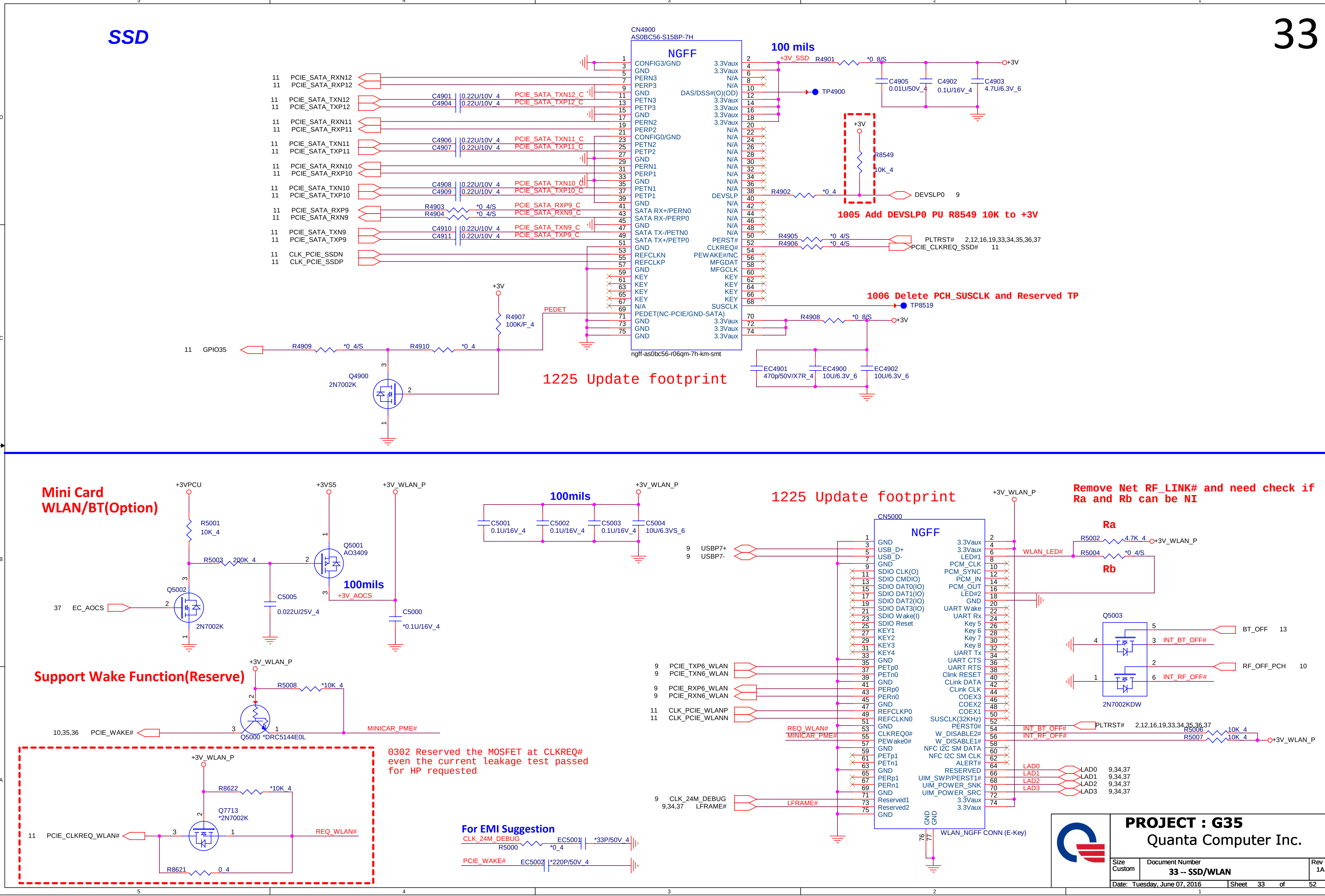
Date: Tuesday, June 07, 2016 Sheet 31 of 52

SATA LED

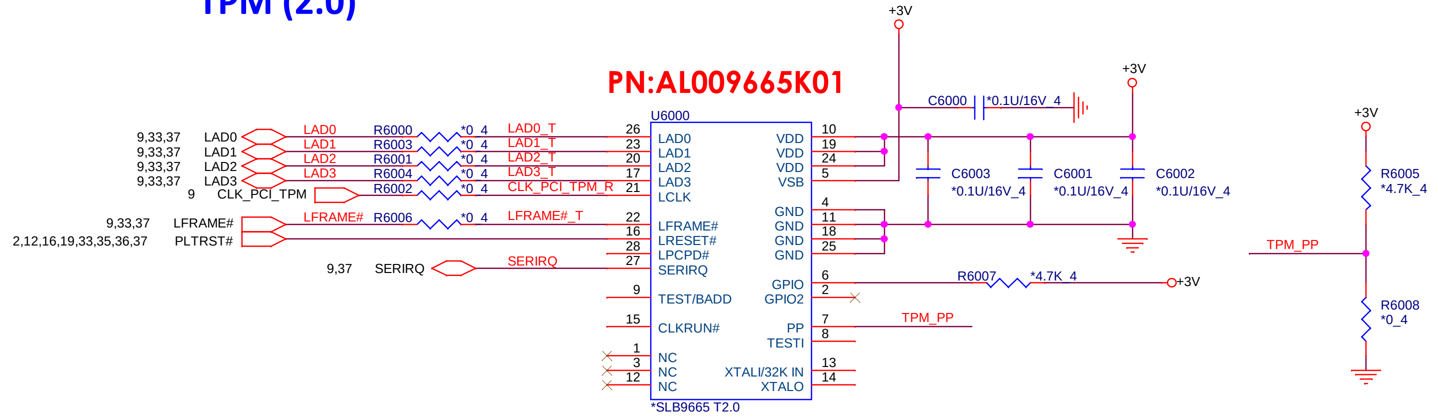

11 SATA_LED#
13 ACC_LED#
SATA_LED#
ACC_LED#
R4807 200/F_6
VC4800 *AVLC5S_4
VC4801 *AVLC5S_4
SATA_R_LED1
LED4801
LED 3P WHITE/AMBER
(Amber)
R4805 39_6
+3V

HDD

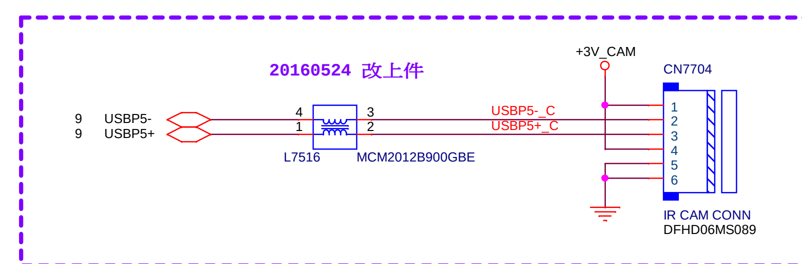

SATA HDD
HD4600
SATA_TXP1B_C
SATA_TXN1B_C
SATA_RXN1B_C
SATA_RXP1B_C
C4600 0.01U/50V_4
C4601 0.01U/50V_4
C4602 0.01U/50V_4
C4603 0.01U/50V_4
SATA_TXP1B 11
SATA_TXN1B 11
SATA_RXN1B 11
SATA_RXP1B 11
+5V
C4604 *10U/6.3VS_6
C4605 10U/6.3VS_6
C4606 0.1U/16V_4


SSD
CN4900
AS0BC56-S15BP-7H
NGFF
100 mils
CONFIG3/GND
GND
PERN3
PERP3
PETN3
PETP3
PERN2
PERP2
CONFIG0/GND
PETN2
PETP2
PERN1
PERP1
PETN1
PETP1
SATA RX+/PERN0
SATA RX-/PERP0
SATA TX-/PETN0
SATA TX+/PETP0
REFCLKN
REFCLKP
KEY
N/A
PEDET(NC-PCIE/GND-SATA)
3.3Vaux
DAS/DSS#(O)(OD)
DEVSLP
PERST#
CLKREQ#
PEWAKE#/NC
MFGDAT
MFGCLK
SUSCLK
ngff-as0bc56-r06qm-7h-km-smt
11 PCIE_SATA_RXN12
11 PCIE_SATA_RXP12
11 PCIE_SATA_TXN12
11 PCIE_SATA_TXP12
11 PCIE_SATA_RXN11
11 PCIE_SATA_RXP11
11 PCIE_SATA_TXN11
11 PCIE_SATA_TXP11
11 PCIE_SATA_RXN10
11 PCIE_SATA_RXP10
11 PCIE_SATA_TXN10
11 PCIE_SATA_TXP10
11 PCIE_SATA_RXP9
11 PCIE_SATA_RXN9
11 PCIE_SATA_TXN9
11 PCIE_SATA_TXP9
11 CLK_PCIE_SSDN
11 CLK_PCIE_SSDP
C4901 0.22U/10V_4 PCIE_SATA_TXN12_C
C4904 0.22U/10V_4 PCIE_SATA_TXP12_C
C4906 0.22U/10V_4 PCIE_SATA_TXN11_C
C4907 0.22U/10V_4 PCIE_SATA_TXP11_C
C4908 0.22U/10V_4 PCIE_SATA_TXN10_C
C4909 0.22U/10V_4 PCIE_SATA_TXP10_C
R4903 *0_4/S PCIE_SATA_RXP9_C
R4904 *0_4/S PCIE_SATA_RXN9_C
C4910 0.22U/10V_4 PCIE_SATA_TXN9_C
C4911 0.22U/10V_4 PCIE_SATA_TXP9_C
+3V_SSD R4901 *0_8/S +3V
C4905 0.01U/50V_4
C4902 0.1U/16V_4
C4903 4.7U/6.3V_6
TP4900
+3V R8549 10K_4
R4902 *0_4 DEVSLP0 9
1005 Add DEVSLP0 PU R8549 10K to +3V
R4905 *0_4/S PLTRST# 2,12,16,19,33,34,35,36,37
R4906 *0_4/S PCIE_CLKREQ_SSD# 11
1006 Delete PCH_SUSCLK and Reserved TP
TP8519
R4908 *0_8/S +3V
EC4901 470p/50V/X7R_4
EC4900 10U/6.3V_6
EC4902 10U/6.3V_6
+3V
R4907 100K/F_4
PEDET
11 GPIO35 R4909 *0_4/S R4910 *0_4
Q4900 2N7002K
1225 Update footprint
Mini Card WLAN/BT(Option)
+3VPCU
R5001 10K_4
R5003 200K_4
Q5002 2N7002K
37 EC_AOCS
C5005 0.022U/25V_4
+3VS5
Q5001 AO3409
100mils
+3V_AOCS
+3V_WLAN_P
C5000 *0.1U/16V_4
100mils
C5001 0.1U/16V_4
C5002 0.1U/16V_4
C5003 0.1U/16V_4
C5004 10U/6.3VS_6
Support Wake Function(Reserve)
R5008 *10K_4
10,35,36 PCIE_WAKE#
Q5000 *DRC5144E0L
MINICAR_PME#
0302 Reserved the MOSFET at CLKREQ# even the current leakage test passed for HP requested
R8622 *10K_4
Q7713 *2N7002K
11 PCIE_CLKREQ_WLAN#
REQ_WLAN#
R8621 0_4
For EMI Suggestion
CLK_24M_DEBUG R5000 *0_4 EC5001 *33P/50V_4
PCIE_WAKE# EC5002 *220P/50V_4
1225 Update footprint
CN5000
NGFF
GND
USB_D+
USB_D-
SDIO CLK(O)
SDIO CMD(IO)
SDIO DAT0(IO)
SDIO DAT1(IO)
SDIO DAT2(IO)
SDIO DAT3(IO)
SDIO Wake(I)
SDIO Reset
KEY1
KEY2
KEY3
KEY4
PETp0
PETn0
PERp0
PERn0
REFCLKP0
REFCLKN0
CLKREQ0#
PEWake0#
PETp1
PETn1
PERp1
PERn1
Reserved1
Reserved2
3.3Vaux
LED#1
PCM_CLK
PCM_SYNC
PCM_IN
PCM_OUT
LED#2
UART Wake
UART Rx
Key 5
Key 6
Key 7
Key 8
UART Tx
UART CTS
UART RTS
Clink RESET
CLink DATA
CLink CLK
COEX3
COEX2
COEX1
SUSCLK(32KHz)
PERST0#
W_DISABLE2#
W_DISABLE1#
NFC I2C SM DATA
NFC I2C SM CLK
ALERT#
RESERVED
UIM_SWP/PERST1#
UIM_POWER_SNK
UIM_POWER_SRC
WLAN_NGFF CONN (E-Key)
9 USBP7+
9 USBP7-
9 PCIE_TXP6_WLAN
9 PCIE_TXN6_WLAN
9 PCIE_RXP6_WLAN
9 PCIE_RXN6_WLAN
11 CLK_PCIE_WLANP
11 CLK_PCIE_WLANN
REQ_WLAN#
MINICAR_PME#
9 CLK_24M_DEBUG
9,34,37 LFRAME#
Remove Net RF_LINK# and need check if Ra and Rb can be NI
Ra
R5002 4.7K_4 +3V_WLAN_P
WLAN_LED#
R5004 *0_4/S
Rb
Q5003 2N7002KDW
BT_OFF 13
INT_BT_OFF#
RF_OFF_PCH 10
INT_RF_OFF#
PLTRST# 2,12,16,19,33,34,35,36,37
R5006 10K_4
R5007 10K_4 +3V_WLAN_P
LAD0 9,34,37
LAD1 9,34,37
LAD2 9,34,37
LAD3 9,34,37
PROJECT : G35
Quanta Computer Inc.
Size Custom
Document Number 33 -- SSD/WLAN
Rev 1A
Date: Tuesday, June 07, 2016
Sheet 33 of 52

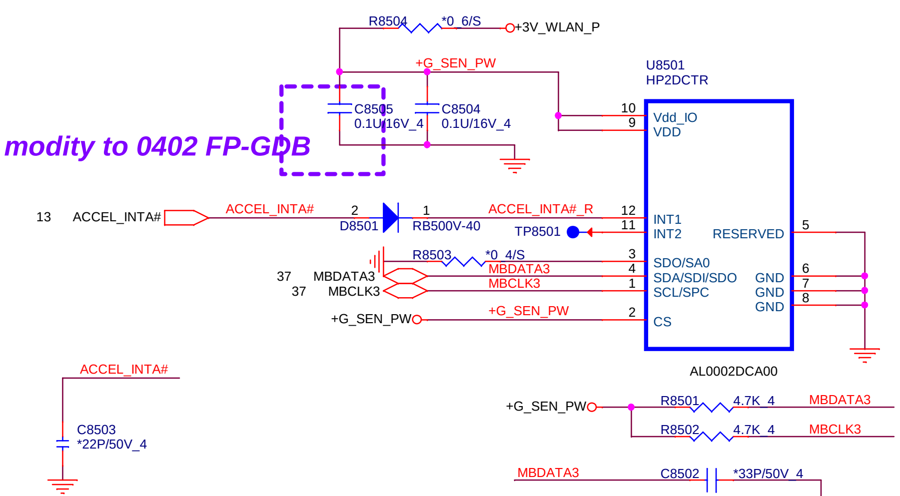
TPM (2.0)



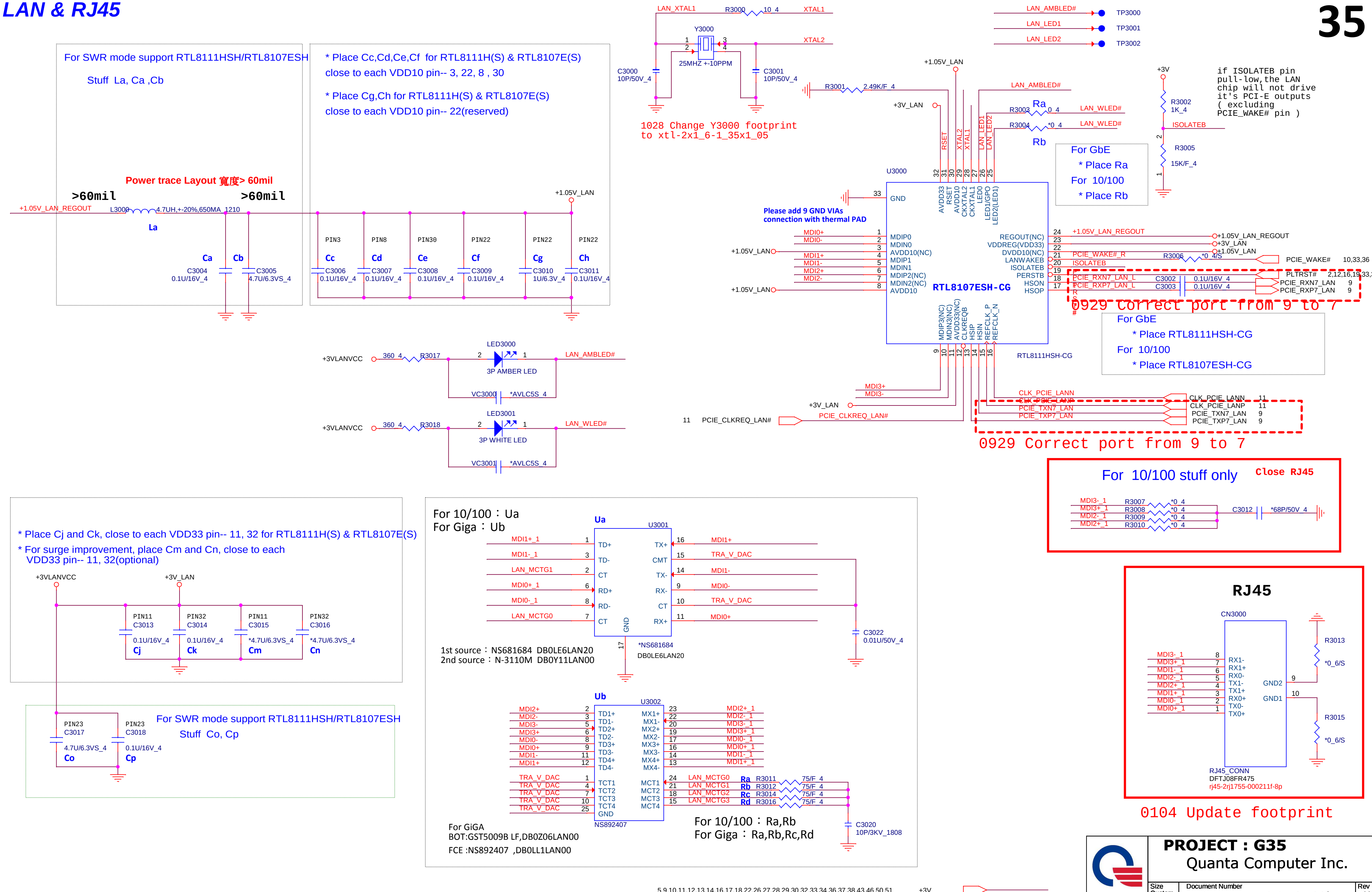
IR CAM



Accelerometer Sensor



LAN & RJ45



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	35 -- LAN RTL8107ESH-CG/RJ45	1A

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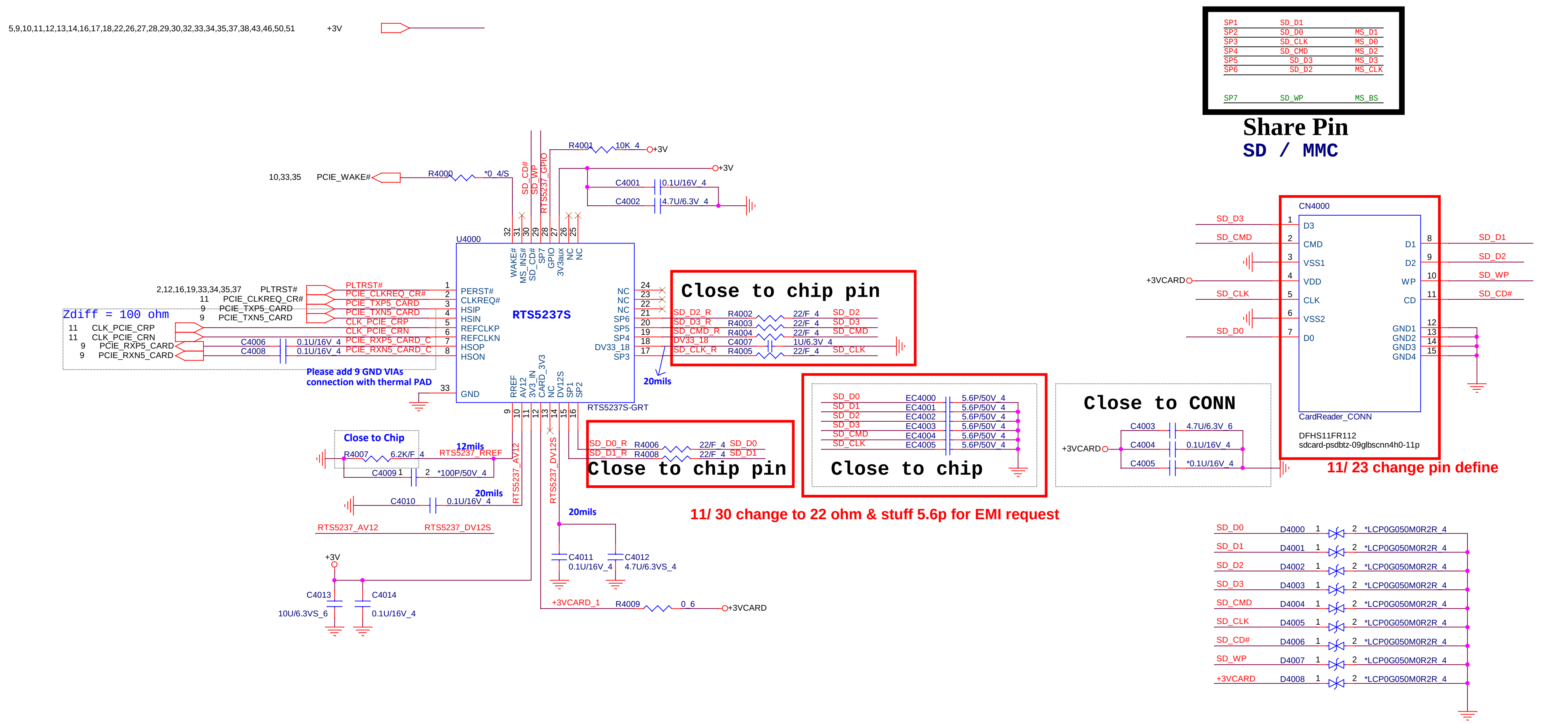
RTS5237S PCIE CARD READER Controller



PROJECT : G35

Quanta Computer Inc.

Size	Document Number	Rev
Custom	36 -- CR RTS5237S/CR SOCKET	1A

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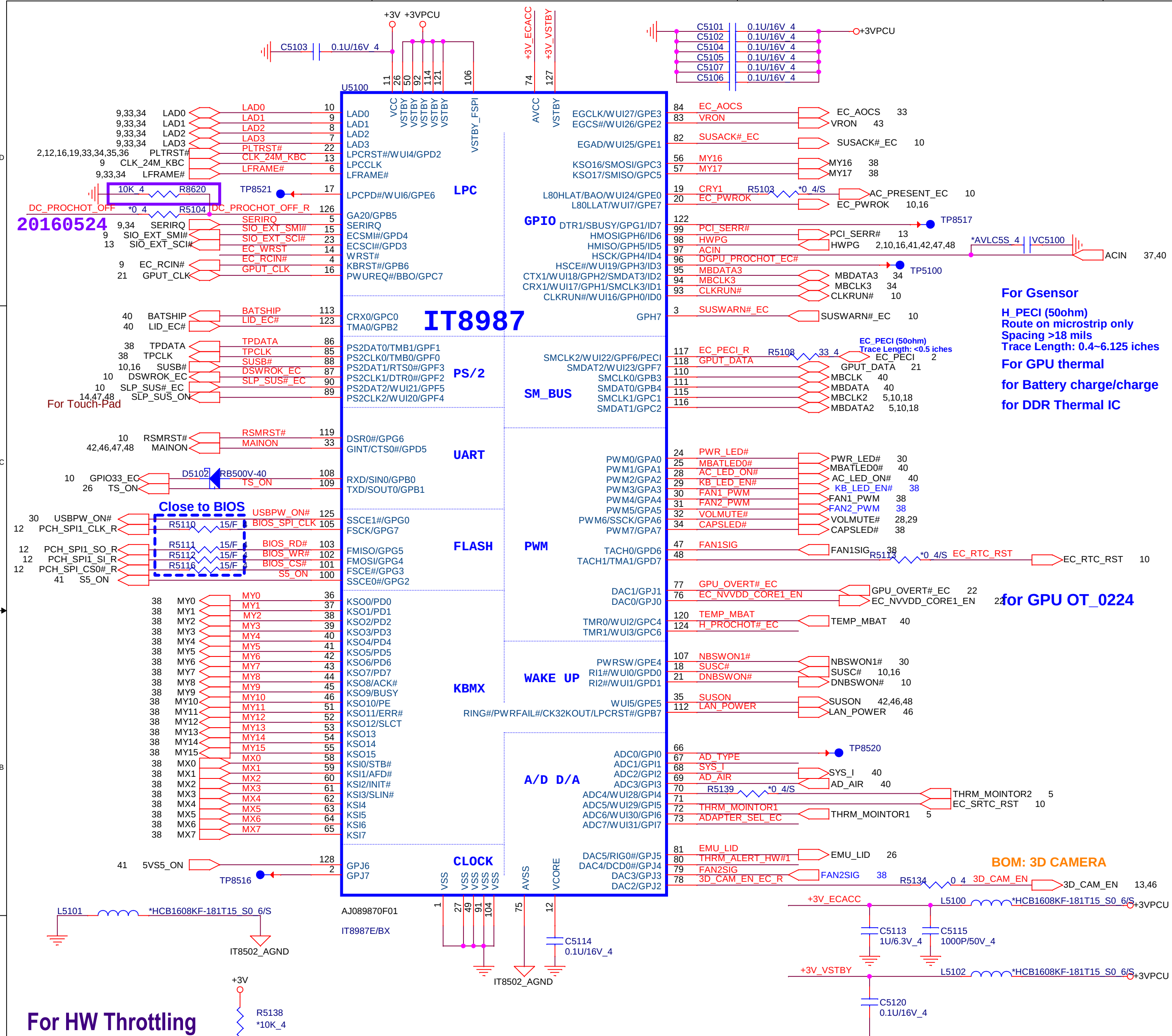
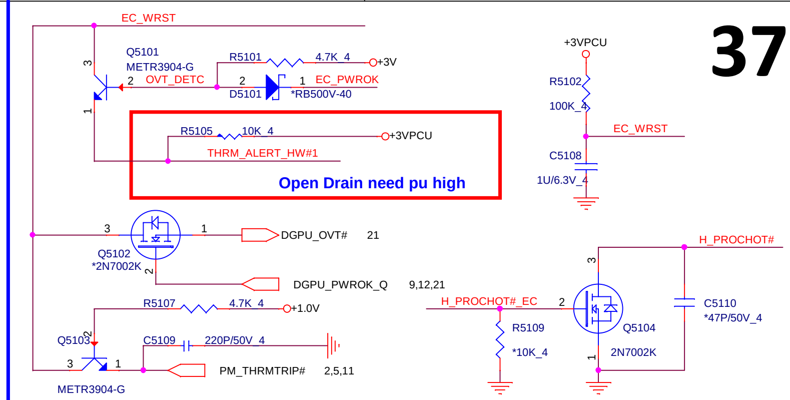
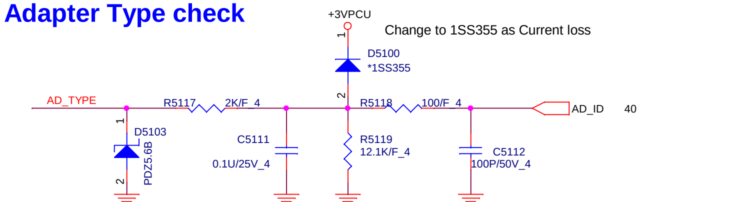


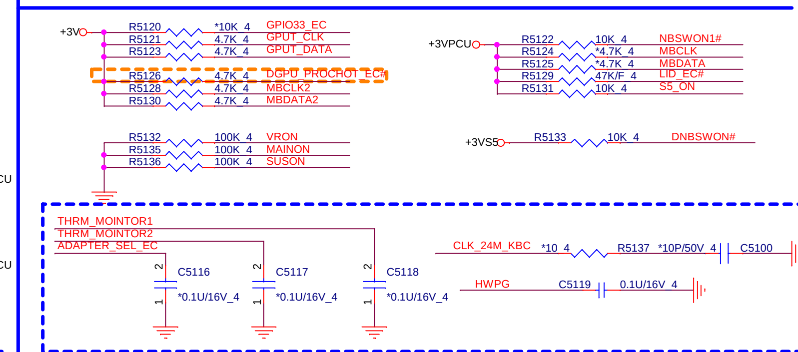


Adapter select for EC

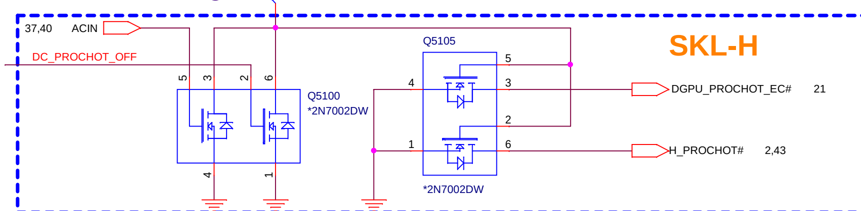
	Ra	Rb	ADAPTER_SEL_EC	BOM
200W	10K(CS31002FB26)	100K (CS41002FB28)	3V	
150W	10K(CS31002FB26)	27.4K(CS32742FB14)	2.42V	
120W	10K(CS31002FB26)	12.1K(CS31212FB28)	1.8V	DIS
90W	10K(CS31002FB26)	6.2K(CS26202FB17)	1.26V	UMA
65W	10K(CS31002FB26)	2.2K(CS22202FB08)	0.59V	
45W	NC	10K(CS31002FB26)	0V	

Adapter Type check





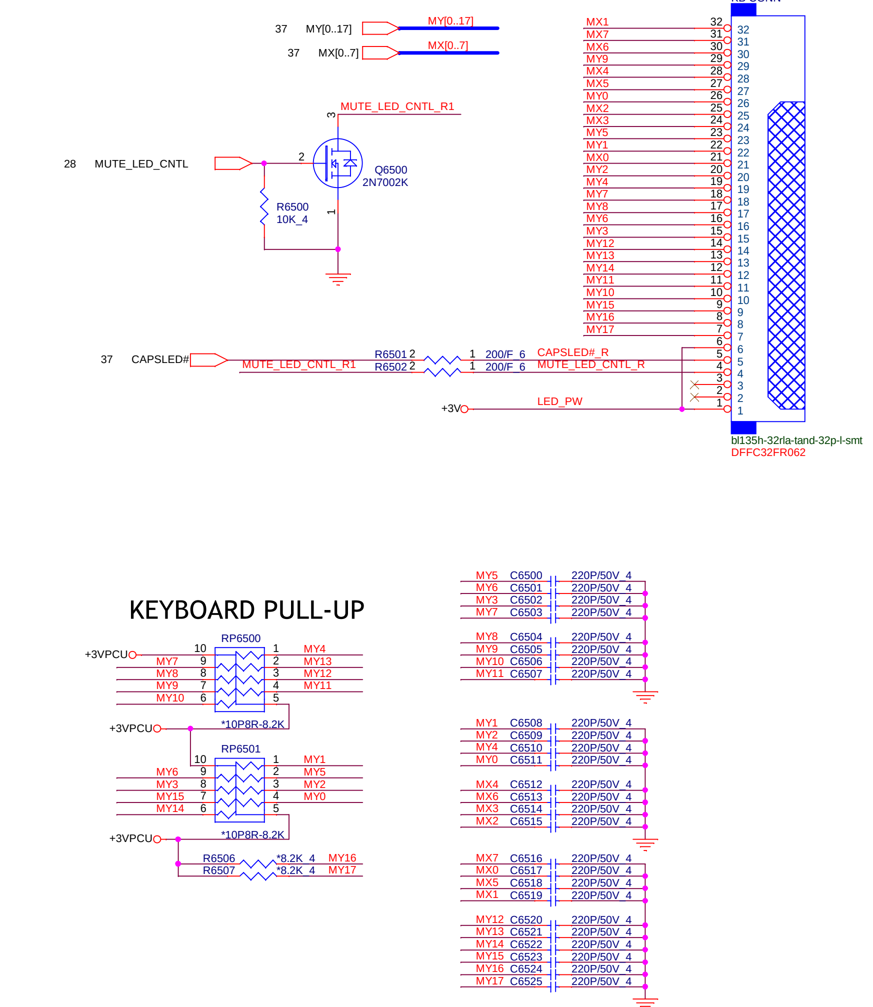
For HW Throttling



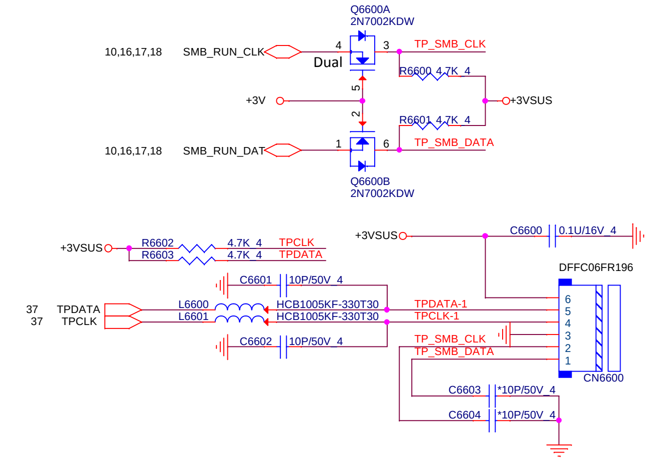
SKL-H

	AC_PRESENT_EC	H_PROCHOT#_EC	H_PROCHOT#
AC IN: AC mode Operation	H	L	H
AC remove: AC mode to DC mode	L	L	L
DC mode recover from PROCHOT	L	H	H

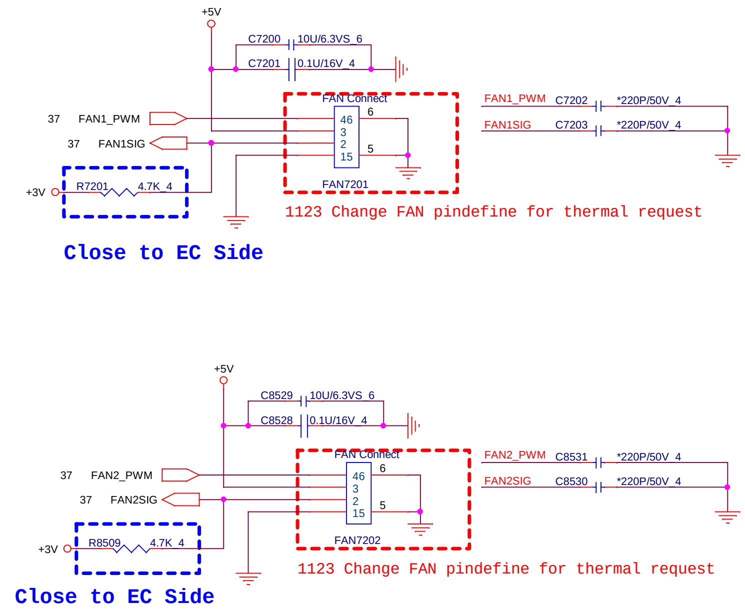
KEYBOARD Con.



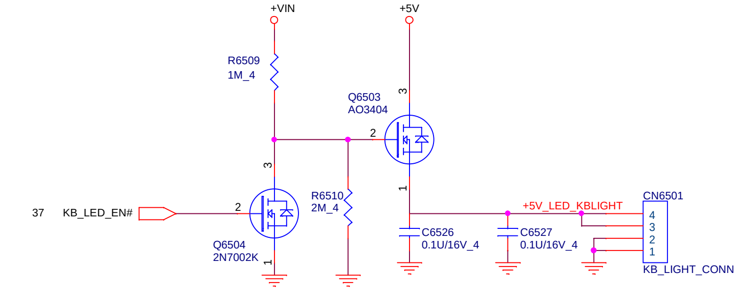
Touch Pad Connector



FAN



KB LIGHT CONN



PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	38 -- KB/TP/FAN/HOLE	1A

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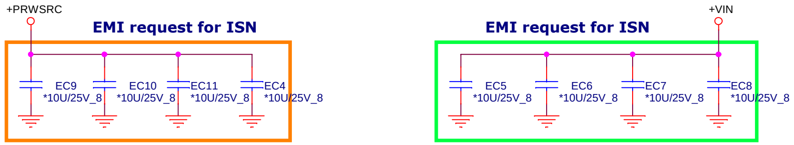
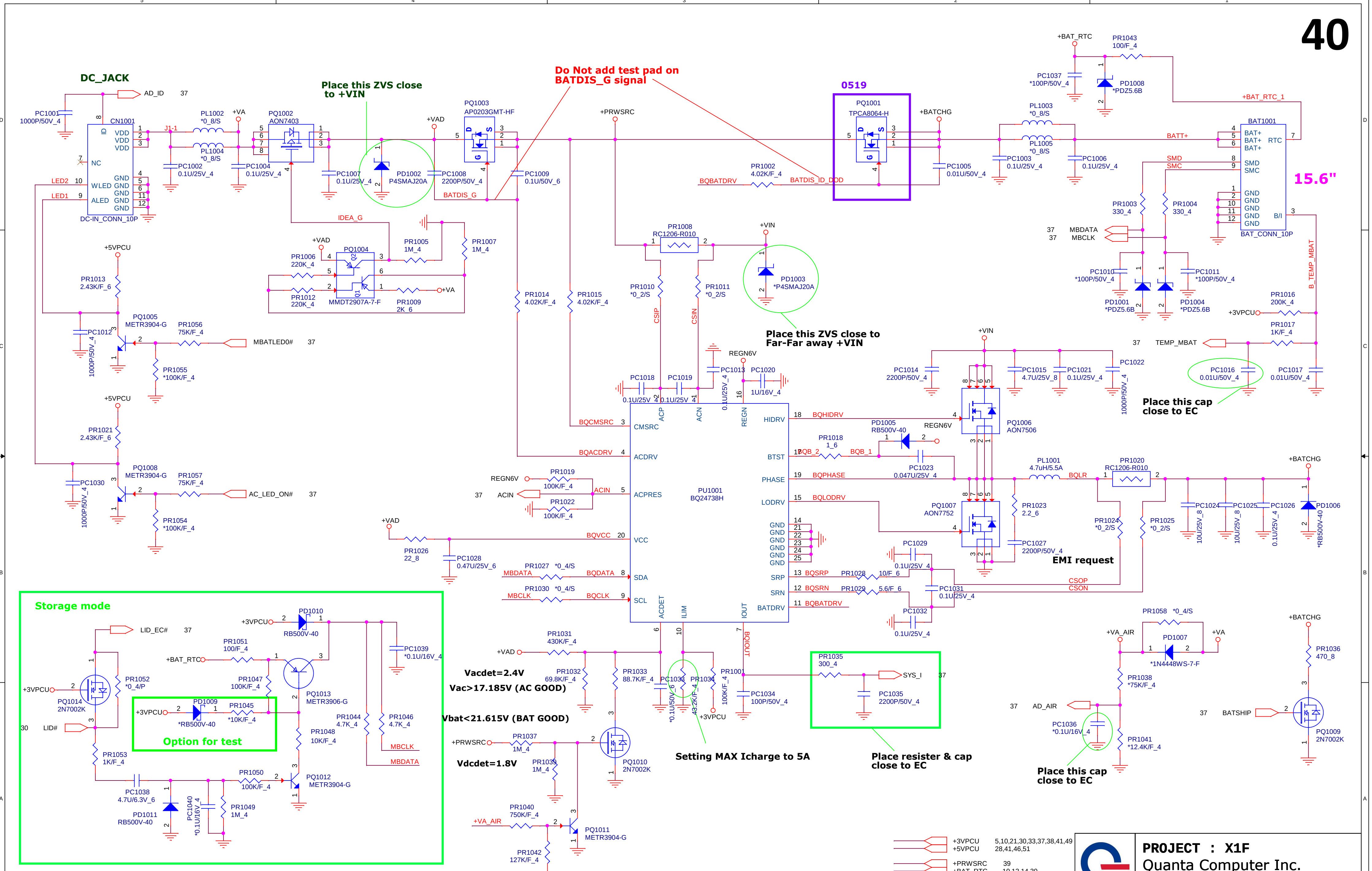

+PRWSRC
EMI request for ISN
EC9
*10U/25V_8
EC10
*10U/25V_8
EC11
*10U/25V_8
EC4
*10U/25V_8
+VIN
EMI request for ISN
EC5
*10U/25V_8
EC6
*10U/25V_8
EC7
*10U/25V_8
EC8
*10U/25V_8



NB5

PROJECT : X1F

Quanta Computer Inc.

Size	Document Number	Rev
Custom	Charger (BQ24738H)	1A

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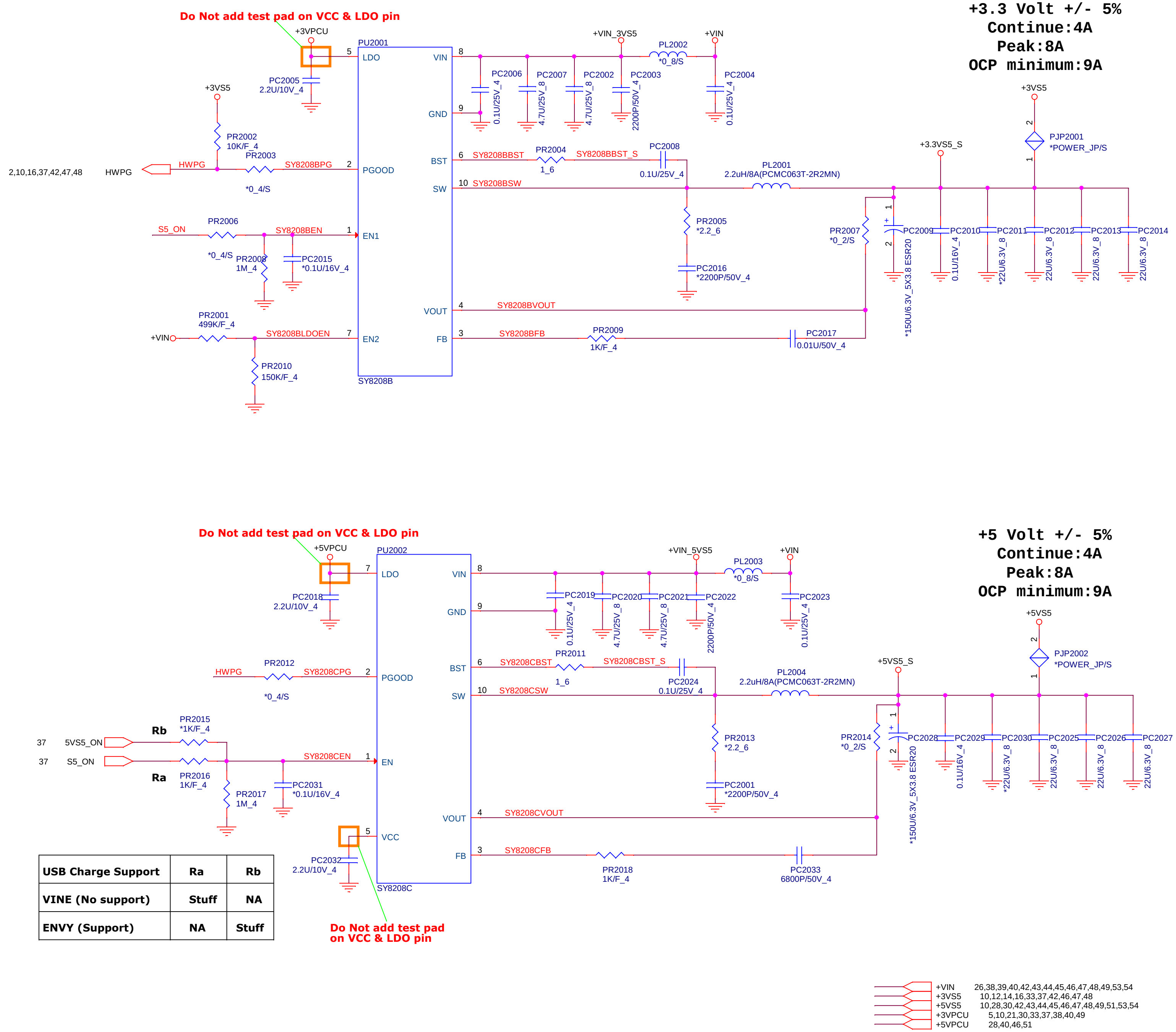
+3.3 Volt +/- 5%
Continue:4A
Peak:8A
OCP minimum:9A



USB Charge Support	Ra	Rb
VINE (No support)	Stuff	NA
ENVY (Support)	NA	Stuff

PROJECT : X1F

Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	3/5VS5 (SY8208B/SY8208C)	1A

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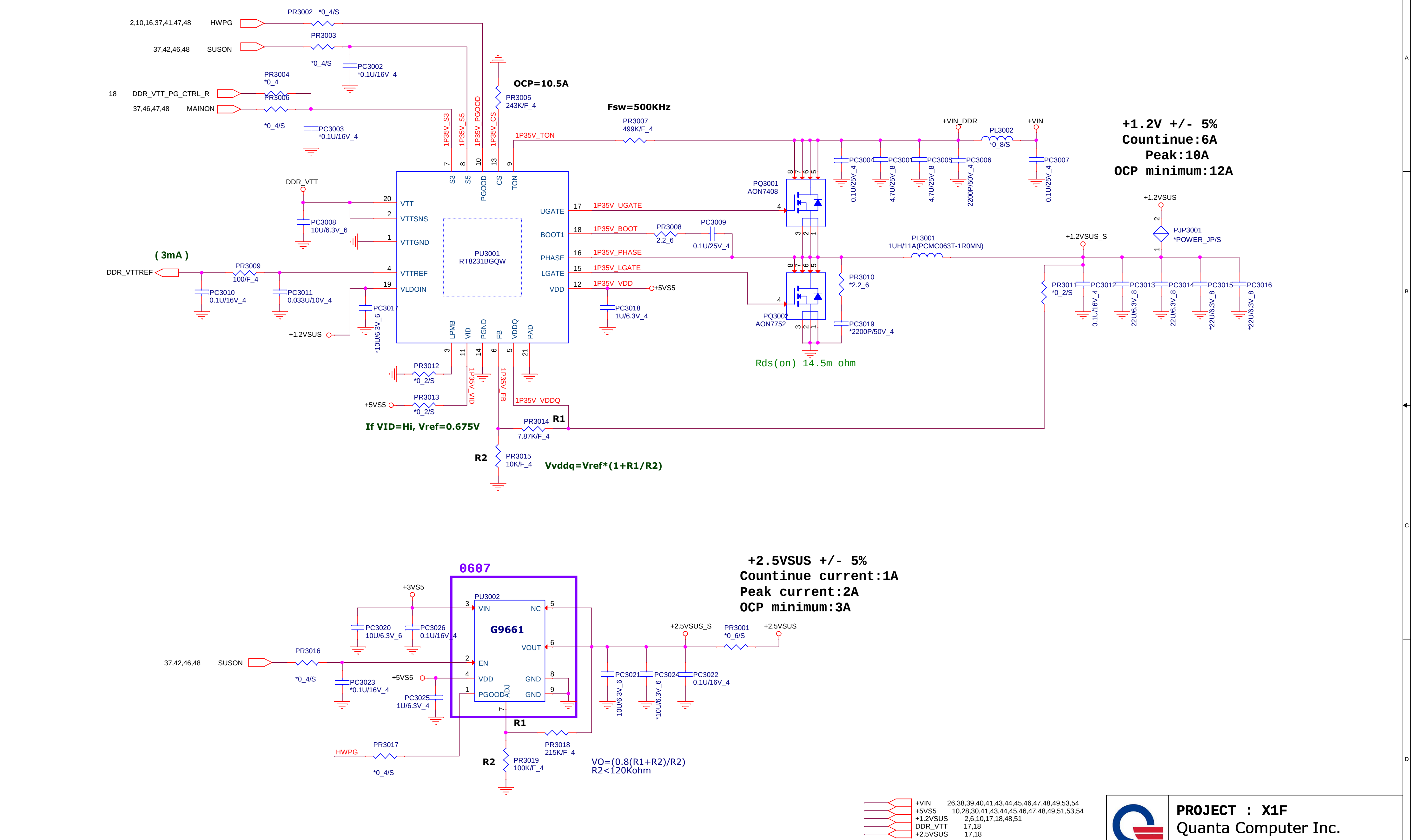

PROJECT : X1F

Quanta Computer Inc.

NB5

Size	Document Number	Rev
	DDR3 (RT8231B)	1A

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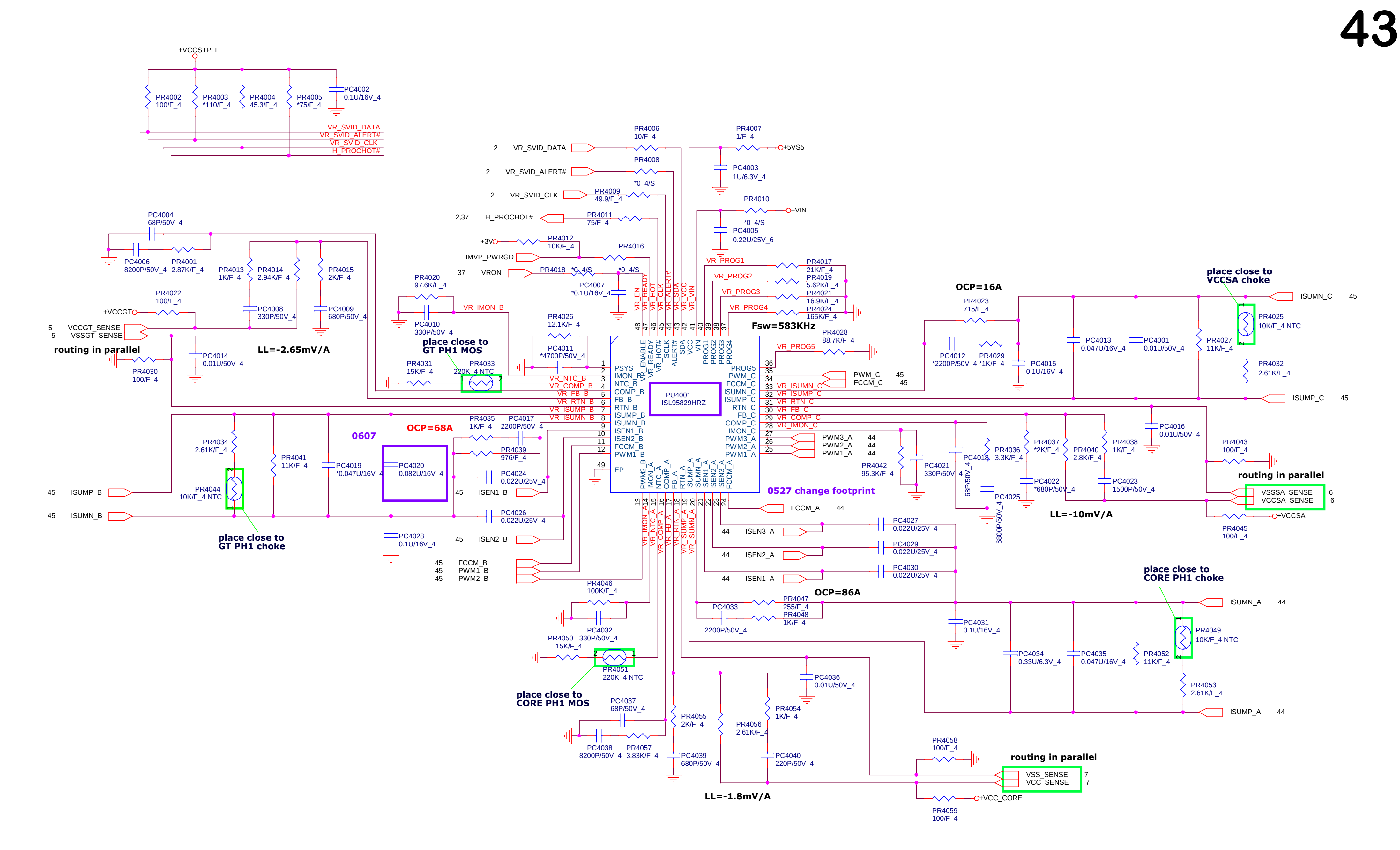
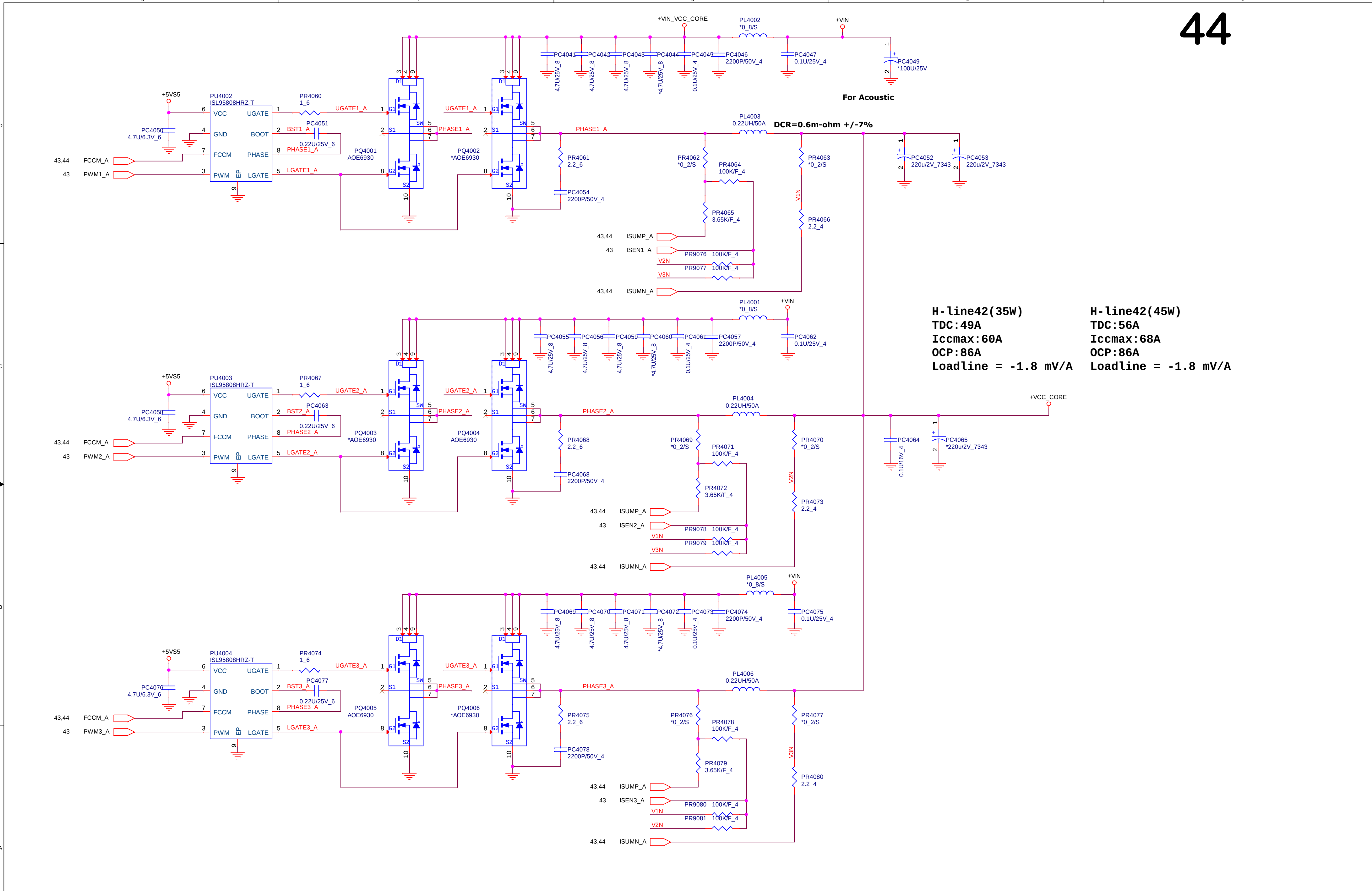


PROJECT : X1F

Quanta Computer Inc.

Size	Document Number	Rev
Custom	CPU VR IC (ISL95829HRZ)	1A

Date: Tuesday, June 07, 2016 Sheet 43 of 51



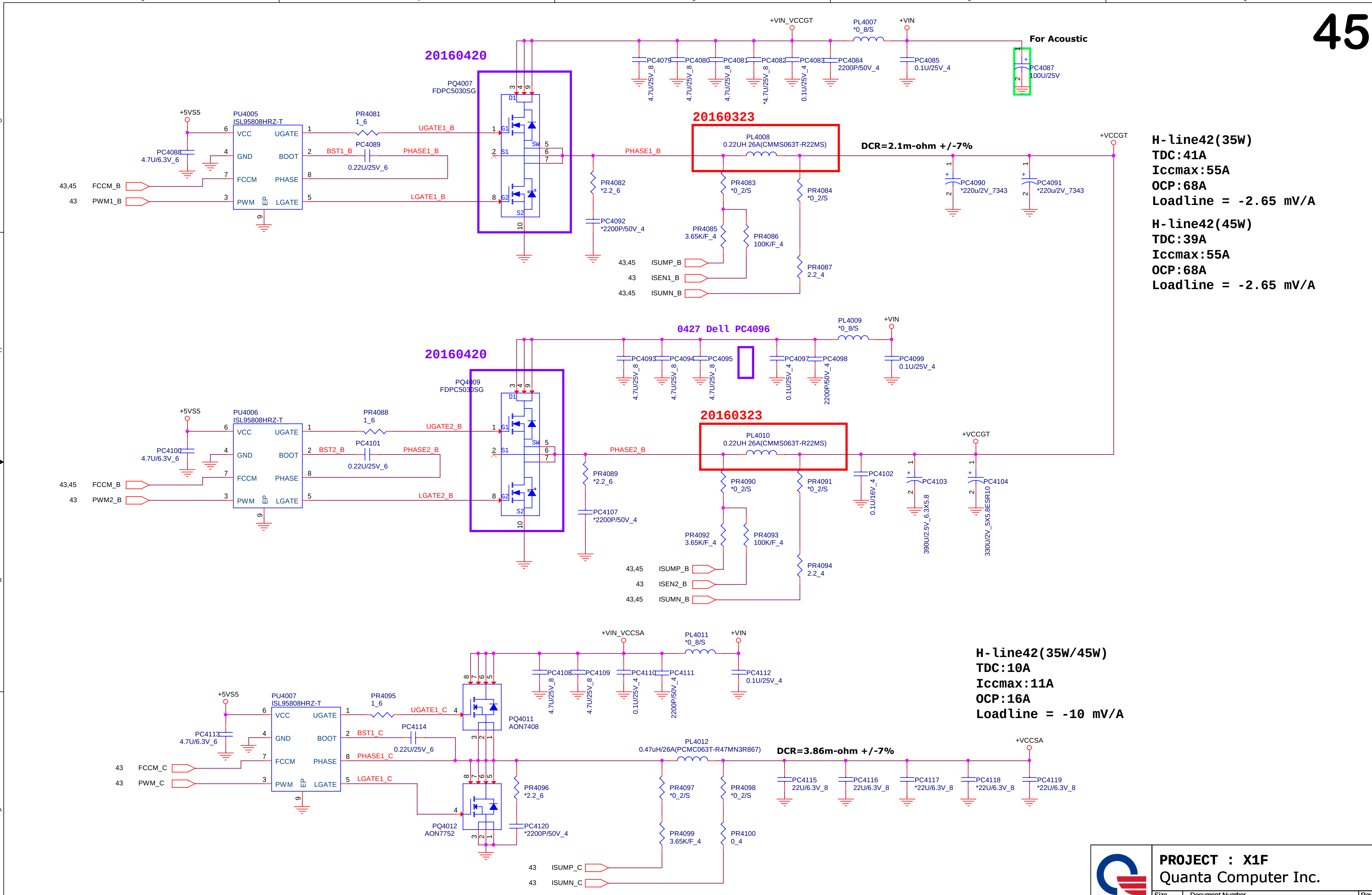
NB5

PROJECT : X1F

Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VCC_CORE (ISL95808HRZ-T)	1A

Date: Tuesday, June 07, 2016 | Sheet 44 of 51



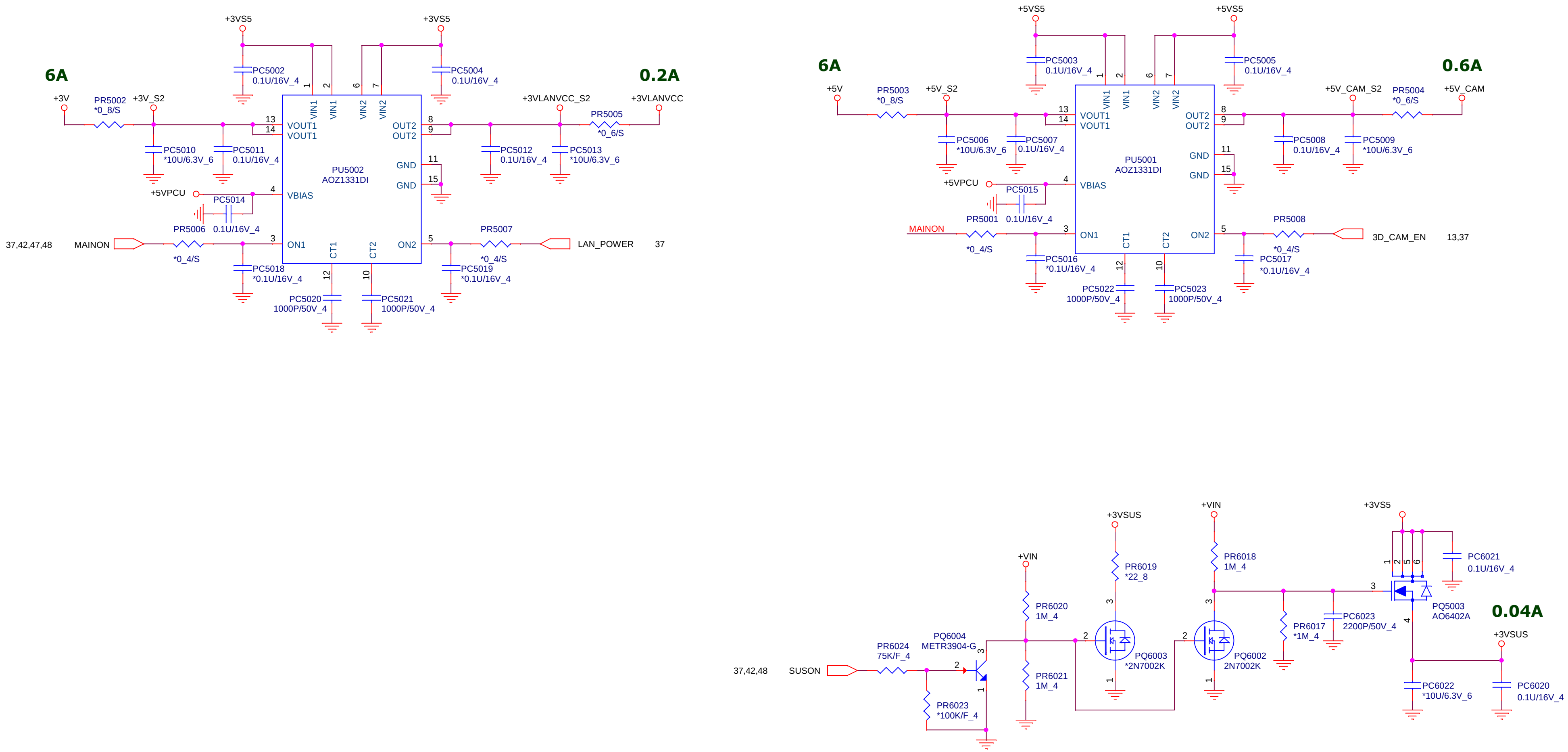
PROJECT : X1F

Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	+VCCGT/SA (ISL95808HRZ-T)	1A

Date: Tuesday, June 07, 2016 Sheet 45 of 51



+3V 5,9,10,11,12,13,14,16,17,18,26,27,28,29,30,32,33,34,35,36,37,38,43,54
+5V 26,27,28,29,31,32,38,49
+3VS5 10,12,14,16,33,37,41,42,47,48
+5VS5 10,28,30,41,42,43,44,45,47,48,49,51,53,54
+3VSUS 38
+3VLANVCC 35
+5V_CAM 31
+3V_DEEP_SUS 9,10,12,13,14,16,18

PROJECT : X1F
Quanta Computer Inc.
NB5

Size	Document Number	Rev
Custom	Load switch IC (AOZ1331D)	1A

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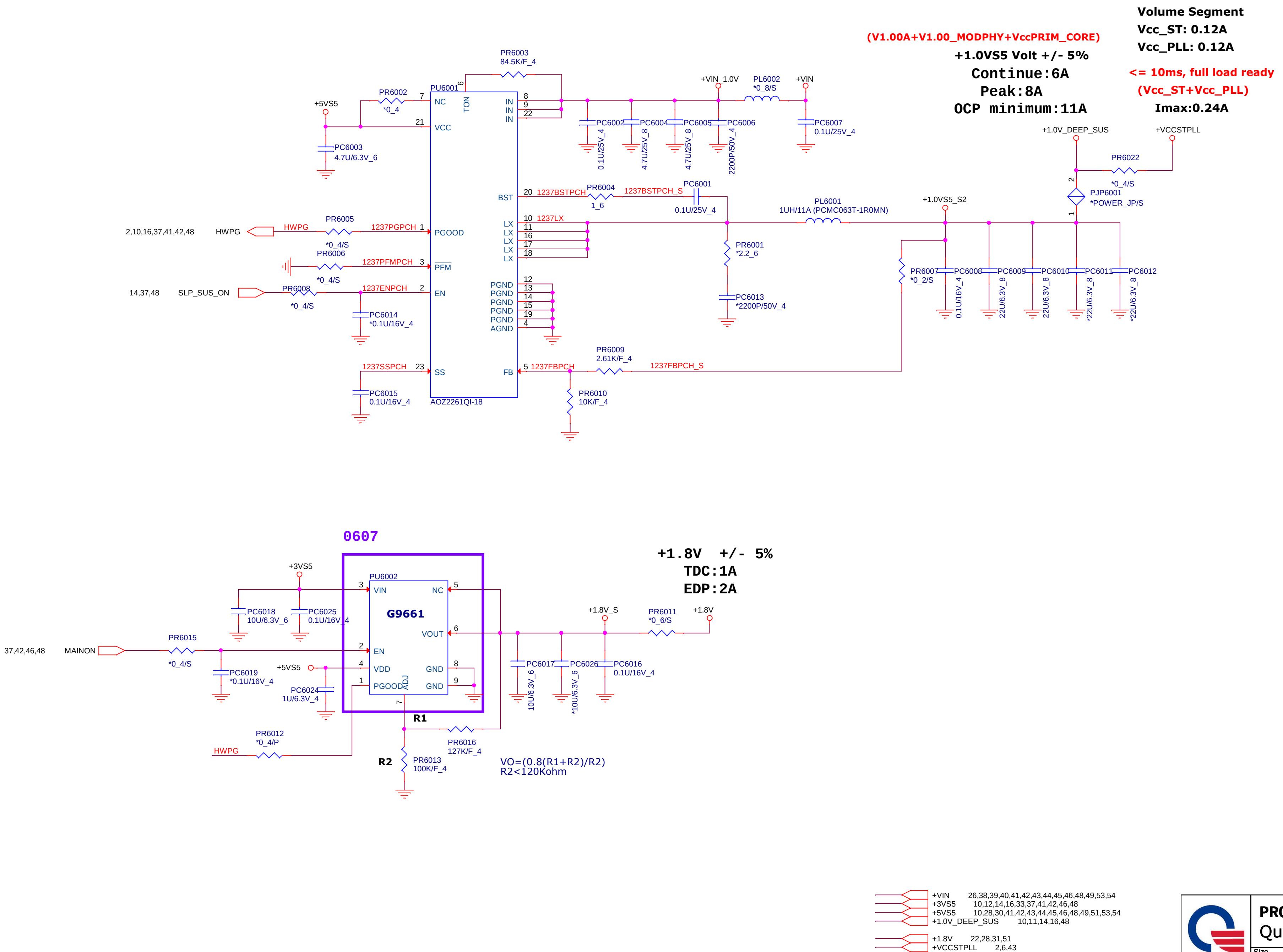

PROJECT : X1F

Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	+1.0_DEEP_SUS	1A

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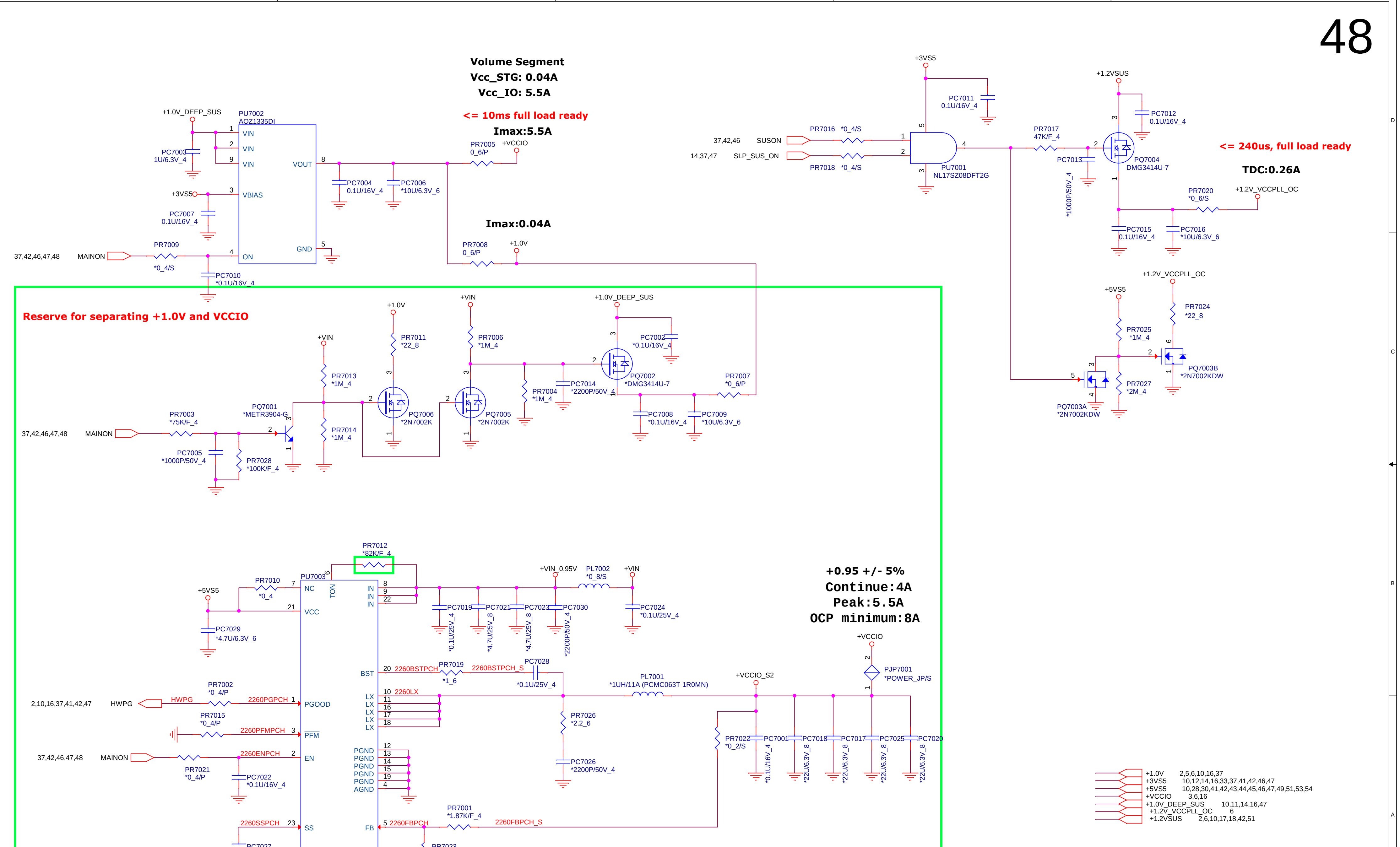

PROJECT : X1F

Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	+1.0V/+VCCSTPLL/+VCCIO	1A

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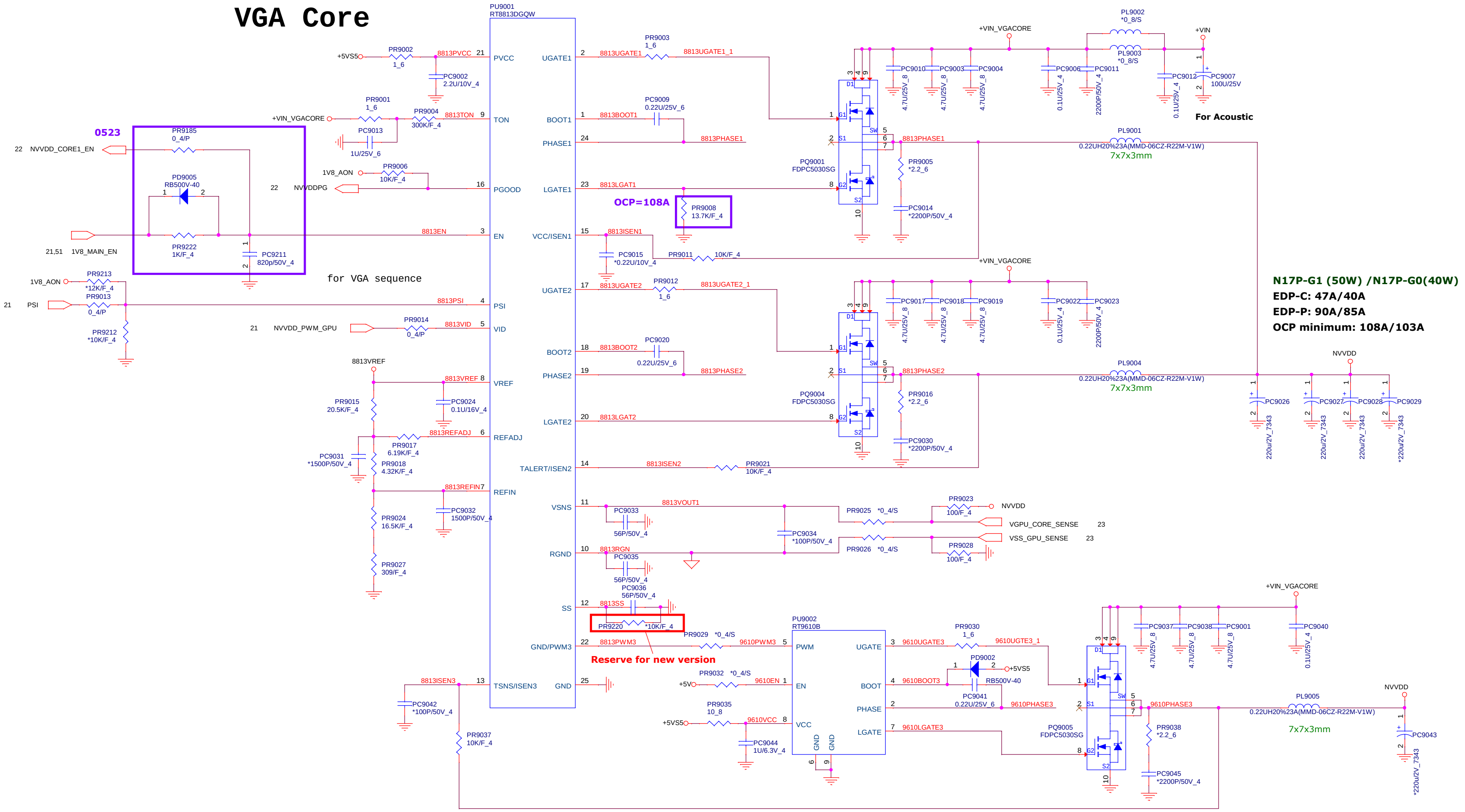
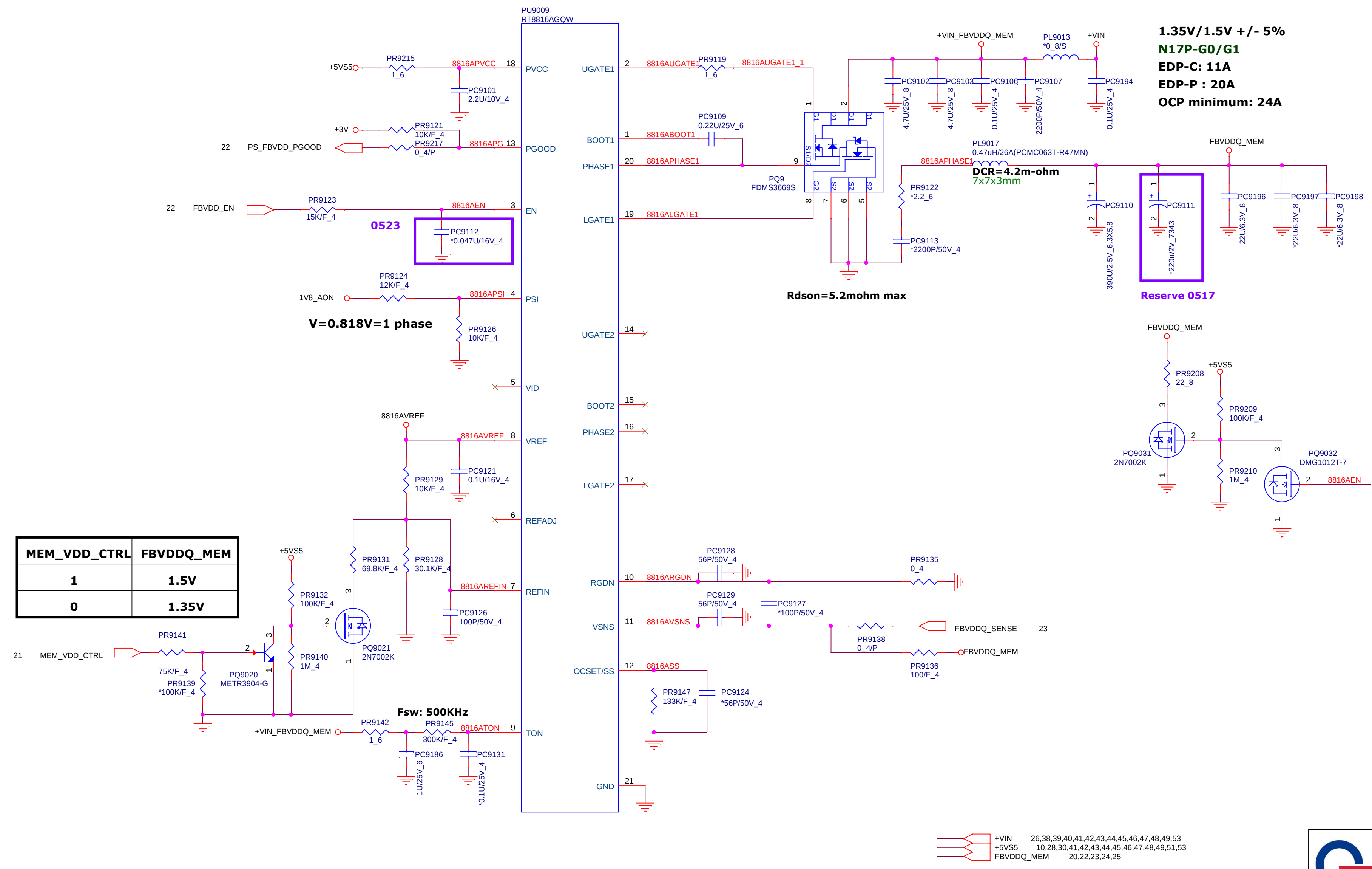
VGA Core



NVDDS

1. Ripple Current:
   Irip=7.79A
2. Ripple Voltage:
   ESR/1=9mohm
   Vrip=70.11mV
3. MOSFET Spec:
   L-side MOSFET: FDPC5030
   Rds(ON)=3mohm (Vgs=4.5 V)
   I cont = 25A (T =25 ℃)
   I pulse=503A
4. Frequency:
   F=500KHz (PR9224=300k ohm)
5. OCP:
   Set = PR9008 to 13.7K
   Vtrip= PR9008*10uA-40mV=97V
   Iocp=(Vtrip/Rdson) + Iripple/2
   = 36.23A (1 phase)

   Total OCP=36.23*3=108.6A (3 phase)



MEM_VDD_CTRL	FBVDDQ_MEM
1	1.5V
0	1.35V

FBVDDQ

1. Ripple Current:

Irip=5.34A Vo=1.35V
Irip=5.88A Vo=1.5V

2. Ripple Voltage:

ESR/1=9mohm
Vrip=48.06mV Vo=1.35
Vrip=53mV Vo=1.5

3.MOSFET Spec:

L-side MOSFET: FDMS3669S
Rds(ON)=5.2mohm (Vgs=4.5 V)
I cont = 18A (T =25 ℃)
I pulse=60A

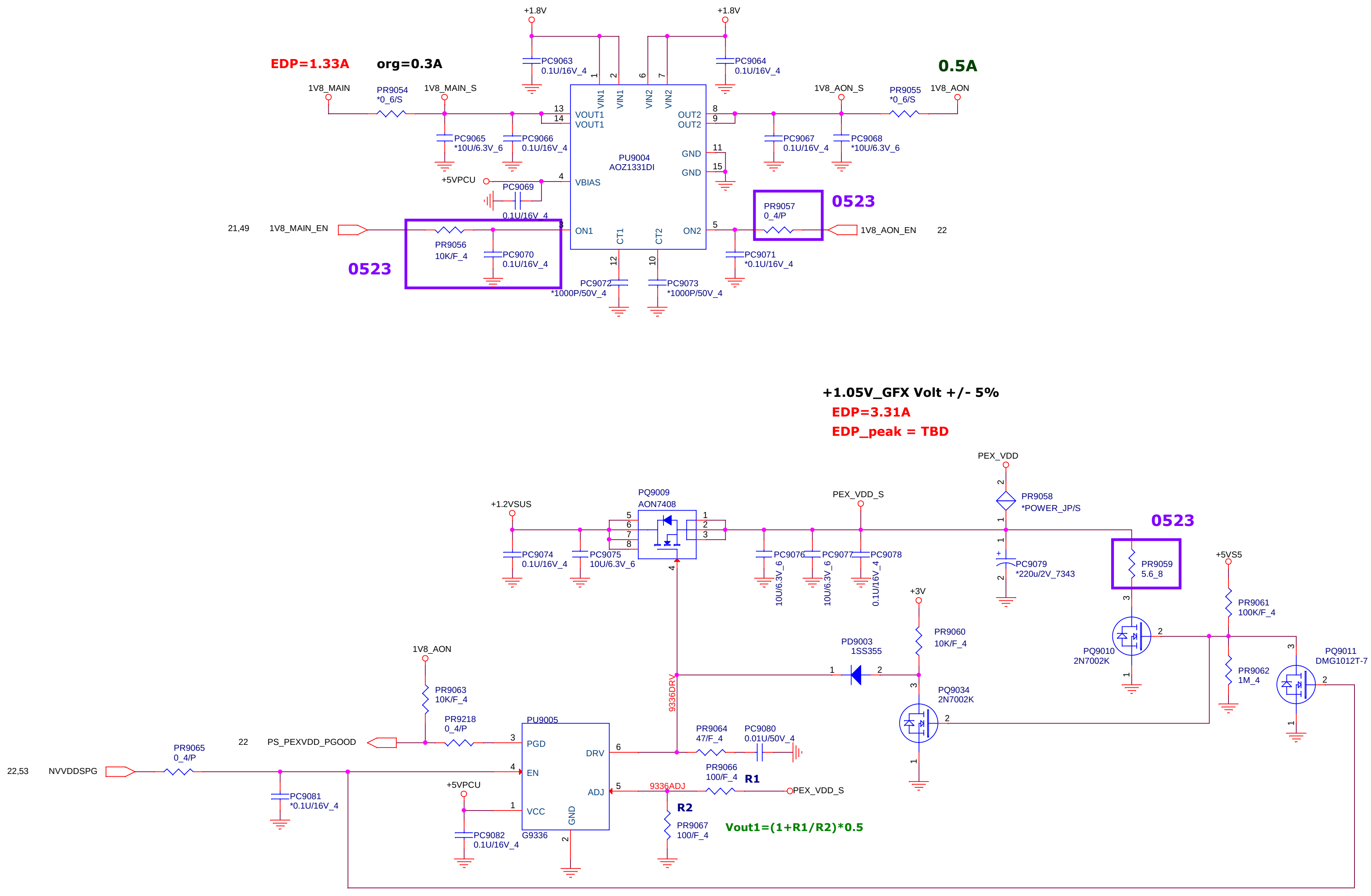
4. Frequency:

F=500KHz (PR9145=300k ohm)

5. OCP:

Set = PR9147 to 133K Vo=1.35
Vtrip= PR9147*10uA/12=110.83mV
Iocp=(Vtrip/Rdson) + Iripple/2 = 24A

+VIN 26,38,39,40,41,42,43,44,45,46,47,48,49,53
+5VS5 10,28,30,41,42,43,44,45,46,47,48,49,51,53
FBVDDQ_MEM 20,22,23,24,25



+VIN	26,38,39,40,41,42,43,44,45,46,47,48,49,53,54
+3VS5	10,12,14,16,33,37,41,42,46,47,48
+5VS5	10,28,30,41,42,43,44,45,46,47,48,49,53,54
+1.2VSUS	2,6,10,17,18,42,48

PROJECT : X1Q
Quanta Computer Inc.

NB5

Size	Document Number	Rev
Custom	+3V/+1.05V_GFX(AOZ1331DI)	1A

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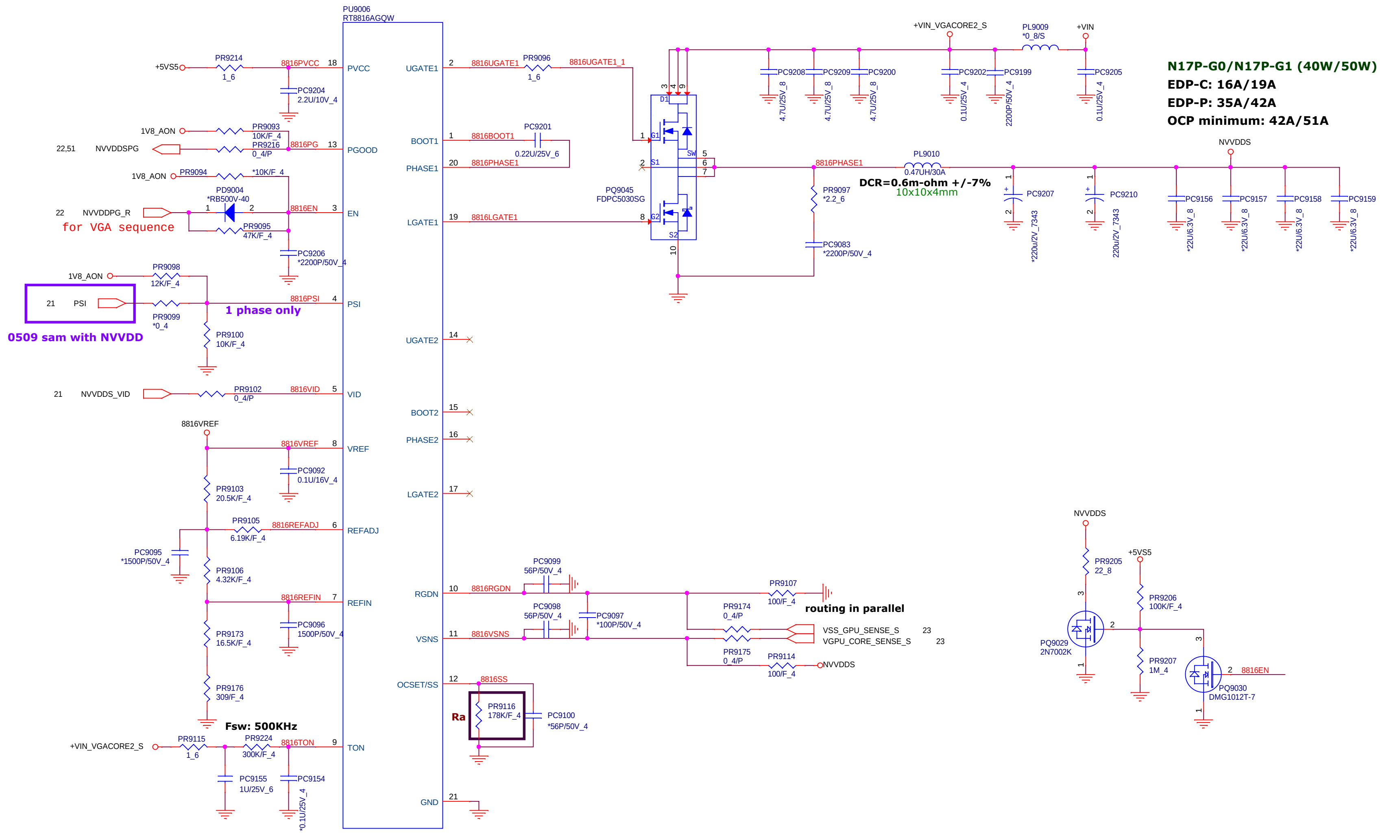

N17P-G0/N17P-G1 (40W/50W)
EDP-C: 16A/19A
EDP-P: 35A/42A
OCP minimum: 42A/51A

NVDDS

1. Ripple Current:
   Irip=3.65A
2. Ripple Voltage:
   ESR/1=9mohm
   Vrip=32.85mV
3. Inductor Spec:
   Isat=40A
   Idc=30A
   DCR=1.68mohm
4. MOSFET Spec:
   H-side MOSFET: FDPC5030
   Rds(ON)=6.5mohm (Vgs=4.5 V)
   I cont = 17A (T =25 ℃)

   L-side MOSFET: FDPC5030
   Rds(ON)=3mohm (Vgs=4.5 V)
   I cont = 25A (T =25 ℃)
   I pulse=503A
5. Frequency:
   F=500KHz (PR9224=300k ohm)
6. OCP:
   Set = PR9116 to 178K
   Vtrip= PR9116*10uA/12=148.3mV
   Iocp=(Vtrip/Rdson) + Iripple/2 = 51.2A

+3V	5,9,10,11,12,13,14,16,17,18,26,27,28,29,30,32,33,34,35,36,37,38,43,46,54
+VIN	26,38,39,40,41,42,43,44,45,46,47,48,49,54
+5VS5	10,28,30,41,42,43,44,45,46,47,48,49,51,54
NVVDDS	23
1V8_AON	19,21,22,23,49,51,54

PROJECT : X1Q
Quanta Computer Inc.
NB5

Size	Document Number	Rev
Custom	+VGACORE (RT8813C)	1A

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