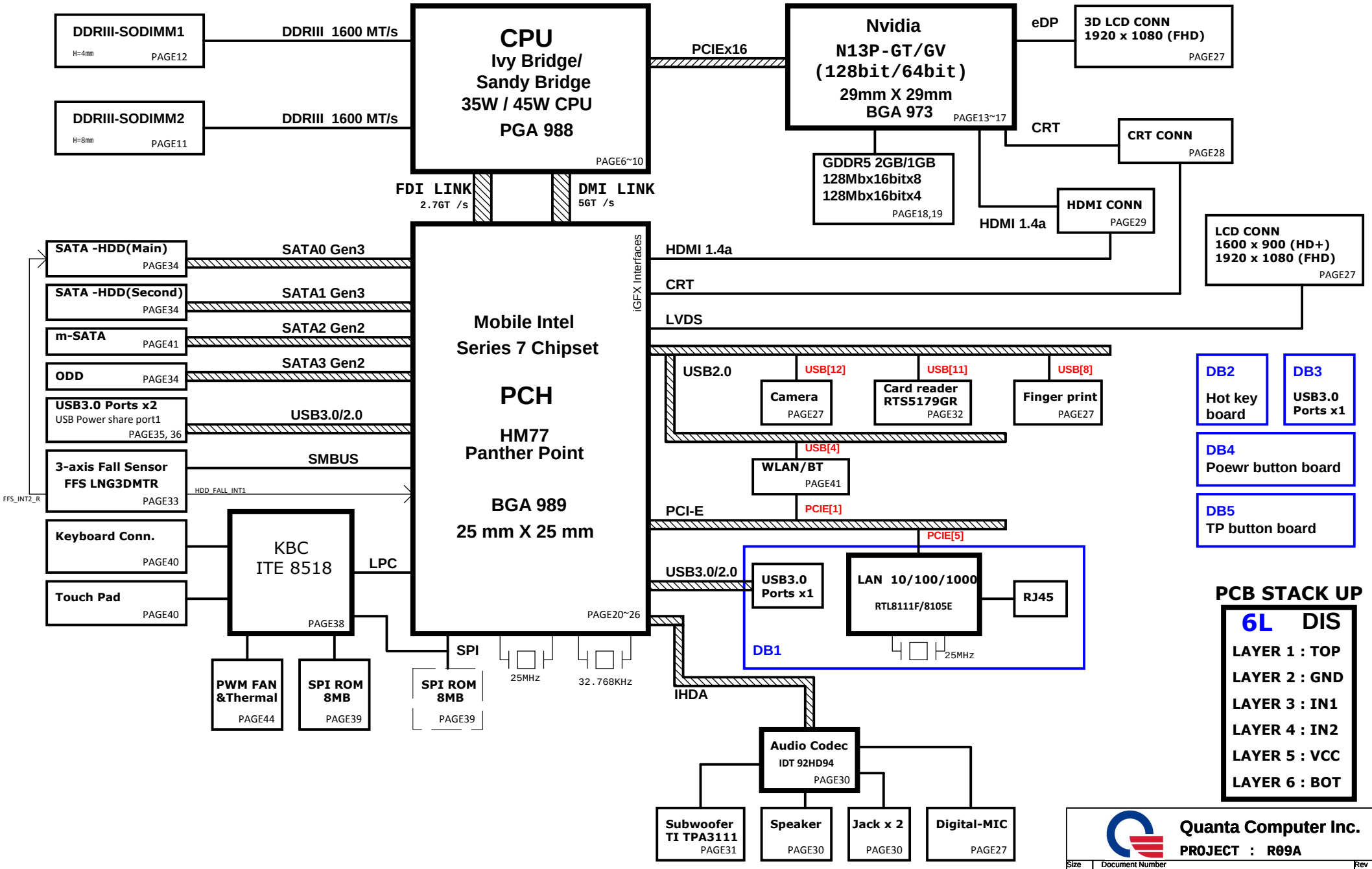
R09/A 17" OPT BLOCK DIAGRAM



PCB STACK UP

6L DIS

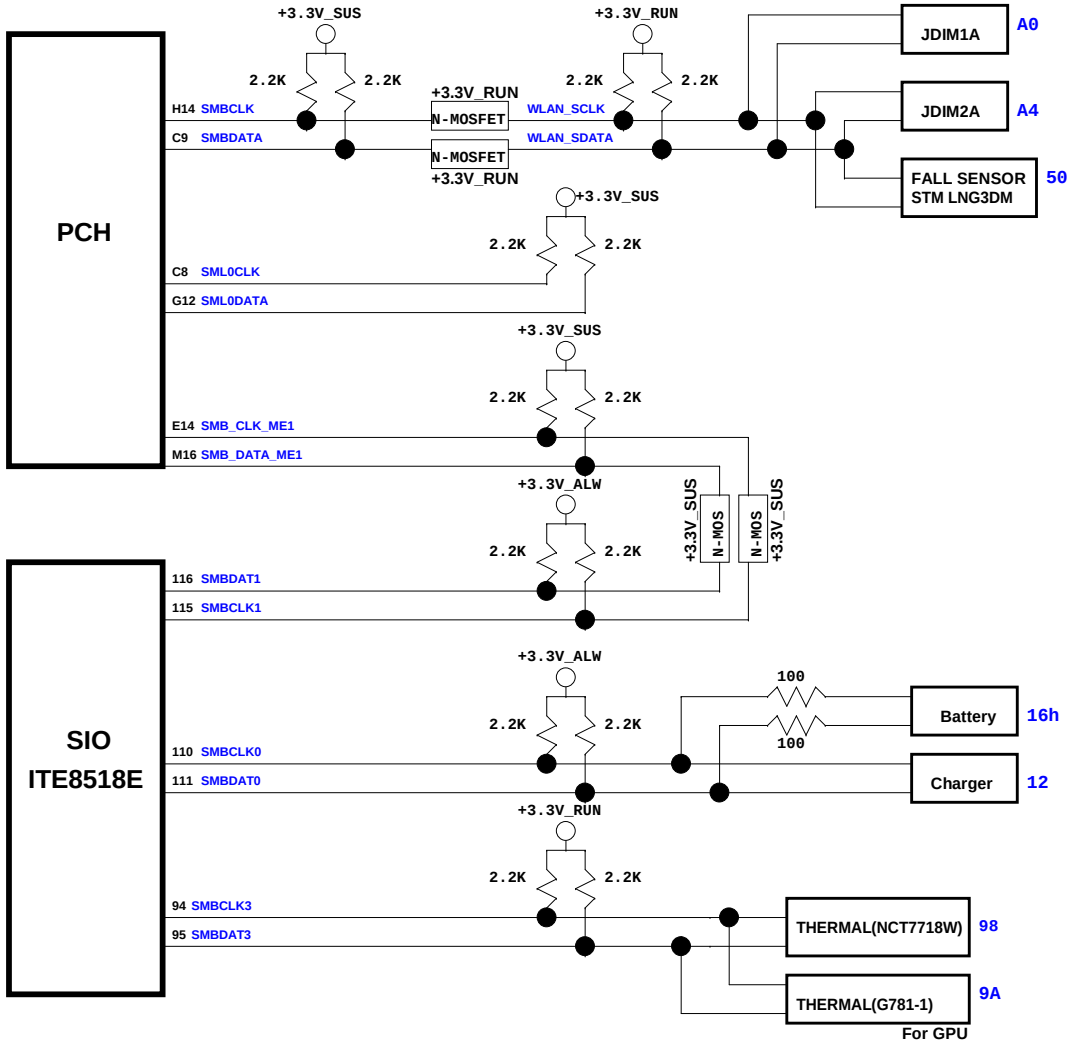
- LAYER 1 : TOP
- LAYER 2 : GND
- LAYER 3 : IN1
- LAYER 4 : IN2
- LAYER 5 : VCC
- LAYER 6 : BOT

Quanta Computer Inc.

PROJECT : R09A

Size	Document Number	Rev
	BLOCK DIAGRAM	3A

Date: Monday, February 20, 2012 Sheet 1 of 58



Function	IC	SMBus Address
DDR3	JDIM1A JDIM2A	A0 A4
Thermal IC	G781-1P8	1001101xb (9Ah)
	EMC1422	1001100xb (98h)
Charge IC	BQ24707ARGRR	0b00010010 (0x12)
Battery	Battery	16h
Fall Sensor	LNG3DM	01010000 (50h)

Quanta Computer Inc.
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Size | Document Number: SMB/SCREW PAD | Rev 3A
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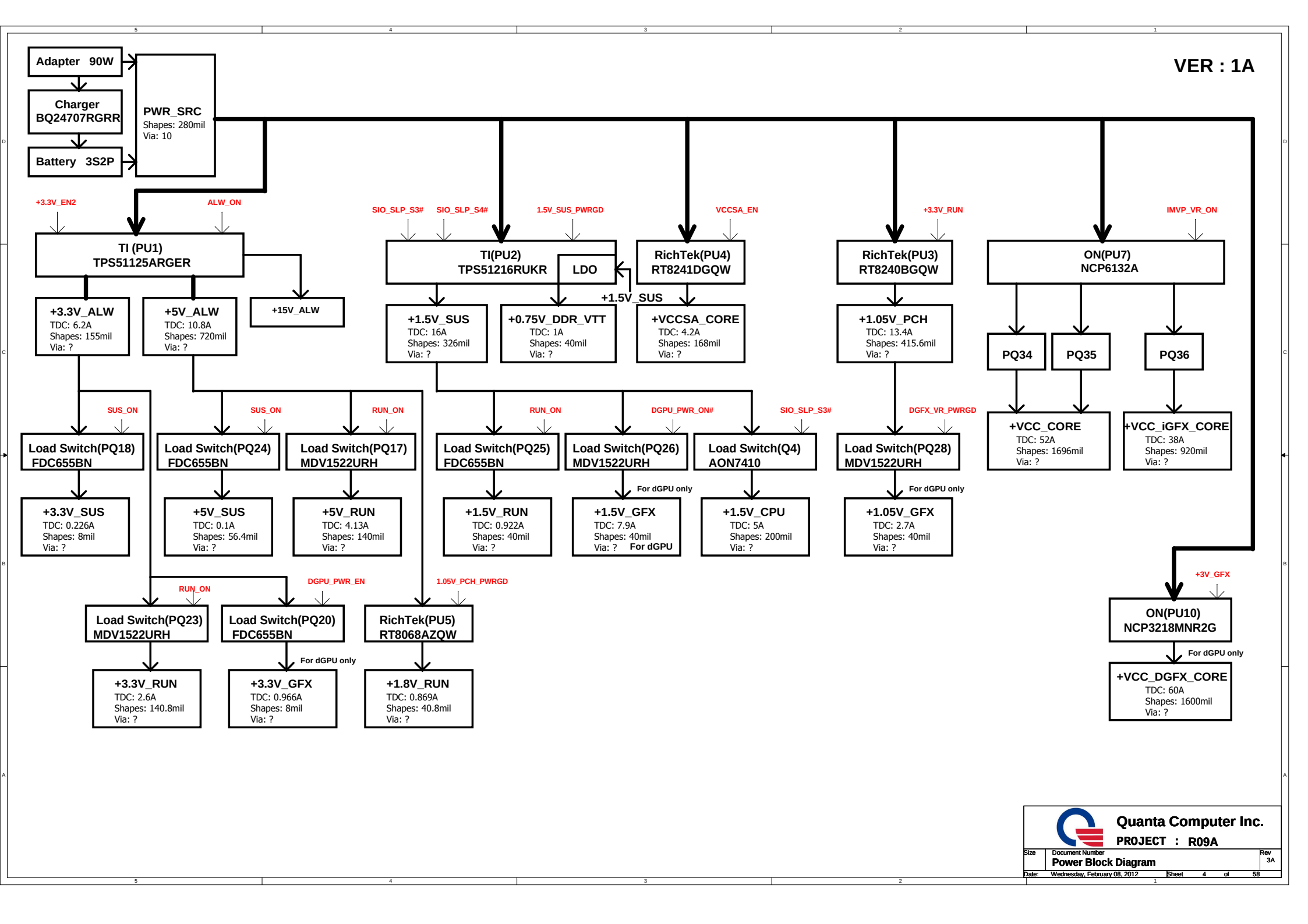
USB Master	Port Assignment
USB0	External port#1 (USB3.0)
USB1	External port#2 (USB3.0 / Power share)
USB2	External port#3 (USB3.0)
USB3	External port#4 (USB3.0)
USB4	MiniCard 1 (WLAN/BT/WiMAX)
USB5	NC
USB6	X(FOR HM77)
USB7	X(FOR HM77)
USB8	Fingerprint
USB9	NC
USB10	Card Reader
USB11	Express Card
USB12	Camera
USB13	NC

SATA Master	Port Assignment
SATA0	HDD Main
SATA1	HDD Second
SATA2	mSATA
SATA3	ODD
SATA4	NC
SATA5	NC

PCIE Master	Port Assignment
PCIE 1	WLAN
PCIE 2	NC
PCIE 3	NC
PCIE 4	NC
PCIE 5	LAN
PCIE 6	NC
PCIE 7	NC
PCIE 8	NC


VER : 1A
Adapter 90W
Charger BQ24707RGRR
Battery 3S2P
PWR_SRC
Shapes: 280mil
Via: 10
+3.3V_EN2
ALW_ON
TI (PU1) TPS51125ARGER
+3.3V_ALW
TDC: 6.2A
Shapes: 155mil
Via: ?
+5V_ALW
TDC: 10.8A
Shapes: 720mil
Via: ?
+15V_ALW
SIO_SLP_S3#
SIO_SLP_S4#
1.5V_SUS_PWRGD
TI(PU2) TPS51216RUKR
LDO
+1.5V_SUS
TDC: 16A
Shapes: 326mil
Via: ?
+0.75V_DDR_VTT
TDC: 1A
Shapes: 40mil
Via: ?
VCCSA_EN
RichTek(PU4) RT8241DGQW
+VCCSA_CORE
TDC: 4.2A
Shapes: 168mil
Via: ?
+3.3V_RUN
RichTek(PU3) RT8240BGQW
+1.05V_PCH
TDC: 13.4A
Shapes: 415.6mil
Via: ?
IMVP_VR_ON
ON(PU7) NCP6132A
PQ34
PQ35
PQ36
+VCC_CORE
TDC: 52A
Shapes: 1696mil
Via: ?
+VCC_iGFX_CORE
TDC: 38A
Shapes: 920mil
Via: ?
SUS_ON
Load Switch(PQ18) FDC655BN
+3.3V_SUS
TDC: 0.226A
Shapes: 8mil
Via: ?
SUS_ON
Load Switch(PQ24) FDC655BN
+5V_SUS
TDC: 0.1A
Shapes: 56.4mil
Via: ?
RUN_ON
Load Switch(PQ17) MDV1522URH
+5V_RUN
TDC: 4.13A
Shapes: 140mil
Via: ?
RUN_ON
Load Switch(PQ25) FDC655BN
+1.5V_RUN
TDC: 0.922A
Shapes: 40mil
Via: ?
DGPU_PWR_ON#
Load Switch(PQ26) MDV1522URH
+1.5V_GFX
TDC: 7.9A
Shapes: 40mil
Via: ?
For dGPU only
For dGPU
SIO_SLP_S3#
Load Switch(Q4) AON7410
+1.5V_CPU
TDC: 5A
Shapes: 200mil
Via: ?
DGFX_VR_PWRGD
Load Switch(PQ28) MDV1522URH
+1.05V_GFX
TDC: 2.7A
Shapes: 40mil
Via: ?
For dGPU only
RUN_ON
Load Switch(PQ23) MDV1522URH
+3.3V_RUN
TDC: 2.6A
Shapes: 140.8mil
Via: ?
DGPU_PWR_EN
Load Switch(PQ20) FDC655BN
+3.3V_GFX
TDC: 0.966A
Shapes: 8mil
Via: ?
For dGPU only
1.05V_PCH_PWRGD
RichTek(PU5) RT8068AZQW
+1.8V_RUN
TDC: 0.869A
Shapes: 40.8mil
Via: ?
+3V_GFX
ON(PU10) NCP3218MNR2G
For dGPU only
+VCC_DGFX_CORE
TDC: 60A
Shapes: 1600mil
Via: ?
Quanta Computer Inc.
PROJECT : R09A
Size
Document Number
Power Block Diagram
Rev 3A
Date: Wednesday, February 08, 2012
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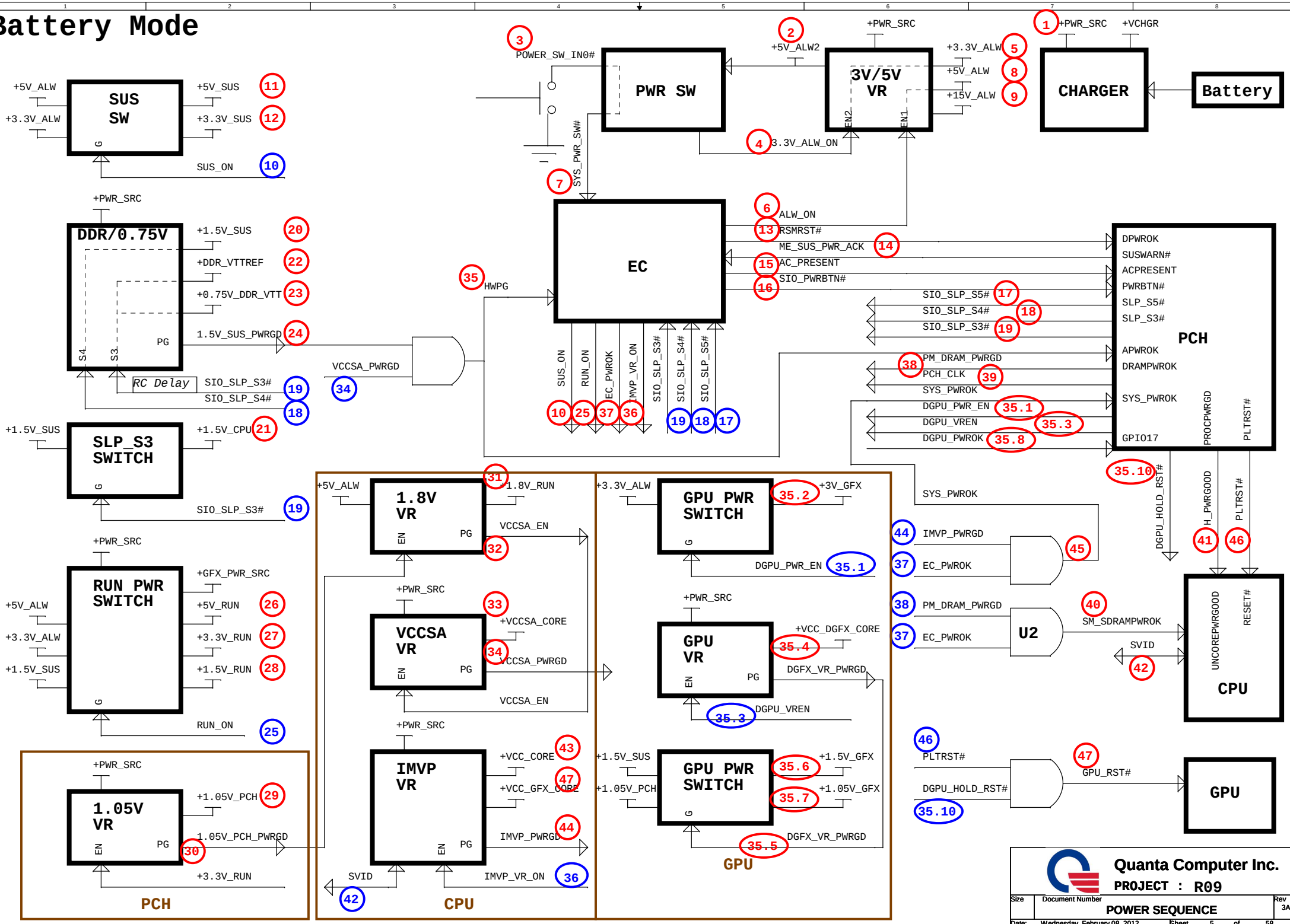
Battery Mode

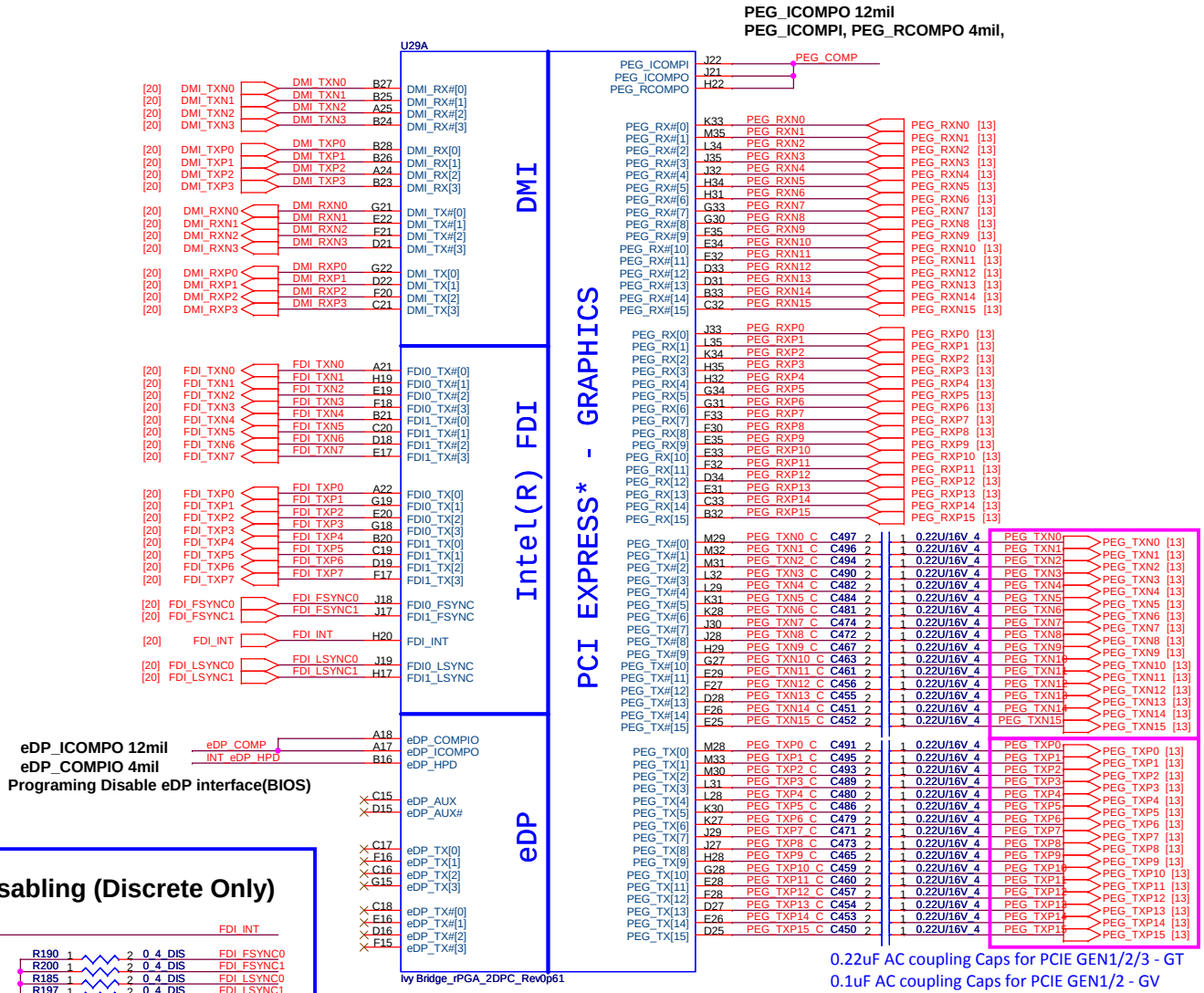


Quanta Computer Inc.
PROJECT : R09

Size	Document Number	Rev
	POWER SEQUENCE	3A

Date: Wednesday, February 08, 2012 Sheet 5 of 58

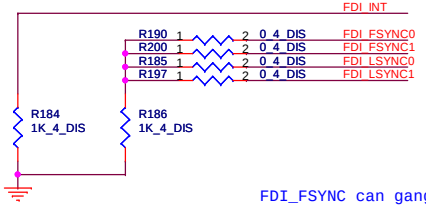
Ivy Bridge Processor (RESERVED, CFG)



0.22uF AC coupling Caps for PCIE GEN1/2/3 - GT

0.1uF AC coupling Caps for PCIE GEN1/2 - GV

FDI Disabling (Discrete Only)

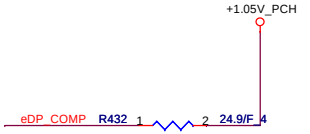


DIS: POP
UMA/ OTP: NC

FDI_FSYNC can gang all these 4 signals together and tie them with only one 1K resistor to GND (DG V0.5 Ch2.2.9).

VGA(U3)	AC coupling Cap	PN	TX location	RX location(page13)
N13P-GV	0.1uF CAP CHIP 0.1U 16V(10%,X7R,0402)	CH4103K1B08	C452,C451,C455, C456,C461,C463, C467,C472,C450, C453,C454,C457, C460,C459,C465, C473	C125,C126,C147 C145,C123,C124 C152,C153,C121 C122,C151,C150 C119,C120,C149 C148
N13P-GT	0.22uF CAP CHIP 0.22U 16V(10%,X7R,0402)	CH4223K1B00	ALL	ALL

DP & PEG Compensation

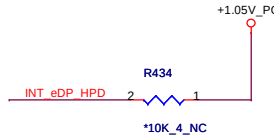


eDP_COMPIO and ICOMPO signals should be shorted near balls and routed within 500 mils

PEG_ICOMPI and RCOMPO signals should be routed within 500 mils

PEG_ICOMPO signals should be routed within 500 mils

eDP Hot-plug (Disable)



CAD Note: Place PU resistor within 2 inches of CPU

This signal can be left as no connect if entire eDP interface is disabled.

Quanta Computer Inc.
PROJECT : R09A

Size	Document Number	Rev
	Ivy Bridge 1/5	3A
Date: Monday, March 05, 2012	Sheet 6 of 58	

Ivy Bridge Processor (CLK,MISC,JTAG)

U29B

SNB_IVB# N.A at SNB EDS #27637 0.7v1

[23] H_SNB_IVB# — H_SNB_IVB# — C26 PROC_SELECT#

[38] H_CPUDET# — H_CPUDET# — AN34 SKTOCC#

MISC

TP1 — CATERR# — AL33 CATERR#

THERMAL

[38] PECI_EC — PECI_EC — R150 43_4 — PECI_EC_R — AN33 PECI

[38,53,55] IMVP7_PROCHOT# — IMVP7_PROCHOT# — R151 56_4 — H_PROCHOT# — AL32 PROCHOT#

Over 130 degree C will drive low

[25] PM_THRMTRIP# — PM_THRMTRIP# — AN32 THERMTRIP#

CLOCKS

BCLK A28 — CLK_CPU_BCLKP — CLK_CPU_BCLKP [24]

BCLK# A27 — CLK_CPU_BCLKN — CLK_CPU_BCLKN [24]

DPLL_REF_CLK A16 — CLK_DP_P_R — R439 1K_4

DPLL_REF_CLK# A15 — CLK_DP_N_R — R438 1K_4 — +1.05V_PCH

For internal eDP (Disable)

DDR3 MISC

SM_DRAMRST# — R8 — CPU_DRAMRST#

SM_RCOMP[0] AK1 — SM_RCOMP_0 — R236 140/F_4

SM_RCOMP[1] A5 — SM_RCOMP_1 — R231 25.5/F_4

SM_RCOMP[2] A4 — SM_RCOMP_2 — R230 200/F_4

SM_RCOMP_0, SM_RCOMP_1 20mil / SM_RCOMP_2 15mil.

PWR MANAGEMENT

[20] H_PM_SYNC — H_PM_SYNC — AM34 PM_SYNC

[25] H_PWRGOOD — H_PWRGOOD — AP33 UNCOREPWRGOOD

10K_4 — R136

SM_DRAMPWROK — V8 SM_DRAMPWROK

[13,23,38,41,57] PLTRST# — PLTRST# — R146 1.5K/F_4 — CPU_PLTRST#_R — AR33 RESET#

R147 750/F_4

JTAG & BPM

PRDY# AP29

PREQ# AP27

TCK AR26 — XDP_TCLK — P3

TMS AR27 — XDP_TMS — P5

TRST# AP30 — XDP_TRST# — P7

TDI AR28 — XDP_TDI — P6

TDO AP26 — XDP_TDO — P4

DBR# AL35 — XDP_DBRST# — R152 1K_4 — +3.3V_RUN

BPM#[0] AT28

BPM#[1] AR29

BPM#[2] AR30

BPM#[3] AT30

BPM#[4] AP32

BPM#[5] AR31

BPM#[6] AT31

BPM#[7] AR32

Ivy Bridge_rPGA_2DPC_Rev0p61

+1.05V_PCH

XDP_TMS — R142 *51_4_NC

XDP_TDI — R143 *51_4_NC

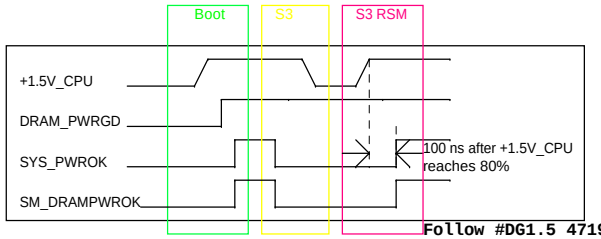
XDP_TDO — R141 *51_4_NC

IMVP7_PROCHOT# — R139 62_4

XDP_TCLK — R129 *51_4_NC

XDP_TRST# — R144 *51_4_NC

Intel spec VinH min =VCCIO X 0.7



Follow #DG1.5 471984 P119

Follow #DG1.5 471984 P130
DRAMRST# Routing Illustration

+1.5V_SUS

R463 1K_4

Q45 2N7002W

[11,12] DDR3_DRAMRST# — DDR3_DRAMRST# — R464 1K_4 — DDR3_DRAMRST#_R — CPU_DRAMRST#

[9,24] DDR_HVREF_RST_PCH — DDR_HVREF_RST_PCH

+3.3V_SUS — R462 1K_4

C586 0.047U/10V_4

R461 4.99K/F_4

Follow #DG1.5 471984 P128
DDR Power Gating Topology

+3.3V_SUS

R460 200_4

C585 0.1U/16V_4

+1.5V_CPU

R229 200_4

[20] PM_DRAM_PWRGD — PM_DRAM_PWRGD

[20,38] EC_PWROK

U30

74AHC1G09GW

SM_DRAMPWROK_R — R225 130_4 — SM_DRAMPWROK

when 1,2 is high, 4 is high-impedance OFF-state

Quanta Computer Inc.

PROJECT : R09A

Size	Document Number	Rev
	Ivy Bridge 2/5	3A

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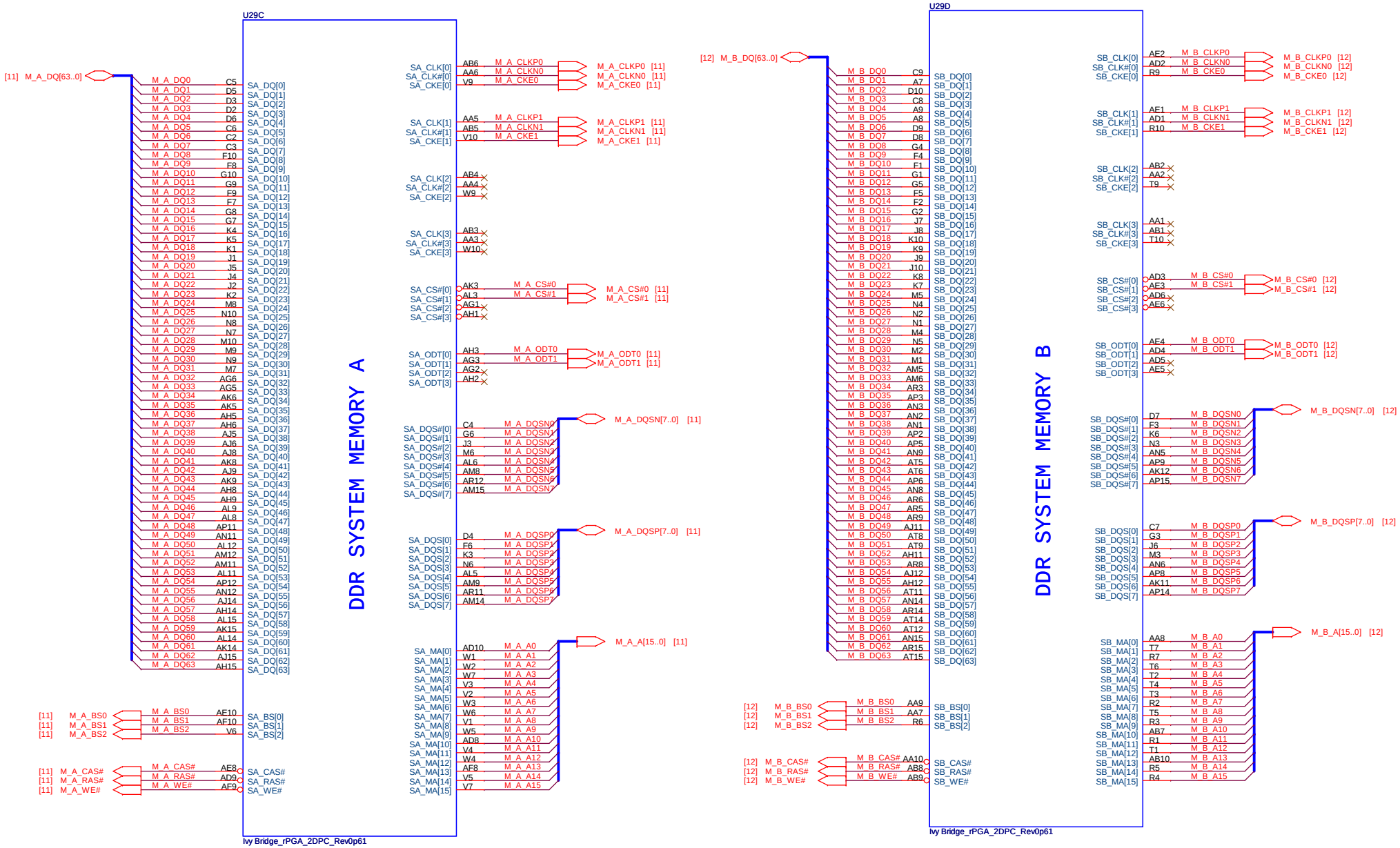
Ivy Bridge Processor (DDR3)



Quanta Computer Inc.

PROJECT : R09A

Size	Document Number	Rev
	Ivy Bridge 3/5	3A

Date: Wednesday, February 08, 2012 Sheet 8 of 58

Ivy Bridge Processor (GRAPHIC POWER)

35W	16pcs
45W	24pcs

CPU Core Power
IVY, SNB: 35W ~ 53A
IVY, SNB: 45W ~ 94A
10F x24

1.05V_PCH
SNB: 8.5A
IVY: 8.5A
10F x12

CPU VGT
SNB: 33A
IVY: 33A
10uF x 12

OTP/UMA : POP
DIS : NC

POWER

U29F — CORE SUPPLY, PEG AND DDR, SVID, SENSE LINES

U29G — GRAPHICS, DDR3 -1.5V RAILS, SA RAIL, 1.8V RAIL, MISC, VREF, SENSE LINES

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

DIS	0 ohm	C221,C223,C215
CS00003J951		
RESISTOR CHIP 0 1/10W+-5%(0603)		

UMA/OPT 10uF	C548,C202,C539,C530,C221,C536,C554,C219,C223,C217,C213,C215
CH6101M9905	
CAP CHIP 10U 6.3V(+-20%,X5R,0603)	

CPU VCCPL
SNB: 1.2A
IVY: 1.2A
10uF x 1
1uF x 2

M3 VREF
Q43, Q44 *AP2302GN_NC
Vgs=2.5V Rds=115m

CPU MCH
SNB: 5A
IVY: 5A
10uF x 6

CPU SA
SNB: 6A
IVY: 6A
10uF x 3

CAD Note: +VDDR_REF_CPU should have 10 mil trace width

R34 and R36 pull-down 1K
Spec:This will ensure the VID is 00 prior to VCCIO stability.

S3 Power reduce
5A
Q19A DMN66D0LDW-7
Q19B DMN66D0LDW-7
Q20 AON7410

Take care Q20 Vgs(MAX)=2.5

Layout note: need routing together and ALERT need between CLK and DATA

SVID CLK

Place PU resistor close to CPU
SVID DATA
R148 130_4

Place PU resistor close to CPU
SVID ALERT
R138 75/F
R149 43_4

Ivy Bridge_rPGA_2DPC_Rev0p61

Quanta Computer Inc.
PROJECT : R09A

Size	Document Number	Rev
	Ivy Bridge 4/5	3A
Date: Monday, March 05, 2012	Sheet 9 of 58	

Ivy Bridge Processor (GND)

U29H

VSS

Ivy Bridge_rPGA_2DPC_Rev0p61

U29I

VSS

Ivy Bridge_rPGA_2DPC_Rev0p61

Ivy Bridge Processor (RESERVED, CFG)

U29E

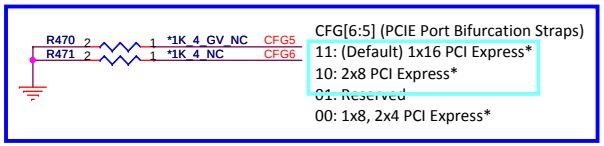
CFG

RESERVED

Ivy Bridge_rPGA_2DPC_Rev0p61

#27636 SNB EDS0.7v1 no function.

GV - R470 POP
GT, UMA - ALL NC



Processor Strapping

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

	1	0
CFG2 (PCI-E Static x16 Lane Reversal)	Normal Operation	Lane Reversed CFG2 — R145 2K_4 — 1
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	Enable; An ext DP device is connected to eDP

Quanta Computer Inc.
PROJECT : R09A

Size	Document Number	Rev
	Ivy Bridge 5/5	3A
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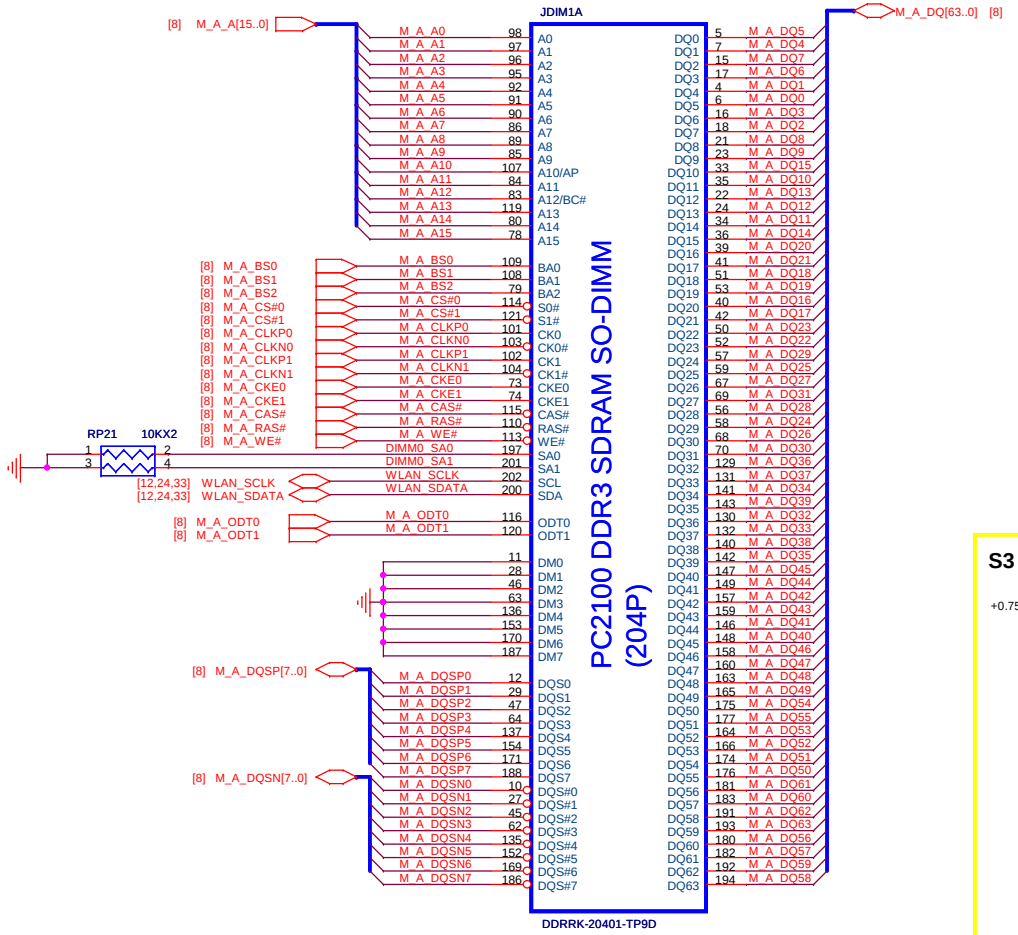
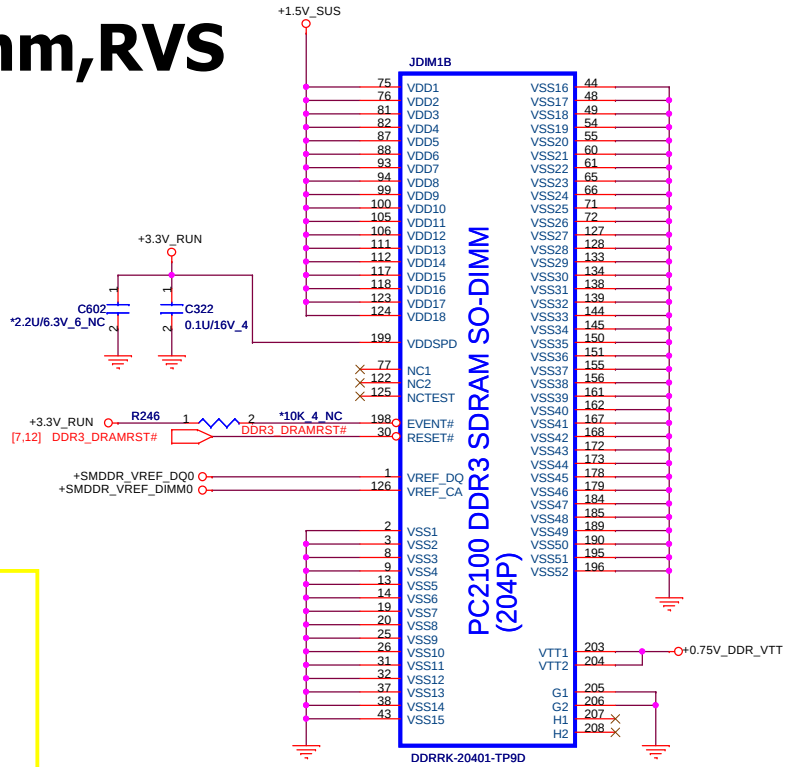
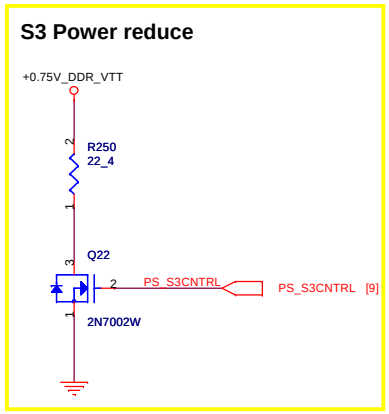
H=9.2mm,RVS

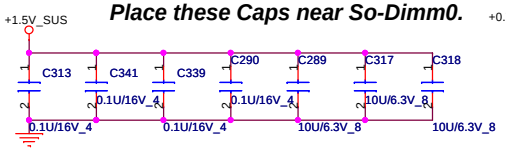


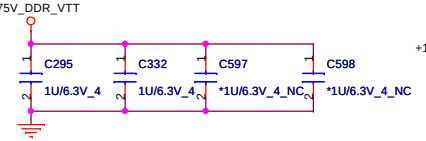


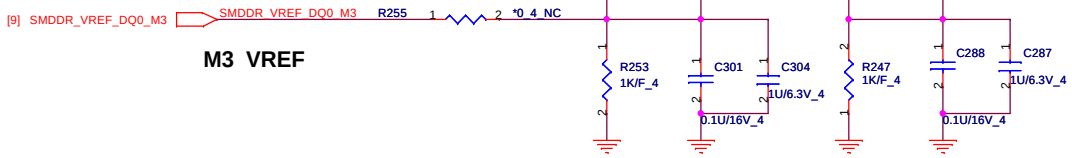


M1 VREF

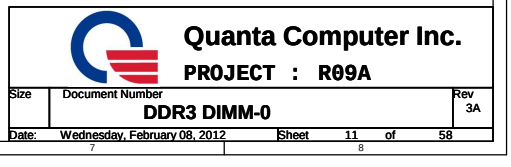
Place these Caps near So-Dimm0.



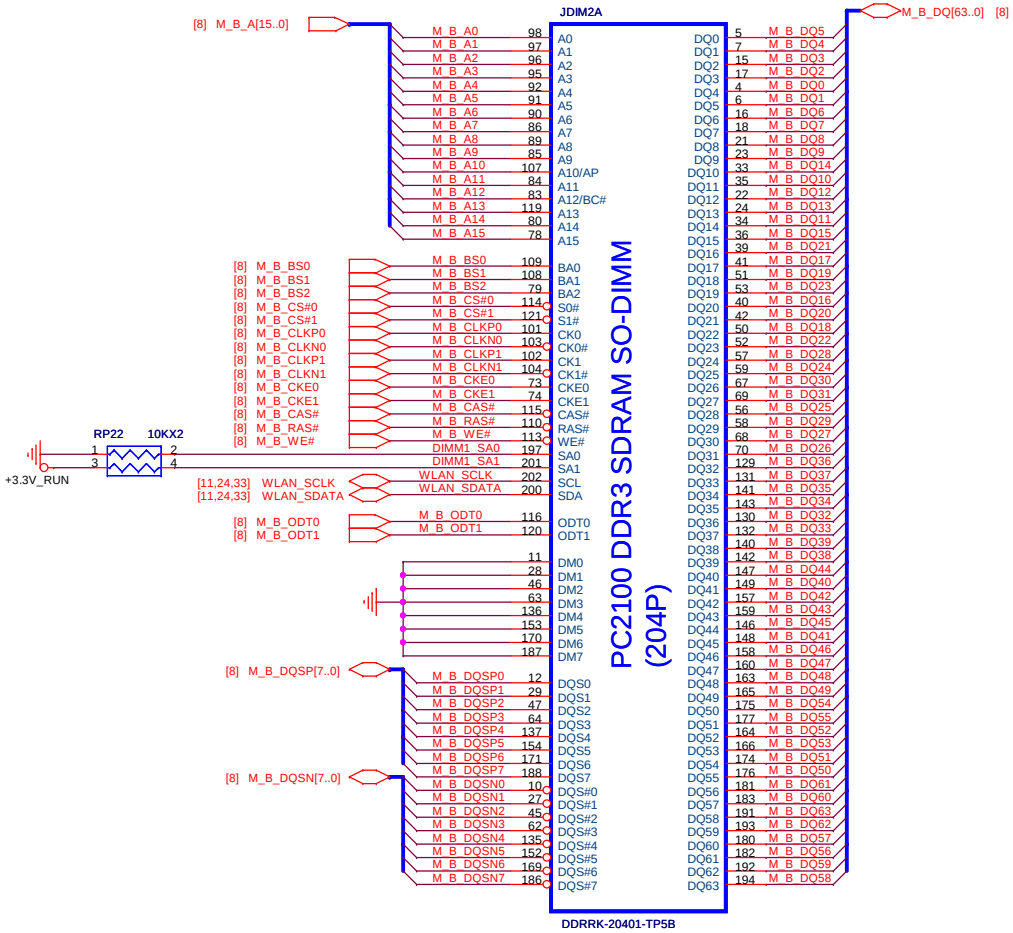


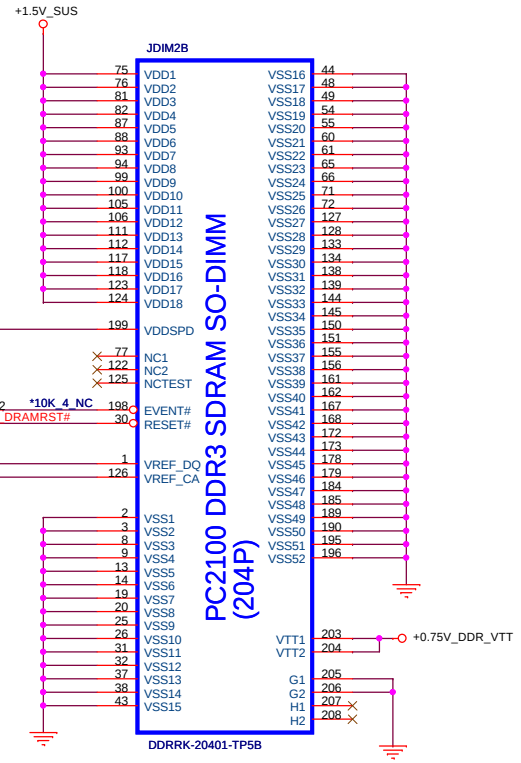


M3 VREF

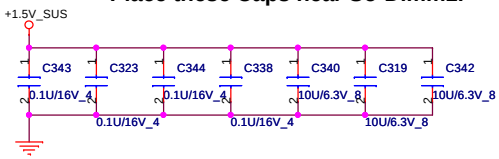


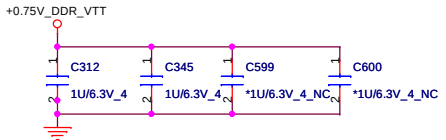
H=5.2mm,RVS





Place these Caps near So-Dimm1.





M1 VREF

M3 REF

Quanta Computer Inc.		
PROJECT : R09A		
Size	Document Number: DDR3 DIMM-1	Rev: 3A
Date: Wednesday, February 08, 2012	Sheet 12 of 58	

PEX_IOVDD/Q <3.3A

U24A
N13P-GT-A2

GB4-128

PCI EXPRESS

GPU all PWROK

PDTC143TT
Hfe=200, Vce(sat)=0.1V, Vbe(sat)=0.7V, Rb=4.7K
Ib=(1.05-0.7)/4.7K=74.46uA,
Ic=(3.3-0.1)/220=9.69mA
Hfe*Ib > Ic, Saturation

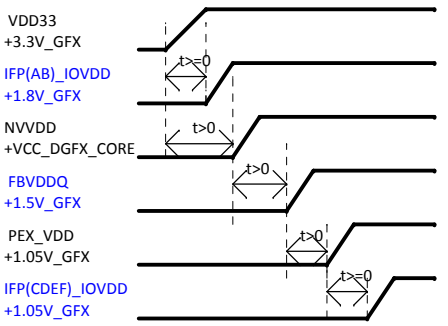
12~16 mils width

150mA

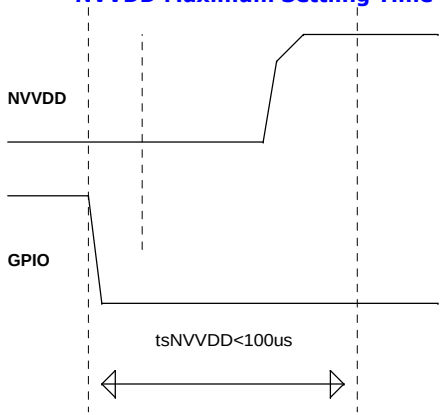
210mA 12~16 mils width

0.22uF AC coupling Caps for PCIE GEN1/2/3
0.1uF AC coupling Caps for PCIE GEN1/2

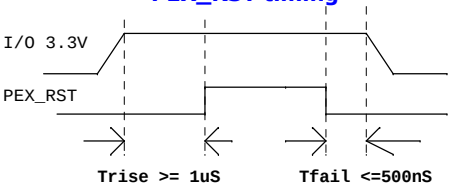
Power up sequence



NVVDD Maximum Settling Time



PEX_RST timing



Quanta Computer Inc.		
PROJECT : R09A		
Size	Document Number: N13P-GS (PCIE I/F) 1/5	Rev: 3A
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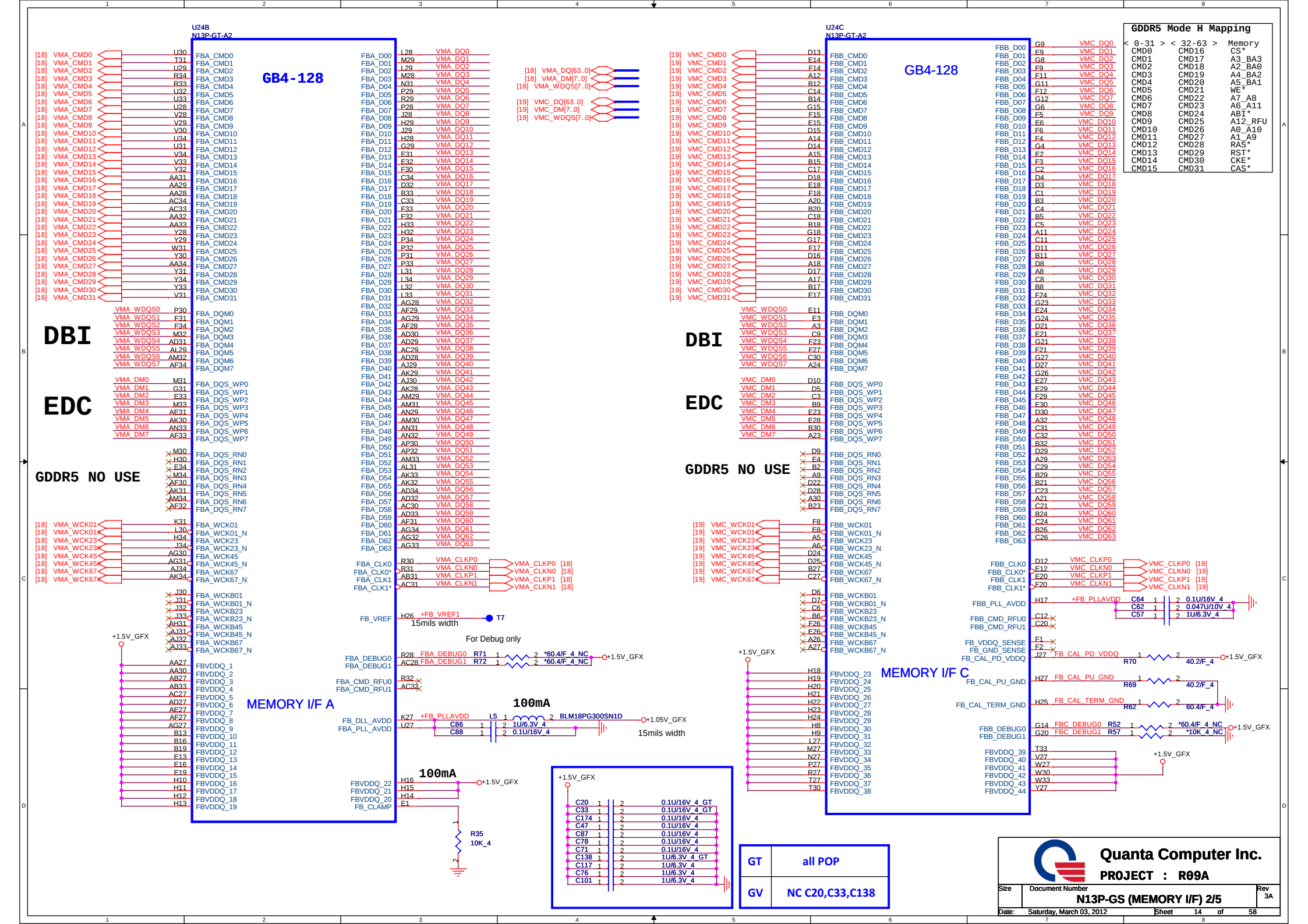
U24B
N13P-GT-A2
GB4-128
DBI
EDC
GDDR5 NO USE
MEMORY I/F A
100mA
100mA
U24C
N13P-GT-A2
GB4-128
DBI
EDC
GDDR5 NO USE
MEMORY I/F C
GDDR5 Mode H Mapping
< 0-31 > < 32-63 > Memory
CMD0 CMD16 CS*
CMD1 CMD17 A3_BA3
CMD2 CMD18 A2_BA0
CMD3 CMD19 A4_BA2
CMD4 CMD20 A5_BA1
CMD5 CMD21 WE*
CMD6 CMD22 A7_A8
CMD7 CMD23 A6_A11
CMD8 CMD24 ABI*
CMD9 CMD25 A12_RFU
CMD10 CMD26 A0_A10
CMD11 CMD27 A1_A9
CMD12 CMD28 RAS*
CMD13 CMD29 RST*
CMD14 CMD30 CKE*
CMD15 CMD31 CAS*
GT all POP
GV NC C20,C33,C138
Quanta Computer Inc.
PROJECT : R09A
Size
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N13P-GS (MEMORY I/F) 2/5
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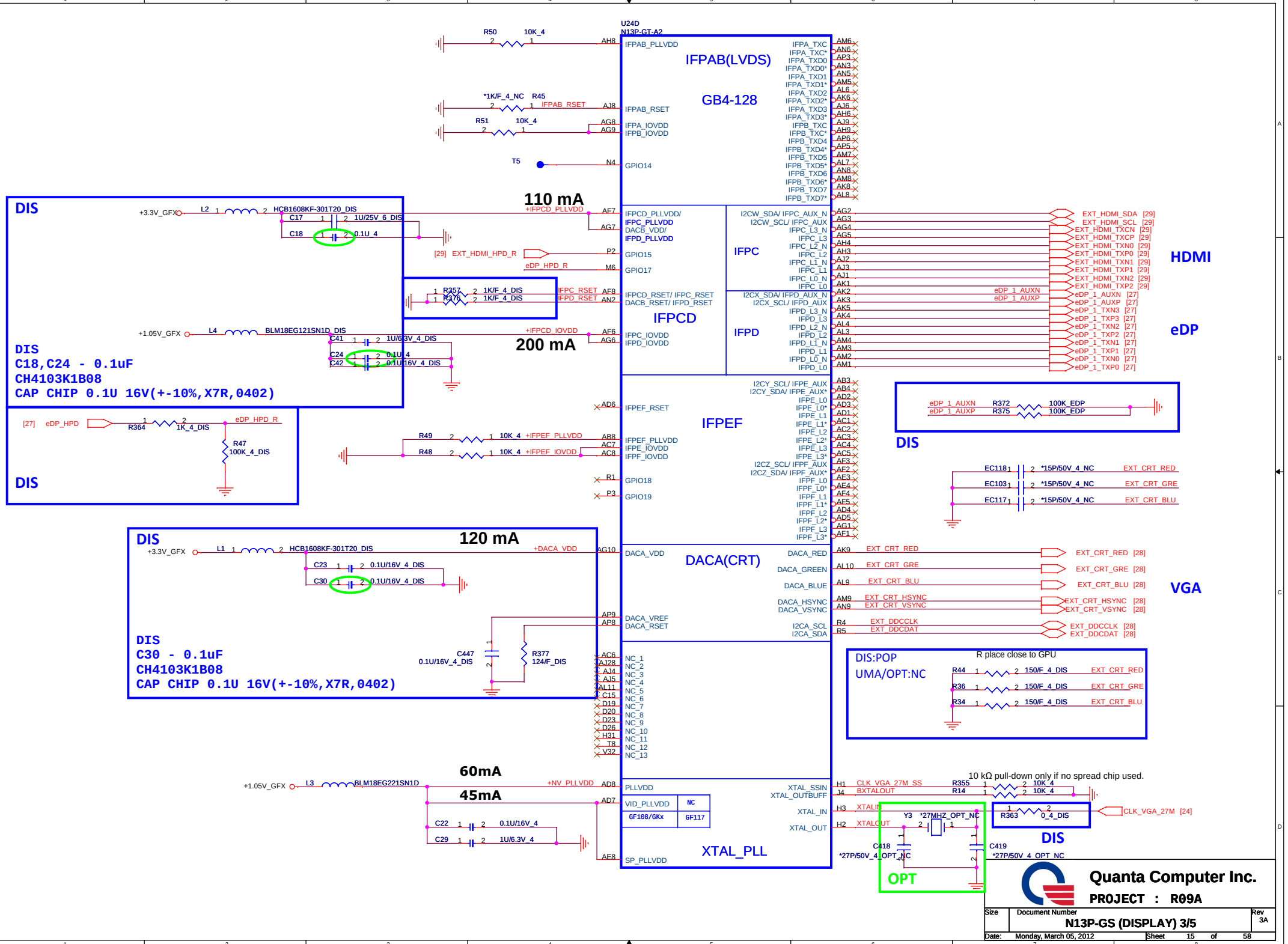
U24D
N13P-GT-A2
IFPAB(LVDS)
GB4-128
IFPCD
IFPEF
DACA(CRT)
XTAL_PLL
IFPAB_PLLVDD
IFPAB_RSET
IFPA_IOVDD
IFPB_IOVDD
GPIO14
IFPCD_PLLVDD/ IFPC_PLLVDD
DACB_VDD/ IFPD_PLLVDD
GPIO15
GPIO17
IFPCD_RSET/ IFPC_RSET
DACB_RSET/ IFPD_RSET
IFPC_IOVDD
IFPD_IOVDD
IFPEF_RSET
IFPEF_PLLVDD
IFPE_IOVDD
IFPF_IOVDD
GPIO18
GPIO19
DACA_VDD
DACA_VREF
DACA_RSET
PLLVDD
VID_PLLVDD
GF108/GKx
NC
GF117
SP_PLLVDD
XTAL_SSIN
XTAL_OUTBUFF
XTAL_IN
XTAL_OUT
IFPA_TXC
IFPA_TXC*
IFPA_TXD0
IFPA_TXD0*
IFPA_TXD1
IFPA_TXD1*
IFPA_TXD2
IFPA_TXD2*
IFPA_TXD3
IFPA_TXD3*
IFPB_TXC
IFPB_TXC*
IFPB_TXD4
IFPB_TXD4*
IFPB_TXD5
IFPB_TXD5*
IFPB_TXD6
IFPB_TXD6*
IFPB_TXD7
IFPB_TXD7*
I2CW_SDA/ IFPC_AUX_N
I2CW_SCL/ IFPC_AUX
IFPC_L3_N
IFPC_L3
IFPC_L2_N
IFPC_L2
IFPC_L1_N
IFPC_L1
IFPC_L0_N
IFPC_L0
I2CX_SDA/ IFPD_AUX_N
I2CX_SCL/ IFPD_AUX
IFPD_L3_N
IFPD_L3
IFPD_L2_N
IFPD_L2
IFPD_L1_N
IFPD_L1
IFPD_L0_N
IFPD_L0
I2CY_SCL/ IFPE_AUX
I2CY_SDA/ IFPE_AUX*
IFPE_L0
IFPE_L0*
IFPE_L1
IFPE_L1*
IFPE_L2
IFPE_L2*
IFPE_L3
IFPE_L3*
I2CZ_SCL/ IFPF_AUX
I2CZ_SDA/ IFPF_AUX*
IFPF_L0
IFPF_L0*
IFPF_L1
IFPF_L1*
IFPF_L2
IFPF_L2*
IFPF_L3
IFPF_L3*
DACA_RED
DACA_GREEN
DACA_BLUE
DACA_HSYNC
DACA_VSYNC
I2CA_SCL
I2CA_SDA
NC_1
NC_2
NC_3
NC_4
NC_5
NC_6
NC_7
NC_8
NC_9
NC_10
NC_11
NC_12
NC_13
HDMI
eDP
VGA
DIS
C18,C24 - 0.1uF
CH4103K1B08
CAP CHIP 0.1U 16V(+-10%,X7R,0402)
DIS
C30 - 0.1uF
CH4103K1B08
CAP CHIP 0.1U 16V(+-10%,X7R,0402)
110 mA
200 mA
120 mA
60mA
45mA
DIS:POP
UMA/OPT:NC
R place close to GPU
10 kΩ pull-down only if no spread chip used.
OPT
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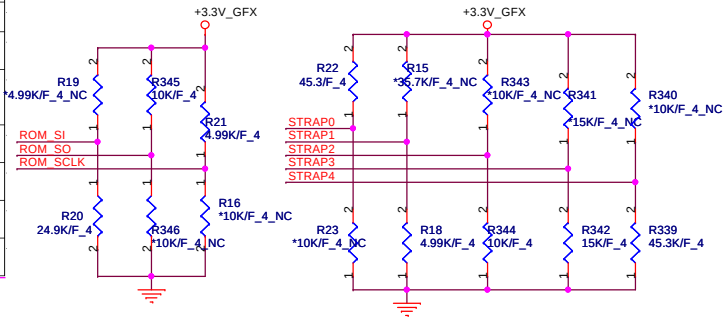
10K/F_4: CS31002FB26 [RES CHIP 10K 1/16W +1% (0402)]
4.99K/F_4: CS24992FB26 [RES CHIP 4.99K 1/16W +1%(0402)]
15K/F_4: CS31502FB24 [RES CHIP 15K 1/16W +1% (0402)]
20K/F_4: CS32002FB29 RES CHIP 20K 1/16W +-1%(0402)

24.9K/F_4: CS32492FB16 [RES CHIP 24.9K 1/16W +-1%(0402)]
30K/F_4: CS33002FB13 [RES CHIP 30K 1/16W +-1%(0402)]
35.7K/F_4: CS33572FB13 [RES CHIP 35.7K 1/16W +-1%(0402)]
45.3K/F_4: CS34532FB18 [RES CHIP 45.3K 1/16W +-1% (0402)]

N13P-GT

	N13P-GT-OPT	N13P-GT-DIS
ROM_SCLK	5K-PU	5K-PU
ROM_SO	10K-PU	10K-PU
ROM_SI	GDDR5 Hynix-128MX16*-25K-PD Samsung-128Mx16-30K-PD	GDDR5 Hynix-128MX16*-25K-PD Samsung-128Mx16-30K-PD
STRAP-1	5K-PD	5K-PD
STRAP-2	10K-PD	10K-PD
STRAP-3	5K-PD	15K-PD
STRAP-4	45K-PD	45K-PD



N13P-GV

For N13P-GV-B-A2, the h/w strap setting must be modified as below
ROM_SO PD 10K
ROM_SI PD 10K
ROM_SCLK PD 10K
Strap 4 PD10K

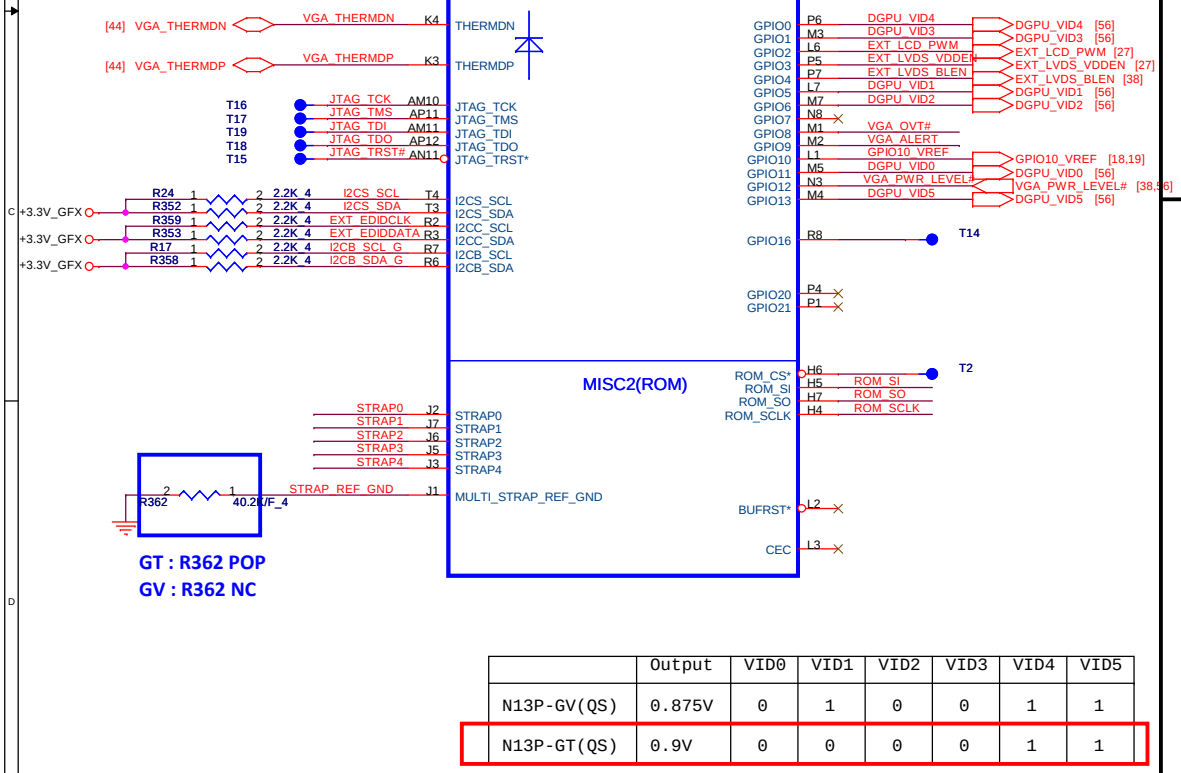
For Hynix 128MX16 GDDR5	For Samsung 128MX16 GDDR5
Strap 3 PD 10K	Strap 3 PD 10K
Strap 2 PU 10K	Strap 2 PU 10K
Strap 1 PD 10K	Strap 1 PD 10K
Strap 0 PD 10K	Strap 0 PU 10K

Default: Hynix VRAM (0100) VRAM Configuration Table

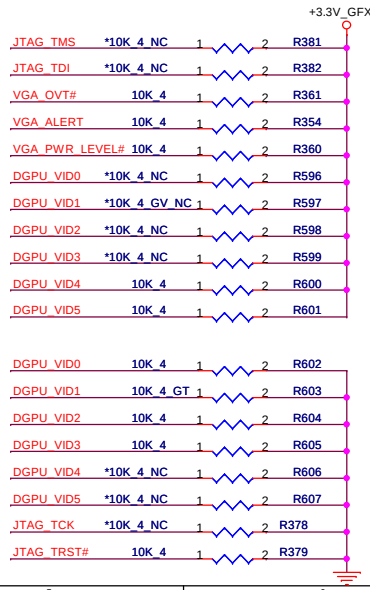
RAMCFG [3:0]	DESCRIPTION	Vendor	Quanta P/N	Vendor P/N	ROM_SI
0100	GDDR5 128Mx16, 2500MHz	Hynix	AKG5MWUTW14	H5GQ2H24MFR-T2C	PD 25K
0101	GDDR5 128Mx16, 2500MHz	Samsung	AKG5MWDT509	K4G20325FD-F	PD 30K

Display confiauration table

SOR_EXPOSED[3:0]		STRAP3
0000	Optimus	PD 5K
0010	Discret only	PD 15K



	Output	VID0	VID1	VID2	VID3	VID4	VID5
N13P-GV(QS)	0.875V	0	1	0	0	1	1
N13P-GT(QS)	0.9V	0	0	0	0	1	1



GPIO	I/O	ACTIVE	USAGE
0	OUT	N/A	NVVDD VID4
1	OUT	N/A	NVVDD VID3
2	OUT	HIGH	PANEL BACKLIGHT PWM
3	OUT	HIGH	PANEL POWER ENABLE
4	OUT	HIGH	PANEL BACKLIGHT ENABLE
5	OUT	N/A	NVVDD VID1
6	OUT	N/A	NVVDD VID2
7	OUT	N/A	3D VERSION LEFT/RIGHT SIGNAL
8	I/O	LOW	OVERT
9	I/O	LOW	ALERT
10	OUT	N/A	MEMORY VREF CONTROL
11	OUT	N/A	NVVDD VID0
12	IN	N/A	PWR_LEVEL
13	OUT	N/A	NVVDD VID5

Quanta Computer Inc.
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Size	Document Number	Rev
	N13P-GT (GPIO&STRAPS) 4/5	2B

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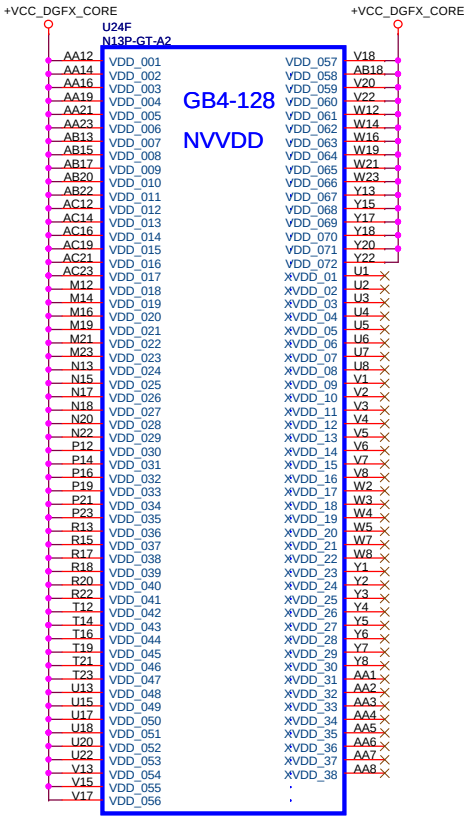
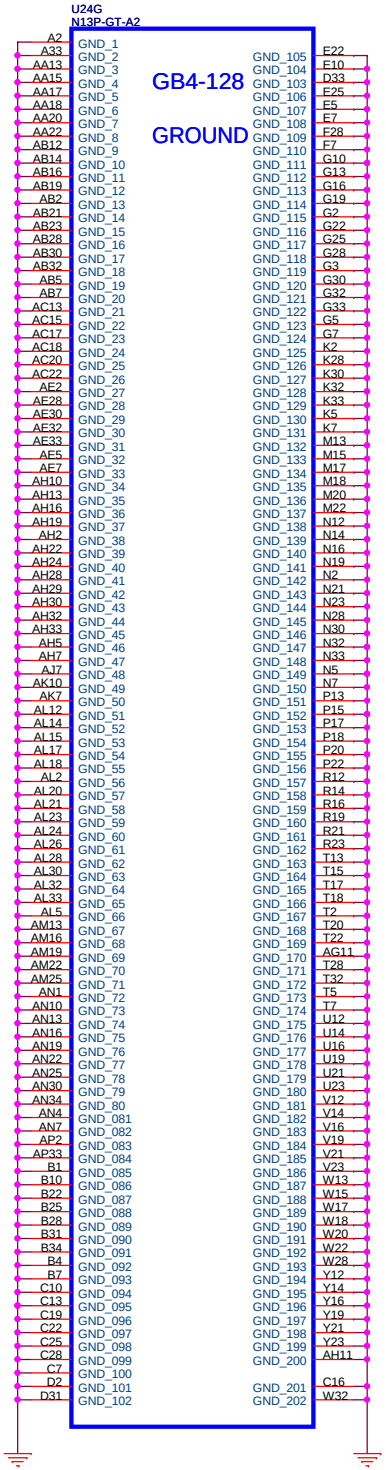
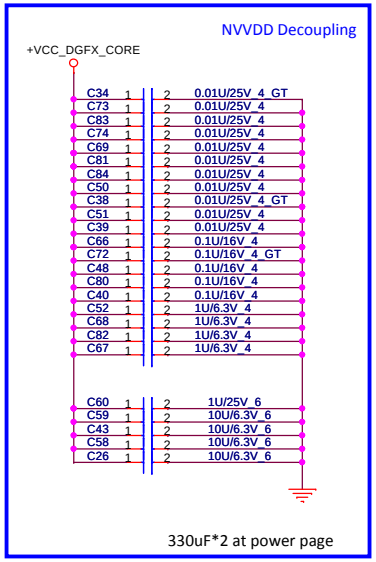




GT: 60A	all POP
GV: 42A	NC C34,C38,C72



Quanta Computer Inc.

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Size	Document Number	Rev
	N13P-GS (POWER & GND) 5/5	3A

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CHANNEL A: 1024MB GDDR5

LOWER HALF

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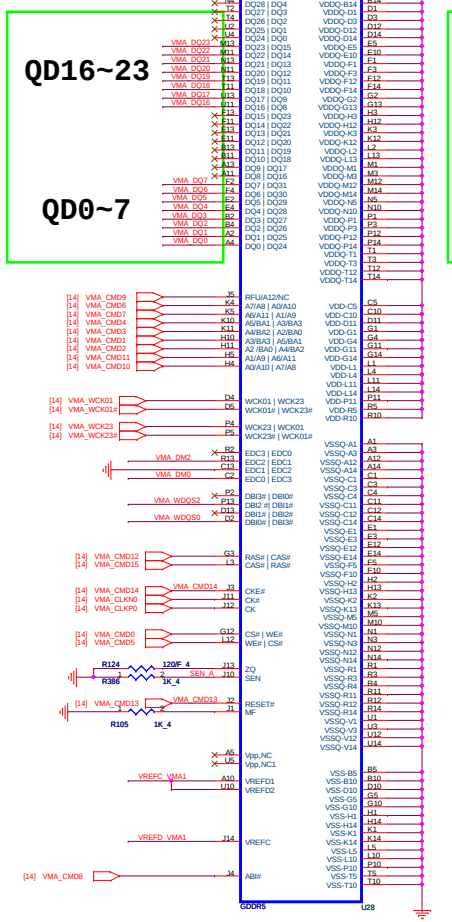

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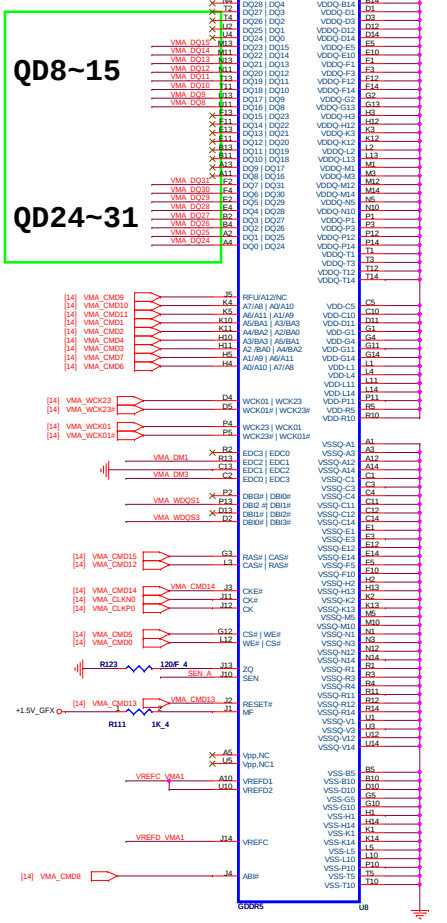

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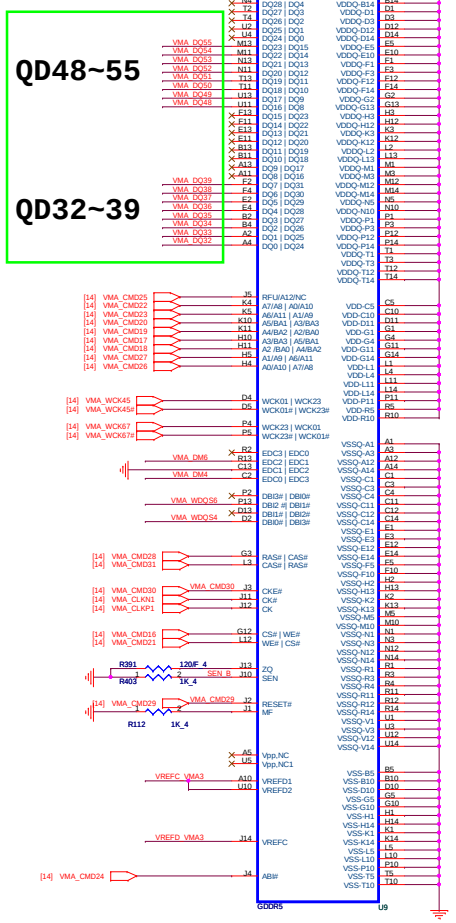

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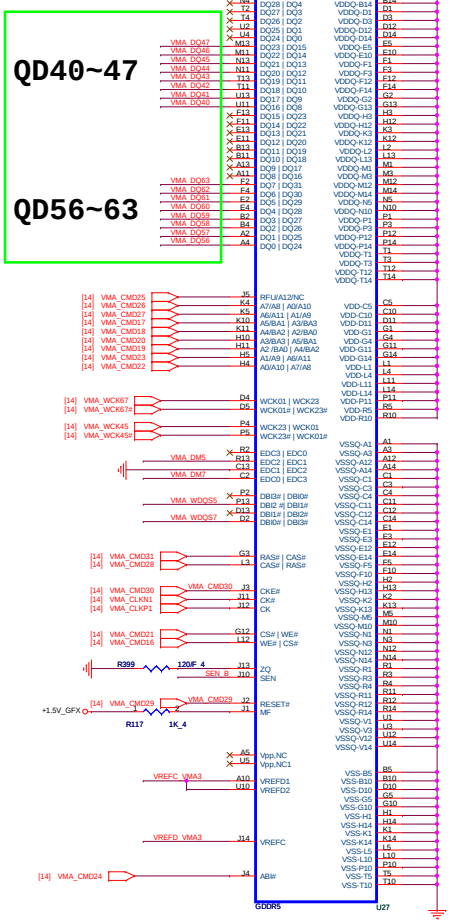

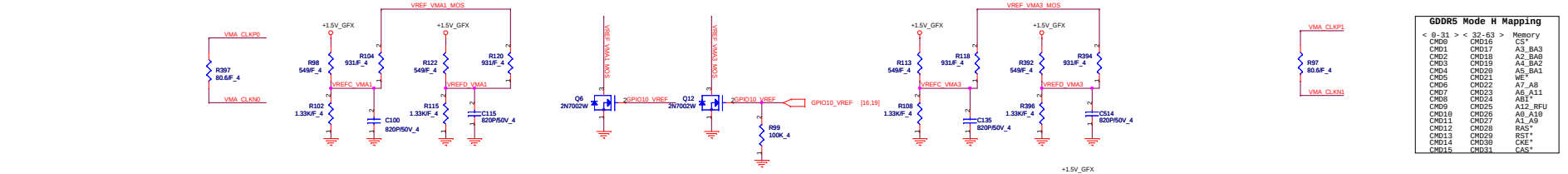

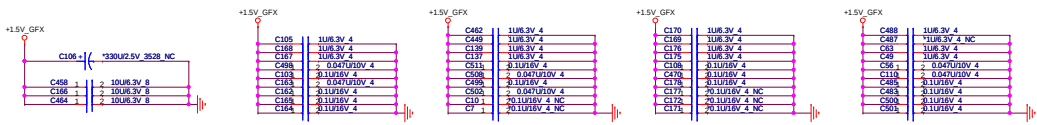

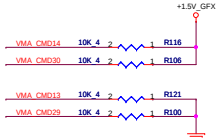

GDDR5 Mode H Mapping

< 0-31 >	< 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

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	N13P-GS VRAM-1(GDDR5 BGA170)	3A
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CHANNEL B: 1024MB GDDR5

LOWER HALF

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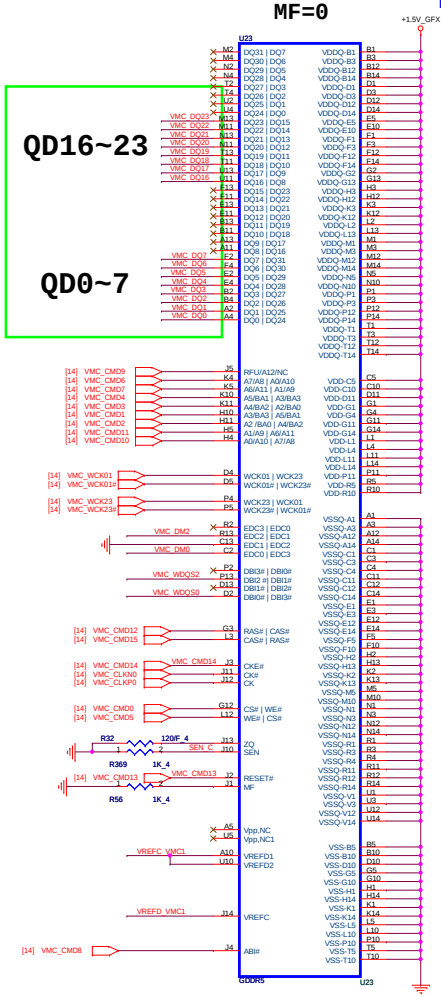

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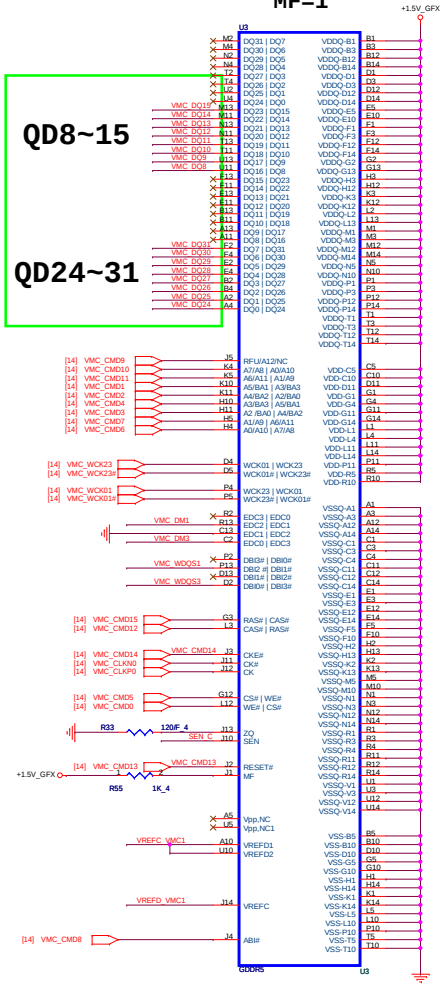

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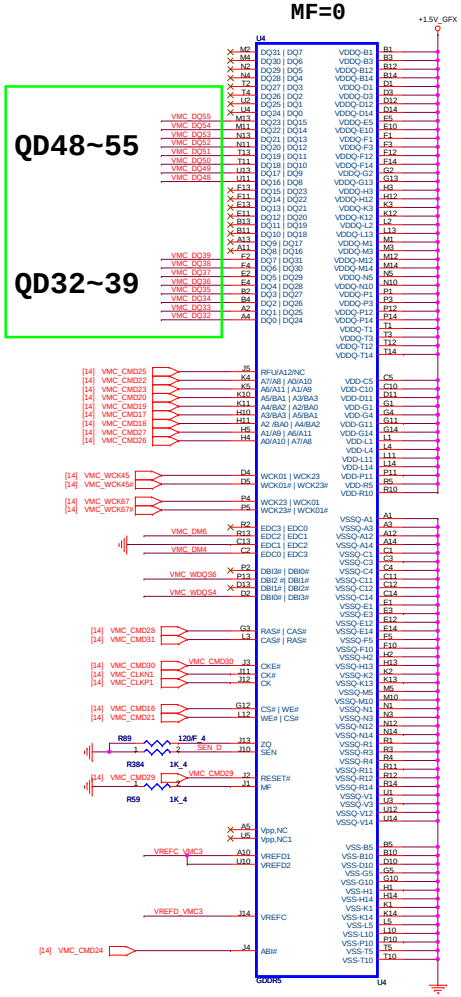

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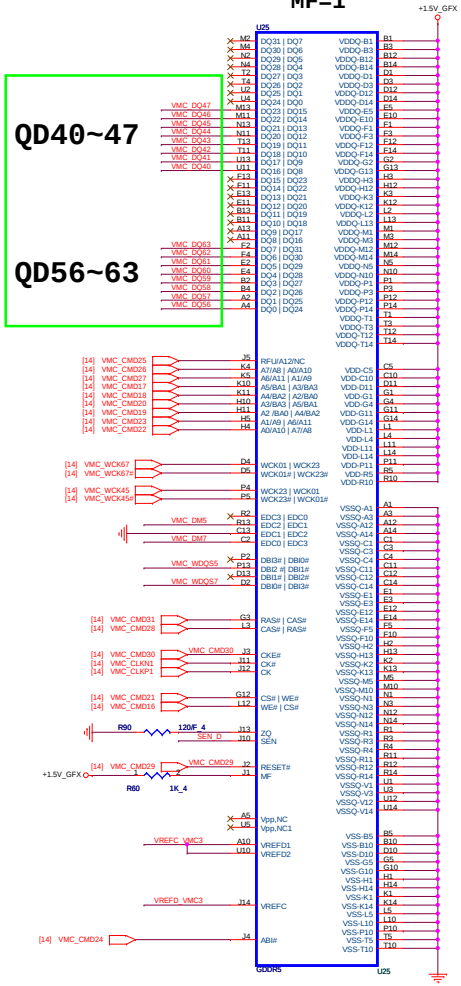
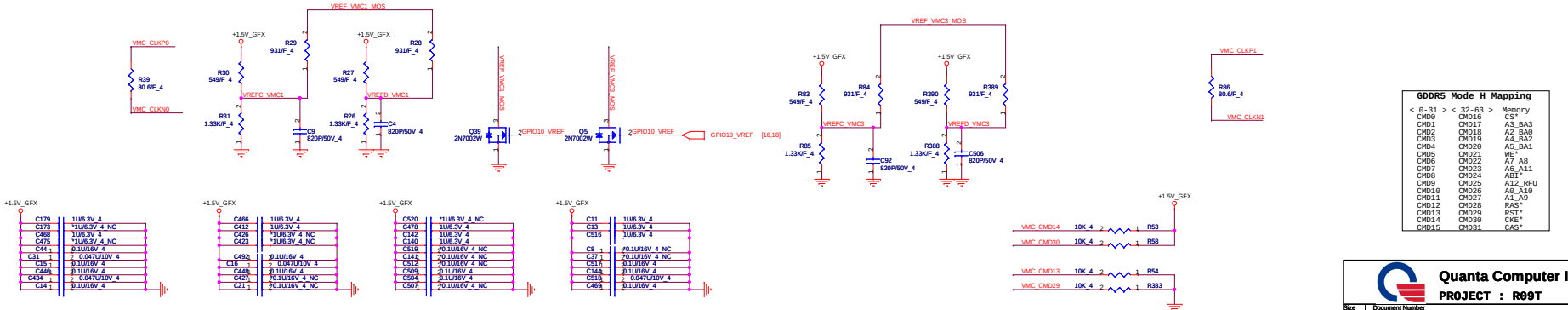
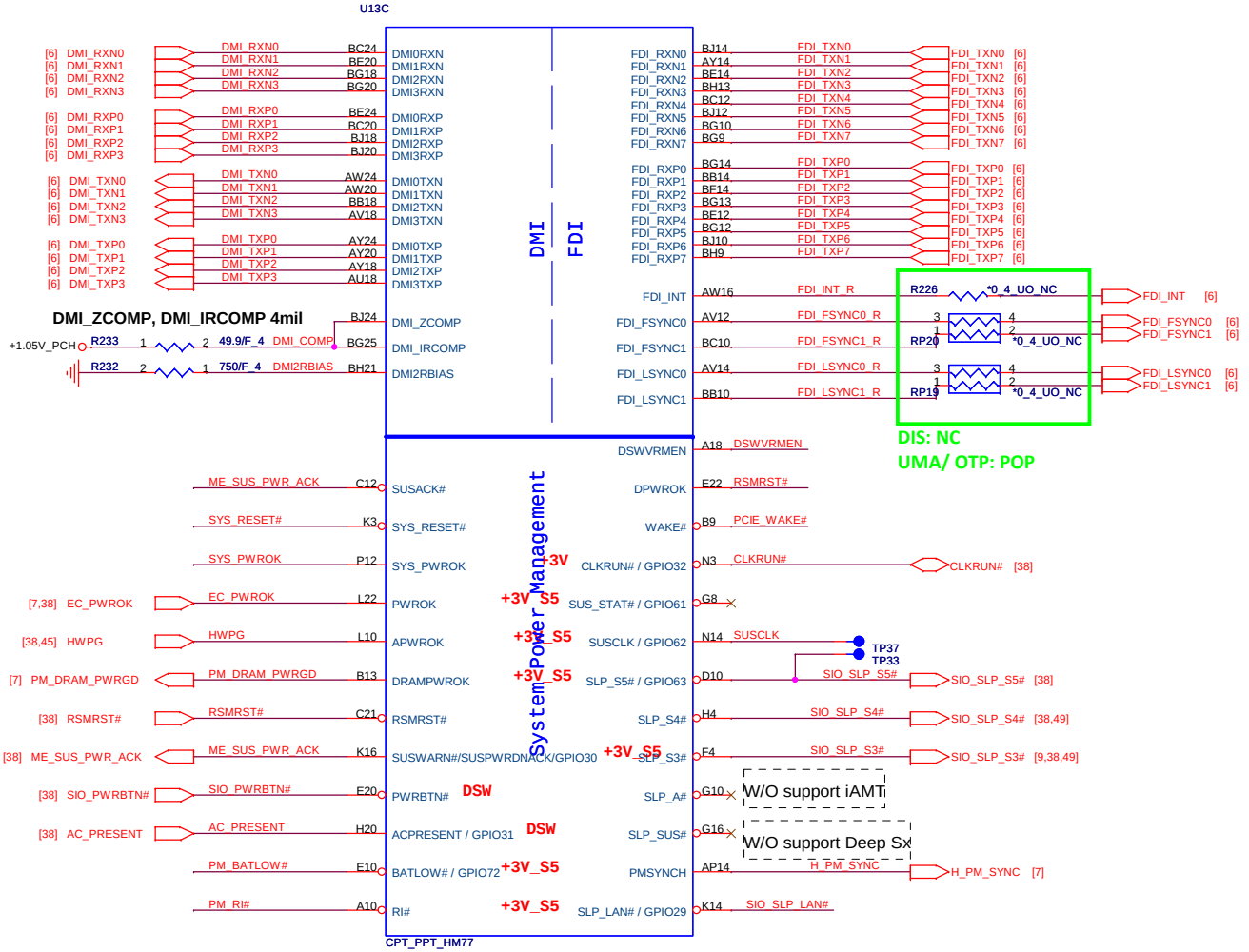
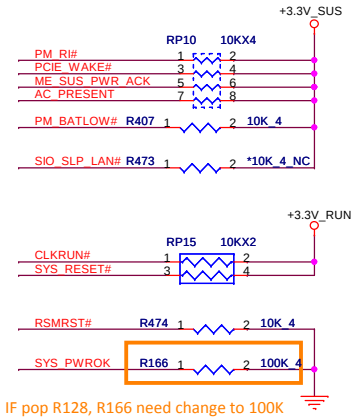


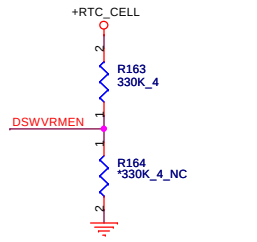


Cougar Point/Panther Point (DMI,FDI,PM)

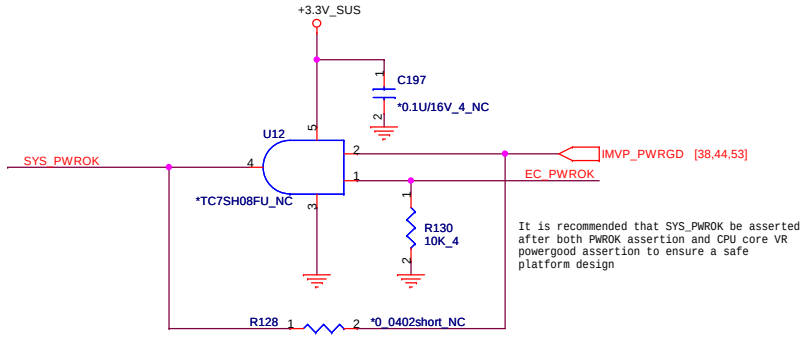


PCH Pull-high/low(CLG)





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



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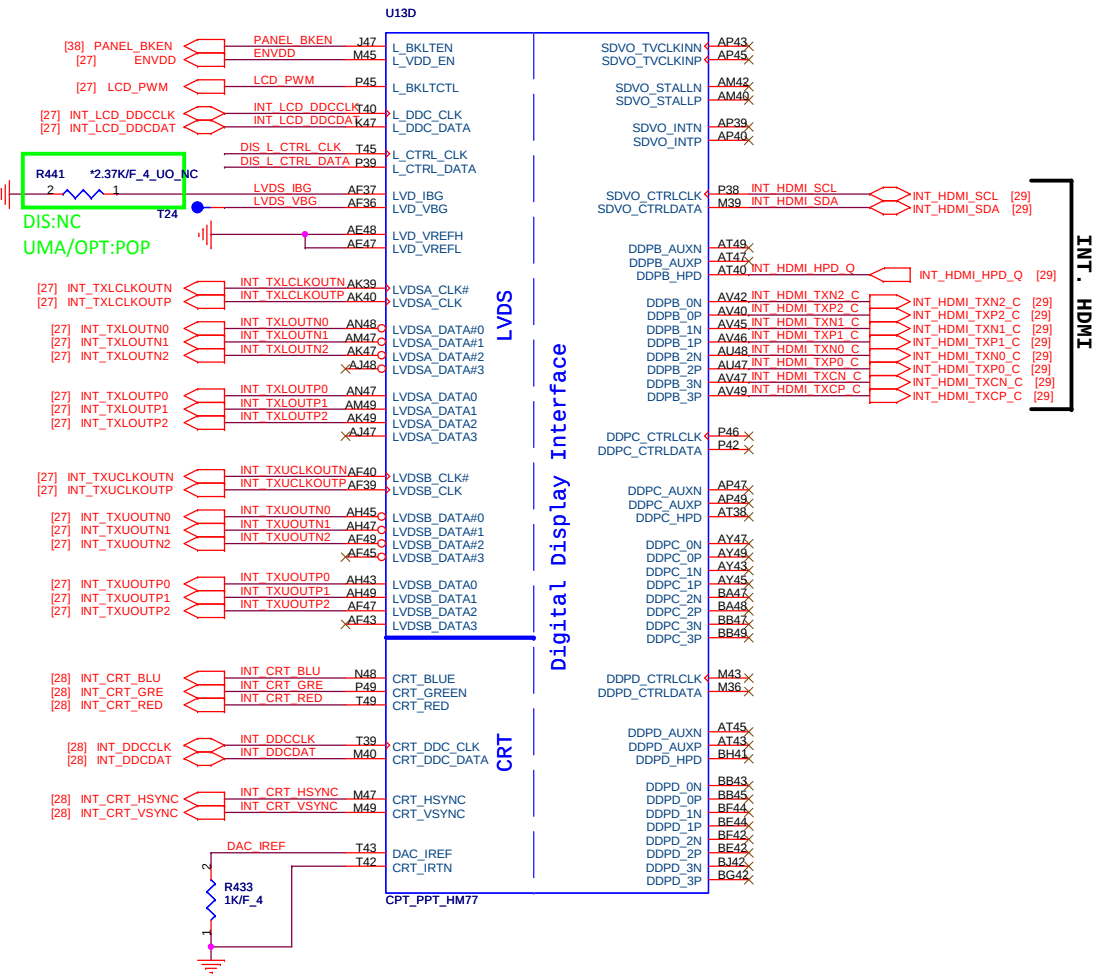
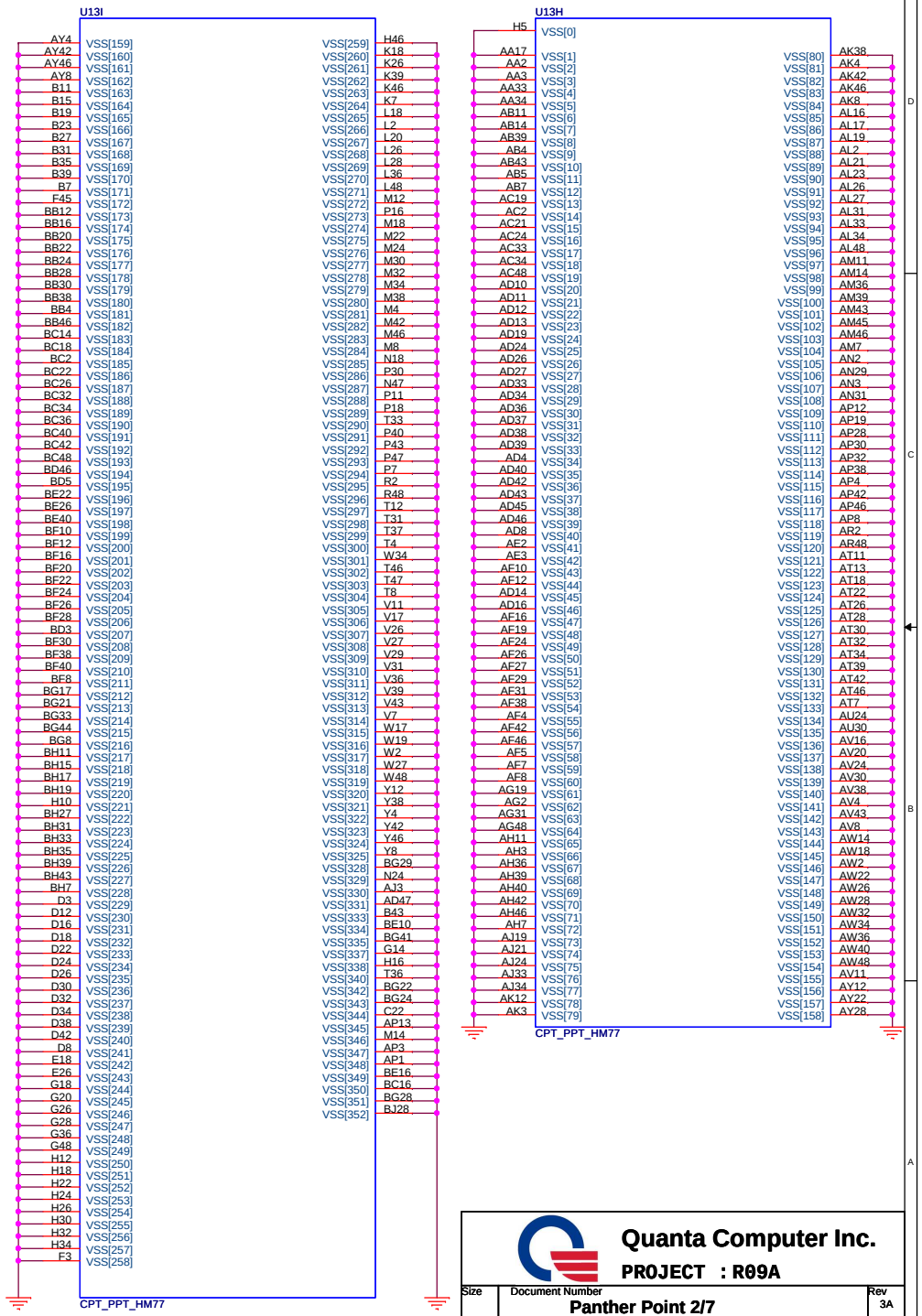
Cougar Point/Panther Point (LVDS,DDI)



Cougar Point/Panther Point (GND)



Quanta Computer Inc.

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Size	Document Number	Rev
	Panther Point 2/7	3A

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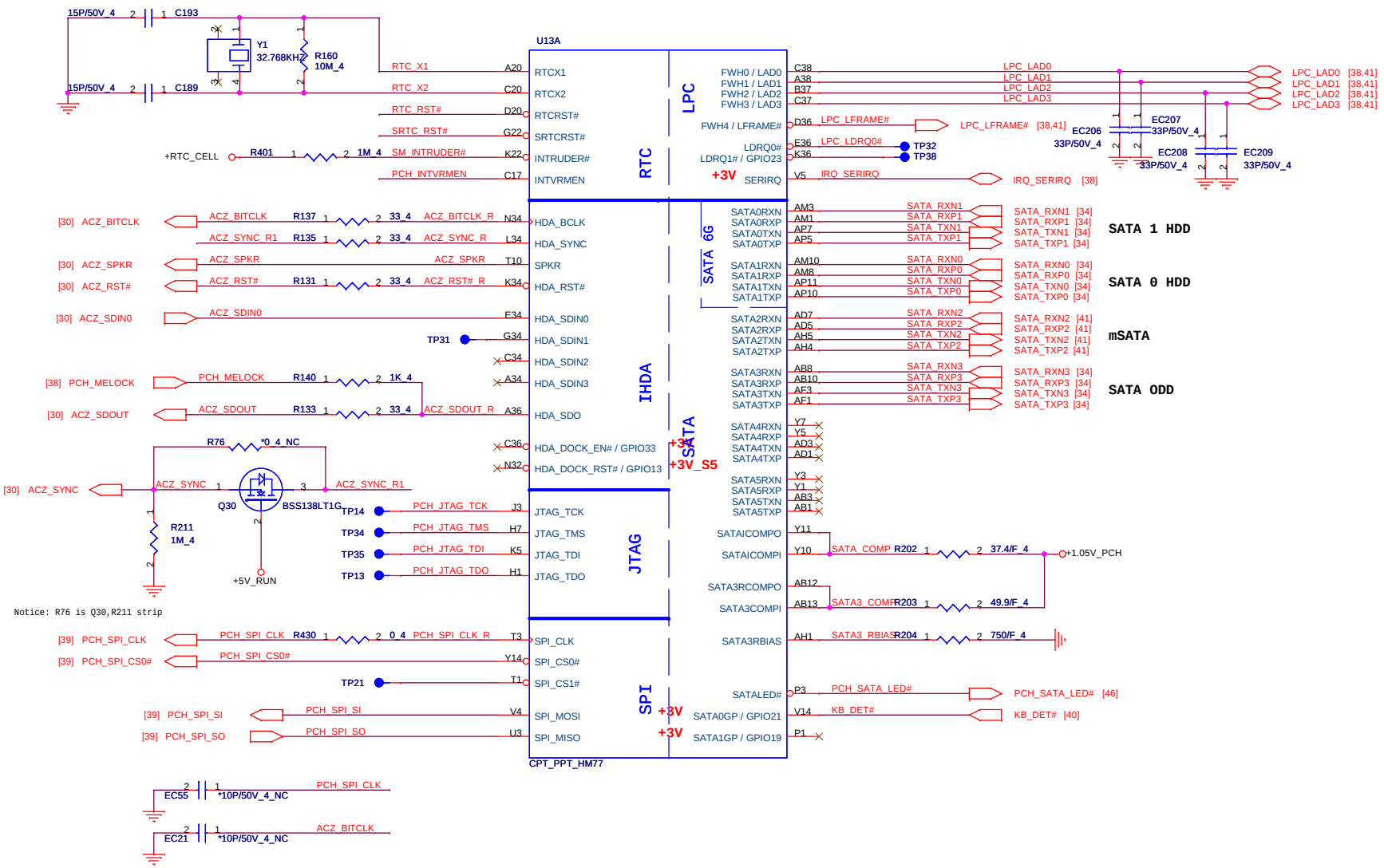
Cougar Point/Panther Point (HDA,JTAG,SATA)



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	**NC**
HDA_SDO	Flash Descriptor Security	PWROK	0 = Default (weak pull-down 20K) 1 = Override	**NC**
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+RTC_CELL R162 330K_4 PCH_INTVRMEN
HDA_SYNC	On-Die PLL VR Volatge Select	RSMRST	0 = Support by 1.8V (weak PD) 1 = Support by 1.5V	+3.3V_SUS R134 1K_4 ACZ_SYNC_R

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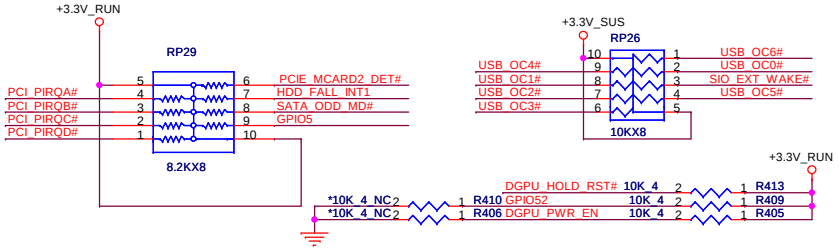
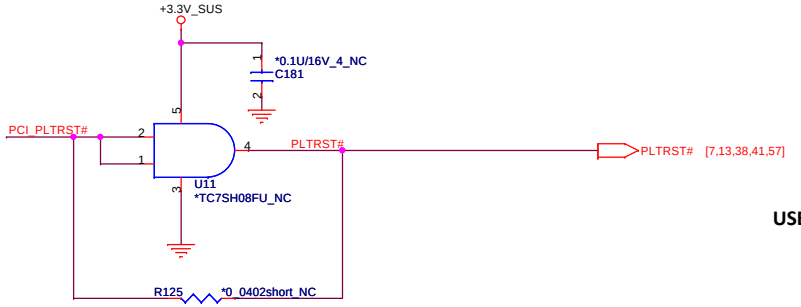
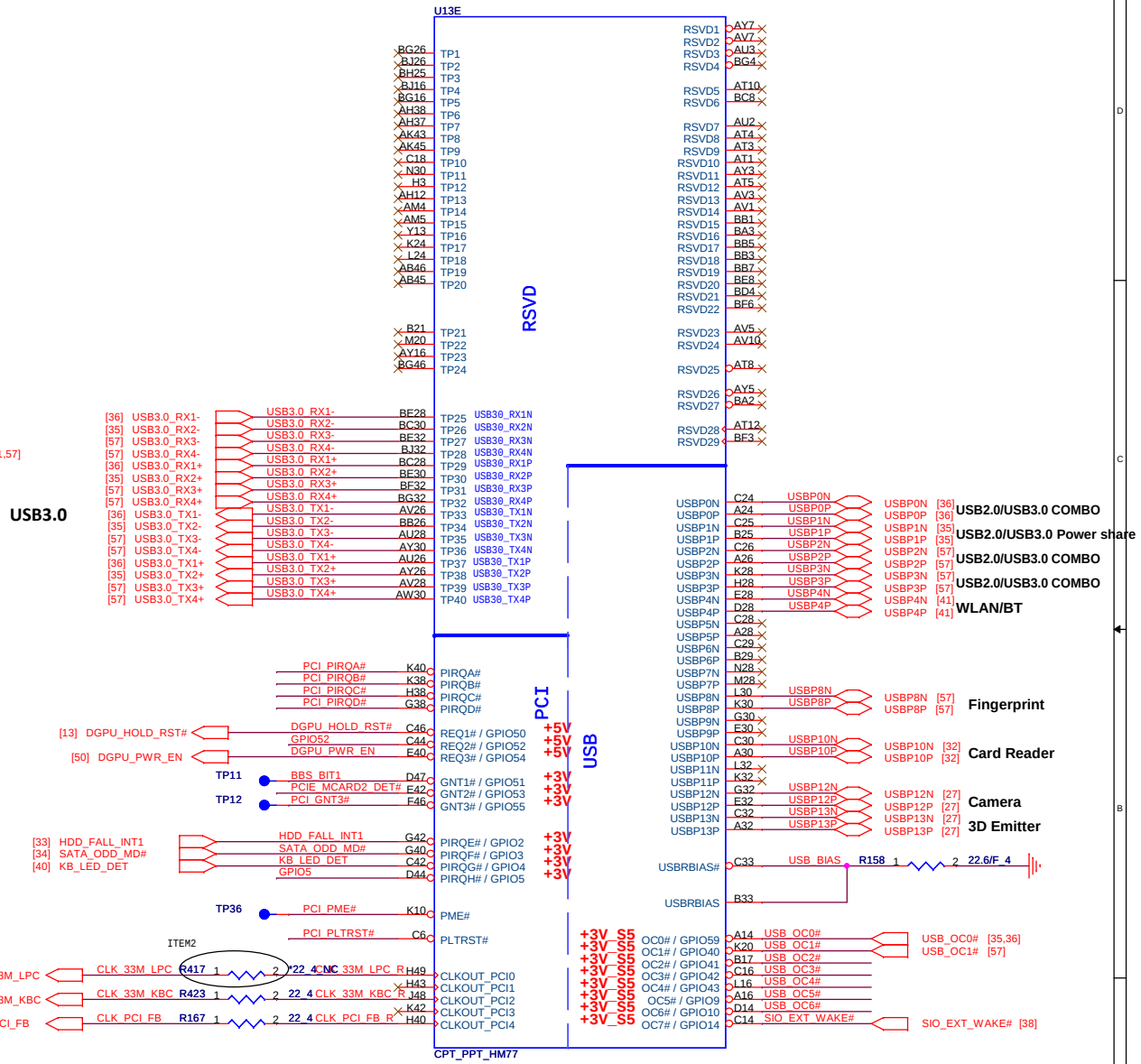
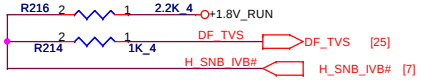
Cougar Point-M/Panther Point (PCI,USB,NVRAM)







Pin Name	Strap description	Sampled	Configuration
GNT2# / GPIO53	ESI strap (Server only)	PWROK	Should not be pull-down (weak pull-up 20K)
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	Bit 0 / Bit 1 / Boot Location 1 / 1 / SPI *
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK	0 / 0 / LPC
			Default weak pull-up on GNT0/1# **[Need external pull-down for LPC BIOS]**
DF_TVS	DMI and FDI Tx/Rx Termination Voltage	PWROK	weak pull-down 20kohm



Quanta Computer Inc.

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	Panther Point 4/7	3A

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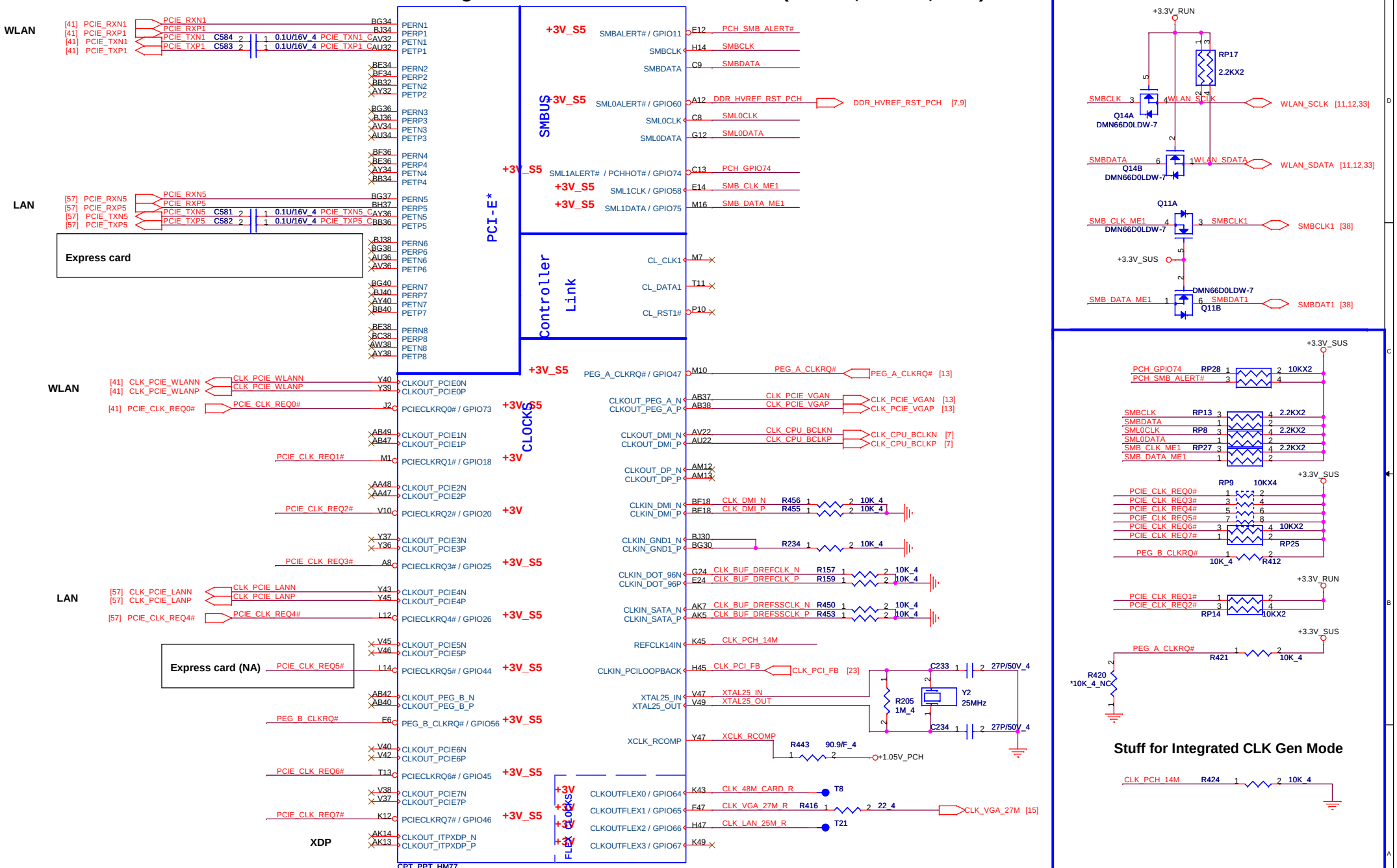
U13B Cougar Point-M/Panther Point (PCI-E,SMBUS,CLK)



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

SMBus/Pull-up(CLG)

Stuff for Integrated CLK Gen Mode

Quanta Computer Inc.		
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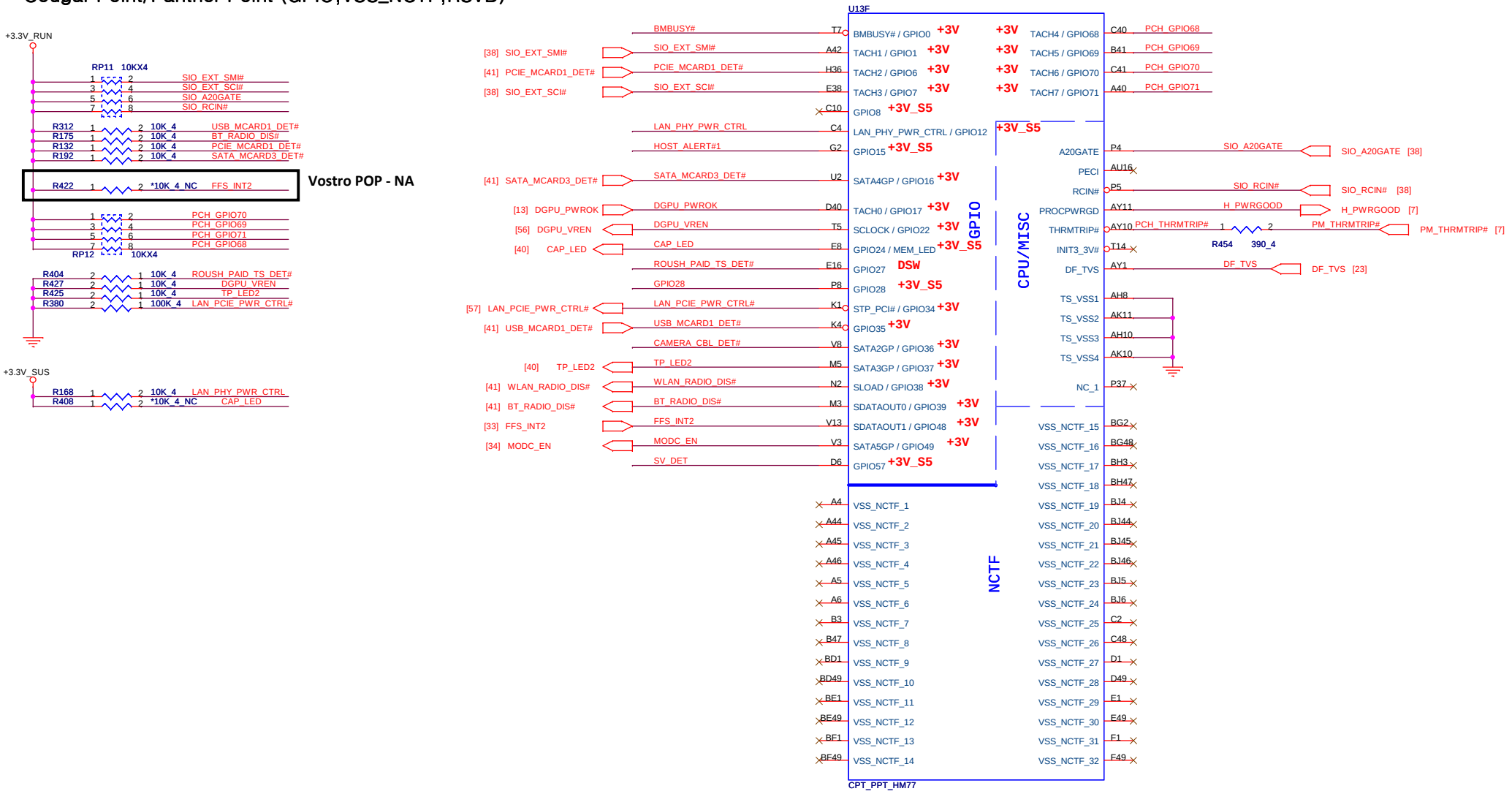
Cougar Point/Panther Point (GPIO,VSS_NCTF,RSVD)



Pin Name	Strap description	Sampled	Configuration
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)

R426 *1K_4_NC GPIO28

CHECK LIST:
When Unused as GPIO or SATA*GP - Use 8.2K-10K pull-down to ground.

CAMERA_CBL_DET# R439 10K_4

+3.3V_RUN
BMBUSY# R435 10K_4

BMBUSY#:
If not used, require a weak pull-up (8.2- KΩ to 10 kΩ) to Vcc3_3.
CRB(V1.0)P28: it has 1K PU and 100 ohm on this net for validation purpose.

+3.3V_SUS
HOST_ALERT#1 R170 1K_4

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

+3.3V_SUS
R411 10K_4 SV_DET

MFG - TEST

+3.3V_RUN
WLAN_RADIO_DIS# R182 10K_4
R181 *0_4_NC

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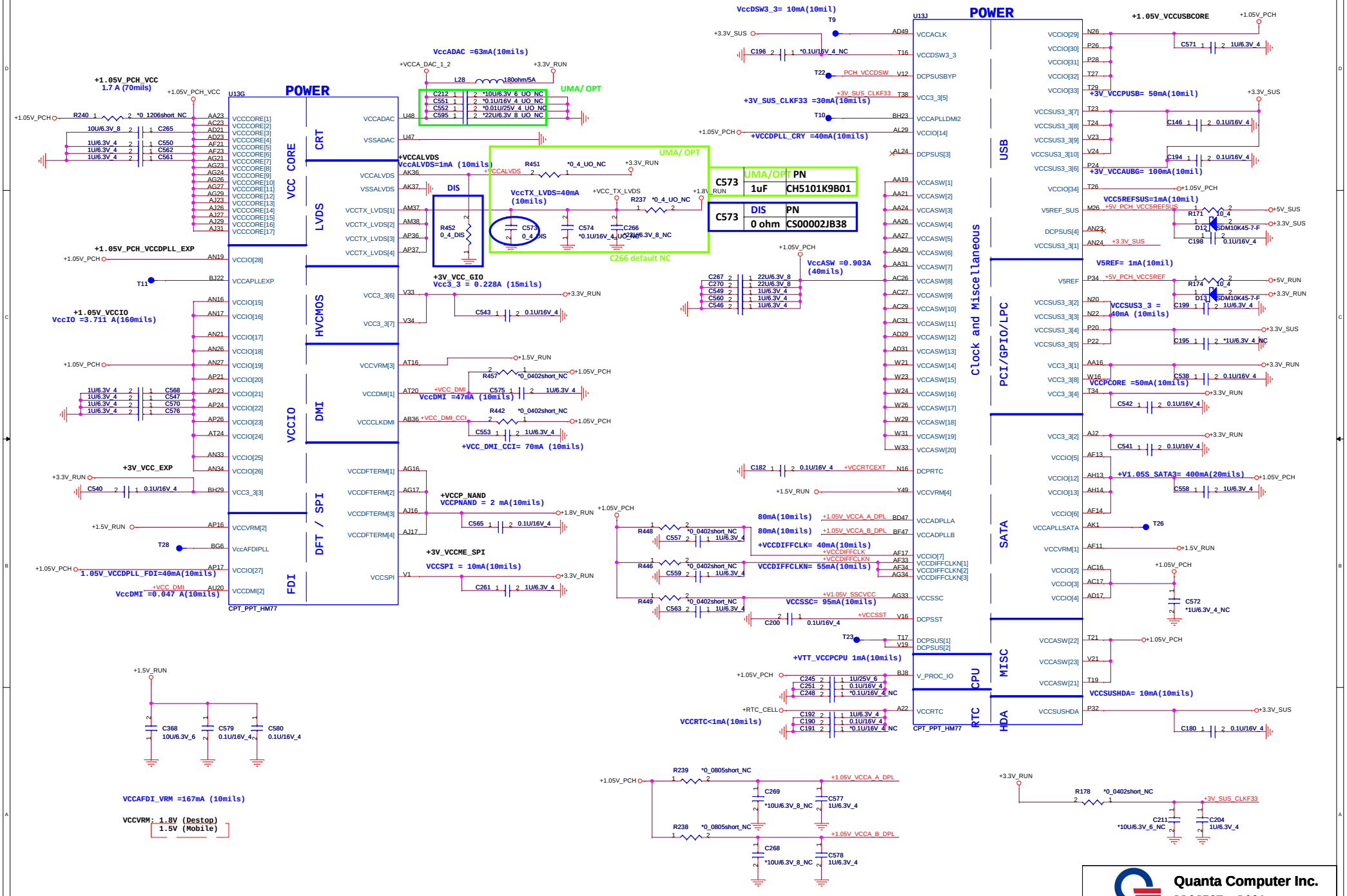
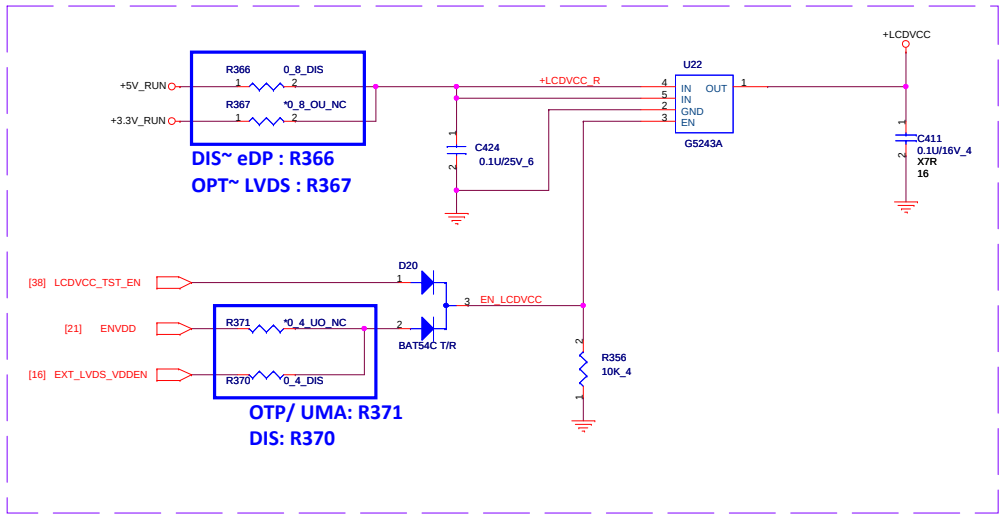
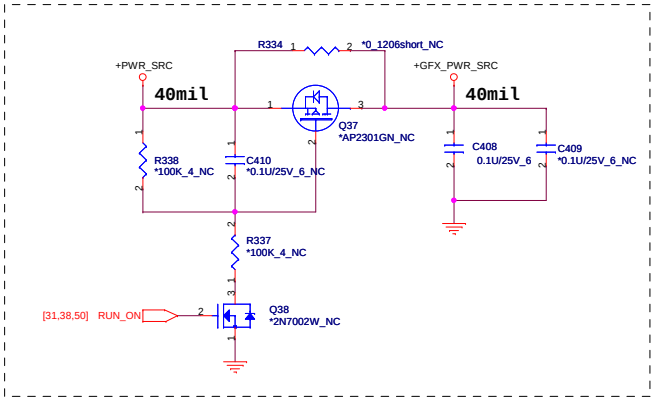
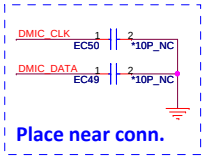
Cougar Point/Panther Point (POWER)

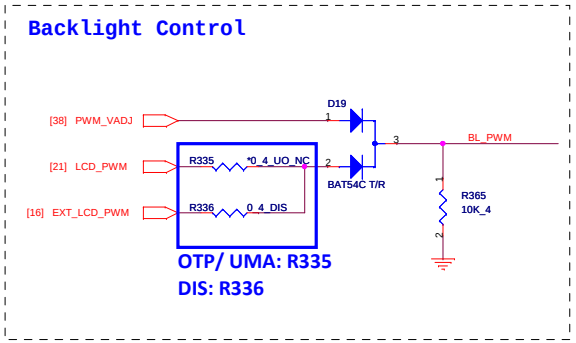
Cougar Point/Panther Point (POWER)

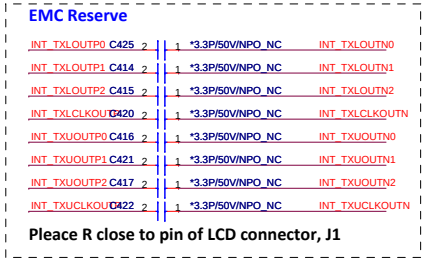


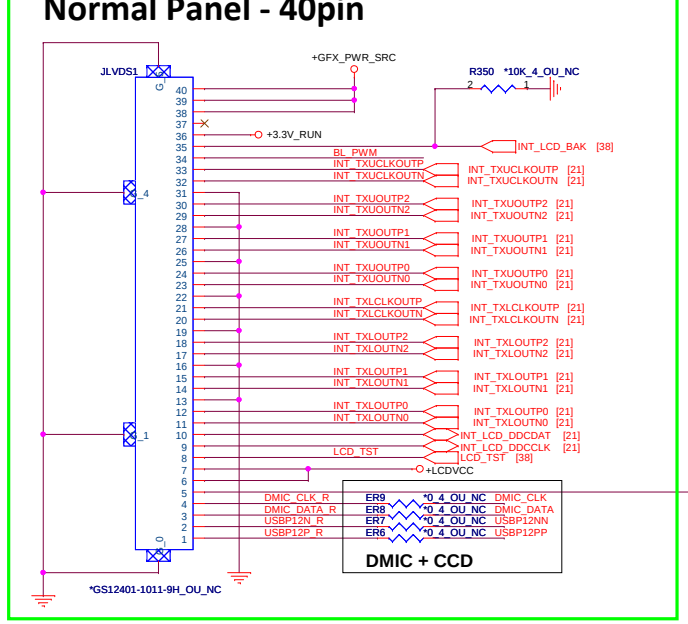


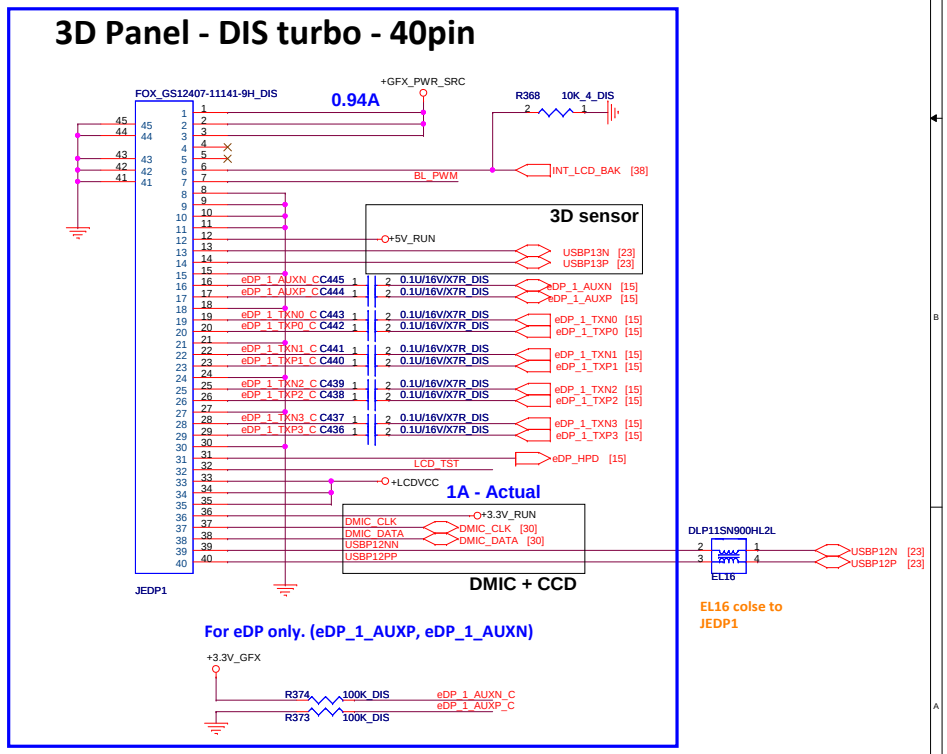












Quanta Computer Inc.
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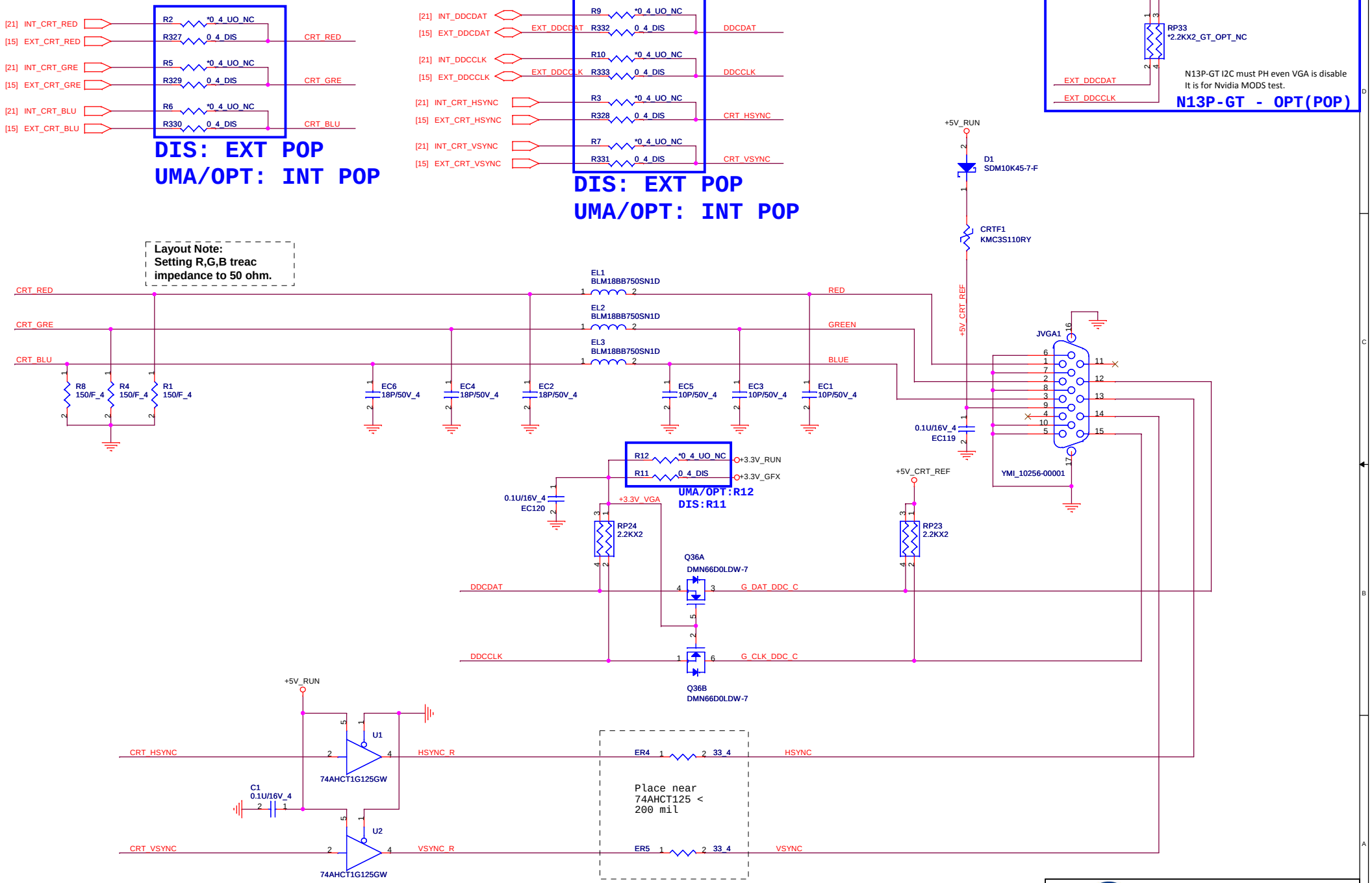
VGA



Quanta Computer Inc.		
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HDMI W/O Re-driver

DIS HDMI

[15] EXT_HDMI_TXP2	EXT_HDMI_TXP2	C239	0.1U/16V_4_DIS	HDMI_TX2+_R
[15] EXT_HDMI_TXN2	EXT_HDMI_TXN2	C237	0.1U/16V_4_DIS	HDMI_TX2-_R
[15] EXT_HDMI_TXP1	EXT_HDMI_TXP1	C236	0.1U/16V_4_DIS	HDMI_TX1+_R
[15] EXT_HDMI_TXN1	EXT_HDMI_TXN1	C235	0.1U/16V_4_DIS	HDMI_TX1-_R
[15] EXT_HDMI_TXP0	EXT_HDMI_TXP0	C241	0.1U/16V_4_DIS	HDMI_TX0+_R
[15] EXT_HDMI_TXN0	EXT_HDMI_TXN0	C244	0.1U/16V_4_DIS	HDMI_TX0-_R
[15] EXT_HDMI_TXCP	EXT_HDMI_TXCP	C250	0.1U/16V_4_DIS	HDMI_CLK+_R
[15] EXT_HDMI_TXCN	EXT_HDMI_TXCN	C247	0.1U/16V_4_DIS	HDMI_CLK-_R

OTP/UMA HDMI

[21] INT_HDMI_TXP2_C	INT_HDMI_TXP2_C	C240	*0.1U/16V_4_UO_NC	HDMI_TX2+_R
[21] INT_HDMI_TXN2_C	INT_HDMI_TXN2_C	C238	*0.1U/16V_4_UO_NC	HDMI_TX2-_R
[21] INT_HDMI_TXP1_C	INT_HDMI_TXP1_C	C232	*0.1U/16V_4_UO_NC	HDMI_TX1+_R
[21] INT_HDMI_TXN1_C	INT_HDMI_TXN1_C	C226	*0.1U/16V_4_UO_NC	HDMI_TX1-_R
[21] INT_HDMI_TXP0_C	INT_HDMI_TXP0_C	C242	*0.1U/16V_4_UO_NC	HDMI_TX0+_R
[21] INT_HDMI_TXN0_C	INT_HDMI_TXN0_C	C246	*0.1U/16V_4_UO_NC	HDMI_TX0-_R
[21] INT_HDMI_TXCP_C	INT_HDMI_TXCP_C	C252	*0.1U/16V_4_UO_NC	HDMI_CLK+_R
[21] INT_HDMI_TXCN_C	INT_HDMI_TXCN_C	C249	*0.1U/16V_4_UO_NC	HDMI_CLK-_R

EL7: HDMI_TX2+_R / HDMI_TX2-_R → HDMI_TX2+_C / HDMI_TX2-_C, EXC24CG900U

EL8: HDMI_TX0+_R / HDMI_TX0-_R → HDMI_TX0+_C / HDMI_TX0-_C, EXC24CG900U

EL6: HDMI_TX1+_R / HDMI_TX1-_R → HDMI_TX1+_C / HDMI_TX1-_C, EXC24CG900U

EL9: HDMI_CLK+_R / HDMI_CLK-_R → HDMI_CLK+_C / HDMI_CLK-_C, EXC24CG900U

[15] EXT_HDMI_SCL	EXT_HDMI_SCL	R191	0_4_DIS	HDMI_SCL
[21] INT_HDMI_SCL	INT_HDMI_SCL	R187	*0_4_UO_NC	
[15] EXT_HDMI_SDA	EXT_HDMI_SDA	R195	0_4_DIS	HDMI_SDA
[21] INT_HDMI_SDA	INT_HDMI_SDA	R199	*0_4_UO_NC	
[15] EXT_HDMI_HPD_R	EXT_HDMI_HPD_R	R198	0_4_DIS	HDMI_HPD_Q
[21] INT_HDMI_HPD_Q	INT_HDMI_HPD_Q	R189	*0_4_UO_NC	

DIS - R191,R195,R198
UMA/OPT - R187,R199,R189

R213	499_4	HDMI_TX2+_R
R210	499_4	HDMI_TX2-_R
R209	499_4	HDMI_TX1+_R
R206	499_4	HDMI_TX1-_R
R215	499_4	HDMI_TX0+_R
R220	499_4	HDMI_TX0-_R
R224	499_4	HDMI_CLK+_R
R221	499_4	HDMI_CLK-_R

+3.3V_RUN — Q18 2N7002W

R691~702
UMA/OPT -- 680 ohm PN: CS16802JB27
DIS ----- 499 ohm PN: CS14992FB24

HDMI HPD

HDMI_HPD spec
VinH_min=2.0V

+3.3V_RUN — Q16 MMST3904-7-F — 150K — R196 — HDMI_HPD

HDMI_HPD_Q — R194 5.11K/F_4

IB=(5V-0.7V)/(150K+(70+1)5.1K)=8.4uA
IE=(1+70)X8.4uA=596.4uA
VE=596.4uA X 5.1K=3.04V
B=70

+3.3V_RUN / +3.3V_GFX — R37 *0_4_UO_NC / R42 0_4_DIS

UMA/OPT:R37
DIS:R42

+3.3V_HDMI — RP16 4.7KX2

HDMI_SCL — Q15 FDV301N

HDMI_SDA — Q17 FDV301N

+5V_HDMI — D14 SDM10K45-7-F / D21 SDM10K45-7-F

+5V_HDMIF1_D / +5V_HDMIF2_D — RP18 2.2KX2

HDMIF1 — KMC3S110RY — +5V_RUN

HDMI Conn.

CN5 DFHD19MR203, TYPE A

1	HDMI_TX2+_C
2	
3	HDMI_TX2-_C
4	HDMI_TX1+_C
5	
6	HDMI_TX1-_C
7	HDMI_TX0+_C
8	
9	HDMI_TX0-_C
10	HDMI_CLK+_C
11	
12	HDMI_CLK-_C
13	
14	
15	HDMI_CLK
16	HDMI_DAT
17	
18	+5V_HDMI
19	HDMI_HPD
20	GND
21	GND
22	GND
23	GND

Quanta Computer Inc.
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CODEC

[22] ACZ_BITCLK — R274 *0_0402short_NC — ACZ_BITCLK_CODEC

EC41 *22P_NC

For EMI solution, can be reserved, place close to pin6

Notes:
Keep PVDD supply and speaker traces routed on the DGND plane.
Keep away from AGND and other analog signals

+5V_RUN — R302 *0_0805short_NC — +5V_AVDD

+3.3V_SUS, +3.3V_RUN

C360 0.1U/16V_4 | C359 1U/6.3V_4 | C358 0.1U/16V_4 | C361 10U/6.3V_6

DVDD_IO should match with HDA Bus level

+5V_AVDD

C384 10U/6.3V_6 | C393 1U/6.3V_4 | C394 0.1U/16V_4

1A max current

C374 10U/6.3V_6 | C380 0.1U/16V_4 | C370 *10U/6.3V_6_NC | C371 *0.1U/16V_4_NC

U20

1	DVDD_CORE	AVDD1 / AVDD2	27 / 38
3	DVDD_IO	PVDD1 / PVDD2	45 / 39
9	DVDD	SENSE_A / SENSE_B	13 / 14
6	HDA_BITCLK	HP0_PORTA_L / HP0_PORTA_R / VREFOUT_A	28 / 29 / 23
5	HDA_SDO	HP1_PORTB_L / HP1_PORTB_R	31 / 32
10	HDA_SYNC	PORTC_L / PORTC_R / VREFOUT_C/GPIO4	19 / 20 / 24
8	HDA_SDI	PORTE_L / PORTE_R	15 / 16
11	HDA_RST#	PORTF_L / PORTF_R	17 / 18
47	EAPD	SPK_PORTD_+L / SPK_PORTD_-L	40 / 41
2	DMIC_CLK/GPIO1 / DMIC0/GPIO2	SPK_PORTD_+R / SPK_PORTD_-R	44 / 43
48 / 46	SPDIFOUT0/GPIO3 / DMIC1/GPIO0/SPDIFOUT1	MONO_OUT	25
36	CAP+	PCBEEP	12
35	CAP-	VREFFILT / CAP2 / V- / VREG(+2.5V)	21 / 22 / 34 / 37
7 / 42 / 49	DVSS / PVSS / PAD	AVSS1 / AVSS2 / AVSS3	26 / 30 / 33

92HD94B2X5NLGXYAX

ACZ_BITCLK_CODEC
[22] ACZ_SDOUT — ACZ_SDOUT
[22] ACZ_SYNC — ACZ_SYNC
[22] ACZ_SDIN0 — ACZ_SDIN0 — R277 33_4 — ACZ_SDIN0_CODEC
[22] ACZ_RST# — ACZ_RST#

+3.3V_RUN — R286 10K_4

[31,38] NB_MUTE#

[27] DMIC_CLK — ER3 *0_0402short_NC — DMIC_CLK_ER
[27] DMIC_DATA — ER2 *0_0402short_NC — DMIC_DATA_ER

EC39 *10P_NC | EC38 *10P_NC

C396 4.7U/6.3V_6

SENSE_A — R282 20K/F_4 — HP_JD#
SENSE_B — R278 39.2K/F_4 — MIC_JD#

MIC1_L | MIC1_R | MIC1_VREFOUT

HP_OUT_L | HP_OUT_R

SPK_PORTD_+L — AUD_SPK_L+ [31]
SPK_PORTD_-L — AUD_SPK_L- [31]
SPK_PORTD_+R — AUD_SPK_R+ [31]
SPK_PORTD_-R — AUD_SPK_R- [31]
MONO_OUT — SUB_OUT [31]

AUD_PCBEEP — C364 0.1U/16V_4 — C375 0.1U/16V_4

R273 100K/F_4 — ACZ_SPKR — ACZ_SPKR [22]
R290 100K/F_4 — BEEP — BEEP [38]

C387 4.7U/6.3V_6 | C395 4.7U/6.3V_6 | C383 1U/6.3V_4 | C379 10U/6.3V_6

AGND

PLACE CLOSE TO U1 PIN 13

+5V_AVDD — R280 2.49K/F_4 1% — SENSE_A — C369 1000P/50V_4 — AGND

PLACE CLOSE TO U1 PIN 14

+5V_AVDD — R291 10K_4 — SENSE_B

If Sense_B is un-used, then pull high Sense_B to AVDD by 10Kohm resistor

R303 *0_0603short_NC
R271 *0_0603short_NC
R270 *0_0603short_NC
R269 *0_0603short_NC
AGND

Tied at one point only under the 92HD94 or near it.
QT change to short pad

Place C14~C17 close to Codec

R295 10K_4 | R276 10K_4

Recommend to divide the amplitude of BEEP signal before input to PCBEEP pin.
R20,R21 are optional.

HP Jack

CON6

HP_OUT_L — R298 30/F_4 — HP_OUT_L_R — L12 HCB1608KF-601T10 — HP_OUT_L_RL
HP_OUT_R — R305 30/F_4 — HP_OUT_R_R — L14 HCB1608KF-601T10 — HP_OUT_R_RL

HP_JD#

C399 0.01U/25V_4 | C377 0.01U/25V_4

AUDIO JACK 5P FR(H3.9)
Normal Open

AGND

C352 1U/6.3V_4

MIC1_VREFOUT — R272 4.7K_4 — R275 4.7K_4 — AGND

L24.L25,L30,L31, FB_600ohm+-25%_100MHz _200mA_0.6ohm DC

MIC Jack

CON5

MIC1_L — C349 2.2U/6.3V_6 — MIC1_L_C — L9 HCB1608KF-601T10 — MIC1_L_CL
MIC1_R — C357 2.2U/6.3V_6 — MIC1_R_C — L10 HCB1608KF-601T10 — MIC1_R_CL

MIC_JD#

C362 220P/50V_4 | C347 220P/50V_4

AUDIO JACK 5P FR(H3.9)
Normal Open

AGND

Quanta Computer Inc.
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	CODEC	3A

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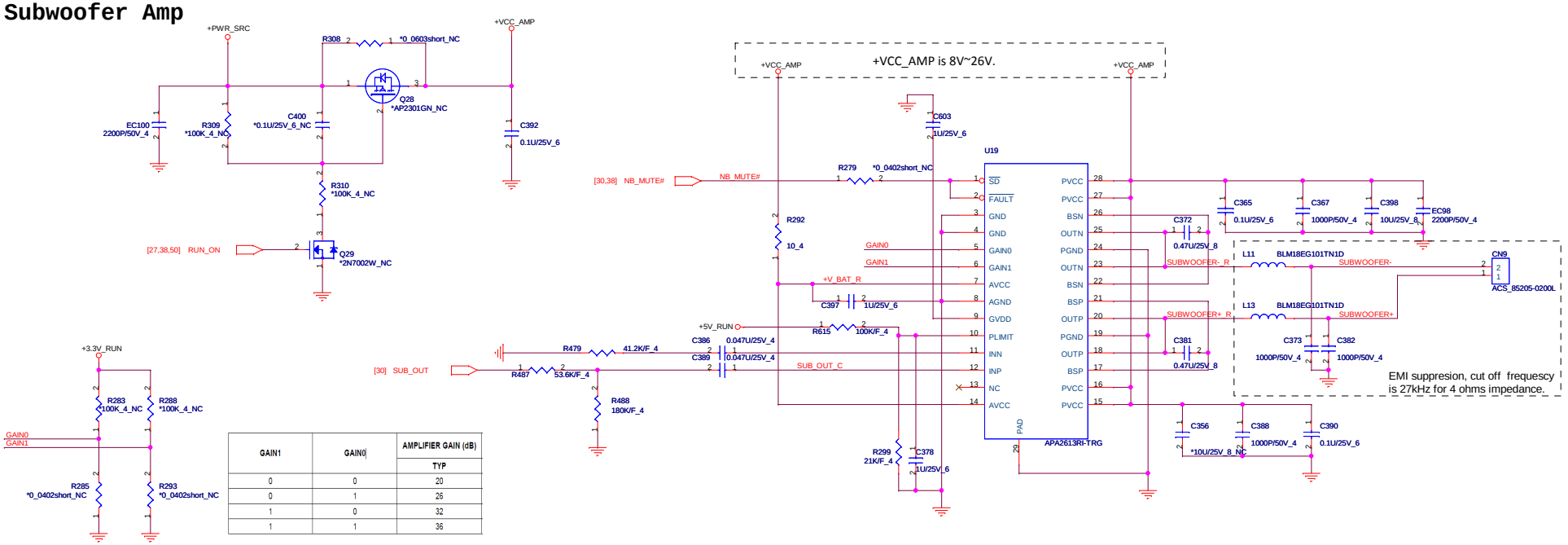
Subwoofer Amp

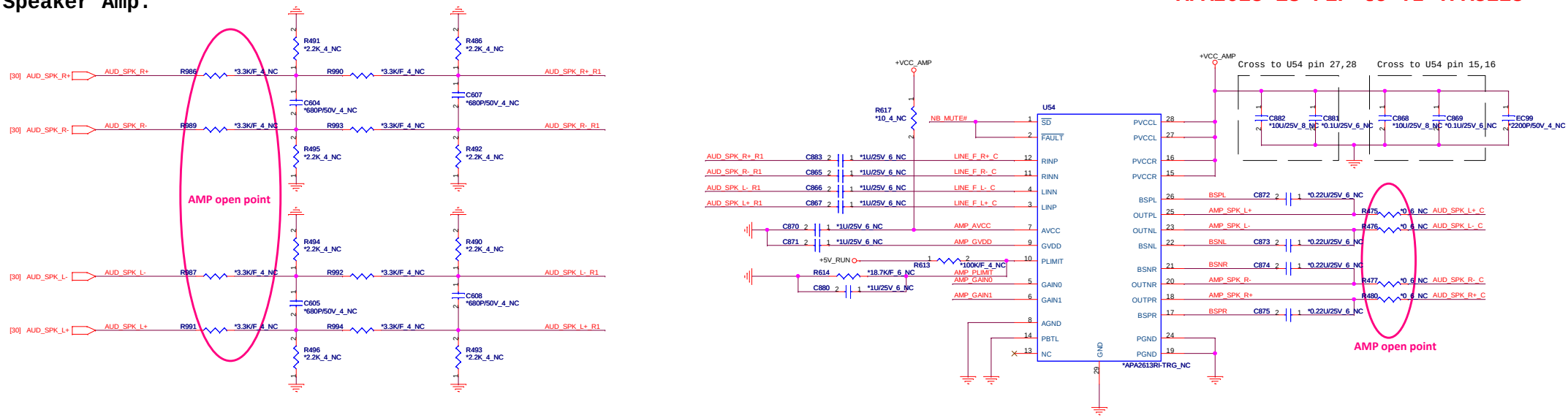


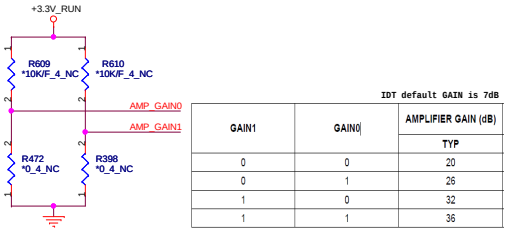
GAIN1	GAIN0	AMPLIFIER GAIN (dB)
		TYP
0	0	20
0	1	26
1	0	32
1	1	36

Speaker Amp.

R491,R495,R494,R496 default NC

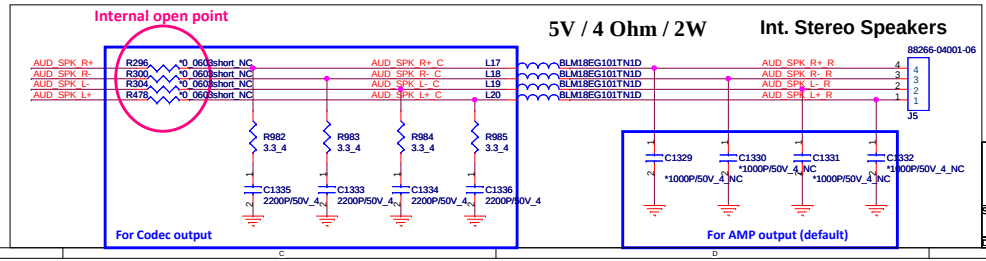
APA2613 is P2P to TI TPA3113





IDT default GAIN is 7dB

GAIN1	GAIN0	AMPLIFIER GAIN (dB)
		TYP
0	0	20
0	1	26
1	0	32
1	1	36



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	WOOFER	3A
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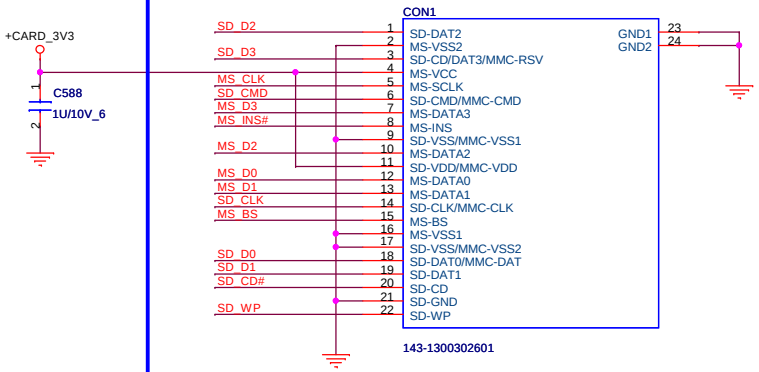
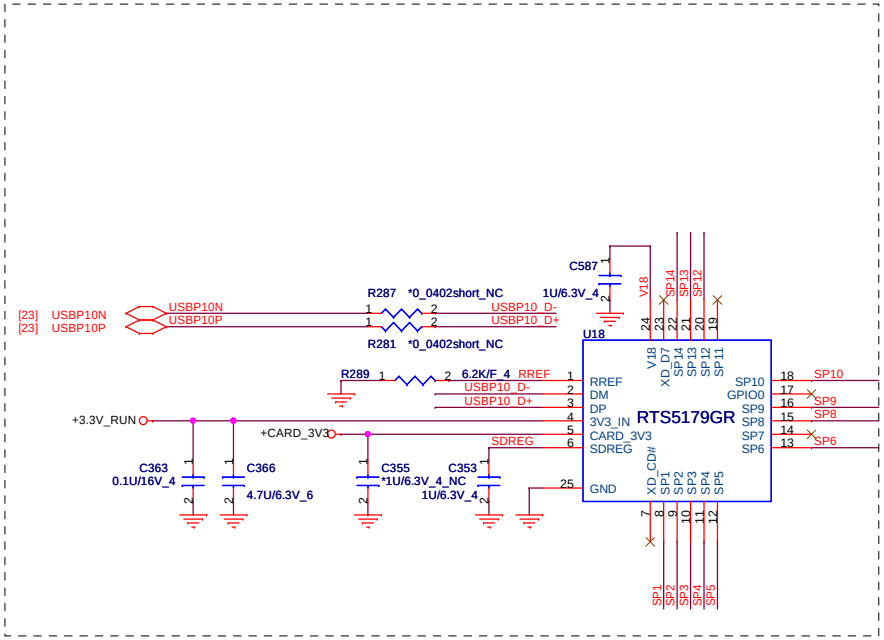
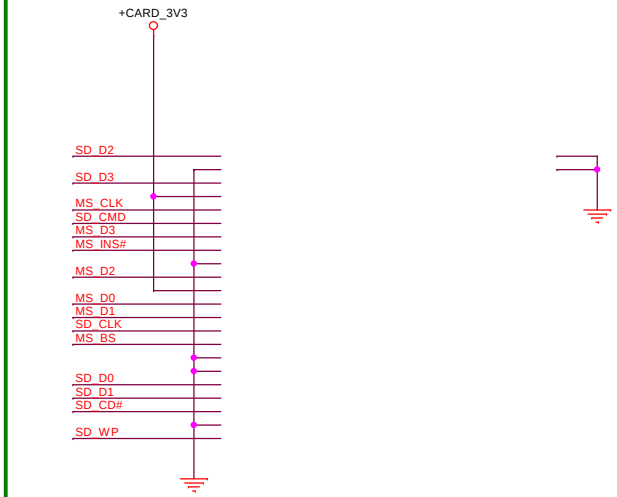
Cardreader (RTS5179GR) Support SD3.0 USH50

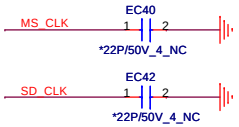
For INSPIRON Placement (R09,R09A,R09T)

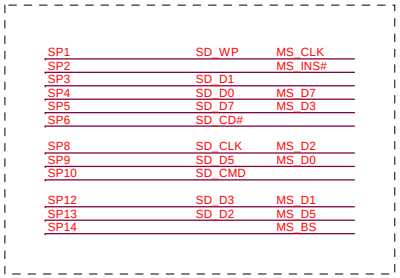




NA







Share Pin

Quanta Computer Inc.		
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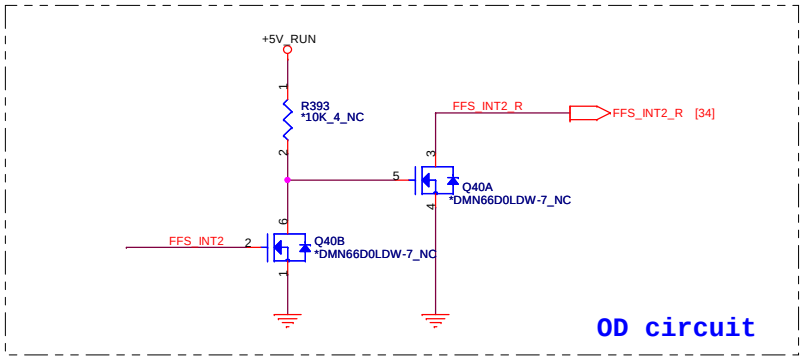
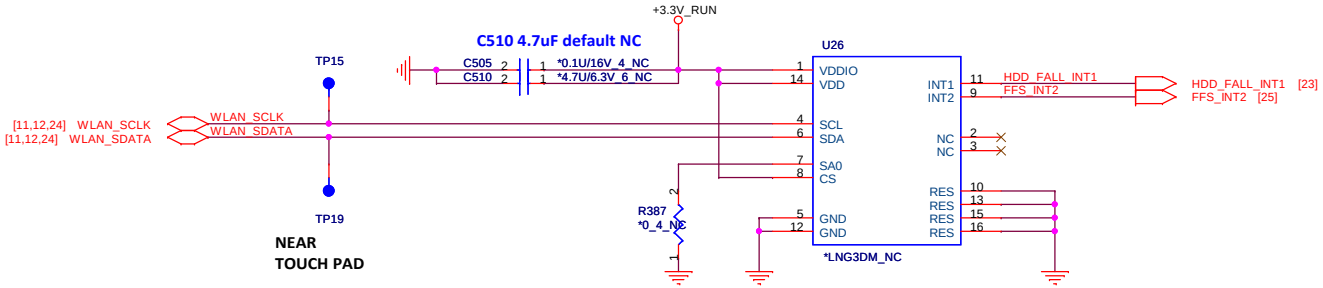
3-axis Fall Sensor - NC





SA0 is low: I2C device address is 00110000 (30h)

SA0 is high: I2C device address is 00110010 (32h)

Quanta Computer Inc.

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	3-axis Fall Sensor	3A
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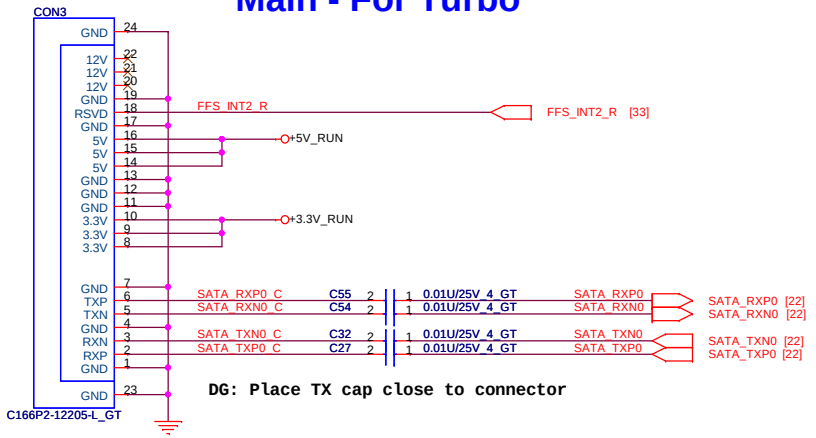
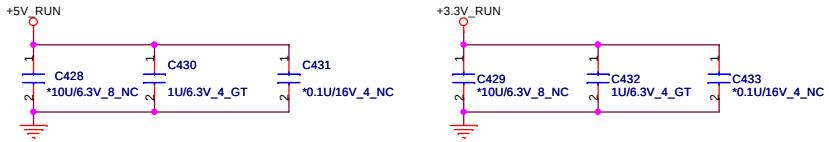
HDDX2

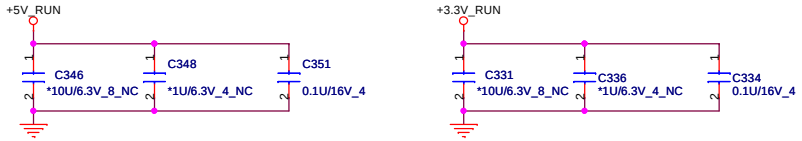
Main - For Turbo



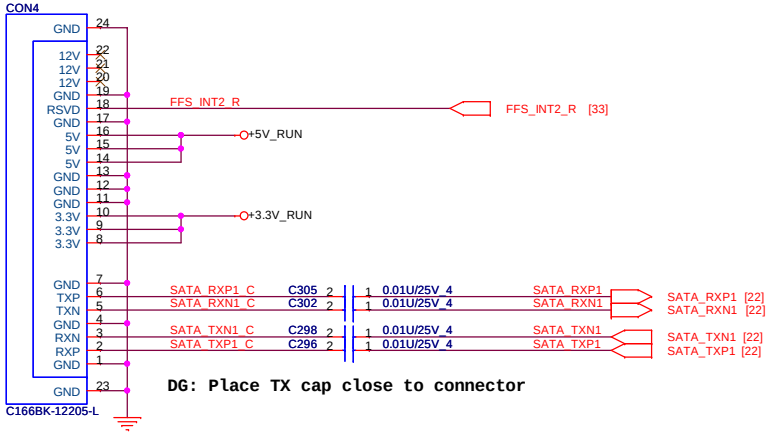


Default C351, C430 POP

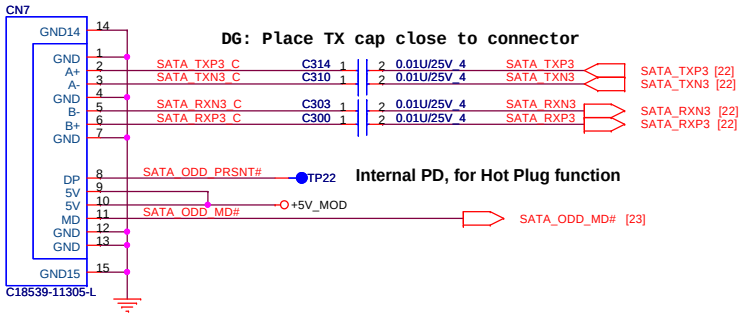
Default C334, C432 POP

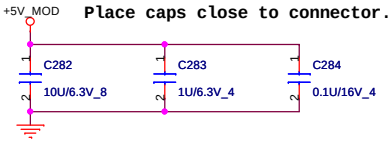


Second - For Inspiron

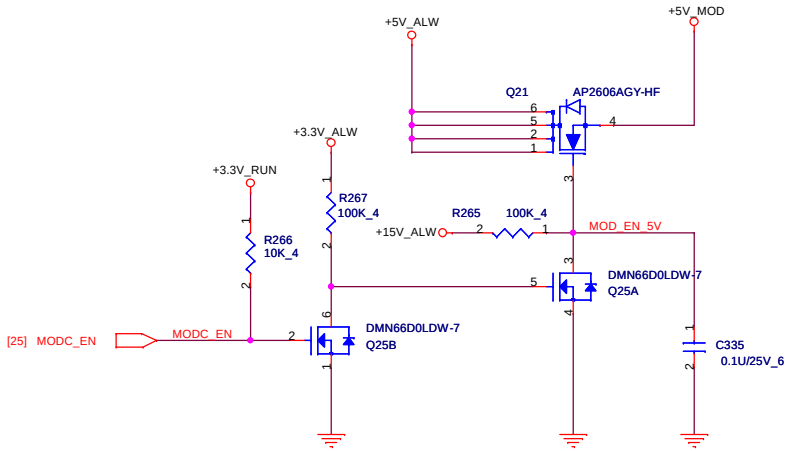


ODD





Support Zero power ODD



Quanta Computer Inc.

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	SATA HDD/ODD	3A

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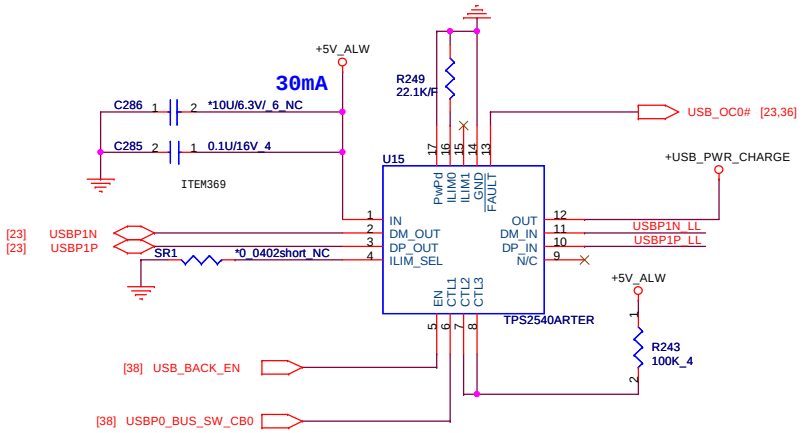
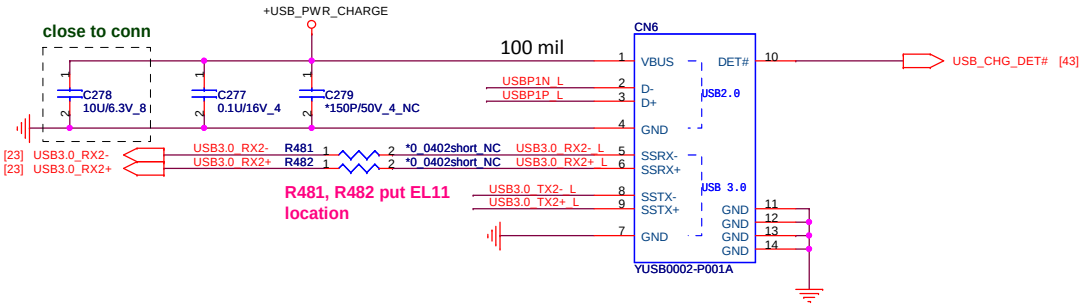
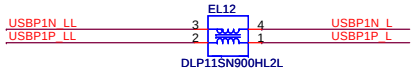
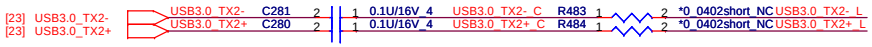
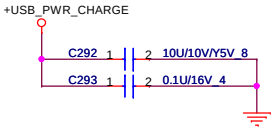
USB3.0x1 with Power share







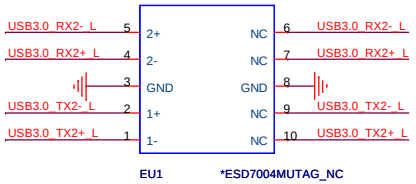




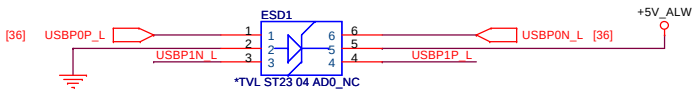
	R249	mA	
OC limitation	100k ohm	480	
	22.1k ohm	2171	Applied Now

USBP0_BUS_SW_CB0	Mode	Operating at
Low	DCP, Auto-detect	S3/S4/S5, 1.5 A
High	CDP, BC Spec 1.1	S0, 1.5 A

USB 3.0 ESD



USB 2.0 ESD



Quanta Computer Inc.

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	USB3.0 POWER SHARE	3A

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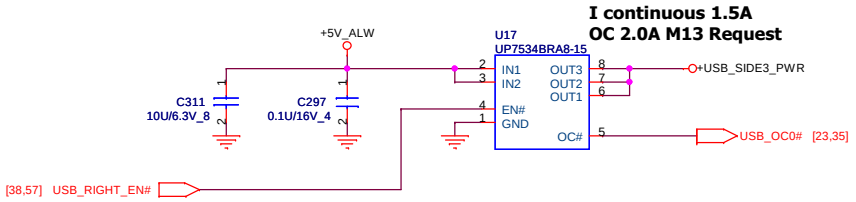
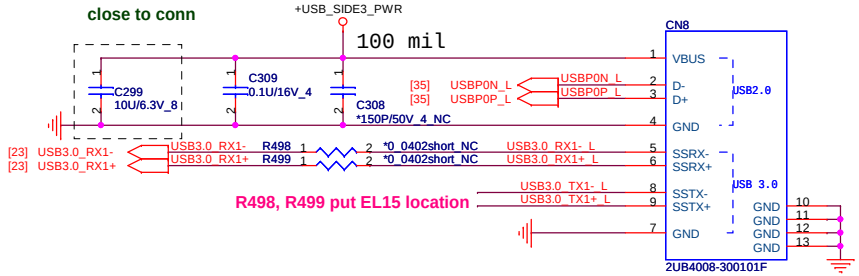
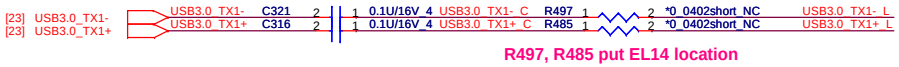
USB3.0x1

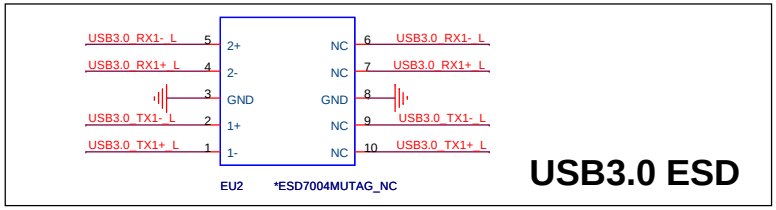


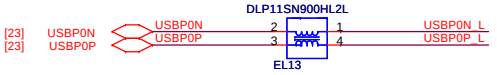


R498, R499 put EL15 location



R497, R485 put EL14 location





Quanta Computer Inc.

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Size	Document Number	Rev
	USB 3.0 port	3A

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H19 *h-tc315bc236d118p2 h-tc315bc236d118p2
H24 *h-tc315bc236d118p2 H-TC315BC256D118P2
H23 *h-tc315bc236d118p2 h-tc315bc236d118p2
H20 *h-tc315bc236d118p2 h-tc315bc236d118p2
H25 *h-tc315bc354d118p2 h-tc315bc354d118p2
H18 *H-C433D433N H-C433D433N
H21 *o-r09-2 H-TC315BC236D118P2
H3 *o-r09-2 H-C118D118N
H2 *h-o189x228d189x228n h-o189x228d189x228n
H17 *H-O181X104D181X104N H-O181X104D181X104N
H6 *h-tc335bc315D118p2 h-tc335bc315D118p2
H12 *H-TC354BC315D118P2 H-TC354BC315D118P2
H22 *H-TC315BC354D118P2 H-TC315BC354D118P2
H5 *H-TC354BC315D118P2 H-TC354BC315D118P2
H10 *H-TC472BC315D118P2 H-TC472BC315D118P2
H13 *o-r09-1 o-r09-1
H7 *H-C154D154N H-C154D154N
H1 *H-C102D102N H-C102D102N
H4 *H-tc243bc154d154pt H-tc243bc154d154pt
H9 *H-C189D189N H-C189D189N
H16 *h-o165x106d165x106n h-o165x106d165x106n
H26 *O-R09-3 O-R09-3
H11 INTEL-CPU-BKT2 *INTEL-CPU-BKT2
CPU BLEKET
H8 H-TC217BC102D102PT H-TC217BC102D102PT
CPU NUT
MBIM3001010
H14 H-TC217BC102D102PT H-TC217BC102D102PT
mSATA NUT
MBIM3001010
H15 H-TC217BC65D61PT H-TC217BC65D61PT
WLAN NUT
FBFM8001010
+3.3V_SUS
Near H14
EC62 2200P/50V_4
EC63 1000P/50V_4
H27 *PAD-C197 PAD-C197
H28 *PAD-C177 PAD-C177
+3.3V_RUN
Near H22
EC64 2200P/50V_4
H29 *PAD-C189 PAD-C189
H30 *PAD-C189 PAD-C189
Near
C423/ESD2/H8/PR204/PR235/pq20/PL5/PC121/H10/R334/PL7/EC45
+PWR_SRC
EC66 1000P/50V_4
EC67 0.1U/25V_6
+PWR_SRC
EC77 2200P/50V_4
EC78 1000P/50V_4
EC79 0.1U/25V_6
+PWR_SRC
EC95 2200P/50V_4
EC97 0.1U/25V_6
+5V_ALW
EC96 2200P/50V_4
Near H26
+5V_ALW
EC102 0.1U/25V_6
Near EC96
+PWR_SRC
EC68 2200P/50V_4
EC69 1000P/50V_4
EC70 0.1U/25V_6
+PWR_SRC
EC80 2200P/50V_4
EC81 1000P/50V_4
EC82 0.1U/25V_6
+PWR_SRC
EC71 2200P/50V_4
EC72 1000P/50V_4
EC73 0.1U/25V_6
+PWR_SRC
EC83 2200P/50V_4
EC84 1000P/50V_4
EC85 0.1U/25V_6
+PWR_SRC
EC90 2200P/50V_4
EC89 1000P/50V_4
EC91 0.1U/25V_6
+VCC_DGFX_CORE
EC121 100P/50V_4
EC122 100P/50V_4
EC123 100P/50V_4
+PWR_SRC
EC74 2200P/50V_4
EC75 1000P/50V_4
+PWR_SRC
EC86 2200P/50V_4
EC87 1000P/50V_4
EC88 0.1U/25V_6
+PWR_SRC
EC93 2200P/50V_4
EC92 1000P/50V_4
EC94 0.1U/25V_6
Spring
S1 RHC-CP-55B01 SPAD-RE167X98
L5.6*W2.5*H5.5
S2 RHC-CP-25L03 SPAD-RE110X79
L3.5*W2.0*H2.5
AOI label
AOI LABEL on 31 header
PPID label
PPID LABEL on 31 header
AOI label
AOI LABEL on 31 header
Quanta Computer Inc.
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SCREW HOLE
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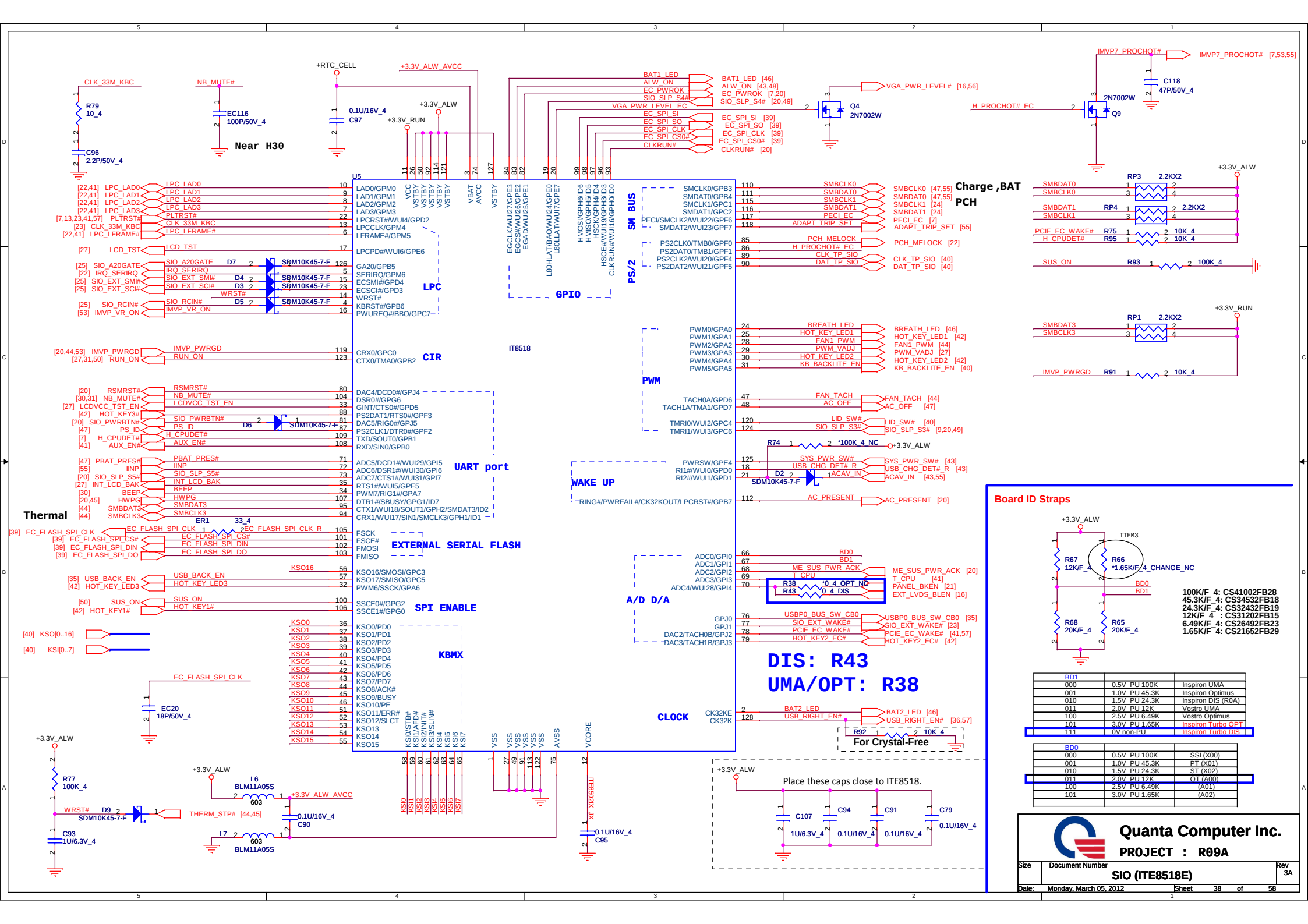
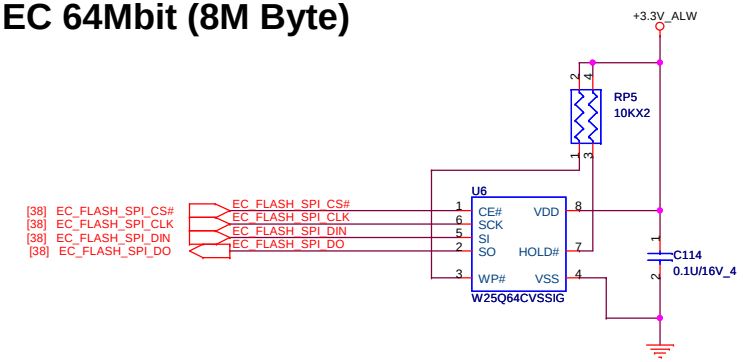
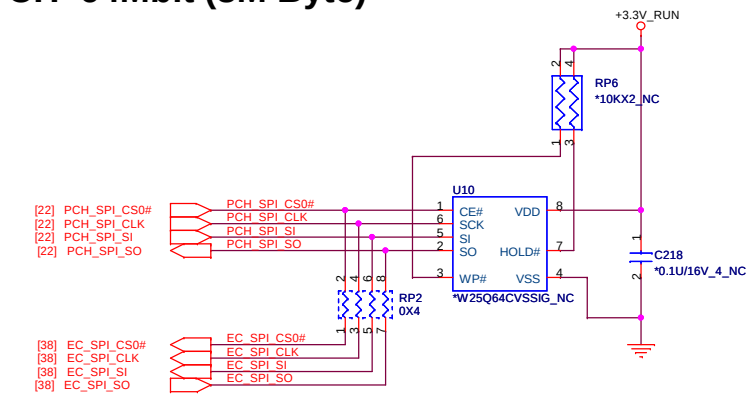

U5
IT8518
LPC
GPIO
SM BUS
PS/2
PWM
CIR
UART port
WAKE UP
EXTERNAL SERIAL FLASH
SPI ENABLE
KBMX
A/D D/A
CLOCK
Near H30
Thermal
Charge ,BAT
PCH
Board ID Straps
DIS: R43
UMA/OPT: R38
For Crystal-Free
Place these caps close to ITE8518.
Quanta Computer Inc.
PROJECT : R09A
SIO (ITE8518E)
Monday, March 05, 2012

FLASH / RTC

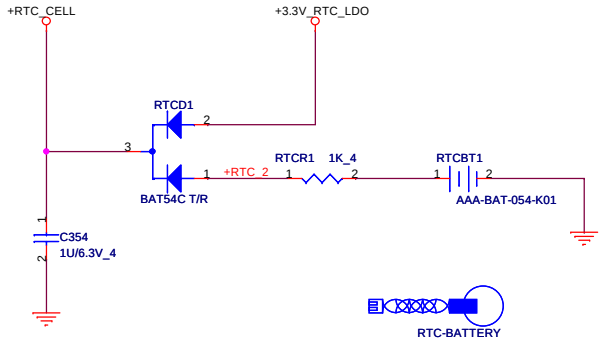
For EC 64Mbit (8M Byte)



For PCH 64Mbit (8M Byte)



RTC



Double, 25'C, Vf=0.4V, If=25mA
one, 25'C, Vf=0.35V, If=15.8mA

Quanta Computer Inc.
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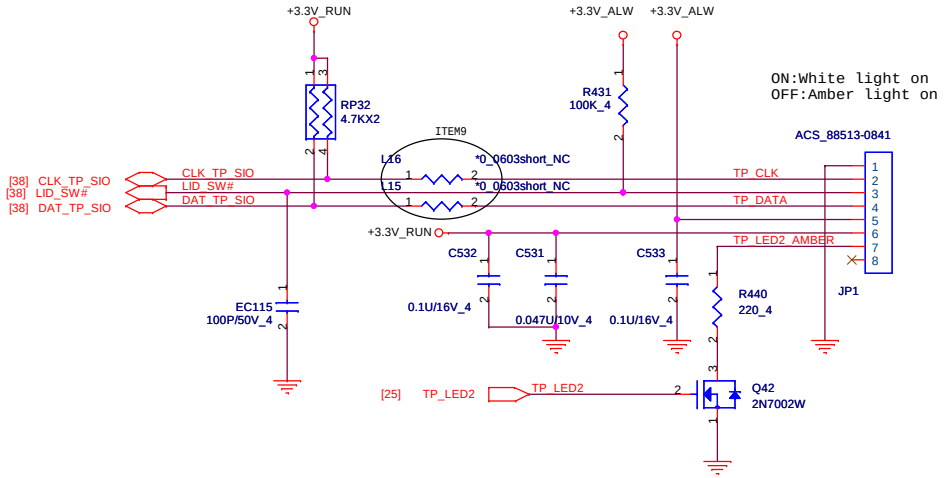
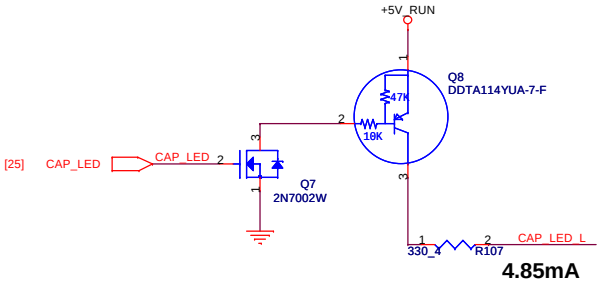
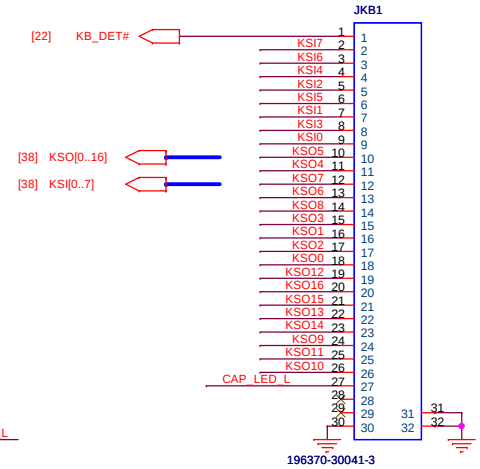
Touch Pad CONNECTOR



KEYBOARD CONNECTOR

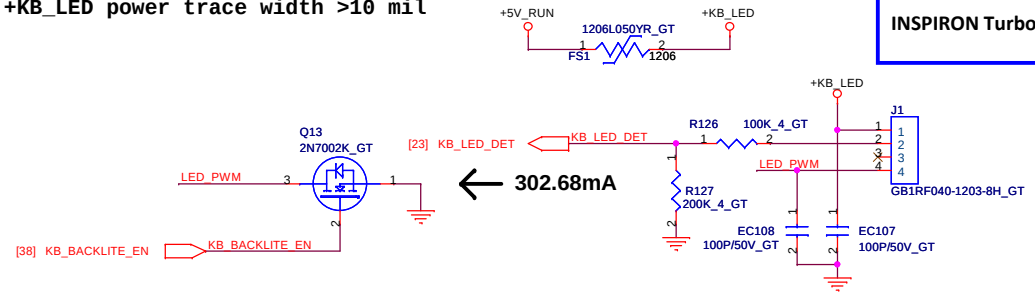


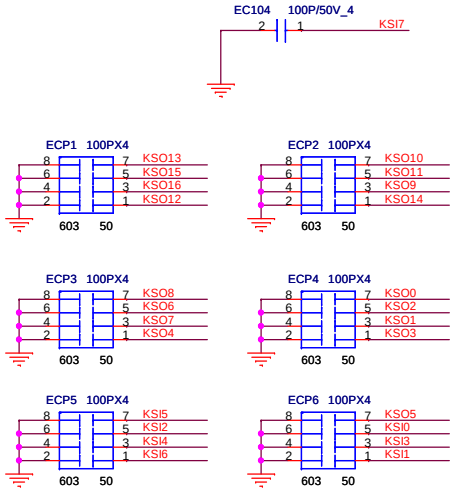


Key board illumination

+KB_LED power trace width >10 mil

INSPIRON	NC
INSPIRON Turbo	POP





Layout Note: 100P CAPS CLOSE TO JKB1

Quanta Computer Inc.

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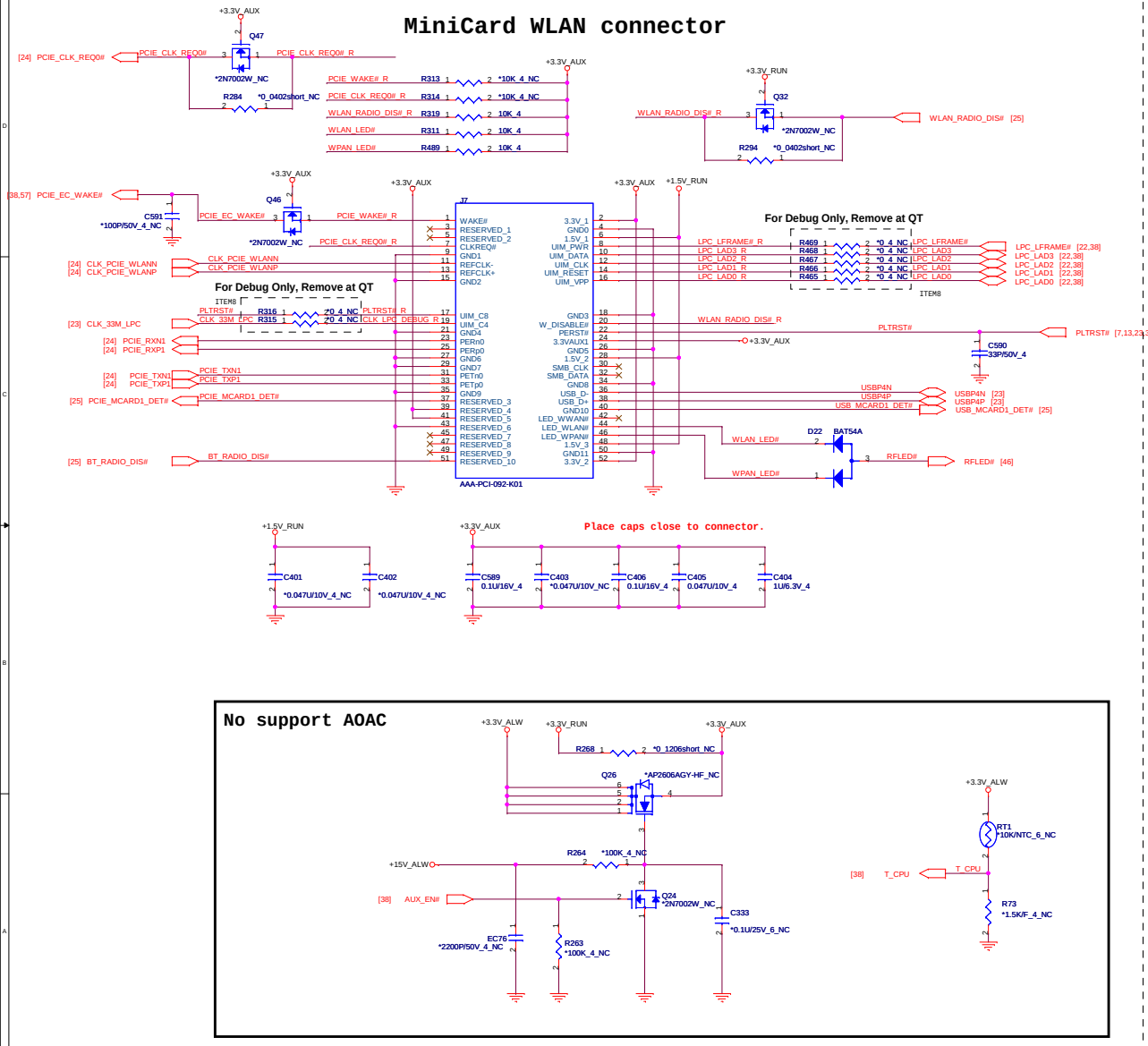
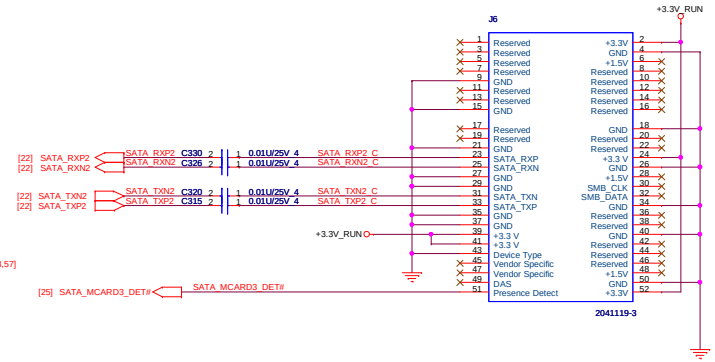
MiniCard WLAN connector



No support AOAC

MiniCard mSATA connector



Quanta Computer Inc.

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	WLAN/mSATA	3A

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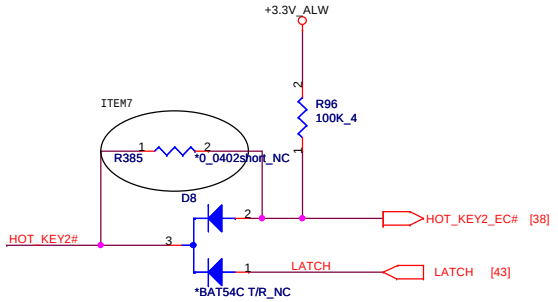
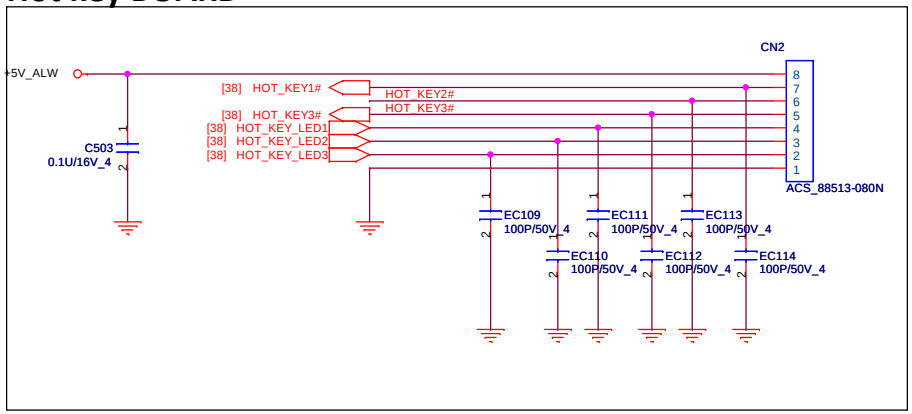
HOT_KEY2 support Pre-Boot Recovery



INSPIRON: R385 pop, D8 NC

Hot key BOARD



Quanta Computer Inc.

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	HOT KEY	3A

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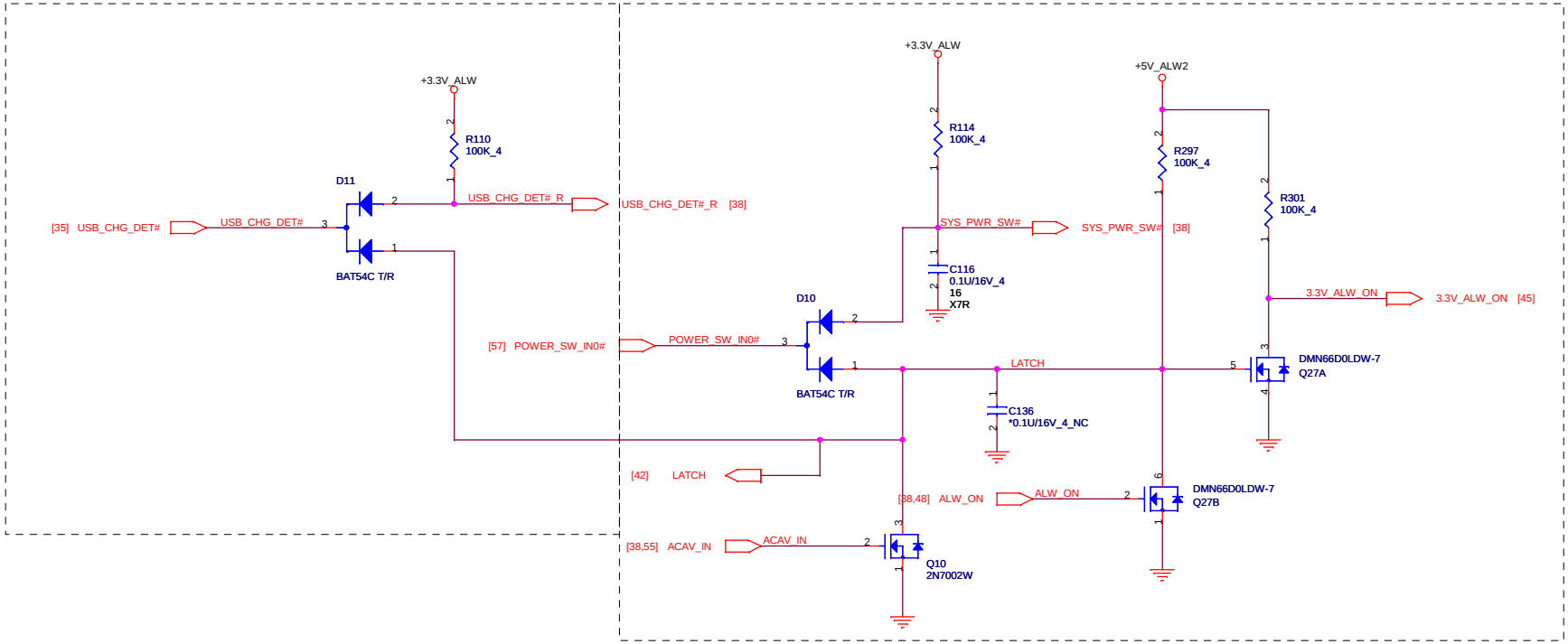
For USB charger usage

3V ALW ON POWER LOGIC



Quanta Computer Inc.

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	POWER SWITCH	3A

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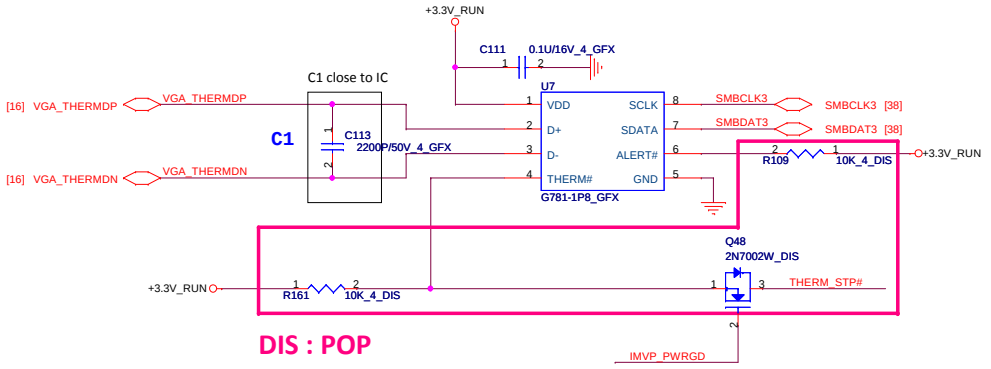
THERMAL IC

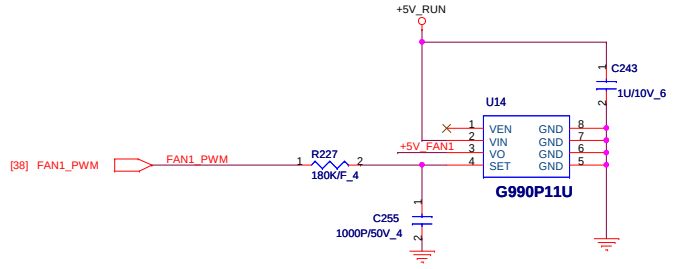
For GPU use

DIS/OPT:POP
UMA:NC

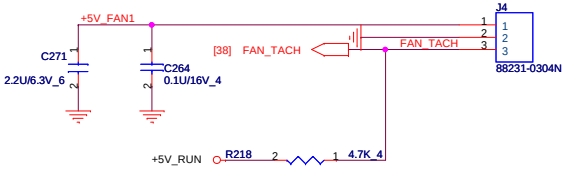
G781-1P8
SMBus address is 1001101xb (9Ah) (x is R/W bit).



DIS : POP
OPT: NC

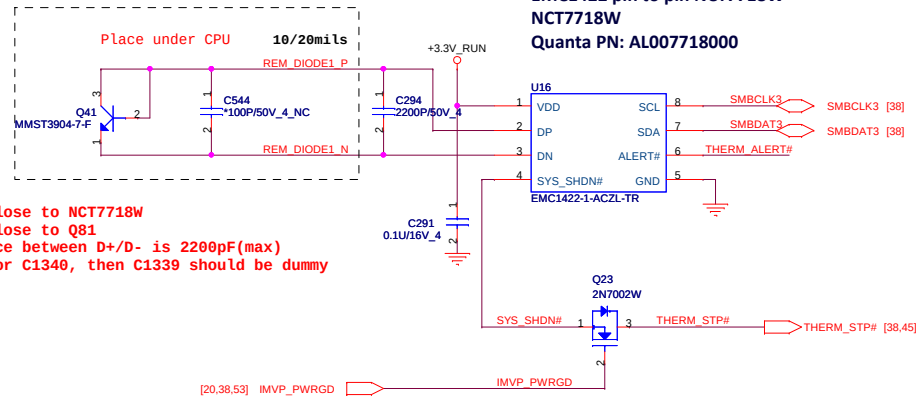


FAN CONN



For CPU use

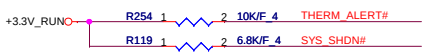
Closed to CPU



Low cost
EMC1422 pin to pin NCT7718W
NCT7718W
Quanta PN: AL007718000

1.Place C1340 close to NCT7718W
2.Place C1339 close to Q81
Total capacitance between D+/D- is 2200pF(max)
if use 2200pF for C1340, then C1339 should be dummy

OTP 85 degree C



EMC1422
OTP 85 degree : R996 = 10K, R997 = 6.8K
OTP 90 degree : R996 = 6.8K, R997 = 10K

NCT7718W SMBus address is 1001100xb (98h) (x is R/W bit).

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

EMC1422 SMBus address is 1001_100xb (98h) (x is R/W bit).

SYS_SHD# / ALERT#	4.7K	6.8K	10K	15K	22K	33K
4.7K	77'C	83'C	89'C	95'C	101'C	107'C
6.8K	78'C	84'C	90'C	96'C	102'C	108'C
10K	79'C	85'C	91'C	97'C	103'C	109'C
15K	80'C	86'C	92'C	98'C	104'C	110'C
22K	81'C	87'C	93'C	99'C	105'C	111'C
33K	82'C	88'C	94'C	100'C	106'C	112'C

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	FAN & THERMAL	3A
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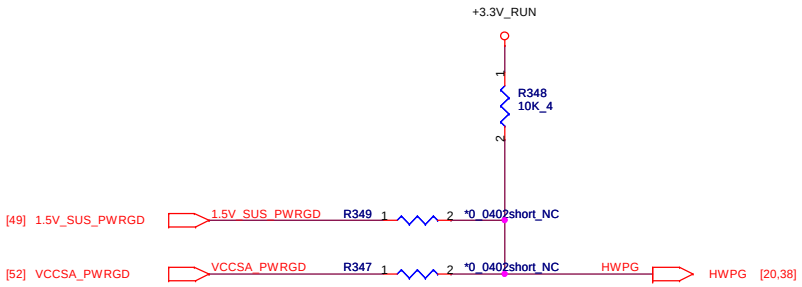
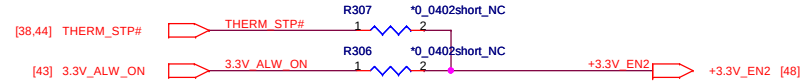
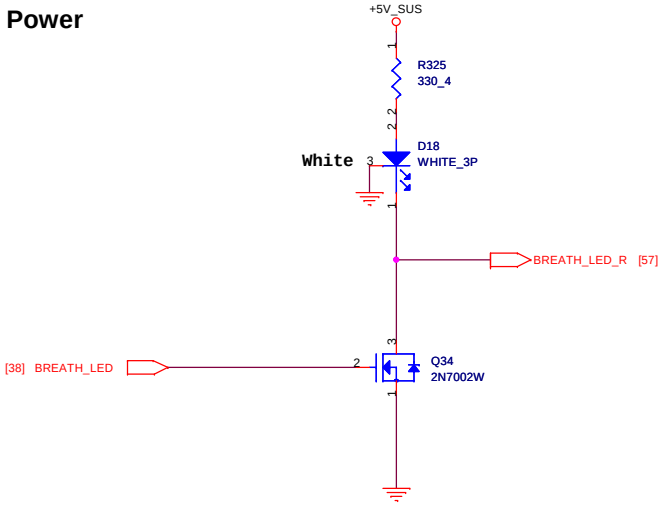


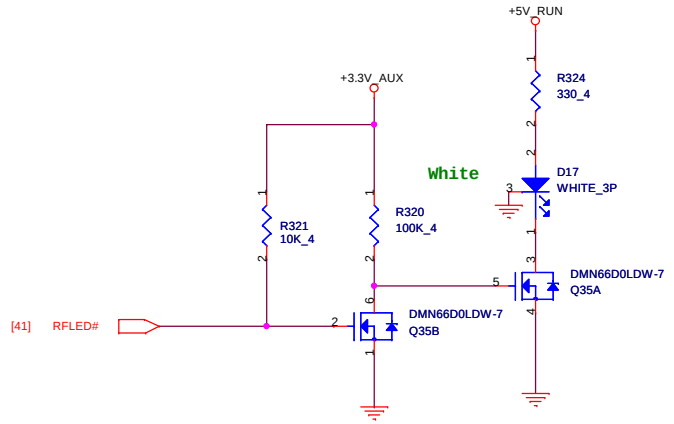


Quanta Computer Inc.		
PROJECT : R09A		
Size	Document Number: System Reset Circuit	Rev 3A
Date: Friday, March 02, 2012	Sheet 45 of 58	

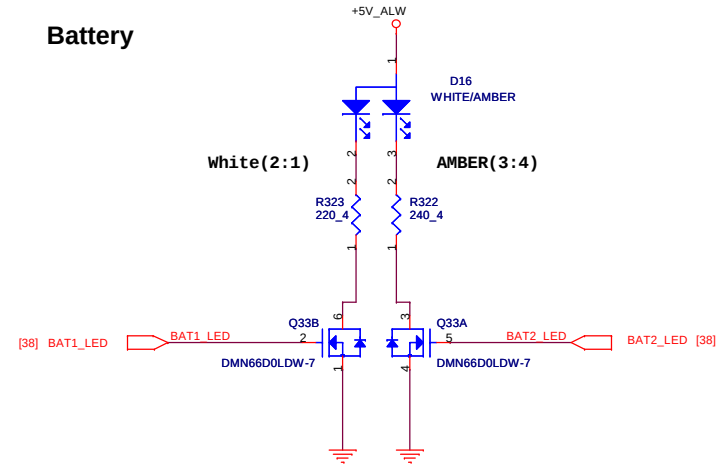
Power



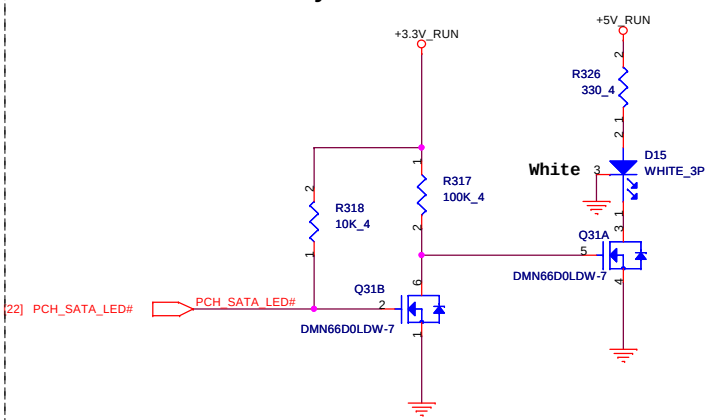
Bluetooth / WLAN on/off LED



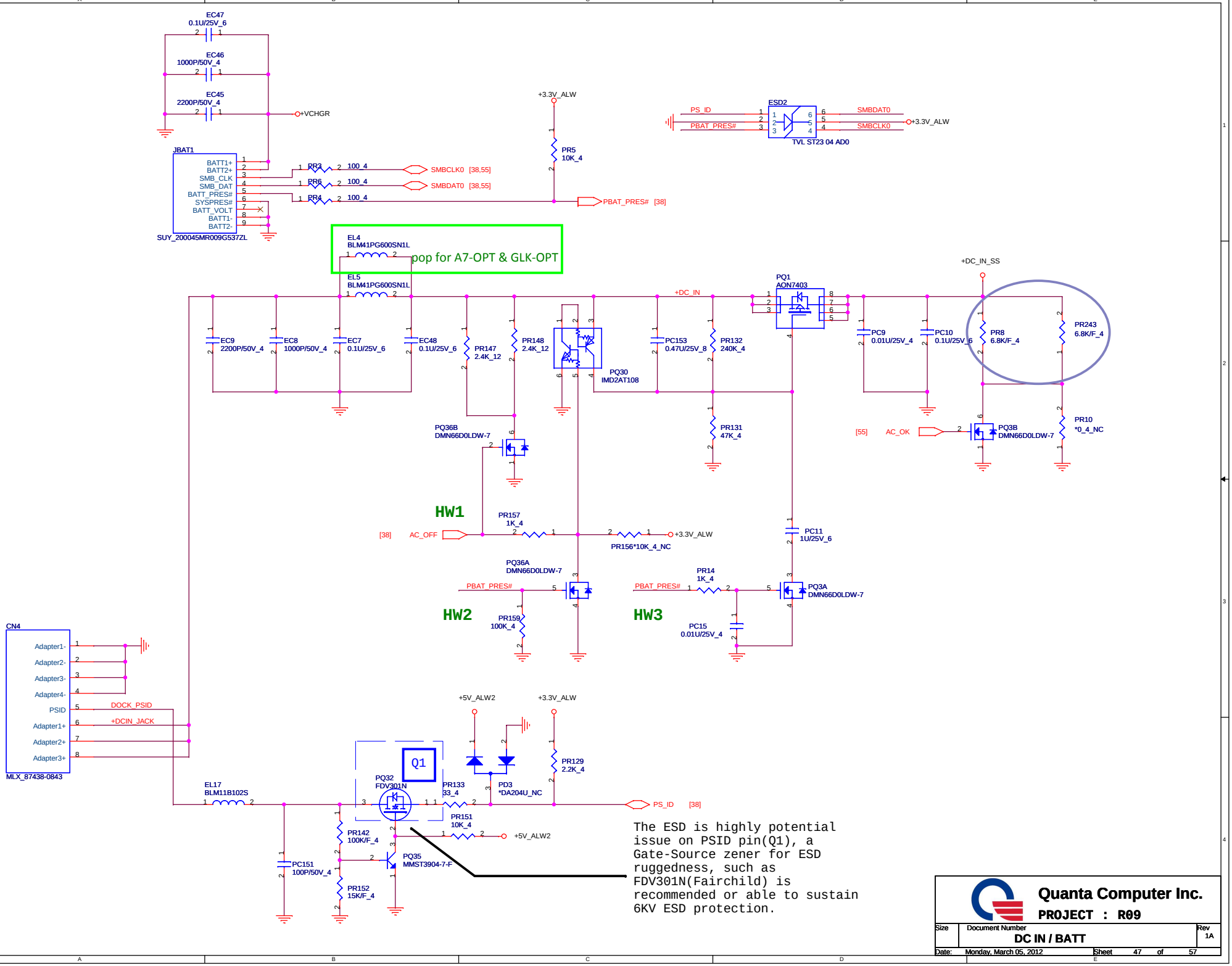
Battery



HDD activity LED.



Quanta Computer Inc.		
PROJECT : R09A		
Size	Document Number: LED	Rev: 3A
Date: Wednesday, February 08, 2012	Sheet 46 of 58	


EC47
0.1U/25V_6
EC46
1000P/50V_4
EC45
2200P/50V_4
+VCHGR
JBAT1
BATT1+
BATT2+
SMB_CLK
SMB_DAT
BATT_PRES#
SYSPRES#
BATT_VOLT
BATT1-
BATT2-
SUY_200045MR009G537ZL
PR3 100_4
PR6 100_4
PR4 100_4
SMBCLK0 [38,55]
SMBDAT0 [38,55]
+3.3V_ALW
PR5
10K_4
PBAT_PRES# [38]
PS_ID
PBAT_PRES#
ESD2
SMBDAT0
SMBCLK0
+3.3V_ALW
TVL ST23 04 AD0
EL4
BLM41PG600SN1L
pop for A7-OPT & GLK-OPT
EL5
BLM41PG600SN1L
+DC_IN
PQ1
AON7403
+DC_IN_SS
EC9
2200P/50V_4
EC8
1000P/50V_4
EC7
0.1U/25V_6
EC48
0.1U/25V_6
PR147
2.4K_12
PR148
2.4K_12
PQ30
IMD2AT108
PC153
0.47U/25V_8
PR132
240K_4
PC9
0.01U/25V_4
PC10
0.1U/25V_6
PR8
6.8K/F_4
PR243
6.8K/F_4
PQ36B
DMN66D0LDW-7
PR131
47K_4
[55] AC_OK
PQ3B
DMN66D0LDW-7
PR10
*0_4_NC
HW1
[38] AC_OFF
PR157
1K_4
PR156*10K_4_NC
+3.3V_ALW
PC11
1U/25V_6
PQ36A
DMN66D0LDW-7
PBAT_PRES#
HW2
PR159
100K_4
PBAT_PRES#
PR14
1K_4
PQ3A
DMN66D0LDW-7
HW3
PC15
0.01U/25V_4
CN4
Adapter1-
Adapter2-
Adapter3-
Adapter4-
PSID
Adapter1+
Adapter2+
Adapter3+
MLX_87438-0843
DOCK_PSID
+DCIN_JACK
+5V_ALW2
+3.3V_ALW
PR129
2.2K_4
EL17
BLM11B102S
Q1
PQ32
FDV301N
PR133
33_4
PD3
*DA204U_NC
PS_ID [38]
PR151
10K_4
+5V_ALW2
PR142
100K/F_4
PQ35
MMST3904-7-F
PC151
100P/50V_4
PR152
15K/F_4
The ESD is highly potential issue on PSID pin(Q1), a Gate-Source zener for ESD ruggedness, such as FDV301N(Fairchild) is recommended or able to sustain 6KV ESD protection.
Quanta Computer Inc.
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DC IN / BATT
Rev
1A
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TPS51125A TONSEL Connection and Switching Frequency				
Ton	REG5	REG3	VREF	GND
Channel1 Fs	365 kHz	300 kHz	245 kHz	200 kHz
Channel2 Fs	460 kHz	375 kHz	305 kHz	250 kHz

+5V_ALW
Fsw : 300K
TDC : 10.8A
OCP : 15A

+3.3V_ALW
Fsw : 375K
TDC : 6.2A
OCP : 8.7A

PU4 TPS51125ARGER

PL1 2.2UH20%18A(TMPB1004M-2R2MN-Z01)

PL4 2.2UH20%12A(TMPB0603M-2R2MN-Z01)

PQ19 MDV1525URH

PQ18 MDV1522URH

PQ22 NTTFS4930N

PQ23 NTTFS4930N

AGND_DC/DC

close to output Cap

close to output Cap

Enable

PQ20A DMN66D0LDW-7

PQ20B DMN66D0LDW-7

PQ16A DMN66D0LDW-7

PQ16B DMN66D0LDW-7

Quanta Computer Inc.		
PROJECT : R09		
Size	Document Number: 3.3V_ALW / 5V_ALW (TPS51125ARGER)	Rev: 1A
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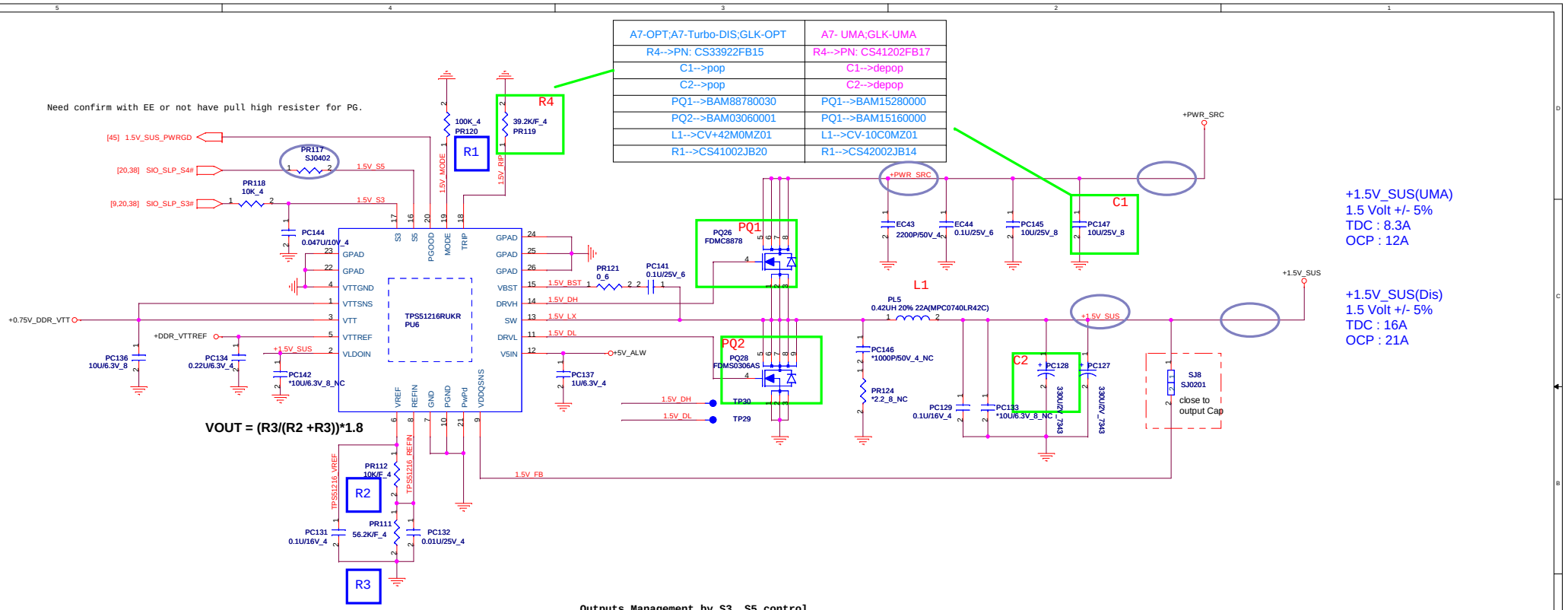

A7-OPT;A7-Turbo-DIS;GLK-OPT	A7- UMA;GLK-UMA
R4-->PN: CS33922FB15	R4-->PN: CS41202FB17
C1-->pop	C1-->depop
C2-->pop	C2-->depop
PQ1-->BAM88780030	PQ1-->BAM15280000
PQ2-->BAM03060001	PQ1-->BAM15160000
L1-->CV+42M0MZ01	L1-->CV-10C0MZ01
R1-->CS41002JB20	R1-->CS42002JB14

MODE Selection				
	Resistance between MODE and GND		Frequency	Discharge Mode
R1	200K_4	CS42002JB14	400k Hz	Tracking Discharge
R1	100K_4	CS41002JB20	300k Hz	
R1	68K_4	CS36802JB12	300k Hz	Non-tracking
R1	47K_4	CS34702JB21	400k Hz	Discharge

Outputs Management by S3, S5 control

State	S3	S5	VDDQ	VTTREF	VTT
S0	HI	HI	On	On	On
S3	LO	HI	On	On	Off (Hi-Z)
S4/S5	LO	LO	Off (discharge)	Off (discharge)	Off (discharge)

Quanta Computer Inc.
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Size	Document Number	Rev
	1.5_SUS/0.75_DDR_VTT (TPS51216RUKR)	1A
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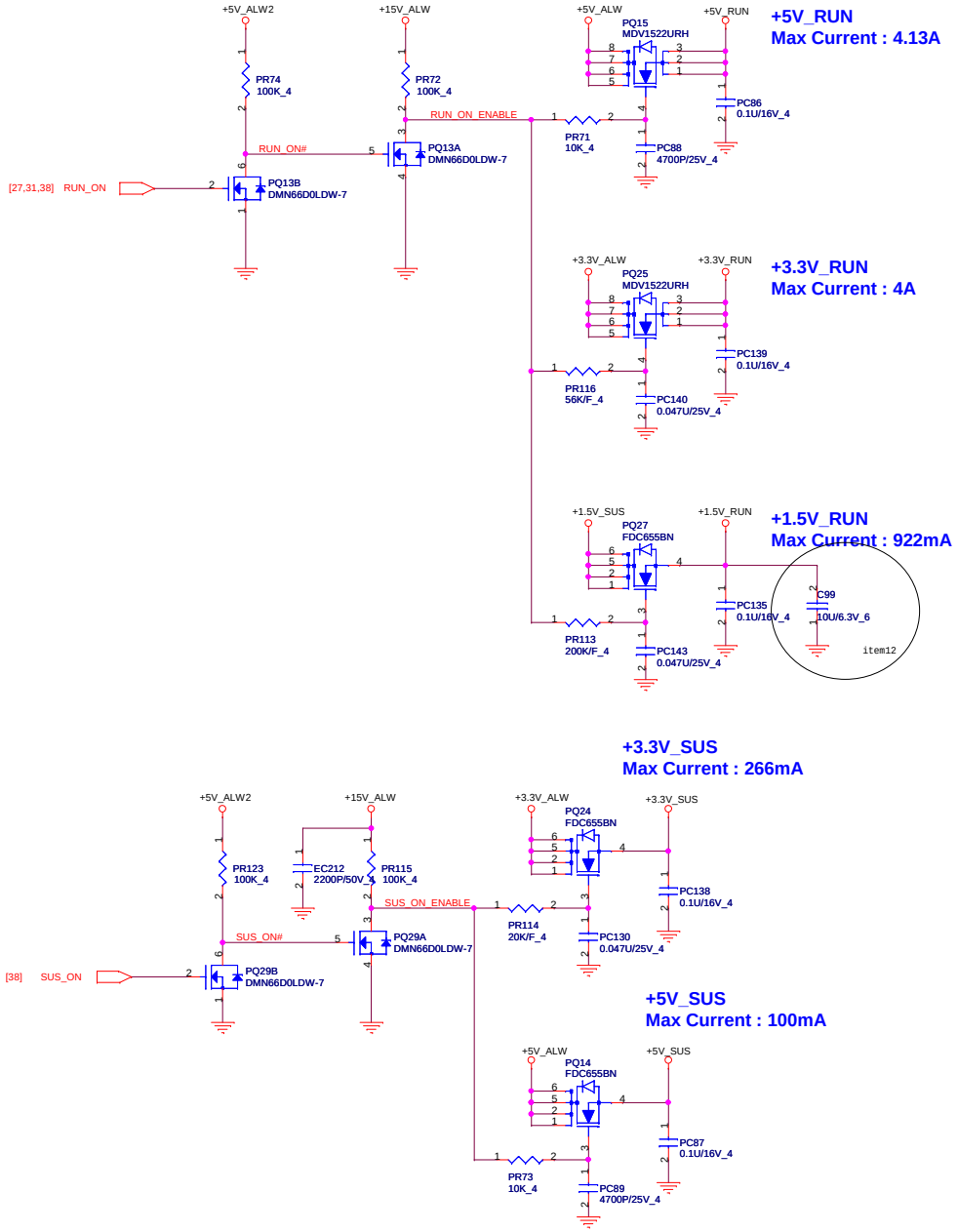

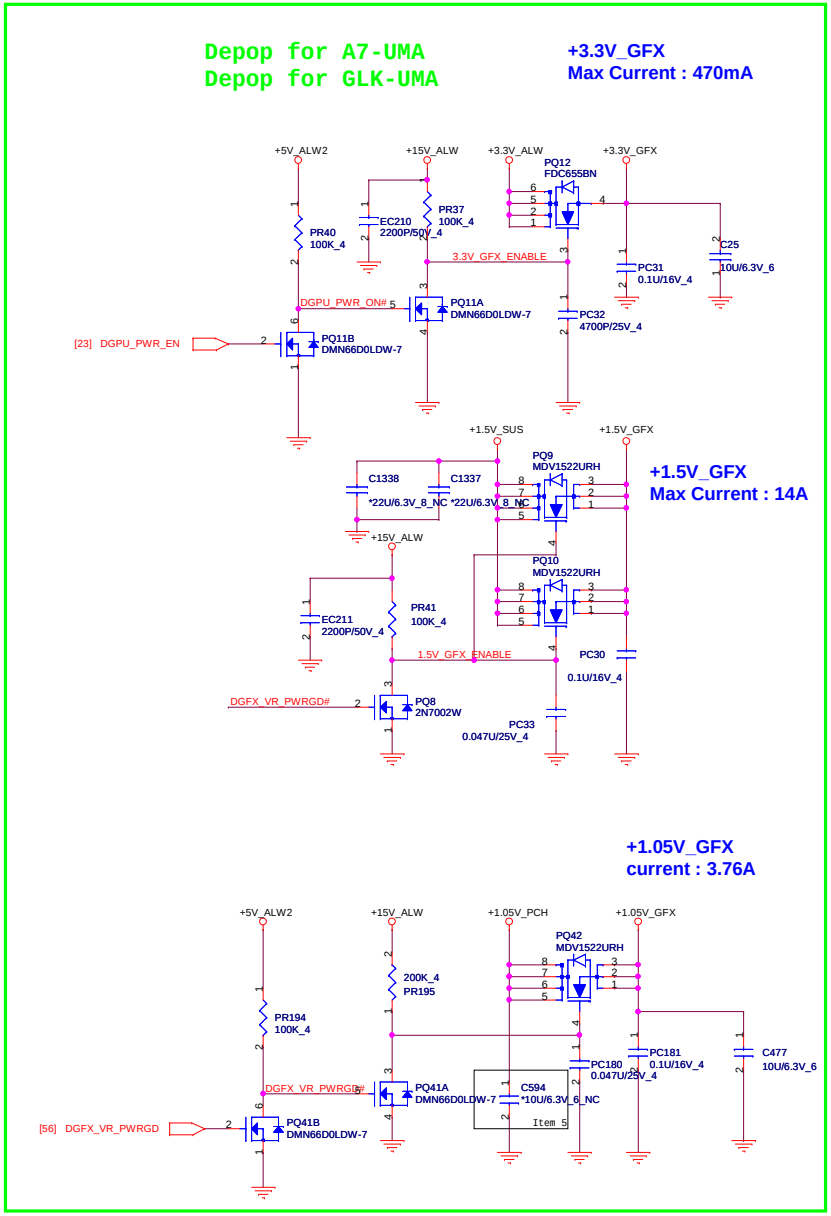

Quanta Computer Inc.

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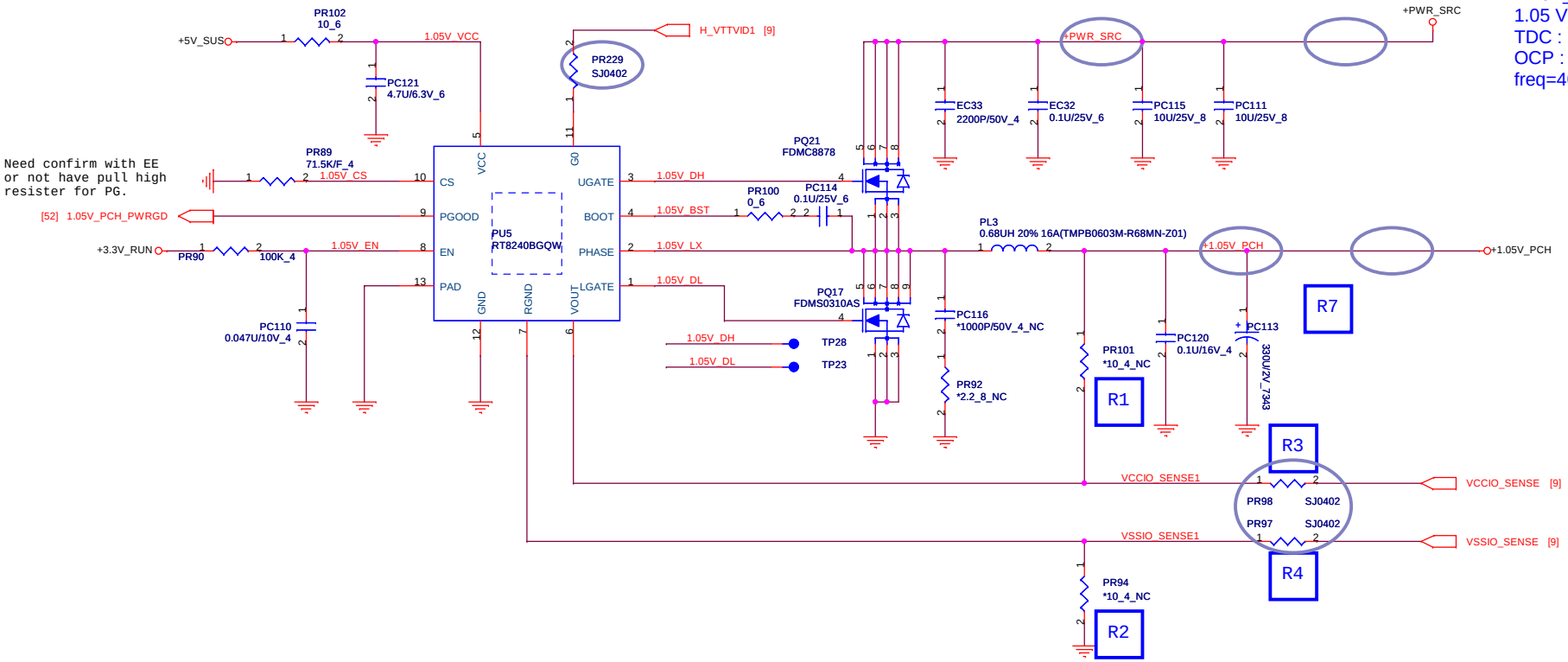
Size	Document Number	Rev
	Load Switch	1A
Date: Monday, March 05, 2012	Sheet 50 of 57	



For EA test	
R1	10_4
R2	10_4
R3	NC
R4	NC
R5	NC
R6	NC
R7	NC

Quanta Computer Inc.
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Size	Document Number	Rev
	+1.05V_PCH / VTT (RT8240BGQW)	1A

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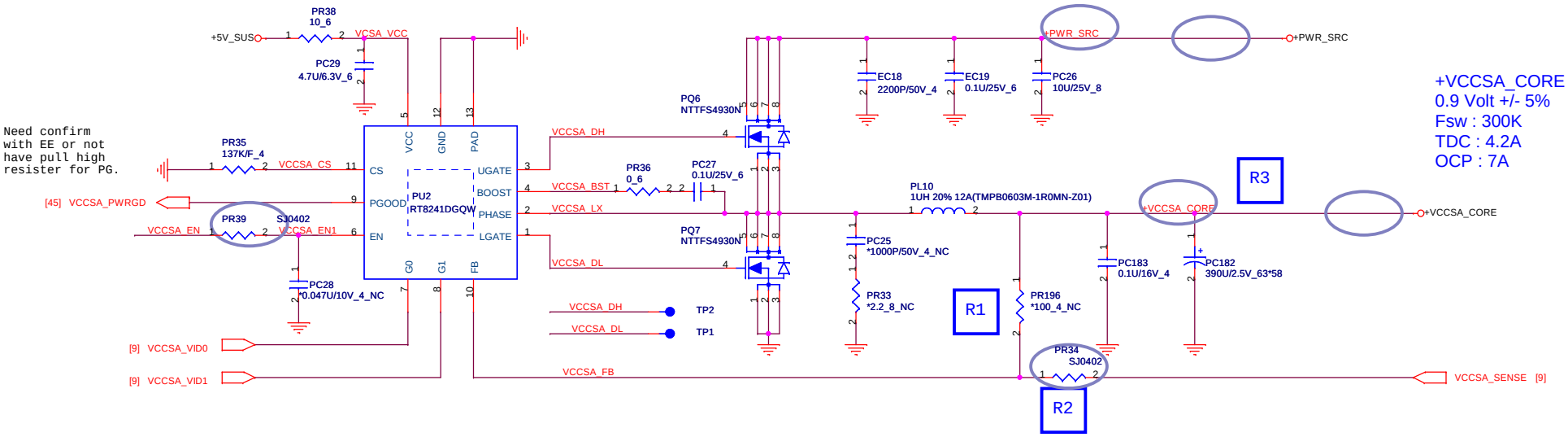
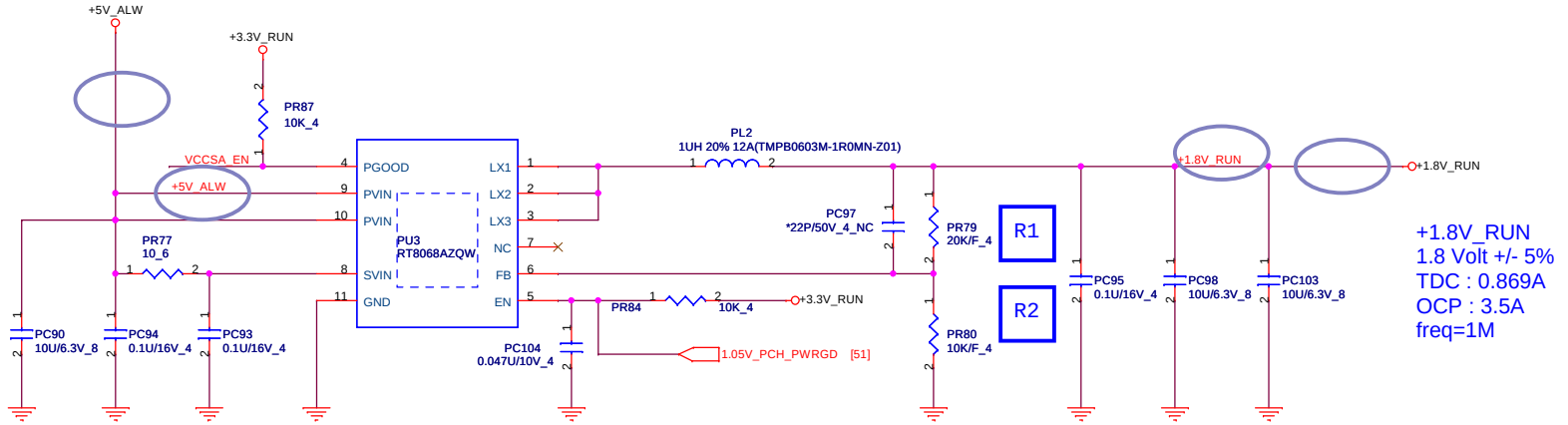


VCCSA_VID1	VCCSA_VID0	VCCSA_CORE
Low	Low	0.9V
High	Low	0.8V
Low	High	0.725V
High	High	0.675V

For EA test	
R1	100_4
R2	NC
R3	NC
R4	NC



VOUT = 0.6(1+R1/R2)

Quanta Computer Inc.

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Size	Document Number	Rev
	VCCSA (RT8241DGQW)	1A

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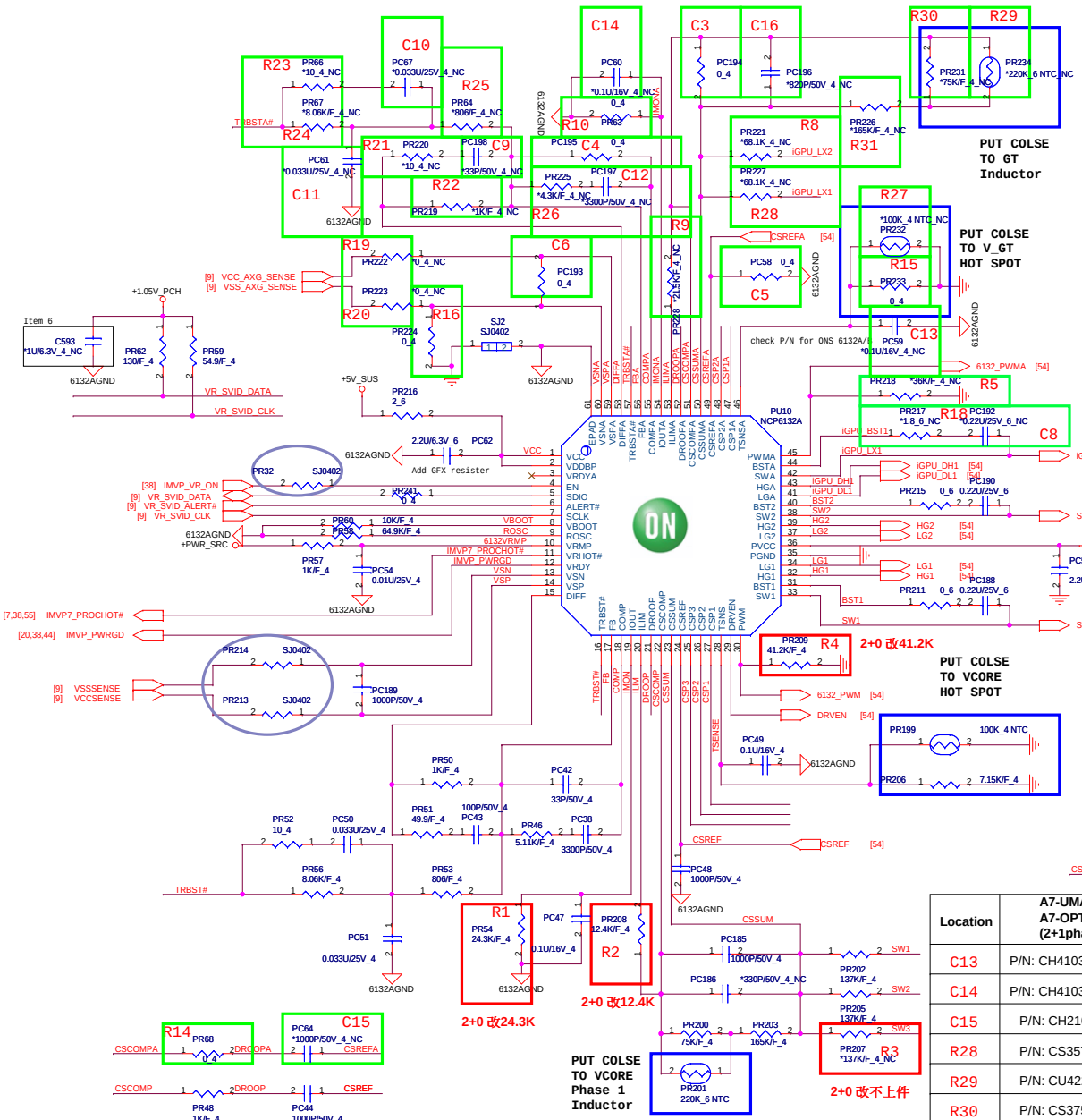

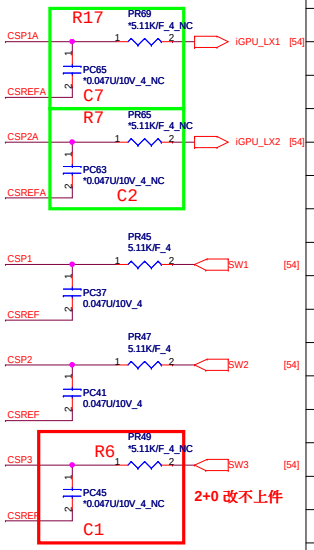

Location	A7-UMA A7-OPT (2+1phase)	A7 Turbo-DIS (3phase)	GLK-UMA GLK-OPT (3+2phase)
R1	P/N: CS32432FB01	P/N: CS32372FB05	P/N: CS32372FB05
R2	P/N: CS31242FB05	P/N: CS32102FB14	P/N: CS32102FB14
R3	depop	P/N: CS41302FB01	P/N: CS41302FB01
R4	P/N: CS34122FB19	P/N: CS37322FB14	P/N: CS37322FB14
R5	P/N: CS32552FB03	depop	P/N: CS33602FB07
R6	depop	P/N: CS25112FB15	P/N: CS25112FB15
C1	depop	P/N: CH34702KB10	P/N: CH34702KB10
R7	depop	depop	P/N: CS25112FB15
C2	depop	depop	P/N: CH34702KB10
R8	depop	depop	P/N: CS35762FB11
R9	P/N: CS31582FB12	depop	P/N: CS32152BB00
R10	P/N: CS32432FB01	P/N: CS00002JB38	P/N: CS32402FB15
R11	depop	P/N: CS00002JB38	depop
R12	P/N: CS00002JB38	P/N: CS00002JB38	depop
R13	P/N: CS00002JB38	depop	depop
C3	P/N: CH21006JB10	P/N: CS00002JB38	P/N: CH21006JB10
C4	P/N: CH01006JB08	P/N: CS00002JB38	P/N: CH01006JB08
C5	P/N: CH21006JB10	P/N: CS00002JB38	P/N: CH21006JB10
R14	P/N: CS15102FB19	P/N: CS00002JB38	P/N: CS15102FB19
C6	P/N: CH21006JB10	P/N: CS00002JB38	P/N: CH21006JB10
R15	P/N: CS28252FB15	P/N: CS00002JB38	P/N: CS28252FB15
R16	depop	P/N: CS00002JB38	depop
R17	P/N: CS25112FB15	depop	P/N: CS25112FB15
C7	P/N: CH34702KB10	depop	P/N: CH34702KB10
R18	P/N: CS00003J951	depop	P/N: CS00003J951
C8	P/N: CH4224K9904	depop	P/N: CH4224K9904
R19	P/N: CS00002JB38	depop	P/N: CS00002JB38
R20	P/N: CS00002JB38	depop	P/N: CS00002JB38
R21	P/N: CS01002JB22	depop	P/N: CS01002JB22
R22	P/N: CS21002FB24	depop	P/N: CS21002FB24
C9	P/N: CH03306JB04	depop	P/N: CH03306JB04
R23	P/N: CS01002JB22	depop	P/N: CS01002JB22
R24	P/N: CS22002FB19	depop	P/N: CS22002FB19
C10	P/N: CH16806KB17	depop	P/N: CH16806KB17
C11	P/N: CH24704KB19	depop	P/N: CH24704KB19
R25	P/N: CS31072FB10	depop	P/N: CS31072FB10
R26	P/N: CS24302FB07	depop	P/N: CS24302FB07
R29	P/N: CU422090000	depop	P/N: CU422090000
R30	P/N: CS37502FB12	depop	P/N: CS37502FB12
R31	P/N: CS41652FB14	depop	P/N: CS41652FB14
C16	P/N: CH18206KB11	depop	P/N: CH18206KB11

Location	A7-UMA A7-OPT (2+1phase)	A7 Turbo-DIS (3phase)	GLK-UMA GLK-OPT (3+2phase)
C13	P/N: CH4103K1B08	depop	P/N: CH4103K1B08
C14	P/N: CH4103K1B08	depop	P/N: CH4103K1B08
C15	P/N: CH21006JB10	depop	P/N: CH21006JB10
R28	P/N: CS35762FB11	depop	P/N: CS35762FB11
R29	P/N: CU422090000	depop	P/N: CU422090000
R30	P/N: CS37502FB12	depop	P/N: CS37502FB12
R31	P/N: CS41652FB14	depop	P/N: CS41652FB14
C16	P/N: CH18206KB11	depop	P/N: CH18206KB11

Quanta Computer Inc.
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	CPU_CORE (NCP6132)	1A

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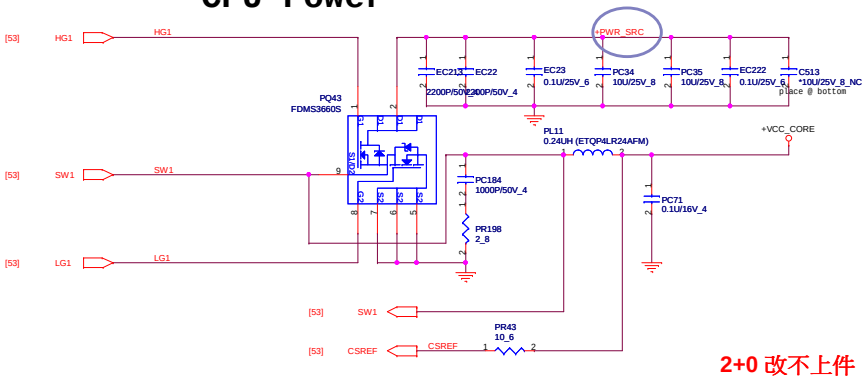
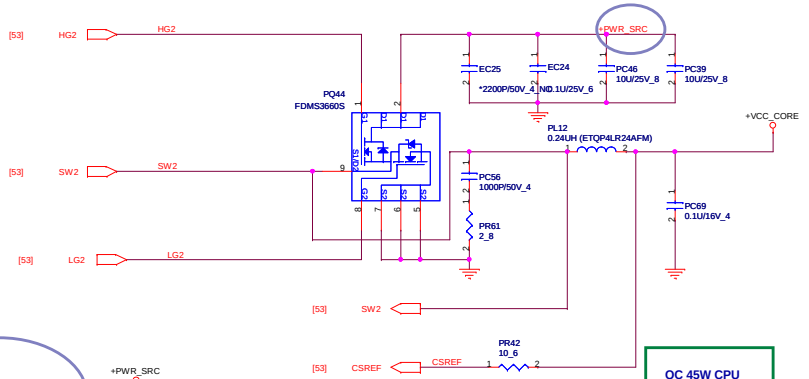
CPU Power

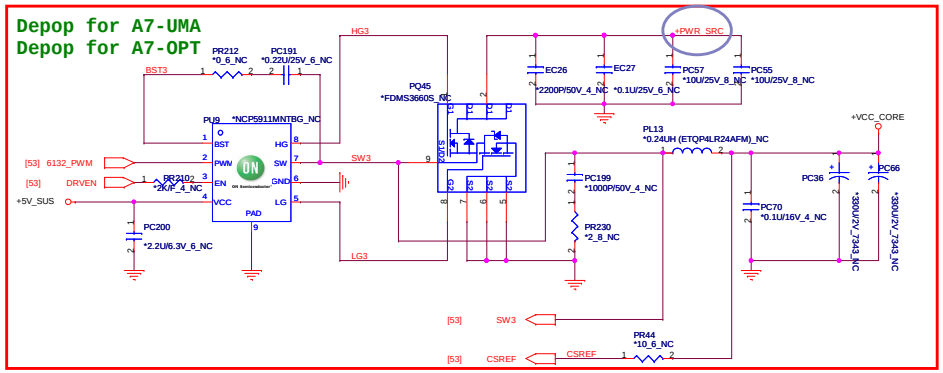


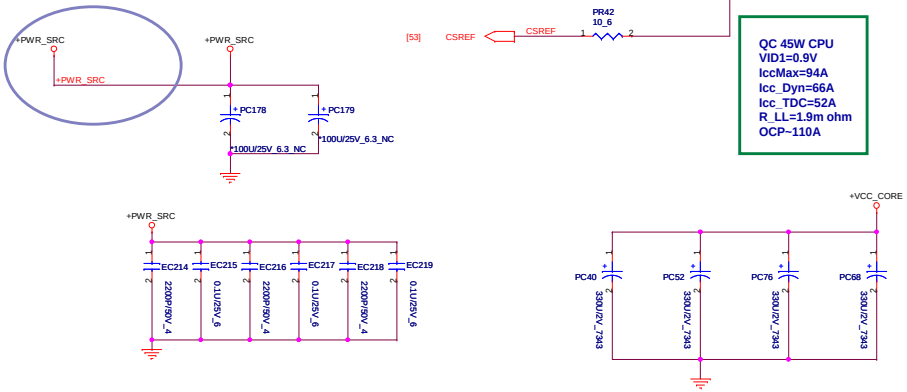


QC 45W CPU
VID1=0.9V
IccMax=94A
Icc_Dyn=66A
Icc_TDC=52A
R_LL=1.9m ohm
OCP~110A

2+0 改不上件

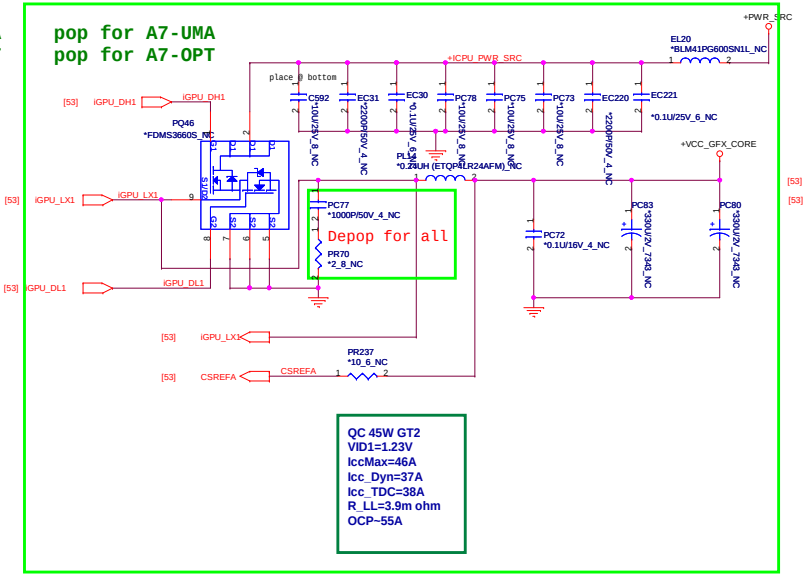
Depop for A7-UMA
Depop for A7-OPT



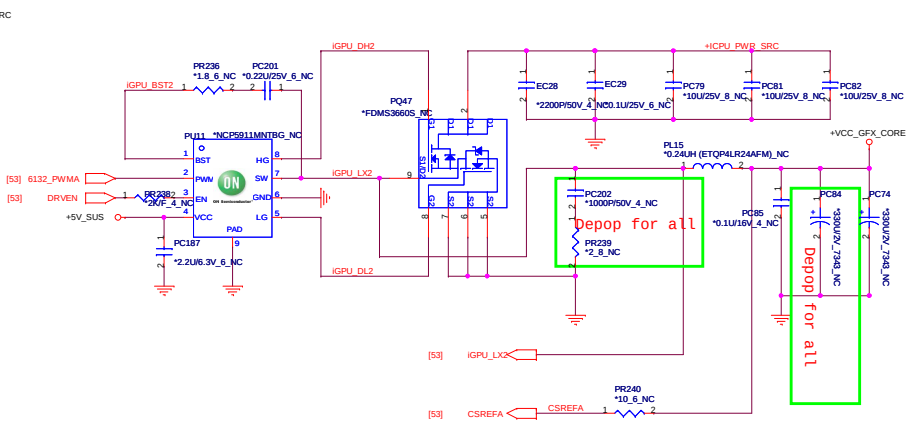


pop for GLK UMA
pop for GLK OPT

pop for A7-UMA
pop for A7-OPT



QC 45W GT2
VID1=1.23V
IccMax=46A
Icc_Dyn=37A
Icc_TDC=38A
R_LL=3.9m ohm
OCP~55A



Quanta Computer Inc.
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Size	Document Number	Rev
	CPU_CORE (NCP6132)	1A
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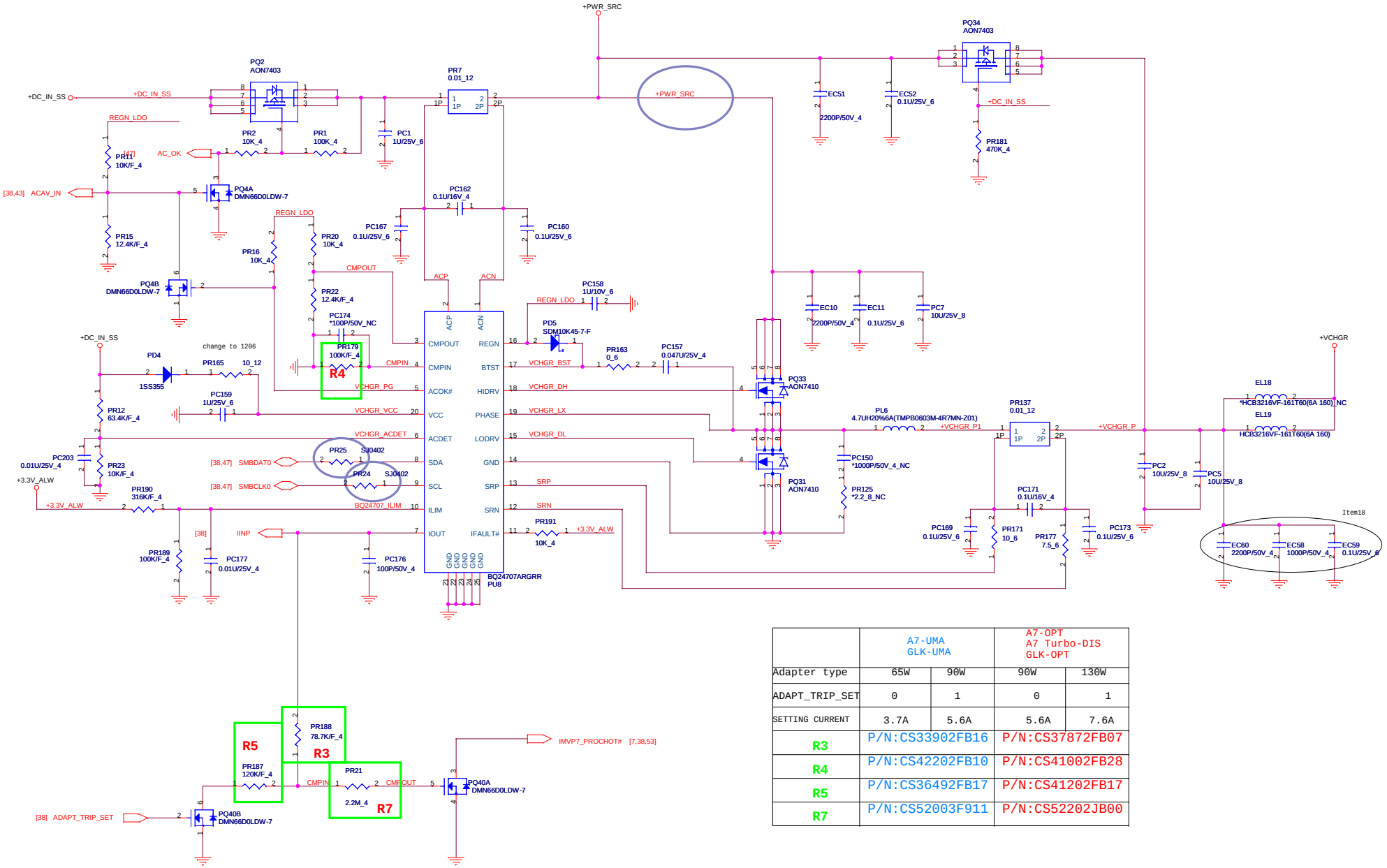

	A7-UMA GLK-UMA		A7-OPT A7 Turbo-DIS GLK-OPT	
Adapter type	65W	90W	90W	130W
ADAPT_TRIP_SET	0	1	0	1
SETTING CURRENT	3.7A	5.6A	5.6A	7.6A
R3	P/N:CS33902FB16		P/N:CS37872FB07	
R4	P/N:CS42202FB10		P/N:CS41002FB28	
R5	P/N:CS36492FB17		P/N:CS41202FB17	
R7	P/N:CS52003F911		P/N:CS52202JB00	

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Size	Document Number	Rev
	Charger (BQ24765RUVR)	1A

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Depop for A7-UMA
Depop for GLK-UMA

N13XXX2

	DGPU_VID3	DGPU_VID2	DGPU_VID1
0.85V	1	0	1
0.95V	0	1	1
1.0V	0	1	0

N13XXX1

	DGPU_VID3	DGPU_VID2	DGPU_VID1
0.825V	1	0	1
0.975V	0	1	0
1.0V	0	0	1

+VCC_GFX_CORE
Fs=400K
Dis =30A
Turbo =42A
Dis OC=42A
Turbo OC=60A

PR130 pop; PR135,PR242 depop
for Nvidia OS sample

Need confirm with EE
or not have pull high
resister for PG.

PU7
NCP3218MNR2G

PUT COLSE TO
+VCC_GFX_CORE
Phase 1 Inductor

For EA test	
R1	100_4
R2	100_4
R3	NC
R4	NC

Location	A7-OPT GLK-OPT (2phase)	A7 Turbo-DIS (3phase)
R5	P/N: CS41202FB17	P/N: CS37872FB15
R6	P/N: CS46492FB00	P/N: CS45622FB11
R7	P/N: CS21402FB02	P/N: CS22152FB07
R8	Depop	P/N: CS42742FB00
R9	P/N: CS00002JB38	Depop
R10	Depop	P/N: CS00002JB38

Depop for A7-OPT
Depop for GLK-OPT

PU1
ADP3611_DIS

Quanta Computer Inc.
PROJECT : R09

Size	Document Number	Rev
	VGA_N11P-dGFX (NCP3218MNR2G)	1A

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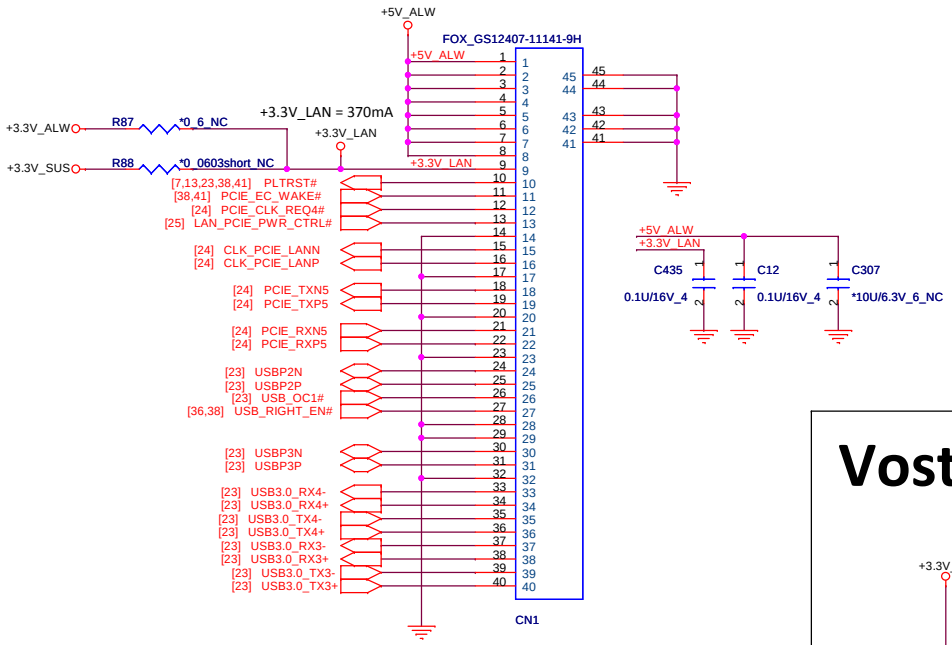
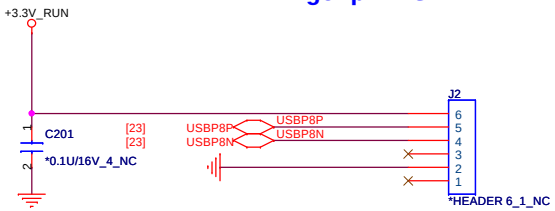
DB CONNECTOR

RJ45 + USB 3.0* 2

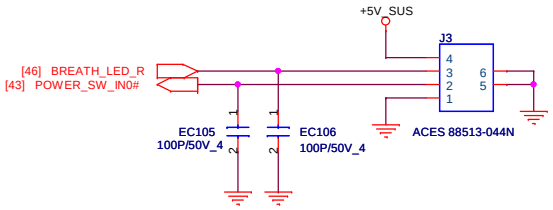


Vostro - NA

Fingerprint



Power button board



Quanta Computer Inc.

PROJECT : R09A

Size	Document Number	Rev
	DB CONNECTOR	3A

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