PS3 BLOCK DIAGRAM

PCB STACK UP

LAYER 1 : TOP
LAYER 2 : SGND
LAYER 3 : IN1
LAYER 4 : IN2
LAYER 5 : SVCC
LAYER 6 : IN3
LAYER 7 : SGND1
LAYER 8 : BOT

POWER

SYSTEM RESET CIRCUIT PG 48
BATT CHARGER PG 47
AC/BATT CONNECTOR PG 47
RUN POWER SW 3VSUS, 5VSUS, 3V_S5, 5V_S5 +3V, +5V PG 48

POWER

REGULATOR +1.05V PG 42
REGULATOR +1.5VSUS, 0.75VSMDDR_VTERM,SMDDR_VREF PG 41
REGULATOR +1.8V,+VCCSA(0.85V) PG 43,44
CPU Core /GFX Core +VCC_CORE,+VCC_GFX PG 46
DC/DC 3VPCU, 5VPCU, 15V PG 40
VGA Core +VGPU_CORE,+1.0V_GPU PG 45

DDRIII-SODIMM0 Page 13
DDRIII-SODIMM1 Page 14
DDR3 1333 MTs
DDR3 1333 MTs

CPU
Sandy Bridge SV
Dual Core
Integrated Graphics Module (BGA1023) (35W)
Page 3,4,5,6

- Package size: 37.5 mm x 37.5 mm
- Package size: 31 mm x 24 mm

CPU THERMAL SENSOR Page 35

PCIEx16

VRAM DDR3 x 8 (2GB) Page 20,21

AMD Whistler LP Page 15,16,17,18,19

UMA / Switchable

27M

GPU THERMAL SENSOR Page 35

32.768KHz

FDI

DMI

LCD CONN Page 23 — LVDS
HDMI CON Page 24 — TMDS
CRT CON Page 25 — VGA
SATA - 2.5" HDD Page 26 — SATA
USB+eSATA Page 27 — SATA / USB2.0

PCH
Cougar_Point (Mobile)
FCBGA989
Package size: 25 mm x 25 mm
Page 7,8,9,10,11,12

USB2.0
USB2.0 Ports X2 Page 28
Webcam Page 23
BlueTooth Page 31

mSATA

PCI-E

Giga LAN Atheros AR8151-BL1A-R Page 33
RJ45 Page 33
Mini PCI-E Card WLAN Page 29
Mini PCI-E Card WWAN/mSATA Page 30
SIM socket Page 30
Card Reader Controller Realtek RTS5209 Page 34
4 in 1 socket Page 34

HD Audio

Audio CODEC Conexant CX20671 Page 32
Audio Jack HP/MIC Page 32
INT MIC (Digital) Page 32
INT Speaker Page 32

25M
32.768KHz

LPC

SPI

Keyboard/TouchPad Page 22
Accelerometer Sensor Page 36
ITE EC IT8518 Page 38
SPI Flash 4MB Page 8

THERMAL SENSOR A Page 35
THERMAL SENSOR B Page 35
THERMAL SENSOR C Page 35
FAN Page 35
SPI Flash 512KB Page 38

SPI

Quanta Computer Inc.
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System Block Diagram
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07-12	PCH
13-14	DDRIII SO-DIMM
15-19	Madison
20-21	VRAM
22	KB, TP, TrackPoint
23	LCD + CAMERA CONN
24	HDMI
25	CRT
26	HDD
27	USB X1/USB+ESATA
28	CONN USB X2
29	MINI-Card (WLAN/Wimax)
30	MINI-Card (SSD, WWAN)
31	BLUETOOTH
32	AUDIO CODEC (CX20671-21Z)
33	LAN: AR8151-BL1A-R
34	Card Reader(RTS5209)
35	FAN & THERMAL
36	G-SENSOR/LID SWITCH/LED
37	RFID EEPROM
38	KBC IT8518/19
39	HOLE & SCREW
40	SYSTEM 5V/3V (RT8206M)
41	+1.5VSUS (UP6163BQAG)
42	+1.05V (OZ8117)
43	+1.8V (HPA00835RTER)
44	+VCCSA (OZ8117)
45	+VGPU_CORE (OZ8117)
46	+VCC_CORE(ISL95831)
47	Charger (ISL88731A)
48	Discharge
49	Power Block Diagram
50	Schematic Value Descript

Power States

POWER PLANE	VOLTAGE	PAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
VIN	10V~+20V	23,40,41,42,44,45,46,,47,48	MAIN POWER		S0~S5
+3V_RTC	+3.0V~+3.3V	7,8,11,38	RTC		S0~S5
3VPCU	+3.3V	7,8,22,23,31,33,36,38,40,43,45,47,48	ITE8518 POWER	3V5V_EN	S0~S5
5VPCU	+5V	8,38,40,41,42,43,44,45,47,48	DC/DC POWER IC SOURCE	3V5V_EN	S0~S5
+15V	+15V	23,40,41,43,45,48	LARGE POWER	3V5V_EN	S0~S5
LANVCC	+3.3V	33	LAN POWER	LAN_ON	
5V_S5	+5V	11,27,28,48	PCH SUS POWER	S5_ON	S0~S3
3V_S5	+3.3V	3,7,8,9,10,11,29,38,48	Sys Management,PCH Resume Well, Intel HD Audio,USB,WLAN,WiMAX POWER	S5_ON	S0~S3
5VSUS	+5V	23,36,46,48	SLP_S4# CTRLD POWER	SUSON	S0~S3
3VSUS	+3.3V	15,38,48	SLP_S4# CTRLD POWER	SUSON	S0~S3
+1.5VSUS	+1.5V	3,5,11,13,14,41,45,48	DDR3 SODIMM POWER	SUSON	S0~S3
0.75VSMDDR_VTERM	+0.75V	13,14,41,48	DDR3 SODIMM REFERENCE POWER	MAINON	S0
+5V	+5V	7,11,18,22,23,24,25,26,32,35,36,38,48	SLP_S3# CTRLD POWER	MAINON	S0
+3V	+3.3V	7,8,9,10,11,13,14,18,22,23,24,25,26,27,29,30, 31,32,34,35,37,38,40,41,42,44,45,46,48	SLP_S3# CTRLD POWER	MAINON	S0
+1.8V	+1.8V	5,8,11,,43,48	LVDS,NVM POWER	MAINON	S0
+1.5V	+1.5V	11,27,29,30,41	Mini PCIe,Express Card POWER	MAINON	S0
+1.05V	+1.05V	3,5,7,8,9,11,42,48	VTT POWER/PCH CORE POWER	MAINON	S0
+VGPU_CORE		18,45	VGA CORE POWER	GFX_ON	S0
+VCC_CORE		5,46,48	CPU CORE POWER	VRON	S0
+VCCSA		5,44,48	VCCSA POWER	MAINON	S0
LCDVCC	+3.3V	23	LCD Power	INT_LVDS_VDDEN	S0
+5V_HDD	+5V	29	HDD Power	MAINON	S0
BAT-V	+10V~+17V	47	MAIN BATTERY		S0~S5

Quanta Computer Inc.
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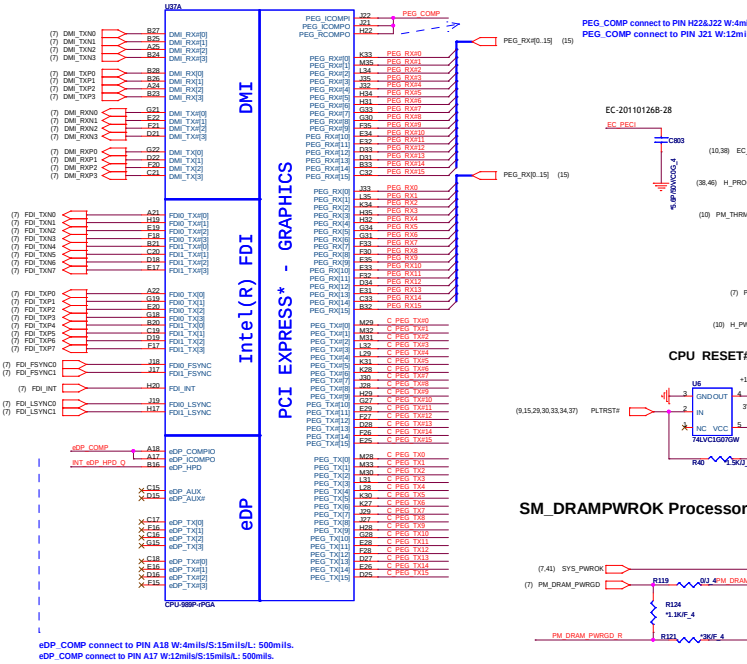
Block Diagram

Sandy Bridge Processor (DMI,PEG,FDI)

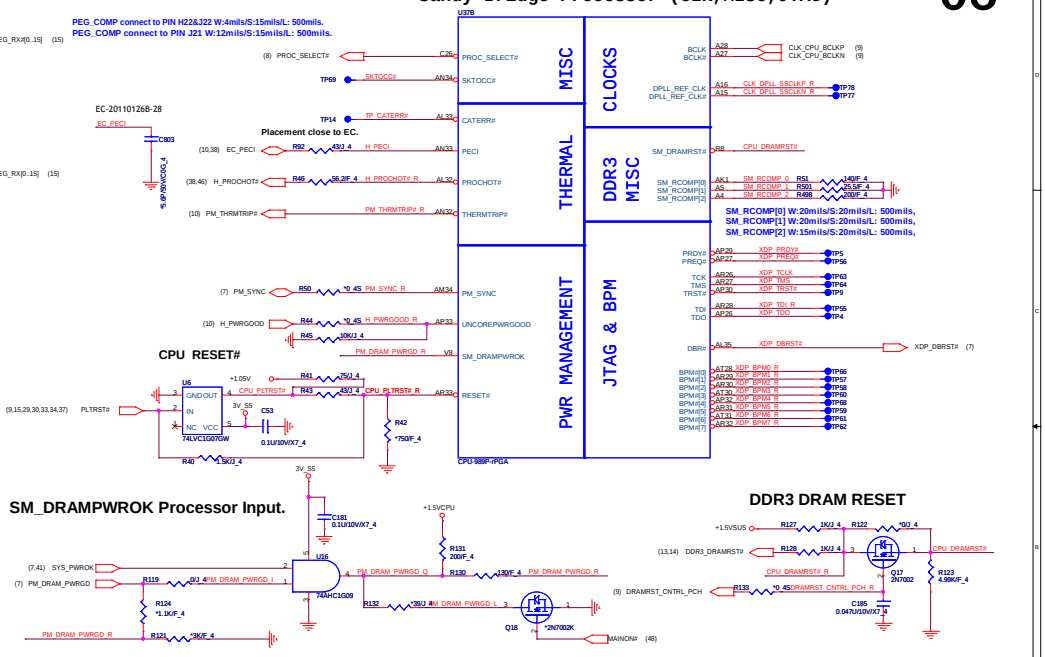


+1.05V (5,7,8,9,11,42,48)
+1.5VCPU (5,41,48)
3V_S5 (7,8,9,10,11,29,38,48)
+1.5VSUS (5,11,13,14,41,45,48)

PEG_COMP connect to PIN H22&J22 W:4mils/S:15mils/L: 500mils.
PEG_COMP connect to PIN J21 W:12mils/S:15mils/L: 500mils.

eDP_COMP connect to PIN A18 W:4mils/S:15mils/L: 500mils.
eDP_COMP connect to PIN A17 W:12mils/S:15mils/L: 500mils.

Sandy Bridge Processor (CLK,MISC,JTAG)



SM_RCOMP[0] W:20mils/S:20mils/L: 500mils,
SM_RCOMP[1] W:20mils/S:20mils/L: 500mils,
SM_RCOMP[2] W:15mils/S:20mils/L: 500mils.

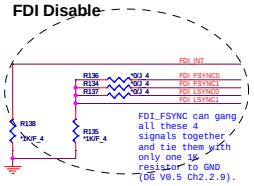
Placement close to EC.

CPU RESET#

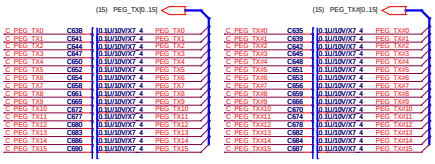
SM_DRAMPWROK Processor Input.

DDR3 DRAM RESET

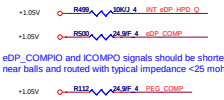
FDI Disable



PEG x16



DP & PEG Compensation



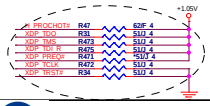
eDP_COMPIO and ICOMPO signals should be shorted near balls and routed with typical impedance <25 mohms

PEG_ICOMPI and RCOMPO signals should be routed within 500 mils typical impedance = 43 mohms PEG_ICOMPO signals should be routed within 500 mils typical impedance = 14.5 mohms

Disable external GRAPIC DP

If motherboard only supports external graphics or if it supports integrated graphic but without eDP:
Connct DPP_REF_SSCLK on Processor to GND through 1K+/- 5% resistor
Connct DPP_REF_SSCLK# on Processor to VCCP through 1K+/- 5% resistor

Processor pull-up (CPU)



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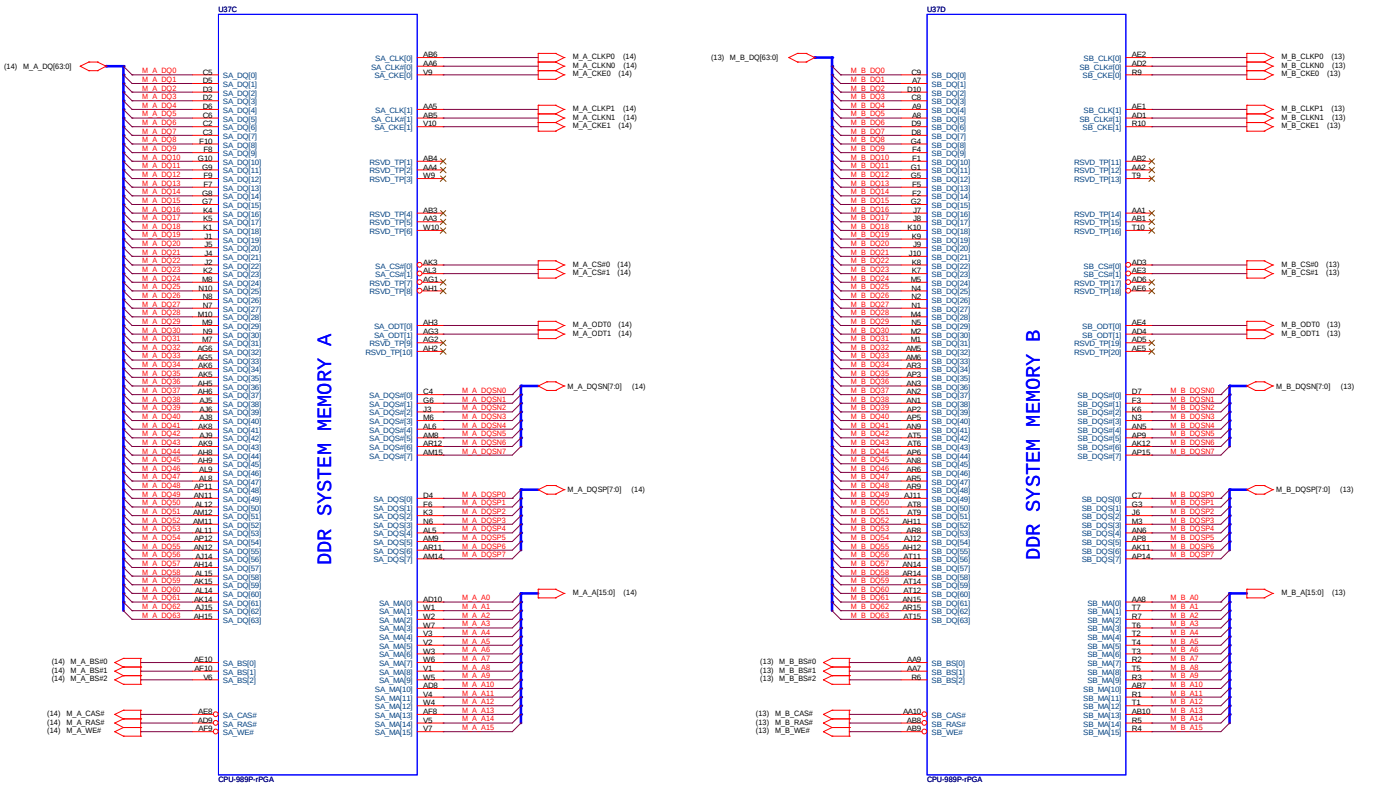
03

Sandy Bridge Processor (DDR3)



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	SNB 2/4 (DDR3 I/F)	1A
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Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)

05

POWER

CPU Core Power
SNB 35W:55A
22uF x 32
22uF x 3 (Non-stuff)

CPU VTT
SNB 35W:8.5A
22uF x 10
22uF x 6 (Non-stuff)

CPU VGT
SNB 35W:24A
22uF x 12
22uF x 4 (Reserved)

CPU VCCPL
SNB 35W:3A
330uF/7mohm x 1
10uF x 1
1uF x 2

CPU MCH
SNB 35W: 8.5A
330uF/6mohm x 1
10uF x 6

CPU SA
SNB 35W: 6A
330uF/7mohm x 1
10uF x 3

CORE SUPPLY
PEG AND DDR
SVID
SENSE LINES
GRAPHICS
SENSE LINES
VREF
DDR3 -1.5V RAILS
SA RAIL
MISC
1.8V RAIL

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

SVID CLK
Place PU resistor close to VR
SVID DATA
Place PU resistor close to CPU
Place PU resistor close to VR
SVID ALERT
Place PU resistor close to CPU

Trace Route to Power IC area.

CAD Note: +VDDR_REF_CPU should have 10 mil trace width

1122 DB add for Intel. Placement close to CPU.

Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
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	SNB 3/4 (POWER)	
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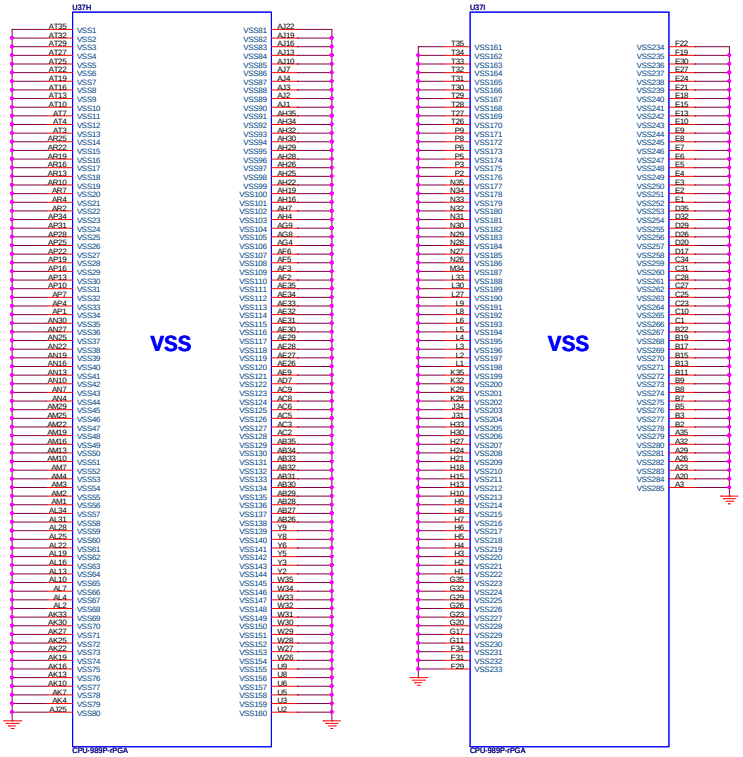
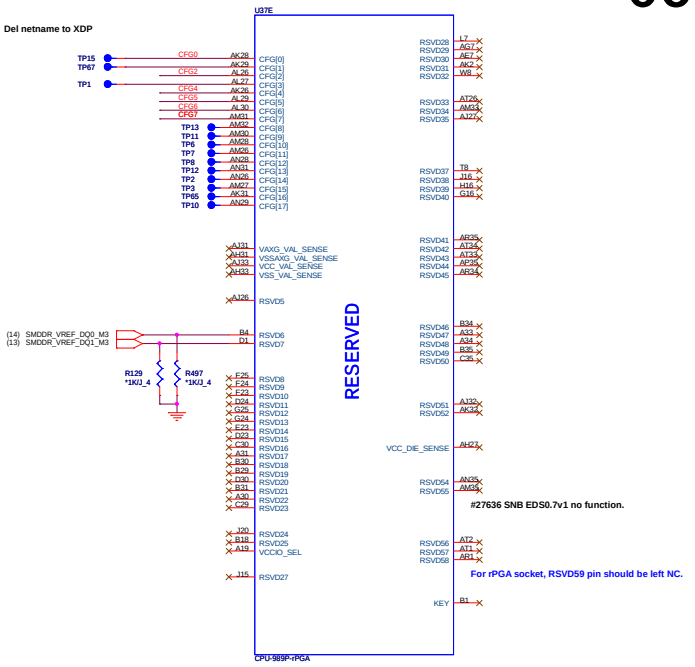
Sandy Bridge Processor (GND)



Sandy Bridge Processor (RESERVED, CFG)



Processor Strapping

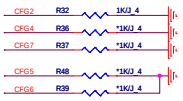
The CFG signals have a default value of '1' if not terminated on the board.

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

11(Default)

CFG[6:5] (PCIE Port Bifurcation Straps)

11: (Default) x16 - Device 1 functions 1 and 2 disabled
10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled
01: Reserved - (Device 1 function 1 disabled ; function 2 enabled)
00: x8,x4,x4 - Device 1 functions 1 and 2 enabled



Quanta Computer Inc.
PROJECT :PT NOTE(INTEL)

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	SNB 4/4 (GND)	1A
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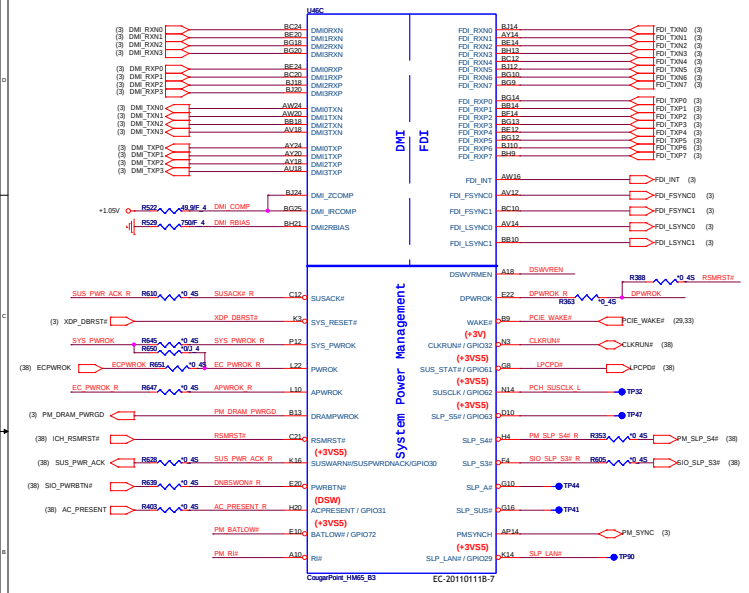
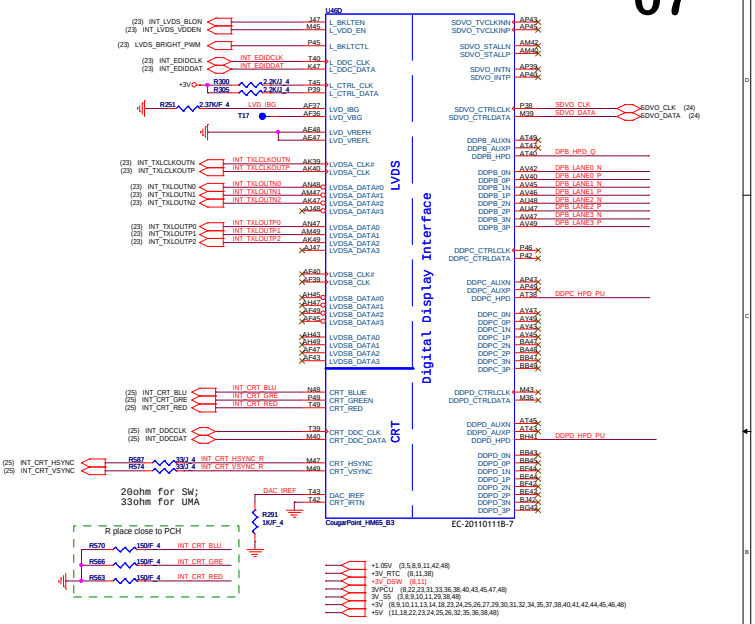
Cougar Point (DMI,FDI,PM)



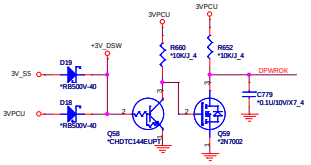
Cougar Point (LVDS,DDI)



07

PCH Pull-high/low(CLG)

DPWROK FOR DSW



System PWR_OK(CLG)

For UMA HDMI Function

Quanta Computer Inc.
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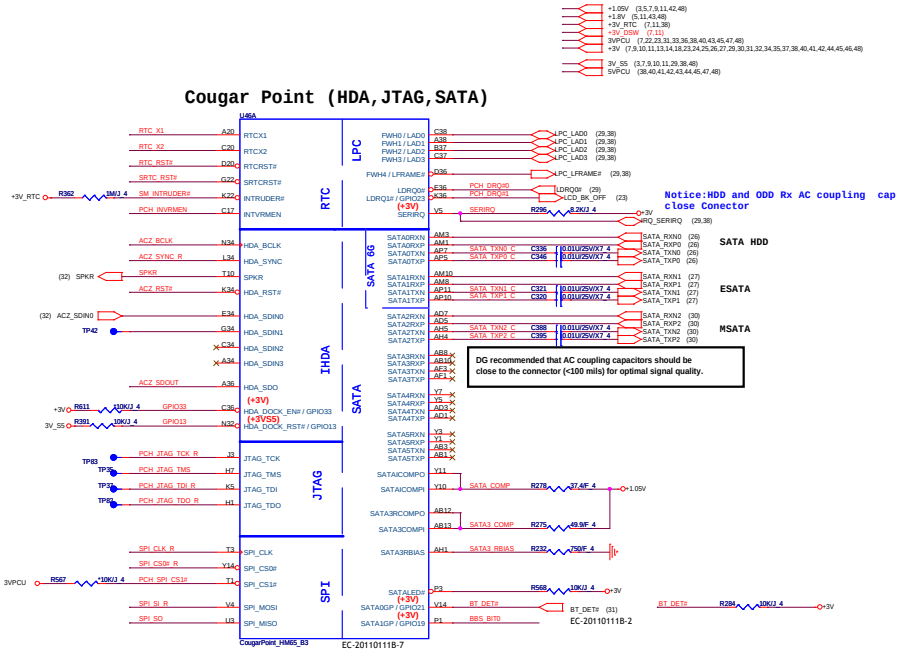
Cougar Point (HDA,JTAG,SATA)

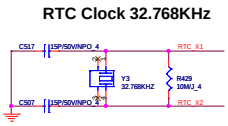


if default boot destination is SPI, no external pull-up/-down resistors on the board are necessary

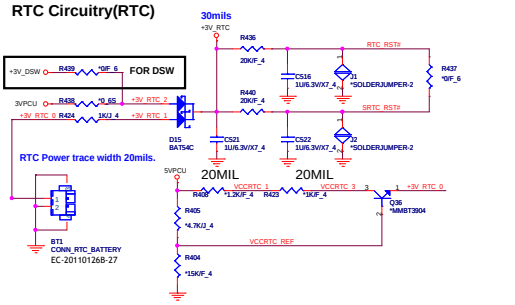
PCH Strap Table

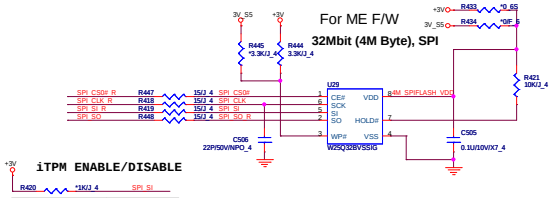
Pin Name	Strap description	Sampled	Configuration	Circuit
SPKR Different from Calpella	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	SPKR R565 *1KJ_4 +3V
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	PCH_INVRMEN R640 330KJ_4 +3V_RTC
HDA_SDO	Flash Descriptor Security Only for Interposer	PWROK	1 = Override 0 = Default (weak pull-up 20K)	TP87 HDA_SDOUT R632 *1KJ_4 TP53 3V_S5
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	GNT1#: 1 / 0; GNT0#: 1 / 0; Boot Location: SPI / LPC	[Need external pull-down for LPC BIOS]
GPIO19 Different from Calpella	Boot BIOS Selection 0 [bit-0]	PWROK		R569 *1KJ_4 BBS_BIT0 R619 *1KJ_4 BBS_BIT1 (9)
GNT2# / GPIO53	ESI strap (Server only)	PWROK	Should not be pull-down (weak pull-up 20K)	USE GPIO PIN
DF_TVS	DMI Termination voltage	PWROK	weak pull-down 20kohm	+1.8V R523 2.2KJ_4 R517 1KJ_4 DF_TVS (10) (3) PROC_SELECT#
HDA_SYNC	**On-Die PLL VR Voltage Select**	**RSMRST**	0 = Support by 1.8V (weak pull-down) 1 = Support by 1.5V	3V_S5 R390 1KJ_4 ACZ_SYNC_R
GPIO15				3V_S5 R624 1KJ_4 GPIO15 (10)
GPIO28 Different from Calpella	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)	R319 *1KJ_4 PLL_ODVR_EN (10)
	DSWVRMEM(page7)		0 = Disable 1 = Enable	

RTC Clock 32.768KHz



RTC Circuitry(RTC)

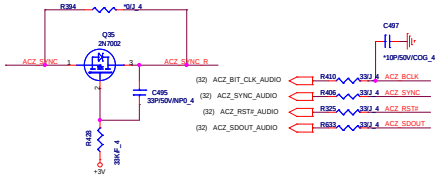




iTPM ENABLE/DISABLE

TPM Function	R420
Enable	Stuff
Disable	NC (Default)

HDA Bus(CLG)



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Cougar Point-M (PCI,USB,NVRAM)

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

PCI/USBOC# Pull-up(CLG)

1122 SWAP

PLTRST#(CLG)

SMBus/Pull-up(CLG)

CLK_REQ/Strap Pin(CLG)

SMBus/Pull-up(CLG)

DGPU_PRSNT# H:Switchable
L:UMA

Quanta Computer Inc.
PROJECT :PT NOTE(INTEL)
PCH 3/6 (PCIE/USB/CLK)
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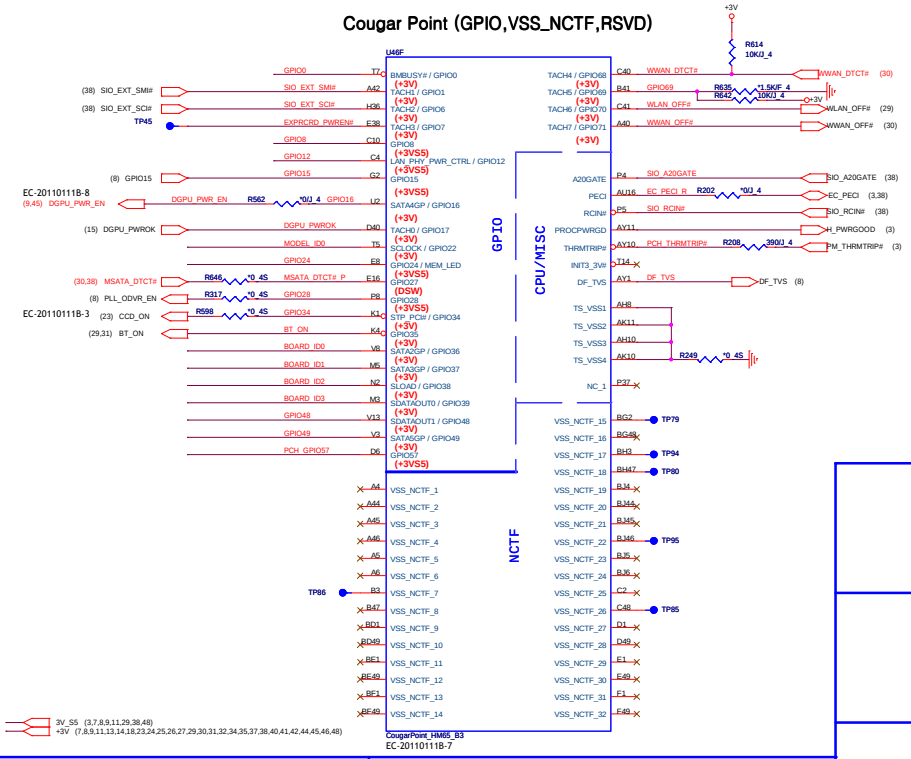
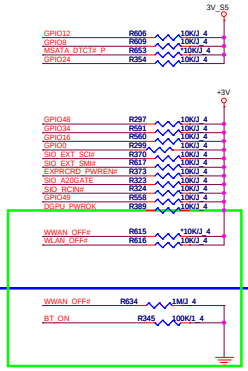
Cougar Point (GPIO,VSS_NCTF,RSVD)

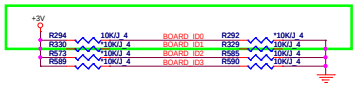


GPIO Pull-up/Pull-down(CLG)

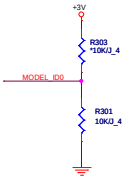


BOARD ID SETTING

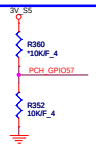
Board ID For Function	ID3 GPIO39	ID2 GPIO38	ID1 GPIO37	ID0 GPIO36
SDV	0	0	0	0
DV2	0	0	0	1
SIT	0	0	1	0
SVT	0	0	1	1
SOVP	0	1	0	0



Model ID	MODEL_ID0
14"	0
15"	1



TPM physical presence	
PCH_GPIO57	Low: Default



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Size: Document Number: Rev 1A
PCH 4/6 (GPIO/MISC)
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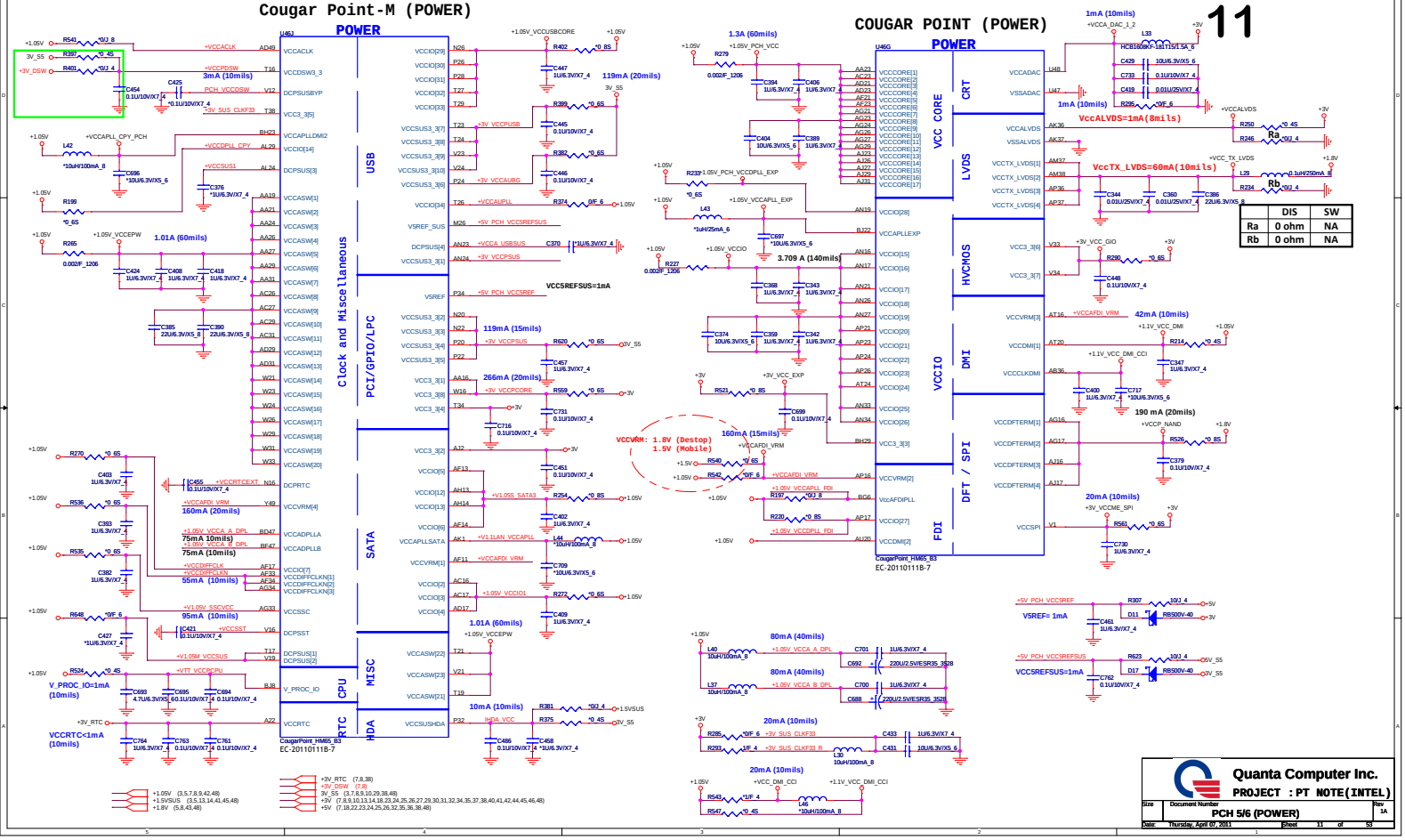
Cougar Point-M (POWER)



COUGAR POINT (POWER)

	DIS	SW
Ra	0 ohm	NA
Rb	0 ohm	NA

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)

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	PCH 5/6 (POWER)	1A
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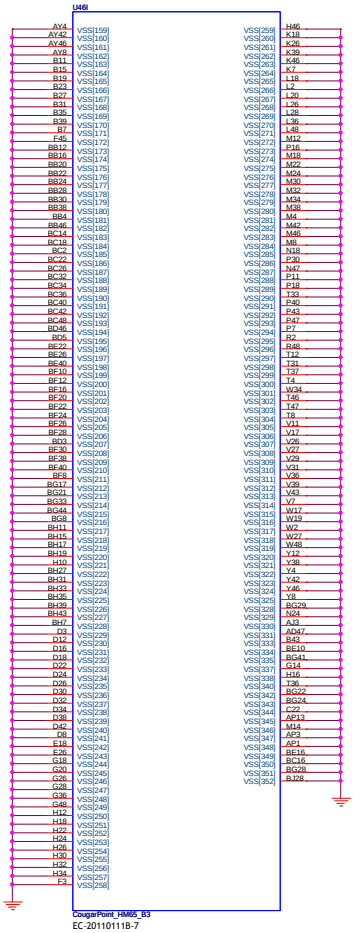
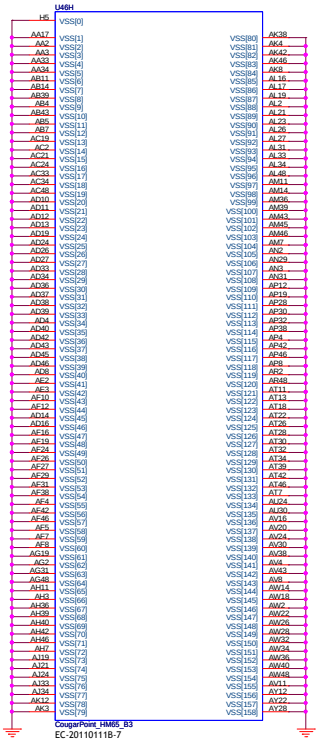
IBEX PEAK-M (GND)



IBEX PEAK-M (GND)



Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
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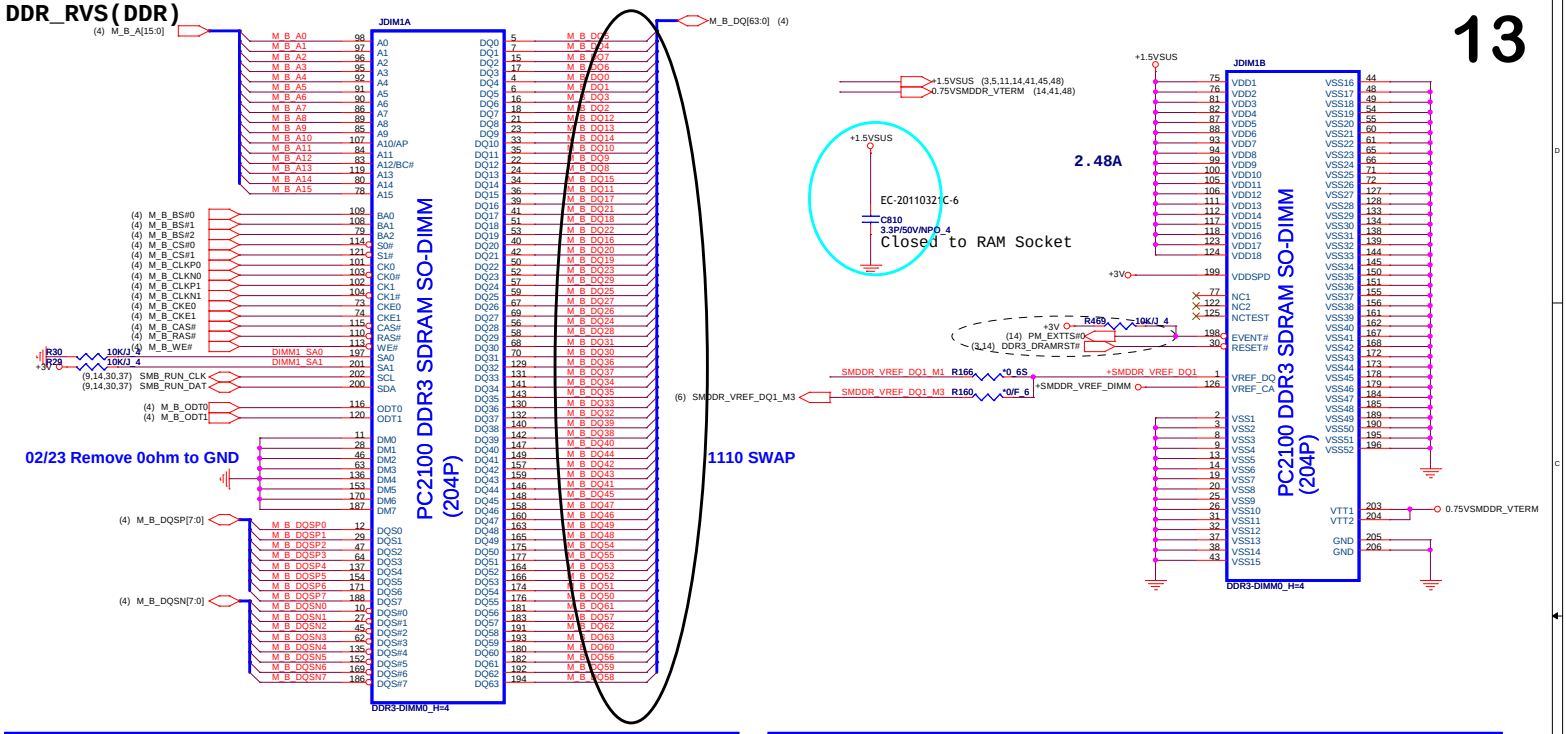
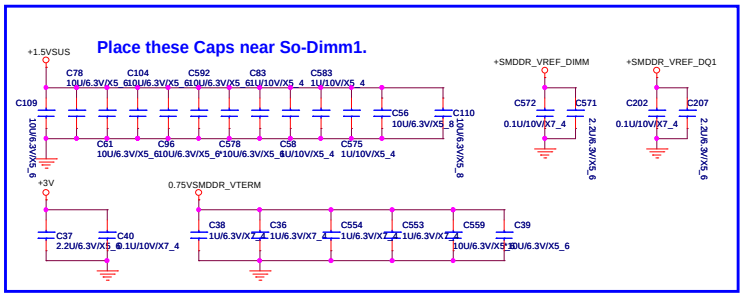
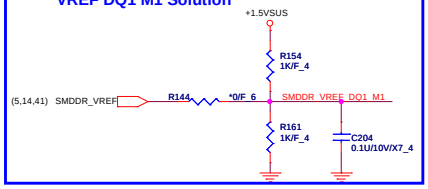
DDR_RVS(DDR)





VREF DQ1 M2 Solution

VREF DQ1 M1 Solution



	RVS 4H	RVS 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080

Standard 8H type:DDR-C-2013310-204p-1

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	DDRIII SO-DIMM-0	1A
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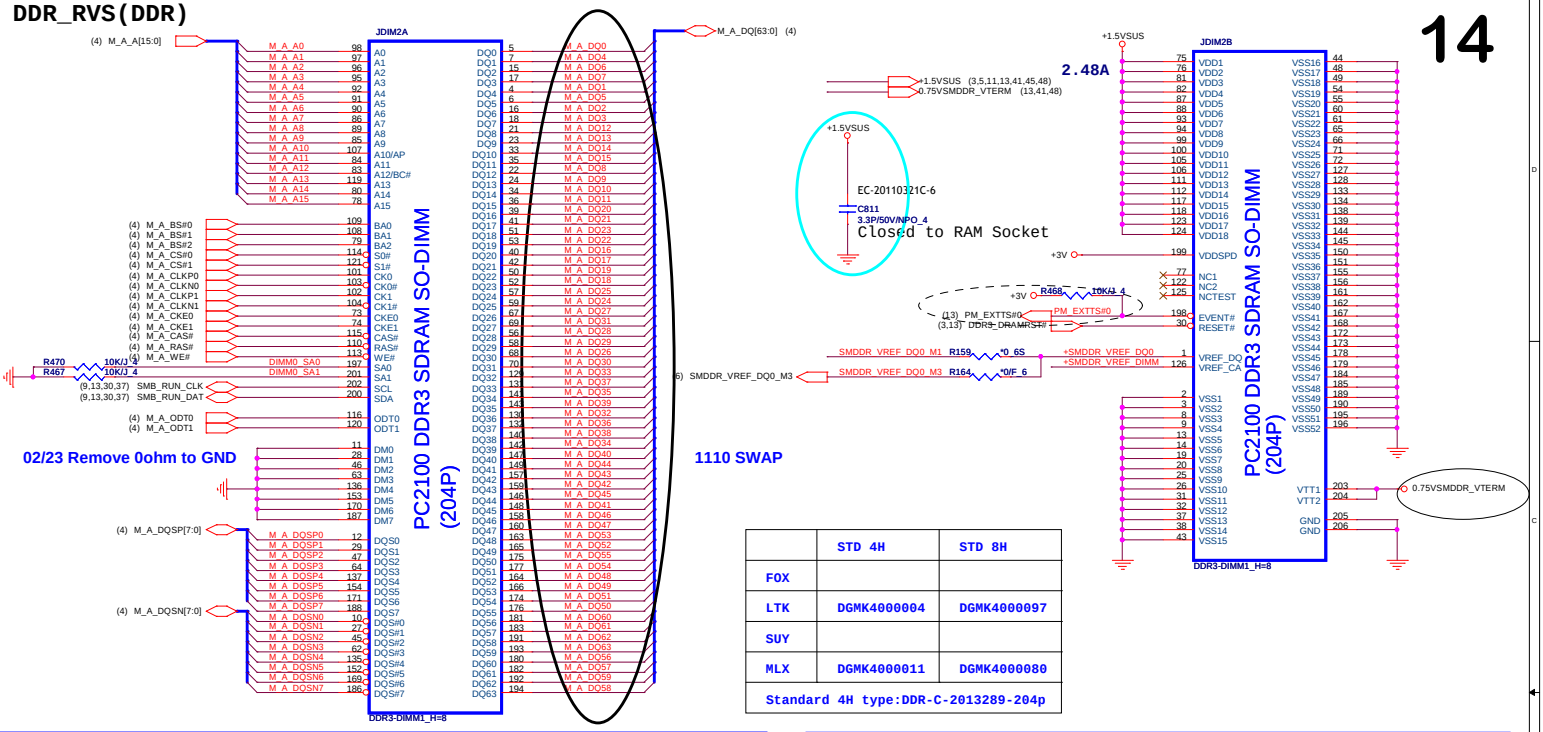
DDR_RVS(DDR)

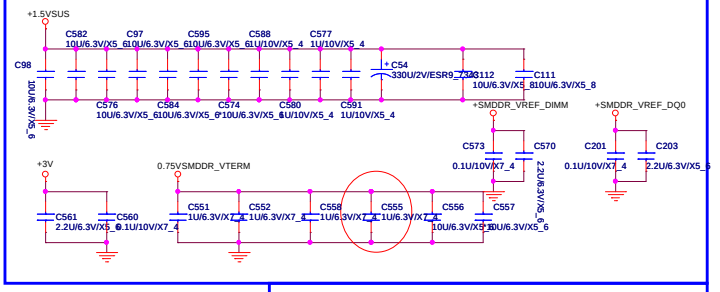


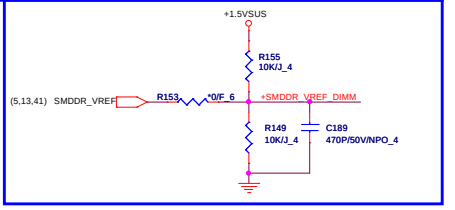
	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080

Standard 4H type:DDR-C-2013289-204p

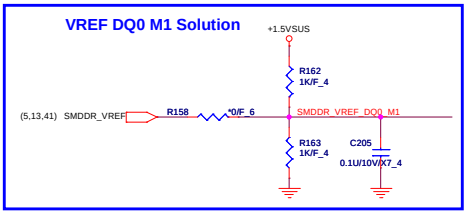
VREF DQ0 M2 Solution

Place these Caps near So-Dimm0.





VREF DQ0 M1 Solution



Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
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	DDRIII SO-DIMM-1	1A
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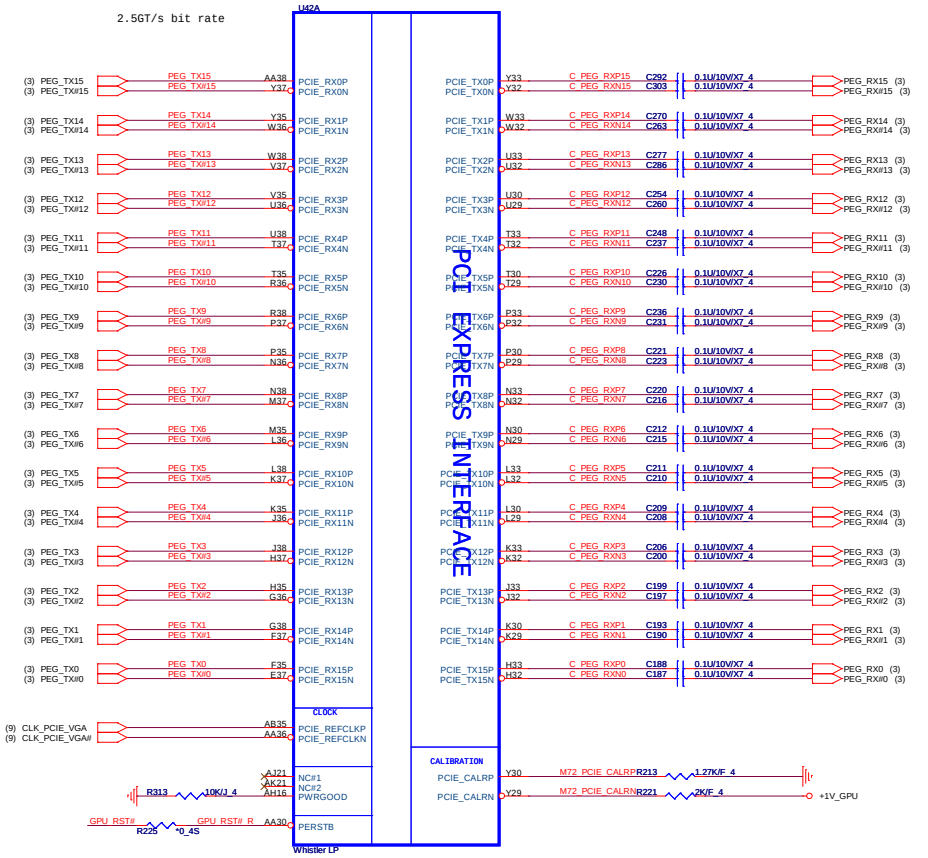

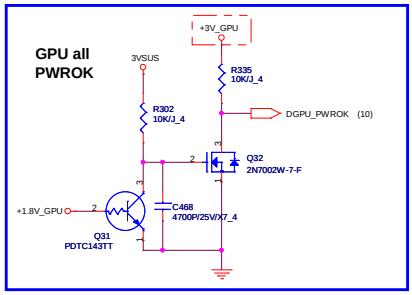

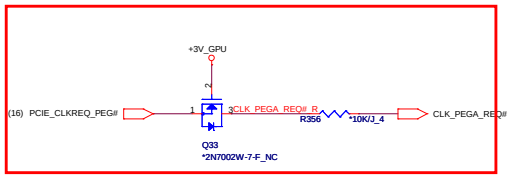

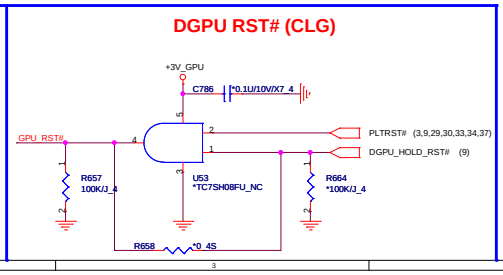

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)

Size	Document Number	Rev
	N11M-GE2 (PCIE I/F) 1/5	1A
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CONFIGURATION STRAPS

STRAPS	PIN	DESCRIPTION	SET
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING 0 = 50% Tx output swing 1 = Full Tx output swing	0
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED 0 = Disable ; 1 = Enable	0
BIF_GEN2_EN_A	GPIO2	0 = Advertises the PCIe device as 2.5 GTs capable at power-on. 1 = Advertises the PCIe device as 5.0 GTs capable at power-on.	1
GPIO_S_AC_BATT (M96-M2)	GPIO5	1 = AC (Performance mode) 0 = Battery saving mode	0
VGA_DIS	GPIO9	0: VGA Controller capacity enabled 1: The device will not be recognized as the system's VGA controller	0
BIOS_ROM_EN	GPIO22	Enable external BIOS ROM device 0 = Disable ; 1 = Enable	0
AUD[1] AUD[0]	VGAHSYNC VGAVSYNC	AUD[1:0]: 00 - No audio function; 01 - Audio for DisplayPort only. 10 - Audio for DisplayPort and HDMI if dongle is detected; 11 - Audio for both DisplayPort and HDMI.	00
VIP_DEVICE_STRAP_EN	BIOS_ROM_EN	VIP Device Strap Enable 0 = Disable ; 1 = Enable	0

APERTURE SIZE

MEMORY APERTURE SIZE SELECT

MEMORY SIZE	CFG2 GPIO13	CFG1 GPIO12	CFG0 GPIO11
128MB	0	0	0
256MB	0	0	1
64MB	0	1	0

Memory Straps	RAM_TYPE _CFG2	RAM_TYPE _CFG1	RAM_TYPE _CFG0	Quanta PN (QuantaBuy)	Vendor PN
900MHz Samsung 1GB(128M*16*8pcs)	0	0	0	AKD5MGWT505	K4W2G1646C-HC11
900MHz Samsung 1GB(64M*16*8pcs)	0	0	1	AKD5LGHT504	K4W1G1646E-HC11
900MHz Hynix 1GB(128M*16*8pcs)	0	1	0	AKD5MGWTW04	H5TQ2G63BFR-11C
900MHz Hynix 1GB(64M*16*8pcs)	0	1	1	AKD5LZWTW06	H5TQ1G63DFR-11C

VRAM TYPE

M96 => +1.1V_GFX_PCIE
Park, Madison=> +1.1V_GFX_PCIE

PLACE VREFG DIVIDER AND CAP CLOSE TO ASIC

Del DIS HDMI

Reserve 0 ohm for Dual mode DDC/AUX

R place close to GPU

EC-20110117B-1

EC-20110323C-3

Quanta Computer Inc.
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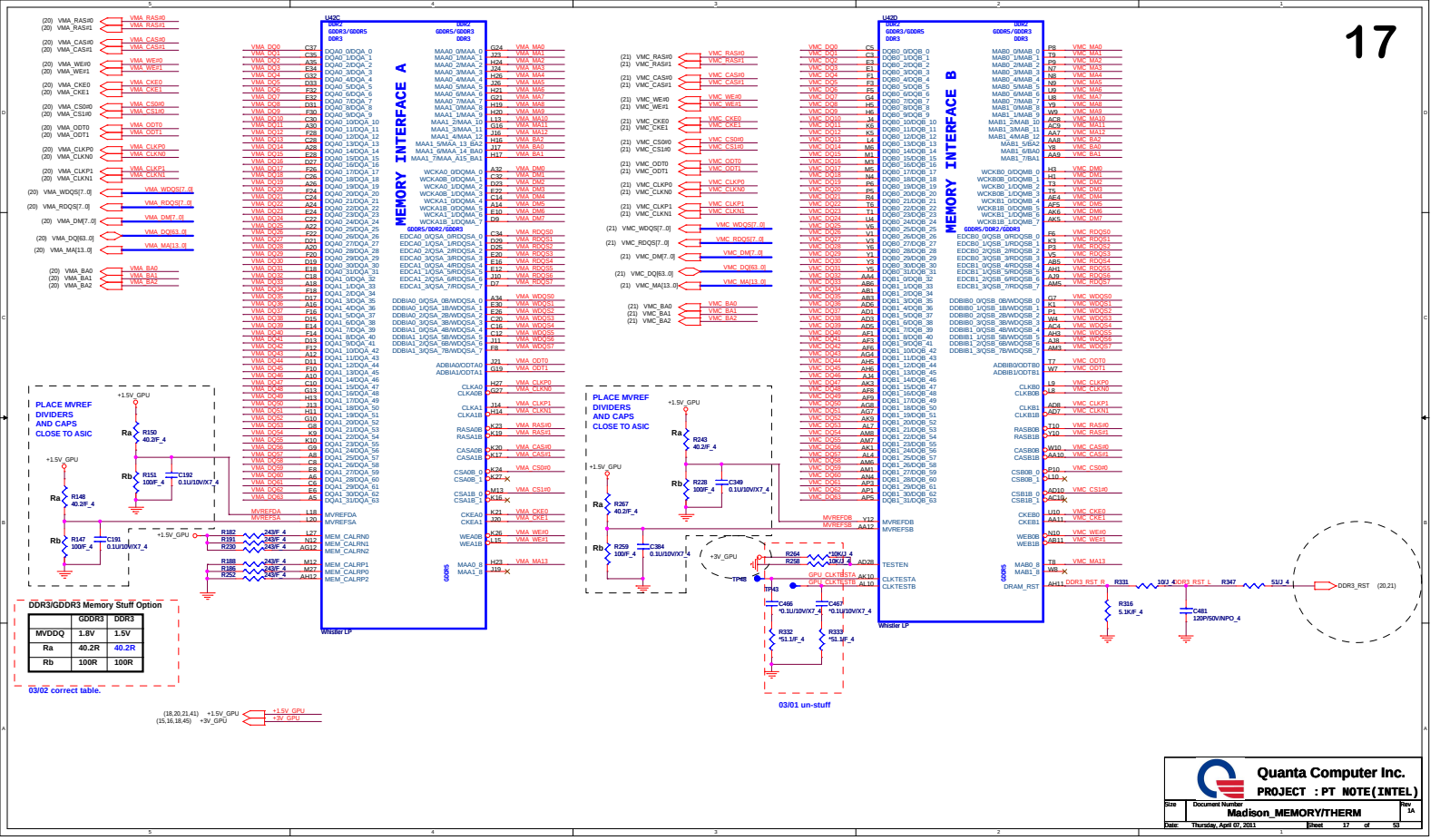

Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
Size	Document Number: Madison_MEMORY/THERM	Rev: 1A
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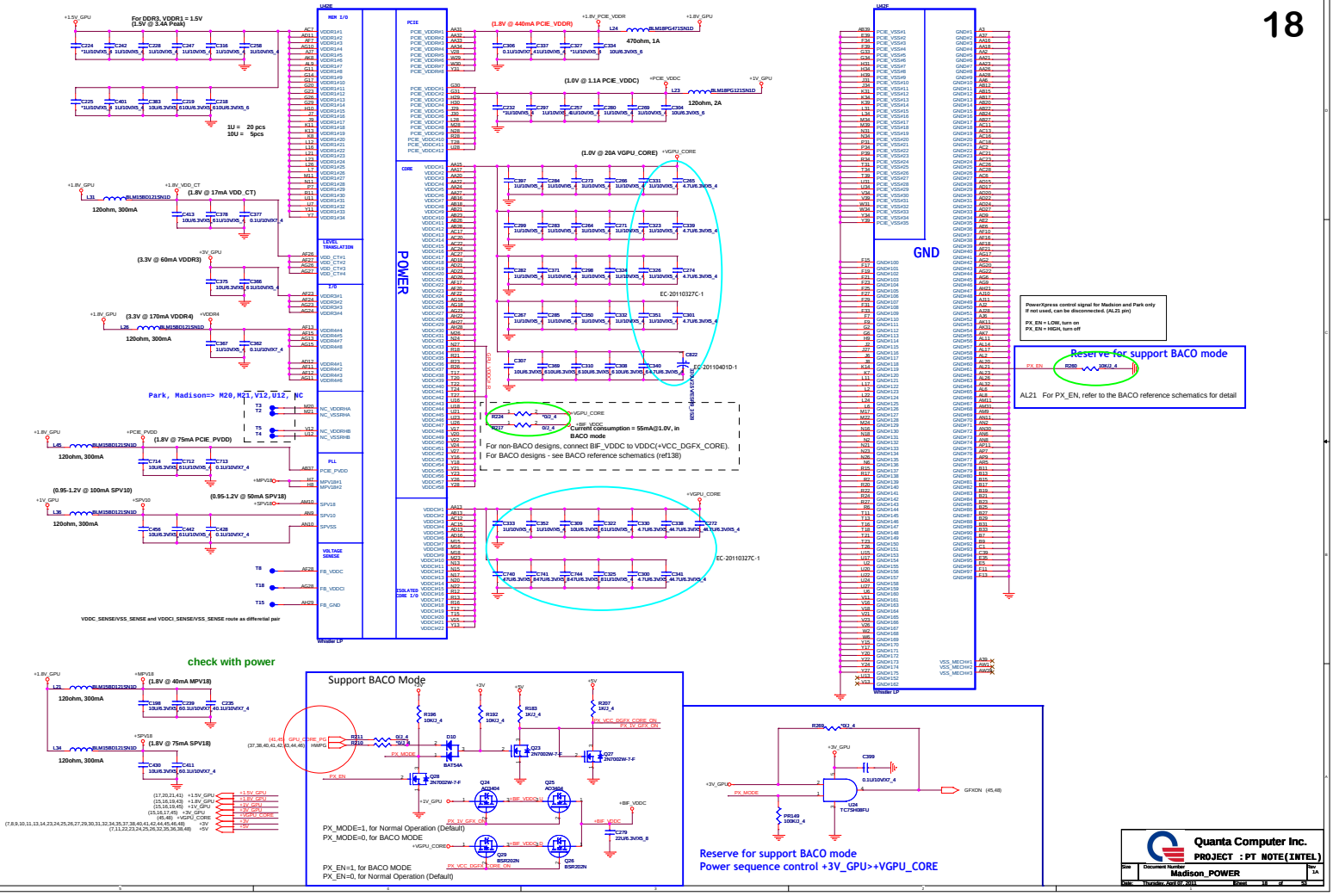

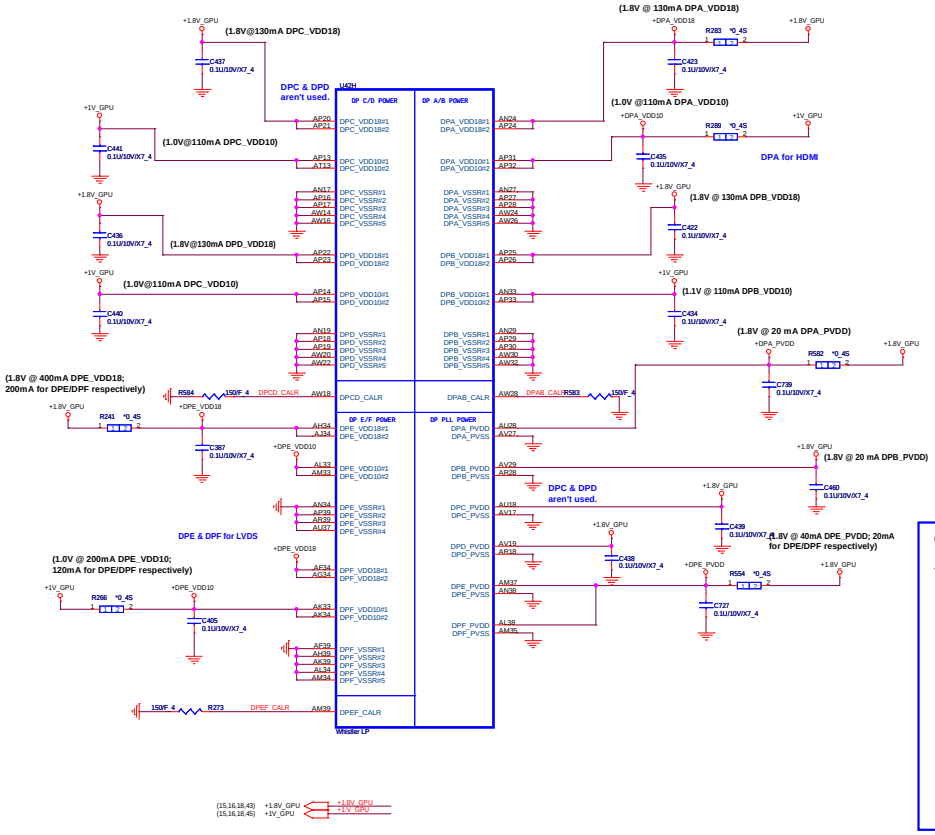

GPU Power Rail List

+1V_GPU=>
- +DPA_VDD10
- +SPV10
- +DPE_VDD10
- +DPLL_VDDC
- +PCIE_VDDC

+1.8V_GPU=>
- +A2VDDQ
- +AVDD
- +DPA_PVDD
- +DPA_VDD18
- +DPE_PVDD
- +DPE_VDD18
- +DPLL_PVDD
- +MPV18
- +PCIE_PVDD
- +PCIE_VDDR
- +SPV18
- +TSVDD
- +VDD1DI
- +VDD2DI
- +VDD_CT
- +VDDR4

GPU Power-on sequence

1 => +3V_GPU
2 => +VGPU_CORE
3 => +1V_GPU
4 => +1.5V_GPU
5 => +1.8V_GPU
6 => DGPU_PWROK

Quanta Computer Inc.
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	Madison_DP_POWER	1A

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CHANNEL A: 1024MB DDR3

(17) VMA_DQ[63..0]
(17) VMA_DM[7..0]
(17) VMA_WDQS[7..0]
(17) VMA_RDQS[7..0]

U14 U39 U40 U15

1110 SWAP

1119 SWAP

96-BALL SDRAM DDR3
K4W2G1646C-HC11

Placement has to be close to VRAM

EC-20110330C-1

C136 330U/2.5V/ESR35_3528

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)
Size: Document Number: N11M-GE2 VRAM-1(DDR3 BGA96) Rev: 1A
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CHANNEL B: 1024MB DDR3

(17) VMC_DQ[63..0]
(17) VMC_DM[7..0]
(17) VMC_WDQS[7..0]
(17) VMC_RDQS[7..0]

1110 SWAP

U17 / U41 / U25 / U48 — K4W2G1646C-HC11 (96-BALL SDRAM DDR3)

Placement has to be close to VRAM

EC-20110330C-1

Quanta Computer Inc.	PROJECT : PT NOTE(INTEL)
Size	Document Number: N11M-GE2 VRAM-2(DDR3 BGA96) Rev 1A
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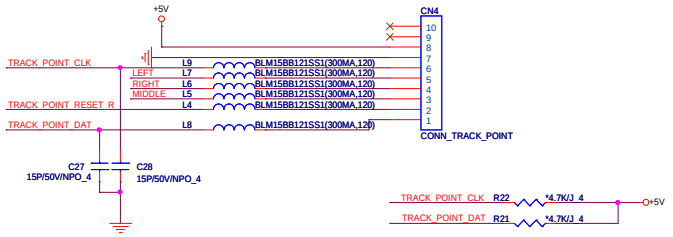
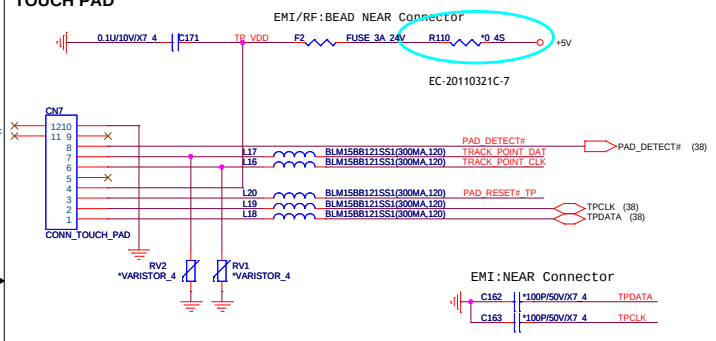
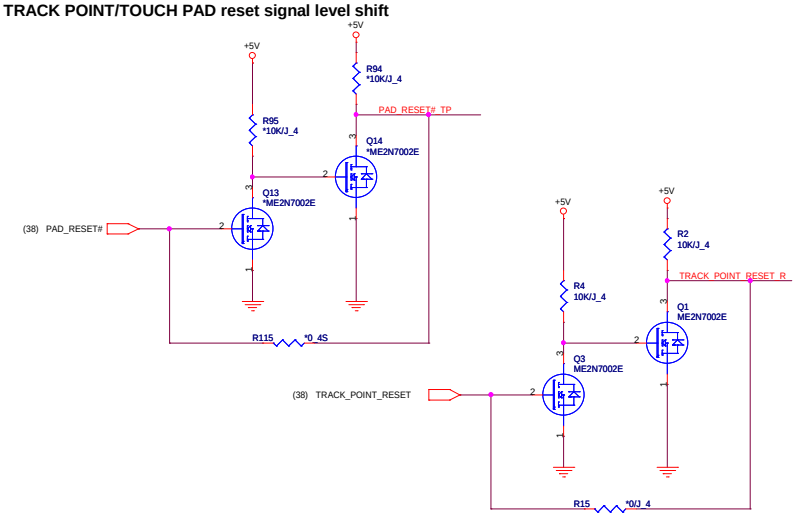
TRACK POINT



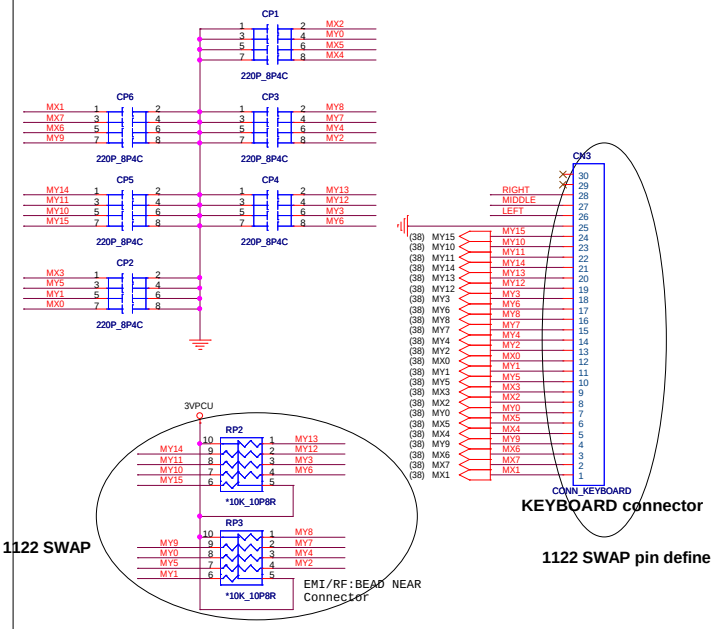
TOUCH PAD



TRACK POINT/TOUCH PAD reset signal level shift



KEYBOARD CONNECTOR



1122 SWAP

1122 SWAP pin define

Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
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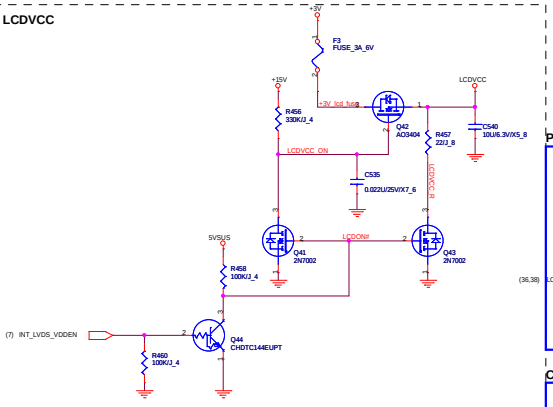
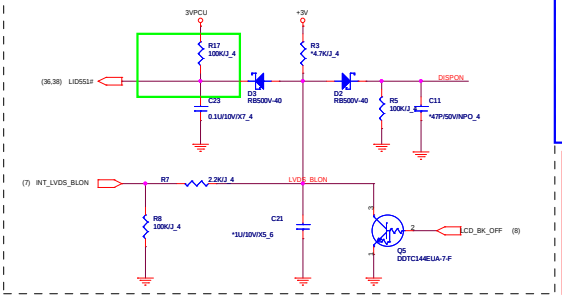
CONN

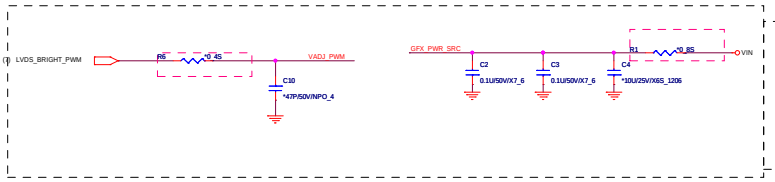
CONN

LCDVCC

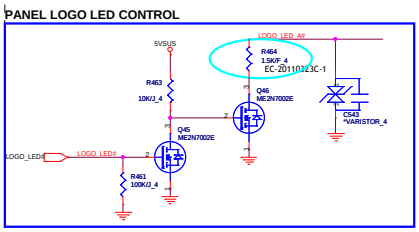


Back light

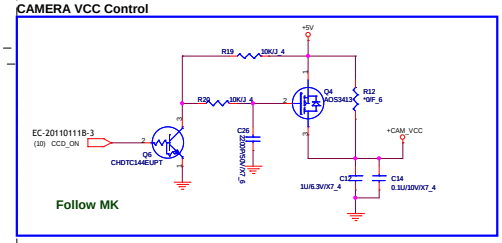


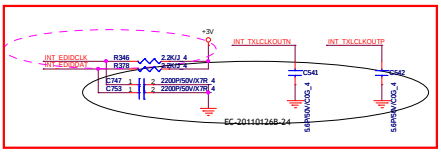


PANEL LOGO LED CONTROL

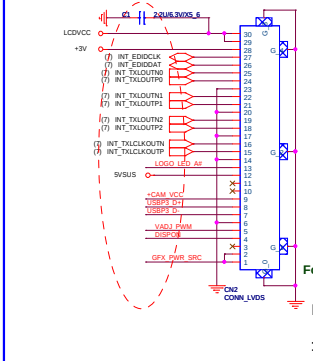


CAMERA VCC Control

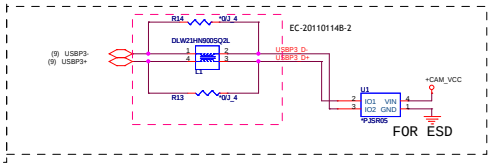




LVDS Connector



FOR ESD



Quanta Computer Inc.	
PROJECT : PT NOTE(INTEL)	
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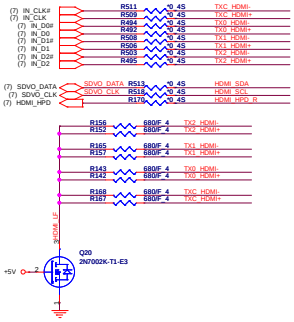
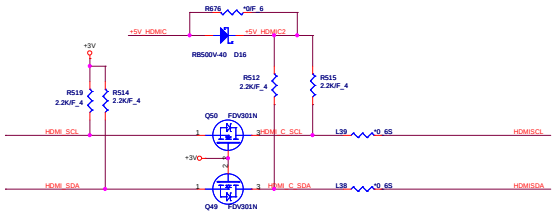
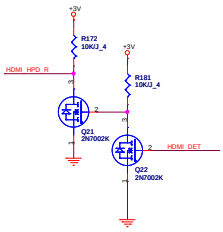
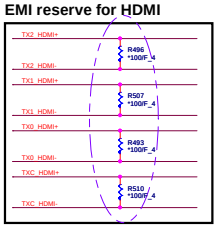


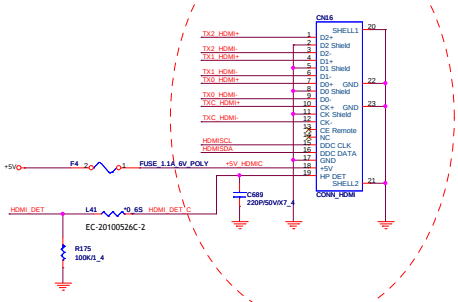




EMI reserve for HDMI



HDMI PORT



Quanta Computer Inc.		
PROJECT :PT NOTE(INTEL)		
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	CONN HDMI	
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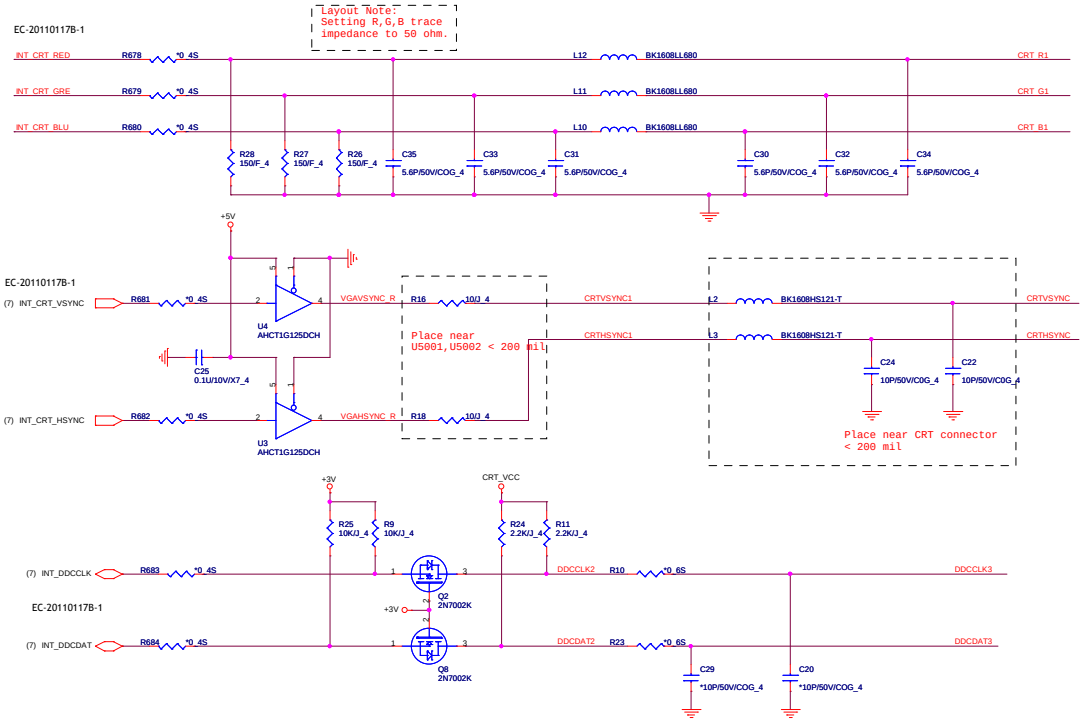
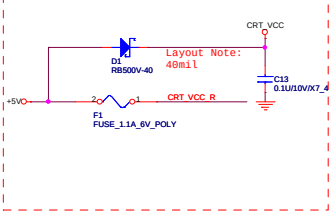
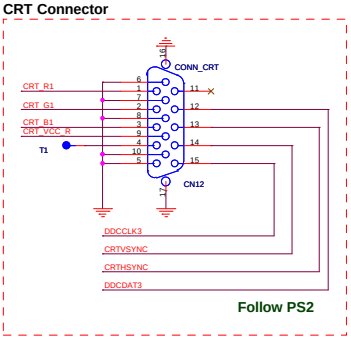
(7) INT_CRT_RED
(7) INT_CRT_GRE
(7) INT_CRT_BLU



CRT Power

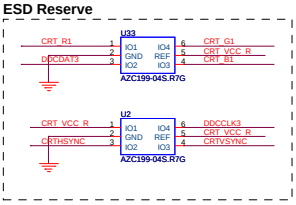


CRT Connector



Follow PS2

ESD Reserve



Quanta Computer Inc.		
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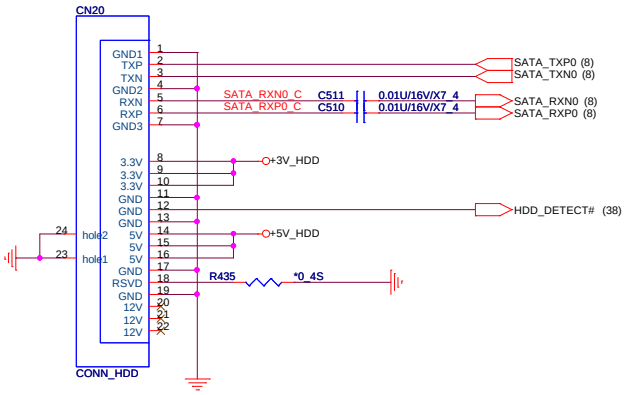
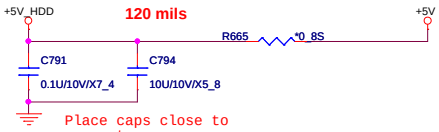
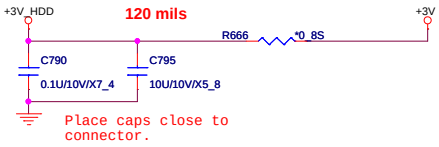
SATA Connector.

(7,11,18,22,23,24,25,32,35,36,38,48) +5V
(7,8,9,10,11,13,14,18,23,24,25,27,29,30,31,32,34,35,37,38,40,41,42,44,45,46,48) +3V

26







Quanta Computer Inc.

PROJECT : PT NOTE(INTEL)

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	SATA HDD	1A
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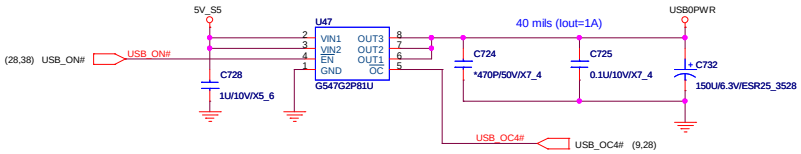
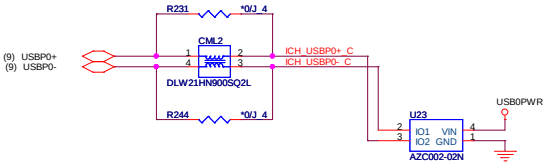
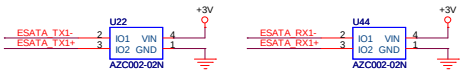
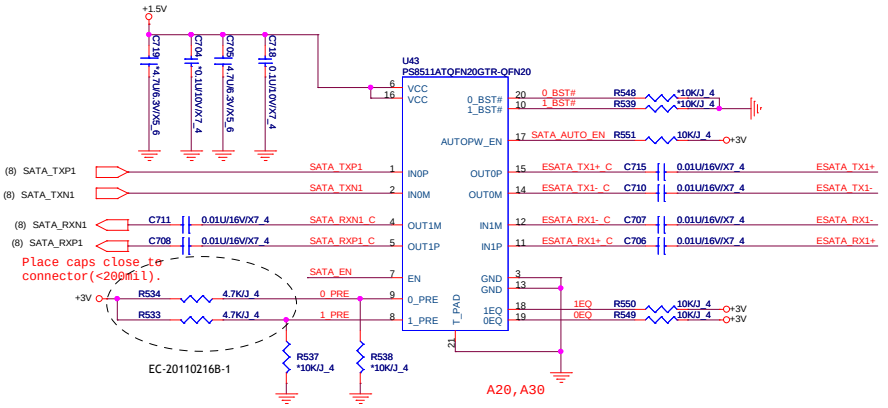
USB + E-SATA

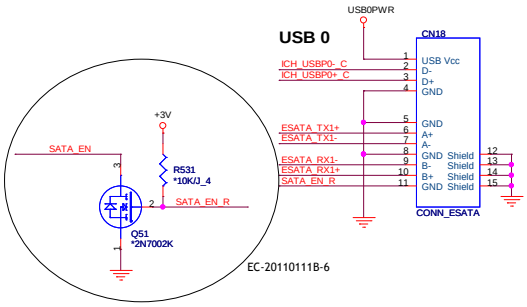




E-SATA RE-DRIVER







All straps of PS8511A have int. PL 150Kohm.

EN	AUTO_EN	0/1EQ	0/1EQ	0/1_BST#	0/1_BST#	0/1_PRE	0/1_PRE	Function
0	X	X	X	X	X	X	X	Standby
1	0	X	X	X	X	X	X	disable auto power saving
1	1	X	X	X	X	X	X	enable auto power saving
1	X	0	X	X	X	X	X	Short and medium length
1	X	X	1	X	X	X	X	Long length
1	X	X	X	0	X	X	X	Output :800~1200 mVpp
1	X	X	X	X	1	X	X	Output :400~700 mVpp
1	X	X	X	X	X	0	X	Pre-emphasis disabled
1	X	X	X	X	X	X	1	Pre-emphasis enabled

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)

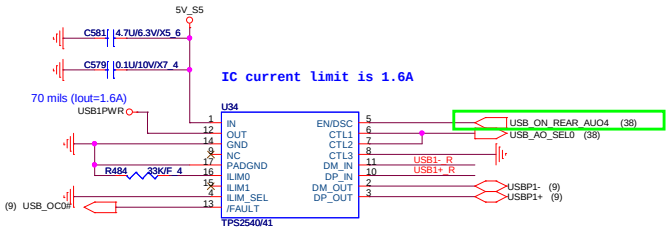
Size	Document Number	Rev
	USB X1/USB+ESATA	1A
Date: Friday, April 01, 2011	Sheet 27 of 53	

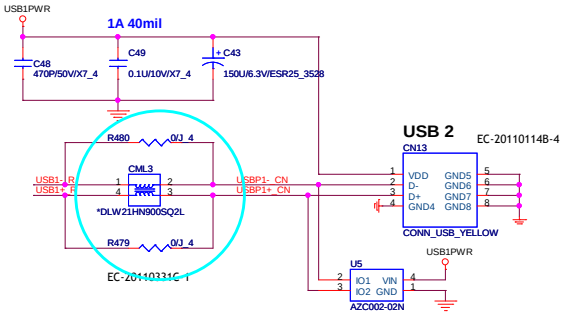
(11,27,48) 5V_S5
(7,8,9,10,11,13,14,18,23,24,25,26,27,29,30,31,32,34,35,37,38,40,41,42,44,45,46,48) +3V
(7,8,22,23,31,33,36,38,40,43,45,47,48) 3VPCU
(15,38,48) 3VSUS

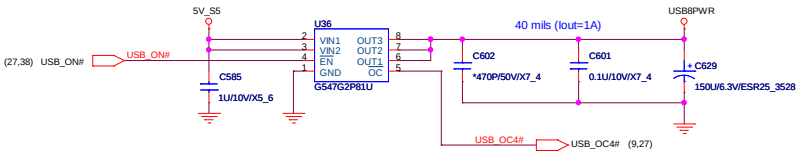
TPS2541 table

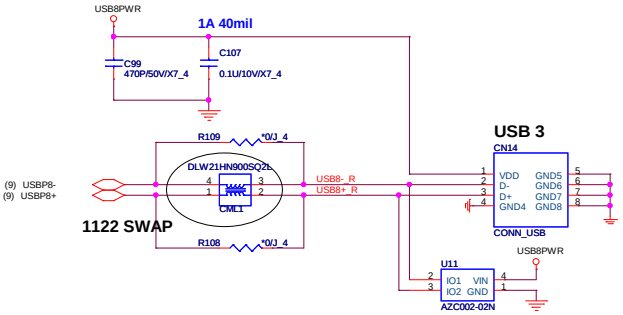
CTL1	CTL2	CTL3	Mode
0	0	X	Dedicated Charging Port, Auto-detect
0	1	X	Dedicated Charging Port, BC Specification 1.1 Only
1	0	X	Dedicated Charging Port, Apple Only
1	1	0	Standard Downstream Port, USB 2.0 Mode
1	1	1	Charging Downstream Port, BC Specification 1.1

Table 3 – TPS2541 Control Truth Table









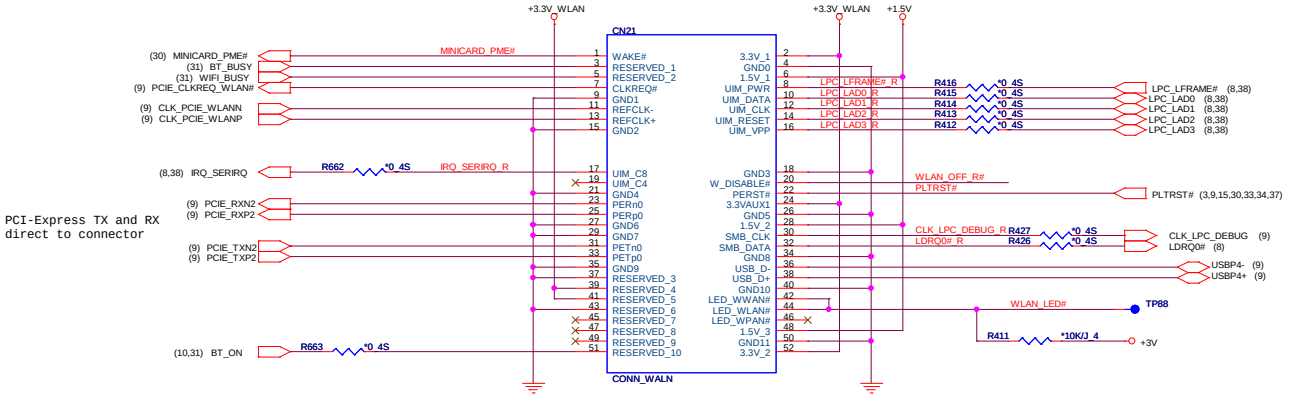
Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)

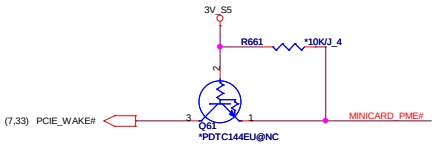
Size	Document Number	Rev
	CONN USB X2	1A
Date: Thursday, March 31, 2011	Sheet 28 of 53	

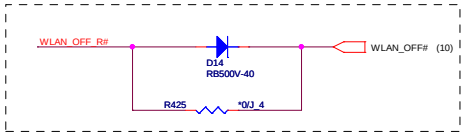
MiniCard WLAN/WiMAX connector

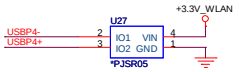
(7,8,9,10,11,13,14,18,23,24,25,26,27,30,31,32,34,35,37,38,40,41,42,44,45,46,48) +3V
(11,27,30,41) +1.5V
(3,7,8,9,10,11,38,48) 3V_S5

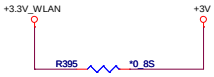
29

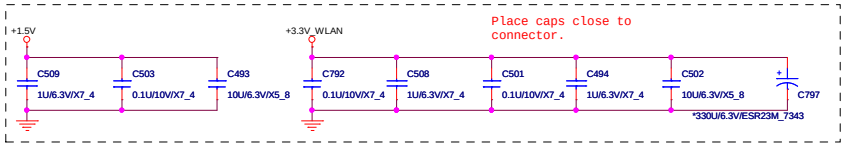










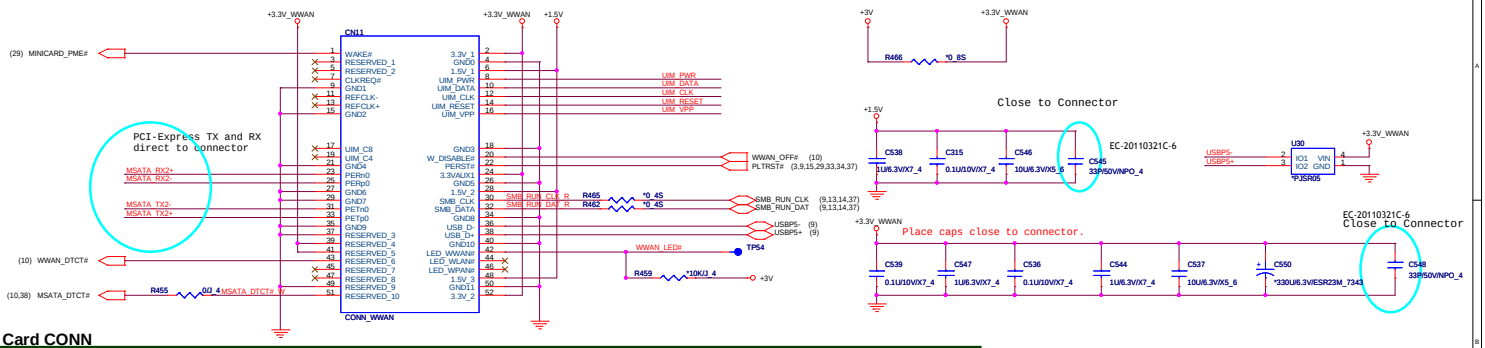


Quanta Computer Inc.

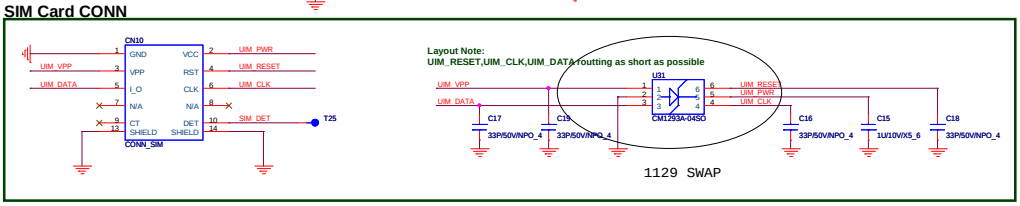
PROJECT : PT NOTE(INTEL)

Size	Document Number	Rev
	MINI-Card (WLAN/Wimax)	1A
Date: Wednesday, March 23, 2011	Sheet 29 of 53	

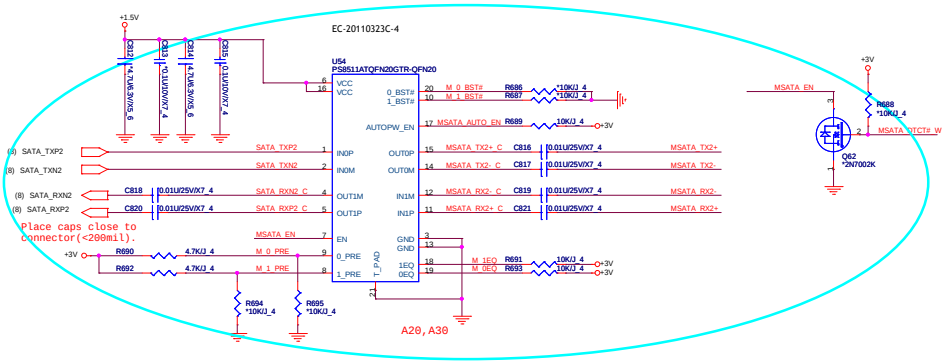
MiniCard WWAN connector



SIM Card CONN



M-SATA RE-DRIVER



All straps of PS8511A have int. PL 150Kohm.

EN	AUTO_EN	0/1EQ	0/1EQ	0/1_BST#	0/1_BST#	0/1_PRE	0/1_PRE	Function
0	X	X	X	X	X	X	X	Standby
1	0	X	X	X	X	X	X	disable auto power saving
1	1	X	X	X	X	X	X	enable auto power saving
1	X	0	X	X	X	X	X	Short and medium length
1	X	X	1	X	X	X	X	Long length
1	X	X	X	0	X	X	X	Output :800~1200 mVpp
1	X	X	X	X	1	X	X	Output :400~700 mVpp
1	X	X	X	X	X	0	X	Pre-emphasis disabled
1	X	X	X	X	X	X	1	Pre-emphasis enabled

Quanta Computer Inc.			
PROJECT : PT NOTE(INTEL)			
Size	Document Number		Rev
	MINI-Card (SSD, WWAN)		1A
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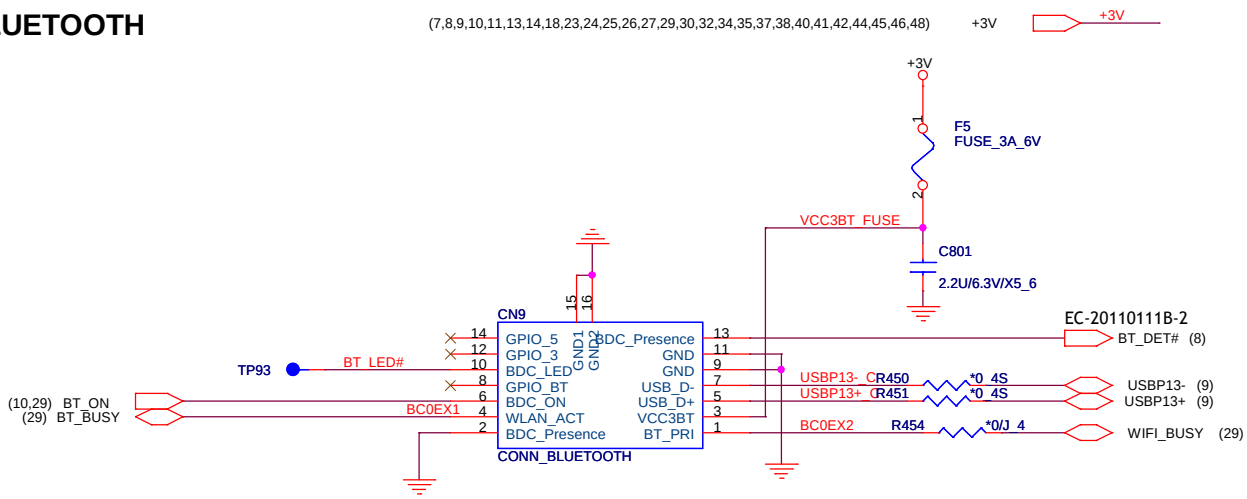
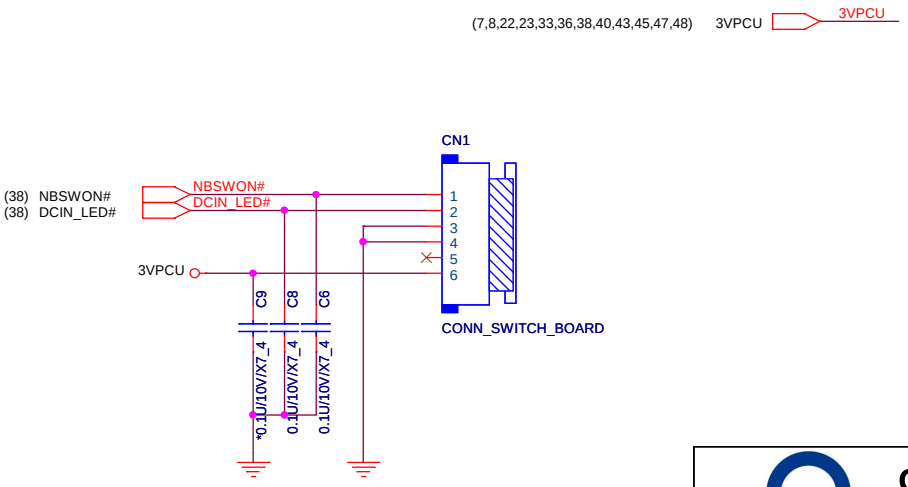
BLUETOOTH



Connect to S/B



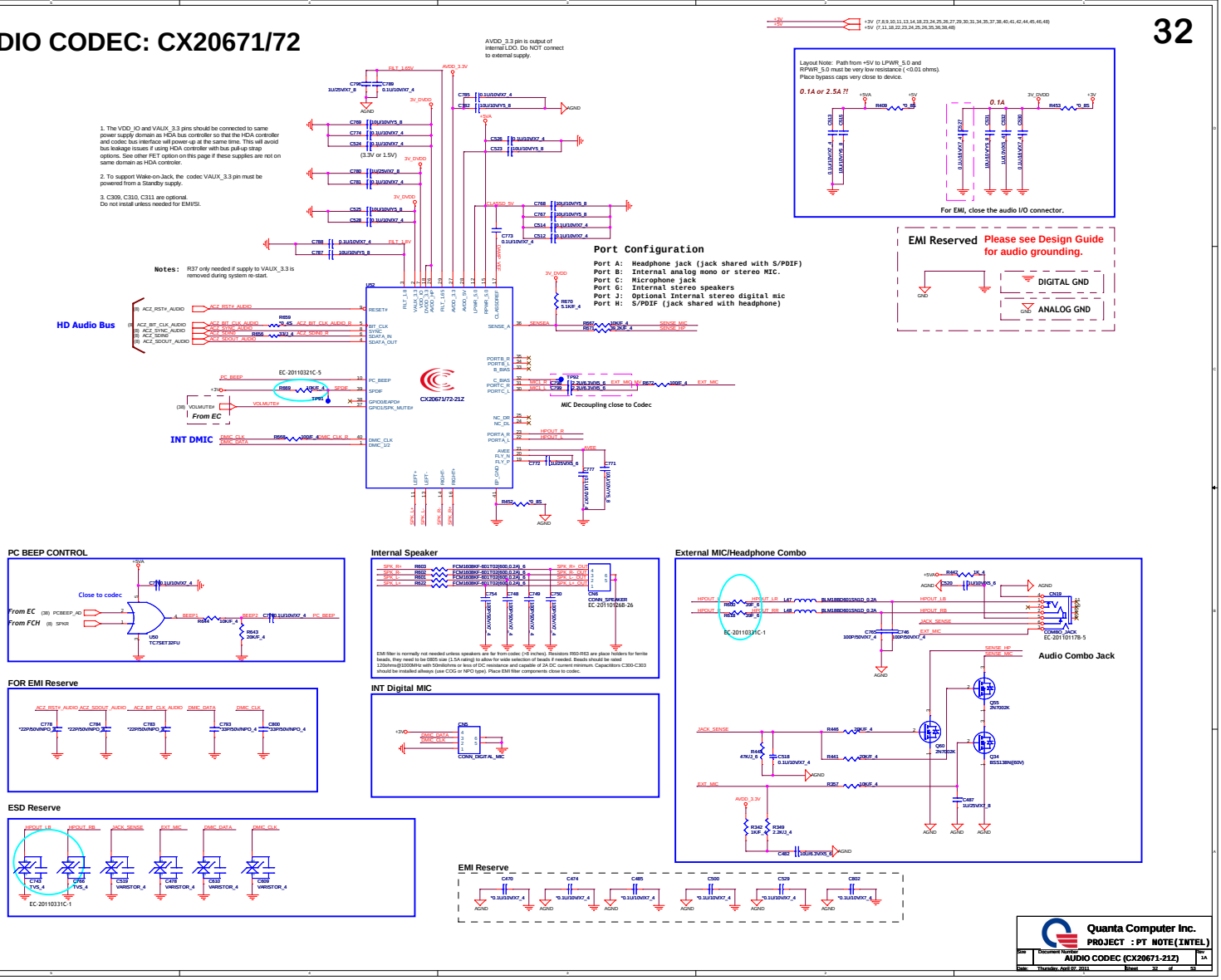
Quanta Computer Inc.

PROJECT :PT NOTE(INTEL)

Size	Document Number	Rev
	BLUETOOTH	1A

Date: Thursday, April 07, 2011 Sheet 31 of 53

AUDIO CODEC: CX20671/72



PC BEEP CONTROL

Internal Speaker

External MIC/Headphone Combo

FOR EMI Reserve

INT Digital MIC

ESD Reserve

EMI Reserve

Quanta Computer Inc. PROJECT : PT NOTE(INTEL)			
Size	Document Number: AUDIO CODEC (CX20671-21Z)		Rev 1A
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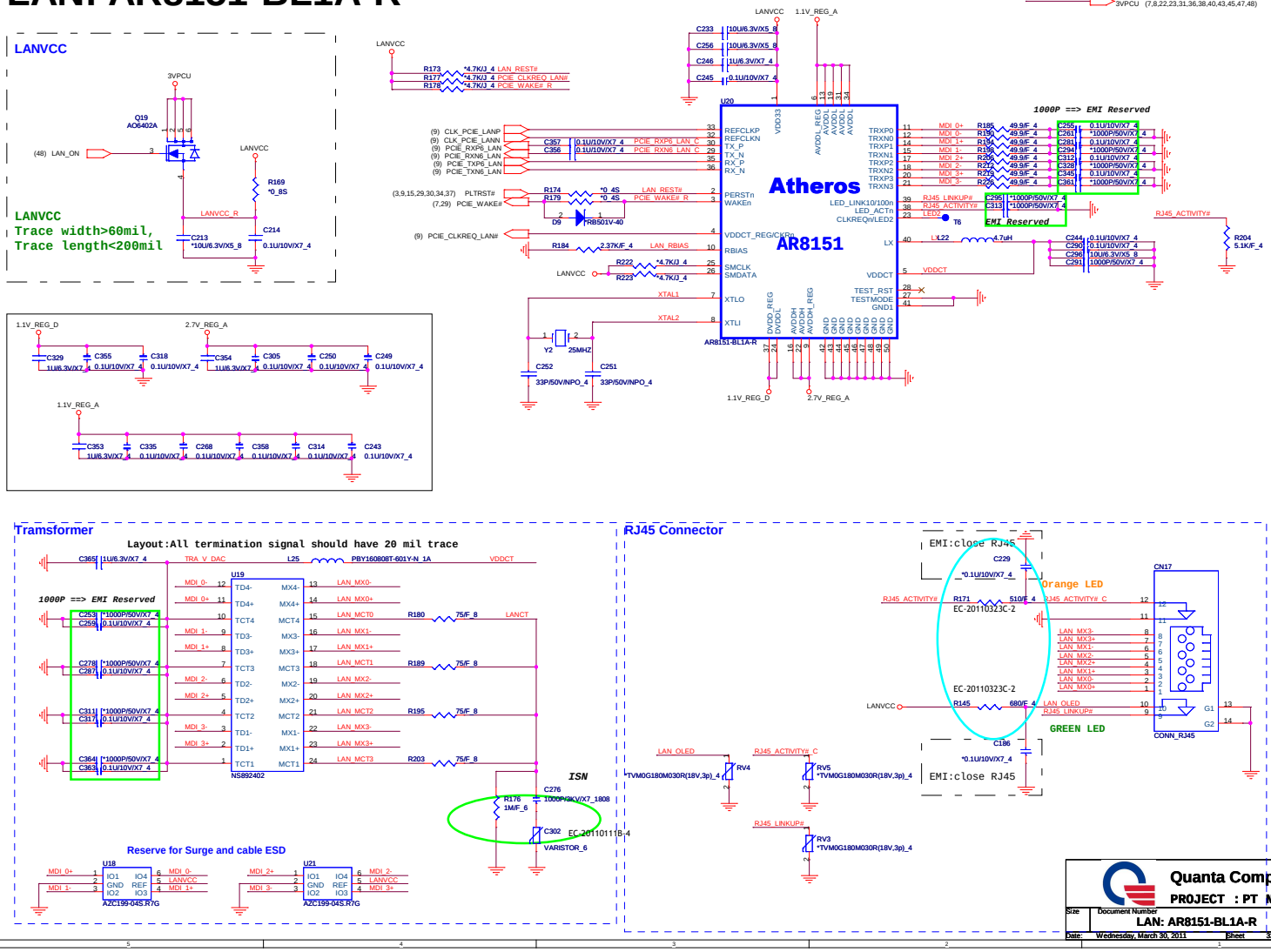
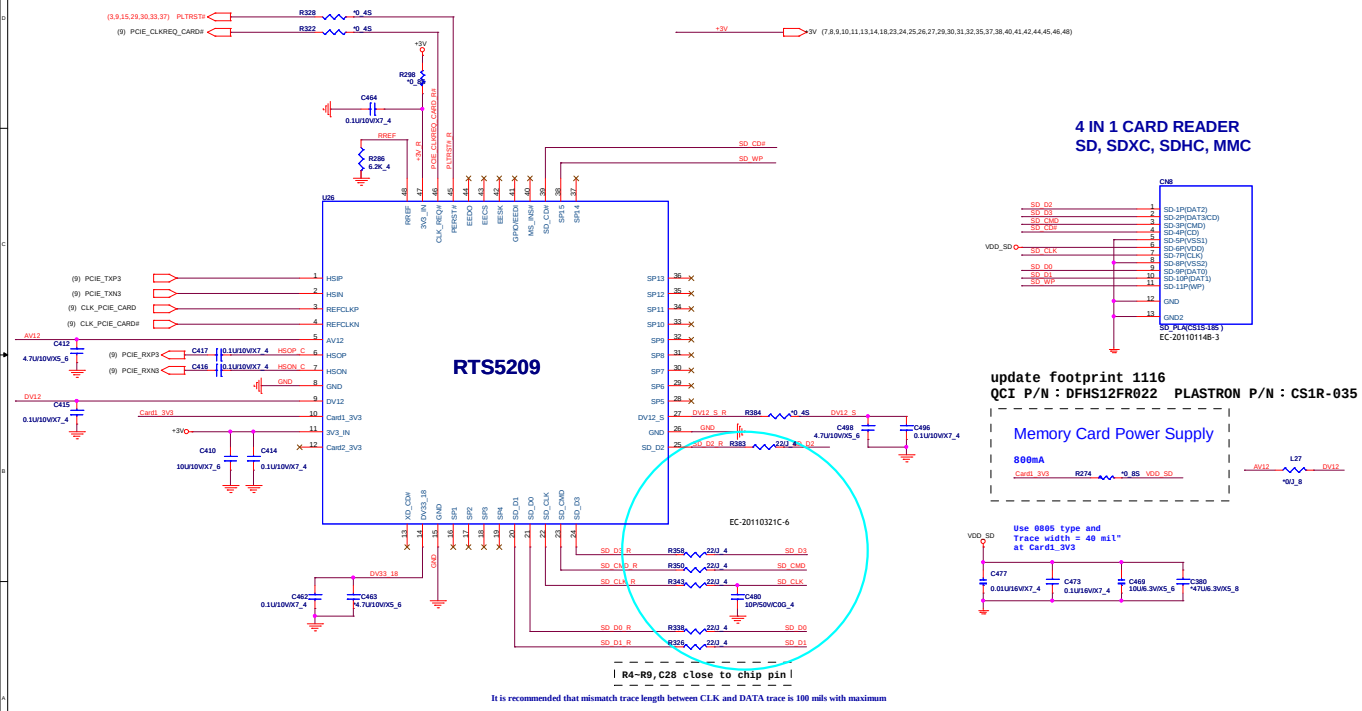
LAN: AR8151-BL1A-R

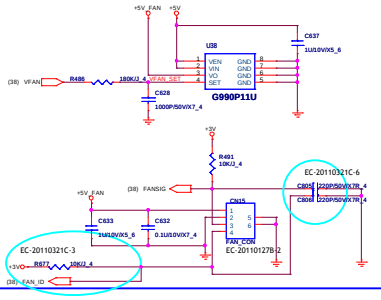




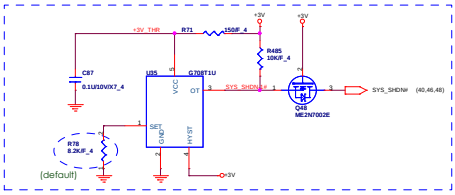
Quanta Computer Inc.			
PROJECT :PT NOTE(INTEL)			
Size	Document Number	Rev	
	Card Reader(RTS5209)	1A	
Date: Friday, March 25, 2011	Sheet 34 of 53		

+3V_GPU (15,16,17,18,45)
+3V (7,8,9,10,11,13,14,18,20,24,25,26,27,29,30,31,32,34,37,38,40,41,42,44,45,46,48)
+5V (7,11,18,22,23,24,25,26,32,36,38,48)

FAN CONTROL



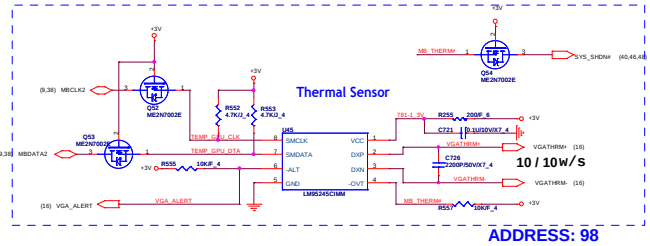
Close to CPU



Over Temperature Protecton

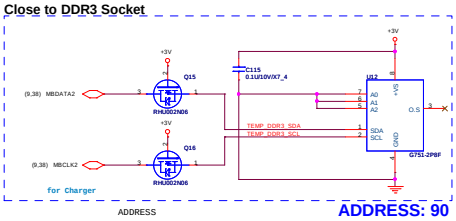
DEGREE	R78
120	1.74K
110	8.2K
100	15K

Close to GPU



ADDRESS: 98

Close to DDR3 Socket



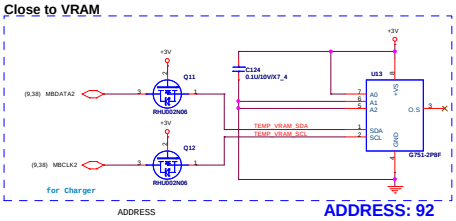
ADDRESS

1	0	0	1	A2	A1	A0	0

MSB LSB

ADDRESS: 90

Close to VRAM



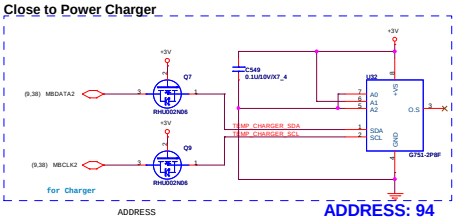
ADDRESS

1	0	0	1	A2	A1	A0	0

MSB LSB

ADDRESS: 92

Close to Power Charger



ADDRESS

1	0	0	1	A2	A1	A0	0

MSB LSB

ADDRESS: 94

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)
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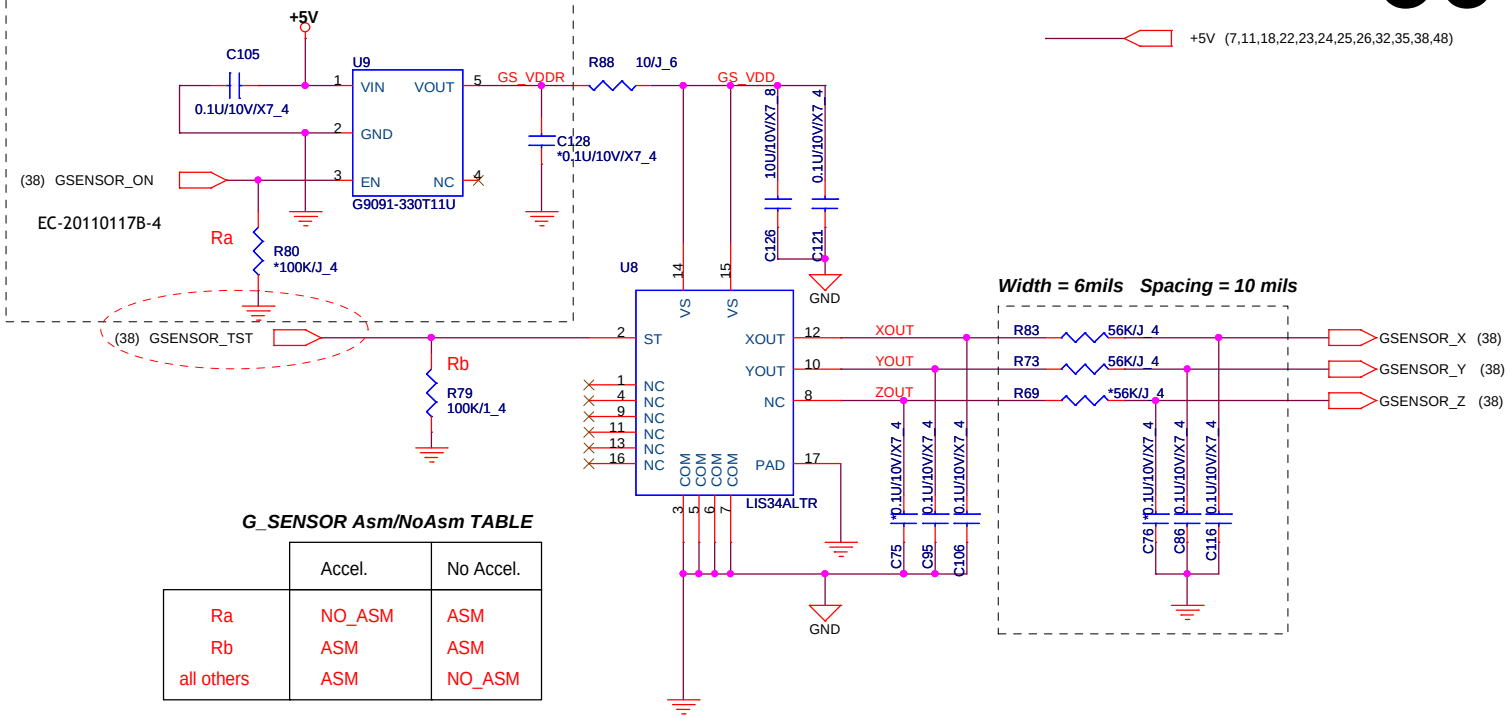
Accelerometer Sensor

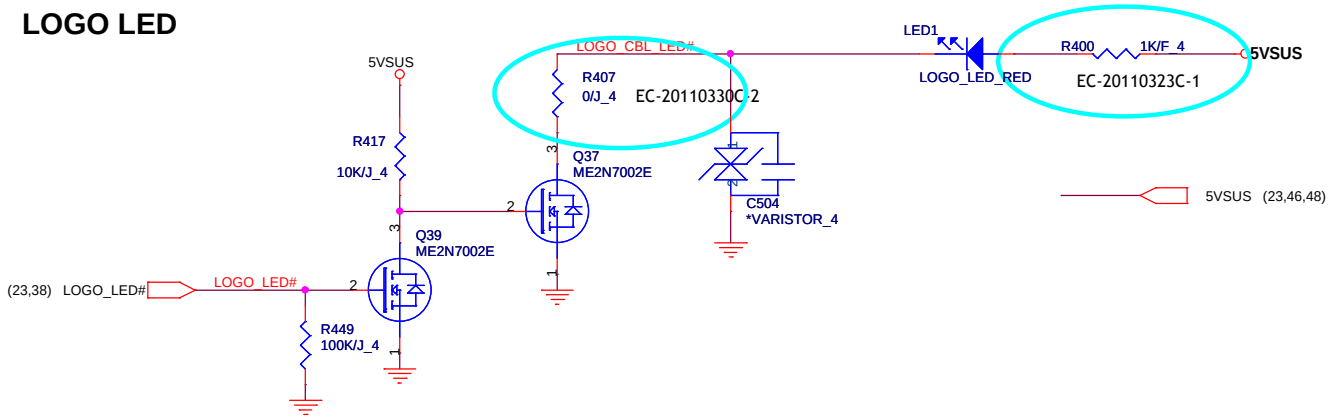


+5V (7,11,18,22,23,24,25,26,32,35,38,48)

G_SENSOR Asm/NoAsm TABLE

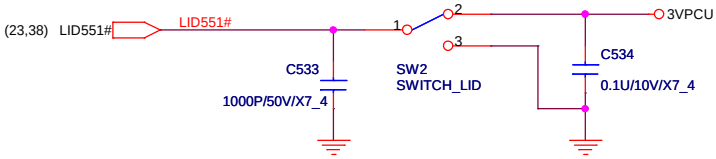
	Accel.	No Accel.
Ra	NO_ASM	ASM
Rb	ASM	ASM
all others	ASM	NO_ASM

LOGO LED



5VSUS (23,46,48)

LID SWITCH

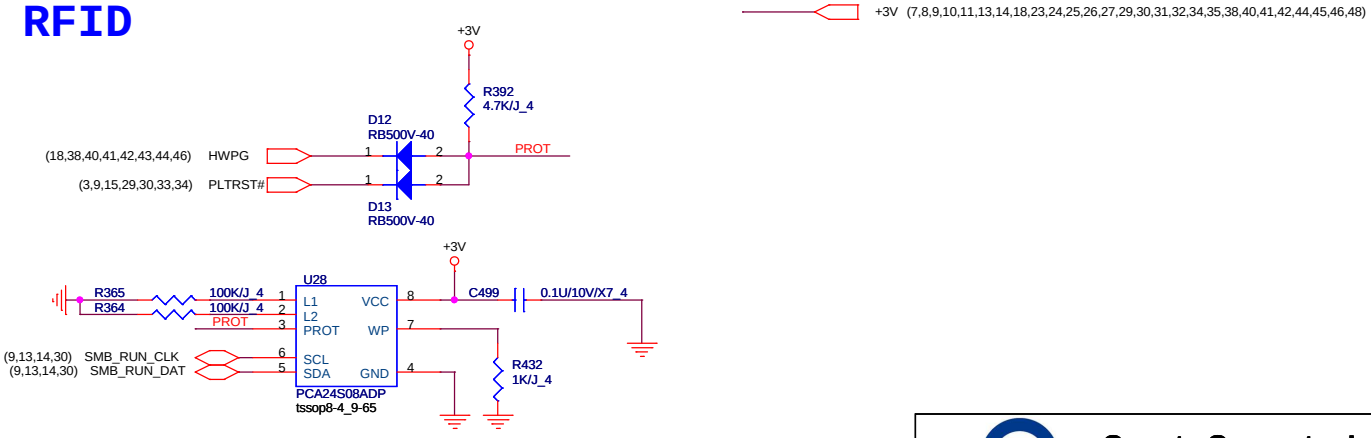


3VPCU (7,8,22,23,31,33,38,40,43,45,47,48)

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)

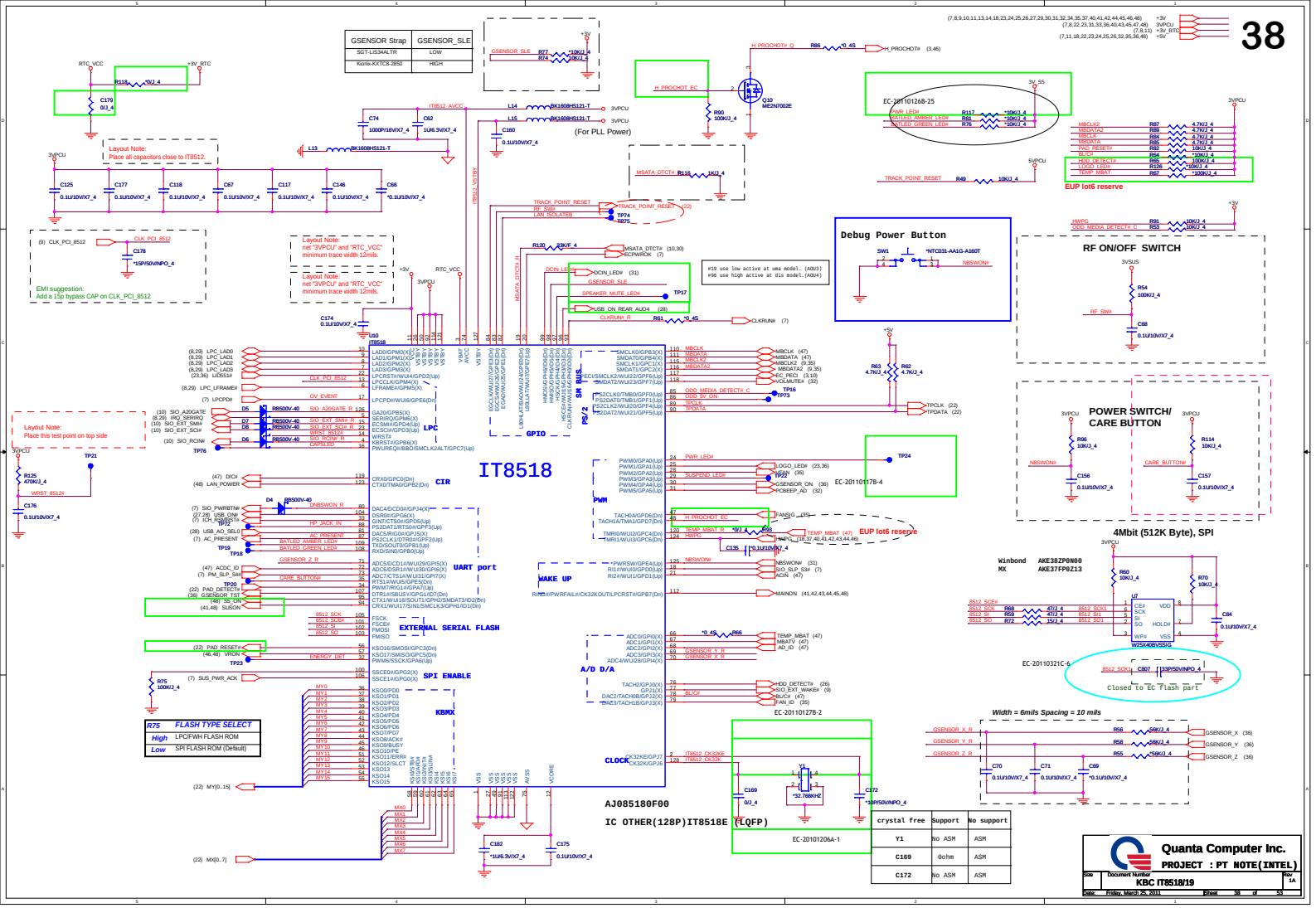
Size	Document Number	Rev
	G-SENSOR/LID SWITCH/LED	1A
Date: Wednesday, March 30, 2011	Sheet 36 of 53	

RFID



+3V (7,8,9,10,11,13,14,18,23,24,25,26,27,29,30,31,32,34,35,38,40,41,42,44,45,46,48)

Quanta Computer Inc.			
PROJECT : PT NOTE(INTEL)			
Size	Document Number: RFID EEPROM		Rev: 1A
Date: Wednesday, March 23, 2011		Sheet 37 of 53	

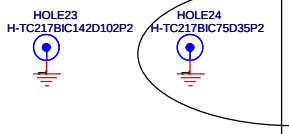


GSENSOR Strap	GSENSOR_SLE
SGT-LIS34ALTR	LOW
Kionix-KXTC8-2850	HIGH

crystal free	Support	No support
Y1	No ASM	ASM
C169	0ohm	ASM
C172	No ASM	ASM

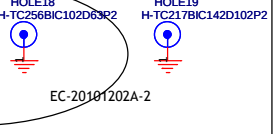
Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)
Size: Document Number: KBC IT8518/19 Rev: 1A
Date: Friday, March 25, 2011 Sheet 38 of 53

MiniCard WLAN



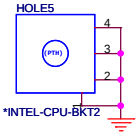
SMT NUT H=4mm

MiniCard WWAN

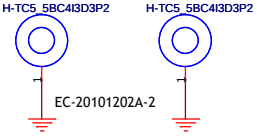


SMT NUT H=7mm

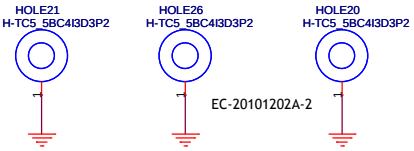
CPU BKT



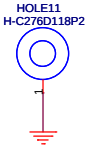
Hole for PCH support



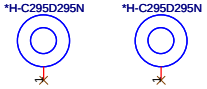
VGA nut



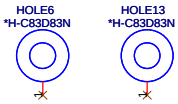
Bluetooth nut



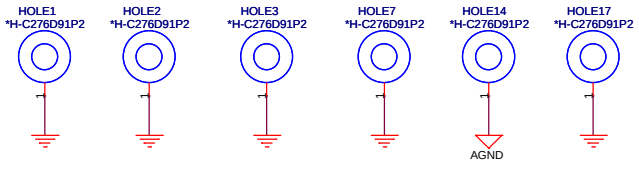
Keyboard Hole

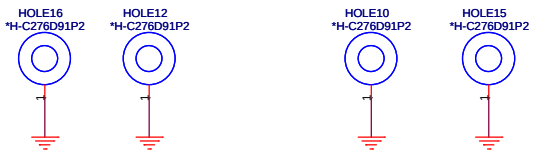


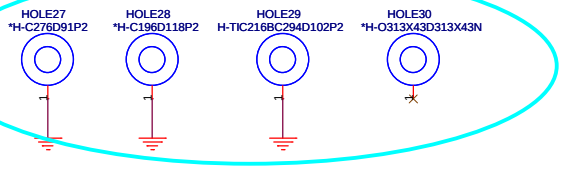
Fixed Hole



BOARD EDGE SCREW

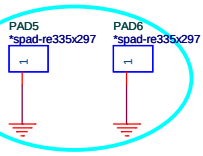






EC-20110321C-1

Optics Point



EC-20110321C-2

Quanta Computer Inc.

PROJECT : PT NOTE(INTEL)

Size	Document Number	Rev
	HOLE & SCREW	1A

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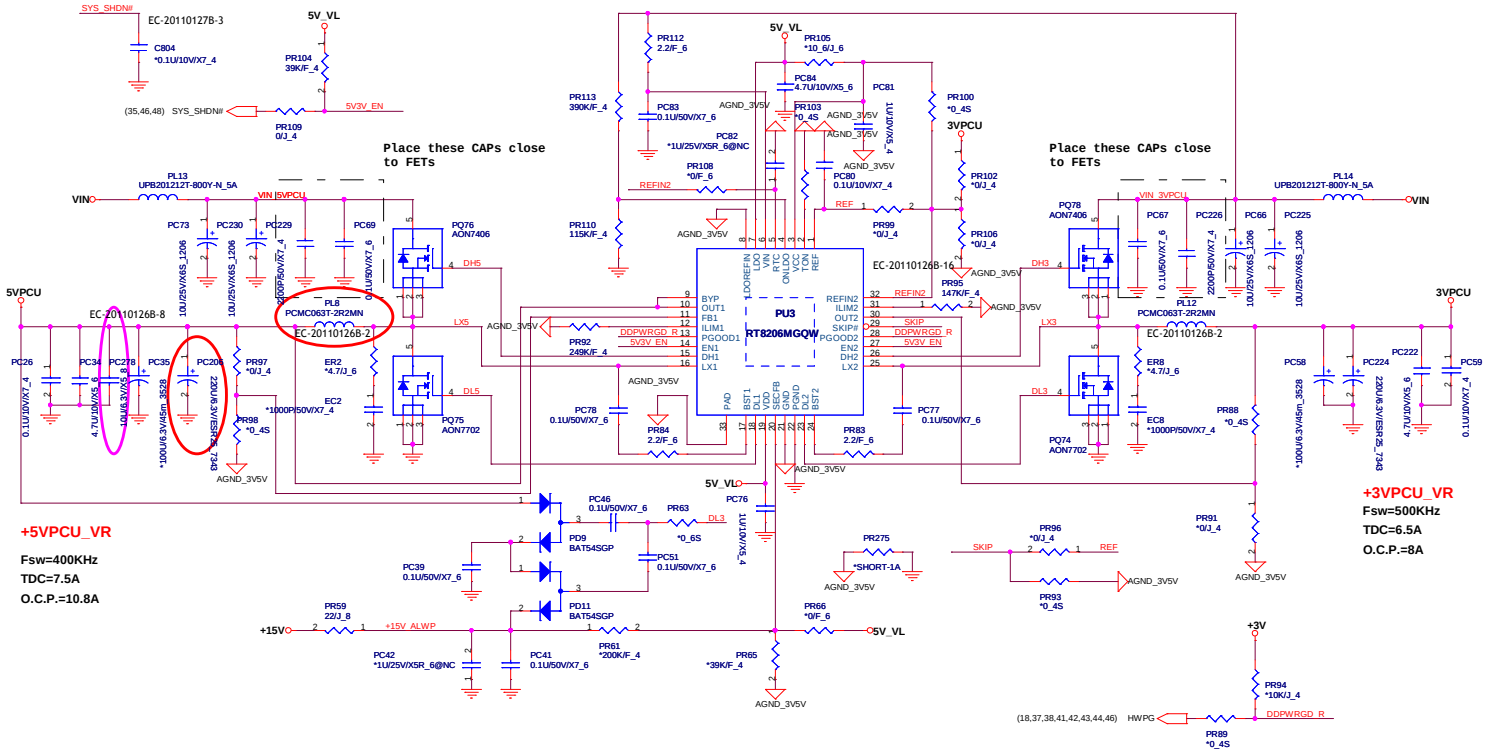

Quanta Computer Inc.		
PROJECT : PT NOTE(INTEL)		
Size	Document Number	Rev
	SYSTEM 5V/3V (RT8206BGQW)	1A
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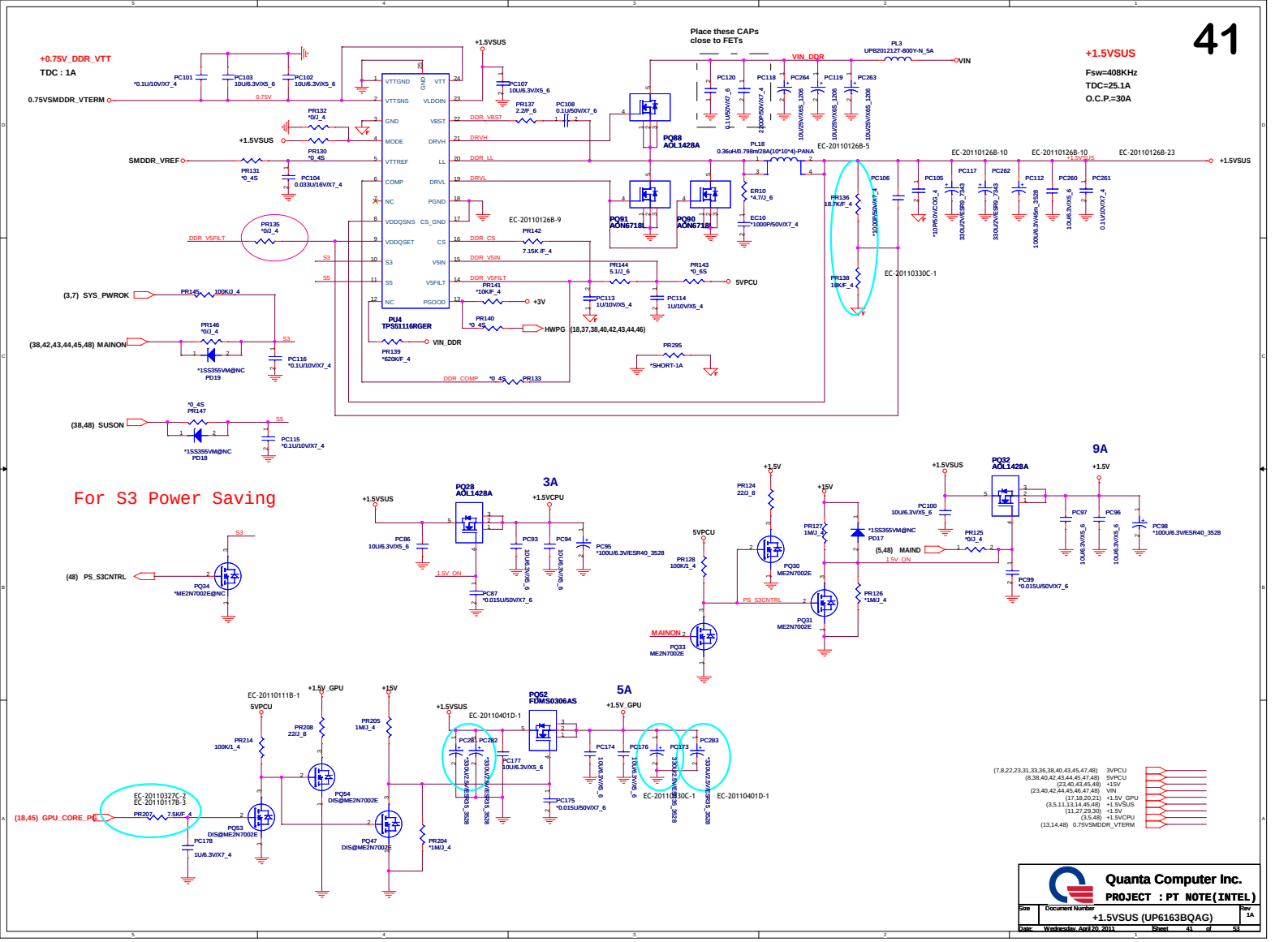

Quanta Computer Inc.
PROJECT : PT NOTE(INTEL)
+1.5VSUS (UP6163BQAG)
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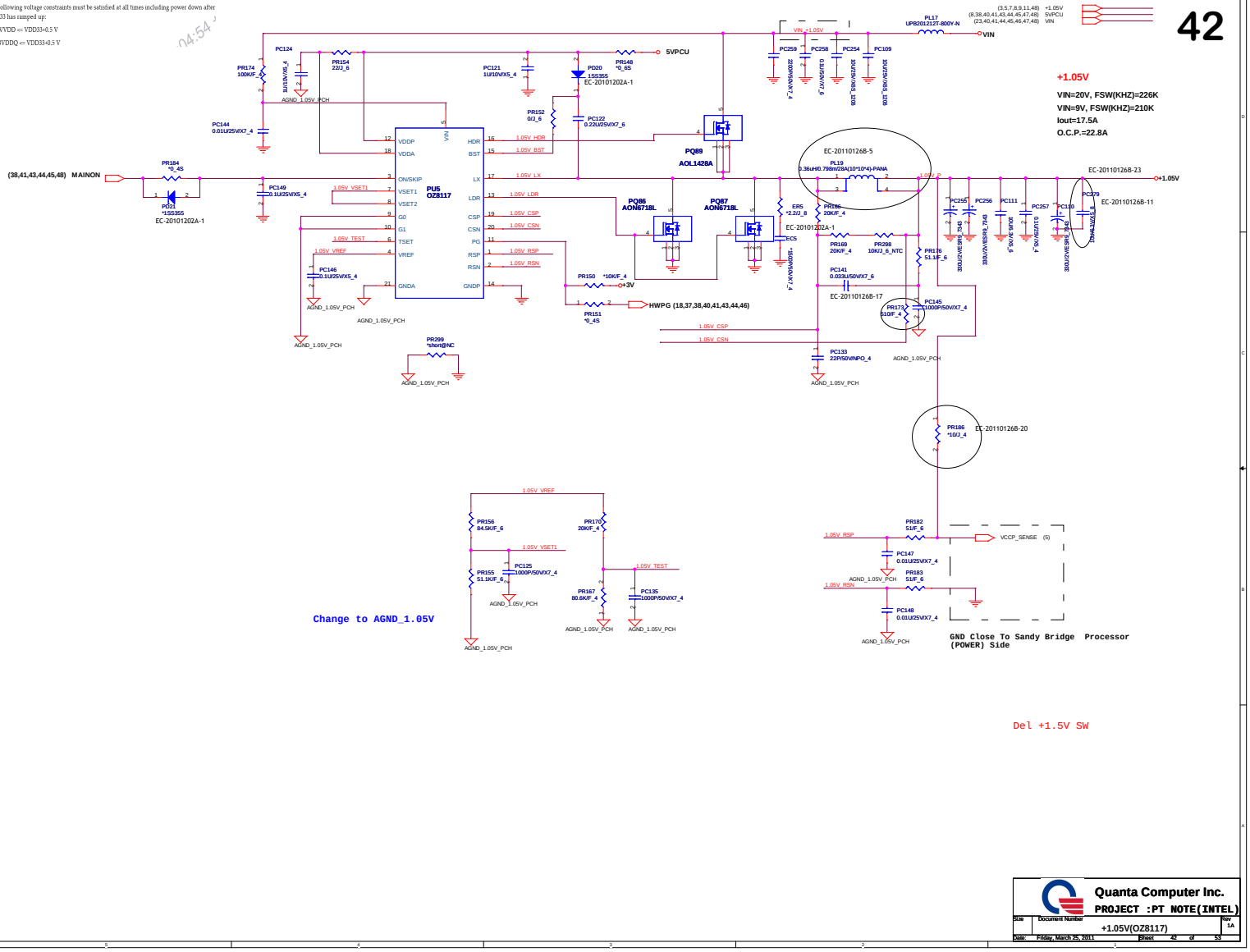
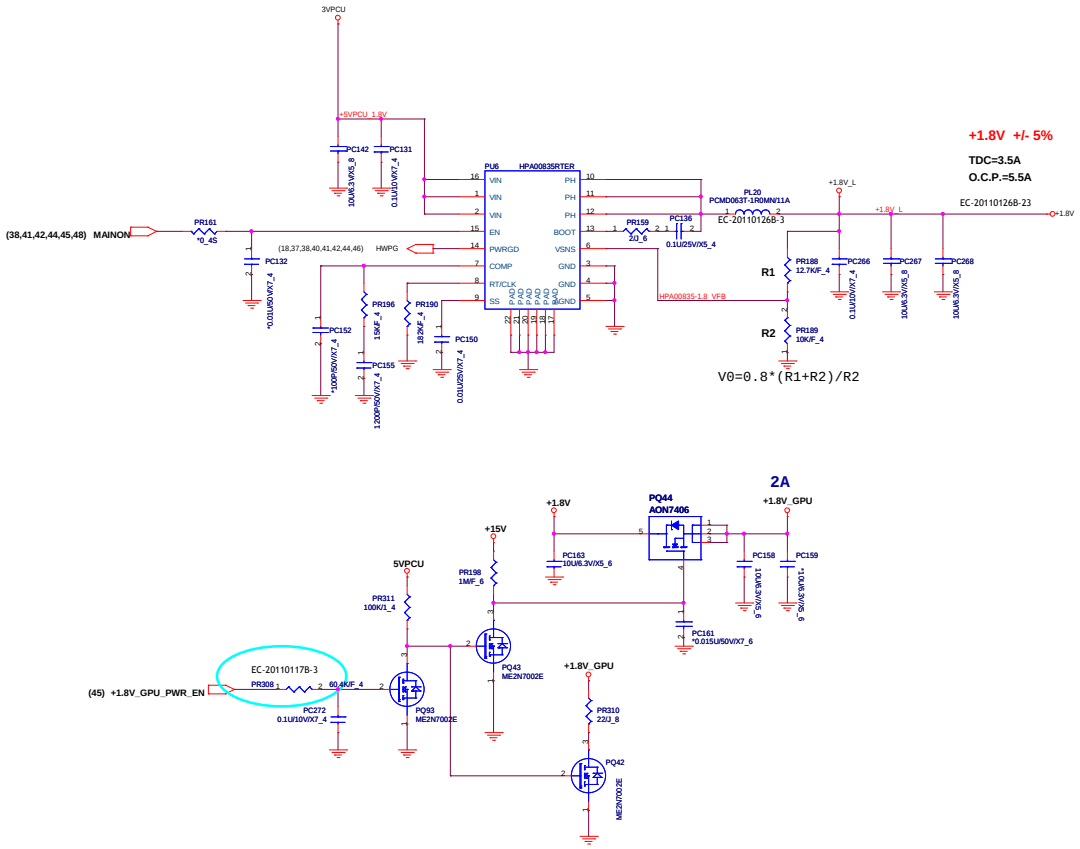
The following voltage constraints must be satisfied at all times including power down after VDD33 has ramped up:

- NVVDD <= VDD33+0.5 V
- FBVDDQ <= VDD33+0.5 V



Quanta Computer Inc.	
PROJECT : PT NOTE(INTEL)	
Size:	Document Number: +1.05V(OZ8117) Rev: 1A
Date: Friday, March 25, 2011	Sheet 42 of 53



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PROJECT :PT NOTE(INTEL)

Size	Document Number	Rev
	+1.8V (OZ8115)	1A

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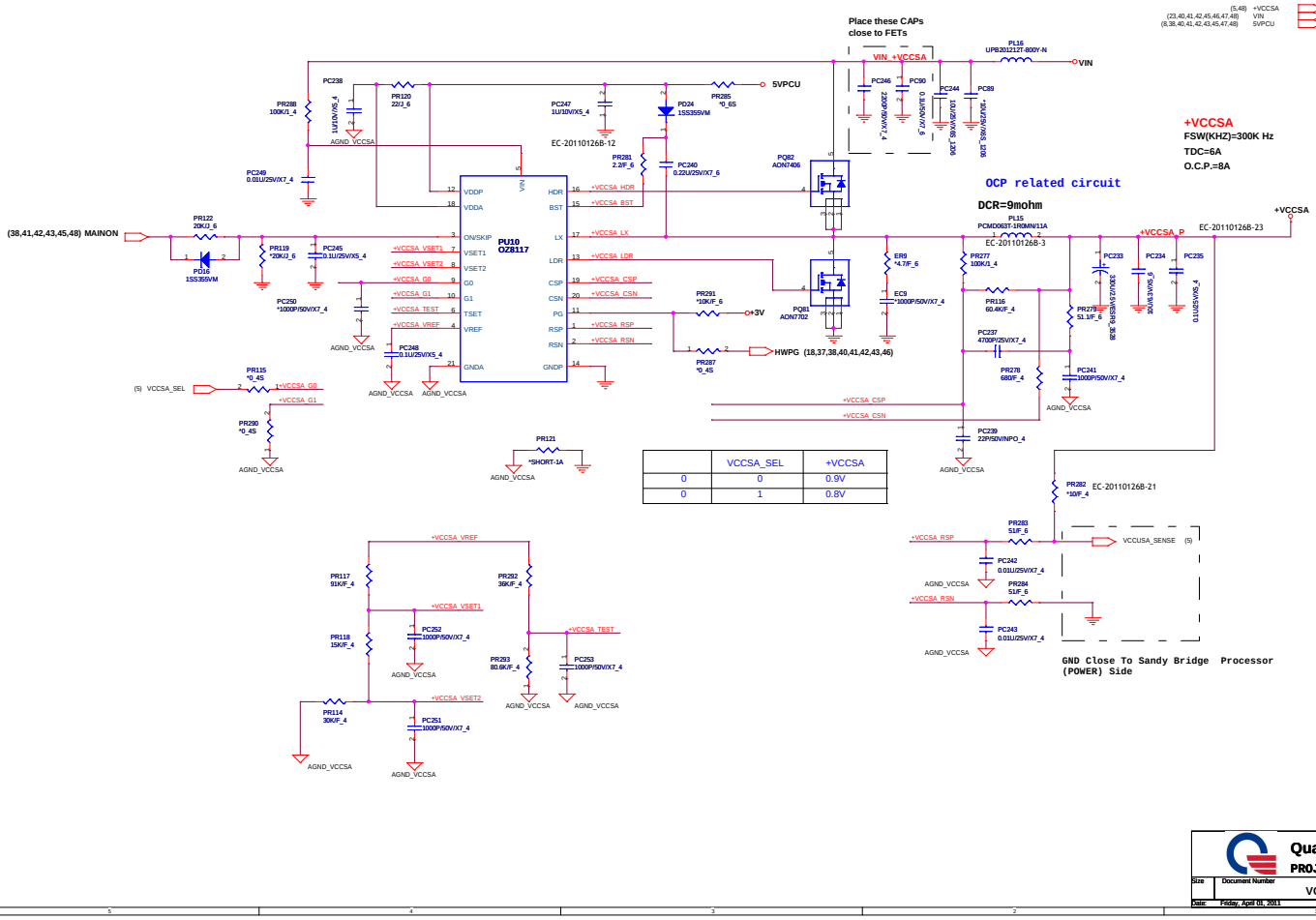

	VCCSA_SEL	+VCCSA
0	0	0.9V
0	1	0.8V

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PROJECT : PT NOTE(INTEL)			
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	VCCSA (OZ8117)		
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For Descrete M93 VGA Only

Place these CAPs close to FETs

+VGPU_CORE

VIN=20V, FSW(KHZ)=236K
VIN=9V, FSW(KHZ)=220K
TDC=20A
O.C.P.=25A

OCP related circuit

+1V_GPU

Iout=2.2A

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	+VCC_GFX_CORE
1	1	1.00V
1	0	0.90V
0	1	0.80V
0	0	0.70V

Close To VGPU Discrete Power Rail Side

VO=(0.8(R1+R2)/R2)
R2<120KOhm

1.4A

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PROJECT : PT NOTE(INTEL)
+VGPU_CORE (OZ8117)
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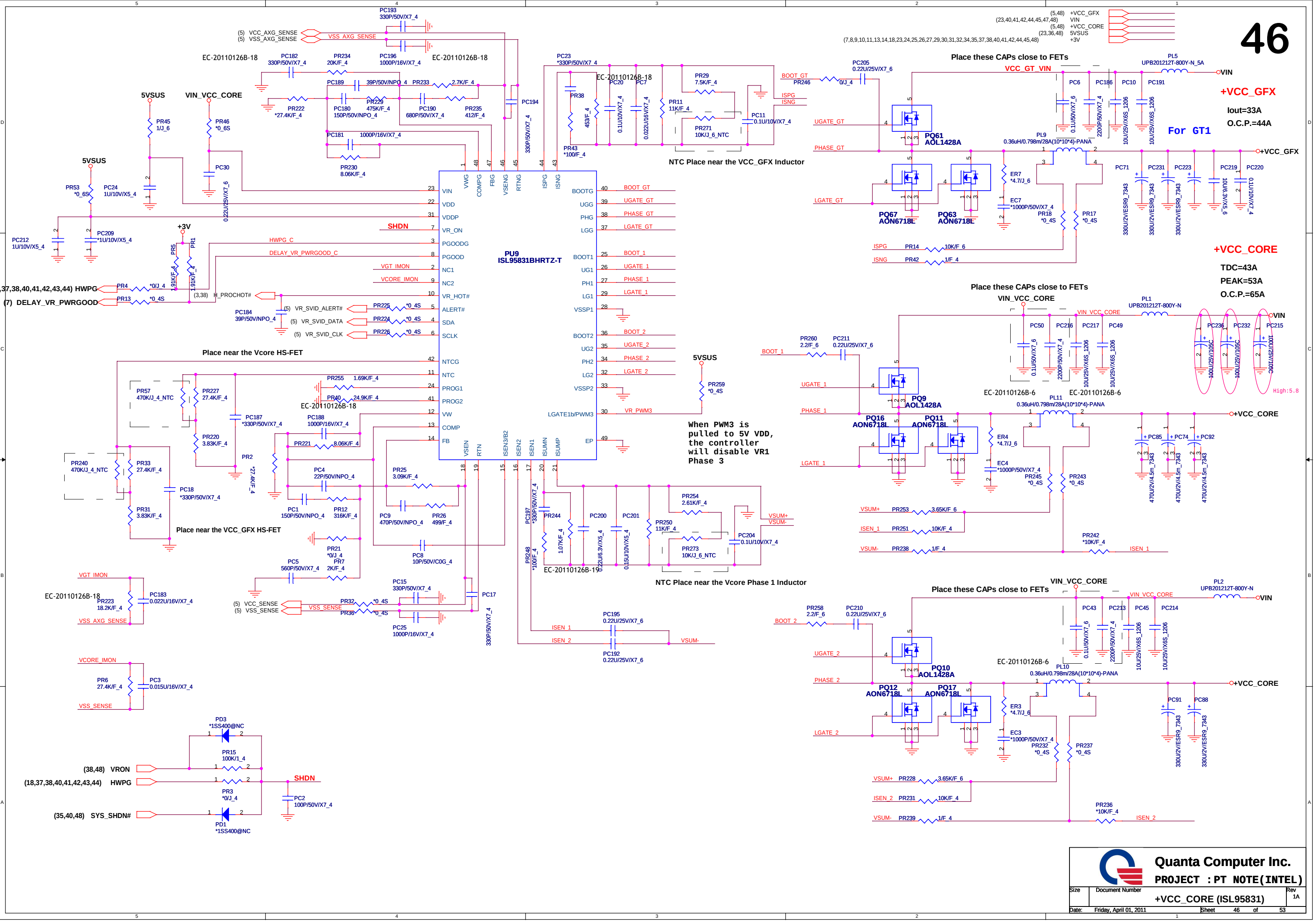
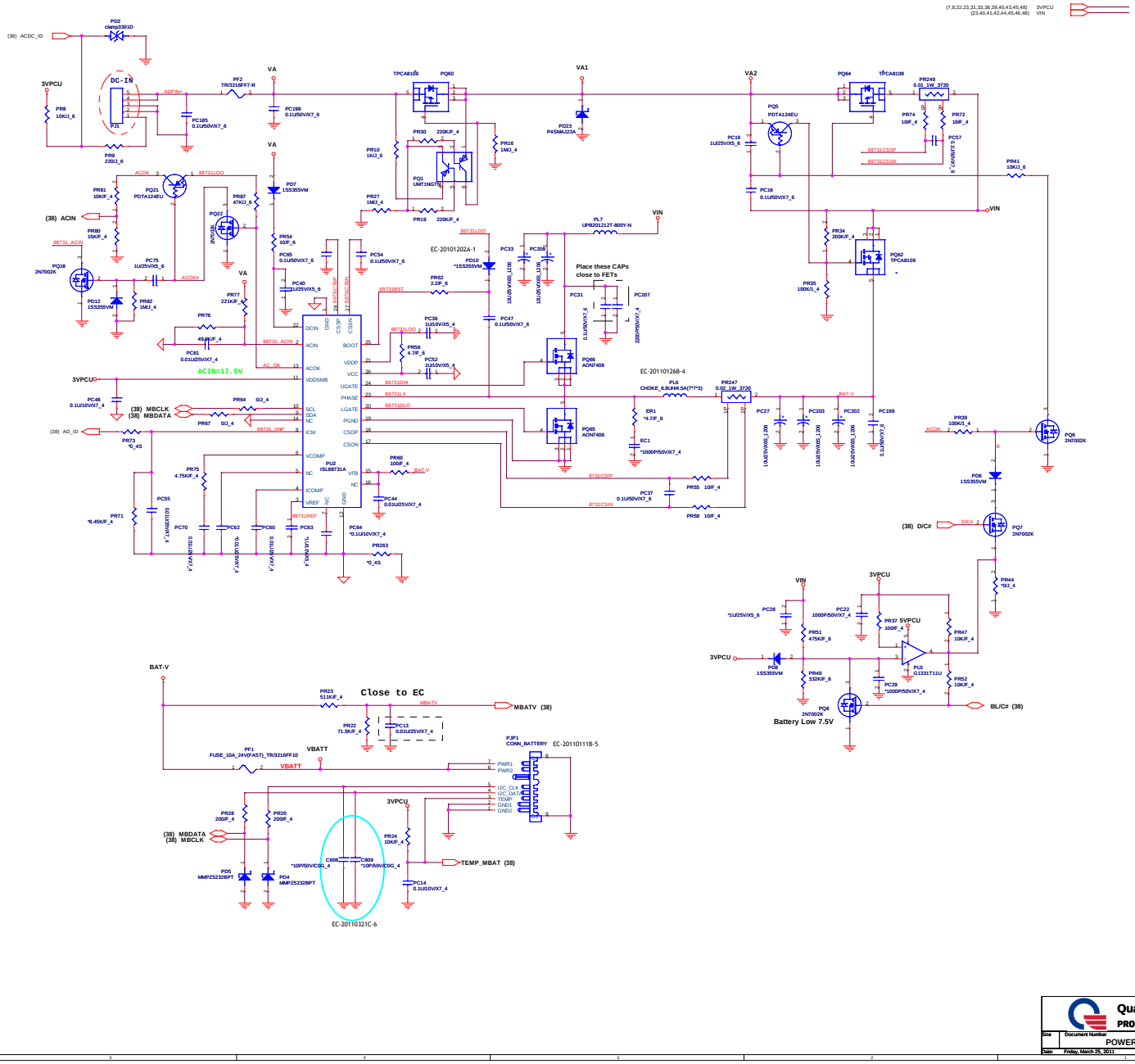
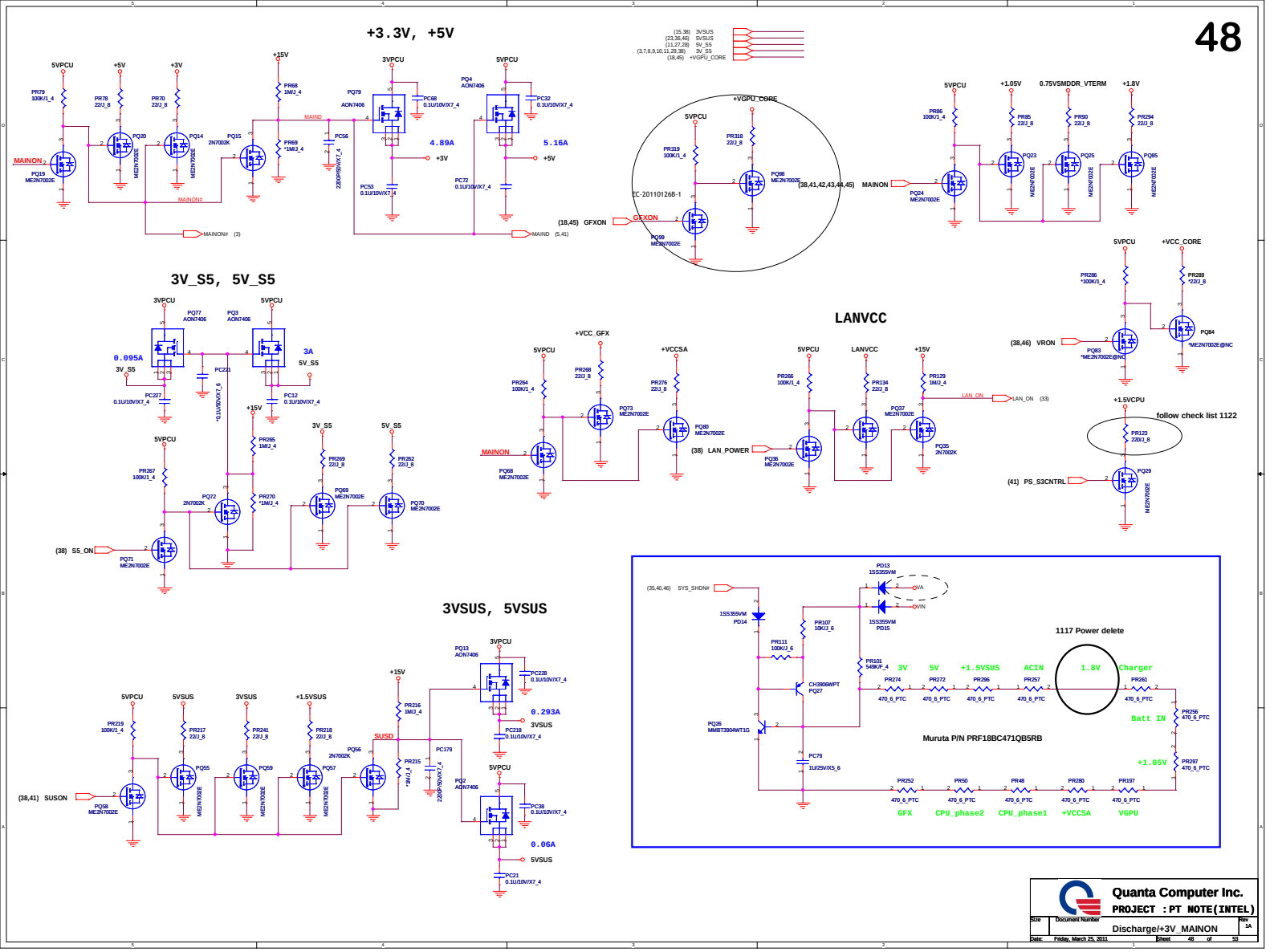
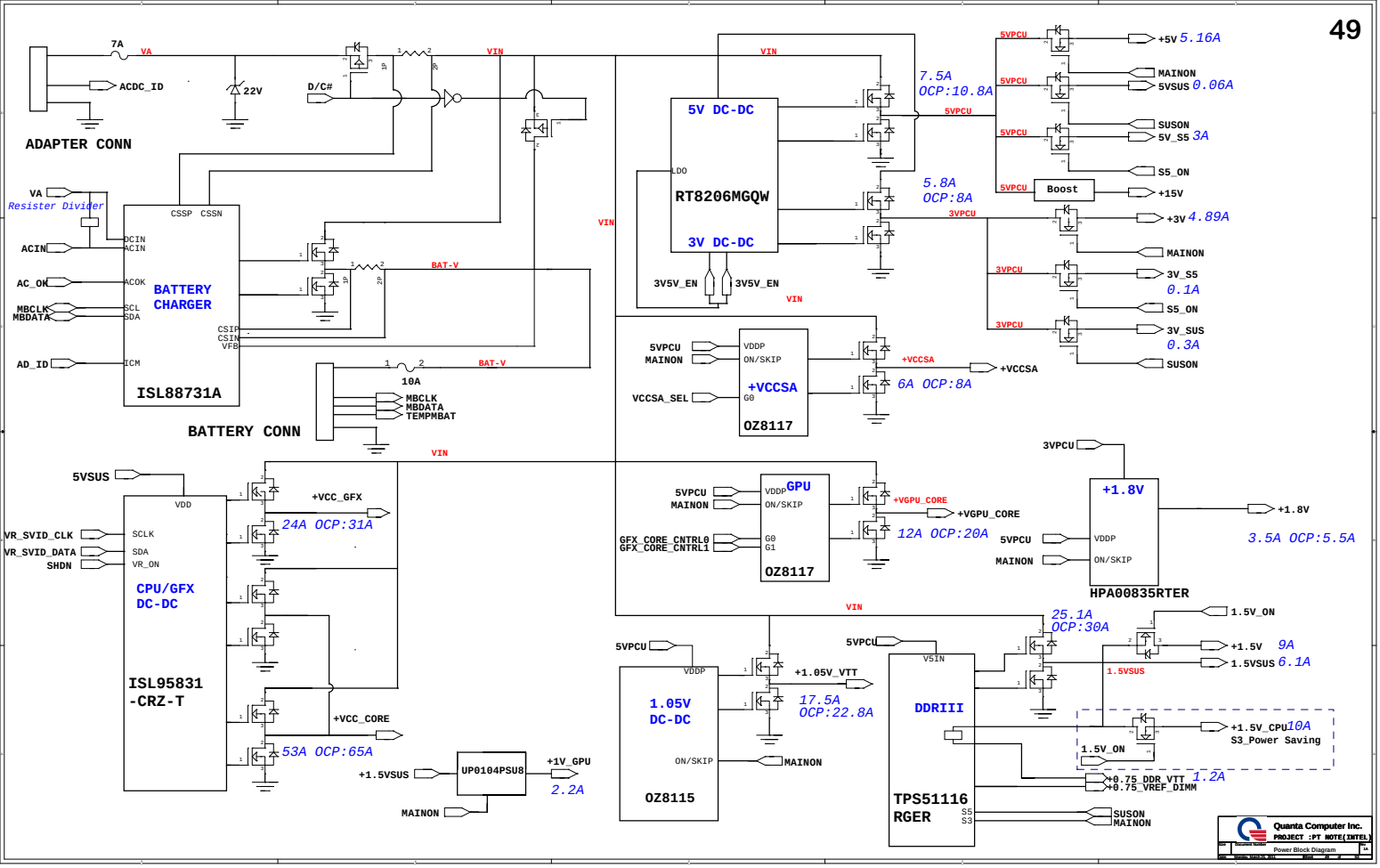






POWER_Charger (ISL88731A)



Revision History

Revision	Date	Phase	Change List	Release Schematic Date	Release Gerber File Date
1A		DV	Initial release		

Schematic Value Explanation Description :

RESISTOR

Value	F	4	6	8	12	1210	*	Description
*1K/F_4	1%	0402 (1005)					DE POP	1K ohm 1% SMD 0402 package and DE POP
1K_6	5%		0603 (1608)				POP	1K ohm 5% SMD 0603 package and POP
1K_8	5%			0805 (2125)			POP	1K ohm 5% SMD 0805 package and POP
1K_12	5%				1206 (3216)		POP	1K ohm 5% SMD 1206 package and POP
1K_1210	5%					1210 (3225)	POP	1K ohm 5% SMD 1210 package and POP

CAPACITOR

Value	Voltage	Material	6				*	Description
*0.1U/10V/X5R_4	10V	X5R	0402 (1005)				DE POP	0.1UF 10V X5R SMD 0402 package DE POP
1U/25V/X7R_6	25V	X7R	0603 (1608)				POP	0.1UF 25V X7R SMD 0603 package POP

Quanta Computer Inc.
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EC-20101202A-1	P42	Power RECOMMAND	Power update BOM: PD20,PD21 from BC1SS355Z05 change to BC1SS355Z07
			ER5 and EC5 unomunt
	P47		PD10 unmount
EC-20101202A-2	P39		BOM error: Update Hole20,Hole21,Hole22,Hole25,Hole26 from MBGC1001010 to FBCW4003010
			Hole18 and Hole19 update from MBIM3001010 to MBKL7001010
EC-20101206A-1	P38	FAE SUGGESTION	Use EC internal CLOCK:Y1 and C172 unmount,C169 chnge to 0 ohm 0402

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	Pre A to A-test	1A
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EC-20110111B-1	P41 P45		Net name error:update +5VPCU to 5VPCU
EC-20110111B-2	P8 P9 P31		BT Boot issue:BT_DET# change from GPIO55 to GPIO21 of PCH side,GPIO55 of PCH side rename to PCH_GPIO55
EC-20110111B-3	P10 P23		The signal is high active :update CCD power on signal from CCD_ON# to CCD_ON
EC-20110111B-4	P33	ESD RECOMMAND	Change C302 package from 0402 to 0603
EC-20110111B-5	P47		Battery connector footprint error :update PJ1P footprint to bat-c144gn-10707-l-7p-l and swap the signal of PJP1
EC-20110111B-6	P27		ESATA function fail:update SATA_EN schematic and add SATA_EN_R connection to pin11 of CN18
EC-20110111B-7	P7 P8 P9 P10 P11 P12		Change PCH footprint.It is according to Lenovo request to enhance BGA rework performance, lower the F/R of solder mask or pad peel off from the reworking
EC-20110111B-8	P9 P10 P45		The signal is high active :update VGA power on signal from DGPU_PWR_EN# to DGPU_PWR_EN
EC-20110114B-1	P46		To solove random shutdown issue:Mount 330uF 7343 on PC231
EC-20110114B-2	P23		The netname of U1,L1 swap for easy routing
EC-20110114B-3	P34		Card reader socket error:update BOM and footprint of CN8
EC-20110114B-4	P28		update CN13 Value
EC-20110117B-1	P16 P23		Resever for fine tune VRAM timing:Add 0 ohm RES R673-R684 on CRT signal
EC-20110117B-2	P45		VGPU_CORE leakage:mount 4.7k 0402 RES on location PR301
EC-20110117B-3	P41 P45 P43		Fine tune VGA power sequence:Mount 30k RES on location PR207,mount 0 ohm RES on location PR304 mount 4.99k res on location PR308,mount 0.1uF cap on location PC272
EC-20110117B-4	P36 P38		The signal is high active :update from GSENSOR_ON# to GSENSOR_ON
EC-20110117B-5	P32		Combo phone jack error:update CN19 pin define and BOM
EC-20110126B-1	P48		Add VGA core schematic:Add PR318,PR319,PQ98,PQ99
EC-20110126B-2	P40	Power RECOMMAND	change BOM for EOL material:change friom DC-2280M004 to CV-2280MZ15 of location PL8,PL12
EC-20110126B-3	P43 P44		change BOM for EOL material:change friom DC-10B0M007 to CV-10B0MZ13 of location PL15,PL20
EC-20110126B-4	P47		change BOM for EOL material:change friom DC-6845M000 to CV-6845MZ05 of location PL6
EC-20110126B-5	P41 P42 P45		change BOM for EOL material and update footprint:BOM change friom to CV+36T0MZ01 of location PL18,PL19 and PL21
EC-20110126B-6	P46		change BOM for EOL material:BOM change friom to CV+36T0MZ01 of location PL9,PL10 and PL11
EC-20110126B-7	P46 P45 P41		change BOM for EOL material:BOM change friom to CV+36T0MZ01 of location PQ11,PQ12,,PQ16,PQ17,PQ45,PQ46 PQ63,PQ67,PQ90,PQ91
EC-20110126B-8	P40		Reduce power noise:Add PC278 and PC35 unmont
EC-20110126B-9	P41		Fine tune +1.5VSUS OCP:chnage BOM to CS27152FB19 of PR142
EC-20110126B-10	P41		Reduce power noise:change BOM to CH733RY8802 of location PC117 and PC162,and mount 10uF on lcoation PC260
EC-20110126B-11	P42		Reduce power noise:Add PC279
EC-20110126B-12	P44		For stable VCCSA switching:change BOM to CS-2203F911 on locationc PR281
EC-20110126B-13	P45		For stable GPU switching:change BOM to CS-2203F911 on locationc PR191
EC-20110126B-14	P45		Reduce power noise:Add PC280
EC-20110126B-15	P45		Fine tune VGPU_CORE OCP:chnage BOM to CS14532FB14 of PR162
EC-20110126B-16	P40		Fine tune 3VPCU OCP:chnage BOM to CH41472FB16 of PR95
EC-20110126B-17	P42		Fine tune 1.05V OCP:chnage BOM to CS15102FB19 of PR173
EC-20110126B-18	P46		Reduce GFX power noise:1.PC182 mount 2.Change BOM to CS32002FB29 of location PR234 3.Change BOM to CS14532FB14 of location PR38 4.Change BOM to CS22702FB14 of location PR233 5.Change BOM to CS32492FB16 of location PR40 6.Change BOM to CS31822FB16 of location PR223
EC-20110126B-19	P46		For stable Vcore volage:change BOM to CS21072FB18 on locationc PR244
EC-20110126B-20	P42		For 1.05V delete jump:PR186 unmont
EC-20110126B-21	P44		For VCCSA delete jump:PR282 unmont
EC-20110126B-22	P45		For VCCSA delete jump:PR158 unmont
EC-20110126B-23	P41 P42 P43 P44 P45		Delet PJP2-PJP15
EC-20110126B-24	P23	RF RECOMMAND	Reduce RF noise:1. 2200pF on location C747 and C753 2. 5.6pF on location C541 and C542
EC-20110126B-25	P38		Reduce S5 leakage:R117,R81,R76 unmount
EC-20110126B-26	P32	ME RECOMMAND	To differentiate between SPK connector and INT MIC connector:change BOM to DFHS04FRC51 of location CN6
EC-20110126B-27	P8		To follow DR4 RTC battery:Change BOM to DFHD02MS119 and update footprint to 50271-00201-001-2p-l of BT1
EC-20110126B-28	P3		Reduce sigal noise of PECI bus:Reserve 5.6pf on location C803
EC-20110127B-1	P46	Power RECOMMAND	For stable GFX voltage respones:Chnage BOM to CS00002JB38 of location PR246
EC-20110127B-2	P35	Thermal RECOMMAND	Due to add FAN_ID:update BOM and footprint of location CN6,FAN_ID connect to pin79 of U10
EC-20110127B-3	P40		Reduce signal noise of SYS_SHDN#:reserve 0.1uF cap on location C804
EC-20110216B-1	P26	FAE RECOMMAND	Fine tune ESATA signal:mount 4.7k Res on location R533 and R534

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EC-20110321C-1	P39	ME RECOMMAND	For ME Base design change:Delet Hole8 and add Hole27, Hole28,Hole29,Hole30
EC-20110321C-2	P39	ESD RECOMMAND	GND pad for ESD solution:Add PAD5 and PAD6
EC-20110321C-3	P35	EC RECOMMAND	Add pull up RES R677 for FAN ID
EC-20110321C-4			Update 0 ohm to short pad
EC-20110321C-5	P32		To fine tune Audio code pcbeeper gain control:R699 mount 10k ohm 0402
EC-20110321C-6	P13 P14	EMI RECOMMAND	Reduce +1.5VSUS noise:Add C810 3.3P/NPO 0402 and closed to ram socket Reduce +1.5VSUS noise:Add C811 3.3P/NPO 0402 and closed to ram socket
	P34		update R383,R358,R350,R343,R338,R326 from 0 ohm to 22 ohm 0402 mount 10PF 0402 on location C480
	P38		Add 33PF 0402 cap on location C807 for reduce 8512_CLK1 noise and closed to EC flash part
	P30		Reduce +1.5V and +3.3V_WWAN noise:mount C545 and C548 of 33P/NPO 0402
	P35		Add C805 and C806 cap 220pf for EMI solution
	P47		Reserve C808 and C809 10pf 0402 for battery smbus
EC-20110321C-7	P22		Delet CilicPad unused power of +3V and remove R111
EC-20110323C-1	P23 P36		To fine tune logo LED brightness:1.update from 330 to 1k ohm on location R400 2.update from 510 to 1k ohm on location R464
EC-20110323C-2	P33		To fine tune RJ45 LED brightness:1.update from 150 to 680 ohm on location R145 2.update from 150 to 510 ohm on location R171
EC-20110323C-3	P16		To fine tune Y4(27M crystal) :update from 18pf to 10pf ohm on location C751 and C745
EC-20110323C-4	P30	Lenovo RECOMMAND	Upadte MSATA speed to gen2:Add MSATA redriver IC schematic
EC-20110327C-1	P18		Reduce +VGPU_CORE GPU side power noise Add capacitance: mount 4.7uf 6.3V cap on loaction C272,C338,C330,C341,C300,C340,C301,C274,C339,C265 mount 47uf 6.3V cap on loaction C740,C741,C744
EC-20110327C-2	P41 P45		Fine tune VGA power seqence:mount 7.5k resistance on loaction PR207 mount 60.4k resistance on loaction PR308 mount 51k resistance on loaction PR201 mount 0.1uf capacitance on lcation PC172
EC-20110330C-1	P20 P21 P41		Improve +1.5V_GPU heavy lodading voltage drop: 1.Update +1.5VSUS output voltage from 1.5V to 1.53V : PR136 mount 18.7k resistance and PR138 mount 18k resistance 2.Add capacitance: Add 1uf 6.3V cap on loaction C664,C195,C722,C381,C618,C180,C621,C164 Add 0.1uf 10V cap on loaction C703,C319,C720,C471,C640,C145,C630,C147 Mount 330uf ESR35 on lcation C136 and PC173 3.Change low RDS_ON MOS:change BAM03060001 to PQ52
EC-20110330C-2	P36		To fine tune logo LED brightness:update from 510 to 0 ohm on location R407
EC-20110331C-1	P32	ESD RECOMMAND	Update R600 and R618 from 75 ohm to 39 ohm Update C743 and C766 BOM to BC00511P200
EC-20110331C-2	P28		EA fail:Del CML3 , mount R479 and R480
EC-20110401D-1	P18 P42		Reduce power noise and voltage drop:1.+VGPU_CORE:Add 330uf 3538 Cap on location C822 2..+1.5V_GPU:Add 330uf 3538 Cap on location PC281,PC282 and PC283

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	C test to C2 test		
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