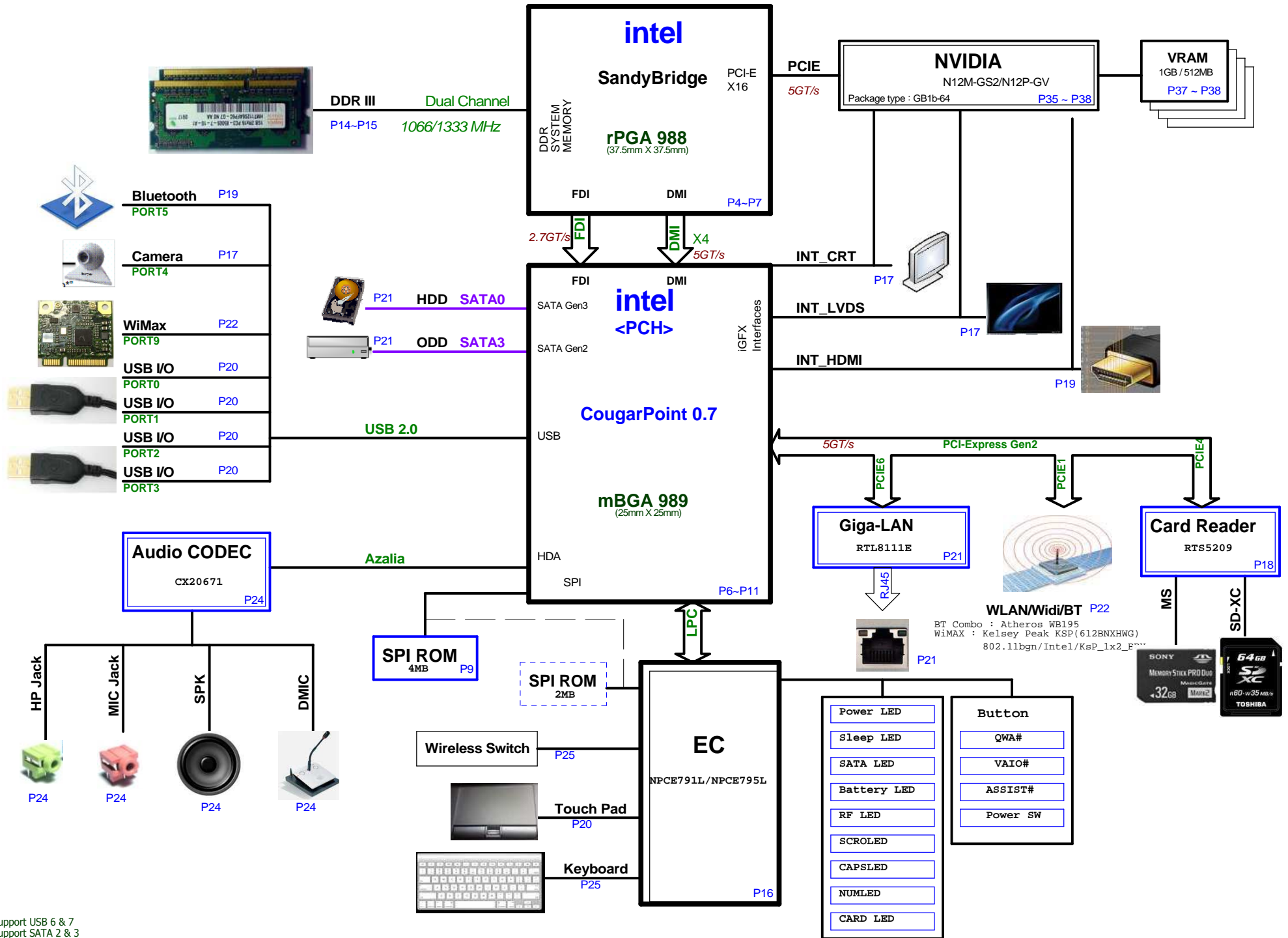


* : No mount
E@ : For DIS GFX only
I@ : For INT GFX only

Page	Title of schematic page	Rev.	Date
01	Page List	1A	
02	Block Diagram	1A	
03	Change List	1A	
04	SNB 1/4(HOST&PCIE)	1A	
05	SNB 2/4(DDR3 I/F)	1A	
06	SNB 3/4(POWER)	1A	
07	SNB 4/4(GND/Strap)	1A	
08	PCH 1/6(DMI/FDI/VIDEO)	1A	
09	PCH 2/6(SATA/RTC/HDA/LPC)	1A	
10	PCH 3/6(PCIE/USB/CLK/NV)	1A	
11	PCH 4/6(GPIO/CPU/STRAP)	1A	
12	PCH 5/6(POWER)	1A	
13	PCH 6/6 (GND)	1A	
14	DDR3 DIMM-0-STD	1A	
15	DDR3 DIMM-1-STD	1A	
16	WPCE791L & FLASH	1A	
17	CRT/LVDS/CAMERA	1A	
18	CARD READER(RTS5209)	1A	
19	HDMI Conn/BT/THERMAL	1A	
20	USE/TP/FAN	1A	
21	LAN (RTL8111E)	1A	
22	WLAN/HOLE	1A	
23	HDD/ODD/EMI	1A	
24	Audio CX20671	1A	
25	LED/RF/KB/PS	1A	
26	POWER +VCC_CORE (ISL95831)	1A	
27	POWER 3VPCU&5VPCU(PM6686)	1A	
28	POWER 1.5VSUS/VTT_MEM	1A	
29	POWER +1.05V(UP6128A)-15A	1A	
30	POWER +0.85V(APE8858)-6A	1A	
31	POWER VGA_CORE(OZ8111)--15A	1A	
32	POWER VCC1.8/Thermal	1A	
33	POWER(ADAPTER IN / CONN)	1A	
34	POWER CHARGER (ISL88731C)	1A	
35	NVIDIA GS2-64 PCIE&PW 1/4	1A	
36	NVIDIA GS2-64 TMDs&DAC 2/4	1A	
37	NVIDIA GS2-64 VRAM 3/4	1A	
38	NVIDIA GS2-64 VRAM 4/4	1A	
39	IO PORT LIST	1A	

HK1 BLOCK DIAGRAM



Note:
 HM65 does not support USB 6 & 7
 HM65 does not support SATA 2 & 3

Change List from PVT to MP


HK1_MB_SCH_PVT_001

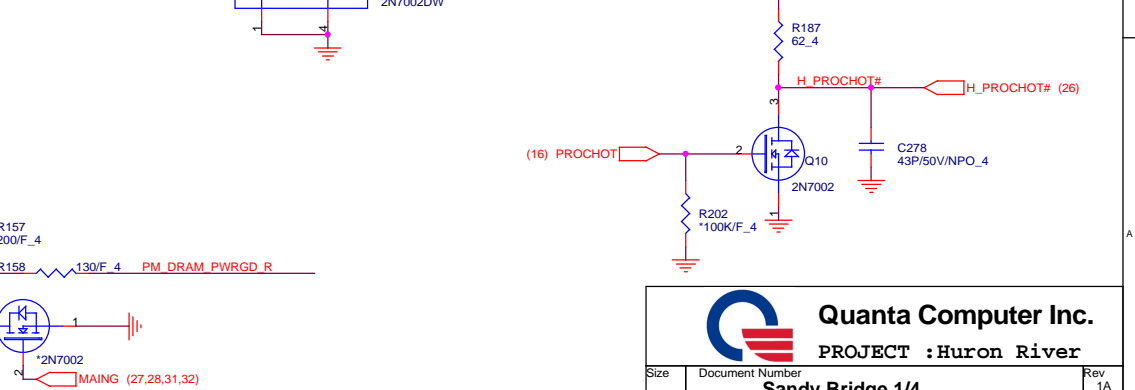
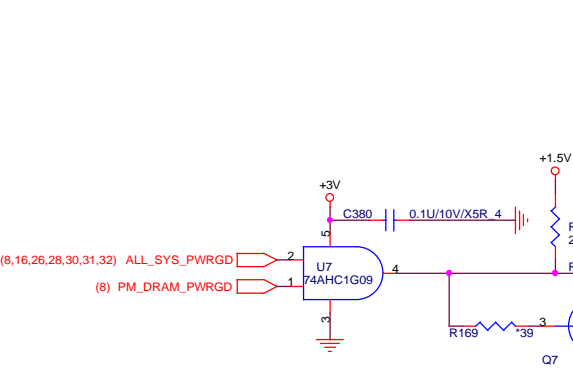
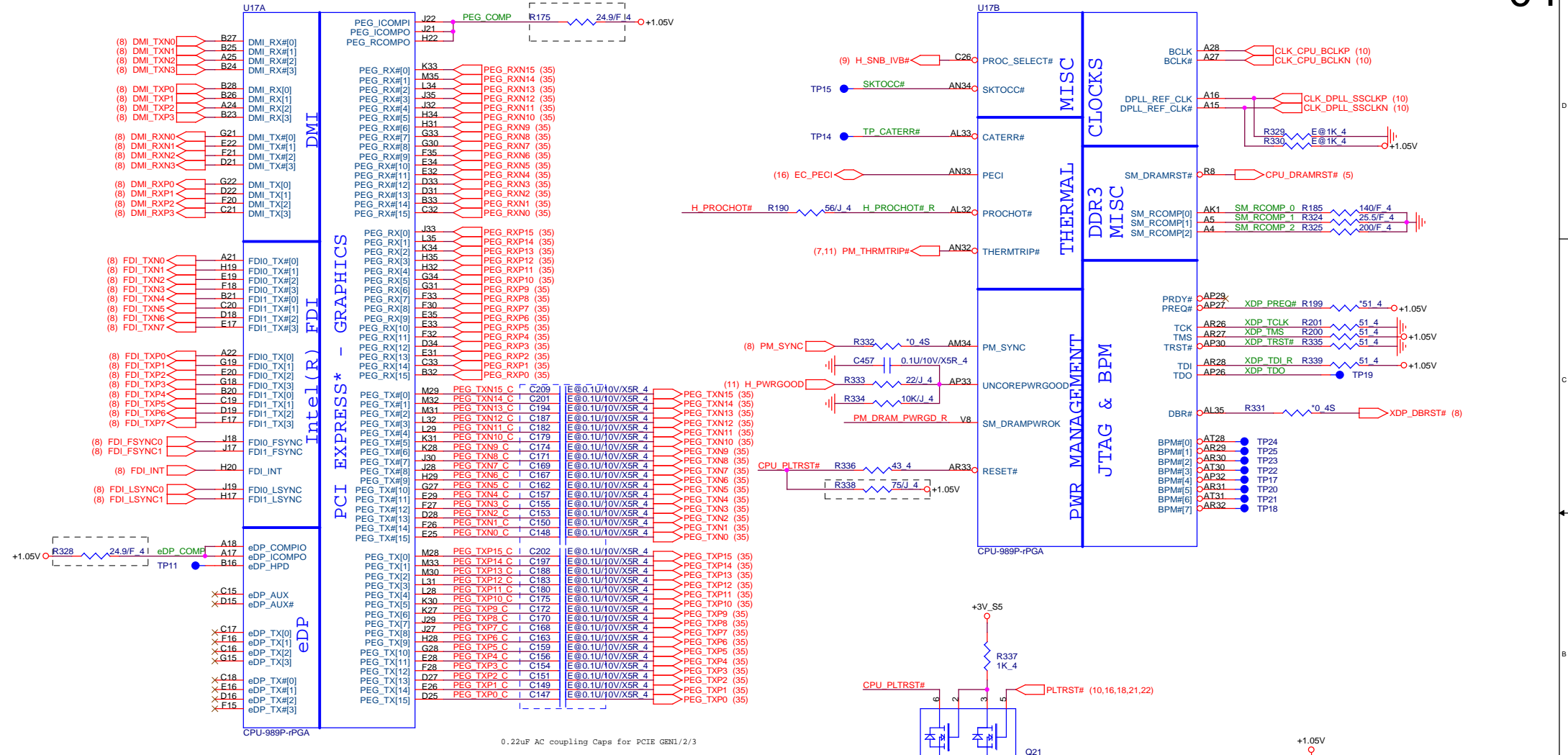
P19-- R345 change to 48.7K.
Reason : Change thermal sensor temperature to 55 degree.
Possible Risk: No.

P19-- R208 change to 27.4K for UMA.
Reason : Change thermal sensor temperature to 82 degree.
Possible Risk: No.

HK1_MB_SCH_PVT_002

P16-- KR27 change value from 10K to 4.7K.
P33-- PD7 change value from uClamp3301D to CDSOD323-T03C.
Reason : for Battery ESD protect.
Possible Risk: No.

		Quanta Computer Inc.
		PROJECT :Huron River
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	Change List	2A
Date: Wednesday, April 06, 2011	Sheet 3 of 39	



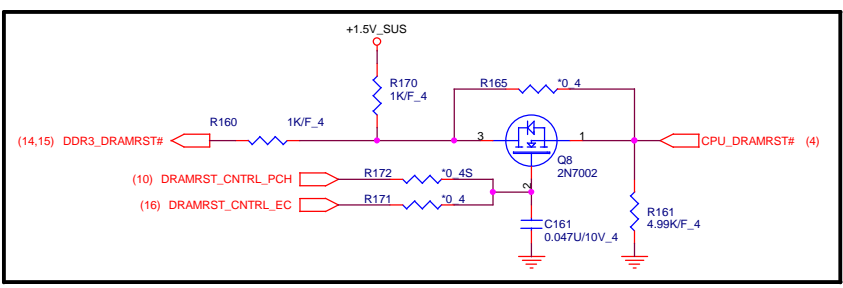
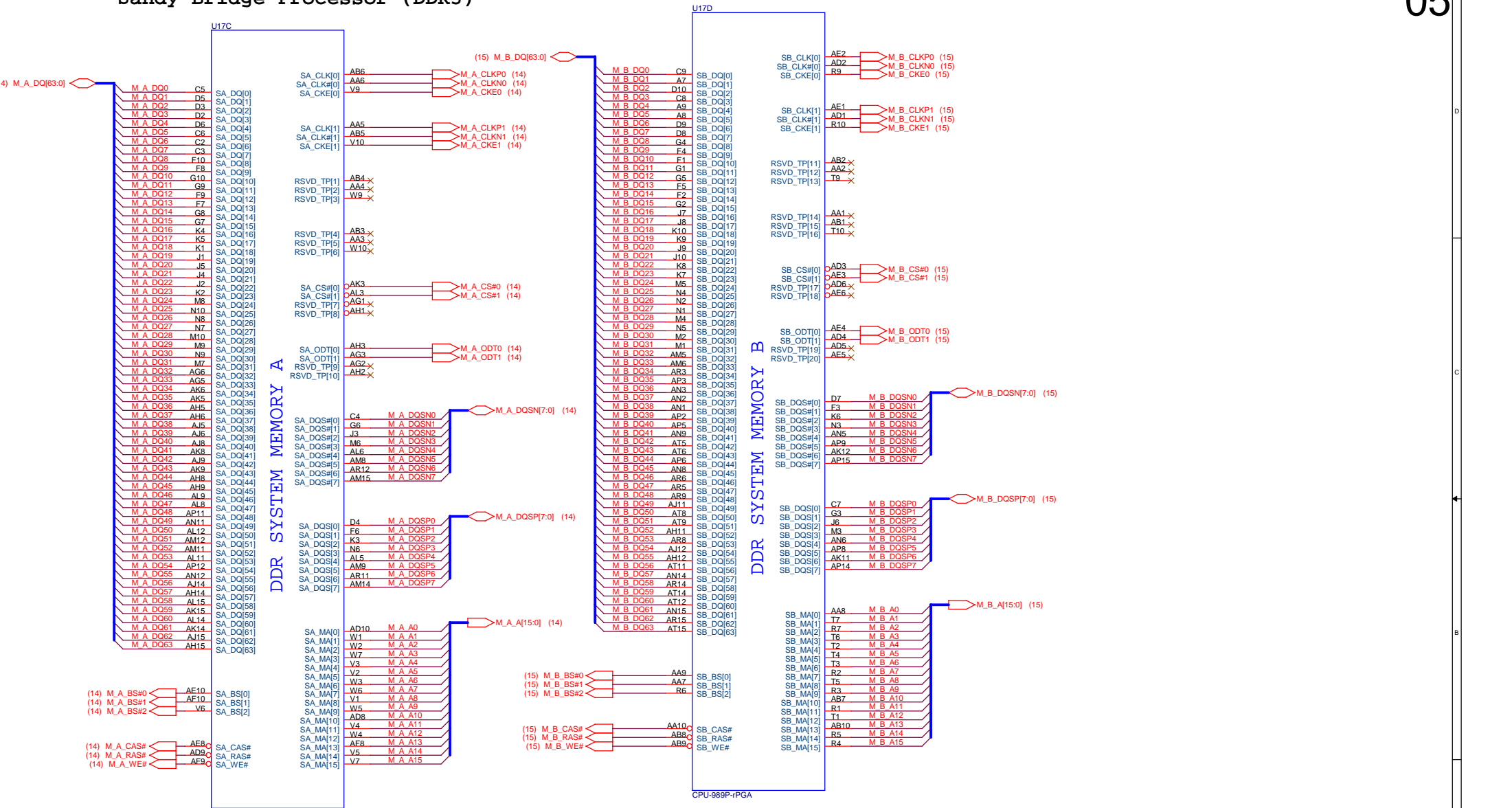
Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Rev
	Sandy Bridge 1/4	1A

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

Date: Sunday, April 03, 2011 Sheet 4 of 39

Sandy Bridge Processor (DDR3)

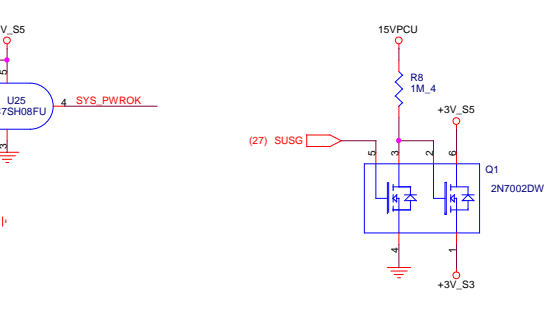
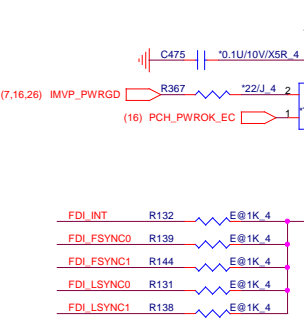
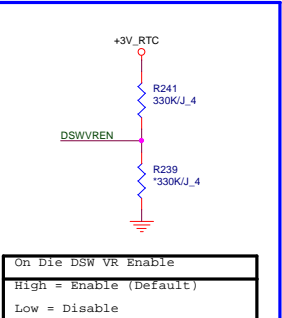
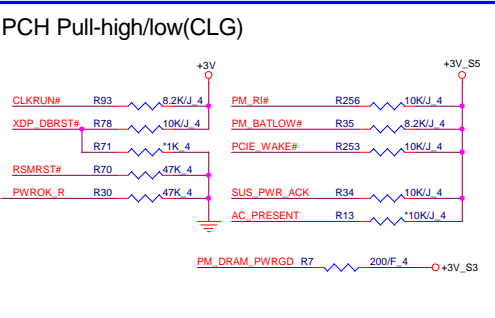
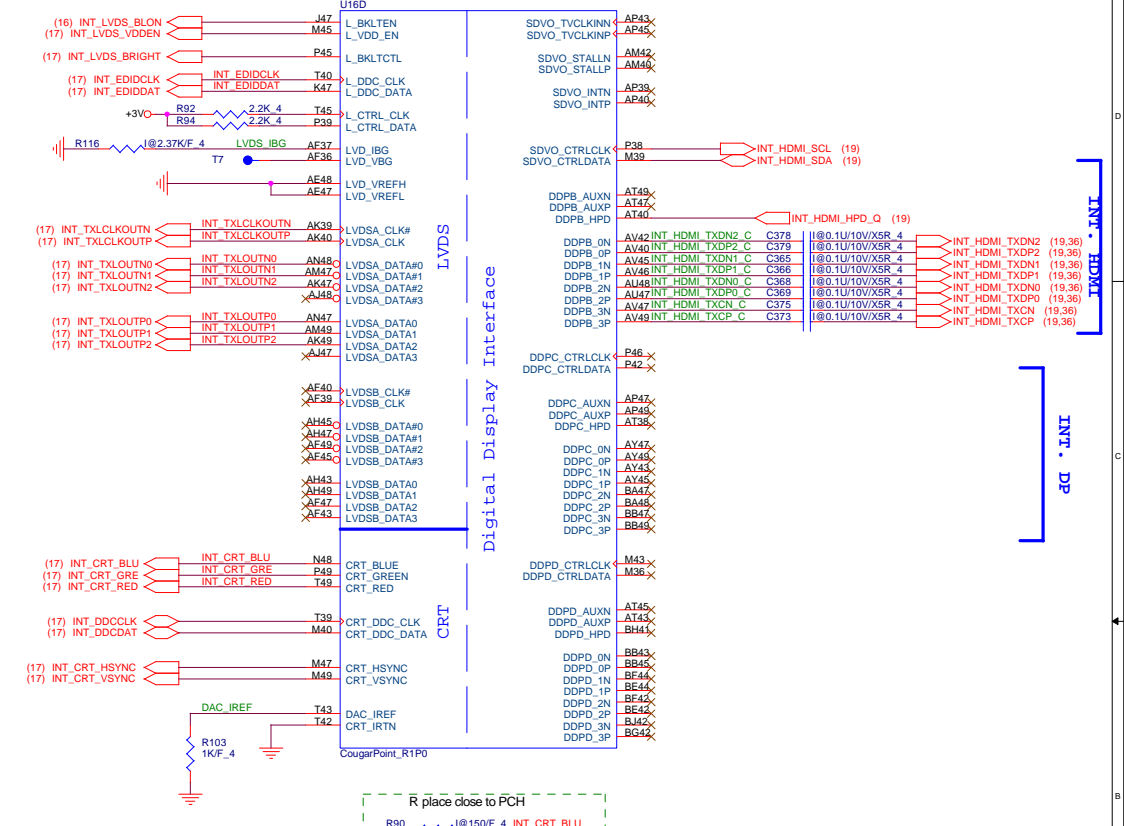
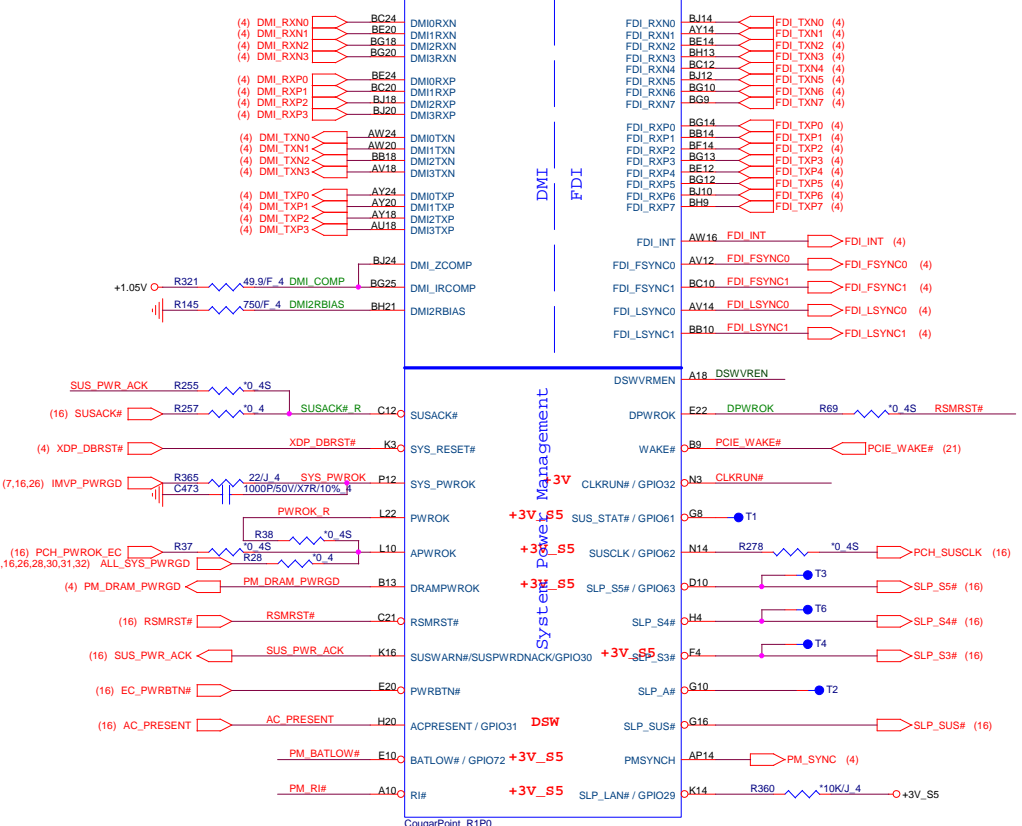


Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Rev
	Sandy Bridge 2/4	1A

Date: Sunday, April 03, 2011 Sheet 5 of 39

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

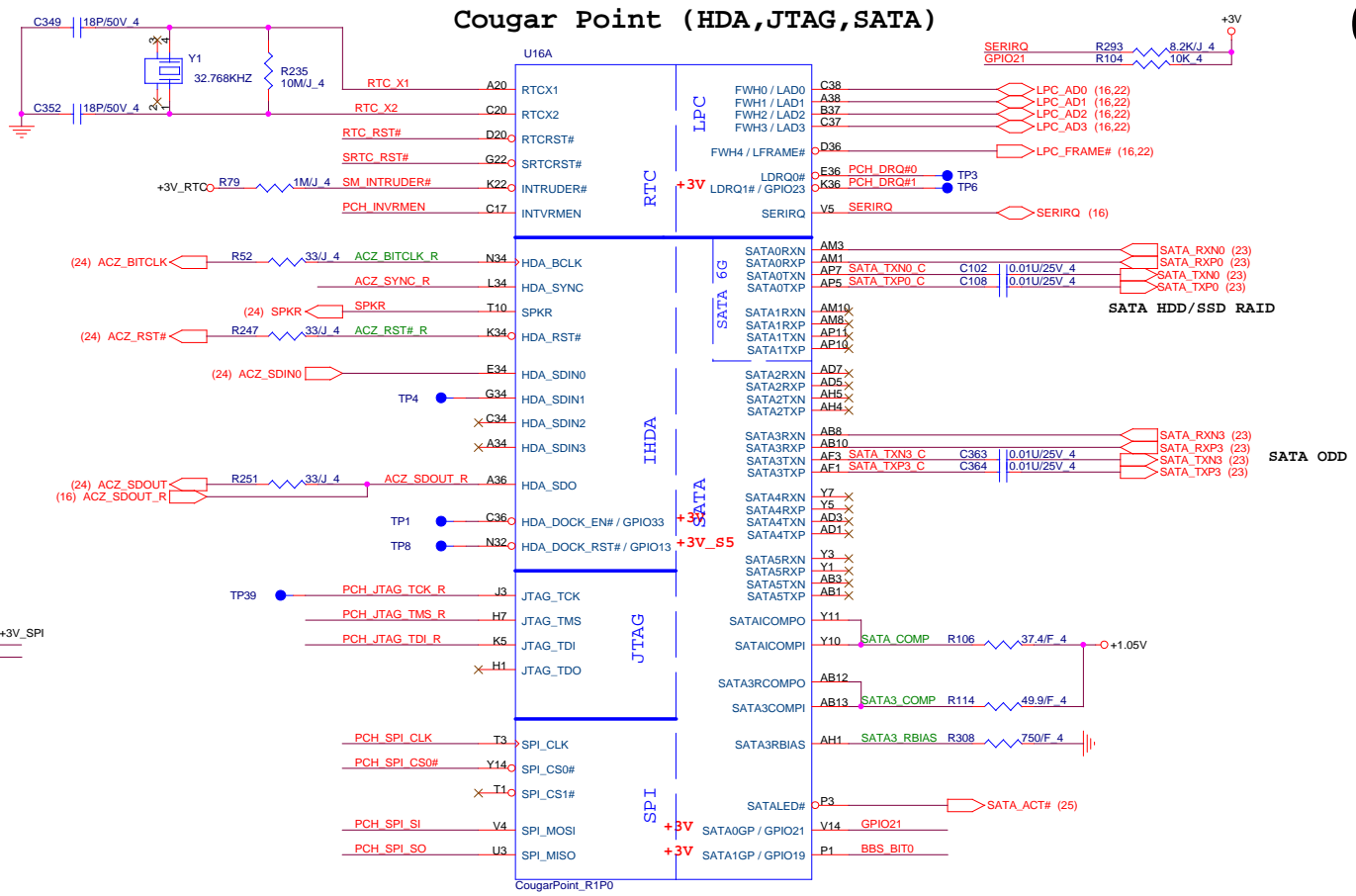


On Die DSW VR Enable
High = Enable (Default)
Low = Disable

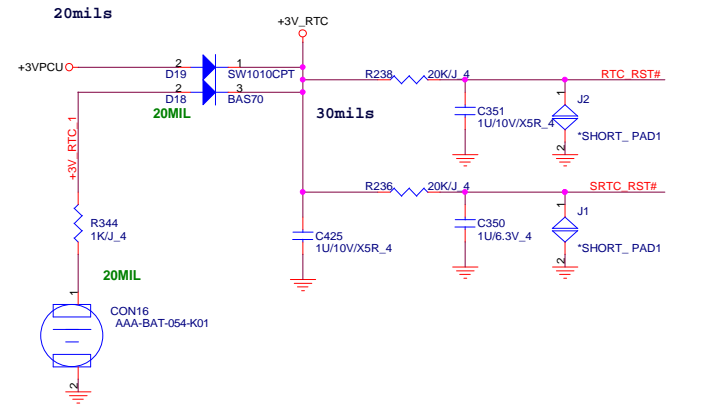
Quanta Computer Inc.
PROJECT :Huron River
Cougar Point 1/6

Size	Document Number	Rev
		1A

Cougar Point (HDA, JTAG, SATA)

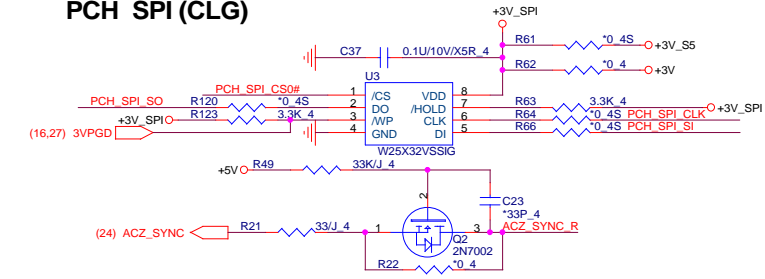


RTC Circuitry(RTC)



MX25L3205DM2I-12G; AKE39FP0Z00
W25X32VSSIG; AKE39ZP0N00

PCH SPI (CLG)

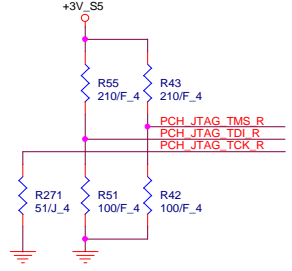


Pin Name	Strap description	Sampled	Configuration	HK1/HK2 note									
SPKR	No reboot mode setting	PWR0K	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	+3V_ R105 *1K 4 SPKR									
GNT3# / GPIO55	Top-Block Swap Override	PWR0K	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	R270 *1K 4 PCL_GNT3# (10)									
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+3V_RTC_ R242 *330K/J 4 PCH_INVRMEN									
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWR0K	<table border="1"> <thead> <tr> <th>GNT1#</th> <th>GNT0#</th> <th>Boot Location</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>SPI *</td> </tr> <tr> <td>0</td> <td>0</td> <td>LPC</td> </tr> </tbody> </table>	GNT1#	GNT0#	Boot Location	1	1	SPI *	0	0	LPC	Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS] R266 *1K 4 BBS_BIT1 (10) R289 *1K 4 BBS_BIT0
GNT1#	GNT0#	Boot Location											
1	1	SPI *											
0	0	LPC											
GPIO19	Boot BIOS Selection 0 [bit-0]	PWR0K											
HDA_SDO	Flash Descriptor Security	PWR0K	0 = Default (weak pull-down 20K) 1 = Enabled	+3V_ R250 *1K 4 ACZ_SDOOUT_R									
DF_TVS	DMI/FDI Termination voltage	PWR0K	0 = Set to Vss 1 = Set to Vcc (weak pull-down 20K)	R140 *2.2K 4 +1.8V R320 *1K 4 NV_CLE (11) H_SNB_IVB# (4)									
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)	R91 *1K 4 PLL_ODVR_EN (11)									
HDA_SYNC	On-Die PLL VR Voltage Select	RSMRST	0 = Support by 1.8V (weak pull-down) 1 = Support by 1.5V	+3V_S5_ R29 *1K 4 ACZ_SYNC_R									

PCH Strap Table

For NPCE795L Using

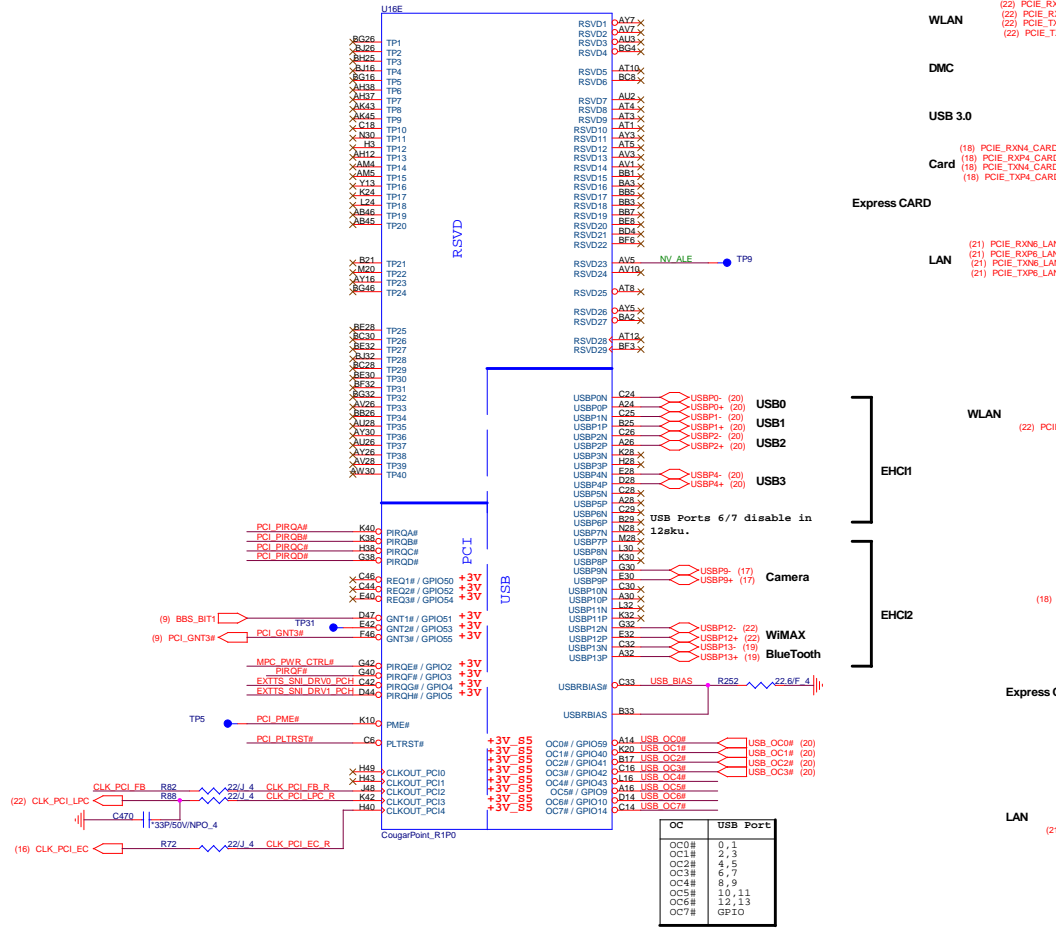
PCH JTAG Debug (CLG)



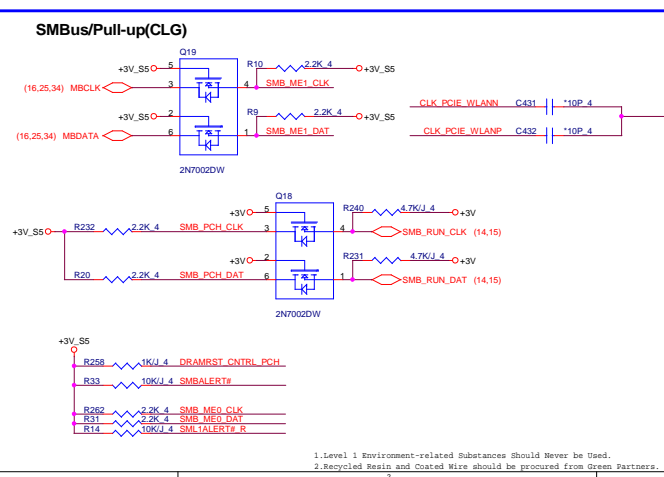
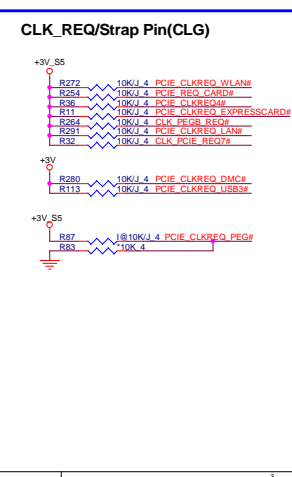
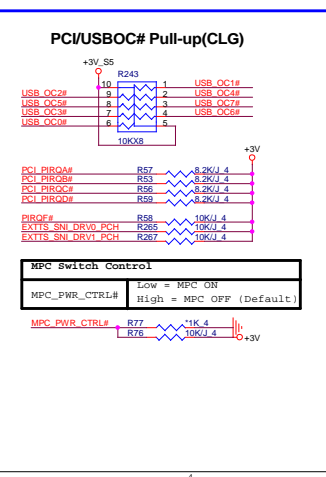
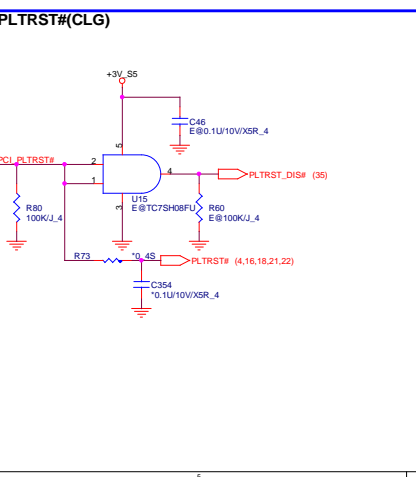
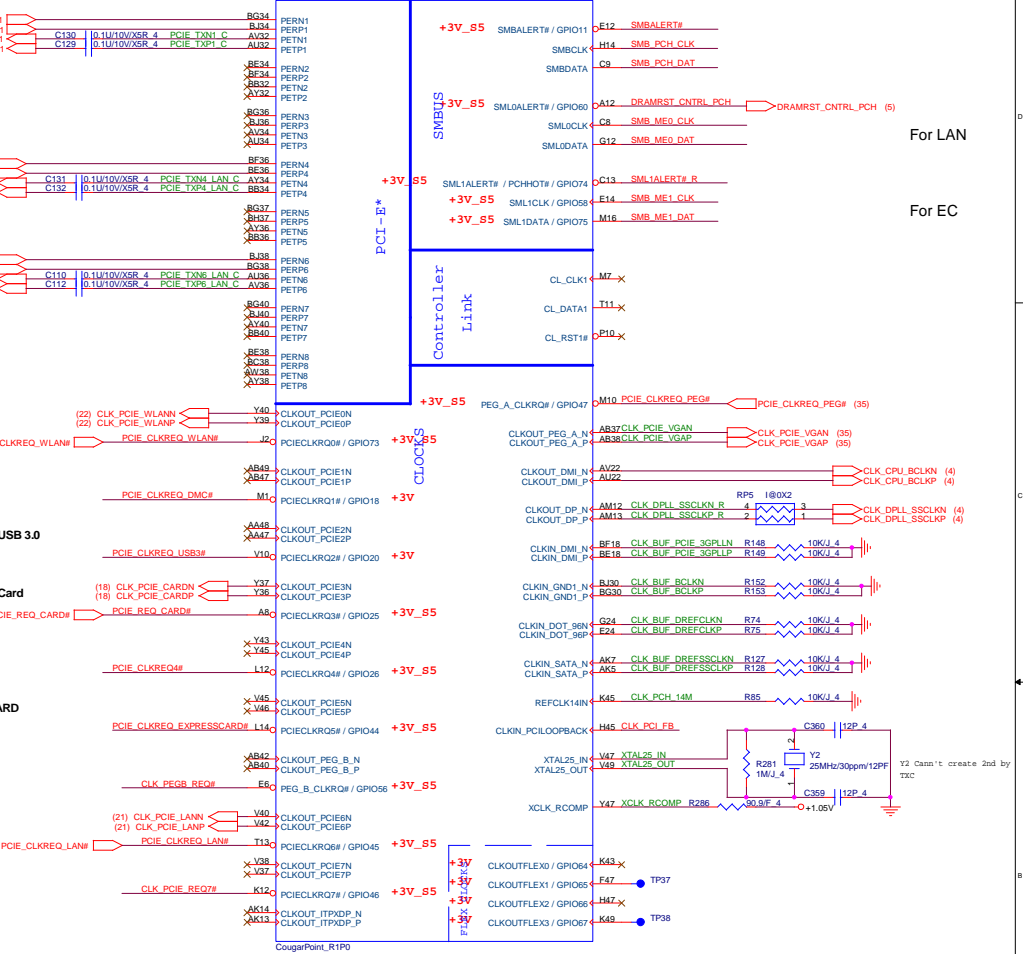
Quanta Computer Inc.
PROJECT :Huron River

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

Cougar Point-M (PCI,USB,NVRAM)



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



MPC Switch Control

Low = MPC ON
High = MPC OFF (Default)

MPC_PWR_CTRL#

Quanta Computer Inc.

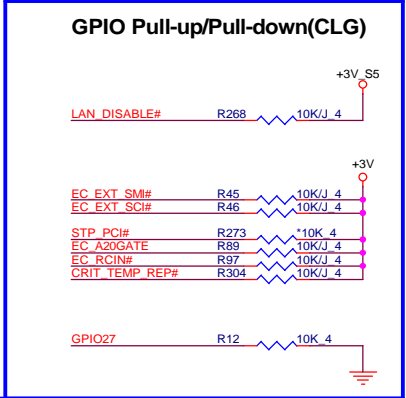
PROJECT :Huron River

Size: _____ Document Number: _____ Rev: 1A

Date: Tuesday, April 05, 2011 Sheet: 10 of 39

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

Cougar Point (GPIO,VSS_NCTF,RSVD)



Board ID0 (N12M/N12P)

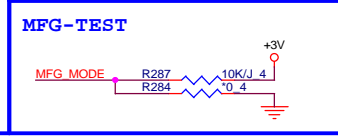
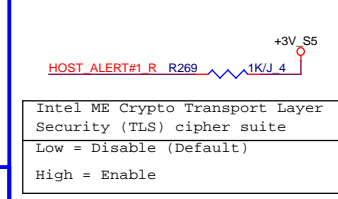
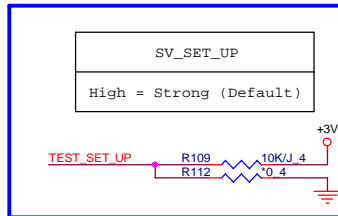
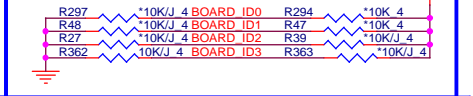
	N12M	N12P
R294	Stuff	No Stuff
R297	No Stuff	Stuff

Board ID1 (VRAM Vendor)

	Samaung	Hynix
R47	Stuff	No Stuff
R48	No Stuff	Stuff

Board ID2 (VRAM 1G/512M)

	1G	512M
R39	Stuff	No Stuff
R27	No Stuff	Stuff



PCBA SKU

PCBA SKU	Discrete	UMA
R277	Stuff	No Stuff
R275	No Stuff	Stuff

FDI TERMINATION VOLTAGE OVERRIDE

Low - Tx, Rx terminated to same voltage

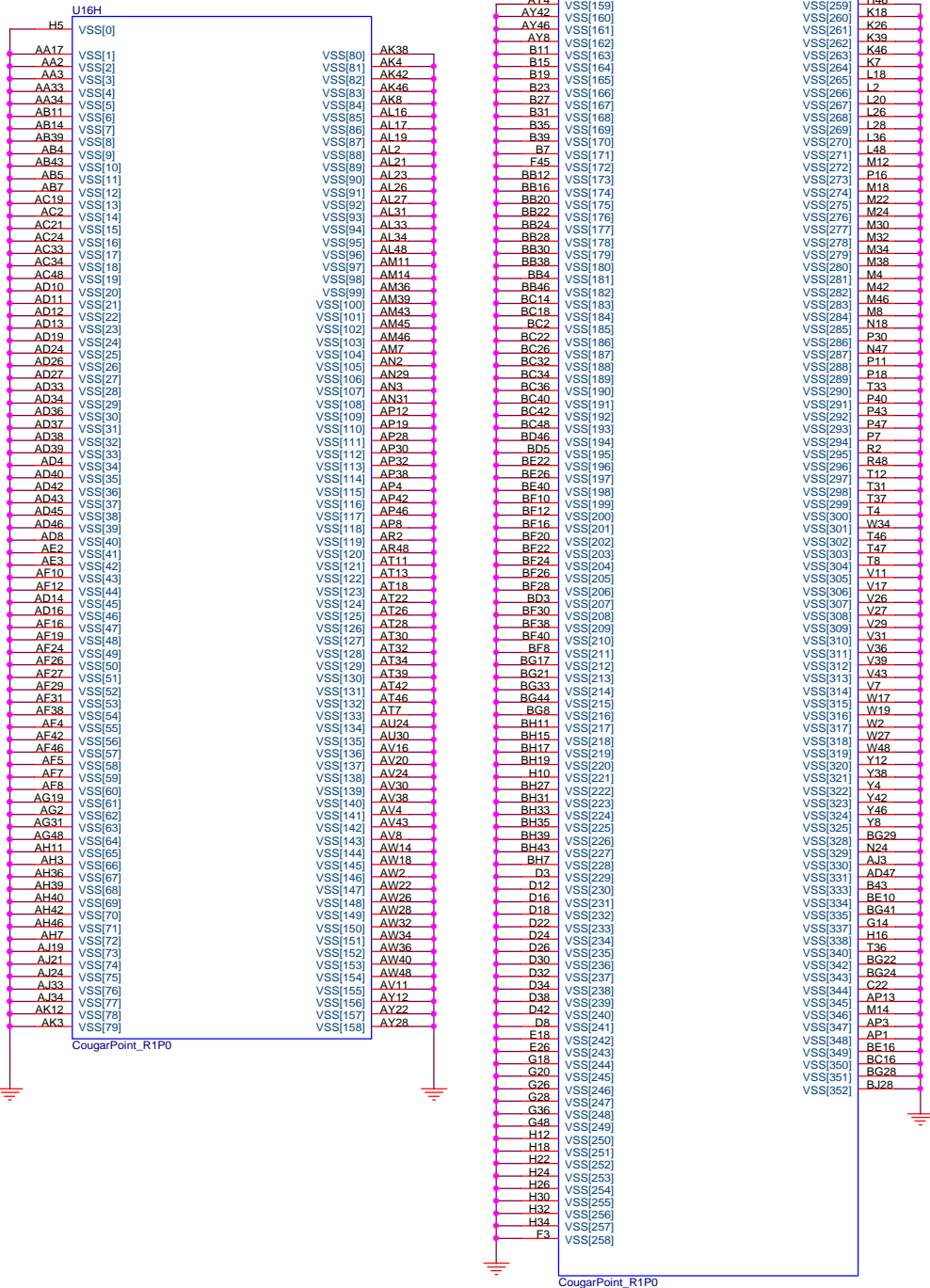
DMI TERMINATION VOLTAGE OVERRIDE


Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (DEFAULT)

BIOS RECOVERY

High = Disable (Default)
Low = Enable

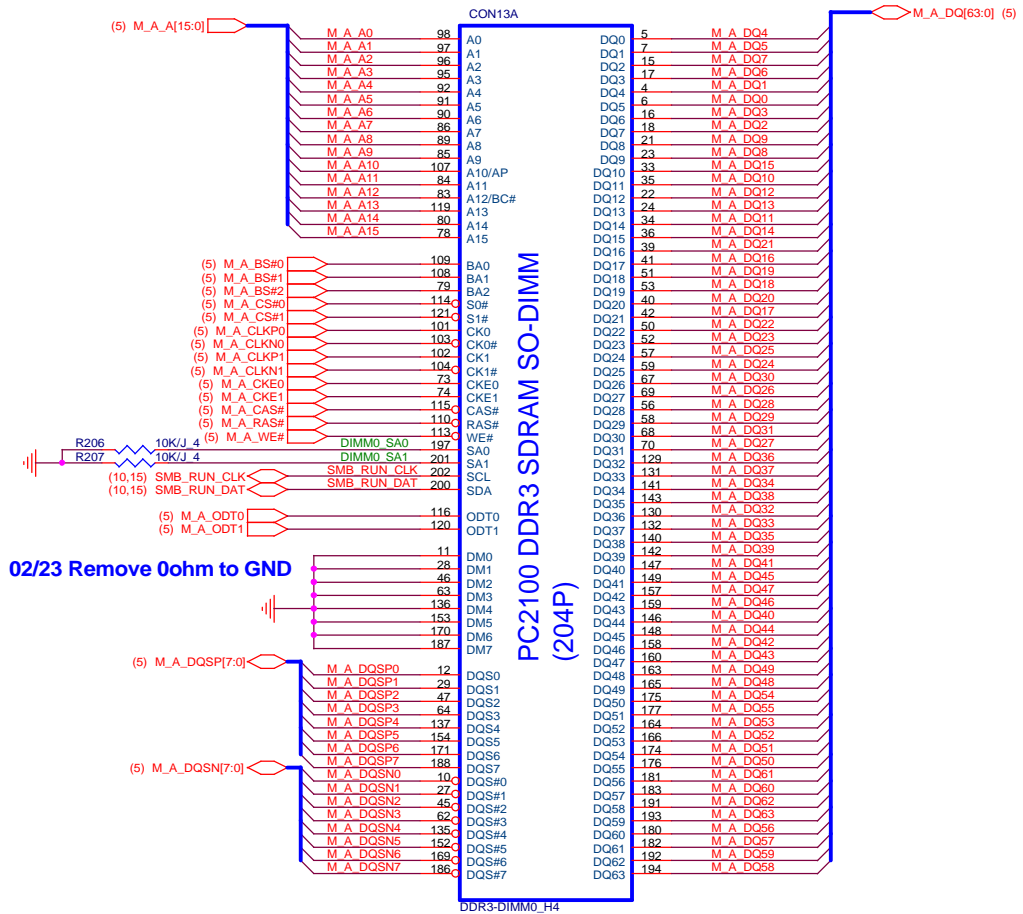
Quanta Computer Inc.
PROJECT :Huron River



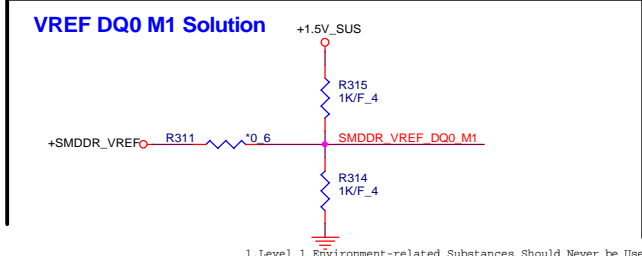
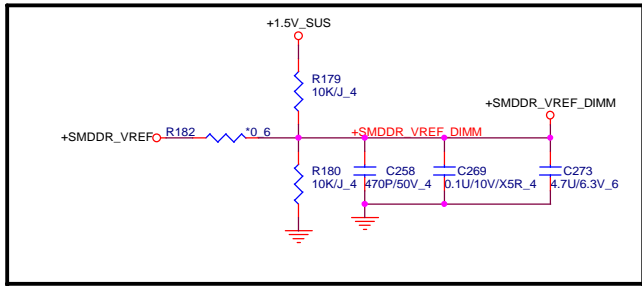
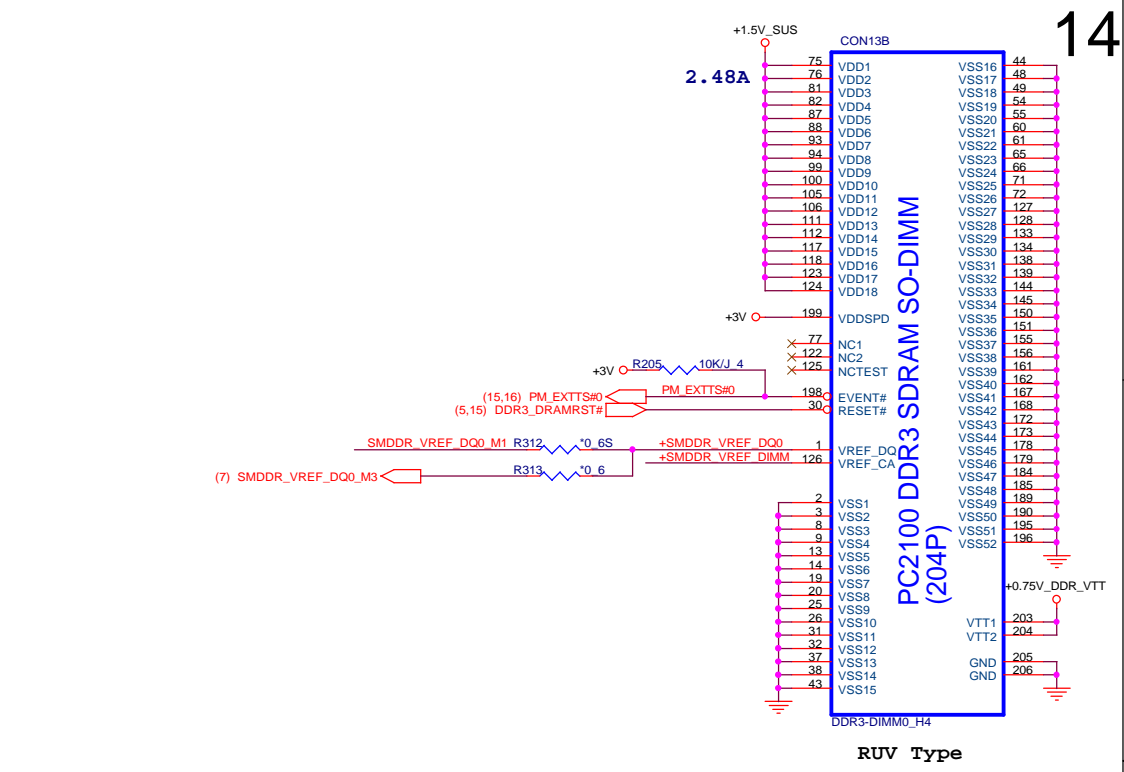
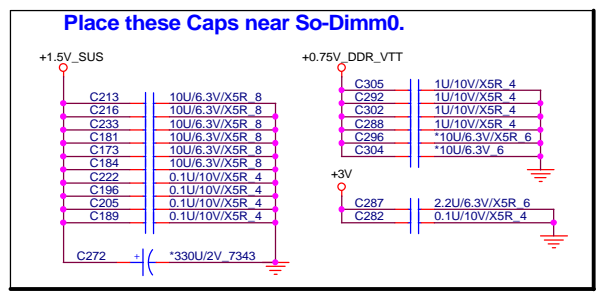

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 PROJECT :Huron River

Size	Document Number	Rev	1A
	Cougar Point 6/6		
Date: Monday, February 21, 2011		Sheet	13 of 39

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



02/23 Remove 0ohm to GND



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PROJECT :Huron River

Document Number: DDRIII SO-DIMM-0

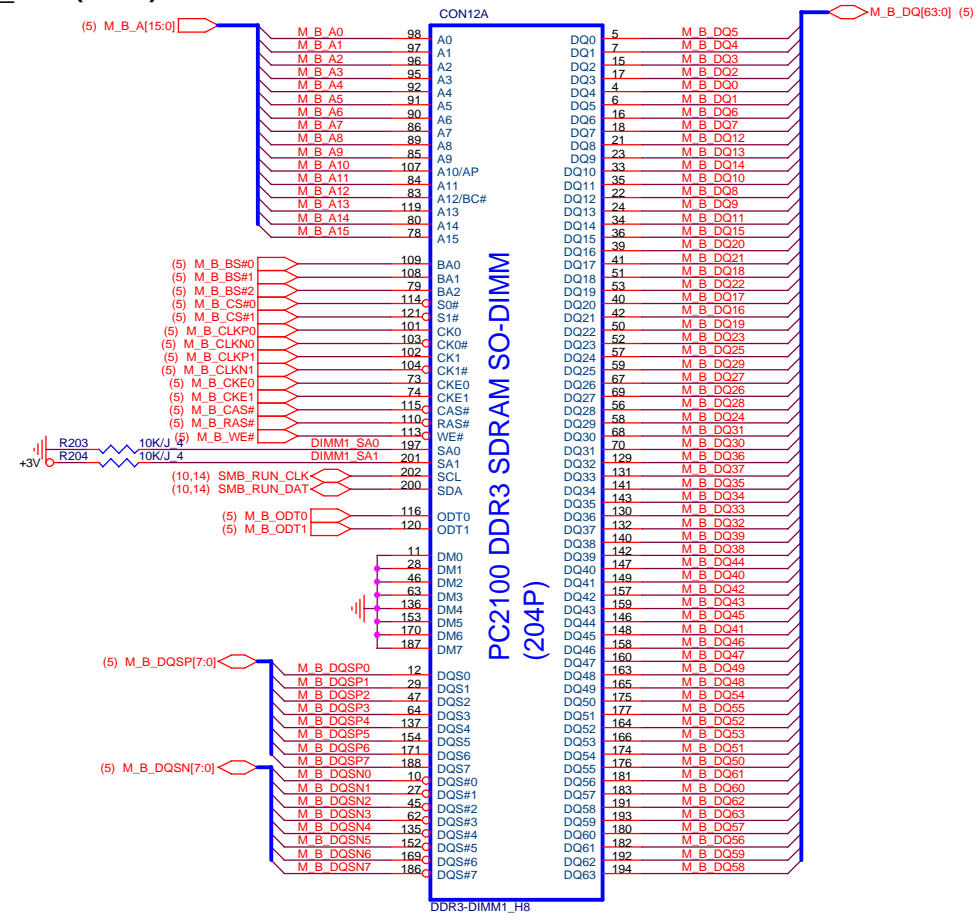
Size: _____ Date: Tuesday, April 05, 2011

Sheet: 14 of 39

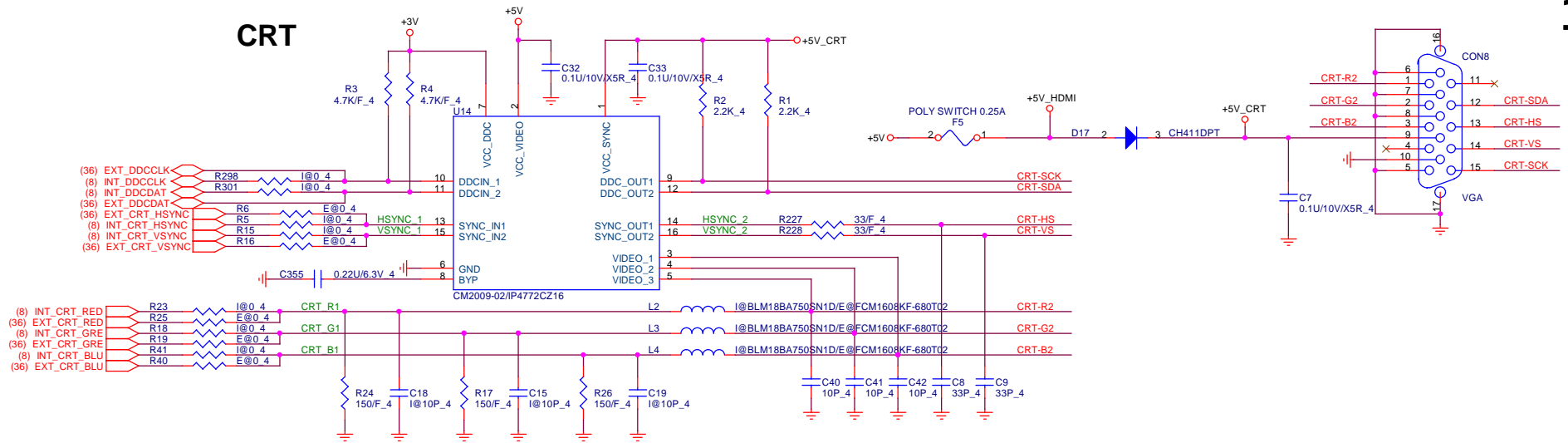
Rev: 1A

1. Level 1 Environment-related Substances Should Never be Used.
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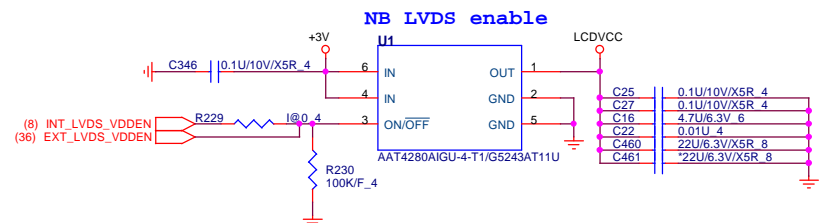
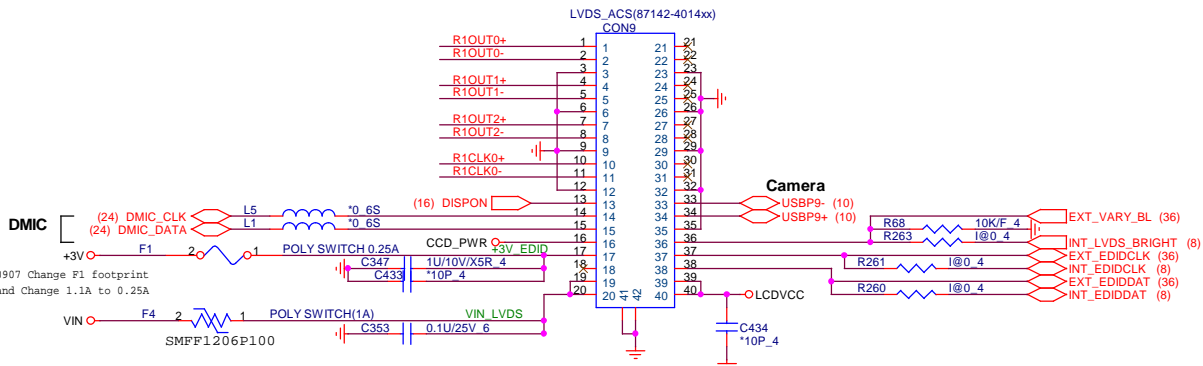
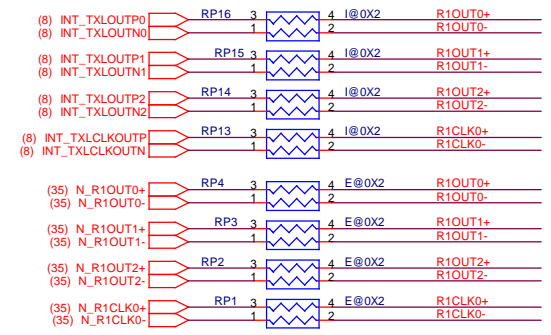
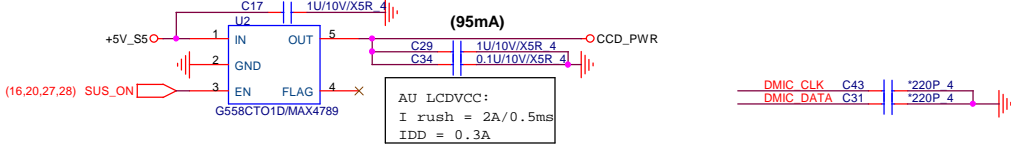
DDR_RVS (DDR)



CRT



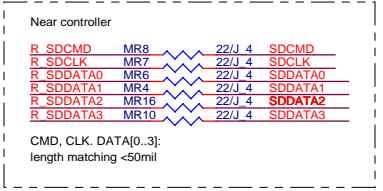
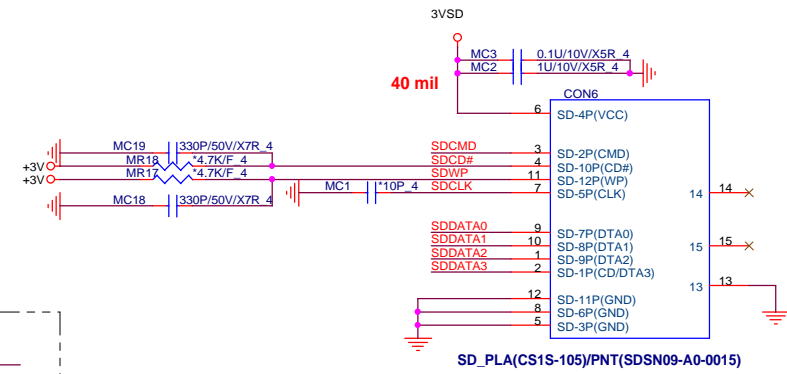
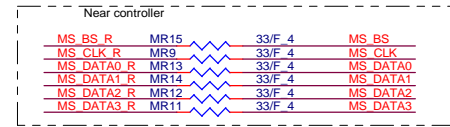
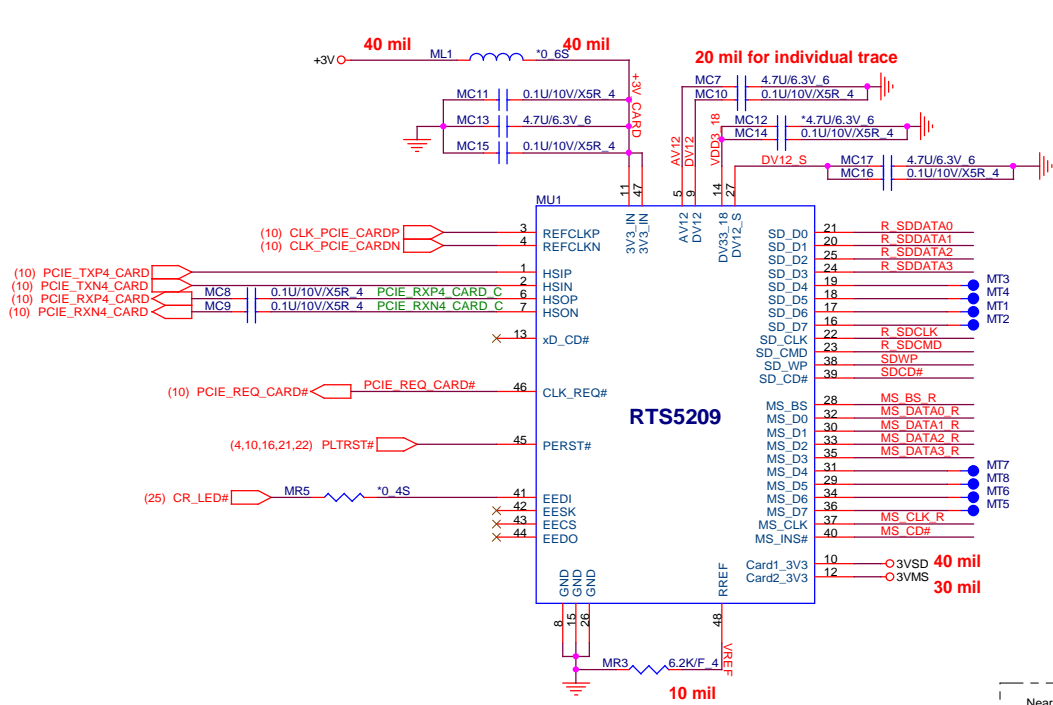
USB Camera Power



0907 Change F1 footprint and Change 1.1A to 0.25A

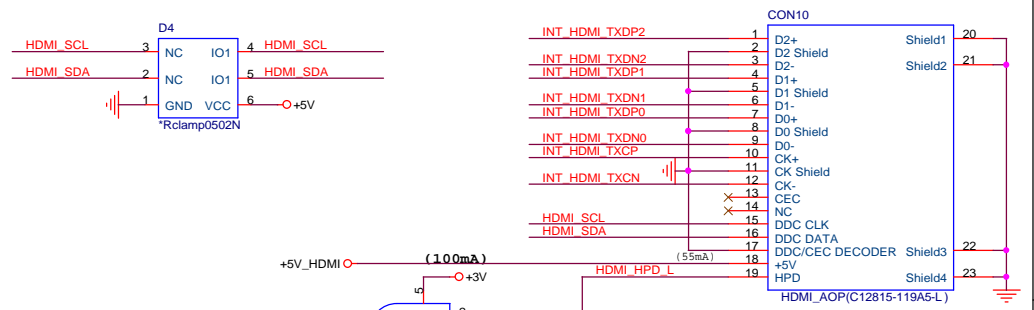
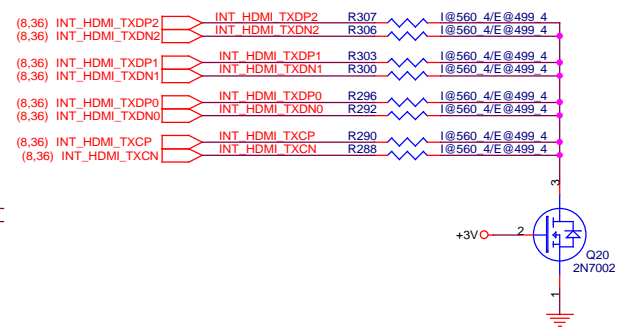
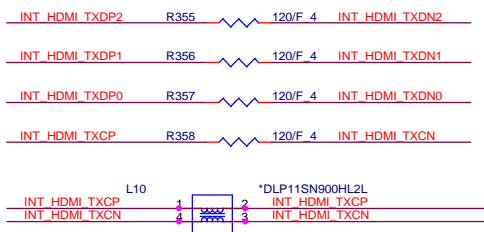
Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Sheet	Rev
	CRT/LVDS	17	1A



Quanta Computer Inc.
PROJECT : Huron River
CARD

Size	Document Number	Rev
		1A



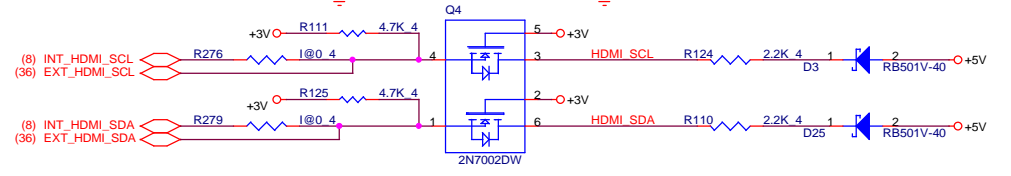
DIS SKU

Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	73	R208=34.59K	34.8K	73.2	72.2
Near GFX sensor temp	73	R146=34.59K	34.8K	73.2	72.2
Near AUDIO sensor temp	55	R345=48.58K	48.7K	55.5	54.2

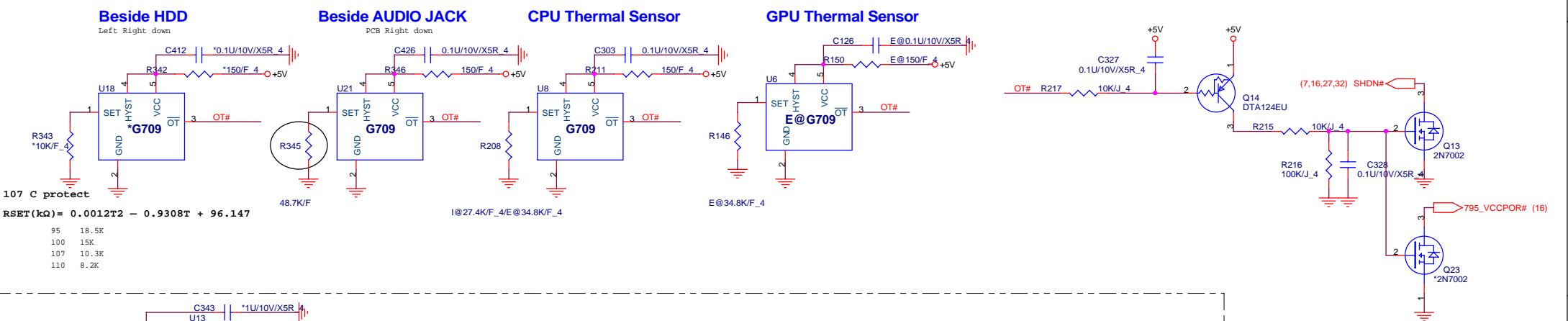
UMA SKU

Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	82	R208=27.89K	27.4K	83.1	82.2
Near AUDIO sensor temp	55	R345=48.58K	48.7K	55.5	54.2

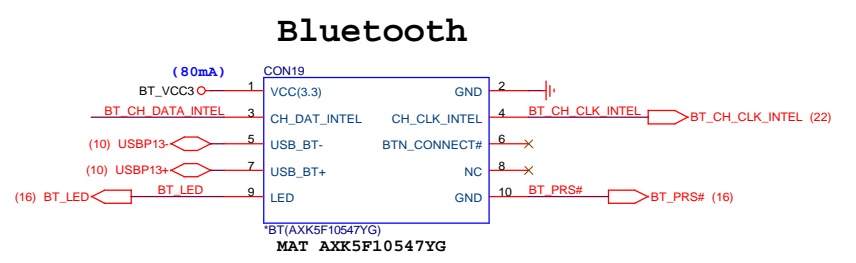
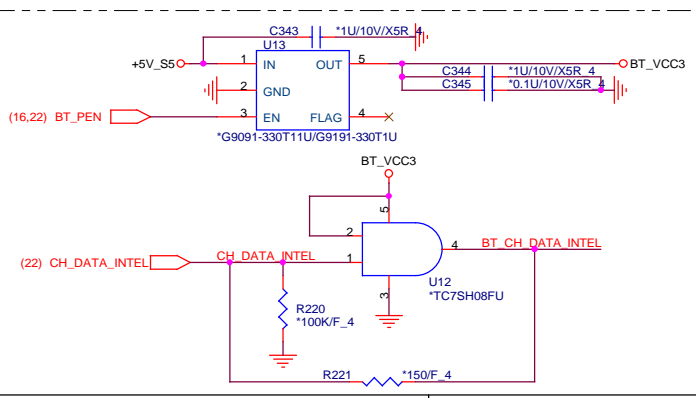
1/18 Change R125,R111 from 2.2K to 4.7K.



H/W Thermal Protect



107 C protect
 $RSET(k\Omega) = 0.0012T^2 - 0.9308T + 96.147$
 95 18.5K
 100 15K
 107 10.3K
 110 8.2K

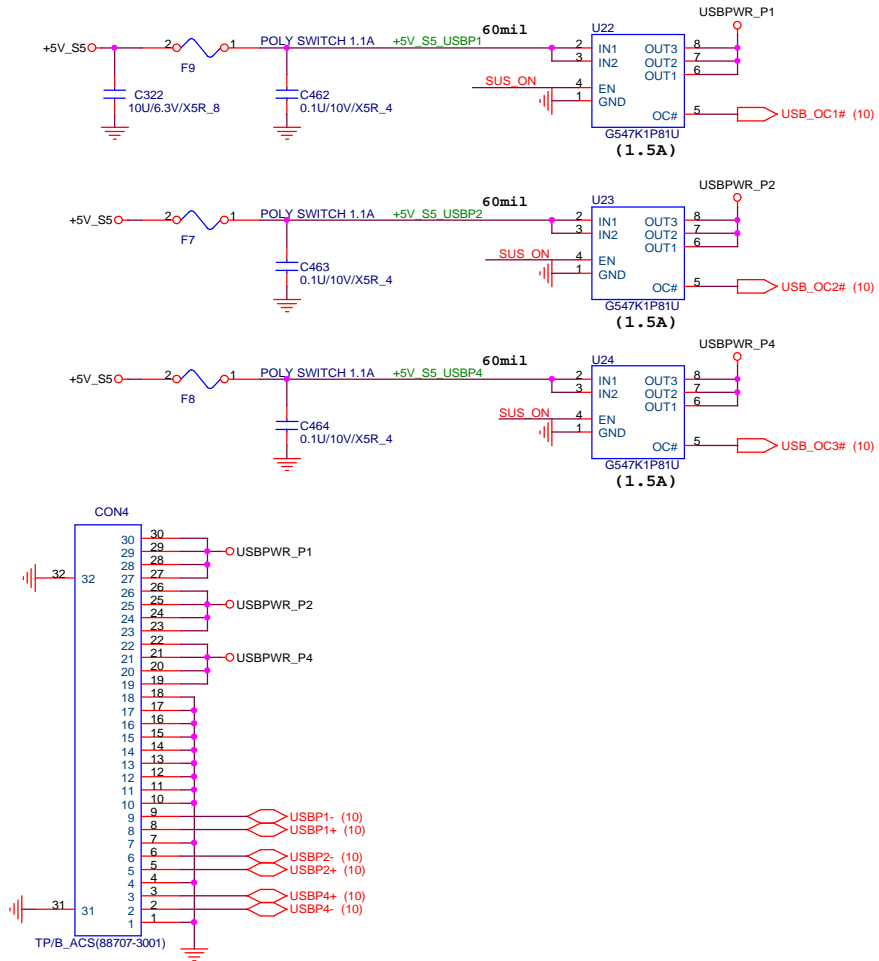


Quanta Computer Inc.
 PROJECT :Huron River

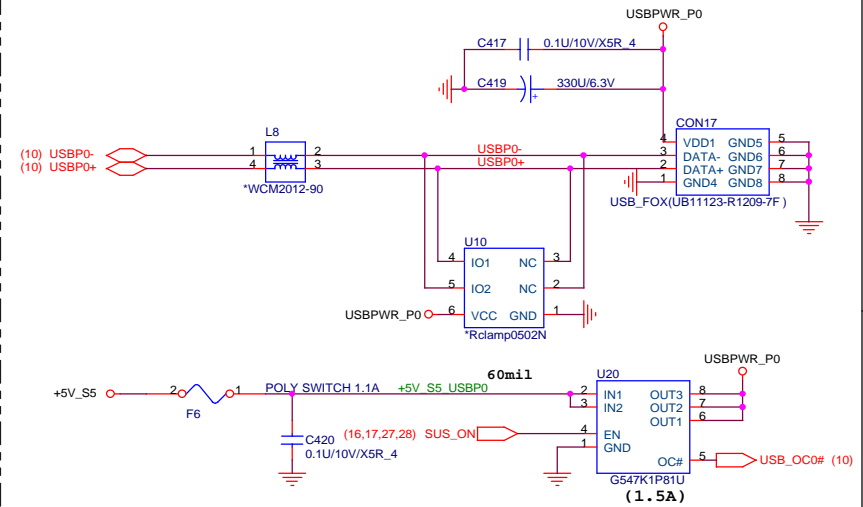
Size	Document Number	Rev
	HDMI/Bluetooth/Thermal IC	3A

1.Level 1 Environment-related Substances Should Never be Used.
 2.Recycled Resin and Coated Wire should be procured from Green Partners.
 Date: Wednesday, April 06, 2011 Sheet 19 of 39

MB to USB board

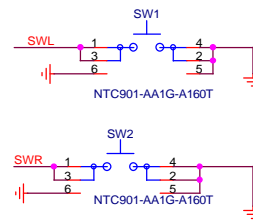
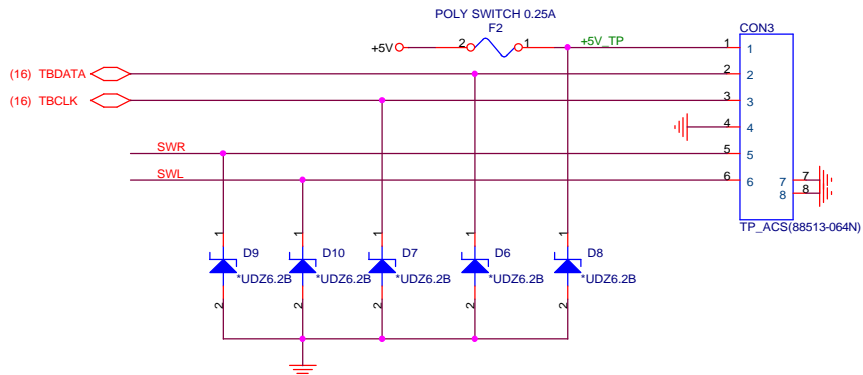


USB PORT 0

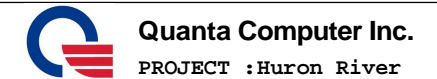
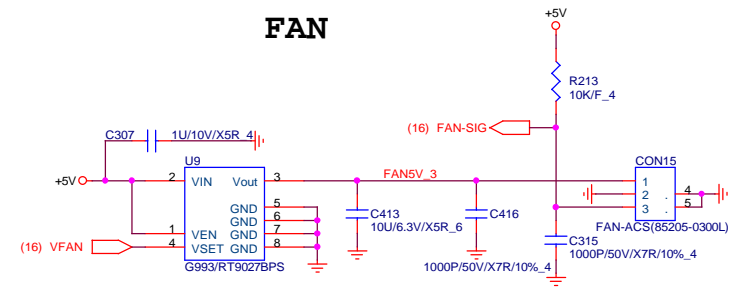


T/P Board to T/P

9/13 change F2 P/N from 0.12A to 0.25A

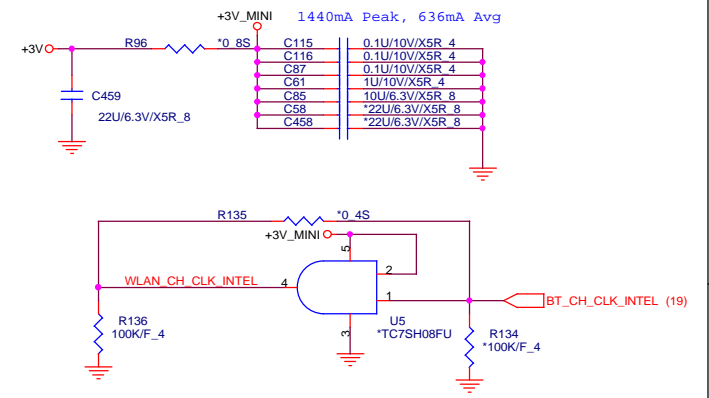
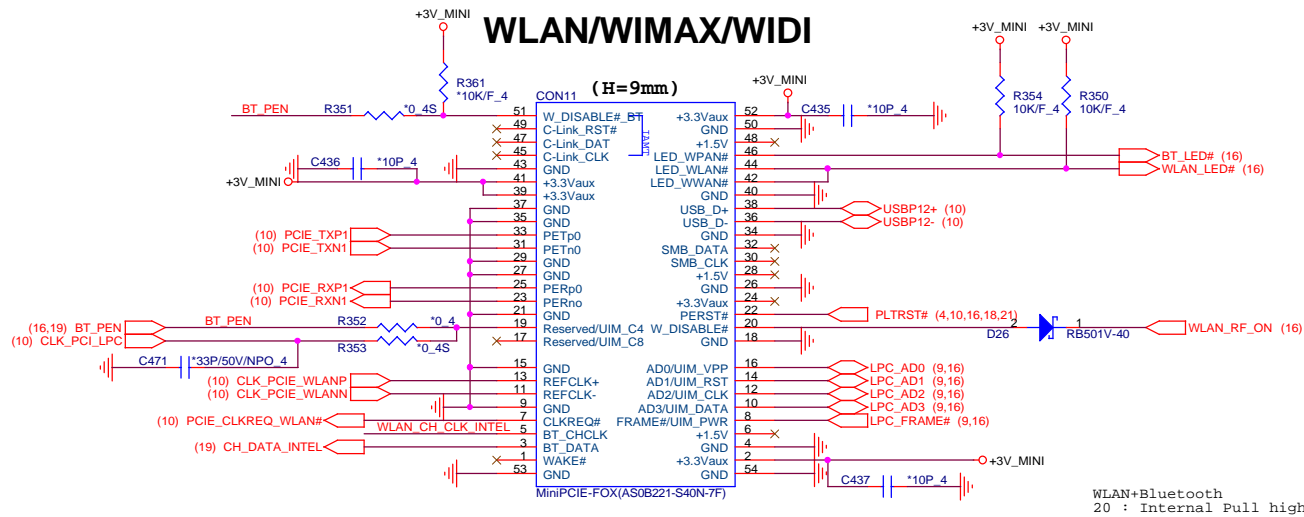


FAN

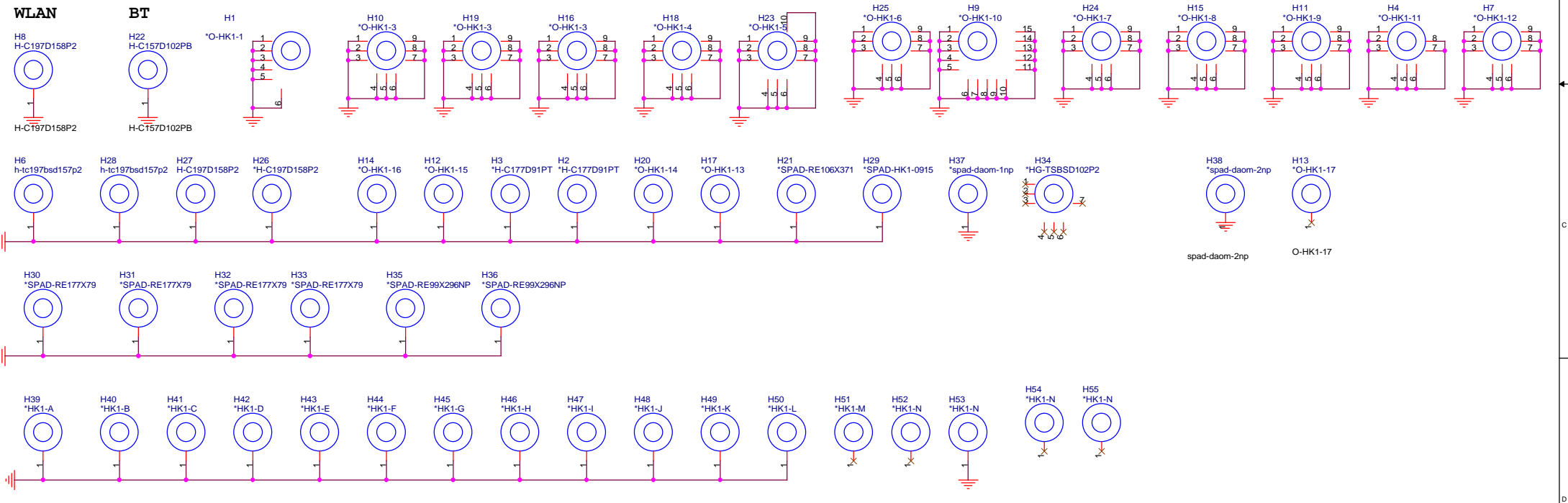


Size	Document Number	Rev 1A
USB/TP/FAN		

WLAN/WIMAX/WIDI



HOLE



Quanta Computer Inc.
PROJECT :Huron River

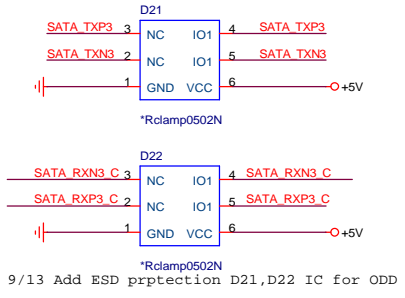
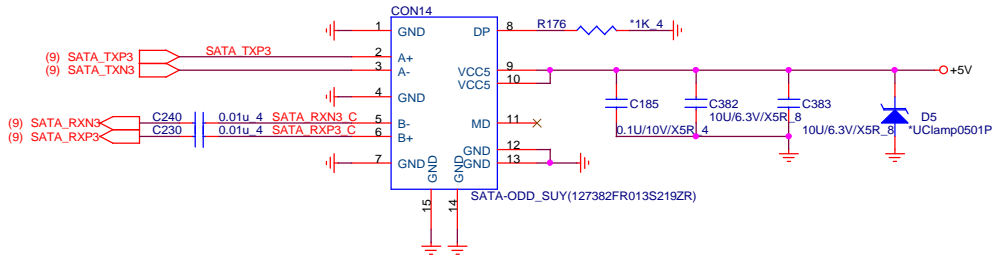
Size	Document Number	Rev
	WLAN/WIMAX/WIDI	1A

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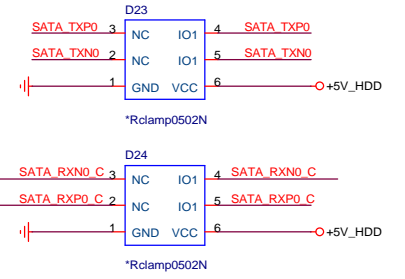
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

ODD CONNECTOR

8/18 Change HDD 2nd source connector patt number

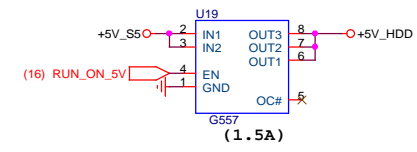
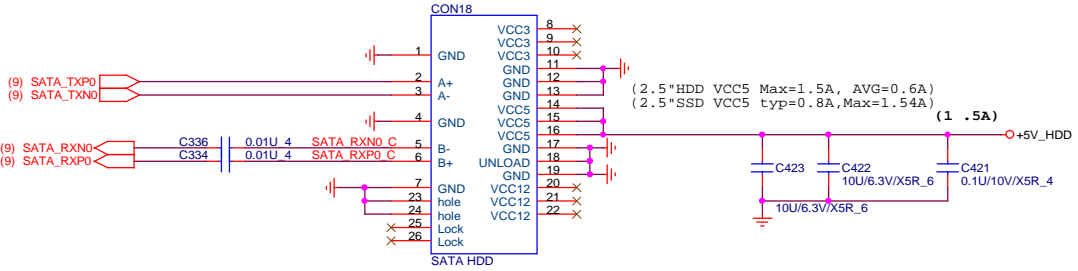


9/13 Add ESD prptection D21,D22 IC for ODD

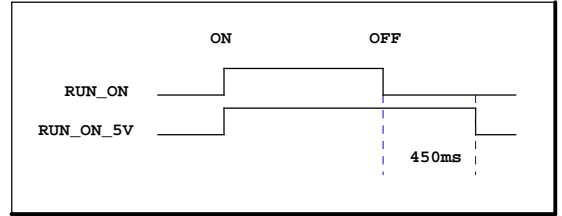


9/13 Add ESD prptection D23,D24 IC for HDD

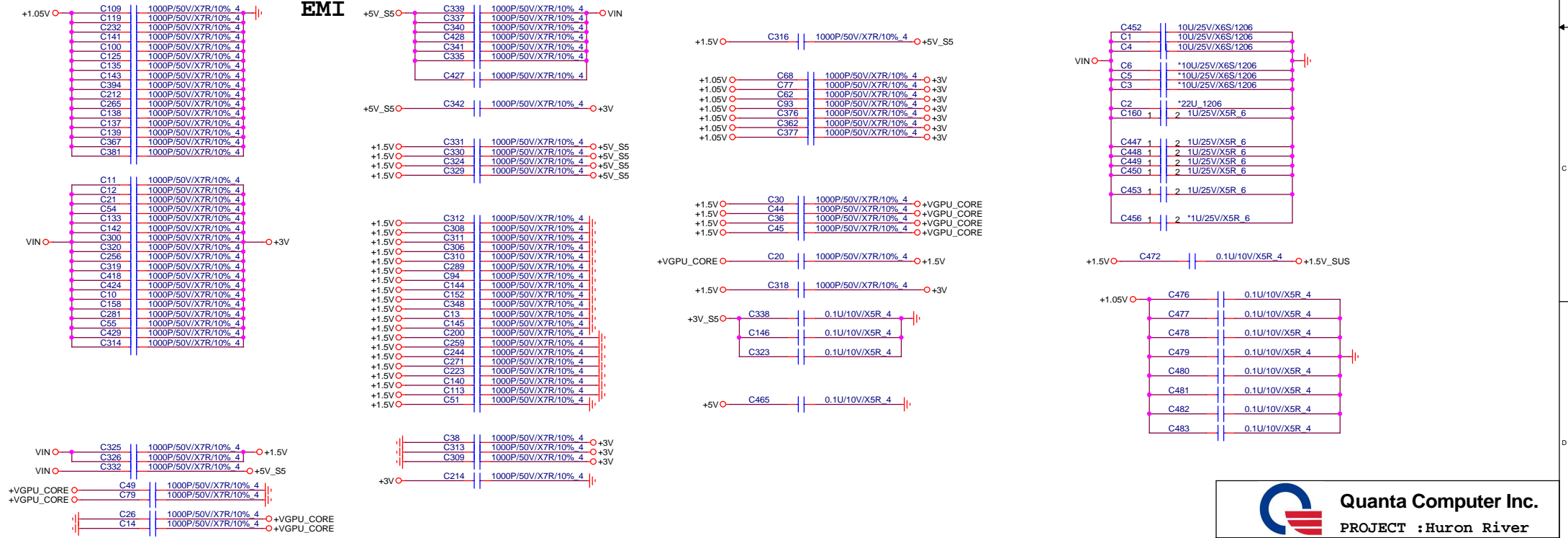
HDD CONNECTOR



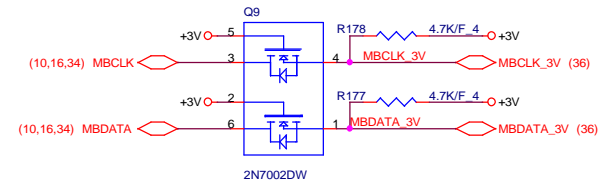
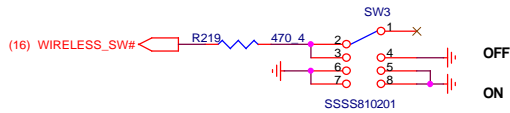
1/18 Change U19 from G547 to G557.



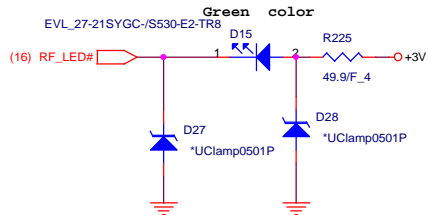
EMI



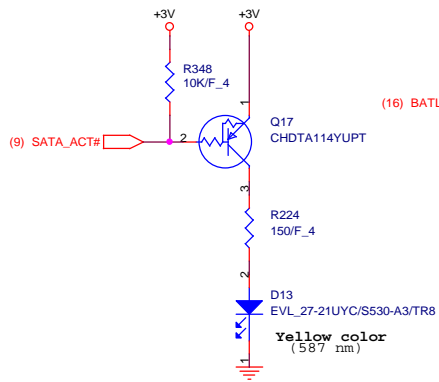
WIRELESS/Bluetooth SWITCH



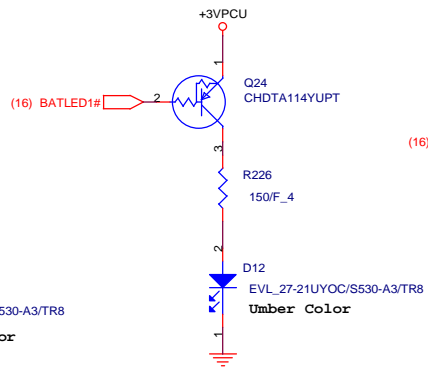
RF LED



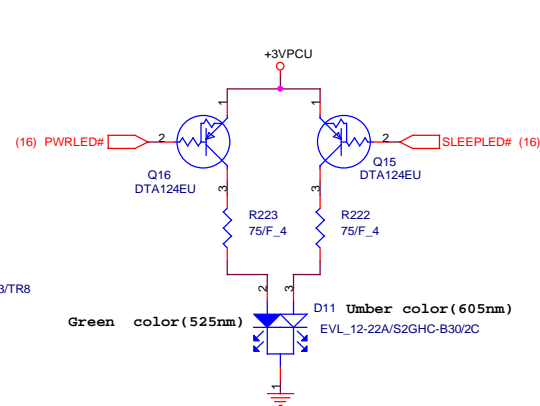
SATA LED



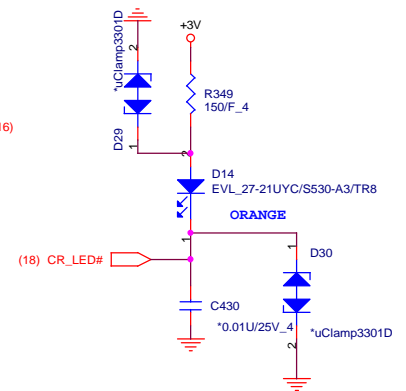
BATTERY LED



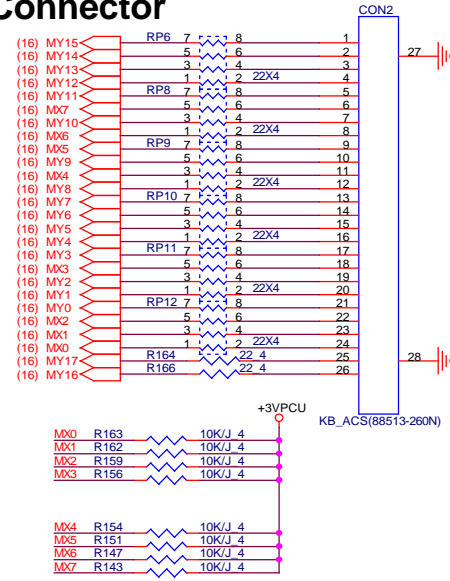
Power/Sleep LED



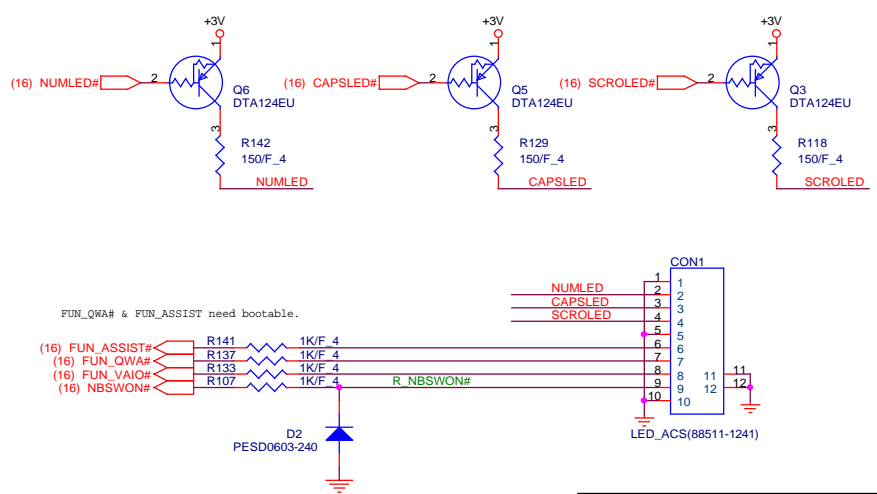
CARD LED



KEY BOARD Connector



Power SW Board Connector

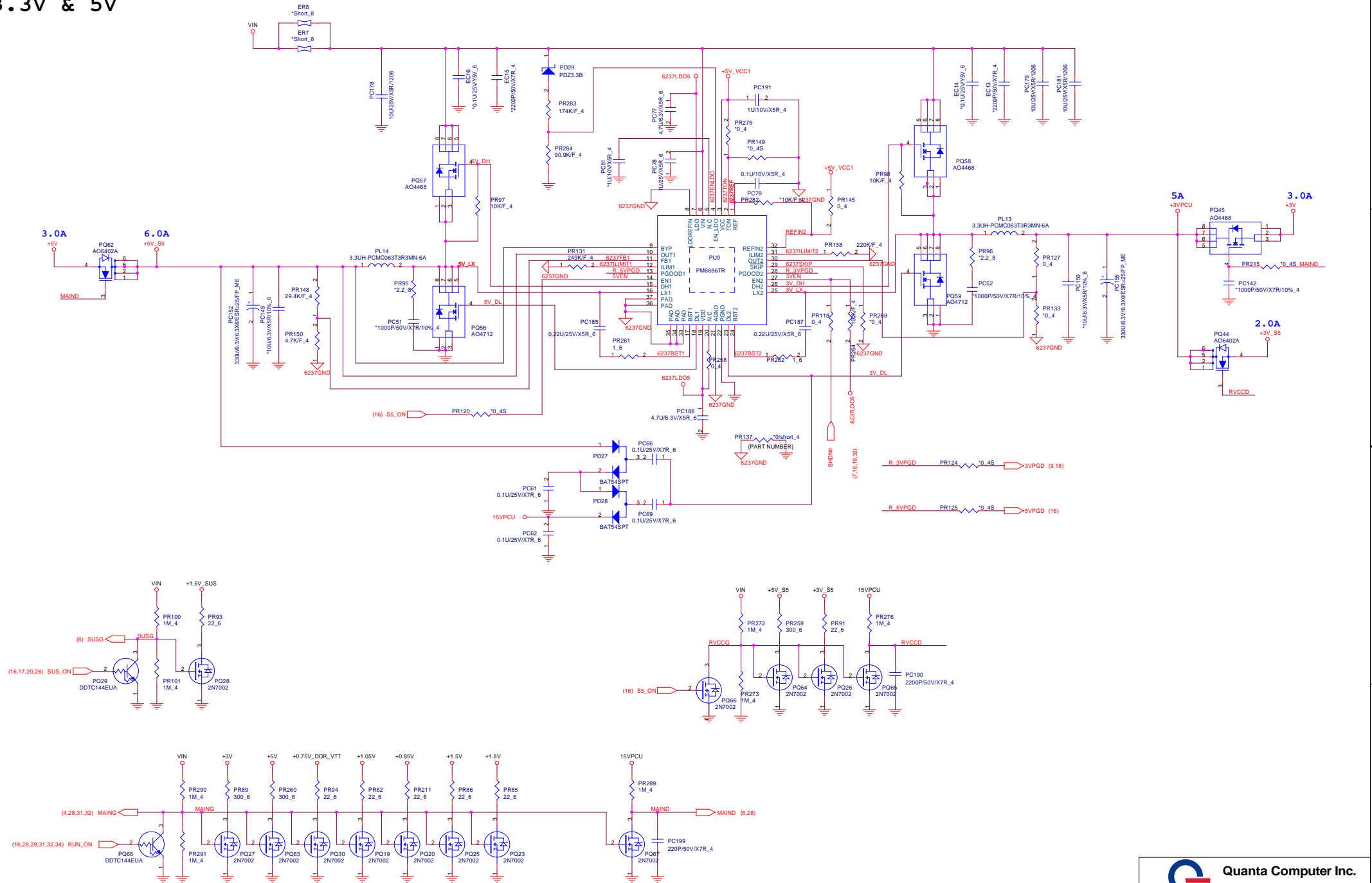


Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Rev
	LED/RF/KB/PS	1A

Date: Wednesday, April 06, 2011 Sheet 25 of 39

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

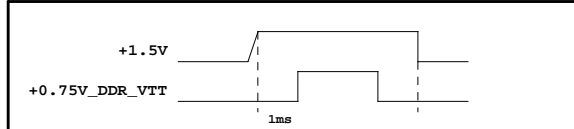
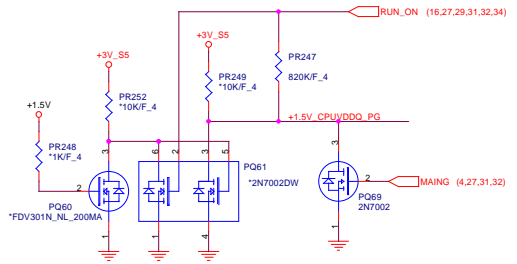
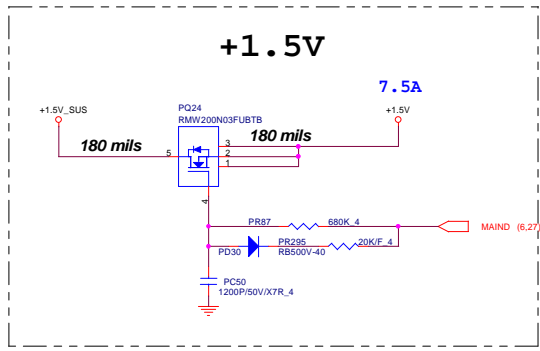
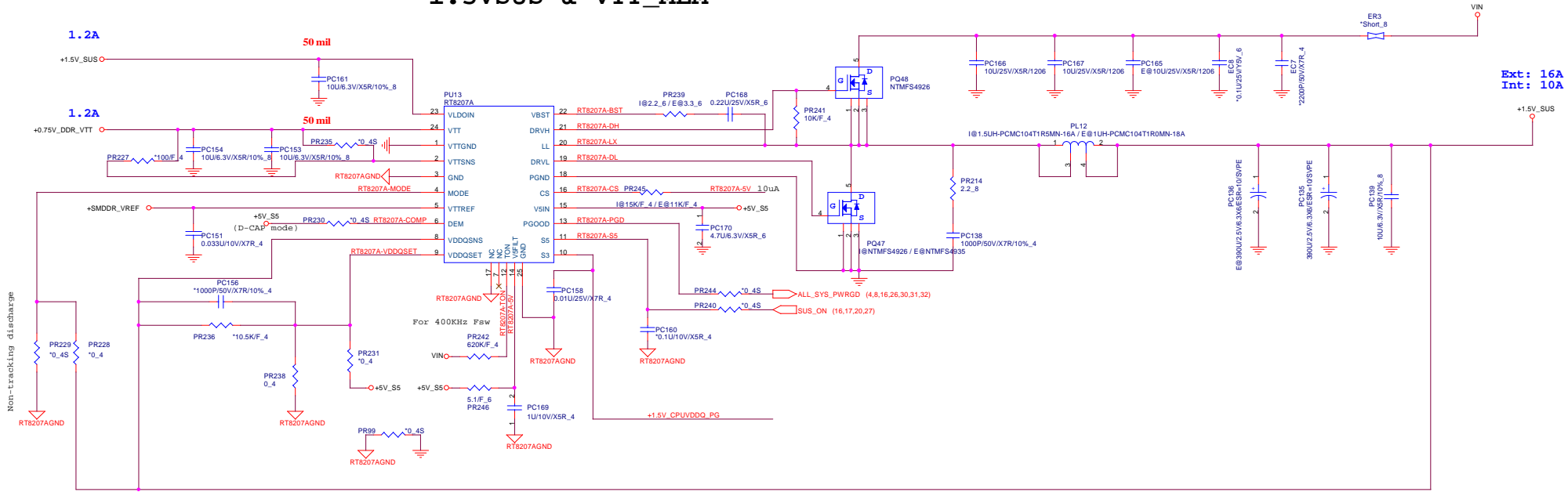


Quanta Computer Inc.
PROJECT : Huron River

Size Document Number
3VPCU&5VPCU(PM6688)

Rev 1A

1.5VSUS & VTT_MEM



MODE	DISCHARGE MODE
+5V	No discharge
+1.5V	Tracking discharge
GND	Non-tracking discharge

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

VTT = VITREF = VDDQSNS/2 = 0.75V

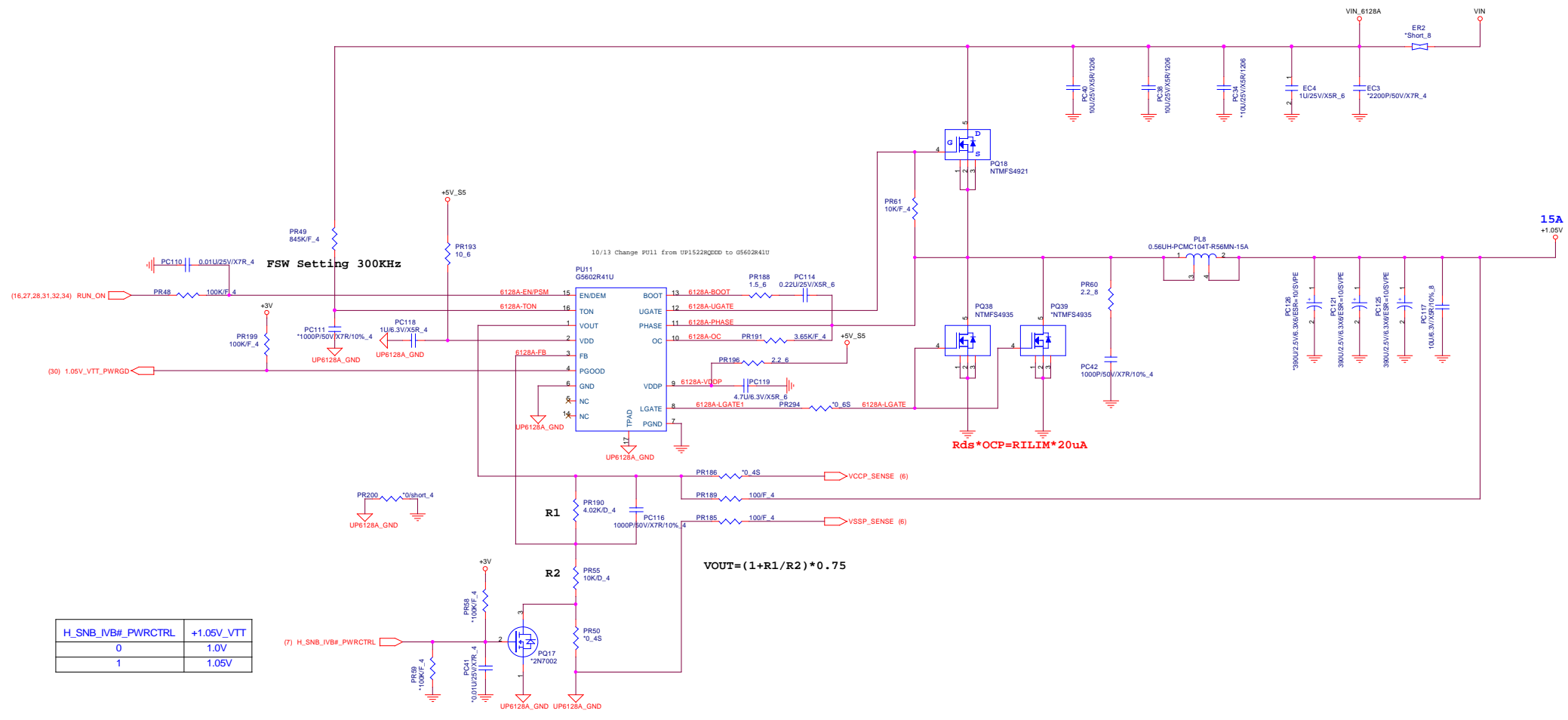
STATE	S3	S5	1.5VSUS	VITREF	VTT
S0	1	1	on	on	on
S3	0	1	on	on	off
S4/S5	0	0	off	off	off

Quanta Computer Inc.
PROJECT : Huron River

Size: Document Number: 1.5VSUSVTT_MEM
 Date: Tuesday, April 05, 2011 Sheet: 28 of 39

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

+1.05V / 15.0A



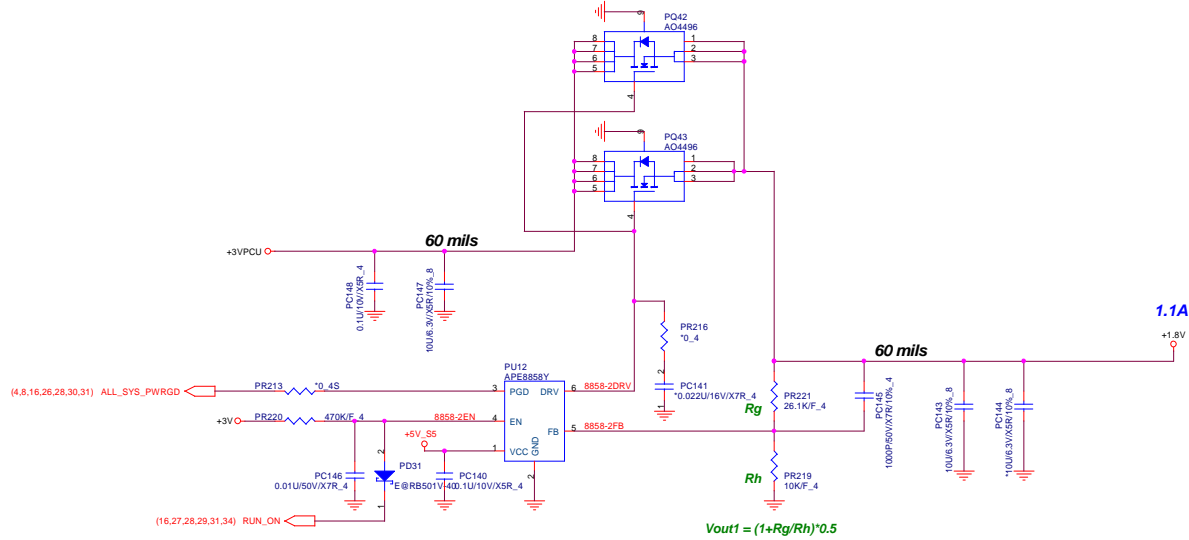
H_SNB_IVB#_PWRCTRL	+1.05V_VTT
0	1.0V
1	1.05V

$V_{OUT} = (1 + R1/R2) * 0.75$

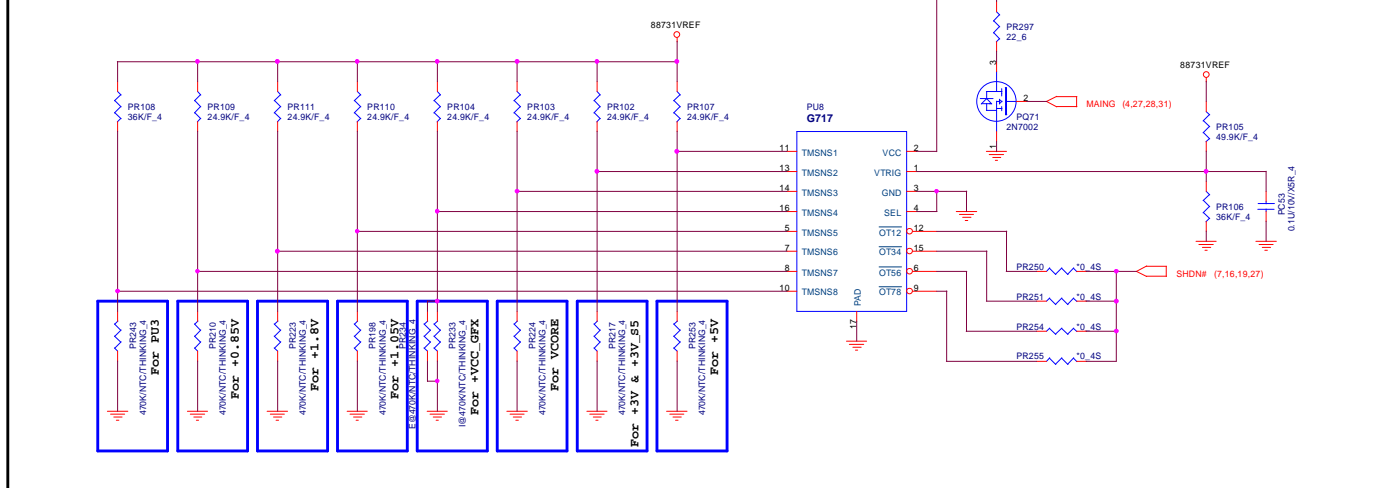
$R_{ds} * OCP = R_{ILIM} * 20\mu A$

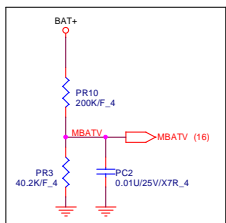
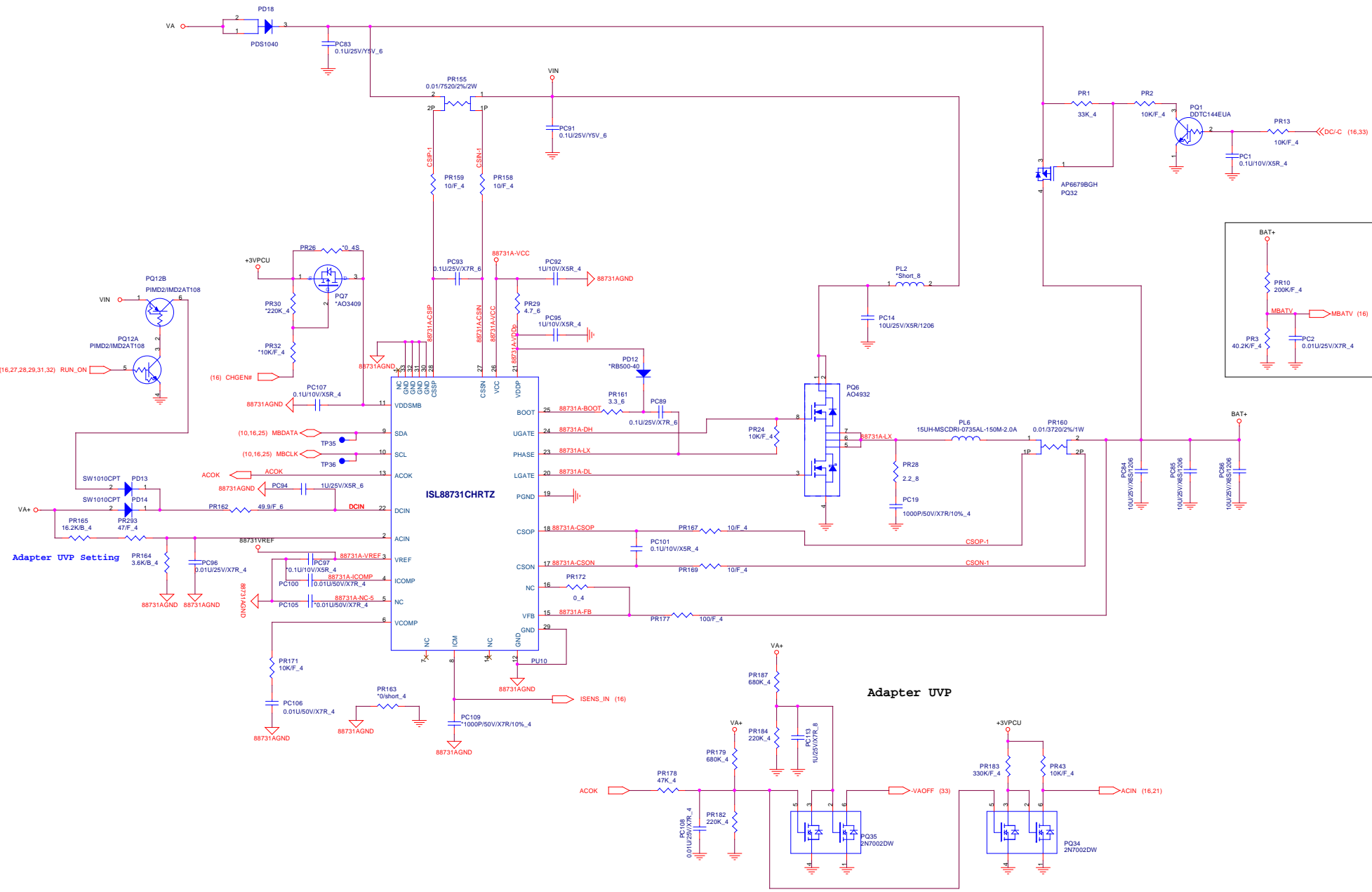
1. Level 1 Environment-related Substances Should Never be Used.
 2. Recycled Resin and Coated Wire should be procured from Green Partners.

VCC1.8



Thermal Protection for VEDS





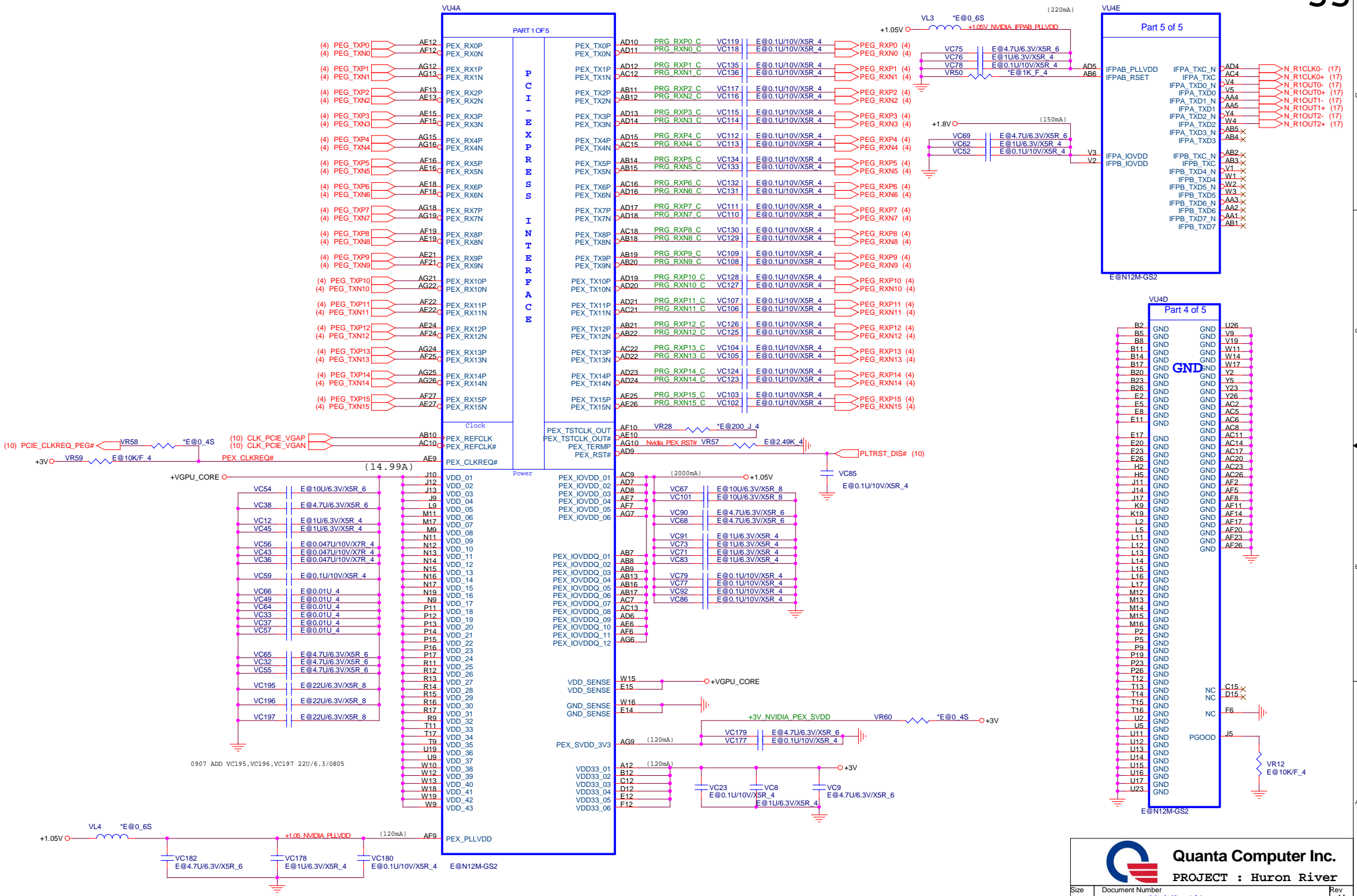
Adapter UVP Setting

Adapter UVP

Quanta Computer Inc.
PROJECT : Huron River
CHARGER(ISL88731A)

Size	Document Number	Rev
		1A

1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.
Date: Tuesday, April 05, 2011 Sheet 34 of 39



Quanta Computer Inc.
PROJECT : Huron River
Nvidia 1/4

Size	Document Number	Rev
		1A

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

Date: Tuesday, April 05, 2011 Sheet 35 of 39

N12P-GV

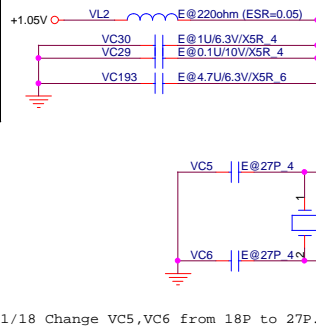
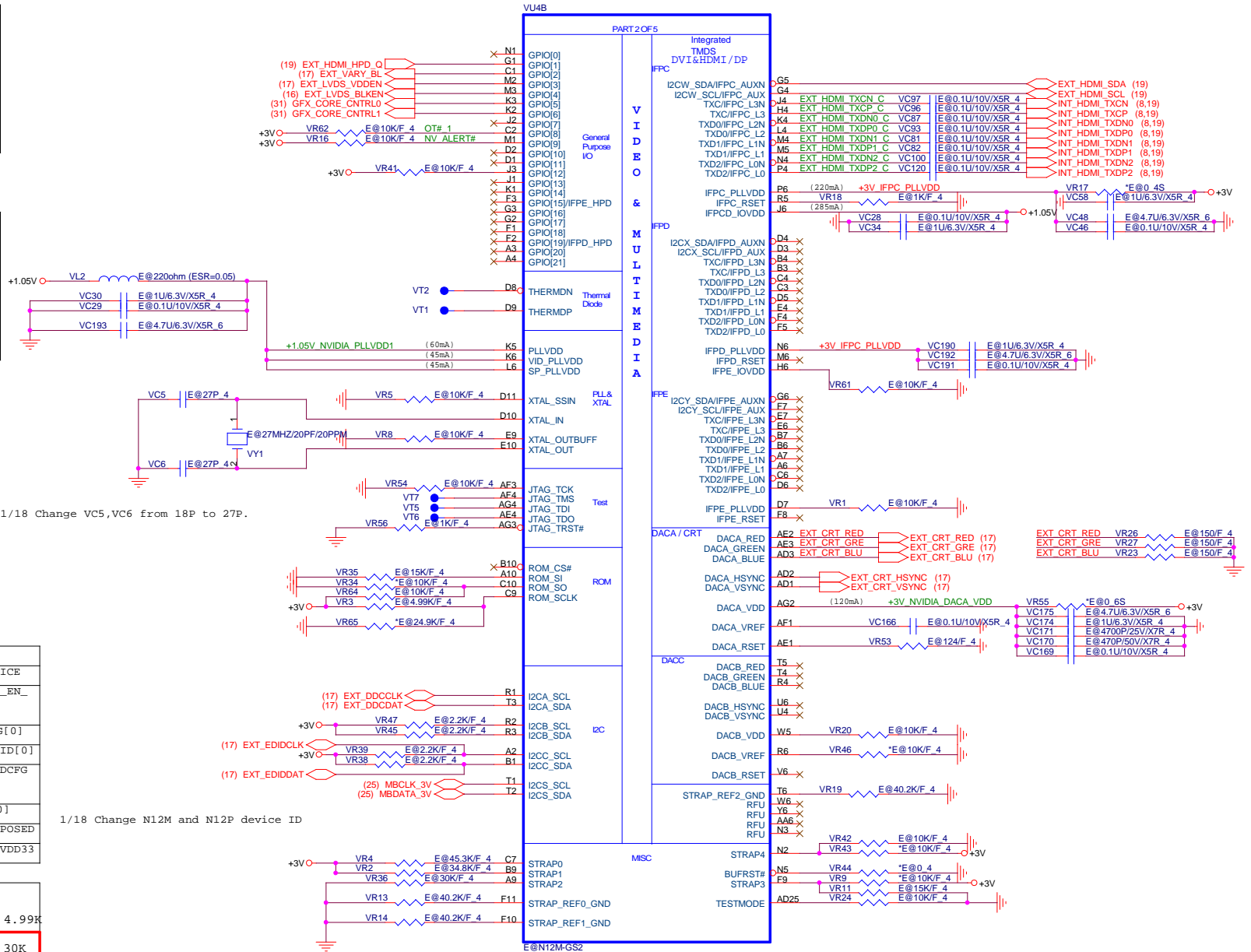
External VGA_CORE Voltage Setting:

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	VGA_CORE	
0	0	1.025V	PR176=64.9K/F_4
0	1	1.00V	PR181=0_4
1	0	0.85V	PR180=16.9K/F_4
1	1	0.85V	PR39=3.24K/F_4

N12M-GS2

External VGA_CORE Voltage Setting:

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	VGA_CORE	
0	0	1.025V	PR176=66.5K/F_4
0	1	1.00V	PR180=15.4K/F_4
1	0	0.875V	PR39=3.09K/F_4
1	1	0.875V	



Logical Strap Bit Mapping

Resistor Value	Pull to VDD	Pull to GND
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

N12M Strap Bit Define

Straps	Bit 3	Bit 2	Bit 1	Bit 0
ROM_SO	FB[1]	FB[1]	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	PCI_DEVID[5]	PEX_PLL_EN_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP1	3GIO_PADCFG [3]	3GIO_PADCFG [2]	3GIO_PADCFG [1]	3GIO_PADCFG [0]
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	RESERVED	RESERVED	PCIE_MAX_SPEED	DP_PLL_VDD33

for device ID
 For N12P VR3 pull high 4.99K VR65 NC VR36 Pull down 4.99K
 For N12M VR3 pull high 4.99K VR65 NC VR36 Pull down 30K

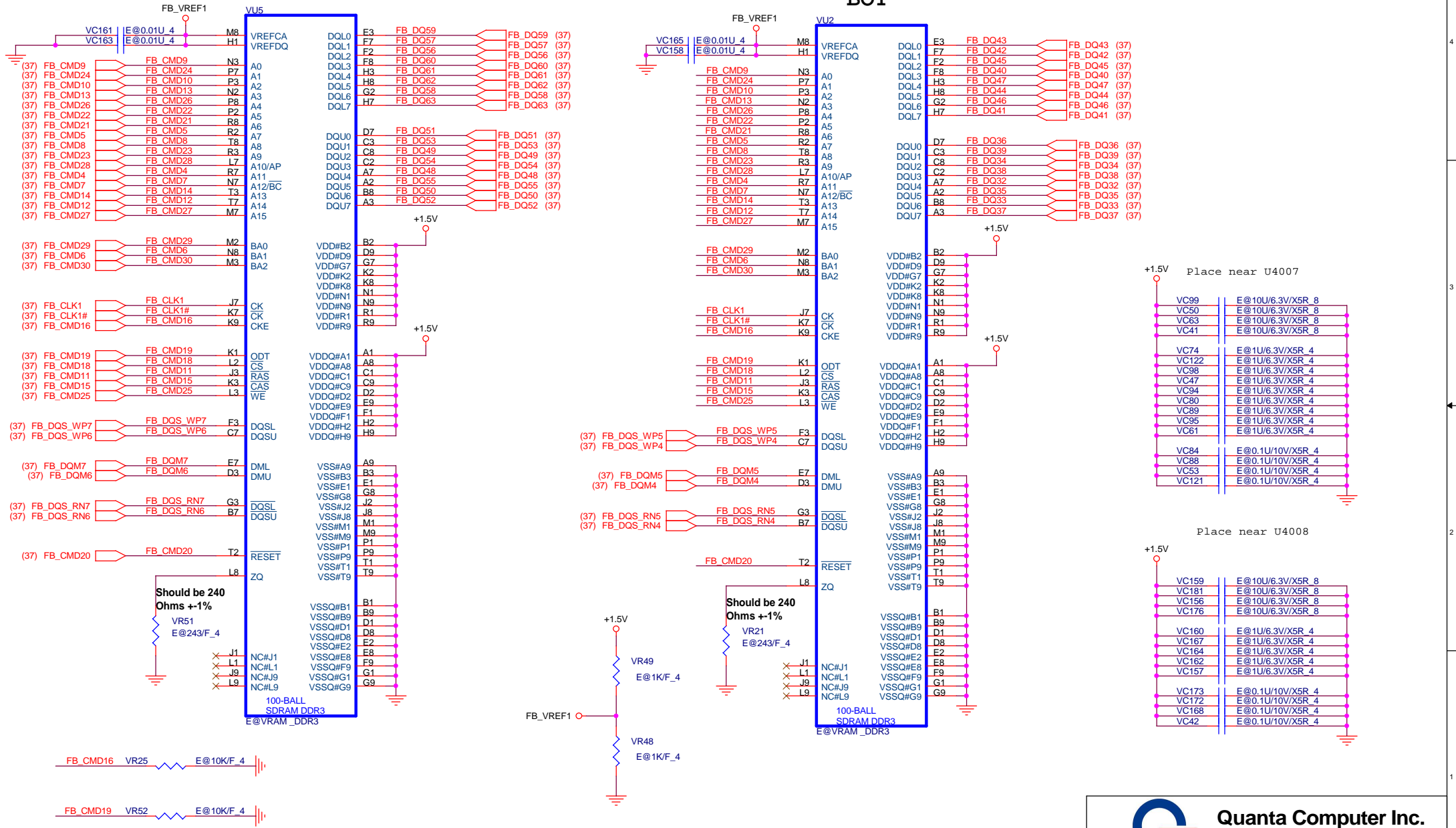
	VRAM Capacity	VRAM Vender	ID	VR35	P/N	P/N
N12M	64Mx16 DDR3	Hynix	0010	PD15K	H5TQ1G63DFR-12C	
		Samsung	0011	PD20K	K4W1G1646G-BCL2	
	128Mx16 DDR3	Hynix	0110	PD35K	H5TQ2G63BFR-12C	
		Samsung	0111	PD45K	K4W2G1646C-HCL2	

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PROJECT : Huron River
 Size Document Number **Nvidia 2/4** Rev 2A

Up Side VRAM TOP/BOT

TOP

BOT



Quanta Computer Inc.
PROJECT : Huron River

Size	Document Number	Rev
	VRAM 4/4	1A
Date:	Monday, February 21, 2011	Sheet 38 of 39

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

USB PORT Architecture for EVT	
PORT 0	IO Port
PORT 1	IO Port
PORT 2	IO Port
PORT 3	N/A
PORT 4	IO Port
PORT 5	N/A
PORT 6	N/A
PORT 7	N/A
PORT 8	N/A
PORT 9	Camera
PORT 10	N/A
PORT 11	N/A
PORT 12	WiMax
PORT 13	BlueTooth

PCIE BUS	
PORT 1	WLAN Port
PORT 2	N/A
PORT 3	N/A
PORT 4	CARD READER
PORT 5	N/A
PORT 6	GLAN(RTL8111E)
PORT 7	N/A
PORT 8	N/A

SM BUS	MBCLK/MBDATA
ISL88731CHRTZ	0001 001X
NVIDIA	1001 111X

SATA BUS	
PORT 0	HDD
PORT 1	N/A
PORT 2	N/A
PORT 3	ODD
PORT 4	N/A

Board ID0 (N12M/N12P)	N12M	N12P
R294	Stuff	No Stuff
R297	No Stuff	Stuff

Board ID1 (VRAM Vendor)	Samaung	Hynix
R47	Stuff	No Stuff
R48	No Stuff	Stuff

Board ID2 (VRAM 1G/512M)	1G	512M
R39	Stuff	No Stuff
R27	No Stuff	Stuff

	DGPU_PRSENT#(GPIO39)	BOARD_ID0 (GPIO16)	BOARD_ID1(GPIO6)	BOARD_ID2(GPIO17)
UMA	0	0	0	0
N12M-GS2_SAM_512MB	1	1	1	0
N12M-GS2-SAM_1GB	1	1	1	1
N12M-GS2-HYN_512MB	1	1	0	0
N12M-GS2-HYN_1GB	1	1	0	1
N12P-GV_SAM_512MB	1	0	1	0
N12P-GV-SAM_1GB	1	0	1	1
N12P-GV-HYN_512MB	1	0	0	0
N12P-GV-HYN1_1GB	1	0	0	1