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	USB/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	

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

HK1 BLOCK DIAGRAM

DDR III — Dual Channel
P14~P15 — 1066/1333 MHz

intel
SandyBridge
PCI-E X16
DDR SYSTEM MEMORY
rPGA 988
(37.5mm X 37.5mm)
FDI DMI
P4~P7

PCIE — 5GT/s

NVIDIA
N12M-GS2/N12P-GV
Package type : GB1b-64
P35 ~ P38

VRAM
1GB / 512MB
P37 ~ P38

2.7GT/s FDI
DMI X4 5GT/s

intel
<PCH>
FDI DMI
SATA Gen3
SATA Gen2
iGFX Interfaces
CougarPoint 0.7
USB
mBGA 989
(25mm X 25mm)
HDA
SPI
P6~P11

INT_CRT — P17
INT_LVDS — P17
INT_HDMI — P19

Bluetooth P19 — PORT5

Camera P17 — PORT4

WiMax P22 — PORT9
USB I/O P20 — PORT0
USB I/O P20 — PORT1
USB I/O P20 — PORT2
USB I/O P20 — PORT3

USB 2.0

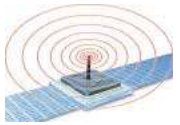
P21 HDD SATA0

P21 ODD SATA3

5GT/s PCI-Express Gen2
PCIE6 PCIE1 PCIE4

Giga-LAN
RTL8111E
P21
RJ45

P21



WLAN/Widi/BT P22
BT Combo : Atheros WB195
WiMAX : Kelsey Peak KSP(612BNXHWG)
802.11bgn/Intel/KsP_1x2_BD

Card Reader
RTS5209
P18
MS SD-XC

Audio CODEC
CX20671
P24
Azalia

HP Jack — P24
MIC Jack — P24
SPK — P24
DMIC — P24

SPI ROM
4MB
P9

SPI ROM
2MB

LPC

EC
NPCE791L/NPCE795L
P16

Wireless Switch — P25

Touch Pad — P20

Keyboard — P25

Power LED
Sleep LED
SATA LED
Battery LED
RF LED
SCROLED
CAPSLED
NUMLED
CARD LED

Button
QWA#
VAIO#
ASSIST#
Power SW

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

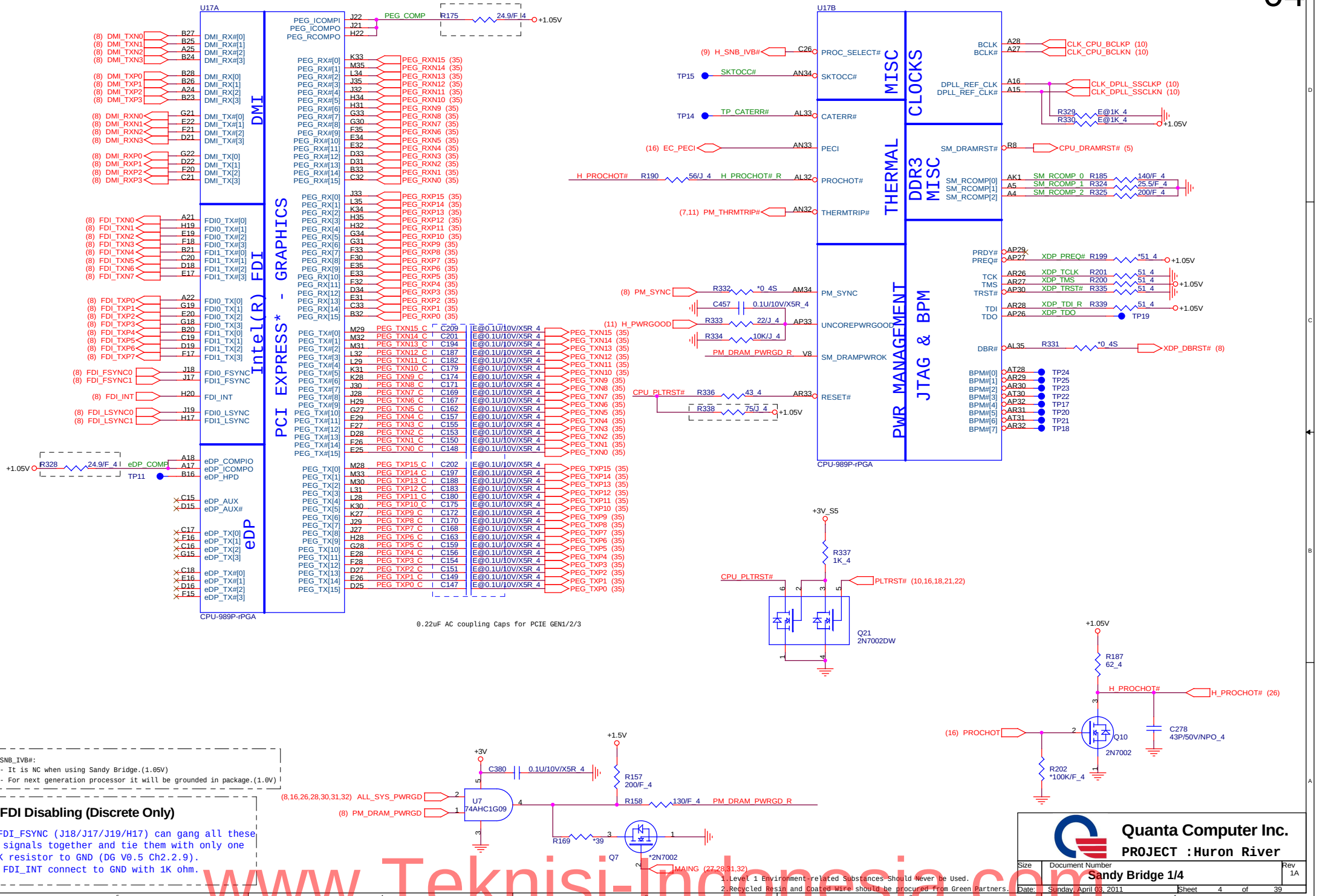
P16-- KR27 change value from 10K to 4.7K.
P33-- PD7 change value from uClamp3301D to CDSOD323-T03C.

Reason : for Battery ESD protact.
Possible Risk: No.

Sandy Bridge Processor (DMI,PEG,FDI)

Sandy Bridge Processor (CLK,MISC,JTAG)

04



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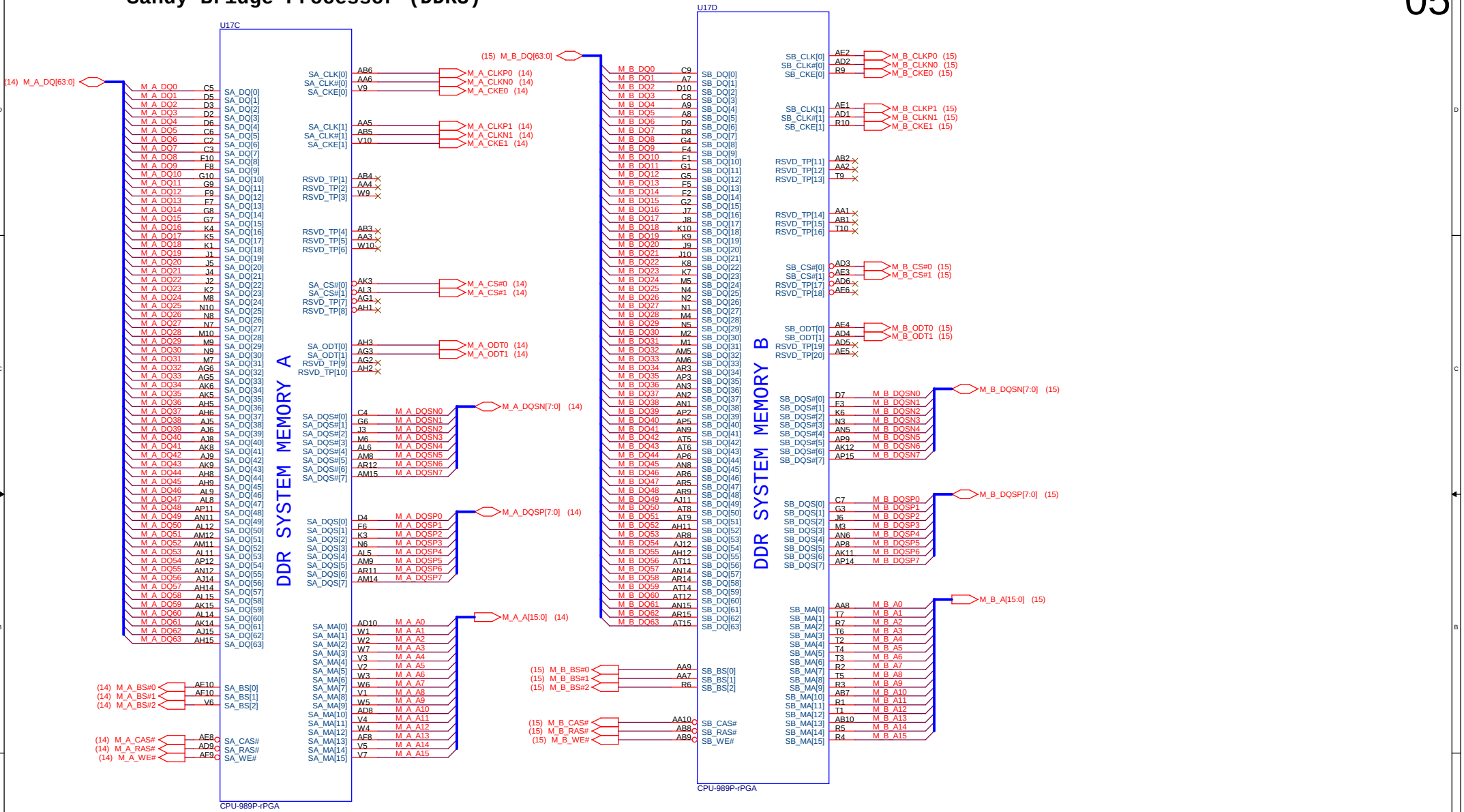
PROJECT : Huron River

Size	Document Number	Rev
	Sandy Bridge 1/4	1A

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

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

Sandy Bridge Processor (DDR3)



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

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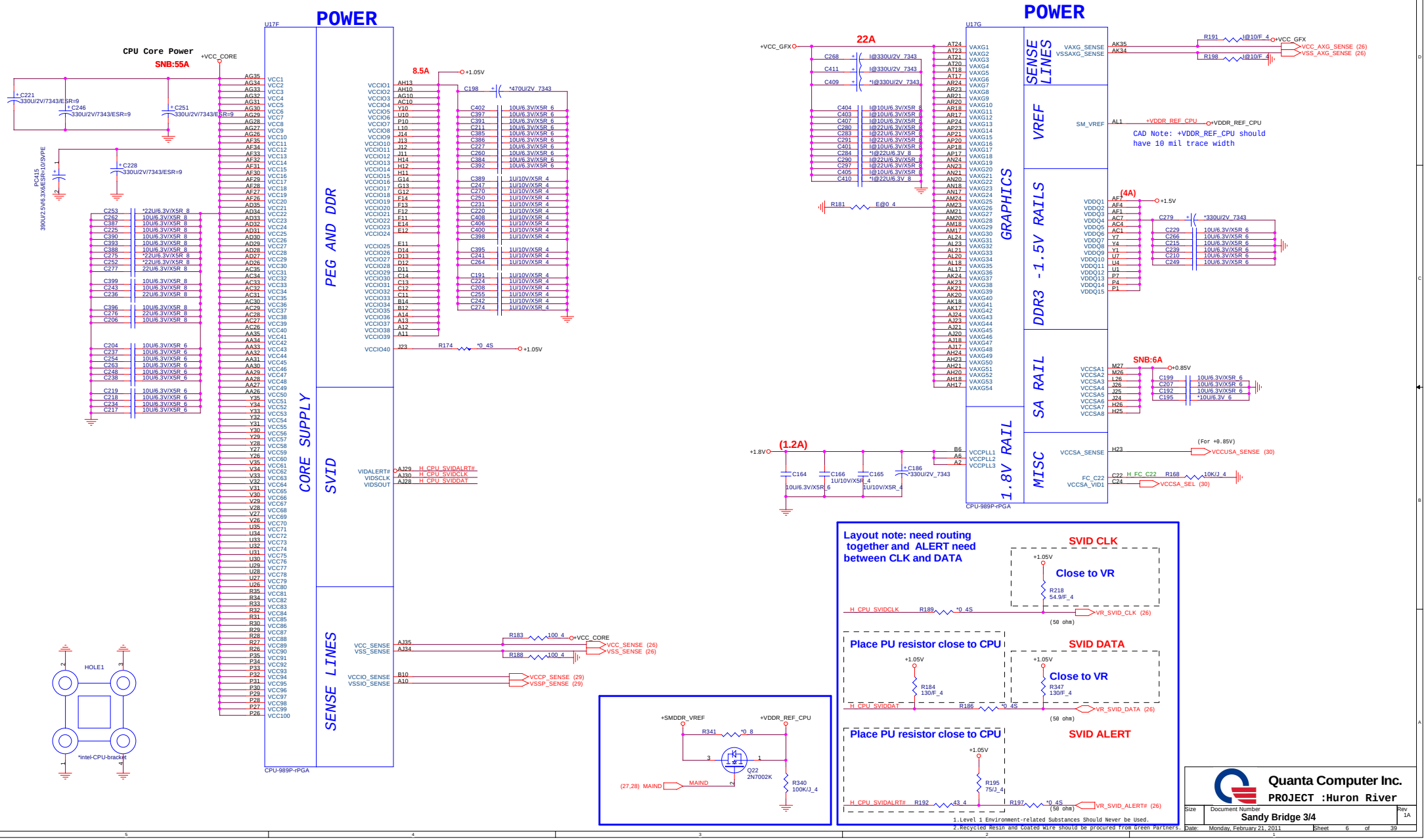
PROJECT : Huron River

Size	Document Number	Rev
	Sandy Bridge 2/4	1A
Date: Sunday, April 03, 2011	Sheet 5 of 39	

Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)



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

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PROJECT :Huron River			
Size	Document Number		Rev
	Sandy Bridge 3/4		1A
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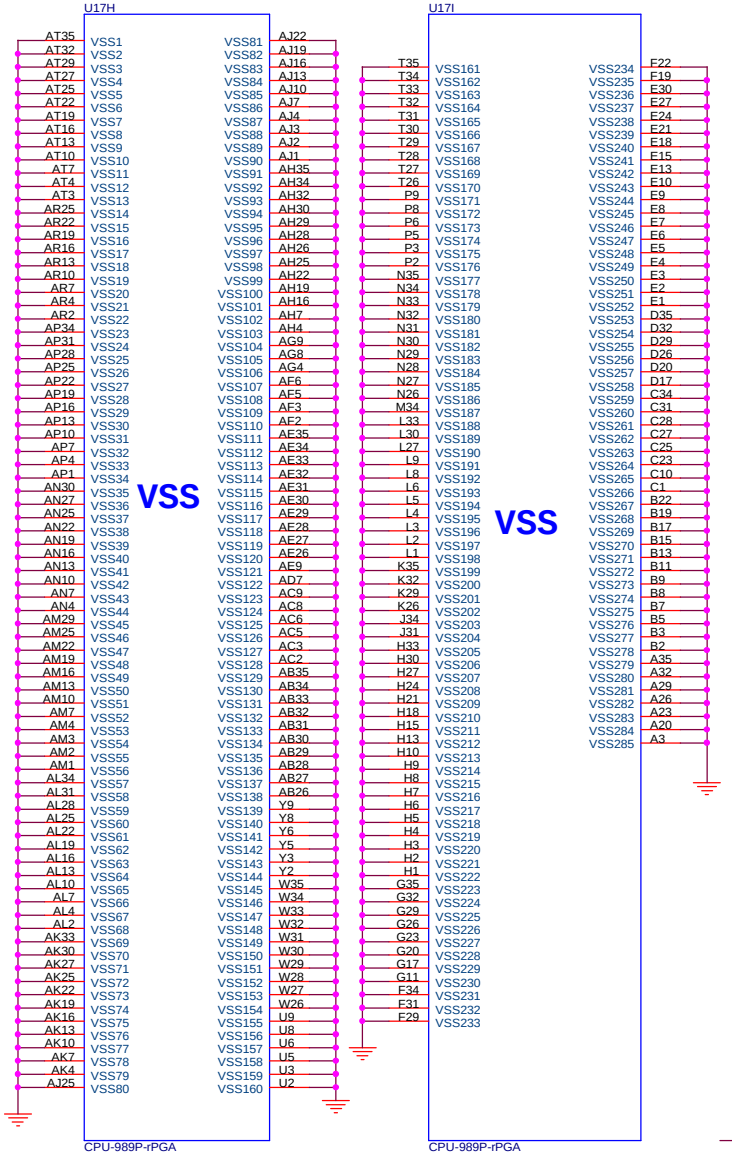
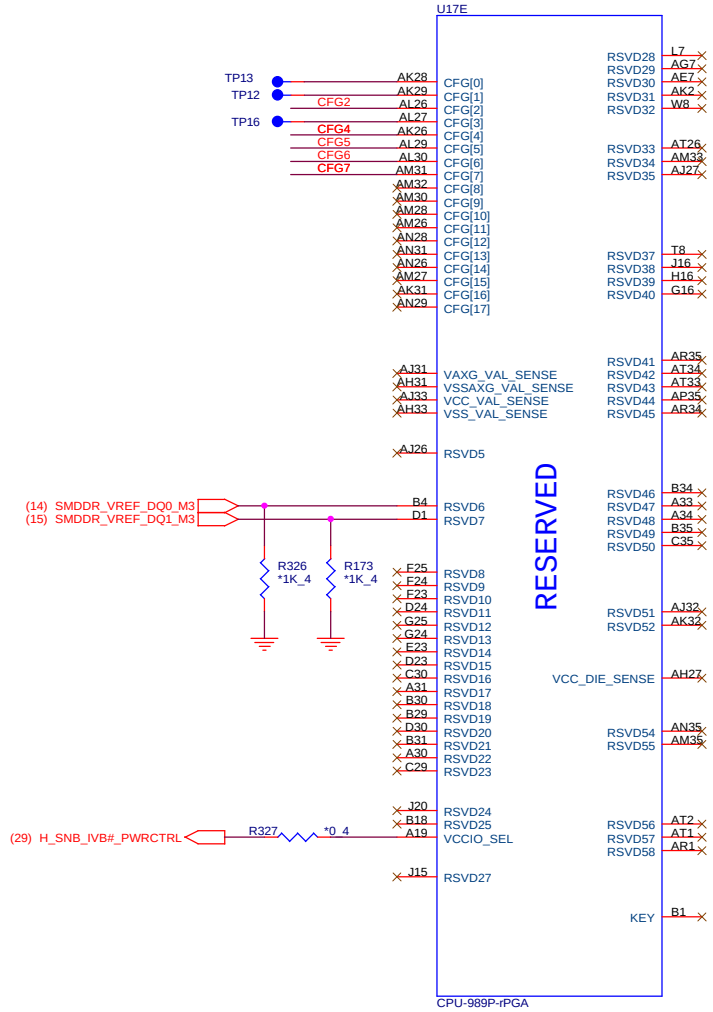
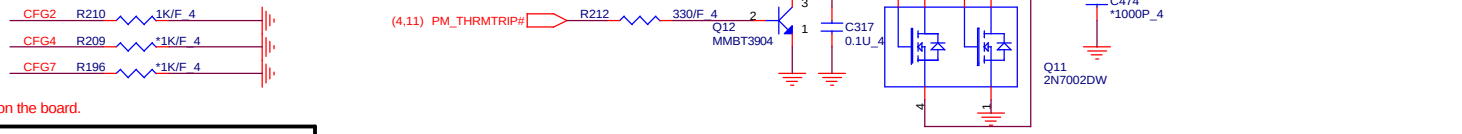
Sandy Bridge Processor (GND)



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**
CFG4 (DP Presence Strap)	**Disable; No physical DP attached to eDP**	Enable; An ext DP device is connected to eDP
CFG7 (PEG Defer Training)	**PEG train immediately following xxRESETB de assertion**	PEG wait for BIOS training

CFG5 R194 *1K/F_4
CFG6 R193 *1K/F_4

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

11: (Default) x16 - X16 PEG interface
10: PEG x8 x8 bifurcation enableddisabled
01: Reserved - (Device 1 function 1 disabled ; function 2 enabled)
00: x8,x4,x4 - Device 1 functions 1 and 2 enabled

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

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PROJECT : Huron River

Size	Document Number	Rev
	Sandy Bridge 4/4	1A
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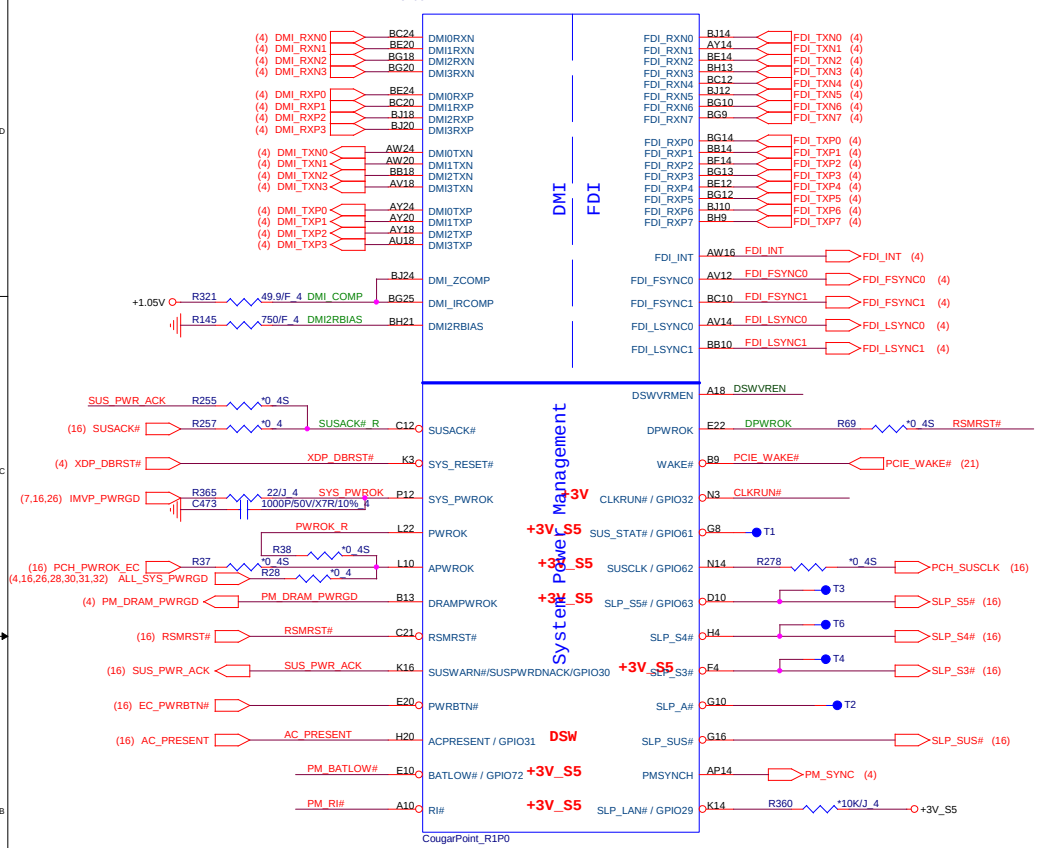
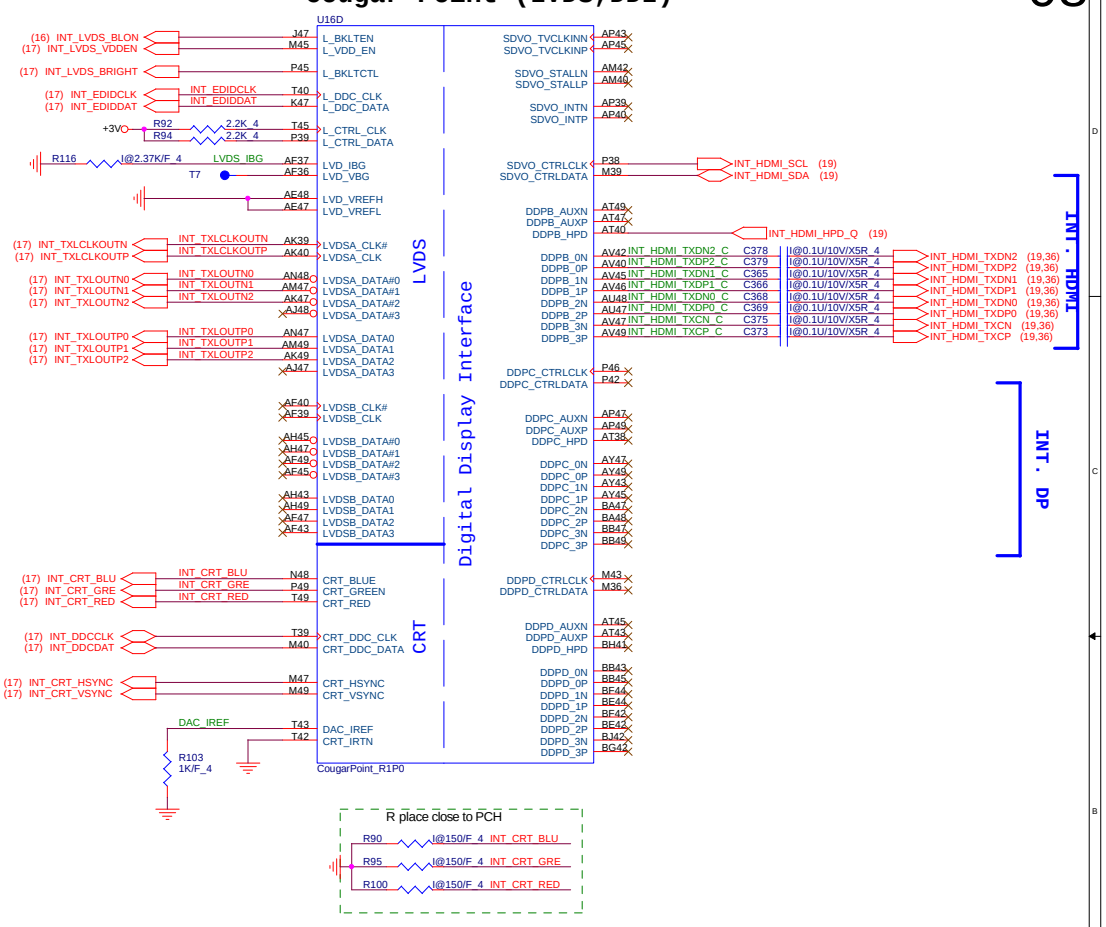
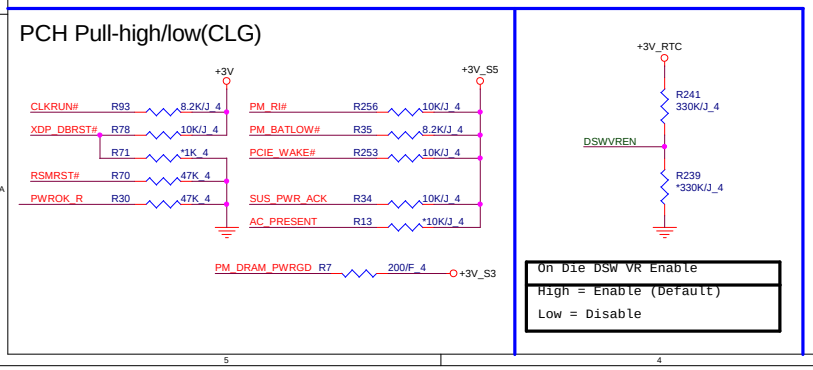
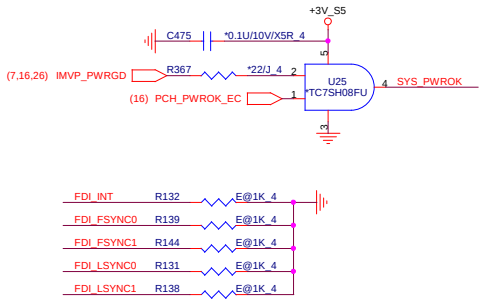
Cougar Point (DMI,FDI,PM)

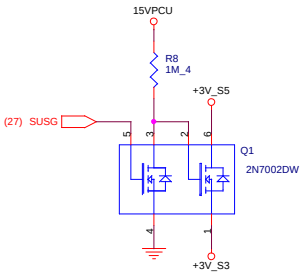


Cougar Point (LVDS,DDI)









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PROJECT :Huron River

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	Cougar Point 1/6	1A
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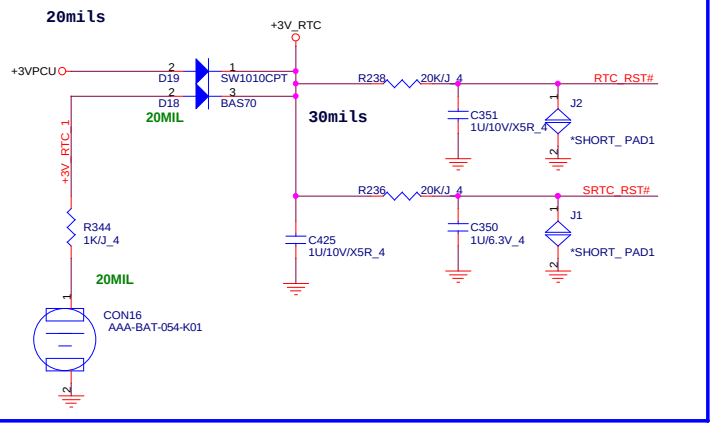
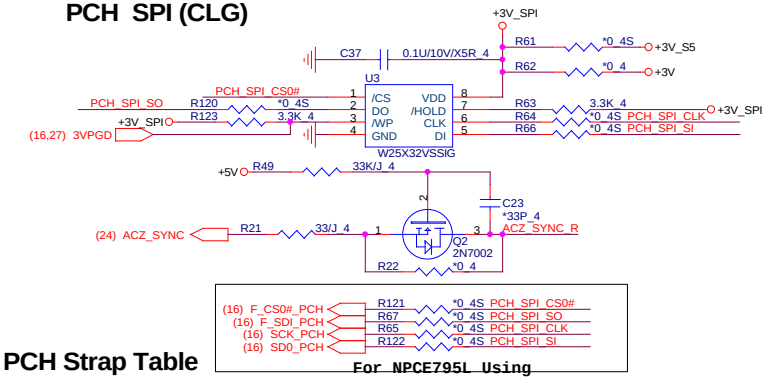
Cougar Point (HDA,JTAG,SATA)

RTC Circuitry(RTC)



MX25L3205DM2I-12G: AKE39FP0Z00
W25X32VSSIG: AKE39ZP0N00

PCH SPI (CLG)

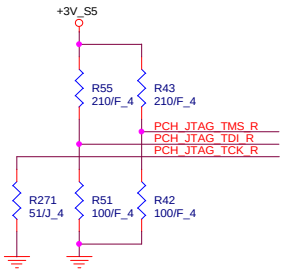


For NPCE795L Using

PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	HK1/HK2 note
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	+3V R105 *1K_4 SPKR
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	R270 *1K_4 PCI_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]	PWROK	GNT1# / GNT0# / Boot Location: 1 / 1 / SPI *; 0 / 0 / LPC	Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK		R266 *1K_4 BBS_BIT1 (10) R289 *1K_4 BBS_BIT0
HDA_SDO	Flash Descriptor Security	PWROK	0 = Default (weak pull-down 20K) 1 = Enabled	+3V R250 *1K_4 ACZ_SDOUT_R
DF_TVS	DMI/FDI Termination voltage	PWROK	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 JTAG Debug (CLG)



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	Cougar Point 2/6	1A
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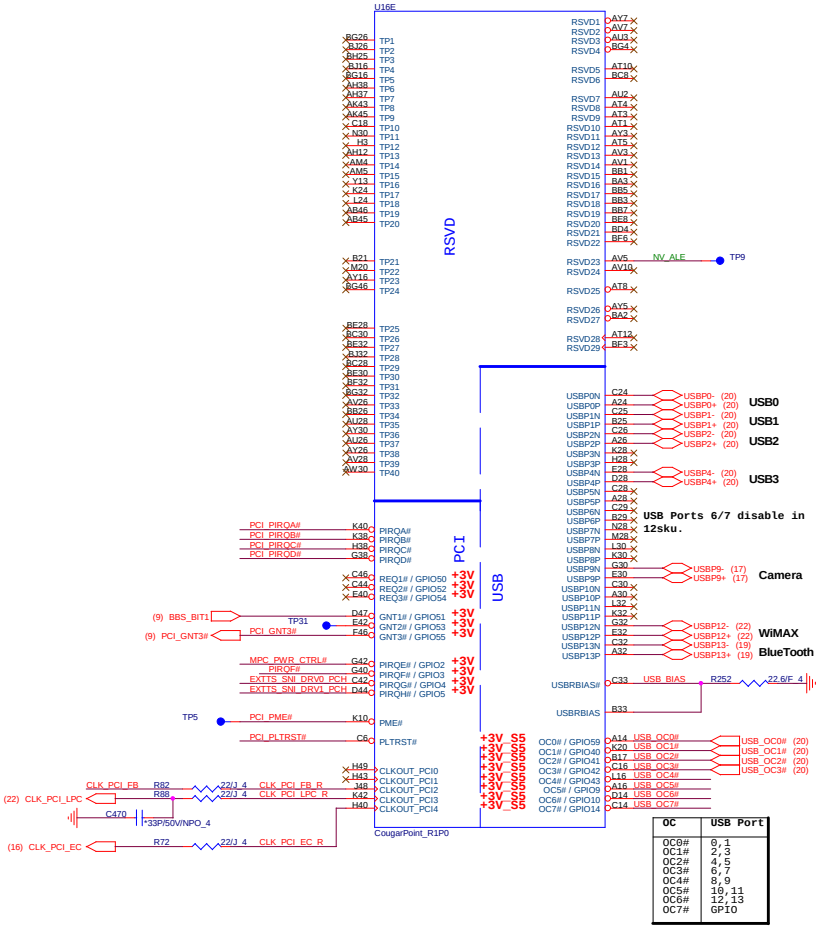
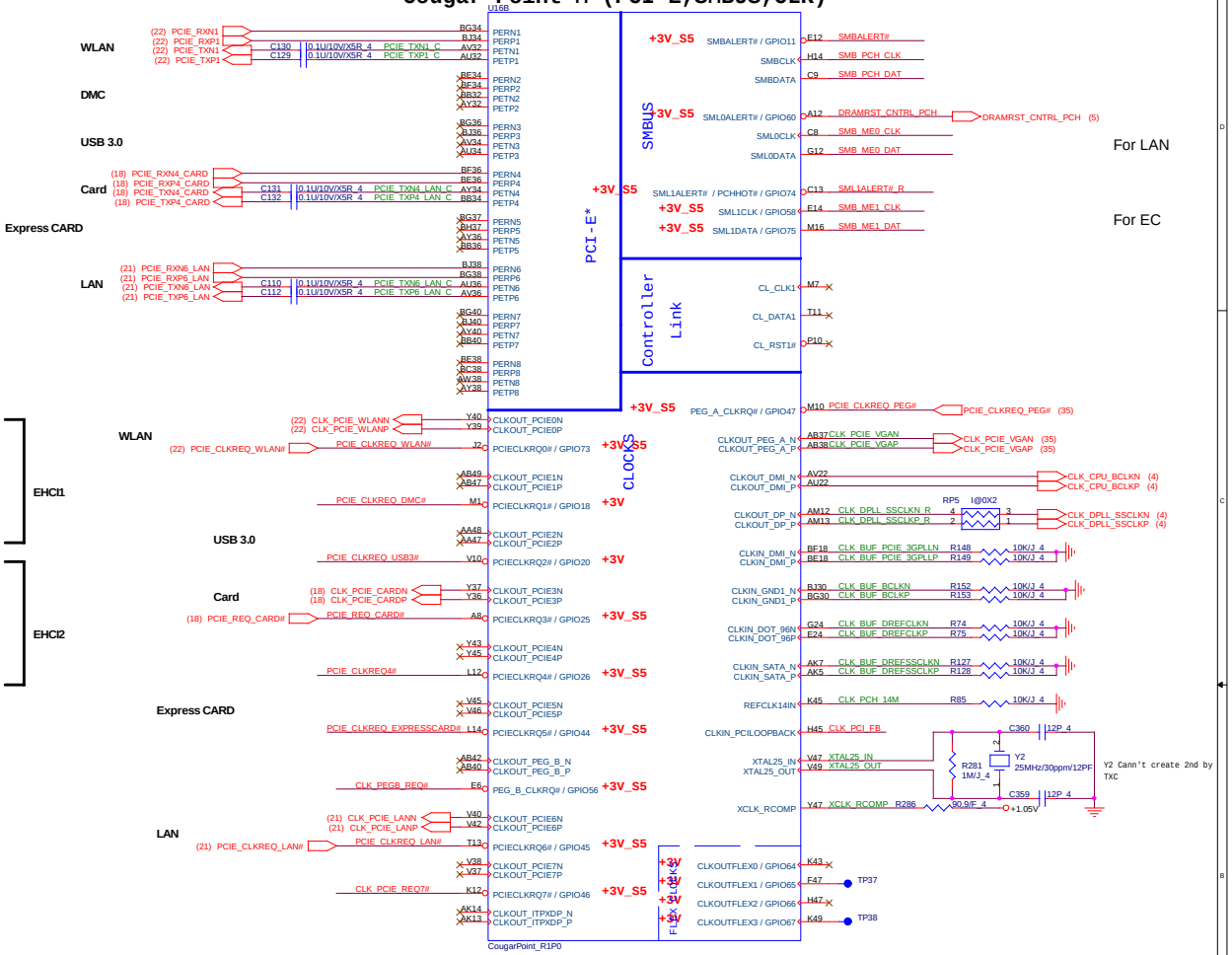
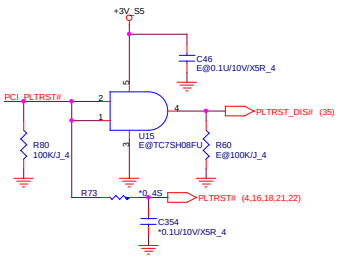
Cougar Point-M (PCI,USB,NVRAM)



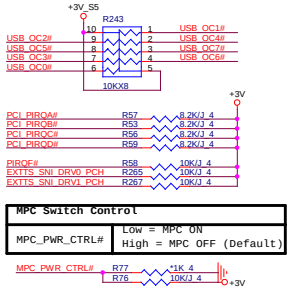
Cougar Point-M (PCI-E,SMBUS,CLK)



PLTRST#(CLG)



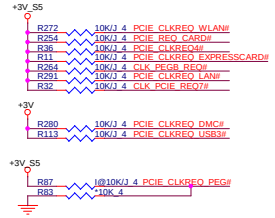
PCI/USBOC# Pull-up(CLG)



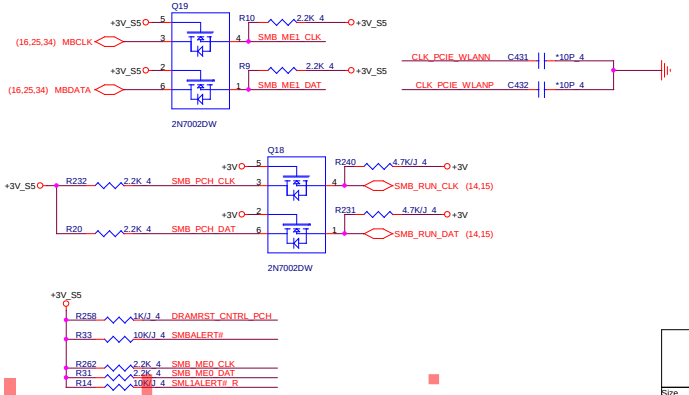
MPC Switch Control

MPC_PWR_CTRL#	Low = MPC ON High = MPC OFF (Default)

CLK_REQ/Strap Pin(CLG)



SMBus/Pull-up(CLG)



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PROJECT :Huron River

Size	Document Number	Rev
	Cougar Point 3/6	1A
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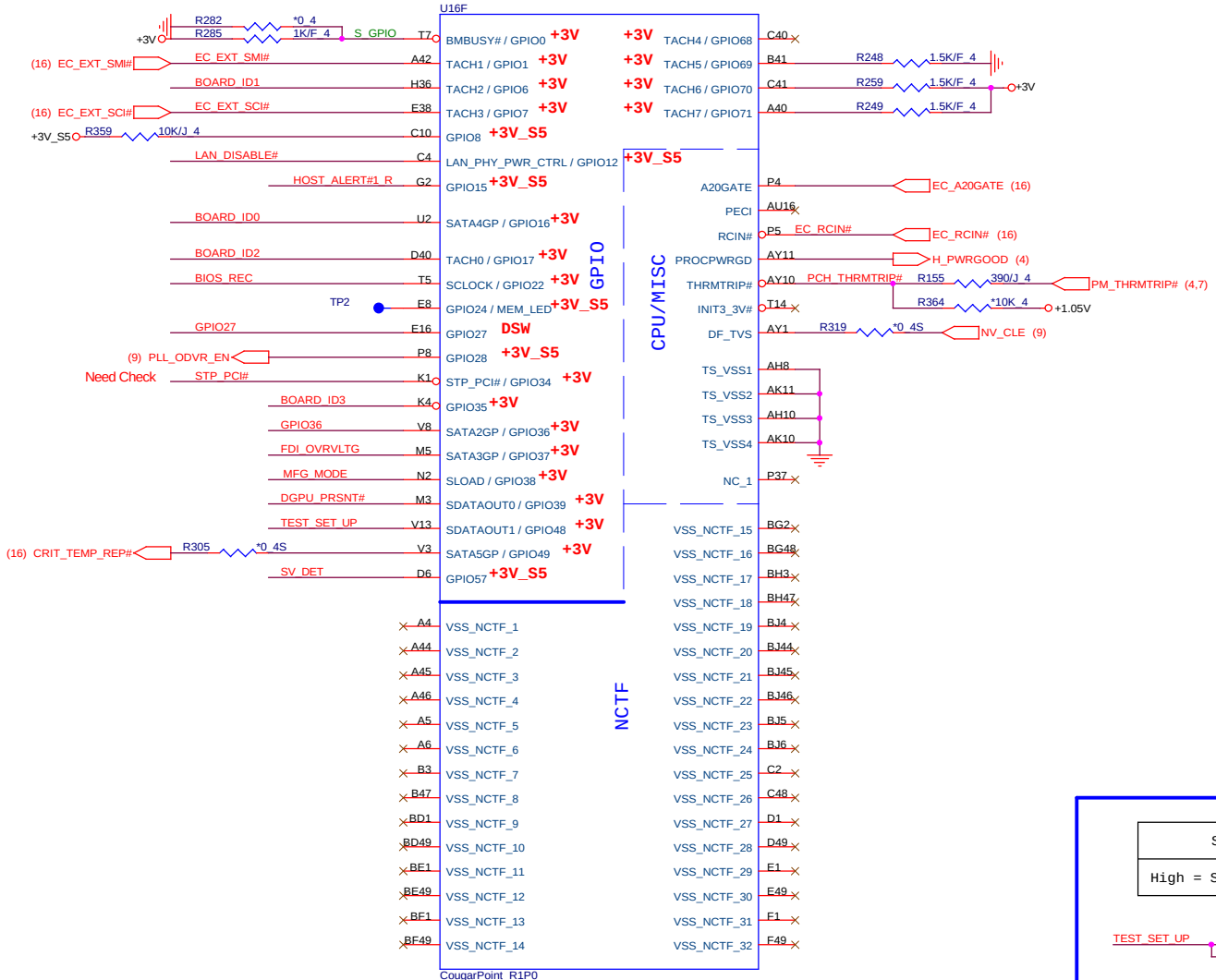
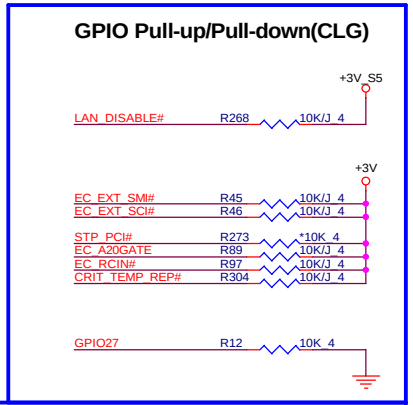
1.Level 1 Environmentrelated Substances Should Never Be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Cougar Point (GPIO,VSS_NCTF,RSVD)



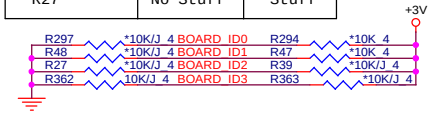
GPIO Pull-up/Pull-down(CLG)



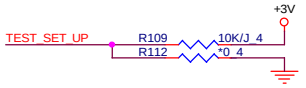
Board ID0 (N12M/N12P)	N12M	N12P
R294	Stuff	No Stuff
R297	No Stuff	Stuff

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

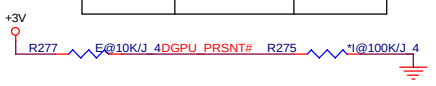


SV_SET_UP
High = Strong (Default)

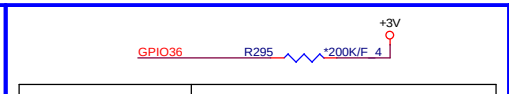


Intel ME Crypto Transport Layer Security (TLS) cipher suite
Low = Disable (Default)
High = Enable

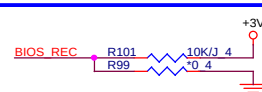
PCBA SKU	Discrete	UMA
R277	Stuff	No Stuff
R275	No Stuff	Stuff



FDI TERMINATION VOLTAGE OVERRIDE	LOW - Tx, Rx terminated to same voltage

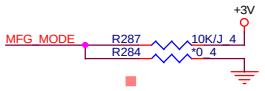


DMI TERMINATION VOLTAGE OVERRIDE	Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (DEFAULT)



BIOS RECOVERY	High = Disable (Default) Low = Enable

MFG-TEST



1.Level 1 Environment-related Substances Should Never Be Used.
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Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Rev
	Cougar Point 4/6	1A
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PCH5(CLG) COUGAR POINT (POWER)

POWER

VccCORE =1.3 A(60mils)

U16G

VCC CORE: VCCCORE[1] AA23, VCCCORE[2] AC23, VCCCORE[3] AD21, VCCCORE[4] AD23, VCCCORE[5] AF21, VCCCORE[6] AF23, VCCCORE[7] AG21, VCCCORE[8] AG23, VCCCORE[9] AG24, VCCCORE[10] AG26, VCCCORE[11] AG27, VCCCORE[12] AG29, VCCCORE[13] AJ23, VCCCORE[14] AJ26, VCCCORE[15] AJ27, VCCCORE[16] AJ29, VCCCORE[17] AJ31

C91 10U/6.3V/X5R_6, C97 1U/10V/X5R_4, C81 1U/10V/X5R_4, C73 1U/10V/X5R_4

CRT: VCCADAC U48, VSSADAC U47

1mA(8mils)

+3V_VCCADAC L9 180ohm/5A_6 +3V

C356 10U/6.3V/X5R_6, C358 0.1U/10V/X5R_4, C357 0.01U/25V_4

1mA(8mils)

LVDS: VCCALVDS AK36, VSSALVDS AK37

+3V_VCCALVDS R117 I@0_4 +3V

C104 I@0.1U/10V/X5R_4/E@0_4

60mA(10mils)

VCCTX_LVDS[1] AM37, VCCTX_LVDS[2] AM38, VCCTX_LVDS[3] AP36, VCCTX_LVDS[4] AP37

+1.8V_VCCTX_LVDS R130 I@0_4 +1.8V

C114 I@10U/6.3V/X5R_8, C103 I@0.01U/25V_4, C101 I@0.01U/25V_4/E@0_4

+1.05V AN19 VCCIO[28]

TP29 BJ22 VCCAPLLEXP

+1.05V AN16 VCCIO[15], AN17 VCCIO[16]

C89 1U/10V/X5R_4, C111 1U/10V/X5R_4, C106 1U/10V/X5R_4, C128 1U/10V/X5R_4, C107 10U/6.3V/X5R_6

AN21 VCCIO[17], AN26 VCCIO[18], AN27 VCCIO[19], AP21 VCCIO[20], AP23 VCCIO[21], AP24 VCCIO[22], AP26 VCCIO[23], AT24 VCCIO[24]

(VccIO =2.925A (140mils))

HVCMOS: VCC3_3[6] V33, VCC3_3[7] V34

+3V C70 0.1U/10V/X5R_4

DMI: VCCVRM[3] AT16, VCCDMI[1] AT20, VCCCLKDMI AB36

C99 0.1U/10V/X5R_4 +VCCAFDI_VRM +VCCAFDI_VRM

VCCDMI = 42mA(10mils)

C98 1U/10V/X5R_4 +1.05V

VCCCLKDMI = 20mA(8mils)

C74 *10U/6.3V_6, C72 1U/10V/X5R_4 +1.05V

VCCIO: AN33 VCCIO[25], AN34 VCCIO[26], BH29 VCC3_3[3]

+3V C121 0.1U/10V/X5R_4

DFT / SPI: VCCDFTERM[1] AG16, VCCDFTERM[2] AG17, VCCDFTERM[3] AJ16, VCCDFTERM[4] AJ17

VCCPNAND = 190 mA(15mils)

+1.8V C96 0.1U/10V/X5R_4

+VCCAFDI_VRM +VCCAFDI_VRM AP16 VCCVRM[2]

TP10 BG6 VccAFDIPLL

+1.05V AP17 VCCIO[27]

FDI: +1.05V AU20 VCCDMI[2]

VCCSPI = 20mA(8mils)

VCCSPI V1 +3V_SPI C361 1U/10V/X5R_4

CougarPoint_R1P0

+VCCAFDI_VRM R98 *0_6S +1.5V

VCCVRM: 1.8V (Destop) 02/20 del for Pre-ES1
1.5V (Mobile)

Cougar Point-M (POWER)

POWER

U16J

TP27 AD49 VCCACLK

+3V_S5 C63 0.1U/10V/X5R_4 T16 VCCDSW3_3

VCCDSW3_3= 3mA

C67 *0.1U/10V_4 PCH_VCCDSW V12 DCPSUSBYP

C78 10U/6.3V/X5R_6, C65 1U/10V/X5R_4

+3V R102 *0_6S +3V_SUS_CLKF33 T38 VCC3_3[5]

TP30 BH23 VCCAPLLDMI2

+1.05V R126 *0_4S +VCCDPLL_CPY AL29 VCCIO[14]

C92 *1U/10V/X5R_4 +VCCSUS1 AL24 DCPSUS[3]

USB

VccASW =1.01 A(60mils)

+1.05V

C76 10U/6.3V/X5R_6, C83 10U/6.3V/X5R_6, C82 1U/10V/X5R_4, C69 1U/10V/X5R_4, C75 1U/10V/X5R_4

VCCASW[1] AA19, VCCASW[2] AA21, VCCASW[3] AA24, VCCASW[4] AA26, VCCASW[5] AA27, VCCASW[6] AA29, VCCASW[7] AA31, VCCASW[8] AC26, VCCASW[9] AC27, VCCASW[10] AC29, VCCASW[11] AC31, VCCASW[12] AD29, VCCASW[13] AD31, VCCASW[14] W21, VCCASW[15] W23, VCCASW[16] W24, VCCASW[17] W26, VCCASW[18] W29, VCCASW[19] W31, VCCASW[20] W33

Clock and Miscellaneous

PCI/GPIO/LPC

C56 0.1U/10V/X5R_4 +VCCRTCEXT N16 DCPRTC

+VCCAFDI_VRM +VCCAFDI_VRM Y49 VCCVRM[4]

65mA(10mils) +1.05V L6 10uH/100mA +1.05V_VCCA_A_DPL C120 22U/6.3V/X5R_8, C117 1U/10V/X5R_4, C118 10U/6.3V/X5R_6 BD47 VCCADPLLA

8mA(8mils) +1.05V L7 10uH/100mA +1.05V_VCCA_B_DPL C136 22U/6.3V/X5R_8, C122 1U/10V/X5R_4, C127 10U/6.3V/X5R_6 BF47 VCCADPLLB

+1.05V C86 1U/10V/X5R_4 AF17 VCCIO[7]

VCCDIFFCLKN= 55mA(10mils) +1.05V R299 *0_6S +1.05V_VCCDIFFCLKN C84 1U/10V/X5R_4 AF33 VCCDIFFCLKN[1], AF34 VCCDIFFCLKN[2], AG34 VCCDIFFCLKN[3]

VCCSSC= 95mA(10mils) +1.05V R302 *0_6S +V1.05V_SSCVCC C95 1U/10V/X5R_4 AG33 VCCSSC

C66 0.1U/10V/X5R_4 +VCCSST V16 DCPSST

+1.05V_VCCSUS C59 *1U/10V/X5R_4 T17 DCPSUS[1], V19 DCPSUS[2]

SATA

MISC

1mA(8mils) +1.05V C123 0.1U/10V/X5R_4, C124 0.1U/10V/X5R_4, C134 4.7U/6.3V_6 BJ8 V_PROC_IO

CPU

VCCRTC<1mA(8mils) +3V_RTC C39 0.1U/10V/X5R_4, C24 0.1U/10V/X5R_4, C35 1U/10V/X5R_4 A22 VCCRTC

RTC

HDA

CougarPoint_R1P0

VCCIO[29] N26, VCCIO[30] P26, VCCIO[31] P28, VCCIO[32] T27, VCCIO[33] T29

+1.05V C60 1U/10V/X5R_4

VCCSUS3_3 = 119mA(15mils)

VCCSUS3_3[7] T23, VCCSUS3_3[8] T24, VCCSUS3_3[9] V23, VCCSUS3_3[10] V24, VCCSUS3_3[6] P24

+3V_S5 C57 0.1U/10V/X5R_4 C53 0.1U/10V/X5R_4

VCCIO[34] T26 +1.05V

V5REF_SUS M26 +5V_S5_PCH_VCC5REFSUS R246 10/F_4 +5V_S5

VCC5REFSUS=1mA

DCPSUS[4] AN23 +VCCA_USBSUS C105 *1U/10V/X5R_4 D1 RB500V-40 +3V_S5

VCCSUS3_3[1] AN24 +3V_S5 C48 0.1U/10V/X5R_4

V5REF P34 +5V_PCH_VCC5REF R44 10/F_4 +5V

V5REF= 1mA

D16 RB500V-40 +3V C52 1U/10V/X5R_4

VCCSUS3_3[2] N20, VCCSUS3_3[3] N22, VCCSUS3_3[4] P20, VCCSUS3_3[5] P22

+3V_S5 C47 1U/10V/X5R_4

VCCSUS3_3 = 119mA(15mils)

VCC3_3[1] AA16, VCC3_3[8] W16, VCC3_3[4] T34

C71 0.1U/10V/X5R_4 +3V

VCCPCORE = 28mA(10mils)

+3V C64 0.1U/10V/X5R_4

VCC3_3[2] AJ2 C90 0.1U/10V/X5R_4 +3V

VCCIO[5] AF13, VCCIO[12] AH13, VCCIO[13] AH14

+1.05V C88 1U/10V/X5R_4

VCCIO[6] AF14, VCCAPLLSATA AK1 TP28

VCCVRM[1] AF11 +VCCAFDI_VRM

VCCVRM= 114mA(15mils)

VCCIO[2] AC16, VCCIO[3] AC17, VCCIO[4] AD17

+1.05V C80 1U/10V/X5R_4

VCCASW[22] T21, VCCASW[23] V21, VCCASW[21] T19

+1.05V

VCCME = 1.01A(60mils)

VCCSUSHDA P32 +3V_S5 C50 0.1U/10V/X5R_4, C28 *1U/10V/X5R_4

VCCSUSHDA= 10mA(8mils)

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

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	Cougar Point 5/6	1A

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PCH6(CLG) IBEX PEAK-M (GND)

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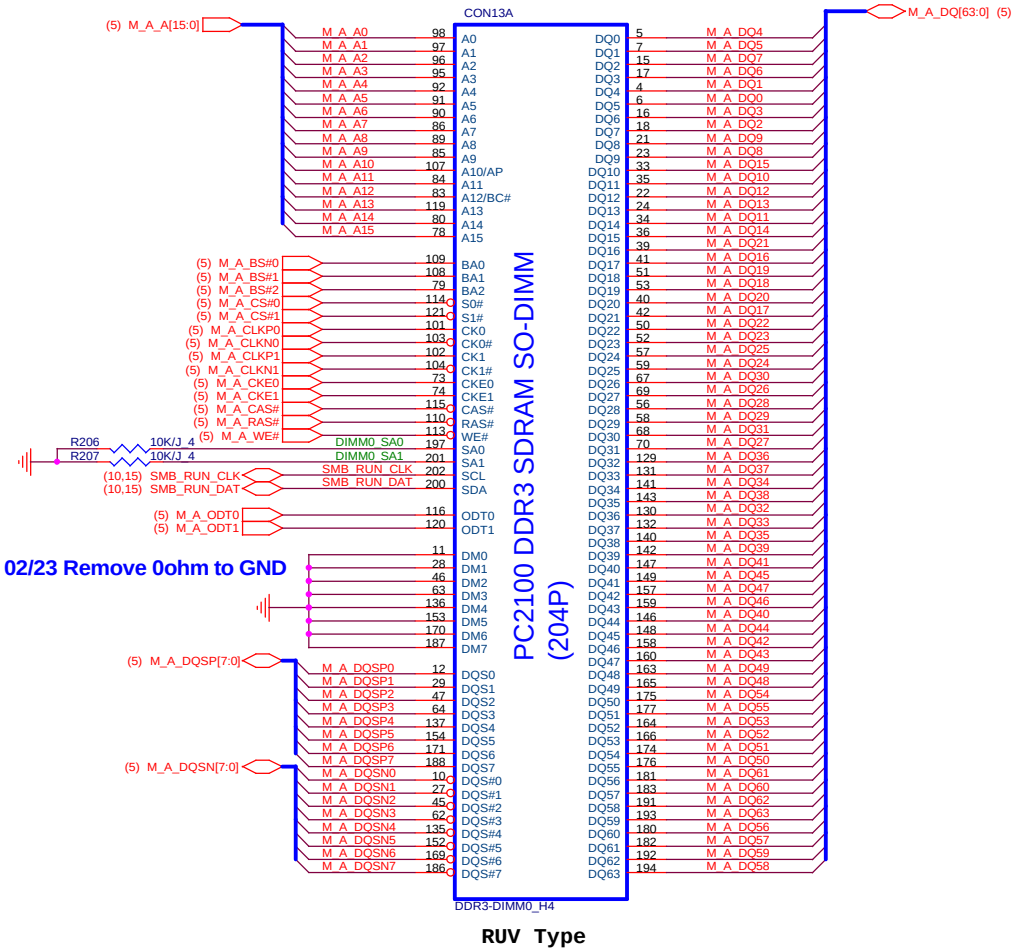
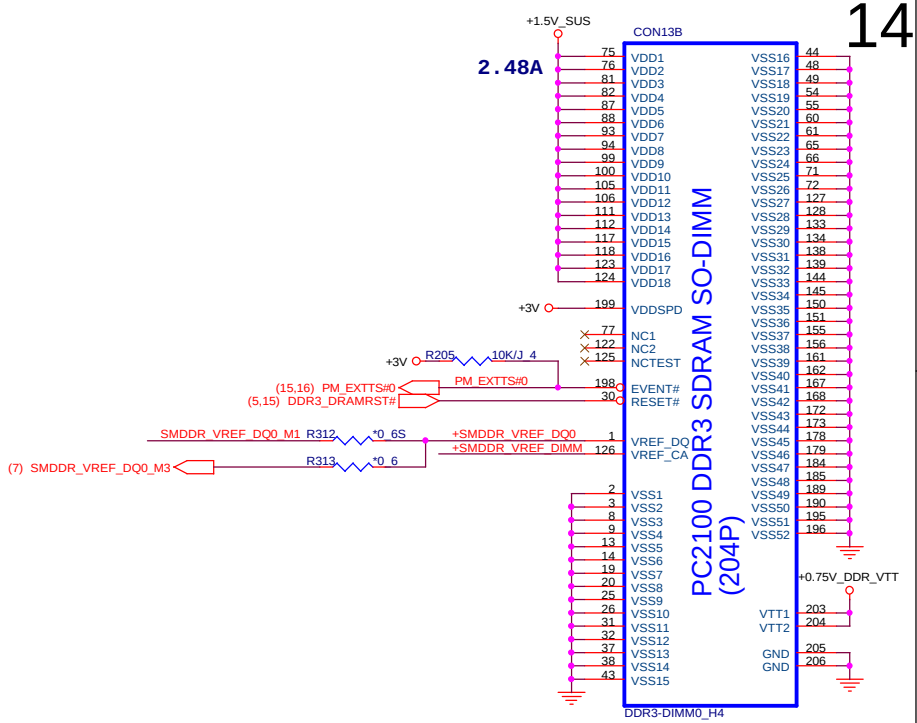
PROJECT :Huron River

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

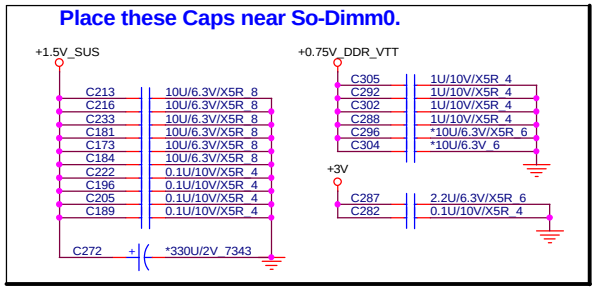


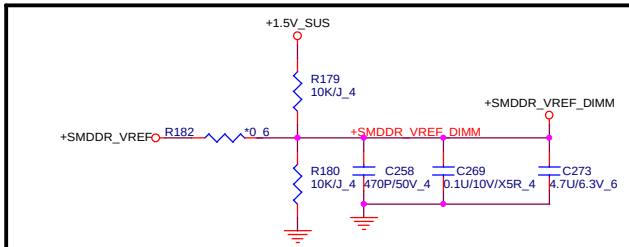
02/23 Remove 0ohm to GND

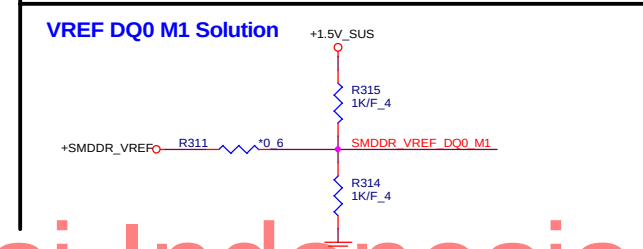
RUV Type

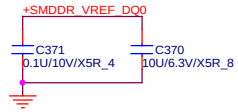


RUV Type









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PROJECT :Huron River

Size	Document Number	Rev
	DDRIII SO-DIMM-0	1A
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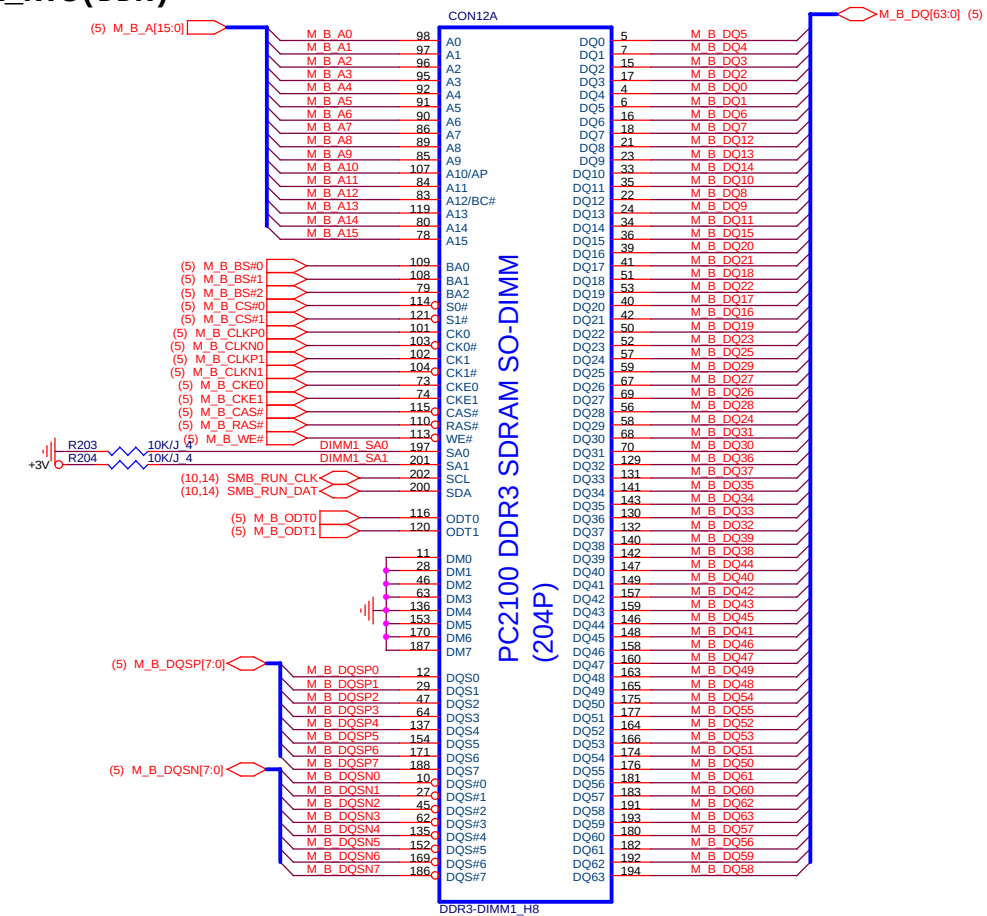
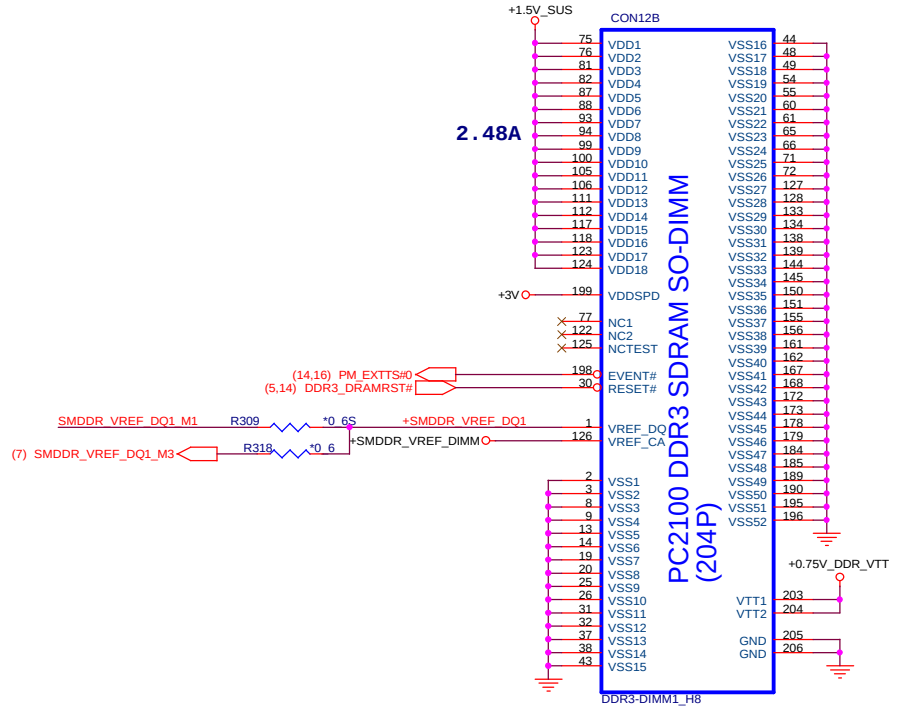
DDR_RVS(DDR)

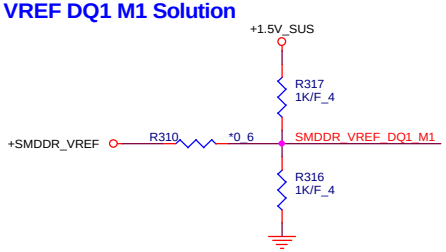


RUV Type

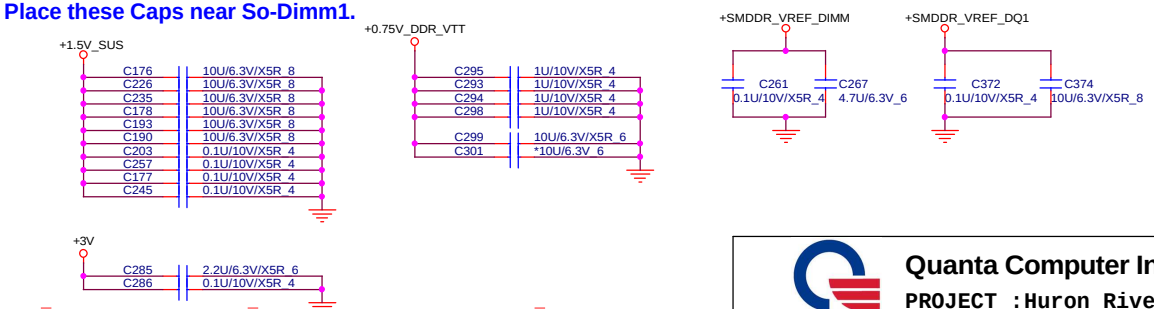


RUV Type

VREF DQ1 M1 Solution



Place these Caps near So-Dimm1.



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PROJECT :Huron River

Size	Document Number	Rev
	DDRIII SO-DIMM-1	1A
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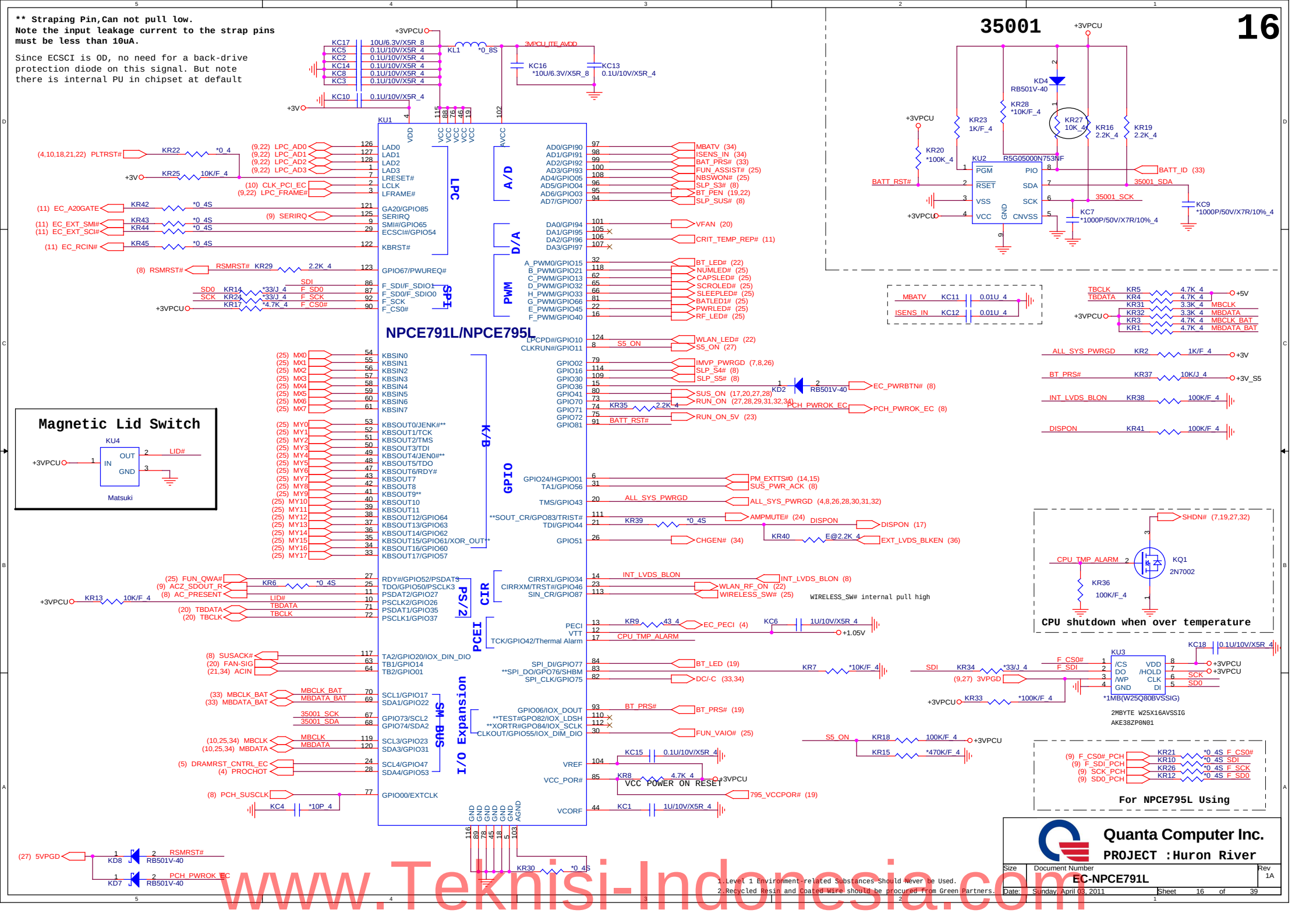
**** Straping Pin,Can not pull low.**
Note the input leakage current to the strap pins must be less than 10uA.

Since ECSCI is OD, no need for a back-drive protection diode on this signal. But note there is internal PU in chipset at default



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PROJECT : Huron River		
Size	Document Number	Rev
	EC-NPCE791L	1A
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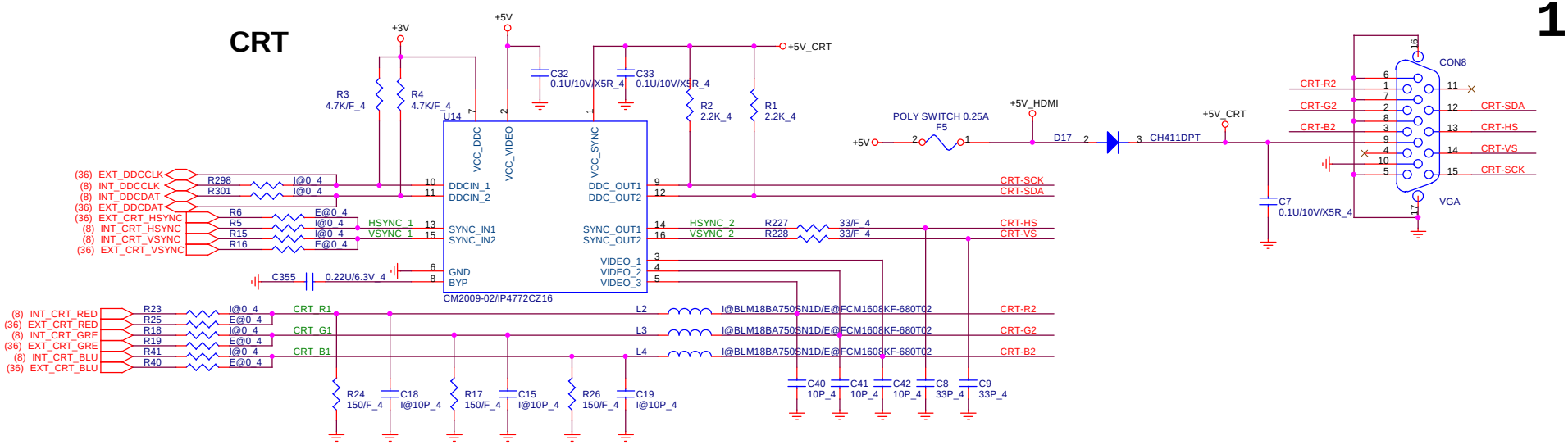
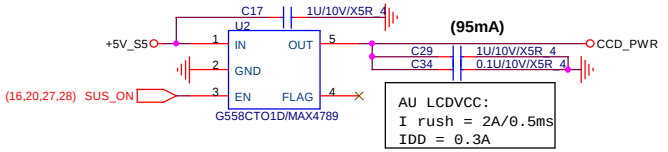
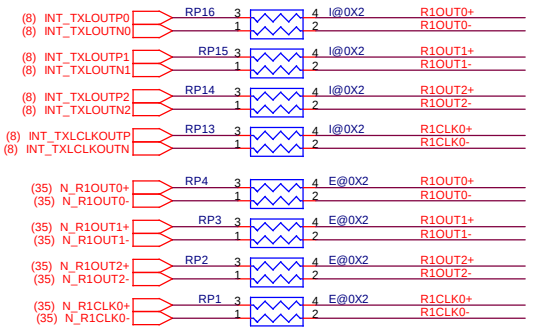
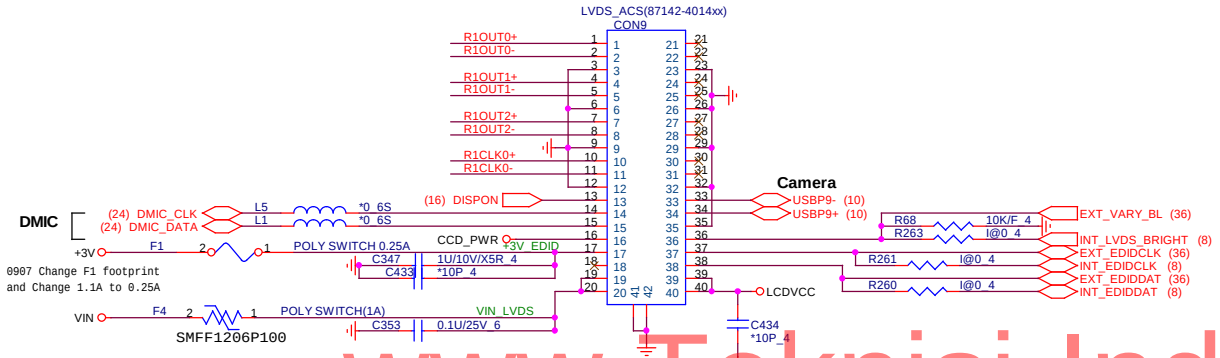
CRT



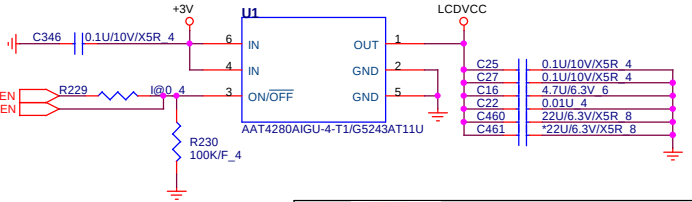
USB Camera Power







NB LVDS enable



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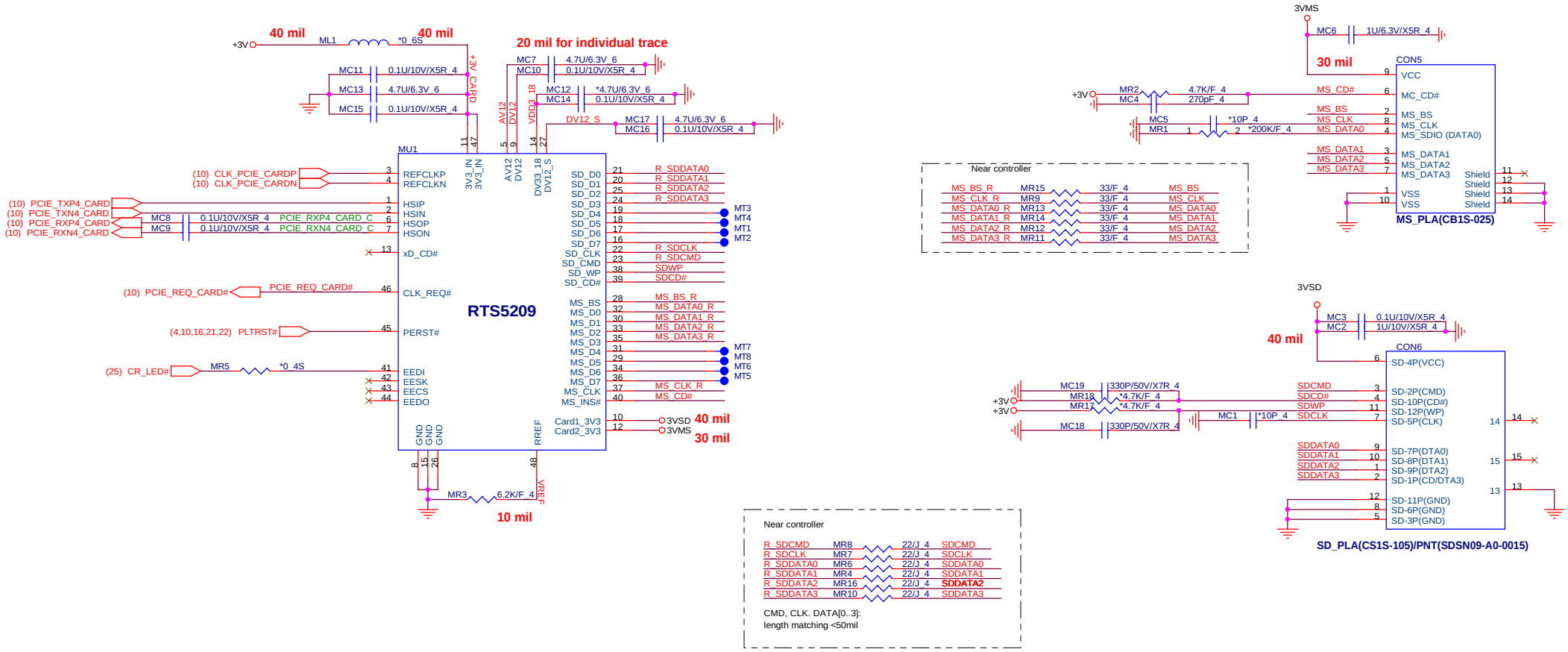
PROJECT :Huron River

Size	Document Number	Rev
	CRT/LVDS	1A
Date: Tuesday, April 05, 2011	Sheet 17 of 39	



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PROJECT :Huron River

Size	Document Number	Rev
	CARD	1A
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1.Level 1 Environment-related Substances Should Never be Used.
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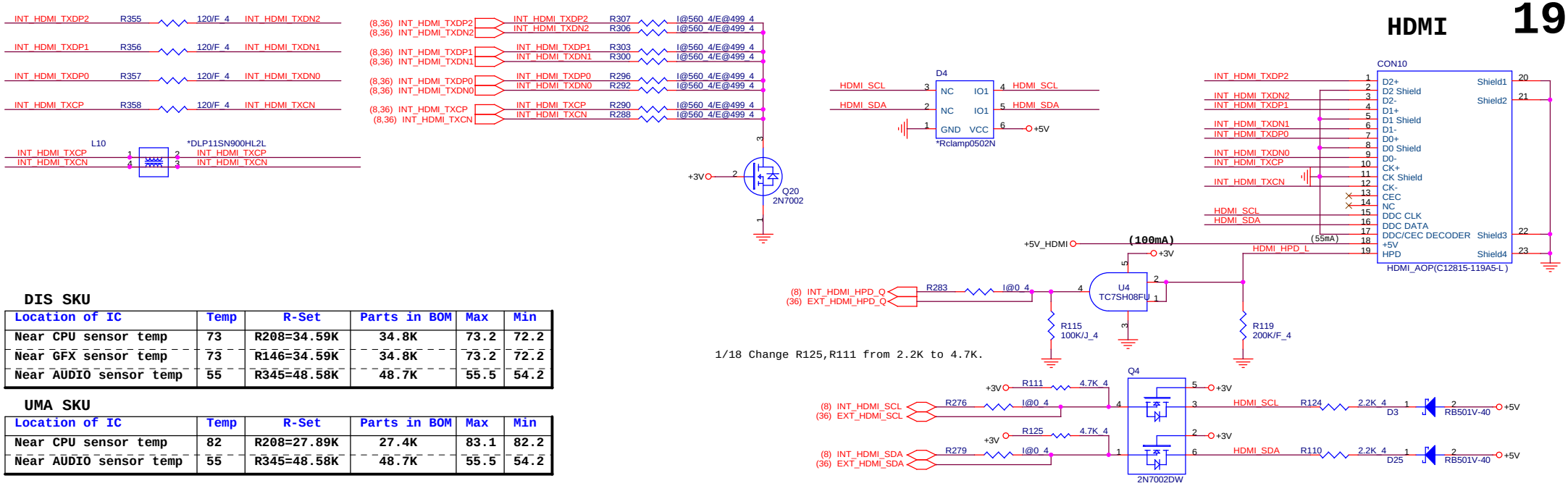
HDMI



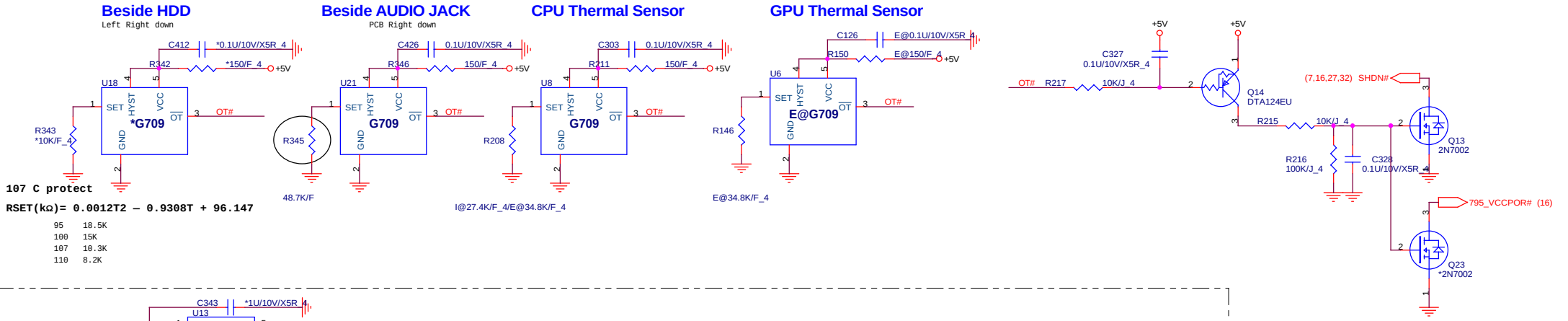
DIS SKU

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

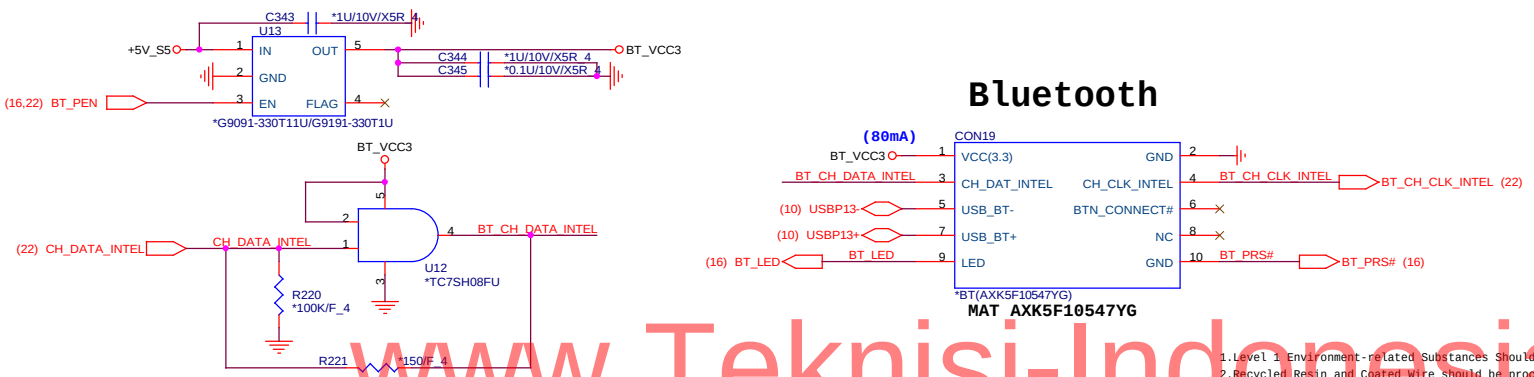
UMA SKU

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

H/W Thermal Protect



Bluetooth



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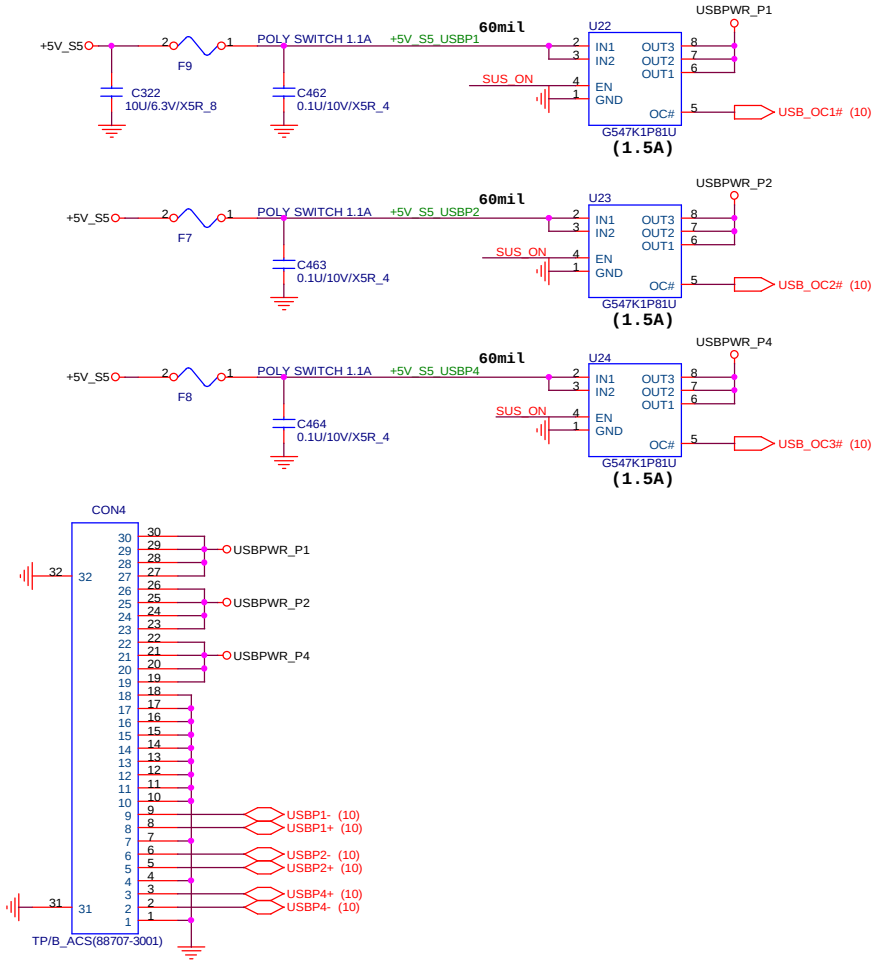
PROJECT :Huron River

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

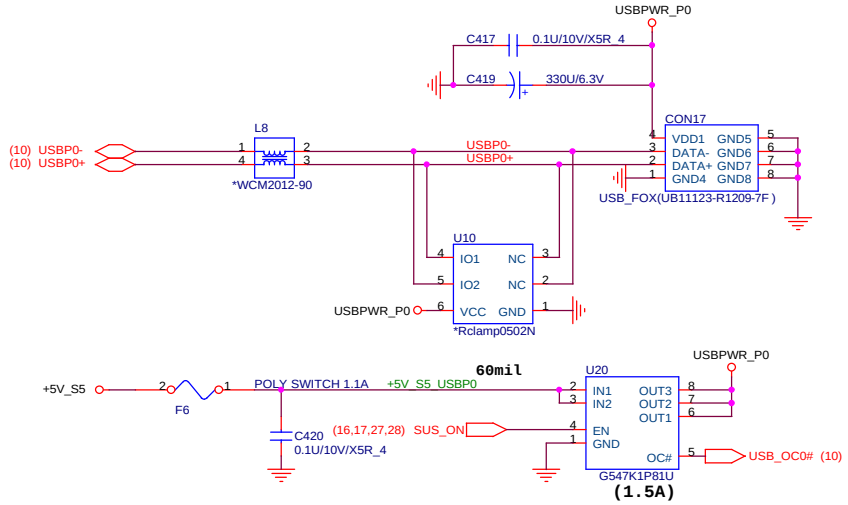
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Date: Wednesday, April 06, 2011 Sheet 19 of 39

MB to USB board

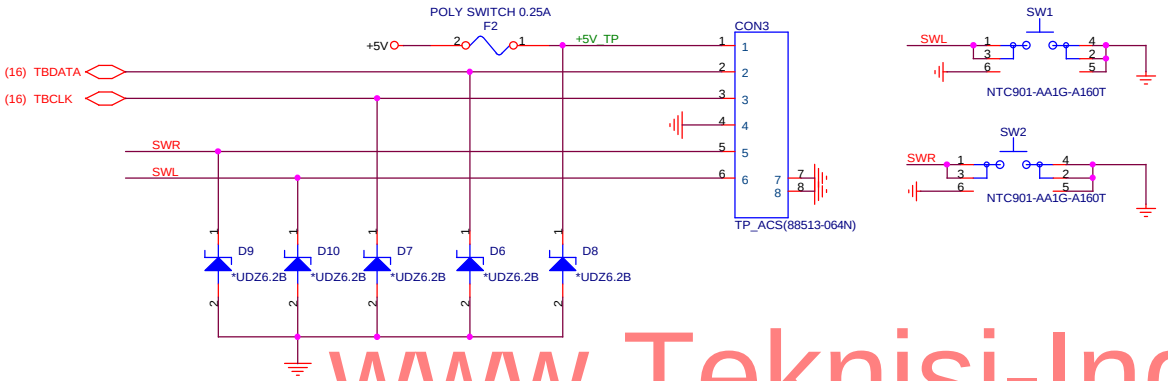


USB PORT 0

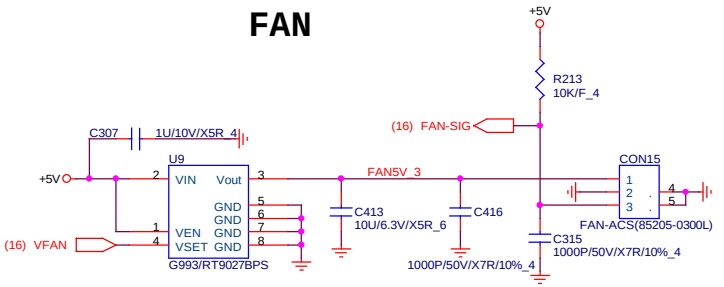


T/P Board to T/P

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



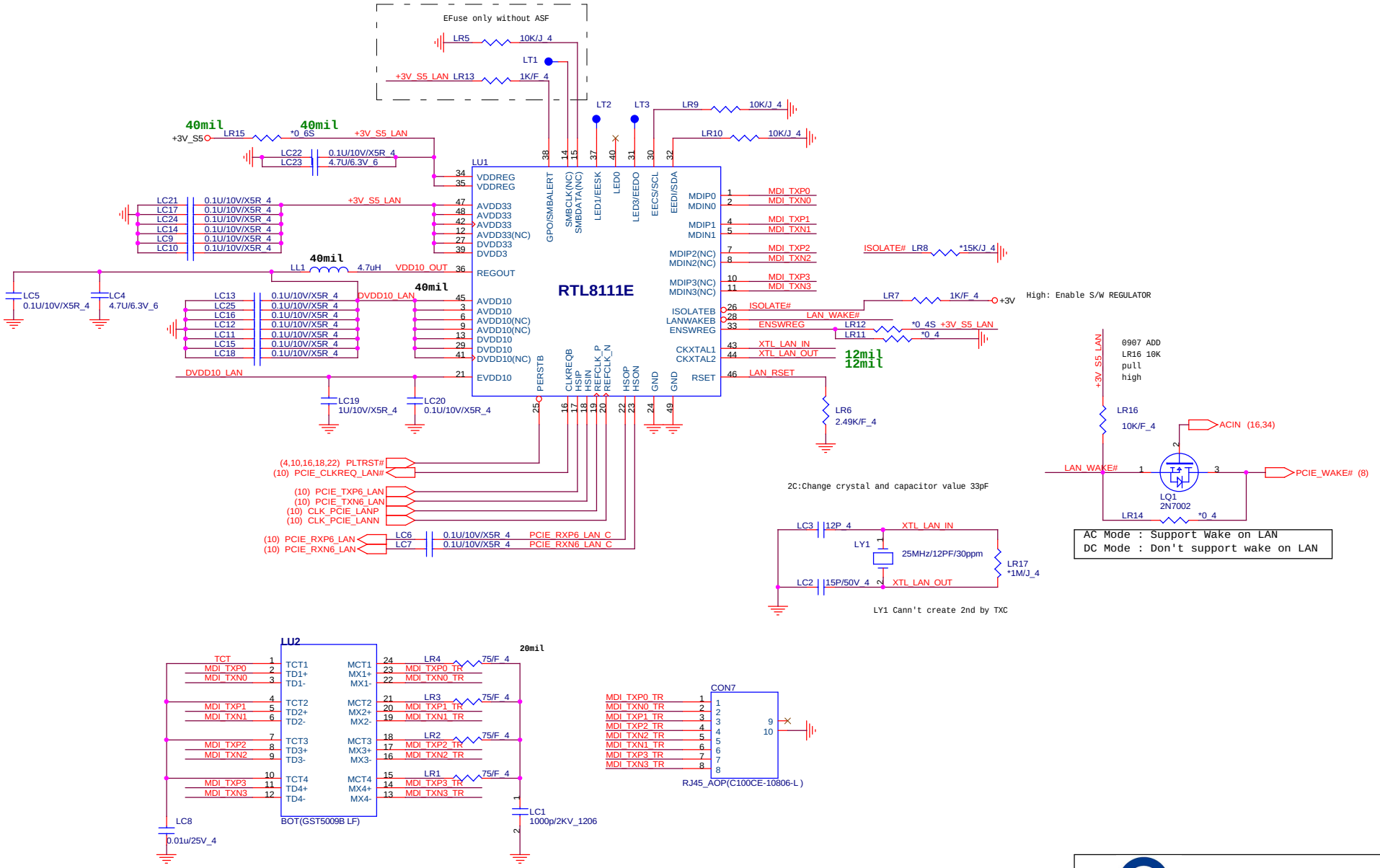
FAN



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	Rev
	USB/TP/FAN	1A
Date: Monday, February 21, 2011	Sheet 20 of 39	



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PROJECT : Huron River

Size	Document Number	Rev
	LAN RTL8111E	1A
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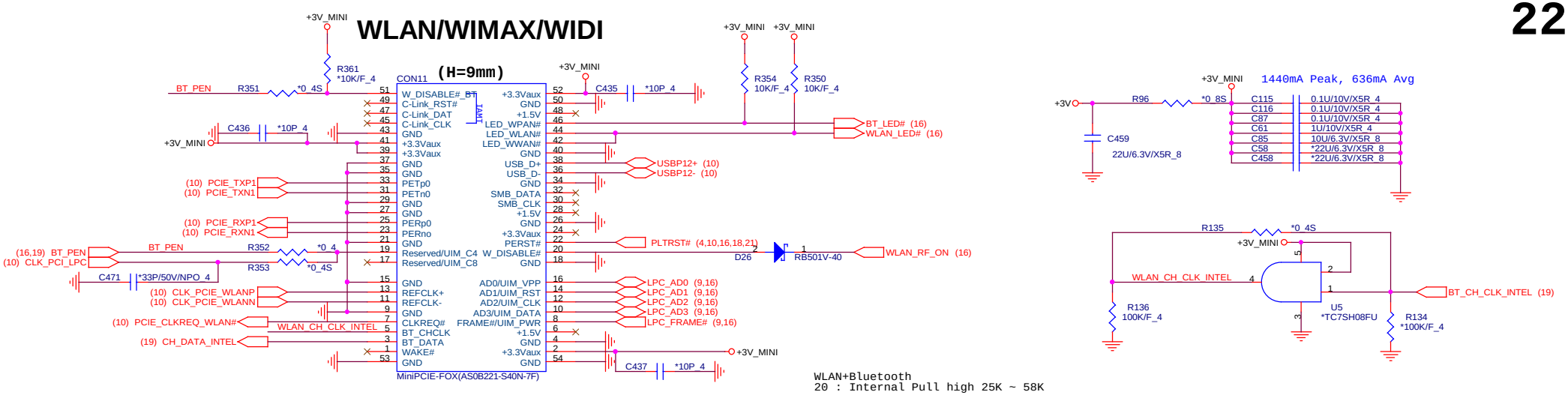
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

WLAN/WIMAX/WIDI



WLAN+Bluetooth
20 : Internal Pull high 25K ~ 58K

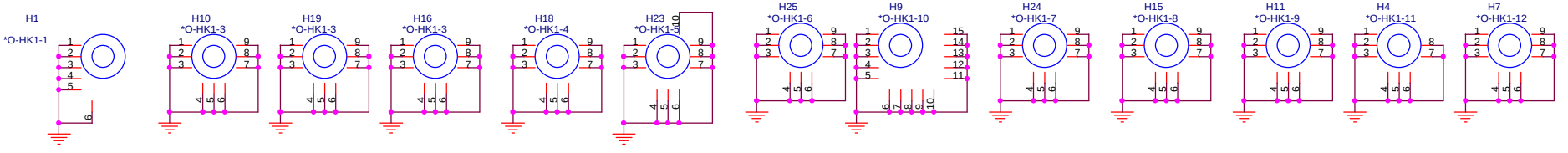
HOLE

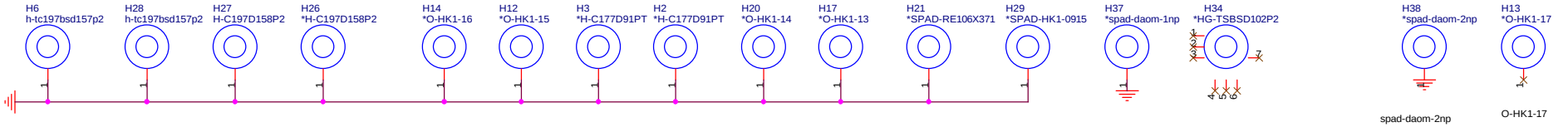
WLAN

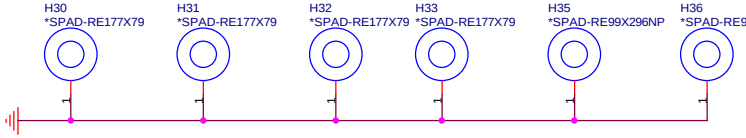
H8 H-C197D158P2

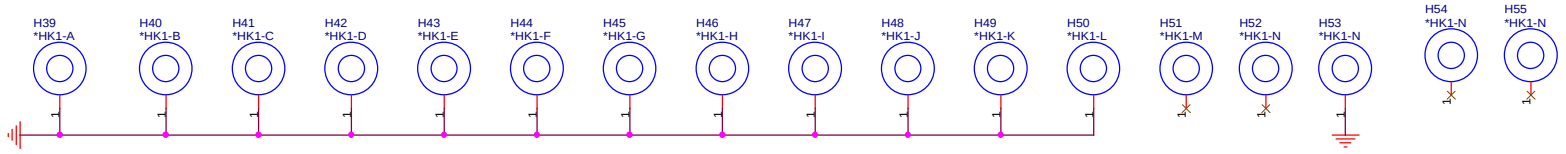
BT

H22 H-C157D102PB









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PROJECT :Huron River

Size	Document Number	Rev
	WLAN/WIMAX/WIDI	1A
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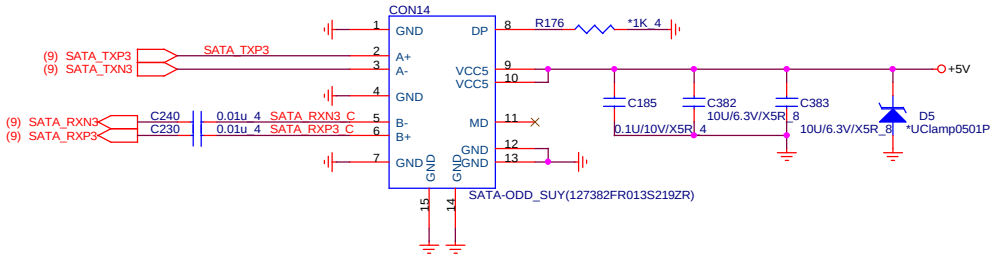
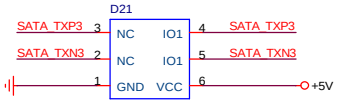
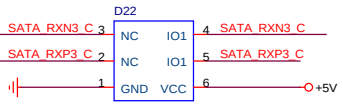
ODD CONNECTOR

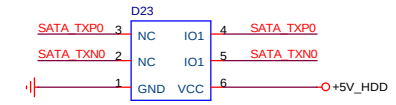
8/18 Change HDD 2nd source connector patt number

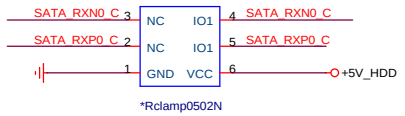






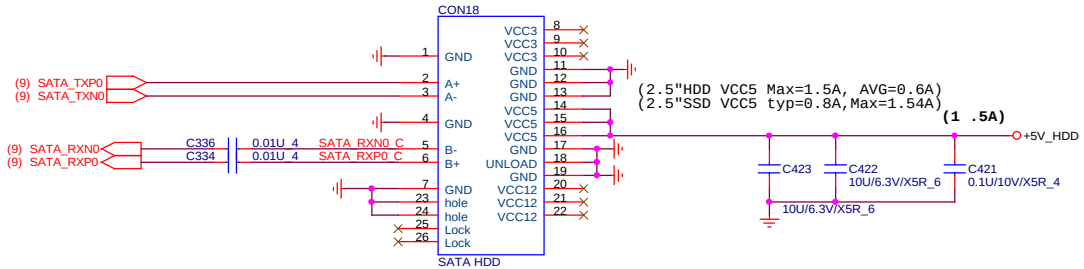
9/13 Add ESD prptection D21,D22 IC for ODD

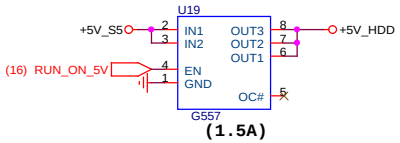




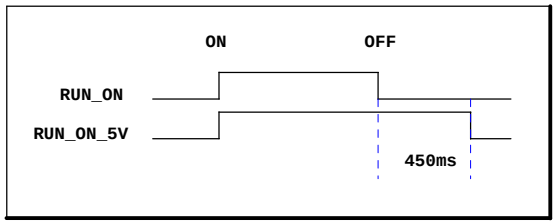
9/13 Add ESD prptection D23,D24 IC for HDD

HDD CONNECTOR

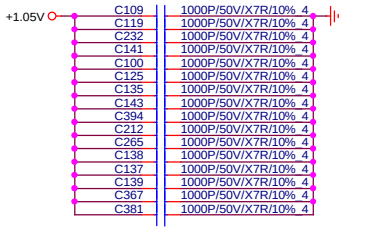


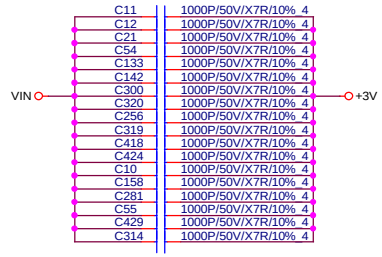


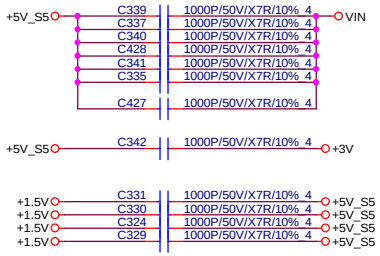
1/18 Change U19 from G547 to G557.

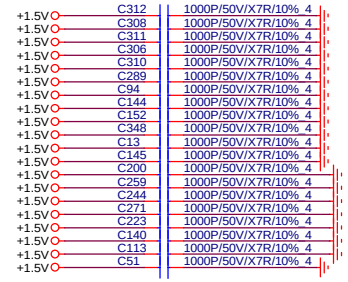


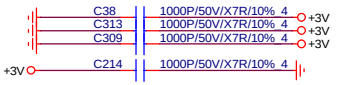
EMI

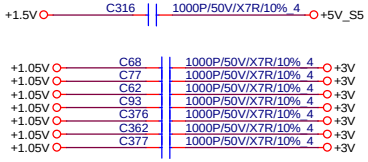


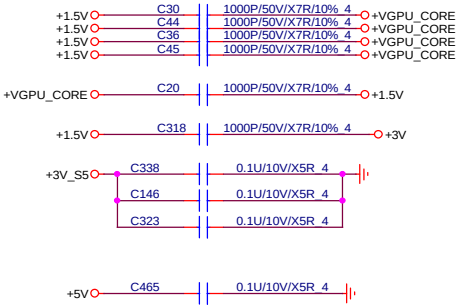


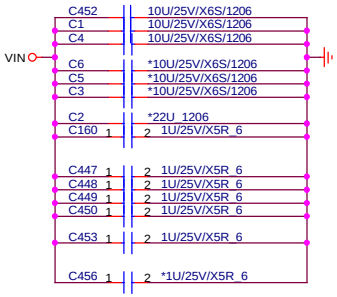


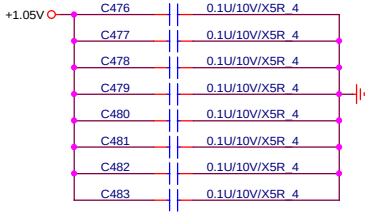


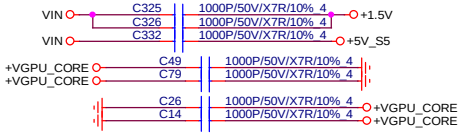










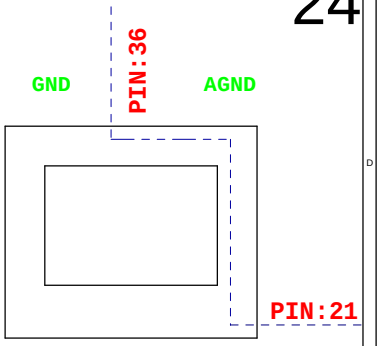


Quanta Computer Inc.
PROJECT :Huron River

Size	Document Number	Rev
	HDD/ODD	1A
Date: Monday, February 21, 2011	Sheet 23 of 39	

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

AVDD_3.3 pin is output of internal LDO. Do NOT connect to external supply.
Layout Note: Path from +5V to LPWR_5.0 and RPWR_5.0 must be very low resistance (<0.01 ohms).



CX20671-21Z

Digital Micphone

1/18 Change AL1,AL2,AL3,AL4 from 0ohm to short pad.

1/18 Change AL1~AL4 footprint from 0ohm to short pad

HP

MIC

INT Speaker

Speaker((85205-0400L))

HP_SIT(2SJ1012-002111)

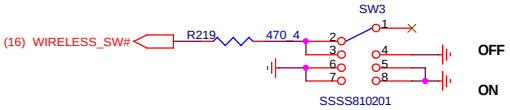
HP_SIT(2SJ1012-008111)
紅色料號申請中

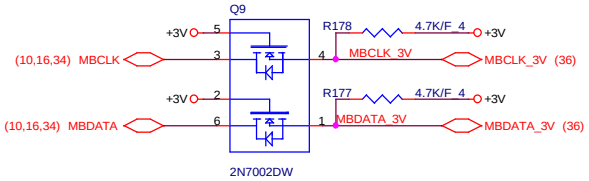
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : Huron River

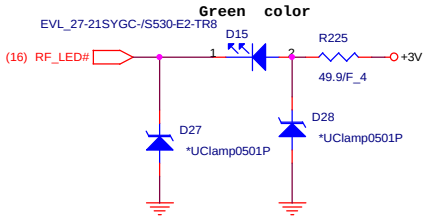
Size	Document Number	Rev
	Audio Codec CX20671	1A
Date: Tuesday, April 05, 2011	Sheet 24 of 39	

WIRELESS/Bluetooth SWITCH

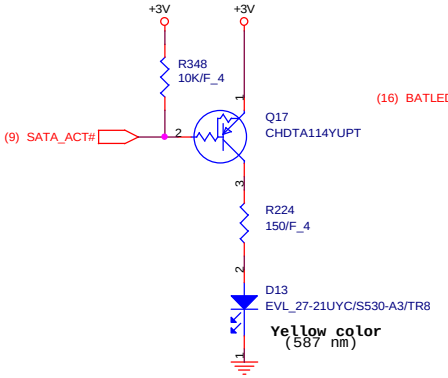




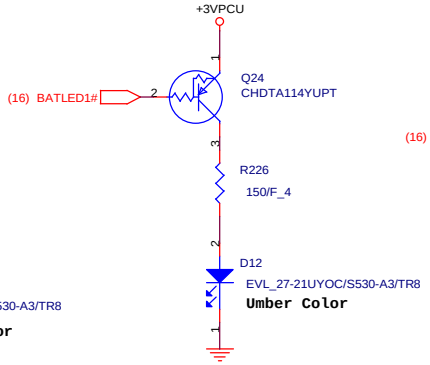
RF LED



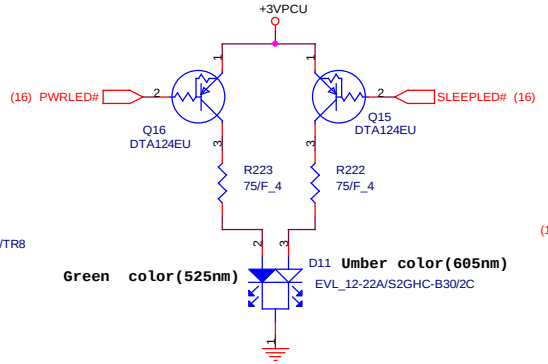
SATA LED



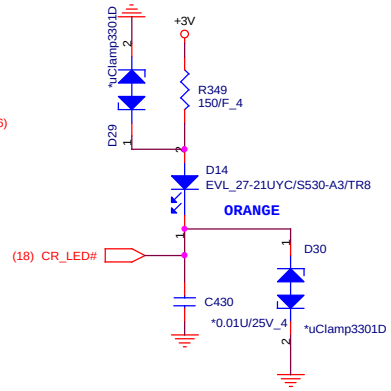
BATTERY LED



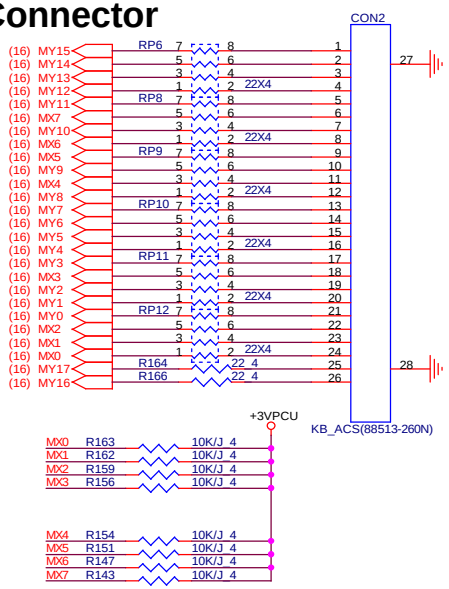
Power/Sleep LED



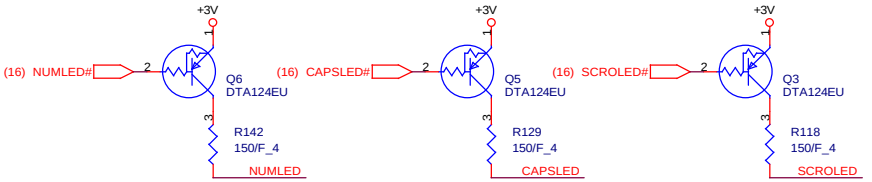
CARD LED

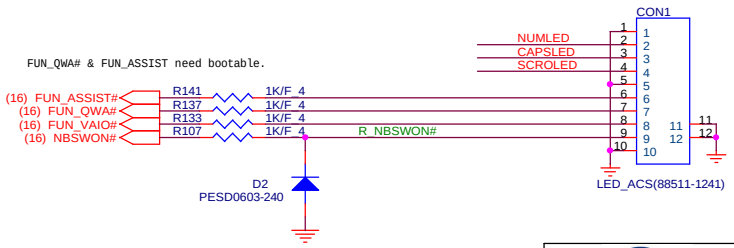


KEY BOARD Connector



Power SW Board Connector





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	Rev
	LED/RF/KB/PS	1A
Date:	Wednesday, April 06, 2011	Sheet 25 of 39

GFX_CORE LL: -3.9mV/A (OCP40A, PR142: 2.49K) - GT2

Parallel

ISL95831HRTZY

Place NTC close to the GFX_CORE inductor

Place NTC close to the VCORE Hot-Spot.

Place NTC close to the GFX_CORE Hot-Spot.

Place NTC close to the VCORE inductor of phase 1

Parallel

VCORE LL: 1.9mV/A

33A +VCC_GFX

53A +VCC_CORE

Quanta Computer Inc.

PROJECT :Huron River

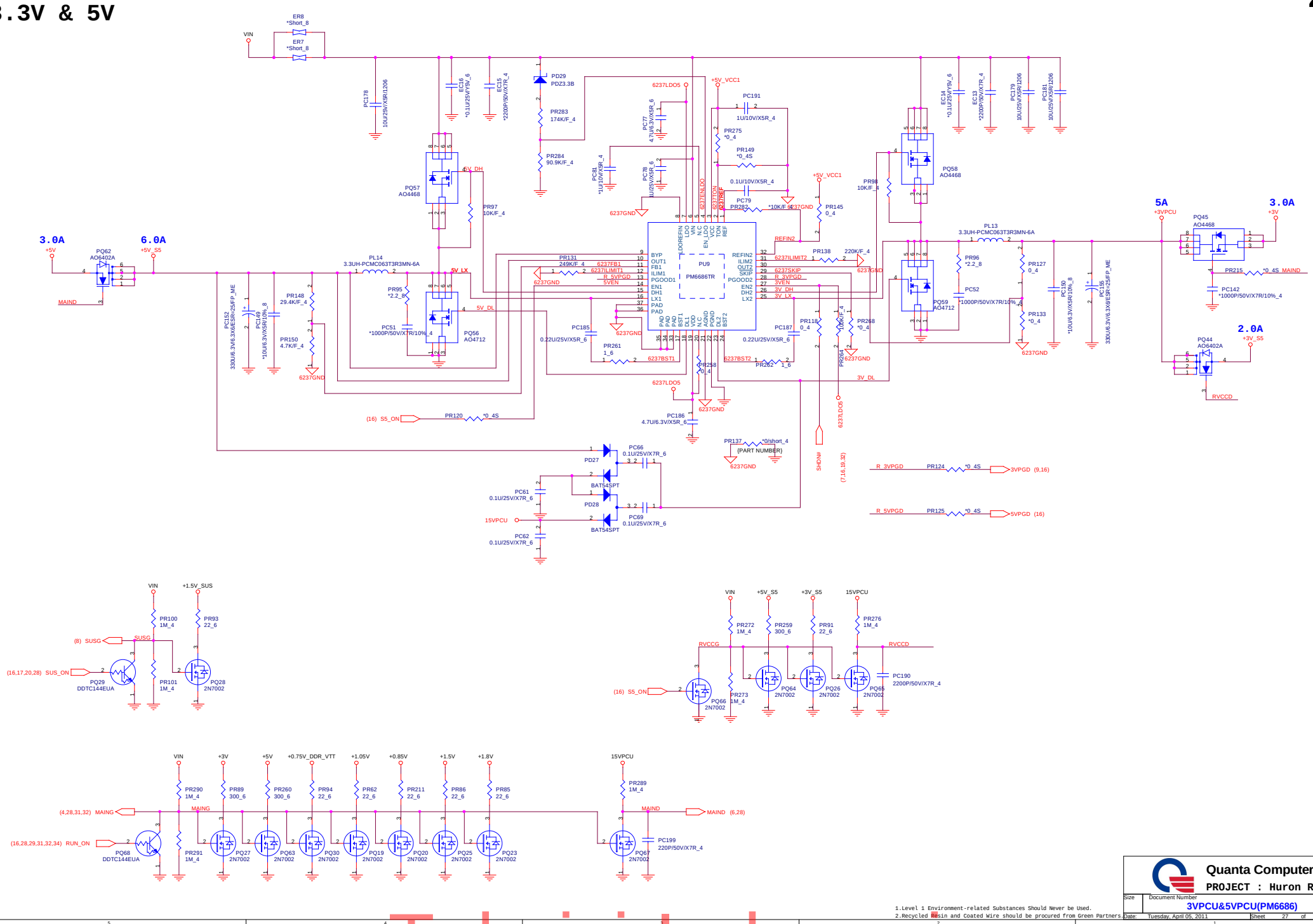
+VCC_CORE (ISL95831)

Size | Document Number | Rev 1A

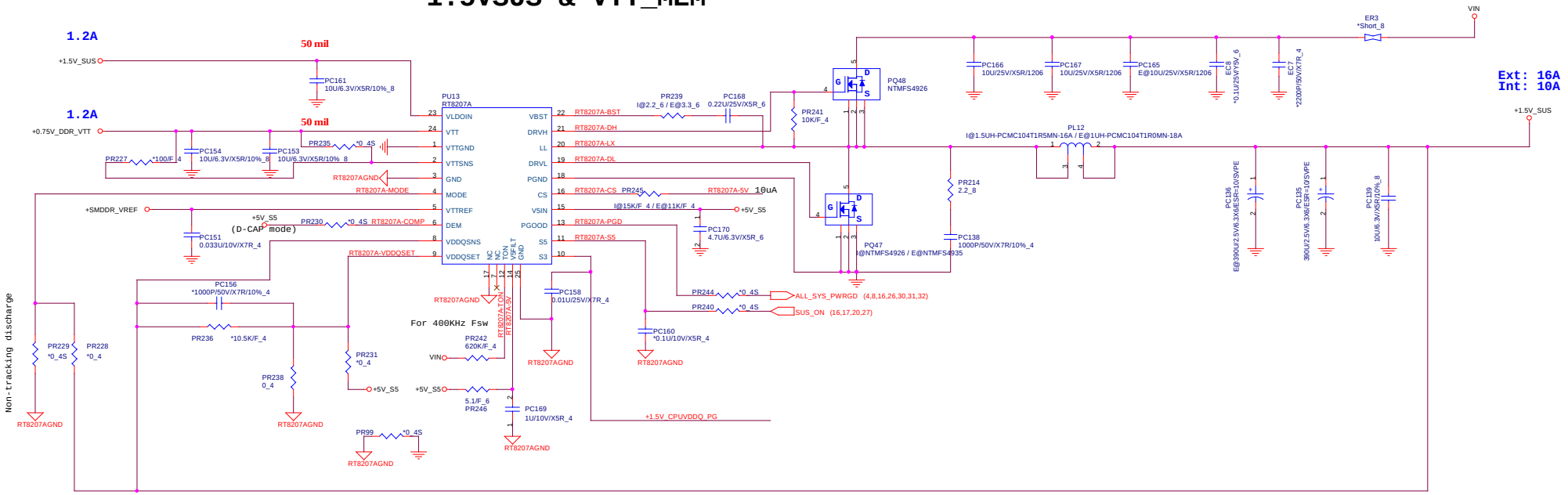
Date: Tuesday, April 05, 2011 | Sheet 26 of 39

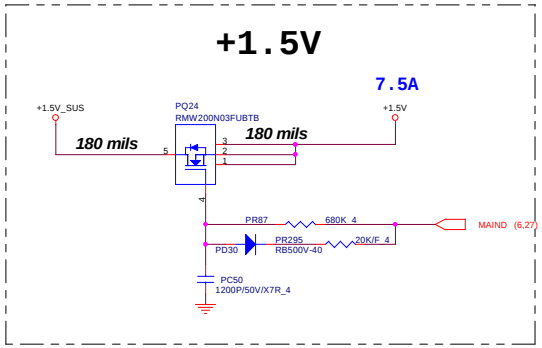
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

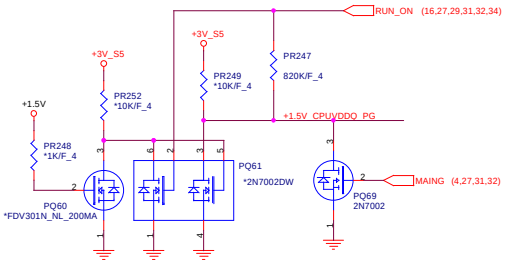
3.3V & 5V

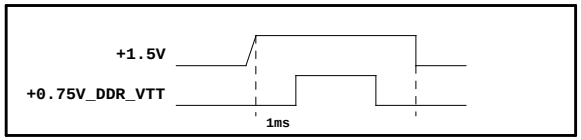


1.5VSUS & VTT_MEM









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

VDDQSET	VDDQ(V)	VTTREF & 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 = VTTREF = VDDQSNS/2 = 0.75V

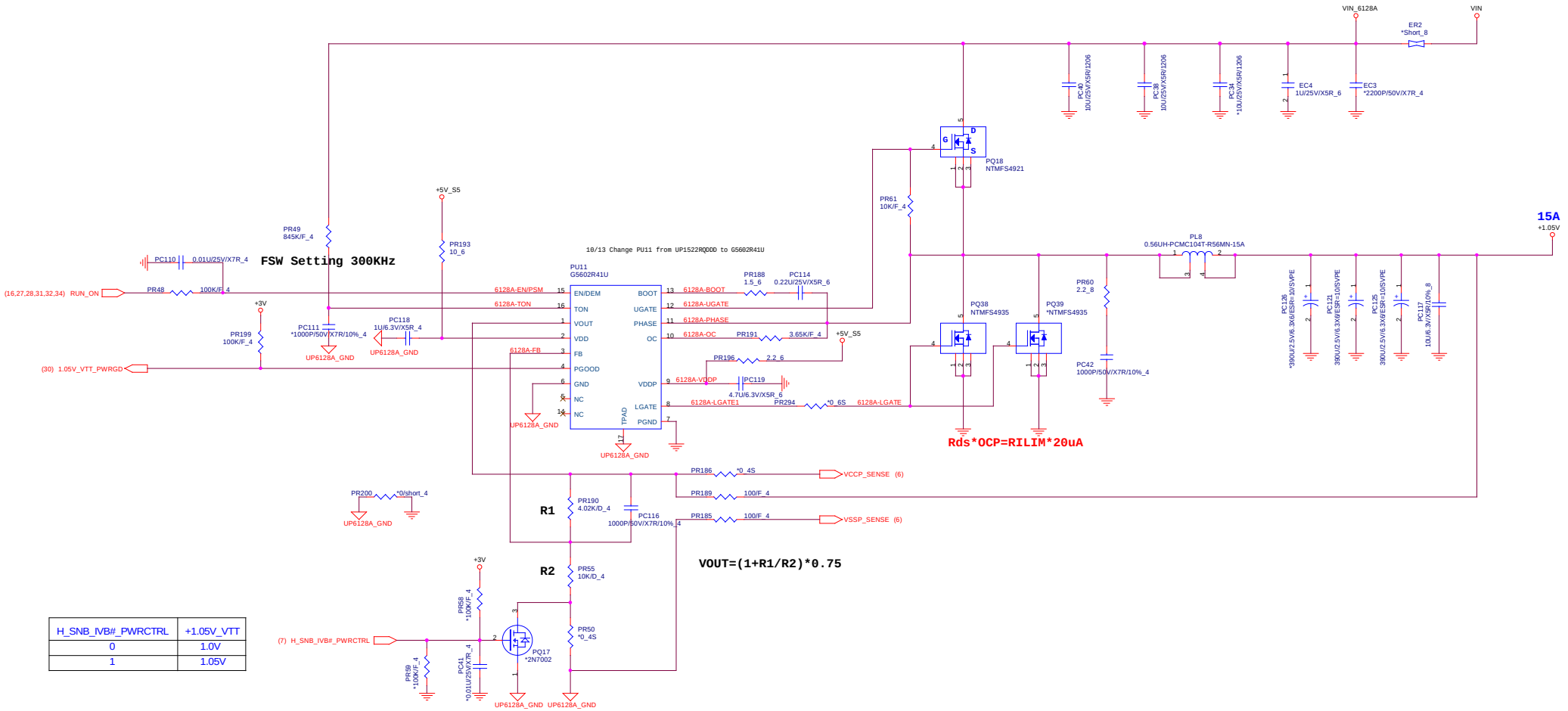
STATE	S3	S5	1.5VSUS	VTTREF	VTT
S0	1	1	on	on	on
S3	0	1	on	on	off
S4/S5	0	0	off	off	off

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	Rev
	1.5VSUS/VTT_MEM	1A
Date: Tuesday, April 05, 2011	Sheet 28 of 39	

+1.05V / 15.0A



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

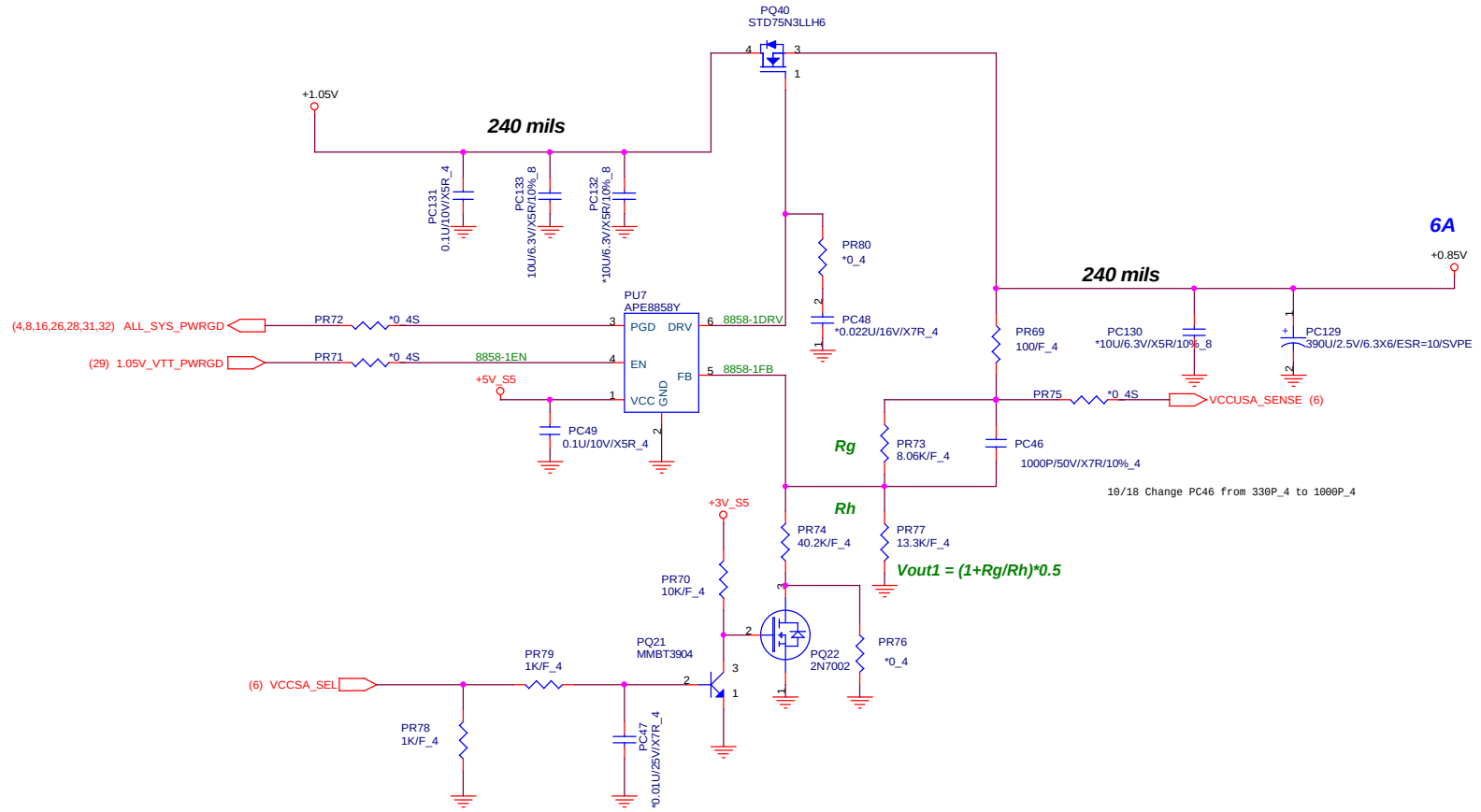
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : Huron River

Size	Document Number	Rev
	+1.05V (UP1522RQDD)-15A	1A

Date: Tuesday, April 05, 2011 Sheet 29 of 39

+0.85V

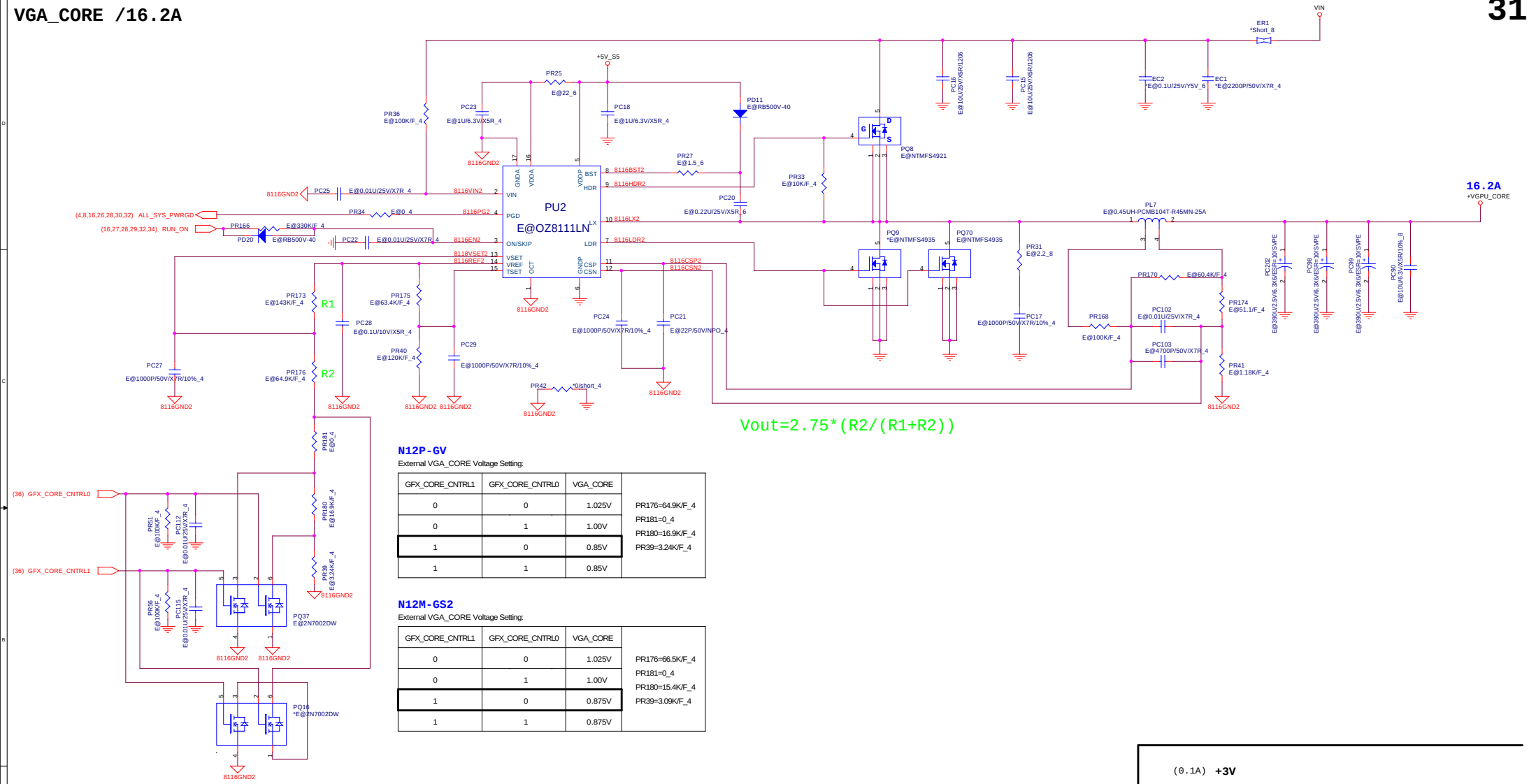


VID 0	VCCSA_SEL	+0.85V
0	0	0.9V
0	1	0.8V
1	0	0.75V
1	1	0.65V

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	Rev
	+0.85V(OZ8116LN)	1A
Date: Tuesday, April 05, 2011	Sheet 30 of 39	



Vout=2.75*(R2/(R1+R2))

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:

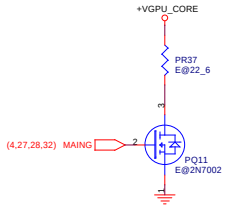
GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	VGA_CORE	
0	0	1.025V	PR176=66.5K/F_4
0	1	1.00V	PR181=0_4
1	0	0.875V	PR180=15.4K/F_4
1	1	0.875V	PR39=3.09K/F_4

(0.1A) **+3V**

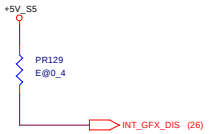
(2A) **+1.05V**

(6A) **+1.5V**

Dis-charge



UMA_GFX_DISABLE

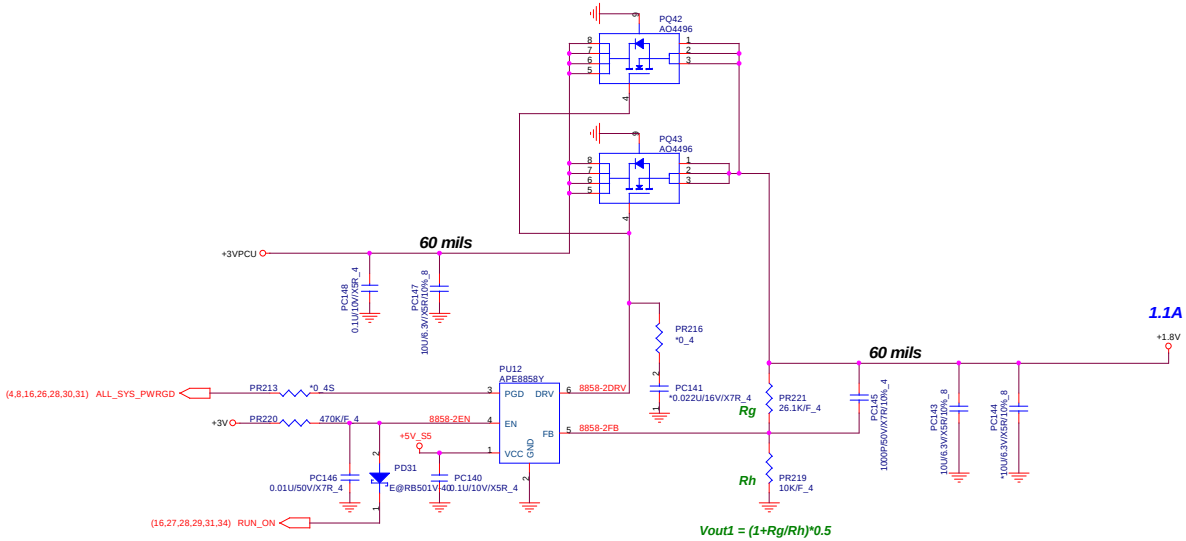


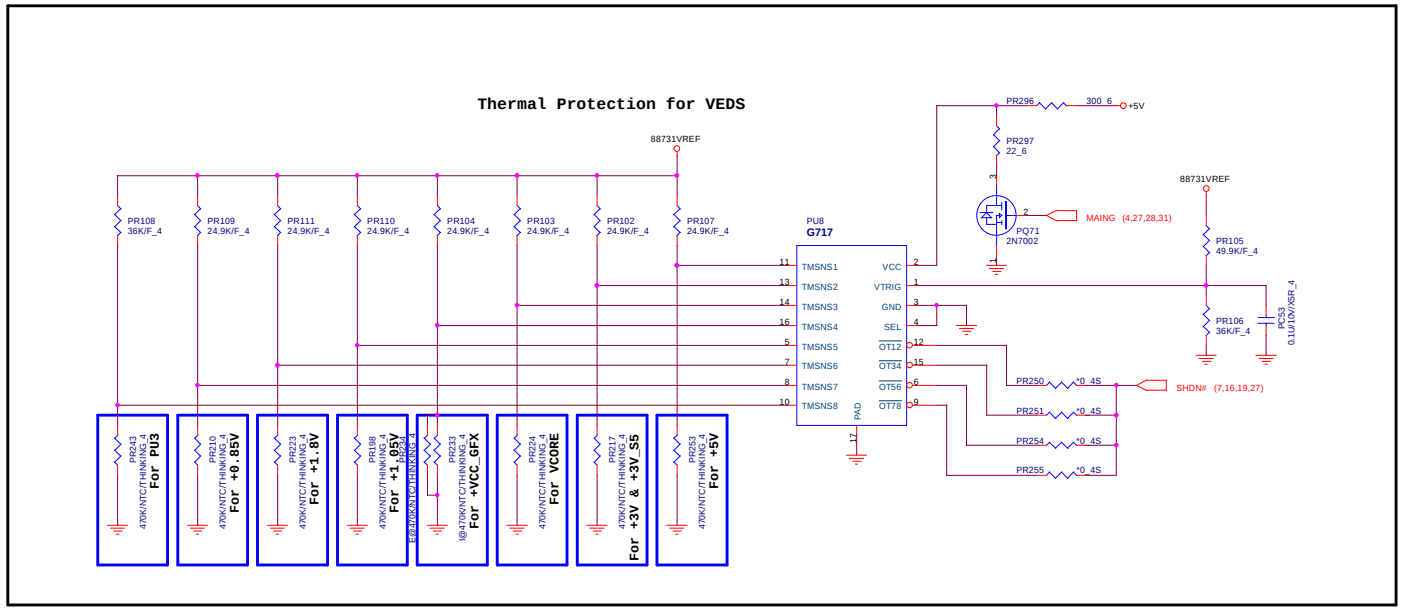
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : Huron River

Size	Document Number	Rev
	VGA_CORE(OZ8111)-15A	1A
Date: Tuesday, April 05, 2011	Sheet 31 of 39	

VCC1.8

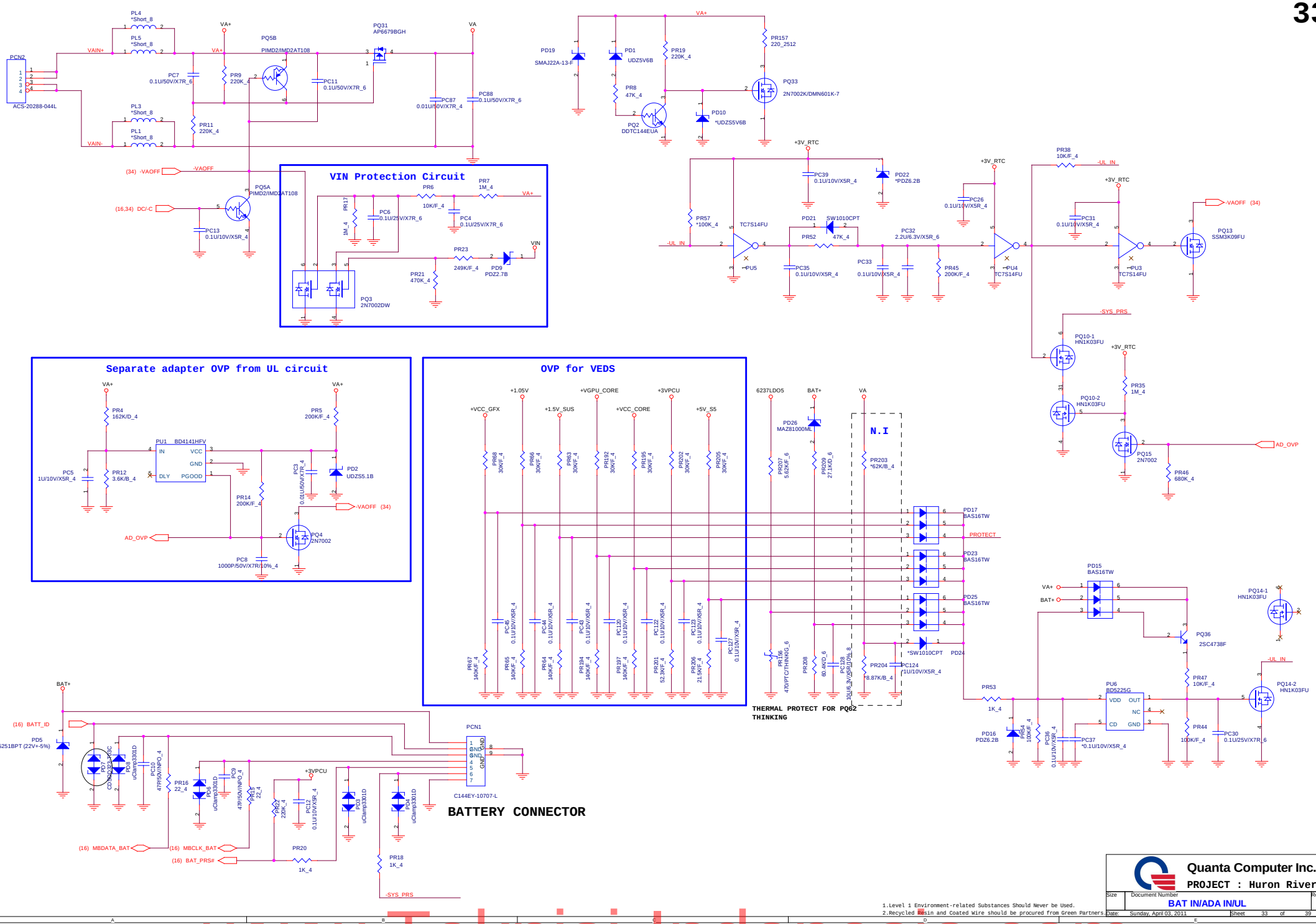




1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

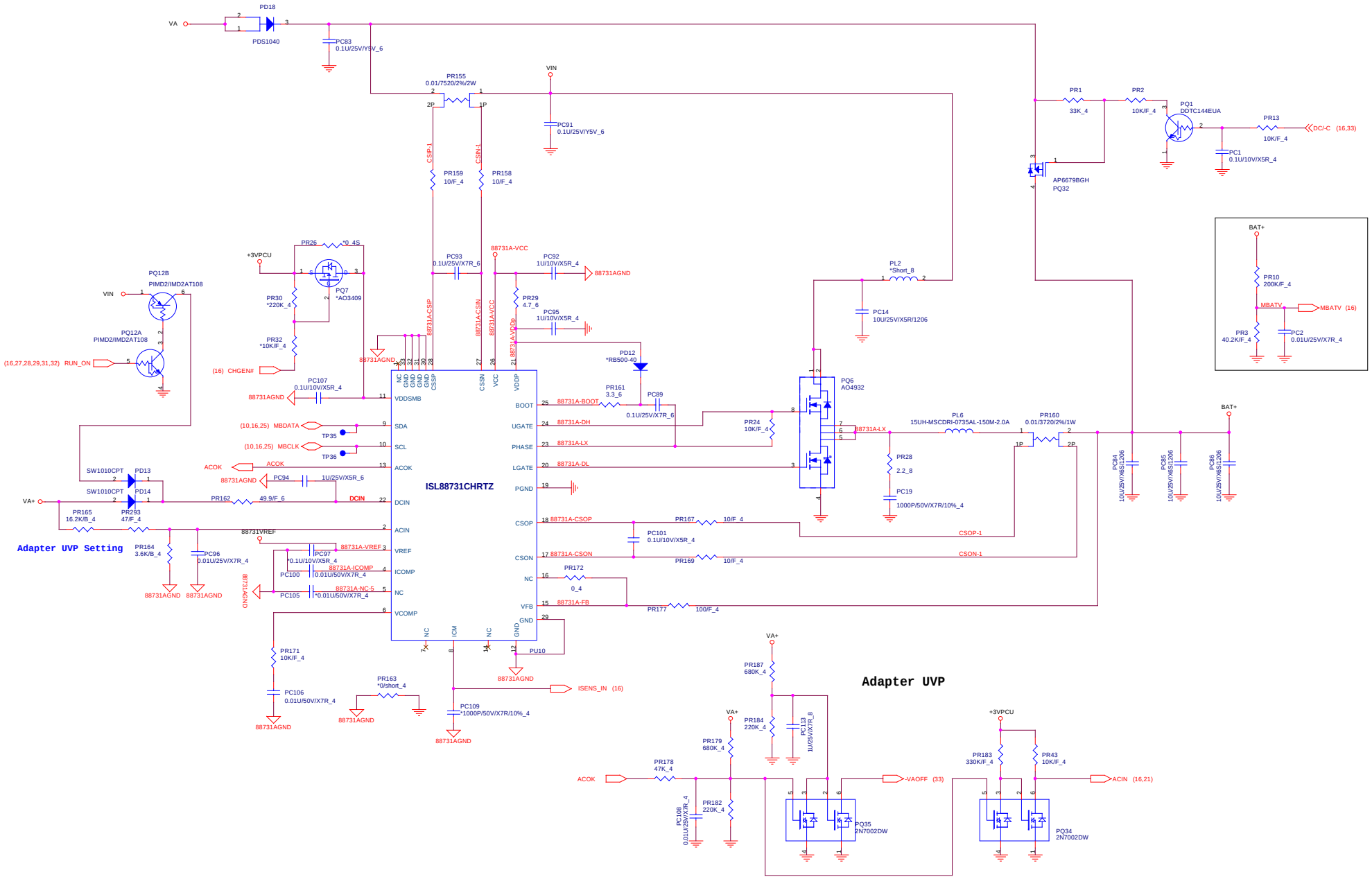
Quanta Computer Inc.
PROJECT : Huron River

Size	Document Number	Rev
	VCC1.8	1A
Date: Tuesday, April 05, 2011	Sheet 32 of 39	



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

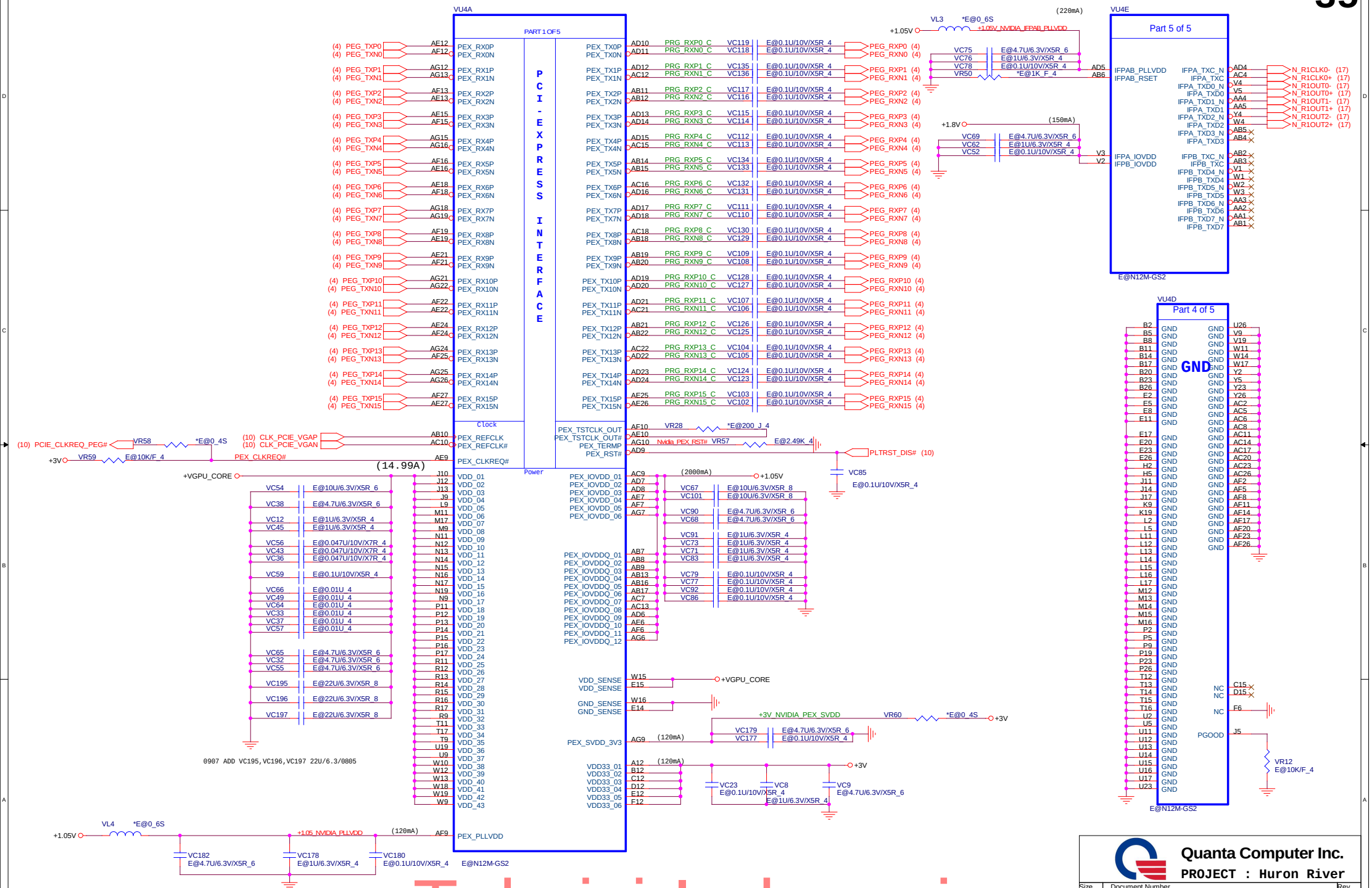
Quanta Computer Inc.		
PROJECT : Huron River		
Size	Document Number	Rev
	BAT IN/ADA IN/UL	1A
Date: Sunday, April 03, 2011	Sheet 33 of 39	



Quanta Computer Inc.
PROJECT : Huron River

Size	Document Number	Rev
	CHARGER(ISL88731A)	1A
Date: Tuesday, April 05, 2011	Sheet 34 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	Rev
	Nvidia 1/4	1A

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

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

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	PR181=0_4
1	0	0.875V	PR180=15.4K/F_4
1	1	0.875V	PR39=3.09K/F_4

Logical Strap Bit Mapping

Resister 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

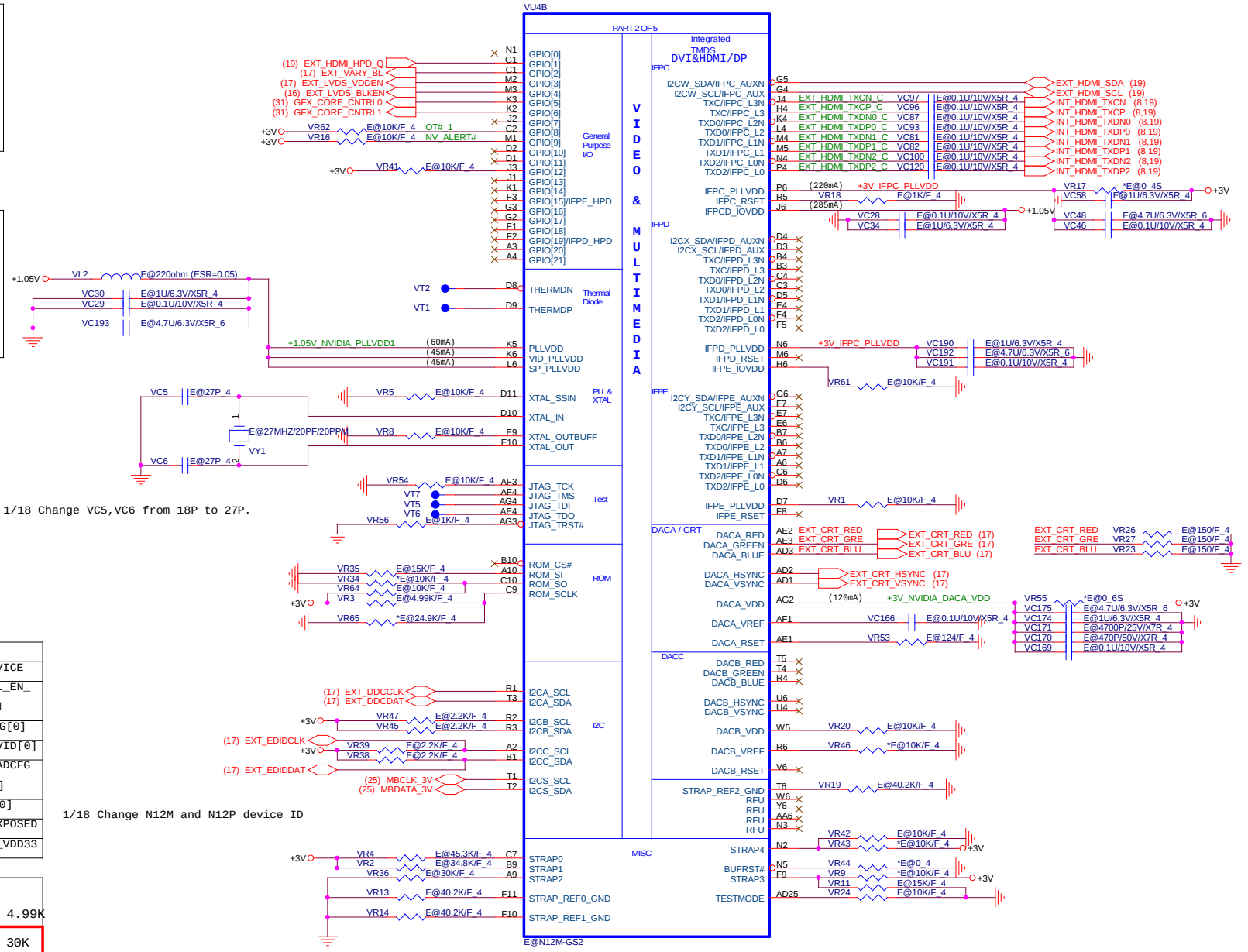
For N12P VR3 pull high 4.99K VR65 NC VR36 Pull down 4.99K

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-BC12	
	128Mx16 DDR3	Hynix	0110	PD35K	H5TQ2G63BFR-12C	
		Samsung	0111	PD45K	K4W2G1646C-HC12	

1/18 Change VC5,VC6 from 18P to 27P.

1/18 Change N12M and N12P device ID



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

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	Nvidia 2/4	2A

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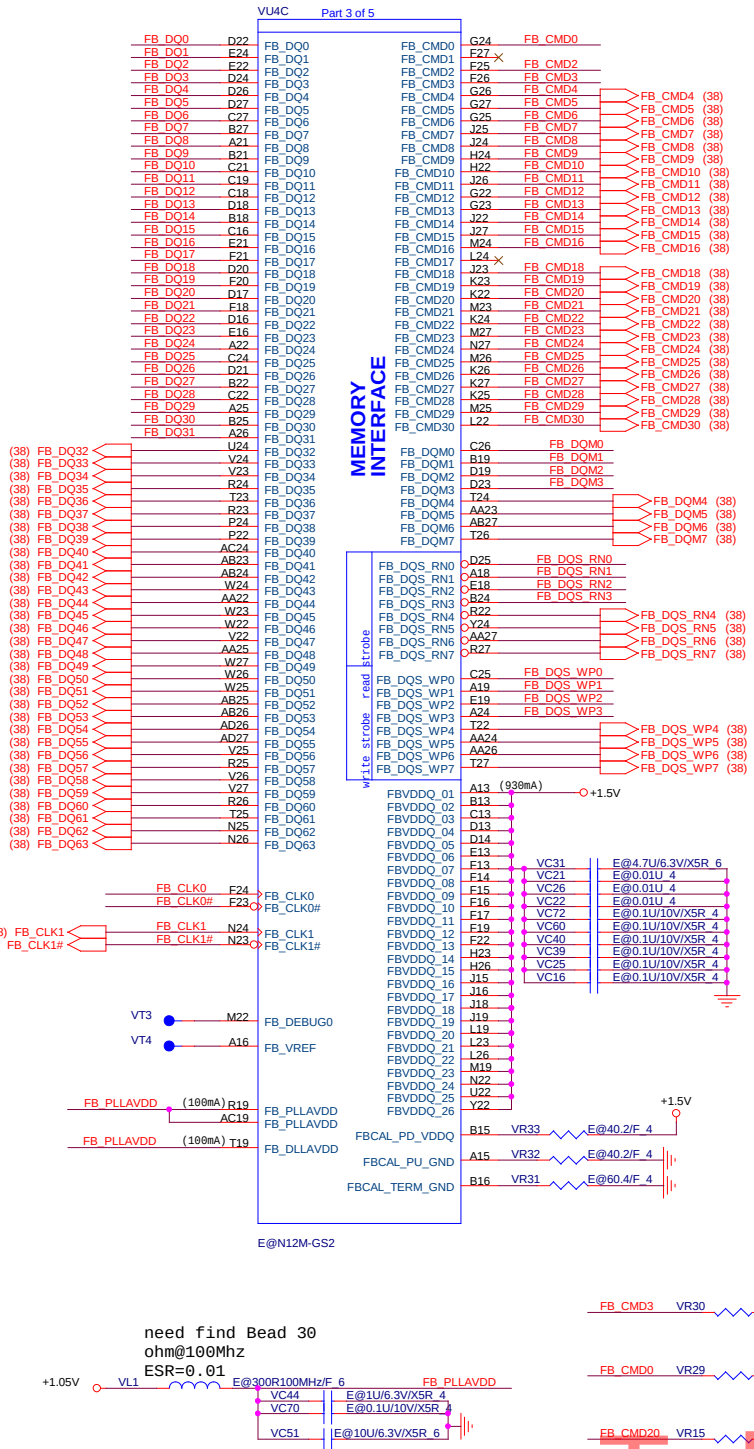
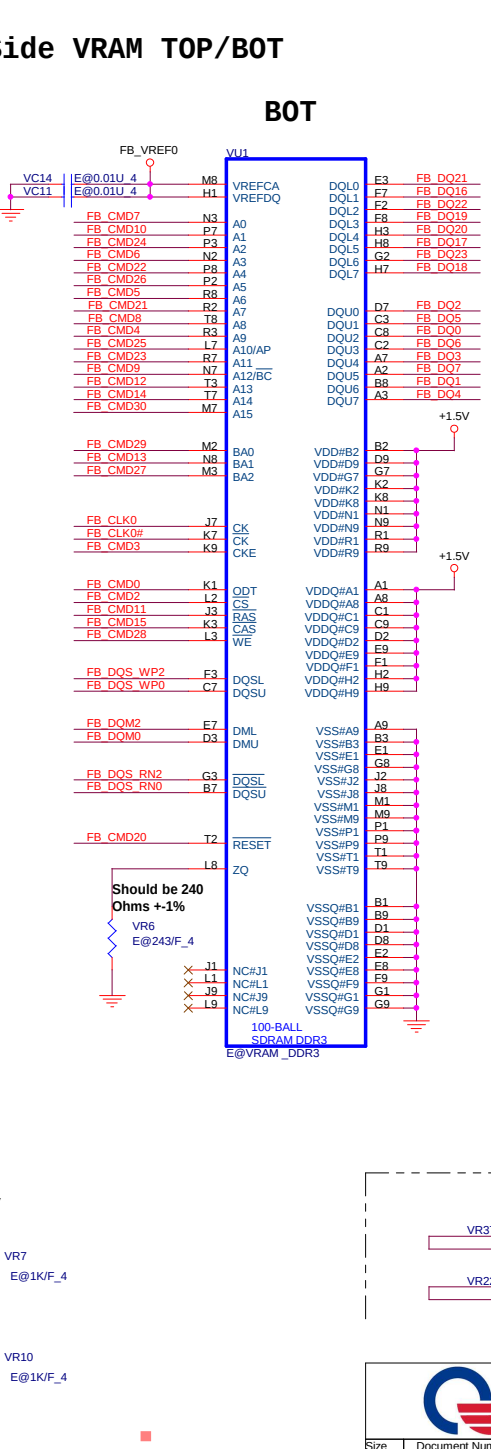
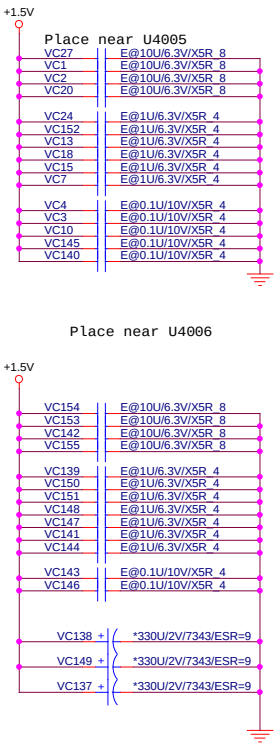
Down Side VRAM TOP/BOT

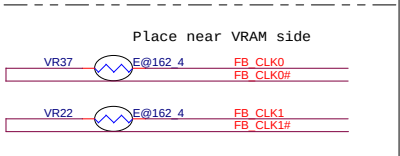
TOP

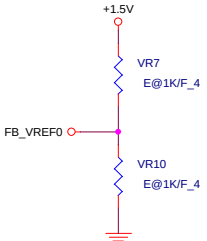


BOT









FB_CMD3 VR30 E@10K/F_4

FB_CMD0 VR29 E@10K/F_4

FB_CMD20 VR15 E@10K/F_4

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	VRAM 3/4	2A

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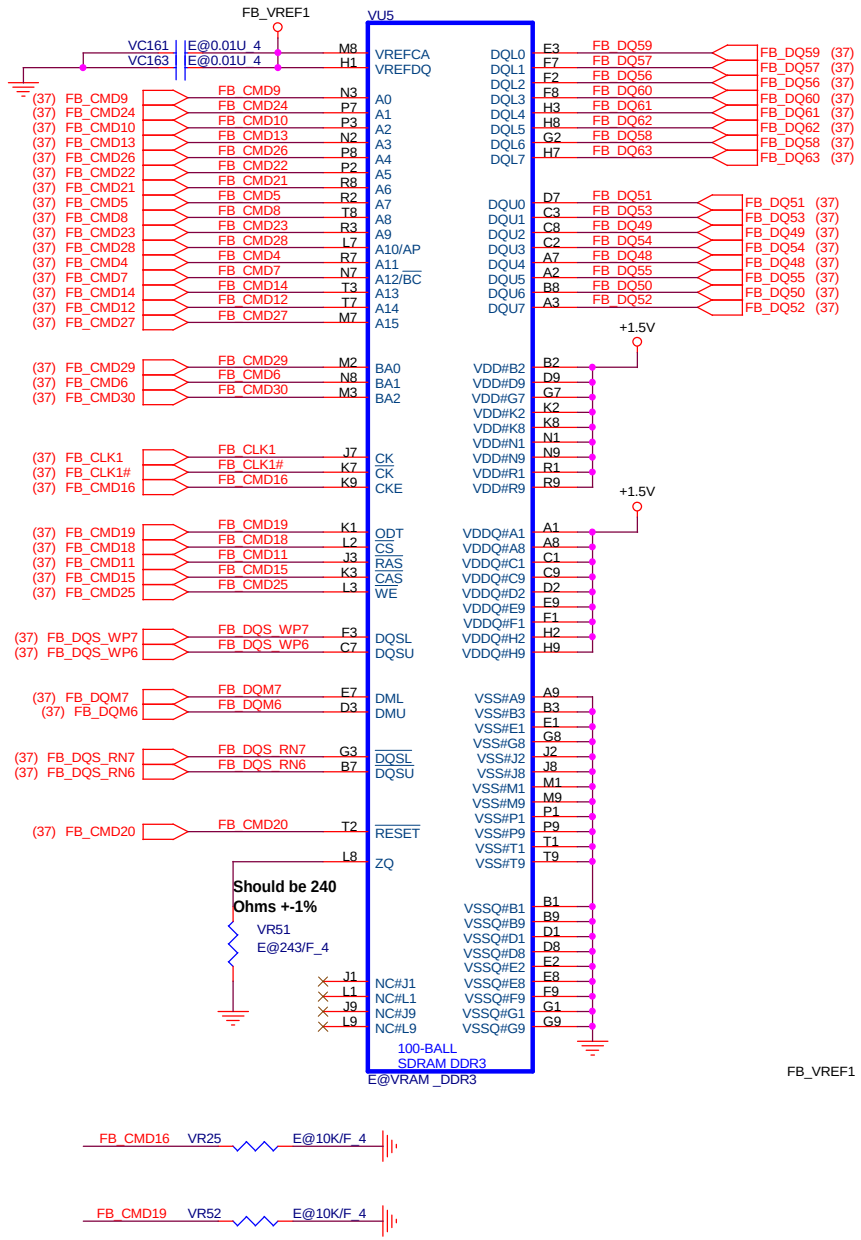
Up Side VRAM TOP/BOT

TOP



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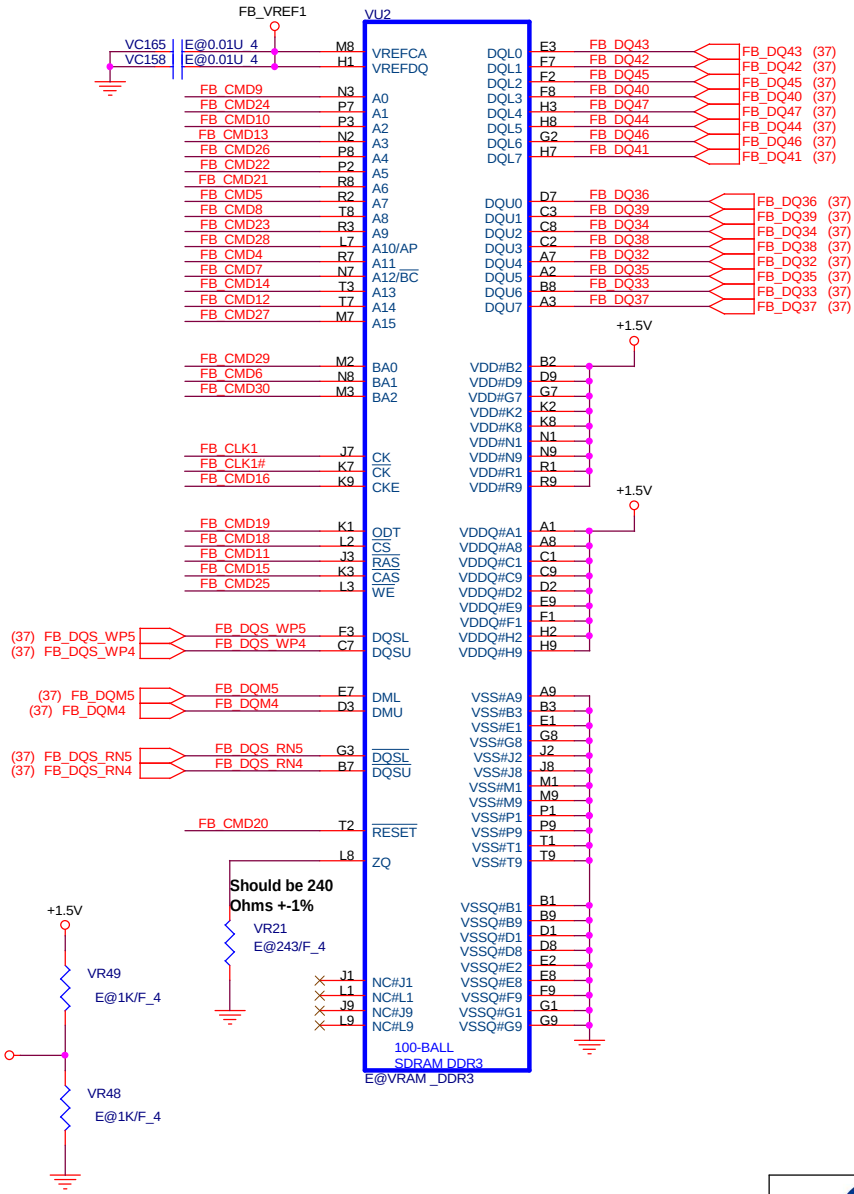

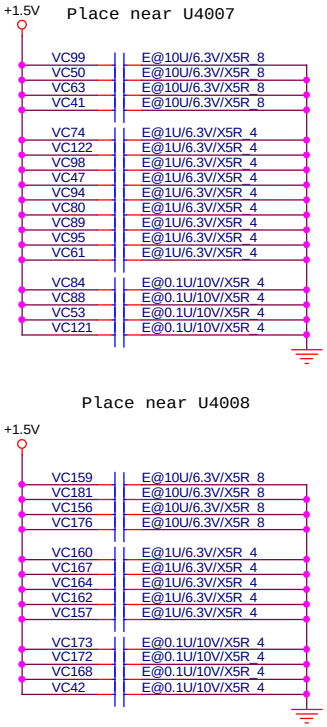

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PROJECT : Huron River

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	VRAM 4/4	1A
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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_PRSNT#(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