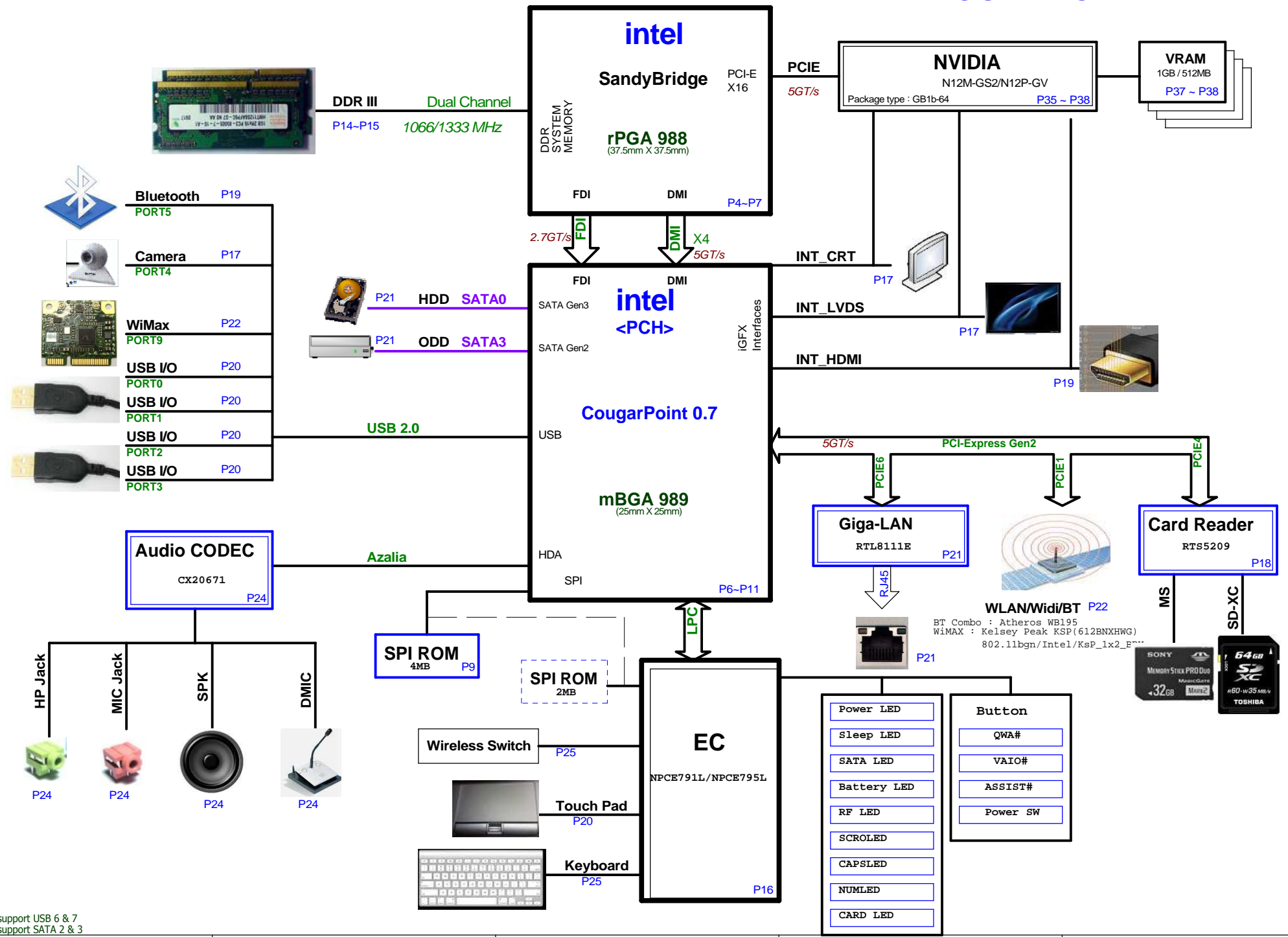


* : No mount
E@ : For DIS GFX only
I@ : For INT GFX only

| Page | Title of schematic page | Rev. | Date |
|------|-----------------------------|------|------|
| 01 | Page List | 1A | |
| 02 | Block Diagram | 1A | |
| 03 | Change List | 1A | |
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| 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 | |
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| 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 TMS&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

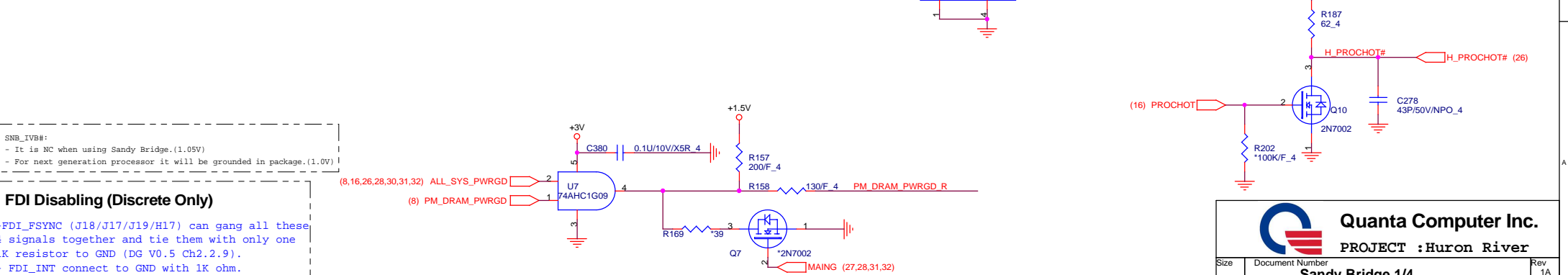
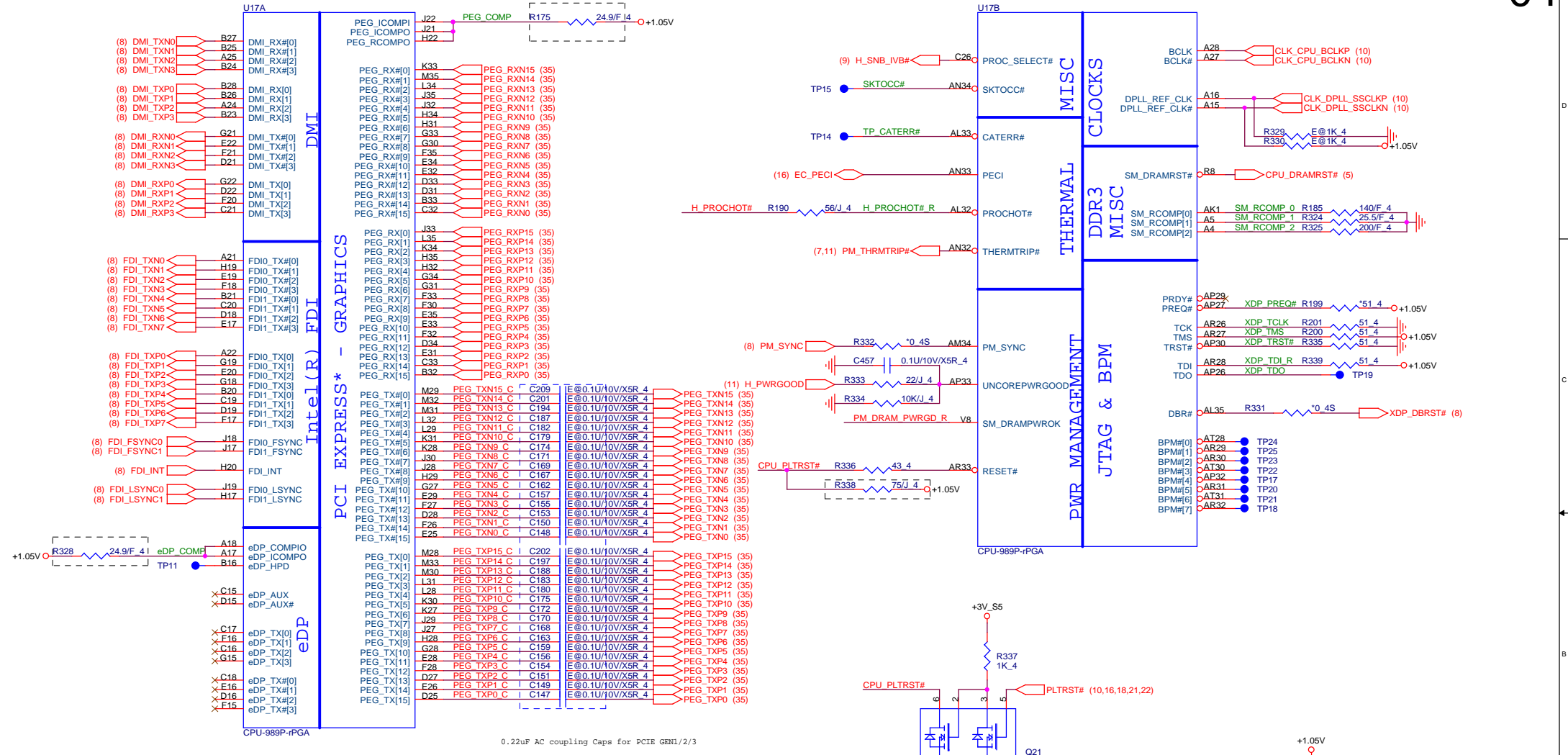
P19-- R345 change to 48.7K.
Reason : Change thermal sensor temperature to 55 degree.
Possible Risk: No.

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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| | | 2A | |
| Change List | | | |
| Date: | Wednesday, April 06, 2011 | Sheet | 3 of 39 |



FDI Disabling (Discrete Only)

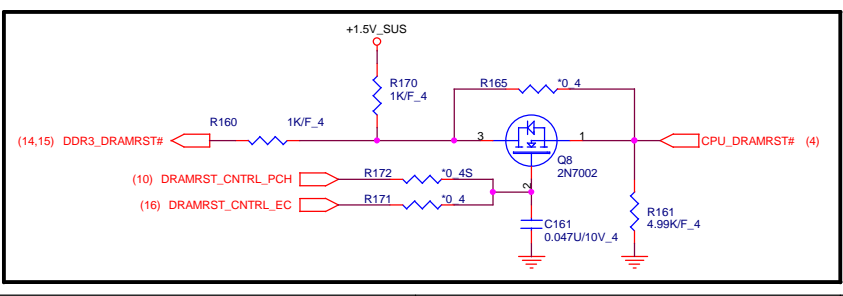
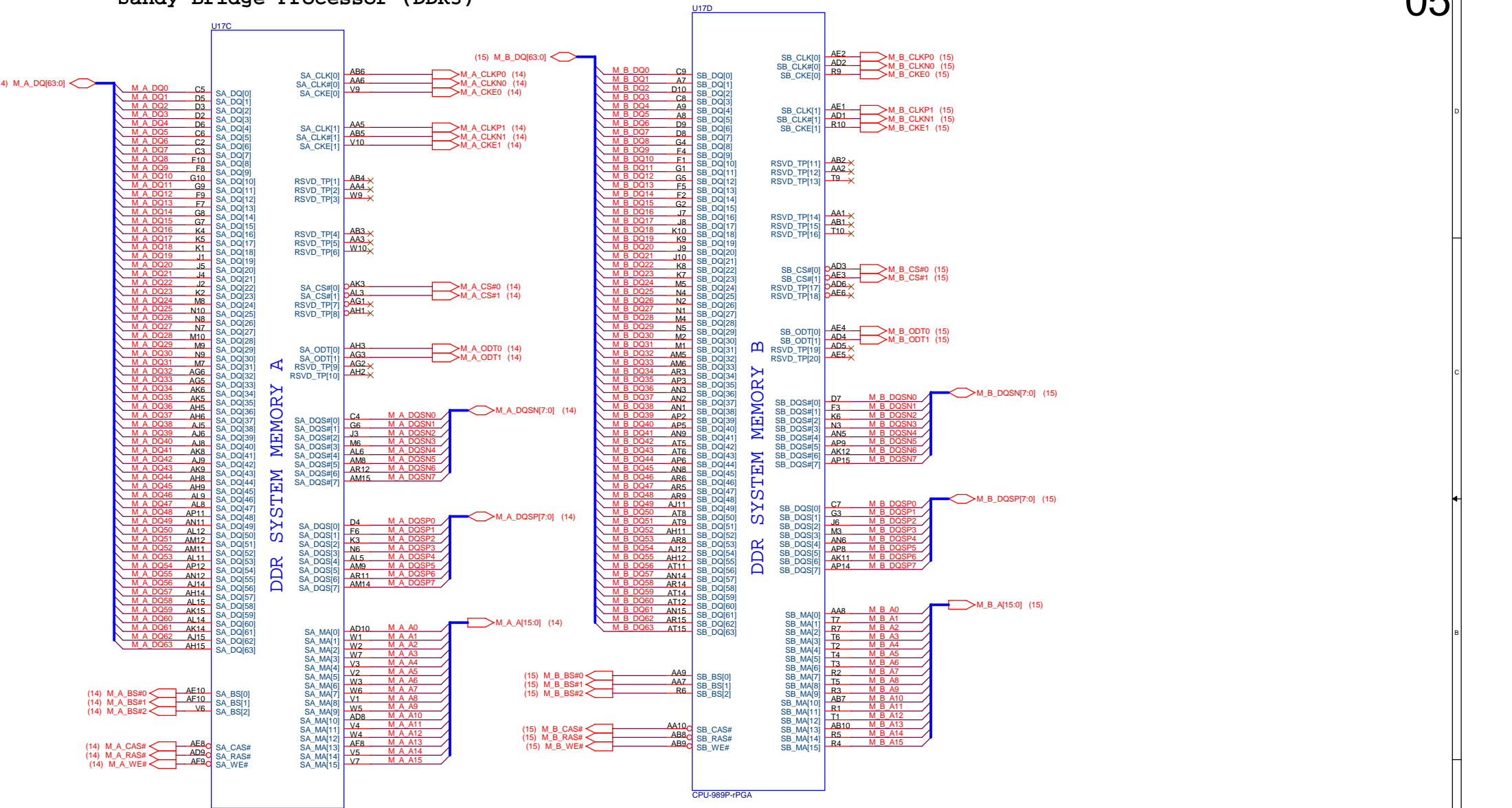
- FDI_FSYNC (J18/J17/J19/H17) can gang all these 4 signals together and tie them with only one 1K resistor to GND (DG V0.5 Ch2.2.9).
- FDI_INT connect to GND with 1K ohm.

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| | | | | | |
|------|------------------|------------------------|-------|----|------|
| Size | Document Number | Date | Sheet | of | Page |
| | Sandy Bridge 1/4 | Sunday, April 03, 2011 | 4 | | 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)



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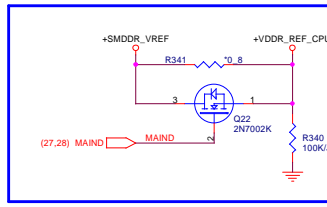
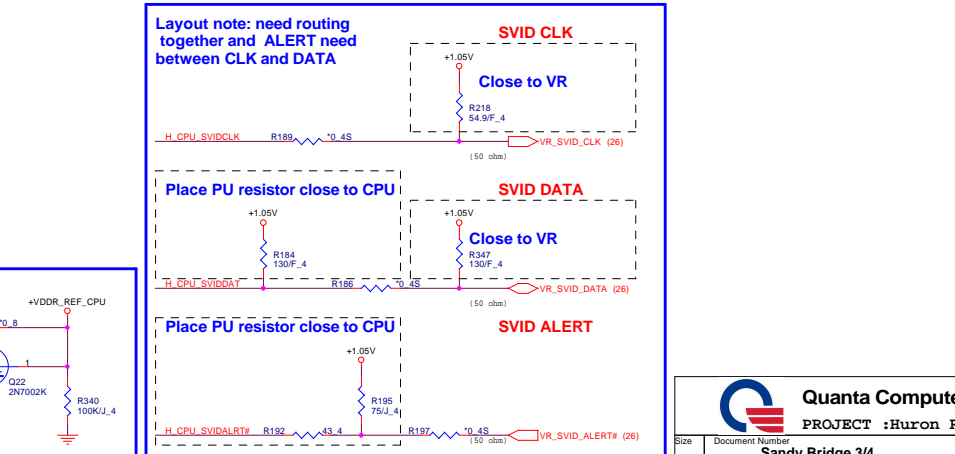
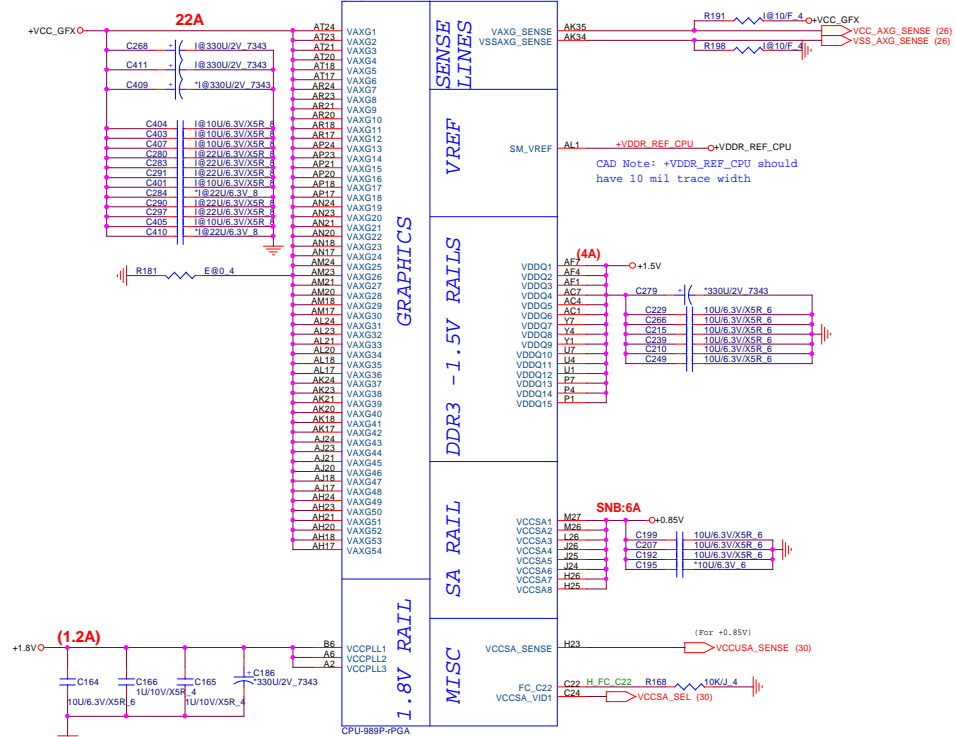
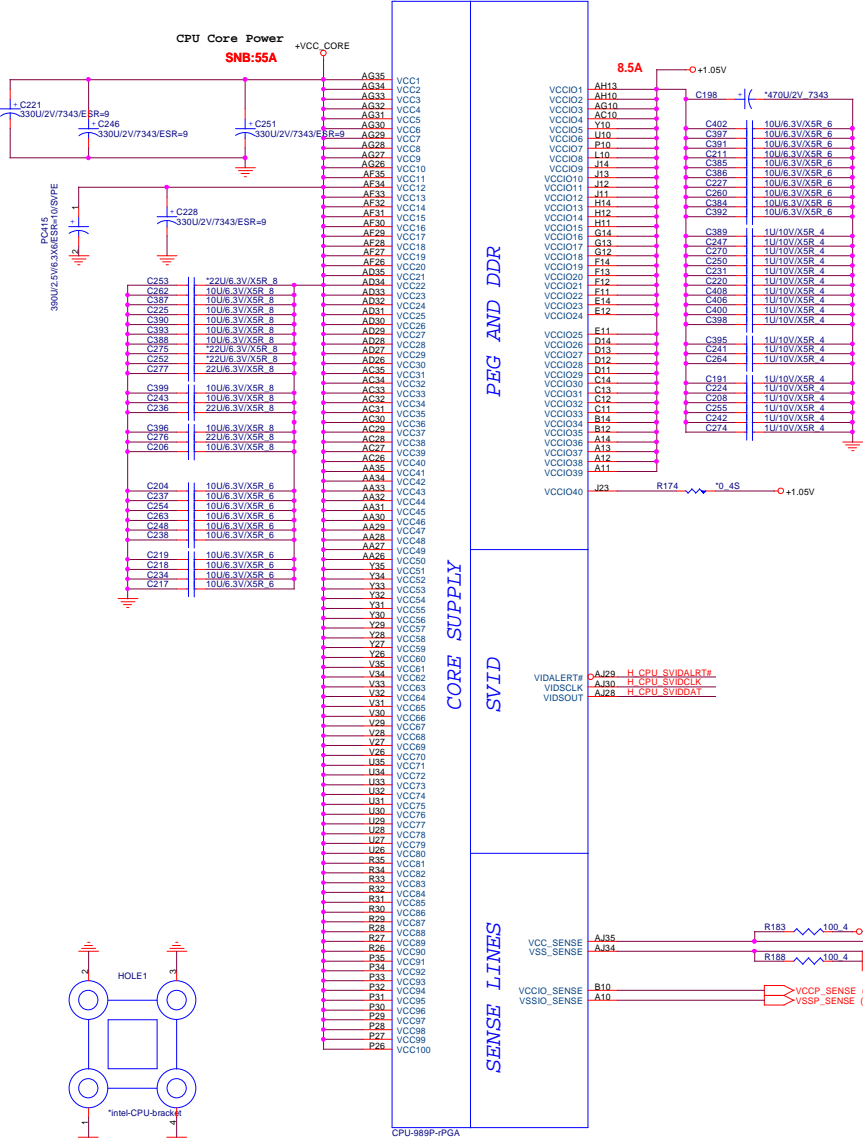
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|------|------------------|-----|
| Size | Document Number | Rev |
| | Sandy Bridge 2/4 | 1A |

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.

POWER

POWER



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| | | |
|------|-----------------|-----|
| Size | Document Number | Rev |
| | | 1A |

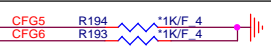
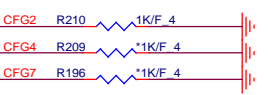
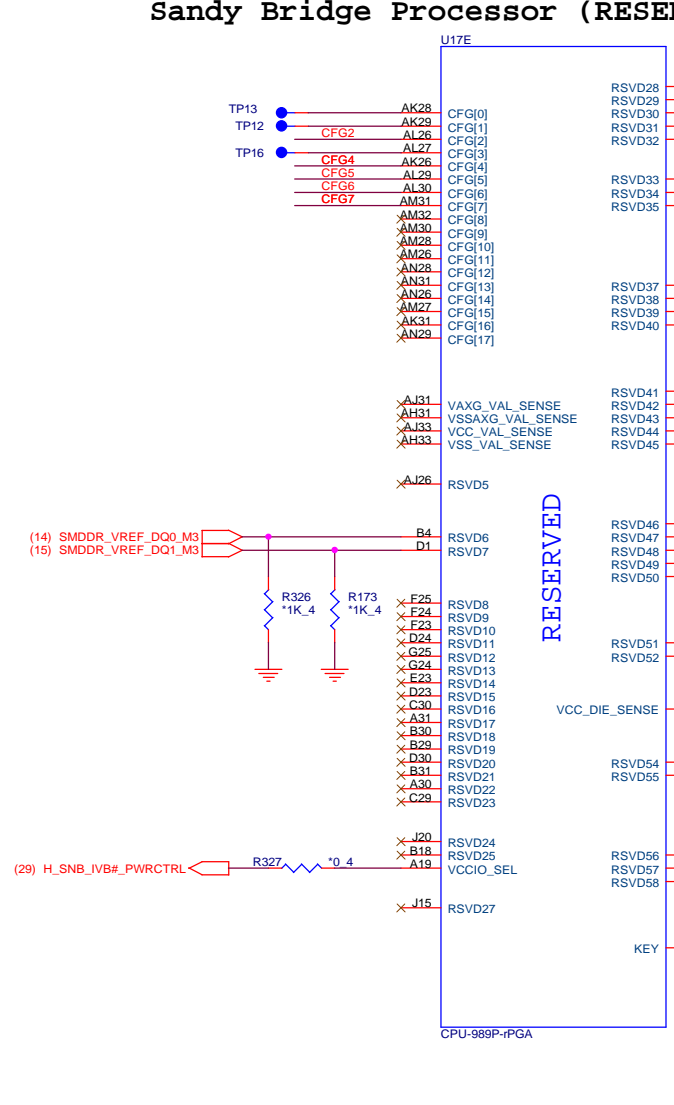
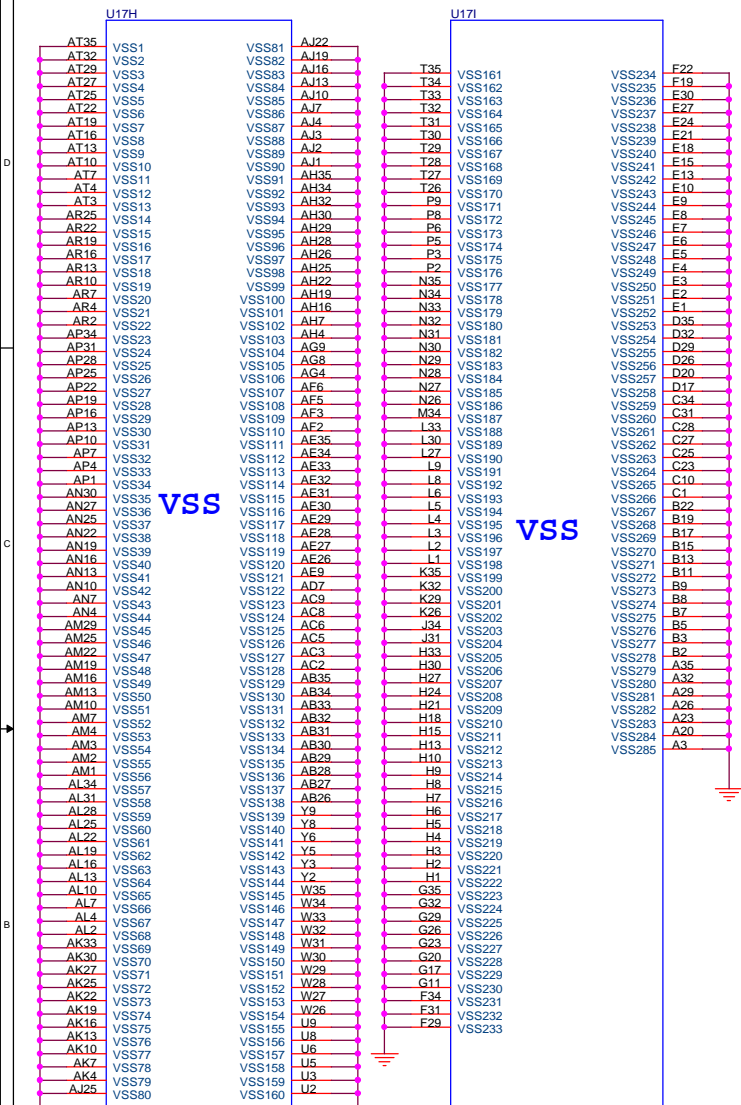
Sandy Bridge 3/4

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

Date: Monday, February 21, 2011 Sheet 6 of 39

Sandy Bridge Processor (GND)

Sandy Bridge Processor (RESERVED, CFG)



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

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

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 xRESETB de assertion | PEG wait for BIOS training |

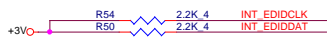
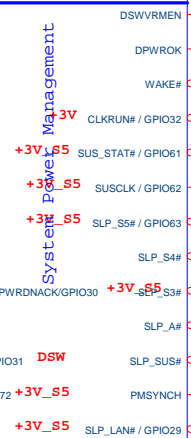
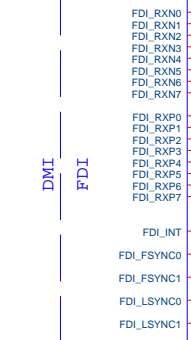
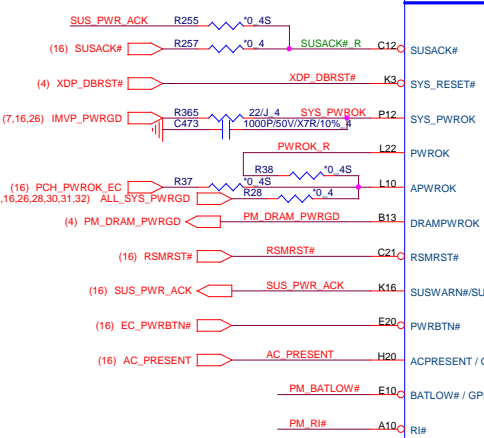
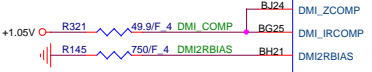
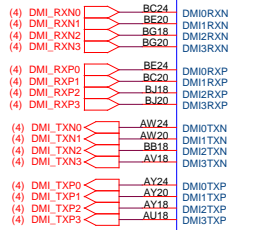
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| Size | Document Number | Date | Revision |
| | Sandy Bridge 4/4 | Monday, February 21, 2011 | 1A |

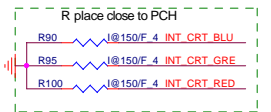
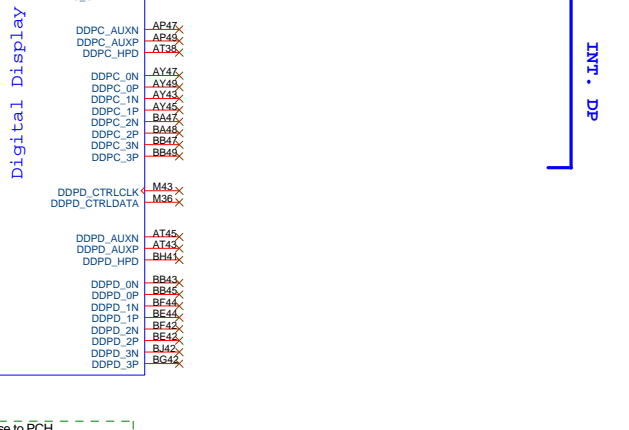
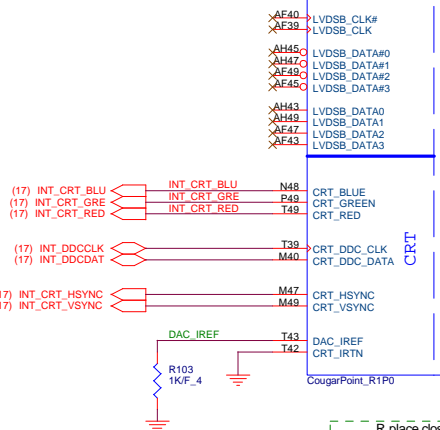
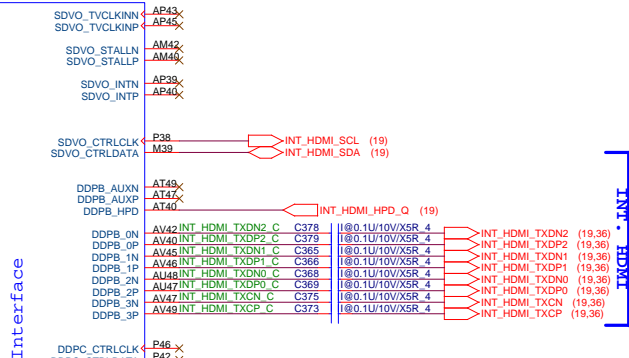
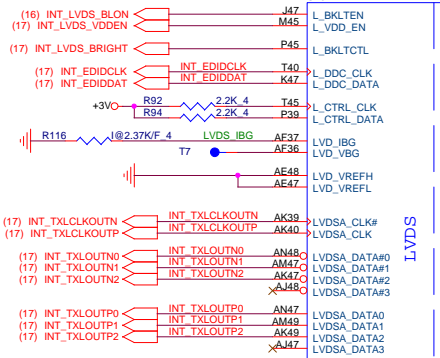
Cougar Point (DMI, FDI, PM)

U16C

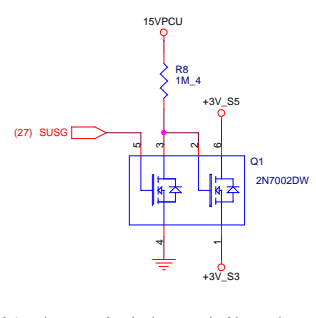
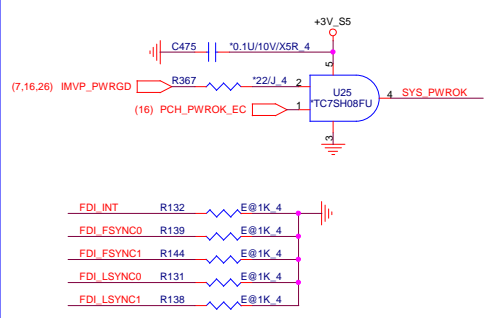
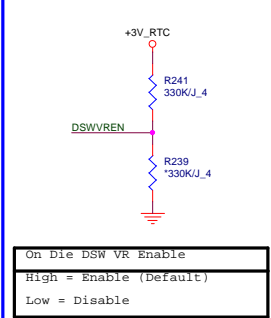
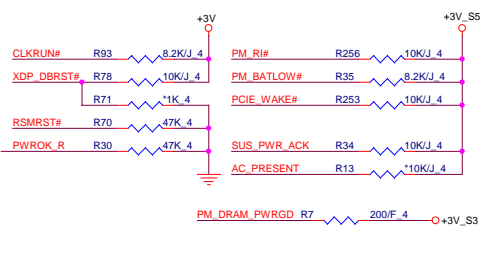


Cougar Point (LVDS, DDI)

U16D



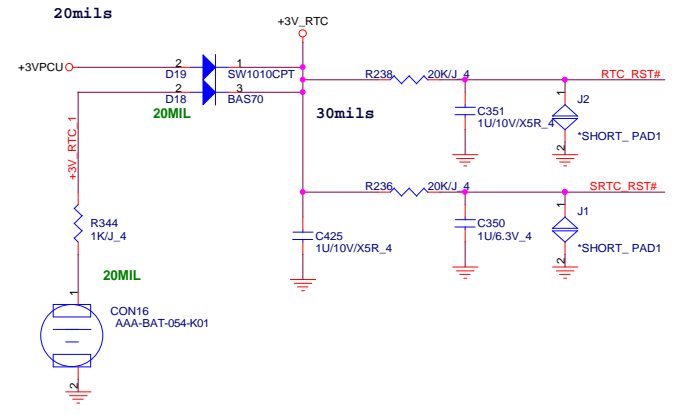
PCH Pull-high/low(CLG)



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

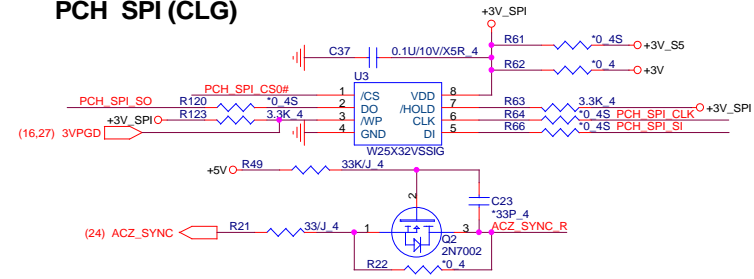
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

RTC Circuitry(RTC)



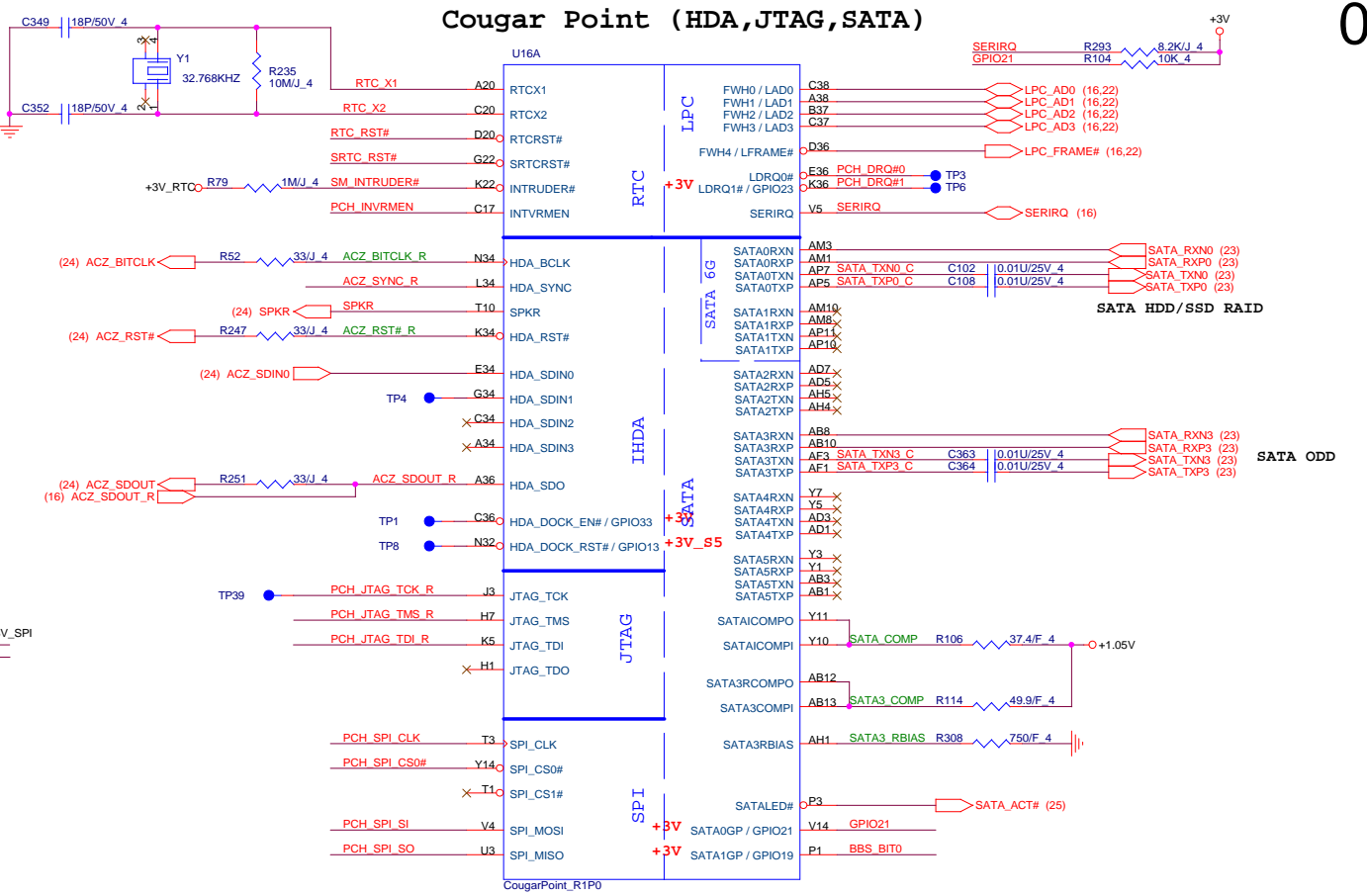
MX25L3205DM2I-12G: AKE39FP0Z00
W25X32VSSIG: AKE39ZPON00

PCH SPI (CLG)



| | | | |
|-----------------|------|------|--------------|
| (16) F_CS0#_PCH | R121 | 0.4S | PCH_SPI_CS0# |
| (16) F_SDI_PCH | R67 | 0.4S | PCH_SPI_SO |
| (16) SCK_PCH | R65 | 0.4S | PCH_SPI_CLK |
| (16) SD0_PCH | R122 | 0.4S | PCH_SPI_SI |

Cougar Point (HDA, JTAG, SATA)

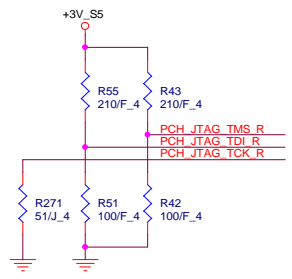


PCH Strap Table

For NPCE795L Using

| 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 PCL_GNT3# (10) | | | | | | | | | |
| INTVRMEN | Integrated 1.05V VRM enable | ALWAYS | Should be always pull-up | +3V_RTC_ R242 330K/J_4 PCH_INTRMEN | | | | | | | | | |
| GNT1# / GPIO51 | Boot BIOS Selection 1 [bit-1] | PWROK | <table border="1"> <tr> <th>GNT1#</th> <th>GNT0#</th> <th>Boot Location</th> </tr> <tr> <td>1</td> <td>1</td> <td>SPI *</td> </tr> <tr> <td>0</td> <td>0</td> <td>LPC</td> </tr> </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] |
| GNT1# | GNT0# | Boot Location | | | | | | | | | | | |
| 1 | 1 | SPI * | | | | | | | | | | | |
| 0 | 0 | LPC | | | | | | | | | | | |
| 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_SDOOUT_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_ODVWR_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 | | | | | | | | | |

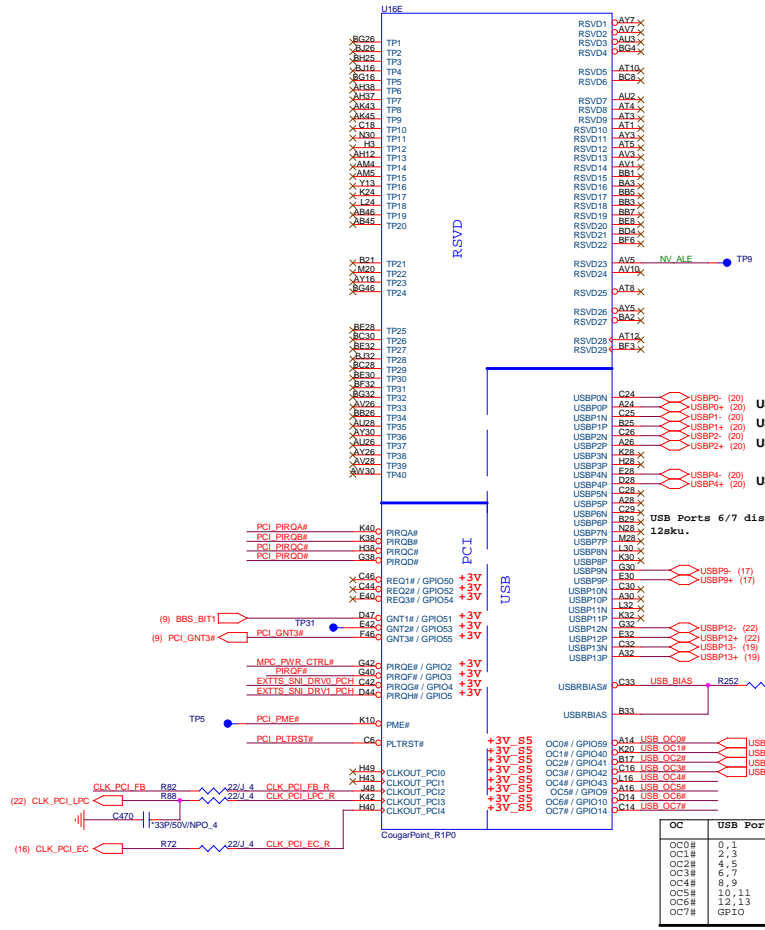
PCH JTAG Debug (CLG)



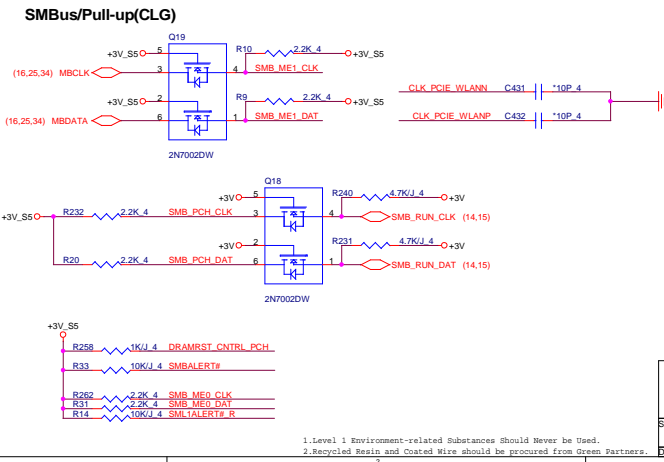
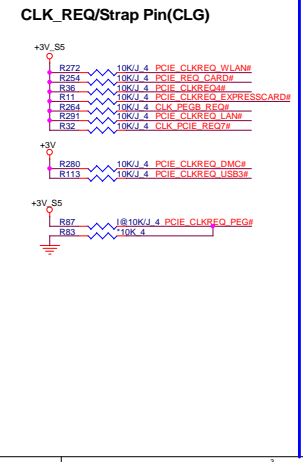
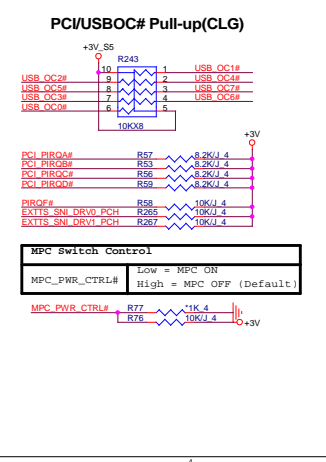
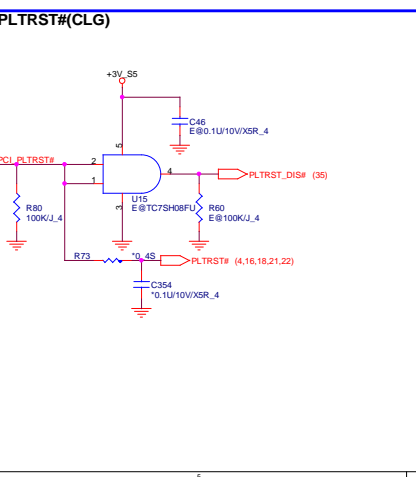
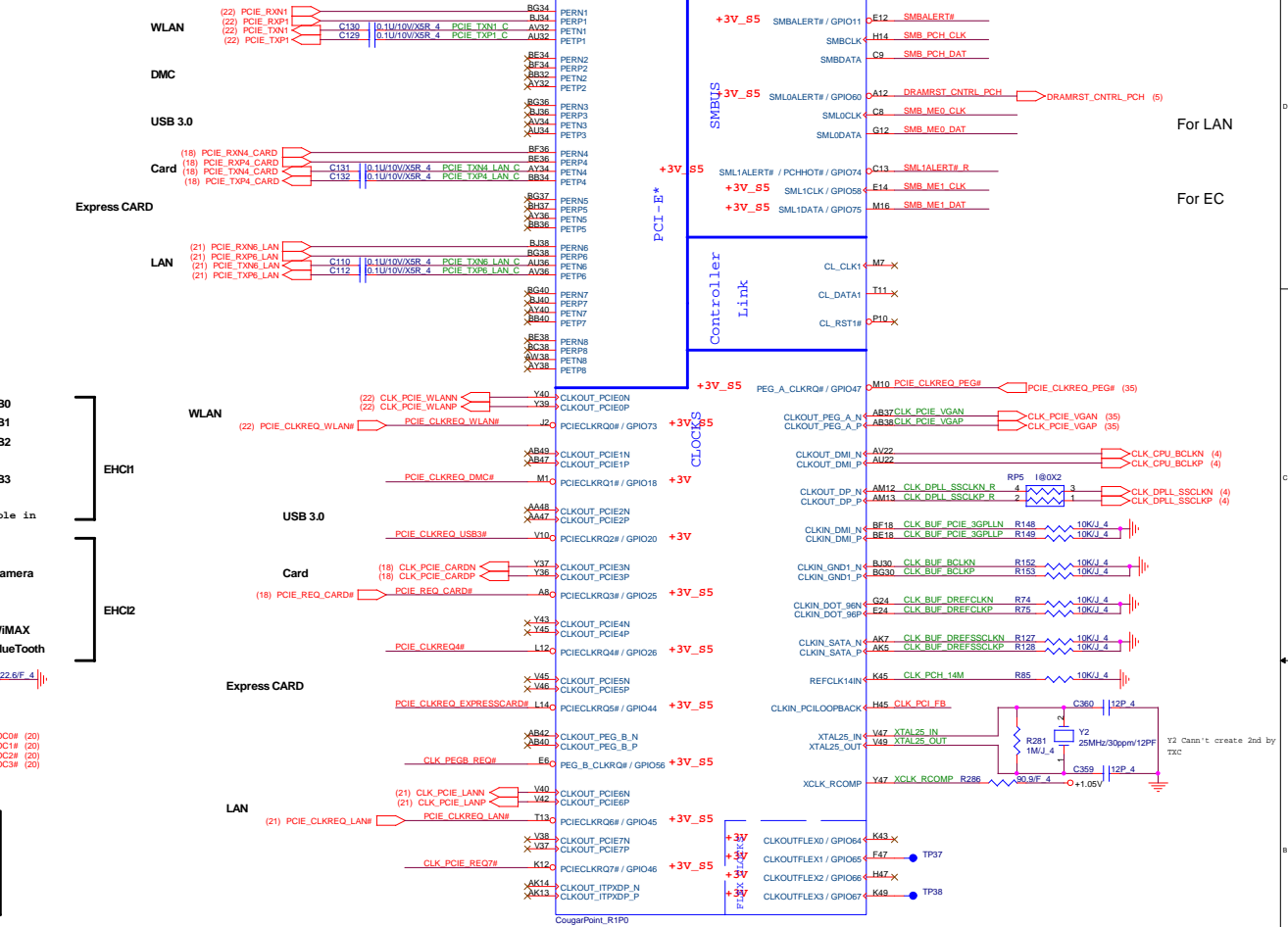
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1.LEVEL 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Cougar Point-M (PCI,USB,NVRAM)



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

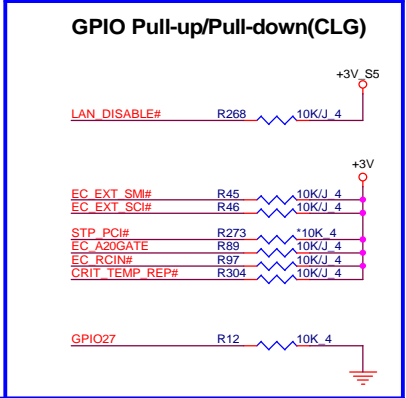
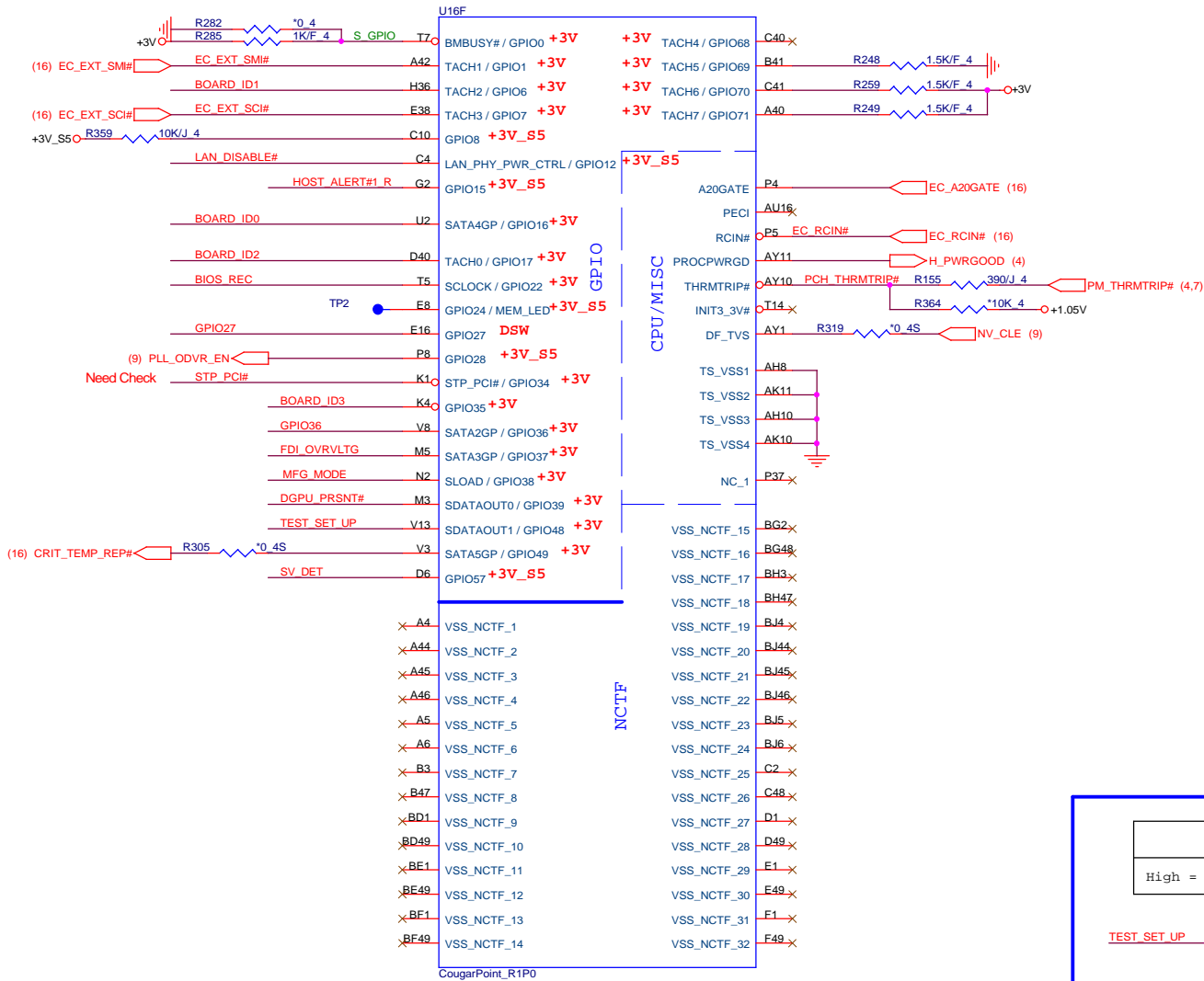


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Size: _____ Document Number: _____ Rev: 1A
Date: Tuesday, April 05, 2011 Sheet: 10 of 39

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)

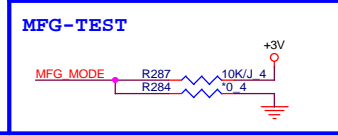
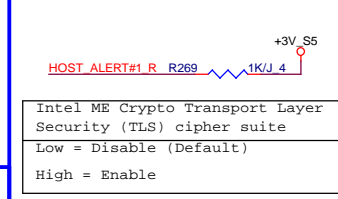
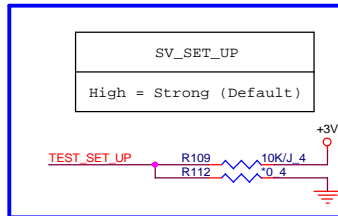
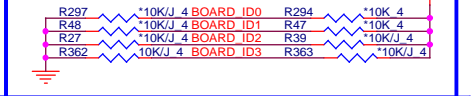
| | N12M | N12P |
|------|----------|----------|
| R294 | Stuff | No Stuff |
| R297 | No Stuff | Stuff |

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)

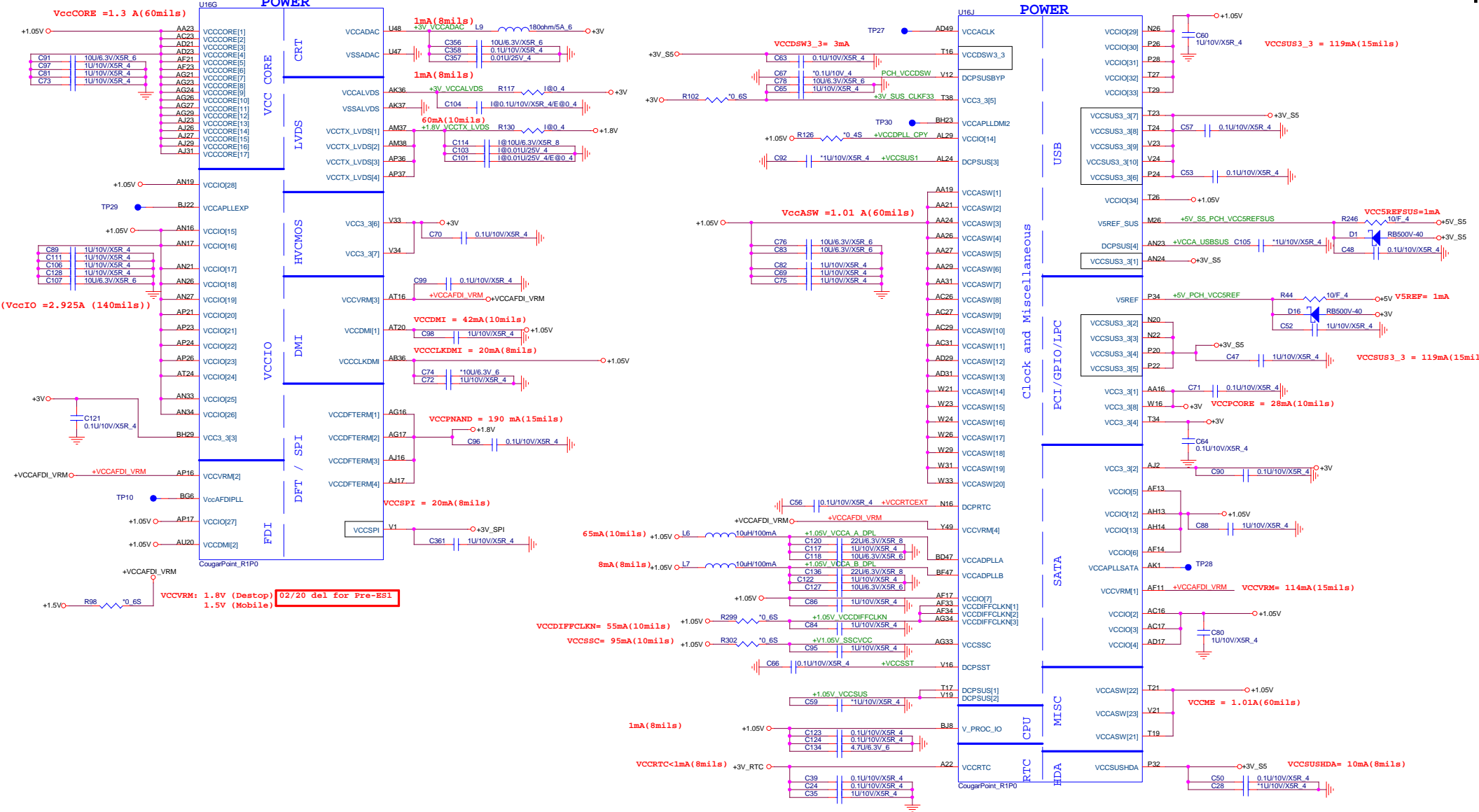
BIOS RECOVERY

High = Disable (Default)
Low = Enable


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PCH5 (CLG) COUGAR POINT (POWER)

Cougar Point-M (POWER)



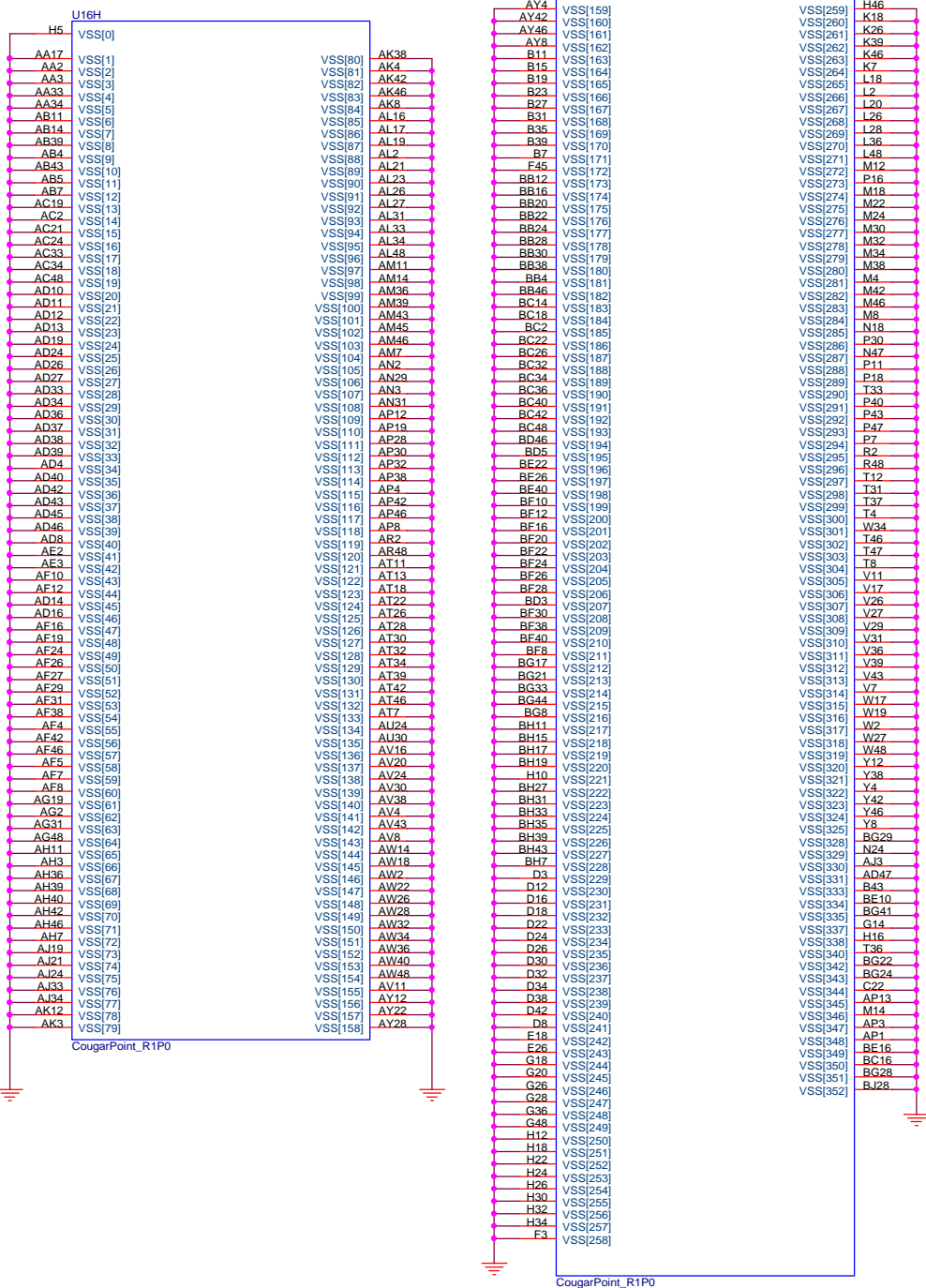
VCCVRM: 1.8V (Desktop) 02/20 del for Pre-ES1
1.5V (Mobile)




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| | | |
|-------------------------|-------------------------|----------------|
| Size | Document Number | Rev 1A |
| Cougar Point 5/6 | | |
| Date: | Tuesday, April 05, 2011 | Sheet 12 of 39 |

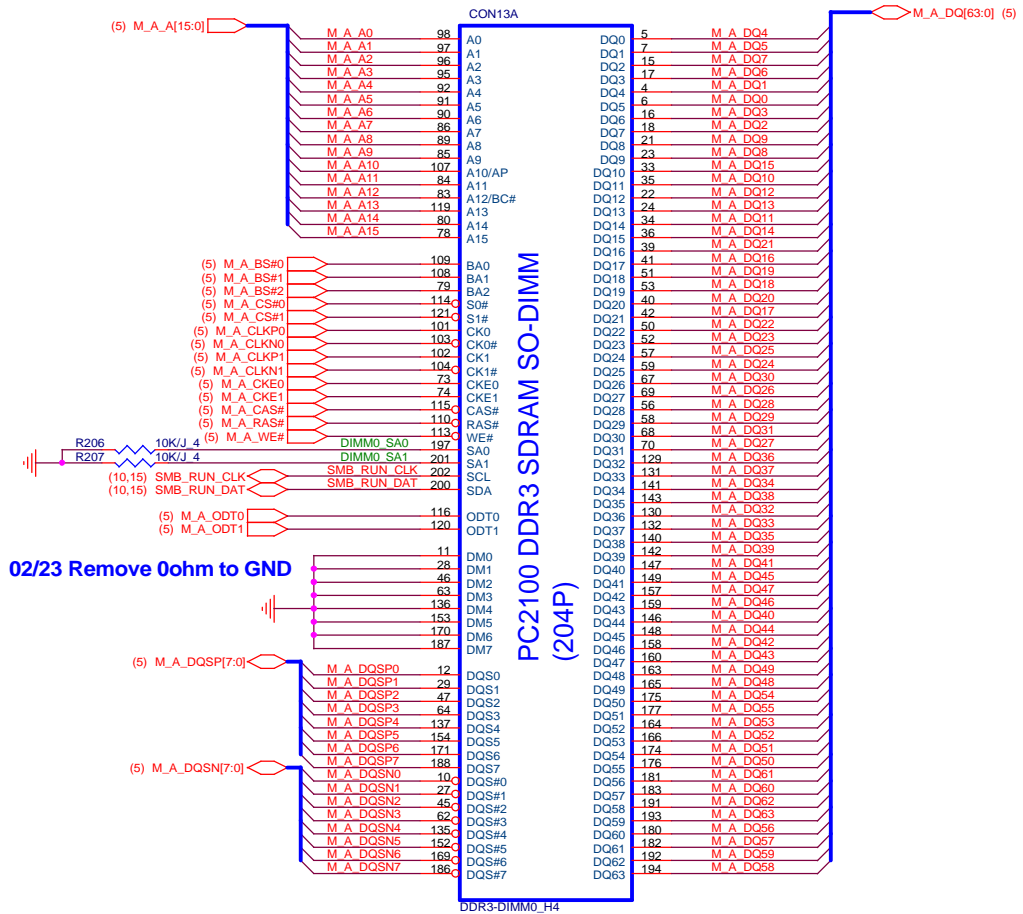
1.Level 1 Environment-related Substances should Never be Used.
 2.Recycled Resin and Coated Wire should be procured from Green Partners.



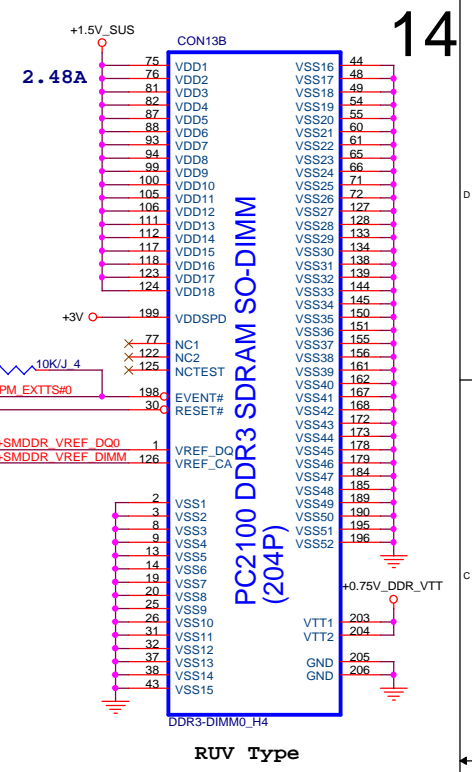
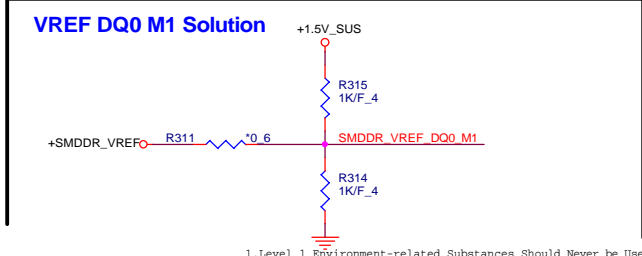
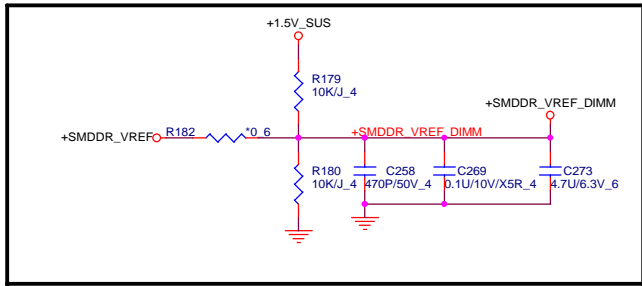
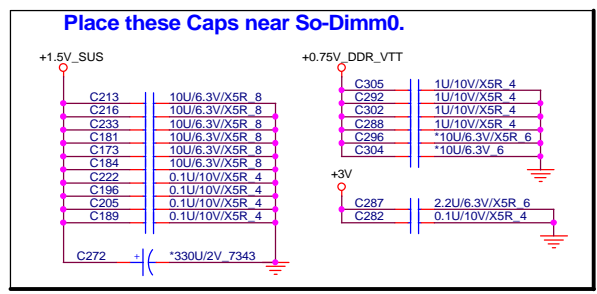

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Cougar Point 6/6

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|---------------------------------|-----------------|-------|----------|
| Size | Document Number | Rev | 1A |
| 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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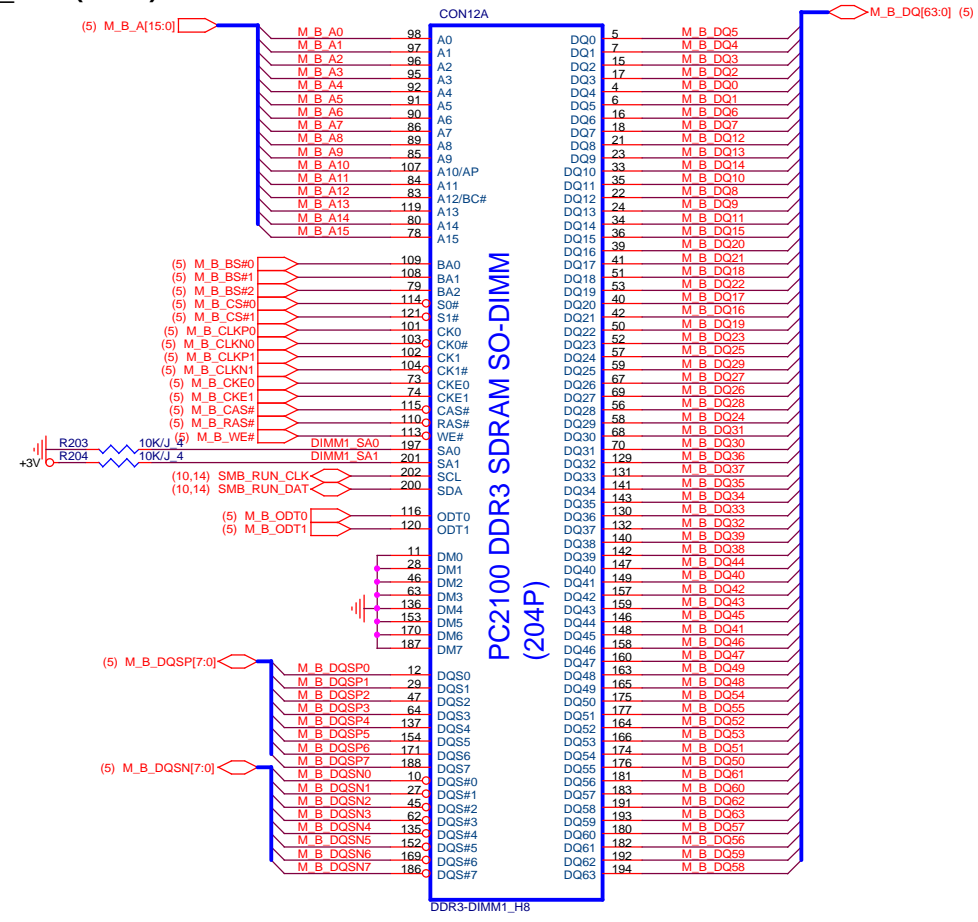
PROJECT :Huron River

Size Document Number **DDRIII SO-DIMM-0** Rev 1A

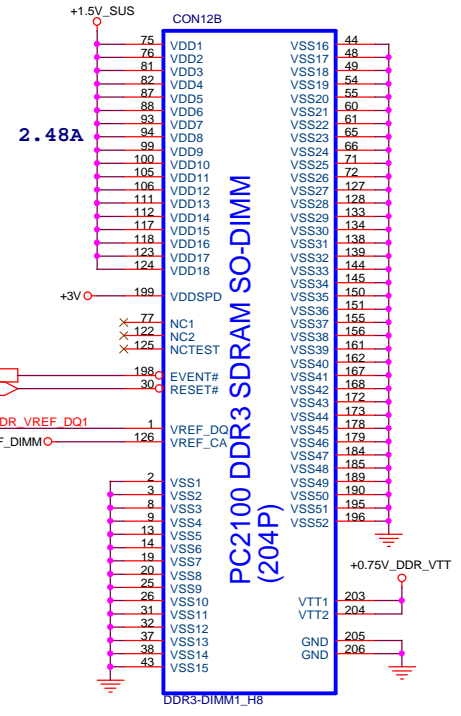
Date: Tuesday, April 05, 2011 Sheet 14 of 39

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

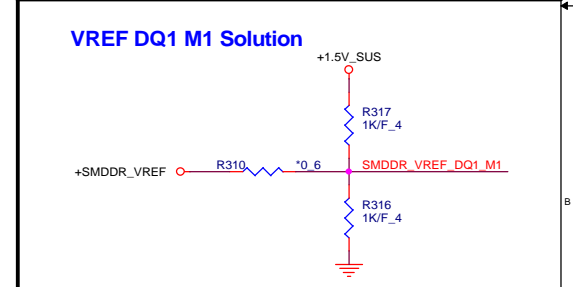
DDR_RVS (DDR)



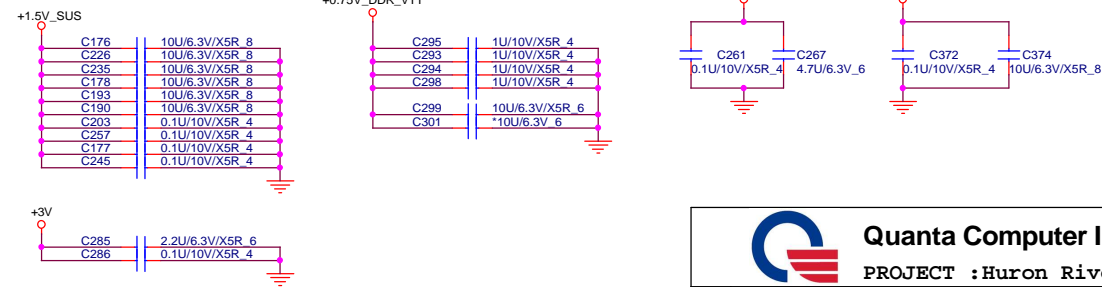
RUV Type



RUV Type



Place these Caps near So-Dimm1.

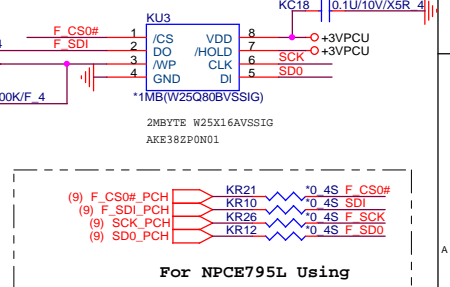
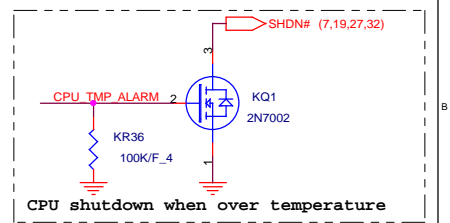
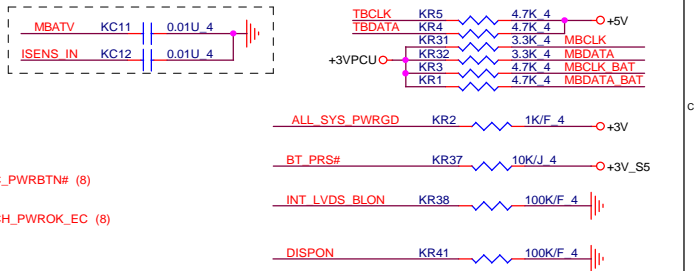
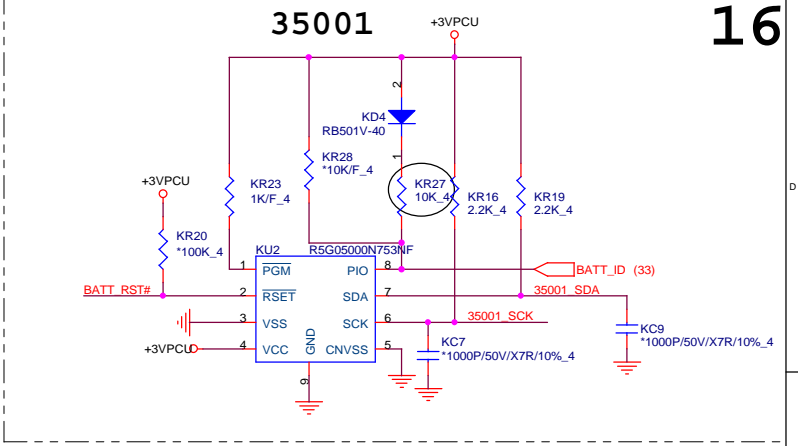
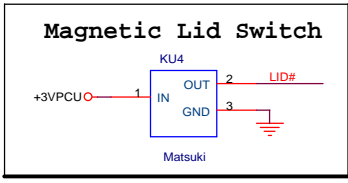
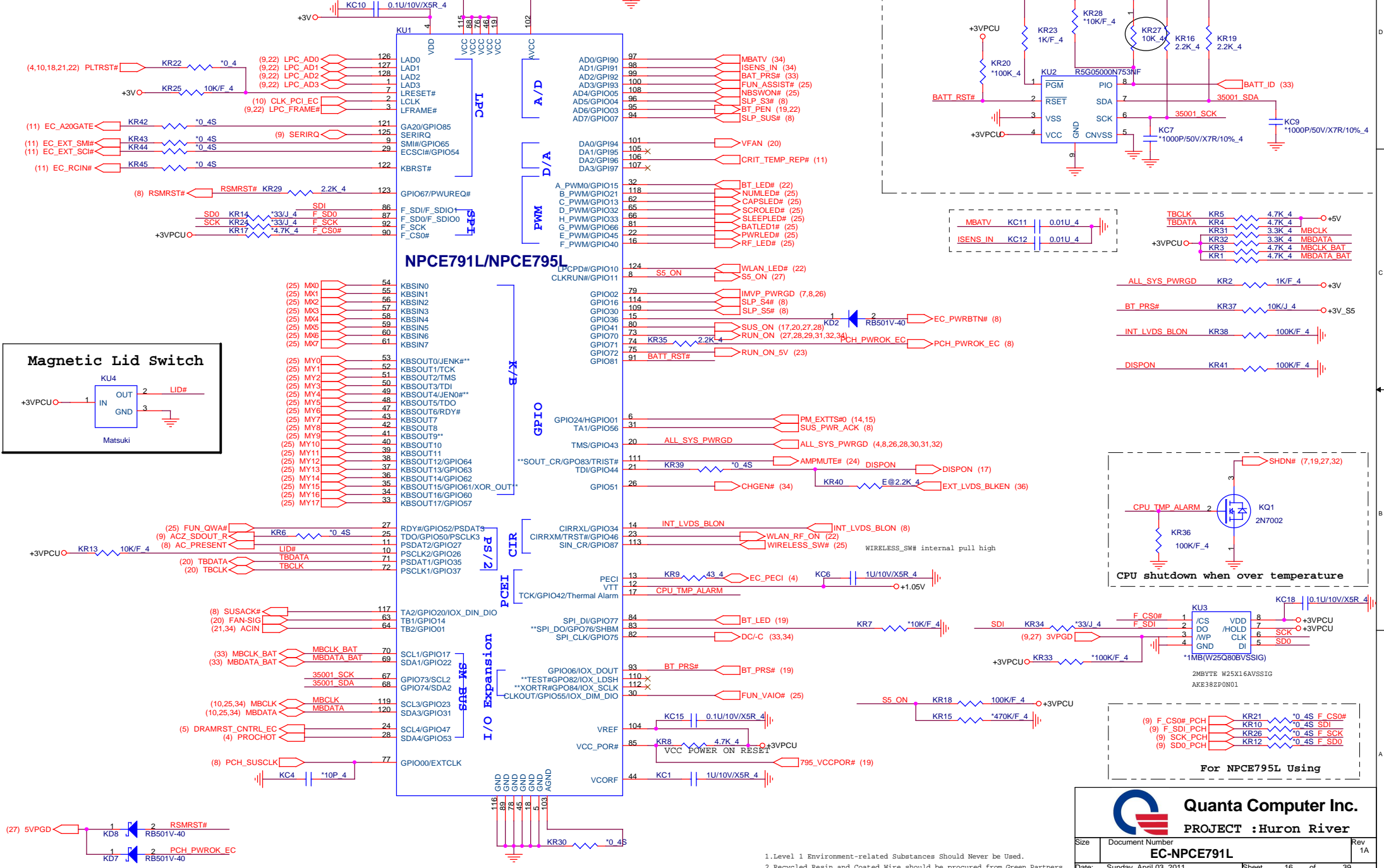


Quanta Computer Inc.
PROJECT :Huron River

| | | |
|------|-------------------------|-----|
| Size | Document Number | Rev |
| | DDRIII SO-DIMM-1 | 1A |

** Strapping Pin, Can not pull low.
Note the input leakage current to the strap pins must be less than 10uA.

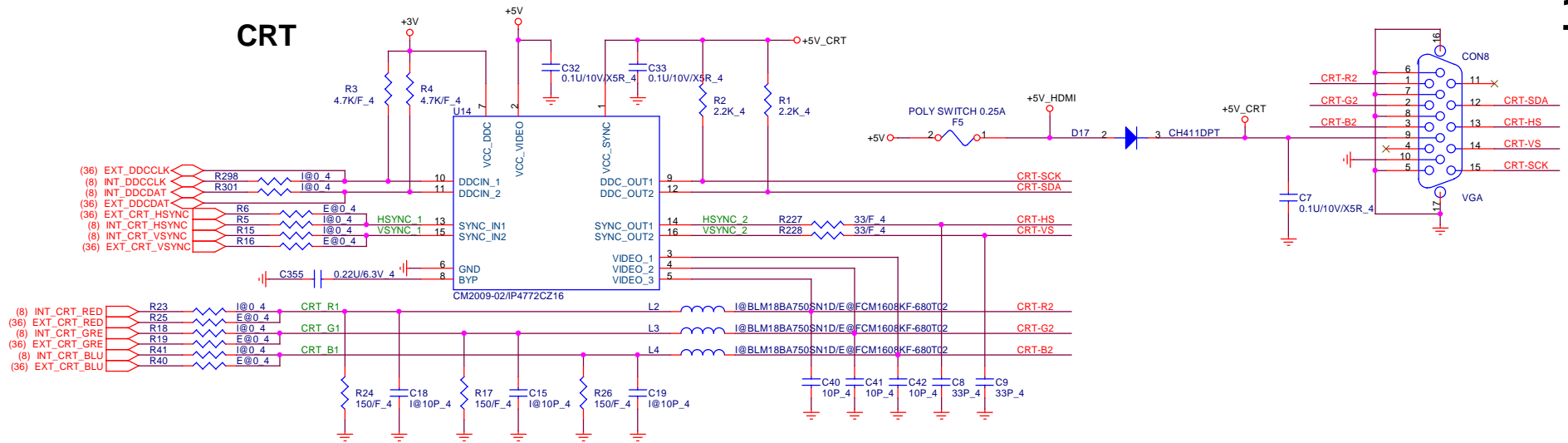
Since ECSCI is OD, no need for a back-drive protection diode on this signal. But note there is internal PU in chipset at default



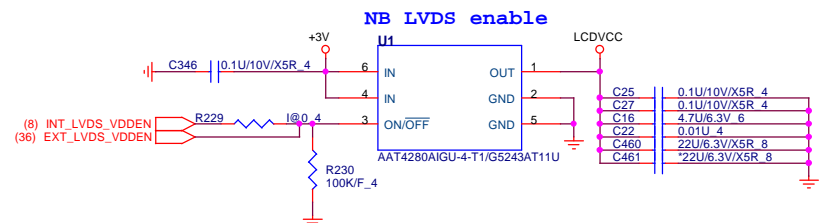
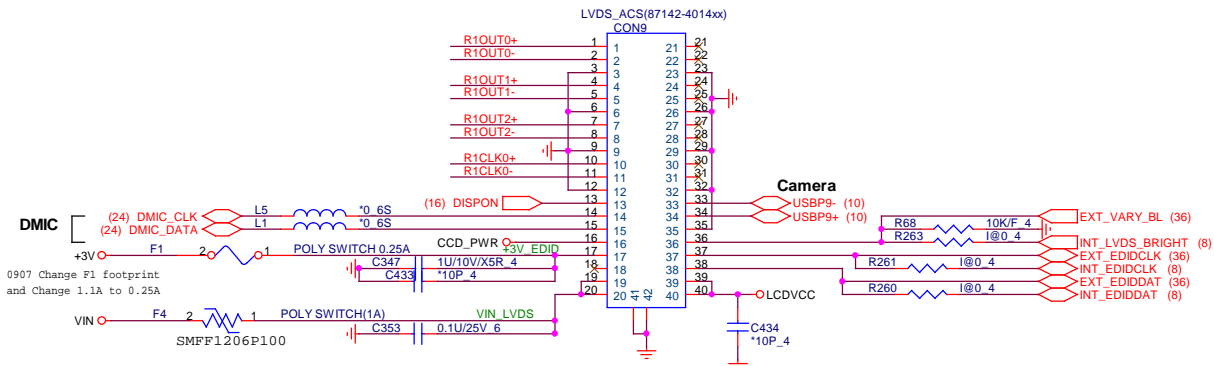
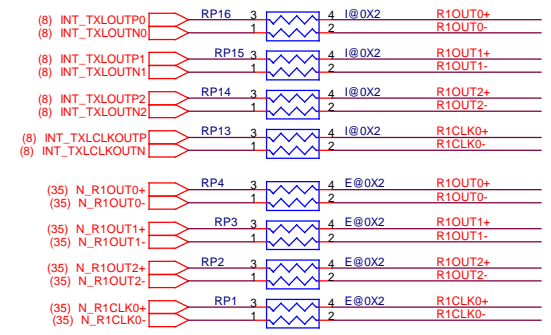
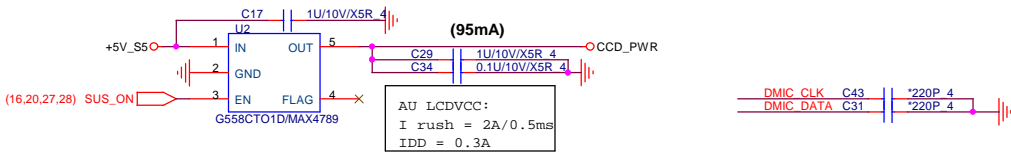
Quanta Computer Inc.
 PROJECT : Huron River
 Size: [] Document Number: **EC-NPCE791L** Rev: 1A
 Date: Sunday, April 03, 2011 Sheet: 16 of 39

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

CRT



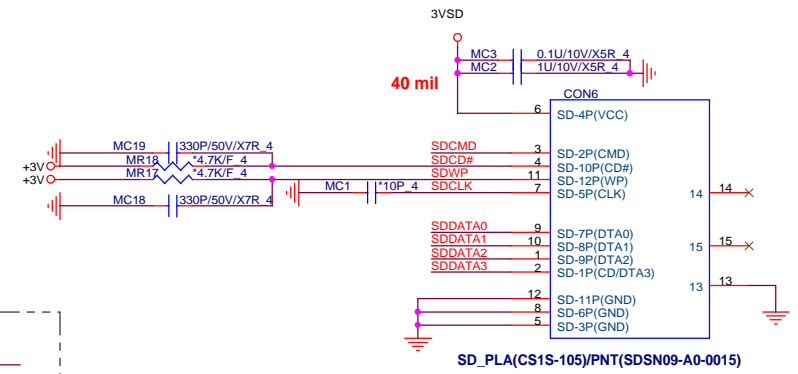
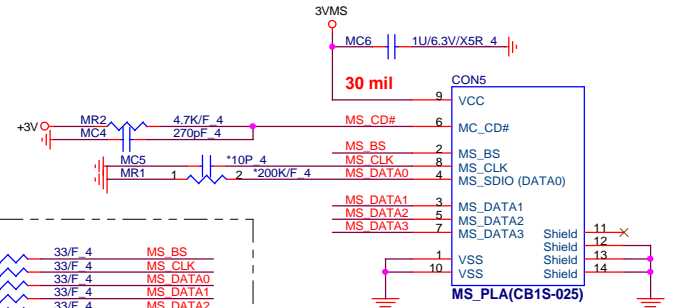
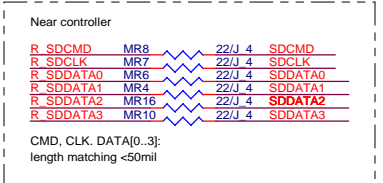
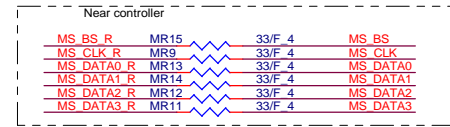
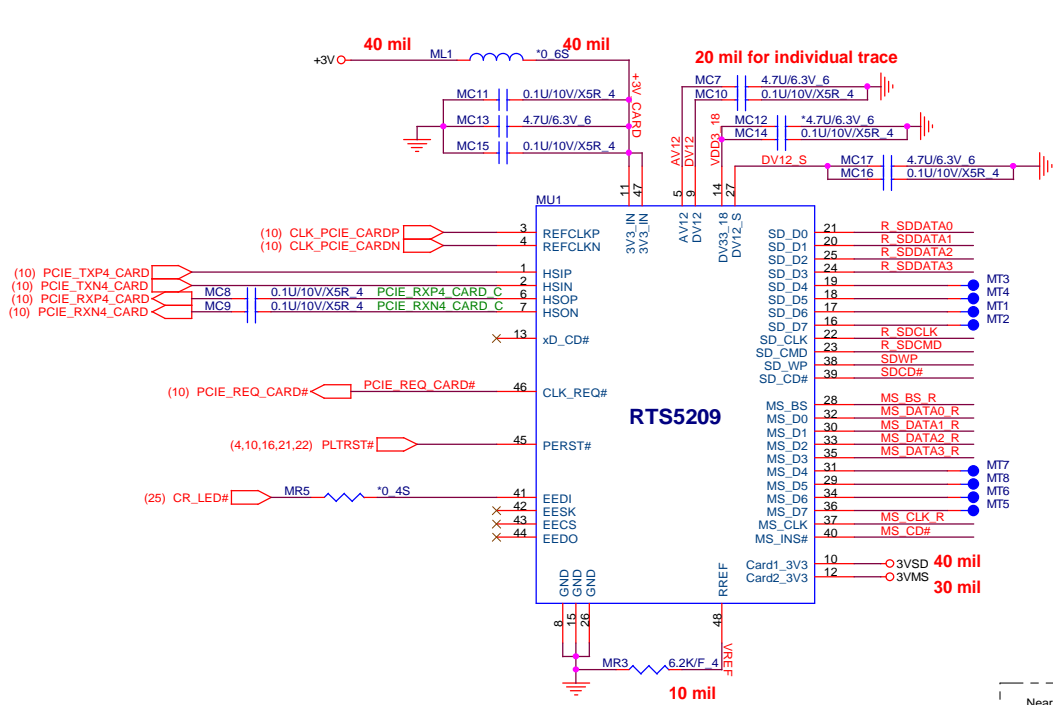
USB Camera Power



0907 Change F1 footprint and Change 1.1A to 0.25A

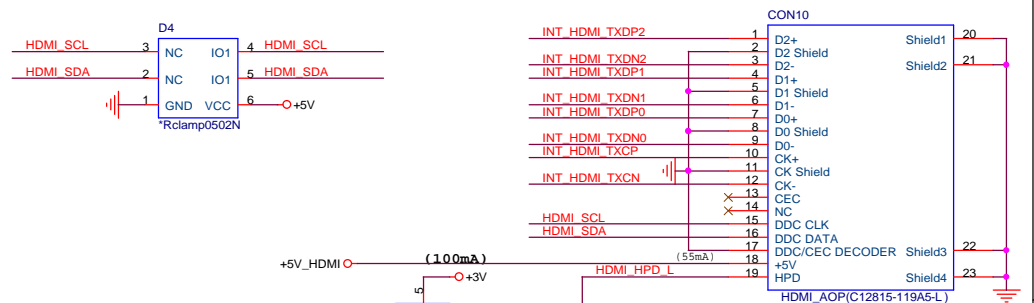
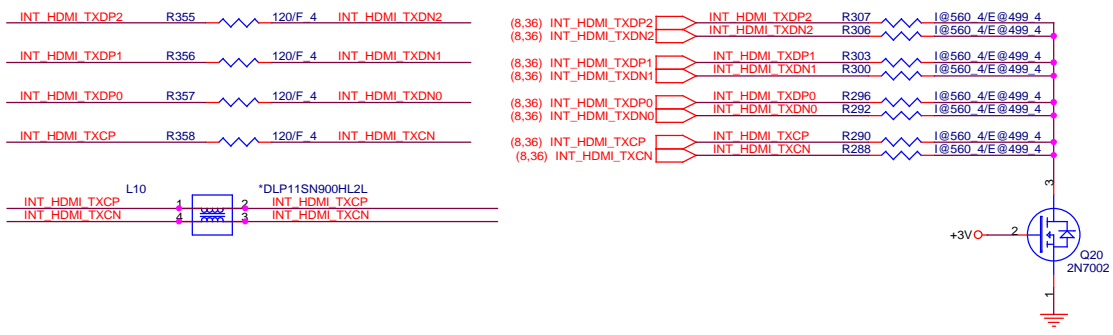
Quanta Computer Inc.
PROJECT :Huron River

| | | |
|------|-----------------|-----|
| Size | Document Number | Rev |
| | CRT/LVDS | 1A |



Quanta Computer Inc.
 PROJECT :Huron River
 CARD

| | | |
|---------------------------------|-----------------|----------------|
| Size | Document Number | Rev 1A |
| Date: Monday, February 21, 2011 | | Sheet 18 of 39 |

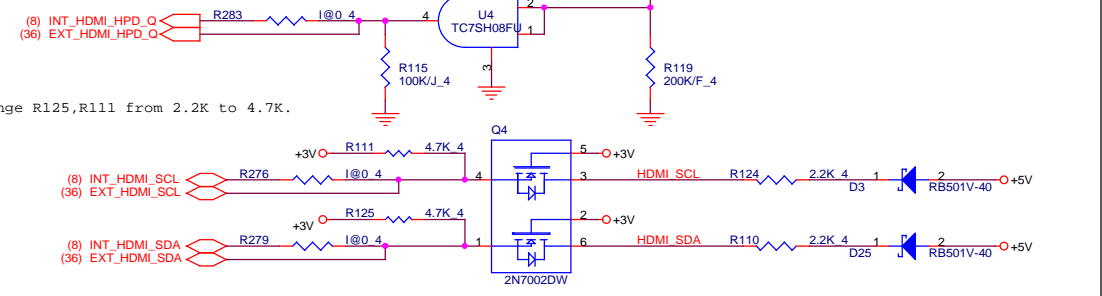


DIS SKU

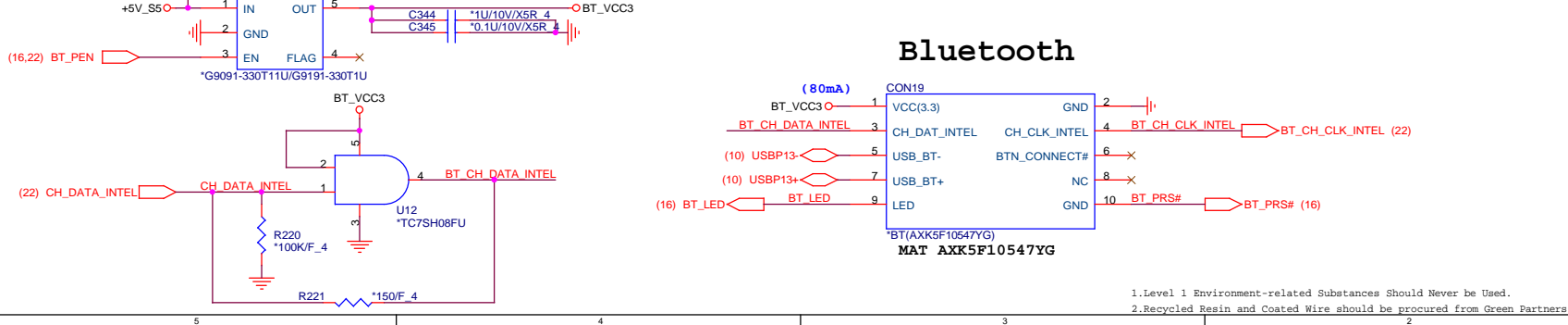
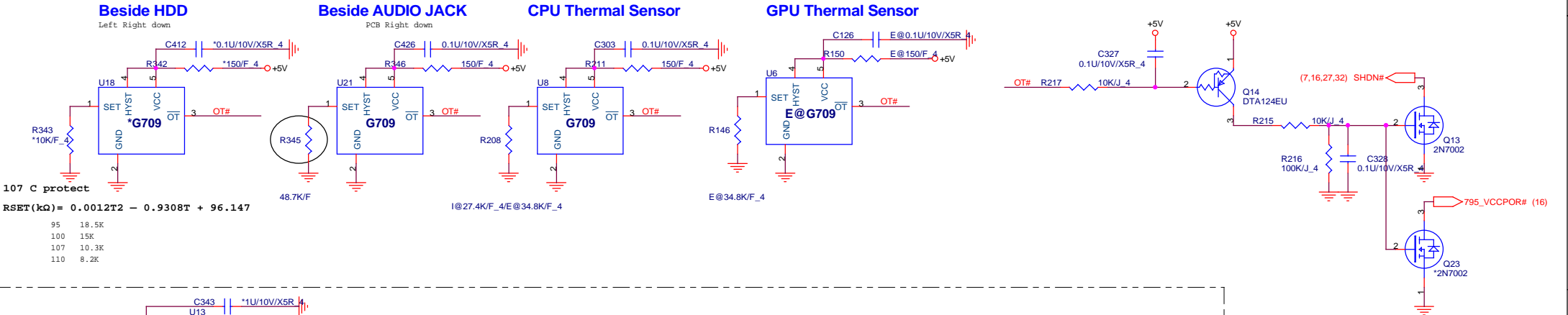
| Location of IC | Temp | R-Set | Parts in BOM | Max | Min |
|------------------------|------|-------------|--------------|------|------|
| Near CPU sensor temp | 73 | R208=34.59K | 34.8K | 73.2 | 72.2 |
| Near GFX sensor temp | 73 | R146=34.59K | 34.8K | 73.2 | 72.2 |
| Near AUDIO sensor temp | 55 |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



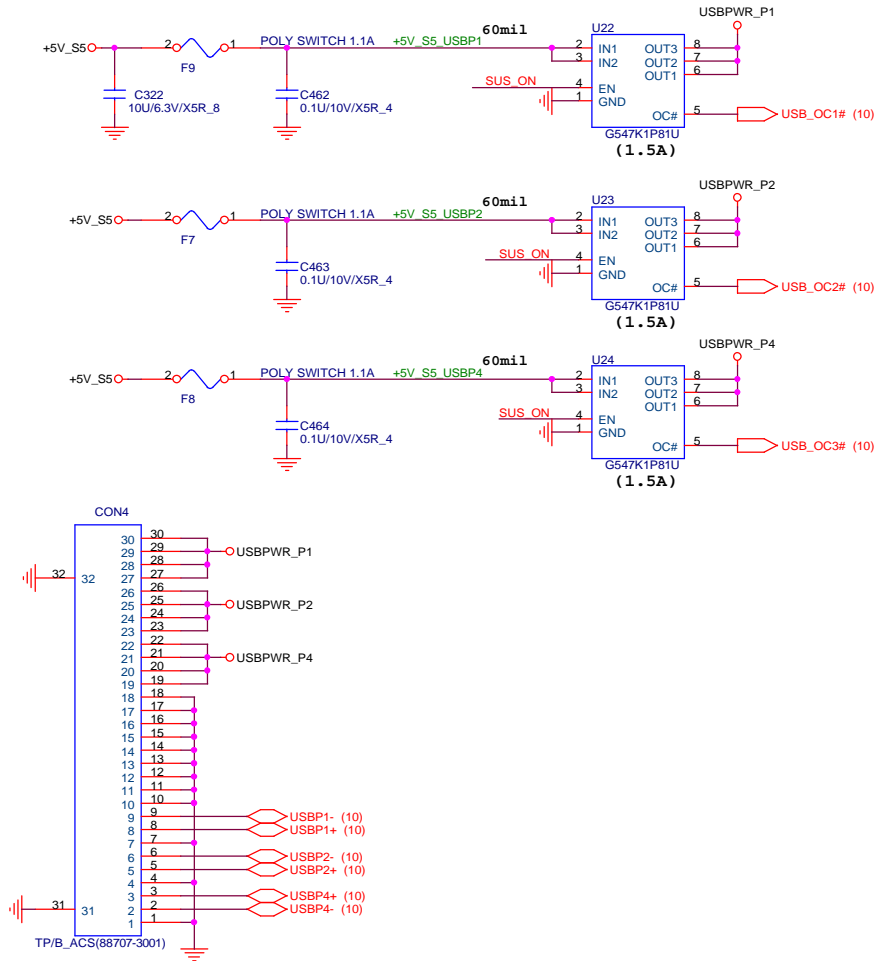
Quanta Computer Inc.
PROJECT :Huron River

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

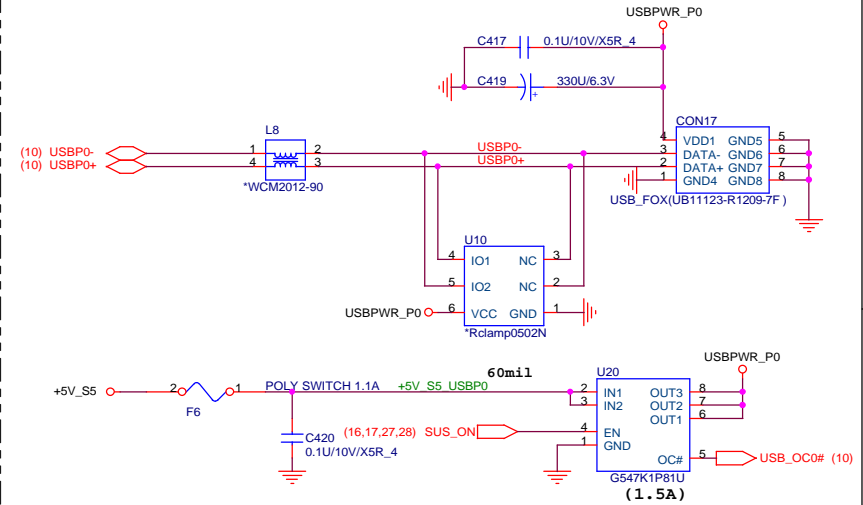
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

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

MB to USB board

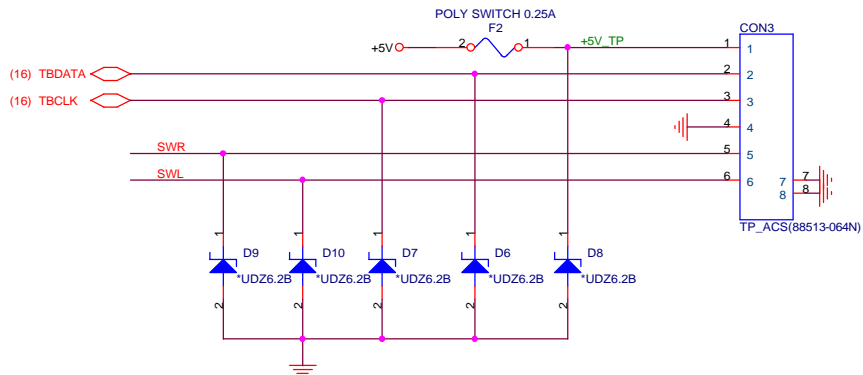


USB PORT 0

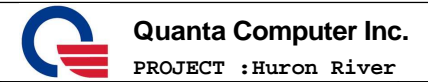
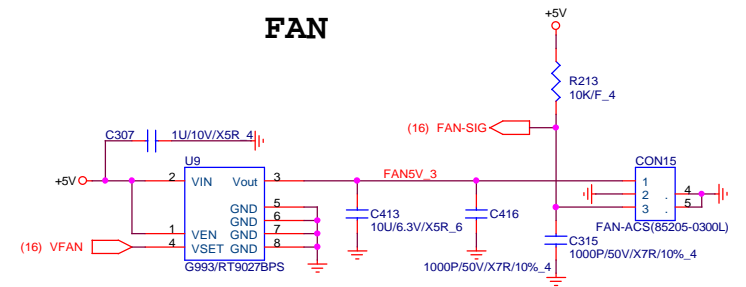


T/P Board to T/P

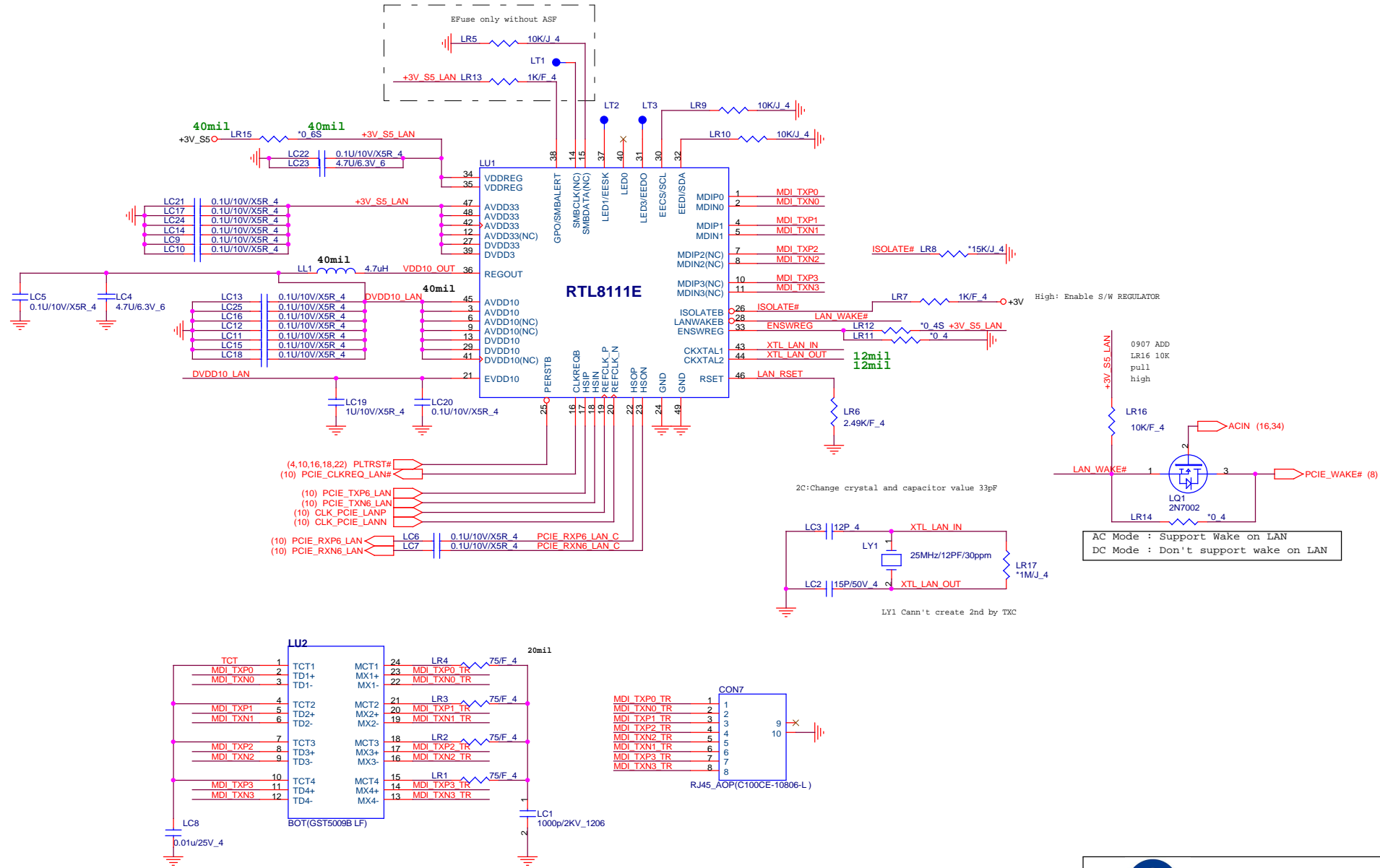
9/13 change F2 P/N from 0.12A to 0.25A



FAN



| | | |
|------------|-----------------|--------|
| Size | Document Number | Rev 1A |
| USB/TP/FAN | | |



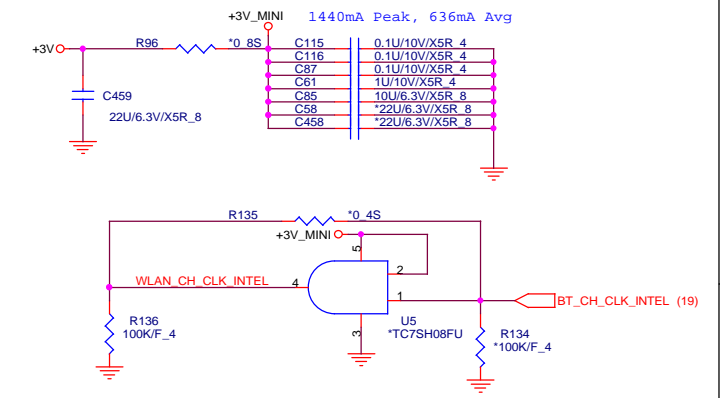
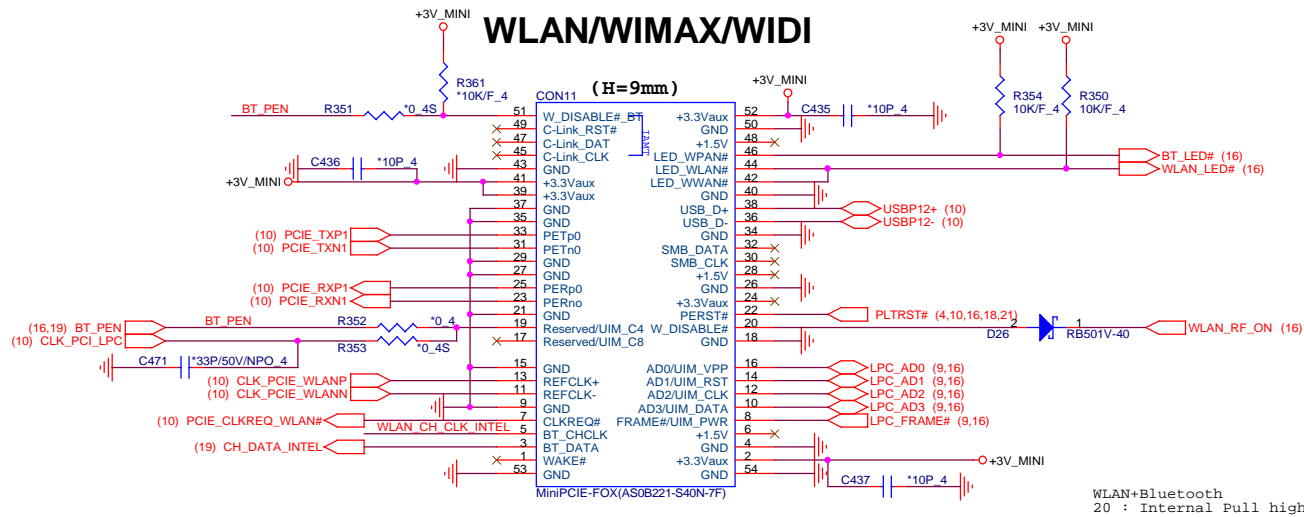
Quanta Computer Inc.
PROJECT : Huron River

| | | |
|------|---------------------|-----|
| Size | Document Number | Rev |
| | LAN RTL8111E | 1A |

Date: Tuesday, April 05, 2011 Sheet 21 of 39

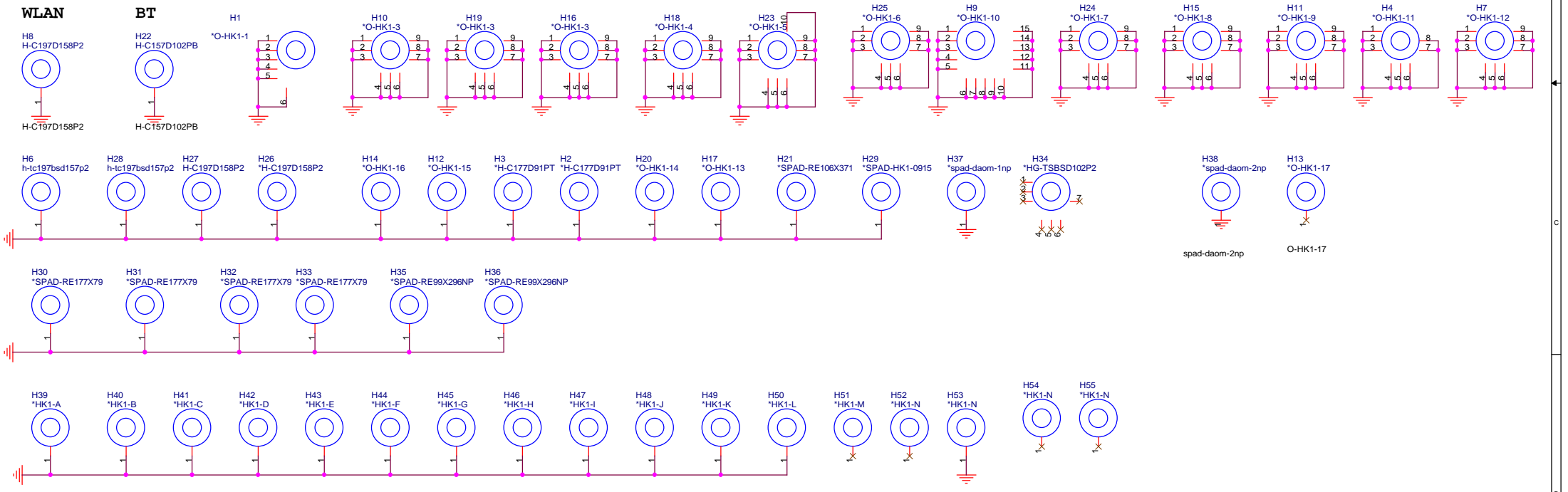
1. Level 1 Environment-related Substances Should Never be Used.
2. Recycled Resin and Coated Wire should be procured from Green Partners.

WLAN/WIMAX/WIDI



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

HOLE



Quanta Computer Inc.
PROJECT : Huron River

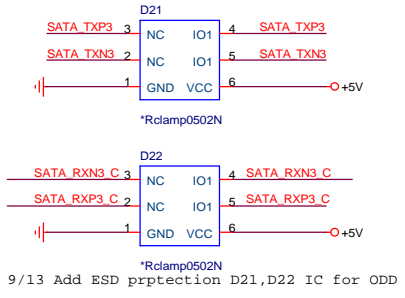
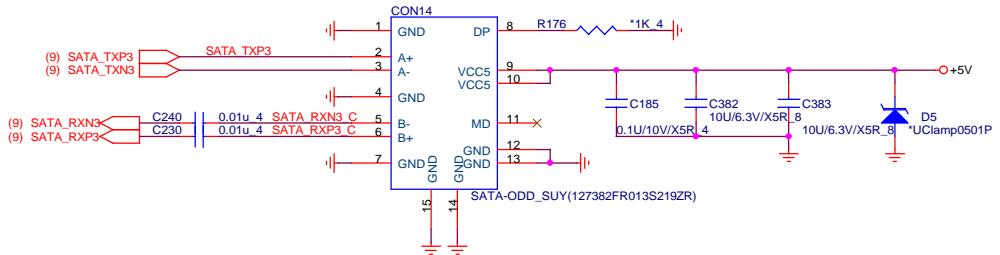
| | | |
|------|------------------------|-----|
| Size | Document Number | Rev |
| | WLAN/WIMAX/WIDI | 1A |

Date: Tuesday, April 05, 2011 Sheet 22 of 39

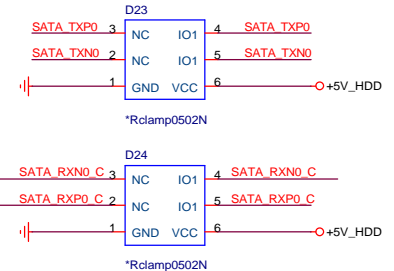
1. Level 1 Environment-related Substances Should Never be Used.
2. Recycled Resin and Coated Wire should be procured from Green Partners.

ODD CONNECTOR

8/18 Change HDD 2nd source connector patt number

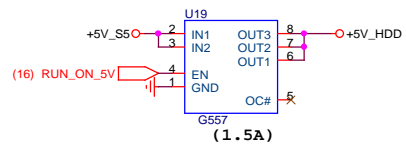
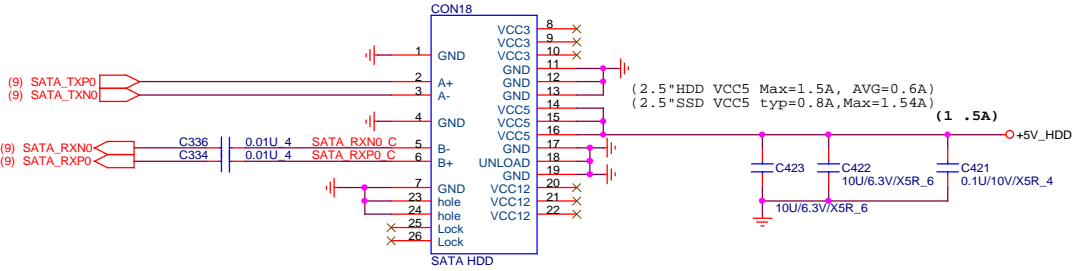


9/13 Add ESD prptection D21,D22 IC for ODD

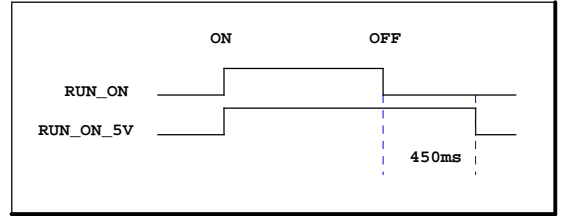


9/13 Add ESD prptection D23,D24 IC for HDD

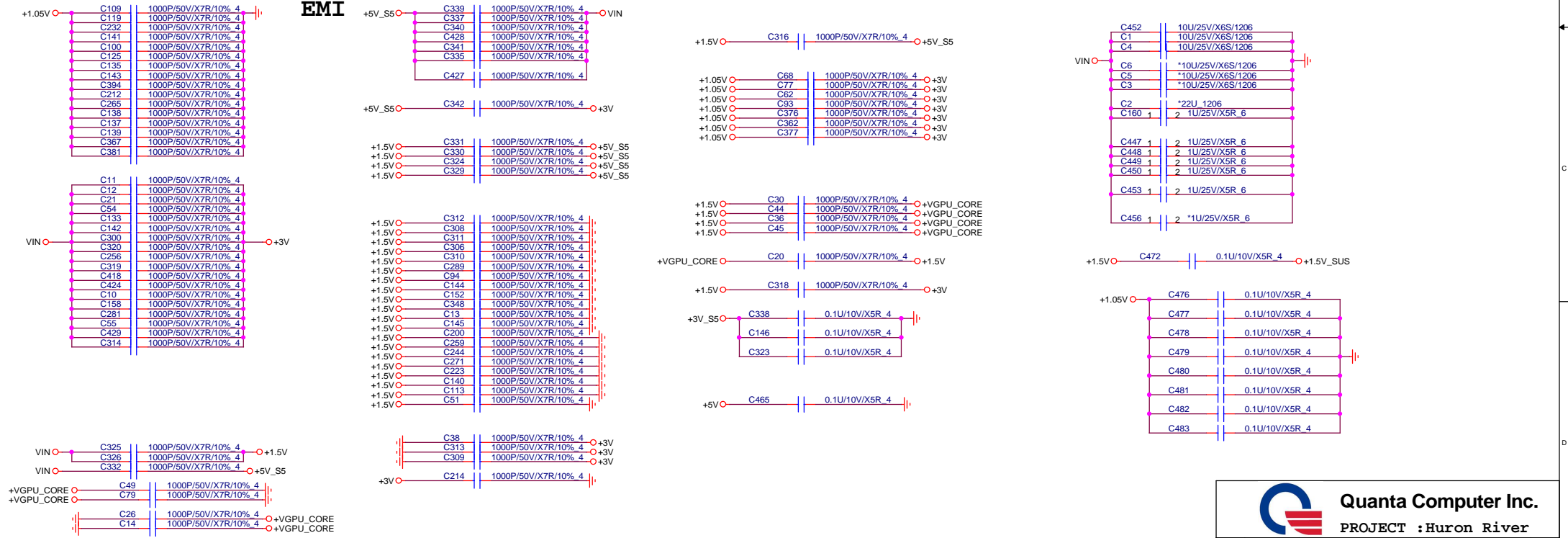
HDD CONNECTOR



1/18 Change U19 from G547 to G557.



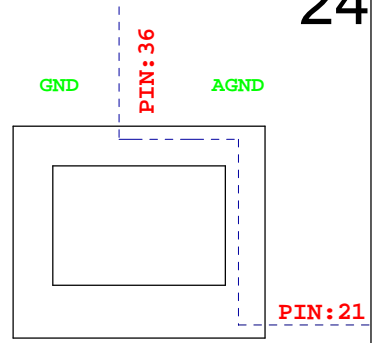
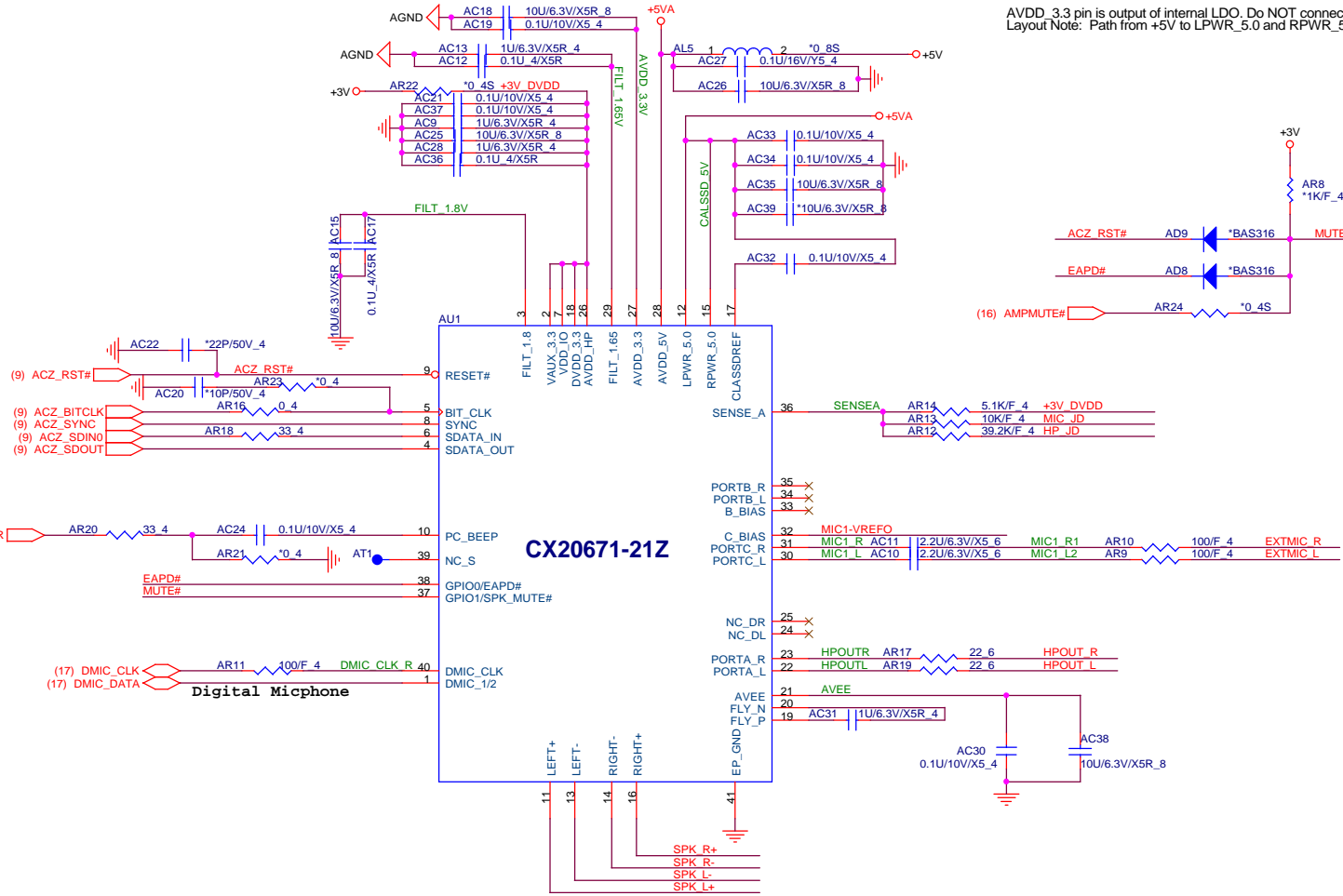
EMI



Quanta Computer Inc. PROJECT :Huron River. Size: Document Number: HDD/ODD, Rev 1A. Date: Monday, February 21, 2011. Sheet 23 of 39.

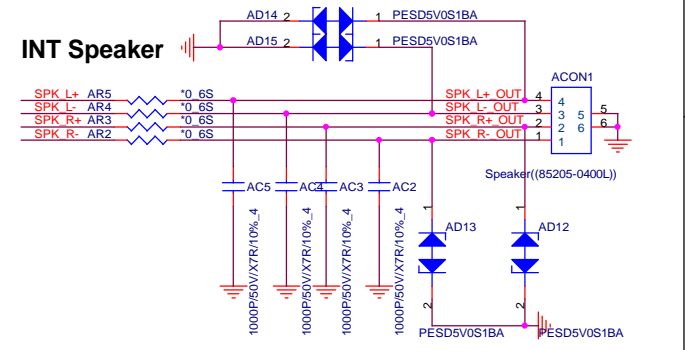
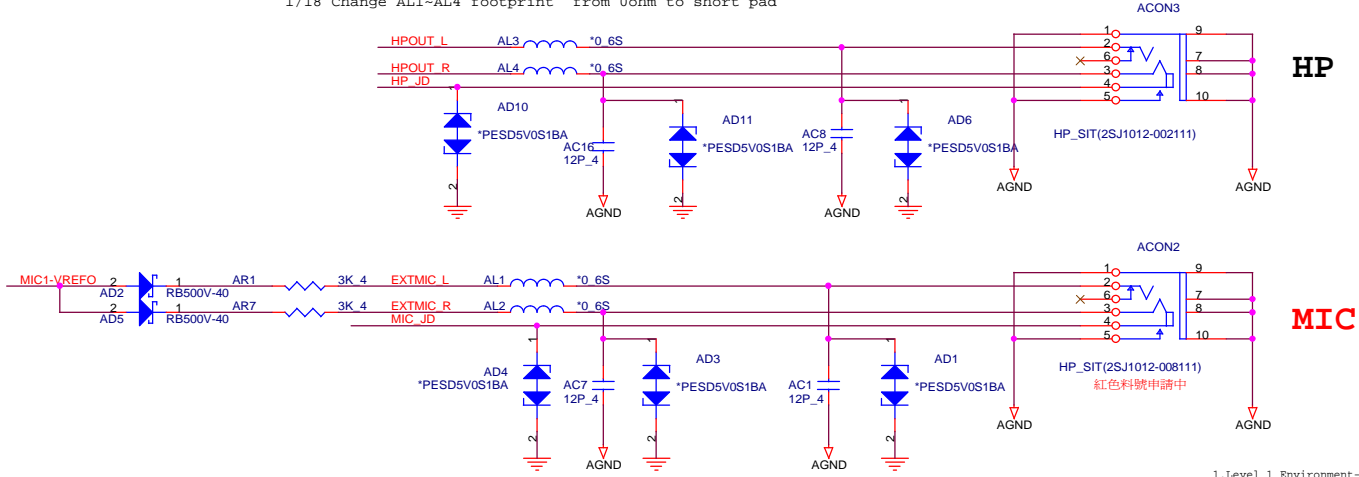
1.Level 1 Environment-related Substances Should Never be Used. 2.Recycled Resin and Coated Wire should be procured from Green Partners.

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).



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

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

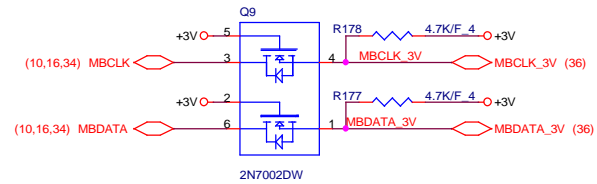
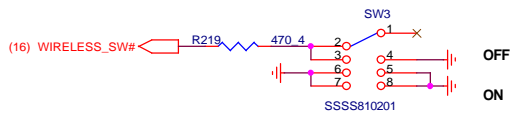


Quanta Computer Inc.
PROJECT : Huron River

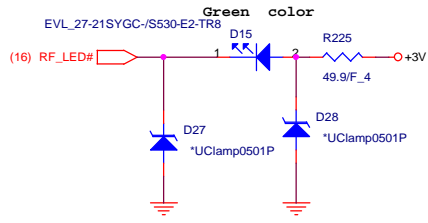
| | | | | |
|------|----------------------------|-------------------------|----------|-----|
| Size | Document Number | Date | Sheet | Rev |
| | Audio Codec CX20671 | Tuesday, April 05, 2011 | 24 of 39 | 1A |

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

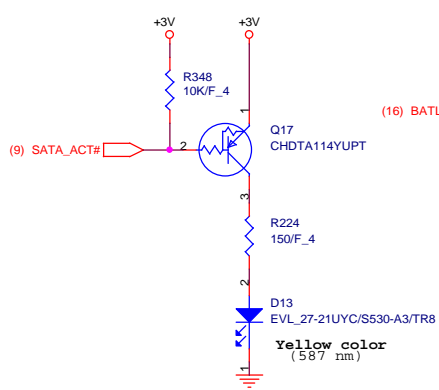
WIRELESS/Bluetooth SWITCH



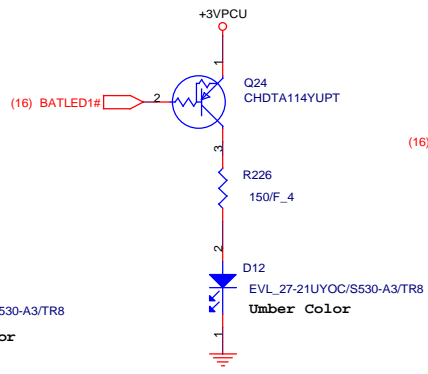
RF LED



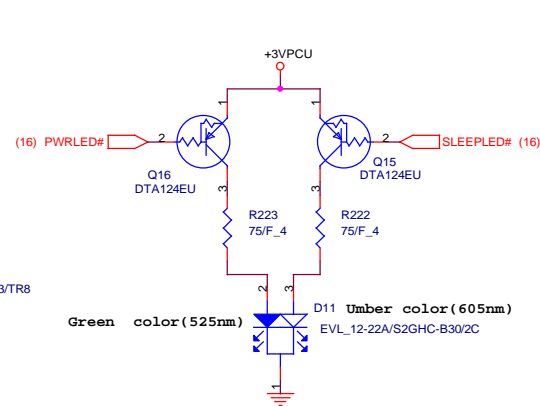
SATA LED



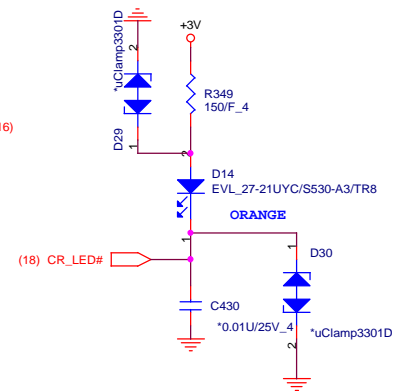
BATTERY LED



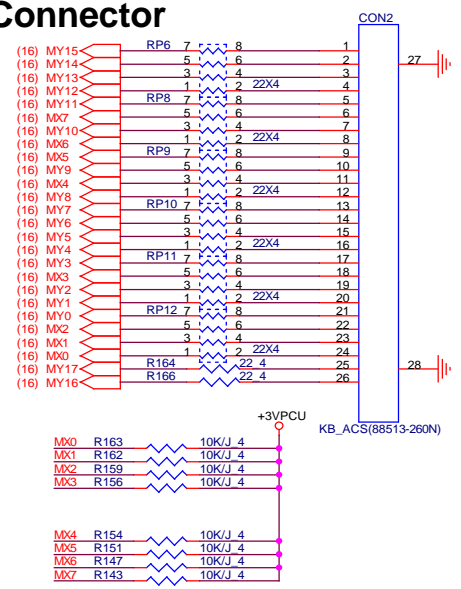
Power/Sleep LED



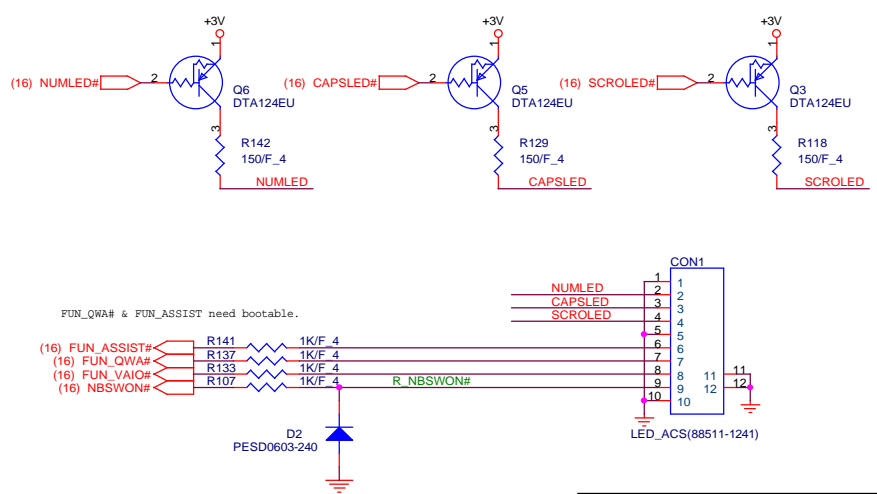
CARD LED



KEY BOARD Connector



Power SW Board Connector



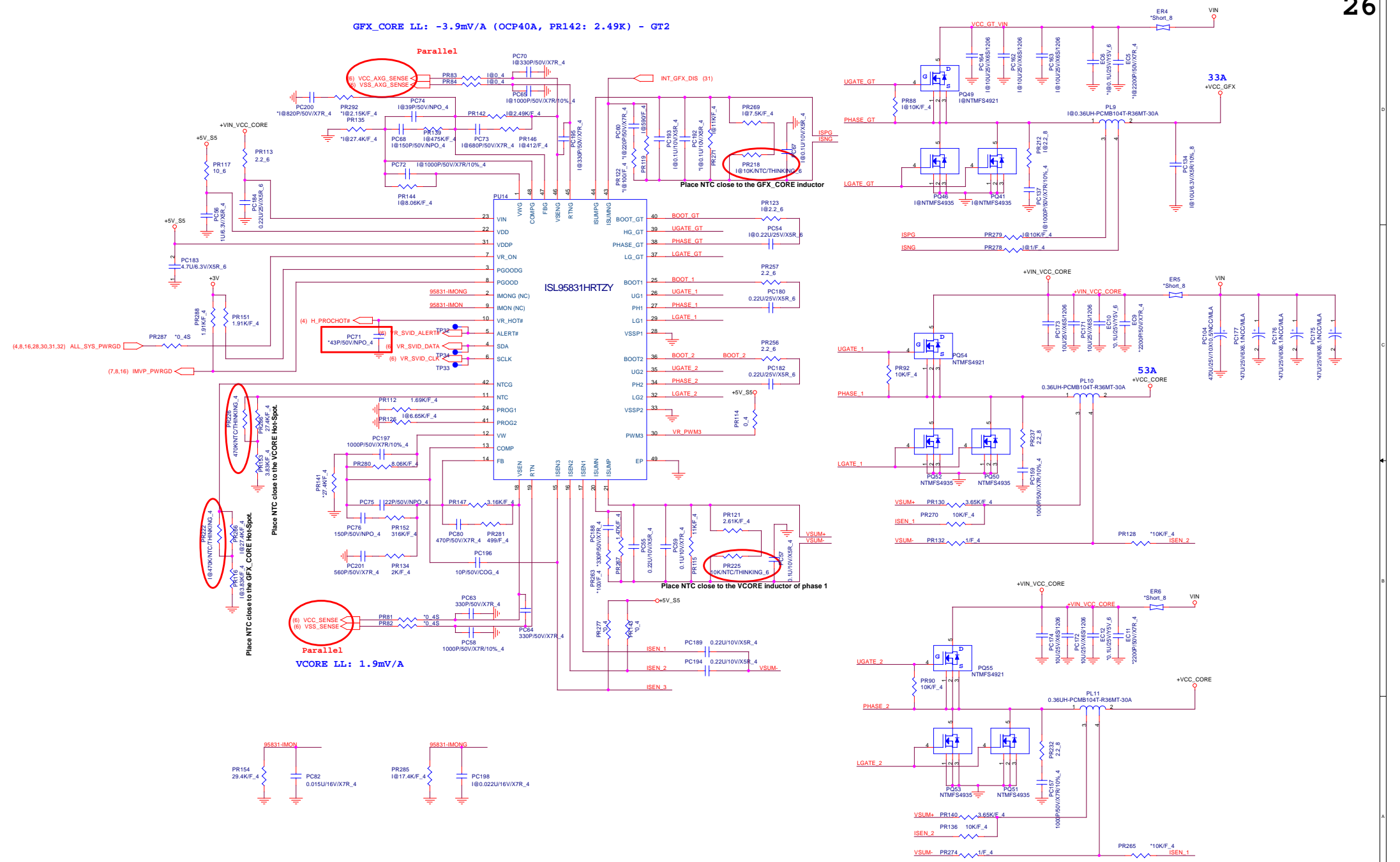
Quanta Computer Inc.
PROJECT :Huron River

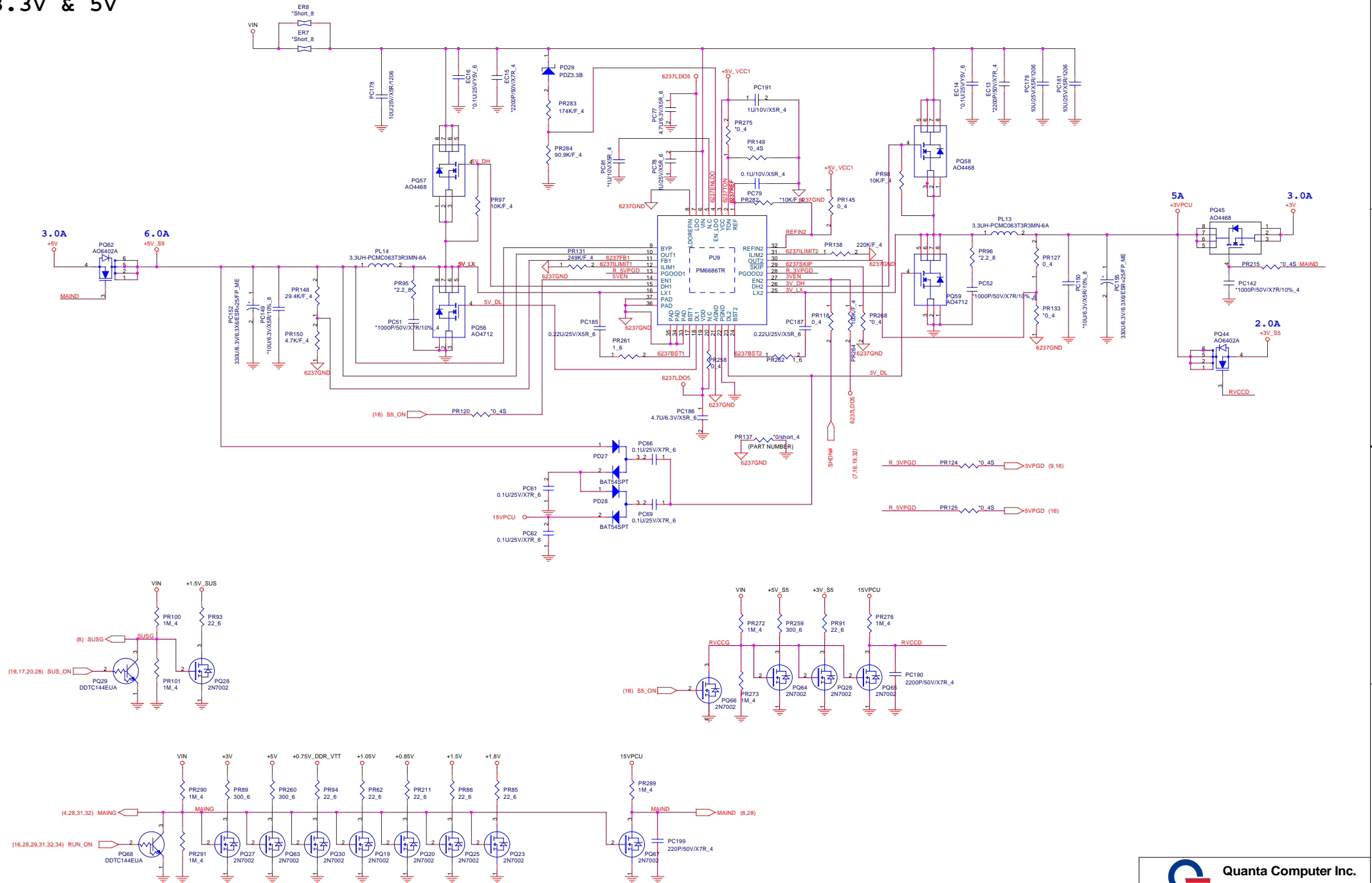
| | | |
|------|---------------------|-----|
| Size | Document Number | Rev |
| | LED/RF/KB/PS | 1A |

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 25 of 39

GFX_CORE LL: -3.9mV/A (OCF40A, PR142: 2.49K) - GT2



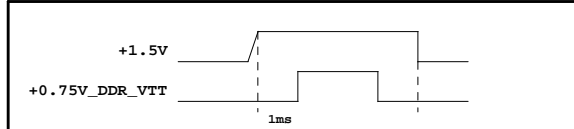
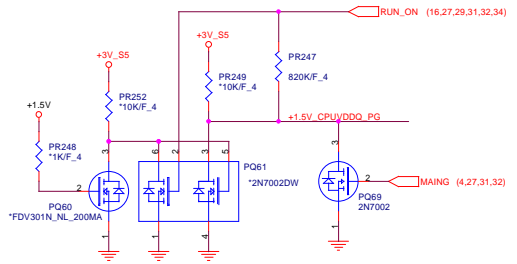
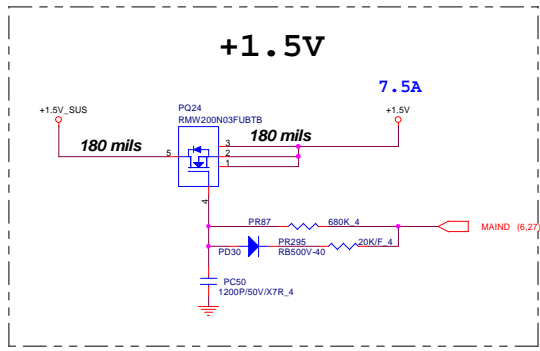
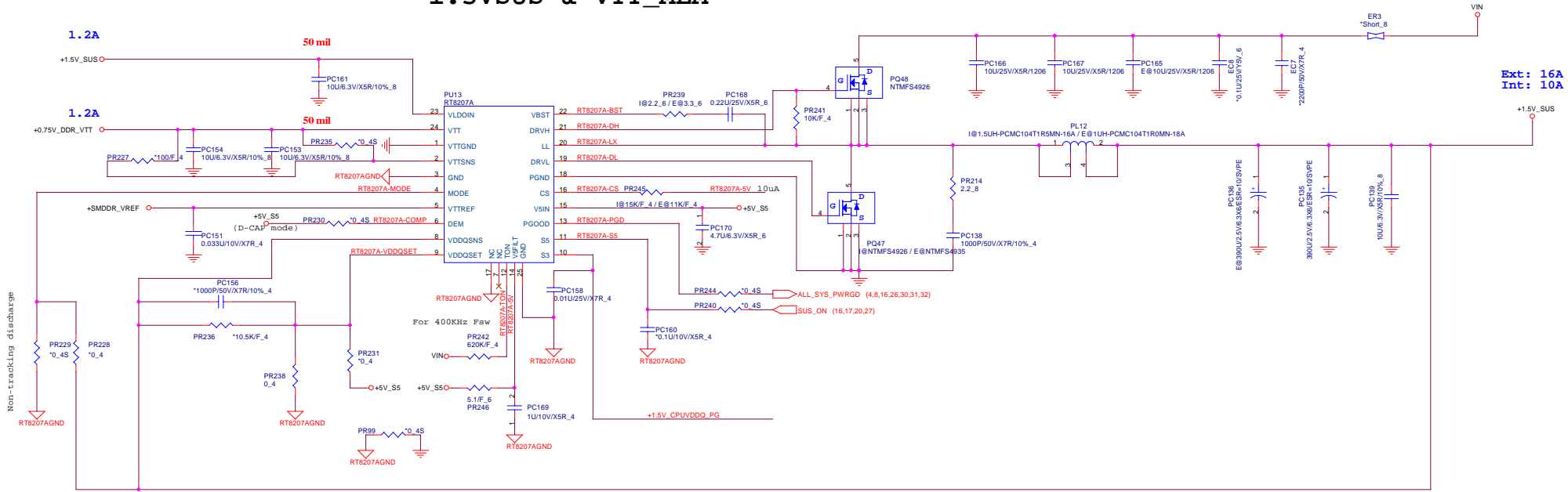


Quanta Computer Inc.
PROJECT : Huron River

Size Document Number
3VPCU&5VPCU(PM6688)

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 27 of 39

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

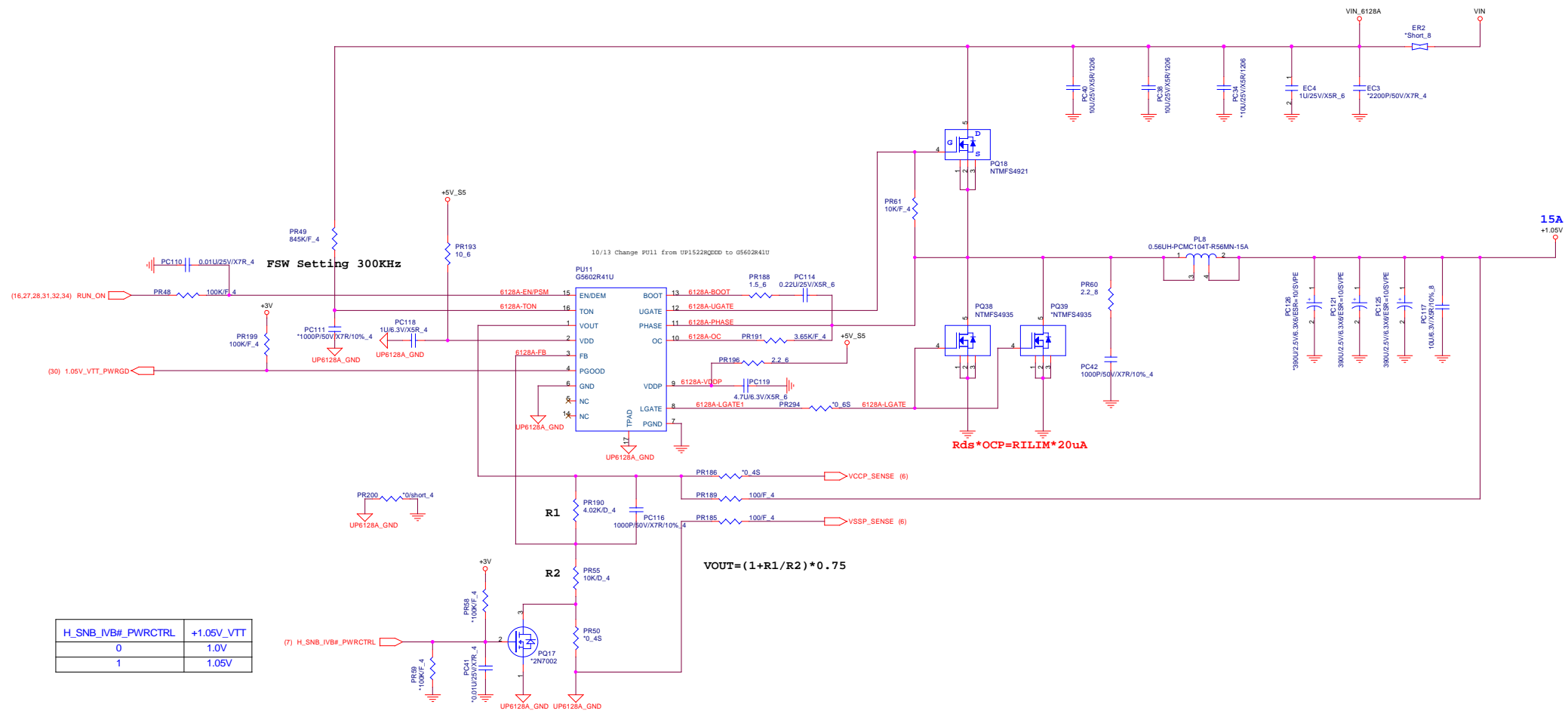
| STATE | S3 | S5 | 1.5VSUS | VTTREF | VTT |
|-------|----|----|---------|--------|-----|
| S0 | 1 | 1 | on | on | on |
| S3 | 0 | 1 | on | on | off |
| S4/S5 | 0 | 0 | off | off | off |

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

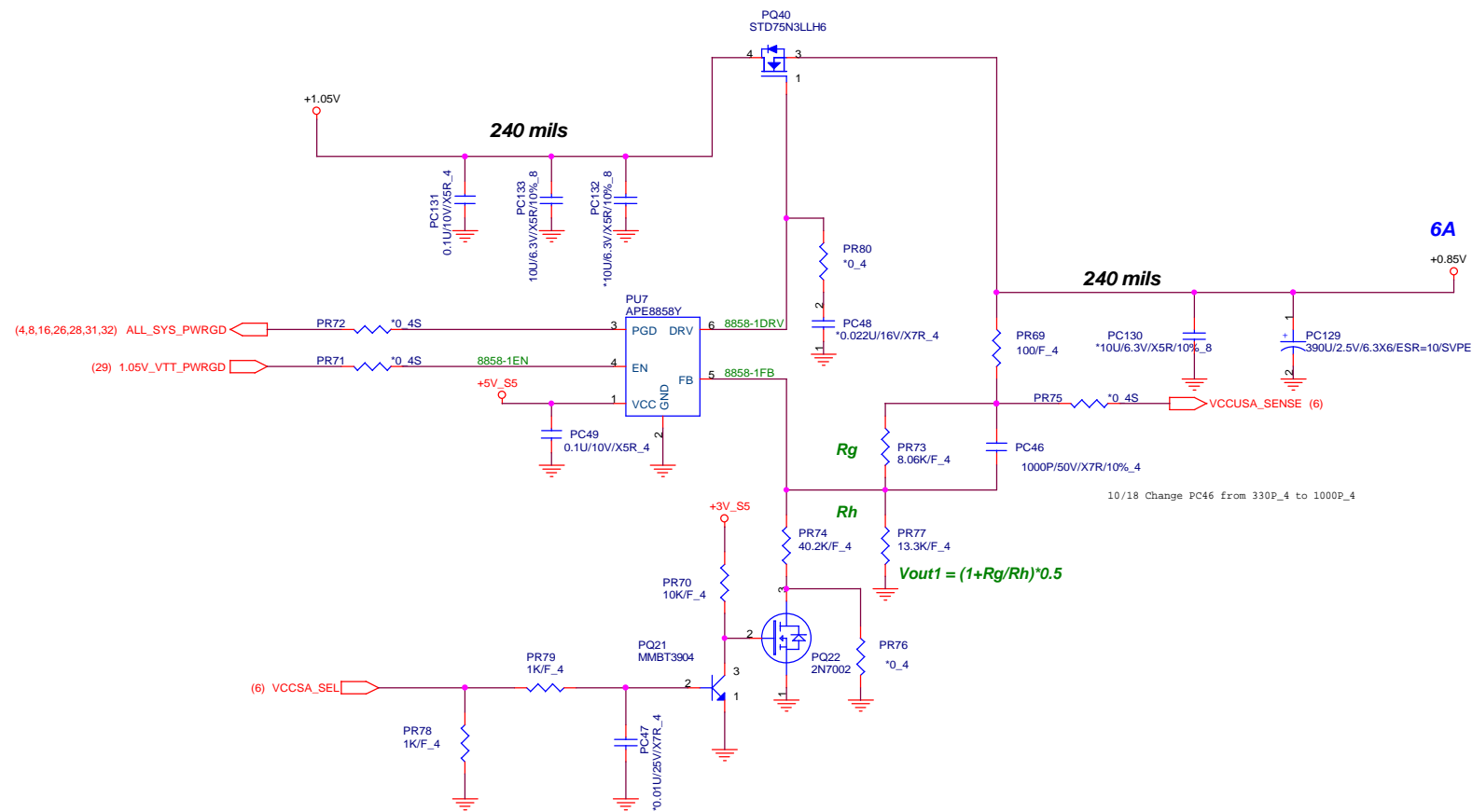


| H_SNB_IVB#_PWRCTRL | +1.05V_VTT |
|--------------------|------------|
| 0 | 1.0V |
| 1 | 1.05V |

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


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

+0.85V



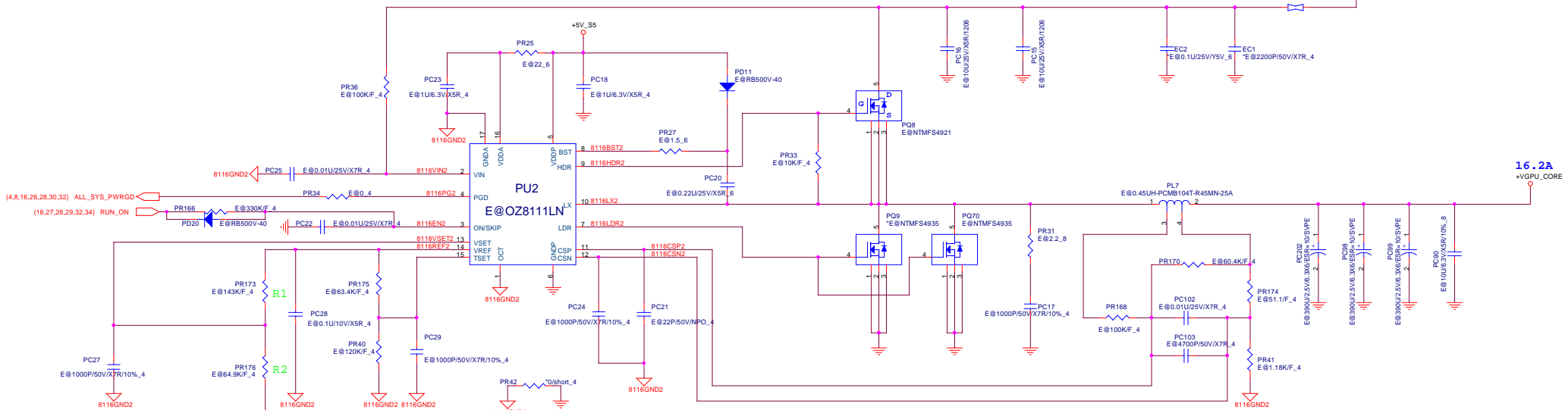
$V_{out1} = (1 + R_g/R_h) * 0.5$

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


Quanta Computer Inc.
 PROJECT : Huron River
 +0.85V(OZ8116LN)

| | | |
|------|-----------------|-----|
| 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 30 of 39



$$V_{out} = 2.75 * (R2 / (R1 + R2))$$

N12P-GV

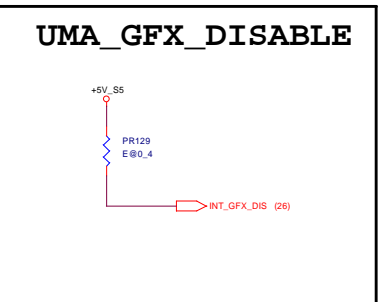
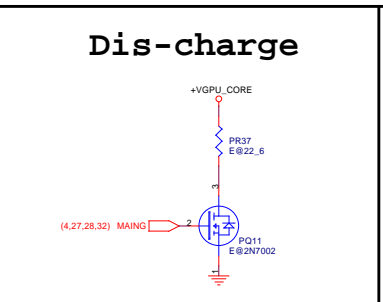
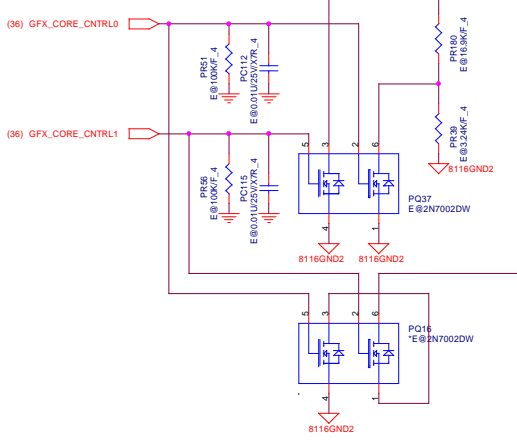
External VGA_CORE Voltage Setting:

| GFX_CORE_CNTRL1 | GFX_CORE_CNTRL0 | VGA_CORE | Resistor Values |
|-----------------|-----------------|----------|-----------------|
| 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 | Resistor Values |
|-----------------|-----------------|----------|-----------------|
| 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 |

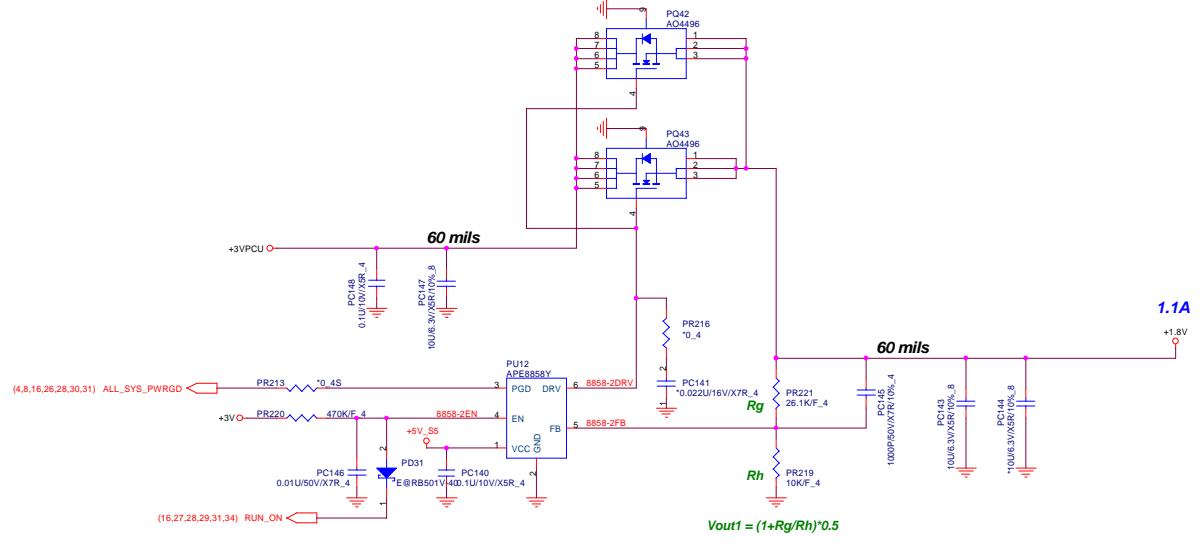


(0.1A) **+3V**
 (2A) **+1.05V**
 (6A) **+1.5V**

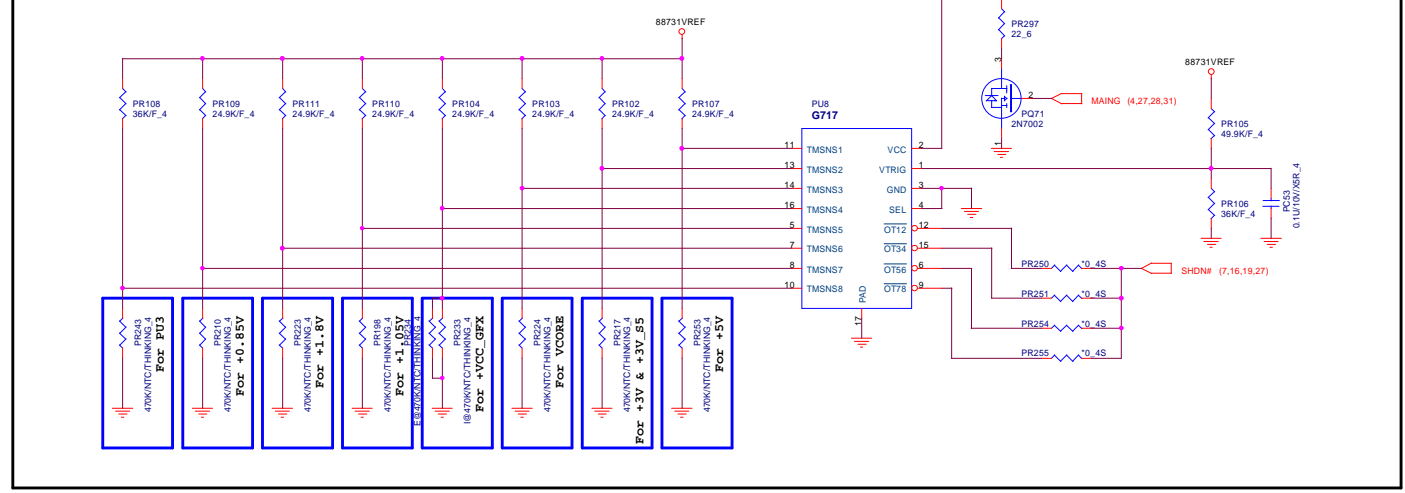
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PROJECT : Huron River

Size Document Number Rev 1A
VGA_CORE(OZ8111)-15A

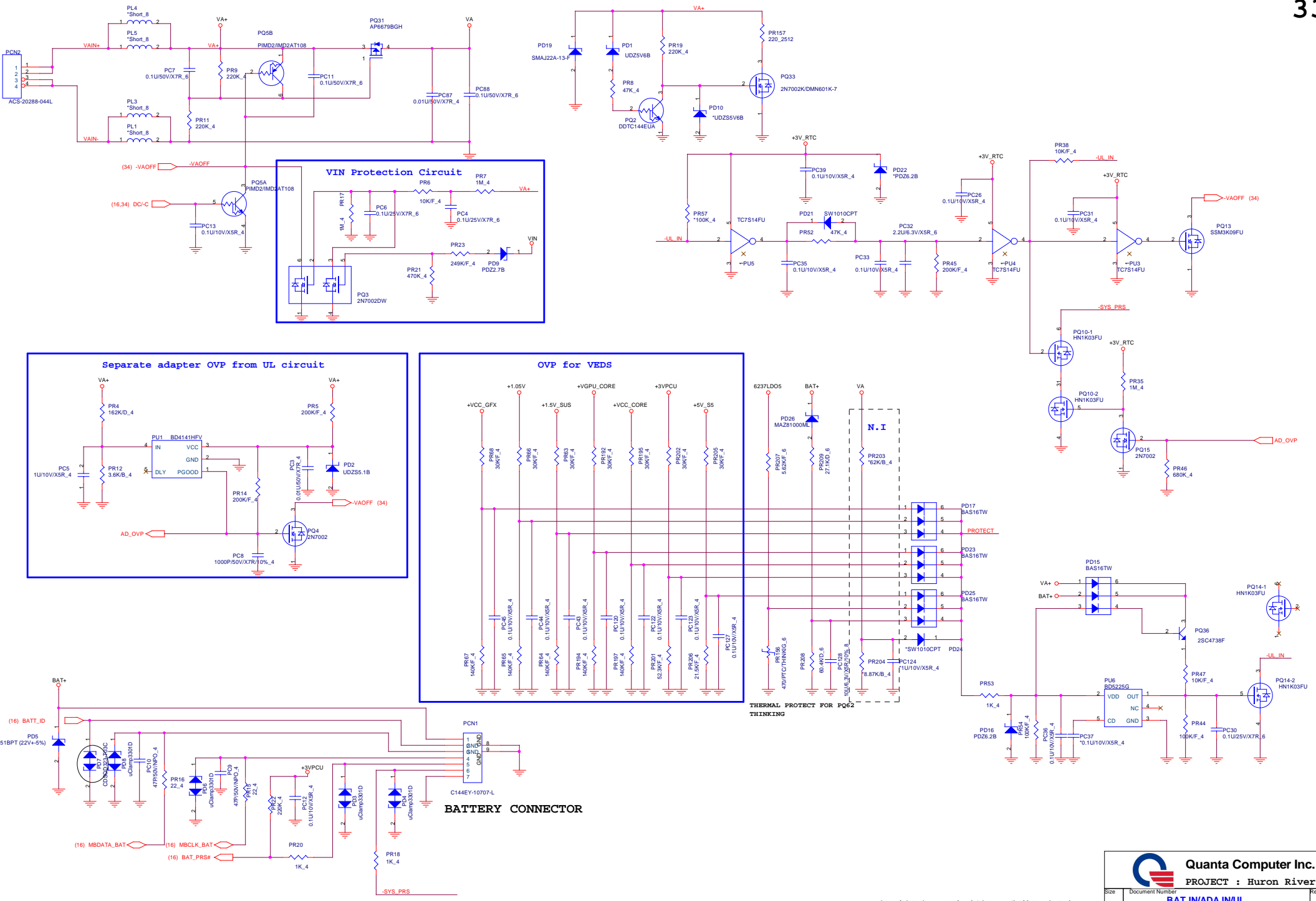
VCC1.8



Thermal Protection for VEDS



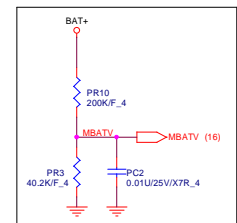
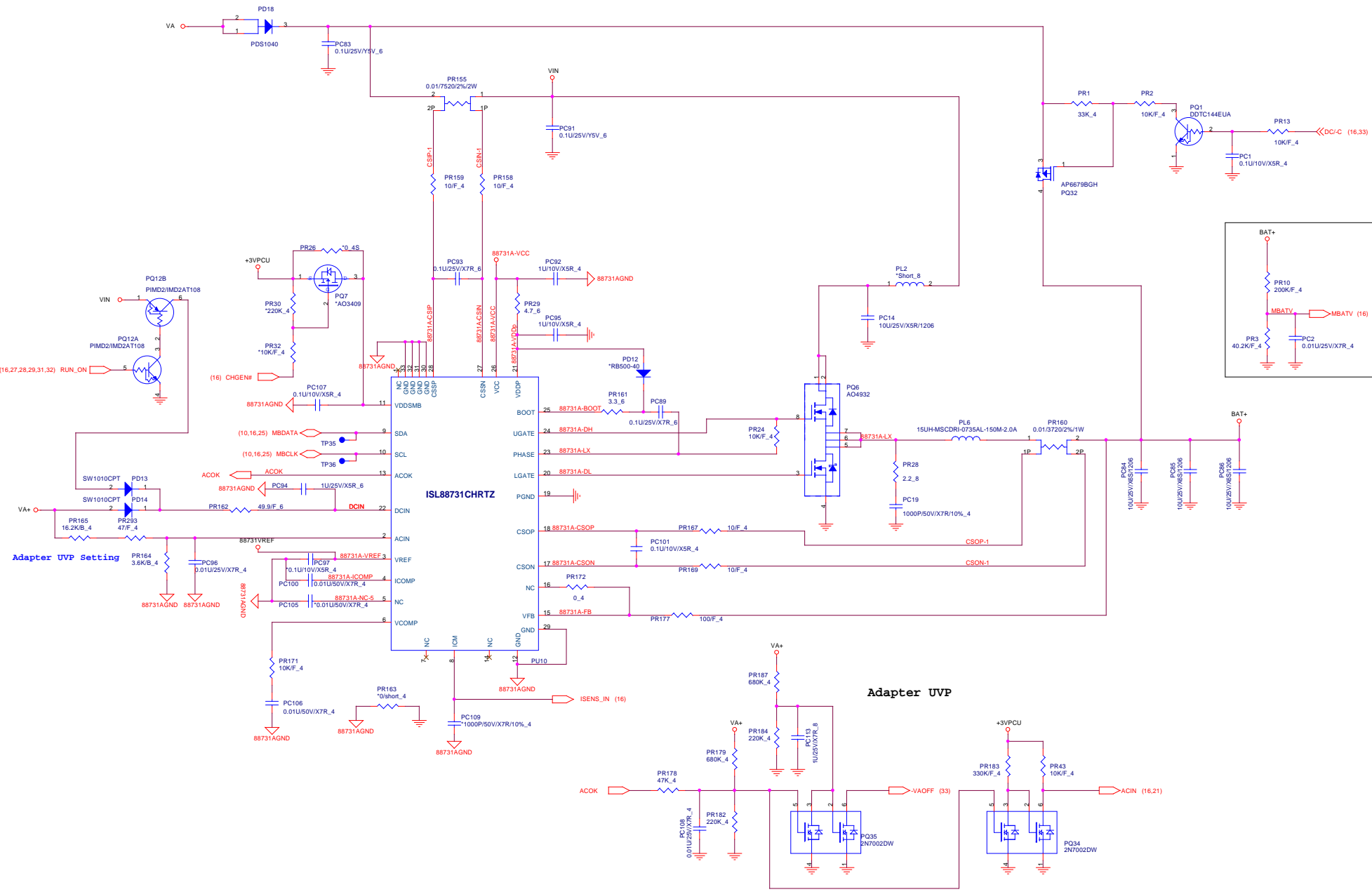
1. Level 1 Environment-related Substances Should Never be Used.
 2. Recycled Resin and Coated Wire should be procured from Green Partners.



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| | | |
|------|-------------------------|-----|
| Size | Document Number | Rev |
| | BAT IN/ADA IN/UL | 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 33 of 39

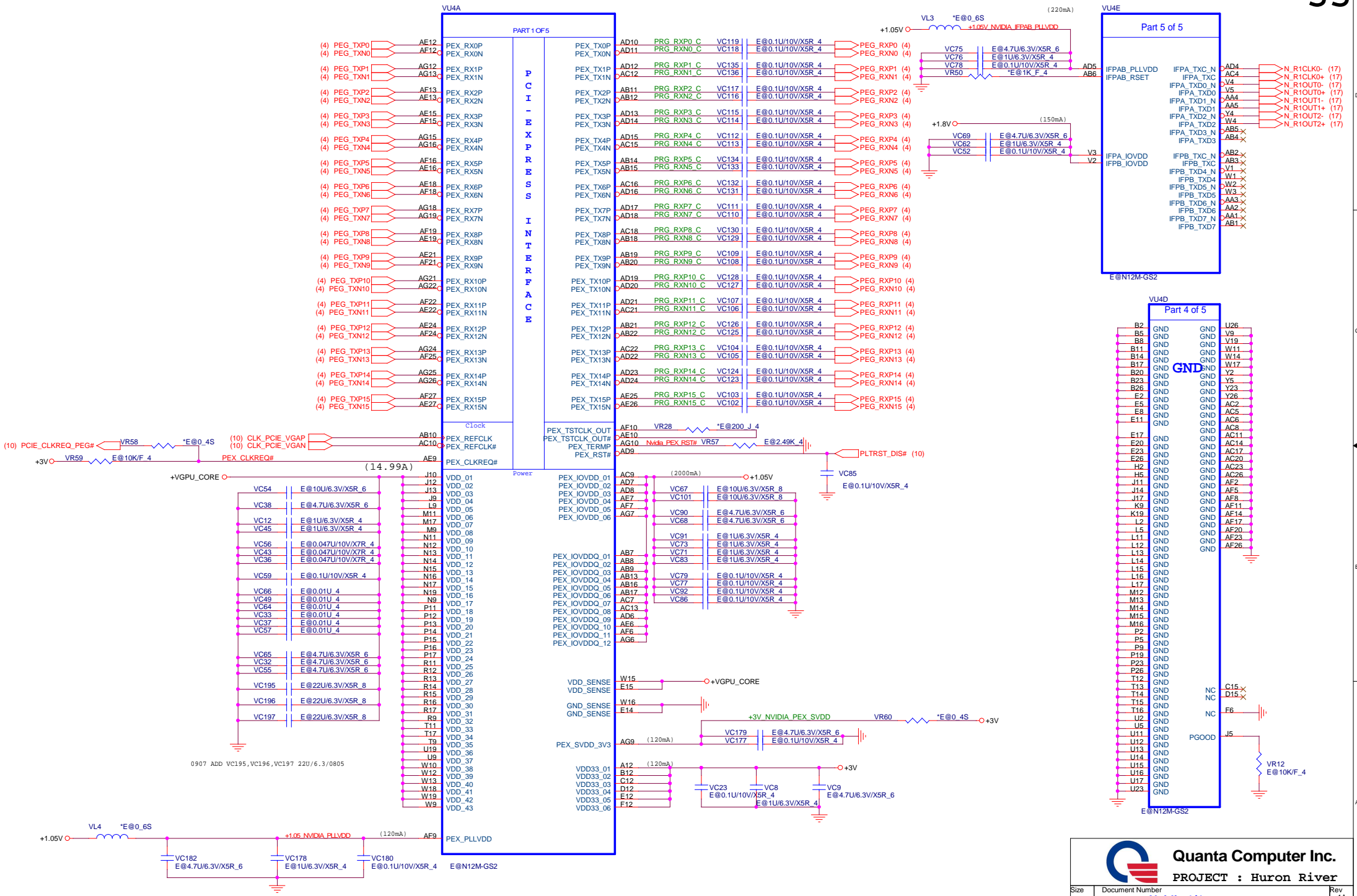


Adapter UVP Setting

Adapter UVP

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 Size Document Number Rev 1A
CHARGER(ISL88731A)

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
 Size Document Number **Nvidia 1/4** Rev 1A

N12P-GV

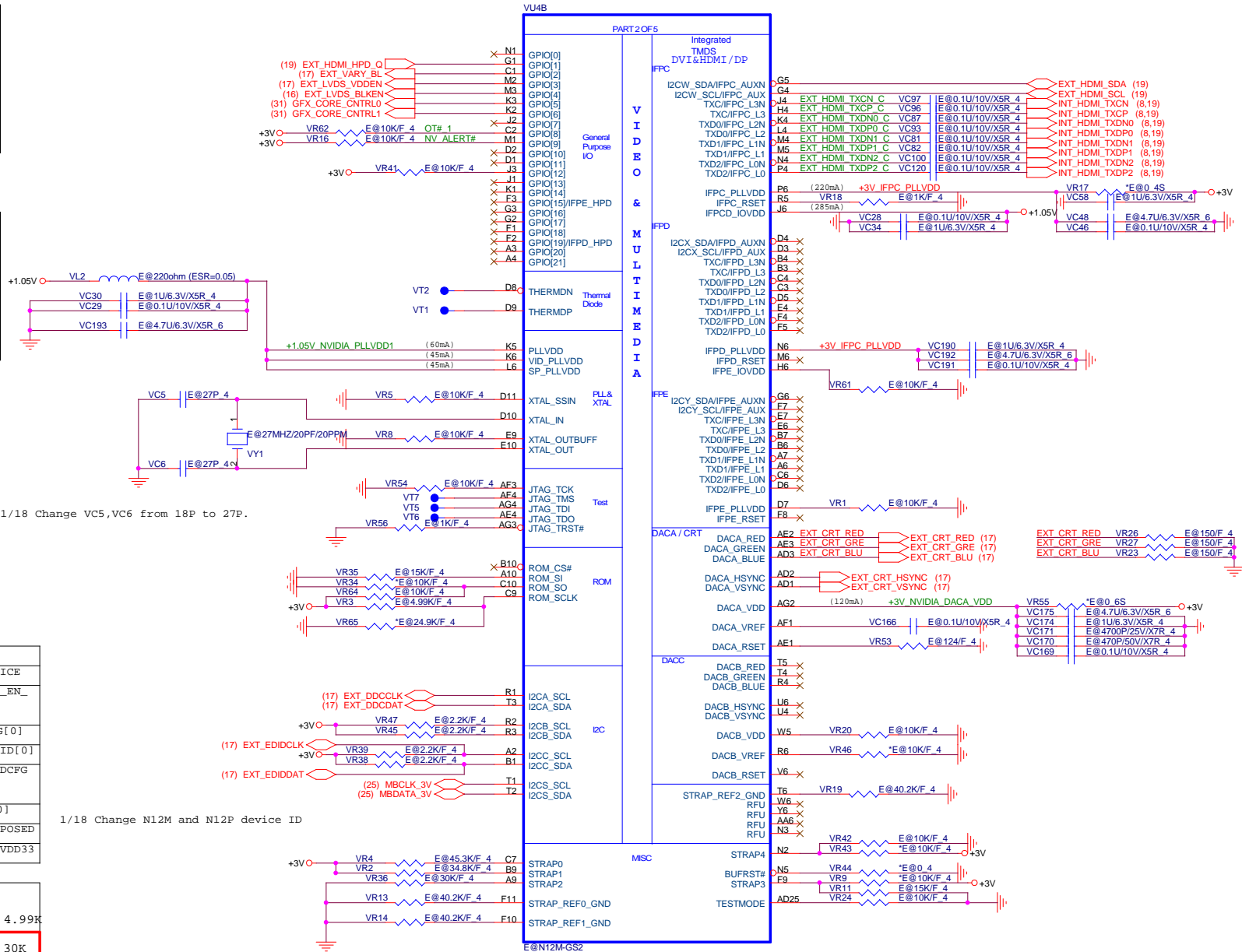
External VGA_CORE Voltage Setting:

| 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 | |



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

1/18 Change N12M and N12P device ID

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 |

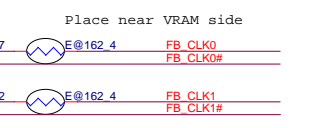
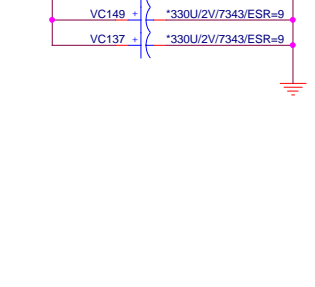
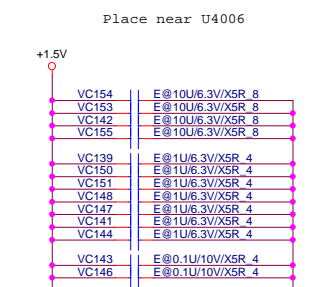
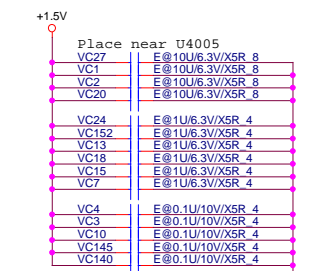
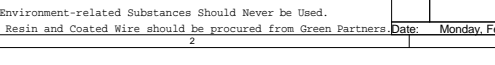
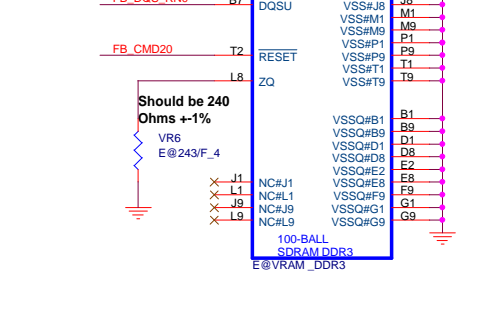
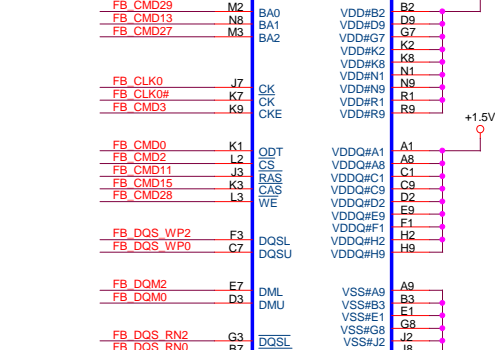
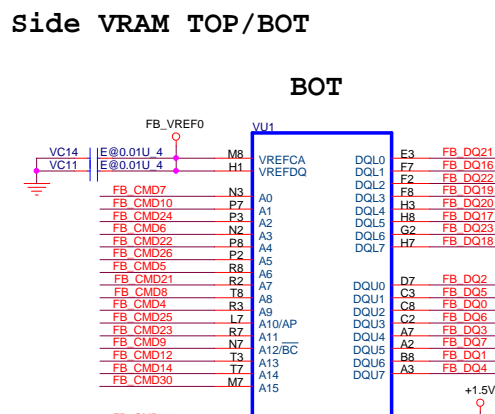
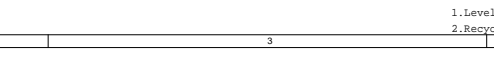
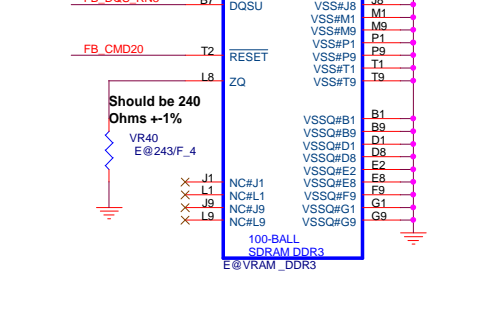
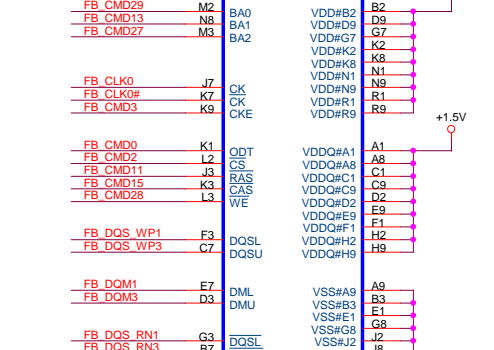
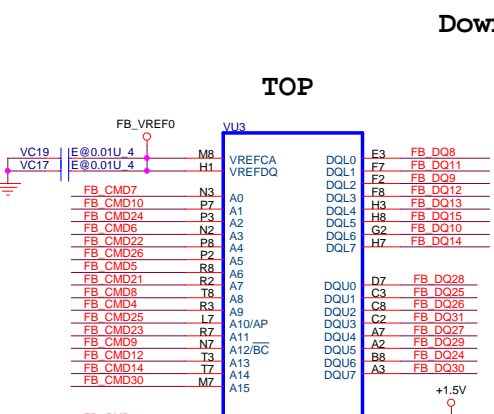
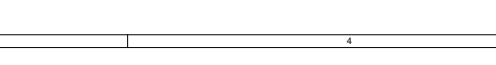
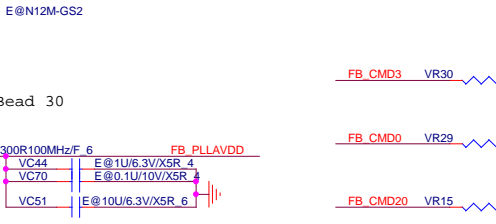
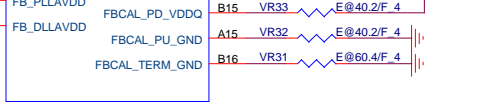
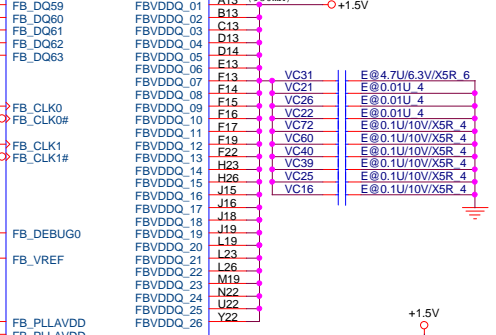
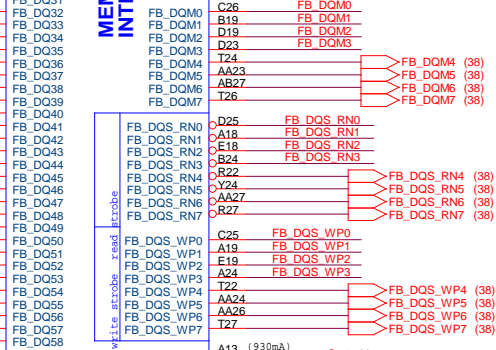
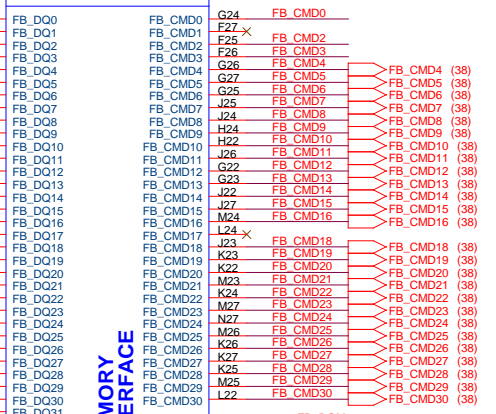
for device ID
 For N12P VR3 pull high 4.99K VR65 NC VR36 Pull down 4.99K
 For N12M VR3 pull high 4.99K VR65 NC VR36 Pull down 30K

| | 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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 Size Document Number **Nvidia 2/4** Rev 2A
 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 36 of 39

Down Side VRAM TOP/BOT

VU4C Part 3 of 5



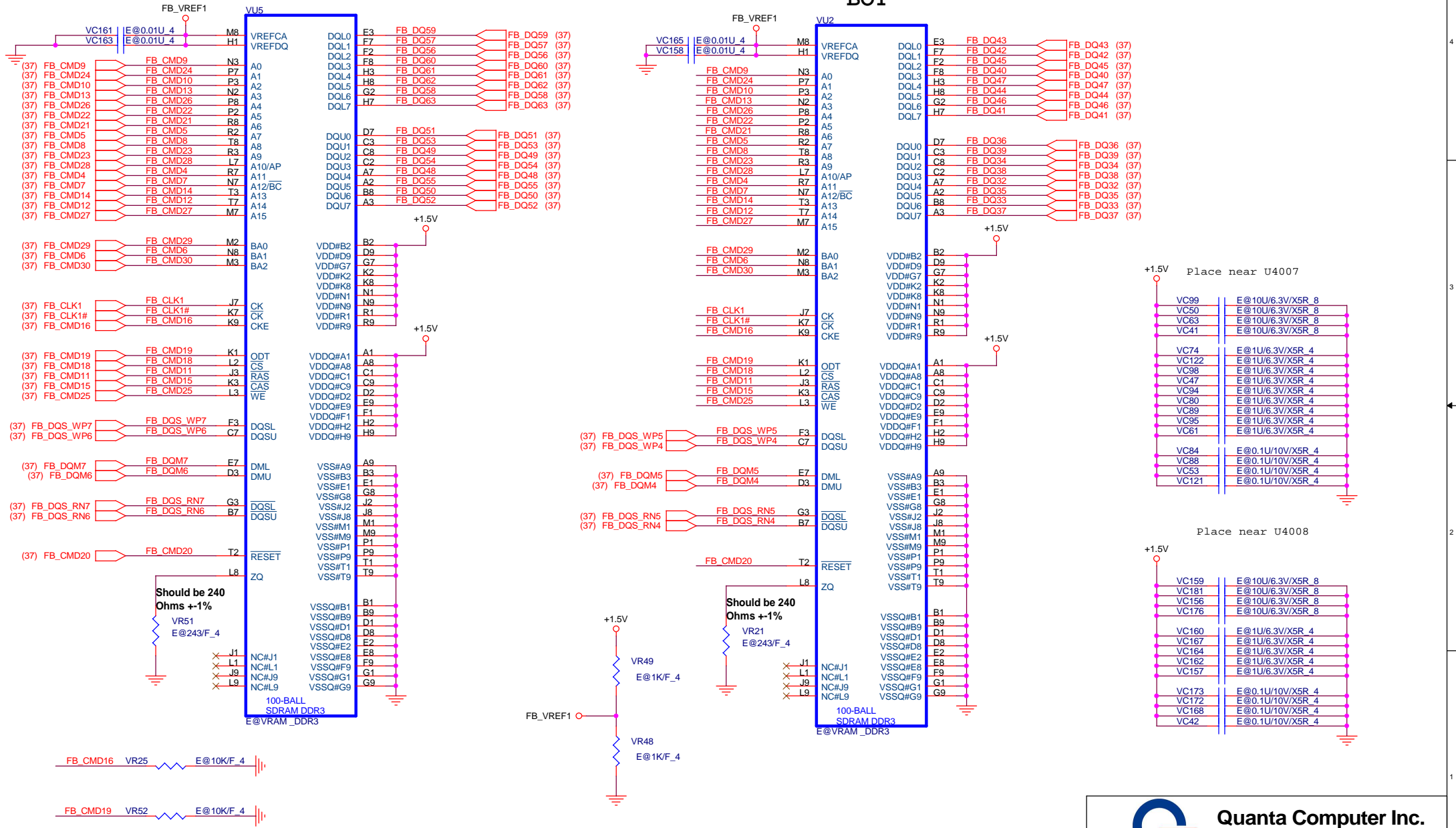
Quanta Computer Inc.
PROJECT : Huron River
VRAM 3/4

Size Document Number Rev 2A

Up Side VRAM TOP/BOT

TOP

BOT



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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 |