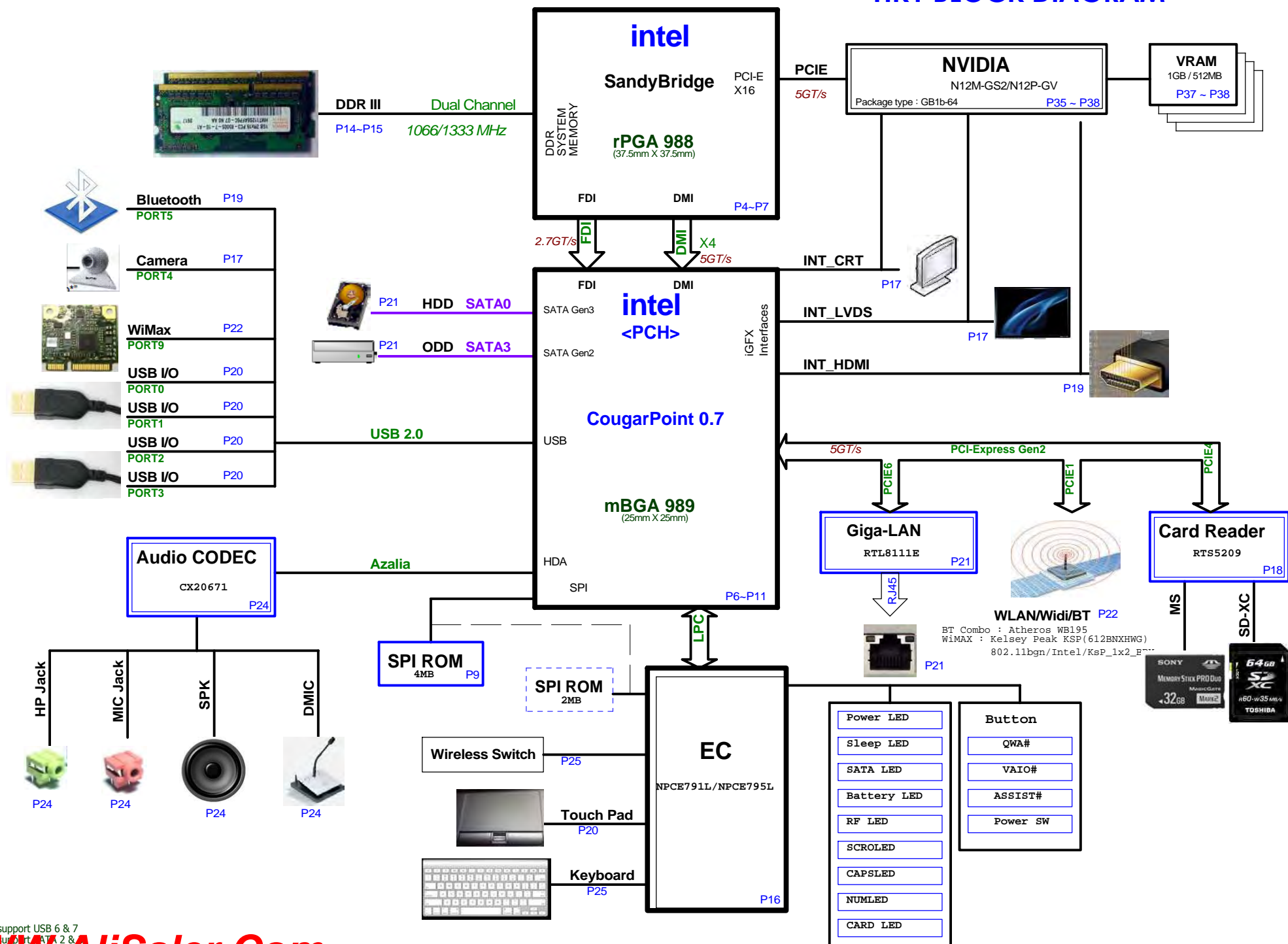


1

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

| Page | Title of schematic page     | Rev. | Date |
|------|-----------------------------|------|------|
| 01   | Page List                   | 1A   |      |
| 02   | Block Diagram               | 1A   |      |
| 03   | Change List                 | 1A   |      |
| 04   | SNB 1/4(HOST&PCIE)          | 1A   |      |
| 05   | SNB 2/4(DDR3 I/F)           | 1A   |      |
| 06   | SNB 3/4(POWER)              | 1A   |      |
| 07   | SNB 4/4(GND/Strap)          | 1A   |      |
| 08   | PCH 1/6(DMI/FDI/VIDEO)      | 1A   |      |
| 09   | PCH 2/6(SATA/RTC/HDA/LPC)   | 1A   |      |
| 10   | PCH 3/6(PCIE/USB/CLK/NV)    | 1A   |      |
| 11   | PCH 4/6(GPIO/CPU/STRAP)     | 1A   |      |
| 12   | PCH 5/6(POWER)              | 1A   |      |
| 13   | PCH 6/6 (GND)               | 1A   |      |
| 14   | DDR3 DIMM-0-STD             | 1A   |      |
| 15   | DDR3 DIMM-1-STD             | 1A   |      |
| 16   | WPCE791L & FLASH            | 1A   |      |
| 17   | CRT/LVDS/CAMERA             | 1A   |      |
| 18   | CARD READER(RTS5209)        | 1A   |      |
| 19   | HDMI Conn/BT/THERMAL        | 1A   |      |
| 20   | 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   |      |

## HK1 BLOCK DIAGRAM



Change List from PVT to MP

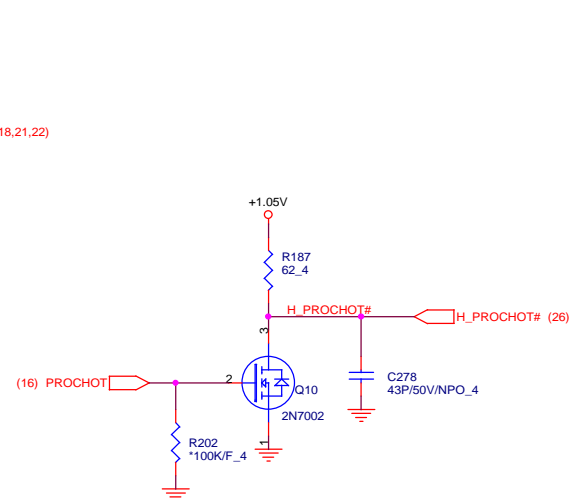
HK1\_MB\_SCH\_PVT\_001

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

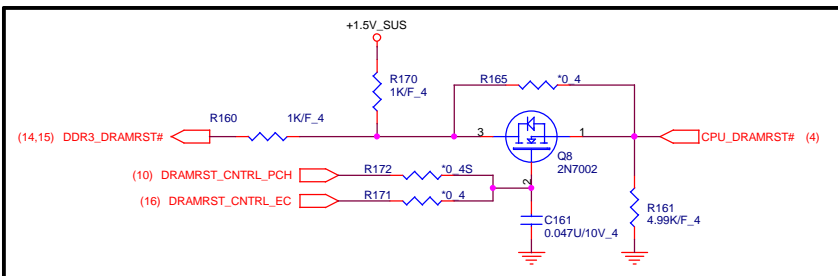
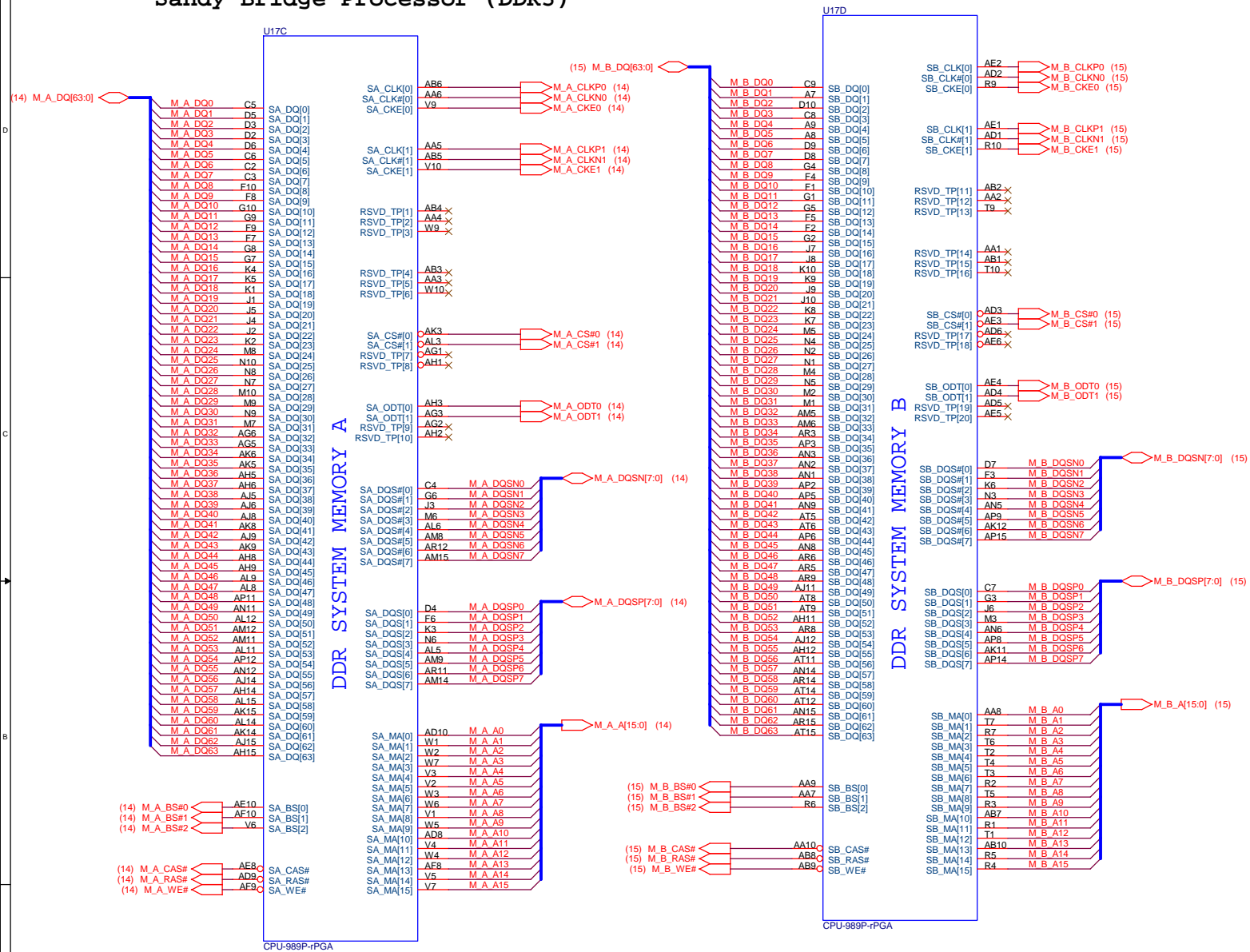
P16-- KR27 change value from 10K to 4.7K.  
P33-- PD7 change value from uClamp3301D to CDSOD323-T03C.  
Reason : for Battery ESD protect.  
Possible Risk: No.



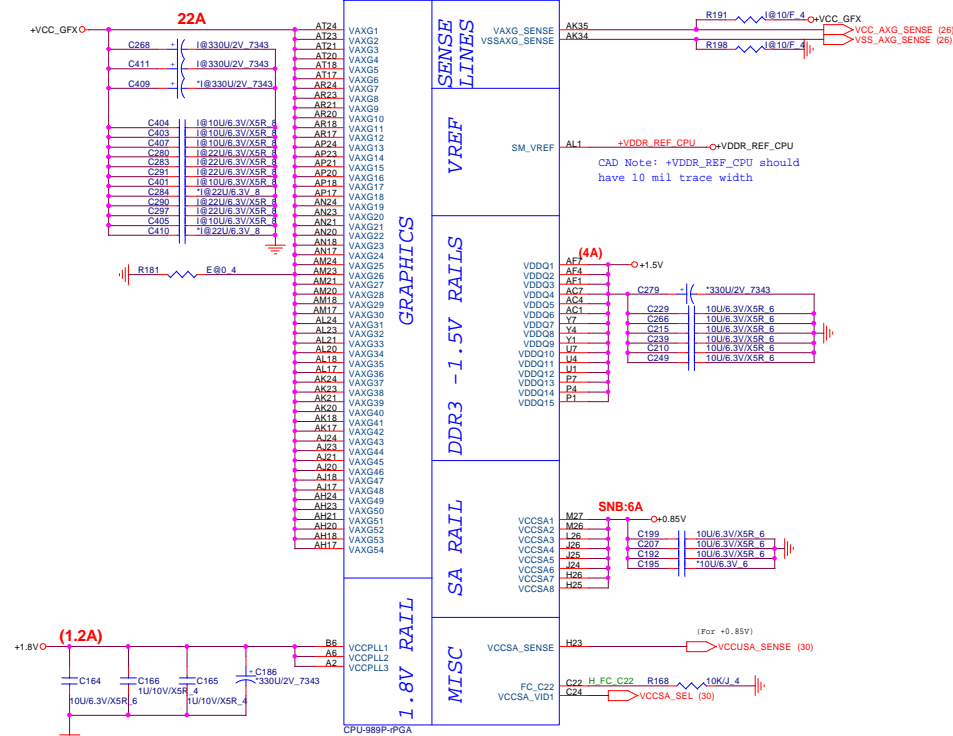
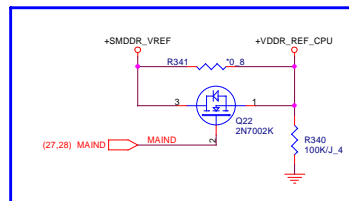
Date: Sunday, April 03, 2011 Sheet 4 of 39

# Sandy Bridge Processor (DDR3)

05



## POWER



**SVID ALERT**

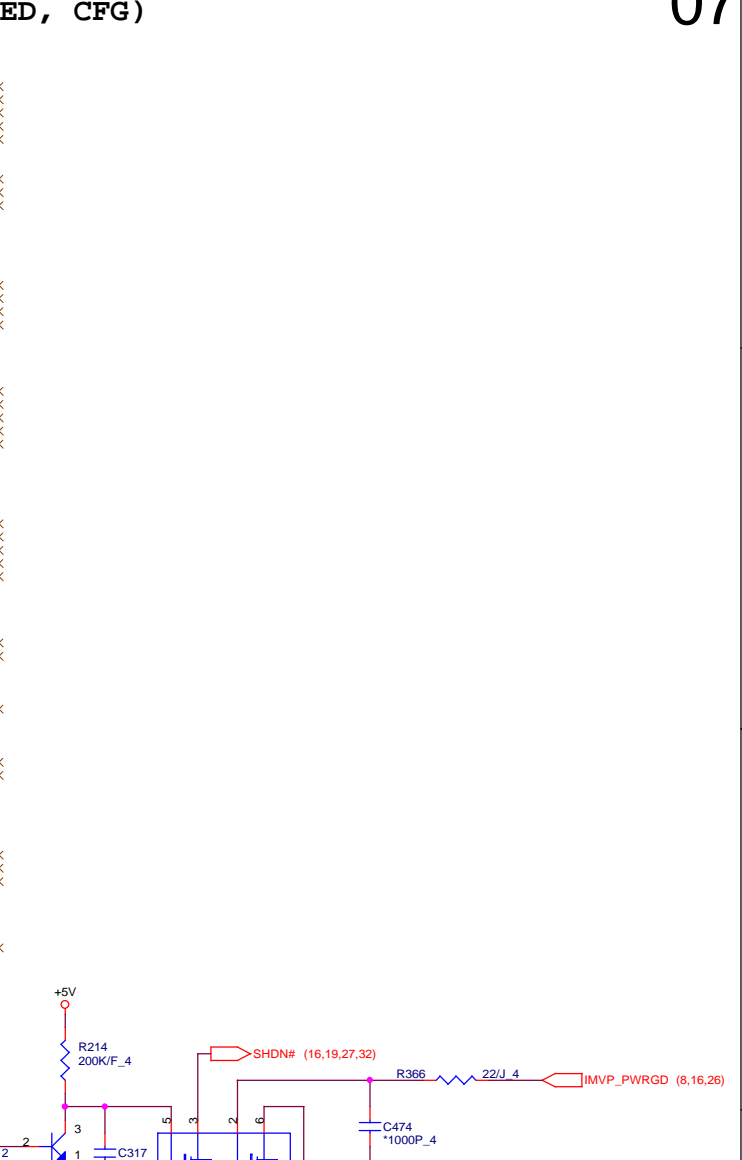
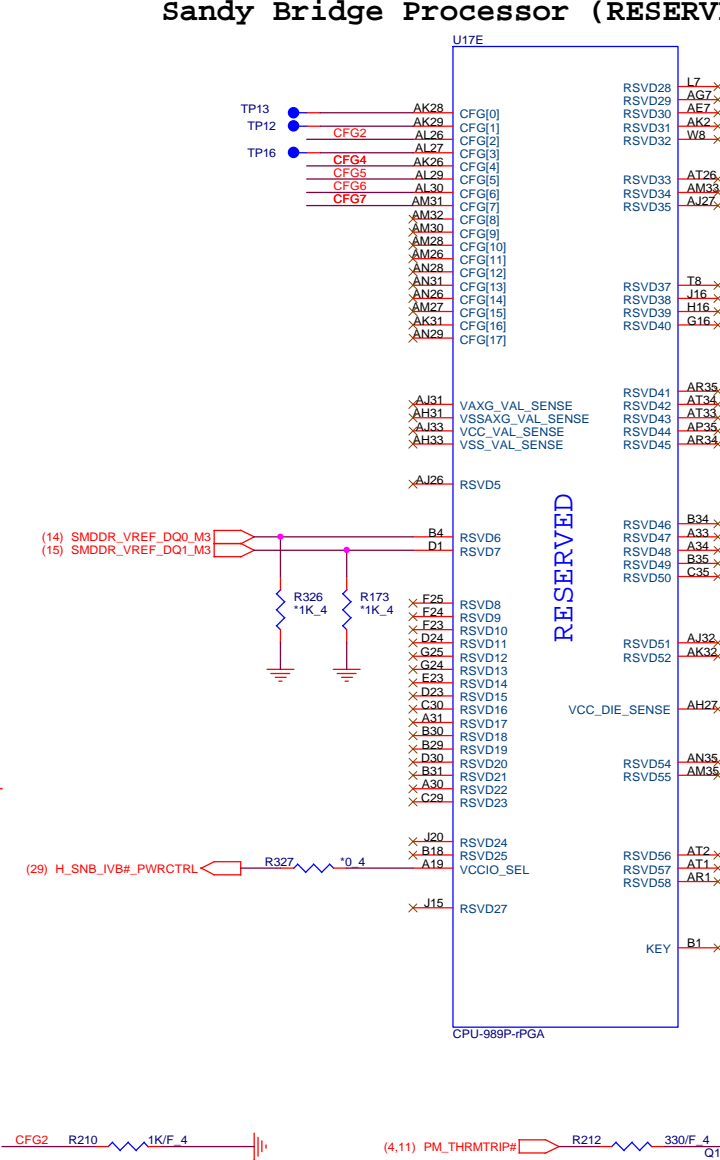
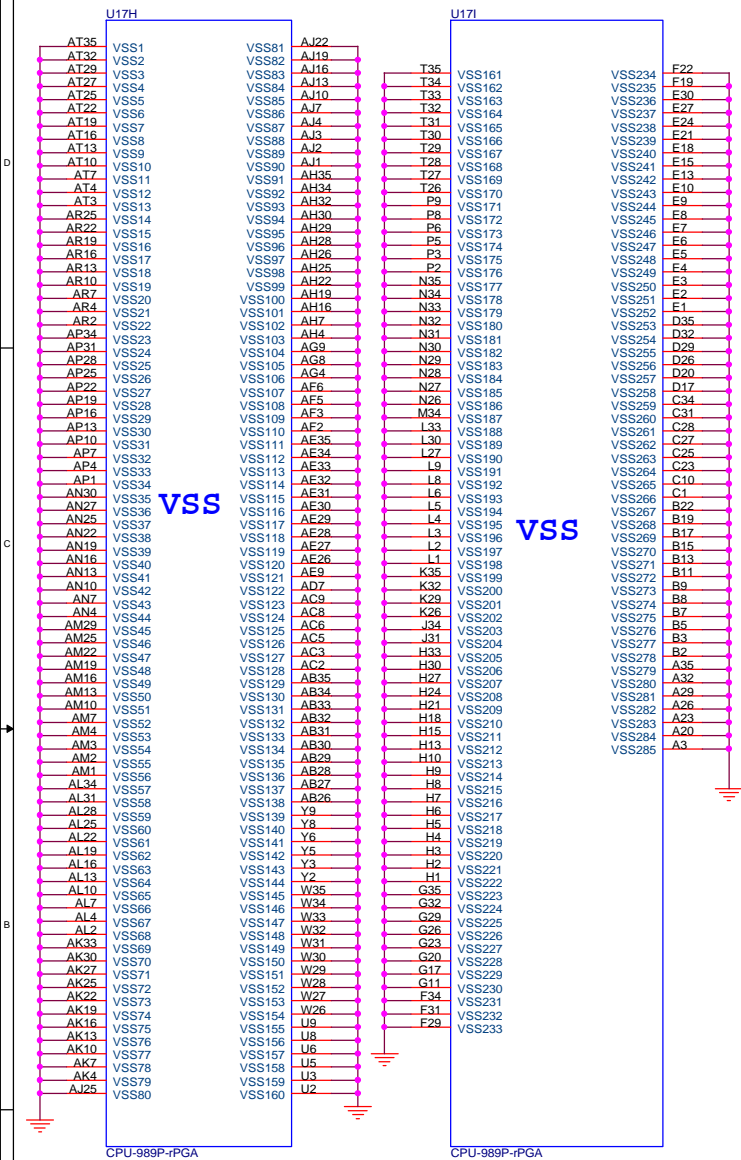
|      |                         |    |
|------|-------------------------|----|
| Size | Document Number         | Re |
|      | <b>Sandy Bridge 3/4</b> |    |

|  |                                 |       |         |
|--|---------------------------------|-------|---------|
| 1.Level 1 Environment-related Substances Should Never be Used.           | <b>Sandy Bridge 3/4</b>         |       |         |
| 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)



## Processor Strapping


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

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

CFG5 R194 \*1K/F 4  
CFG6 R193 \*1K/F 4

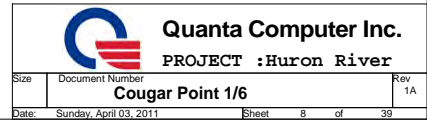
CFG[6:5] (PCIe Port Bifurcation Straps)

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

 **Quanta Computer Inc.**  
**PROJECT :Huron River**

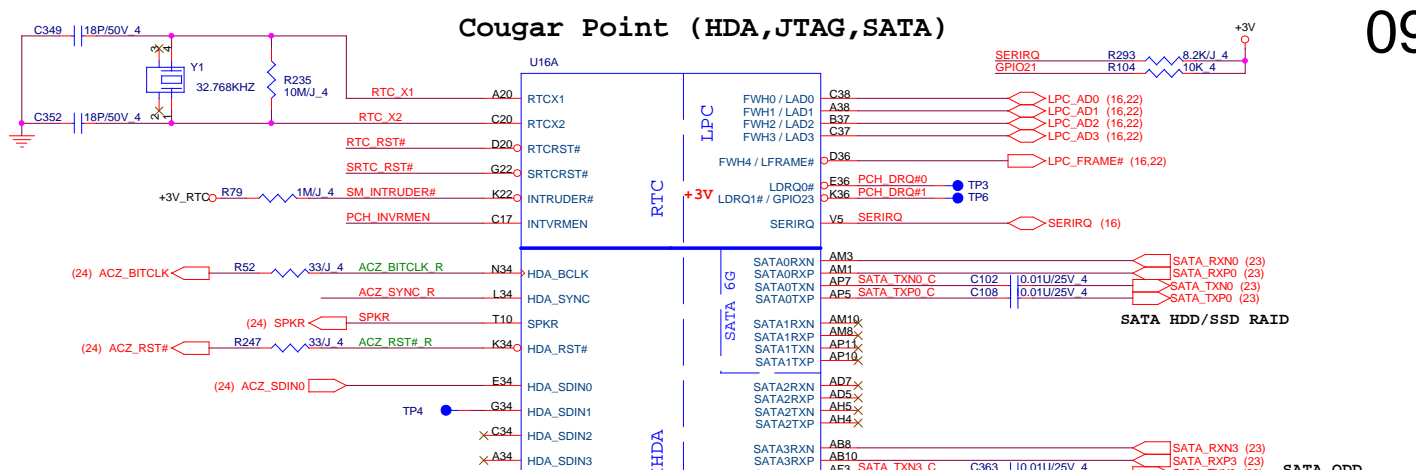
Size Document Number  
**Sandy Bridge 4/4** Rev 1A

Date: Monday, February 21, 2011 Sheet 7 of 39





## 09

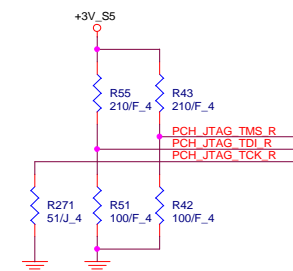


The diagram illustrates the internal wiring of the CougarPoint R1P0 board. Key features include:

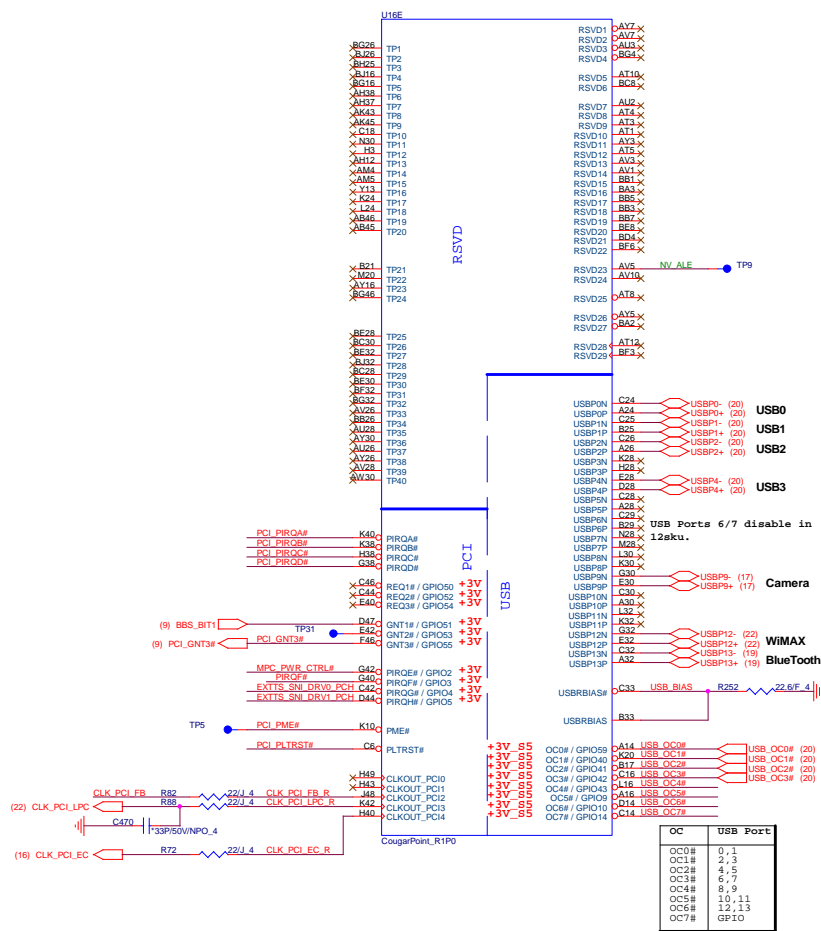
- Power Supply:** +3V and +1.05V rails are shown, with various resistors (R251, R106, R114, R308) used for voltage division and current limiting.
- Interfaces:**
  - SATA:** SATA3TXP, SATA4RXN, SATA4RXP, SATA4TXN, SATA4TXP, SATA5RXN, SATA5RXP, SATA5TXN, SATA5TXP.
  - JTAG:** JTAG\_TCK, JTAG\_TMS, JTAG\_TDI, JTAG\_TDO.
  - SPI:** SPI\_CLK, SPI\_CS0#, SPI\_CS1#, SPI\_MOSI, SPI\_MISO.
- Connectors:** TP1, TP8, TP39 are used for testing and debugging.
- Internal Components:** Various integrated circuits and components are labeled, including SATA3TXP, SATA4RXN, SATA4RXP, SATA4TXN, SATA4TXP, SATA5RXN, SATA5RXP, SATA5TXN, SATA5TXP, SATAICOMPO, SATAICOMPI, SATA3RCOMPO, SATA3COMPI, SATA3RBIAS, and SATALED#.

For NPCE795L Using

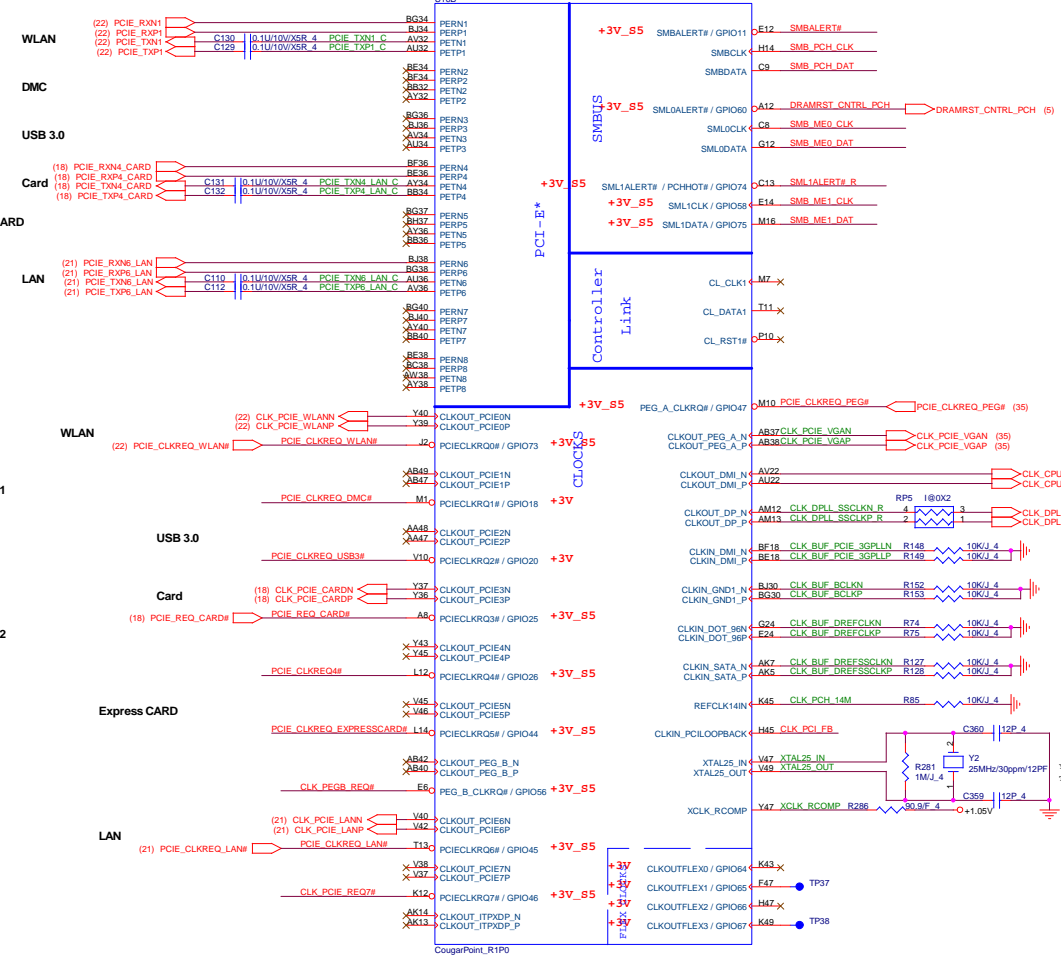
## PCH JTAG Debug (CLG)



Cougar Point-M (PCI,USB,NVRAM)



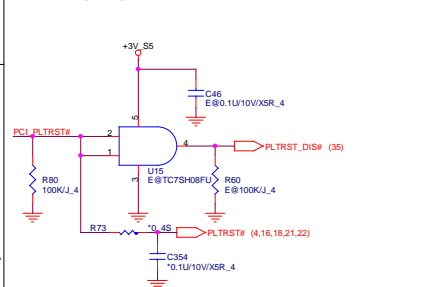
Cougar Point-M (PCI-E,SMBUS,CLK)



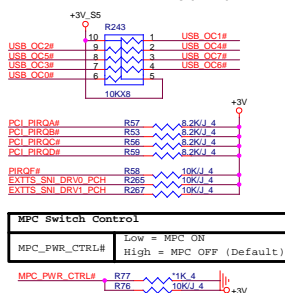
For LAN

For EC

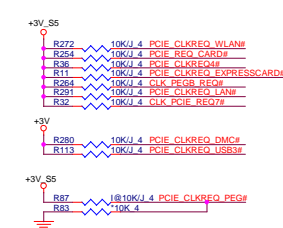
PLTRST#(CLG)



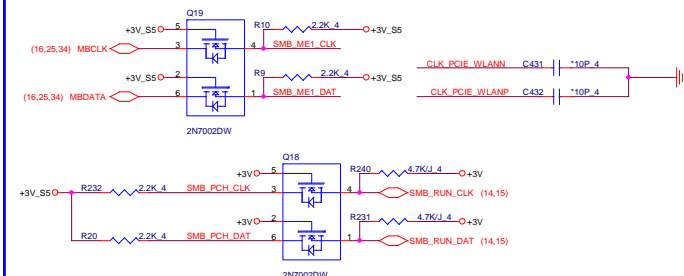
PCI/USB OC# Pull-up (CLG)



**CLK\_REQ/Strap Pin(CLG)**



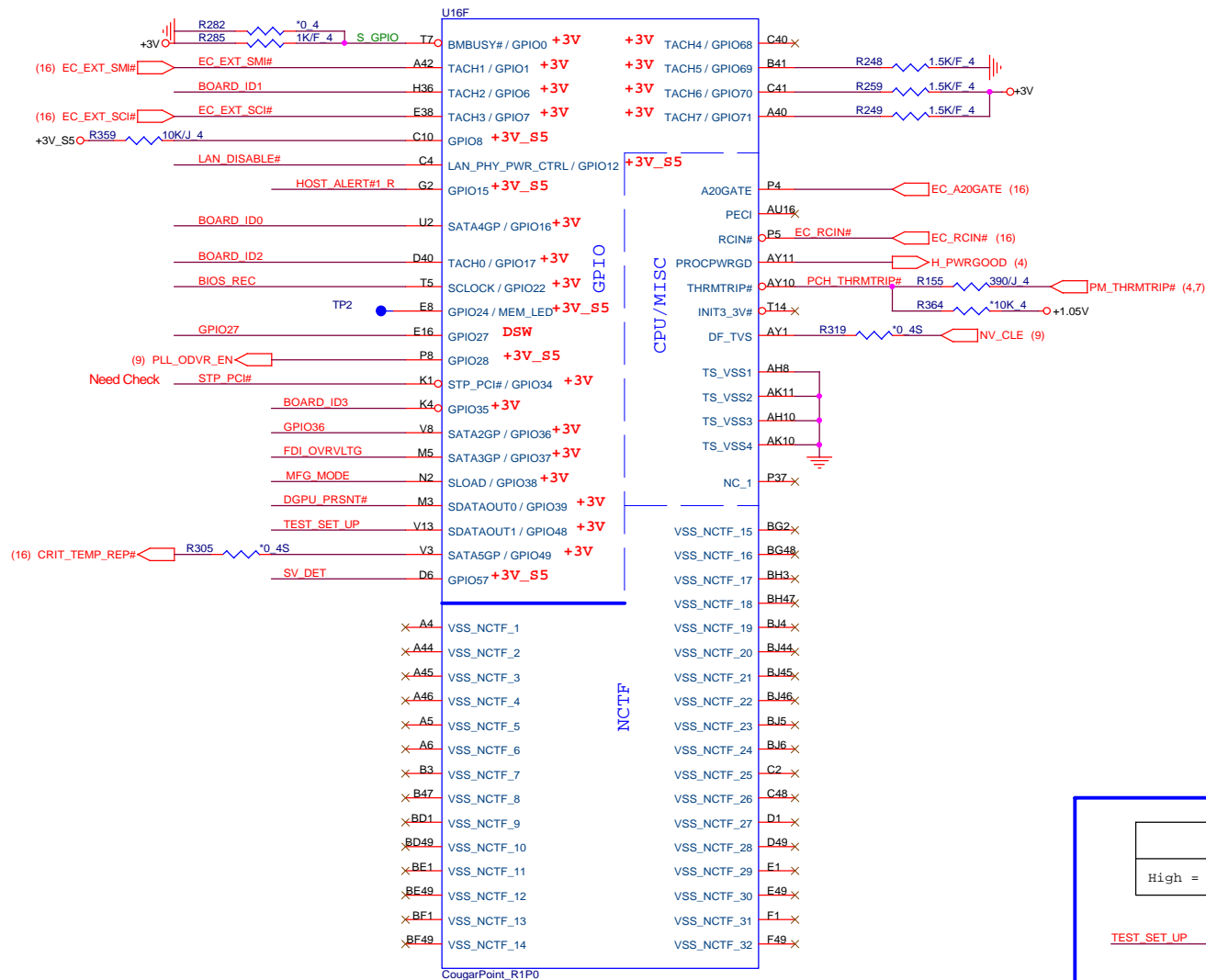
**SMBus/Pull-up(CLG)**



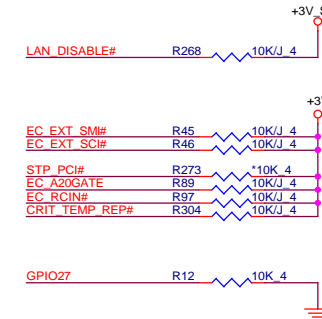
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|       |                         |                |
|-------|-------------------------|----------------|
| Size  | Document Number         | Rev            |
|       | <b>Cougar Point 3/6</b> | 1A             |
| Date: | Tuesday, April 05, 2011 | Sheet 10 of 39 |

# Cougar Point (GPIO,VSS\_NCTF,RSVD)



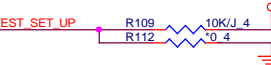
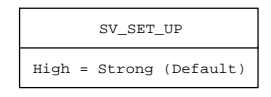
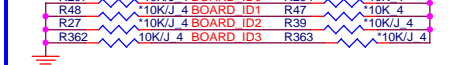
## GPIO Pull-up/Pull-down(CLG)



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

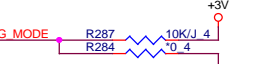
| Board ID1 (VRAM Vendor) | Samaung  | Hynix    |
|-------------------------|----------|----------|
| R47                     | Stuff    | No Stuff |
| R48                     | No Stuff | Stuff    |

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

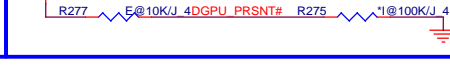


Intel ME Crypto Transport Layer Security (TLS) cipher suite  
Low = Disable (Default)  
High = Enable

## MFG-TEST



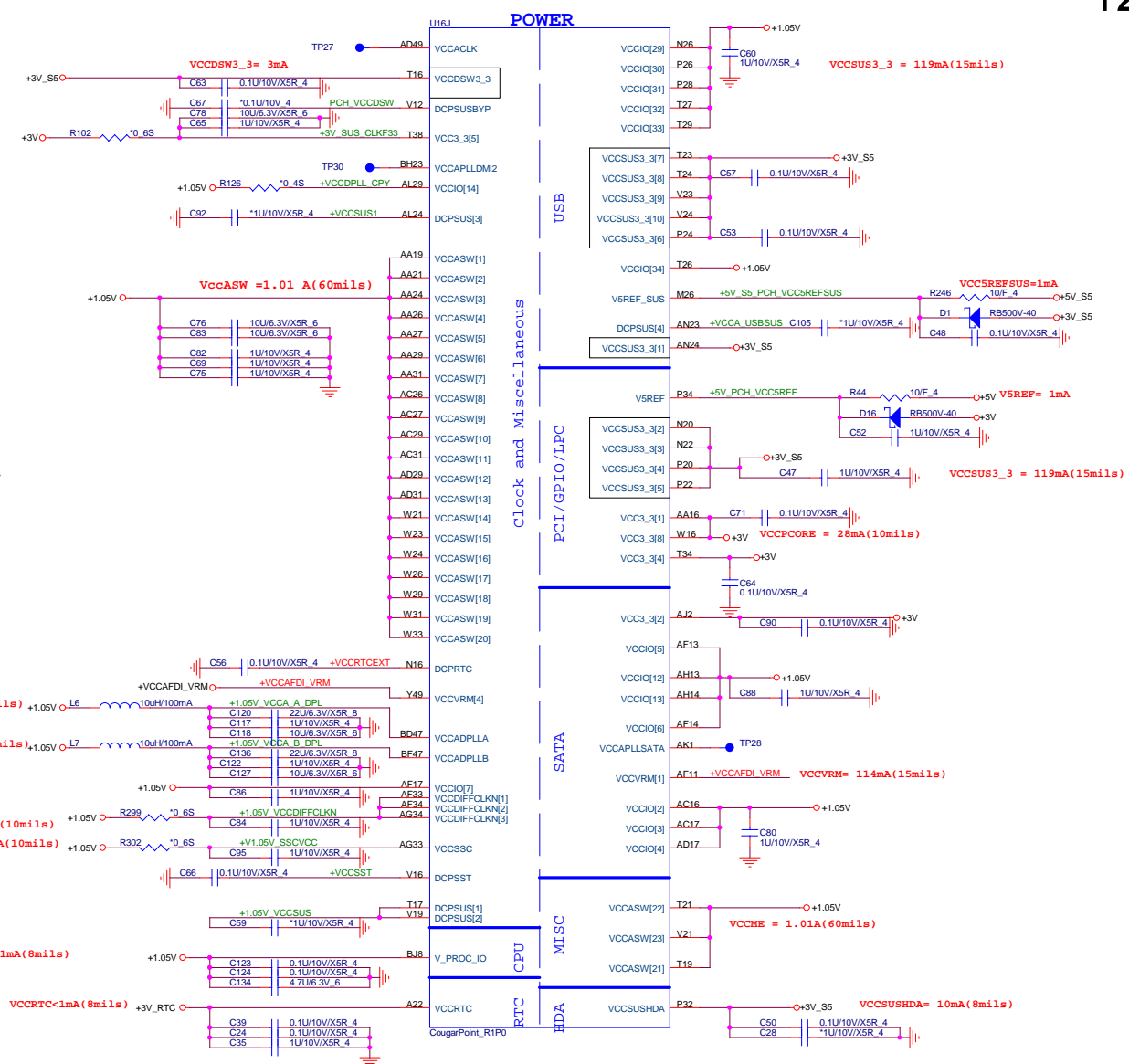
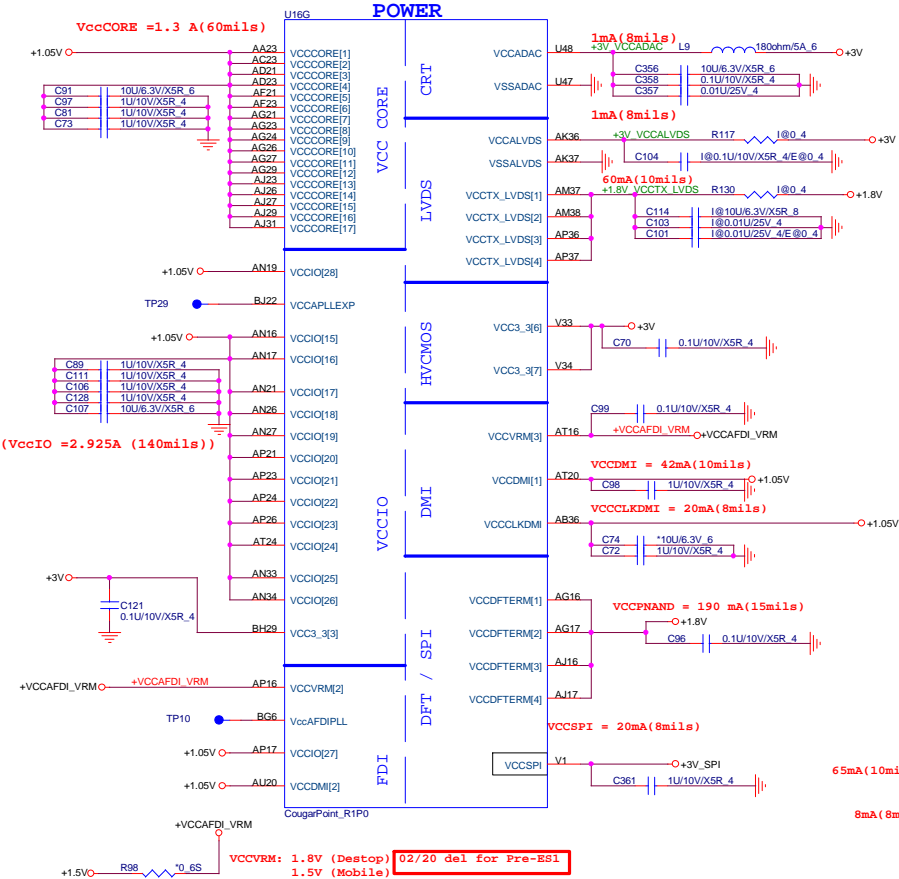
| PCBA SKU | Discrete | UMA      |
|----------|----------|----------|
| R277     | Stuff    | No Stuff |
| R275     | No Stuff | Stuff    |

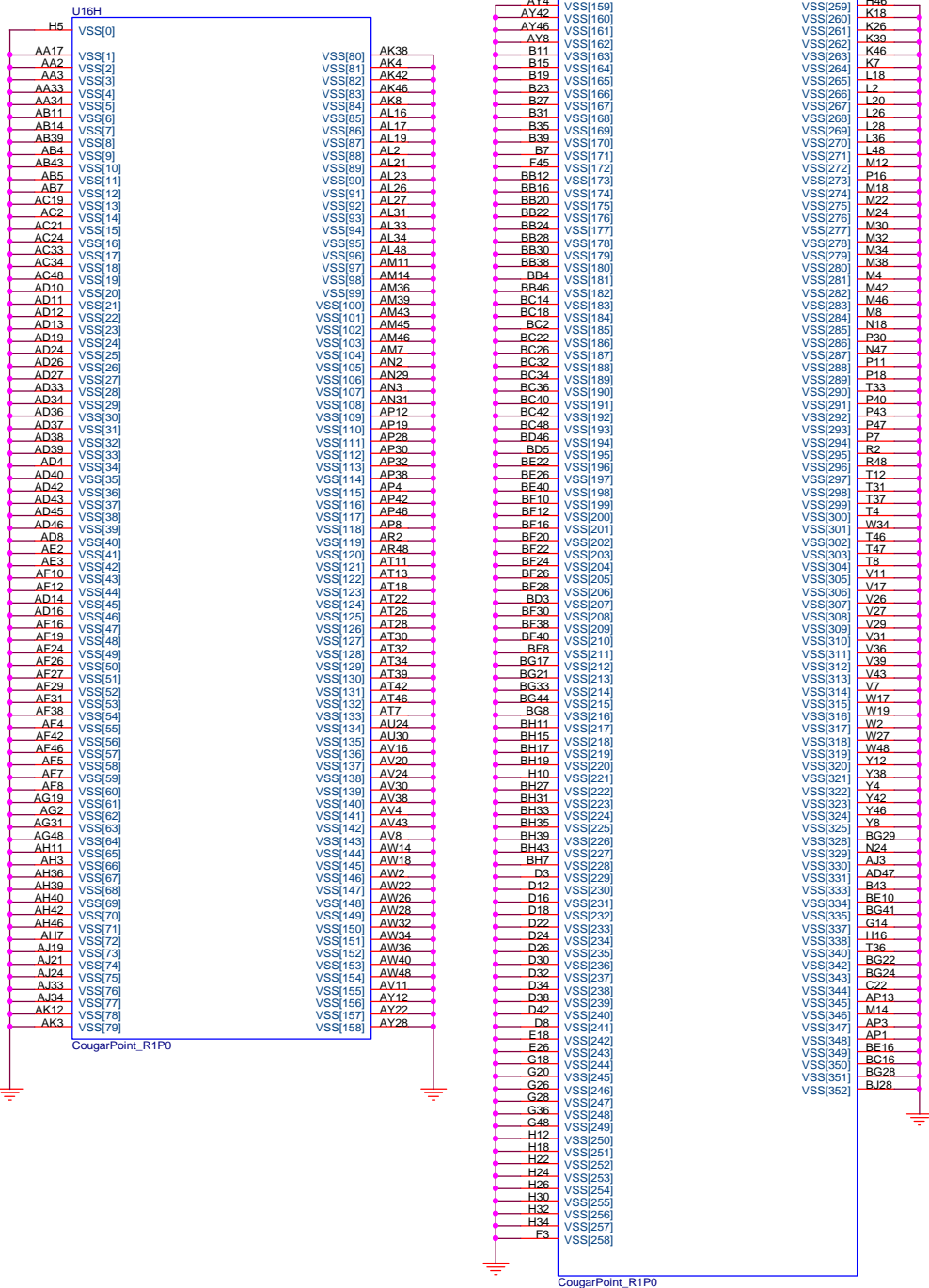


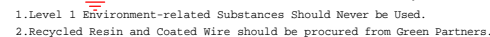
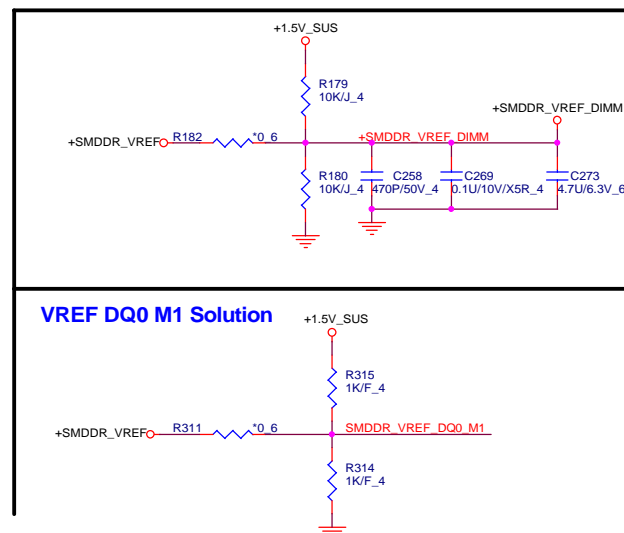
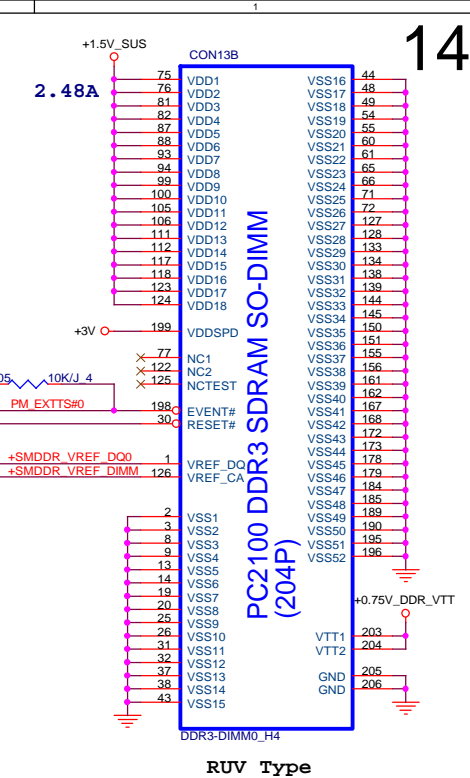
**Quanta Computer Inc.**  
PROJECT :Huron River

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

## PCH5 (CLG) COUGAR POINT (POWER)

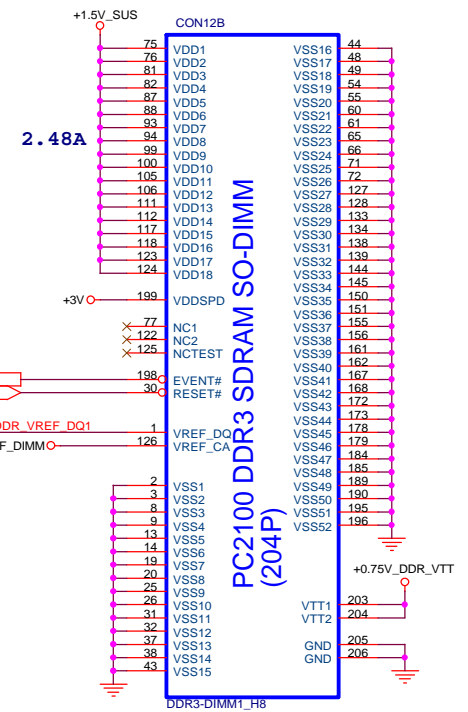
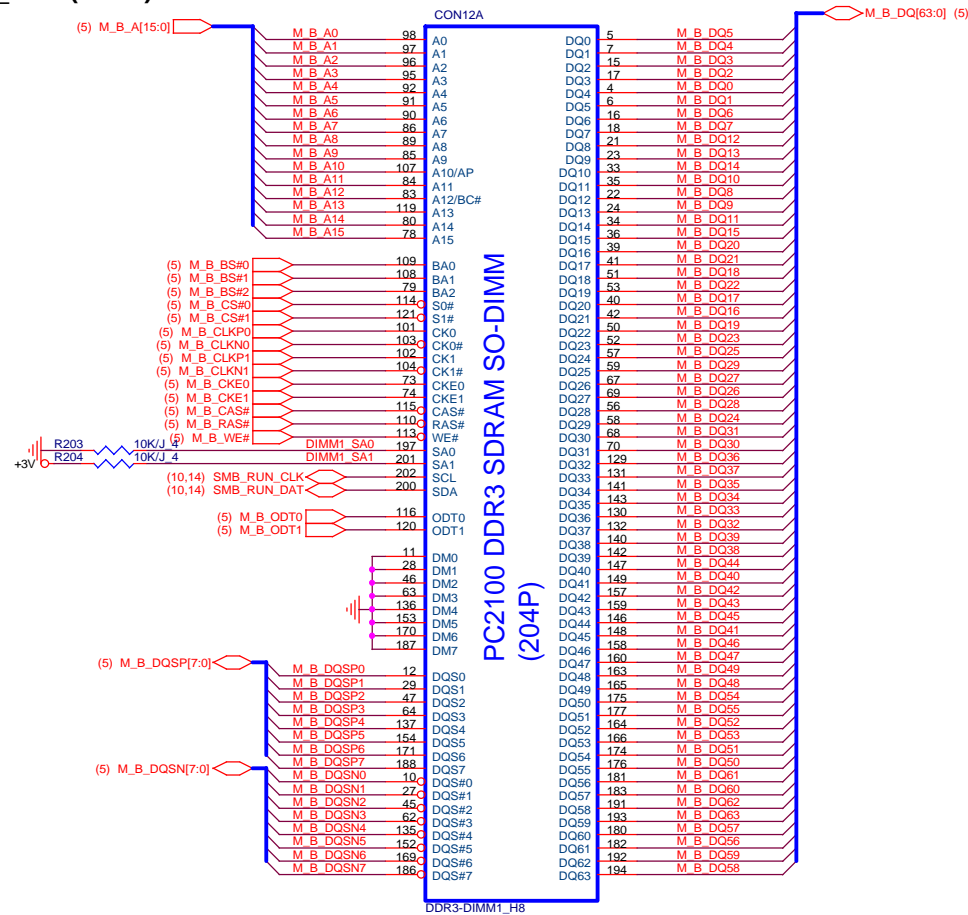






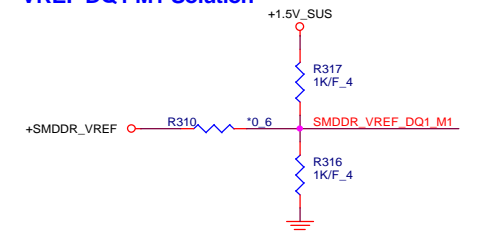


# DDR\_RVS (DDR)

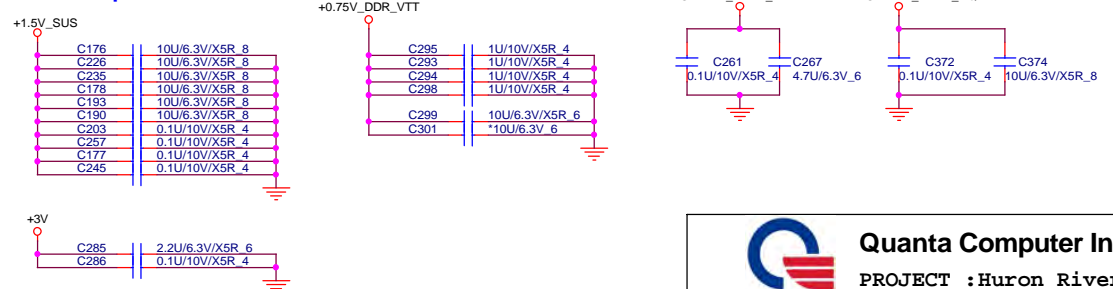


## RUV Type

### VREF DQ1 M1 Solution



## Place these Caps near So-Dimm1.



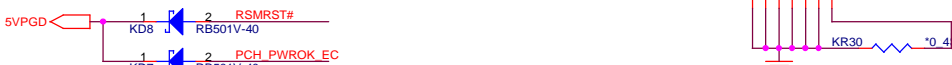
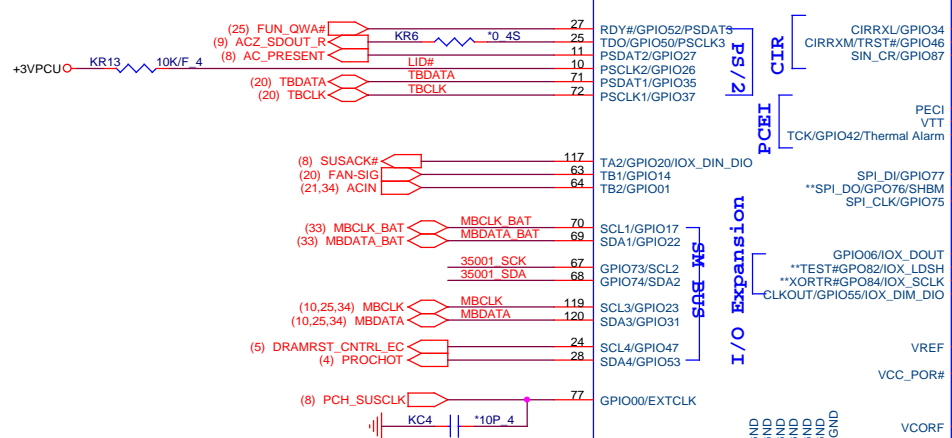
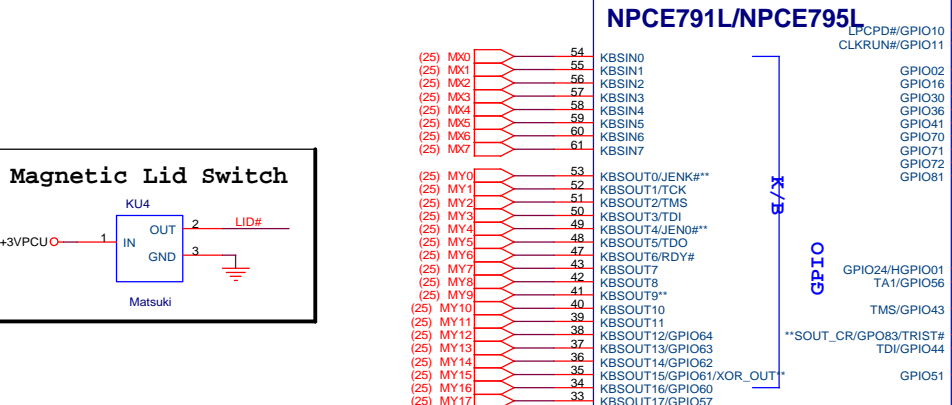
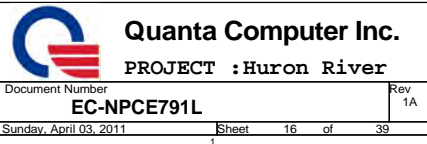
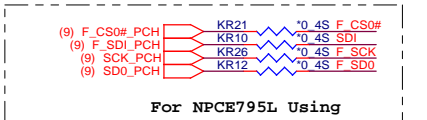
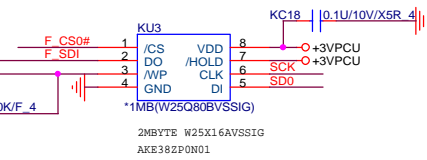
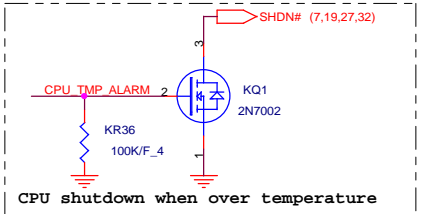
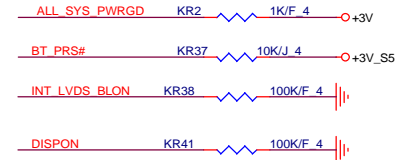
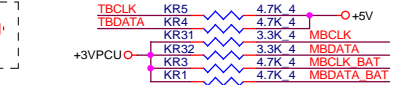
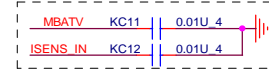
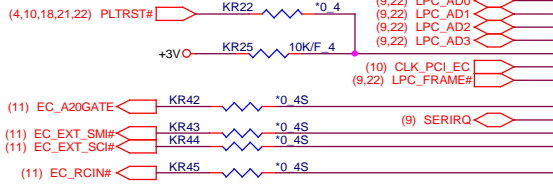
Quanta Computer Inc.  
PROJECT :Huron River

| Size | Document Number | Date                    | Sheet    | Rev |
|------|-----------------|-------------------------|----------|-----|
|      | DDR3 SO-DIMM-1  | Tuesday, April 05, 2011 | 15 of 39 | 1A  |

1.Level 1 Environment-related Substances Should Never be Used.

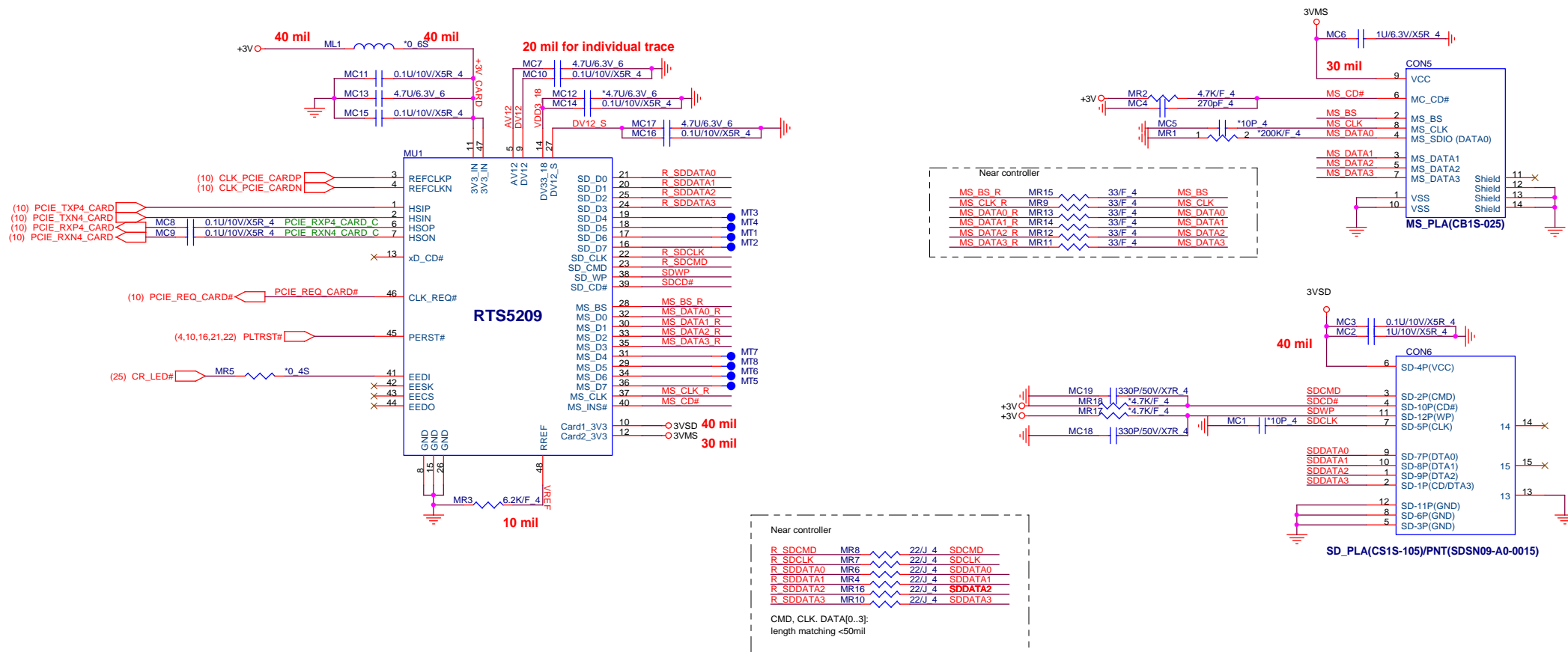
2.Recycled Resin and Coated Wire should be procured from Green Partners.

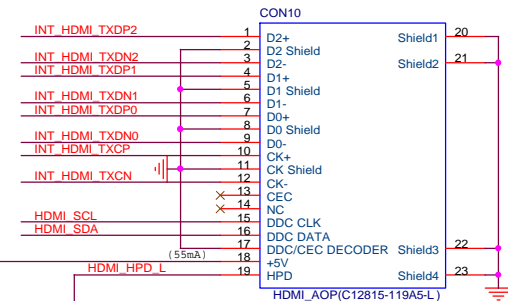
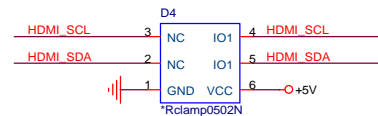
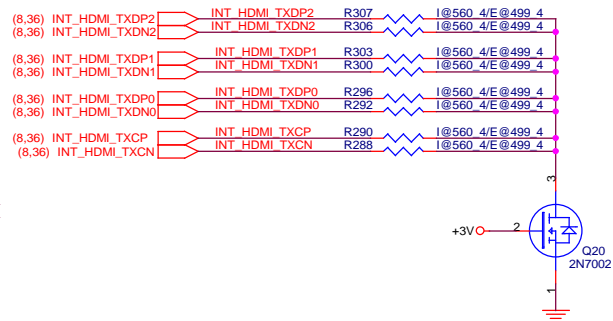
Note the input leakage current to the strap pins must be less than 10uA.



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

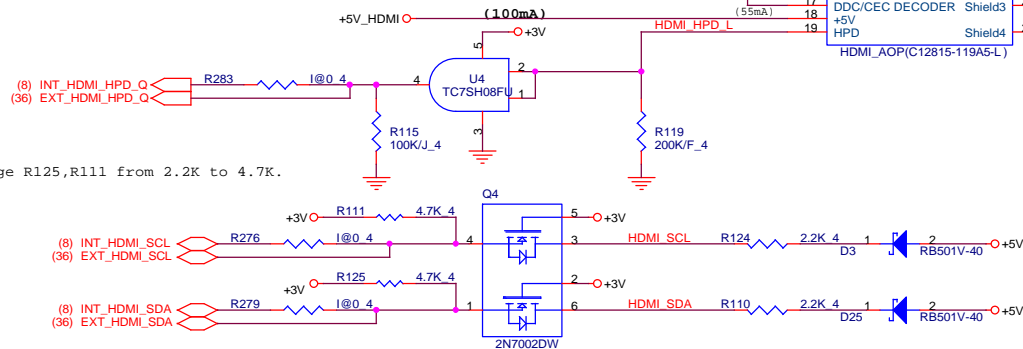
## USB Camera Power





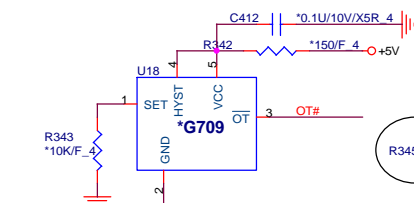
| Location of IC         | Temp | R-Set       | Parts in BOM | Max  | Min  |
|------------------------|------|-------------|--------------|------|------|
| Near CPU sensor temp   | 73   | R208=34.59K | 34.8K        | 73.2 | 72.2 |
| Near GFX sensor temp   | 73   | R146=34.59K | 34.8K        | 73.2 |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

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



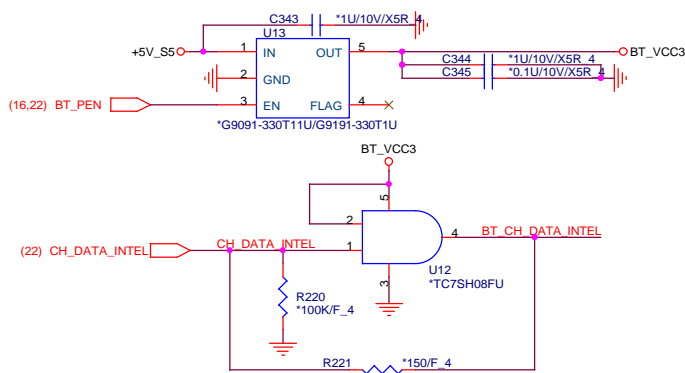
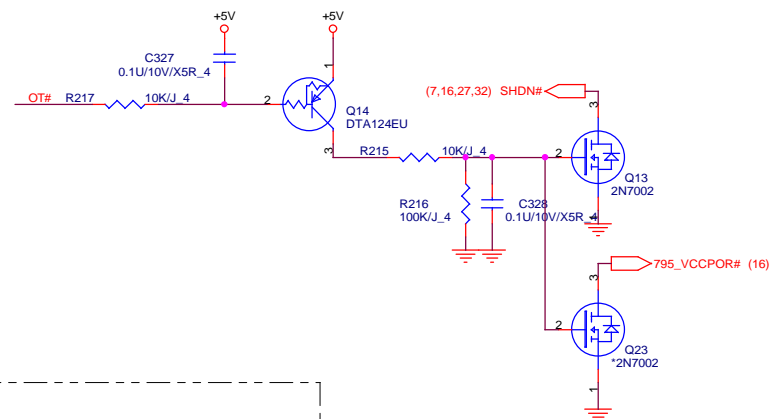
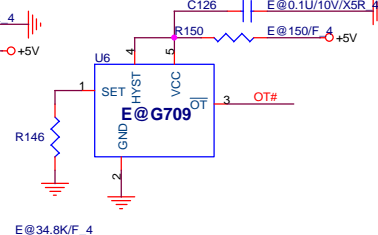
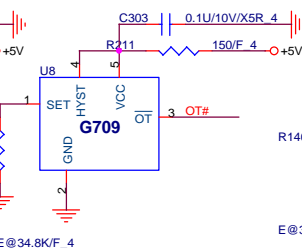
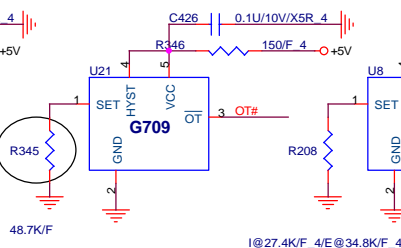
1/18 Change R125,R111 from 2.2K to 4.7K.

CPU Thermal Sensor      GPU Thermal Sensor



$$R_{SET}(k\Omega) = 0.0012T^2 - 0.9308T + 96.147$$

|     |       |
|-----|-------|
| 95  | 18.5K |
| 100 | 15K   |
| 107 | 10.3K |
| 110 | 8.2K  |



**(80mA)**

**CON19**

1 BT\_VCC3 (80mA) VCC(3.3)

2 GND

3 BT\_CH\_DATA\_INTEL CH\_DAT\_INTEL

4 BT\_CH\_CLK\_INTEL CH\_CLK\_INTEL (22)

5 (10) USBP13- USB\_BT-

6 (10) USBP13+ USB\_BT+

7 BT\_LED LED

8 NC

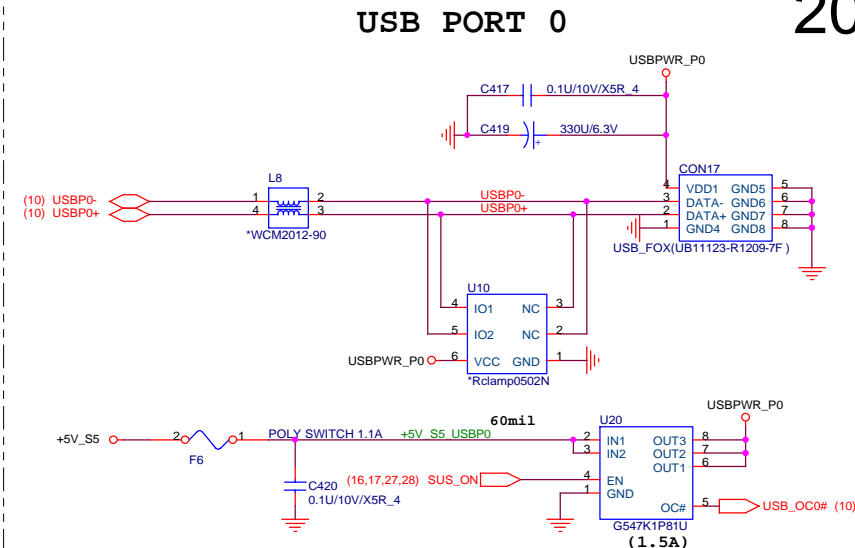
9 BT\_LED

10 BT\_PRIS#

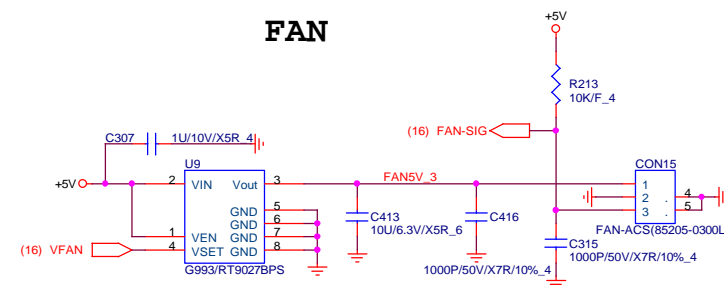
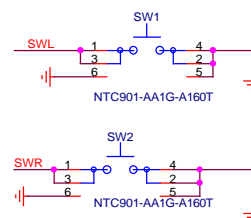
BT(AKK5F10547YG)

**MAT AKK5F10547YG**

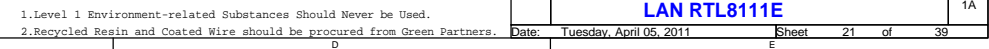
## 20



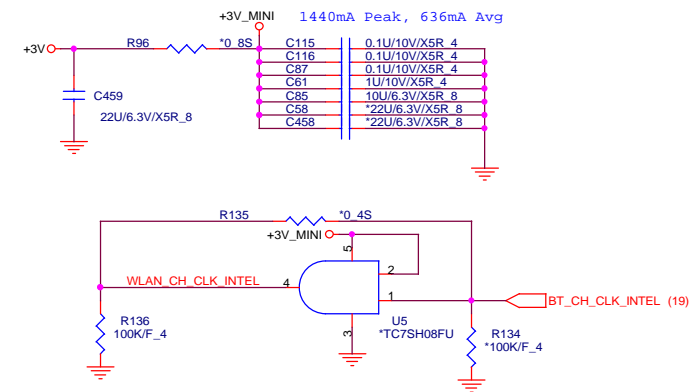
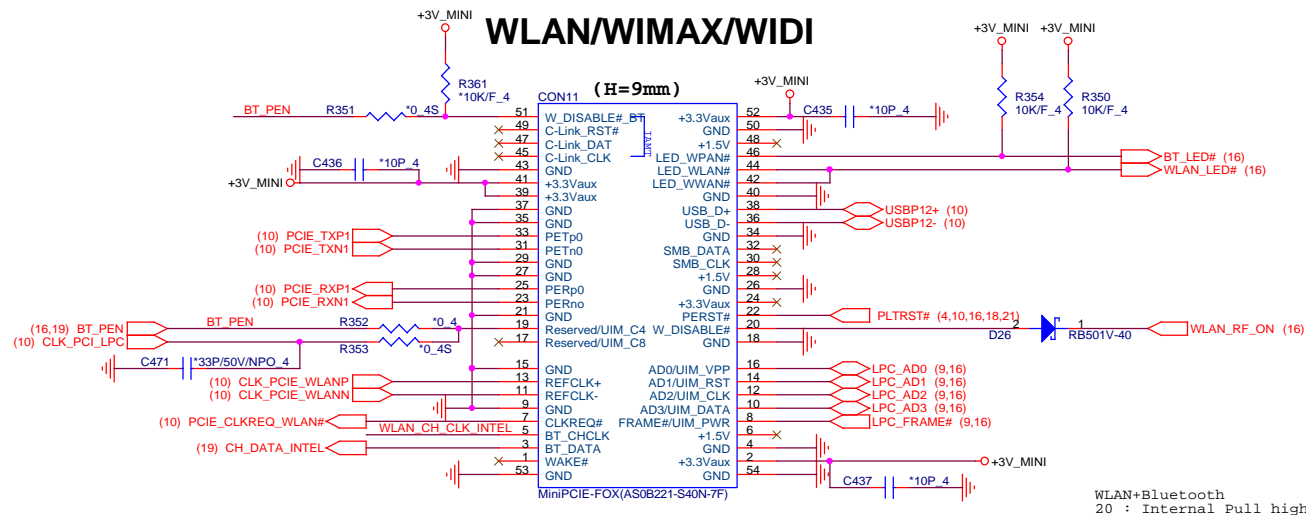
**FAN**





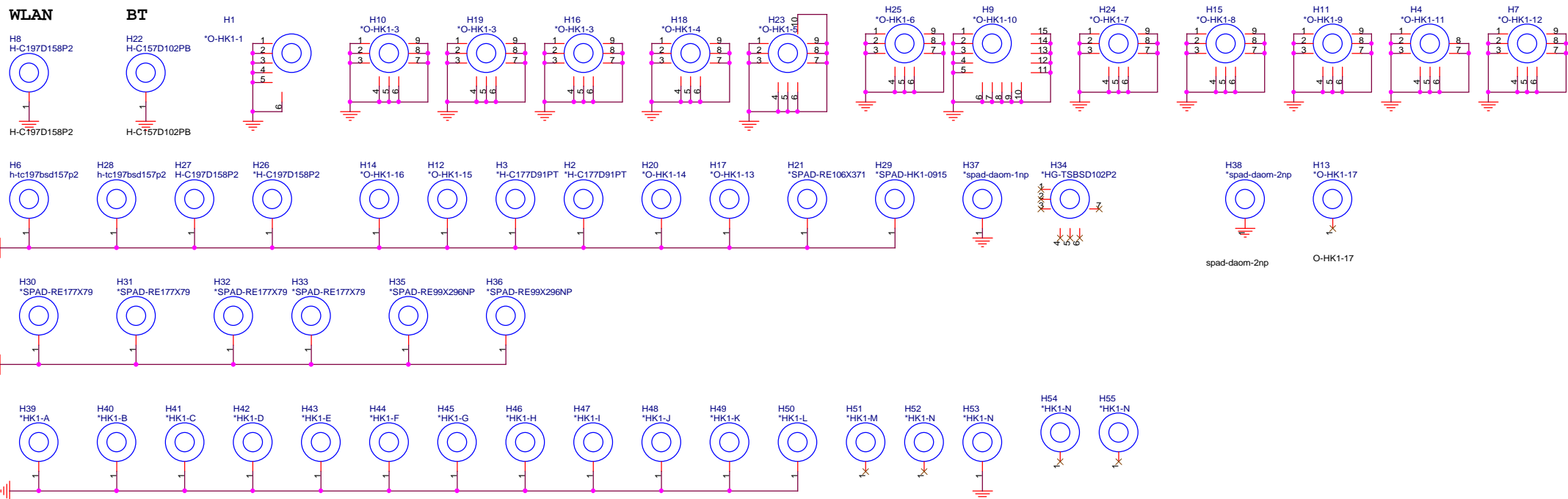


## WLAN/WIMAX/WIDI



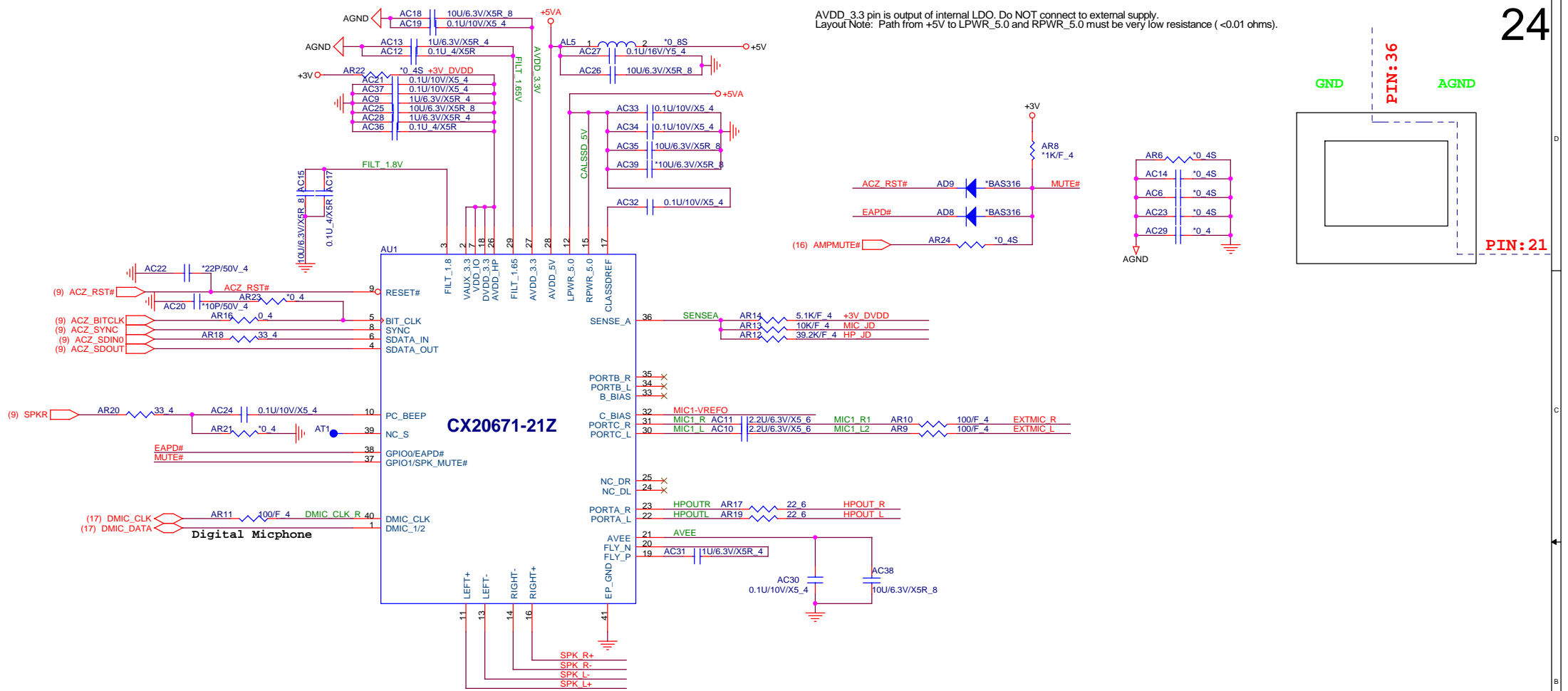
WLAN+Bluetooth  
20 : Internal Pull high 25K ~ 58K

# HOLE



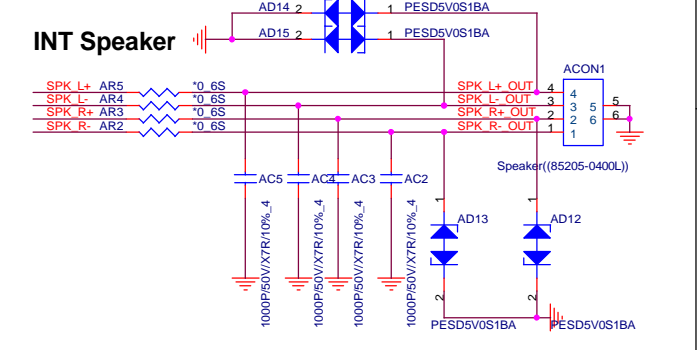
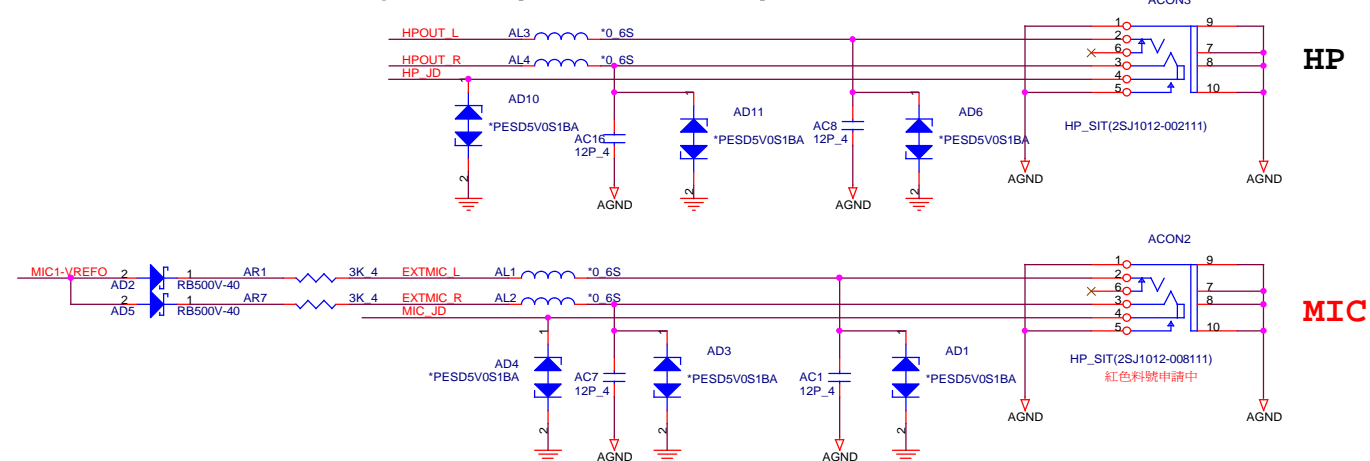


AVDD\_3.3 pin is output of internal LDO. Do NOT connect to external supply.  
Layout Note: Path from +5V to LPWR\_5.0 and RPWR\_5.0 must be very low resistance (<0.01 ohms).



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

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

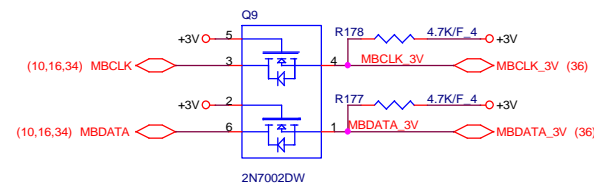


**Quanta Computer Inc.**  
PROJECT : Huron River  
**Audio Codec CX20671**

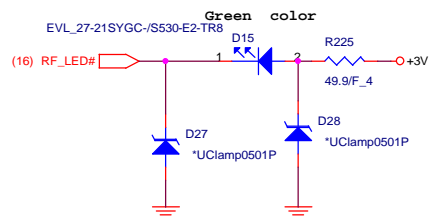
|      |                 |                         |       |          |
|------|-----------------|-------------------------|-------|----------|
| Size | Document Number | Date                    | Sheet | 24 of 39 |
|      |                 | Tuesday, April 05, 2011 |       |          |

Rev 1A

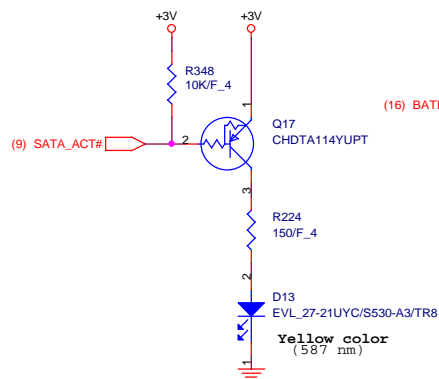
## WIRELESS/Bluetooth SWITCH



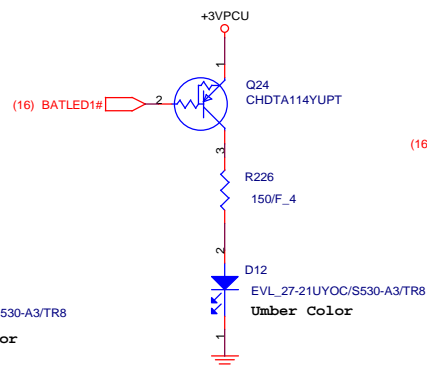
## RF LED



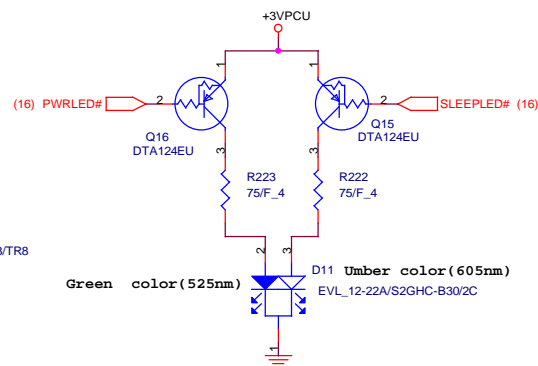
## SATA LED



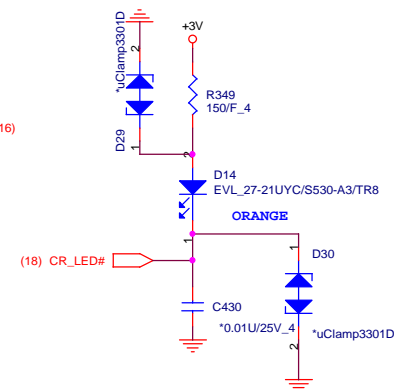
## BATTERY LED



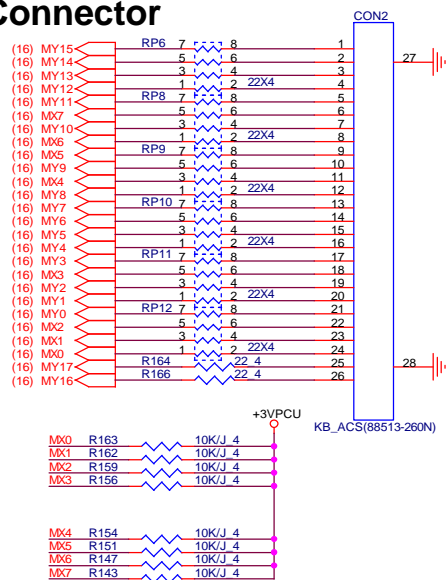
## Power/Sleep LED



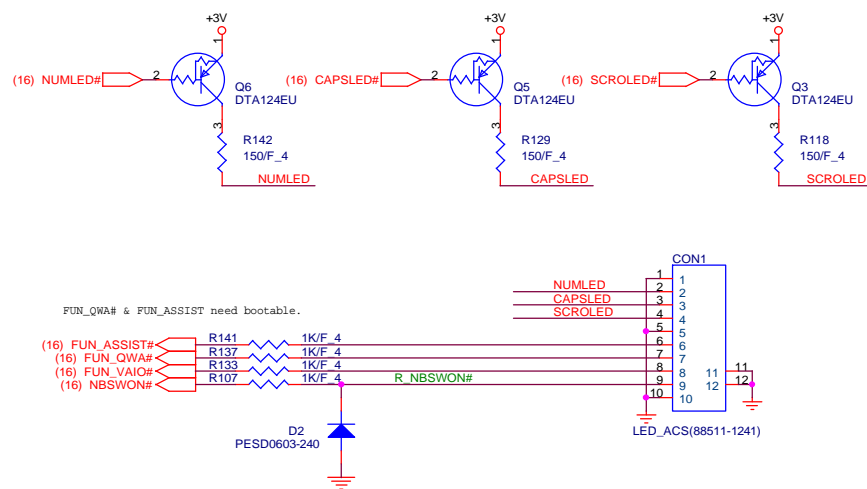
## CARD LED



## KEY BOARD Connector



## Power SW Board Connector



Quanta Computer Inc.

PROJECT :Huron River

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

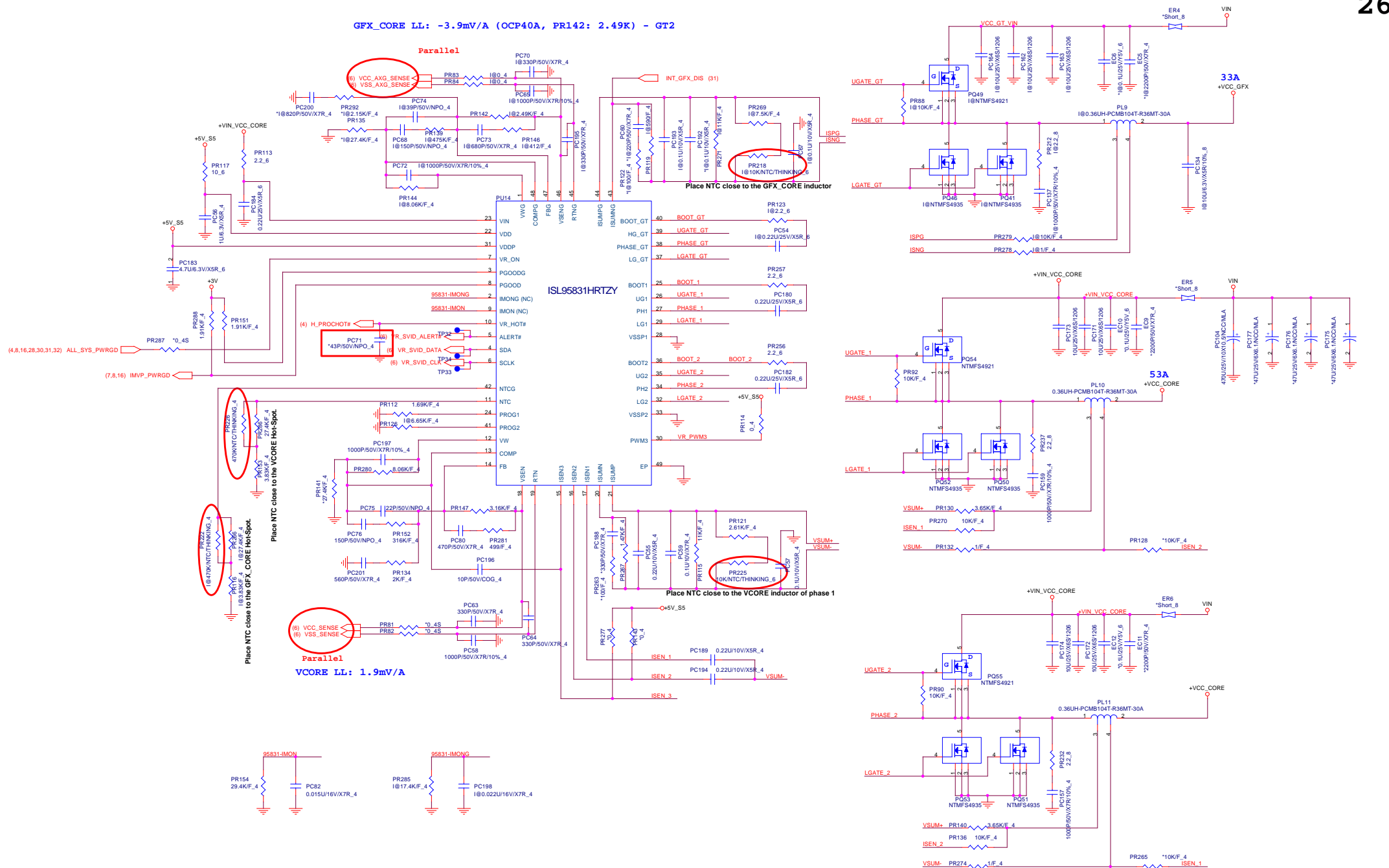
1.Level 1 Environment-related Substances Should Never be Used.

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 (OCP40A, PR142: 2.49K) - GT2



Quanta Computer Inc.  
PROJECT : Huron River

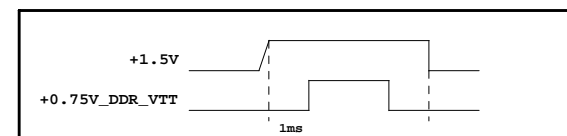
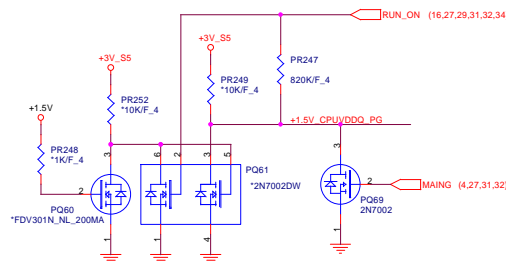
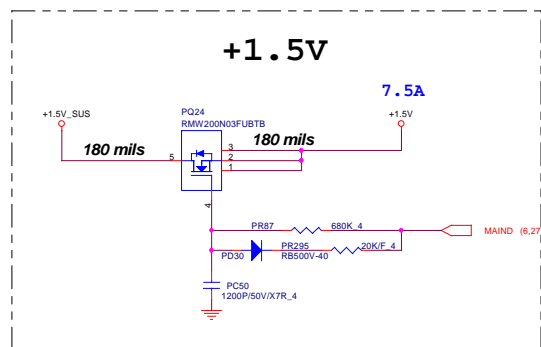
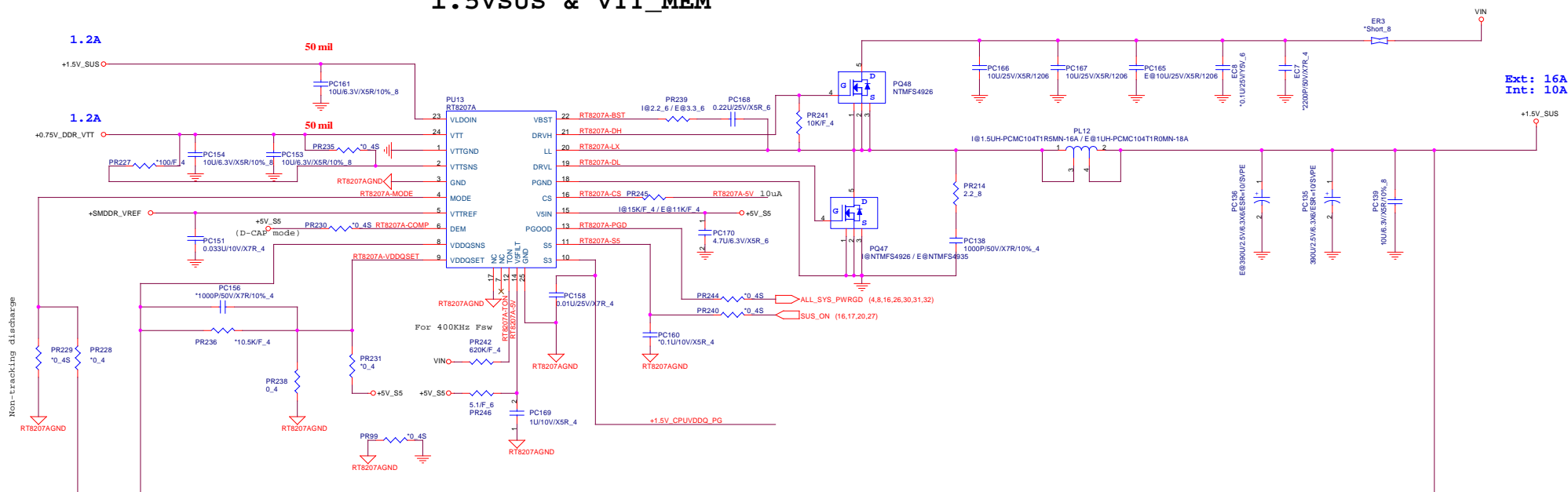
Size Document Number  
+VCC\_CORE (ISL95831)

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 26 of 39





## 1.5VSUS & VTT\_MEM



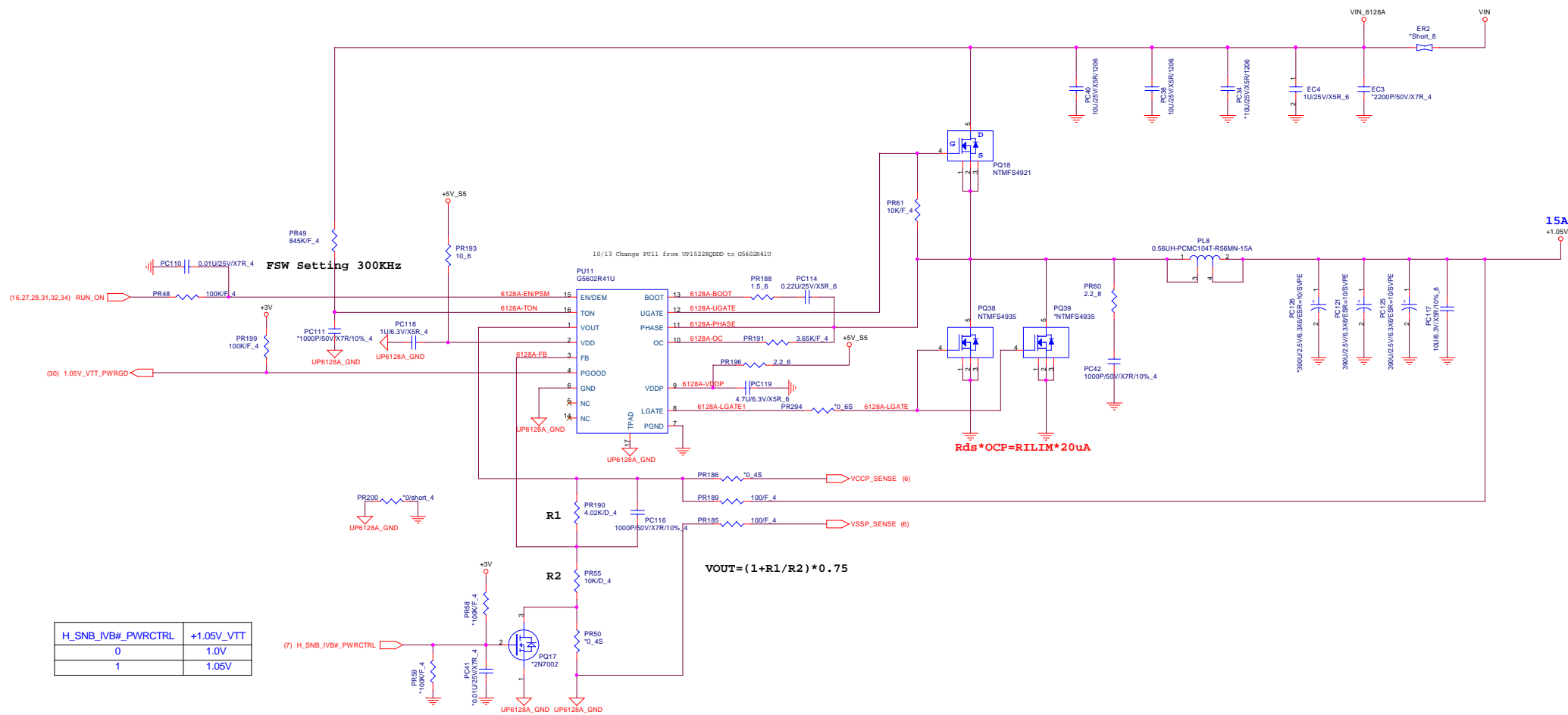
|       |                        |
|-------|------------------------|
| MODE  | DISCHARGE MODE         |
| +5V   | No discharge           |
| +1.5V | Tracking discharge     |
| GND   | Non-tracking discharge |

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

$$V_{TT} = V_{TTREF} = V_{DDQSNS}/2 = 0.75V$$

| 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 |

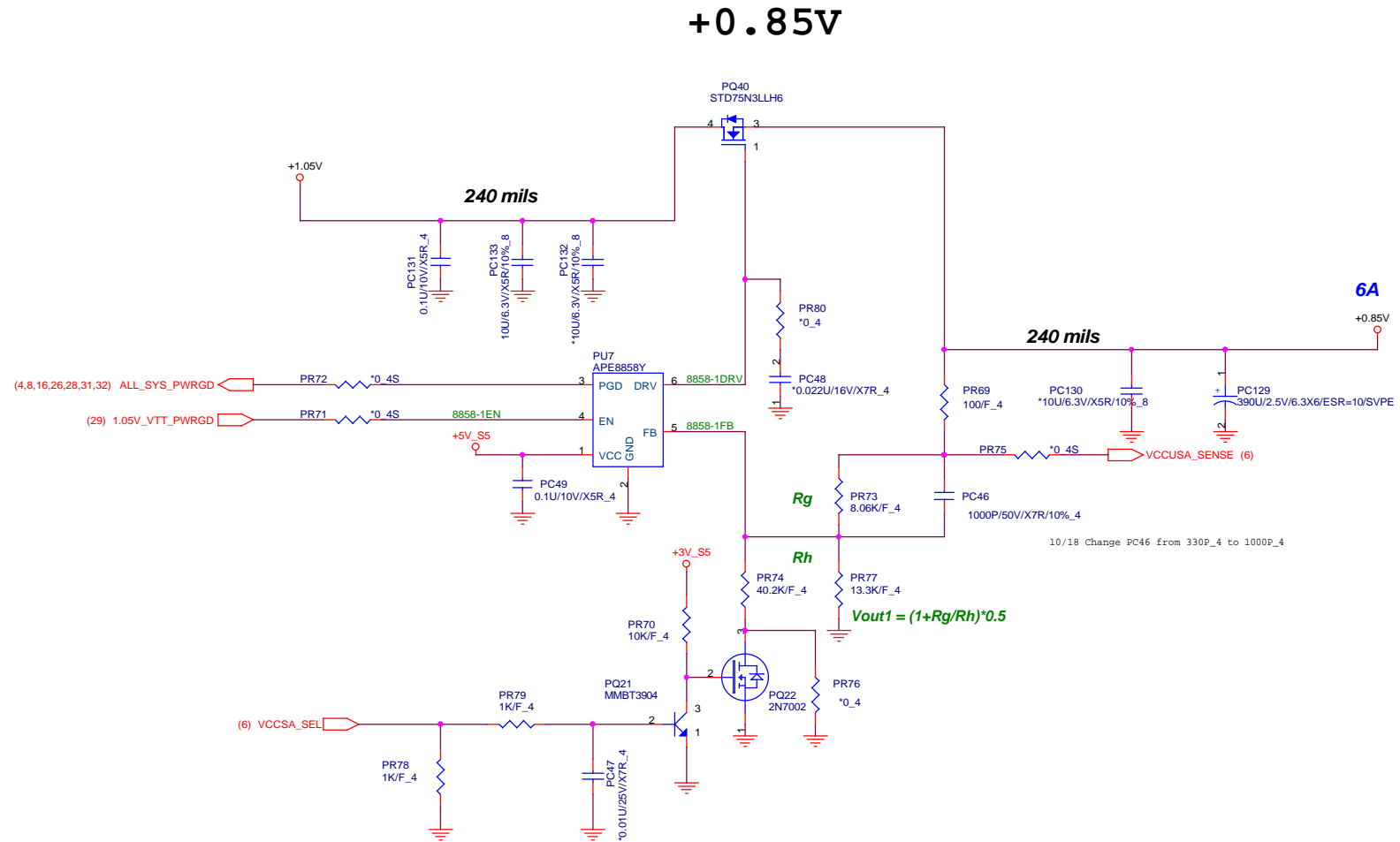
+1.05V / 15.0A



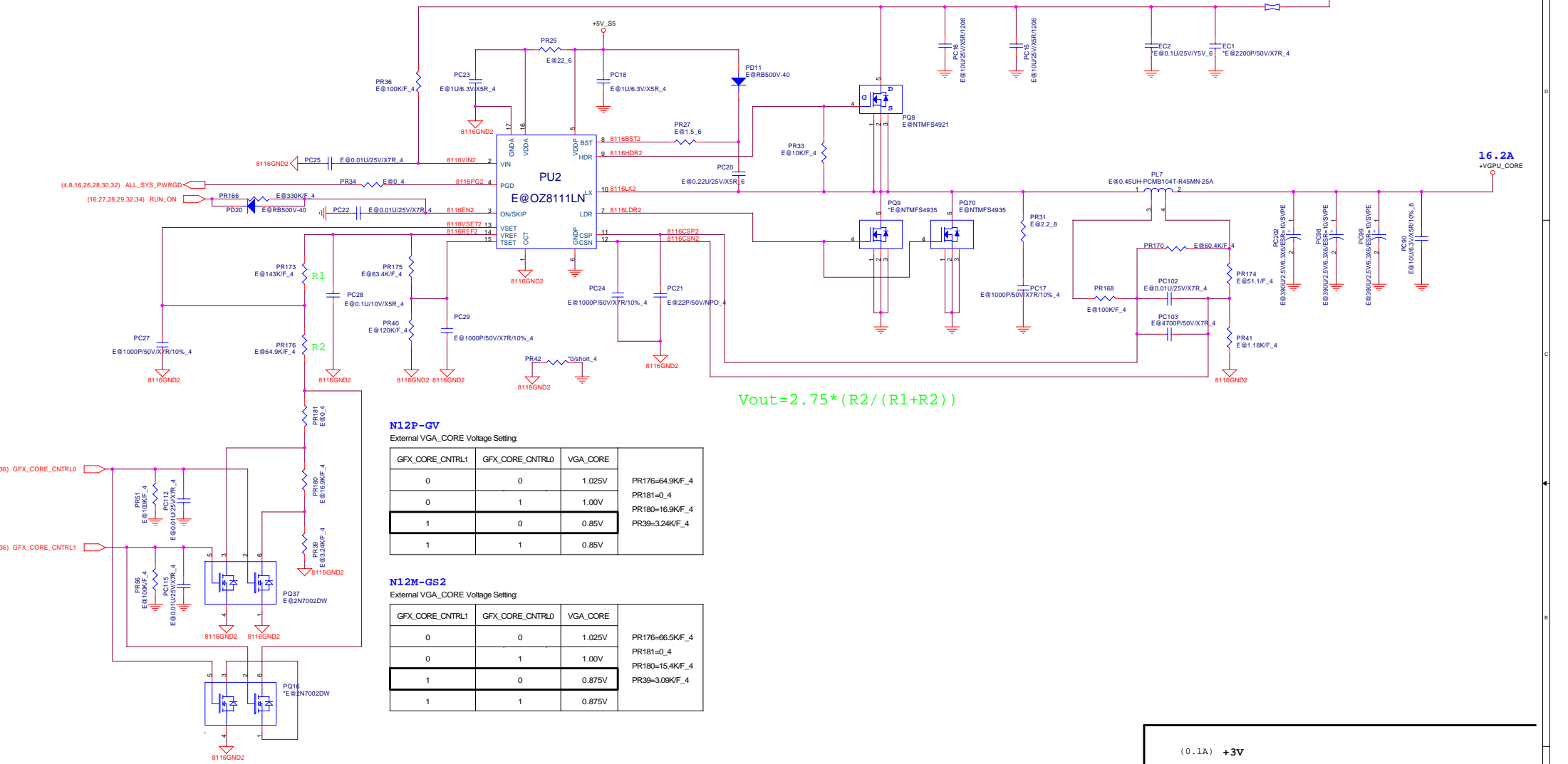
**Quanta Computer Inc.**  
**PROJECT : Huron River**

Size Document Number  
**+1.05V (UP1522RQDD)-15A**  
 Date: Tuesday, April 05, 2011 Sheet 29 of 39

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



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

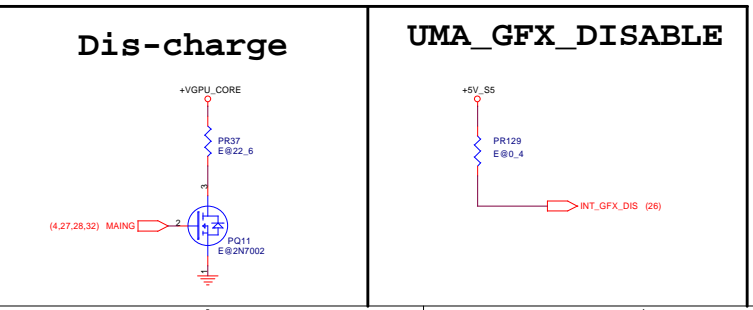


**N12P-GV**  
External VGA\_CORE Voltage Setting:

| 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**

**Quanta Computer Inc.**

**PROJECT : Huron River**

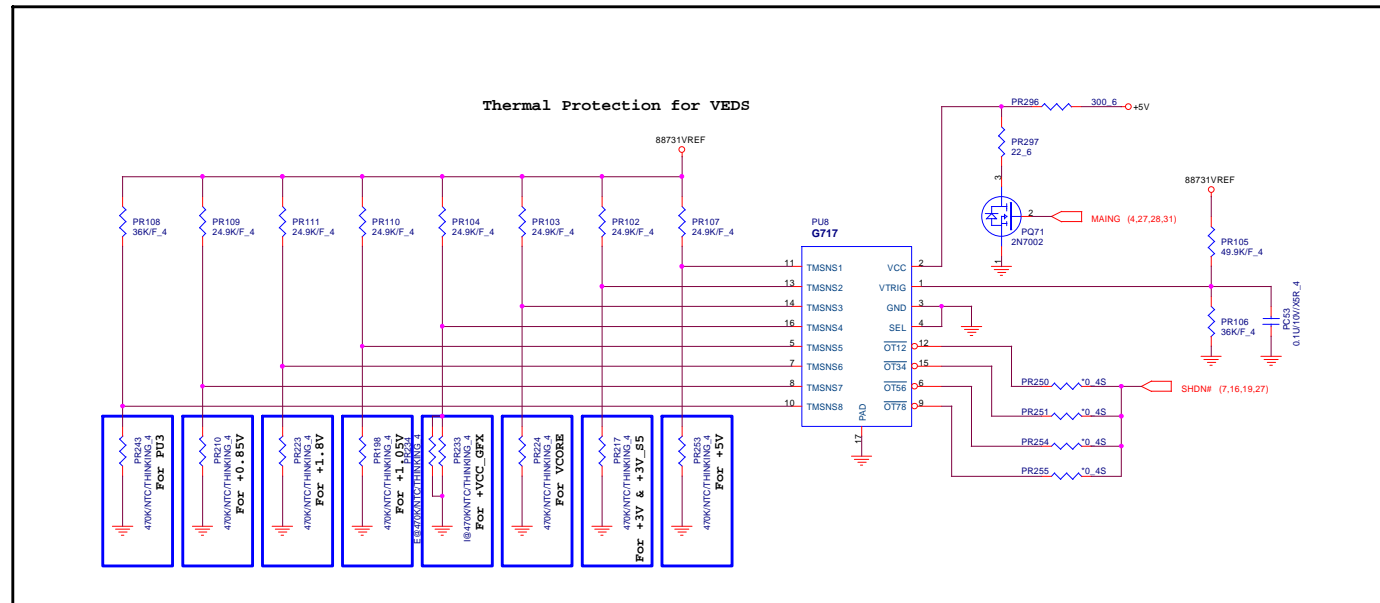
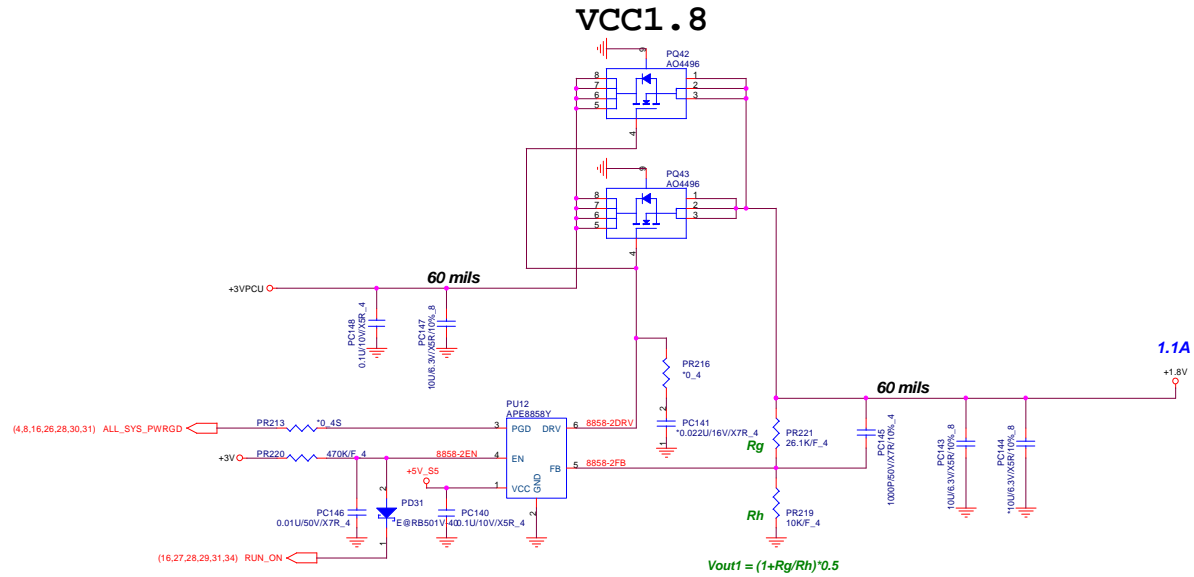
VGA\_CORE(OZ8111)-15A

Size Document Number

1A

Date: Tuesday, April 05, 2011

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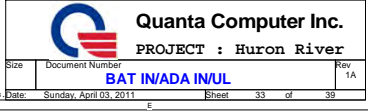
Quanta Computer Inc.  
PROJECT : Huron River

Size Document Number  
VCC1.8  
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 32 of 39





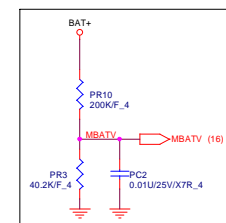
2. Recycled Resin and Coated Wire should be procured from Green Partner

BA

---

BAT IN/ADA IN/UL

| Jan 03, 2011 | Jan 03, 2011 | Jan 03, 2011 | Jan 03, 2011 |
|--------------|--------------|--------------|--------------|
| 1            | 1            | 1            | 1            |
| 2            | 2            | 2            | 2            |
| 3            | 3            | 3            | 3            |
| 4            | 4            | 4            | 4            |
| 5            | 5            | 5            | 5            |
| 6            | 6            | 6            | 6            |
| 7            | 7            | 7            | 7            |
| 8            | 8            | 8            | 8            |
| 9            | 9            | 9            | 9            |
| 10           | 10           | 10           | 10           |
| 11           | 11           | 11           | 11           |
| 12           | 12           | 12           | 12           |
| 13           | 13           | 13           | 13           |
| 14           | 14           | 14           | 14           |
| 15           | 15           | 15           | 15           |
| 16           | 16           | 16           | 16           |
| 17           | 17           | 17           | 17           |
| 18           | 18           | 18           | 18           |
| 19           | 19           | 19           | 19           |
| 20           | 20           | 20           | 20           |
| 21           | 21           | 21           | 21           |
| 22           | 22           | 22           | 22           |
| 23           | 23           | 23           | 23           |
| 24           | 24           | 24           | 24           |
| 25           | 25           | 25           | 25           |
| 26           | 26           | 26           | 26           |
| 27           | 27           | 27           | 27           |
| 28           | 28           | 28           | 28           |
| 29           | 29           | 29           | 29           |
| 30           | 30           | 30           | 30           |
| 31           | 31           | 31           | 31           |





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

| 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

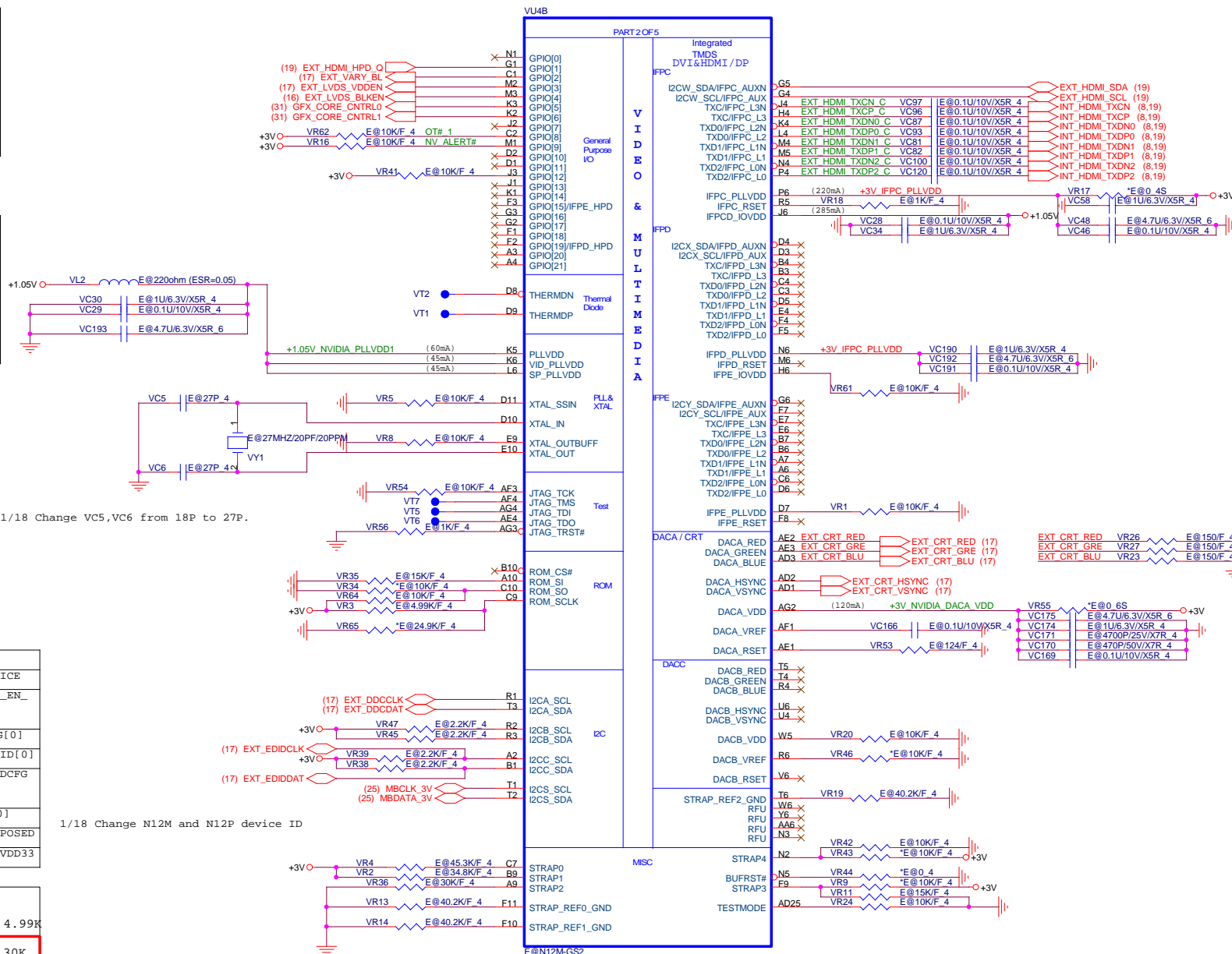
| Straps   | Bit 3              | Bit 2              | Bit 1              | Bit 0              |
|----------|--------------------|--------------------|--------------------|--------------------|
| ROM_SO   | FB[1]              | FB[1]              | SMB_ALT_ADDR       | VGA_DEVICE         |
| ROM_SCLK | 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<br>[3] | 3GIO_PADCFG<br>[2] | 3GIO_PADCFG<br>[1] | 3GIO_PADCFG<br>[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

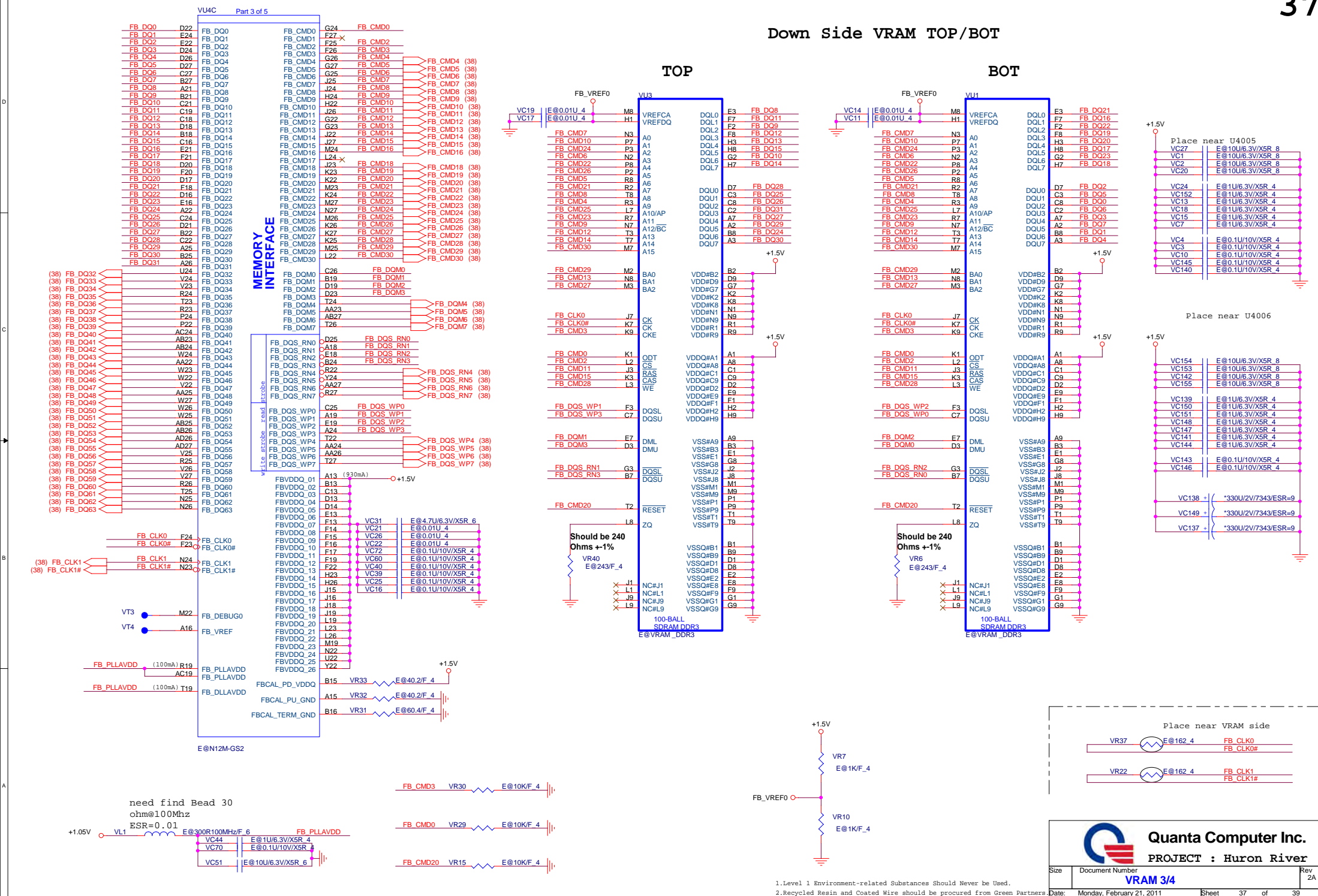
|      | VRAM Capacity | VRAM Vender | ID   | VR35  | P/N             | P/N |
|------|---------------|-------------|------|-------|-----------------|-----|
| N12M | 64Mx16 DDR3   | Hynix       | 0010 | PD15K | H5TQ1G63DFR-12C |     |
|      |               | Samsung     | 0011 | PD20K | K4W1G1646G-BC12 |     |
|      | 128Mx16 DDR3  | Hynix       | 0110 | PD35K | H5TQ2G63BFR-12C |     |
|      |               | Samsung     | 0111 | PD45K | K4W2G1646C-HC12 |     |



## Down Side VRAM TOP/BOT

TOP

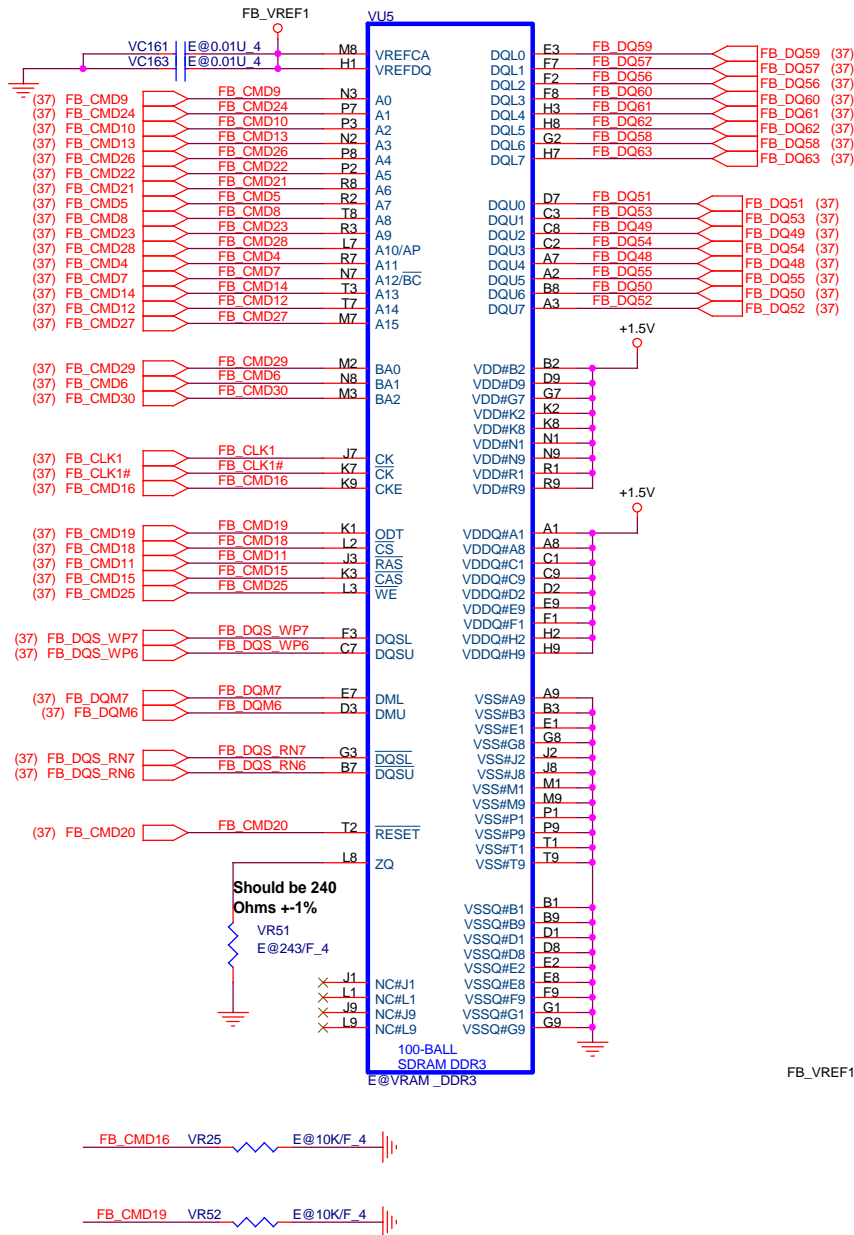
BOT



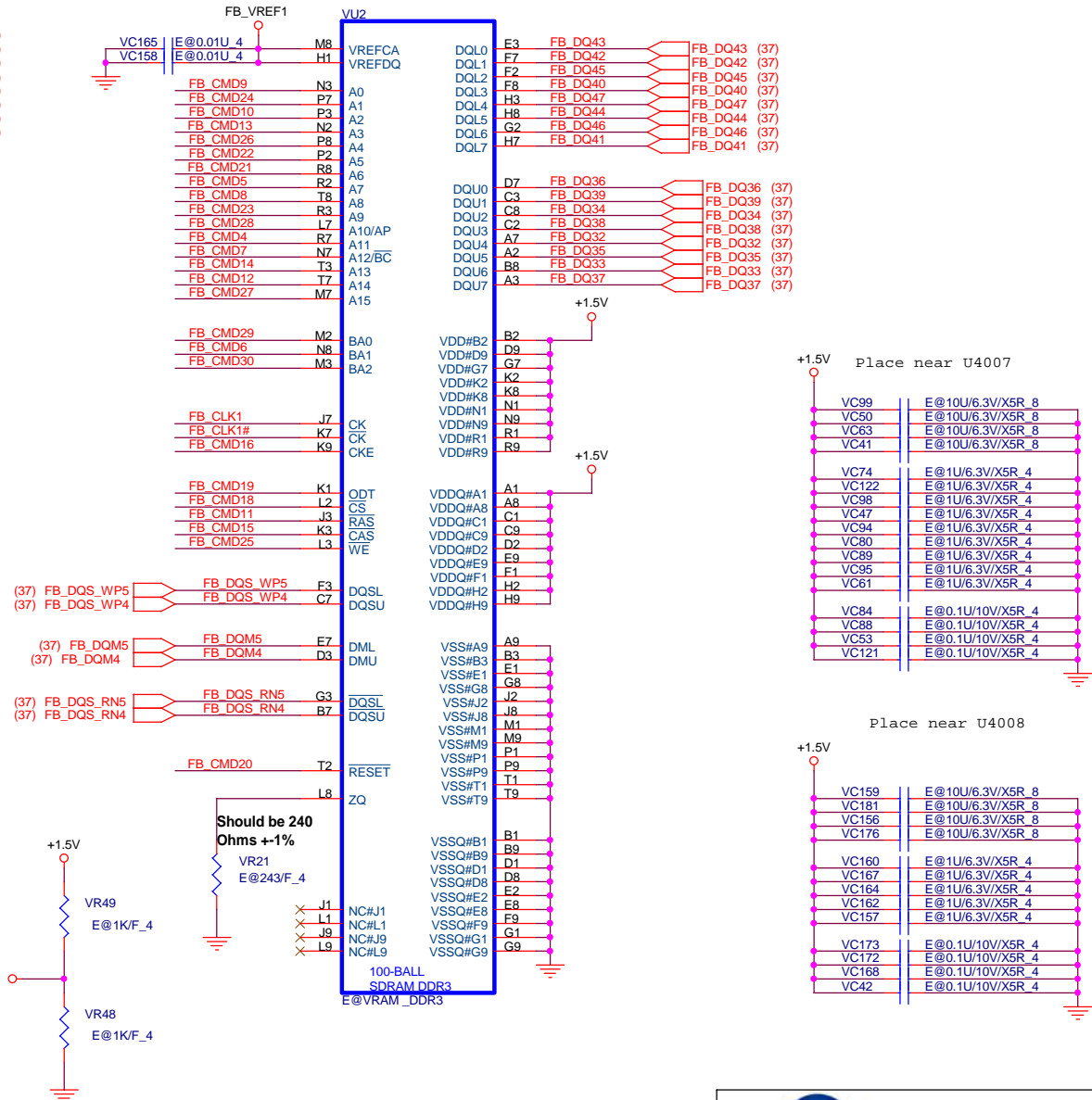


## Up Side VRAM TOP/BOT

**TOP**



**BOT**





| 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<br>(N12M/N12P) | N12M     | N12P     |
| R294                     | Stuff    | No Stuff |
| R297                     | No Stuff | Stuff    |

|                            |          |          |
|----------------------------|----------|----------|
| Board ID1<br>(VRAM Vendor) | Samaung  | Hynix    |
| R47                        | Stuff    | No Stuff |
| R48                        | No Stuff | Stuff    |

|                             |          |          |
|-----------------------------|----------|----------|
| Board ID2<br>(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                 |