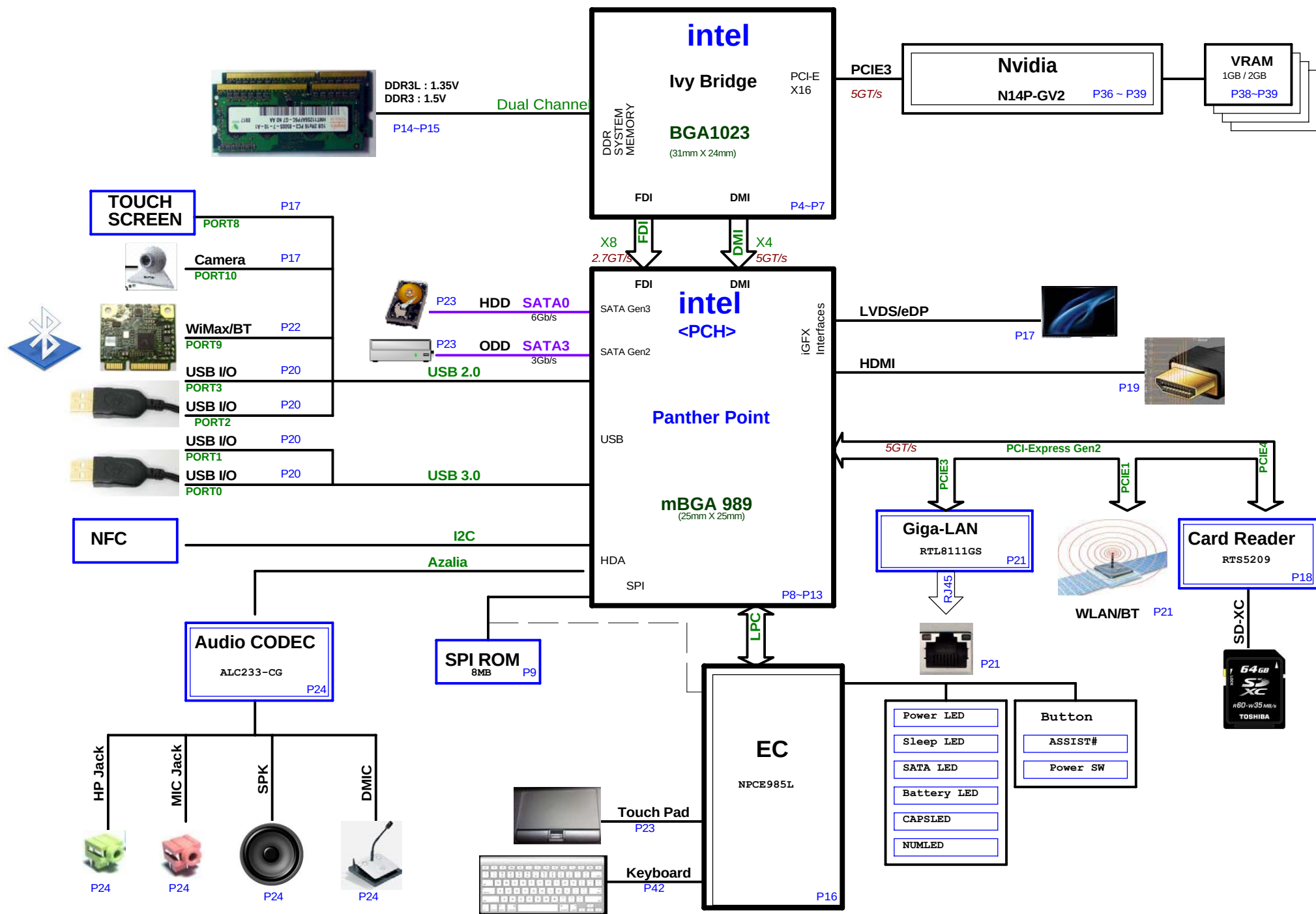


Page	Title of schematic page	Rev.	Date
01	Page List	1A	
02	Block Diagram	1A	
03	Change List	1A	
04	IVY 1/4 (HOST&PCIE)	1A	
05	IVY 2/4 (DDR3 I/F)	1A	
06	IVY 3/4 (POWER)	1A	
07	IVY 4/4 (GND/Strap)	1A	
08	PCH 1/6 (DMI/FDI/VIDEO)	1A	
09	PCH 2/6 (SATA/RTC/HDA/LPC)	1A	
10	PCH 3/6 (PCIE/USB/CLK/NV)	1A	
11	PCH 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	WPCE985L & FLASH	1A	
17	LVDS/CAMERA	1A	
18	CARD READER (RTS5209)	1A	
19	HDMI/THERMAL	1A	
20	USB	1A	
21	LAN (RTL8111GS)	1A	
22	WLAN/KB-BL	1A	
23	HDD/ODD/G-SENSOR/TP/FAN	1A	
24	Audio ALC233-CG	1A	
25	LED/PS/DMIC	1A	
26	POWER +VCC_CORE (ISL95835)	1A	
27	POWER 3VPCU&RVCC5 (PM6686)	1A	
28	POWER 1.5VSUS/VTT_MEM	1A	
29	POWER +1.05V (G5602R41U) -15A	1A	
30	POWER VCCSA/VCCIO	1A	
31	POWER VCC1.8/Thermal	1A	
32	POWER (BAT IN / ADA IN/ UL)	1A	
33	POWER CHARGER (ISL88731C)	1A	
34	POWER VGA_CORE (RT8812A)	1A	
35	POWER VCC1.5_VRAM/1.05V	1A	
36	NVIDIA N14 GB2-64 PCIE 1/4	1A	
37	NVIDIA N14 GB2-64 TMDS 2/4	1A	
38	NVIDIA N14 GB2-64 VRAM 3/4	1A	
39	NVIDIA N14 GB2-64 VRAM 4/4	1A	

Page	Title of schematic page	Rev.	Date
42	HOLE/EMI/KB	1A	
43	AUDIO Woofer	1A	
44	IO PORT LIST	1A	
		1A	

* : No mount
L@ : For LVDS output
D@ : For eDP output
E@ : For DIS GFX
I@ : For UMA



Change List
MB_SCH_PVT_001
P22-Add R333 0_6S.
P22- U15 don't mount
P22-Add Q32(2N7002).
P22-Add R335(100K_4).

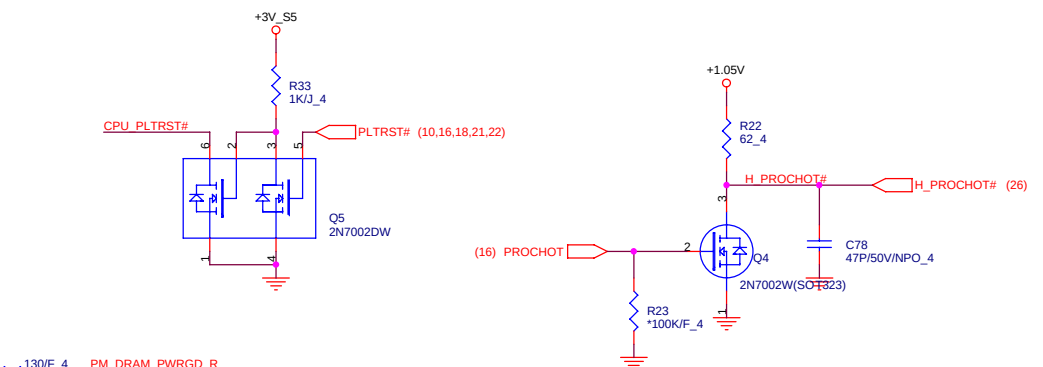
Reason : Modify circuit for KB Backlight.
Possible Risk: No.

MB_SCH_PVT_002
P23-CON11.11 delete net"DATA_ODD_DA#"
P10-U17.G40 delete net"SATA_ODD_DA#".
P10-Delete R64(10K_4).

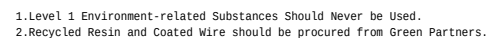
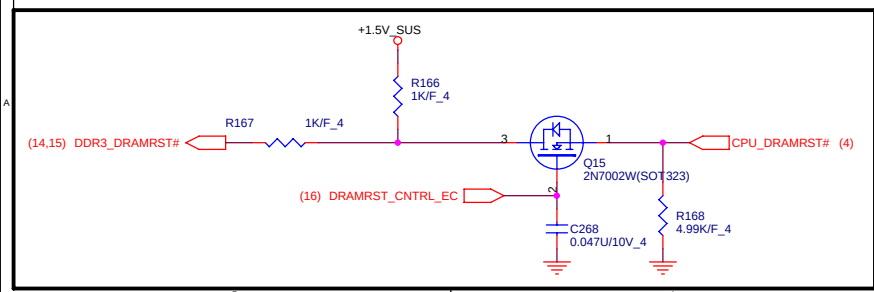
Reason : Modify circuit for Zero Power ODD.
Possible Risk: No.

MB_SCH_PVT_002
P08-ADD 0.1UF on "PCH_PWROK_EC"

Reason : Modify circuit for ESD.
Possible Risk: No.

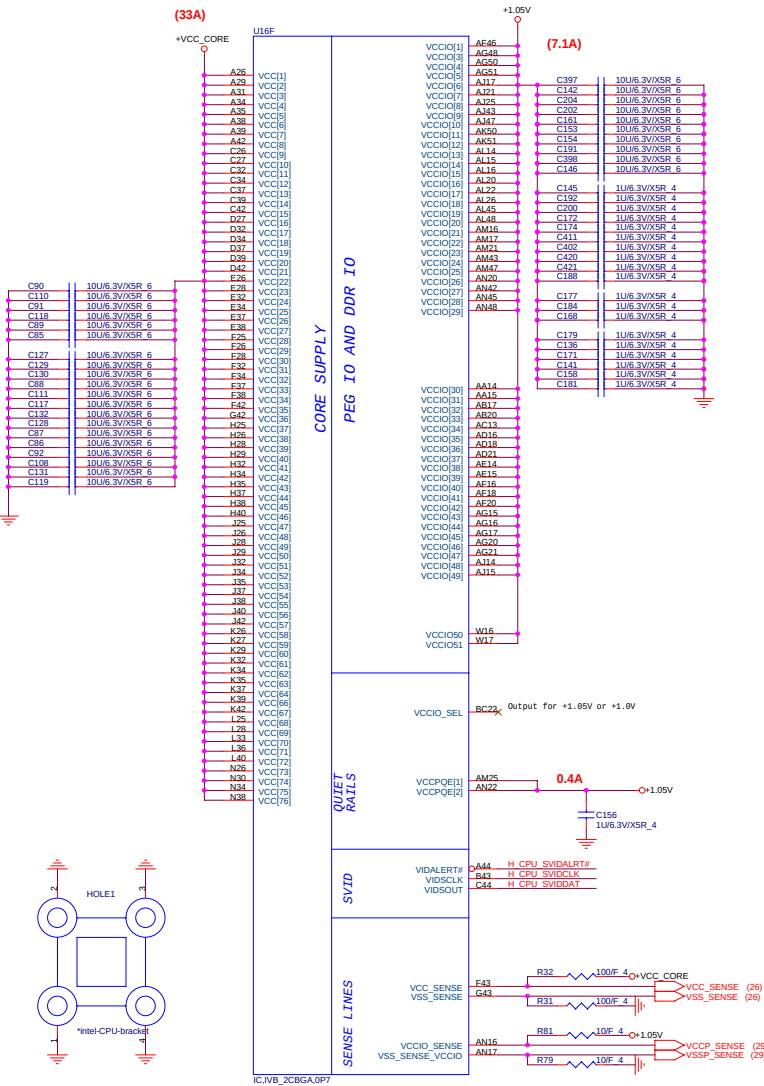


 Quanta Computer Inc. PROJECT :Chief River		
Size	Document Number	Rev
	SNB/IVB 1/4	1A
Date:	Thursday, January 17, 2013	Sheet 4 of 41

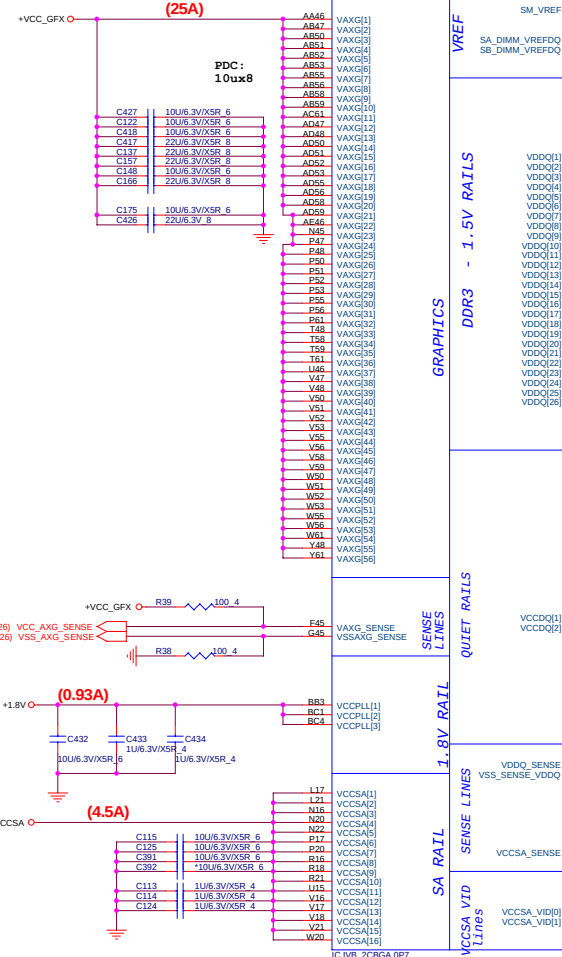


POWER

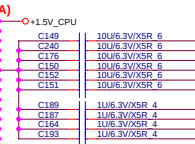
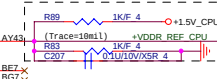
CPU Core Power



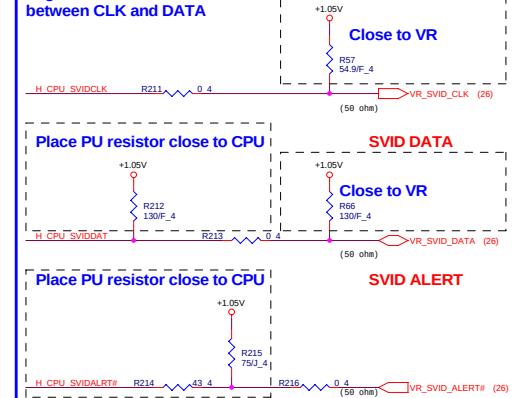
IC,IVB_2CBGA,0P7



SNB:6A



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

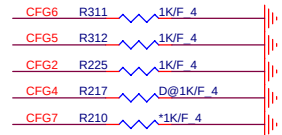
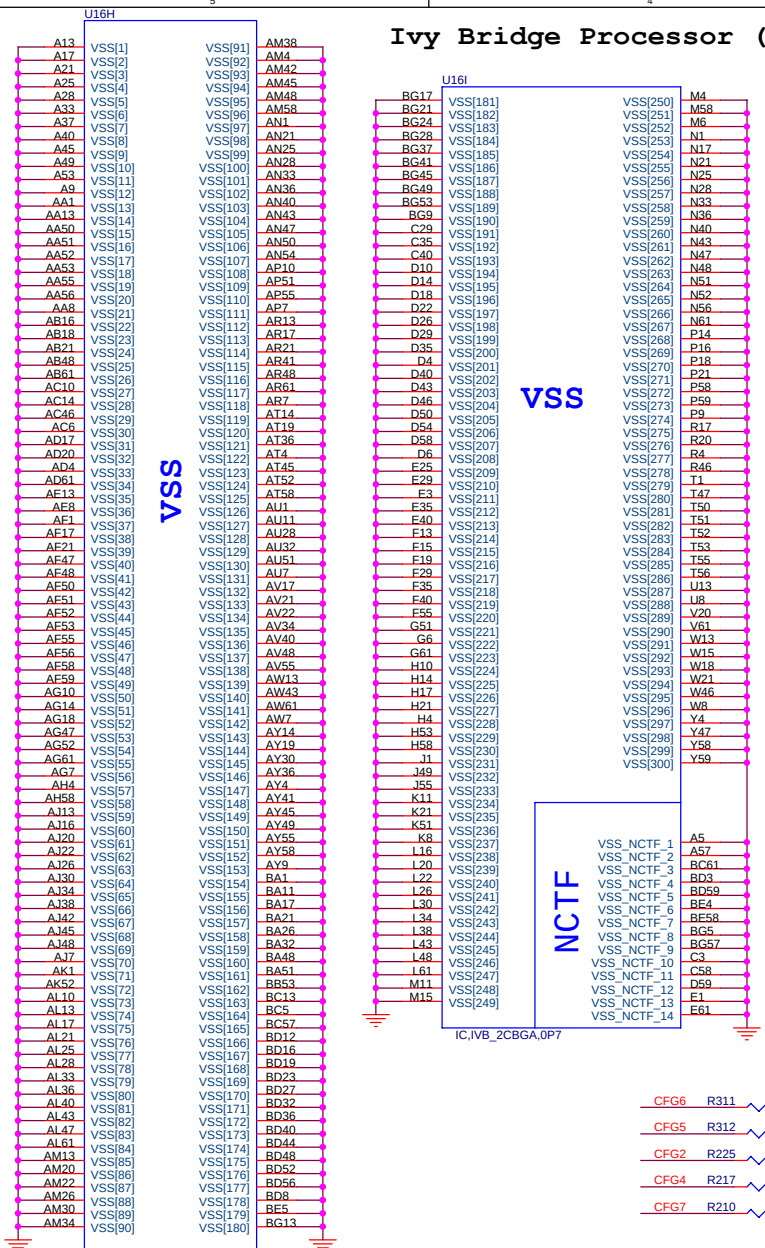


HR/CR: HR(VID1 only) CR(VID0&VID1)

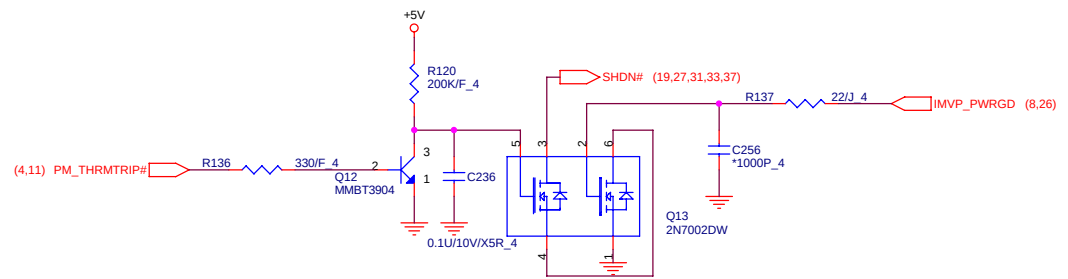
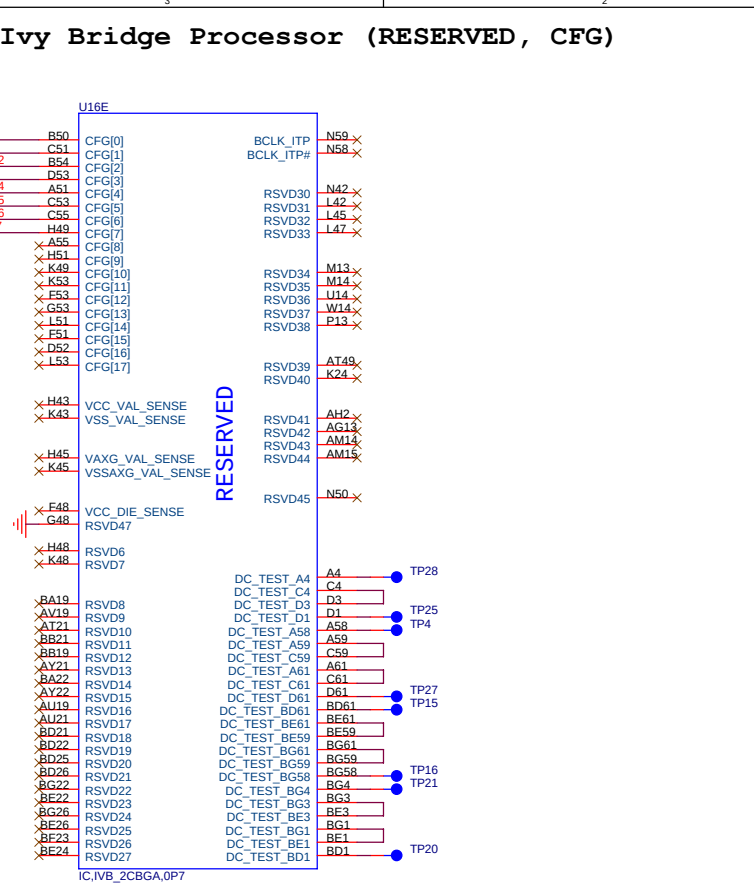
```
VCCIO_SEL:
Sandy is High = 1.05V
Ivy is Low = 1.0V
```

Ivy Bridge Processor (GND)

Ivy Bridge Processor (RESERVED, CFG)



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



Processor Strapping

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

CFG[6:5] (PCIe Port Bifurcation Straps)
11: (Default) x16 - X16 PEG interface
10: PEG x8 x8 bifurcation enabledisabled
01: Reserved - (Device 1 function 1 disabled ; function 2 enabled)
00: x8,x4,x4 - Device 1 functions 1 and 2 enabled

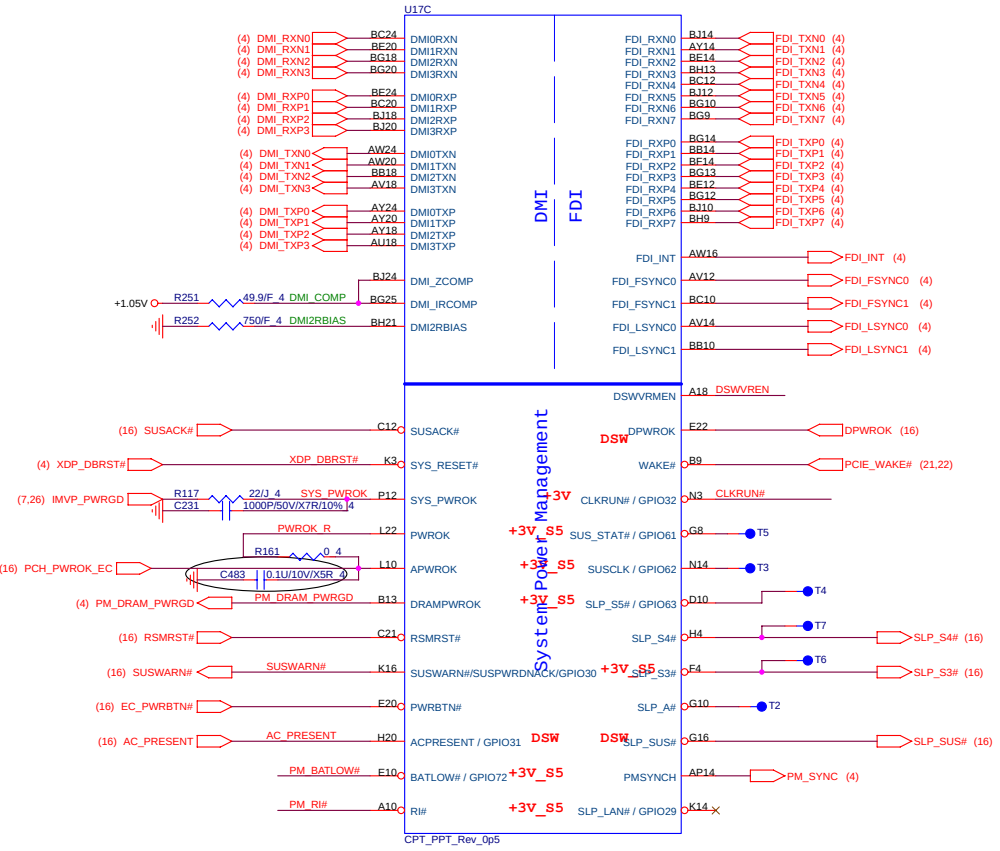


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PROJECT :Chief River

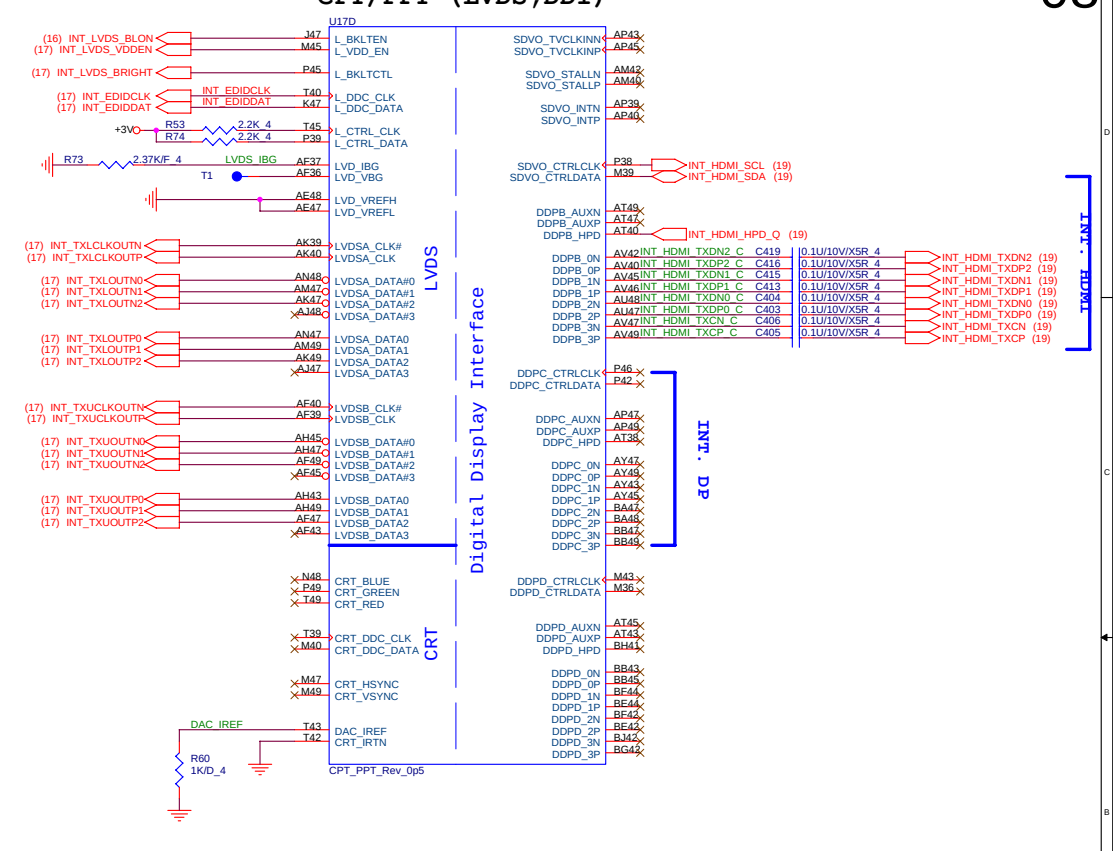
Size	Document Number	Rev
	SNB/IVB 4/4	1A
Date:	Thursday, January 17, 2013	Sheet 7 of 41

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

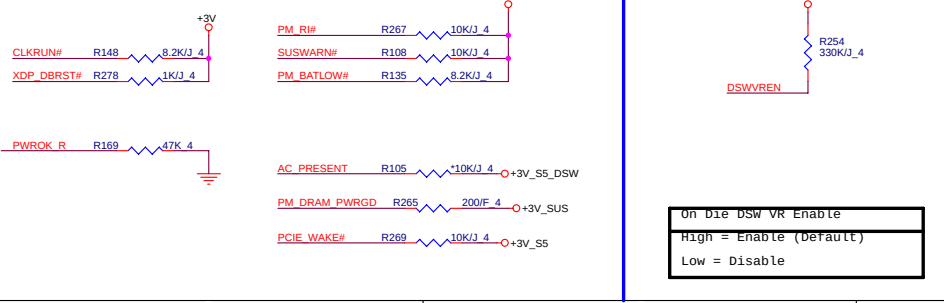
CPT/PPT (DMI, FDI, PM)



CPT/PPT (LVDS, DDI)



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.

[illegible][illegible]

(16) F_CS0#_PCH	R298	0.4	PCH_SPI_CS0#
(16) F_SDI_PCH	R297	0.4	PCH_SPI_SO
(16) SCK_PCH	R292	0.4	PCH_SPI_CLK
(16) SD0_PCH	R301	0.4	PCH_SPI_SI

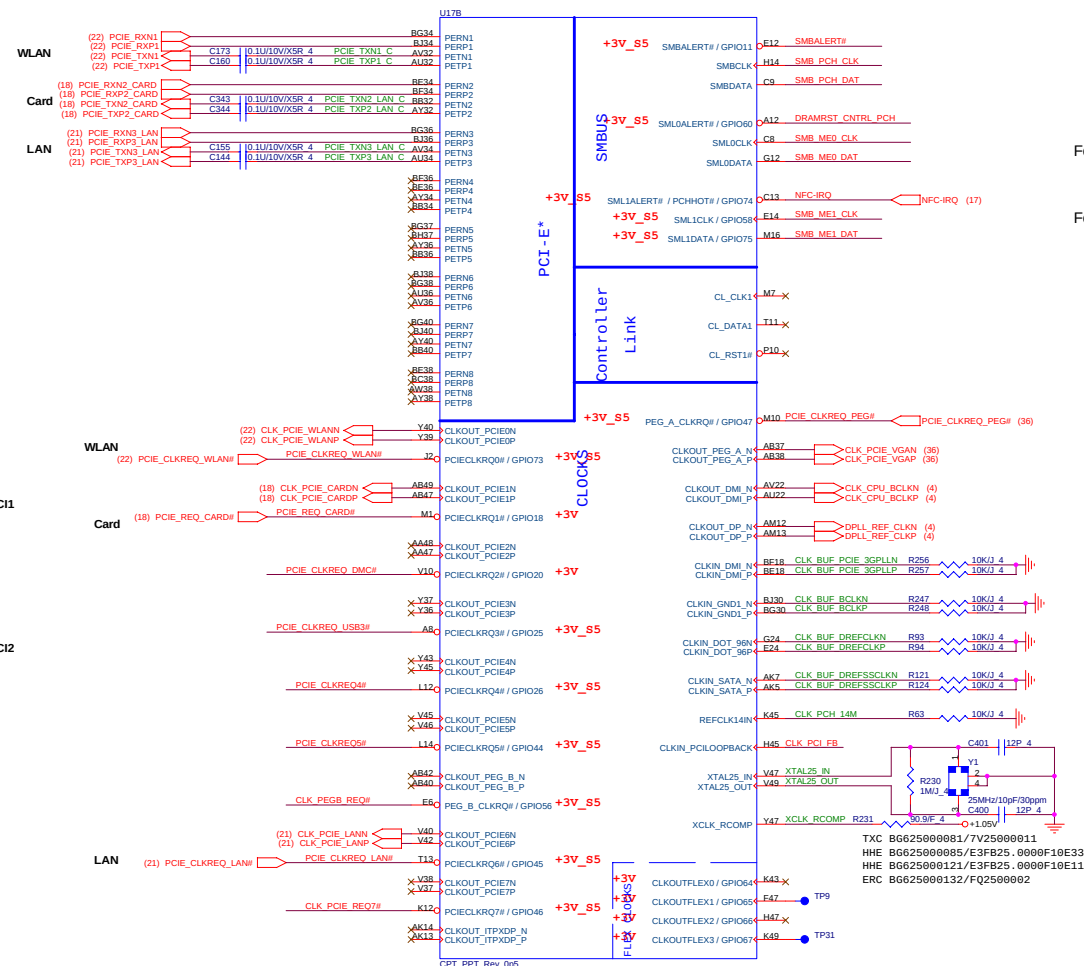
For NPCE885L Using

Pin Name	Strap description	Sampled	Configuration	Note									
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	SPKR									
PCI_GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)										
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up										
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	<table border="1"><thead><tr><th>GNT1#</th><th>GNT0#</th><th>Boot Location</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>SPI ★</td></tr><tr><td>0</td><td>0</td><td>LPC</td></tr></tbody></table>	GNT1#	GNT0#	Boot Location	1	1	SPI ★	0	0	LPC	Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]  
GNT1#	GNT0#	Boot Location											
1	1	SPI ★											
0	0	LPC											
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK											
HDA_SDO	Flash Descriptor Security	PWROK	0 = Default (weak pull-down 20K) 1 = Enabled	ACZ_SDOUT_R   									
DF_TV5	DMI/FDI Termination voltage	PWROK	0 = Set to Vss for Ivy Bridge 1 = Set to Vcc for Sandy Bridge (weak pull-down 20K)										
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)										
HDA_SYNC	On-Die PLL VR Voltage Select	RSMRST	0 = Support by 1.8V (weak pull-down) 1 = Support by 1.5V										

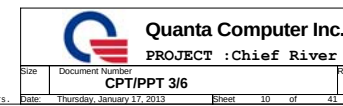
[illegible][illegible]

 Quanta Computer Inc. PROJECT :Chief River	
Size	Document Number
	CPT/PPT 2/6
Date:	Thursday, January 17, 2013
Sheet	9 of 41
Rev	1A

CPT/PPT (PCI-E, SMBUS, CLK)



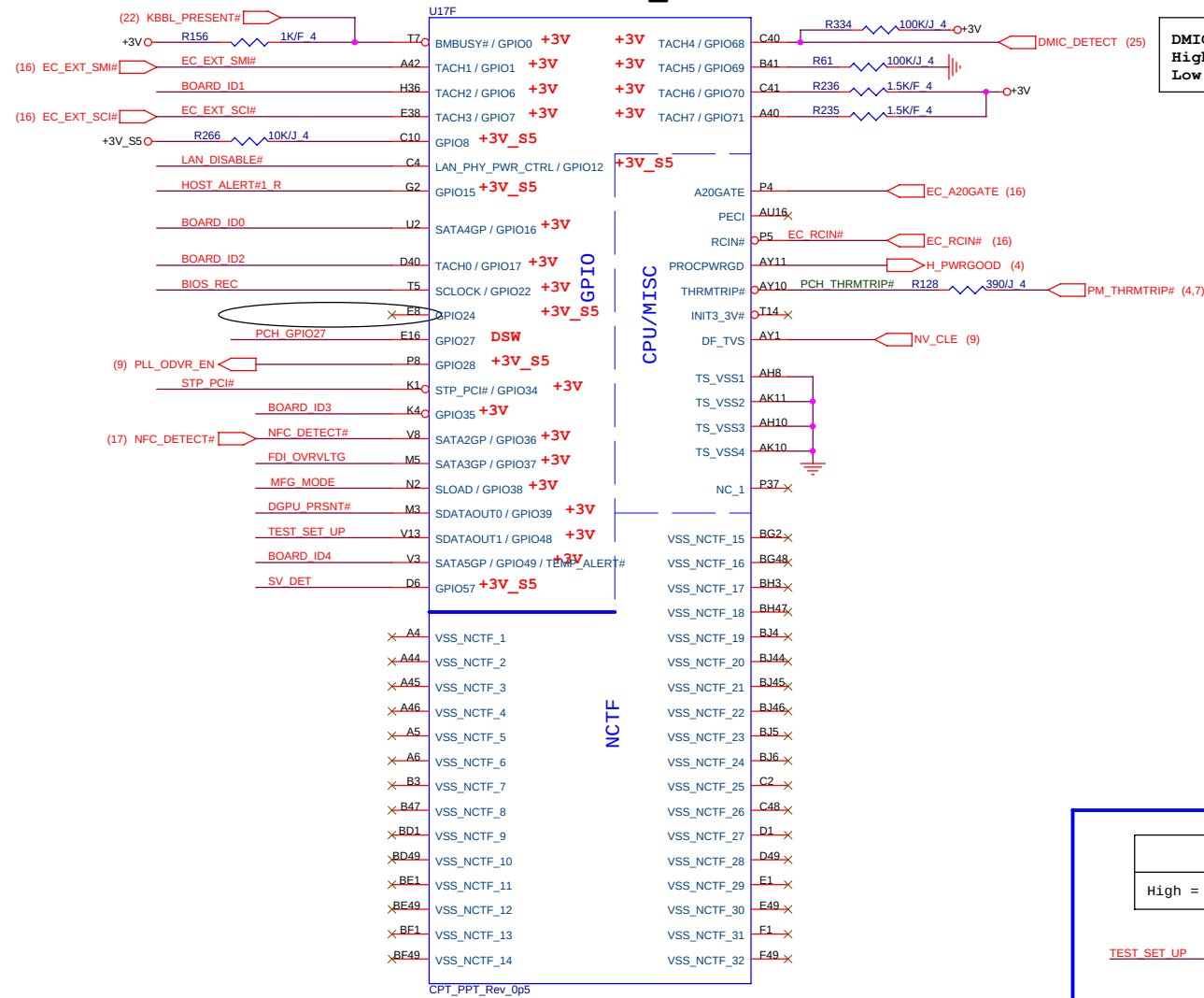
For EC



CPT/PPT (GPIO,VSS_NCTF,RSVD)

GPIO Pull-up/Pull-down(CLG)

11



	0	1
Board ID0	CaspiCRA1-CaspiCRB1 HK8-HK9	SuperiorCRA1-SuperiorCRB1 GD5-GD6
Board ID1	HK8/GD5 14"	HK9/GD6 15"

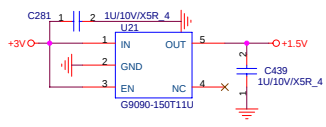
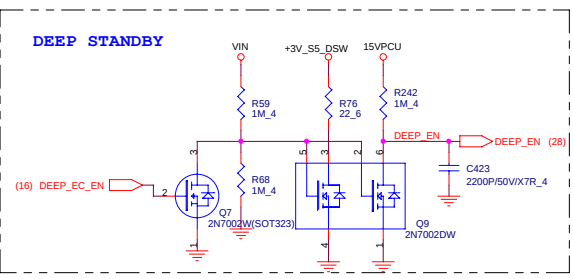
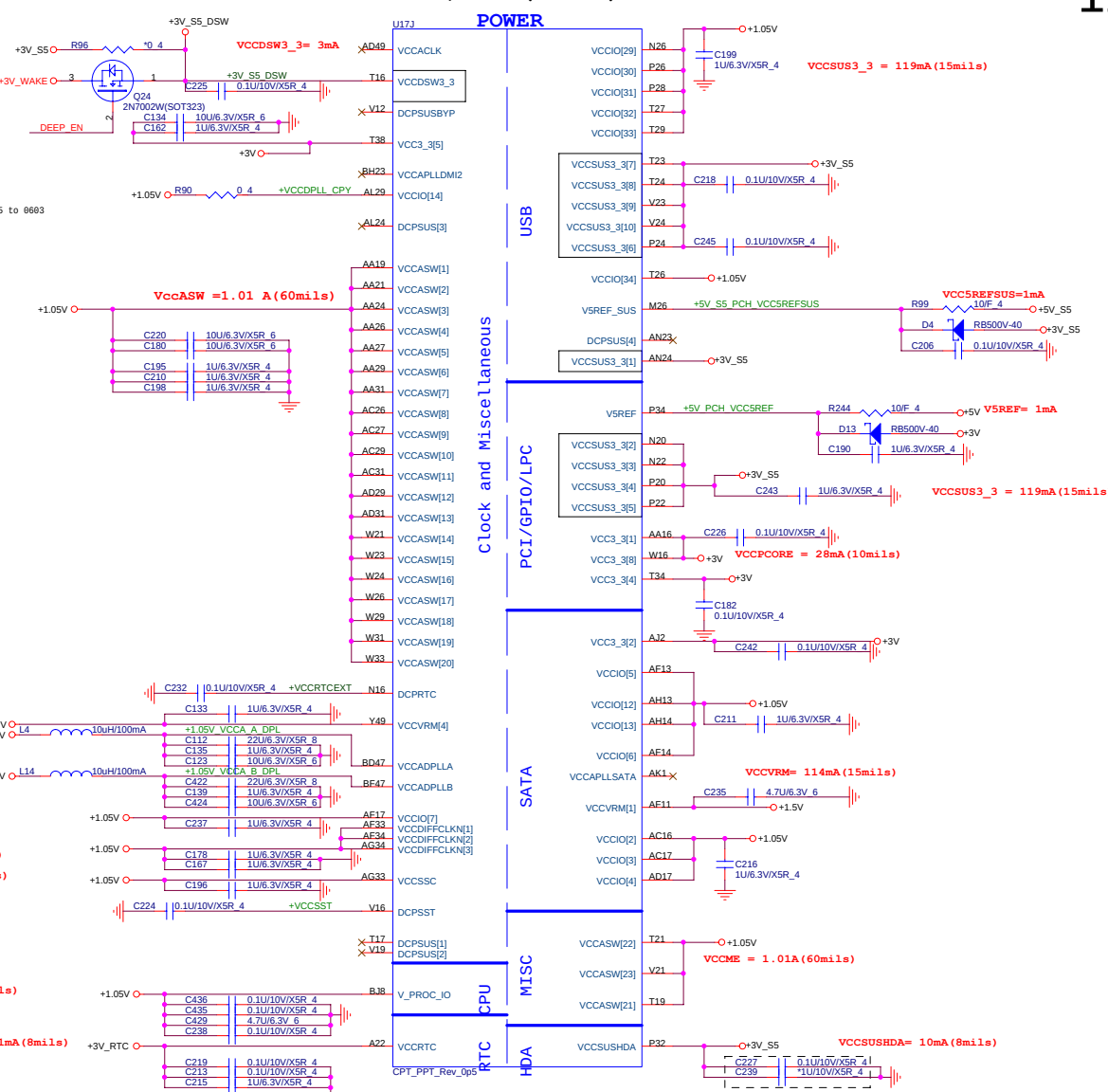
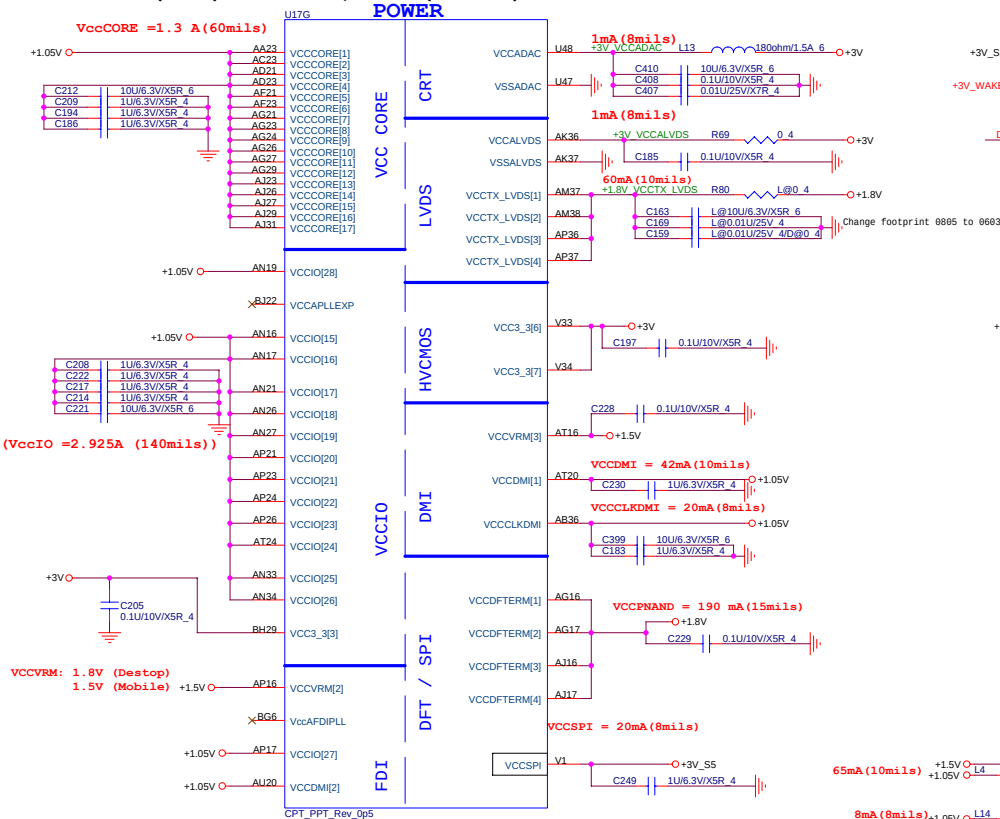
R285	10K/J 4	BOARD ID0	R286	*10K 4
R82	10K/J 4	BOARD ID1	R78	*10K 4
R56	*10K/J 4	BOARD ID2	R51	*10K/J 4
R151	*10K/J 4	BOARD ID3	R150	*10K/J 4
R145	*10K/J 4	BOARD ID4	R155	*10K/J 4

PCBA SKU	Discrete	UMA
R280(Pull High)	Stuff	No Stuff
R279(Pull Low)	No Stuff	Stuff

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PROJECT :Chief River

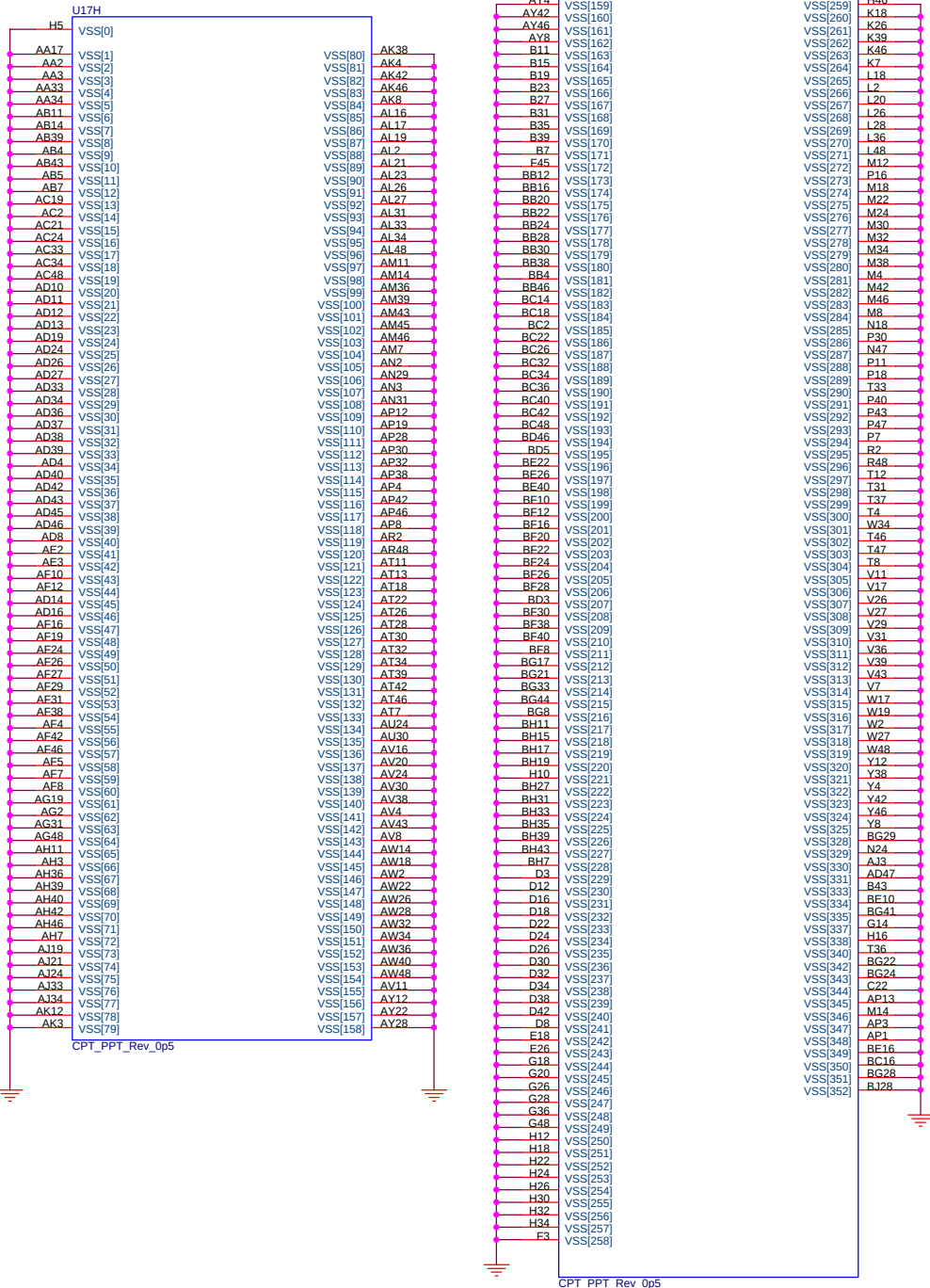
Size	Document Number	Rev
	CPT/PPT 4/6	1A

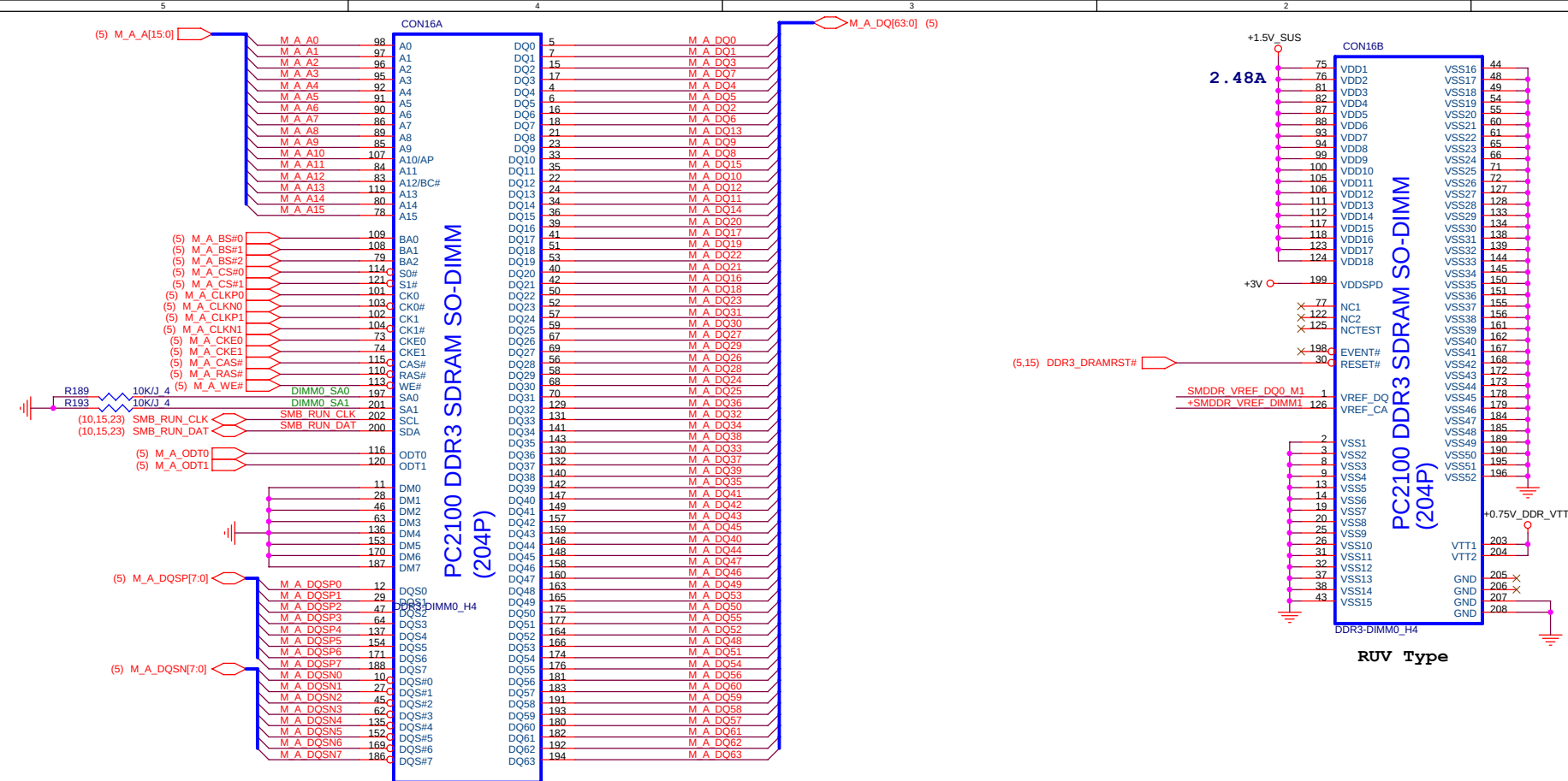
CPT/PPT (POWER)



CPT/PPT (GND)

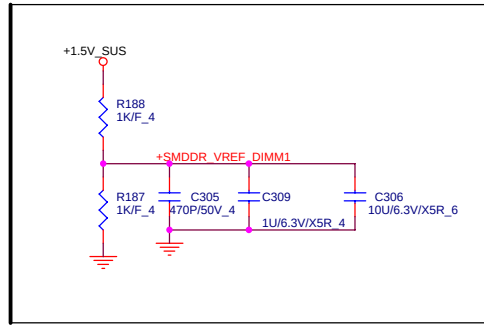
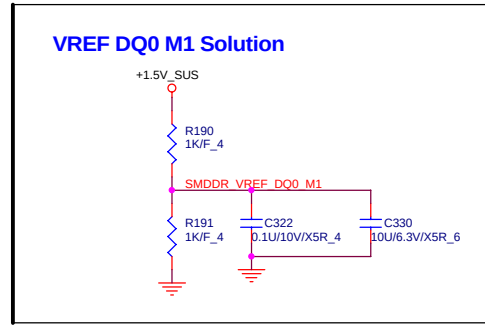
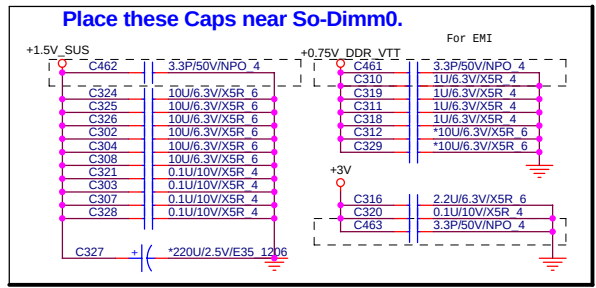
U17I





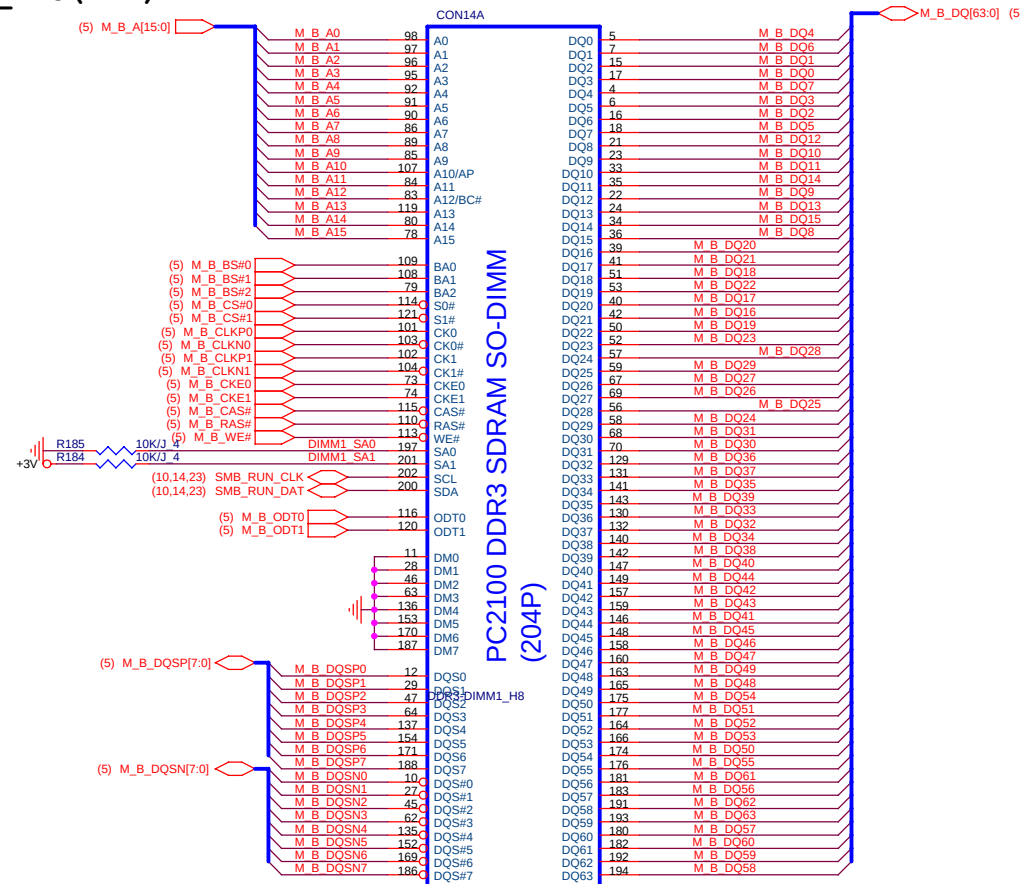
RUV Type

RUV Type

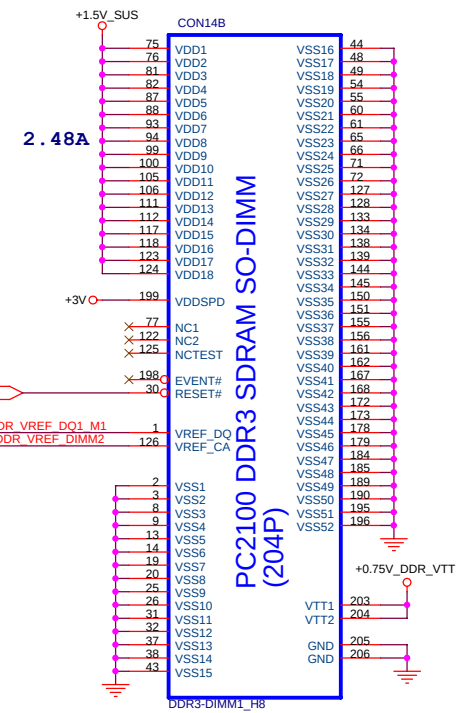


1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

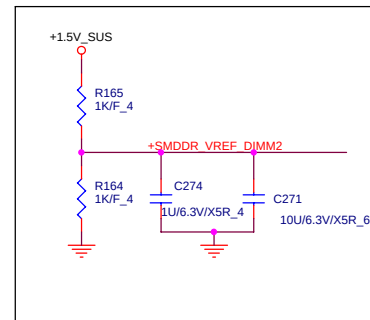
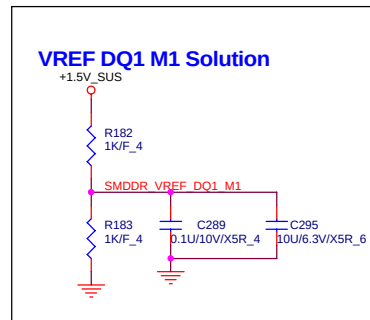
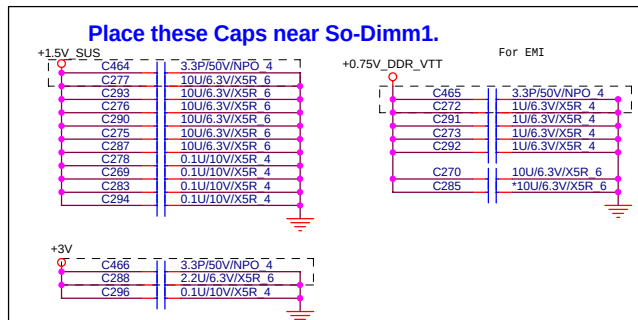
DDR_RVS (DDR)



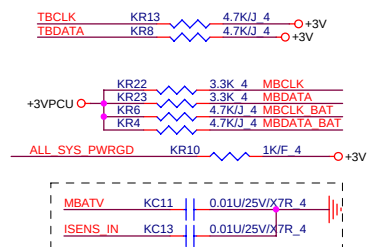
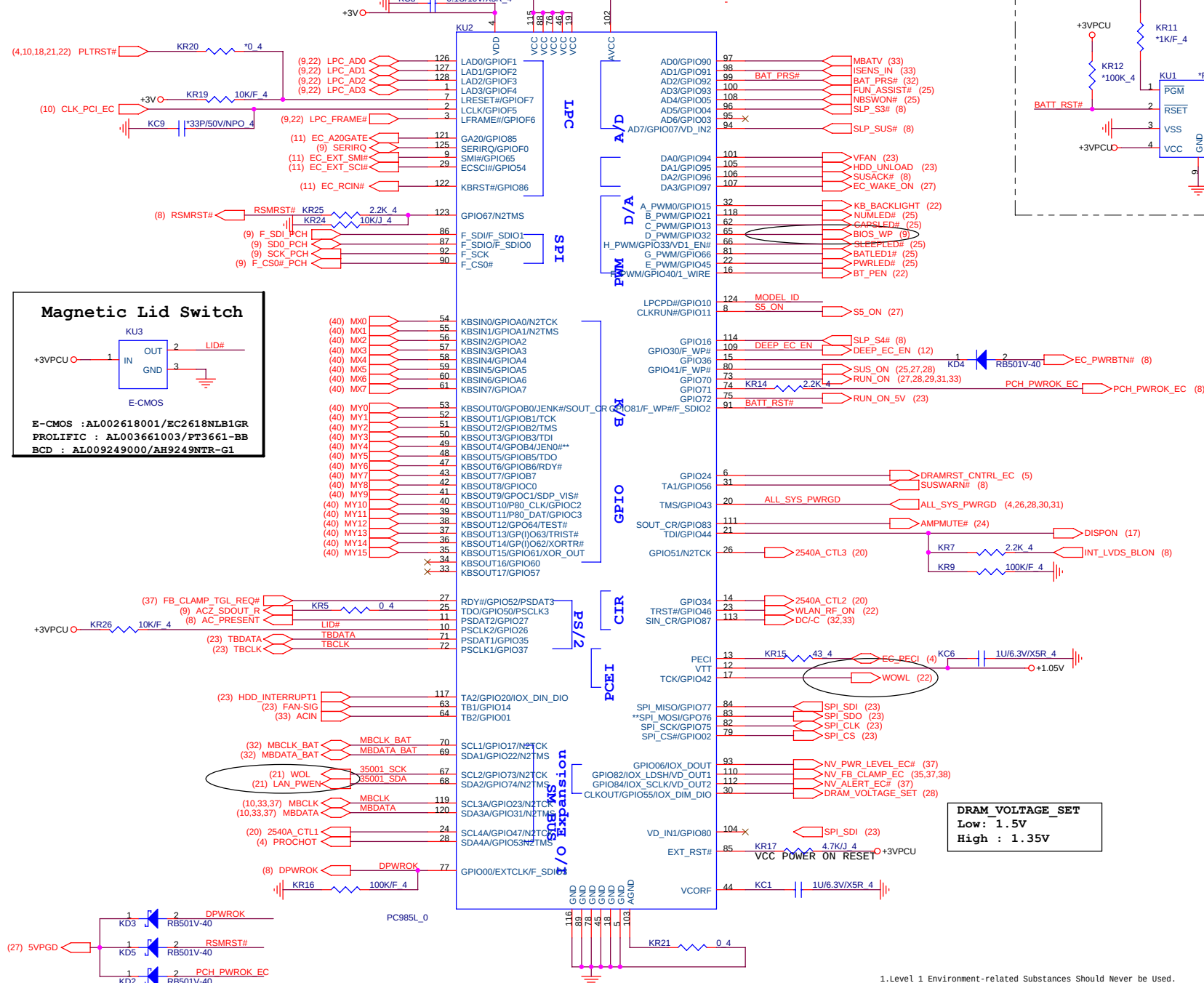
RUV Type



RUV Type



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

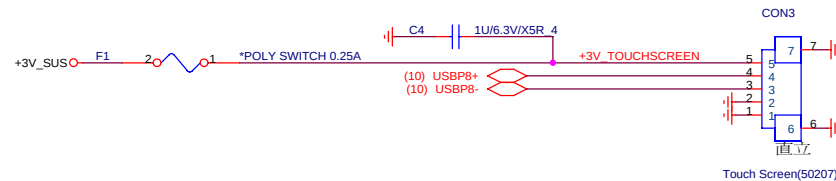
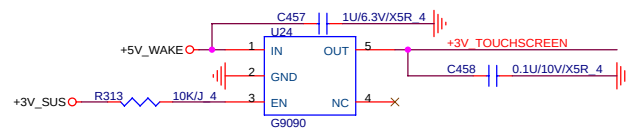


EC WAKE ON KR28 100K/F 4
S5 ON KR18 100K/F 4
DEEP EC EN KR27 100K/F 4

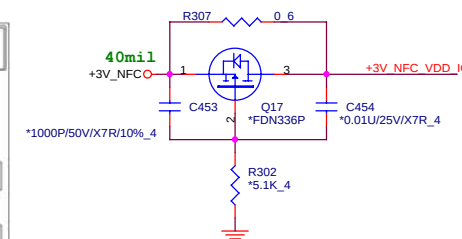
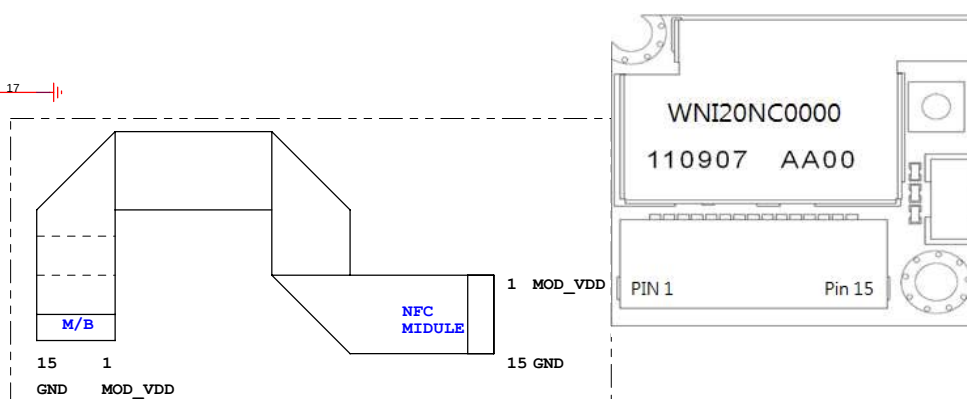
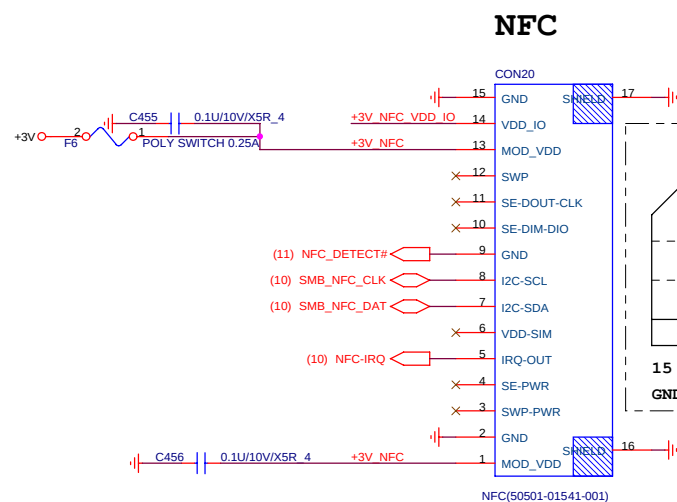
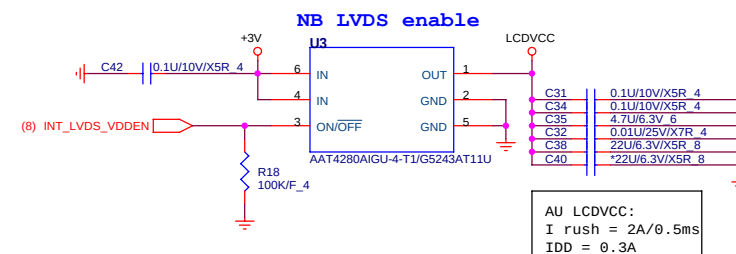
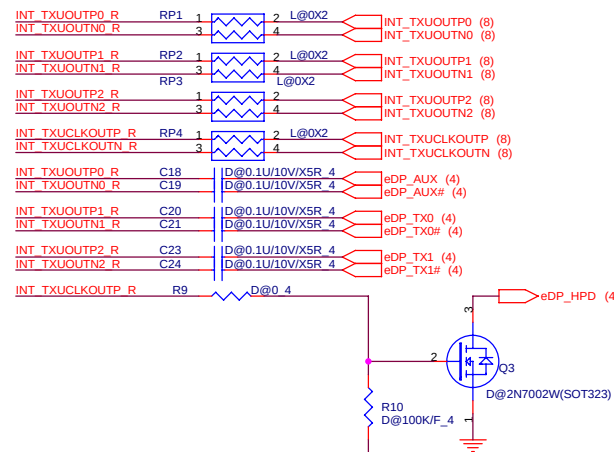
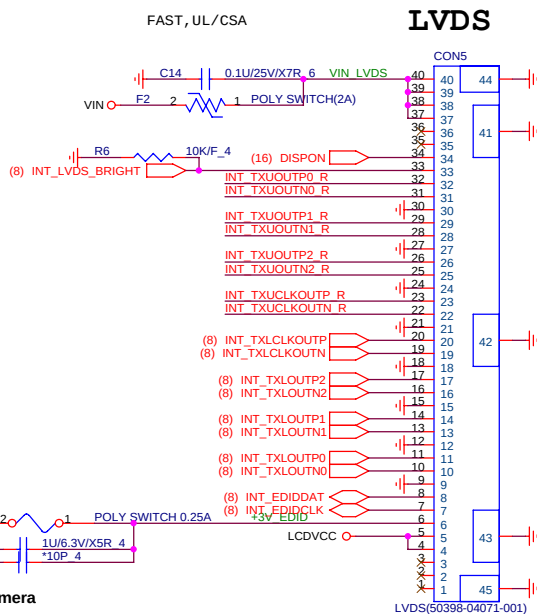
MODEL ID	
High	HK8/HK9(KR29 mount KR30 no mount)
Low	GD5/GD6(KR29 no mount KR30 mount)

 Quanta Computer Inc. PROJECT :Chief River		
Size	Document Number	Rev
	NPCE885L	1A
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Touch Screen



NFC module :
Vender : Samsung SNC-i20
Power consumption : Max. 160mW/48mA
Power Ripple +/- 50mV

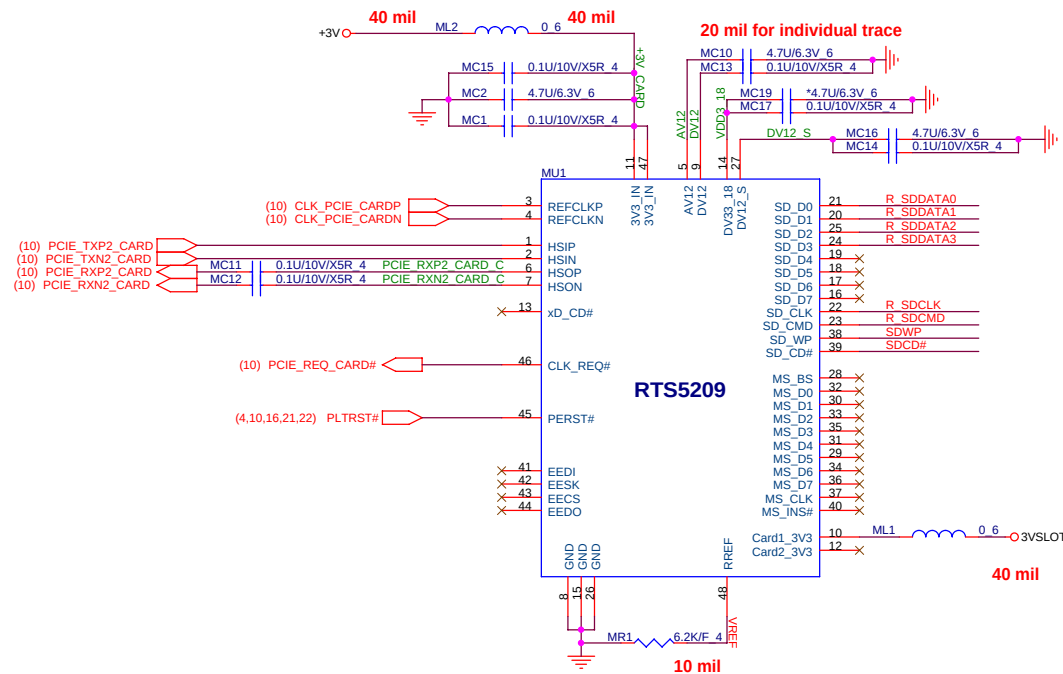


Quanta Computer Inc.

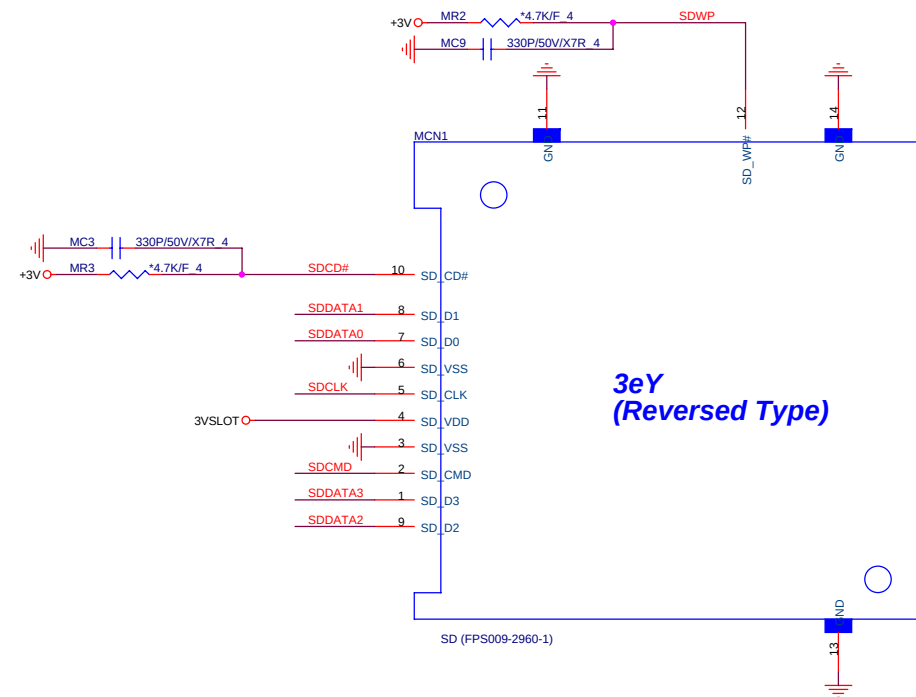
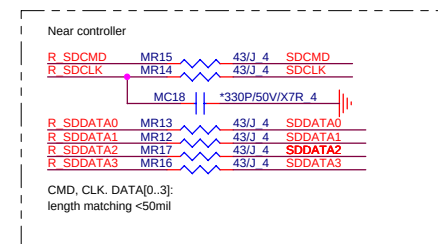
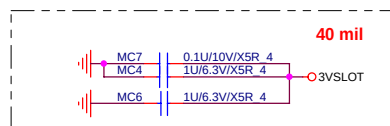
PROJECT :Chief River

CRT/LVDS

Rev
1A



These component need
to close to Slot



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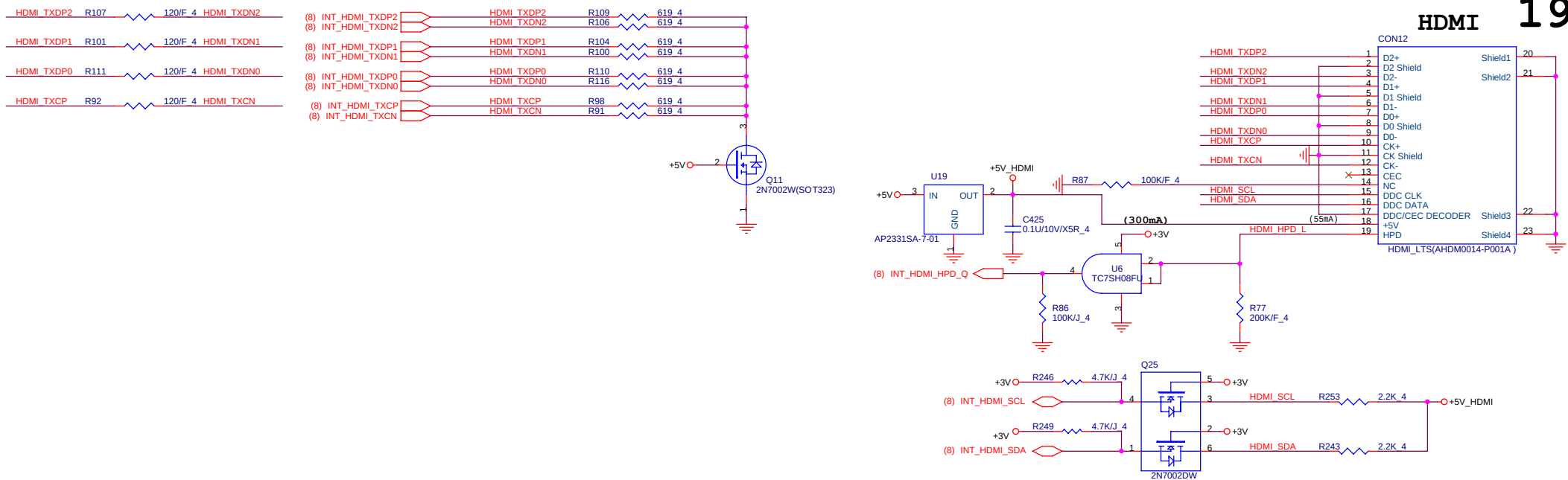
CARD

Size	Document Number	Rev
		1A

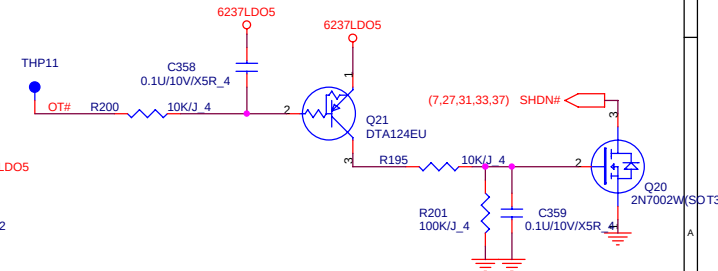
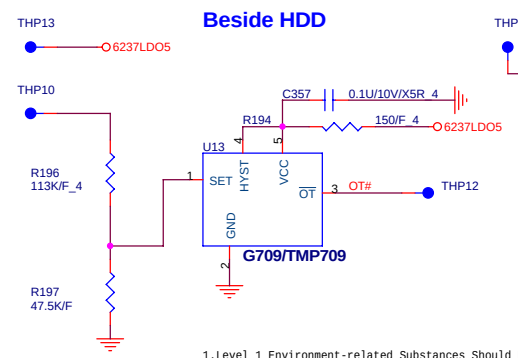
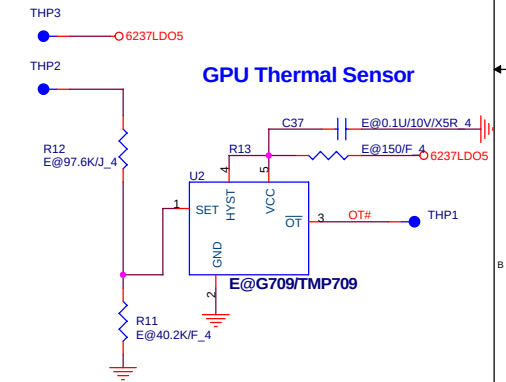
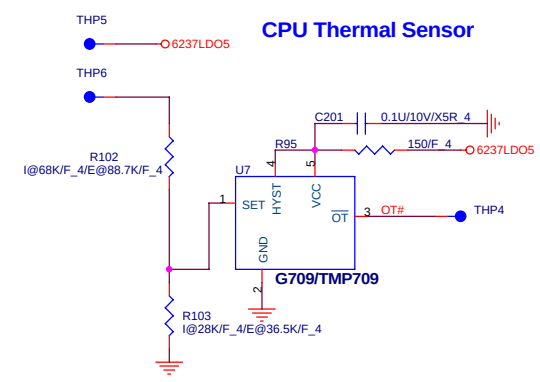
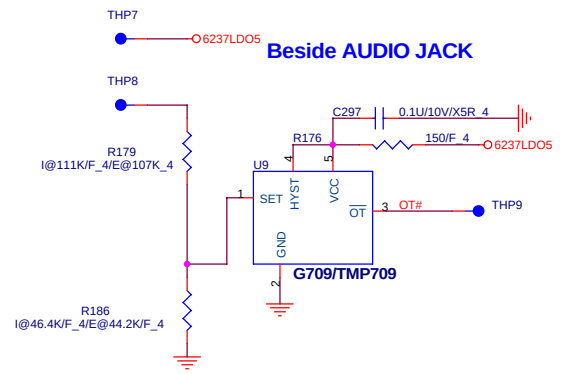
1.Level 1 Environment-related Substances Should Never be Used.

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

Date: Thursday, January 17, 2013 Sheet 18 of 41



H/W Thermal Protect



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

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

DIS SKU

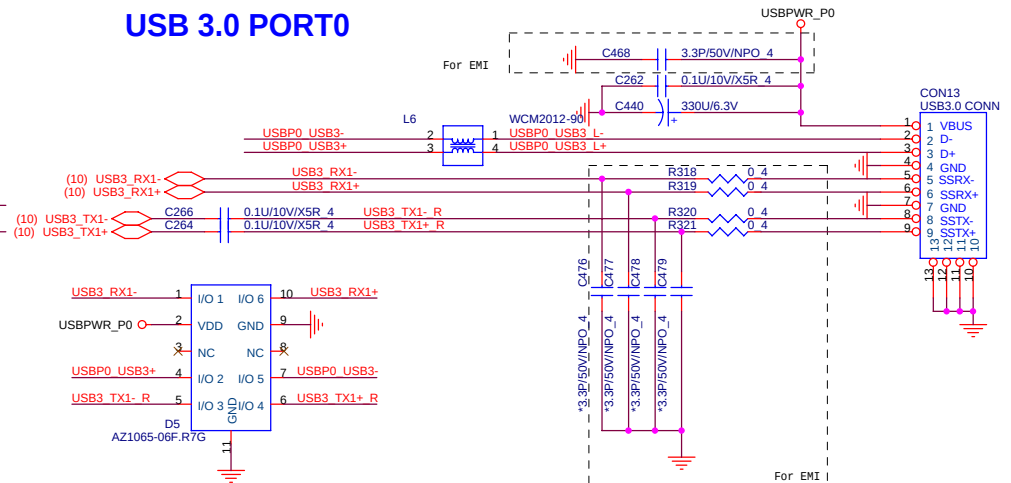
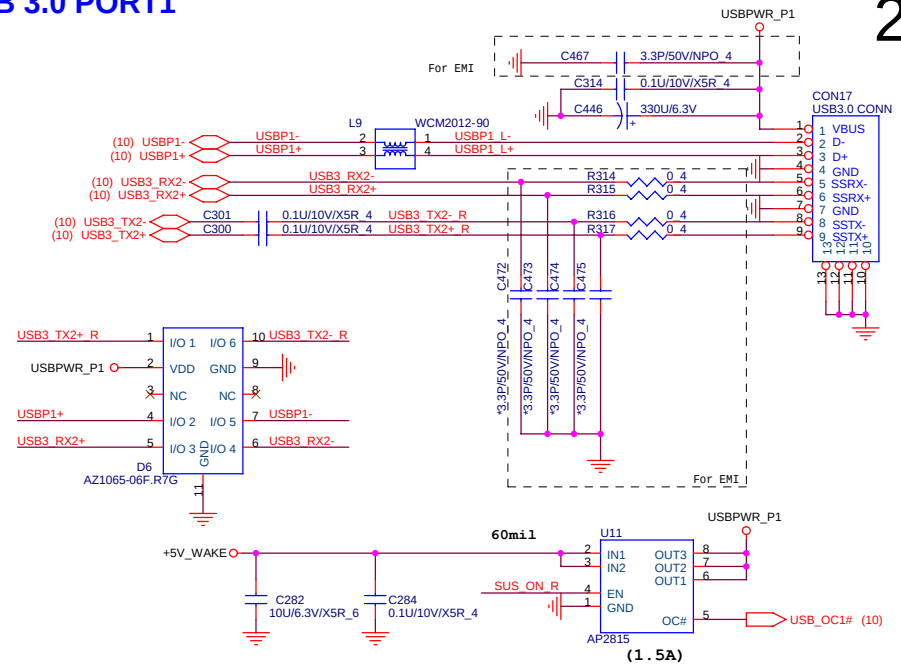
Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	70	R208=36.87K	36.5K	71	70
Near GFX sensor temp	65	R146=40.72K	40.2K	66.3	65.1
Near AUDIO sensor temp	60	R345=44.62K	44.2K	61.2	60

UMA SKU

Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	81	R208=28.63K	28K	82.3	81.4
Near AUDIO sensor temp	58	R345=46.2K	46.4K	58.4	57.1

 Quanta Computer Inc. PROJECT :Chief River		
Size	Document Number HDMI/Thermal IC	Rev 1A
Date:	Thursday, January 17, 2013	Sheet 19 of 41

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

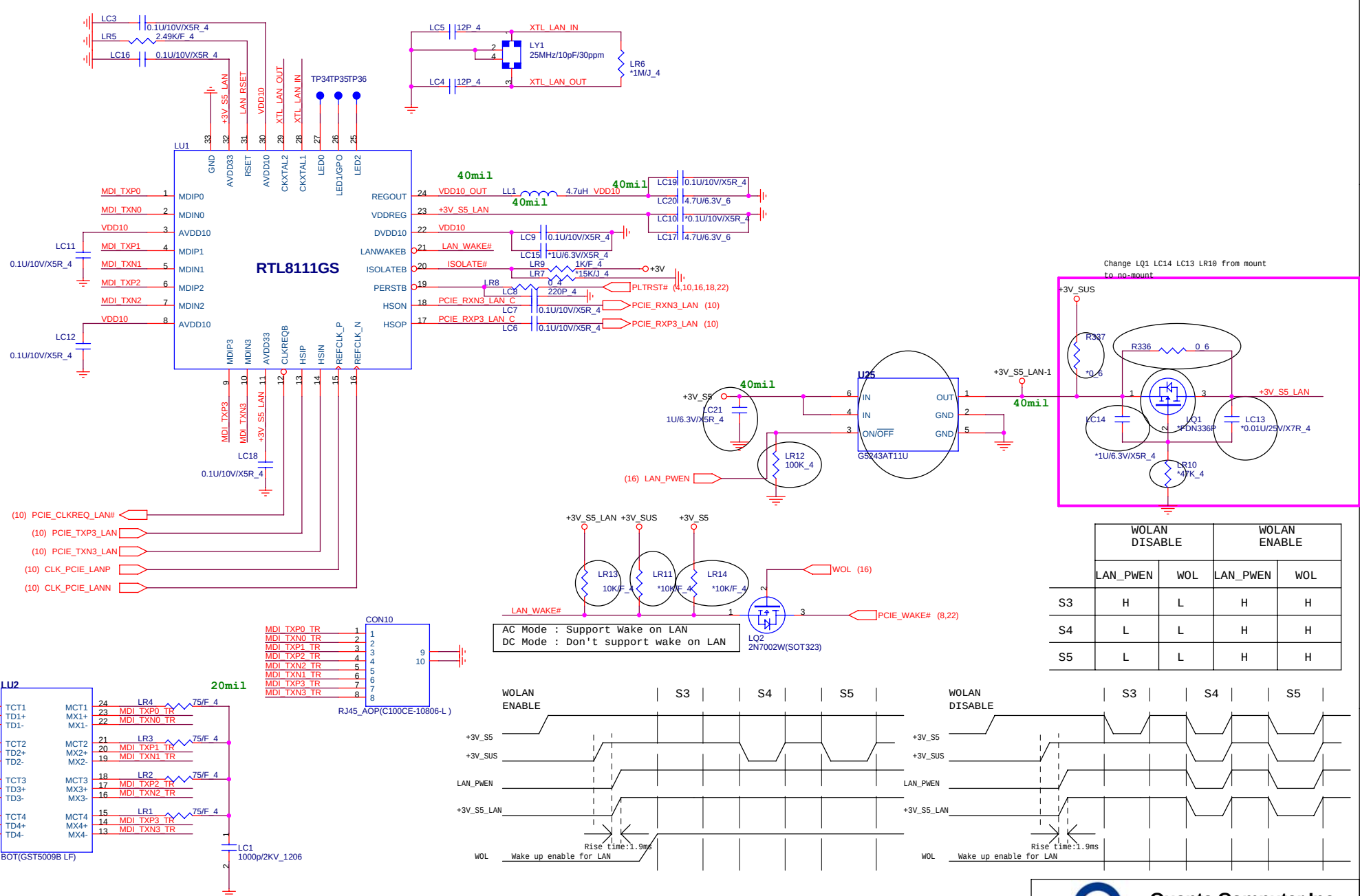


The diagram shows the relationship between the Mode signal and the VBUS signal. The Mode signal transitions from CDP to OFF and then to DCP. The VBUS signal transitions from high to low when Mode becomes OFF and returns to high when Mode becomes DCP. A double-headed arrow indicates the duration of the low VBUS signal, labeled 'VBUS stop time 1Sec'.

System State	USB Battery Charging Setting	
	Disable C(1 2 3)	Enable C(1 2 3)
S0	SDP (X 1 0)	CDP (1 1 1)
S3	SDP (X 1 0)	DCP BC (1 0 0)
DS3	Charger OFF (0 0 0)	DCP BC (1 0 0)
S4	Charger OFF (0 0 0)	DCP BC (1 0 0)
S5	Charger OFF (0 0 0)	DCP BC (1 0 0)

ILIM_SEL (I LIMIT(A)= 48000/R)		
HI	I_LIM_1	
LO	I_LIM_0	48000/22.6K=2.123A

 Quanta Computer Inc. PROJECT :Chief River		Rev 1A
Size	Document Number	
USB/USB Charger		
Date:	Thursday, January 17, 2013	Sheet 20 of 41





Quanta Computer Inc.

PROJECT : Chief River

Giga LAN RTL8111GS

Size

Document Number

Date

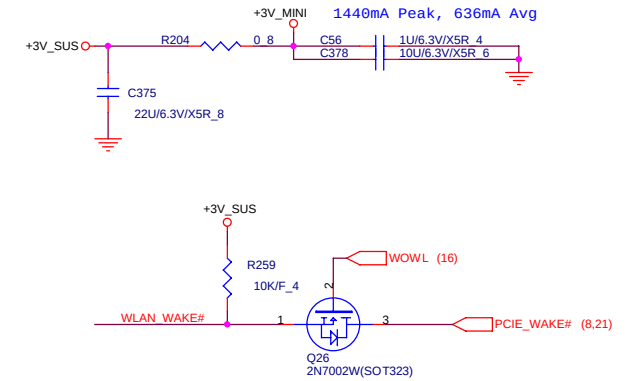
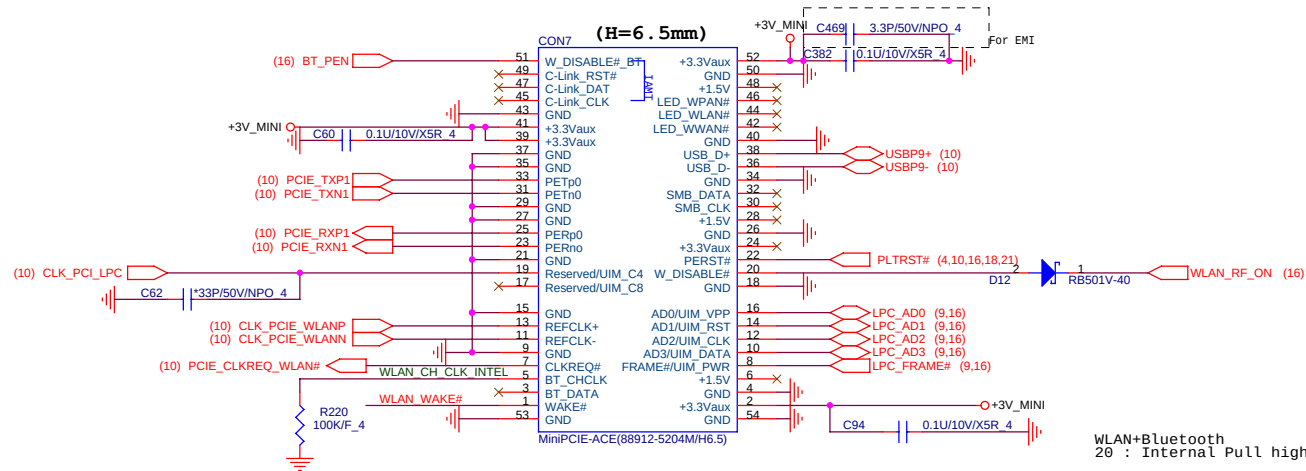
Rev 1A

Thursday, January 17, 2013

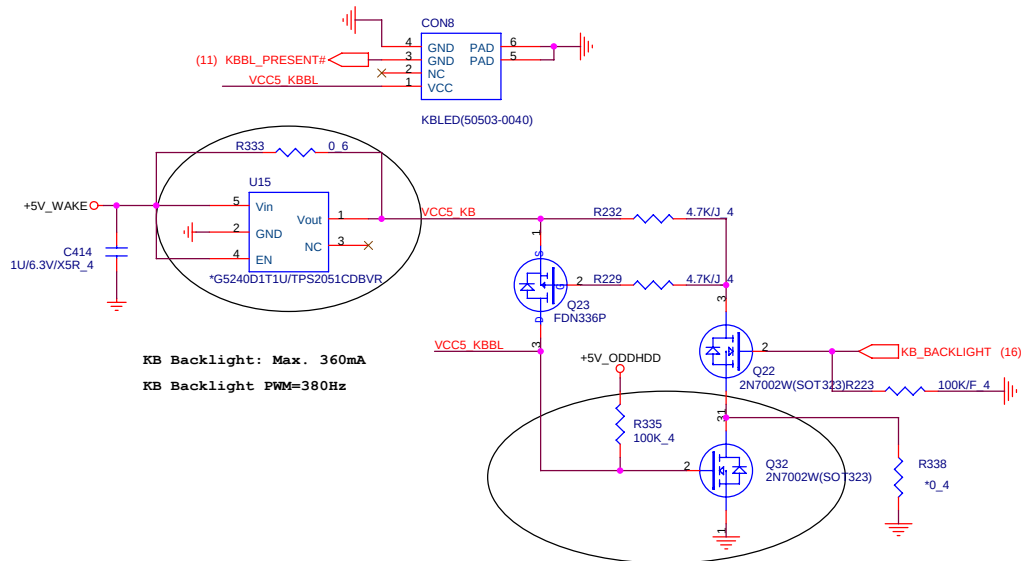
Sheet 21 of 41

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



KB BACKLIGHT



Quanta Computer Inc.

PROJECT :Chief River

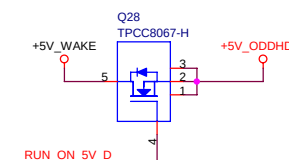
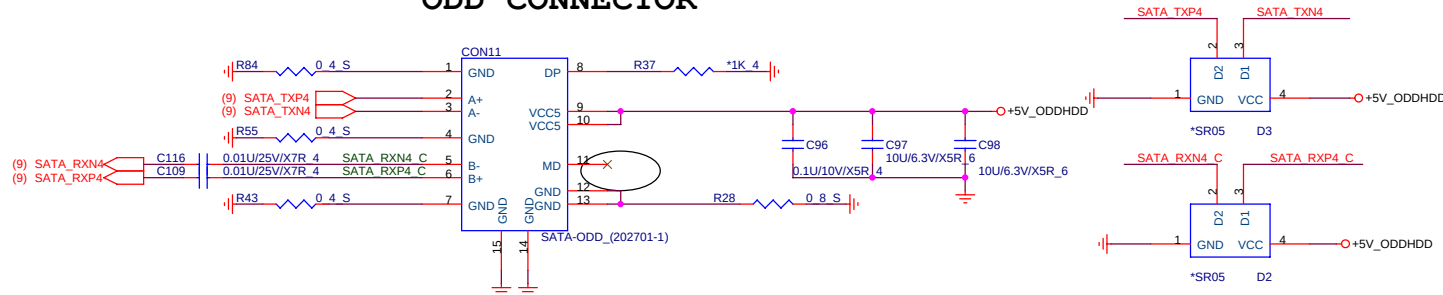
Size	Document Number	Rev
	WLAN/KB BL	1A

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

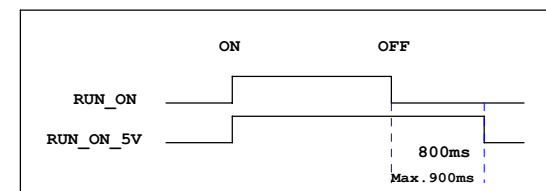
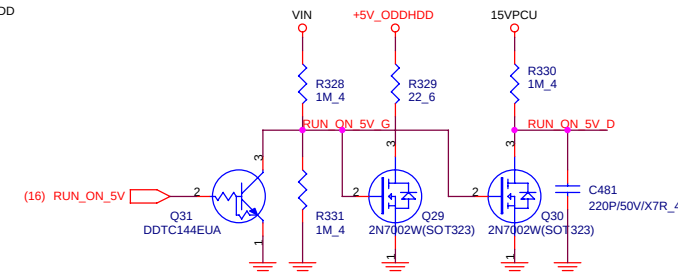
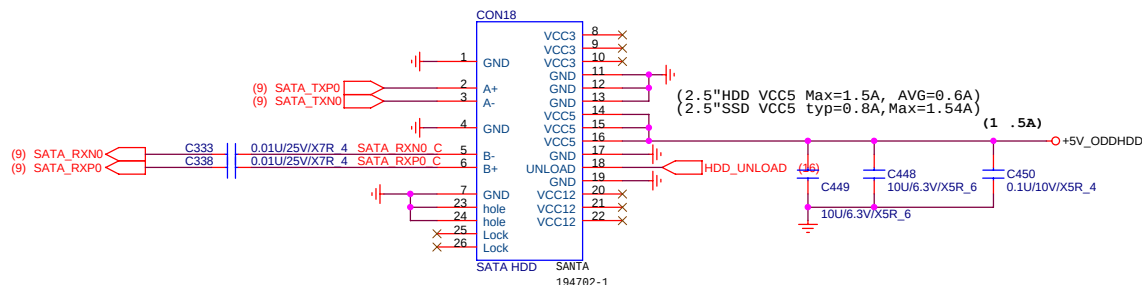
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Date: Thursday, January 17, 2013 Sheet 22 of 41

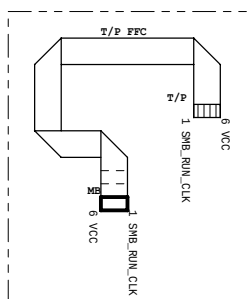
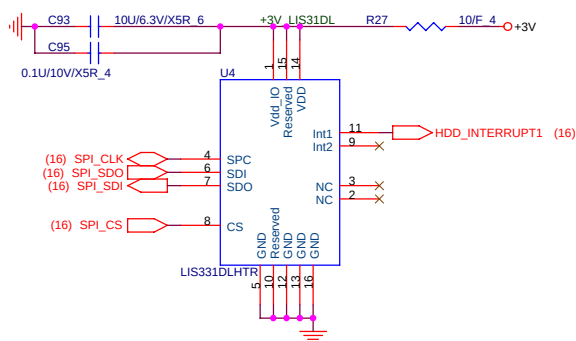
ODD CONNECTOR



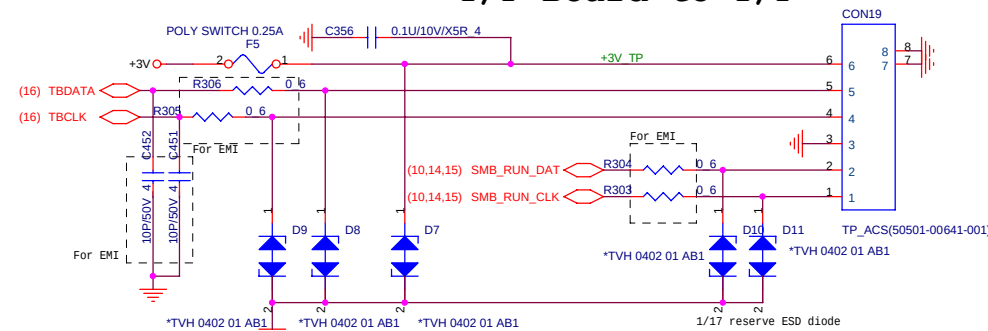
HDD CONNECTOR



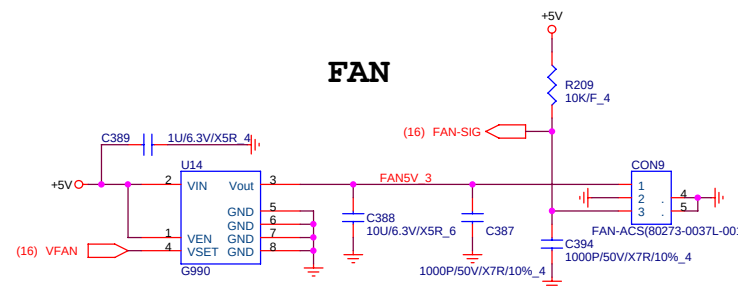
HDD PROTECT SPI INTERFACE

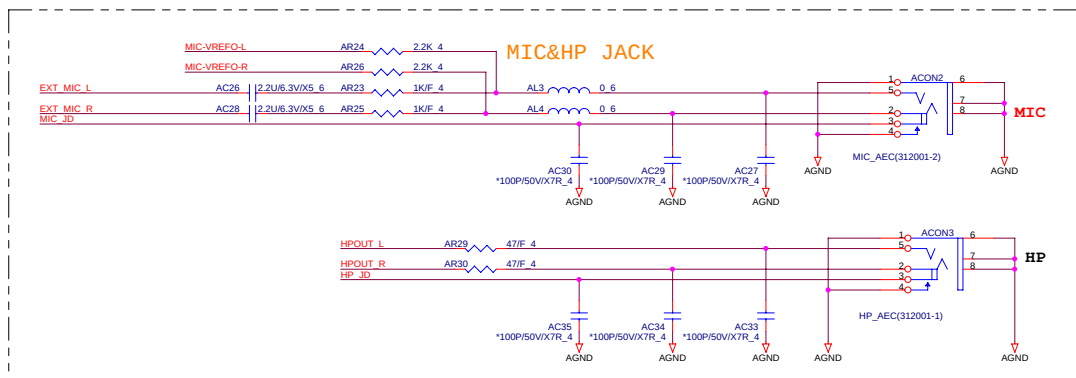
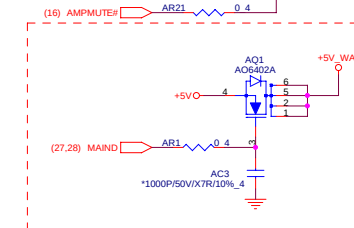
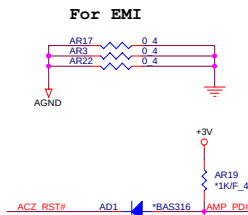
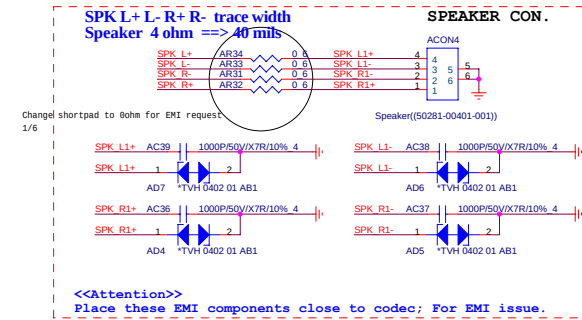
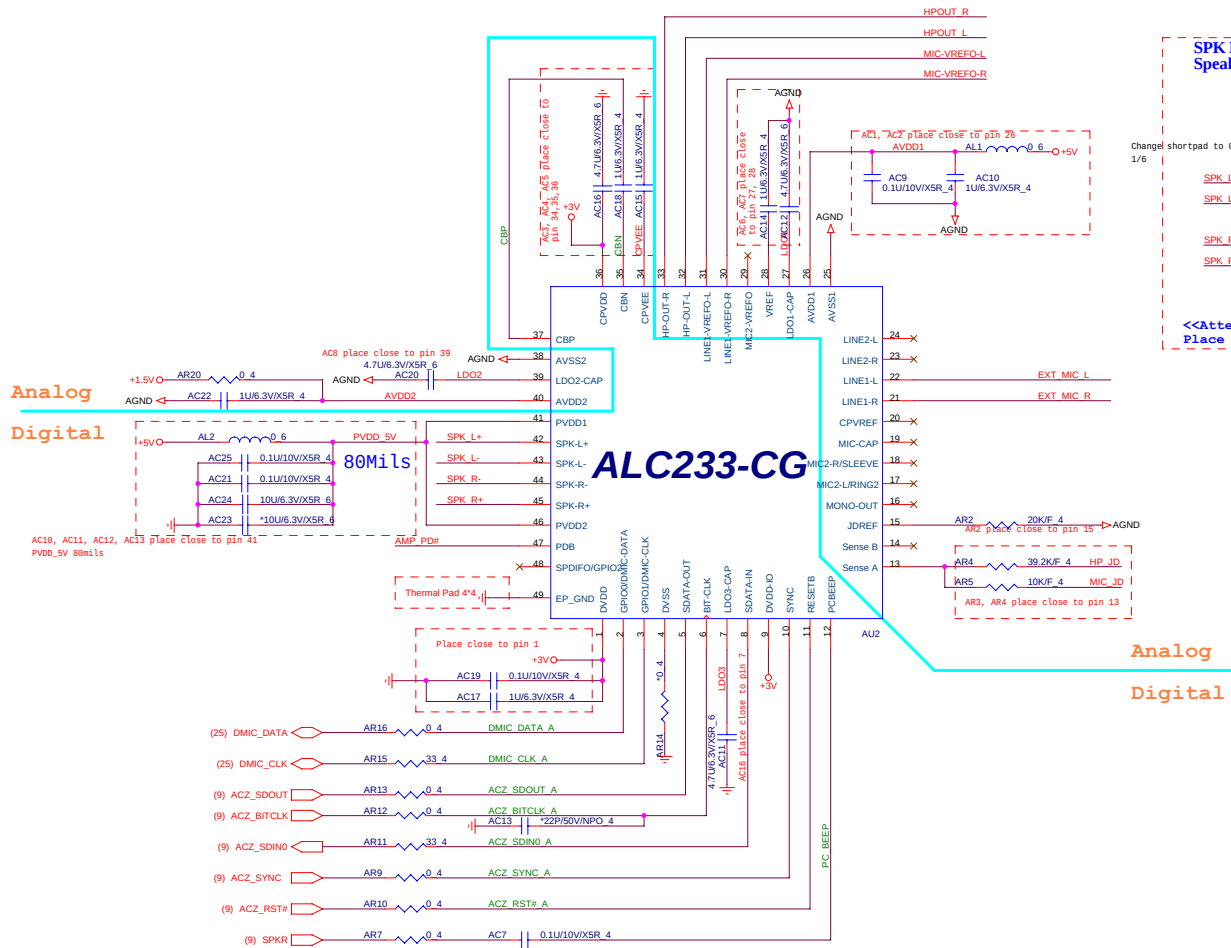


T/P Board to T/P

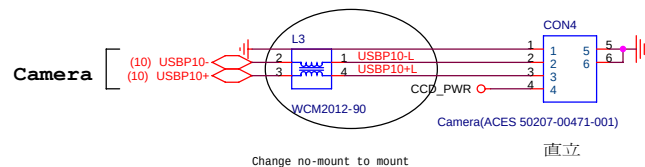
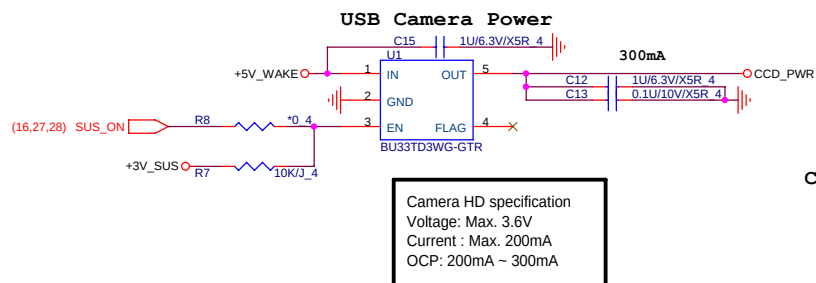


FAN

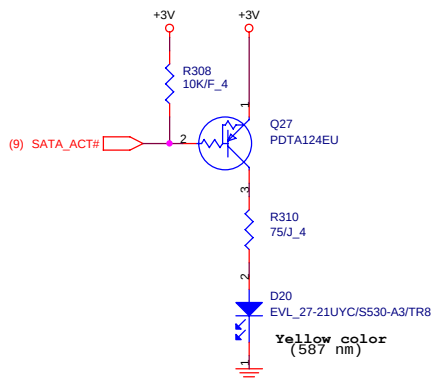




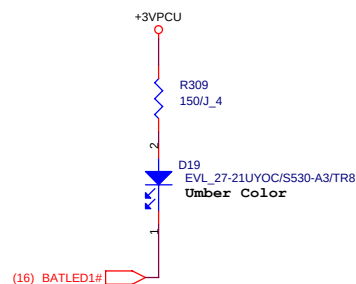
Camera



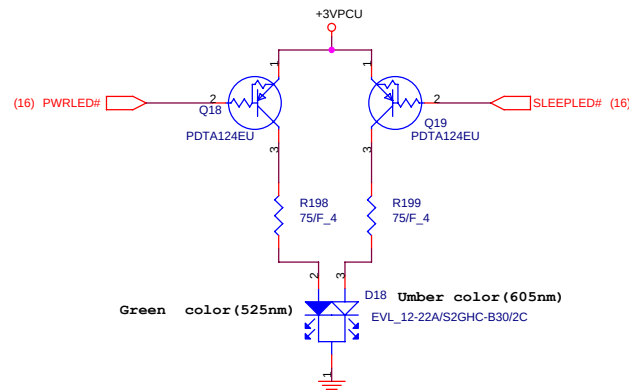
SATA LED



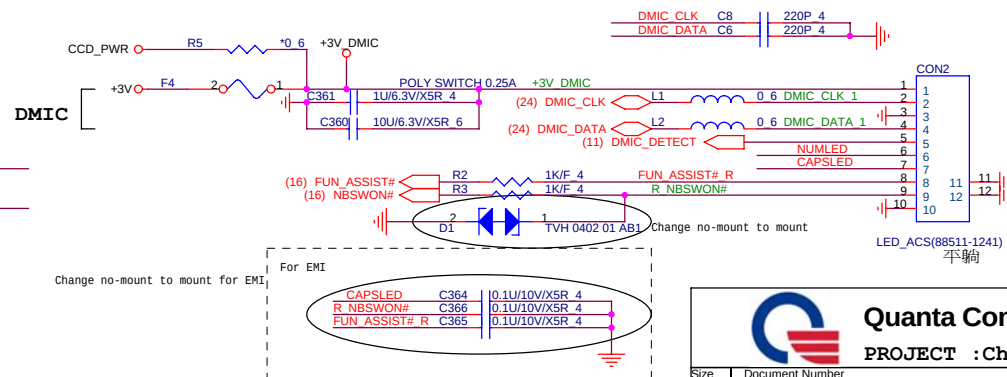
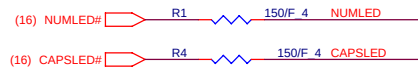
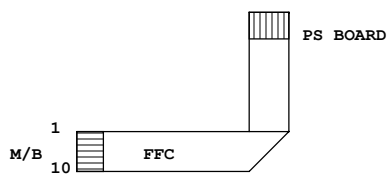
BATTERY LED



Power/Sleep LED

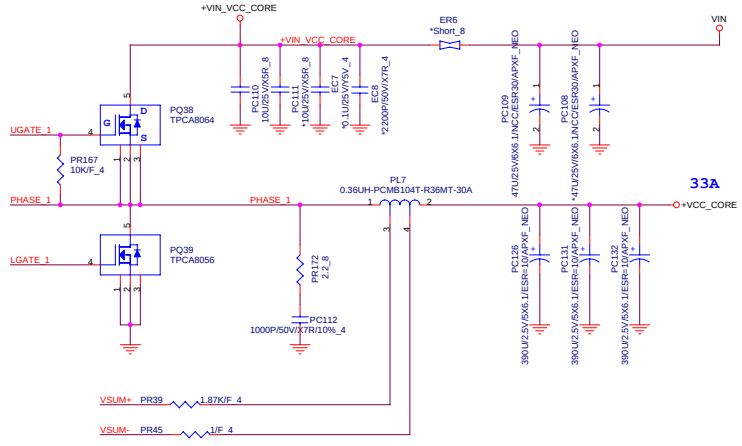
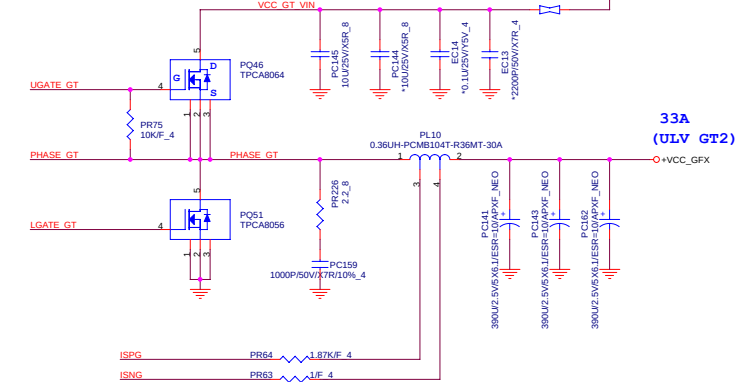
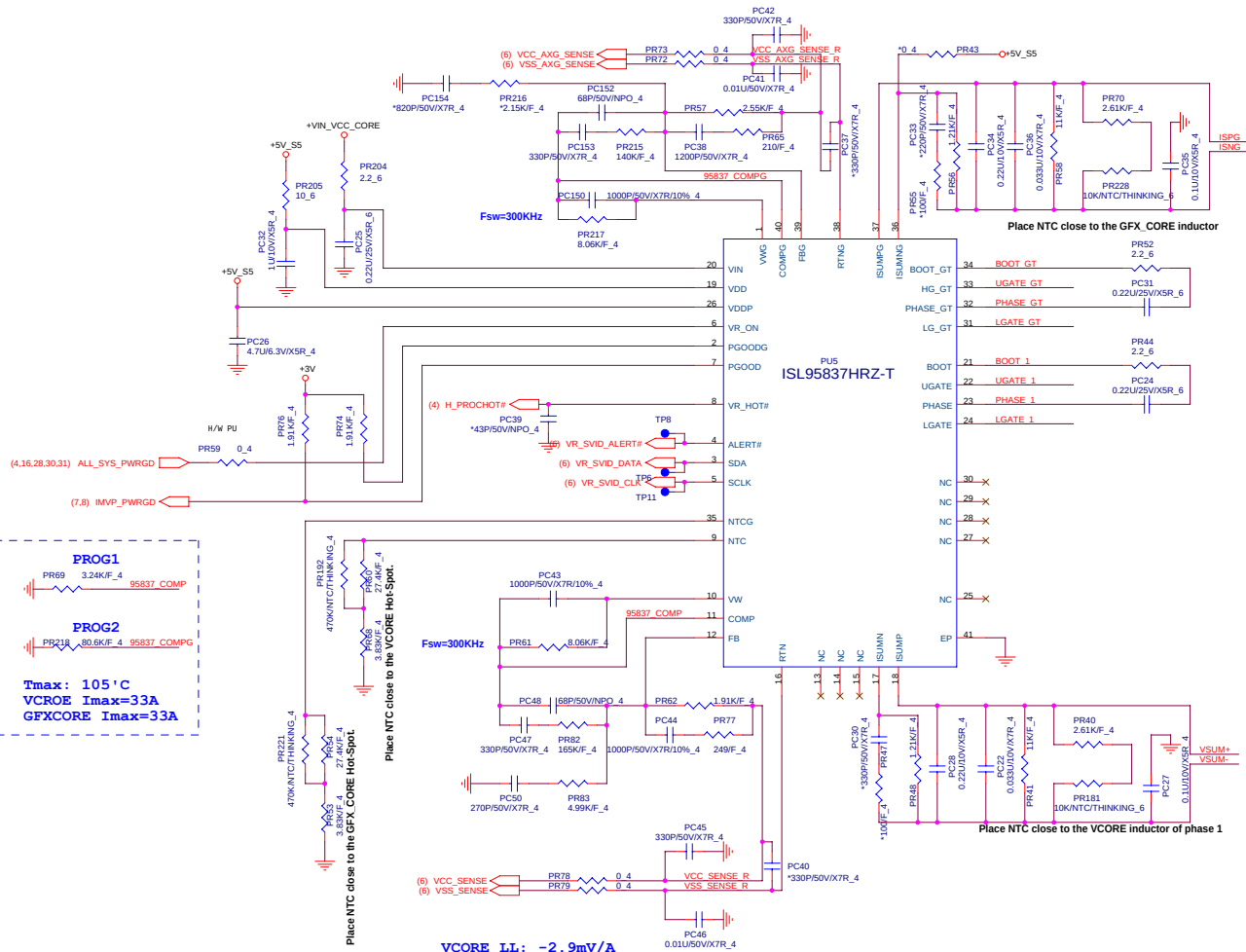


Power SW Board Connector



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

GFX_CORE LL: -3.9mV/A for GT2



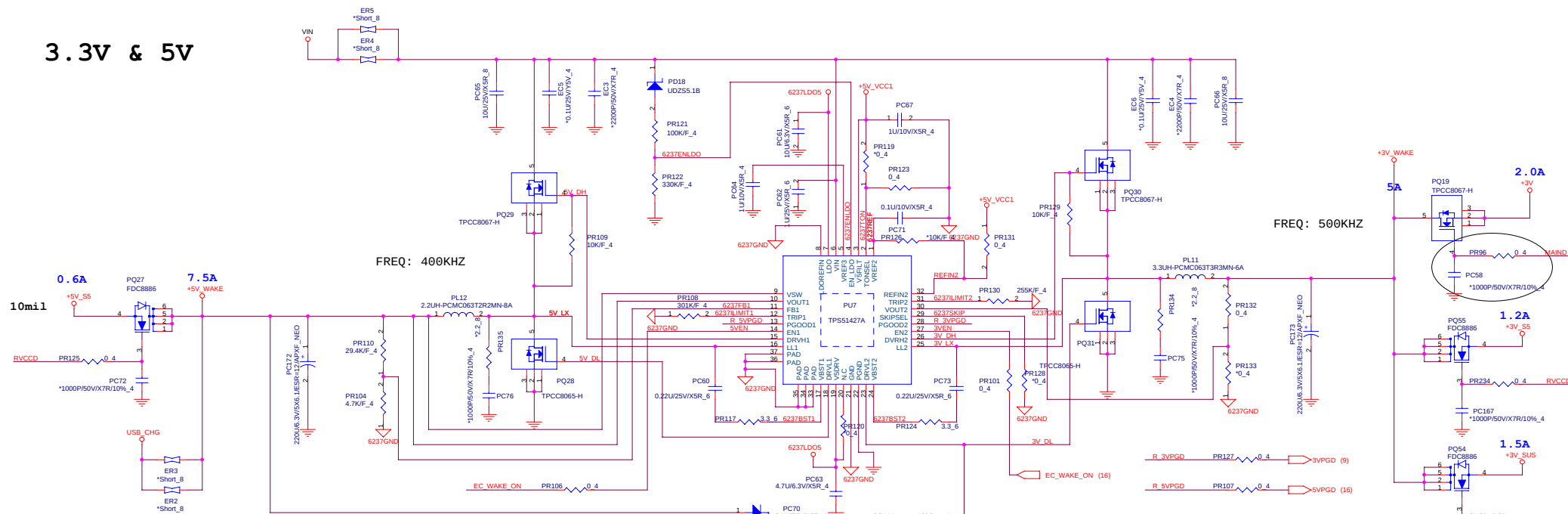
PROG1
PR69 3.24K/F_4 95837_COMP

PROG2
PR218 80.6K/F_4 95837_COMP

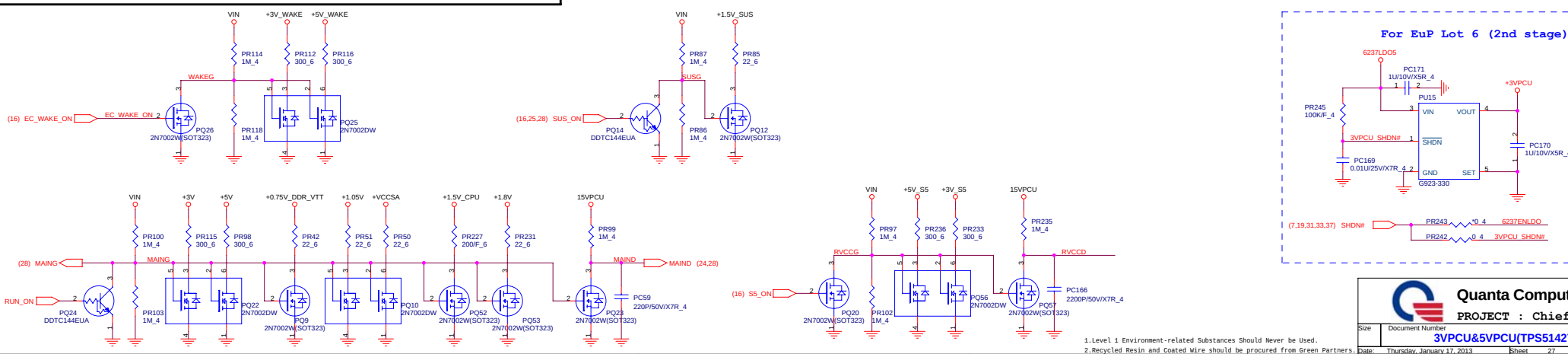
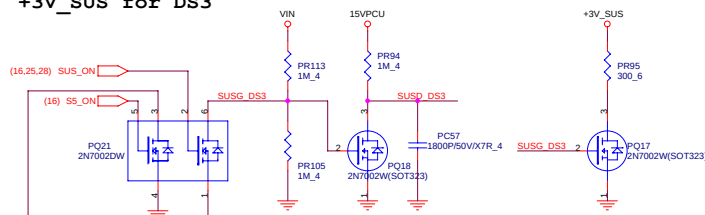
Tmax: 105°C
VCORE Imax=33A
GFXCORE Imax=33A

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

3.3V & 5V



+3V SUS for DS3



Quanta Computer Inc.

PROJECT : Chief R

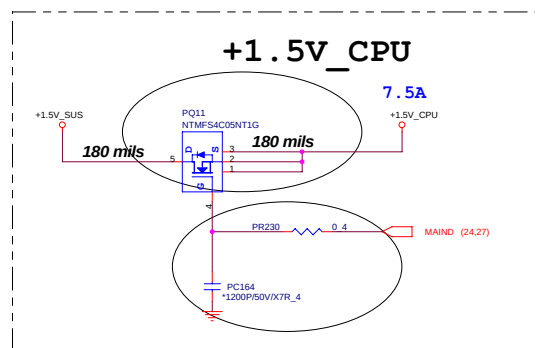
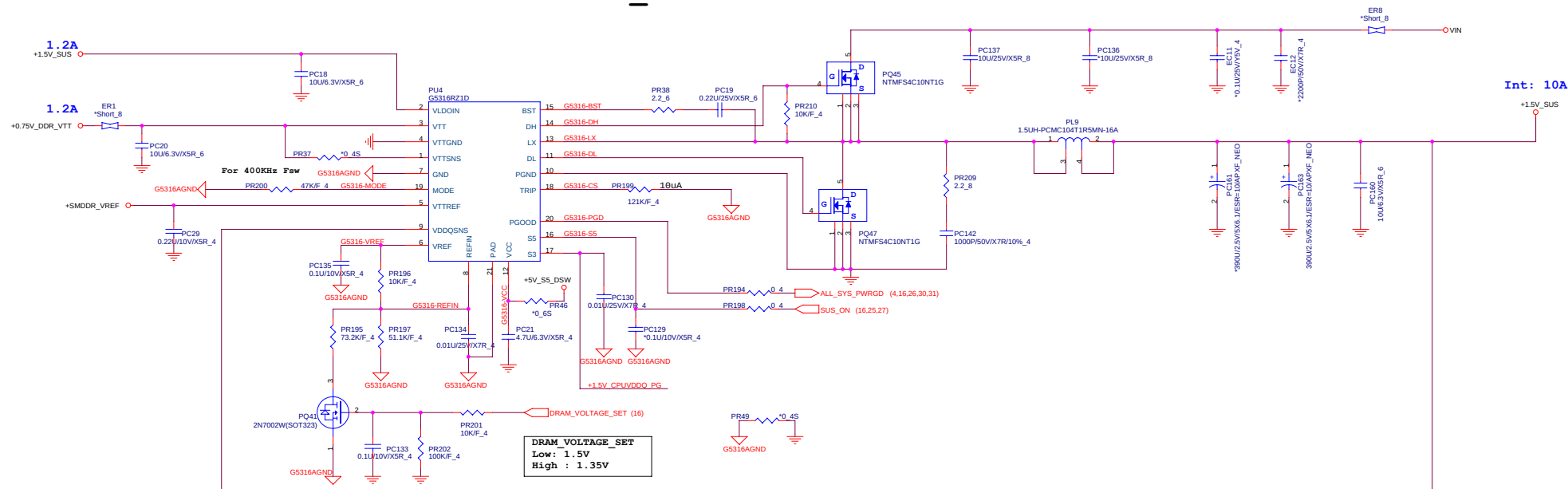
Size	Document Number	Revision
	3VPCU&5VPCU(TPS51427A)	

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

- 1.Level 1 Environment-Related Substances should never be used.
- 2.Recycled Resin and Coated Wire should be procured from Green Partners

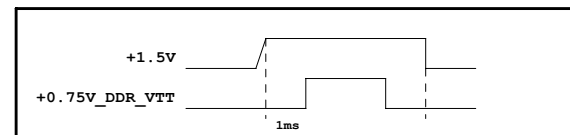
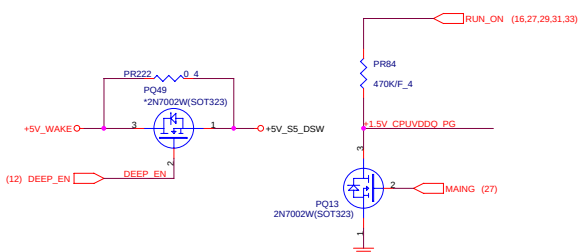
ers. Date: Thursday, January 17, 2013 Sheet 27 of 41

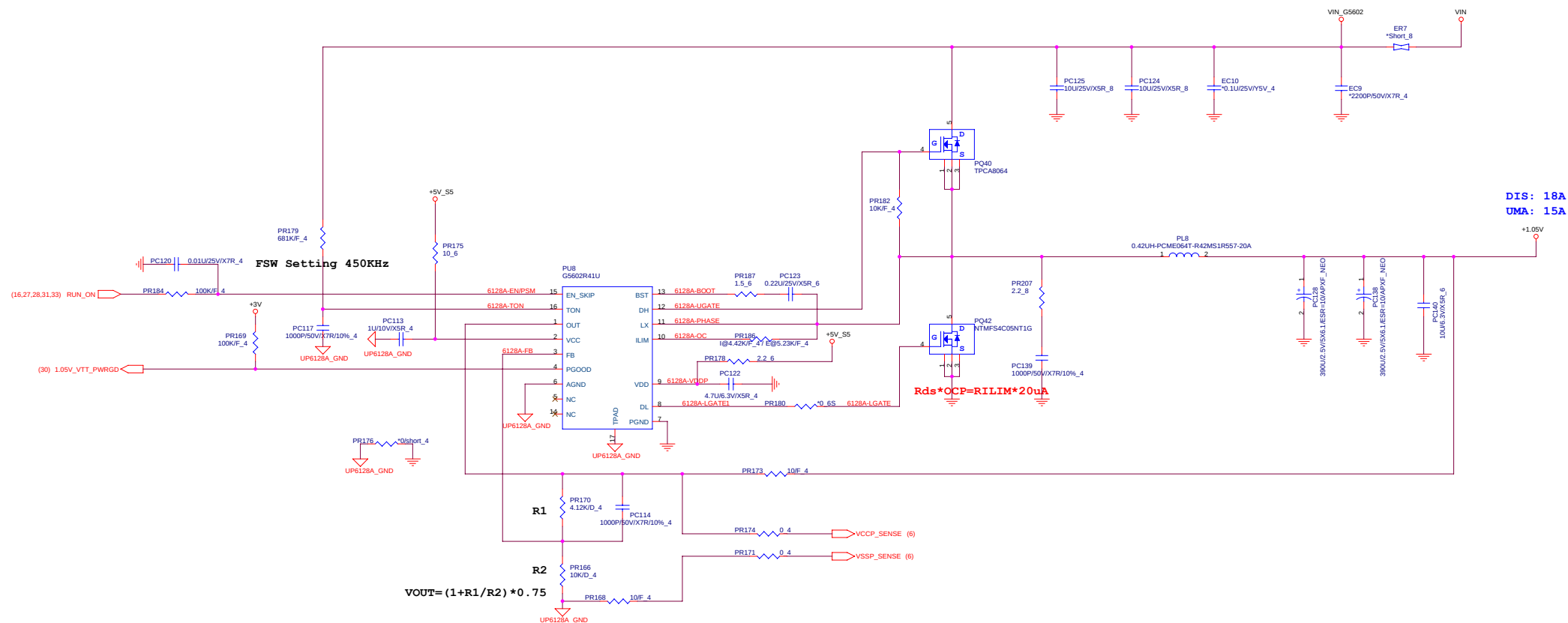
1.5VSUS & VTT_MEM

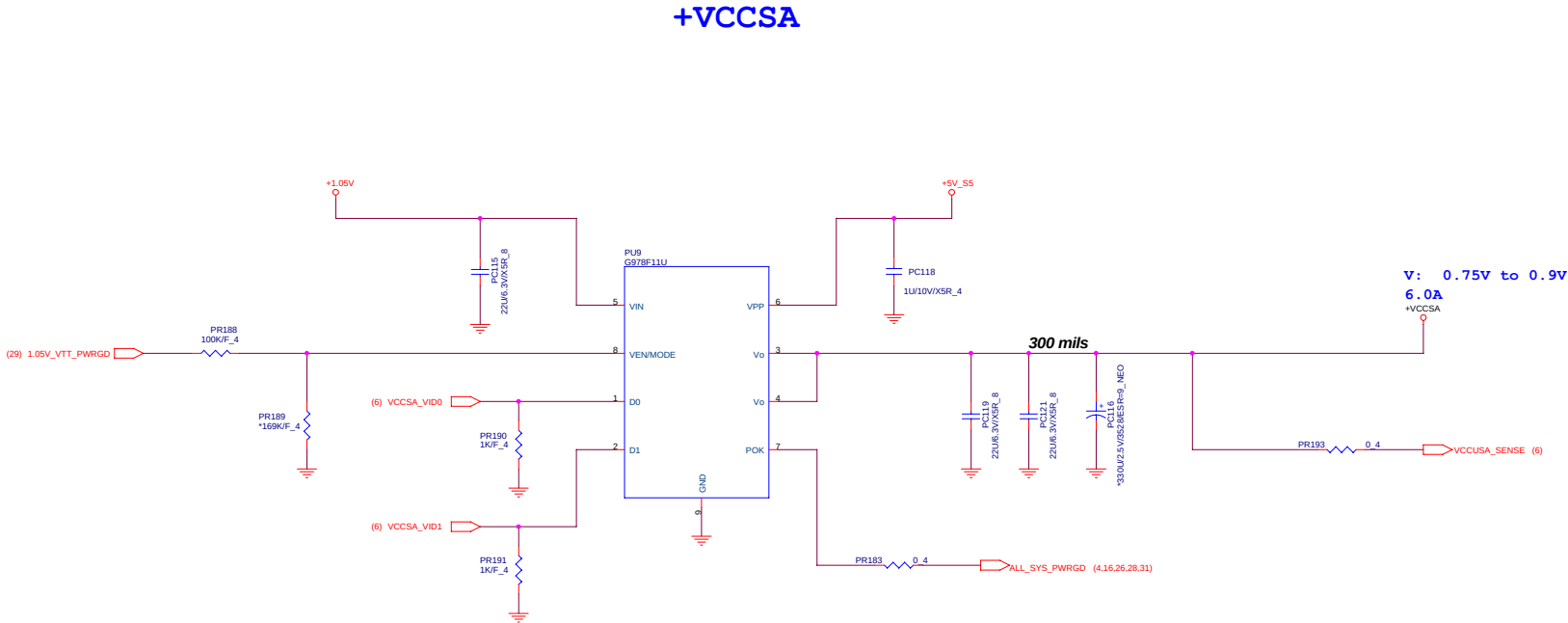


MODE	Resistor on Mode	Fsw	Discharge Mode
3	200Kohm	400KHZ	tracking discharge
2	100Kohm	300KHZ	tracking discharge
1	68Kohm	300KHZ	Non-tracking discharge
0	47Kohm	400KHz	Non-tracking discharge

STATE	S3	S5	1.5VSUS	VTTREF	VTT
S0	1	1	0n	0n	0n
S3	0	1	0n	0n	Off/High Z
S4/S5	0	0	Off	Off	Off



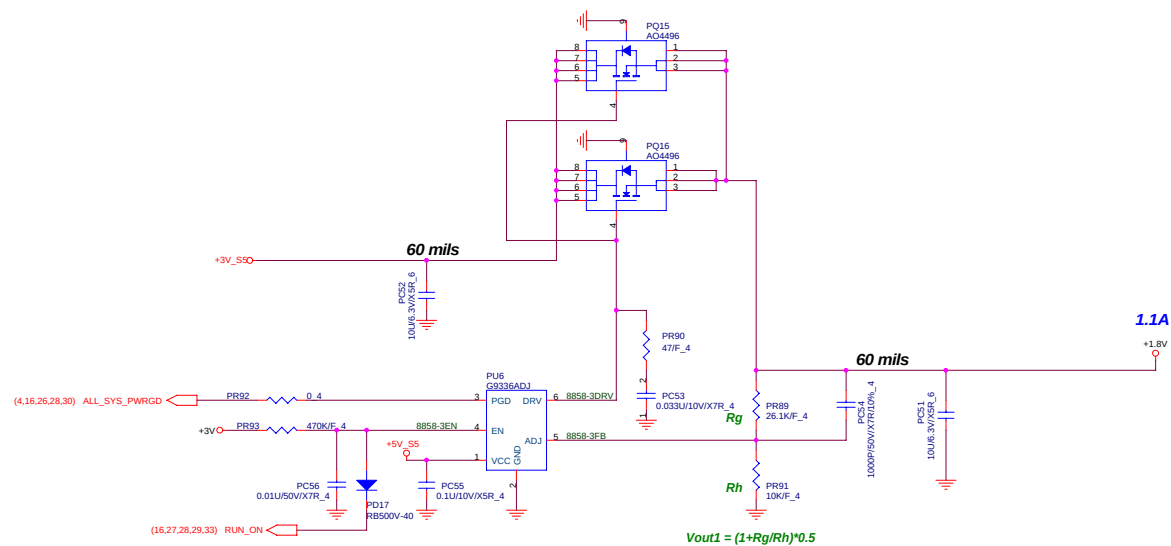




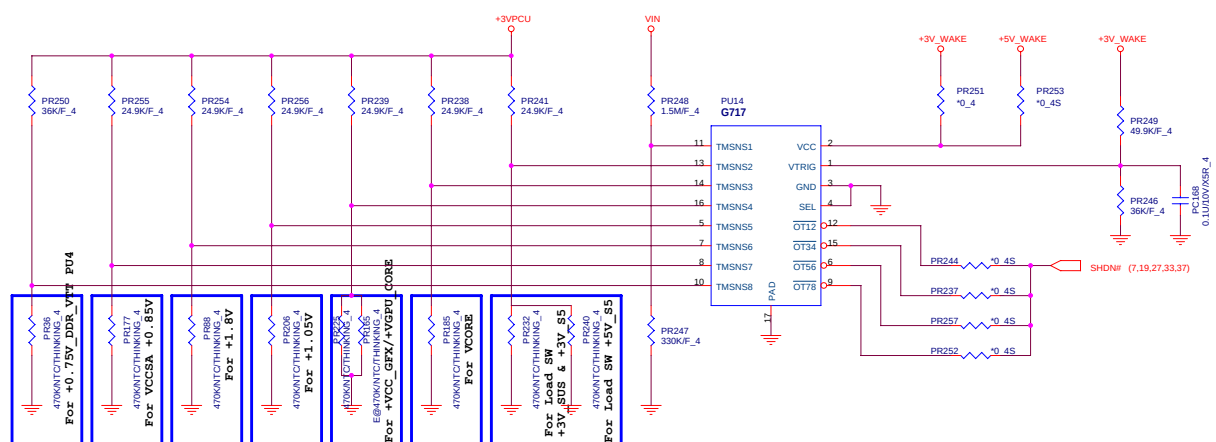
For Chief River ULV

VCCSA_VID0	VCCSA_VID1	+VCCSA
0	0	0.9V
0	1	0.85V
1	0	0.775V
1	1	0.75V

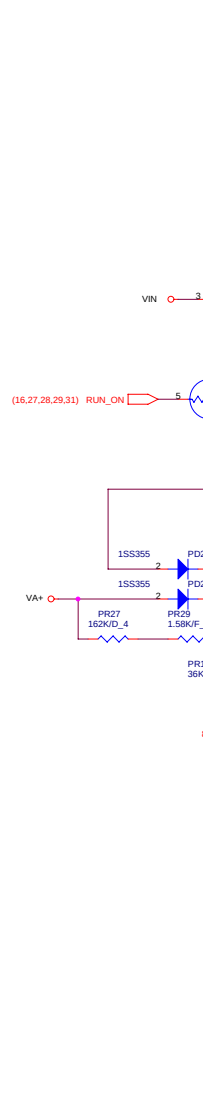
VCC1.8



Thermal Protection and Battery UVP for VEDS

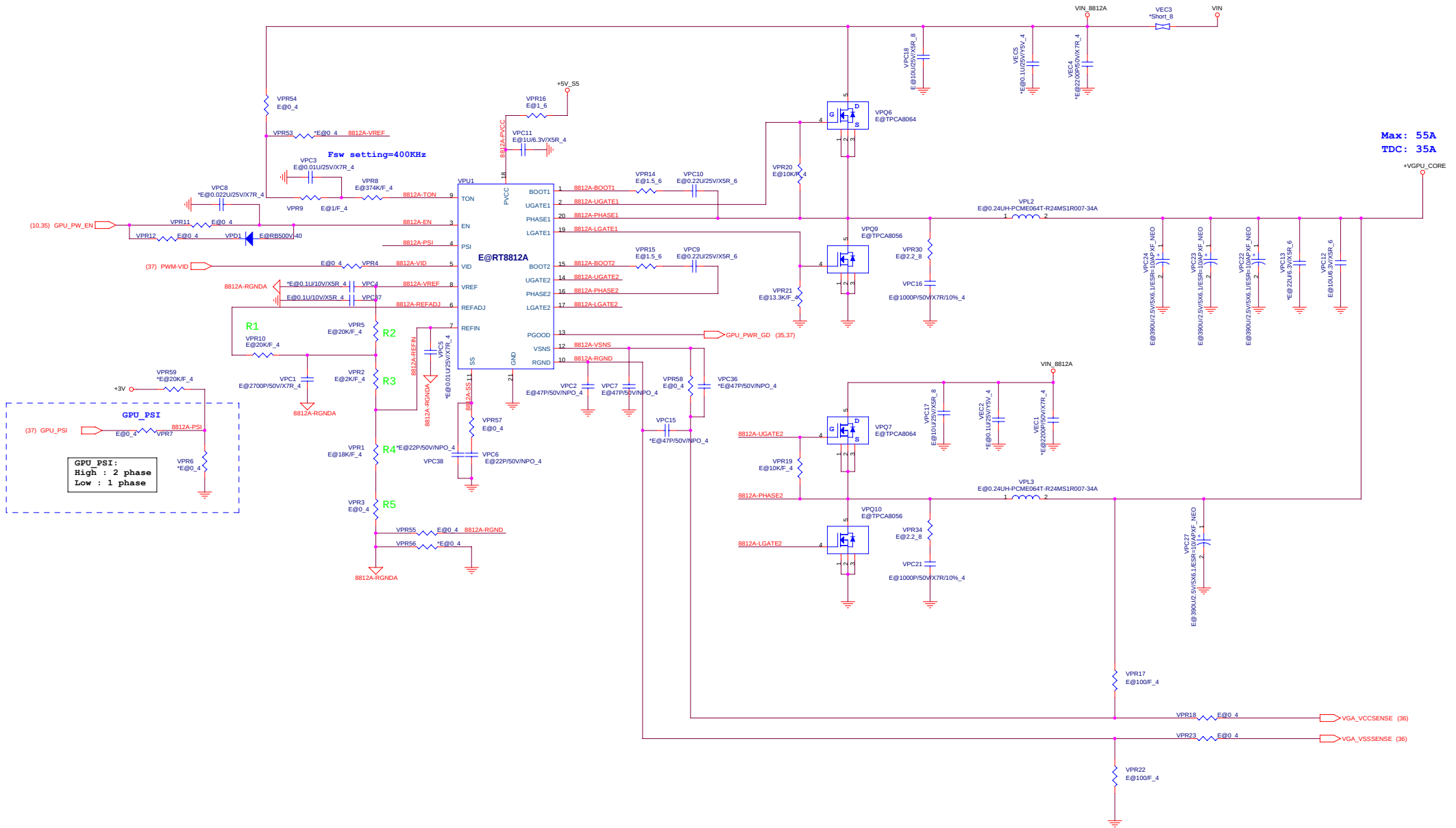






	ACOK	SHDN#	ACIN
ADP Normal	1	1	1
ADP UVP	0	0	0

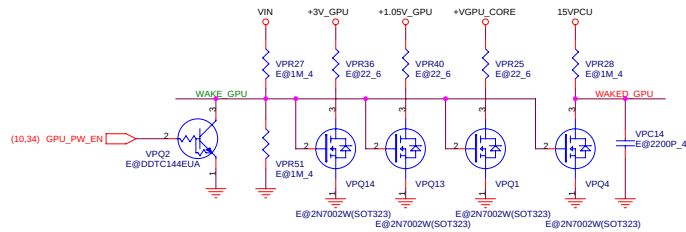
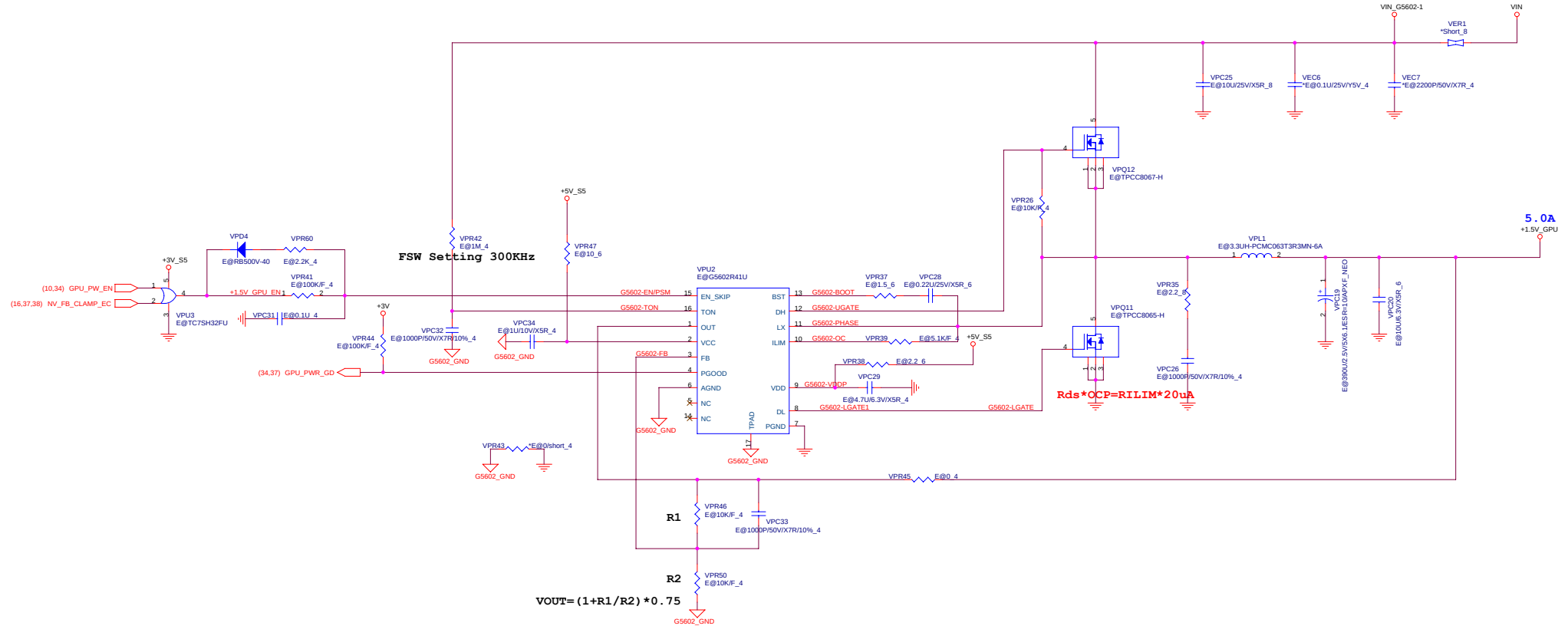
VGA-CORE



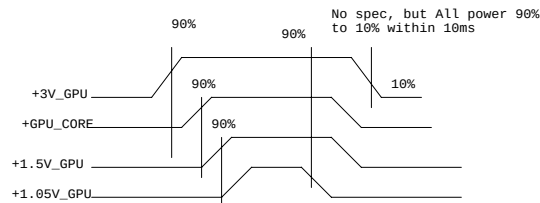
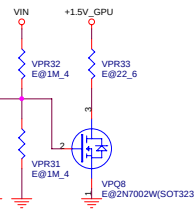
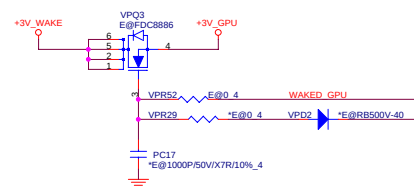
Quanta Computer Inc.
PROJECT : Chief River

Size Document Number
VGA_CORE (RT8812A)
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: Thursday, January 17, 2013 Sheet 34 of 41



+3V_GPU

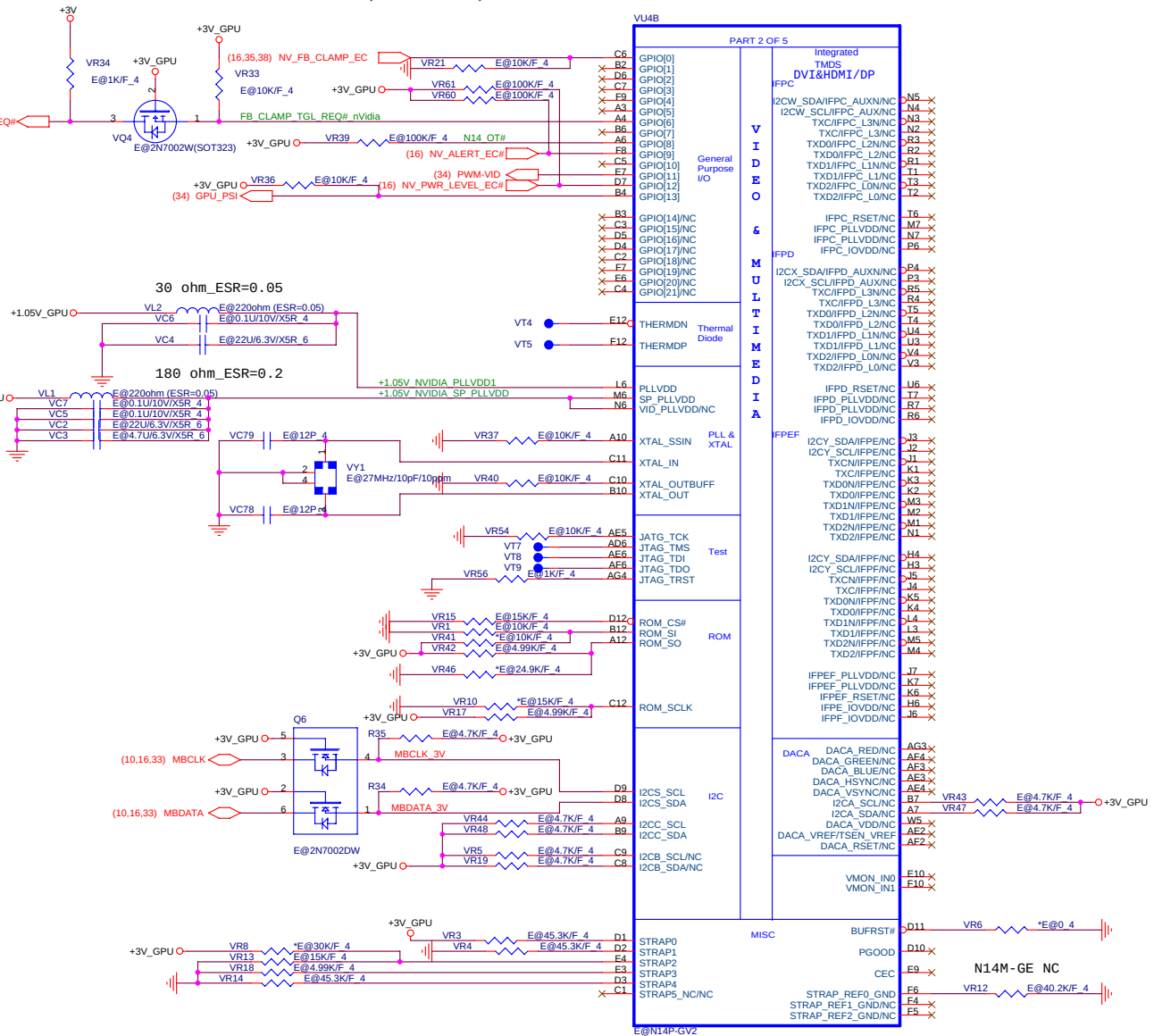


Quanta Computer Inc.
PROJECT : Chief River

Size Document Number 1.8 GPU / 1.0 GPU 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: Thursday, January 17, 2013 Sheet 35 of 41



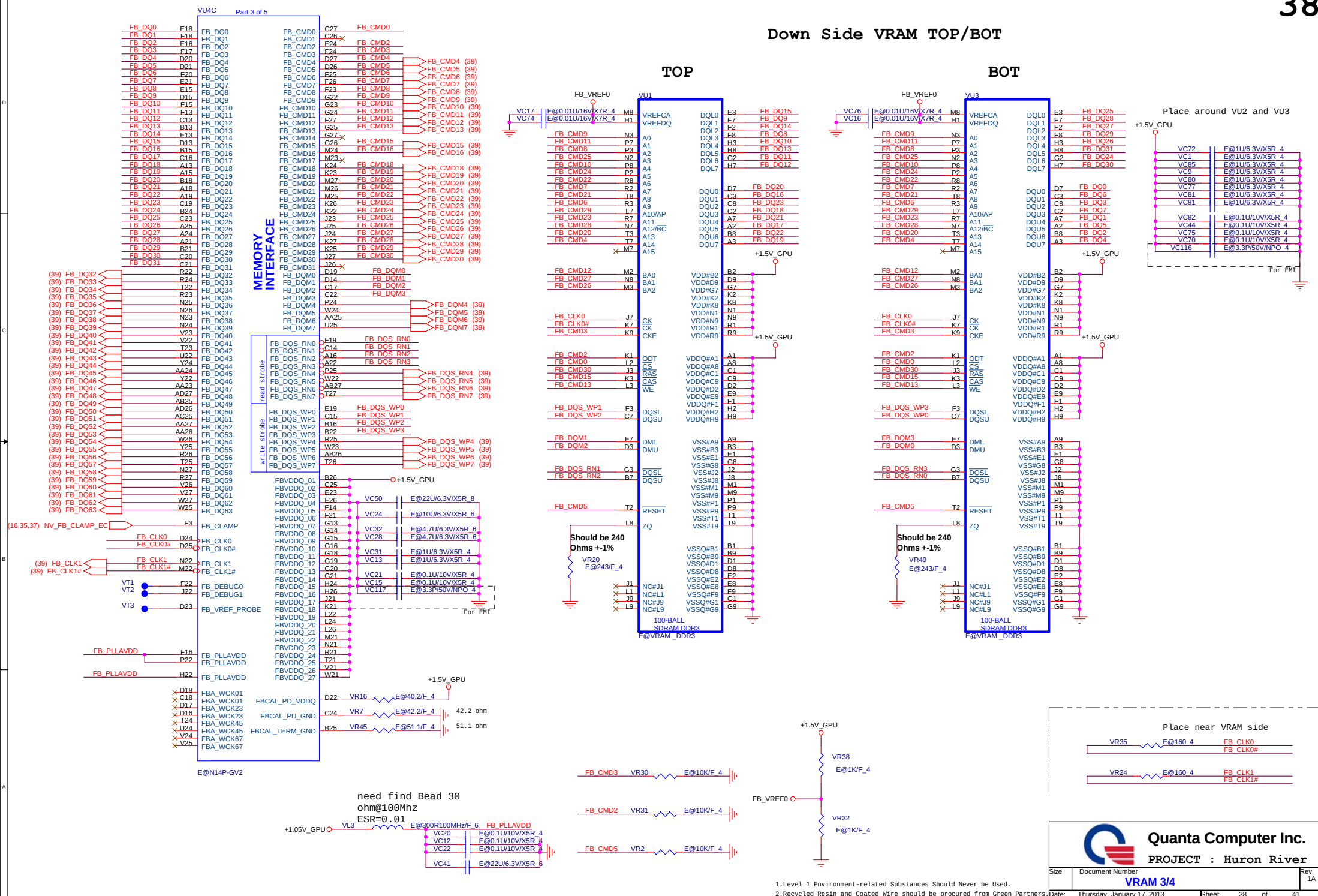


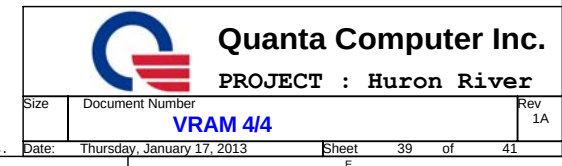
Resistor Value	Pull to VDD	Pull to GND	Resistor P/N
4.99K	1000	0000	
10K	1001	0001	
15K	1010	0010	CS31502FB24
20K	1011	0011	CS32002FB29
24.9K	1100	0100	
30.1K	1101	0101	
34.8K	1110	0110	CS33482FB22
45.3K	1111	0111	CS34532FB18

	VRAM Capacity	VRAM Vender	ID	VR1	Mfr P/N	Quanta P/N
N14M-LP N14P-GV2	128Mx16 DDR3	Samsung	0111	PD45.3K	K4W2G1646E-BC11	AKD5MGGT525
		Hynix	0110	PD34.8K	H5TQ2G63DFR-11C	AKD5MGWTW15
	256Mx16 DDR3	Samsung	0011	PD20K	K4W4G1646E-BC11	AKD5MGGT525
		Hynix	0010(TBD)	PD15K	H5TC4G63AFR-11C	AKD5PGWTW10

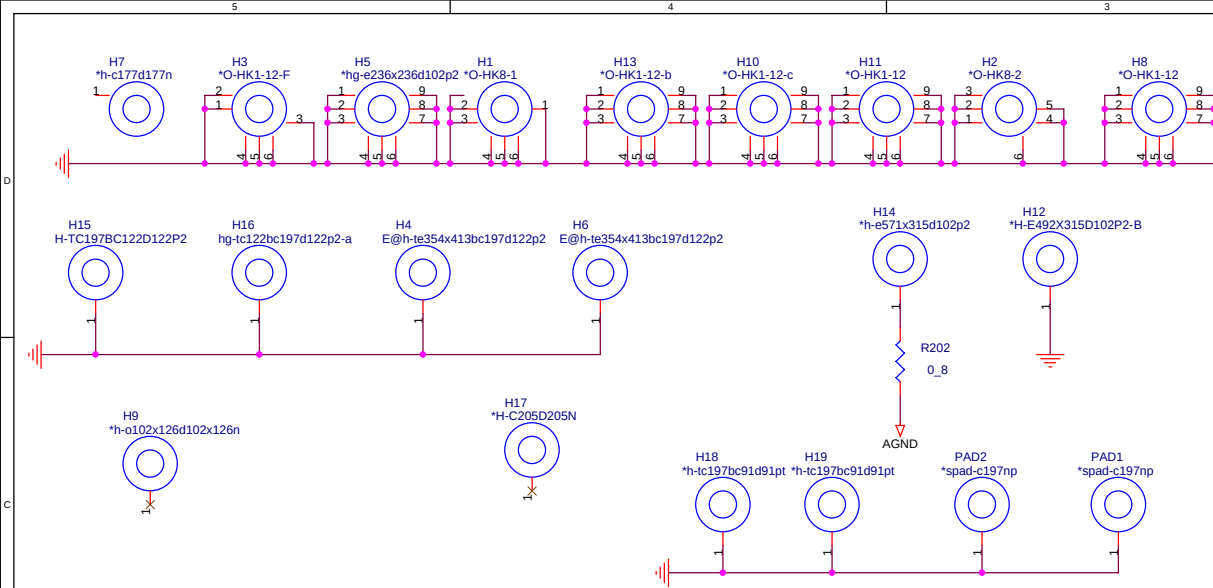
- 1.Level 1 Environment-related Substances Should Never be Used.
- 2.Recycled Resin and Coated Wire should be procured from Green Partners.

Down Side VRAM TOP/BOT

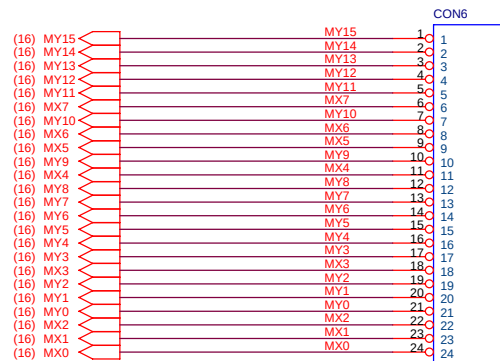




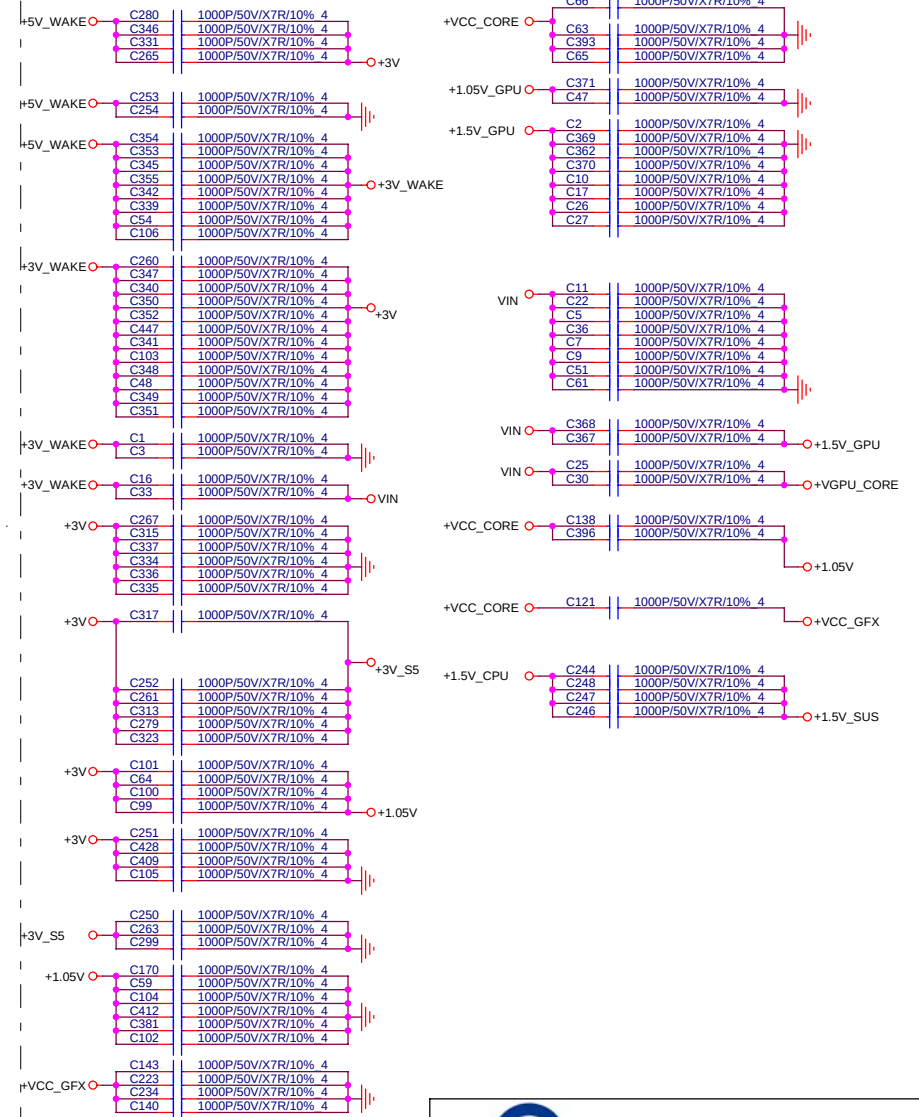
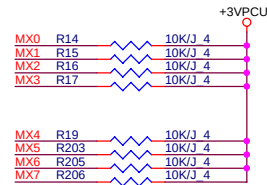
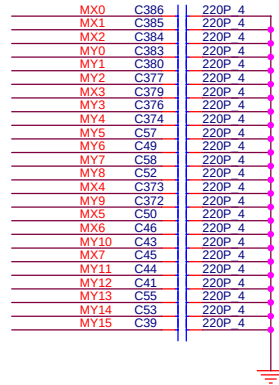
- 1.Level 1 Environment-related Substances Should Never be Used.
- 2.Recycled Resin and Coated Wire should be procured from Green Partners.



KEY BOARD Connector



KB(50503-02441-001)



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

		Quanta Computer Inc.	
		PROJECT : HK5	
Size	Document Number	Rev 1A	
HOLE/EMI/KB			
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USB PORT Architecture	
PORT 0	USB3.0
PORT 1	USN3.0
PORT 2	USN2.0
PORT 3	USB2.0
PORT 4	NFC
PORT 5	N/A
PORT 6	N/A
PORT 7	N/A
PORT 8	N/A
PORT 9	WiMax/BT
PORT 10	Camera
PORT 11	Card Reader
PORT 12	Touch Screen
PORT 13	N/A

PCIE BUS	
PORT 1	WLAN Port
PORT 2	CARD READER
PORT 3	GLAN(RTL8111G)
PORT 4	N/A
PORT 5	N/A
PORT 6	N/A
PORT 7	N/A
PORT 8	N/A

SATA BUS	
PORT 0	HDD
PORT 1	N/A
PORT 2	N/A
PORT 3	N/A
PORT 4	ODD
PORT 5	N/A

SM BUS	MBCLK/MBDATA	WRITE	READ	Function
ISL88731CHRTZ	0001 001X	0001 0010	0001 0011	Charger
Nvidia	1001 1110	-	1001 1110	Graphice
LIS331DL	0011 101X	0011 1010	0011 1011	G Sensor

SM BUS	MBCLK_BAT/MBDATA_BAT	WRITE	READ	Function
VGP-BPS35A	0001 011X	0001 0110	0001 0111	Battery

SM BUS	SMB_PCH_CLK/SMB_PCH_DAT	WRITE	READ	Function
DIMM Module0	1010 000X	1010 0000	1010 0001	DDRIII
DIMM Module 1	1010 010X	1010 0100	1010 0101	DDRIII
Synaptics	0010 110X	0010 1100	0010 1101	Click PAD

	0	1
Board ID0	CaspiCRA1-CaspiCRB1 HK8-HK9	SuperiorCRA1-SuperiorCRB1 GD5-GD6
Board ID1	HK8/GD5 14"	HK9/GD6 15"

PCBA SKU	Discrete	UMA
R280(Pull High)	Stuff	No Stuff
R279(Pull Low)	No Stuff	Stuff

	S0	S3	DS3	S4	S5 (Charger Enable)	S5 (Charger Disable)	S5 (Soft OFF) (WoL Disable)	S5 (Soft OFF) (WoL Enable)
RUN_ON	H	L	L	L	L	L	L	L
+3V	H	L	L	L	L	L	L	L
+5V	H	L	L	L	L	L	L	L
+0.75V_DDR_VTT	H	L	L	L	L	L	L	L
+1.05V	H	L	L	L	L	L	L	L
+0.85V	H	L	L	L	L	L	L	L
+1.5V	H	L	L	L	L	L	L	L
+1.8V	H	L	L	L	L	L	L	L
+1.8V_GPU	H	L	L	L	L	L	L	L
+1.0V_GPU	H	L	L	L	L	L	L	L
+VGPU_CORE	H	L	L	L	L	L	L	L
+VCC_GFX	H	L	L	L	L	L	L	L
+VCC_CORE	H	L	L	L	L	L	L	L
SUS_ON	H	H	H	L	L	L	L	L
+1.5V_SUS	H	H	H	L	L	L	L	L
S5_ON	H	H	L	H	L	L	L	H
+5V_S5	H	H	L	H	L	L	L	H
+3V_S5	H	H	L	H	L	L	L	H
EC_WAKE_ON	H	H	H	H	H	L	L	H
+3V_WAKE	H	H	H	H	H	L	L	H
+5V_WAKE	H	H	H	H	H	L	L	H
DEEP_EC_EN	H	H	H	H	L	L	L	L
+3V_S5_DSW	H	H	H	H	L	L	L	L
+3V_SUS	H	H	L	L	L	L	L	L