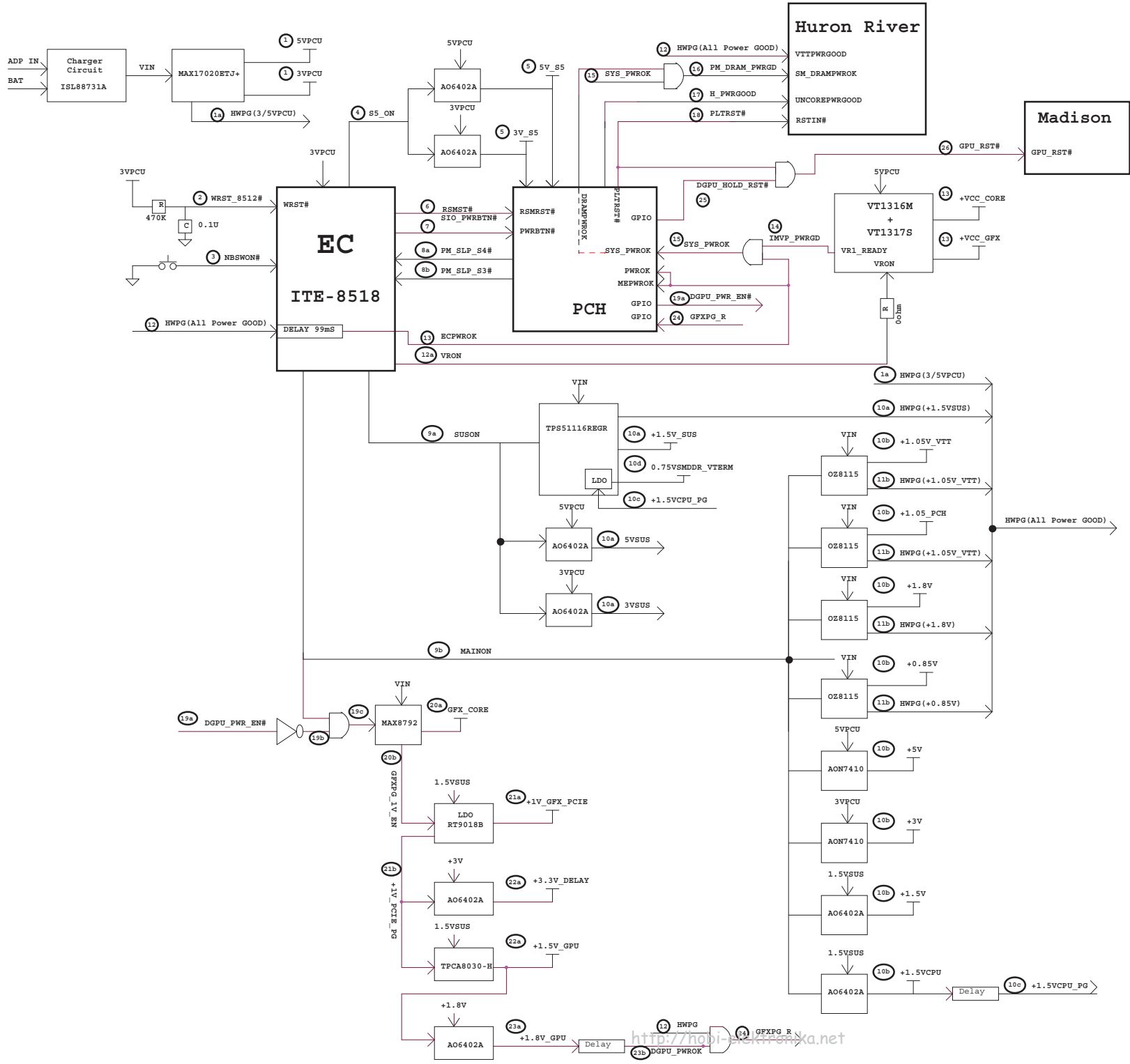


REGULATOR (DDR3) 1.5VSUS, 0.75VSMDDR_VTERM, 1.5V 1.5V_GPU, 1.5V_CPU
REGULATOR +1.05V_VTT, +1.8V
DC/DC 3VPCU, 5VPCU, +15V PG 42
CPU Core PG 43
VGA Core Discrete PG 44



CLK Gen(CLK)

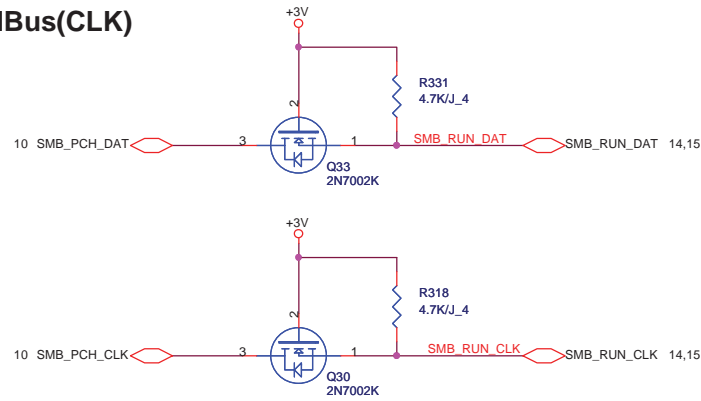
02/20 DEL for Pre-ES1


CPU_CLK select(CLK)

02/20 DEL for Pre-ES1

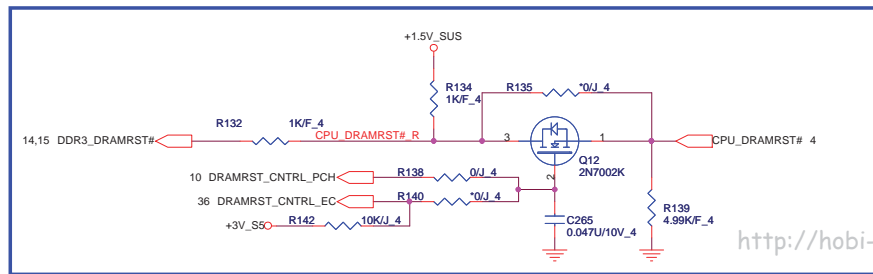
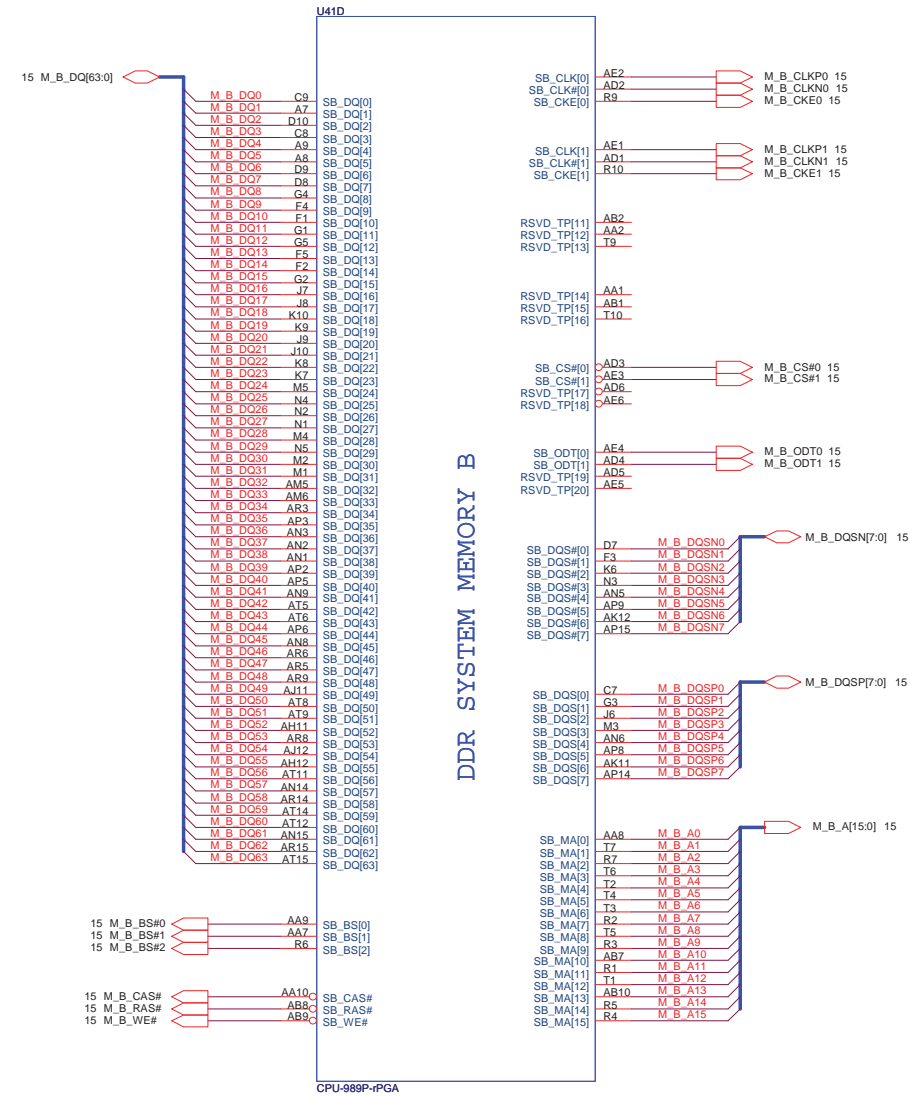
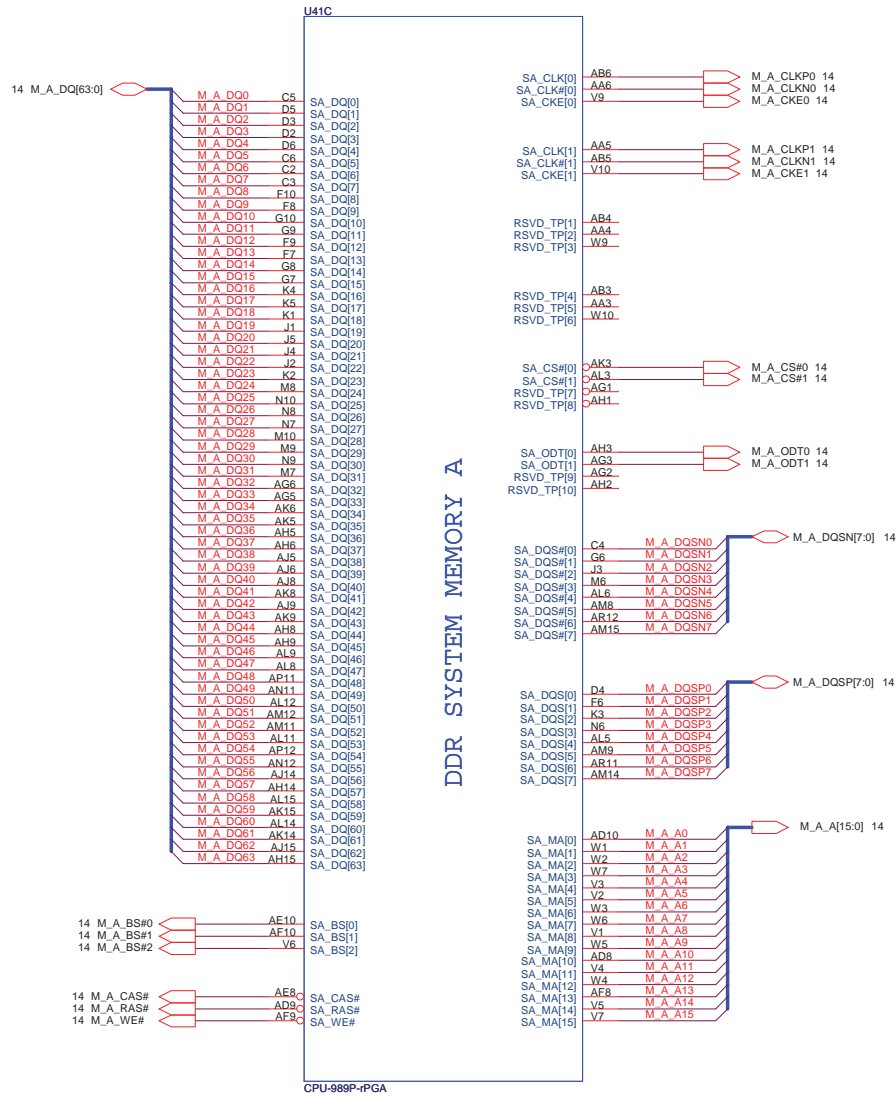
	0	1
CPU_SEL	CPU0/1=133MHz (default)	CPU0/1=100MHz

SMBus(CLK)



 PROJECT : KL2D Quanta Computer Inc.		Size	Document Number	Rev
		Clock Generator		1A
Date:	Saturday, July 24, 2010	Sheet	3	of 47

Sandy Bridge Processor (DDR3)



<http://hobi-elektronika.net>

PROJECT : KL2D
Quanta Computer Inc.

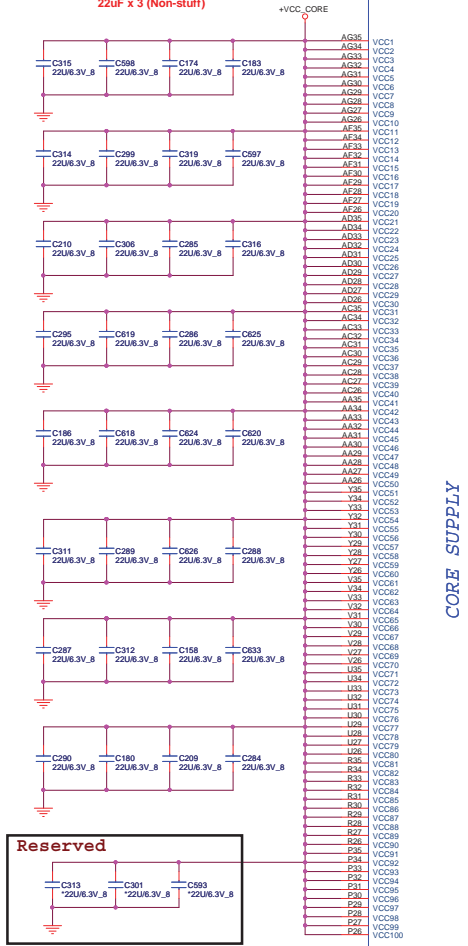
Size	Document Number	Rev
	Sandy Bridge 2/4	1A
Date:	Saturday, July 24, 2010	Sheet 5 of 47

Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)

CPU Core Power
SNB 45W:55A
22uF x 32
22uF x 3 (Non-stuff)

POWER

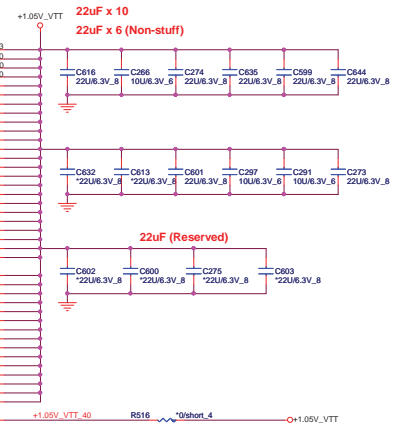


PEG AND DDR

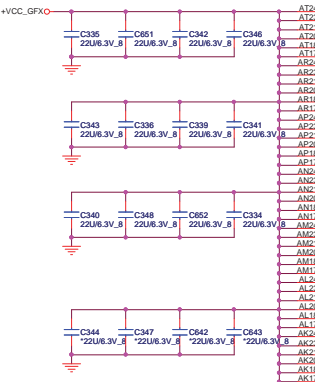
CORE SUPPLY

SENSE LINES

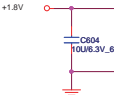
CPU VTT
SNB 45W:8.5A
22uF x 10
22uF x 6 (Non-stuff)



CPU VGT
SNB 45W:22A
22uF x 12
22uF x 4 (Reserved)



CPU VCCPL
SNB 45W:3A
330uF/7mohm x 1
10uF x 1
1uF x 2



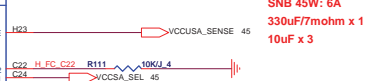
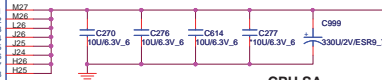
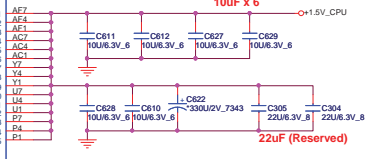
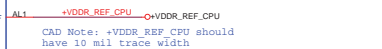
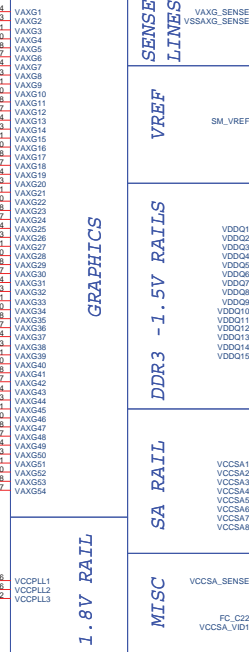
POWER

GRAPHICS

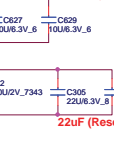
DDR3 - 1.5V RAILS

SA RAIL

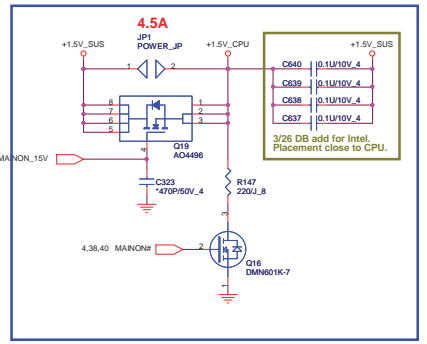
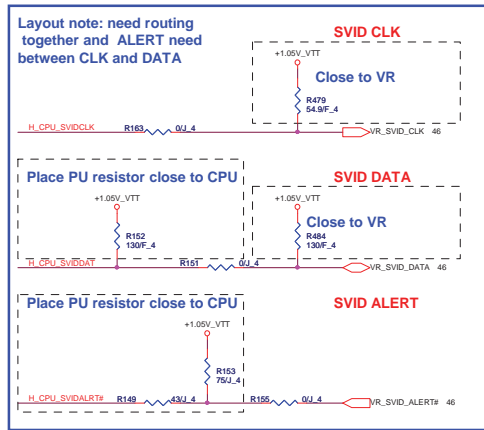
MISC



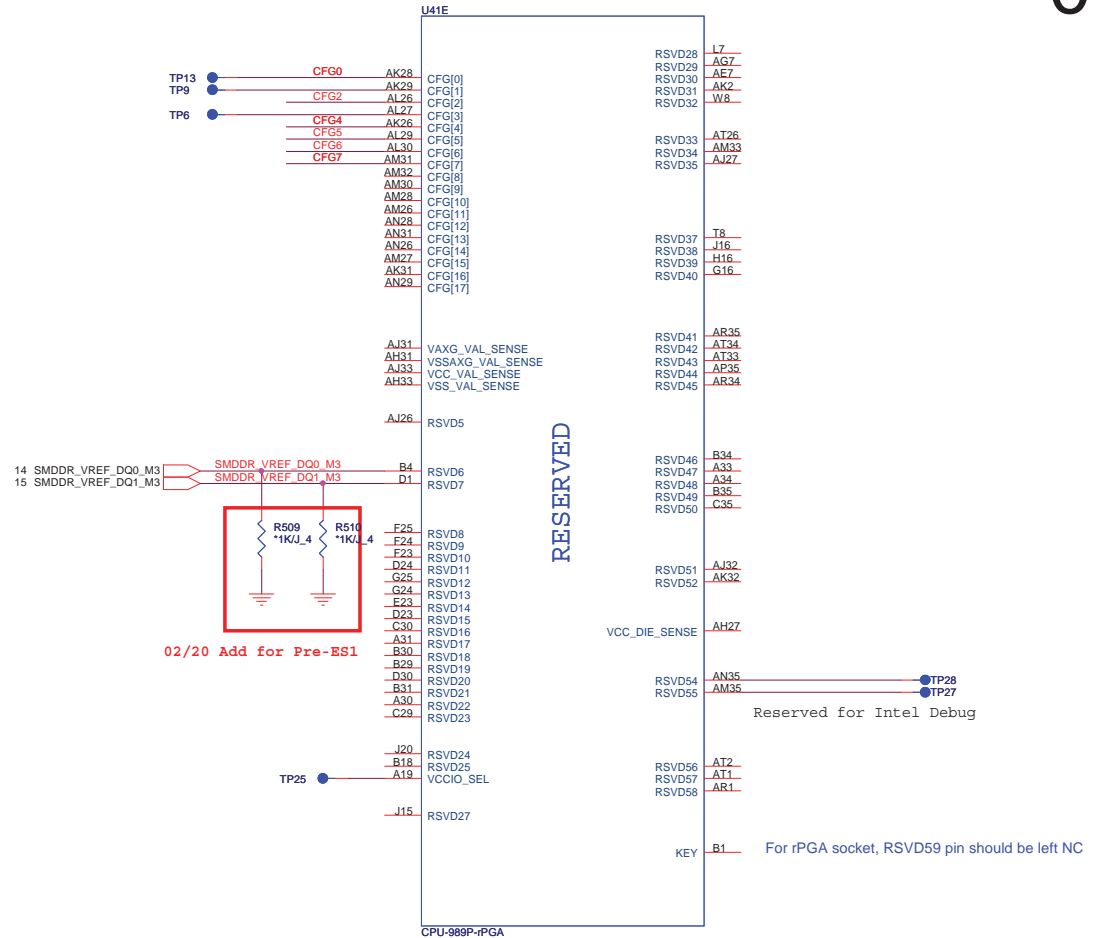
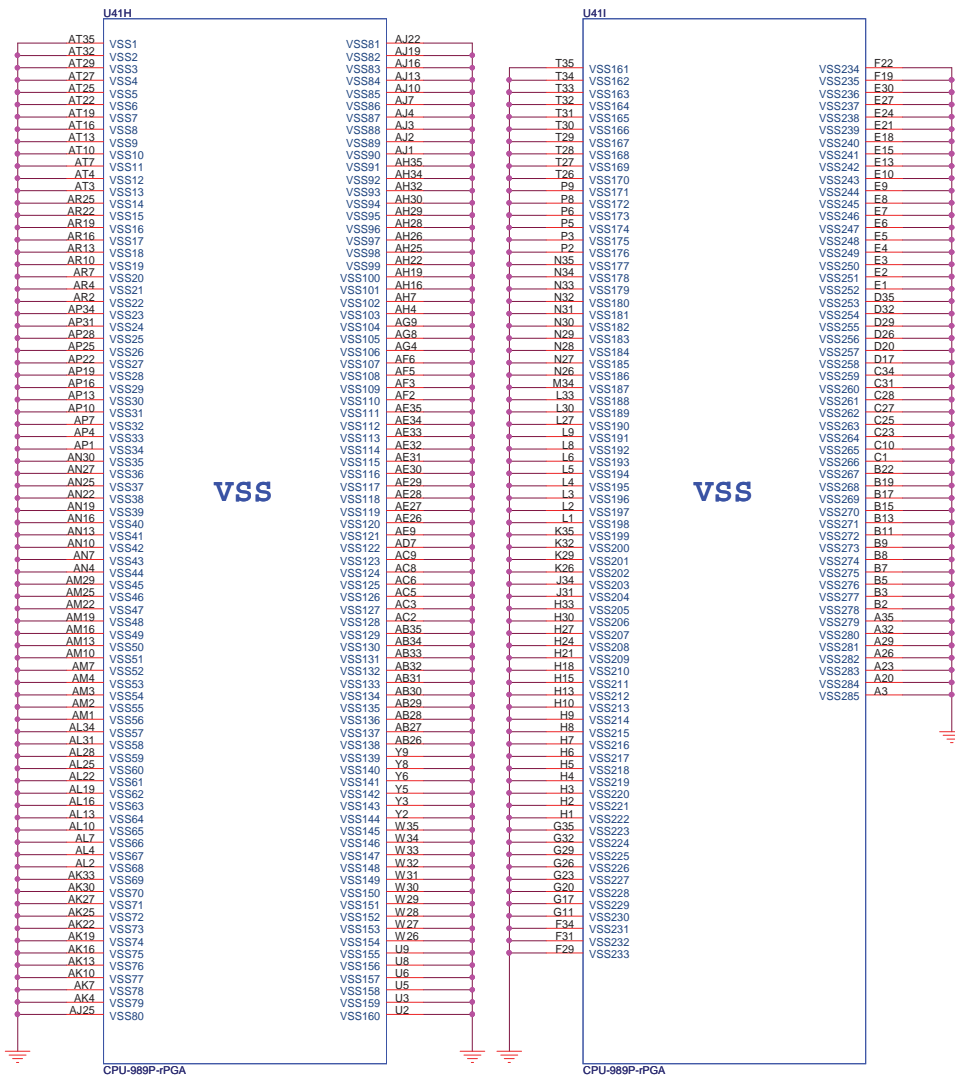
CPU MCH
SNB 45W: 5A
330uF/6mohm x 1
10uF x 6



CPU SA
SNB 45W: 6A
330uF/7mohm x 1
10uF x 3



PROJECT : KL2D
Quanta Computer Inc.
Sandy Bridge 3/4
Date: Saturday, July 24, 2010 Sheet 6 of 27



Processor Strapping

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

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



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

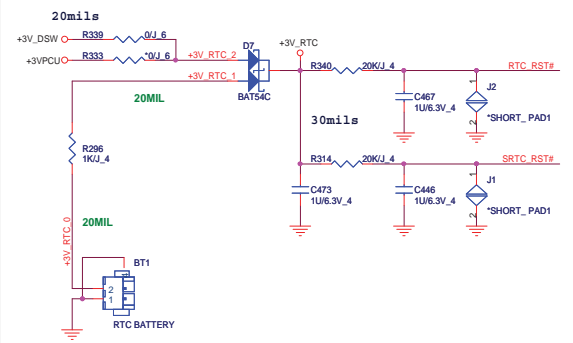
- 11: (Default) x16 - Device 1 functions 1 and 2 disabled
- 10: x8, x8 - Device 1 function 1 enabled; function 2 disabled
- 01: Reserved - (Device 1 function 1 disabled; function 2 enabled)
- 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled



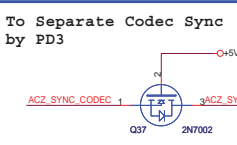
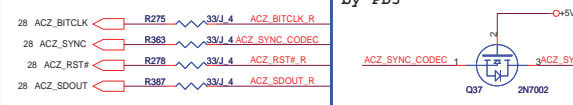
Size	Document Number	Rev
	Sandy Bridge 4/4	1A

Date: Saturday, July 24, 2010 Sheet 7 of 47

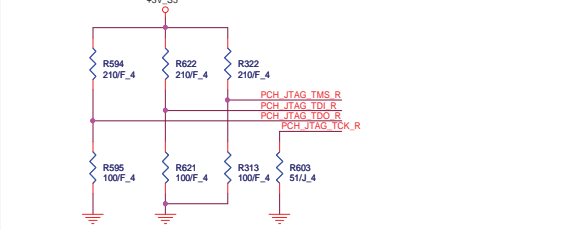
RTC Circuitry(RTC)



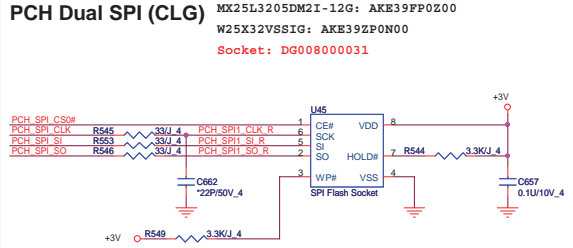
HDA Bus(CLG)



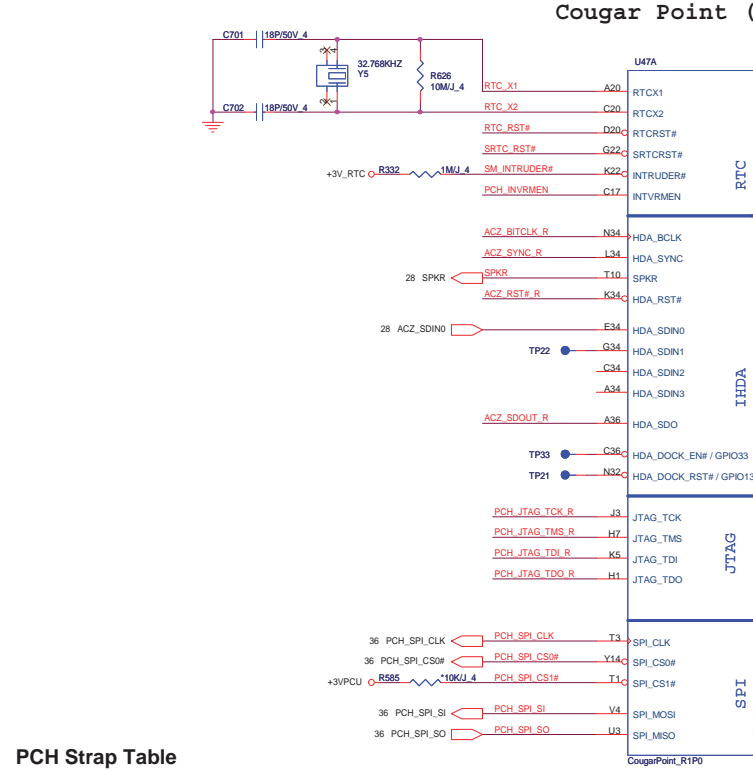
PCH JTAG Debug (CLG)



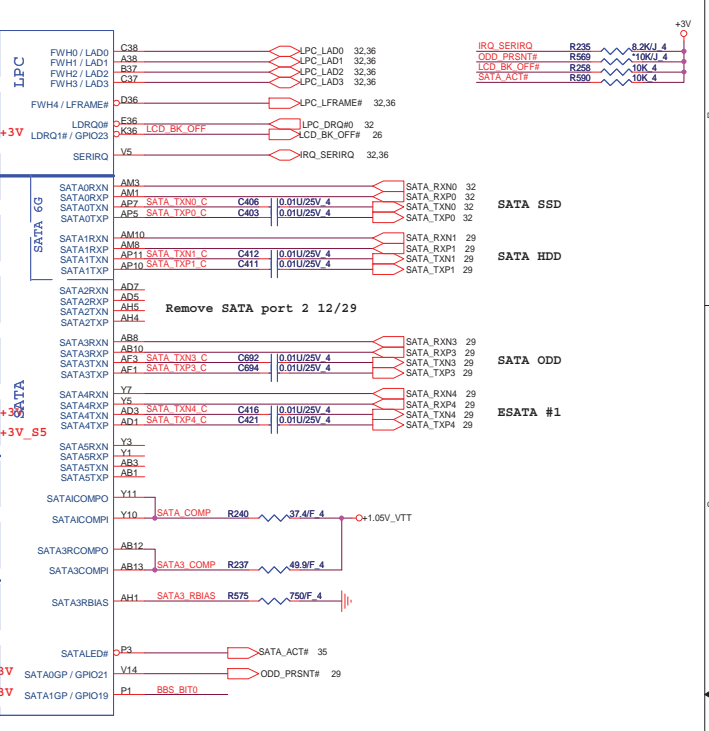
PCH Dual SPI (CLG)



PCH2 (CLG)



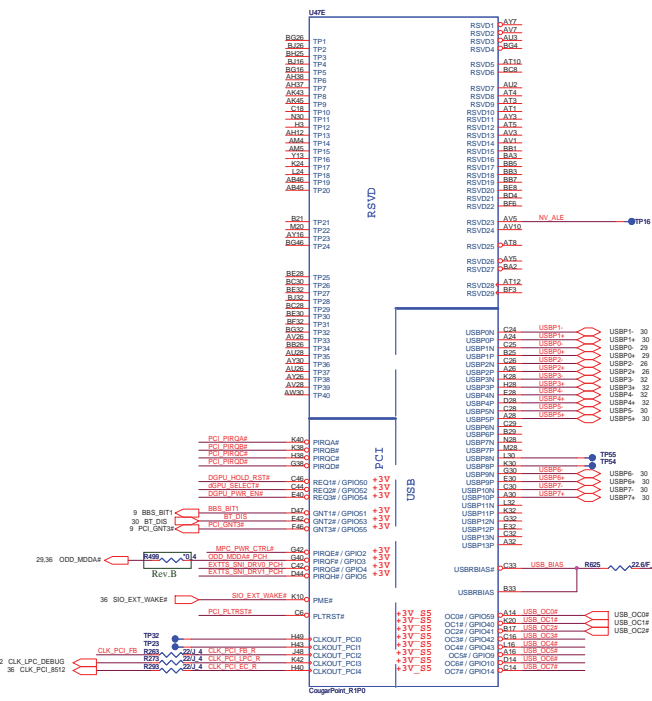
Cougar Point (HDA, JTAG, SATA)



PCH Strap Table

Table with 4 columns: Pin Name, Strap description, Sampled, Configuration. Rows include SPKR, GNT3# / GPIO55, INTVRMEN, GNT1# / GPIO51, GPIO19, HDA_SDO, DF_TVS, GPIO28, HDA_SYNC, GPIO8, SPI_MOSI, and NV_ALE. Includes a small table for GNT# / GPIO51 configuration.

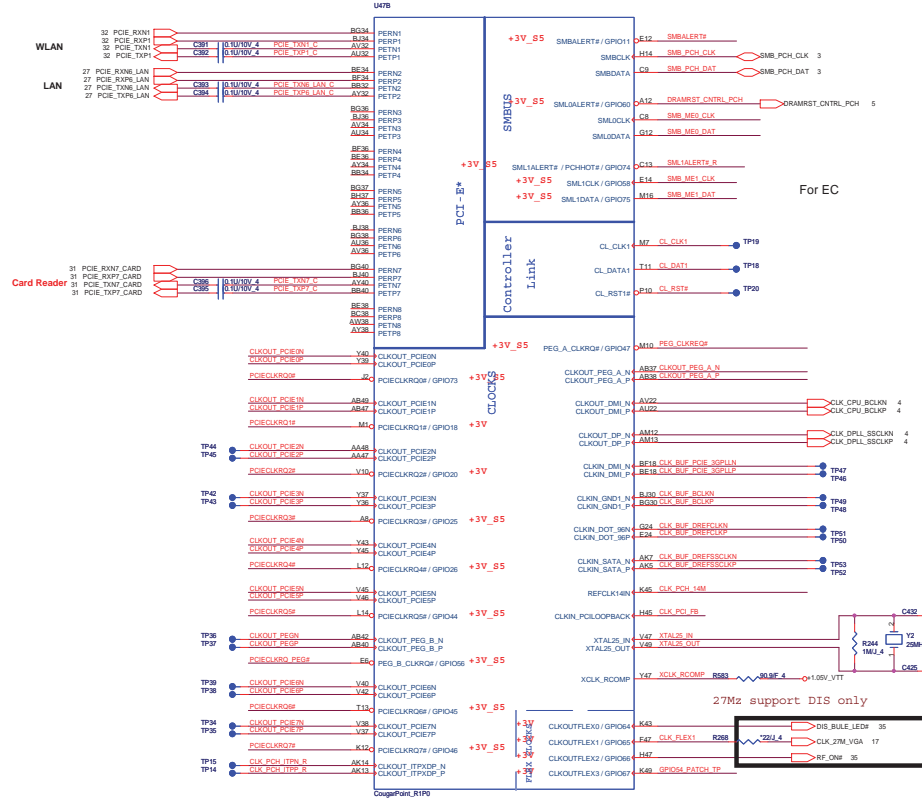
Cougar Point-M (PCI,USB,NVRAM)



BlueTooth
USB/SATA Combo #1
CCD on LVDS
WLAN
WWAN
USB #1

USB #2
USB #3

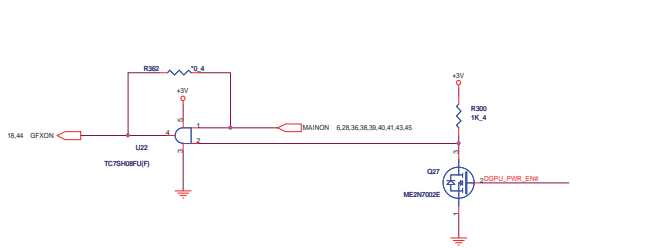
Cougar Point-M (PCI-E, SMBUS, CLK)



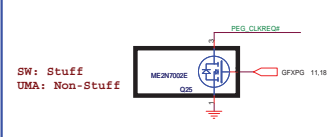
For EC

27M support DIS only

DGPU Power ON

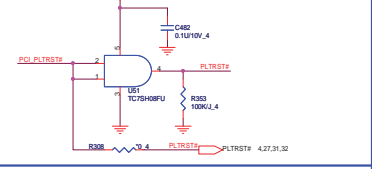


PEG CLK detect

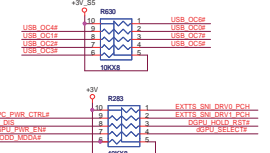


SW: Stuff
UMA: Non-stuff

PLTRST#(CLG)



PCI/USB0C# Pull-up(CLG)



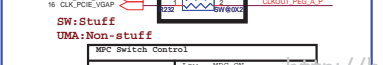
WLAN



LAN

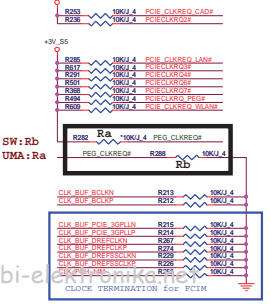


Card Reader



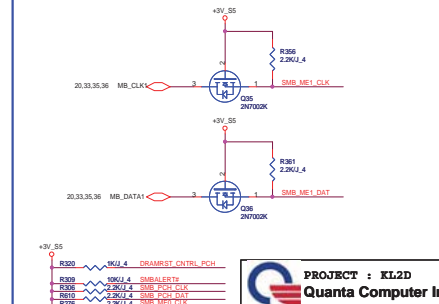
SW: Stuff
UMA: Non-stuff

CLK_REQ/Strap Pin(CLG)

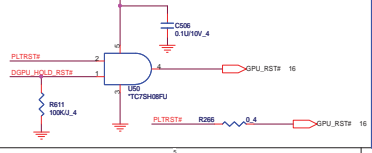


SW: Rb
UMA: Ra

SMBus/Pull-up(CLG)



GPU RST#(CLG)

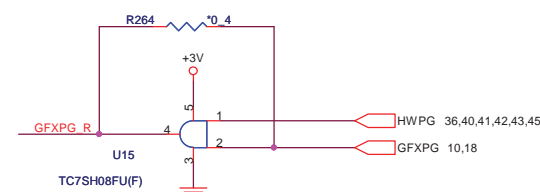
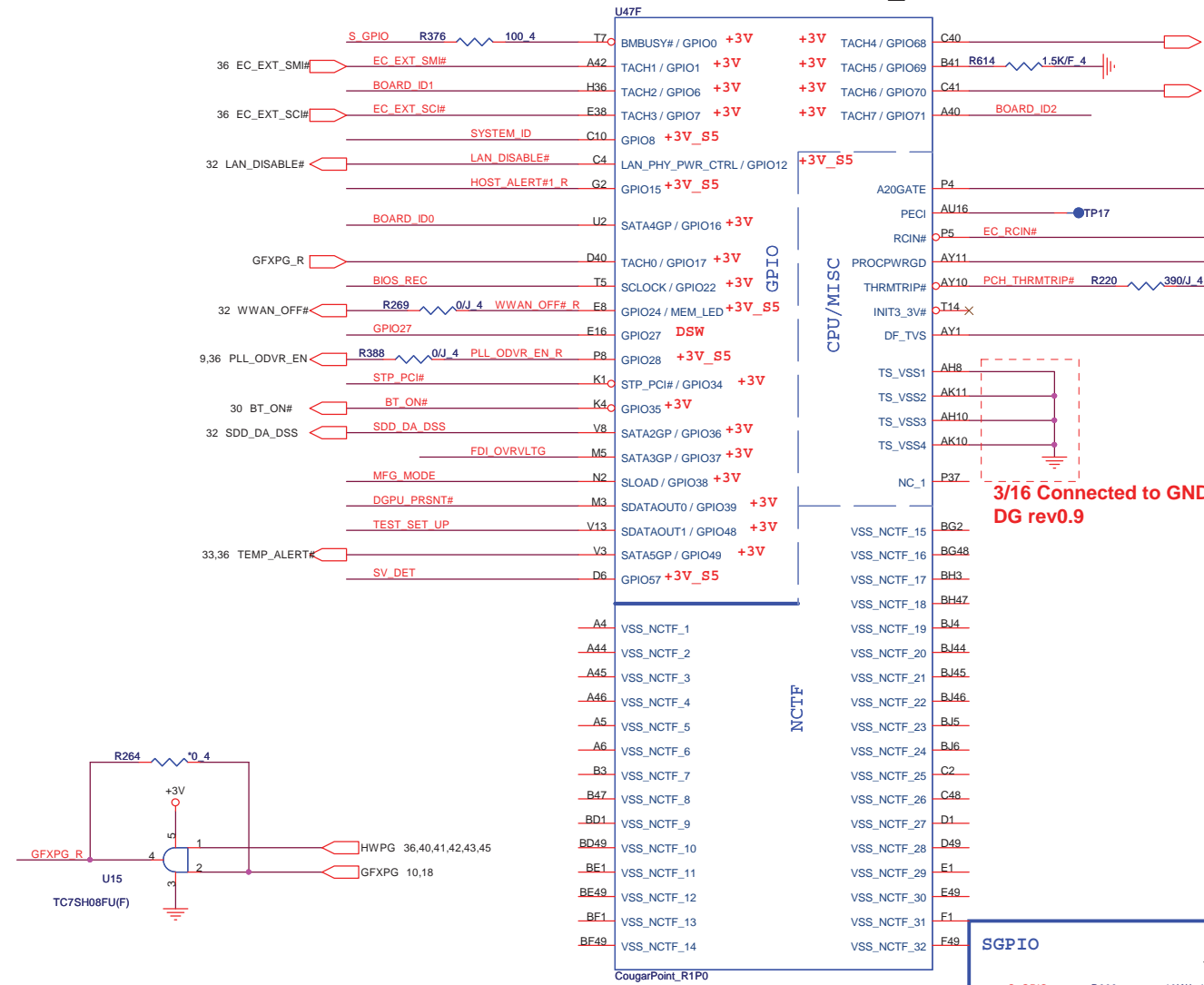


PROJECT : KL2D
Quanta Computer Inc.

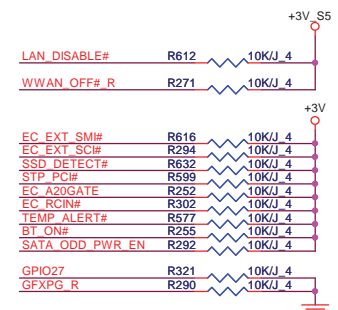
Doc: Document Number
Cougar Point 3/6

Date: Saturday, July 24, 2010 Page: 10 of 47

Cougar Point (GPIO,VSS_NCTF,RSVD)

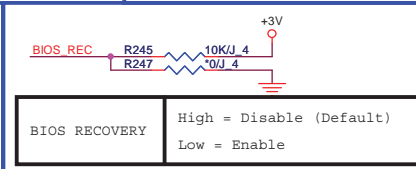
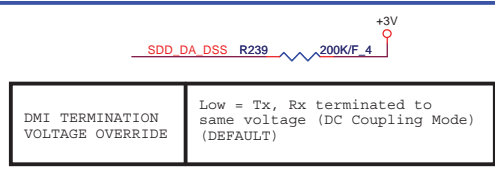
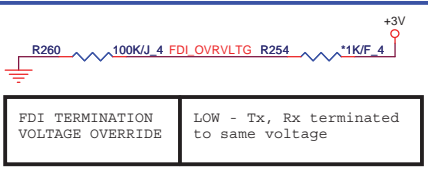
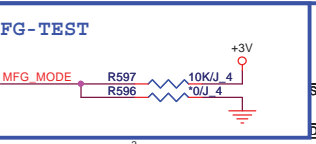
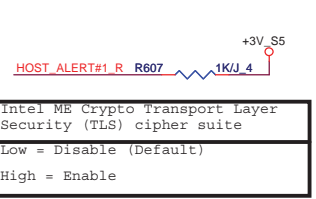
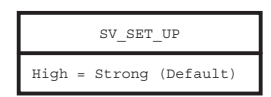
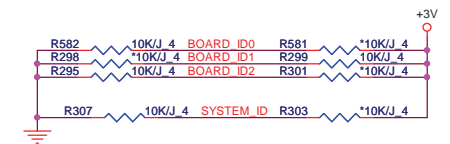


GPIO Pull-up/Pull-down(CLG)



3/16 Connected to GND
DG rev0.9

Model	BOARD_ID2	BOARD_ID1	BOARD_ID0
Reserve	0	0	0
UMA	0	0	1
Muxless	0	1	0
Discrete	0	1	1
Reserve	1	0	0
Reserve	1	0	1
Reserve	1	1	0



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

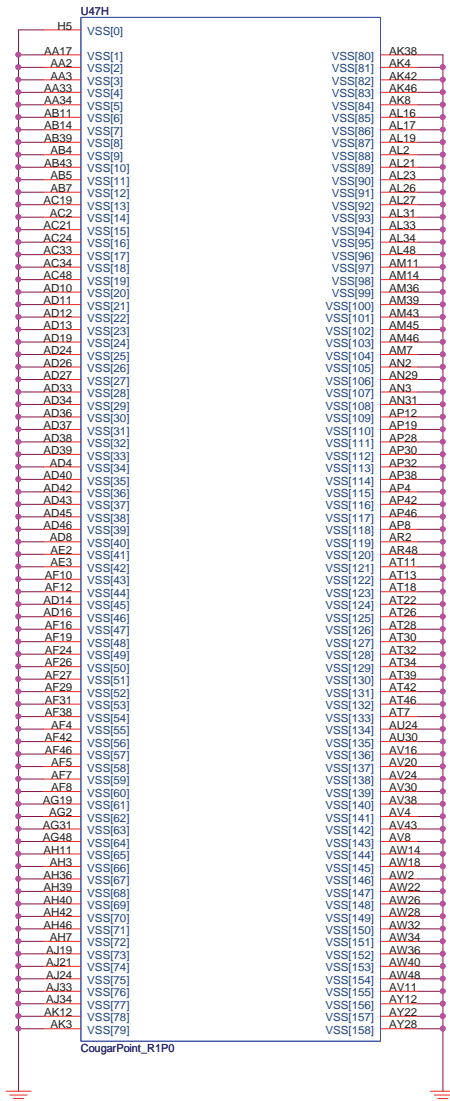
	SWITCHABLE	UMA
Stuff	R8489	R8490
No Stuff	R8490	R8489

PROJECT : KL2D
Quanta Computer Inc.

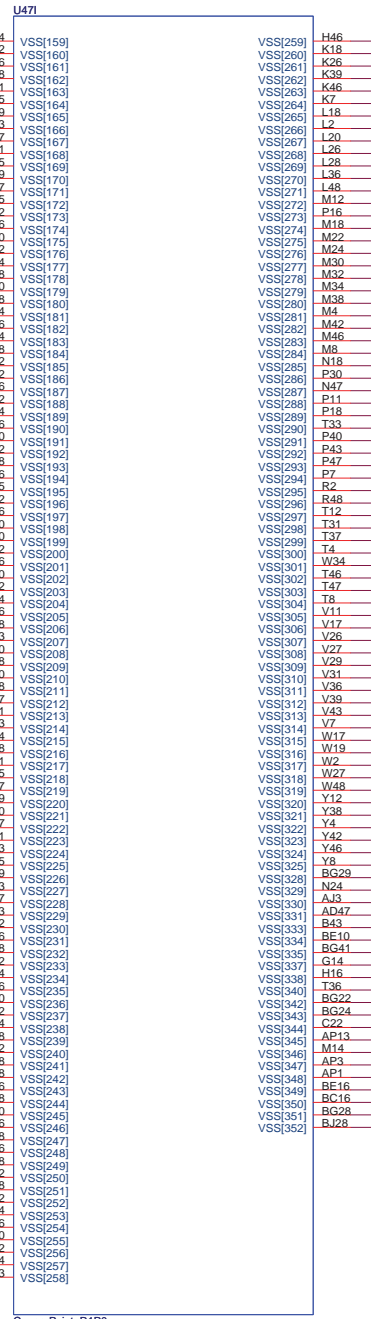
Size	Document Number	Rev
	Cougar Point 4/6	1A

Date: Saturday, July 24, 2010 Sheet 11 of 47

IBEX PEAK-M (GND)



CougarPoint_R1P0



CougarPoint_R1P0

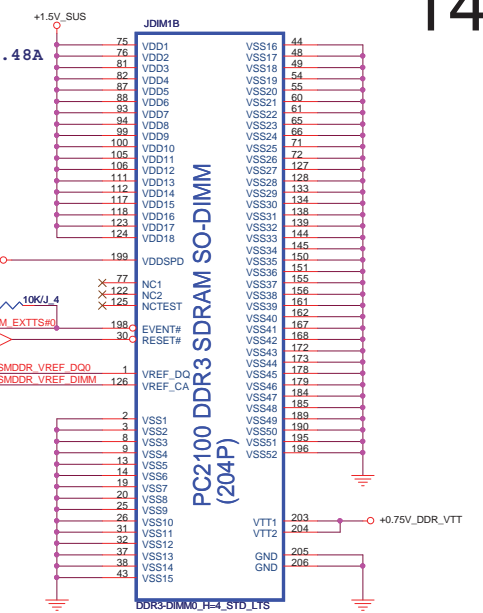
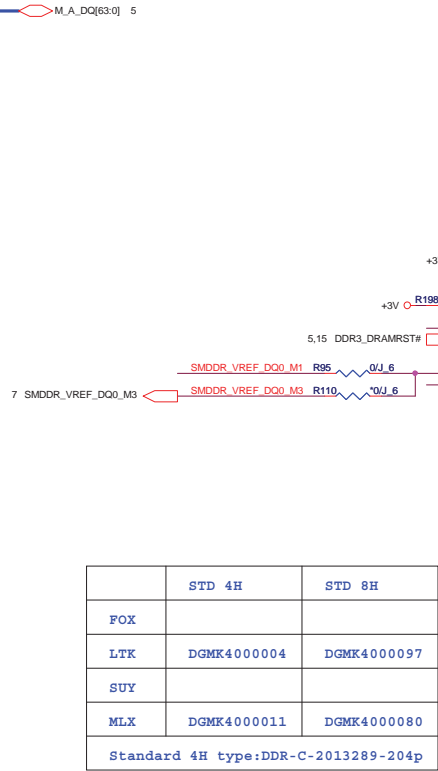
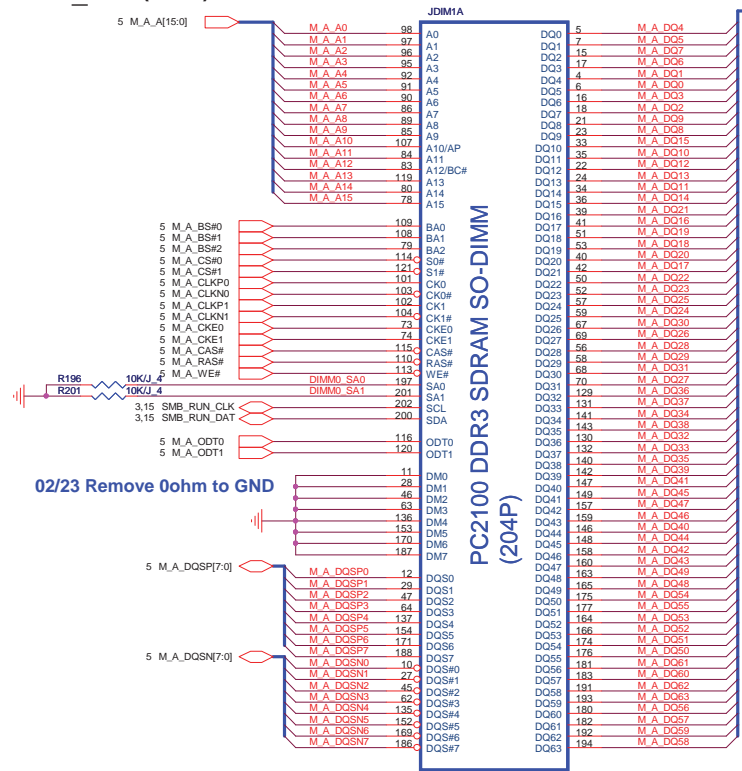
<http://hobi-elektronika.net>

PROJECT : KL2D
Quanta Computer Inc.

Size: Document Number
Cougar Point 6/6
 Rev 1A

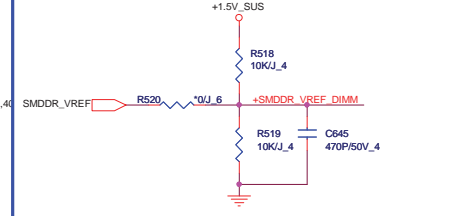
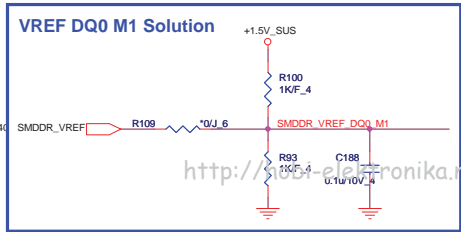
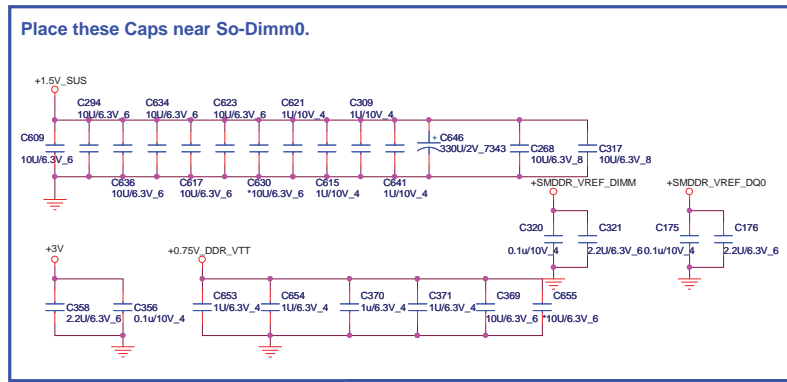
Date: Saturday, July 24, 2010 Sheet 13 of 47

DDR STD (DDR)

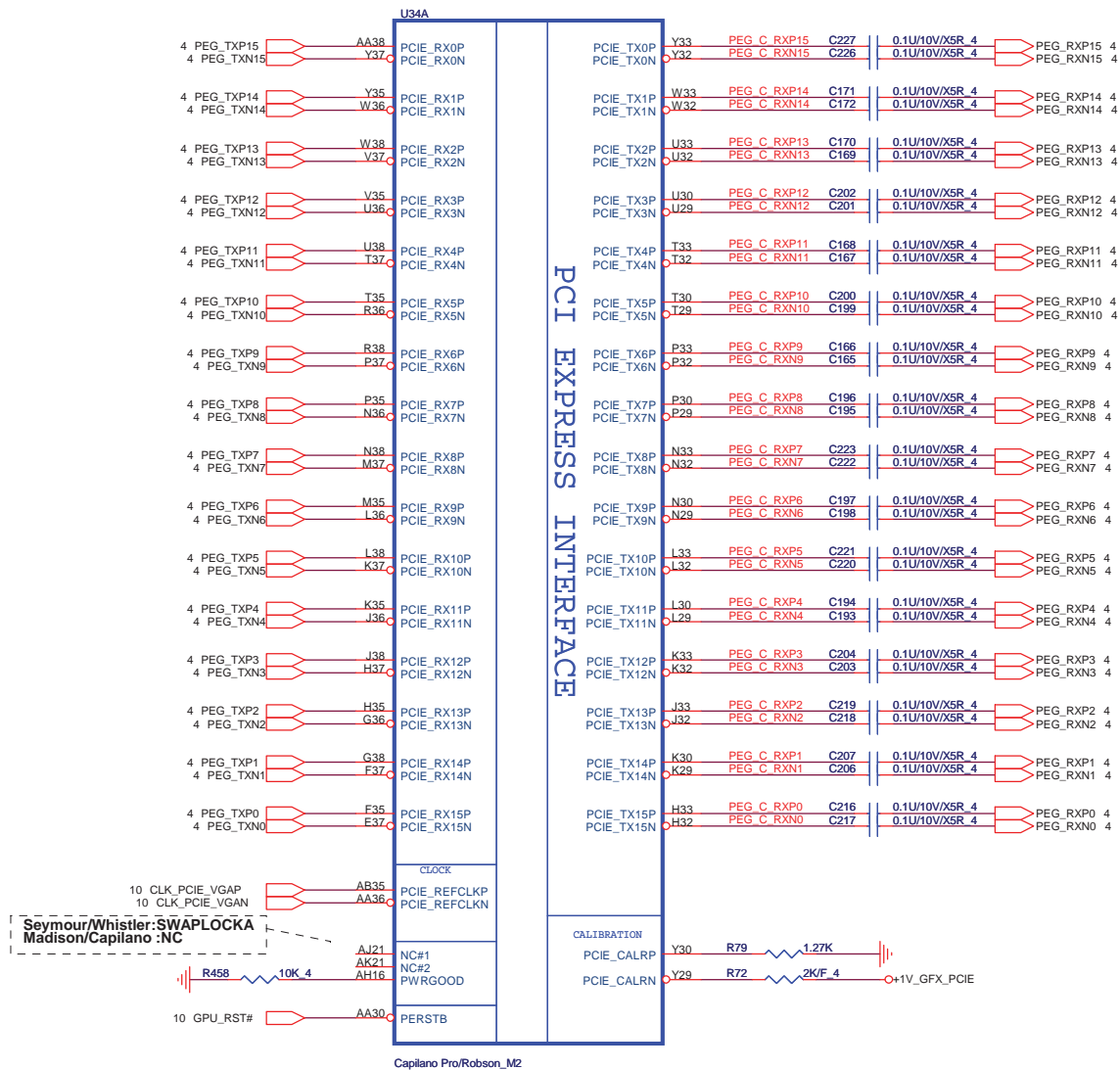


	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080

Standard 4H type:DDR-C-2013289-204p



PCI EXPRESS INTERFACE

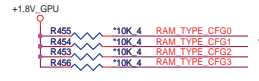


PROJECT : KL2D
Quanta Computer Inc.

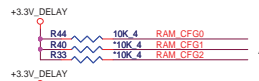
Size Custom	Document Number Madison PCIE I/F	Rev 1A
Date: Saturday, July 24, 2010	Sheet 16	of 47

Memory Straps		RAM TYPE_CFG1	RAM TYPE_CFG2	RAM TYPE_CFG	RAM TYPE_CFG4
800 MHz 1GB(64M*16) Hynix_Orion die	H5TQ1G63BFR-12C	0	0	0	0
800 MHz 1GB(64M*16) Samsung_E die	K4W1G1648E-HC12	0	0	0	1
		0	0	1	0
		0	1	0	0
		0	1	0	1

Note : Required Frequency = 800 Mhz

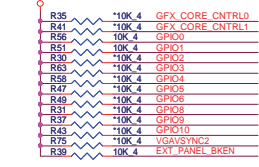


VRAM TYPE

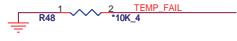
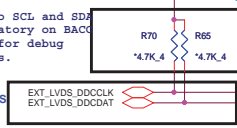


APERTURE SIZE

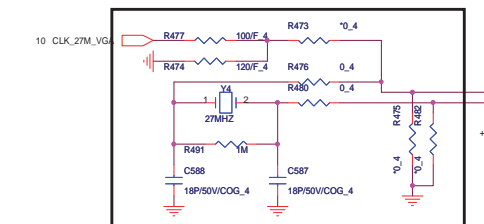
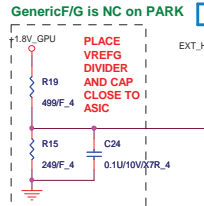
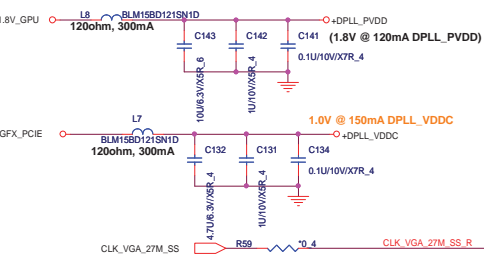
MEMORY APERTURE SIZE SELECT				
MEMORY SIZE	CFG2 GPIO13	CFG1 GPIO12	CFG0 GPIO11	
128MB	0	0	0	
256MB	0	0	1	
64MB	0	1	0	



Access to SCL and SDA is mandatory on BACQ design for debug purposes.



- GPU Power-on sequence**
- 1 => +VGPU_CORE
 - 2 => +VGPU_IO
 - 3 => +1V
 - 4 => +1.5V_GPU
 - 5 => +3V_D
 - 6 => +1.8V_GPU
 - 7 => dGPU_PWROK



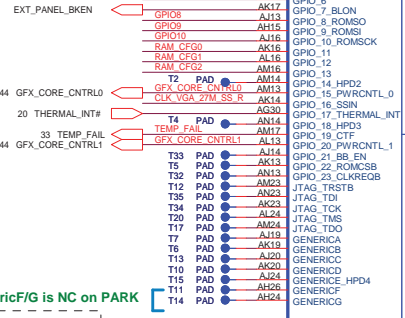
Use 27Mhz Crystal for A test Danny0518

NC FOR PARK

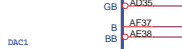
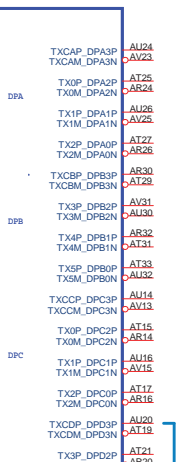
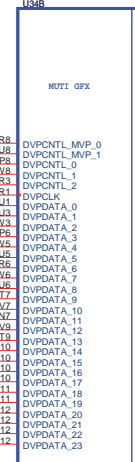
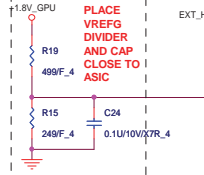
NC FOR PARK

NC FOR PARK

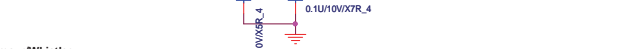
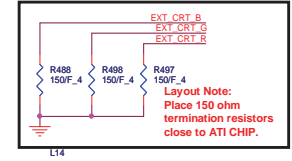
Power PWM config



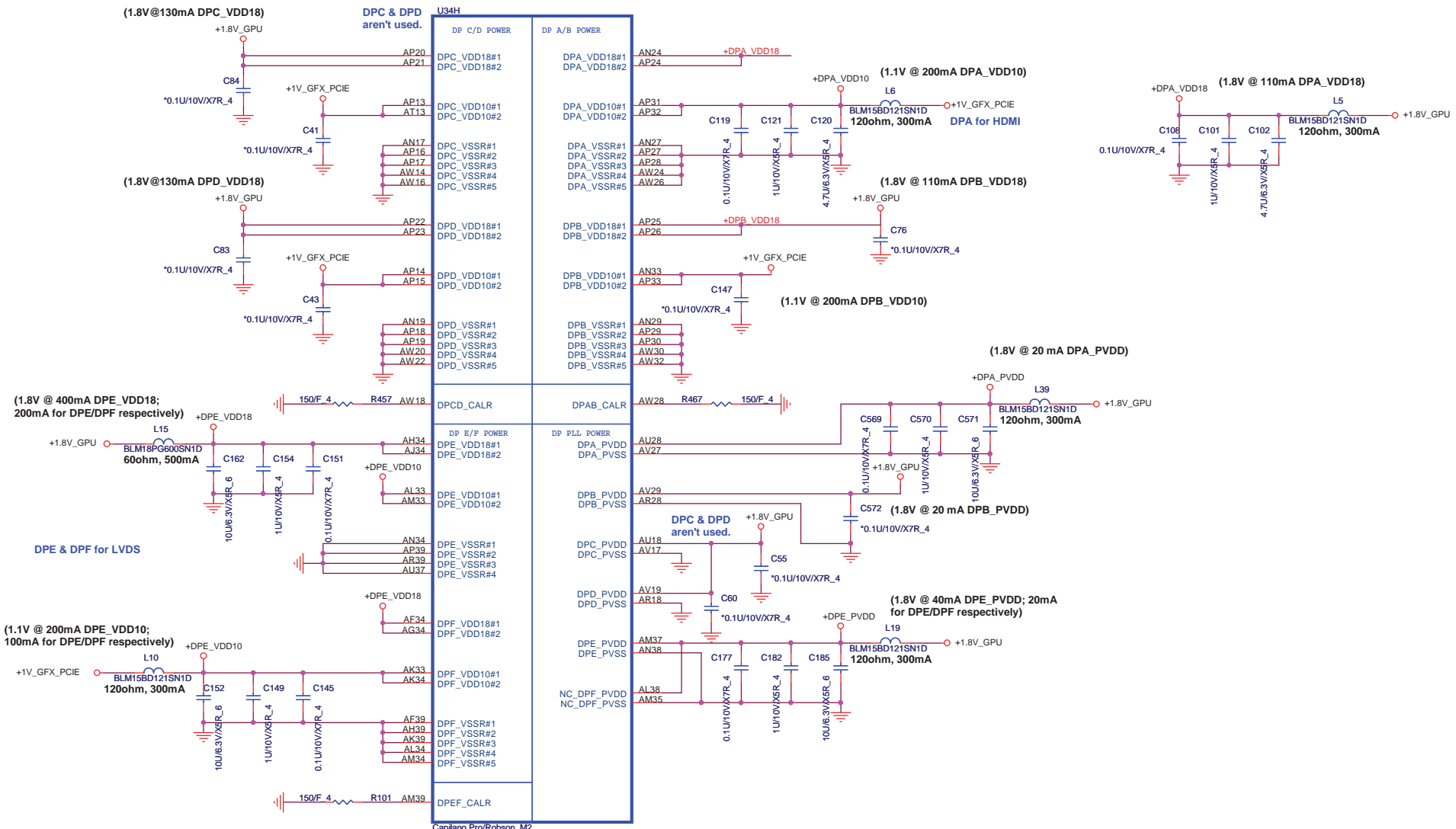
Generic/G is NC on PARK



CONFIGURATION STRAPS				
STRAPS	PIN	DESCRIPTION	SET	
TX_PWRS_ENB	GPIO0	PCIe FULL TX OUTPUT SWING 0 = 50% Tx output swing 1 = Full Tx output swing	1	
TX_DEEMPH_EN	GPIO1	PCIe TRANSMITTER DE-EMPHASIS ENABLED 0 = Disable ; 1 = Enable	1	
BIF_GEN2_EN_A	GPIO2	0 = Advertises the PCIe device as 2.5 GT/s capable at power-on. 1 = Advertises the PCIe device as 5.0 GT/s capable at power-on.	0	
GPIO_5_AC_BATT	GPIO5	1 = AC (Performance mode) 0 = Battery saving mode	1	
VGA_DIS	GPIO9	0: VGA Controller capacity enabled 1: The device will not be recognized as the system's VGA controller	0	
BIOS_ROM_EN	GPIO22	Enable external BIOS ROM device 0 = Disable ; 1 = Enable	0	
AUD[1] AUD[0]	VGAHSYNC VGAVSYNC	AUD[1:0]: 00 - No audio function; 01 - Audio for DisplayPort only; 10 - Audio for DisplayPort and HDMI if dongle is detected; 11 - Audio for both DisplayPort and HDMI.	11	
VIP_DEVICE_STRAP_EN	BIOS_ROM_EN	VIP Device Strap Enable 0 = Disable ; 1 = Enable	0	



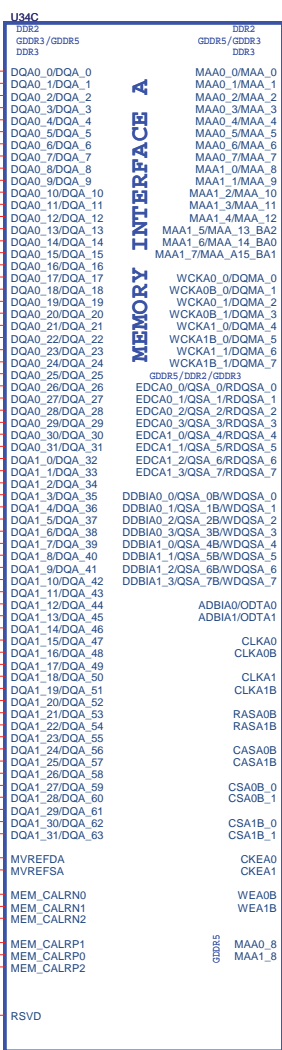
!!!
For M96/92, DPx_VDD10 = 1.1V
For M97 DPx_VDD10 = 1.0V



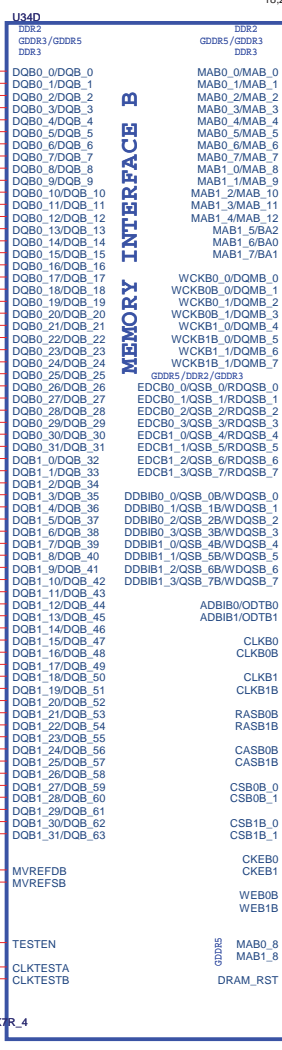
Capilano Pro/Robson_M2

PROJECT : KL2D
Quanta Computer Inc.

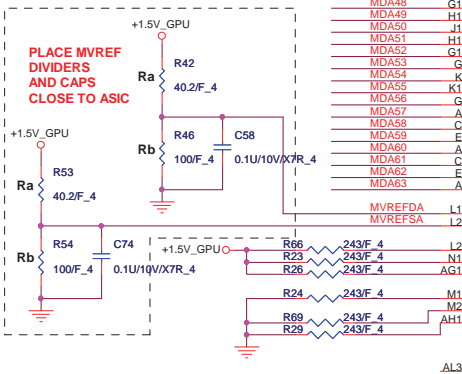
Size Custom	Document Number Madison_DP_POWER	Rev 1A
Date: Saturday, July 24, 2010	Sheet 19 of 47	



MEMORY INTERFACE A

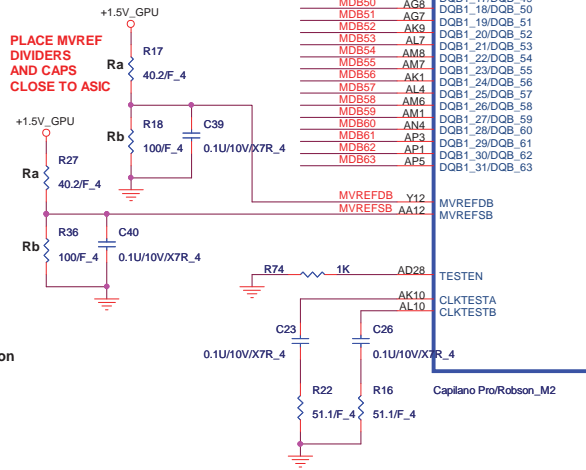


MEMORY INTERFACE B

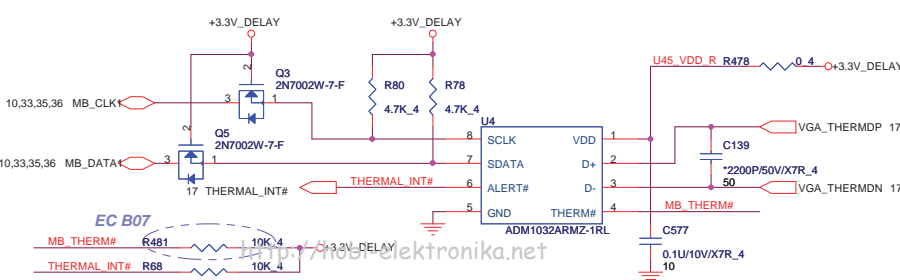


DDR3/GDDR3 Memory Stuff Option

	GDDR3	DDR3
MVDDQ	1.8V	1.5V
Ra	40.2R	100R
Rb	100R	100R

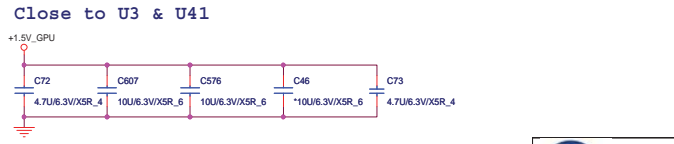
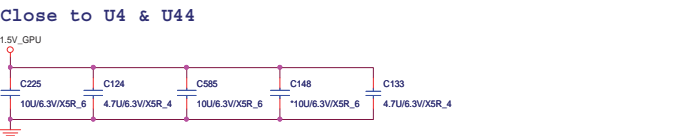
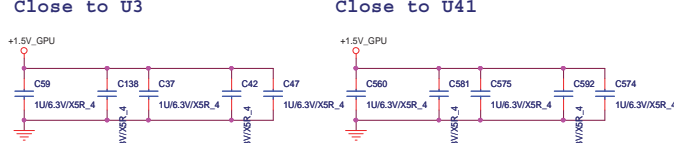
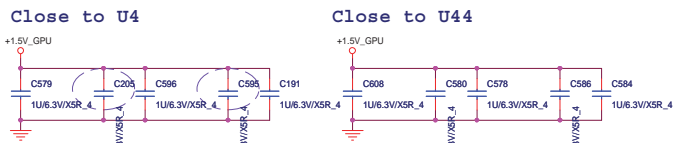
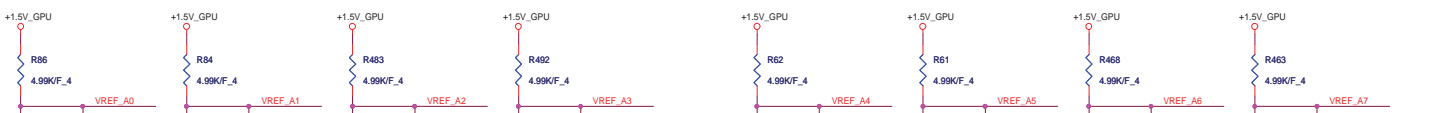
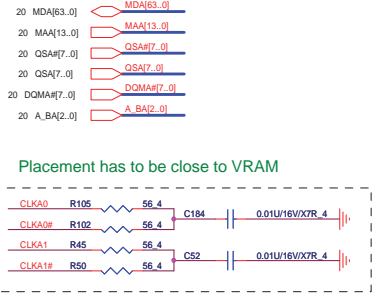
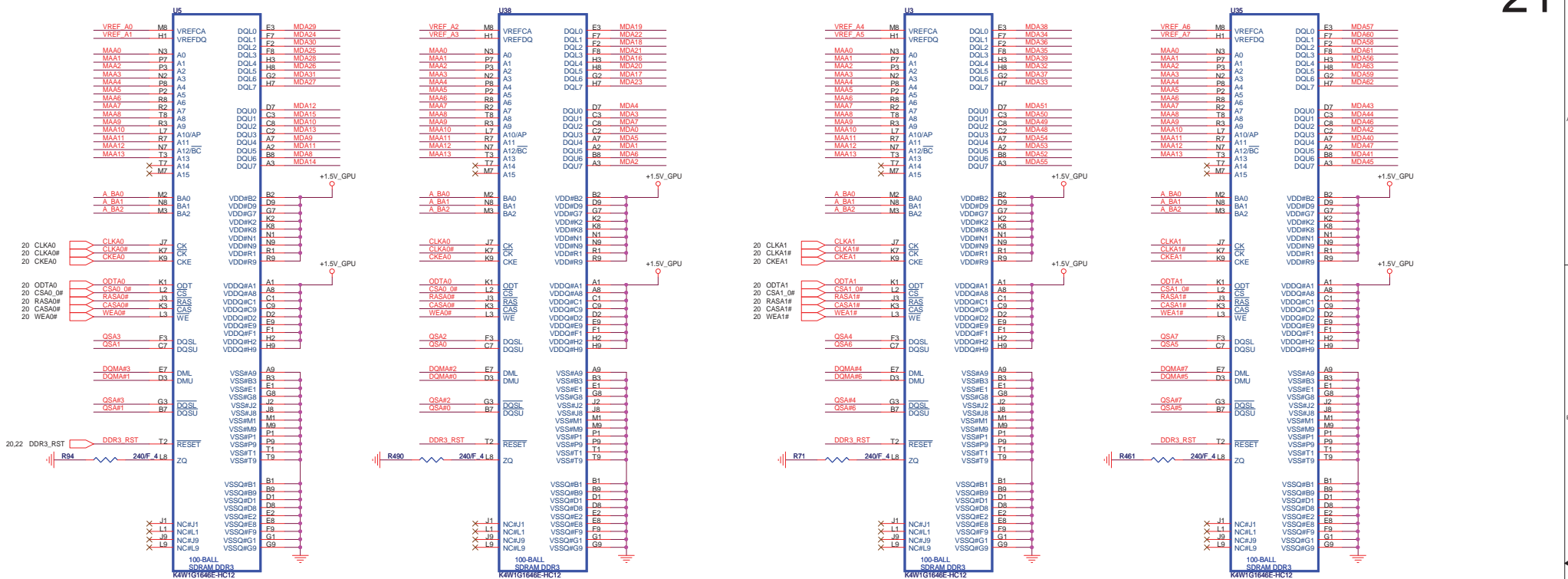


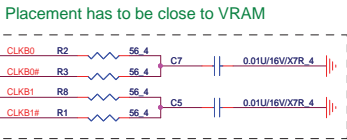
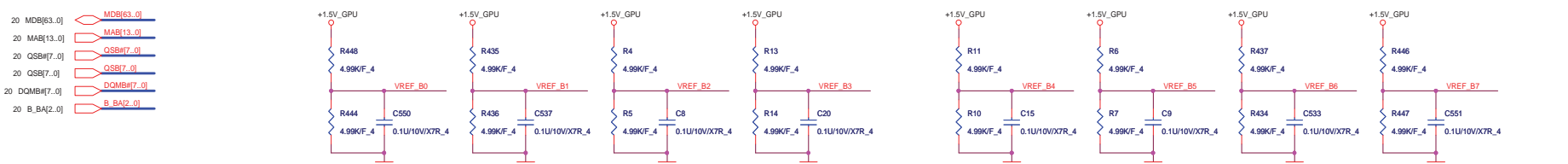
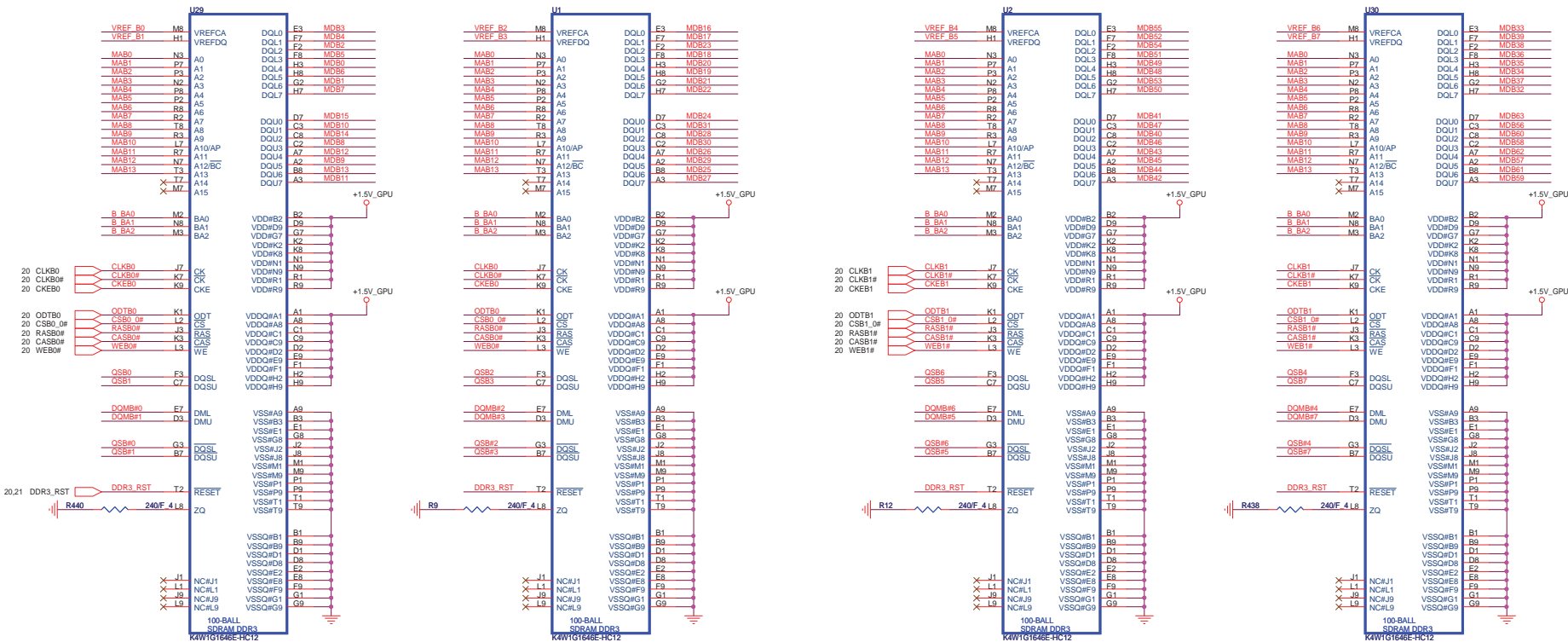
THERMAL MONITOR



PROJECT : KL2D
Quanta Computer Inc.

Size Custom Document Number Madison_MEMORY/THERM Rev 1A
 Date: Saturday, July 24, 2010 Sheet 20 of 47



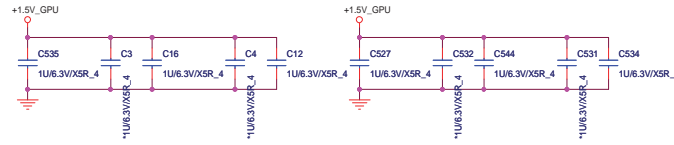
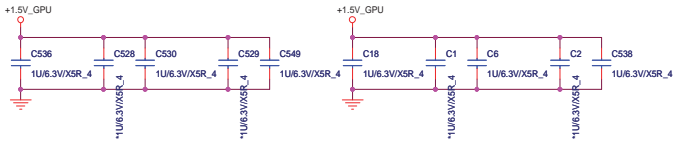


Close to U35

Close to U1

Close to U2

Close to U36



Close to U35 & U1

Close to U2 & U36



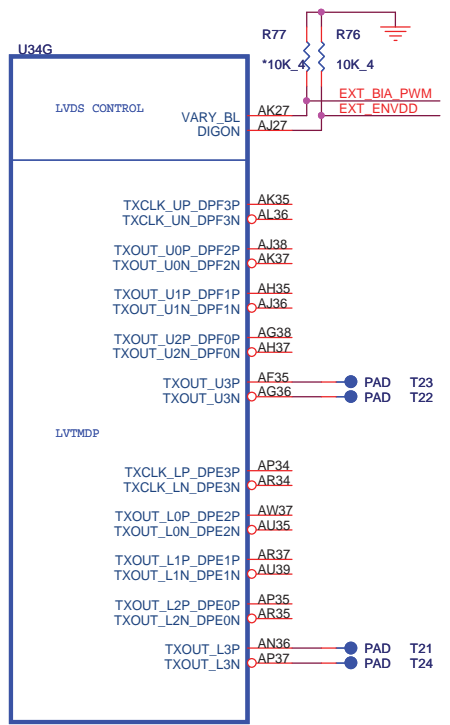
<http://hobi-elektronika.net>

PROJECT : KL2D
Quanta Computer Inc.

Size C Document Number
Madison_DDR3_B_512M

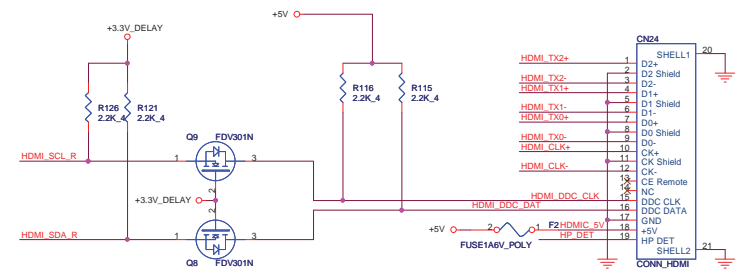
Date: Saturday, July 24, 2010 Sheet 22 of 47

CRT SWITCH

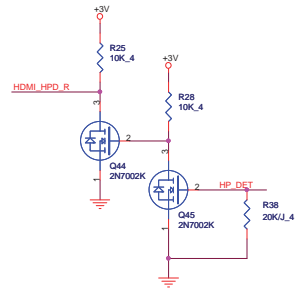


Capilano Pro/Robson_M2

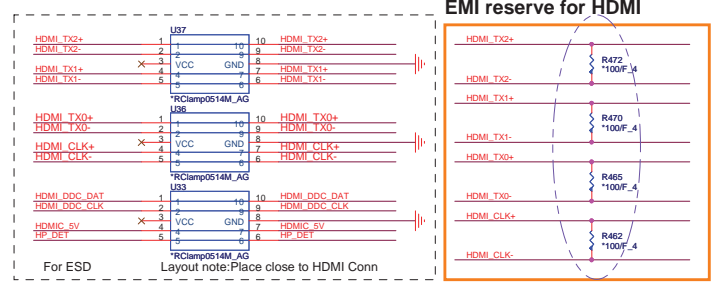
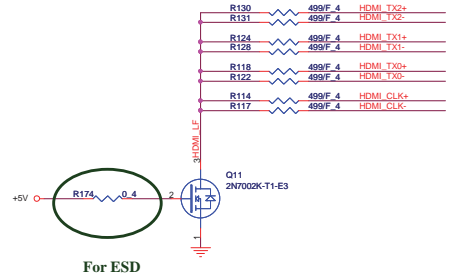
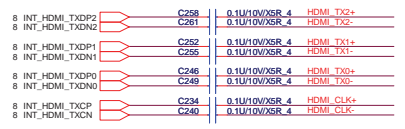
		PROJECT : KL2D	
		Quanta Computer Inc.	
Size Custom	Document Number Madison_LVDS/HDMI/CRT switchable	Date: Saturday, July 24, 2010	Rev 1A
		Sheet 1	of 47



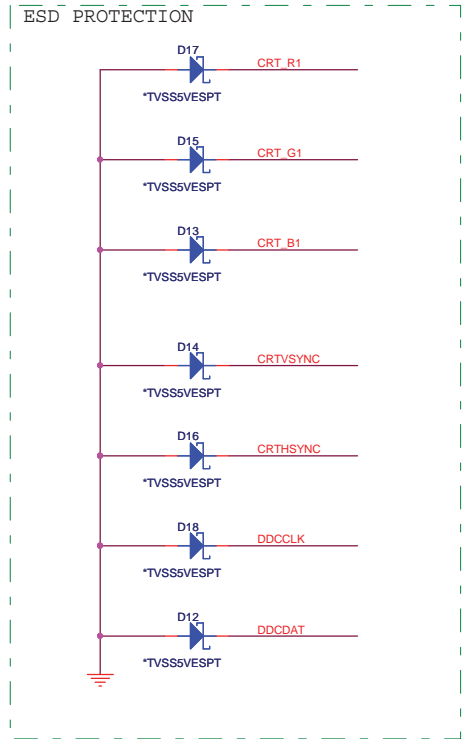
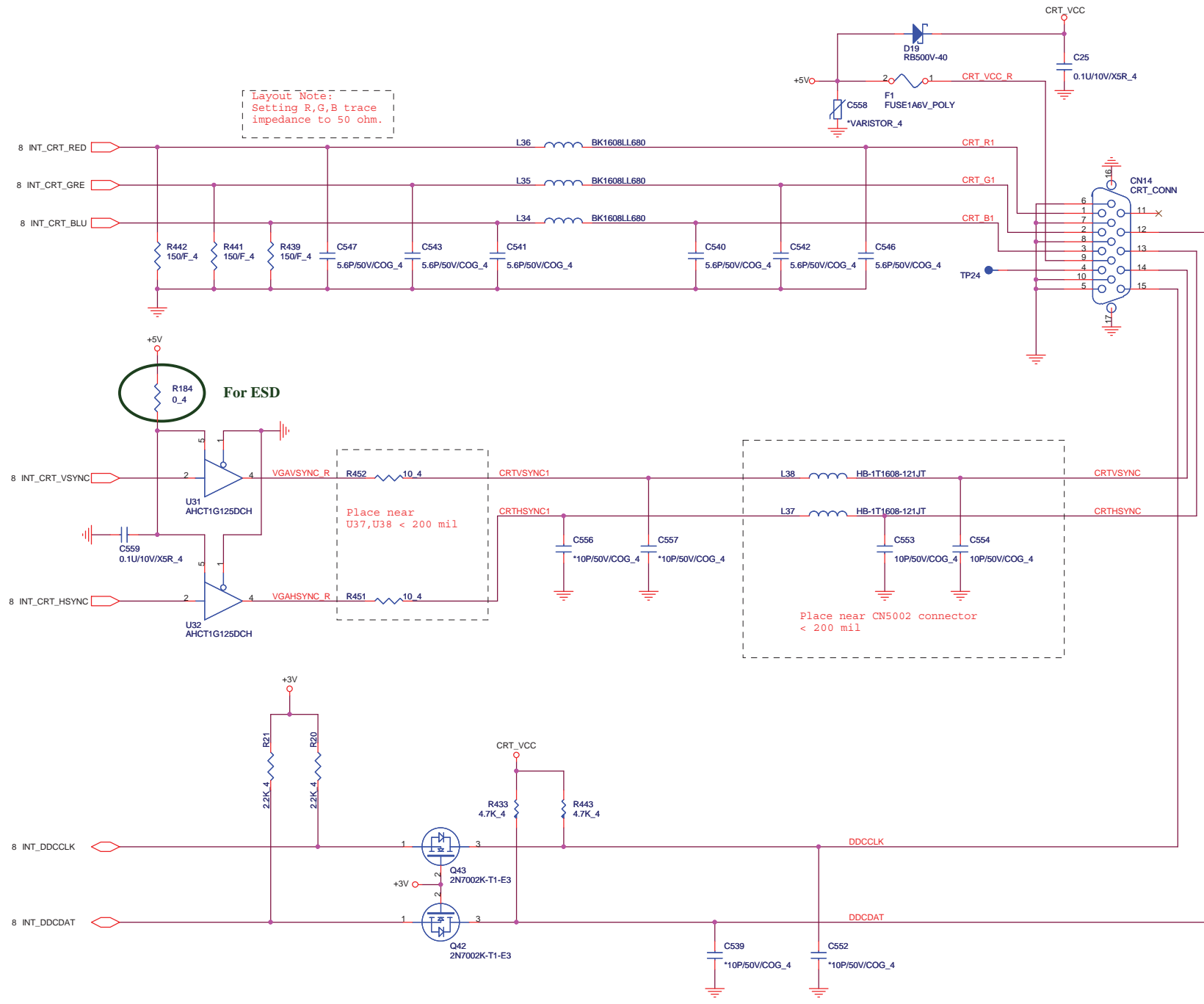
HDMI Hot-PLUG to EC and GPU



UMA Only / Muxless HDMI



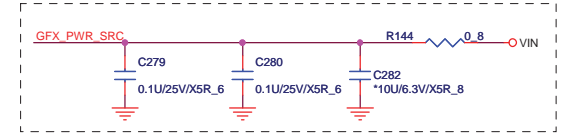
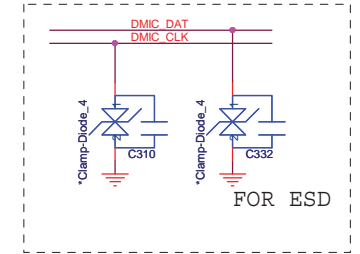
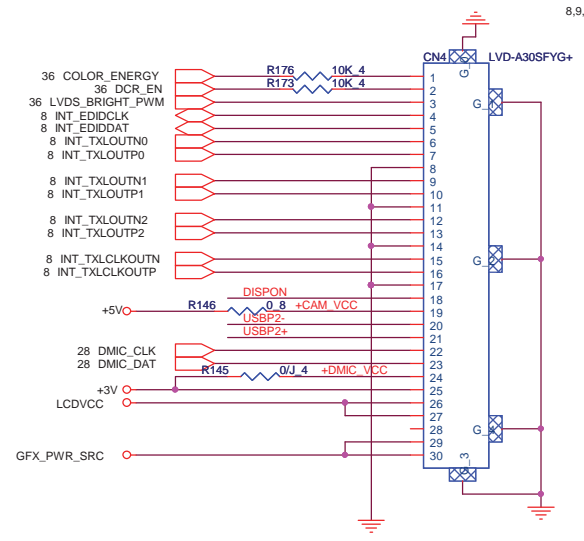
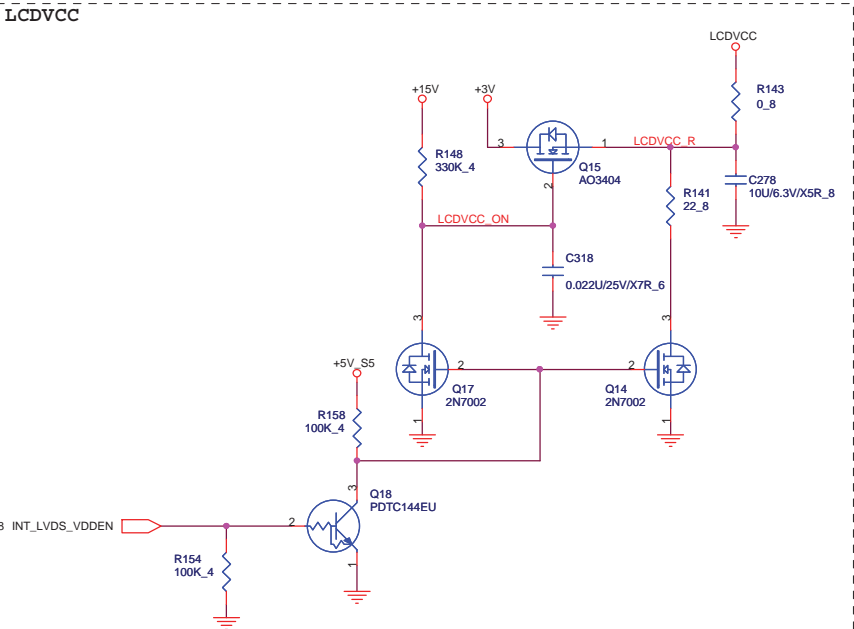
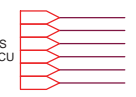
Layout Note:
Setting R,G,B trace
impedance to 50 ohm.



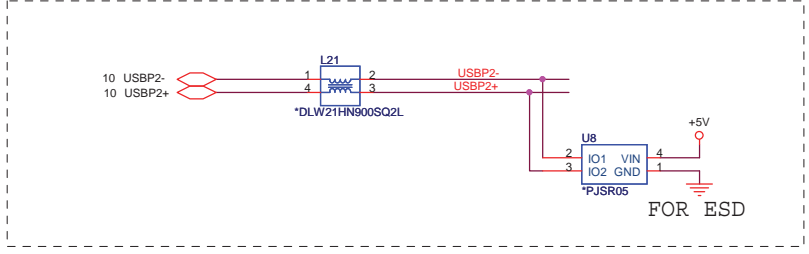
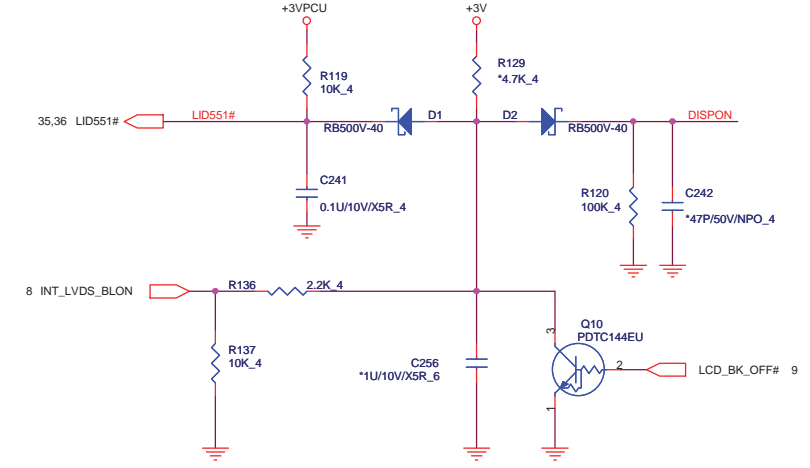
Place near
U37, U38 < 200 mil

Place near CN5002 connector
< 200 mil

3,4,8,9,10,11,12,14,15,18,24,25,27,28,29,30,31,32,33,34,35,36,38,39,43,44,45,46
 28,30,38,40,42,43
 8,9,27,34,35,36,38,39,42,44,46
 39,40,41,42,43,44,45
 8,9,12,18,24,25,28,29,33,34,36,38,39

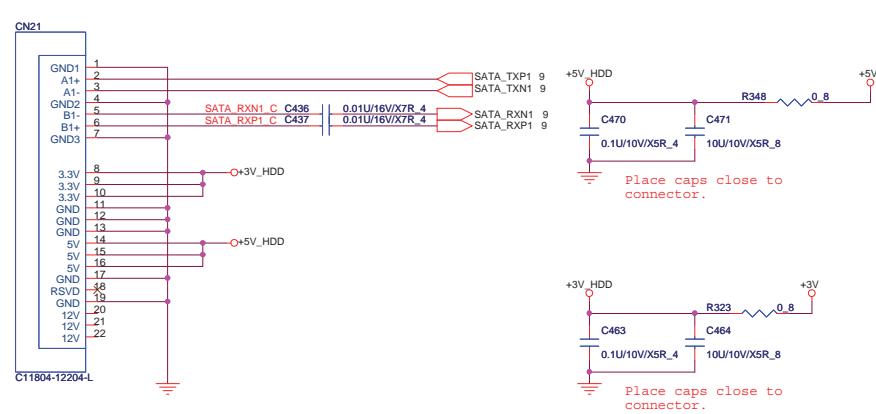


back light

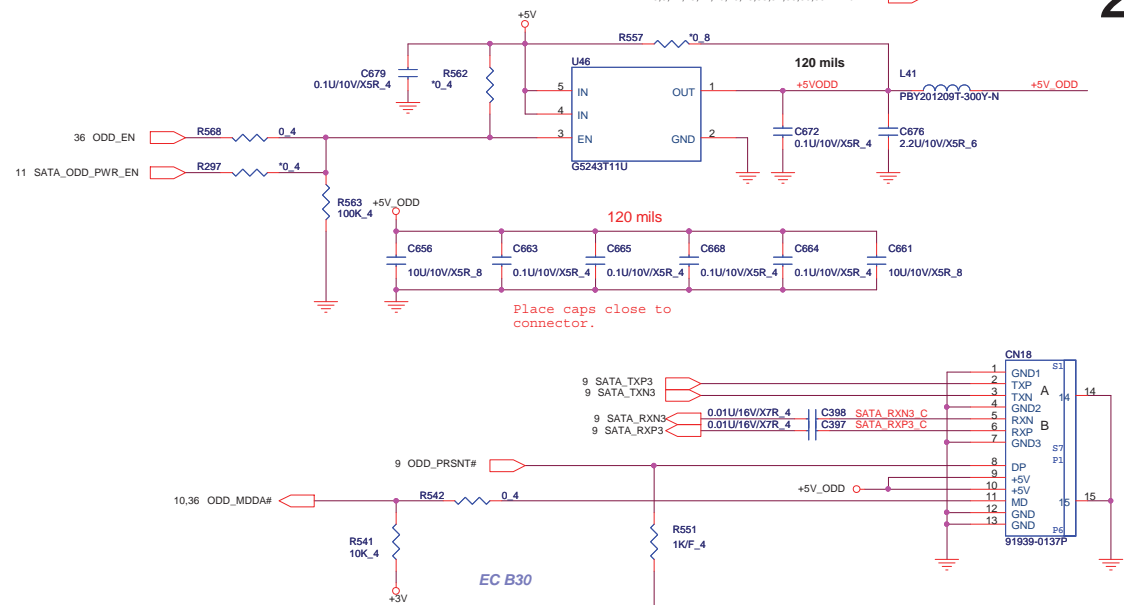


		PROJECT : KL2D	
		Quanta Computer Inc.	
Size Custom	Document Number LCD CONN	Rev 1A	
Date: Saturday, July 24, 2010	Sheet 26 of 47		

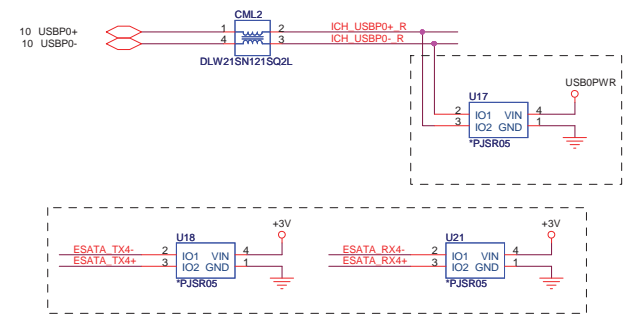
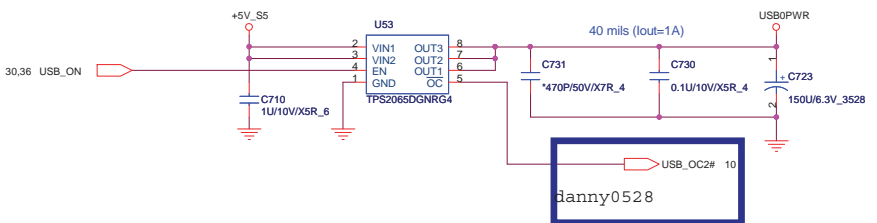
SATA HDD Connector.



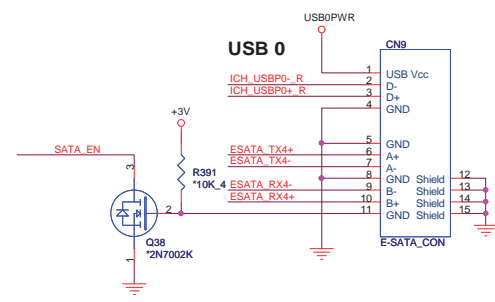
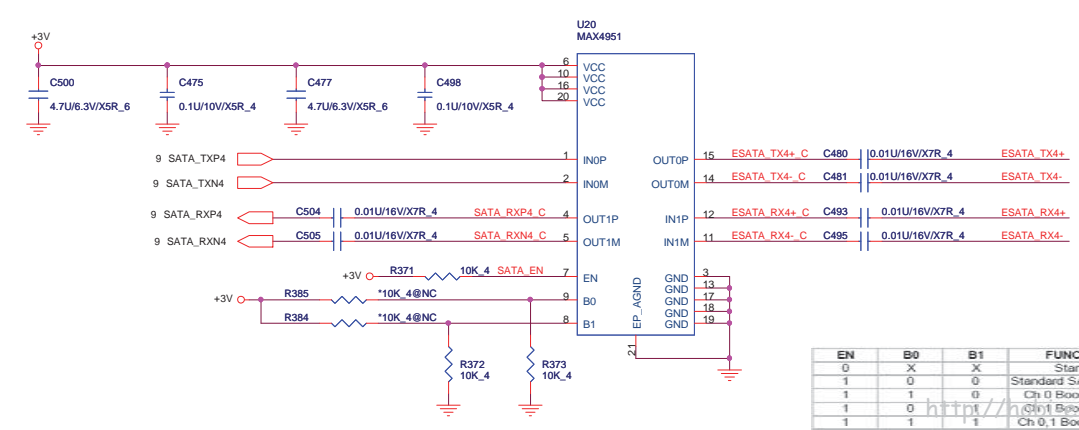
SATA ODD Connector.



USB + E-SATA

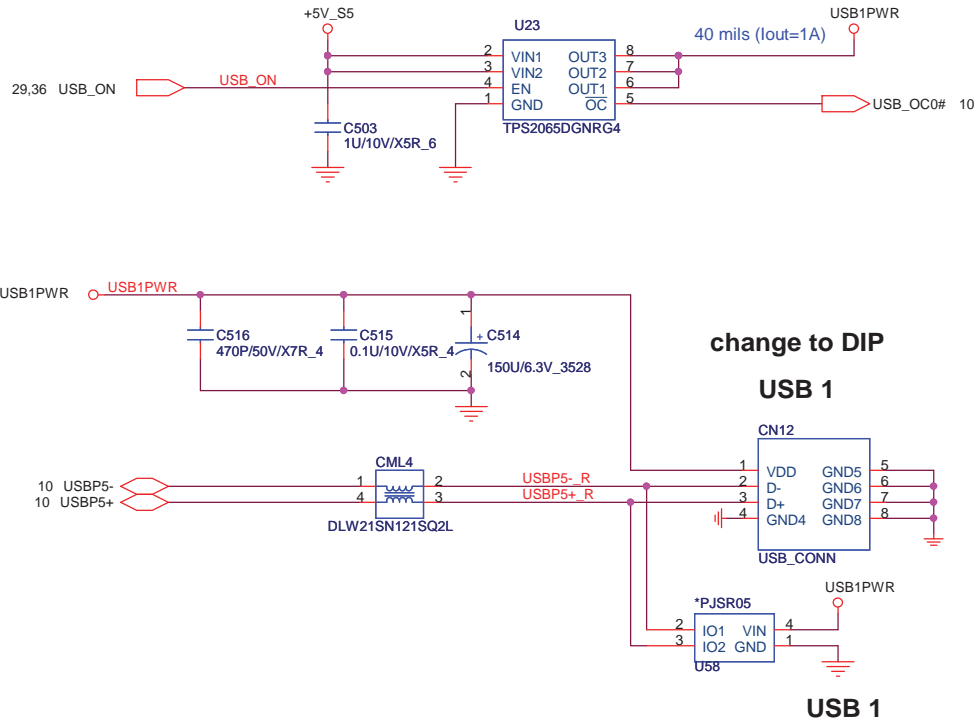


E-SATA RE-DRIVER



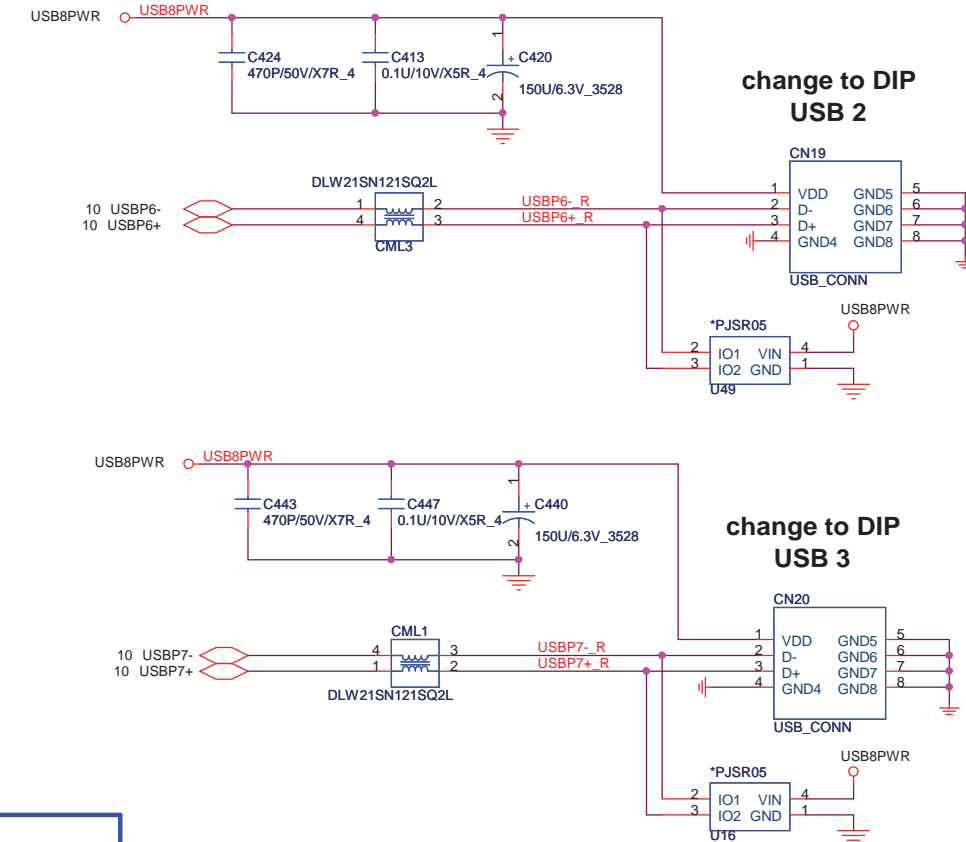
EN	B0	B1	FUNCTION
0	X	X	Standby
1	0	0	Standard SATA Output
1	1	0	Ch 0 Boost Output
1	0	1	Ch 1 Boost Output
1	1	1	Ch 0,1 Boost Output

USBX3

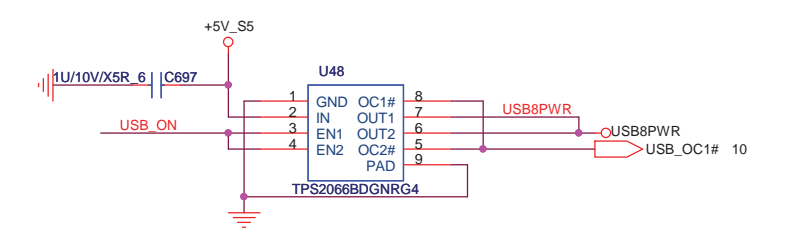
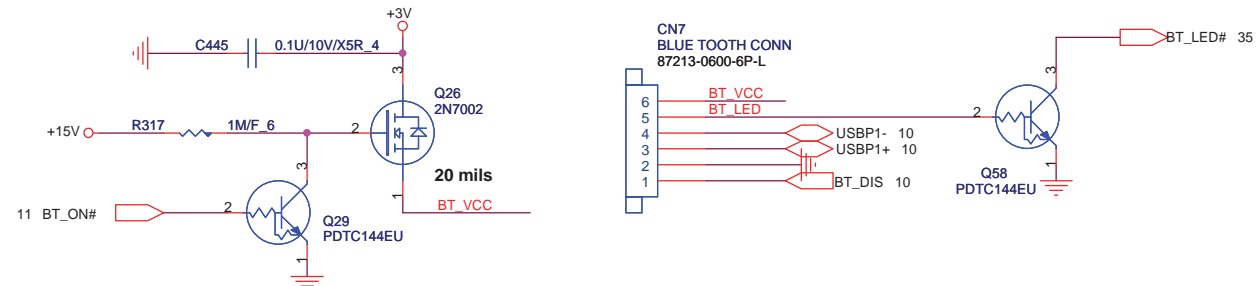


3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,31,32,33,34,35,36,38,39,43,44,45,46
 12,26,29,38 +5V_S5
 +3V
 26,28,38,40,42,43 +15V

29



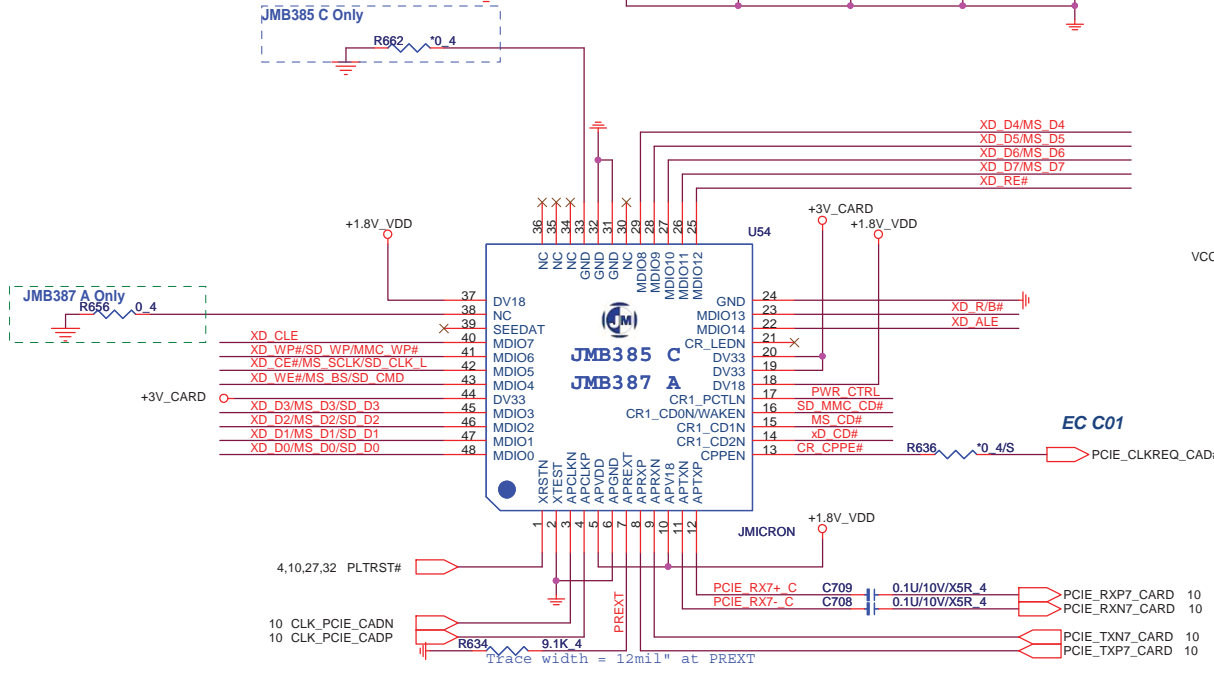
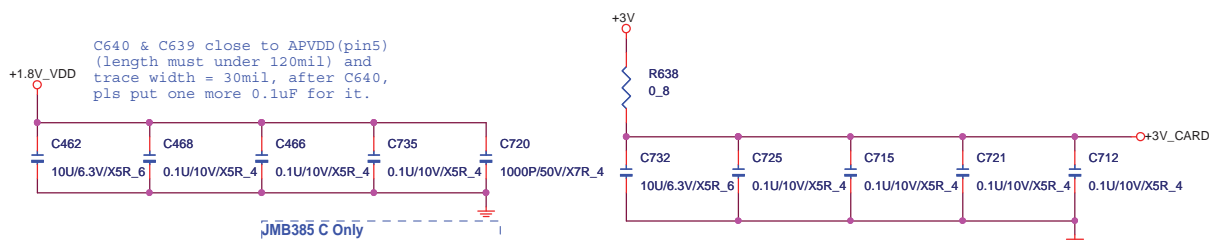
BLUETOOTH



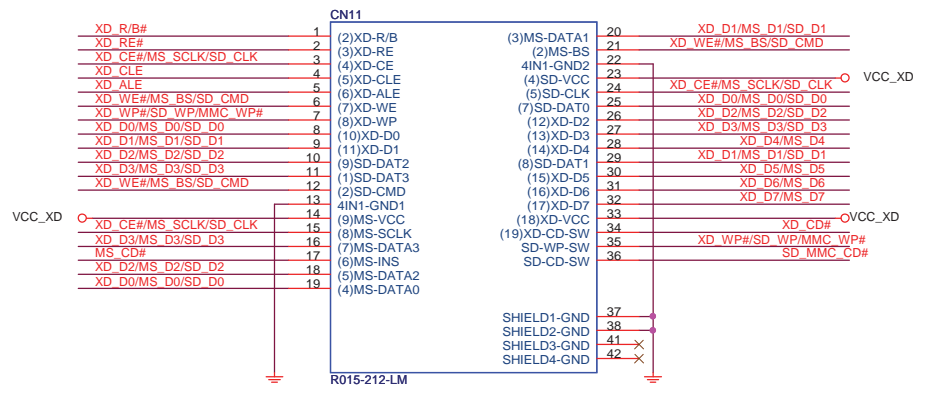
<http://hobi-elektronika.net>

PROJECT : KL2D
Quanta Computer Inc.

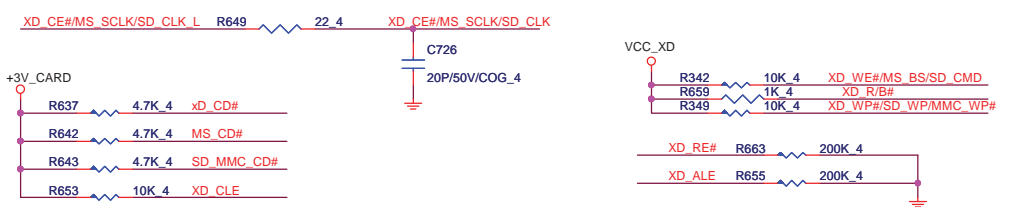
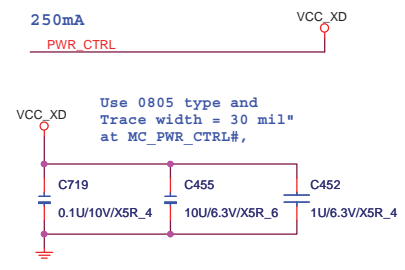
Size	Document Number	Rev
Custom	USB X3/BT	1A
Date:	Saturday, July 24, 2010	Sheet 30 of 47



7 IN 1 CARD READER



Memory Card Power Supply

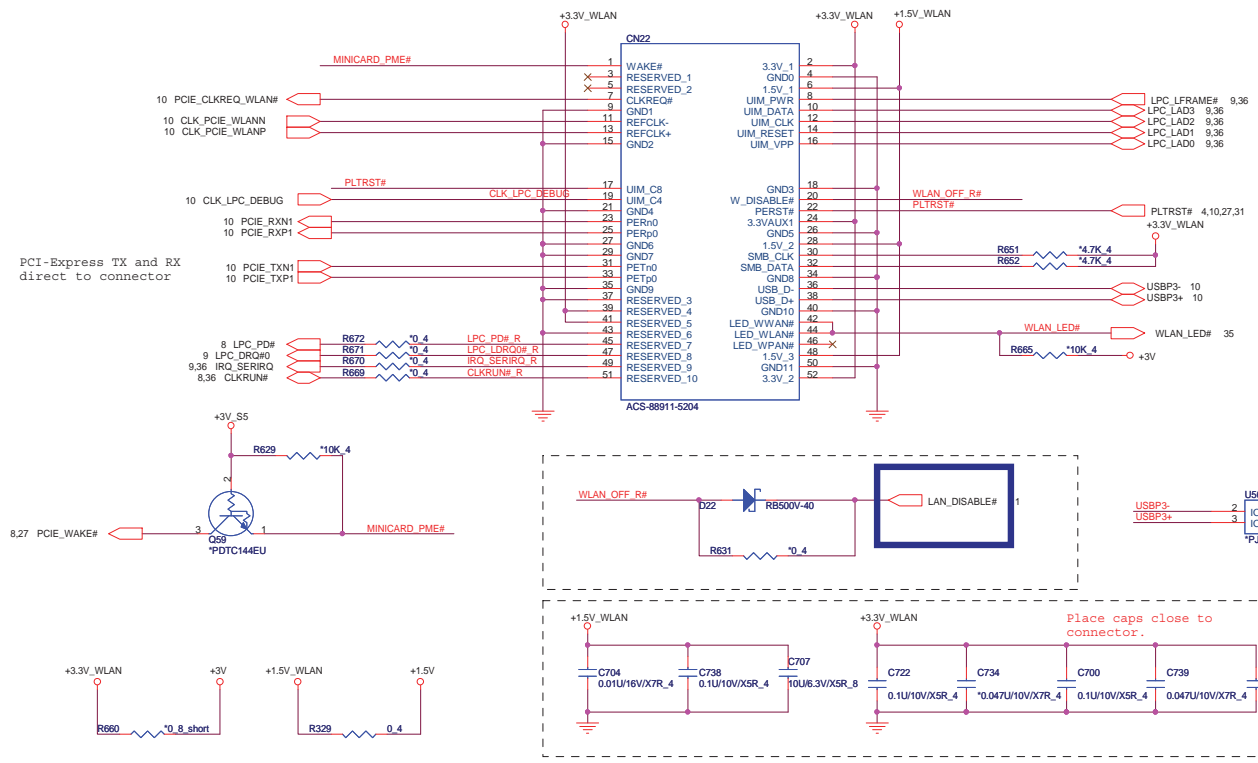
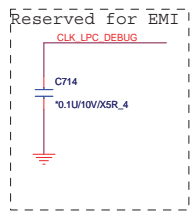


PROJECT : KL2D
Quanta Computer Inc.

Size Custom Document Number
JMB385/387 Card Reader

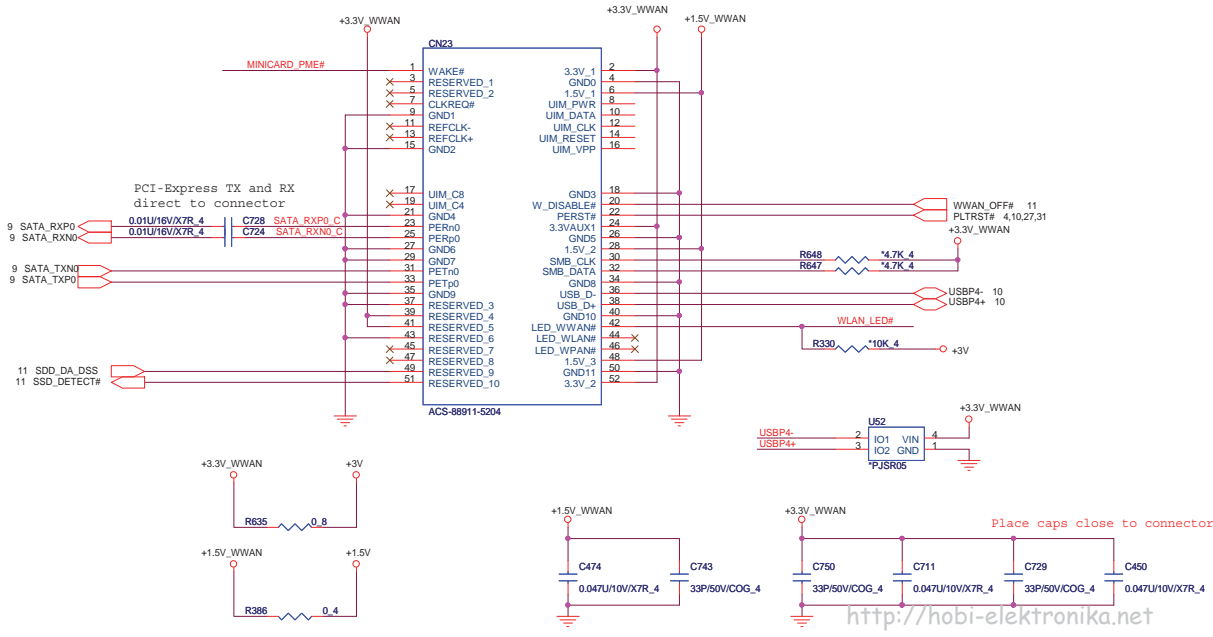
Date: Saturday, July 24, 2010 Sheet 31 of 47 Rev 1A

MiniCard WLA connector



MiniCard WWAN/SATA SSD connector

SIM Card CONN



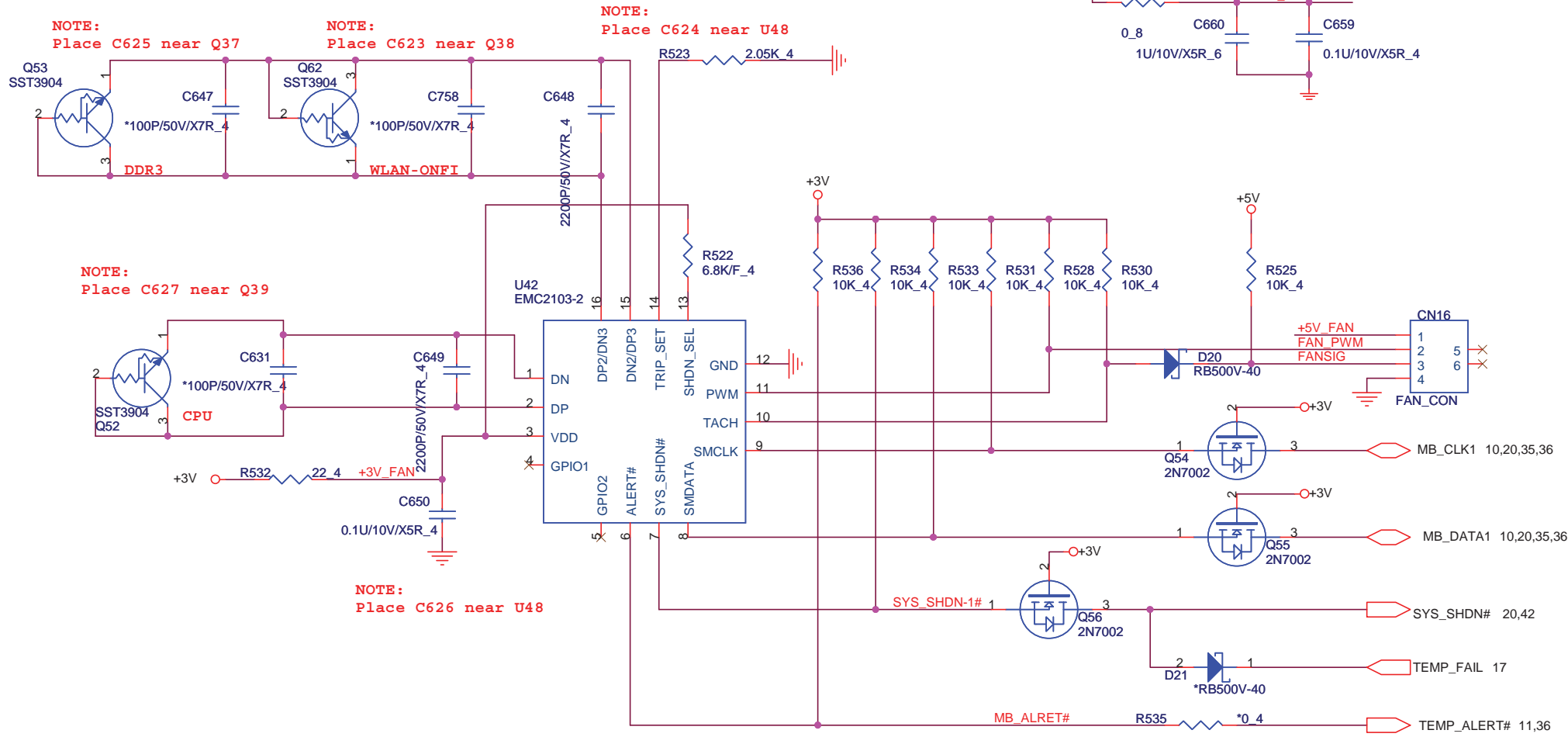
PROJECT : KL2D
Quanta Computer Inc.

Size: Custom Document Number: MINI-Card (WLAN/WWAN) Rev: 1A

Date: Saturday, July 24, 2010 Sheet: 32 of 47

FAN CONTROL

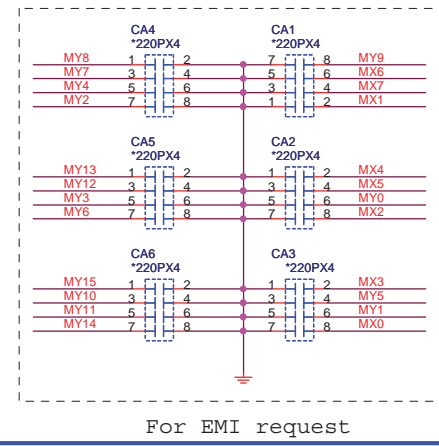
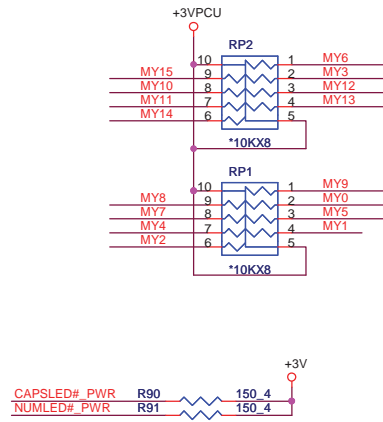
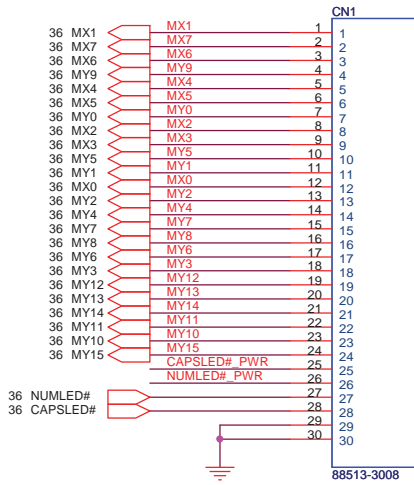
3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,31,32,34,35,36,38,39,43,44,45,46 +3V
8,9,12,18,24,25,26,28,29,34,36,38,39 +5V



PROJECT : KL2D
Quanta Computer Inc.

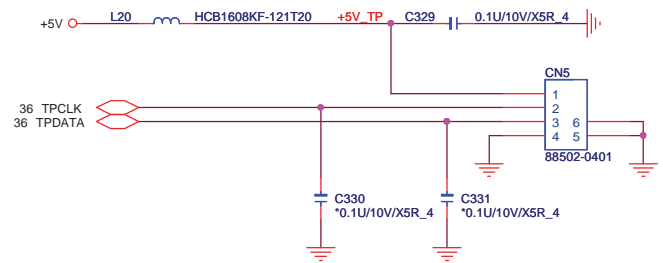
Size Custom	Document Number FAN /THERMAL	Rev 1A
Date: Saturday, July 24, 2010	Sheet 33 of 47	

KEYBOARD



8,9,12,18,24,25,26,28,29,33,36,38,39 +5V
 8,9,26,27,35,36,38,39,42,44,46 +3VPCU
 26,28,30,38,40,42,43 +15V
 3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,31,32,33,35,36,38,39,43,44,45,46 +3V
 5VSUS

Touch pad

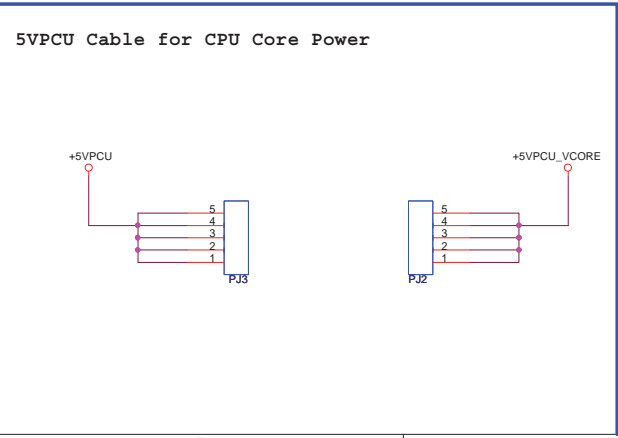
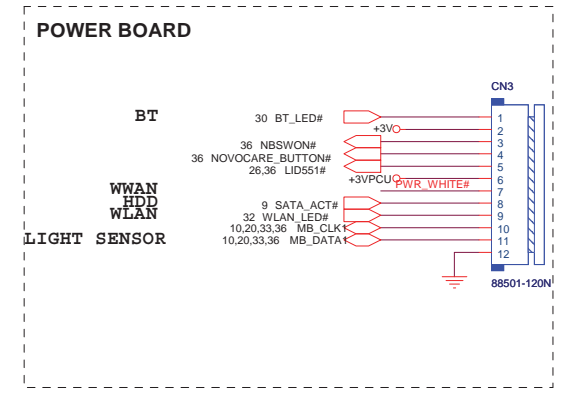
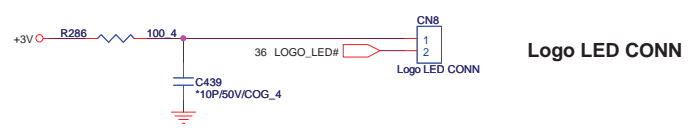
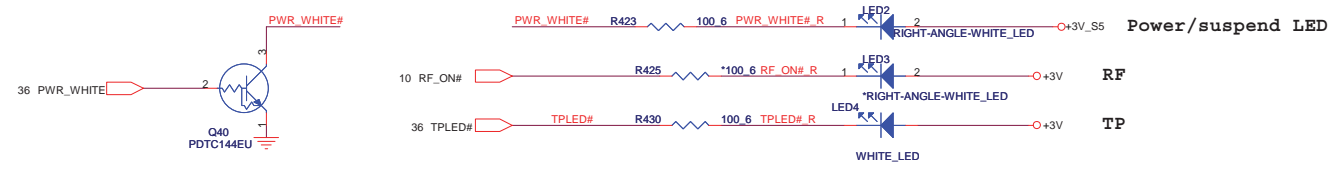
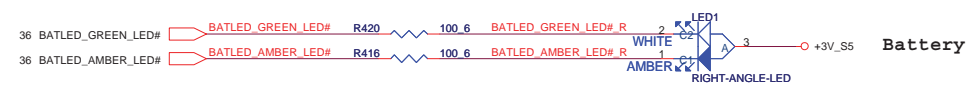
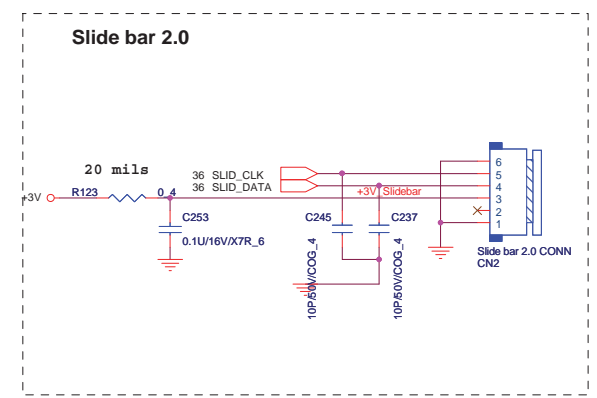
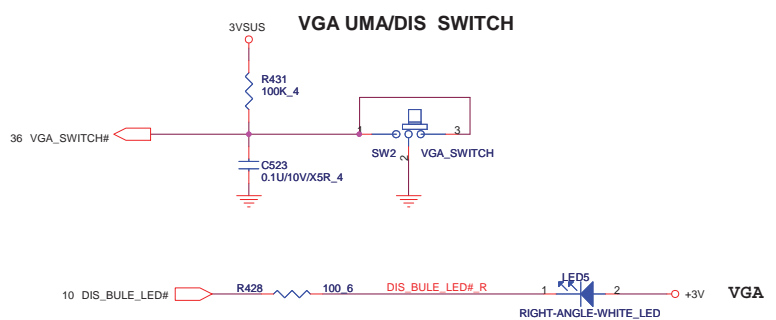


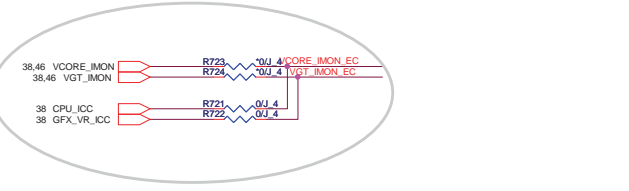
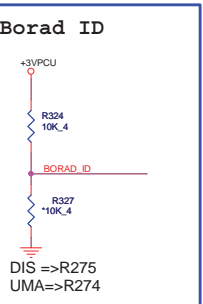
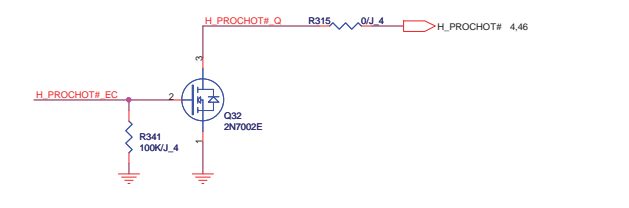
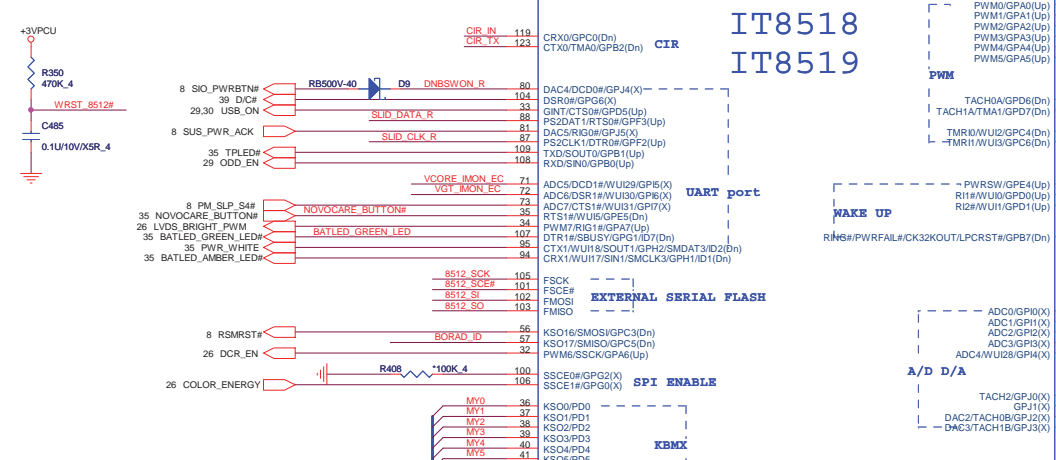
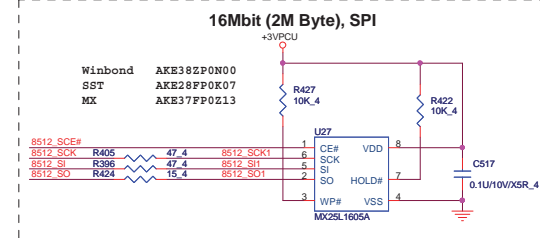
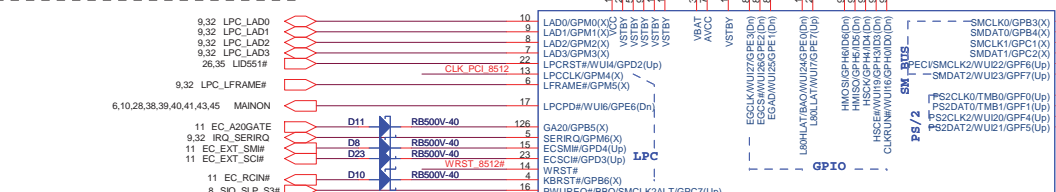
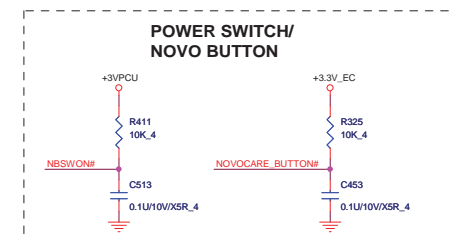
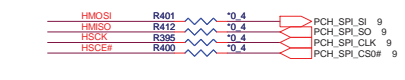
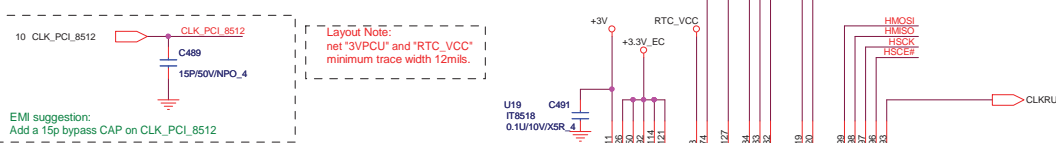
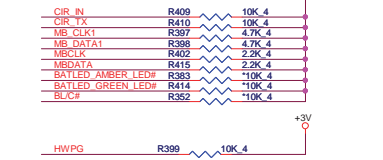
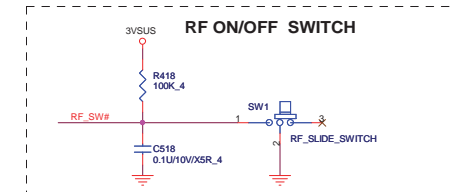
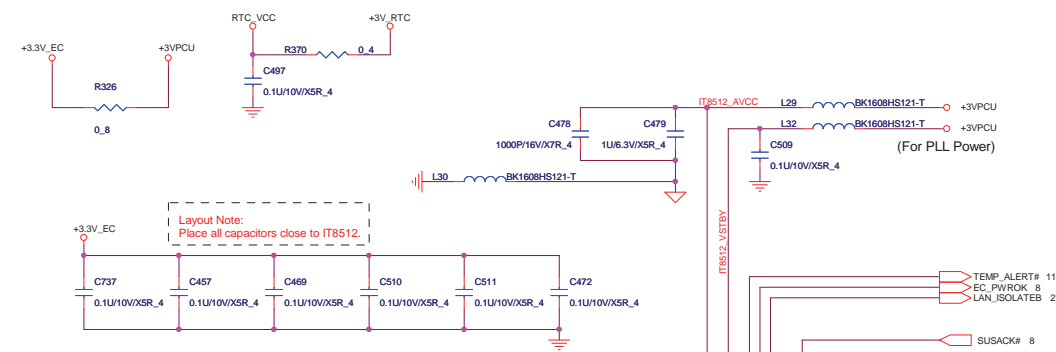
Backlight Keyboard Con.

<http://hobi-elektronika.net>

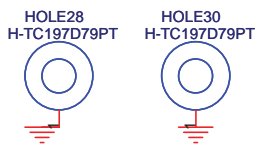
PROJECT : KL2D
Quanta Computer Inc.

Size Custom	Document Number K/B, T/P	Rev 1A
Date: Saturday, July 24, 2010	Sheet 34 of 47	1

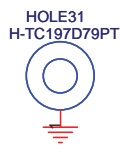




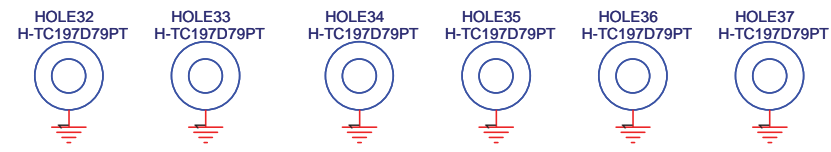
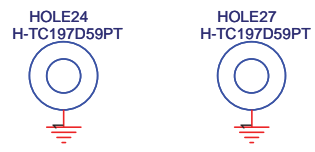
MiniCard WLAN



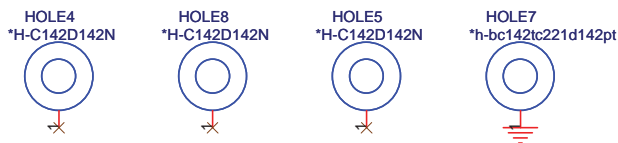
MiniCard WWAN



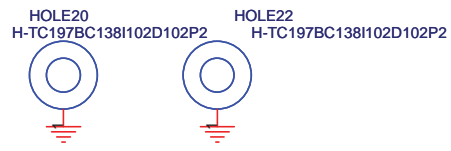
Hole for PCH support



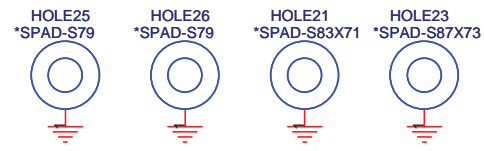
Hole for CPU support



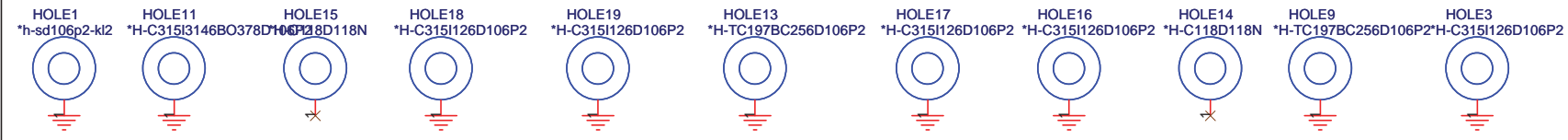
VGA nut



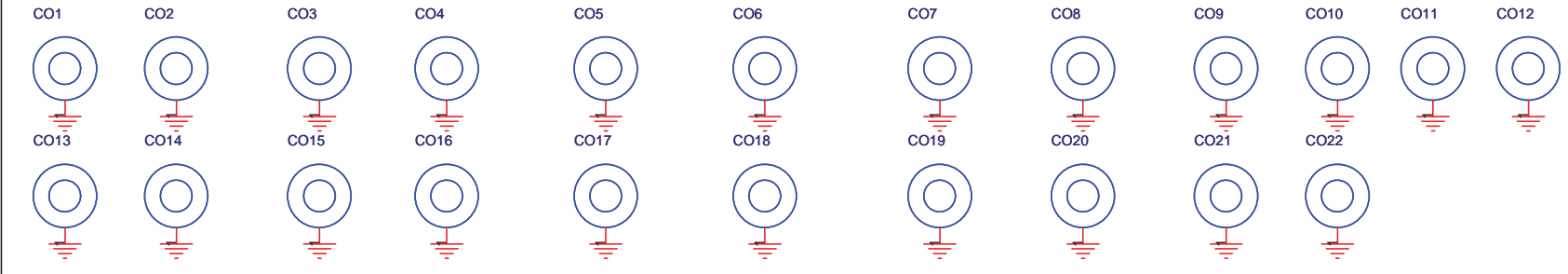
PAD



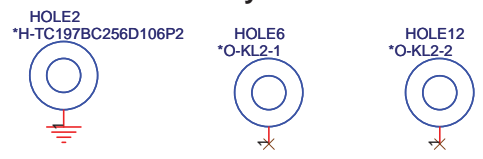
Boundary Hole



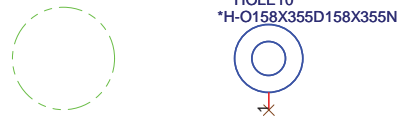
ESD Mask Copper



Boundary Hole



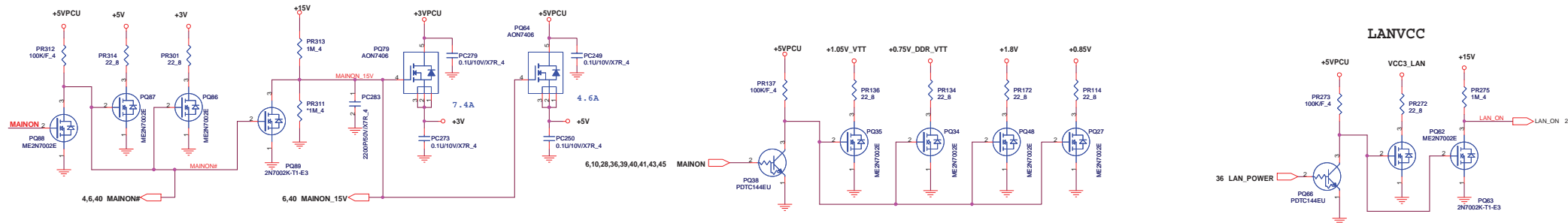
HDD PAD
EC QV08



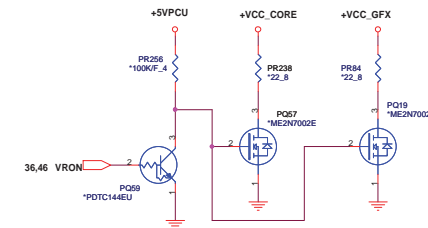
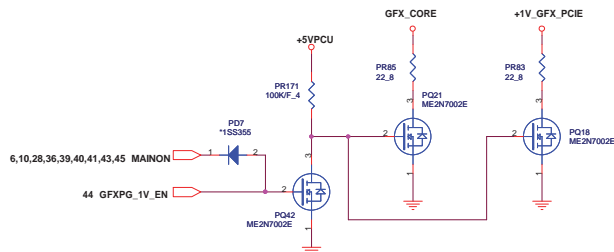
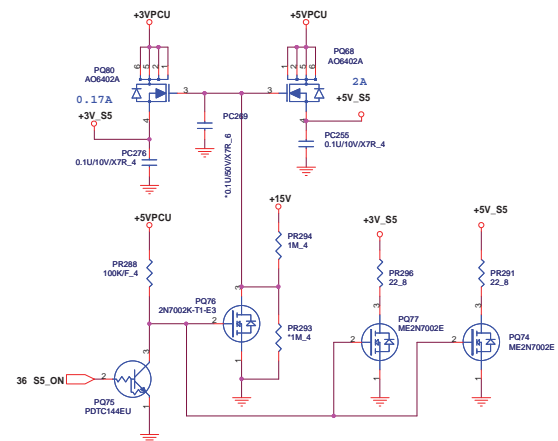
PROJECT : KL2D
Quanta Computer Inc.

Size Custom	Document Number HOLD & SKEW	Rev 1A
Date: Saturday, July 24, 2010		Sheet 37 of 47

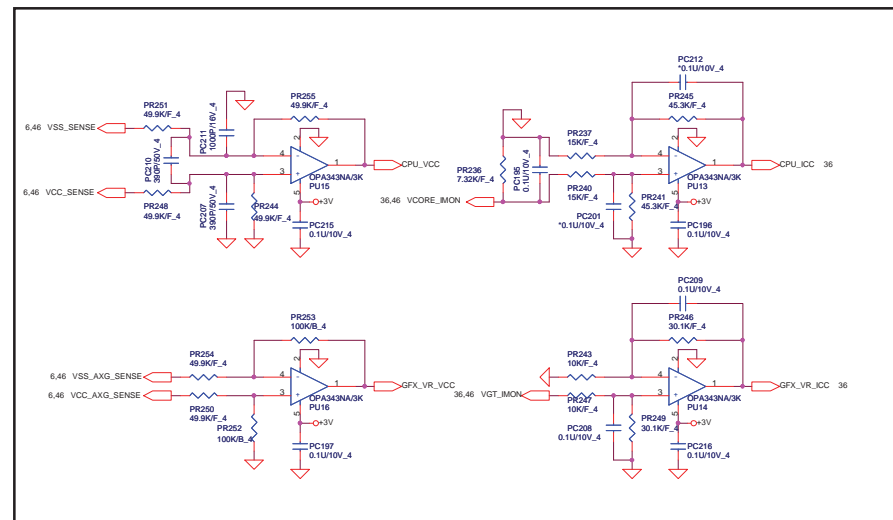
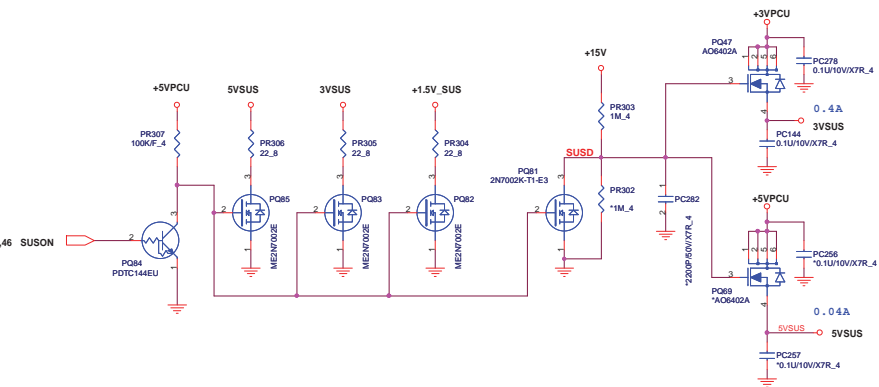
+3V, +5V

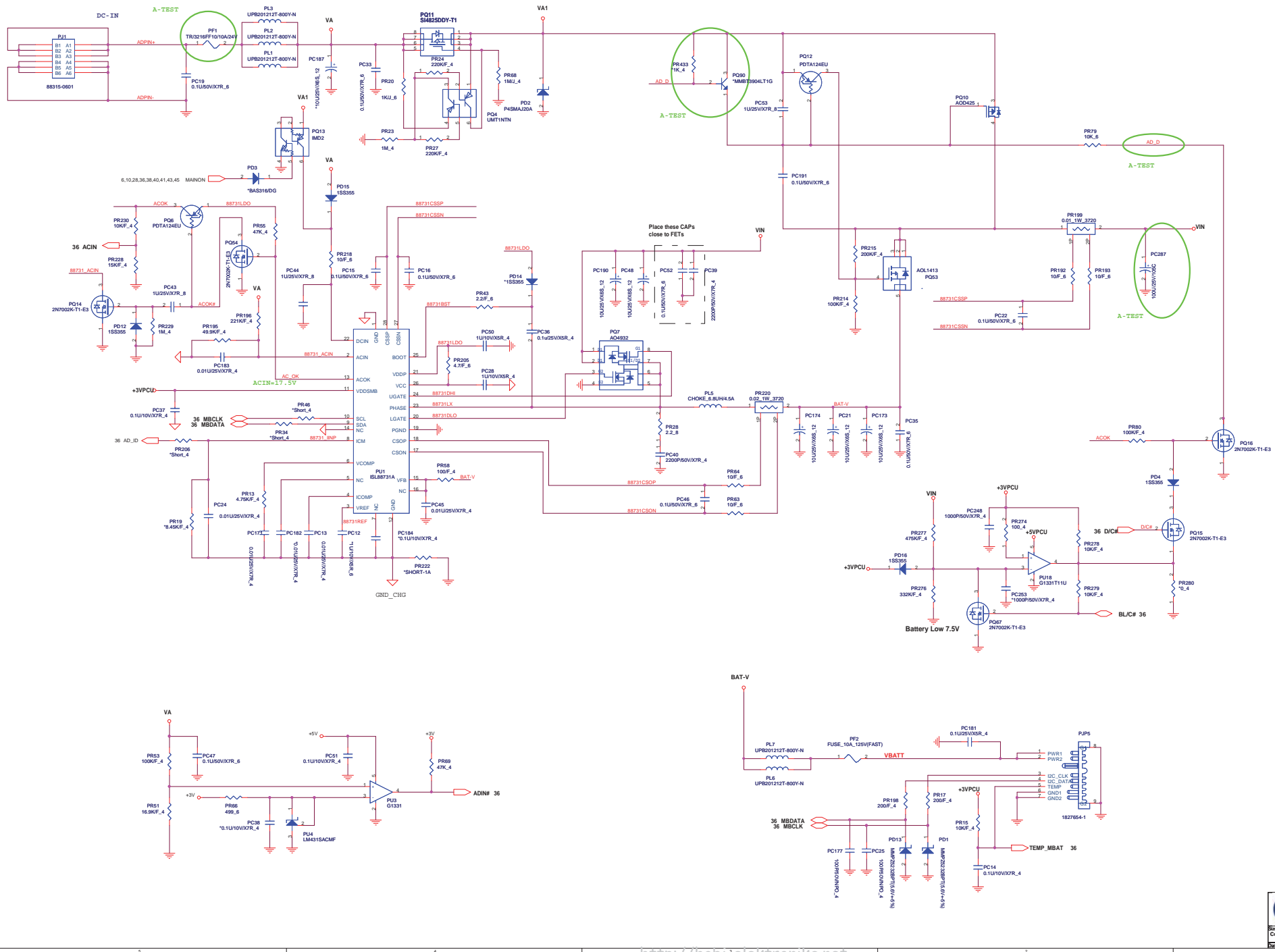


3V_S5, 5V_S5



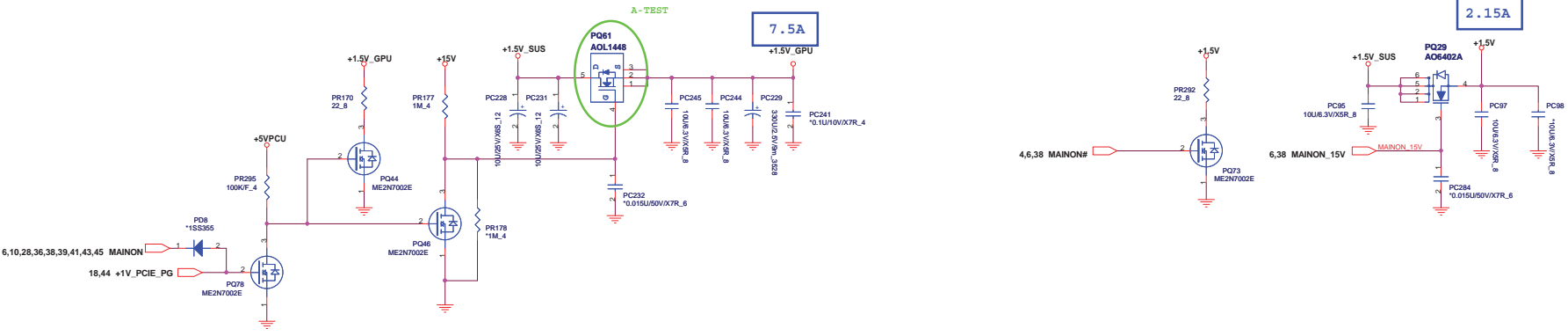
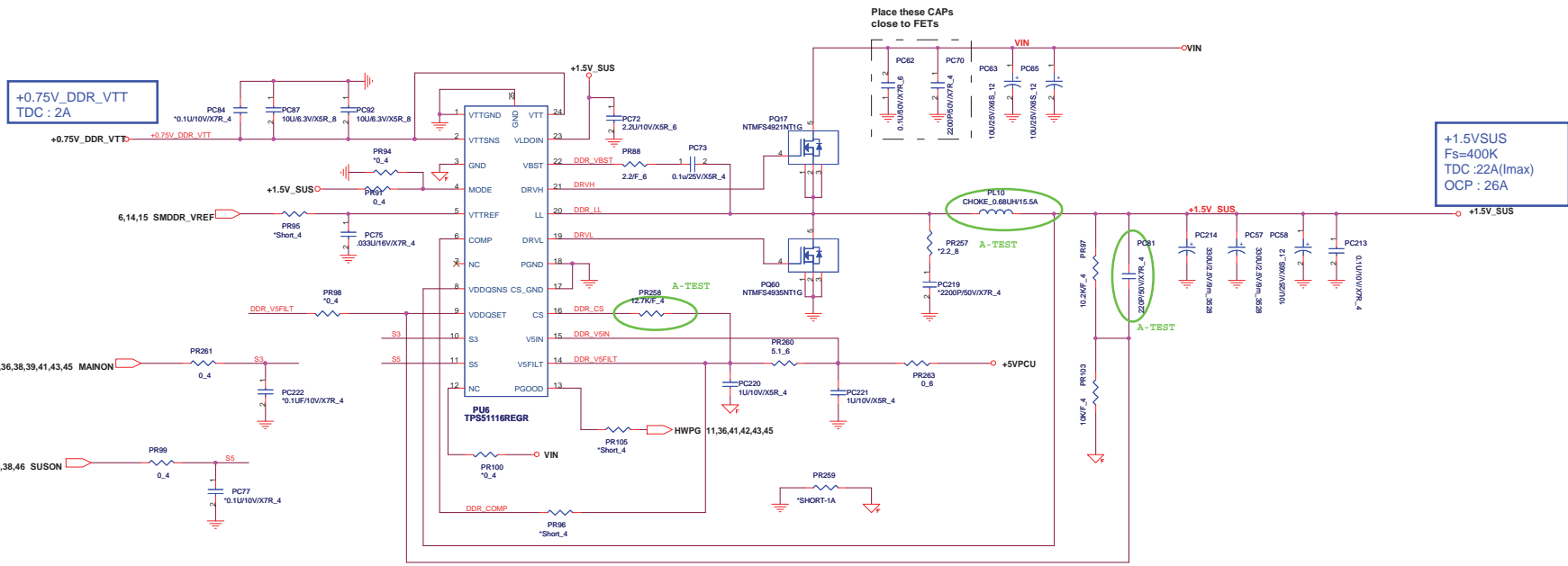
3VSUS, 5VSUS



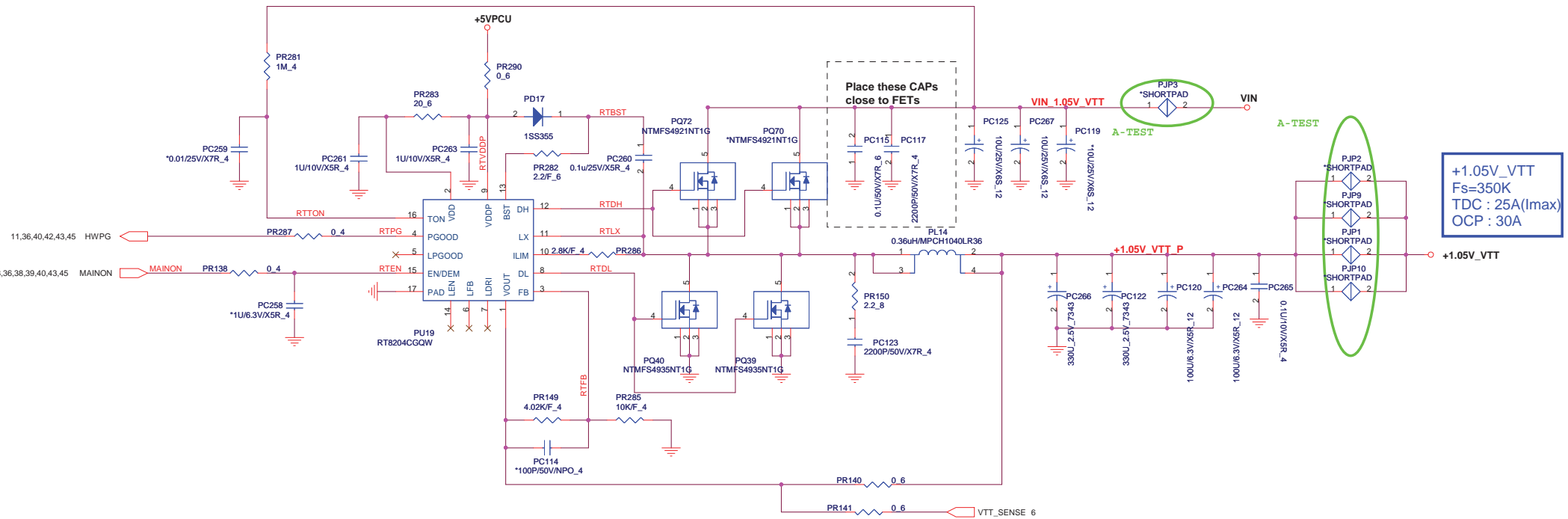


PROJECT : KL2D
Quanta Computer Inc.

Doc Number: 18L8731A
 Date: 2010.05.25
 Sheet: 39 of 47

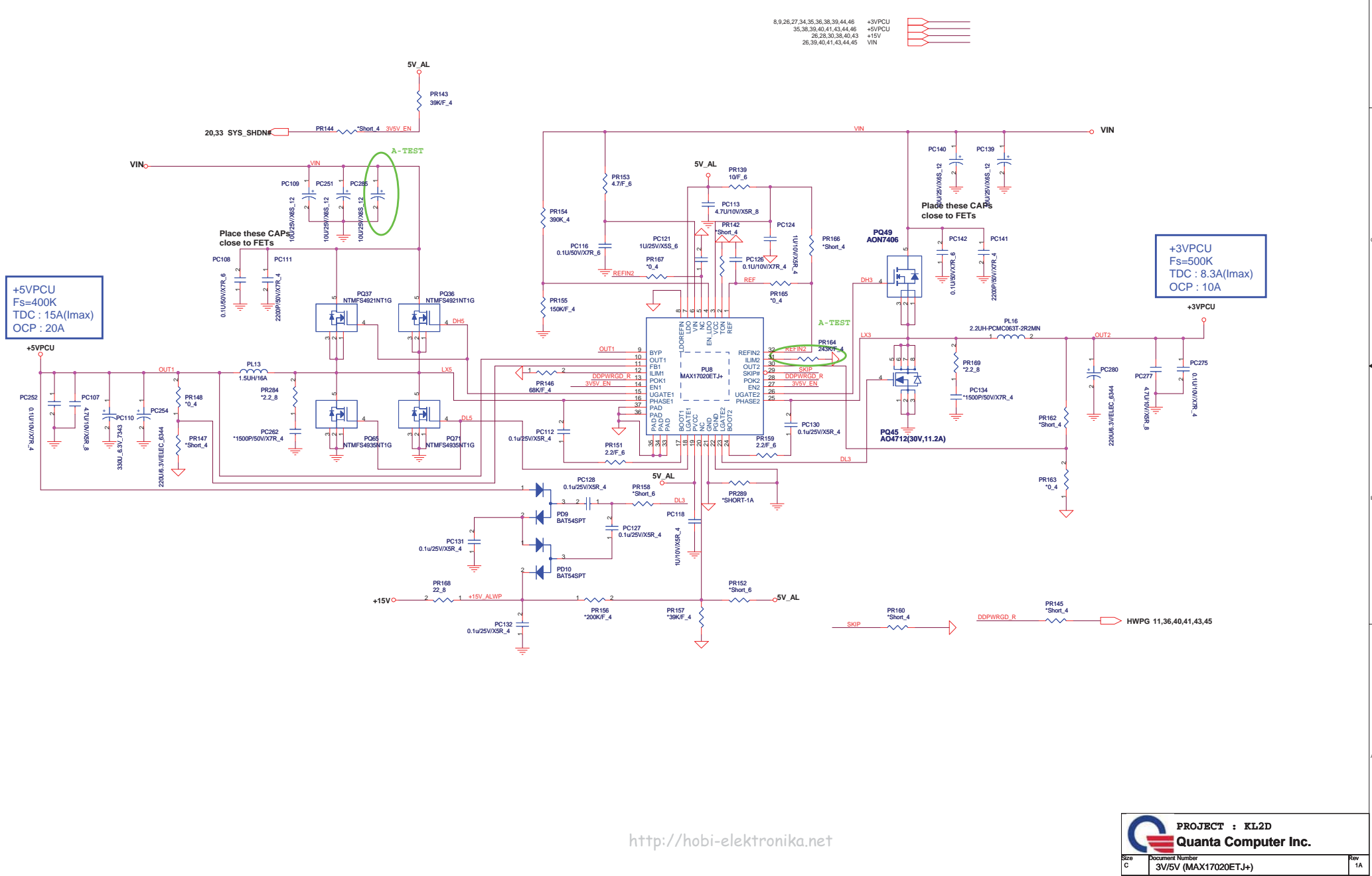


For S3 Power Saving



PROJECT : KL2D
Quanta Computer Inc.

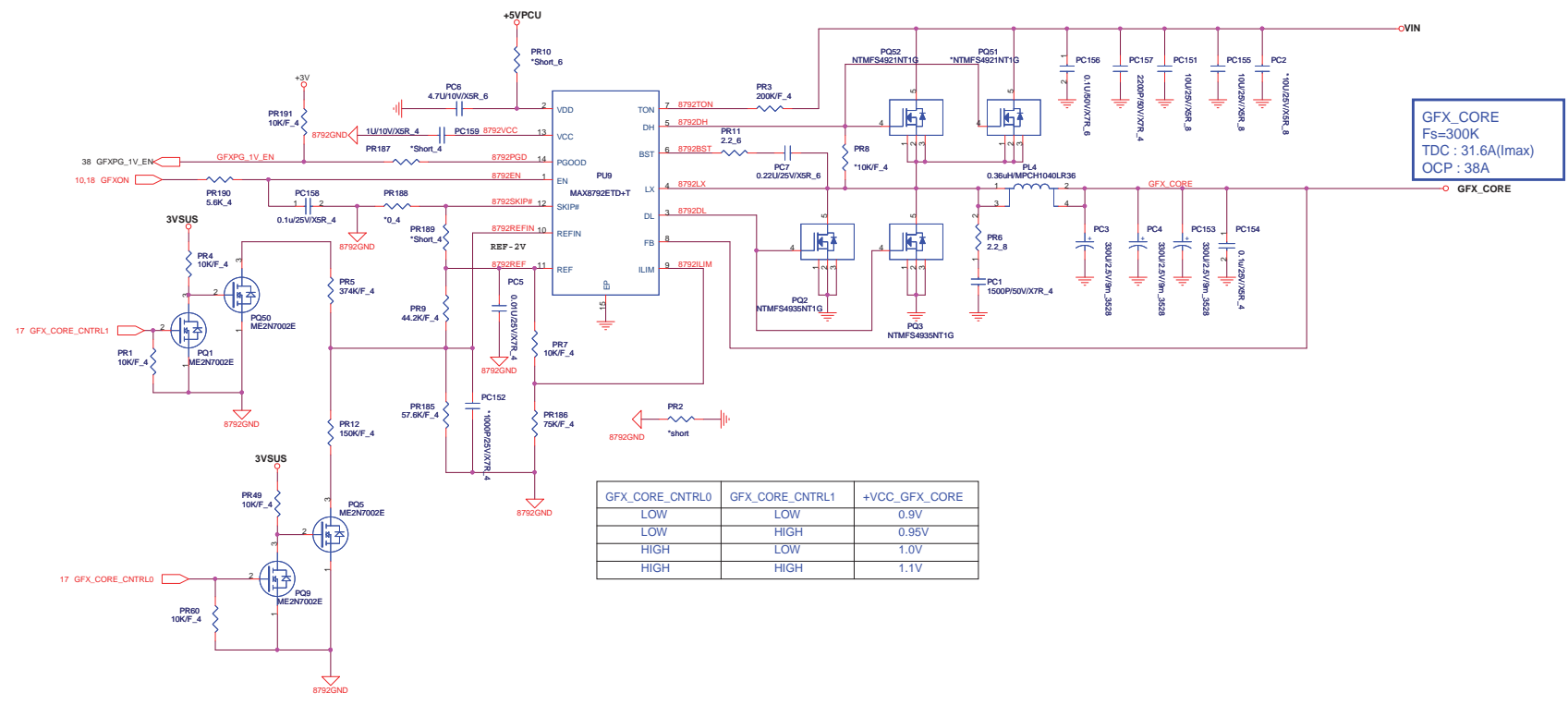
Size	Document Number	Rev
Custom	1.05V_VTT (RT8204)	1A
Date:	Saturday, July 24, 2010	Sheet 41 of 47



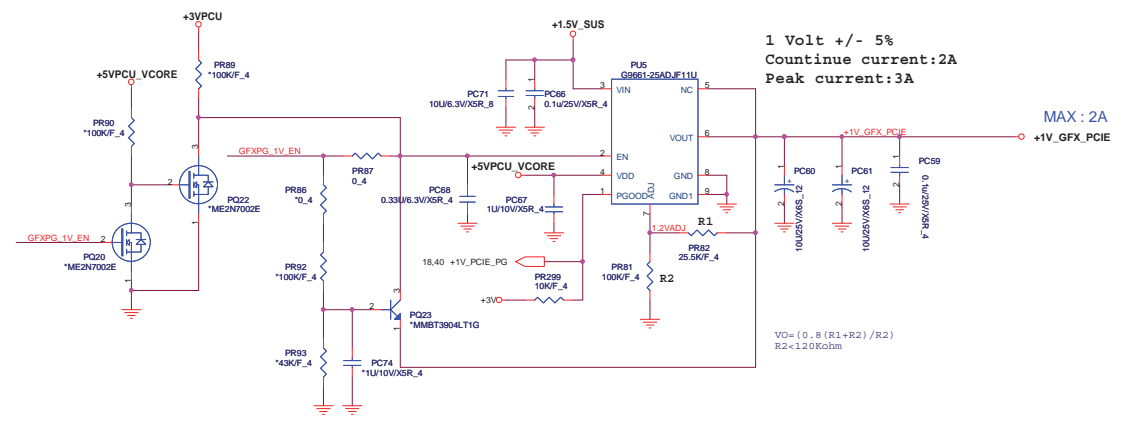
- 8,9,26,27,34,35,36,38,39,44,46 +3VPCU
- 35,38,39,40,41,43,44,46 +5VPCU
- 26,28,30,38,40,43 +15V
- 26,39,40,41,43,44,45 VIN

+5VPCU
 Fs=400K
 TDC : 15A(I_{max})
 OCP : 20A

+3VPCU
 Fs=500K
 TDC : 8.3A(I_{max})
 OCP : 10A



GFX_CORE
 Fs=300K
 TDC : 31.6A(I_{max})
 OCP : 38A

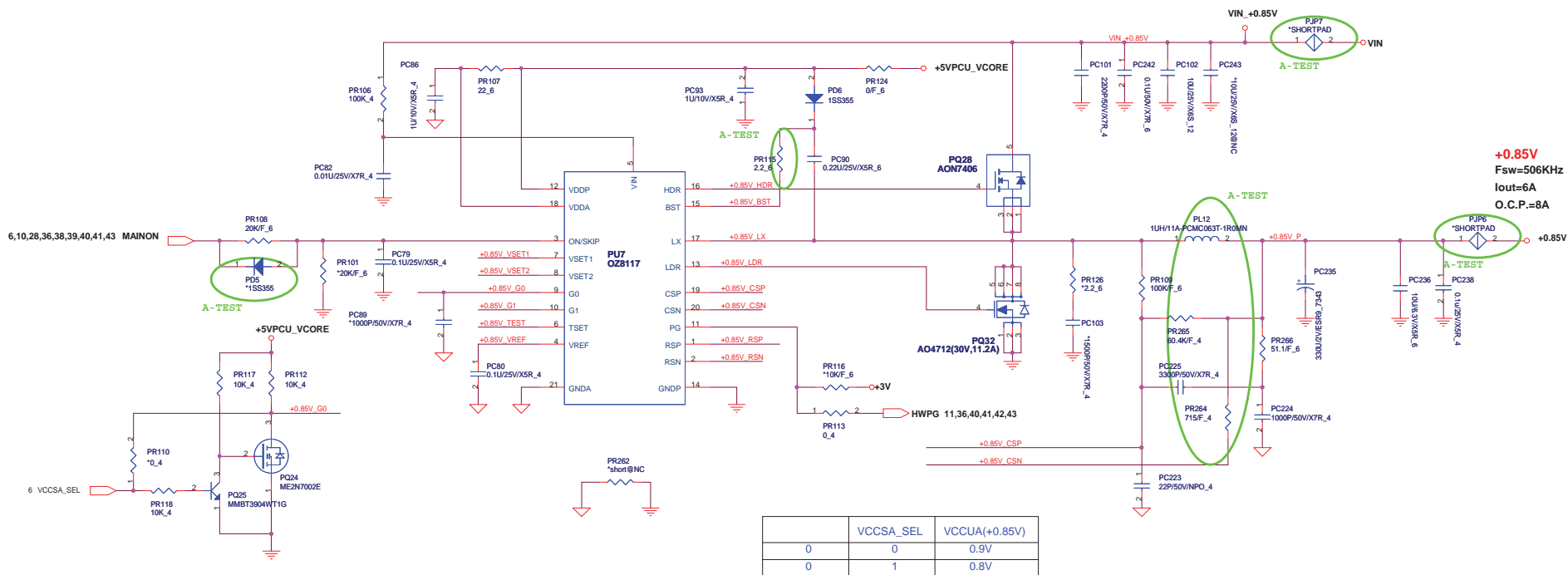


1 Volt +/- 5%
 Countinue current:2A
 Peak current:3A

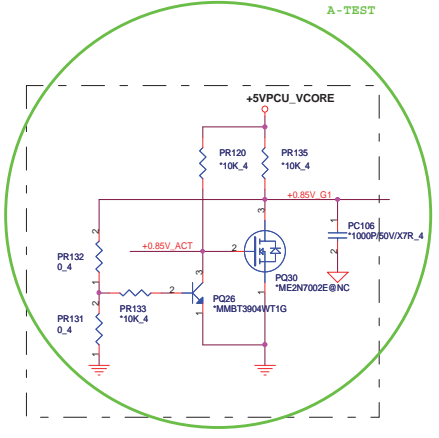
MAX : 2A

$$V_O = (0.8 (R1+R2) / R2) \cdot V_{ADJ}$$

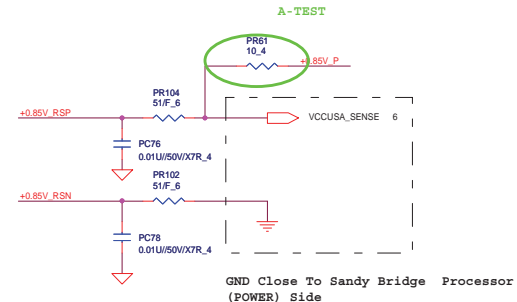
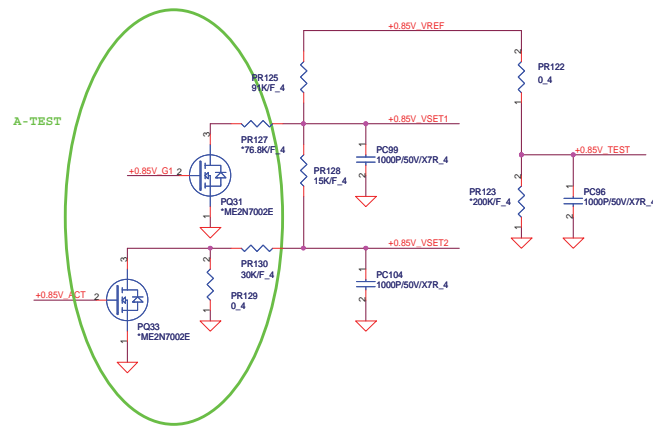
$$R2 < 1.20 K\Omega$$



+0.85V
 Fsw=506KHz
 Iout=6A
 O.C.P.=8A




For Sandy Bridge And IV Bridge VID Select



GND Close To Sandy Bridge Processor (POWER) Side

EC #	Page	Description	Part Affected

<http://hobi-elektronika.net>

	PROJECT : KL2D	
	Quanta Computer Inc.	
Size Custom	Document Number EC RECORD B	Rev 1A
Date: Saturday, July 24, 2010	Sheet 47	of 47