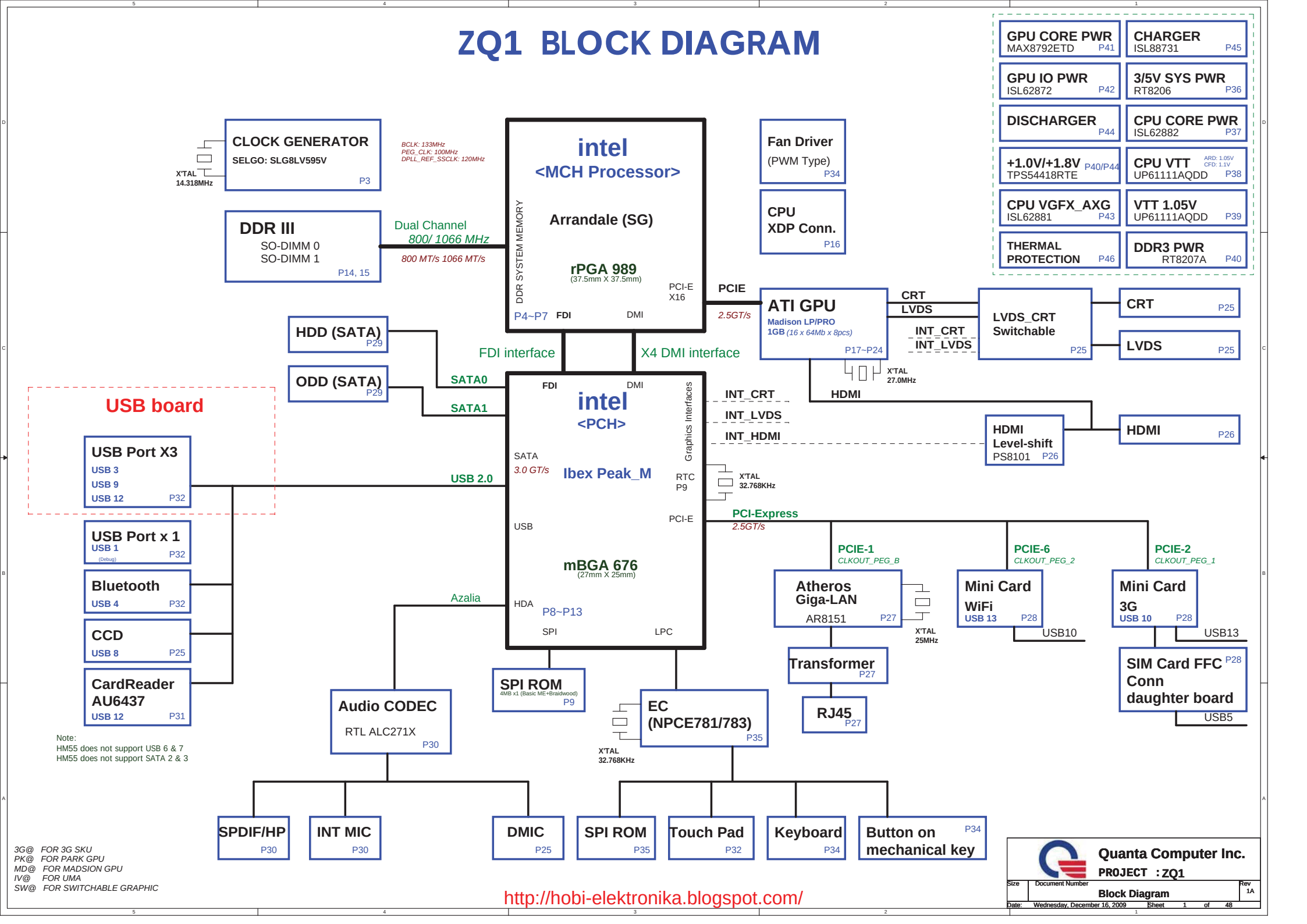
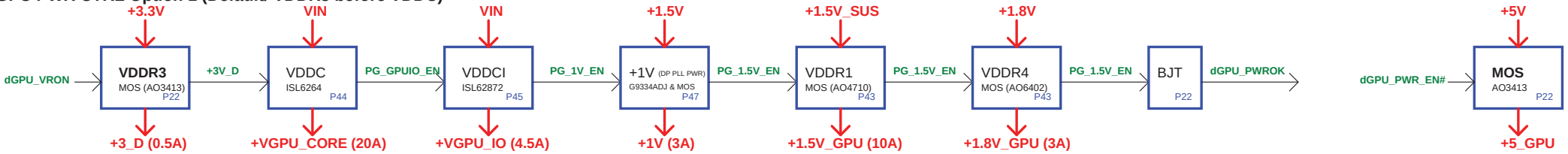
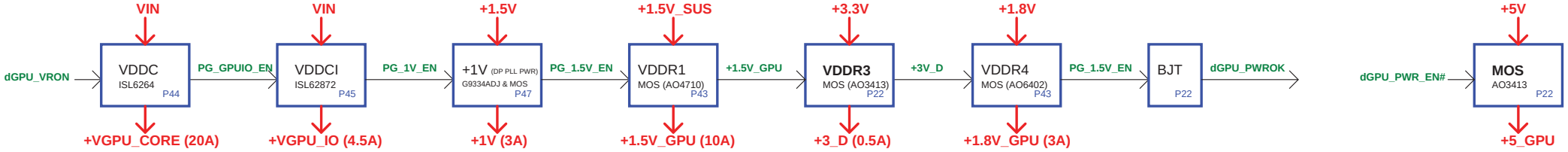
ZQ1 BLOCK DIAGRAM



GPU PWR CTRL Option 1 (Default/ VDDR3 before VDDC)



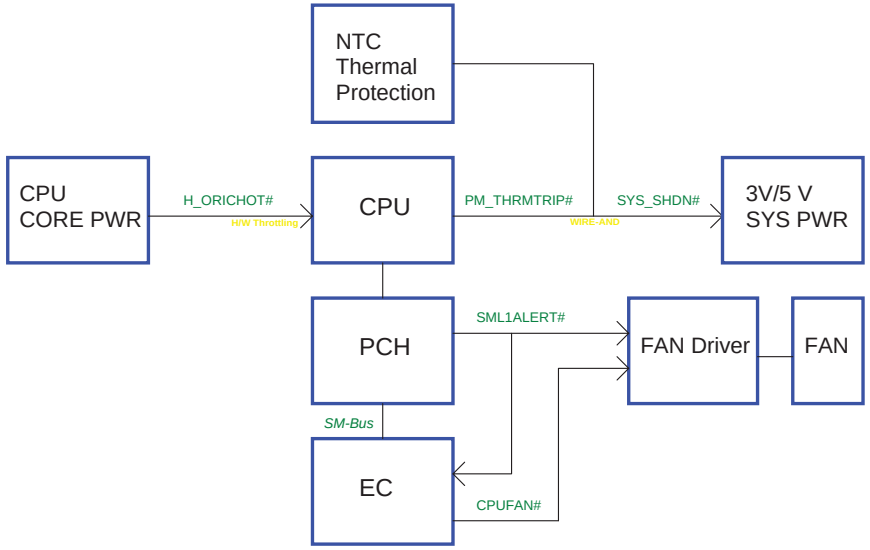
GPU PWR CTRL Option 2 (VDDR3 after VDDR1)



Power States

POWER PLANE	VOLTAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
VIN	+10V~+19V	MAIN POWER		S0~S5
+RTC_CELL	+3V~+3.3V	RTC		S0~S5
+3VPCU	+3.3V	8051 POWER	ALWON	S0~S5
+5VPCU	+5V	CHARGE POWER	ALWON	S0~S5
+15V	+15V	LARGE POWER	+15V_ALWP	S0~S5
3V_LAN_S5	+3.3V	LAN POWER	AUX_ON	
+5VSUS	+5V		SUSD	
+3VSUS	+3.3V		SUSD	
+1.5V_SUS	+1.5V	SODIMM POWER	SUSON	
+0.75V_DDR_VTT	+0.9V	SODIMM POWER	MAINON	
+5V	+5V		MAIND	
+3V	+3.3V		MAIND	
+1.8V	+1.8V		MAINON	
+1.5V	+1.5V	PCH POWER	MAIND	
+1.1V_VTT	+1.05V~+1.1V	CPU POWER	MAINON	
+1.05V	+1.05V	PCH POWER	MAINON	
+VCC_CORE	0V~+1.5V	CPU CORE POWER	VRON	
LCDVCC	+3.3V	LCD Power	LVDS_VDDEN	
MBAT+	+10V~+17V	MAIN BATTERY		
+5V_S5	+5V		S5_ON	
+3V_S5	+3.3V		S5D	

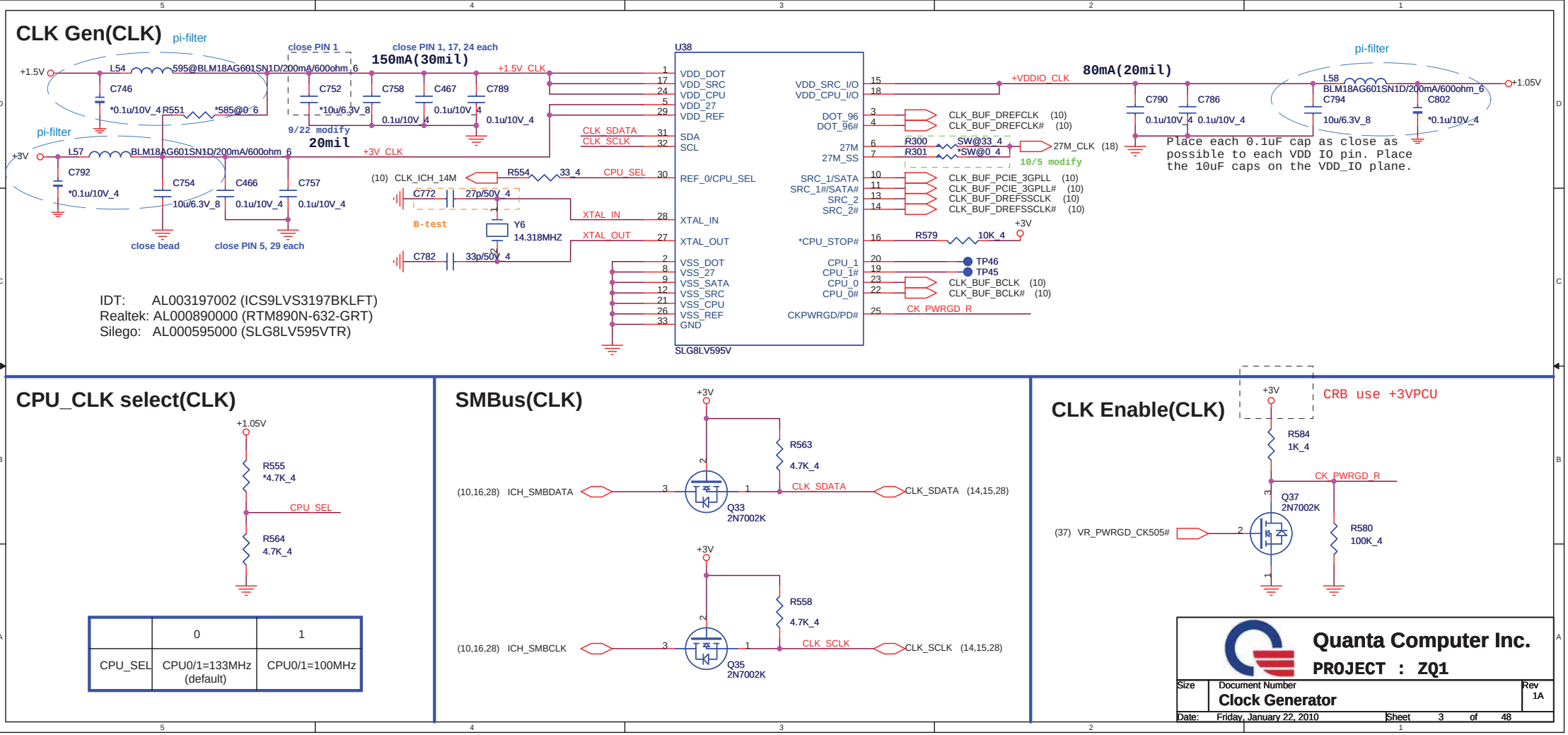
Thermal Follow Chart



Quanta Computer Inc.
PROJECT : ZQ1

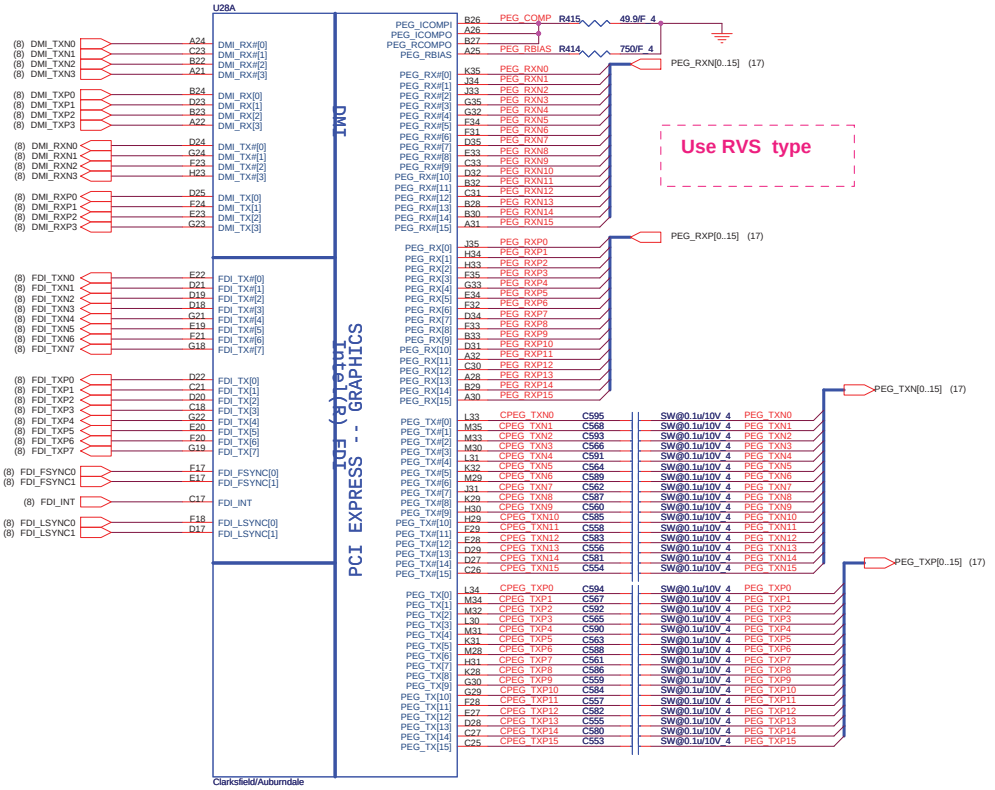
Size	Document Number	Rev
	PWR Status & GPU PWR CRL & THRM	1A

Date: Wednesday, December 16, 2009 Sheet 2 of 48

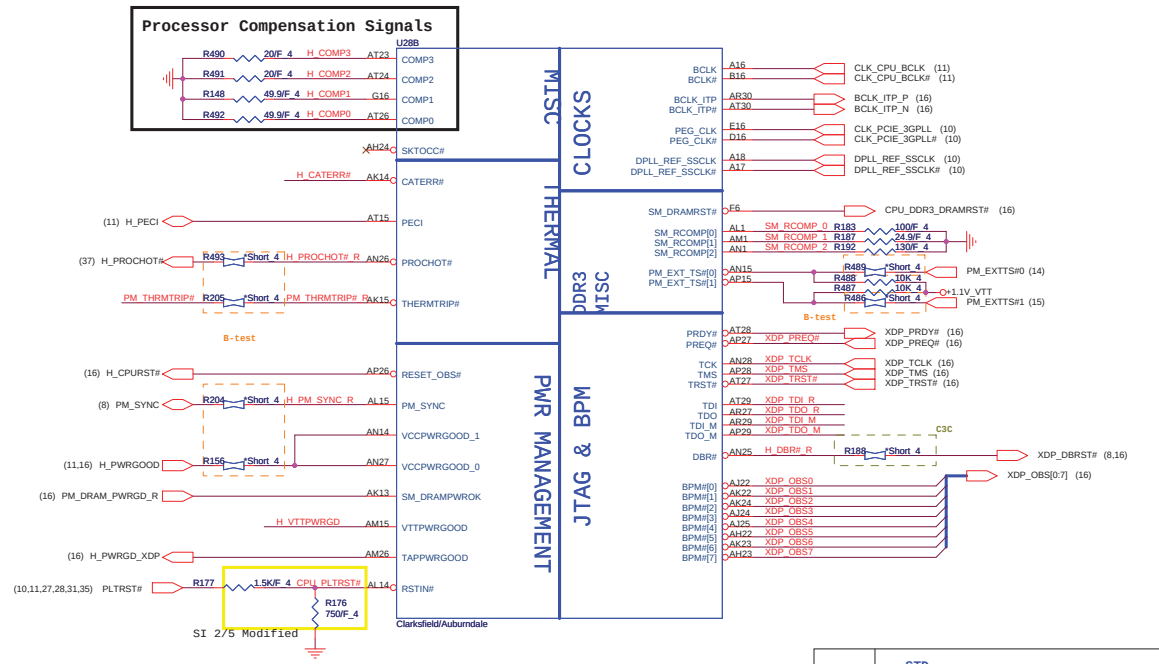


Arrandale_1(CPU)

AUBURNDALE/CLARKSFIELD PROCESSOR (DMI,PEG,FDI)



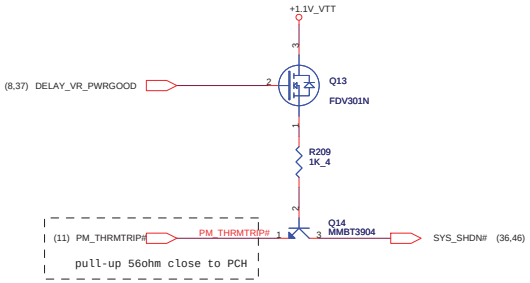
AUBURNDALE/CLARKSFIELD PROCESSOR (CLK,MISC,JTAG)



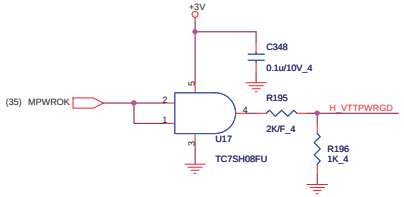
	STD
FOX	DGG^9000024
LTS	DGG^9000022
SUY	
MLX	

Standard: rpga989-aca-zif-069-k01-socket
Reverse: PZ98927-364R-01F-SOCKET

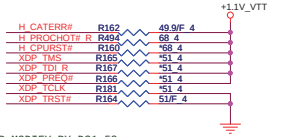
Thermaltrip protect(CPU)



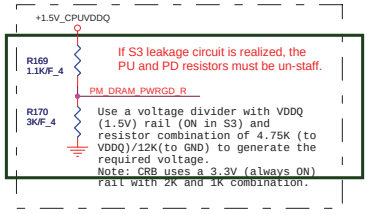
VTT PWR_Good(CPU)



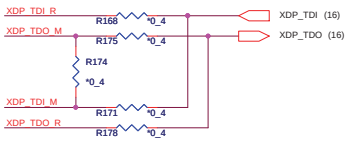
Processor pull-up(CPU)



4/9 REV:B MODIFY BY DG1.52



JTAG MAPPING(CPU)



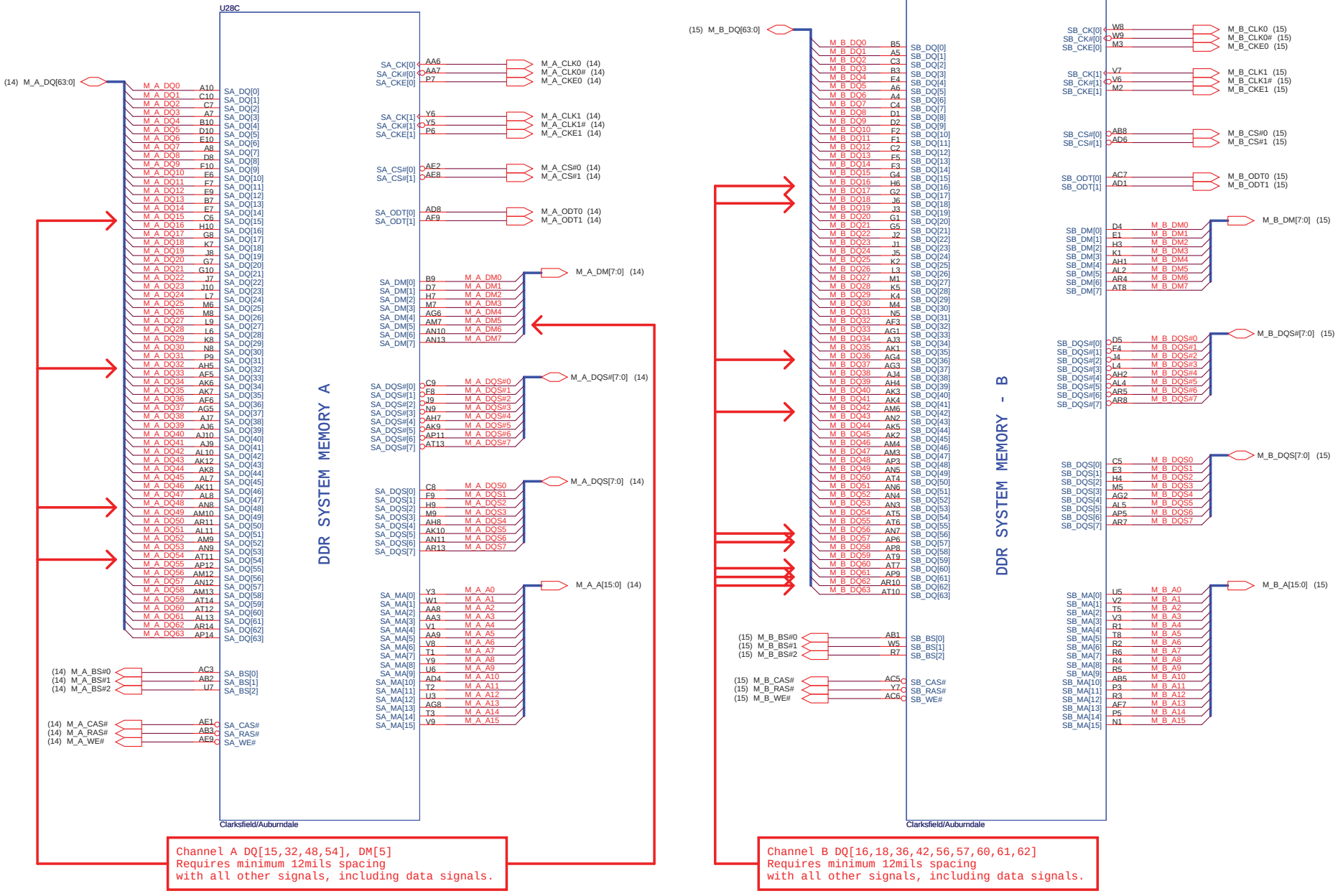
Scan Chain (Default)	STUFF -> R469, R491, R507 NO STUFF -> R489, R490
CPU Only	STUFF -> R490, R491 NO STUFF -> R469, R489, R507
GMCH Only	STUFF -> R489, R507 NO STUFF -> R491, R490, R469

Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	AUBURNDA 1/4	1A
Date: Friday, January 22, 2010	Sheet 4 of 48	

Arrandale_2(CPU)

AUBURNDALE/CLARKSFIELD PROCESSOR (DDR3)



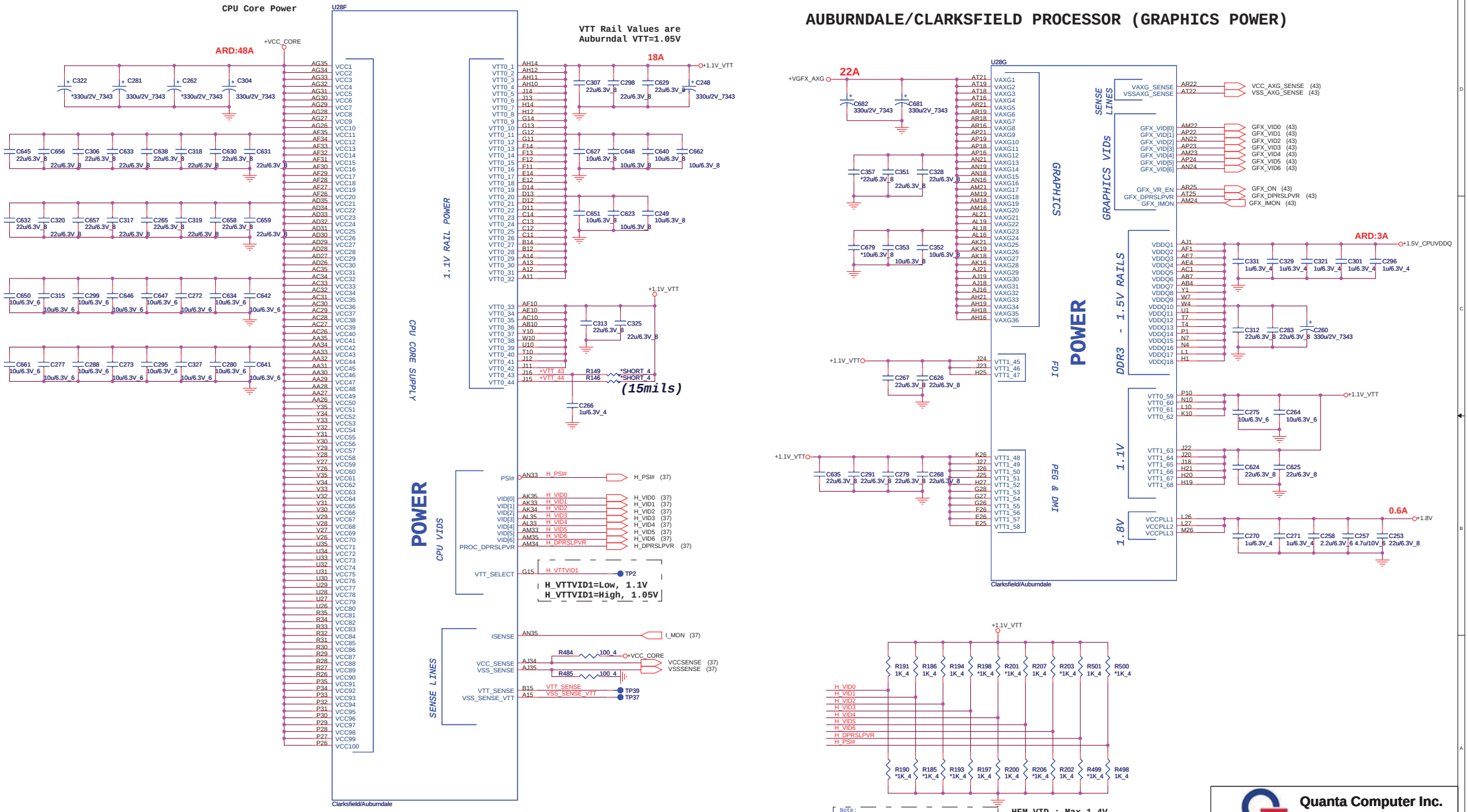
Quanta Computer Inc.

PROJECT : ZQ1

Size	Document Number	Rev
	AUBURNDA 2/4	1A

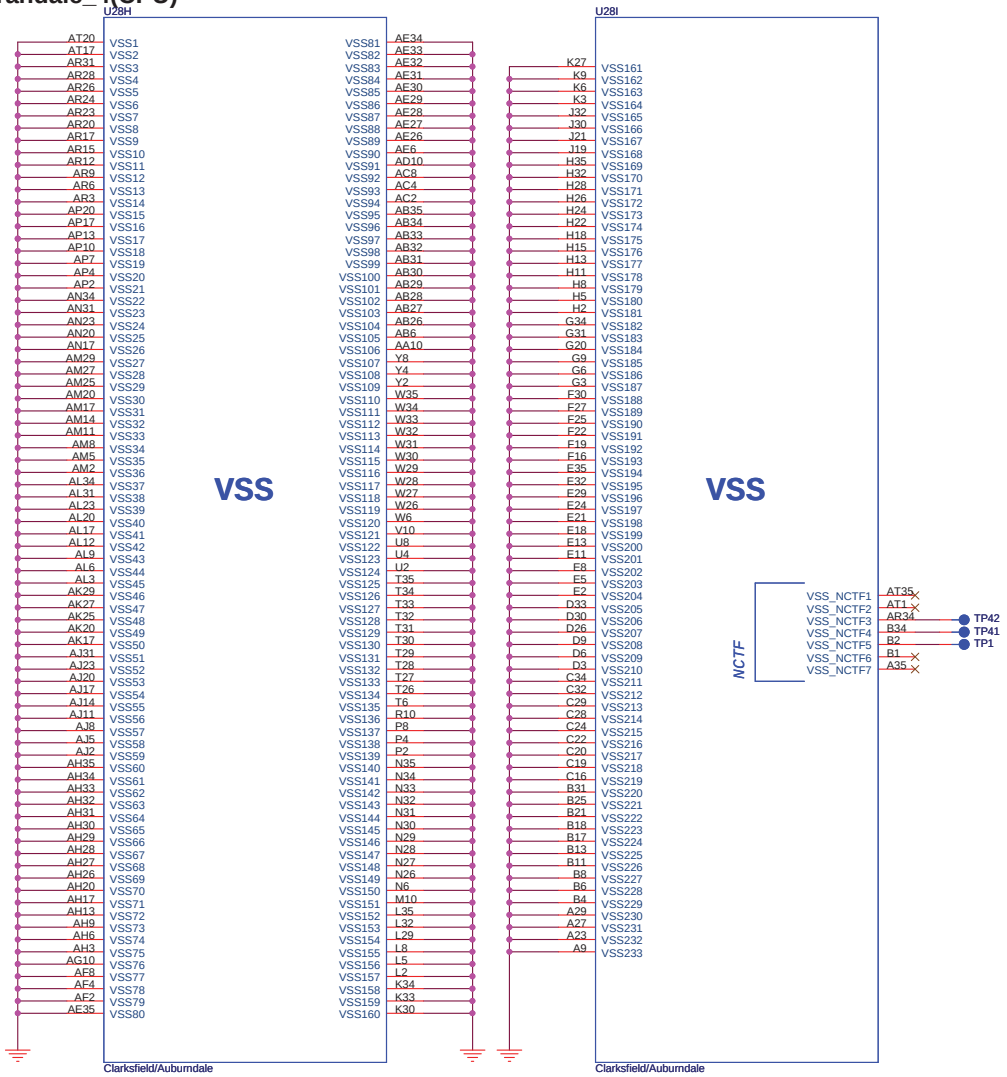
Date: Friday, January 22, 2010 Sheet 5 of 48

Arrandale_3(CPU)

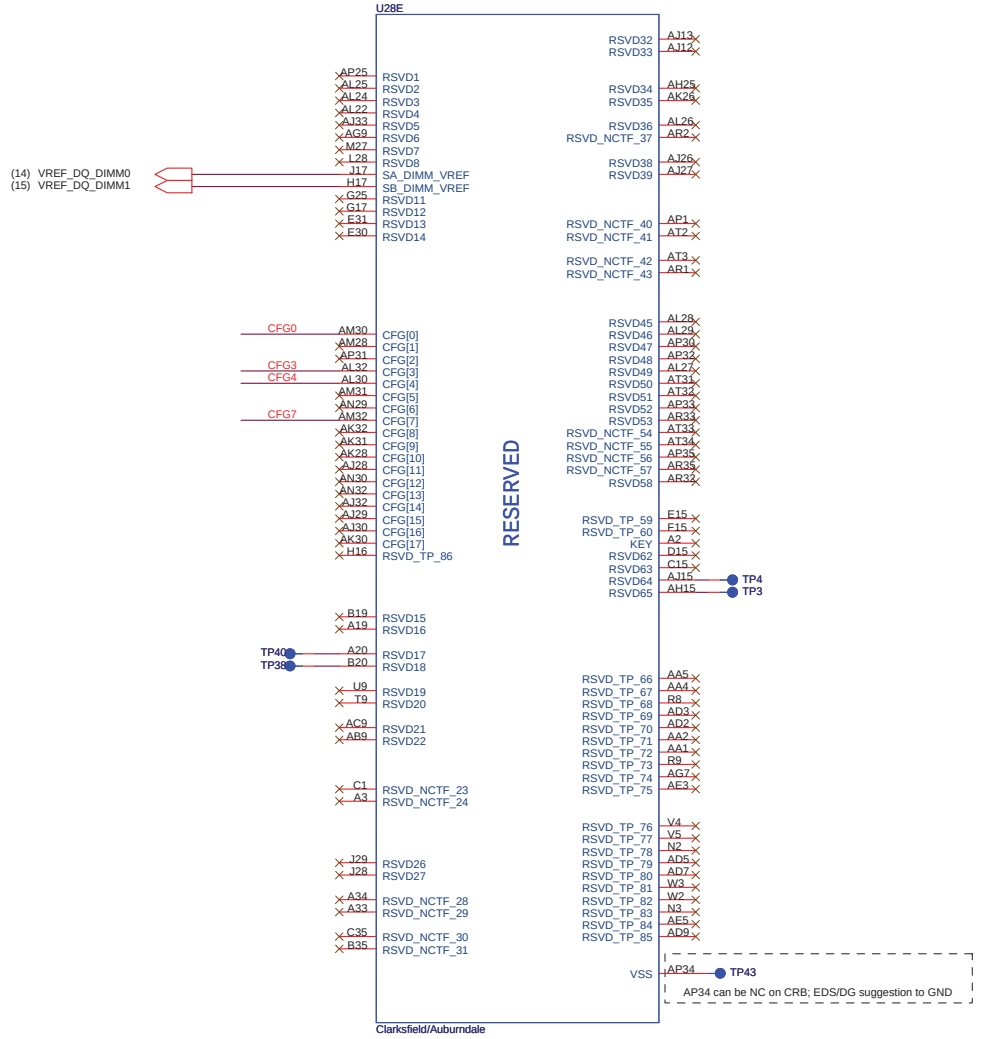


Arrandale_4(CPU)

AUBURNDALE/CLARKSFIELD PROCESSOR (GND)



AUBURNDALE/CLARKSFIELD PROCESSOR(RESERVED, CFG)

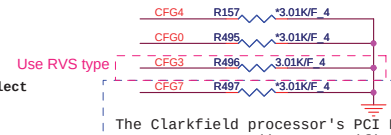


Processor Strapping

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

	1	0
CFG4 (Display Port Presence)	Disabled; No Physical Display Port attached to Embedded Diplay Port	Enabled; An external Display port device is connected to the Embedded Display port
CFG0 (PCI-Epress Configuration Select)	Single PEG	Bifurcation enabled
CFG3 (PCI-Epress Static Lane Reversal)	Normal Operation	Lane Numbers Reversed

```
CFG[ 1:0 ] - PCI_Epress Configuration Select
* 11= 1 x 16 PEG
* 10= 2 x 8 PEG
```



The Clarkfield processor's PCI Express interface may not meet PCI Express 2.0 jitter specifications. Intel recommends placing a 3.01K +/- 5% pull down resistor to VSS on CFG[7] pin for both rPGA and BGA components. This pull down resistor should be removed when this issue is fixed.(ES1 only)

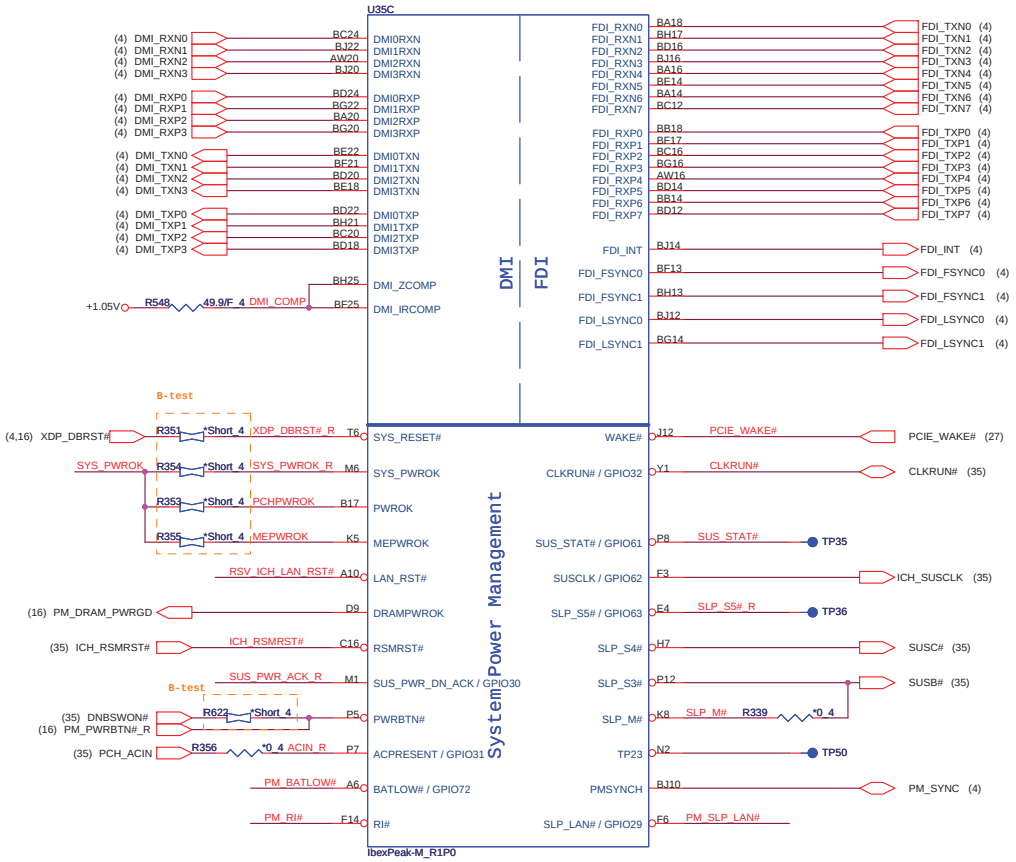
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	AUBURNDA 4/4	1A

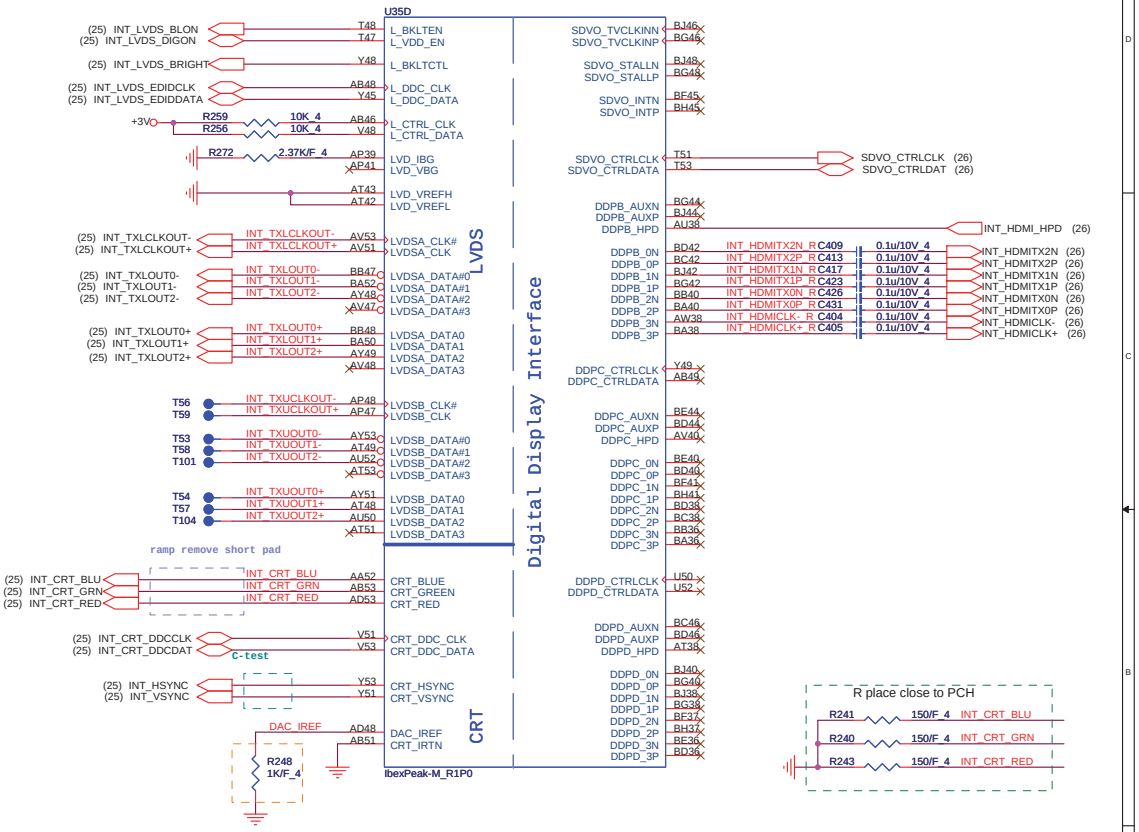
Date: Friday, January 22, 2010 Sheet 7 of 48

PCH1(CLG)

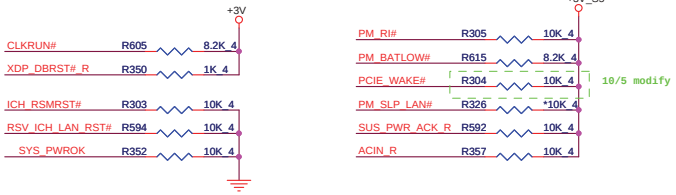
IBEX PEAK-M (DMI,FDI,GPIO)



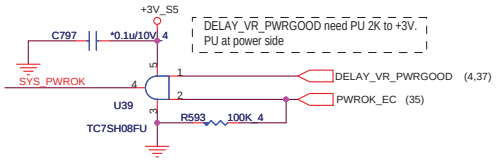
IBEX PEAK-M (LVDS,DDI)



PCH Pull-high/low(CLG)



System PWR_OK(CLG)

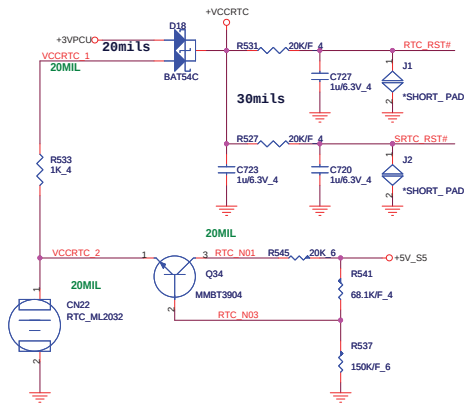


Quanta Computer Inc.
PROJECT : ZQ1

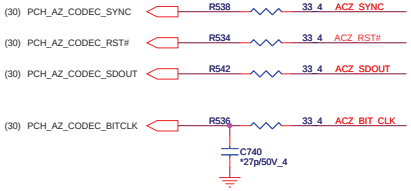
Size	Document Number	Rev
	IBEX PEAK-M 1/6	1A

Date: Friday, January 22, 2010 Sheet 8 of 48

RTC Circuitry(RTC)

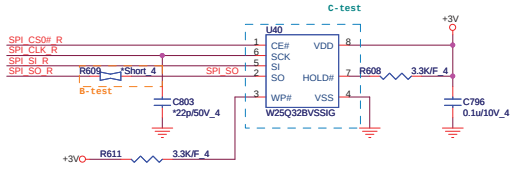


HDA Bus(CLG)

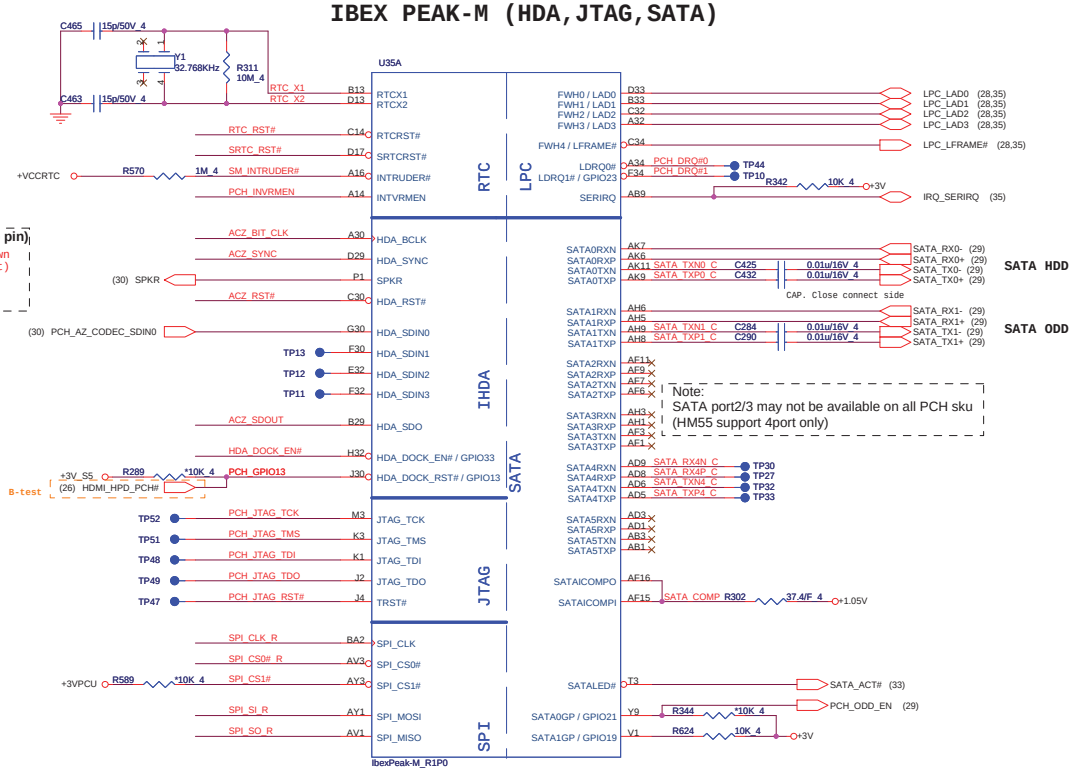


Place all series terms close to PCH except for SDIN input lines,which should be close to source.Placement of R should equal distance to the T split trace point. Basically, keep the same distance from T for all series termination resistors.

PCH SPI(CLG)



PCH2(CLG)



PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	ZQ1 note
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	+3V R601 *10K_4 SPKR
INIT3_3V	Reserved	PWROK	1 = Default (weak pull-up 20K) Should not be pull-down	
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	R517 *10K_4 PCI_GNT3# (10)
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+VCCRTC R567 330K_4 PCH_INVRMEN
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	GNT1# / GNT0# / Boot Location: 1 / 1 / SPI 1 / 0 / PCI 0 / 0 / LPC	Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS] +3V R249 1K_4 R245 1K_4 C-test R255 *1K_4 R254 *1K_4 PCI_GNT0# (10) PCI_GNT1# (10)
GNT0#	Boot BIOS Selection 0 [bit-0]	PWROK		
GNT2# / GPIO53	ESI strap (Server only)	PWROK	Should not be pull-down (weak pull-up 20K)	USE GPIO PIN
NV_ALE	Intel Anti-Theft HDD protection	PWROK	0 = Disable (Internal pull-down 32ohm)	+1.8V R590 *1K_4 NV_ALE NV_ALE (10)
NV_CLE	DMI Termination voltage	PWROK	weak pull-down 32ohm	+1.8V R591 *1K_4 NV_CLE NV_CLE (10)
HDA_DOCK_EN#/GPIO33	Flash Descriptor Security	PWROK	0 = Override 1 = Default (weak pull-up 20K)	+3V R277 *1K_4 R273 *10K_4 HDA_DOCK_EN#
SPI_MOSI	iTPM function Disable	MEPWROK	0 = Default (weak pull-down 20K) 1 = Enable	+3V R627 *1K_4 SPI_SI_R
HDA_SDO	Reserved	RSMRST#	Should not be pull-up (weak pull-down 20K)	
GPIO8	Reserved	RSMRST#	Should not be pull-down (weak pull-up 20K)	+3V_S5 R340 10K_4 RSV_GPIO8 (11)
GPIO27	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (weak pull-up 20K)	
HDA_SYNC	On-die PLL PWR supply select	RSMRST#	0 = 1.8V supply (weak pull-down 20K) 1 = 1.5V supply	use defaul (0 = 1.8V supply)
GPIO15	Reserved	RSMRST#	0 = TLS no Confidentiality (weak pull-down 20K) 1 = TLS Confidentiality	+3V_S5 R349 1K_4 CR_WAKE# (11)

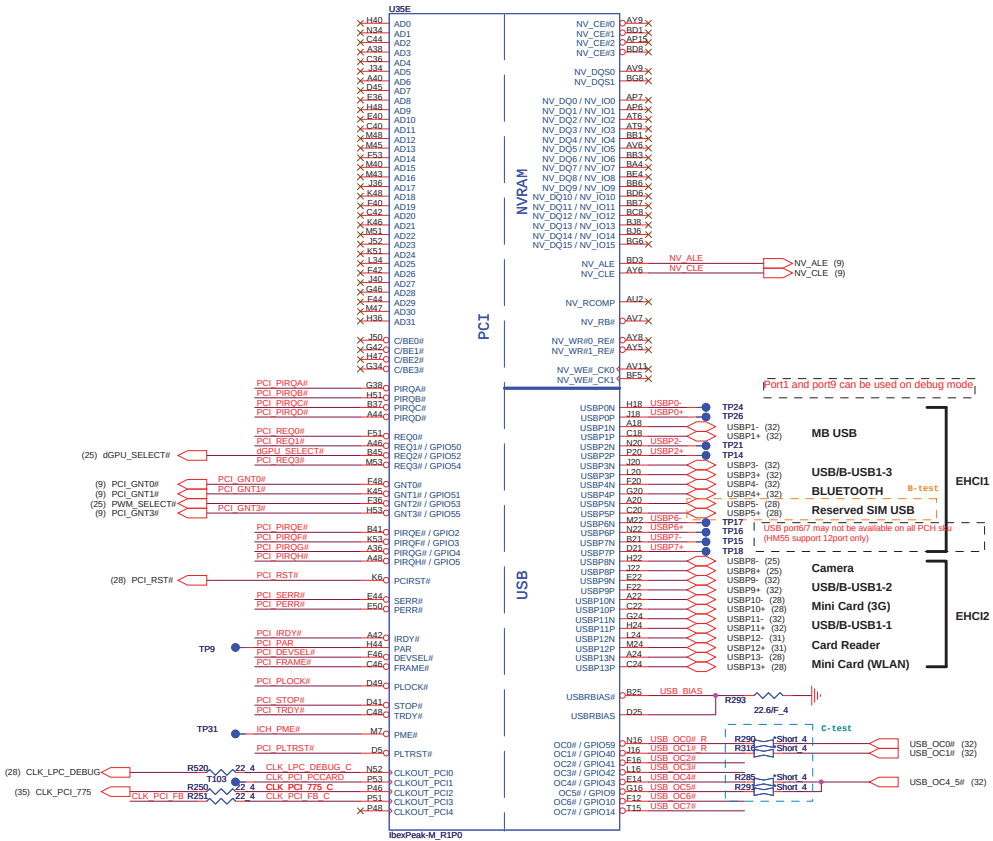
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	IBEX PEAK-M 2/6	1A

Date: Friday, January 22, 2010 Sheet 9 of 48

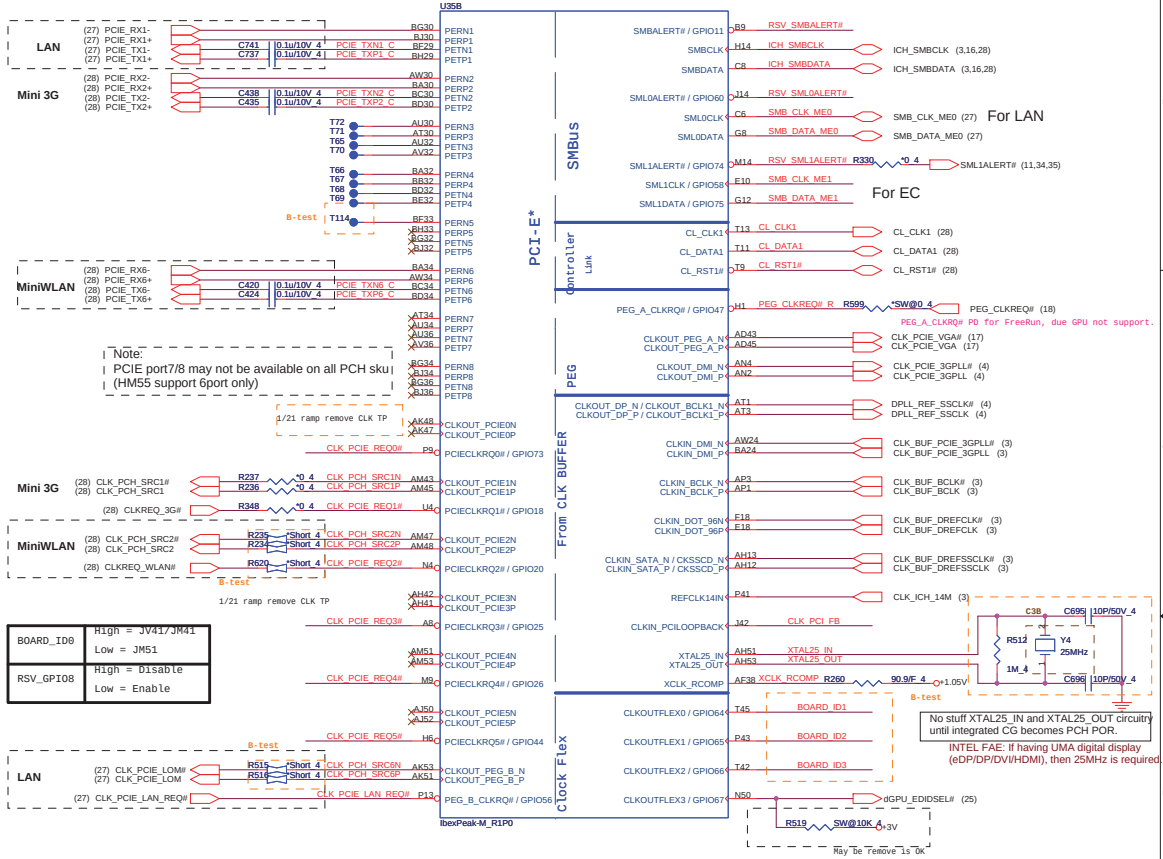
PCH3(CLG)

IBEX PEAK-M (PCI,USB,NVRAM)

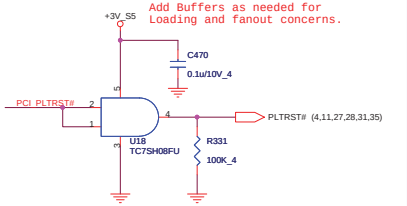


IBEX PEAK-M (PCI-E,SMBUS,CLK)

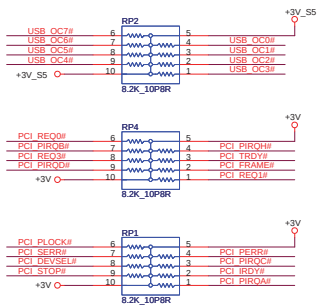
8/13 Swap Lan and WLAN/ Lan chagne to port 1



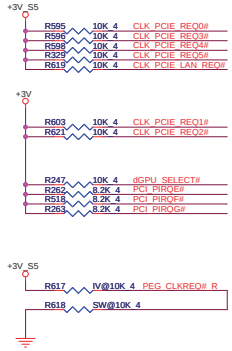
PLTRST#(CLG)



PCI/USBOC# Pull-up(CLG)



CLK_REQ/Strap Pin(CLG)



PEG_A_CLKRQ# PD for FreeRun, due GPU not support.

A16 swap override Strap/Top-Block Swap Override jumper

PCI_GNT3#	Low = A16 swap override/Top-Block Swap Override enabled High = Default

Boot BIOS Strap

GNT0#	GNT1#	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	PCI
1	1	SPI

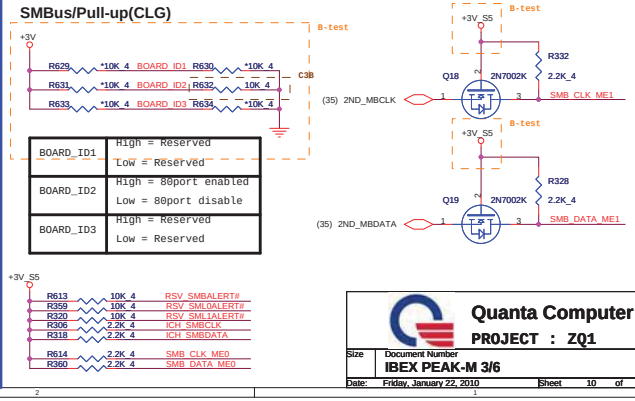
Danbury Technology Enabled

NV_ALE	High = Enable Low = Disable

DMI Termination Voltage

NV_CLE	Set to Vcc when LOW Set to Vcc/2 when HIGH

SMBus/Pull-up(CLG)



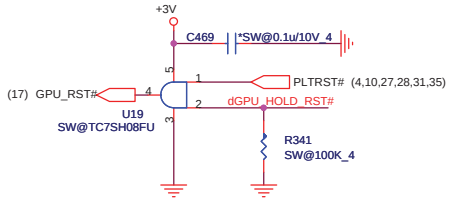
Quanta Computer Inc.	PROJECT : ZQ1
Size	Document Number: IBEX PEAK-M 3/6 — Rev: 1A
Date: Friday, January 22, 2010	Sheet 10 of 48

PCH4(CLG)

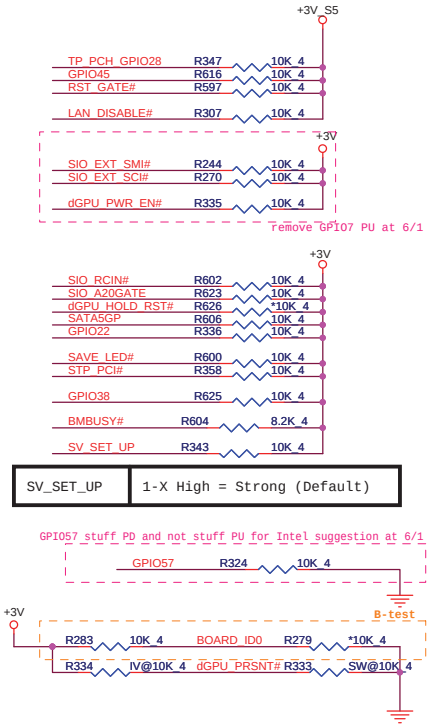
IBEX PEAK-M (GPIO,VSS_NCTF,RSVD)

SATA5GP / GPIO49 / TEMP_ALERT# is used to alert for EC when CPU or Graph/Memory controllers' temperature go out of limit. So connecting GPIO49 to EC and avoid this pin to be used for other purpose

GPU RST#(CLG)



GPIO Pull-up/Pull-down(CLG)



SV_SET_UP	1-X High = Strong (Default)

BOARD_ID0	High = JV41/JM41 Low = JM51
RSV_GPIO8	High = Disable Low = Enable

Quanta Computer Inc.

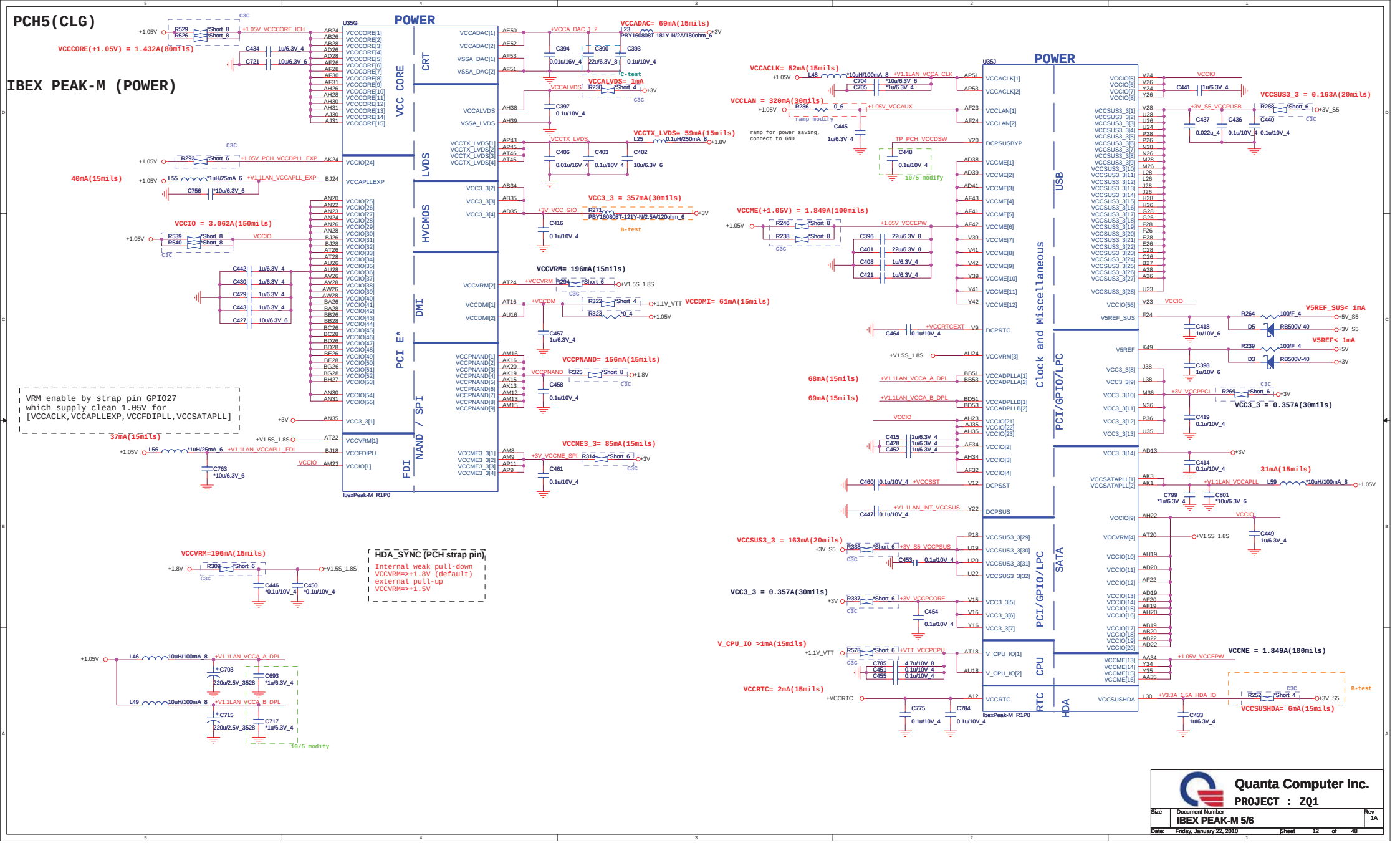
PROJECT : ZQ1

Size	Document Number	Rev
	IBEX PEAK-M 4/6	1A

Date: Friday, January 22, 2010 Sheet 11 of 48

PCH5(CLG)

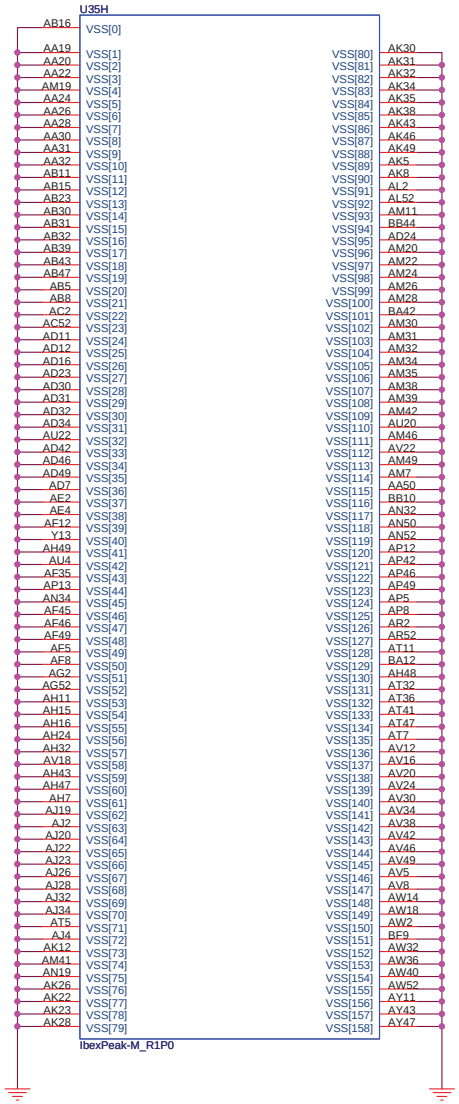
IBEX PEAK-M (POWER)

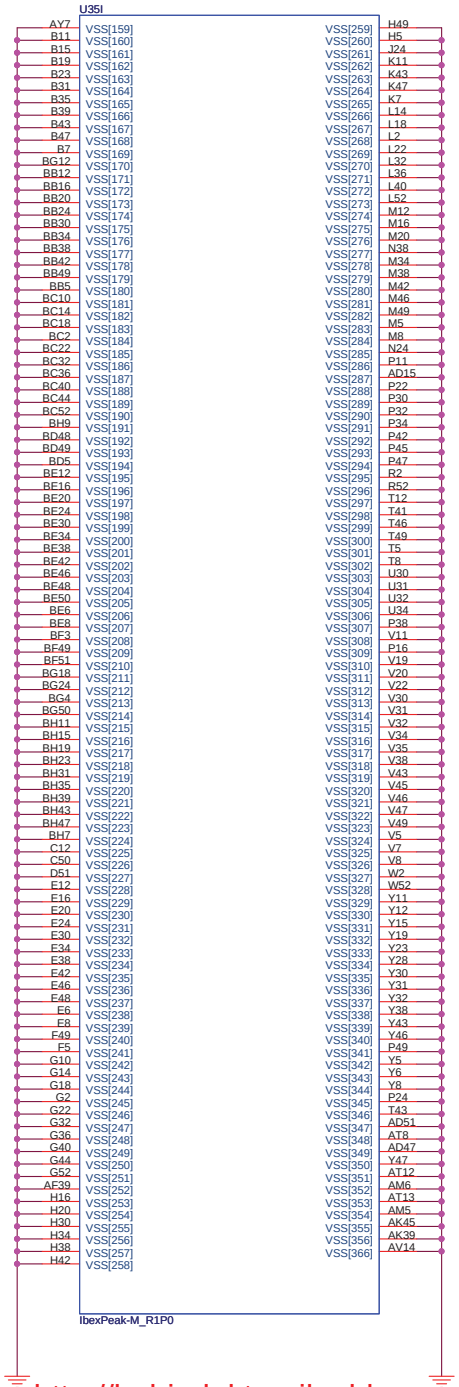


Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	IBEX PEAK-M 5/6	1A
Date: Friday, January 22, 2010	Sheet 12 of 48	

IBEX PEAK-M (GND)





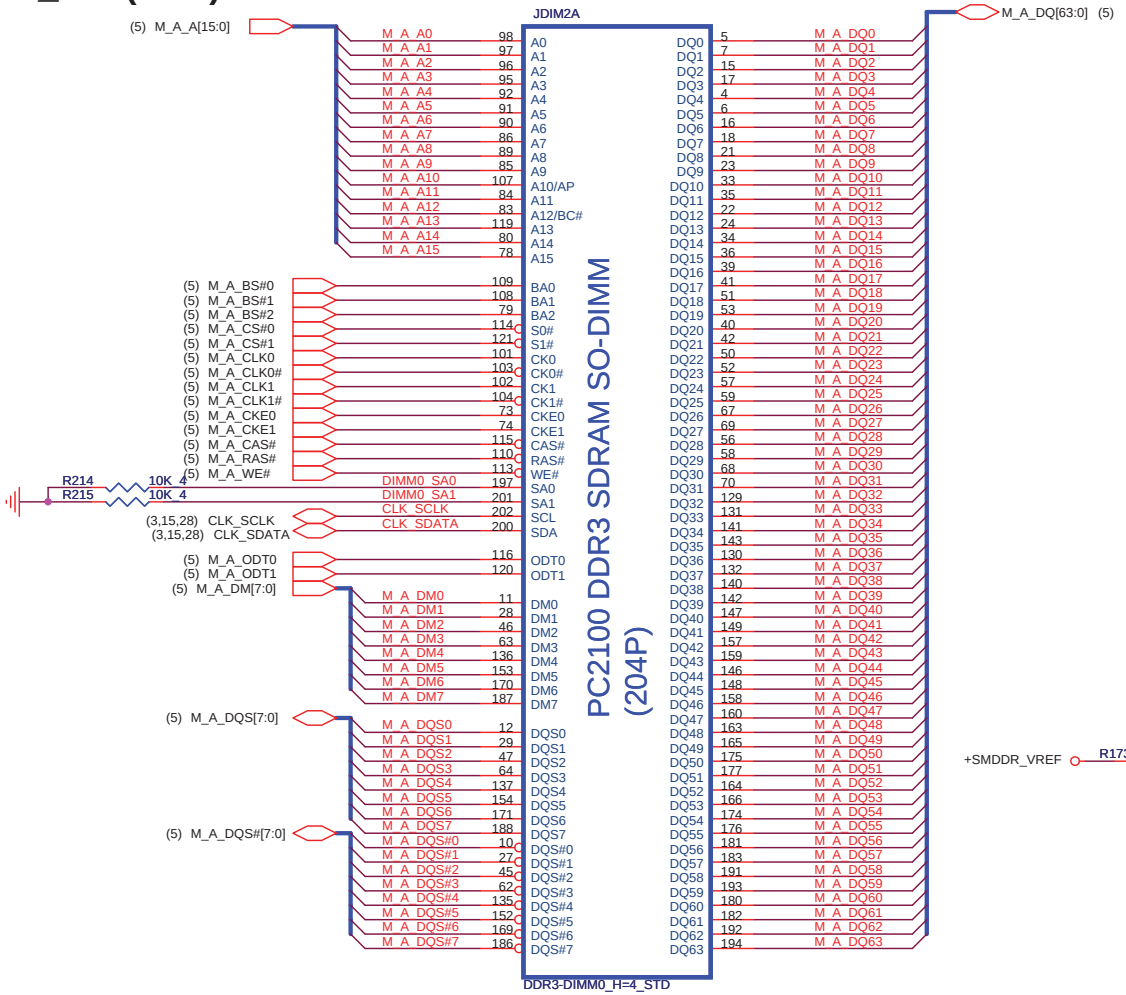
Quanta Computer Inc.

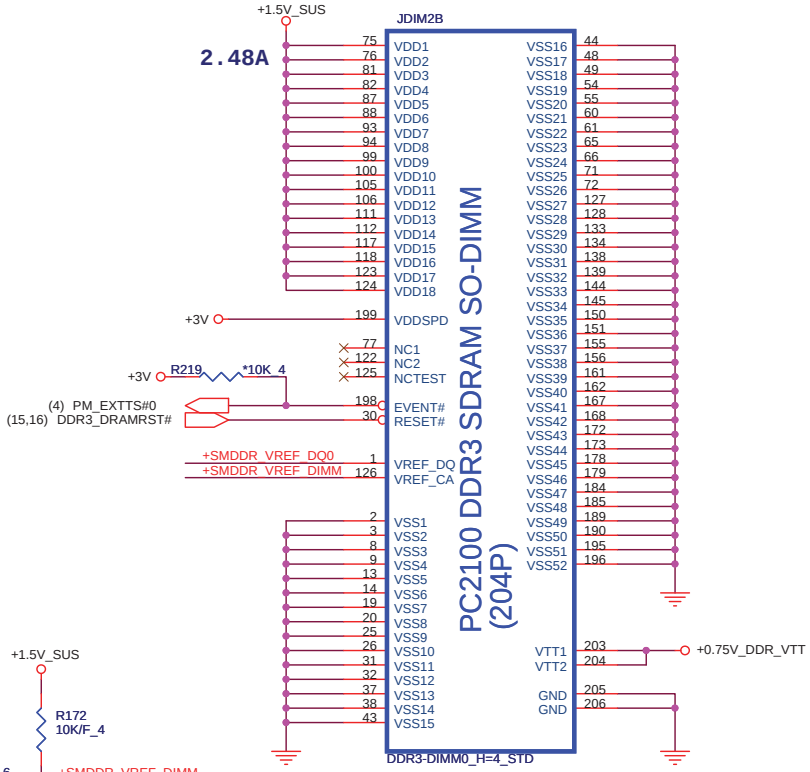
PROJECT : ZQ1

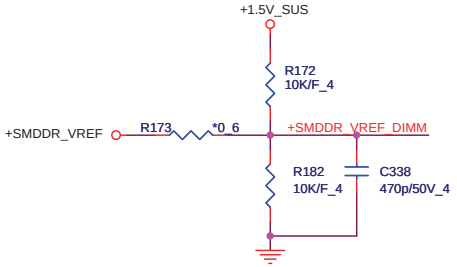
Size	Document Number	Rev
	IBEX PEAK-M 6/6	1A

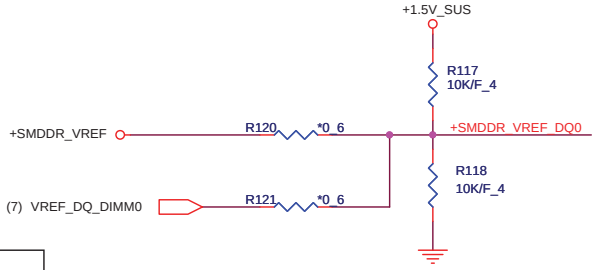
Date: Wednesday, December 16, 2009 Sheet 13 of 48

DDR_STD(DDR)

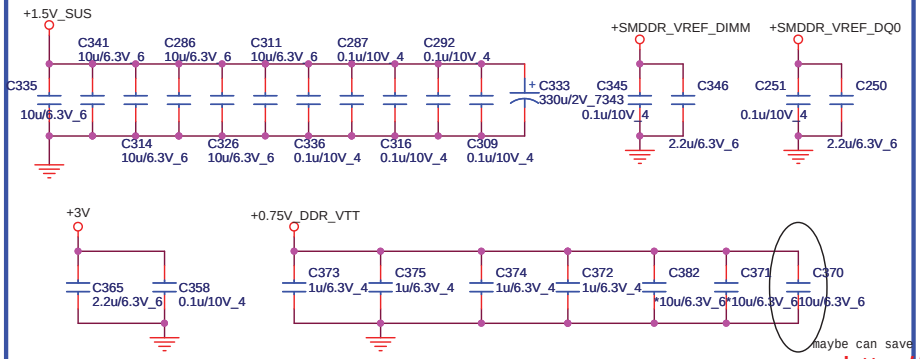








Place these Caps near So-Dimm0.



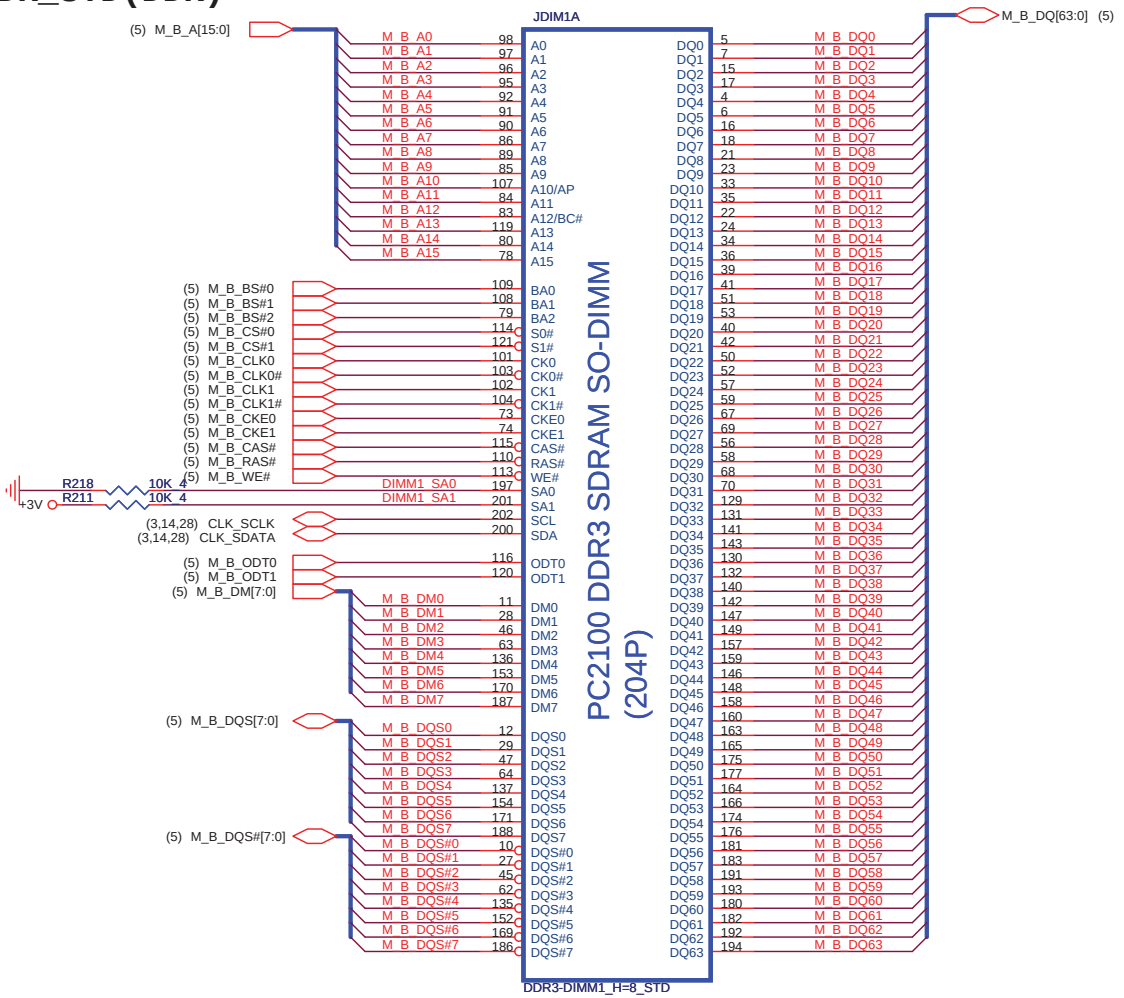
	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080
Standard 4H type:DDR-C-2013289-204p		

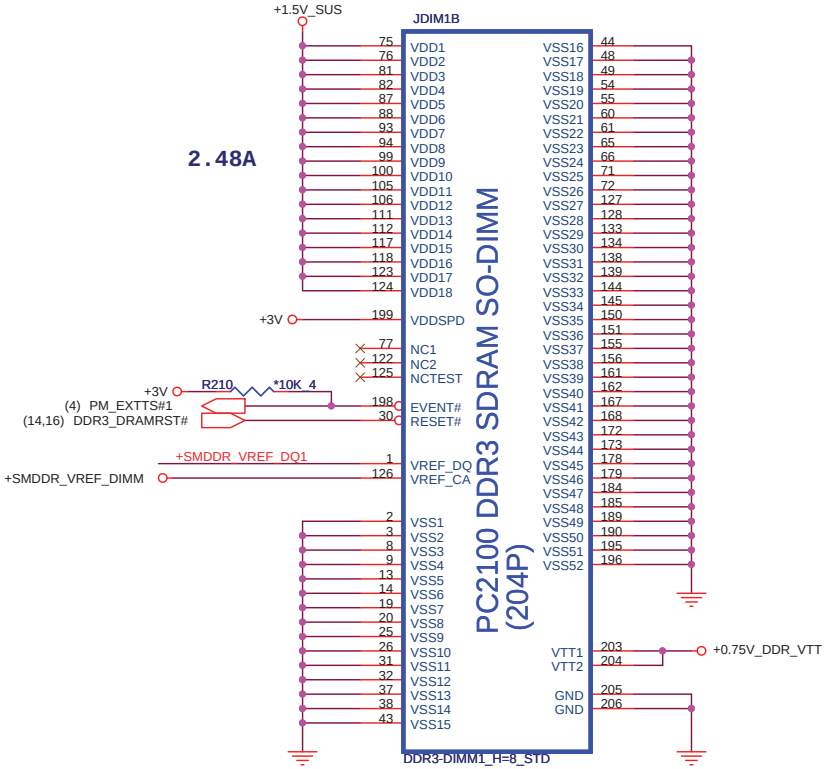
M1:PWR SMDRR_VREF
M1+:voltage divider(Default)
M3:CPU VREF_DQ_DIMM0

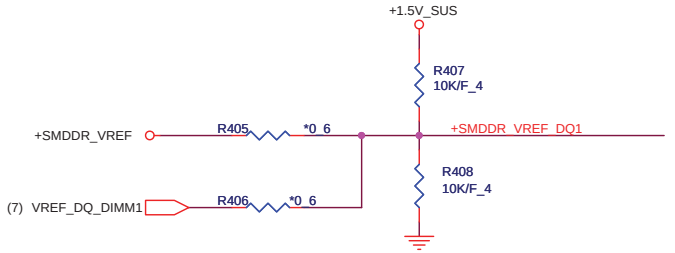
Quanta Computer Inc.
PROJECT : ZQ1

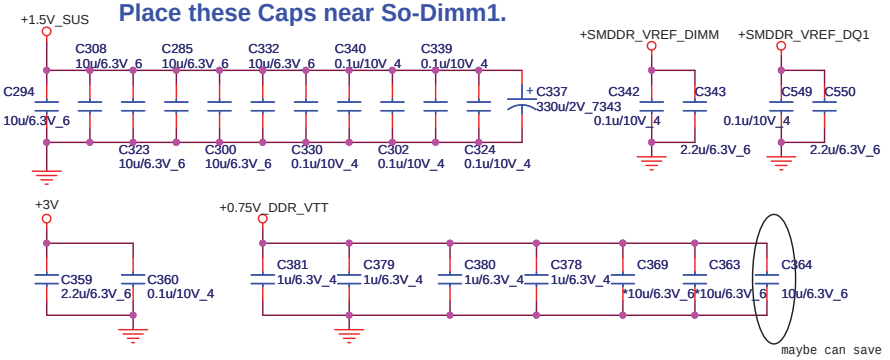
Size	Document Number	Rev
	DDRIII SO-DIMM-0	1A
Date: Friday, January 22, 2010	Sheet 14 of 48	

DDR_STD(DDR)









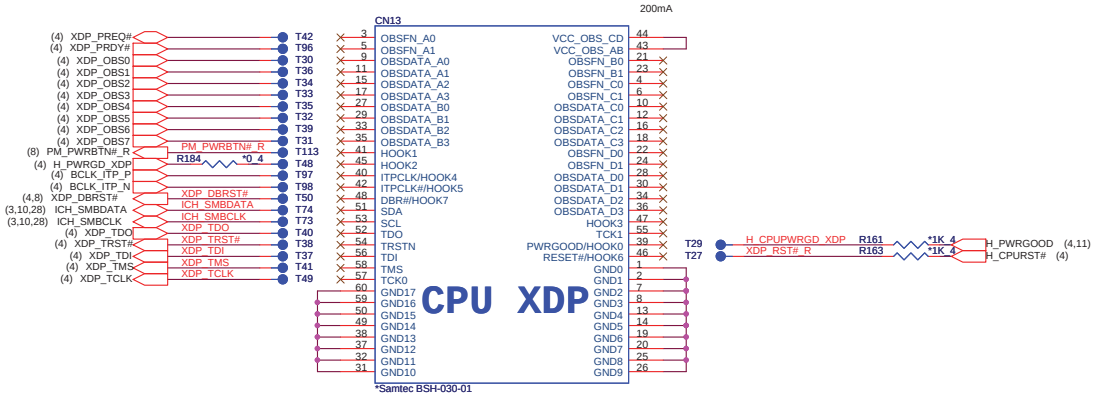
	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080
Standard 8H type:DDR-C-2013310-204p-1		

M1:PWR SMDRR_VREF
M1+:voltage divider(Default)
M3:CPU VREF_DQ_DIMM0

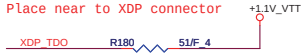
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	DDRIII SO-DIMM-1	1A
Date: Friday, January 22, 2010	Sheet 15 of 48	

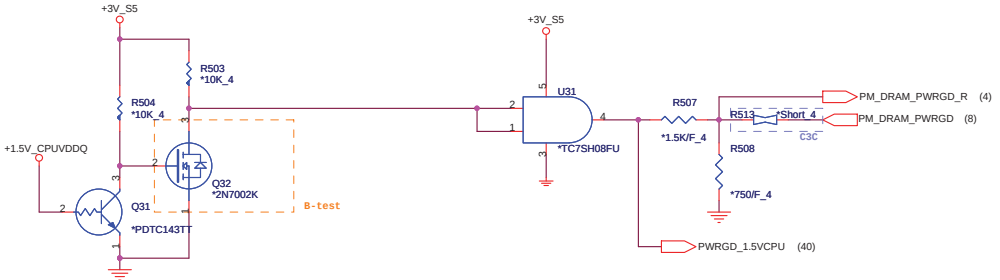
CPU XDP Connector(CPU)

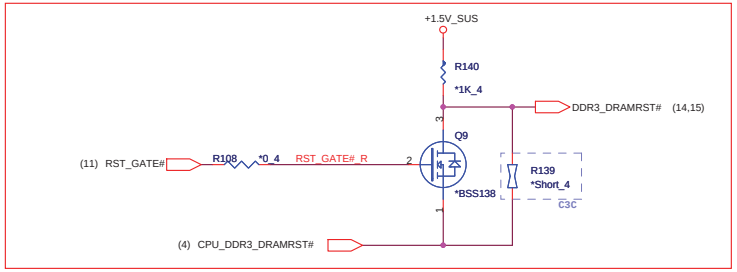


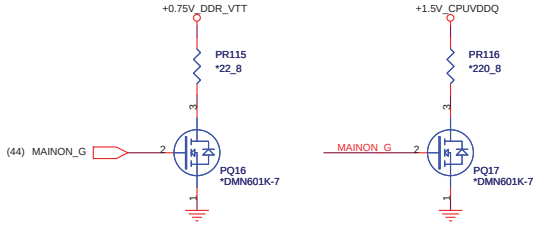
Place near to XDP connector

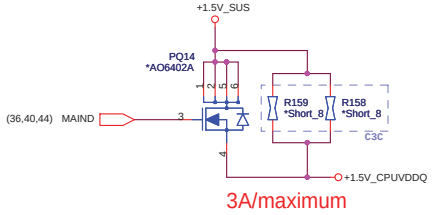


S3 leakage solution(CLG)







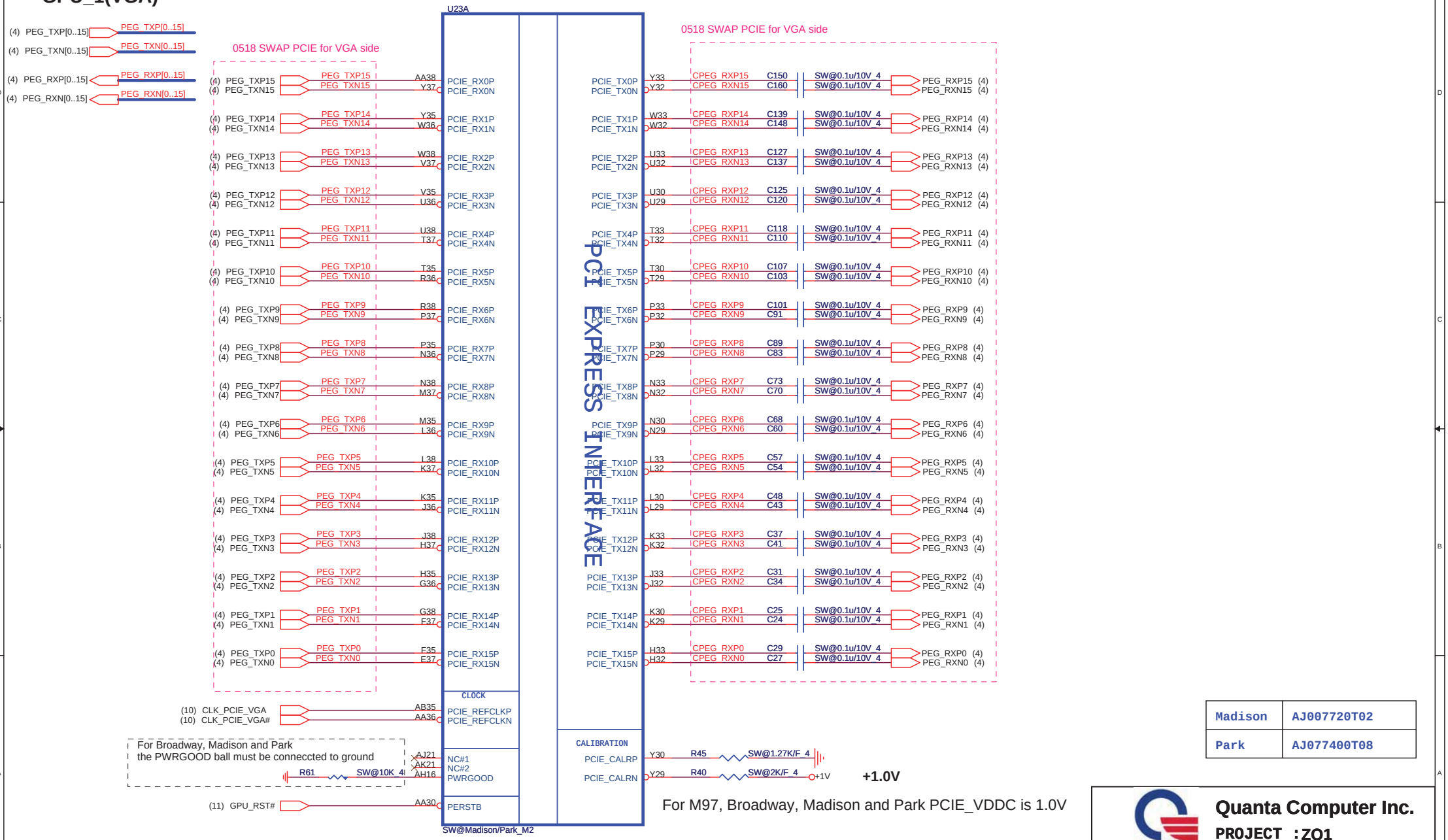


3A/maximum

Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	XDP	1A
Date: Friday, January 22, 2010	Sheet 16 of 48	

GPU_1(VGA)



+1.0V

For M97, Broadway, Madison and Park PCIE_VDDC is 1.0V

Madison	AJ007720T02
Park	AJ077400T08

Quanta Computer Inc.
PROJECT : ZQ1

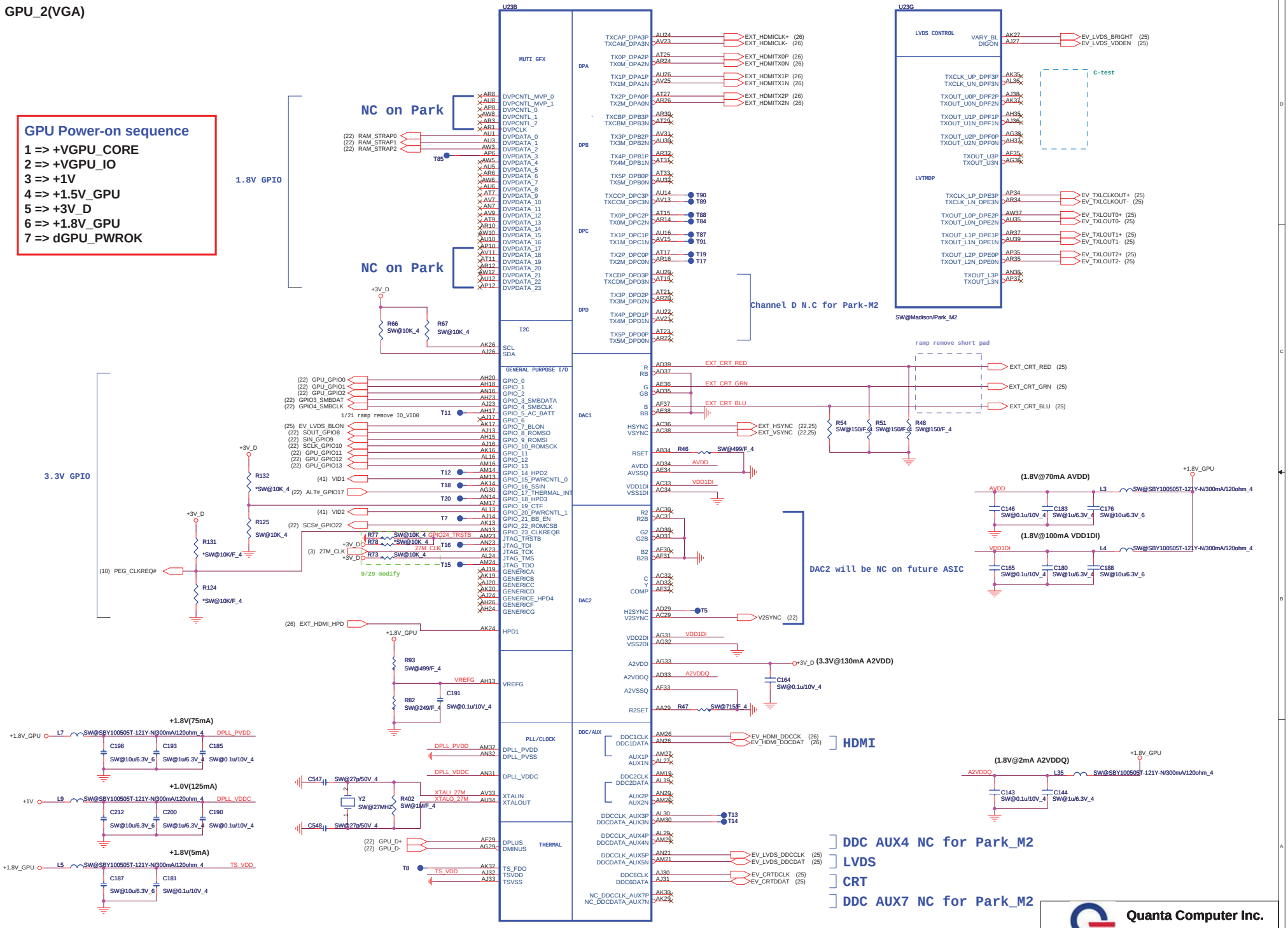
Size	Document Number	Rev
	Madison/Park M2-PCIE I/F	1A

Date: Friday, January 22, 2010 Sheet 17 of 48

GPU_2(VGA)

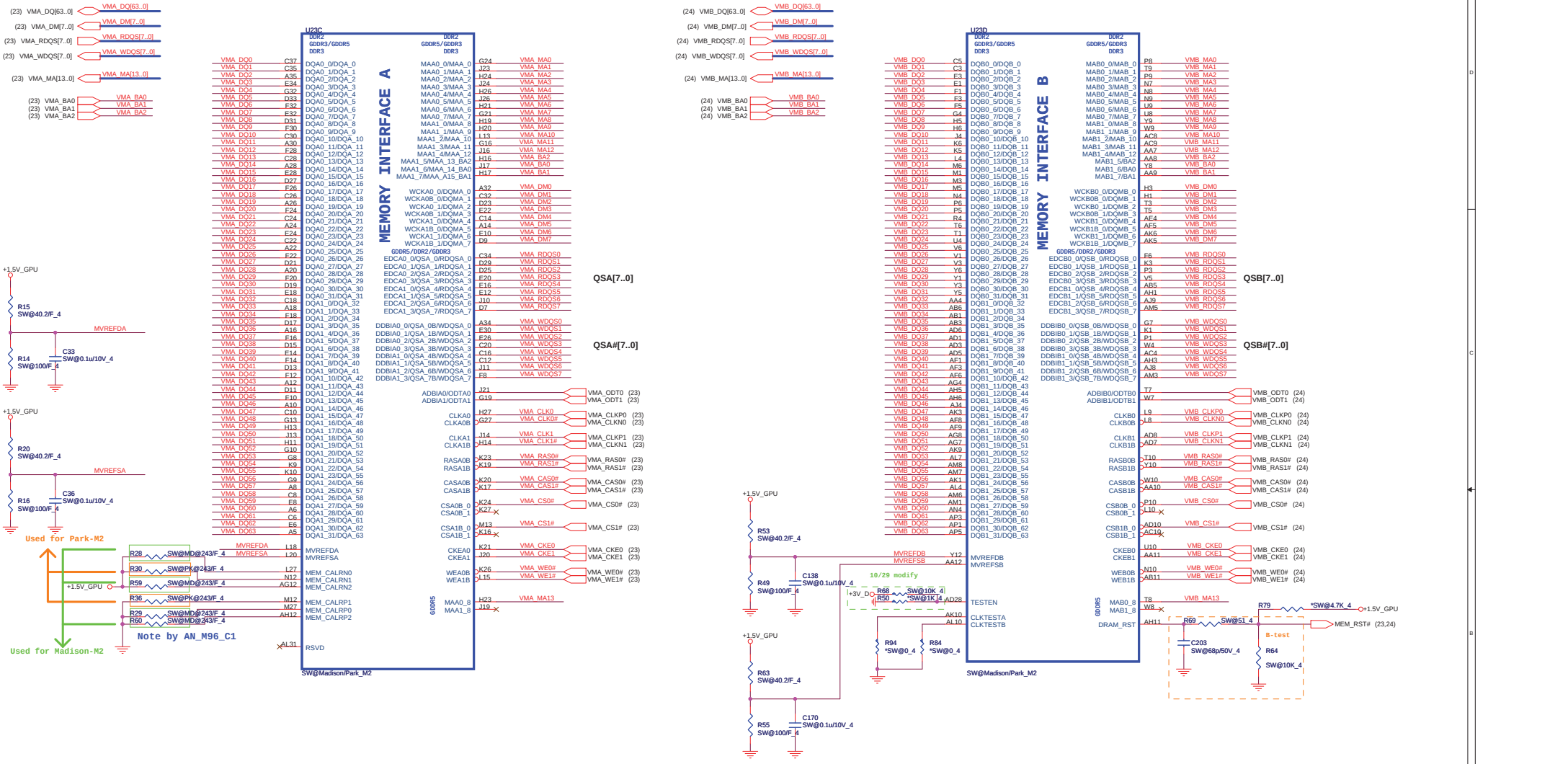
GPU Power-on sequence

1 => +VGPU_CORE
2 => +VGPU_IO
3 => +1V
4 => +1.5V_GPU
5 => +3V_D
6 => +1.8V_GPU
7 => dGPU_PWROK

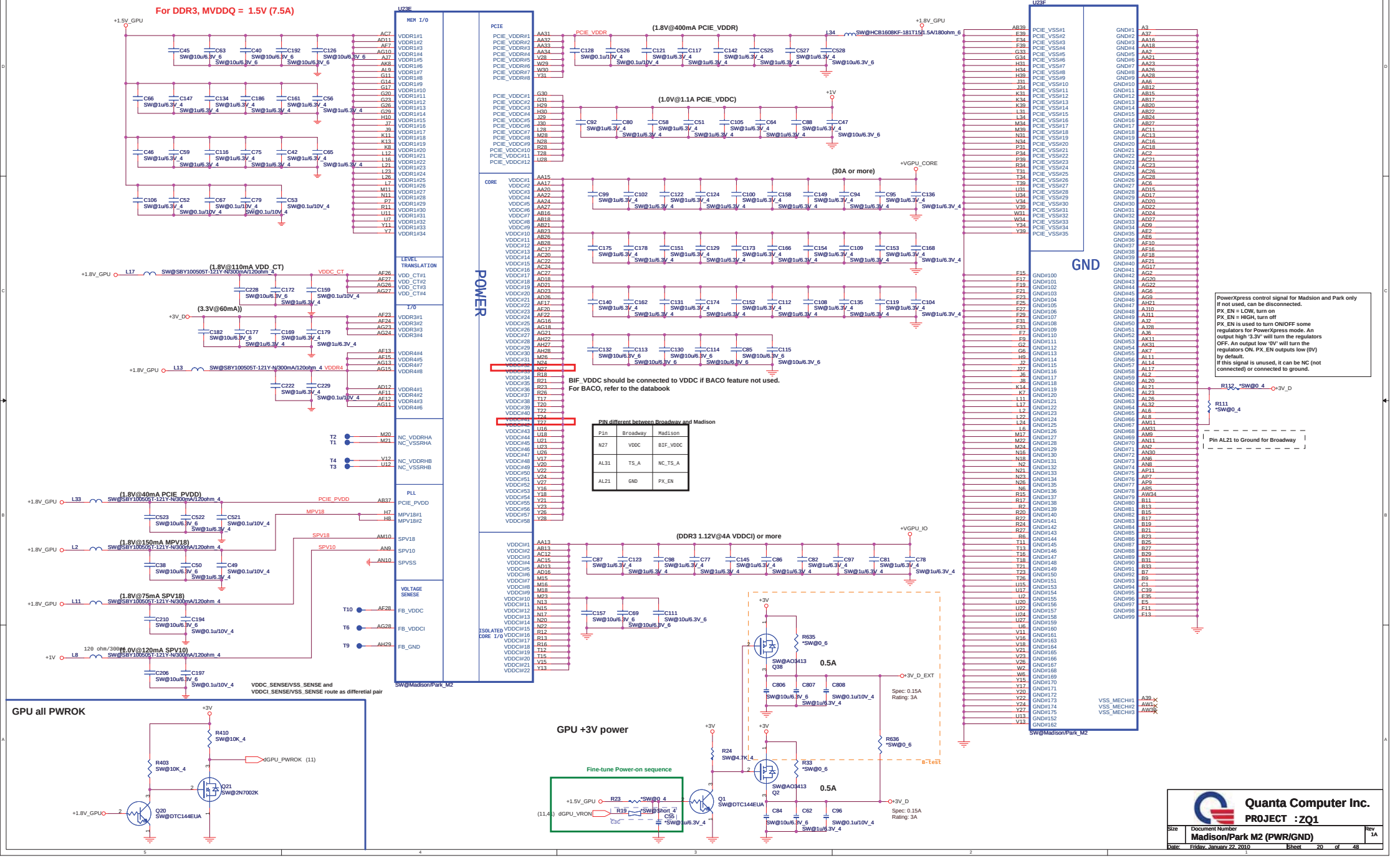


GPU_3(VGA)

Park M2-channel B used(S3 package use Channel A)



GPU_4(VGA)

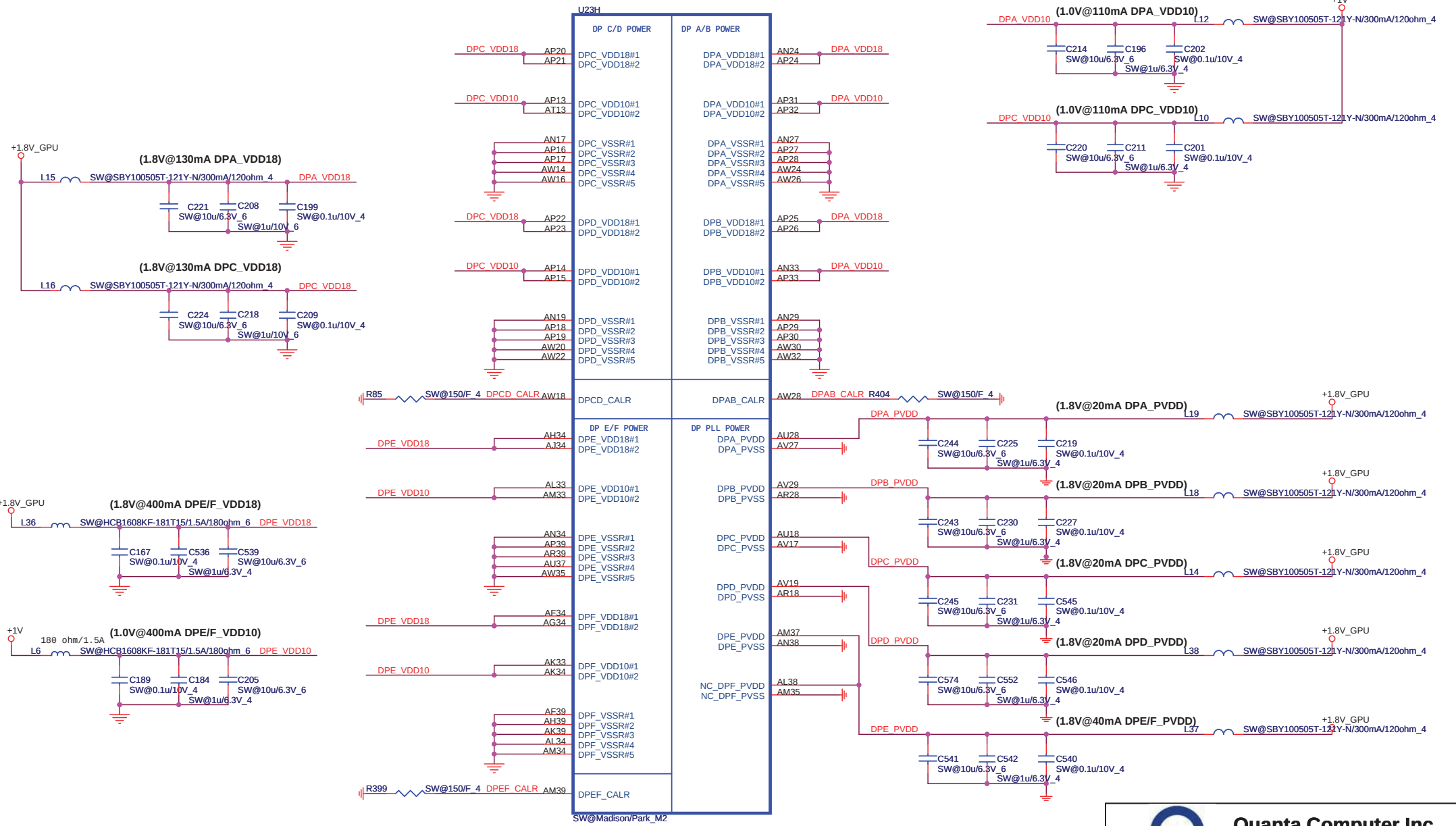


Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	Madison/Park M2 (PWR/GND)	1A

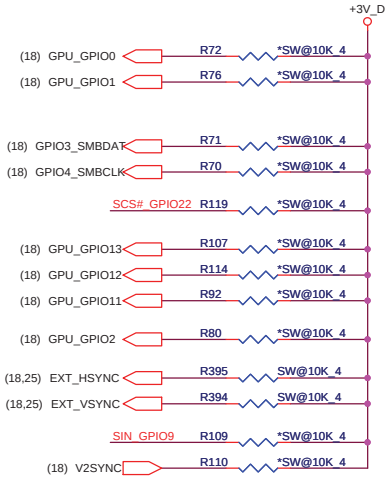
Date: Friday, January 22, 2010 Sheet 20 of 48

GPU_5(VGA)



Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: Madison/Park M2 (DP_PWR/GND)	Rev 1A
Date: Thursday, January 21, 2010	Sheet 21 of 48	

PIN STRAPS(VGA)



ROM Table		
Manufacturer	Part Number	Code
Numonyx ST Microelectronics	M25P05A	100
	M25P10A	101
	M25P20	101
	M25P40	101
	M25P80	101
Chingis PMC	Pm25LV512A	100
	Pm25LV010A	101

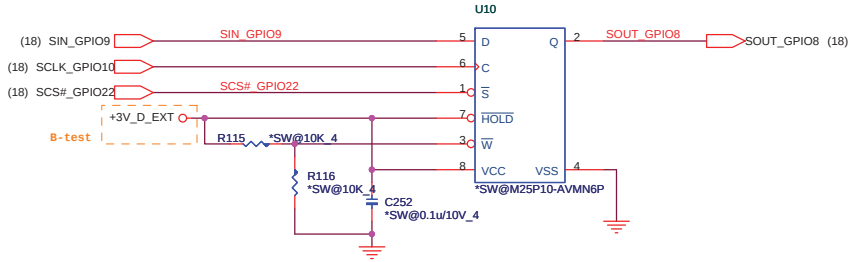
ROM Table		
EXT_HSYNC	EXT_VSYNC	Discription
0	0	No Audio
0	1	Any one by dectec
1	0	DP only
1	1	Both DP & HDMI

CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	DEFAULT	REMARK
TX_PWRS_ENB	GPIO0	0 = 50% TX OUTPUT SWING 1 = FULL TX OUTPUT SWING	0	
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED 0 = TX DE-EMPHASIS DISABLED 1 = TX DE-EMPHASIS ENABLED	0	
BIOS_ROM_EN	GPIO_22_ROMCSB	ENABLE EXTERNAL BIOS ROM 0 = DISABLE 1 = ENABLE	1	
ROMIDCFG(2:0)	GPIO[13:11]	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT NUMONYX M25P10A : 101	101	See ROM table
BIF_GEN2_EN_A	GPIO2	0 = PCIE DEVICE AS 2.5GT/S CAPABLE 1 = PCIE DEVICE AS 5GT/S CAPABLE	0	
GPIO_8_ROMSO H2SYNC GPIO_21_BB_EN	GPIO8 H2SYNC GPIO21	Reserved Only	0	
AUD[1] AUD[0]	HSYNC VSYNC	AUD[1:0] 00: NO AUDIO FUNCTION. 01: AUDIO FOR DISPLAYPORT AND HDMI IF ADAPTER IS DETECTED. 10: AUDIO FOR DISPLAYPORT ONLY. 11: AUDIO FOR BOTH DISPLAYPORT AND HDMI.	11	See Audio table
GPIO_9_ROMSI	GPIO9	0 = VGA controller capacity enable	0	
VIP_DEVICE_STRAP_ENA	V2SYNC	0 = DRIVER would ignore the value sample on VHAD_0 during RESET.	0	

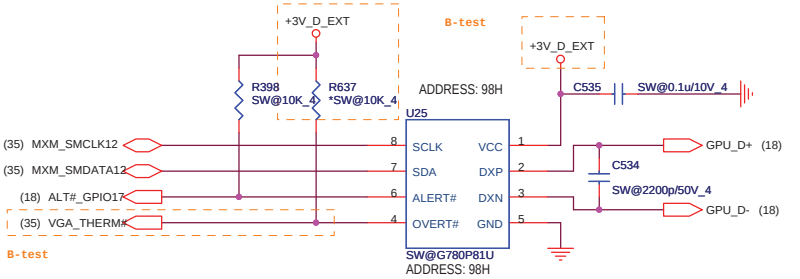
EEPROM(VGA)



Thermal Sensor(VGA)

Vendor	P/N
WINDBOND	AL83L771K01
GMT	AL000780000

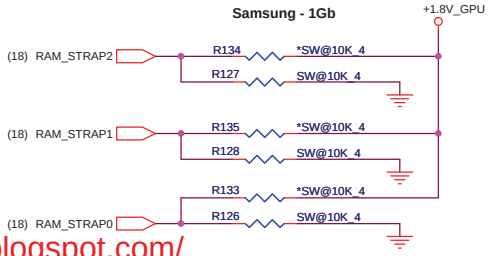
USD0.16



DDR3 Memory Aperture size(GPU)

DDR3 Memory Aperture size						
Vendor	Vendor P/N	STN B/S P/N	Size	RAM_STRAP2 DVPDATA_2	RAM_STRAP1 DVPDATA_1	RAM_STRAP0 DVPDATA_0
Hynix			512Mb	1	1	0
	H5TQ1G63BFR-12C	AKD5LZGTW04 (64M*16)	1Gb	1	0	0
			2Gb	1	0	1
Samsung			512Mb			
	K4W1G1646E-HC12	AKD5LGGT506 (64M*16)	1Gb	0	0	0
	K4W2G1646B-HC12	AKD5MGGT500	2Gb	0	0	1
AMD	23EY2387MA12-SZ	AKD5LGGT700	1Gb	0	1	0

C-test



RAM_STRAP2 SET DDR3 Vendor
RAM_STRAP[1:0] SET SIZE.

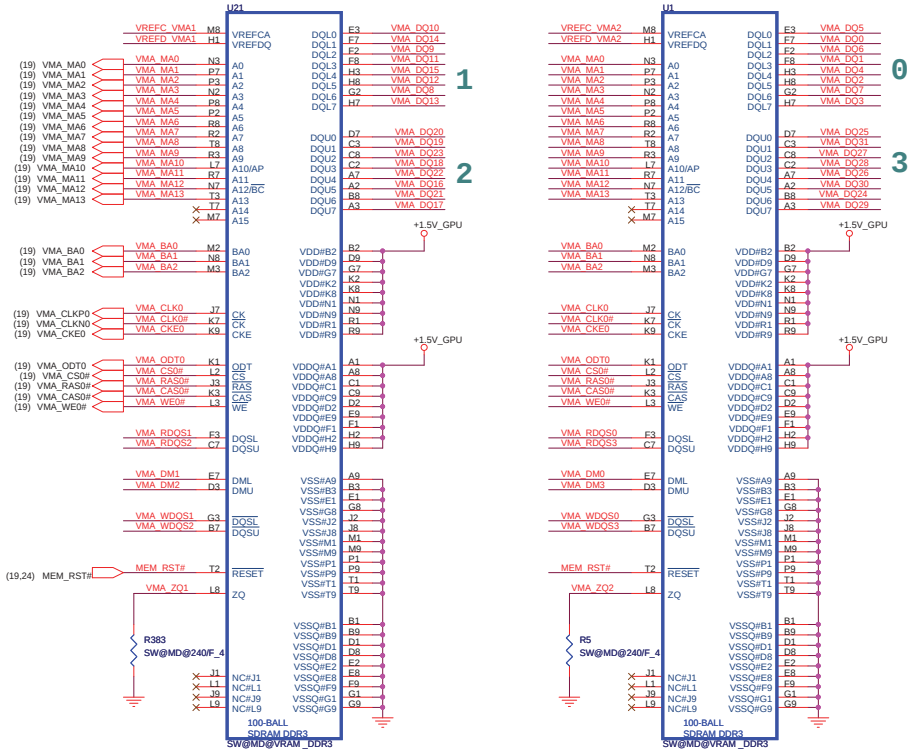
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	Strip/Thermal	1A
Date: Friday, January 22, 2010	Sheet 22 of 48	

CHANNEL A: 512MB DDR3 (16*64M*4pcs)

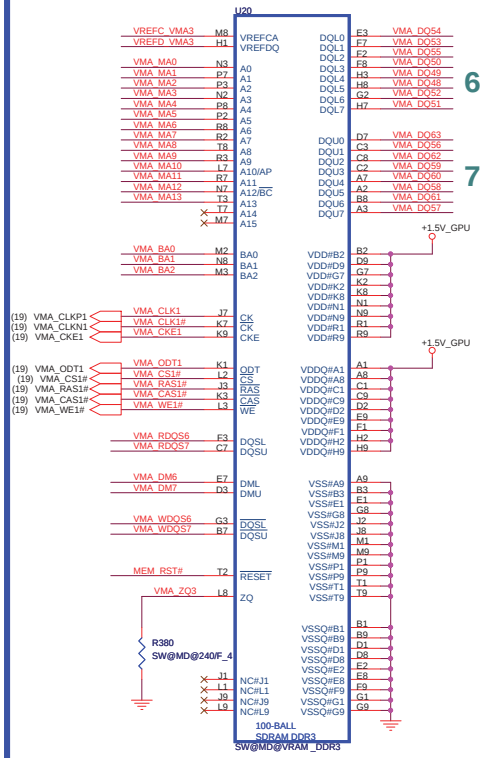
Park, M92M Use Channel B Memory Interface Only

(19) VMA_DQ[63..0] — VMA_DQ[63..0]
(19) VMA_DM[7..0] — VMA_DM[7..0]
(19) VMA_RDQS[7..0] — VMA_RDQS[7..0] — QSA[7..0]
(19) VMA_WDQS[7..0] — VMA_WDQS[7..0] — QSA#[7..0]

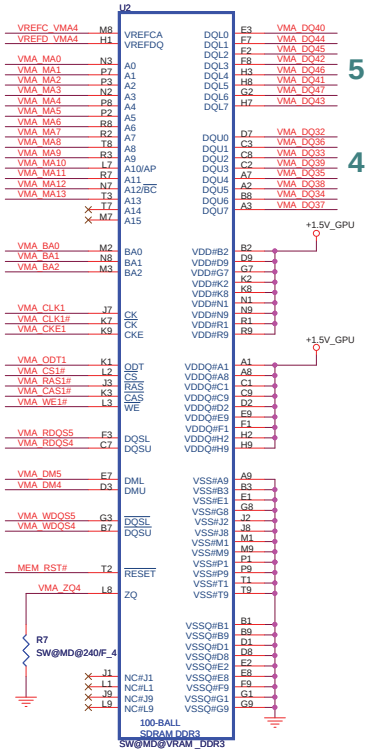


TOP Left

BOT Left

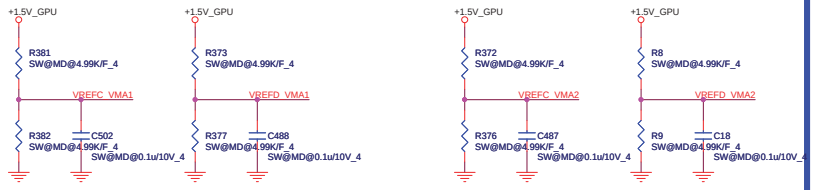


BOT Right

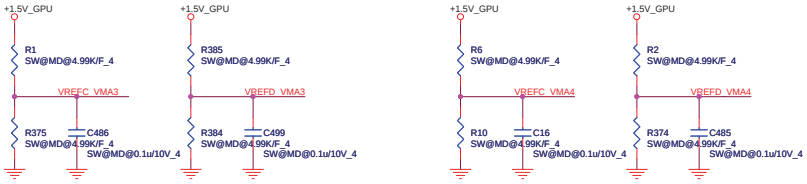


TOP Right

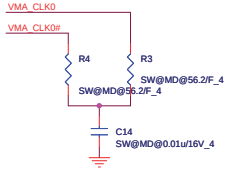
Group-A0 VREF



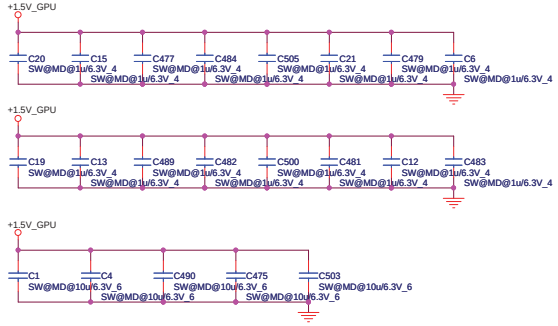
Group-A1 VREF



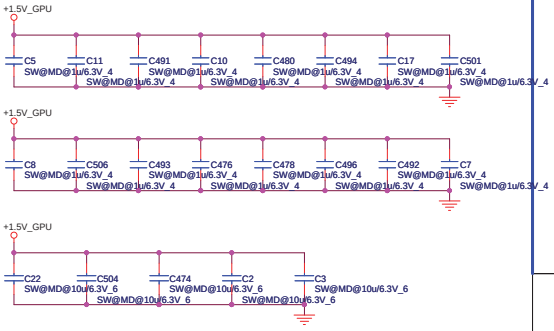
MEM_A0 CLK



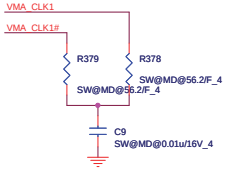
Group-A0 decoupling CAP



Group-A1 decoupling CAP

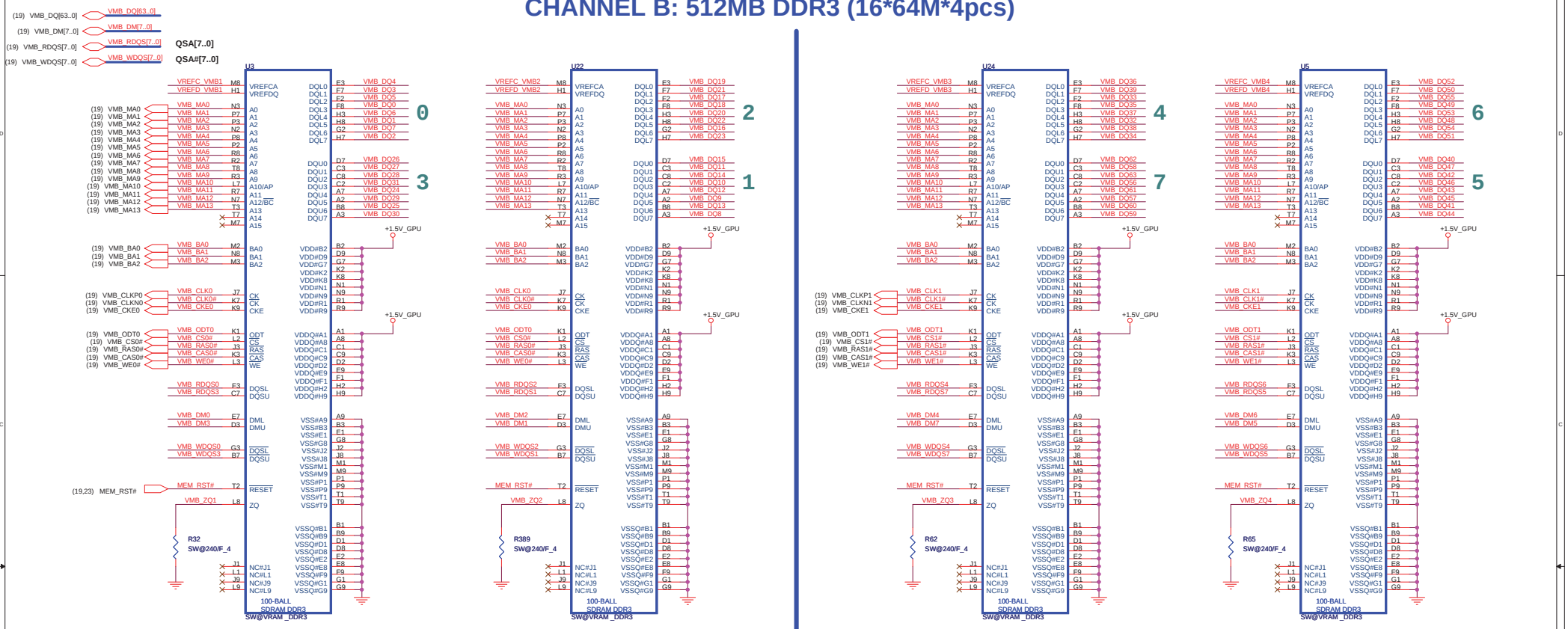


MEM_A1 CLK

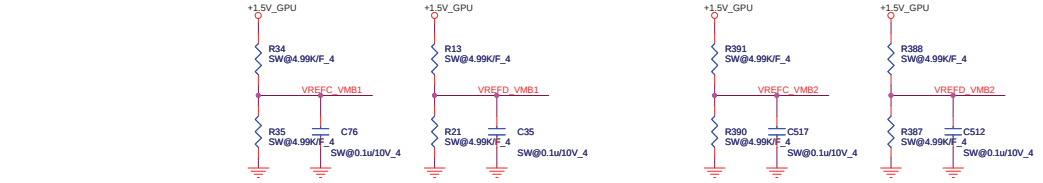


Quanta Computer Inc.
PROJECT : ZQ1
Size | Document Number | Rev 1A
MEMORY 1 channel A
Date: Friday, January 22, 2010 | Sheet 23 of 48

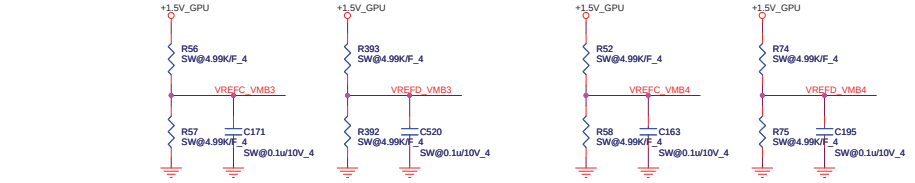
CHANNEL B: 512MB DDR3 (16*64M*4pcs)



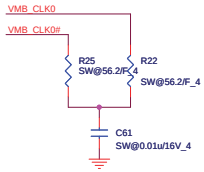
Group-B0 VREF



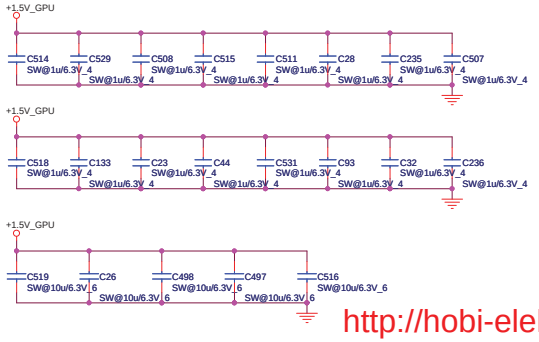
Group-B1 VREF



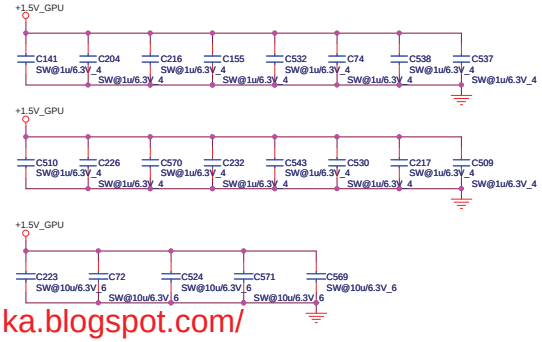
MEM_B0 CLK



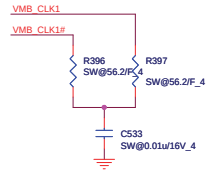
Group-B0 decoupling CAP



Group-B1 decoupling CAP



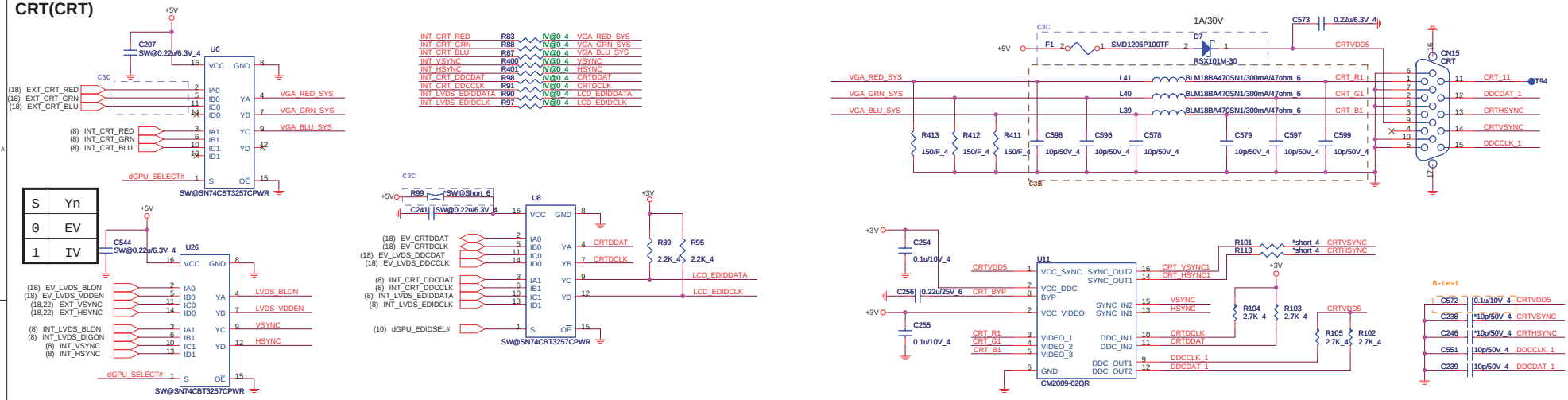
MEM_B1 CLK



Quanta Computer Inc.
PROJECT : ZQ1

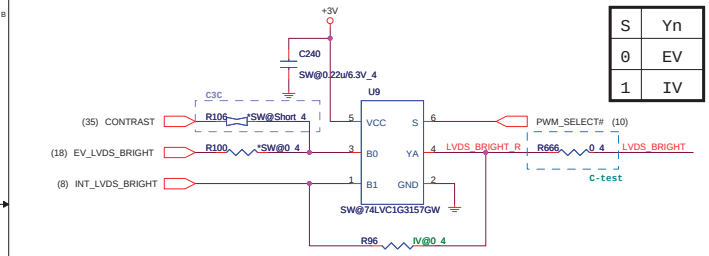
Size	Document Number	Rev
	MEMORY 2 channel B	1A
Date: Friday, January 22, 2010	Sheet 24 of 48	

CRT(CRT)

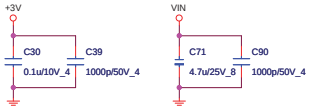


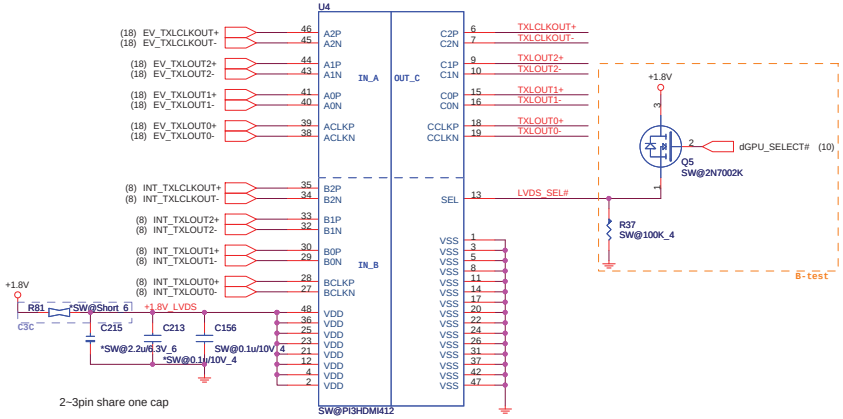
S	Yn
0	EV
1	IV

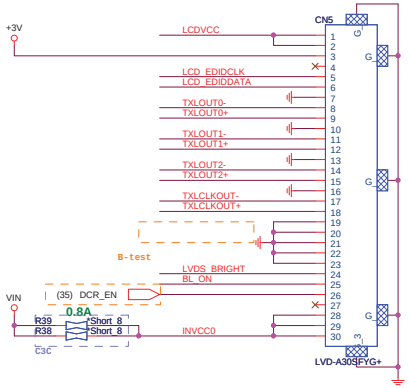
LVDS(LDS)



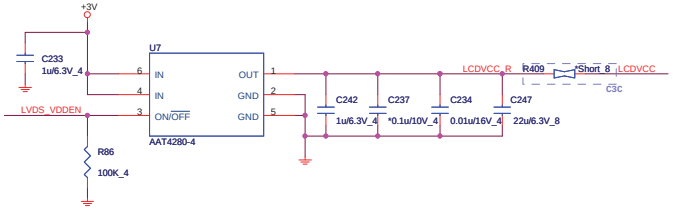
S	Yn
0	EV
1	IV



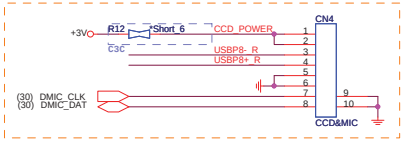




LCD Power(LDS)

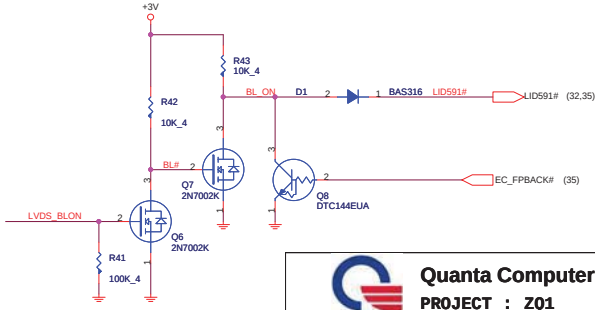


CCD&DMIC Conn.(CCD)



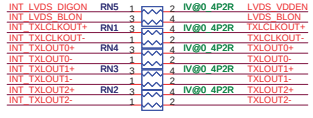
CAMERA Module(CCD)

Backlight Control(LDS)



TI	AL3DV421V00
Pericom	AL000412W00

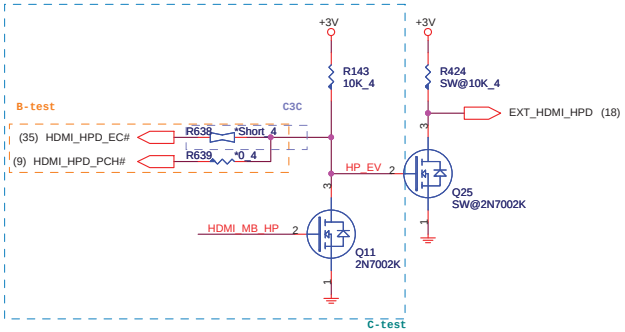
dGPU_SELECT#	Output
L	EV_LVDS
H	INT_LVDS



Quanta Computer Inc.
PROJECT : ZQ1

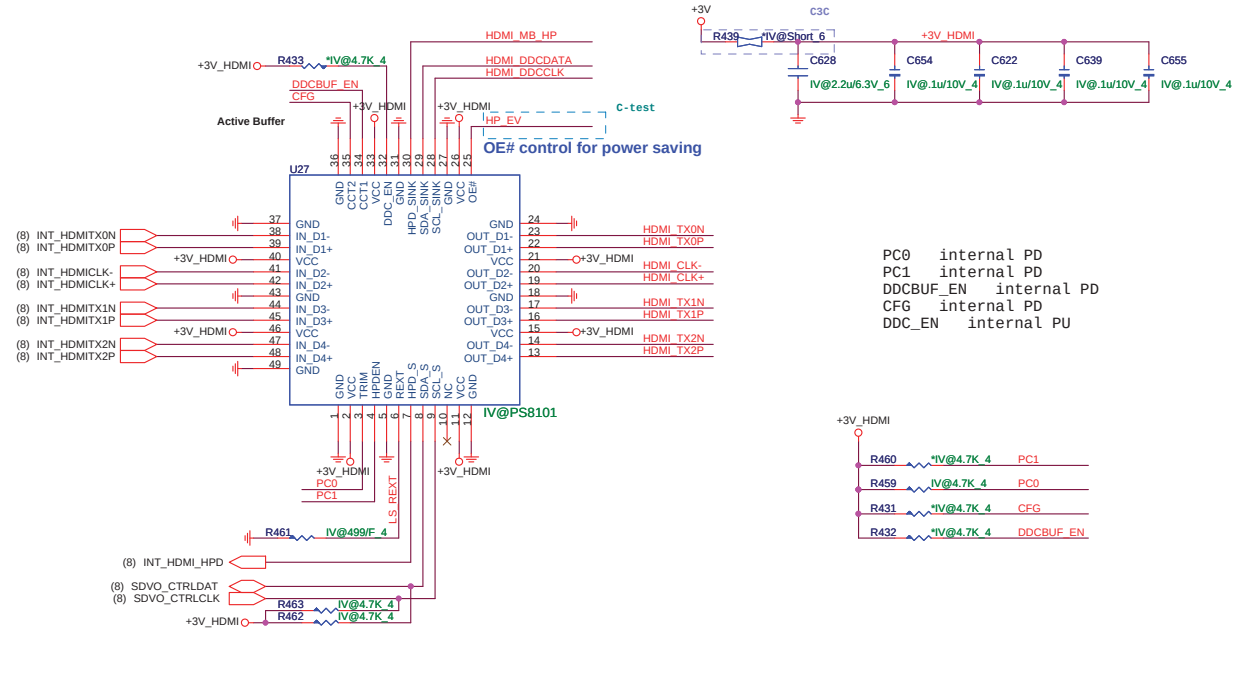
Size	Document Number	Rev
	CRT/LVDS	1A
Date: Friday, January 22, 2010	Sheet 25 of 48	

HDMI HPD(HDM)



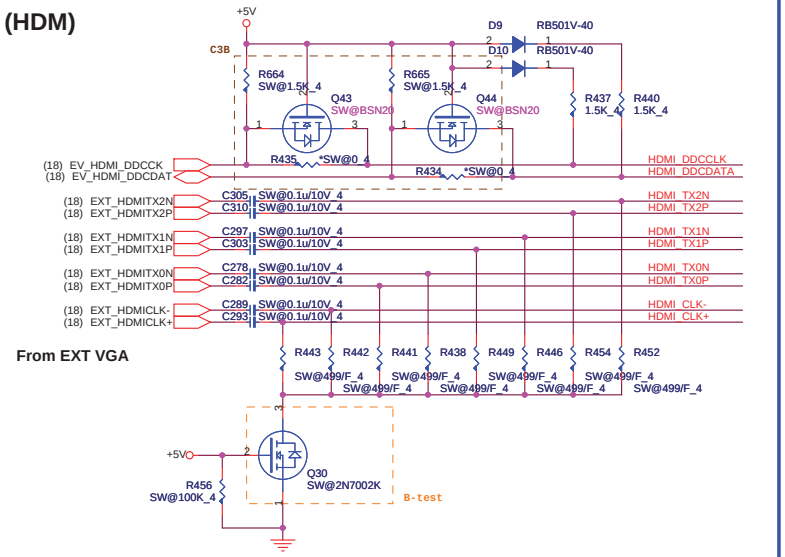
HDMI LEVEL SHIFTER(HDM)

PS8101 :: AL008101000

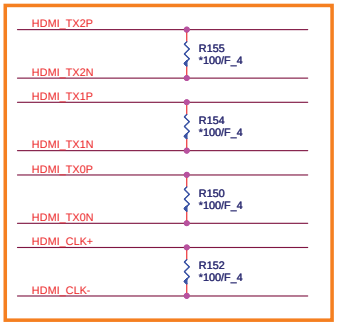


Equalization Control		
PC1 PIN4	PC0 PIN3	EQ Control
L	L	8dB
L	H	4dB
H	L	12dB
H	H	0dB

(HDM)

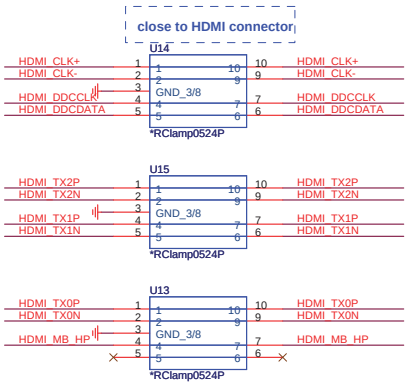


EMI reserve for HDMI(HDM)

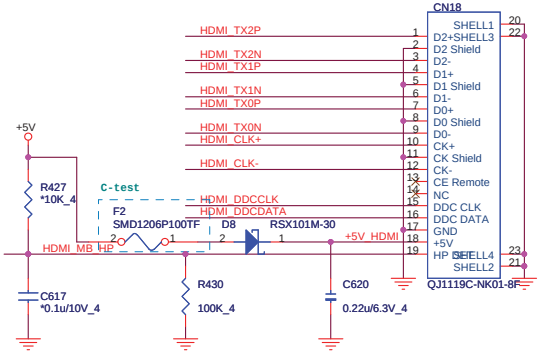


Close connector

ESD Protect



HDMI connector(HDM)

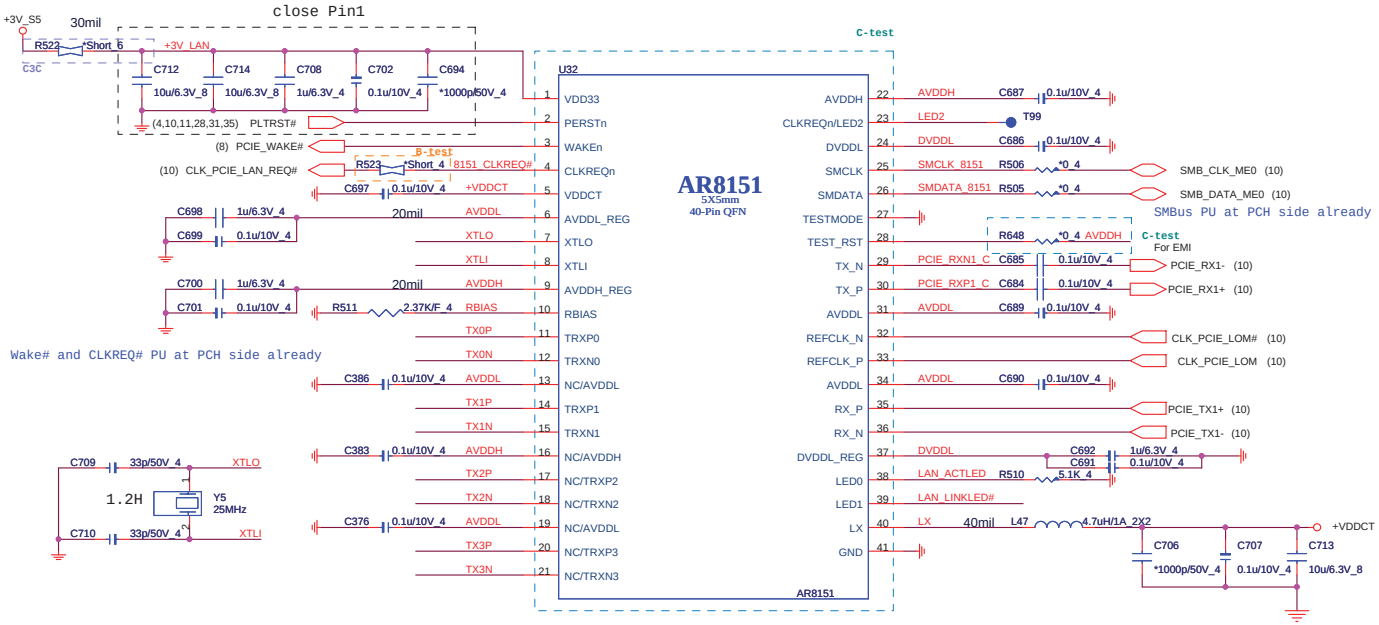


Quanta Computer Inc.

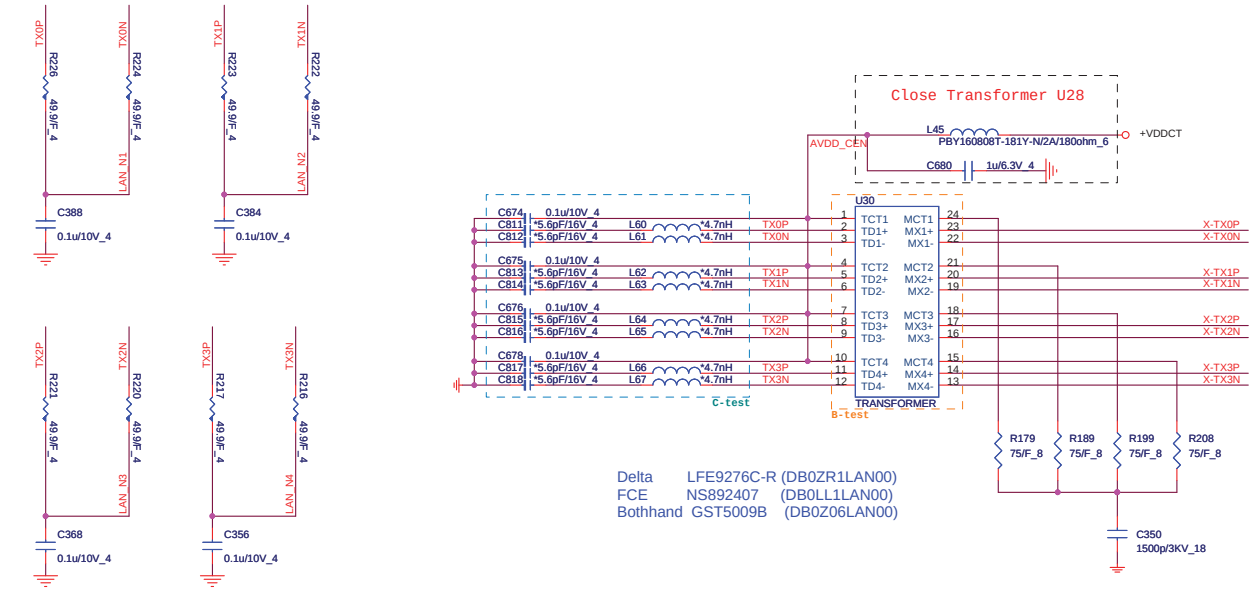
PROJECT : ZQ1

Size	Document Number	Rev
	HDMI	1A
Date: Friday, January 22, 2010	Sheet 26 of 48	

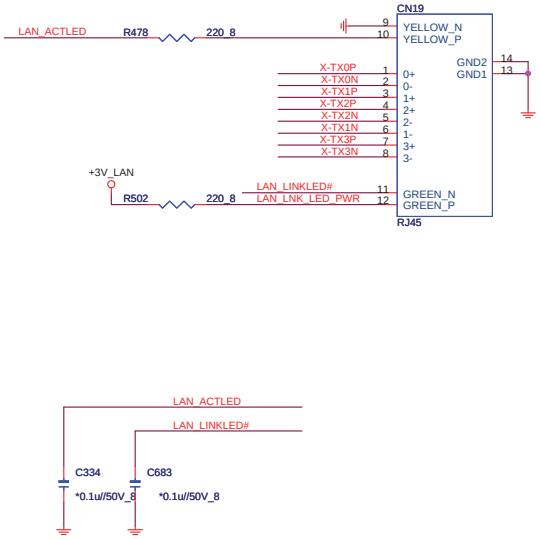
Giga-LAN AR8151(LAN)



TRANSFORMER(LAN)



RJ45(LAN)

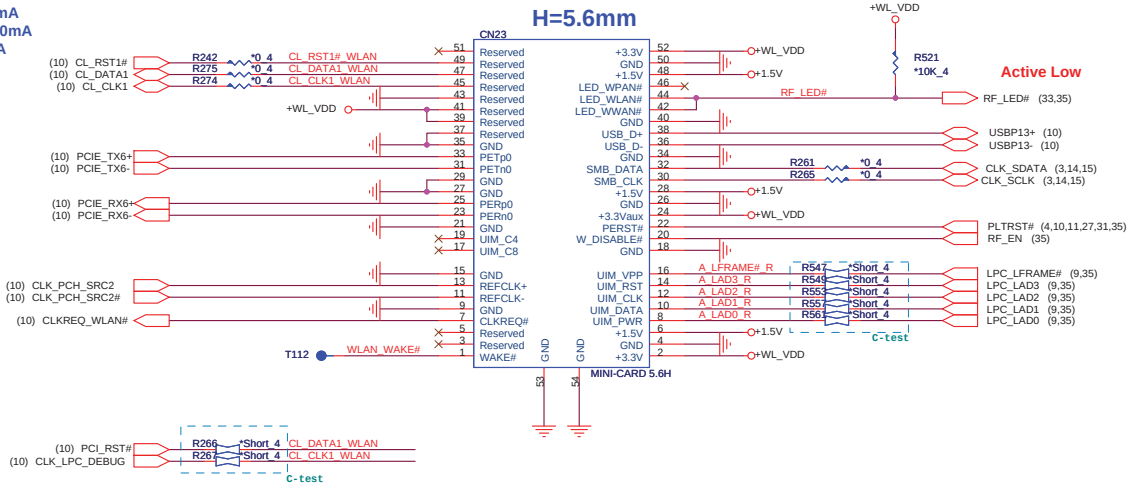


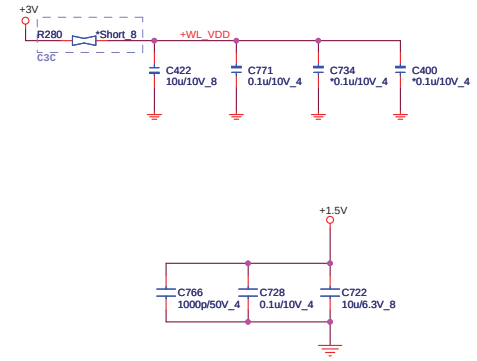
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	LAN (AR8151)	1A
Date: Friday, January 22, 2010	Sheet 27 of 48	

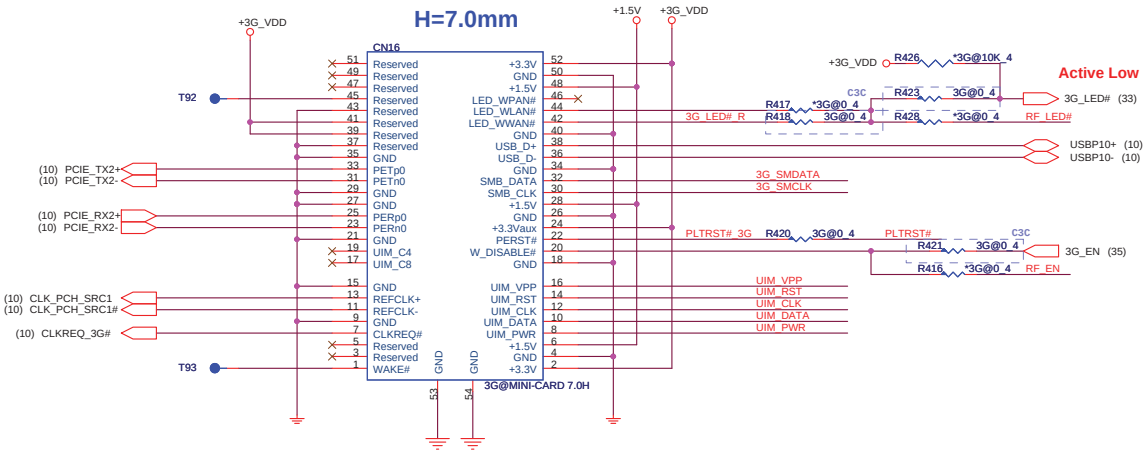
MINI-CARD WLAN(MPC)

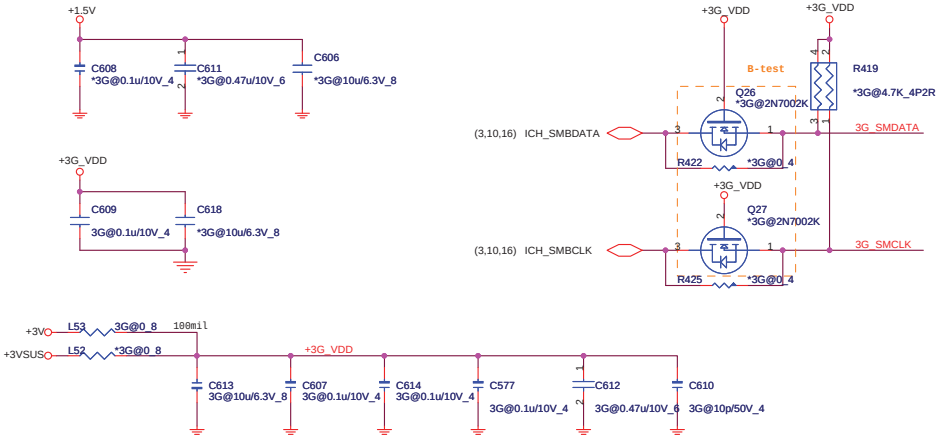
+3.3V: 1000mA
+3.3Vaux:330mA
+1.5V:500mA



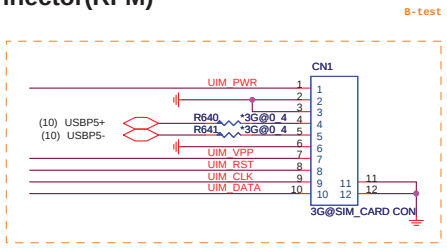


MINI-CARD 3G(MNC)Reserve for JV41-CP



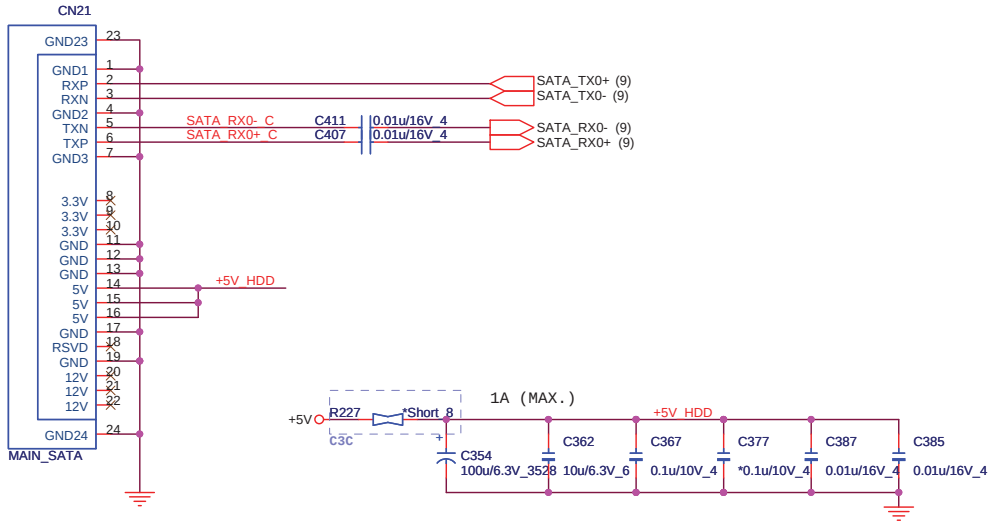


SIM CARD FFC connector(RFM)

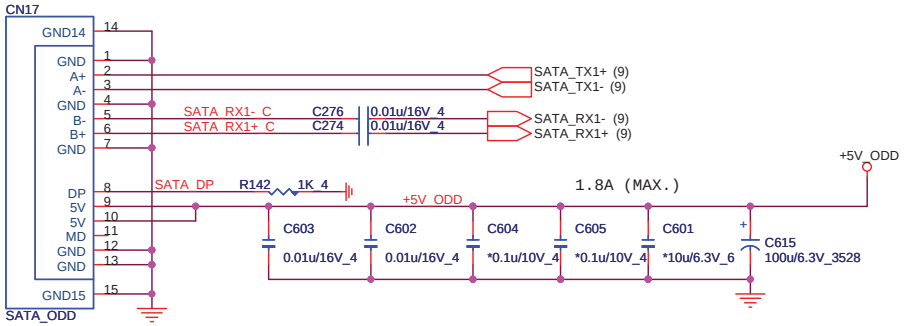


Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: Mini-Card/WL/3G/SIM	Rev: 1A
Date: Friday, January 22, 2010	Sheet 28 of 48	

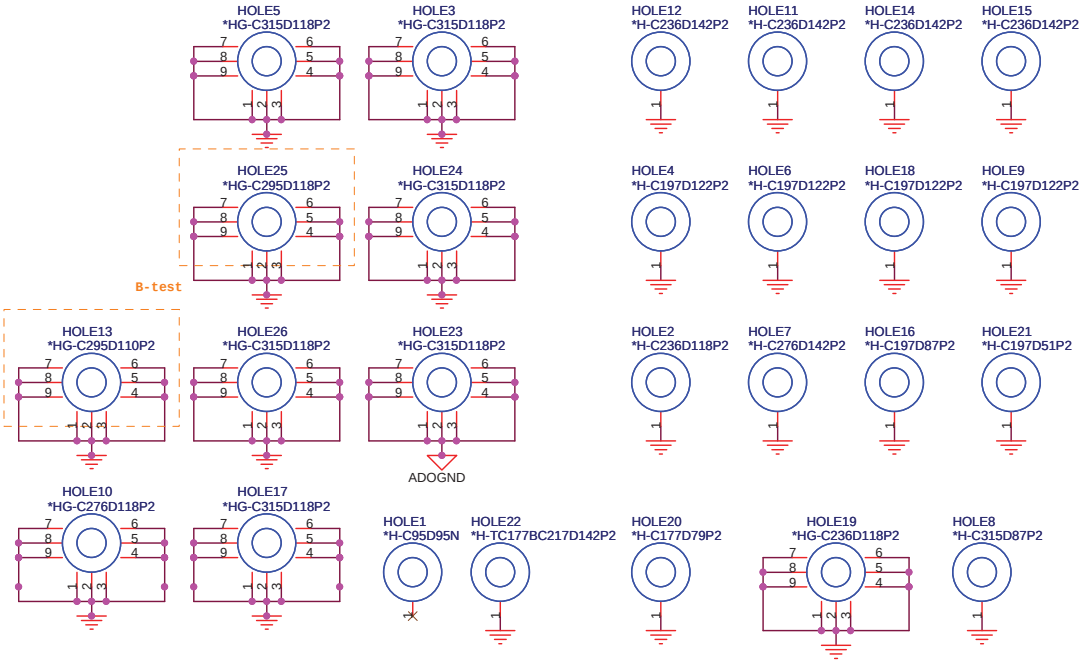
SATA HDD(HDD)



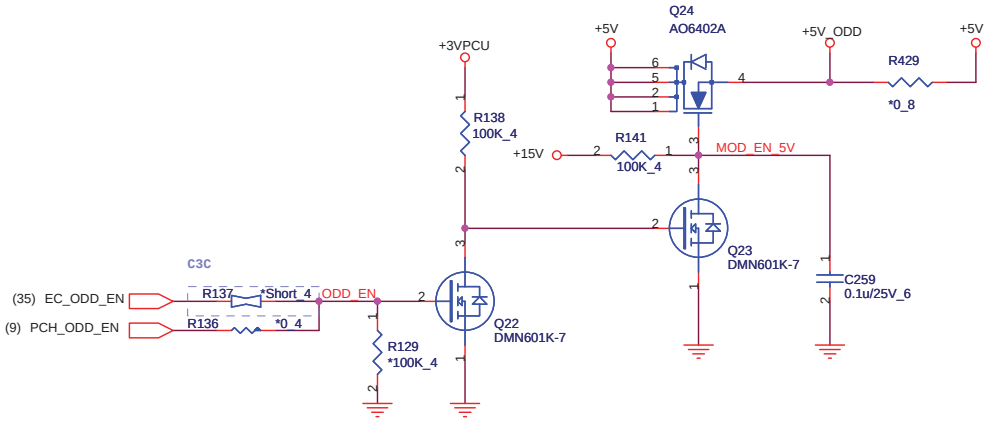
SATA ODD (ODD)



HOLE(OTH)



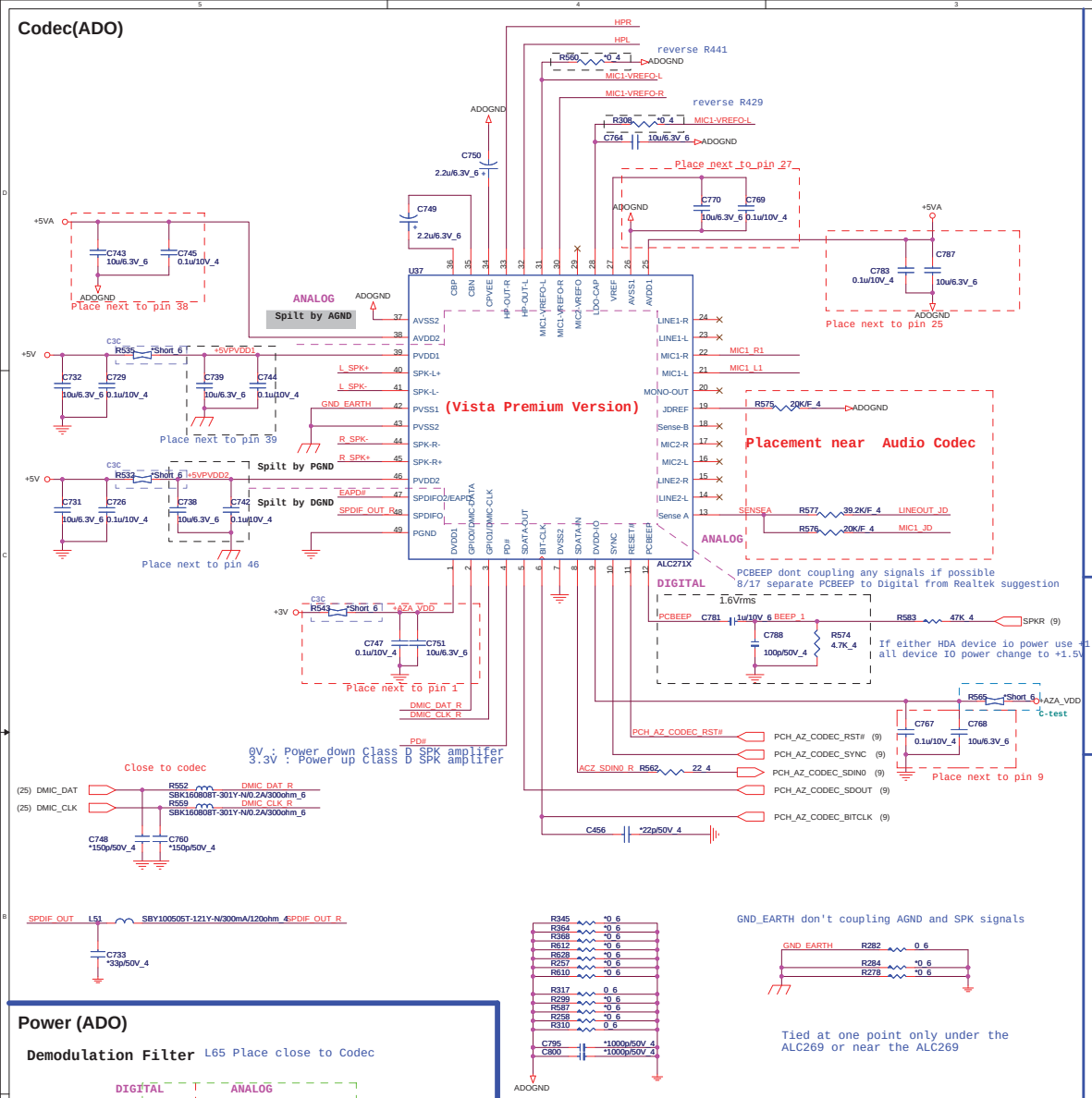
ODD POWER(ODD)



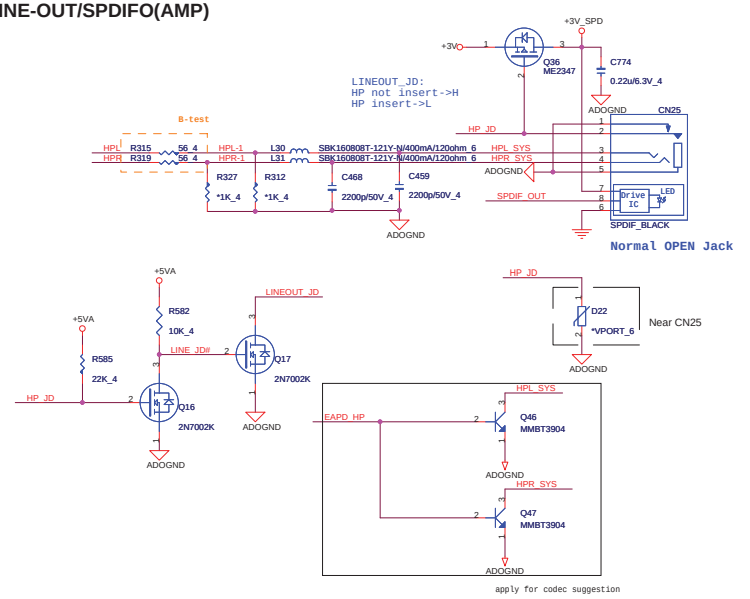
Connect to PCH(GPIO21) pin Y9
and EC pin28(GPIO53)

Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: SATA-HDD/ODD/HOLE	Rev 1A
Date: Friday, January 22, 2010	Sheet 29 of 48	

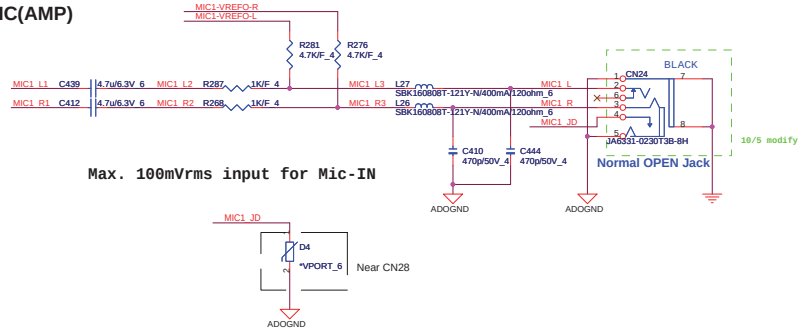
Codec(ADO)



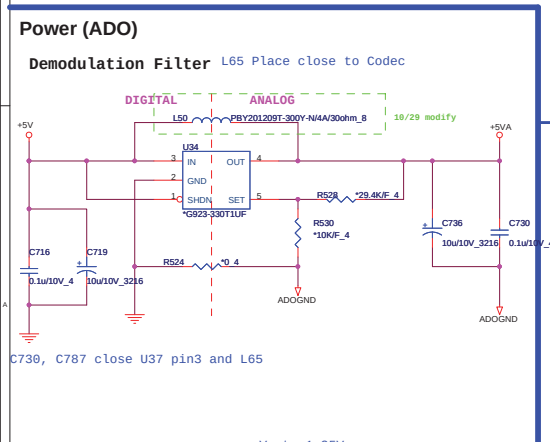
LINE-OUT/SPDIFO(AMP)



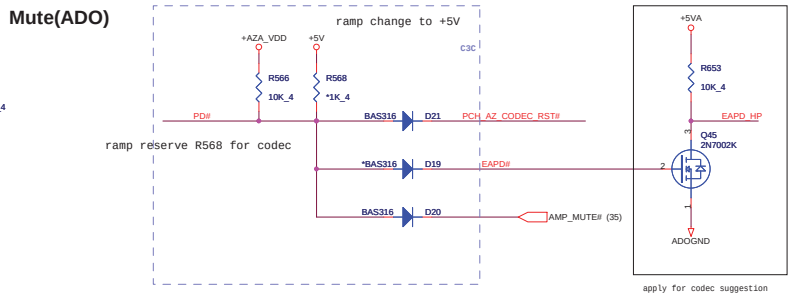
MIC(AMP)



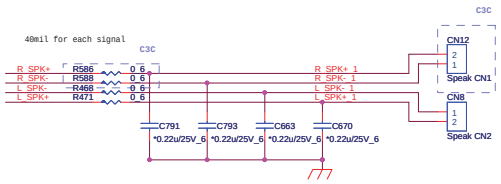
Power (ADO)



Mute(ADO)



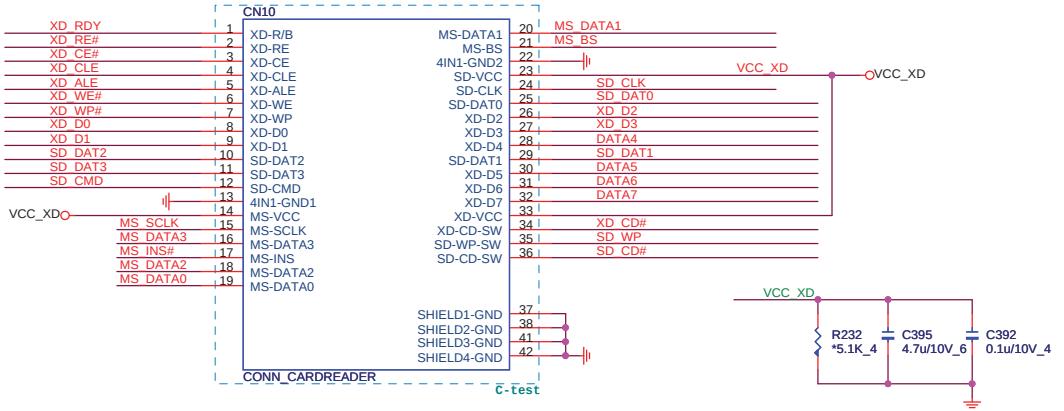
Internal Speaker(AMP)



Quanta Computer Inc.
PROJECT : ZQ1
ALC271X / AMP / SPK
Rev 1A
Date: Friday, January 22, 2010
Sheet 30 of 48

Cardreader(MMC)

4 IN 1 CARD READER (MMC)



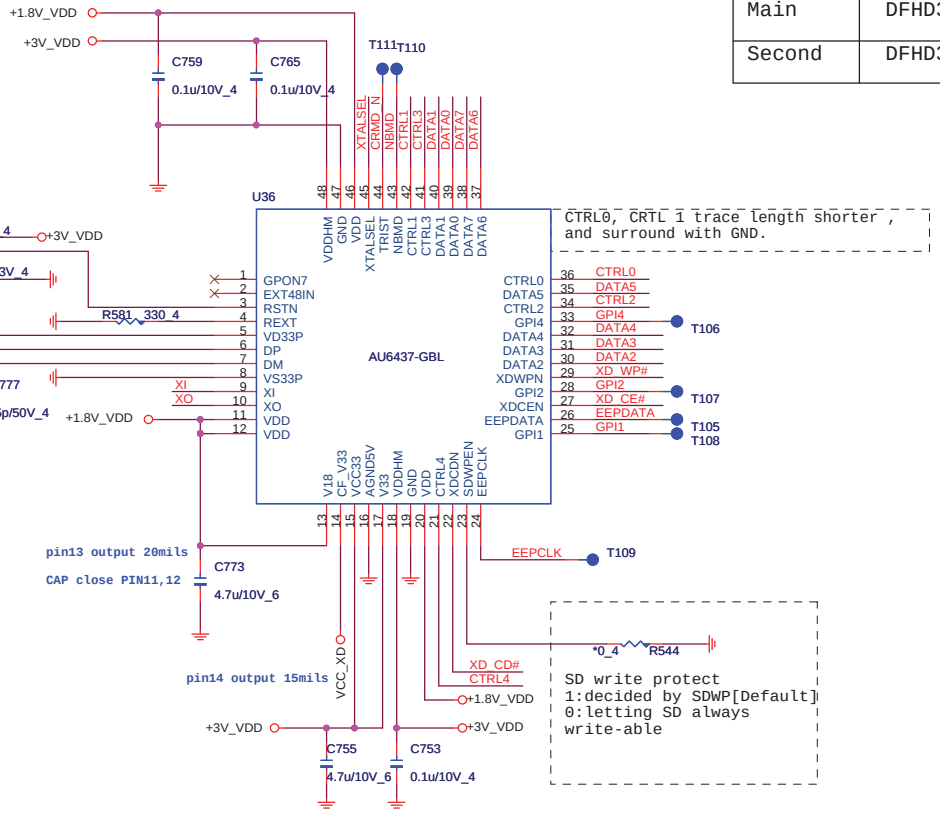
Main	DFHD36MS012
Second	DFHD38MS013

Close to CN14 pin 14 & pin23
4.7u CAP close to pin23

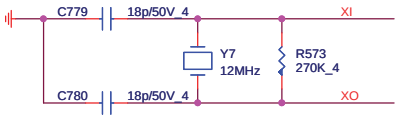
C-test

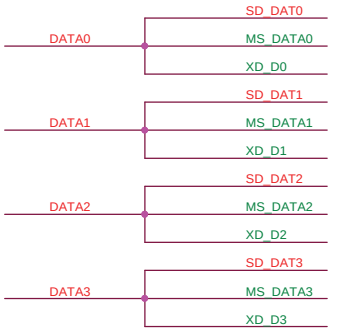
R550 *Short_4 XTALSEL

Clock input selection
'1' for 48MHz input [Default]
'0' for 12MHz input

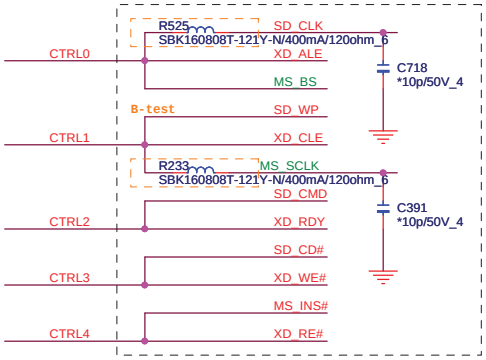


crystal trace width needs at least 10 mils.





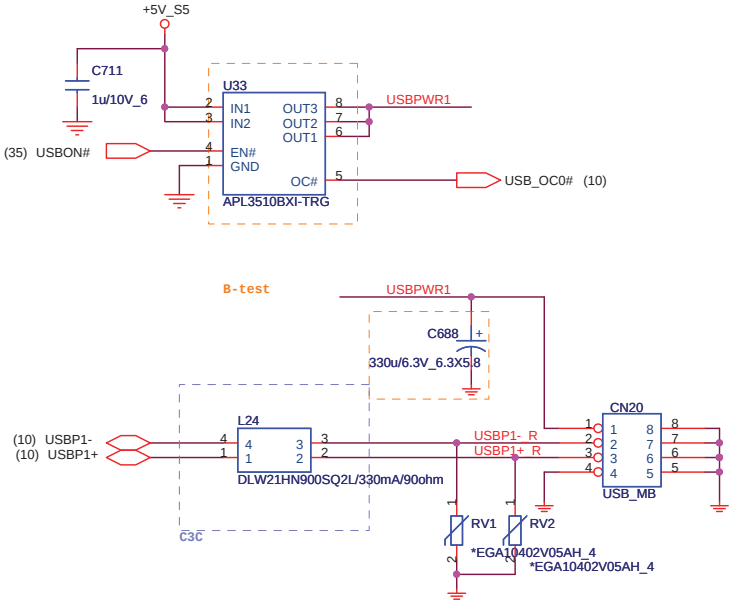
Close to connector



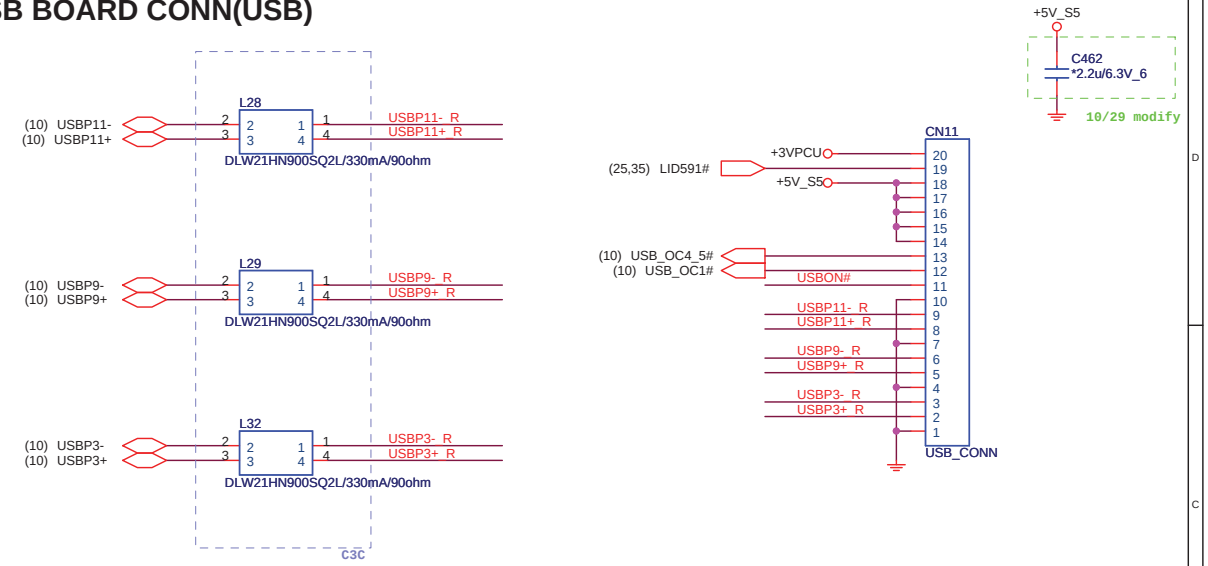
Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	AU6437 CardReader	1A
Date: Friday, January 22, 2010	Sheet 31 of 48	

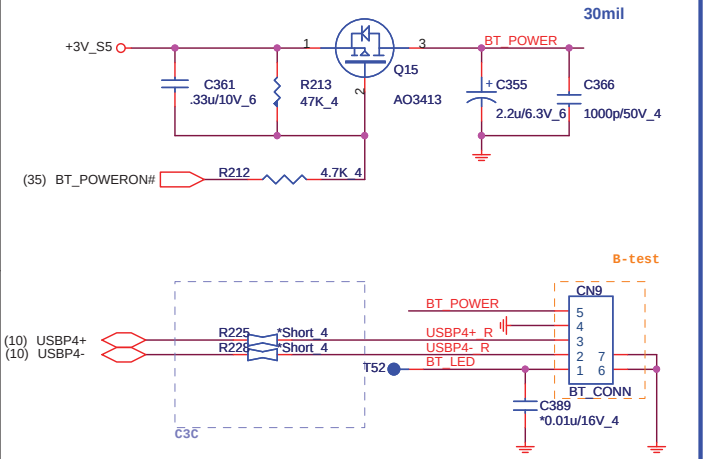
USB PORT(USB)



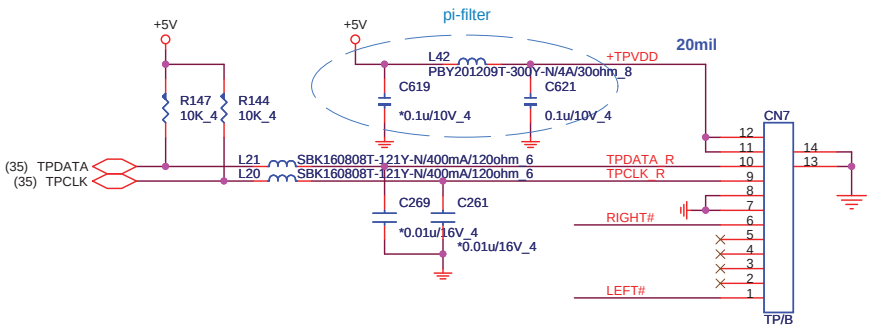
USB BOARD CONN(USB)



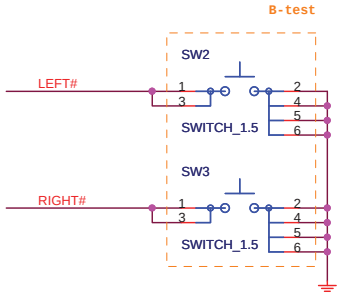
BLUETOOTH CONN(BTM)



TOUCHPAD BOARD CONN(TPD)

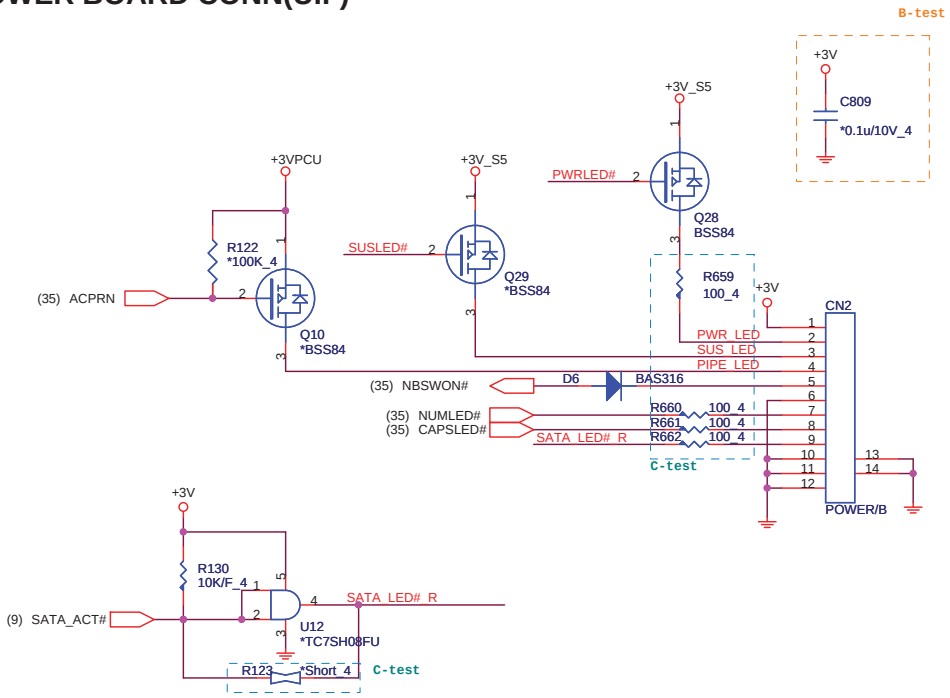


TP SWITCH(UIF)

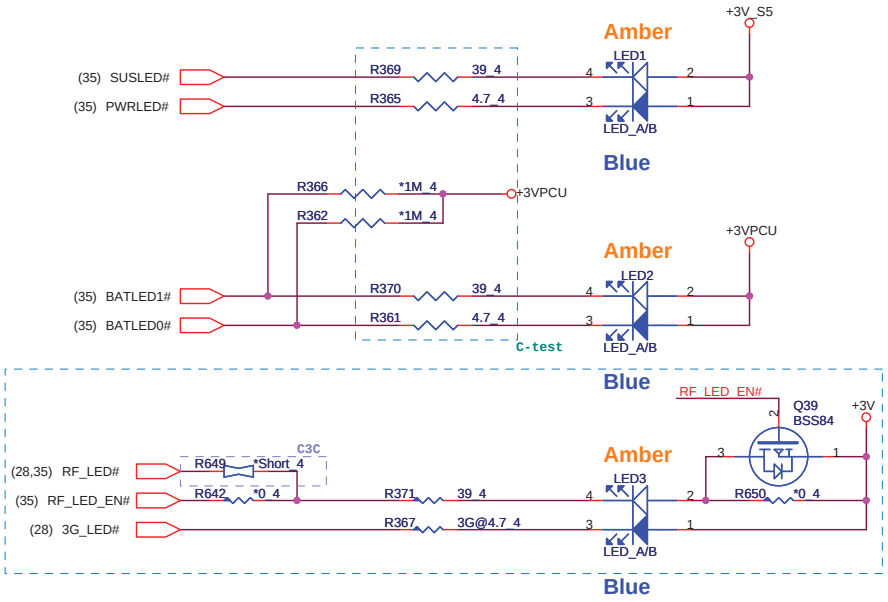


Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number	Rev
	eSATA/USB	1A
Date: Friday, January 22, 2010	Sheet 32 of 48	

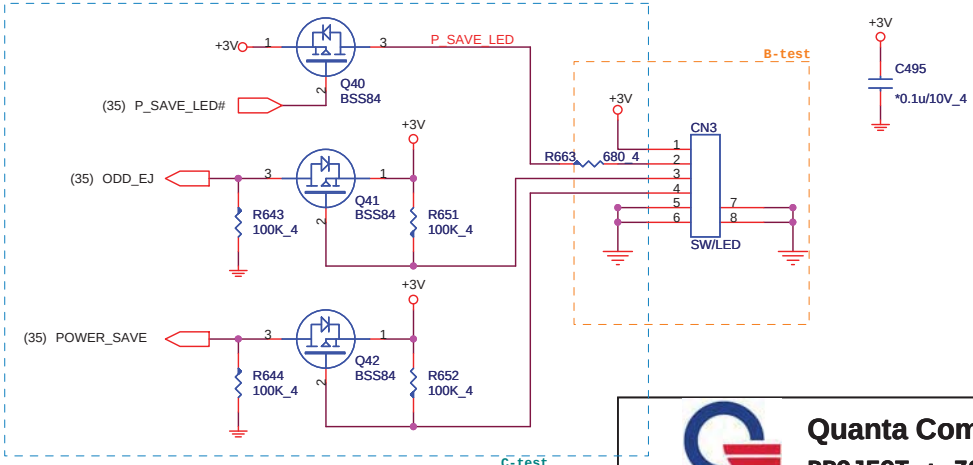
POWER BOARD CONN(UIF)



LED(UIF)



SW BOARD CONNECTOR(UIF)



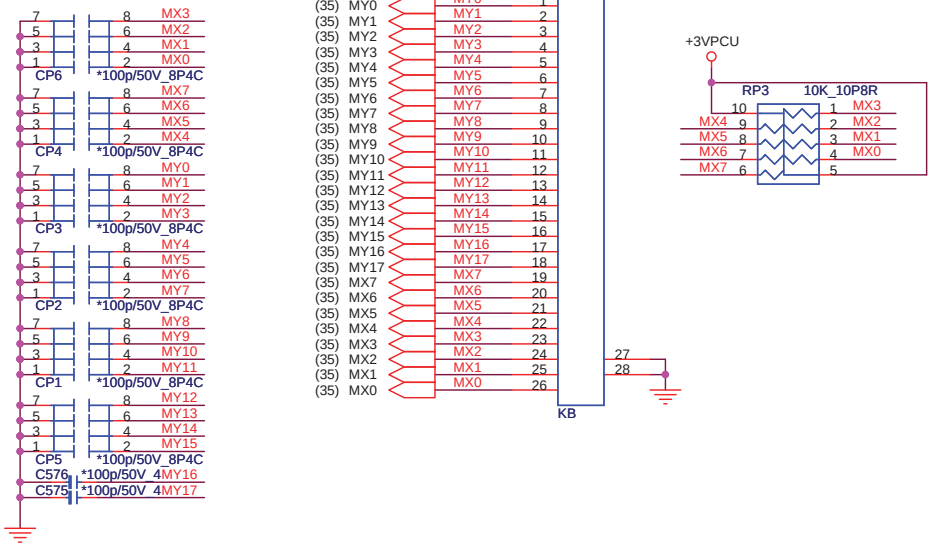
Quanta Computer Inc.

PROJECT : ZQ1

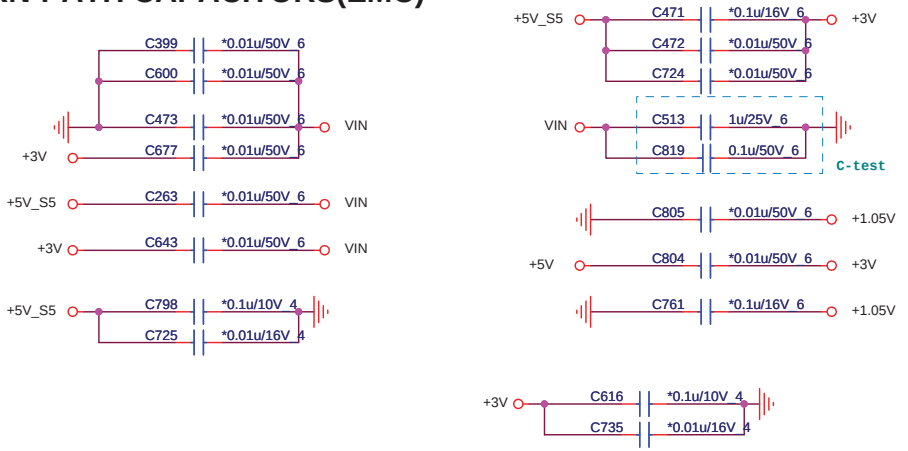
Size	Document Number	Rev
	POWER BOARD/LED/SW DB	1A

Date: Friday, January 22, 2010 Sheet 33 of 48

14" K/B(KBC)

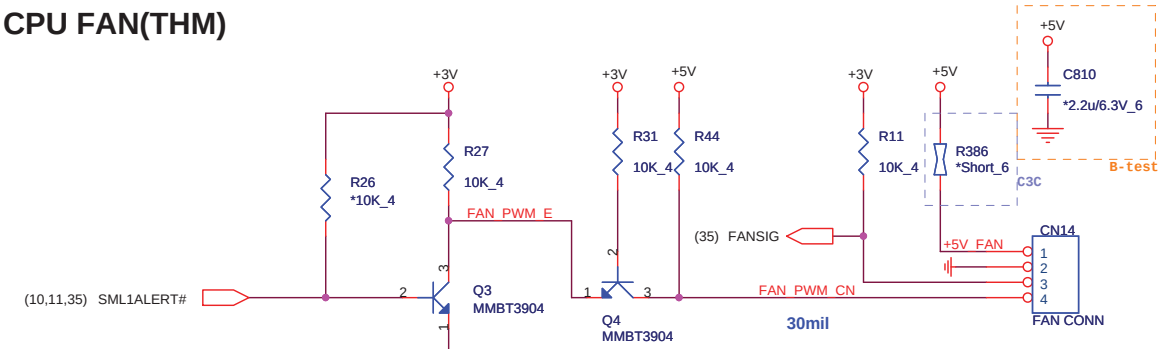


EE RETURN-PATH CAPACITORS(EMC)



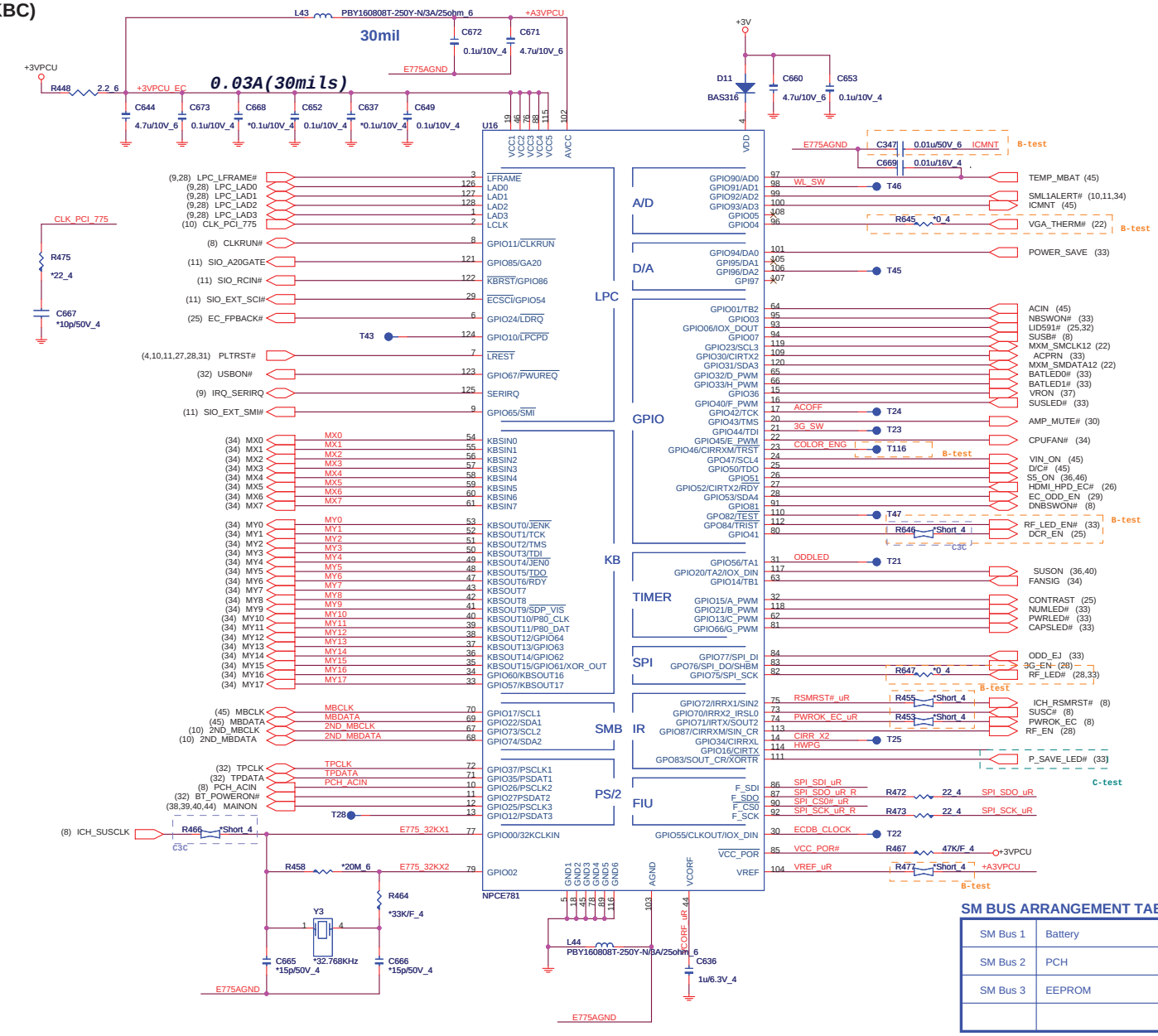
STITCHING for LPC

CPU FAN(THM)



Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: KB/FAN/EE RETURN CAP	Rev: 1A
Date: Friday, January 22, 2010	Sheet 34 of 48	

EC(KBC)



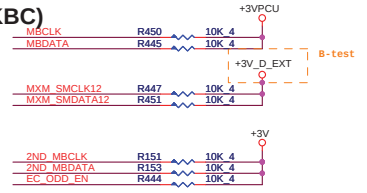
I/O ADDRESS SETTING(KBC)

SHBM=0: Enable shared memory with host BIOS

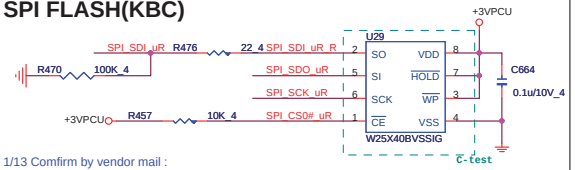
SHBM — 3G_EN — R465 — 10K_4

1/13 Comfirm by vendor mail :
Disabled ('1') if using FWH device on LPC.
Enabled ('0') if using SPI flash for both system BIOS and EC firmware

SM BUS PU(KBC)

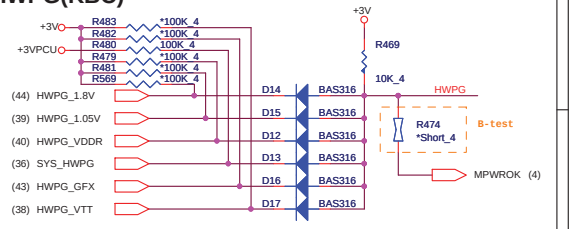


SPI FLASH(KBC)



1/13 Comfirm by vendor mail :
If the Southbridge enables 'Long Wait Abort' by
default, the flash device should be 50MHz (or faster)

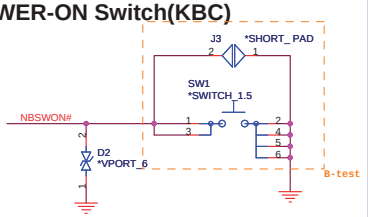
HWPG(KBC)



SM BUS ARRANGEMENT TABLE

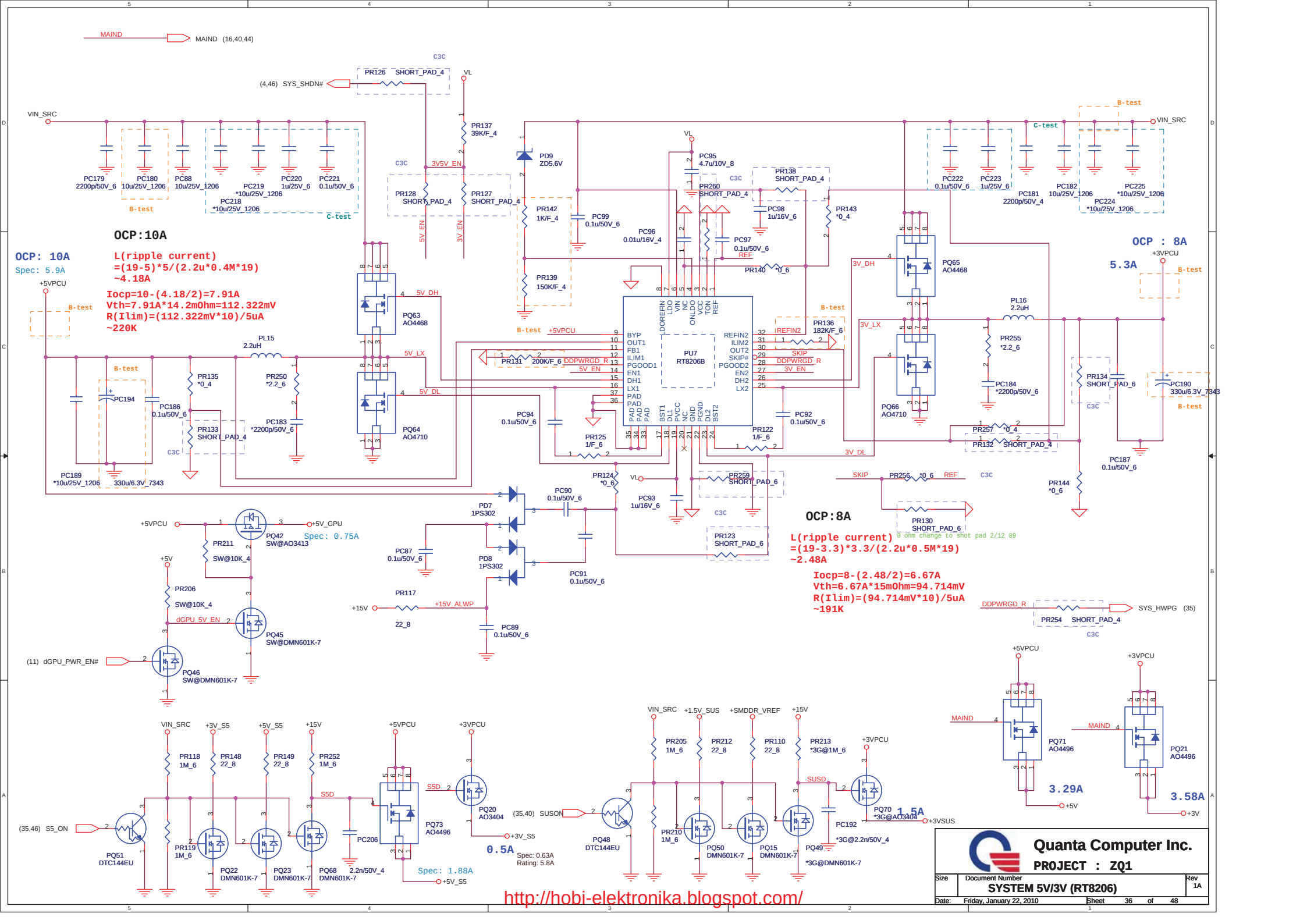
SM Bus 1	Battery
SM Bus 2	PCH
SM Bus 3	EEPROM

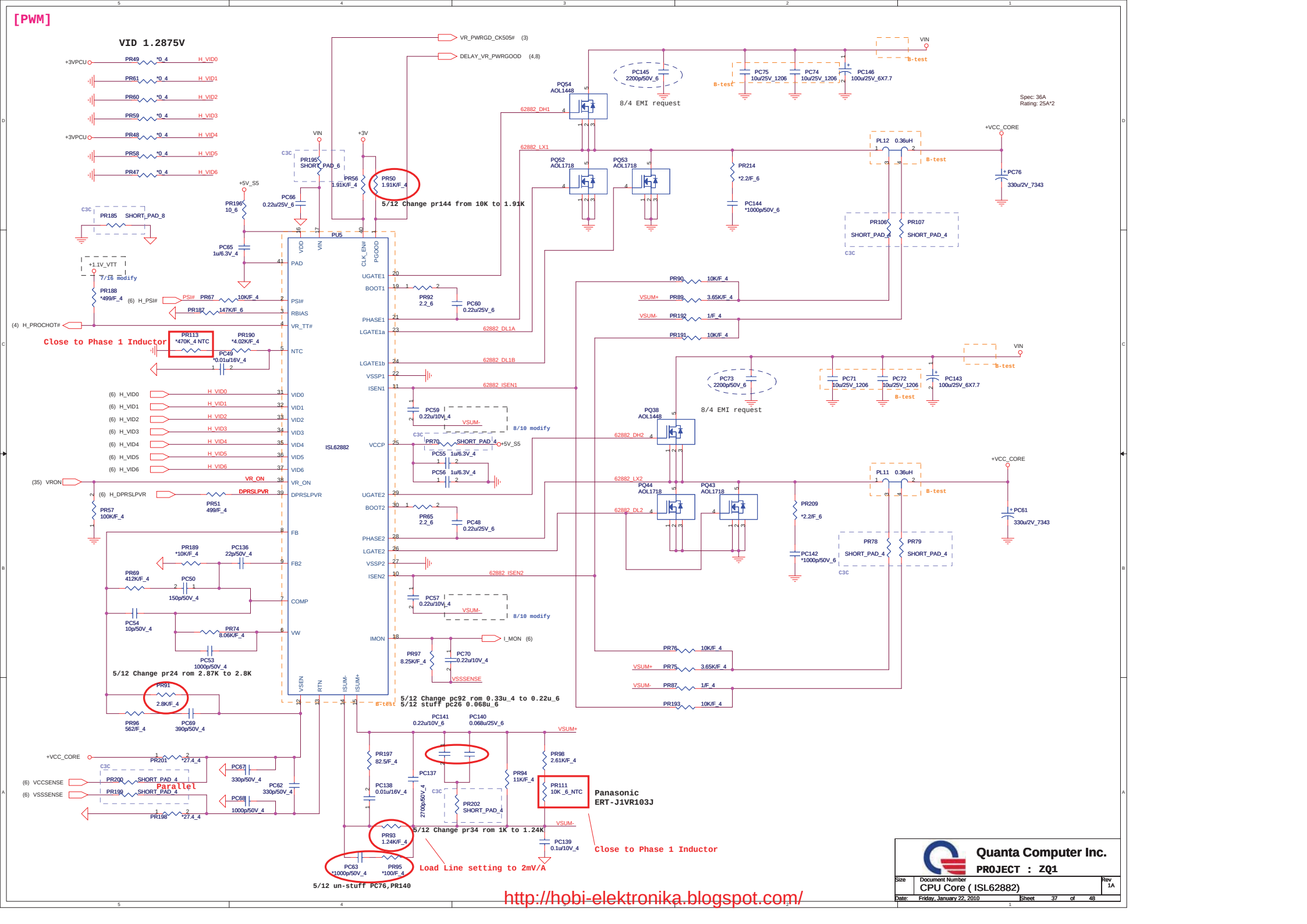
POWER-ON Switch(KBC)



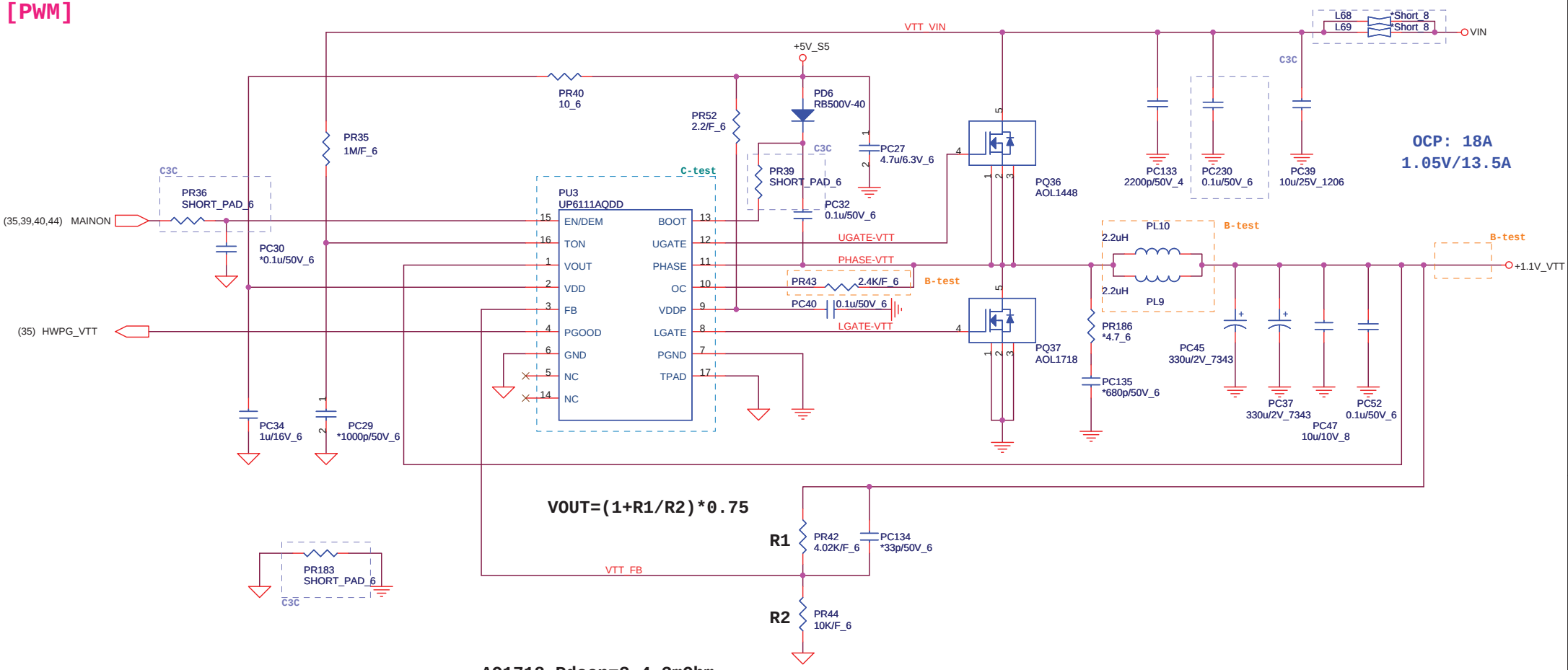
INTERNAL KEYBOARD STRIP SET(KBC)

Quanta Computer Inc.			
PROJECT : ZQ1			
Size	Document Number		Rev
	WPCE775C_0DG & FLASH		1A
Date: Friday, January 22, 2010		Sheet 35 of 48	


MAIND
MAIND (16,40,44)
(4,46) SYS_SHDN#
PR126 SHORT_PAD_4
VL
VIN_SRC
PR137 39K/F_4
3V5V_EN
PR128 SHORT_PAD_4
PR127 SHORT_PAD_4
PD9 ZD5.6V
PR142 1K/F_4
PC99 0.1u/50V_6
PR139 150K/F_4
PC96 0.01u/16V_4
PC95 4.7u/10V_8
PR260 SHORT_PAD_4
PC97 0.1u/50V_6
PR140 *0_6
PR138 SHORT_PAD_4
PC98 1u/16V_6
PR143 *0_4
PC179 2200p/50V_6
PC180 10u/25V_1206
PC88 10u/25V_1206
PC219 *10u/25V_1206
PC218 *10u/25V_1206
PC220 1u/25V_6
PC221 0.1u/50V_6
PC222 0.1u/50V_6
PC223 1u/25V_6
PC181 2200p/50V_4
PC182 10u/25V_1206
PC224 *10u/25V_1206
PC225 *10u/25V_1206
B-test
C-test
C3C
OCP:10A
OCP: 10A
Spec: 5.9A
L(ripple current)
=(19-5)*5/(2.2u*0.4M*19)
~4.18A
Iocp=10-(4.18/2)=7.91A
Vth=7.91A*14.2mOhm=112.322mV
R(Ilim)=(112.322mV*10)/5uA
~220K
OCP : 8A
5.3A
+3VPCU
+5VPCU
PQ63 AO4468
PQ64 AO4710
PQ65 AO4468
PQ66 AO4710
5V_DH
5V_LX
5V_DL
3V_DH
3V_LX
3V_DL
PL15 2.2uH
PL16 2.2uH
PR135 *0_4
PR250 *2.2_6
PR183 *2200p/50V_6
PR133 SHORT_PAD_4
PC194
PC186 0.1u/50V_6
PC189 *10u/25V_1206
330u/6.3V_7343
PR255 *2.2_6
PC184 *2200p/50V_6
PR134 SHORT_PAD_6
PC190 330u/6.3V_7343
PC187 0.1u/50V_6
PR257 *0_4
PR132 SHORT_PAD_4
PR144 *0_6
PU7 RT8206B
BYP
OUT1
FB1
ILIM1
PGOOD1
EN1
DH1
LX1
PAD
PAD
PAD
PAD
LDOREFIN
LDO
VIN
NC
ONLDO
VCC
TON
REF
REFIN2
ILIM2
OUT2
SKIP#
PGOOD2
EN2
DH2
LX2
BST1
DL1
PVCC
NC
GND
DL2
BST2
PR131 200K/F_6
DDPWRGD_R
5V_EN
3V_EN
SKIP
REFIN2
PR136 182K/F_6
PR125 1/F_6
PR122 1/F_6
PC94 0.1u/50V_6
PC92 0.1u/50V_6
PR124 *0_6
PC93 1u/16V_6
PR259 SHORT_PAD_6
PR123 SHORT_PAD_6
PR256 *0_6
PR130 SHORT_PAD_6
0 ohm change to shot pad 2/12 09
OCP:8A
L(ripple current)
=(19-3.3)*3.3/(2.2u*0.5M*19)
~2.48A
Iocp=8-(2.48/2)=6.67A
Vth=6.67A*15mOhm=94.714mV
R(Ilim)=(94.714mV*10)/5uA
~191K
PD7 1PS302
PD8 1PS302
PC90 0.1u/50V_6
PC91 0.1u/50V_6
PC87 0.1u/50V_6
PC89 0.1u/50V_6
PR117 22_8
+15V_ALWP
+15V
PQ42 SW@AO3413
Spec: 0.75A
PR211 SW@10K_4
PR206 SW@10K_4
dGPU_5V_EN
PQ45 SW@DMN601K-7
PQ46 SW@DMN601K-7
(11) dGPU_PWR_EN#
+5V
+5V_GPU
DDPWRGD_R
PR254 SHORT_PAD_4
SYS_HWPG (35)
PQ71 AO4496
PQ21 AO4496
3.29A
3.58A
+5V
+3V
VIN_SRC
+3V_S5
+5V_S5
+15V
+5VPCU
+3VPCU
PR118 1M_6
PR148 22_8
PR149 22_8
PR252 1M_6
S5D
PQ73 AO4496
PQ20 AO3404
PC206
PQ51 DTC144EU
PR119 1M_6
PQ22 DMN601K-7
PQ23 DMN601K-7
PQ68 DMN601K-7
2.2n/50V_4
(35,46) S5_ON
Spec: 1.88A
0.5A
Spec: 0.63A
Rating: 5.8A
+5V_S5
+3V_S5
+1.5V_SUS
+SMDDR_VREF
PR205 1M_6
PR212 22_8
PR110 22_8
PR213 *3G@1M_6
SUSD
PQ70 *3G@AO3404
1.5A
+3VSUS
PC192 *3G@2.2n/50V_4
PQ49 *3G@DMN601K-7
(35,40) SUSON
PQ48 DTC144EU
PR210 1M_6
PQ50 DMN601K-7
PQ15 DMN601K-7
http://hobi-elektronika.blogspot.com/
Quanta Computer Inc.
PROJECT : ZQ1
Size
Document Number
SYSTEM 5V/3V (RT8206)
Rev 1A
Date: Friday, January 22, 2010
Sheet 36 of 48


[PWM]
VID 1.2875V
+3VPCU
PR49 *0_4 H_VID0
PR61 *0_4 H_VID1
PR60 *0_4 H_VID2
PR59 *0_4 H_VID3
PR48 *0_4 H_VID4
PR58 *0_4 H_VID5
PR47 *0_4 H_VID6
VR_PWRGD_CK505# (3)
DELAY_VR_PWRGOOD (4,8)
VIN
+3V
+5V_S5
C3C
PR195 SHORT_PAD_6
PR56 1.91K/F_4
PR50 1.91K/F_4
5/12 Change pr144 from 10K to 1.91K
PR196 10_6
PC66 0.22u/25V_6
PC65 1u/6.3V_4
PR185 SHORT_PAD_8
+1.1V_VTT
7/16 modify
PR188 *499/F_4
(6) H_PSI#
PR67 10K/F_4
PR187 147K/F_6
(4) H_PROCHOT#
Close to Phase 1 Inductor
PR113 *470K_4 NTC
PR190 *4.02K/F_4
PC49 *0.01u/16V_4
PU5
ISL62882
VDD
VIN
CLK_EN#
PGOOD
PAD
UGATE1
BOOT1
PR92 2.2_6
PC60 0.22u/25V_6
PHASE1
LGATE1a
62882_DL1A
LGATE1b
62882_DL1B
VSSP1
ISEN1
62882_ISEN1
PC59 0.22u/10V_4
VSUM-
8/10 modify
VCCP
PR70 SHORT_PAD_4
+5V_S5
PC55 1u/6.3V_4
PC56 1u/6.3V_4
UGATE2
BOOT2
PR65 2.2_6
PC48 0.22u/25V_6
PHASE2
LGATE2
VSSP2
ISEN2
62882_ISEN2
PC57 0.22u/10V_4
IMON
I_MON (6)
PR97 8.25K/F_4
PC70 0.22u/10V_4
VSSSENSE
PSI#
RBIAS
VR_TT#
NTC
VID0
VID1
VID2
VID3
VID4
VID5
VID6
VR_ON
DPRSLPVR
FB
FB2
COMP
VW
VSEN
RTN
ISUM-
ISUM+
(6) H_VID0
(6) H_VID1
(6) H_VID2
(6) H_VID3
(6) H_VID4
(6) H_VID5
(6) H_VID6
(35) VRON
(6) H_DPRSLPVR
PR57 100K/F_4
PR51 499/F_4
PR189 *10K/F_4
PC136 22p/50V_4
PR69 412K/F_4
PC50 150p/50V_4
PC54 10p/50V_4
PR74 8.06K/F_4
PC53 1000p/50V_4
5/12 Change pr24 rom 2.87K to 2.8K
PR91 2.8K/F_4
PR96 562/F_4
PC69 390p/50V_4
B-test
5/12 Change pc92 rom 0.33u_4 to 0.22u_6
5/12 stuff pc26 0.068u_6
PC141 0.22u/10V_6
PC140 0.068u/25V_6
VSUM+
PR197 82.5/F_4
PC137
PC138 0.01u/16V_4
2700p/50V_4
PR94 11K/F_4
PR98 2.61K/F_4
PR111 10K_6_NTC
Panasonic
ERT-J1VR103J
PR202 SHORT_PAD_4
5/12 Change pr34 rom 1K to 1.24K
PR93 1.24K/F_4
PC139 0.1u/10V_4
Close to Phase 1 Inductor
PC63 *1000p/50V_4
PR95 *100/F_4
Load Line setting to 2mV/A
5/12 un-stuff PC76,PR140
+VCC_CORE
PR201 *27.4_4
PR200 SHORT_PAD_4
PR199 SHORT_PAD_4
PR198 *27.4_4
PC67 330p/50V_4
PC62 330p/50V_4
PC68 1000p/50V_4
Parallel
(6) VCCSENSE
(6) VSSSENSE
PC145 2200p/50V_6
8/4 EMI request
PQ54 AOL1448
62882_DH1
62882_LX1
PQ52 AOL1718
PQ53 AOL1718
PR214 *2.2/F_6
PC144 *1000p/50V_6
PC75 10u/25V_1206
PC74 10u/25V_1206
PC146 100u/25V_6X7.7
Spec: 36A
Rating: 25A*2
PL12 0.36uH
PC76 330u/2V_7343
PR106 SHORT_PAD_4
PR107 SHORT_PAD_4
PR90 10K/F_4
PR89 3.65K/F_4
PR192 1/F_4
PR191 10K/F_4
PC73 2200p/50V_6
PC71 10u/25V_1206
PC72 10u/25V_1206
PC143 100u/25V_6X7.7
PQ38 AOL1448
62882_DH2
62882_LX2
PQ44 AOL1718
PQ43 AOL1718
62882_DL2
PR209 *2.2/F_6
PC142 *1000p/50V_6
PL11 0.36uH
PC61 330u/2V_7343
PR78 SHORT_PAD_4
PR79 SHORT_PAD_4
PR76 10K/F_4
PR75 3.65K/F_4
PR87 1/F_4
PR193 10K/F_4
Quanta Computer Inc.
PROJECT : ZQ1
Size
Document Number
CPU Core (ISL62882)
Rev 1A
Date: Friday, January 22, 2010
Sheet 37 of 48
http://hobi-elektronika.blogspot.com/

[PWM]



TON=3.85p*RTON*Vout/(Vin-0.5)

Frequency=Vout/(Vin*TON)

TON=3.85p*1M*1/(Vin-0.5)

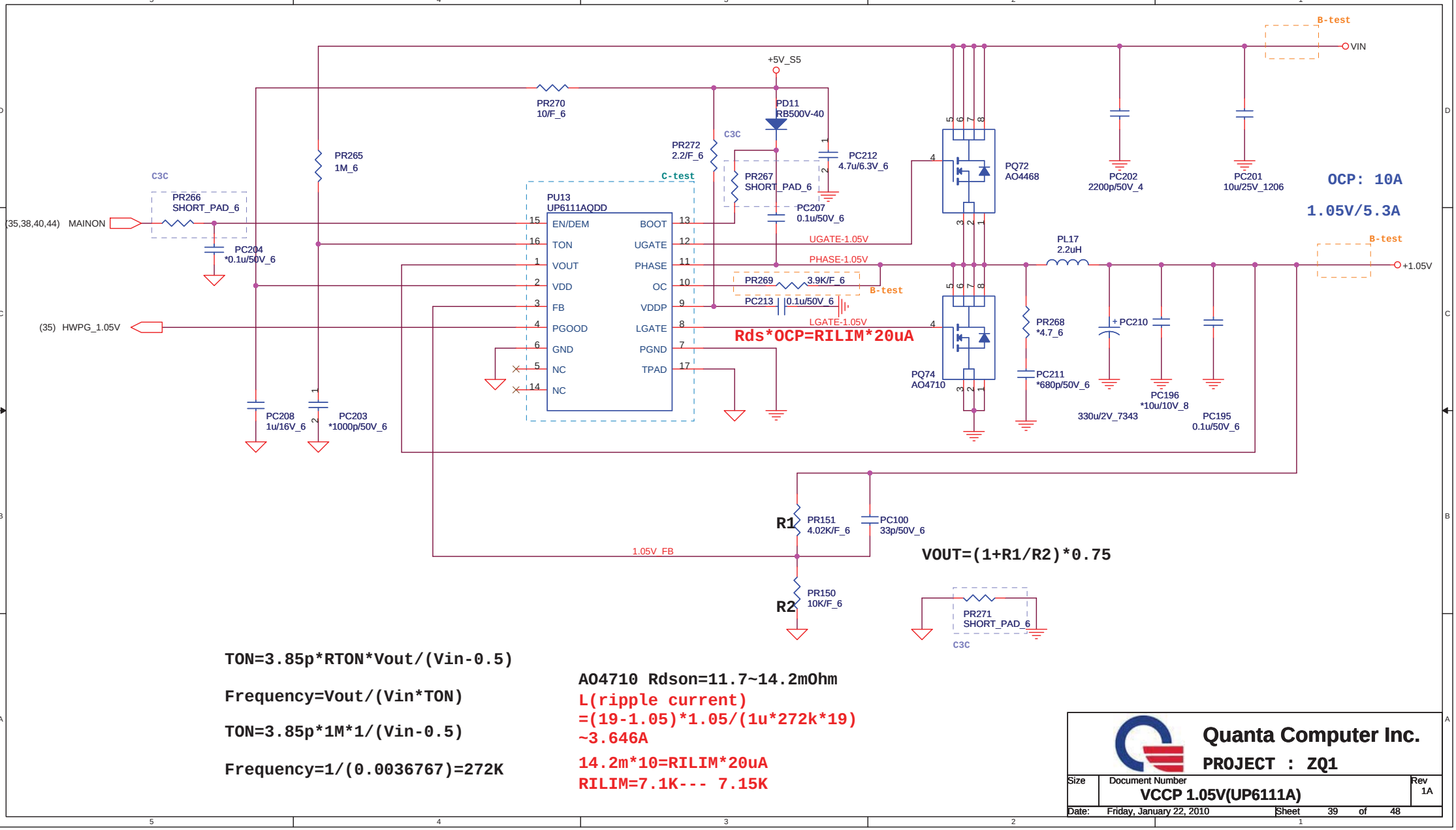
Frequency=1/(0.0036767)=272K

AO1718 Rdson=3~4.3mOhm

L(ripple current)
=(19-1.05)*1.05/(1u*272k*19)
~3.64A

4.3m*18=RILIM*20uA
RILIM=3.87K --- 3.92K

Quanta Computer Inc. PROJECT : ZQ1		
Size	Document Number +VTT (UP6111A)	Rev 1A
Date: Friday, January 22, 2010	Sheet 38 of 48	



TON=3.85p*RTON*Vout/(Vin-0.5)

Frequency=Vout/(Vin*TON)

TON=3.85p*1M*1/(Vin-0.5)

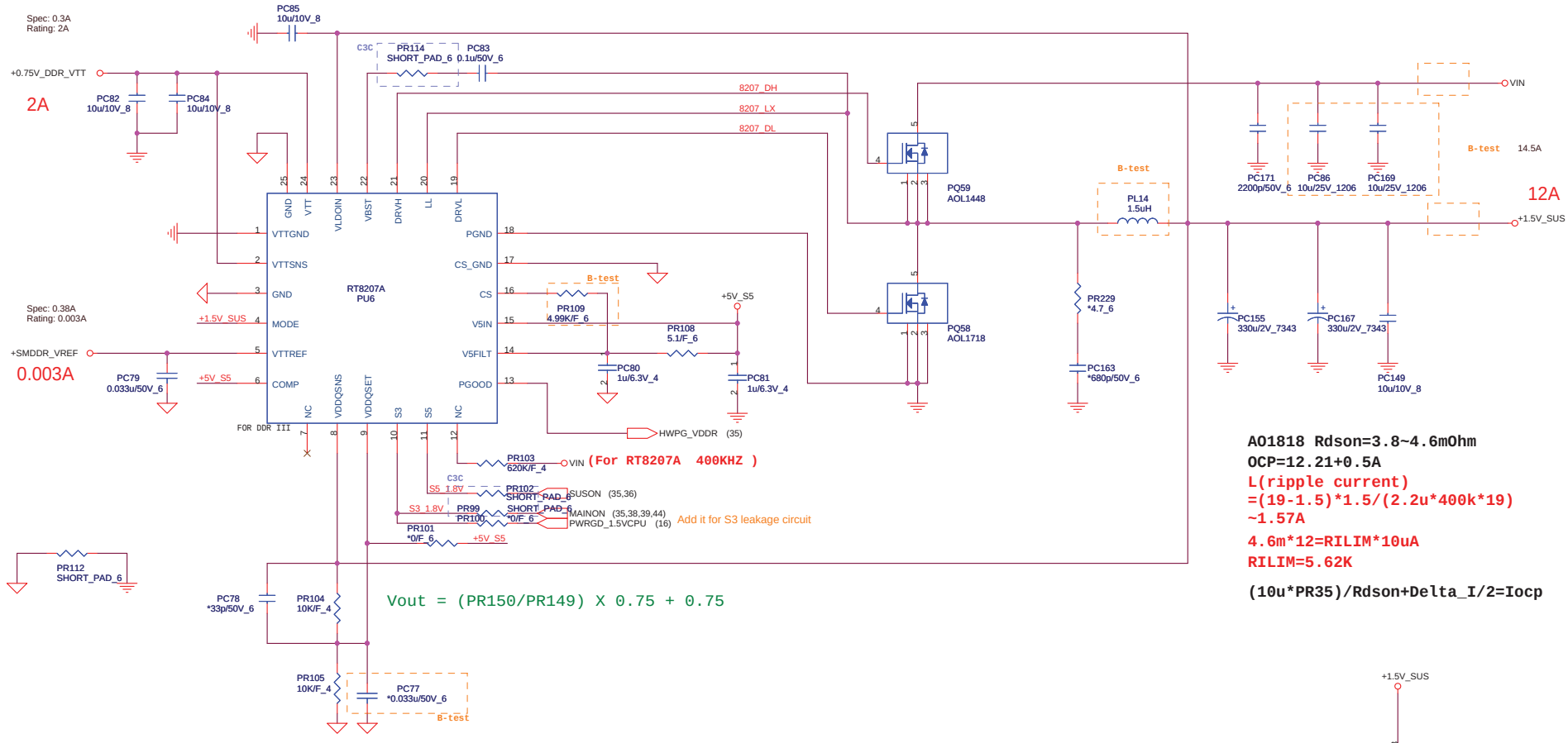
Frequency=1/(0.0036767)=272K

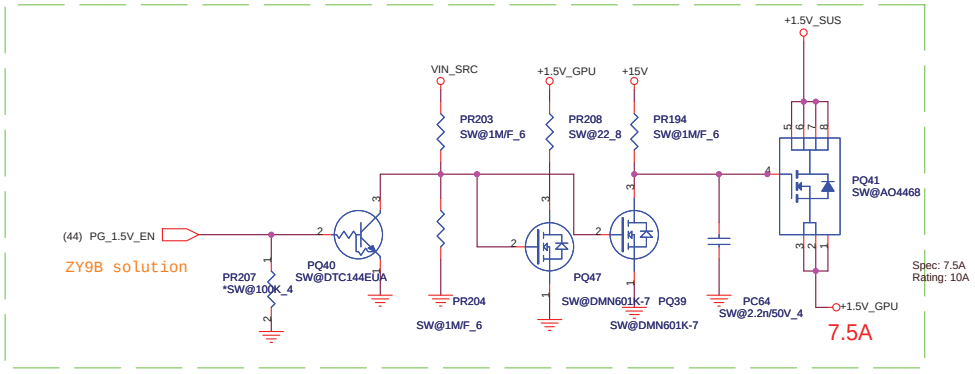
AO4710 Rdson=11.7~14.2mOhm

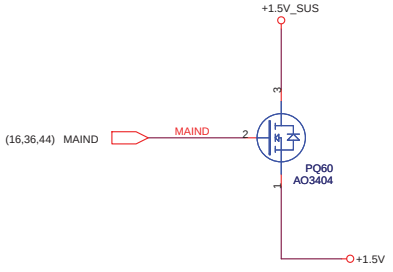
L(ripple current)
=(19-1.05)*1.05/(1u*272k*19)
~3.646A

14.2m*10=RILIM*20uA
RILIM=7.1K--- 7.15K

Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: VCCP 1.05V(UP6111A)	Rev: 1A
Date: Friday, January 22, 2010	Sheet 39 of 48	



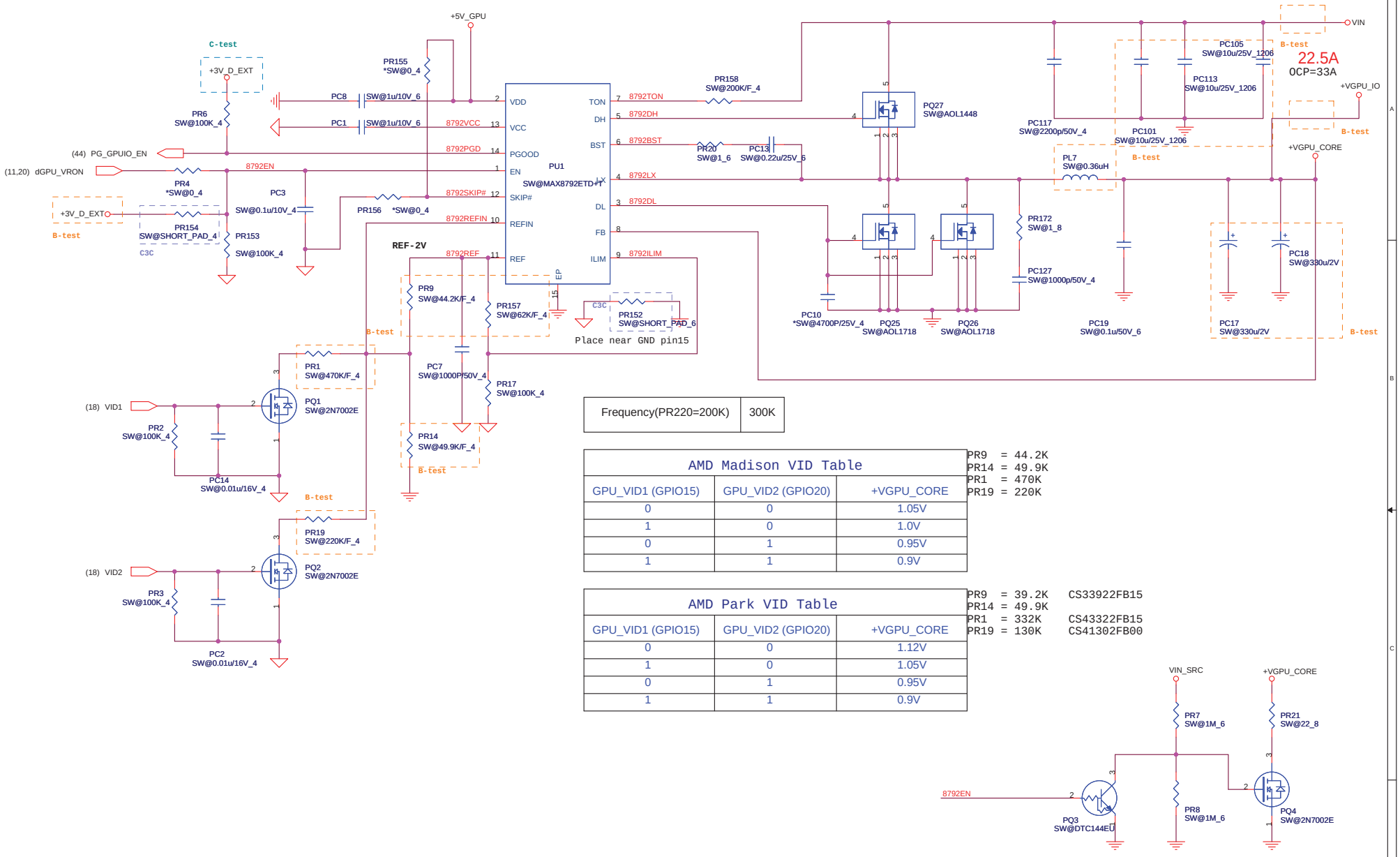




Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	DDR III 1.5V(TPS51116)	1A

Date: Friday, January 22, 2010 Sheet 40 of 48



Frequency(PR220=200K)	300K

AMD Madison VID Table		
GPU_VID1 (GPIO15)	GPU_VID2 (GPIO20)	+VGPU_CORE
0	0	1.05V
1	0	1.0V
0	1	0.95V
1	1	0.9V

```
PR9  = 44.2K
PR14 = 49.9K
PR1  = 470K
PR19 = 220K
```

AMD Park VID Table		
GPU_VID1 (GPIO15)	GPU_VID2 (GPIO20)	+VGPU_CORE
0	0	1.12V
1	0	1.05V
0	1	0.95V
1	1	0.9V

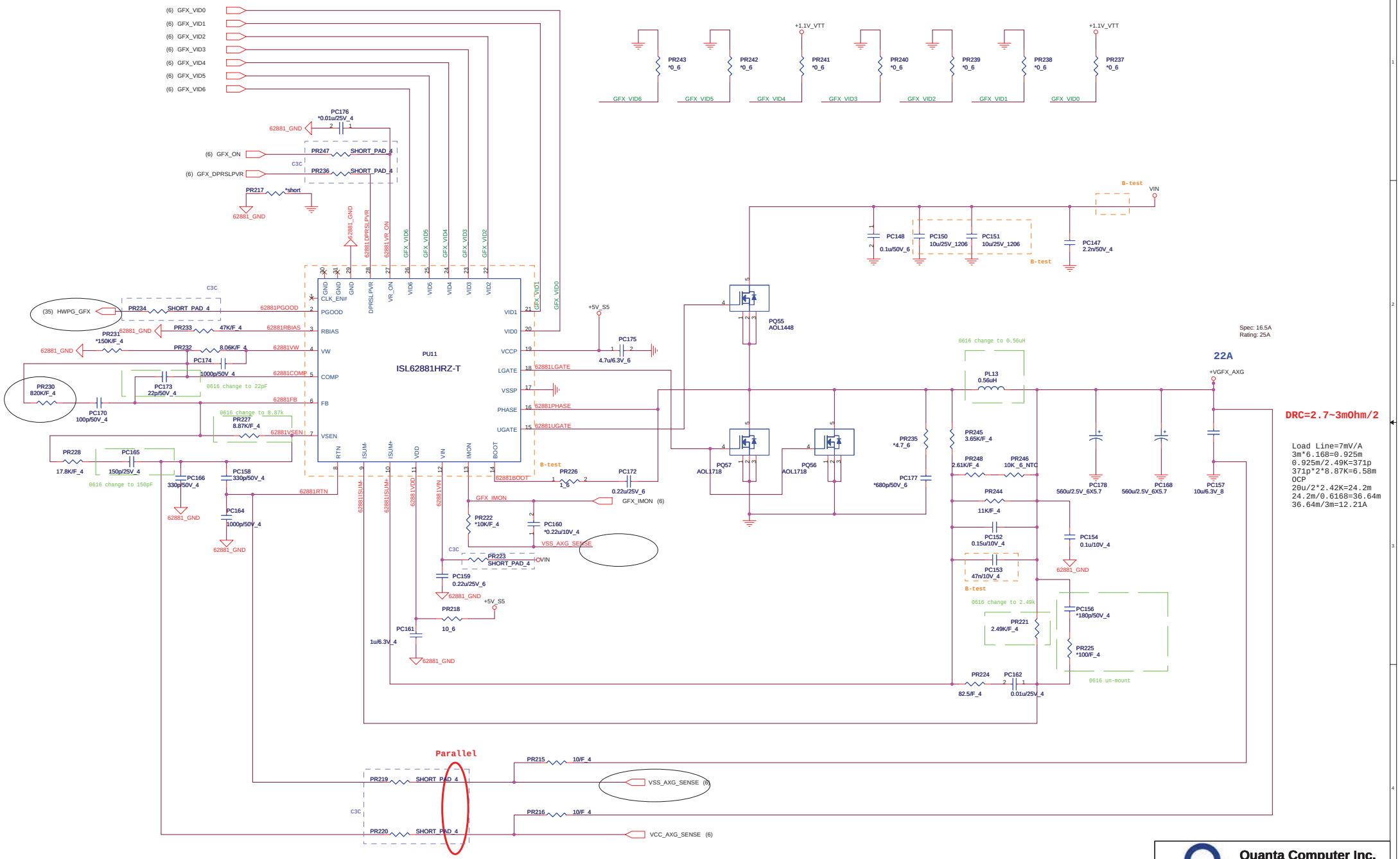
```
PR9  = 39.2K   CS33922FB15
PR14 = 49.9K
PR1  = 332K    CS43322FB15
PR19 = 130K    CS41302FB00
```


Quanta Computer Inc.
PROJECT : ZQ1

Size	Document Number	Rev
	GPU CORE(MAX8792)	1A

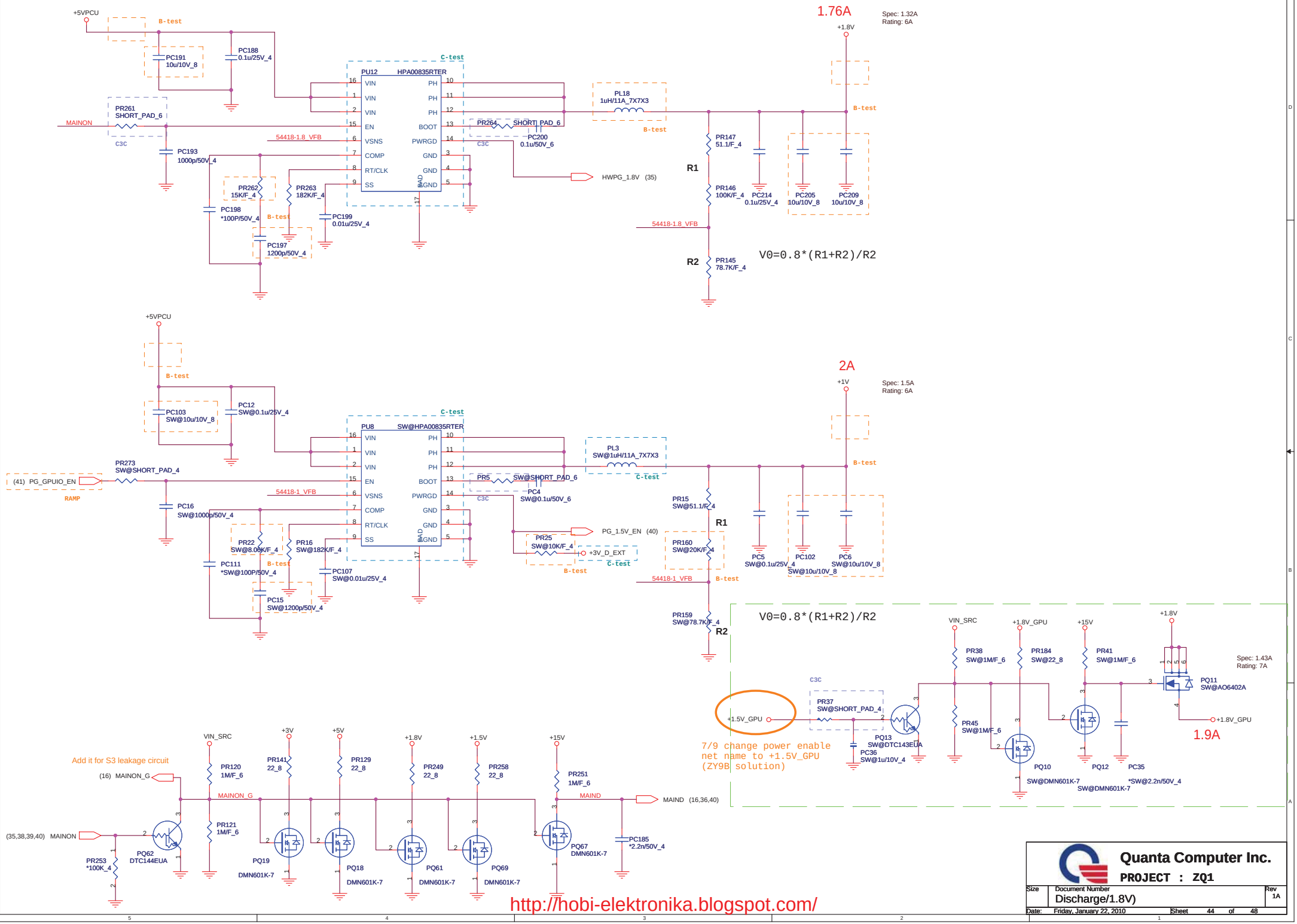
Date: Friday, January 22, 2010 Sheet 41 of 48

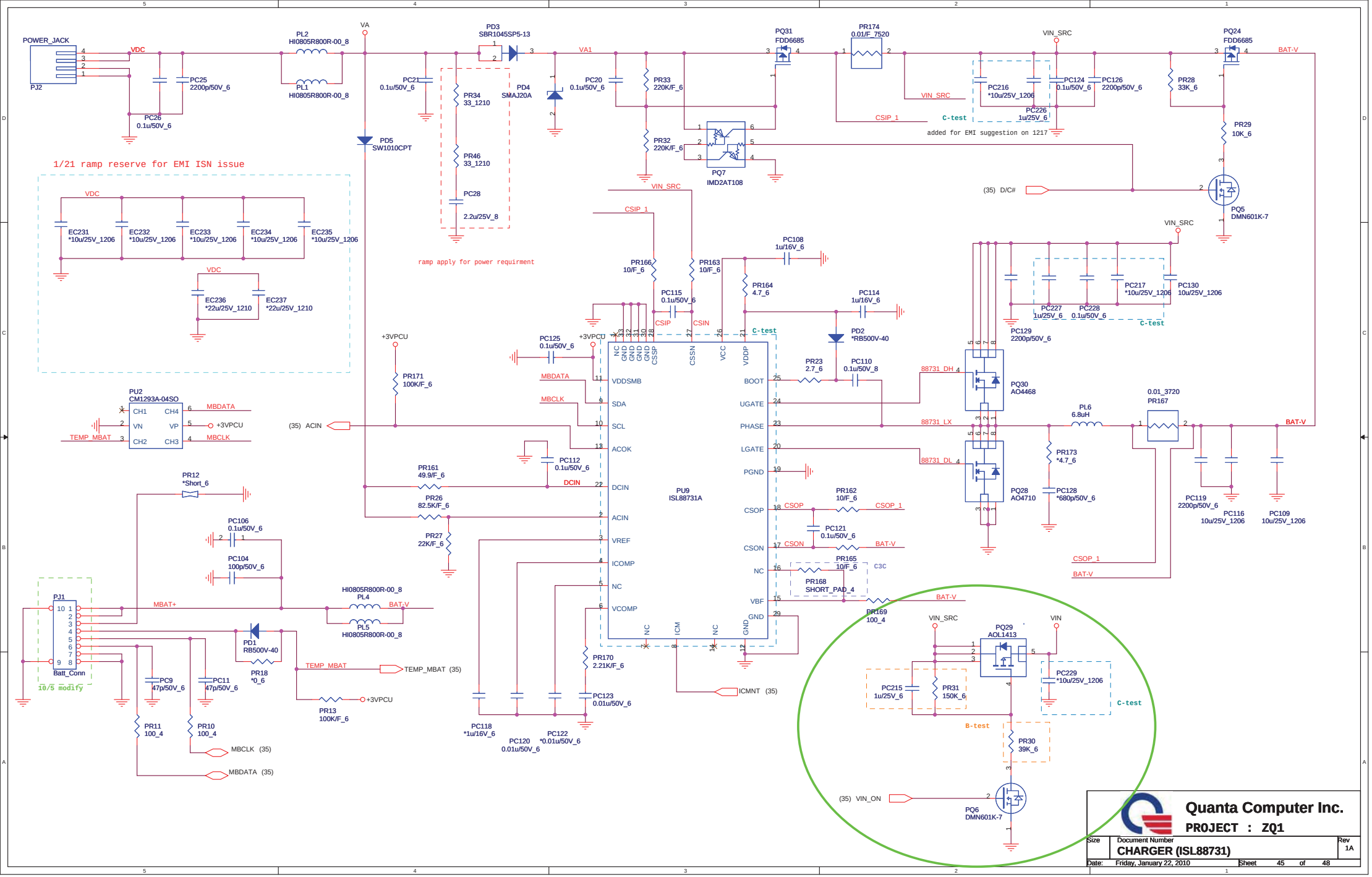
Int_VGA [PWM]

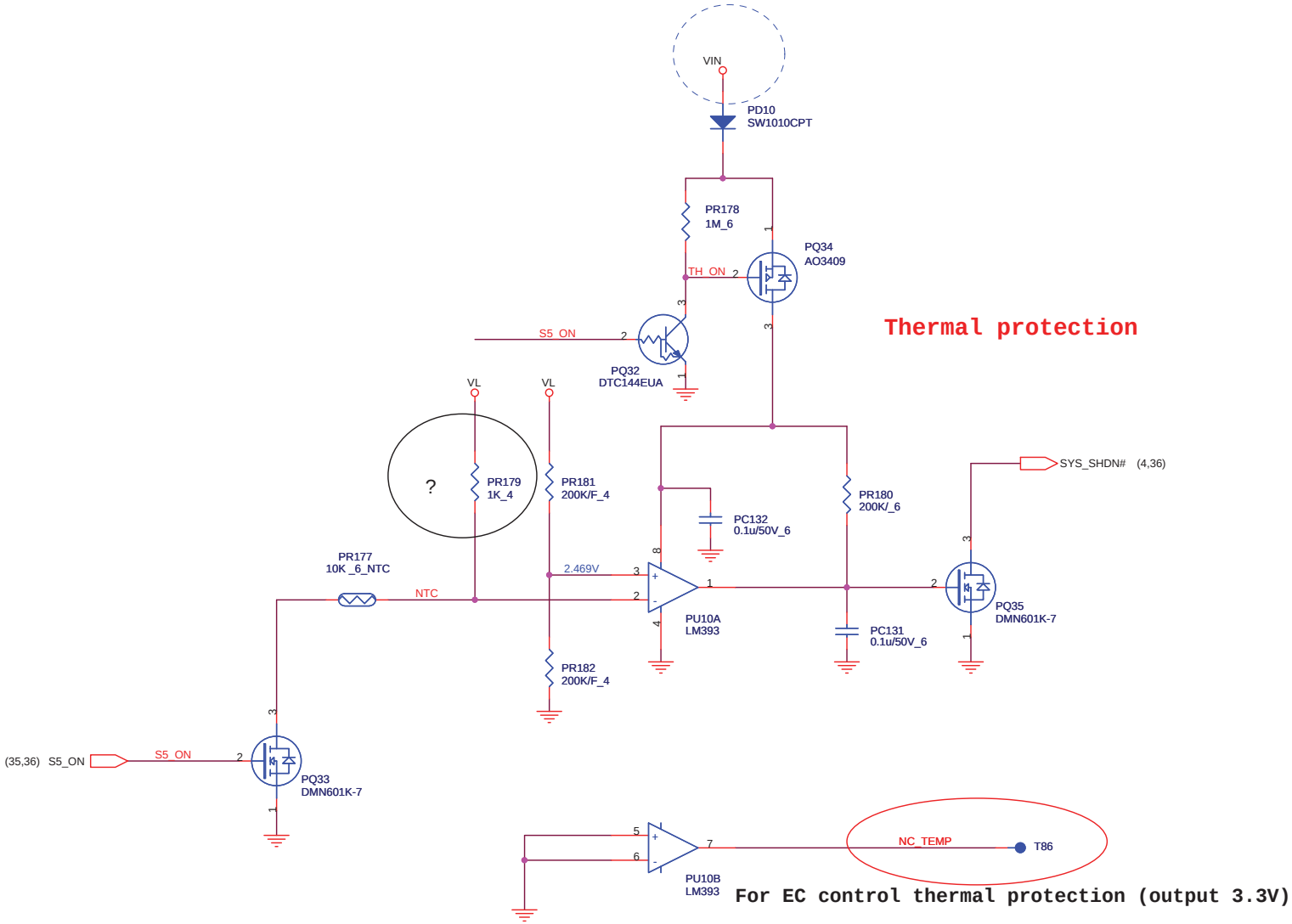


Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: +VGFX_AXG (ISL62881)	Rev: 1A
Date: Friday, January 22, 2010	Sheet 43 of 48	

1.Level 1 Environment-related Substances Should NEVER be Used.
2.Purchase ink, paint, wire rods, and Molding resins only from the business Partners that Sony approves as Green Partners.


1.76A
Spec: 1.32A
Rating: 6A
+5VPCU
B-test
PC191 10u/10V_8
PC188 0.1u/25V_4
C-test
PU12 HPA00835RTER
VIN
PH
EN
BOOT
VSNS
PWRGD
COMP
GND
RT/CLK
SS
PAD
PR261 SHORT_PAD_6
MAINON
C3C
PC193 1000p/50V_4
54418-1.8_VFB
PR262 15K/F_4
PR263 182K/F_4
PC198 *100P/50V_4
PC199 0.01u/25V_4
PC197 1200p/50V_4
PR264 SHORT_PAD_6
PC200 0.1u/50V_6
PL18 1uH/11A_7X7X3
HWPG_1.8V (35)
+1.8V
R1
PR147 51.1/F_4
PR146 100K/F_4
PC214 0.1u/25V_4
PC205 10u/10V_8
PC209 10u/10V_8
R2
PR145 78.7K/F_4
V0=0.8*(R1+R2)/R2
2A
Spec: 1.5A
Rating: 6A
+1V
PC103 SW@10u/10V_8
PC12 SW@0.1u/25V_4
PU8 SW@HPA00835RTER
PR273 SW@SHORT_PAD_4
(41) PG_GPUIO_EN
RAMP
54418-1_VFB
PR22 SW@8.06K/F_4
PR16 SW@182K/F_4
PC16 SW@1000p/50V_4
PC111 *SW@100P/50V_4
PC107 SW@0.01u/25V_4
PC15 SW@1200p/50V_4
PR5 SW@SHORT_PAD_6
PC4 SW@0.1u/50V_6
PL3 SW@1uH/11A_7X7X3
PG_1.5V_EN (40)
PR25 SW@10K/F_4
+3V_D_EXT
PR15 SW@51.1/F_4
PR160 SW@20K/F_4
PC5 SW@0.1u/25V_4
PC102 SW@10u/10V_8
PC6 SW@10u/10V_8
PR159 SW@78.7K/F_4
V0=0.8*(R1+R2)/R2
VIN_SRC
+1.8V_GPU
+15V
PR38 SW@1M/F_6
PR184 SW@22_8
PR41 SW@1M/F_6
PQ11 SW@AO6402A
Spec: 1.43A
Rating: 7A
1.9A
+1.5V_GPU
PR37 SW@SHORT_PAD_4
PQ13 SW@DTC143EUA
PC36 SW@1u/10V_4
PR45 SW@1M/F_6
PQ10 SW@DMN601K-7
PQ12 SW@DMN601K-7
PC35 *SW@2.2n/50V_4
7/9 change power enable net name to +1.5V_GPU (ZY9B solution)
Add it for S3 leakage circuit
(16) MAINON_G
MAINON_G
PR120 1M/F_6
PR121 1M/F_6
(35,38,39,40) MAINON
PR253 *100K_4
PQ62 DTC144EUA
+3V
+5V
+1.8V
+1.5V
+15V
PR141 22_8
PR129 22_8
PR249 22_8
PR258 22_8
PR251 1M/F_6
MAIND
MAIND (16,36,40)
PQ19 DMN601K-7
PQ18 DMN601K-7
PQ61 DMN601K-7
PQ69 DMN601K-7
PQ67 DMN601K-7
PC185 *2.2n/50V_4
http://hobi-elektronika.blogspot.com/
Quanta Computer Inc.
PROJECT : ZQ1
Size
Document Number
Discharge/1.8V)
Rev 1A
Date: Friday, January 22, 2010
Sheet 44 of 48





Quanta Computer Inc.		
PROJECT : ZQ1		
Size	Document Number: Thermal Protection	Rev: 1A
Date: Friday, January 22, 2010	Sheet 46 of 48	