OP8 SYSTEM DIAGRAM

AMD Smarter Choice

01

PCB STACK UP

LAYER 1 : TOP
LAYER 2 : IN1
LAYER 3 : IN2
LAYER 4 : VCC
LAYER 5 : IN3
LAYER 6 : BOT

DDRII-SODIMM1 PAGE 6,7
DDRII-SODIMM2 PAGE 6,7
DDRII 667/800 MHz

AMD Lion Sabie
Tigris
S1G2 Processor
638P (uPGA)/35W
PAGE 3,4,5

CPU THERMAL SENSOR PAGE 5

14.318MHz
CLOCK GEN
ICS9LPRS476AKLFT-->HP
SLG8SP628VTR-->HP
RTM880N-796 -->HP
PAGE 2

CPU_CLK
NBGFX_CLK
NBGPP_CLK
SBLINK_CLK

HT3

PCI-E
PCI-Express 16X

NORTH BRIDGE
RS880
A12
21mm X 21mm, 528pin BGA
PAGE 8,9,10,11

HDMI PAGE 25
CRT PAGE 24
LVDS PAGE 23

ATI M92-S for Discrete only
64 Bit,DDR2*4
M92-S2
PAGE 17,18,19 20,21,22

X1 LAN Realtek PCIE-LAN RTL8103E (10/100) PAGE 30
X1 Mini PCI-E Card (Wireless LAN) PAGE 33
RJ45 PAGE 30

Side port
256mb RAM for UMA only PAGE 8

10 PCI-E WLAN Card x1 PAGE 33

SBSRC_CLK

ALINK X4

USB2.0

SOUTH BRIDGE
SB710 A14
21mm X 21mm, 528pin BGA
4.5W(Ext)
4.3W(Int)
PAGE 12,13.14.15.16

1,8,9 USB2.0 Ports X2 PAGE 29
5 Blueflame PAGE 29
2 Webcam X1 PAGE 23
3 Flash Media RTS5159 PAGE 26

SATA - HDD PAGE 29 — SATA0 150MB
SATA - CD-ROM PAGE 29 — SATA4 150MB
E-SATA PAGE 29 — SATA1 150MB

Azalia

LPC

MDC CONN PAGE 28

IDT 92HD75B2 PAGE 27

AUDIO Amplifier TPA6017A2 PAGE 28

Ang MIC PAGE 28
AUDIO CONN (Phone/ MIC) PAGE 28
Audio Conn PAGE 27

Keyboard PAGE 32
Touch Pad PAGE 32

ENE KBC
KB3926 Dx
PAGE 32

FAN PAGE 28
SPI PAGE 35

SYSTEM CHARGER(ISL6251) PAGE 40
SYSTEM POWER ISL6237 PAGE 34
DDR II SMDDR_VTERM 1.8V/1.8VSUS(RT8207) PAGE 37
VCCP +1.1V AND +1.2V(RT8204) PAGE 35
VGACORE(1.1V~1.2V)Oz8118 PAGE 38
CPU CORE ISL6265HRTZ-T PAGE 36

SMBUS TABLE		
SB--SCL0/SD0	Clock gen/Robson/TV tuner /DDR2/DDR2 thermal/Accelerometer	+3V
	epress card Wlan Card	+3VS5
EC --SCL/SD	Battery charge/discharge	+3VPCU
EC--SCL2/SD2	VGA thermal/system thermal	+3V

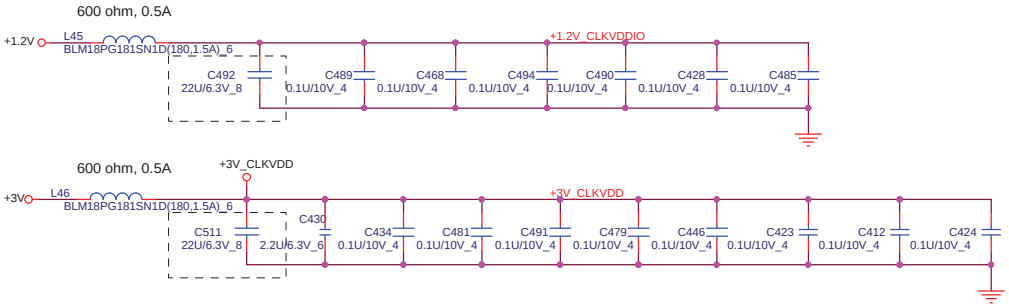
NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

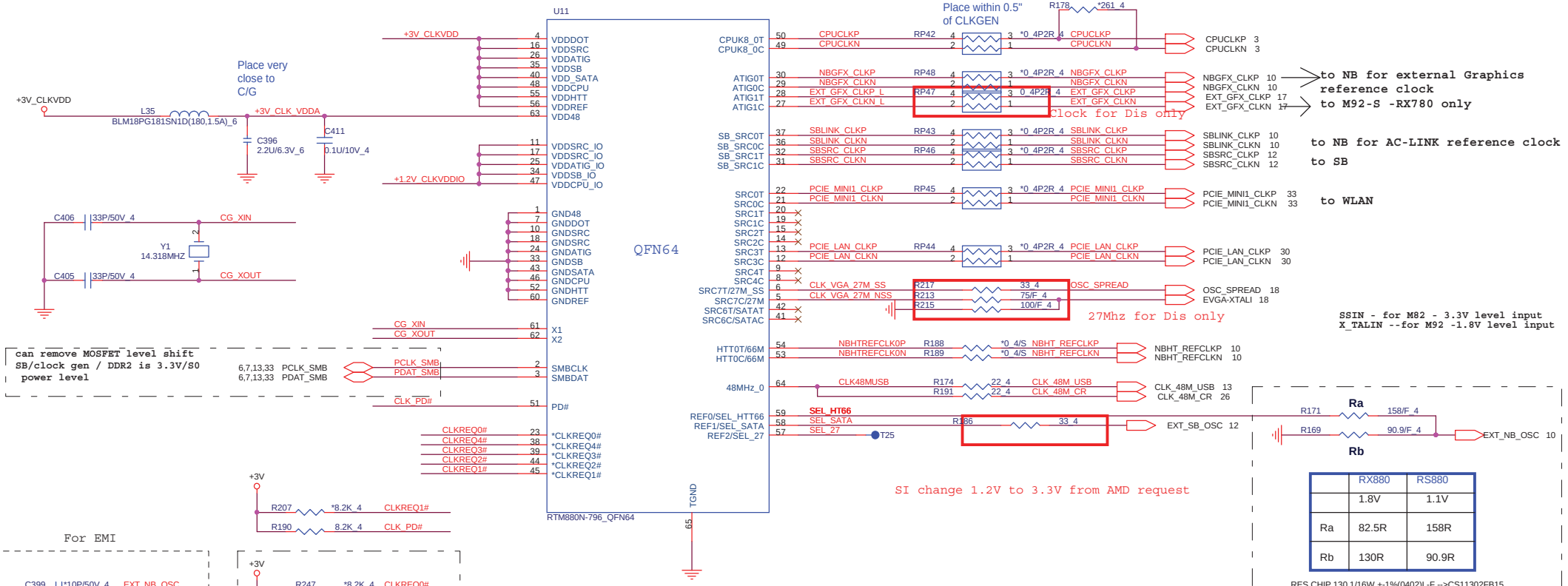
Size	Document Number	Rev
Custom	Block Diagram	1A

Date: Friday, March 20, 2009 Sheet 1 of 42

CLOCKS name	RX780	RS780	Clock pin function
NBGFX_CLKP NBGFX_CLKN	RP48 STUFF	RP48 STUFF	to NB for VGA reference clock
EXT_GFX_CLKP EXT_GFX_CLKN	RP47 STUFF	RP47 NC	to M92-S external reference clock -RX780 only
SBLINK_CLKP SBLINK_CLKN	RP43 STUFF	RP43 STUFF	to NB for AC-LINK reference clock
CLK_VGA_27M_SS CLK_VGA_27M_NSS	R213,R215 STUFF	R213,R215 NC	To M92-S 27Mhz - RX780 only



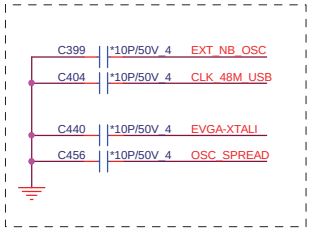
Need check the net name for the short pad

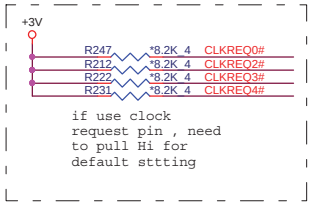


	RX880	RS880
	1.8V	1.1V
Ra	82.5R	158R
Rb	130R	90.9R

RES CHIP 130 1/16W +-1%(0402)L-F -->CS11302FB15
RES CHIP 158 1/16W +-1%(0402) -->CS11582FB00
RES CHIP 90.9 1/16W +-1%(0402) -->CS09092FB15
RES CHIP 82.5 1/16W +-1%(0402) -->CS08252FB11

For EMI

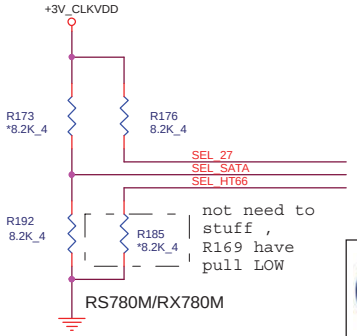




SLG SLG8SP628VTR--AL8SP628000
RTL RTM880N-796-- AL000880001

* default

SEL_HTT66	1	66 MHz 3.3V single ended HTT clock
	0*	100 MHz differential HTT clock
SEL_SATA	1	100 MHz non-spreading differential SRC clock
	0*	100 MHz spreading differential SRC clock
SEL_27	1*	27MHz non-spreading singled clock
	0	100 MHz spreading differential SRC clock



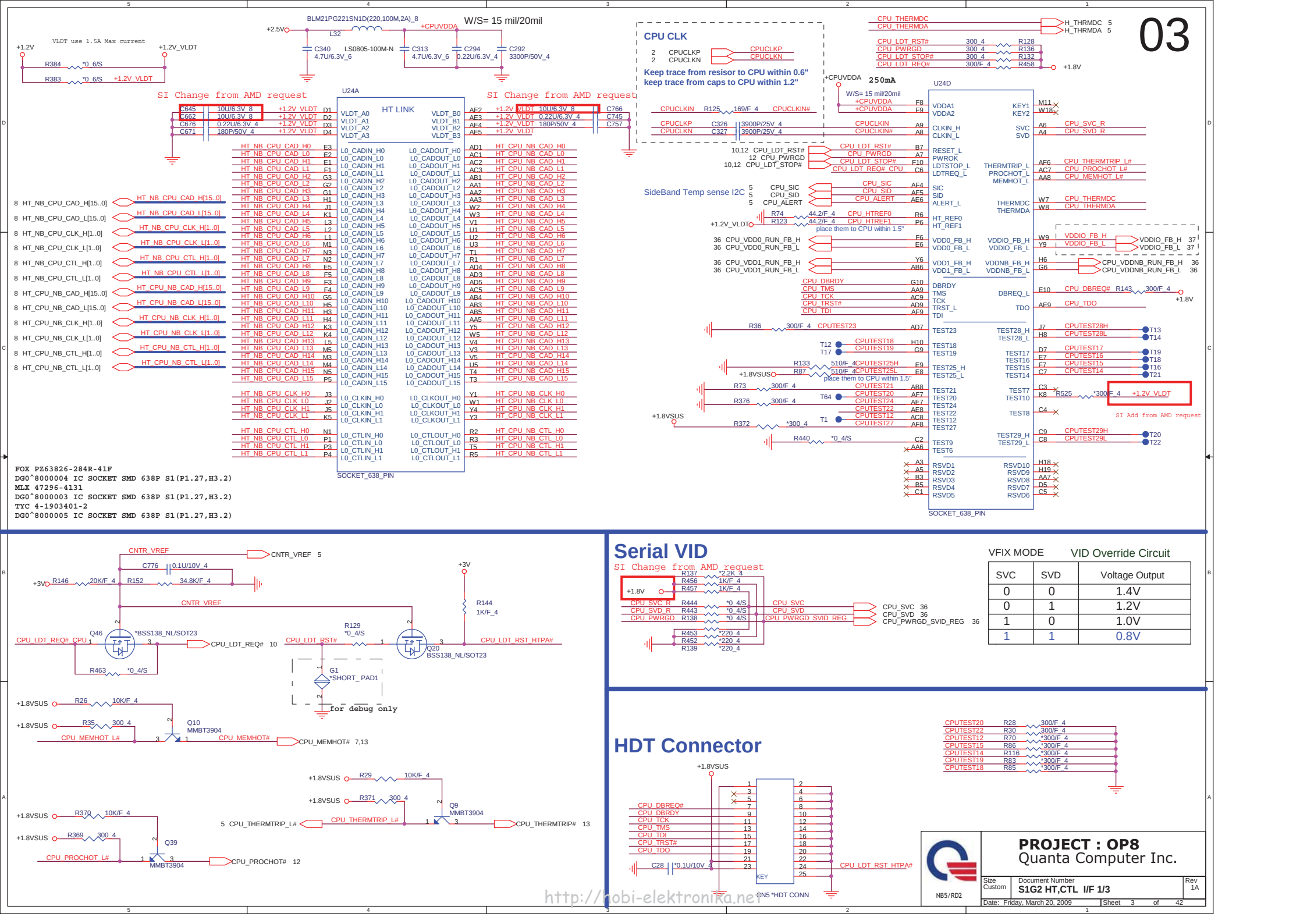
Clock chip has internal serial terminations
for differential pairs, external resistors are
reserved for debug purpose.

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Clock Generator	1A

Date: Friday, March 20, 2009 Sheet 2 of 42

NB5/RD2


03
CPU CLK
Keep trace from resisor to CPU within 0.6"
keep trace from caps to CPU within 1.2"
SI Change from AMD request
SideBand Temp sense I2C
HT LINK
U24A
U24D
SOCKET_638_PIN
FOX PZ63826-284R-41F
DG0^8000004 IC SOCKET SMD 638P S1(P1.27,H3.2)
MLX 47296-4131
DG0^8000003 IC SOCKET SMD 638P S1(P1.27,H3.2)
TYC 4-1903401-2
DG0^8000005 IC SOCKET SMD 638P S1(P1.27,H3.2)
Serial VID
VFIX MODE
VID Override Circuit
SVC SVD Voltage Output
0 0 1.4V
0 1 1.2V
1 0 1.0V
1 1 0.8V
HDT Connector
for debug only
PROJECT : OP8
Quanta Computer Inc.
NB5/RD2
Size Custom
Document Number S1G2 HT,CTL I/F 1/3
Rev 1A
Date: Friday, March 20, 2009
Sheet 3 of 42
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Processor Memory Interface

04

PLACE THEM CLOSE TO CPU WITHIN 1"

U24B — MEM:CMD/CTRL/CLK — SOCKET_638_PIN

750 mA

R374 39.2/F_4 M_ZP
R373 39.2/F_4 M_ZN
T15 MEM_MA_RESET#

R67 2K/F_4
R68 *0_4 Reserved
R62 2K/F_4
C154 0.1U/10V_4
C133 1000P/50V_4

U24C — MEM:DATA — SOCKET_638_PIN

Place close to socket

C23 4.7U/6.3V_6
C198 4.7U/6.3V_6
C22 4.7U/6.3V_6
C119 4.7U/6.3V_6
C167 0.22U/6.3V_4
C201 0.22U/6.3V_4
C115 0.22U/6.3V_4
C136 0.22U/6.3V_4

C204 1000P/50V_4
C155 1000P/50V_4
C117 1000P/50V_4
C142 1000P/50V_4
C140 180P/50V_4
C147 180P/50V_4
C208 180P/50V_4
C116 180P/50V_4

Close to CPU within 1500 mils

PLACE CLOSE TO PROCESSOR WITHIN 1.5 INCH

C640 1.5P/50V_4
C291 1.5P/50V_4
C636 1.5P/50V_4
C293 1.5P/50V_4

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	S1G2 DDRII MEMORY I/F 2/3	1A

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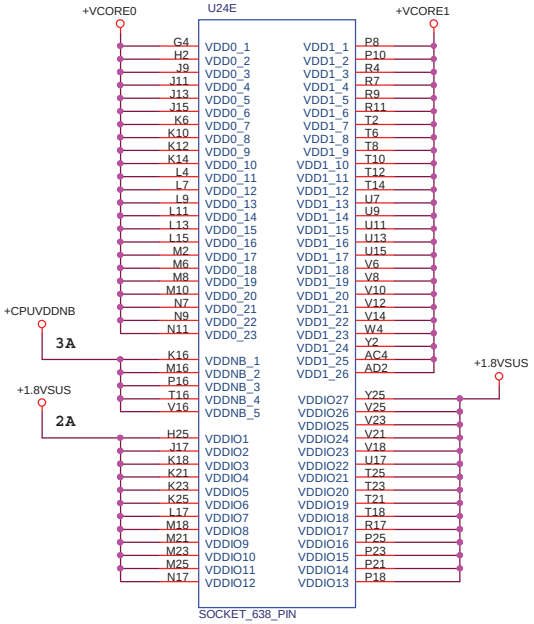
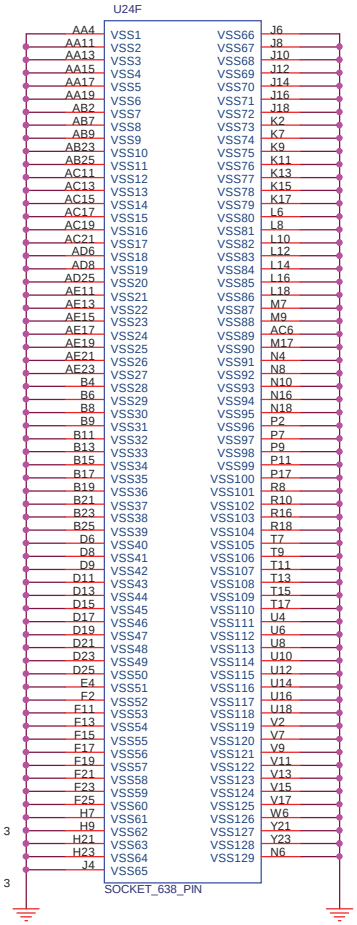
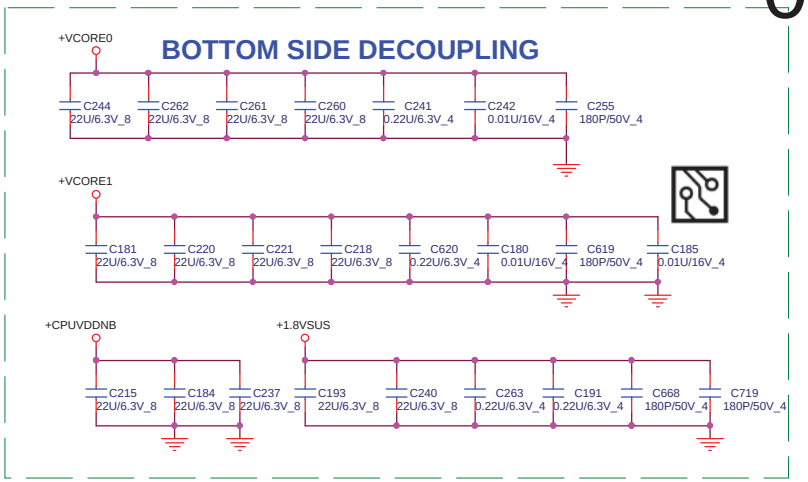
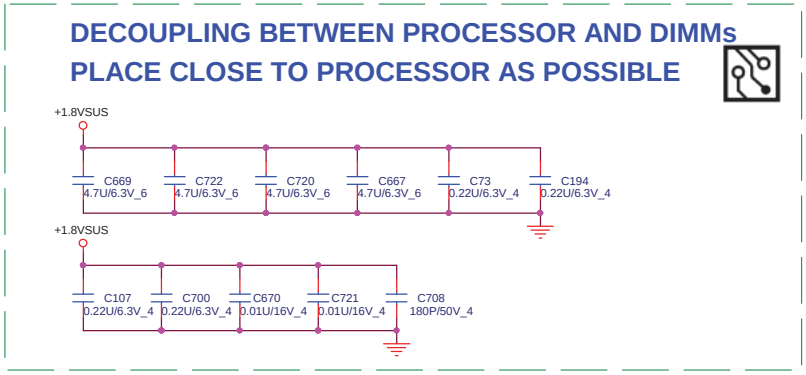
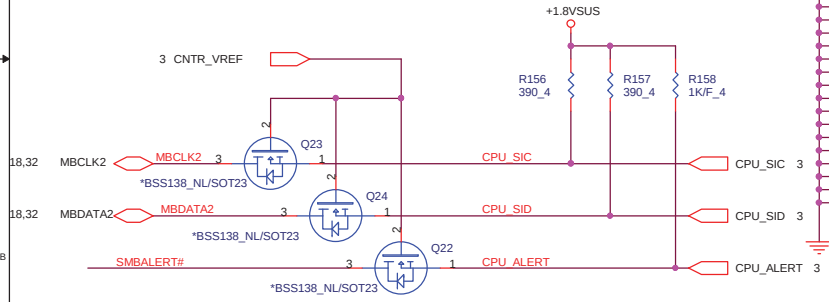
PROCESSOR POWER AND GROUND

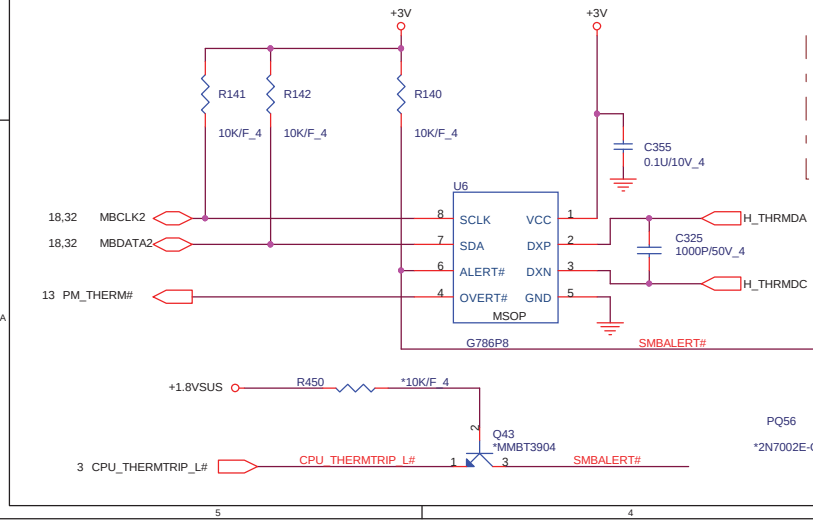


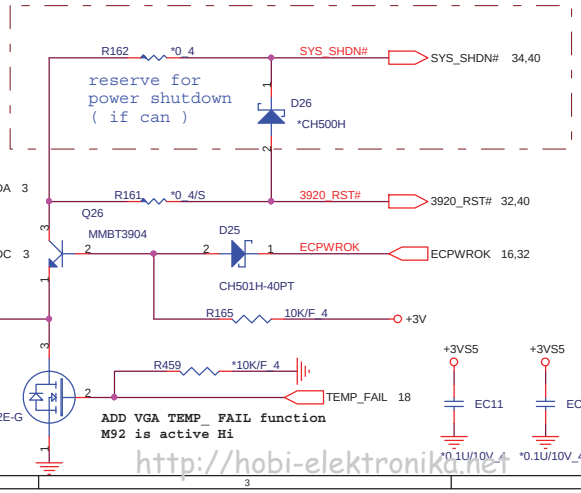


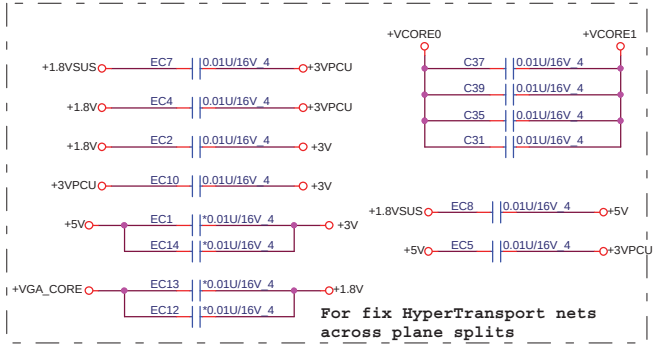


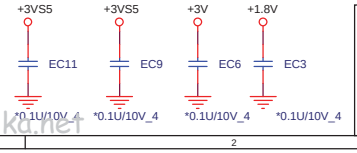










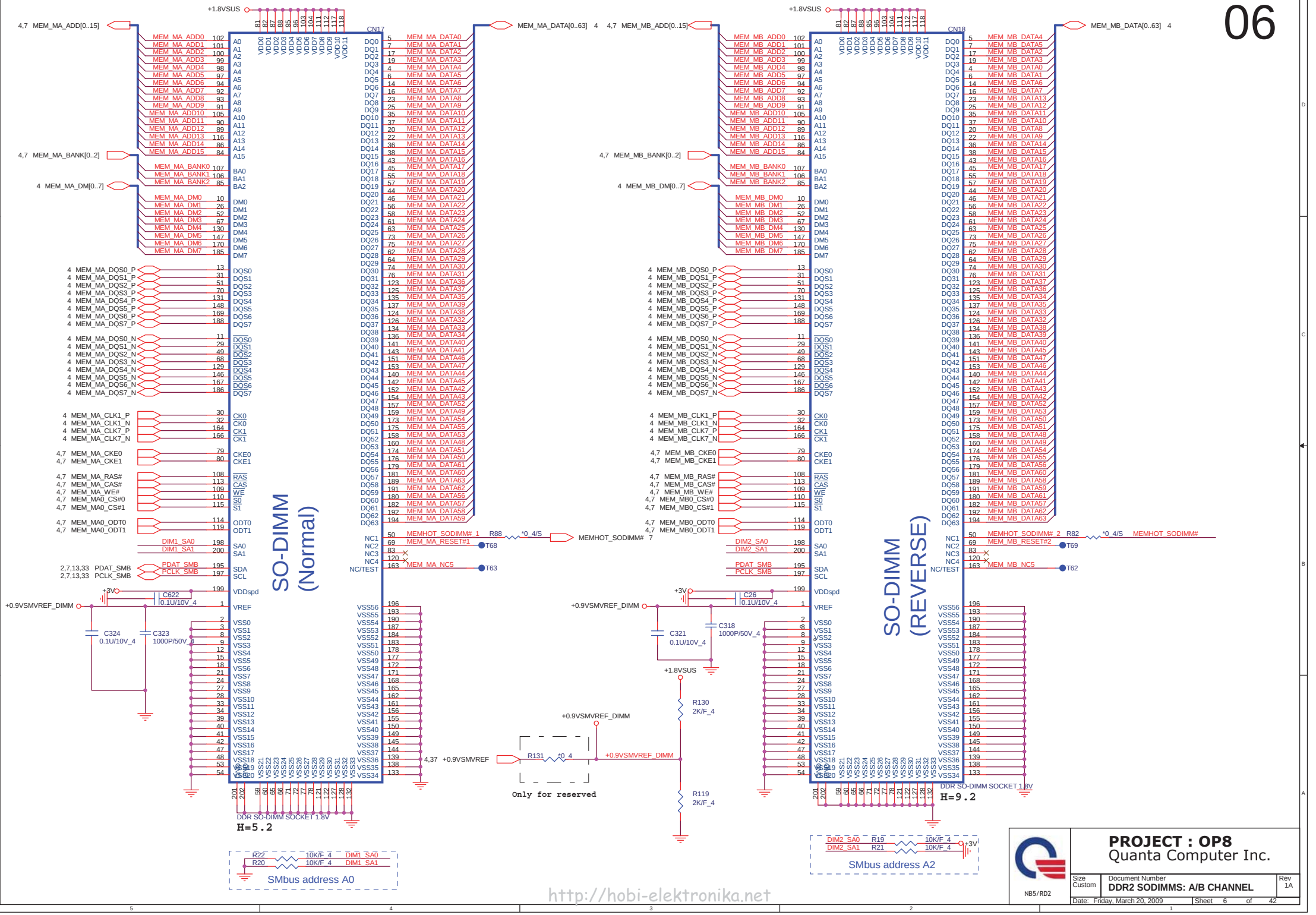


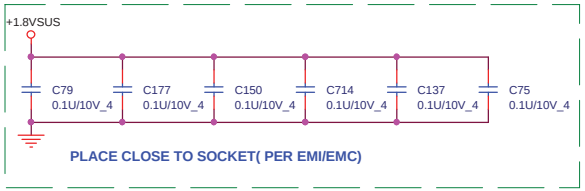
NB5/RD2

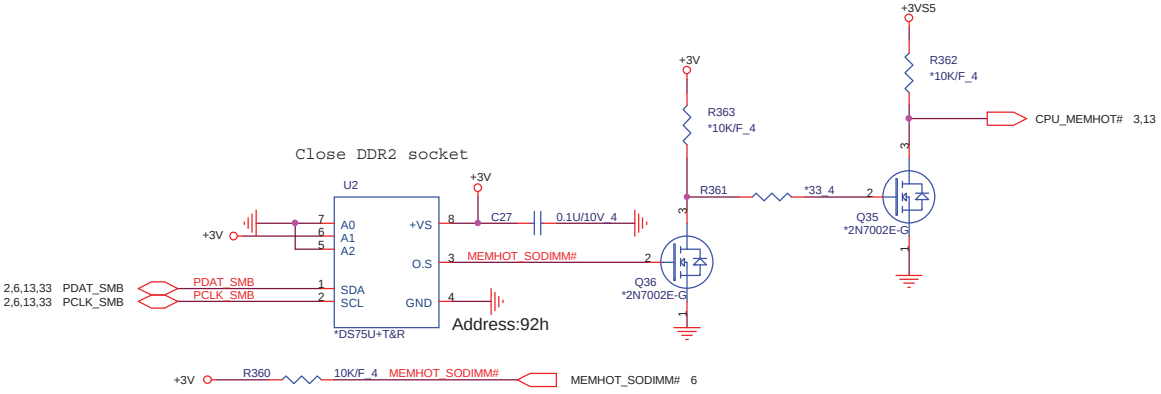
PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	S1G2 PWR & GND 3/3	1A

Date: Friday, March 20, 2009 | Sheet 5 of 42


06
SO-DIMM (Normal)
SO-DIMM (REVERSE)
CN17
CN18
+1.8VSUS
+0.9VSMVREF_DIMM
+3V
MEM_MA_DATA[0..63]
MEM_MB_DATA[0..63]
MEM_MA_ADD[0..15]
MEM_MB_ADD[0..15]
MEM_MA_BANK[0..2]
MEM_MB_BANK[0..2]
MEM_MA_DM[0..7]
MEM_MB_DM[0..7]
MEMHOT_SODIMM#
MEMHOT_SODIMM# 1
MEMHOT_SODIMM# 2
MEM_MA_RESET#1
MEM_MB_RESET#2
MEM_MA_NC5
MEM_MB_NC5
PDAT_SMB
PCLK_SMB
DIM1_SA0
DIM1_SA1
DIM2_SA0
DIM2_SA1
C622 0.1U/10V_4
C324 0.1U/10V_4
C323 1000P/50V_4
C26 0.1U/10V_4
C321 0.1U/10V_4
C318 1000P/50V_4
R130 2K/F_4
R119 2K/F_4
R131 *0_4
Only for reserved
R22 10K/F_4
R20 10K/F_4
R19 10K/F_4
R21 10K/F_4
SMbus address A0
SMbus address A2
DDR SO-DIMM SOCKET 1.8V
H=5.2
H=9.2
http://hobi-elektronika.net
PROJECT : OP8
Quanta Computer Inc.
NB5/RD2
Size Custom
Document Number
DDR2 SODIMMS: A/B CHANNEL
Rev 1A
Date: Friday, March 20, 2009
Sheet 6 of 42



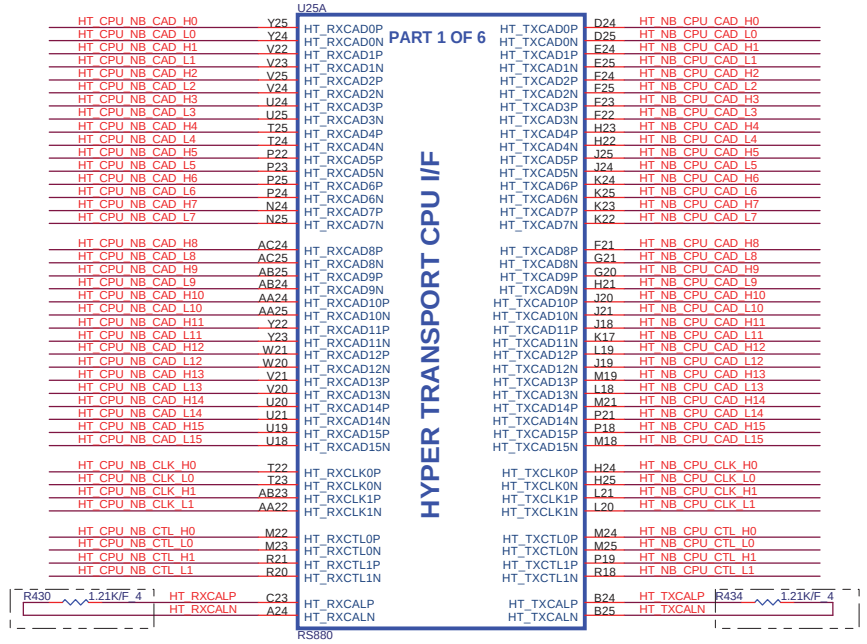


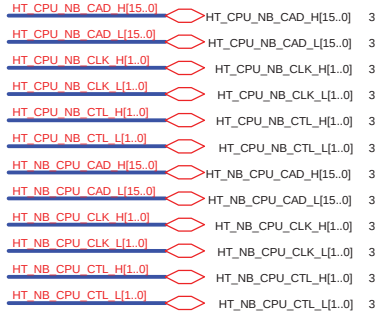
NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DDR2 SODIMMS TERMINATIONS	1A

Date: Friday, March 20, 2009 Sheet 7 of 42

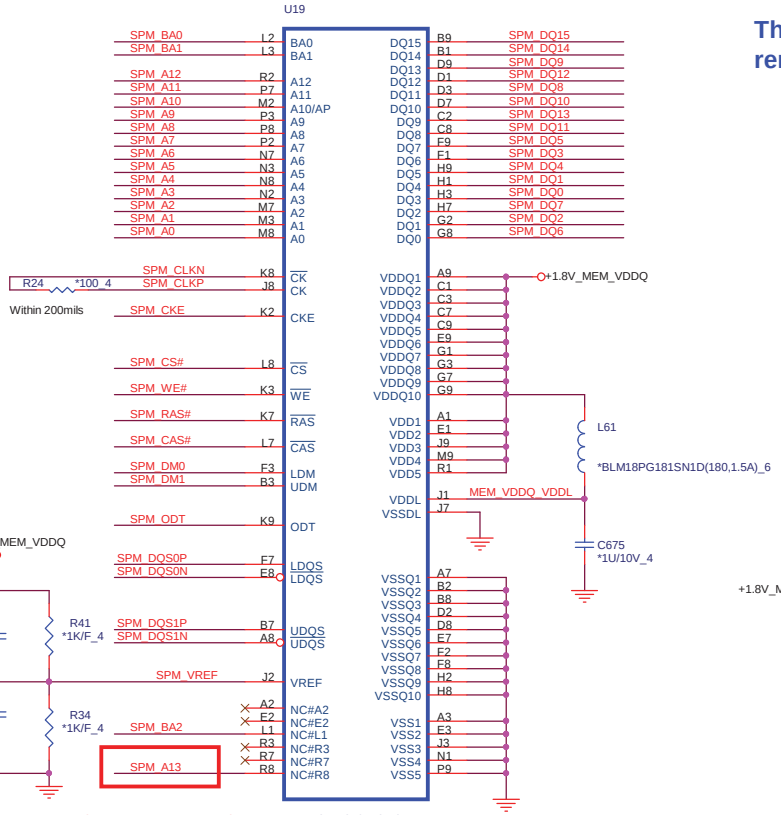




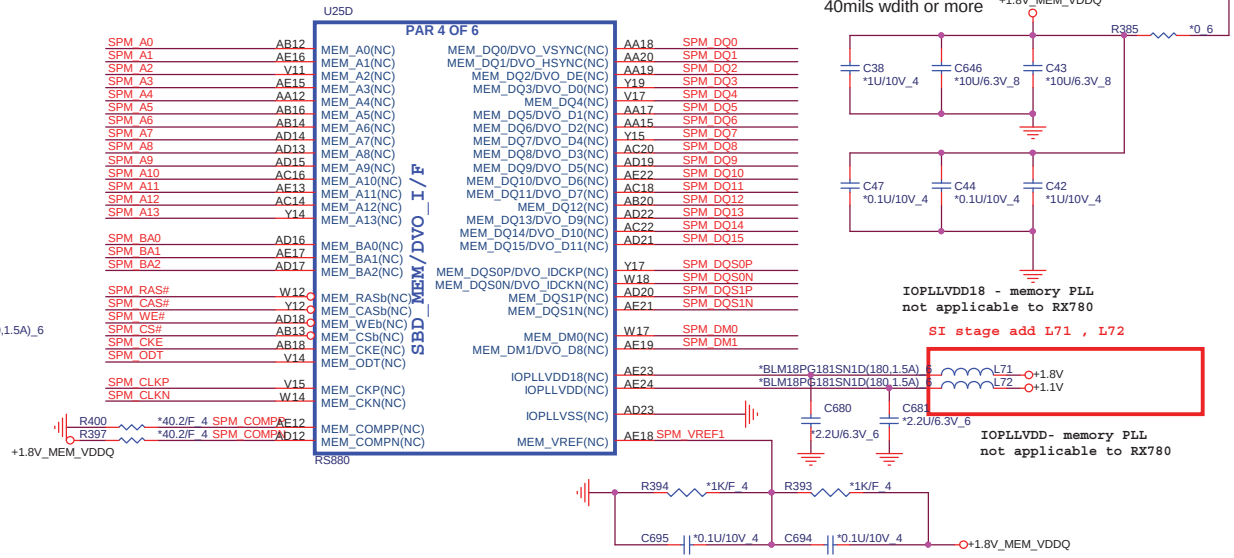
signals	RS880	RX880
HT_TXCALP	R430 301 ohm 1%	R430 1.21k ohm 1%
HT_TXCALN		
HT_RXCALP	R434 301 ohm 1%	R434 1.21k ohm 1%
HT_RXCALN		

RES CHIP 1.21K 1/16W +-1%(0402)
P/N : CS21212FB18

RES CHIP 301 1/16W +-1%(0402)
P/N : CS13012FB14



This block is for UMA RS880 only , RX880 can remove all component

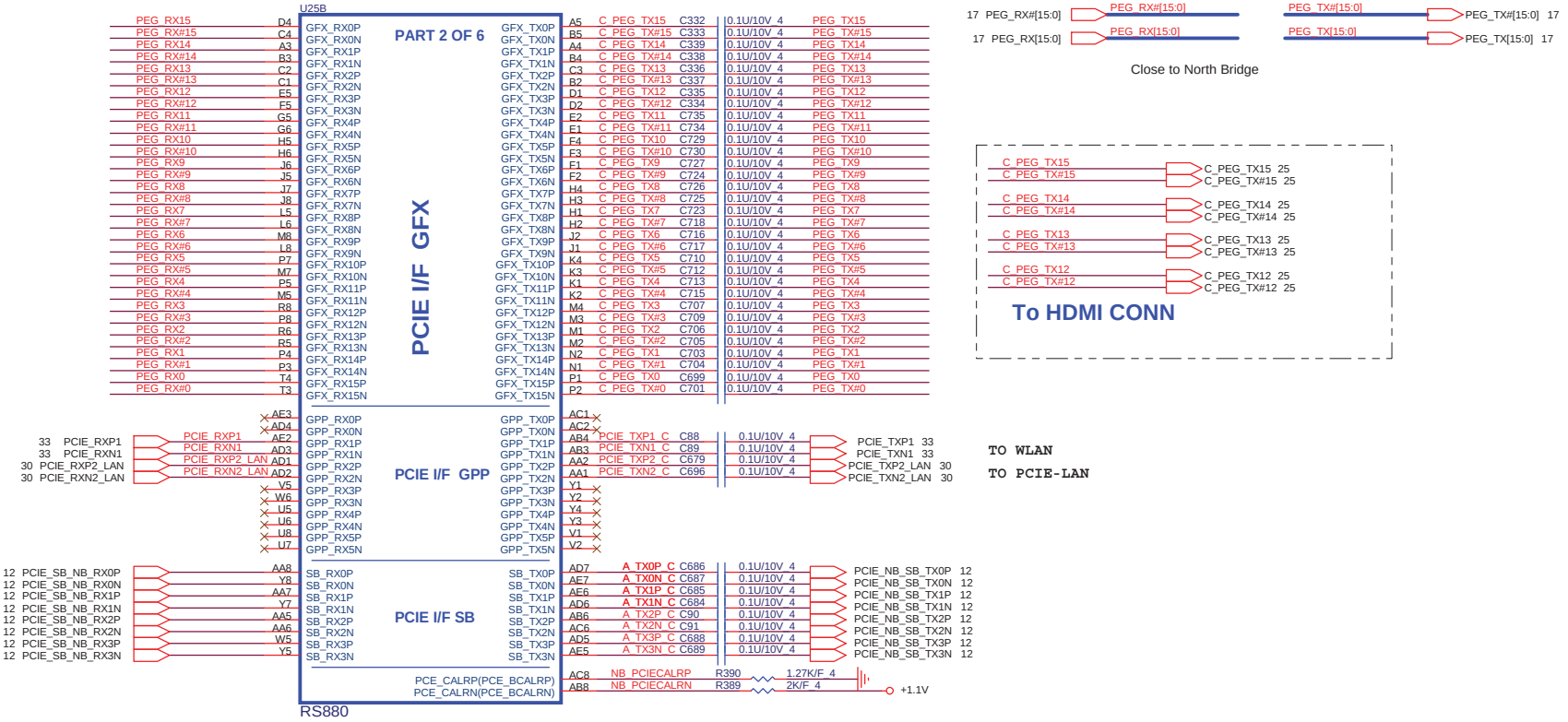


PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RS740/RS780-HT LINK I/F 1/5	1A

NB5/RD2

Date: Friday, March 20, 2009 Sheet 8 of 42



RS880 Display Port Support (muxed on GFX)

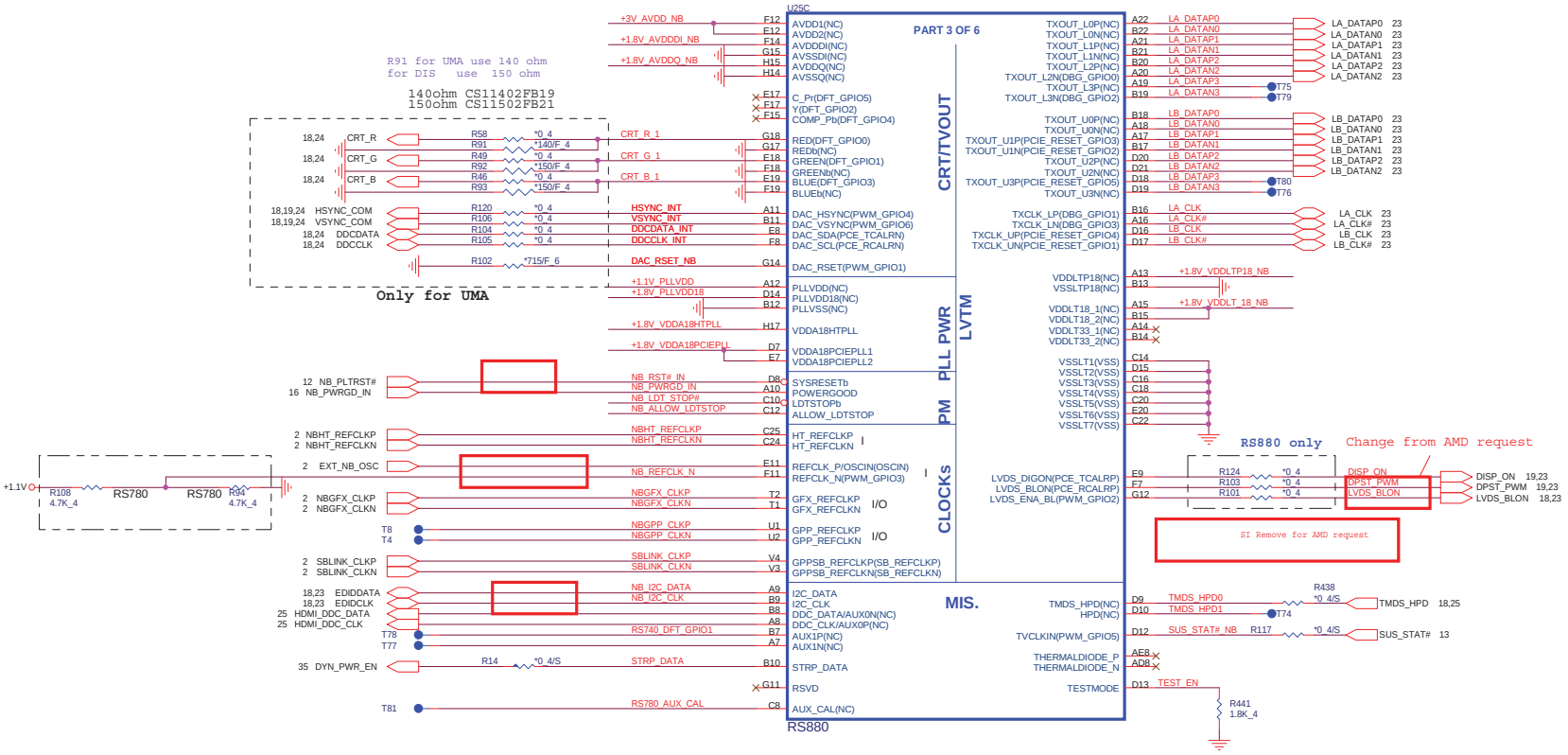
DP0	GFX_TX0,TX1,TX2 and TX3 AUX0 and HPD0
DP1	GFX_TX4,TX5,TX6 and TX7 AUX1 and HPD1

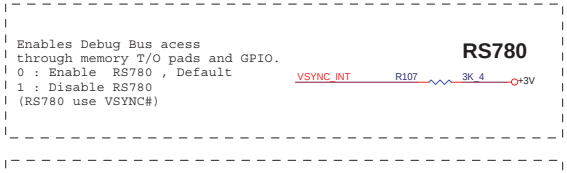
NB5/RD2

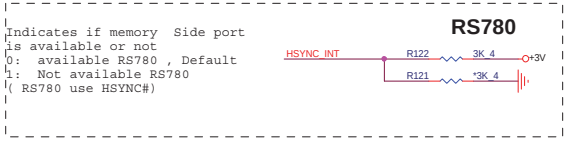
PROJECT : OP8
Quanta Computer Inc.

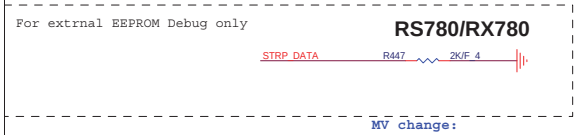
Size	Document Number	Rev
Custom	RS740/RS780-PCIE I/F 2/5	1A

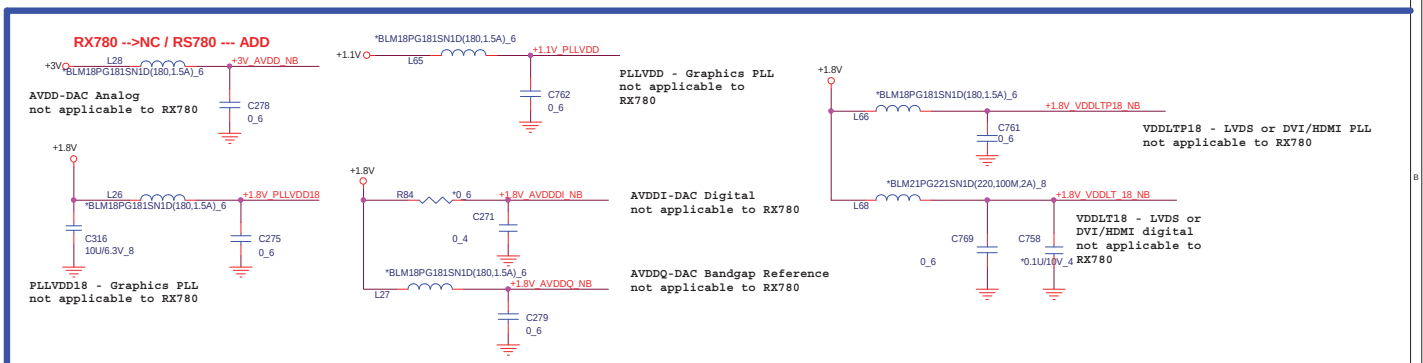
Date: Friday, March 20, 2009 Sheet 9 of 42

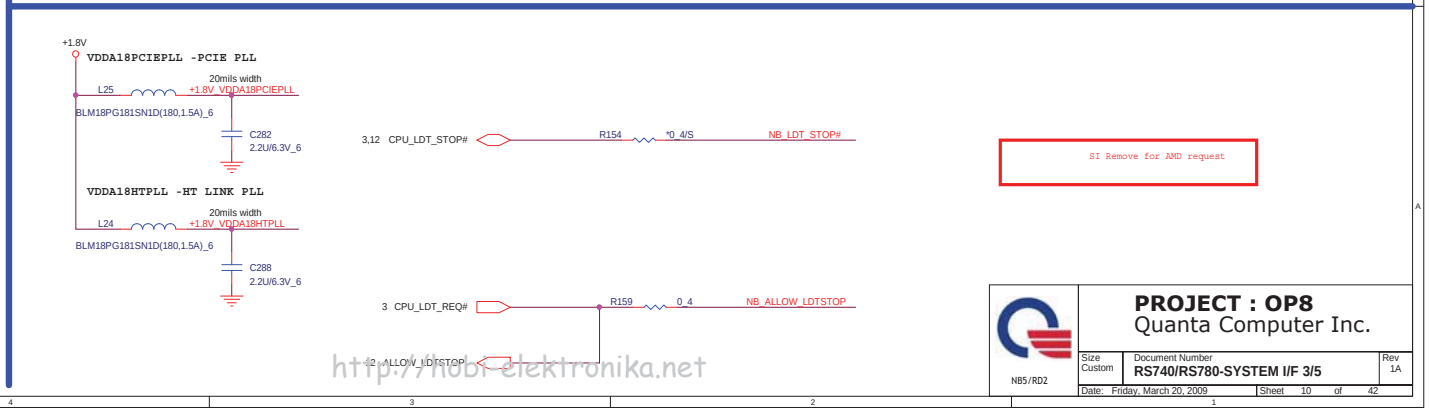








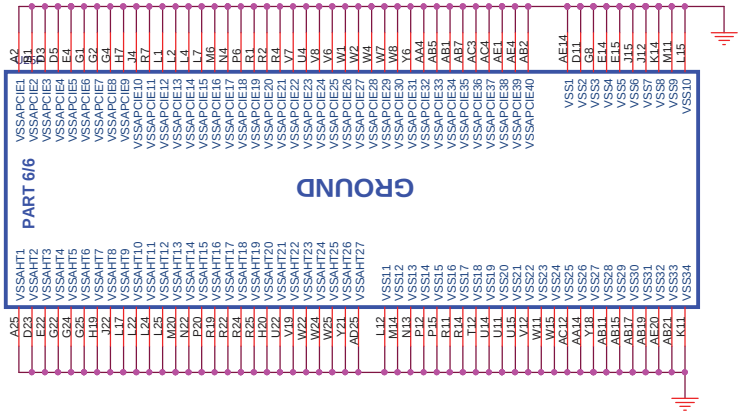


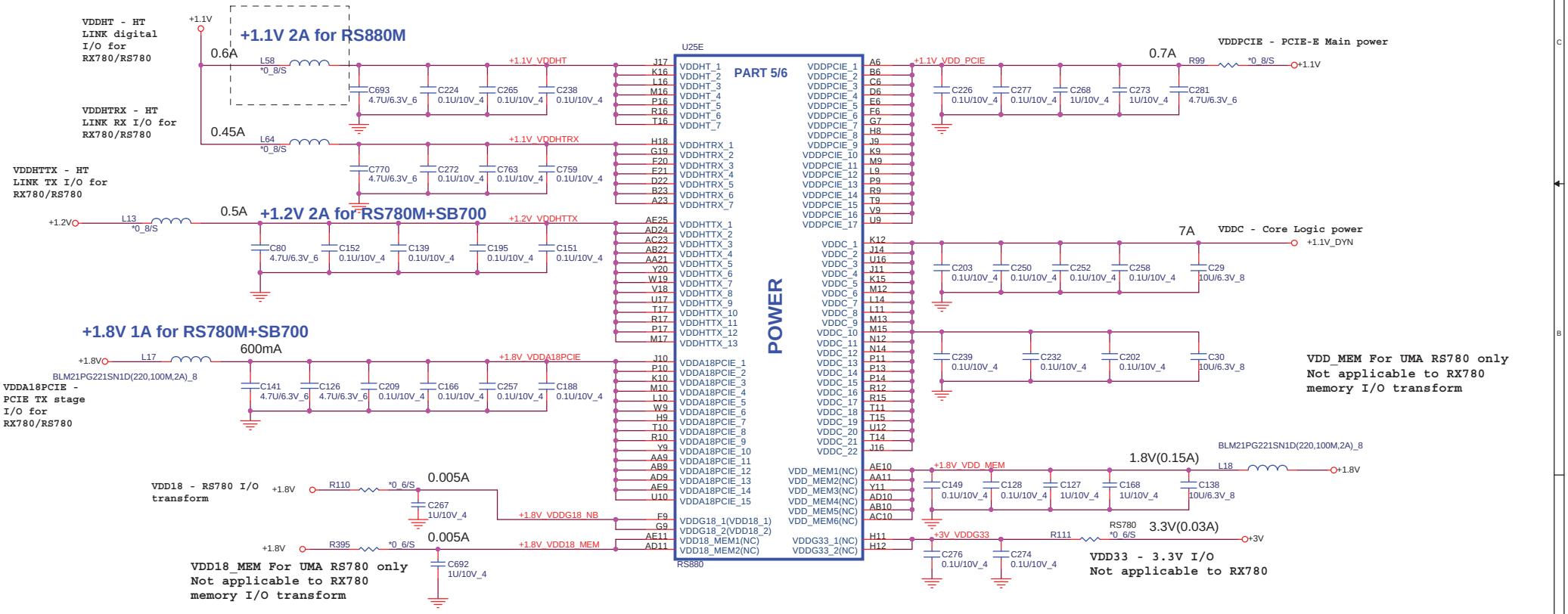


NB5/RD2	PROJECT : OP8 Quanta Computer Inc.	
Size: Custom	Document Number: RS740/RS780-SYSTEM I/F 3/5	Rev: 1A
Date: Friday, March 20, 2009	Sheet 10 of 42	

RX780/RS780 POWER DIFFERENCE TABLE

PIN NAME	RX780	RS780	PIN NAME	RX780	RS780
VDDHT	+1.1V	+1.1V	IOPLLVDD	NC	+1.1V
VDDHTRX	+1.1V	+1.1V	AVDD	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	AVDDDI	NC	+1.8V
VDDA18PCIE	+1.8V	+1.8V	AVDDQ	NC	+1.8V
VDDG18	+1.8V	+1.8V	PLLVDD	NC	+1.1V
VDD18_MEM	NC	+1.8V	PLLVDD18	NC	+1.8V
VDDPCIE	+1.1V	+1.1V	VDDA18PCIEPLL	+1.8V	+1.8V
VDDC	+1.1V	+1.1V	VDDA18HTPLL	+1.8V	+1.8V
VDD_MEM	NC	+1.8V/1.5V	VDDLTP18	NC	+1.8V
VDDG33	NC	+3.3V	VDDLT18	NC	+1.8V
IOPLLVDD18	NC	+1.8V	VDDLT33	NC	NC





NB5/RD2	PROJECT : OP8 Quanta Computer Inc.	
Size: Custom	Document Number: RS740/RS780-POWER5/5	Rev: 1A
Date: Friday, March 20, 2009	Sheet 11 of 42	

PLACE THESE
PCIE AC
COUPLING CAPS
CLOSE TO U600

To RS780

SB710
Part 1 of 5
U31A

PCIE_PVDD-- PCIE PLL POWER

Change for SB710 chip

FOR A14 chip

All the PCI bus has build-in Pull-UP/Down resistors

Change from 0ohm to 1K for safty issue

for EMI suggestion

INTRUDER_ALERT# Left not connected (Southbridge has 50-kohm internal pull-up to VBAT).

SB710
IC CTRL(528P) SB710 A14(218-0660017)
P/N : AJ066000T01

PROJECT : OP8	Quanta Computer Inc.
Size: Custom	Document Number: SB700-PCIE/PCI/CPU/LPC 1/4
Rev: 1A	
NB5/RD2	
Date: Friday, March 20, 2009	Sheet 12 of 42

NC only ,Can't be install

+3VS5 R319 *2.2K_4 SB_TEST0
R180 *2.2K_4 SB_TEST1
R296 *2.2K_4 SB_TEST2

+3V SCL0/SDATA0 is 3V tolerance
AMD datasheet define it
R238 2.2K_4 PCLK_SMB
R241 2.2K_4 PDAT_SMB

Clock gen/Robson/TV tuner /DDR2/DDR2 thermal/Accelerometer

Change for test point for Debug mode

30,33 PCIE_WAKE#
C840 100P/50V_4

+3VS5 SCL1/SDATA1 is 3V/S5 tolerance
AMD datasheet define it
R492 2.2K_4 SB_SMBCLK1
R494 2.2K_4 SB_SMBDATA1

remove pull hi
(chip internal
have pull hi)

+3VS5 SCL2/SDATA2 is 3V/S5 tolerance
AMD datasheet define it
R204 2.2K_4 SB_SCLK2
R205 2.2K_4 SB_SDATA2

+3V
R290 3K_4 SUS_STAT#

Change from AMD request

+3VS5
R288 2.2K_4 DNBSWON#

To Azalia

ACZ_SDOUT R487 33_4 → ACZ_SDOUT_AUDIO 27
C830 *10P/50V_4
ACZ_SYNC R303 33_4 → ACZ_SYNC_AUDIO 27
C562 *10P/50V_4
ACZ_BCLK R489 33_4 → BIT_CLK_AUDIO 27
C832 10P/50V_4
ACZ_RST# R317 33_4 → ACZ_RST#_AUDIO 27
ACZ_SDIN0 → ACZ_SDIN0 27
Remove short pad

To Modem Board

ACZ_SDOUT R488 33_4 → ACZ_SDOUT_AUDIO_MDC 28
C831 *10P/50V_4
ACZ_SYNC R320 33_4 → ACZ_SYNC_AUDIO_MDC 28
C580 *10P/50V_4
ACZ_BCLK R490 33_4 → BIT_CLK_AUDIO_MDC 28
C833 10P/50V_4
ACZ_RST# R312 33_4 → ACZ_RST#_AUDIO_MDC 28
ACZ_SDIN1 → ACZ_SDIN1 28
Remove short pad

Modified for EMI suggestion

Check BIOS for no connetcor pin for the power

U31D

SB710 Part 4 of 5

T113	RI#	E1 PCI_PME#/GEVENT4#
T43	SLP_S2	F2 RI#/EXTEVNT0#
32 SUSB#	SUSB#	H7 SLP_S2/GPM9#
32 SUSC#	SUSC#	F5 SLP_S3#
32 DNBSWON#	DNBSWON#	G1 SLP_S5#
16 SB_PWRGD_IN	SB_PWRGD_IN	H2 PWR_BTN#
10 SUS_STAT#	SUS_STAT#	H1 PWR_GOOD
	SB_TEST2	K3 SUS_STAT#
	SB_TEST1	H5 TEST2
	SB_TEST0	H4 TEST1
32 GATEA20	GATEA20	H3 TEST0
32 RCIN#	RCIN#	Y15 GA20IN/GEVENT0#
32 SCI#	SCI#	W15 KBRST#/GEVENT1#
32 KBSMI#	KBSMI#	K4 LPC_PME#/GEVENT3#
T56	GEVENT5#	K24 LPC_SMI#/EXTEVNT1#
T124	SYS_RST#	F1 S3_STATE/GEVENT5#
		J2 SYS_RESET#/GPM7#
R198 0_4 SWI#_L		H6 WAKE#/GEVENT8#
32 SWI# R181 *0_4/S	SB_THERMTRIP#	F2 BLINK/GPM6#
3 CPU_THERMTRIP#		J6 SMBALERT#/THRMTRIP#/GEVENT2#
16 WD_PWRGD	WD_PWRGD	W14 NB_PWRGD
32 RSMRST#	RSMRST#	D3 RSMRST#

ACPI / WAKE UP EVENTS

T29	SATA_IS1	AE18 SATA_IS0#/GPIO10
T106		AD18 CLK_REQ3#/SATA_IS1#/GPIO6
30,32 LAN_DISABLE# R230 *0_4	LAN_DISABLE#_SB	AA19 SMARTVOLT/SATA_IS2#/GPIO4
		W17 CLK_REQ0#/SATA_IS3#/GPIO0
T36	SB_NWD_CLK_REQ#	Y17 CLK_REQ1#/SATA_IS4#/FANOUT3/GPIO39
		W20 CLK_REQ2#/SATA_IS5#/FANIN3/GPIO40
27,28 ACZ_SPKR	ACZ_SPKR	V21 SPKR/GPIO2
2,6,7,33 PCLK_SMB	PCLK_SMB	AA18 SCL0/GPOC0#
2,6,7,33 PDAT_SMB	PDAT_SMB	W18 SDA0/GPOC1#
	SB_SMBCLK1	K1 SCL1/GPOC2#
	SB_SMBDATA1	K2 SDA1/GPOC3#
T33		AA20 DDC1_SCL/GPIO9
T37		Y18 DDC1_SDA/GPIO8
32 PM_BATLOW#	PM_BATLOW#	C1 LLB#/GPIO66
	SES_INT	Y19 SHUTDOWN#/GPIO5
T34	GEVENT7#	G5 DDR3_RST#/GEVENT7#
T50		

GPIO

3,7 CPU_MEMHOT#	CPU_MEMHOT#	B9 USB_OC6#/IR_TX1/GEVENT6#
5 PM_THERM# R264 *0_4	SMBALERT#_1	B8 USB_OC5#/IR_TX0/GPM5#
R276 10K/F_4 +3VS5		A8 USB_OC4#/IR_RX0/GPM4#
	SB_JTAG_TDO	A9 USB_OC3#/IR_RX1/GPM3#
	SB_JTAG_TCK	E5 USB_OC2#/GPM2#
	SB_JTAG_TDI	F8 USB_OC1#/GPM1#
	SB_JTAG_RST#	E4 USB_OC0#/GPM0#

USB OC

R483 *10K/F_4	ACZ_BCLK	M1 AZ_BITCLK
	ACZ_SDOUT	M2 AZ_SDOUT
R339 *10K/F_4 ACZ_SDIN0		J7 AZ_SDIN0/GPIO42
R336 *10K/F_4 ACZ_SDIN1		J8 AZ_SDIN1/GPIO43
R275 *10K/F_4 ACZ_SDIN2_R		L8 AZ_SDIN2/GPIO44
R506 *10K/F_4 ACZ_SDIN3_R		M3 AZ_SDIN3/GPIO46
	ACZ_SYNC	L6 AZ_SYNC
16 ACZ_RST#	ACZ_RST#	M4 AZ_RST#
		L5 AZ_DOCK_RST#/GPM8#

HD AUDIO

HD audio interface is 3.3S5 voltage

H19	IMC_GPIO0
H20	IMC_GPIO1
H21	SPI_CS2#/IMC_GPIO2
F25	IDE_RST#/F_RST#/IMC_GPO3
D22	IMC_GPIO4
E24	IMC_GPIO5
E25	IMC_GPIO6
D23	IMC_GPIO7

INTEGRATED uC

USB MISC

	USBCLK/14M_25M_48M_OSC	C8 CLK_48M_USB ← CLK_48M_USB 2
	USB_RCOMP	G8 USB_RCOMP_SB R263 11.8K/F_6

USB 1.1

	USB_FSD13P	E6 USB_FSD13P → T54
	USB_FSD13N	E7 USB_FSD13N → T57
	USB_FSD12P	F7 USB_FSD12P → T38
	USB_FSD12N	E8 USB_FSD12N → T40

USB 2.0

	USB_HSD13P	H11
	USB_HSD13N	J10
	USB_HSD10P	E11 USBP10+ 33
	USB_HSD10N	F11 USBP10- 33 WLAN Min-Card
	USB_HSD9P	A11 USBP9+ 29
	USB_HSD9N	B11 USBP9- 29 BLUETOOTH
	USB_HSD8P	C10 USBP8+ 29
	USB_HSD8N	D10 USBP8- 29 USB Connector
	USB_HSD7P	G11
	USB_HSD7N	H12
	USB_HSD6P	E12
	USB_HSD6N	E14
	USB_HSD5P	C12 USBP5+ 29
	USB_HSD5N	D12 USBP5- 29 USB Connector
	USB_HSD4P	B12
	USB_HSD4N	A12
	USB_HSD3P	G12 USBP3+ 26
	USB_HSD3N	G14 USBP3- 26 USB card reader
	USB_HSD2P	H14 USBP2+ 23
	USB_HSD2N	H15 USBP2- 23 Carama USB
	USB_HSD1P	A13 USBP1+ 29
	USB_HSD1N	B13 USBP1- 29 E-SATA and USB Connector
	USB_HSD0P	B14
	USB_HSD0N	A14

Si Change USB port reference Raven 2.0 design

INTEGRATED uC

	IMC_GPIO8 A18
	IMC_GPIO9 B18
	IMC_PWM0/IMC_GPIO10 F21
	SCL2/IMC_GPIO11 D21 SB_SCLK2
	SDA2/IMC_GPIO12 F19 SB_SDATA2
	SCL3_LV/IMC_GPIO13 E20 SB_SCLK3 T32
	SDA3_LV/IMC_GPIO14 E21 5158_RST_R# 5158_RST_R# 26
	IMC_PWM1/IMC_GPIO15 E19
	IMC_PWM2/IMC_GPIO16 D19 SB_GPIO16 16
	IMC_PWM3/IMC_GPO17 E18 SB_GPIO17 16 SPI/LPC define
	IMC_GPIO18 G20
	IMC_GPIO19 G21
	IMC_GPIO20 D25
	IMC_GPIO21 D24
	IMC_GPIO22 C25
	IMC_GPIO23 C24
	IMC_GPIO24 B25
	IMC_GPIO25 C23
	IMC_GPIO26 B24
	IMC_GPIO27 B23
	IMC_GPIO28 A23
	IMC_GPIO29 C22
	IMC_GPIO30 A22
	IMC_GPIO31 B22
	IMC_GPIO32 B21
	IMC_GPIO33 A21
	IMC_GPIO34 D20
	IMC_GPIO35 C20
	IMC_GPIO36 A20
	IMC_GPIO37 B20
	IMC_GPIO38 B19
	IMC_GPIO39 A19
	IMC_GPIO40 D18
	IMC_GPIO41 C18

SB710

CLK_48M_USB → C516 *2.2P/50V_4 for EMI

CN11 +3VSUS C393 10P/50V_4
1 SB_JTAG_TCK
2 SB_JTAG_TDO
3 SB_JTAG_TDI
4 SB_TEST1
5
6 SB_JTAG_RST#
7
8

SB JTAG

*S/W JTAG DEBUG

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	SB700-ACPI/GPIO/USB 2/4	1A

Date: Friday, March 20, 2009 Sheet 13 of 42

SATA PORT 0,1,2,3 can support AHCI mode

SATA1

SATA ODD

E-SATA

PLACE SATA AC COUPLING CAPS CLOSE TO SB600

U31B

SB710

Part 2 of 5

SERIAL ATA

ATA 66/100/133

SPI ROM

SATA PWR

HW MONITOR

SB710

IF THERE IS NO IDE, TEST POINTS FOR DEBUG BUS IS MANDATORY

SIDE_PORT_ID1	SIDE_PORT_ID0	
0	0	Samsung
0	1	Qimonda
1	0	Hynix
1	1	no supprot side port

PLACE SATA_CAL RES VERY CLOSE TO BALL OF SB700

NOTE:
R361 IS 1K 1% FOR 25MHz XTAL, 4.99K 1% FOR 100MHz INTERNAL CLOCK

PLVDD_SATA-- SATA PLL POWER

XTLVDD_SATA-- SATA crystal power

AVDD--H/W monitor Analog power

Add for design

ID3	ID2	ID1	ID0	
0	0	0	0	OP8 UMA
0	0	0	1	OP9 UMA
0	0	1	0	OP8 Dis
0	0	1	1	OP9 Dis
0	1	0	0	
0	1	0	1	
0	1	1	0	
0	1	1	1	

PROJECT : OP8
Quanta Computer Inc.

NB5/RD2

Size: Custom | Document Number: SB700-ACPI/GPIO/USB 2/4 | Rev: 1A

Date: Friday, March 20, 2009 | Sheet 14 of 42

PLACE ALL THE DECOUPLING CAPS ON
THIS SHEET CLOSE TO SB AS POSSIBLE.

VDD-- S/B CORE power

VDDQ--3.3V I/O power 0.8A

1.8V : FLASH MEMORY MODE(DEFAULT)
3.3V: IDE MODE

VDD33_18--3.3V IDE I/O power
1.8V flash memory I/O power 0.45A

SI Remove R219 from AMD request

PCIE_VDDR--PCIE I/O power 844mA

AVDD_SATA--SATA phy power 0.2A

For support USB wakeup-->3V_S5

AVDDTX--USB Phy Analog I/O power 0.2A

+1.2V_VCC_SB_R 604mA

CKVDD_1.2V-- Internal clock Generator I/O power 286mA

S5_3.3--3.3v standby power 0.01A

S5_1.2V--1.2V standby power 0.22A 0.2A

V5_VREF--PCI 5V TOLERANCE 4mA 7mA 44mA 16mA

USB_PHY_1.2V--USB Phy digital power

AVDDC--USB Analog PLL power

AVDDCK_1.2--USB Phy digital power

AVDDCK_3.3--Analog system PLL power

SB710 Part 3 of 5

SB710 Part 5 of 5

POWER

GROUND

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	SB700-PWR/DECOUPLING 4/4	1A

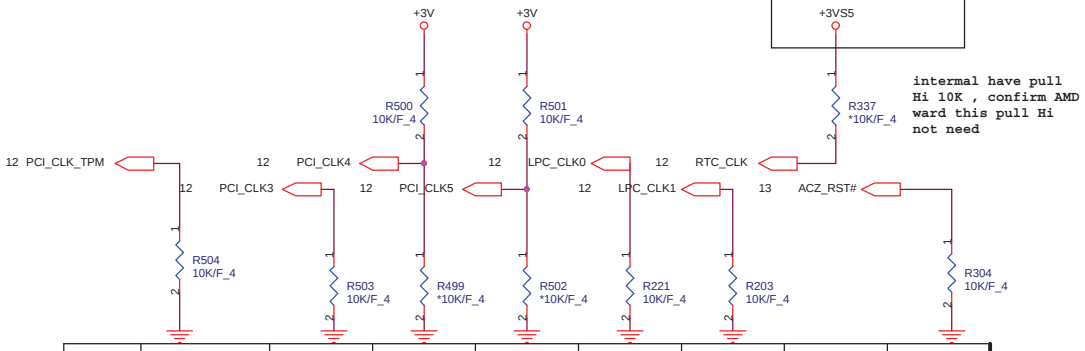
Date: Friday, March 20, 2009 Sheet 15 of 42

NB5/RD2

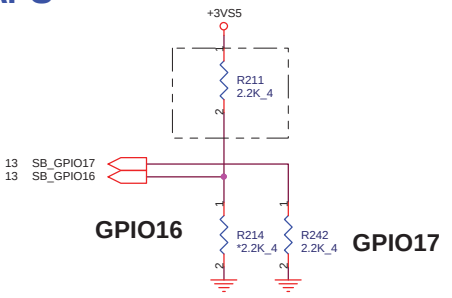
OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

It must ready refore RSMRST#

REQUIRED STRAPS



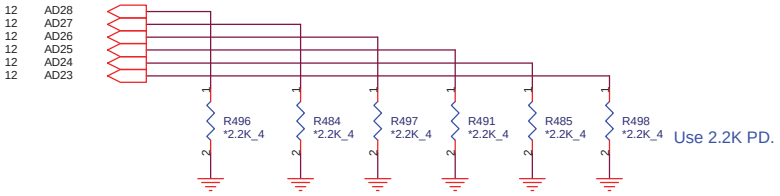
	PCI_CLK_TPM	PCI_CLK3	PCI_CLK4	PCI_CLK5	LPC_CLK0	LPC_CLK1	RTC_CLK	AZ_RST#
PULL HIGH	BOOTFAIL TIMER ENABLED	USE DEBUG STRAPS	RESERVED	RESERVED	IMC ENABLED	CLKGEN ENABLED	INTERNAL RTC DEFAULT	ENABLE PCI ROM BOOT
PULL LOW	BOOTFAIL TIMER DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT			IMC DISABLED DEFAULT	CLKGEN DISABLED DEFAULT	EXT. RTC (PD on X1, apply 32KHz to RTC_CLK)	DISABLE PCI ROM BOOT DEFAULT



TYPE	GPIO16	GPIO17
FWH	L : 2.2K pull down	L : 2.2K pull down
LPC	NC	L : 2.2K pull down
SPI	L : 2.2K pull down	NC
RSVD	NC	NC

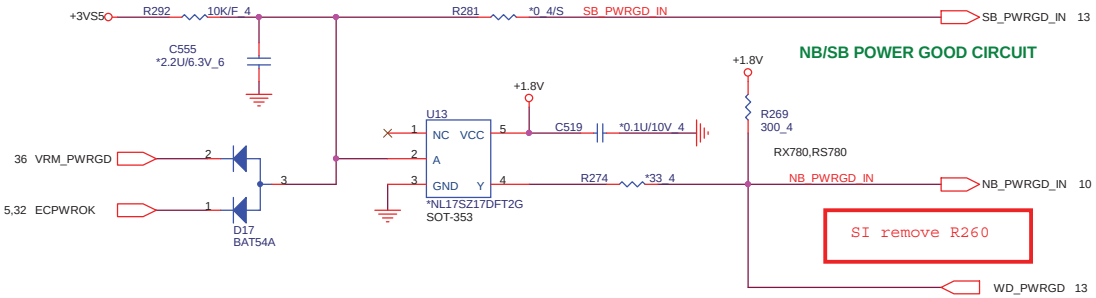
DEBUG STRAPS

SB700 HAS 15K INTERNAL PU FOR PCI_AD[28:23]



	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	RESERVED
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	

NB_PWRGD_IN:
RS780/RX780 = 1.8V; RS740 = 3.3V
Do NOT share it with SB_PWRGD when use Internal Clk Gen
(Need SB PLL initialize firstly)



AL17SZ17000	IC(5P) NL17SZ17DFT2G(SOT-353)	SOT-353
ALUC1G17000	IC OTHER(5P) SN74AUC1G17DBVR(SOT23-5)	SOT23-5

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	SB700-STRAPS	1A

Date: Friday, March 20, 2009 Sheet 16 of 42

POWER
+PCIE_VDDR=1.2V
+VDD_MEM1.8V=1.8V
+VGA_CORE=0.9~1.2V

U22A

2.5GT/s bit rate

9 PEG_TX0	PEG_TX0	AF30	PCIE_RX0P	PCIE_TX0P	AH30	C_PEG_RXP0	C92	0.1U/10V_4
9 PEG_TX#0	PEG_TX#0	AE31	PCIE_RX0N	PCIE_TX0N	AG31	C_PEG_RXN0	C84	0.1U/10V_4
9 PEG_TX1	PEG_TX1	AE29	PCIE_RX1P	PCIE_TX1P	AG29	C_PEG_RXP1	C94	0.1U/10V_4
9 PEG_TX#1	PEG_TX#1	AD28	PCIE_RX1N	PCIE_TX1N	AF28	C_PEG_RXN1	C99	0.1U/10V_4
9 PEG_TX2	PEG_TX2	AD30	PCIE_RX2P	PCIE_TX2P	AF27	C_PEG_RXP2	C100	0.1U/10V_4
9 PEG_TX#2	PEG_TX#2	AC31	PCIE_RX2N	PCIE_TX2N	AF26	C_PEG_RXN2	C112	0.1U/10V_4
9 PEG_TX3	PEG_TX3	AC29	PCIE_RX3P	PCIE_TX3P	AD27	C_PEG_RXP3	C83	0.1U/10V_4
9 PEG_TX#3	PEG_TX#3	AB28	PCIE_RX3N	PCIE_TX3N	AD26	C_PEG_RXN3	C82	0.1U/10V_4
9 PEG_TX4	PEG_TX4	AB30	PCIE_RX4P	PCIE_TX4P	AC25	C_PEG_RXP4	C134	0.1U/10V_4
9 PEG_TX#4	PEG_TX#4	AA31	PCIE_RX4N	PCIE_TX4N	AB25	C_PEG_RXN4	C146	0.1U/10V_4
9 PEG_TX5	PEG_TX5	AA29	PCIE_RX5P	PCIE_TX5P	Y23	C_PEG_RXP5	C120	0.1U/10V_4
9 PEG_TX#5	PEG_TX#5	Y28	PCIE_RX5N	PCIE_TX5N	Y24	C_PEG_RXN5	C131	0.1U/10V_4
9 PEG_TX6	PEG_TX6	Y30	PCIE_RX6P	PCIE_TX6P	AB27	C_PEG_RXP6	C153	0.1U/10V_4
9 PEG_TX#6	PEG_TX#6	W31	PCIE_RX6N	PCIE_TX6N	AB26	C_PEG_RXN6	C156	0.1U/10V_4
9 PEG_TX7	PEG_TX7	W29	PCIE_RX7P	PCIE_TX7P	Y27	C_PEG_RXP7	C164	0.1U/10V_4
9 PEG_TX#7	PEG_TX#7	V28	PCIE_RX7N	PCIE_TX7N	Y26	C_PEG_RXN7	C171	0.1U/10V_4
9 PEG_TX8	PEG_TX8	V30	PCIE_RX8P	PCIE_TX8P	W24	C_PEG_RXP8	C187	0.1U/10V_4
9 PEG_TX#8	PEG_TX#8	U31	PCIE_RX8N	PCIE_TX8N	W23	C_PEG_RXN8	C199	0.1U/10V_4
9 PEG_TX9	PEG_TX9	U29	PCIE_RX9P	PCIE_TX9P	V27	C_PEG_RXP9	C183	0.1U/10V_4
9 PEG_TX#9	PEG_TX#9	T28	PCIE_RX9N	PCIE_TX9N	U26	C_PEG_RXN9	C172	0.1U/10V_4
9 PEG_TX10	PEG_TX10	T30	PCIE_RX10P	PCIE_TX10P	U24	C_PEG_RXP10	C210	0.1U/10V_4
9 PEG_TX#10	PEG_TX#10	R31	PCIE_RX10N	PCIE_TX10N	U23	C_PEG_RXN10	C223	0.1U/10V_4
9 PEG_TX11	PEG_TX11	R29	PCIE_RX11P	PCIE_TX11P	T26	C_PEG_RXP11	C225	0.1U/10V_4
9 PEG_TX#11	PEG_TX#11	P28	PCIE_RX11N	PCIE_TX11N	T27	C_PEG_RXN11	C234	0.1U/10V_4
9 PEG_TX12	PEG_TX12	P30	PCIE_RX12P	PCIE_TX12P	T24	C_PEG_RXP12	C236	0.1U/10V_4
9 PEG_TX#12	PEG_TX#12	N31	PCIE_RX12N	PCIE_TX12N	T23	C_PEG_RXN12	C246	0.1U/10V_4
9 PEG_TX13	PEG_TX13	N29	PCIE_RX13P	PCIE_TX13P	P27	C_PEG_RXP13	C249	0.1U/10V_4
9 PEG_TX#13	PEG_TX#13	M28	PCIE_RX13N	PCIE_TX13N	P26	C_PEG_RXN13	C253	0.1U/10V_4
9 PEG_TX14	PEG_TX14	M30	PCIE_RX14P	PCIE_TX14P	P24	C_PEG_RXP14	C269	0.1U/10V_4
9 PEG_TX#14	PEG_TX#14	L31	PCIE_RX14N	PCIE_TX14N	P23	C_PEG_RXN14	C270	0.1U/10V_4
9 PEG_TX15	PEG_TX15	L29	PCIE_RX15P	PCIE_TX15P	M27	C_PEG_RXP15	C256	0.1U/10V_4
9 PEG_TX#15	PEG_TX#15	K30	PCIE_RX15N	PCIE_TX15N	N26	C_PEG_RXN15	C264	0.1U/10V_4

PEG_RX0 9	PEG_RX#0 9	PEG_RX1 9	PEG_RX#1 9	PEG_RX2 9	PEG_RX#2 9	PEG_RX3 9
PEG_RX#3 9	PEG_RX4 9	PEG_RX#4 9	PEG_RX5 9	PEG_RX#5 9	PEG_RX6 9	PEG_RX#6 9
PEG_RX7 9	PEG_RX#7 9	PEG_RX8 9	PEG_RX#8 9	PEG_RX9 9	PEG_RX#9 9	PEG_RX10 9
PEG_RX#10 9	PEG_RX11 9	PEG_RX#11 9	PEG_RX12 9	PEG_RX#12 9	PEG_RX13 9	PEG_RX#13 9
PEG_RX14 9	PEG_RX#14 9	PEG_RX15 9	PEG_RX#15 9			

EXPRESS ENTRANCE

CLOCK

2 EXT_GFX_CLKP	EXT_GFX_CLKP	AK30	PCIE_REFCLKP
2 EXT_GFX_CLKN	EXT_GFX_CLKN	AK32	PCIE_REFCLKN

SI Add

10K/F_4 1 2 R533

L9	NC#1	
N9	NC#2	
N10	NC_PWRGOOD	
12 PCIE_RST#	PERSTB	AL27

CALIBRATION

PCIE_CALRP	Y22	M72_PCIE_CALRP	R72	1.27K/F_4	
PCIE_CALRN	AA22	M72_PCIE_CALRN	R71	2K/F_4	+1.1V_PCIE_VDDC

M92-S2

100MHz (+/-300ppm) input frequency,
0-0.7V single-ended swing

U22G

DP E/F POWER

+1.8V_DPE_VDD18	AG15	DPE_VDD18#1
	AG16	DPE_VDD18#2
+1.1V_DPE_VDD10	AG20	DPE_VDD10#1
	AG21	DPE_VDD10#2
	AG14	DPE_VSSR#1
	AH14	DPE_VSSR#2
	AM14	DPE_VSSR#3
	AM16	DPE_VSSR#4
	AM18	DPE_VSSR#5
+1.8V_DPE_VDD18	AF16	DPF_VDD18#1
	AG17	DPF_VDD18#2
+1.1V_DPE_VDD10	AF22	DPF_VDD10#1
	AG22	DPF_VDD10#2
	AF23	DPF_VSSR#1
	AG23	DPF_VSSR#2
	AM20	DPF_VSSR#3
	AM22	DPF_VSSR#4
	AM24	DPF_VSSR#5
R51 150/F_4	AF17	DPEF_CALR
+1.8V_DPE_PVDD	AG18	DPE_PVDD
+1.8V_DPE_PVDD	AF19	DPE_PVSS
+1.8V_DPE_PVDD	AG19	NC_DPF_PVDD
	AF20	NC_DPF_PVSS

DP A/B POWER

NC_DPA_VDD18#1	AE11	+1.8V
NC_DPA_VDD18#2	AE11	
DPA_VDD10#1	AE6	+1.1V_DPB_VDD10
DPA_VDD10#2	AE7	
DPA_VSSR#1	AE1	
DPA_VSSR#2	AE3	
DPA_VSSR#3	AG1	
DPA_VSSR#4	AG6	
DPA_VSSR#5	AH5	
NC_DPB_VDD18#1	AE13	+1.8V
NC_DPB_VDD18#2	AE13	
DPB_VDD10#1	AF8	+1.1V_DPB_VDD10
DPB_VDD10#2	AF9	
DPB_VSSR#1	AF10	
DPB_VSSR#2	AG9	
DPB_VSSR#3	AH8	
DPB_VSSR#4	AM6	
DPB_VSSR#5	AM8	
DPAB_CALR	AE10 R63 150/F_4	
DPA_PVDD	AG8	+1.8V_DPA_PVDD
DPA_PVSS	AG7	
DPB_PVDD	AG10	+1.8V_DPA_PVDD
DPB_PVSS	AG11	

DP PLL POWER

M92-S2

1.1V(S100,D200mA)

BLM18PG181SN1D(180,1.5A)_6

+1.1V_DPB_VDD10 — L59 — +1.1V
C677 0.1U/10V_4 — C698 10U/6.3V_8 — C118 1000P/50V_4

+1.1V_DPE_VDD10 — L51 — +1.1V
C114 0.1U/10V_4 — C104 1000P/50V_4 — C648 10U/6.3V_8

+1.8V_DPA_PVDD — L54 — +1.8V
C658 0.1U/10V_4 — C663 1000P/50V_4 — C649 10U/6.3V_8

1.8V(40mA)

+1.8V_DPE_PVDD — L10 — +1.8V
C54 0.1U/10V_4 — C53 1000P/50V_4 — C52 10U/6.3V_8

1.8V(20mA)

SI remove DPB power source

1.8V -(300mA)

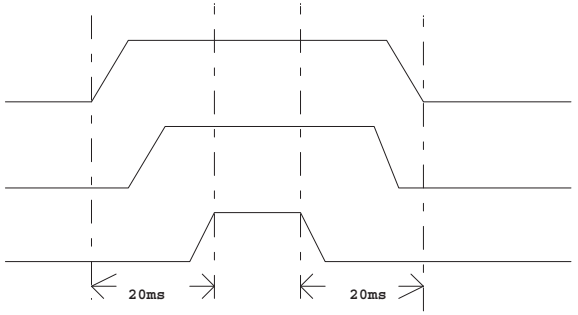
+1.8V_DPE_VDD18 — L12 — +1.8V
C111 0.1U/10V_4 — C103 1U/10V_4 — C56 10U/6.3V_8

BLM18PG181SN1D(180,1.5A)_6

VGA Core BPP
VGA Core VDDC

+1.8V PCIE_VDDR
+1.8V PCIE_PVDD
+1.8V VDDR1

3.3V_Delay VDDR3



PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	M7X/M8X_PCIE_Interface	1A
NB5/RD2	Date: Friday, March 20, 2009	Sheet 17 of 42

R414 10K/F_4 GPIO22

GPIO22(ROMCS#)
PD without external VBIOS ROM

MEM_ID[3:0]	Vendor	Type	Vendor P/N
0000	Hynix	64*16-500MHZ	H5P51G63EFR-20L
0001	Samsung (E die)	64*16-500MHZ	K4N1G164QE-HC20
0010	Qimonda (Infineon)	64*16-500MHZ	TBD
0011	Reserved		
0100	Reserved		
0101	Reserved		
0110	Reserved		
0111	Reserved		
1000	Reserved		
1001	Reserved		
1010	Reserved		
1011	Reserved		
1100	Reserved		
1101	Reserved		
1110	Reserved		
1111	Reserved		

	PWRCNTL1	PWRCNTL0	V-CORE
H	0	0	1.1V
M	0	1	1.0V
M	1	0	1.0V
L	1	1	0.9V

	BBEN	BBP
L	0	V-CORE
H	1	+1.8V

U22B

M93-S3/M92-S2
DVCNTL_0/ DVPDATA_18
DVCNTL_1 / NC
DVCNTL_2 / NC
DVDATA_12 / DVPDATA_16
DVDATA_9 / DVPDATA_12
DVDATA_8 / DVPDATA_14
DVDATA_7 / DVPCNTL_0
DVDATA_6 / DVPDATA_8
DVDATA_5 / DVPDATA_6
DVDATA_4 DVPDATA_4
DVDATA_3 / DVPDATA_19
DVDATA_1 / DVPDATA_2
DVDATA_0 / DVPDATA_0
DVO
DPC_VDD18#2/DVPDAT23
DVDATA_10 / DVPDATA_22
DVDATA_2 / DVPDATA_21
DVDATA_11 / DVPDATA_20
M93-S3/M92-S2
DPC_PVDD / DVPDATA_11
DPC_VDD18#1/DVPDAT10
DPC_VDD10#1/DVPDAT15
DPC_VDD10#2/DVPDAT17
DPC_VSSR#1 / DVPCLK
DPC_VSSR#2 / DVPDAT5
DPC_VSSR#5/ DVPCNTL_MV0

DPA
TXCAP_DPA3P
TXCAM_DPA3N
TX0P_DPA2P
TX0M_DPA2N
TX1P_DPA1P
TX1M_DPA1N
TX2P_DPA0P
TX2M_DPA0N

DPB
TXCBP_DPB3P
TXCBM_DPB3N
TX3P_DPB2P
TX3M_DPB2N
TX4P_DPB1P
TX4M_DPB1N
TX5P_DPB0P
TX5M_DPB0N

M92-S2/M93-S3
DVPDATA_3/TXCCP_DPC3P
DVPCNTL_2/TXCCM_DPC3N
DVPDATA_7 / TX0P_DPC2P
DVPDATA_1 / TX0M_DPC2N
DVPCNTL_MV1 / TX1P_DPC1P
DVPDATA_9 / TX1M_DPC1N
DVPDATA_13 / TX2P_DPC0P
DVPCNTL_1 / TX2M_DPC0N
VDDR4 / DPCD_CALR
DPC

M92-S2: Use 0R to VDDR4
+VDDR4 R69 0_4

I2C
SCL
SDA

GENERAL PURPOSE I/O
GPIO_0
GPIO_1
GPIO_2
GPIO_3_SMBDATA
GPIO_4_SMBCLK
GPIO_5_AC_BATT
GPIO_6
GPIO_7_BLON
GPIO_8_ROMSO
GPIO_9_ROMSI
GPIO_10_ROMSCK
GPIO_11
GPIO_12
GPIO_13
GPIO_14_HPD2
GPIO_15_PWRCNTL_0
GPIO_16_SSIN
GPIO_17_THERMAL_INT
GPIO_18_HPD3
GPIO_19_CTF
GPIO_20_PWRCNTL_1
GPIO_21_BB_EN
GPIO_22_ROMCSB
GPIO_23_CLKREQB
GPIO_29
GPIO_30

JTAG_TRSTB
JTAG_TDI
JTAG_TCK
JTAG_TMS
JTAG_TDO
TESTEN

GENERICA
GENERICB
GENERICC
GENERICD
GENERICE_HPD4
HPD1

VREFG

PLL/CLOCK
DPLL_PVDD
DPLL_PVSS
DPLL_VDDC
XTALIN
XTALOUT

THERMAL
DPLUS
DMINUS
TS_FDO
TSVDD
TSVSS

DAC1
R
RB
G
GB
B
BB
HSYNC
VSYNC
RSET
AVDD
AVSSQ
VDD1DI
VSS1DI

M92-S2/M93-S3
R2 / NC
R2B / NC
G2 / NC
G2B / NC
B2 / NC
B2B / NC

DAC2
C / NC
Y / NC
COMP / NC
H2SYNC
V2SYNC
VDD2DI / NC
VSS2DI / NC
A2VDD / NC
A2VDDQ / NC
A2VSSQ
R2SET / NC

DDC/AUX
DDC1CLK
DDC1DATA
AUX1P
AUX1N
DDC2CLK
DDC2DATA
AUX2P
AUX2N
DDCCLK_AUX5P
DDCDATA_AUX5N
DDC6CLK
DDC6DATA
DDCCLK_AUX3P
DDCDATA_AUX3N
NC#1
NC#2

SI Add from AMD check list

+VDDR4 Memory ID
R401 *10K/F_4 MEM_ID3
R406 *10K/F_4 MEM_ID2
R403 *10K/F_4 MEM_ID1
R405 *10K/F_4 MEM_ID0

10,23 EDIDCLK R1
10,23 EDIDDATA R3

19 GPIO0 GPIO0 U6
19 GPIO1 GPIO1 U10
19 GPIO2 GPIO2 T10
T9 GPIO3 U8
T7 GPIO4 U7
19 GPIO5 GPIO5 T9
T8
10,23 LVDS_BLON R59 0_4 EXT_LVDS_BLON T7
19 GPIO8 GPIO8 P10
19 GPIO9 GPIO9 P4
GPIO10 P2
T70
19 GPIO11 GPIO11 N6
19 GPIO12 GPIO12 N5
19 GPIO13 GPIO13 N3
T3 HDMI_HP2 Y9
38 GFX_CORE_CNTRL0 GFX_CORE_CNTRL0 N1
2 OSC_SPREAD OSC_SPREAD M4
VGA_ALERT R6
T6 HPD3 W10
5 TEMP_FAIL TEMP_FAIL M2
38 GFX_CORE_CNTRL1 GFX_CORE_CNTRL1 P8
20 BBEN BBEN P7
19 GPIO22 GPIO22 N8
GPIO_23_CLKREQB N7

SI Add GND from Check list
T11 T11
T10 L5
T71 L3
T72 L1
T73 K4
R52 5.11K/F_4 AF24
T120 TESTEN AB13
GENERICC W8
19 GENERICC W9
10,25 TMDS_HPD 150 OHM W7
*100K/F_4 R65 TMDS_HPD AD10 AC14
+1.8V
1.8V+R6043(249R)=1.8V/3=0.6V
R33 499/F_4
R66 249/F_4 +0.6V_M92_VREFG AC16
C58 0.1U/10V_4

Need check again
+3V_DELAY R60 *10K/F_4 LVDS_BLON
+3V_DELAY R417 10K/F_4 GPIO_23_CLKREQb

1.8V(120mADPLL_PVDD)
+1.8V BLM18PG181SN1D(180,1.5A)_6 L63
C652 10U/6.3V_8
C644 1U/10V_4
C110 0.1U/10V_4
+1.8V_DPLL_PVDD AF14 AE14

+1.1V BLM18PG181SN1D(180,1.5A)_6 L8
1.1V(300mA DPLL_VDDC)
C59 10U/6.3V_8
C51 1U/10V_4
C123 0.1U/10V_4
+1.1V_DPLL_VDDC AD14
2 EVGA-XTALI EVGA-XTALI AM28
EVGA-XTALO AK28

+1.8V BLM18PG181SN1D(180,1.5A)_6 L11
1.8V(20mA TSVDD)
C55 10U/6.3V_8
C61 1U/10V_4
C143 0.1U/10V_4
VGATHRM+ T4
VGATHRM- T2
+1.8V_TSVDD R5 AD17 AC17

+1.8V_AVDD_Q
+1.8V_AVDD_Q L57 BLM18PG181SN1D(180,1.5A)_6 +1.8V
1.8V(70mA)
C674 0.1U/10V_4
C673 1U/10V_4
C659 10U/6.3V_8

+1.8V_A2VDD_Q
+1.8V_A2VDD_Q L52 BLM18PG181SN1D(180,1.5A)_6 +1.8V
1.8V(70mA)
C650 0.1U/10V_4
C124 1U/10V_4
C651 10U/6.3V_8

+VDDD1
+VDDD1 L49 BLM18PG181SN1D(180,1.5A)_6 +1.8V
1.8V(45mA VDD1DI)
C632 0.1U/10V_4
C654 1U/10V_4
C641 10U/6.3V_8

+VDDD2
+VDDD2 L9 BLM18PG181SN1D(180,1.5A)_6 +1.8V
1.8V(45mA VDD1DI)
C113 0.1U/10V_4
C48 1U/10V_4
C46 10U/6.3V_8

L_CRT_R R380 150/F_4 R56 0_4 CRT_R 10,24
L_CRT_G R379 150/F_4 R47 0_4 CRT_G 10,24
L_CRT_B R378 150/F_4 R44 0_4 CRT_B 10,24
HSYNC_COM 10,19,24
VSYNC_COM 10,19,24
R61 499/F_4
+1.8V_AVDD_Q C672 0.1U/10V_4
+VDDD1 C628 0.1U/10V_4
+VDDD2 C49 0.1U/10V_4
DAC2_VSY 19
DAC2_HSY 19
+1.8V_A2VDD_Q C162 0.1U/10V_4
+3V_DELAY

C657 22P/50V_4
EVGA-XTALI
Y7 27MHZ
CL=20PF
R388 10M_6
For Int Clk 27Mhz
C656 22P/50V_4
EVGA-XTALO

Thermal Sensor
U3
SMCLK VCC
SMDATA DXP
-ALT DXN
GND -OVT
G781-1P8@EV
781-1_3V_ R39 200/F_6 +3V_DELAY
C64 0.1U/10V_4
VGATHRM+
C78 2200P/50V_4
VGATHRM-
-VGATHRM R42 10K/F_4 +3V_DELAY
5,32 MBCLK2 R55 *0_4/S MB_CLK2
5,32 MBDATA2 R54 *0_4/S MB_DATA2
+3V_DELAY R53 10K/F_4 VGA_ALERT
I2C ADDRESS: 9AH

w/s 10 / 10

PROJECT : OP8
Quanta Computer Inc.
NB5/RD2
Size: Custom
Document Number: M7X/M8X_Main
Rev: 1A
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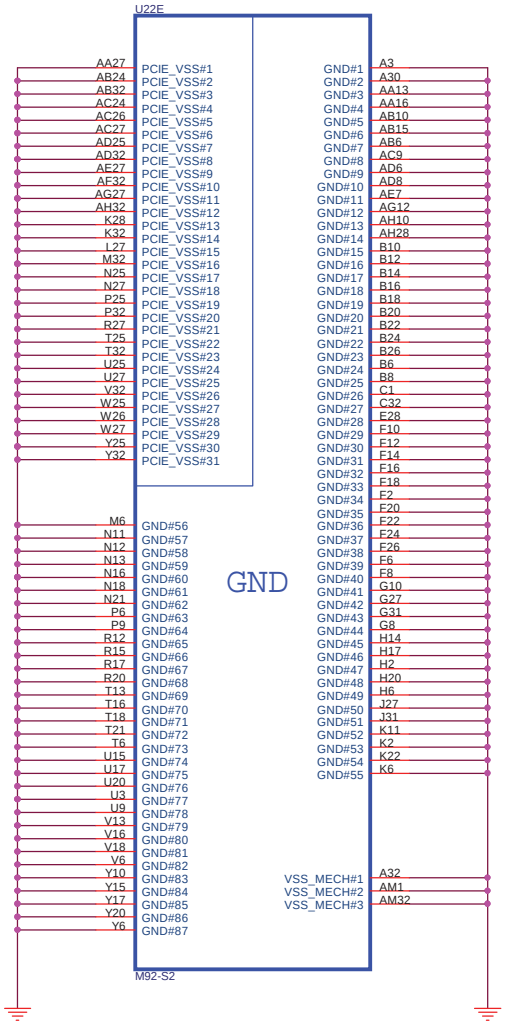
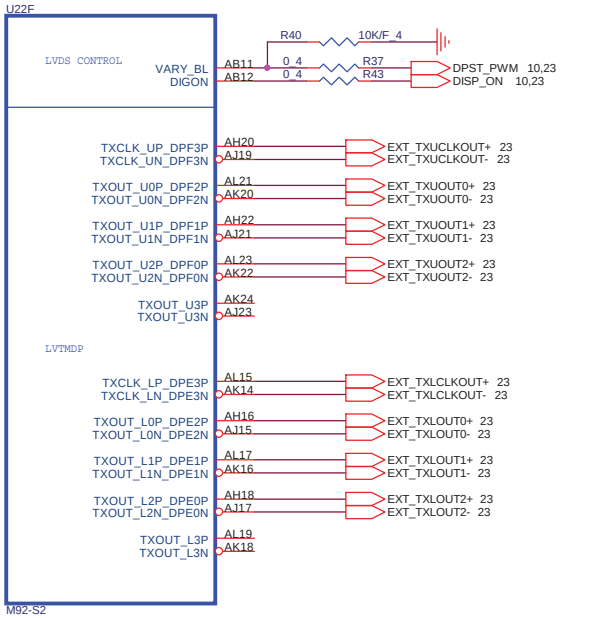
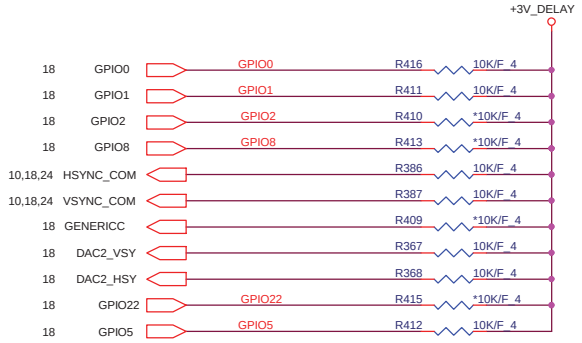
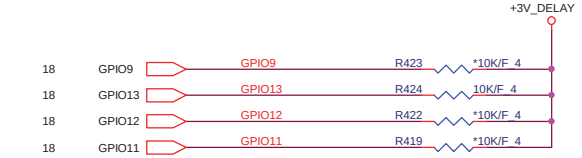








Strap Name		Pin Straps description	Default Value
TX_PWRS_ENB	GPIO0	**Transmitter Power Savings Enable** 0: 50% Tx output swing for mobile mode 1: full Tx output swing (Default setting for Desktop)	1
TX_DEEMPH_EN	GPIO1	· **PCI Express Transmitter De-emphasis Enable** 0: Tx de-emphasis disabled for mobile mode 1: Tx de-emphasis enabled (Default setting for Desktop)	1
BIF_GEN2_EN	GPIO2	0 = Advertises the PCI-E device as 2.5 GT/s capable at power-on. 1 = Advertises the PCI-E device as 5.0 GT/s capable at power-on. 5.0 GT/s capability will be controlled by software.	0
STRAP_BIF_CLK_PM_EN	GPIO8	Enable CLKREQ# Power Management 0 - CLKREQ# power management capability is disabled 1 - CLKREQ# power management capability is enabled	0
BIOS_ROM_EN	GPIO22	Enable external BIOS ROM device 0 - Disable external BIOS ROM device 1 - Enable external BIOS ROM device	0
AUDIO[0]	VSYNC		1
AUD(1)	HSYNC	HSYNC - HDMI_EN HDMI connector presence. 0 ?No HDMI connector is present on PCB 1 - HDMI connector is present on the PCB HDMI	1
VIP_DEVICE_STRAP_DIS	DAC2_VSY	If VIP_DEVICE_STRAP_EN is set to ?? then this pin is used to sense whether a VIP slave device is connected to the VIP Host interface. If VIP_DEVICE_STRAP_EN is set to ?? then this pin is not used as a strap at all (i.e. its value during reset is unimportant), and it can be used as a regular GPIO	0
SMS_EN_HARD	DAC2_HSY		0
CCBYPASS	GENERICC		0

Memory Aperture size

GPIO9 BIOSROM		GPIO13 ROMIDCFG2	GPIO12 ROMIDCFG1	GPIO11 ROMIDCFG0
0	128M	0	0	0
0	256M	0	0	1
0	64M	0	1	0
0	32M	0	1	1
0	512M	1	0	0
0	1G	1	0	1
0	2G	1	1	0
0	4G	1	1	1

It is a shared pin strap with CONFIG[2:0] if BIOS_ROM_EN is set to 0.

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	M7X/M8X_GND / LVDS/ Straps	1A

Date: Friday, March 20, 2009 Sheet 19 of 42

VDD_CT -- Level translation between core and I/O, excluding memory receivers.1.8 V ± 5%

PCIE_VDDR--PCI-E I/O power. 1.8 V ± 5%

1.8V(2.2A VDDR1+VDDRHA)

1.8V(136mA VDD_CT)

Gated 3.3V 60mA by VDDC

VDD_R3 --IO power for 3.3 V pins (e.g. GPIO's). 3.3 V ± 5%

1.8V(170mA VDDR5)

1.8V(170mA VDDR4)

1.8V(68mA PCIE_PVDD)

0.95V~1.1V(35mA SPV10)

1.5/1.8V 120mA

VDD_R4 -- Power for DVPDATA_[23:12] - external TMDS or GPIO; corresponds to DVOA_MSB_VMODE register bit; '1' - 3.3 V(default); '0' - 1.8 V; 1.8 V ± 5% or 3.3 V ± 5%

VDD_R5 -- Power for DVP control pins (DVPCNTL_[0-2] and DVPCLK) and DVPDATA_[11:0] - external TMDS or GPIO; corresponds to DVOA_LSB_VMODE register bit; '1' - 3.3 V(default); '0' - 1.8 V; 1.8 V ± 5% or 3.3 V ± 5%

VDDRH_1 & VDDRH_2 --Dedicated power pins for memory clock pads for each channel. Should have the same voltage level as VDDR1.

U22D

M93-S3/M92-S2

POWER

PCIE_VDDC--PCI-E Digital Power Supply (Either 1.0 V or 1.1 V) 1.0 V -5% to 1.1 V +5%

VDDC+VDDCI 0.95~1.1V(15A peak)(Ripple < 87.2mV)

VDDC--Dedicated core power, provides power to the internal logic. 0.9 V - 1.2 V (± 5%)

SI Add from AMD check list

0.95V~1.1V(2A VDDCI)

VDDCI--Isolated (clean) core power for the I/O logic. Voltage level should match that of VDDC. POWER Same as VDDC

BBP -- Connect to VBBP back bias regulator / generator. If back bias is not used, connect directly to VDDC.

Back Bias Enabled: (GPIO_21_BB_EN = 3.3 V): 1.5 V or 1.8 V

Back Bias Disabled: (GPIO_21_BB_EN = 0 V): VDDC

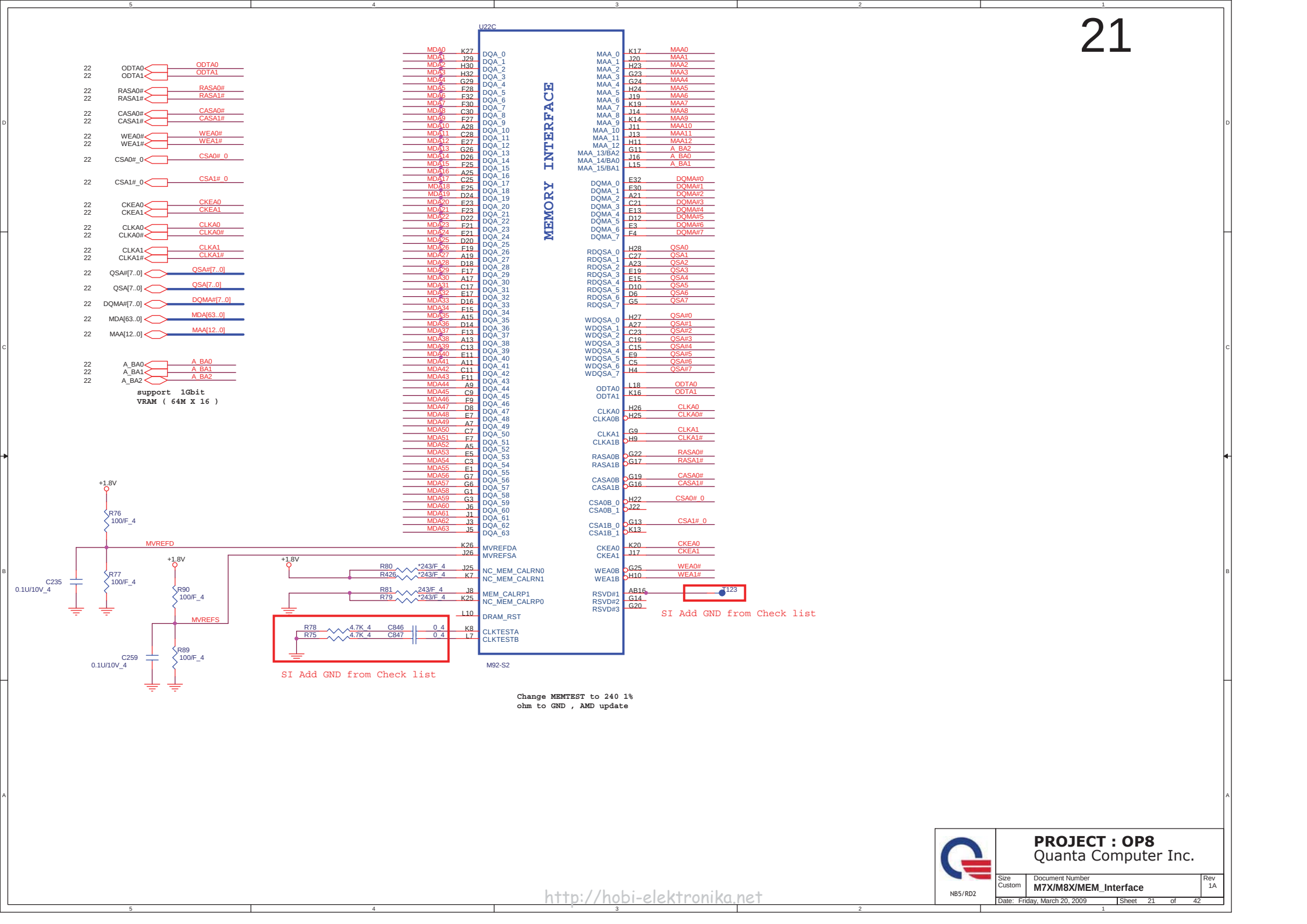
SI Add from AMD check list

PROJECT : OP8
Quanta Computer Inc.

NB5/RD2

Size: Custom | Document Number: M7X/M8X_Power_and_NC | Rev: 1A

Date: Friday, March 20, 2009 | Sheet 20 of 42



NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	M7X/M8X/MEM_Interface	1A

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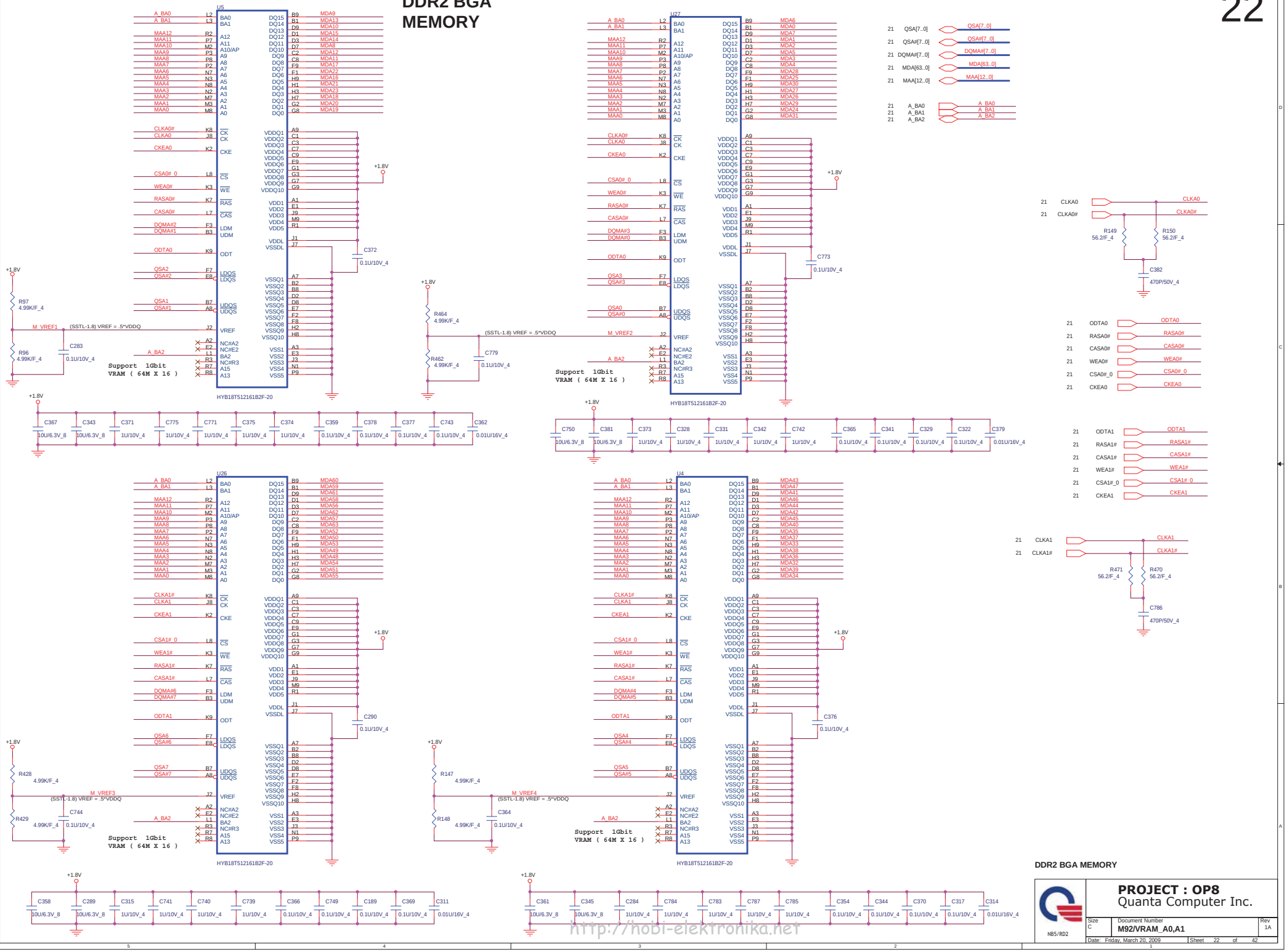
DDR2 BGA MEMORY



DDR2 BGA MEMORY

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
C	M92/VRAM_A0,A1	1A

NB5/RD2

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1. If LCD connector near GPU, then place these series Resistors near GPU
2. If LCD connector near N/B, then place these series Resistors near N/B

OPTION SIGNAL FROM NB to LVDS for UMA

10	LA_CLK	LA_CLK	RP1	3	4	*0_4P2R_4	TXLCLKOUT+
10	LA_CLK#	LA_CLK#		1	2		TXLCLKOUT-
10	LA_DATAP0	LA_DATAP0	RP2	3	4	*0_4P2R_4	TXLOUT0+
10	LA_DATAN0	LA_DATAN0		1	2		TXLOUT0-
10	LA_DATAP1	LA_DATAP1	RP3	3	4	*0_4P2R_4	TXLOUT1+
10	LA_DATAN1	LA_DATAN1		1	2		TXLOUT1-
10	LA_DATAP2	LA_DATAP2	RP4	3	4	*0_4P2R_4	TXLOUT2+
10	LA_DATAN2	LA_DATAN2		1	2		TXLOUT2-
10	LB_CLK	LB_CLK	RP5	3	4	*0_4P2R_4	TXUCLKOUT+
10	LB_CLK#	LB_CLK#		1	2		TXUCLKOUT-
10	LB_DATAP0	LB_DATAP0	RP6	3	4	*0_4P2R_4	TXUOUT0+
10	LB_DATAN0	LB_DATAN0		1	2		TXUOUT0-
10	LB_DATAP1	LB_DATAP1	RP7	3	4	*0_4P2R_4	TXUOUT1+
10	LB_DATAN1	LB_DATAN1		1	2		TXUOUT1-
10	LB_DATAN2	LB_DATAN2	RP8	1	2	*0_4P2R_4	TXUOUT2-
10	LB_DATAP2	LB_DATAP2		3	4		TXUOUT2+

OPTION SIGNAL FROM M92 to LVDS for discrete

19	EXT_TXLCLKOUT-	EXT_TXLCLKOUT-	RP49	3	4	0_4P2R_4	TXLCLKOUT-
19	EXT_TXLCLKOUT+	EXT_TXLCLKOUT+		1	2		TXLCLKOUT+
19	EXT_TXLOUT0-	EXT_TXLOUT0-	RP50	3	4	0_4P2R_4	TXLOUT0-
19	EXT_TXLOUT0+	EXT_TXLOUT0+		1	2		TXLOUT0+
19	EXT_TXLOUT1-	EXT_TXLOUT1-	RP51	3	4	0_4P2R_4	TXLOUT1-
19	EXT_TXLOUT1+	EXT_TXLOUT1+		1	2		TXLOUT1+
19	EXT_TXLOUT2+	EXT_TXLOUT2+	RP52	1	2	0_4P2R_4	TXLOUT2+
19	EXT_TXLOUT2-	EXT_TXLOUT2-		3	4		TXLOUT2-
19	EXT_TXUCLKOUT-	EXT_TXUCLKOUT-	RP53	3	4	0_4P2R_4	TXUCLKOUT-
19	EXT_TXUCLKOUT+	EXT_TXUCLKOUT+		1	2		TXUCLKOUT+
19	EXT_TXUOUT0+	EXT_TXUOUT0+	RP54	1	2	0_4P2R_4	TXUOUT0+
19	EXT_TXUOUT0-	EXT_TXUOUT0-		3	4		TXUOUT0-
19	EXT_TXUOUT1-	EXT_TXUOUT1-	RP55	3	4	0_4P2R_4	TXUOUT1-
19	EXT_TXUOUT1+	EXT_TXUOUT1+		1	2		TXUOUT1+
19	EXT_TXUOUT2-	EXT_TXUOUT2-	RP56	3	4	0_4P2R_4	TXUOUT2-
19	EXT_TXUOUT2+	EXT_TXUOUT2+		1	2		TXUOUT2+

+3V — R1 *4.7K_4 EDIDCLK
R2 *4.7K_4 EDIDDATA

+3V_DELAY — R420 4.7K_4 EDIDCLK
R418 4.7K_4 EDIDDATA

+3VLCD — L2 PBY201209T-4A_8 — +3VLCD_CON
C6 10U/6.3V_8
C2 *0.1U/10V_4
C3 0.01U/16V_4

+12VALW — R6 330K_6 — Q1 N-MOS,5.8A AO3404 (AO3404 ID current 5.8A) — +3V
C10 0.1U/10V_4
+5VSUS — R7 100K/F_4 — Q2 2N7002E — LCDONG
Q4 PDTC144EU — R10 2.2K_4 — 10,19 DISP_ON
C11 0.1U/10V_4
+3VLCD — R3 22_8 — LCDDISCHG
LCDON# — Q3 2N7002E

+1.8V — C849 0.1U/10V_4 — +VGA_CORE
+1.8V — C854 0.1U/10V_4 — +VGA_CORE

SI Add for EMI

10,18 LVDS_BLON — LVDS_BLON — R12 1K/F_4
PN_BLON — D1 CH501H-40PT — BLONCON — C16 22P/50V_4
+3VPCU — R13 33K_6 — R11 100K/F_4
LID_EC# — LID_EC# 31,32
HWPG 32,34,35,37,38
12 LCD_BK — LCD_BK — Q5 *PDTC144EU
D2 BAT54A

Del R21 and Pull hi R259 to +3VS5, no-stuff Q5, add D7 to HWPG on PV

+3V — C842 0.047U/10V — U33 TC7SH08FU
10,19 DPST_PWM — DPST_PWM
32 PWM_VADJ — PWM_VADJ
R524 1K_4 — VADJ1
C9 *4.7U/6.3V_6
C8 0.01U/50V_4
R5 *0_4

SI add U33,R524,C842 for Vari bright function

+5V — C17 1U/10V_4 — U1 AT5231H-3.9KER (VIN, VOUT, SHDN, GND, SET)
+3.9V-CAMARA — R1 — R9 *215K/F_4 — C843 4.7U/6.3V_6
R2 — R8 *100K/F_4

+3V — C4 1000P/50V_4
+3VLCD_CON
10,18 EDIDCLK
10,18 EDIDDATA
TXLOUT0- TXLOUT0+
TXLOUT1- TXLOUT1+
TXLOUT2- TXLOUT2+
TXLCLKOUT- TXLCLKOUT+
TXUOUT0- TXUOUT0+
TXUOUT1- TXUOUT1+
TXUOUT2- TXUOUT2+
TXUCLKOUT- TXUCLKOUT+
CN1 GS12401-1011-9F

*WCM-2012-900T(400mA)
13 USBP2+ — L1
13 USBP2- — USBP2+ USBP2-
+3.9V-CAMARA
C14 .01U/16V_4 — C15 *4.7U/6.3V_6
+VIN_BLIGHT — VADJ1 BLONCON

+VIN — L3 FBM2125 HM330-T(4A,0.015)_8 — +VIN_BLIGHT
C13 0.1U/50V_6
C1 0.01U/50V_4
C5 0.1U/50V_6
C12 *10U/25V_12
C7 0.1U/50V_6

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LCD CONN	1A

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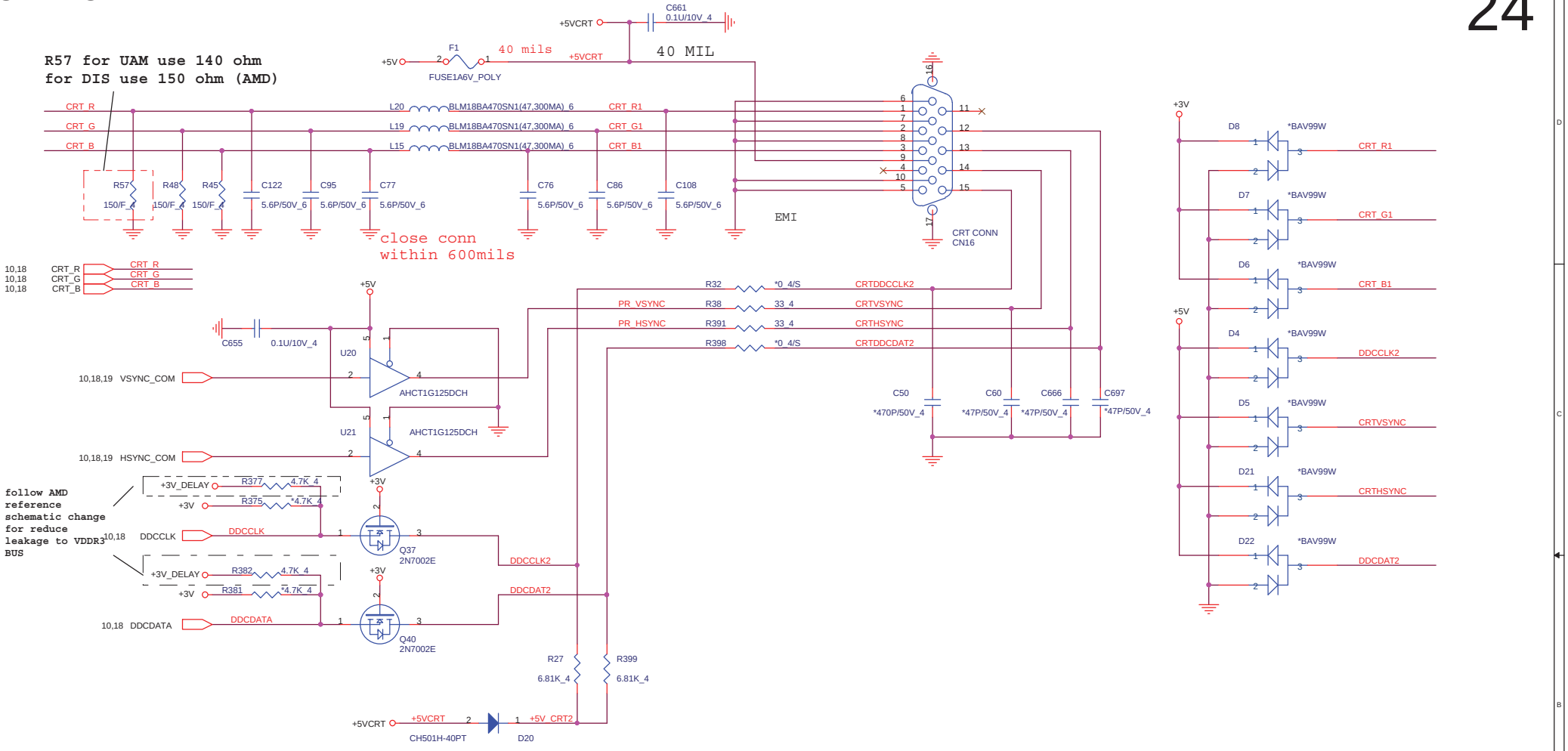
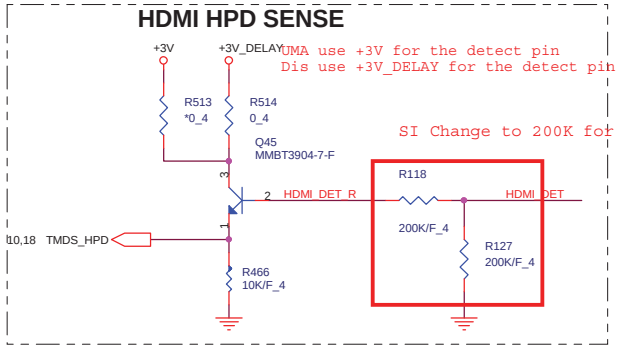
CRT PORT



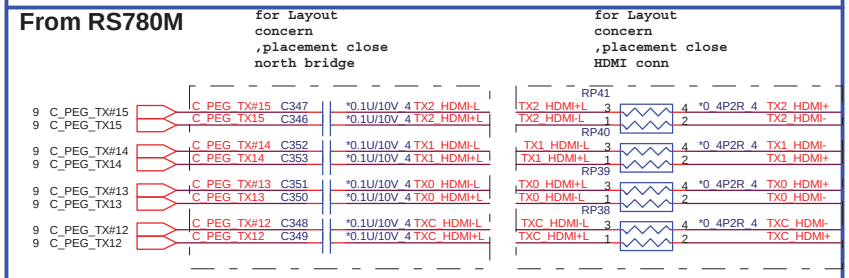
NB5/RD2	PROJECT : OP8 Quanta Computer Inc.	
Size: Custom	Document Number: CRT	Rev: 1A
Date: Friday, March 20, 2009	Sheet 24 of 42	

HDMI HPD SENSE

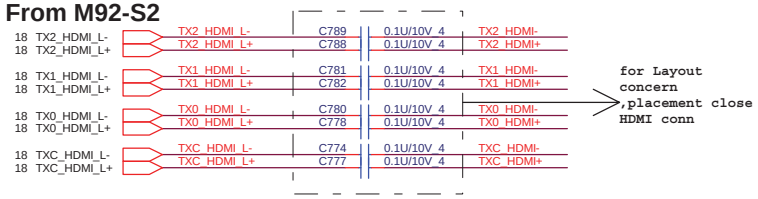


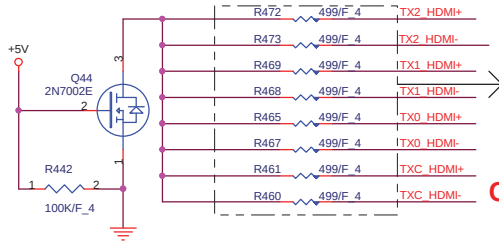
UMA/DISCRETE select for HDMI

From RS780M



From M92-S2





UMA RS780M
上 715 ohm CS17152FB17

DIS M92-S
上 499 ohm CS14992FB24

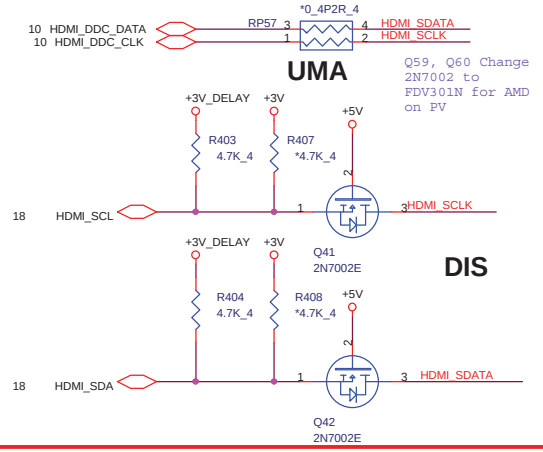
Close to HDMI Connector

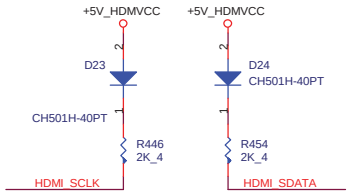
Discrete DDC4 is 5V tolerance , the MOSFET level shifter no need
UMA DDC is 3V tolerance,the MOSFET level shifter is need

SI Change for DIS HDMI

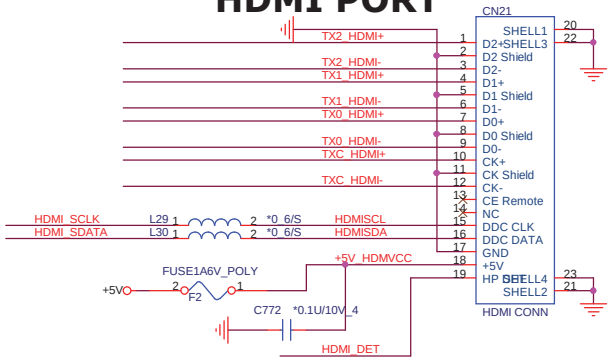
UMA AND DISCRETE HDMI I2C SELECT

Close to HDMI Connector





HDMI PORT



PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	HDMI	1A

NB5/RD2

Date: Friday, March 20, 2009 Sheet 25 of 42

For 5158E

2 CLK_48M_CR — CLK_48M_CR

SI remove R350 for langth trace

+3VSUS — R250 100K/F_4

31 CARD_LED#

U14 RTS5159

CF_CD# GPIO0 CF_D10 CF_D9 CF_D2 CF_D8/SM_CD# CF_D1/XD_CD# CF_D0/SM_WPM#/SD_WP CF_A0/SD_CD# CF_DMACK# CF_A1/XD_D4 CF_DMARQ

XD_CD# SP2 SD_CD# SP4

R323 6.19K/F_4 RREF

13 USBP3- 13 USBP3+ — DM DP

C610 *5.6P/50V_4 — CLK_48M_CR — *12MHz Y6 — R327 *270K_4 — C609 *5.6P/50V_4 — XTLO XTLI

For 5158 BG612000717

MODE_SEL — R325 10K/04 — C585 *47P/50V_4 — MODE_SEL

For 5158

+3VSUS — R326 100K/F_4 — 5158_RST# — C591 1U/10V_4 — RST#

If SD_DAT1 connect to SP4 , MOD_SEL need to let it to N.C

XD_CLE/CF_D3 XD_CE#/CF_D11 XD_ALE/CF_D4 SD_DAT2/XD_RE#/CF_D12 SD_DAT3/XD_WE#/CF_D5 XD_RDY/CF_D13 SD_DAT4/XD_WP#/CF_D6 SD_CMD SD_DAT5/XD_D0/CF_D14 SD_CLK/XD_D1/MS_CLK/CF_D7 SD_DAT6/XD_D7/MS_D3/CF_D15 CF_CS0# MS_INS#/CF_IORD# SD_DAT7/XD_D2/MS_D2/CF_IOWR# SD_DAT0/XD_D6/MS_D0/CF_RST# SD_DAT1/XD_D3/MS_D1/CF_IORDY XD_D5/MS_BS/CF_A2

SP19 SP18 SP17 SP16 SP15 SP14 SD_CMD_R SP12 SP11 SP10 MS_CD# SP8 SP7 SP6 SP5

AV_PLL_IN — C581 0.1U/10V_4 — C530 1U/10V_4

VREG_OUT 5V_IN A3V3_IN D3V3_IN — VREG — +3VSUS_RTS — R300 *0_8/S — +3VSUS

C552 0.1U/10V_4 — C557 4.7U/6.3V_6 — C558 0.1U/10V_4 — C568 0.1U/10V_4 — C574 0.1U/10V_4 — C514 4.7U/6.3V_6

D3V3_OUT — +3VSUS

A3V3_OUT — +3VSUS

CARD_3V3_OUT — +3VCARD

AG33 AG_PLL DGND2 DGND1 — C538 1U/10V_4 — C518 0.1U/10V_4 — C573 0.1U/10V_4

+3VCARD — C532 0.1U/10V_4 — C534 0.1U/10V_4 — C526 0.1U/10V_4

For 5158

SP6 — R273 *0_4 — SD_DAT1

SP4 — R254 *0_4/S

For 5158E

AL005158B10 -->RTS5158E

AL005158B00 -->RTS5158

Note:

	SD/MMC	MS	XD
SP1			XD_CD#
SP2	SD_WP		
SP3	SD_CD#		
SP4	SD_DAT1		XD_D4
SP5		MS_BS	XD_D5
SP6		MS_D1	XD_D3
SP7	SD_DAT0	MS_D0	XD_D6
SP8	SD_DAT7	MS_D2	XD_D2
SP9		MS_INS#	
SP10	SD_DAT6	MS_D3	XD_D7
SP11	SD_CLK	MS_SCLK	XD_D1
SP12	SD_DAT5		XD_D0
SP13	SD_DAT4		XD_WP#
SP14			XD_R/B#
SP15	SD_DAT3		XD_WE#
SP16	SD_DAT2		XD_RE#
SP17			XD_ALE
SP18			XD_CE#
SP19			XD_CLE

SP7	R280	*0_4/S	MS-D0_SD-D0_XD-D6
SP6	R268	*0_4/S	MS-D1_XD-D3_SD_D1
SP8	R252	*0_4/S	MS-D2_XD-D2
SP16	R343	*0_4/S	XD-RE#_SD-D2
SP5	R259	*0_4/S	MS-BS_XD-D5
SP15	R342	*0_4/S	SD-D3_XD-WE
SP11	R314	*0_4/S	SD-CLK
	R523	*0_4/S	MS-CLK
SP2	R255	*0_4/S	SD-WP
SP13	R507	*0_4/S	XD-WP#
SP19	R345	*0_4/S	XD-CLE
SP4	R253	*0_4/S	XD-D4
SP10	R291	*0_4/S	MS-D3_XD-D7
SP14	R353	*0_4/S	XD-RB#
SP12	R322	*0_4/S	XD-D0
SP17	R354	*0_4/S	XD-ALE
SP18	R344	*0_4/S	XD-CE#
SD_CMD_R	R331	*0_4/S	SD-CMD

SP11 — C572 *27P/50V_4 — Can not more than 30p

5158_RST# — D19 RB501V-40 — 5158_RST_R# — 5158_RST_R# 13

Add diode for 5158E cardreader driver lost issue

4 IN1 CARD READER XD,SD,MS/MSP

+3VCARD — R509 *10K/F_4

CN24 TAI-SOL 144-2300001900

XD_CD# XD_RB# XD_RE#_SD-D2 XD_CE# XD_CLE XD_ALE SD-D3_XD-WE XD_WP# XD_D0 SP11 MS-D2_XD-D2 MS-D1_XD-D3_SD_D1 XD_D4 MS_BS_XD-D5 MS-D0_SD-D0_XD-D6 MS-D3_XD-D7 MS-BS_XD-D5 MS-D1_XD-D3_SD_D1

XD-GND1 XD-CD# XD-R/B XD-RE XD-CE XD-CLE XD-ALE XD-WE XD-WP XD-GND2 XD-D0 XD-D1 XD-D2 XD-D3 XD-D4 XD-D5 XD-D6 XD-D7 XD-VCC MS-GND1 MS-BS MS-D1

GND SD-WP SD-GND1 SD-CD# SD-GND2 SD-D2 SD-D1 SD-D0 SD-GND SD-CLK SD_VCC SD-GND3 SD-CMD SD-D3 MS-GND2 MS-VCC MS-SCLK MS-P-D3 MS-INS MS-P-D2 MS-SDIO

SD-WP SD_CD# XD-RE#_SD-D2 SD_DAT1 MS-D0_SD-D0_XD-D6 SD-CLK SD-CMD SD-D3_XD-WE MS-CLK MS-D3_XD-D7 MS_CD# MS-D2_XD-D2 MS-D0_SD-D0_XD-D6

+3VCARD — C828 2.2U/6.3V_6 — R481 150K/F_4 — C829 0.1U/10V_4 — C810 0.1U/10V_4 — C824 0.1U/10V_4

CLOSE CONN

+VIN — C852 0.1U/50V_6 — C851 0.1U/50V_6 — C850 0.1U/50V_6

H34 *spad-re63x213np H35 *spad-c157np H36 *spad-c157np H43 *spad-c157np H44 *h-c118d118n H45 *h-c91d91n H40 *spad-op89-2 H41 *spad-c157np H42 *spad-c157np H37 *spad-re142x339np H38 *spad-c157np H39 *spad-c134np

H1 *h-tr472bc315d118p2 H2 *H-TC236BC118D118P2 H3 *H-C315D118P2 H4 *H-C315D118P2 H28 *h-c354d118p2 H9 *H-TE3-8X9-138C8P2 H12 *H-TO1DX138C9D8P2 H14 *h-tshehc315d118p2 H27 *H-TC236BC118D118P2

H23 *H-TE8X9BC8D3P2 H21 *H-C315D18P2 H19 *H-TC88EBX7-5D3P2 H24 *H-TC315BC39AD18P2 H22 *H-C315D270P2 H20 *H-TO9X148C8D3P2 H26 *H-O28X197D158X118P2 H29 *h-c354d118p2 H25 *H-C315D18P2

PAD1 *SPAD-RE100X200NP H11 *H-C079X180D79X18 H30 *h-tc354bs354d118p2 H31 *h-c354d118p2

H5 *H-C55D55N H8 *H-C67D67N H7 *H-C197D87P2 H6 *H-C197D87P2

Battery Hole

H10 *H-C236D181P2 H15 *H-C236D181P2 H16 *h-c307d181p2

VGA Hole

H18 *H-C217D181P2 H13 *H-C217D181P2 H17 *H-C217D181P2

CPU Hole

+1.8V — C286 0.1U/10V_4 — +Vcore0

Add for EMI request

H52 H51 *h-tc315bc127d87p2 H46 *H-R103X67D103X67N H47 *SPAD-RE98X298NP-1 H48 *SPAD-RE98X298NP-2 H49 *SPAD-RE59X315NP-1 H50 *SPAD-RE59X315NP-2

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RTS5158 & CR SOCKET &HOLE	1A

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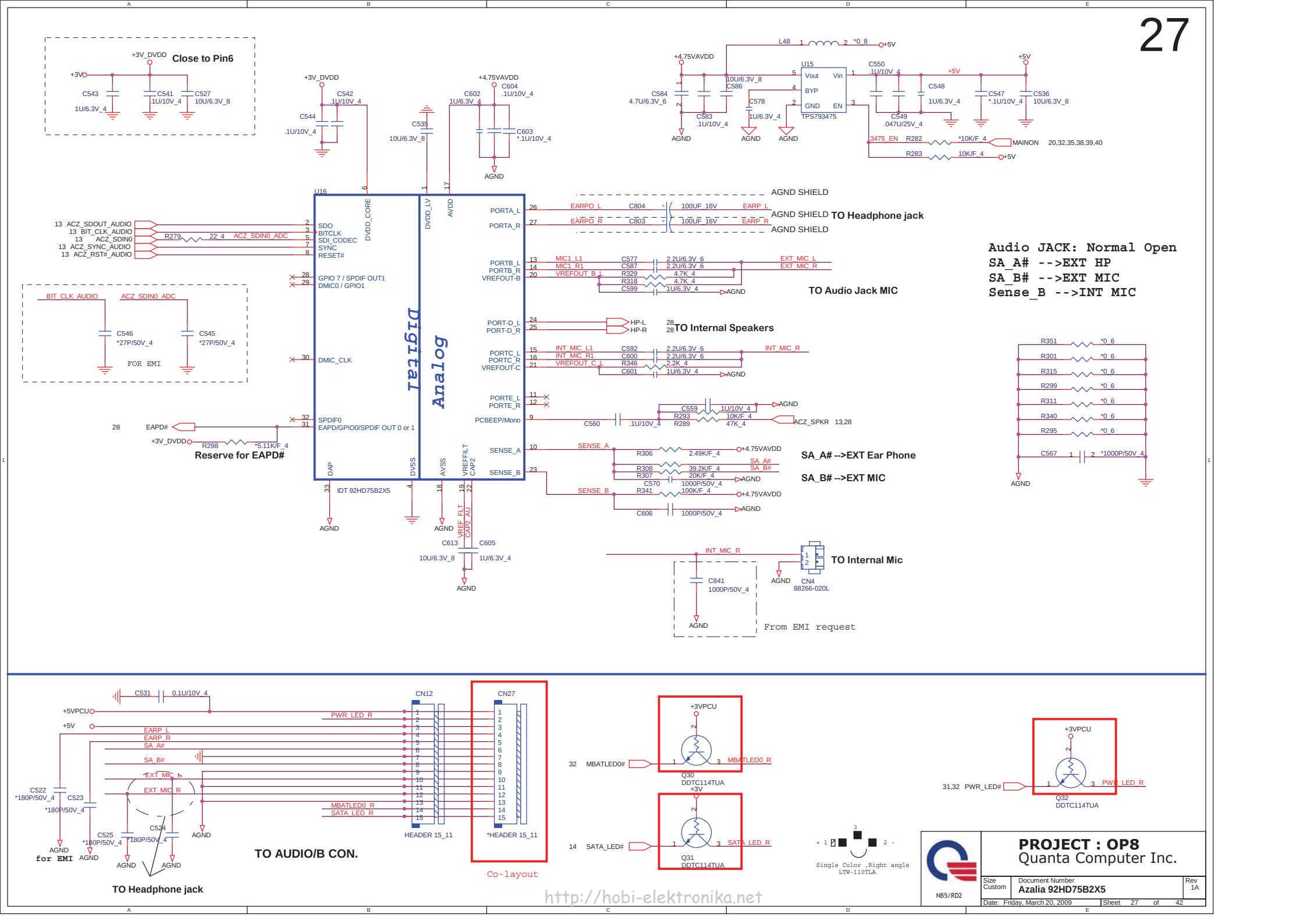
Close to Pin6
+3V_DVDD
+3V
C543 1U/6.3V_4
C541 .1U/10V_4
C527 10U/6.3V_8
C542 .1U/10V_4
C544 .1U/10V_4
C535 10U/6.3V_8
C602 1U/6.3V_4
C604 .1U/10V_4
C603 *.1U/10V_4
AGND
+4.75VAVDD
L48 *0_8
+5V
U15
Vout Vin
BYP
GND EN
TPS793475
C584 4.7U/6.3V_6
C586 10U/6.3V_8
C583 .1U/10V_4
C578 1U/6.3V_4
C550 .1U/10V_4
C548 1U/6.3V_4
C549 .047U/25V_4
C547 *.1U/10V_4
C536 10U/6.3V_8
3475_EN
R282 *10K/F_4
R283 10K/F_4
MAINON
20,32,35,38,39,40
U16
DVDD_CORE
DVDD_LV
AVDD
SDO
BITCLK
SDI_CODEC
SYNC
RESET#
GPIO 7 / SPDIF OUT1
DMIC0 / GPIO1
DMIC_CLK
SPDIF0
EAPD/GPIO0/SPDIF OUT 0 or 1
DAP
DVSS
AVSS
VREFFILT
CAP2
IDT 92HD75B2X5
digital
Analog
13 ACZ_SDOUT_AUDIO
13 BIT_CLK_AUDIO
13 ACZ_SDIN0
13 ACZ_SYNC_AUDIO
13 ACZ_RST#_AUDIO
R279 22_4 ACZ_SDIN0_ADC
BIT_CLK_AUDIO
ACZ_SDIN0_ADC
C546 *27P/50V_4
C545 *27P/50V_4
FOR EMI
28 EAPD#
+3V_DVDD
R298 *5.11K/F_4
Reserve for EAPD#
PORTA_L
PORTA_R
EARPO_L
EARPO_R
C804 100UF_16V
C803 100UF_16V
EARP_L
EARP_R
AGND SHIELD
TO Headphone jack
PORTB_L
PORTB_R
VREFOUT_B
MIC1_L1
MIC1_R1
VREFOUT_B_L
C577 2.2U/6.3V_6
C587 2.2U/6.3V_6
R329 4.7K_4
R318 4.7K_4
C599 1U/6.3V_4
EXT_MIC_L
EXT_MIC_R
TO Audio Jack MIC
PORT-D_L
PORT-D_R
HP-L
HP-R
TO Internal Speakers
PORTC_L
PORTC_R
VREFOUT_C
INT_MIC_L1
INT_MIC_R1
VREFOUT_C_L
C592 2.2U/6.3V_6
C600 2.2U/6.3V_6
R346 2.2K_4
C601 1U/6.3V_4
INT_MIC_R
PORTE_L
PORTE_R
PCBEEP/Mono
C560 .1U/10V_4
C559 1U/10V_4
R293 10K/F_4
R289 47K_4
ACZ_SPKR 13,28
SENSE_A
SENSE_B
R306 2.49K/F_4
R308 39.2K/F_4
R307 20K/F_4
C570 1000P/50V_4
R341 100K/F_4
C606 1000P/50V_4
SA_A#
SA_B#
SA_A# -->EXT Ear Phone
SA_B# -->EXT MIC
C613 10U/6.3V_8
C605 1U/6.3V_4
VREF_FLT
CAP2_AU
INT_MIC_R
C841 1000P/50V_4
CN4 88266-020L
TO Internal Mic
From EMI request
Audio JACK: Normal Open
SA_A# -->EXT HP
SA_B# -->EXT MIC
Sense_B -->INT MIC
R351 *0_6
R301 *0_6
R315 *0_6
R299 *0_6
R311 *0_6
R340 *0_6
R295 *0_6
C567 *1000P/50V_4
C531 0.1U/10V_4
+5VPCU
+5V
PWR_LED_R
EARP_L
EARP_R
SA_A#
SA_B#
EXT_MIC_L
EXT_MIC_R
MBATLED0_R
SATA_LED_R
C522 *180P/50V_4
C523 *180P/50V_4
C525 *180P/50V_4
C524 *180P/50V_4
AGND for EMI
CN12
CN27
HEADER 15_11
*HEADER 15_11
Co-layout
TO AUDIO/B CON.
TO Headphone jack
32 MBATLED0#
14 SATA_LED#
Q30 DDTC114TUA
Q31 DDTC114TUA
Q32 DDTC114TUA
31,32 PWR_LED#
Single Color ,Right angle
LTW-110TLA
http://hobi-elektronika.net
NB5/RD2
PROJECT : OP8
Quanta Computer Inc.
Size Custom
Document Number
Azalia 92HD75B2X5
Rev 1A
Date: Friday, March 20, 2009
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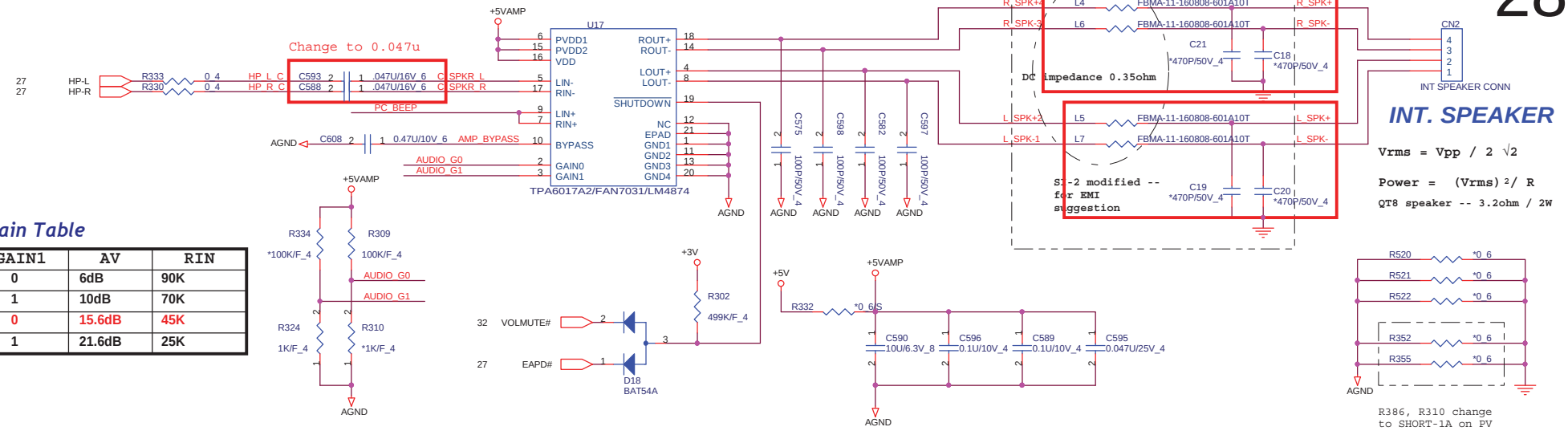
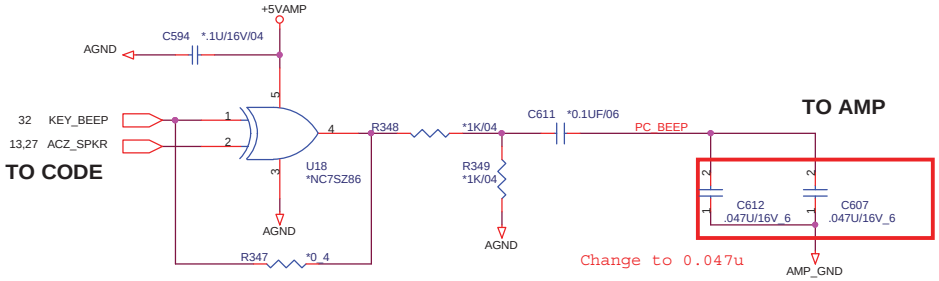
AUDIO AMPLIFIER



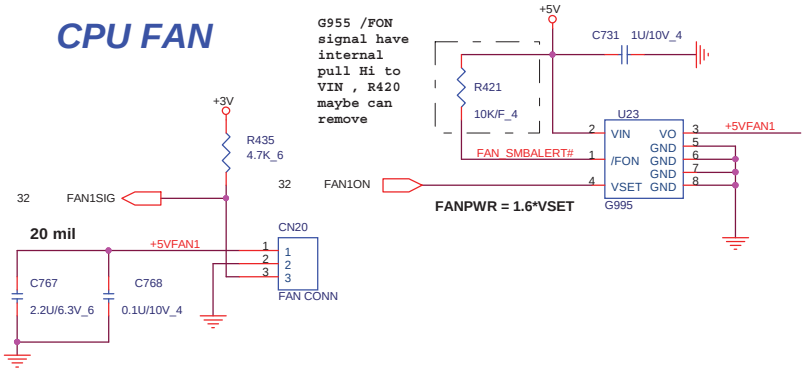
6017A2 Gain Table

GAIN0	GAIN1	AV	RIN
0	0	6dB	90K
0	1	10dB	70K
1	0	15.6dB	45K
1	1	21.6dB	25K

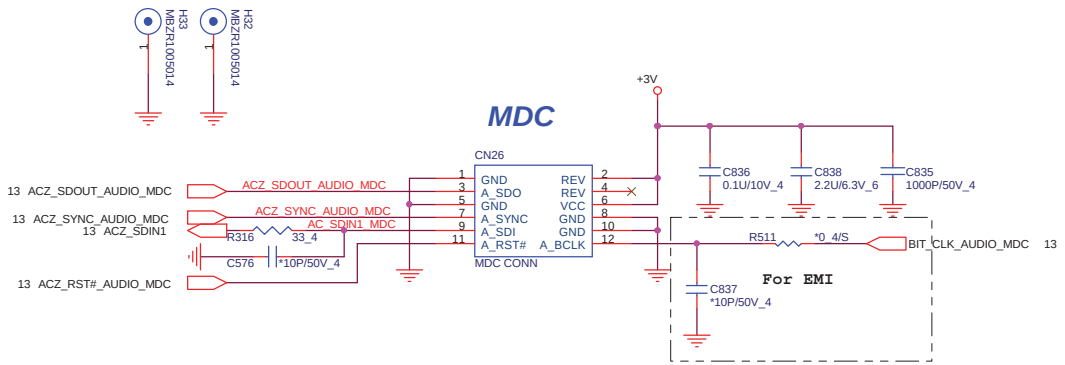
PC-BEEP



CPU FAN



Modem CONN



PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	AMP_TPA6017/MDC1.5/CPU FAN	1A

NB5/RD2

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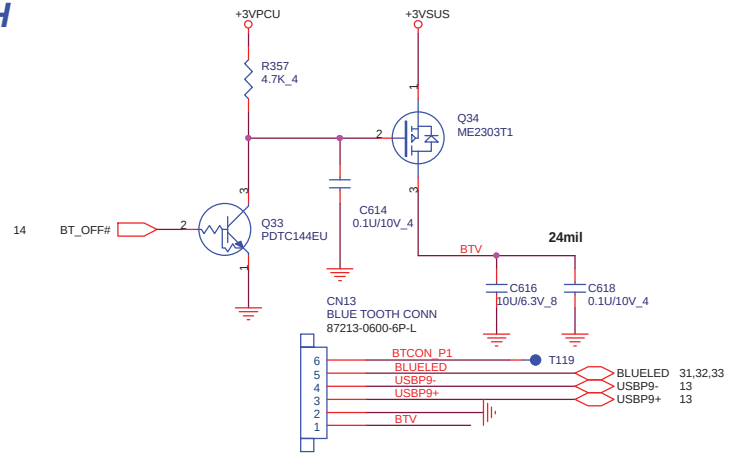
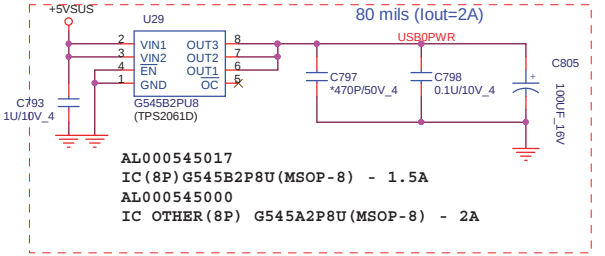
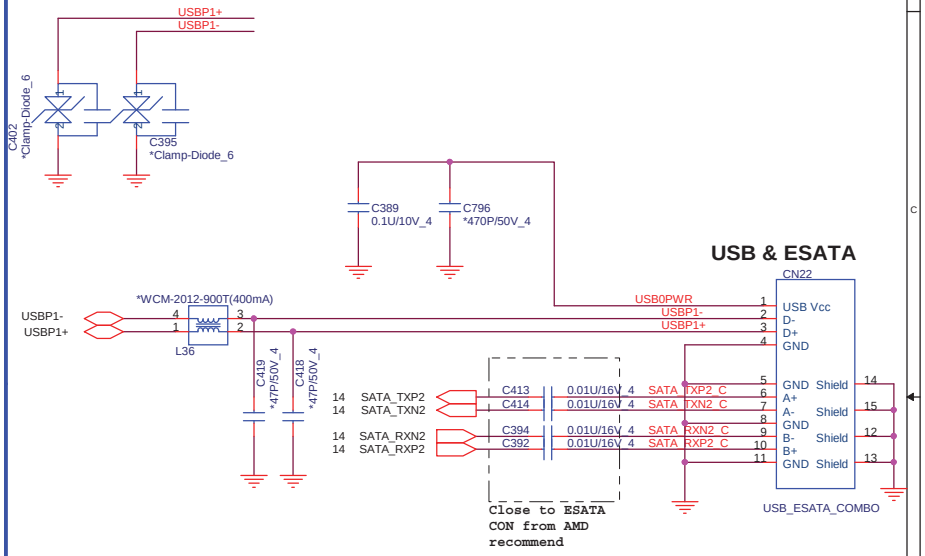
BLUETOOTH

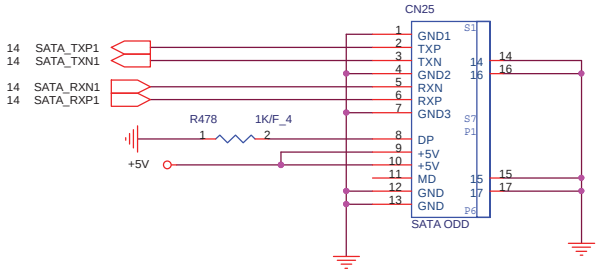


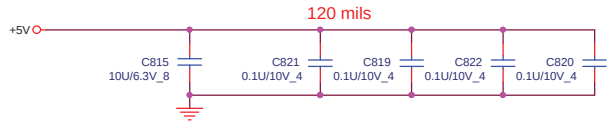
LEFT SIDE USBX1 and E-SATA/USB COMBO



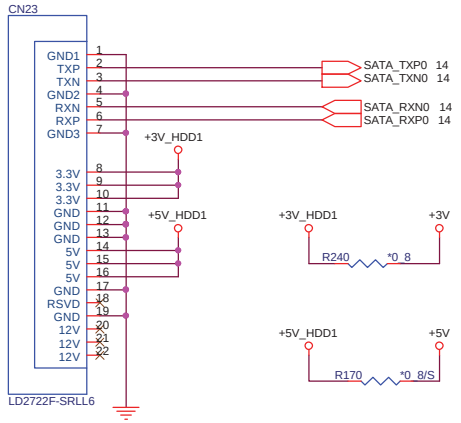


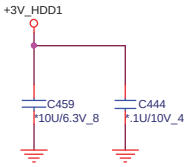
SATA CD-ROM





SATA HDD

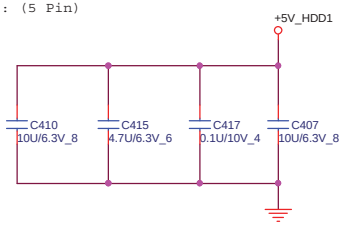




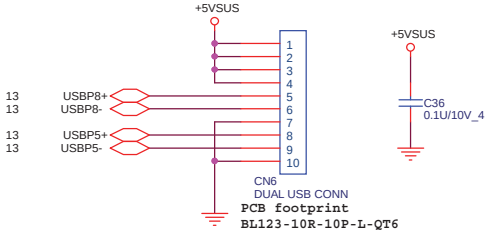
+5V: 2 A(4 Pin)

+3V: 2 A(4 Pin)

Gnd : (5 Pin)



RIGHT SIDE USBX2



NB5/RD2	PROJECT : OP8 Quanta Computer Inc.	
	Size: Custom	Document Number: BT/USBX3/ESATA/SATA ODD/HDD — Rev: 1A
	Date: Friday, March 20, 2009	Sheet 29 of 42

Power trace Layout 寬度> 30mil

+CTRL12DVDD R237 *0_6/S

+DVDD12

C397 .1U/10V_4 C457 .1U/10V_4 C409 .1U/10V_4 C458 .1U/10V_4

CLOSE to Pin 10, 13, 30, 36

+EVDD12

C421 *.1U/10V_4 C426 1U/10V_4

LAN-AGND

close to pin 19

Power trace Layout 寬度> 30mil

+3VLANVCC

LANVCC
1.2W
364mA

C469 4.7U/6.3V_6 C436 .1U/10V_4

+3V_LAN

C463 .1U/10V_4 C462 .1U/10V_4

CLOSE to Pin 29,37

+3V_A_LAN

C398 .1U/10V_4 C435 *.1U/10V_4

CLOSE to Pin 1

+CTRL12DVDD

C403 10U/6.3V_8 C472 .1U/10V_4

R177 2.49K/F_4 LANRSET

+CTRL12A

C400 10U/6.3V_8 C401 .1U/10V_4

XTAL2 XTAL1

C429 33P/50V_4 Y3 25MHZ C416 33P/50V_4

LAN_YLED# +3V_LAN

U9

RTL8103EL

+3V_A_LAN

MDI0+ MDI0- MDI1+ MDI1-

+DVDD12

LAN_REST# 32
PCIE_WAKE# 13,33

R235 *0_4

+3V

Delete R261 and add D38 as current loss issue

R233 *1K/F_4

R232 100/F_4

ISOLATEB

D16 *RB501V-40

LAN_DISABLE# 13,32

R220 15K/F_4

if ISOLATEB pin pull-low,the LAN chip will not drive it's PCI-E outputs (excluding PCIE_WAKE# pin)

R199 1K/F_4

+3V_LAN

U10

EECS EESK_LED100# EEDI_LED10# EEDO

CS SK DI DO VCC DC ORG GND

*M93C46-WMN6TP

C422 .1U/10V_4

R196 3.6K_4 +3V_LAN

Check the EEPROM for LAN

+3V_LAN

C839 0.1U/10V_4

U32

12 LAN_PLTRST#

LAN_REST_R#

TC7SH08FU

R210 *0_6/S

R209 *0_6/S

LAN-AGND

DB modified to short-pad

+DVDD12

9 PCIE_TXP2_LAN
9 PCIE_TXN2_LAN

2 PCIE_LAN_CLKP
2 PCIE_LAN_CLKN

PCIE_LAN_CLKP
PCIE_LAN_CLKN

LAN-AGND

PCIE_RXN2_LAN_L
PCIE_RXP2_LAN_L

C471 .1U/10V_4
C470 .1U/10V_4

PCIE_RXN2_LAN 9
PCIE_RXP2_LAN 9

+EVDD12

Symbol	Type	Pin No (64-Pin)	Pin No (48-Pin)	Description
LED0	O	57	38	
LED1	O	56	35	
LED2	O	55	34	
LED3	O	54	33	

LEDS1-0	00	01	10	11
LED0	Tx/Rx	Tx/Rx	Tx	Tx
LED1	LINK100	LINK	LINK	LINK100
LED2	LINK10	FULL	Rx	LINK10
LED3	NA	NA	NA	NA

LAN_Transformer

U28

MDI0+ MDI0- V_DAC_1 MDI1+ MDI1- V_DAC_2

RD+ RD- CT TD+ TD- CT

RX+ CT RX- TX- CMT TX+

LAN_MX0+ LAN_MCT0 LAN_MX0- LAN_MX1- LAN_MCT1 LAN_MX1+

C792 0.01U/100V_0603 LAN_MCT0_1 R475 75/F_4

C791 0.01U/100V_0603 LAN_MCT0_2 R474 75/F_4

C790 1000P/3KV_1808

C794 .01U/16V_4 C795 .01U/16V_4

NS681684

Bios need change

EEDI_LED10# R515 *0_6

EESK_LED100# R516 0_6

LAN_GLED#

LAN_YLED#

C760 *.01U/16V_4 C728 *.01U/16V_4

Link

FOR EMI

C764 .1U/10V_4

RJ45

CN19

Add for EMI request

+3V_LAN R433 *0_6/S LAN_GLED LAN_GLED#

R534 *75/F_4

C853 *1000P/3KV_1808

LAN_MX1- LAN_MX1+ LAN_MX0- LAN_MX0+

+3V_LAN R425 *0_6/S LAN_YLED LAN_YLED#

LED_GRE_P LED_GRE_N LED_YEL_P LED_YEL_N

RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+ GND1 GND

RJ45_CONN

C733 .1U/10V_4

FOR EMI

Fixed RJ45 Pin define (0829)

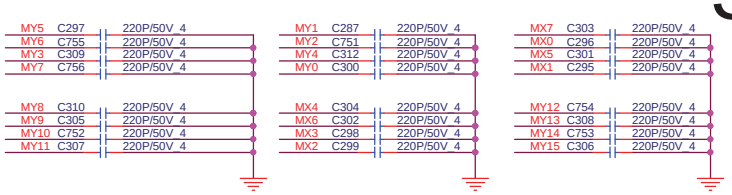
NB5/RD2

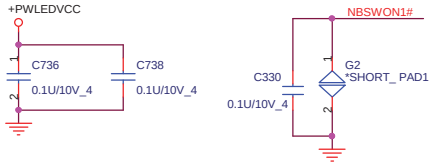
PROJECT : OP8
Quanta Computer Inc.

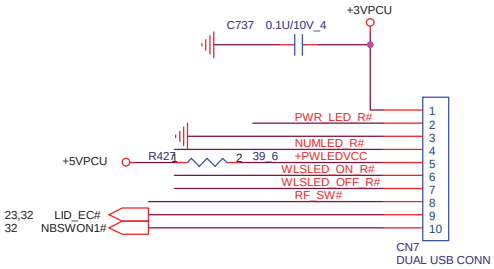
Size	Document Number	Rev
Custom	RTL8102EL/RJ45	1A

Date: Friday, March 20, 2009 Sheet 30 of 42

POWER BUTTON CONNECT

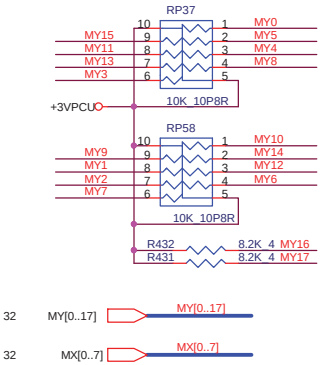


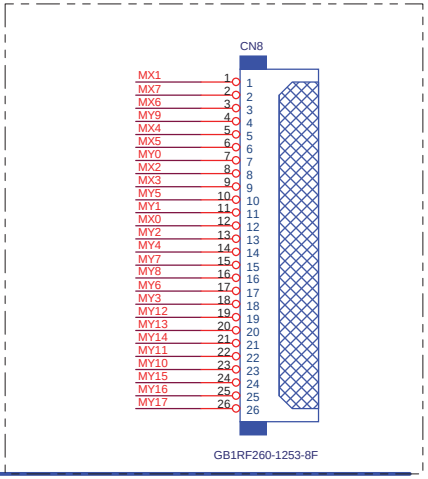


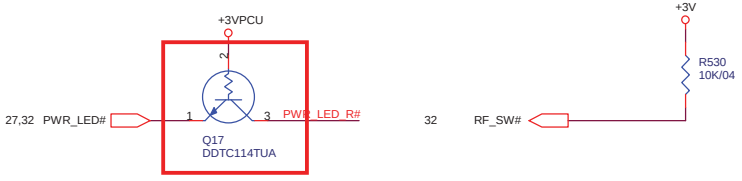


1. +3VPCU(LIDSWITCH PWR)
2. PWR_LED#
3. GND
4. NumLED
5. +5VPCU (PWRLED PWR)
6. WLSLED_ON#
7. WLSLED_OFF#
8. RF_SW#
9. LIDSWITCH
10. POWERON#

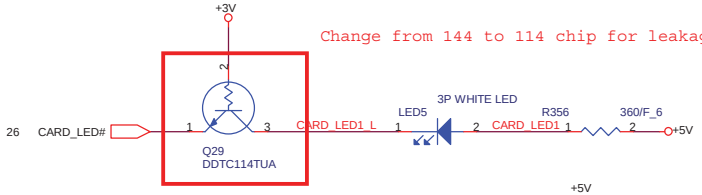
KEYBOARD PULL-UP

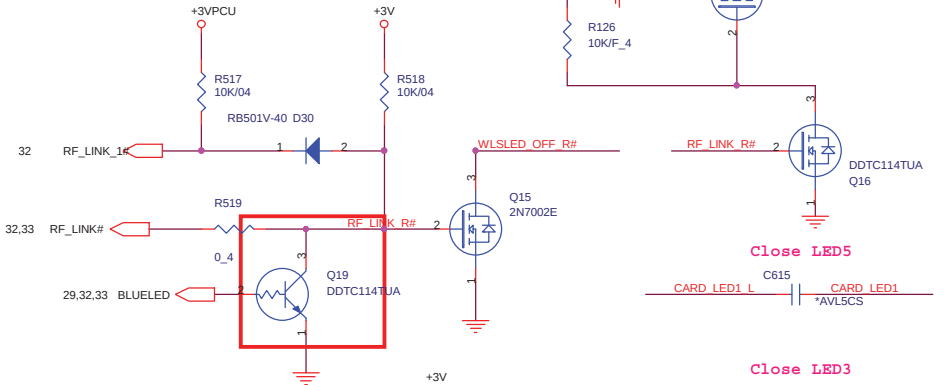


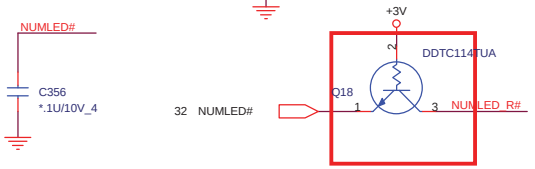


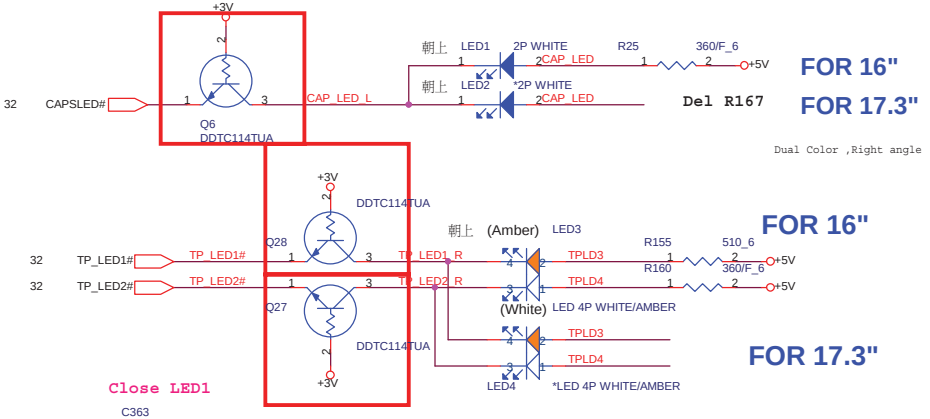


Change from 144 to 114 chip for leakage current

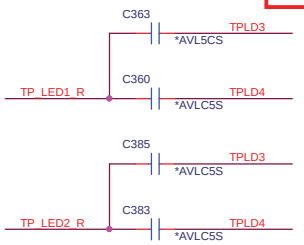






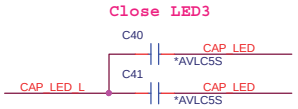


Close LED1



Close LED5

Close LED3



Close LED4

Close LED2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LED/KEYBOARD/SW_BOARD	1A

NB5/RD2

Date: Friday, March 20, 2009 | Sheet 31 of 42

U8

KB3926

Battery charge/discharge Cap button

VGA thermal system thermal

reserved for H/W CIR

Modify from RF LED control

For KB3926 C version

TOUCH PAD CONNECTOR

25 mils

close conn

PCB footprint BL121-12R-12P-L-QT6

TOUCH PAD L/R FOR 17" only

TOUCH PAD L/R FOR 16"

TOUCH PAD ON/OFF FOR 16"

TOUCH PAD ON/OFF FOR 17.3"

*TOUCH PAD EN SW

DB modified

Project Model	GPIO42
OPX 16"	Low
OPX 17.3"	High

GPIO42 control fan table

SB internal pull Hi 10k to 3v_s5

Change D12, D16 to RB500 for current loss

SB internal pull Hi 10k to 3v_s5

SST	AKE5GFK0Z09	1M byte
WINBOND	AKE3GFP0N08	SPI
PME	AKE3GZP0500	BIOS
EON	AKE3GZP0Q00	

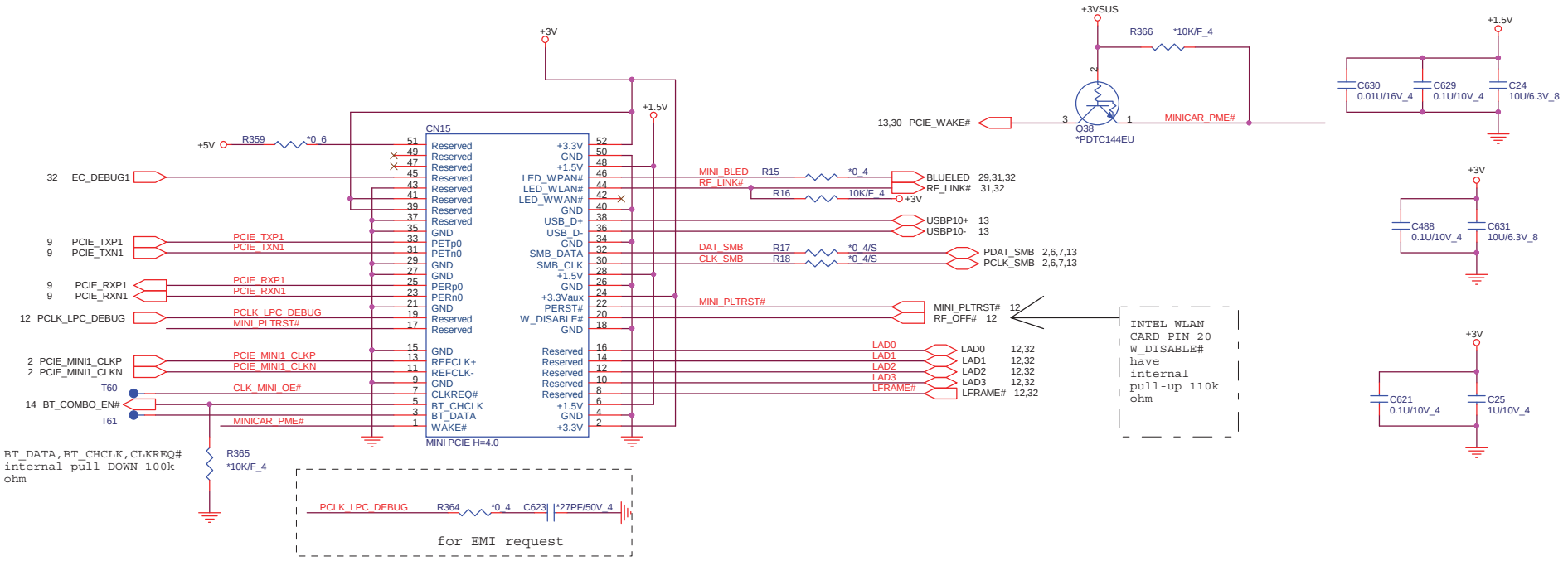
PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	KB3926/ROM/TP	1A

Date: Friday, March 20, 2009 Sheet 32 of 42

NB5/RD2

Mini PCI-E Card 1 WLAN



PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Mini CARD	1A

NB5/RD2

Date: Friday, March 20, 2009 Sheet 33 of 42

DC/DC +3VPCU/+ 5VPCU/ +12VALW

+3V 2,3,5,6,7,10,11,12,13,14,15,16,20,23,24,25,27,28,29,30,31,32,33,35,39

+5VPCU 27,31,32,35,36,37,38
+3VPCU 5,12,23,27,29,31,32,36,37,38,40
+3VSUS 13,26,29,33,35,37,39
+3VS5 5,7,12,13,14,15,16,39
+5VSUS 23,29,32,39
+5V 5,15,20,23,24,25,27,28,29,31,32,33,35,38,39
+3VLANVCC 30,39

TON: 5V / 3.3V
GND = 400 / 500KHz
REF = 400 / 300KHz
VCC = 200 / 300KHz

DB modify

Place these CAPs close to FETs

5 Volt +/- 5%
+5VPCU
C/C:8A
P/C:10A

Vout=0.7(Ra+Rb)/Rb
Rb around 49.9k

I_lim*MOSFET(RDSON)=V_ILIM(mV)/10
V_ILIM(mV)=5uA*R_ILIM

+12VALW is +15V power level
Please use +15VALW to prevent voltage rating issue

Rds(on) 15m ohm

3.3 Volt +/- 5%
+3VPCU
C/C:8A
P/C:10A

+3V
6.76A
S0-S1

+3VS5
0.5A
S0-S5

+3VSUS
1.84A
S0-S3

+5V
4.31A
S0-S1

+5VSUS
4.5A
S0-S3

+LANVCC
0.27A

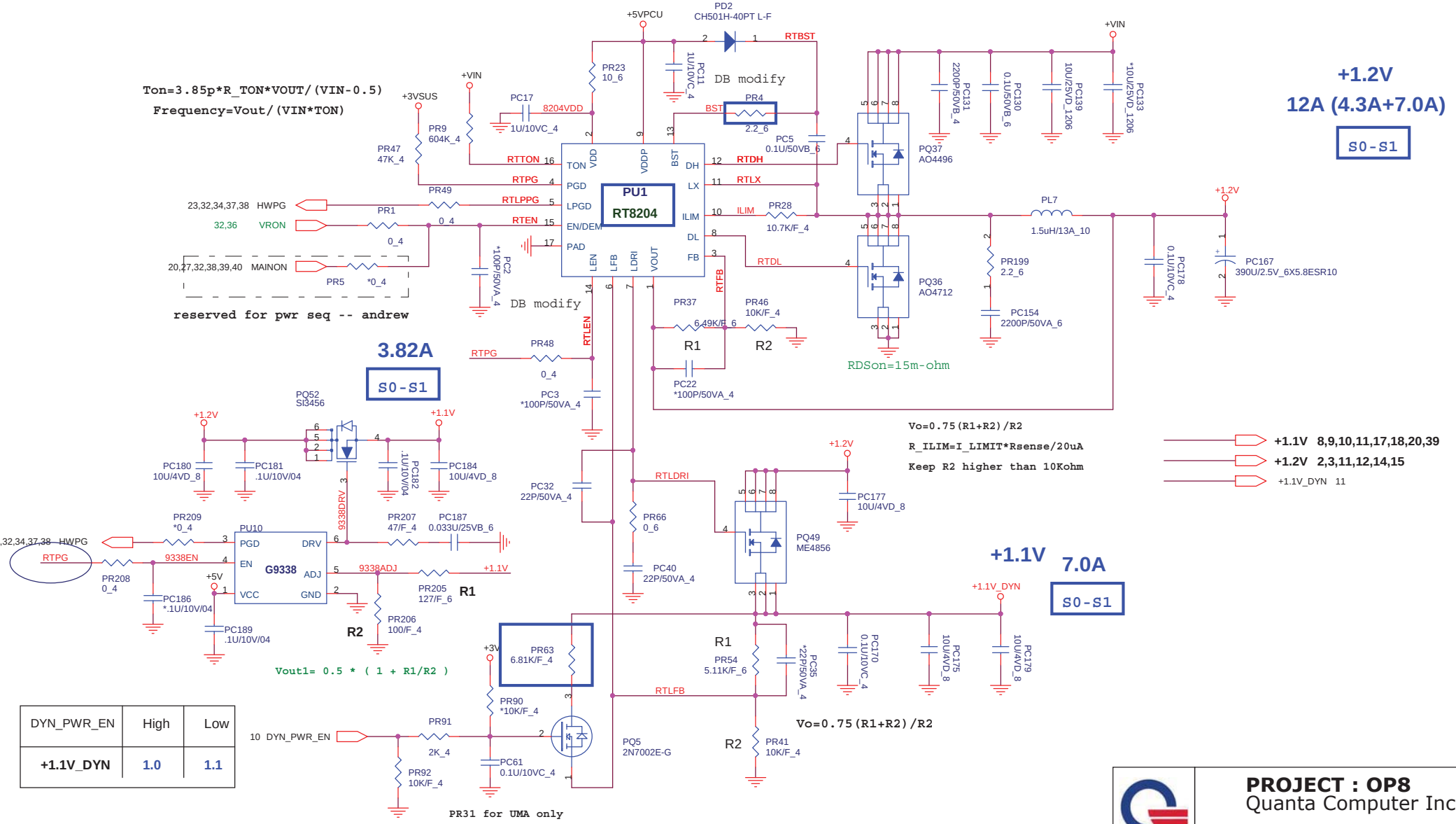
For EMI-SI

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+5V/+3V(ISL6237)	1A
Date: Friday, March 20, 2009	Sheet 34 of 42	

NB5/RD2

+1.1V & +1.2V



DYN_PWR_EN	High	Low
+1.1V_DYN	1.0	1.1

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
B	+1.2V & +1.1V(RT8204)	1A

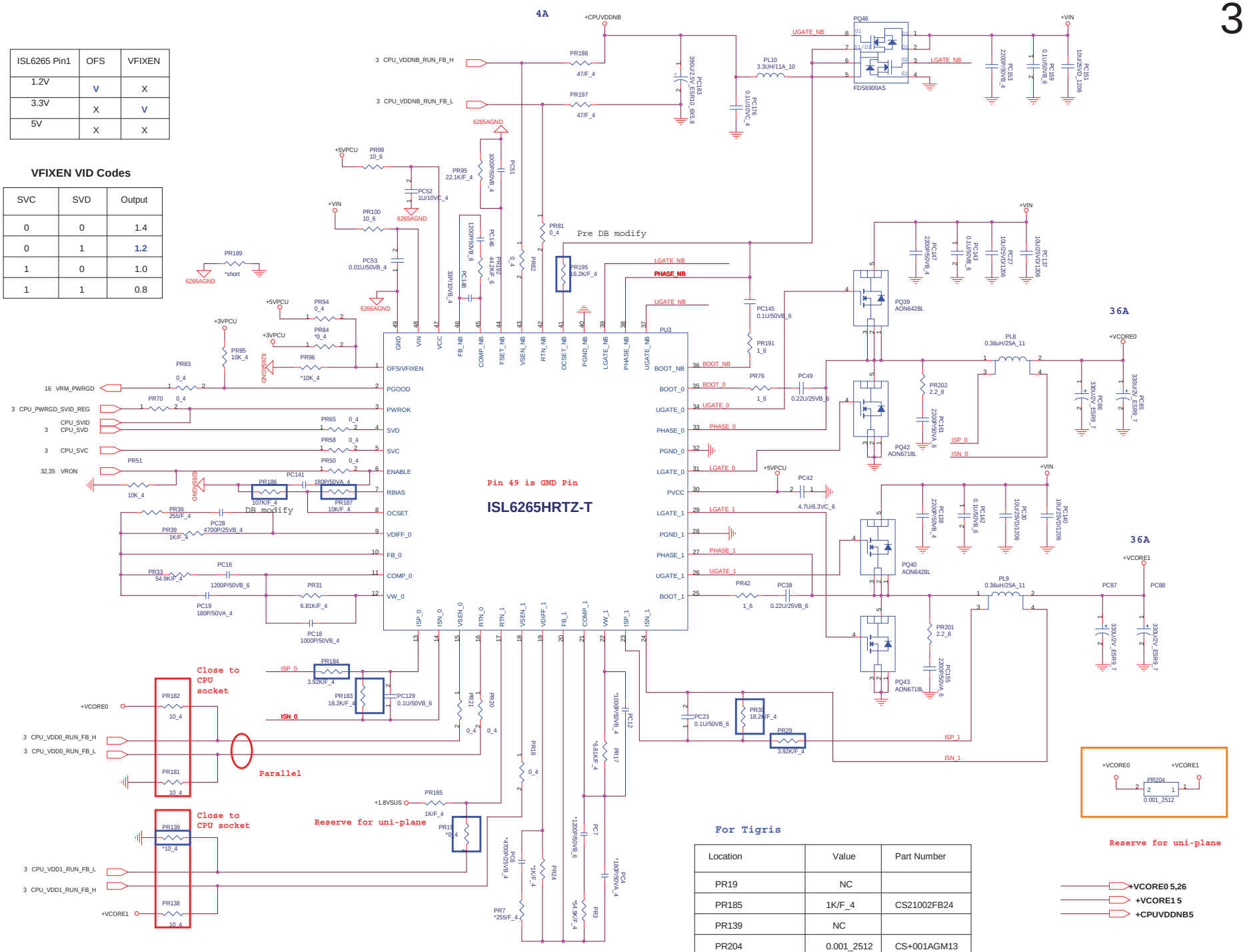
Date: Friday, March 20, 2009 Sheet 35 of 42

NB5/RD2

ISL6265 Pin1	OFS	VFIXEN
1.2V	V	X
3.3V	X	V
5V	X	X

VFIXEN VID Codes

SVC	SVD	Output
0	0	1.4
0	1	1.2
1	0	1.0
1	1	0.8



Location	Value	Part Number
PR19	NC	
PR185	1K/F_4	CS21002FB24
PR139	NC	
PR204	0.001_2512	CS+001AGM13
PC12,PR17,PC4,PC7, PR3,PR24,PC6,PR7	NC	

For Tigris

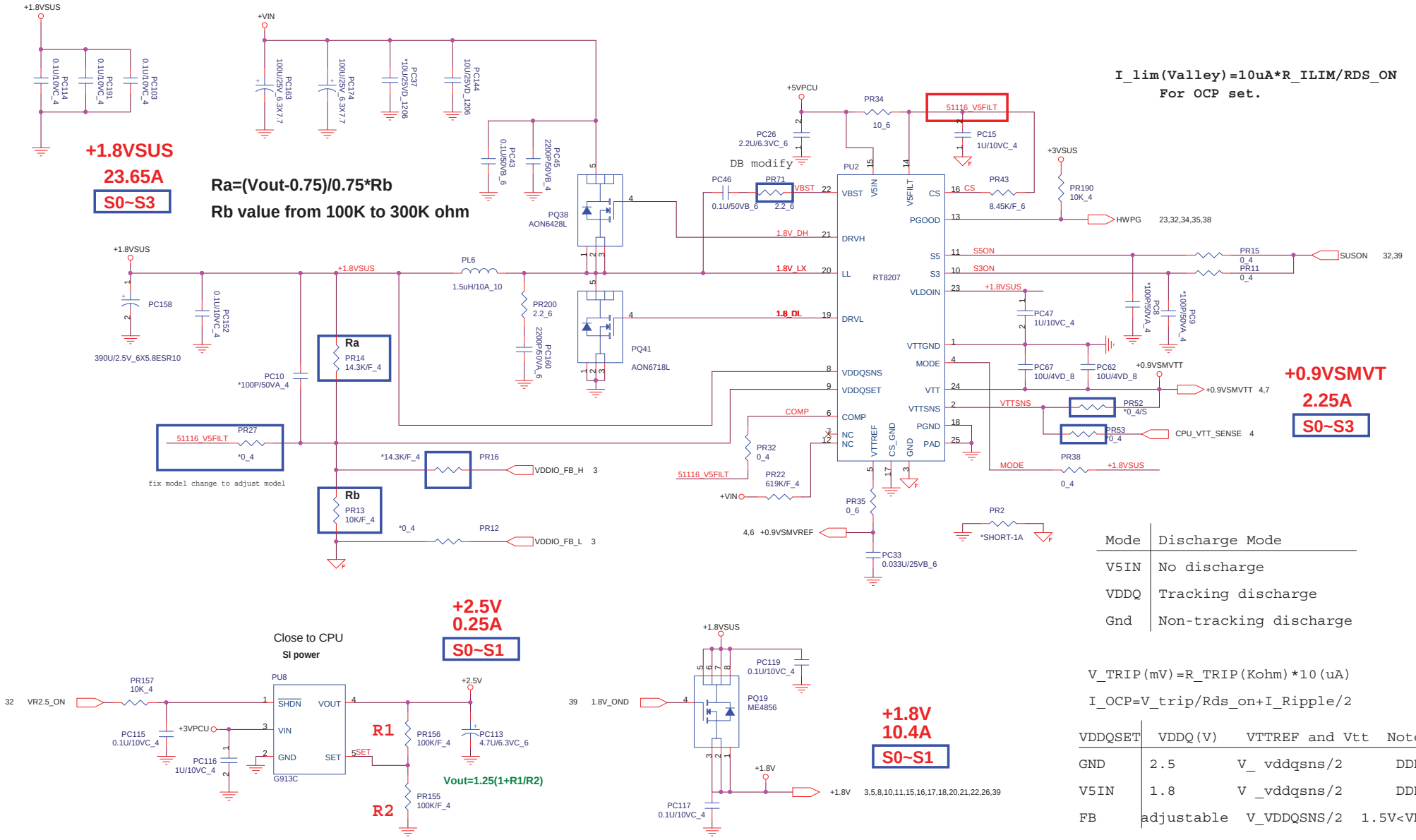
+VCORE0 5,26
+VCORE1 5
+CPUVDDNB5

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
C	CPU_CORE(ISL6265)	1A

NB5/RD2

Date: Friday, March 20, 2009 Sheet 36 of 43



Mode	Discharge Mode
V5IN	No discharge
VDDQ	Tracking discharge
Gnd	Non-tracking discharge

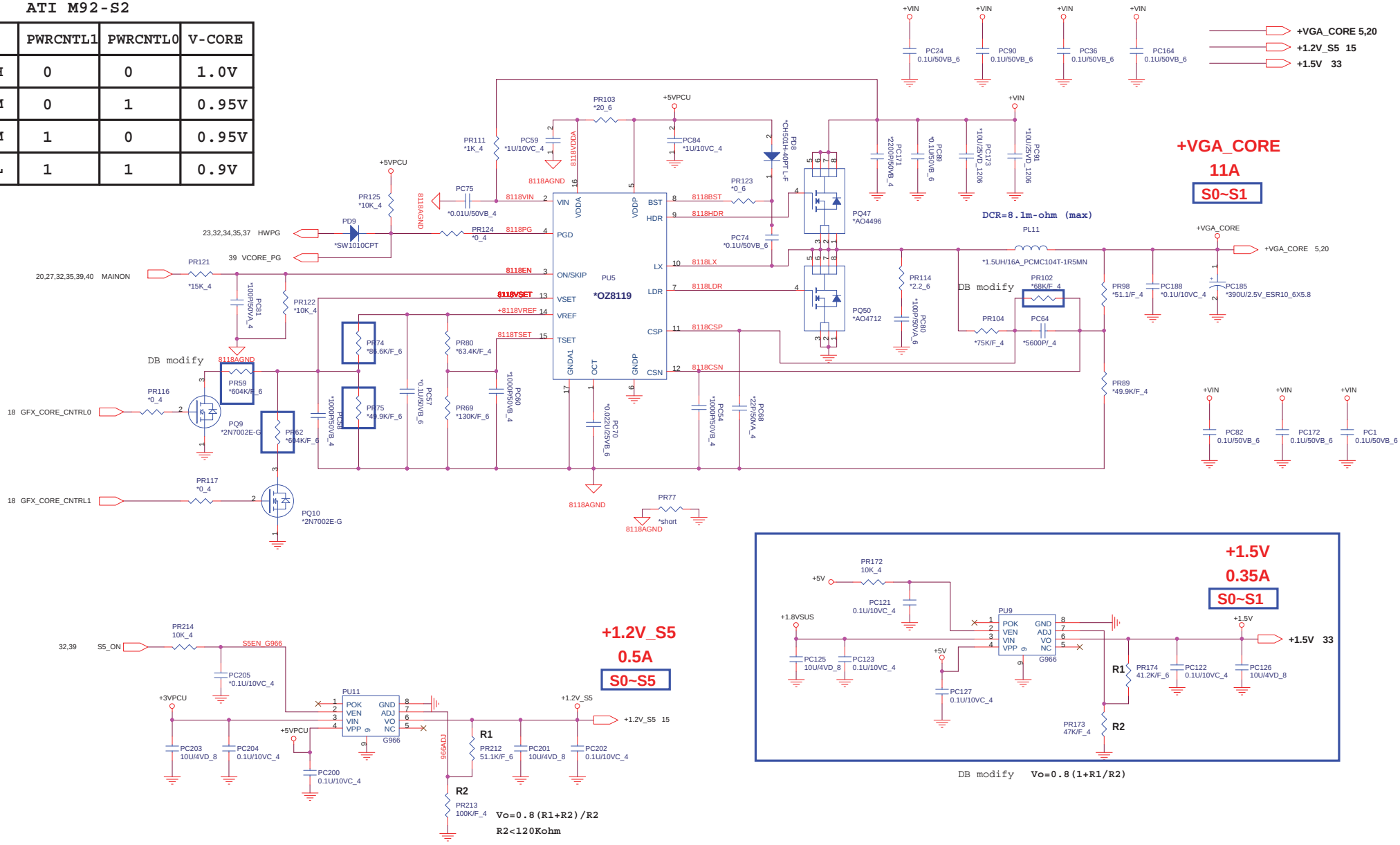
V_TRIP(mV)=R_TRIP(Kohm)*10(uA)

I_OCP=V_trip/Rds_on+I_Ripple/2

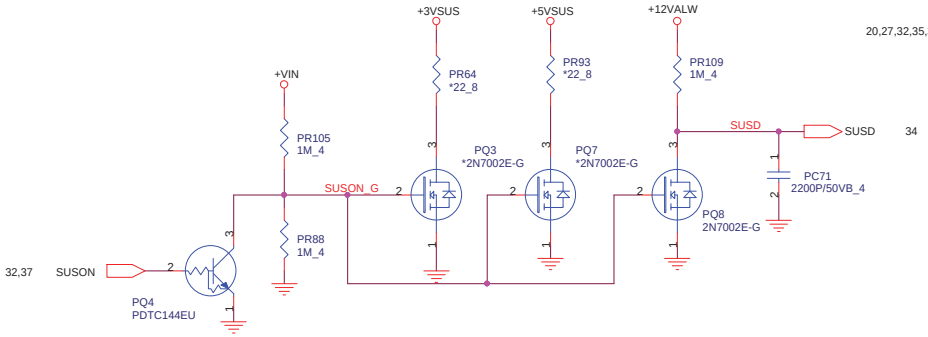
VDDQSET	VDDQ(V)	VTTREF and Vtt	Note
GND	2.5	V_ vddqsns/2	DDR
V5IN	1.8	V _vddqsns/2	DDR2
FB	adjustable	V_VDDQSNS/2	1.5V<VDDQ<3V

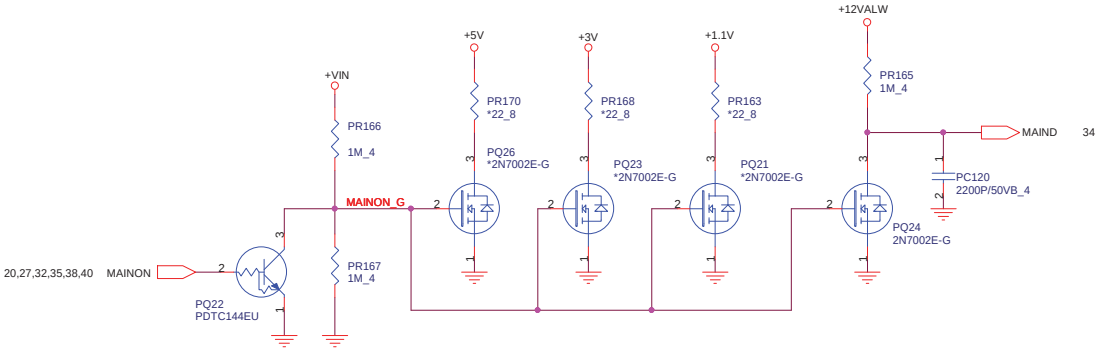
ATI M92-S2

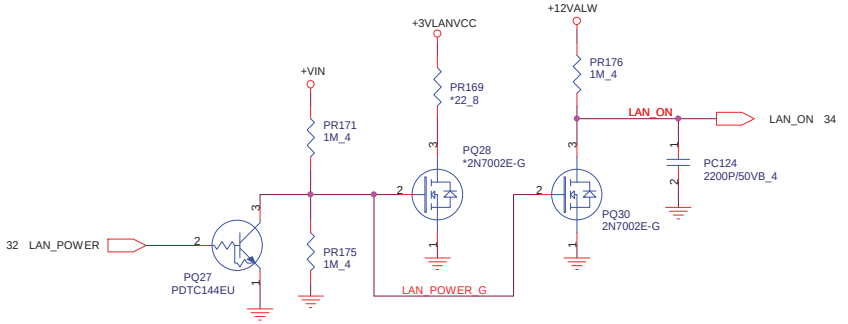
	PWRCNTL1	PWRCNTL0	V-CORE
H	0	0	1.0V
M	0	1	0.95V
M	1	0	0.95V
L	1	1	0.9V

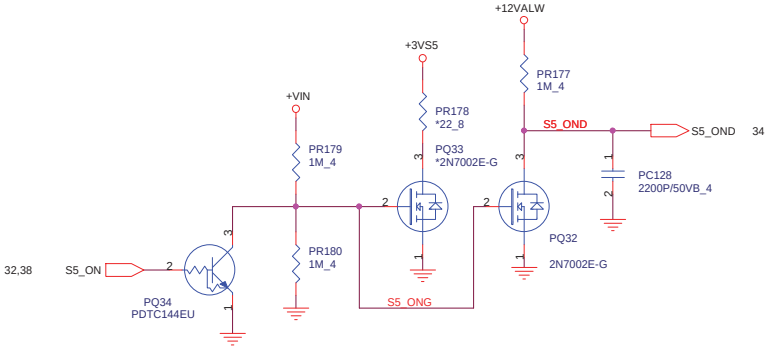


PROJECT : OP8 Quanta Computer Inc.		
Size: Custom	Document Number: VGA PWR OZ8118/1.2V_S5/+1.5	Rev: 1A
Date: Friday, March 20, 2009	Sheet 38 of 42	NB5/RD2

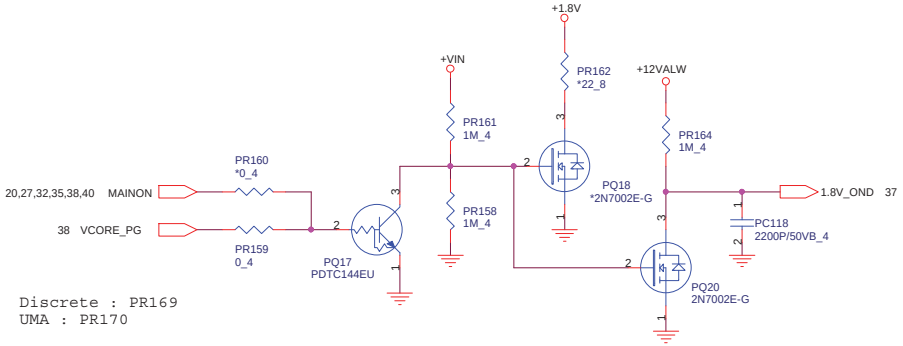








For Discrete Only



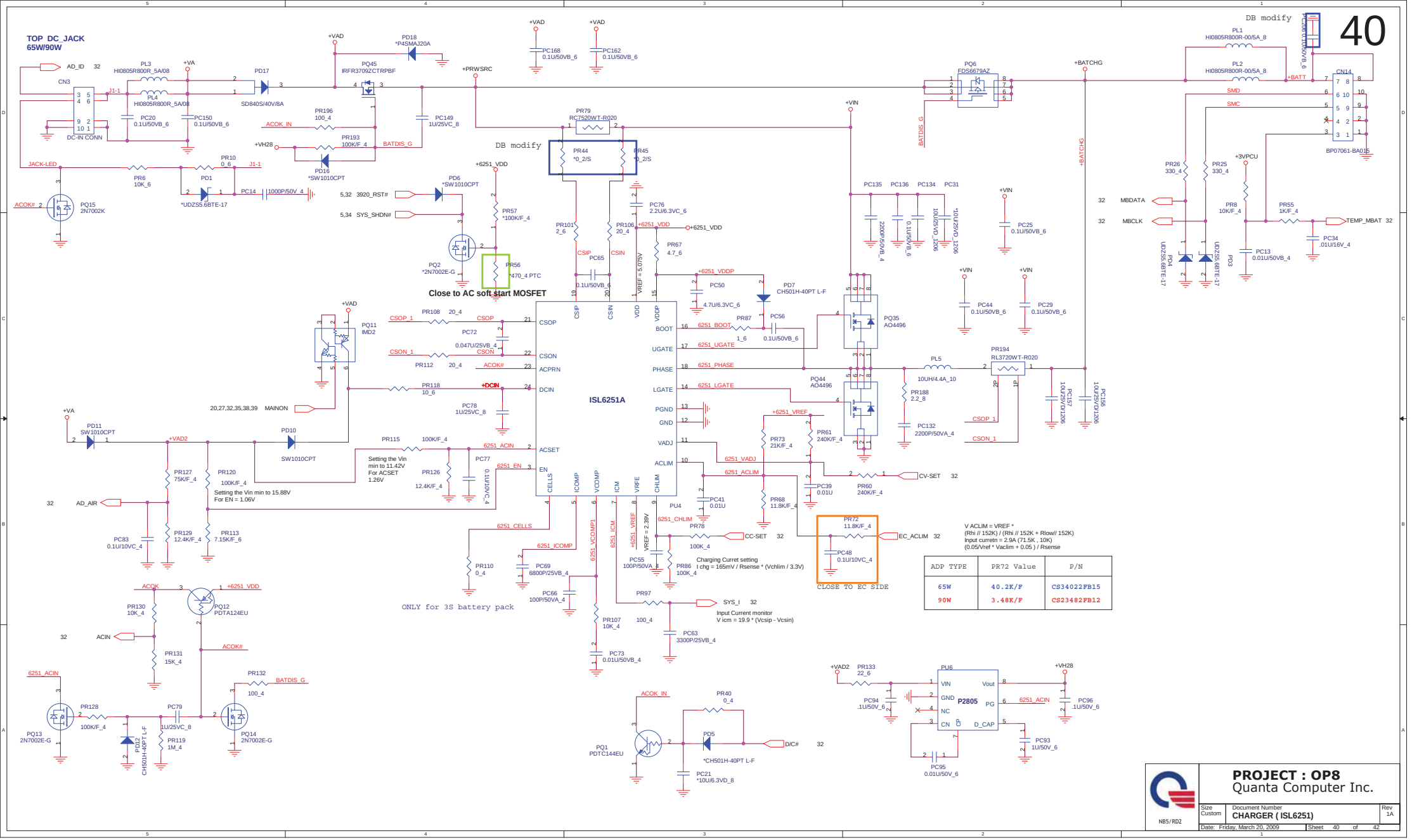
Discrete : PR169
UMA : PR170

NB5/RD2

PROJECT : OP8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	**DISCHARGE**	1A

Date: Friday, March 20, 2009 Sheet 39 of 42



ADP TYPE	PR72 Value	P/N
65W	40.2K/F	CS34022FB15
90W	3.48K/F	CS23482FB12