BU3A SYSTEM DIAGRAM

01

PCB STACK UP

- LAYER 1 : TOP
- LAYER 2 : SGND
- LAYER 3 : IN1
- LAYER 4 : SVCC
- LAYER 5 : IN2
- LAYER 6 : IN3
- LAYER 7 : SGND1
- LAYER 8 : BOT

DDRII-SODIMM1 PAGE 8 — DDRII 667/800 MHz

DDRII-SODIMM2 PAGE 8 — DDRII 667/800 MHz

AMD Lion Sabie
Congo
ASB1 Processor
812 FCBGA 27x27
PAGE 4,5,6,7

CPU THERMAL SENSOR PAGE 6

14.318MHz

CLOCK GEN
ICS9LPRS480AKLFT
SLG8SP628VTR
RTM880N-795
PAGE 3

CPU_CLK
NBGFX_CLK
NBGPP_CLK
SBLINK_CLK
SBSRC_CLK

16*16 HT LINK

PCI-E

NORTH BRIDGE
RS780M
21mm X 21mm, 528pin BGA
PAGE 9,10,11

HDMI PAGE 18

CRT PAGE 17

LVDS PAGE 17

Side Port Memory
DDR2 64M*16
PAGE 9

1 Atheros PCIE-LAN
AR8132
(10/100/LAN)
PAGE 23
RJ45 Board

2 Mini PCI-E Card
(Wireless LAN)
PAGE 20

3 Mini PCI-E Card
(3G Card)
PAGE 20

PCIE X4

SOUTH BRIDGE
SB710
21mm X 21mm, 528pin BGA
4.5W(Ext)
4.3W(Int)
PAGE 12,13,14,15,16

SATA - HDD PAGE 19 — 0 SATA

SATA - ODD PAGE 19 — 3 SATA

USB2.0

0,1 USB2.0 Ports X2 PAGE 21

3 USB2.0 Ports Sleep charge X1 PAGE 18

5 11.6"Card Reader Conn PAGE 18
RT5159

10 CCD PAGE 17

11 13.3"Card Reader Conn PAGE 21
RT5159

6 3G SIM Card PAGE 20

7,8 Wi-Fi Mini PCI-E Card x1
3G Mini PCI-E Card x1

9 Bluetooth PAGE 21

Azalia

Azalia Conn PAGE 21

CONEXANT CX20582

Earphone

External MIC

Speaker

SMBUS

LPC

G-Sensor PAGE 19

Keyboard PAGE 21

Touch Pad PAGE 21
Kill SW PAGE 21

WINBOND KBC
WPCE775L
PAGE 22

FAN PAGE 6

FLASH
SPI 8Mbit
PAGE 22

SYSTEM CHARGER(ISL88731) PAGE 24

SYSTEM POWER ISL6237IRZA-T PAGE 29

CPU CORE OZ828 PAGE 28

+1.2V(UP6111AQDD) PAGE 28

+NB_CORE 1.0V(UP6111AQDD) PAGE 27

DDR II SMDDR_VTERM
1.8V/1.8VSUS(TPS51116REGR)
PAGE 26

DISCHARGE +1.5/+1.2V_S5/2.5V/1.1V PAGE 30

NB7

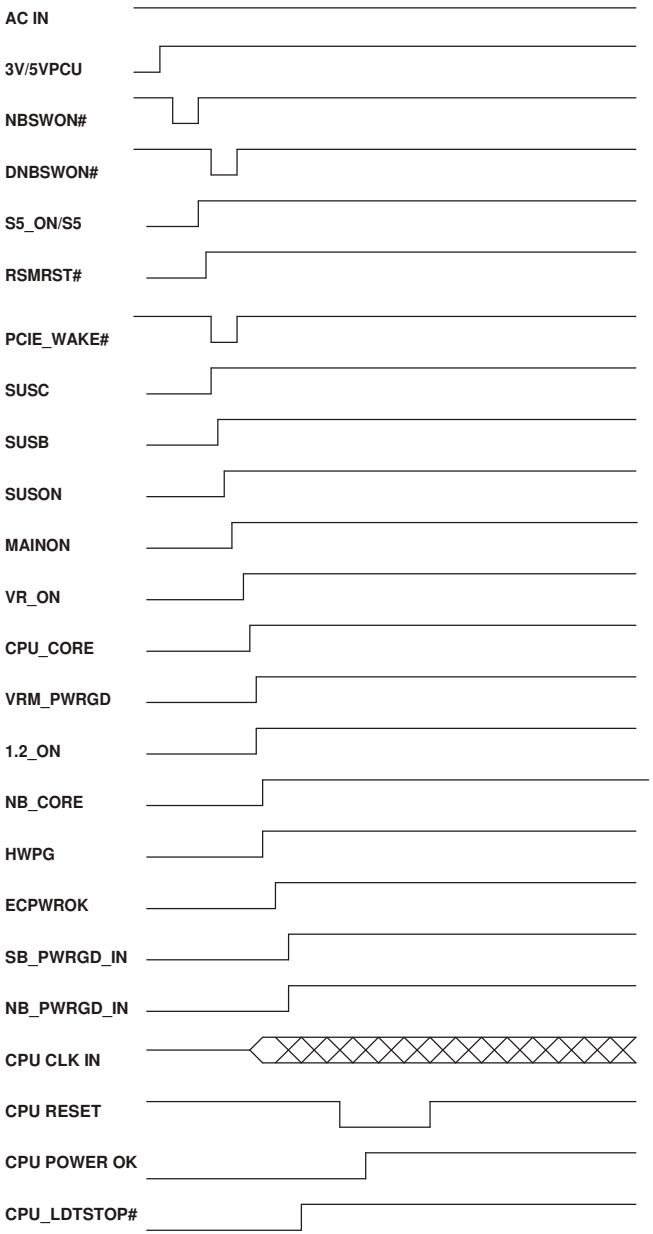
PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	BLOCK DIAGRAM	1B

Date: Sunday, May 31, 2009 Sheet 1 of 32

INDEX

Power Sequence



RS780 SM BUS

RS780 I2C (S0)	I2C and AUX Function Define
DAC_SCL DAC_SDA	CRT (+5V)
I2C_CLK I2C_DATA	LVDS (+3V)
DDC_CLK0/AUX0N DDC_DATA1/AUX0P	HDMI (+5V)
DDC_CLK1/AUX1N DDC_DATA1/AUX1P	not used

SB710 SM BUS

SB710 SMBUS	SMBUS Function Define
SMBCLK0 SMBDAT0 (+3V)	DDR / DDR THER / CLOCK GEN
SMBCLK1 SMBDAT1 (+3V_S5)	LAN IC//WI-FI
SMBCLK2 SMBDAT2 (+3V_S5)	3G mini card

KBC(EC) SM BUS

KBC SMBUS (+3VPCU)	SMBUS Function Define
MBCLK MBDAT	BATTERY (+3VPCU)
2ND_MBCLK 2ND_MBDATA	CPU THER SENSOR(+3V) EC EEPROM (+3VPCU)
3ND_MBCLK 3ND_MBDATA	G-SENSOR(+3VS5)

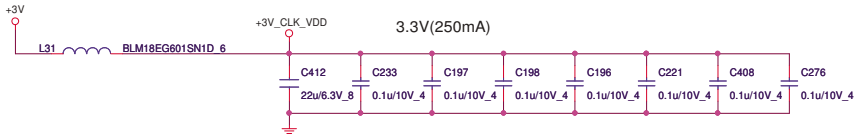
NB7

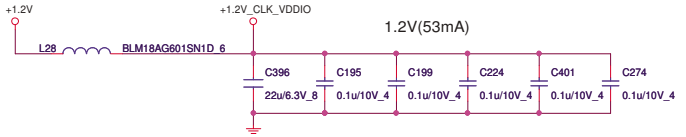
PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	SYSTEM INFORMATION	1B

Date: Tuesday, June 30, 2009 Sheet 2 of 32

CLK_GEN_SLG8SP628





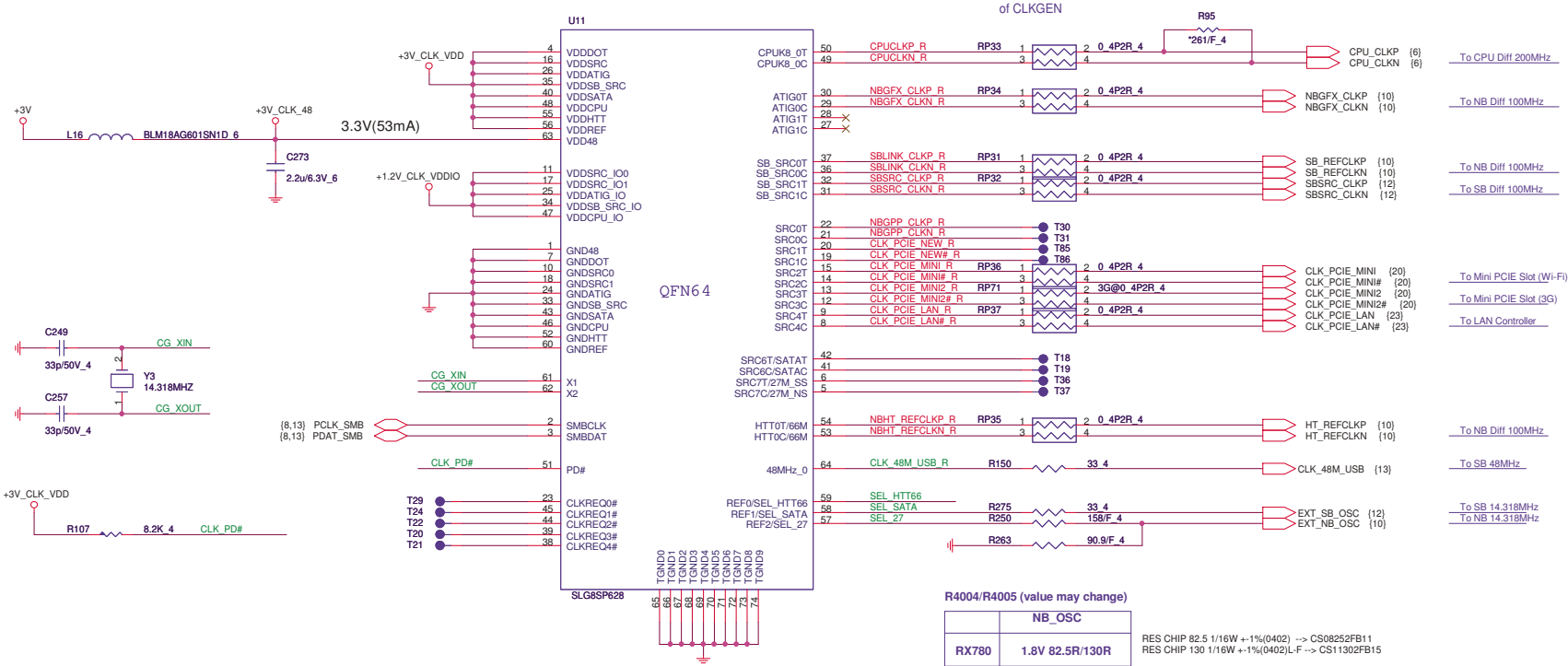
ICS9LPRS480 P/N : ALPRS480000

SLG8SP628 P/N : AL8SP628000

RTM880N-796 P/N : AL000880000

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

Place within 0.5" of CLKGEN



R4004/R4005 (value may change)

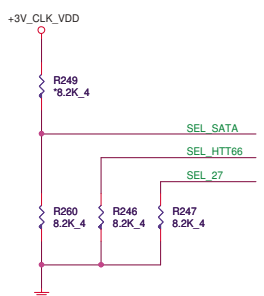
	NB_OSC
RX780	1.8V 82.5R/130R
RS780	1.1V 158R/90.9R

RES CHIP 82.5 1/16W +-1%(0402) --> CS08252FB11
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

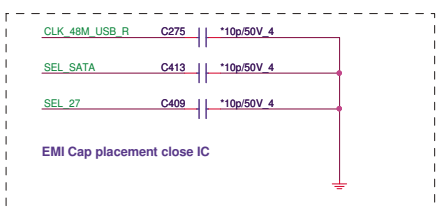
NB CLOCK INPUT TABLE

NB CLOCKS	RX780	RS780
HT_REFCLKP	100M DIFF	100M DIFF
HT_REFCLKN	100M DIFF	100M DIFF
REFCLK_P	14M SE (1.8V)	14M SE (1.1V)
REFCLK_N	NC	vref
GFX_REFCLK	100M DIFF	100M DIFF(IN/OUT)*
GPP_REFCLK	100M DIFF	NC or 100M DIFF OUTPUT
GPPSB_REFCLK	100M DIFF	100M DIFF



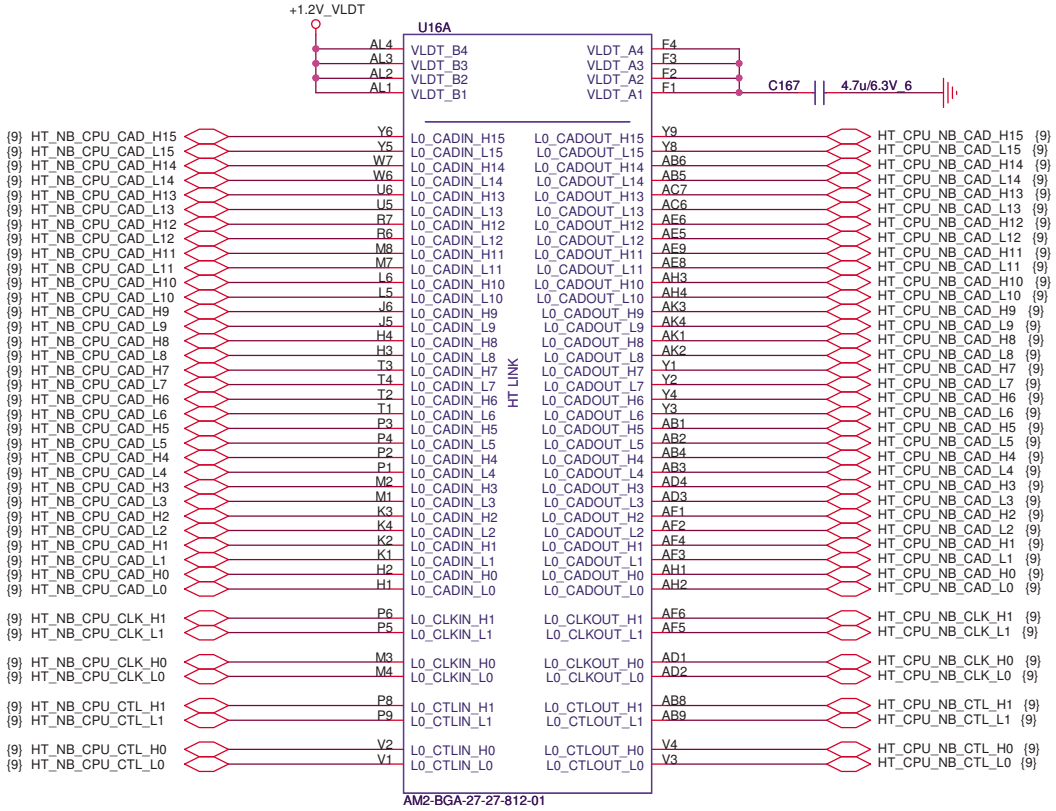
SEL_HTT66	1	66 MHz 3.3V single ended HTT clock
	0*	100 MHz differential HTT clock
SEL_SATA	1	100 MHz non-spreading differential SRC clock
	0 *	100 MHz spreading differential SRC clock
SEL_27	1	27MHz and 27M SS outputs
	0*	100 MHz SRC clock

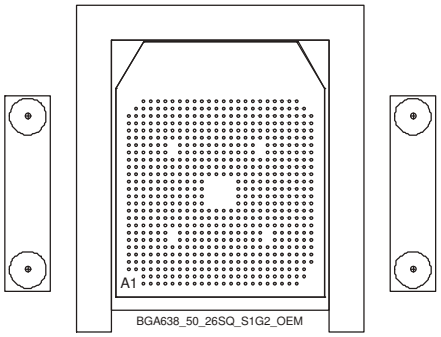
* default

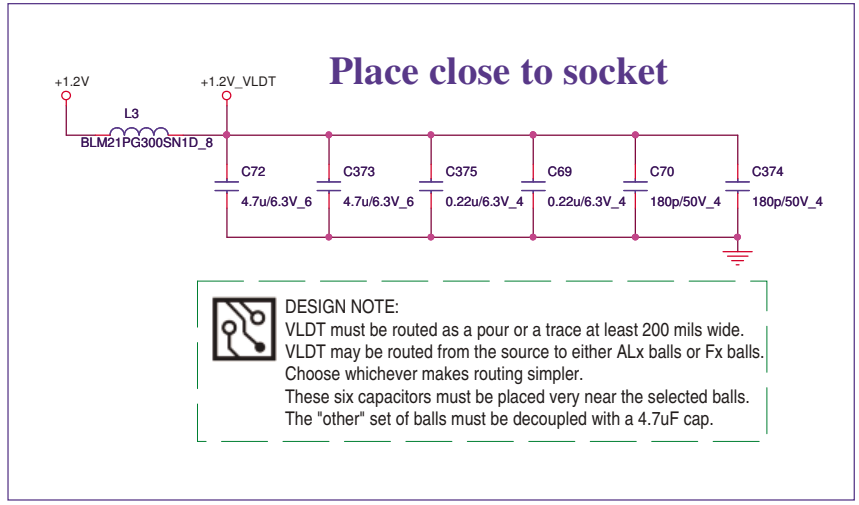


PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	CLOCK GENERATOR_SLG8SP628	1B
NB7	Date: Wednesday, June 03, 2009	Sheet 3 of 32







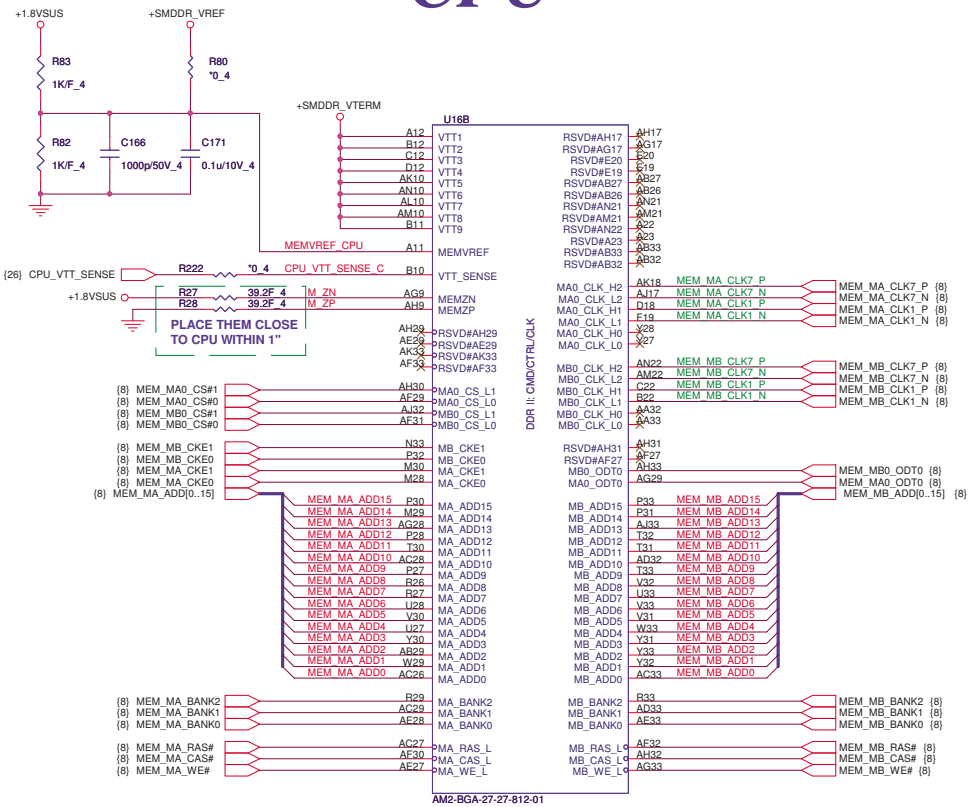
CPU

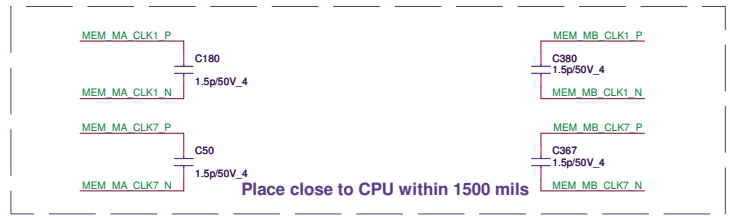
NB7	PROJECT : BU3 Quanta Computer Inc.	
	Size: B Document Number: K8G BGA HT I/F 1/4	Rev: 1B
	Date: Tuesday, May 26, 2009	Sheet 4 of 32

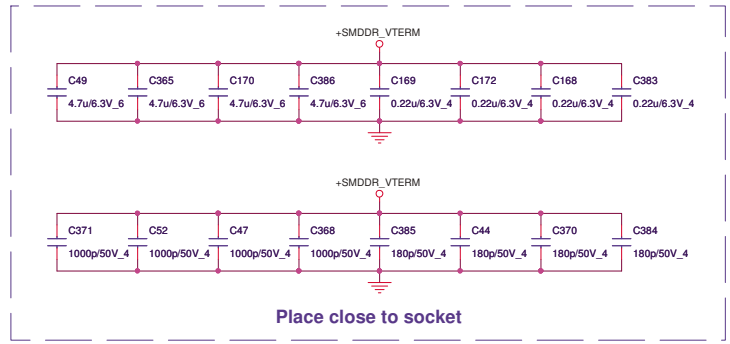
CPU

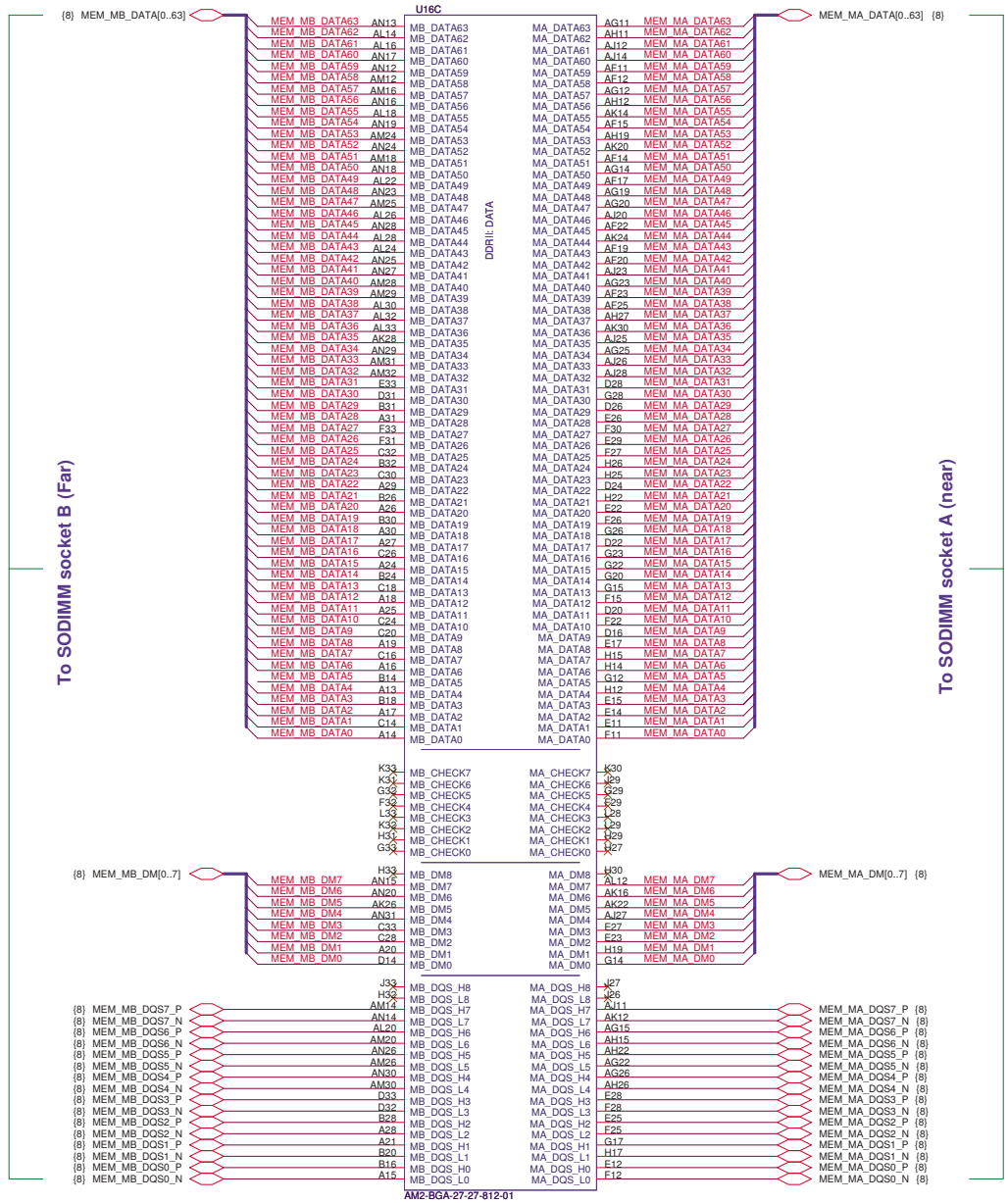
05

Processor Memory Interface

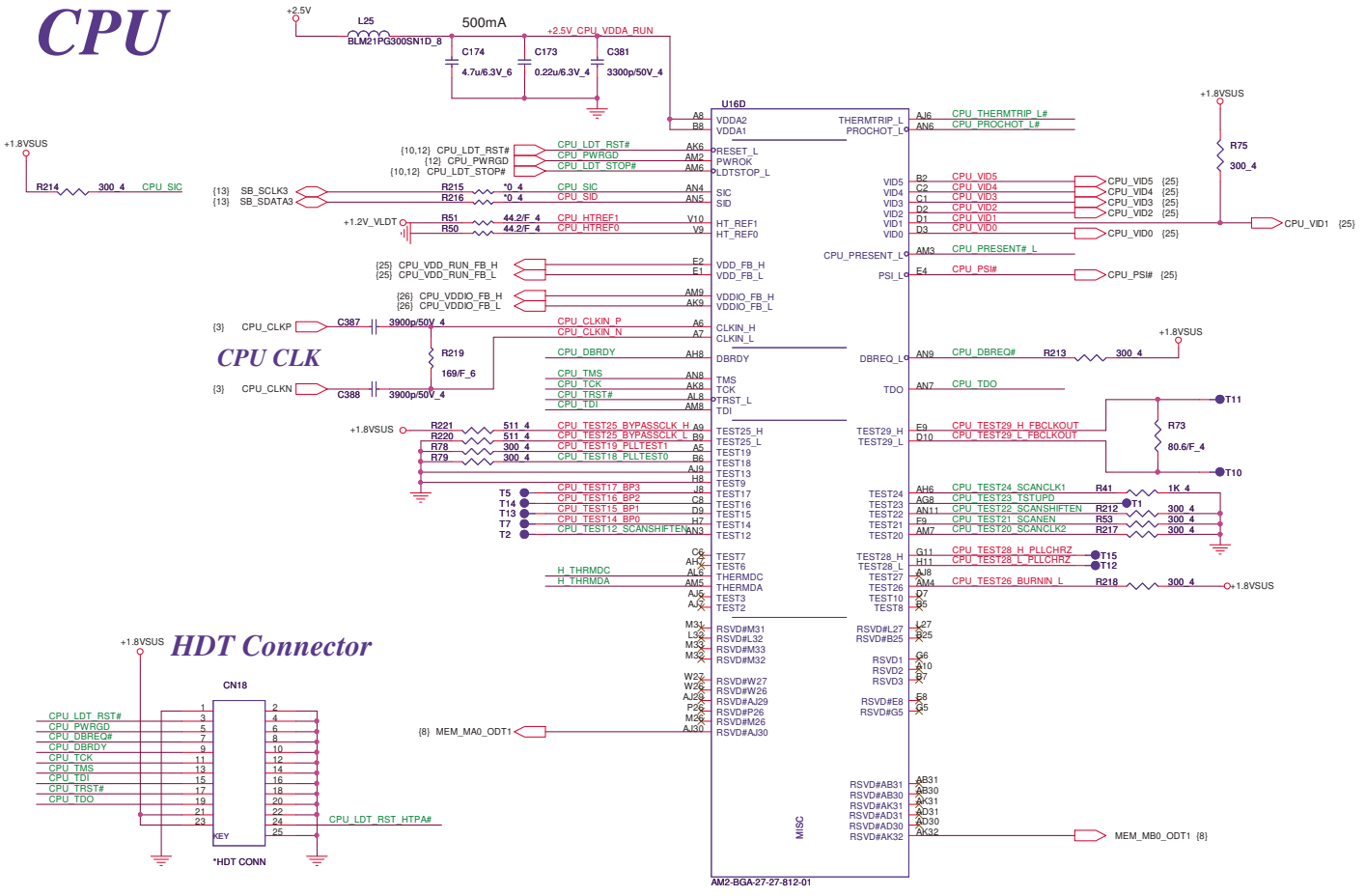




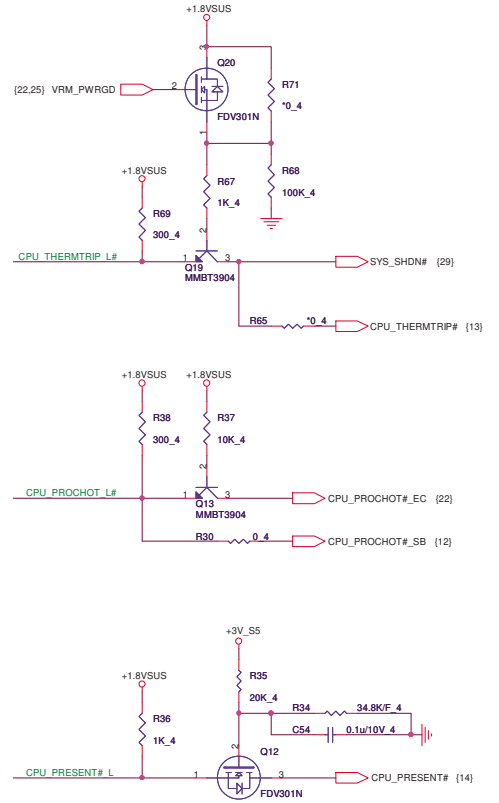




CPU

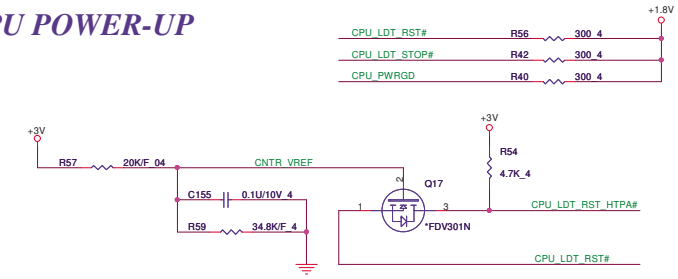


CPU THERM

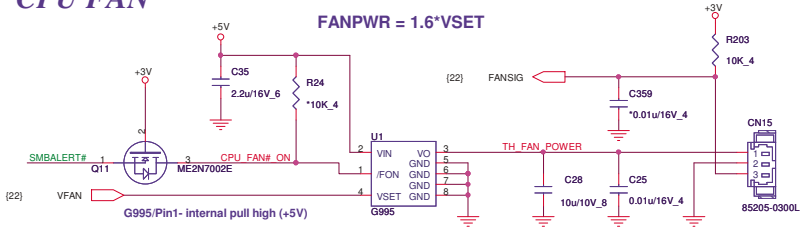


06

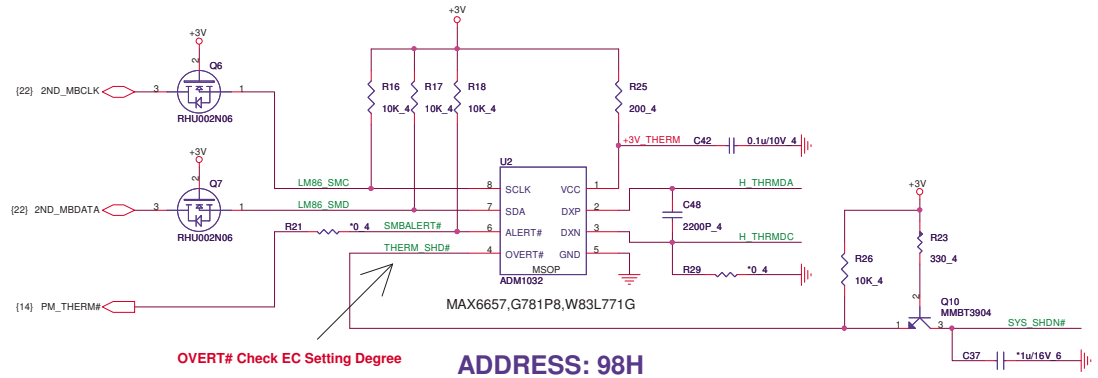
CPU POWER-UP



CPU FAN



CPU H/W MONITOR



PROJECT : BU3
Quanta Computer Inc.
Size: Custom
Document Number: K8G BGA CTRL & DEBUG 3/4
Rev: 1B
Date: Tuesday, May 26, 2009
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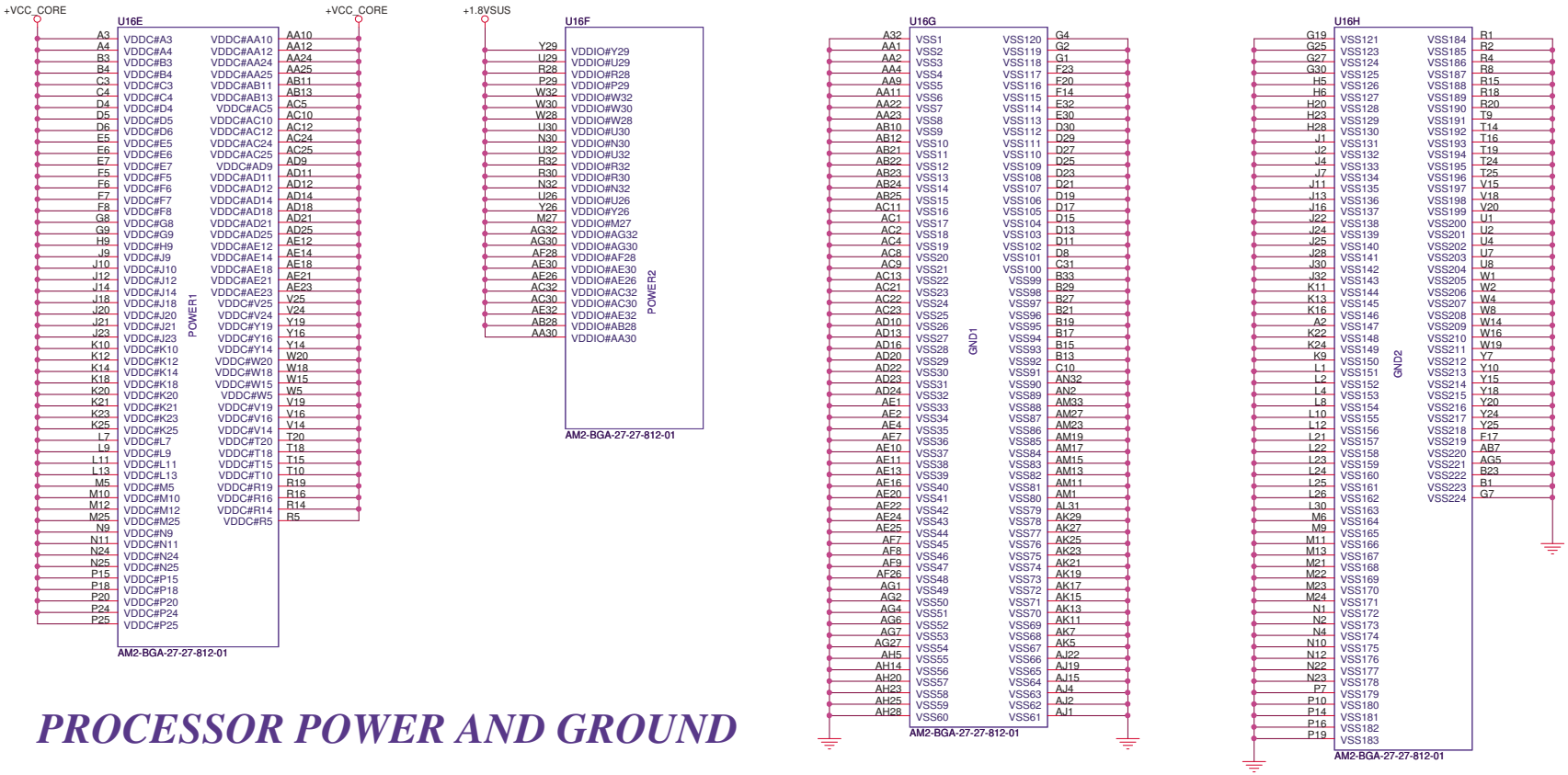
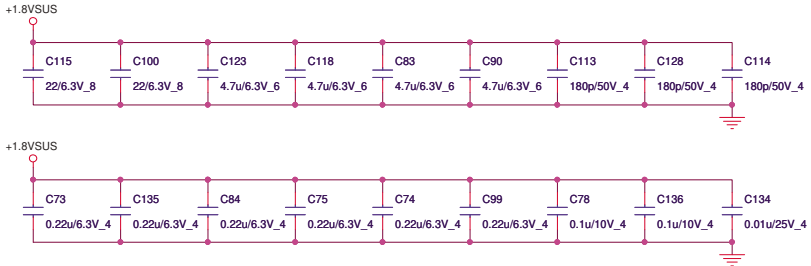
CPU

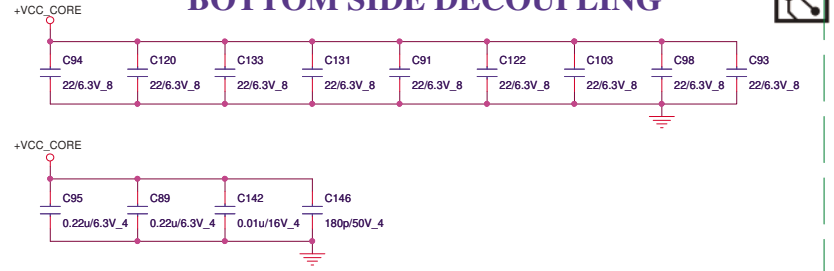


PROCESSOR POWER AND GROUND

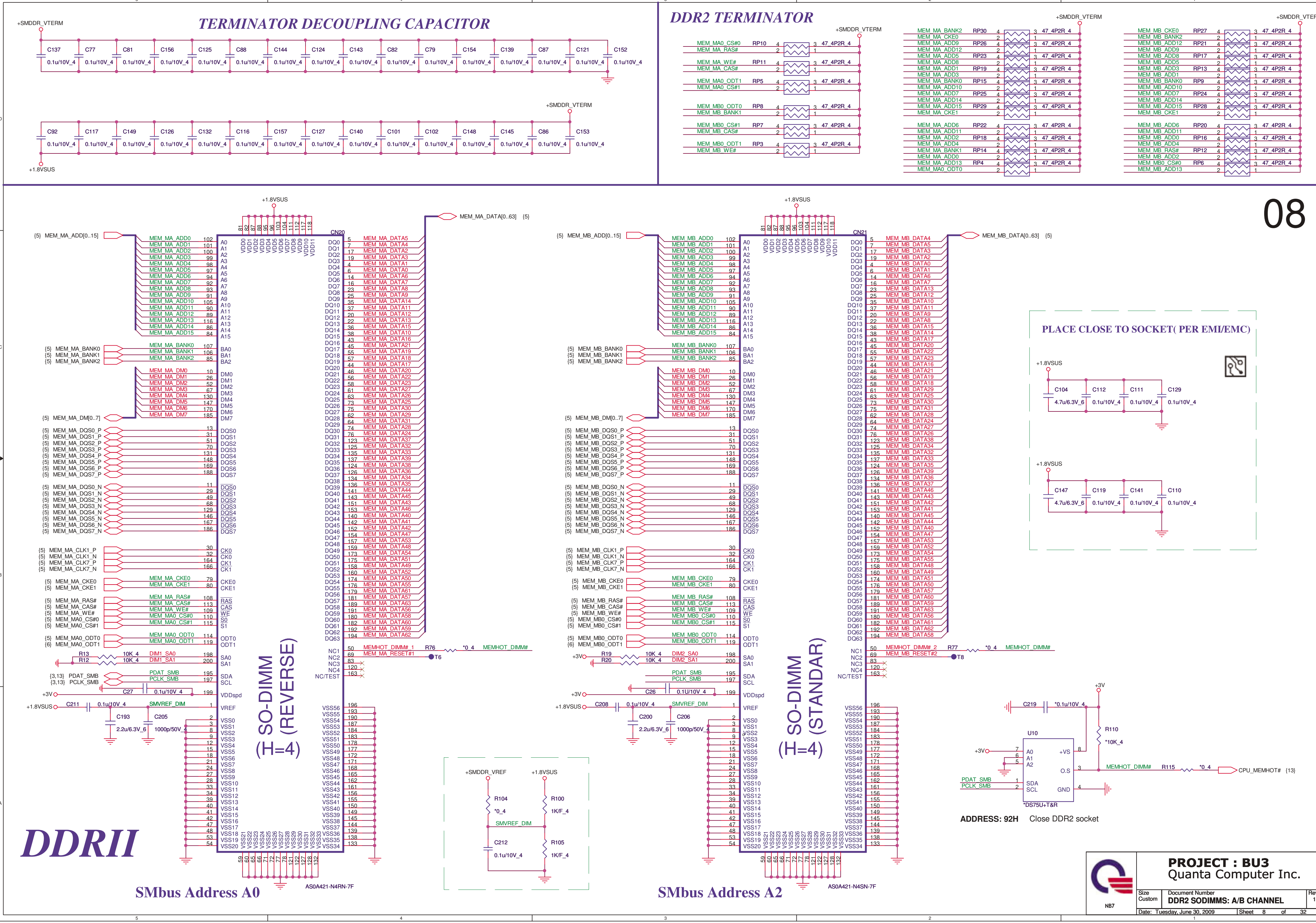
DECOUPLING BETWEEN PROCESSOR AND DIMMs PLACE CLOSE TO PROCESSOR AS POSSIBLE



BOTTOM SIDE DECOUPLING



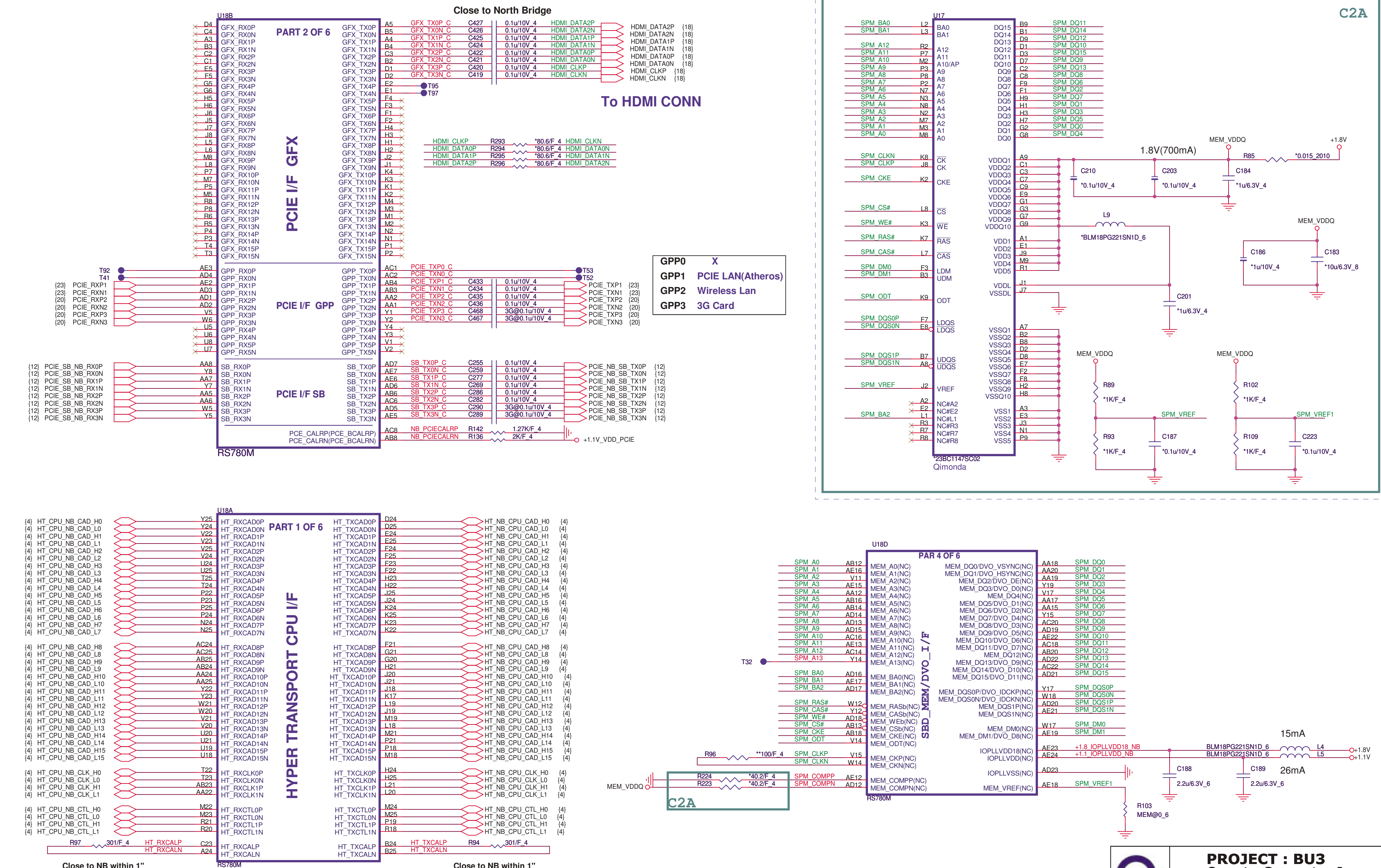
NB7	PROJECT : BU3 Quanta Computer Inc.	
Size: Custom	Document Number: K8G BGA PWR & GND 4/4	Rev: 1B
Date: Monday, May 18, 2009	Sheet 7 of 32	


TERMINATOR DECOUPLING CAPACITOR
+SMDDR_VTERM
+1.8VSUS
DDR2 TERMINATOR
08
PLACE CLOSE TO SOCKET(PER EMI/EMC)
SO-DIMM (REVERSE) (H=4)
SO-DIMM (STANDAR) (H=4)
CN20
CN21
AS0A421-N4RN-7F
AS0A421-N4SN-7F
DDRII
SMbus Address A0
SMbus Address A2
ADDRESS: 92H
Close DDR2 socket
U10
*DS75U+T&R
CPU_MEMHOT# {13}
PROJECT : BU3
Quanta Computer Inc.
NB7
Size
Custom
Document Number
DDR2 SODIMMS: A/B CHANNEL
Rev
1B
Date: Tuesday, June 30, 2009
Sheet 8 of 32

RS780

RS780 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



GPP0	X
GPP1	PCIE LAN(Atheros)
GPP2	Wireless Lan
GPP3	3G Card

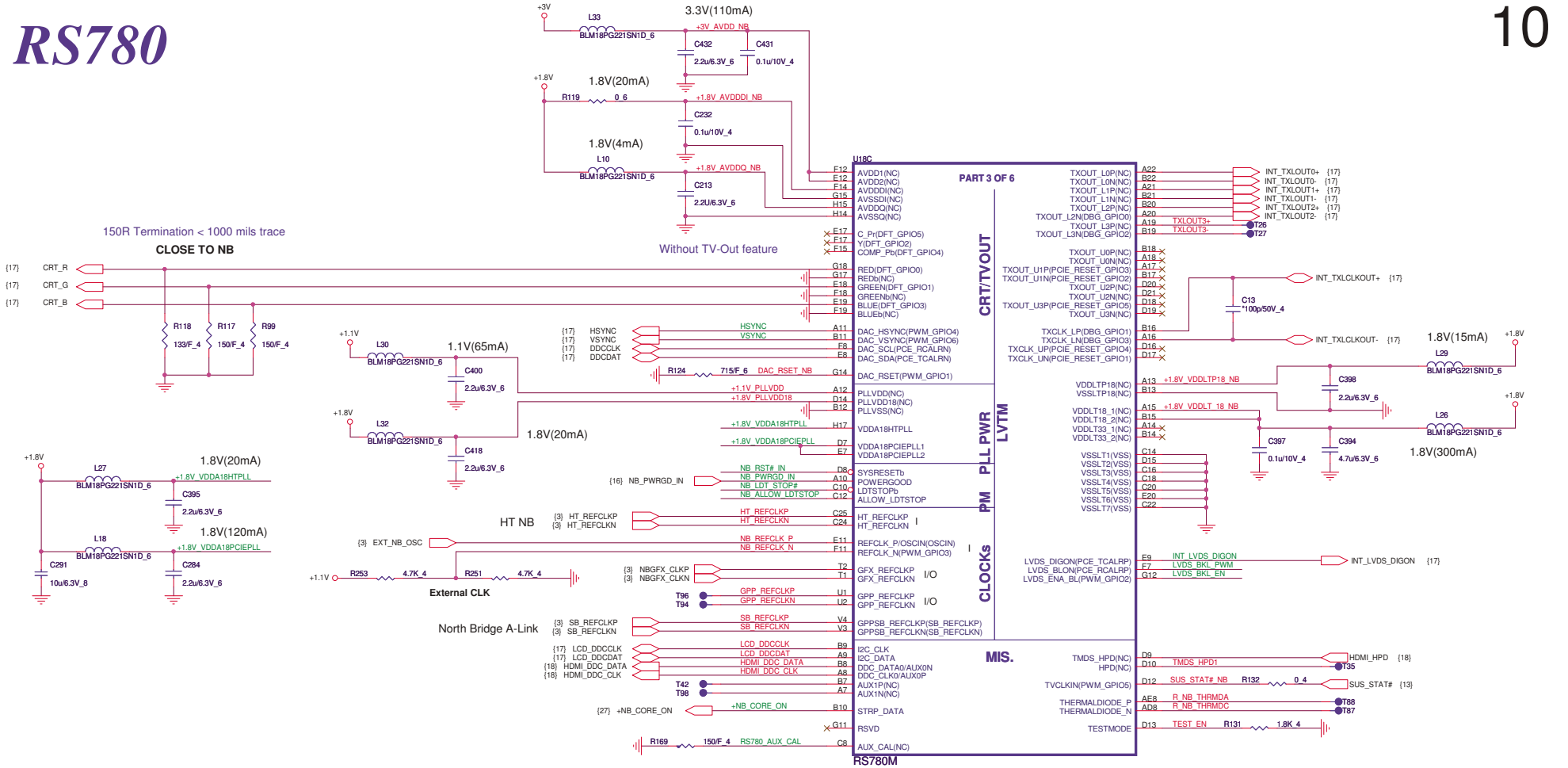
PROJECT : BU3
Quanta Computer Inc.

NB7

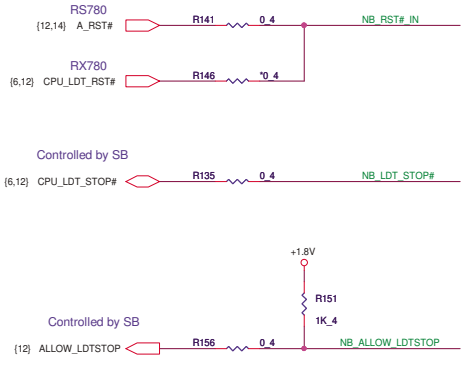
Size	Document Number	Rev
Custom	RS780-HT LINK/PCIE/MEM I/F 1/4	1B

Date: Friday, July 03, 2009 Sheet 9 of 32

RS780



North Bridge RESET



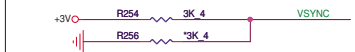
STRAP DEBUG BUS GPIO

C2A

RS780M: Enables Side port memory

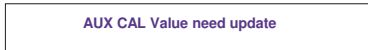
For Side Port Enables/Disable
0 : Enable(Default) 1 : Disable

STRAP_DEBUG_BUS_GPIO_ENABLEb



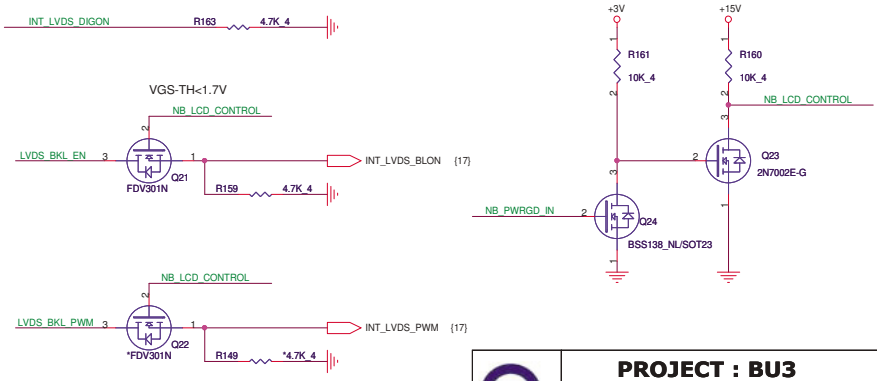
Enables the Test Debug Bus using GPIO.(RS780 -->VSYNC#)
1 : Enable(Defult) 0 : Disable

AUX CAL Value need update

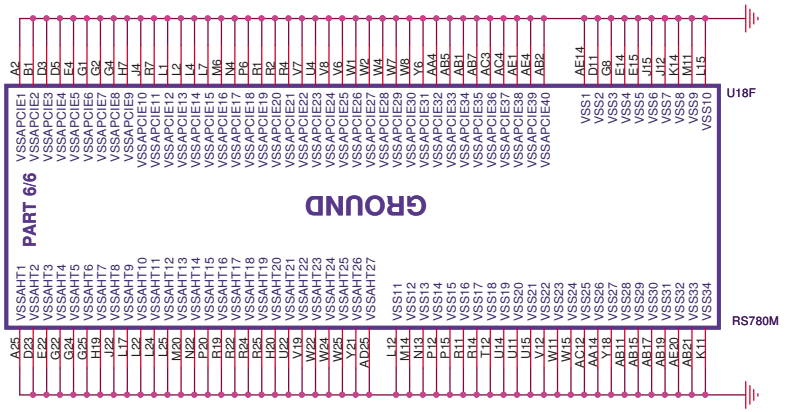


Northbridge Core Voltage
1 : 1.0V 0 : 1.1V (default)

LVDS BLON

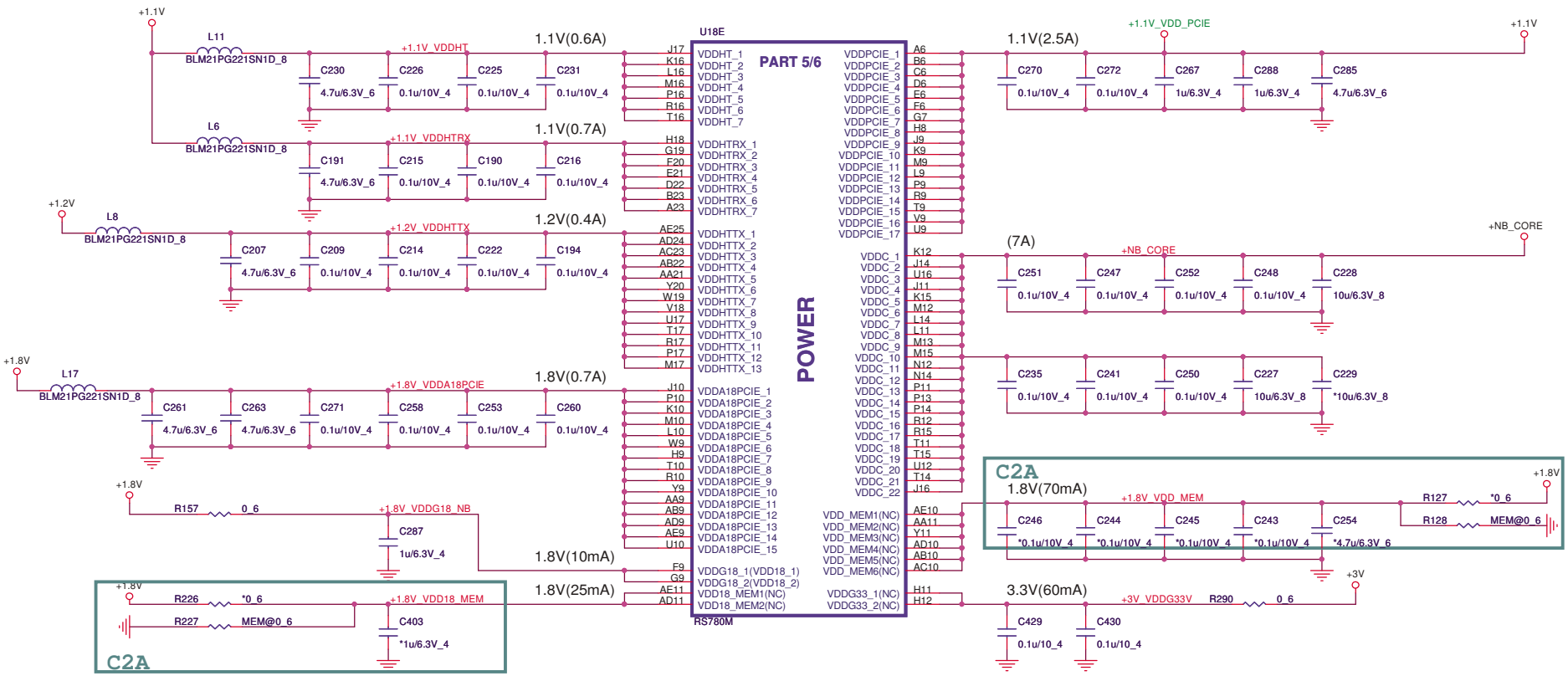


NB7	**PROJECT : BU3** Quanta Computer Inc.	
Size: Custom	Document Number: RS780-SYSTEM/STRAPS I/F 3/5	Rev: 1B
Date: Thursday, June 04, 2009	Sheet 10 of 32	



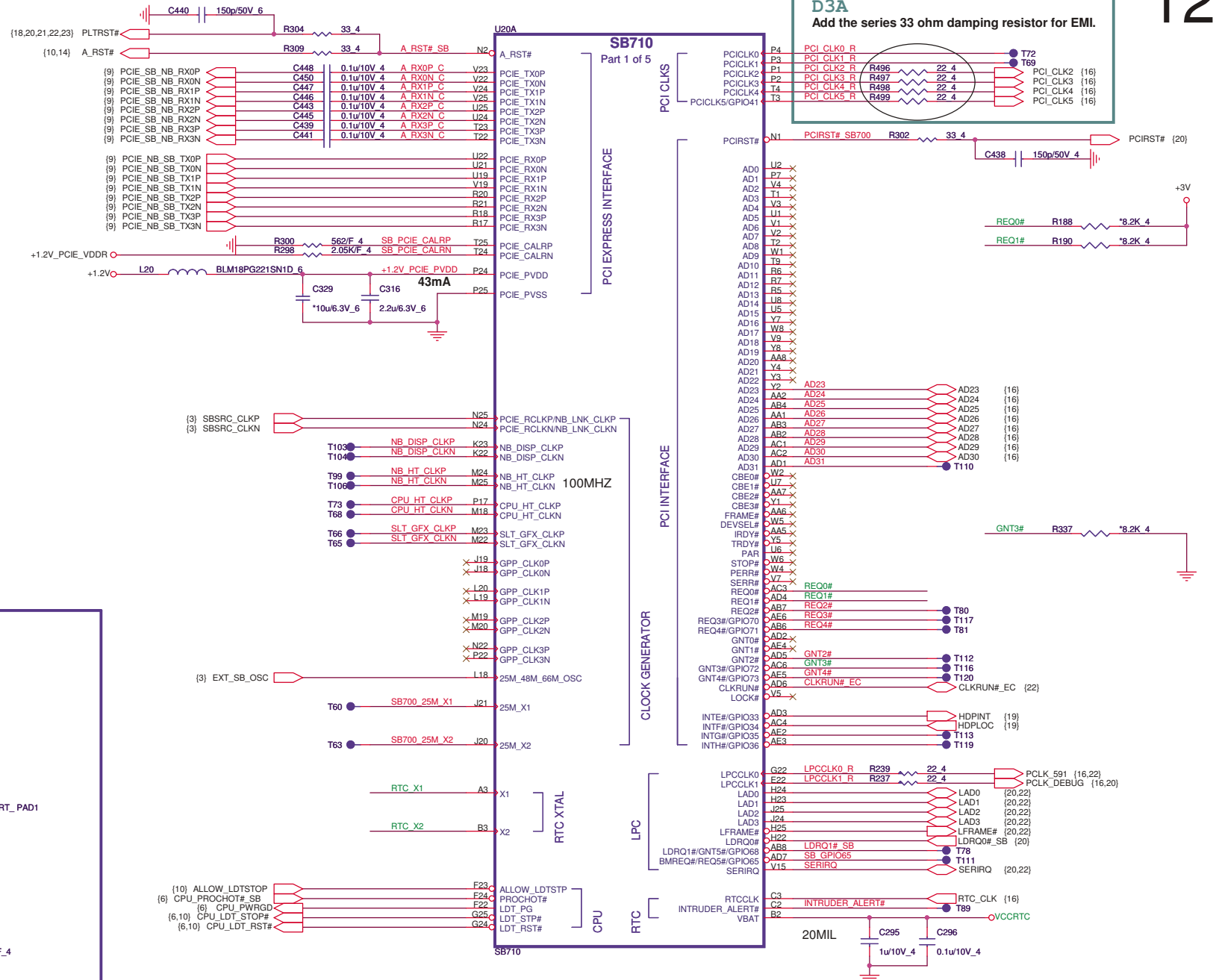
RS740/RX780/RS780 POWER DIFFERENCE TABLE

PIN NAME	RS740	RX780	RS780	PIN NAME	RS740	RX780	RS780
VDDHT	NC	+1.1V	+1.1V	IOPLLVDD	+1.2V	NC	+1.1V
VDDHTRX	NC	+1.1V	+1.1V	AVDD	+3.3V	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	+1.2V	AVDDDI	+1.8V	NC	+1.8V
VDDA18PCIE	NC	+1.8V	+1.8V	AVDDQ	+1.8V	NC	+1.8V
VDDG18	+1.8V	+1.8V	+1.8V	PLLVDD	+1.2V	NC	+1.1V
VDD18_MEM	NC	NC	+1.8V	PLLVDD18	+1.8V	NC	+1.8V
VDDPCIE	+1.2V	+1.1V	+1.1V	VDDA18PCIEPLL	+1.2V	+1.8V	+1.8V
VDDC	+1.2V	+1.1V	+1.1V	VDDA18HTPLL	+1.8V	+1.8V	+1.8V
VDD_MEM	+1.8V/1.5V	NC	+1.8V/1.5V	VDDLTP18	+1.8V	NC	+1.8V
VDDG33	+3.3V	NC	+3.3V	VDDLT18	+1.8V	NC	+1.8V
IOPLLVDD18	+1.8V	NC	+1.8V	VDDLT33	+3.3V	NC	NC

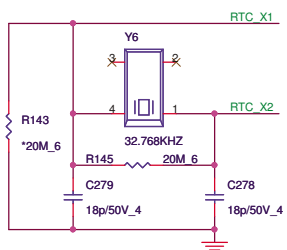


RS780

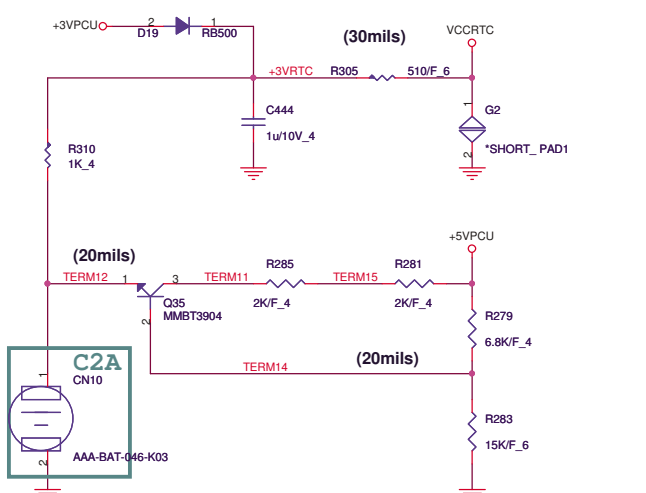
SB710



RTC XTAL



RTC



NB7	**PROJECT : BU3** Quanta Computer Inc.	
Size: Custom	Document Number: SB710-PCIE/PCI/CPU/LPC 1/4	Rev: 1B
Date: Wednesday, July 01, 2009	Sheet 12 of 32	

SB710

EMI

CLK_48M_USB — R129 *10_4 — C242 *10p/50V_4

SB710 Part 4 of 5

48MHz

USBCLK/14M_25M_48M_OSC — C8 CLK_48M_USB → CLK_48M_USB {3}

USB_RCOMP — G8 USB_RCOMP_SB — R158 11.8K/F_6

Input

USB MISC

USB_FSD13P E6 / USB_FSD13N E7

USB_FSD12P F7 / USB_FSD12N E8

USB 1.1

USB_HSD11P H11 / USB_HSD11N J10	USBP11+ {21} / USBP11- {21}	13.3" CARD Reader
USB_HSD10P E11 / USB_HSD10N F11	USBP10+ {17} / USBP10- {17}	CCD
USB_HSD9P A11 / USB_HSD9N B11	USBP9+ {21} / USBP9- {21}	BLUETOOTH
USB_HSD8P C10 / USB_HSD8N D10	USBP8+ {20} / USBP8- {20}	Min-Card(WLN)
USB_HSD7P G11 / USB_HSD7N H12	USBP7+ {20} / USBP7- {20}	3G Min-Card
USB_HSD6P E12 / USB_HSD6N E14	USBP6+ {20} / USBP6- {20}	3G SIM-Card
USB_HSD5P C12 / USB_HSD5N D12	T122 / T123	11.6" CARD Reader
USB_HSD4P B12 / USB_HSD4N A12	USBP4+ {19} / USBP4- {19}	ODD
USB_HSD3P G12 / USB_HSD3N G14	USBP3+ {18} / USBP3- {18}	USB Connector(HDMI/USB BOARD)
USB_HSD2P H14 / USB_HSD2N H15	T57 / T62	
USB_HSD1P A13 / USB_HSD1N B13	USBP1+ {21} / USBP1- {21}	USB Connector (Audio Board)
USB_HSD0P B14 / USB_HSD0N A14	USBP0+ {21} / USBP0- {21}	USB Connector (Audio Board)

D3A
Move the 11.6" Card reader

ACPI / WAKE UP EVENTS

T54	E1	PCI_PME#/GEVENT4#
T90	E2	RI#/EXTEVNT0# (RI#)
T61	H7	SLP_S2/GPM9# (SLP_S2)
{22} SUSB#	F5	SLP_S3#
{22} SUSC#	G1	SLP_S5#
{22} DNBSWON#	H2	PWR_BTN#
{16} SB_PWRGD_IN	H1	PWR_GOOD
{10} SUS_STAT#	K3	SUS_STAT# (SUS_STAT#)
	H5	TEST2 (R255 *2.2K_4 SB_TEST2)
+3V_S5	H4	TEST1 (R259 *2.2K_4 SB_TEST1)
	H3	TEST0 (R258 *2.2K_4 SB_TEST0)
{22} GATEA20	Y15	GA20IN/GEVENT0#
{22} RCIN#	W15	KBRST#/GEVENT1#
{22} SCI#	K4	LPC_PME#/GEVENT3#
T100	K24	LPC_SMI#/EXTEVNT1#
T93	F1	S3_STATE/GEVENT5#
	J2	SYS_RESET#/GPM7# (SYS_RST#)
{20,23} PCIE_WAKE#	H6	WAKE#/GEVENT8#
T91	F2	BLINK/GPM6# (GPM6#)
{6} CPU_THERMTRIP#	J6	SMBALERT#/THRMTRIP#/GEVENT2#
{16} WD_PWRGD	W14	NB_PWRGD
{22} RSMRST#	D3	RSMRST#

GPIO / USB 2.0

{18} BOARD_ID2	AE18	SATA_IS0#/GPIO10 (BOARD_ID2)
	AD18	CLK_REQ3#/SATA_IS1#/GPIO6 (BOARD_ID1)
	AA19	SMARTVOLT/SATA_IS2#/GPIO4 (BOARD_ID0)
T79	W17	CLK_REQ0#/SATA_IS3#/GPIO0
T75	V17	CLK_REQ1#/SATA_IS4#/FANOUT3/GPIO39
T76	W20	CLK_REQ2#/SATA_IS5#/FANIN3/GPIO40
{21} SPKR	W21	SPKR/GPIO2
{3,8} PCLK_SMB	AA18	SCL0/GPOC0# (PCLK_SMB)
{3,8} PDAT_SMB	W18	SDA0/GPOC1# (PDAT_SMB)
{20,23} SB_SMBCLK1	K1	SCL1/GPOC2# (SB_SMBCLK1)
{20,23} SB_SMBDATA1	K2	SDA1/GPOC3# (SB_SMBDATA1)
	AA20	DDC1_SCL/GPIO9 (BOARD_ID3)
{20} CPUSB#	Y18	DDC1_SDA/GPIO8 (R184 10K_4 CPUSB#)
	C1	LLB#/GPIO66
T82	Y19	SHUTDOWN#/GPIO5
{19} HDPACT	G5	DDR3_RST#/GEVENT7#

USB OC

	B9	USB_OC6#/IR_TX1/GEVENT6# (CPU_MEMHOT# IN)
T39	B8	USB_OC5#/IR_TX0/GPM5# (USBOC5_GPM5)
T44	A8	USB_OC4#/IR_RX0/GPM4# (USBOC4_GPM4)
T49	A9	USB_OC3#/IR_RX1/GPM3# (USBOC3_GPM3)
T59	E5	USB_OC2#/GPM2# (USBOC2_GPM2)
{18,22} USB_SLEEP_OC#	F8	USB_OC1#/GPM1#
{21,22} USBOC#0	E4	USB_OC0#/GPM0#

HD AUDIO

	M1	AZ_BITCLK (ACZ_BCLK)
	M2	AZ_SDOUT (ACZ_SDOUT)
{21} ACZ_SDIN0	J7	AZ_SDIN0/GPIO42
T64	J8	AZ_SDIN1/GPIO43
T67	L8	AZ_SDIN2/GPIO44
T107	M3	AZ_SDIN3/GPIO46
	L6	AZ_SYNC (ACZ_SYNC)
{16} ACZ_RST#	M4	AZ_RST# (ACZ_RST#)
	L5	AZ_DOCK_RST#/GPM8#

INTEGRATED uC

	A18	IMC_GPIO8
	B18	IMC_GPIO9
	F21	IMC_PWM0/IMC_GPIO10
	D21	SCL2/IMC_GPIO11 (SB_SCLK2)
	F19	SDA2/IMC_GPIO12 (SB_SDATA2)
	E20	SCL3_LV/IMC_GPIO13 (SB_SCLK3)
	E21	SDA3_LV/IMC_GPIO14 (SB_SDATA3)
	E19	IMC_PWM1/IMC_GPIO15
	D19	IMC_PWM2/IMC_GPIO16 (SB_GPIO16)
	E18	IMC_PWM3/IMC_GPIO17 (SB_GPIO17)
	G20	IMC_GPIO18
	G21	IMC_GPIO19
	D25	IMC_GPIO20
	D24	IMC_GPIO21
	C25	IMC_GPIO22
	C24	IMC_GPIO23
	B25	IMC_GPIO24
	C23	IMC_GPIO25
	B24	IMC_GPIO26
	B23	IMC_GPIO27
	A23	IMC_GPIO28
	C22	IMC_GPIO29
	A22	IMC_GPIO30
	B22	IMC_GPIO31
	B21	IMC_GPIO32
	A21	IMC_GPIO33
	D20	IMC_GPIO34
	C20	IMC_GPIO35
	A20	IMC_GPIO36
	B20	IMC_GPIO37
	B19	IMC_GPIO38
	A19	IMC_GPIO39
	D18	IMC_GPIO40
	C18	IMC_GPIO41

SB_SCLK2 / SB_SDATA2 — SPI/LPC define

INTEGRATED uC

	H19	IMC_GPIO0
	H20	IMC_GPIO1
	H21	SPI_CS2#/IMC_GPIO2
T56	F25	IDE_RST#/F_RST#/IMC_GPO3
	D22	IMC_GPIO4
	E24	IMC_GPIO5
	E25	IMC_GPIO6
	D23	IMC_GPIO7

SB710

+3V_S5 — SCL1/SDATA1 SCL2/SDATA2 is 3V_S5 tolerance
AMD datasheet define it

R240 2.2K_4 SB_SCLK2
R241 2.2K_4 SB_SDATA2
R282 2.2K_4 SB_SMBCLK1
R273 2.2K_4 SB_SMBDATA1
R152 47K_4 CPUSB#

3G card detect

+3V — SCL0/SDATA0 is 3V tolerance
AMD datasheet define it

R196 2.2K_4 PCLK_SMB
R201 2.2K_4 PDAT_SMB
R172 4.7K_4 SUS_STAT#

G1 — 2 — 1 — SYS_RST#
*SHORT_ PAD1

{8} CPU_MEMHOT# — D14 CH501H-40PT

HD Audio Interface

To Azalia

{21} BIT_CLK_AUDIO — R299 BK1005HM121_4 — C437 22p/50V_4 — R292 *10K_4 — ACZ_BCLK

{21} ACZ_SDOUT_AUDIO — R289 33_4 — C423 *10p/50V_4 — R286 *10K_4 — ACZ_SDOUT

{21} ACZ_SYNC_AUDIO — R174 33_4 — C330 *10p/50V_4 — ACZ_SYNC

{21} ACZ_RST#_AUDIO — R284 33_4 — ACZ_RST#

MB ID Selection Table

BOARD_ID	BOARD_ID0	BOARD_ID1	BOARD_ID2	BOARD_ID3	
W/ G-Sensor W/O G-Sensor	H L				
W/ 3G W/O 3G		H L			
W/ HDMI W/O HDMI			H L		
W/ SIDE-PORT MEMORY W/O SIDE-PORT MEMORY				H L	

MB ID

+3V

R189 *W/O@1K_4 BOARD_ID0 R193 GS@10K_4
R197 *W/O@1K_4 BOARD_ID1 R194 3G@10K_4
R198 *W/O@1K_4 BOARD_ID2 R199 HDM@10K_4
R179 W/O@1K_4 BOARD_ID3 R185 *SPM@10K_4

N87

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	SB710-ACPI/GPIO/USB 2/4	1B

Date: Friday, July 03, 2009 — Sheet 13 of 32

SB710

PLACE SATA AC COUPLING CAPS CLOSE TO SB700

U20B

SB710
Part 2 of 5

SB710

SERIAL ATA

SATA PWR

ATA 66/100/133

SPI ROM

HW MONITOR

SATA HDD

{19} SATA_TXP0 — C461 0.01u/16V_4 — SATA_TXP0_C — AD9 SATA_TX0P
{19} SATA_TXN0 — C460 0.01u/16V_4 — SATA_TXN0_C — AE9 SATA_TX0N

{19} SATA_RXN0 — C459 0.01u/16V_4 — SATA_RXN0_C — AB10 SATA_RX0N
{19} SATA_RXP0 — C458 0.01u/16V_4 — SATA_RXP0_C — AC10 SATA_RX0P

T109 — AE10 SATA_TX1P
T115 — AD10 SATA_TX1N

T114 — AD11 SATA_RX1N
T118 — AE11 SATA_RX1P

T77 — AB12 SATA_TX2P
T83 — AC12 SATA_TX2N

T84 — AE12 SATA_RX2N
T108 — AD12 SATA_RX2P

SATA ODD

{19} SATA_TXP3 — C456 0.01u/16V_4 — SATA_TXP3_C — AD13 SATA_TX3P
{19} SATA_TXN3 — C457 0.01u/16V_4 — SATA_TXN3_C — AE13 SATA_TX3N

{19} SATA_RXN3 — C454 0.01u/16V_4 — SATA_RXN3_C — AB14 SATA_RX3N
{19} SATA_RXP3 — C455 0.01u/16V_4 — SATA_RXP3_C — AC14 SATA_RX3P

AE14 SATA_TX4P
AD14 SATA_TX4N

AD15 SATA_RX4N
AE15 SATA_RX4P

AB16 SATA_TX5P
AC16 SATA_TX5N

AE16 SATA_RX5N
AD16 SATA_RX5P

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

R186 1K/F_4 SATA_RBIAS_PN — V12 SATA_CAL

C349 27p/50V_4 — SATA_X1 — Y12 SATA_X1
Y5 25MHZ
R195 10M_6
C354 27p/50V_4 — SATA_X2 — AA12 SATA_X2

{21} SATA_LED# — W11 SATA_ACT#/GPIO67

+1.2V_PLLVDD_SATA — AA11 PLLVDD_SATA
+3V_XTLVDD_SATA — W12 XTLVDD_SATA

+1.2V — 1.2V (93mA) — L22 BLM18PG221SN1D_6 — +1.2V_PLLVDD_SATA
C348 2.2u/6.3V_6
C345 *1u/10V_4

+3V — 3.3V (6mA) — L23 BLM18PG221SN1D_6 — 1mA — +3V_XTLVDD_SATA
C350 1u/10V_4
Place near ball

IDE_IORDY AA24
IDE_IRQ AA25
IDE_A0 Y22
IDE_A1 AB23
IDE_A2 Y23
IDE_DACK# AB24
IDE_DRQ AD25
IDE_IOR# AC25
IDE_IOW# AC24
IDE_CS1# Y25
IDE_CS3# Y24

IDE_D0/GPIO15 AD24
IDE_D1/GPIO16 AD23
IDE_D2/GPIO17 AE22
IDE_D3/GPIO18 AC22
IDE_D4/GPIO19 AD21
IDE_D5/GPIO20 AE20
IDE_D6/GPIO21 AB20
IDE_D7/GPIO22 AD19
IDE_D8/GPIO23 AE19
IDE_D9/GPIO24 AC20
IDE_D10/GPIO25 AD20
IDE_D11/GPIO26 AE21
IDE_D12/GPIO27 AB22
IDE_D13/GPIO28 AD22
IDE_D14/GPIO29 AE23
IDE_D15/GPIO30 AC23

Support USB Mode 4 Function.

SPI_DI/GPIO12 G6 — USB_BUS_SW0 — USB_BUS_SW0 {18}
SPI_DO/GPIO11 D2 — USB_BUS_SW1 — USB_BUS_SW1 {18}
SPI_CLK/GPIO47 D1 — T51
SPI_HOLD#/GPIO31 E4 — USB_BUS_SW2 — USB_BUS_SW2 {18}
SPI_CS#/GPIO32 E3 — USB_BUS_SW3 — USB_BUS_SW3 {18}

LAN_RST#/GPIO13 U15 — LAN_RST# R308 *0_4 — A_RST# {10,12}
ROM_RST#/GPIO14 J1 — ROM_RST# — T105

FANOUT0/GPIO3 M8 — SB_FANOUT0 — T70
FANOUT1/GPIO48 M5 — SB_FANOUT1 — T71
FANOUT2/GPIO49 M7 — SB_FANOUT2 — T74

FANIN0/GPIO50 P5
FANIN1/GPIO51 P8
FANIN2/GPIO52 R8

TEMP_COMM C6
TEMPIN0/GPIO61 B6 — T50
TEMPIN1/GPIO62 A6 — T46
TEMPIN2/GPIO63 A5 — T45
TEMPIN3/TALERT#/GPIO64 B5 — PM_THERM# {6}

VIN0/GPIO53 A4
VIN1/GPIO54 B4
VIN2/GPIO55 C4
VIN3/GPIO56 D4 — VIN3 — 0_4 R225 — CPU_PRESENT# {6}
VIN4/GPIO57 D5 — VIN4 — T58
VIN5/GPIO58 D6
VIN6/GPIO59 A7
VIN7/GPIO60 B7

+3V_S5

3.3V (5mA)

AVDD F6 — AVDD_HWM — R147 0_6
AVSS G7
C297 0.1u/10V_4
C294 *2.2u/6.3V_6

SB710

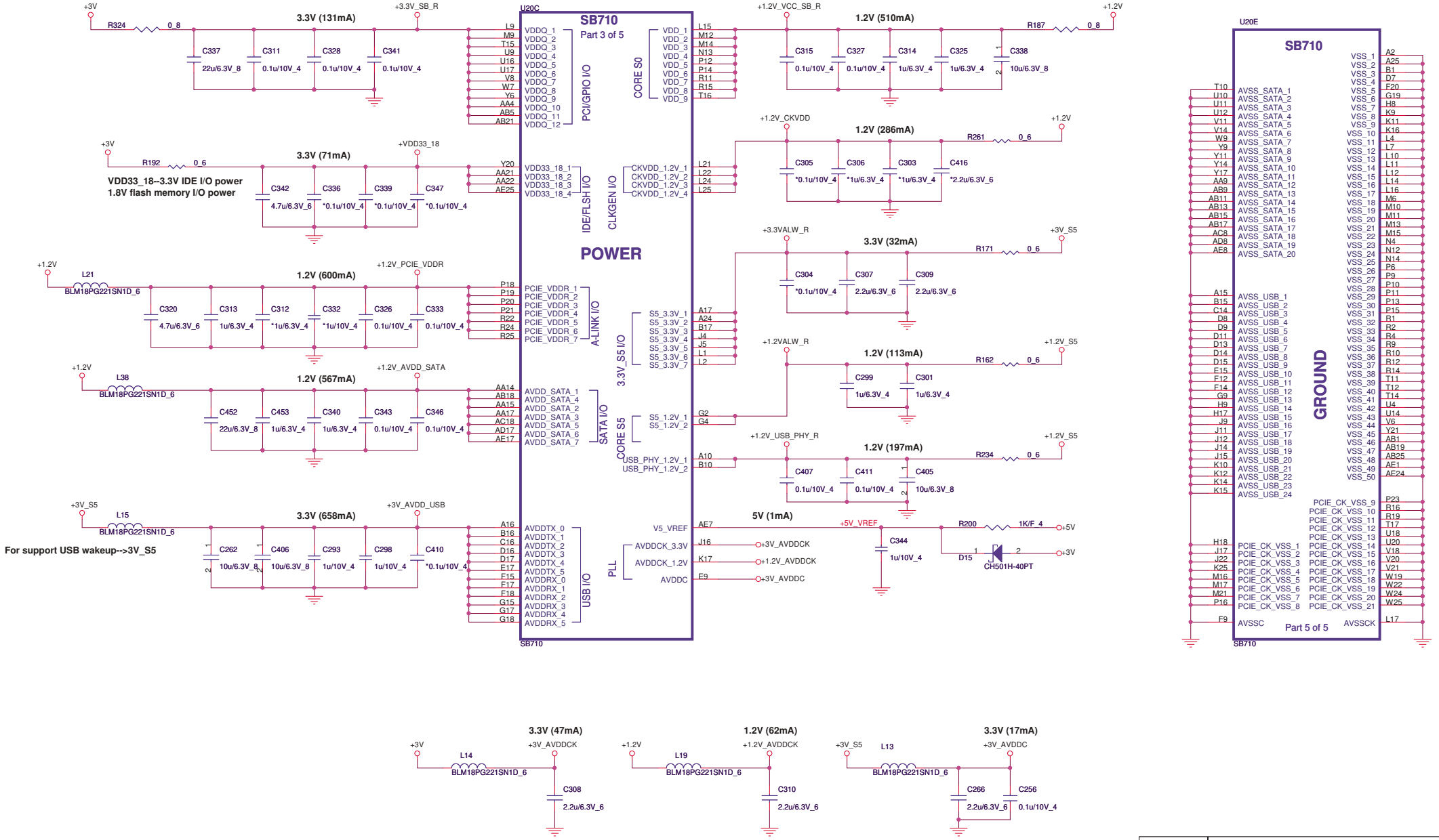
NB7

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
B	SB710-ACPI/GPIO/USB 2/4	1B

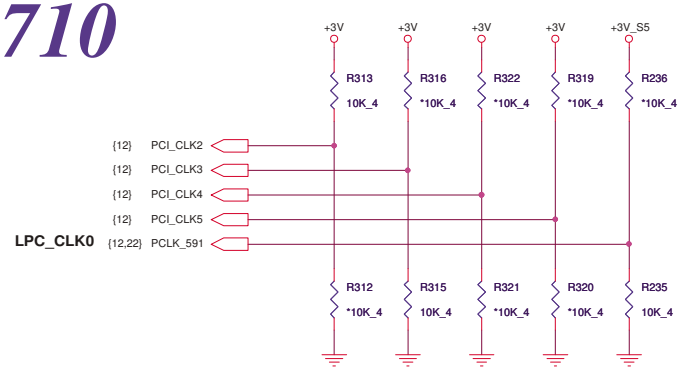
Date: Monday, June 01, 2009 — Sheet 14 of 32

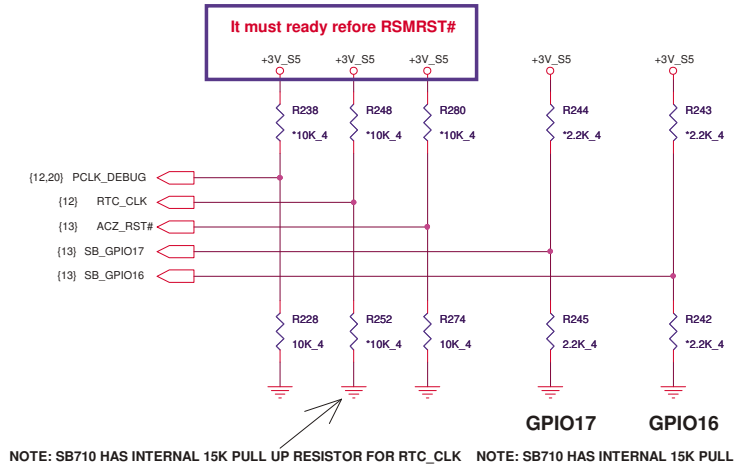
PLACE ALL THE DECOUPLING CAPS ON
THIS SHEET CLOSE TO SB AS POSSIBLE.



PROJECT : BU3	
Quanta Computer Inc.	
Size: Custom	Document Number: SB710-PWR/DECOUPLING 4/4
Rev: 1B	
Date: Monday, May 18, 2009	Sheet 15 of 32
N87	

SB710





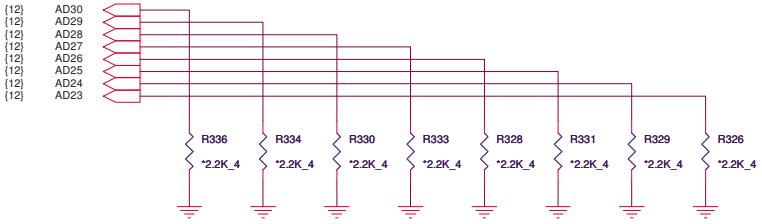
REQUIRED STRAPS

	PCI_CLK2	PCI_CLK3	PCI_CLK4	PCI_CLK5	LPC_CLK0
PULL HIGH	BOOTFAIL TIMER ENABLED DEFAULT	USE DEBUG STRAPS	RESERVED	RESERVED	EC ENABLED
PULL LOW	BOOTFAIL TIMER DISABLED	IGNORE DEBUG STRAPS DEFAULT			EC DISABLED DEFAULT

	LPC_CLK1	RTC_CLK	ACZ_RST#	GP17 GP16
PULL HIGH	CLKGEN ENABLED	INTERNAL RTC DEFAULT	ENABLE PCI MEM BOOT	ROM TYPE: H, H = Reserved H, L = SPI ROM L, H = LPC ROM DEFAULT L, L = FWH ROM
PULL LOW	CLKGEN DISABLED DEFAULT	EXT. RTC (PD on X1, apply 32KHz to RTC_CLK)	DISABLE PCI MEM BOOT DEFAULT	

DEBUG STRAPS

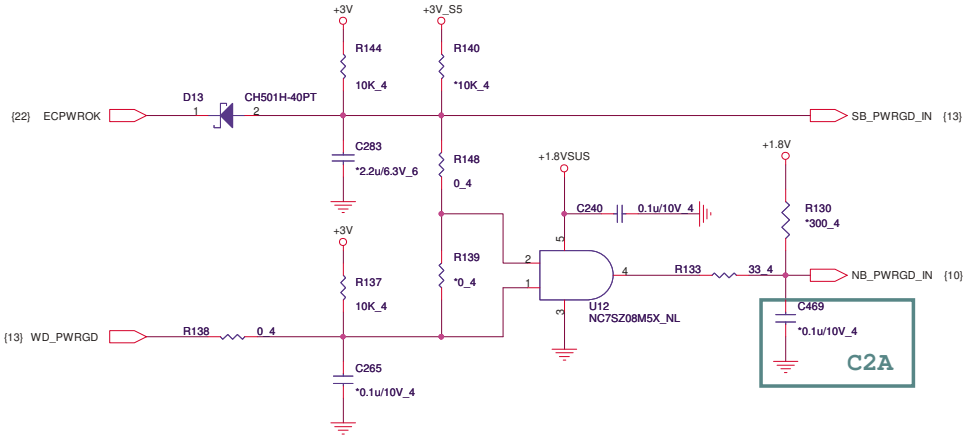
SB710 HAS 15K INTERNAL PU FOR PCI_AD[28:23]



REQUIRED STRAPS

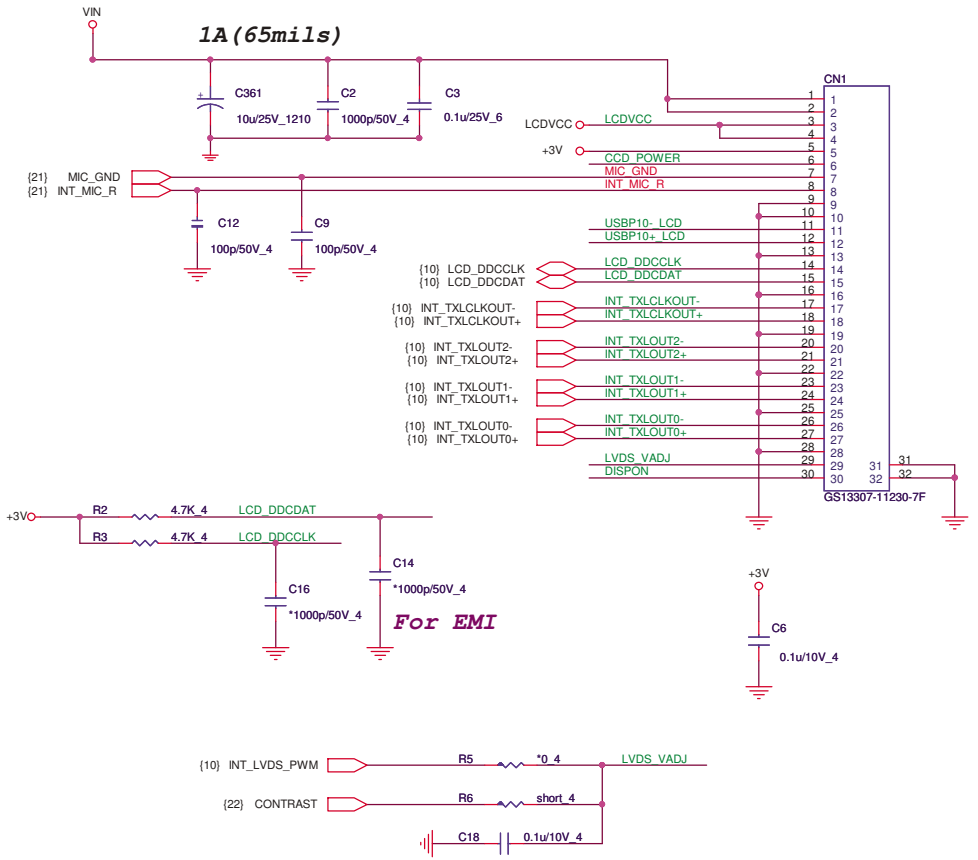
	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23	PCI_AD29	PCI_AD30
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	RESERVED		
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS		RESERVED	RESERVED

NB/SB POWER GOOD CIRCUIT

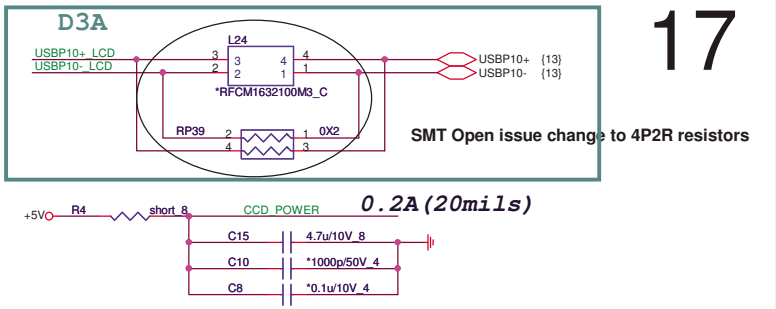


	PROJECT : BU3 Quanta Computer Inc.		
NB7	Size: Custom	Document Number: SB710-STRAPS & PWRGD	Rev: 1B
	Date: Wednesday, June 03, 2009	Sheet 16 of 32	

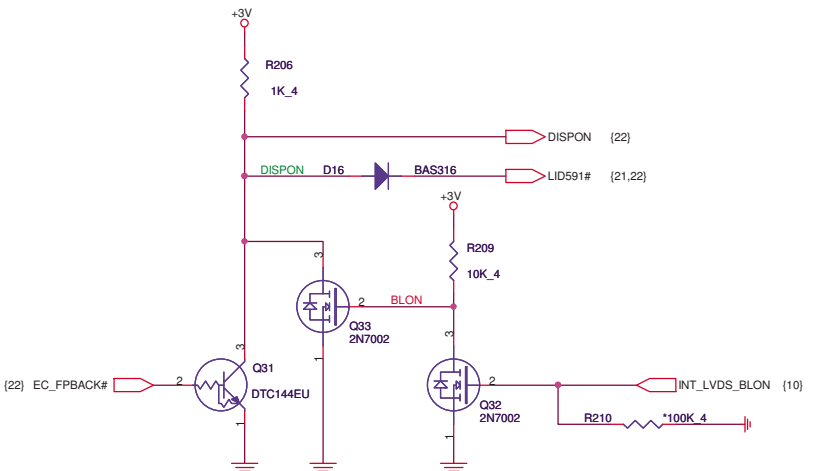
LCD Panel Module



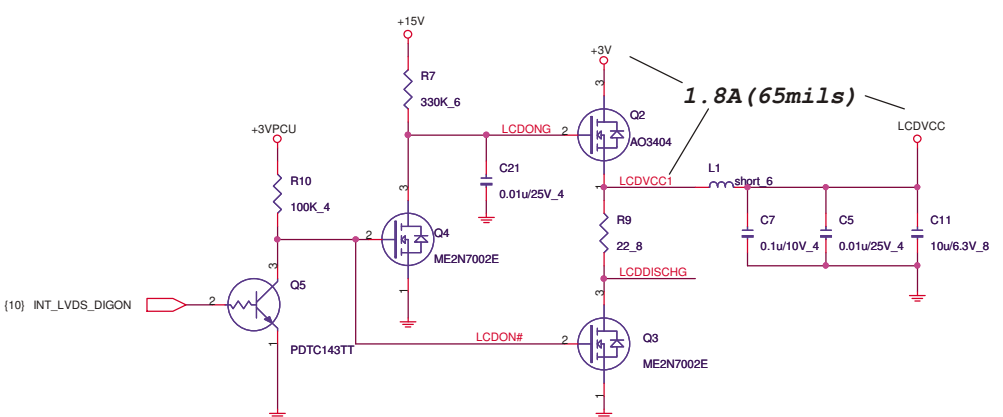
CCD



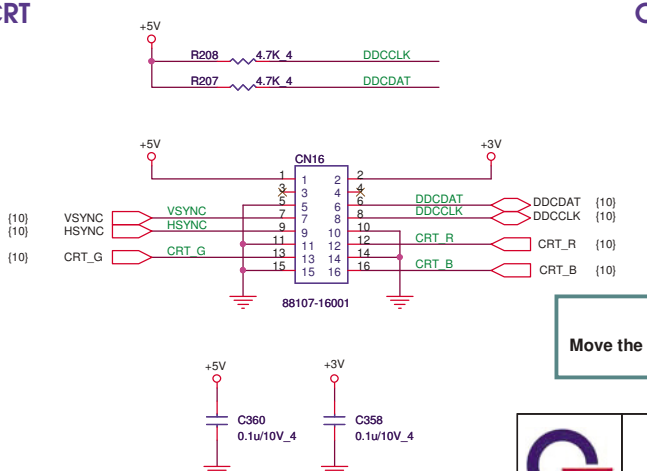
HALL SENSOR&BACK LIGHT SWITCH



LCD POWER SWITCH



CRT



CRT CON. co-lay

D3A

Move the Co-lay Connector for Routing the smooth.

NB7

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LCD/CCD/CRT	1B

Date: Tuesday, July 07, 2009 | Sheet 17 of 32

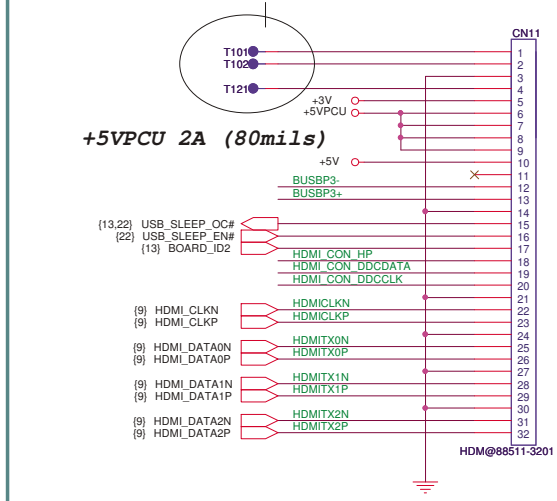
HDMI

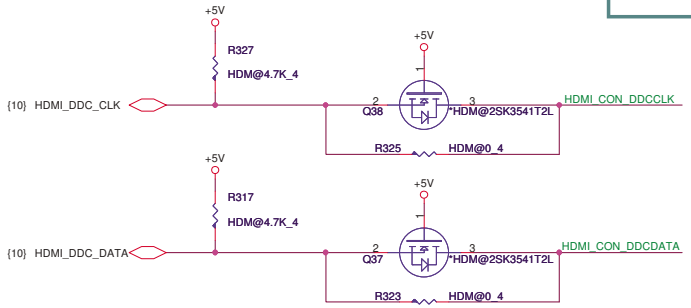
D3A

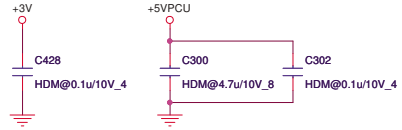
Del the 0ohm for Routing the smooth.

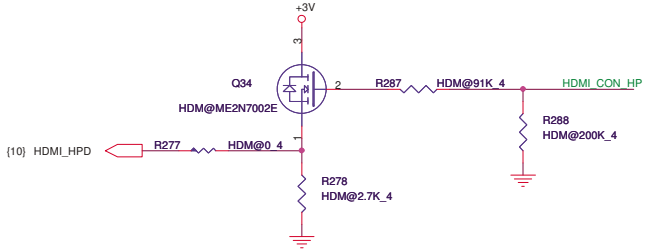
C2A
D3A

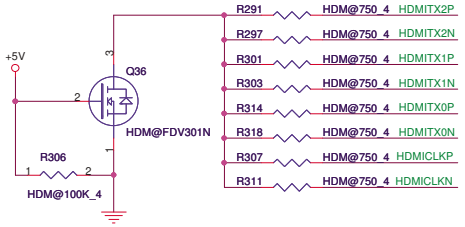
Move the 11.6" Card reader





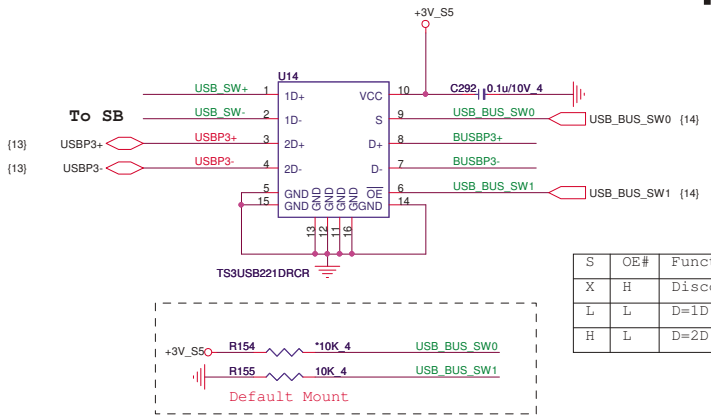




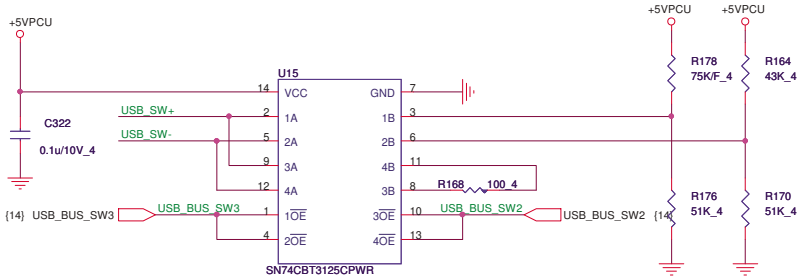


USB SLEEP CHARGE

18



S	OE#	Function
X	H	Disconnect
L	L	D=1D
H	L	D=2D



OE#	Function
H	Disconnect
L	A port= B port

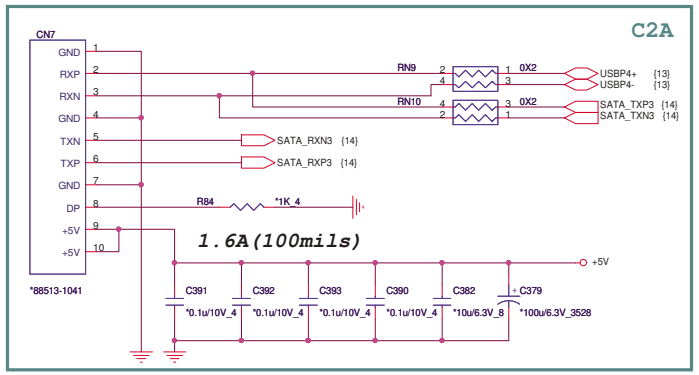
OE#	1OE#	2OE#	3OE#	4OE#
Mode3	High	High	Low	Low
Mode4	Low	Low	High	High

NB7

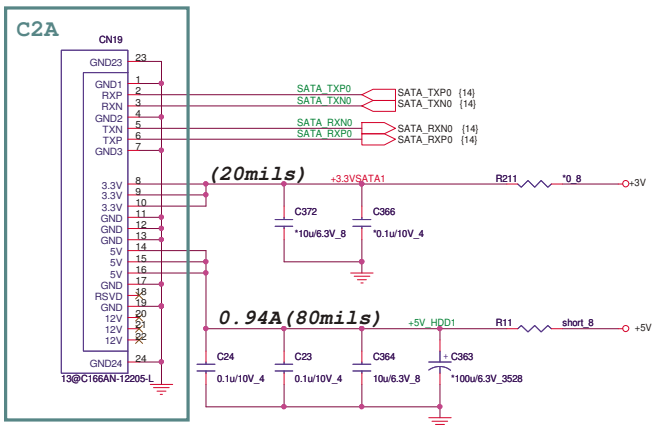
PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	HDMI Conn	1B
Date: Friday, July 03, 2009	Sheet 18 of 32	

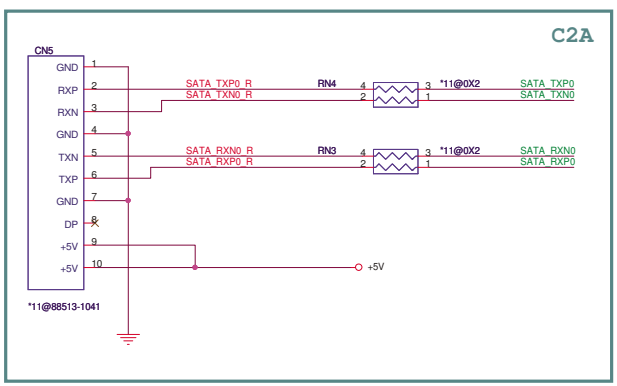
SATA ODD



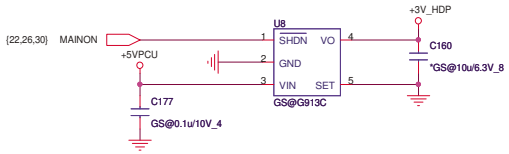
MAIN SATA HDD

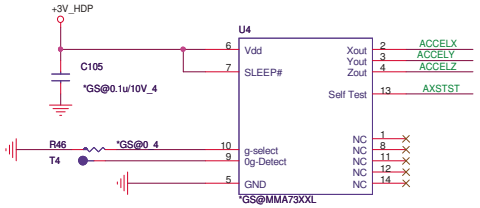


11.6" SATA HDD



G-sensor





FS (Full Scale) selection

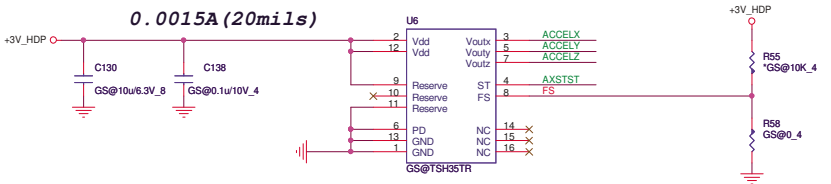
FS	0	1
	2g Full-Scale	6g Full-Scale

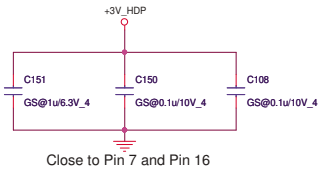
PD (Power Down) selection

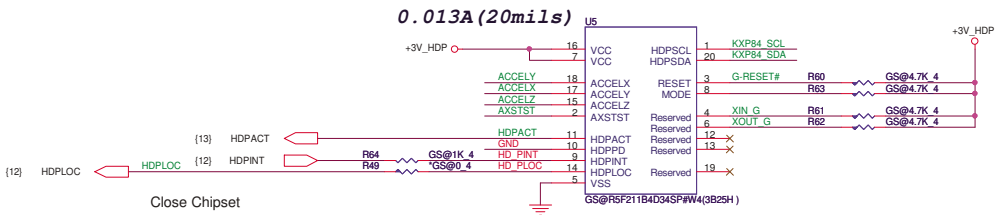
PD	0	1
	Normal Mode	Power-down mode

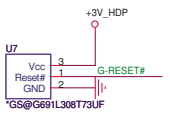
HDPPD selection

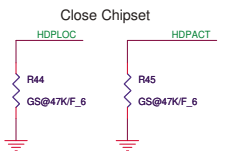
HDPPD	0	1
	Normal Mode	Power-down mode

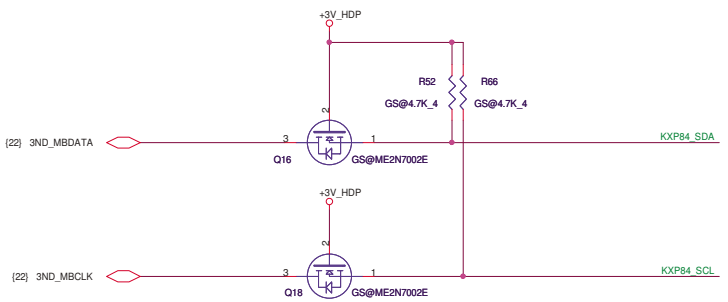


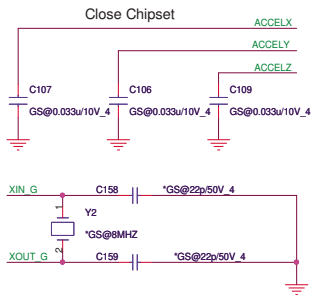












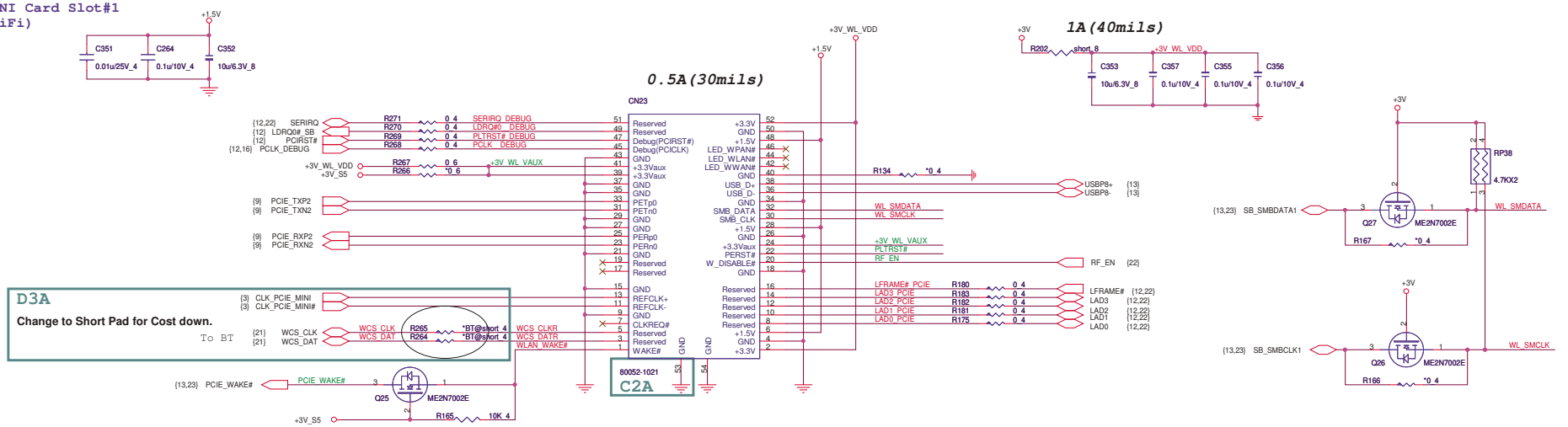
PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	HDD/ODD/G-SENSOR	1B

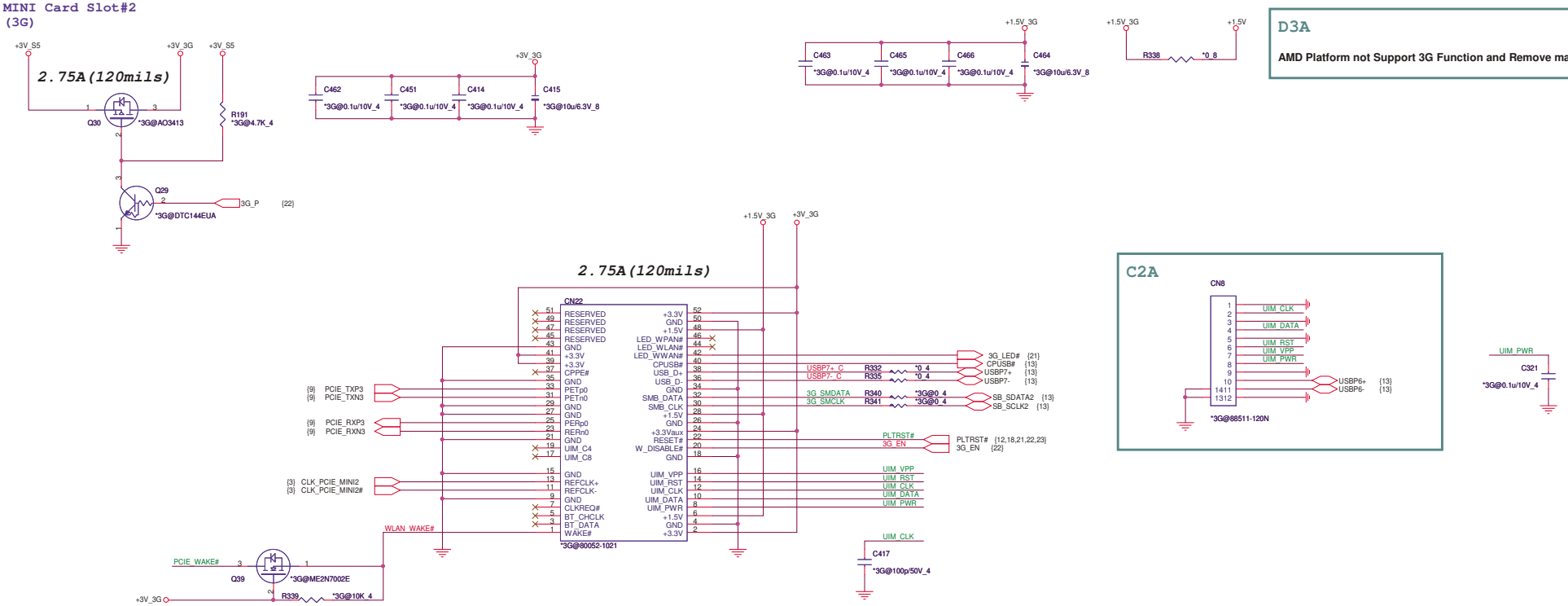
Date: Friday, July 03, 2009 | Sheet 19 of 32

N87

MINI Card Slot#1 (WiFi)

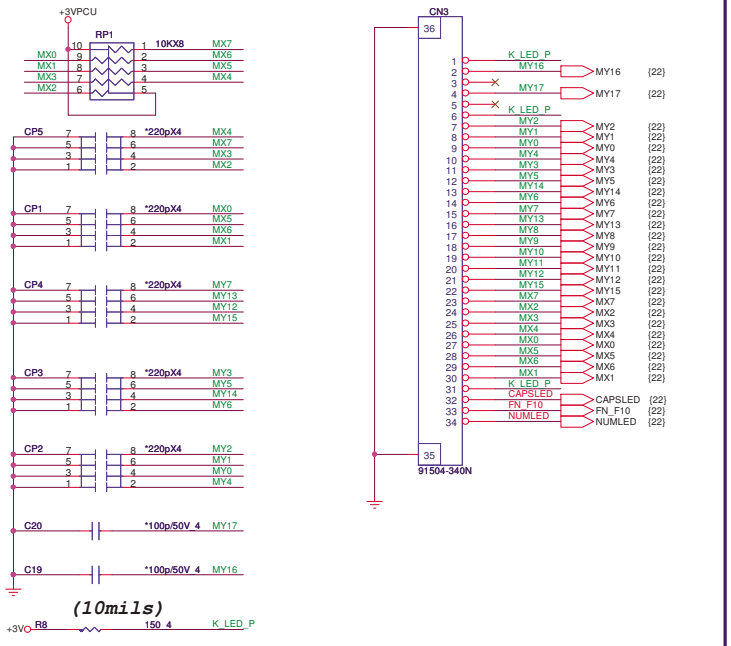


MINI Card Slot#2 (3G)

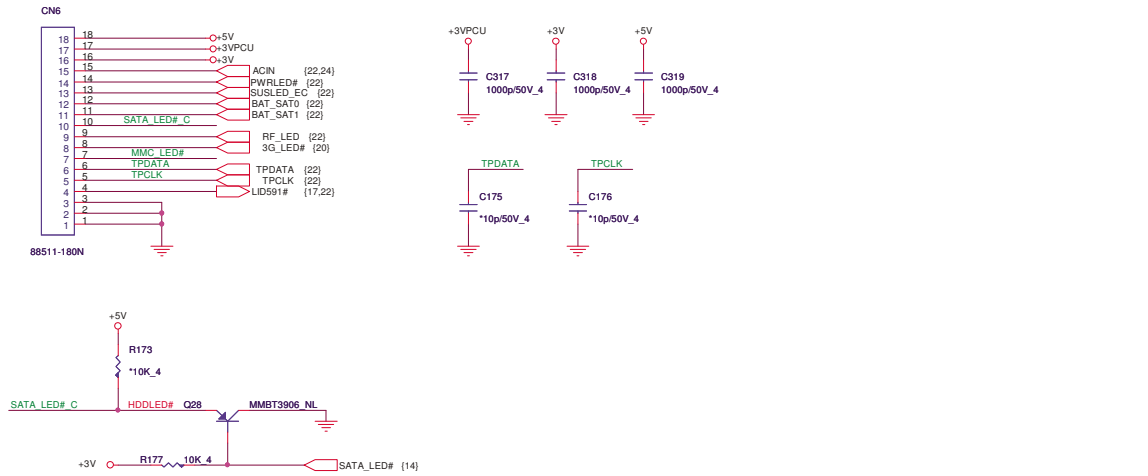


N87	PROJECT : BU3 Quanta Computer Inc.		
	Size: C	Document Number: MINI CARD (Wi-Fi and 3G)	Rev: 1B
	Date: Tuesday, July 07, 2009	Sheet 20 of 32	

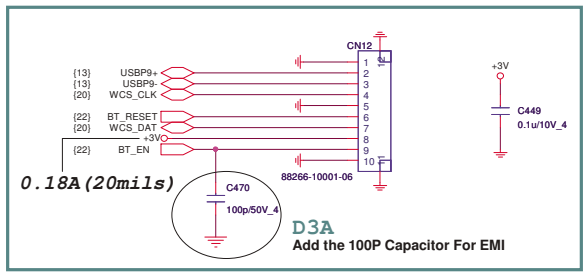
INT KeyBoard



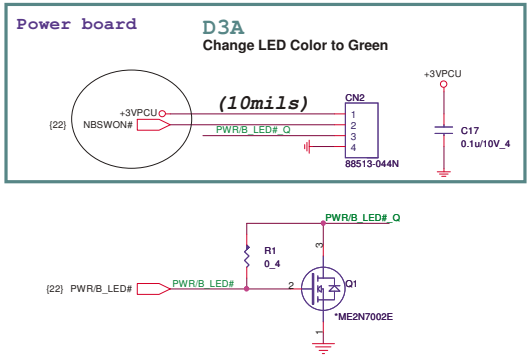
LED / TP / Hall sensor board



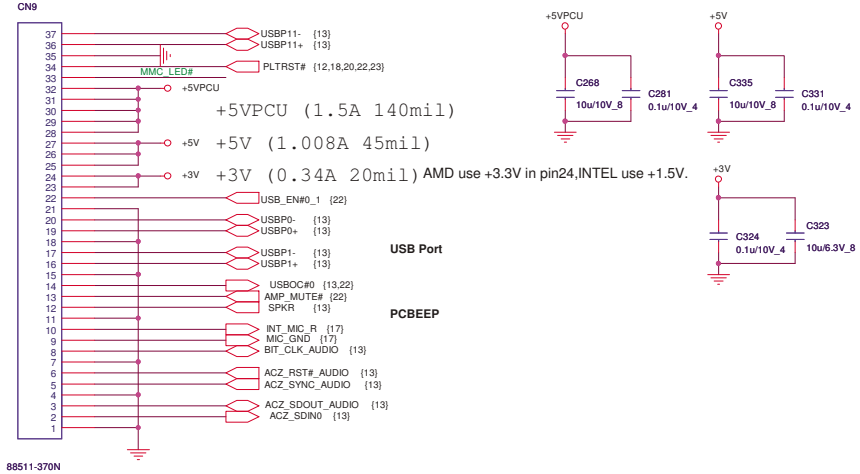
Bluetooth



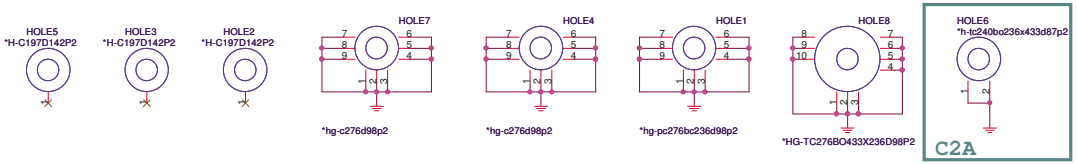
Power board



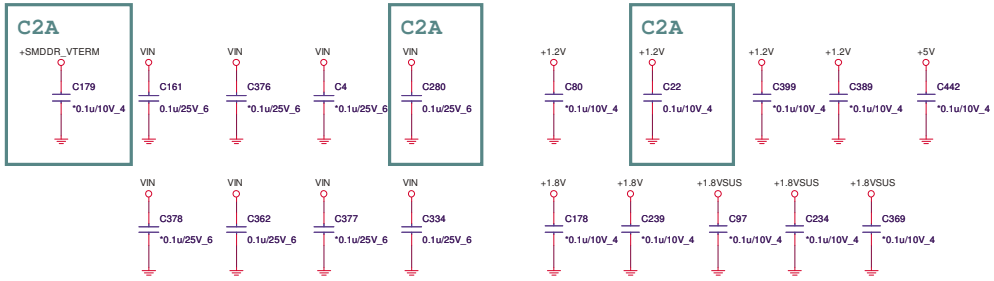
Audio + Card Reader +USB*2



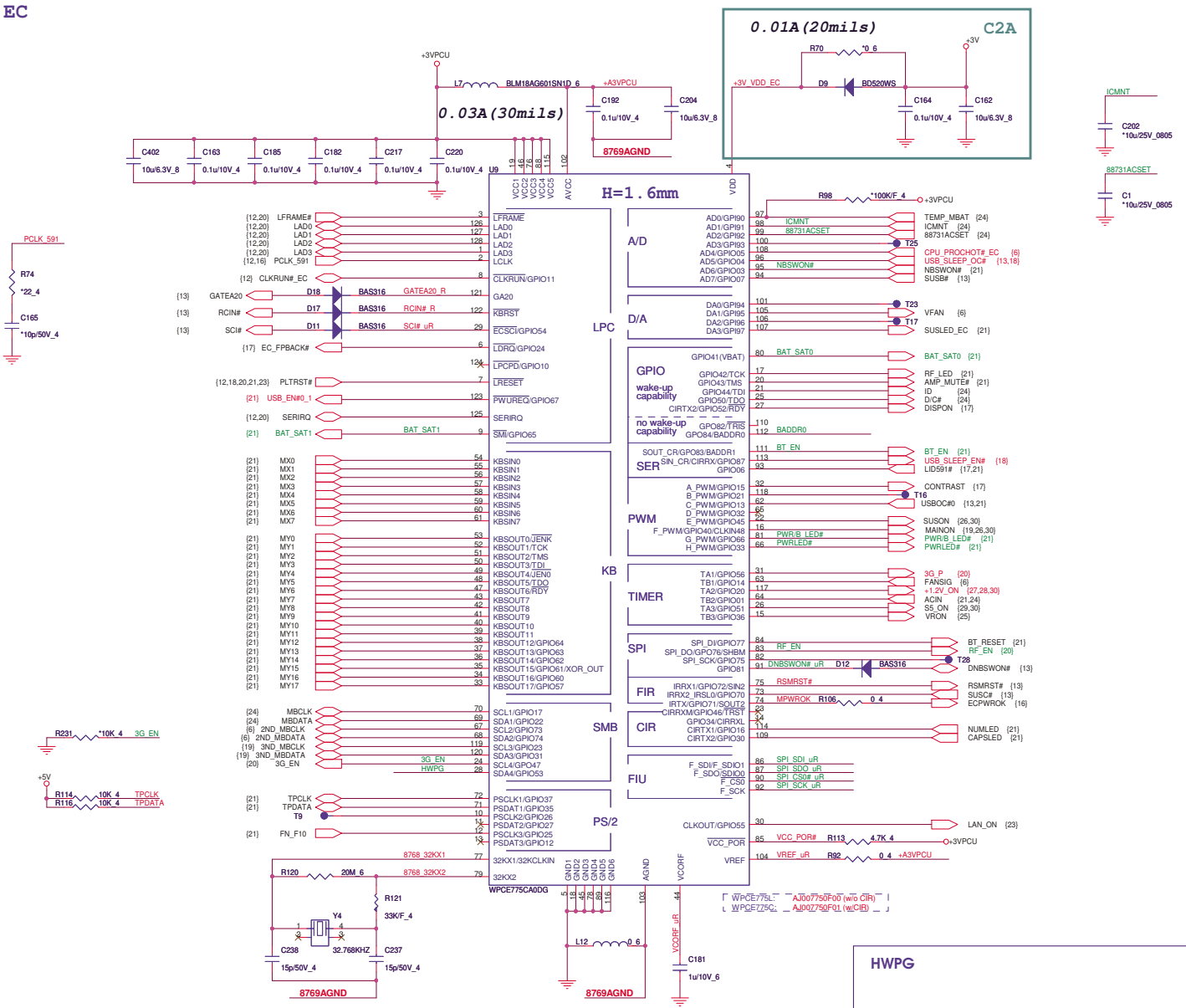
HOLE



EMI



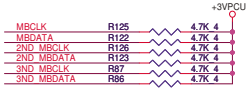
EC



SMBUS Table

SMBUS	Devices	Address
1	Battery	
2	CPU Thermal Sensor1	98H
	EC EEPROM	A0H
3	3D Sensor	32H

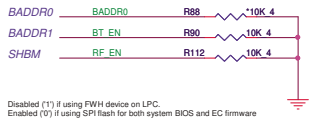
SM BUS PU



I/O Base Address

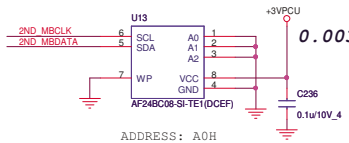
	I/O Address	
BADDR1-0	Index	Data
0 0	XOR TREE TEST MODE	
0 1	CORE DEFINED	
1 0	2Eh	2Fh
1 1	164Eh	164Fh

SHBM=0: Enable shared memory with host BIOS

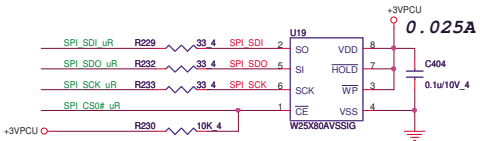


Disabled ('1') if using FWH device on LPC.
Enabled ('0') if using SPI flash for both system BIOS and EC firmware

ID

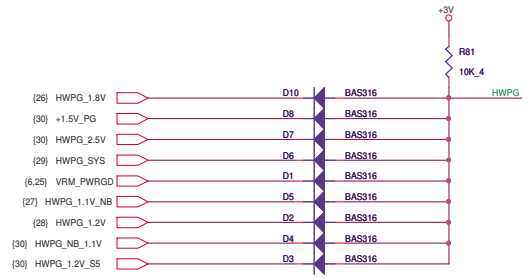


SPI FLASH

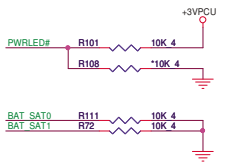


INTERNAL KEYBOARD STRIP SET

HWPG



LED



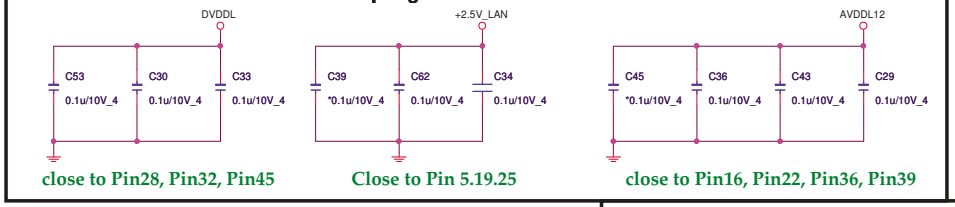
PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	EC WPCE775L	1B
Date: Tuesday, July 07, 2009	Sheet 22 of 32	

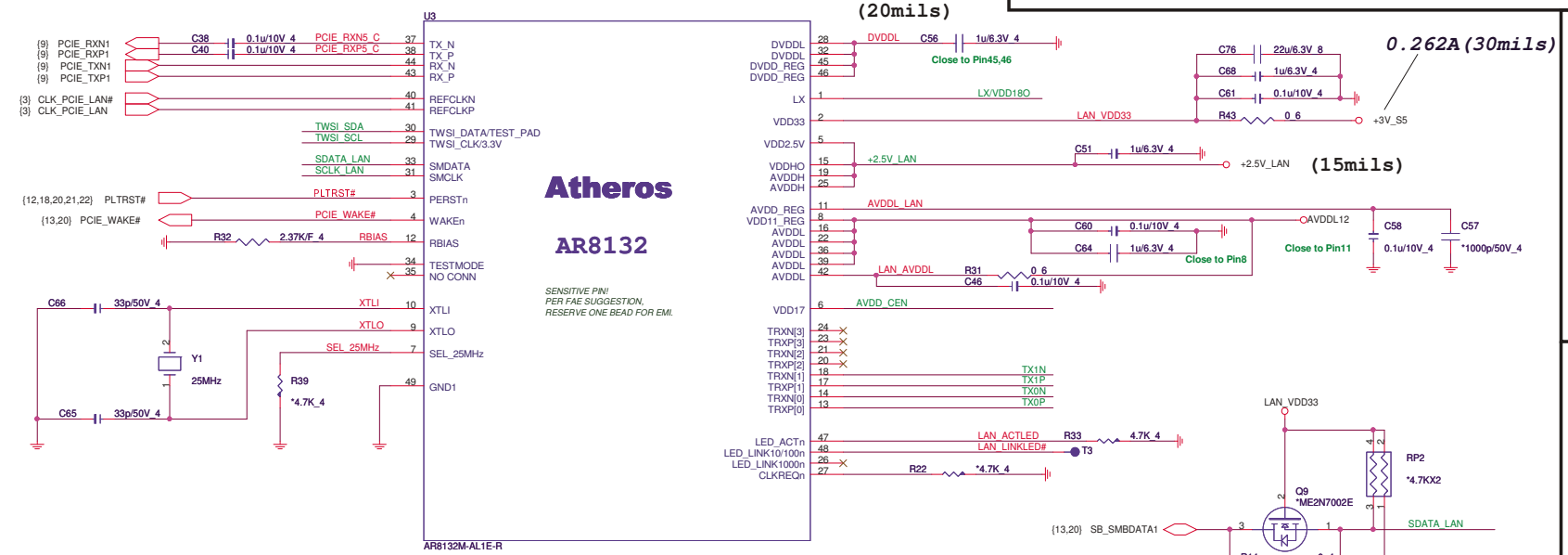
NB7

Atheros Lan

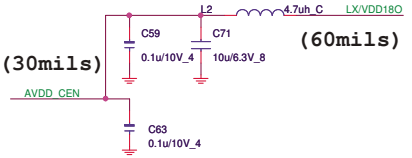
Close to LAN IC — Decoupling CAP



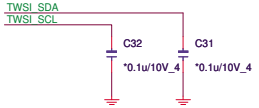
10/100:AR8132 PN=>AL008132002



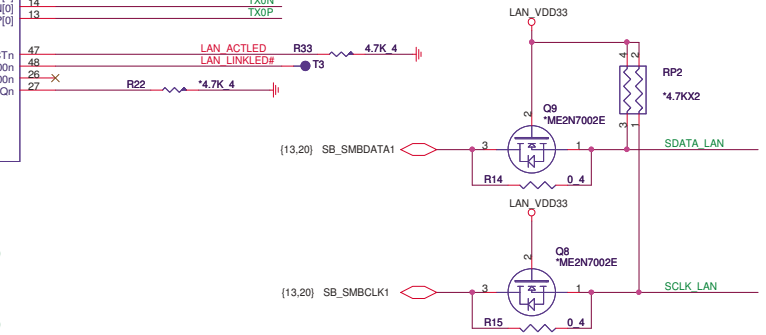
Close to LAN IC

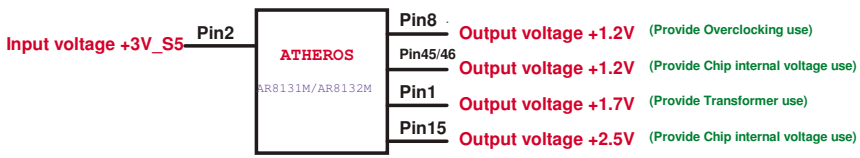


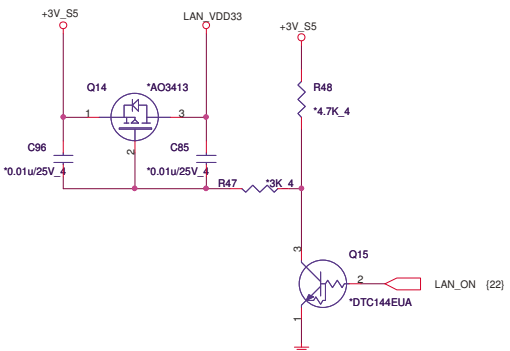
EEPROM



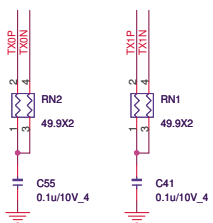
Close to LAN IC pin30

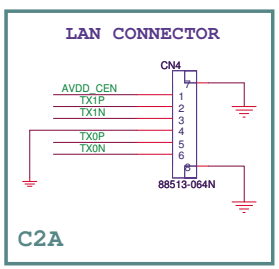




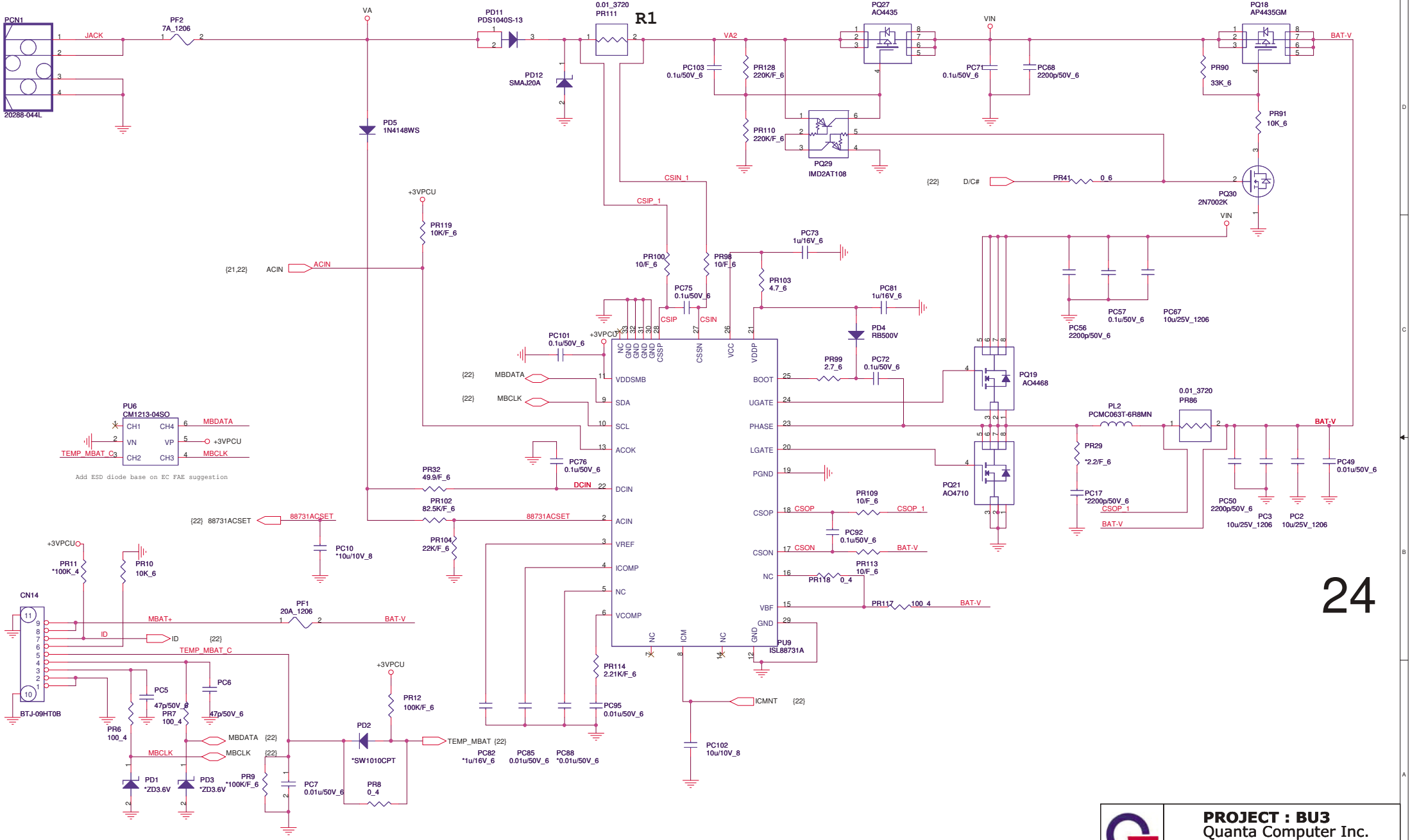


PLACE NEAR LAN IC SIDE





PROJECT : BU3	
Quanta Computer Inc.	
Size: Custom	Document Number: Atheros Lan
Rev: 1B	
Date: Tuesday, May 26, 2009	Sheet 23 of 32
NB7	


PCN1
JACK
20288-044L
PF2
7A_1206
VA
PD11
PDS1040S-13
PD12
SMAJ20A
PD5
1N4148WS
0.01_3720
PR111
R1
VA2
PC103
0.1u/50V_6
PR128
220K/F_6
PR110
220K/F_6
PQ27
AO4435
PQ29
IMD2AT108
VIN
PC71
0.1u/50V_6
PC68
2200p/50V_6
PQ18
AP4435GM
BAT-V
PR90
33K_6
PR91
10K_6
PQ30
2N7002K
{22} D/C#
PR41
0_6
+3VPCU
PR119
10K/F_6
{21,22} ACIN
CSIN_1
CSIP_1
PR100
10/F_6
PR98
10/F_6
PR103
4.7_6
PC73
1u/16V_6
PC81
1u/16V_6
PC75
0.1u/50V_6
CSIP
CSIN
PD4
RB500V
PC101
0.1u/50V_6
PC57
0.1u/50V_6
PC67
10u/25V_1206
PC56
2200p/50V_6
PU6
CM1213-04SO
MBDATA
+3VPCU
MBCLK
TEMP_MBAT_C
Add ESD diode base on EC FAE suggestion
PR32
49.9/F_6
PC76
0.1u/50V_6
DCIN
PR102
82.5K/F_6
PR104
22K/F_6
{22} 88731ACSET
PC10
*10u/10V_8
PR99
2.7_6
PC72
0.1u/50V_6
PQ19
AO4468
PQ21
AO4710
PL2
PCMC063T-6R8MN
0.01_3720
PR86
PR29
*2.2/F_6
PC17
*2200p/50V_6
PC50
2200p/50V_6
PC3
10u/25V_1206
PC2
10u/25V_1206
PC49
0.01u/50V_6
CSOP_1
BAT-V
PR109
10/F_6
PC92
0.1u/50V_6
CSON
PR113
10/F_6
PR118
0_4
PR117
100_4
PR114
2.21K/F_6
PC95
0.01u/50V_6
PC102
10u/10V_8
ICMNT {22}
PU9
ISL88731A
BOOT
UGATE
PHASE
LGATE
PGND
CSOP
CSON
VBF
GND
VDDSMB
SDA
SCL
ACOK
DCIN
ACIN
VREF
ICOMP
NC
VCOMP
VCC
VDDP
CSSN
CSSP
CN14
BTJ-09HT0B
PR11
*100K_4
PR10
10K_6
PF1
20A_1206
MBAT+
ID
TEMP_MBAT_C
PC5
47p/50V_6
PC6
47p/50V_6
PR7
100_4
PR6
100_4
PR12
100K/F_6
PD2
*SW1010CPT
TEMP_MBAT {22}
PC82
*1u/16V_6
PC85
0.01u/50V_6
PC88
*0.01u/50V_6
PD1
*ZD3.6V
PD3
*ZD3.6V
PR9
*100K/F_6
PC7
0.01u/50V_6
PR8
0_4
24
PROJECT : BU3
Quanta Computer Inc.
NB7
Size
Custom
Document Number
CHAGRER (ISL88731)
Rev
1B
Date: Tuesday, June 30, 2009
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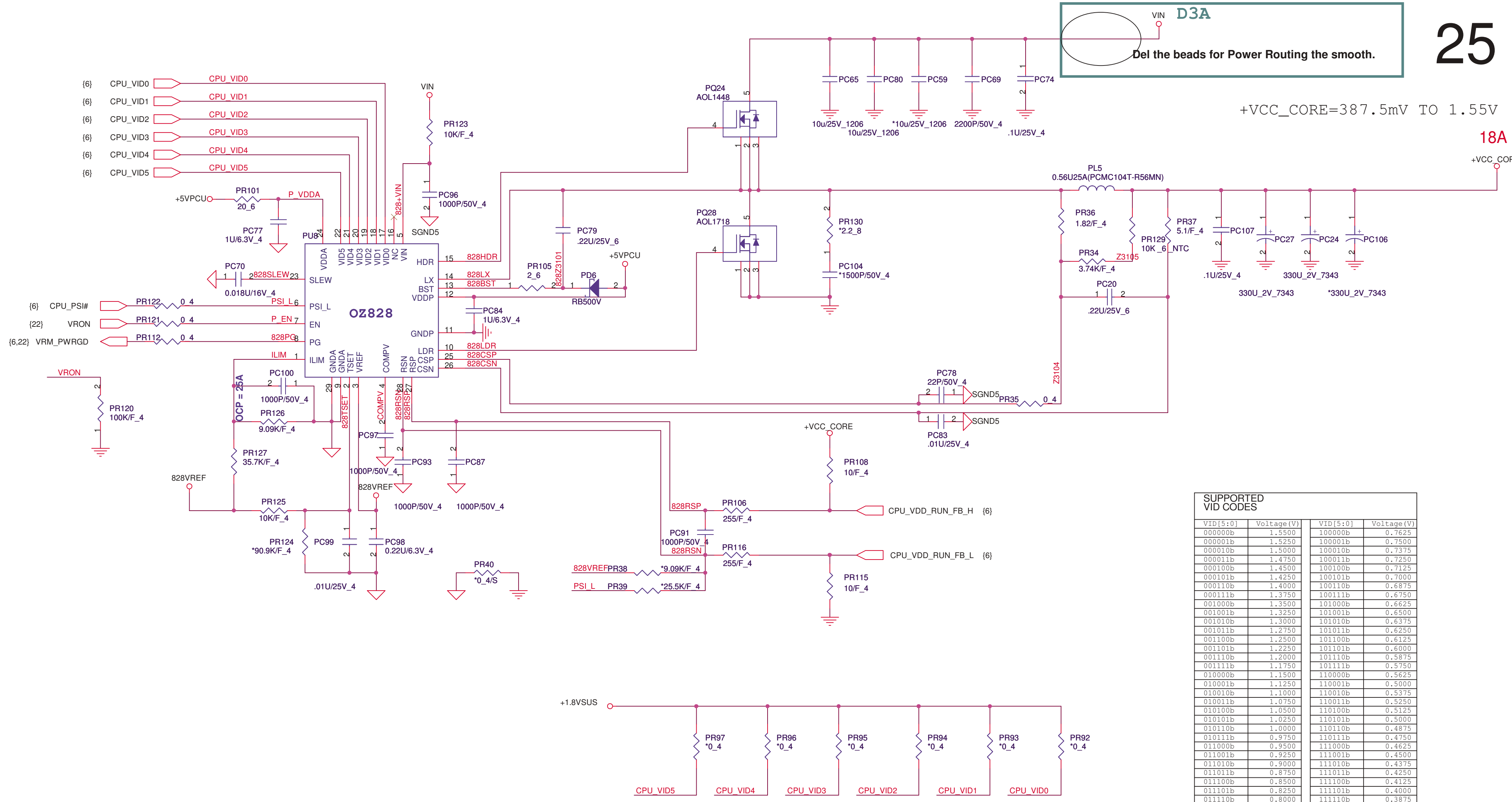


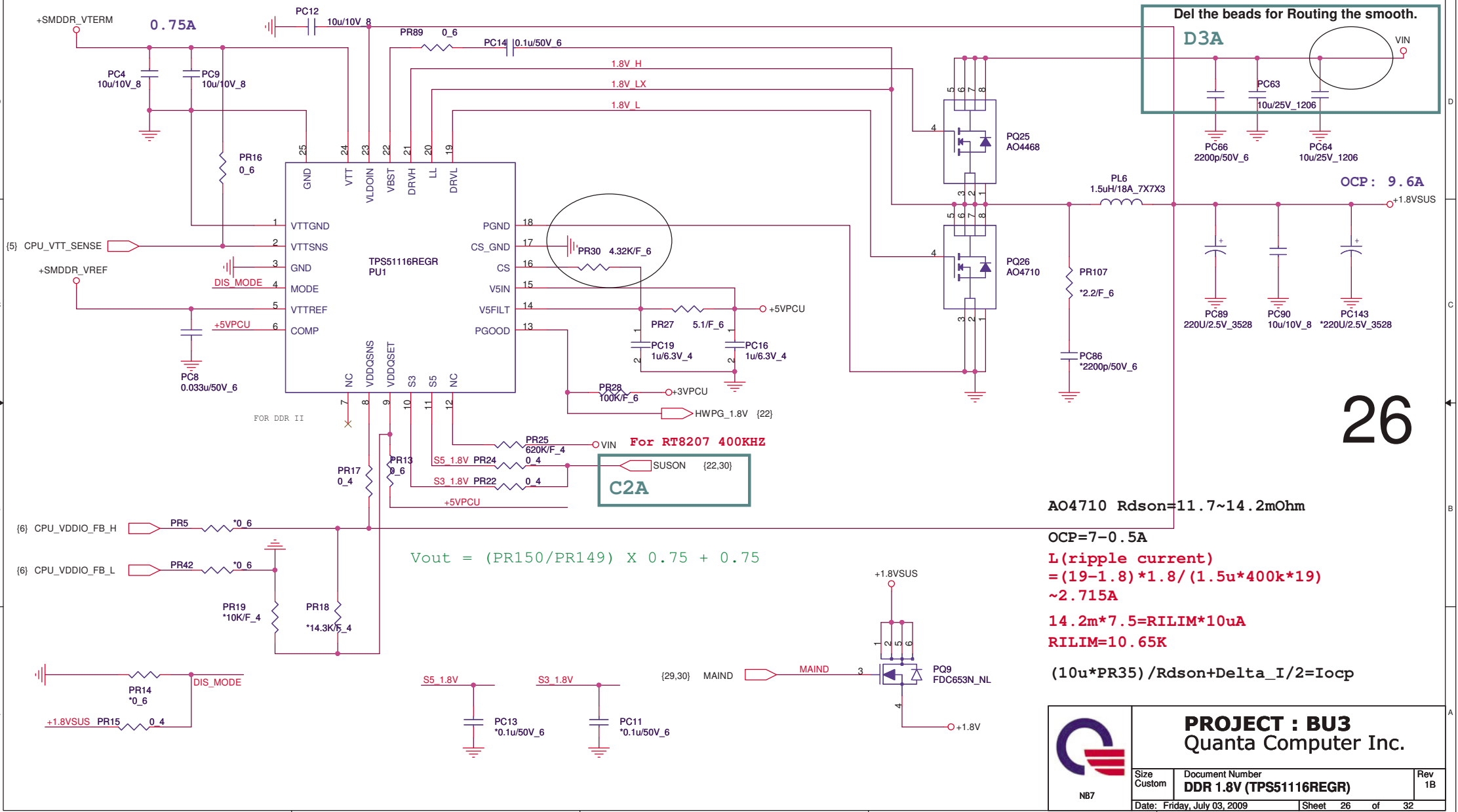
SUPPORTED
VID CODES

VID[5:0]	Voltage(V)	VID[5:0]	Voltage(V)
000000b	1.5500	100000b	0.7625
000001b	1.5250	100001b	0.7500
000010b	1.5000	100010b	0.7375
000011b	1.4750	100011b	0.7250
000100b	1.4500	100100b	0.7125
000101b	1.4250	100101b	0.7000
000110b	1.4000	100110b	0.6875
000111b	1.3750	100111b	0.6750
001000b	1.3500	101000b	0.6625
001001b	1.3250	101001b	0.6500
001010b	1.3000	101010b	0.6375
001011b	1.2750	101011b	0.6250
001100b	1.2500	101100b	0.6125
001101b	1.2250	101101b	0.6000
001110b	1.2000	101110b	0.5875
001111b	1.1750	101111b	0.5750
010000b	1.1500	110000b	0.5625
010001b	1.1250	110001b	0.5000
010010b	1.1000	110010b	0.5375
010011b	1.0750	110011b	0.5250
010100b	1.0500	110100b	0.5125
010101b	1.0250	110101b	0.5000
010110b	1.0000	110110b	0.4875
010111b	0.9750	110111b	0.4750
011000b	0.9500	111000b	0.4625
011001b	0.9250	111001b	0.4500
011010b	0.9000	111010b	0.4375
011011b	0.8750	111011b	0.4250
011100b	0.8500	111100b	0.4125
011101b	0.8250	111101b	0.4000
011110b	0.8000	111110b	0.3875
011111b	0.7750	111111b	0.3750

PROJECT : BU3
Quanta Computer Inc.

NB7

Size	Document Number	Rev
Custom	CPU CORE (OZ828)	1B


+SMDDR_VTERM
0.75A
PC12
10u/10V_8
PR89 0_6
PC14 0.1u/50V_6
1.8V_H
1.8V_LX
1.8V_L
PC4
10u/10V_8
PC9
10u/10V_8
PR16
0_6
GND
VTT
VLDOIN
VBST
DRVH
LL
DRVL
VTTGND
VTTSNS
GND
MODE
VTTREF
COMP
PGND
CS_GND
CS
V5IN
V5FILT
PGOOD
TPS51116REGR
PU1
{5} CPU_VTT_SENSE
+SMDDR_VREF
DIS_MODE
+5VPCU
PC8
0.033u/50V_6
PR30 4.32K/F_6
PR27 5.1/F_6
PC19
1u/6.3V_4
PC16
1u/6.3V_4
PR28
100K/F_6
+3VPCU
HWPG_1.8V {22}
FOR DDR II
NC
VDDQSNS
VDDQSET
S3
S5
NC
PR25
620K/F_4
VIN
For RT8207 400KHZ
PR17
0_4
PR13
0_6
S5_1.8V PR24 0_4
S3_1.8V PR22 0_4
SUSON {22,30}
C2A
{6} CPU_VDDIO_FB_H
PR5 *0_6
{6} CPU_VDDIO_FB_L
PR42 *0_6
PR19
*10K/F_4
PR18
*14.3K/F_4
Vout = (PR150/PR149) X 0.75 + 0.75
PR14
*0_6
DIS_MODE
+1.8VSUS PR15 0_4
S5_1.8V
PC13
*0.1u/50V_6
S3_1.8V
PC11
*0.1u/50V_6
{29,30} MAIND
MAIND
PQ9
FDC653N_NL
+1.8V
+1.8VSUS
PQ25
AO4468
PQ26
AO4710
PL6
1.5uH/18A_7X7X3
PR107
*2.2/F_6
PC86
*2200p/50V_6
+5VPCU
Del the beads for Routing the smooth.
D3A
VIN
PC63
10u/25V_1206
PC66
2200p/50V_6
PC64
10u/25V_1206
OCP: 9.6A
+1.8VSUS
PC89
220U/2.5V_3528
PC90
10u/10V_8
PC143
*220U/2.5V_3528
AO4710 Rdson=11.7~14.2mOhm
OCP=7-0.5A
L(ripple current)
=(19-1.8)*1.8/(1.5u*400k*19)
~2.715A
14.2m*7.5=RILIM*10uA
RILIM=10.65K
(10u*PR35)/Rdson+Delta_I/2=Iocp
26
PROJECT : BU3
Quanta Computer Inc.
NB7
Size Custom
Document Number
DDR 1.8V (TPS51116REGR)
Rev 1B
Date: Friday, July 03, 2009
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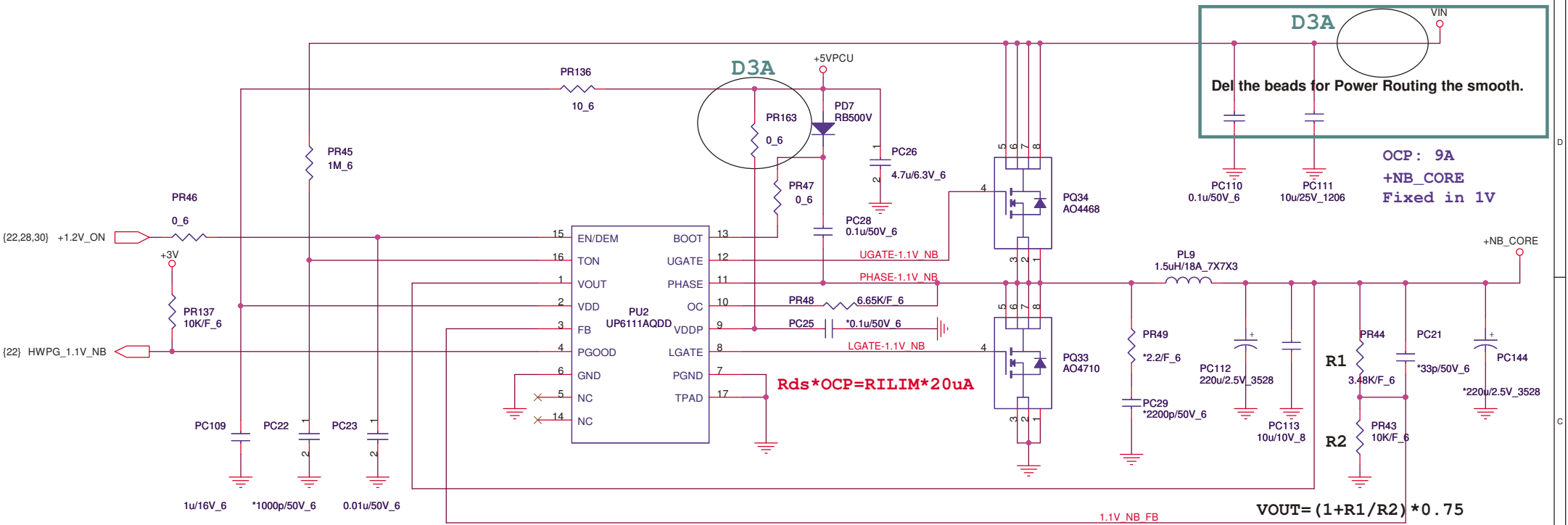


TON=3.85p*RTON*Vout/(Vin-0.5)

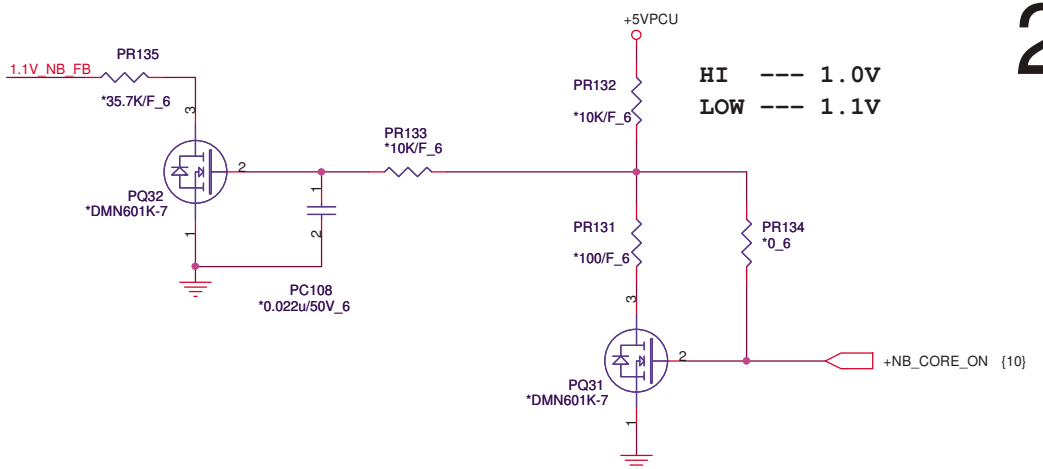
Frequency=Vout/(Vin*TON)

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

Frequency=1/(0.0036767)=272K

AO4710 Rdson=11.8~14.2mOhm
OCP=7.2-0.8A
L(ripple current)
=(19-1.5)*1.5/(1.0u*272k*19)
~3.38A

14.2m*10=RILIM*20uA
RILIM=4.9K(4.87K)



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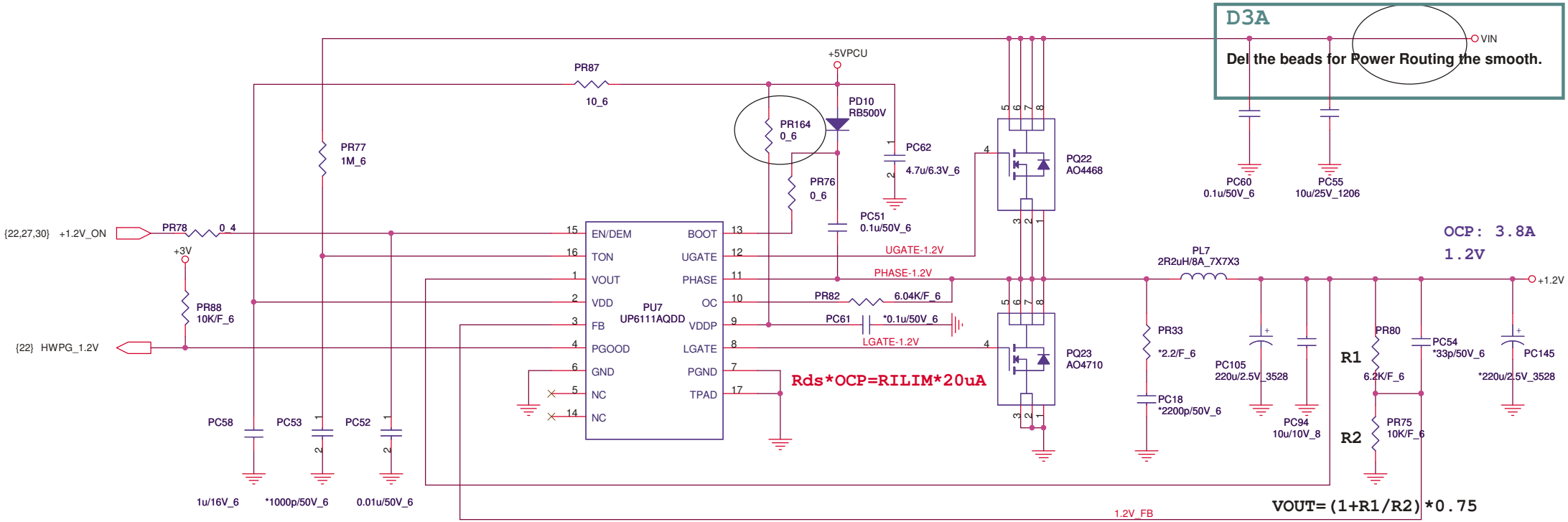
NB7

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+NB_CORE (UP6111AQDD)	1B
Date: Friday, July 03, 2009	Sheet 27 of 32	



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

AO4932 Rdson=15.8~19.6mOhm

OCP=7.2-0.8A

L(ripple current)
=(19-1.05)*1.05/(3.3u*272k*19)
~1.105A

19.6m*5=RILIM*20uA
RILIM=4.9K(4.87K)

NB7

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.2V (UP6111AQDD)	1B
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D3A

Peak 6.9A,AVG 5.189A
Total capacitor : 680uF
ESR : 17mΩ
f : 400k Hz

OCP: 8.1A

AO4710 Rdson=11.8~14.2mOhm
+5VPCU OCP:4A 400K

L(ripple current)
=(19-5)*5/(2.2u*400k*19)
~4.18A

Iocp=6.2-(4.18/2)~4.11A
Vth=4.11A*14.2mOhm=58.362mV
R(Ilim)=(58.362mV*10)/5uA
~116.7K

D3A Del the beads for Power Routing the smooth.

(Peak 4.707A,AVG 3.508A)
Total capacitor : 730 uF
ESR : 17mΩ
f : 500k Hz

OCP : 4.6A

AO4932 Rds=15.8~19.6mOhm
+3VPCU OCP:4.6A 500K

L(ripple current)
=(19-3.3)*3.3/(3.3u*500k*19)
~1.653A

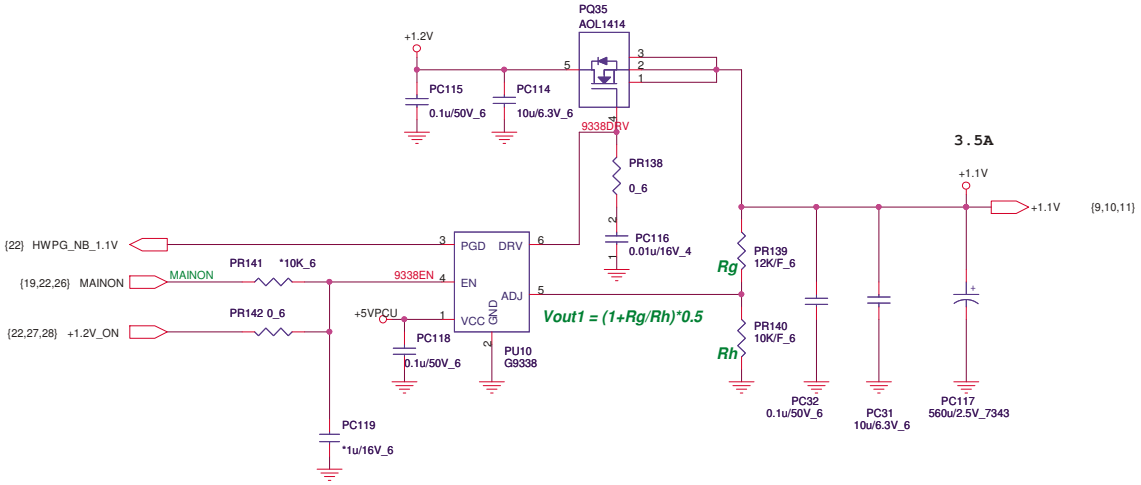
Iocp=4.5-(1.653/2)~3.6735A
Vth=3.6735A*19.6mOhm=72mV
R(Ilim)=(72mV*10)/5uA
~143K

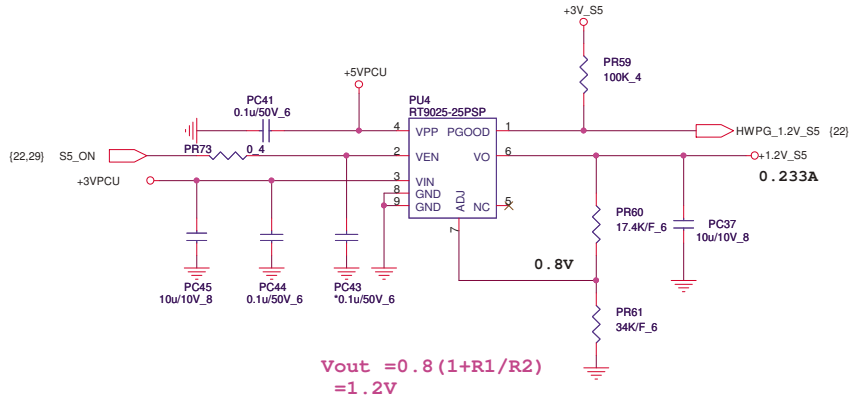
4A

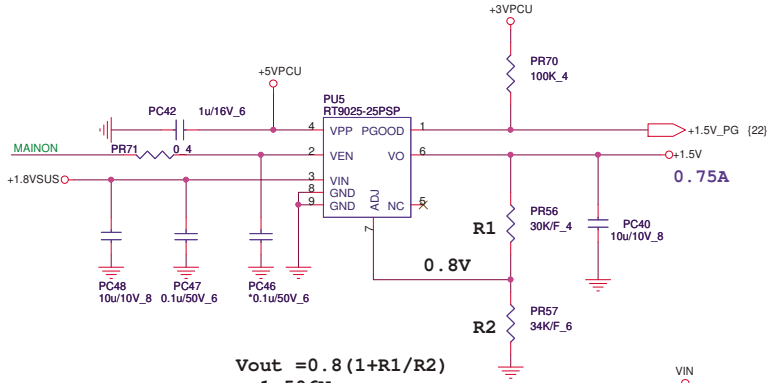
3.733A

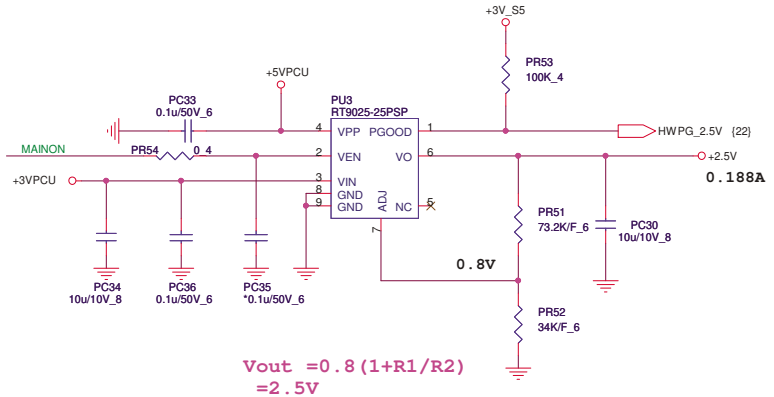
0.752A

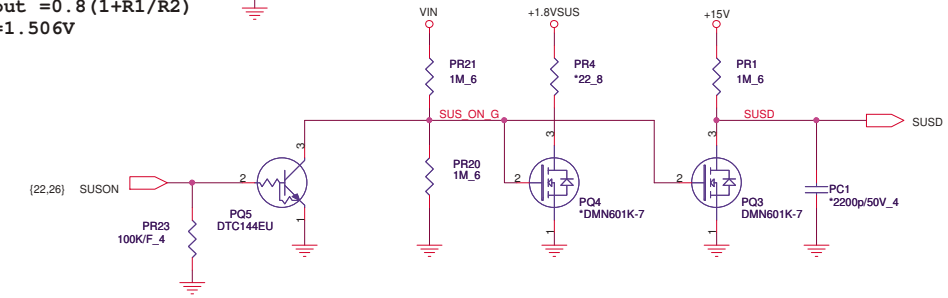
NB7	**PROJECT : BU3** Quanta Computer Inc.	
Size: Custom	Document Number: **SYSTEM +5V/+3V (ISL6237)**	Rev: 1B
Date: Friday, July 03, 2009	Sheet 29 of 32	

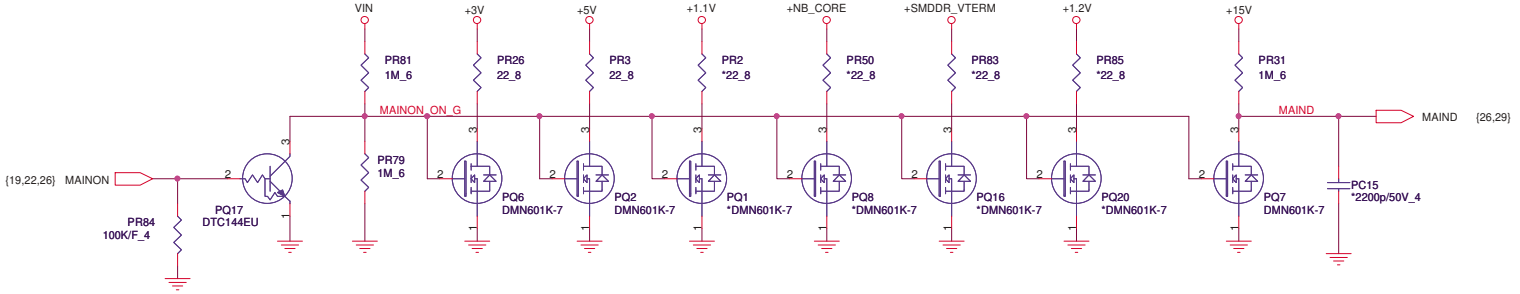












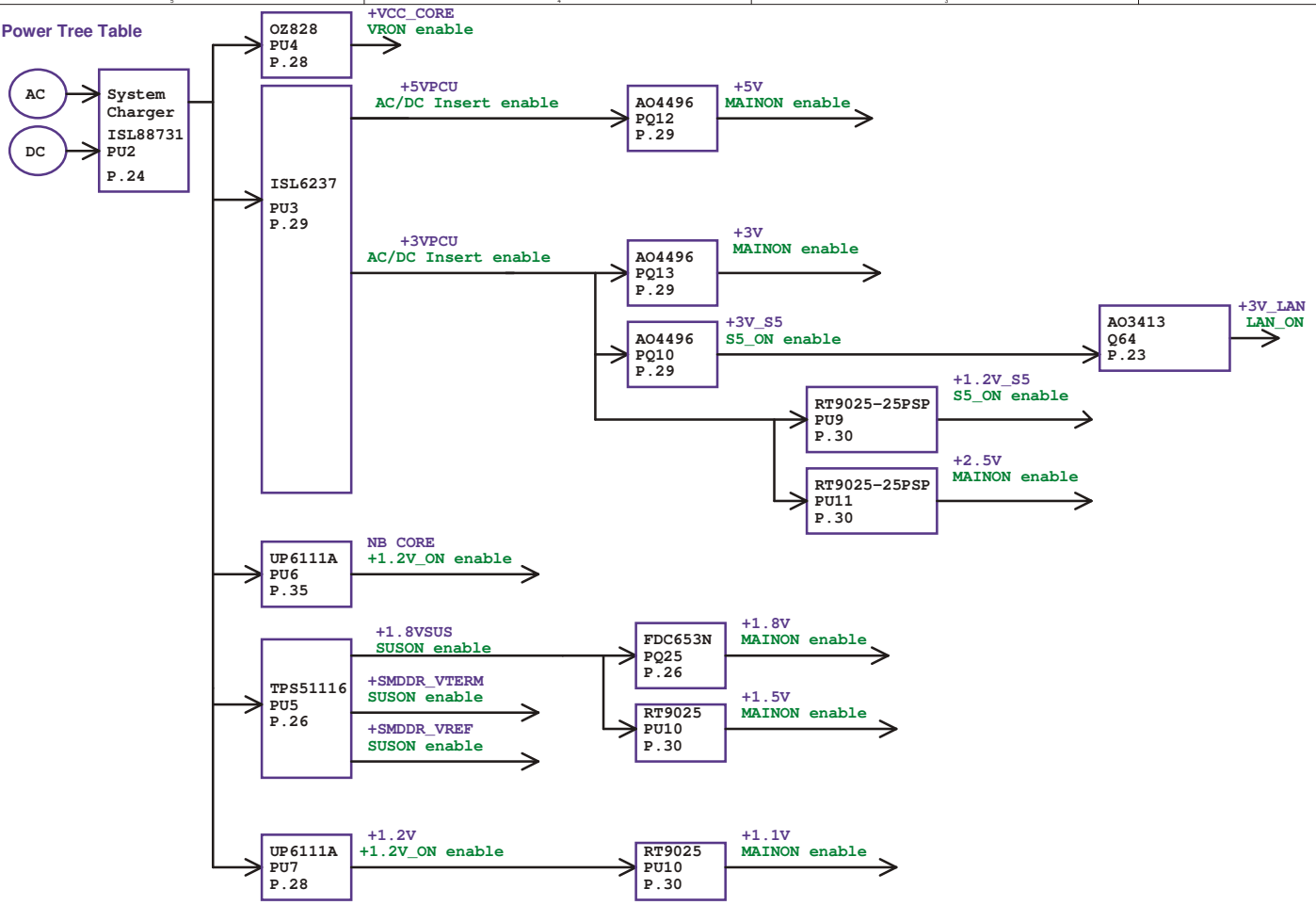
NB7

PROJECT : BU3
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DISCHARGE/+1.5V/+1.2V_S5/+2.5V	1B

Date: Wednesday, June 03, 2009 Sheet 30 of 32

Power Tree Table



Power Distribution List

Power	Distribution
+VCC_CORE	CPU
+5VPCU	SB710, Audio/USB /B, HDMI/USB/ B, G-Sensor, Power /B
+3VPCU	RTC, HALL SENSOR, KB, TP/LED /B, EC, ID, SPI Flash, CIR
+1.5V	Mini Card
+1.8V_SUS	CPU, DDR
+VDR_VREF	CPU, DDR
+VDR_VTT	DDR
+1.2V	CPU, CLK, RS780M, SB710
+1.1V	RS780M, FRAME BUFFER
+5V	CPU FAN,SB710,CRT,CCD,HDMI,HDD,ODD,Audio/USB /B,LED /B
+3V	CLK_CPU_FAN,DDR,RS780M,SB710,LCD,CRT,MINI CARD,BT /B,LED /B,Audio/USB /B,EC
+3V_S5	RS780M,SB710,USB SLEEP CHARGE,MINI CARD,LAN
+1.8V	CPU,FRAME BUFFER,RS780M
+2.5V	CPU

Model	REV	DATE	Change List	NOTE
BU3A	1A	20090408	First Release	
	1B	20090514	PAGE 20: Remove T43,T55. add net USBP5+ and USBP5- to CN11. USBP6+ and USBP6- connect to CN8 (SIM card). PAGE 20: Add R338,C464,C463,C465,C466,Q39,R339,R340,R341. PAGE 20: CN22,CN23 (Mini card) change footprint. PAGE 3: Remove T47,T48. Add RP71. Add net CLK_PCIE_MINI2 and CLK_PCIE_MINI2# to CN22(3G mini card). PAGE 9: Remove T38,T40,T101,T102. Add C468,C467. Add net PCIE_TXP3,PCIE_TXN3,PCIE_RXP3,PCIE_RXN3 to CN22 (3G mini card) PAGE 18: RN5,RN6,RN7,RN8 change footprint. PAGE 21: Remove CN13,C179. CN16 Change footprint, then modify pin define. PAGE 13: CN10 change footprint. PAGE 19: RN3,RN4 change footprint. PAGE 10: R119 change footprint. PAGE 21: CN9 modify pin define. PAGE 11: Remove R153	
	2A	20090521	PAGE 22: Change D9 to BC000520Z20(BD520WS), Move the C162/C164 capacitors on the +3V side(Prevent the RC delay).	
	3A	20090701	PAGE 12: Add the series 33 ohm damping resistor for EMI. PAGE 13: As for Battery life, Move the USB Port for 11.6" Card reader. PAGE 17: SMT Open issue change 0ohm to 4P2R resistors. PAGE 17: Move the Co-lay CRT Connector for Routing the smooth. PAGE 18: Del the HDMI GFX(TX&RX) ohm for Routing the smooth. PAGE 20: AMD Platform not Support 3G Function and Remove these materials on BOM. PAGE 21: Reserve the 100p Capacitir on BT Enable pin.	