Jones/Cujo BLOCK DIAGRAM

01

PCB STACK UP

8L Dis.

LAYER 1 : TOP
LAYER 2 : SGND
LAYER 3 : IN2
LAYER 4 : SGND1
LAYER 5 : SVCC
LAYER 6 : IN2
LAYER 7 : SGND2
LAYER 8 : BOT

Cable Docking PAGE 36
- VGA
- RJ-45
- CIR/Pwr btn
- SPDIF Out
- Stereo MIC
- Headphone Jack
- USB Port
- VOL Cntr

- SYSTEM CHARGER(ISL6251AHAZ-T) PAGE 37
- SYSTEM POWER ISL6237IRZ-T PAGE 38
- DDR II SMDDR_VTERM 1.8V/1.8VSUS(TPS51116REGR) PAGE 42
- VCCP +1.5V AND GMCH 1.05V(RT8204) PAGE 39
- VGACORE(1.025V)Oz8119 PAGE 41
- CPU CORE ISL6262A PAGE 40

CPU Penryn
478P (uPGA)/35W
PAGE 3,4

CPU THERMAL SENSOR PAGE 4

FSB 667/800/1066

14.318MHz

CLOCK GEN
ALPRS355B MLF64PIN
PAGE 2

CLK_CPU_BCLK, CLK_CPU_BCLK#
CLK_MCH_BCLK, CLK_MCH_BCLK#
DREFCLK, DREFCLK#
DREFSSCLK, DREFSSCLK#

NORTH BRIDGE
Cantiga
PM45,GM45
PAGE 5~9

Level Shift PAGE 20

27MHz

DDRII-SODIMM1 PAGE 10
DDRII 667/800 MHz

DDRII-SODIMM2 PAGE 10
DDRII 667/800 MHz

PCI-Express 16X

nVIDIA
NB9M-GE 64 Bit
NB9P-GS 128 Bit
PAGE 12~18
969p

Dual Link

HDMI CON PAGE 20

CRT PAGE 20

LCD CONN PAGE 19

Mini PCI-E Card x2
Express Card x1
Cable Docking x1
4,7,10,11

DMI LINK

32.768KHz

NBSRCCLK, NBSRCCLK#

SOUTH BRIDGE
ICH9-M
PAGE 21,22,23,24

SATA - HDD PAGE 32 — SATA0 150MB
SATA - CD-ROM PAGE 32 — SATA1 150MB
SATA - 2ndHDD PAGE 32 — SATA4 150MB
E-SATA PAGE 29 — SATA5 150MB

USB2.0

0,1,8,9
- **USB2.0 Ports X4** PAGE 29
- 5 **BlueTooth** PAGE 29
- 3 **Webcam** PAGE 29
- 2 **Fingerprint** PAGE 29

PCI-E

24.576Hz

Azalia

SMBUS

Accelerometer LIS3LV02DL PAGE 27

32.768KHz

LPC

MDC CONN PAGE 33

Analog IDT92HD75B3 PAGE 26

X2 **Mini PCI-E Card** (Wireless LAN/TV) PAGE 35

X1 **LAN** Realtek PCIE-LAN RTL8102E/8111C (10/100/GagaLAN) PAGE 30,31

X1 **Express Card** (NEW CARD) PAGE 32

X1 **JMICRO 380 for Discrete** PAGE25

25MHz

RJ45 PAGE 30

IEEE1394 connect for Discrete only PAGE 25

Memory CardReader PAGE 25

ENE KBC
KB3926 C0
PAGE 34

Keyboard PAGE 33
Touch Pad PAGE 34

Capacitive Sense SW PAGE 33

SPI PAGE 22

AUDIO Amplifier TPA6047 PAGE 27

AUDIO Amplifier TPA3007D1 PAGE 28

microphone PAGE 28

Audio Jacks (Phone/ MIC) PAGE 28

Jack to Speaker PAGE 27

Jack to Sub-Woofer PAGE 28

GMT G9931P1U
FAN PAGE 36

SPI PAGE 34

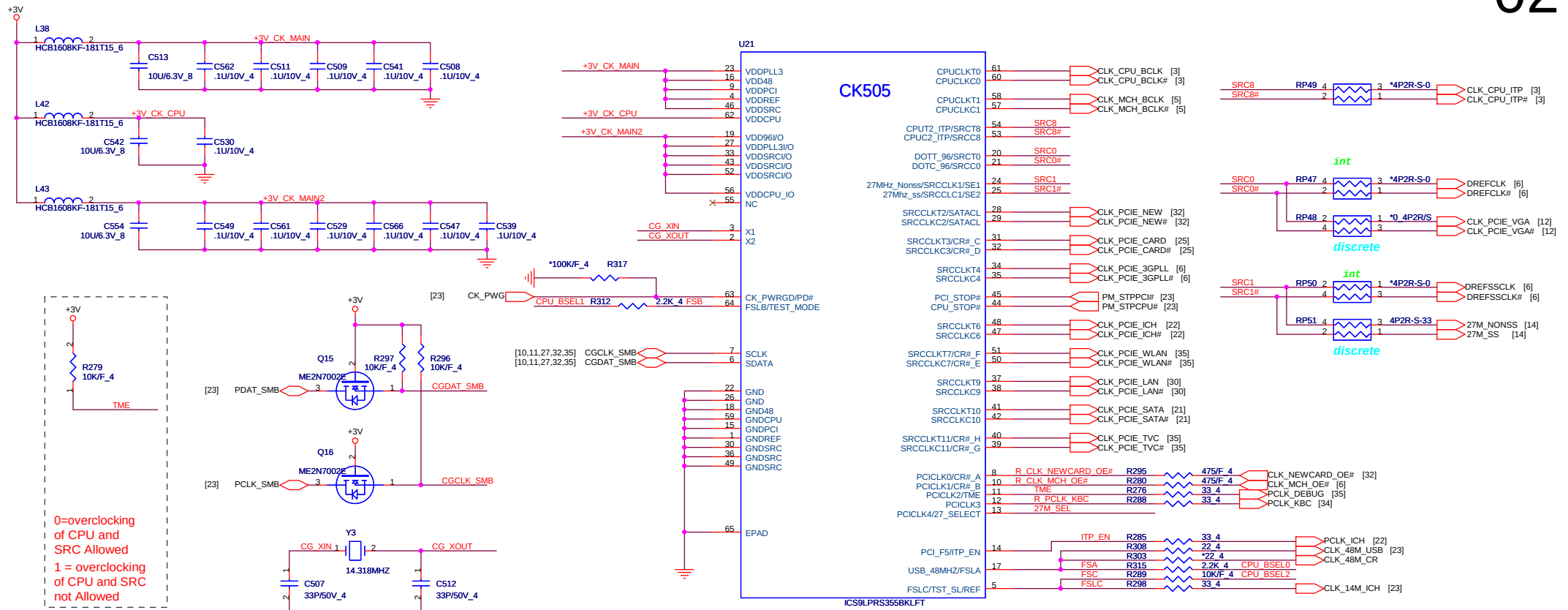
NB5

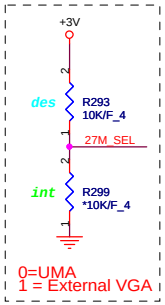
PROJECT : UT3/5
Quanta Computer Inc.

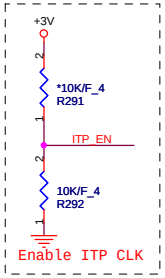
Size	Document Number	Rev
Custom	Block Diagram	PV

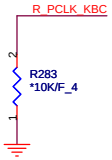
Date: Monday, October 20, 2008 Sheet 1 of 43

[4,6,9,10,11,12,14,15,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[3,4,5,6,8,9,21,24,33,39,40] +1.05V





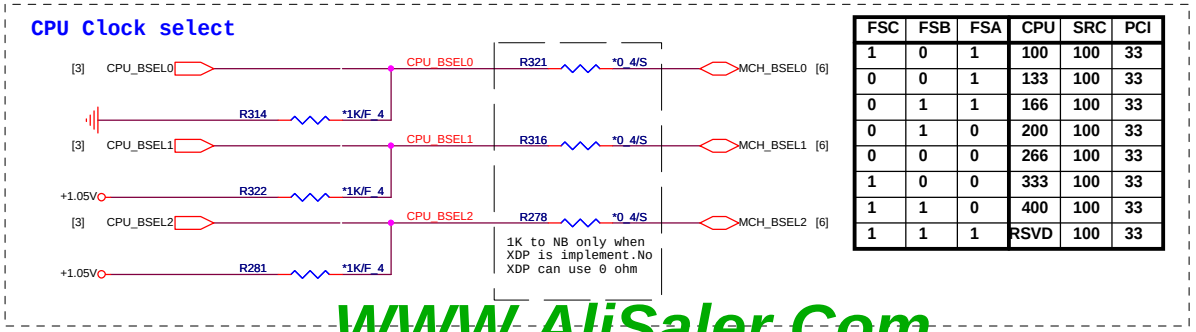




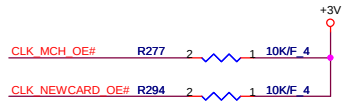
27M_SEL PIN13	PIN20	PIN21	PIN24	PIN25
0=UMA	DOT96T	DOT96C	SRCT1/LCDT_100	SRCT1/LCDT_100
1 = External VGA	SRCT0	SRCC0	27Mout-NSS	27Mout-SS

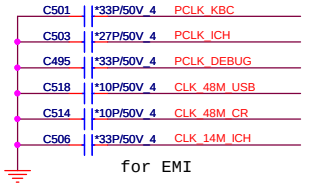
CK505 QFN64

ICS	ICS9LPRS355BKLF	ALPRS355000
Silego	SLG8SP513VTR	AL8SP513000
Realtek	RTM875N-606-VD-GR	AL000875000
SPECTRALINEAR	SL28541BQCT	AL028541000



FSC	FSB	FSA	CPU	SRC	PCI
1	0	1	100	100	33
0	0	1	133	100	33
0	1	1	166	100	33
0	1	0	200	100	33
0	0	0	266	100	33
1	0	0	333	100	33
1	1	0	400	100	33
1	1	1	RSVD	100	33





NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Clock Generator	PV

Date: Monday, October 20, 2008 Sheet 2 of 43

DGT^8000021

U34A

ADDR GROUP_0
ADDR GROUP_1
CONTROL
XDP/ITP SIGNALS
THERMAL
MISC
H CLK
Quard Core Only

Penryn Ball-out Rev 1a

U34B

DATA GRP 0
DATA GRP 1
DATA GRP 2
DATA GRP 3

Penryn Ball-out Rev 1a

For QC CPU

For QC CPU

	Rc
Dual Core	2K Ohm
Quard Core	1.74K Ohm

For QC CPU

	COMP0/2	COMP1/3
Dual Core	27.4 Ohm (CS02742FB19)	54.9 Ohm (CS05492FB19)
Quard Core	24.9 Ohm (CS02492FB29)	49.9 Ohm (CS04992FB31)

MODEL	UT5 Quad Core	UT3 Dual Core
R28	*0_4	0_4

R542 -->1.74K for Quad Core

For QC Support

Don't install for DC

Change to +5V

Populate ITP700Flex for bringup

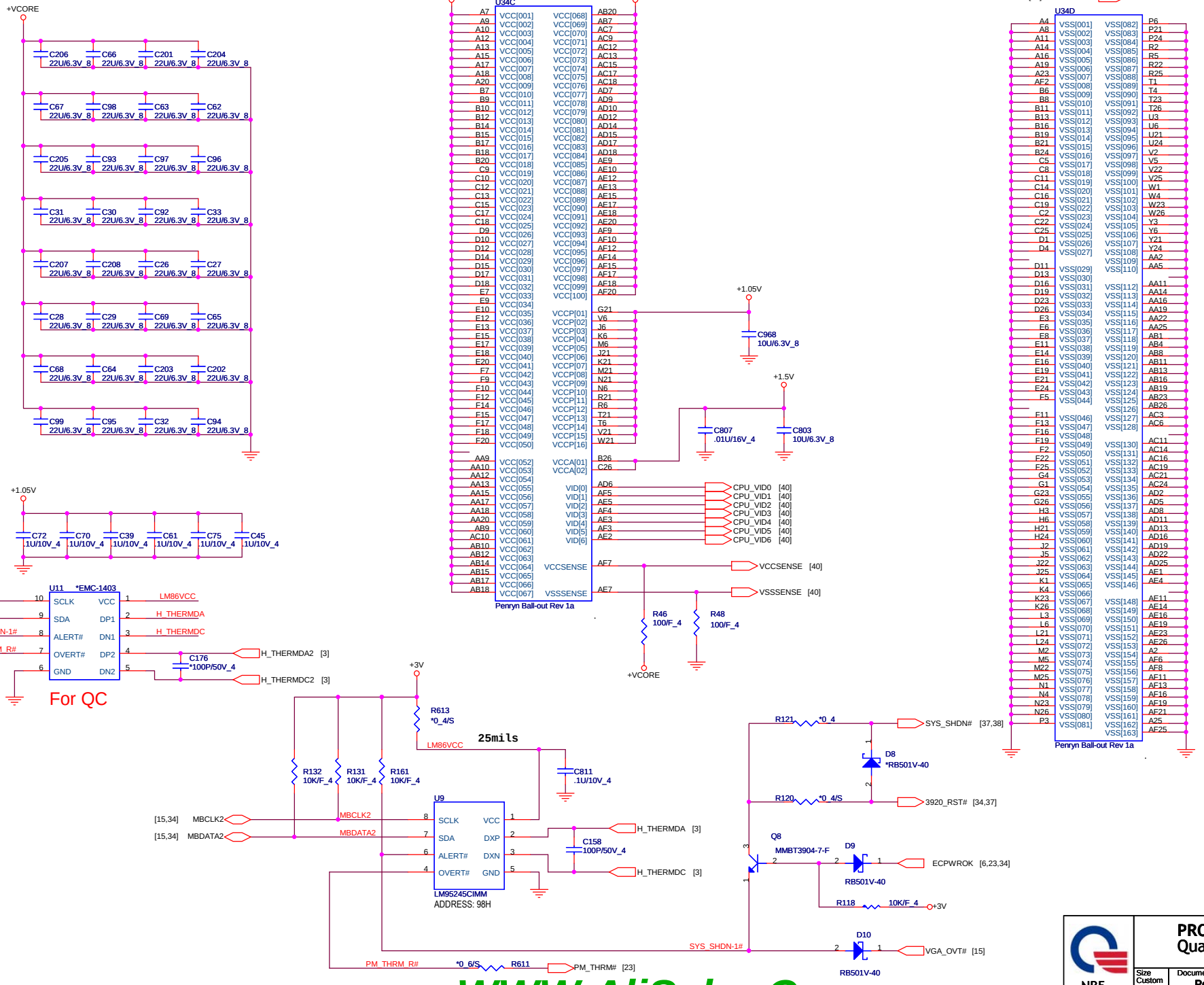
*ITP700Flex

PROJECT : UT3/5
Quanta Computer Inc.

NB5

Size: Custom | Document Number: Penryn 1/2 | Rev: PV

Date: Monday, October 20, 2008 | Sheet 3 of 43

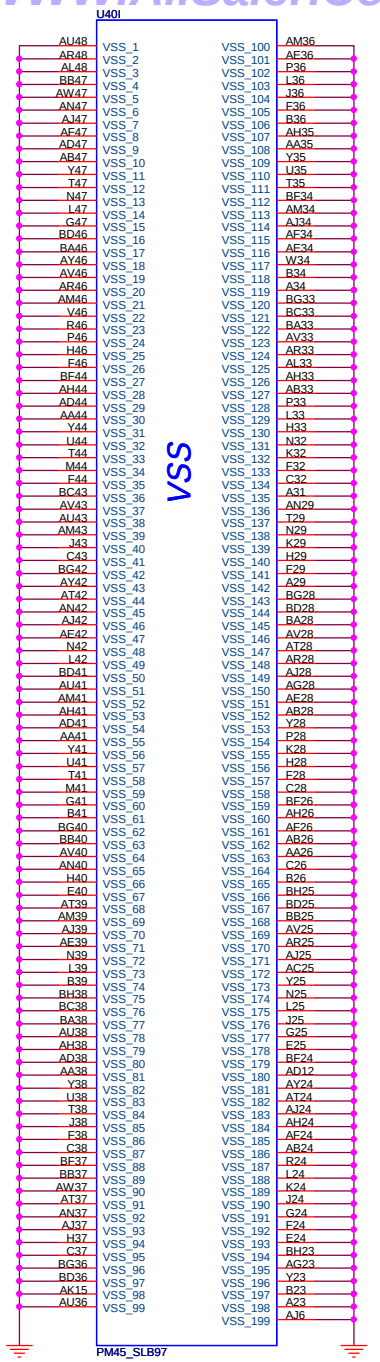


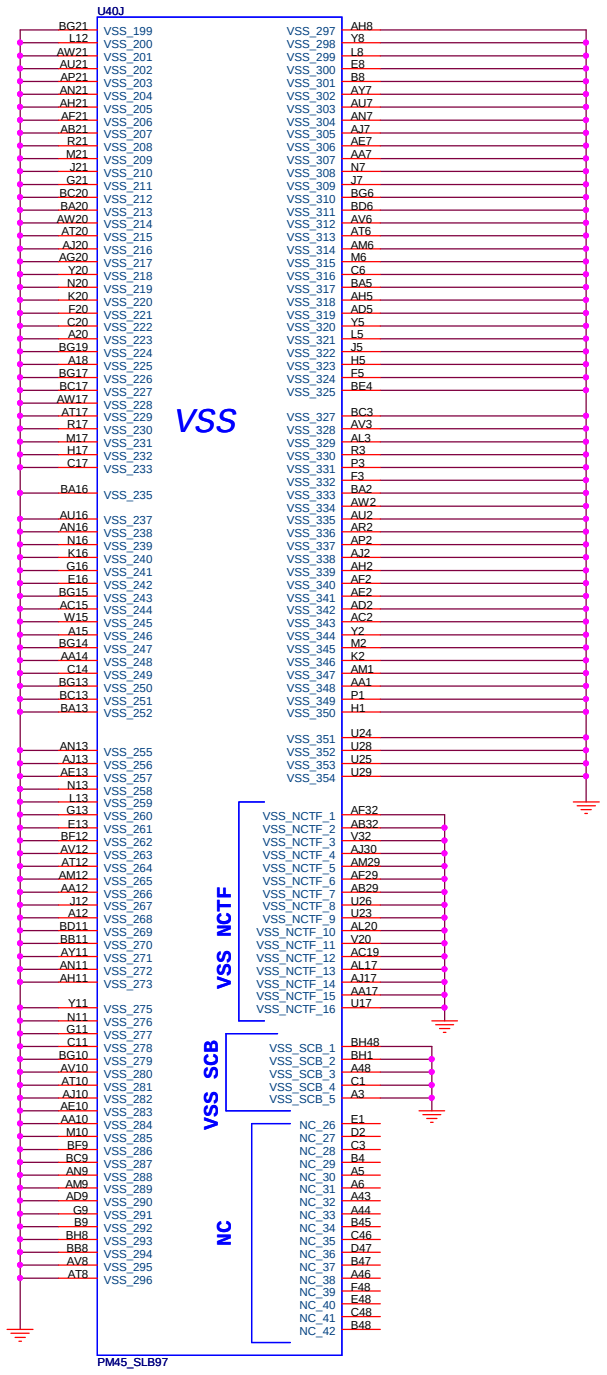
PROJECT : UT3/5
Quanta Computer Inc.

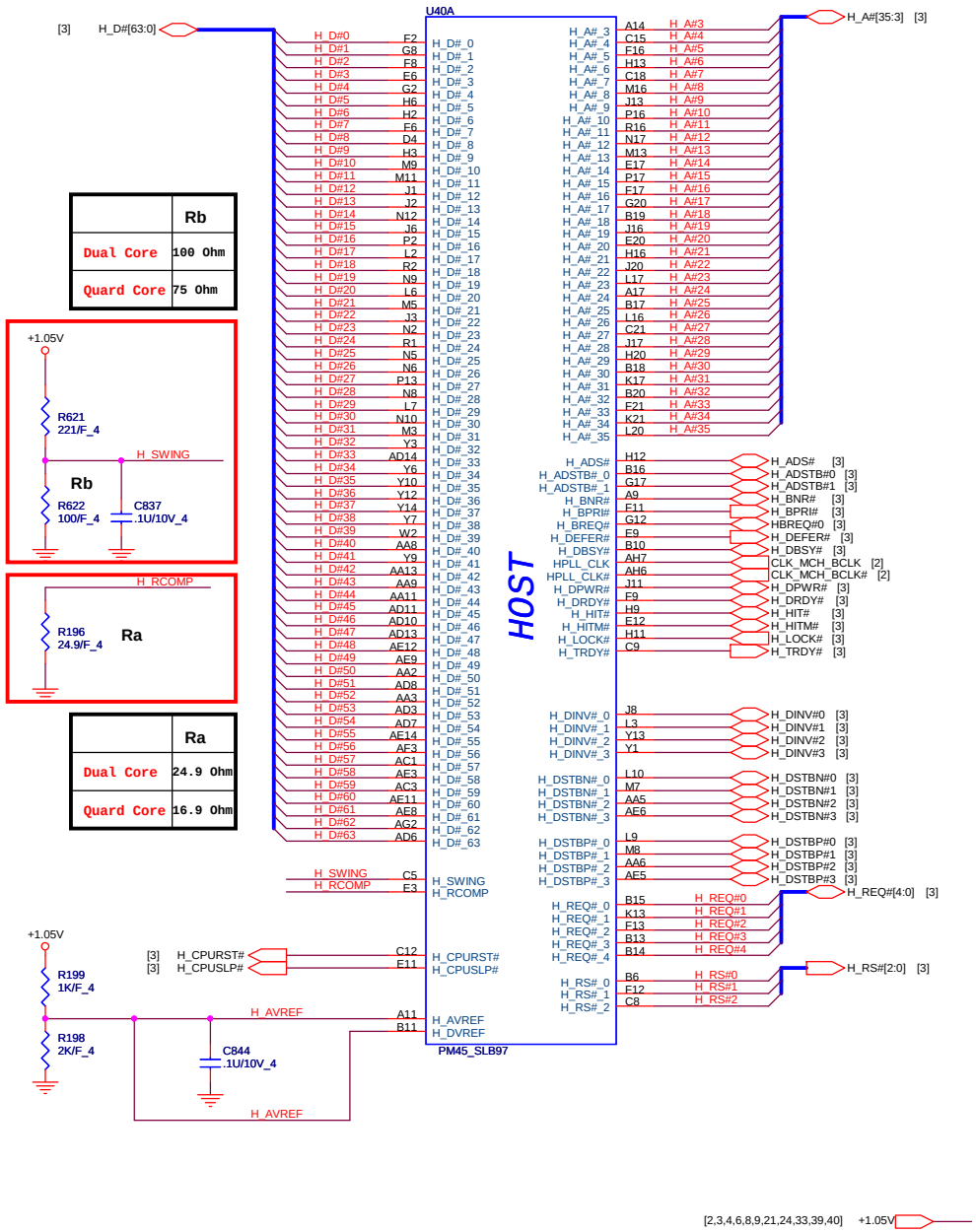
NB5

Size	Document Number	Rev
Custom	Penryn & TH Monitor 2/2	PV

Date: Monday, October 20, 2008 Sheet 4 of 43







[2,3,4,6,8,9,21,24,33,39,40] +1.05V

PROJECT :	UT3/5
Quanta Computer Inc.	
NB5	
Size: Custom	Document Number: Cantiga Host & VSS 1/5
Rev: PV	
Date: Monday, October 20, 2008	Sheet 5 of 43

MCH_CFG_5 DMIx2 selection
Low = DMI X2
High = DMI X4 (Default)

MCH_CFG_16 FSB Dynamic ODT
Low = Dynamic ODT disabled
High = Dynamic ODT enabled (default)

MCH_CFG_9 PCI Express Graphic Lane
Low: Reverse Lane
High: Normal operation(Default)

MCH_CFG_19 DMI Lane Reversal
Low = Normal operation (Default)
High = Reverse Lanes

MCH_CFG_6 iTPM Host Interface
Low =The iTPM Host Interface is enabled2
High = The iTPM Host Interface is disabled (default)

MCH_CFG_7 Intel (R) Management Engine Crypto
Low: Intel (R) Management Engine Crypto
TLS cipher suite with no confidentiality
High: Intel (R) Management Engine Crypto
TLS cipher suite with no confidentiality (Default)

MCH_CFG_10 PCIe Lookback Enable
Low = Enabled3
High: Disabled (Default)

MCH_CFG_12/13 XOR/ALLZ/CLOCK Un-gating

MCH_CFG_13	MCH_CFG_12	Configuration
0	0	Reserved
1	0	XOR Mode enabled
0	1	All-Z Mode enabled
1	1	Normal operation (Default)

MCH_CFG_20

Digital Display Port (SDVO/DP/iHDMI) Concurrent with PCIE
Low = Only digital display port (SDVO/DP/iHDMI) or PCIE is operational (default)
High = Digital display port (SDVO/DP/iHDMI) and PCIE are operating simultaneously via the PEG port

MCH_CFG2:0
000 = FSB1066
010 = FSB800
011 = FSB667
Others = Reserved

U40B

RSVD
RSVD1 RSVD2 RSVD3 RSVD4 RSVD5 RSVD6 RSVD7 RSVD8 RSVD9 RSVD14 RSVD15 RSVD16 RSVD17 RSVD20 RSVD22 RSVD23 RSVD24 RSVD25

DDR CLK/ CONTROL/COMPENSATION
SA_CK_0 SA_CK_1 SA_CK_0 SA_CK_1 SA_CK#_0 SA_CK#_1 SA_CK#_0 SA_CK#_1 SA_CKE_0 SA_CKE_1 SA_CKE_0 SA_CKE_1 SA_CS#_0 SA_CS#_1 SB_CS#_0 SB_CS#_1 SA_ODT_0 SA_ODT_1 SB_ODT_0 SB_ODT_1 SM_RCOMP SM_RCOMP# SM_RCOMP_VOH SM_RCOMP_VOL SM_VREF SM_PWROK SM_REXT SM_DRAMRST#
M_A_CLK0 M_A_CLK1 M_B_CLK0 M_B_CLK1 M_A_CLK0# M_A_CLK1# M_B_CLK0# M_B_CLK1# M_A_CKE0 M_A_CKE1 M_B_CKE0 M_B_CKE1 M_A_CS#0 M_A_CS#1 M_B_CS#0 M_B_CS#1 M_A_ODT0 M_A_ODT1 M_B_ODT0 M_B_ODT1
SM_RCOMP SM_RCOMP# SM_RCOMP_VOH SM_RCOMP_VOL +0.9VSMVREF_MCH SW_PWROK_NB SM_REXT TP_SM_DRAMRST#
R219 80.6/F_4 R209 80.6/F_4 R237 10K/F_4 R207 499/F_4 TP34 +1.8VSUS

CLK
DPLL_REF_CLK DPLL_REF_CLK# DPLL_REF_SSCLK DPLL_REF_SSCLK# PEG_CLK PEG_CLK#
DREFCLK DREFCLK# DREFSSCLK DREFSSCLK# CLK_PCIE_3GPLL CLK_PCIE_3GPLL#

ME JTAG
TP36 ME_JTAG_TCK TP32 ME_JTAG_TDI TP29 ME_JTAG_TDO TP28 ME_JTAG_TMS

DMI
DMI_RXN_0 DMI_RXN_1 DMI_RXN_2 DMI_RXN_3 DMI_RXP_0 DMI_RXP_1 DMI_RXP_2 DMI_RXP_3 DMI_TXN_0 DMI_TXN_1 DMI_TXN_2 DMI_TXN_3 DMI_TXP_0 DMI_TXP_1 DMI_TXP_2 DMI_TXP_3
DMI_TXN0 DMI_TXN1 DMI_TXN2 DMI_TXN3 DMI_TXP0 DMI_TXP1 DMI_TXP2 DMI_TXP3 DMI_RXN0 DMI_RXN1 DMI_RXN2 DMI_RXN3 DMI_RXP0 DMI_RXP1 DMI_RXP2 DMI_RXP3
DMI_TXN[3:0] DMI_TXP[3:0] DMI_RXN[3:0] DMI_RXP[3:0]

CFG
MCH_BSEL0 MCH_BSEL1 MCH_BSEL2 MCH_CFG_3 MCH_CFG_4 MCH_CFG_5 MCH_CFG_6 MCH_CFG_7 MCH_CFG_8 MCH_CFG_9 MCH_CFG_10 MCH_CFG_11 MCH_CFG_12 MCH_CFG_13 MCH_CFG_14 MCH_CFG_15 MCH_CFG_16 MCH_CFG_17 MCH_CFG_18 MCH_CFG_19 MCH_CFG_20
CFG_0 CFG_1 CFG_2 CFG_3 CFG_4 CFG_5 CFG_6 CFG_7 CFG_8 CFG_9 CFG_10 CFG_11 CFG_12 CFG_13 CFG_14 CFG_15 CFG_16 CFG_17 CFG_18 CFG_19 CFG_20

GRAPHICS VID
GFX_VID_0 GFX_VID_1 GFX_VID_2 GFX_VID_3 GFX_VID_4 GFX_VR_EN
GFXVR_VID_0 GFXVR_VID_1 GFXVR_VID_2 GFXVR_VID_3 GFXVR_VID_4 GFXVR_EN
TP66 TP65 TP33 TP31 TP30 TP67

PM
PM_SYNC# PM_DPRSTP# PM_EXT_TS#_0 PM_EXT_TS#_1 PWROK RSTIN# THERMTRIP# DPRSLPVR
PM_EXTTS#0 PM_EXTTS#1 R201 100/F_4 RST_IN#_MCH

ME
CL_CLK CL_DATA CL_PWROK CL_RST# CL_VREF
CL_CLK0 CL_DATA0 ECPWROK CL_RST#0 MCH_CLVREF 0.35 V R257 1K/F_4 C451 1U/10V_4 R258 499/F_4 +1.05V

MISC
DDPC_CTRLCLK DDPC_CTRLDATA SDVO_CTRLCLK SDVO_CTRLDATA CLKREQ# ICH_SYNC# TSATN#
TP27 TP26 SDVO_CLK SDVO_DATA CLK_MCH_OE# MCH_ICH_SYNC# R200 56.2/F_4 +1.05V

HDA
HDA_BCLK HDA_RST# HDA_SDI HDA_SDO HDA_SYNC
ACZ_SDIN3_MCH R638 *0_4/S
ACZ_BITCLK_MCH ACZ_RST#_MCH ACZ_SDIN3 ACZ_SDOUT_MCH ACZ_SYNC_MCH

NC
NC_1 NC_2 NC_3 NC_4 NC_5 NC_6 NC_7 NC_8 NC_9 NC_10 NC_11 NC_12 NC_13 NC_14 NC_15 NC_16 NC_17 NC_18 NC_19 NC_20 NC_21 NC_22 NC_23 NC_24 NC_25 NC_26

PM45_SLB97

+3V R235 10K/F_4 PM_EXTTS#0 R230 10K/F_4 PM_EXTTS#1

ACZ_BITCLK_MCH R634 *33_4 C874 *33P/50V_4

[2,4,9,10,11,12,14,15,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[8,9,10,33,39,42] +1.8VSUS
[2,3,4,5,8,9,21,24,33,39,40] +1.05V
[2,3,4,5,8,9,21,24,33,39,40] +1.05V_PEG

U40C

LVDS
L_BKLT_CTRL L_BKLT_EN L_CTRL_CLK L_CTRL_DATA L_DDC_CLK L_DDC_DATA L_VDD_EN LVDS_IBG LVDS_VBG LVDS_VREFH LVDS_VREFL LVDSA_CLK# LVDSA_CLK LVDSB_CLK# LVDSB_CLK LVDSA_DATA#_0 LVDSA_DATA#_1 LVDSA_DATA#_2 LVDSA_DATA#_3 LVDSA_DATA_0 LVDSA_DATA_1 LVDSA_DATA_2 LVDSA_DATA_3 LVDSB_DATA#_0 LVDSB_DATA#_1 LVDSB_DATA#_2 LVDSB_DATA#_3 LVDSB_DATA_0 LVDSB_DATA_1 LVDSB_DATA_2 LVDSB_DATA_3
[15,19] DPST_PWM [15,19] LVDS_BLON R636 *0_4 DPST_PWM_INT R227 *0_4 LVDS_BLON_INT R229 *10K/F_4 L_CTRL_CLK
+3V R236 *10K/F_4 L_CTRL_DATA R640 *0_4 EDIDCLK_INT
[14,15,19] EDIDCLK [14,15,19] EDIDDATA R239 *0_4 EDIDDATA_INT
[15,19] DISP_ON R637 *0_4 DISP_ON_INT R646 *2.37K/F_4 LVDS_IBG TP70 LVDS_VBG
[19] LA_CLK# [19] LA_CLK [19] LB_CLK# [19] LB_CLK
[19] LA_DATAN0 [19] LA_DATAN1 [19] LA_DATAN2 TP69 LA_DATAN3
[19] LA_DATAP0 [19] LA_DATAP1 [19] LA_DATAP2 TP68 LA_DATAP3
[19] LB_DATAN0 [19] LB_DATAN1 [19] LB_DATAN2 TP35 LB_DATAN3
[19] LB_DATAP0 [19] LB_DATAP1 [19] LB_DATAP2 TP37 LB_DATAP3

TV
TVA_DAC TVB_DAC TVC_DAC TV_RTN TV_DCONSEL_0 TV_DCONSEL_1
R211 *0_4 TV_COMP1 R213 *0_4 TV_Y/G1 R212 *0_4 TV_C/R1
Change to 75 ohm to GND
R626 *0_4 TV_DCONSEL0 R628 *0_4 TV_DCONSEL1
Change to 0 ohm to GND

VGA
CRT_BLUE CRT_GREEN CRT_RED CRT_IRTN CRT_DDC_CLK CRT_DDC_DATA CRT_HSYNC CRT_VSYNC
[14,20] CRT_B R166 *0_4 CRT_B_1
[14,20] CRT_G R215 *150/F_4 R171 *0_4 CRT_G_1
[14,20] CRT_R R221 *150/F_4 R179 *0_4 CRT_R_1 R217 *150/F_4
[14,20] DDCCLK R226 *0_4 DDCCLK_INT
[14,20] DDCDATA R228 *0_4 DDCDATA_INT
[14,20] HSYNC_COM R216 *33_4 HSYNC_INT R630 *1.02K/F_4 CRTIREF
[14,20] VSYNC_COM R220 *33_4 VSYNC_INT

PM45_SLB97

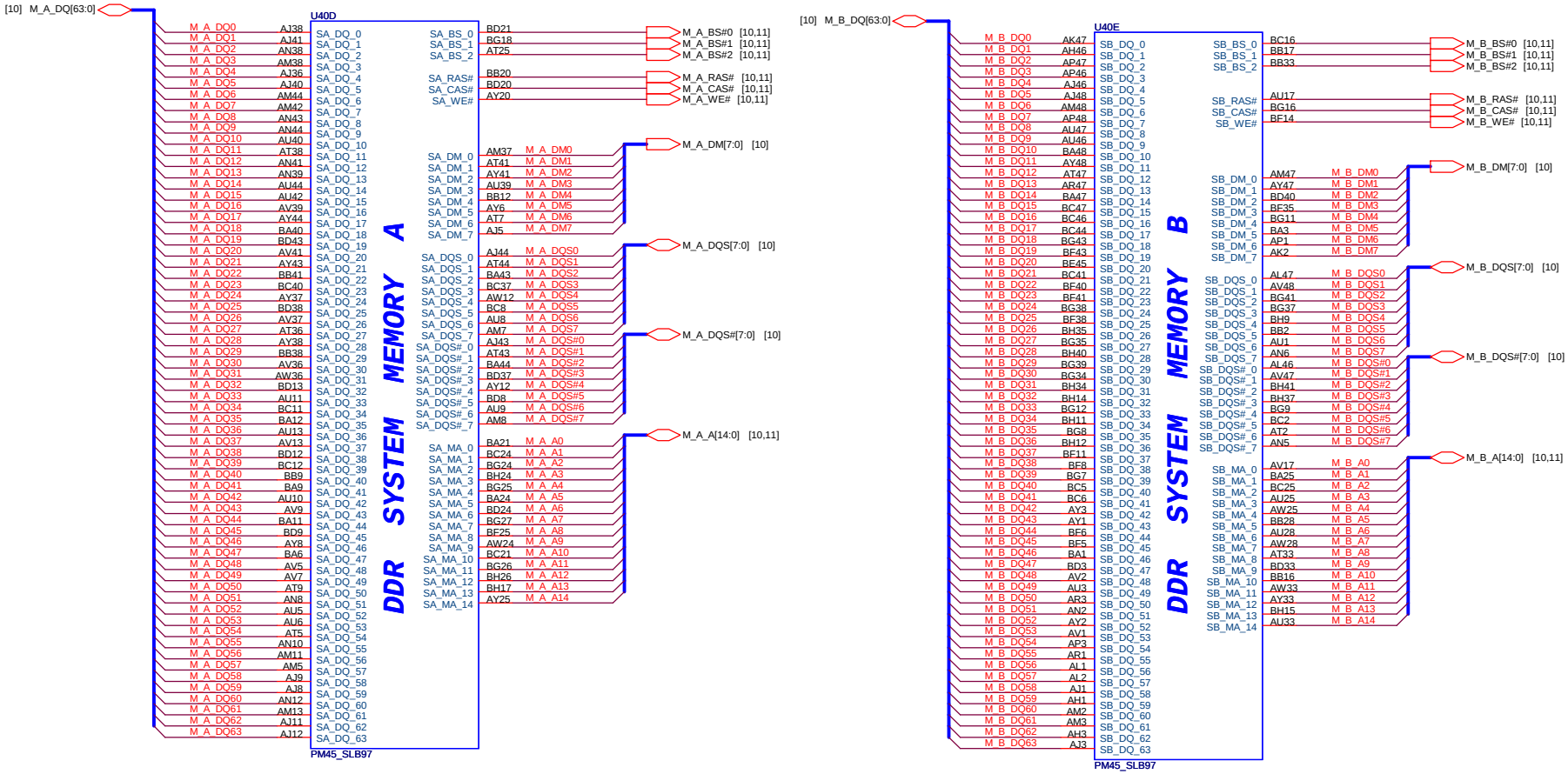
PCI-EXPRESS GRAPHICS
PEG_TX#[15:0] PEG_TX#[15:0] [12]
PEG_TX[15:0] PEG_TX[15:0] [12]
PEG_RX#[15:0] PEG_RX#[15:0] [12]
PEG_RX[15:0] PEG_RX[15:0] [12]
PEG_COMPI PEG_COMPO T37 PEG_COMP R241 49.9/F_4 +1.05V_PEG
PEG_RX#_0 PEG_RX#_1 PEG_RX#_2 PEG_RX#_3 PEG_RX#_4 PEG_RX#_5 PEG_RX#_6 PEG_RX#_7 PEG_RX#_8 PEG_RX#_9 PEG_RX#_10 PEG_RX#_11 PEG_RX#_12 PEG_RX#_13 PEG_RX#_14 PEG_RX#_15
PEG_RX#0 PEG_RX#1 PEG_RX#2 PEG_RX#3 PEG_RX#4 PEG_RX#5 PEG_RX#6 PEG_RX#7 PEG_RX#8 PEG_RX#9 PEG_RX#10 PEG_RX#11 PEG_RX#12 PEG_RX#13 PEG_RX#14 PEG_RX#15
PEG_RX_0 PEG_RX_1 PEG_RX_2 PEG_RX_3 PEG_RX_4 PEG_RX_5 PEG_RX_6 PEG_RX_7 PEG_RX_8 PEG_RX_9 PEG_RX_10 PEG_RX_11 PEG_RX_12 PEG_RX_13 PEG_RX_14 PEG_RX_15
PEG_RX0 PEG_RX1 PEG_RX2 PEG_RX3 PEG_RX4 PEG_RX5 PEG_RX6 PEG_RX7 PEG_RX8 PEG_RX9 PEG_RX10 PEG_RX11 PEG_RX12 PEG_RX13 PEG_RX14 PEG_RX15
int R182 HDMI_HPD# *0_4
PEG_TX#_0 PEG_TX#_1 PEG_TX#_2 PEG_TX#_3 PEG_TX#_4 PEG_TX#_5 PEG_TX#_6 PEG_TX#_7 PEG_TX#_8 PEG_TX#_9 PEG_TX#_10 PEG_TX#_11 PEG_TX#_12 PEG_TX#_13 PEG_TX#_14 PEG_TX#_15
C_PEG_TX#0 C_PEG_TX#1 C_PEG_TX#2 C_PEG_TX#3 C_PEG_TX#4 C_PEG_TX#5 C_PEG_TX#6 C_PEG_TX#7 C_PEG_TX#8 C_PEG_TX#9 C_PEG_TX#10 C_PEG_TX#11 C_PEG_TX#12 C_PEG_TX#13 C_PEG_TX#14 C_PEG_TX#15
C416 C423 C440 C431 C435 C437 C446 C455 C457 C447 C473 C465 C469 C433 C466 C470
PEG_TX_0 PEG_TX_1 PEG_TX_2 PEG_TX_3 PEG_TX_4 PEG_TX_5 PEG_TX_6 PEG_TX_7 PEG_TX_8 PEG_TX_9 PEG_TX_10 PEG_TX_11 PEG_TX_12 PEG_TX_13 PEG_TX_14 PEG_TX_15
C_PEG_TX0 C_PEG_TX1 C_PEG_TX2 C_PEG_TX3 C_PEG_TX4 C_PEG_TX5 C_PEG_TX6 C_PEG_TX7 C_PEG_TX8 C_PEG_TX9 C_PEG_TX10 C_PEG_TX11 C_PEG_TX12 C_PEG_TX13 C_PEG_TX14 C_PEG_TX15
C419 C418 C430 C424 C444 C438 C453 C464 C439 C462 C458 C468 C432 C467 C471
1U/10V_4 PEG_TX#0 PEG_TX#1 PEG_TX#2 PEG_TX#3 PEG_TX#4 PEG_TX#5 PEG_TX#6 PEG_TX#7 PEG_TX#8 PEG_TX#9 PEG_TX#10 PEG_TX#11 PEG_TX#12 PEG_TX#13 PEG_TX#14 PEG_TX#15
PEG_TX0 PEG_TX1 PEG_TX2 PEG_TX3 PEG_TX4 PEG_TX5 PEG_TX6 PEG_TX7 PEG_TX8 PEG_TX9 PEG_TX10 PEG_TX11 PEG_TX12 PEG_TX13 PEG_TX14 PEG_TX15
dis

+1.8VSUS R225 1K/F_4 R222 3.01K/F_4 R218 1K/F_4
SM_RCOMP_VOH C363 01U/16V_4 C356 2.2U/6.3V_6
SM_RCOMP_VOL C386 01U/16V_4 C373 2.2U/6.3V_6

HP SVTP TEST
+1.8VSUS R253 *1K/F_4 R254 *0_4/S +0.9VSMVREF [10,42] R251 *1K/F_4
+0.9VSMVREF_MCH C426 1U/10V_4 C425 470P/50V_4

For UMA HDMI Function
PEG_TX0 PEG_TX#0 RP58 *4P2R-S-0 IN_D2 IN_D2#
PEG_TX1 PEG_TX#1 RP59 *4P2R-S-0 IN_D1 IN_D1#
PEG_TX2 PEG_TX#2 RP60 *4P2R-S-0 IN_D0 IN_D0#
PEG_TX3 PEG_TX#3 RP61 *4P2R-S-0 IN_CLK IN_CLK#
C416,C423,C440,C431
C419,C418,C430,C424
Need to install for GM
+3V R552 *20K/F_4 HDMI_HPD# Level: 0.9V
[20] HDMI_HPD_CON Q31 *ME2N7002E R550 *7.5K/F_4 R558 *100K/F_4
HPD# Inverting Level Shifting Circuit

PROJECT : UT3/5
Quanta Computer Inc.
NB5
Size: Custom | Document Number: Cantiga DMI/DISP 2/5 | Rev: PV
Date: Monday, October 20, 2006 | Sheet 6 of 43



NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: Cantiga DDR2 3/5	Rev: PV
Date: Monday, October 20, 2008	Sheet 7 of 43	

U40G

+1.8VSUS

2600mA

VCC_SM_36 through VCC_SM_42 can be left as NC for DDR2 desgins.

VCC SM POWER

VCC_SM_1 … VCC_SM_35 (AP33, AN33, BH32, BG32, BF32, BD32, BC32, BB32, BA32, AY32, AW32, AV32, AU32, AT32, AR32, AP32, AN32, BH31, BG31, BF31, BG30, BH29, BG29, BF29, BD29, BC29, BB29, BA29, AY29, AW29, AV29, AU29, AT29, AR29, AP29)

VCC_SM_36/NC (BA36), VCC_SM_37/NC (BB24), VCC_SM_38/NC (BD16), VCC_SM_39/NC (BB21), VCC_SM_40/NC (AW16), VCC_SM_41/NC (AW13), VCC_SM_42/NC (AT13)

+1.05V

VCC GFX NCTF

VCC_AXG_NCTF_1 … VCC_AXG_NCTF_60 (W28, V28, W26, V26, W25, V25, W24, V24, W23, V23, AM21, AL21, AK21, W21, V21, U21, AM20, AK20, W20, U20, AM19, AL19, AK19, AJ19, AH19, AG19, AF19, AE19, AB19, AA19, Y19, W19, V19, U19, AM17, AK17, AH17, AG17, AE17, AE17, AC17, AB17, Y17, W17, V17, AM16, AL16, AK16, AJ16, AH16, AG16, AE16, AE16, AC16, AB16, AA16, Y16, W16, V16, U16)

VCC GFX

VCC_AXG_1 … VCC_AXG_42 (Y26, AE25, AB25, AA25, AE24, AC24, AA24, Y24, AE23, AC23, AB23, AA23, AJ21, AG21, AE21, AC21, AA21, Y21, AH20, AF20, AE20, AC20, AB20, AA20, T17, T16, AM15, AL15, AE15, AJ15, AH15, AG15, AF15, AB15, AA15, Y15, V15, U15, AN14, AM14, U14, T14)

+1.05V

R204 10_4

R202 10_4

VCC_AXG_SENSE (AJ14)

VSS_AXG_SENSE (AH14)

VCC_AXG_SENSE

VSS_AXG_SENSE

VCC SM LF

VCC_SM_LF1 … VCC_SM_LF7 (AV44, BA37, AM40, AV21, AY5, AM10, BB13)

+VCCSM_LF1 … +VCCSM_LF7

C315 .1U/10V_4; C304 .1U/10V_4; C285 .33U/6.3V_4; C331 .33U/6.3V_4; C402 .47U/6.3V_4; C398 1U/6.3V_4; C397 1U/6.3V_4

PM45_SLB97

[6,9,10,33,39,42] +1.8VSUS

[2,3,4,5,6,9,21,24,33,39,40] +1.05V

Ivcc=1930.4+508.12=2438.52mA

Ivcc_axg=6326.84mA

U40F

+1.05V

C825 *330u_2.5V_7343; C284 10U/6.3V_8; C460 10U/6.3V_8; C316 .33U/6.3V_4; C323 .33U/6.3V_4; C320 .1U/10V_4

+1.8VSUS

C843 .1U/10V_4; C846 10U/6.3V_8; C854 10U/6.3V_8; C870 10U/6.3V_8; C857 10U/6.3V_8

+1.05V

C328 .47U/6.3V_4; C313 1U/6.3V_4; C243 10U/6.3V_8; C244 10U/6.3V_8; C483 10U/6.3V_8; C324 1U/10V_4; C319 .1U/10V_4

C849 390U/2.5V_6X5.8ESR10

VCC CORE POWER

AG34, AC34, AB34, AA34, Y34, V34, U34, AM33, AK33, AJ33, AG33, AF33, AE33, AC33, AA33, Y33, W33, V33, U33, AH28, AF28, AC28, AA28, AJ26, AG26, AE26, AC26, AH25, AG25, AF25, AG24, AJ23, AH23, AF23, T32

VCC_1 … VCC_35

VCC NCTF

VCC_NCTF_1 … VCC_NCTF_44 (AM32, AL32, AK32, AJ32, AH32, AG32, AE32, AC32, AA32, Y32, W32, U32, AM30, AL30, AK30, AH30, AG30, AF30, AE30, AC30, AB30, AA30, Y30, W30, V30, U30, AL29, AK29, AJ29, AH29, AG29, AF29, AC29, AA29, Y29, W29, V29, AL28, AK28, AL26, AK26, AK25, AK24, AK23)

PM45_SLB97

NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Cantiga Vcc 4/5	PV

Date: Monday, October 20, 2008 Sheet 8 of 43

+1.05V [2,3,4,5,6,8,21,24,33,39,40]
+3V [2,4,6,10,11,12,14,15,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43]
+1.5V [4,21,22,24,26,32,33,35,39,43]
+1.8VSUS [6,8,10,33,39,42]
+1.05V_PEG [2,3,4,5,6,8,21,24,33,39,40]

U40H

PM45_SLB97

POWER

Change to CX000181016(180 ohm,1.5A) as current request
(L21,L22)

Intel Design Guide 1.5
thermal management is enabled on discrete graphics motherboard

Modify to U40#AF1 power to +1.05V_MPLL as CRB change

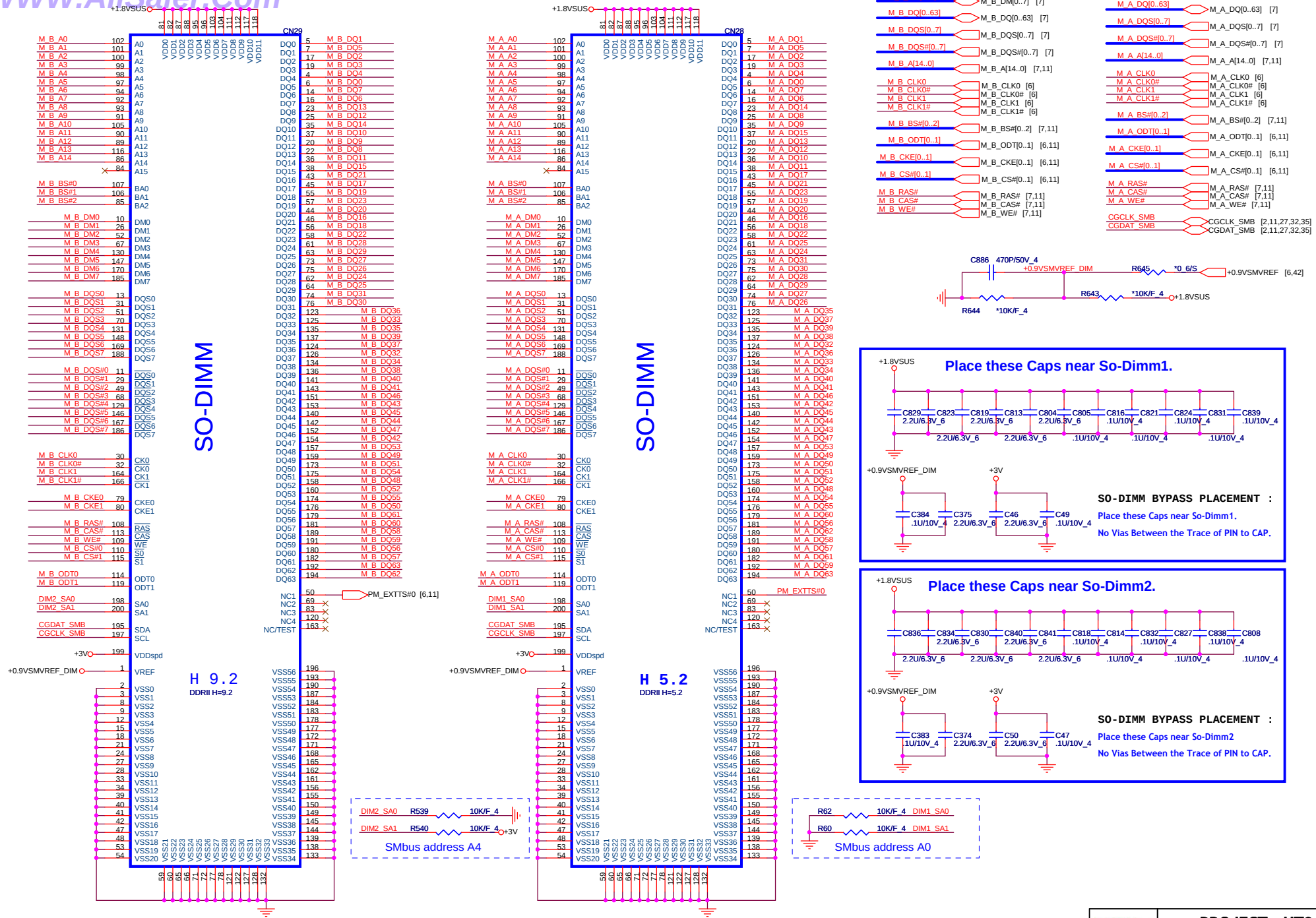
Modify 0829

PROJECT : UT3/5
Quanta Computer Inc.

NB5

Size: Custom | Document Number: Cantiga Power 5/5 | Rev: PV

Date: Monday, October 20, 2008 | Sheet 9 of 43

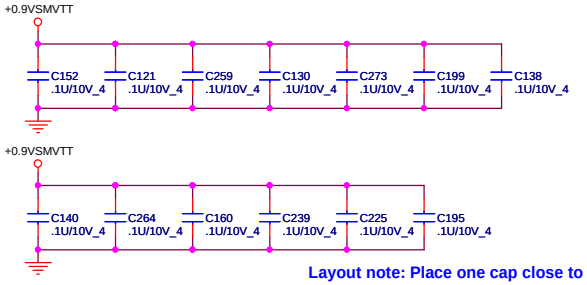


[6,8,9,33,39,42] +1.8VSUS
[2,4,6,9,11,12,14,15,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V

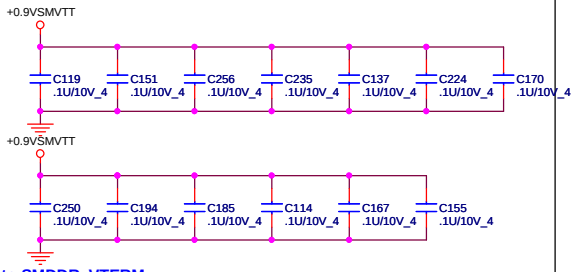
NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: DDR2 DIMM	Rev: PV
Date: Monday, October 20, 2008	Sheet 10 of 43	

DDRII DUAL CHANNEL A,B.

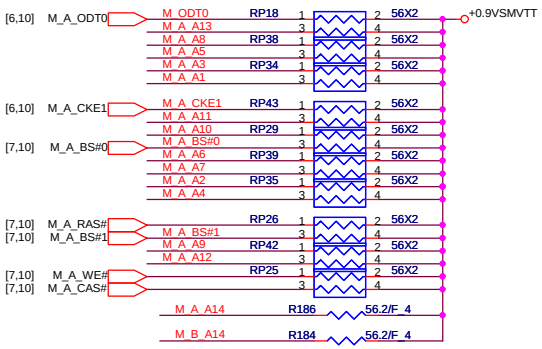
DDRII A CHANNEL

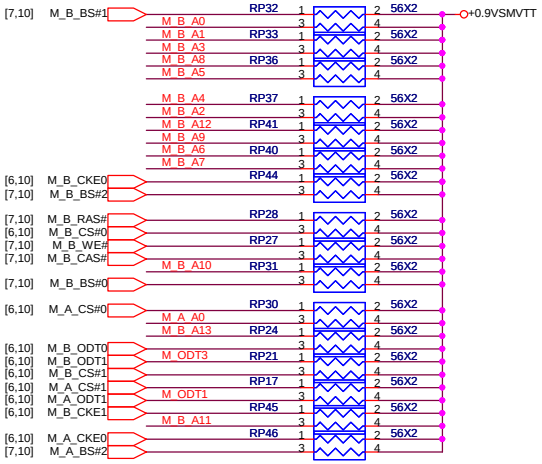


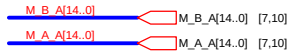
DDRII B CHANNEL

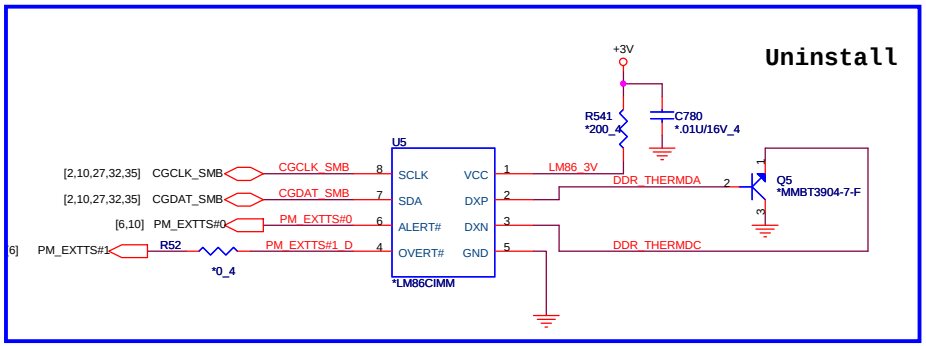


Layout note: Place one cap close to every 2 pullup resistors terminated to SMDDR_VTERM









+0.9VSMVTT [42]

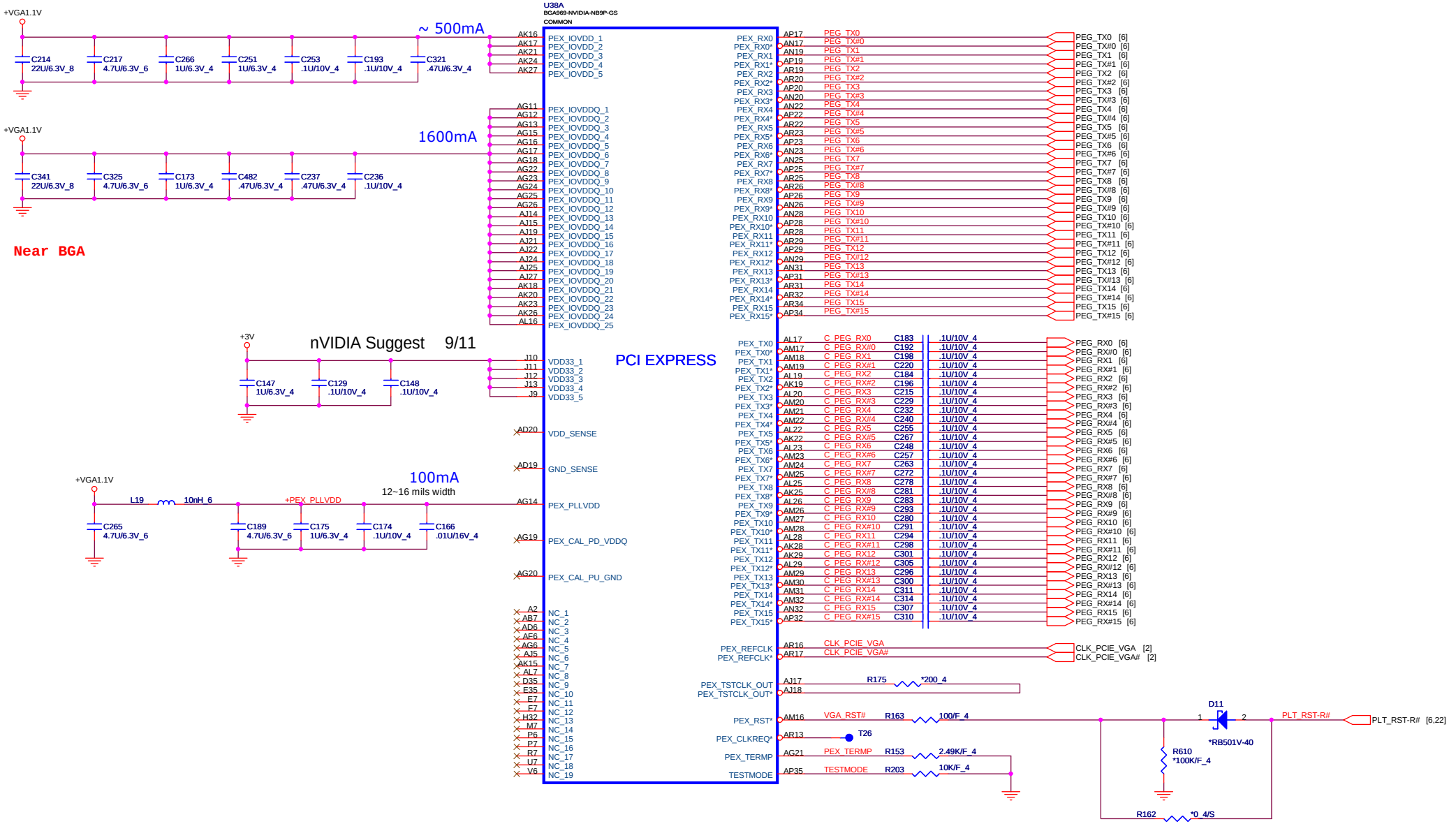
+3V [2,4,6,9,10,12,14,15,19,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43]

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DDR2 termination	PV

NB5

Date: Monday, October 20, 2008 Sheet 11 of 43



PROJECT : UT3/5	
Quanta Computer Inc.	
NB5	Size: Custom; Document Number: NV9X (PCIE I/F) 1/5; Rev: PV
Date: Monday, October 20, 2008	Sheet 12 of 43

U38B
BGA969-NVIDIA-NB9P-GS
COMMON

MEMORY I/F A

[17] VMA_MA3 … VMA_MA0 … VMA_MA2 … VMA_MA1 … VMA_MA3H … VMA_MA4H … VMA_MA5H
[17] VMA_CS0# … VMA_WE# … VMA_BA0 … VMA_CKE … VMA_ODT … VMA_MA2H … VMA_MA12 … VMA_RAS# … VMA_MA11 … VMA_MA10 … VMA_BA1 … VMA_MA8 … VMA_MA9 … VMA_MA6 … VMA_MA5 … VMA_MA7 … VMA_MA4 … VMA_CAS#
[17] VMA_BA2

DB modified

VMA_DM0 … VMA_DM7
VMA_WDQS0 … VMA_WDQS7
VMA_RDQS0 … VMA_RDQS7

FBA_CMD0 … FBA_CMD30
FBA_DQM0 … FBA_DQM7
FBA_DQS_WP0 … FBA_DQS_WP7
FBA_DQS_RN0 … FBA_DQS_RN7
FBA_WDS0 … FBA_WDS3*

FBA_D0 … FBA_D63
VMA_DQ0 … VMA_DQ63

FBA_CLK0 … FBA_CLK1*
VMA_CLK0 … VMA_CLK1#

FB_VREF
+FB_VREF1
C260 .1U/10V_4

R191 *1K/F_4
R190 *1K/F_4

FBA_DEBUG
For Debug only
T30 FBA_DEBUG *60.4/F_4 R193 +1.8V

FB_DLLAVDD0
FB_PLLAVDD0
AG27 +FB_PLLAVDD
AF27
15mils width
L20 HCB1608KF-181T15_6
+VGA1.1V
C216 .1U/10V_4
C190 .1U/10V_4
C282 1U/6.3V_4

+1.8V
FBVDDQ_1 … FBVDDQ_27

C357 4.7U/6.3V_6
C340 .47U/6.3V_4
C822 .47U/6.3V_4
C350 .1U/10V_4
C820 4.7U/6.3V_6
C252 .47U/6.3V_4
C286 .47U/6.3V_4
C279 .1U/10V_4
C860 .1U/10V_4
C275 .1U/10V_4
C276 .1U/10V_4
C172 .1U/10V_4
C858 .1U/10V_4
C277 .1U/10V_4

C268 4.7U/6.3V_6
C187 .47U/6.3V_4
C833 .47U/6.3V_4
C238 .1U/10V_4
C234 4.7U/6.3V_6
C161 .47U/6.3V_4
C178 .47U/6.3V_4
C177 .1U/10V_4
C180 .1U/10V_4
C270 .1U/10V_4
C271 .1U/10V_4
C261 .1U/10V_4
C262 .1U/10V_4
C125 .1U/10V_4

[17] VMA_DQ[63..0]
[17] VMA_DM[7..0]
[17] VMA_WDQS[7..0]
[17] VMA_RDQS[7..0]

R194 10K/F_4 VMA_ODT
R195 10K/F_4 VMA_CKE
R624 10K/F_4 VMC_ODT
R187 10K/F_4 VMC_CKE

for DDR2 need use
CMD11(CKE) and
CMD12(ODT)

use internal Vref, ext
divider no stuff

U38C
BGA969-NVIDIA-NB9P-GS
COMMON

MEMORY I/F B

[18] VMC_MA3 … VMC_MA0 … VMC_MA2 … VMC_MA1 … VMC_MA3H … VMC_MA4H … VMC_MA5H
[18] VMC_CS0# … VMC_WE# … VMC_BA0 … VMC_CKE … VMC_ODT … VMC_MA2H … VMC_MA12 … VMC_RAS# … VMC_MA11 … VMC_MA10 … VMC_BA1 … VMC_MA8 … VMC_MA9 … VMC_MA6 … VMC_MA5 … VMC_MA7 … VMC_MA4 … VMC_CAS#
[18] VMC_BA2

DB modified

VMC_DM0 … VMC_DM7
VMC_WDQS0 … VMC_WDQS7
VMC_RDQS0 … VMC_RDQS7

FBC_CMD0 … FBC_CMD30
FBC_DQM0 … FBC_DQM7
FBC_DQS_WP0 … FBC_DQS_WP7
FBC_DQS_RN0 … FBC_DQS_RN7
FBC_WDS0 … FBC_WDS3*

FBC_D0 … FBC_D63
VMC_DQ0 … VMC_DQ63

FBC_CLK0 … FBC_CLK1*
VMC_CLK0 … VMC_CLK1#

[18] VMC_DQ[63..0]
[18] VMC_DM[7..0]
[18] VMC_WDQS[7..0]
[18] VMC_RDQS[7..0]

+1.8V
FBVDDQ_28 … FBVDDQ_38

FB_CAL_PD_VDDQ K27 FB_CAL_PD_VDDQ R188 30.1/F_4 +1.8V
FB_CAL_PU_GND L27 FB_CAL_PU_GND R189 30.1/F_4
FB_CAL_TERM_GND M27 FB_CAL_TERM_GND R192 *30.1/F_4
R192 Install for DDR3
FBC_DEBUG G19 FBC_DEBUG R178 *60.4/F_4 +1.8V

R178 no stuff

G96 only
FB_DLLAVDD1 J19
FB_PLLAVDD1 J18
+FB_PLLAVDD
C197 .1U/10V_4
C274 .1U/10V_4

For G96 only
For NB9P-GS only

NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	NV9X (MEMORY I/F) 2/5	PV

Date: Monday, October 20, 2008 Sheet 13 of 43

U38D

BGA969-NVIDIA-N89P-GS
COMMON

IFPAB(LVDS)

IFPA_PLLVDD AK9 — +IFPAB_PLLVDD — 100 mA
L58 HCB1608KF-181T15_6
C801 4.7U/6.3V_6 | C806 4700P/25V_4 | C144 470P/50V_4

IFPAB_RSET AJ11 — R106 *1K/F_4

IFPA_IOVDD AG9 — 50 mA
L9 HCB1608KF-181T15_6 — +IFPAB_IOVDD
C76 4.7U/6.3V_6 | C74 4.7U/6.3V_6 | C83 4700P/25V_4 | C157 4700P/25V_4 | C78 470P/50V_4 | C141 470P/50V_4

IFPB_IOVDD AG10 — 50 mA
+1.8V
L13 HCB1608KF-181T15_6 — +IFPCD_PLLVDD
C231 1U/6.3V_4 | 0827b | C116 4.7U/6.3V_6 | C135 4700P/25V_4 | C123 470P/50V_4

IFPCD_PLLVDD AJ9
IFPCD_RSET AK7 — R736 1K/F_4

IFPC_IOVDD AJ8
+VGA1.1V
L14 HCB1608KF-181T15_6 — +IFPCD_IOVDD
C794 4.7U/6.3V_6 | C128 1U/6.3V_4 | C795 1U/6.3V_4 | C127 4700P/25V_4 | C136 470P/50V_4 | C124 470P/50V_4

IFPD_IOVDD AK8

IFPC
AUX+ AP2
AUX AR2
DPL3_TXC AP1
DPL3_TXC AM4
DPL2_TXD0 AM3
DPL2_TXD0 AM5
DPL1_TXD1 AL5
DPL1_TXD1 AM6
DPL0_TXD2 AM7
DPL0_TXD2 AN4

IFPD
AUX AP4
AUX AR4
DPL3_TXC AP5
DPL3_TXC AR5
DPL2_TXD0 AN5
DPL2_TXD0 AN7
DPL1_TXD1 AP7
DPL1_TXD1 AR7
DPL0_TXD2 AR8
DPL0_TXD2 AN4

IFPA_TXC AM11 — EXT_TXLCLKOUT+ [19]
IFPA_TXC* AM12 — EXT_TXLCLKOUT- [19]
IFPA_TXD0 AM8 — EXT_TXLOUT0+ [19]
IFPA_TXD0* AL8 — EXT_TXLOUT0- [19]
IFPA_TXD1 AM10 — EXT_TXLOUT1+ [19]
IFPA_TXD1* AM9 — EXT_TXLOUT1- [19]
IFPA_TXD2 AK10 — EXT_TXLOUT2+ [19]
IFPA_TXD2* AL10 — EXT_TXLOUT2- [19]
IFPA_TXD3 AK11
IFPA_TXD3* AL11

IFPB_TXC AP13 — EXT_TXUCLKOUT+ [19]
IFPB_TXC* AN13 — EXT_TXUCLKOUT- [19]
IFPB_TXD4 AN8 — EXT_TXUOUT0+ [19]
IFPB_TXD4* AP8 — EXT_TXUOUT0- [19]
IFPB_TXD5 AP10 — EXT_TXUOUT1+ [19]
IFPB_TXD5* AN10 — EXT_TXUOUT1- [19]
IFPB_TXD6 AR11 — EXT_TXUOUT2+ [19]
IFPB_TXD6* AR10 — EXT_TXUOUT2- [19]
IFPB_TXD7 AN11
IFPB_TXD7* AP11

Fix Ball out and Pin Name

N_TXC_HDMI- AR2 — N_TXC_HDMI- [20]
N_TXC_HDMI+ AP1 — N_TXC_HDMI+ [20]
N_TX0_HDMI- AM4 — N_TX0_HDMI- [20]
N_TX0_HDMI+ AM3 — N_TX0_HDMI+ [20]
N_TX1_HDMI- AM5 — N_TX1_HDMI- [20]
N_TX1_HDMI+ AL5 — N_TX1_HDMI+ [20]
N_TX2_HDMI- AM6 — N_TX2_HDMI- [20]
N_TX2_HDMI+ AM7 — N_TX2_HDMI+ [20]

TMDS channel two

IFPEF

IFPEF_PLLVDD AJ6 — IFPEF_PLLVDD — R140 10K/F_4 — T23 — IFPEF_RSET AL1
IFPE_IOVDD AE7
IFPF_IOVDD AD7 — R85 10K/F_4

IFPE_AUX AE4
IFPE_AUX* AD4
IFPE_L0 AH6
IFPE_L0* AH5
IFPE_L1 AH4
IFPE_L1* AG4
IFPE_L2 AF4
IFPE_L2* AF5
IFPE_L3 AF6
IFPE_L3* AF5
IFPF_AUX AF3
IFPF_AUX* AF2
IFPF_L0 AL2
IFPF_L0* AL3
IFPF_L1 AJ3
IFPF_L1* AJ2
IFPF_L2 AJ1
IFPF_L2* AH1
IFPF_L3 AH2
IFPF_L3* AH3

Display port output

DACA(CRT)

+3V
L10 HCB1608KF-181T15_6 — +DACA_VDD — AJ12
0827b
C105 4.7U/6.3V_6 | C154 4700P/25V_4 | C108 470P/50V_4 | C159 .1U/10V_4 | R602 124/F_4

DACA_VREF AK12
DACA_RSET AK13

DACA_RED AM15 — L_CRT_R — R176 *0_4/S — CRT_R [6,20]
DACA_GREEN AM14 — L_CRT_G — R169 *0_4/S — CRT_G [6,20]
DACA_BLUE AL14 — L_CRT_B — R164 *0_4/S — CRT_B [6,20]
DACA_HSYNC AM13 — CRT_HSYNC — R156 33_4 — HSYNC_COM [6,20]
DACA_VSYNC AL13 — CRT_VSYNC — R160 33_4 — VSYNC_COM [6,20]
I2CA_SCL G1 — L_DDCCLK — R566 *0_4/S — DDCCLK [6,20]
I2CA_SDA G4 — L_DDCDAT — R565 *0_4/S — DDCDATA [6,20]

L_CRT_R — R172 150/F_4
L_CRT_G — R168 150/F_4
L_CRT_B — R165 150/F_4
Close to GPU

DACC(CRT2)

+DACB_VDD AG7
T25 AK6
T24 AH7
R79 10K/F_4

DACC_RED AK4
DACC_GREEN AL4
DACC_BLUE AJ4
DACC_HSYNC AM1
DACC_VSYNC AM2

+3V
I2CB_SCL G3 — I2CB_SCL — R76 2.2K_4
I2CB_SDA G2 — I2CB_SDA — R77 2.2K_4

DACB(TV)

10K/F_4 — R749 — +DACC_VD — AC6
T34 AC5
T35 AB6

DACB_RED AA4
DACB_GREEN AB4
DACB_BLUE Y4
DACB_CSYNC AB5 — T1

PLACE CLOSE TO GPU

+VGA1.1V
L17 HCB1608KF-181T15_6 — +NV_PLLVDD — AE9
C156 1U/6.3V_4 | C134 1U/6.3V_4 | C143 1U/6.3V_4 | C149 .1U/10V_4 | C126 .1U/10V_4

65mA
50mA
25mA

VID_PLLVDD AD9
SP_PLLVDD AF9

XTAL_PLL

PLLVDD

XTAL_SSIN D2 — XTAL_SSIN — R97 *0_4/S — 27M_SS [2]
XTAL_OUTBUFF D1 — BXTALOUT
XTALIN B1
XTALOUT B2 — Y1 2 *27MHZ 1 — R88 *0_4/S — 27M_NONSS [2]

C85 *18P/50V_4 — 5*3 package — C86 *18P/50V_4

STUFF PDs on XTALSSIN and XTALOUTBUFF WHEN EXT_SS IS NOT USED

SPREAD SPECTRUM

SI Build

+3V — R64 *10K/F_4 — ICSS_PD — BXTALOUT
+3V — R65 *10K/F_4 — GFX27M_L
R80 *22_4 — XTAL_SSIN — C73 *10P/50V_4

U8
PD# 8 | CLKIN 1 | VDD 2 | CLKOUT 4 | REFOUT 5 | GND 3
SCL 7 | SDA 6
*ICS91730AMLF-T

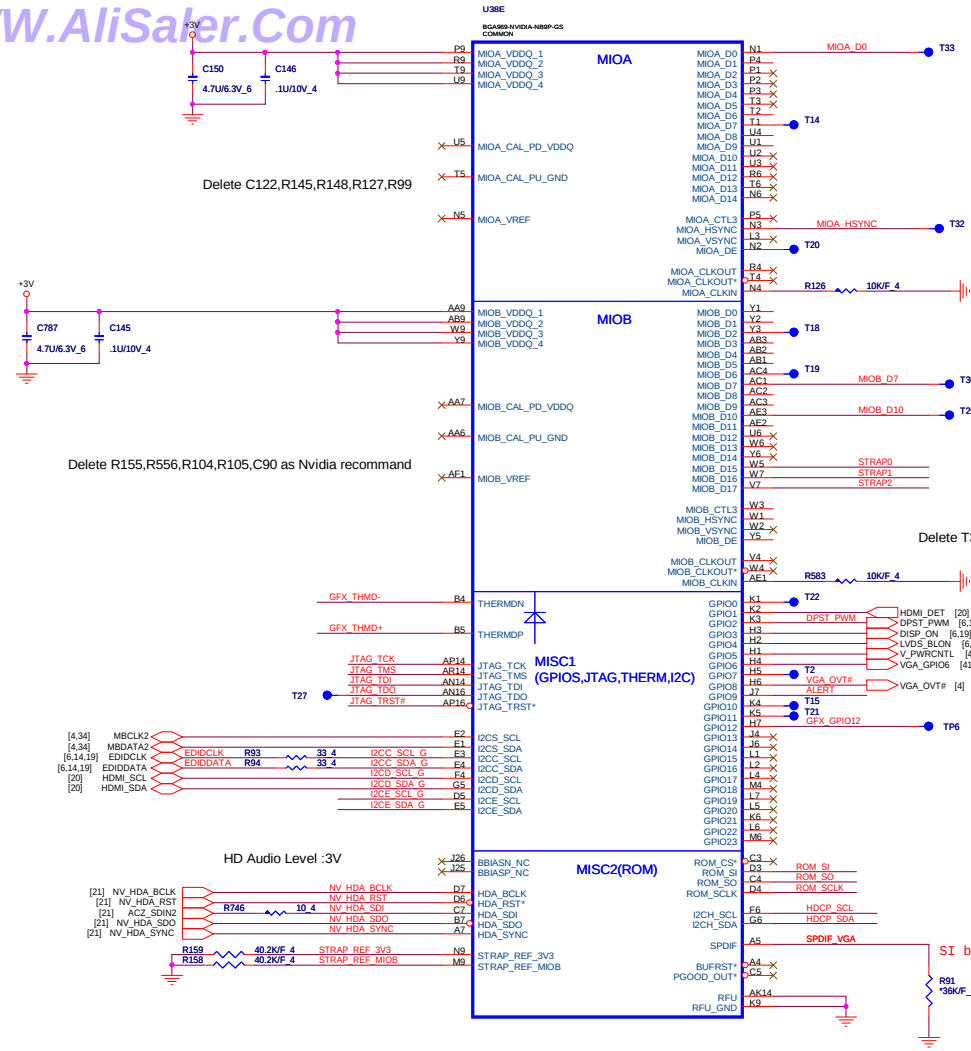
+3V_SSC — R117 *4.7_6 — +3V
ICSS_RFO — R90 *10K/F_4
C91 *470P/50V_4 | C87 *.1U/10V_4 | C109 *4.7U/6.3V_6 | C106 *4.7U/6.3V_6

[6,15,19] EDIDCLK
[6,15,19] EDIDDATA

I2C ADDRESS: 0xD4H

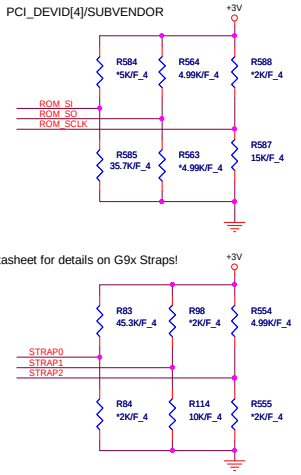
27M_SS — R107 *10K/F_4
BXTALOUT — R586 *10K/F_4
Install it when not connected to Spread spectrum device

NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: NV9X (DISPLAY) 3/5	Rev: PV
Date: Monday, October 20, 2008	Sheet 14 of 43	



NB9P-GS (G96) Straps
NB9M-GE (G98) Straps
GPIO ASSIGNMENTS

GPIO	I/O	ACTIVE	USAGE
0	IN	N/A	PRIMARY DVI HOTPLUG
1	IN	N/A	SECONDARY DVI HOTPLUG
2	OUT	HIGH	PANEL BACKLIGHT PWM
3	OUT	HIGH	PANEL POWER ENABLE
4	OUT	HIGH	PANEL BACKLIGHT ENABLE
5	OUT	N/A	NVVDD VID0
6	OUT	N/A	NVVDD VID1
7	OUT	N/A	FBVDD VID0
8	IN	LOW	THERMAL ALERT
9	OUT	LOW	FAN PWM
10	OUT	N/A	FBVREF SELECT
11	OUT	N/A	SLI SYNC0
12	IN	N/A	AC DETECT
13	OUT	LOW	PS CONTROL OR HDMI_CEC
14	OUT	HIGH	PS CONTROL



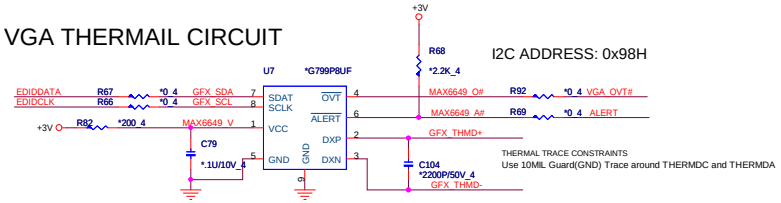
Logical Strap Bit Mapping

	PU-VDD	PD
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

	Logical	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0	
ROM_SO	XCLK_277	TVMODE2]	TVMODE[1]	TVMODE[0]	1000
ROM_SCLK	PCI_DEVIDE[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM100	0010
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]	XXXX
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]	XXXX
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]	0001
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]	1111

VGA THERMAIL CIRCUIT

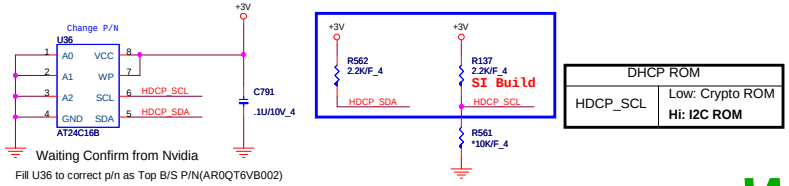
I2C ADDRESS: 0x98H



HDCP ROM

PV-2

Change R562 and R137 from 10k to 2.2k as Nvidia request



DHCP ROM	
HDCP_SCL	Low: Crypto ROM Hi: I2C ROM

NB9X VRAM Configuration Table

RAM_CFG[3:0]	DESCRIPTION	Vendor	
0111 0110 0101 other	DDR2 32Mx16x8, 128bit, 512MB DDR2 32Mx16x8, 128bit, 512MB DDR2 32Mx16x8, 128bit, 512MB Reserved	Hynix Qimonda Samsung	HY5PS121621CFP-25 HYB18T512161B2F-25 K4N51163QE-ZC25
0000 0001	DDR2 64Mx16x4, 128bit, 512MB DDR2 64Mx16x4, 128bit, 512MB	Hynix Samsung	HY5PS1G1631CFR-25 K4N1G164QQ-HC25

PCI_DEVID: STRAP2 R554

NB9M-GE	0x06E	8	1000	PU	5K
NB9M-GS	0x06E	9	1001	PU	10K
NB9P-GE2	0x064	8	1000	PU	5K
NB9P-GS	0x064	9	1001	PU	10K

CS33012FB18 RES CHIP 30.1K 1/16W +-1%(0402)
CS33572FB13 RES CHIP 35.7K 1/16W +-1%(0402)
CS34532FB18 RES CHIP 45.3K 1/16W +-1% (0402)

RAM ID: ROM_SI R585

32M*16	SAM	0101	PD	30.1K
	QIM	0110	PD	35.7K
	HYN	0111	PD	45.3K
64M*16	HYN	0000	PD	5K
	SAM	0001	PD	10K

PROJECT : UT3/5
Quanta Computer Inc.
NB5
Size C | Document Number NV9X (GPIO & STRRAPS) 4/5 | Rev PV
Date: Monday, October 20, 2008 | Sheet 15 of 43

NVVDD Decoupling

+VGACORE

+VGACORE

U38F

BGA969-NVIDIA-NB9P-GS
COMMON

NVVDD

AB11	VDD_001	VDD_057	P21
AB13	VDD_002	VDD_058	P23
AB15	VDD_003	VDD_059	P25
AB17	VDD_004	VDD_060	R11
AB19	VDD_005	VDD_061	R12
AB21	VDD_006	VDD_062	R13
AB23	VDD_007	VDD_063	R14
AB25	VDD_008	VDD_064	R15
AC11	VDD_009	VDD_065	R16
AC12	VDD_010	VDD_066	R17
AC13	VDD_011	VDD_067	R18
AC14	VDD_012	VDD_068	R19
AC15	VDD_013	VDD_069	R20
AC16	VDD_014	VDD_070	R21
AC17	VDD_015	VDD_071	R22
AC18	VDD_016	VDD_072	R23
AC19	VDD_017	VDD_073	R24
AC20	VDD_018	VDD_074	R25
AC21	VDD_019	VDD_075	T12
AC22	VDD_020	VDD_076	T14
AC23	VDD_021	VDD_077	T16
AC24	VDD_022	VDD_078	T18
AC25	VDD_023	VDD_079	T20
AD12	VDD_024	VDD_080	T22
AD14	VDD_025	VDD_081	T24
AD16	VDD_026	VDD_082	V11
AD18	VDD_027	VDD_083	V13
AD22	VDD_028	VDD_084	V15
AD24	VDD_029	VDD_085	V17
L11	VDD_030	VDD_086	V19
L12	VDD_031	VDD_087	V21
L13	VDD_032	VDD_088	V23
L14	VDD_033	VDD_089	V25
L15	VDD_034	VDD_090	W11
L16	VDD_035	VDD_091	W12
L17	VDD_036	VDD_092	W13
L18	VDD_037	VDD_093	W14
L19	VDD_038	VDD_094	W15
L20	VDD_039	VDD_095	W16
L21	VDD_040	VDD_096	W17
L22	VDD_041	VDD_097	W18
L23	VDD_042	VDD_098	W19
L24	VDD_043	VDD_099	W20
L25	VDD_044	VDD_100	W21
M12	VDD_045	VDD_101	W22
M14	VDD_046	VDD_102	W23
M16	VDD_047	VDD_103	W24
M18	VDD_048	VDD_104	W25
M20	VDD_049	VDD_105	Y12
M22	VDD_050	VDD_106	Y14
M24	VDD_051	VDD_107	Y16
P11	VDD_052	VDD_108	Y18
P13	VDD_053	VDD_109	Y20
P15	VDD_054	VDD_110	Y22
P17	VDD_055	VDD_111	Y24
P19	VDD_056		

PLACE NEAR BALLS

NEAR BGA

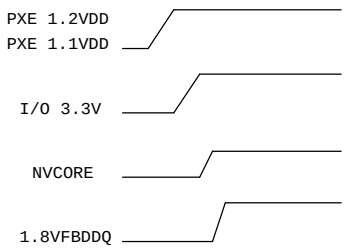
+VGACORE

C227	C245	C164	C165	C179	C793		C935
.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	4.7U/6.3V_6		330U/2.5V_6032
C247	C246	C226	C186	C168	C792		
.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	.47U/6.3V_4	4.7U/6.3V_6		
C212	C163	C209	C211	C210	C188		
.1U/10V_4	.1U/10V_4	.1U/10V_4	.1U/10V_4	.1U/10V_4	4.7U/6.3V_6		
C230	C228	C182	C249	C213			
.1U/10V_4	.1U/10V_4	.1U/10V_4	.1U/10V_4	.1U/10V_4			

Follow Design Guide DG-03276-001 4.7uFx3 and 0.47x10 uF instead of 0.1uF x10

NB9M: VGACORE +0.90V (Normal) , +1.09V

power up sequence



U38G

BGA969-NVIDIA-NB9P-GS
COMMON

GROUND

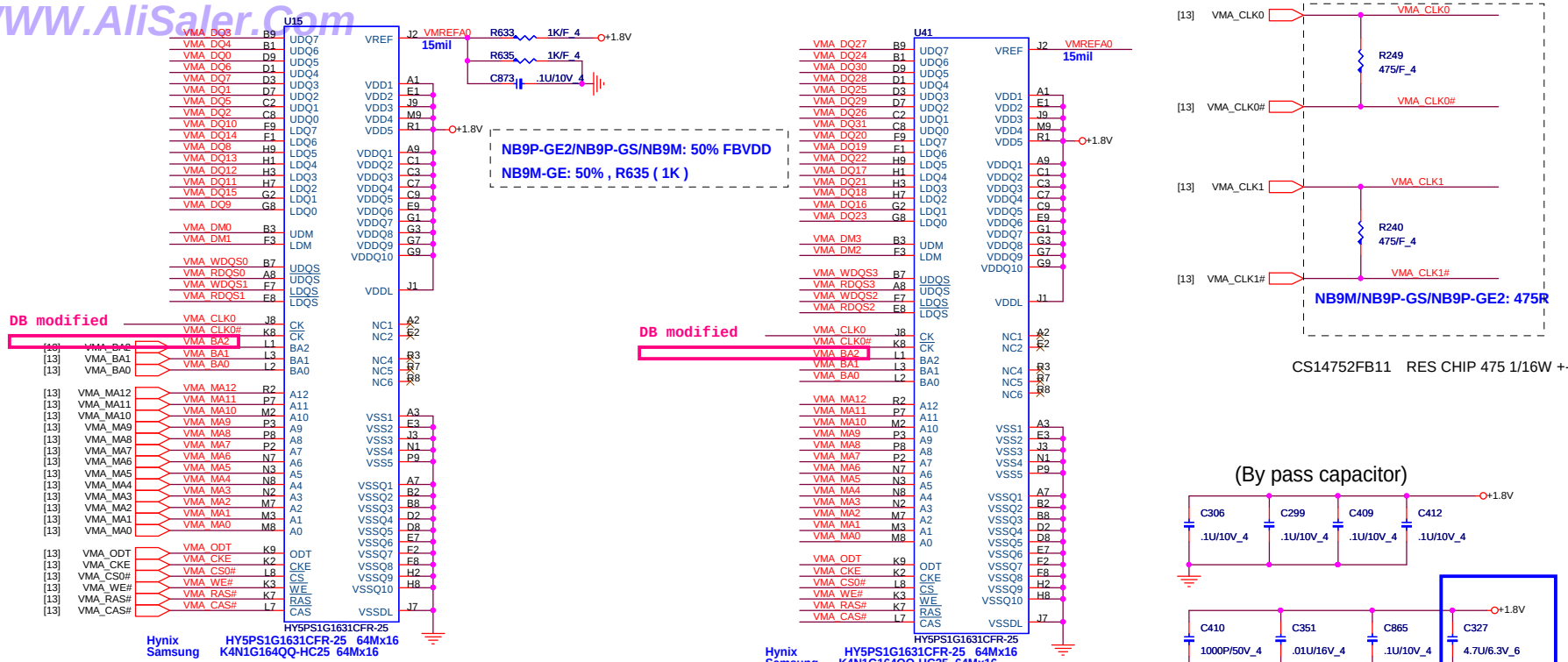
AA11	GND_1	GND_096	E15
AA12	GND_2	GND_097	E18
AA13	GND_3	GND_098	E24
AA14	GND_4	GND_099	E27
AA15	GND_5	GND_100	E30
AA16	GND_6	GND_101	E6
AA17	GND_7	GND_102	E9
AA18	GND_8	GND_103	F2
AA19	GND_9	GND_104	F31
AA2	GND_10	GND_105	F34
AA20	GND_11	GND_106	F5
AA21	GND_12	GND_107	J2
AA22	GND_13	GND_108	J31
AA23	GND_14	GND_109	J34
AA24	GND_15	GND_110	J5
AA25	GND_16	GND_111	L9
AA34	GND_17	GND_112	M11
AA5	GND_18	GND_113	M13
AB12	GND_19	GND_114	M15
AB14	GND_20	GND_115	M17
AB16	GND_21	GND_116	M19
AB18	GND_22	GND_117	M2
AB20	GND_23	GND_118	M21
AB22	GND_24	GND_119	M23
AB24	GND_25	GND_120	M25
AC9	GND_26	GND_121	M31
AD11	GND_27	GND_122	M34
AD13	GND_28	GND_123	M5
AD15	GND_29	GND_124	N11
AD17	GND_30	GND_125	N12
AD2	GND_31	GND_126	N13
AD21	GND_32	GND_127	N14
AD23	GND_33	GND_128	N15
AD25	GND_34	GND_129	N16
AD31	GND_35	GND_130	N17
AD34	GND_36	GND_131	N18
AD5	GND_37	GND_132	N19
AE11	GND_38	GND_133	N20
AE12	GND_39	GND_134	N21
AE13	GND_40	GND_135	N22
AE14	GND_41	GND_136	N23
AE15	GND_42	GND_137	N24
AE16	GND_43	GND_138	N25
AE17	GND_44	GND_139	P12
AE18	GND_45	GND_140	P14
AE19	GND_46	GND_141	P16
AE20	GND_47	GND_142	P18
AE21	GND_48	GND_143	P20
AE22	GND_49	GND_144	P22
AE23	GND_50	GND_145	P24
AE24	GND_51	GND_146	R2
AE25	GND_52	GND_147	R31
AG2	GND_53	GND_148	R34
AG31	GND_54	GND_149	R5
AG34	GND_55	GND_150	T11
AG5	GND_56	GND_151	T13
AK2	GND_57	GND_152	T15
AK31	GND_58	GND_153	T17
AK34	GND_59	GND_154	T19
AK5	GND_60	GND_155	T21
AL12	GND_61	GND_156	T23
AL15	GND_62	GND_157	T25
AL18	GND_63	GND_158	U11
AL21	GND_64	GND_159	U12
AL24	GND_65	GND_160	U13
AL27	GND_66	GND_161	U14
AL30	GND_67	GND_162	U15
AL6	GND_68	GND_163	U16
AL9	GND_69	GND_164	U17
AN2	GND_70	GND_165	U18
AN34	GND_71	GND_166	U19
AP12	GND_72	GND_167	U20
AP15	GND_73	GND_168	U21
AP18	GND_74	GND_169	U22
AP21	GND_75	GND_170	U23
AP24	GND_76	GND_171	U24
AP27	GND_77	GND_172	U25
AP3	GND_78	GND_173	V12
AP30	GND_79	GND_174	V14
AP33	GND_80	GND_175	V16
AP6	GND_081	GND_176	V18
AP9	GND_082	GND_177	V2
B12	GND_083	GND_178	V20
B15	GND_084	GND_179	V22
B21	GND_085	GND_180	V24
B24	GND_086	GND_181	V31
B27	GND_087	GND_182	V5
B3	GND_088	GND_183	V9
B30	GND_089	GND_184	Y11
B33	GND_090	GND_185	Y13
B6	GND_091	GND_186	Y15
B9	GND_092	GND_187	Y17
C2	GND_093	GND_188	Y19
C34	GND_094	GND_189	Y21
E12	GND_095	GND_190	Y23
		GND_191	Y25

NB5

PROJECT : UT3/5
Quanta Computer Inc.

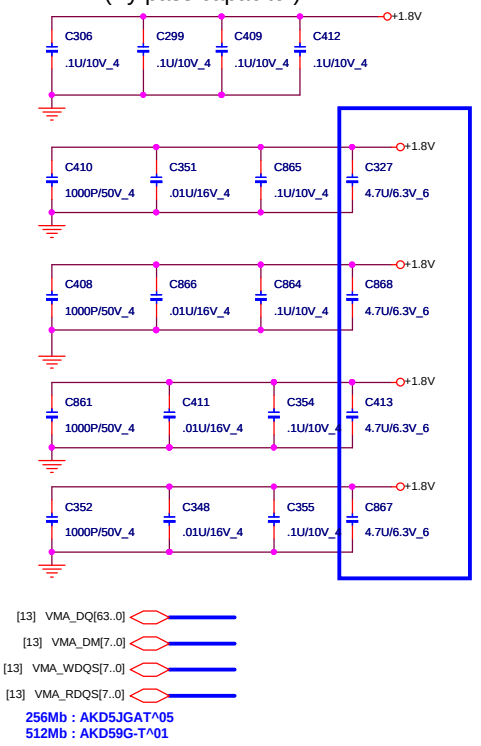
Size	Document Number	Rev
Custom	NV9X (POWER & GND) 5/5	PV

Date: Monday, October 20, 2008 Sheet 16 of 43



CS14752FB11 RES CHIP 475 1/16W +-1%(0402)

(By pass capacitor)



[13] VMA_DQ[63..0]
[13] VMA_DM[7..0]
[13] VMA_WDQS[7..0]
[13] VMA_RDQS[7..0]

256Mb : AKD5JGAT^05
512Mb : AKD59G-T^01

NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: NV9X VRAM-1(GDDR2 BGA84)	Rev: PV
Date: Monday, October 20, 2008	Sheet 17 of 43	

U12 / U37 / U39 / U14 — *HYB18T512161B2F-25

NB9P-GE2/NB9P-GS/NB9M: 50% FBVDD
NB9M-GE:50% , R133(1K)

NB9P-GE2/NB9P-GS/NB9M: 50% FBVDD
NB9M-GE: 50% ,R632 (1K)

DB modified

[13] VMC_CLK0 → VMC_CLK0 — R732 475/F_4 — VMC_CLK0# ← [13] VMC_CLK0#
[13] VMC_CLK1 → VMC_CLK1 — R625 475/F_4 — VMC_CLK1# ← [13] VMC_CLK1#

NB9M/NB9P-GS/NB9P-GE2: 475R

CS14752FB11 RES CHIP 475 1/16W +-1%(0402)

+1.8V: C965 *4.7U/6.3V_6, C966 *4.7U/6.3V_6, C967 *330U_2.5V_7343_ESR6
+1.8V: C796 1000P/50V_4, C798 .01U/16V_4, C815 .1U/10V_4, C359 4.7U/6.3V_6
+1.8V: C142 1000P/50V_4, C810 .1U/10V_4, C869 4.7U/6.3V_6
+1.8V: C862 1000P/50V_4, C349 .01U/16V_4, C797 .1U/10V_4, C826 4.7U/6.3V_6
+1.8V: C353 1000P/50V_4, C863 .01U/16V_4, C799 .1U/10V_4, C835 4.7U/6.3V_6

[13] VMC_DQ[63..0]
[13] VMC_DM[7..0]
[13] VMC_WDQS[7..0]
[13] VMC_RDQS[7..0]

Samsung
Qimonda
Hynix

NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: NV9X VRAM-2(GDDR2 BGA84)	Rev: PV
Date: Monday, October 20, 2008	Sheet 18 of 43	

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 FOR UMA VGA

[6]	LA_CLK	RP9	*4P2R-S-0	TXLCLKOUT+	
[6]	LA_CLK#			TXLCLKOUT-	
[6]	LA_DATAP0	RP1	*4P2R-S-0	TXLOUT0+	
[6]	LA_DATAN0			TXLOUT0-	
[6]	LA_DATAP1	RP4	*4P2R-S-0	TXLOUT1+	
[6]	LA_DATAN1			TXLOUT1-	
[6]	LA_DATAP2	RP7	*4P2R-S-0	TXLOUT2+	
[6]	LA_DATAN2			TXLOUT2-	
[6]	LB_CLK#	RP20	*4P2R-S-0	TXUCLKOUT-	
[6]	LB_CLK			TXUCLKOUT+	
[6]	LB_DATAP0	RP11	*4P2R-S-0	TXUOUT0+	
[6]	LB_DATAN0			TXUOUT0-	
[6]	LB_DATAP1	RP15	*4P2R-S-0	TXUOUT1+	
[6]	LB_DATAN1			TXUOUT1-	
[6]	LB_DATAN2	RP23	*4P2R-S-0	TXUOUT2-	
[6]	LB_DATAP2			TXUOUT2+	

OPTION SIGNAL FROM Nvidia to VGA

[14]	EXT_TXLCLKOUT+	RP8	*0_4P2R/S	TXLCLKOUT+	
[14]	EXT_TXLCLKOUT-			TXLCLKOUT-	
[14]	EXT_TXLOUT0-	RP2	*0_4P2R/S	TXLOUT0-	
[14]	EXT_TXLOUT0+			TXLOUT0+	
[14]	EXT_TXLOUT1+	RP3	*0_4P2R/S	TXLOUT1+	
[14]	EXT_TXLOUT1-			TXLOUT1-	
[14]	EXT_TXLOUT2+	RP6	*0_4P2R/S	TXLOUT2+	
[14]	EXT_TXLOUT2-			TXLOUT2-	
[14]	EXT_TXUCLKOUT+	RP19	*0_4P2R/S	TXUCLKOUT+	
[14]	EXT_TXUCLKOUT-			TXUCLKOUT-	
[14]	EXT_TXUOUT0+	RP10	*0_4P2R/S	TXUOUT0+	
[14]	EXT_TXUOUT0-			TXUOUT0-	
[14]	EXT_TXUOUT1-	RP14	*0_4P2R/S	TXUOUT1-	
[14]	EXT_TXUOUT1+			TXUOUT1+	
[14]	EXT_TXUOUT2-	RP22	*0_4P2R/S	TXUOUT2-	
[14]	EXT_TXUOUT2+			TXUOUT2+	

+3V R520 2.2K_4 EDIDCLK
R522 2.2K_4 EDIDDATA

+VIN_BLIGHT
+VIN L53 FBM2125 HM330-T +VIN_BLIGHT
C753 .1U/50V_6 C751 .01U/50V_4 C750 .1U/50V_6 C6 *10U/25V_12

0090 use 100 ohm and must change back to 75ohm

R12 75R/F_6 +5V +LOGO_PWR1
C758 1000P/50V_4

[6,15] DPST_PWM R526 *0_4
[34] PWM_VADJ R524 *0_4/S VADJ1
C754 *4.7U/6.3V_6 C756 .1U/10V_4

[2,4,6,9,10,11,12,14,15,20,21,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[3,20,24,26,27,29,32,33,36,43] +5V
[28,36,37,38,39,40,41,42,43] +VIN
[21,29,33,34,36,37,38,43] +3VPCU
[29,33,38,43] +12VALW

+3VLCD_CON
+3V C9 1000P/50V_4
[6,14,15] EDIDCLK
[6,14,15] EDIDDATA

CN1 GS12401-1011-9F
TXLOUT0- TXLOUT0+
TXLOUT1- TXLOUT1+
TXLOUT2- TXLOUT2+
TXLCLKOUT- TXLCLKOUT+
TXUOUT0- TXUOUT0+
TXUOUT1- TXUOUT1+
TXUOUT2- TXUOUT2+
TXUCLKOUT- TXUCLKOUT+
VADJ1
BLON_CON
+VIN_BLIGHT
+LOGO_PWR1

PV MODIFY

DISP_ON R525 100K/F_4
LVDS_BLON R7 100K/F_4

PN_BLON D1 RB501V-40 BLON_CON
R4 100K/F_4 C8 22P/50V_4

+3VPCU R8 33K_6
[6,15] LVDS_BLON R6 1K/F_4 D2 RB501V-40 LID_EC# [33,34]
Close to EC

[23] LCD_BK Q2 DTC144EUA

+5VSUS 14.5v +12VALW
R527 100K/F_4
R10 330K_6
AO3404 ID current 5.8A
Q1 AO3404
+3V C12 .1U/10V_4
+3VLCD
LCDONG
L52 PBY201209T-4A/08
+3VLCD_CON
R516 22_8
C757 .01U/16V_4 C746 .1U/10V_4 C748 10U/6.3V_8
LCDDISCHG
Q26 ME2N7002E
C759 .022U/16V_4
LCDON#
Q27 ME2N7002E
Q25 DTC144EUA
[6,15] DISP_ON

PROJECT : UT3/5
Quanta Computer Inc.
NB5
Size B | Document Number LCD CONN/Lid function | Rev PV
Date: Monday, October 20, 2008 | Sheet 19 of 43

CRT PORT

Change Layout footprint to dsub-070546fr015sx68zr-15p-v

Change ESD protection to +5V

EMI

CRT CONN CN18

CRT SWITCH

U3 74CBT3257

inputs		function
/E	SET	
L	L	Y - port 0
L	H	Y - port 1
H	X	Disconnect

For UMA HDMI function

U35 *PI3VDP411LSZDE

EQUALIZATION SETTING
PC1:PC0=0:0 8dB
PC1:PC0=0:1 4dB Recommanded
PC1:PC0=1:0 12dB
PC1:PC0=1:1 0dB

SCL/SDAZ Low-level input/output Voltage
CFG1:CFG0=0:0 VIL:<0.4V VOL:0.6V (Default)
CFG1:CGF0=0:1 VIL:<0.36V VOL:0.55V
CGF1:CGF0=1:0 VIL:<0.44V VOL:0.65V
CGF1:CGF0=1:1 VIL:<0.36V VOL:0.6V

For EXT VGA

UMA : 0R
NB9M-GE/NB9P-GS: 0.1uF

Only for NVIDIA

HDMI PORT

DFHD19MR021

CN27 HDMI CONN

for EMI request

PROJECT :	UT3/5
	Quanta Computer Inc.
Size	C
Document Number	CRT/PS8101 HDMI Conn
Rev	PV
Date:	Monday, October 20, 2008
Sheet	20 of 43

NB5

[19,29,33,34,36,37,38,43] +3VPCU
[24] +3VRTC
[2,4,6,9,10,11,12,14,15,19,20,22,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[4,9,22,24,26,32,33,35,39,43] +1.5V
[2,3,4,5,6,8,9,24,33,39,40] +1.05V
[22,23,24,32,43] +3VS5

SI build
RB500V-40
D19
D20
+3VRTC
+3VPCU
+3VRTC_2
C905 1U/6.3V_4
R375 20K/F_4
R378 180K_4
C599 1U/6.3V_4
C624 .1U/10V_4
G4 *SHORT_PAD1
G3 *SHORT_PAD1
C908 15P/50V_4
C909 15P/50V_4
Y7 32.768KHZ
R335 10M_4
R393 1K/F_4
R346 1M/F_4
20MIL
+3VRTC_BAT
For CR2032(Large)
BT1
BAT_CONN
update footprint (0830)
C569 .1U/10V_4
R409 10K/F_4
U26
MC74VHC1G08DFT2G
[29] SATA_LED#
ICH_SATA_LED#
R320 24.9/F_4
+1.5V
GLAN_COMP
Notice: GPIO33 is also a strap pin. Don't pull it to high.
HP Request
BT_COMBO_EN#
R381 *1K/F_4
[35] BT_COMBO_EN#
TP87

U45A
ICH9BM_SLB8Q

RTC_X1 C23
RTC_X2 C24
RTC_RST# A25
SRTC_RST F20
SM_INTRUDER# C22
ICH_INTVRMEN B22
LAN100_SLP A22
GLAN_CLK E25
LAN_RSTSYNC C13
LAN_RXD0 F14
LAN_RXD1 G13
LAN_RXD2 D14
LAN_TXD0 D13
LAN_TXD1 D12
LAN_TXD2 E13
GPIO56 B10
GLAN_COMPI B28
GLAN_COMPO B27
ACZ_BCLK AE6
ACZ_SYNC AH4
ACZ_RST# AE7
ACZ_SDIN0 AF4
ACZ_SDIN1 AG4
ACZ_SDIN2 AH3
ACZ_SDIN3 AE5
ACZ_SDOUT AG5
HDA_DOCK_EN#/GPIO33 AG7
HDA_DOCK_RST#/GPIO34 AE8
SATALED# AG8
SATA0RXN AJ16
SATA0RXP AH16
SATA0TXN AF17
SATA0TXP AG17
SATA1RXN AH13
SATA1RXP AJ13
SATA1TXN AG14
SATA1TXP AF14

RTC: RTCX1, RTCX2, RTCRST#, SRTCRST#, INTRUDER#
LPC: INTVRMEN, LAN100_SLP, FWH0/LAD0, FWH1/LAD1, FWH2/LAD2, FWH3/LAD3, FWH4/LFRAME#, LDRQ0#, LDRQ1#/GPIO23
LAN / GLAN: LAN_RSTSYNC, LAN_RXD0, LAN_RXD1, LAN_RXD2, LAN_TXD0, LAN_TXD1, LAN_TXD2, GLAN_CLK, GLAN_COMPI, GLAN_COMPO
CPU: A20GATE, A20M#, DPRSTP#, DPSLP#, FERR#, CPUPWRGD, IGNNE#, INIT#, INTR, RCIN#, NMI, SMI#, STPCLK#, THRMTRIP#, TP12
IHDA: HDA_BIT_CLK, HDA_SYNC, HDA_RST#, HDA_SDIN0, HDA_SDIN1, HDA_SDIN2, HDA_SDIN3, HDA_SDOUT, HDA_DOCK_EN#/GPIO33, HDA_DOCK_RST#/GPIO34
SATA: SATALED#, SATA0RXN, SATA0RXP, SATA0TXN, SATA0TXP, SATA1RXN, SATA1RXP, SATA1TXN, SATA1TXP, SATA4RXN, SATA4RXP, SATA4TXN, SATA4TXP, SATA5RXN, SATA5RXP, SATA5TXN, SATA5TXP, SATA_CLKN, SATA_CLKP, SATARBIAS#, SATARBIAS

FWH0/LAD0 K5 — LAD0 [34,35]
FWH1/LAD1 K4 — LAD1 [34,35]
FWH2/LAD2 L6 — LAD2 [34,35]
FWH3/LAD3 K2 — LAD3 [34,35]
FWH4/LFRAME# K3 — LFRAME# [34,35]
LDRQ0# J3 — ICH_DRQ#0 — TP60
LDRQ1#/GPIO23 J1 — ICH_DRQ#1 — TP80
R382 10K/F_4 +3V
A20GATE N7 — GATEA20 [34]
A20M# AJ27 — H_A20M# [3]
DPRSTP# AJ25 — H_DPRSTP# [3,6,40]
DPSLP# AE23 — H_DPSLP# [3]
FERR# AJ26 — R330 49.9/F_4 — H_FERR# [3]
CPUPWRGD AD22 — H_PWRGD [3]
IGNNE# AF25 — H_IGNNE# [3]
INIT# AE22 — H_INIT# [3]
INTR AG25 — H_INTR [3]
RCIN# L3 — RCIN# [34]
R421 10K/F_4 +3V
NMI AF23 — H_NMI [3]
SMI# AF24 — H_SMI# [3]
STPCLK# AH27 — H_STPCLK# [3]
THRMTRIP# AG26 — H_THERMTRIP_R R326 49.9/F_4 — PM_THRMTRIP# [3,6]
TP12 AG27 — ICH_TP12 — TP71
R329 *56.2/F_4 +1.05V
R337 *56.2/F_4
R331 49.9/F_4 +1.05V
R327 49.9/F_4 +1.05V
Change R331,R327 to 49.9 ohm

SATA4RXN AH11 — SATA_RXN4_C — C940 *.01U/16V_4 — SATA_RXN4 [32]
SATA4RXP AJ11 — SATA_RXP4_C — C937 *.01U/16V_4 — SATA_RXP4 [32]
SATA4TXN AG12 — SATA_TXN4_C — C939 *.01U/16V_4 — SATA_TXN4 [32]
SATA4TXP AE12 — SATA_TXP4_C — C938 *.01U/16V_4 — SATA_TXP4 [32]
For UT5 17" 2nd HDD only
SATA HDD2
DB modified
SATA5RXN AH9 — SATA_RXN5_C — C611 .01U/16V_4 — SATA_RXN5 [29]
SATA5RXP AJ9 — SATA_RXP5_C — C606 .01U/16V_4 — SATA_RXP5 [29]
SATA5TXN AE10 — SATA_TXN5_C — C614 .01U/16V_4 — SATA_TXN5 [29]
SATA5TXP AF10 — SATA_TXP5_C — C623 .01U/16V_4 — SATA_TXP5 [29]
E-SATA CONNECT
SATA_CLKN AH18 — CLK_PCIE_SATA# [2]
SATA_CLKP AJ18 — CLK_PCIE_SATA [2]
SATARBIAS# AJ7 — SATA_RBIAS_PN
SATARBIAS AH7 — R396 24.9/F_4

SATA HDD1
[32] SATA_RXN0 — C583 .01U/16V_4 — SATA_RXN0_C AJ16
[32] SATA_RXP0 — C579 .01U/16V_4 — SATA_RXP0_C AH16
[32] SATA_TXN0 — C576 .01U/16V_4 — SATA_TXN0_C AF17
[32] SATA_TXP0 — C578 .01U/16V_4 — SATA_TXP0_C AG17
SATA ODD
[32] SATA_RXN1 — C590 .01U/16V_4 — SATA_RXN1_C AH13
[32] SATA_RXP1 — C592 .01U/16V_4 — SATA_RXP1_C AJ13
[32] SATA_TXN1 — C588 .01U/16V_4 — SATA_TXN1_C AG14
[32] SATA_TXP1 — C584 .01U/16V_4 — SATA_TXP1_C AF14

For HD Audio
ACZ_RST# R388 33_4 — ACZ_RST#_AUDIO [26]
ACZ_SDOUT R404 33_4 — ACZ_SDOUT_AUDIO [26]
ACZ_SYNC R400 33_4 — ACZ_SYNC_AUDIO [26]
ACZ_BCLK R390 33_4 — BIT_CLK_AUDIO [26]
C622 C632 C633 *10P/50V_4
For MDC
ACZ_RST# R387 33_4 — ACZ_RST#_MDC [33]
ACZ_SDOUT R394 33_4 — ACZ_SDOUT_MDC [33]
ACZ_SYNC R406 33_4 — ACZ_SYNC_MDC [33]
ACZ_BCLK R398 33_4 — BIT_CLK_MDC [33]
C635 C656 C657 *10P/50V_4
For UMA
ACZ_RST# R389 *33_4 — ACZ_RST#_MCH [6]
ACZ_SDOUT R376 *33_4 — ACZ_SDOUT_MCH [6]
ACZ_SYNC R377 *33_4 — ACZ_SYNC_MCH [6]
ACZ_BCLK R395 *33_4 — ACZ_BITCLK_MCH [6]
C631 C602 C601 *10P/50V_4
ACZ_RST# R745 22_4 — NV_HDA_RST — NV_HDA_RST [15]
ACZ_SDOUT R747 22_4 — NV_HDA_SDO — NV_HDA_SDO [15]
ACZ_SYNC R748 22_4 — NV_HDA_SYNC — NV_HDA_SYNC [15]
ACZ_BCLK R744 22_4 — NV_HDA_BCLK — NV_HDA_BCLK [15]
Close to U45
For Discrete
C691 C605 C693 *10P/50V_4

SB Strap

ICH9-M Internal VR Enable strap (Internal VR for Vccsus1_05,VccSus1_5 and VccCL1_5)

INTVRMEN	Low = Internal VR disable High = Internal VR enable(Default)

ICH9-M LAN100_SLP Strap (Internal VR for VccLAN1_05 and VccCL1.05)

LAN100_SLP	Low = Internal VR disable High = Internal VR enable(Default)

R677 332K/F_4 — ICH_INTVRMEN — R674 *0_4 (+3VRTC)
R679 332K/F_4 — LAN100_SLP — R678 *0_4 (+3VRTC)

XOR Chain Entrance Strap

ICH_TP3	HDA_SDOUT	Description
0	0	RSVD
0	1	Enter XOR Chain
1	0	Normal opration(Default)
1	1	Set PCIE port config bit 1

+3V — R399 *1K/F_4 — ACZ_SDOUT — ICH_TP3 [23] — R681 *1K/F_4

ICH9 Boot BIOS select

STRAP	PCI_GNT0#	SPI_CS#1
SPI	0	1
PCI	1	0
LPC	1	1

(default)

*1K/F_4 R392 GNT0# [22]
*1K/F_4 R391 GNT3# [22]

A16 swap override strap

PCI_GNT#3	Low = A16 swap override enabled Hi = Default

No Reboot Strap

ACZ_SPKR	Low: Default Hi: No reboot

+3V — R384 *1K/F_4 — ACZ_SPKR [23,26,27]

TPM physical presence

ICH_GPIO57	Low: Default

+3VS5 — R704 *10K/F_4 — ICH_GPIO57 [23] — R706 100K/F_4

PROJECT : UT3/5
Quanta Computer Inc.
NB5
Size: Custom
Document Number: ICH9-M Host 1/4
Rev: PV
Date: Monday, October 20, 2008
Sheet 21 of 43

SWAP PCIE PORT6 to PORT2 (Lan and New card swap) -->Rename the port name by function and port

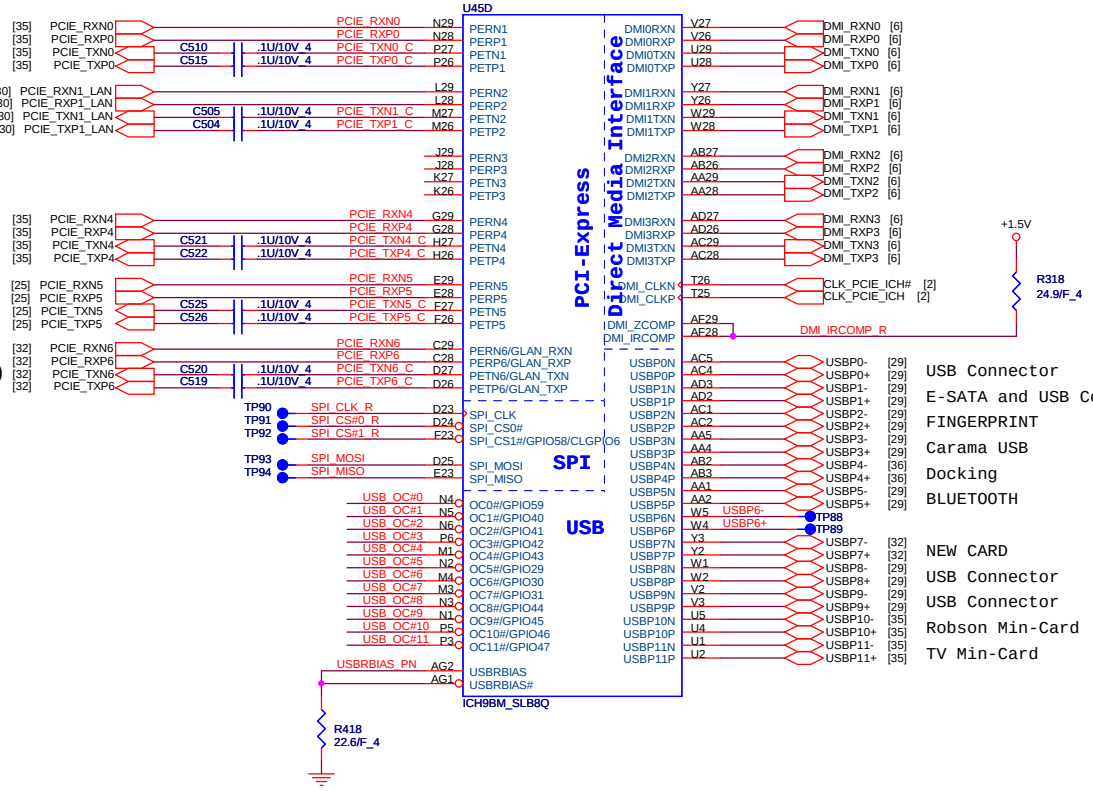
[4,9,21,24,26,32,33,35,39,43] +1.5V
[2,4,6,9,10,11,12,14,15,19,20,21,23,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[23,29,35,39,40,41,43] +3VSUS

MINI CARD PCI-E(WLAN)

PCIE-LAN

TV CARD PCI-E

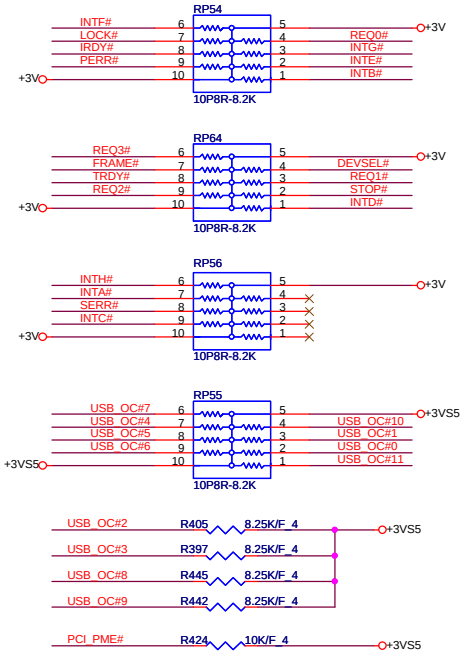
EXPRESS CARD (NEW CARD)

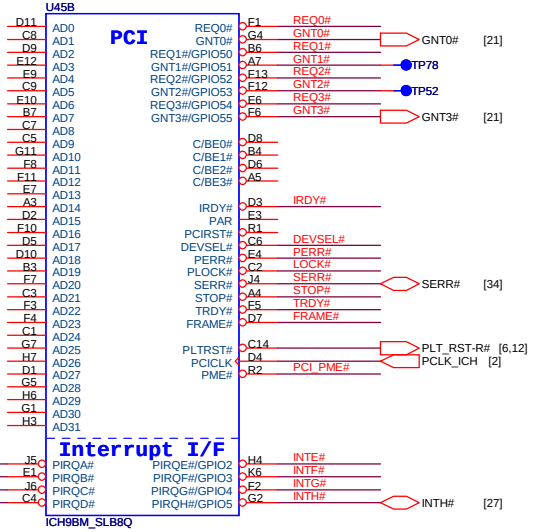


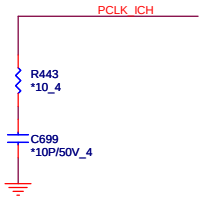
SI-2 Delete
Delete RP53,RP57 and tied from SB to CR(USB6)

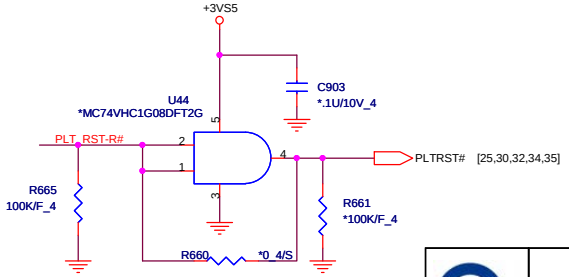
des

int



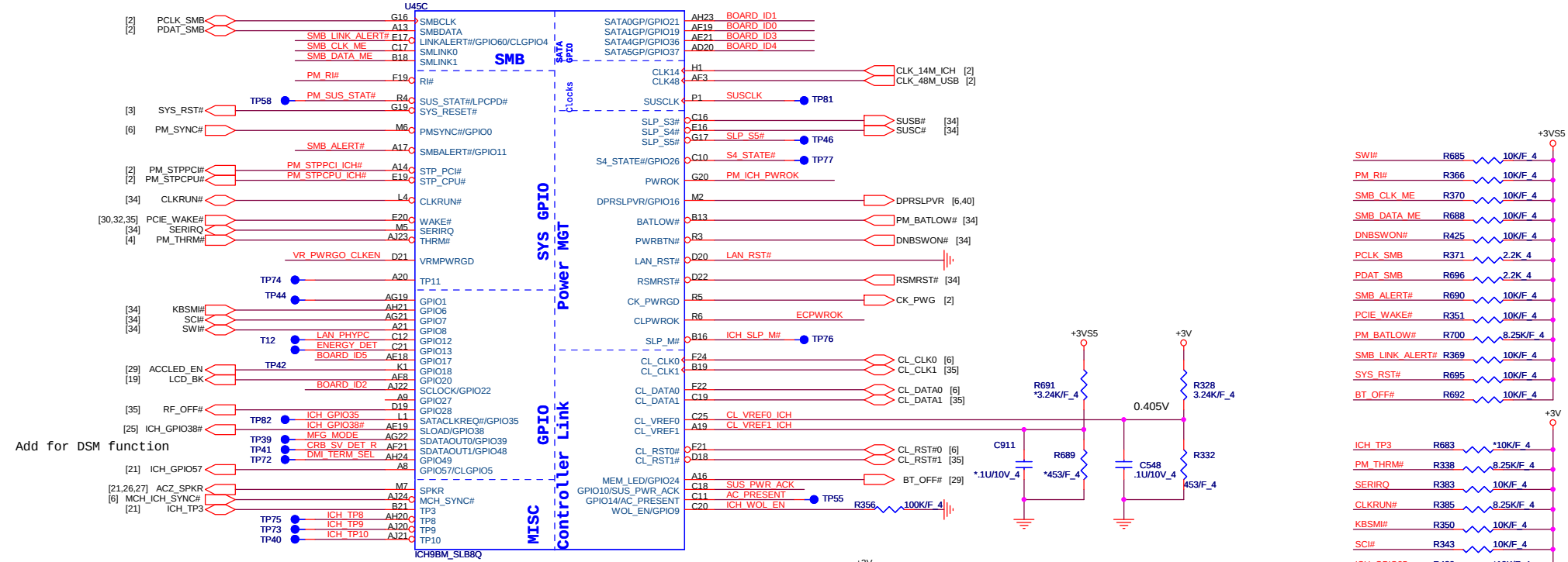


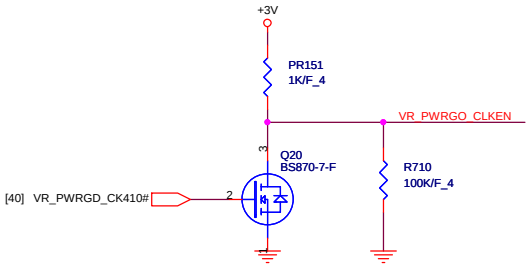


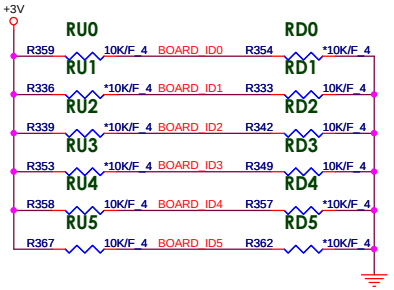


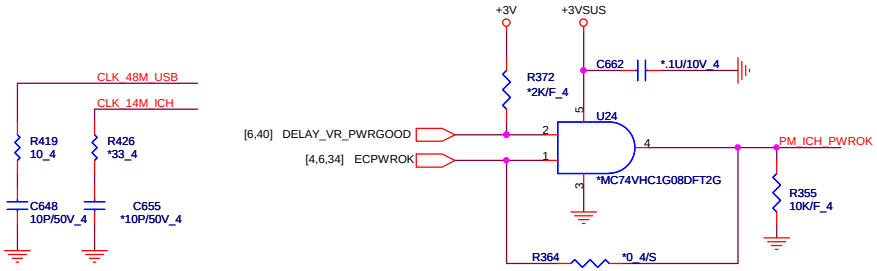
NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: ICH9-M PCIE 2/4	Rev: PV
Date: Monday, October 20, 2008	Sheet 22 of 43	

[4,9,21,22,24,26,32,33,35,39,43] +1.5V
[2,4,6,9,10,11,12,14,15,19,20,21,22,24,25,26,27,28,29,30,32,33,34,35,36,40,43] +3V
[21,22,24,32,43] +3VS5
[29,35,39,40,41,43] +3VSUS









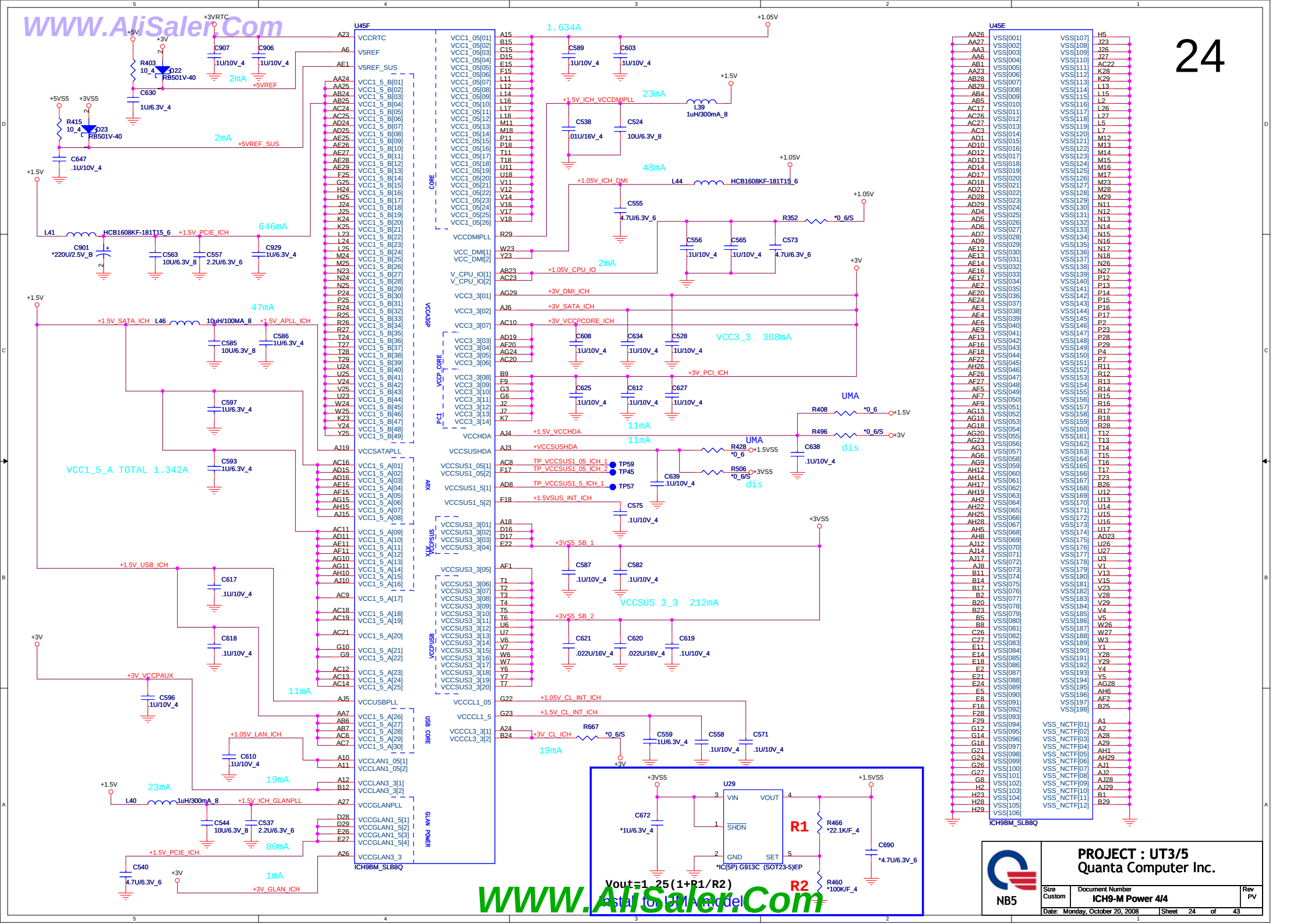
Board ID	ID0	ID1	ID2	ID3	ID4	ID5
UT3/Dis./9M	RD0 (0)	RU1 (1)	RD2 (0)	NC	NC	RD5 (0)
UT3/UMA	RD0 (0)	RD1 (0)	NC	NC	NC	NC
UT5/Dis./M92	RU0 (1)	RU1 (1)	RD2 (0)	NC	NC	RU5 (1)
UT5/Dis./M96	RU0 (1)	RU1 (1)	RU2 (1)	NC	NC	RD5 (0)
UT5/UMA	RU0 (1)	RD1 (0)	NC	NC	NC	NC
UT3D/Dis./M92	RD0 (0)	RU1 (1)	RD2 (0)	NC	NC	RU5 (1)
UT3D/Dis./M96	RD0 (0)	RU1 (1)	RU2 (1)	NC	NC	RD5 (0)

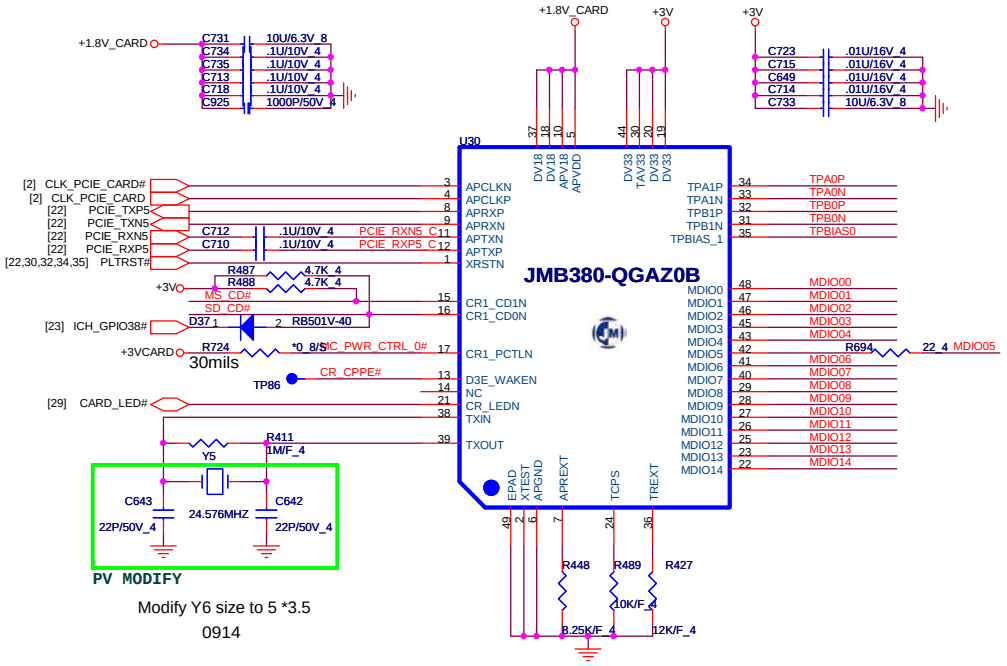
Board ID	ID0	ID1	ID2	ID3	ID4	ID5
UT3/5	0=UT3 1=UT5					
UMA/Dis.		0=UMA 1=Dis.				
NV9M			0			0
ATI M92			0			1
ATI M96			1			0

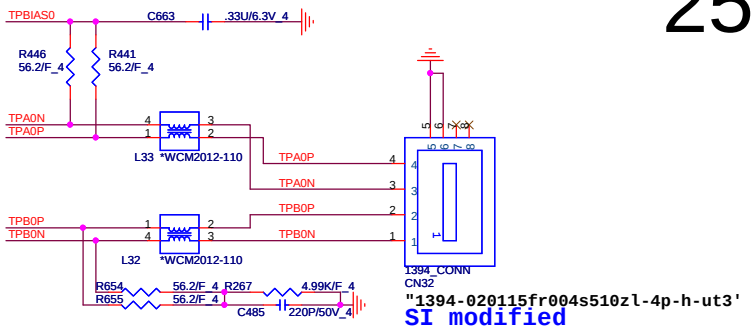
PROJECT : UT3/5
Quanta Computer Inc.

NB5

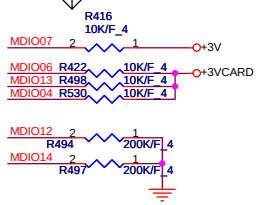
Size: Custom | Document Number: ICH9-M GPIO 3/4 | Rev: PV
Date: Monday, October 20, 2008 | Sheet 23 of 43







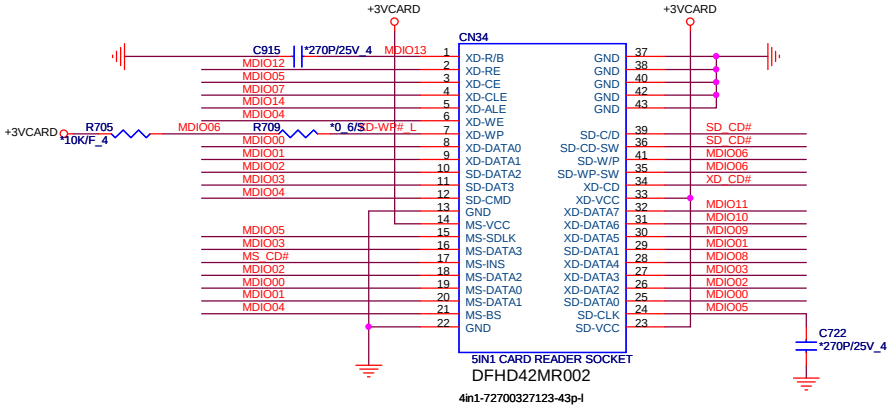
Change to 10K

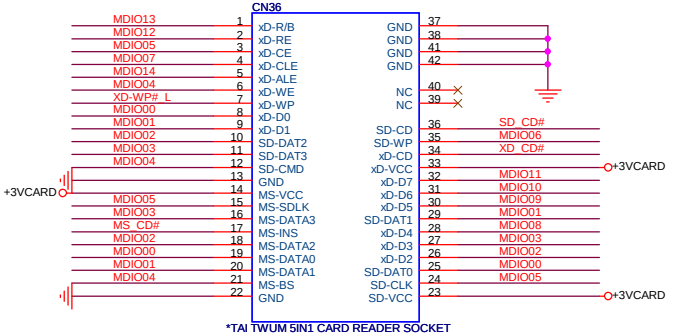


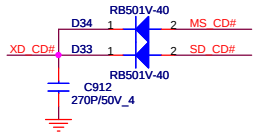
JMB 380 Note:

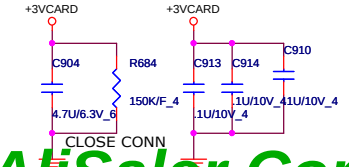
	SD/MMC	MS	XD
MDID0	SD_DAT0	MS_D0	XD_D0
MDID1	SD_DAT1	MS_D1	XD_D1
MDID2	SD_DAT2	MS_D2	XD_D2
MDID3	SD_DAT3	MS_D3	XD_D3
MDID4	SD_CMD	MS_BS	XD_WE#
MDID5	SD_CLK	MS_SCLK	XD_CE#
MDID6	SD_WP		XD_WP#
MDID7			XD_CLE
MDID8	SD_DAT4		XD_D4
MDID9	SD_DAT5		XD_D5
MDID10	SD_DAT6		XD_D6
MDID11	SD_DAT7		XD_D7
MDID12			XD_RE#
MDID13			XD_R/B#
MDID14			XD_ALE
CR1_LEDN	SD1_LED#	MS1_LED#	XD_LED#
CR1_PCTLN	SD1_PCTL#	MS1_PCTL#	XD1_PCTL#
CR1_CD0	SD1_CD#		XD_CV#
CR1_CD1		MS1_CD#	XD_CD#

5 IN1 CARD READER
XD,MMC/SD,MS/MSP









NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RTS5158 & CR SOCKET &HOLE	PV

Date: Monday, October 20, 2008 Sheet 25 of 43

SI MODIFY

+3V_DVDD R571 *0_4 DVDD_LV

DB MODIFY

UMA +3V_1.5V_DVIO

+1.5V R454 *0_4
+3V_DVDD R517 *0_4/S
Dis
C688 1U/10V_4

+3V_DVDD C695 1U/10V_4, C685 1U/6.3V_4, C716 10U/6.3V_8, DVDD_LV
+4.75VAVDD C721 1U/10V_4, C738 1U/6.3V_4, C770 1U/6.3V_4, C737 .1U/10V_4
Close to Pin38
AGND

+3V_DVDD Close to Pin9
+3V
C684 1U/6.3V_4
C671 1U/10V_4
C669 10U/6.3V_8

U32

Digital

SDO
BITCLK
SDI_CODEC
SYNC
RESET#
VOL_UP/DMIC_0
VOL_DN/DMIC_1
GPIO 3
GPIO 5
GPIO 6
GPIO 7 / SPDIF OUT1
DMIC_CLK
SPDIF0
EAPD/GPIO0/SPDIF OUT 0 or 1
DVDD_IO
DVDD_CORE
DVDD_LV
AVDD1** AVDD2**
PAD
NC NC NC NC NC/OTP
DVSS
AVSS2** AVSS1
VREFFILT CAP2

Analog

PORTA_L
PORTA_R
PORTB_L
PORTB_R
VREFOUT-B
PORTC_L
PORTC_R
VREFOUT-C
PORT-D_L
PORT-D_R
PORTE_L
PORTE_R
VREFOUT-E / GPIO 4
PORTF_L
PORTF_R
PCBEEP/Mono
SENSE_A
SENSE_B

IDT 92HD75B3

[21] ACZ_SDOUT_AUDIO
[21] BIT_CLK_AUDIO
[21] ACZ_SDIN0
[21] ACZ_SYNC_AUDIO
[21] ACZ_RST#_AUDIO
R452 22_4 ACZ_SDIN0_ADC

[29] DIGITAL_D1
[27] HP_EAPD
C762 10P/50V_4
R471 *0_6/S

[27] IDT_GPIO3#
[28] SUB-MUTE#
[36] PR_INSERT# _IDT
PR_INSERT# IDT R726 *0_4/S
JACK_SEN# R723 *0_4
For IDT Dolby functionality.
[29] DIGITAL_CLK R476 22_6
C763 *10P/50V_4

[36] SPDIF
[27] EAPD#

C628 47U/6.3V_3528
C629 47U/6.3V_3528
R569 60.4_4 DOCK_LSPK+ [36]
R570 60.4_4 DOCK_RSPK+ [36]

TO DOCKING Speakers

MIC1_L1 C711 2.2U/6.3V_6 EXT_MIC_L
MIC1_R1 C719 2.2U/6.3V_6 EXT_MIC_R
VREFOUT_B R482 4.7K_4
R492 4.7K_4
C717 1U/6.3V_4 AGND
C736 *1U/6.3V_4 AGND

TO Audio Jack MIC

SI MODIFY

LINE_OUTR R572 *0_4 SUB_OUTR [28]
LINE_OUTL R573 *0_4 SUB_OUTL [28]

TO Internal Speakers and Sub Woofer EQ

LINE_OUTL LINE_OUTL [27]
LINE_OUTR LINE_OUTR [27]

DOCK_MIC_L1 C697 2.2U/6.3V_6 DOCK_MIC_L2
DOCK_MIC_R1 C706 2.2U/6.3V_6 DOCK_MIC_R2
VREFOUT_E R499 *4.7K_4
R485 *4.7K_4
C742 *1U/6.3V_4 AGND
R463 1.21K_4
R462 10K/F_4
R474 10K/F_4
R475 1.21K_4
DOCK_MIC_L [36]
DOCK_MIC_R [36]

TO DOCKING MIC

HP-L [27]
HP-R [27]

TO Headphone jack

C692 .1U/10V_4 R438 47K_4 ACZ_SPKR [21,23,27]
R450 10K/F_4
C675 1U/10V_4 AGND
R449 2.49K/F_4
R523 39.2K/F_4 SB_A#
R456 20K/F_4 SA_B#
C680 1000P/50V_4 AGND
R510 2.49K/F_4
R509 39.2K/F_4 SB_E#
R457 20K/F_4 SA_F#
C740 1000P/50V_4 AGND
SENSE_A +4.75VAVDD
SENSE_B +4.75VAVDD

DB MODIFY

C743 C739 10U/6.3V_8 1U/6.3V_4
AGND

SA_A# -->DOCK HP
SB_E# -->DOCK MIC
SA_B# -->EXT MIC
SA_F# -->EXT HP

Audio JACK: Normal Open

Reserve for EAPD#
+3V_DVDD
R479 *5.11K/F_4
EAPD#

PORT	PLACE TO
MONO_OUT	X
PORT A	Docking Speakers
PORT B	M/B MIC
PORT C	X
PORT D	Internal Speckers
PORT E	Docking MIC
PORT F	HP OUT
DM	DIGITAL MIC

ADC_BITCLK ACZ_SDIN0_ADC
C687 *27P/50V_4
C686 *27P/50V_4
FOR EMI

R501 R500 R480 R473 R440 R491 R472 *0_6/S
C741 1000P/50V_4
AGND

HP_EAPD

TPA6040A4	Low enable
TPA6047A4	High enable

Codec

	92HD71	92HD75
R571	POP	NA
C716	NA	POP
R449 R510	5.11K	2.49K

5.11K P/N: CS25112FB15

TO AUDIO/B CON.

DFFC12FR293
CN17 AUDIO CONN
C707 .1U/10V_4
+5VPCU
[34,36] CIR_IN
[27] HPOUT_L
[27] HPOUT_R
HPOUT_L
HPOUT_R
SA_F#
SA_B#
EXT_MIC_L
EXT_MIC_R
C705 *180P/50V_4
C704 *180P/50V_4
C703 *27P/50V_4
C702 *27P/50V_4
AGND
EMI 0828

DOCK MIC DETECT

+5V
R538 10K/F_4
R535 10K/F_4
SB_E#
Q30 ME2N7002E
DOCK_MIC_L
R536 10K/F_4
DKMIC_SEN
Q29
Q28 MMBT3904-7-F
R537 47K_4
C779 1U/6.3V_4
MMBT3904-7-F
AGND

+5V
R568 47K_4
R556 47K_4
SB_A#
Q37 ME2N7002E
Q38
[36] JACK_SEN#
R567 10K/F_4
MMBT3904-7-F
AGND

PROJECT : UT3/5
Quanta Computer Inc.

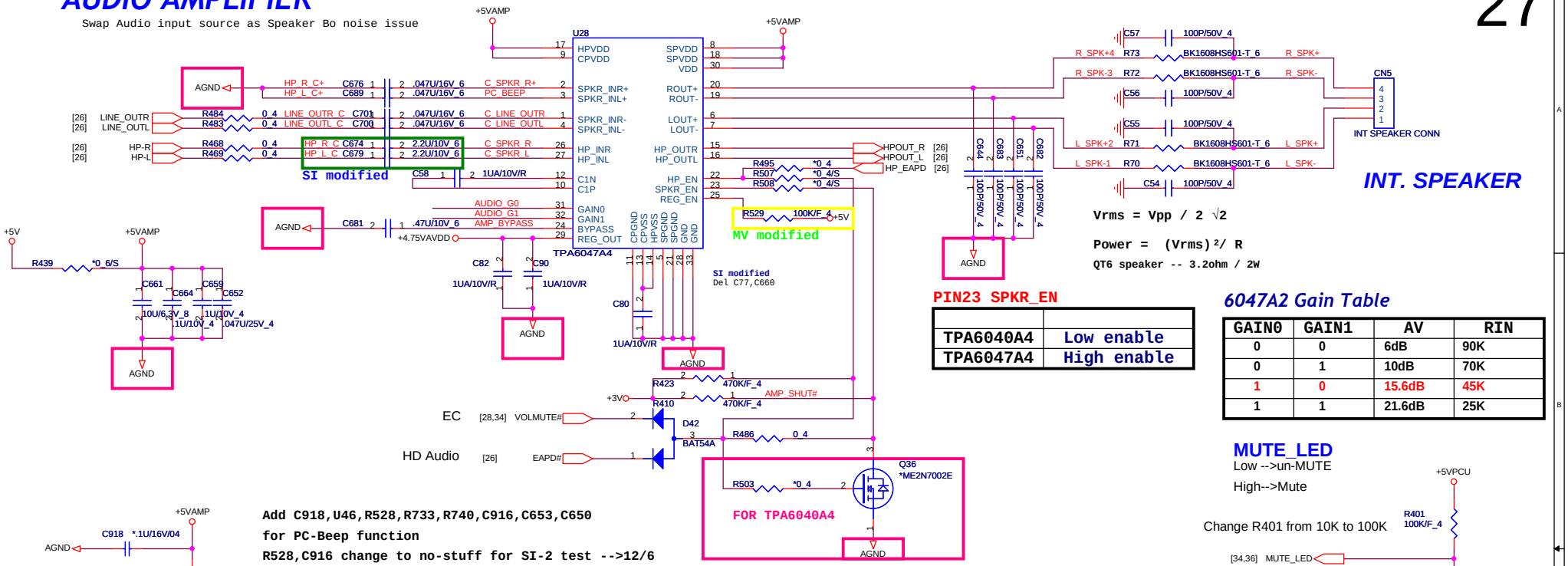
NB5

Size	Document Number	Rev
Custom	Azalia IDT92HD75B3	PV

Date: Monday, October 20, 2008 Sheet 26 of 43

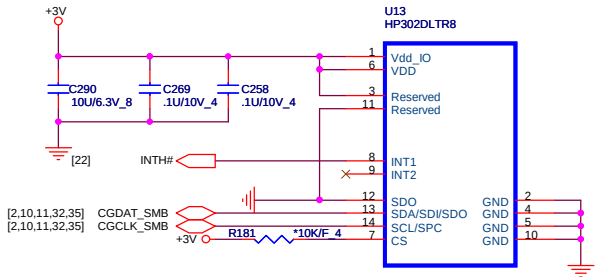
AUDIO AMPLIFIER

Swap Audio input source as Speaker Bo noise issue



Accelerometer Sensor

SGT-LIS302DLTR interrupt pin default is low / active Hi , BIOS need to programming 22h to change status from active Hi to low



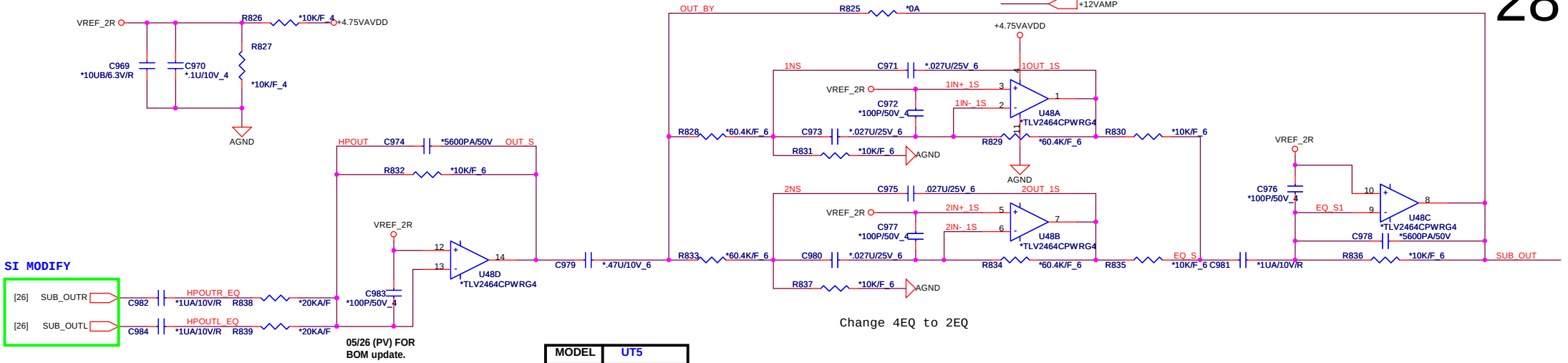
Pin 12: Low 38hex

Pin 12: unconnected/floating 3Ahex

PROJECT : UT3/5	
Quanta Computer Inc.	
NB5	Size: Custom
Document Number: AMP_TPA6017/Accelerometer	Rev: PV
Date: Monday, October 20, 2008	Sheet 27 of 43

EQ FOR SUBWOOFER

+3V [2,4,6,9,10,11,12,14,15,19,20,21,22,23,24,25,26,27,29,30,32,33,34,35,36,40,43]
+5VAMP [27]
+4.75VAVDD [26,27]
+12VAMP

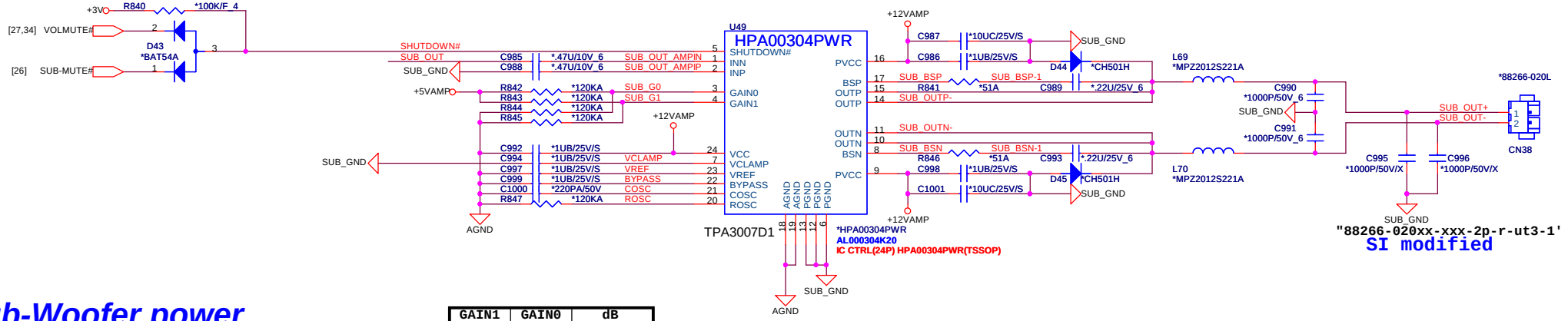


SI MODIFY

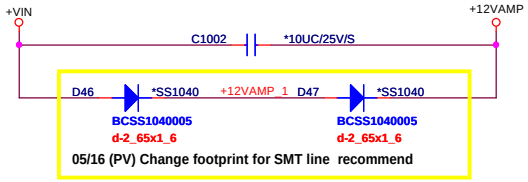
Change 4EQ to 2EQ

05/26 (PV) FOR BOM update.

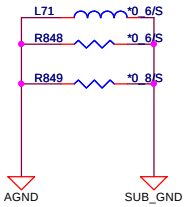
MODEL	UT5
R316	60.4K/F_6
R319	60.4K/F_6
R330	60.4K/F_6
R314	60.4K/F_6
C509	0.027U/25V_6
C510	0.027U/25V_6
C529	0.027U/25V_6
C543	0.027U/25V_6



Sub-Woofer power

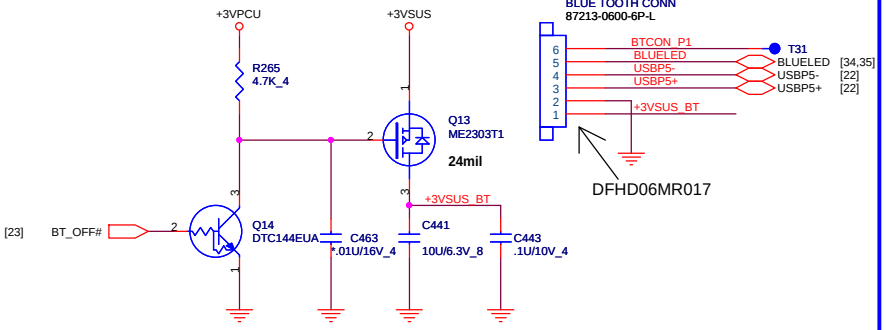


GAIN1	GAIN0	dB
0	0	12
0	1	18
1	0	23.6
1	1	36

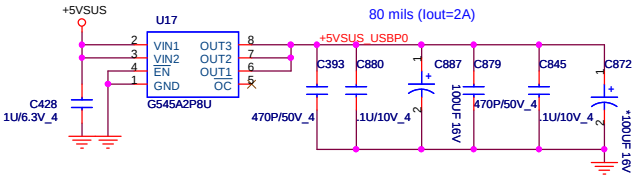


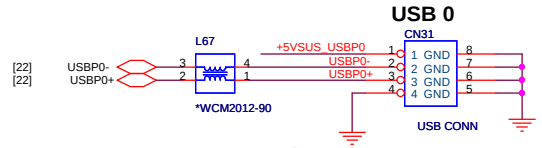
NB5	PROJECT : UT3/5 Quanta Computer Inc.
Size: Custom	Document Number: SUBWOOFER(EQ & AMP.)
Rev: PV	
Date: Monday, October 20, 2008	Sheet 28 of 43

BLUETOOTH



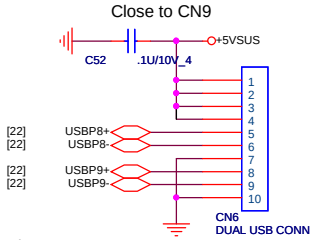
LEFT SIDE USBX1 and E-SATA/USB COMBO



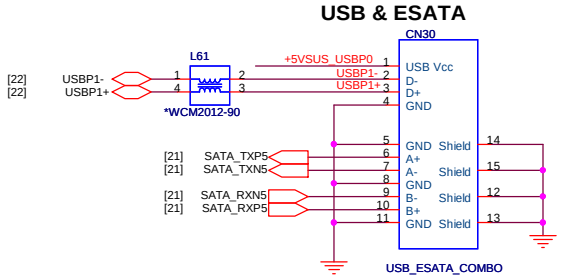


SI modified
usb-020173mr004s51-4p-r-h-ut3

RIGHT SIDE USBX2



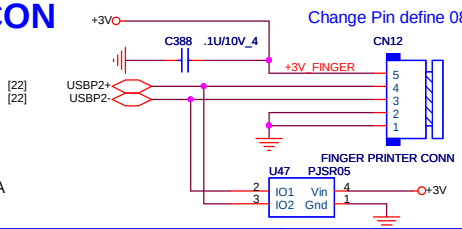
Change CN6 to BL123-10R-10P-L-QT6-A



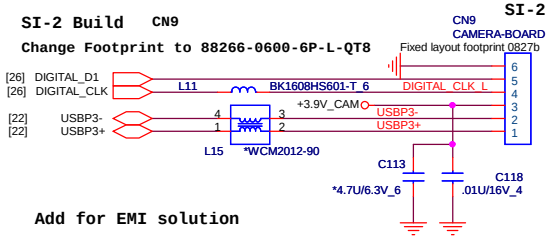
USB fingerprint CON

1. ESD GND
2. SYSTEM GND
3. USB-
4. USB+
5. USB PWR(+3V)

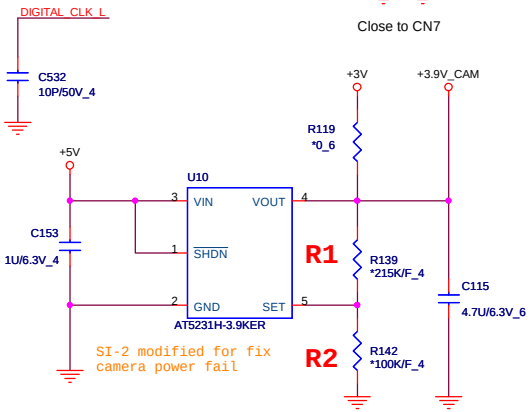
Change CN12 to BL123-05R-5P-L-QT6-A
Add U47 for Finger print USB signal



USB CAMERA /DIGITAL MIC CONNECT

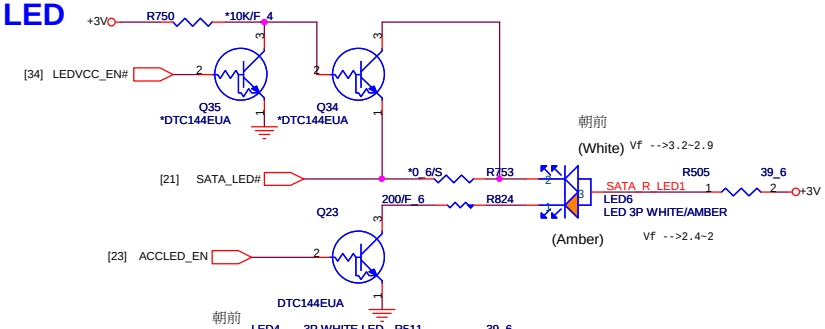


Add for EMI solution



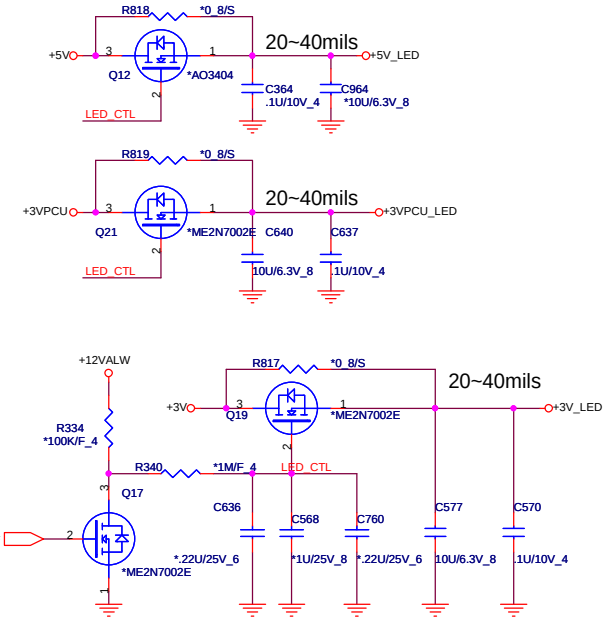
Vout=1.25(1+R1/R2)

LED



LED PWR CONTROL

Change Q12 to AO3404 as LED current limited



NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: BT/WC/FT/TS/ESATA/USB	Rev: PV
Date: Monday, October 20, 2008	Sheet 29 of 43	

T : Stuffed for RTL8111C(10/100/1000)

E : Stuffed for 8101E/8102E(10/100)

For 8102E/8111C

[31] +CTRL15 — R648 *0_6 — +CTRL15_E [31]

Stuffed for 8102E

+FB12 — R641 *0_6/S — +LAN_A1.8_FB12

Stuffed for RTL8111C and nostuff 8102E

+LAN_D1.5 — R649 *0_6/S — +LAN_D1.5_SRVDD

Stuffed for 8102E/RTL8111C

+3VLANVCC — R647 *0_6/S — +CTRL15_E; C894 10U/6.3V_8; C889 10U/6.3V_8; C890 .1U/10V_4

+3VLANVCC — R247 *0_6/S — +3V_GVDD

enable switch regular

Stuffed for RTL8111C(10/100/1000)

Y2 25MHZ; C427 33P/50V_4; C420 33P/50V_4

PV MODIFY

8102E No Mount

8111C No Mount ,R247 mount

C414 *.1U/10V_4; C417 *.1U/10V_4; R233 2.49K/F_4; LANRSET

U18#63 wider than 40 mils

U18#1 wider than 60 mils

U18 — RTL8111C-VB-GR — Pin 65

LAN_TX# +LAN_D1.5_SRVDD +3V_A_LAN XTAL1 XTAL2 +3V_GVDD +CTRL15_E LAN_LED_100# R255 *0_4/S LAN_GLINK100# LAN_GLINK10# LAN_GLINK1000# +3V_LAN LAN_CABLE_DETECT [34]

Isolate pull low:
1.Can only disable RTL8111C.
2.RTL8101E can't disable

for 93C56 used. NC if 93C46 is used.

R653 *10K/F_4; U43 *M93C46-WMN6TP; C897 *.1U/10V_4; 3.24K/F_4 R652

R263 *1K/F_4; R262 15K/F_4; ISOLATEB; R261 100/F_4; D38 *RB501V-40; LAN_DISABLE# [34]

Change back to R261 at 1/24

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

R252 *0_6/S; R259 *0_6/S; LAN-AGND

C531 .1U/10V_4

New add and Close to Pin 5

From Vendor EMI suggest

R434 *0_4

8111C = No Mount

8102E = Mount

T3 T4

[23,32,35] PCIE_WAKE# — PCIE_WAKE#

+LAN_D1.5 +LAN_E1.8

[22] PCIE_TXP1_LAN — PCIE_TXP1_LAN

[22] PCIE_TXN1_LAN — PCIE_TXN1_LAN

[22,25,32,34,35] PLTRST# — R248 *0_4/S

[34] LAN_REST# — R246 *0_4

PCIE_RXN1_LAN_L — C452 .1U/10V_4 — PCIE_RXN1_LAN [22]

PCIE_RXP1_LAN_L — C442 .1U/10V_4 — PCIE_RXP1_LAN [22]

CLK_PCIE_LAN# — CLK_PCIE_LAN# [2]

CLK_PCIE_LAN — CLK_PCIE_LAN [2]

Swap PCIE from Port 6 to PCIE Port 1

Swap PCIE from Port 6 to PCIE Port 2

AL08111C001 IC CTRL(64P) RTL8111C-VB-GR(QFN)

AL08102E001 IC CTRL(64P) RTL8102E-VB-GR(QFN)

Remove 8111B and 8101E support in PV Build

1. Delete R264 (For 8111B)
2. Delete R650 and T28
3. Delete R651 and U18#33 for 8111B support
4. Delete R231 as RSET
5. Delete R242,R243,R244,R245,C394,C395 8101E support

LAN_GLINK10# D36 BAT54A LAN_GLINK100# LAN_GLINK1000# D35 RB501V-40 LAN_GLED# LAN_TX# R109 *0_4/S LAN_YLED#

C48 *.01U/16V_4; C88 *.01U/16V_4

Link

Stuffed for RTL8101E

+LAN_A1.8 R589 *0_4

U33 NS892402

C782 .01U/16V_4; C783 .01U/16V_4; C789 .01U/16V_4; C790 .01U/16V_4

MDI0+ MDI0- MDI1+ MDI1- MDI2+ MDI2- MDI3+ MDI3-

Add C898,C899,C900,C902 as HP request

LAN_MCT0 C898 0.01U/100V_0603 R544 75/F_4 — LAN_MX0+ [36] LAN_MX0- [36]

LAN_MCT1 C899 0.01U/100V_0603 R545 75/F_4 — LAN_MX1+ [36] LAN_MX1- [36]

LAN_MCT2 C900 0.01U/100V_0603 R547 75/F_4 — LAN_MX2+ [36] LAN_MX2- [36]

LAN_MCT3 C902 0.01U/100V_0603 R548 75/F_4 — LAN_MX3+ [36] LAN_MX3- [36]

SI Build

C781 1000P/3KV_1808

RJ45 CN24

FOR EMI

C89 *.1U/10V_4; R89 330/F_4; LAN_GLED LAN_GLED#; LED_GRE_P LED_GRE_N

LAN_MX3- LAN_MX3+ LAN_MX1- LAN_MX2- LAN_MX2+ LAN_MX1+ LAN_MX0- LAN_MX0+ — RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+ GND1 GND

R87 330/F_4; LAN_YLED LAN_YLED#; LED_YEL_P LED_YEL_N

C81 *.1U/10V_4

RJ45_CONN

NS892402:GIGABIT

NS892405:10/100

DB0AT9LAN05

DB0AB7LAN0

NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size: Custom | Document Number: RTL8111C/8101E/RJ45 | Rev: PV

Date: Monday, October 20, 2008 | Sheet 30 of 43

T : Stuffed for RTL8111C(10/100/1000)

E : Stuffed for 8101E/8102E(10/100)

LANVCC
1.2W
364mA

+3VLANVCC

+3V_LAN

Power trace Layout 寬度> 30mil

C385 4.7U/6.3V_6
C480 .1U/10V_4

C454 .1U/10V_4
C475 .1U/10V_4
C477 .1U/10V_4
C399 .1U/10V_4

these CAP are for LAN CHIP LANVCC pins--16, 37, 46 and 53.placement close lan chip

+3V_A_LAN

C401 .1U/10V_4
C434 .1U/10V_4

these CAP are for LAN CHIP LAN_A3.3 pins-- 2 and 59.placement close lan chip

8111C CV-4706MN00
8102E CS00004JA40

For Giga must change L65 to Inductor (Chipset include switch power)

+CTRL18 will become to switch power phase

placement close to lan chipset

L54 for Gaga lan use 4.7uH power choke
A>500mA tolerance ±15%

SI Build

+CTRL18

L65 4.7UH_2016

+FB12 [30]

L63 *0_8/S

Power trace Layout 寬度> 30mil

+LAN_A1.8

C884 *4.7U/6.3V_6

C931 *10U/6.3V_8 SI build
C930 10U/6.3V_8 SI build
C881 4.7U/6.3V_6
C876 4.7U/6.3V_6
C878 .1U/10V_4

For 8102E

C891 .1U/10V_4
C892 .1U/10V_4
C875 .1U/10V_4
C893 .1U/10V_4

these cap are for lan chip LAN_A1.8 pins--5, 8, 11 and 14. placement close chip

STUFF 100 ohm BEAD

+LAN_E1.8

R250 *0_8/S

C422 Change to 1u for 8102E

C421 .1U/10V_4
C422 1U/6.3V_4

LAN-AGND

these cap are for lan chip LAN_D1.8 pins, such as 22 and 28. placement close lan chip

Remove R250,L63,L66 -->For 8102E

L66 *0_8/S

Only For 8111C application

[30] +CTRL15

L64 *0_8

C883 *4.7U/6.3V_6
C888 *4.7U/6.3V_6
C895 *4.7U/6.3V_6
C896 *.1U/10V_4

For 8102E

+LAN_D1.5

Power trace Layout 寬度> 30mil

C474 .1U/10V_4
C479 .1U/10V_4
C459 .1U/10V_4
C456 .1U/10V_4
C472 .1U/10V_4
C461 .1U/10V_4
C476 .1U/10V_4
C415 .1U/10V_4
C478 .1U/10V_4
C400 .1U/10V_4

these cap are for lan chip LAN_D1.5 pins-- 15, 21, 32, 33, 38, 41, 43, 49, 52 and 58.placement close lan chip

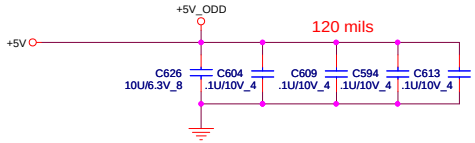
Power domain chart

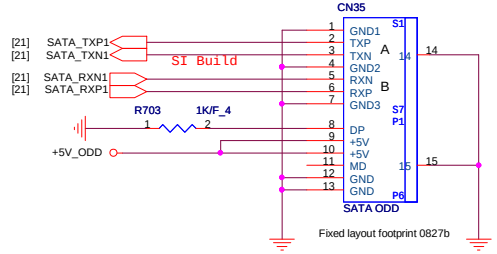
	RTL8111C(P) RTL8102E
LANVCC	3.3V
LAN_D1.8	1.2V
LAN_A1.8	1.2V
LAN_D1.5	1.2V

C422 change to 1uf

NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size A3	Document Number LAN Power	Rev PV
Date: Monday, October 20, 2008	Sheet 31 of 43	

SATA CD-ROM





CN35 part number

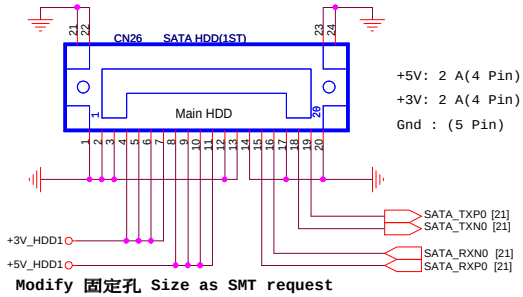
UT3	DFHD13MR006
	DFHD13MR008
	DFHD13MR009
UT5	DFHS13FR030
	DFHS13FR040

SATA-48325-1103-13P-R-H-QT6

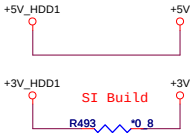
SATA HDD CONNECTOR

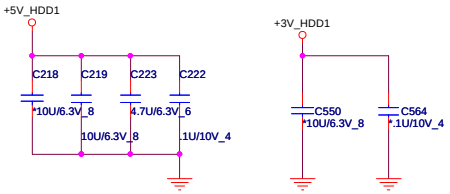
DFHD20MR005

DC Current rating: 0.5 A



+5V: 2 A(4 Pin)
+3V: 2 A(4 Pin)
Gnd : (5 Pin)





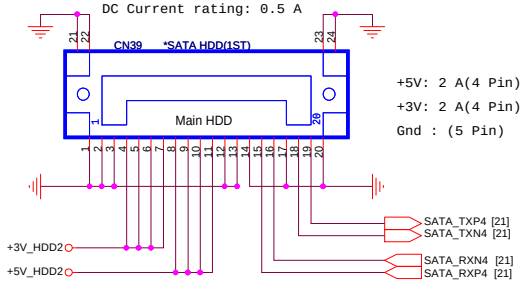
Modify 固定孔 Size as SMT request

GS12201-1011-9F-20P-L-QT6

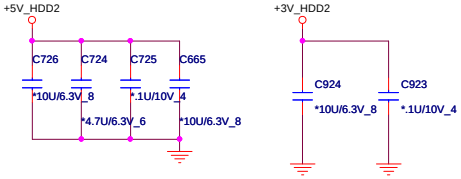
DB modified

SATA_2 CONNECTOR

DC Current rating: 0.5 A



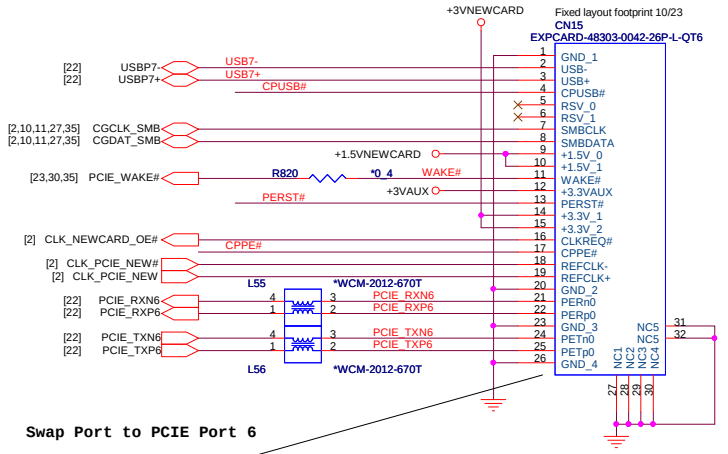
+5V: 2 A(4 Pin)
+3V: 2 A(4 Pin)
Gnd : (5 Pin)



NEWCARD

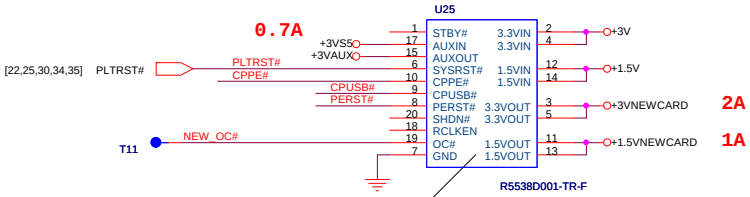
NEWCARD (PCIEXPRESS*1 + USB*1)

32

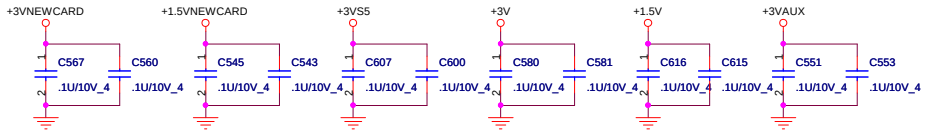


Swap Port to PCIE Port 6

Change CN15#31,32 as ME request for Hole pad
expcard-48303-0042-26p-l-qt6 as ME modify Pad size(pin31,32)
Move CN15#29,30 Pin as ME request(Molex confirm drawing)



add Pin 21~25 as U25 Thermal pad tied to Gnd



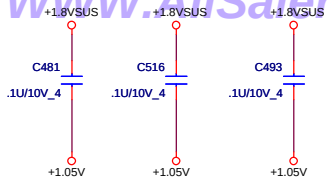
	Header	Housing
MLX	DFHD26MS012	DFHS26FR023
FOX	DFHD26MS013	DFHS26FR024
DGN	DFHD26MS017	DFHS26FR028

NB5

PROJECT : UT3/5
Quanta Computer Inc.

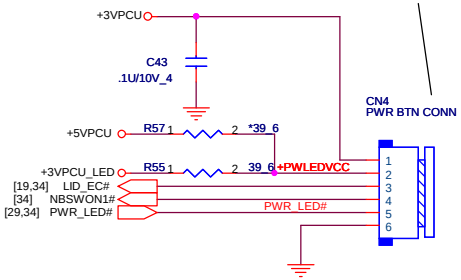
Size	Document Number	Rev
Custom	ODD/HDD/NEW CARD	PV

Date: Monday, October 20, 2008 Sheet 32 of 43



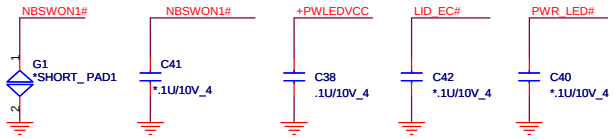
Close to U21 For EMI

Change CN4 to BL123-06R-6P-L-QT6-A



1. +3VPCU(LIDSWITCH PWR)
2. LEDVCC(+3VPCU)
3. LIDSWITCH
4. POWERON#
5. PWRLED#
6. GND

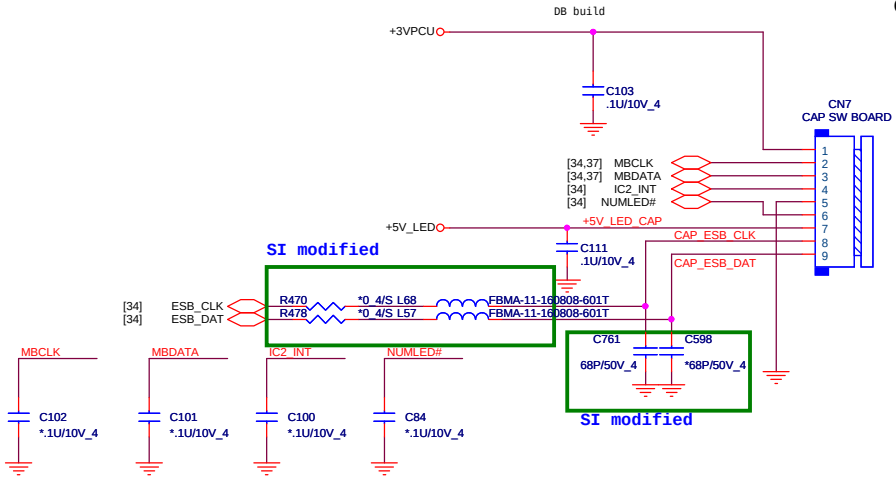
POWER BOTTON CONNECT



EMI 0828

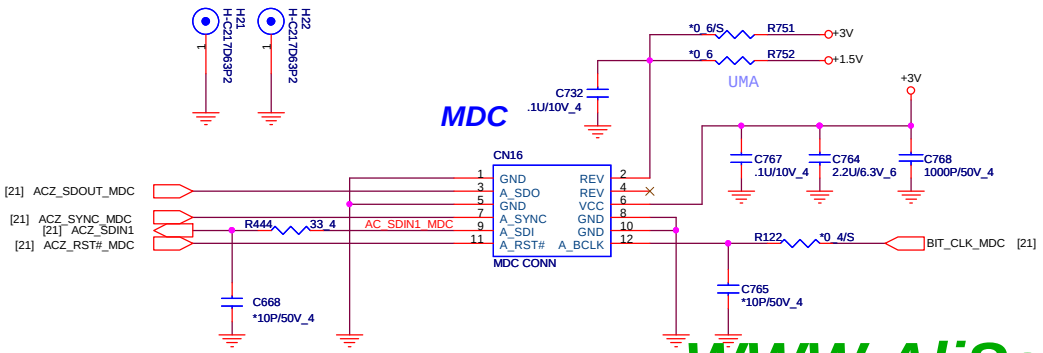
POWRER SW CONNECT

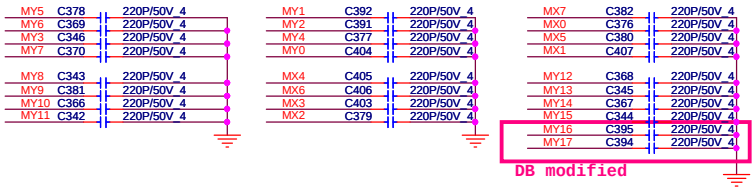
CAP SW CONNECT



1. +3VPCU
2. MBCLK
3. MBDATA
4. CAP_INT
5. GND
6. NUM LOCK LED
7. +5V_LED
8. ESB_CLK
9. ESB_DAT

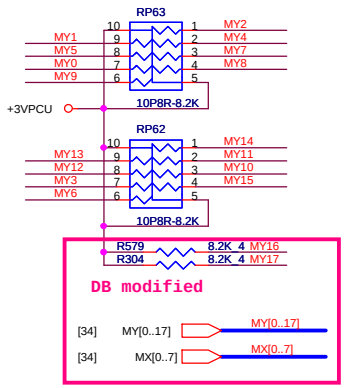
Modem CONN

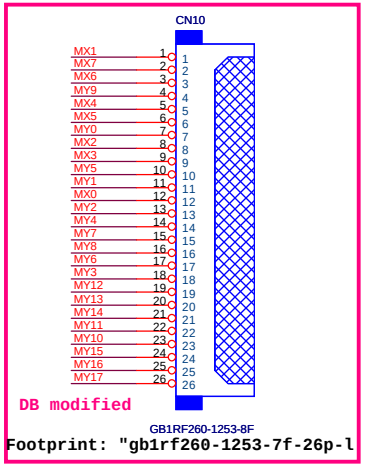




DB modified

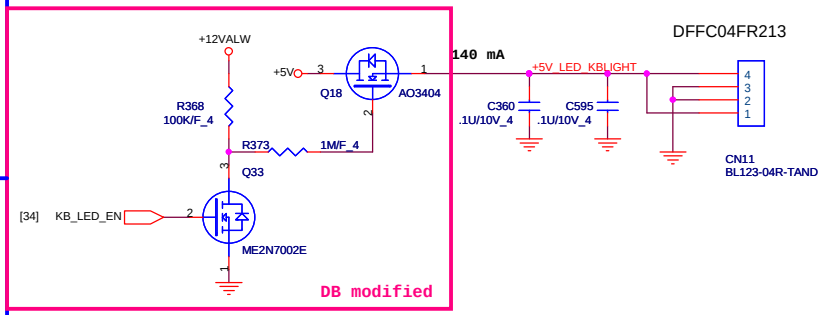
KEYBOARD PULL-UP





clear ABS 758 resin for key cap.
7 LEDs for 15.4" (total LED current 140mA)
11 LEDs for 17" (Total LED current 220mA)

DFFC04FR213



NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: KB/CAP/POWER CONN/MDC	Rev: PV
Date: Monday, October 20, 2008	Sheet 33 of 43	

Change U20 layout footprint
to LQFP128-16X16-4-AA1

U20

KB3926QF C0

DB modified

SI modified

R323 remove for KB3926 C version

For KB3926 B, C version

ID	R374	R379
UT3	10K	N/A
UT5	N/A	10K

Hi ==> 120W
Low ==> 65W/90W

Change to RB500 as Current loss

R430 Change to 100k ohm ,pull low

Add Pin 117,103 for DSM,116 for Bluetooth,Pin 23 for Key Beep to Amplifier
Add T37,T38,T39 for EC
Delete T10 and tie pin 117 from Lan for DSM

TOUCH PAD CONNECTOR

25 mils

CN13
TOUCH PAD CONN
DFFC12FR293

TOUCH PAD L/R FOR 16"

TOUCH PAD ON/OFF FOR 16"

close conn

TOUCH PAD L/R FOR 17.3"

TOUCH PAD ON/OFF FOR 17.3"

DB modified

Socket: DG008000031

MXIC AKE38FP0Z00
WINBOND AKE38ZP0N01
EON AKE38ZA0Q00

2M byte
SPI
BIOS

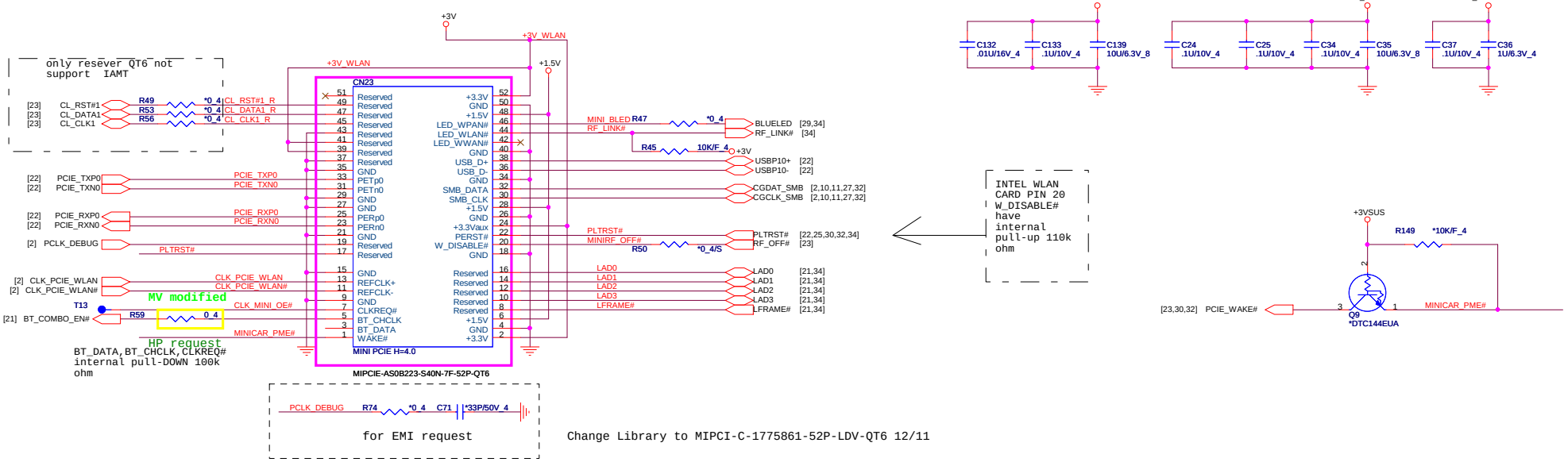
R273
64.9K -->65W CS36492FB17
33.2K -->90W CS33322FB13

NB5	PROJECT : UT3/5 Quanta Computer Inc.
Size: Custom	Document Number: KB3926/ROM/TP
Rev: PV	
Date: Monday, October 20, 2008	Sheet 34 of 43

Mini PCI-E Card 1 WLAN

Delete R78 and tied the CN23#24 to R110 direction
Change CN23 layout footprint to MIPCIE-AS0B223-S40N-7F-52P-QT6 as ME drawing

Change net name



M/B Screw Hole

SI-2,h-e276x315d118p2

Modify H16 Hole size
H-TC256BC315D118P2

SI-2

New add as ME request

RF PAD

PAD10 PAD9 PAD6

New add as RF request

PAD13 PAD12 PAD11

New add as RF request

ME PAD

PAD5 PAD4

PAD8

Routed spring

Delete PAD14

PAD15 *MDC_SPRING

PAD16 *MDC_SPRING

EMI PAD

PAD2 *EMIPAD — Del PAD1

MV MODIFY

PAD21 *EMIPAD

PAD3 *EMIPAD

ME Routed spring

PAD23

PAD17 *Emi157x79

PAD19 *ME_SPRING

ME-Ground Pad

PAD34

PV MODIFY

ME-Ground Pad

PAD35 PAD36

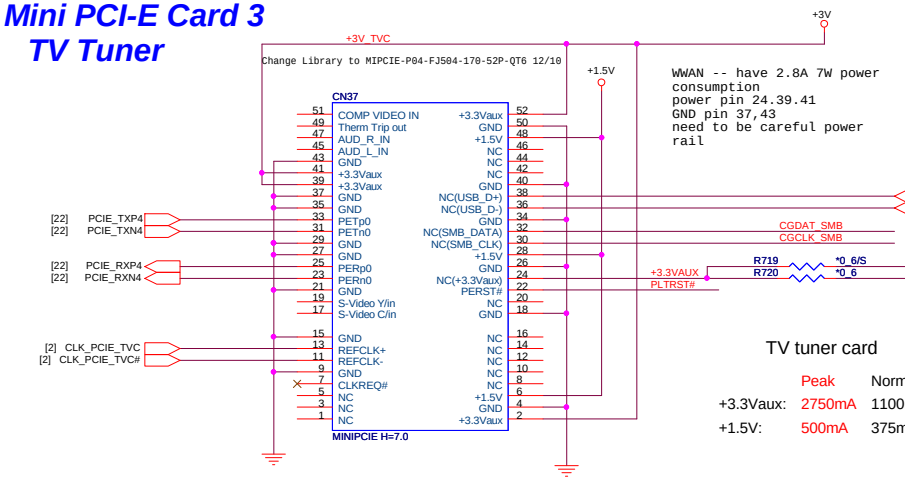
MV MODIFY

SI modified ME-Ground Pad

PAD26 PAD27 PAD28 PAD29 PAD30 PAD31 PAD32

Del PAD18 (Same as PAD26)

Mini PCI-E Card 3 TV Tuner



Size	Document Number	Rev
Custom	MINI PCIE CONN X2 & HOLE	PV

PROJECT : UT3/5
Quanta Computer Inc.

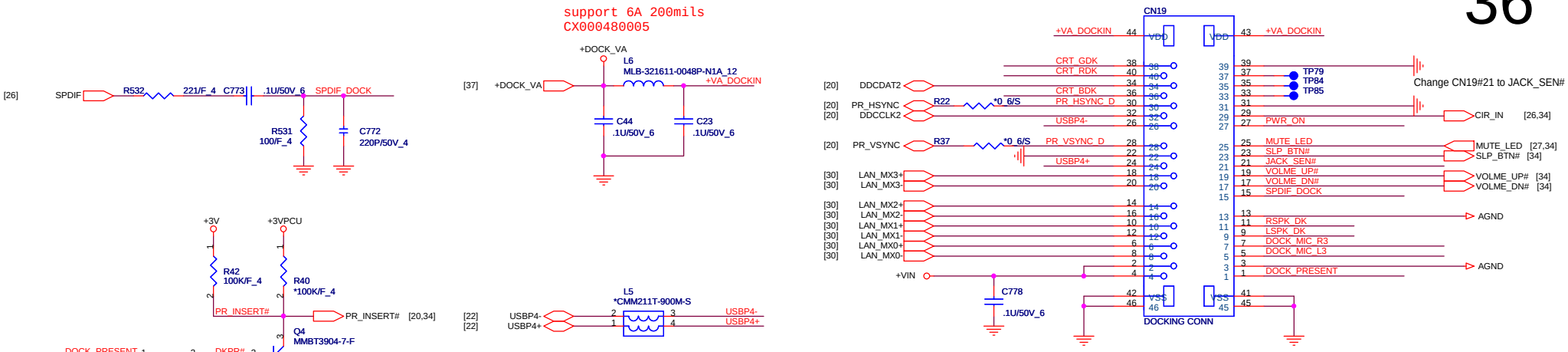
NB5

Date: Monday, October 20, 2008 Sheet 35 of 43

CABLE DOCK

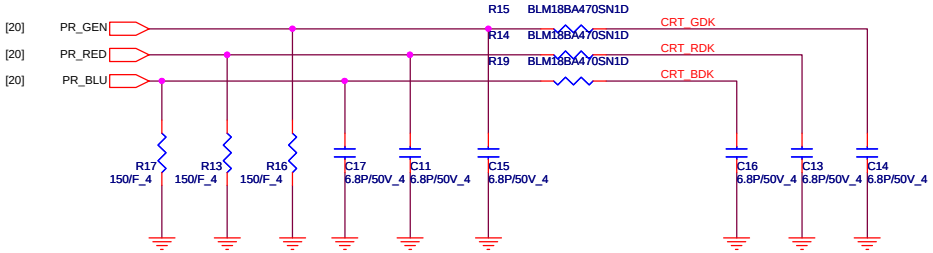
support 6A 200mils
CX000480005

DFHS44FRC04



R13,R16,R17 Change to install

Delete CX08T470000 as CRT rising time and falling time request

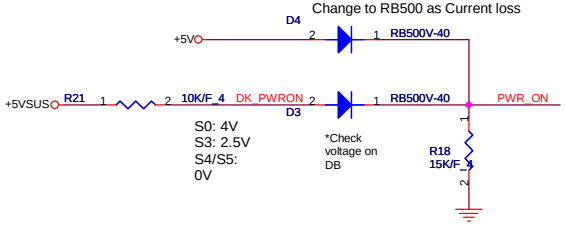


For IDT Dolby functionality.

DB modified

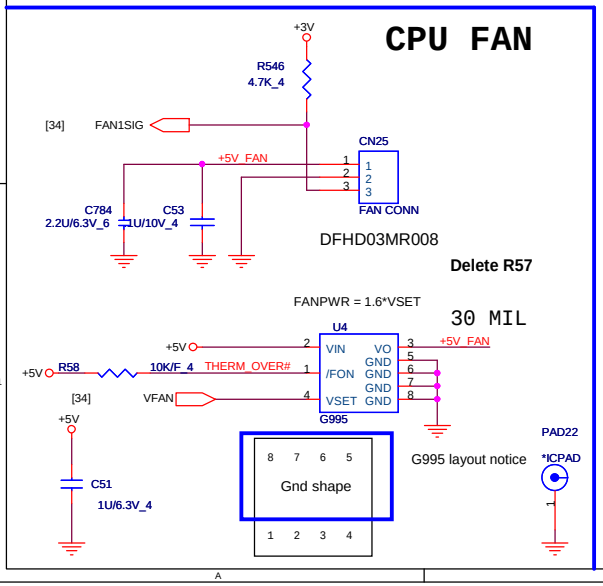
[26] PR_INSERT#_IDT — PR_INSERT#_IDT — R730 *0_4/S — R_INSERT#

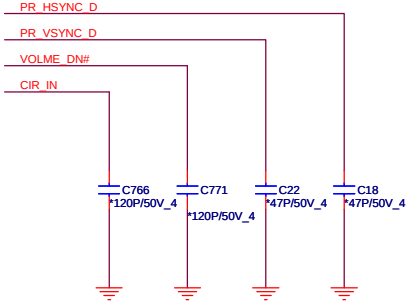
Change to RB500 as Current loss

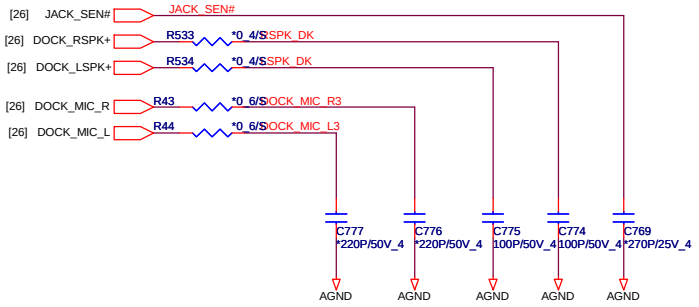


Add Loss net(GND Net)

CPU FAN







Change to Analog Gnd

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	CABLE DOCKING/FAN	PV

NB5

Date: Monday, October 20, 2008 Sheet 36 of 43

TOP_DC_JACK
65W/90W

BATTERY CONNECTOR TYPE		
MODEL	PART NUMBER	FOOTPRINT
UT3	DFHD08MR015	BAT-BP02083-B09065-7F-9P-V-QT6
UT5	DFHD08MR030	bat-200045mr008g10jzr-8p-l-v

Change CN21 to BAT-BP02083-B09065-7F-9P-V-QT6

FOR 16"

FOR 17.3"

DB modified

SI modified

To PWR LED

EMI Solution

Size	Mounted	N/A
16"	PR185	PR184, PR186, PQ59
17.3"	PR184, PR186, PQ59	PR185

CELL_SLT = 1 ~ 3 S (Cells = GND 3S)
CELL_SLT = 0 ~ 4 S (Cells = VDD 4S)

Charging Curret setting =
I chg = 165mV / Rsense * (Vchlim / 3.3V)

V ACLIM = VREF *
(Rl // 152K) / (Rhi // 152K + Rlow// 152K)
Input curretn = 2.9A (71.5K , 10K)
(0.05/Vref * Vaclim + 0.05) / Rsense

Input Current monitor
V icm = 19.9 * (Vcsip - Vcsin)

Setting the Vin min to 12V
For ACSET 1.26V

Setting the Vin min to 17V
For EN = 1.06V

PROJECT : UT3/5
Quanta Computer Inc.

NB5

Size: Custom | Document Number: Charger (ISL6251) | Rev: PV

Date: Monday, October 20, 2008 | Sheet 37 of 43

DC/DC +3V_ALW/+5V_ALW2 /+12V_ALW

Place these CAPs close to FETs

Place these CAPs close to FETs

5 Volt +/- 5%
Countinue current:5A
Peak current:7.5A
OCP minimum 10A

3.3 Volt +/- 5%
Countinue current:5A
Peak current:7.5A
OCP minimum 9A

SI modified

SI modified

Rds(on) 20m ohm

Rds(on) 20m ohm

PU2 RT8206B

PR21 1K/F_4
PR19 150K/F_4
PR22 *0_6/S
PR214 *0_4
PD48 UDZ5V6B-7-F
PR26 *47_6
PC29 10U/25V_12
PC31 1000P/50V_4
PC30 .1U/50V_6
PC9 4.7U/6.3V_6
PC130 *0.1U/10V_4
PR25 *0_4
PC13 .1U/50V_6
PC12 .1U/10V_4
PC11 1U/6.3V_4
PR20 *0_4/S
PR23 *0_4/S
PR27 309K/F_4
PR39 309K/F_4
PC4 .1U/50V_6
PC125 1000P/50V_4
PC6 10U/25V_12
PQ49 AO4496
PL9 2.5uH_7.5A
PR168 *2.2_8
PC129 *1500P/50V_4
PR29 0_4
PR33 *0_4
PQ50 AO4468
PC138 .1U/10V_4
PC144 330U/6.3V_6X5.8
PQ55 AO4496
PL8 2.5uH/7.5A
PR165 *2.2_8
PC124 *1500P/50V_4
PQ47 AO4468
PC186 3300P/50V_4
PC134 330U/6.3V_6X5.8
PC135 .1U/10V_4
PR31 *0_4
PR35 0_4
PC49 .1U/50V_6
PR69 4.7_6
PR47 4.7_6
PC34 .1U/50V_6
PC62 .01U/50V_6
PC63 .01U/50V_6
PC70 0.1U/25V_8
PD12
PD13
BAV99
BAV99
PR73 *0_6/S
PC52 1U/6.3V_4
PR45 100K/F_4
PC71 2.2U/50V_8
PC180 *.1U/10V_4
PC181 *.1U/10V_4
PR36 *0_4/S

+VIN
+5VALW
+5V_VCC1
+5VPCU
+5V_ALWP
+3VPCU
+3.3V_ALWP
+12VALW
+15VALW
3V_LX
5V_LX
5V_DH
5V_DL
3V_DH
3V_DL
PGOOD1
PGOOD2

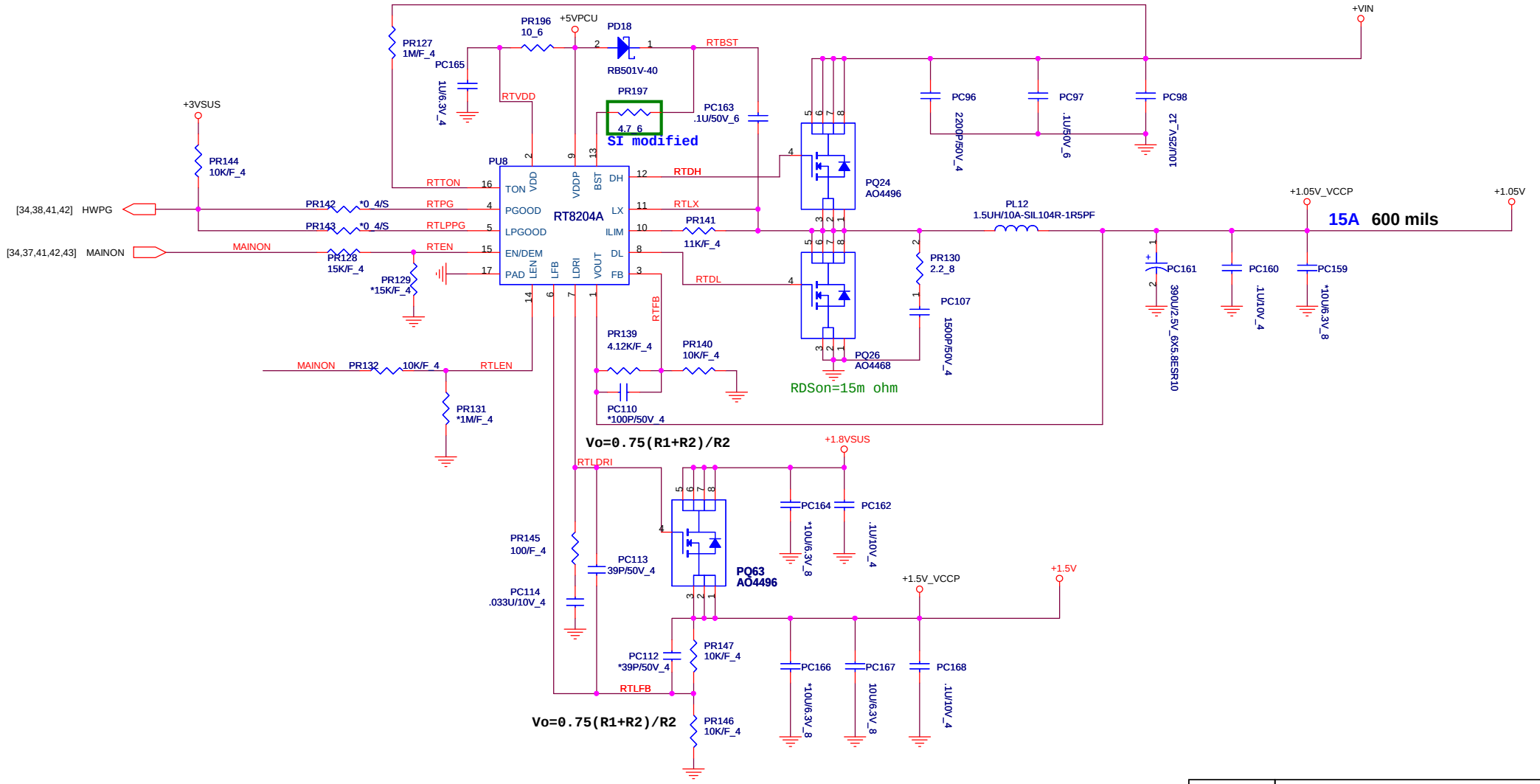
[4,37] SYS_SHDN#
HWPG [34,39,41,42]

EMI reserved

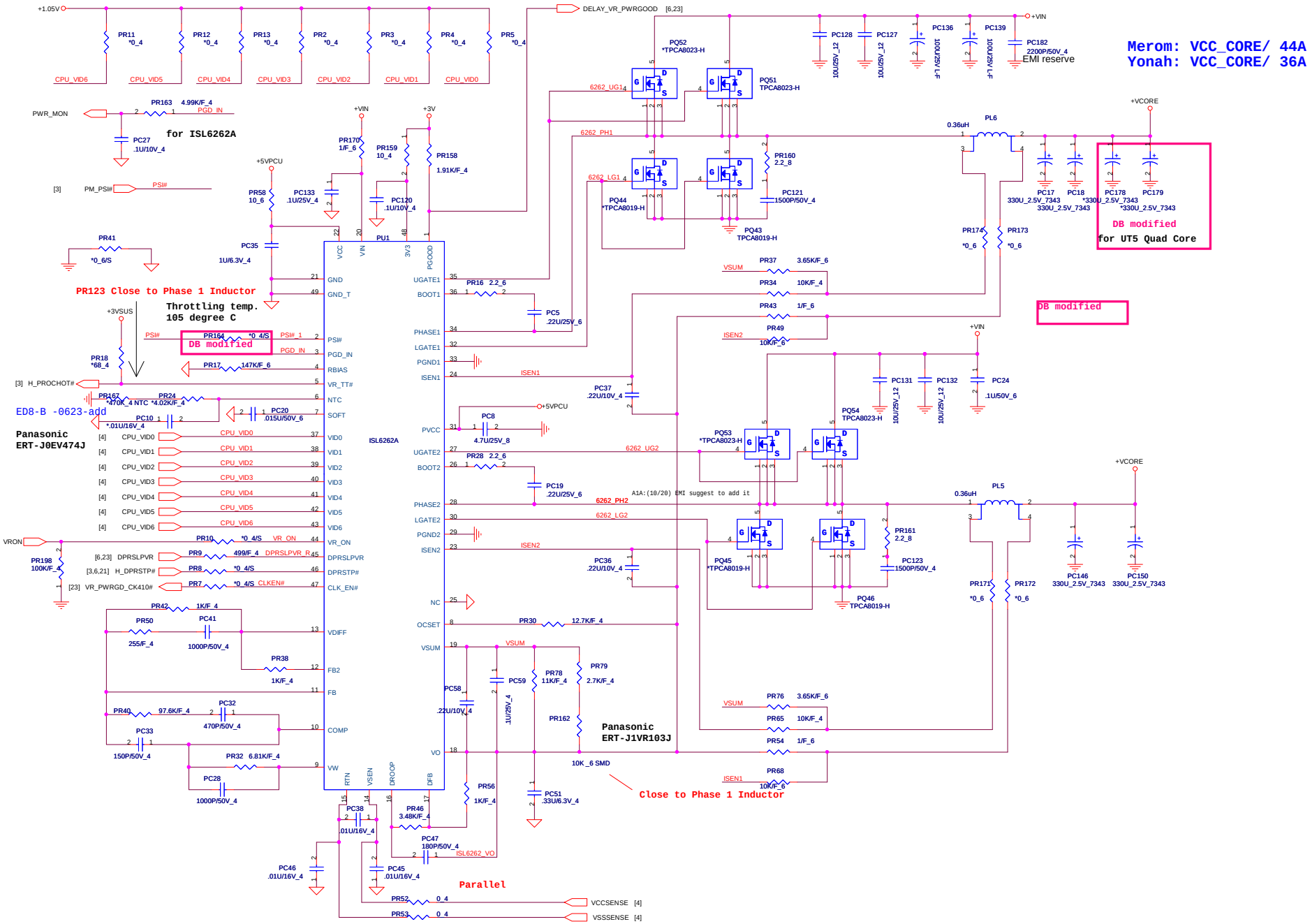
NB5	PROJECT : UT3/5 Quanta Computer Inc.	
	Size B / Document Number: +5V/+3V (ISL6237)	Rev PV
	Date: Monday, October 20, 2008 / Sheet 38 of 43	

VCCP1.05V & +1.5V

+1.05Volt +/- 5%
Countinue current:7.5A
Peak current:10A
OCP minimum 15A



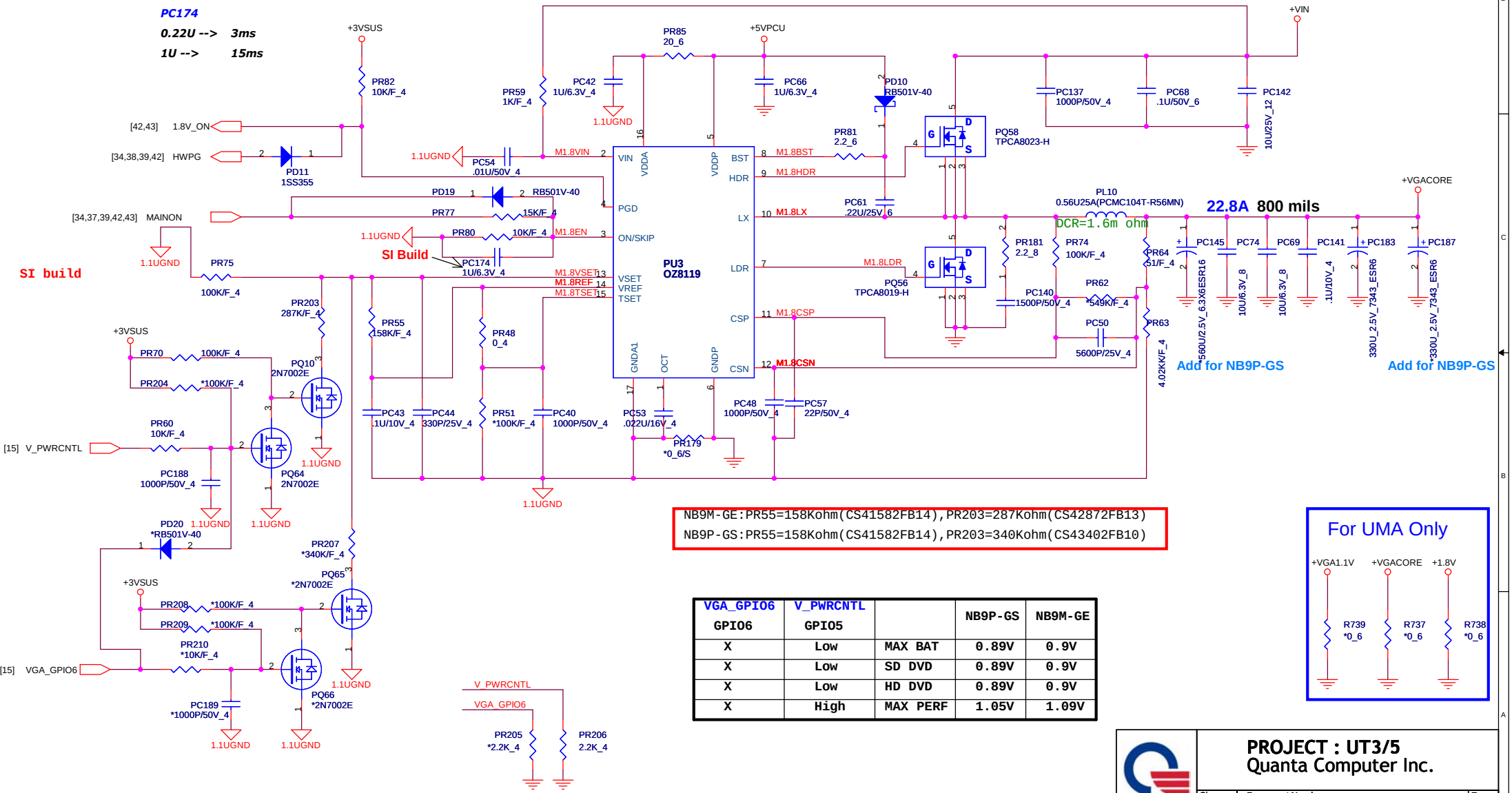
NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size B	Document Number +1.05V/+1.5V (RT8204)	Rev PV
Date: Monday, October 20, 2008	Sheet 39 of 43	



NB5	PROJECT : UT3/5 Quanta Computer Inc.	
Size: Custom	Document Number: CPU Core (ISL6262A)	Rev: PV
Date: Monday, October 20, 2008	Sheet 40 of 43	

VGA Core & VCC1.1

+1.1Volt +/- 5%
Countinue current:17.54A
Peak current:22.8A
OCP minimum 23A



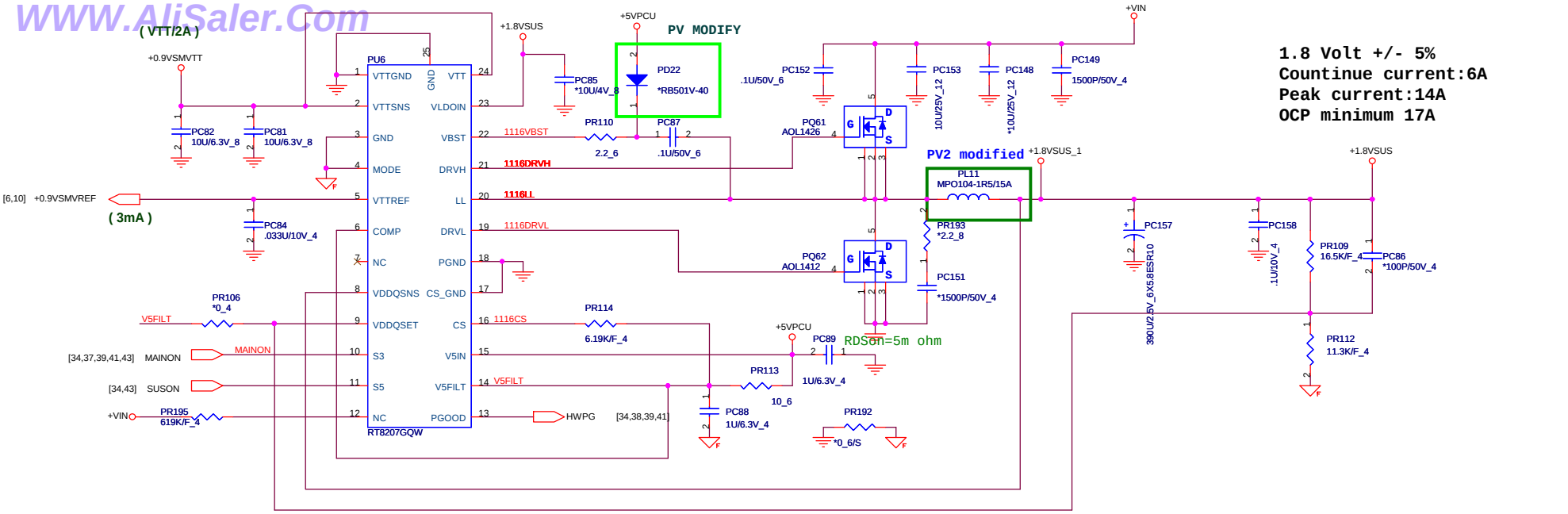
VGA_GPIO6 GPIO6	V_PWRCNTL GPIO5		NB9P-GS	NB9M-GE
X	Low	MAX BAT	0.89V	0.9V
X	Low	SD DVD	0.89V	0.9V
X	Low	HD DVD	0.89V	0.9V
X	High	MAX PERF	1.05V	1.09V

NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
B	VGA Core OZ8119	PV

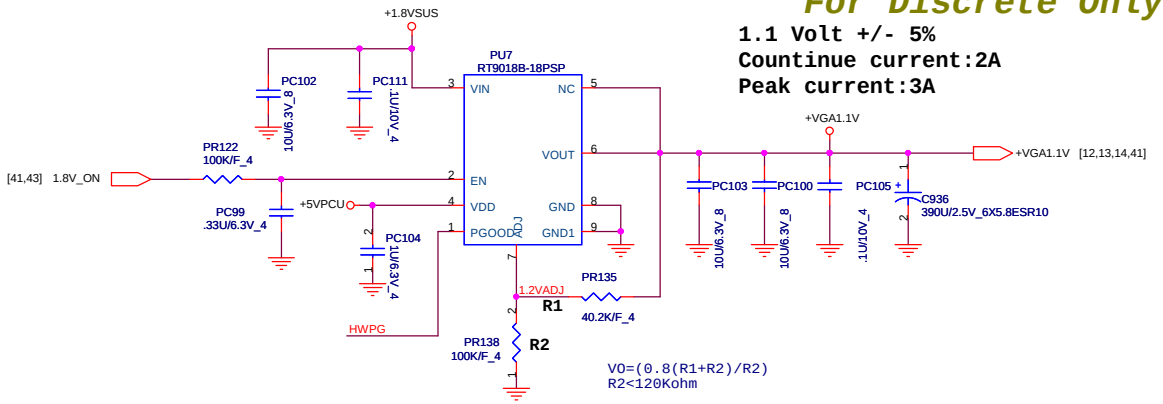
Date: Monday, October 20, 2008 Sheet 41 of 43

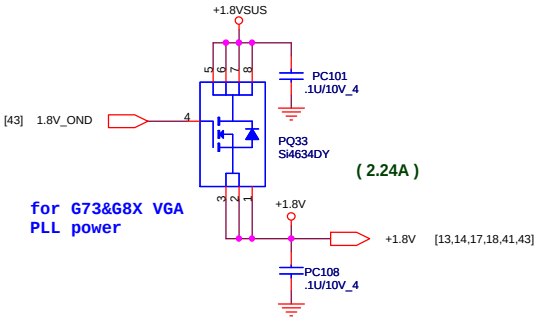


Change PR122 tied to 1.8V_ON as power sequence reuqest

For Discrete Only

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



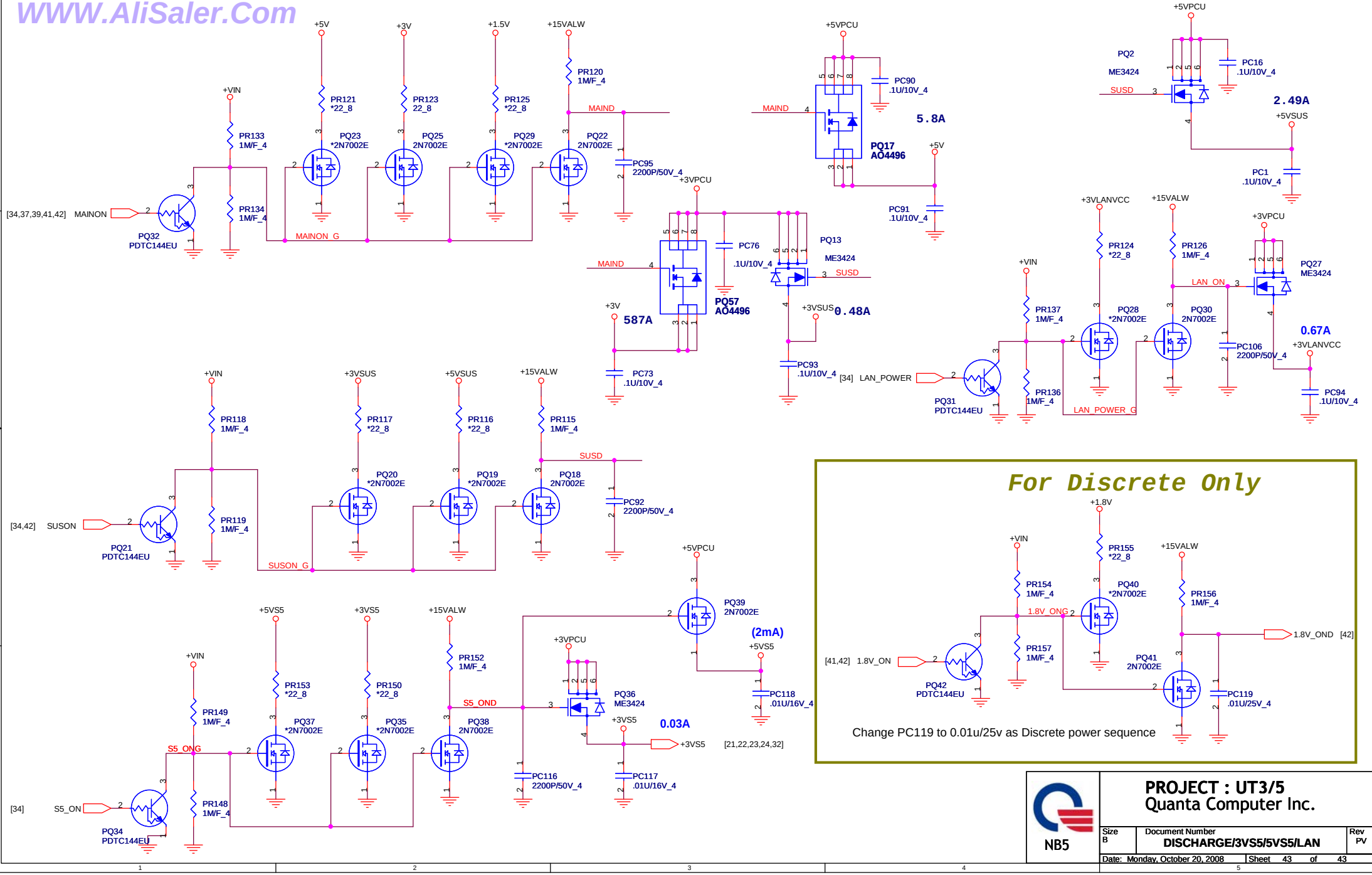


NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
Custom	1.8V/DDR_VTER/+1.8v/+1.1V	PV

Date: Monday, October 20, 2008 | Sheet 42 of 43



NB5

PROJECT : UT3/5
Quanta Computer Inc.

Size	Document Number	Rev
B	DISCHARGE/3VS5/5VS5/LAN	PV

Date: Monday, October 20, 2008 Sheet 43 of 43