PWA : P835D
PWB : R983D
SCH : M854D

RM2 Paltrow Intel Discrete Block Diagram

VER : 3A

SYSTEM POWER

REGULATOR +1.5V_RUN/+1.05V_VCCP PG 48	SYS VR +5V_ALW2/+3.3V_ALW +5V_ALW/+15V_ALW PG 50	VGA Core +VCC_GFX_CORE +1.1V_GFX_PCIE PG 52
DDR3 VR +1.5V_DDR/+0.75V_DDR_VTT +V_DDR_MCH_REF PG 49	CPU VR +VCC_CORE PG 51	REGULATOR +1.8V_SUS PG 53
Load Switch +5V_SUS/+3.3V_SUS/+5V_RUN/+3.3V_RUN/+1.8V_RUN PG 55		

POWER

- AC/BATT CONNECTOR PG 54
- BATT CHARGER PG 47

CLOCK SLG8SP513V (QFN-64) PG 17

FAN & THERMAL EMC1423 (10P TSSOP) PG 39

Penryn (478 Micro-FCPGA) PG 3,4

667 / 800 / 1066 MHz FSB

DDR3-SODIMM1 PG 15 — 800 / 1066 MHZ DDR III

DDR3-SODIMM2 PG 16 — 800 / 1066 MHZ DDR III

Cantiga (1299 uFCBGA) PG 5,6,7,8,9,10

PCIEx16

AMD M86ME-XT PCI EXPRESS GFX (880 BGA) PG 18,19,20,21,22,26

- HDMI → HDMI CONN. PG 25
- DP → DISPLAYPORT PG 25
- LVDS → Panel Connector PG 26
- VGA → CRT CONN. PG 27

GDDR3 x 4 (512M) (136P FBGA) PG 23,24

GPU THERMAL ANALOG DEVICES ADM1032 (8 MSOP) 3 x 3 mm PG 22

DMI interface

ICH9-M (676 BGA) PG 11,12,13,14

IHDA

AUDIO IDT 92HD73C (56 LQFP) 9 x 9 mm PG 40

- Subwoofer CONN PG 42 ← Subwoofer AMP MAXIM MAX9759 (16 Pin TQFN) PG 42
- MIC PG 42 & IB
- Internal Speaker PG 37 & DB ← Amplifier TI TPA6040A4 (32 Pin QFN) PG 41
- HP2 PG 42 & IB
- HP1 PG 42 & IB ← Amplifier TI TPA4411MRTJR (20 Pin QFN) PG 41
- Camera + D-MIC PG 37 — USB2.0 [11]
- TV CONN PG 35 — USB2.0 [9]
- USB CONN PG 42 & IB — USB2.0 x 2 [0:1]
- USB/eSATA Combo PG 35 & eSATA board — USB2.0 [8]
- SATA-ODD PG 36 — SATA2 [A5]
- SATA-HDD PG 36 — SATA2 [A1]
- SATA2 [A0]
- 33MHz PCI

PCIE [1] USB2.0 [5] → WWAN MINI-CARD PG 34

PCIE [2] USB2.0 [4] → WLAN Half MINI-CARD PG 33

PCIE [3] USB2.0 [6] → UWB/BT MINI-CARD PG 34

PCIE [4] USB2.0 [7] → Express Card PG 30 → Express Switch RICOH R5538D001 (20 QFN) 4 x 4 mm PG 30

PCIE [6] → LAN Broadcom BCM5784M (68P QFN) PG 43 → Magnetic PG 44 → RJ45 PG 44

LPC

- 1394 CONN PG 29 & 1394 board
- CardReader CONN PG 29

PC Card/1394 RICOH R5C833T (128 Pin TQFP) 14 x 14 mm PG 28,29

Debug Port (Mini PCI) PG 56

SPI

SIO ITE ITE8512E (128 Pin LQFP) 16 x 16 mm PG 31

SMBus [2]

PS/2

- SPI ROM 2MB (8 Pin SO8W) PG 32
- Keyboard PG 37
- CIR PG 32
- Touchpad PG 37 & DB
- Media Button PG 37 & DB
- LED PG 38
- RTC PG 32

PAD & SCREW & SPRING PG 46

System Reset Circuit PG 45

To IO Board (USB*2/ MIC/ HP2/ HP1/ LED) PG 42

To Daughter Board (Power Button/Speaker/ KB LED/Touch PAD/ Media Button) PG 37

QUANTA COMPUTER

Title	BLOCK DIAGRAM	
Size	Document Number RM2	Rev 3A
Date: Wednesday, August 06, 2008	Sheet 1 of 59	

Table of Contents

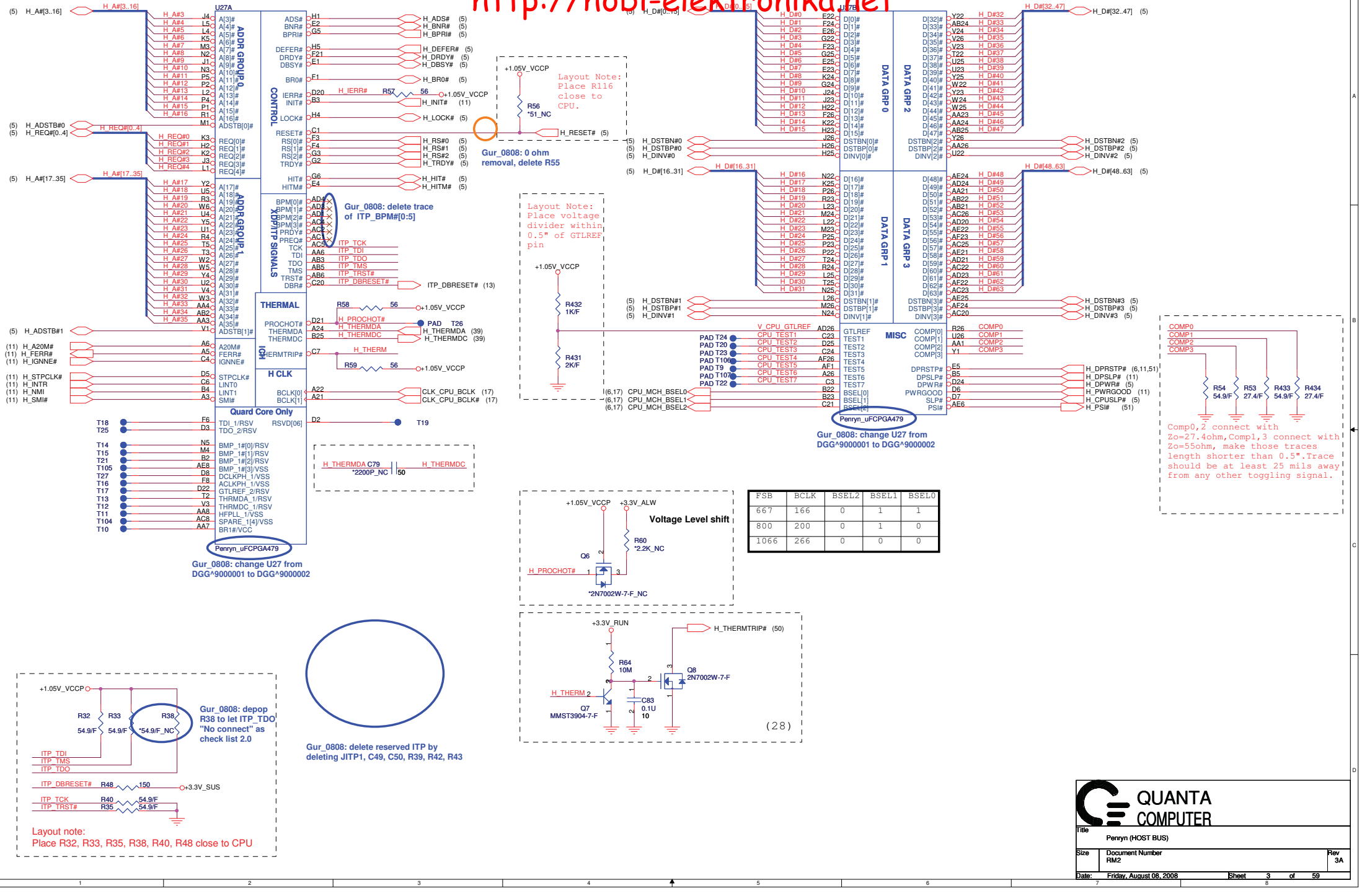
Power States

POWER PLANE	VOLTAGE	PAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
+PWR_SRC	10V~+19V	4,26,32,34,48,49,50,51,52,55	MAIN POWER		S0~S5
+RTC_CELL	+3.0V~+3.3V	11,14,31,32	RTC		S0~S5
+3.3V_ALW	+3.3V	3,13,26,31,32,34,36,37,38,44,46,49,52,53,54	8051 POWER	ALWON	S0~S5
+5V_ALW	+5V	35,36,46,48,49,52,53,54	LCD/CHARGE POWER	ALWON	S0~S5
+15V_ALW	+15V	26,36,37,52,53	LARGE POWER	+5V_ALW	S0~S5
+3.3V_LAN	+3.3V	42,43	LAN POWER	AUX_ON	
+5V_SUS	+5V	14,38,50,51,53	SLP_S5# CTRLD POWER	SUS_ON	
+3.3V_SUS	+3.3V	3,11,12,13,14,20,30,37,38,43,48,49,50,51,53	SLP_S5# CTRLD POWER	3.3V_SUS_ON	
+1.8V_SUS	+1.8V	6,8,9,15,48,49,50,53,55	SODIMM POWER	DDR_ON	
+0.9V_DDR_VTT	+0.9V	16,49,53	SODIMM POWER	0.9V_DDR_VTT_ON	
+5V_RUN	+5V	14,20,25,27,36,37,38,39,40,41,53	SLP_S3# CTRLD POWER	RUN_ON	
+3.3V_RUN	+3.3V	6,8,9,11,12,13,14,15,17,19,20,22,25,26,27,28, 30,33,34,36,38,39,40,41,42,53,55	SLP_S3# CTRLD POWER	3.3V_RUN_ON	
+1.8V_RUN	+1.8V	19,20,21,22,23,24,25,38,53	SDVO POWER	RUN_ON	
+1.5V_RUN	+1.5V	4,9,14,30,33,34,48,,53,55	CALISTOGA/ICH8 POWER	1.5V_RUN_ON	
+1.25V_RUN	+1.25V	6,9,14,49,53	CALISTOGA/ICH8 POWER	1.25V_RUN_ON	
+1.05V_VCCP	+1.05V	3,4,5,6,8,9,11,14,37,48,55	CPU/CALISTOGA/ICH8 POWER	1.05V_RUN_ON	
+VCC_CORE	+0.7V~+1.5V	4,51	CPU CORE POWER	IMVP_VR_ON	
+LCDVCC	+3.3V	26	LCD Power	LCDVCC_TST_EN & ENVDD	
+5V_MOD	+5V	36	Module Power	MODC_EN#	
+5V_HDD	+5V	36	HDD Power	HDDC_EN#	
+5V_ALW2	+5V	37,38.52,53	LED power source	LDO output	

GND PLANE	PAGE	DESCRIPTION
8731AGND	46	
AGND_0.9V	49	
AGND_DC/DC	52	
AGND_DC2	48	
AGND_DDR	49	
AGND_ISL6260	51	
GND	ALL	

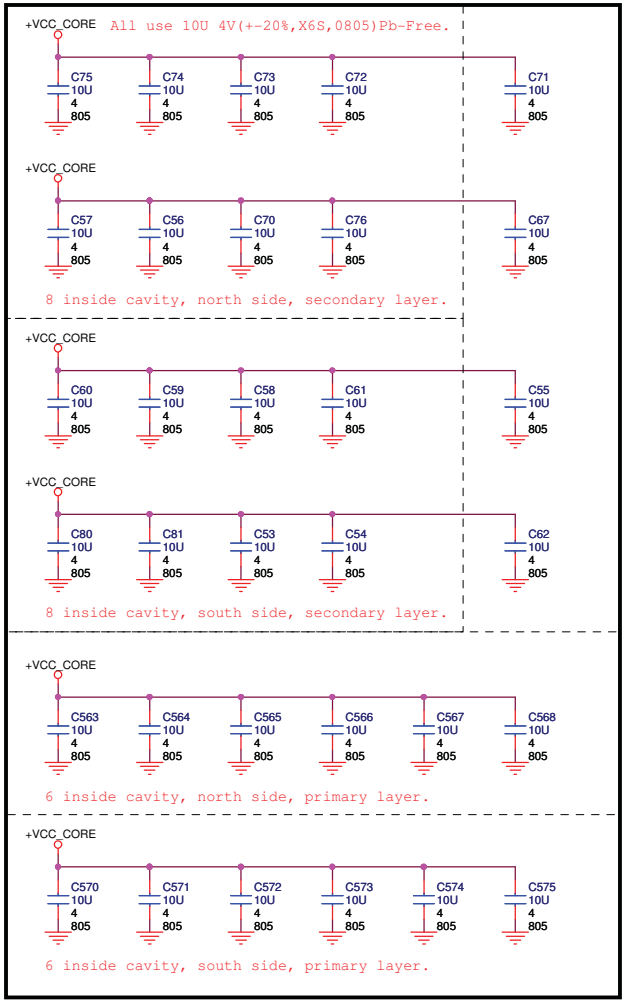
QUANTA COMPUTER

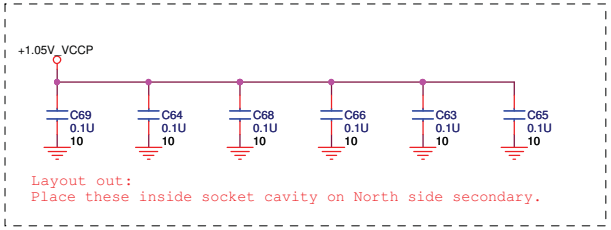
Title	FRONTPAGE	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 2 of 59	

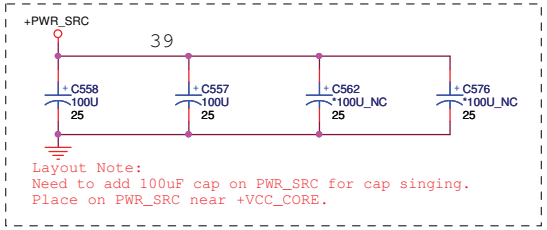


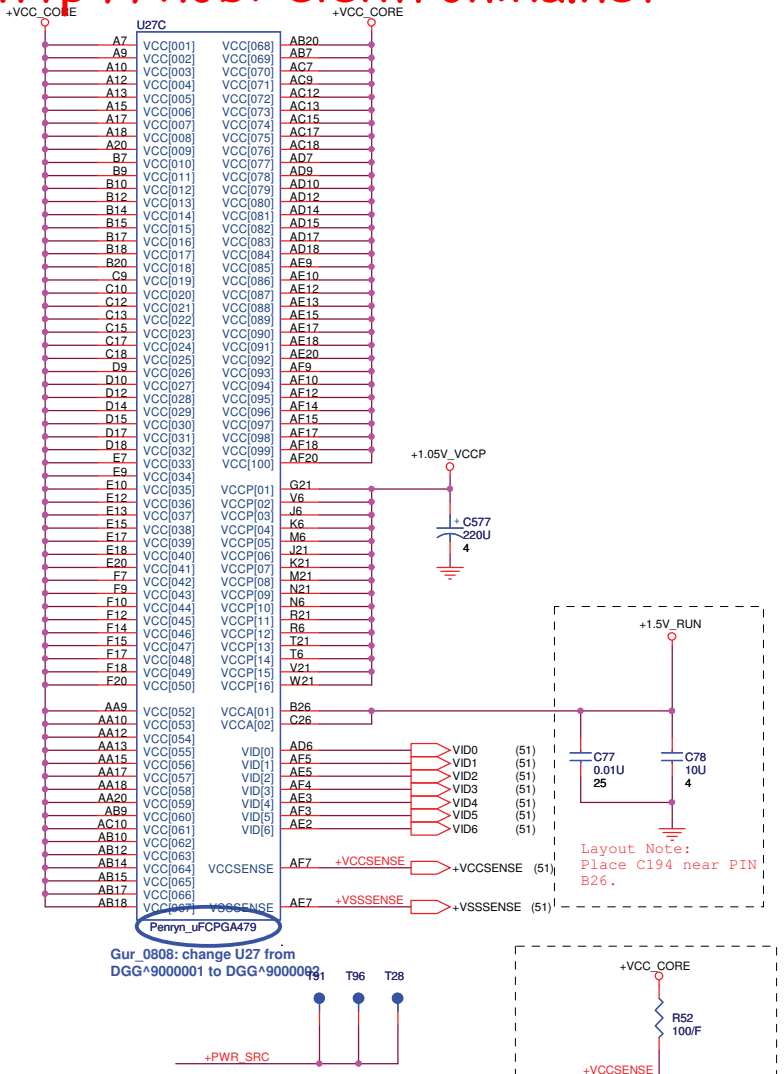
FSB	BCLK	BSEL2	BSEL1	BSEL0
667	166	0	1	1
800	200	0	1	0
1066	266	0	0	0

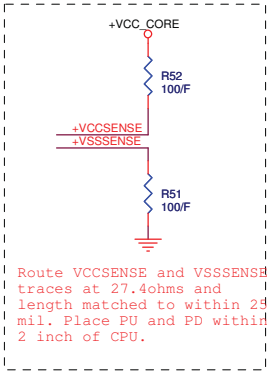
QUANTA COMPUTER	
Title	Penryn (HOST BUS)
Size	Document Number RM2 — Rev 3A
Date: Friday, August 08, 2008	Sheet 3 of 59

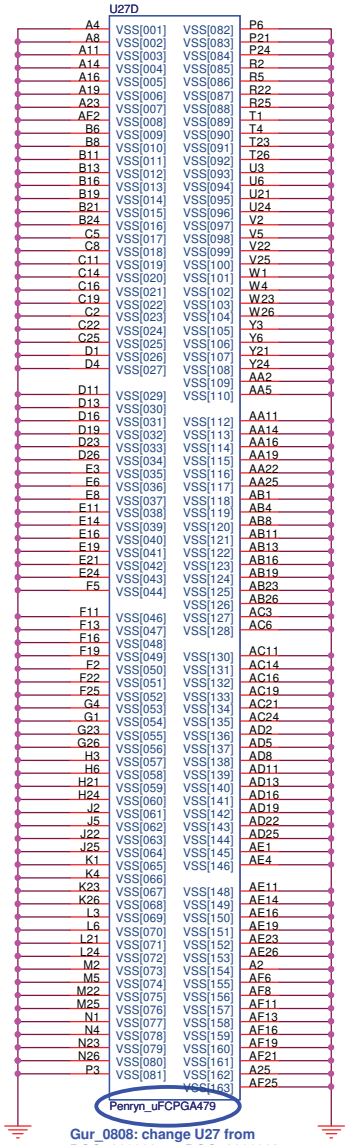






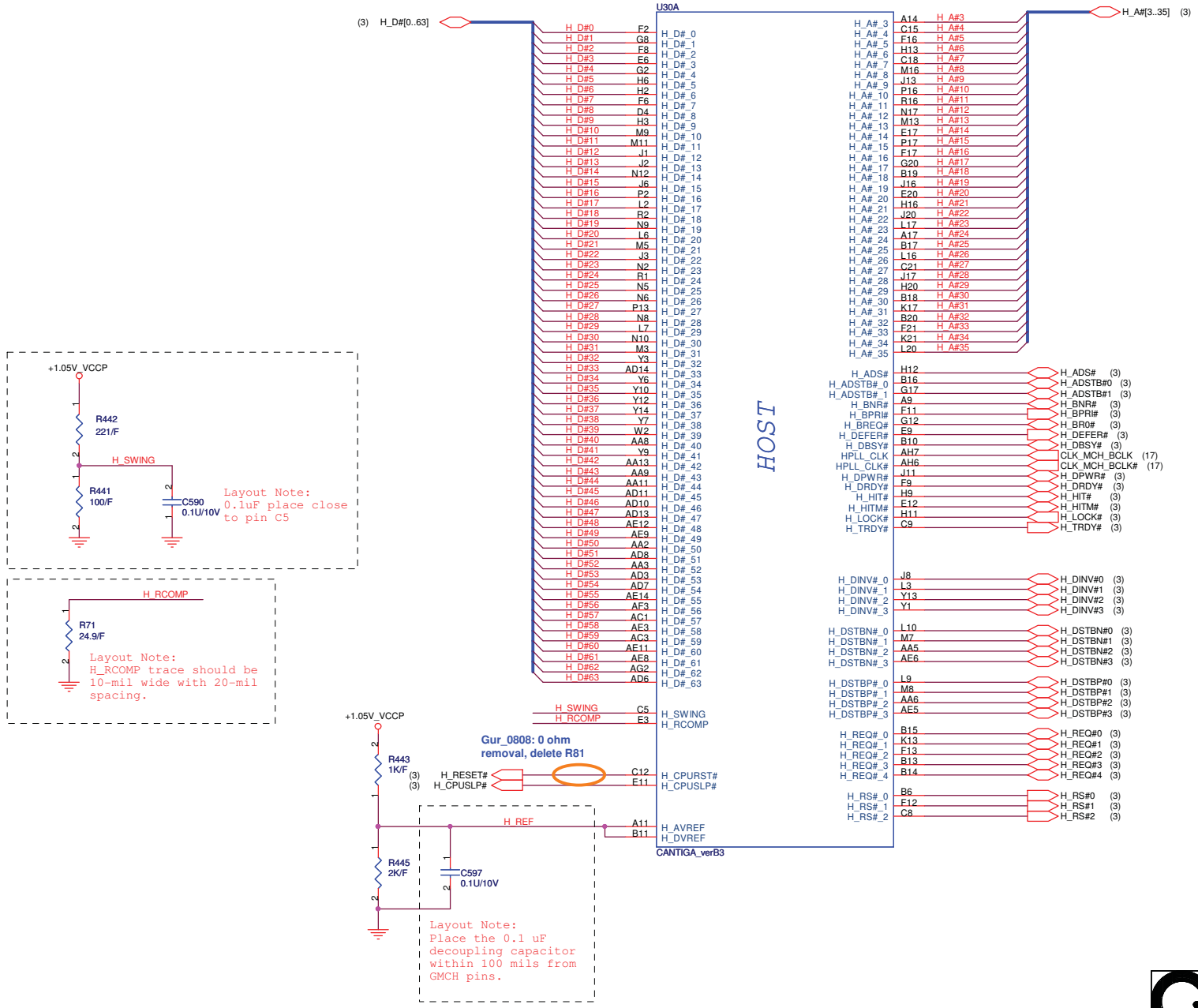




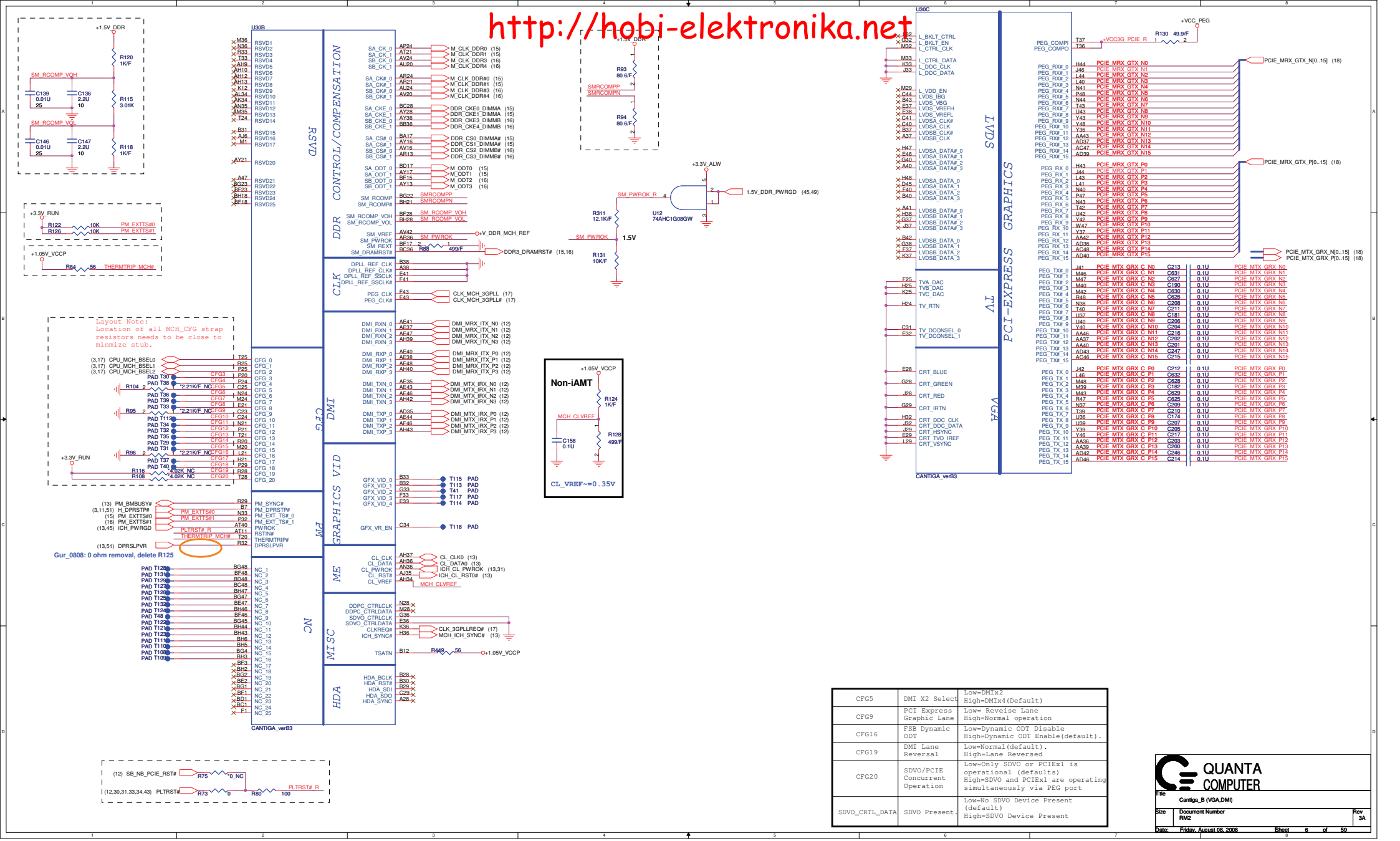


Title	Penryn (POWER/NC)	
Size	Document Number RM2	Rev 3A
Date:	Friday, August 08, 2008	Sheet 4 of 59

QUANTA COMPUTER



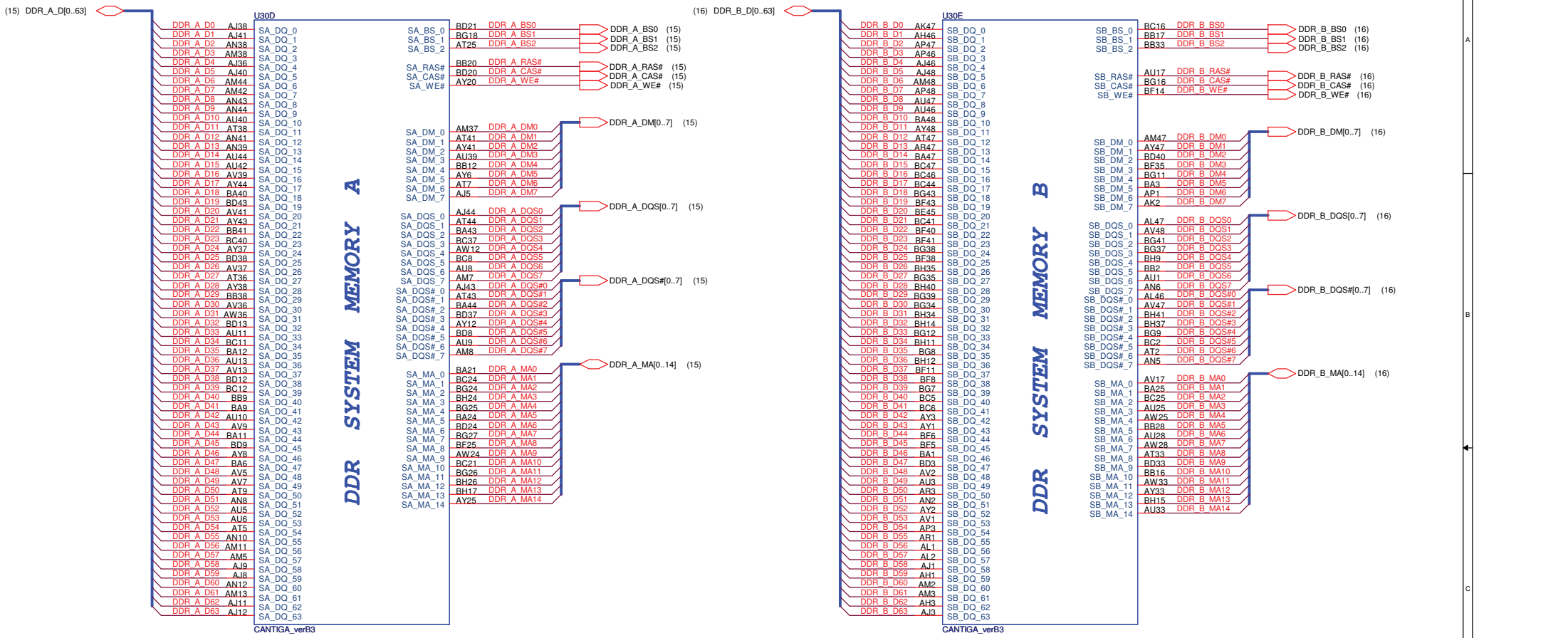
QUANTA COMPUTER		
Title	Cantiga_A (HOST)	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 5 of 59	



CFG5	DMI X2 Select	Low=DMIx2 High=DMIx4(Default)
CFG9	PCI Express Graphic Lane	Low= Reveise Lane High=Normal operation
CFG16	FSB Dynamic ODT	Low=Dynamic ODT Disable High=Dynamic ODT Enable(default).
CFG19	DMI Lane Reversal	Low=Normal(default). High=Lane Reversed
CFG20	SDVO/PCIE Concurrent Operation	Low=Only SDVO or PCIEx1 is operational (defaults) High=SDVO and PCIEx1 are operating simultaneously via PEG port
SDVO_CRTL_DATA	SDVO Present.	Low=No SDVO Device Present (default) High=SDVO Device Present

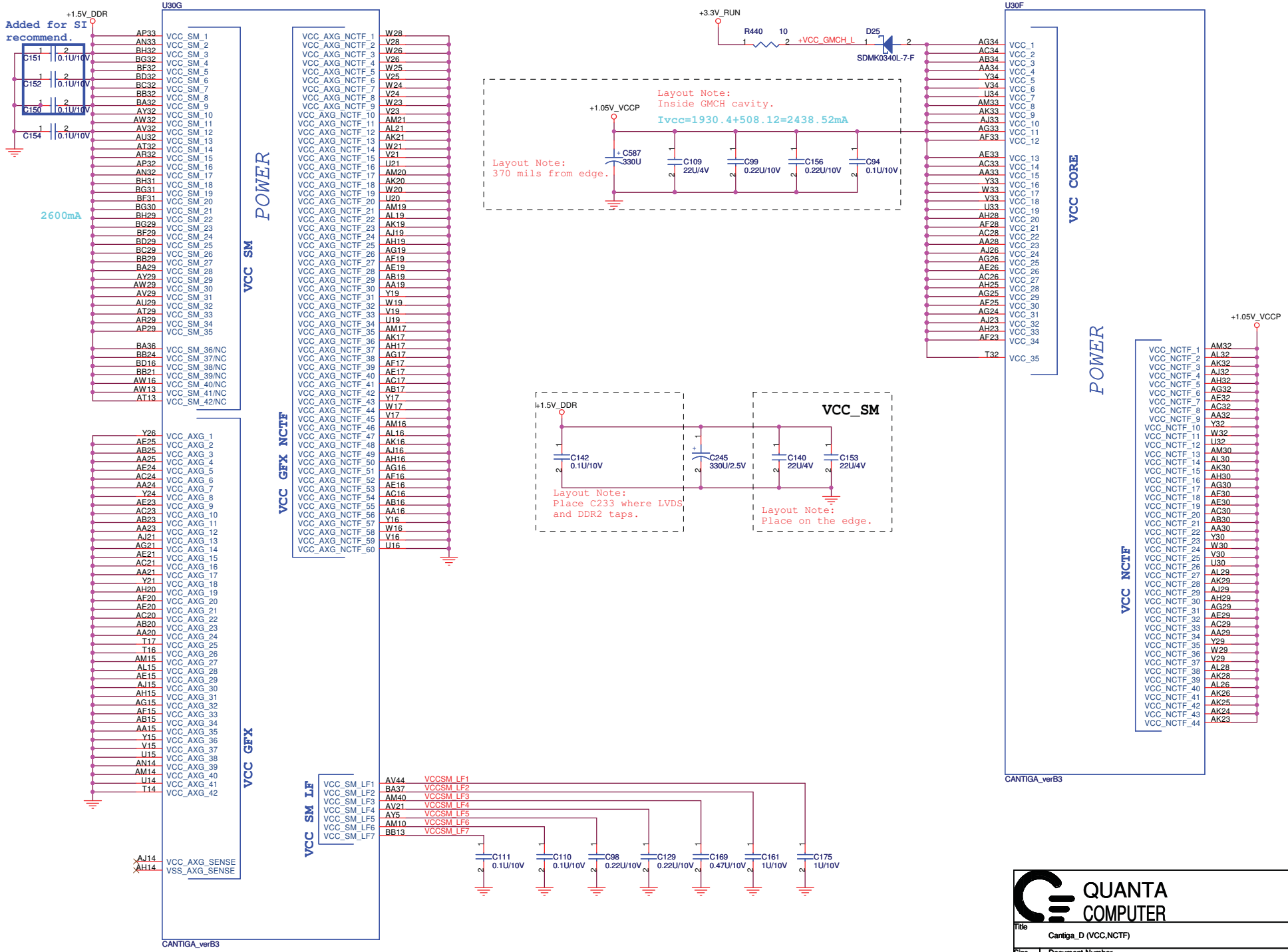
QUANTA COMPUTER

Title	Cantiga_B (VGA,DMI)	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 6 of 59	

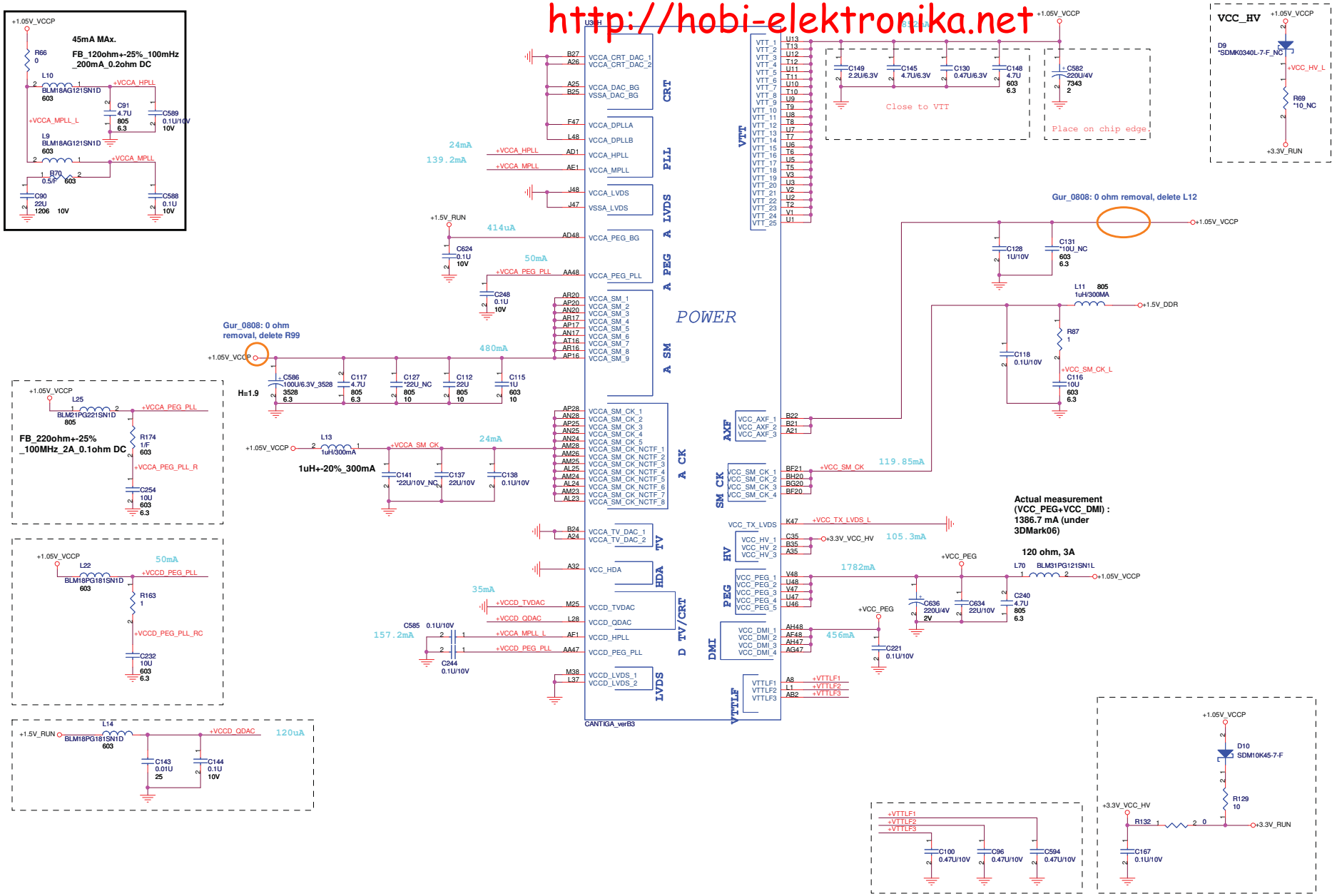


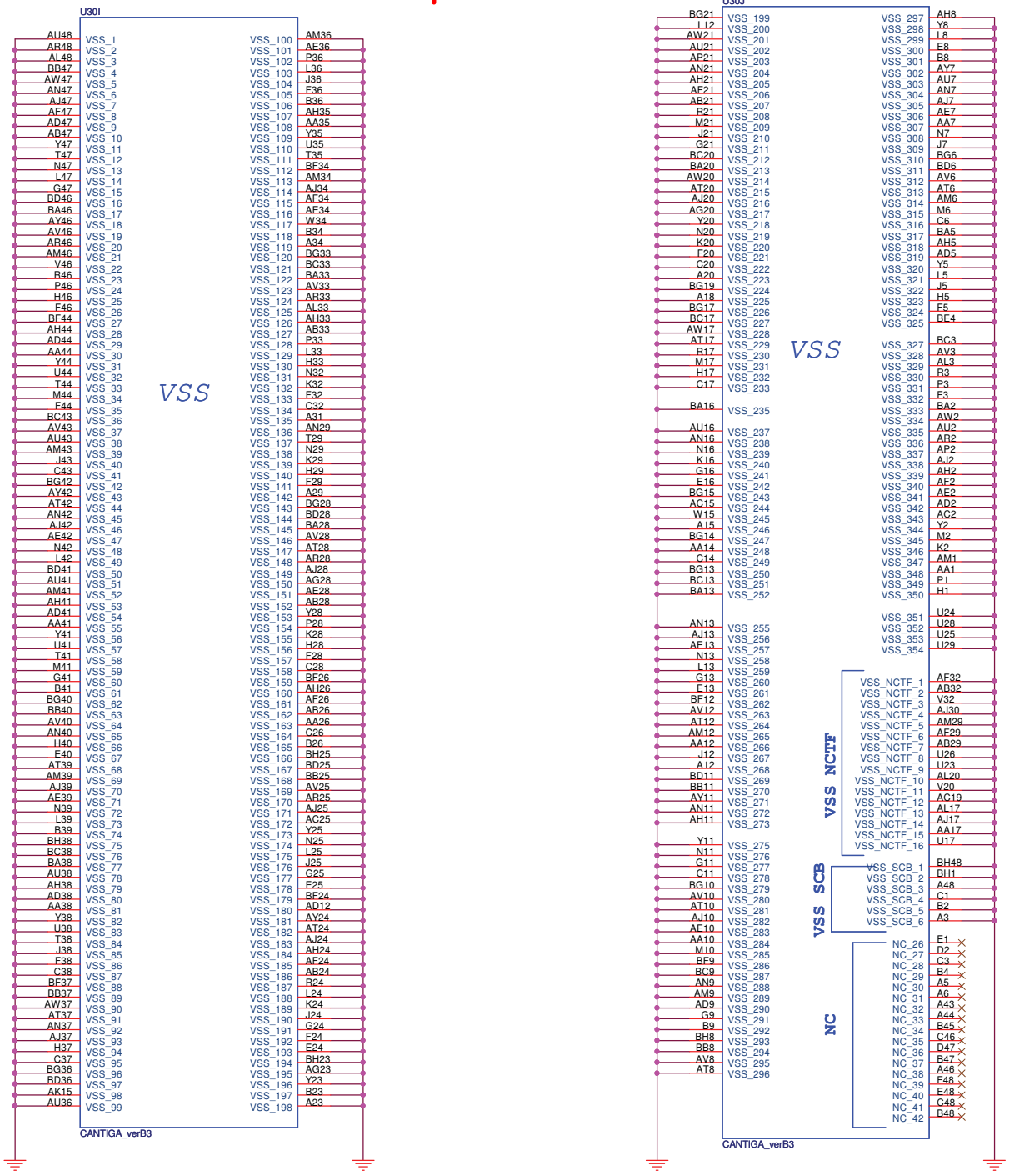
QUANTA COMPUTER

Title	Cantiga_C (DDR3)	
Size	Document Number RM2	Rev 2D
Date: Wednesday, August 06, 2008	Sheet 7 of 59	

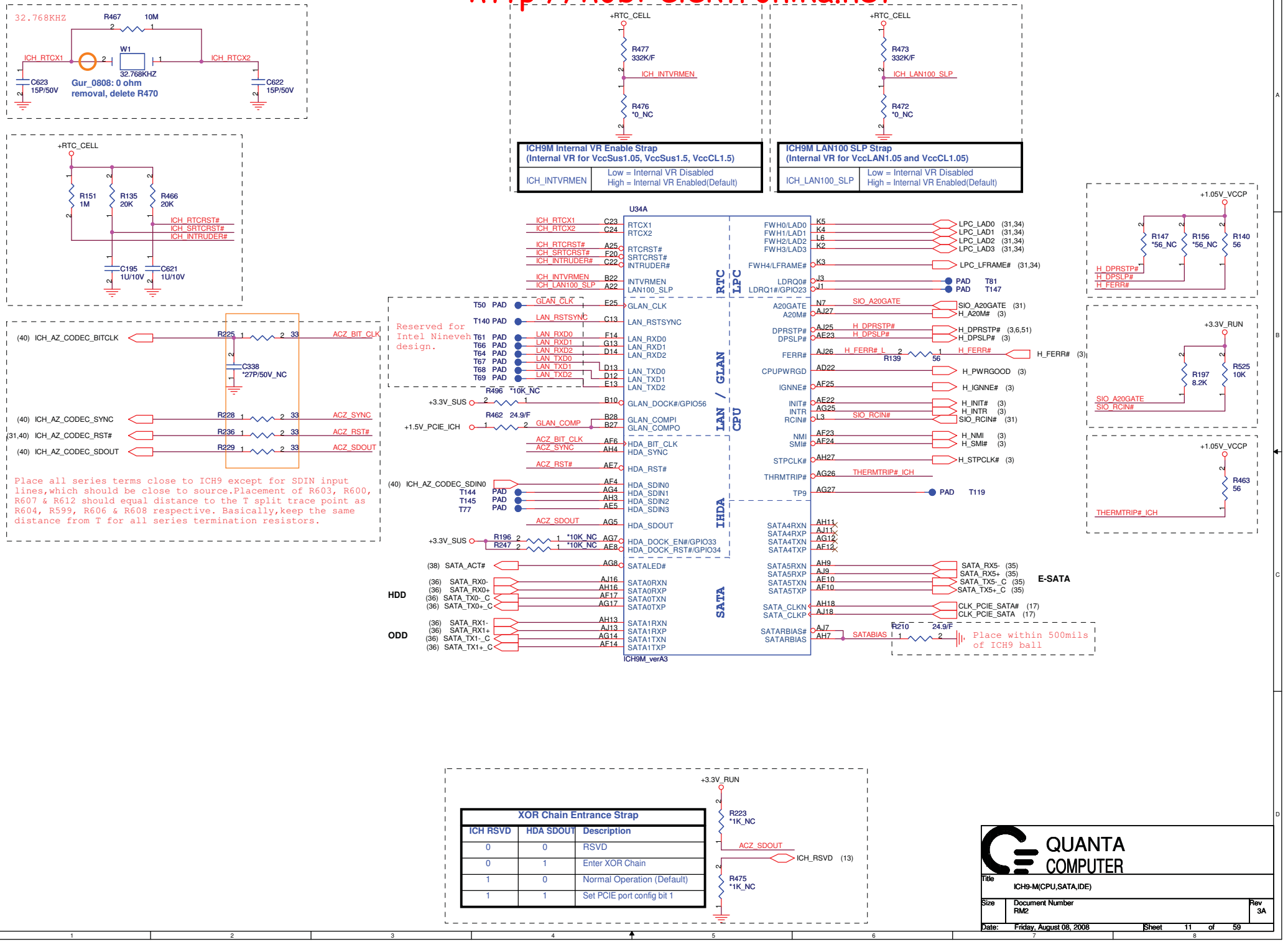


QUANTA COMPUTER		
Title: Cantiga_D (VCC,NCTF)		
Size	Document Number: RM2	Rev: 2D
Date: Wednesday, August 06, 2008	Sheet 8 of 59	





QUANTA COMPUTER		
Title: Cantiga_F (VSS)		
Size	Document Number: RM2	Rev: 2D
Date: Wednesday, August 06, 2008	Sheet 10 of 59	



Place TX DC blocking caps close ICH8.

(34) PCIE_TX1- C617 0.1U 10 PCIE_TXN1_C
(34) PCIE_TX1+ C616 0.1U 10 PCIE_TXP1_C

(33) PCIE_TX2- C615 0.1U 10 PCIE_TXN2_C
(33) PCIE_TX2+ C614 0.1U 10 PCIE_TXP2_C

(34) PCIE_TX3- C613 0.1U 10 PCIE_TXN3_C
(34) PCIE_TX3+ C612 0.1U 10 PCIE_TXP3_C

(30) PCIE_TX4- C611 0.1U 10 PCIE_TXN4_C
(30) PCIE_TX4+ C610 0.1U 10 PCIE_TXP4_C

(43) PCIE_TX6-/GLAN_TX- C609 0.1U 10 GLAN_TXN_C
(43) PCIE_TX6+/GLAN_TX+ C608 0.1U 10 GLAN_TXP_C

U34D

(34) PCIE_RX1- L29 PERN1
(34) PCIE_RX1+ N28 PERP1
MiniWWAN
PCIE_TXN1_C P27 PETN1
PCIE_TXP1_C P26 PETP1

(33) PCIE_RX2- L29 PERN2
(33) PCIE_RX2+ L28 PERP2
MiniWLAN
PCIE_TXN2_C M27 PETN2
PCIE_TXP2_C M26 PETP2

(34) PCIE_RX3- J29 PERN3
(34) PCIE_RX3+ J28 PERP3
MiniWPAN
PCIE_TXN3_C K27 PETN3
PCIE_TXP3_C K26 PETP3

(30) PCIE_RX4- G29 PERN4
(30) PCIE_RX4+ G28 PERP4
Express Card
PCIE_TXN4_C H27 PETN4
PCIE_TXP4_C H26 PETP4

T44 PAD E29 PERN5
T116 PAD E28 PERP5
T47 PAD F27 PETN5
T46 PAD F26 PETP5

PCI-Express

Direct Media Interface

DMI0RXN V27 DMI_MTX_IRX_N0 (6)
DMI0RXP V26 DMI_MTX_IRX_P0 (6)
DMI0TXN U29 DMI_MRX_ITX_N0 (6)
DMI0TXP U28 DMI_MRX_ITX_P0 (6)

DMI1RXN Y27 DMI_MTX_IRX_N1 (6)
DMI1RXP Y26 DMI_MTX_IRX_P1 (6)
DMI1TXN W29 DMI_MRX_ITX_N1 (6)
DMI1TXP W28 DMI_MRX_ITX_P1 (6)

DMI2RXN AB27 DMI_MTX_IRX_N2 (6)
DMI2RXP AB26 DMI_MTX_IRX_P2 (6)
DMI2TXN AA29 DMI_MRX_ITX_N2 (6)
DMI2TXP AA28 DMI_MRX_ITX_P2 (6)

DMI3RXN AD27 DMI_MTX_IRX_N3 (6)
DMI3RXP AD26 DMI_MTX_IRX_P3 (6)
DMI3TXN AC29 DMI_MRX_ITX_N3 (6)
DMI3TXP AC28 DMI_MRX_ITX_P3 (6)

DMI_CLKN T26 CLK_PCIE_ICH# (17)
DMI_CLKP T25 CLK_PCIE_ICH (17)

DMI_ZCOMP AE29
DMI_IRCOMP AE28 DMI_COMP R464 24.9/F +1.5V_PCIE_ICH

Place within 500mils of ICH8

(43) PCIE_RX6-/GLAN_RX- C29 PERN6/GLAN_RXN
(43) PCIE_RX6+/GLAN_RX+ C28 PERP6/GLAN_RXP
Giga Bit LOM
GLAN_TXN_C D27 PETN6/GLAN_TXN
GLAN_TXP_C D26 PETP6/GLAN_TXP

Side pair (Top / left, IB)
Side pair (Bottom / left, IB)

T51 PAD D23 SPI_CLK
T45 PAD D24 SPI_CS0#
ICH_SPI_CS1#_R F23 SPI_CS1#/GPIO58/CLGPIO6

T49 PAD D25 SPI_MOSI
T52 PAD E23 SPI_MISO

SPI

USBP0N AC5 ICH_USBP0- (42)
USBP0P AC4 ICH_USBP0+ (42)
USBP1N AD3 ICH_USBP1- (42)
USBP1P AD2 ICH_USBP1+ (42)
USBP2N AC1 PAD T151
USBP2P AC2 PAD T152
USBP3N AA5 PAD T78
USBP3P AA4 PAD T80
USBP4N AB2 ICH_USBP4- (33)
USBP4P AB3 ICH_USBP4+ (33)
USBP5N AA1 ICH_USBP5- (34)
USBP5P AA2 ICH_USBP5+ (34)
USBP6N W5 ICH_USBP6- (34)
USBP6P W4 ICH_USBP6+ (34)
USBP7N Y3 ICH_USBP7- (30)
USBP7P Y2 ICH_USBP7+ (30)
USBP8N W1 ICH_USBP8- (35)
USBP8P W2 ICH_USBP8+ (35)
USBP9N V2 ICH_USBP9- (35)
USBP9P V3 ICH_USBP9+ (35)
USBP10N U5 PAD T76
USBP10P U4 PAD T79
USBP11N U1 ICH_USBP11- (37)
USBP11P U2 ICH_USBP11+ (37)

Mini Card (WLAN)
Mini Card (WWAN)
Mini Card (WPAN)
Express Card
USB W/ E-SATA port
TV
Camera

(35) USB_OC0_1# USB_OC0_1# N4 OC0#/GPIO59
N5 OC1#/GPIO40
OC2_3# N6 OC2#/GPIO41
P6 OC3#/GPIO42
OC4# M1 OC4#/GPIO43
OC5# N2 OC5#/GPIO29
OC6# M4 OC6#/GPIO30
OC7# M3 OC7#/GPIO31
(35) USB_OC8# USB_OC8# N3 OC8#/GPIO44
OC9# N1 OC9#/GPIO45
OC10# P5 OC10#/GPIO46
OC11# P3 OC11#/GPIO47

USB

Places within 500 mils of the ICH9
R527 22.6/F
USBRBIAS AG2 USBRBIAS
AG1 USBRBIAS#

ICH9M_verA3

Boot BIOS Strap

		GNT0#	SPI_CS1#
LPC	11	No stuff	No stuff
PCI	10	No stuff	Stuff
SPI	01	Stuff	No stuff

ICH_SPI_CS1#_R
PCI_GNT0#
R227 *1K_NC
R150 *1K_NC

PCI Pullups

RP5 8.2K_10P8R
PCI_FRAME# PCI_REQ1#
PCI_DEVSEL# PCI_IRDY#
PCI_TRDY# PCI_PIRQD#
PCI_STOP# PCI_PERR#
+3.3V_RUN

RP7 8.2K_10P8R
PCI_PIRQB# PCI_PLOCK#
PCI_PIRQC# ICH_IRQH_GPIO5
PCI_PIRQA# PCI_SERR#
PCI_REQ0#
+3.3V_RUN

SB_WPAN_PCIE_RST# R203 20K
SB_WWAN_PCIE_RST# R182 20K
SB_WLAN_PCIE_RST# R205 20K
SB_LOM_PCIE_RST# R220 20K
SB_NB_PCIE_RST# R522 20K

BIOS should not enable the internal GPIO pull up resistor.

WWAN Noise - ICH improvements

OC6# C339 *0.1U_NC
OC4# C690 *0.1U_NC
OC5# C692 *0.1U_NC
OC7# C325 *0.1U_NC
USB_OC8# C342 *0.1U_NC
OC2_3# C336 *0.1U_NC
USB_OC0_1# C310 *0.1U_NC
OC9# C691 *0.1U_NC

RP6 10KX8
+3.3V_SUS
OC9# OC7#
OC4# OC6#
USB_OC8# USB_OC0_1#
OC5# OC2_3#
OC10# R219 10K
OC11# R224 10K

U34B

(28,56) PCI_AD[0..31]

PCI_AD0 AD0 PCI_AD1 AD1 PCI_AD2 AD2 PCI_AD3 AD3 PCI_AD4 AD4 PCI_AD5 AD5 PCI_AD6 AD6 PCI_AD7 AD7 PCI_AD8 AD8 PCI_AD9 AD9 PCI_AD10 AD10 PCI_AD11 AD11 PCI_AD12 AD12 PCI_AD13 AD13 PCI_AD14 AD14 PCI_AD15 AD15 PCI_AD16 AD16 PCI_AD17 AD17 PCI_AD18 AD18 PCI_AD19 AD19 PCI_AD20 AD20 PCI_AD21 AD21 PCI_AD22 AD22 PCI_AD23 AD23 PCI_AD24 AD24 PCI_AD25 AD25 PCI_AD26 AD26 PCI_AD27 AD27 PCI_AD28 AD28 PCI_AD29 AD29 PCI_AD30 AD30 PCI_AD31 AD31

PCI

REQ0# F1 PCI_REQ0# PCI_REQ0# (28)
GNT0# G4 PCI_GNT0# PCI_GNT0# (28)
REQ1#/GPIO50 B6 PCI_REQ1# PCI_REQ1# (56)
GNT1#/GPIO51 A7 PCI_GNT1# PCI_GNT1# (56)
REQ2#/GPIO52 F13 SB_WWAN_PCIE_RST# SB_WWAN_PCIE_RST# (34)
GNT2#/GPIO53 F12 PCI_GNT2# PAD T71
REQ3#/GPIO54 E6 SB_LOM_PCIE_RST# SB_LOM_PCIE_RST# (43)
GNT3#/GPIO55 F6 PCI_GNT3# PAD T75

Card Reader
Mini PCI debug

C/BE0# D8 PCI_C_BE0# (28,56)
C/BE1# B4 PCI_C_BE1# (28,56)
C/BE2# D6 PCI_C_BE2# (28,56)
C/BE3# A5 PCI_C_BE3# (28,56)

IRDY# D3 PCI_IRDY# PCI_IRDY# (28,56)
PAR E3 PCI_PAR (28,56)
PCIRST# R1 PCI_RST# G
DEVSEL# C6 PCI_DEVSEL# PCI_DEVSEL# (28,56)
PERR# E4 PCI_PERR# PCI_PERR# (28,56)
PLOCK# C2 PCI_PLOCK#
SERR# J4 PCI_SERR# PCI_SERR# (28,56)
STOP# A4 PCI_STOP# PCI_STOP# (28,56)
TRDY# F5 PCI_TRDY# PCI_TRDY# (28,56)
FRAME# D7 PCI_FRAME# PCI_FRAME# (28,56)

PLTRST# C14 PCI_PLTRST#
PCICLK D4 CLK_PCI_ICH CLK_PCI_ICH (17)
PME# R2 ICH_PME# (28,56)

Interrupt I/F

PCI_PIRQA# J5 PIRQA# PIRQE#/GPIO2 H4 SB_WPAN_PCIE_RST# SB_WPAN_PCIE_RST# (34)
PCI_PIRQB# E1 PIRQB# PIRQF#/GPIO3 K6 SB_WLAN_PCIE_RST# SB_WLAN_PCIE_RST# (33)
PCI_PIRQC# J6 PIRQC# PIRQG#/GPIO4 F2 SB_NB_PCIE_RST# SB_NB_PCIE_RST# (6)
PCI_PIRQD# C4 PIRQD# PIRQH#/GPIO5 G2 ICH_IRQH_GPIO5 PAD T83

ICH9M_verA3

(56) PCI_PIRQA#
(28) PCI_PIRQB#
(28) PCI_PIRQC#
(56) PCI_PIRQD#

PCI_PIRQA & D : Mini PCI debug
PCI_PIRQB & C : Card Reader

PCI_GNT3#
R209 *1K_NC

A16 away override strap.

SB_NB_PCIE_RST#	Low = A16 swap override enabled. High = Default.

CLK_PCI_ICH
R232 *10_NC
C340 *8.2P_NC

Reserved for EMI.Place resister and cap close to ICH.

Non-iAMT

Add Buffers as needed for Loading and fanout concerns.

+3.3V_SUS
C349 0.047U
U5
PCI_RST# G
PCI_RST# (28,56)
TC7SZ32FU(T5L,F,T)

C647 0.047U
U35
PCI_PLTRST#
PLTRST# (6,30,31,33,34,43)
TC7SZ32FU(T5L,F,T)

PCI_IRDY#

QUANTA COMPUTER

Title	ICH9-M(USB,PCIE,DMI)	
Size	Document Number RM2	Rev 2D
Date:	Wednesday, August 06, 2008	Sheet 12 of 59

Non-iAMT

+3.3V_SUS
RP2
1 3 2 4
ICH_SMBDATA
ICH_SMBCLK
2.2KX2

Non-iAMT

+3.3V_SUS
R180 2 1 *10K_NC RSV_ICH_CL_RST1#
R176 2 1 10K ICH_RI#
R489 2 1 10K SIO_EXT_SCI#
R173 2 1 1K PCIE_WAKE#

Gur_0808: 0 ohm removal, delete R178, R186, RP14

+3.3V_RUN
R242 8.2K
CLKRUN#
R233 *10_NC

Option to " Disable " clkrun. Pulling it down will keep the clks running.

Place these close to ICH8.

CLK_ICH_48M
R235 *10_NC
C348 *4.7P_NC
50

CLK_ICH_14M
R524 *10_NC
C689 *4.7P_NC
50

+3.3V_RUN
R155 8.2K

U34C

ICH_SMBCLK G16 SMBCLK
ICH_SMBDATA A13 SMBDATA
T63 PAD RSV_ICH_CL_RST1# E17 LINKALERT#/GPIO60/CLGPIO3
T60 PAD ICH_SMBCLK C17 SMLINK0
T65 PAD ICH_SMBDATA B18 SMLINK1
SMB

ICH_RI# F19 RI#

T72 PAD RSV_LPCPD# R4 SUS_STAT#/LPCPD#
(3) ITP_DBRESET# G19 SYS_RESET#

(6) PM_BMBUSY# M6 PMSYNC#/GPIO0

(33) USB_MCARD1_DET# USB_MCARD1_DET# A17 SMBALERT#/GPIO11

(17) H_STP_PCI# A14 STP_PCI#/GPIO15
(17) H_STP_CPU# E19 STP_CPU#/GPIO25

(28,31,56) CLKRUN# CLKRUN# L4 CLKRUN#/GPIO32

(30,33,34,43) PCIE_WAKE# PCIE_WAKE# E20 WAKE#
(28,31,56) IRQ_SERIRQ IRQ_SERIRQ M5 SERIRQ
(39) THERM_ALERT# THERM_ALERT# AJ23 THRM#

(31,45,51) IMVP_PWRGD IMVP_PWRGD D21 VRMPWRGD

T134 PAD A20 TP8

SYS GPIO

(34) USB_MCARD2_DET# USB_MCARD2_DET# AG19 TACH1/GPIO1
(34) USB_MCARD3_DET# USB_MCARD3_DET# AH21 TACH2/GPIO6
(31) SIO_EXT_WAKE# AG21 TACH3/GPIO7
(31) SIO_EXT_SMI# SIO_EXT_SMI# A21 GPIO8
(31) SIO_EXT_SCI# SIO_EXT_SCI# C12 LANPHYPC/GPIO12
T133 PAD C21 ENGDET/GPIO13
(37) KB_LED_DET AE18 TACH0/GPIO17
(33) PCIE_MCARD1_DET# R244 4.7K PCIE_MCARD1_DET# K1 GPIO18
(34) PCIE_MCARD2_DET# PCIE_MCARD2_DET# AF8 GPIO20
(34) PCIE_MCARD3_DET# PCIE_MCARD3_DET# AJ22 SCLOCK/GPIO22
(33) WLAN_RADIO_DIS# A9 QRT_STATE0/GPIO27
(37) CAMERA_CBL_DET# D19 QRT_STATE1/GPIO28
(17) SATA_CLKREQ# L1 SATACLKREQ#/GPIO35
(18) PLTRST_DELAY# PLTRST_DELAY# AE19 SLOAD/GPIO38
(34) WPAN_RADIO_DIS_MINI# AG22 SDATAOUT0/GPIO39
(34) WWAN_RADIO_DIS# AF21 SDATAOUT1/GPIO48
T120 PAD AH24 GPIO49
T143 PAD A8 GPIO57/CLGPIO5

Power MGT

(40) SPKR SPKR M7 SPKR
(6) MCH_ICH_SYNC# MCH_ICH_SYNC# AJ24 MCH_SYNC#
(11) ICH_RSVD B21 TP3
T138 PAD TP9 AH20 TP9
T135 PAD TP10 AJ20 TP10
T130 PAD TP11 AJ21 TP11
MISC

ICH9M_verA3

SATA GPIO

SATA0GP/GPIO21 AH23
SATA1GP/GPIO19 AE19
SATA4GP/GPIO36 AE21
SATA5GP/GPIO37 AD20

Clocks

CLK14 H1 CLK_ICH_14M → CLK_ICH_14M (17)
CLK48 AF3 CLK_ICH_48M → CLK_ICH_48M (17)
SUSCLK P1 ICH_SUSCLK → PAD T148

SLP_S3# C16 → SIO_SLP_S3# (31)
SLP_S4# E16 → PAD T58
SLP_S5# G17 → SIO_SLP_S5# (31)

S4_STATE#/GPIO26 C10

PWROK G20 ICH_PWRGD → ICH_PWRGD (6,45)
DPRSLPVR → DPRSLPVR (6,51)
DPRSLPVR/GPIO16 M2

R488 8.2K
BATLOW# B13 ICH_BATLOW# → +3.3V_SUS
PWRBTN# R3 → SIO_PWRBTN# (31)
LAN_RST# D20 RSV_ICH_LAN_RST# → PAD T53
RSMRST# D22 ICH_RSMRST# → ICH_RSMRST# (31)
CK_PWRGD R5 → CLK_PWRGD (17)
CLPWROK R6 ICH_CL_PWROK → ICH_CL_PWROK (6,31)
SLP_M# B16 → PAD T55

GPIO Controller Link

CL_CLK0 F24 → CL_CLK0 (6)
CL_CLK1 B19 RSV_ICH_CL_CLK1 → PAD T136
CL_DATA0 F22 → CL_DATA0 (6)
CL_DATA1 C19 RSV_ICH_CL_DATA1 → PAD T137
CL_VREF0 C25 CL_VREF0
CL_VREF1 A19 CL_VREF1
CL_RST0# F21 → ICH_CL_RST0# (6)
CL_RST1# D18 CL_RST1# → PAD T139

MEM_LED/GPIO24 A16 RSV_GPIO24 → PAD T62
ALERT#/GPIO10 C18 RSV_GPIO10 → PAD T56
NETDETECT/GPIO14 C11 RSV_GPIO14 → PAD T70
WOL_EN/GPIO9 C20 RSV_WOL_EN → PAD T54

R188 8.2K → +3.3V_SUS

Non-iAMT

ICH_PWRGD R162 10K
DPRSLPVR R526 100K
ICH_RSMRST# R152 10K
RSV_ICH_LAN_RST# R167 10K
ICH_CL_PWROK R198 1M

+3.3V_SUS
RSV_GPIO10 R170 10K

Gur_0808: 0 ohm removal, delete R146

DIS:ALW
UMA:SUS

Non-iAMT

+3.3V_RUN
R177 2 1 10K PLTRST_DELAY#

+3.3V_RUN
R159 2 1 2.2K IMVP_PWRGD
R171 1 2 100K USB_MCARD2_DET#
R154 1 2 100K USB_MCARD3_DET#
R243 1 2 100K PCIE_MCARD1_DET#
R215 1 2 100K PCIE_MCARD2_DET#
R158 1 2 100K PCIE_MCARD3_DET#

+3.3V_RUN
R148 2 1 *10K_NC MCH_ICH_SYNC#
R193 2 1 10K IRQ_SERIRQ
R149 2 1 10K THERM_ALERT#

+3.3V_SUS
R164 2 1 10K RSV_WOL_EN
R478 2 1 10K SIO_EXT_SMI#
R480 1 2 100K USB_MCARD1_DET#

+3.3V_RUN
R200 *1K_NC
SPKR

No Reboot strap.	
SPKR	Low = Default. High = No Reboot.

SMbus address D2

These are for backdrive issue.

Non-iAMT

+3.3V_RUN
RP3 2.2KX2
(30,33,34) ICH_SMBDATA → ICH_SMBDATA Q26 → MEM_SDATA (15,16)
2N7002W-7-F

+3.3V_RUN
(30,33,34) ICH_SMBCLK → ICH_SMBCLK Q25 → MEM_SCLK (15,16)
2N7002W-7-F

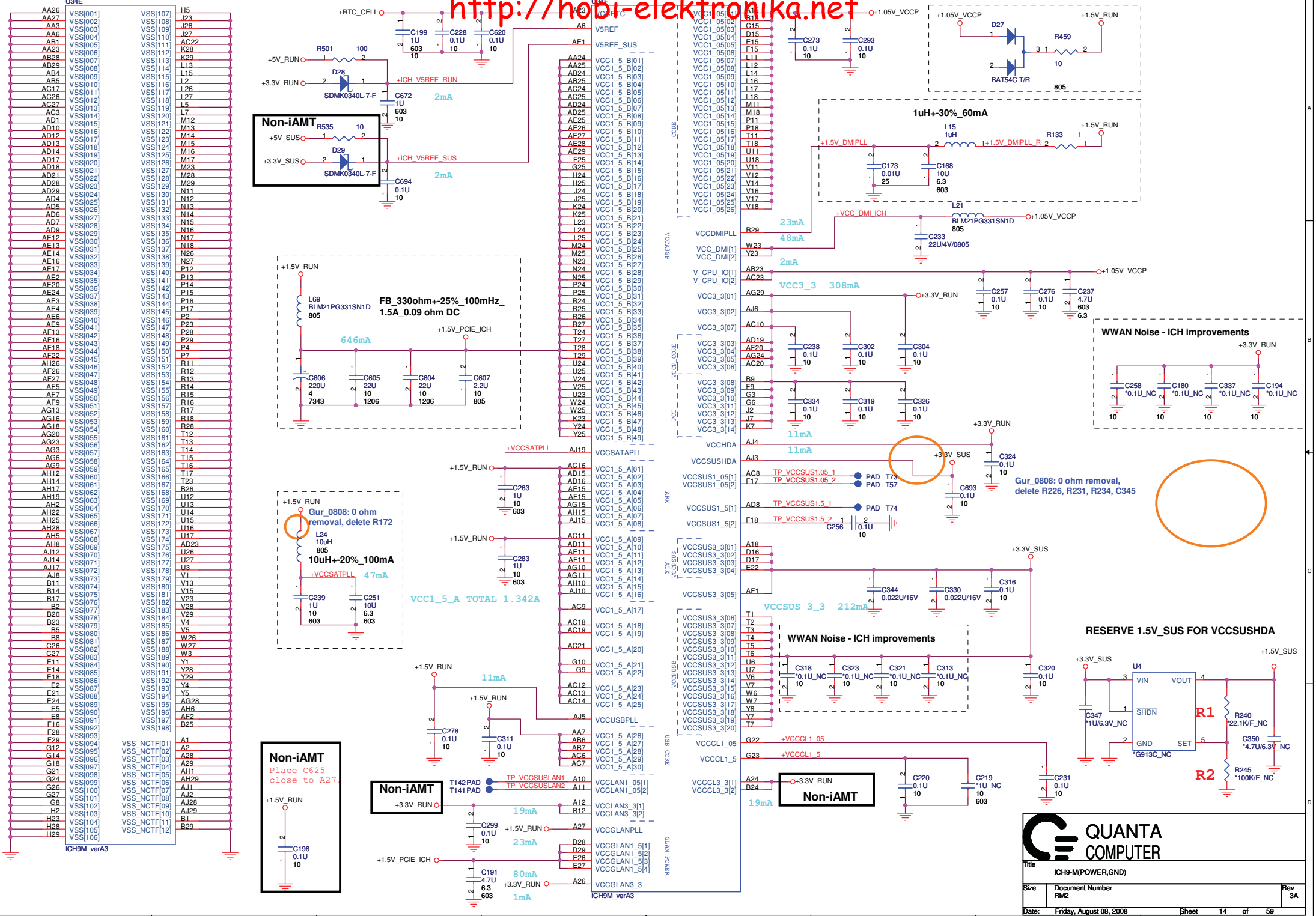
Non-iAMT

+3.3V_RUN +3.3V_ALW +3.3V_SUS
R136 3.24K/F
R469 *3.24K/F_NC
R471 *3.24K/F_NC
CL_VREF0
CL_VREF1
C179 0.1U
R137 453/F
C249 *0.1U_NC
R169 *453/F_NC
10
10

CL_VREF0/1 ~=0.405V

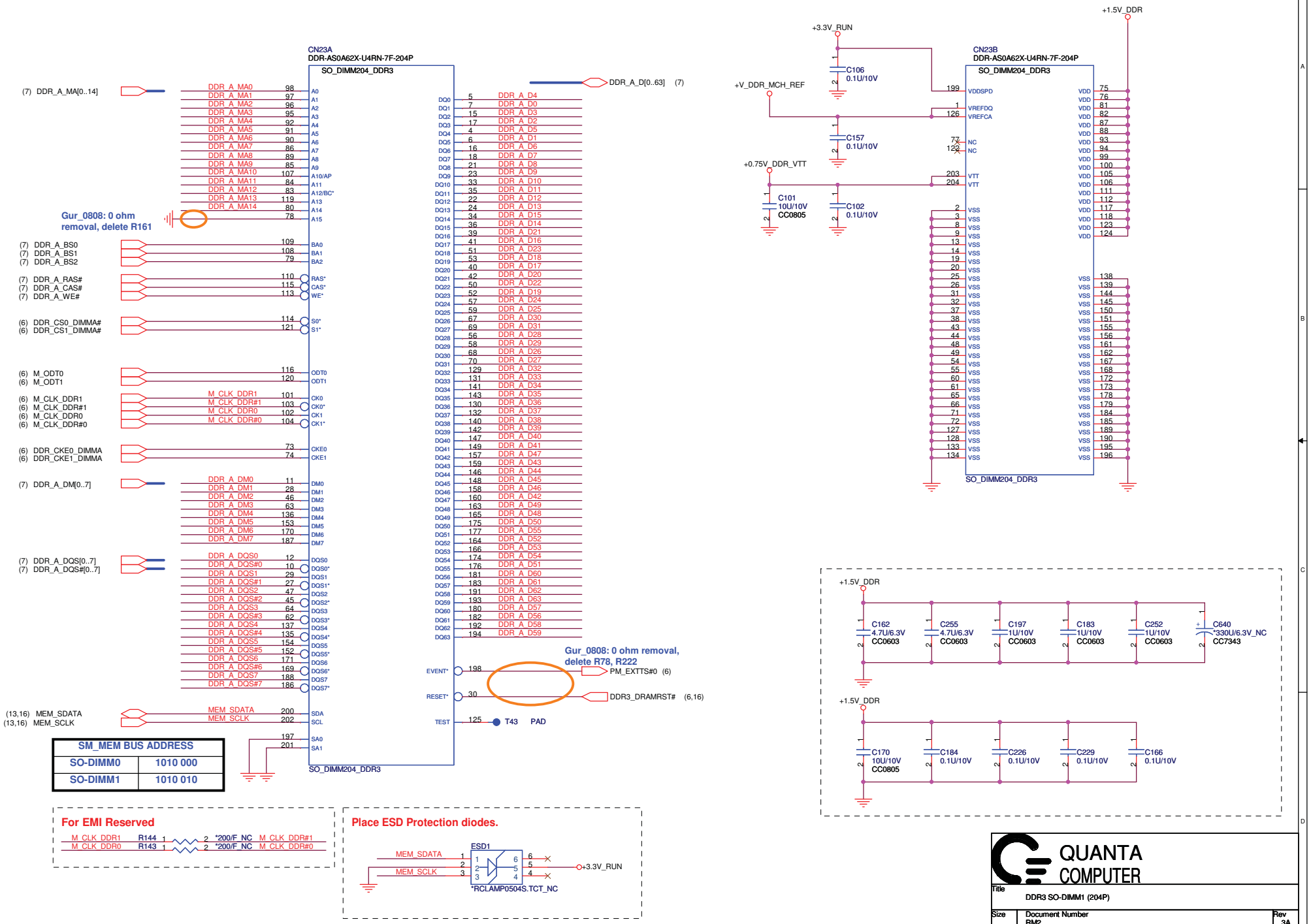
QUANTA COMPUTER

Title	ICH9-M(PM,GPIO,SMB)	
Size	Document Number RM2	Rev 3A
Date: Wednesday, August 13, 2008	Sheet 13 of 59	



Title	ICH9-M(POWER,GND)
Size	Document Number RM2 — Rev 3A
Date:	Friday, August 08, 2008 — Sheet 14 of 59

QUANTA COMPUTER



SM_MEM BUS ADDRESS	
SO-DIMM0	1010 000
SO-DIMM1	1010 010

For EMI Reserved

Place ESD Protection diodes.

Title	DDR3 SO-DIMM1 (204P)		
Size	Document Number RM2		Rev 3A
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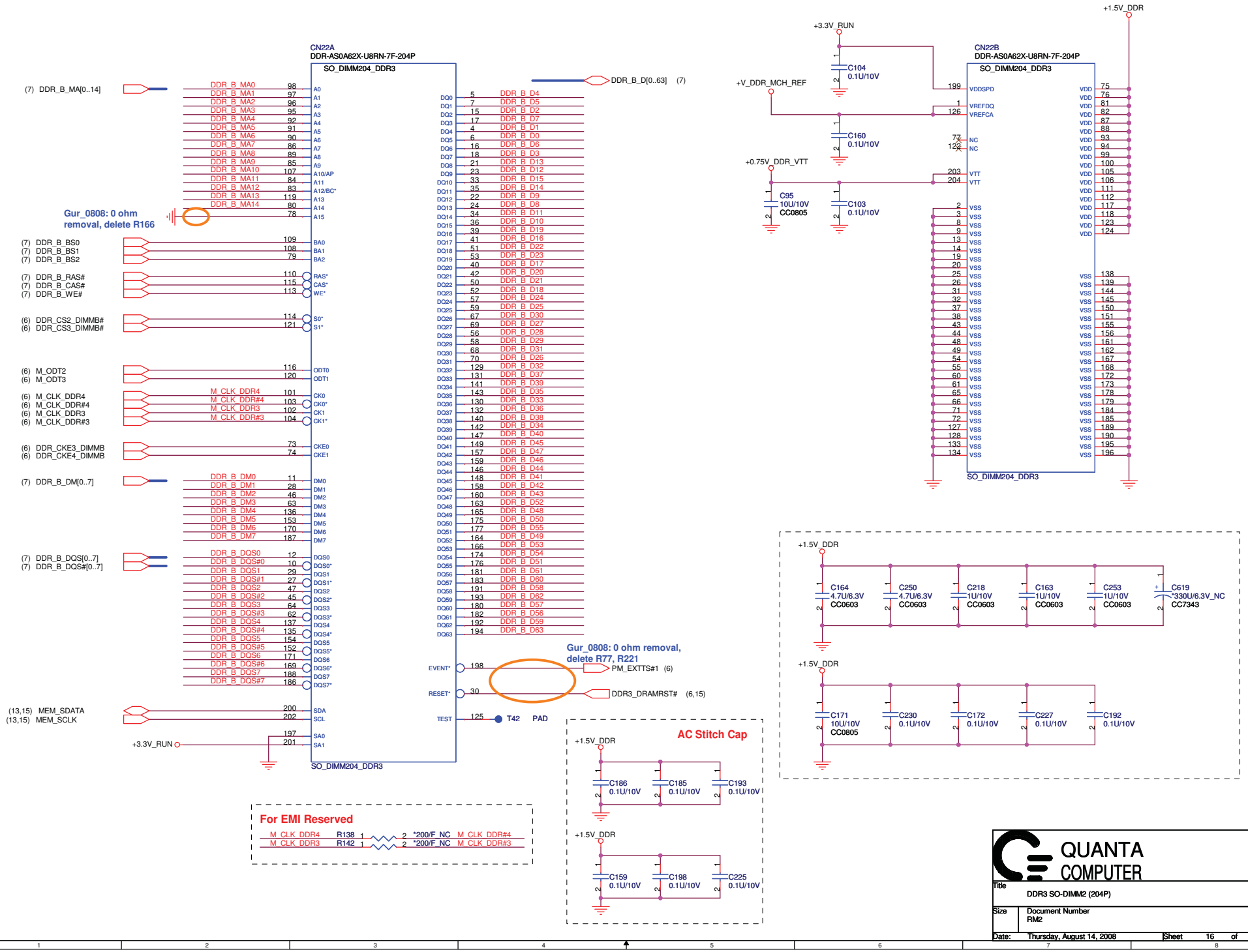
QUANTA COMPUTER



QUANTA COMPUTER		
Title	DDR3 SO-DIMM2 (204P)	
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Add capacitor pads for improving WWAN.

C657 27P 50 FSA
C662 *27P_NC 50 FSC
C332 *27P_NC 50 PCI_SIO
C331 *27P_NC 50 PCI_PCCARD
C666 *27P_NC 50 PCI_ICH
C322 *27P_NC 50 27M_SEL

Y3 14.318MHZ
CLK_XTAL_IN — CLK_XTAL_OUT
C673 33P 50
C661 33P 50
14.318MHz

U36
CK505
QFN64
SLG8SP513V

+CK_VDD_PCI 9
+CK_VDD_PLL3 23
+CK_VDD_48 16
+CK_VDD_SRC 46
62
+CK_VDD_MAIN 19
27
33
43
52
56
VDD_PCI VDD_REF VDD_PLL3 VDD_48 VDD_SRC VDD_CPU
VDD_IO VDD_IO VDD_IO VDD_IO VDD_IO VDD_IO VDD_IO
15 18 22 26 30 36 49 59 1
GND GND GND GND GND GND GND GND GND

CPU-0 61 CPU_BCLK — RP19 0 — CLK_CPU_BCLK (3)
CPU-0# 60 CPU_BCLK# — CLK_CPU_BCLK# (3)
CPU-1 58 MCH_BCLK — RP18 0 — CLK_MCH_BCLK (5)
CPU-1# 57 MCH_BCLK# — CLK_MCH_BCLK# (5)
SRC-8/CPU_ITP 54 CPU_ITP — RP16 0 — CLK_PCIE_MINI1 (33)
SRC-8#/CPU_ITP# 53 CPU_ITP# — CLK_PCIE_MINI1# (33)
Mini Card (WLAN)
SRC-0/DOT96 20 DOT96_SSC — RP20 0 — CLK_PCIE_VGA (18)
SRC-0#/DOT96# 21 DOT96_SSC# — CLK_PCIE_VGA# (18)
to ATI VGA
SRC-1/SE1 24 27M_NSS — RP17 33 — CLK_VGA_27M_NSS (19)
SRC-1#/SE2 25 27M_SS — CLK_VGA_27M_SS (19)
SRC-2/SATA 28 PCIE_SATA — RP15 0 — CLK_PCIE_SATA (11)
SRC-2#/SATA# 29 PCIE_SATA# — CLK_PCIE_SATA# (11)
CR#_C/SRC-3 31 PCIE_MINI3 — RP13 0 — CLK_PCIE_MINI3 (34)
CR#_D/SRC-3# 32 PCIE_MINI3# — CLK_PCIE_MINI3# (34)
Mini Card (WPAN)
SRC-4 34 MCH_3GPLL — RP12 0 — CLK_MCH_3GPLL (6)
SRC-4# 35 MCH_3GPLL# — CLK_MCH_3GPLL# (6)
PCI_STOP#/SRC-5 45 — H_STP_PCI# — H_STP_PCI# (13)
CPU_STOP#/SRC5-5# 44 — H_STP_CPU# — H_STP_CPU# (13)
SRC-6 48 PCIE_EXPCARD — RP8 0 — CLK_PCIE_EXPCARD (30)
SRC-6# 47 PCIE_EXPCARD# — CLK_PCIE_EXPCARD# (30)
CR#_F/SRC-7 51 MINI1CLK_REQ#_C R484 475/F MINI1CLK_REQ# — MINI1CLK_REQ# (33)
CR#_E/SRC-7# 50 CARD_CLK_REQ#_C R482 475/F CARD_CLK_REQ# — CARD_CLK_REQ# (30)
SRC-9 37 PCIE_MINI2 — RP11 0 — CLK_PCIE_MINI2 (34)
SRC-9# 38 PCIE_MINI2# — CLK_PCIE_MINI2# (34)
Mini Card (WWAN)
SRC-10 41 PCIE_ICH — RP9 0 — CLK_PCIE_ICH (12)
SRC-10# 42 PCIE_ICH# — CLK_PCIE_ICH# (12)
CR#_H/SRC-11 40 PCIE_LOM — RP10 0 — CLK_PCIE_LOM (43)
CR#_G/SRC-11# 39 PCIE_LOM# — CLK_PCIE_LOM# (43)
GND 65

(13) SATA_CLKREQ# — SATA_CLKREQ# R490 475/F
(6) CLK_3GPLLREQ# — CLK_3GPLLREQ# R491 475/F
CLK_LPC_DEBUG FOR DEBUG NEED POP RESISTOR
(34) CLK_LPC_DEBUG — R492 22
(28) CLK_PCI_PCCARD — R493 22 — PCI_PCCARD
(31) CLK_PCI_8512 — R494 33 — PCI_SIO
(56) CLK_PCI_DEBUG — R195 33 — 27M_SEL
(12) CLK_PCI_ICH — R495 33 — PCI_ICH
(13) CLK_ICH_48M — R486 33
(3,6) CPU_MCH_BSEL0 — R487 2.2K — FSA
(3,6) CPU_MCH_BSEL1 — FSC
(3,6) CPU_MCH_BSEL2 — R497 10K
(13) CLK_ICH_14M — R498 33
(13) CLK_PWRGD
Gur_0808: 0 ohm removal, delete R485
CLK_XTAL_OUT — CLK_XTAL_IN
CLK_SDATA — CLK_SCLK

+3.3V_RUN
H_STP_PCI# R474 10K
H_STP_CPU# R165 10K

+3.3V_RUN
CLK_3GPLLREQ# R500 10K
SATA_CLKREQ# R499 10K
CARD_CLK_REQ# R481 10K
MINI1CLK_REQ# R483 10K
PCI_PCCARD R212 *10K_NC
PCI_SIO R214 *10K_NC

UMA without iAMT
+3.3V_RUN
L36 BLM21PG600SN1D 805 120 ohms@100Mhz
+CK_VDD_MAIN
C267 0.1U 10
C280 0.1U 10
C242 0.1U 10
C243 0.1U 10
C274 0.1U 10
C294 0.1U 10
C259 *10U_NC 6.3
L35 BLM21PG600SN1D 805 120 ohms@100Mhz
R230 2.2 — +CK_VDD_PCI
C308 0.1U 10
C309 0.1U 10
R185 2.2 — +CK_VDD_PLL3
C281 0.1U 10
R192 2.2 — +CK_VDD_48
C301 0.1U 10
C296 4.7U 6.3 603
R191 2.2 — +CK_VDD_SRC
C241 0.1U 10
C295 0.1U 10

Gur_0808: delete reserved ITP clock & ITP_EN circuit

Non-iAMT
SMbus address D2
These are for backdrive issue.
+3.3V_RUN
RP4 2.2KX2
(26,31,39) SMBDAT1 — Q28 2N7002W-7-F — CLK_SDATA
(26,31,39) SMBCLK1 — Q27 2N7002W-7-F — CLK_SCLK

+3.3V_RUN
R202 10K
27M_SEL
R213 *10K_NC

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

27M_SEL

27M_SEL (PIN13)	PIN20	PIN21	PIN24	PIN25
0=UMA	DOT96T	DOT96C	96/ 100M_T	96/ 100M_C
1 = Disc. GRFX down	SRCT0	SRCC0	27Mout	27MSSout

QUANTA COMPUTER

Title	CLOCK GENERATOR	
Size	Document Number RM2	Rev 3A
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QUANTA COMPUTER		
Title	M86XT_PCIE	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 18 of 59	

MEMORY APERTURE SIZE SELECT				
MEMORY SIZE	CFG3 GPIO9	CFG2 GPIO13	CFG1 GPIO12	CFG0 GPIO11
128MB	X	0	0	0
256MB	X	0	0	1
64MB	X	0	1	0
512MB	X	1	0	0

VRAM SIZE

VRAM TYPE

GPIO_23_CLKREQB DRIVES LOW DURING RESET

8/15: The strap on VIP[3] is for enabling HD Audio on M86.

Memory Straps		RAM_ TYPE_CFG3	RAM_ TYPE_CFG2	RAM_ TYPE_CFG1	RAM_ TYPE_CFG0
900 MHz 256MB(16M*32) Hynix_Tiva die	H5RS5223CFR-11C	1	1	1	1
800 MHz 256MB(16M*32) Qimonda_B2 die	HYB18H512321B2F-12	1	1	1	0
reserve for Samsung		1	1	0	1
reserve for Hynix		1	0	1	1
900 MHz 512MB(32M*32) Qimonda_A die	HYB18H1G321AF-11	1	0	1	0
800 MHz 512MB(32M*32) Samsung_D die	K4J10324QD-HC12	1	0	0	1

Note : Required Frequency = 800 MHz

Gur_0808: 0 ohm removal, delete R273

Gur_0808: 0 ohm removal, delete R287, R574

Gur_0808: 0 ohm removal, delete R194, R208, R216

PLACE VREF DIVIDER AND CAP CLOSE TO ASIC

Layout Note: Place 150 ohm termination resistors close to ATI CHIP.

3.3V to 5V level shift Logic required
If DDC1,DDC2 used on M8x or DDC1,DDC2,DDC3 used on M7x
DDC3,DDC4 are 5V tolerant on M8x

M86-ME XT A11

Title	M86XT_IO
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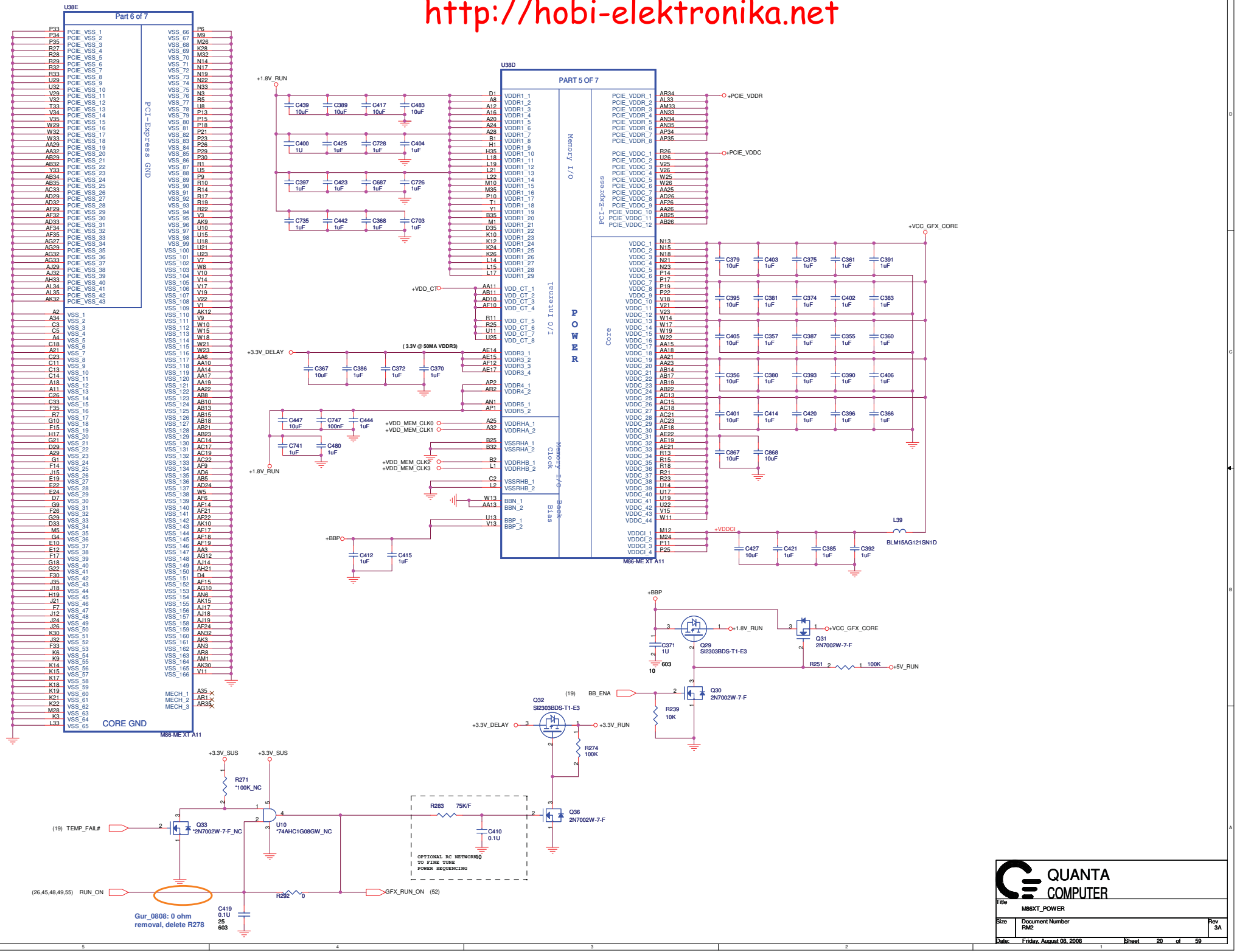
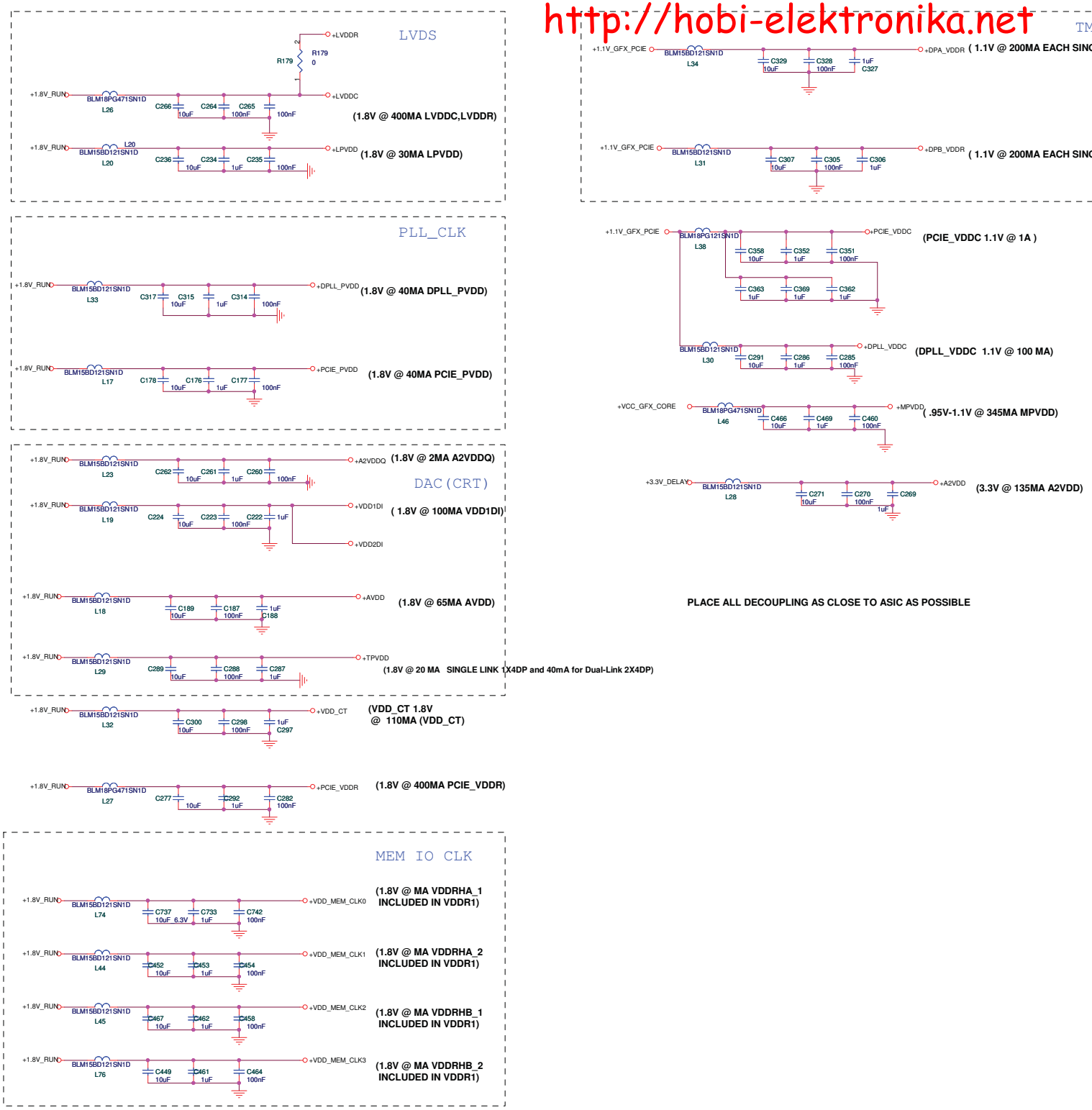


Title	M86XT_POWER
Size	Document Number: RM2 — Rev: 3A
Date:	Friday, August 08, 2008 — Sheet 20 of 59

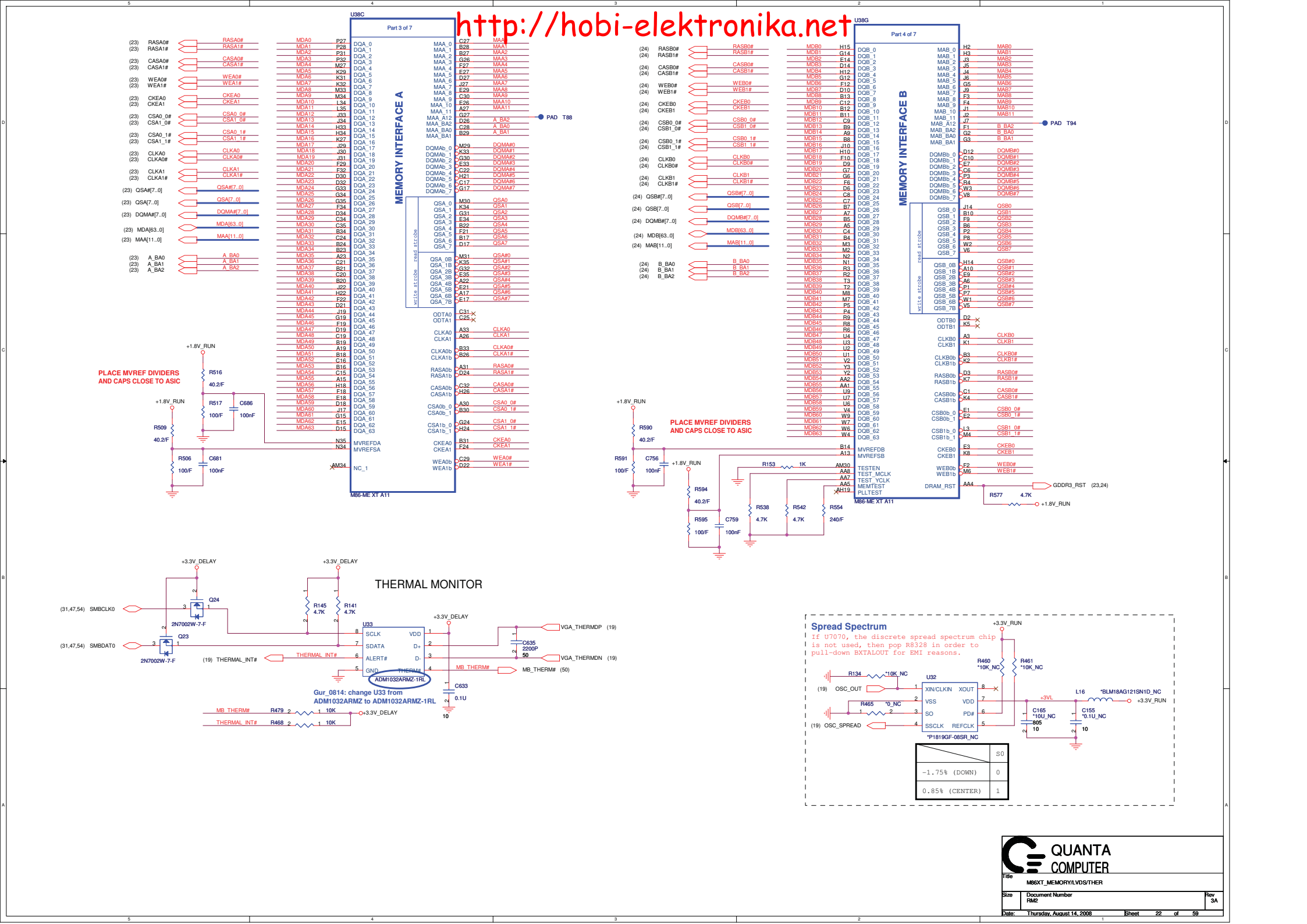
QUANTA COMPUTER



PLACE ALL DECOUPLING AS CLOSE TO ASIC AS POSSIBLE

QUANTA COMPUTER

Title	M86XT_POWER RAIL	
Size	Document Number RM2	Rev 2E
Date: Tuesday, July 15, 2008	Sheet 21 of 59	

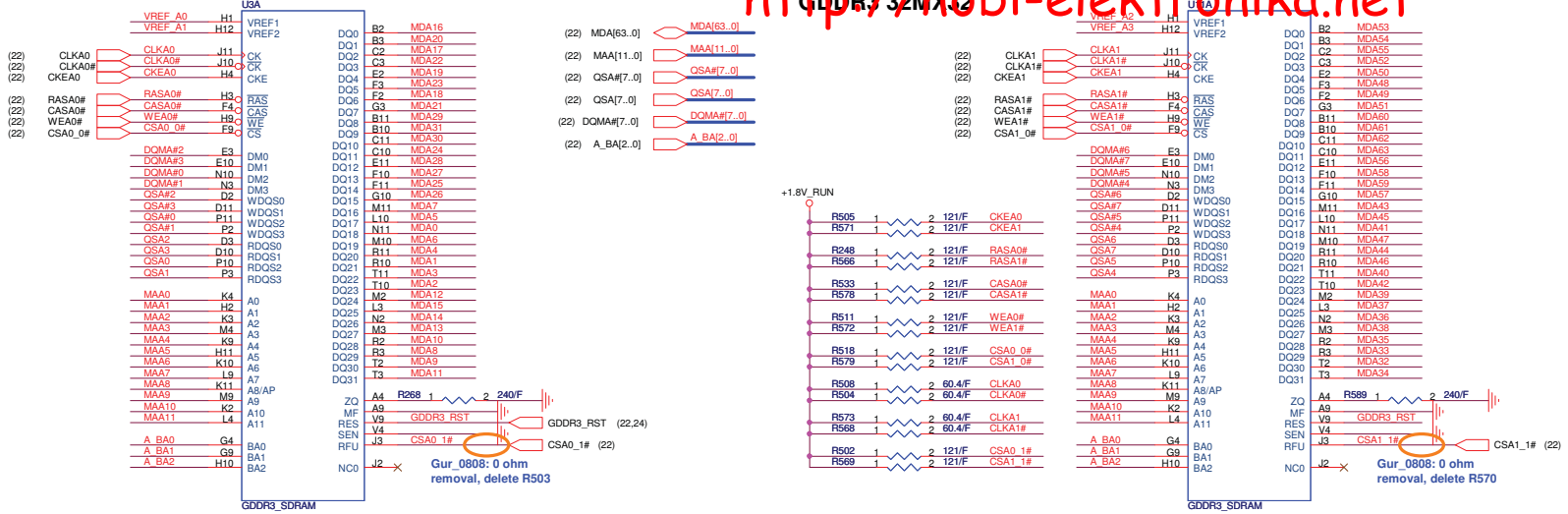


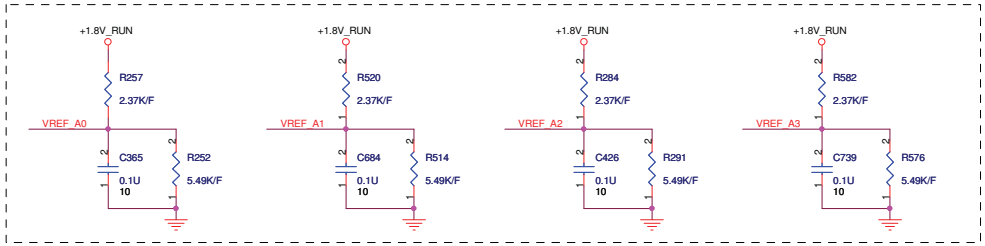
	S0
-1.75% (DOWN)	0
0.85% (CENTER)	1

QUANTA COMPUTER

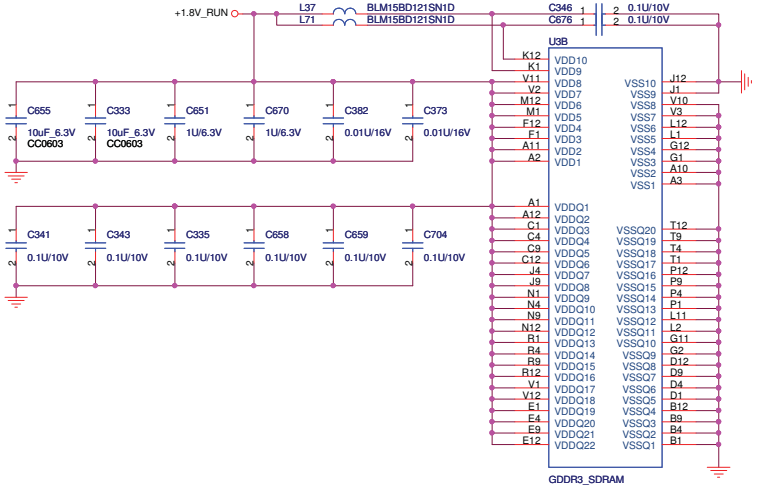
Title	M86XT_MEMORY/LVDS/THER	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 14, 2008	Sheet 22 of 59	

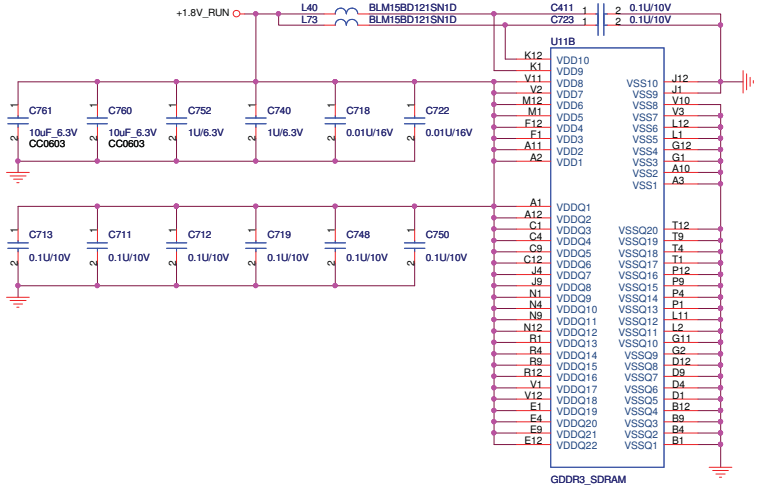
GDDR3 32Mx32





GDDR3 32Mx32 configuration			
		Pin J2	Pin J3
Non Merged	1CS	MAA12	NC
	2CS	NC	CSAx_1#
Merged	1CS	NC	MAA12
	2CS	NC	CSAx_1#

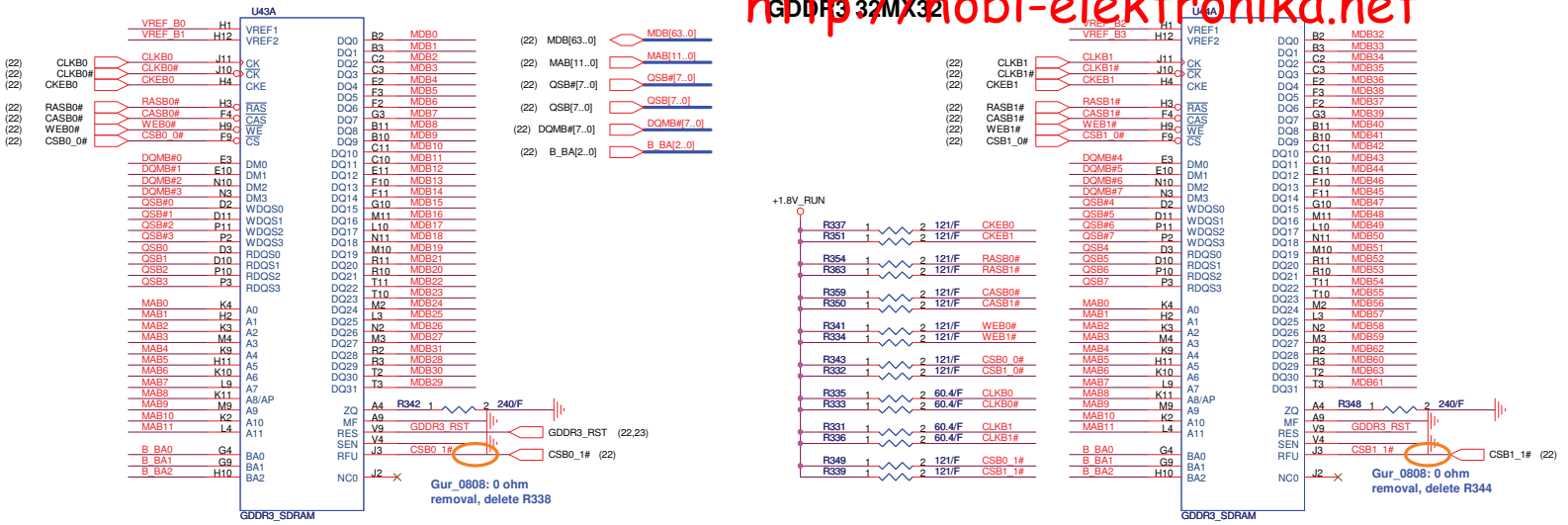


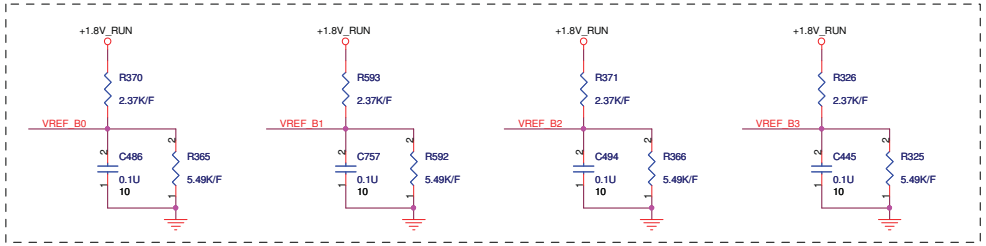


QUANTA COMPUTER

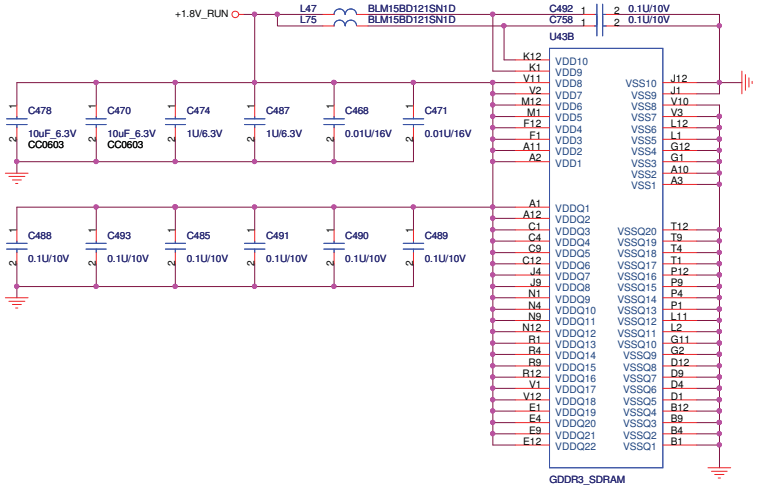
Title	M86XT_DDR3_A_512M	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 23 of 59	

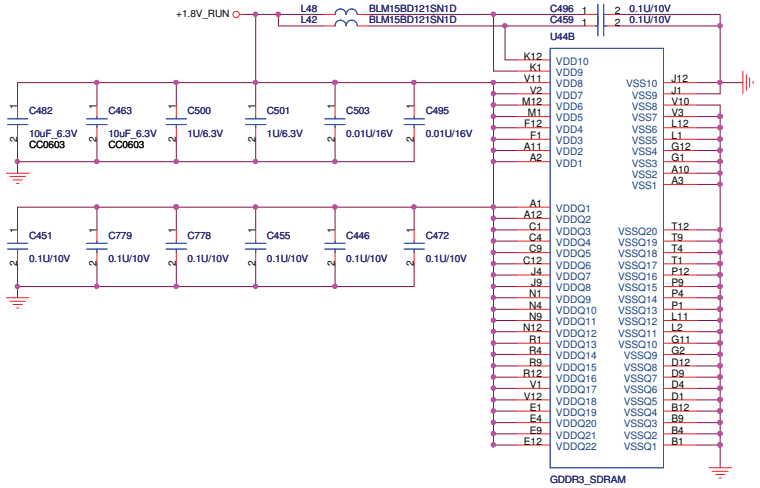
GDDR3 32MX32





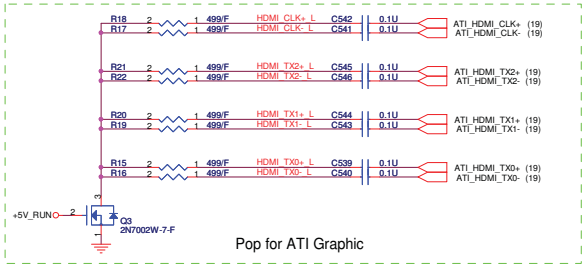
GDDR3 32Mx32 configuration			
		Pin J2	Pin J3
Non Merged	1CS	MAB12	NC
	2CS	NC	CSBx_1#
Merged	1CS	NC	MAB12
	2CS	NC	CSBx_1#



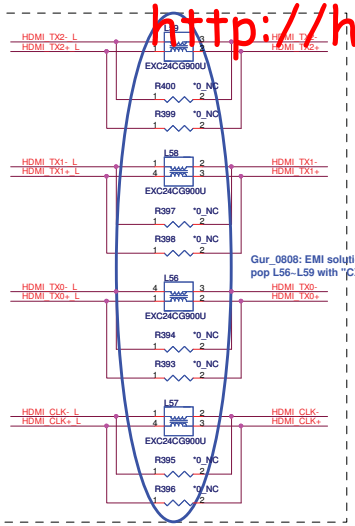


QUANTA COMPUTER

Title	M86XT_DDR3_B_512M	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 24 of 59	

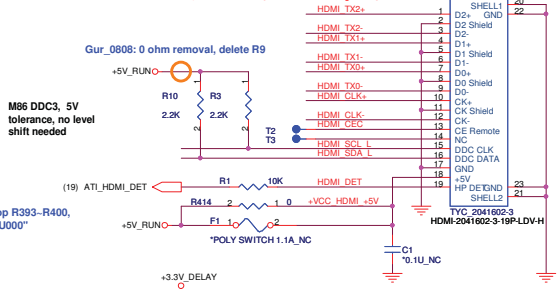


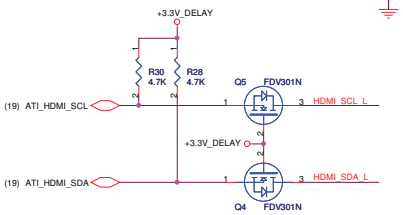
Pop for ATI Graphic

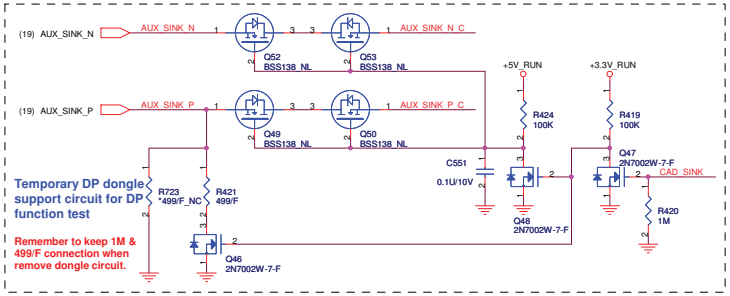


Gur_0808: EMI solution, depop R393~R400, pop L56~L59 with "CXCG900U000"

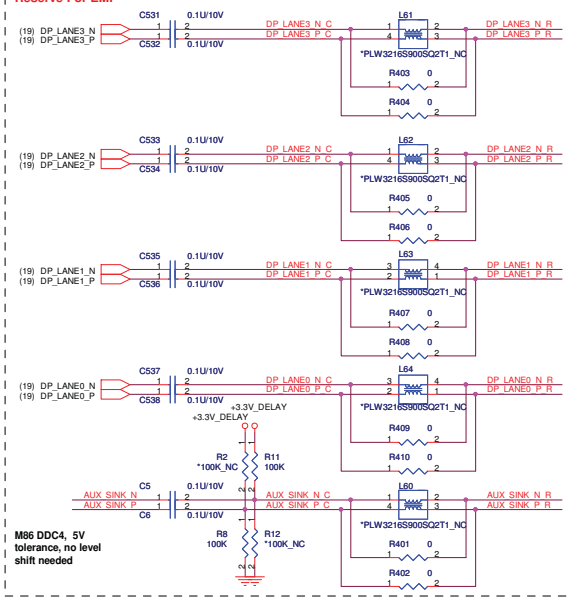
Delete EMI ESD IC for EMI asked HDMI signals link to CONN directly.



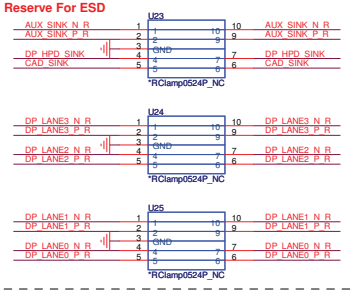




Reserve For EMI

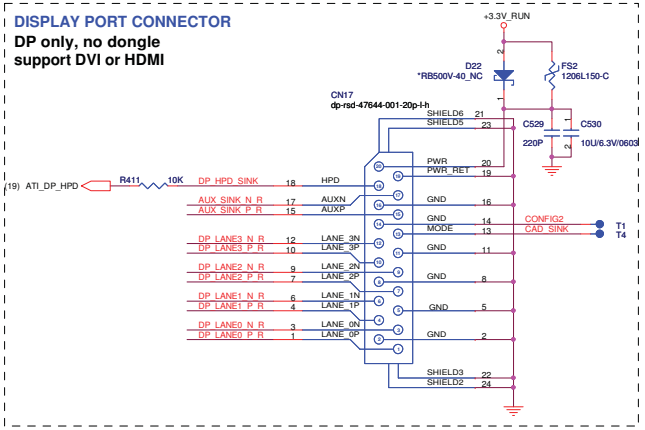


Reserve For ESD



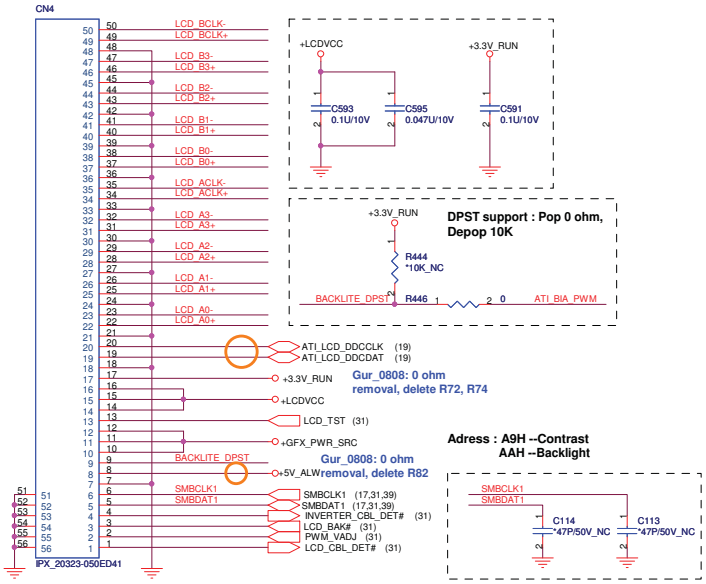
DISPLAY PORT CONNECTOR

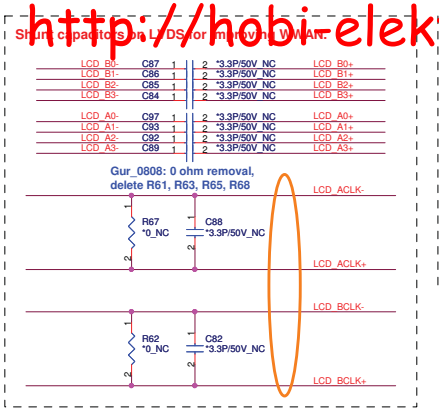
DP only, no dongle support DVI or HDMI

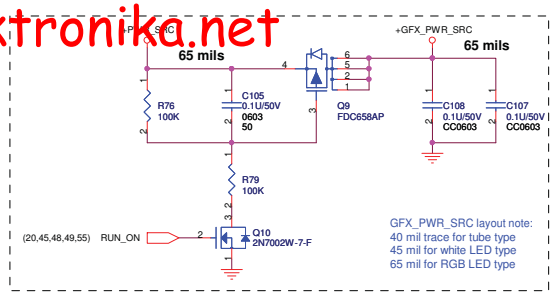


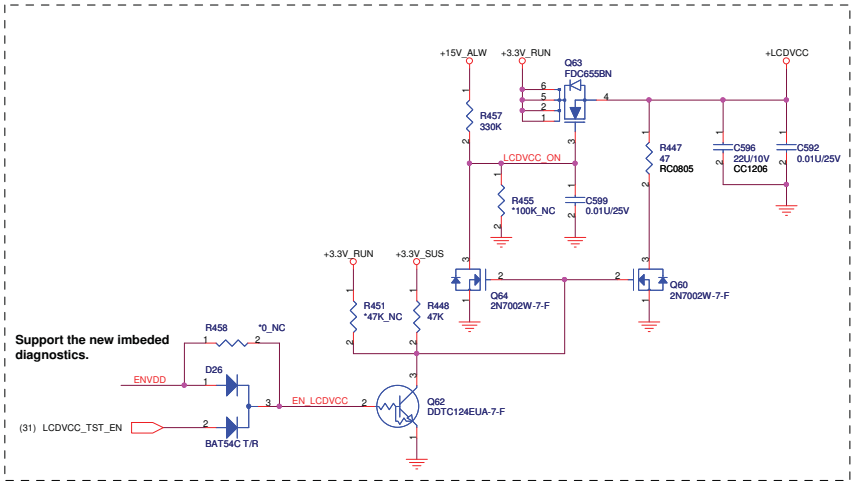
QUANTA COMPUTER

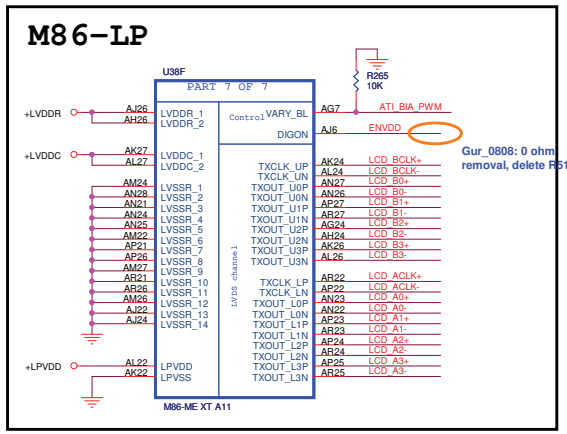
Title	HDMI & DP	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 25 of 59	





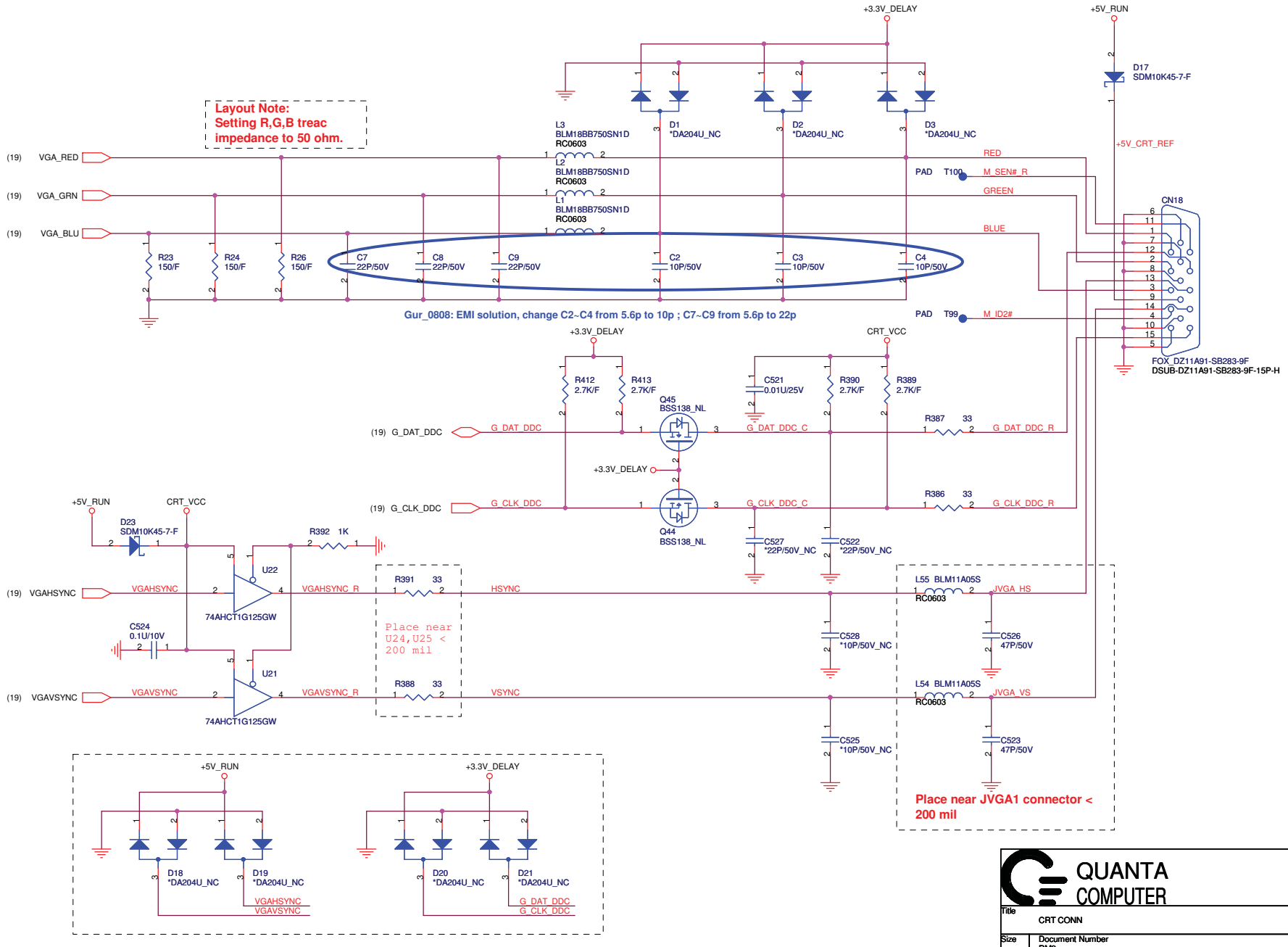






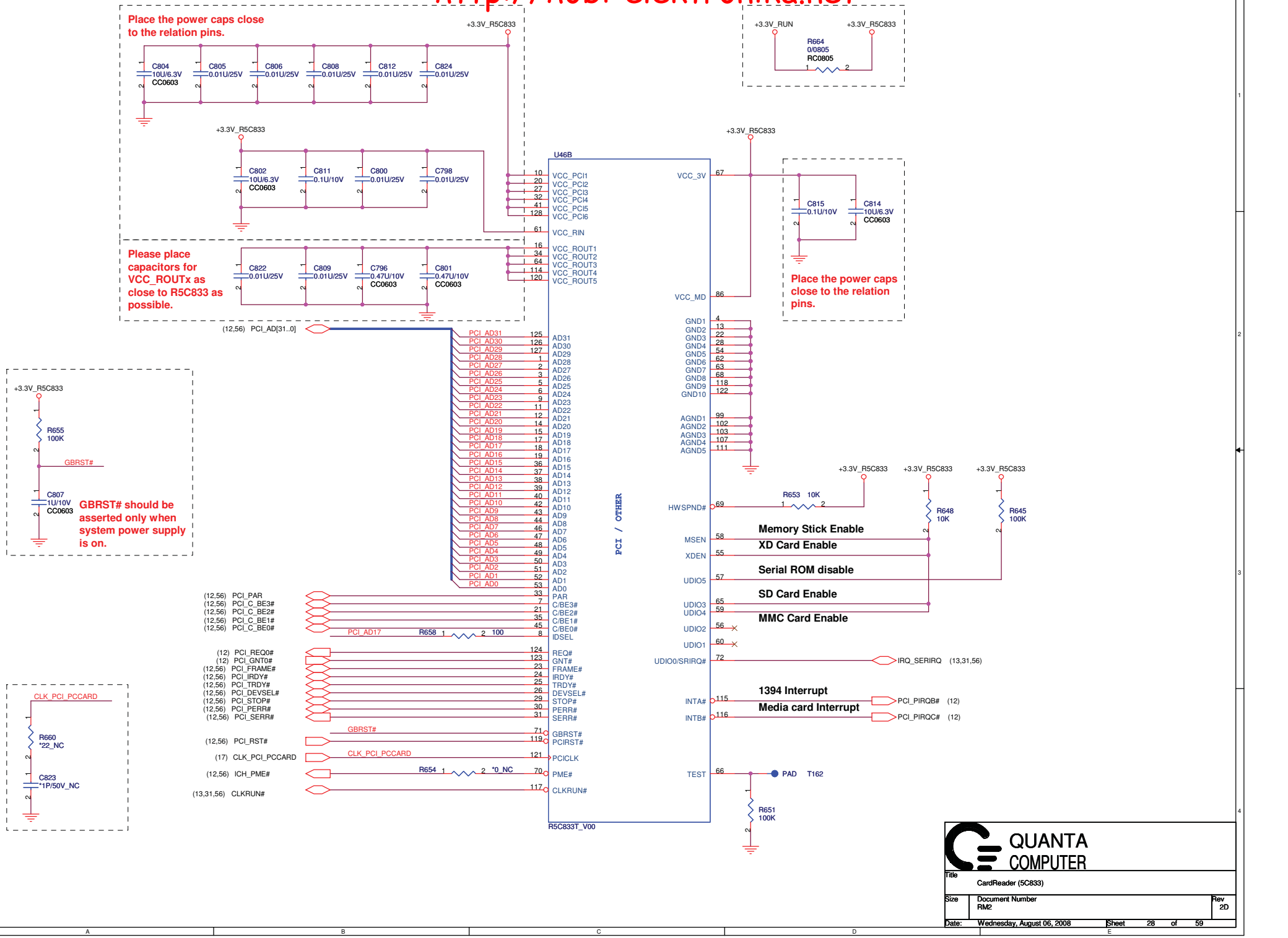
QUANTA COMPUTER

Title	M86XT_LVDS & LCD CONN	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 26 of 59	



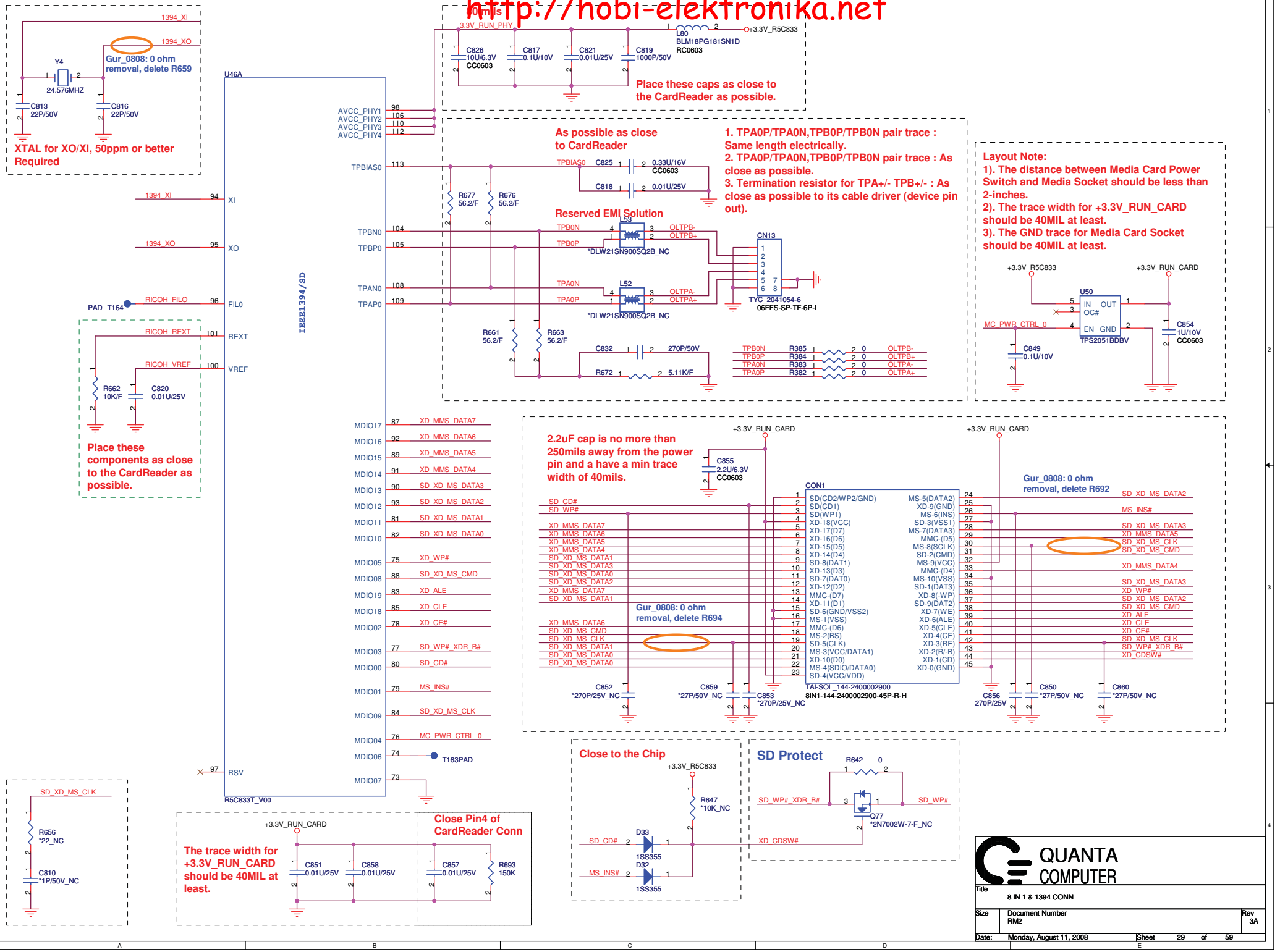
QUANTA COMPUTER

Title	CRT CONN	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 27 of 59	

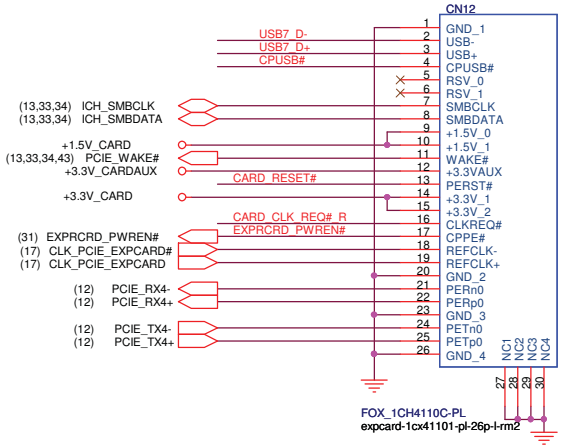


QUANTA COMPUTER

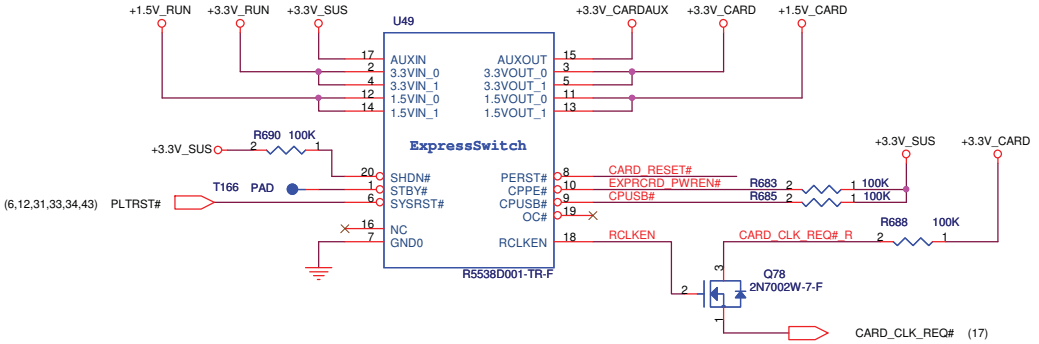
Title	CardReader (5C833)	
Size	Document Number RM2	Rev 2D
Date: Wednesday, August 06, 2008	Sheet 28 of 59	



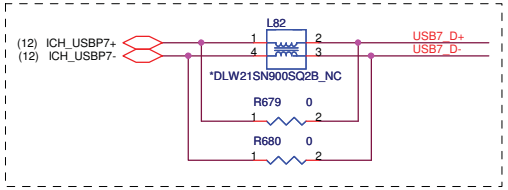
Express Card

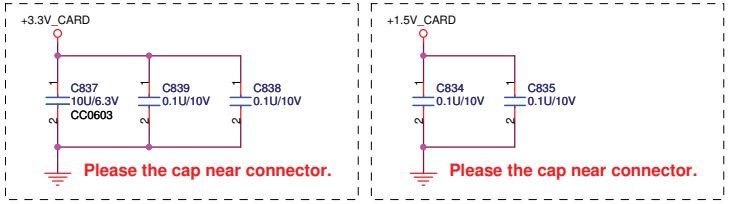


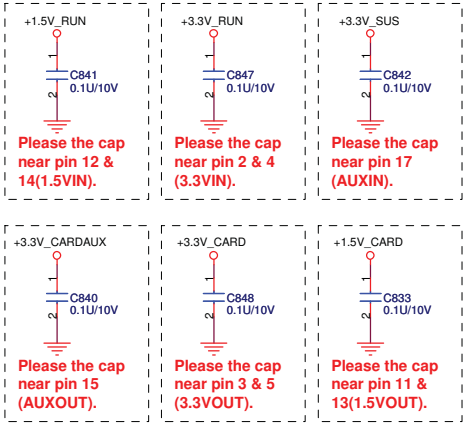
+1.5V_CARD Max. 650mA, Average 500mA.
+3V_CARD Max. 1300mA, Average 1000mA.



PCI-Express TX and RX direct to connector.

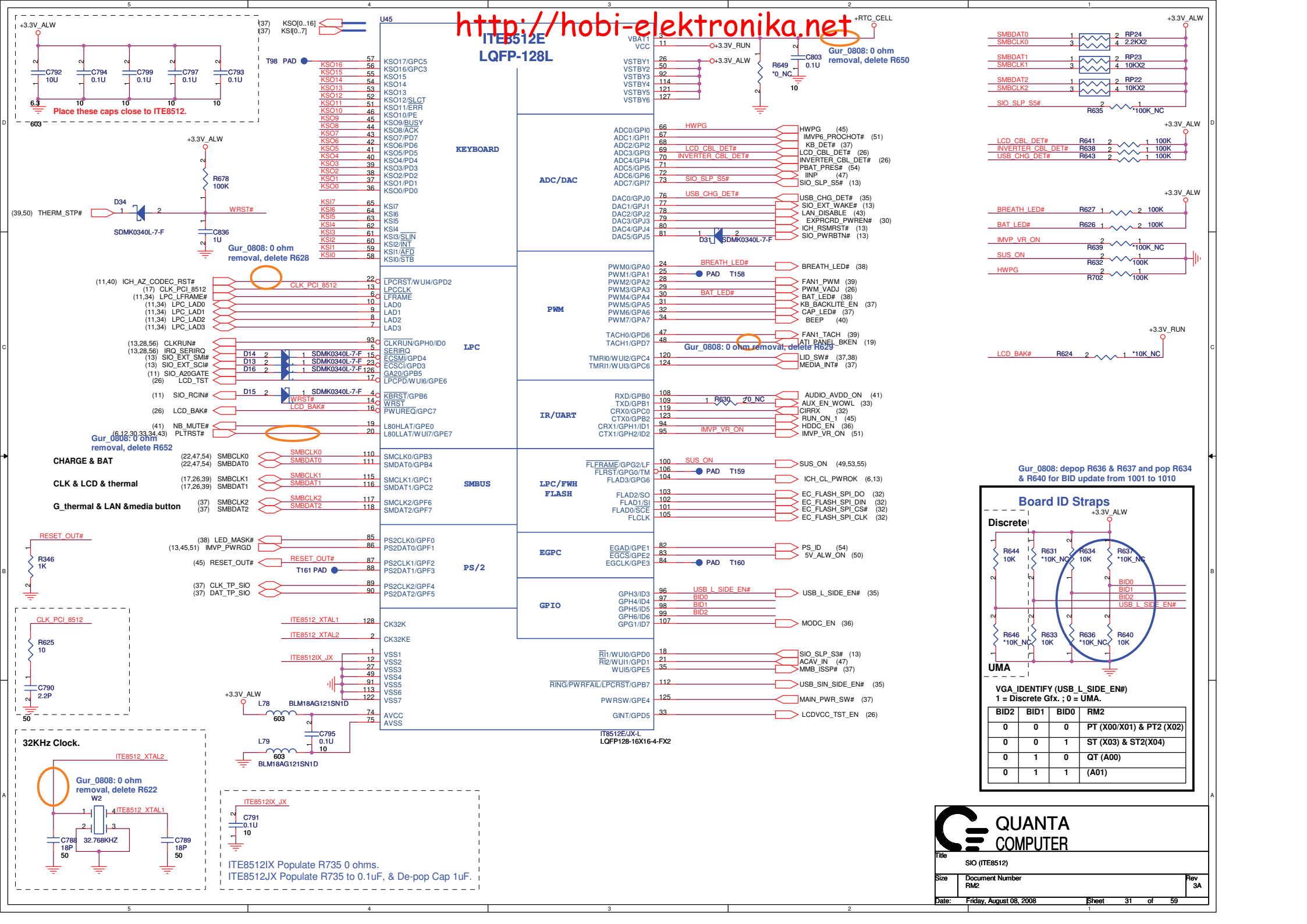




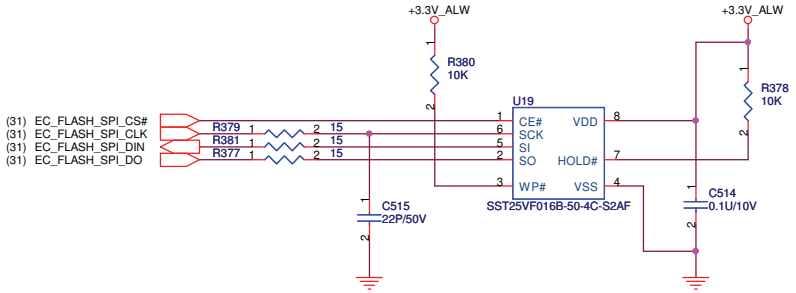


QUANTA COMPUTER

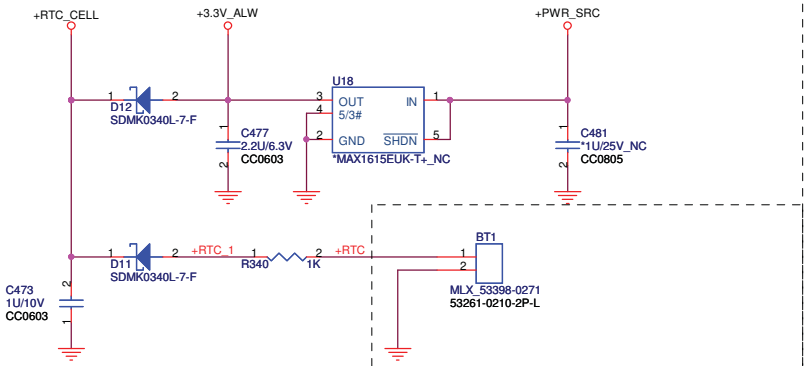
Title	EXPRESS CARD	
Size	Document Number RM2	Rev 2D
Date: Wednesday, August 06, 2008	Sheet 30 of 59	



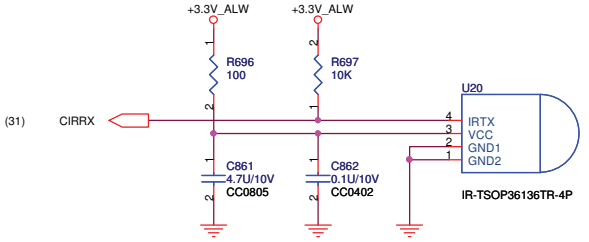
16Mbit (2M Byte), SPI



RTC BATTERY



Consumer IR



QUANTA COMPUTER

Title	FLASH/ RTC/ CIR	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 32 of 59	

MiniCard WLAN Connector

Mini Card Nut

H16 Mini Card Align (h3.2)

H17 Mini Card Nut (h3.2)

MINI1CLK_REQ#

C785 220P/50V

Gur_0808: 0 ohm removal, delete R618, R621

CN28

(13,30,34,43) PCIE_WAKE#
(34) COEX2_WLAN_ACTIVE
(34) COEX1_BT_ACTIVE_MINI
(17) MINI1CLK_REQ#
(17) CLK_PCIE_MINI1#
(17) CLK_PCIE_MINI1

PCI-Express TX and RX direct to connector

(12) PCIE_RX2-
(12) PCIE_RX2+
(12) PCIE_TX2-
(12) PCIE_TX2+
(13) PCIE_MCARD1_DET#

1	WAKE#	3.3V_1	2
3	RESERVED_1	GND0	4
5	RESERVED_2	1.5V_1	6
7	CLKREQ#	UIM_PWR	8
9	GND1	UIM_DATA	10
11	REFCLK-	UIM_CLK	12
13	REFCLK+	UIM_RESET	14
15	GND2	UIM_VPP	16
17	UIM_C8	GND3	18
19	UIM_C4	W_DISABLE#	20
21	GND4	PERST#	22
23	PERn0	3.3VAUX1	24
25	PERp0	GND5	26
27	GND6	1.5V_2	28
29	GND7	SMB_CLK	30
31	PETn0	SMB_DATA	32
33	PETp0	GND8	34
35	GND9	USB_D-	36
37	RESERVED_3	USB_D+	38
39	RESERVED_4	GND10	40
41	RESERVED_5	LED_WWAN#	42
43	RESERVED_6	LED_WLAN#	44
45	RESERVED_7	LED_WPAN#	46
47	RESERVED_8	1.5V_3	48
49	RESERVED_9	GND11	50
51	RESERVED_10	3.3V_2	52

TYC_1775838-1
MIPCIEXP-1775838-1-52P

+3.3V_WLAN
+1.5V_RUN

R610 0 → PLTRST# (6,12,30,31,34,43)

WLAN_RADIO_OFF# → R609 *0_NC → SB_WLAN_PCIE_RST# (12)

WLAN_SMBCLK
WLAN_SMBDATA

USB4_D-
USB4_D+

PAD T156
PAD T157

USB_MCARD1_DET# (13)
LED_WLAN_OUT# (38)

Reserved PAD for EMI

USB4_D-
USB4_D+
L77 *DLW21SN900SQ2B_NC
ICH_USBP4- (12)
ICH_USBP4+ (12)
R611 0
R612 0

RP21 2.2KX2
Q75 *2N7002W-7-F_NC
WLAN_SMBCLK → ICH_SMBCLK (13,30,34)
R608 *0_NC
Q73 *2N7002W-7-F_NC
WLAN_SMBDATA → ICH_SMBDATA (13,30,34)
R606 *0_NC

Suport for WoW

WLAN_RADIO_OFF# → D30 SDMK0340L-7-F → WLAN_RADIO_DIS# (13)
R614 *0_NC

Prevent backdrive when WoW is enabled.

+PWR_SRC
+3.3V_ALW
+3.3V_WLAN
+3.3V_RUN
Q74 *FDC655BN_NC
R607 0/0805 RC0805
R587 *100K_NC
R596 *100K_NC
Q71B *2N7002DW-7-F_NC
Q71A *2N7002DW-7-F_NC
(31) AUX_EN_WOWL
R598 *100K_NC
R588 *200K_NC
R600 *470K_NC
C770 *4700P/50V_NC

Place caps close to connector.

+1.5V_RUN
C777 0.047U/10V
C773 0.047U/10V

+3.3V_WLAN
C507 0.1U/10V
C508 0.047U/10V
C775 0.1U/10V
C776 0.047U/10V
C774 4.7U/10V CC0805
C763 *330U/6.3V_NC CC7343

QUANTA COMPUTER

Title	MINI-CARD (WLAN)	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 33 of 59	

MiniCard Robson, BT. UWB Connector

Mini Card Nut
H24 Mini Card Align (h3.2)
H25 Mini Card Nut (h3.2)

CN31
TYC_1775838-1
MIPCIEXP-1775838-1-52P

Gur_0808: 0 ohm removal, delete R686, R687
Gur_0808: 0 ohm removal, delete R691
Gur_0808: 0 ohm removal, delete R665, R666, R667, R668, R669
Gur_0808: 0 ohm removal, delete R675

PCI-Express TX and RX direct to connector

C846 *33P/50V_NC
R689 *100K_NC

Reserve For EMI
L81 *DLW21SN900SQ2B_NC
R673 0
R674 0
Layout Note:
R240 and R244 close to choke as possible to minimize stubs.

Place caps close to connector.
C830 0.047U/10V
C828 0.047U/10V
C831 0.1U/10V
C845 0.047U/10V
C829 0.1U/10V
C843 0.047U/10V
C827 4.7U/6.3V CC0603
C844 *330U/6.3V_NC CC7343

MiniCard WWAN Connector

Mini Card Nut
H12 Mini Card Align (h3.2)
H13 Mini Card Nut (h3.2)

CN25
TYC_1775838-1
MIPCIEXP-1775838-1-52P

Reserve For EMI
L72 *DLW21SN900SQ2B_NC
R531 0
R532 0
Layout Note:
R240 and R244 close to choke as possible to minimize stubs.

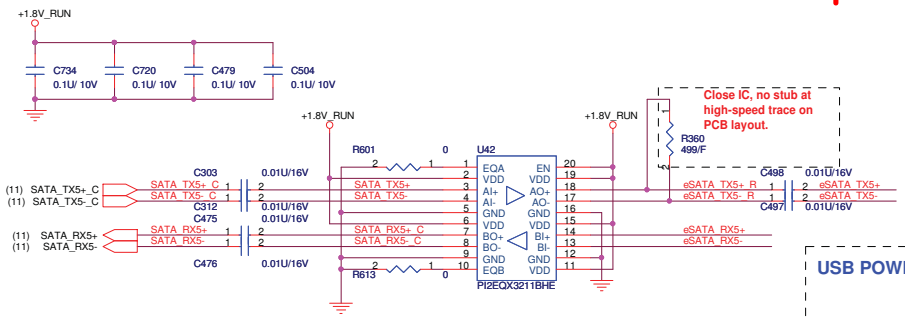
Place caps close to connector.
C696 0.047U/10V
C699 33P/50V
C698 33P/50V
C695 0.047U/10V
C729 33P/50V
C730 0.047U/10V
C388 330U/6.3V CC7343

CN26
YMI_10124-00001
Place as close as possible to JMINI connector

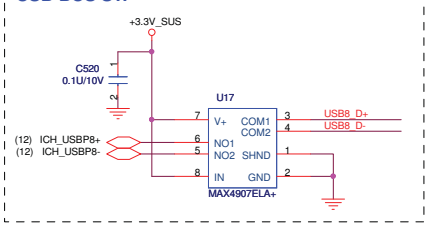
layout note:10 mil trace and 20 mil space for SIM card and UIM_PWR use 20mil
ESD3 RCLAMP0504S.TCT
C701 33P/50V
C700 33P/50V
C697 33P/50V
C685 33P/50V
C432 1U/10V CC0603

Title	MINI-CARD (WPAN,WWAN)
Size	Document Number RM2
Rev	3A
Date:	Friday, August 08, 2008
Sheet	34 of 59

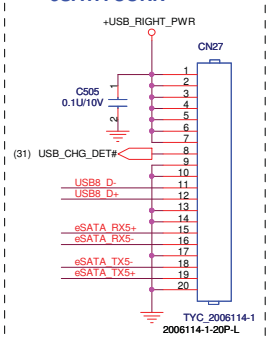
eSATA Re-driver IC



USB BUS SW

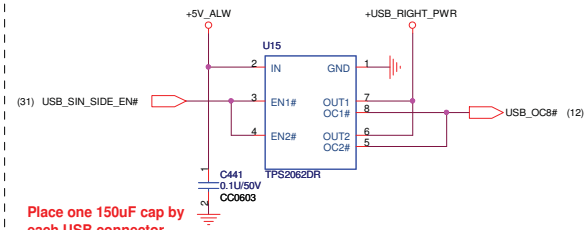


eSATA CONN



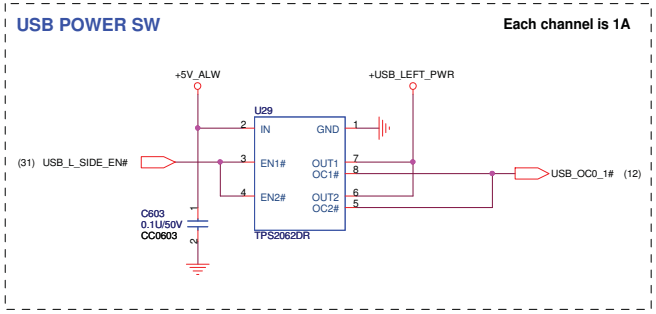
USB POWER SW

Each channel is 1A

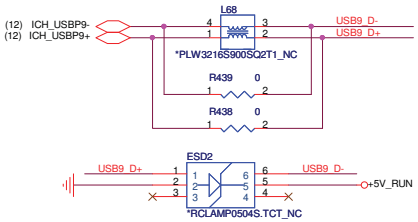


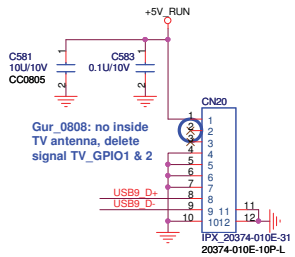
USB POWER SW

Each channel is 1A

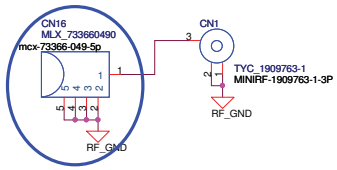


TV module

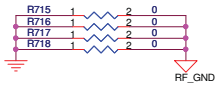




TV RF Jack & Microwave connector

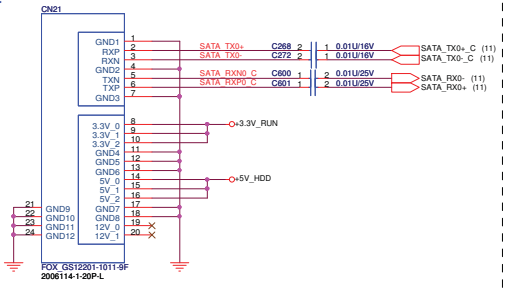


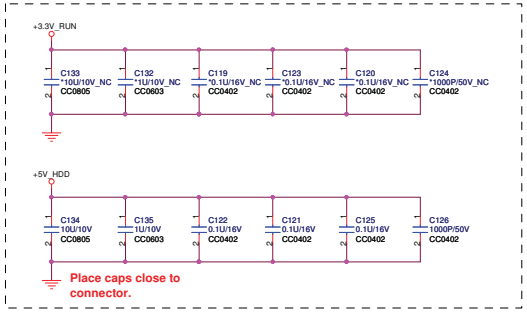
Gur_0814: change P/N & footprint & library for non-switch RF Jack

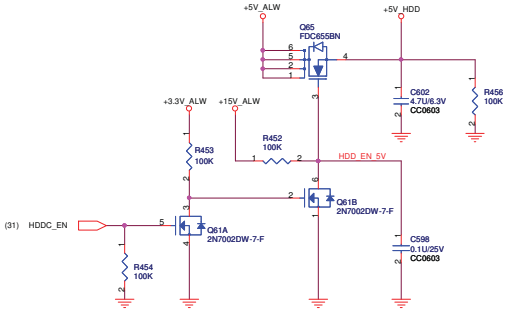


QUANTA COMPUTER		
Title: USB & eSATA & TV		
Size	Document Number: RM2	Rev: 3A
Date: Thursday, August 14, 2008	Sheet 35 of 59	

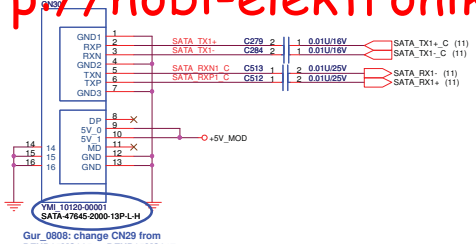
SATA Connector



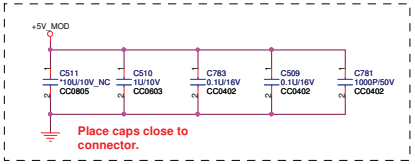


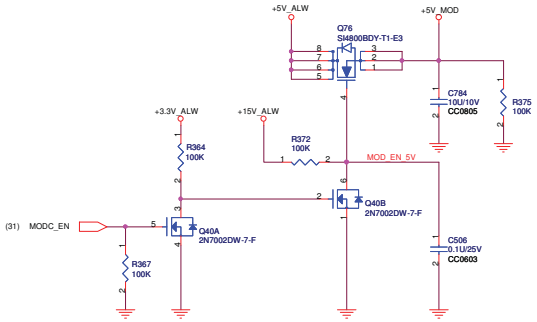


ODD Connector



Gur_0808: change CN29 from DFHD05MS095 to DFHD05MS017





QUANTA COMPUTER

Title	HDD & ODD (SATA)	
Size	Document Number RM2	Rev 3A
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To Daughter Board connector

Solid White = System On, Normal Activity
Off= System off (system off or hibernate);
"Breathing White " = System in Standby (S3);

Power Button

Speaker

Gur_0814: change
R722 to connect to
R721 from pin1 to pin2

KB LED

Touch Pad

Media Button

CN8
FOX_GB5RF321-1203-7F
gb5rf341-1203-7f-32p-l

Power Button

D35 *DA204U_NC
R709 10K
R707 100K
C863 1U/10V CC0603

Hall Switch

U54 PT3661-BB
C869 0.1U/10V
R726 0

KEYBOARD CONNECTOR

CN6
HRS_FH28-60(30)SB-1SH(86)
FH28-30SB-1SH-30P-R
R711 100K
R712 100K
Q82 DDTA114YUA-7-F
Q84 2N7002W-7-F
R708 2.49K/F

CP2 CP1 CP4 CP3 CP6 CP5 *100PX4_NC 50 NPO 1206
C618 *100P/50V_NC

100P CAPS close to KB connector

Array Microphone & Camera

The GND (pin 8) for DMIC is defined as AGND.
Connect with GND at MB, but separate AGND
& GND at coaxial cable & CCD module.

CN9
IPX_20374-010E-31
20374-010E-10P-L

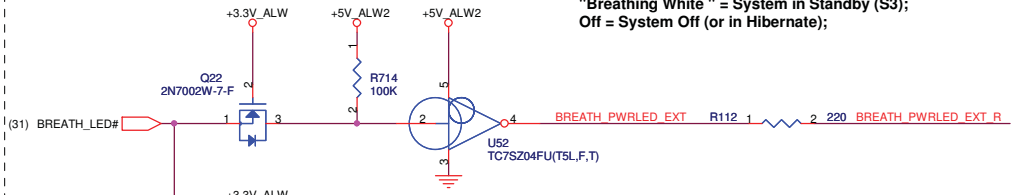
Gur_0808: no inside TV antenna,
change CN9 from 14 to 10 pins,
delete signal TV_GPIO1 & 2

U16 *TPS76301DBVR_NC
C465 *1U/10V_NC CC0603
R357 *100K/F_NC
C484 *27P/50V_NC
R358 *49.9K/F_NC
C499 *4.7U/6.3V_NC CC0603

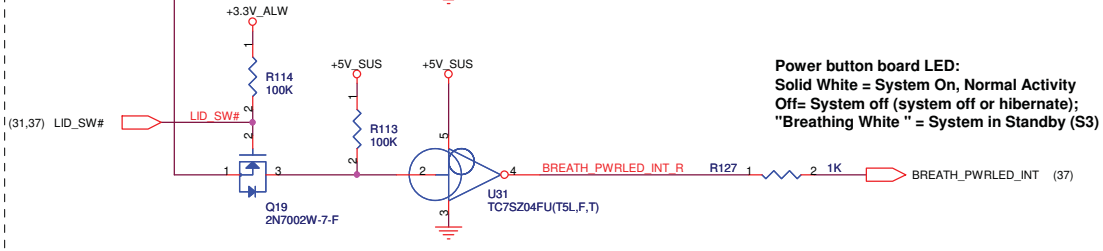
QUANTA COMPUTER			
Title	KB/ CCD/ UI		
Size	Document Number RM2		Rev 3A
Date: Thursday, August 14, 2008		Sheet 37 of 59	

Hinge & Power Button board LED (PWR/Battery indictor)

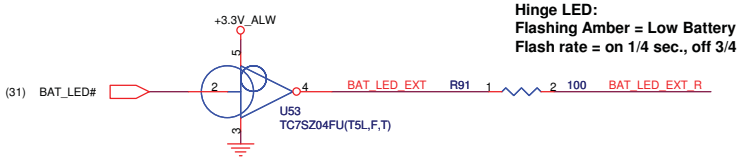
Hinge LED
Solid White= System On, Normal Activity
Solid White= Charging (system on);
Solid White= Charging (system off or hibernate and battery charge <90%);
Off= Charging (system off or hibernate and battery charge > 90%) ;
"Breathing White " = System in Standby (S3);
Off = System Off (or in Hibernate);



Power button board LED:
Solid White = System On, Normal Activity
Off= System off (system off or hibernate);
"Breathing White " = System in Standby (S3)

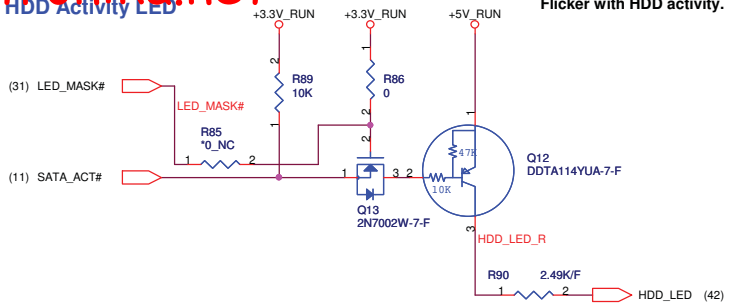


Hinge LED:
Flashing Amber = Low Battery (S0 and S3 and no AC) when battery charge <10%
Flash rate = on 1/4 sec., off 3/4 sec.



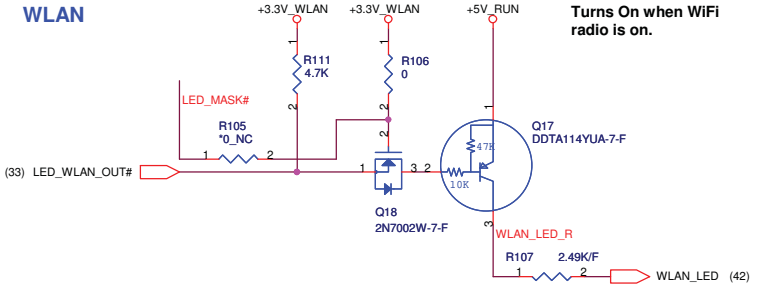
HDD Activity LED

Flicker with HDD activity.



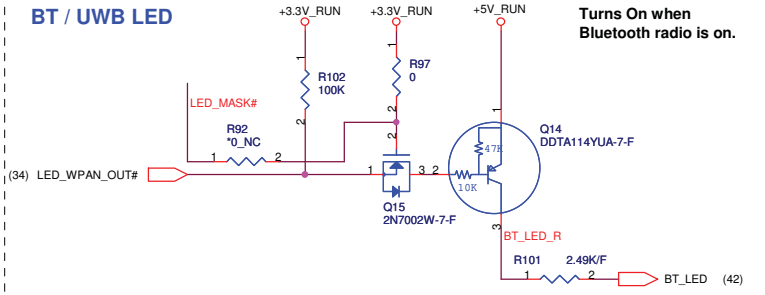
WLAN

Turns On when WiFi radio is on.



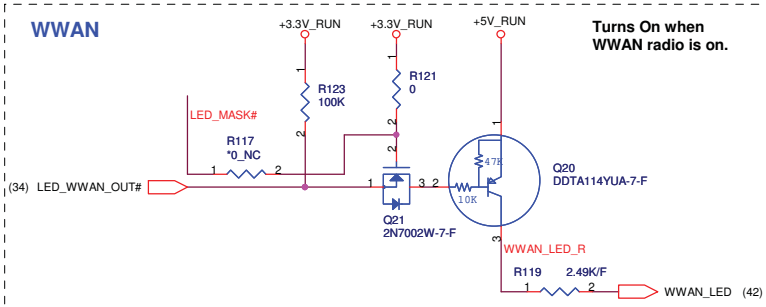
BT / UWB LED

Turns On when Bluetooth radio is on.



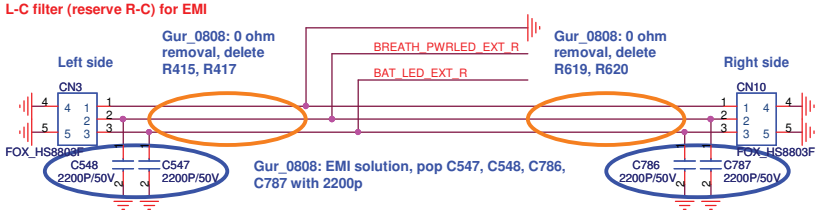
WWAN

Turns On when WWAN radio is on.



Hinge LED (PWR/Battery indictor)

L-C filter (reserve R-C) for EMI



Solid White= System On, Normal Activity
Solid White= Charging (system on);
Solid White= Charging (system off or hibernate and battery charge <90%);
Off= Charging (system off or hibernate and battery charge > 90%);
"Breathing White " = System in Standby (S3);
Off = System Off (or in Hibernate);

Flashing Amber = Low Battery (S0 and S3 and no AC) when battery charge <10%
Flash rate = on 1/4 sec., off 3/4 sec.

QUANTA COMPUTER

Title	LED	
Size	Document Number RM2	Rev 3A
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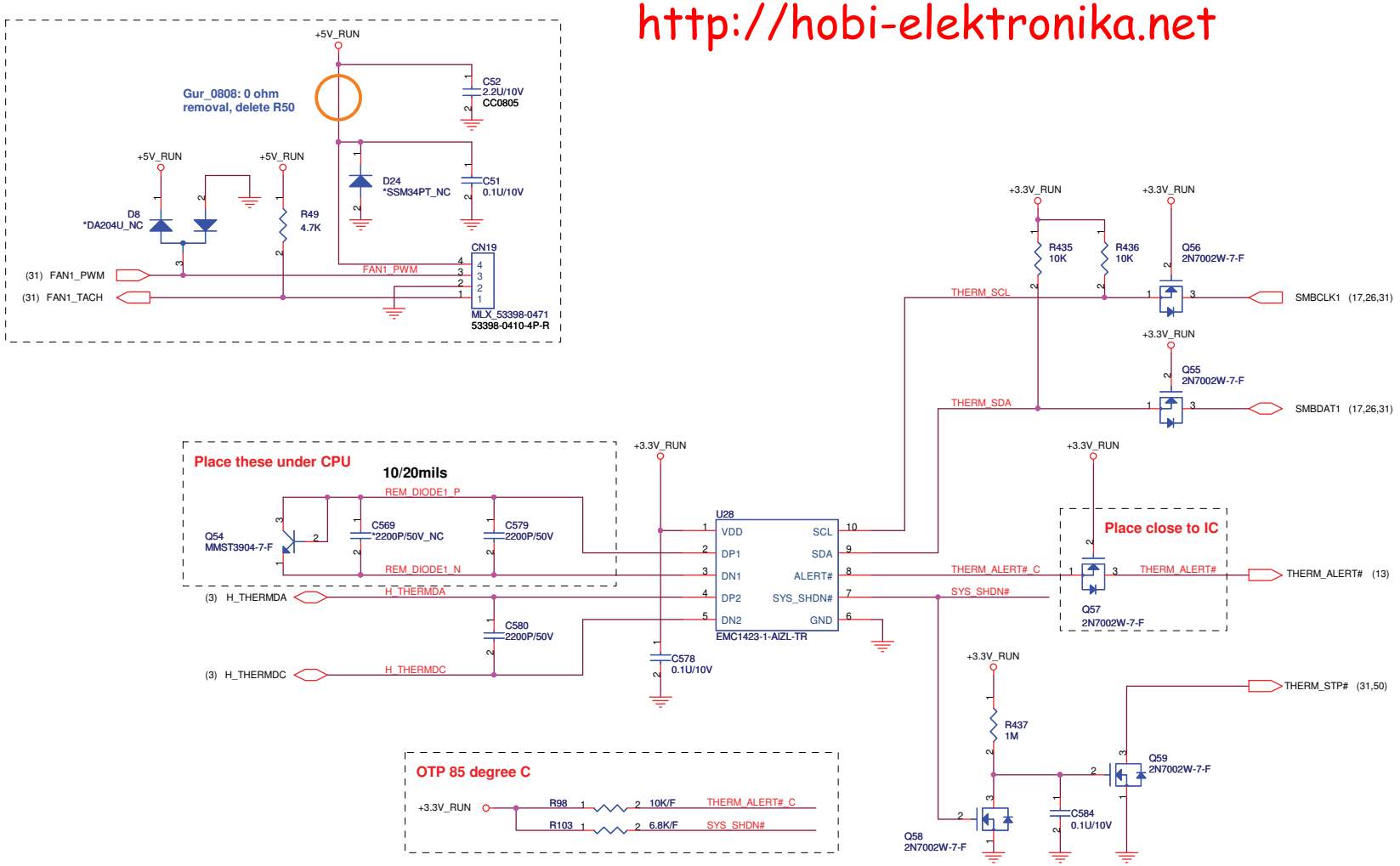
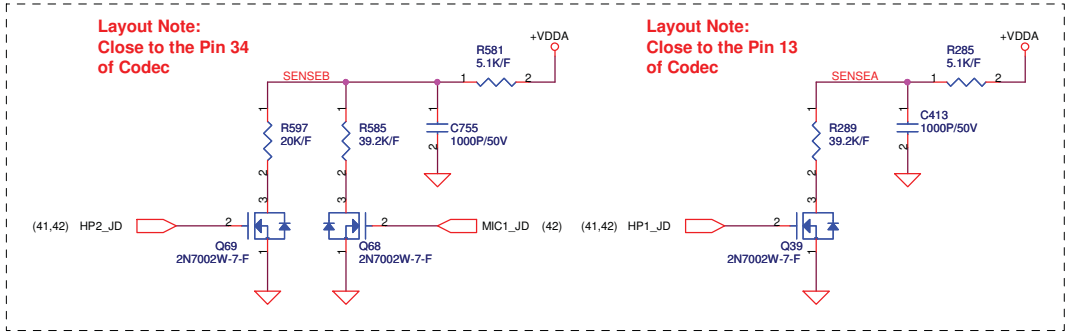
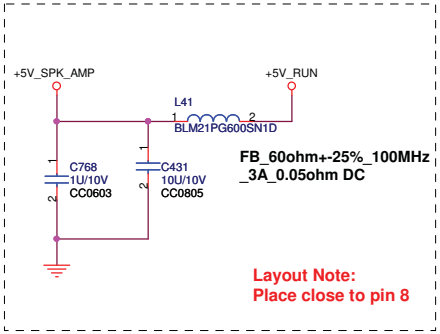
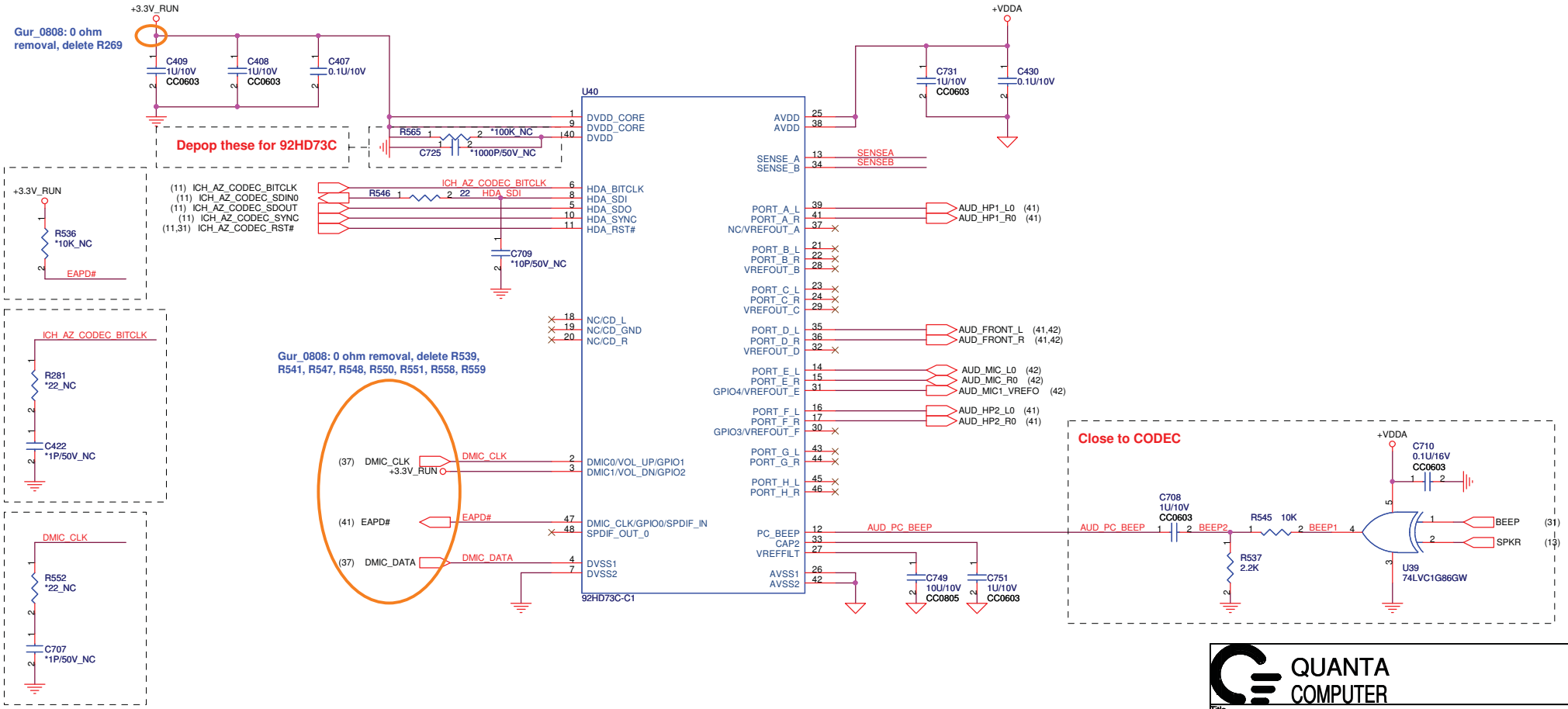


QUANTA COMPUTER		
Title	FAN /THERMAL	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 39 of 59	



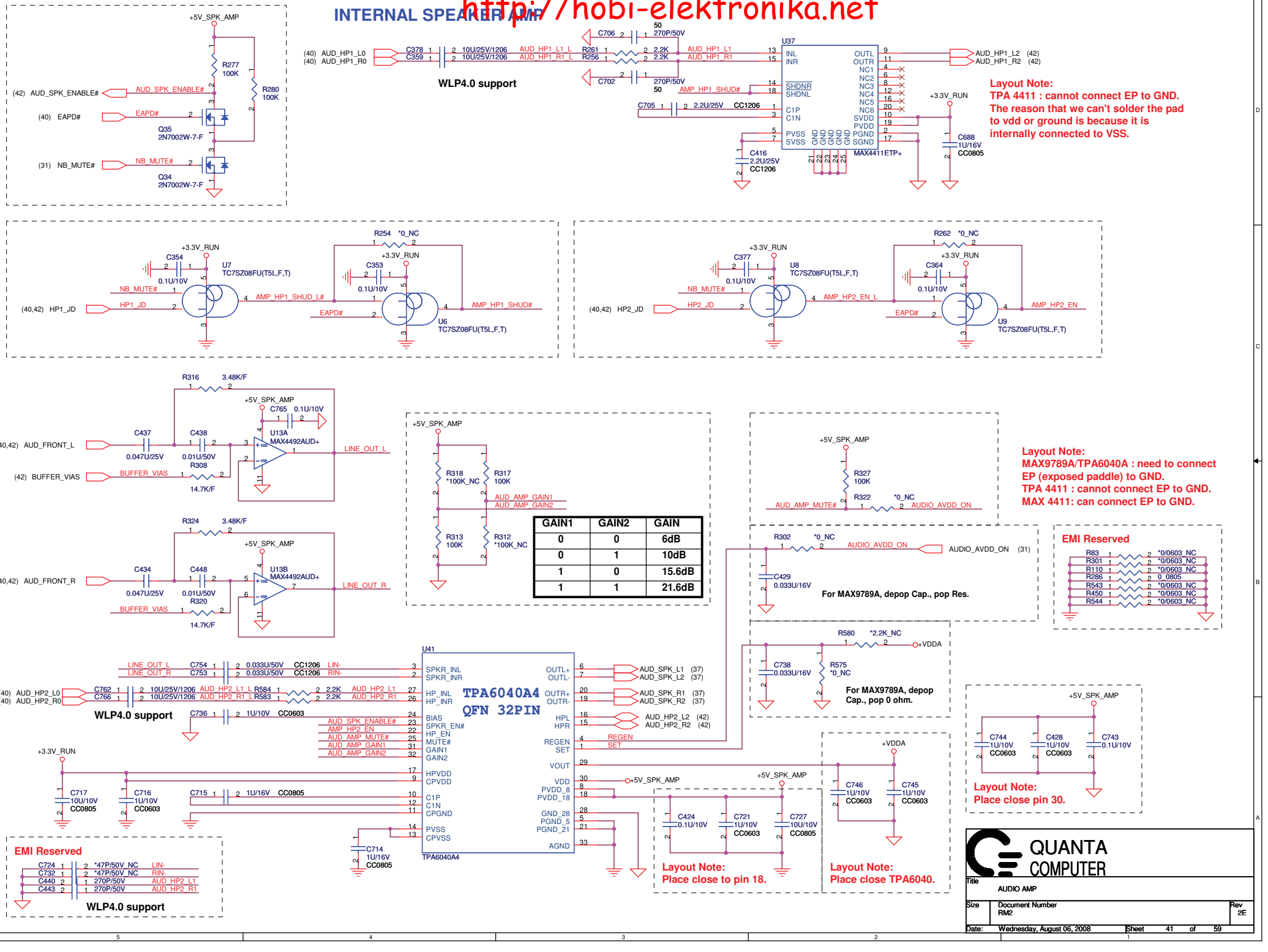


AZALIA (HD) CODEC



QUANTA COMPUTER		
Title	AZELIA CODEC (92HD73C)	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 40 of 59	

INTERNAL SPEAKER AMP

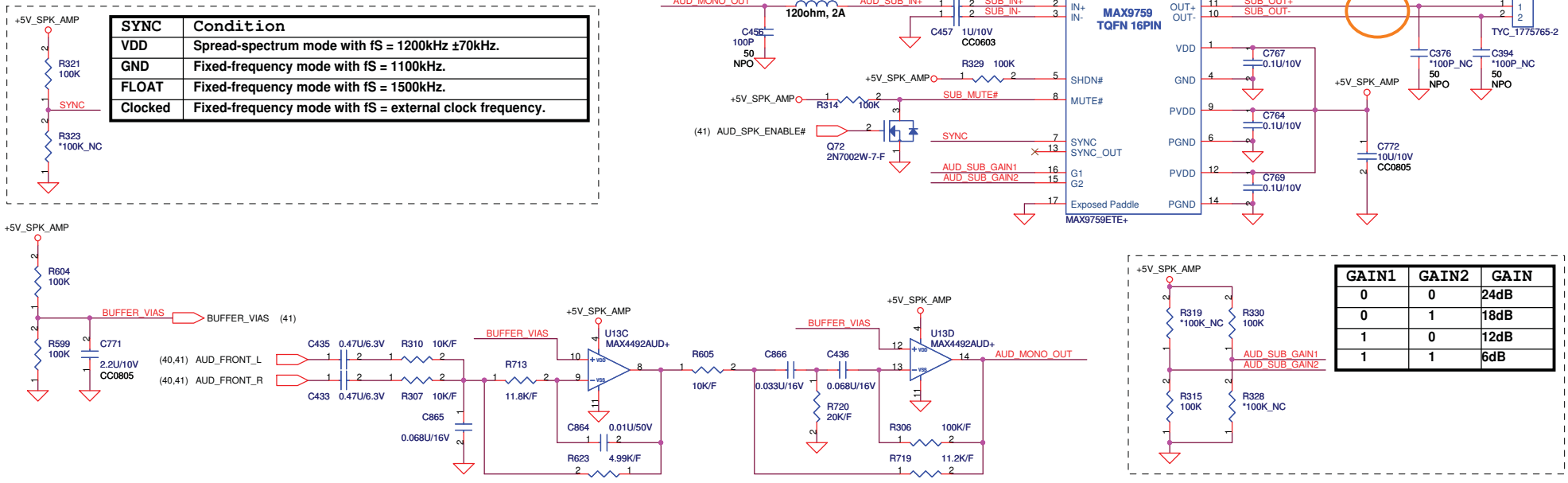


Title	AUDIO AMP	
Size	Document Number RM2	Rev 2E
Date: Wednesday, August 06, 2008	Sheet 41 of 59	

QUANTA COMPUTER

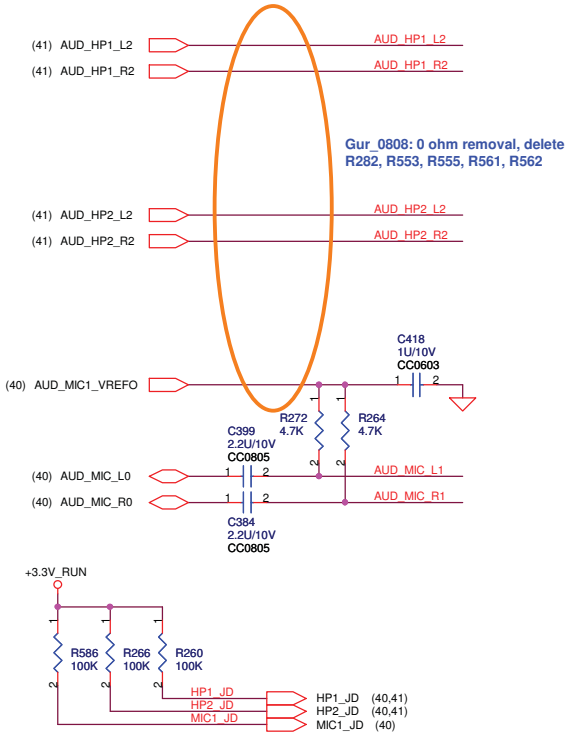
INTERNAL SUBWOOFER AMP

SYNC	Condition
VDD	Spread-spectrum mode with fS = 1200kHz ±70kHz.
GND	Fixed-frequency mode with fS = 1100kHz.
FLOAT	Fixed-frequency mode with fS = 1500kHz.
Clocked	Fixed-frequency mode with fS = external clock frequency.

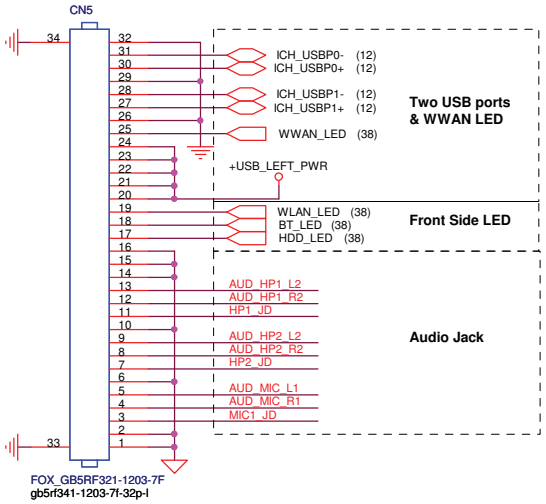


GAIN1	GAIN2	GAIN
0	0	24dB
0	1	18dB
1	0	12dB
1	1	6dB

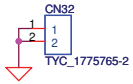
Ambient Parts of Headphone & MIC Jack



To IB(IO Board) connector

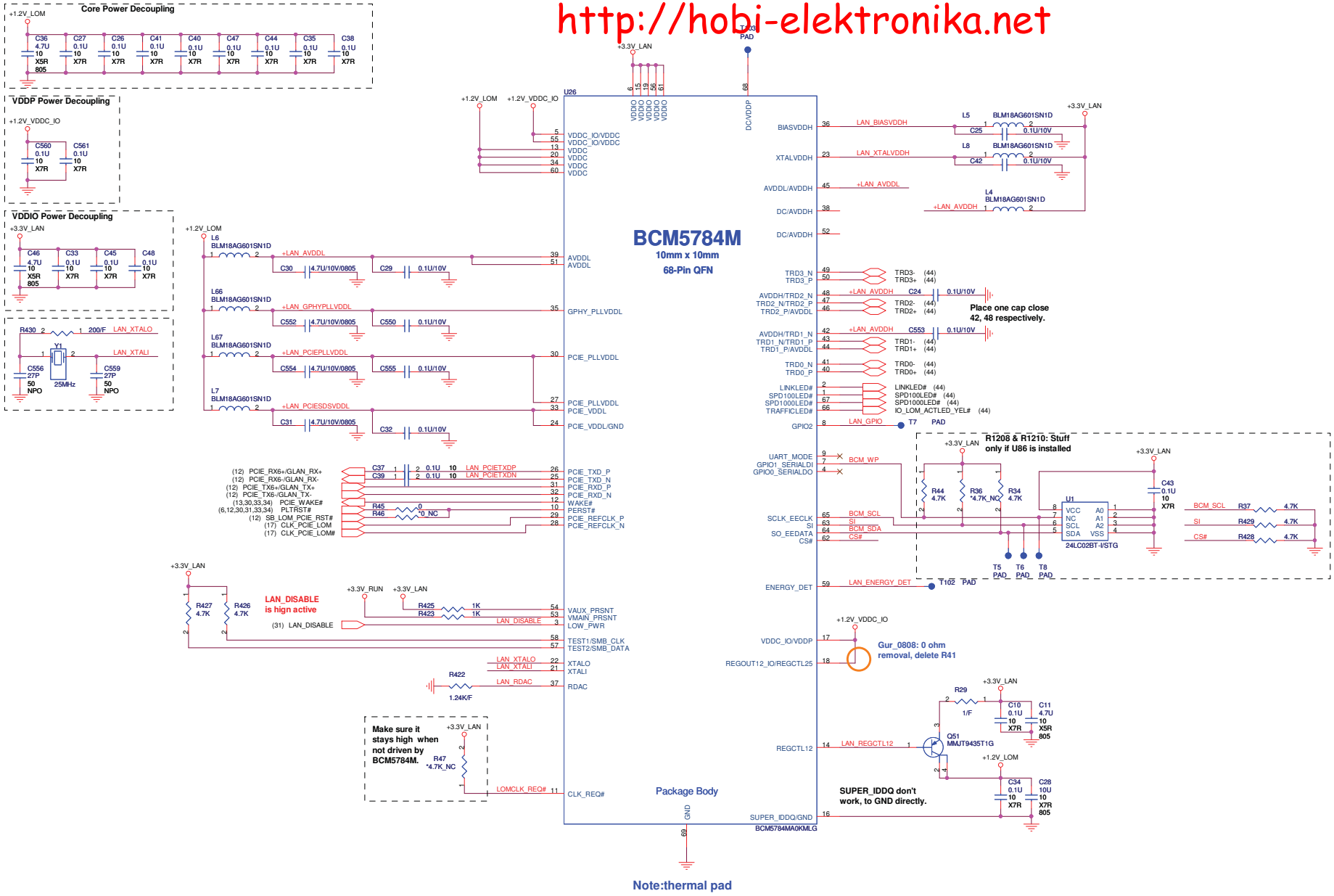


Adding additional AGND



QUANTA COMPUTER

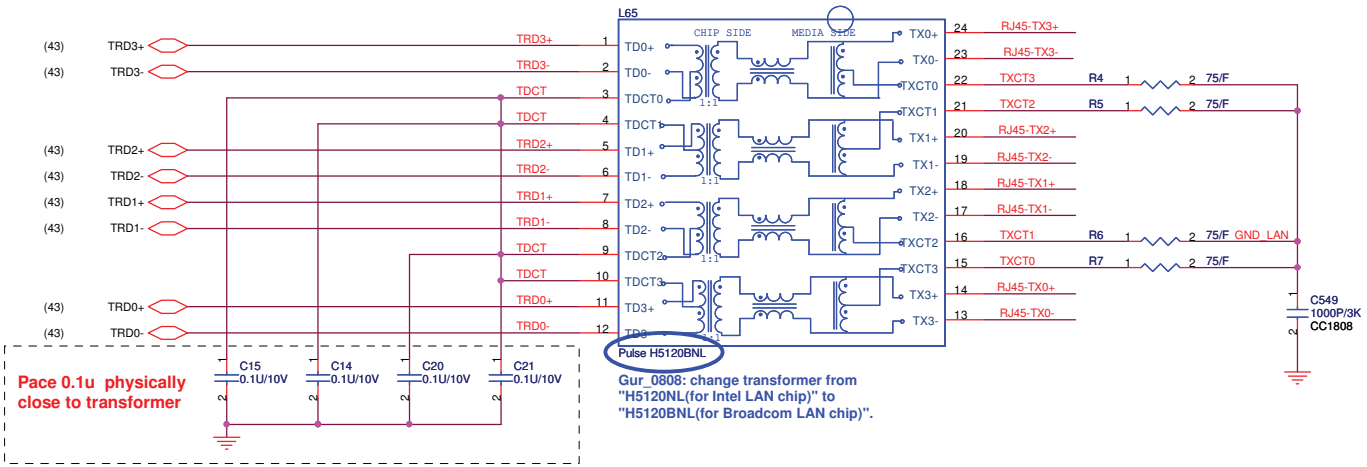
Title	IB CONN & SUBWOOFER	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 42 of 59	



QUANTA COMPUTER			
Title	LAN (BCM5784M)		
Size	Document Number RM2		Rev 3A
Date:	Friday, August 08, 2008	Sheet 43 of 59	

TRANSFORMER

Layout Note:
Route TRD+/- pairs with 100 ohm differential trace immpedance.

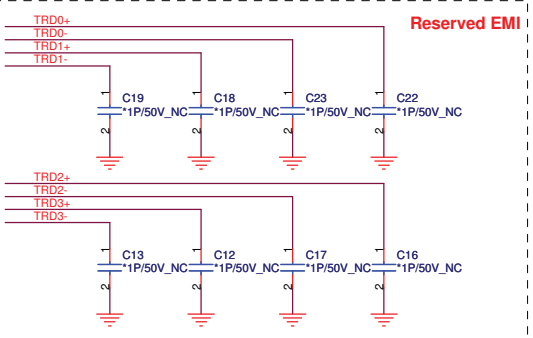


Pace 0.1u physically close to transformer

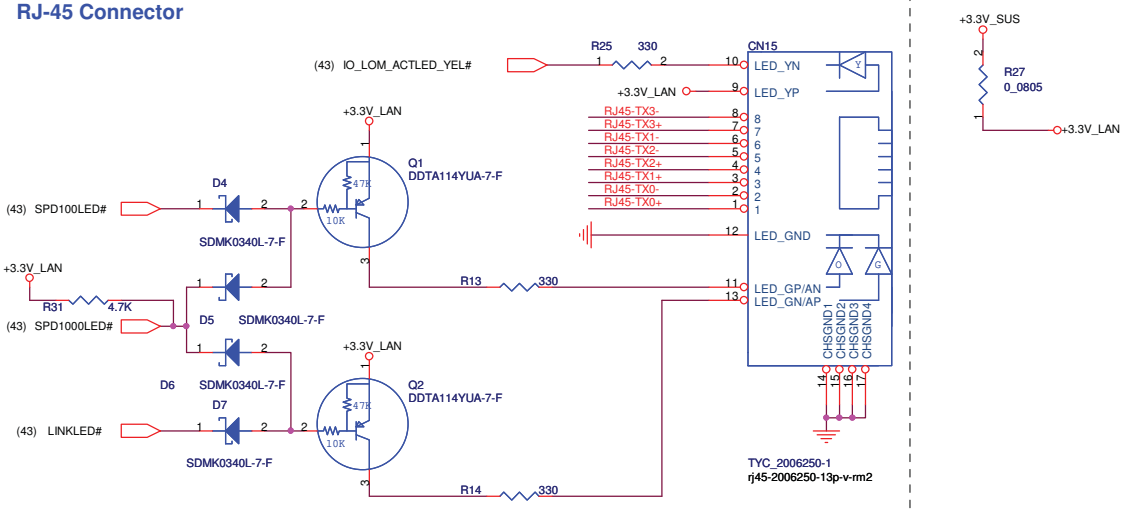
C15 0.1U/10V, C14 0.1U/10V, C20 0.1U/10V, C21 0.1U/10V

Gur_0808: change transformer from "H5120NL(for Intel LAN chip)" to "H5120BNL(for Broadcom LAN chip)".

Reserved EMI

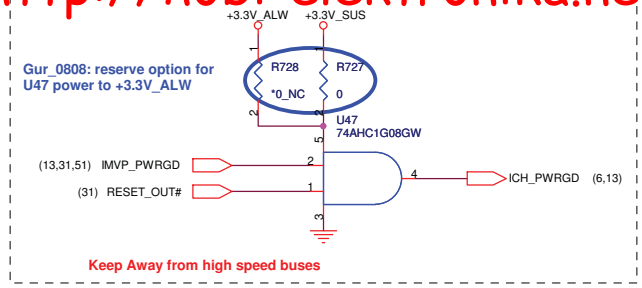


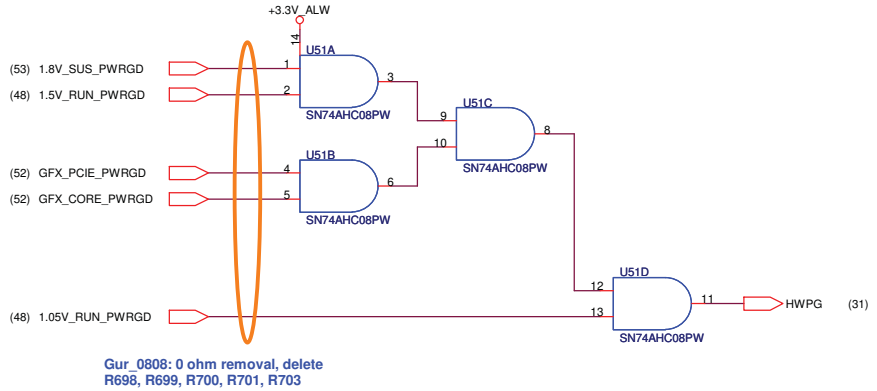
RJ-45 Connector

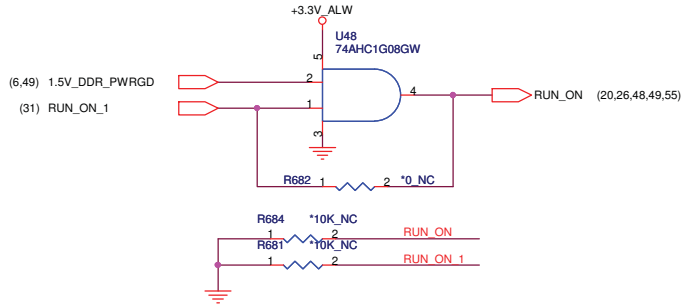


Title	LAN SWITCH	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 44 of 59	

QUANTA COMPUTER







QUANTA COMPUTER

Title	System Reset Circuit	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 45 of 59	

Gur_0808: change PV1 from FDZD3002010 to FDEF3001015

H-C276D118P2-8 * 9

H26 H-C276D118P2-8
H33 H-C276D118P2-8
H23 H-C276D118P2-8
H32 H-C276D118P2-8
H21 H-C276D118P2-8
H10 H-C276D118P2-8
H7 H-C276D118P2-8
H2 H-C276D118P2-8
H1 H-C276D118P2-8

H-C236D118P2-8 * 3

H9 H-C236D118P2-8
H11 H-C236D118P2-8
H22 H-C236D118P2-8

h-c236d197p2 * 1

H4 h-c236d197p2

H-C236D158P2 * 4

H15 H-C236D158P2
H19 H-C236D158P2
H20 H-C236D158P2
H14 H-C236D158P2

H-T295X280B236D118P2 * 1

H28 H-T295X280B236D118P2

h-c236d157p2 * 2

H6 h-c236d157p2
H3 h-c236d157p2

h-c394d260p2 * 1

H5 H-C394D260P2-8

H-C394D260P2-8 * 1

H18 H-C394D260P2-8

h-c236d236n * 2

H31 h-c236d236n

Gur_0814: delete H27

H-C197D118P2-8 * 1

H30 H-C197D118P2-8

H-C197D91P2-8 * 1

H8 H-C197D91P2-8

h-o205x157d138x91p2 * 1

H29 h-o205x157d138x91p2

PV5 *FDRM200201_NC
PV6 *FDRM200201_NC
PV4 *FDRM200201_NC
PV3 *HYH_RHC-CP-27G03_NC
PV1 HYH_RHC-CP-27G03
PV2 *HYH_RHC-CP-27G03_NC

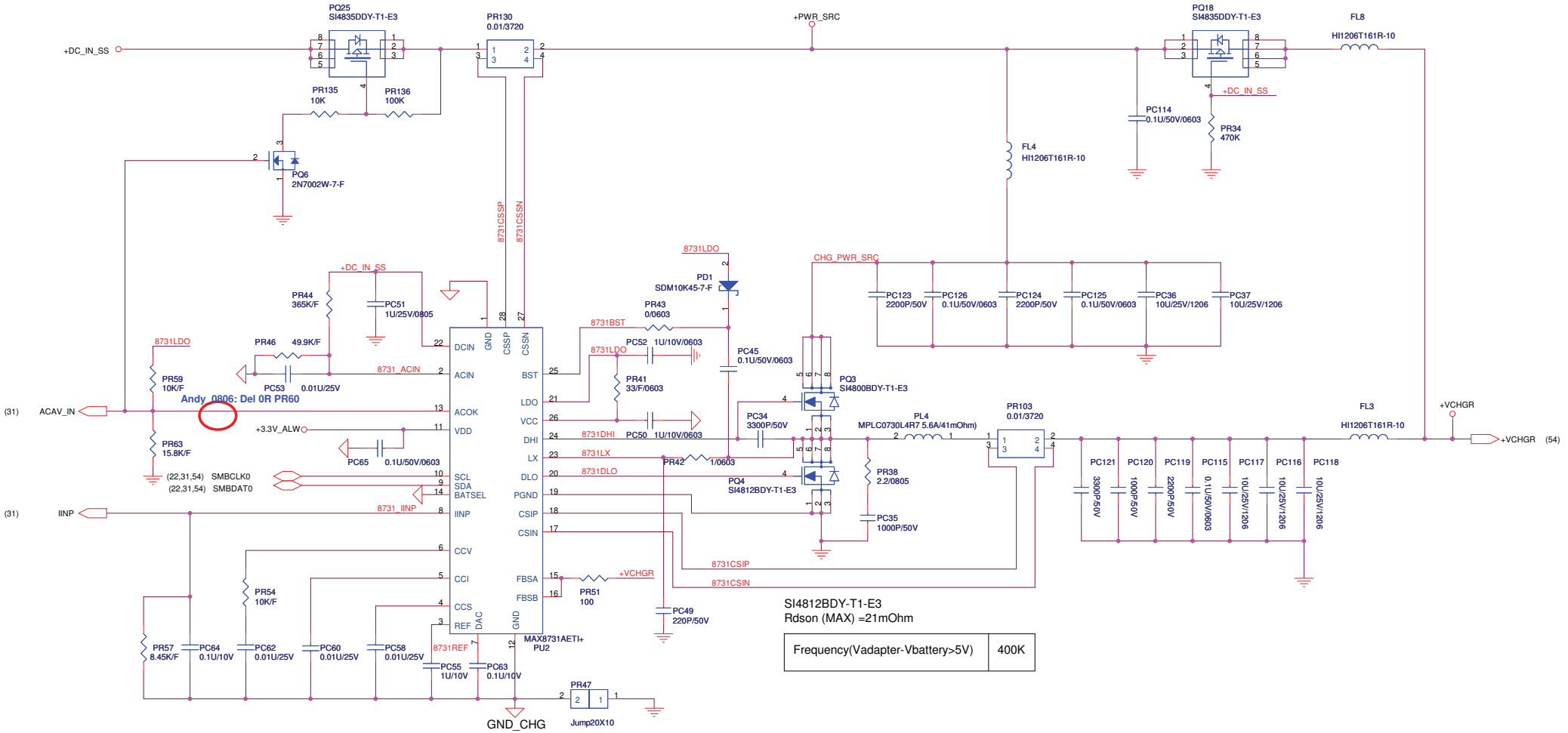
PV7 PAD181X67
PV8 PAD181X67
PV9 PAD118X67

RF_GND

H34 o-rm2-1

QUANTA COMPUTER

Title	PAD & SCREW & SPRING	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 14, 2008	Sheet 46 of 59	



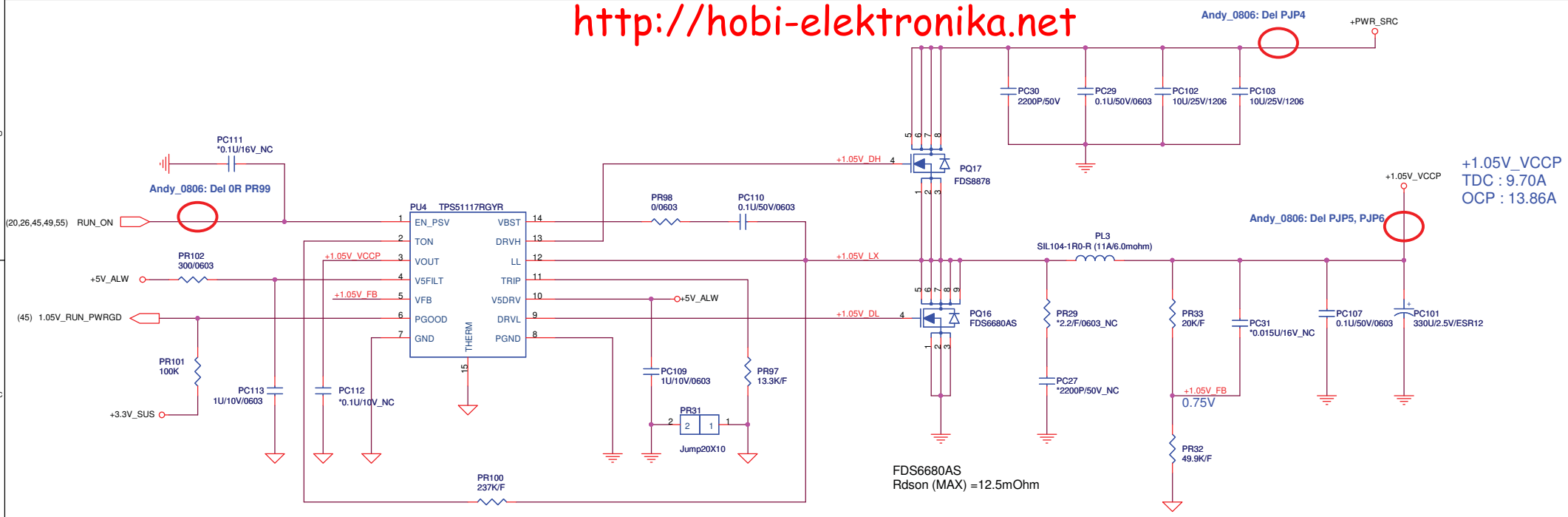
SI4812BDY-T1-E3
Rdson (MAX) =21mOhm

Frequency(Vadapter-Vbattery>5V)	400K

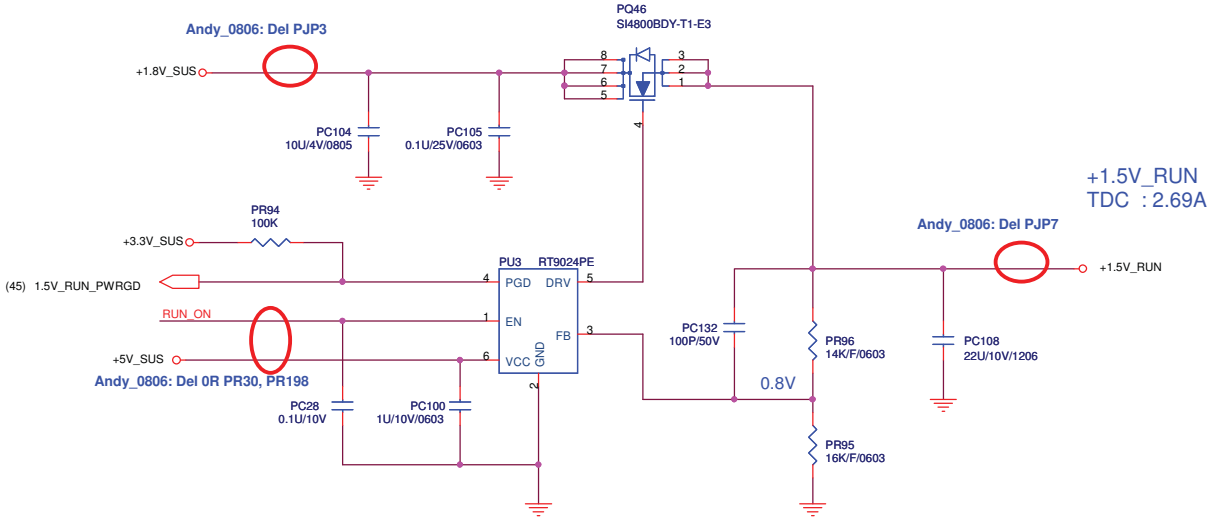
QUANTA COMPUTER

Title	CHARGER (MAX8731A)	
Size	Document Number RM2	Rev 3A
Date:	Sheet 47 of 59	

2005/4/21

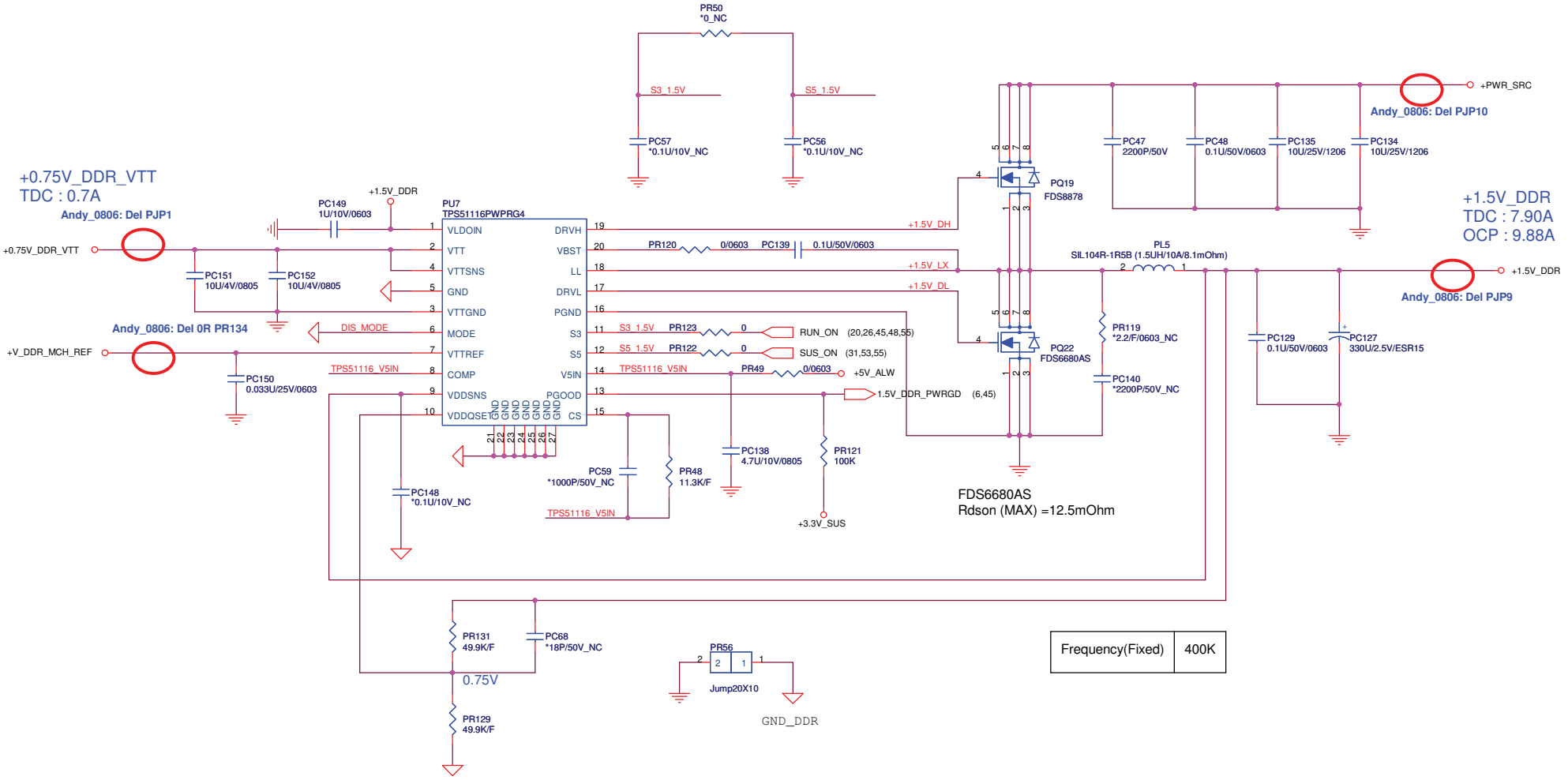


TON	PR3=237K
Frequency	300K

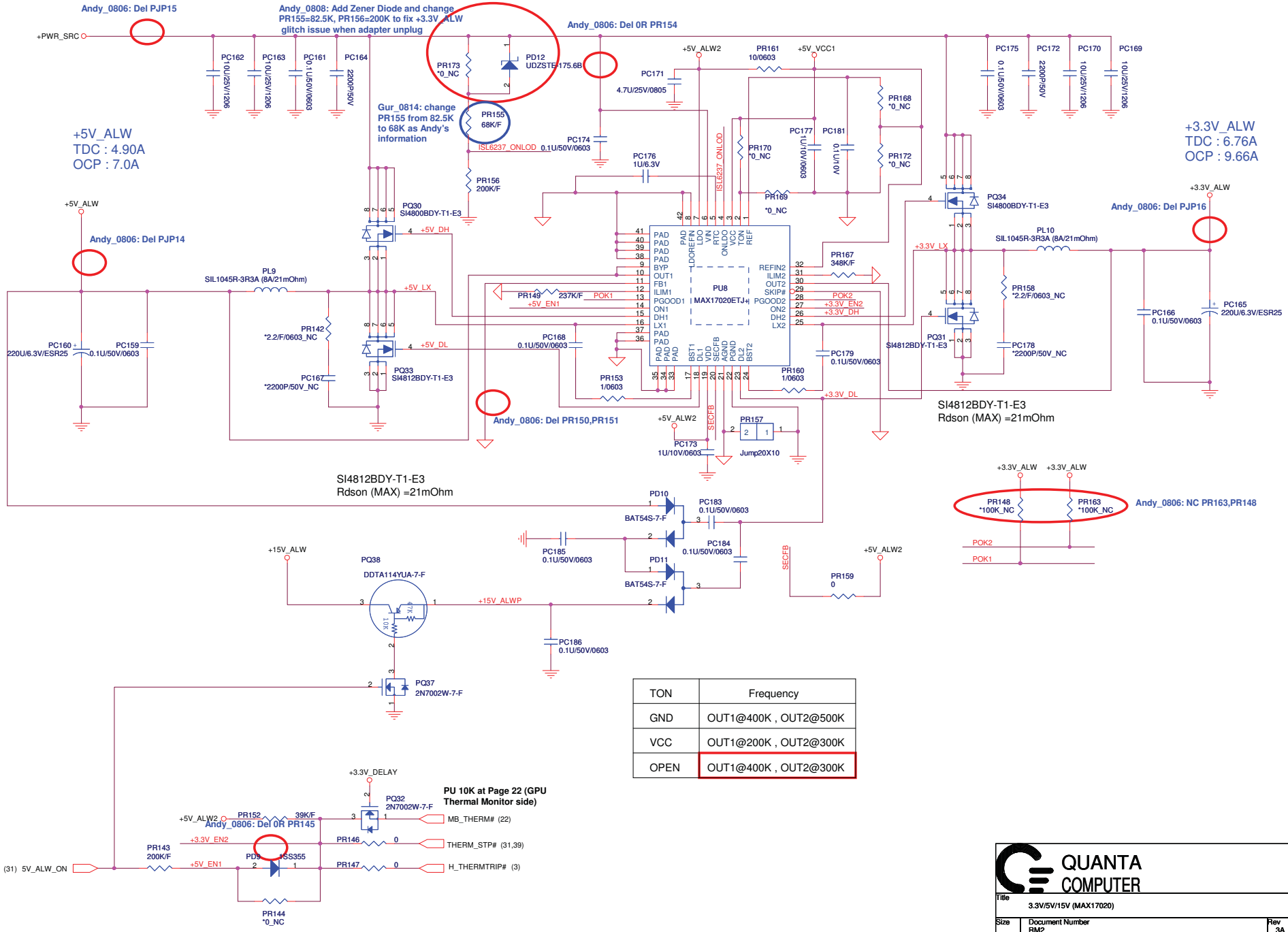


QUANTA COMPUTER

Title	1.05VCCP & 1.5VRUN	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 07, 2008	Sheet 48 of 59	



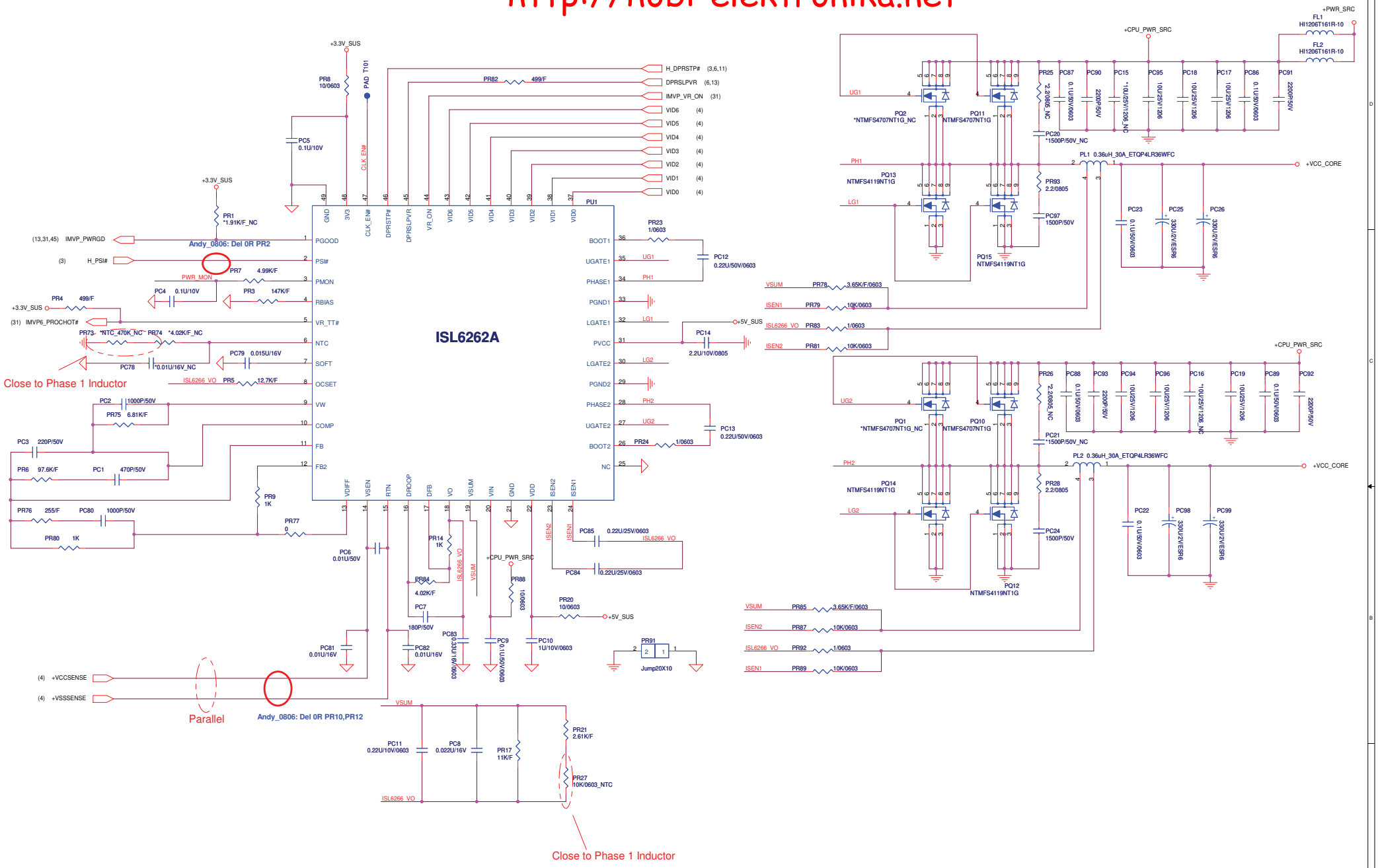
QUANTA COMPUTER		
Title	1.5_DDR/0.75(TPS51116)	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 07, 2008	Sheet 49 of 59	



TON	Frequency
GND	OUT1@400K , OUT2@500K
VCC	OUT1@200K , OUT2@300K
OPEN	OUT1@400K , OUT2@300K

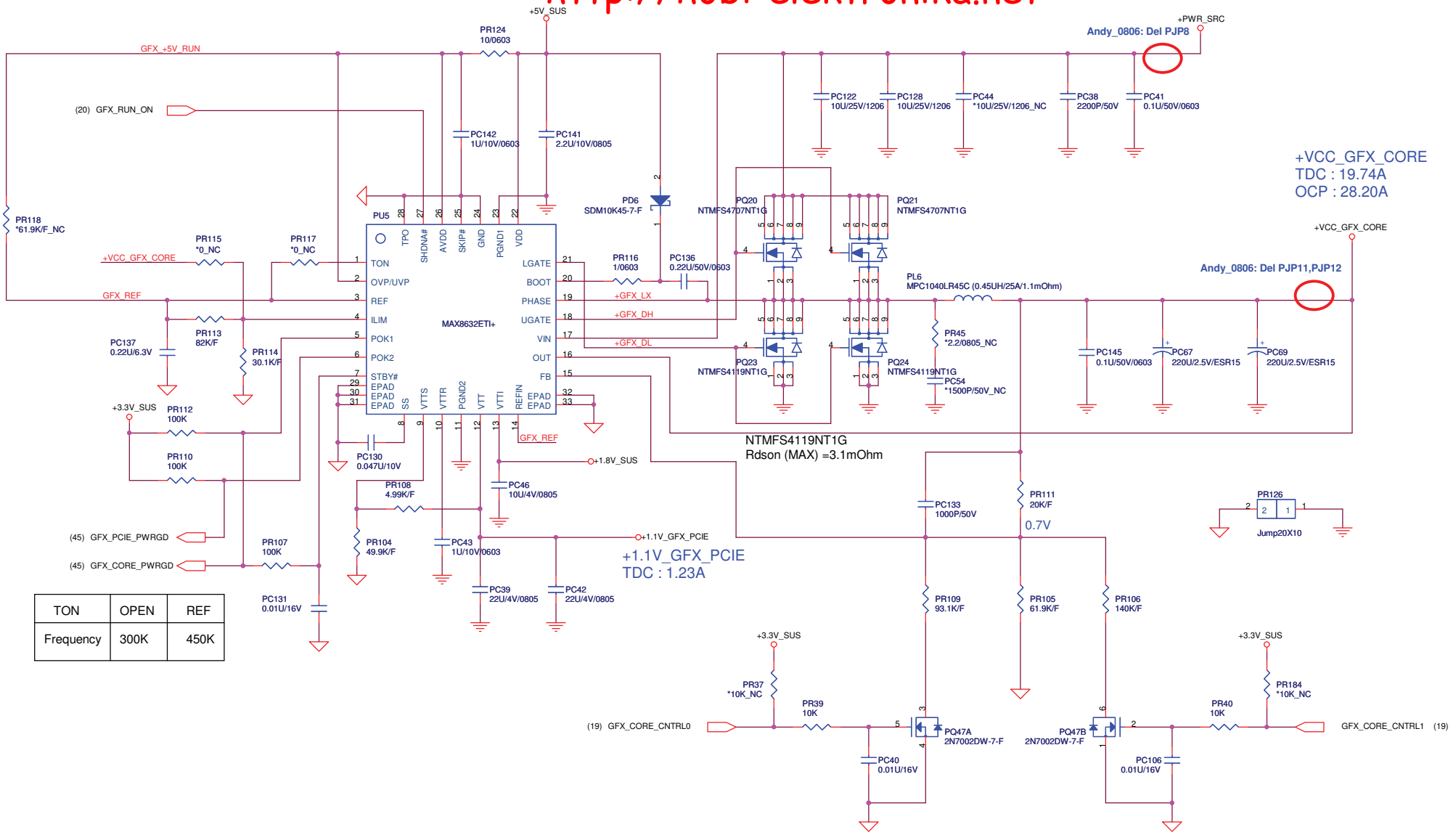
QUANTA COMPUTER

Title	3.3V/5V/15V (MAX17020)	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 14, 2008	Sheet 50 of 59	



Title	CPU_POWER (ISL6262A)
Size	Document Number: RM2 — Rev: 3A
Date: Thursday, August 07, 2008	Sheet 51 of 59

QUANTA COMPUTER



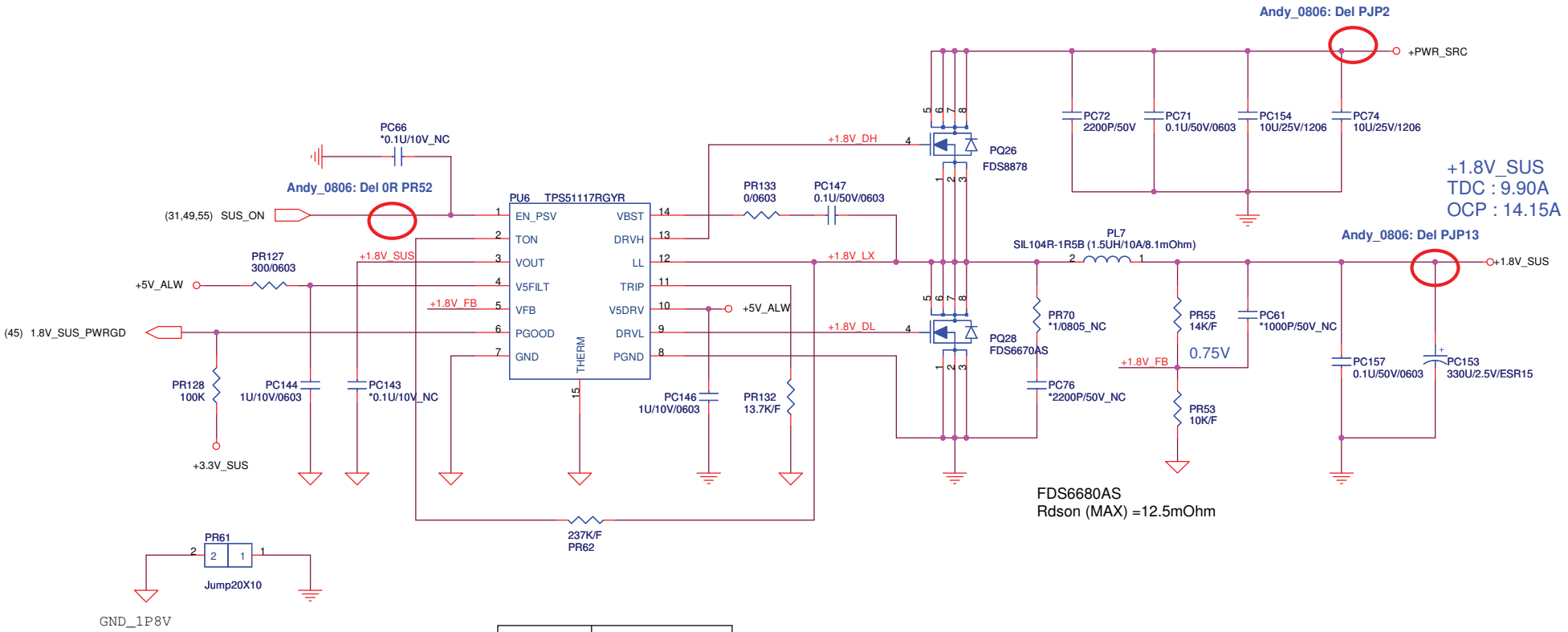
TON	OPEN	REF
Frequency	300K	450K

GFX_CORE_CNTRL0	GFX_CORE_CNTRL1	+VCC_GFX_CORE
LOW	LOW	0.95
HIGH	LOW	1.1V
HIGH	HIGH	1.2V

ILIM	Iovp=(2*(Rb/(Ra+Rb))*0.1*(1/RDSON)+(I_DELTA/2)
SKIP#	AVDD = Low-noise, forced-PWM mode. GND = Pulse-skipping operation.
OVP/UVP	The overvoltage limit is 116% of Vout. The undervoltage limit is 70% of Vout.

QUANTA COMPUTER

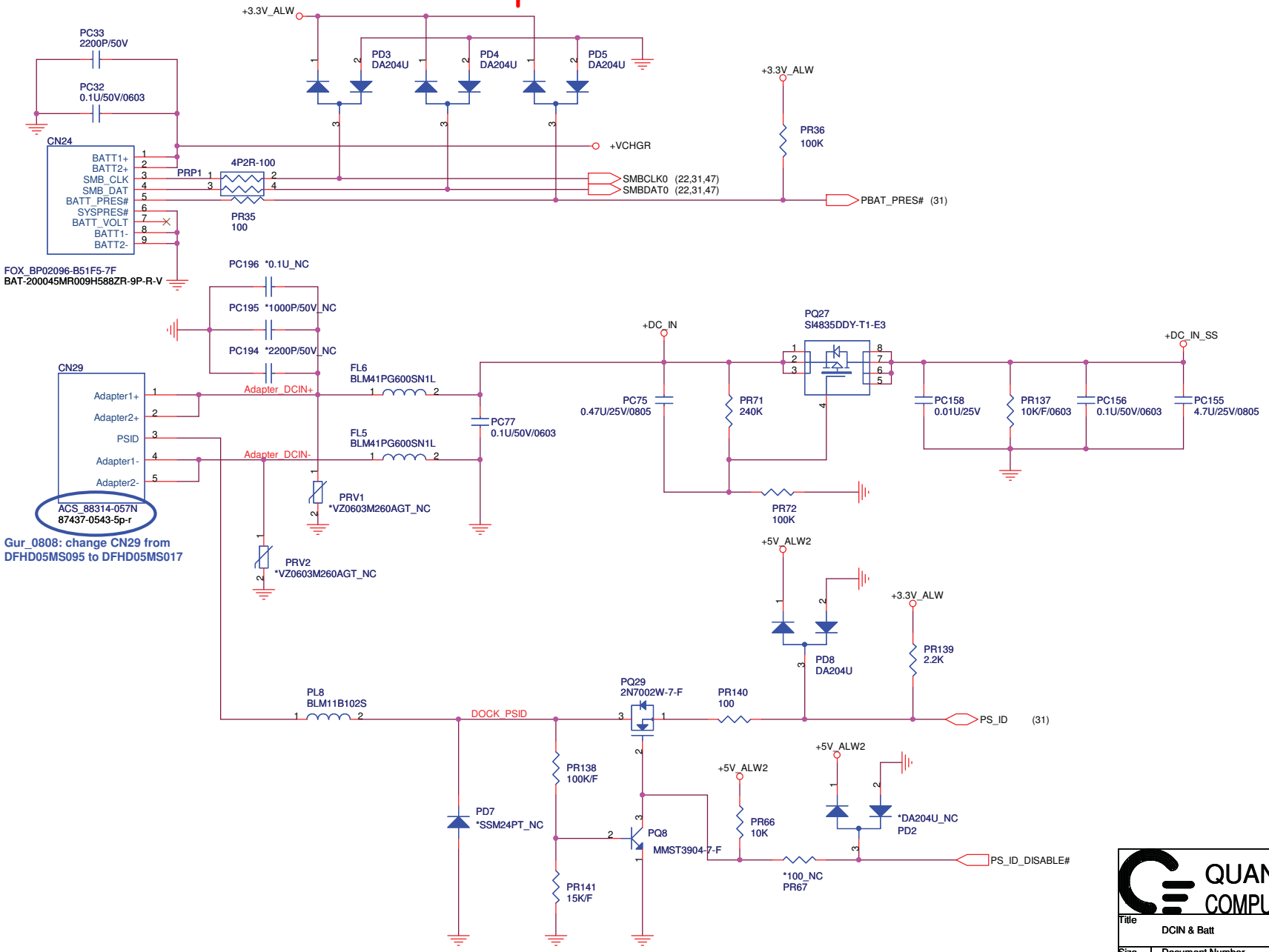
Title	VGA_M86 (MAX8632)	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 07, 2008	Sheet 52 of 59	



TON	PR185=237K
Frequency	300K

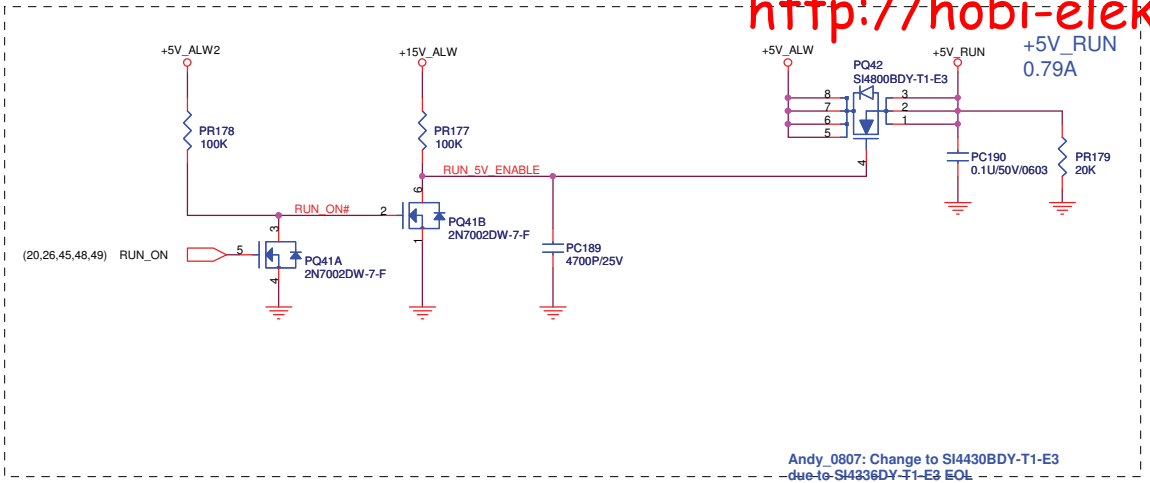
QUANTA COMPUTER

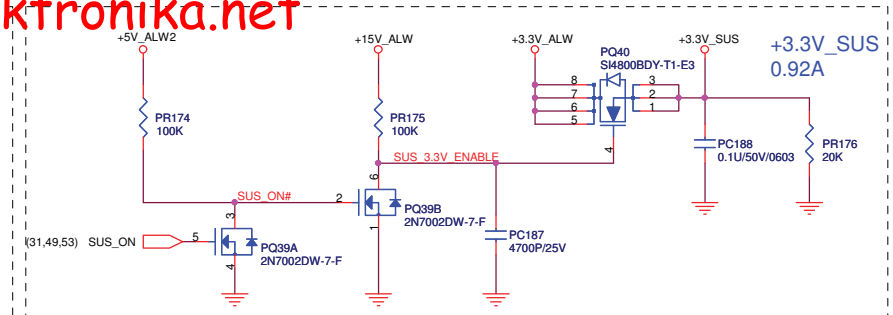
Title	1.8V_SUS (TPS51117)	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 07, 2008	Sheet 53 of 59	

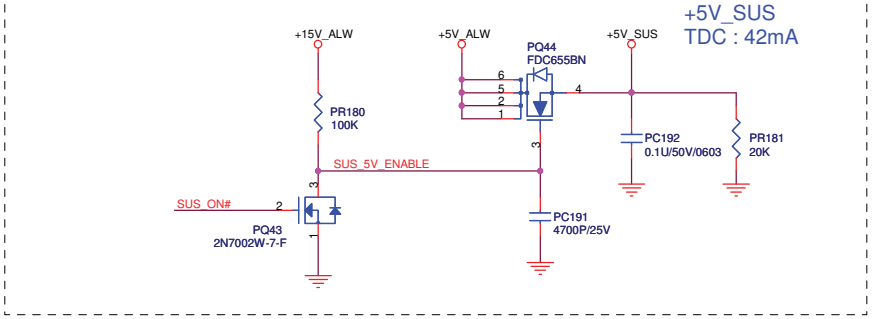


QUANTA COMPUTER

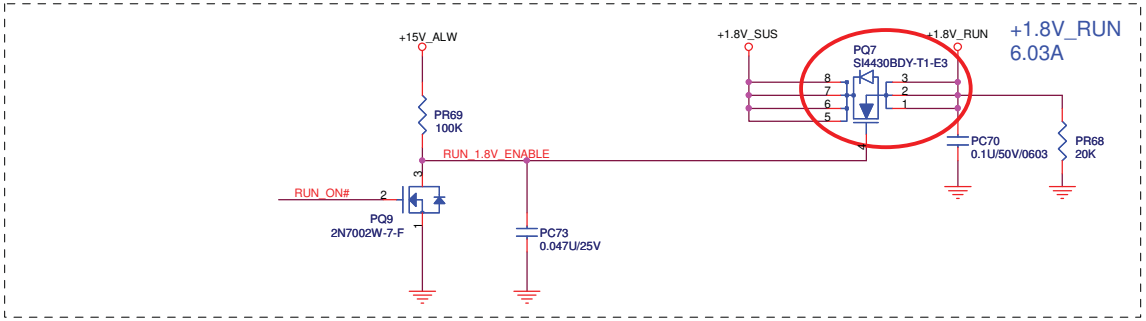
Title	DCIN & Batt	
Size	Document Number RM2	Rev 3A
Date: Friday, August 08, 2008	Sheet 54 of 59	



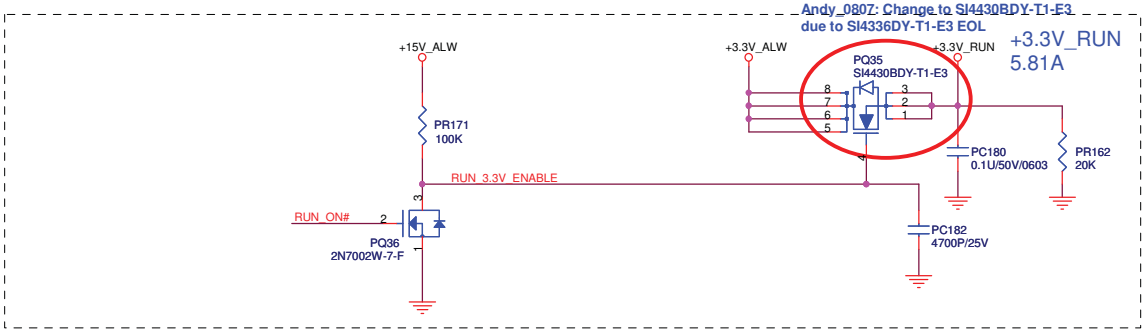




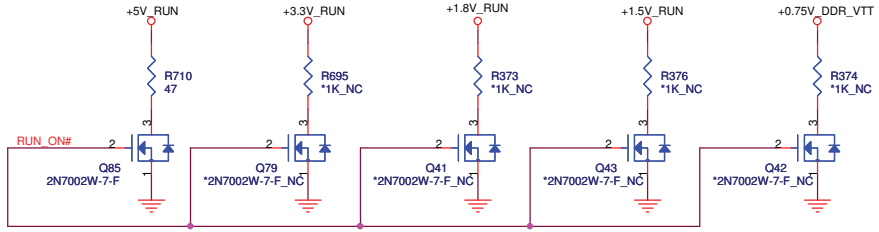
Andy_0807: Change to SI4430BDY-T1-E3
due to SI4336DY-T1-E3 EOL



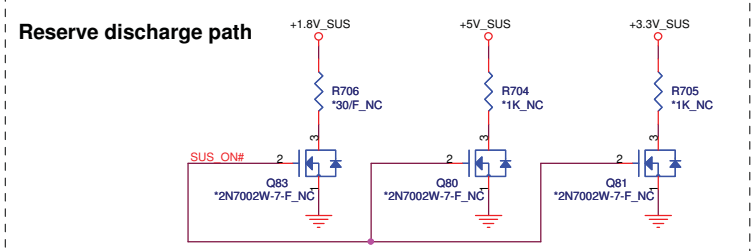
Andy_0807: Change to SI4430BDY-T1-E3
due to SI4336DY-T1-E3 EOL



Reserve discharge path

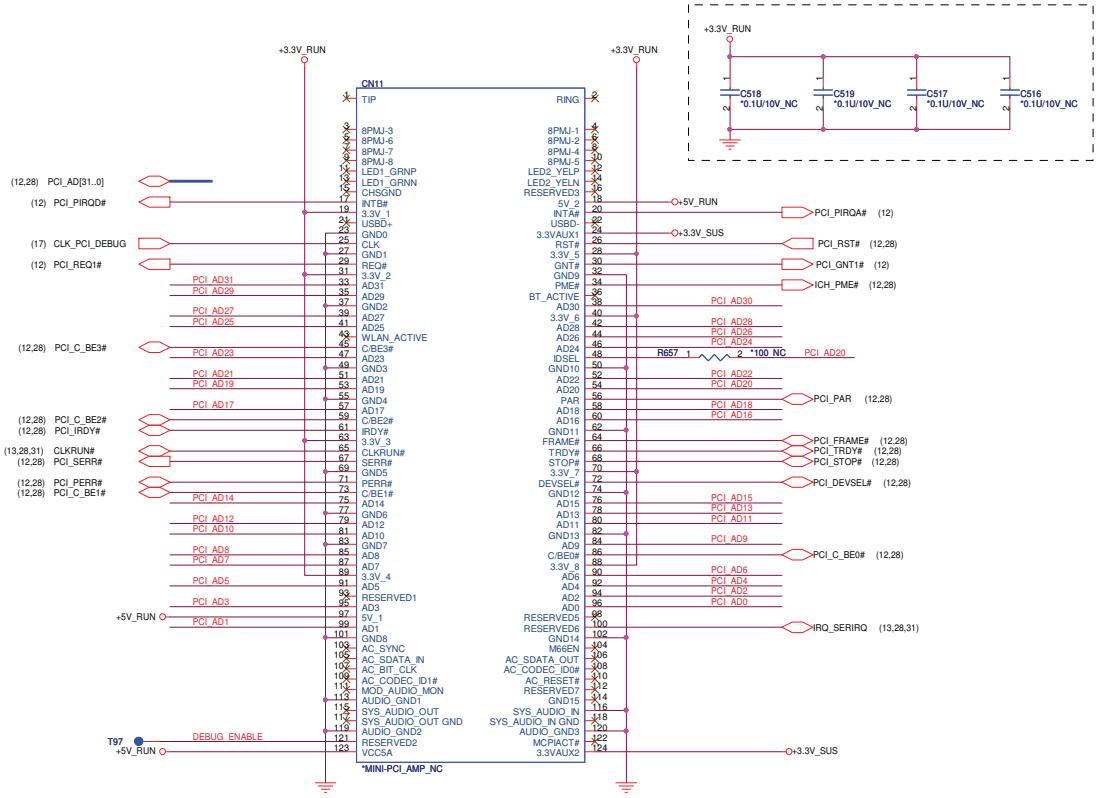


Reserve discharge path



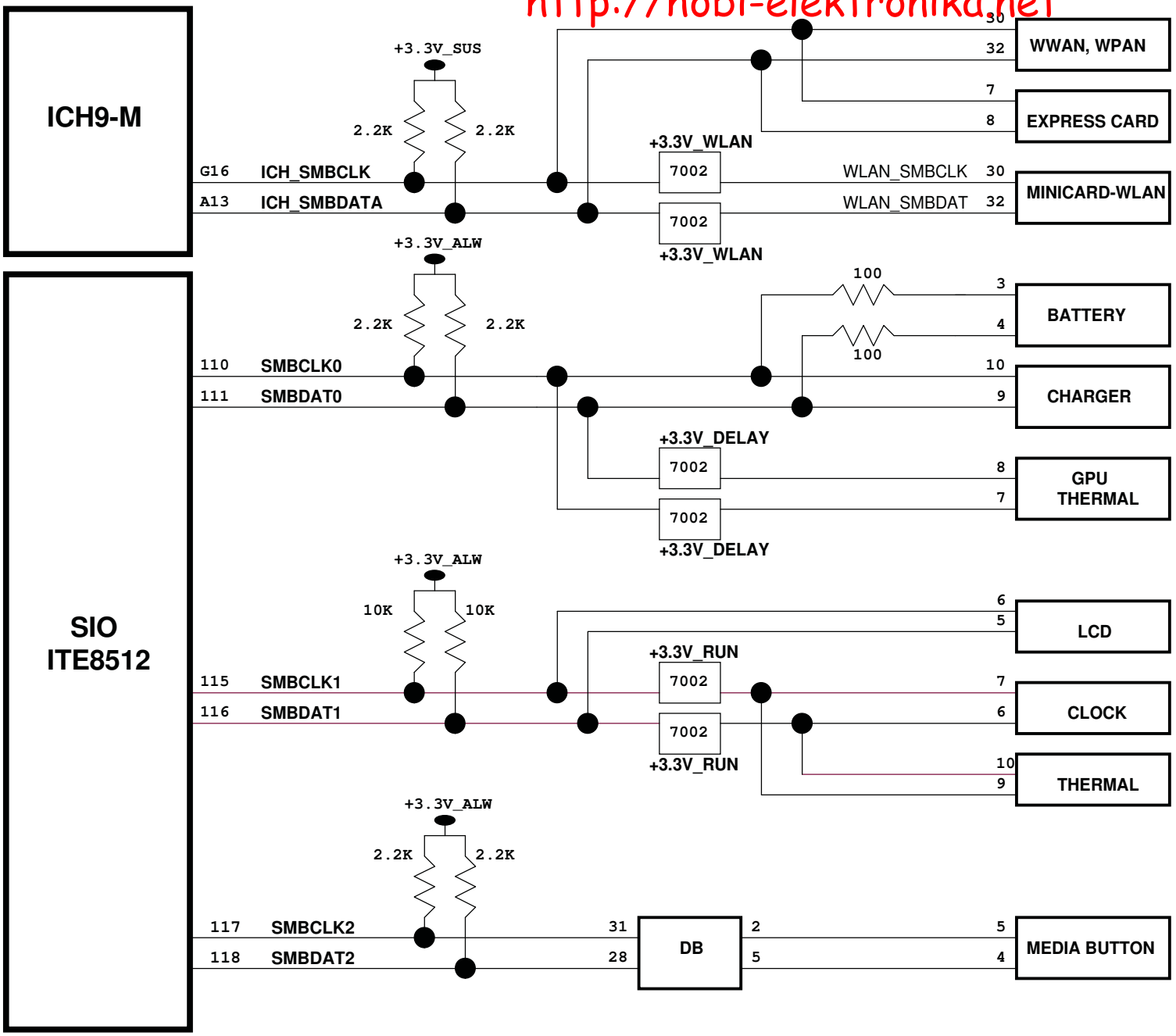
QUANTA COMPUTER

Title	Load Switch	
Size	Document Number RM2	Rev 3A
Date: Thursday, August 07, 2008	Sheet 55 of 59	



QUANTA COMPUTER

Title	Debug Port (Mini PCI)	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 56 of 59	



QUANTA COMPUTER

Title	SMBUS BLOCK	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 57 of 59	

POWER STATES

State \ Signal	SLP S3#	SLP S4#	SLP S5#	S4 STATE#	ALWAYS PLANE	SUS PLANE	RUN PLANE	CLOCKS
S0 (Full ON) / M0	HIGH	HIGH	HIGH					
S3 (Suspend to RAM) / M1	LOW	HIGH	HIGH					
S4 (Suspend to DISK) / M1	LOW	HIGH	HIGH					
S5 (SOFT OFF) / M1	LOW	HIGH	LOW					
S3 (Suspend to RAM) / M-OFF	LOW	HIGH	HIGH					
S4 (Suspend to DISK) / M-OFF	LOW	LOW	HIGH					
S5 (SOFT OFF) / M-OFF	LOW	LOW	LOW					

PM TABLE

State \ power plane	+3.3V_ALW +3.3V_RTC_LDO +3.3V_WLAN +5V_ALW +15V_ALW	+1.8V_SUS +1.8V_LOM +3.3V_LAN +3.3V_SUS +5V_SUS	+0.9V_DDR_VTT +1.05V_VCCP +1.25V_RUN +1.5V_CARD +1.5V_RUN +3.3V_CARD +3.3V_CARDAUX +3.3V_R5C832 +3.3V_RUN	+3.3V_RUN_CARD +2.5V_RUN +5V_MOD +5V_RUN +5V_SPK_AMP +CPU_PWR_SRC +VCC_CORE +VDDA	+DC_IN +DC_IN_SS +PWR_SRC +RTC_CELL
S0	ON	ON	ON		ON
S3	ON	ON	OFF		ON
S5 S4/AC	ON	OFF	OFF		ON
S5 S4/AC don't exist	OFF	OFF	OFF		ON

PCI TABLE

PCI DEVICE	IDSEL	REQ#/GNT#	PIRQ
R5C833	AD23	REQ#0 / GNT#0	PIRQB: 1394 PIEQC: Card reader

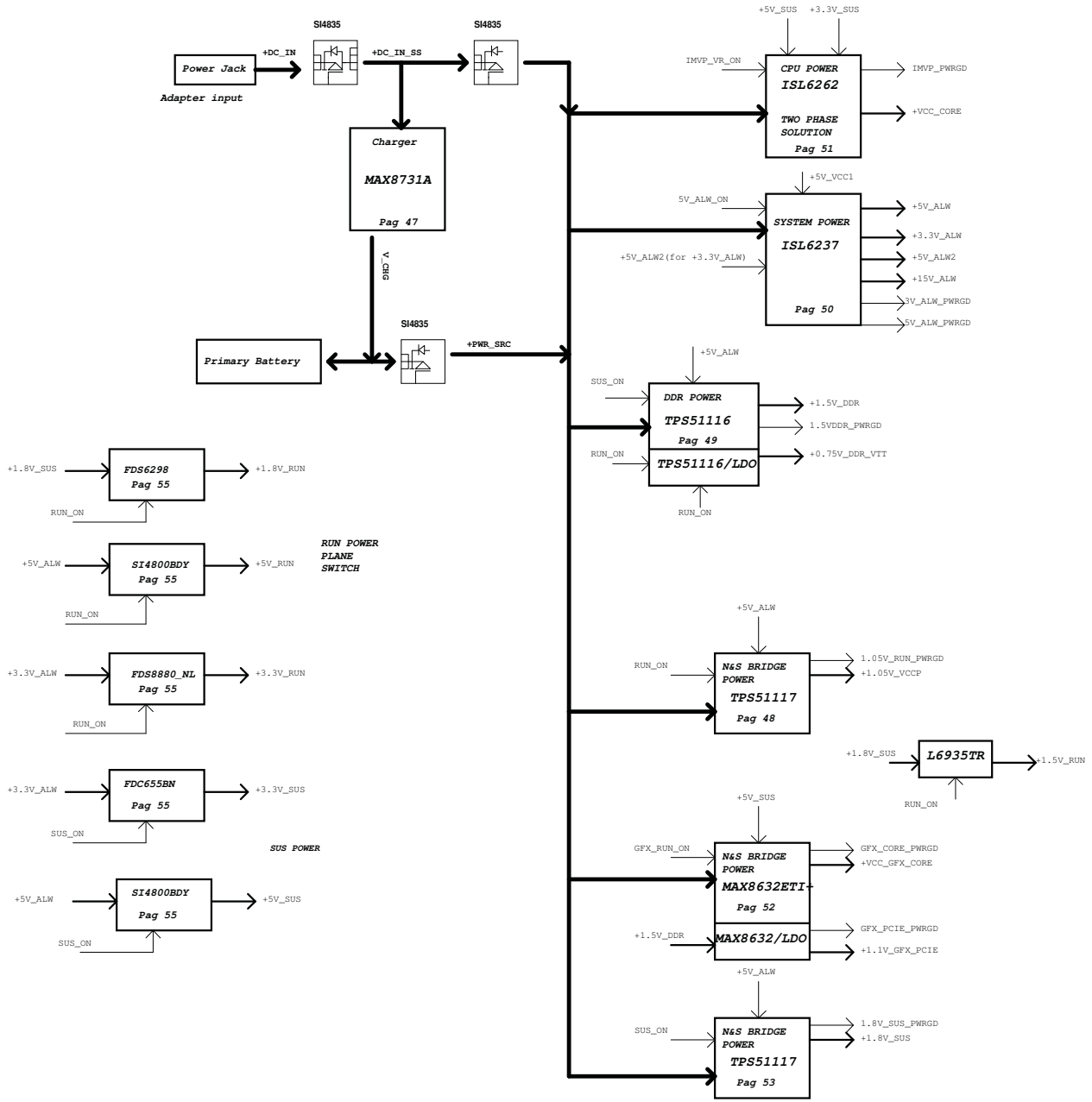
	USB PORT#	DESTINATION
ICH9-M	0	Side pair Top / left
	1	Side pair bottom / left
	2	Reserved
	3	Reserved
	4	WLAN
	5	Mini Card (WWAN)
	6	Mini Card (WPAN)
	7	Express Card
	8	USB W/ E-SATA port
	9	TV
	10	Reserved
	11	Camera
ECE 5011	1	None
	2	None
	3	None
	4	None

PCI EXPRESS	DESTINATION
Lane 1	MINI CARD-1 WWAN
Lane 2	MINI CARD-2 WLAN
Lane 3	MINI CARD-3 WPAN
Lane 4	Express Card
Lane 5	None
Lane 6	LOM

QUANTA COMPUTER

Title	Power statu	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 58 of 59	

RM1 Power Design Block Diagram
2008/03/014



QUANTA COMPUTER

Title	Power Block Diagram	
Size	Document Number RM2	Rev 2A
Date: Tuesday, July 15, 2008	Sheet 59 of 59	

MODEL	REV	DATE	CHANGE LIST
RM2 MB with MV	Pre	2008/03/05	**Base on the schematic of "GM5-0226-3.DSN"** **CPU socket** P3,P4 use RM1(NV) CPU socket **DIMM from DDR2 to DDR3** P6,P15,P16 DIMM from DDR2 to DDR3 as RM1(NV) **VRAM from DDR2 to DDR3** P23,P24 VRAM from DDR2 to DDR3 as RM1(NV) **HDMI function** P6,P25 delete parts of HDMI for UMA option, use RM1(NV) connector **DP function** P25 adding DP related part from RM1(NV), need to connect all signals **LCD panel** P6,P26 delete UMA option, use RM1(NV) connector & related parts **CRT** P6,P27 delete UMA option, use RM1(NV) connector and adding sync & SMBus ESD parts **1394** P29 use RM1(NV) connector **Card Reader** P30 use RM1(NV) connector, need re-connect signals **Express Card** P30 use RM1(NV) connector **FLASH/ RTC/ CIR** P32 use RM1(NV) parts, CIR need On/Off control (CIR-ON/OFF#) ? **WPAN, WWAN, WLAN** P33, P34 use RM1(NV) connector & nut, add WWAN LED as RM1(NV) **USB & eSATA & TV** P35 all the same with RM1(NV), need to re-connect all signals **HDD & ODD (SATA)** P11, P36 all the same with RM1(NV), delete SATA 4 for original 2nd HDD
		2008/03/06	**KB/ CCD/ UI** P31, 37 use the same KB/CCD/Daughter Board with RM1, delete KSO17 & KSO18 &NUM_LED#, remember to re-connect all signals **LED** P31,P37,P38 delete original BATLED2; need to add BAT LED on Power Button board through DB; base on RM1's LED circuit & change Barrel LED from active low to active high **FAN /THERMAL** P39 use the same parts with RM1 **Audio & Subwoofer & IB connector** P40~42 follow original RM1's; remember to add LED function on IB connector & board and re-connect USB signals **LAN** P43, P44 use RM1's transformer & RJ45 & related parts
		2008/03/10	**Card Reader** P28~30 use RM1(NV) schematic, need re-connect signals **Express Card** P28~30 use RM1(NV) schematic, need re-connect signals **WPAN, WWAN, WLAN** P33~34 use RM1(NV) schematic, need re-connect signals **CRT** P27 use RM1(NV) schematic, need re-connect signals **remove reserved UMA circuit** P05~P10 remove reserved UMA circuit with "FM7MB_A1A_0227_DIS.DSN" reference
		2008/03/11	P31 depop Cap 1uF of "ITE8512IX_JX" for IT8512E/JX as ITE's review P26 pop 0 ohm for DPST support from GPU **remove reserved UMA circuit** P31 remove reserved UMA circuit with "FM7MB_A1A_0227_DIS.DSN" reference **Codec update & WLP4.0 support from IDT suggestion** P40,41, update Codec to "AL73C1X5B01(rev B1)"; add 2.2K & 220p for HP as WLP4.0 from IDT suggestion **traces re-connect** P19, P28, P30, P33, P34, P35, P37, P42
		2008/03/12	P45, change power of ICH_PWRGD AND Gate from +3.3V_ALW to +3.3V_SUS for its glitch issue P9, add 0 ohm, move "+VCCA_MPLL_L" as Intel CRB(373319, Rev 1.0) P35, change eSATA traces name from SATA 2 to SATA 5 as GM5 P31, delete unused "USB_R_SIDE_EN#" **Power circuit update** P55, P56, rename Page 56 to Page 59; rename Page 55 to Page 56 P47~P55, update power circuit as "RM1 WITH MV_0312.DSN" **DIMM from DDR2 to DDR3** P6,P8,P9 change +1.8V_SUS to +1.5V_DDR of NB for DDR3 from DDR2 **GM5-0311 schematic update for issue fix** P25, change HDMI_DET serial Res. from 0 ohm to 10K P31, delete 1U for the backdrive issue of IT8512E/JX when initial
		2008/03/14	P47~P55, update power circuit as "RM1MB_M86_A1A_0312 FOR 256MB(MV)_A.DSN" P45, change Res of PWRGD logic power from 10K to 0 ohm **VRAM from DDR2 to DDR3** P22~P24, update circuit as AMD M86 CRB "ref133-8.pdf"
		2008/03/17	P9, change C1020 from 7343(ESR=18m) to 3528(ESR=45m) P47~P55, update power circuit as "RM1MB_M86_A1A_0314 FOR 256MB(MV)_2.DSN" P44, reserve EMI Cap for LAN signals **HDMI & DP** P19, P25, update circuit by referring AMD M86 CRB "ref133-8.pdf"
		2008/03/18	P6, no UMA, delete HDA for UMA HDMI P6, P15 PM_EXTTS#0 for DIMM1 event, PM_EXTTS#1 for DIMM2 event **Intel review** P3, P6, P8, P9, P14, P15, P17, P38, P51, update as Intel review list "Customer_schematics_review_DELL_0318.XLS"
		2008/03/20	P34, add trace name of debug Mini card P47~P55, update power circuit as "RM2MB_M86_A1A_0318 FOR 256MB_1.DSN" P19,P25, DP update & refer XM1(Nike) schematic for DP power issue P11, delete IHDA for UMA HDMI P12,P17,P57~P60, add Mini PCI debug at P57, original P57~P59 renamed with plus one page P11, P35, P36, move SATA TX Cap from ICH to device side as Intel ICH Spec P45, replace 1.25V_RUN_PWRGD by 1.8V_SUS_PWRGD; 1.5V_SUS_PWRGD by 1.5V_RUN_PWRGD P31, delete GPIO ADAPT_TRIP_SEL & CIR_ON/OFF# & ADAPT_OC P48, P50~P53 update power circuit as "RM2MB_M86_A1A_0320 FOR 256MB_1.DSN"
		2008/03/21	P31, BID update, change CHIPSET_ID1 to BID2; del DIS & UMA select ID update connector P/N & footprint as "Paltrow_GGCL_EE_032108_Gur.xls" P35, change eSATA re-driver IC from 3201 to 3211 as FM7 P37, change pin definition of to DB connector as IM3 P31, replace WIRELESS_ON/OFF# by AUDIO_AVDD_ON at EC pin 108 P42, add Front Side LED at IB connector (MB side) pin 15~18 **TV tuner** P35, change CN19 from 4 to 10 pins for adding TV GPIO P37, change CN7 from 20 to 14 pins for deleting LED & adding TV GPIO **USB charge** P35, add "USB_CHG_DET#" at CN29 pin 8 for USB charge detect P31, add "USB_CHG_DET#" at EC pin 76 **AMD review (update as"Dell Paltrow RM2 M86XT Review Mar20_2008_Gur.doc")** P25, change CN14 to pin14 from GND to test PAD; add 499 ohm to GND for AUX_SINK_P P27, +3.3V_RUN to +3.3V_DELAY for CRT RGB & DDC
		2008/03/24	P31, add DIS & UMA select ID back ; add test PAD for NC pins P22~24, add MAA12 & MAB12 to reserve 32Mx32 GDDR usage P48~P50, P53, P55, update power circuit as "RM2MB_M86_A1A_0321 FOR 256MB_1.DSN" P29, change 1394 CONN for 1394 board, remember to update footprint **Intel review** P14, update as Intel review list "Customer_schematics_review_DELL_rev2.2_Gur.xls"

Model	RM2 MB with MV	
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59	2A	

QUANTA COMPUTER

PROJECT : RM2	DOC. NO. 204	REV: 2A	ASSY: 31RM2MB0000	
APPROVED BY : Roger Chen	CHECKED BY : Roger Chen	DRAWN BY : Guresu Lo	DATE : Mar., 24, 2008	SHEET 1 OF 4

MODEL	REV	DATE	CHANGE LIST
RM2 MB with MV	Pre	2008/03/25	P56, remove original GM5 stitching Cap*5 & Spring*3 P46, update screw hole as mail "rm2 hole footprint (0325, 6:15PM)" P11, change as RM1's for layout space limitation update connector P/N & footprint as "Paltrow_GGCL_EE_032508_Gur.xls" **TV tuner module** P35, change bluk Cap of TV power from 1U to 10U P35, as TV tuner vendor suggestion, exchange GPIO1 & 2 ; exchange USB signals ; connect pin 9 & 10 to GND
		2008/03/26	P18~P22, change AMD GPU from M86 LP to M86-ME XT A11 P15, P16, delete stitch Cap used for RM1 layout P47~P55, update power circuit as "RM2MB_M86_A1A_0325 FOR 256MB_1.DSN" P09, add trace name "+VCCA_SM" for layout **LAN from 5787 to 5784** P43, P44, update from 5787 to 5784, check support items
		2008/03/27	All page, change CC0402-FM6 to CC0402, RC0402-FM6 to RC0402; change R738, R741, R748 from CC0402-C to RC0402-C P34, change SIM card back as RM1's P20, add trace name +VDDCI P19, update VRAM table & set configuration to 1111 P31, delete R1134 & "ADP_OC" for "IINP" for double reserved 0 ohm **Biometric de-feature** P12, P37, del USB 10, check re-arrange pin of DB connector
		2008/03/28	P47~P55, update power circuit as "RM2MB_M86_A1A_0327A FOR 256MB_1.DSN" P22~P24, reserve MAA12, MAB12, CSAx_1# & CSBx_1# for 32Mx32 GDDR3, default set Non Merged & 1CS mode **Biometric de-feature** P28, del USB 10 & power of Biometric for de-feature, and re-arrange pin **H/P HDMI failure, follow "FM6-HDMI DDC test issue 0326.ppt"** P25, change D47 to 0_0805, change PU Res to 2.2K from 6.8K P55, H/P HDMI failure, change R1261 from 1K to 47 ohm, and pop R1261 & Q121 for back drive solution
		2008/03/31	P31, P43, change "LAN_DISABLE#" to "LAN_DISABLE" for high active P46, delete H23, H24, H27, H28, H29, H30 P52, update power circuit as "RM2MB_M86_A1A_0328 FOR 256MB_1.DSN" P22, change GPU thermal SMBus from 2 to 0 for MMB FW ISSP Flash support P19, R23, R24 update VRAM table & P/N to set Hynix(16Mx32) as default **Change by layout requirement** P15, P16, swap as "a788.1257a_ddr_swap_0331.xls" P23, swap as "a788.1257a_vrma_swap_0329.xls" **Silego review** P17, update as "RM2_Silego Suggestion.pdf" P17, delete R927, double reserved PD of PCI_ICH
		2008/04/01	P33, P34, change footprint of Mini Card nut from "MININUT-5028HB25" to "h-tc138bc236d55p2" P38, change BAT LED Power from +5V_ALW2 to +3.3V_ALW ; add L-C filter (R-C) as EMI request P25, reserve level shift for HDMI as HDMI issue on H/P **Intel review** P14, update as Intel review list "Customer_schematics_review_DELL_rev2.3_Gur.xls" **IDT review** P41, change C1456, C1457, C1458 and C1459 to 270Pfrom 220P; change C675, C676, C718, C719 from 2.2U to 10U **AMD review** P23, P24, update to 2CS, non-Merged mode for 32Mx32 GDDR3 **change LAN to 5784 only** P43, P44, delete option for 5787, use 5784 only
		2008/04/02	P12, P13, swap as "a788.1257a_swap_0402_Gur.xls" P35, change pin definition of CN19 for cable making process concern P19, update VRAM table & config default GDDR3 is Samsung 32Mx32 ; VRAM size from 256M to 512M as default **RICOH review** P29, delete reserved C839 (0.01u), not necessary
		2008/04/03	P1, update Block Diagram update connector P/N & footprint as "Paltrow_GGCL_EE_040308_Gur.xls" P35, update library of RF Jack
		2008/04/07	P22~24, delete reserved MAA12/B12 for 2CS mode only. P43, connect SUPER_IDDQ to GND directly P26, delete Pin 59~62 of CN2 for footprint change P31, change PU of "BREATH_LED#" & "BAT_LED#" from +5V_ALW2 to +3.3V_ALW **Intel review** P09, delete reserved +1.5V circut, connect +VCCD_TVDAC directly to GND ; delete reserved R798 PD Res of +VCCD_QDAC **Broadcom review** P43, update as "RM2_schematic_review_0407_Gur.doc"
		2008/04/08	P13, 25, 29, 35, swap as "a788.1257a_swap_0407.xls" P34, update library as SIM card pin definition P48, 49, 50, 52 ,53 ,55, update power circuit as "RM2MB_M86_A1A_0407 FOR 512MB_1.DSN" P22, P50, add MOS to shutdown system 3/5V by GPU thermal trip P46, P56, P57, P60, delete P56 "EMI CAP (blank page)", move P57 (Mini PCI) to P56 and P60 (SMBus) to P57; add 6 spring at P46 P29, P33, P34, P46, update connector P/N & footprint as "Paltrow_GGCL_EE_040808_Gur.xls"
		2008/04/09	P29, change CN35 library (to 1394 board) from 4 to 8 pins **MMB ISSP support** P31, P37 reserve circuit for MMB ISSP support
		2008/04/10	P23, P24 swap as "a788.1257a-vrma-swap-0410_Gur.xls" P35, add hi-pol Cap for RF signal P46, change from h-236d118p2 to h-tc197bc236d118p2 **Internal review** P45, P50, P52, change 3V/5V_ALW_PWRGD to GFX PWRGD for PWRGD monitor change P14, del reserve +1.5V_RUN and 0 ohm*1 & 0.1u*1 P23, P24, pop R1299, R1302, R1307, R1310 for 32Mx32 P28, del R605, connect CLK_PCI_PCCARD directly P35, del R583, R474 for double PU to +3.3V_SUS with ICH P01, P57, update Block Diagram & SMBus Block
		2008/04/11	P37, IDT check, change series Res of DMIC_CLK from 0 to 22 ohm P17, add bead on BSEL0 & BSEL2 for EMI noise of 48M & 14M P47, 48, 49, 50, 52 ,54, update power circuit as "RM2MB_M86_A1A_0410A FOR 512MB_1.DSN" P37, update library of CN7 to add shield GND P45, delete R1230 0 ohm to connect directly; change U87 & U92 from 74AHCT1G08GW to 74AHC1G08GW for working power issue, AHCT is 4.5~5.5V, AHC is 2~5.5V P36, delete reserved 0_0805 to +5V_RUN of HDD & ODD power for layout concern **Intel review** P14, change back to 1U_0603_X5R from 0.1u_0402_X7R for V5REF decouping Cap; change series Res from 100 to 10 ohm for V5REF_SUS **Add temporary DP dongle support circuit for DP function test** P25, add temporary DP dongle support circuit for DP function test at PT stage
		2008/04/14	P47, 49, 52, 53 ,55, update power circuit as "RM2MB_M86_A1A_0411 FOR 512MB_1.DSN" P29, update connector P/N & footprint as "Paltrow_GGCL_EE_041108_Gur.xls" Delete all test PAD which footprint is "PAD-VIA20D10A25TMP", T65,T70,T71,T72,T73,T74,T75,T76,T83,T84,T85,T86,T87,T88,T89,T90,T127,T128,T129,T130,T131,T132,T133,T134,T135,T136,T149,T150,T151,T152,T153, T154,T155,T156,T160,T161,T163,T164,T175,T176,T177,T178,T179,T180,T181,T182,T183,T184,T185,T186,T187,T188,T189,T190,T191,T192,T193,T194,T196,T197,T198,T199,T200,T201,T204,T205,T266,T285,T286,T287, T288,T289 P19, P38 delete repeat Res, R977 (series 0 ohm) with Page 31; R1181 (PU, 100K) with Page 38 **GM5 update (0411 schematic)** P3, update BSEL table P6, del R751 to prevent back driver(from +5V_ALW2 to +1.05_VCCP) when stuffed
		2008/04/15	P28, change IDSEL from PCI_AD23 to AD17 as FM7 & GM5 P41, pop 100K, depop 0 ohm for "AUD_AMP_MUTE#" as FM7 & GM5 **Intel review** P03, Intel review, change R660 from 68 to 56 ohm as check list 2.0 P06, add circuit for SM_PWROK of DDR3 **Brodacom review** P43, BCM review, delete R1185 & R1187 by power directly connecting to save cost

Page	Model RM2 MB with MV FROM	TO
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MODEL	REV	DATE	CHANGE LIST
RM2 MB with MV	Pre	2008/04/16	P17, remove bead of BSEL0 & 2 for layout space concern
		2008/04/17	P1, update Block Diagram P29, update library of CON1 to delete pin 48 & 49 (to GND) P51 (after rename), pop PQ10 & PQ11, depop PQ1 & PQ2 **Rename**
		2008/04/18	P48, update power circuit as "RM2MB_M86_A1A_0417 FOR 512MB_1.DSN" P31, BOM change for RP23 from "CJ310042N02" to "CJ310042N11" P32, delete RTC battery "UBM2" for assembly process change
	2A(PT)	2008/04/18	**First Release** All pages, change revision form 1A to 2A for RM2 start from PT stage P44, change footprint of RJ45 from "rj45-2006250-13p-v-rm2" to "rj45-2006250-13p-h-rm2.
	2B(PT)	2008/04/23	P01, change Ver. from 2A to 2B; adding Dell PWA, PWB, SCH P/N P26, delete Pin 57, 58 of CN4 for new footprint **Update for AMD PowerPlay** P52, update power circuit as "RM2MB_M86_A1A_0418A FOR 512MB_1.DSN" P19, pop R287 and separate "GFX_CORE_CNTRL" to ""GFX_CORE_CNTRL0" & "GFX_CORE_CNTRL1"
		2008/04/24	P48, update power circuit as "RM2MB_M86_B2B_0423 FOR 512MB_1.DSN" P20, change reserved U10 from "74AHCT1G08GW" to "74AHC1G08GW" for logic power level issue
		2008/04/28	P4, pop C558 & depop C562 for mechanical interference concern
		2008/05/02	**Badge LED don't light enough issue** P38, change R112 from 100K (CS41002JB20) to 220 (CS12202JB24) ; change R91 from 100K (CS41002JB20) to 150 (CS11502JB22) ; change R416 & R418 from 220 (CS12202JB24) to 0 ohm (CS00002JB38)
	2C(PT)	2008/05/14	P1, change ver. from 2B to 2C P14, change L15 from "CV-1008MZ14" to "CV-1001TN09" P35, delete bypass Res. of eSATA **MMB ISSP backdrive issue** P37, reserve a MOS for +MMB_PWR backdrive when ISSP **LAN 10M & 100M LED reversed and LAN footprint update** P44, exchange CN15 pin 11 & 13 for LAN 10M & 100M LED reversed; change RJ45 footprint from "rj45-2006250-13p-h-rm2" to "rj45-2006250-13p-v-rm2.
		2008/05/29	P46, change H14, H15, H19, H20 from "h-c236d197p2" to "H-C236D158P2"; change from "h-tc197bc236d118p2" to "H-T295X280B236D118P2"; change H30 from "h-c157d157n" to "H-C197D118P2" **for IB cable cost down from coxial to FFC type** P42, change CN5 from 30 to 32 pin for cable cost down from coxial to FFC type
	2D(ST)	2008/06/16	P1, change ver. from 2C to 2D P31, pop R637 & depop R640 for BID update from 1000 to 1001 P11, change C622 & C623 from 10pF to 15pF as TXC's validation. P40, change U40 from AL73C1X5B02 to AL73C1X5B03 for Rev. from B2 to C1. P43, change +2.5V_LOM to +1.2V_VDDC_IO & LAN_REGCTL25 to LAN_REGOUT12_IO to avoid confusion. P46, change PV4~PV6 from FDZD3002010 to FDRM2002010 as ME's request **S3/S5 leakage** P28, R31, depop R654 for S3 leakage issue, and supplier indicate it's no need for R5C833; pop R652 as GM5, no leakage concern as test P49, change PR121 PU from +3.3V_ALW to +3.3V_SUS for S5 leakage issue P38, change design, add U52, R714 & U53, delete Q11, R416 & R418 **Derating issue** P9, change L70(91nH, 1.5A) to 0_0805
		2008/06/19	P42, change CN5 from 32 FFC to 32 coxial connector for IB cable change P35, del JP1, FS1, JP2, FS3 for direct USB SW power P35, del C520 & add R715~R718 & change GND to RF_GND for TV layout ; del CN2 to disable internal antenna support P46, depop PV2 & PV4 as ME request **XPS_Premium_LED_colors_behavior v3 3.xls** P38, depop Q16, R100, U2, R109 of Power button board Amber LED as "XPS_Premium_LED_colors_behavior v3 3.xls" **MMB ISSP fail** P31, change RP22 from 2.2K to 10K for ISSP fail **Power issue (update as "RM2MB_M86_D2D_0616 FOR 512MB_1.DSN")** P47, Change PQ18,PQ25 to SI4835DDY-T1-E3 due to SI4835BDY-T1-E3 EOL; Change PL4 to SIL104R-5R8B due to SIL104R-5R8PF EOL; Change PR47 to short jumper; Remove 0R PR58 P48, Change PR97 from 15.8K to 13.3K for WCEPTA; Remove PR85 and PR64, directly connect pin6 to GND; Change PR31 to short jumper P49, Remove PR65 and PR64, directly connect pin6 to GND; Depop PC56,PC57; Change PR48 from 15.4K to 11.32K for WCEPTA; Change PR56 to short jumper; Change PL5 to SIL104R-1R5B due to SIL104R-1R5PF EOL P50, Remove 0R PR173; Change PR157 to short jumper; Remove 0R PR164; Remove 0R PR165 and PR166; P51, Remove 0R PR11,PR13,PR15,PR86,PR16,PR18,PR19,PR22,PR90; Change PR84 to 4.02K; Change PR91 to short jumper; Andy_0617: Depop PC15,PC16 P52, Remove 0R PR125; Change PR113 to 82K; Change PR105 to 61.9K; Change PR126 to short jumper P53, Change PR61 to short jumper; Change PL7 to SIL104R-1R5B due to SIL104R-1R5PF EOL P54, Change to SI4835DDY-T1-E3 due to SI4835BDY-T1-E3 EOL
		2008/06/20	**EMI Solution for Power as "RM2MB_M86_D2D_0619 FOR 512MB_1.DSN"** P47, Add FL8 for EMI solution P50, Change PC176 from 0.1u to 1u by FEA suggestion P54, Add PC194,PC195,PC196 for EMI solution **Derating issue** P9, as EMI request, change from R713 0_0805 to L70 "CX31P121001(120 ohm, 3A)"
		2008/06/24	P31, del R623 & "ICH_PME#" to connect "PLTRST#" to R652; add PD 1K for RESET_OUT# P46, depop PV3, PV5 & PV6 as ME request; add PAD PV7, PV8 & PV9 & hole H34; change screw hole from " * " to " *-8 " for H26, H33, G23, H32, H21, H10, H7, H2, H1, H9, H22, H11, H18, H30 & H8 P41, change R286 from 0_0603 to 0_0805, depop R83, R301, R110, R543, R450 &R544 P38, add pin 4 & 5 for CN3 & CN10 to connect to GND P42, change CN5 from 32 to 30 pin & change pin assignment for cable manufacture P30, change CN12 from "EXPCARD-1CX41101-PL-26P-L" to "expcard-1cx41101-pl-26p-l-rm2" P54, change CN24 from "DFHD09MR017(SUYIN)" to "DFHD09MR024(FOXCONN)" as ME's information P9,P11,P13,P20, change footprint from RC0402-C to RC0402 or CC0402-C to CC0402 for R247, R496, R489, R524, R525, C726, C728, C741, C624, C689 P3, depop R56 for abnormal H_RESET# **Combo USB EA fail - change USB Bus SW** P35, change U17 from "AL0USB31003" to "AL004907000"; del R345 & add C520 for support item **NB(Cantiga) & SB(ICH9M) P/N change** P5~P14, change NB from "AJ0QT780T08" to "AJSLB970T13(ver B3)"; change SB from "AJ0QT090T06" to "AJSLB8Q0T16(ver A3)" **For 2nd source BOM creation problem** P9, P26, P27,P38, P44, change Q63 from "BAM34560102" to "BAM06550025"; change D17 from "BCRB500VZ02" to "BC010K45004"; change D10 from "BC000501Z09" to "BC010K45004"; change D4 & D7 from "BC000751Z05" to "BC000340033"; change Q20 from "BA001140Z08" to "BA001140001"
	2E(ST)	2008/07/10	P1, change ver. from 2D to 2E P47, update power circuit as "RM2MB_M86_D2D_0624 FOR 512MB_1.DSN" P13,P51 depop PR1 & pop R159 for change IMVP_PWRGD PU from +3.3V_SUS & +3.3V_RUN P42, change back CN5 from 30 pin coaxial to 32 pin FFC & change pin assignment for FFC implement; add CN32 for additional AGND P20, add two more 10uF for +VCC_GFX_CORE ripple P15,P34,P35, change ESD1~3 from ALSRV054011 to AL000504000 for EOL concern P34, change SIM card connector to push-push type, CN26 from DG006001404 to DG006000020 P25, reserve R723 for option when remove DP dongle support **ST Internal Doc. 0703-1 update** P48, change PU3 from AL009194000 to AL009024000. P38, change R127 from 220 to 1K; R90,R107,R101,R119 from 220 to 3.3K as IM3 **XPS_Premium_LED_colors_behavior v3 7.xls (no Amber LED & charge indicator on power button LED)** P37, del "BAT_LED_INT" as "XPS_Premium_LED_colors_behavior v3 7.xls" P38, change power of R113 & U31 from +5V_ALW2 to +5V_SUS, no charge indicator ; del Q16, R100, U2, R109 of Power button board Amber LED **Subwoofer overload & band filter and main SPK EQ issue fix as "PALTROW EQ CIRCUIT rev 3.pptx"** P41, circuit change for main SPK EQ as "PALTROW EQ CIRCUIT rev 3.pptx" P42, circuit change for subwoofer overload & band filter issue as "PALTROW EQ CIRCUIT rev 3.pptx" **add KB LED detect pin** P13, del T59 & add "KB_LED_DET" P37, del +15V_ALW, add KB_LED_DET & R721, R722
		2008/07/14	P25, change DP connector footprint from "DP-47644-0001-20P-L-H" to "dp-rsd-47644-001-20p-l-h" P20,P21, add "-C" on footprint for C867,C868,C427,C417,C405,C395,C401,C379,C367,L38,C356,C358,L39,C389 P46, update library for " *-8 " for H26, H33, G23, H32, H21, H10, H7, H2, H1, H9, H22, H11, H18, H30 & H8 **debug port code "52" issue when "MEDIA_INT#" isn't high at system boot** P37, add R724, move PU of "MEDIA_INT#" to MB side **reserve Hall IC on MB side for option & study** P37, add U54, C869, R726 & reserve R725 for study of Hall IC on MB

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QUANTA COMPUTER

PROJECT : RM2	DOC. NO. 204	REV: 2E	ASSY: 31RM2MB0000
APPROVED BY : Roger Chen	CHECKED BY : Roger Chen	DRAWN BY : Guresu Lo	DATE : Jul., 14, 2008 SHEET 3 OF 4

MODEL	REV	DATE	CHANGE LIST
RM2 MB with MV	2E(ST)	2008/07/15	**Subwoofer overload & band filter and main SPK EQ issue fix as "PALTROW EQ CIRCUIT rev 5.pptx"** P41, circuit change for main SPK EQ as "PALTROW EQ CIRCUIT rev 5.pptx"
		2008/07/21	P37, depop R602 & pop Q70, Q86, R603 to temporarily enable ISSP circuit for need. P55, change PC73 from 4700p to 0.047U for GFX power sequence **LED fine tune** P37, P38 change R708,R90,R107,R101,R119 from 220/3.3K to 2.49K; change R91 from 150 to 100 as IM3
	3A(QT)	2008/08/08	P1, change ver. from 2E to 3A and PCB from E to F. P31, depop R636 & R637 and pop R634 & R640 for BID update from 1001 to 1010 P44, change transformer from "H5120NL(for Intel LAN chip)" to "H5120BNL(for Broadcom LAN chip)". P45, reserve option for U47 power to +3.3V_ALW P47~P55, update power circuit as "RM2MB_M86_E2E_0721 FOR 512MB_1.DSN" P3, P4, P36, P37, P46, P54, update connector P/N & footprint as "Paltrow_GGCL_EE_080808_Gur.xls" **Remove ITP reserve** P3, depop R38 to let ITP_TDO "No connect" as check list 2.0 ; delete reserved ITP by deleting JITP1, C49, C50, R39, R42, R43 ; delete trace of ITP_BPM#[0:5] P17, delete reserved ITP clock & ITP_EN circuit **EMI solution implement** P25, depop R393~R400, pop L56~L59 with "CXCG900U000" P27, change C2~C4 from 5.6p to 10p ; C7~C9 from 5.6p to 22p P38, pop C547, C548, C786, C787 with 2200p **0 ohm removal for QT entrance (orange circle)** P3, 5, 6, 9, 11, 13~20, 23~26, 29, 31, 33, 34, 38~40, 42, 43, 45 remove 0 ohm as "0 ohm removal(RM2)-0807.xls" **+3.3V_ALW have a glitch issue when unplug AC outlet or DC cable** P50, update power circuit as "RM2MB_M86_E2E_0721 FOR 512MB_2.DSN" for adding Zener Diode and change PR155=82.5K, PR156=200K **no inside TV antenna** P35, P37, delete signal TV_GPIO1 & 2; change CN9 from 14 to 10 pins
		2008/08/14	P35, change P/N & footprint & library for non-switch RF Jack P50, change PR155 from 82.5K to 68K as Andy's information P37 change R722 to connect to R721 from pin1 to pin2 P22, change U33 from ADM1032ARMZ to ADM1032ARMZ-1RL P46, delete H27

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QUANTA COMPUTER

PROJECT : RM2	DOC. NO. 204	REV: 3A	ASSY: 31RM2MB0000	
APPROVED BY : Roger Chen	CHECKED BY : Roger Chen	DRAWN BY : Guresu Lo	DATE : Aug., 14, 2008	SHEET 4 OF 4