IM3 (Jolie) Discrete 256M

VER : 1B

POWER

- AC/BATT CONNECTOR PG 55
- BATT CHARGER PG 48

HybridSLI POWER

- VGA Core +1.1V_GFX PG 53
- REGULATOR For GDDR3 +1.8V_RUN PG 50
- HybridSLI SW +3.3V_NB9X/+1.8V_FBVDDQ/ +1.1V_GFX_PCIE PG 23

Dual Core CPU
Intel Penryn
(25W)
(478 Micro-FCPGA)
35 x 35 mm
PG 3,4

1066 MHz FSB

SYSTEM POWER

- MCP VR +MCP_CORE PG 50
- CPU VR +VCC_CORE/ +1.05V_VCCP PG 49,54
- REGULATOR For DDR3 +1.5V_DDR/ +0.75V_DDR_VTT PG 51
- REGULATOR +3.3V_ALW/+5V_SRC/ +15V_ALW PG 52
- RUN/SUS POWER SW +5V/+3.3V/+1.5V_RUN +3.3V_SUS PG 56
- LDO +1.1V_SUS PG 53
- LDO +1.1V_RUN PG 51

NVIDIA
MCP79MX
(1437 Pin PBGA)
35 x 35 mm
PG 5~14

- DDR3-SODIMM -A PG 15 — 1066 MHZ DDR-III
- DDR3-SODIMM -B PG 16 — 1066 MHZ DDR-III
- LVDS x 1 Channel → Panel PG 26
- VGA → CRT CONN PG 27
- ML_LANE → MUX/DeMUX Switch Texas SN75DP122 (56 Pin QFN) 8 x 8 mm PG 28
  - HDMI → HDMI Connector PG 29
  - DP → Display Port PG 29
- PCIEx16 → NVIDIA GPU NB9M-GE(GB1-64) (533 BGA) 23 x 23 mm PG 17~23
  - Frame Buffer 32Mx32 Bit x 2 (136 FBGA) 11 x 14 mm
  - GDDR3 256MB PG 24,25
- PCI-E / USB2.0 → WLAN MINI-CARD Half size PG 32
- PCI-E / USB2.0 → WWAN MINI-CARD PG 33
- PCI-E / USB2.0 → UWB/BT MINI-CARD PG 33
- PCI-E / USB2.0 → Express Card PG 34
  - Express Switch RICOH R5538D001 (20 QFN) 4 x 4 mm PG 34
- RGMII → PHY Broadcom B5071A2KFBG (100 BGA) 9 x 9 mm PG 45
  - Magnetic PG 46
  - RJ45 PG 46
- IHDA → AUDIO IDT 92HD73C (56 LQFP) 9 x 9 mm PG 42
  - Audio Jack -HP1 PG 44 → Amplifier Texas TPA4411MRTJR (20 Pin QFN) PG 43
  - Audio Jack -MIC PG 44
  - Audio Jack -HP2 PG 44 → Amplifier Texas TPA6040A4 (32 Pin QFN) PG 43
  - Internal Speaker PG 38
- WebCam+DMIC PG 38 — USB2.0
- Fingerprint PG 38 — USB2.0
- USB CONN -Left PG 30 — USB2.0 x 2
- eSATA/USB COMBO CONN PG 30 — USB2.0
- SATA - ODD PG 31 — SATA2
- SATA - HDD PG 31 — SATA2
- 33MHz PCI
  - 1394 CONN PG 41
  - CardReader CONN PG 41
  - PC Card/1394 RICOH R5C833T (128 Pin TQFP) 14 x 14 mm PG 40,41

LPC

SIO ITE
ITE8512E
(128 Pin LQFP)
16 x 16 mm
PG 36

SPI

- PS/2
  - K/B, CCD, D/B connector PG 38
  - CIR PG 37
  - Touchpad PG 38
- FLASH Memory SPI, 2MB (8 Pin SO8W) PG 37

GPU THERMAL ADM1032
GPU SS Clock
PG1819G-08SR PG 19

CPU Thermal & FAN
SMSC1423
(10 TSSOP)
3 x 3 mm PG 35

QUANTA COMPUTER

Title	Schematic Block Diagram	
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INDEX

Power States

Power Rail	Control Signal	S0	S3	S4	S5	G3
+PWR_SRC	N/A	V	V	V	V	
+0.75V_DDR_VTT	RUN_ON	V				
+1.05V_VCCP	CPUVDD_EN	V				
+1.1V_GFX	+3.3V_NB9X	V				
+1.1V_GFX_PCIE	MXM_PWR_EN	V				
+1.1V_RMGT	SLP_RMGT#	V	V			
+1.1V_RUN	RUN_ON	V				
+1.1V_SUS	+3.3V_SUS	V	V			
+1.5V_RUN	RUN_ON	V				
+1.5V_DDR	SIO_SLP_S5#	V	V			
+1.8V_FBVDDQ	NB9_CORE_PWRGD	V				
+1.8V_RUN	RUN_ON	V				
+15V_ALW	+5V_ALW	V	V			
+3.3V_ALW	+5V_ALW2	V	V	V	V	
+3.3V_NB9X	MXM_PWR_EN	V				
+3.3V_RMGT	SLP_RMGT#	V	V			
+3.3V_RUN	RUN_ON	V				
+3.3V_SUS	SUS_ON	V	V			
+5V_ALW	5V_ALW_ON	V	V			
+5V_ALW2	+PWR_SRC	V	V	V	V	
+5V_HDD	HDDC_EN	V				
+5V_MOD	MODC_EN	V				
+5V_RUN	RUN_ON	V				
+GFX_PWR_SRC	RUN_ON	V				
+LCDVCC	EN_LCDVCC	V				
+MCP_CORE	RUN_ON	V				
+NB9_CORE	+3.3V_NB9X	V				
+RTC_CELL	N/A	V	V	V	V	V
+VCC_CORE	1.05V_VCCP_PWRGD	V				
+USB_RIGHT_PWR	USB_SIDE_EN#	V	V			
+USB_LEFT_PWR	USB_BACK_EN#	V	V			

QUANTA COMPUTER

Title	Index & Power Status	
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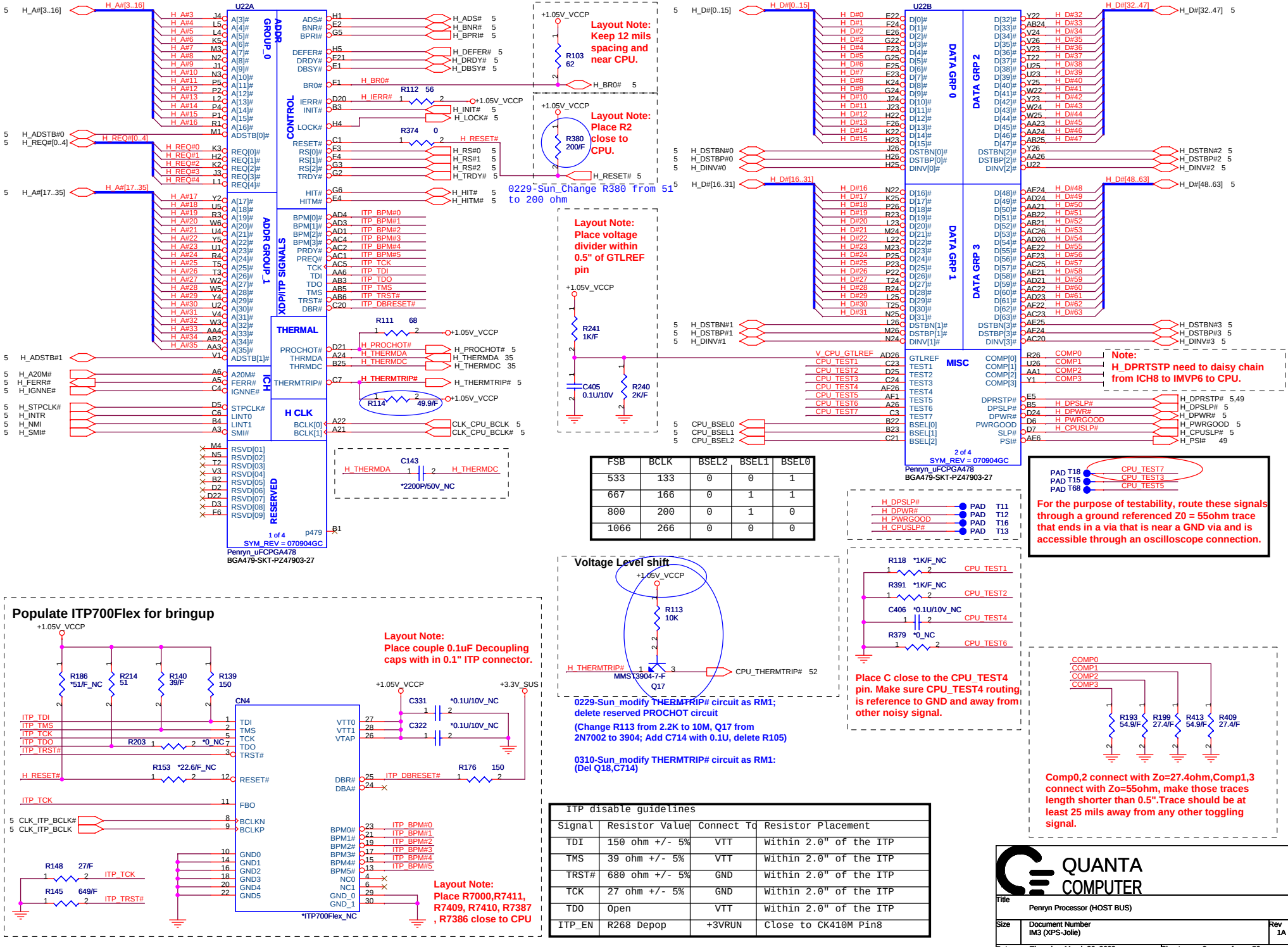

FSB	BCLK	BSEL2	BSEL1	BSEL0
533	133	0	0	1
667	166	0	1	1
800	200	0	1	0
1066	266	0	0	0

ITP disable guidelines

Signal	Resistor Value	Connect To	Resistor Placement
TDI	150 ohm +/- 5%	VTT	Within 2.0" of the ITP
TMS	39 ohm +/- 5%	VTT	Within 2.0" of the ITP
TRST#	680 ohm +/- 5%	GND	Within 2.0" of the ITP
TCK	27 ohm +/- 5%	GND	Within 2.0" of the ITP
TDO	Open	VTT	Within 2.0" of the ITP
ITP_EN	R268 Depop	+3VRUN	Close to CK410M Pin8

QUANTA COMPUTER

Title	Penryn Processor (HOST BUS)	
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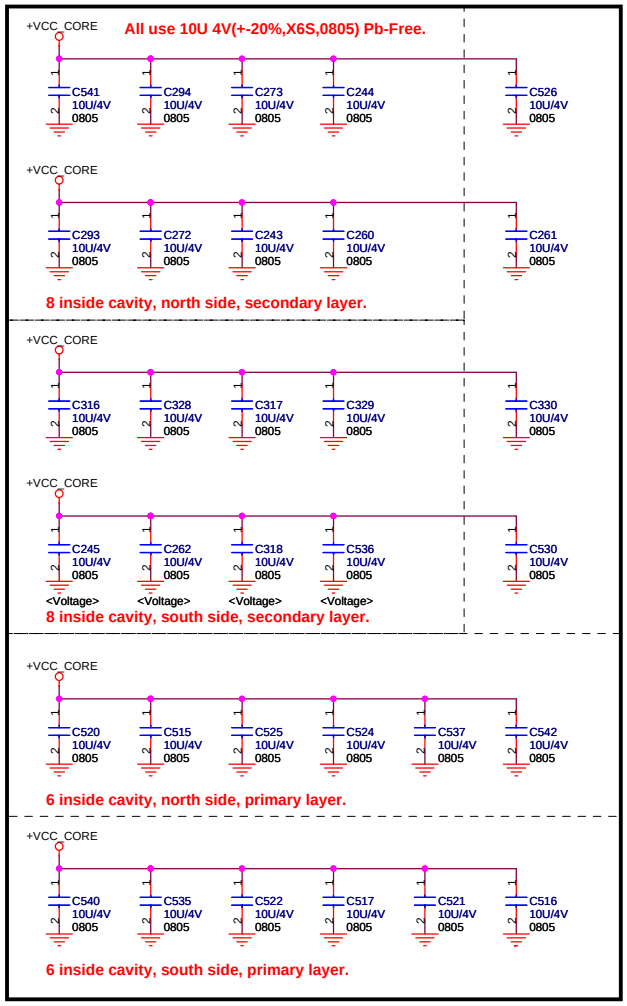

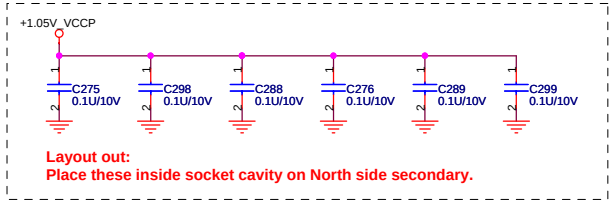

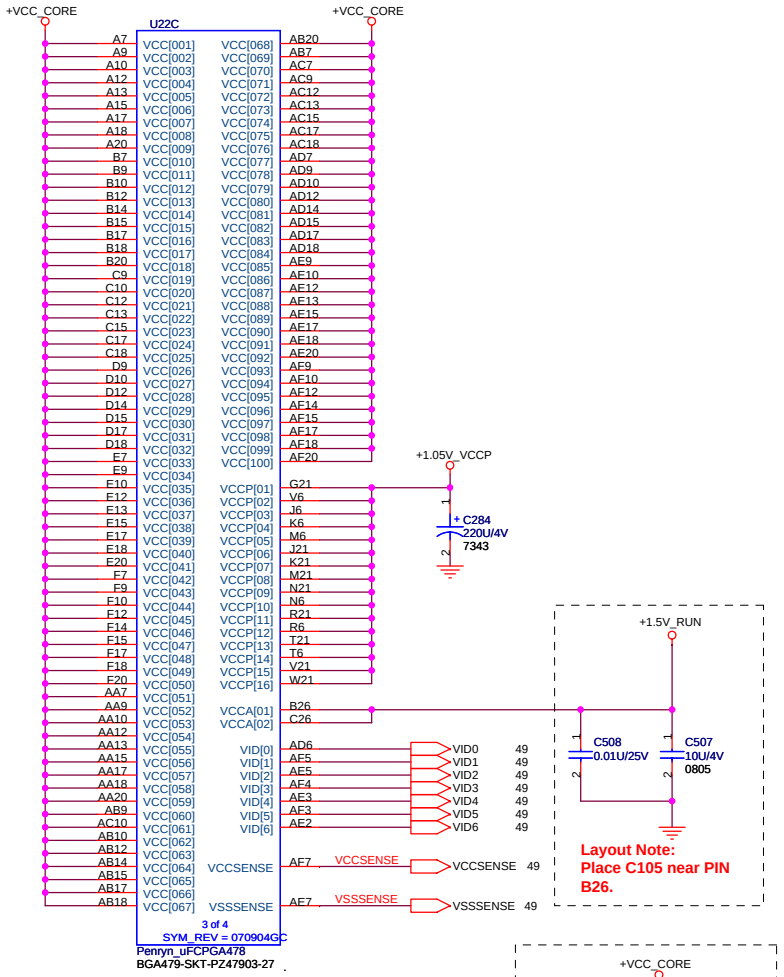

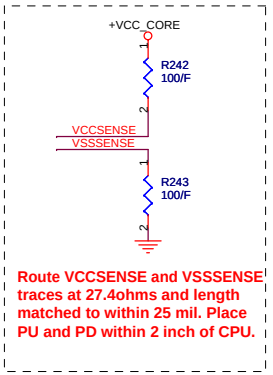

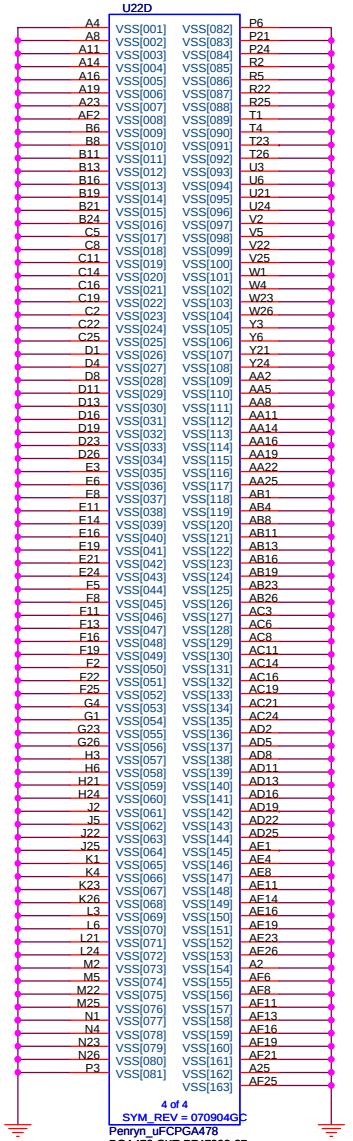

QUANTA COMPUTER

Title	Penryn Processor (POWER)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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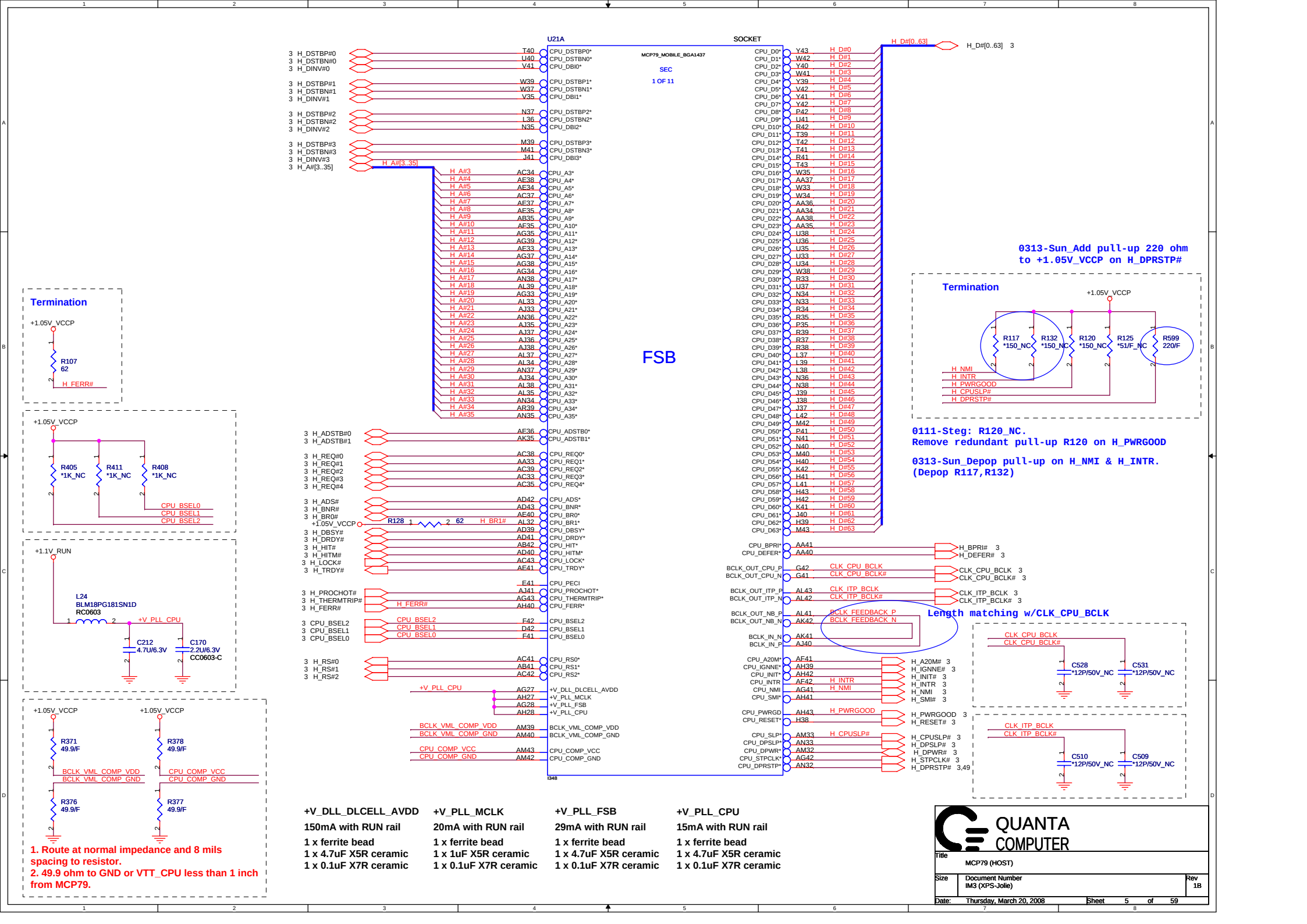
U21A
MCP79_MOBILE_BGA1437
SEC
1 OF 11
FSB
SOCKET
H_D#[0..63]
H_D#[0..63] 3
0313-Sun_Add pull-up 220 ohm
to +1.05V_VCCP on H_DPRSTP#
Termination
+1.05V_VCCP
R117 *150_NC
R132 *150_NC
R120 *150_NC
R125 *51/F_NC
R599 220/F
H_NMI
H_INTR
H_PWRGOOD
H_CPUSLP#
H_DPRSTP#
0111-Steg: R120_NC.
Remove redundant pull-up R120 on H_PWRGOOD
0313-Sun_Depop pull-up on H_NMI & H_INTR.
(Depop R117,R132)
Termination
+1.05V_VCCP
R107
62
H_FERR#
+1.05V_VCCP
R405 *1K_NC
R411 *1K_NC
R408 *1K_NC
CPU_BSEL0
CPU_BSEL1
CPU_BSEL2
+1.1V_RUN
L24
BLM18PG181SN1D
RC0603
+V_PLL_CPU
C212 4.7U/6.3V
C170 2.2U/6.3V CC0603-C
Length matching w/CLK_CPU_BCLK
CLK_CPU_BCLK
CLK_CPU_BCLK#
C528 *12P/50V_NC
C531 *12P/50V_NC
CLK_ITP_BCLK
CLK_ITP_BCLK#
C510 *12P/50V_NC
C509 *12P/50V_NC
+1.05V_VCCP
R371 49.9/F
R378 49.9/F
BCLK_VML_COMP_VDD
BCLK_VML_COMP_GND
CPU_COMP_VCC
CPU_COMP_GND
R376 49.9/F
R377 49.9/F
1. Route at normal impedance and 8 mils spacing to resistor.
2. 49.9 ohm to GND or VTT_CPU less than 1 inch from MCP79.
+V_DLL_DLCELL_AVDD
150mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
+V_PLL_MCLK
20mA with RUN rail
1 x ferrite bead
1 x 1uF X5R ceramic
1 x 0.1uF X7R ceramic
+V_PLL_FSB
29mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
+V_PLL_CPU
15mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
QUANTA COMPUTER
Title
MCP79 (HOST)
Size
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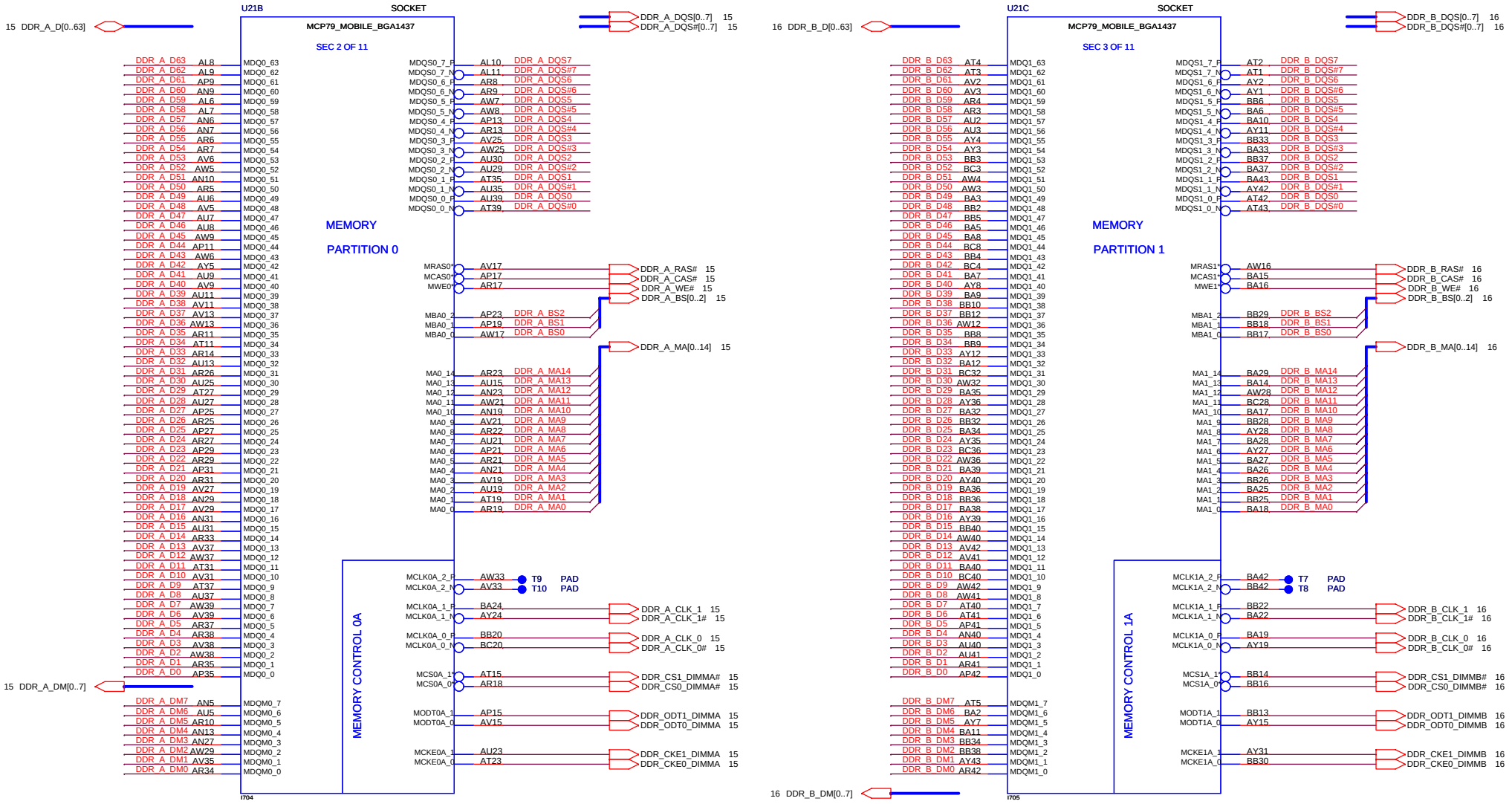

Layout Notice:
Memory Data Signal Group
MCP79 BGA Breakout (<175ps): Route at 50 ohm impedance and 1.5x dielectric height spacing.
After Breakout: Route at 40 ohm impedance and 4x(Microstrip) or 3x(Stripline) dielectric spacing.
DIMM Fan-in (<90ps): Route at 40 ohm impedance and 1.5x dielectric height spacing.

Memory Data Strobes
Route strobes differentially at 66 ohm impedance (42 ohm SE) and 5x dielectric height spacing to other signals.

Memory Clock Signal Group
MCP79 BGA Breakout (<90ps): Route at 50 ohm SE / 100 ohm differential impedance.
After Breakout: Route at 40 ohm SE / 66 ohm differential impedance and 5x dielectric height spacing to other signals.

Memory Address/Command/Control Signal Group
MCP79 BGA Breakout (<90ps): Route at 50 ohm impedance and 1.5x dielectric height spacing.
After Breakout: Route at 40 ohm impedance and 2x dielectric height to other signals and 3x dielectric spacing to other non-associated signals.
DIMM Fan-in (<90ps): Route at 40 ohm impedance and 1.5x dielectric height spacing.

QUANTA COMPUTER

Title	MCP79 (DDR3)	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
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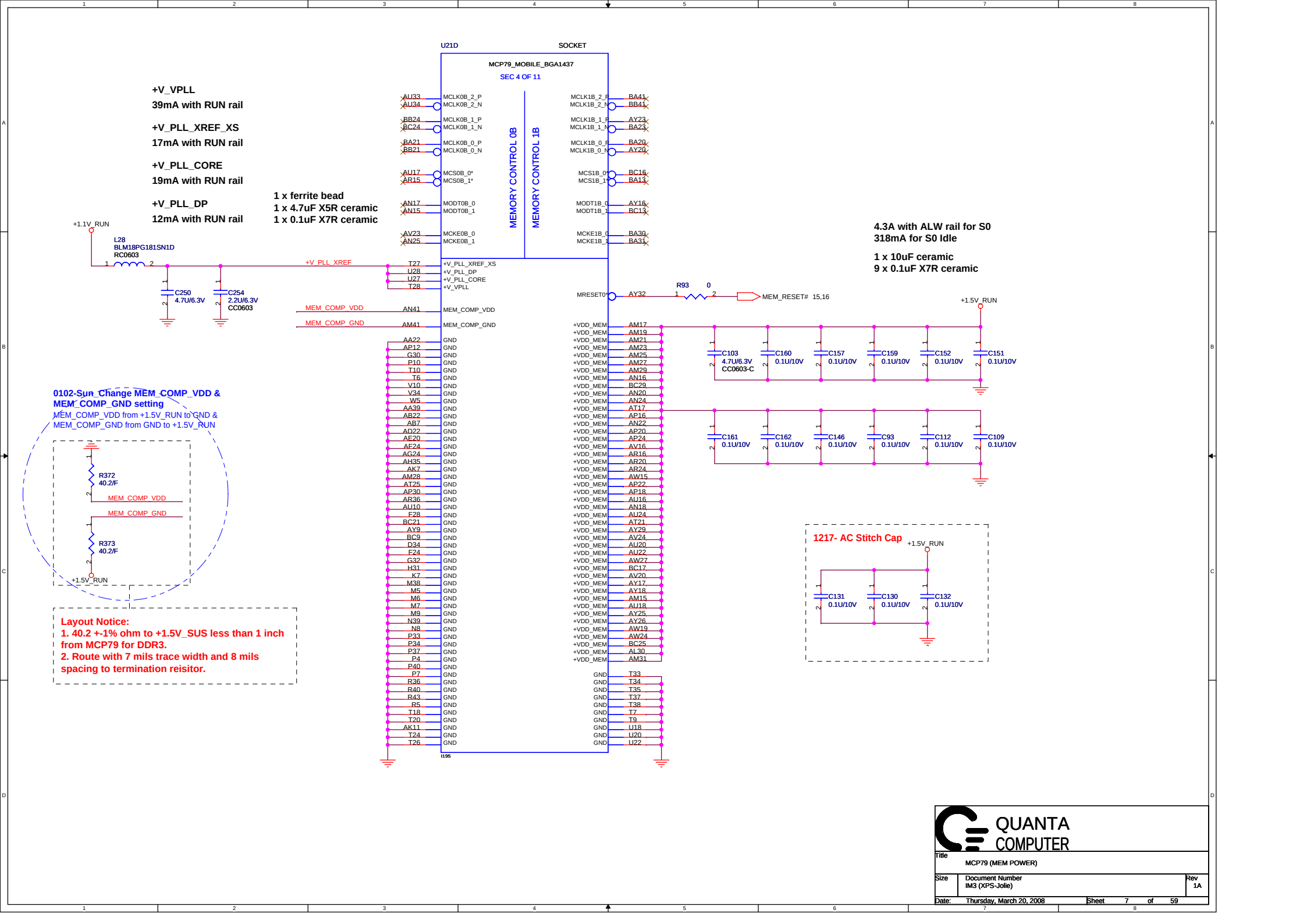
U21D
SOCKET
MCP79_MOBILE_BGA1437
SEC 4 OF 11
MEMORY CONTROL 0B
MEMORY CONTROL 1B
+V_VPLL
39mA with RUN rail
+V_PLL_XREF_XS
17mA with RUN rail
+V_PLL_CORE
19mA with RUN rail
+V_PLL_DP
12mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
+1.1V_RUN
L28
BLM18PG181SN1D
RC0603
C250
4.7U/6.3V
C254
2.2U/6.3V
CC0603
+V_PLL_XREF
MEM_COMP_VDD
MEM_COMP_GND
R93
0
MEM_RESET# 15,16
4.3A with ALW rail for S0
318mA for S0 Idle
1 x 10uF ceramic
9 x 0.1uF X7R ceramic
+1.5V_RUN
C103
4.7U/6.3V
CC0603-C
C160
C157
C159
C152
C151
C161
C162
C146
C93
C112
C109
0.1U/10V
0102-Sun Change MEM_COMP_VDD & MEM_COMP_GND setting
MEM_COMP_VDD from +1.5V_RUN to GND &
MEM_COMP_GND from GND to +1.5V_RUN
R372
40.2/F
R373
40.2/F
Layout Notice:
1. 40.2 +-1% ohm to +1.5V_SUS less than 1 inch from MCP79 for DDR3.
2. Route with 7 mils trace width and 8 mils spacing to termination reisitor.
1217- AC Stitch Cap
C131
C130
C132
QUANTA COMPUTER
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MCP79 (MEM POWER)
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1A
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PCIE Layout Notice:
MCP79 BGA Breakout (<27ps):
Route at 50 ohm impedance and 1.5x dielectric height spacing.
After Breakout:
Route at 50 Signal end and 90 ohm differential.
Inter-pair spacing 4x (Microstrip) dielectric height spacing 3x (Stripline)
dielectric height spacing.

17 PCIE_MRX_GTX_P[0..15]
17 PCIE_MRX_GTX_N[0..15]

U21E
MCP79_MOBILE_BGA1437
SOCKET
SEC 5 OF 11

PCIE

PCIE_MRX_GTX_P0 F7 PE0_RX0_P
PCIE_MRX_GTX_N0 F7 PE0_RX0_N
PCIE_MRX_GTX_P1 D7 PE0_RX1_P
PCIE_MRX_GTX_N1 C7 PE0_RX1_N
PCIE_MRX_GTX_P2 E6 PE0_RX2_P
PCIE_MRX_GTX_N2 F6 PE0_RX2_N
PCIE_MRX_GTX_P3 E5 PE0_RX3_P
PCIE_MRX_GTX_N3 F5 PE0_RX3_N
PCIE_MRX_GTX_P4 E4 PE0_RX4_P
PCIE_MRX_GTX_N4 E3 PE0_RX4_N
PCIE_MRX_GTX_P5 C3 PE0_RX5_P
PCIE_MRX_GTX_N5 D3 PE0_RX5_N
PCIE_MRX_GTX_P6 G5 PE0_RX6_P
PCIE_MRX_GTX_N6 H5 PE0_RX6_N
PCIE_MRX_GTX_P7 J7 PE0_RX7_P
PCIE_MRX_GTX_N7 J6 PE0_RX7_N
PCIE_MRX_GTX_P8 J5 PE0_RX8_P
PCIE_MRX_GTX_N8 J4 PE0_RX8_N
PCIE_MRX_GTX_P9 L11 PE0_RX9_P
PCIE_MRX_GTX_N9 L10 PE0_RX9_N
PCIE_MRX_GTX_P10 L9 PE0_RX10_P
PCIE_MRX_GTX_N10 L8 PE0_RX10_N
PCIE_MRX_GTX_P11 L7 PE0_RX11_P
PCIE_MRX_GTX_N11 L6 PE0_RX11_N
PCIE_MRX_GTX_P12 N11 PE0_RX12_P
PCIE_MRX_GTX_N12 N10 PE0_RX12_N
PCIE_MRX_GTX_P13 N9 PE0_RX13_P
PCIE_MRX_GTX_N13 P9 PE0_RX13_N
PCIE_MRX_GTX_P14 N7 PE0_RX14_P
PCIE_MRX_GTX_N14 N6 PE0_RX14_N
PCIE_MRX_GTX_P15 N5 PE0_RX15_P
PCIE_MRX_GTX_N15 N4 PE0_RX15_N

PE0_TX0_P C5 PCIE_MTX_GRX_C_P0 C347 1 2 0.1U/10V PCIE_MTX_GRX_P0
PE0_TX0_N D4 PCIE_MTX_GRX_C_N0 C340 1 2 0.1U/10V PCIE_MTX_GRX_N0
PE0_TX1_P C4 PCIE_MTX_GRX_C_P1 C373 1 2 0.1U/10V PCIE_MTX_GRX_P1
PE0_TX1_N B4 PCIE_MTX_GRX_C_N1 C384 1 2 0.1U/10V PCIE_MTX_GRX_N1
PE0_TX2_P A4 PCIE_MTX_GRX_C_P2 C556 1 2 0.1U/10V PCIE_MTX_GRX_P2
PE0_TX2_N A3 PCIE_MTX_GRX_C_N2 C565 1 2 0.1U/10V PCIE_MTX_GRX_N2
PE0_TX3_P B3 PCIE_MTX_GRX_C_P3 C552 1 2 0.1U/10V PCIE_MTX_GRX_P3
PE0_TX3_N B2 PCIE_MTX_GRX_C_N3 C548 1 2 0.1U/10V PCIE_MTX_GRX_N3
PE0_TX4_P C1 PCIE_MTX_GRX_C_P4 C358 1 2 0.1U/10V PCIE_MTX_GRX_P4
PE0_TX4_N D1 PCIE_MTX_GRX_C_N4 C367 1 2 0.1U/10V PCIE_MTX_GRX_N4
PE0_TX5_P D2 PCIE_MTX_GRX_C_P5 C333 1 2 0.1U/10V PCIE_MTX_GRX_P5
PE0_TX5_N E1 PCIE_MTX_GRX_C_N5 C323 1 2 0.1U/10V PCIE_MTX_GRX_N5
PE0_TX6_P E2 PCIE_MTX_GRX_C_P6 C547 1 2 0.1U/10V PCIE_MTX_GRX_P6
PE0_TX6_N F2 PCIE_MTX_GRX_C_N6 C544 1 2 0.1U/10V PCIE_MTX_GRX_N6
PE0_TX7_P F3 PCIE_MTX_GRX_C_P7 C543 1 2 0.1U/10V PCIE_MTX_GRX_P7
PE0_TX7_N F4 PCIE_MTX_GRX_C_N7 C539 1 2 0.1U/10V PCIE_MTX_GRX_N7
PE0_TX8_P G3 PCIE_MTX_GRX_C_P8 C311 1 2 0.1U/10V PCIE_MTX_GRX_P8
PE0_TX8_N H4 PCIE_MTX_GRX_C_N8 C319 1 2 0.1U/10V PCIE_MTX_GRX_N8
PE0_TX9_P H3 PCIE_MTX_GRX_C_P9 C534 1 2 0.1U/10V PCIE_MTX_GRX_P9
PE0_TX9_N H2 PCIE_MTX_GRX_C_N9 C538 1 2 0.1U/10V PCIE_MTX_GRX_N9
PE0_TX10_P H1 PCIE_MTX_GRX_C_P10 C297 1 2 0.1U/10V PCIE_MTX_GRX_P10
PE0_TX10_N J1 PCIE_MTX_GRX_C_N10 C307 1 2 0.1U/10V PCIE_MTX_GRX_N10
PE0_TX11_P J2 PCIE_MTX_GRX_C_P11 C291 1 2 0.1U/10V PCIE_MTX_GRX_P11
PE0_TX11_N J3 PCIE_MTX_GRX_C_N11 C280 1 2 0.1U/10V PCIE_MTX_GRX_N11
PE0_TX12_P K2 PCIE_MTX_GRX_C_P12 C532 1 2 0.1U/10V PCIE_MTX_GRX_P12
PE0_TX12_N K3 PCIE_MTX_GRX_C_N12 C529 1 2 0.1U/10V PCIE_MTX_GRX_N12
PE0_TX13_P L4 PCIE_MTX_GRX_C_P13 C523 1 2 0.1U/10V PCIE_MTX_GRX_P13
PE0_TX13_N L3 PCIE_MTX_GRX_C_N13 C527 1 2 0.1U/10V PCIE_MTX_GRX_N13
PE0_TX14_P M4 PCIE_MTX_GRX_C_P14 C263 1 2 0.1U/10V PCIE_MTX_GRX_P14
PE0_TX14_N M3 PCIE_MTX_GRX_C_N14 C267 1 2 0.1U/10V PCIE_MTX_GRX_N14
PE0_TX15_P M2 PCIE_MTX_GRX_C_P15 C519 1 2 0.1U/10V PCIE_MTX_GRX_P15
PE0_TX15_N M1 PCIE_MTX_GRX_C_N15 C518 1 2 0.1U/10V PCIE_MTX_GRX_N15

PCIE_MTX_GRX_P[0..15] 17
PCIE_MTX_GRX_N[0..15] 17

10 MXM_ON#
R185 1 2 0
C9 PE0_PRSNT_16#

Express Card
34 CARD_CLK_REQ#
34,36 EXPRCRD_PWREN#
D9 1 2 CH751H-40HPT
D5 PEB_CLKREQ#/GPIO_49
D9 PEB_PRSNT#

WLAN
32 MINI1CLK_REQ#
R433 1 2 0
E8 PEC_CLKREQ#/GPIO_50
C10 PEC_PRSNT#

UWB/BT
33 MINI2CLK_REQ#
R435 1 2 0
M15 PED_CLKREQ#/GPIO_51
B10 PED_PRSNT#

WWAN
33 MINI3CLK_REQ#
R168 1 2 0
L16 PEE_CLKREQ#/GPIO_16
L18 PEE_PRSNT#/GPIO_46

0229_Pop R177 w/0 ohm
12,17 PE_RESET_MXM#
R177 1 2 0
M16 PEF_CLKREQ#/GPIO_17
M18 PEF_PRSNT#/GPIO_47

+3.3V_SUS
R211 *100K_NC
MXM_PRESENT#
R210 1K
0229_Change R210 from 100k to 2.2k ohm
0314_Change R210 from 100k to 1k ohm base on NV suggestion

T27 PAD
M17 PEG_CLKREQ#/GPIO_18
M19 PEG_PRSNT#/GPIO_48

12,36,47 MXM_RUNPWROK
32,33,34 PCIE_WAKE#
R458 1 2 0
F17 PE_WAKE#

Express Card
34 PCIE_RX0_P
34 PCIE_RX0_N
K9 PE1_RX0_P
J9 PE1_RX0_N

WLAN
32 PCIE_RX1_P
32 PCIE_RX1_N
H9 PE1_RX1_P
G9 PE1_RX1_N

UWB/BT
33 PCIE_RX2_P
33 PCIE_RX2_N
F9 PE1_RX2_P
E9 PE1_RX2_N

WWAN
33 PCIE_RX3_P
33 PCIE_RX3_N
H7 PE1_RX3_P
G7 PE1_RX3_N

PE0_REFCLK_P F11
PE0_REFCLK_N D11
CLK_PCIE_VGA 17
CLK_PCIE_VGA# 17

PE1_REFCLK_P G11
PE1_REFCLK_N F11
CLK_PCIE_EXPCARD 34
CLK_PCIE_EXPCARD# 34

PE2_REFCLK_P J11
PE2_REFCLK_N J10
CLK_PCIE_MINI1 32
CLK_PCIE_MINI1# 32

PE3_REFCLK_P G13
PE3_REFCLK_N F13
CLK_PCIE_MINI2 33
CLK_PCIE_MINI2# 33

PE4_REFCLK_P J13
PE4_REFCLK_N H13
CLK_PCIE_MINI3 33
CLK_PCIE_MINI3# 33

PE5_REFCLK_P L14 PAD T28
PE5_REFCLK_N K14 PAD T30

PE6_REFCLK_P N14 PAD T22
PE6_REFCLK_N M14 PAD T21

PE_RST0# K11 PE_RESET# C

PE1_TX0_P D8 PCIE_TX0_P_C C564 1 2 0.1U/10V PCIE_TX0_P 34
PE1_TX0_N C8 PCIE_TX0_N_C C563 1 2 0.1U/10V PCIE_TX0_N 34

PE1_TX1_P B8 PCIE_TX1_P_C C576 1 2 0.1U/10V PCIE_TX1_P 32
PE1_TX1_N A8 PCIE_TX1_N_C C575 1 2 0.1U/10V PCIE_TX1_N 32

PE1_TX2_P A7 PCIE_TX2_P_C C561 1 2 0.1U/10V PCIE_TX2_P 33
PE1_TX2_N B7 PCIE_TX2_N_C C562 1 2 0.1U/10V PCIE_TX2_N 33

PE1_TX3_P B6 PCIE_TX3_P_C C559 1 2 0.1U/10V PCIE_TX3_P 33
PE1_TX3_N C6 PCIE_TX3_N_C C560 1 2 0.1U/10V PCIE_TX3_N 33

+1.1V_RUN
JP3 SHORT40X18
482mA with RUN rail
1 x 4.7uF X5R ceramic
2 x 0.1uF X7R ceramic
0312-Sun_Change footprint to normal short type "short40x18"
C227 4.7U/6.3V CC0603-C
C234 4.7U/6.3V CC0603
C233 0.1U/10V
C253 0.1U/10V
+DVDD_PEX
T17 W19 U17 V19 W16 W17 W18 U16 +DVDD0_PEX
T19 U19 +DVDD1_PEX

+AVDD_PEX
L6 BLM21PG331SN1D RC0805
+1.1V_RUN
C105 10U/6.3V CC0603
Y12 AA12 AB12 M12 P12 R12 N12 T12 U12 AC12 AD12 V12 W12 +AVDD0_PEX
M13 N13 P13 +AVDD1_PEX
1304mA with RUN rail
1x ferrite bead
1x 10uF
1 x 4.7uF X5R ceramic
2 x 1uF X5R ceramic
2 x 0.1uF X7R ceramic
C228 0.1U/10V
C183 0.1U/10V
C240 1U/6.3V
C266 1U/6.3V
C216 4.7U/6.3V CC0603

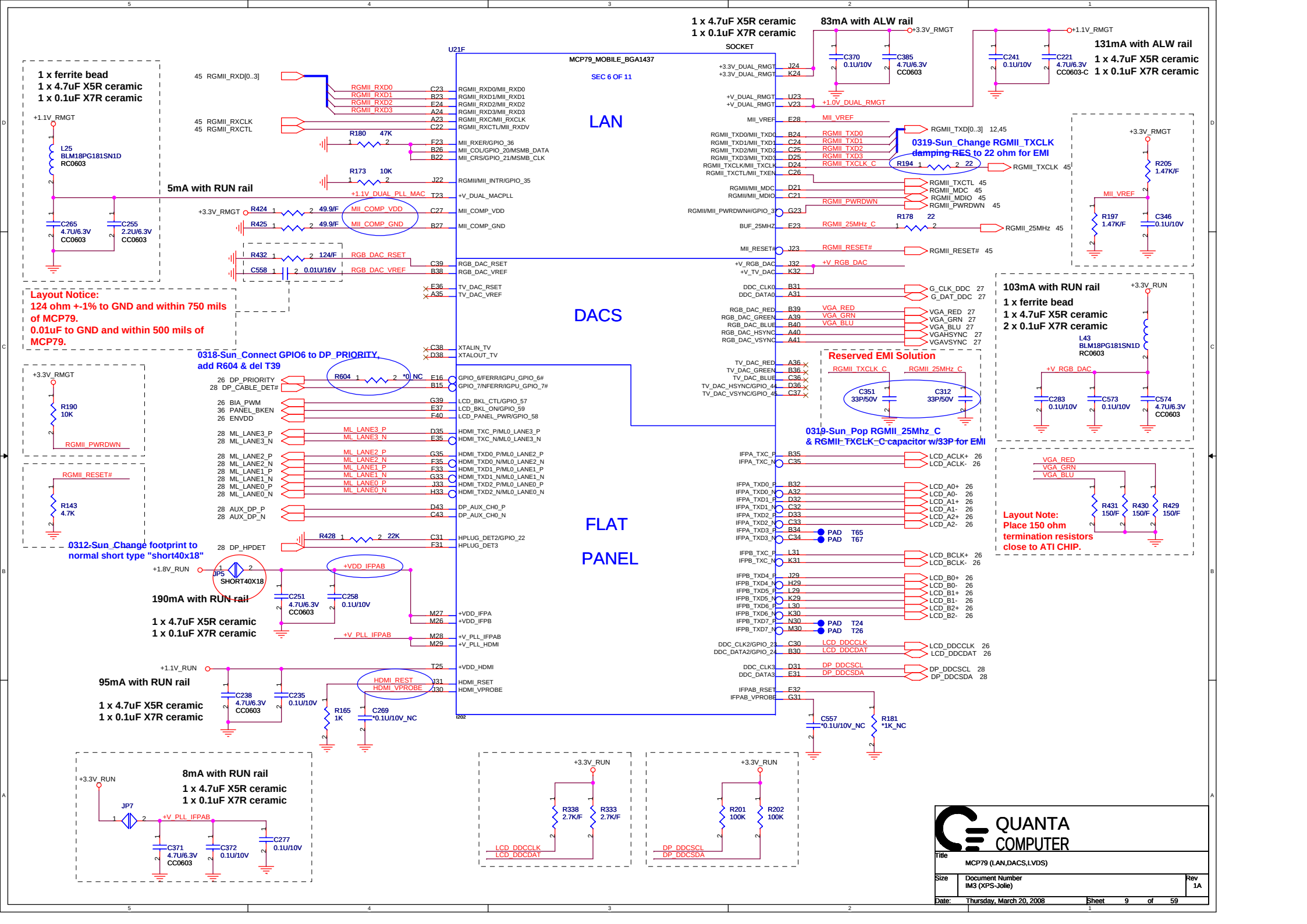
T517
+AVDD_PEX
pad-s1
1221-Sun_Add dummy part for +AVDD_PEX

+1.1V_RUN
L22 BLM18PG181SN1D RC0603
+1.1V_PE_PLL
T16 +V_PLL_PEX
82mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
C256 4.7U/6.3V CC0603
C229 2.2U/6.3V CC0603

PE_CLK_COMP
A11 PE_CLK_COMP
R434 *2.37K/F_NC

+3.3V_SUS
C579 0.047U/10V
U25
PE_RESET# 17,32,33,34
PE_RESET#_C
TC7SZ32FU(T5L,F,T)

QUANTA COMPUTER			
Title	MCP79 (PCIE)		
Size	Document Number IM3 (XPS-Jolie)		Rev 1A
Date:	Friday, March 21, 2008	Sheet 8 of 59	


1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
83mA with ALW rail
SOCKET
U21F
MCP79_MOBILE_BGA1437
SEC 6 OF 11
LAN
DACS
FLAT
PANEL
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
5mA with RUN rail
Layout Notice:
124 ohm +-1% to GND and within 750 mils of MCP79.
0.01uF to GND and within 500 mils of MCP79.
0318-Sun_Connect GPIO6 to DP_PRIORITY, add R604 & del T39
0312-Sun_Change footprint to normal short type "short40x18"
190mA with RUN rail
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
95mA with RUN rail
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
8mA with RUN rail
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
0319-Sun_Change RGMII_TXCLK damping RES to 22 ohm for EMI
Reserved EMI Solution
0319-Sun_Pop RGMII_25Mhz_C & RGMII_TXCLK_C capacitor w/33P for EMI
131mA with ALW rail
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
103mA with RUN rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
2 x 0.1uF X7R ceramic
Layout Note:
Place 150 ohm termination resistors close to ATI CHIP.
QUANTA COMPUTER
Title
MCP79 (LAN,DACS,LVDS)
Size
Document Number
IM3 (XPS-Jolie)
Rev
1A
Date:
Thursday, March 20, 2008
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of
59

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MCP79_MOBILE_BGA1437

SOCKET

SEC 7 OF 11

PCI

LPC

GND

Layout Notice:
Cap placed within
500 mil of MCP79.

0319-Sun_Pop PCI_CLK capacitor w/15P for COMM

For MCP79 A01

Layout Notice:
Serise resistor placed within 500 mil of MCP79.
Length matching w/PCI_CLK*

0229-Sun_TP T77 on PCI_CLK1

Layout Notice:
33 ohm serise resistor placed within 500 mil of MCP79.

Termination

RP1 8.2KX8

RP2 8.2KX8

MCP79 Strapping

Boot BIOS Strapping		
	HDA_SDATA_OUT	LPC_FRAME#
LPC BIOS	0	0
PCI BIOS	0	1
SPI BIOS(CS0)	1	0
SPI BIOS(CS1)	1	1

QUANTA COMPUTER

Title	MCP79 (PCI,LPC)	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1B
Date: Thursday, March 20, 2008	Sheet 10 of 59	

0318-Sun_change left USB port from port1 to port0

U21H
MCP79_MOBILE_BGA1437
SEC 8 OF 11

SOCKET

SATA

USB

Left Side (froth)
Left Side
Combo (eSATA/USB)
Mini Card (WLAN)
Mini Card (WWAN)
Mini Card (WPAN)
Express Card
Biometric
Camera

SATA Layout Notice:
BGA Breakout:
Route differentially at normal impedance and 4 mils within pair and 6 mils to other signals.Maximum brackout distance is 400 mils of MCP79.
BGA Fan-out:
Route differentially at normal impedance and 4 mils within pair and 10 mils to other signals.Maximum BGA brackout plus Fan-out distance is 500 mils.
After Brackout:
Route at 100 ohm differential impedance (50 ohm SE) and 3x dielectric height spacing to other signals.
TX and RX intra-pair skew for a differential pair is 5 mils.

+V_PLL_SATA
163mA with RUN rail
1x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic

0312-Sun_Change footprint to normal short type "short40x18"

+DVDD0_SATA
117mA with RUN rail
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic

+AVDD0_SATA
363mA with RUN rail
1x ferrite bead
1x 10uF
1 x 4.7uF X5R ceramic
2 x 0.1uF X7R ceramic

Layout Notice:
2.49K ohm to GND within 500 mils of MCP79.
Routing 8 mils spacing to resistor.

+V_PLL_USB
18mA with Run rail
1 x ferrite bead
1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic

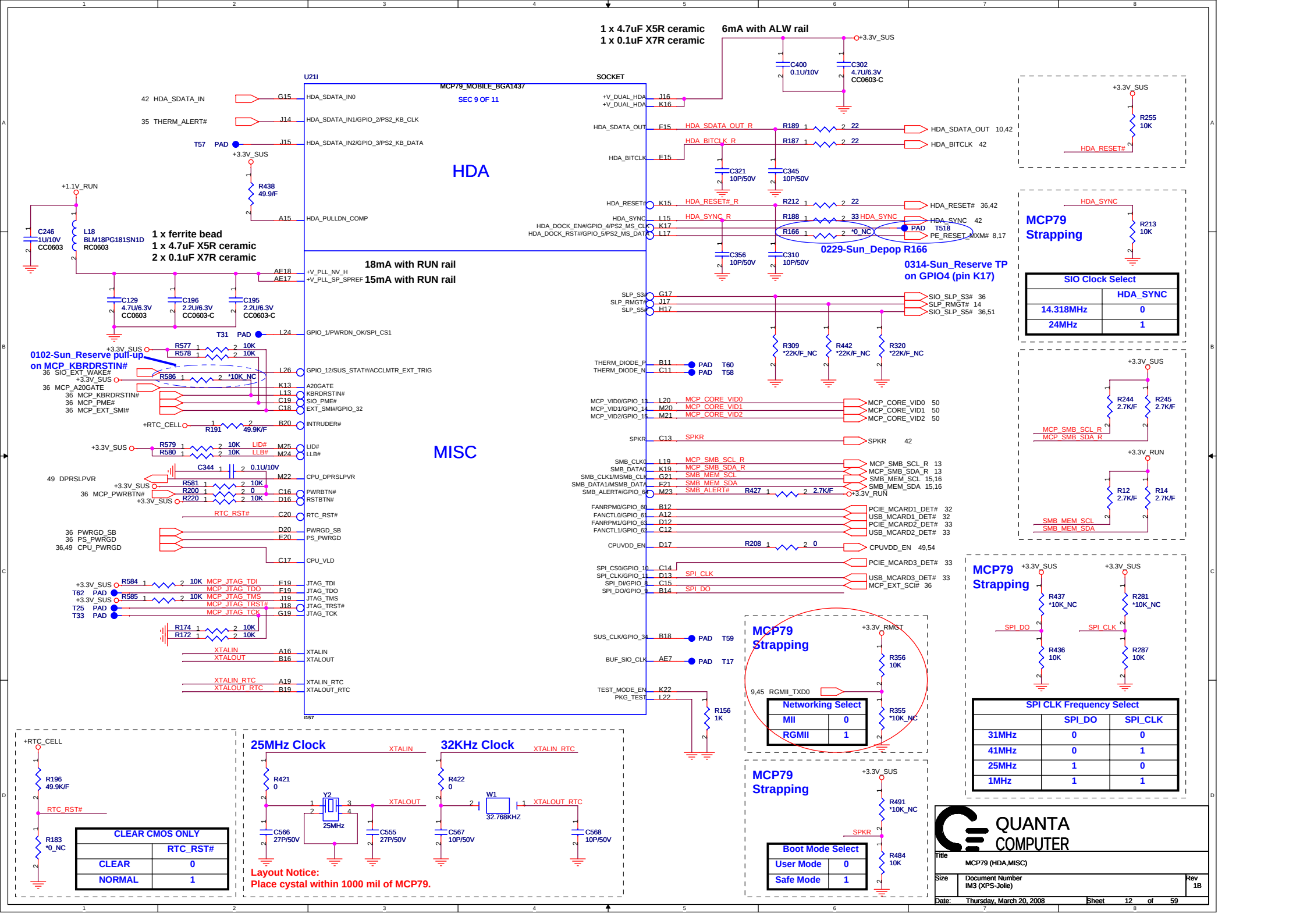
0311-Sun_USB RBIAS changes to 806ohm.

Layout Notice:
909 ohm +-1% to GND within 1000 mil of MCP79.
Routing trace at least 8 mil wide to resistor.

USB Layout Notice:
BGA Breakout:
Route differentially at normal impedance and 4 mils within pair and 6 mils to other signals.Maximum brackout distance is 300 mils of MCP79.
BGA Fan-out:
Route differentially at normal impedance and 4 mils within pair and 10 mils to other signals.Maximum BGA brackout plus Fan-out distance is 400 mils.
After Brackout:
Route at 100 ohm differential impedance (50 ohm SE) and 4x dielectric height spacing (Microstrip) or 2x dielectric height spacing (Stripline) to other signals.
Each USB pair must be length metched to within 50 mil.

QUANTA COMPUTER

Title	MCP79 (SATA,USB)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 11 of 59	


1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic
6mA with ALW rail
U21I
MCP79_MOBILE_BGA1437
SEC 9 OF 11
SOCKET
HDA
MISC
1 x ferrite bead
1 x 4.7uF X5R ceramic
2 x 0.1uF X7R ceramic
18mA with RUN rail
15mA with RUN rail
0102-Sun_Reserve pull-up on MCP_KBRDRSTIN#
0229-Sun_Depop R166
0314-Sun_Reserve TP on GPIO4 (pin K17)
MCP79 Strapping
SIO Clock Select
HDA_SYNC
14.318MHz 0
24MHz 1
SPI CLK Frequency Select
SPI_DO SPI_CLK
31MHz 0 0
41MHz 0 1
25MHz 1 0
1MHz 1 1
Networking Select
MII 0
RGMII 1
Boot Mode Select
User Mode 0
Safe Mode 1
CLEAR CMOS ONLY
RTC_RST#
CLEAR 0
NORMAL 1
25MHz Clock
32KHz Clock
Layout Notice:
Place cystal within 1000 mil of MCP79.
QUANTA COMPUTER
Title MCP79 (HDA,MISC)
Size Document Number IM3 (XPS-Jolie) Rev 1B
Date: Thursday, March 20, 2008 Sheet 12 of 59

1 x 10uF ceramic
2 x 4.7uF X5R ceramic
3 x 1uF X5R ceramic
3 x 0.22uF X5R ceramic
12 x 0.1uF X7R ceramic

17.756A with RUN rail for S0
2850mA for S0 Idle

+VTT_CPU
1139mA for ALW rail

+VTT_CPUCLK
43mA for ALW rail

1 x 10uF ceramic
1 x 4.7uF X5R ceramic
2 x 0.1uF X7R ceramic

U21J
MCP79_MOBILE_BGA1437
SOCKET
SEC
10 OF 11

POWER

+MCP_CORE
+VDD_CORE
C148 10U/10V CC0805
C156 4.7U/6.3V CC0603
C184 1U/6.3V
C188 1U/6.3V
C202 1U/6.3V
C149 4.7U/6.3V CC0603-C
C169 0.22U/6.3V
C186 0.22U/6.3V
C187 0.22U/6.3V
C217 0.1U/10V
C204 0.1U/10V
C173 0.1U/10V
C189 0.1U/10V
C194 0.1U/10V
C220 0.1U/10V
C168 0.1U/10V
C211 0.1U/10V
C206 0.1U/10V
C218 0.1U/10V
C182 0.1U/10V
C225 0.1U/10V

+1.05V_VCCP
C185 0.1U/10V
C219 4.7U/6.3V CC0603
C353 10U/10V CC0805
C150 0.1U/10V
C158 0.1U/10V
C314 1U/6.3V
C282 0.1U/10V
C336 0.1U/10V
C332 1U/6.3V
C303 0.1U/10V
C295 0.1U/10V
C341 0.1U/10V

+3.3V_RUN_MCP
450mA with RUN rail

1 x 4.7uF X5R ceramic
4 x 0.1uF X7R ceramic

0312-Sun_Change footprint to normal short type "short40x18"

JP4 SHORT40X18
C231 0.1U/10V
C205 0.1U/10V
C200 0.1U/10V
C209 0.1U/10V
C226 4.7U/6.3V CC0603-C

0312-Sun_Change footprint to normal short type "short40x18"

JP6 SHORT40X12
C386 0.1U/10V
C364 4.7U/6.3V CC0603-C

+3.3V_DUAL
16mA with ALW rail

1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic

+3.3V_DUAL_USB
450mA with ALW rail

1 x 4.7uF X5R ceramic
1 x 0.1uF X7R ceramic

+VDD_AUXC
105mA with ALW rail

2 x 0.1uF X7R ceramic

JP8
C249 0.1U/10V
C236 0.1U/10V

These are for backdrive issue.

Q35 2N7002W-7-F
Q36 2N7002W-7-F
R257 2.7K/F
R260 2.7K/F
12 MCP_SMB_SCL_R
12 MCP_SMB_SDA_R
MCP_SMB_SCL 32,33,34
MCP_SMB_SDA 32,33,34

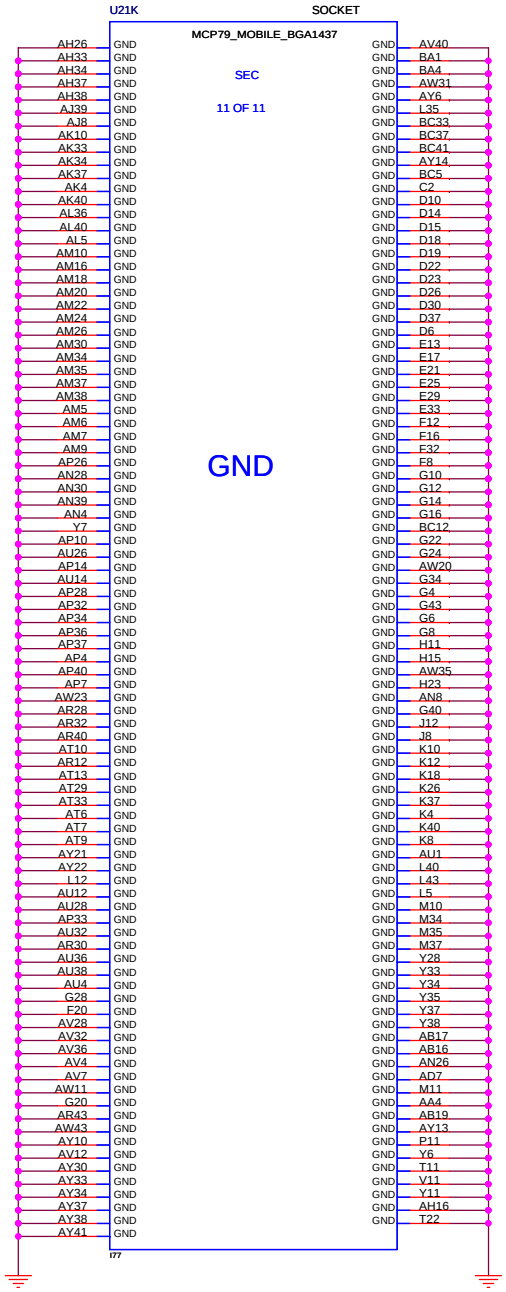
HDCP
U5 *AT24C16BN-SH-T_NC
R23 *10K_NC
R16 *10K_NC
R20 *10K_NC
C30 *0.1U/10V_NC

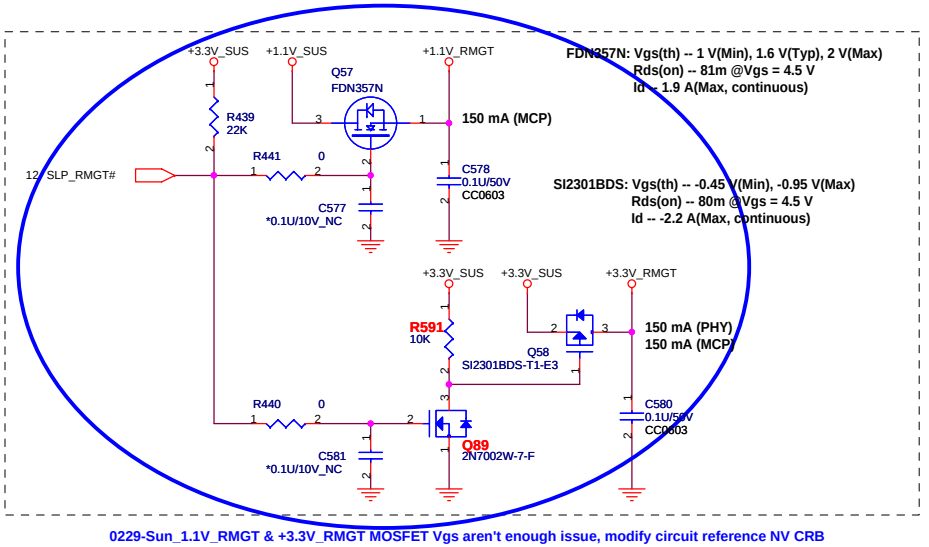
+RTC_CELL
C368 4.7U/6.3V CC0603
C713 0.1U/10V
0229-Sun_Add C713 with 0.1U on +VBAT of MCP79

0.06mA with ALW rail for S0
1 x 4.7uF X5R ceramic

QUANTA COMPUTER

Title	MCP79 (POWER)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 13 of 59	



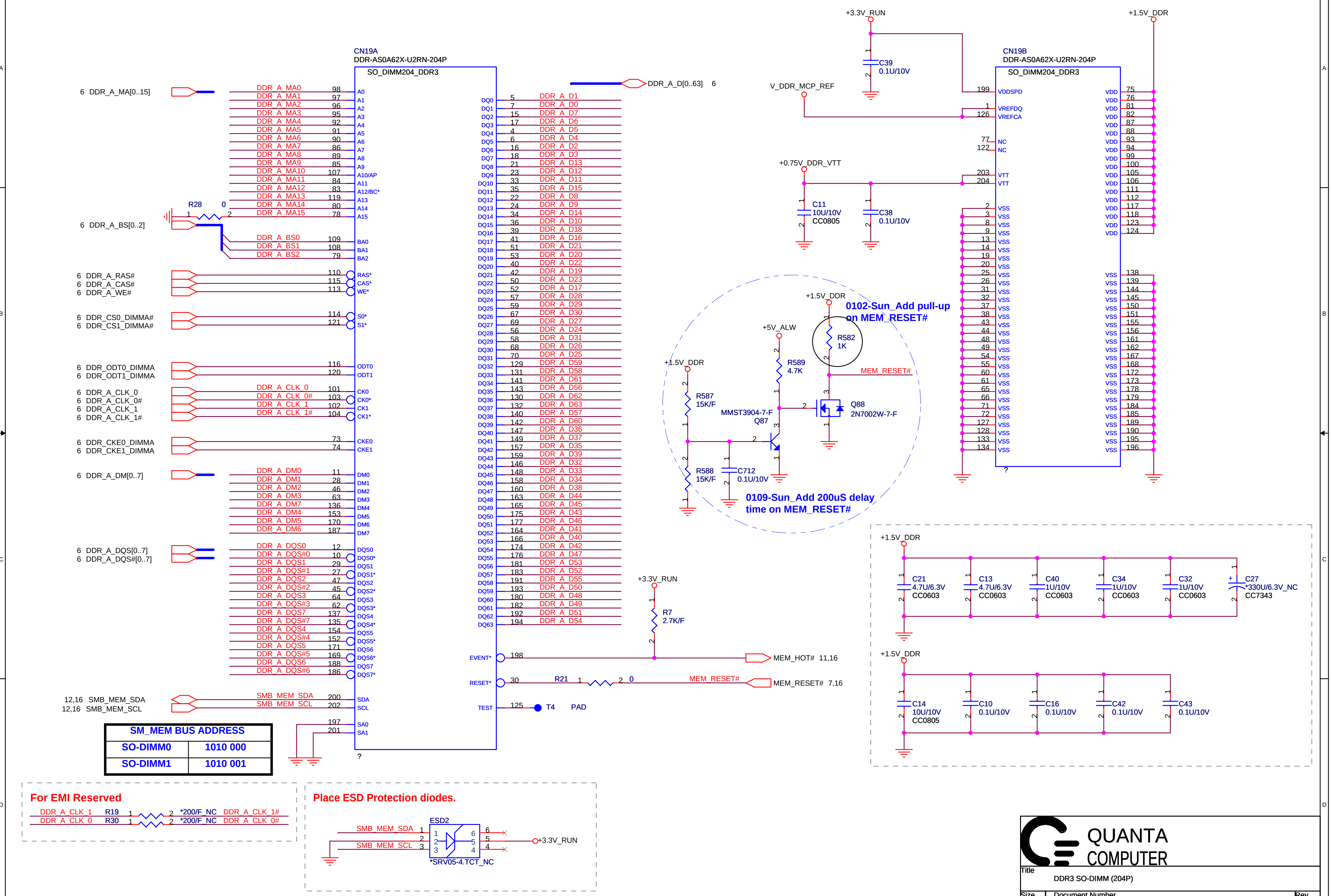


0229-Sun_1.1V_RMGT & +3.3V_RMGT MOSFET Vgs aren't enough issue, modify circuit reference NV CRB

(Del JP11,JP12
Change Q57 from SI2304BDS-T1-E3 to FDN357N, Q58 from SI2304BDS-T1-E3 to SI2301BDS-T1-E3
Add Q? with 2N7002,R? with 10K)

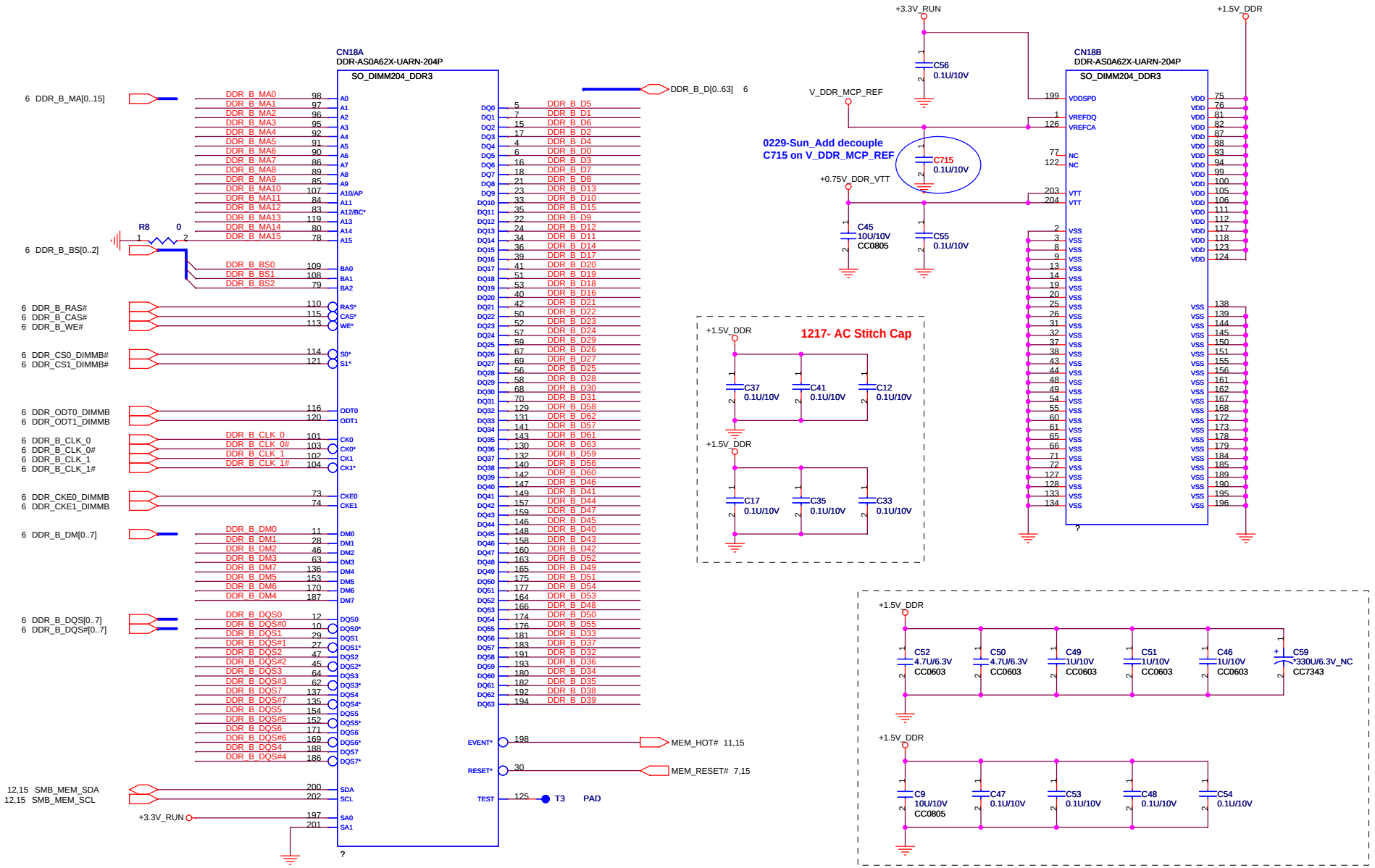
QUANTA COMPUTER

Title	MCP79 (GND)	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1B
Date: Thursday, March 20, 2008	Sheet 14 of 59	


CN19A
DDR-AS0A62X-U2RN-204P
SO_DIMM204_DDR3
6 DDR_A_MA[0..15]
DDR_A_MA0 … DDR_A_MA15
A0 … A15, A10/AP, A12/BC*
R28 0
6 DDR_A_BS[0..2]
DDR_A_BS0, DDR_A_BS1, DDR_A_BS2
BA0, BA1, BA2
6 DDR_A_RAS#
6 DDR_A_CAS#
6 DDR_A_WE#
RAS*, CAS*, WE*
6 DDR_CS0_DIMMA#
6 DDR_CS1_DIMMA#
S0*, S1*
6 DDR_ODT0_DIMMA
6 DDR_ODT1_DIMMA
ODT0, ODT1
6 DDR_A_CLK_0
6 DDR_A_CLK_0#
6 DDR_A_CLK_1
6 DDR_A_CLK_1#
CK0, CK0*, CK1, CK1*
6 DDR_CKE0_DIMMA
6 DDR_CKE1_DIMMA
CKE0, CKE1
6 DDR_A_DM[0..7]
DDR_A_DM0 … DDR_A_DM7
DM0 … DM7
6 DDR_A_DQS[0..7]
6 DDR_A_DQS#[0..7]
DDR_A_DQS0 … DDR_A_DQS7, DDR_A_DQS#0 … DDR_A_DQS#7
DQS0 … DQS7, DQS0* … DQS7*
12,16 SMB_MEM_SDA
12,16 SMB_MEM_SCL
SDA, SCL, SA0, SA1
DDR_A_D[0..63] 6
DQ0 … DQ63
DDR_A_D0 … DDR_A_D63
EVENT*, RESET*, TEST
+3.3V_RUN
R7 2.7K/F
MEM_HOT# 11,16
R21 0
MEM_RESET#
MEM_RESET# 7,16
T4 PAD
SM_MEM BUS ADDRESS
SO-DIMM0 1010 000
SO-DIMM1 1010 001
For EMI Reserved
DDR_A_CLK_1 R19 *200/F_NC DDR_A_CLK_1#
DDR_A_CLK_0 R30 *200/F_NC DDR_A_CLK_0#
Place ESD Protection diodes.
ESD2
SMB_MEM_SDA
SMB_MEM_SCL
*SRV05-4.TCT_NC
+3.3V_RUN
C39 0.1U/10V
V_DDR_MCP_REF
+0.75V_DDR_VTT
C11 10U/10V CC0805
C38 0.1U/10V
CN19B
DDR-AS0A62X-U2RN-204P
SO_DIMM204_DDR3
VDDSPD, VREFDQ, VREFCA, NC, VTT, VSS, VDD
+1.5V_DDR
+5V_ALW
R587 15K/F
R588 15K/F
C712 0.1U/10V
MMST3904-7-F Q87
R589 4.7K
R582 1K
Q88 2N7002W-7-F
MEM_RESET#
0102-Sun_Add pull-up on MEM_RESET#
0109-Sun_Add 200uS delay time on MEM_RESET#
C21 4.7U/6.3V CC0603
C13 4.7U/6.3V CC0603
C40 1U/10V CC0603
C34 1U/10V CC0603
C32 1U/10V CC0603
C27 *330U/6.3V_NC CC7343
C14 10U/10V CC0805
C10 0.1U/10V
C16 0.1U/10V
C42 0.1U/10V
C43 0.1U/10V

QUANTA COMPUTER

Title	DDR3 SO-DIMM (204P)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1B
Date:	Thursday, March 20, 2008	Sheet 15 of 59



Title	DDR3 SO-DIMM (204P)		
Size	Document Number IM3 (XPS-Jolie)		Rev 1A
Date:	Thursday, March 20, 2008	Sheet 16 of 59	

IM3 dedicated.

1113-Sun_Swap PEG for routing smooth.

1115-Sun_Follow NV's command to swap PEG for routing

1115-Sun_Follow NV's command to swap PEG for routing smooth

0321-Steg_Change Resistor Value from 20K to 10K

0311-Sun_Reserve GFX_THERM# to shutdown power. (Add Q18, R540)

U20A

PART 1 OF 5

PCI-EXPRESS INTERFACE

GPIO

JTAG

NB9M

PBGA533-NVIDIA-GEFORCE6250

Footprint: BGA533-NVIDIA-NB9M-GS

VRAM Strap:ROM_SI

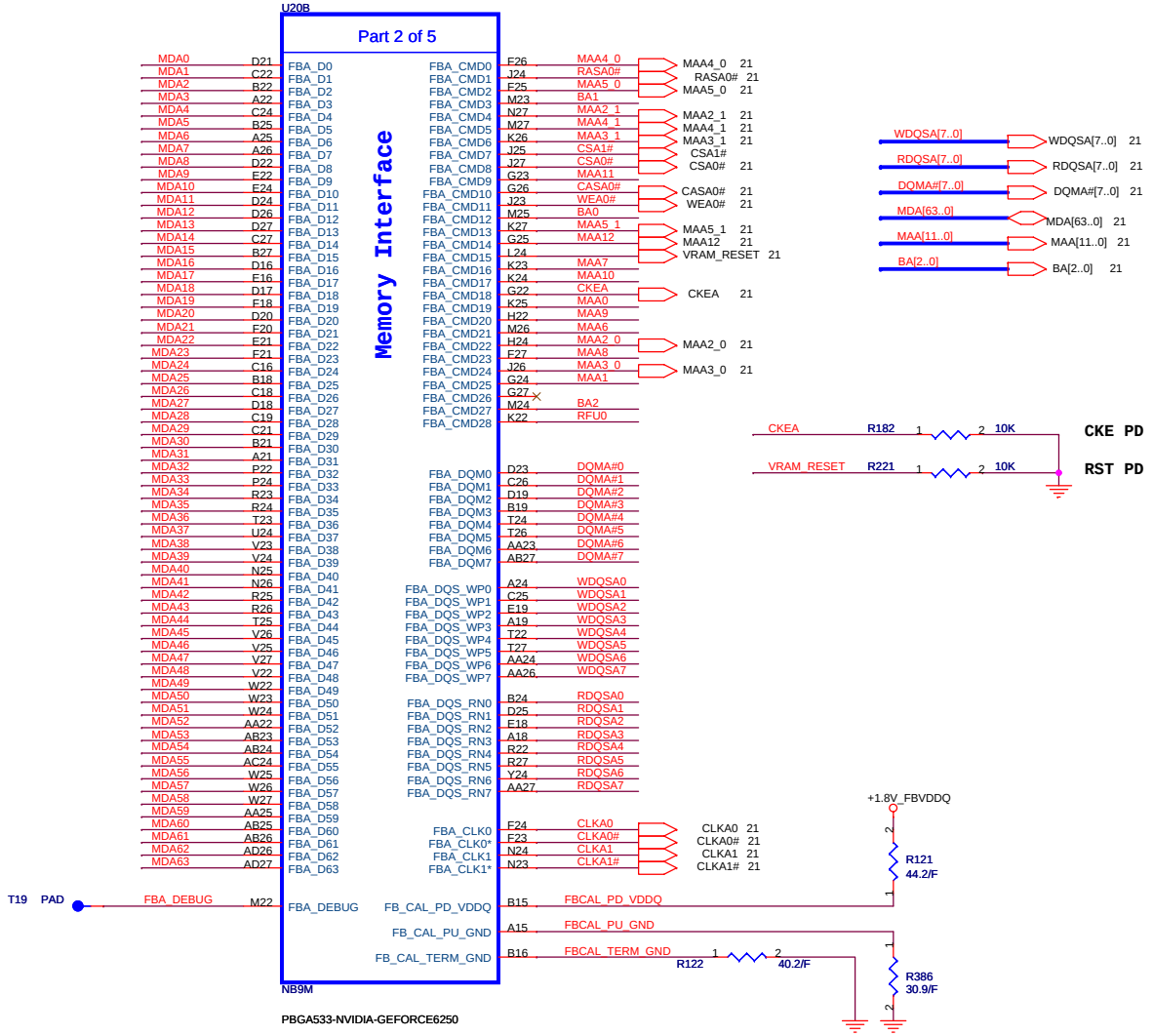
ID	ROM_SI	Memory part
01	Pull down 20K	Samsung
02	Pull down 10K	Infineon
03		
04		

GPIO USAGE

GPIO	I/O	ACTIVE	USAGE	Used
0	IN	N/A	NVGEM HOTPLUG DETECT	
1	IN	N/A	DVI/HDMI LINKC HOTPLUG DETECT	
2	OUT	HIGH	PANEL BACKLIGHT PWM	
3	OUT	HIGH	PANEL POWER ENABLE	
4	OUT	HIGH	PANEL BACKLIGHT ENABLE	
5	OUT	HIGH	NVVDD ALTV0	
6	OUT	HIGH	NVVDD ALTV1	
7	OUT	HIGH	FBVDD VID0	
8	IN	LOW	OVERTEMP ALERT	
9	OUT	LOW	THERMAL ALERT	
10	OUT	HIGH	DYNAMIC FB VREF GDDR3 (not used for DDR2)	
11	OUT	HIGH	SLI SYNC0 (not used for GB1-64)	
12	IN	N/A	AC DETECT	
13	OUT	LOW	POWER SUPPLY CONTROL0	
14	OUT	HIGH	POWER SUPPLY CONTROL1	
15	IN	N/A	HPD_E	
16	IN	N/A	DVI_E	No
17	IN	N/A	HDMI_E	No
18	IN	N/A	DVI_F (not used)	No
19	IN	N/A	HDMI_F (not used)	No

QUANTA COMPUTER

Title	VGA-NB9X GB1-64 (PCIE,PCIE POWER)	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Friday, March 21, 2008	Sheet 17 of 59	



Update as "PUN-03303-001_V01".

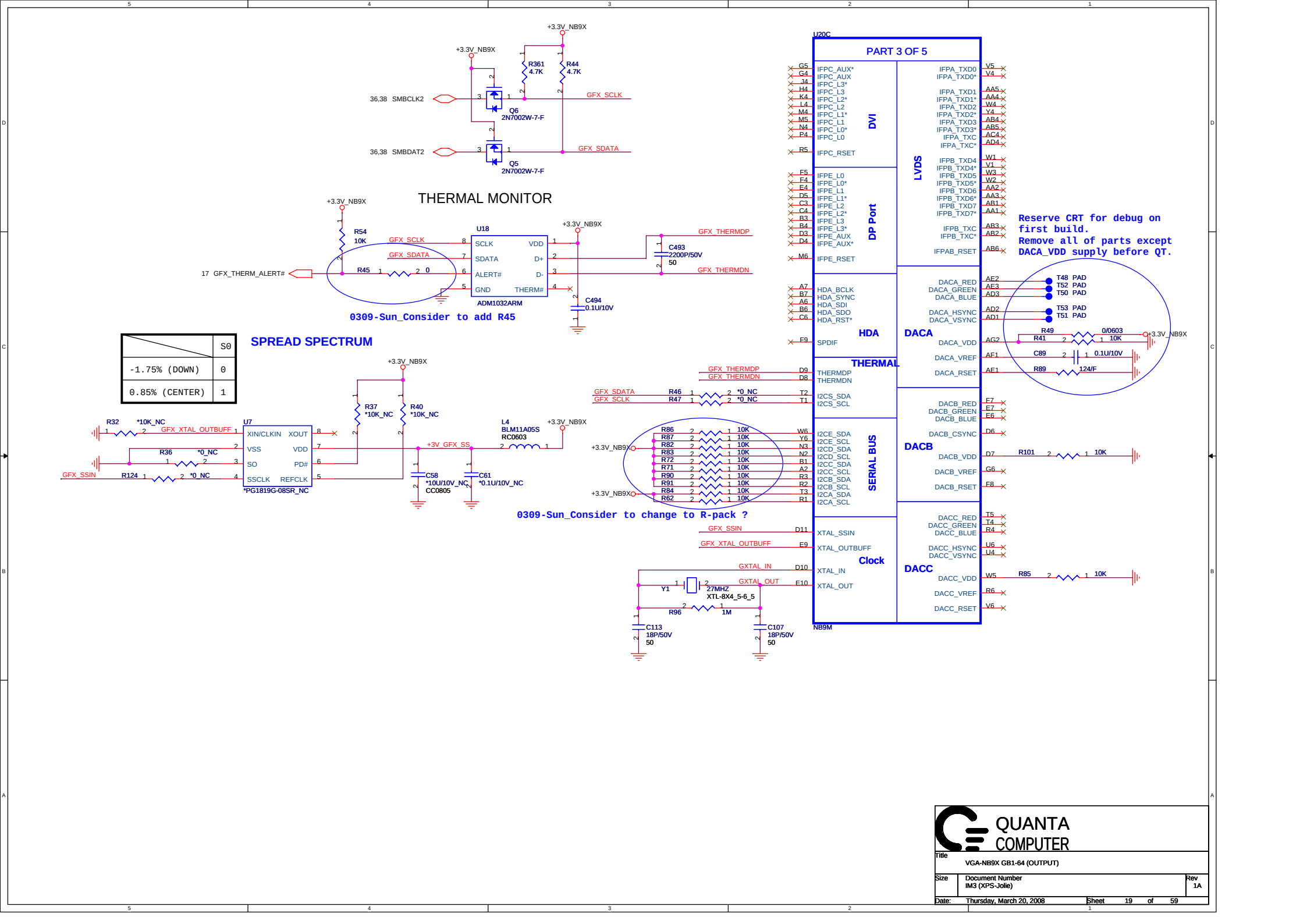
GPU Driver Calibration

Memory/PKG	FBVDDQ	FBCAL_PU_GND	FBCAL_PD_VDDQ
DDR2	1.8V	30.1	30.1
GDDR3	1.8V	30.9	44.2
GDDR3 DVS	1.8V/1.5V	30.9	44.2

Note: Use only 1% resistors for driver calibration

QUANTA COMPUTER

Title	VGA-NB9X GB1-128 (Frame Buffer Channel A)	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Thursday, March 20, 2008	Sheet 18 of 59	


THERMAL MONITOR
SPREAD SPECTRUM
0309-Sun_Consider to add R45
0309-Sun_Consider to change to R-pack ?
Reserve CRT for debug on first build.
Remove all of parts except DACA_VDD supply before QT.
U20C
PART 3 OF 5
DVI
DP Port
LVDS
HDA
THERMAL
SERIAL BUS
Clock
DACA
DACB
DACC
NB9M
ADM1032ARM
*PG1819G-08SR_NC
27MHZ XTL-8X4_5-6_5
QUANTA COMPUTER
VGA-NB9X GB1-64 (OUTPUT)
Document Number IM3 (XPS-Jolie)
Thursday, March 20, 2008
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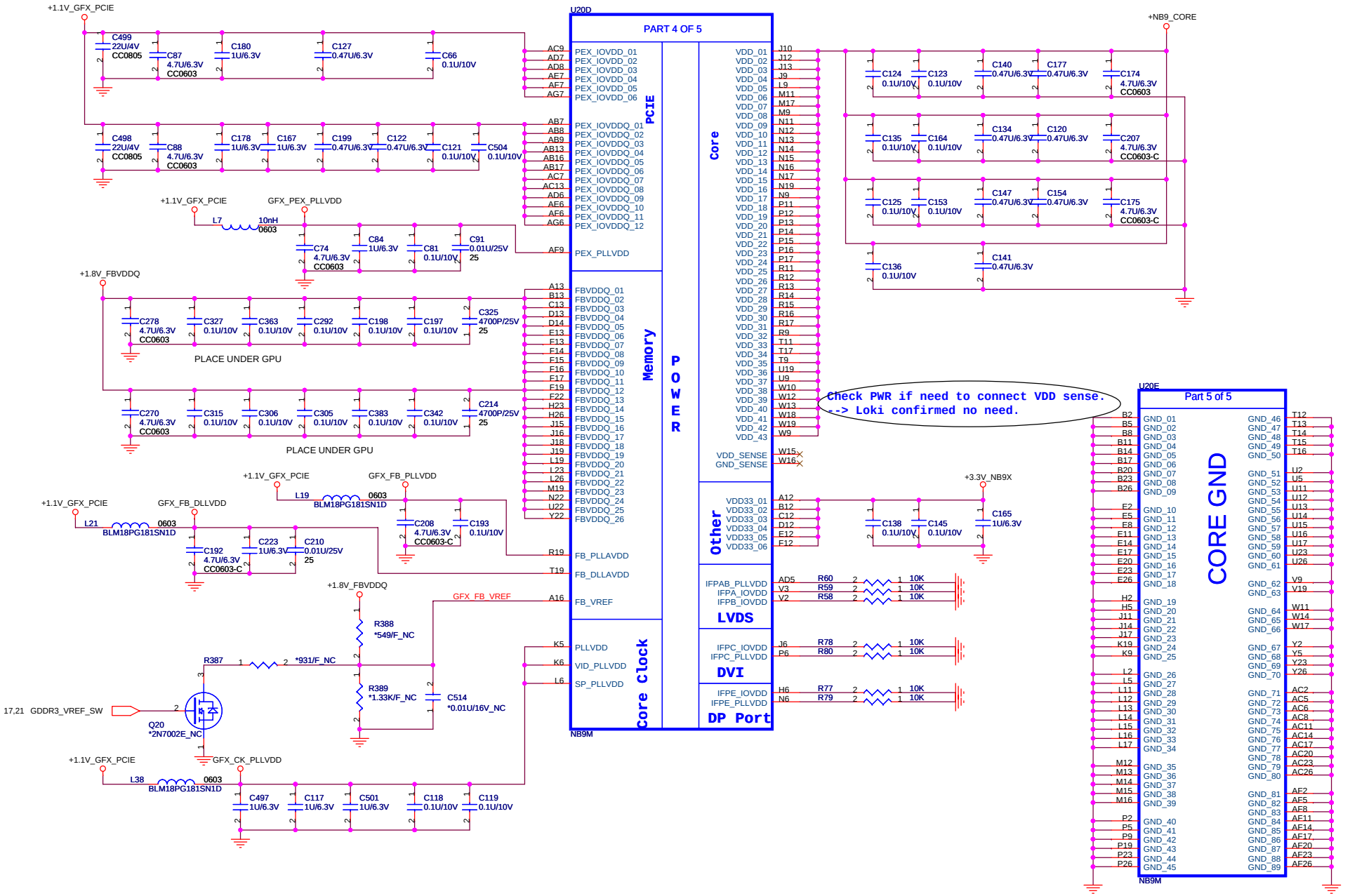
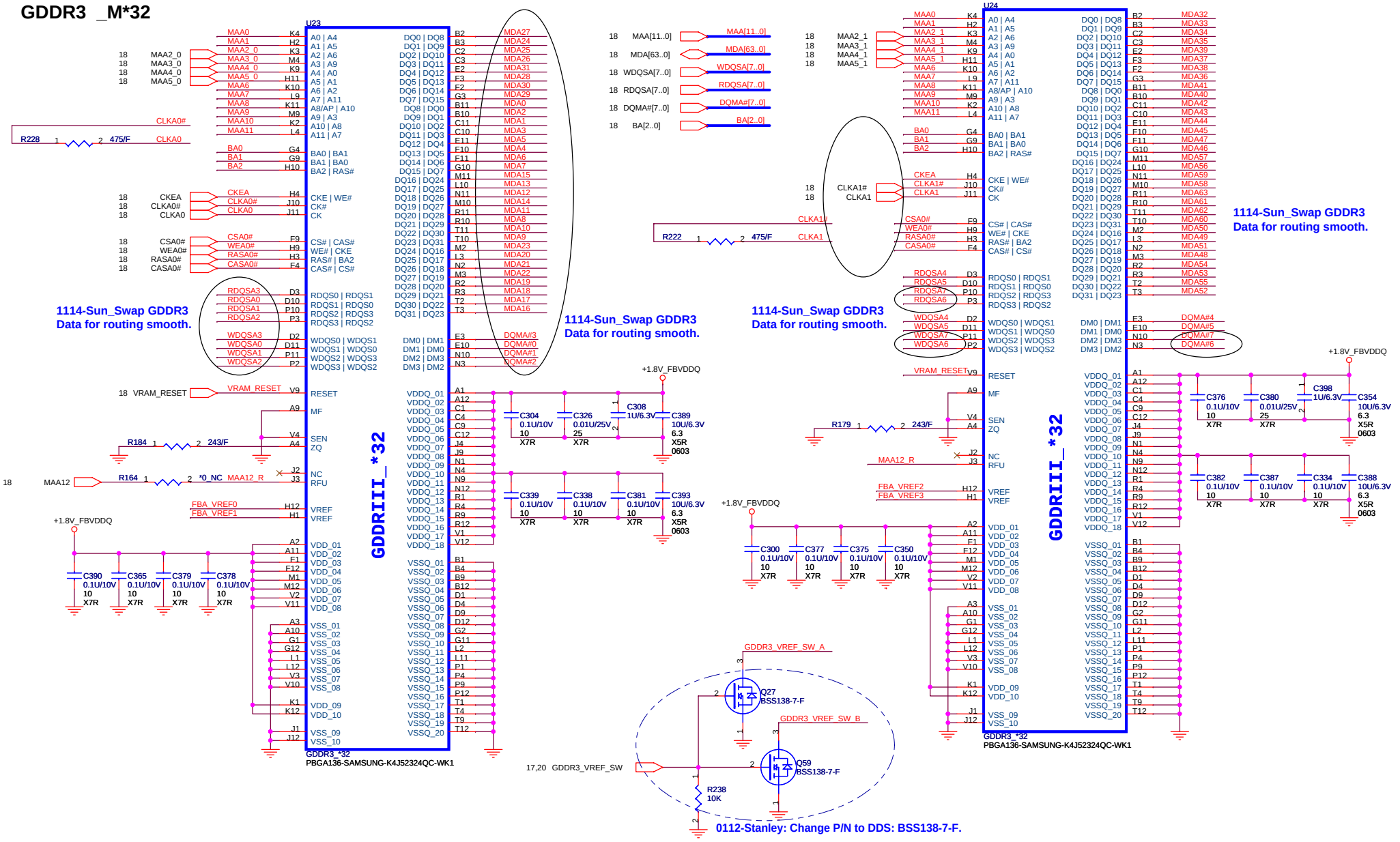
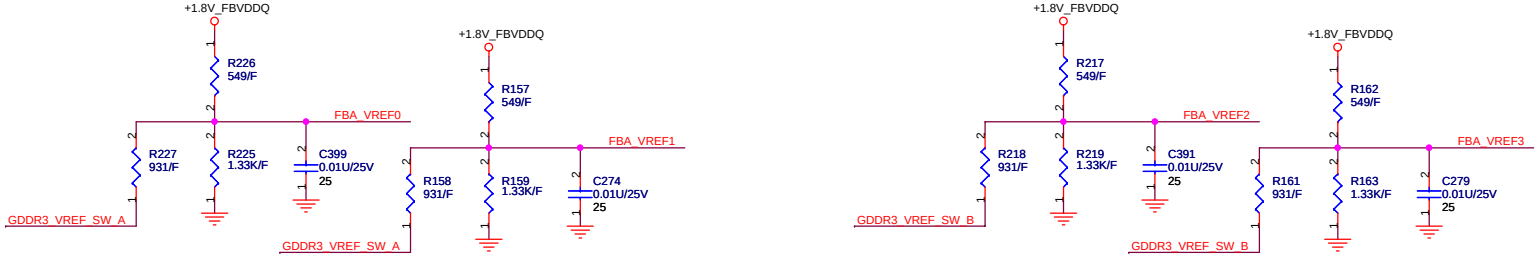


Title	VGA-NB9X GB1-64 (POWER,GND)
Size	Document Number: IM3 (XPS-Jolie) — Rev: 1A
Date:	Thursday, March 20, 2008 — Sheet 20 of 59

QUANTA COMPUTER

GDDR3 _M*32





Title	VGA-NB9X GB1-64 (HybridSLI SWITCH)		
Size	Document Number IM3 (XPS-Jolie)		Rev 1B
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QUANTA COMPUTER

Title		
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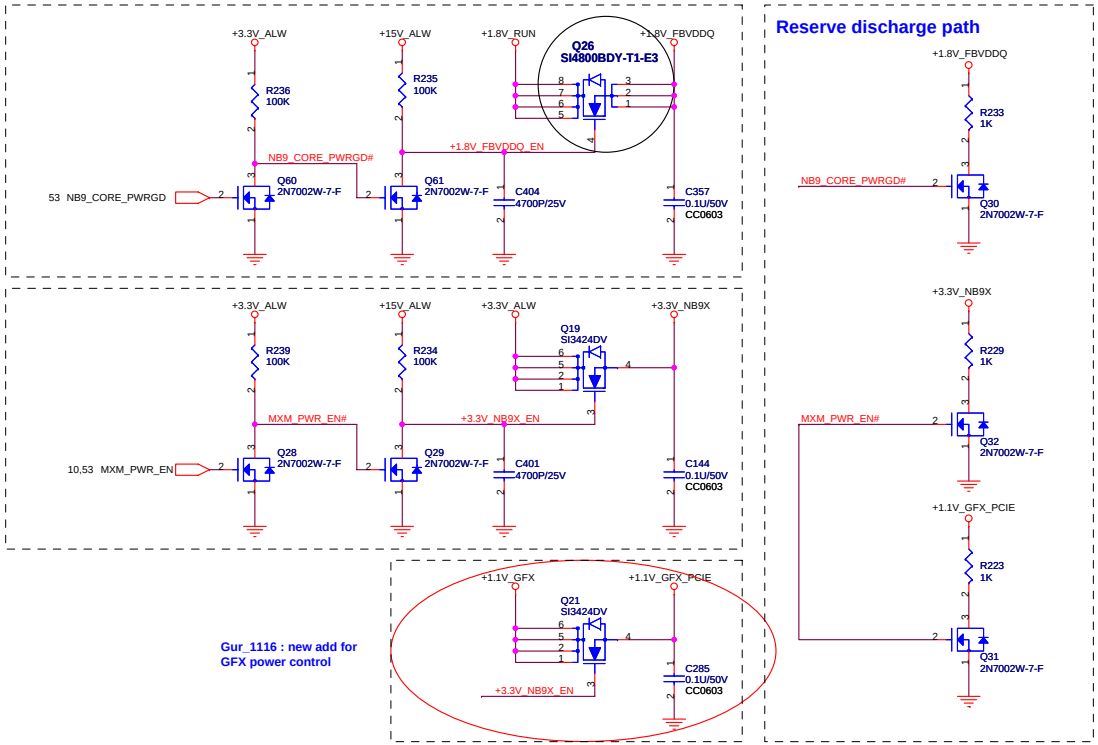
1225-Sun_Chenge Q26 from SI4812BDY to SI4800BDY-T1-E3.



QUANTA COMPUTER

Title	VGA-NB9X GB1-128 (PCIE,PCIE POWER)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 23 of 59	

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QUANTA COMPUTER

Title		
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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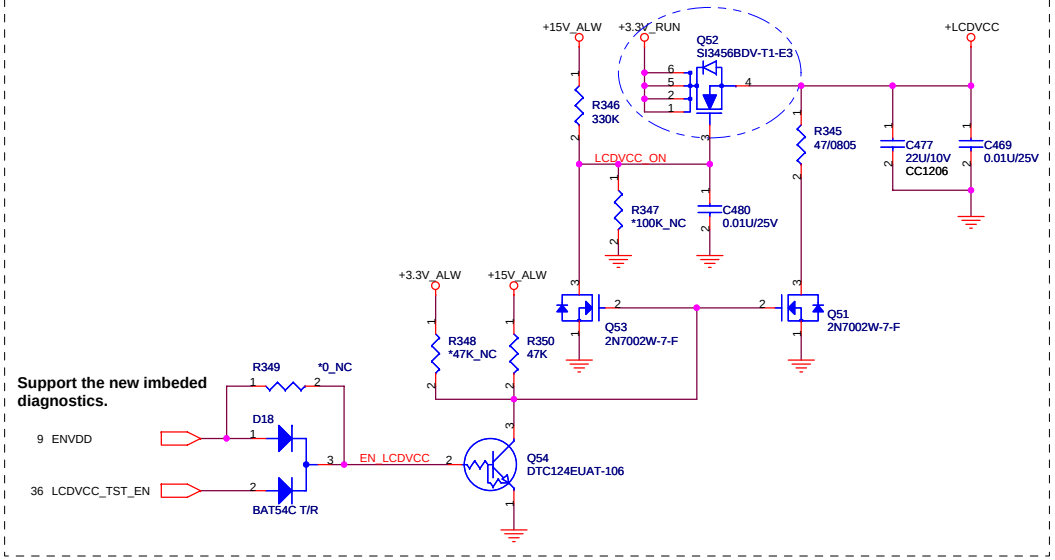
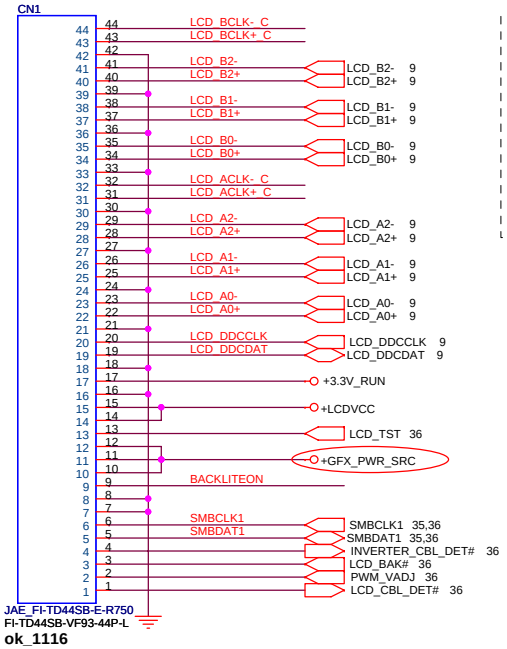
QUANTA COMPUTER

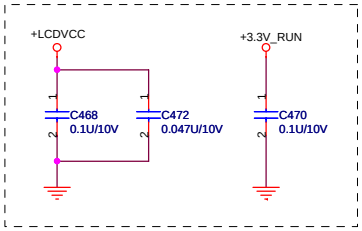
Title		
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 25 of 59	

0112-Stanley: Change BOM for EOL issue (SI3456BDV).



GND,VCC要用最粗的電子線

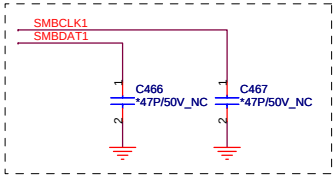




WXGA 1280*800=>70 MHz
WXGA+ 1440*900=>108 MHz
WSXGA+ 1680*1050=>120MHz
WUXGA 1920*1200=>166 MHz

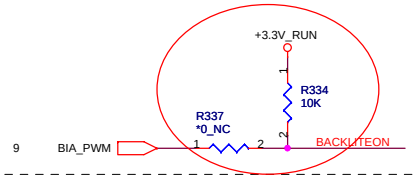
Address : A9H --Contrast
AAH --Backlight

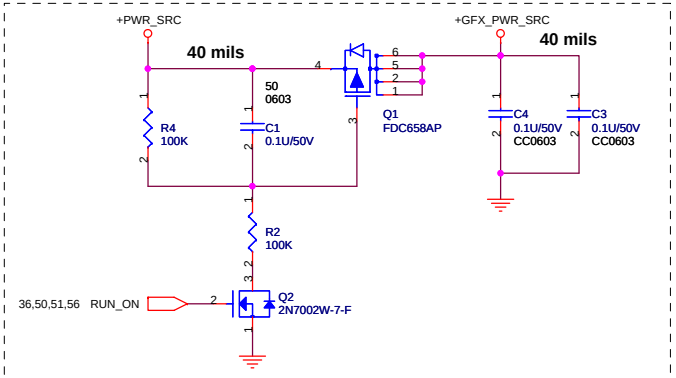
MBRAI specification of antenna gain is 10dBi@474MHz, -7dBi@698MHz, -5dBi@858MHz.



Populate R65 for DPST implementation only.

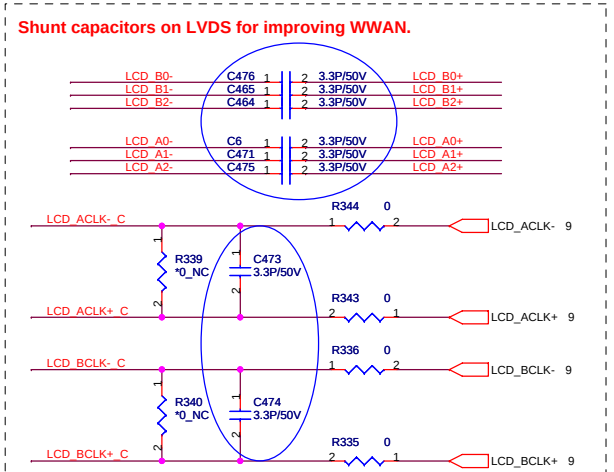
Populate R341 for platform without DPST support. No Stuff for Discrete DSPT support due to back up plan.





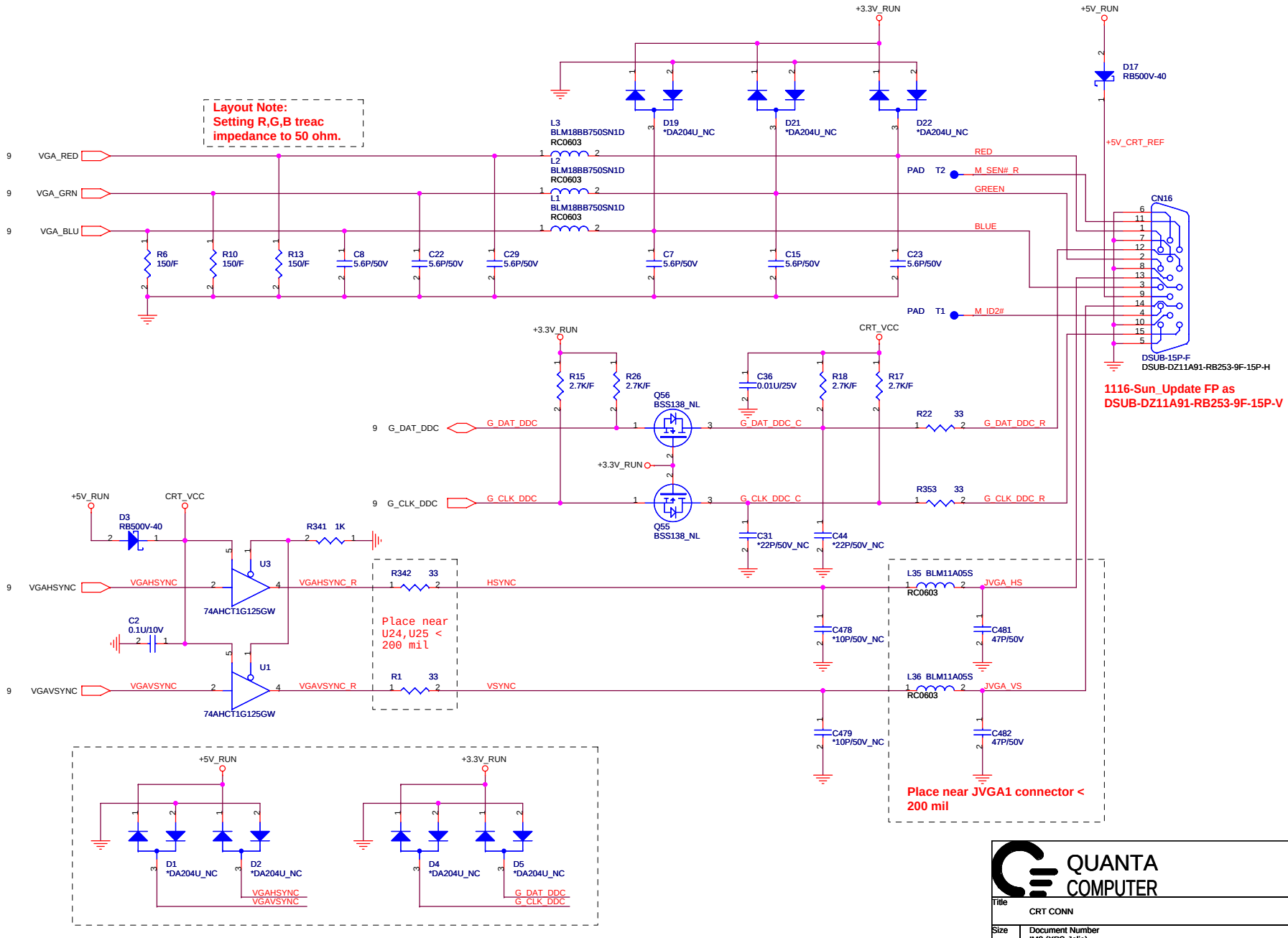
0319-Sun_Pop 3.3P on LVDS bus for COMM team demand

Shunt capacitors on LVDS for improving WWAN.



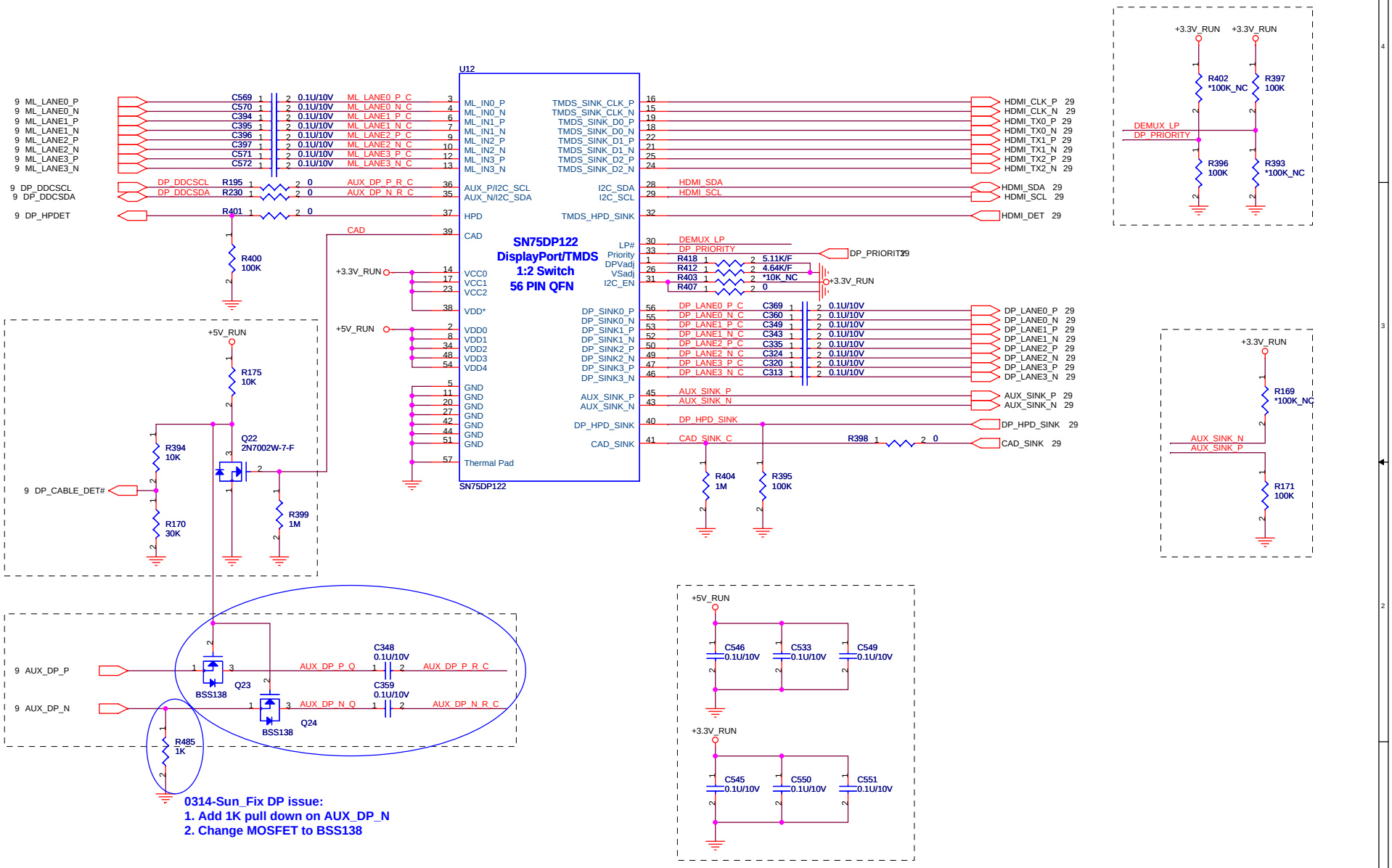
QUANTA COMPUTER

Title	LCD CONN	
Size	Document Number IM3 (XPS-Jolie)	Rev 1B
Date: Thursday, March 20, 2008	Sheet 26 of 59	



QUANTA COMPUTER

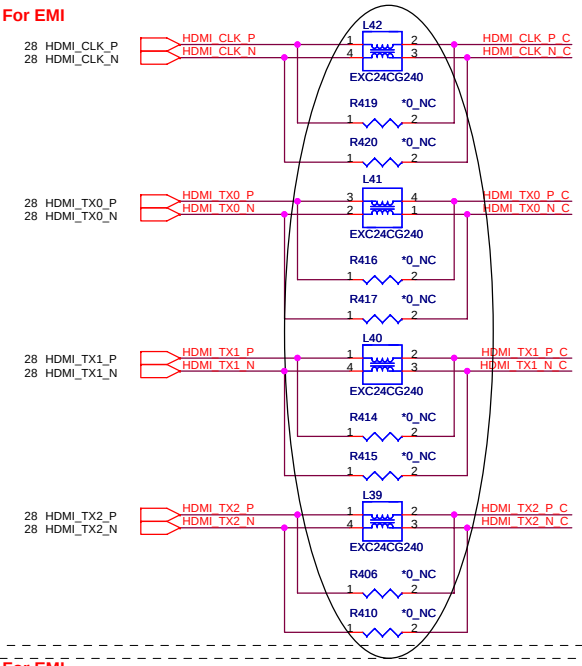
Title	CRT CONN	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 27 of 59	



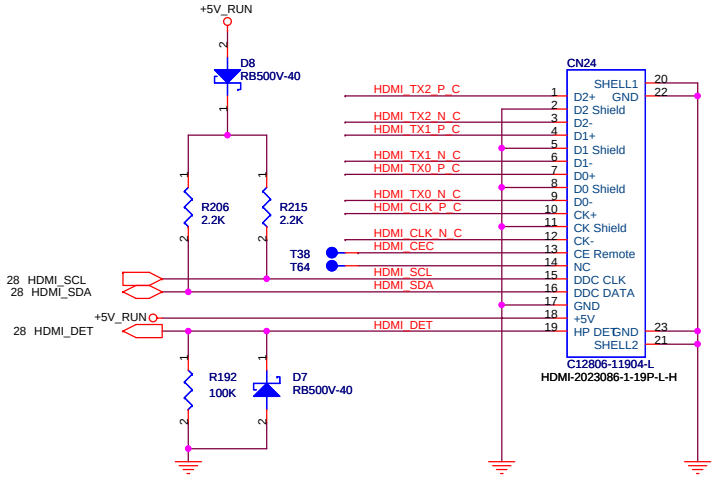
Title	DeMUX Switch (SN75DP122)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 28 of 59	

0319-Sun_Pop EMI baed for HDMI port

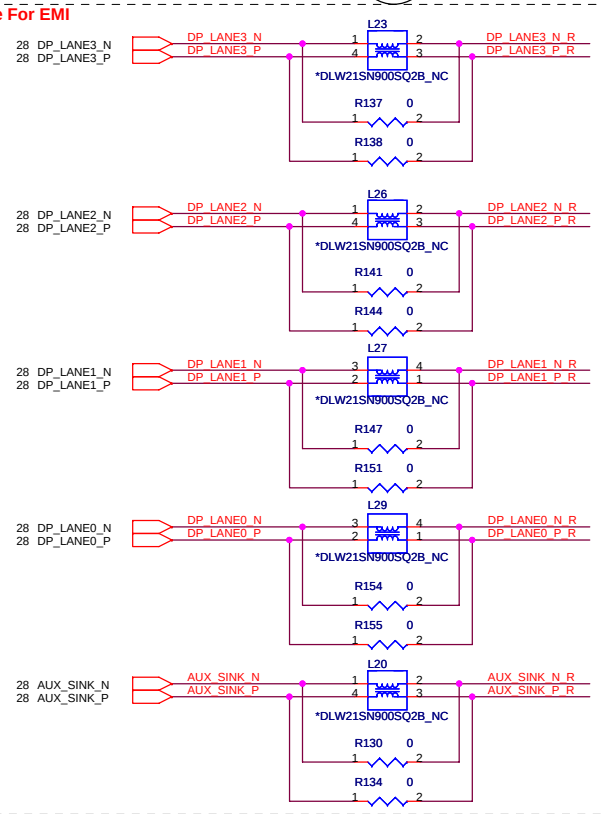
Reserve For EMI



HDMI CONNECTOR

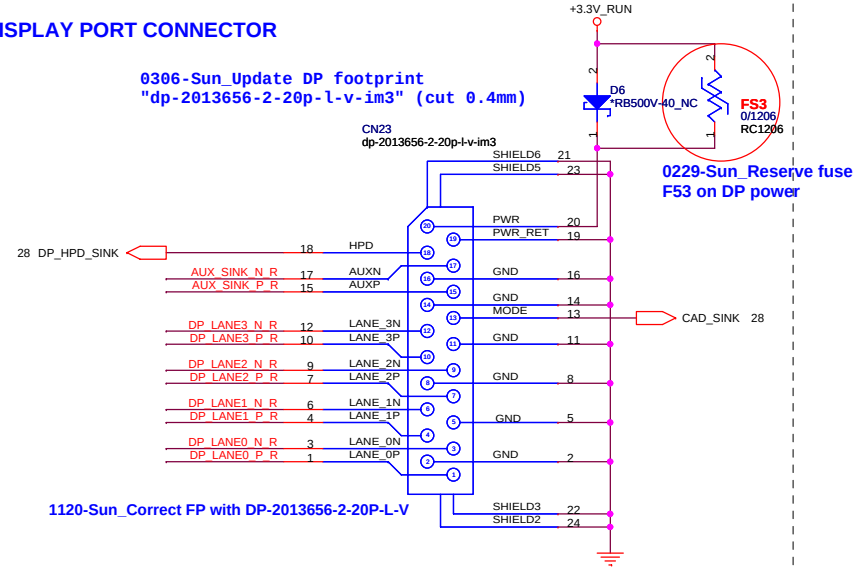


Reserve For EMI



DISPLAY PORT CONNECTOR

0306-Sun_Update DP footprint
"dp-2013656-2-20p-l-v-im3" (cut 0.4mm)



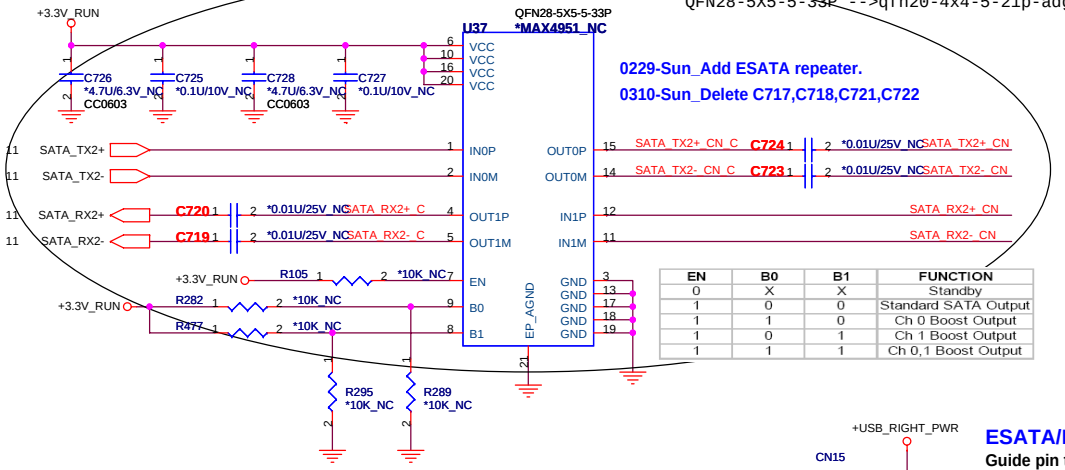
0229-Sun_Reserve fuse
F53 on DP power

1120-Sun_Correct FP with DP-2013656-2-20P-L-V

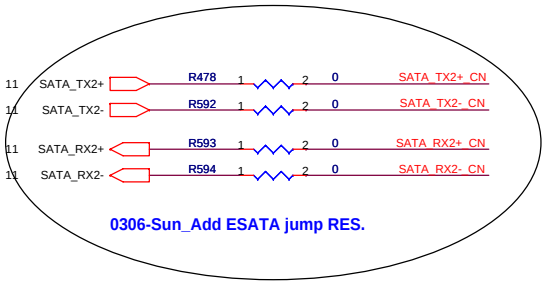
QUANTA COMPUTER

Title	HDMI & DP CONN	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 29 of 59	

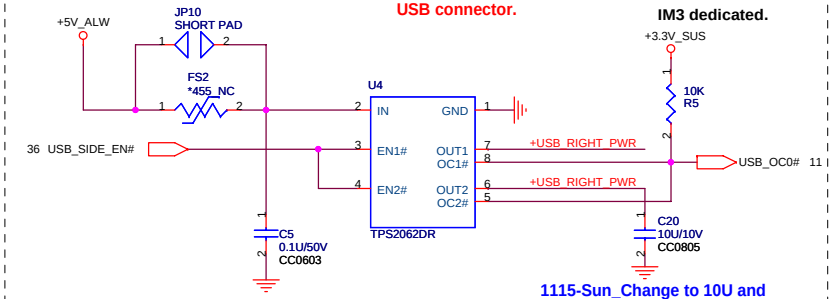
QFN28-5X5-5-33P -->qfn20-4x4-5-21p-adg786

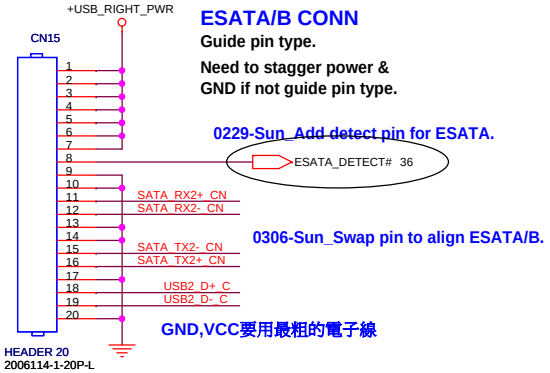


EN	B0	B1	FUNCTION
0	X	X	Standby
1	0	0	Standard SATA Output
1	1	0	Ch 0 Boost Output
1	0	1	Ch 1 Boost Output
1	1	1	Ch 0,1 Boost Output

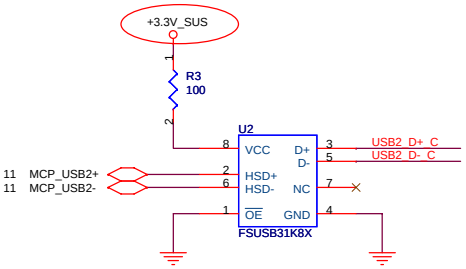


USB POWER SW

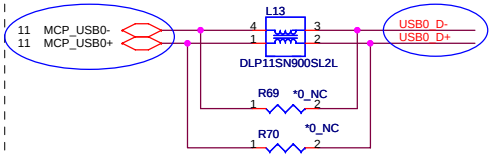


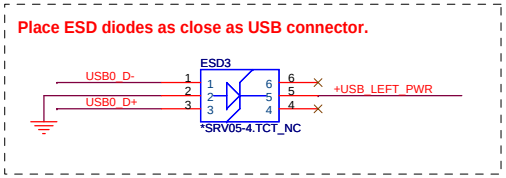


USB BUS SW

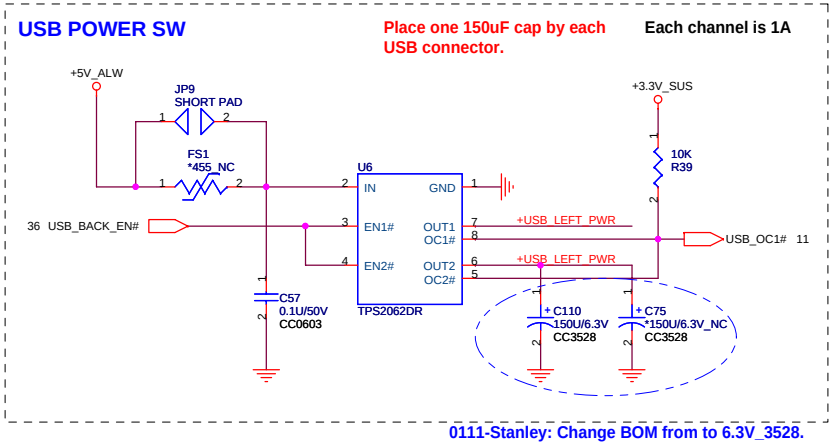


0318-Sun_change left USB port from port1 to port0

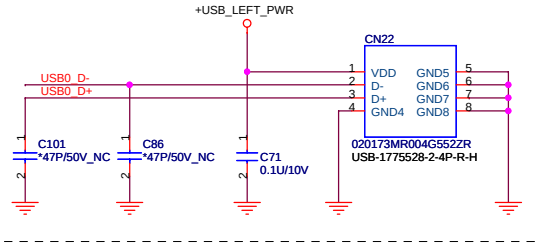




USB POWER SW



USB CONN



QUANTA COMPUTER

Title	USB, eSATA	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1B
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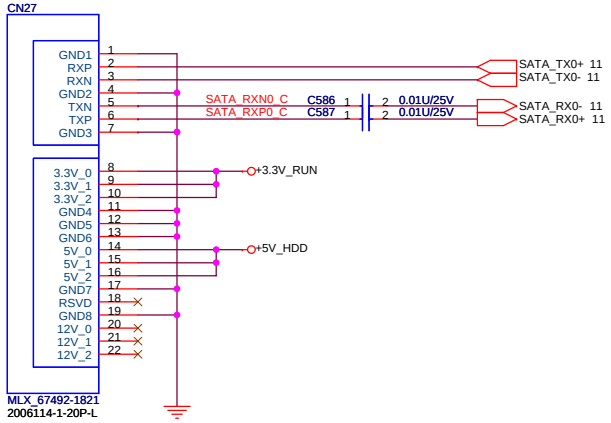
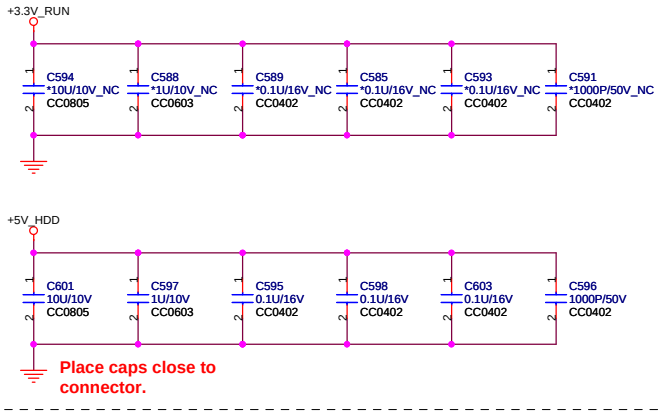
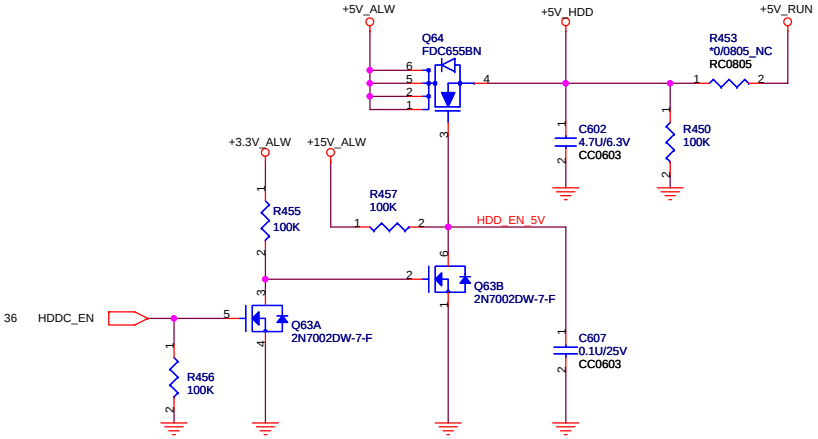
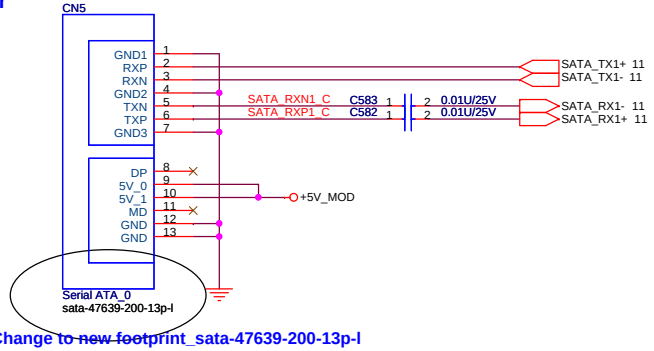
SATA HDD Connector



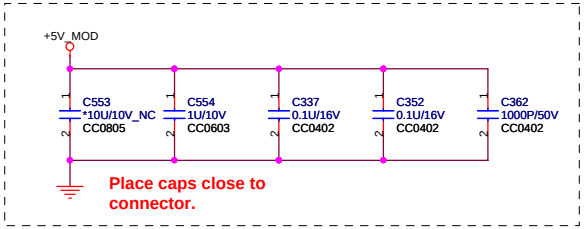


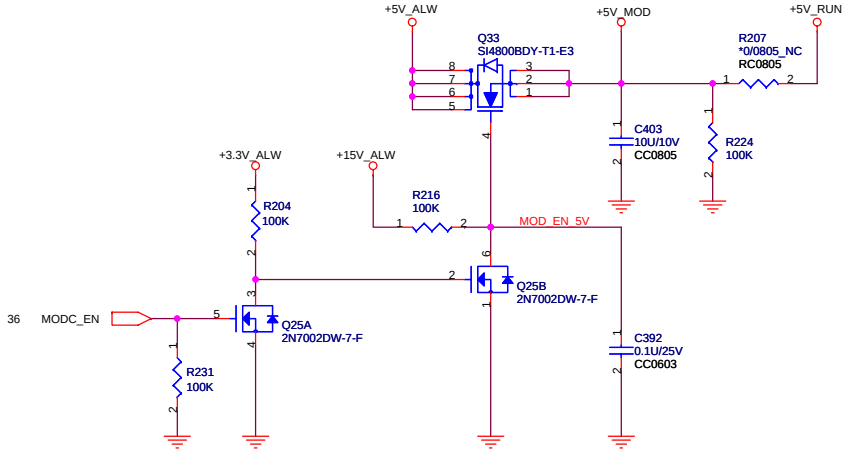


SATA ODD Connector



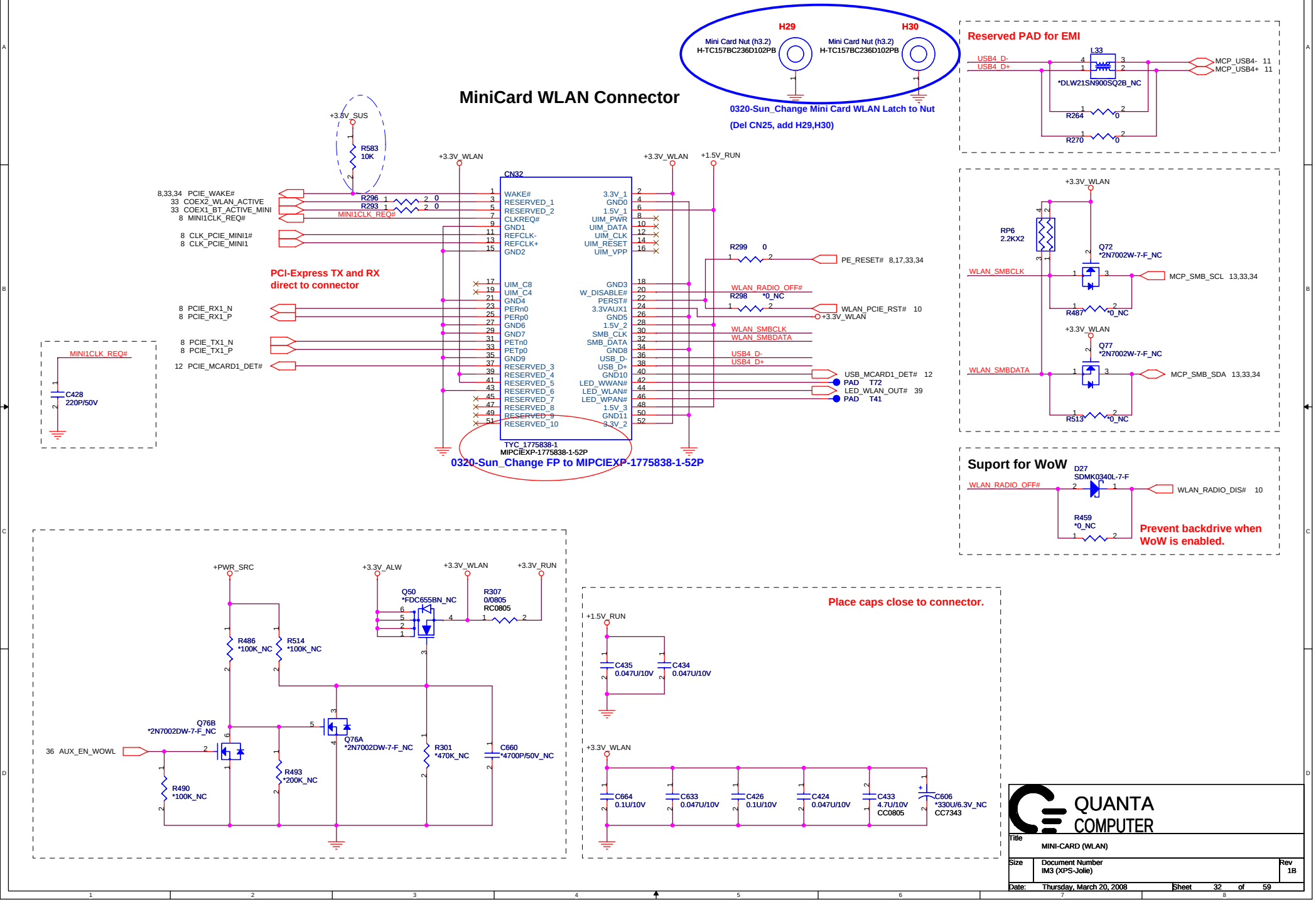
0306-Sun_Change to new footprint_sata-47639-200-13p-l





QUANTA COMPUTER		
Title: SATA (HDD&CD ROM)		
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Friday, March 21, 2008	Sheet 31 of 59	

MiniCard WLAN Connector



QUANTA COMPUTER

Title	MINI-CARD (WLAN)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1B
Date: Thursday, March 20, 2008	Sheet 32 of 59	

MiniCard Robson, BT. UWB Connector

CN30
TYC_JXJM6001
MIPCIEXP-1775837-1-SKT

CN28
TYC_1775838-1
MIPCIEXP-1775838-1-52P

PCI-Express TX and RX direct to connector

0318-Sun_Correct Nut footprint as "H-TC157BC236D102PB"

0229-Sun_Change Mini Card WWAN Latch to Nut (Del CN31, add H27,H28)

Mini Card Nut
H28
H27
Mini Card Nut (h3.2) H-TC157BC236D102PB
Mini Card Nut (h3.2) H-TC157BC236D102PB

MiniCard WWAN Connector

CN29
TYC_1775838-1
MIPCIEXP-1775838-1-52P

0317-Sun_Reserve damping RES on SIM clock & DATA (Place close to CN29)

0306-Sun_Change to new footprint_simcard-2wm610c1c-dd-7f-6p

CN17
2WM610C1C-DD-7F
simcard-2wm610c1c-dd-7f-6p

Place as close as possible to JMINI connector

Reserve For EMI

L32
*DLW21SN900SQ2B_NC

Layout Note:
R240 and R244 close to choke as possible to minimize stubs.

Reserve For EMI

L31
*DLW21SN900SQ2B_NC

Layout Note:
R240 and R244 close to choke as possible to minimize stubs.

Place caps close to connector.

Place caps close to connector.

Title	MINI-CARD (WWAN,WPAN)
Size	Document Number: IM3 (XPS-Jolie)
Rev	1A
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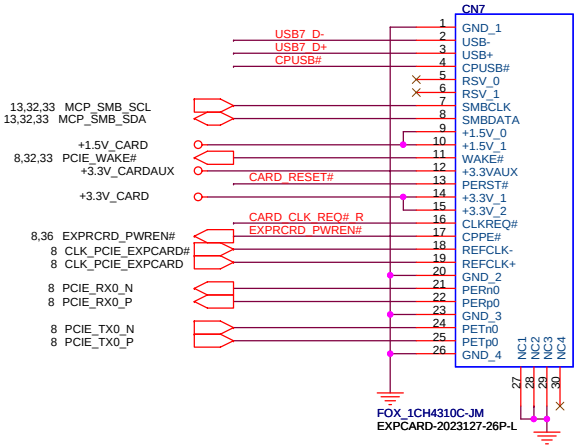
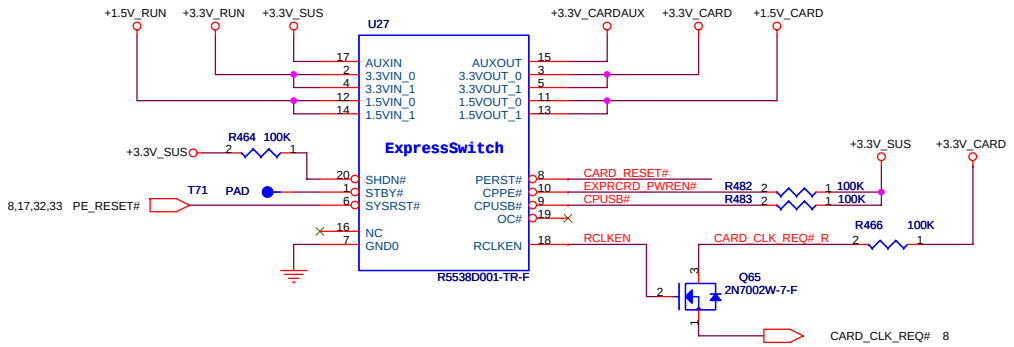
QUANTA COMPUTER

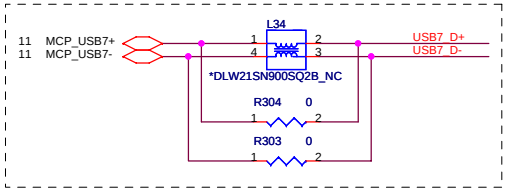
Express Card

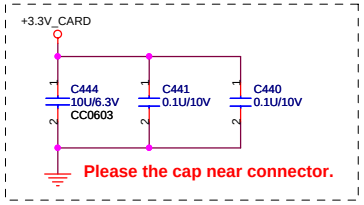
+1.5V_CARD Max. 650mA, Average 500mA.
+3V_CARD Max. 1300mA, Average 1000mA.

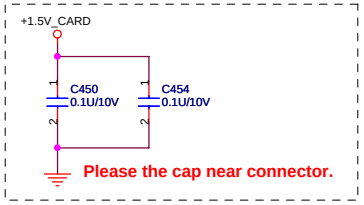


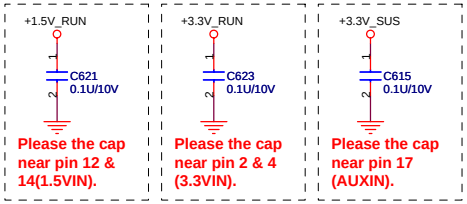


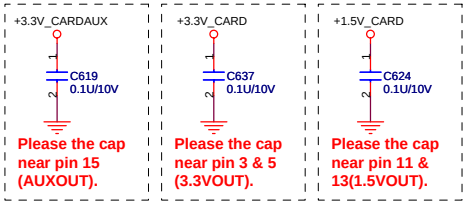
PCI-Express TX and RX direct to connector.











QUANTA COMPUTER

Title	ExpressCard	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
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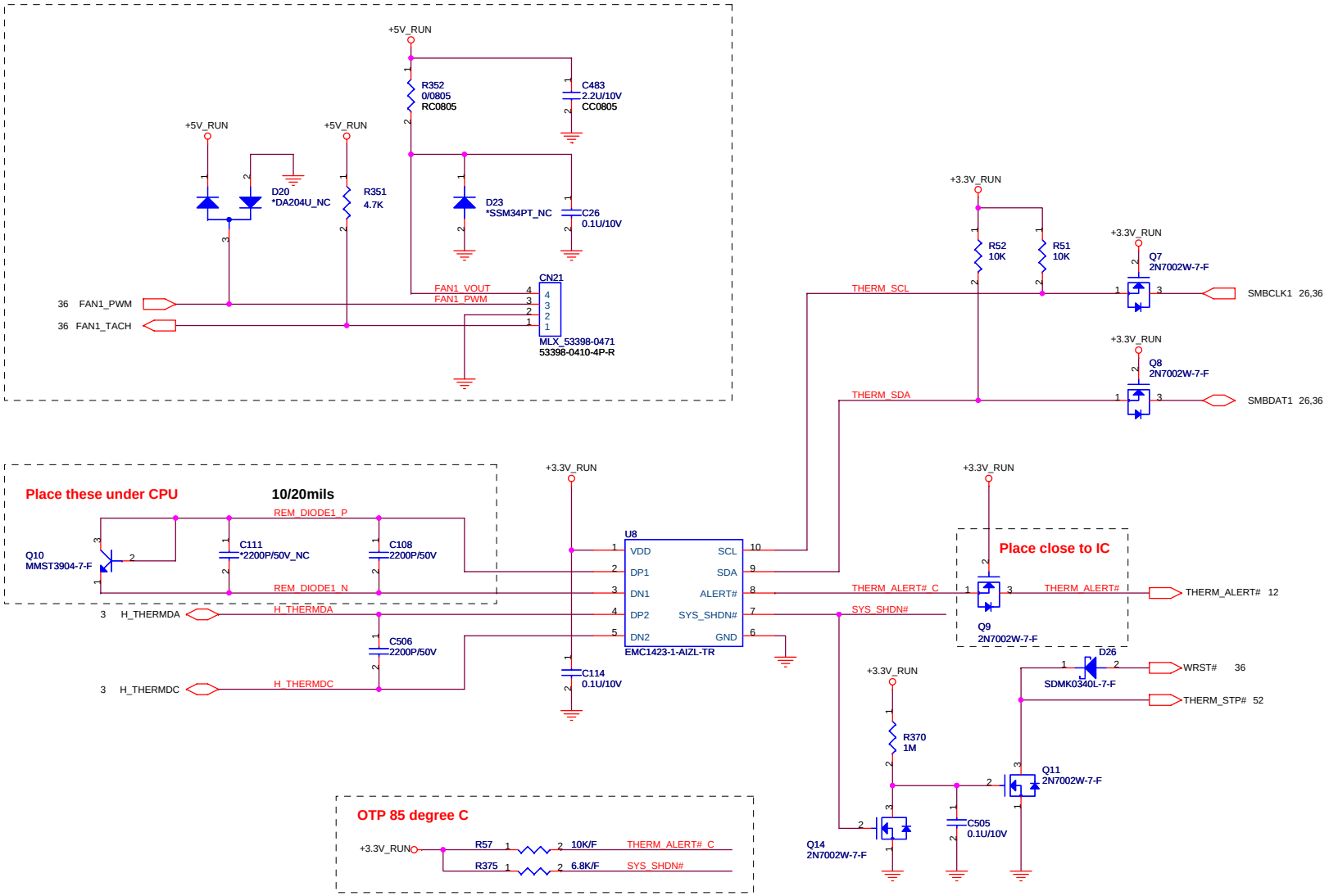

Title	FAN & THERMAL	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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QUANTA COMPUTER

ITE8512E LQFP-128L

U32

0313-Sun_Reserve 220P on MCP_KBRDRSTIN#

0305-Sun_Change ITE8512 pin22 I/P to HDA_RESET#

0102-Sun_Add isolation diode on MCP_PME#

0310-Sun_Remove T75 and connect GPB0 to ESATA_DETECT#.

0229-Sun_Del BAT_LED2#

0310-Sun_Remove 10K ohm on SIO_SLP_S5# to +3.3V_ALW. (Remove R485)

0314-Sun_Add pull up RES on LID_SW# to +3.3V_ALW

0314-Sun_Reserve 10K pull-up on SIO_SLP_S3# & SIO_SLP_S5#.

0314-Sun_Add bypass capacitor on PWRGD_SW to absorb glitch from EC when +3.3V_ALW up.

0314-Sun_Change Board ID to 001 for PT.

Charge and BAT

LCD and Thermal

GPU_Thermal and Media button

Default is pull-up

ITE8512IX pin12 connect to GND.
ITE8512JX pin12 connect to 0.1uF.

Place these caps close to ITE8512.

ITE8512E
LQFP128-16X16-4-FX2

Board ID Straps

Discrete BID2 BID1 BID0

UMA

BID2	BID1	BID0	XPS (UMA)	XPS (Dis)
0	0	0	SSI (X00)	SSI (X00)
0	0	1	PT (X01)	PT (X01)
0	1	0	ST (X02)	ST (X02)
0	1	1	QT (A00)	QT (A00)
0	0	0	(A01)	(A01)
0	0	1		

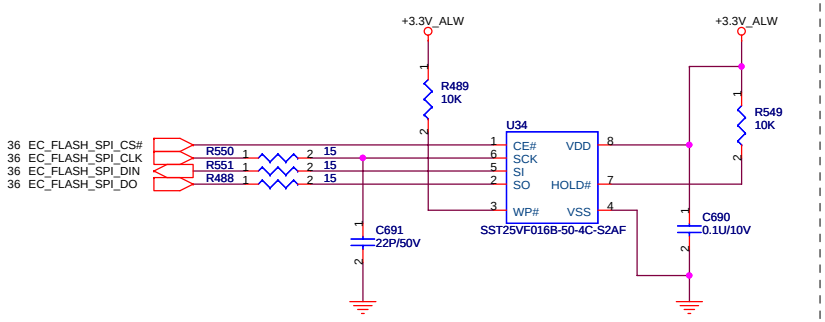
VGA_IDENTIFY : USB_SIDE_EN#
1 = Discrete Gfx / 0 = UMA.

32KHz Clock

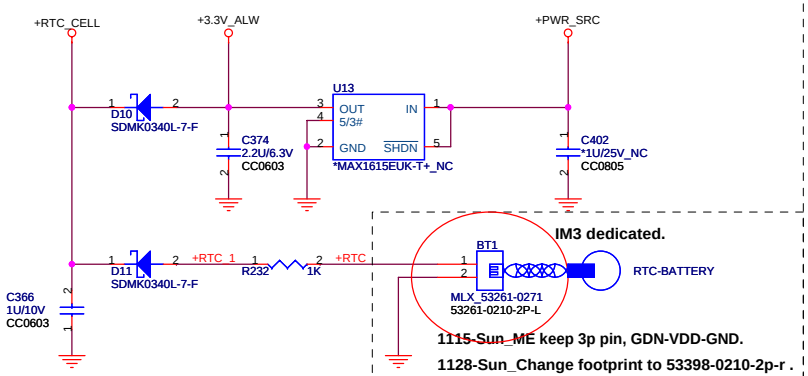
QUANTA COMPUTER

Title	SIO(ITE8512)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1B
Date: Friday, March 21, 2008	Sheet 36 of 59	

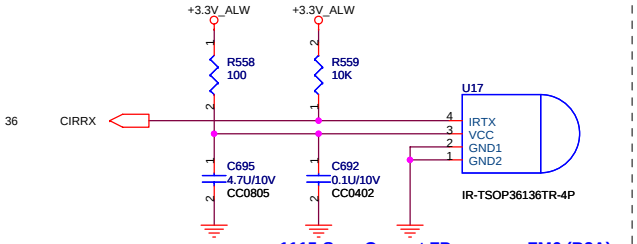
16Mbit (2M Byte), SPI



RTC BATTERY



Consumer IR



QUANTA COMPUTER

Title	FLASH & RTC	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Monday, March 24, 2008	Sheet 37 of 59	

0306-Sun_Change CN6 to 34pin "gb5rf341-1203-7f-34p-l"
0314-Sun_Change CN6 to 32pin "gb5rf341-1203-7f-32p-l"

BREATH_PWRLED_BOT:
Solid = System On, Normal Activity; "Breathing" = System in Standby; Off = System Off (or in Hibernate)

Power Button
39 BAT1_AMB_LED
39 PWRLED_SW
+3.3V_RUN
+1.8V_RUN
POWER_SW_IN0#

Biometric
11 MCP_USB10-
11 MCP_USB10+

Speaker
43 AUD_SPK_L1
43 AUD_SPK_L2
43 AUD_SPK_R1
43 AUD_SPK_R2

KB LED
+15V_ALW
36 KB_BACKLITE_EN
+5V_RUN

Touch Pad
36 DAT_TP_SIO
36 CLK_TP_SIO
+3.3V_ALW
36 LID_SW#

Media Button
19,36 SMBDAT2
+5V_ALW
+5V_ALW2
19,36 SMBCLK2
36 MEDIA_INT#

CN6
HEADER 32
gb5rf341-1203-7f-32p-l

0311-Touch Pad:
1. Connect +3.3V_ALW to TP connector on D/B.
2. Inform TP vendor to change design.

Power Buttom

+3.3V_ALW
+3.3V_ALW
D30
*DA204U_NC
R479
100K
R480
10K
POWER_SW_IN0#
MAIN_PWR_SW# 36
C628
1U/10V
CC0603

KEYBOARD CONNECTOR

36 KSO[0..16]
36 KSI[0..7]
36 KB_DET#
CN9
KSI7 KSI6 KSI4 KSI2 KSI5 KSI1 KSI3 KSI0 KSO5 KSO4 KSO7 KSO6 KSO8 KSO3 KSO1 KSO2 KSO0 KSO12 KSO16 KSO15 KSO13 KSO14 KSO9 KSO11 KSO10 CAP_LED_L
GND1
GND2
FH28-60(30)SB-1SH(05)
FH28-30SB-1SH-30P-R

+3.3V_ALW
+3.3V_ALW
+5V_RUN
R511
100K
36 CAP_LED#
Q78
2N7002W-7-F
Q80
DDTA114YUA-7-F
47K
16K
R533
220
CAP_LED_L

0310-Sun_CAP_LED
+5V_ALW2 change to +5V_RUN

CP2 *100PX4_NC: KSI1 KSI3 KSI0 KSO5
CP1 *100PX4_NC: KSI6 KSI4 KSI2 KSI5
CP4 *100PX4_NC: KSO3 KSO1 KSO2 KSO0
CP3 *100PX4_NC: KSO4 KSO7 KSO6 KSO8
CP6 *100PX4_NC: KSO14 KSO9 KSO11 KSO10
CP5 *100PX4_NC: KSO12 KSO16 KSO15 KSO13
50 NPO 1206
C707 *100P/50V_NC KSI7

100P CAPS CLOSE TO JKB1

Array Microphone & Camera

+3.3V_RUN
+3.3V_RUN
+3.6V_RUN
R64 100K
L12 BLM11A05S RC0603
L11 *BLM11A05S_NC RC0603
R65 0
R66 0
L10 *DLW21SN900SQ2B_NC
11 MCP_USB11+
11 MCP_USB11-
42 DMIC_DATA
42 DMIC_CLK
36 CAMERA_CBL_DET#
R68 0/0603 RC0603
R67 0/0603 RC0603
USB11_D+
USB11_D-
CAM_VCC
DMIC_DATA_R
DMIC_CLK_R
C83 10U/10V CC0805
C82 *33P/50V_NC
C98 *33P/50V_NC

GND,VCC要用最粗的電子線

CN3
IPEX coaxial
20374-010e-10p-l

0306-Sun_Change CCD connector to 10pin

+5V_RUN
U11
IN OUT EN GND NC/FB
*TPS76301DBVR_NC
+3.6V_RUN
C137 *1U/10V_NC CC0603
R94 *100K/F_NC
C106 *27P/50V_NC
R95 *49.9K/F_NC
C102 *4.7U/6.3V_NC CC0603

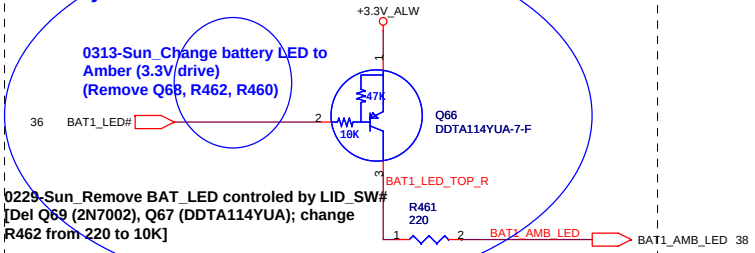
QUANTA COMPUTER

Title	USER INTERFACE/CIR	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 38 of 59	

Battery status

0313-Sun_Change battery LED to Amber (3.3V drive) (Remove Q68, R462, R460)

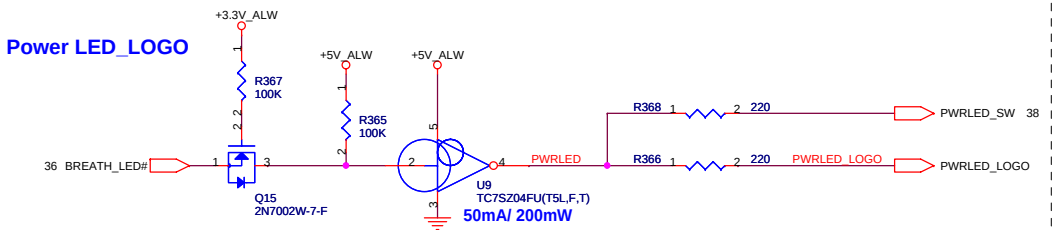
0229-Sun_Remove BAT_LED controled by LID_SW# [Del Q69 (2N7002), Q67 (DDTA114YUA); change R462 from 220 to 10K]



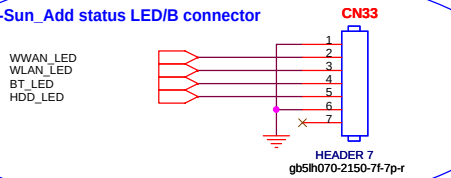
0229-Sun_Del BAT_LED2
[Del R295,Q48,Q43 (2N7002) and Q46,Q47 (DDTA114YUA)]

0229-Sun_Change PWRLED_SW control same as PWRLED_LOGO
[Del U10 (TC7SZ04F), Q16 (2N7002)]

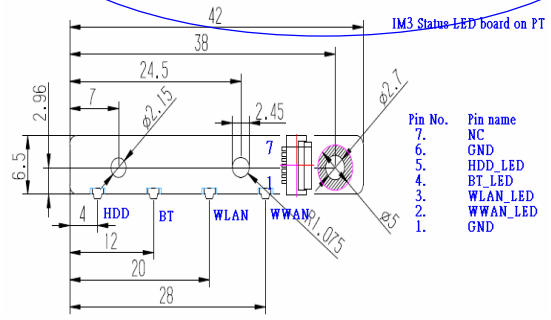
Power LED_LOGO



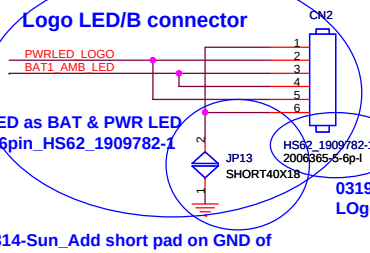
0306-Sun_Add status LED/B connector



0229-Sun_Remove LED control by LID_SW#
(Del R478,R477,Q75)



Logo LED/B connector



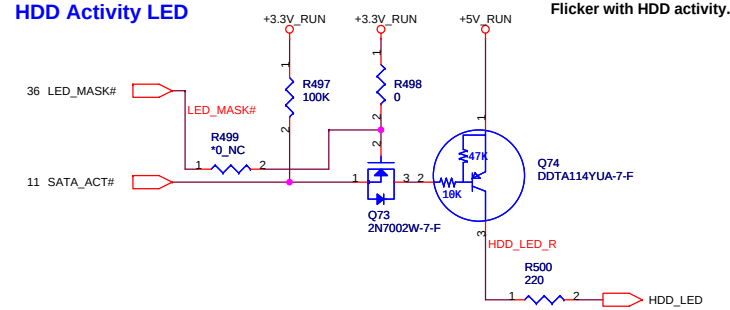
0306-Sun_Change Logo LED as BAT & PWR LED and change connector to 6pin_HS62_1909782-1

0319-Sun_Update Footprint of LOgo LED/B connector

0314-Sun_Add short pad on GND of Logo LED/B connector for EMI request.

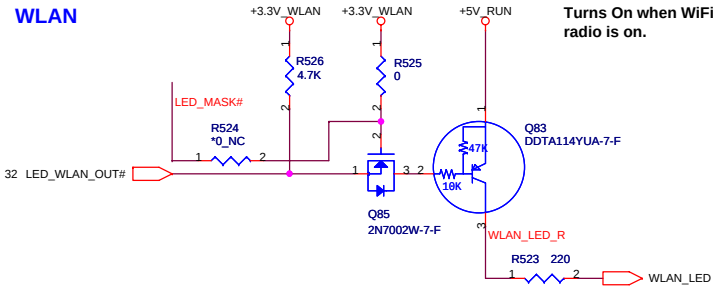
HDD Activity LED

Flicker with HDD activity.



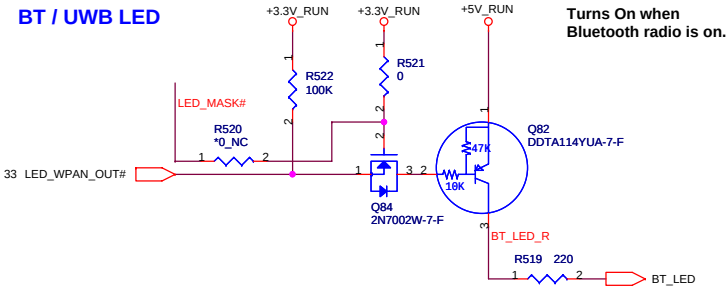
WLAN

Turns On when WiFi radio is on.



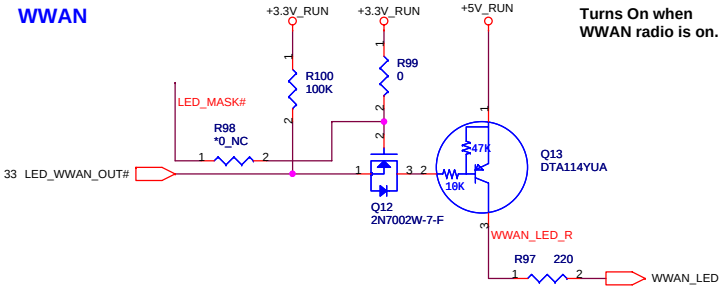
BT / UWB LED

Turns On when Bluetooth radio is on.

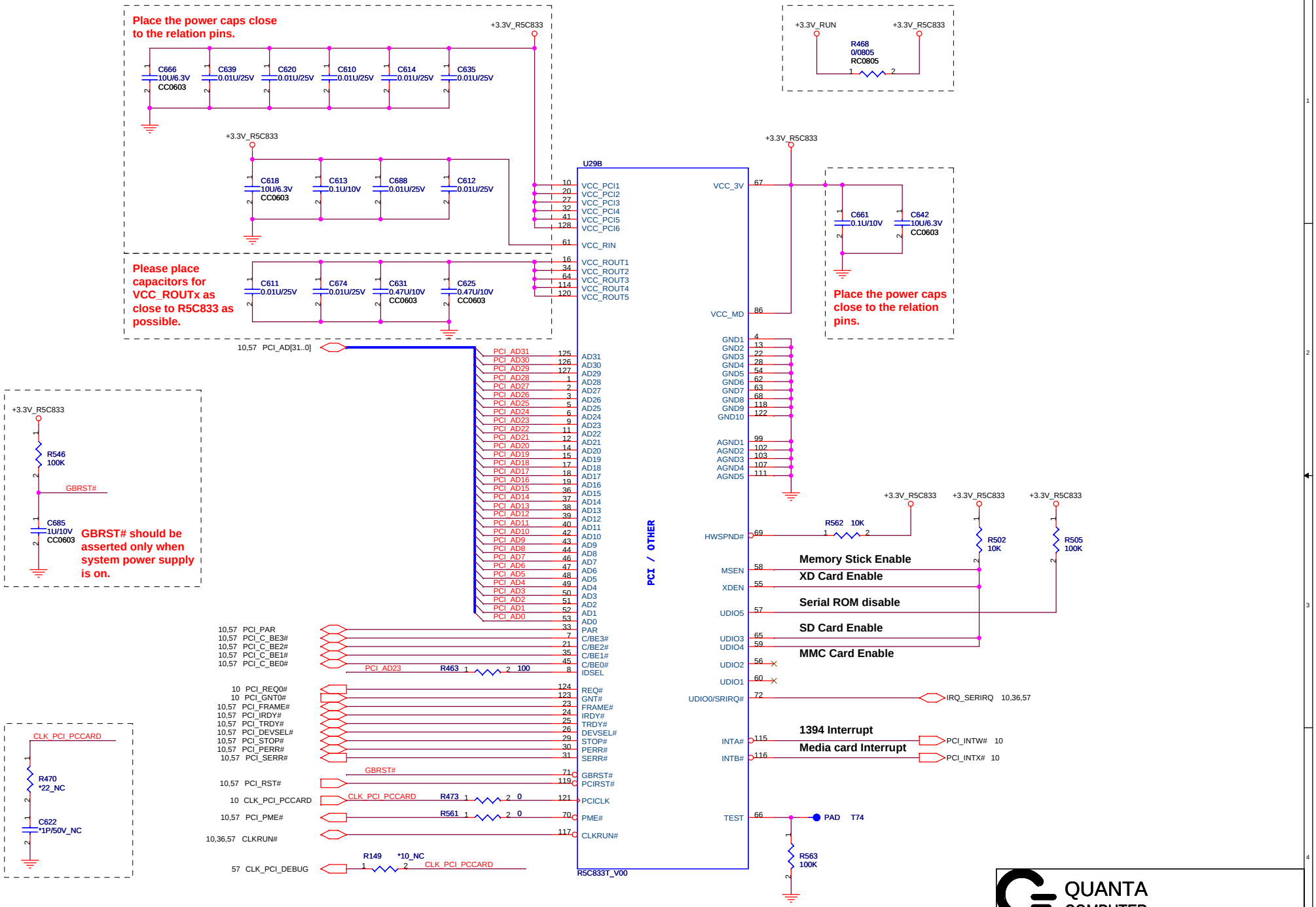


WWAN

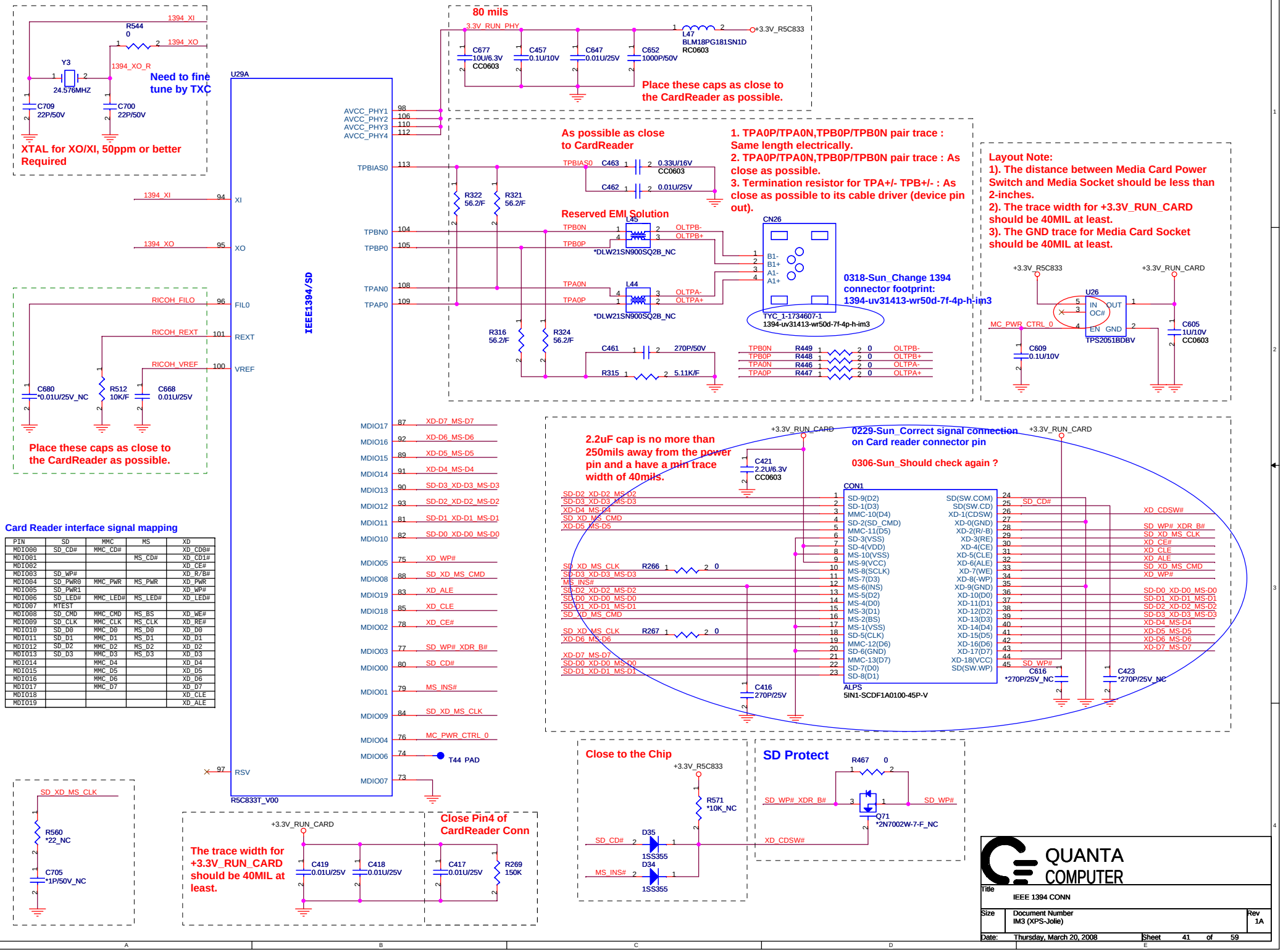
Turns On when WWAN radio is on.



QUANTA COMPUTER		
Title: LED		
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Thursday, March 20, 2008	Sheet 39 of 59	

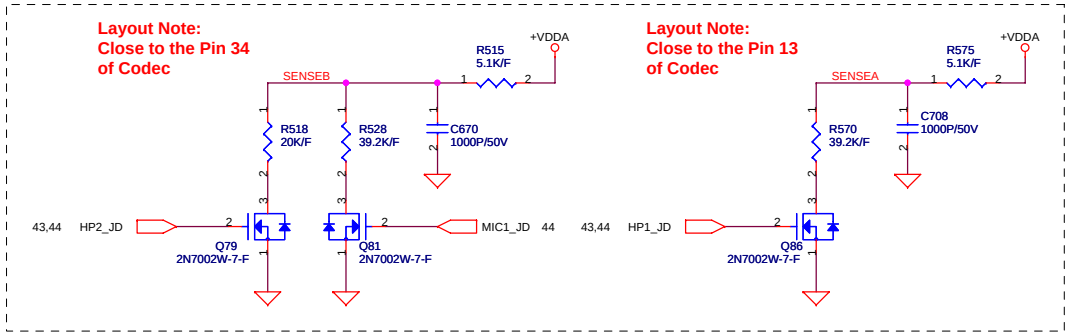


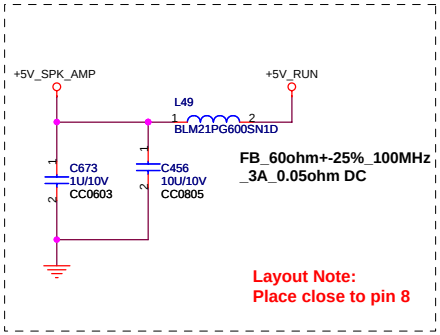
QUANTA COMPUTER		
Title	CARDREADER FOR 8 IN 1 CONTROLLER	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 40 of 59	

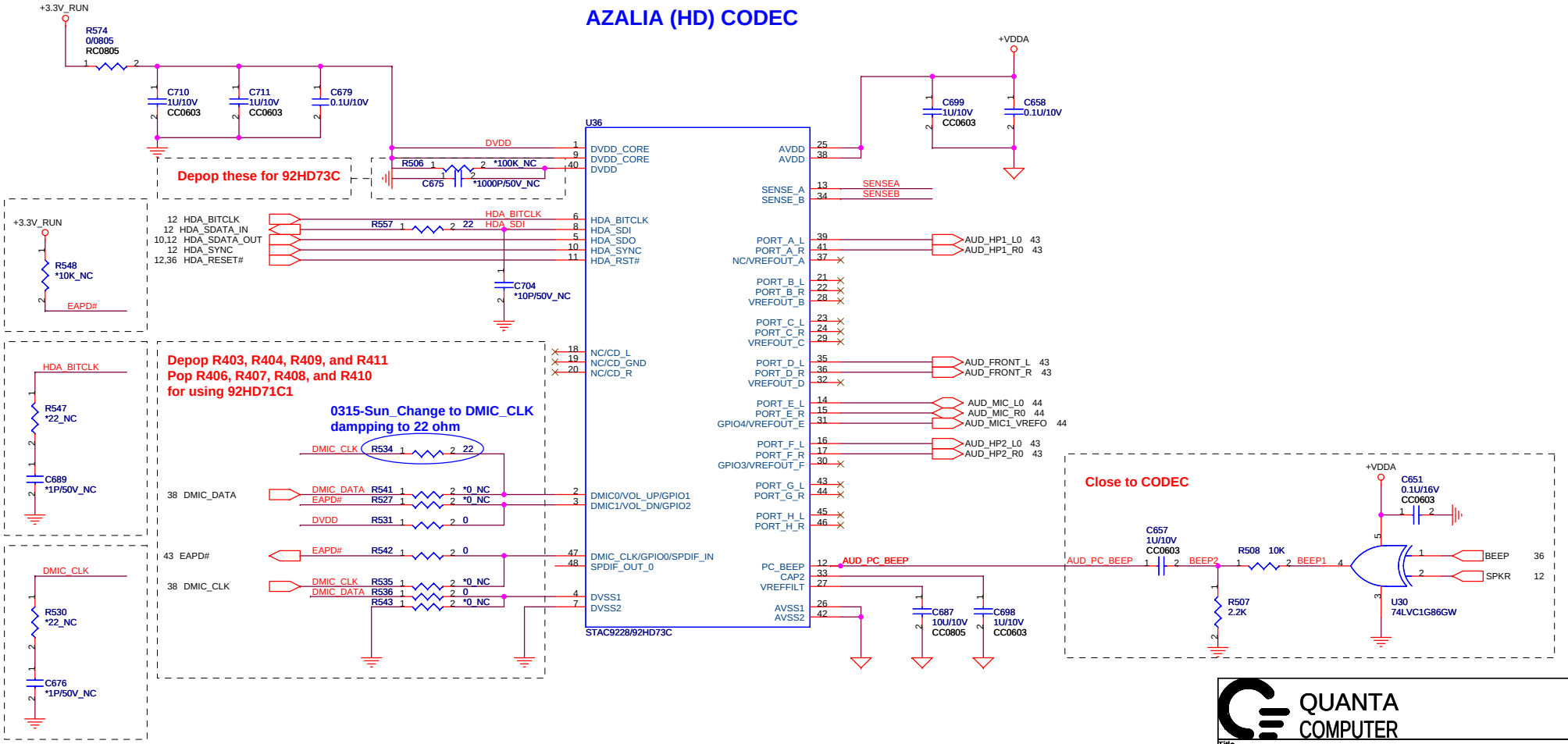


PIN	SD	MMC	MS	XD
MDIO00	SD_CD#	MMC_CD#		XD_CD0#
MDIO01			MS_CD#	XD_CD1#
MDIO02				XD_CE#
MDIO03	SD_WP#			XD_R/B#
MDIO04	SD_PWR0	MMC_PWR	MS_PWR	XD_PWR
MDIO05	SD_PWR1			XD_WP#
MDIO06	SD_LED#	MMC_LED#	MS_LED#	XD_LED#
MDIO07	MTEST			
MDIO08	SD_CMD	MMC_CMD	MS_BS	XD_WE#
MDIO09	SD_CLK	MMC_CLK	MS_CLK	XD_RE#
MDIO10	SD_D0	MMC_D0	MS_D0	XD_D0
MDIO11	SD_D1	MMC_D1	MS_D1	XD_D1
MDIO12	SD_D2	MMC_D2	MS_D2	XD_D2
MDIO13	SD_D3	MMC_D3	MS_D3	XD_D3
MDIO14		MMC_D4		XD_D4
MDIO15		MMC_D5		XD_D5
MDIO16		MMC_D6		XD_D6
MDIO17		MMC_D7		XD_D7
MDIO18				XD_CLE
MDIO19				XD_ALE

AZALIA (HD) CODEC

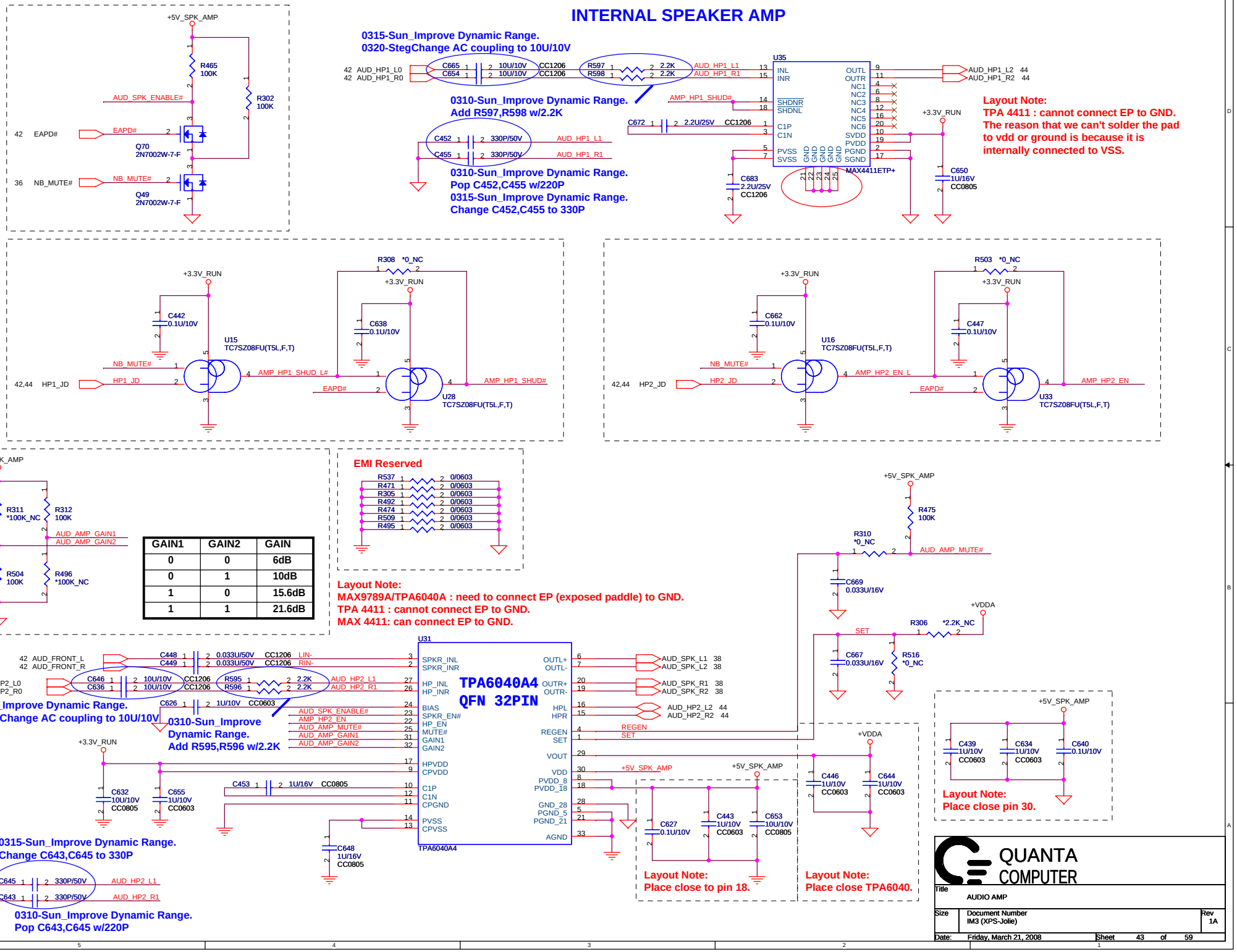






QUANTA COMPUTER			
Title: Azelia CODEC			
Size	Document Number: IM3 (XPS-Jolie)		Rev: 1A
Date: Friday, March 21, 2008		Sheet 42 of 59	

INTERNAL SPEAKER AMP

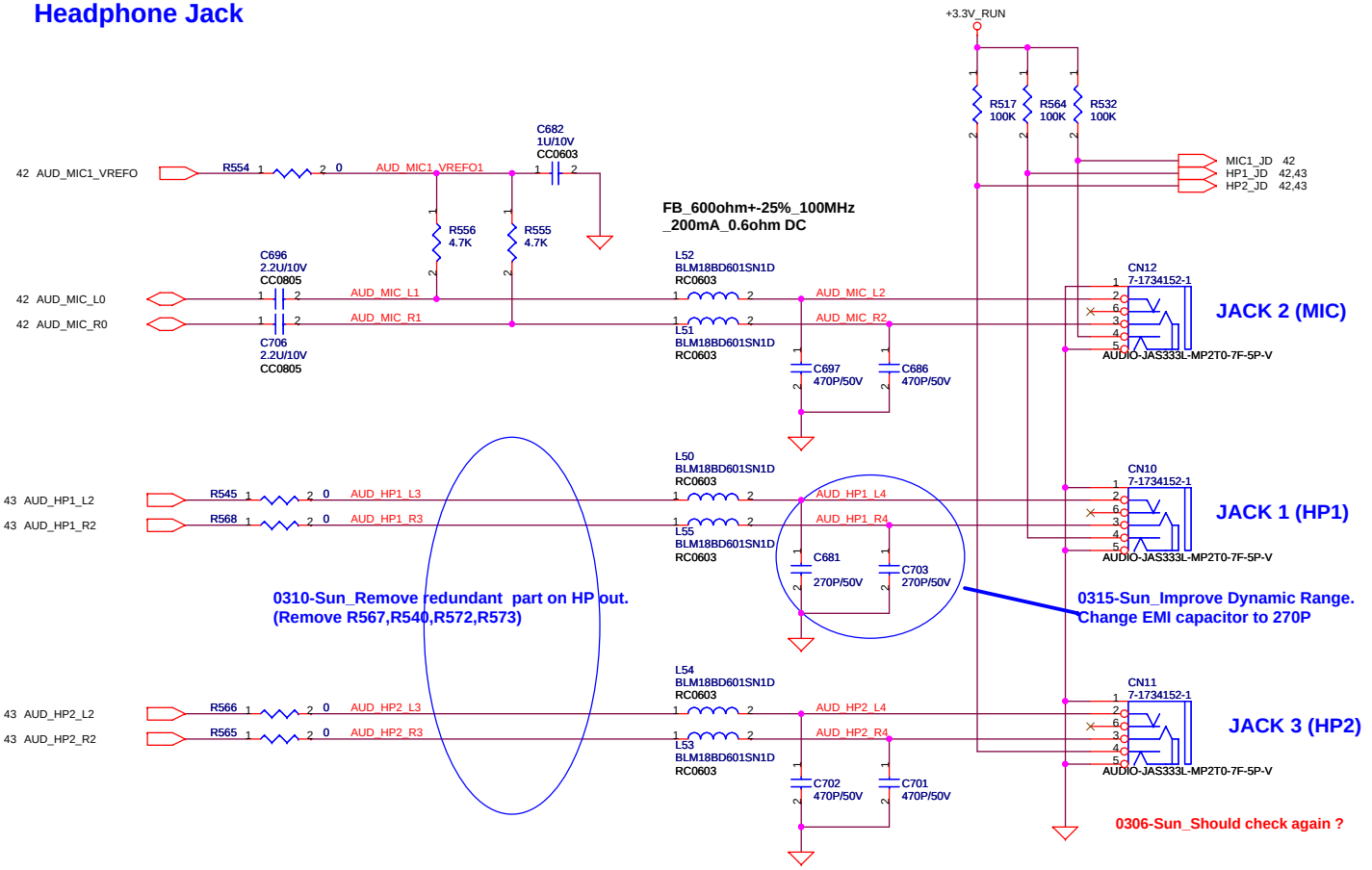


GAIN1	GAIN2	GAIN
0	0	6dB
0	1	10dB
1	0	15.6dB
1	1	21.6dB

QUANTA COMPUTER

Title	AUDIO AMP	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Friday, March 21, 2008	Sheet 43 of 59	

Headphone Jack



QUANTA COMPUTER

Title	AUDIO CONN	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Friday, March 21, 2008	Sheet 44 of 59	

Layout Note:
1.Use 50 ohm impedance for all trace.
2. Trace length matched to a tolerance of 9.8mm in order to keep the skew between signals less than 0.07ns.
3.The receive and transmit signals kept away from each other and other analog and clock signals to reduce crosstalk.

Reserved EMI
0319-Sun_Pop 6.8P on LAN bus

TRD0+ TRD0- TRD1+ TRD1-
C490 6.8P/50V C491 6.8P/50V C486 6.8P/50V C487 6.8P/50V
TRD2+ TRD2- TRD3+ TRD3-
C502 6.8P/50V C503 6.8P/50V C492 6.8P/50V C495 6.8P/50V

U19
B5071A2KFBG
PHY
100 BALL BGA

9 RGMII_TXCLK
9 RGMII_TXCTL
9,12 RGMII_TXD0
9 RGMII_TXD1
9 RGMII_TXD2
9 RGMII_TXD3
A7 GTXCLK
A8 TX_EN
A9 TX_ER
C7 TXD[0]
C8 TXD[1]
B6 TXD[2]
B7 TXD[3]
B8 TXD[4]
B9 TXD[5]
B10 TXD[6]
A10 TXD[7]
C6 TXC

0319-Sun_Change RGMII_RXCLK damping RES to 22 ohm for EMI

9 RGMII_RXCLK
9 RGMII_RXCTL
RGMII_RXCLK R63 22 RGMII_RXCLK_C
RGMII_RXCTL R152 0 RGMII_RXCTL_C
A2 RXC
B2 RX_DV
A1 RX_ER
D5 COL
E5 CRS

9 RGMII_RXD0
9 RGMII_RXD1
9 RGMII_RXD2
9 RGMII_RXD3
D4 RXD[0]
D3 RXD[1]
C3 RXD[2]
C4 RXD[3]
C5 RXD[4]
B5 RXD[5]
B4 RXD[6]
B3 RXD[7]

9 RGMII_MDC
9 RGMII_MDIO
RGMII_MDIO
E3 MDC
E4 MDIO

9 RGMII_25MHz
F1 XTALI
0312-Sun_Remove R76 on RGMII_25MHz
T56 PAD
F2 XTALO
T55 PAD
B1 CLK_125

T6 PAD
T46 PAD
T5 PAD
T45 PAD
D6 TDI
D8 TMS
D7 TCK
F10 TDO
E10 TRST

R43 0
+3.3V_PHY R55 10K
D2 MODE_SEL[1]
H5 MODE_SEL[0]
9 RGMII_PWRDWN R31 0
36 LAN_DISABLE R33 *0_NC
F5 LOWPWR
H8 TEST0
H9 TEST1
9 RGMII_RESET# E4 RESET
0312-Sun_Remove R56 on RGMII_RESET#

A3 NC_1
A4 NC_2
E6 NC_3
E7 NC_4
E8 NC_5
E9 NC_6
F6 NC_7
F7 NC_8
F8 NC_9
F9 NC_10
G2 NC_11
G4 NC_12

TRD[0]+ K1 TRD0+ → TRD0+ 46
TRD[0]- K2 TRD0- → TRD0- 46
TRD[1]+ K4 TRD1+ → TRD1+ 46
TRD[1]- K3 TRD1- → TRD1- 46
TRD[2]+ K5 TRD2+ → TRD2+ 46
TRD[2]- K6 TRD2- → TRD2- 46
TRD[3]+ K8 TRD3+ → TRD3+ 46
TRD[3]- K7 TRD3- → TRD3- 46

LED[1] G7 SPD10LED# → SPD10LED# 46
LED[2] G6 SPD100LED# → SPD100LED# 46
LED[3] H6 PHY_ACTLED → PHY_ACTLED 46
LED[4] G10 PHY_LED[4]

REGOUT[1] F3 → +1.2V_PHY
DVDD_1 C10
DVDD_2 D1
DVDD_3 D10

AVDDL_1 J3 PHY_AVDDL
AVDDL_2 J4
VREF C1

PLLVDD F1 PHY_PLLVDD

REGOUT[2] H3 → +2.5V_PHY
AVDD_2 J8
AVDD_1 J2

BIASVDD J1 BIASVDD
XTALVDD G1 XTALVDD
RDAC H1 R369 1.24K/F

OVDD1 A5
OVDD2 A6
REGSUPPLY[1] G3 +3.3V_PHY
REGSUPPLY[2] H2 3.3V

GND_1 C2
GND_2 C9
GND_3 D9

AGND_1 J5
AGND_2 J6
AGND_3 J7
PLLGND E2

NC_13 G5
NC_14 G8
NC_15 G9
NC_16 H4
NC_17 H7
NC_18 H10 R34 *10K_NC
NC_19 J10
NC_20 J9
NC_21 K10
NC_22 K9

Pull-High: Address 1
NC : Address 0

Pace 0.1u close PHY
+3.3V_PHY
C70 0.1U/10V C68 0.1U/10V

B5071A2KFBG

Reserved EMI
RGMII_RXCLK
C79 33P/50V
0319-Sun_Pop RGMII_RXCLK capacitor w/33P for EMI

PHY_XTALI
1119-Sun_Connect to PHY pin.
R75 22
C100 10P/50V
0319-Sun_Pop AC termination on PHY_XTALI for EMI

0312-Sun_Remove R74 on PHY_XTALI.

+3.3V_PHY
R53 1.5K/F
RGMII_MDIO

+3.3V_PHY
R50 *4.7K_NC
PHY_RESET#
C76 *1P/50V_NC

0311-Sun_Add EMI bead on +3.3V_PHY. (Place on JP1)
+3.3V_RMGT +3.3V_PHY
L56 GB2012091601 RC0805
JP1 SHORT40X12
GB2012091601
Need to change L56 PN to GB2012091601
C69 10U/10V CC0805

0320-Steg_Add EMI capacitor on +3.3V_RGMT & +3.3V_PHY. (Place close to JP1/L56)
+3.3V_RMGT
C714 10P/50V C717 47P/50V C718 3300P/50V C721 0.01U/25V C722 1000P/16V
+3.3V_PHY
C730 33P/50V C731 3300P/50V C729 0.01U/25V

Auto-Negotiate 10/100/1000BASE-T
0319-Sun_Pop 3300P on SPD10LED# and SPD100LED# for EMI
SPD10LED#
PHY_LED[4]
PHY_ACTLED
C732 33P/50V R48 4.7K R35 33P/50V R42 3300P
0311-Sun_Add EMI capacitor on PHY_ACTLED (Place close to CN20)

+1.2V_PHY
1.2V
Pace 0.1u close DVDD pins
Pace 10u close pin F3 "REGOUT[1]"
C62 0.1U/10V C67 0.1U/10V C73 0.1U/10V C85 10U/10V CC0805

1.2V
PHY_AVDDL
Pace close AVDDL pins
L16 BLM18AG601SN1D
C80 0.1U/10V C78 0.1U/10V C104 10U/10V CC0805

1.2V
PHY_PLLVDD
L15 BLM18AG601SN1D
C97 0.1U/10V C90 10U/10V CC0805

Layout Note:
Locate the RDAC resistor as close to the RDAC pin as possible and keep the trace between the pin and resistor and short and wide as possible.

+2.5V_PHY
2.5V
Pace 10u close pin H3 "REGOUT[2]"
C64 0.1U/10V C60 0.1U/10V C485 10U/10V CC0805

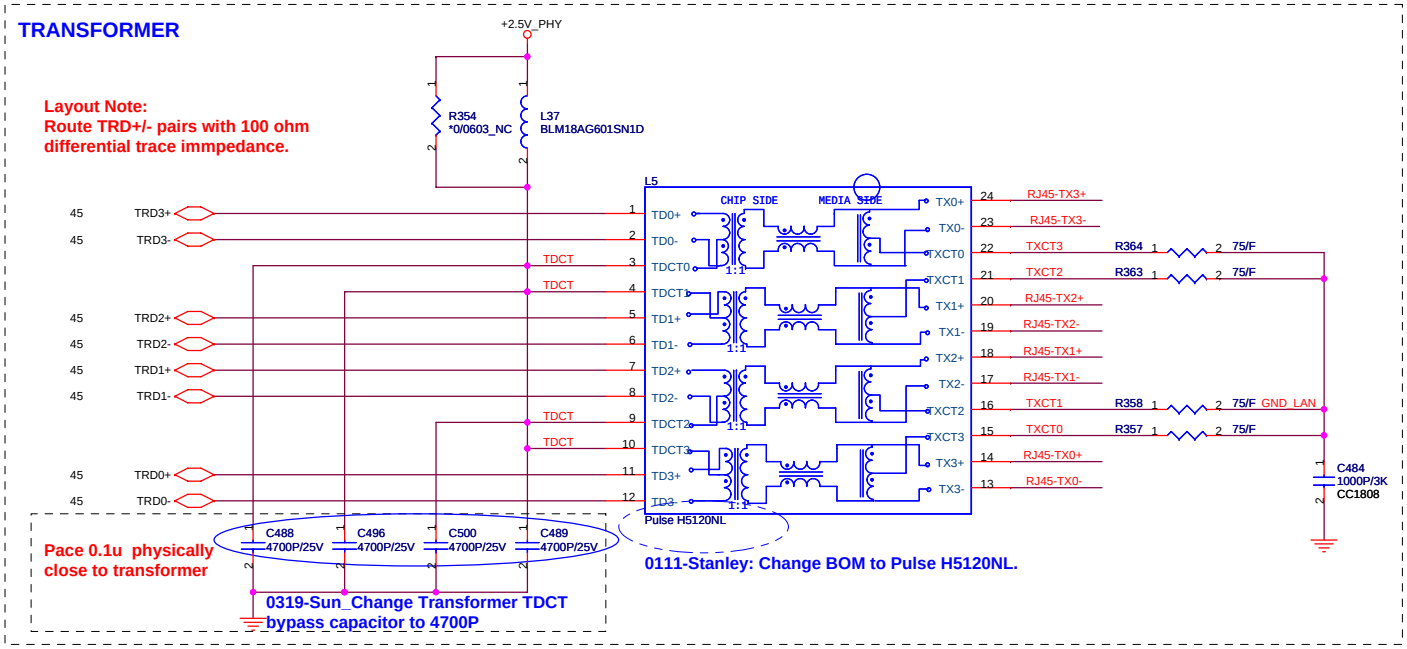
2.5V
BIASVDD
L17 BLM18AG601SN1D
C99 0.1U/10V

2.5V
XTALVDD
L14 BLM18AG601SN1D
C95 0.1U/10V

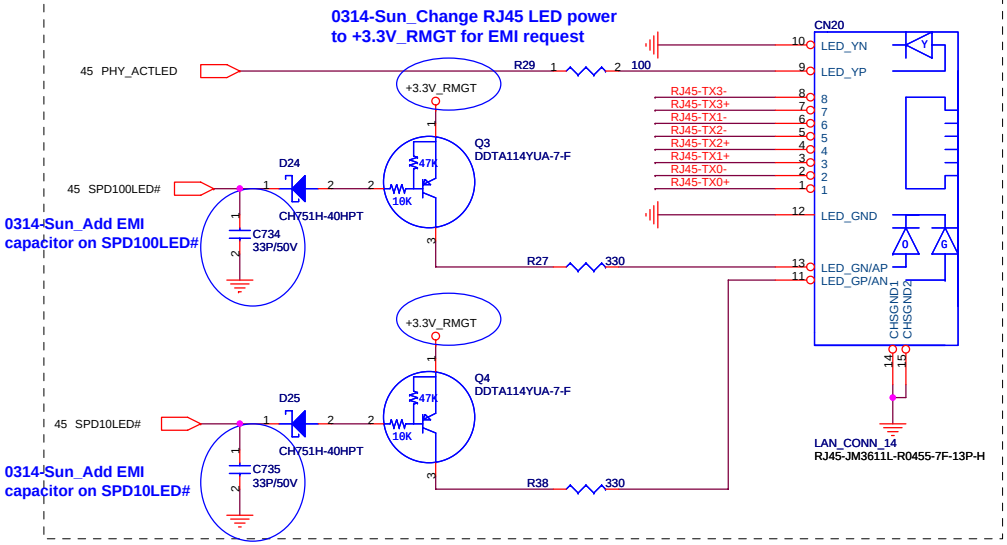
QUANTA COMPUTER

Title	LAN Broadcom PHY B5071	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 45 of 59	

TRANSFORMER

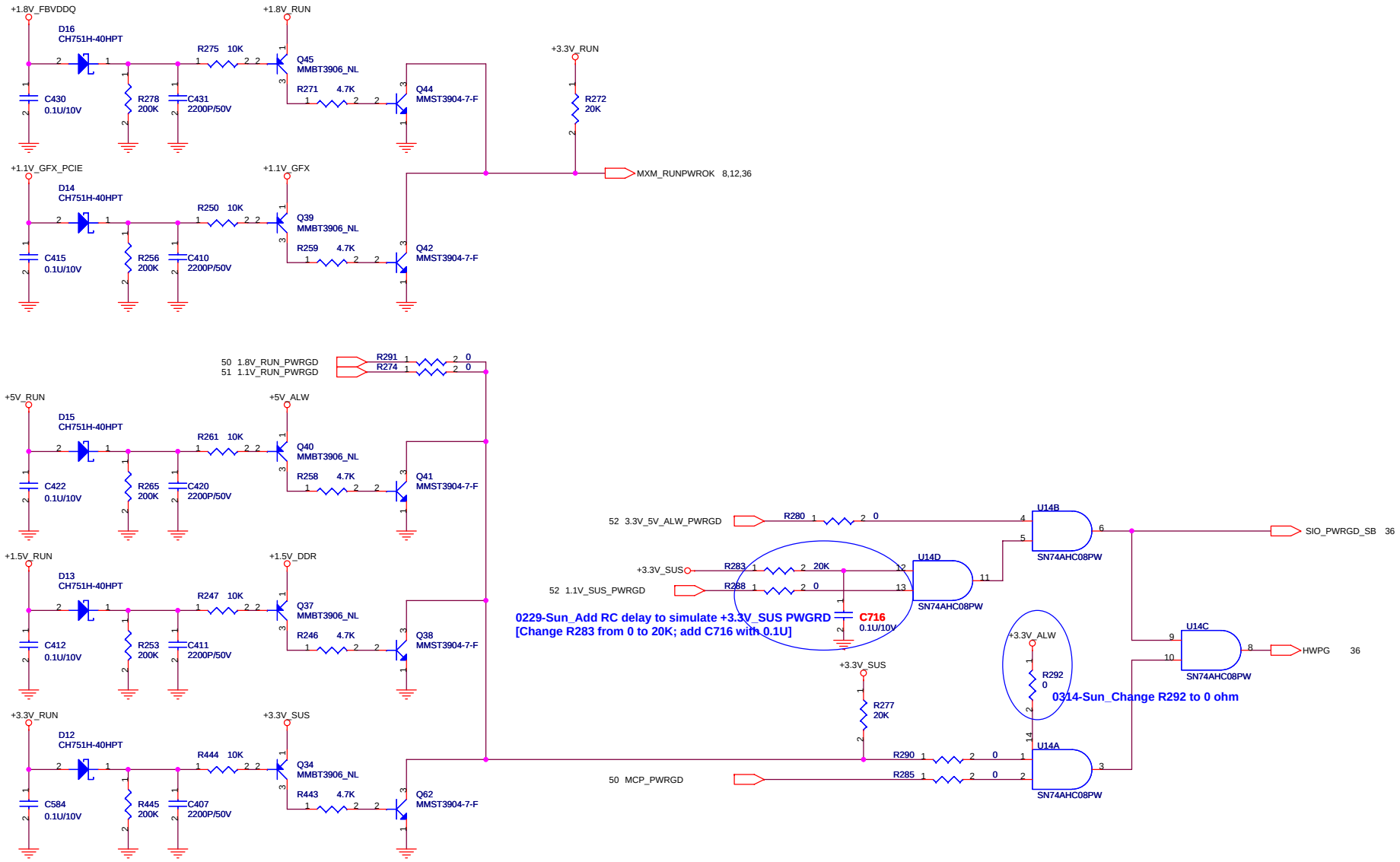


RJ-45 Connector

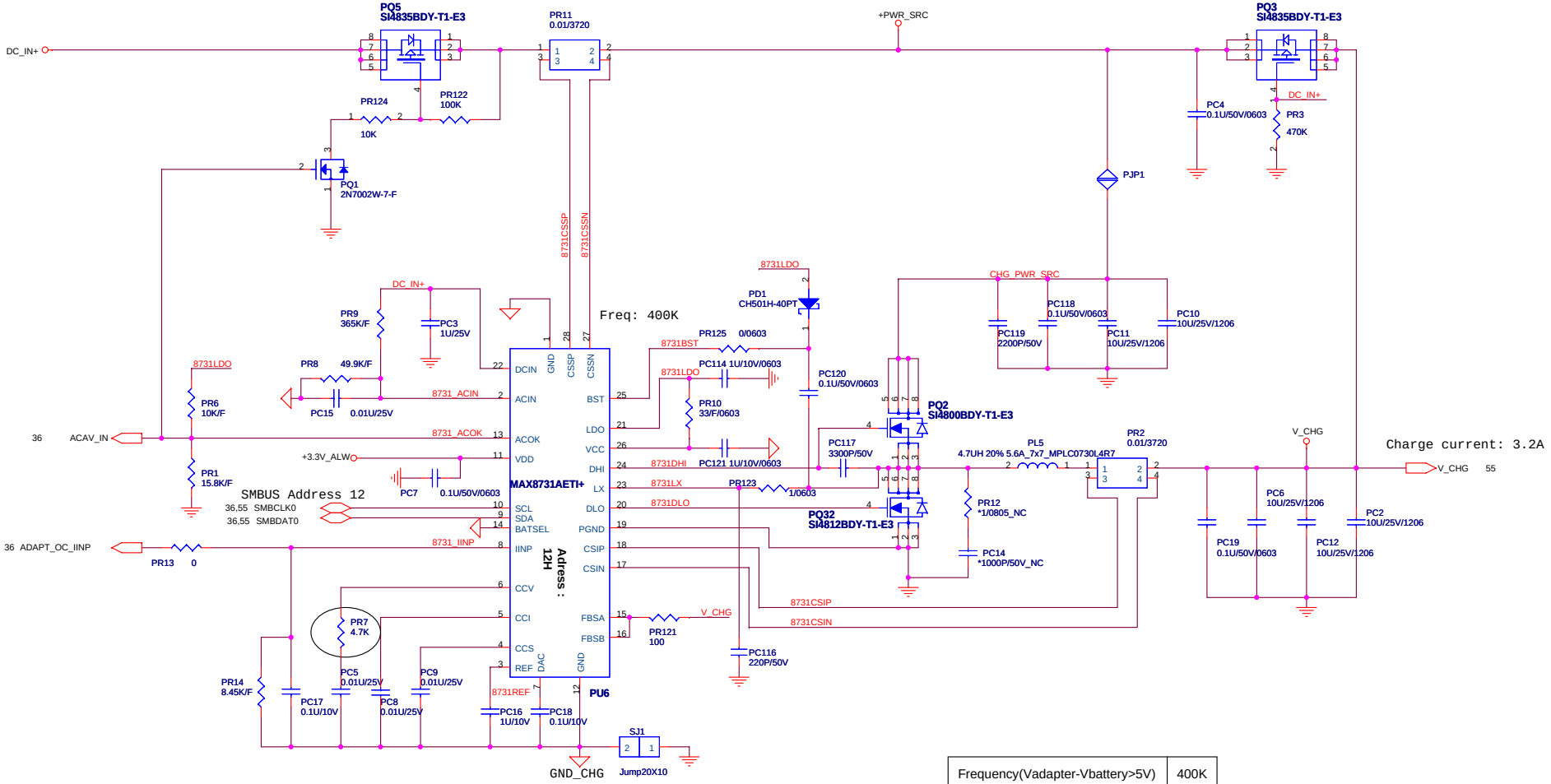


QUANTA COMPUTER

Title	LAN SWITCH	
Size	Document Number IM3 (XPS-Jolie)	Rev 1B
Date: Friday, March 21, 2008	Sheet 46 of 59	



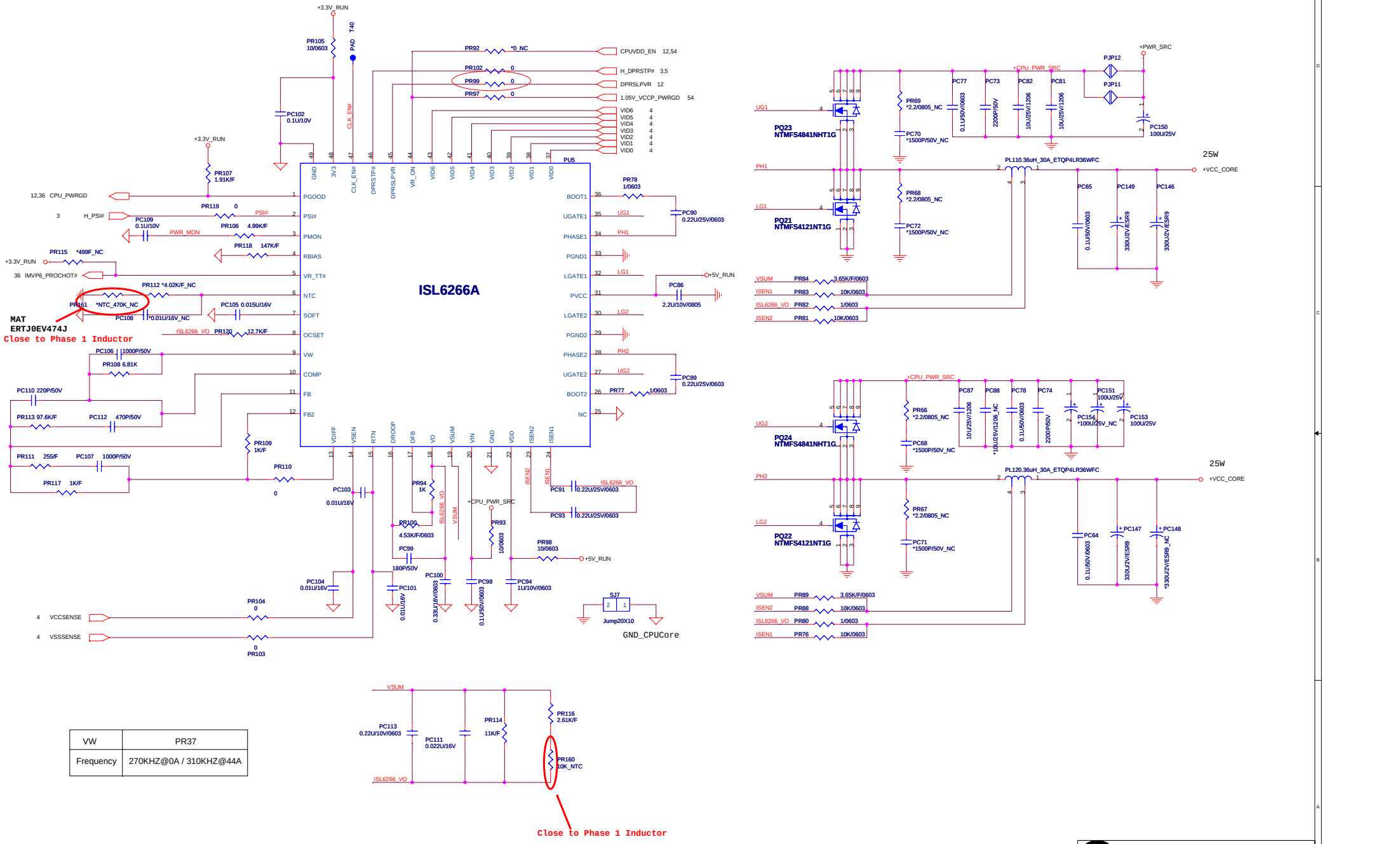
QUANTA COMPUTER		
Title	System Reset Circuit	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Friday, March 21, 2008	Sheet 47 of 59	



Frequency(Vadapter-Vbattery>5V)	400K

QUANTA COMPUTER

Title	CHARGER	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: 2005/4/21	Sheet 48 of 59	



VW	PR37
Frequency	270KHZ@0A / 310KHZ@44A

QUANTA COMPUTER

Title	CPU_Core_2Phase (ISL6266)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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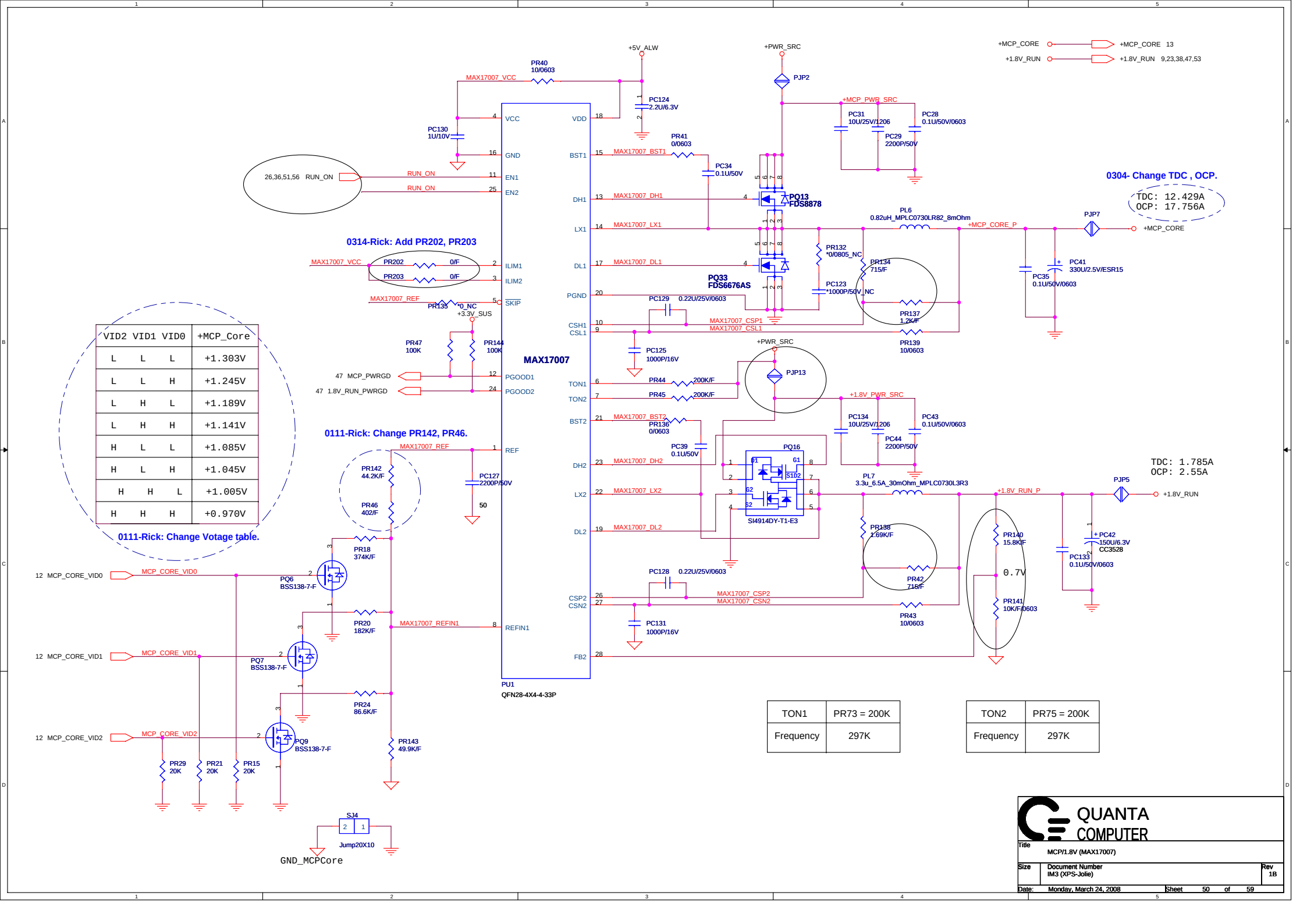
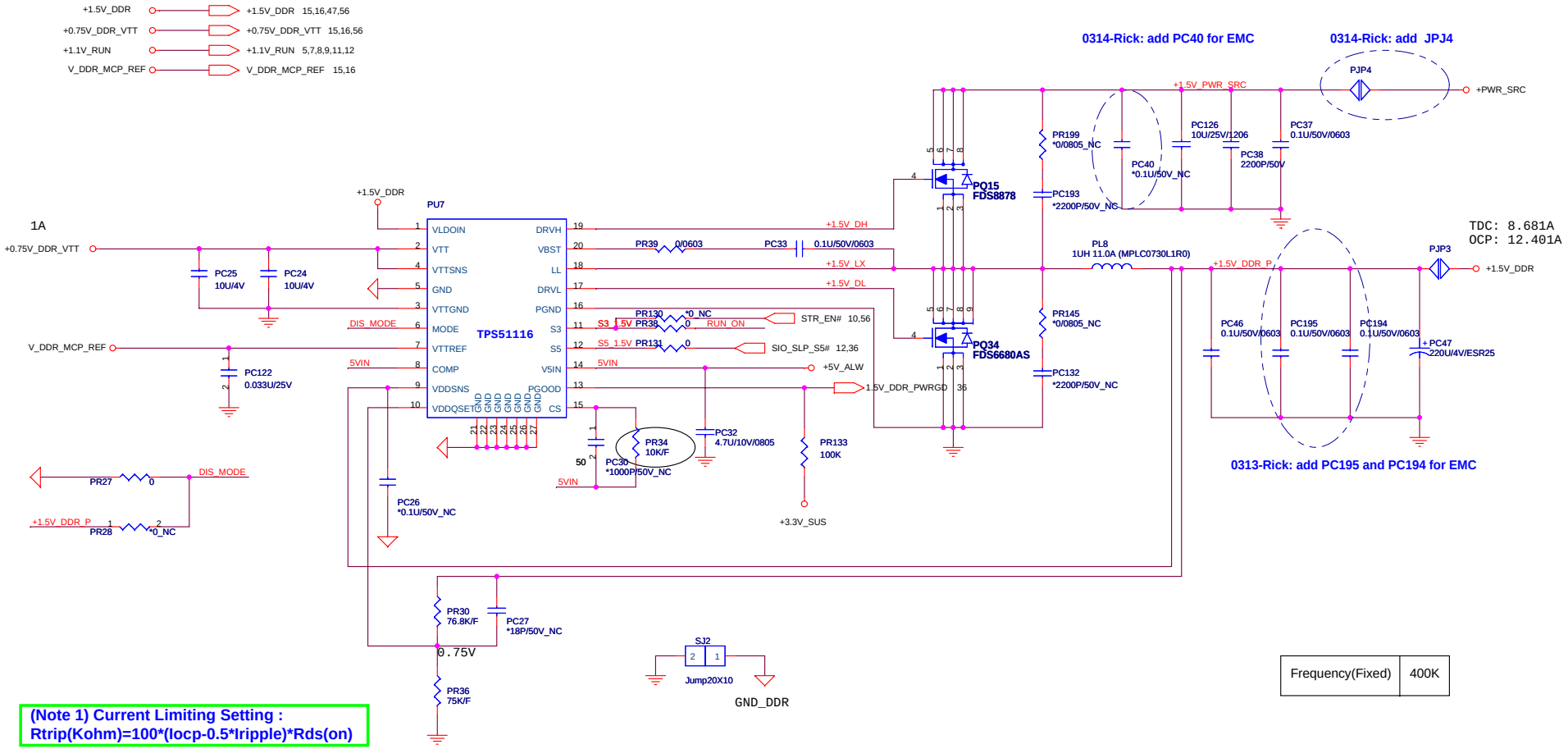
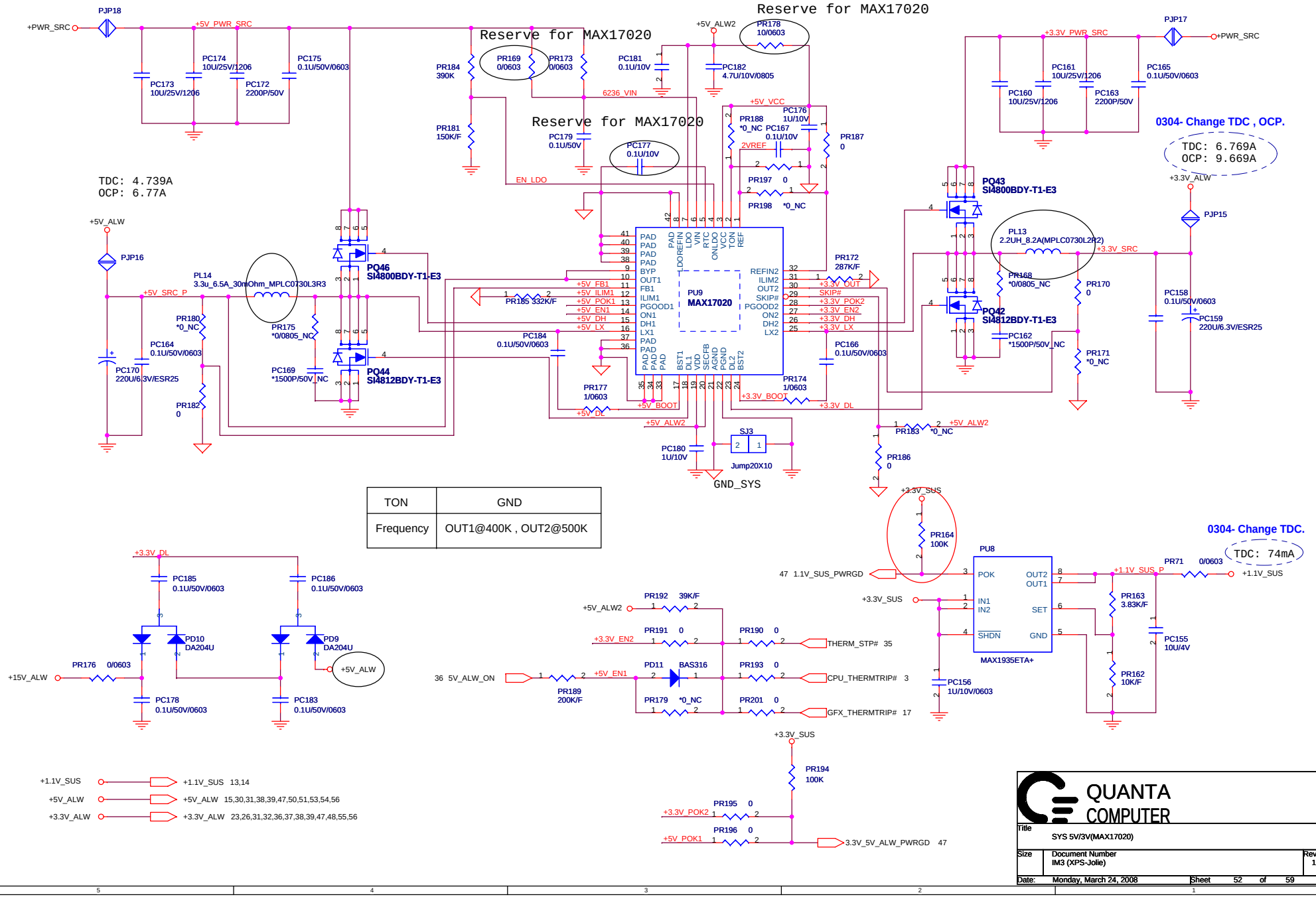

+MCP_CORE +MCP_CORE 13
+1.8V_RUN +1.8V_RUN 9,23,38,47,53
+5V_ALW
+PWR_SRC
PR40 10/0603
MAX17007_VCC
PC124 2.2U/6.3V
PC130 1U/10V
PR41 0/0603
PJP2
+MCP_PWR_SRC
PC31 10U/25V/1206
PC28 0.1U/50V/0603
PC29 2200P/50V
26,36,51,56 RUN_ON
RUN_ON
PC34 0.1U/50V
PQ13 FDS8878
0304- Change TDC , OCP.
TDC: 12.429A
OCP: 17.756A
PL6 0.82uH_MPLC0730LR82_8mOhm
+MCP_CORE_P
PJP7
+MCP_CORE
0314-Rick: Add PR202, PR203
PR202 0/F
PR203 0/F
PR132 *0/0805_NC
PR134 715/F
PQ33 FDS6676AS
PC123 *1000P/50V_NC
PC41 330U/2.5V/ESR15
PC35 0.1U/50V/0603
PR135 *0_NC
+3.3V_SUS
PC129 0.22U/25V/0603
PR137 1.2K/F
PR139 10/0603
PR47 100K
PR144 100K
MAX17007
MAX17007_CSP1
MAX17007_CSL1
PC125 1000P/16V
+PWR_SRC
PJP13
47 MCP_PWRGD
47 1.8V_RUN_PWRGD
PR44 200K/F
PR45 200K/F
+1.8V_PWR_SRC
PC134 10U/25V/1206
PC43 0.1U/50V/0603
PC44 2200P/50V
0111-Rick: Change PR142, PR46.
PR136 0/0603
PC39 0.1U/50V
PQ16
PC127 2200P/50V
50
PL7 3.3u_6.5A_30mOhm_MPLC0730L3R3
PJP5
+1.8V_RUN
TDC: 1.785A
OCP: 2.55A
PR142 44.2K/F
PR46 402/F
PR140 15.8K/F
PR138 1.69K/F
PC42 150U/6.3V CC3528
PC133 0.1U/50V/0603
0.7V
PR141 10K/F/0603
PR42 715/F
PC128 0.22U/25V/0603
PR43 10/0603
PC131 1000P/16V
SI4914DY-T1-E3
PR18 374K/F
PR20 182K/F
PR24 86.6K/F
PR143 49.9K/F
PR29 20K
PR21 20K
PR15 20K
PQ6 BSS138-7-F
PQ7 BSS138-7-F
PQ9 BSS138-7-F
12 MCP_CORE_VID0
12 MCP_CORE_VID1
12 MCP_CORE_VID2
MCP_CORE_VID0
MCP_CORE_VID1
MCP_CORE_VID2
MAX17007_REFIN1
SJ4
Jump20X10
GND_MCPCore
PU1
QFN28-4X4-4-33P
VID2 VID1 VID0 +MCP_Core
L L L +1.303V
L L H +1.245V
L H L +1.189V
L H H +1.141V
H L L +1.085V
H L H +1.045V
H H L +1.005V
H H H +0.970V
0111-Rick: Change Votage table.
TON1 PR73 = 200K
Frequency 297K
TON2 PR75 = 200K
Frequency 297K
QUANTA COMPUTER
Title MCP/1.8V (MAX17007)
Size Document Number IM3 (XPS-Jolie) Rev 1B
Date: Monday, March 24, 2008 Sheet 50 of 59



Title	1.8VSUS & 0.9VTT (TPS51116)
Size	Document Number: IM3 (XPS-Jolie) — Rev: 1A
Date:	Monday, March 24, 2008 — Sheet 51 of 59

QUANTA COMPUTER



TON	GND
Frequency	OUT1@400K , OUT2@500K

Title	SYS 5V/3V(MAX17020)
Size	Document Number: IM3 (XPS-Jolie) — Rev: 1A
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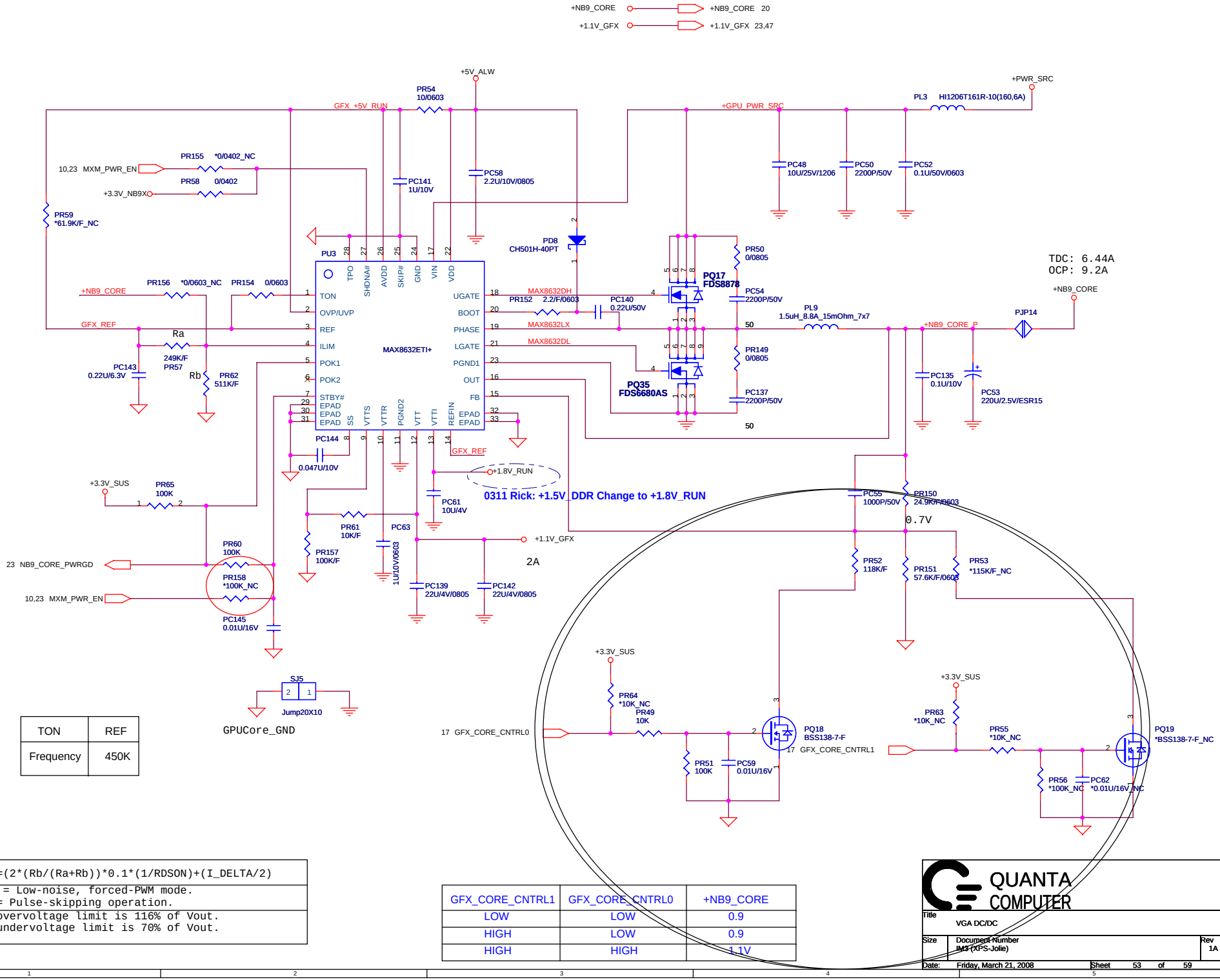
QUANTA COMPUTER



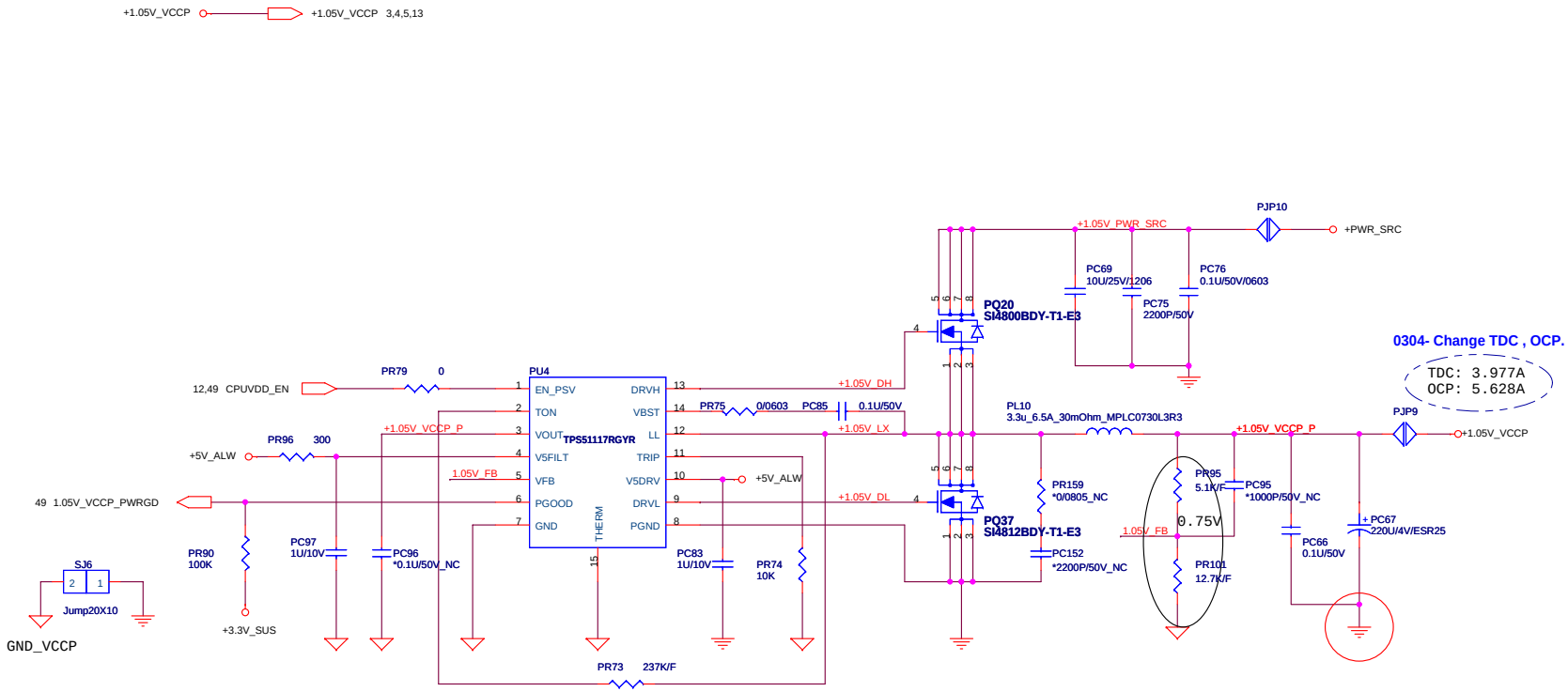
TON	REF
Frequency	450K

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.

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	+NB9_CORE
LOW	LOW	0.9
HIGH	LOW	0.9
HIGH	HIGH	1.1V

QUANTA COMPUTER

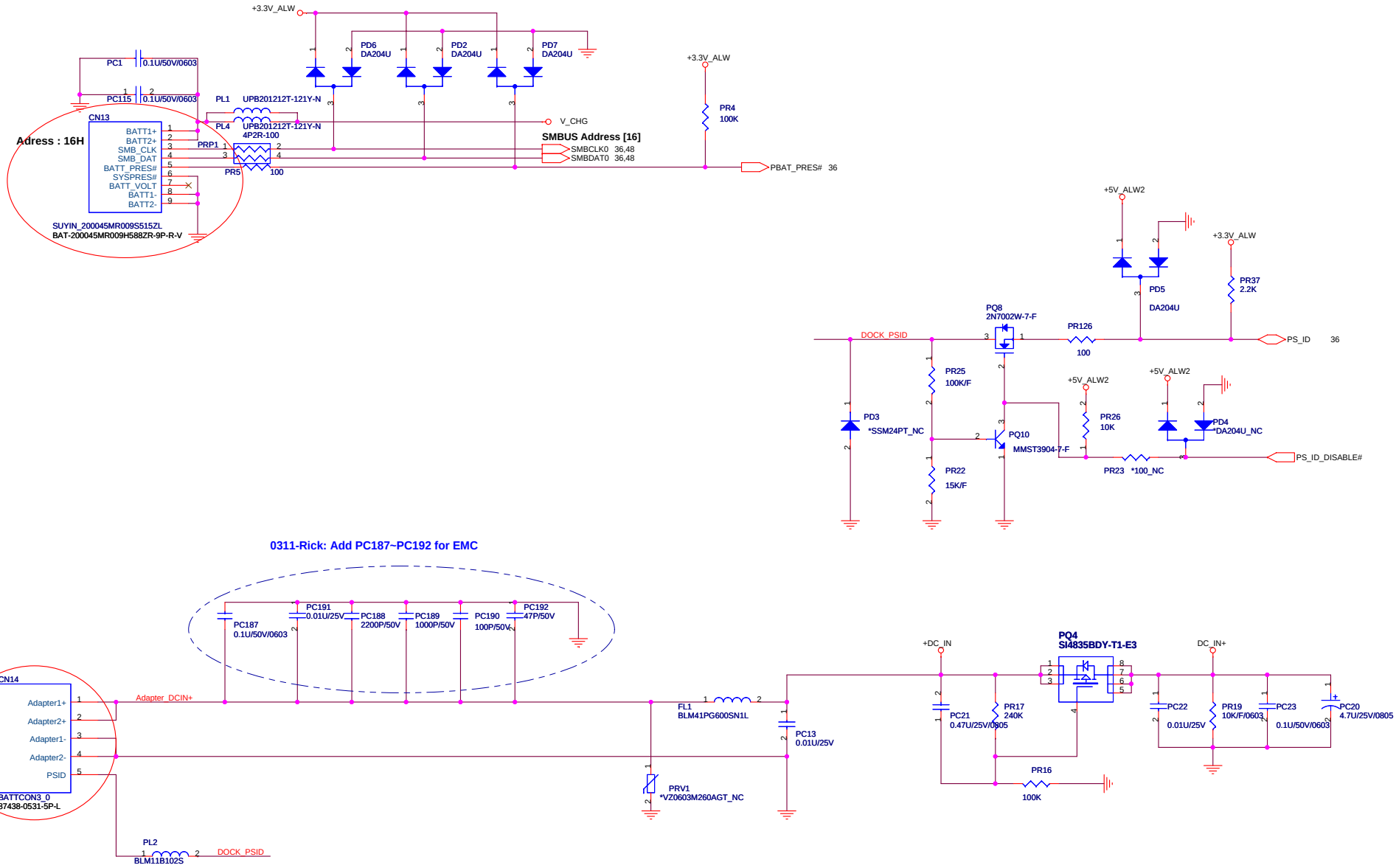
Title	VGA DC/DC	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Friday, March 21, 2008	Sheet 53 of 59	



TON	PR185=237K
Frequency	300K

QUANTA COMPUTER

Title	1.8VSUS & 0.9VTT (TPS51116)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 54 of 59	



QUANTA COMPUTER

Title	DCIN,Batt	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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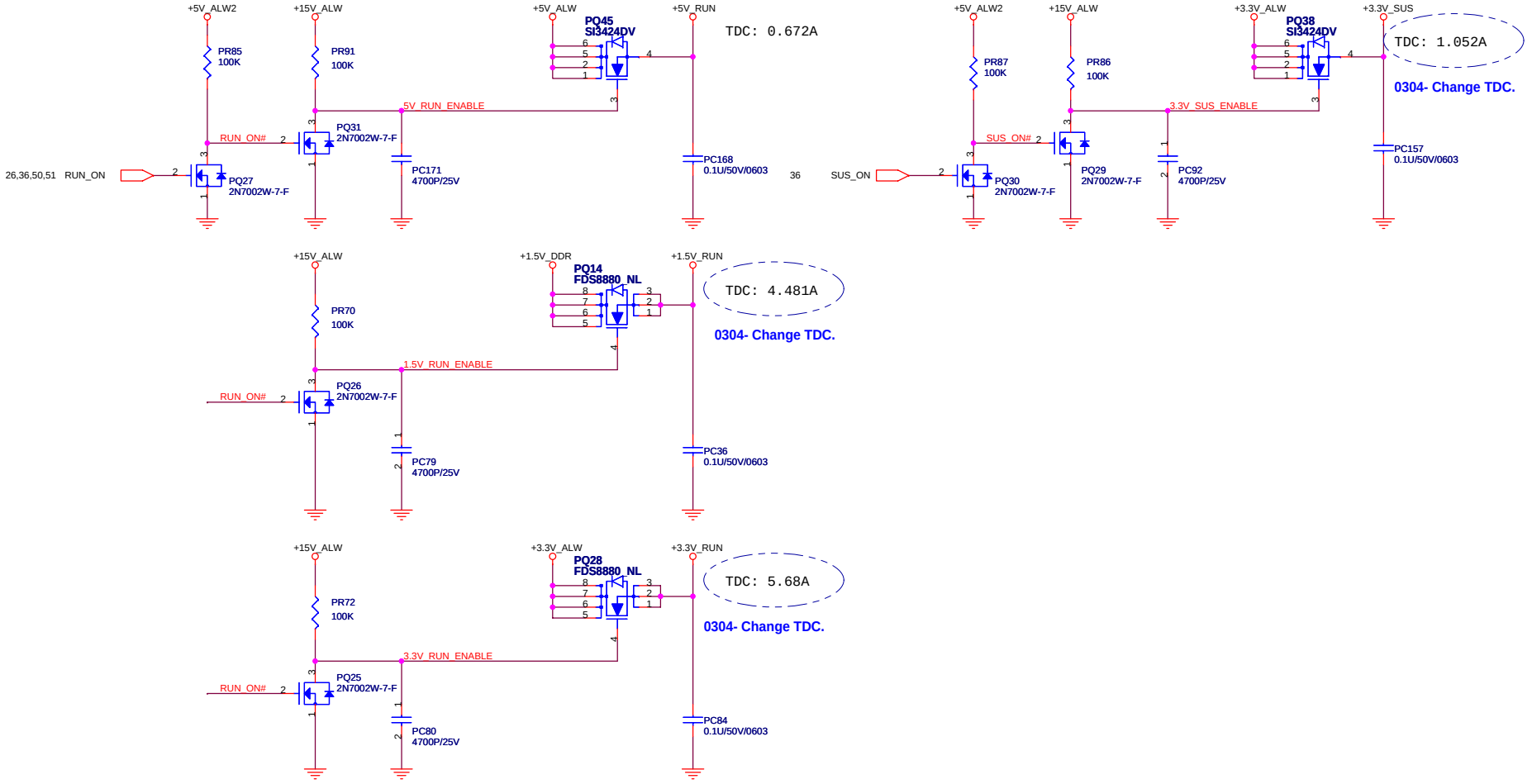
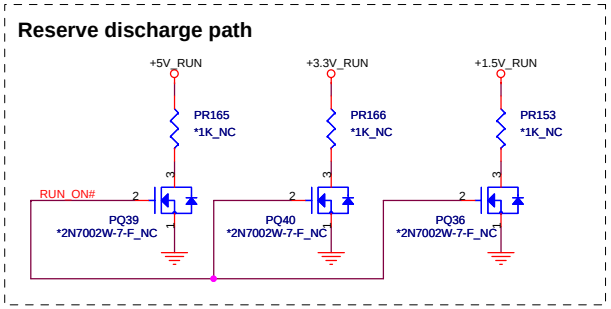
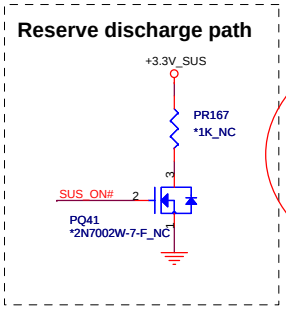
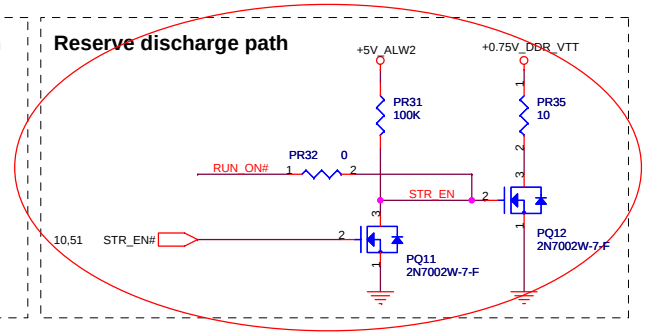


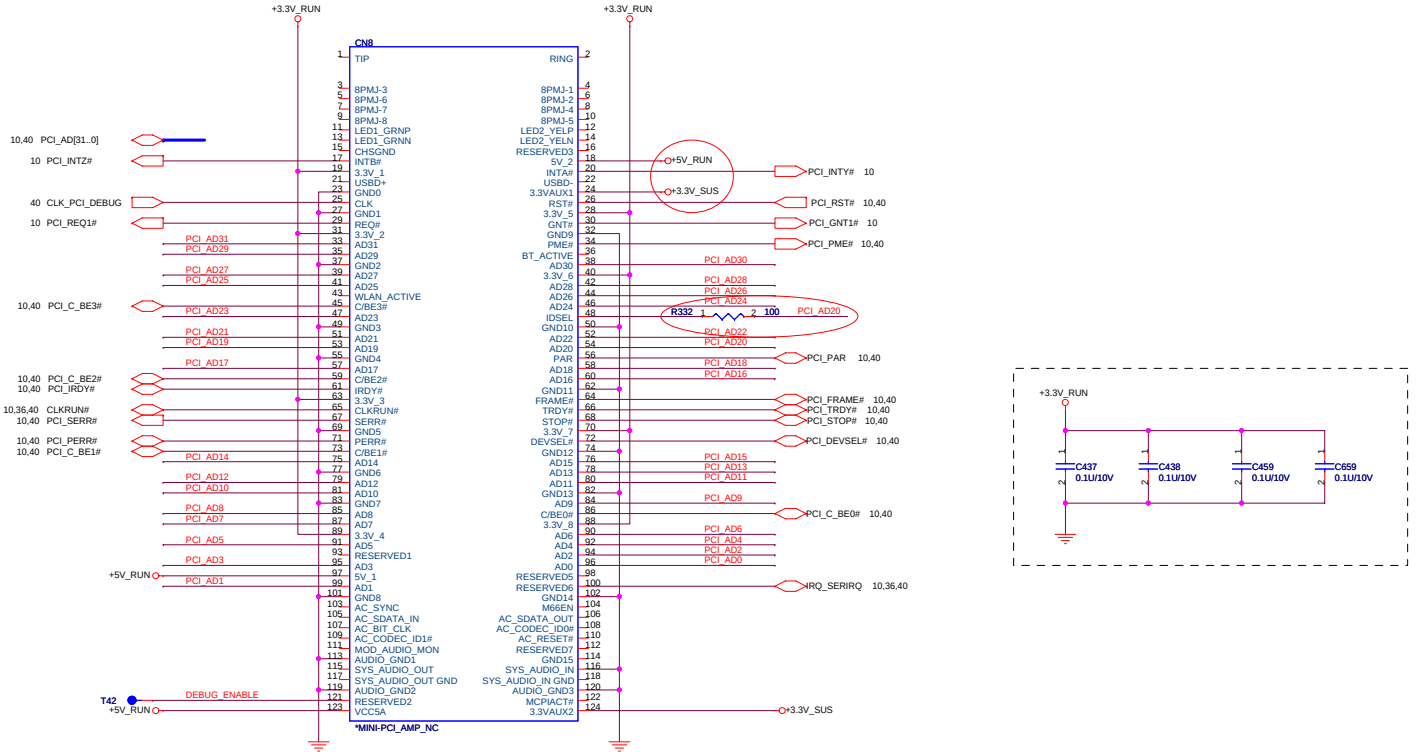






QUANTA COMPUTER

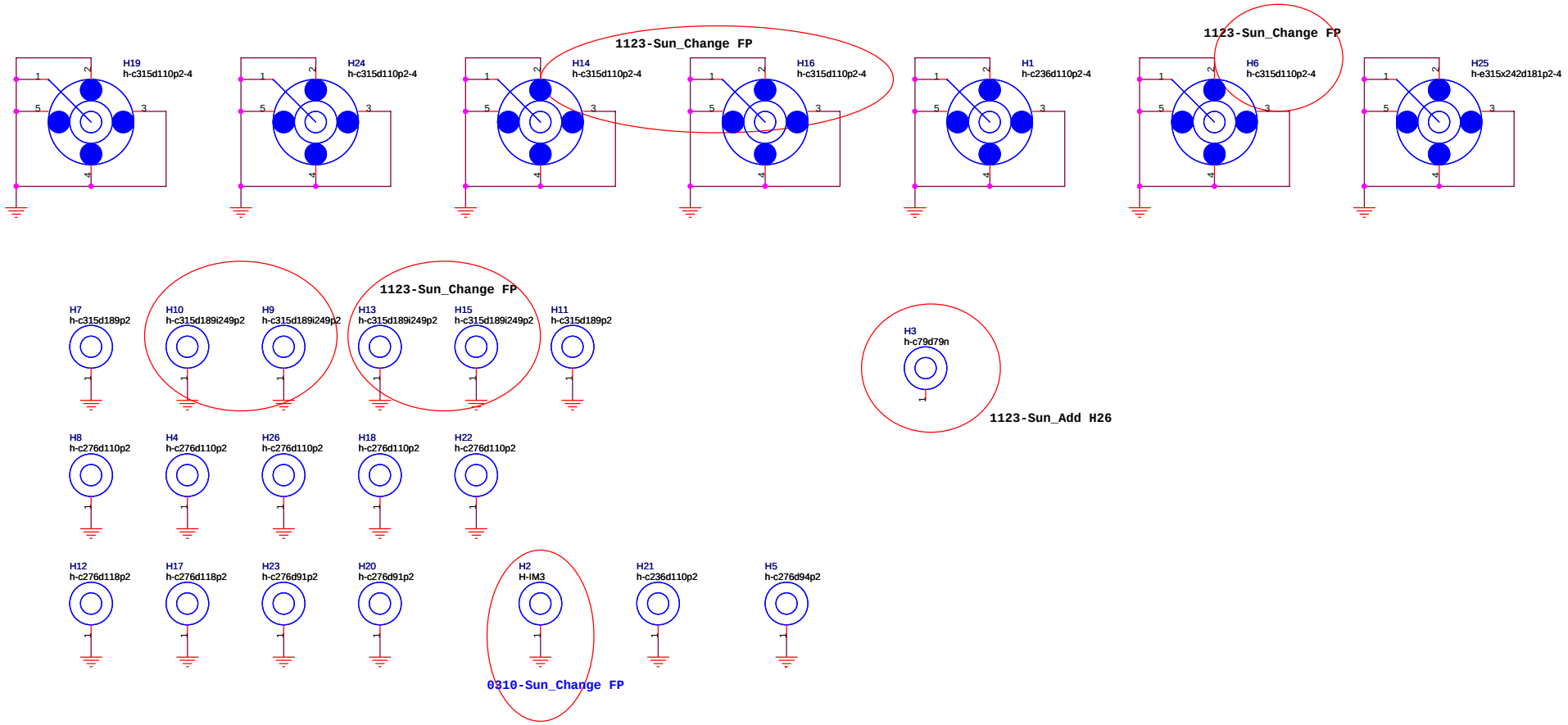
Title	RUN POWER SW	
Size	Document Number: IM3 (XPS-Jolie)	Rev: 1A
Date: Thursday, March 20, 2008	Sheet 56 of 59	



1115-Sun_Add Mini PCI CONN for BIOS debug

QUANTA COMPUTER

Title	Debug Port (Mini PCI)	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
Date: Thursday, March 20, 2008	Sheet 57 of 59	



QUANTA COMPUTER

Title	SCREW PAD	
Size	Document Number IM3 (XPS-Jolie)	Rev 1A
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