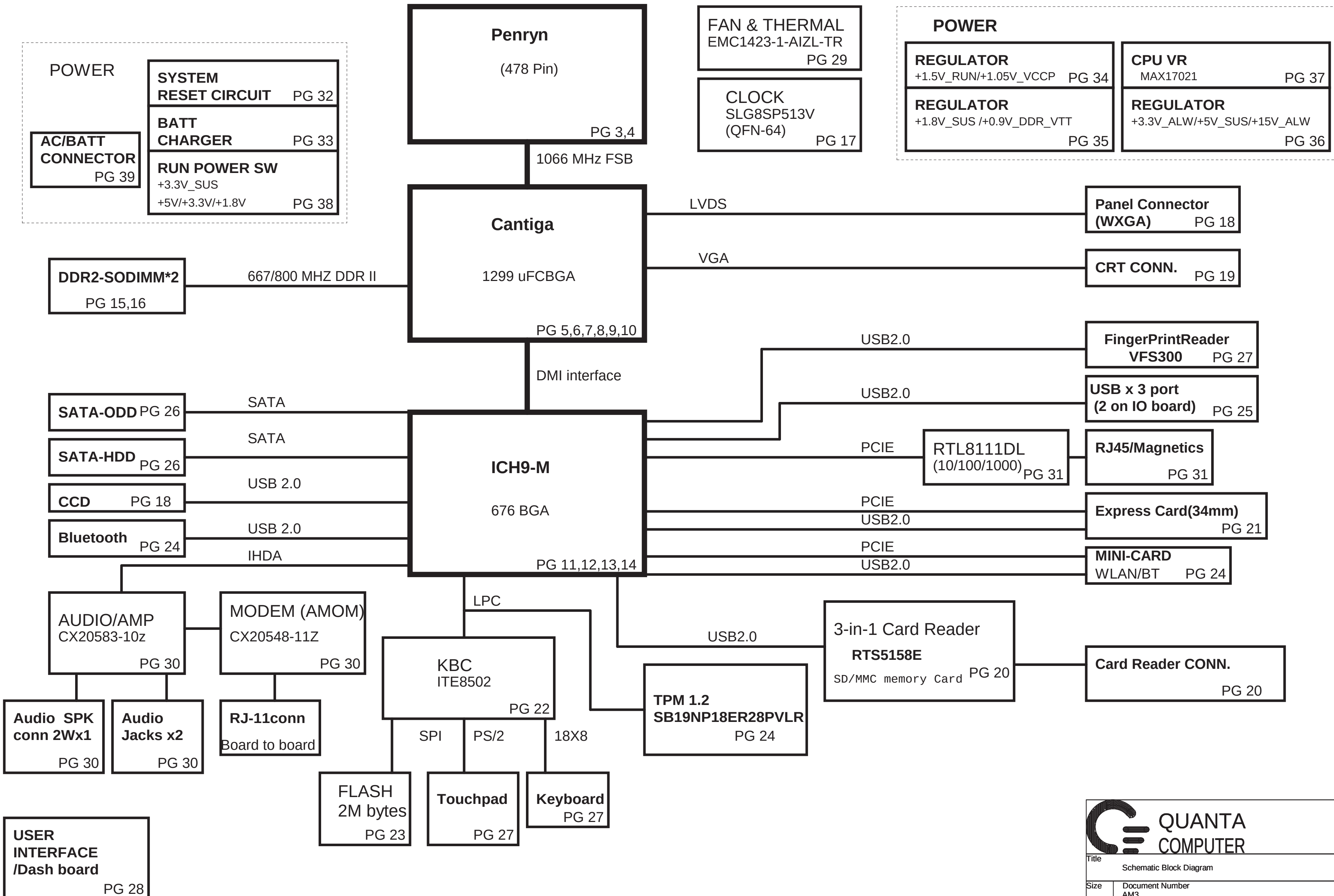
M/B PCB

12.1" AM3 Low Rider Block Diagram

VER : C3A



QUANTA COMPUTER

Title	Schematic Block Diagram		
Size	Document Number AM3		Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 1 of 45	

Table of Contents

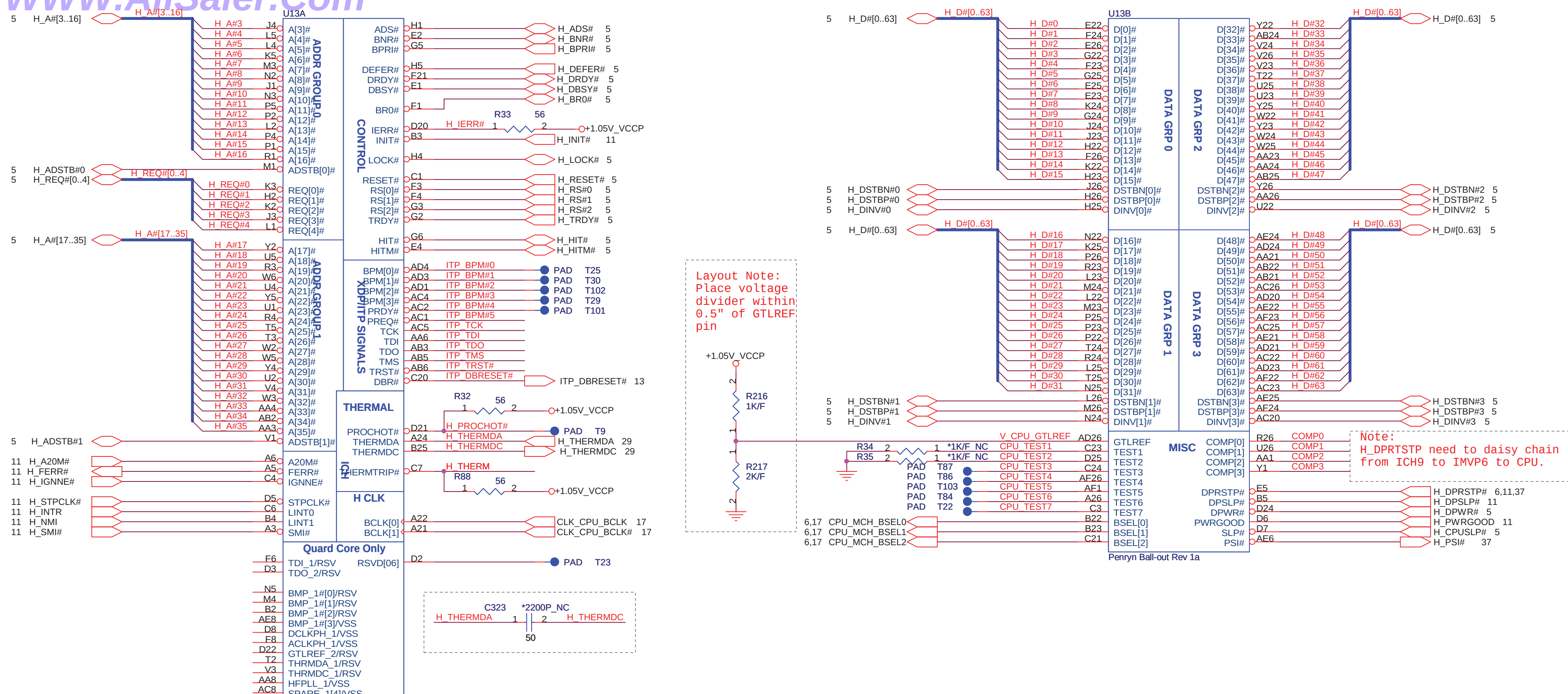
Power States

POWER PLANE	VOLTAGE	PAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
+PWR_SRC	10V~+19V	4,26,32,34,46,48,49,51,52,56	MAIN POWER		S0~S5
+RTC_CELL	+3.0V~+3.3V	11,14,31,32	RTC		S0~S5
+3.3V_ALW	+3.3V	3,31,32,34,36,37,38,44,46,49,52,53,54	8051 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	14,38,51,53	SLP_S5# CTRLD POWER	SUS_ON	
+3.3V_SUS	+3.3V	3,11,12,13,14,26,30,37,38,43,48,49,51,53	SLP_S5# CTRLD POWER	3.3V_SUS_ON	
+1.8V_SUS	+1.8V	6,8,9,15,48,49,53	SODIMM POWER	DDR_ON	
+0.9V_DDR_VTT	+0.9V	16,49,53	SODIMM POWER	0.9V_DDR_VTT_ON	
+5V_RUN	+5V	14,18,27,36,37,38,39,40,41,53	SLP_S3# CTRLD POWER	RUN_ON	
+3.3V_RUN	+3.3V	14,18,27,36,37,38,39,40,41,53	SLP_S3# CTRLD POWER	3.3V_RUN_ON	
+1.5V_RUN	+1.5V	4,9,14,30,33,34,48,53,56	CALISTOGA/ICH8 POWER	1.5V_RUN_ON	
+1.05V_VCCP	+1.05V	3,4,5,6,8,9,11,14,48,56	CPU/CALISTOGA/ICH8 POWER	1.05V_RUN_ON	
+VCC_CORE	+0.7V~+1.77V	4,51,56	CPU CORE POWER	IMVP_VR_ON	
+LCDVCC	+3.3V	26	LCD Power	LCDVCC_TST_EN & ENVDD	
+PBATT	+10V~+17V		MAIN BATTERY	CHG_PBATT	
+SBATT	+10V~+17V		SECOND BATTERY	CHG_SBATT	

GND PLANE	PAGE	DESCRIPTION
GND	ALL	

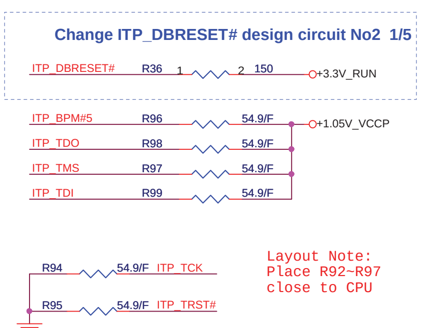
QUANTA COMPUTER

Title	Index & Power Status	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 2 of 45

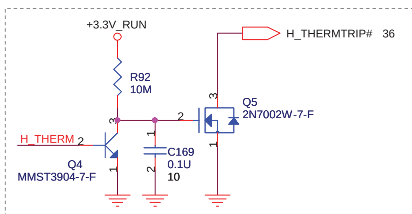


FSB	BCLK	BSEL2	BSEL1	BSEL0
667	166	0	1	1
800	200	0	1	0
1066	266	0	0	0

Populate ITP700Flex for bringup

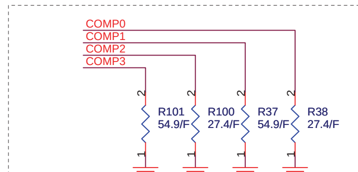


Layout Note:
Place R92~R97
close to CPU



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



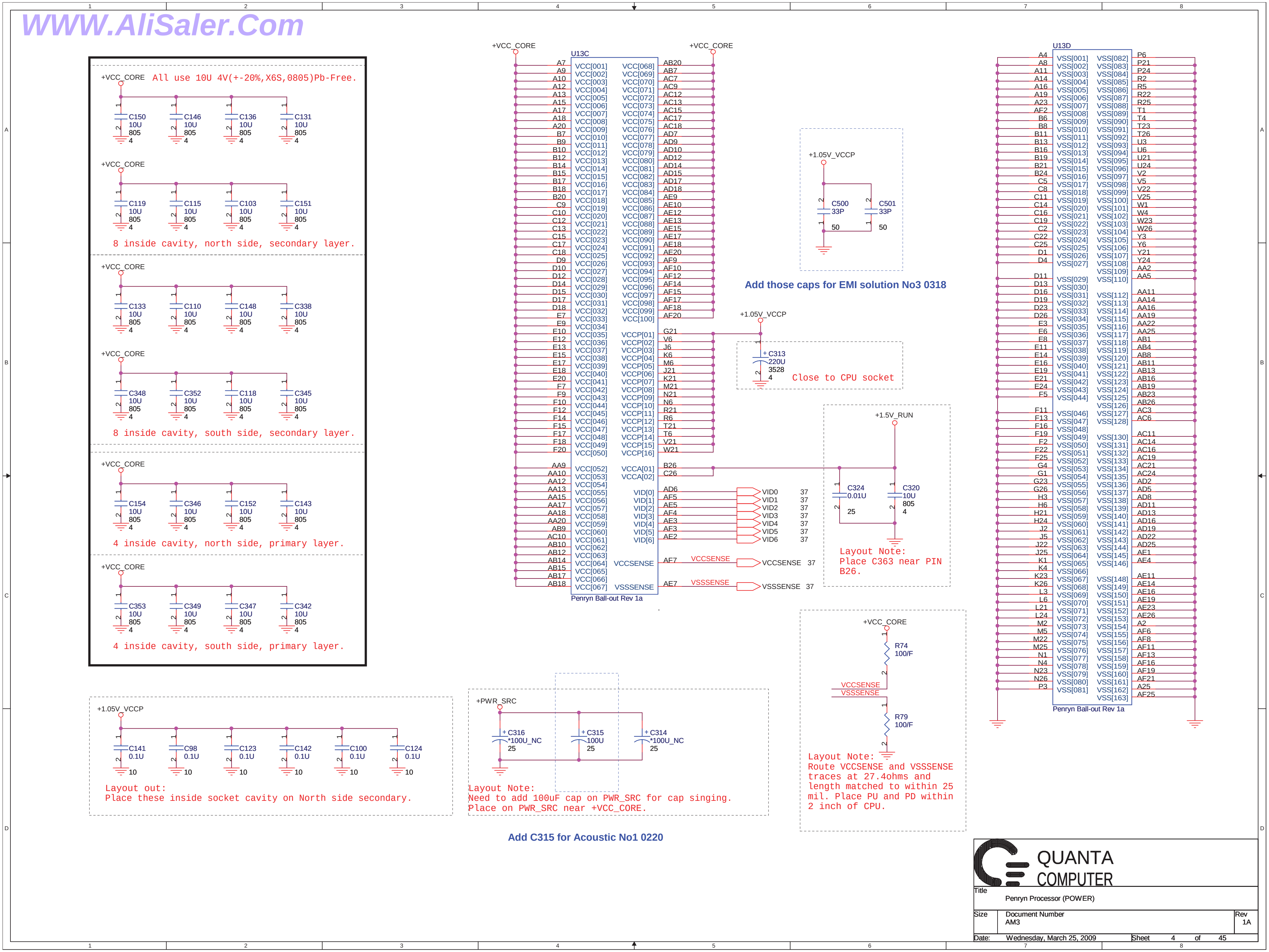
Comp0,2 connect with Zo=27.4ohm,Comp1,3 connect with Zo=55ohm, make those traces length shorter than 0.5".Trace should be at least 25 mils away from any other toggling signal.

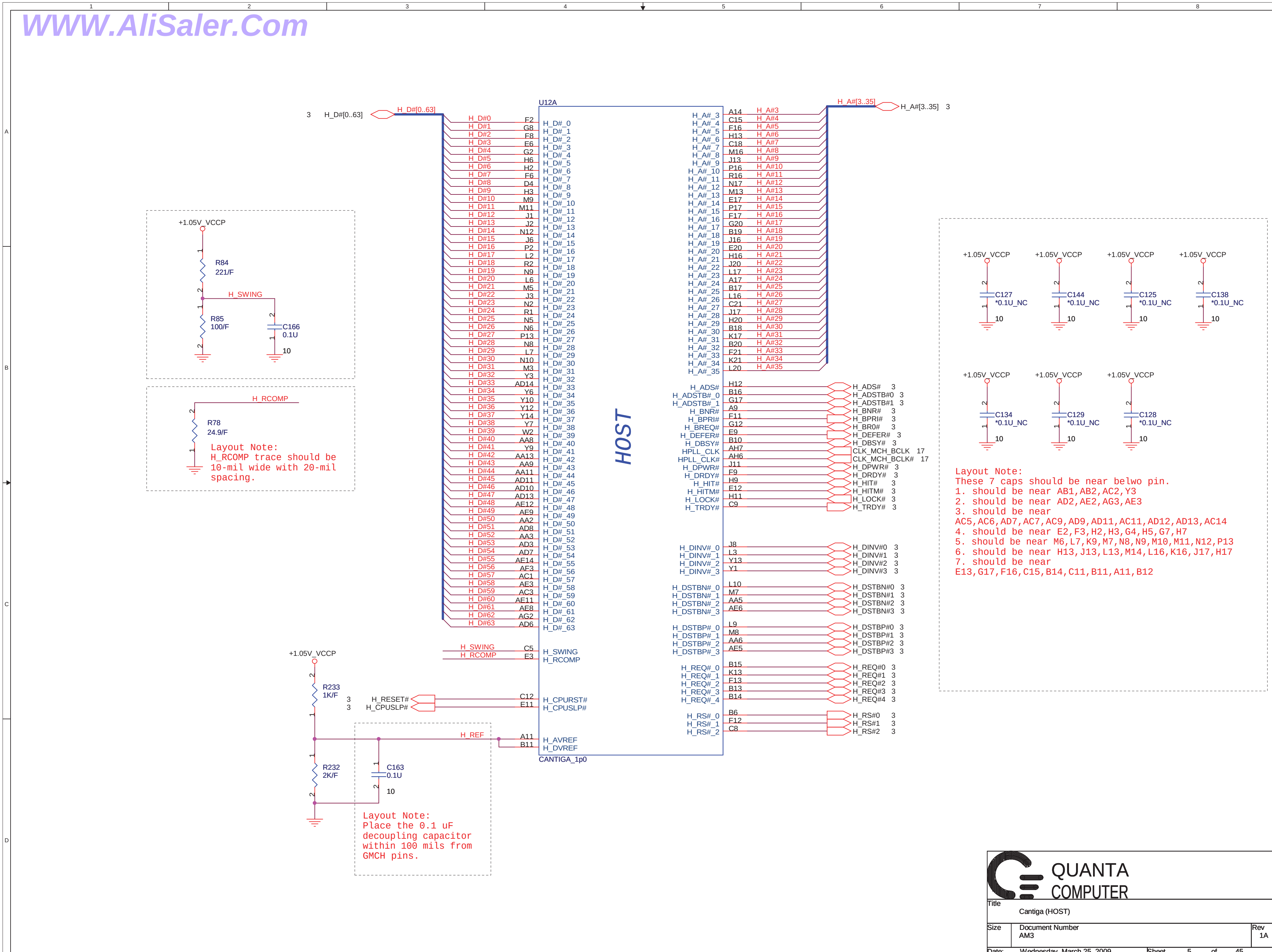
QUANTA COMPUTER

Title: Penryn Processor (HOST BUS)

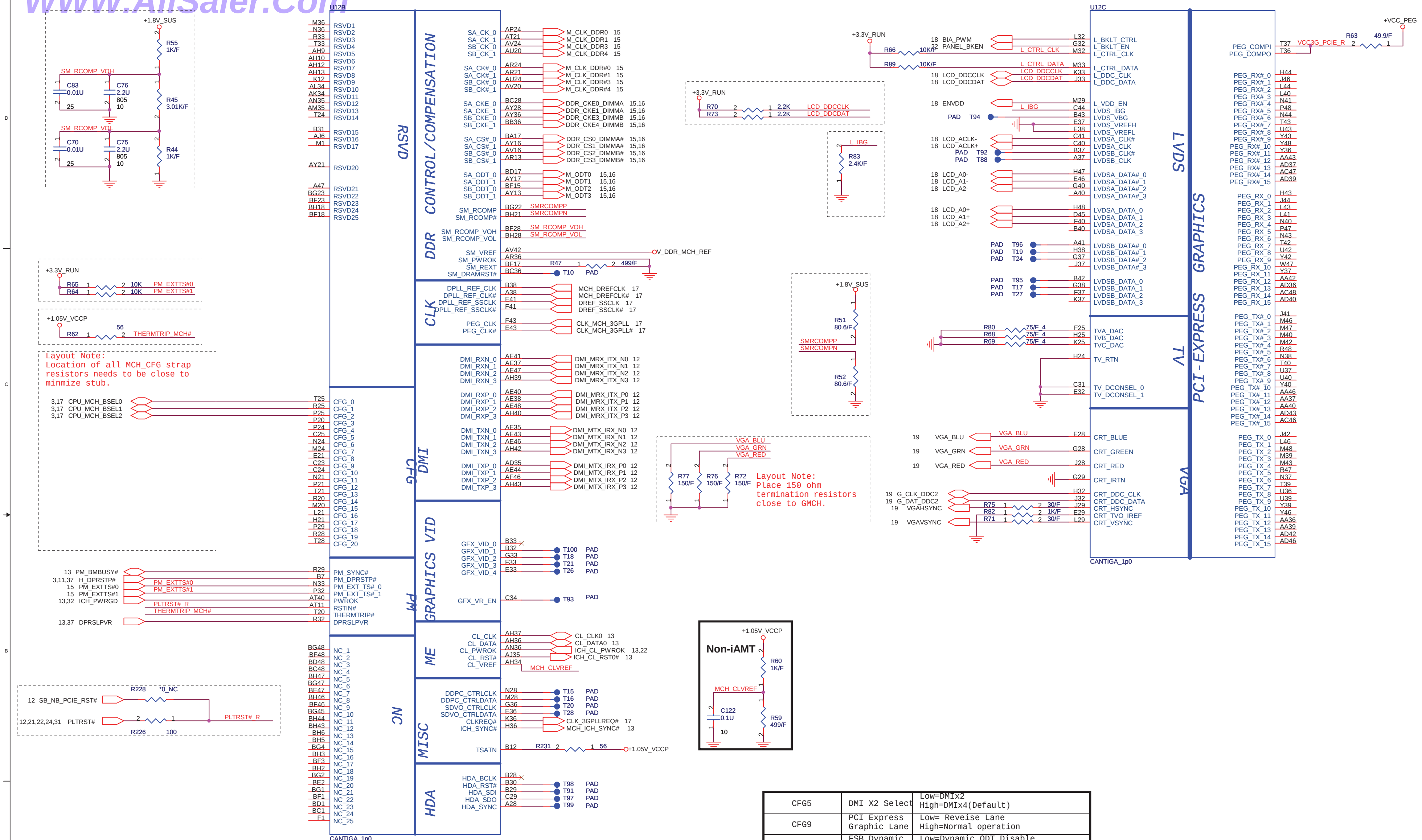
Size | Document Number: AM3 | Rev: 1A

Date: Wednesday, March 25, 2009 | Sheet 3 of 45


+VCC_CORE
All use 10U 4V(+-20%,X6S,0805)Pb-Free.
C150 10U 805
C146 10U 805
C136 10U 805
C131 10U 805
C119 10U 805
C115 10U 805
C103 10U 805
C151 10U 805
8 inside cavity, north side, secondary layer.
C133 10U 805
C110 10U 805
C148 10U 805
C338 10U 805
C348 10U 805
C352 10U 805
C118 10U 805
C345 10U 805
8 inside cavity, south side, secondary layer.
C154 10U 805
C346 10U 805
C152 10U 805
C143 10U 805
4 inside cavity, north side, primary layer.
C353 10U 805
C349 10U 805
C347 10U 805
C342 10U 805
4 inside cavity, south side, primary layer.
+1.05V_VCCP
C141 0.1U
C98 0.1U
C123 0.1U
C142 0.1U
C100 0.1U
C124 0.1U
Layout out:
Place these inside socket cavity on North side secondary.
U13C
Penryn Ball-out Rev 1a
VCCSENSE
VSSSENSE
VID0
VID1
VID2
VID3
VID4
VID5
VID6
+1.05V_VCCP
C500 33P
C501 33P
Add those caps for EMI solution No3 0318
C313 220U 3528
Close to CPU socket
+1.5V_RUN
C324 0.01U
C320 10U 805
Layout Note:
Place C363 near PIN B26.
+PWR_SRC
C316 *100U_NC
C315 100U
C314 *100U_NC
Layout Note:
Need to add 100uF cap on PWR_SRC for cap singing.
Place on PWR_SRC near +VCC_CORE.
Add C315 for Acoustic No1 0220
R74 100/F
R79 100/F
Layout Note:
Route VCCSENSE and VSSSENSE traces at 27.4ohms and length matched to within 25 mil. Place PU and PD within 2 inch of CPU.
U13D
Penryn Ball-out Rev 1a
QUANTA COMPUTER
Title
Penryn Processor (POWER)
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 4 of 45



U12A
HOST
CANTIGA_1p0
3 H_D#[0..63]
H_D#[0..63]
H_A#[3..35]
H_A#[3..35] 3
H_D#_0 … H_D#_63
H_A#_3 … H_A#_35
H_ADS#
H_ADSTB#_0
H_ADSTB#_1
H_BNR#
H_BPRI#
H_BREQ#
H_DEFER#
H_DBSY#
HPLL_CLK
HPLL_CLK#
H_DPWR#
H_DRDY#
H_HIT#
H_HITM#
H_LOCK#
H_TRDY#
CLK_MCH_BCLK 17
CLK_MCH_BCLK# 17
H_DINV#_0 … H_DINV#_3
H_DSTBN#_0 … H_DSTBN#_3
H_DSTBP#_0 … H_DSTBP#_3
H_REQ#_0 … H_REQ#_4
H_RS#_0 … H_RS#_2
H_SWING
H_RCOMP
H_CPURST#
H_CPUSLP#
3 H_RESET#
3 H_CPUSLP#
H_AVREF
H_DVREF
H_REF
+1.05V_VCCP
R84 221/F
R85 100/F
C166 0.1U
R78 24.9/F
R233 1K/F
R232 2K/F
C163 0.1U
C127 *0.1U_NC
C144 *0.1U_NC
C125 *0.1U_NC
C138 *0.1U_NC
C134 *0.1U_NC
C129 *0.1U_NC
C128 *0.1U_NC
Layout Note:
H_RCOMP trace should be
10-mil wide with 20-mil
spacing.
Layout Note:
Place the 0.1 uF
decoupling capacitor
within 100 mils from
GMCH pins.
Layout Note:
These 7 caps should be near belwo pin.
1. should be near AB1,AB2,AC2,Y3
2. should be near AD2,AE2,AG3,AE3
3. should be near
AC5,AC6,AD7,AC7,AC9,AD9,AD11,AC11,AD12,AD13,AC14
4. should be near E2,F3,H2,H3,G4,H5,G7,H7
5. should be near M6,L7,K9,M7,N8,N9,M10,M11,N12,P13
6. should be near H13,J13,L13,M14,L16,K16,J17,H17
7. should be near
E13,G17,F16,C15,B14,C11,B11,A11,B12
QUANTA
COMPUTER
Title
Cantiga (HOST)
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 5 of 45



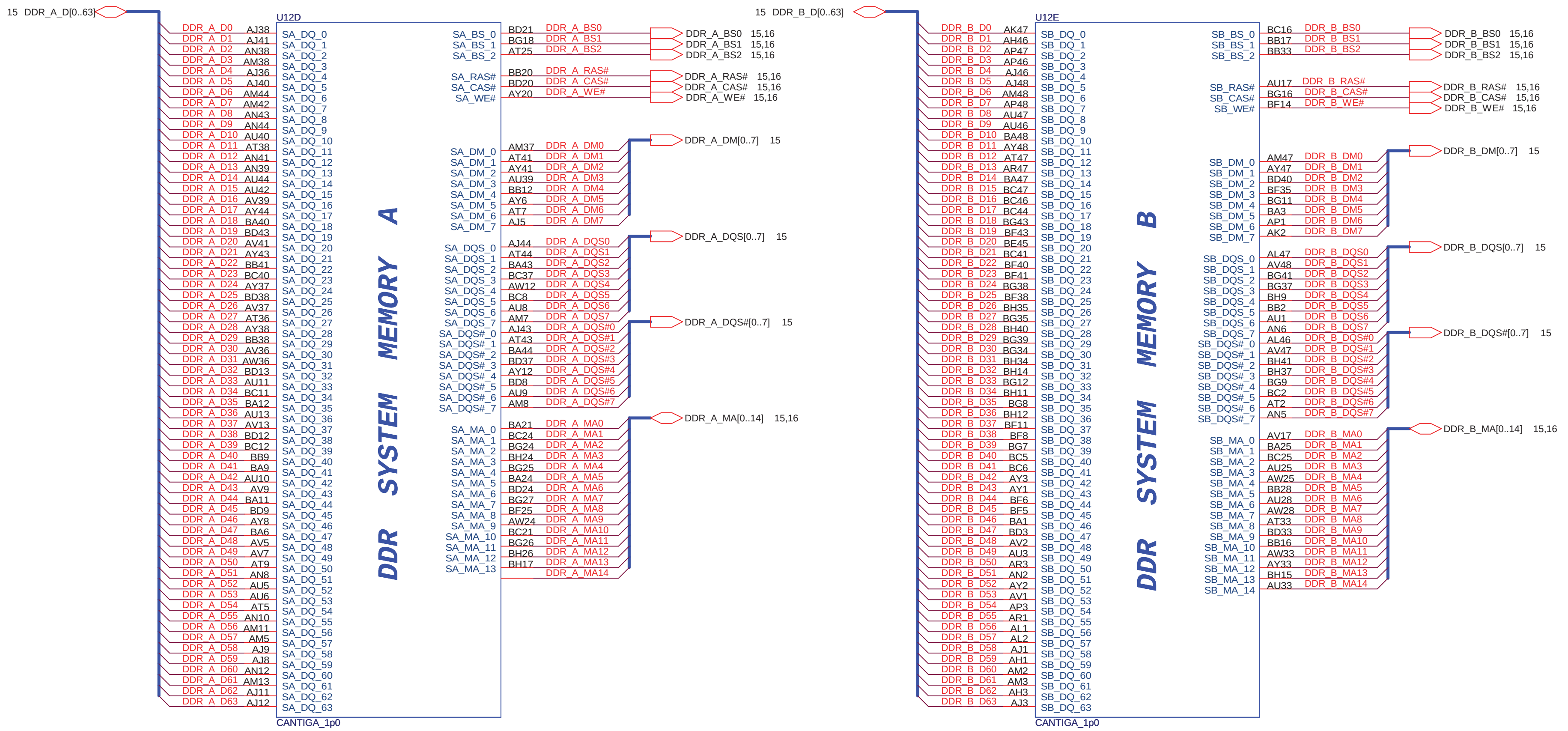
CFG5	DMI X2 Select	Low=DMIx2 High=DMIx4(Default)
CFG9	PCI Express Graphic Lane	Low= Reveise Lane High=Normal operation
CFG16	FSB Dynamic ODT	Low=Dynamic ODT Disable High=Dynamic ODT Enable(default).
CFG19	DMI Lane Reversal	Low=Normal(default). High=Lane Reversed
CFG20	SDVO/PCIE Concurrent Operation	Low=Only 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 (VGA,DMI)

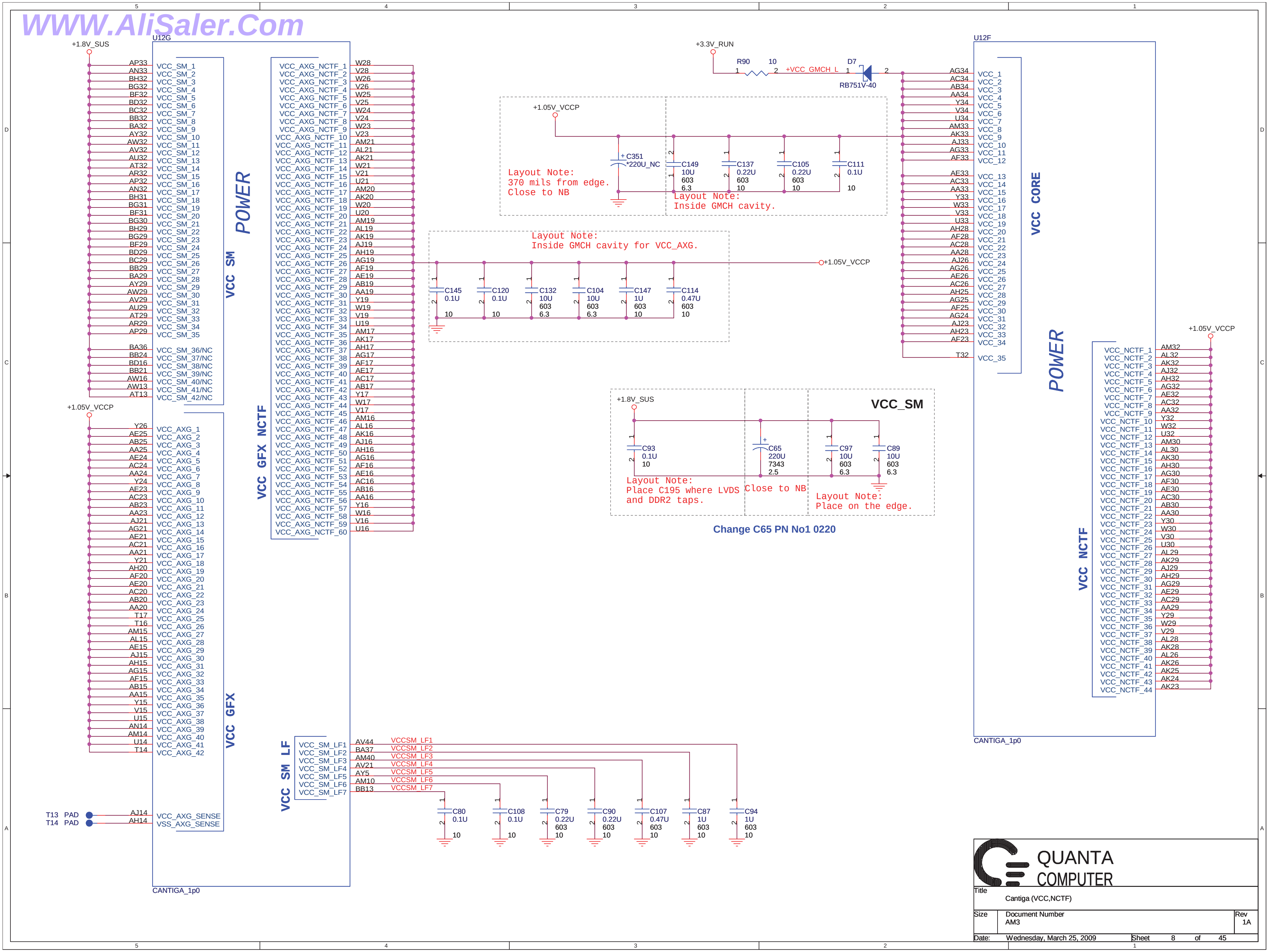
Size | Document Number: AM3 | Rev: 1A

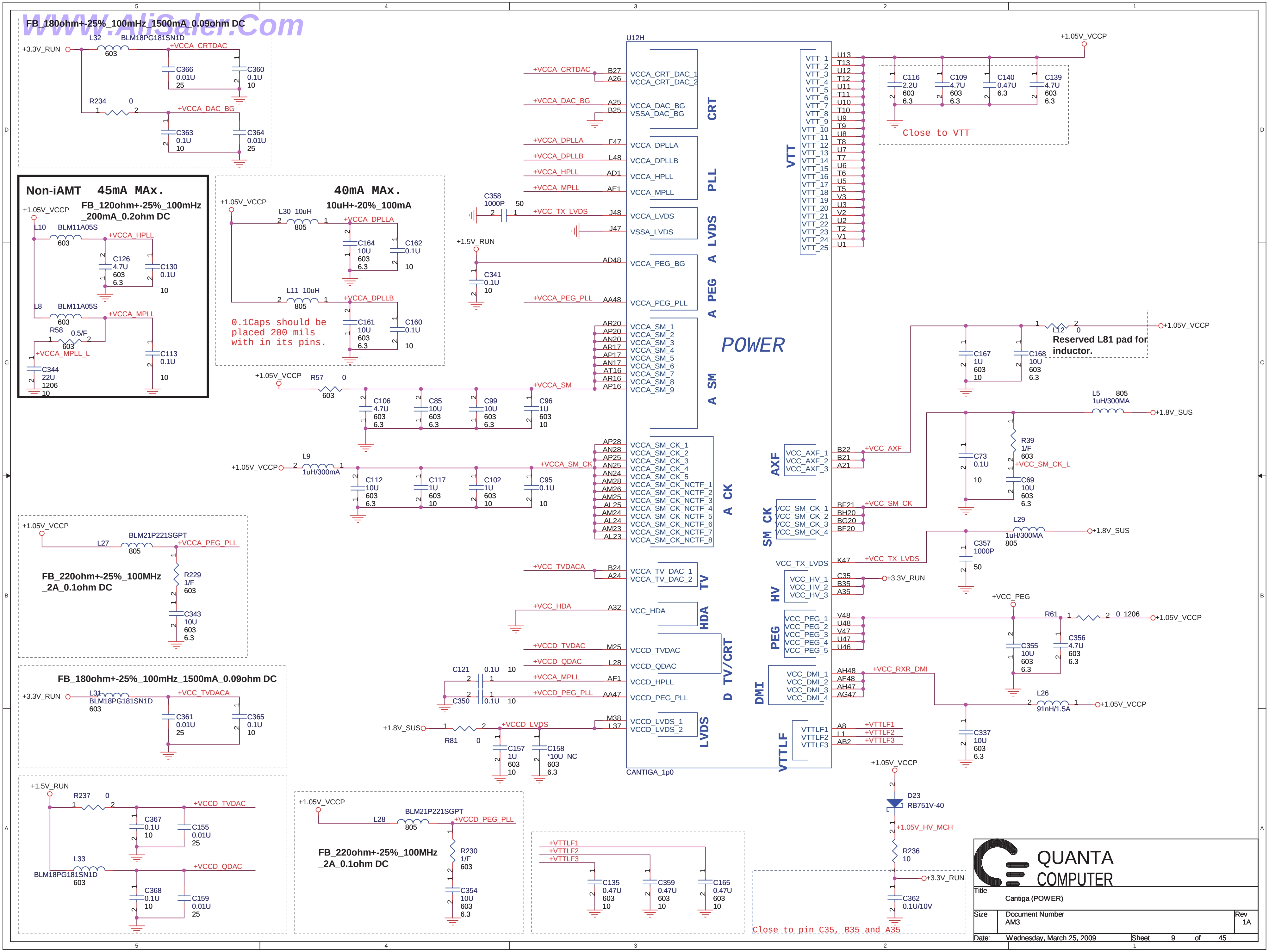
Date: Wednesday, March 25, 2009 | Sheet 6 of 45



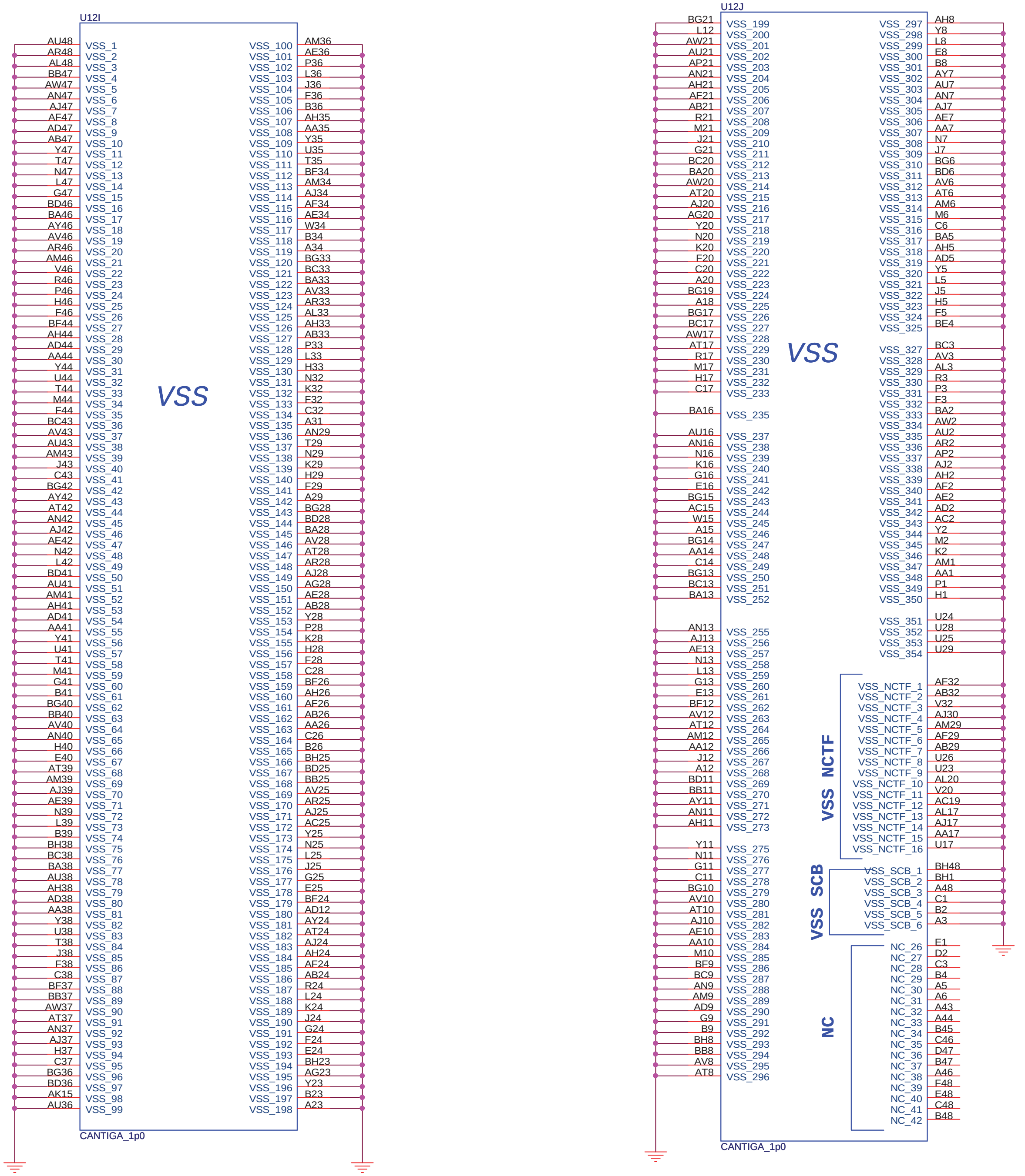
QUANTA COMPUTER

Title	Cantiga (DDR2)	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 7 of 45	


U12G
+1.8V_SUS
VCC SM
POWER
VCC GFX NCTF
+1.05V_VCCP
VCC GFX
VCC SM LF
VCCSM_LF1
VCCSM_LF2
VCCSM_LF3
VCCSM_LF4
VCCSM_LF5
VCCSM_LF6
VCCSM_LF7
T13 PAD
T14 PAD
VCC_AXG_SENSE
VSS_AXG_SENSE
CANTIGA_1p0
+3.3V_RUN
R90 10
+VCC_GMCH_L
D7
RB751V-40
Layout Note:
370 mils from edge.
Close to NB
C351 *220U_NC
C149 10U 603 6.3
C137 0.22U 603 10
C105 0.22U 603 10
C111 0.1U 10
Layout Note:
Inside GMCH cavity.
Layout Note:
Inside GMCH cavity for VCC_AXG.
C145 0.1U 10
C120 0.1U 10
C132 10U 603 6.3
C104 10U 603 6.3
C147 1U 603 10
C114 0.47U 603 10
U12F
VCC CORE
POWER
VCC NCTF
VCC_SM
C93 0.1U 10
C65 220U 7343 2.5
C97 10U 603 6.3
C89 10U 603 6.3
Layout Note:
Place C195 where LVDS
and DDR2 taps.
Close to NB
Layout Note:
Place on the edge.
Change C65 PN No1 0220
C80 0.1U 10
C108 0.1U 10
C79 0.22U 603 10
C90 0.22U 603 10
C107 0.47U 603 10
C87 1U 603 10
C94 1U 603 10
QUANTA
COMPUTER
Title
Cantiga (VCC,NCTF)
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 8 of 45

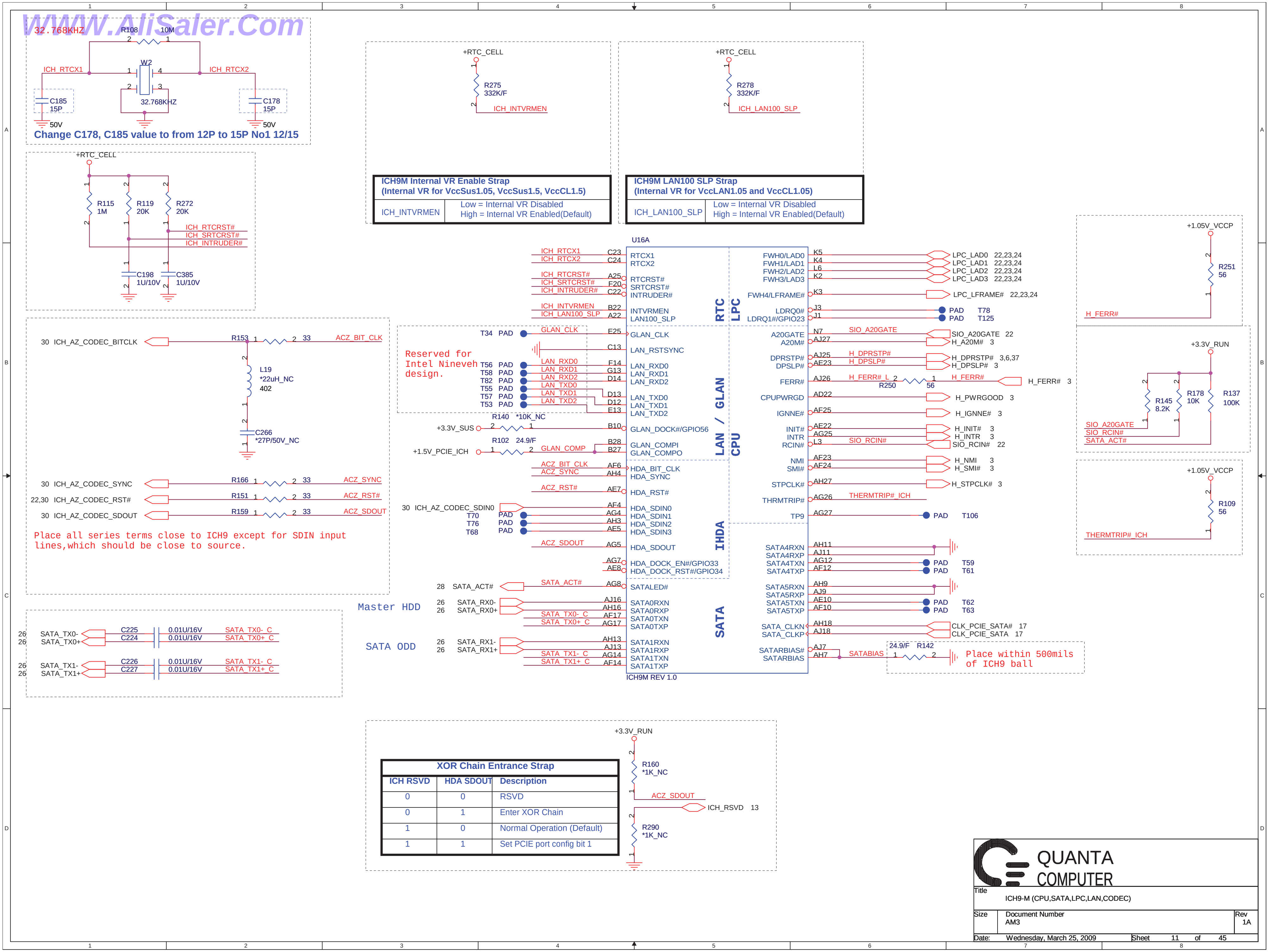


FB_180ohm+-25%_100mHz_1500mA_0.09ohm DC
L32 BLM18PG181SN1D 603
+3.3V_RUN
+VCCA_CRTDAC
C366 0.01U 25
C360 0.1U 10
R234 0
+VCCA_DAC_BG
C363 0.1U 10
C364 0.01U 25
Non-iAMT 45mA MAx.
FB_120ohm+-25%_100mHz _200mA_0.2ohm DC
+1.05V_VCCP
L10 BLM11A05S 603
+VCCA_HPLL
C126 4.7U 603 6.3
C130 0.1U 10
L8 BLM11A05S 603
+VCCA_MPLL
R58 0.5/F 603
+VCCA_MPLL_L
C344 22U 1206 10
C113 0.1U 10
40mA MAx.
10uH+-20%_100mA
+1.05V_VCCP
L30 10uH 805
+VCCA_DPLLA
C164 10U 603 6.3
C162 0.1U 10
L11 10uH 805
+VCCA_DPLLB
C161 10U 603 6.3
C160 0.1U 10
0.1Caps should be placed 200 mils with in its pins.
U12H
+VCCA_CRTDAC B27 A26 VCCA_CRT_DAC_1 VCCA_CRT_DAC_2
+VCCA_DAC_BG A25 B25 VCCA_DAC_BG VSSA_DAC_BG
CRT
+VCCA_DPLLA F47 VCCA_DPLLA
+VCCA_DPLLB L48 VCCA_DPLLB
+VCCA_HPLL AD1 VCCA_HPLL
+VCCA_MPLL AE1 VCCA_MPLL
PLL
C358 1000P 50
+VCC_TX_LVDS J48 VCCA_LVDS
J47 VSSA_LVDS
A LVDS
+1.5V_RUN
C341 0.1U 10
AD48 VCCA_PEG_BG
+VCCA_PEG_PLL AA48 VCCA_PEG_PLL
A PEG
AR20 AP20 AN20 AR17 AP17 AN17 AT16 AR16 AP16
VCCA_SM_1 VCCA_SM_2 VCCA_SM_3 VCCA_SM_4 VCCA_SM_5 VCCA_SM_6 VCCA_SM_7 VCCA_SM_8 VCCA_SM_9
A SM
POWER
+1.05V_VCCP R57 0 603
+VCCA_SM
C106 4.7U 603 6.3
C85 10U 603 6.3
C99 10U 603 6.3
C96 1U 603 10
AP28 AR28 AP25 AN25 AN24 AM28 AM26 AM25 AL25 AM24 AL24 AM23 AL23
VCCA_SM_CK_1 VCCA_SM_CK_2 VCCA_SM_CK_3 VCCA_SM_CK_4 VCCA_SM_CK_5 VCCA_SM_CK_NCTF_1 VCCA_SM_CK_NCTF_2 VCCA_SM_CK_NCTF_3 VCCA_SM_CK_NCTF_4 VCCA_SM_CK_NCTF_5 VCCA_SM_CK_NCTF_6 VCCA_SM_CK_NCTF_7 VCCA_SM_CK_NCTF_8
A CK
+1.05V_VCCP L9 1uH/300mA
+VCCA_SM_CK
C112 10U 603 6.3
C117 1U 603 10
C102 1U 603 10
C95 0.1U 10
+1.05V_VCCP
L27 BLM21PGP221SGPT 805
+VCCA_PEG_PLL
FB_220ohm+-25%_100MHz _2A_0.1ohm DC
R229 1/F 603
C343 10U 603 6.3
+VCC_TVDACA B24 A24 VCCA_TV_DAC_1 VCCA_TV_DAC_2
TV
+VCC_HDA A32 VCC_HDA
HDA
FB_180ohm+-25%_100mHz_1500mA_0.09ohm DC
+3.3V_RUN
L31 BLM18PG181SN1D 603
+VCC_TVDACA
C361 0.01U 25
C365 0.1U 10
+VCCD_TVDAC M25 VCCD_TVDAC
+VCCD_QDAC L28 VCCD_QDAC
+VCCA_MPLL AF1 VCCD_HPLL
+VCCD_PEG_PLL AA47 VCCD_PEG_PLL
D TV/CRT
C121 0.1U 10
C350 0.1U 10
+1.8V_SUS R81 0
+VCCD_LVDS
M38 L37 VCCD_LVDS_1 VCCD_LVDS_2
LVDS
C157 1U 603 10
C158 *10U_NC 603 6.3
CANTIGA_1p0
+1.5V_RUN
R237 0
+VCCD_TVDAC
C367 0.1U 10
C155 0.01U 25
L33 BLM18PG181SN1D 603
+VCCD_QDAC
C368 0.1U 10
C159 0.01U 25
+1.05V_VCCP
L28 BLM21P221SGPT 805
+VCCD_PEG_PLL
FB_220ohm+-25%_100MHz _2A_0.1ohm DC
R230 1/F 603
C354 10U 603 6.3
+VTTLF1 +VTTLF2 +VTTLF3
C135 0.47U 603 10
C359 0.47U 603 10
C165 0.47U 603 10
VTT
VTT_1 ... VTT_25
U13 T13 U12 T12 U11 T11 U10 T10 U9 T9 U8 T8 U7 T7 U6 T6 U5 T5 V3 U3 V2 U2 T2 V1 U1
+1.05V_VCCP
C116 2.2U 603 6.3
C109 4.7U 603 6.3
C140 0.47U 6.3
C139 4.7U 603 6.3
Close to VTT
L12 0
Reserved L81 pad for inductor.
+1.05V_VCCP
C167 1U 603 10
C168 10U 603 6.3
L5 805 1uH/300MA
+1.8V_SUS
AXF
VCC_AXF_1 VCC_AXF_2 VCC_AXF_3
B22 B21 A21 +VCC_AXF
C73 0.1U 10
R39 1/F 603
+VCC_SM_CK_L
C69 10U 603 6.3
SM CK
VCC_SM_CK_1 VCC_SM_CK_2 VCC_SM_CK_3 VCC_SM_CK_4
BF21 BH20 BG20 BF20 +VCC_SM_CK
L29 1uH/300MA 805
+1.8V_SUS
C357 1000P 50
VCC_TX_LVDS K47 +VCC_TX_LVDS
HV
VCC_HV_1 VCC_HV_2 VCC_HV_3
C35 B35 A35 +3.3V_RUN
+VCC_PEG
PEG
VCC_PEG_1 VCC_PEG_2 VCC_PEG_3 VCC_PEG_4 VCC_PEG_5
V48 U48 V47 U47 U46
R61 0 1206
+1.05V_VCCP
C355 10U 603 6.3
C356 4.7U 603 6.3
DMI
VCC_DMI_1 VCC_DMI_2 VCC_DMI_3 VCC_DMI_4
AH48 AF48 AH47 AG47 +VCC_RXR_DMI
L26 91nH/1.5A
+1.05V_VCCP
C337 10U 603 6.3
VTTLF
VTTLF1 VTTLF2 VTTLF3
A8 L1 AB2 +VTTLF1 +VTTLF2 +VTTLF3
+1.05V_VCCP
D23 RB751V-40
+1.05V_HV_MCH
R236 10
+3.3V_RUN
C362 0.1U/10V
Close to pin C35, B35 and A35
QUANTA COMPUTER
Title Cantiga (POWER)
Size Document Number AM3 Rev 1A
Date: Wednesday, March 25, 2009 Sheet 9 of 45



QUANTA COMPUTER

Title	Cantiga (VSS)	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 10 of 45	



ICH9M Internal VR Enable Strap
(Internal VR for VccSus1.05, VccSus1.5, VccCL1.5)

ICH_INTVRMEN	Low = Internal VR Disabled High = Internal VR Enabled(Default)

ICH9M LAN100 SLP Strap
(Internal VR for VccLAN1.05 and VccCL1.05)

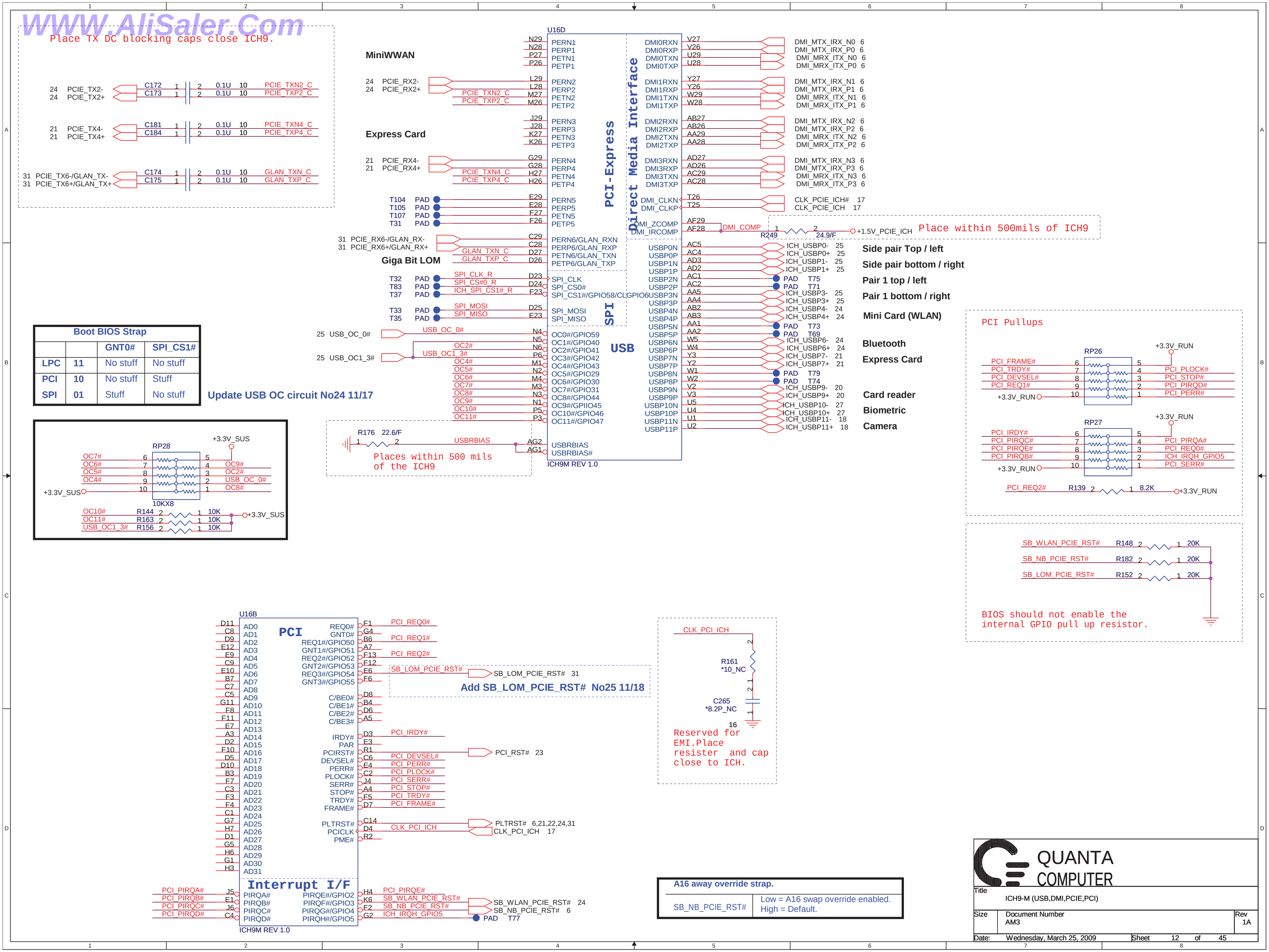
ICH_LAN100_SLP	Low = Internal VR Disabled High = Internal VR Enabled(Default)

XOR Chain Entrance Strap

ICH RSVD	HDA SDOUT	Description
0	0	RSVD
0	1	Enter XOR Chain
1	0	Normal Operation (Default)
1	1	Set PCIE port config bit 1

QUANTA COMPUTER

Title	ICH9-M (CPU,SATA,LPC,LAN,CODEC)	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 11 of 45	



Boot BIOS Strap

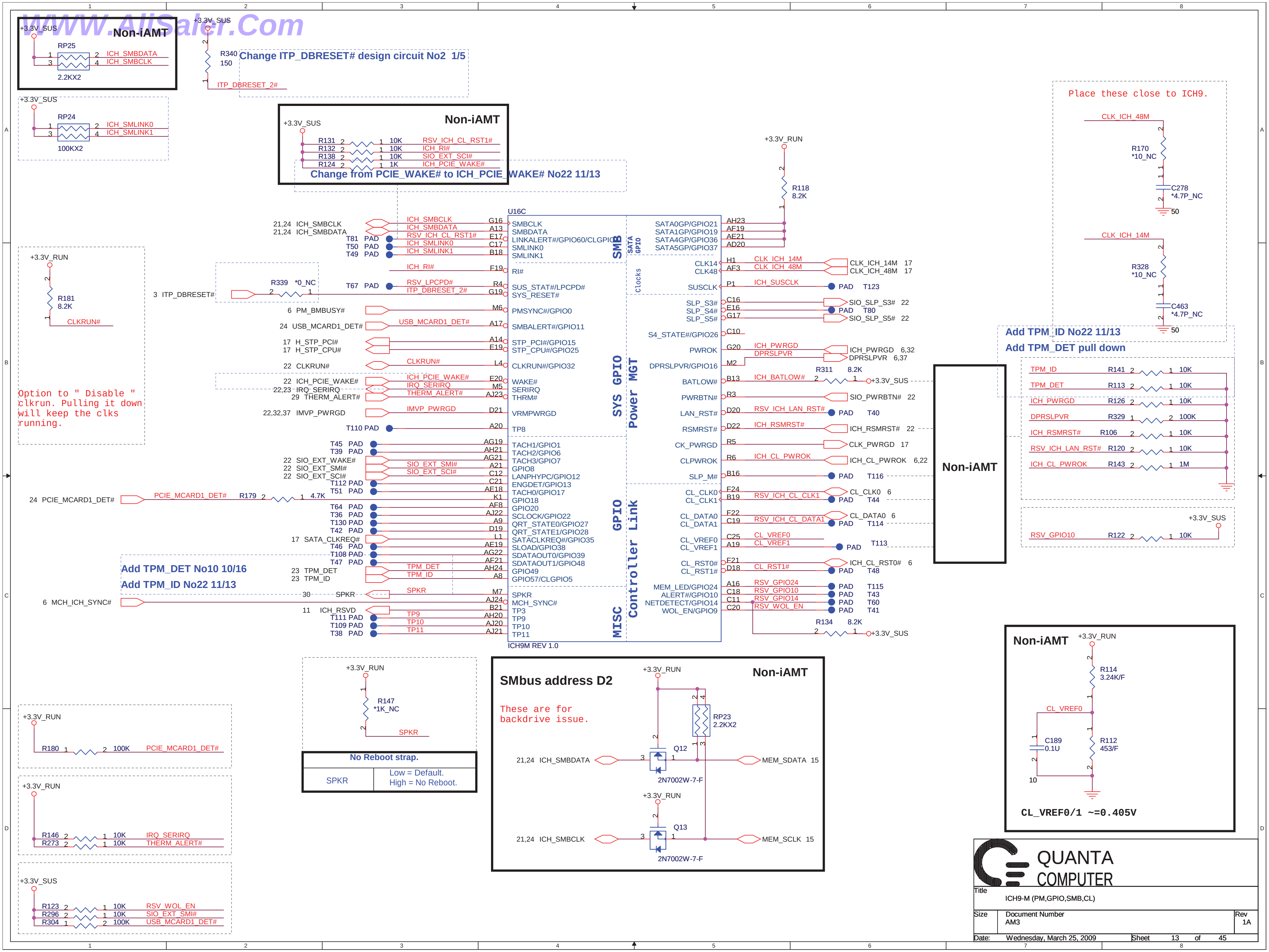
		GNT0#	SPI_CS1#
LPC	11	No stuff	No stuff
PCI	10	No stuff	Stuff
SPI	01	Stuff	No stuff

A16 away override strap.

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

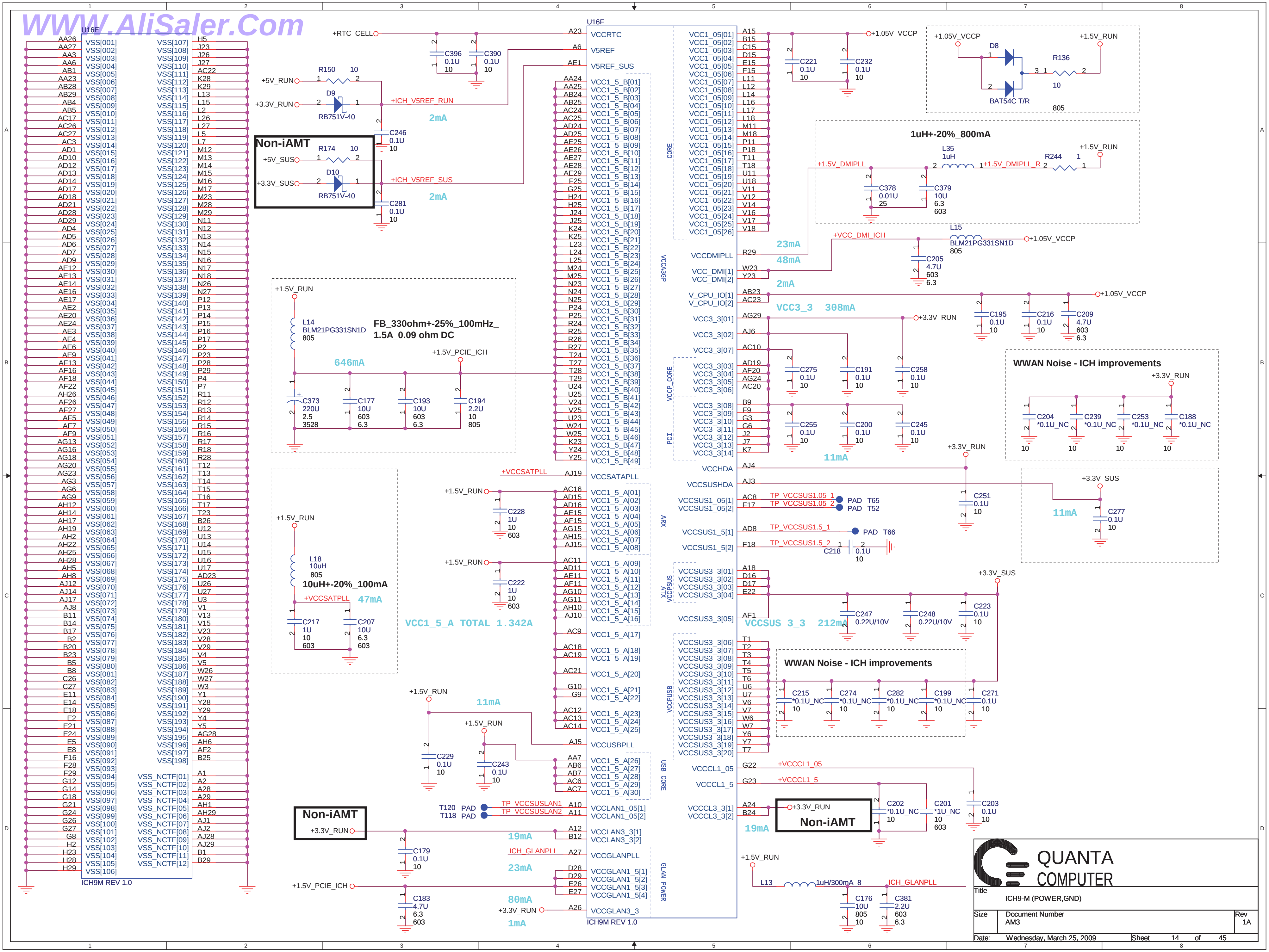
QUANTA COMPUTER

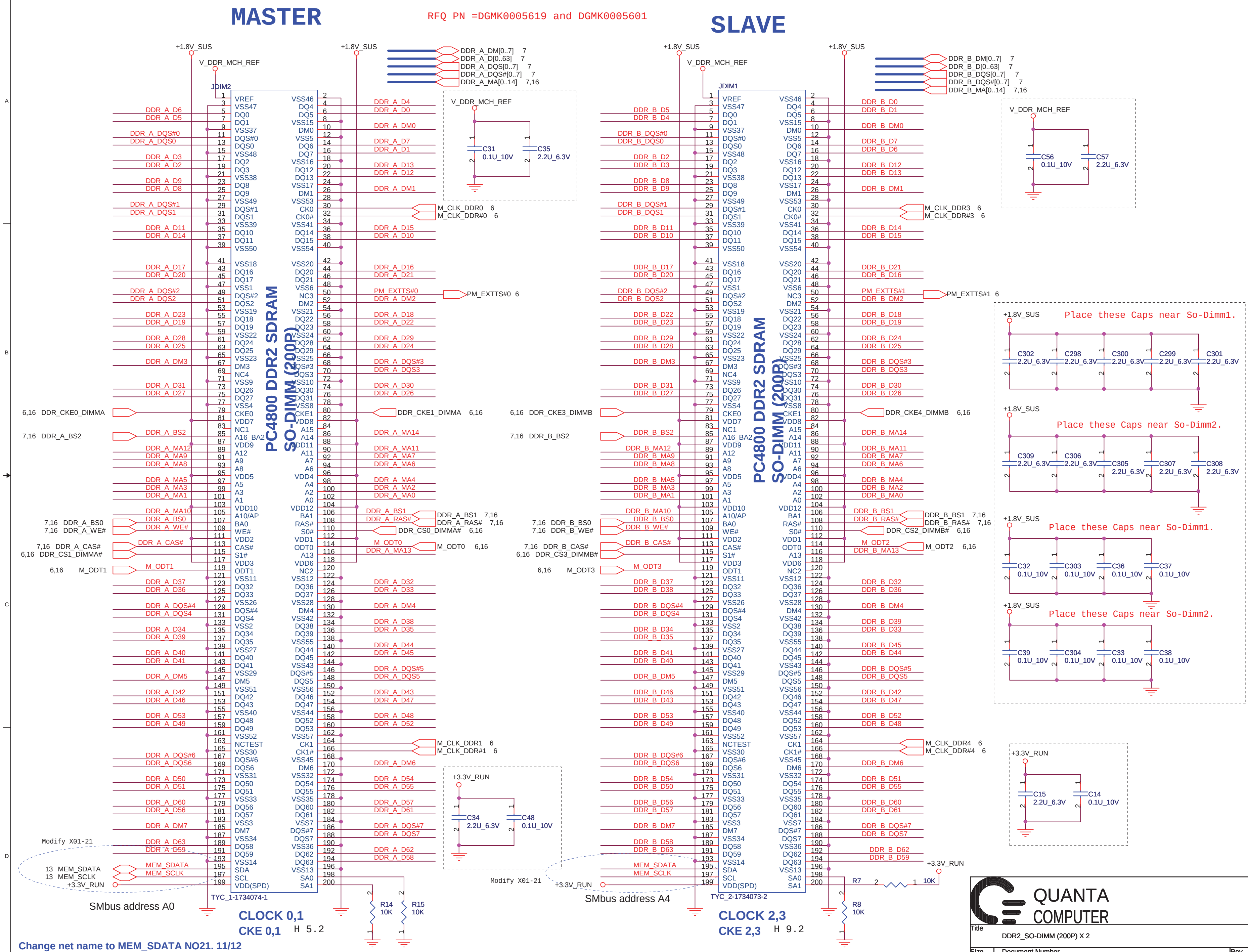
Title	ICH9-M (USB,DMI,PCIE,PCI)	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 12 of 45



QUANTA COMPUTER

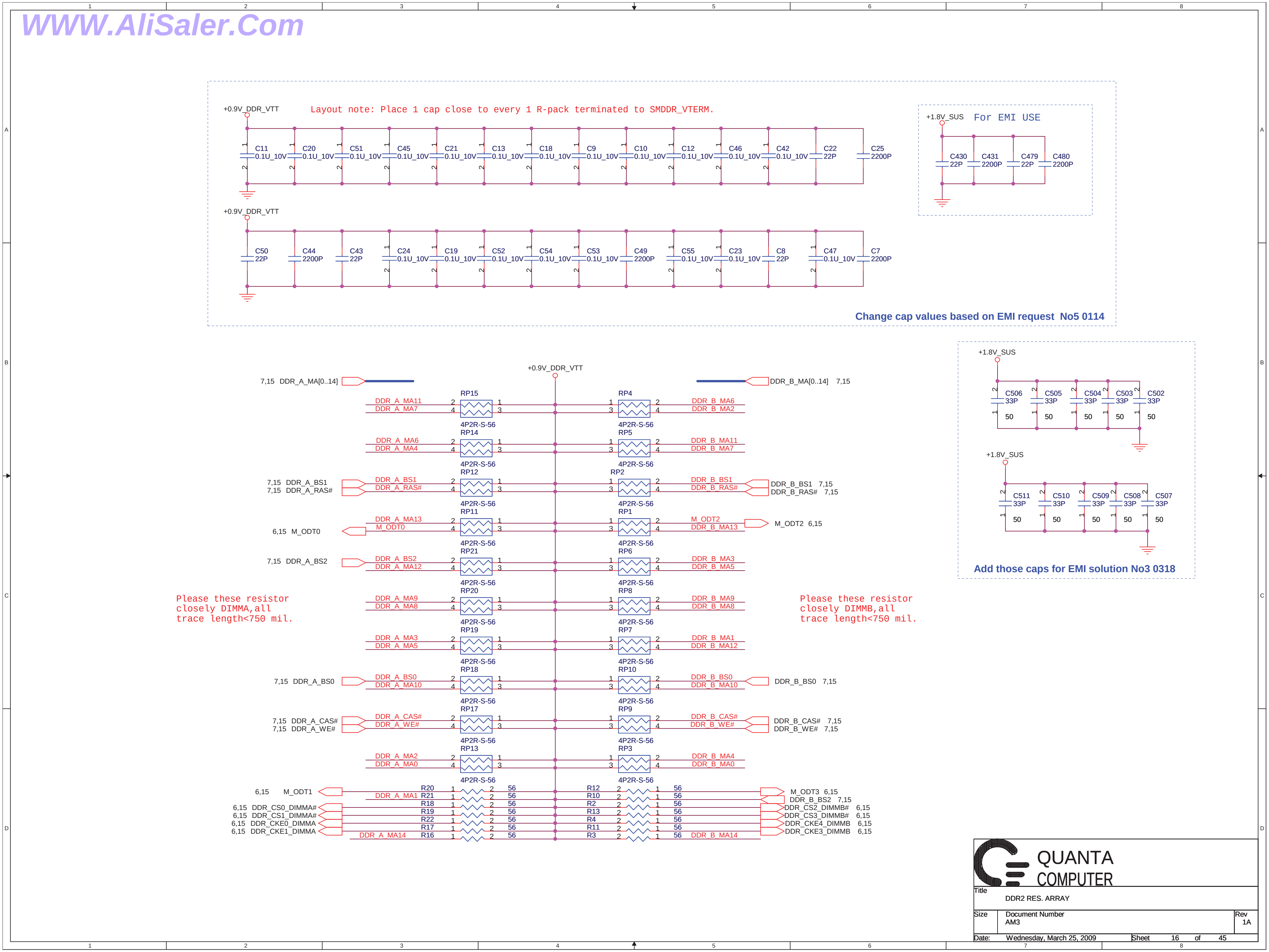
Title	ICH9-M (PM,GPIO,SMB,CL)	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 13 of 45


U16E
U16F
ICH9M REV 1.0
Non-iAMT
RB751V-40
2mA
1uH+-20%_800mA
BAT54C T/R
FB_330ohm+-25%_100mHz_
1.5A_0.09 ohm DC
646mA
10uH+-20%_100mA
47mA
VCC1_5_A TOTAL 1.342A
23mA
48mA
VCC3_3 308mA
11mA
WWAN Noise - ICH improvements
VCCSUS 3_3 212mA
19mA
80mA
1mA
QUANTA
COMPUTER
Title
ICH9-M (POWER,GND)
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 14 of 45

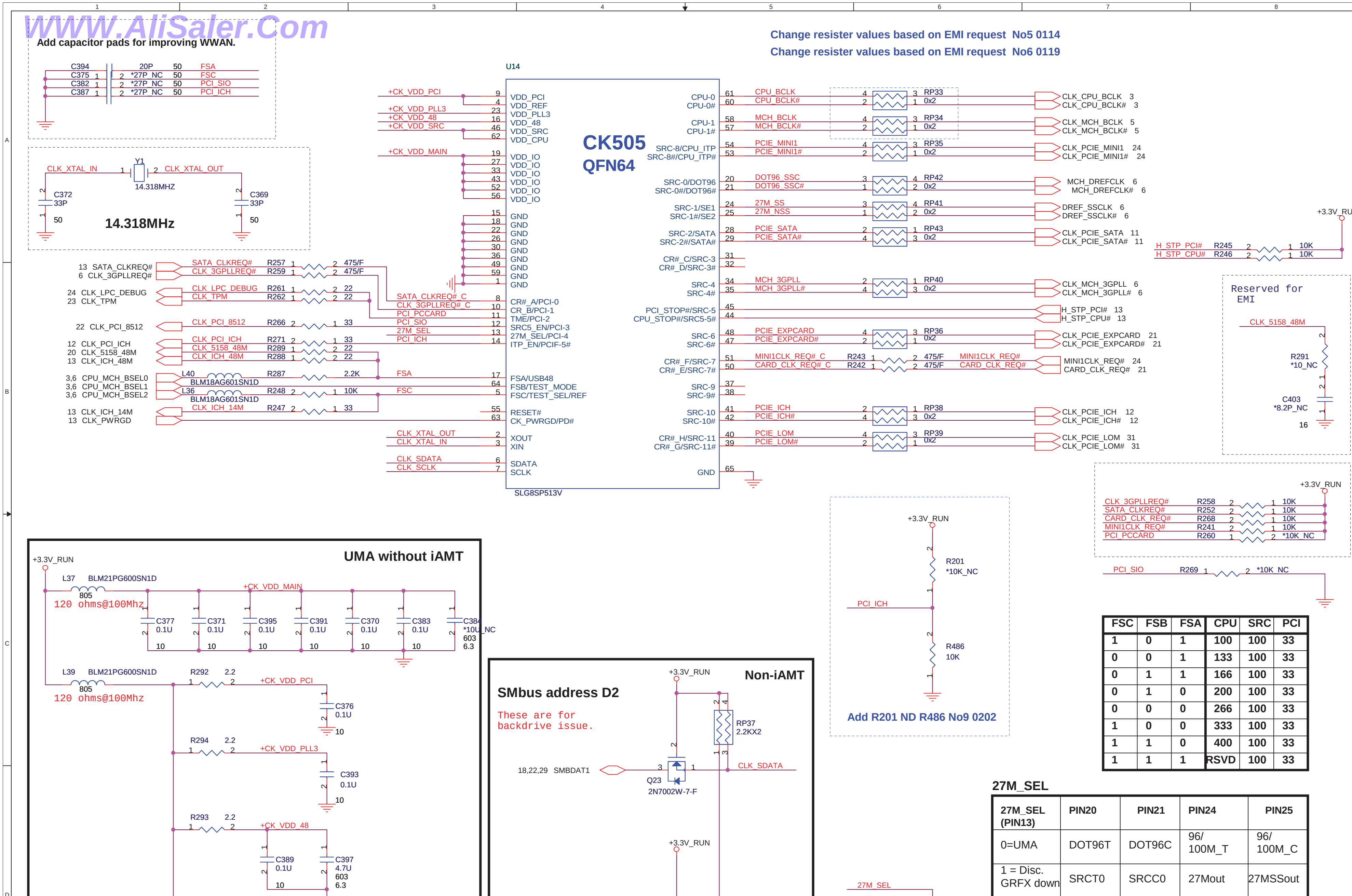


QUANTA COMPUTER

Title	DDR2_SO-DIMM (200P) X 2	
Size	Document Number: AM3	Rev: 1A
Date: Wednesday, March 25, 2009	Sheet 15 of 45	



+0.9V_DDR_VTT
Layout note: Place 1 cap close to every 1 R-pack terminated to SMDDR_VTERM.
C11 0.1U_10V
C20 0.1U_10V
C51 0.1U_10V
C45 0.1U_10V
C21 0.1U_10V
C13 0.1U_10V
C18 0.1U_10V
C9 0.1U_10V
C10 0.1U_10V
C12 0.1U_10V
C46 0.1U_10V
C42 0.1U_10V
C22 22P
C25 2200P
C50 22P
C44 2200P
C43 22P
C24 0.1U_10V
C19 0.1U_10V
C52 0.1U_10V
C54 0.1U_10V
C53 0.1U_10V
C49 2200P
C55 0.1U_10V
C23 0.1U_10V
C8 22P
C47 0.1U_10V
C7 2200P
+1.8V_SUS
For EMI USE
C430 22P
C431 2200P
C479 22P
C480 2200P
Change cap values based on EMI request No5 0114
C506 33P
C505 33P
C504 33P
C503 33P
C502 33P
C511 33P
C510 33P
C509 33P
C508 33P
C507 33P
Add those caps for EMI solution No3 0318
7,15 DDR_A_MA[0..14]
DDR_B_MA[0..14] 7,15
4P2R-S-56
Please these resistor closely DIMMA,all trace length<750 mil.
Please these resistor closely DIMMB,all trace length<750 mil.
7,15 DDR_A_BS1
7,15 DDR_A_RAS#
6,15 M_ODT0
7,15 DDR_A_BS2
7,15 DDR_A_BS0
7,15 DDR_A_CAS#
7,15 DDR_A_WE#
6,15 M_ODT1
6,15 DDR_CS0_DIMMA#
6,15 DDR_CS1_DIMMA#
6,15 DDR_CKE0_DIMMA
6,15 DDR_CKE1_DIMMA
DDR_B_BS1 7,15
DDR_B_RAS# 7,15
M_ODT2 6,15
DDR_B_BS0 7,15
DDR_B_CAS# 7,15
DDR_B_WE# 7,15
M_ODT3 6,15
DDR_B_BS2 7,15
DDR_CS2_DIMMB# 6,15
DDR_CS3_DIMMB# 6,15
DDR_CKE4_DIMMB 6,15
DDR_CKE3_DIMMB 6,15
QUANTA COMPUTER
Title
DDR2 RES. ARRAY
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 16 of 45



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

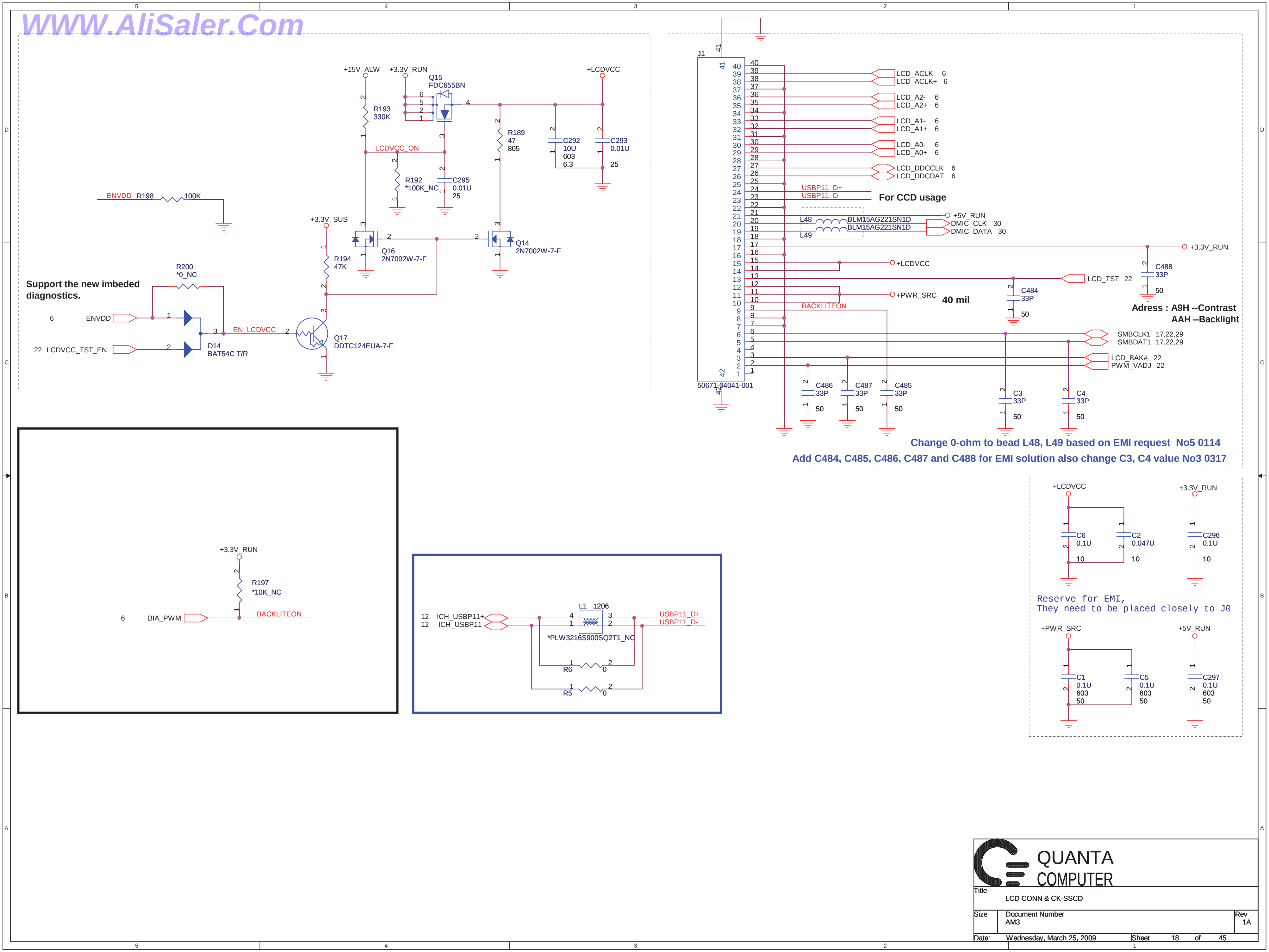
27M_SEL (PIN13)	PIN20	PIN21	PIN24	PIN25
0=UMA	DOT96T	DOT96C	96/ 100M_T	96/ 100M_C
1 = Disc. GRFX down	SRCT0	SRCC0	27Mout	27MSSout

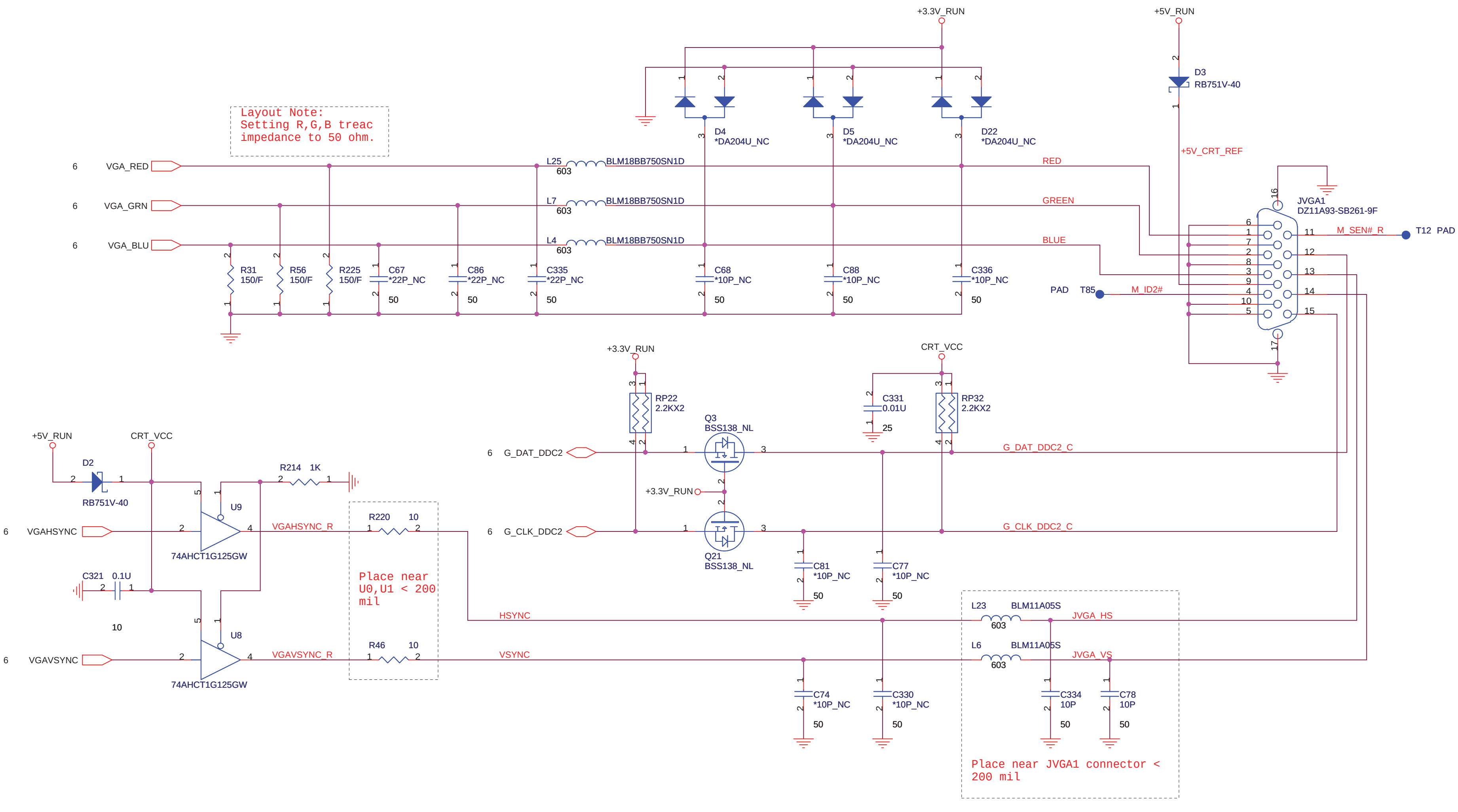
QUANTA COMPUTER

Title: CLOCK GENERATOR

Size | Document Number: AM3 | Rev: 1A

Date: Wednesday, March 25, 2009 | Sheet 17 of 45


+15V_ALW
+3.3V_RUN
Q15
FDC655BN
+LCDVCC
R193
330K
R189
47
805
C292
10U
603
6.3
C293
0.01U
25
LCDVCC_ON
R192
*100K_NC
C295
0.01U
25
ENVDD R198 100K
+3.3V_SUS
Q16
2N7002W-7-F
Q14
2N7002W-7-F
R194
47K
Support the new imbeded diagnostics.
R200
*0_NC
6 ENVDD
22 LCDVCC_TST_EN
D14
BAT54C T/R
EN_LCDVCC
Q17
DDTC124EUA-7-F
J1
50671-04041-001
LCD_ACLK- 6
LCD_ACLK+ 6
LCD_A2- 6
LCD_A2+ 6
LCD_A1- 6
LCD_A1+ 6
LCD_A0- 6
LCD_A0+ 6
LCD_DDCCLK 6
LCD_DDCDAT 6
USBP11_D+
USBP11_D-
For CCD usage
L48
L49
BLM15AG221SN1D
BLM15AG221SN1D
+5V_RUN
DMIC_CLK 30
DMIC_DATA 30
+3.3V_RUN
+LCDVCC
C488
33P
50
LCD_TST 22
C484
33P
50
+PWR_SRC
40 mil
BACKLITEON
Adress : A9H --Contrast
AAH --Backlight
SMBCLK1 17,22,29
SMBDAT1 17,22,29
LCD_BAK# 22
PWM_VADJ 22
C486
33P
50
C487
33P
50
C485
33P
50
C3
33P
50
C4
33P
50
Change 0-ohm to bead L48, L49 based on EMI request No5 0114
Add C484, C485, C486, C487 and C488 for EMI solution also change C3, C4 value No3 0317
+LCDVCC
+3.3V_RUN
C6
0.1U
10
C2
0.047U
10
C296
0.1U
10
Reserve for EMI,
They need to be placed closely to J0
+PWR_SRC
+5V_RUN
C1
0.1U
603
50
C5
0.1U
603
50
C297
0.1U
603
50
+3.3V_RUN
R197
*10K_NC
6 BIA_PWM
BACKLITEON
L1 1206
12 ICH_USBP11+
12 ICH_USBP11-
*PLW3216S900SQ2T1_NC
USBP11_D+
USBP11_D-
R6 0
R5 0
QUANTA
COMPUTER
Title
LCD CONN & CK-SSCD
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 18 of 45

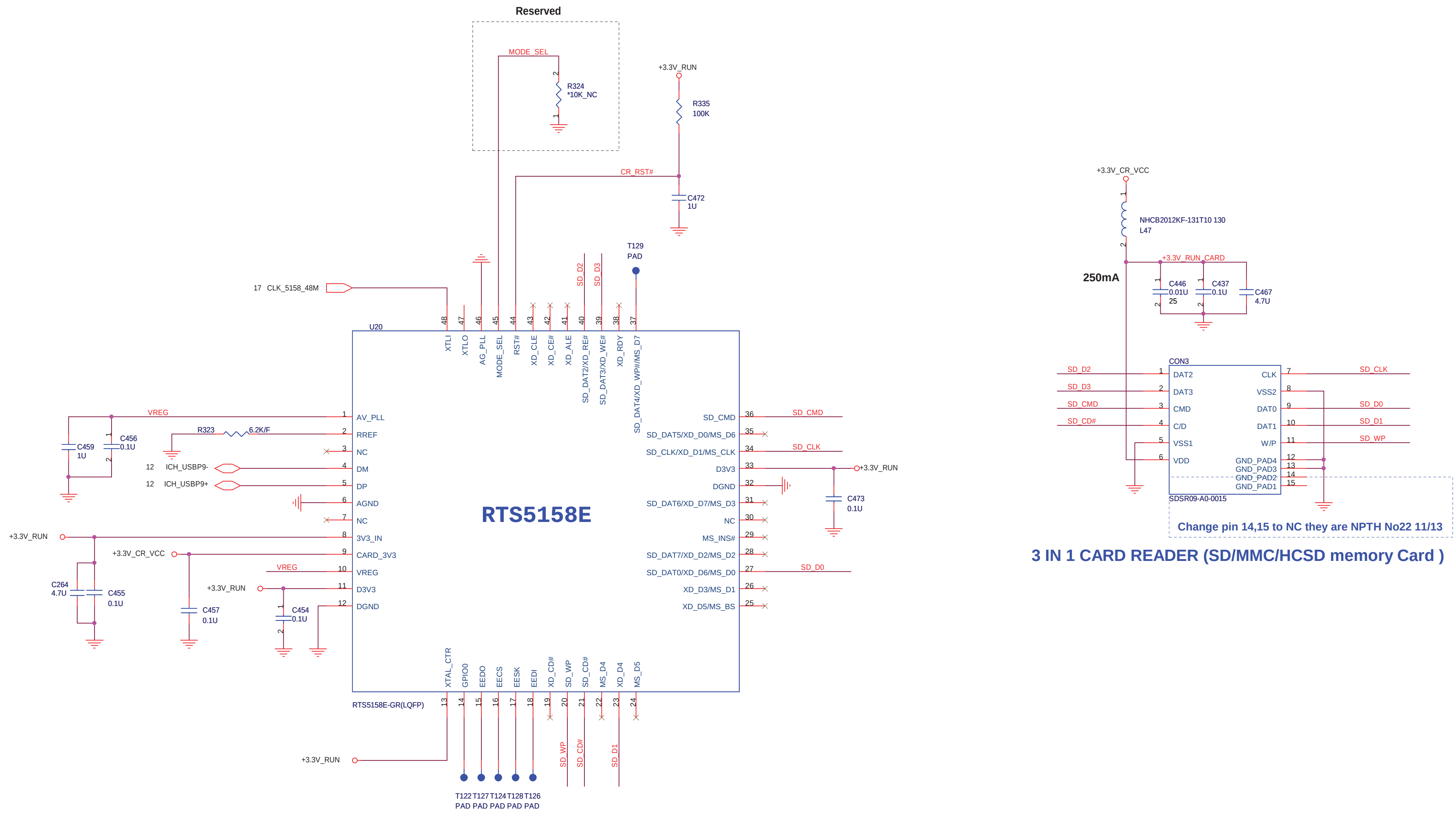


QUANTA COMPUTER

Title: CRT&TV CONN

Size | Document Number: AM3 | Rev: 1A

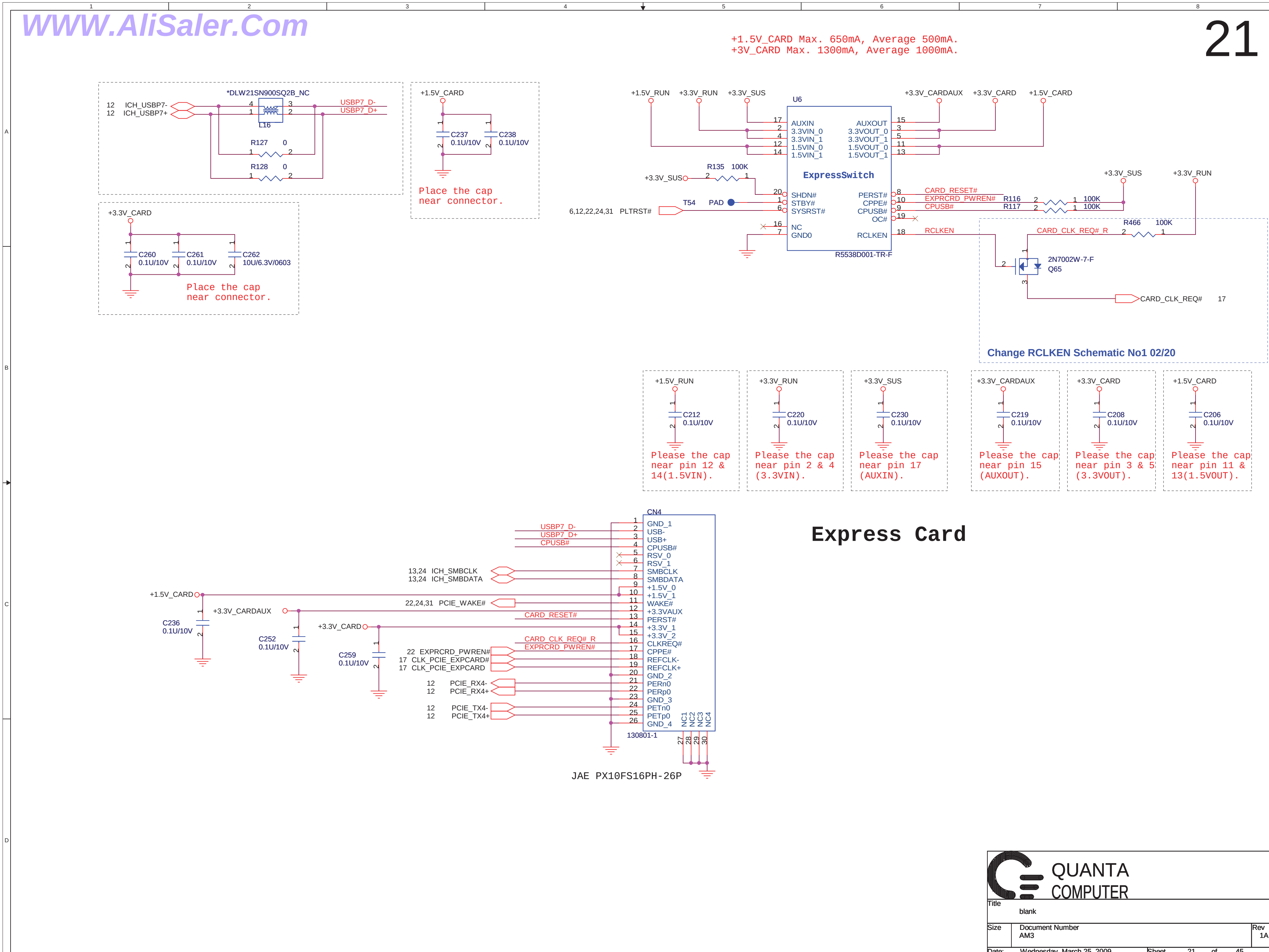
Date: Wednesday, March 25, 2009 | Sheet 19 of 45

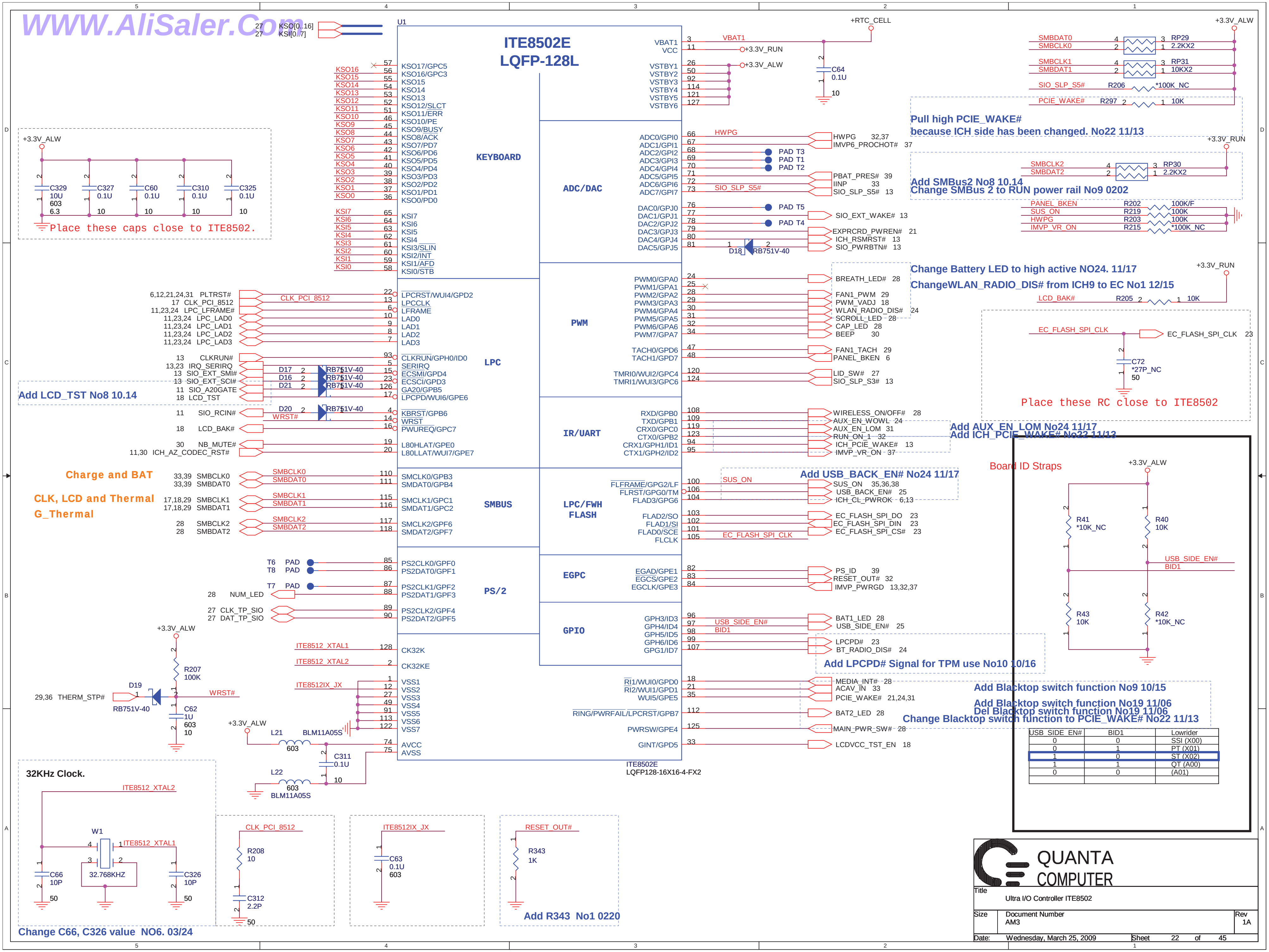


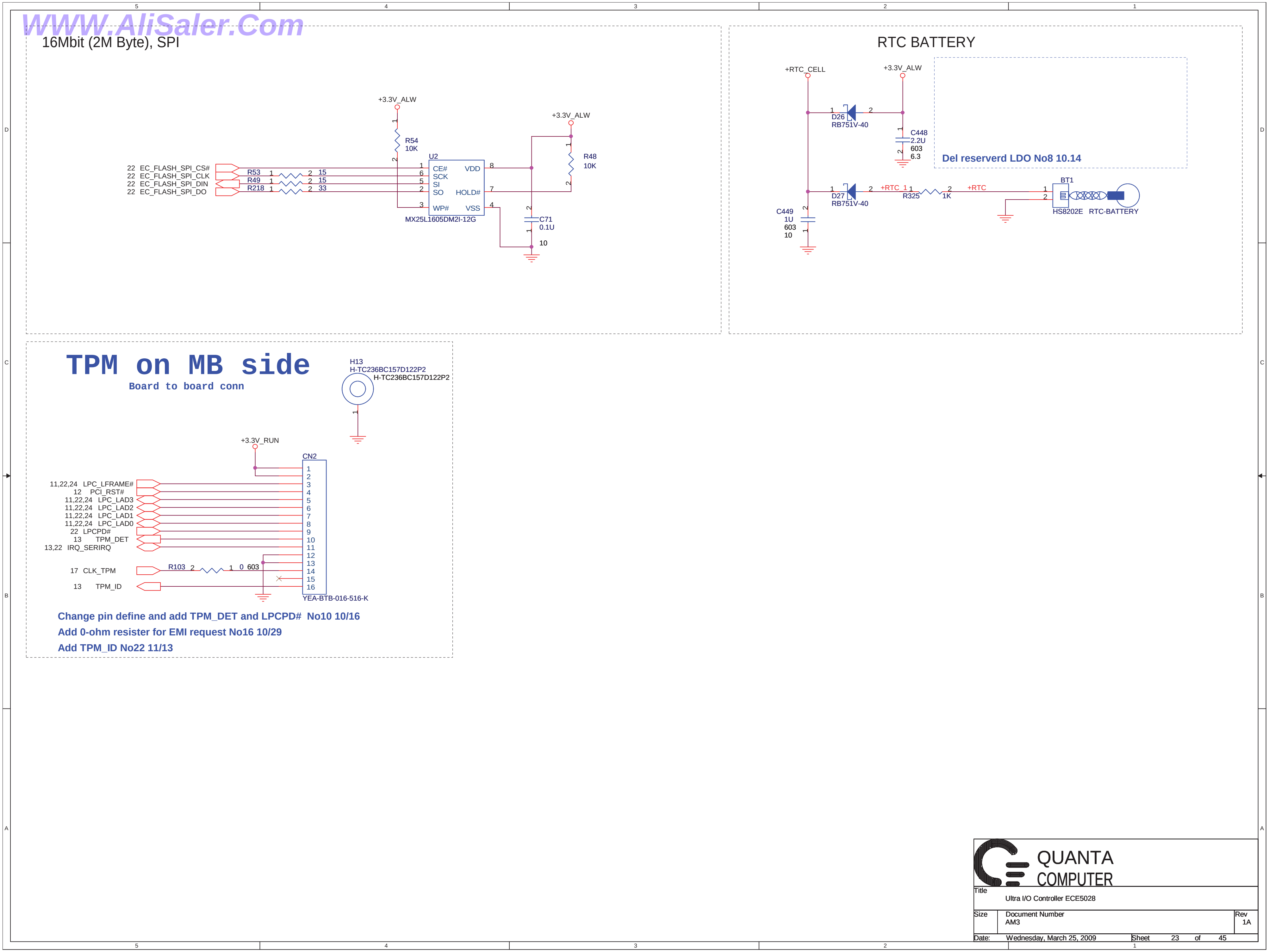
3 IN 1 CARD READER (SD/MMC/HCSD memory Card)

QUANTA COMPUTER

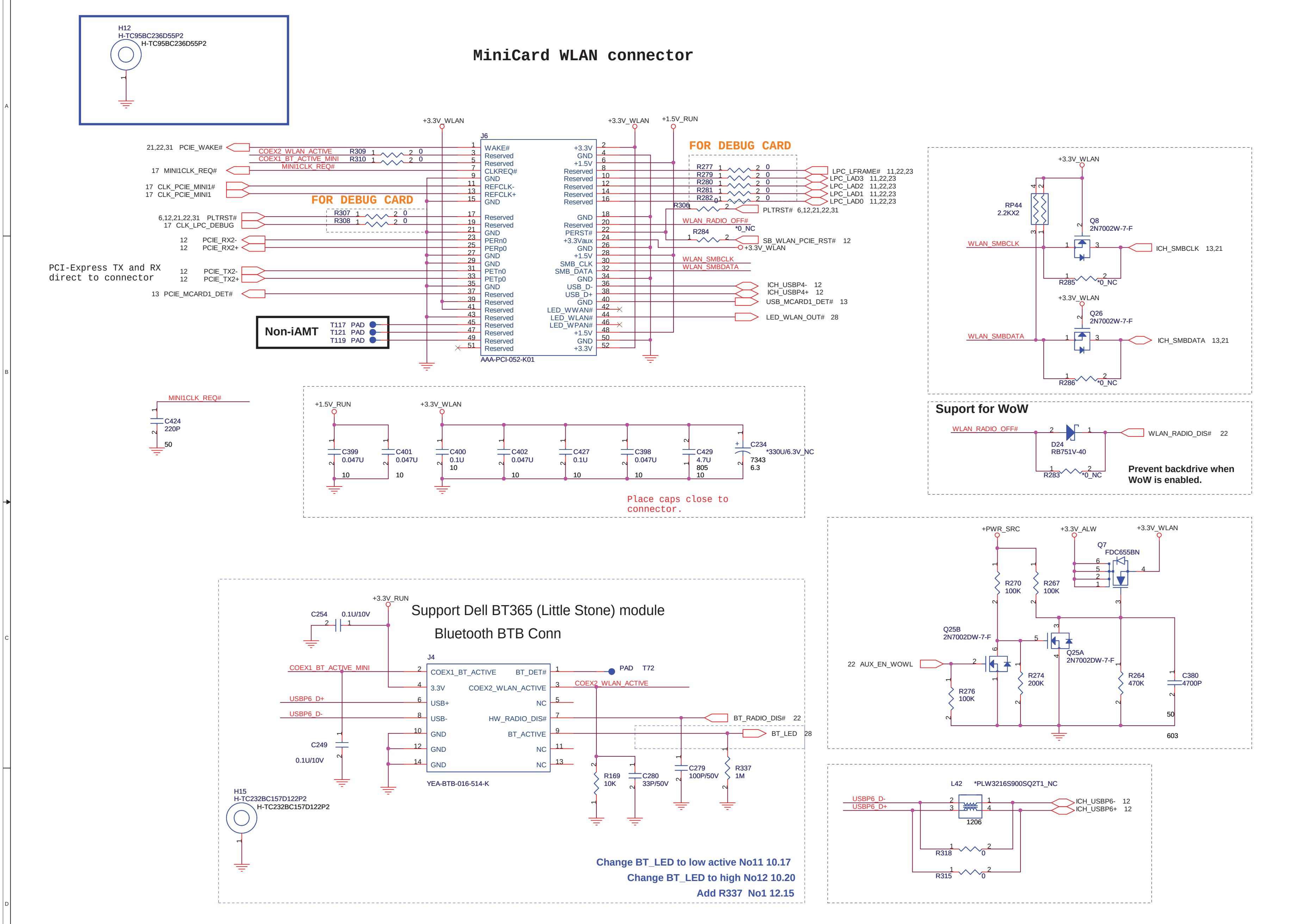
Title	5 IN 1 CONTROLLER
Size	Document Number: AM3 — Rev 1A
Date:	Wednesday, March 25, 2009 — Sheet 20 of 45


+1.5V_CARD Max. 650mA, Average 500mA.
+3V_CARD Max. 1300mA, Average 1000mA.
*DLW21SN900SQ2B_NC
12 ICH_USBP7-
12 ICH_USBP7+
USBP7_D-
USBP7_D+
L16
R127 0
R128 0
+1.5V_CARD
C237 0.1U/10V
C238 0.1U/10V
Place the cap near connector.
+3.3V_CARD
C260 0.1U/10V
C261 0.1U/10V
C262 10U/6.3V/0603
Place the cap near connector.
+1.5V_RUN
+3.3V_RUN
+3.3V_SUS
U6
AUXIN
3.3VIN_0
3.3VIN_1
1.5VIN_0
1.5VIN_1
AUXOUT
3.3VOUT_0
3.3VOUT_1
1.5VOUT_0
1.5VOUT_1
+3.3V_CARDAUX
+3.3V_CARD
+1.5V_CARD
ExpressSwitch
R135 100K
+3.3V_SUS
SHDN#
STBY#
SYSRST#
NC
GND0
T54
PAD
6,12,22,24,31 PLTRST#
PERST#
CPPE#
CPUSB#
OC#
RCLKEN
R5538D001-TR-F
CARD_RESET#
EXPRCRD_PWREN#
CPUSB#
R116 100K
R117 100K
+3.3V_SUS
+3.3V_RUN
RCLKEN
CARD_CLK_REQ#_R
R466 100K
2N7002W-7-F
Q65
CARD_CLK_REQ# 17
Change RCLKEN Schematic No1 02/20
+1.5V_RUN
C212 0.1U/10V
Please the cap near pin 12 & 14(1.5VIN).
+3.3V_RUN
C220 0.1U/10V
Please the cap near pin 2 & 4 (3.3VIN).
+3.3V_SUS
C230 0.1U/10V
Please the cap near pin 17 (AUXIN).
+3.3V_CARDAUX
C219 0.1U/10V
Please the cap near pin 15 (AUXOUT).
+3.3V_CARD
C208 0.1U/10V
Please the cap near pin 3 & 5 (3.3VOUT).
+1.5V_CARD
C206 0.1U/10V
Please the cap near pin 11 & 13(1.5VOUT).
CN4
GND_1
USB-
USB+
CPUSB#
RSV_0
RSV_1
SMBCLK
SMBDATA
+1.5V_0
+1.5V_1
WAKE#
+3.3VAUX
PERST#
+3.3V_1
+3.3V_2
CLKREQ#
CPPE#
REFCLK-
REFCLK+
GND_2
PERn0
PERp0
GND_3
PETn0
PETp0
GND_4
NC1
NC2
NC3
NC4
130801-1
USBP7_D-
USBP7_D+
CPUSB#
13,24 ICH_SMBCLK
13,24 ICH_SMBDATA
+1.5V_CARD
C236 0.1U/10V
+3.3V_CARDAUX
22,24,31 PCIE_WAKE#
CARD_RESET#
C252 0.1U/10V
+3.3V_CARD
C259 0.1U/10V
CARD_CLK_REQ#_R
EXPRCRD_PWREN#
22 EXPRCRD_PWREN#
17 CLK_PCIE_EXPCARD#
17 CLK_PCIE_EXPCARD
12 PCIE_RX4-
12 PCIE_RX4+
12 PCIE_TX4-
12 PCIE_TX4+
JAE PX10FS16PH-26P
Express Card
QUANTA COMPUTER
Title
blank
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 21 of 45

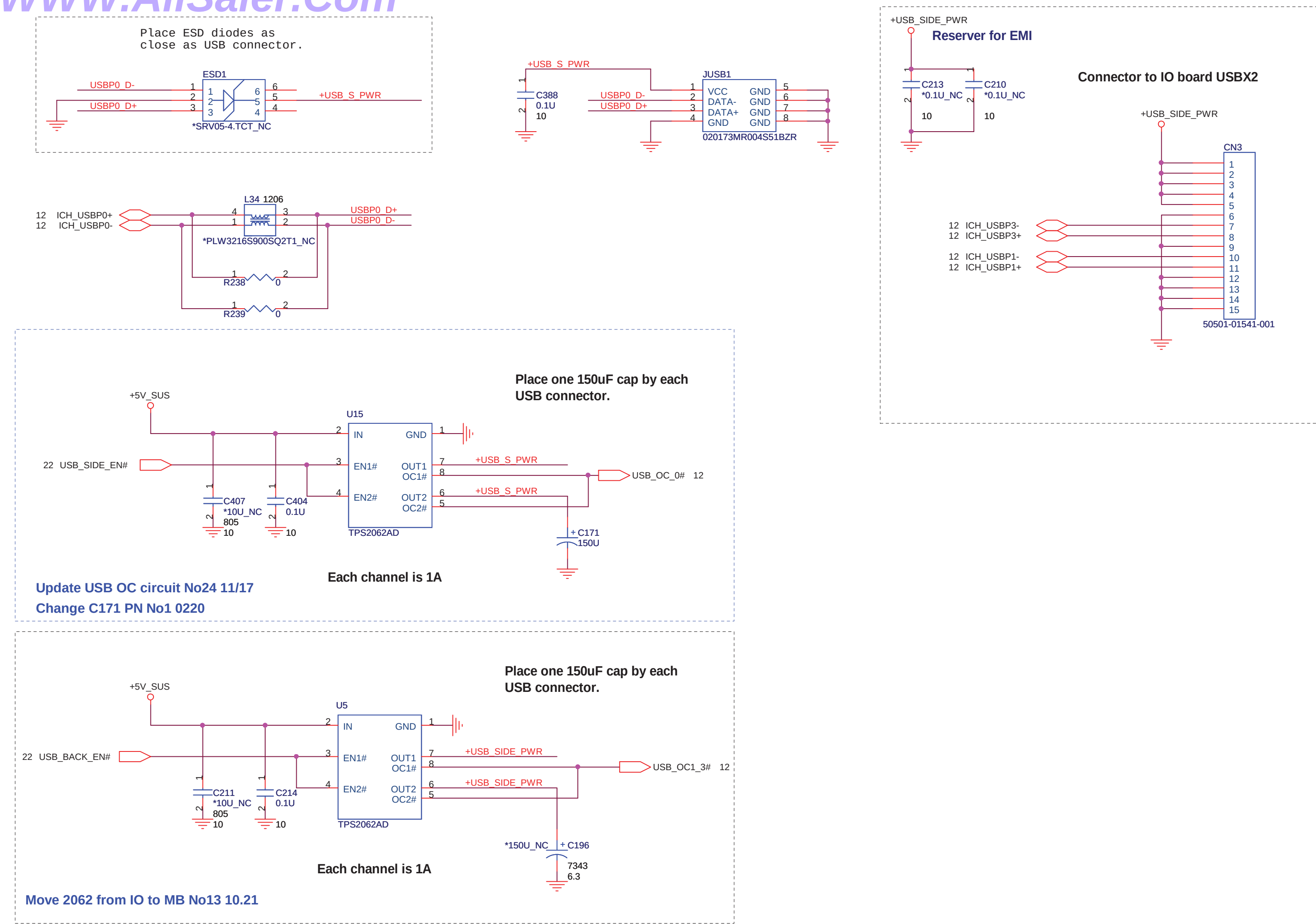

ITE8502E
LQFP-128L
U1
KEYBOARD
LPC
SMBUS
PS/2
ADC/DAC
PWM
IR/UART
LPC/FWH
FLASH
EGPC
GPIO
ITE8502E
LQFP128-16X16-4-FX2
Place these caps close to ITE8502.
C329 10U 603 6.3
C327 0.1U 10
C60 0.1U 10
C310 0.1U 10
C325 0.1U 10
Add LCD_TST No8 10.14
Charge and BAT
CLK, LCD and Thermal
G_Thermal
Pull high PCIE_WAKE#
because ICH side has been changed. No22 11/13
Add SMBus2 No8 10.14
Change SMBus 2 to RUN power rail No9 0202
Change Battery LED to high active NO24. 11/17
ChangeWLAN_RADIO_DIS# from ICH9 to EC No1 12/15
Place these RC close to ITE8502
Add AUX_EN_LOM No24 11/17
Add ICH_PCIE_WAKE# No22 11/13
Add USB_BACK_EN# No24 11/17
Board ID Straps
Add LPCPD# Signal for TPM use No10 10/16
Add Blacktop switch function No9 10/15
Add Blacktop switch function No19 11/06
Del Blacktop switch function No19 11/06
Change Blacktop switch function to PCIE_WAKE# No22 11/13
USB_SIDE_EN# | BID1 | Lowrider
0 | 0 | SSI (X00)
0 | 1 | PT (X01)
1 | 0 | ST (X02)
1 | 1 | QT (A00)
0 | 0 | (A01)
32KHz Clock.
W1 32.768KHZ
C66 10P 50
C326 10P 50
R208 10
C312 2.2P 50
C63 0.1U 603
R343 1K
Add R343 No1 0220
Change C66, C326 value NO6. 03/24
QUANTA
COMPUTER
Title
Ultra I/O Controller ITE8502
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 22 of 45



16Mbit (2M Byte), SPI
+3.3V_ALW
R54
10K
U2
22 EC_FLASH_SPI_CS#
22 EC_FLASH_SPI_CLK
22 EC_FLASH_SPI_DIN
22 EC_FLASH_SPI_DO
R53 15
R49 15
R218 33
CE#
SCK
SI
SO
WP#
VDD
HOLD#
VSS
MX25L1605DM2I-12G
R48
10K
C71
0.1U
10
RTC BATTERY
+RTC_CELL
+3.3V_ALW
D26
RB751V-40
C448
2.2U
603
6.3
Del reserverd LDO No8 10.14
D27
RB751V-40
+RTC_1
R325
1K
+RTC
BT1
HS8202E
RTC-BATTERY
C449
1U
603
10
TPM on MB side
Board to board conn
H13
H-TC236BC157D122P2
H-TC236BC157D122P2
+3.3V_RUN
CN2
11,22,24 LPC_LFRAME#
12 PCI_RST#
11,22,24 LPC_LAD3
11,22,24 LPC_LAD2
11,22,24 LPC_LAD1
11,22,24 LPC_LAD0
22 LPCPD#
13 TPM_DET
13,22 IRQ_SERIRQ
17 CLK_TPM
R103
0 603
13 TPM_ID
YEA-BTB-016-516-K
Change pin define and add TPM_DET and LPCPD# No10 10/16
Add 0-ohm resister for EMI request No16 10/29
Add TPM_ID No22 11/13
QUANTA
COMPUTER
Title
Ultra I/O Controller ECE5028
Size
Document Number
AM3
Rev
1A
Date:
Wednesday, March 25, 2009
Sheet 23 of 45



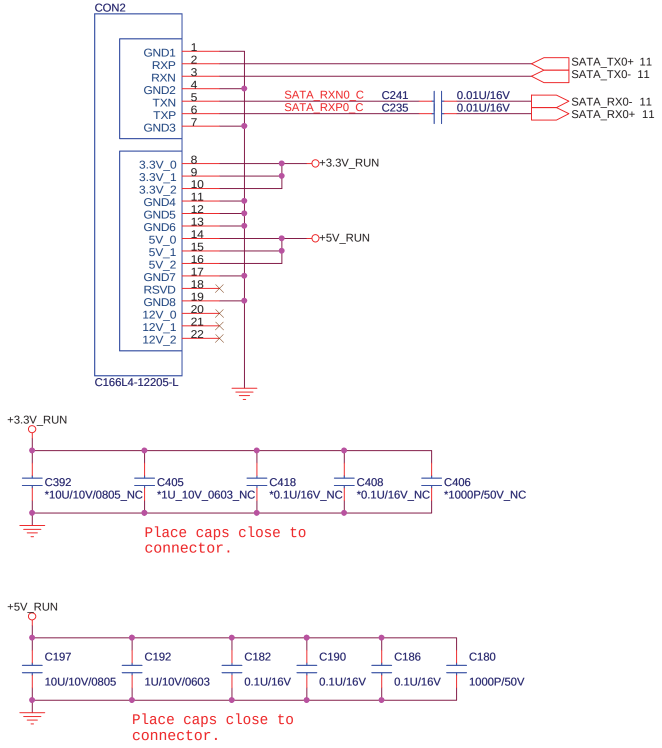
QUANTA COMPUTER		
Title	MDC CONN.	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 24 of 45



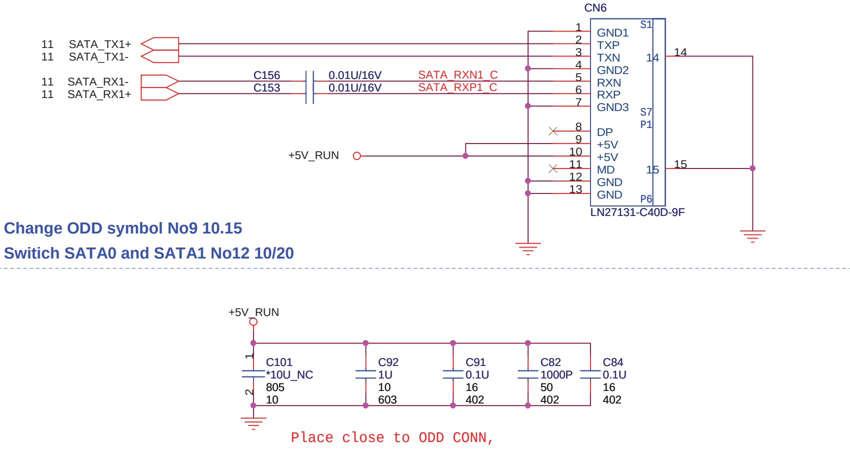
QUANTA COMPUTER

Title	SERIAL PORT & USB	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 25 of 45	

SATA HDD Connector.



SATA ODD Connector.

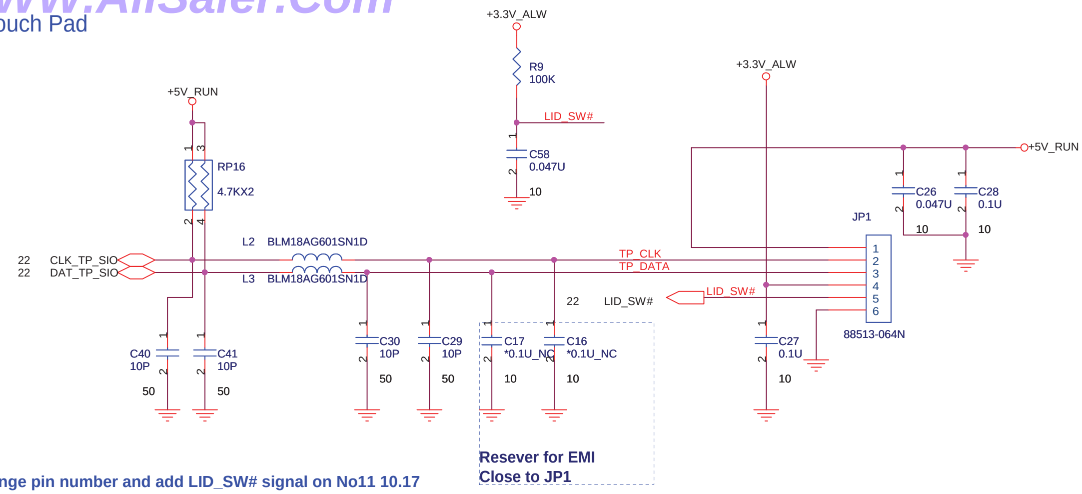


Change ODD symbol No9 10.15

Switch SATA0 and SATA1 No12 10/20

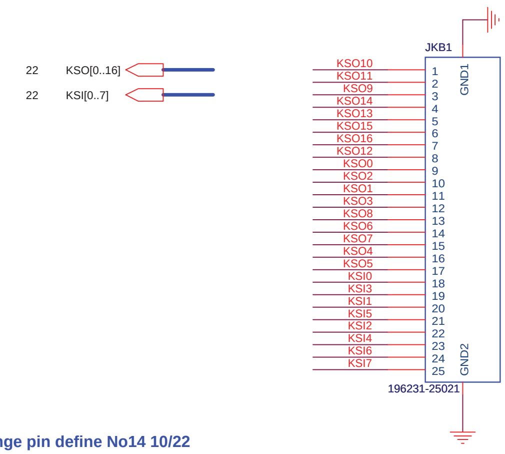
QUANTA COMPUTER		
Title	SATA (HDD&CD_ROM)	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 26 of 45

Touch Pad



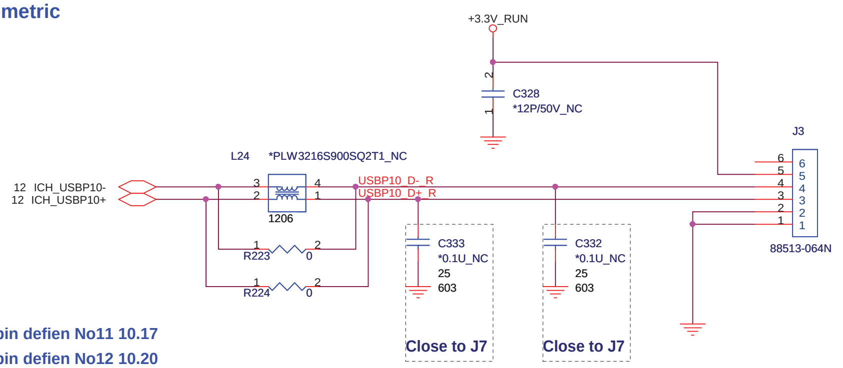
Change pin number and add LID_SW# signal on No11 10.17
Change pin define No14 10/22
Change touch pad pn and footprint No14 10/22
Change Touch pad pin define, avoiding power and ground pin close to each other

KEYBOARD CONNECTOR



Change pin define No14 10/22
Change pin define No22 11/13

Biometric

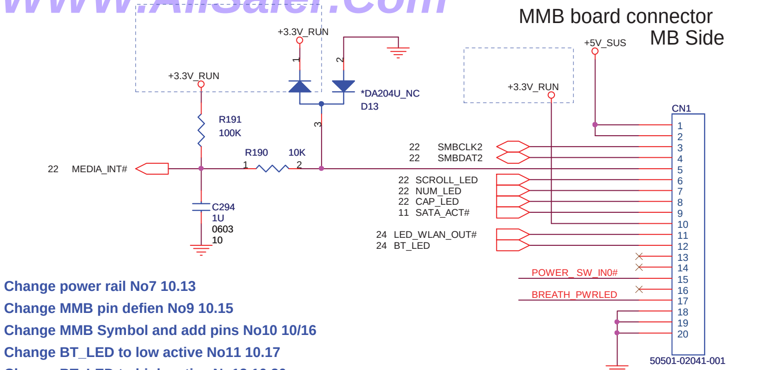


Change pin defien No11 10.17
Change pin defien No12 10.20
Change touch pad pn and footprint No14 10/22
Change FP pin define No15 10/24
Change FP pin define No23 11/14

QUANTA COMPUTER

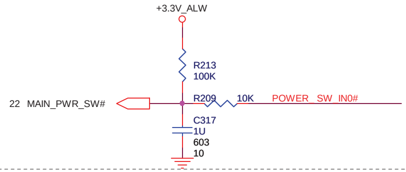
Title	TOUCH PAD, BULE TOOTH & FIR	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 27 of 45

MMB board connector MB Side



Change power rail No7 10.13
Change MMB pin defien No9 10.15
Change MMB Symbol and add pins No10 10/16
Change BT_LED to low active No11 10.17
Change BT_LED to high active No12 10.20
Change 3.3V_ALW to 3.3V_SUS No24 11/17
Change MMB IC power rail from SUS to RUN No26 11/19

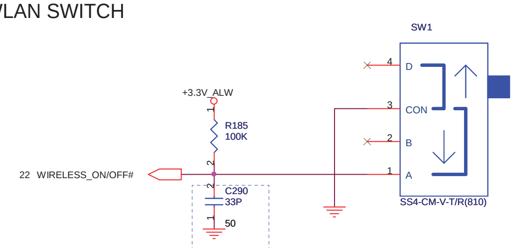
Power Switch



Blacktop Switch

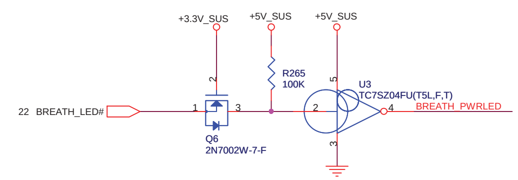
Add Blacktop switch function No9 10/15
Del Blacktop switch function No19 11/06
Add Blacktop switch function No19 11/06
Del Blacktop switch function No23 11/14

WLAN SWITCH



Change C290 PN and size No3 0318

Power & Suspend.

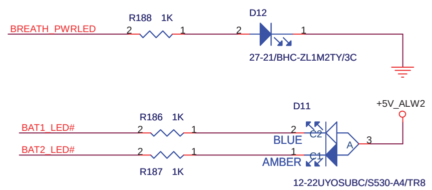


Add WLAN LED on MB NO7. 10/13
Del WLAN LED on MB No9 10/15

Battery status.

Change Battery setting NO20. 11/11
Change Battery setting NO24. 11/17

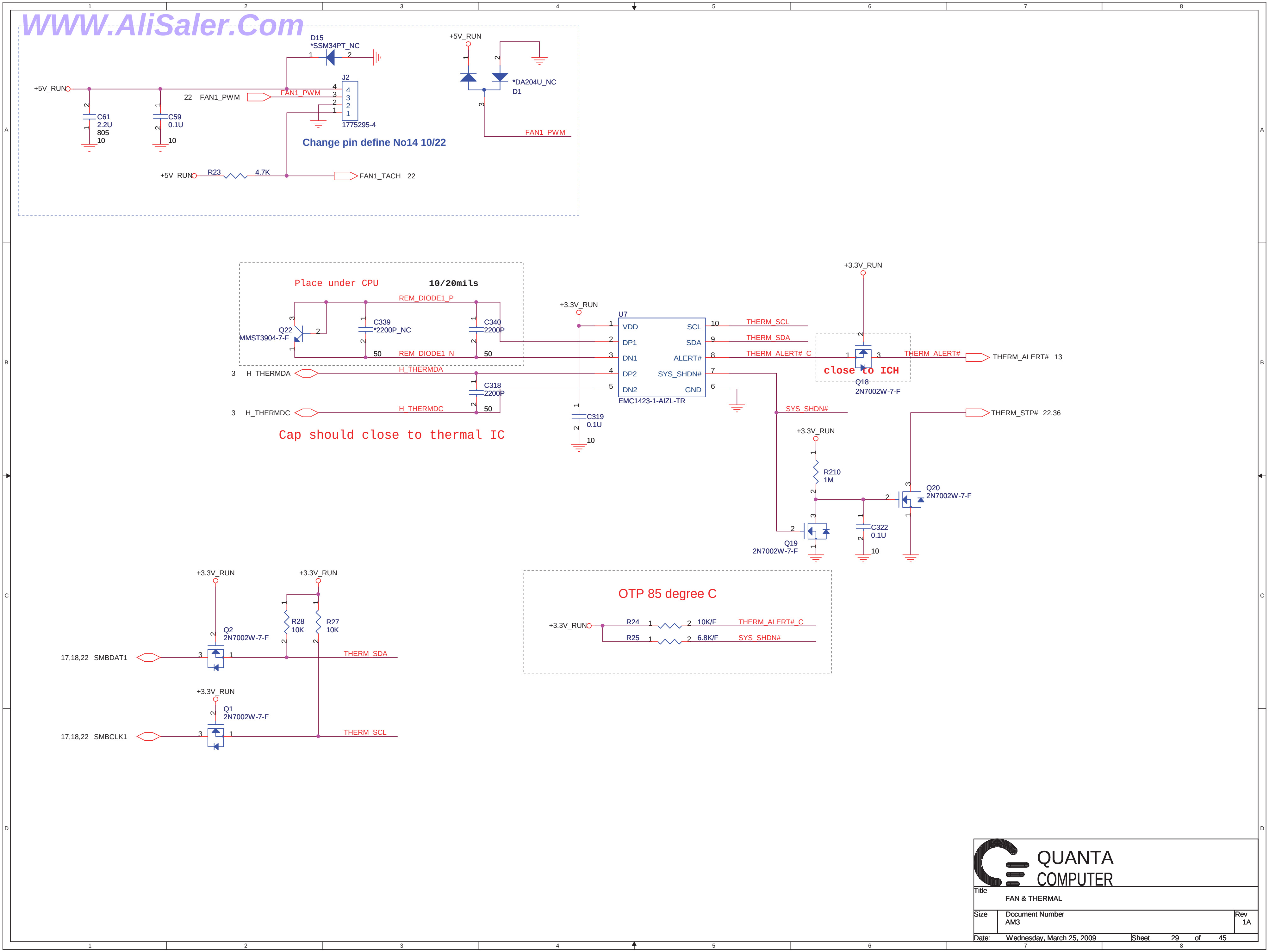
Right angle LED

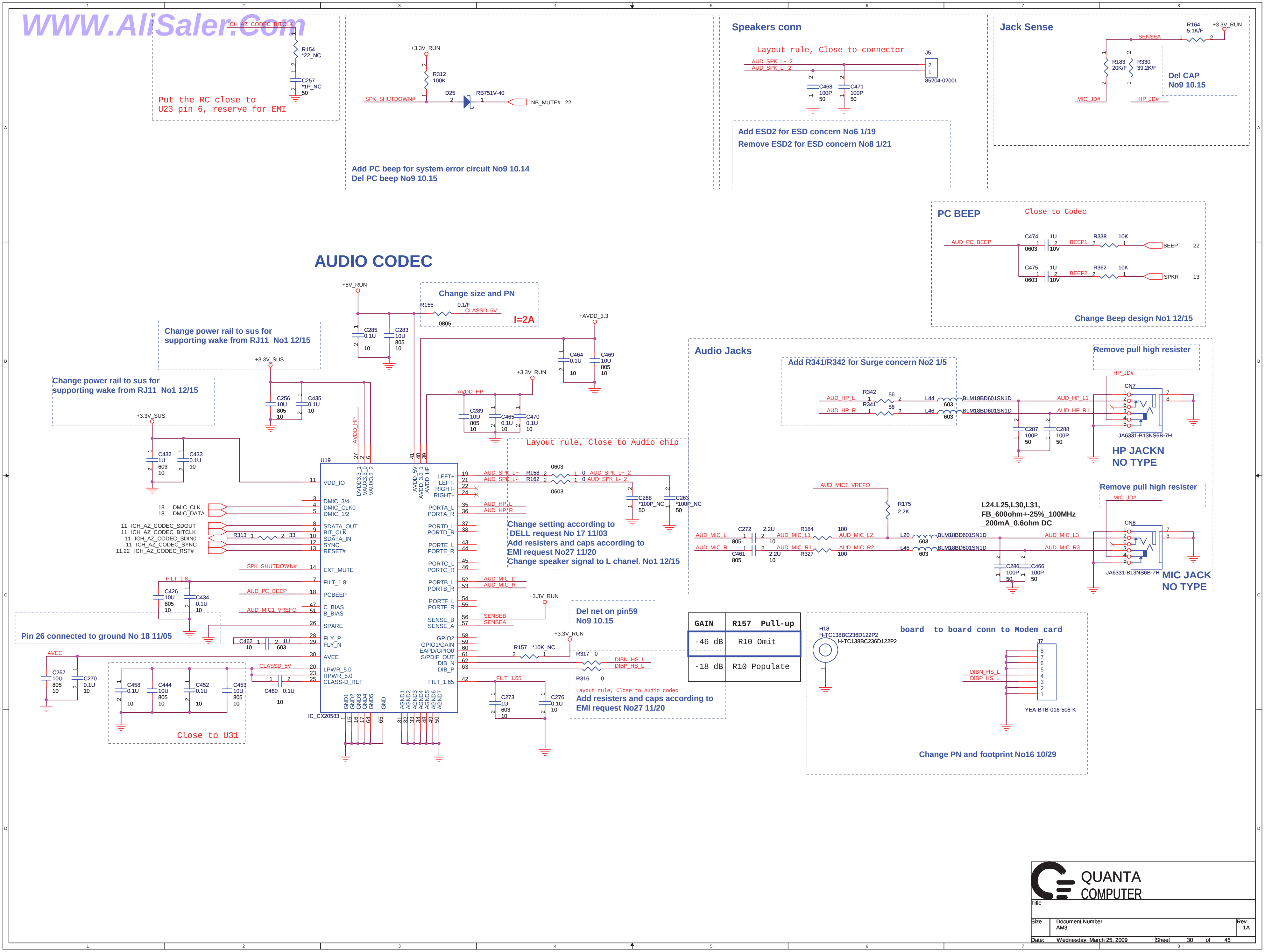


Change Battery setting NO20. 11/11
Change Battery setting NO24. 11/17
Change R186., R187 and R188 value NO6. 03/24

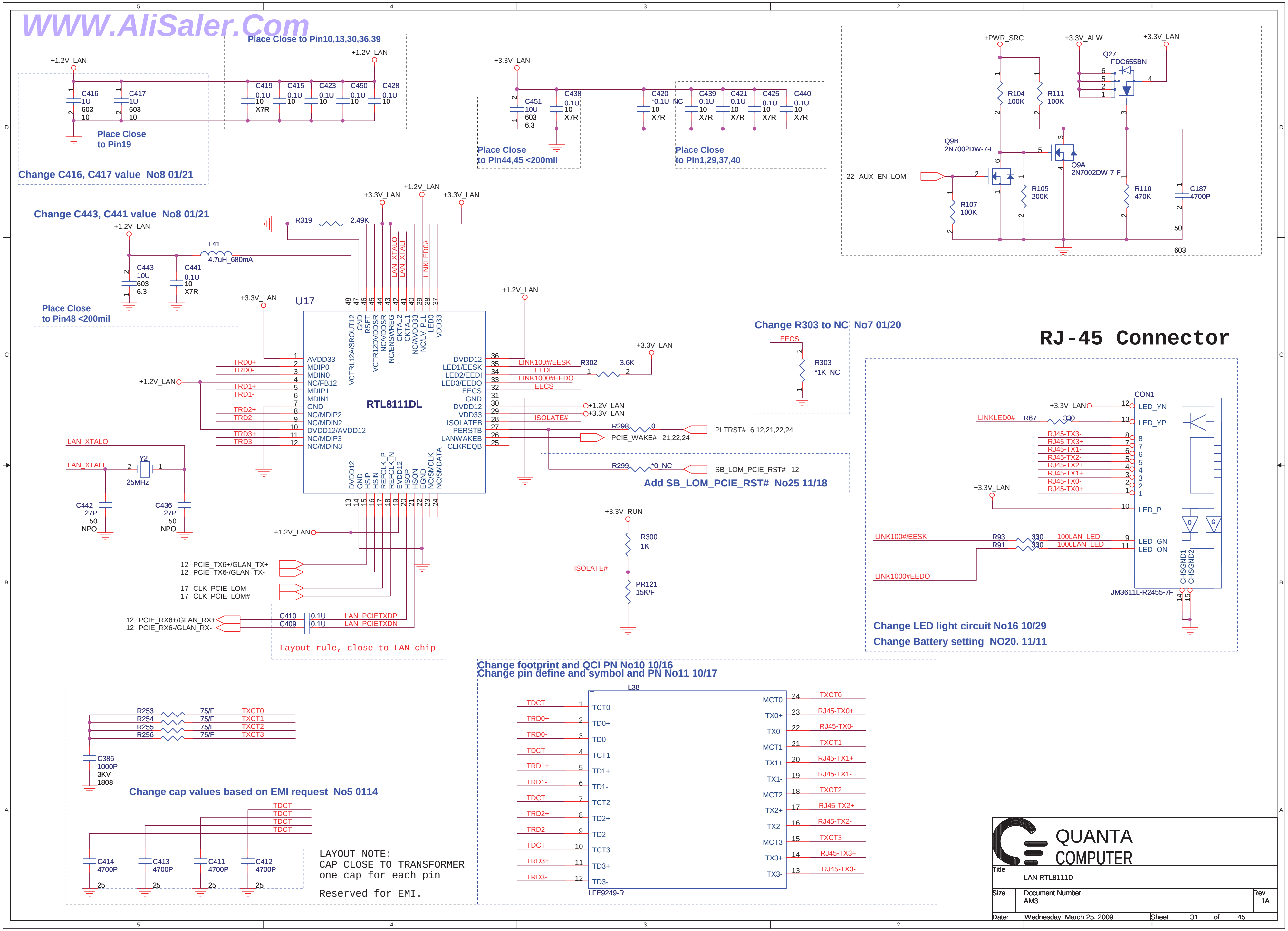
QUANTA COMPUTER

Title	SWITCH, KEYBOARD & LED	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 28 of 45	

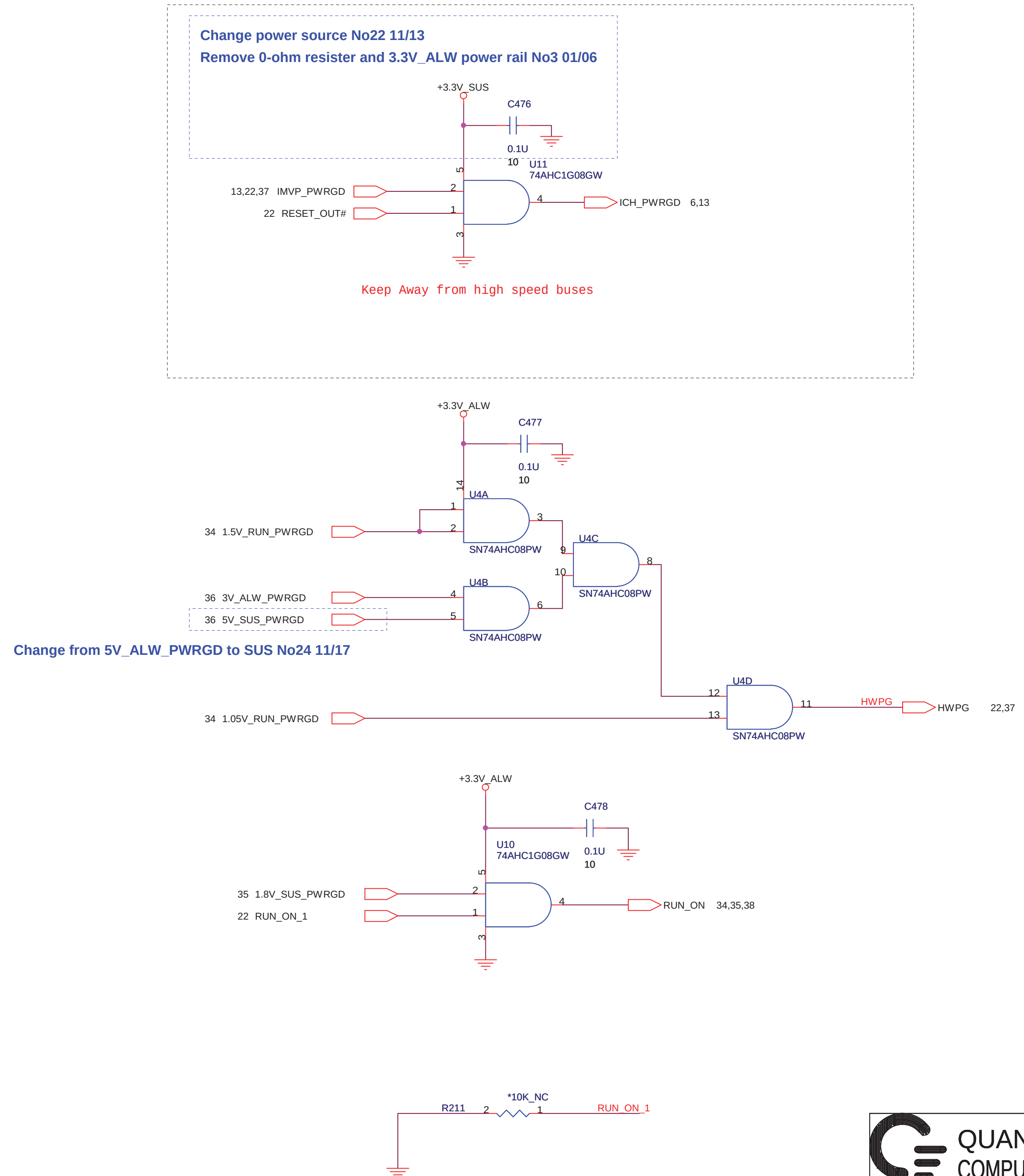

D15
*SSM34PT_NC
J2
1775295-4
+5V_RUN
22 FAN1_PWM
FAN1_PWM
C61
2.2U
805
C59
0.1U
Change pin define No14 10/22
R23
4.7K
FAN1_TACH 22
*DA204U_NC
D1
Place under CPU
10/20mils
REM_DIODE1_P
REM_DIODE1_N
Q22
MMST3904-7-F
C339
*2200P_NC
C340
2200P
C318
2200P
3 H_THERMDA
H_THERMDA
3 H_THERMDC
H_THERMDC
Cap should close to thermal IC
+3.3V_RUN
U7
VDD
DP1
DN1
DP2
DN2
SCL
SDA
ALERT#
SYS_SHDN#
GND
EMC1423-1-AIZL-TR
C319
0.1U
THERM_SCL
THERM_SDA
THERM_ALERT#_C
close to ICH
Q18
2N7002W-7-F
THERM_ALERT#
THERM_ALERT# 13
SYS_SHDN#
THERM_STP# 22,36
R210
1M
Q20
2N7002W-7-F
C322
0.1U
Q19
2N7002W-7-F
Q2
2N7002W-7-F
R28
10K
R27
10K
17,18,22 SMBDAT1
THERM_SDA
Q1
2N7002W-7-F
17,18,22 SMBCLK1
THERM_SCL
OTP 85 degree C
R24
10K/F
R25
6.8K/F
THERM_ALERT#_C
SYS_SHDN#
QUANTA
COMPUTER
Title
FAN & THERMAL
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 29 of 45



GAIN	R157 Pull-up
-46 dB	R10 Omit
-18 dB	R10 Populate



WWW.AliSaler.Com
Place Close to Pin10,13,30,36,39
+1.2V_LAN
C416 1U 603 10
C417 1U 603 10
C419 0.1U 10 X7R
C415 0.1U 10
C423 0.1U 10
C450 0.1U 10
C428 0.1U 10
Place Close to Pin19
Change C416, C417 value No8 01/21
+3.3V_LAN
C451 10U 603 6.3
C438 0.1U 10 X7R
C420 *0.1U_NC 10 X7R
C439 0.1U 10 X7R
C421 0.1U 10 X7R
C425 0.1U 10 X7R
C440 0.1U 10 X7R
Place Close to Pin44,45 <200mil
Place Close to Pin1,29,37,40
+PWR_SRC
+3.3V_ALW
Q27 FDC655BN
R104 100K
R111 100K
Q9B 2N7002DW-7-F
Q9A 2N7002DW-7-F
22 AUX_EN_LOM
R105 200K
R107 100K
R110 470K
C187 4700P 50 603
Change C443, C441 value No8 01/21
L41 4.7uH_680mA
C443 10U 603 6.3
C441 0.1U 10 X7R
Place Close to Pin48 <200mil
R319 2.49K
LAN_XTALO
LAN_XTALI
LINKLED0#
U17
RTL8111DL
AVDD33
MDIP0
MDIN0
NC/FB12
MDIP1
MDIN1
GND
NC/MDIP2
NC/MDIN2
DVDD12/AVDD12
NC/MDIP3
NC/MDIN3
VCTRL12A/SROUT12
RSET
VCTRL12DVDDSR
NC/DVDDSR
NC/ENSWREG
CKTAL2
CKTAL1
NC/AVDD33
NC/LV_PLL
LED0
VDD33
DVDD12
LED1/EESK
LED2/EEDI
LED3/EEDO
EECS
DVDD12
VDD33
ISOLATEB
PERSTB
LANWAKEB
CLKREQB
HSIP
HSIN
REFCLK_P
REFCLK_N
EVDD12
HSOP
HSON
EGND
NC/SMCLK
NC/SMDATA
TRD0+ TRD0- TRD1+ TRD1- TRD2+ TRD2- TRD3+ TRD3-
LINK100#/EESK
EEDI
LINK1000#/EEDO
EECS
ISOLATE#
R302 3.6K
R298 0
PLTRST# 6,12,21,22,24
PCIE_WAKE# 21,22,24
R299 *0_NC
SB_LOM_PCIE_RST# 12
Add SB_LOM_PCIE_RST# No25 11/18
Change R303 to NC No7 01/20
R303 *1K_NC
Y2 25MHz
C442 27P 50 NPO
C436 27P 50 NPO
12 PCIE_TX6+/GLAN_TX+
12 PCIE_TX6-/GLAN_TX-
17 CLK_PCIE_LOM
17 CLK_PCIE_LOM#
12 PCIE_RX6+/GLAN_RX+
12 PCIE_RX6-/GLAN_RX-
C410 0.1U LAN_PCIETXDP
C409 0.1U LAN_PCIETXDN
Layout rule, close to LAN chip
+3.3V_RUN
R300 1K
PR121 15K/F
RJ-45 Connector
CON1
LED_YN
LED_YP
LED_P
LED_GN
LED_ON
CHSGND1
CHSGND2
LINKLED0#
R67 330
RJ45-TX3- RJ45-TX3+ RJ45-TX1- RJ45-TX2- RJ45-TX2+ RJ45-TX1+ RJ45-TX0- RJ45-TX0+
R93 330 100LAN_LED
R91 330 1000LAN_LED
JM3611L-R2455-7F
Change LED light circuit No16 10/29
Change Battery setting NO20. 11/11
R253 75/F TXCT0
R254 75/F TXCT1
R255 75/F TXCT2
R256 75/F TXCT3
C386 1000P 3KV 1808
Change cap values based on EMI request No5 0114
C414 4700P 25
C413 4700P 25
C411 4700P 25
C412 4700P 25
LAYOUT NOTE:
CAP CLOSE TO TRANSFORMER
one cap for each pin
Reserved for EMI.
Change footprint and QCI PN No10 10/16
Change pin define and symbol and PN No11 10/17
L38
TCT0 TD0+ TD0- TCT1 TD1+ TD1- TCT2 TD2+ TD2- TCT3 TD3+ TD3-
MCT0 TX0+ TX0- MCT1 TX1+ TX1- MCT2 TX2+ TX2- MCT3 TX3+ TX3-
LFE9249-R
QUANTA COMPUTER
Title LAN RTL8111D
Size Document Number AM3 Rev 1A
Date: Wednesday, March 25, 2009 Sheet 31 of 45



QUANTA COMPUTER

Title	System Reset Circuit	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 32 of 45

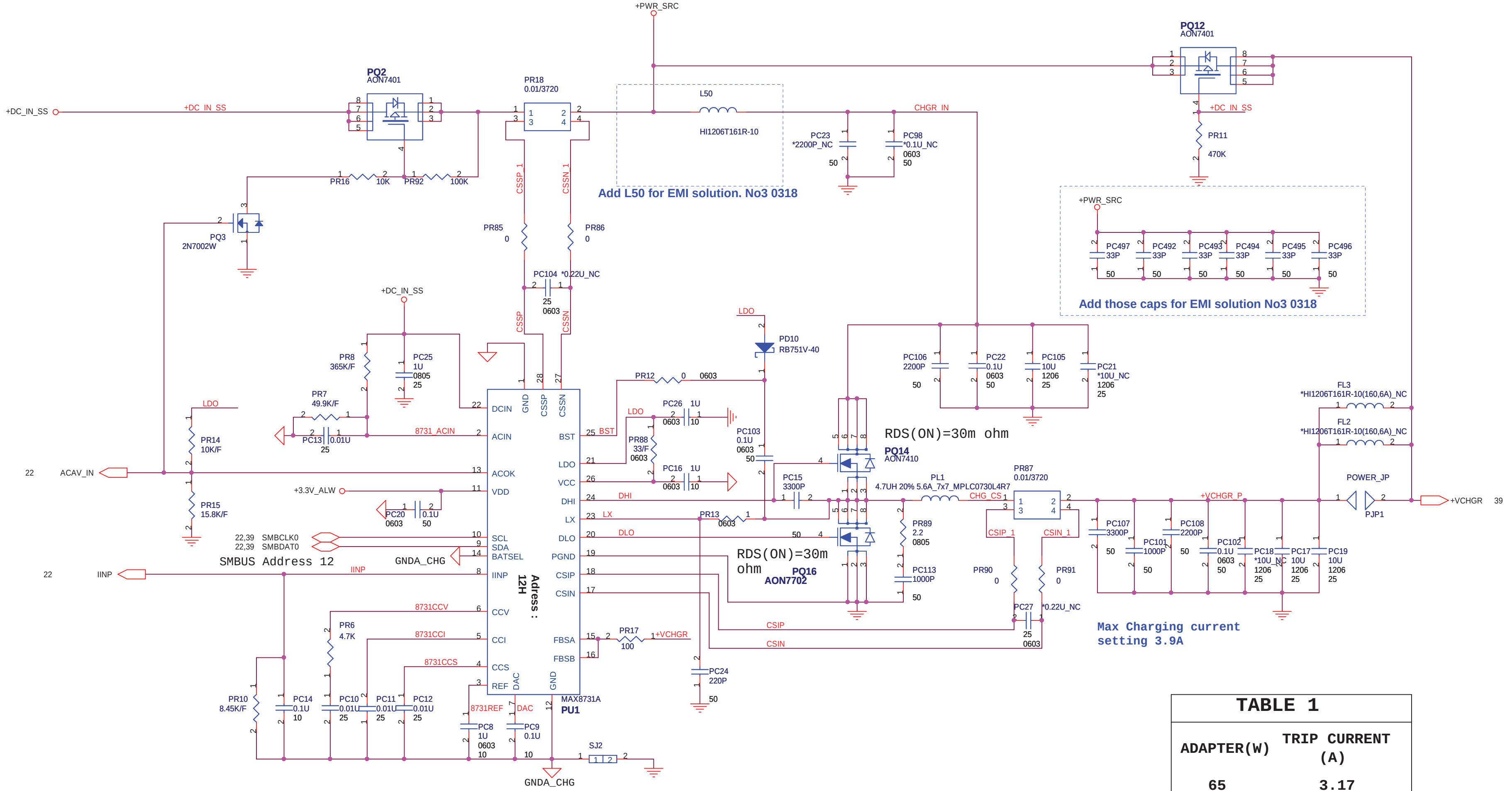


TABLE 1

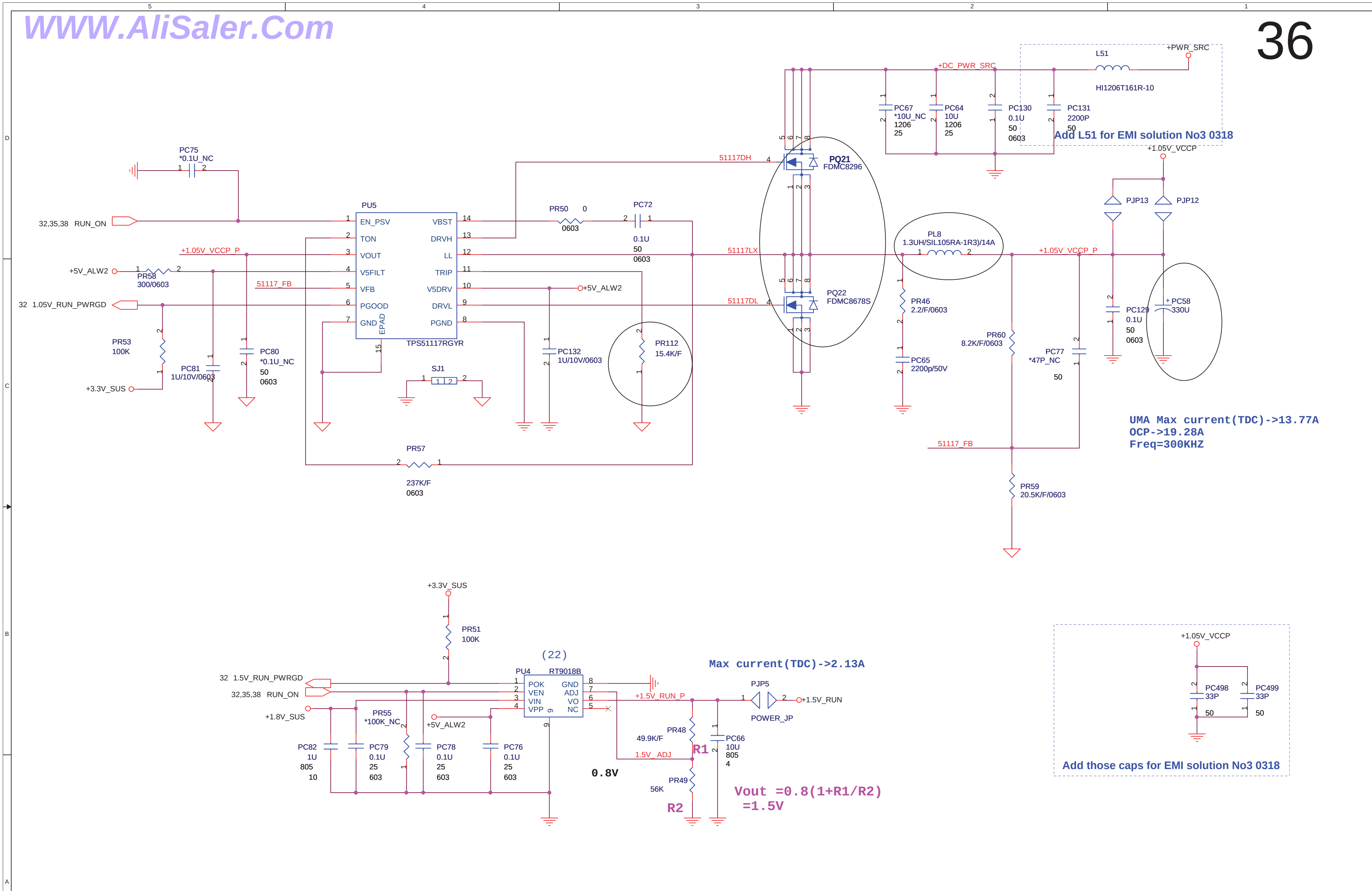
ADAPTER(W)	TRIP CURRENT (A)
65	3.17
90	4.43
130	6.43
150	7.43
200	9.75
230	11.28 (see note3)

QUANTA COMPUTER

Title: Charger (MAX8731A)

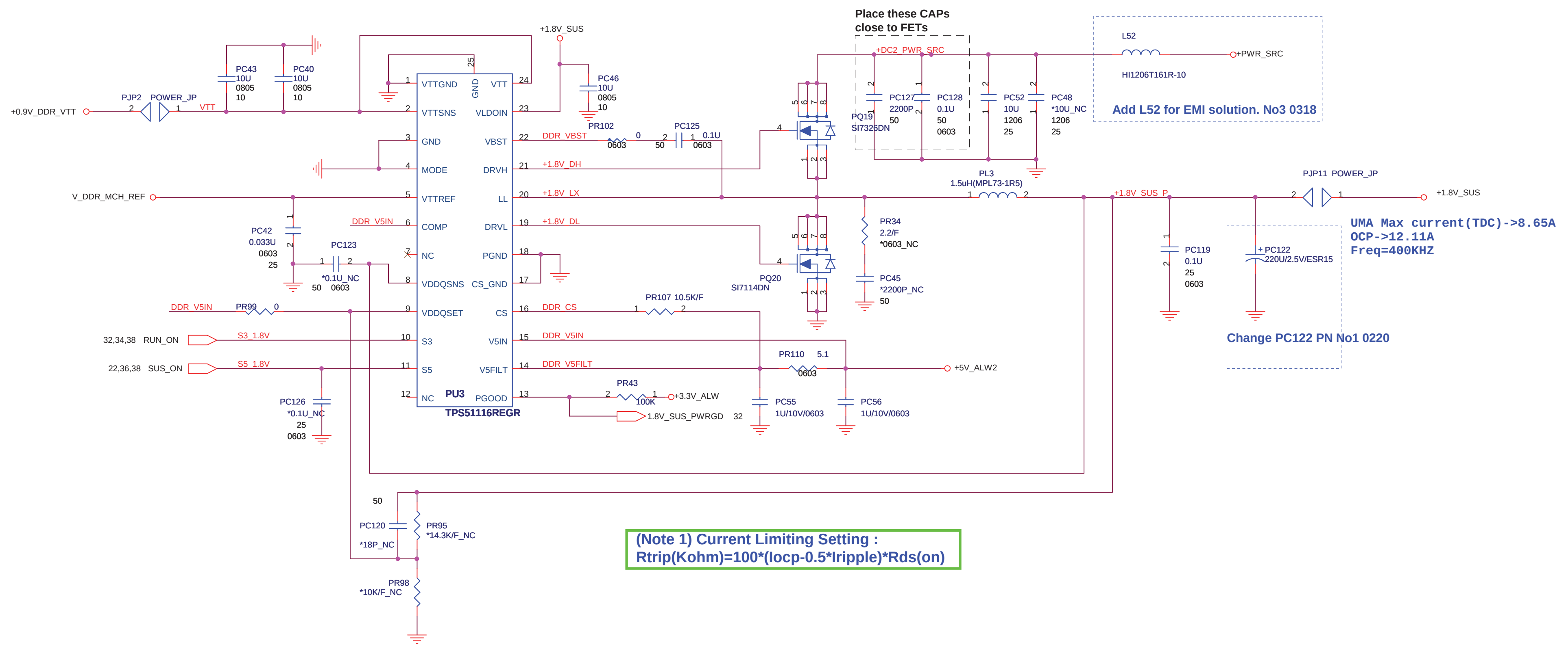
Size | Document Number: AM3 | Rev: 1A

Date: Wednesday, March 25, 2009 | Sheet 33 of 45



QUANTA COMPUTER

Title	1.05_VCCP & 1.5V_RUN
Size	Document Number AM3 — Rev 1A
Date:	Wednesday, March 25, 2009 — Sheet 34 of 45

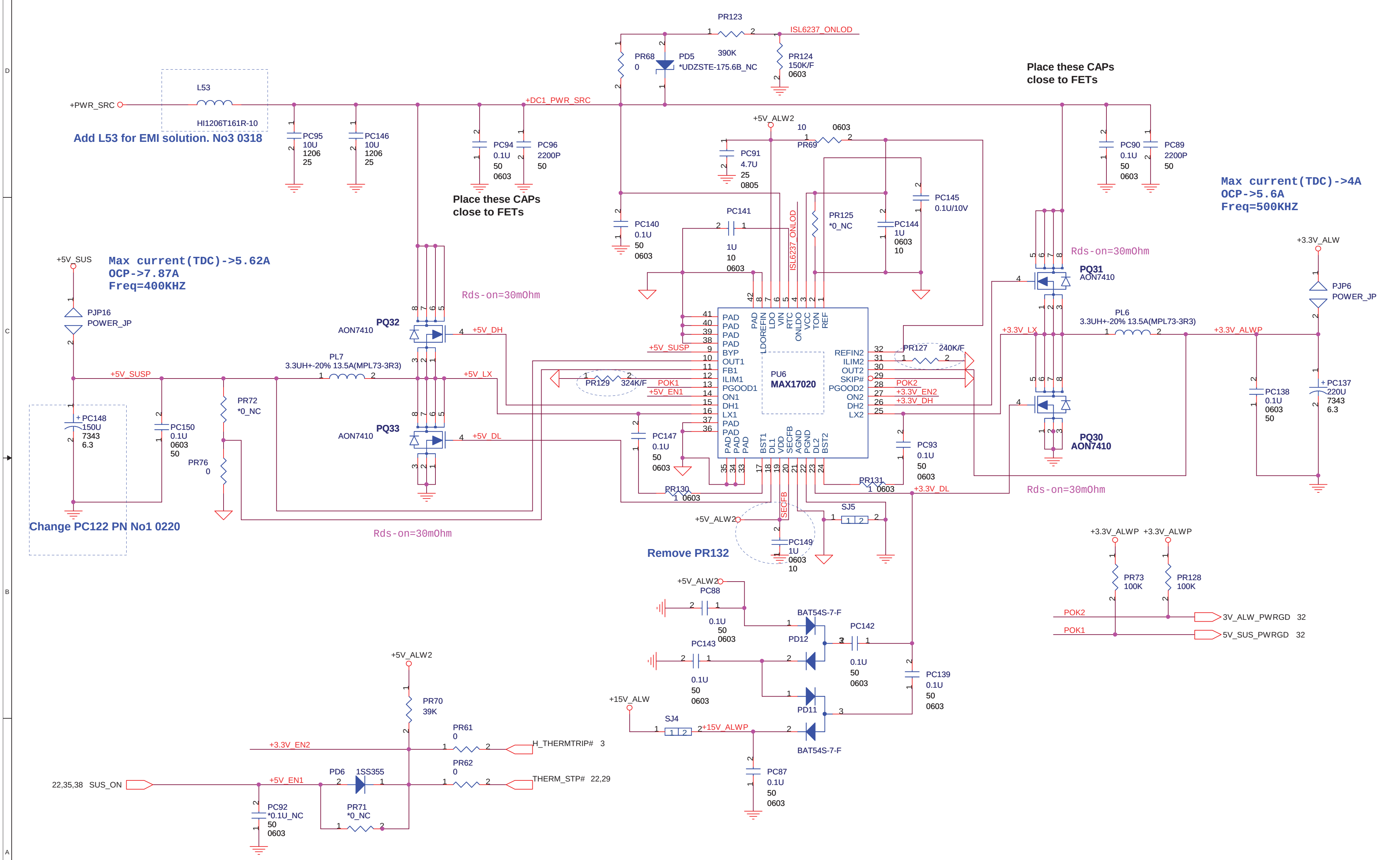


(Note 1) Current Limiting Setting :
Rtrip(Kohm)=100*(Iocp-0.5*Iripple)*Rds(on)

QUANTA COMPUTER

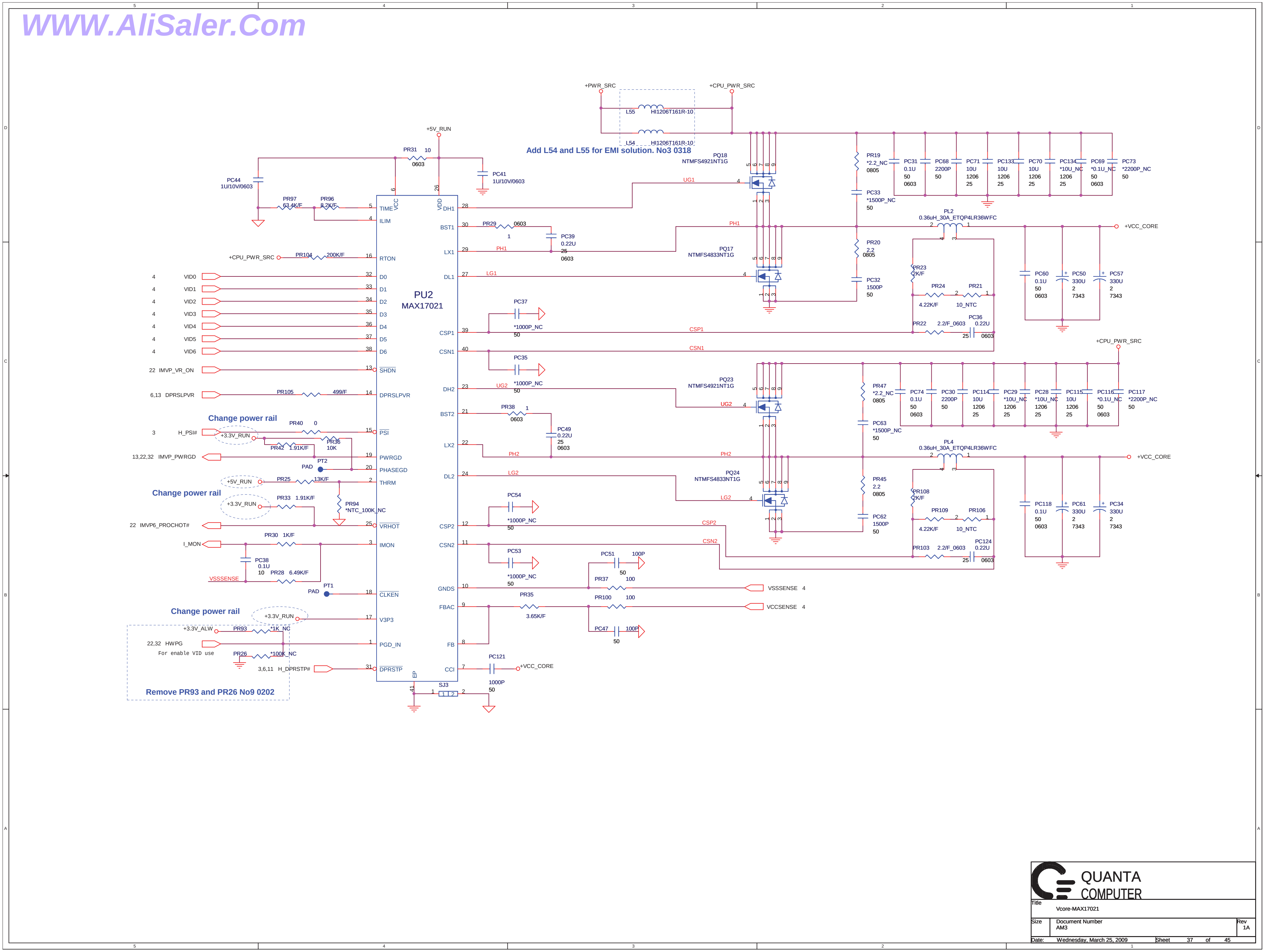
Title	1.8VSUS & 0.9VTT (TPS51116)	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 35 of 45	

DC/DC +3V_ALW/+5V_SUS/+15V_ALW

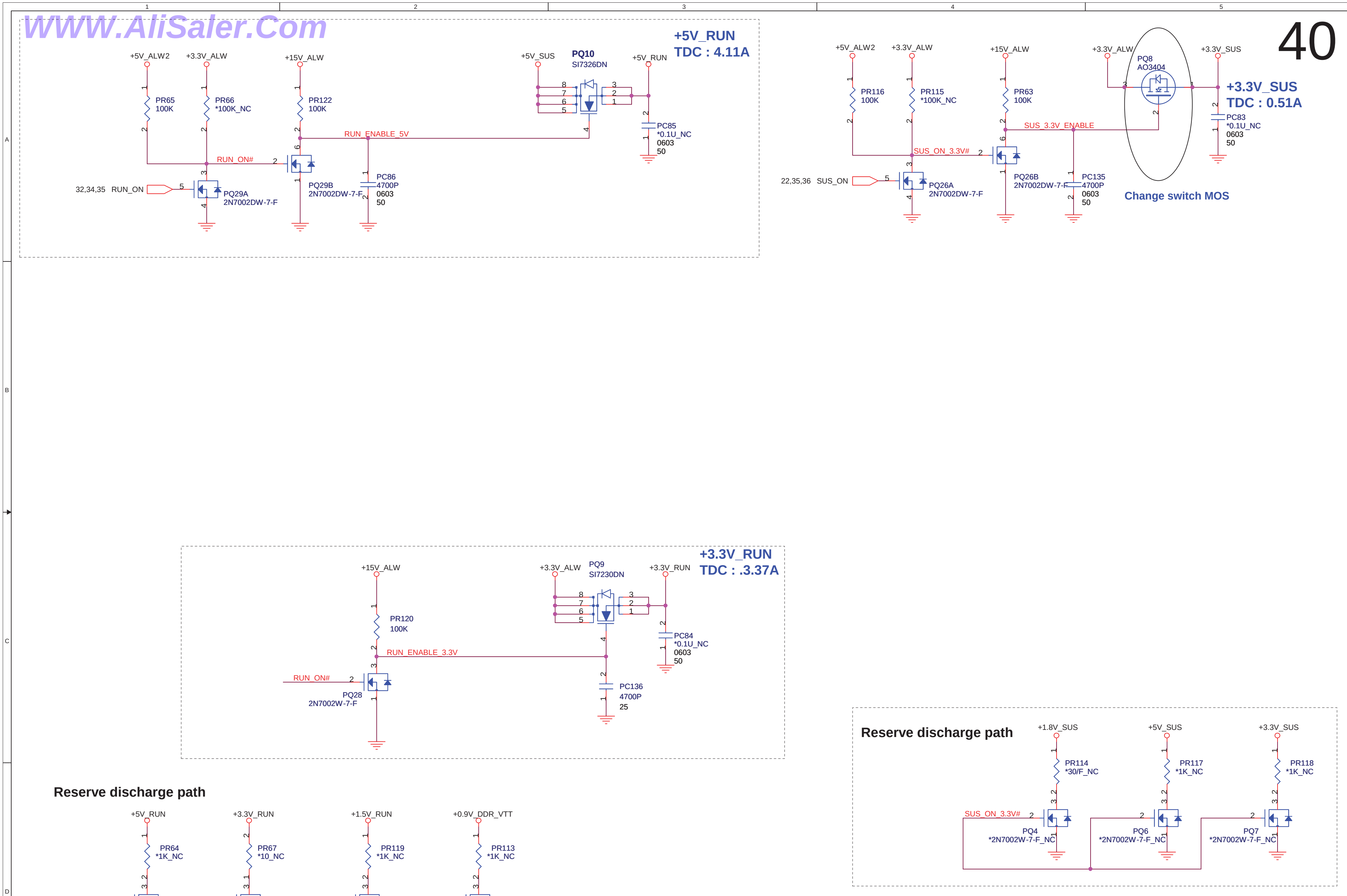


QUANTA COMPUTER

Title	3VALW,5V,3V, Power On		
Size	Document Number AM3		Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 36 of 45	

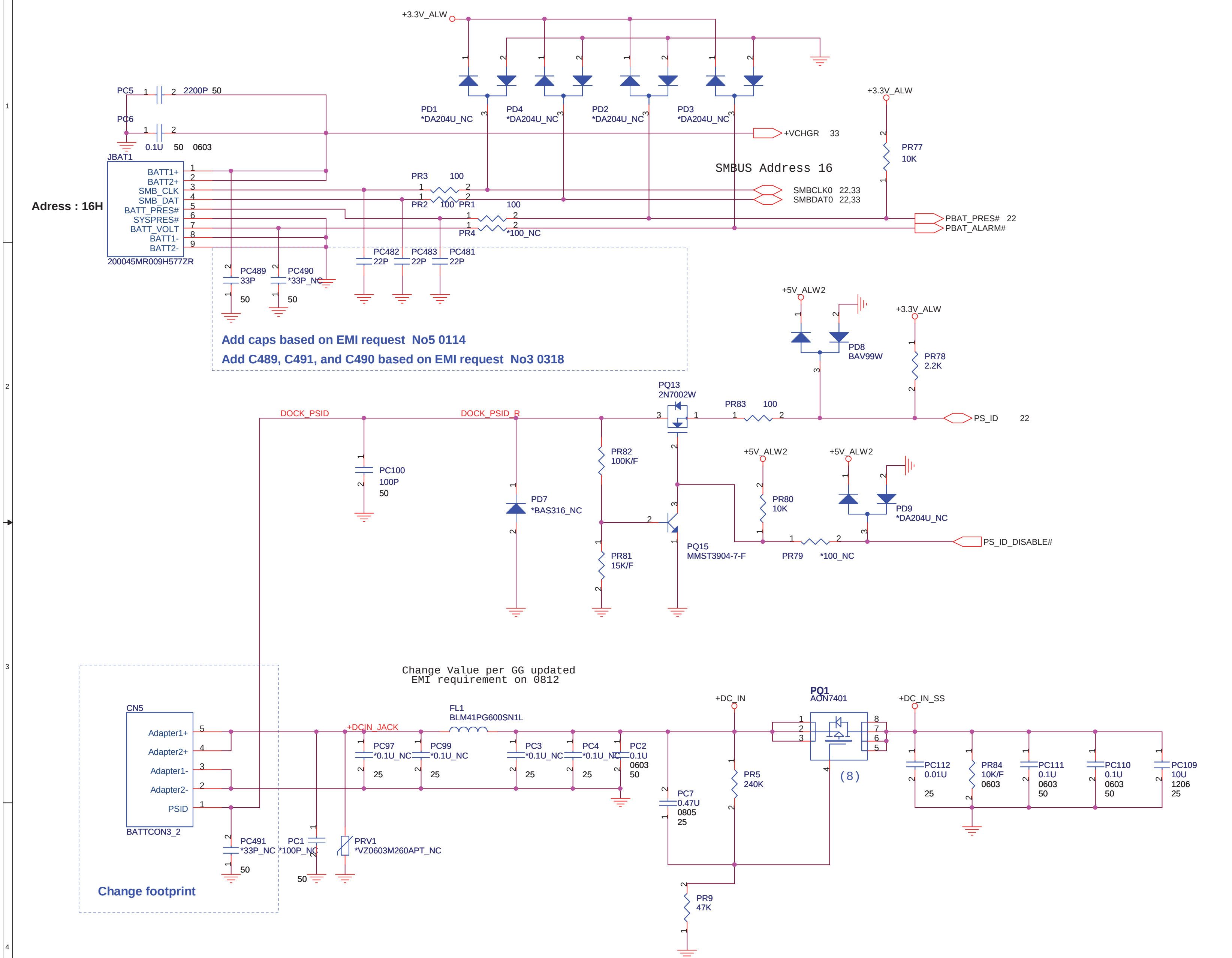


+PWR_SRC
+CPU_PWR_SRC
L55 HI1206T161R-10
L54 HI1206T161R-10
Add L54 and L55 for EMI solution. No3 0318
+5V_RUN
PR31 10 0603
PC41 1U/10V/0603
PC44 1U/10V/0603
PR97 63.4K/F
PR96 8.2K/F
PR104 200K/F
PU2
MAX17021
TIME
ILIM
RTON
D0
D1
D2
D3
D4
D5
D6
SHDN
DPRSLPVR
PSI
PWRGD
PHASEGD
THRM
VRHOT
IMON
CLKEN
V3P3
PGD_IN
DPRSTP
VCC
VDD
DH1
BST1
LX1
DL1
CSP1
CSN1
DH2
BST2
LX2
DL2
CSP2
CSN2
GNDS
FBAC
FB
CCI
EP
VID0
VID1
VID2
VID3
VID4
VID5
VID6
IMVP_VR_ON
DPRSLPVR
Change power rail
H_PSI#
+3.3V_RUN
PR40 0
PR42 1.91K/F
PR36 10K
IMVP_PWRGD
PT2
PAD
+5V_RUN
PR25 13K/F
PR33 1.91K/F
PR94 *NTC_100K_NC
IMVP6_PROCHOT#
I_MON
PR30 1K/F
PC38 0.1U 10
PR28 6.49K/F
VSSSENSE
PT1
+3.3V_ALW
PR93 *1K_NC
HWPG
For enable VID use
PR26 *100K_NC
H_DPRSTP#
Remove PR93 and PR26 No9 0202
PR105 499/F
PR29 0603
PC39 0.22U 25 0603
PC37 *1000P_NC 50
PC35 *1000P_NC 50
PR38 0603
PC49 0.22U 25 0603
PC54 *1000P_NC 50
PC53 *1000P_NC 50
PC51 100P 50
PR37 100
PR100 100
PR35 3.65K/F
PC47 100P 50
VSSSENSE
VCCSENSE
PC121 1000P 50
+VCC_CORE
SJ3
PQ18 NTMFS4921NT1G
PQ17 NTMFS4833NT1G
PQ23 NTMFS4921NT1G
PQ24 NTMFS4833NT1G
UG1
PH1
LG1
UG2
PH2
LG2
CSP1
CSN1
CSP2
CSN2
PR19 *2.2_NC 0805
PC33 *1500P_NC 50
PR20 2.2 0805
PC32 1500P 50
PC31 0.1U 50 0603
PC68 2200P 50
PC71 10U 1206 25
PC133 10U 1206 25
PC70 10U 1206 25
PC134 *10U_NC 1206 25
PC69 *0.1U_NC 50 0603
PC73 *2200P_NC 50
PL2 0.36uH_30A_ETQP4LR36WFC
PR23 2K/F
PR24 4.22K/F
PR21 10_NTC
PR22 2.2/F_0603
PC36 0.22U 25 0603
PC60 0.1U 50 0603
PC50 330U 2 7343
PC57 330U 2 7343
PR47 *2.2_NC 0805
PC63 *1500P_NC 50
PR45 2.2 0805
PC62 1500P 50
PC74 0.1U 50 0603
PC30 2200P 50
PC114 10U 1206 25
PC29 *10U_NC 1206 25
PC28 *10U_NC 1206 25
PC115 10U 1206 25
PC116 *0.1U_NC 50 0603
PC117 *2200P_NC 50
PL4 0.36uH_30A_ETQP4LR36WFC
PR108 2K/F
PR109 4.22K/F
PR106 10_NTC
PR103 2.2/F_0603
PC124 0.22U 25 0603
PC118 0.1U 50 0603
PC61 330U 2 7343
PC34 330U 2 7343
QUANTA COMPUTER
Title
Vcore-MAX17021
Size
Document Number
AM3
Rev
1A
Date: Wednesday, March 25, 2009
Sheet 37 of 45



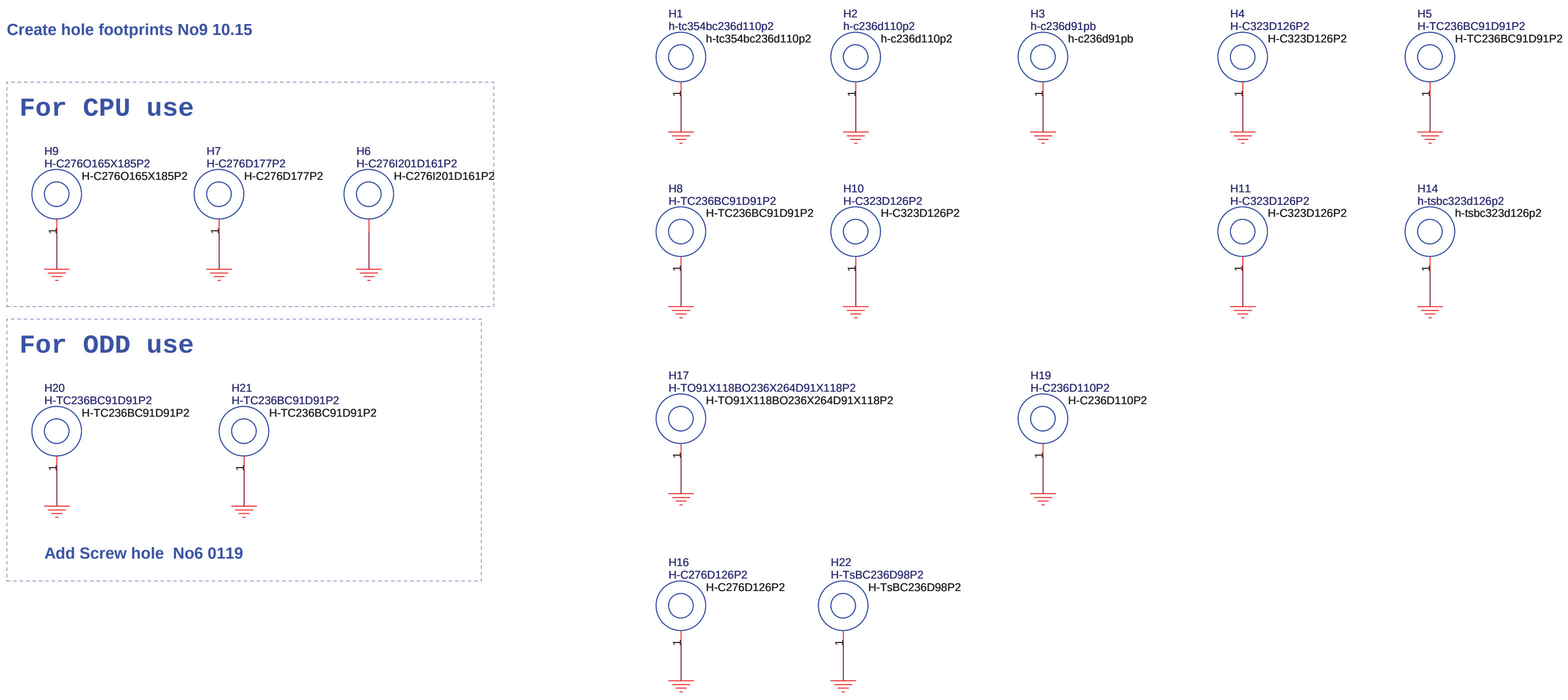
QUANTA COMPUTER

Title	RUN POWER SW	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 38 of 45



QUANTA COMPUTER

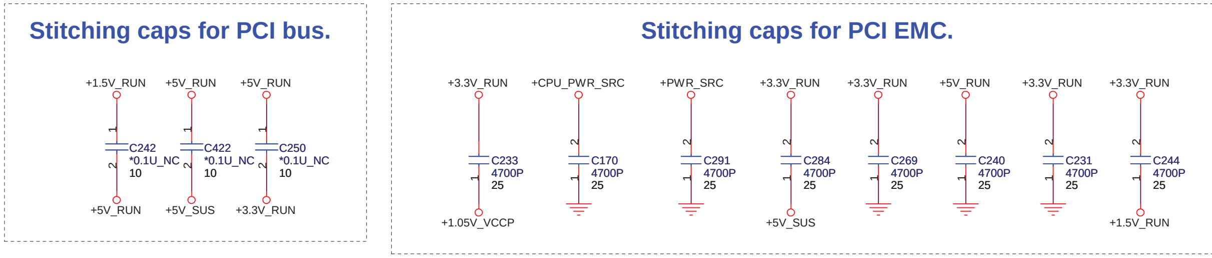
Title	DCIN,BATT CONNECTOR	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 39 of 45



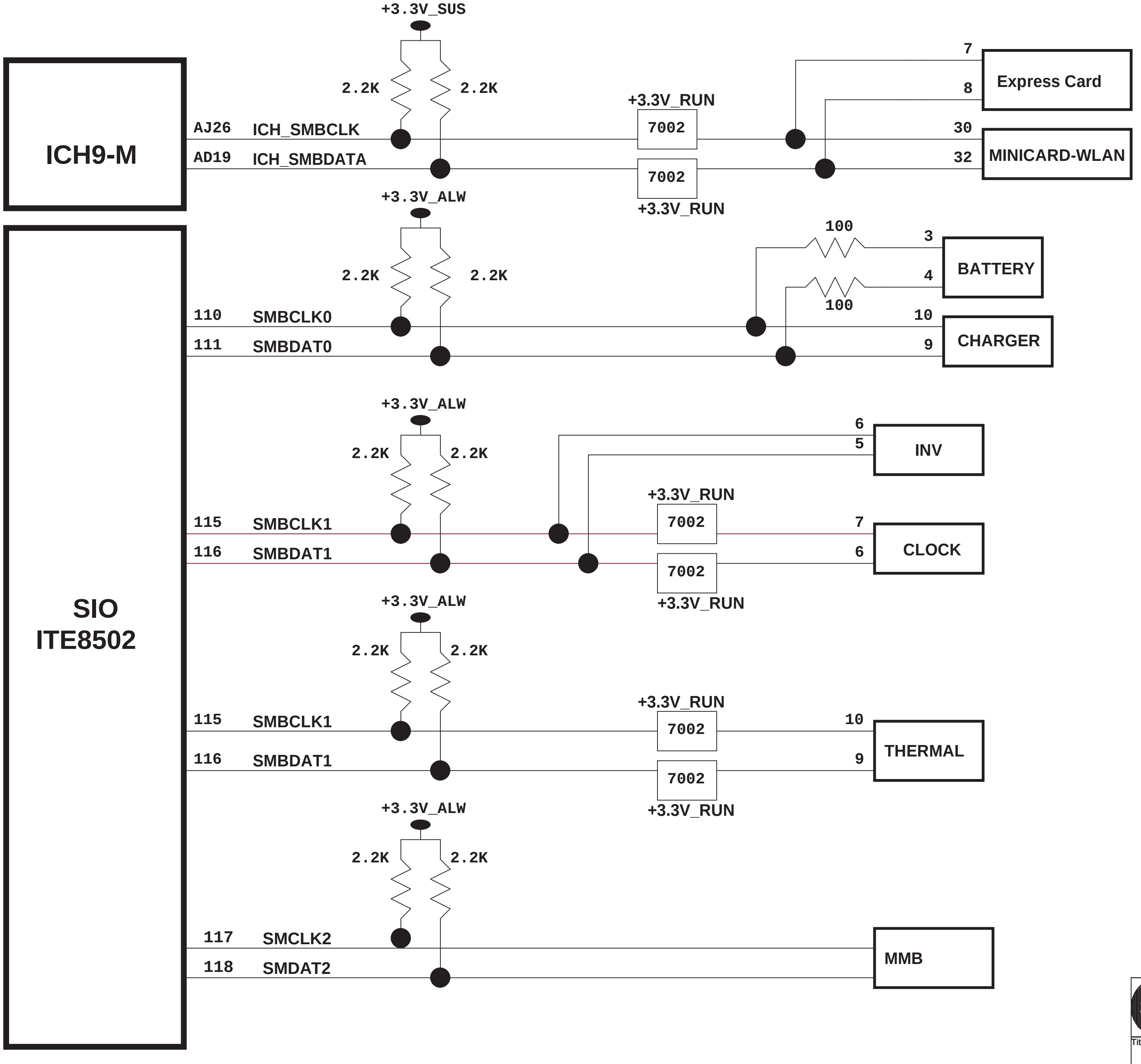
QUANTA COMPUTER

Title	SCREW PAD	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 40 of 45

Reserved for EMI.



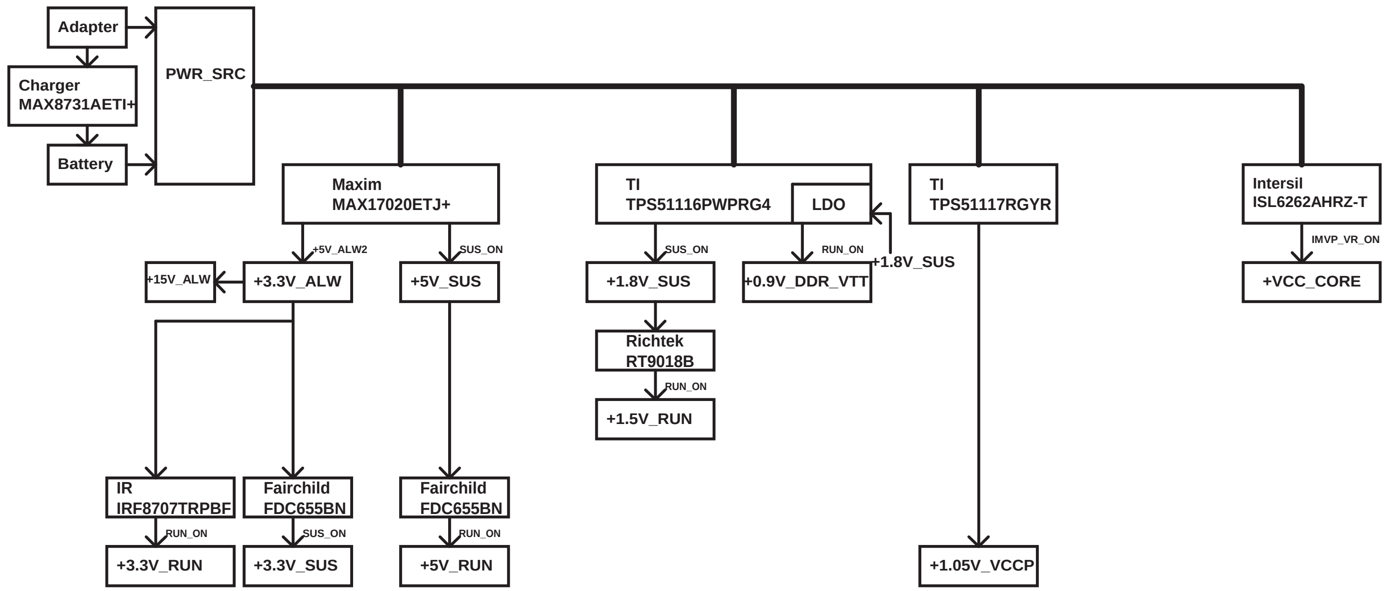
QUANTA COMPUTER		
Title: EMI CAP		
Size	Document Number: AM3	Rev: 1A
Date: Wednesday, March 25, 2009	Sheet 41 of 45	



QUANTA COMPUTER

Title	SMBUS BLOCK	
Size	Document Number AM3	Rev 1A
Date:	Wednesday, March 25, 2009	Sheet 42 of 45

VER : 1A



QUANTA COMPUTER

Title	Schematic Block Diagram	
Size	Document Number AM3	Rev 1A
Date: Wednesday, March 25, 2009	Sheet 43 of 45	