AK3
BIOCK DIAGRAM

01

CPU
Merom
u-FCPGA 478PIN
4,5

CPU Thermal Sensor 12

FAN Control 28

DC/DC & Charge

DC In

Battery

FSB 800 MHZ

Dual channel Memory DDRII 667/800

SO-DIMM STANDARD 13,14 — DDR II CHANNEL A

SO-DIMM STANDARD 13,14 — DDR II CHANNEL B

NB
GM965
1201-pin FCBGA
6,7,8,9,10,11

CRT DDC2B → CRT 1x D-SUB 15-Pin 15

2x LVDS → LCD 15" W 2-CH LVDS 15

S- Vedio → S-Vedio 29

DMI LINK

PRIMARY HDD 27 — SATA<PORT0>

ODD 27 — PATA 66/100MHz

MINI CARD WLAN 26 — PCI-E<PORT3> / USBX1<PORT7>

MINI CARD 1-SegTV 26 — PCI-E<PORT4> / USBX1<PORT8>

USB 4x connector 29 — USBX4<PORT0-3> — USB2.0

FELICA 29 — USBX1<PORT4>

Logitec Camera /MIC 29 — USBX1<PORT5>

Bluetooth 33 — USBX1<PORT6>

SB
ICH-8M
16,17,18,19

PCI-E<PORT6> → Broadcom BCM5787 10/100/1000BASE-T 31 → RJ-45 1x 8P8C 32

PCI-E<PORT1> → Express Card 33

USBX1<PORT9>

PCI 2.3 → CARDBUS RICOH R5C804 20 → PC Card type-I/II 21

CARDBUS RICOH R5C837 22 → Media card reader 23

Azalia → HD_ AUDIO ALC262 24 → MIC-In Jack 25 / Headphone Jack 25 / Int. Speaker 24

AMP MAX4411

AMP MAX9710

Azalia → HD_MDC 25 → WIRE → RJ-11 X1 1x 6P2C

LPC → TPM1.2 29

Key Board 28

Touch Pad 28

Serial 1x D-SUB 9-Pin 30

EC
ITE IT8513E
34

SPI → FLASHBIOS 34

Quanta Computer Inc.
PROJECT : AK3

Size	Document Number	Rev
	BLACK DRAGRAM	2A

Date: Tuesday, October 30, 2007 Sheet 1 of 42

1. PAGE LIST

2. PCI Description :

IDSEL	CHIP
AD17	CardBus(R5C804)
AD20	Media card(R5C837)

PCIINT	CHIP
INTA#	CardBus(R5C804)
INTA#	Media card(R5C837)

BUSMASTER

REQ	CHIP
REQ0 / GNT0	CardBus(R5C804)
REQ1 / GNT1	Media card(R5C837)

3. PCI_E Description :

	CHIP
Port 1	PCI-EXPRESS Card
Port 3	Mini-PCIE (Wireless card)
Port 4	Mini-PCIE (1-seg TV)
Port 6	LAN(BCM5787M)

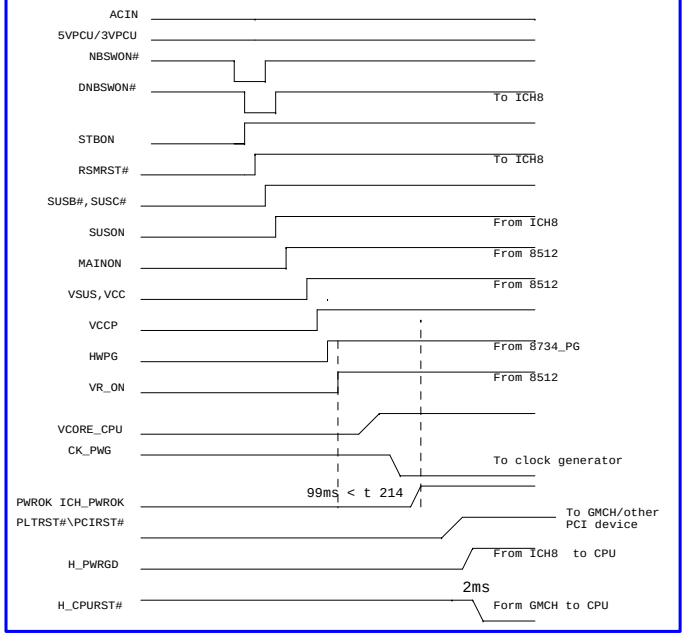
4.Power rails

Voltage Rails

Voltage Rails	Ctl Signal	ON S0~S2	ON S3	ON S4	ON S5
CPU_CORE	VR_ON	ON			
VCCP	MAINON	ON			
SMDDR_VTERM	MAINON	ON			
RVCC3	RVCCD	ON	ON	ON	ON
+3.3ALW	3VSTD_D	ON	ON	ON	ON
VCC1.25	MAINON	ON			
VCC1.5	MAINON	ON			
VCC3	MAIND_2	ON			
VCC5	MAIND_2	ON			
1.8VSUS	SUSON	ON	ON		
3VSUS	SUSD	ON	ON		
5VSUS	SUSD	ON	ON		
3VPCU	LDO5	ON	ON	ON	ON
5VPCU	LDO5	ON	ON	ON	ON
15VPCU	5VPCU	ON	ON	ON	ON

5.POWER ON SEQUENCE

Power On Sequence



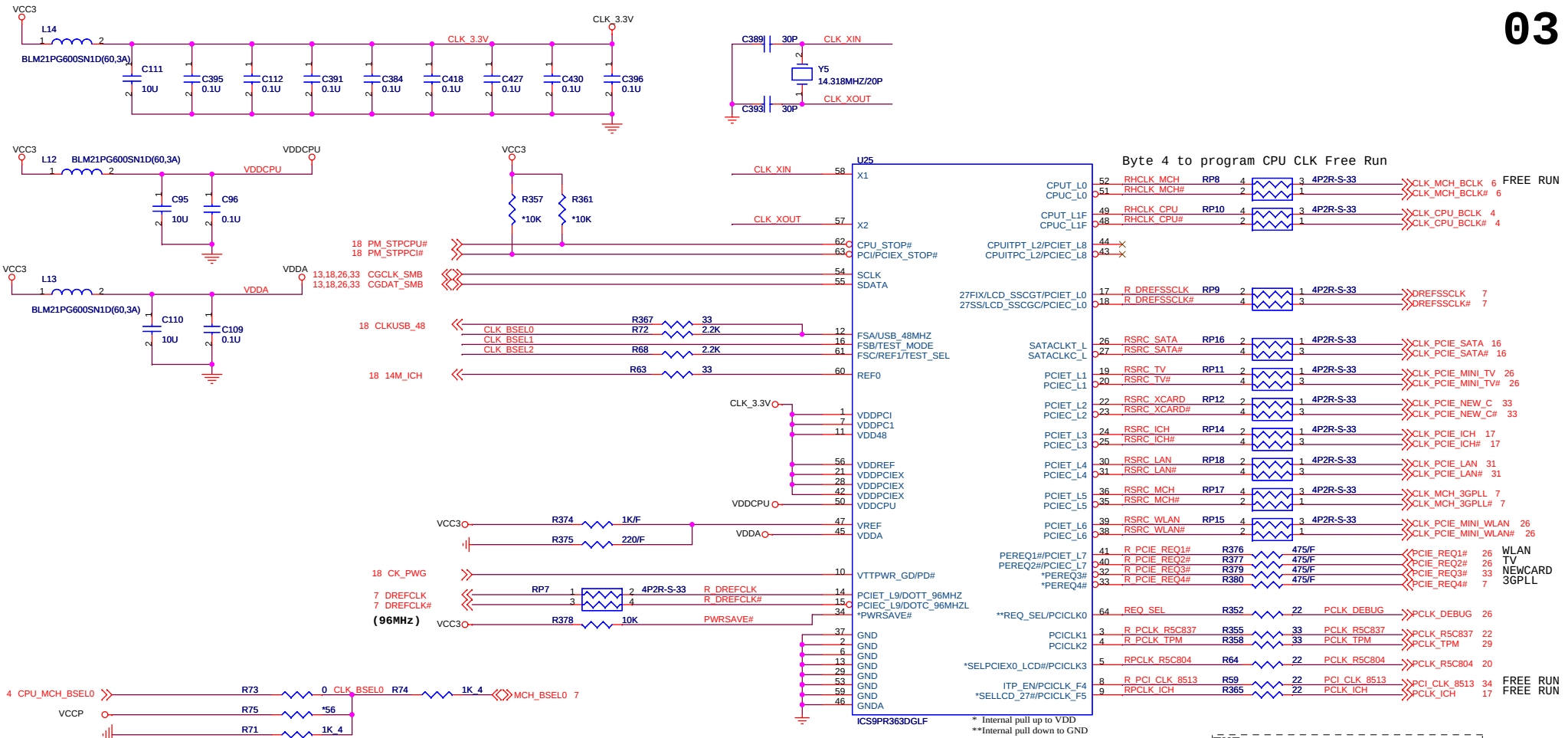
02

QUANTA COMPUTER

Title: PAGE LIST

Size: C | Document Number: AK23 Main Board | Rev: 2A

Date: Tuesday, October 30, 2007 | Sheet 2 of 42



FSB FREQUNCY SELECTION TABLE

FSC BSEL2	FSB BSEL1	FSA BSEL0	CPU	SRC	PCI	REF	USB	DOT	Spread %
0	0	0	266.66	100	33.33	14.318	48	96	0.5 Down
0	0	1	133.33	100	33.33	14.318	48	96	0.5 Down
0	1	0	200.00	100	33.33	14.318	48	96	0.5 Down
0	1	1	166.66	100	33.33	14.318	48	96	0.5 Down
1	0	0	333.33	100	33.33	14.318	48	96	0.5 Down
1	0	1	100.00	100	33.33	14.318	48	96	0.5 Down
1	1	0	400.00	100	33.33	14.318	48	96	0.5 Down
1	1	1	200.00	100	33.33	14.318	48	96	0.5 Down

LATCH SELECTION TABLE

PIN 5	PIN 9	Pin 14/15	Pin 17/18
LO	LO	PCIEX9	27M
	HI	DOT(96MHZ)	LCD
HI	LO	PCIEX9	PCIEX0
	HI	DOT(96MHZ)	PCIEX0

PIN 64	Pin40/41	PIN 8	Pin 43/44
LO	PCIEX7	LO	SRC
HI	PEREQ#	HI	CPU_ITP

CLKREQ# CONTROL TABLE

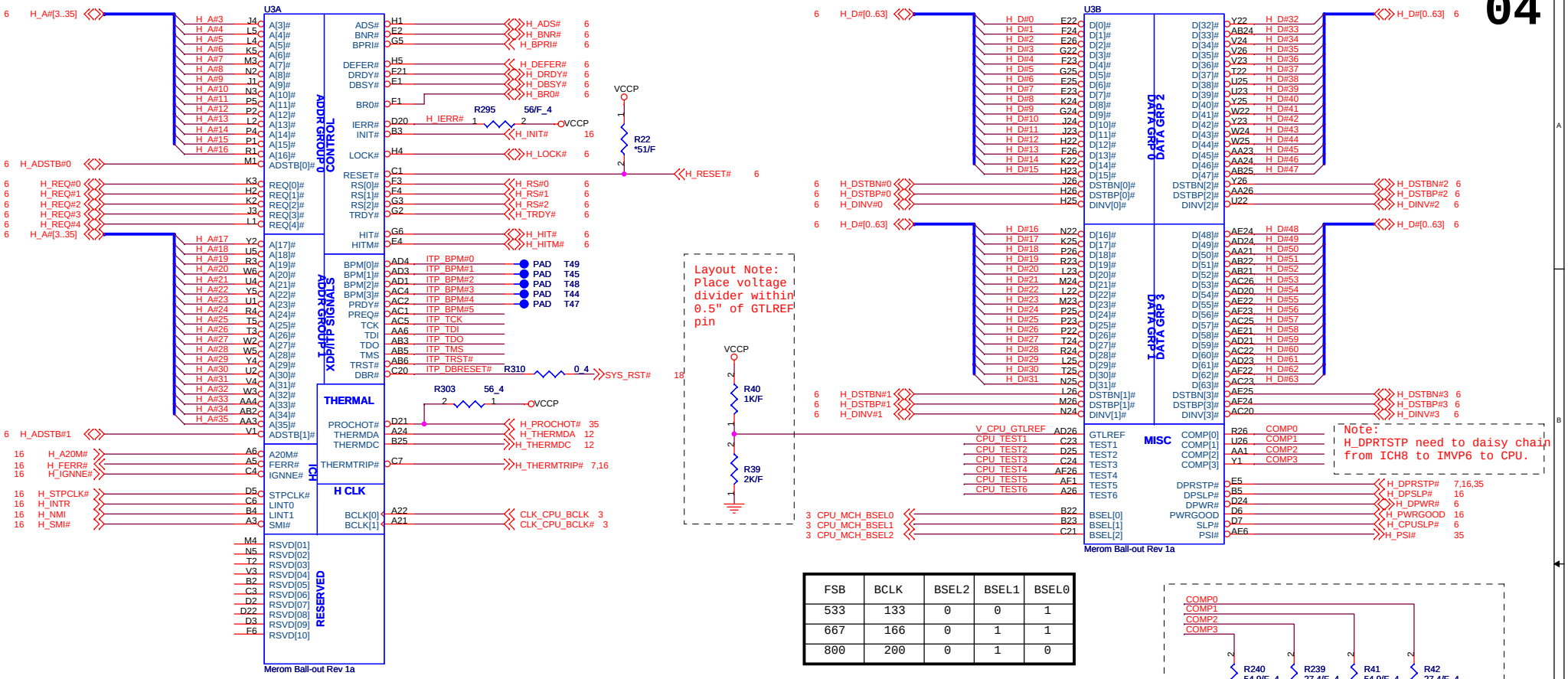
PCIE_REQ1#	PCIE_L6	PCIE_L0
PCIE_REQ2#	PCIE_L1	PCIE_L4
PCIE_REQ3#	PCIE_L2	PCIE_L8
PCIE_REQ4#	PCIE_L5	PCIE_L3 PCIE_L7

Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	CLOCK G_ICS363	2A

Date: Tuesday, October 30, 2007 Sheet 3 of 42



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

Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	Merom(HOST BUS)	2A

Date: Tuesday, October 30, 2007 Sheet 4 of 42

All use 10U 4V(+-20%,X6S,0805)Pb-Free.

CPU_CORE

C286 10U/4V/X6S_8 C287 10U/4V/X6S_8 C281 10U/4V/X6S_8 C288 10U/4V/X6S_8 C297 10U/4V/X6S_8

CPU_CORE

C330 10U/4V/X6S_8 C320 10U/4V/X6S_8 C323 10U/4V/X6S_8 C292 10U/4V/X6S_8 C328 10U/4V/X6S_8

8 inside cavity, north side, secondary layer.

CPU_CORE

C293 10U/4V/X6S_8 C289 10U/4V/X6S_8 C309 10U/4V/X6S_8 C302 10U/4V/X6S_8 C298 10U/4V/X6S_8

CPU_CORE

C308 10U/4V/X6S_8 C301 10U/4V/X6S_8 C282 10U/4V/X6S_8 C329 10U/4V/X6S_8 C319 10U/4V/X6S_8

8 inside cavity, south side, secondary layer.

CPU_CORE

C26 10U/4V/X6S_8 C28 10U/4V/X6S_8 C30 10U/4V/X6S_8 C40 10U/4V/X6S_8 C33 10U/4V/X6S_8 C37 10U/4V/X6S_8

6 inside cavity, north side, primary layer.

CPU_CORE

C25 10U/4V/X6S_8 C27 10U/4V/X6S_8 C29 10U/4V/X6S_8 C32 10U/4V/X6S_8 C36 10U/4V/X6S_8 C39 10U/4V/X6S_8

6 inside cavity, south side, primary layer.

VCCP

C283 0.1U/10V/X7R_4 C327 0.1U/10V/X7R_4 C284 0.1U/10V/X7R_4 C325 0.1U/10V/X7R_4 C285 0.1U/10V/X7R_4 C326 0.1U/10V/X7R_4

>=X5R

Layout out:
Place these inside socket cavity on North side secondary.

CPU_CORE CPU_CORE

U3C

VCC[001] A7, VCC[002] A9, VCC[003] A10, VCC[004] A12, VCC[005] A13, VCC[006] A15, VCC[007] A17, VCC[008] A18, VCC[009] A20, VCC[010] B7, VCC[011] B9, VCC[012] B10, VCC[013] B12, VCC[014] B14, VCC[015] B15, VCC[016] B17, VCC[017] B18, VCC[018] B20, VCC[019] C9, VCC[020] C10, VCC[021] C12, VCC[022] C13, VCC[023] C15, VCC[024] C17, VCC[025] C18, VCC[026] D9, VCC[027] D10, VCC[028] D12, VCC[029] D14, VCC[030] D15, VCC[031] D17, VCC[032] D18, VCC[033] E7, VCC[034] E9, VCC[035] E10, VCC[036] E12, VCC[037] E13, VCC[038] E15, VCC[039] E17, VCC[040] E18, VCC[041] E20, VCC[042] F7, VCC[043] F9, VCC[044] F10, VCC[045] F12, VCC[046] F14, VCC[047] F15, VCC[048] F17, VCC[049] F18, VCC[050] F20, VCC[051] AA7, VCC[052] AA9, VCC[053] AA10, VCC[054] AA12, VCC[055] AA13, VCC[056] AA15, VCC[057] AA17, VCC[058] AA18, VCC[059] AA20, VCC[060] AB9, VCC[061] AC10, VCC[062] AB10, VCC[063] AB12, VCC[064] AB14, VCC[065] AB15, VCC[066] AB17, VCC[067] AB18

VCC[068] AB20, VCC[069] AB7, VCC[070] AC7, VCC[071] AC9, VCC[072] AC12, VCC[073] AC13, VCC[074] AC15, VCC[075] AC17, VCC[076] AC18, VCC[077] AD7, VCC[078] AD9, VCC[079] AD10, VCC[080] AD12, VCC[081] AD14, VCC[082] AD15, VCC[083] AD17, VCC[084] AD18, VCC[085] AE9, VCC[086] AE10, VCC[087] AE12, VCC[088] AE13, VCC[089] AE15, VCC[090] AE17, VCC[091] AE18, VCC[092] AE20, VCC[093] AF9, VCC[094] AF10, VCC[095] AF12, VCC[096] AF14, VCC[097] AF15, VCC[098] AF17, VCC[099] AF18, VCC[100] AF20

VCCP[01] G21, VCCP[02] V6, VCCP[03] J6, VCCP[04] K6, VCCP[05] M6, VCCP[06] J21, VCCP[07] K21, VCCP[08] M21, VCCP[09] N21, VCCP[10] N6, VCCP[11] R21, VCCP[12] R6, VCCP[13] T21, VCCP[14] T6, VCCP[15] V21, VCCP[16] W21

VCCA[01] B26, VCCA[02] C26

VID[0] AD6, VID[1] AE5, VID[2] AE5, VID[3] AF4, VID[4] AE3, VID[5] AF3, VID[6] AE2

CPU_VID0 35, CPU_VID1 35, CPU_VID2 35, CPU_VID3 35, CPU_VID4 35, CPU_VID5 35, CPU_VID6 35

VCCSENSE AF7 — VCCSENSE 35

VSSSENSE AF7 — VSSSENSE 35

Merom Ball-out Rev 1a

VCCP

Before VCORE stable : 4.5A
After VCORE stable : 2.5A

C2 220U/4V ESR = 12mohm

VCC1.5

130mA

C58 0.01U/25V/X7R_4 >=X5R

C64 10U/4V/X6S_8

Layout Note:
Place C105 near PIN B26.

CPU_CORE

R267 100/F

VCCSENSE
VSSSENSE

R260 100/F

Route VCCSENSE and VSSSENSE traces at 27.4ohms and length matched to within 25 mil. Place PU and PD within 2 inch of CPU.

U3D

VSS[001] A4, VSS[002] A8, VSS[003] A11, VSS[004] A14, VSS[005] A16, VSS[006] A19, VSS[007] A23, VSS[008] AE2, VSS[009] B6, VSS[010] B8, VSS[011] B11, VSS[012] B13, VSS[013] B16, VSS[014] B19, VSS[015] B21, VSS[016] B24, VSS[017] C5, VSS[018] C8, VSS[019] C11, VSS[020] C14, VSS[021] C16, VSS[022] C19, VSS[023] C2, VSS[024] C22, VSS[025] C25, VSS[026] D1, VSS[027] D4, VSS[028] D8, VSS[029] D11, VSS[030] D13, VSS[031] D16, VSS[032] D19, VSS[033] D23, VSS[034] D26, VSS[035] E3, VSS[036] E6, VSS[037] E8, VSS[038] E11, VSS[039] E14, VSS[040] E16, VSS[041] E19, VSS[042] F21, VSS[043] E24, VSS[044] F5, VSS[045] F8, VSS[046] F11, VSS[047] F13, VSS[048] F16, VSS[049] F19, VSS[050] F2, VSS[051] F22, VSS[052] F25, VSS[053] G4, VSS[054] G1, VSS[055] G23, VSS[056] G26, VSS[057] H3, VSS[058] H6, VSS[059] H21, VSS[060] H24, VSS[061] J2, VSS[062] J5, VSS[063] J22, VSS[064] J25, VSS[065] K1, VSS[066] K4, VSS[067] K23, VSS[068] K26, VSS[069] L3, VSS[070] L6, VSS[071] L21, VSS[072] L24, VSS[073] M2, VSS[074] M5, VSS[075] M22, VSS[076] M25, VSS[077] N1, VSS[078] N4, VSS[079] N23, VSS[080] N26, VSS[081] P3

VSS[082] P6, VSS[083] P21, VSS[084] P24, VSS[085] R2, VSS[086] R5, VSS[087] R22, VSS[088] R25, VSS[089] T1, VSS[090] T4, VSS[091] T23, VSS[092] T26, VSS[093] U3, VSS[094] U6, VSS[095] U21, VSS[096] U24, VSS[097] V2, VSS[098] V5, VSS[099] V22, VSS[100] V25, VSS[101] W1, VSS[102] W4, VSS[103] W23, VSS[104] W26, VSS[105] Y3, VSS[106] Y6, VSS[107] Y21, VSS[108] Y24, VSS[109] AA2, VSS[110] AA5, VSS[111] AA8, VSS[112] AA11, VSS[113] AA14, VSS[114] AA16, VSS[115] AA19, VSS[116] AA22, VSS[117] AA25, VSS[118] AB1, VSS[119] AB4, VSS[120] AB8, VSS[121] AB11, VSS[122] AB13, VSS[123] AB16, VSS[124] AB19, VSS[125] AB23, VSS[126] AB26, VSS[127] AC3, VSS[128] AC6, VSS[129] AC8, VSS[130] AC11, VSS[131] AC14, VSS[132] AC16, VSS[133] AC19, VSS[134] AC21, VSS[135] AC24, VSS[136] AD2, VSS[137] AD5, VSS[138] AD8, VSS[139] AD11, VSS[140] AD13, VSS[141] AD16, VSS[142] AD19, VSS[143] AD22, VSS[144] AD25, VSS[145] AE1, VSS[146] AE4, VSS[147] AE8, VSS[148] AE11, VSS[149] AE14, VSS[150] AE16, VSS[151] AE19, VSS[152] AE23, VSS[153] AE26, VSS[154] A2, VSS[155] AF6, VSS[156] AF8, VSS[157] AF11, VSS[158] AF13, VSS[159] AF16, VSS[160] AF19, VSS[161] AF21, VSS[162] A25, VSS[163] AF25

Merom Ball-out Rev 1a

Quanta Computer Inc.
PROJECT : AK3

Size	Document Number	Rev
	Merom(POWER/NC)	2A
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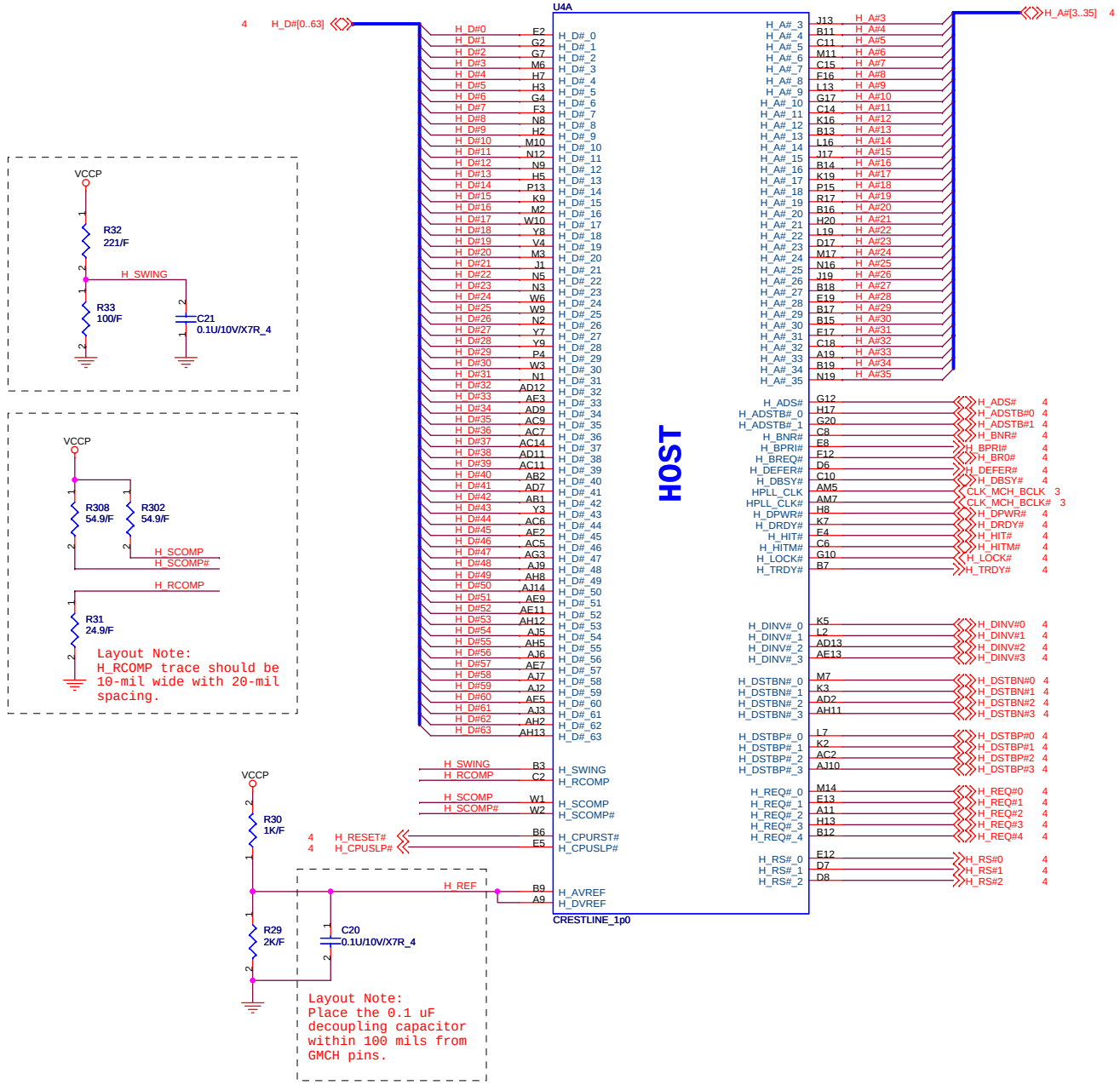

Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: Crestline_A(HOST)	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 6 of 42	

U4B

CRESTLINE_1p0

U4C

CRESTLINE_1p0

Santa Rosa Platform MOW WW15
For 4Gb DRAM support,
change Pin-BJ29 to DDR_A_MA14,
change Pin-BE24 to DDR_B_MA14.

Layout Note:
Location of all MCH_CFG strap
resistors needs to be close to
minmize stub.

<check list>
HSYNC/VSYNC serial R
place close to NB

PP-1025-2

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 Inc.

PROJECT : AK3

Size	Document Number	Rev
	Crestline_B(VGA/DMI)	2A

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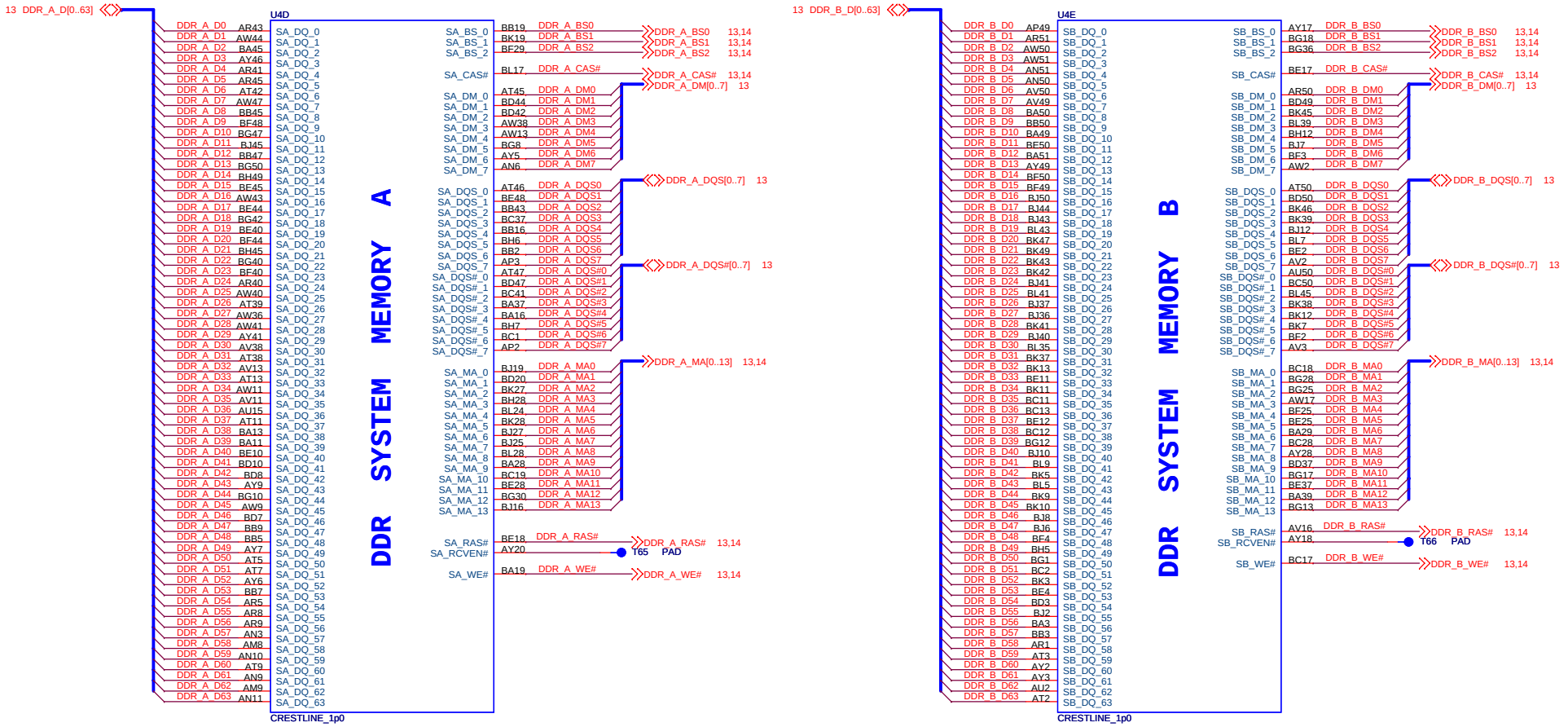


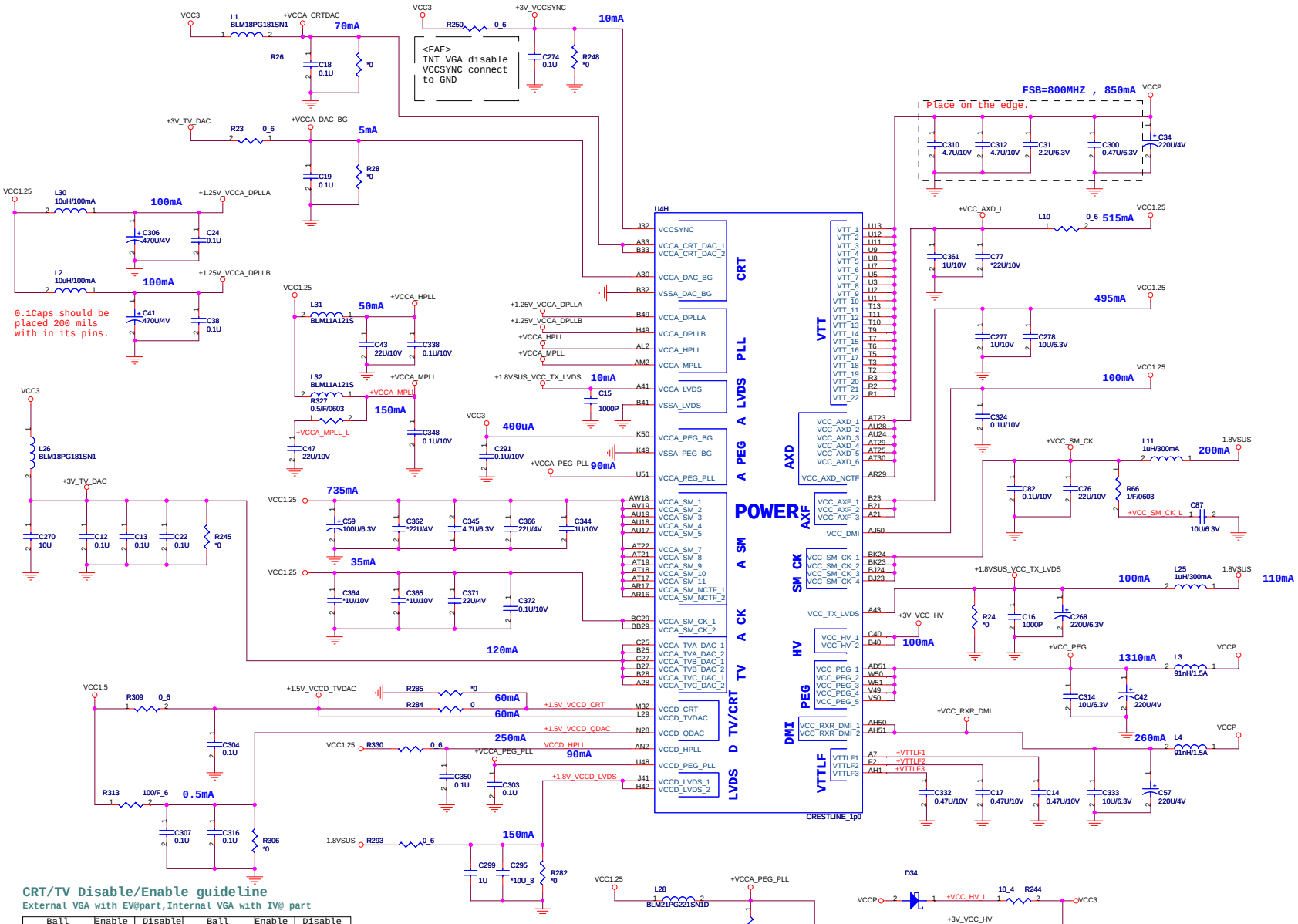
Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	Crestline_C(DDRII)	2A
Date: Tuesday, October 30, 2007	Sheet 8 of 42	

GMCH 1.05V	current(A)	Remark
VCC Core	1.573	(1.3A for external GFX)
VCC_AXG	7.7	for integrated Gfx
VCC_AXD	0.2	
VTT	0.85	FSB VCCP
VCC_PEG	1.2	for PCIEG
VCC_AXM	0.54	for IAMT function
VCCR_RX_DMI	0.25	DMI
SUM	**12.313**	

Quanta Computer Inc.	
PROJECT : AK3	
Size	Document Number: Crestline_D(VCC/NCTF) — Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 9 of 42



CRT/TV Disable/Enable guideline

External VGA with EV@part,Internal VGA with IV@ part

Ball	Enable	Disable	Ball	Enable	Disable
VCCSYNC	3.3V	GND	VCCD_TVDAC	1.5V	1.5V
VCCA_CRT_DAC	3.3V	GND	VCCA_TVA_DAC	3.3V	GND
VCCA_DAC_BG	3.3V	GND	VCCA_TVB_DAC	3.3V	GND
VCCD_CRT	1.5V	GND	VCCA_TVC_DAC	3.3V	GND
VCCD_QDAC	1.5V	GND	VSS_DAC_BG	GND	GND

LVDS Disable/Enable guideline

External VGA with EV@part,Internal VGA with IV@ part

Signal	If SDVO Disable LVDS Disable	If LVDS enable
VCCD_LVDS	GND	1.8V
VCCA_LVDS	GND	1.8V
VCC_TX_LVDS	GND	1.8V

SDMK0340L-7-F_NC

Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	Crestline_E(POWER)	2A

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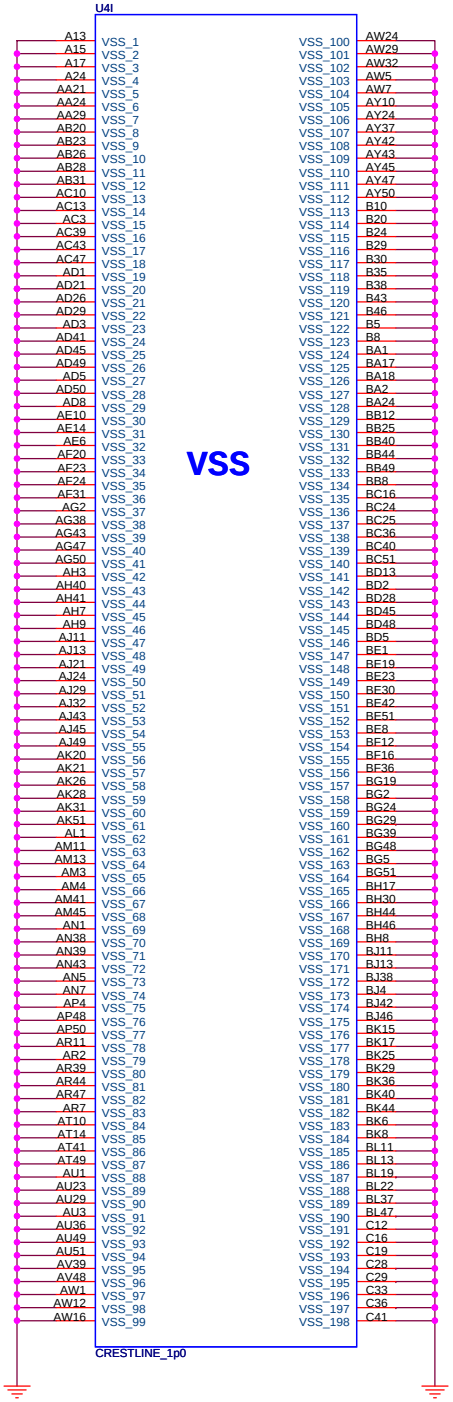
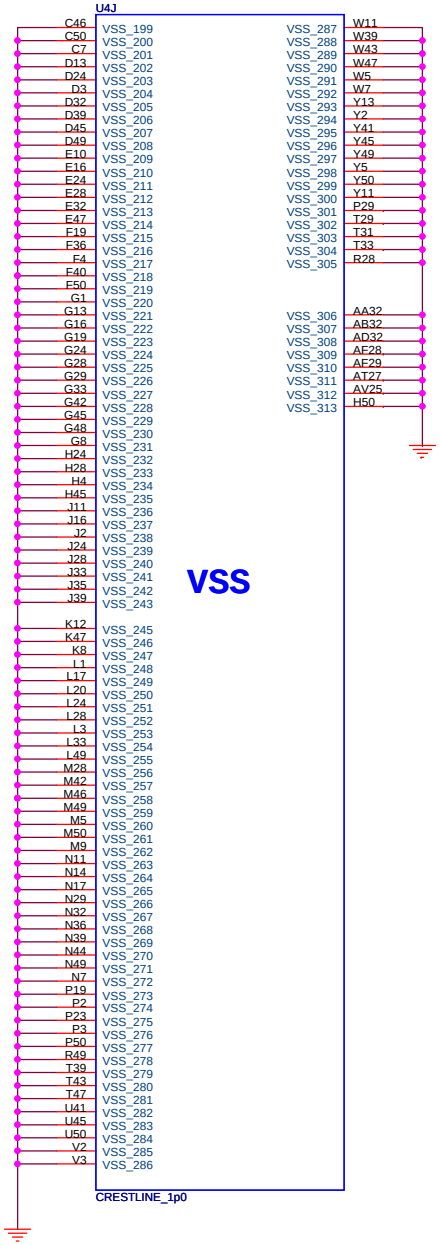
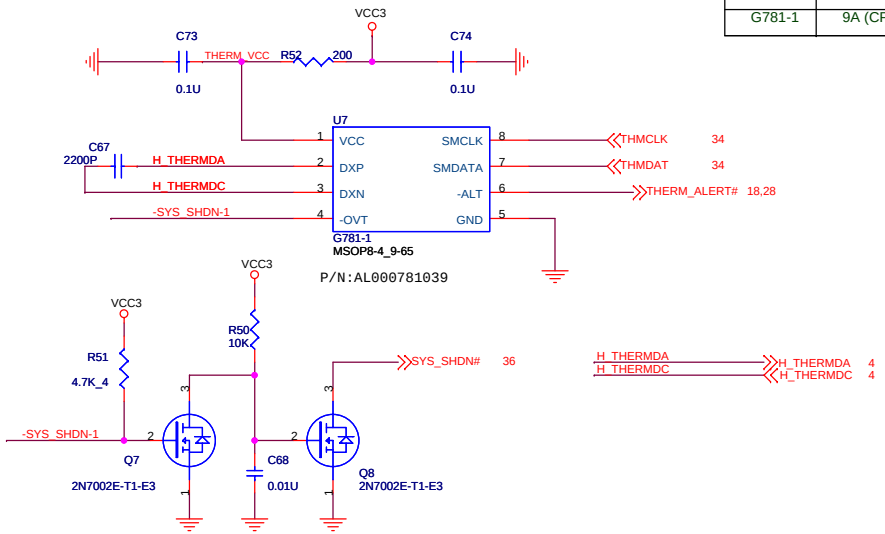


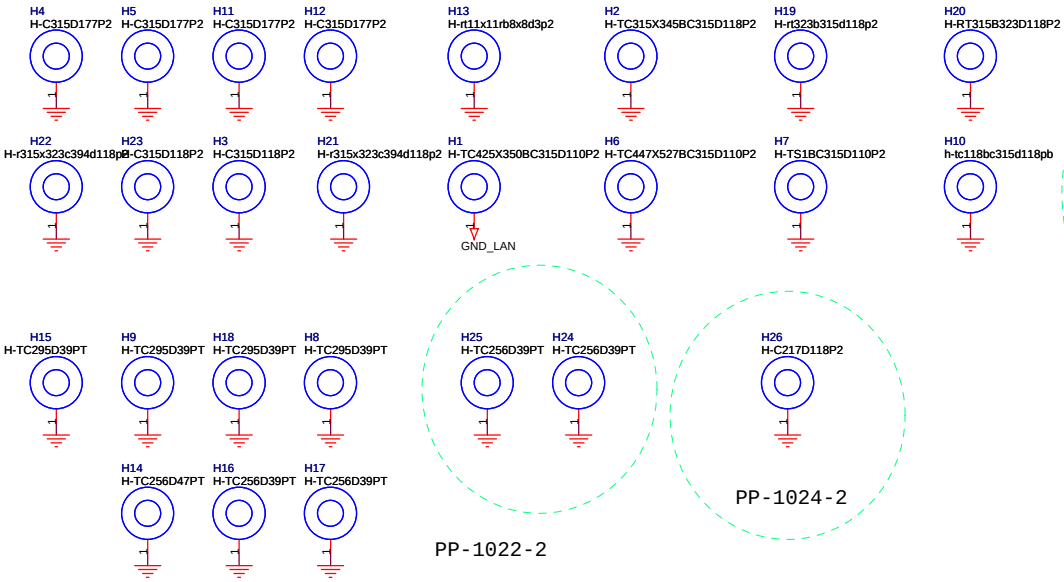


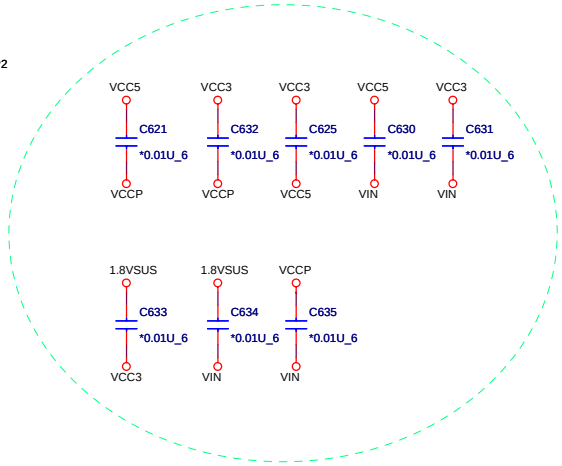
Quanta Computer Inc.	
PROJECT : AK3	
Size	Document Number: Crestline_F(VSS) — Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 11 of 42

Thermal Senser (CPU)

SMBUS SLAVE ADDRESS	
G781	98 (NB)
G781-1	9A (CPU)



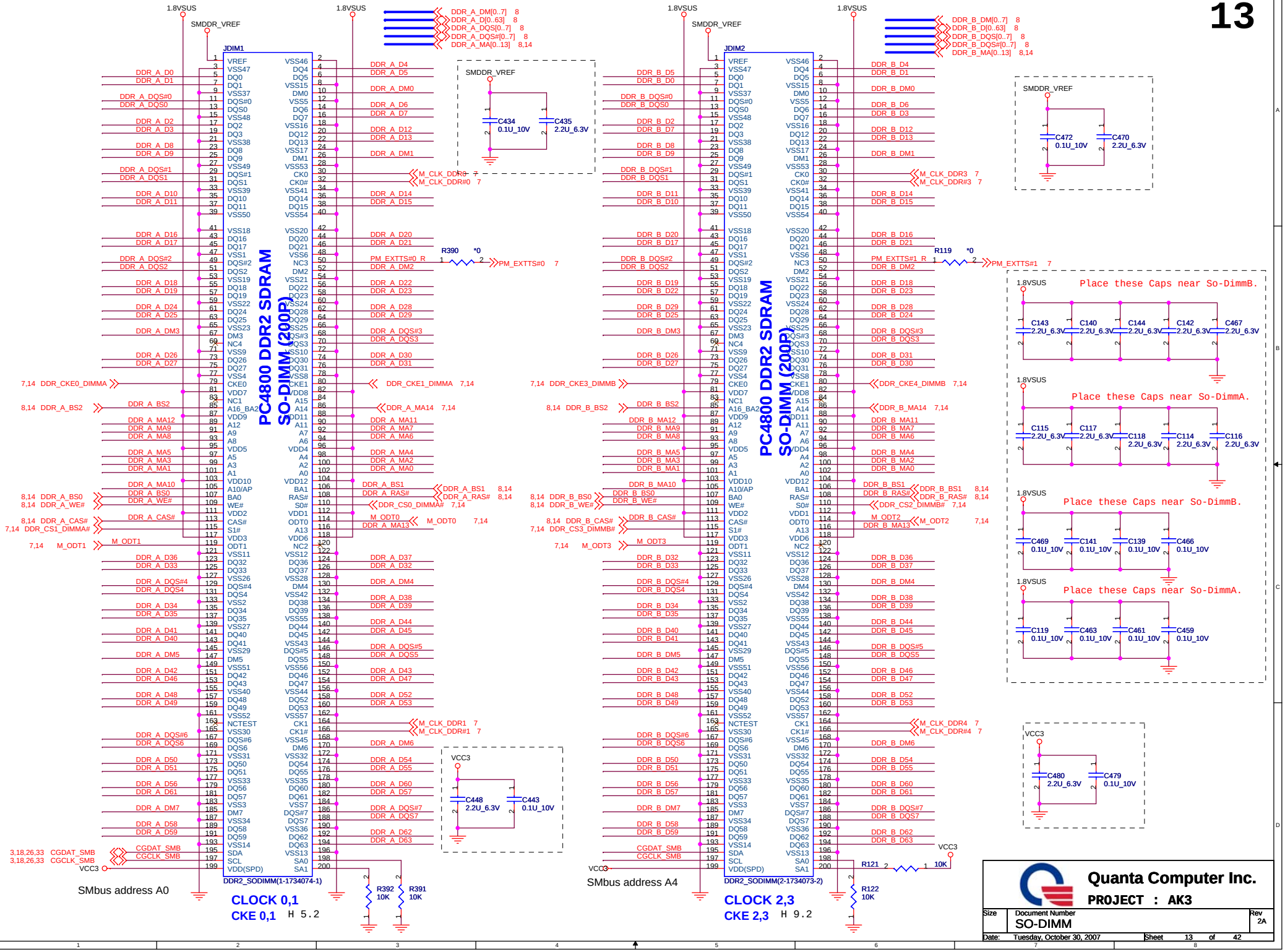




Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	Thermal Sensor	2A
Date: Tuesday, October 30, 2007	Sheet 12 of 42	


JDIM1
PC4800 DDR2 SDRAM SO-DIMM (200P)
DDR2_SODIMM(1-1734074-1)
SMbus address A0
CLOCK 0,1
CKE 0,1 H 5.2
JDIM2
PC4800 DDR2 SDRAM SO-DIMM (200P)
DDR2_SODIMM(2-1734073-2)
SMbus address A4
CLOCK 2,3
CKE 2,3 H 9.2
1.8VSUS
SMDDR_VREF
VCC3
R390 *0
R119 *0
R391 10K
R392 10K
R122 10K
R121 10K
Place these Caps near So-DimmB.
Place these Caps near So-DimmA.
Place these Caps near So-DimmB.
Place these Caps near So-DimmA.
Quanta Computer Inc.
PROJECT : AK3
Size
Document Number
SO-DIMM
Rev 2A
Date: Tuesday, October 30, 2007
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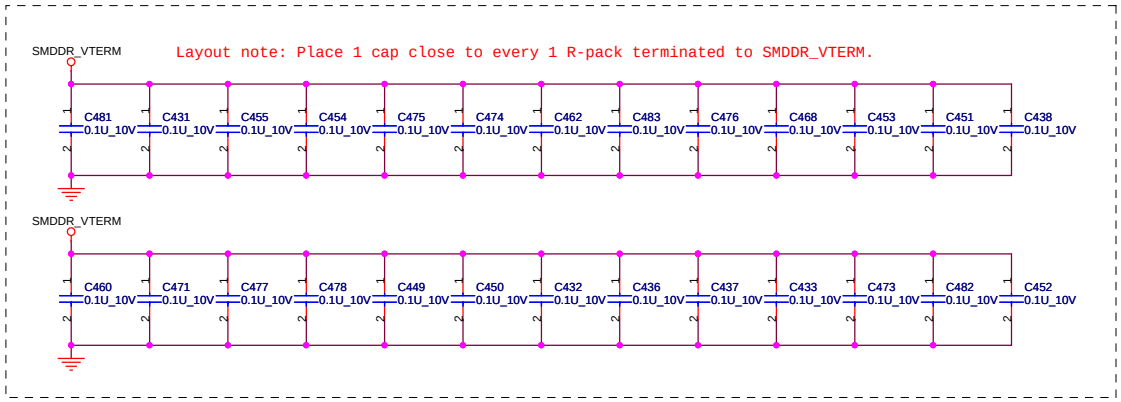
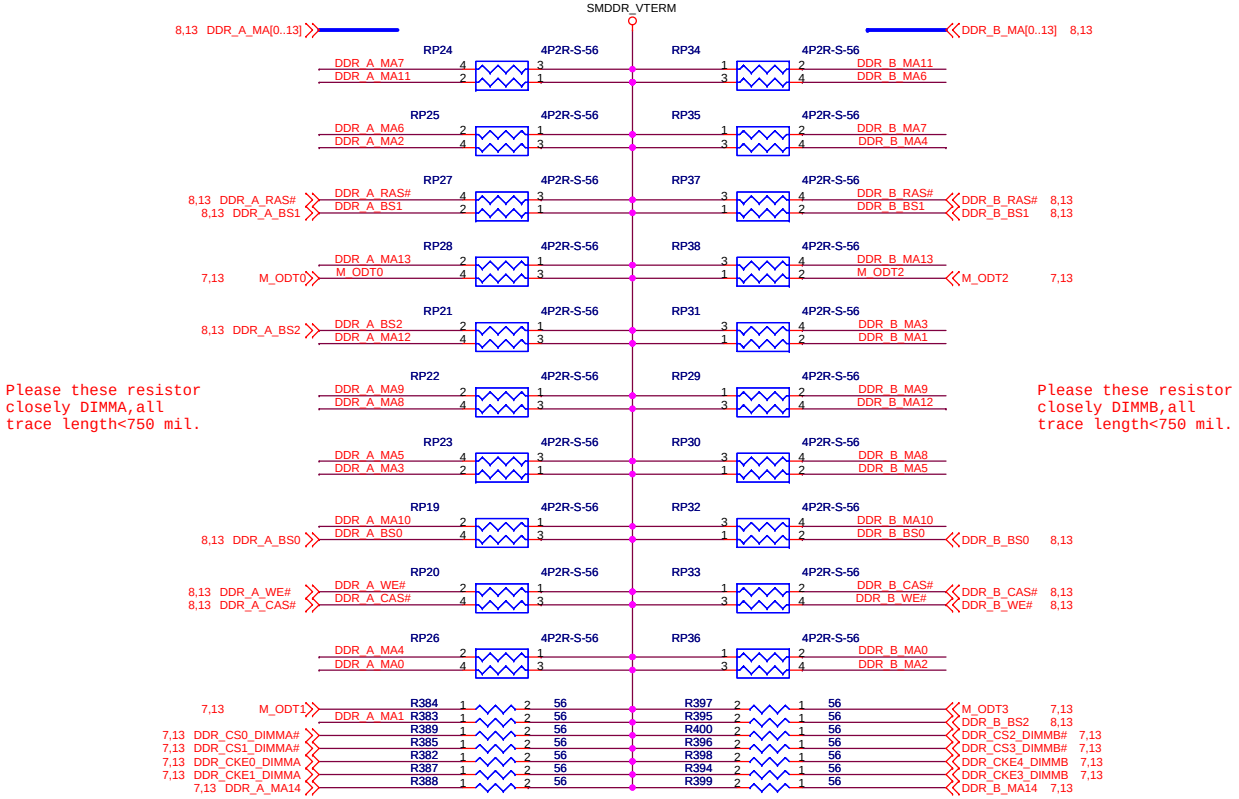


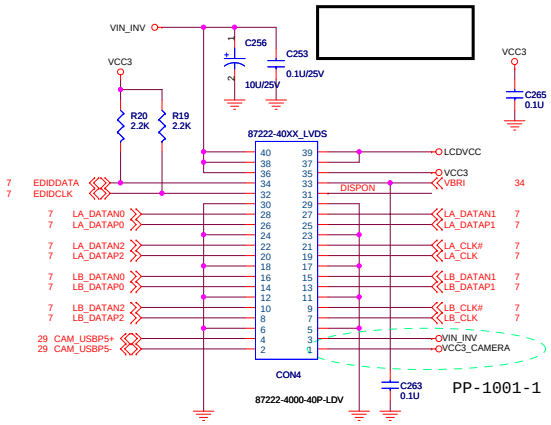


Please these resistor closely DIMMA,all trace length<750 mil.

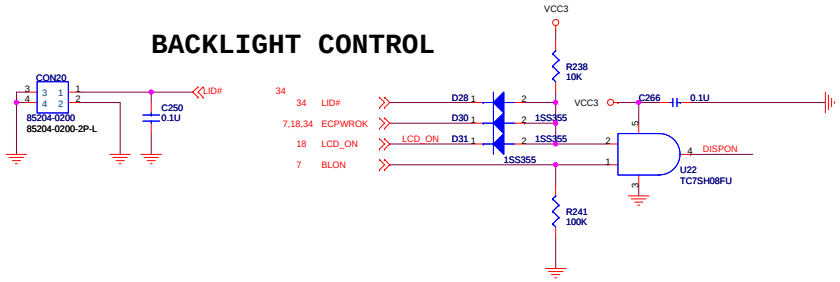
Please these resistor closely DIMMB,all trace length<750 mil.

Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: DDRII Termination	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 14 of 42	

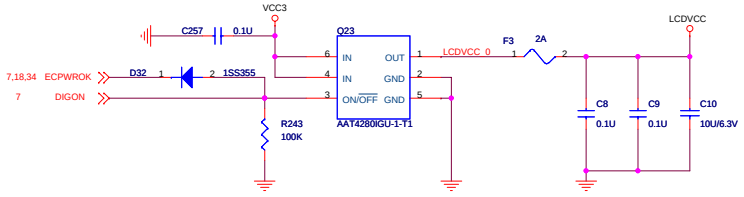
LCD Connector



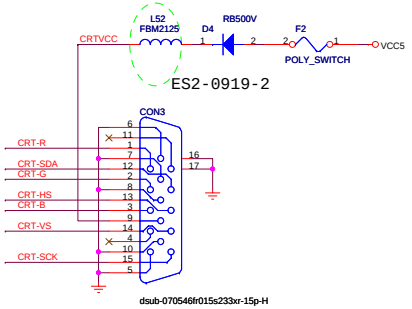
BACKLIGHT CONTROL

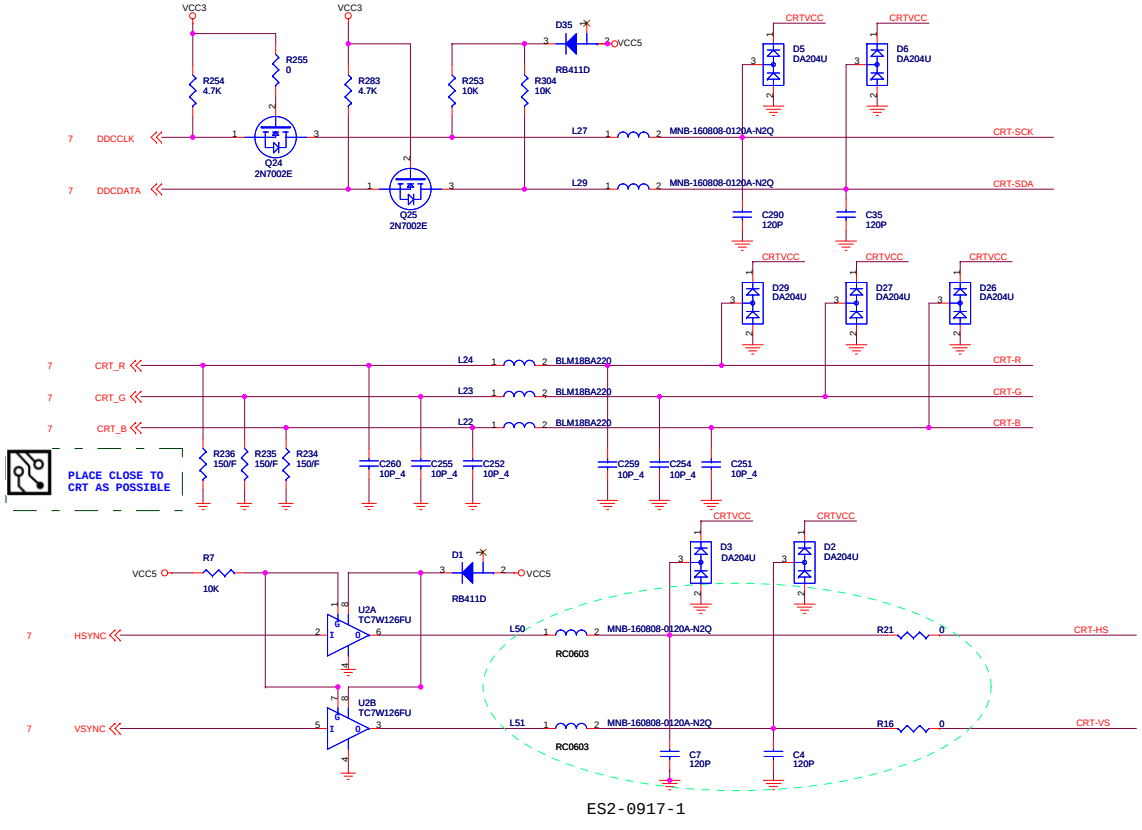


LCDVCC SLEW CONTROL



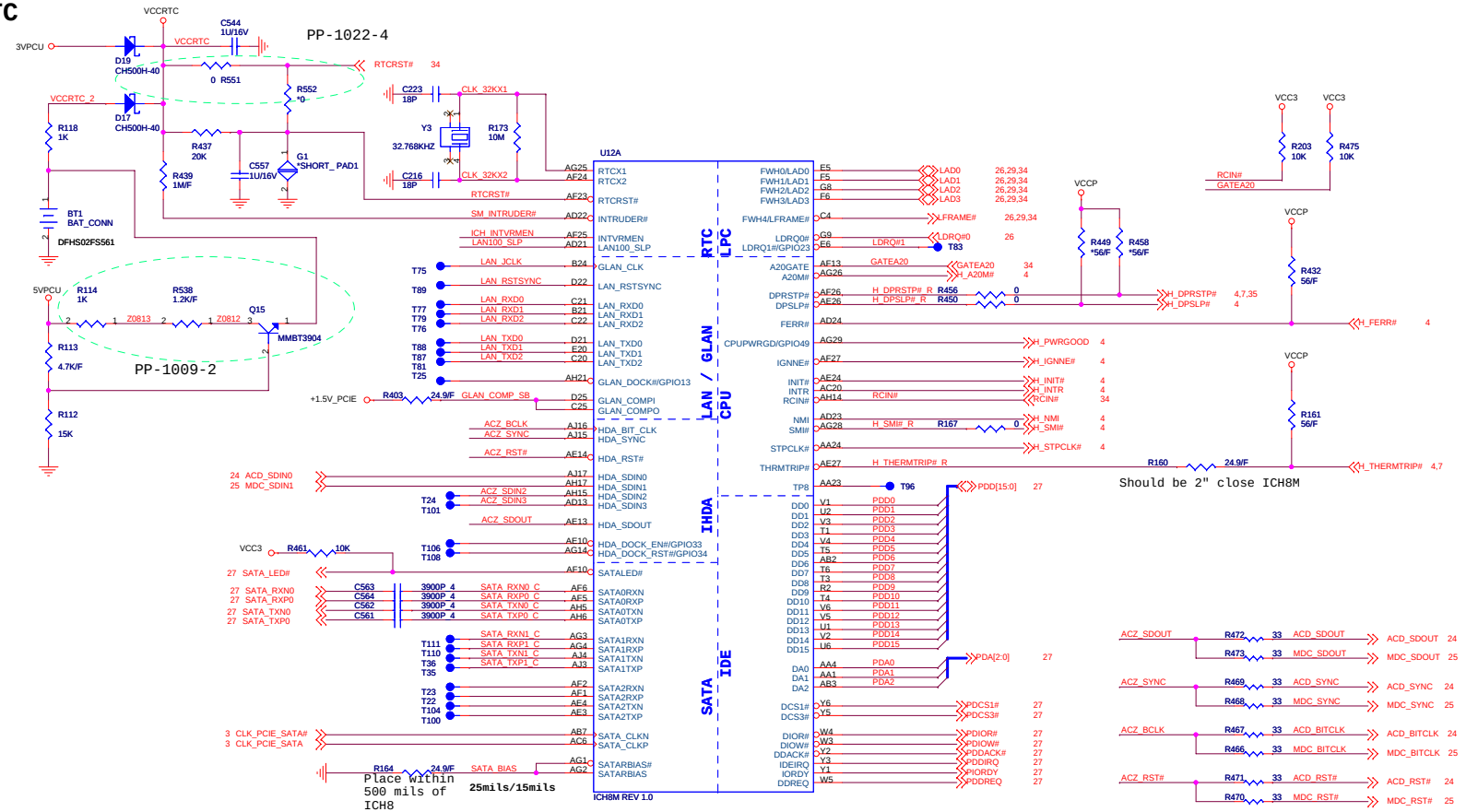
CRT CONNECTOR





ES2-0917-1

RTC



SB Strap

ICH8-M Internal VR Enable strap (Internal VR for Vccsus1_05,VccSus1_5 and VccCL1_5)

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

ICH8-M LAN100_SLP Strap (Internal VR for VccLAN1_05 and VccCL1.05)

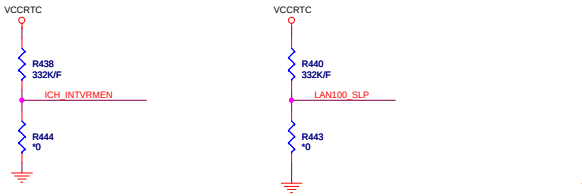
LAN100_SLP	Low = Internal VR disable High = Internal VR enable(Default)

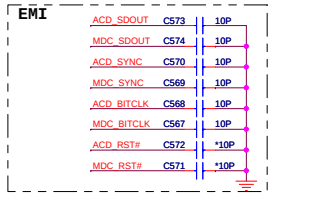
XOR Chain Entrance Strap

ICH_RSV0	HDA_SDOUT	Description
0	0	RSVD
0	1	Enter XOR Chain
1	0	Normal opration(Default)
1	1	Set PCIE port config bit 1

PCIe Port Configuration 1 (Port 1-4)

HDA_SDOUT	HDA_SYNC	Description
0	0	Port 1(x1) , Port 2 (x1) , Port 3(x1) , Port 4 (x1) (Default)
0	1	Port 1(x2) , Port 3(x1) , Port 4 (x1)
1	0	Port 1(x2) , Port 3(x2)
1	1	Reserved





Quanta Computer Inc.
PROJECT : AK3
Size | Document Number: ICH8-M HOST (1 of 4) | Rev 2A
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PP-0929-1

EXPRESS CARD

MINI CARD(WLAN)

MINI CARD(TV)

LAN

U12D

PCI-Express Direct Media Interface

SPI

USB

ICH8M REV 1.0

Place within 500 mils of ICH7

+1.5V_PCIE

R417 24.9/F_4

15/15mils

USB Connector

BLUETOOTH

USB Connector

USB Connector

Felica

Carama USB

USB Connector

WLAN

TV

NEW CARD

25mils/15mils

Place within 500 mils of ICH8

R130 22.6/F_6

Place close to ICH8

3VPCU

USBVCC3 USBVCC3

U11

TS3USB221DRCR

qfn10-3x3-5-11p

R133 75K

R134 43.2K

R132 49.9K

R135 49.9K

R138 USBP3+ *0

R139 USBP3- *0

PP-1006-1

PCIe Port Configuration 2 (Port 5~6)	
PCI_GNT#0	SPI_CS#1
0	Port 5 (x2)
1	Port 5 (x1) , Port 6 (x1)

GNT2# R408 *1K

A16 SWAP Override strap	
PCI_GNT#3	Low = A16 swap override enabled High = Default

GNT3# R404 *1K

ICH8 Boot BIOS select		
PCI_GNT#0	SPI_CS#1	Boot BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC (Default)

SPI_CS1# R407 *1K

GNT0# R405 *1K

RP5 8.2KX8

RP4 8.2KX8

RP3 8.2KX8

RP6 10P8R-10K

USBOC#8 R425 10K +3.3VALW

USBOC#9 R459 10K +3.3VALW

CHECK LIST suggest pull up 10k

PCI

Interrupt I/F

ICH8M REV 1.0

PLT_RST-R#

PCLK_ICH

PCI_PME#

C232 0.1U/16V

U17 TC7SH08FU

PLTRST# 18,26,27,29,31,33

PCLK_ICH R124 *22_4 C138 *33P_4

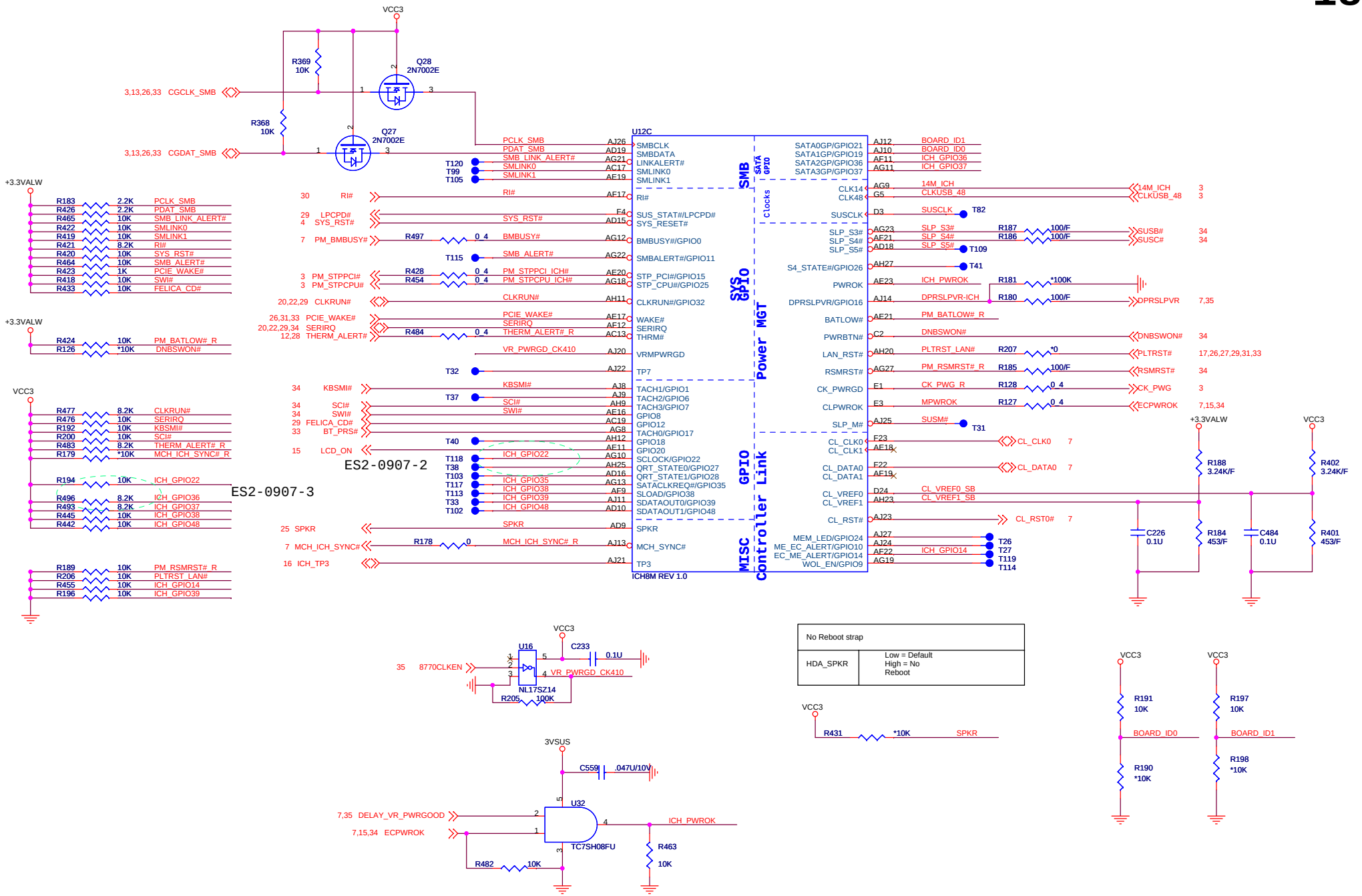
for EMI request

Quanta Computer Inc.

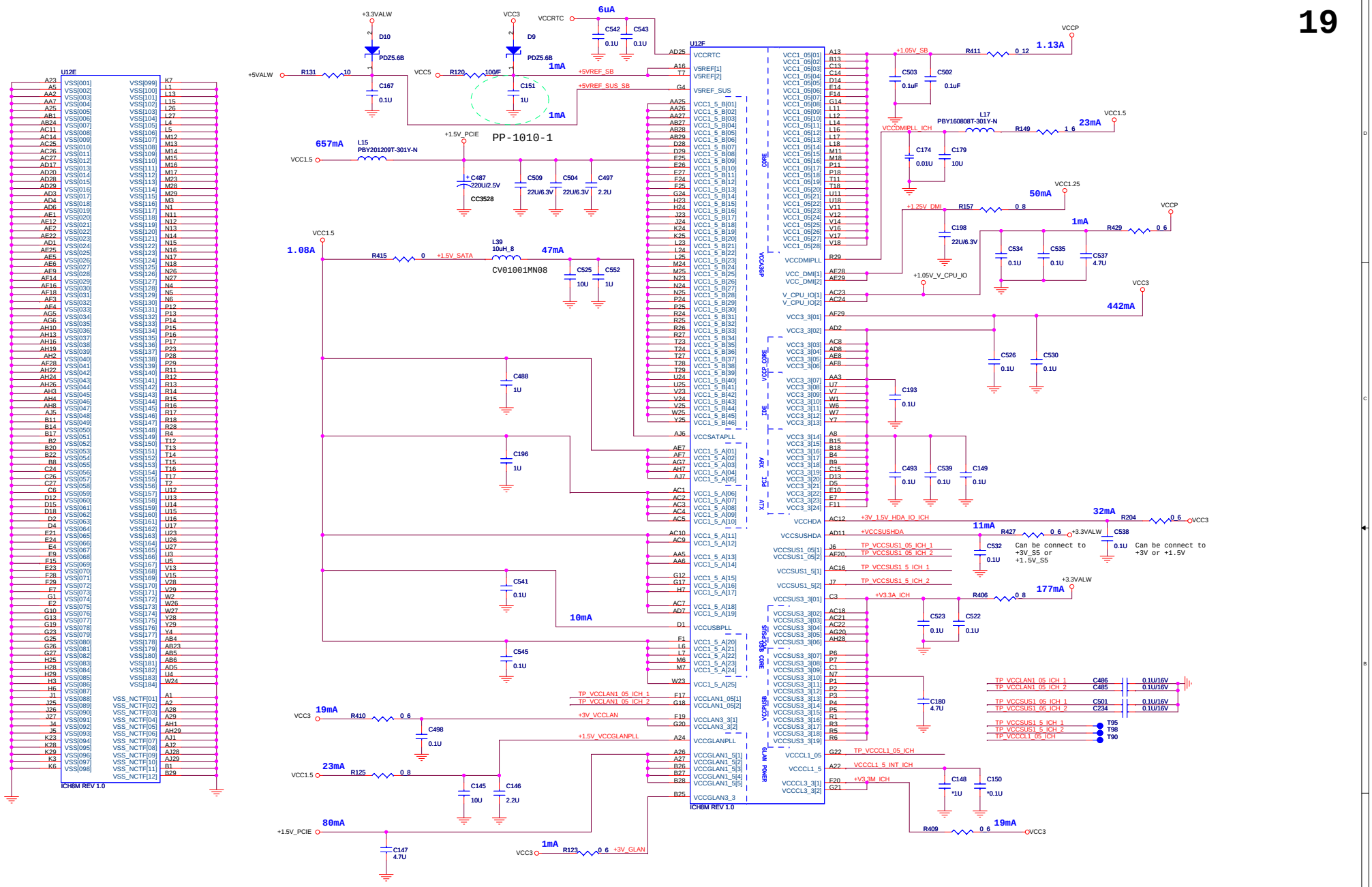
PROJECT : AK3

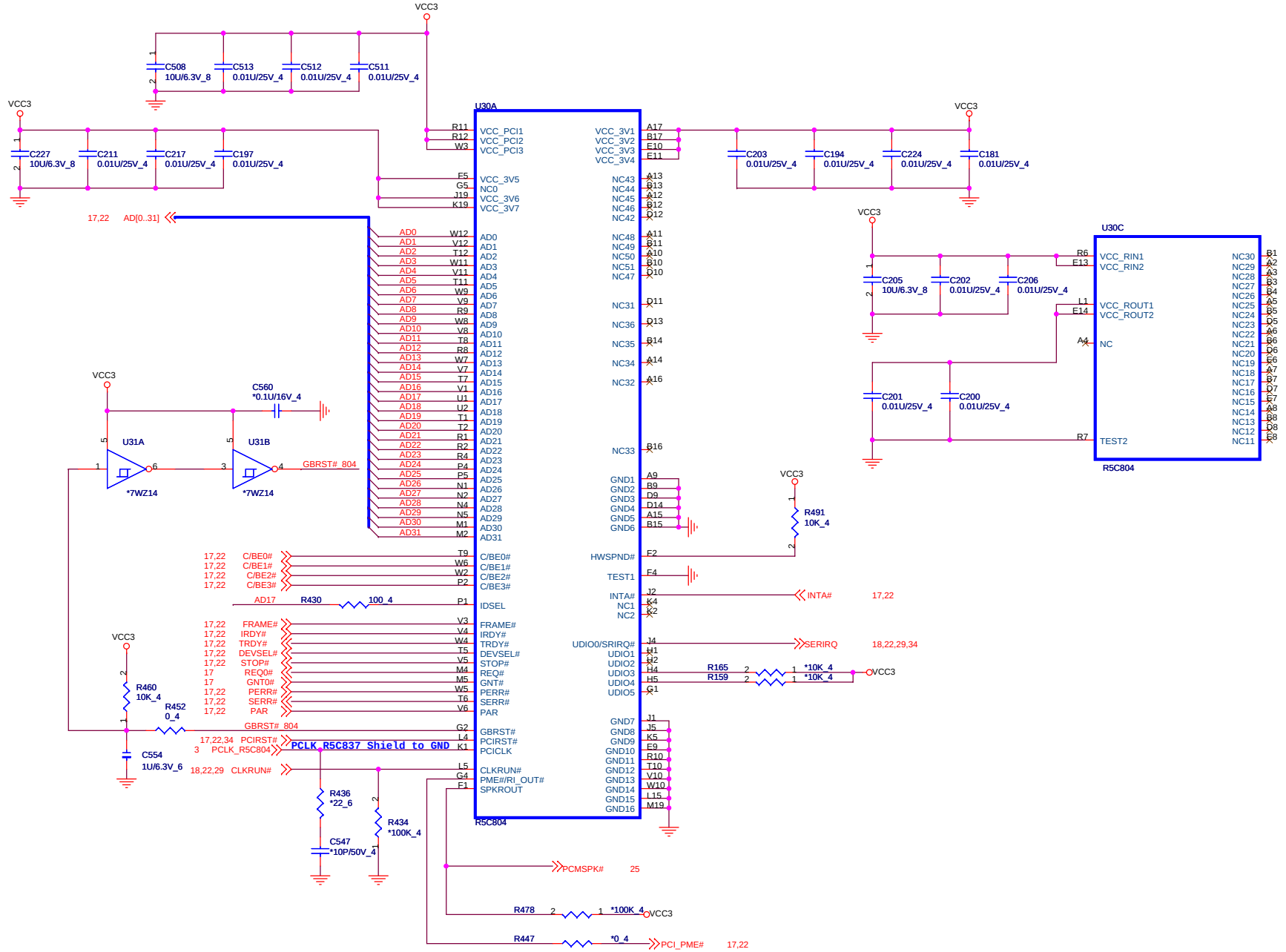
Size	Document Number	Rev
	ICH8-M PCI E (2 of 4)	2A

Date: Tuesday, October 30, 2007 Sheet 17 of 42

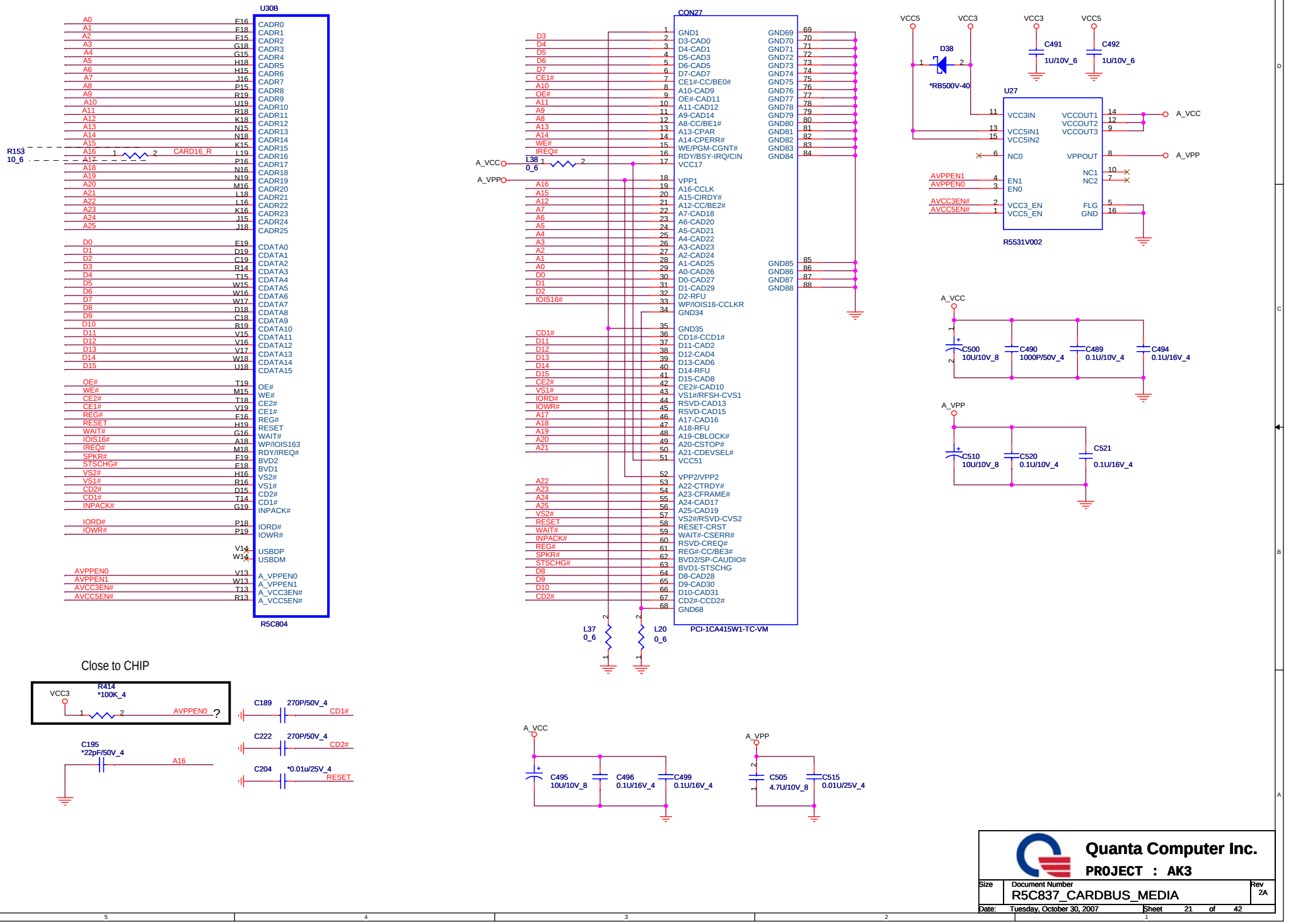


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: ICH8-M GPIO (3 of 4)	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 18 of 42	

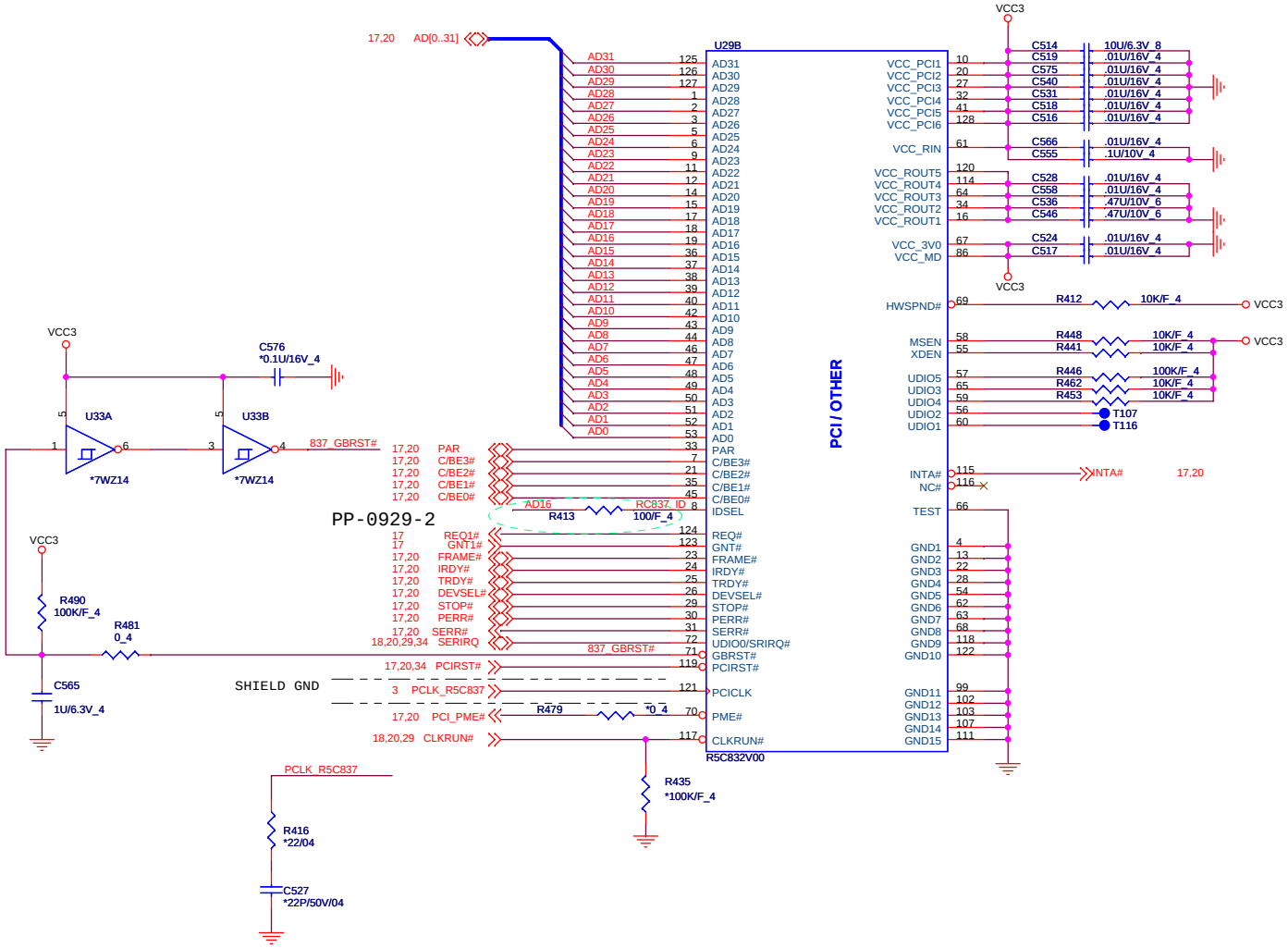

U12E
ICH8M REV 1.0
U12F
ICH8M REV 1.0
PP-1010-1
CC3528
CV01001MN08
+3.3VALW
+5VALW
VCC3
VCC1.5
+1.5V_PCIE
+1.5V_SATA
+5V_SB
+1.05V_SB
+5VREF_SB
+5VREF_SUS_SB
+1.25V_DMI
+1.05V_V_CPU_IO
+3V_1.5V_HDA_IO_ICH
+V3.3A_ICH
+V3V_3M_ICH
+3V_VCCLAN
+3V_GLAN
+VCCSUSHDA
+1.5V_VCCGLANPLL
VCCP
VCC1.25
1.08A
657mA
1.13A
50mA
23mA
1mA
47mA
442mA
32mA
11mA
177mA
10mA
19mA
80mA
6uA
Can be connect to +3V_S5 or +1.5V_S5
Can be connect to +3V or +1.5V
Quanta Computer Inc.
PROJECT : AK3
Document Number
ICH8-M Power (4 of 4)
Rev 2A
Date: Tuesday, October 30, 2007
Sheet 19 of 42



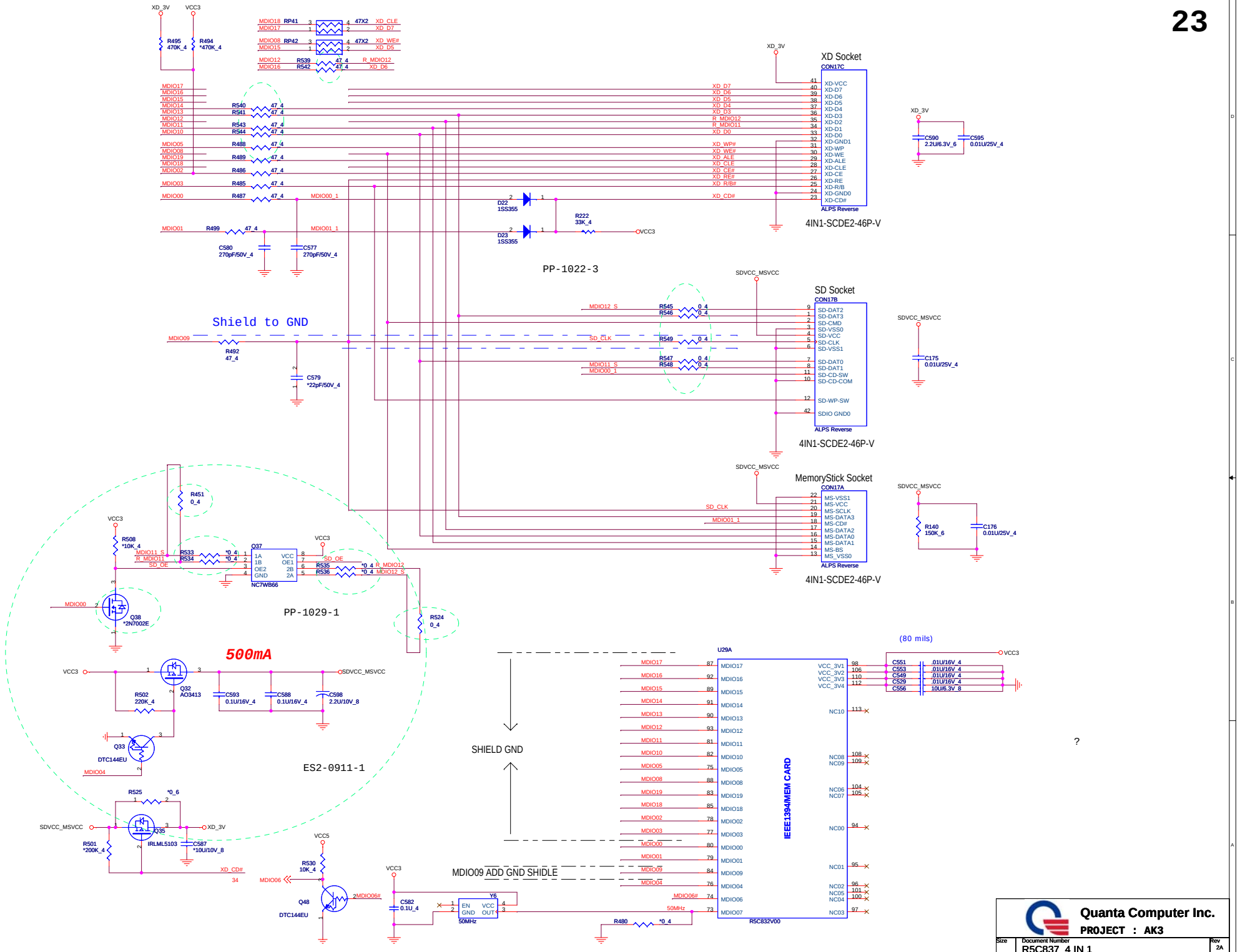
Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: R5C804_PCI	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 20 of 42	

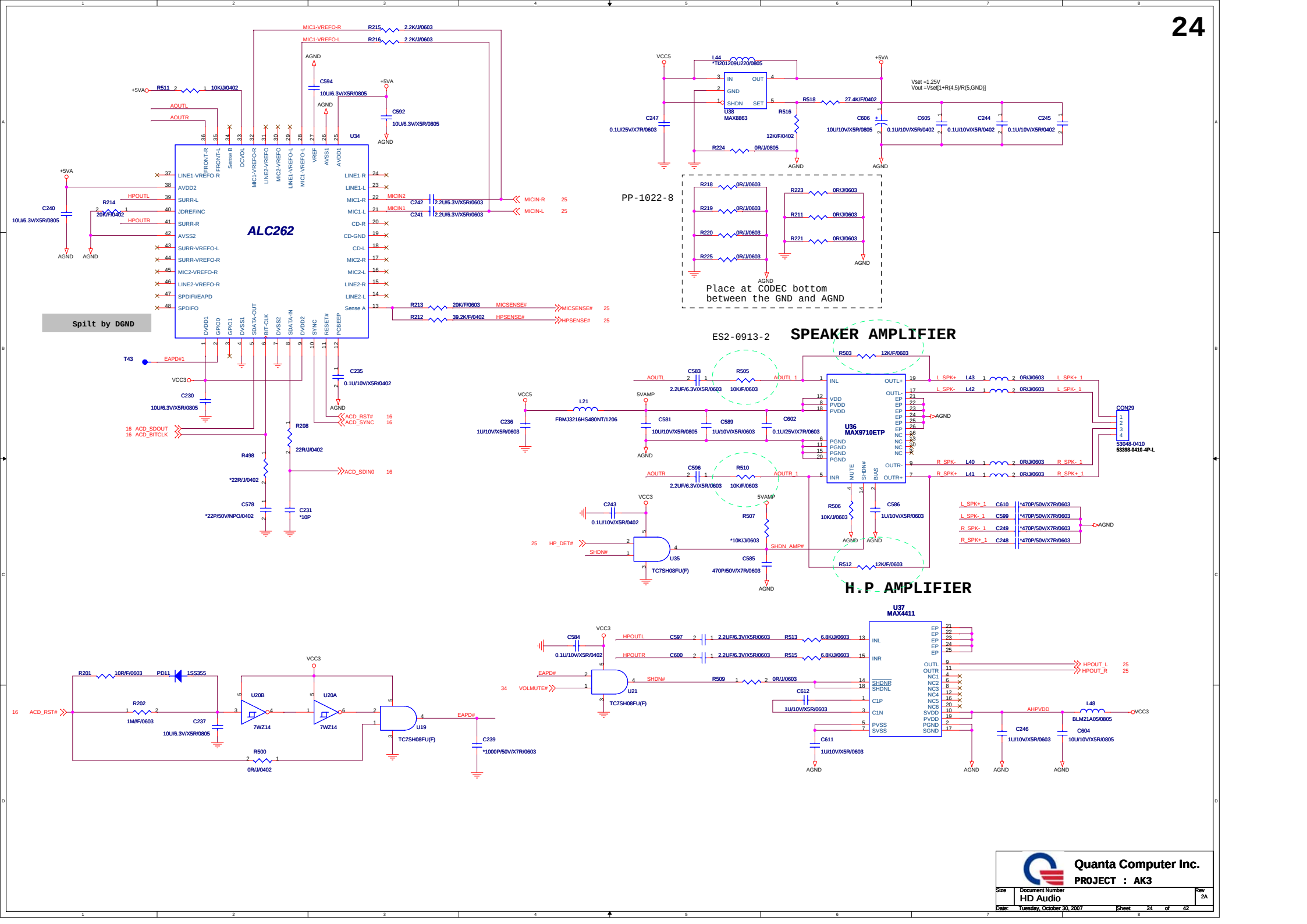


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: R5C837_CARDBUS_MEDIA	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 21 of 42	

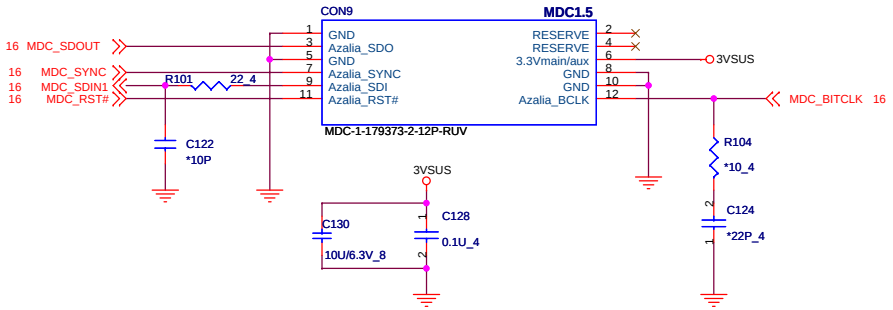


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number R5C837_PCI	Rev 2A
Date: Tuesday, October 30, 2007	Sheet 22 of 42	


XD Socket
CON17C
4IN1-SCDE2-46P-V
ALPS Reverse
PP-1022-3
Shield to GND
SD Socket
CON17B
4IN1-SCDE2-46P-V
MemoryStick Socket
CON17A
4IN1-SCDE2-46P-V
PP-1029-1
500mA
ES2-0911-1
SHIELD GND
MDIO09 ADD GND SHIDLE
U29A
IEEE1394/MEM CARD
R5C832V00
(80 mils)
Quanta Computer Inc.
PROJECT : AK3
R5C837_4 IN 1
Tuesday, October 30, 2007

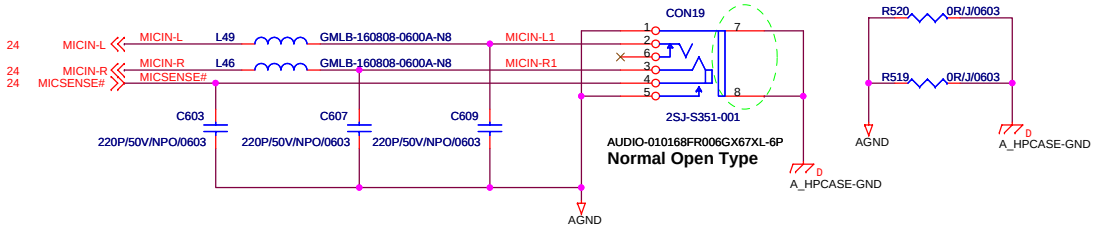

ALC262
Spilt by DGND
PP-1022-8
Place at CODEC bottom
between the GND and AGND
ES2-0913-2
SPEAKER AMPLIFIER
U36
MAX9710ETP
H.P AMPLIFIER
U37
MAX4411
Quanta Computer Inc.
PROJECT : AK3
HD Audio
Tuesday, October 30, 2007

HD_MDC



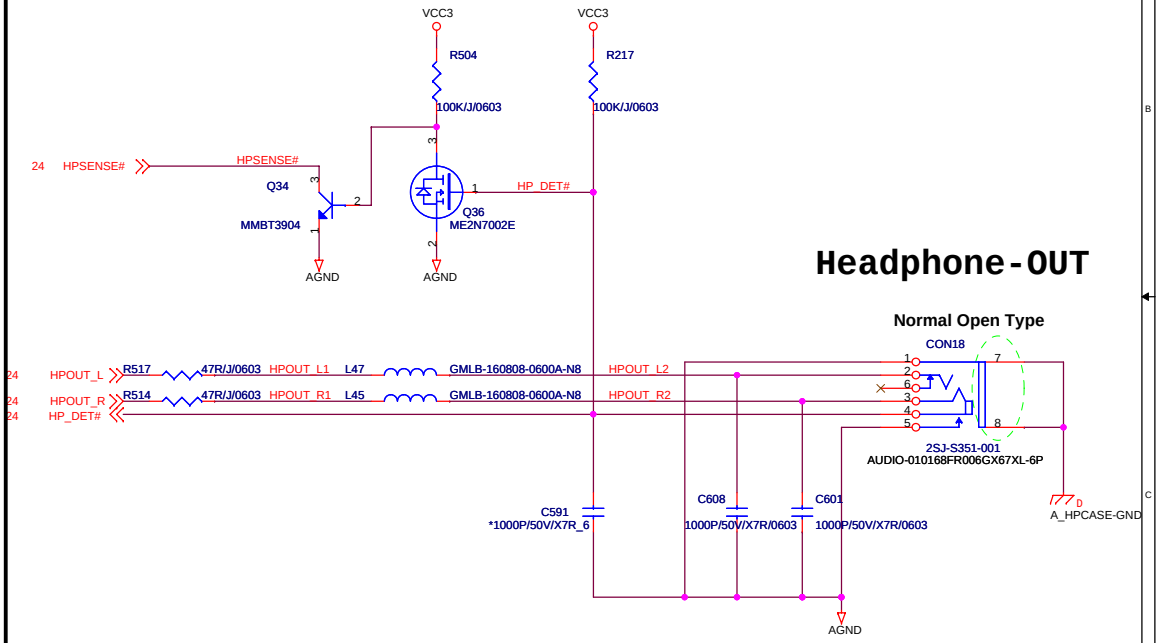
MIC-IN

ES2-0919-1

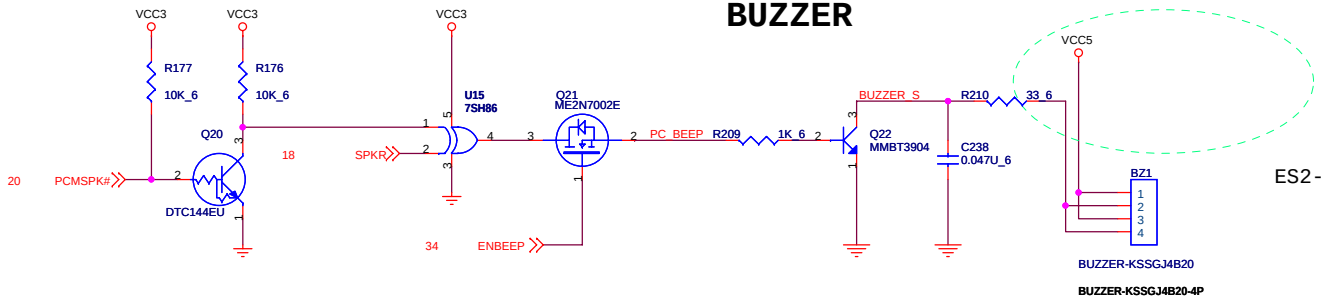


Max. 100mVrms input for Mic-IN

Headphone-OUT



BUZZER



ES2-0913-1

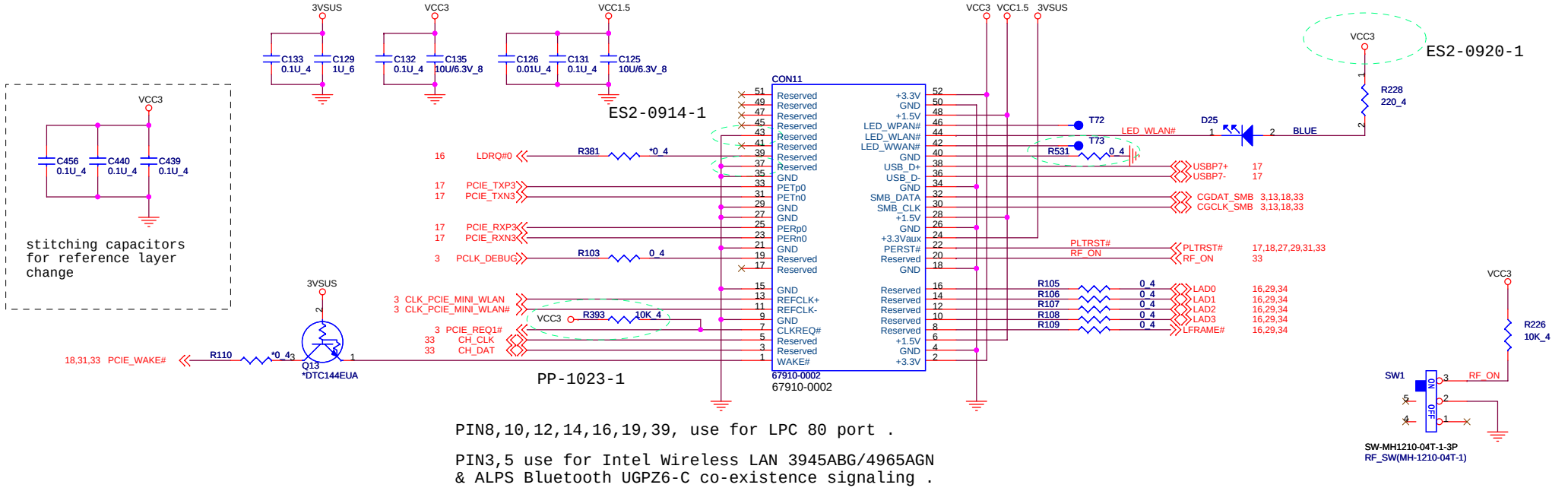
Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	AUDIO JACK/MODEM/BUZZER	2A

Date: Tuesday, October 30, 2007 Sheet 25 of 42

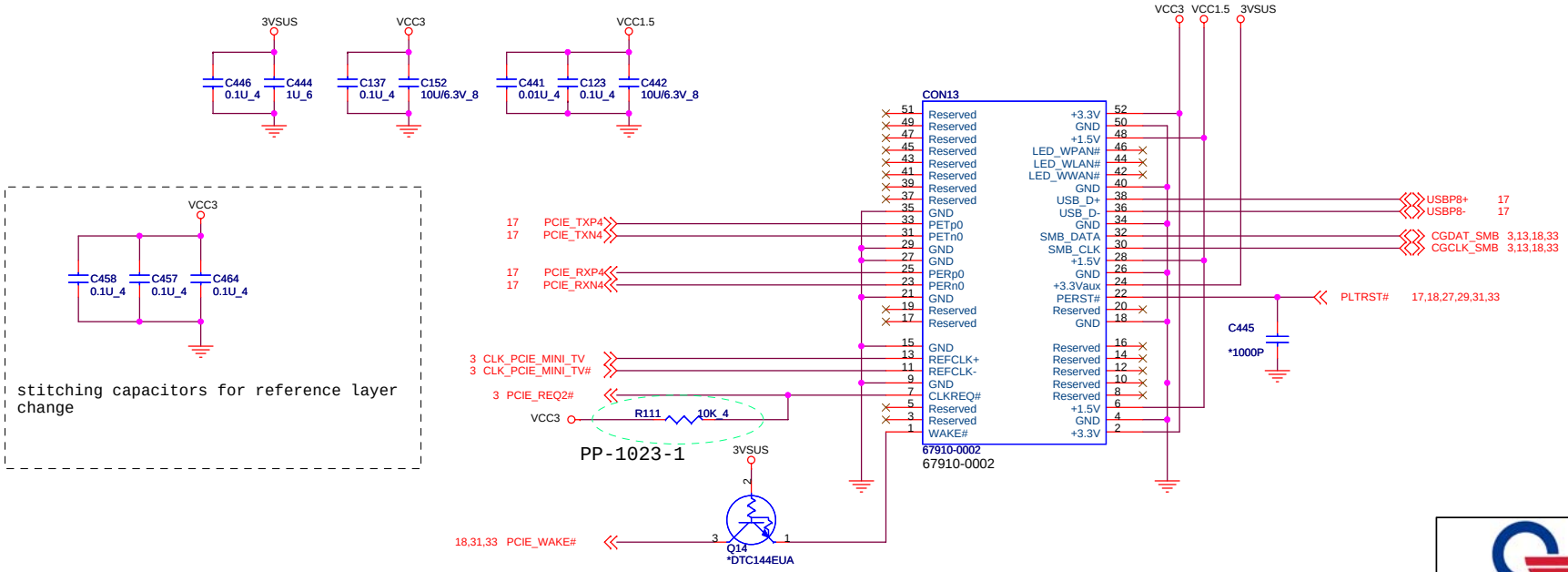
MINI CARD (For WLAN)



PIN8,10,12,14,16,19,39, use for LPC 80 port .

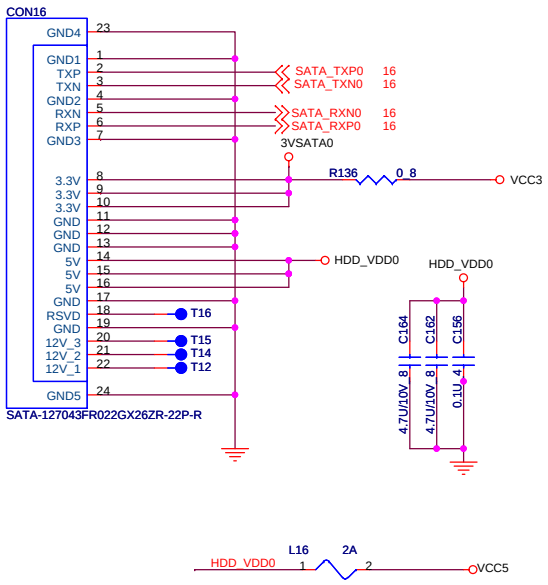
PIN3,5 use for Intel Wireless LAN 3945ABG/4965AGN
& ALPS Bluetooth UGPZ6-C co-existence signaling .

MINI CARD (For 1-seg TV)

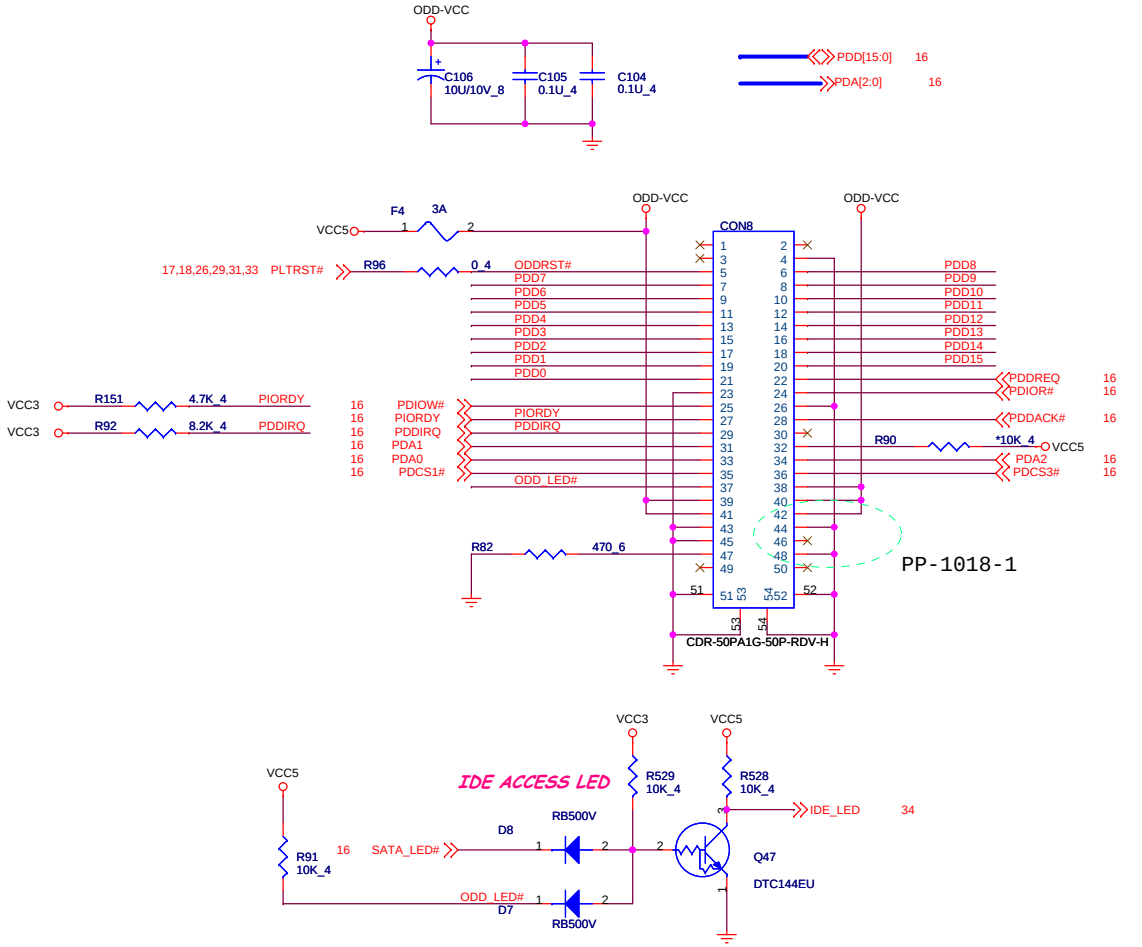


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: MINI PCI-E	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 26 of 42	

SATA HDD

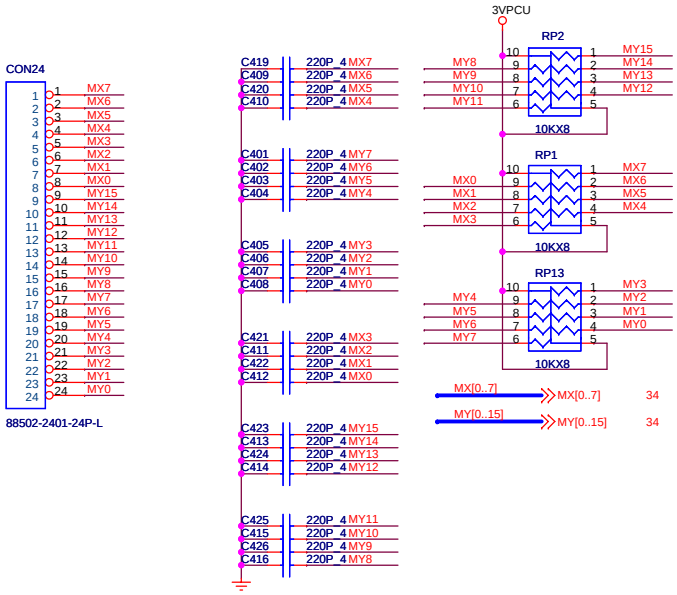


PATA ODD

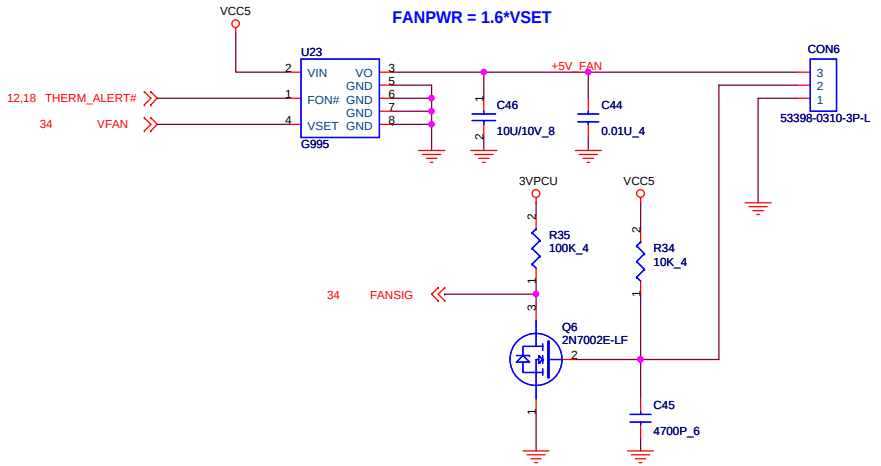


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: SATA(HDD),PATA(ODD) CONNECT	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 27 of 42	

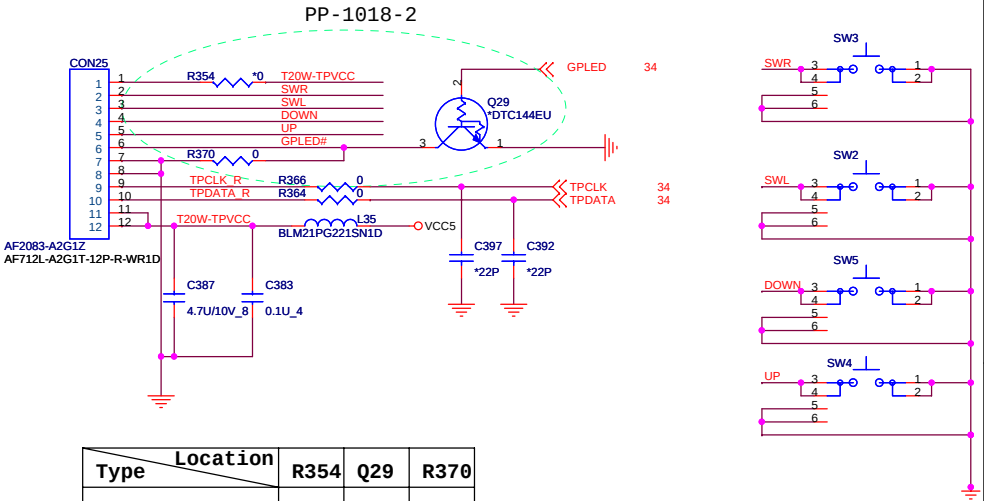
INT. KEYBOARD



FAN CONTROL



TOUCH-PAD



Type \ Location	R354	Q29	R370
Lighting GP	O	O	X
Wide GP	X	X	O

Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	INT.KB/TP/FAN	2A

Date: Tuesday, October 30, 2007 Sheet 28 of 42

RIGHT SIDE USB CONN

Vin of U19 : 80 mil
USBVCCx : 40 mil at least

U1 TPS2062
C3 1U/10V_6

PP-0929-3
CON2 88107-120XX-12P-RUV
R1 *0_8
R2 0_8
R3 0_8
R5 0_8
R4 *0_4
R6 *0_4
TV_LUMA
TV_CHROMA
TV_COMP
USBP0-
USBP0+
USBP6-
USBP6+

USB:R3,R5,R2 stuff,R4,R6,R1 no stuff.
S-Vedio:R3,R5,R2 no stuff,R4,R6,R1 stuff.

Wire CONN to USB Board

U28 TPS2061
C533 1U/10V_6
LP8 *WCM2012-90
CON28
C550 0.1U_4
C548 150U/6.3V_7343

Wire CONN to USB CONN

Transient Voltage Suppresser Close to USB CON
D39 IP4220CZ6

R10 300_6
R11 300_6
R8 300_6
R15 10K/F_4
C1 0.1U_6
Q5 Q4 Q1 2N7002E-LF

LEFT SIDE USB CONN

29

U26 TPS2061
C127 1U/10V_6

USB CONN
CON12 usb-020173mr004s582zl-c2-4p-l-h
LP6 *WCM2012-90
C447 0.1U_4
C465 150U/6.3V_7343

THE BULK CAPs CLOSE TO I CONNECTOR

ES2-0910-1

Transient Voltage Suppresser Close to USB CON
D37 IP4220CZ6

R386 300_6
Q31 2N7002E-LF

TPM1.2

U13 SLB 9635 TT 1.2
R144 *0_4
R143 *4.7K_4
R145 0_4
R142 4.7K_4
5mA
25mA
R162 *33_4
C209 *22P_4
C183 22P_4
Y2 32.768K
C182 22P_4
C184 C208 C210 0.1U_4
C185 1U_6

I/O Address		
BADDR	Index	Data
* 0	2E	2F
1	4E	4F

FELICA

5V_FELICA : 20 mil
F5 POLY_SWITCH
C134 0.1U_4
C136 10U/6.3V_8
100mA
LP7 *WCM2012-90
CON14 ACES-87153-06 87153-06X1X-6P-RUV

USB CAMERA

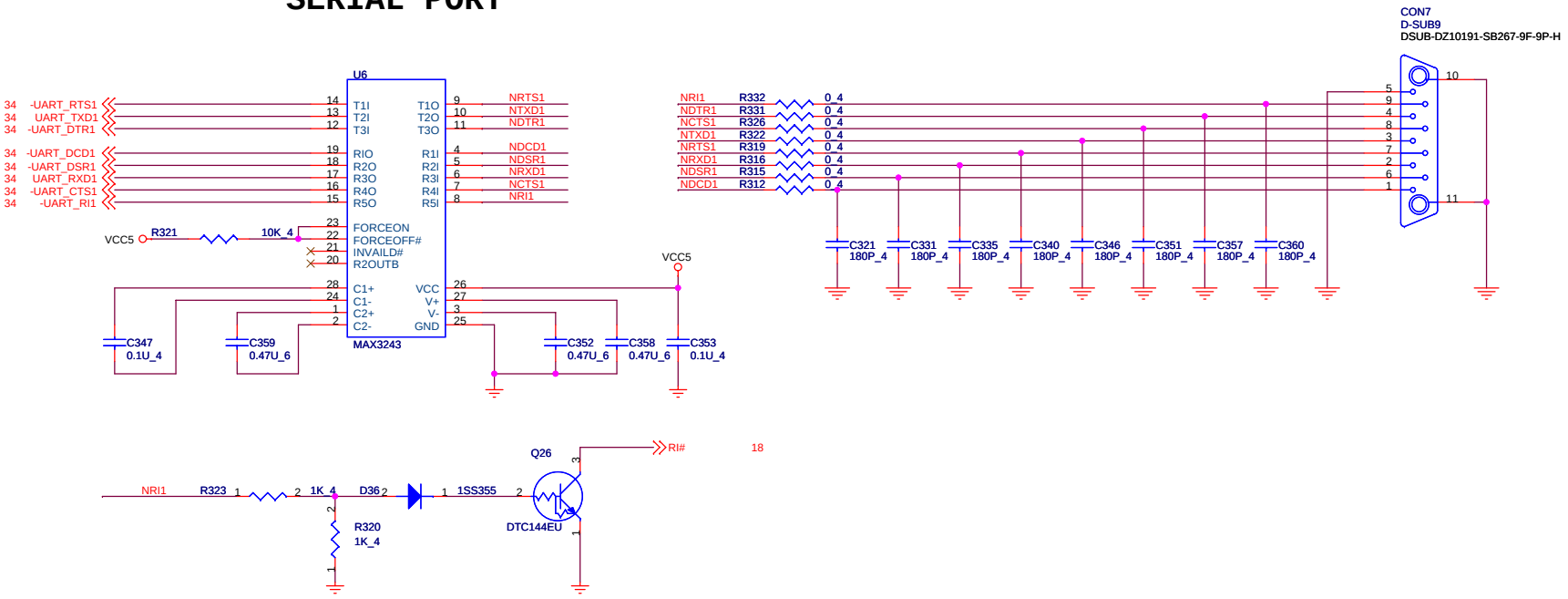
F1 POLY_SWITCH
C5 0.1U_4
C6 10U/6.3V_8
LP1 WCM2012-90
CON5 87212-0400-4p 53048-0410
VCC3_CAMERA : 20 mil
R17 R18 0_4

Quanta Computer Inc.
PROJECT : AK3

Size	Document Number	Rev
	USB&TPM&FELICA&FP&CAMERA	2A

Date: Tuesday, October 30, 2007 Sheet 29 of 42

SERIAL PORT



Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: SERIAL PORT	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 30 of 42	

BCM5787M(Default)/BCM5484M

U8

BCM5784M/5787M

10mm x 10mm

68-Pin QFN

Package Body

ES2-0907-1

ES2-0914-2

ES2-0910-2

The Stub As Short As Possible

	5787M	5784M
R7884	0 ohm	39K ohm

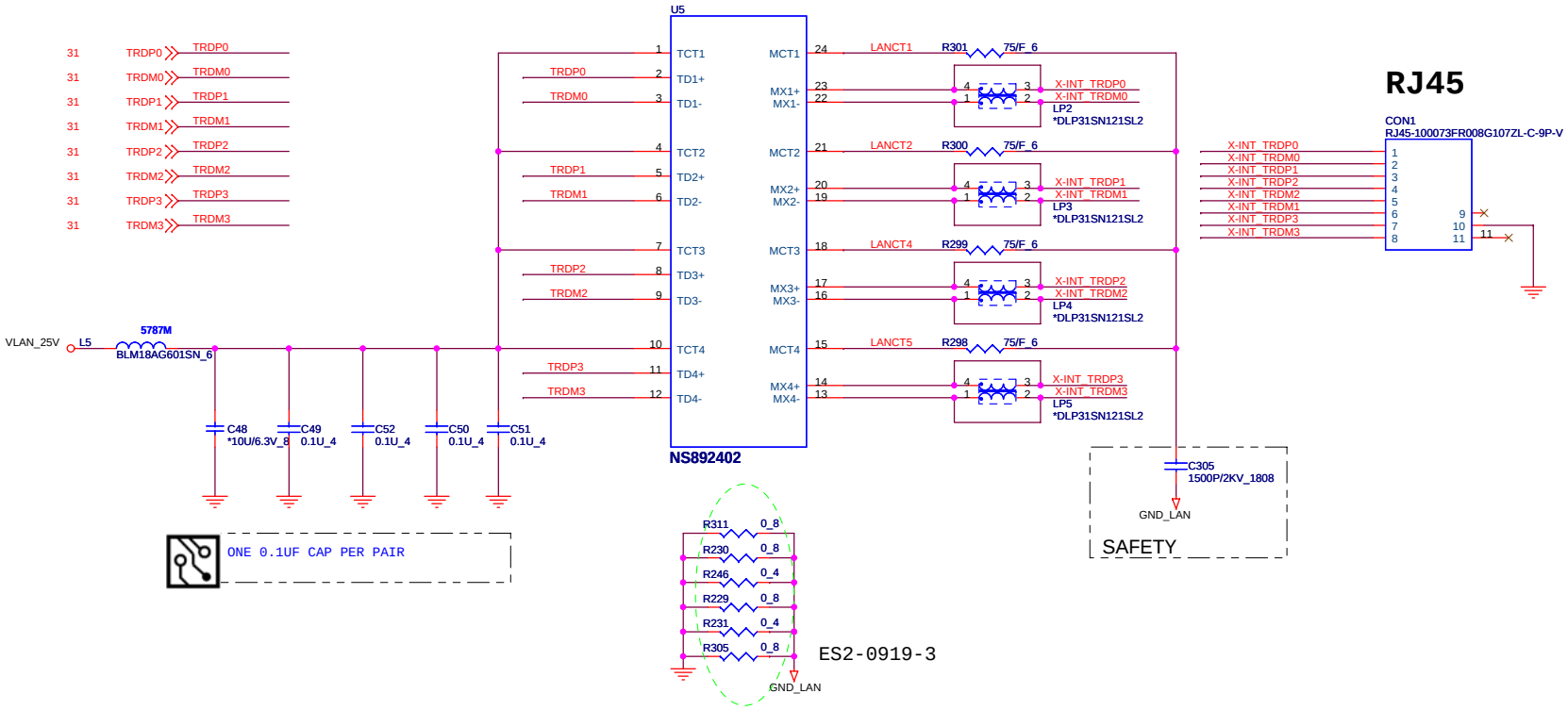
Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	LAN (BCM5787M/5784M)	2A

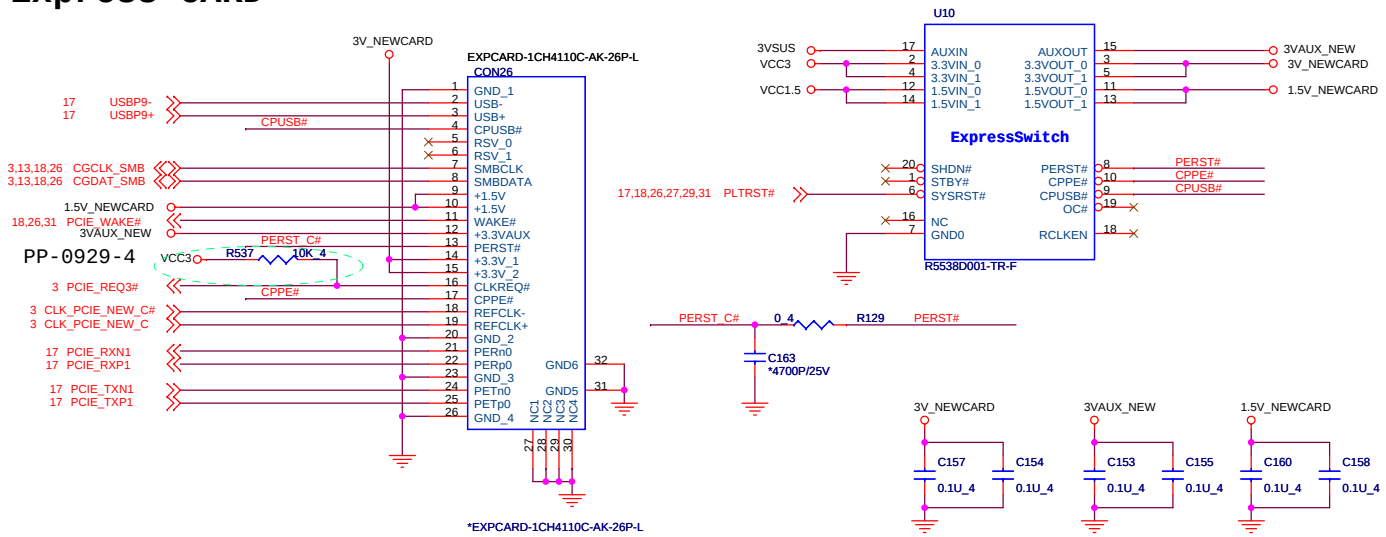
Date: Tuesday, October 30, 2007 Sheet 31 of 42

LAN Transformer & RJ45

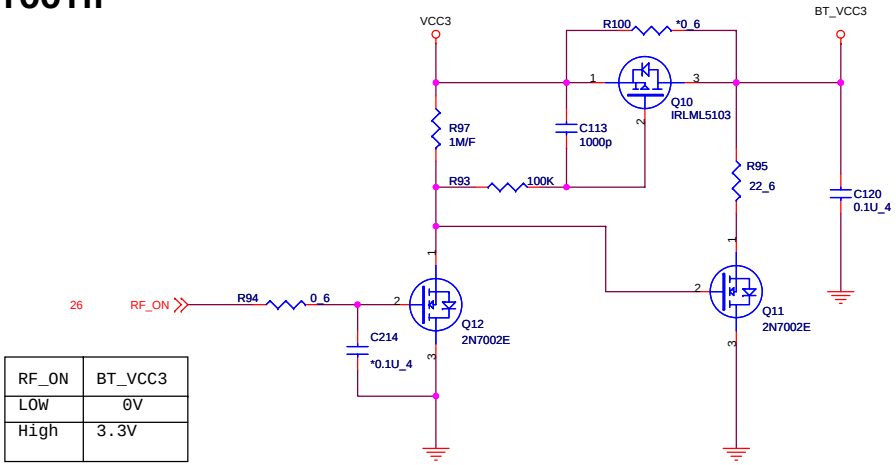


Quanta Computer Inc.		
PROJECT : AK3		
Size	Document Number: LAN (TR & CONNECTOR)	Rev: 2A
Date: Tuesday, October 30, 2007	Sheet 32 of 42	

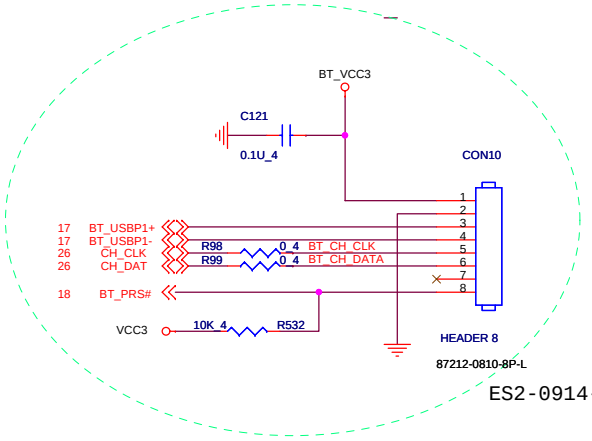
Express CARD



BLUETOOTH



RF_ON	BT_VCC3
LOW	0V
High	3.3V



ES2-0914-3

BT_PRS# Use for Card Detect	
LOW	INSTALL
High	NO CARD

Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	NEW CARD / BLUETOOTH	2A

Date: Tuesday, October 30, 2007 Sheet 33 of 42

IT8513

Layout Note:
Place all capacitors close to IT8512.

Layout Note:
net "3VPCU" and "RTC_VCC"
minimum trace width 12mils.

(For PLL Power)

ES2-0911-2

Model ID

PP-1024-1

PP-1024-2

ES2-0911-3

PP-1016-1

PP-1022-1

AJ085120F01

VER:DX
P/N:AJ085120F01

P/N:BG332768909

16Mbit (1M Byte), SPI

Winbond

Layout Note:
32.768kHz clock lines:
a. If possible, please avoid using any through-hole.
b. Please make the trace length short, and the trace width wide enough.
c. The spacing to the closest neighbor should be wide enough.

Layout Note:
Place R471,R498,R534 within 500 mils from SPI Flash.Place R567 within 500mils from R534; R520 within 500mils from R498 and R570 within 500mils from R471.

LED_ON
Low= LED Off
Hi= LED ON

Quanta Computer Inc.			
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	EC ITE8513		2A
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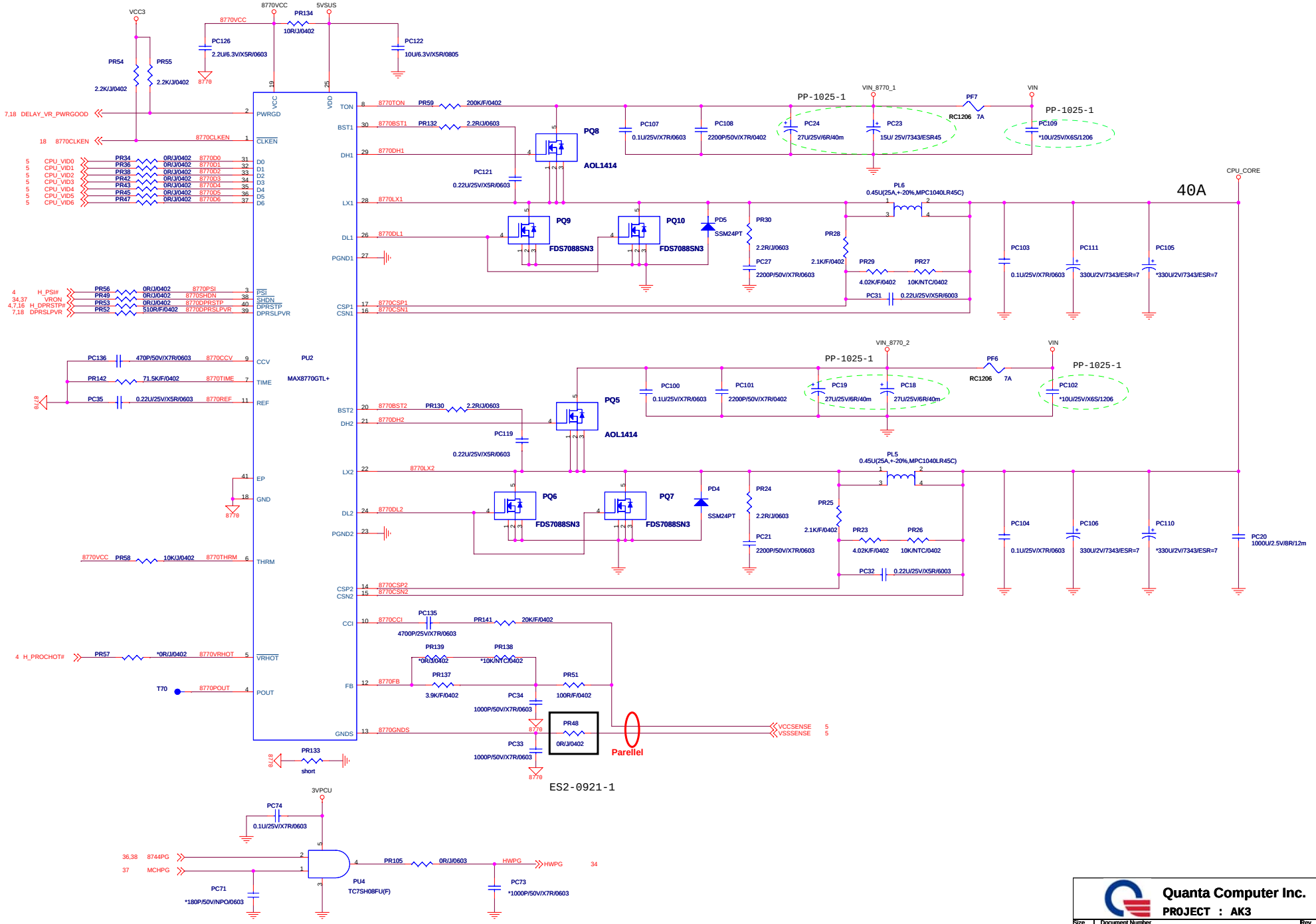
CPU CORE



Quanta Computer Inc.			
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	CPU CORE		2A
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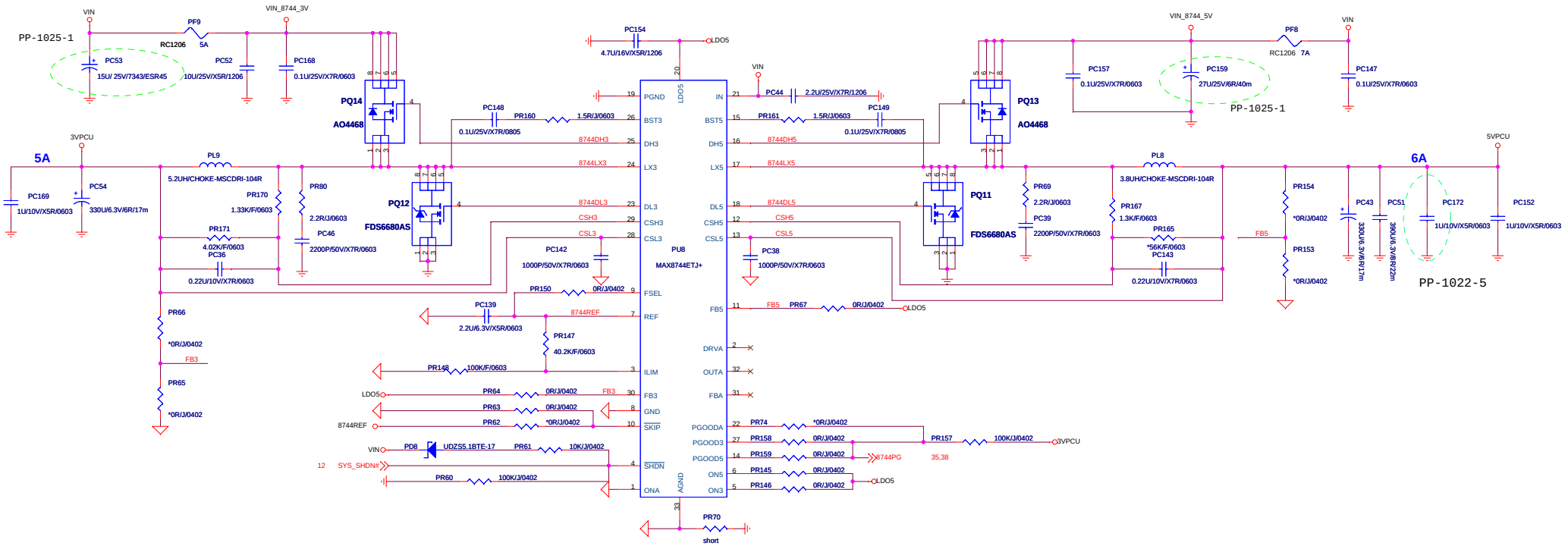
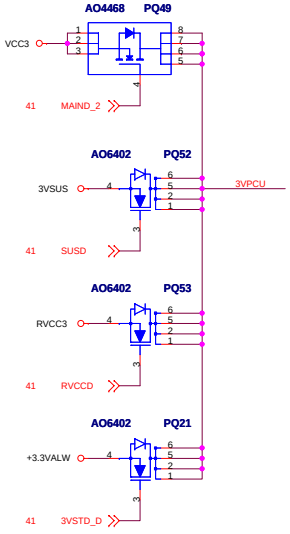
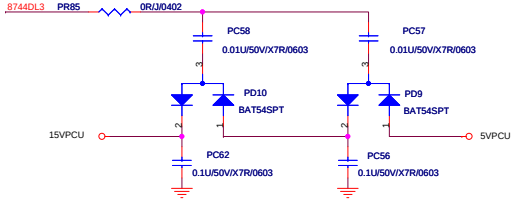
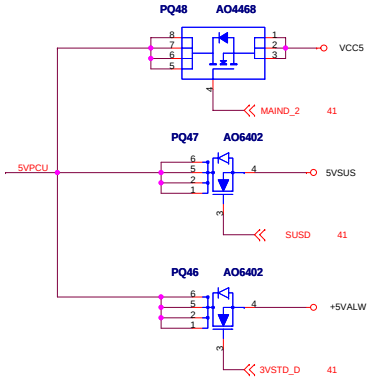
DC/DC 3.3V&5V POWER









Quanta Computer Inc.
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	3V/5V_MAX8744	A

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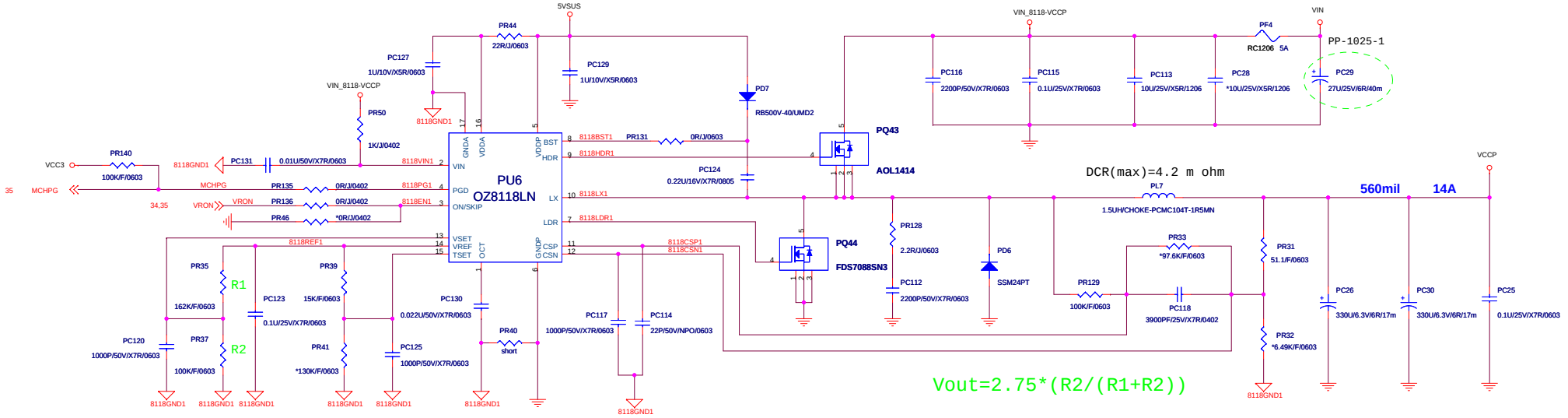
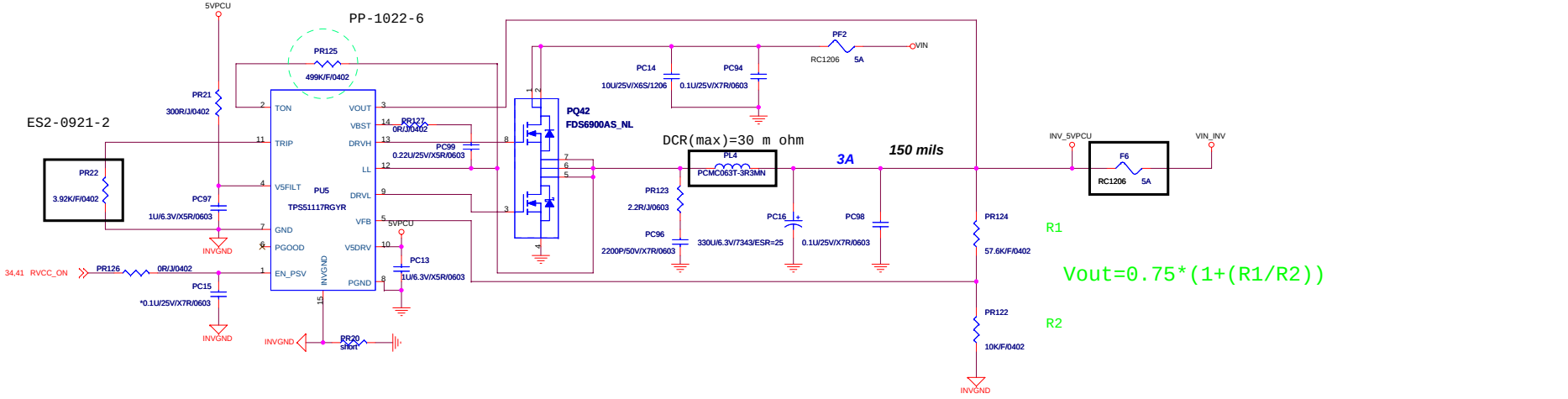
VCCP & INV_5VPCU





Quanta Computer Inc.	PROJECT : AK3	
Size	Document Number: VCCP/INV_5VPCU	Rev: 2A
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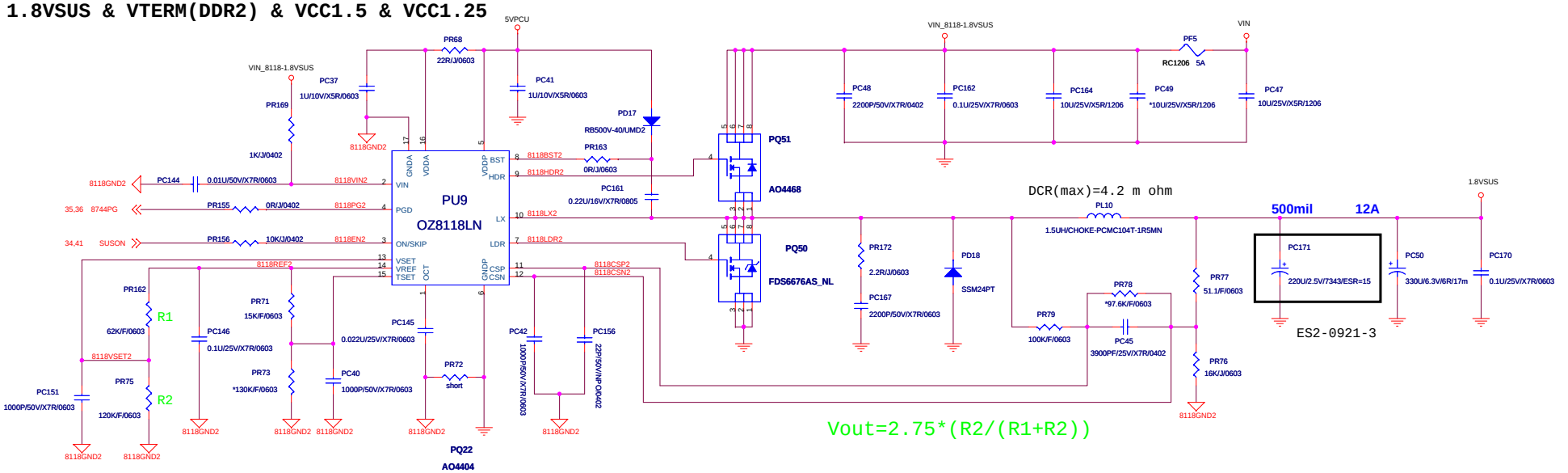
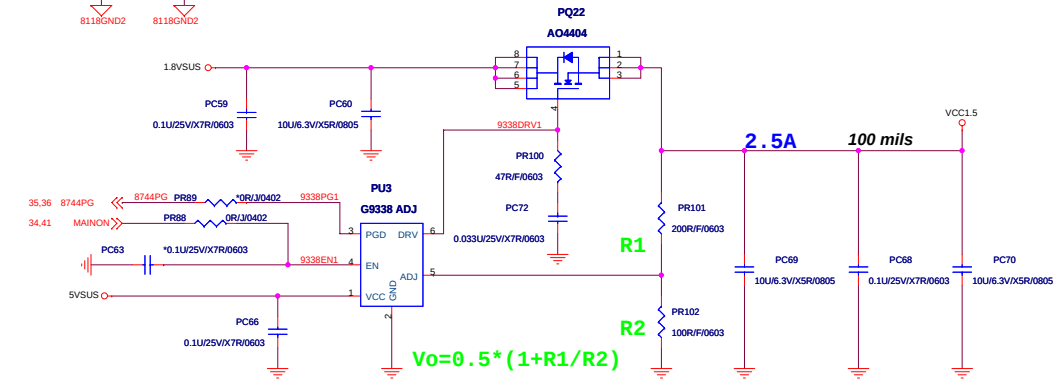
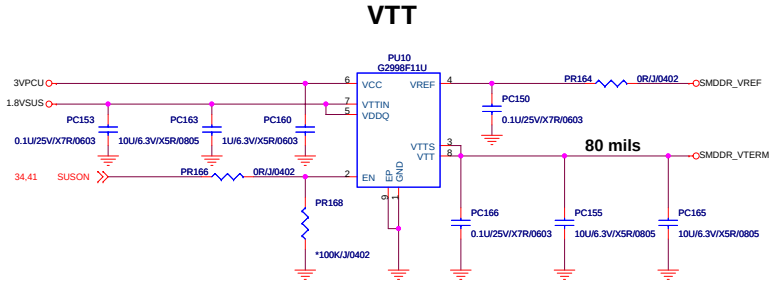
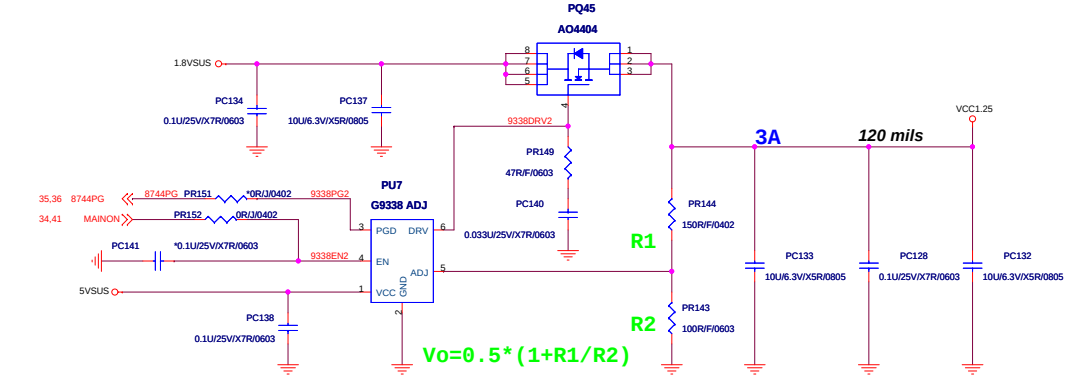
1.8VSUS & VTERM(DDR2) & VCC1.5 & VCC1.25









Quanta Computer Inc.

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Size	Document Number	Rev
	1.8VSUS/DDR/VCC1.5/VCC1.25	2A

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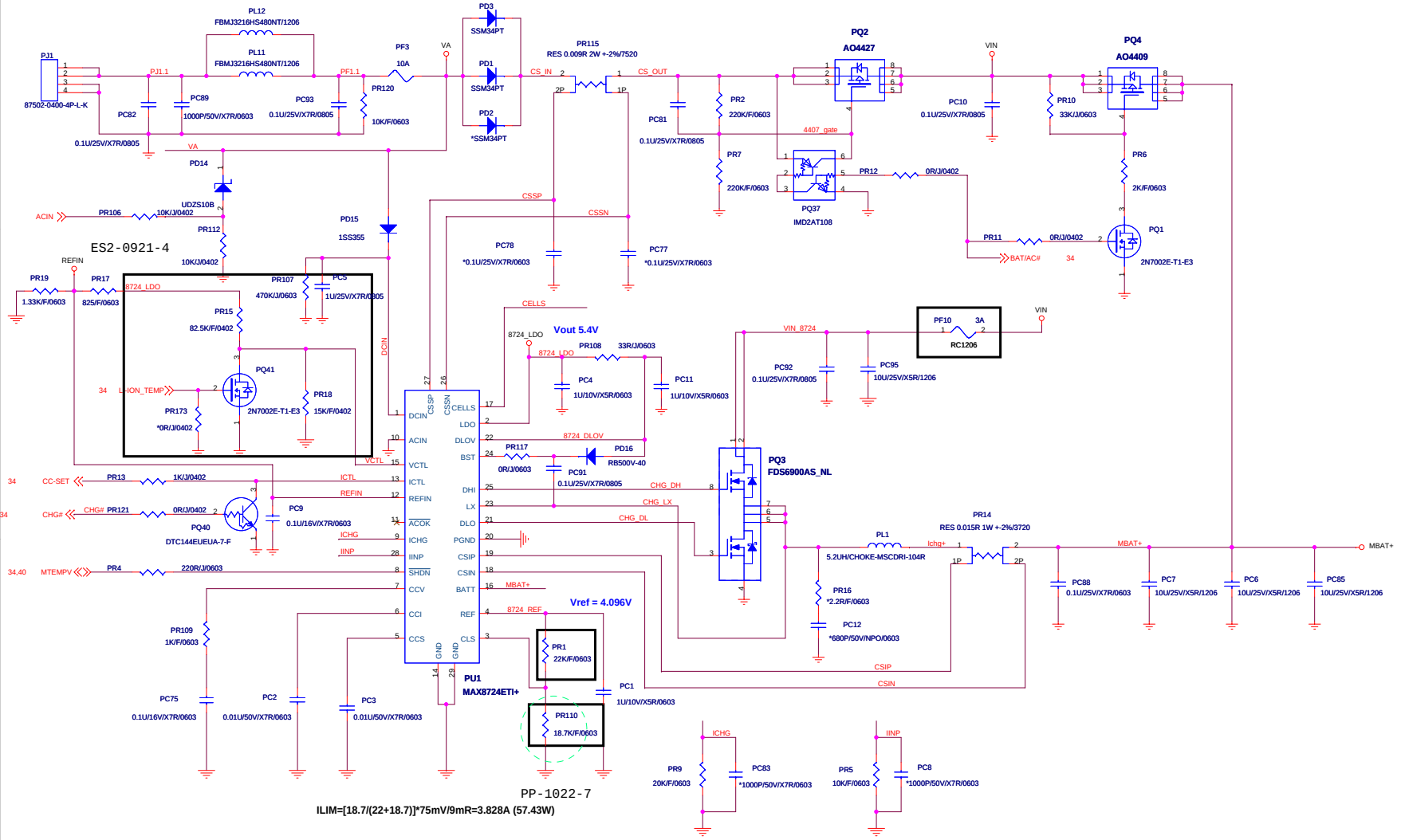
Battery Charger



For Green BOOK LI-ION battery VCTL voltage setting :		
LI-ION_TEMP	V_VCTL	V_CELL
LO	0.825V	4.1V
HI	0V	4.0V

Quanta Computer Inc.
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	Battery Charger	2A

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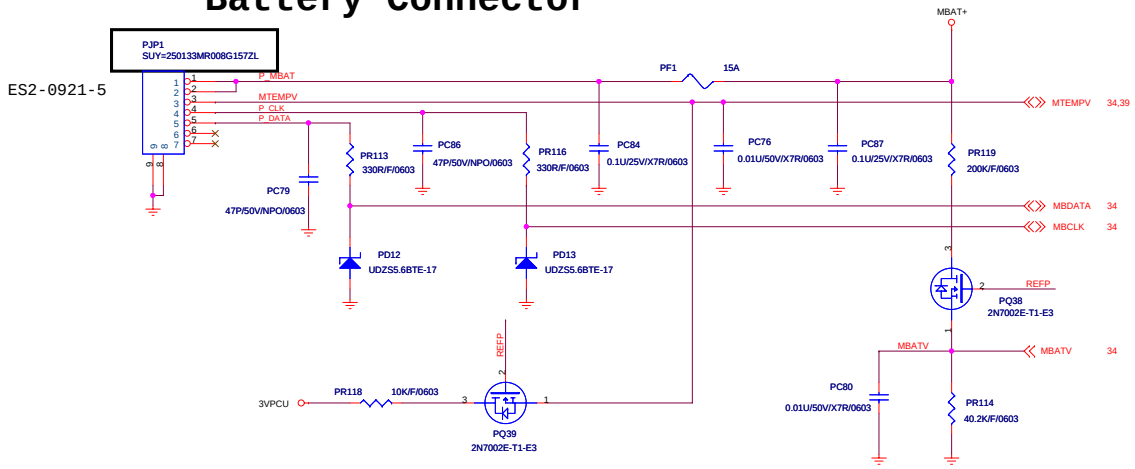
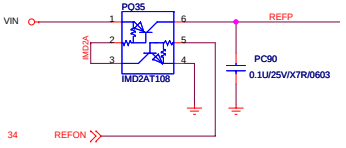
Battery Connector





MTEMPV voltage :		
	System Off	System On
Battery	0V	1.6V
Adapter	3.3V	3.3V
Battery+Adapter	1.6V	1.6V

MBATV voltage :

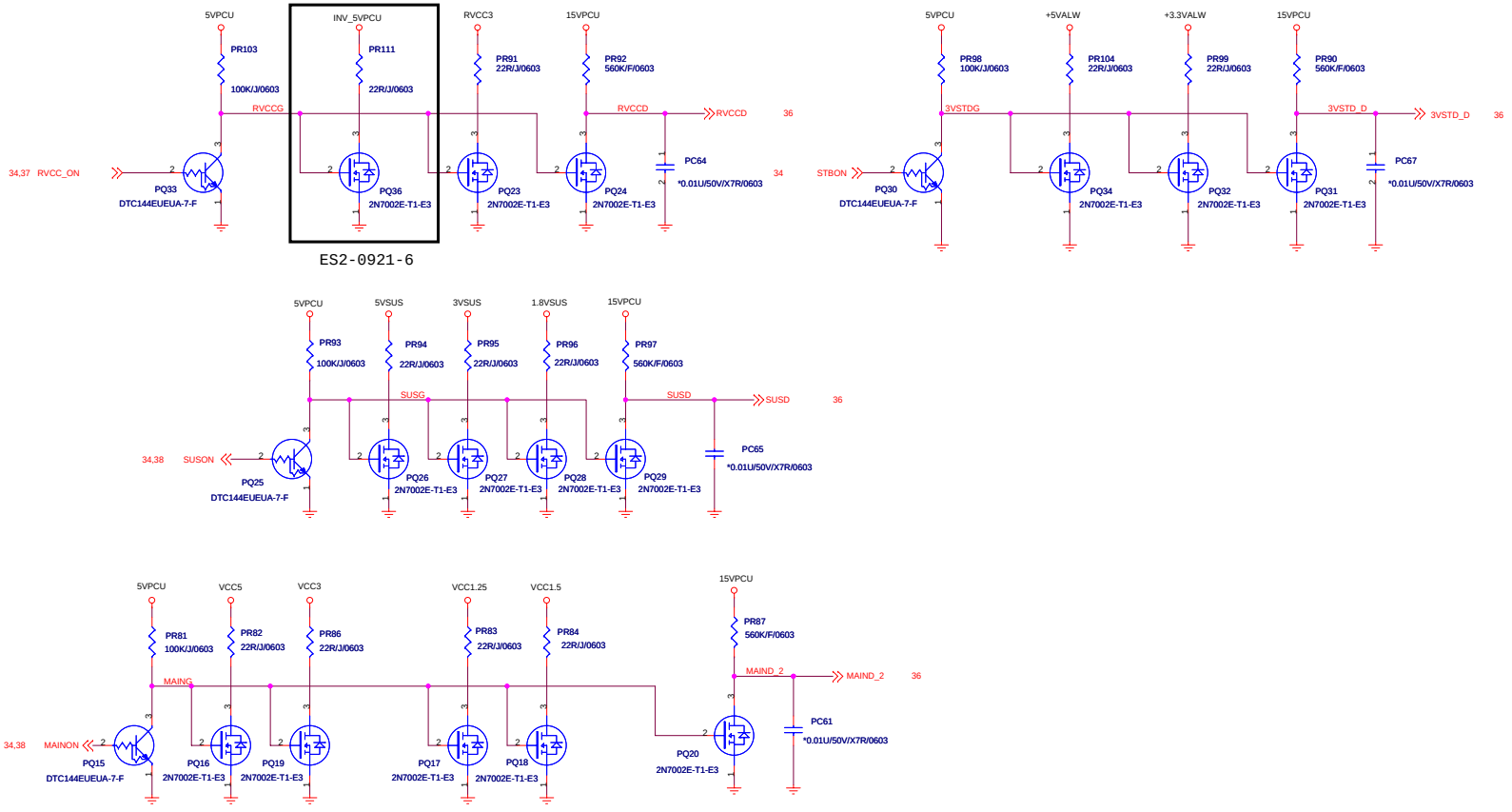
16.8V*40.2/(200+40.2)= 2.812V

12.0V*40.2/(200+40.2)= 2.008V

8.0V*40.2/(200+40.2)= 1.34V

6.0V*40.2/(200+40.2)= 1.004V

Discharge Circuit



Quanta Computer Inc.

PROJECT : AK3

Size	Document Number	Rev
	Discharge	2A

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Item	Page	Reason	Detail
ES2			
ES2-0907-1	31	LAN chip U8 pin24 need connect to GND	circuit change
ES2-0907-2	18	ICH_GPIO22 need connect to U12 pin AG10	circuit change
ES2-0907-3	18	ICH_GPIO35 don't need pull high to VCC3	Del R451
ES2-0910-1	29	CON12 pin reverse	circuit change
ES2-0910-2	31	R360 need stuff	Add R360 4.7K ohm
ES2-0911-1	23	Add R451,R524,R526 for debug (No stuff),C587 (No stuff)	Del C587
ES2-0911-2	34	FONT_UP#,FON_DOWN# need pull High	Add R526,R527 10K ohm
ES2-0911-3	34	LED signal add Trainsistor for more driving strength	Add Q39,Q40,Q41Q42,Q43,Q44,Q45,Q46
ES2-0913-1	25	Delete the BZ2 (SMT ME requirement)	circuit change
ES2-0913-2	24	Gain of Speaker AMP change.	R505,R510 change to 10K ohm 1% R503,R512 change to 12K ohm 1%
ES2-0913-3	31	R36 change size to 0402(Layout requirement)	R36 change to 1.24 RC0402
ES2-0914-1	26	MiniPCI connector for WLAN pin37,pin43 connect to GND,pin40 add 0 ohm resistor to GND	Add R531 0 ohm
ES2-0914-2	31	C85,C92 need change to 27PF	Change C85,C92 to 27PF
ES2-0914-3	33	Change CON10 to ACES 87212-0810	CON10 change to P/N:DFHS08FR766
ES2-0917-1	15	Change L50,L51 to EMI Bead	Add L50,L51 to MNB-160808-0120A-N2Q
ES2-0919-1	25	CON19 Pin7,8 need connect to A_HPCASE-GND	circuit change
ES2-0919-2	15	Add EMI Bead FBM2125 on CRTVCC (EMI requirement)	Add L52 FBM2126
ES2-0919-3	32	Stuff the R311,R230,R246,R229,R231 0 ohm for LAN IEEE test solution	Add the R311,R230,R246,R229,R231 0 ohm
ES2-0919-4	09	C23 330U/2.5V need stuff	Add C23 330U/2.5V
ES2-0920-1	26	WLAN LED power change to VCC3	circuit change
ES2-0921-1	35	For CPU portion stable	circuit change
ES2-0921-2	37	For fixed 5V use	circuit change
ES2-0921-3	38	Change Capacitor size for layout issue	Modify PC171 size
ES2-0921-4	39	For Green book & total power setting	circuit change
ES2-0921-5	40	Key in error,modify SUYIN battery connector P/N	circuit change
ES2-0921-6	41	For fixed 5V discharge use	Add PR111 & PQ36
PP			
PP-0929-1	17	Change Express from channel 1 to channel 2(S/W requirement)	circuit change
PP-0929-2	22	Change R5C832 IDSEL to AD16 (SW requirement	circuit change
PP-0929-3	29	Change CON2 to 12pin connector	Change CON2 to 88107-12001
PP-0929-4	33	Add 10K pull hight to VCC3 for PCIE-REQ3#	Add R537 10K
PP-1001-1	15	CON4 pin3 connect to VIN_INV	circuit change
PP-1006-1	17	Change U11 to TS3USB221DRCR(for USB signal quality)	Change U11 to TS3USB221DRCR
PP-1009-1	03	R65 No stuff,R62 stuff 10K for LVDS SS function	R65 No stuff,R62 stuff 10K
PP-1009-2	16	R114 change to 1K,Add R538 1.2K for UL requirement	R114 change to 1K,Add R538 1.2K
PP-1010-1	19	C151 change to 1U for Intel PA_note requirement	C151 change to 1U
PP-1016-1	34	R521 connect to 5VSUS for LED flash issue on AC-IN	circuit change
PP-1018-1	27	ODD connector CON8 pin46 disconnect	circuit change
PP-1018-2	28	R354 ,Q29 no stuff,R370 o ohm Stuff (for Wide GP)	R354 ,Q29 no stuff,R370 o ohm Stuff
PP-1022-1	34	Add Q61,Q63,R550,C613,C614. CON21,CON23 VCC5 change to VCC5_LED	For dimmer function
PP-1022-2	12	Add H24, H25	For SB thermal pad
PP-1022-3	23	Add R545, R546, R547, R548, R549	For EMI reserve
PP-1022-3	23	Change RP39, RP40, RP43 to R539, R540, R541, R542, R543, R544	Change footprint to 0402
PP-1022-4	23	Add R551, R552	For Clear CMOS function
PP-1022-5	36	Add PC172	For 5VPCU stable
PP-1022-6	37	PR125 change to 499K ohm from 232K ohm	For INV_5VPCU stable
PP-1022-7	39	PR110 change to 18.7K ohm from 26.1K ohm	Re-setting total power (57.43W)
PP-1023-1	26	PCIE-REQ1#(WLAN) & PCIE-REQ2#(TV) pull up to VCC3 from 3VSUS	R393 10K ohm pull up to VCC3, R111 10K ohm pull up to VCC3
PP-1023-2	34	R9, R12, R170, R171 value change to 4.7K ohm form 10K ohm	For SMBUS
PP-1023-3	34	C294, C296, no stuff	For SMBUS
PP-1025-1	35	Delete PC17 , PC22 and add PC18 , PC19 , PC23 , PC24 and PC102 PC109 no mount it	For High Frequency noise issue
PP-1025-1	36	Delete PC158 and add PC53 , PC159	For High Frequency noise issue
PP-1025-1	37	Add PC29	For High Frequency noise issue
PP-1025-2	07	Add C615, C616, C617, C618, C619,C620	For EMI reserve
PP-1029-1	23	No stuff Q38,R508,R533,R534,Q37,R535,R536, stuff R451, R524	Remove short protect circuit from NECP suggestion

IRT