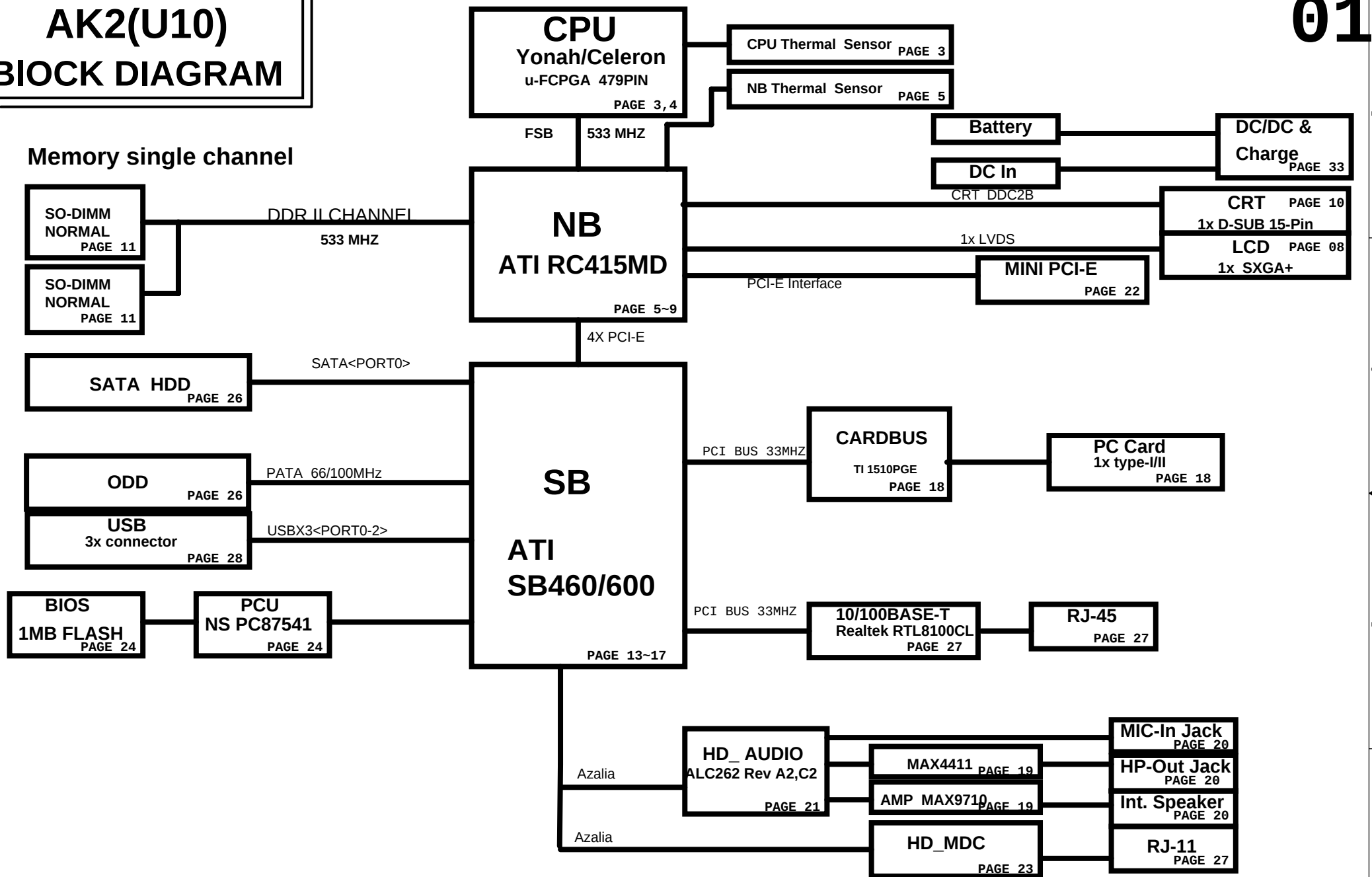


AK2(U10) BLOCK DIAGRAM

01

Memory single channel



1. PAGE LIST

01--BLOCK DIAGRAM	31-- VCCP/VCC1.2/VCC1.5
02--PAGE LIST	32--1.8VSUS/DDRTERM
03--Yonah CPU (HOST BUS)-1	33--Battery Charger
04--Yonah CPU (POWER/NC)-2	34-- BATTERY CONNECTOR
05--RC415MD-AGTL+ I/F 1/5	35-- VGA POWER
06--RC415MD-PCIE LINK I/F 2/5	36--DISCHARGE
07--RC415MD-DDR2 I/F 3/5	37--CHANGE LIST
08--RC415MD-VIDEO & STRAPS 4/5	
09--RC415MD-POWER 5/5	
10--CRT PORT	
11--DDRII SODIMM X2 and Terms	
12--EXT CLK GEM	
13--SB460-PCIE/PCI/CPU/LPC -1	
14--SB460-ACPI/GPIO/USB/AC97 -2	
15--SB460-SATA/IDE/HWM/SPI -3	
16--SB460-POWER & DECOUPLING -4	
17--SB460-STRAPS -5	
18--TI1510 CARD BUS	
19--AUDIO AMP	
20--BUZZER & AUDIO/BOARD	
21--HD_ALC262	
22--MINI PCI-E	
23--HD_MDC	
24--PCU-97551 & BIOS	
25--INT.KB &TP CONN	
26--SATA(HDD),PATA(ODD) CONNECT	
27--LAN (RTL8100CL)	
28--USB PORT	
29--CPU CORE(MAX8736)	
30-- 3V/5V MAX8744	

2. PCI Description :

IDSEL CHIP		PCIINT CHIP
AD24	LAN (RTL8100CL)	IRQA LAN(RTL8100CL)
AD26	CardBus (TI1510)	IRQB CardBus
AD28		IRQC CardBus
		IRQD
		IRQE
		IRQF
BUSMASTER		
REQ	CHIP	
REQ0 / GNT0	LAN(RTL8100CL)	
REQ1 / GNT1	CardBus TI1510	
REQ2 / GNT2		
REQ3 / GNT3		
REQ4 / GNT4		

3. PCI_E Description :

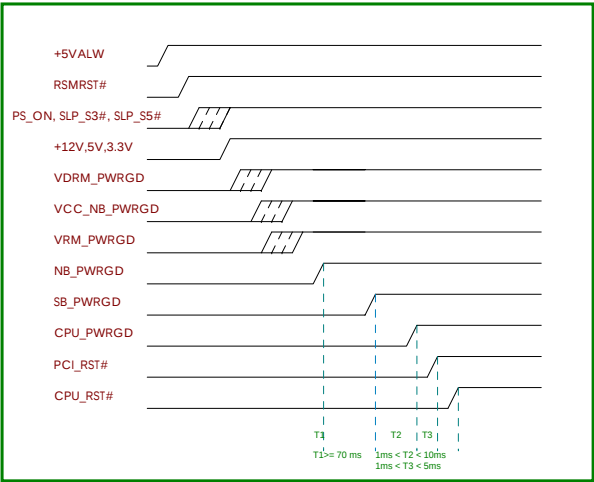
CHIP	
Port 0,1	A-LINK
Port 2	Mini-PCIE (Wireless card)

4.Power rails

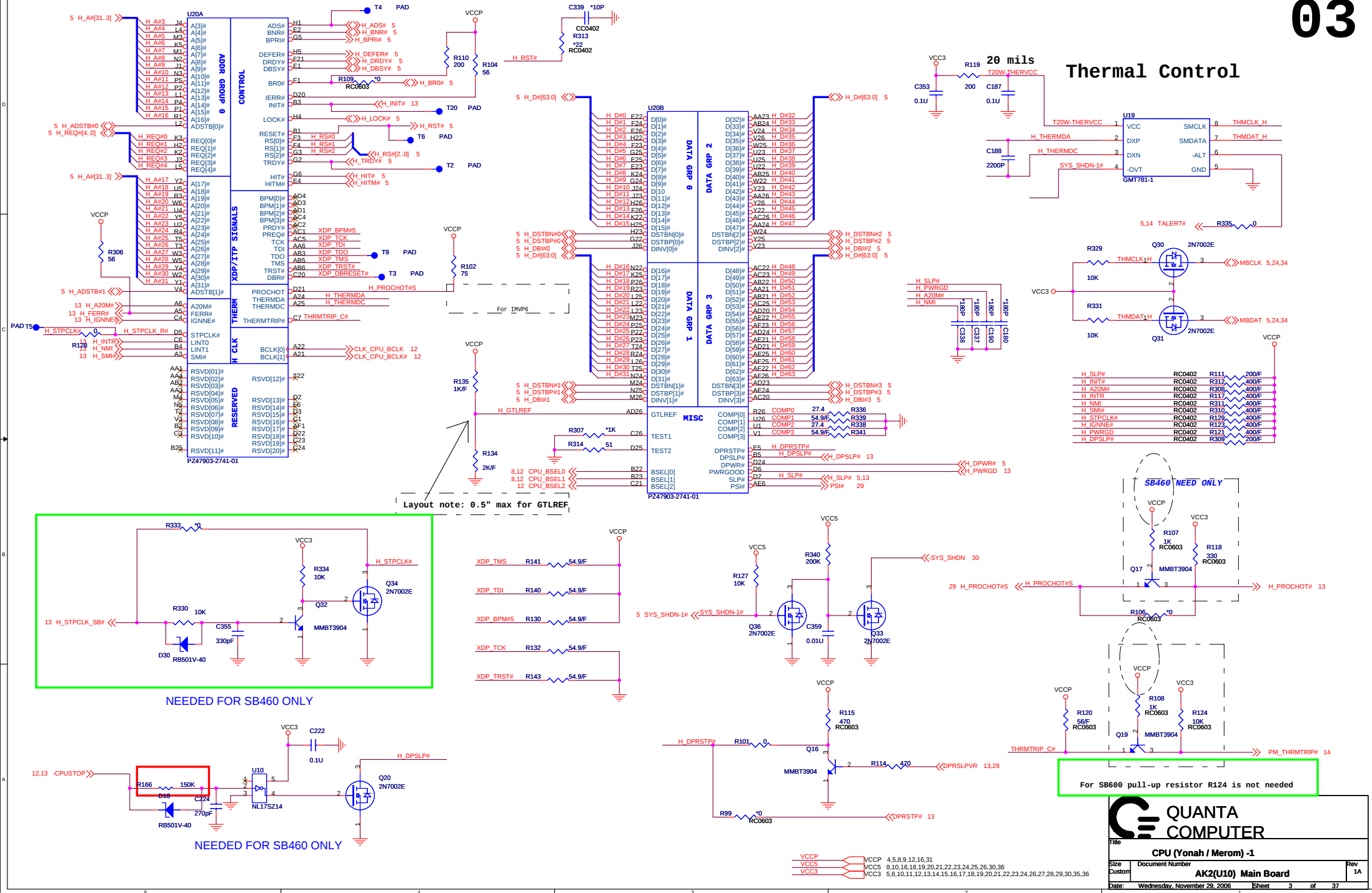
02

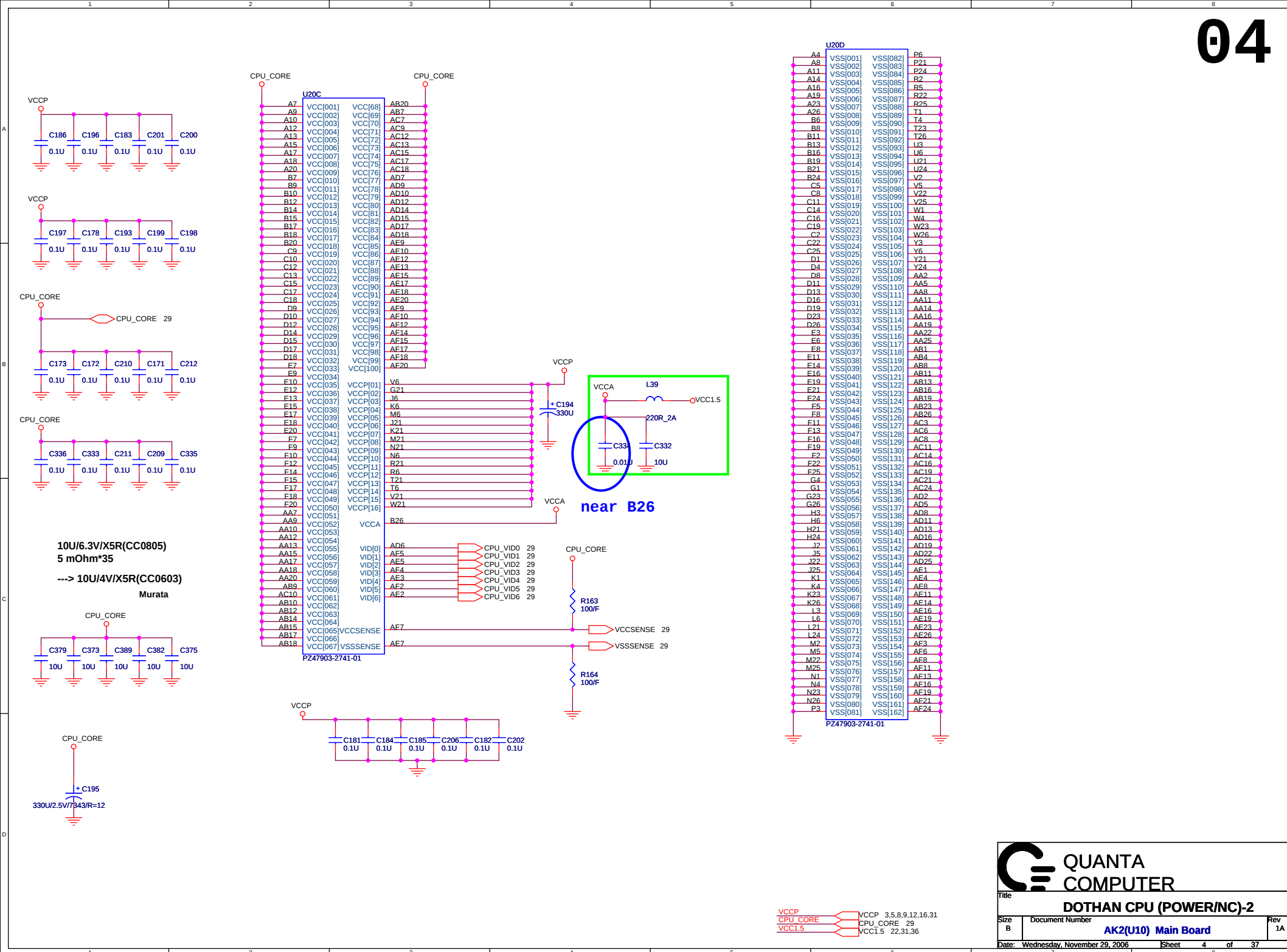
POWER RAIL	VOLTAGE SIGNAL	S0	S1	S2	S3	S4	S5
CPU_CORE	VRON	ON	ON	ON	OFF	OFF	OFF
VCC_NB	VRON	ON	ON	ON	OFF	OFF	OFF
+VTT_DDR	MAINON	ON	ON	ON	OFF	OFF	OFF
VCCP	MAINON	ON	ON	ON	OFF	OFF	OFF
VCCCORE	VRON	ON	ON	ON	OFF	OFF	OFF
RVCC3	RVCCON	ON	ON	ON	ON	ON	OFF
+VCC1.2	MAINON	ON	ON	ON	OFF	OFF	OFF
+1.5V	MAINON	ON	ON	ON	OFF	OFF	OFF
+VCC1.8	MAINON	ON	ON	ON	OFF	OFF	OFF
+3.3V	MAINON	ON	ON	ON	OFF	OFF	OFF
+5V	MAINON	ON	ON	ON	OFF	OFF	OFF
+1.8VALW	STB_ON	ON	ON	ON	ON	ON	ON
+3.3VALW	STB_ON	ON	ON	ON	ON	ON	ON
+1.8VSUS	SUSON	ON	ON	ON	ON	OFF	OFF
+3VSUS	SUSON	ON	ON	ON	ON	OFF	OFF
+5VSUS	SUSON	ON	ON	ON	ON	OFF	OFF
+3VPCU	VIN	ON	ON	ON	ON	ON	ON
+5VPCU	VIN	ON	ON	ON	ON	ON	ON

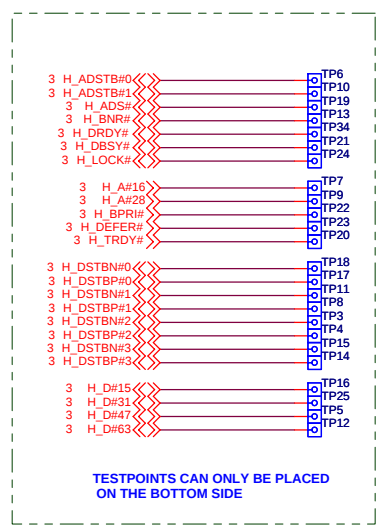
5.ALBACORE POWER UP SEQUENCE



Thermal Control



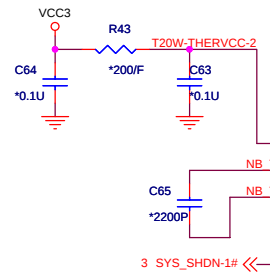




- H_RST# need to fork out from NB
- PLACE GTLREF CIRCUIT CLOSE TO NB, USE 10/10 WIDTH/SPACE
- PLACE C165,C328 CLOSE TO NB, AND CONNECT IOPLLVS TO GND DIRECTLY
- PLACE C161 CLOSE NB BALL
- ROUTE THRMDC AND THRMDC TRACES AS DIFF PAIRS TO SIO AND SB

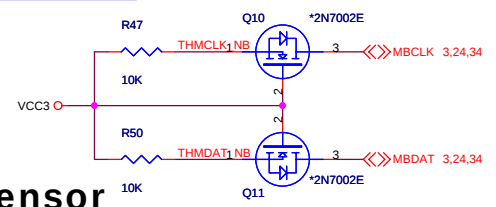
Note:
 * Stuff only for RC415
 ** Stuff only for RC610
 *** Stuff only for RC415 and SB460

RC610/RC415	RC610	RC415
R72	53.6R	49.9R
R73	21R	24.9R



NB Thermal Sensor

TESTMODE	NB MODE
LOW	NORMAL MODE
HIGH	TEST MODE

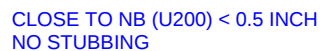


QUANTA COMPUTER

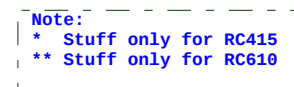
Title: **RC415-AGTL+I/F**

Size: Custom Document Number: **AK2(U10) Main Board** Rev: 1A

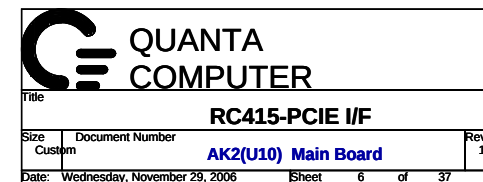
Date: Wednesday, November 29, 2006 Sheet: 5 of 37

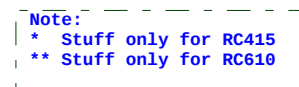


06



VCC1.2 VCC1.2 9,22,31,35,36

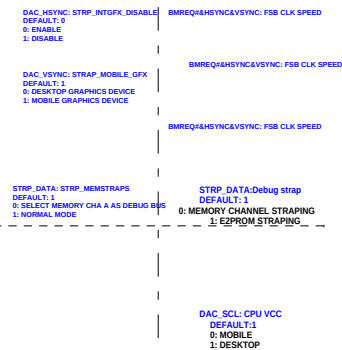
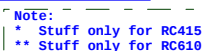




 QUANTA COMPUTER	
Title	
RC415-DDR2 I/F	
Size	Document Number
Custom	AK2(U10) Main Board
Date: Wednesday, November 29, 2006	Sheet 7 of 37
	Rev 1A

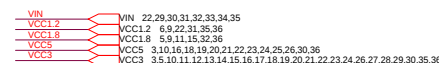


08



The schematic diagram illustrates the electrical connections between the CPU and the LCD module. It features two identical signal path sections at the bottom, labeled "3.12 CPU BSEL1" and "3.12 CPU BSEL0". Each section shows a CPU pin connected through a pull-up resistor (R41/R42) to VCCP and through a series combination of resistors (R39/R40) to VCC3. The signals are then driven by MMBS3904 and MMBT390A transistors respectively.

The main part of the diagram shows the internal components of the LCD module. A 5.2V NBFWROK signal is connected to pin D9 through a 2kΩ resistor (R25). This signal passes through a diode (D9) and a capacitor (C304) before entering the IN pin of the AAT4280IGU-3-T1 driver (Q29). The driver's OUT pin is connected to the F3 input of the RC1206 driver (F3), which is also pulled up to LCDVCC by a 2A resistor. The output of the RC1206 driver drives the L31 FBM12125HM330 inductor, followed by a 0.1μF capacitor (C302) and another 0.1μF capacitor (C47) connected to ground. Finally, the signal reaches the LCDVCC supply rail, which is decoupled by capacitors C303 (10μF/0.1V) and C46 (0.1μF).

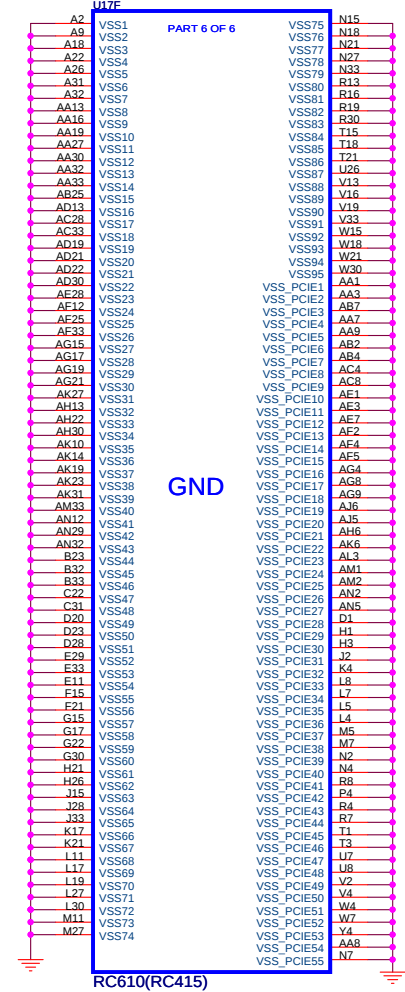


RC415-VIDEO I/F,CLOCK,STRAPS

Size	Document Number
Custom	AK2(U10) Main Board

Date: Wednesday, November 29, 2006 Sheet 8 of 37

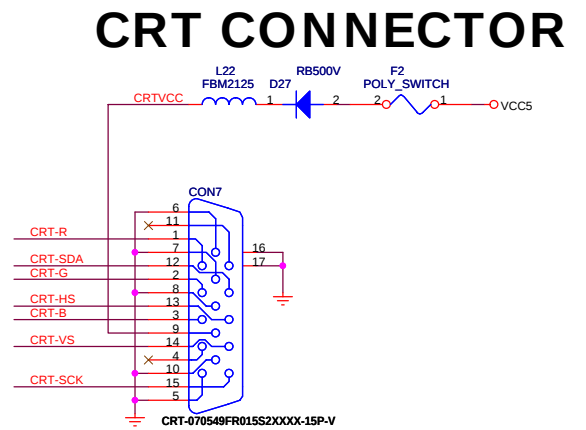
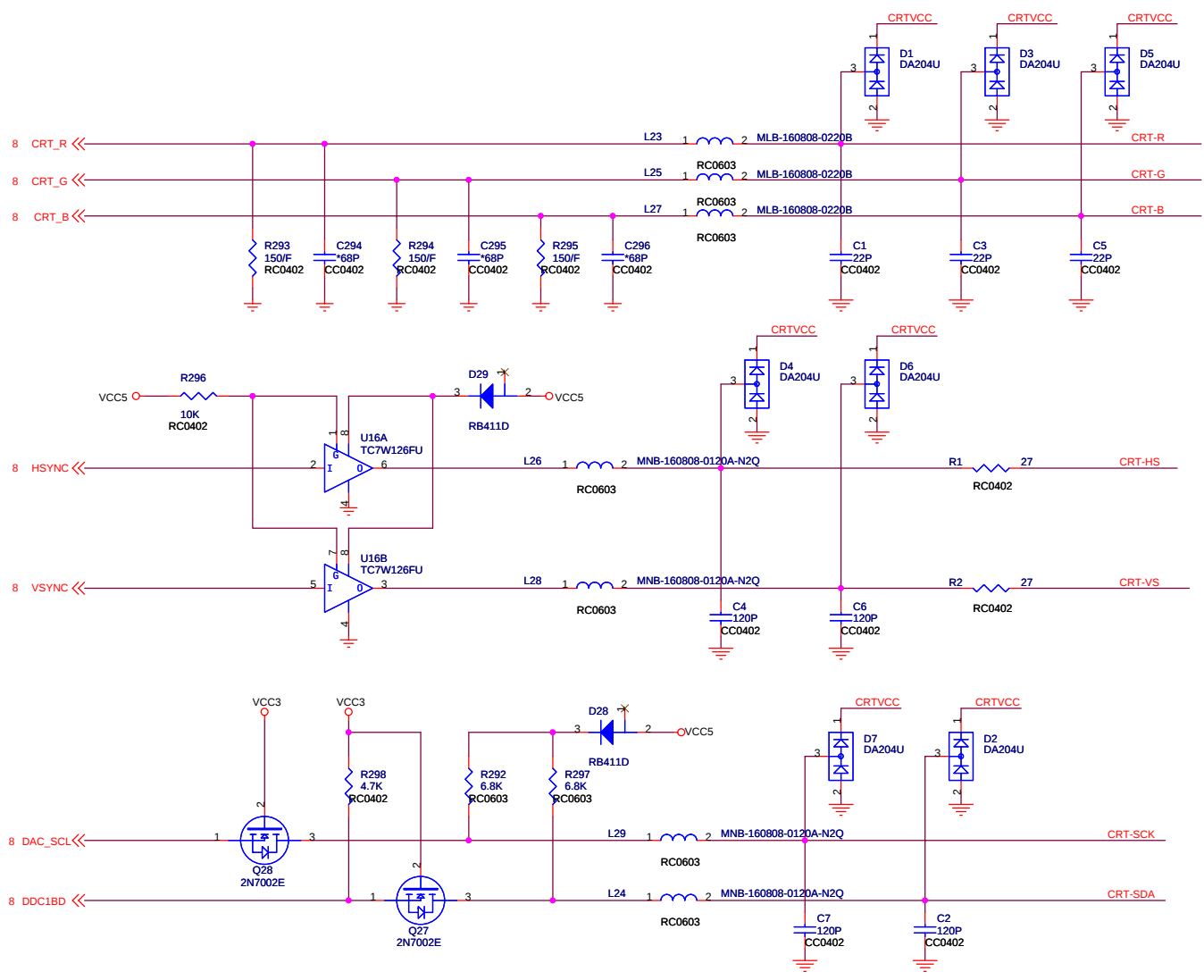
Date: Wednesday, November 29, 2000	Sheet	6	of	37
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VCC1.8	VCC1.8	5,8,11,15,32,36
VCC1.2	VCC1.2	6,22,31,35,36
1.8VSUS	1.8VSUS	5,7,11,16,22,31,32,36
VCCP	VCCP	3,4,5,8,12,16,31
VCC NB	VCC_NB	6,22,31,35,36



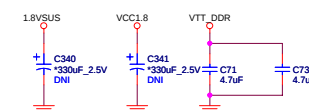
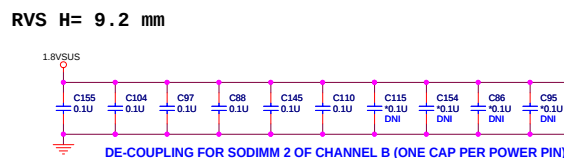
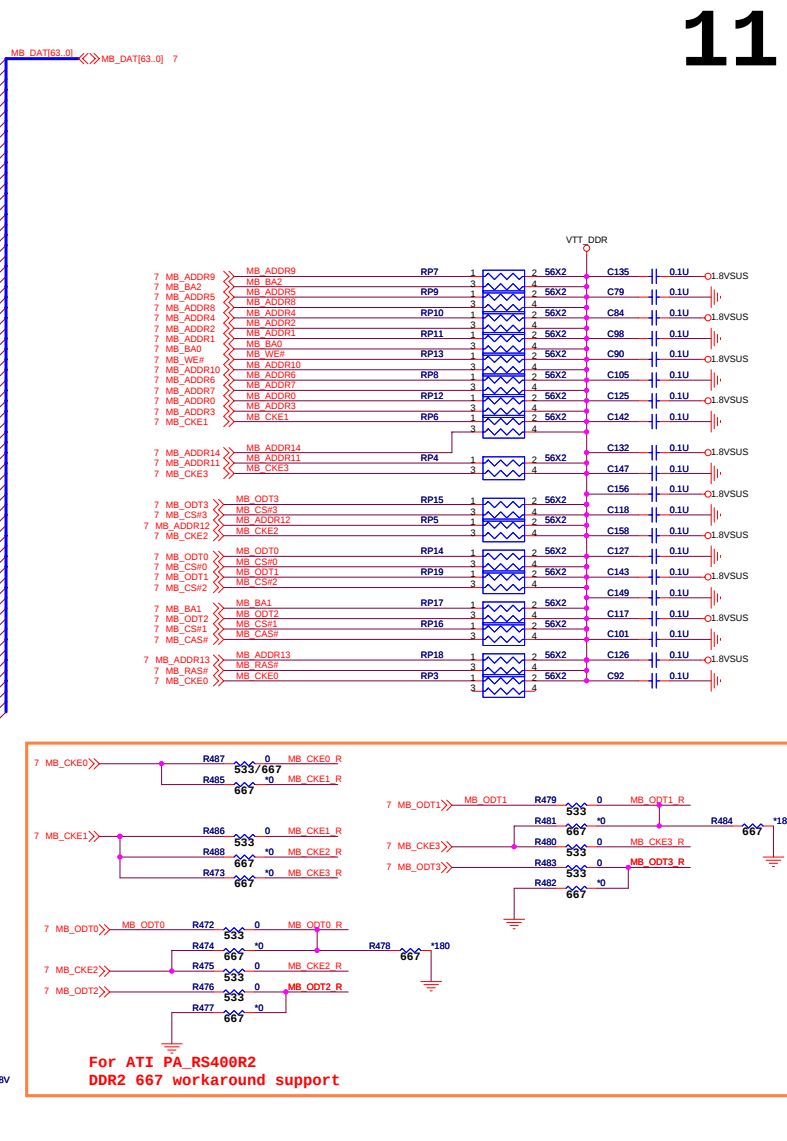
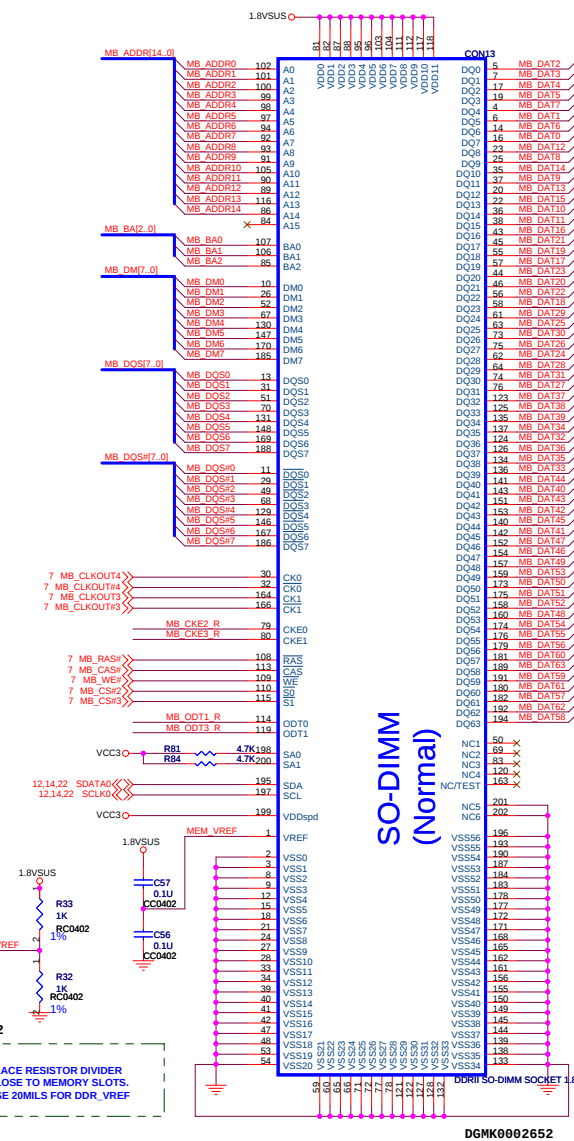
Title			
RC415-POWER			
Size	Document Number	Rev	
Custom	AK2(U10) Main Board	1A	
Date:	Wednesday, November 29, 2006	Sheet	9 of 37

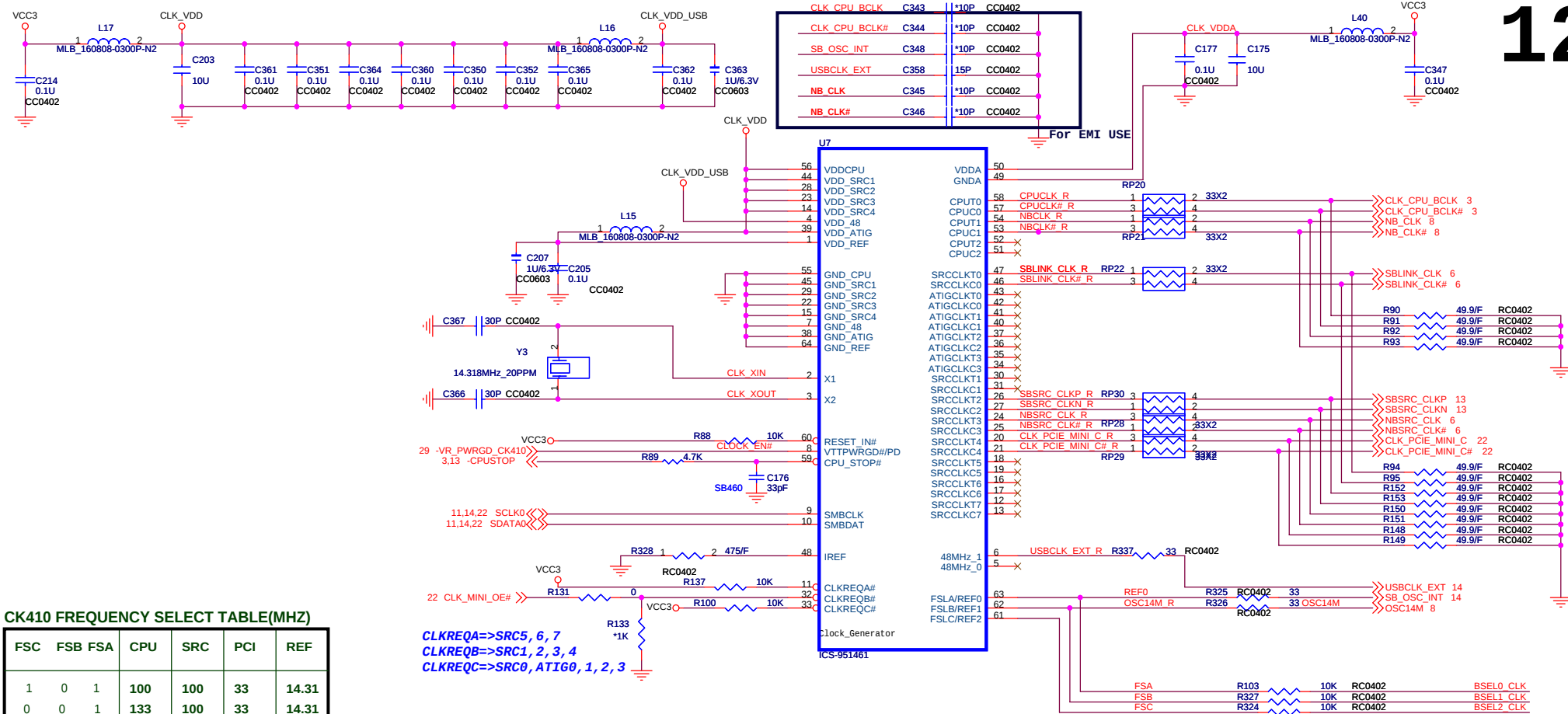


VCC5 3,8,16,18,19,20,21,22,23,24,25,26,30,36
VCC3 3,5,8,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,27,28,29,30,35,36

**QUANTA
COMPUTER**

Title CRT/TV OUT PORT		
Size B	Document Number AK2(U10) Main Board	Rev 1A
Date: Wednesday, November 29, 2006	Sheet 10 of 37	





CK410 FREQUENCY SELECT TABLE(MHZ)

FSC	FSB	FSA	CPU	SRC	PCI	REF
1	0	1	100	100	33	14.31
0	0	1	133	100	33	14.31
0	1	1	166	100	33	14.31
1	1	1	----	---	---	---

```
CLKREQA=>SRC5, 6, 7
CLKREQB=>SRC1, 2, 3, 4
CLKREQC=>SRC0, ATIG0, 1, 2, 3
```

HSYNC&VSYNC: FSB CLK SPEED

DEFAULT: 00
00: 100 MHZ
01: 133 MHZ
10: --
11: --

VCCP VCCP 3,4,5,8,9,16,31

VCC3 VCC3 3,5,8,10,11,13,14,15,16,17,18,19,20,21,22,23,24,26,27,28,29,30,35,36

SB460 is 0.01uf
SB600 is 0.1uf

PLACE THESE PCIE AC DECOUPLING CAPS CLOSE TO THE U22

FOR SB600 VCC_SB= 1.2V
FOR SB460 VCC_SB= 1.8V

C381 AND C383 CLOS
THE BALL U29 OF U22

PLACE THESE COMPONENTS CLOSE TO U19, AND

NEEDED FOR

NEEDED FOR
SB460 ONLY

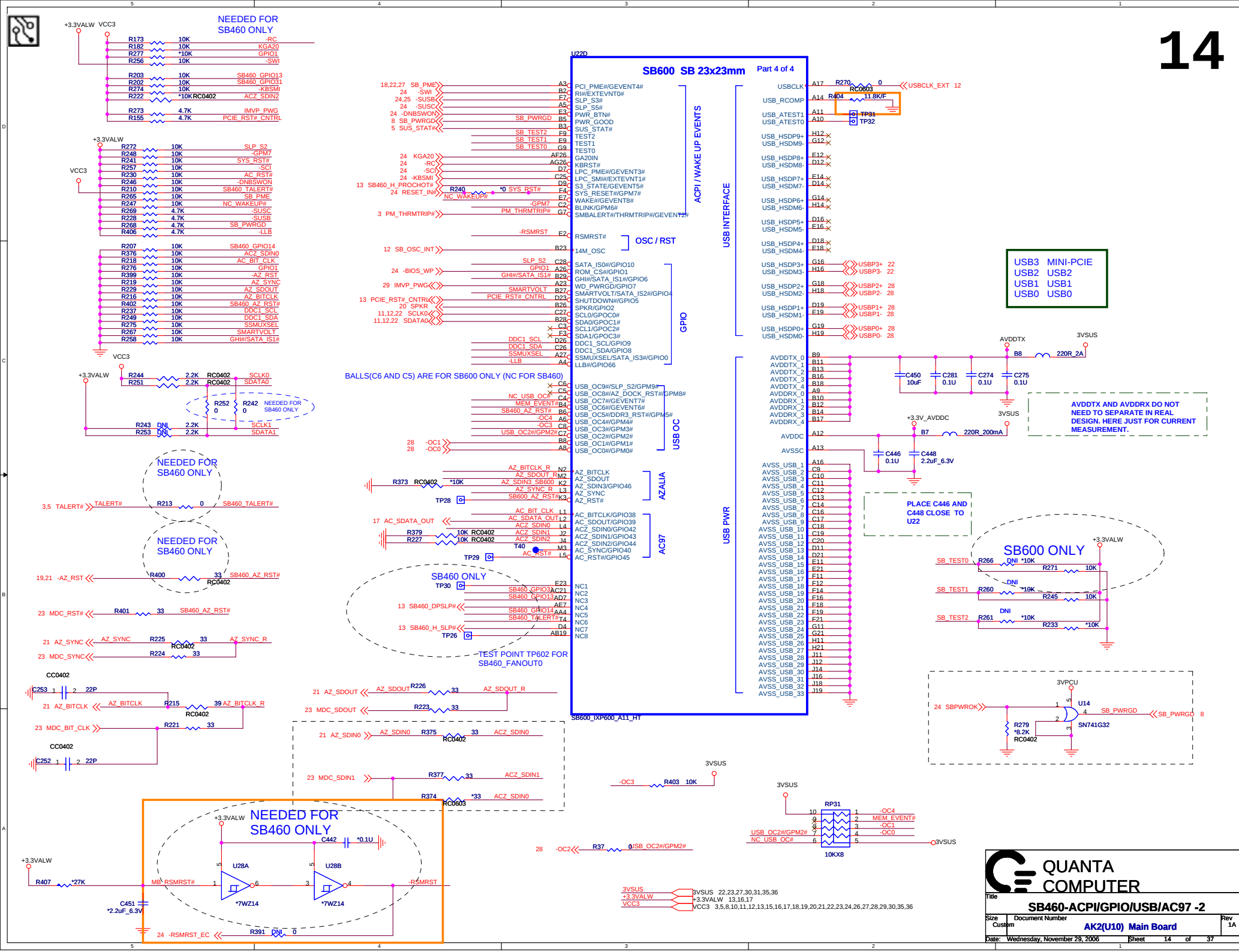
NEEDED FOR
SB460 ONLY

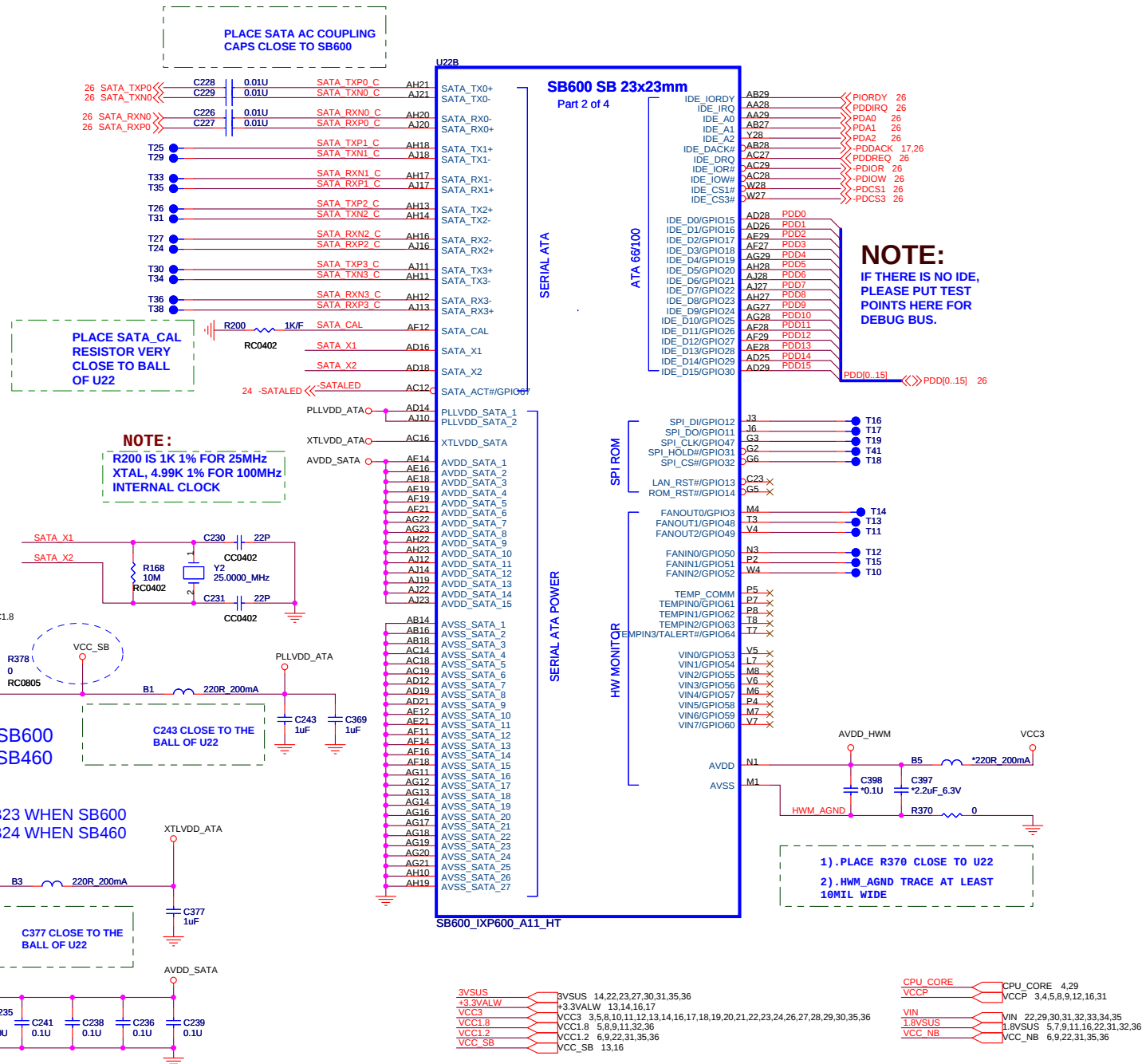
FOR SB460, THE BALL IS LDRQ1 ONLY
FOR SB460, THE BALL IS BMREO# ONLY

ATI recommended to change S5 power to ensure a clean reset during bootup.

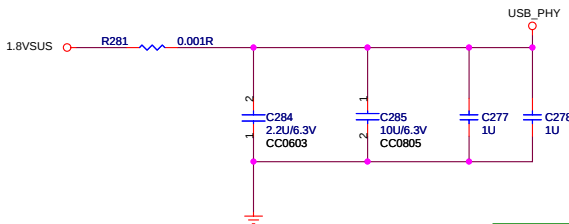
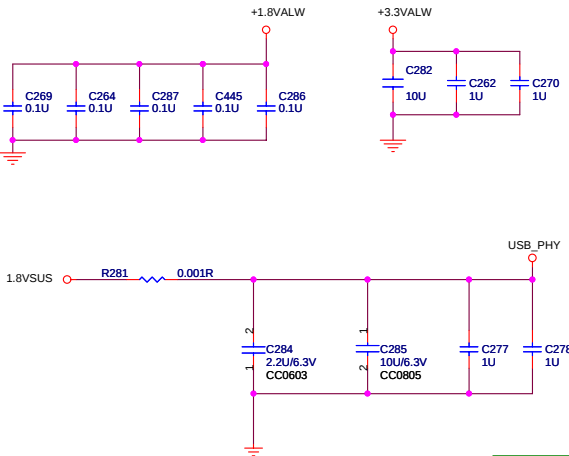
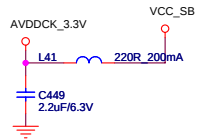
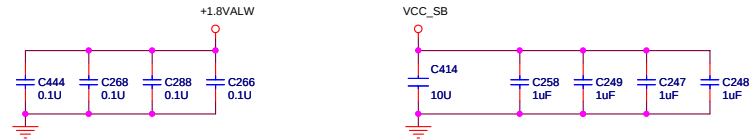
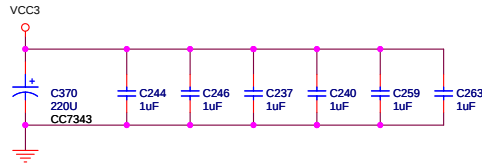


QUANTA
COMPUTER



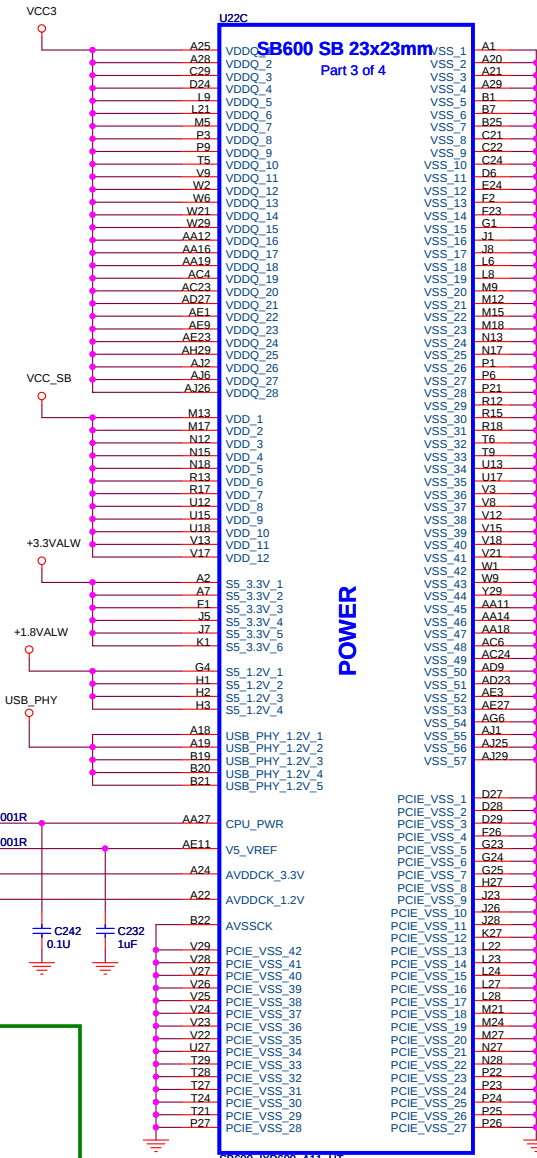
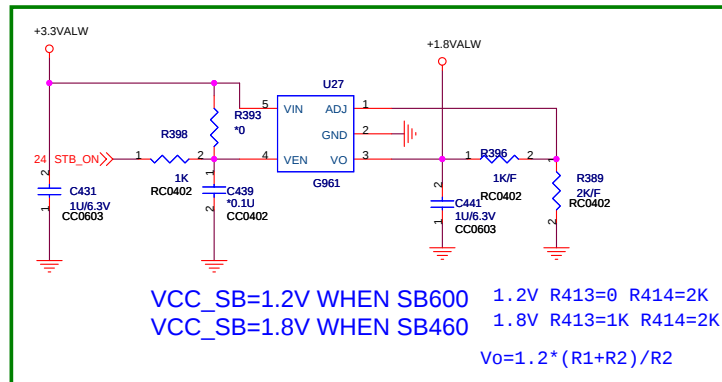
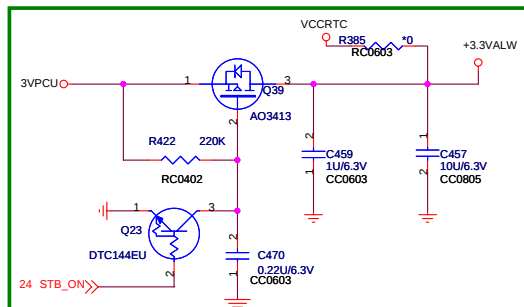
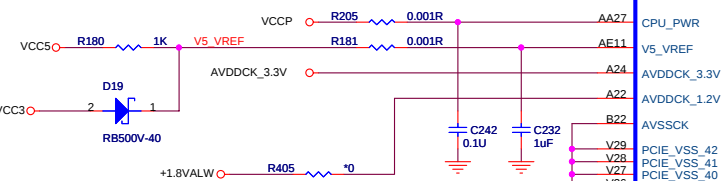


PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.



VCC_SB=1.2V WHEN SB600
VCC_SB=1.8V WHEN SB460

VCC_SB=1.2V WHEN SB600
VCC_SB=1.8V WHEN SB460



POWER

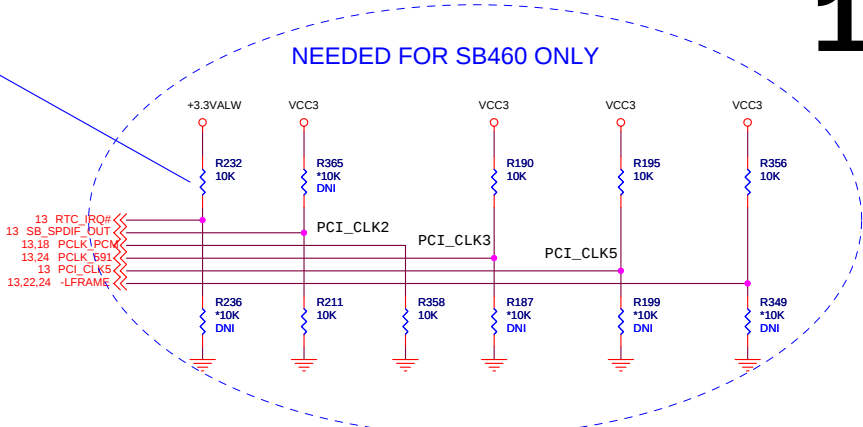
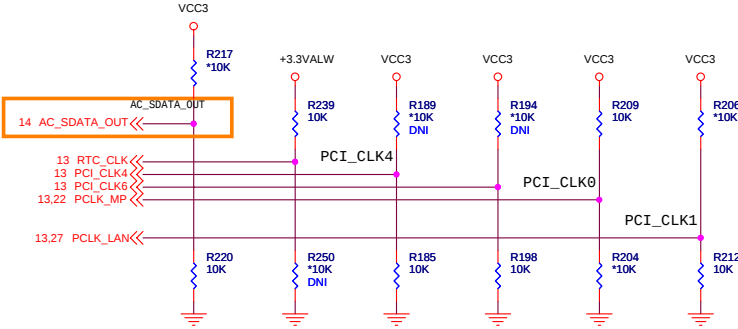
3VPCU 14,22,24,25,29,30,32,34
+3.3VALW 13,14,17
VCC3 3,5,8,10,11,12,13,14,15,17,18,19,20,21,22,23,24,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100
VCC5 3,8,10,18,19,20,21,22,23,24,25,26,30,36
VCC_SB 13,15



REQUIRED STRAPS

SB600 HAS 15K INTERNAL PU FOR AC_SDATA_OUT&RTC_CLK

NOTE: R232 PU RESISTOR FOR RTC_IRQ# IS REQUIRED FOR SB600 TO KEEP THE INPUT FROM FLOATING.

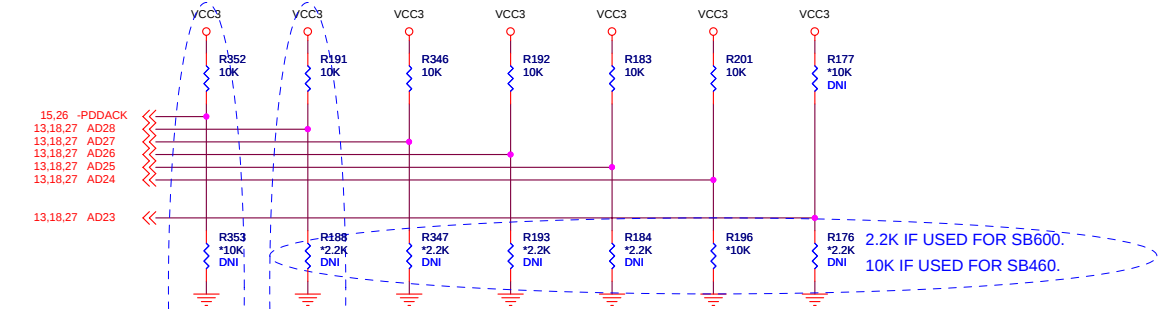


	SB600				SB460	
	AC_SDOUT	RTC_CLK	PCI_CLK4	PCI_CLK6	PCI_CLK0	PCI_CLK1
PULL HIGH	USE DEBUG STRAPS	INTERNAL RTC	USE INT. PLL48	CPU IF=K8	ROM TYPE: H, H = PCI ROM H, L = SPI ROM L, H = LPC ROM L, L = FWH ROM	ROM TYPE: H, H = PCI ROM H, L = LPC I ROM L, H = LPC II ROM L, L = FWH ROM
PULL LOW	IGNORE DEBUG STRAPS	EXTERNAL RTC	USE EXT. 48MHZ	CPU IF=P4	DEFAULT	NOTE: FOR SB460, PCICLK[8:7] ARE CONNECTED TO SUBSTRATE BALLS PCICLK[1:0]

	ACPWRON	SPDIF_OUT	PCI_CLK2	PCI_CLK3	PCI_CLK5	LFRAME#
PULL HIGH	MANUAL PWR ON	SIO 24MHz	XTAL MODE	USB PHY POWERDOWN DISABLE	Auto detection ALink PCIE lanes	ENABLE THERMTRIP#
PULL LOW	AUTO PWR ON	SIO 48MHz	48MHZ OSC MODE	USB PHY POWERDOWN ENABLE	2-lane PCIE	DISABLE THERMTRIP#

DEBUG STRAPS

SB600 HAS 15K INTERNAL PU FOR PCI_AD[28:23]



OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

	IDE_DACK#	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET	USE LONG RESET	USE PCI PLL	USE ACPI BCLK	USE IDE PLL	USE DEFAULT PCIE STRAPS	BOOTFAILTIMER DISABLED
PULL LOW	USE SHORT RESET	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	BOOTFAILTIMER ENABLED

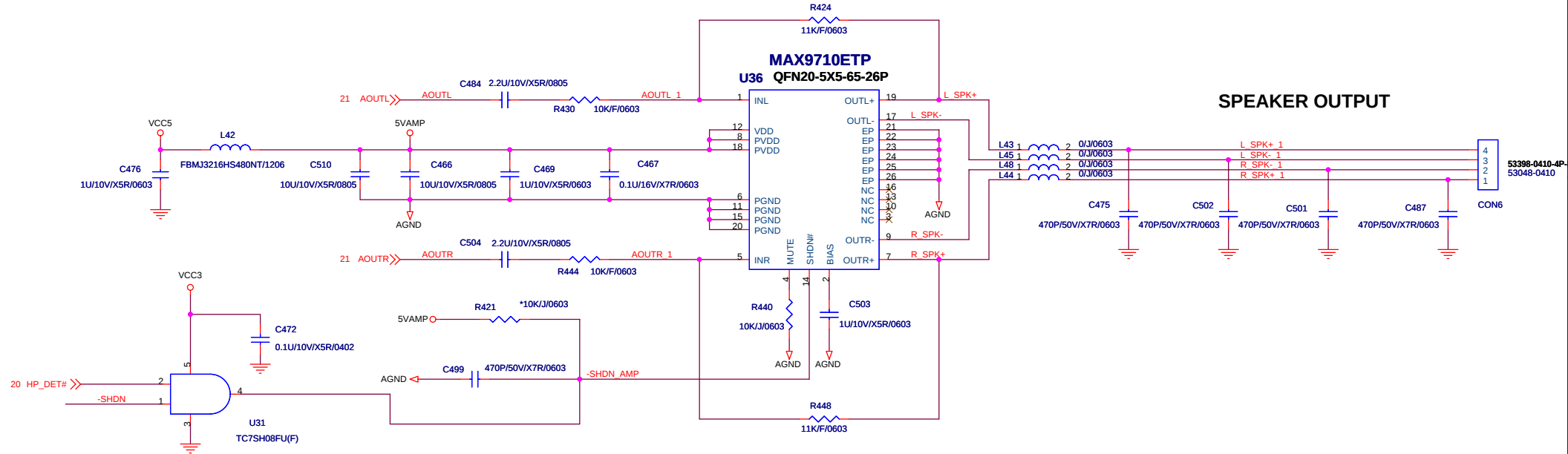
NEEDED FOR SB460 ONLY

NEEDED FOR SB600 ONLY

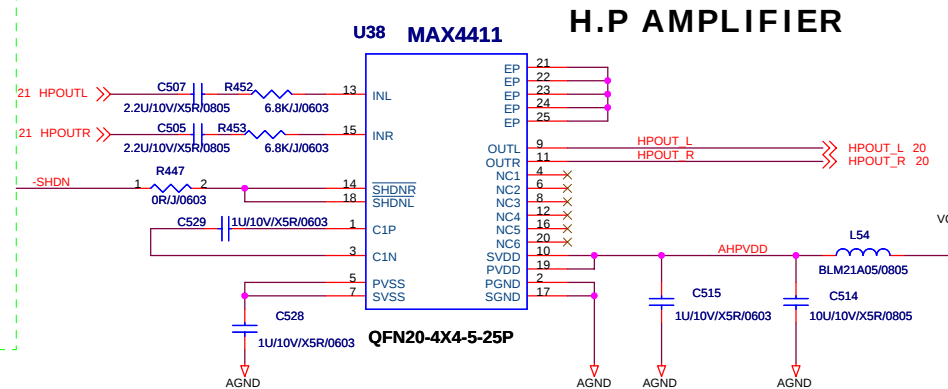
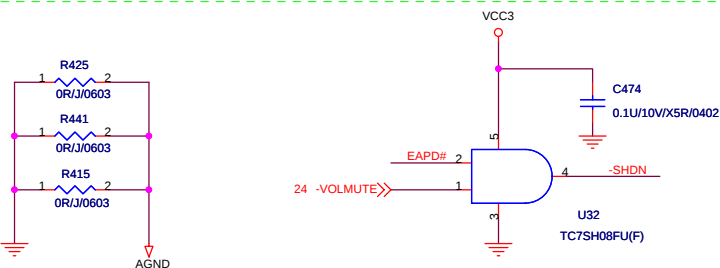
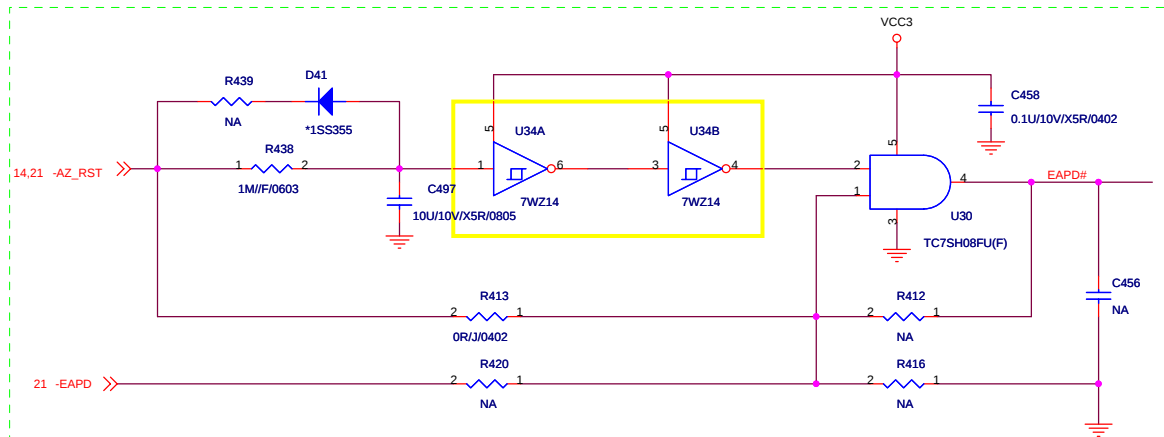
NOTE: FOR SB460, PCI_AD23 IS RESERVED

+3.3VALW VCC3 3,5,8,10,11,12,13,14,15,16,18,19,20,21,22,23,24,26,27



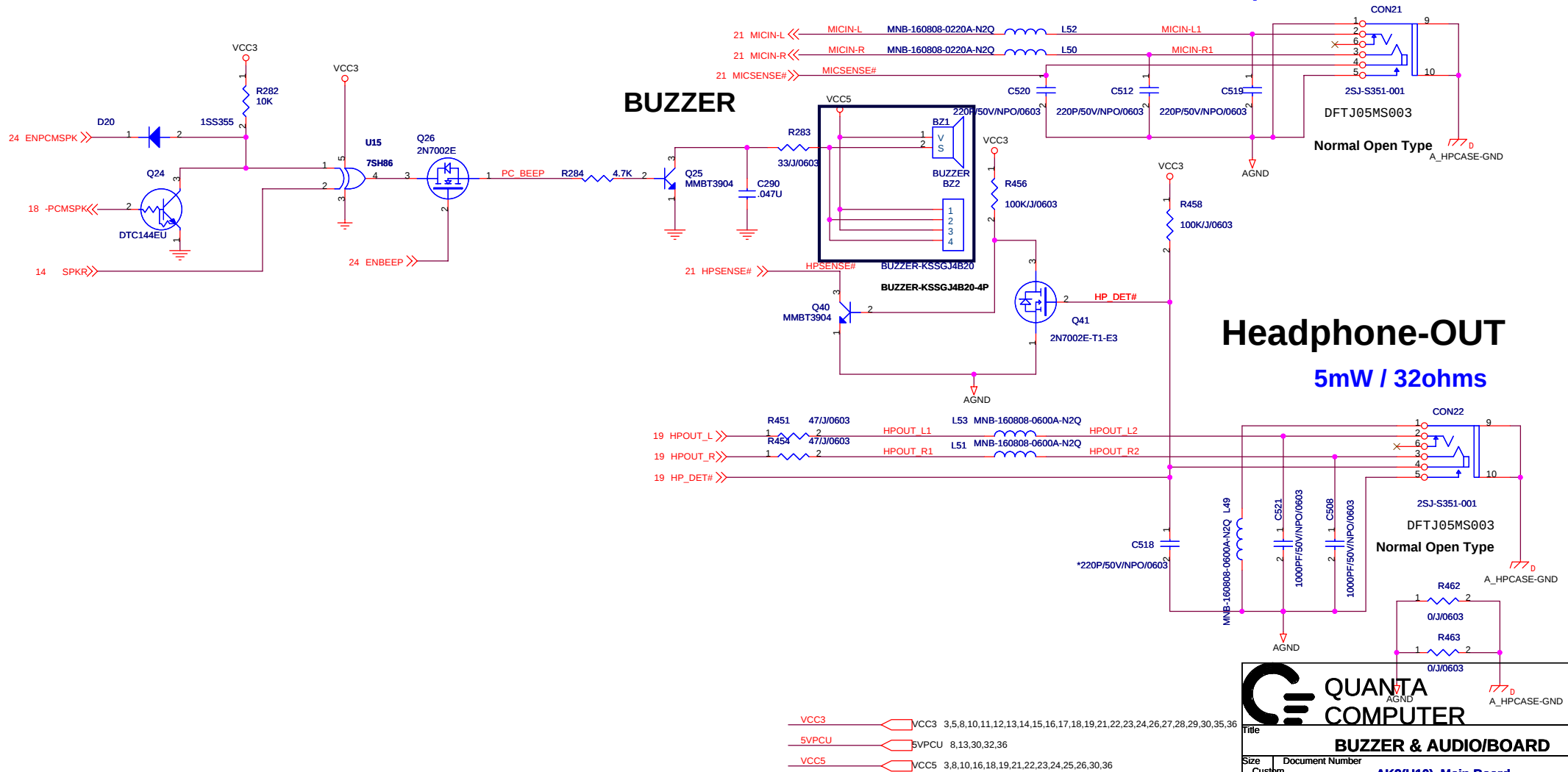


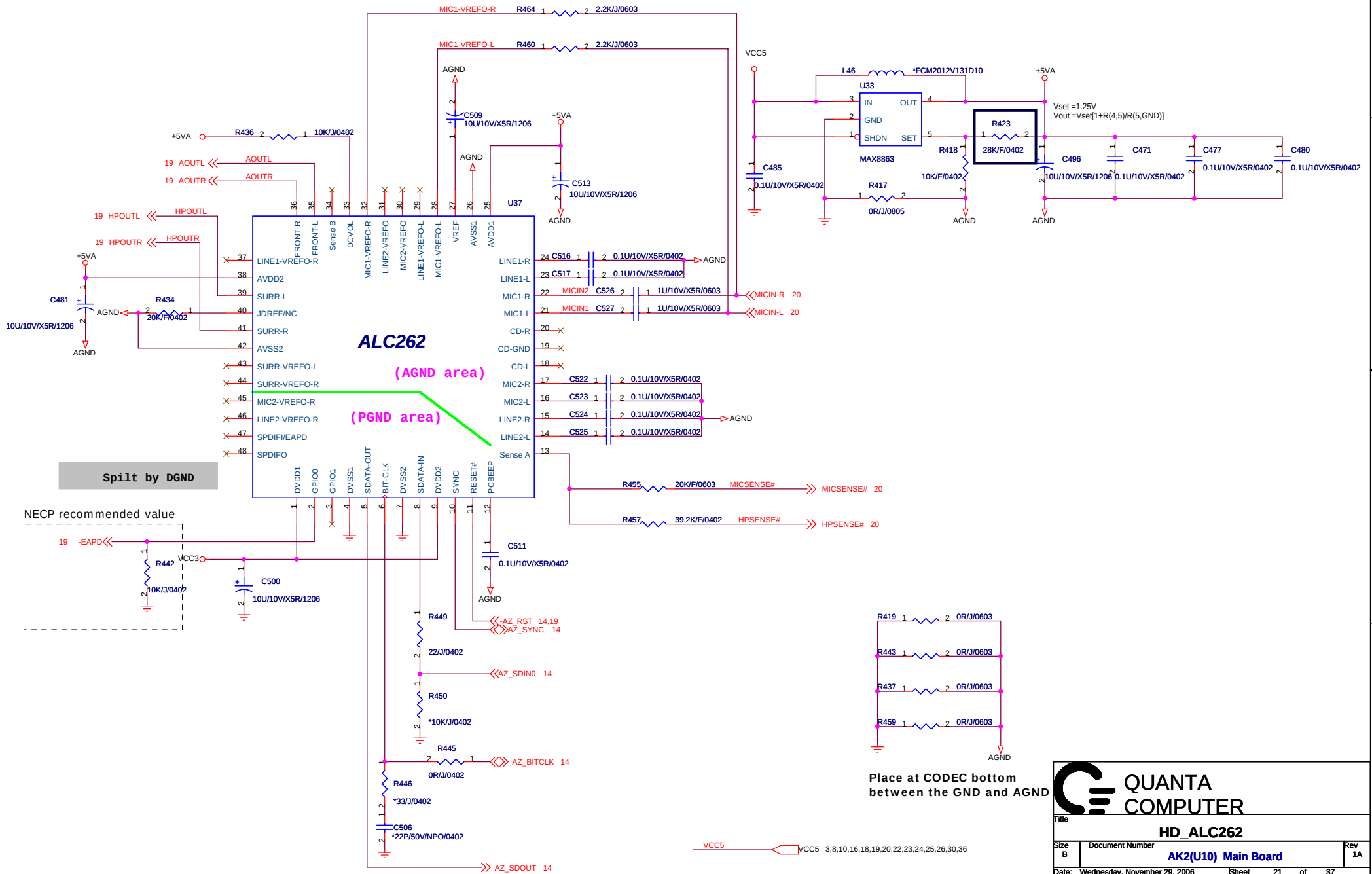
NECP recommend EAPD Control circuit for Vista



MIC-IN

Max. 100mVrms input for Mic-IN





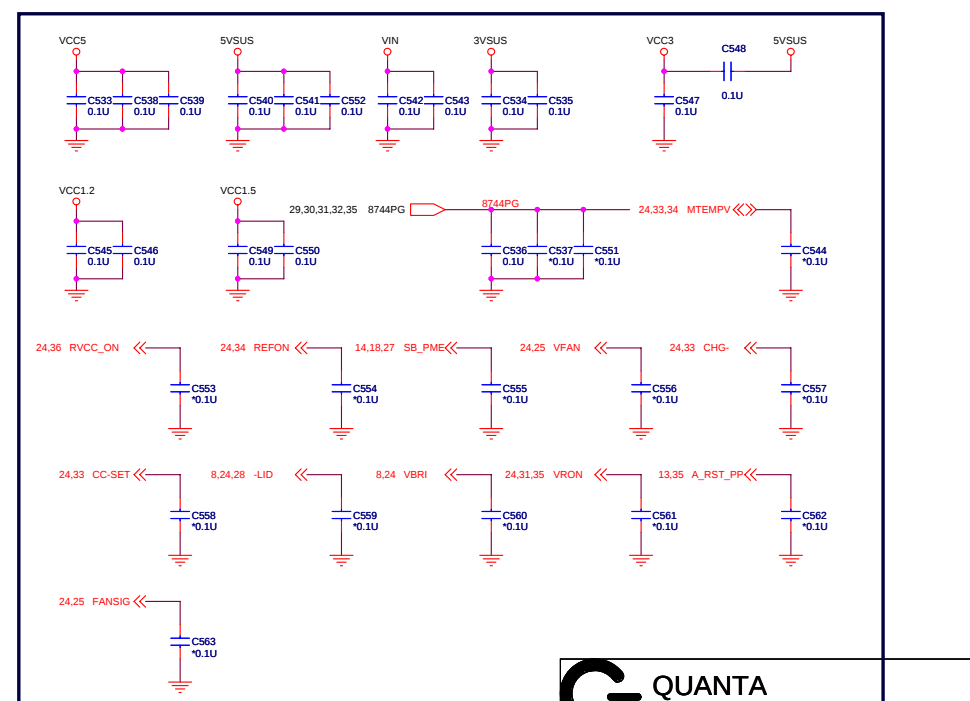
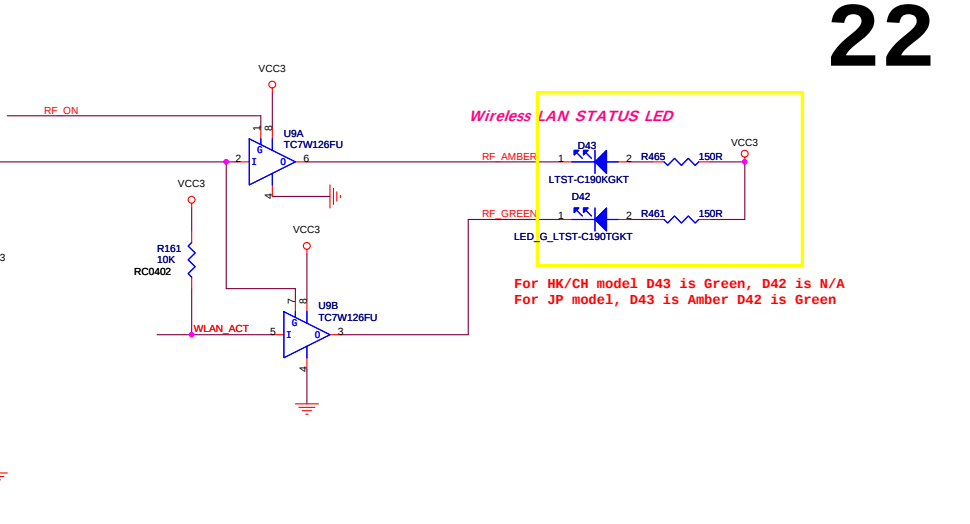
Place at CODEC bottom
between the GND and AGND

QUANTA COMPUTER

Title: **HD_ALC262**

Size B: Document Number **AK2(U10) Main Board** Rev 1A

Date: Wednesday, November 29, 2006 Sheet 21 of 37



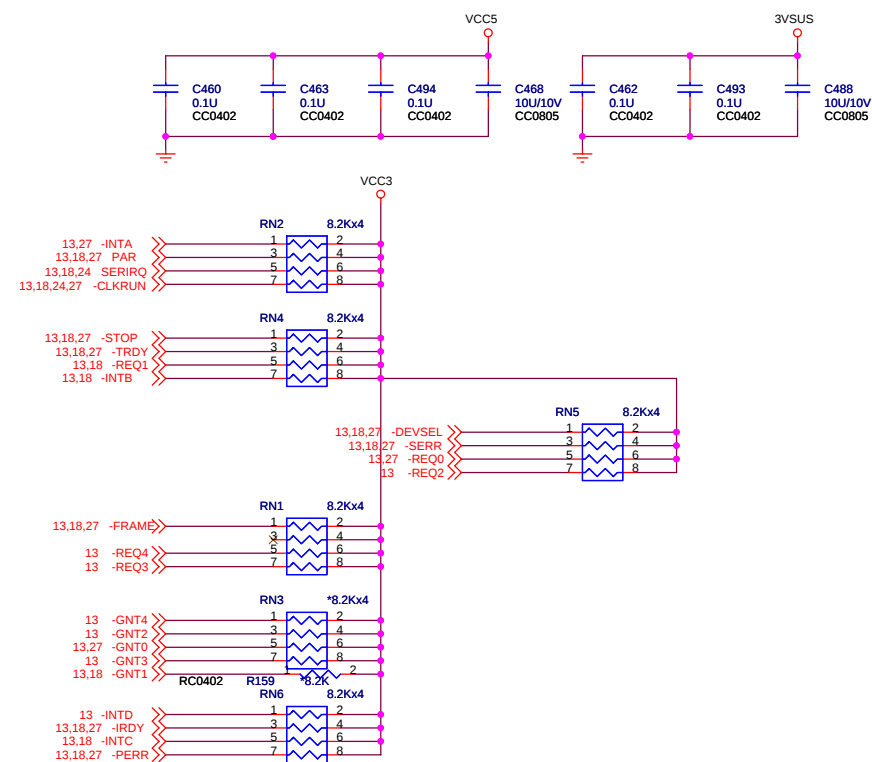
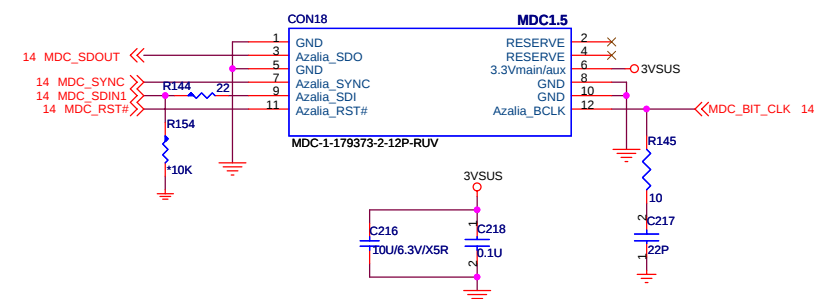
VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24,26,27,28,29,30,35,36

3VSUS 14,23,27,30,31,35,36

VCC1.5 4,31,36

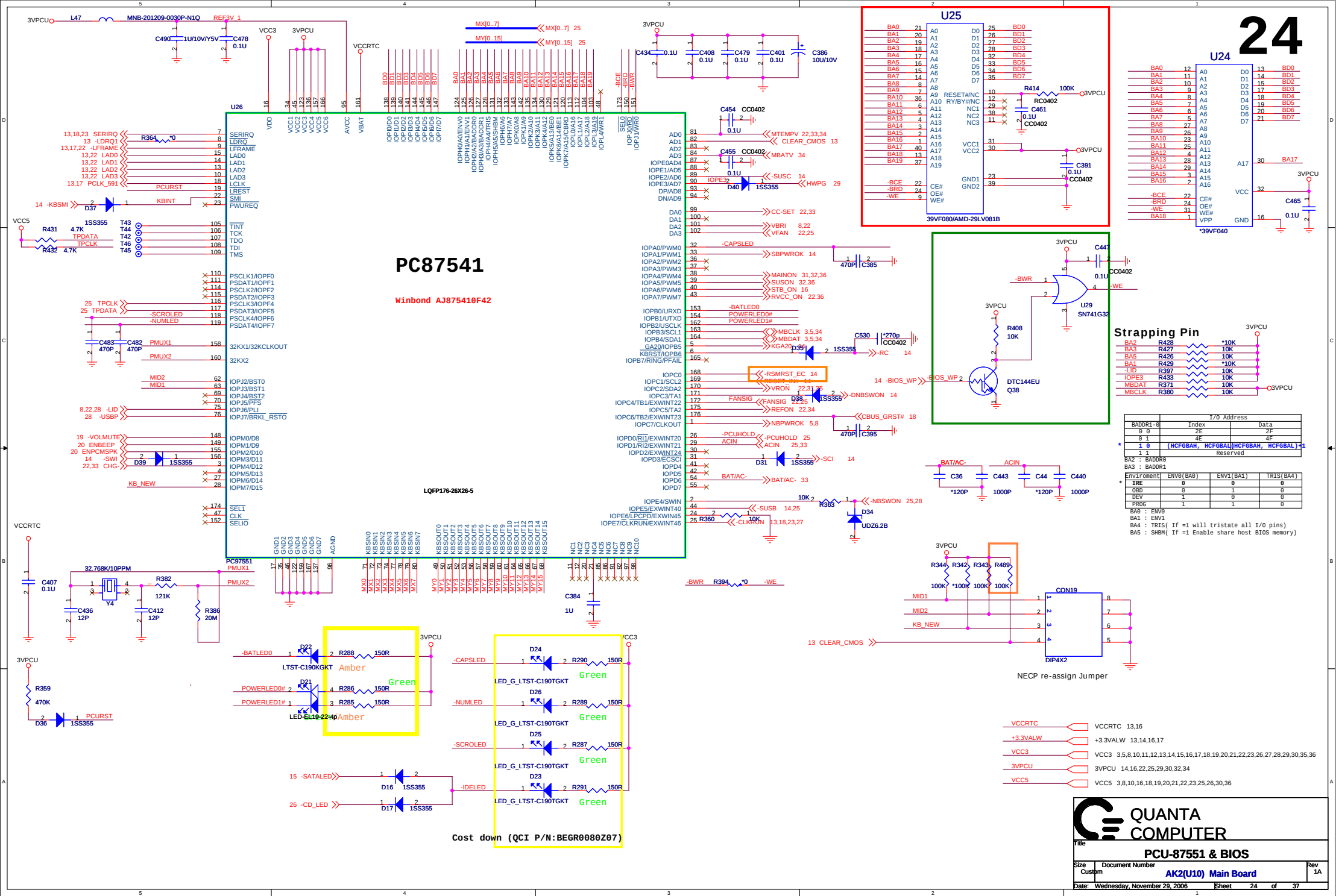
For JP model don't have HD_MDC

HD_MDC

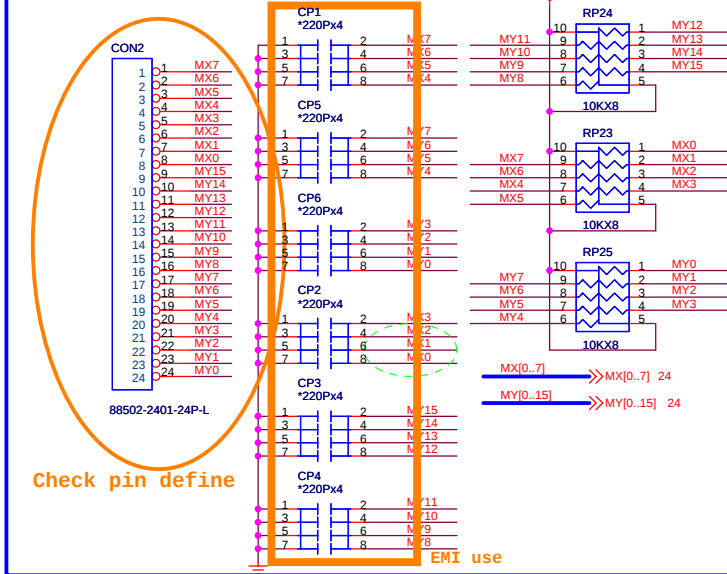


VCC3	VCC3	3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,24,26,27,28,29,30,35,36
3VSUS	3VSUS	14,22,27,30,31,35,36
VCC5	VCC5	3,8,10,16,18,19,20,21,22,24,25,26,30,36

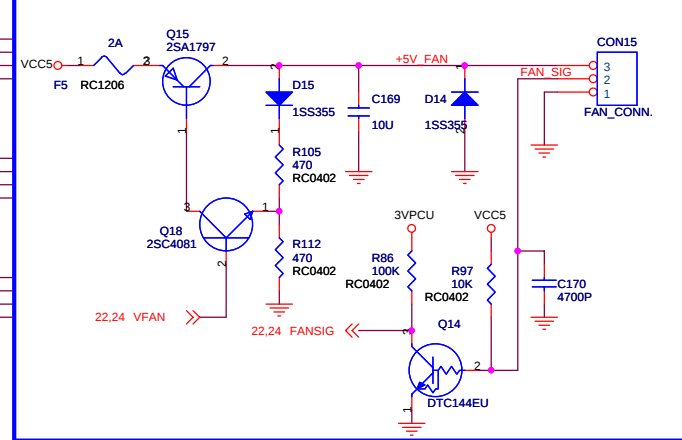
		QUANTA COMPUTER	
Title		MINI PCI & HD_MDC	
Size B		Document Number AK2(U10) Main Board	
Date: Wednesday, November 29, 2006		Sheet 23 of 37	
		Rev 1A	



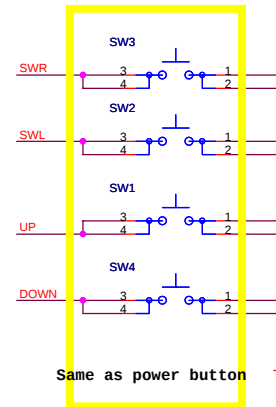
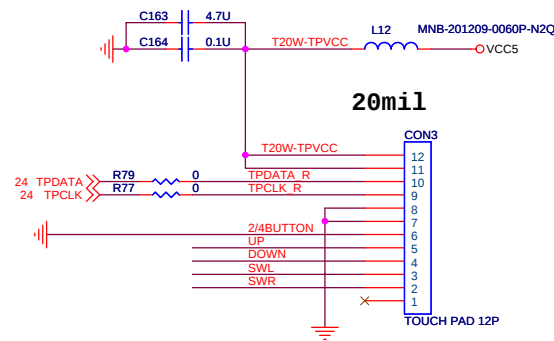
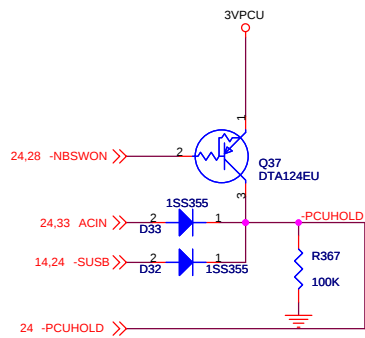
INT. KEYBOARD



FAN Circuit



TOUCHPAD BOARD CON



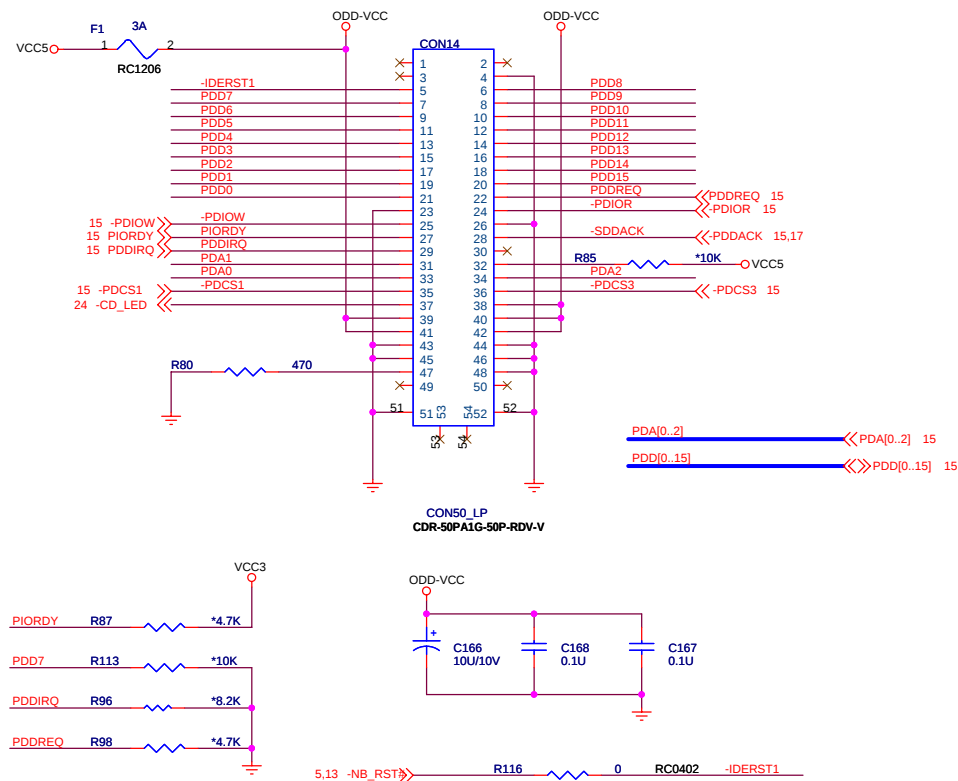
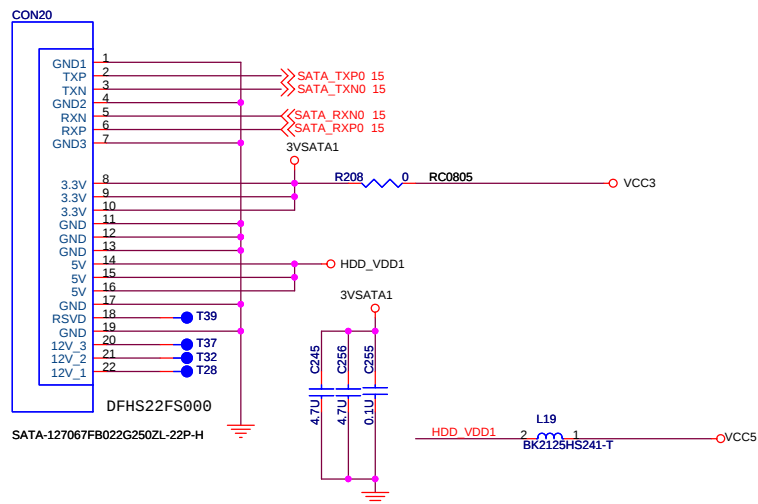
3VPCU 3VPCU 14,16,22,24,29,30,32,34

VCC5 VCC5 3,8,10,16,18,19,20,21,22,23,24,26,30,36

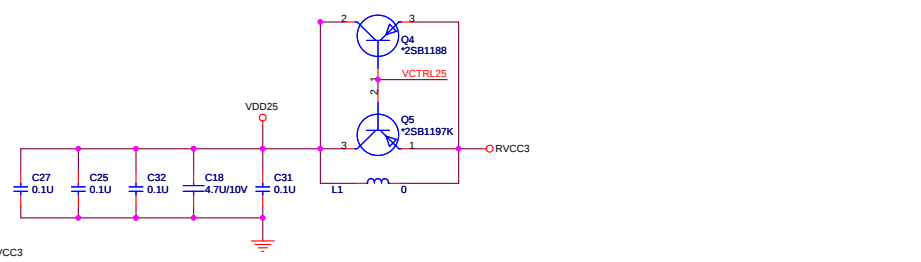
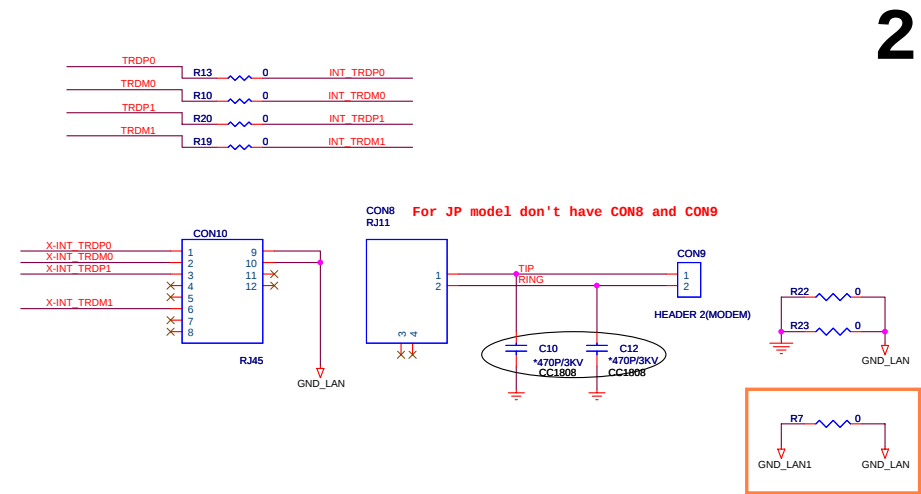
SATA_TOP(MASTER)

ODD Connector

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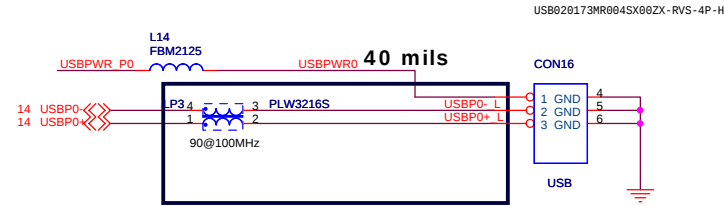
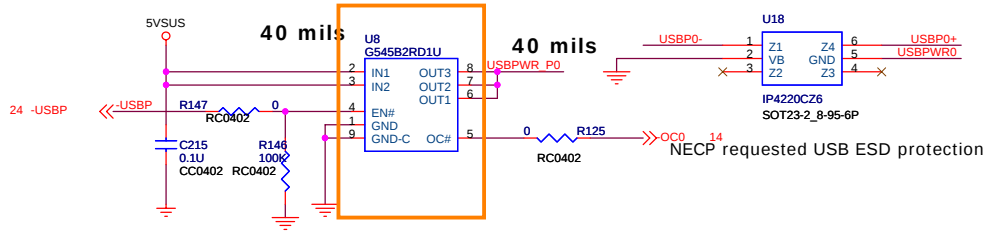
VCC3 VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,27,28,29,30,35,36
VCC5 VCC5 3,8,10,16,18,19,20,21,22,23,24,25,30,36



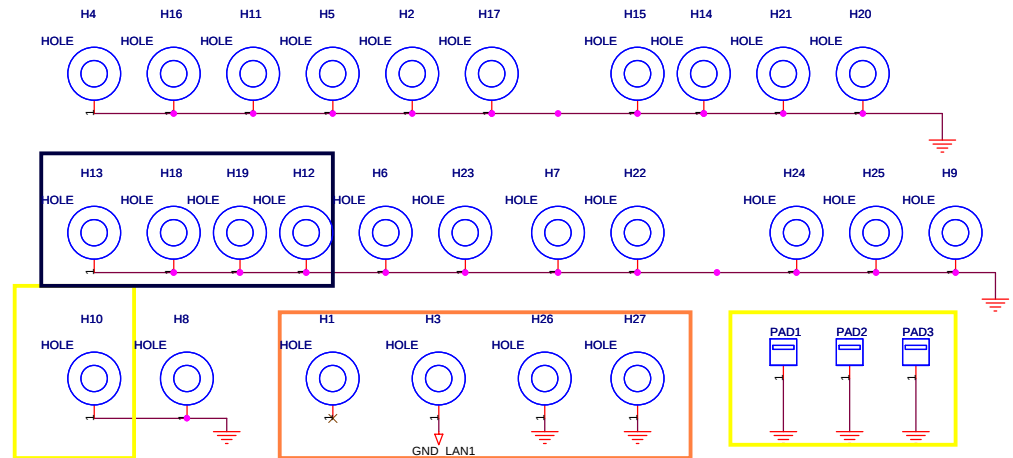
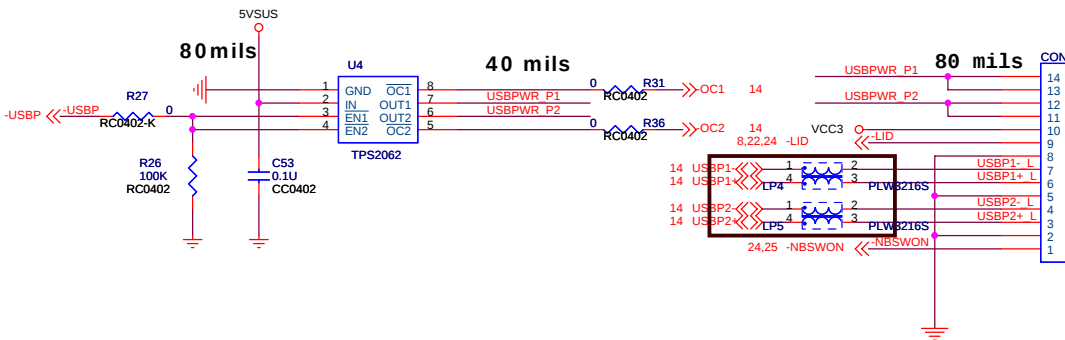
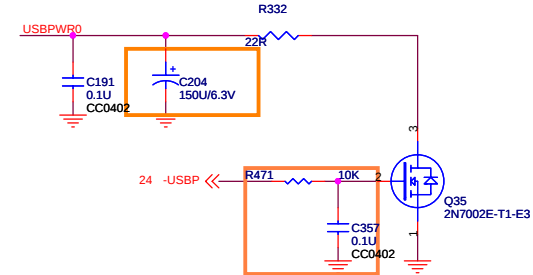
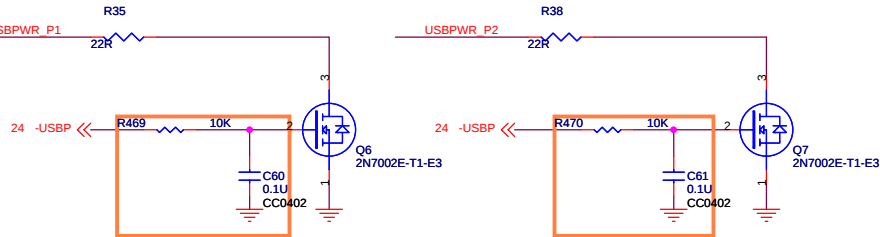
USB Power and Over current

USB Connector

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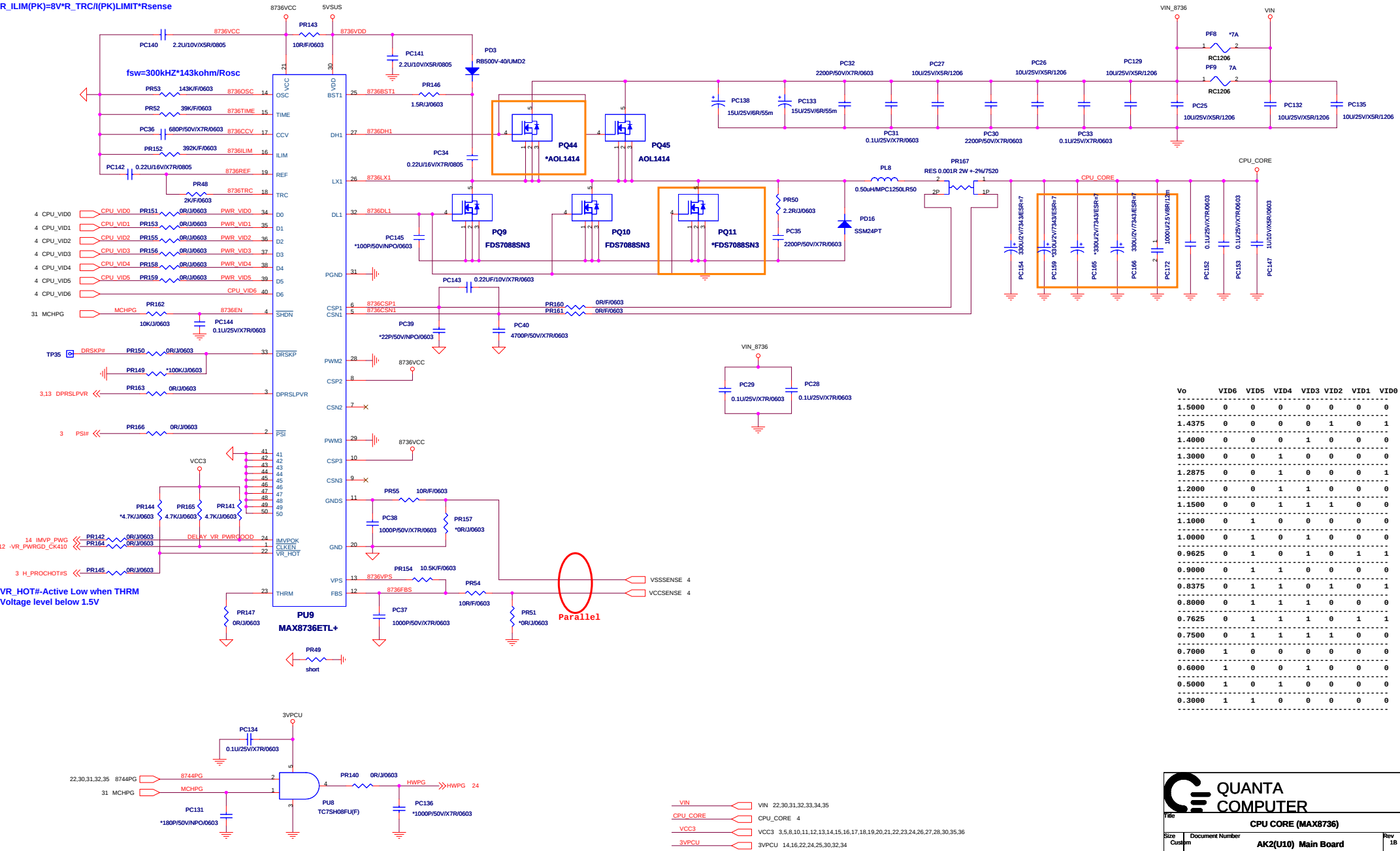
USB POWER DISCHARGE CIRCUIT



VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,27,29,30,35,36

5VSUS 22,29,30,31,35,36

$dV_{Target}/dt=12.5mV/us*71.5kohm/R_TIME$
 $R_ILIM(PK)=8V*R_TRC/(PK)LIMIT*Rsense$



Vo	VID6	VID5	VID4	VID3	VID2	VID1	VID0
1.5000	0	0	0	0	0	0	0
1.4375	0	0	0	0	1	0	1
1.4000	0	0	0	1	0	0	0
1.3000	0	0	1	0	0	0	0
1.2875	0	0	1	0	0	0	1
1.2000	0	0	1	1	0	0	0
1.1500	0	0	1	1	1	0	0
1.1000	0	1	0	0	0	0	0
1.0000	0	1	0	1	0	0	0
0.9625	0	1	0	1	0	1	1
0.9000	0	1	1	0	0	0	0
0.8375	0	1	1	0	1	0	1
0.8000	0	1	1	1	0	0	0
0.7625	0	1	1	1	0	1	1
0.7500	0	1	1	1	1	0	0
0.7000	1	0	0	0	0	0	0
0.6000	1	0	0	1	0	0	0
0.5000	1	0	1	0	0	0	0
0.3000	1	1	0	0	0	0	0



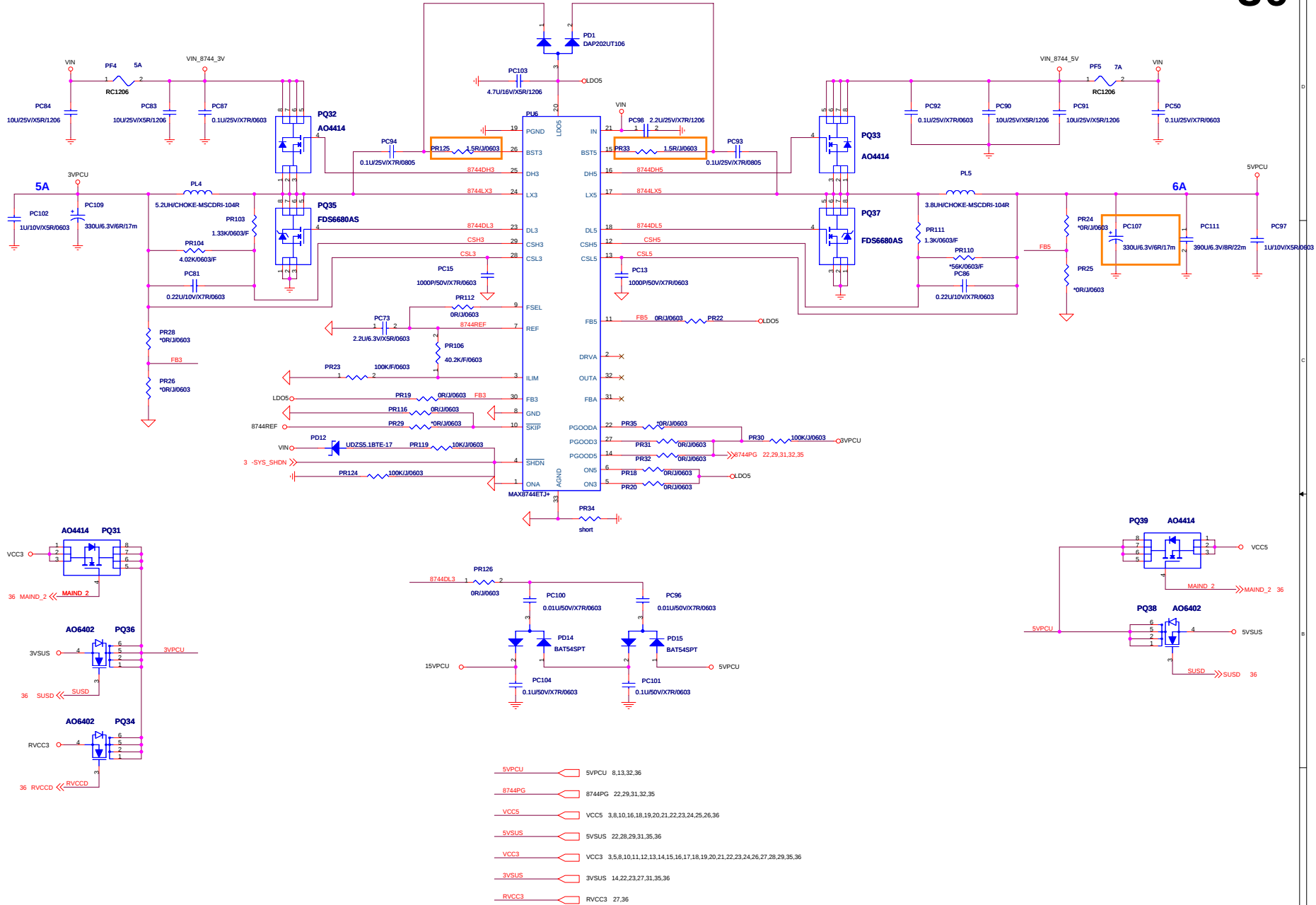
QUANTA
COMPUTER

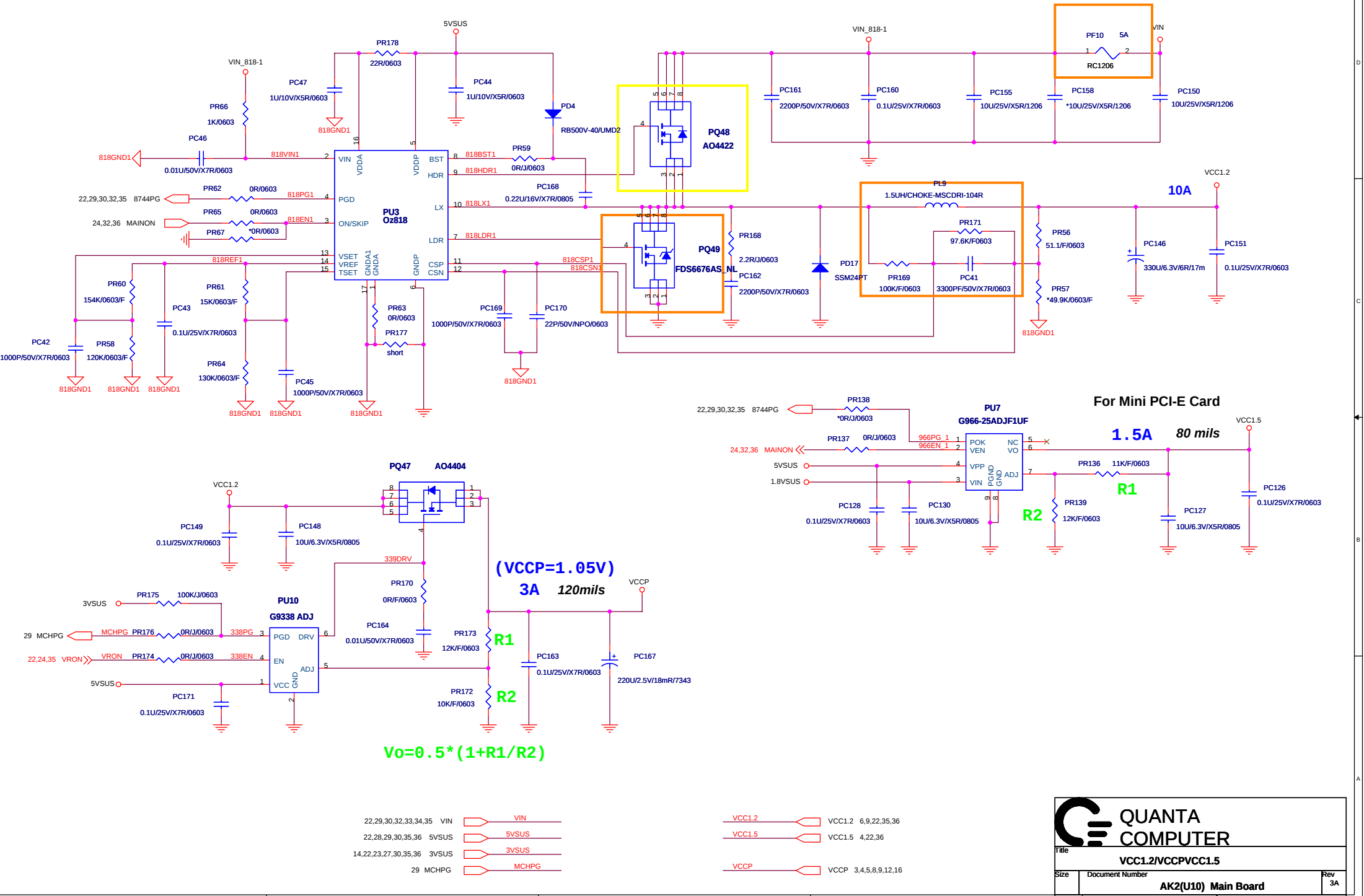
CPU CORE (MAX8736)

Size: 18mm
Cust: AK2(U10) Main Board
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DC/DC 3.3V&5V POWER

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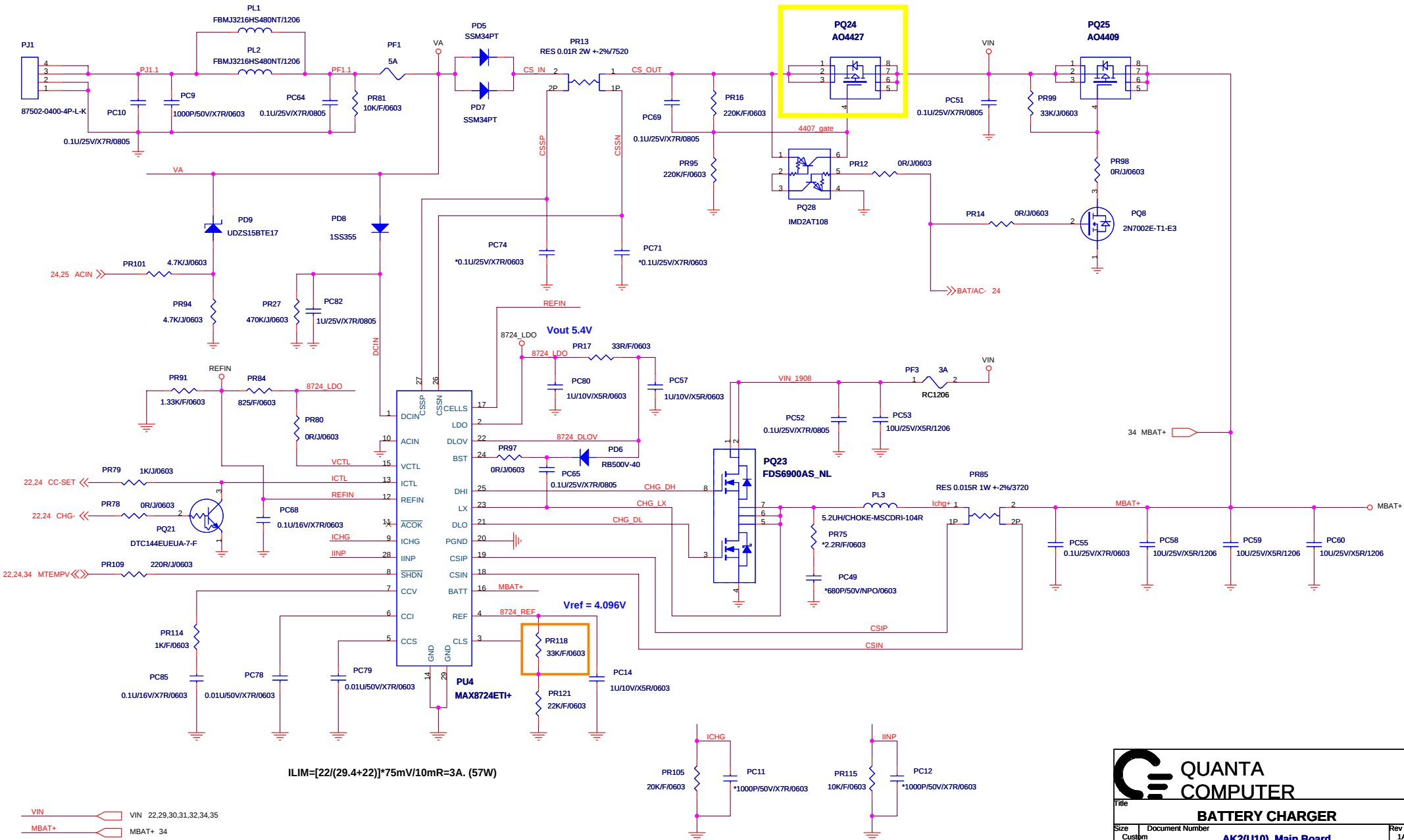




32



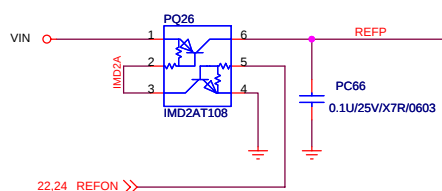
Battery Charger





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COMPUTER

Title		
BATTERY CHARGER		
Size	Document Number	Rev
Custom	AK2(U10) Main Board	1A
Date:	Wednesday, November 29, 2006	Sheet 33 of 37



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

MBATV voltage :

$$16.8V \cdot 40.2 / (200 + 40.2) = 2.812V$$

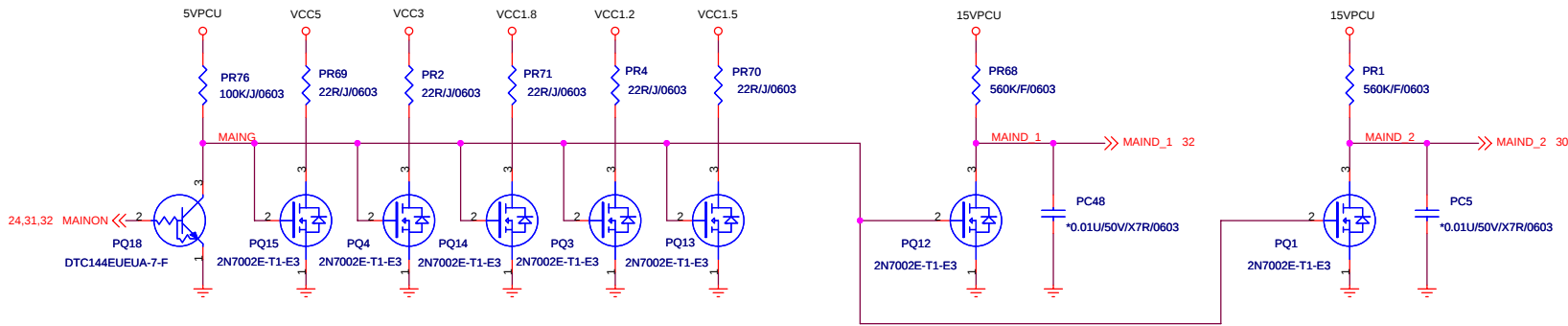
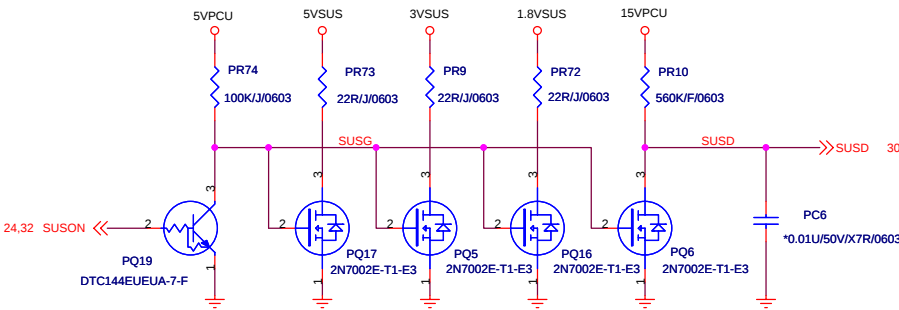
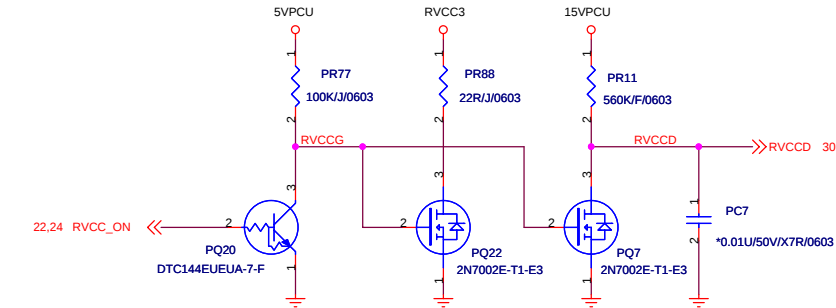
$$12.0V \cdot 40.2 / (200 + 40.2) = 2.008V$$

$$8.0V \cdot 40.2 / (200 + 40.2) = 1.34V$$

$$6.0V \cdot 40.2 / (200 + 40.2) = 1.004V$$

3VPCU	3VPCU 14,16,22,24,25,29,30,32
VIN	VIN 22,29,30,31,32,33,35
MBAT+	MBAT+ 33





- 15VPCU 15VPCU 30
- VCC_NB VCC_NB 6,9,22,31,35
- VCC1.2 VCC1.2 6,9,22,31,35
- VCC1.8 VCC1.8 5,8,9,11,15,32
- VCC3 VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,27,28,29,30,35
- VCC5 VCC5 3,8,10,16,18,19,20,21,22,23,24,25,26,30
- 5VPCU 5VPCU 8,13,30,32

- RVCC3 RVCC3 27,30
- 1.8VSUS 1.8VSUS 5,7,9,11,16,22,31,32
- 3VSUS 3VSUS 14,22,23,24,25,30,35
- 5VSUS 5VSUS 22,28,30,31,35
- RVCCD RVCCD 30
- SUSD SUSD 30
- MAIND_1 MAIND_1 32
- MAIND_2 MAIND_2 30



QUANTA
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TitleDISCHARGE

SizeCustomDocument NumberAK2(U10) Main BoardRev1A

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IRT Change list:
1.Page29: add BZ2
2.Page23:del MINI-PCI circuit
3.Page28:Q6,Q7,Q35 footprint update (change to 2N7002 footprint) SMT request
4.Page28:USB circuit modify
5.Page28: H12, H13, H18, H19 change footprint.
6.Page8:Add PC173
7.Page21:change R423 to 28K
8.page22:Add C533-C563 for EMI