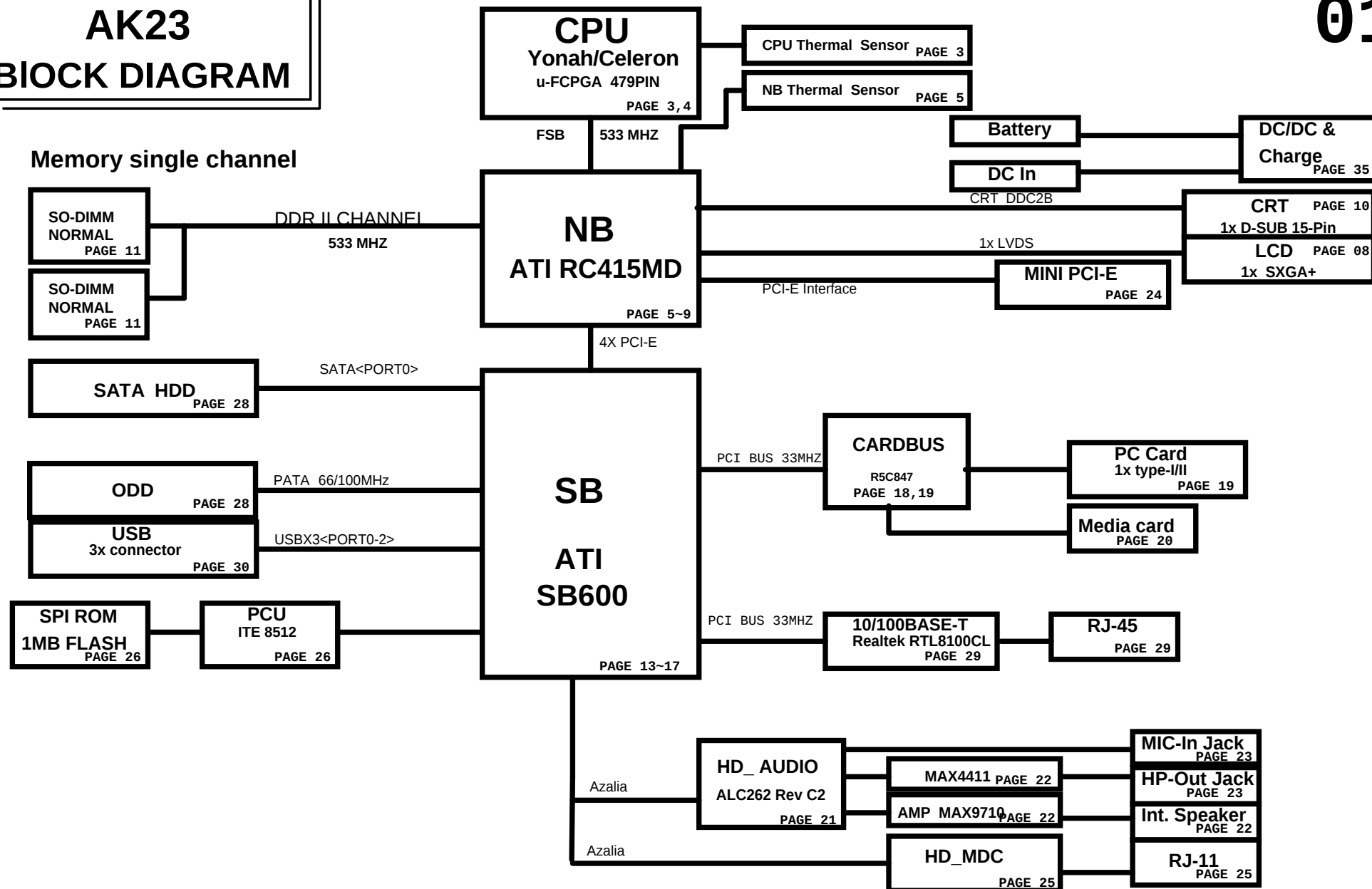


AK23 BLOCK DIAGRAM

01



QUANTA
COMPUTER

Title BLOCK DIAGRAM			
Size B	Document Number AK23 Main Board	Rev B	
Date: Friday, June 29, 2007	Sheet	1	of 38

1. PAGE LIST

01--BLOCK DIAGRAM
02--PAGE LIST
03--Yonah CPU (HOST BUS)-1
04--Yonah CPU (POWER/NC)-2
05--RC415MD-AGTL+ I/F 1/5

31--CPU CORE (MAX8736)
32--3V/5V_MAX8744
33--VCCP/VCC1.2/VCC1.5
34--1.8VSUS/DDRVTM
35--Battery charger

06--RC415MD-PCIE LINK I/F 2/5
07--RC415MD-DDR2 I/F 3/5
08--RC415MD-VIDEO & STRAPS 4/5
09--RC415MD-POWER 5/5
10--CRT PORT

36--Battery CONN
37--Discharge
38--Change list

11--DDR2 SODIMM X2 and Terms
12--EXT CLK GEM
13--SB600-PCIE/PCI/CPU/LPC -1
14--SB600-ACPI/GPIO/USB/AC97 -2
15--SB600-SATA/IDE/HWM/SPI -3

16--SB600-POWER & DECOUPLING -4
17--SB600-STRAPS -5
18--R5C847 PCI
19--R5C847 CARDBUS/MEDIA
20--SD_MS_XD SLOT

21--HD_ALC262
22--AUDIO AMP.
23--BUZZER & Headphone-out
24--Mini PCI-E
25--HD_MDC

26--PCU ITE 8512
27--INT.KB &TP CONN
28--SATA(HDD),PATA(ODD) CONN
29--LAN (RTL 8100CL)
30--USB PORT/USB Board CONN

2. PCI Description :

IDSEL	CHIP	PCIINT	CHIP
AD24	LAN (RTL8100CL)	IRQA	LAN(RTL8100CL)
AD26	CardBus (R5C847)	IRQB	CardBus
AD28		IRQC	CardBus
		IRQD	CardBus
		IRQE	
		IRQF	

BUSMASTER	REQ	CHIP
	REQ0 / GNT0	LAN(RTL8100CL)
	REQ1 / GNT1	CardBus R5C847
	REQ2 / GNT2	
	REQ3 / GNT3	
	REQ4 / GNT4	

3. PCI_E Description :

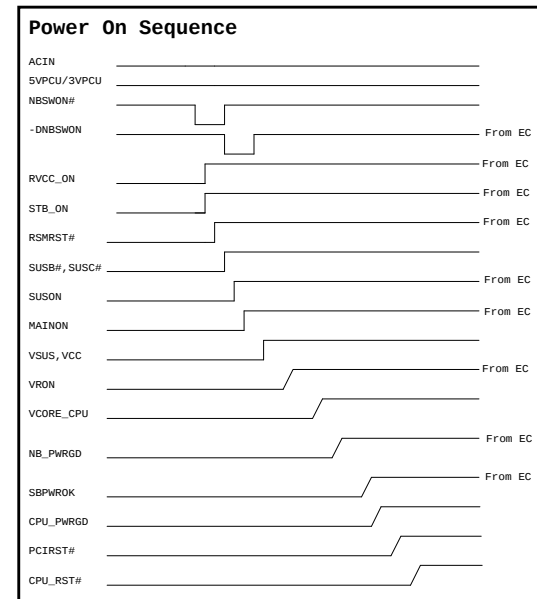
CHIP
Port 0,1 A-LINK
Port 2 Mini-PCIE (Wireless card)

4.Power rails

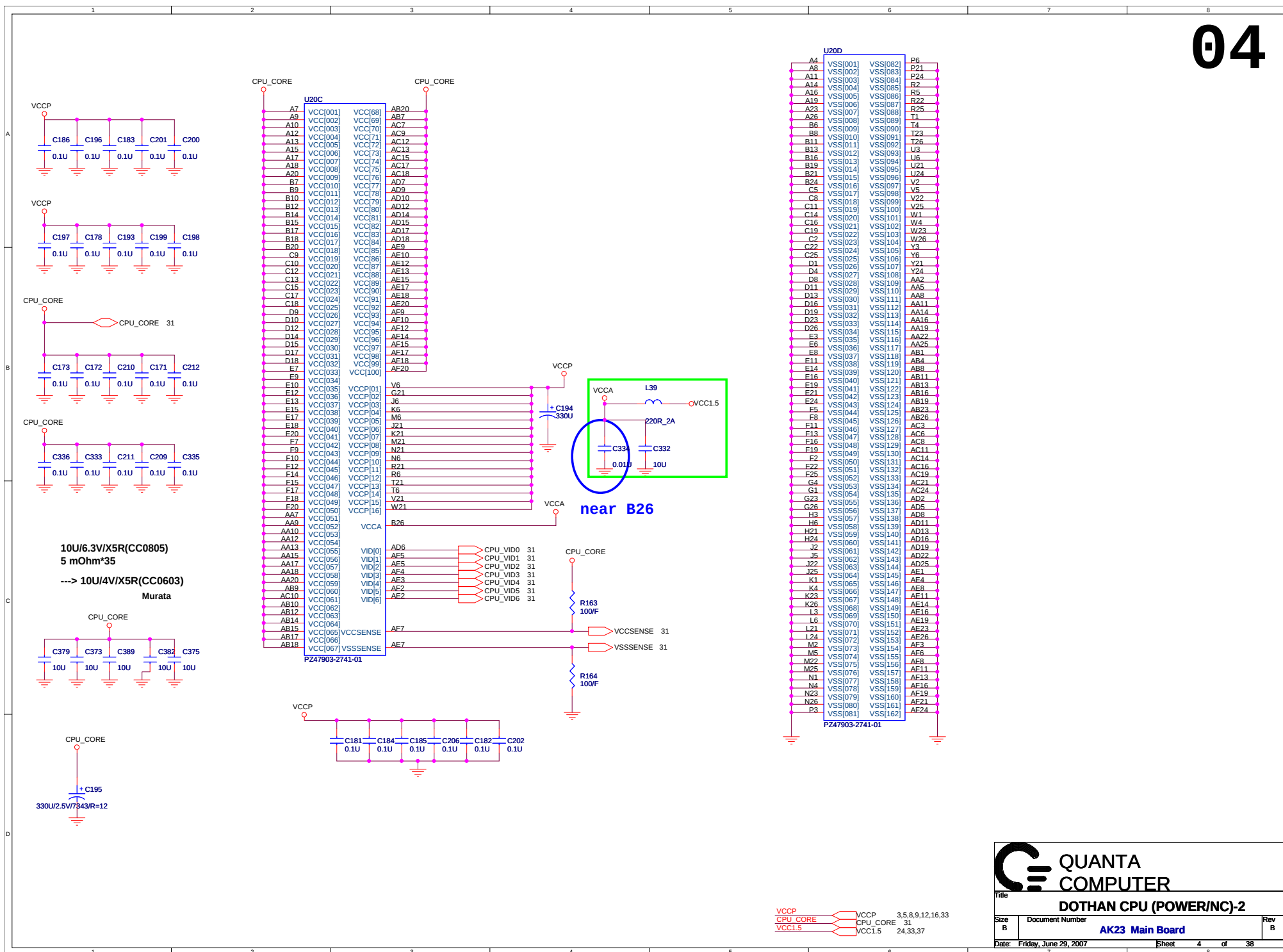
02

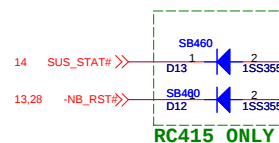
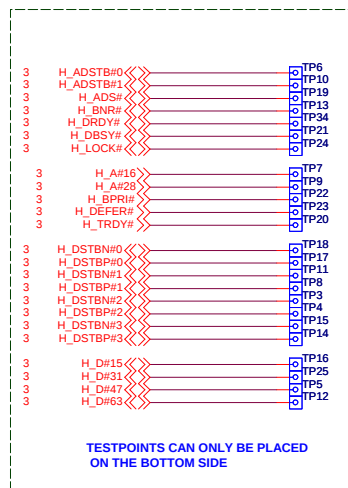
POWER RAIL	VOLTAGE SIGNAL	S0	S1	S2	S3	S4	S5
CPU_CORE	VRON	ON	ON	ON	OFF	OFF	OFF
VCC_NB	VRON	ON	ON	ON	OFF	OFF	OFF
VTT_DDR	MAINON	ON	ON	ON	OFF	OFF	OFF
VCCP	MAINON	ON	ON	ON	OFF	OFF	OFF
VCCCORE	VRON	ON	ON	ON	OFF	OFF	OFF
RVCC3	RVCCON	ON	ON	ON	ON	ON	OFF
VCC1.2	MAINON	ON	ON	ON	OFF	OFF	OFF
VCC1.5	MAINON	ON	ON	ON	OFF	OFF	OFF
VCC1.8	MAINON	ON	ON	ON	OFF	OFF	OFF
VCC3.3	MAINON	ON	ON	ON	OFF	OFF	OFF
VCC5	MAINON	ON	ON	ON	OFF	OFF	OFF
+1.2VALW	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. POWER ON SEQUENCE









H_RST# need to fork out from NB

PLACE GTLREF CIRCUIT CLOSE TO NB, USE 10/10 WIDTH/SPACE

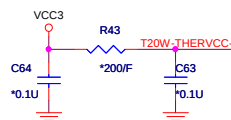
PLACE C165,C328 CLOSE TO NB, AND CONNECT IOPLLVSS TO GND DIRECTLY

PLACE C161 CLOSE NB BALL

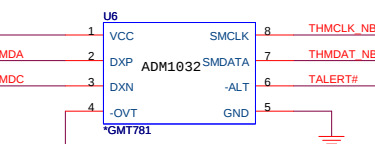
ROUTE THRMDA AND THRMDC TRACES AS DIFF PAIRS TO SIO AND SB

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



P-4 AGTL+ I/F

ADDR. GROUP 0

ADDR. GROUP 1

CONTROL

MISC.

DATA GROUP 0

DATA GROUP 1

DATA GROUP 2

DATA GROUP 3

TESTMODE

LOW

HIGH

TEST MODE

TESTMODE

LOW

HIGH

TEST MODE

TESTMODE

LOW

HIGH

TEST MODE

TESTMODE

LOW

HIGH

TEST MODE

TESTMODE

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TESTMODE

LOW

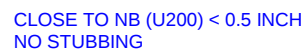
HIGH

TEST MODE

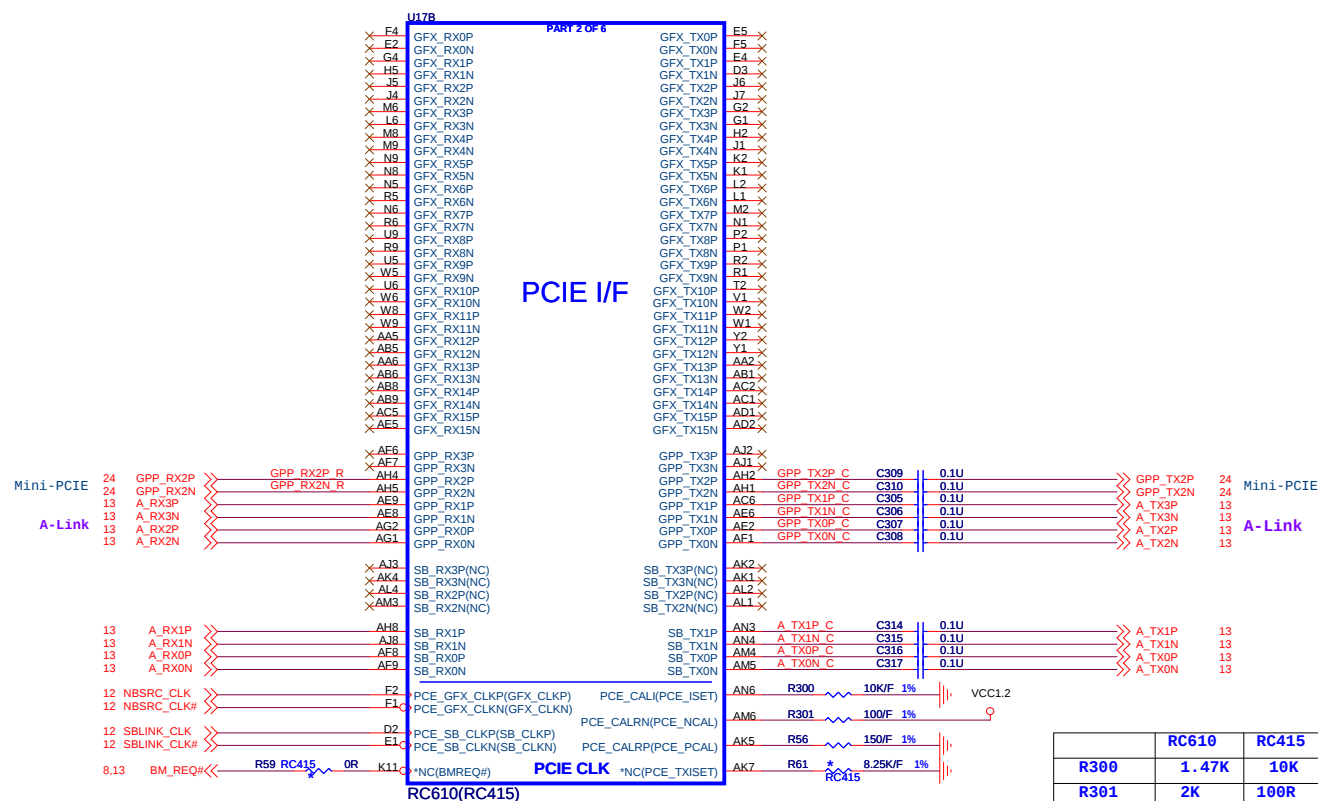


RC415-AGTL+I/F

Size	Document Number	Rev
Custom	AK23 Main Board	B
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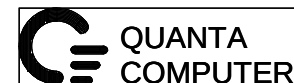


06



```
Note:
* Stuff only for RC415
** Stuff only for RC610
```

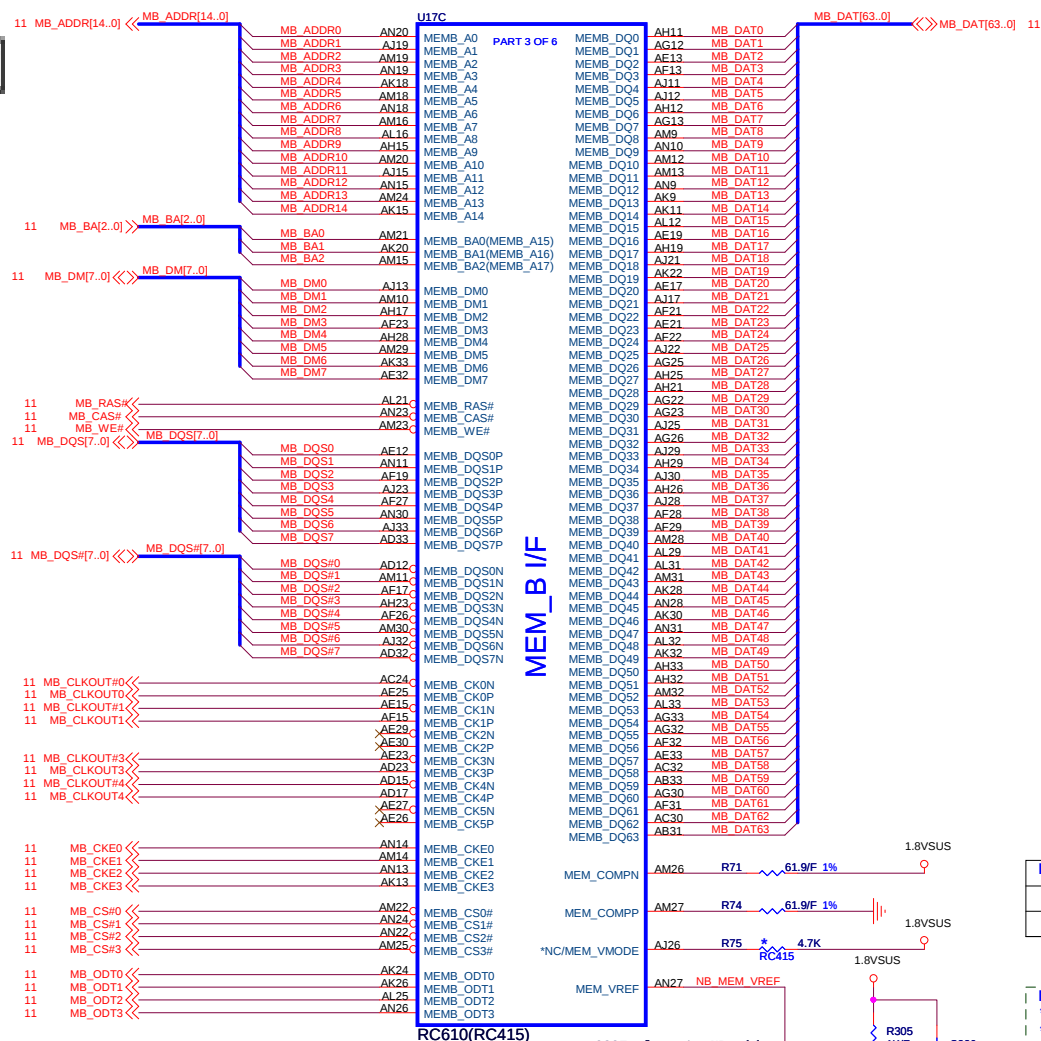
VCC1.2 VCC1.2 9.15.24.33.37



Title **RC415-PCIE I/F**

Size	Document Number
Custom	AK23 Main Board

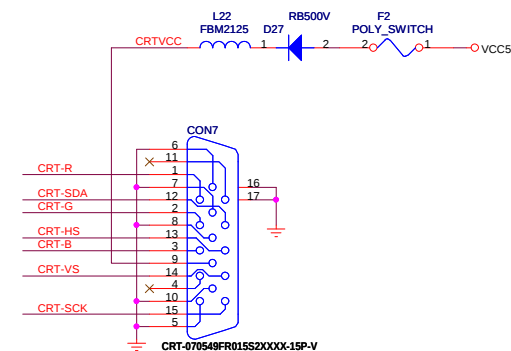
Date: Friday, June 29, 2007 Sheet 6 of 38



1.8VSUS 1.8VSUS 5,9,11,24,33,34,37

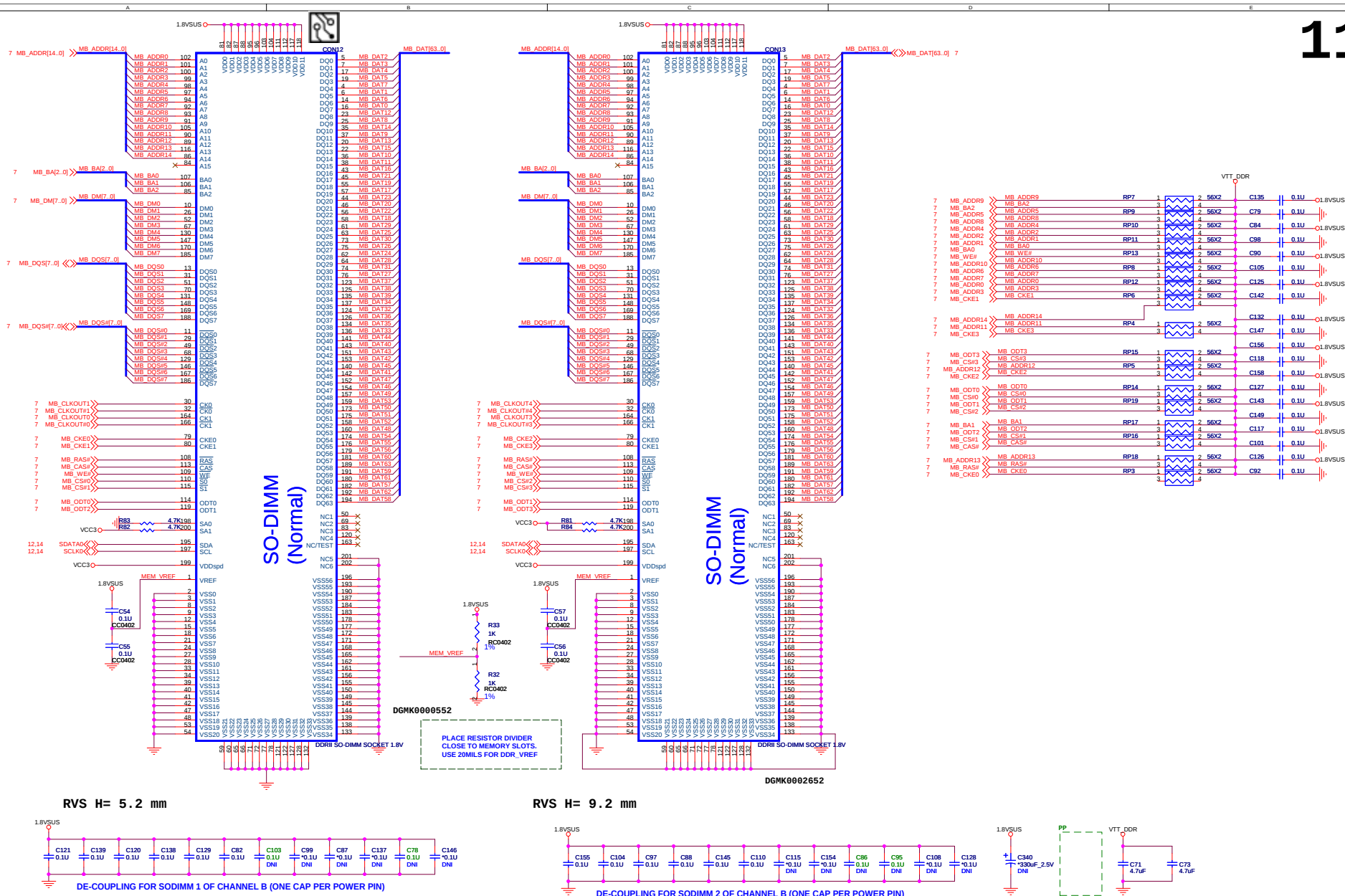
QUANTA COMPUTER			
Title RC415-DDR2 I/F			
Size	Document Number	Rev	
Custom	AK23 Main Board	B	
Date	Friday, June 29, 2007	Sheet	7 of 38

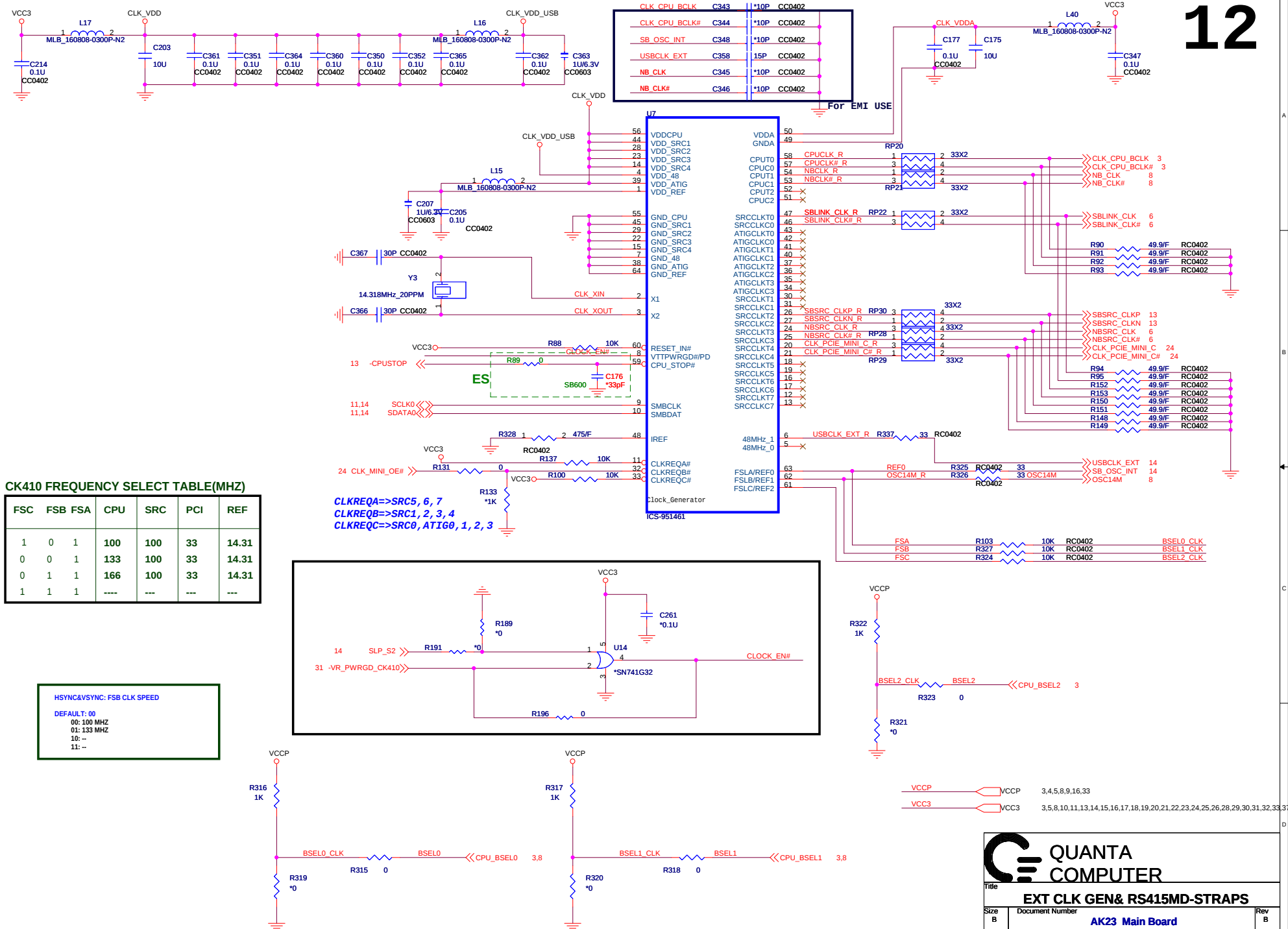


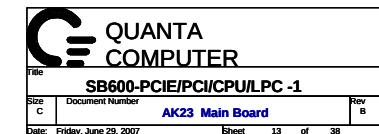


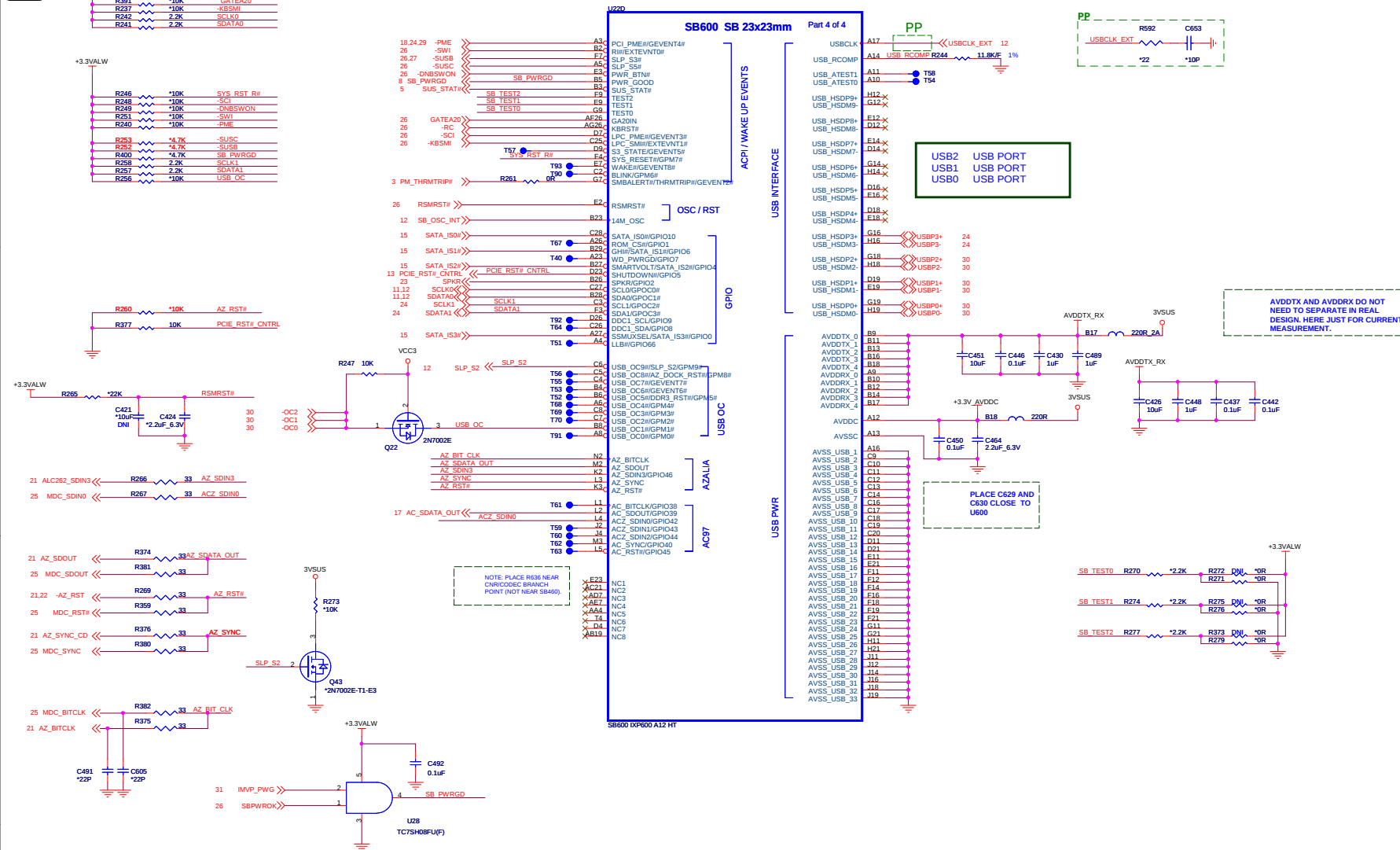
VCC5	VCC5	3,8,16,19,21,22,23,24,25,26,27,28,30,32,37
VCC3	VCC3	3,5,8,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,28,29,30,31,32,33,37

 QUANTA COMPUTER			
Title			
CRT/TV OUT PORT			
Size B	Document Number	Rev B	
	AK23 Main Board		
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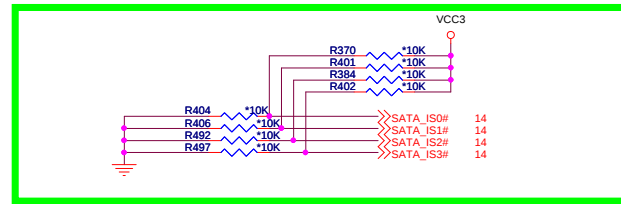




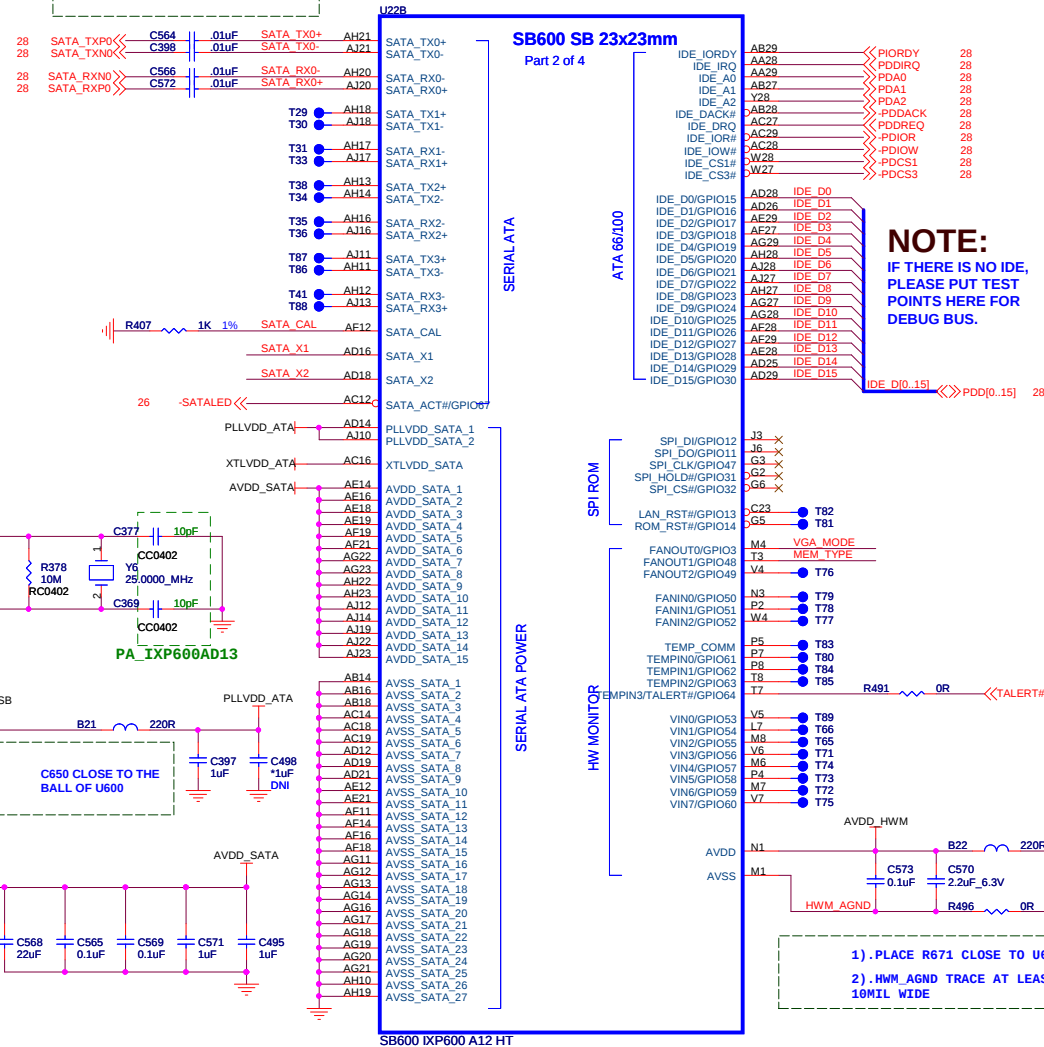




NOTE: J600&J601 ARE SMT. J602&J603 ARE THT.



PLACE SATA AC COUPLING
CAPS CLOSE TO SB600



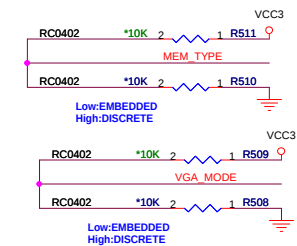
NOTE:
IF THERE IS NO IDE,
PLEASE PUT TEST
POINTS HERE FOR
DEBUG BUS.

PP

```
16M SST P/N:AKE28FP0K07
8M Winbond P/N:AKE3GFP0N08
```

NOTE:
ALL HWM VALUES ARE TBD

NOTE: ROUTE TEMP_COMM
AS A 10MIL TRACE



QUANTA
COMPUTER

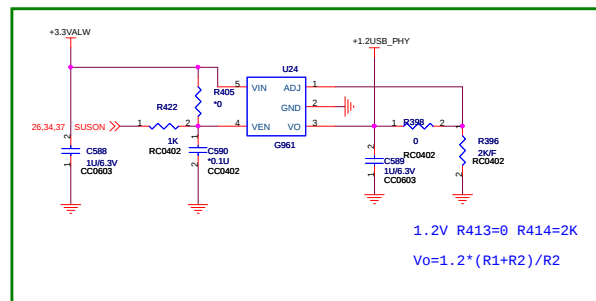
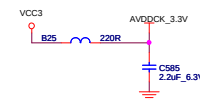
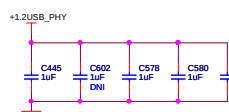
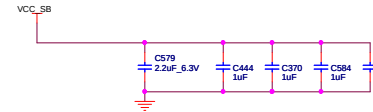
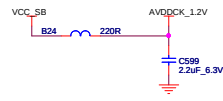
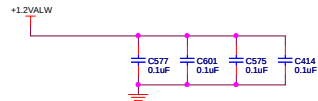
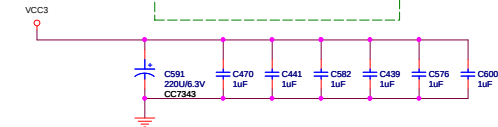
Title **SB600-SATA/IDE/HWM/SPI -3**

Size	Document Number
Custom	AK23 Main Board

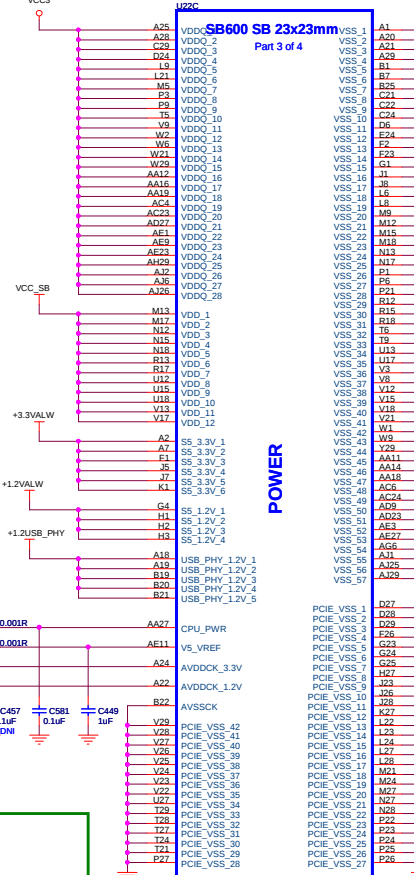
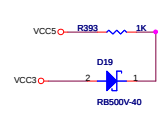
Date: Friday, June 29, 2007 Sheet 15 of 38



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

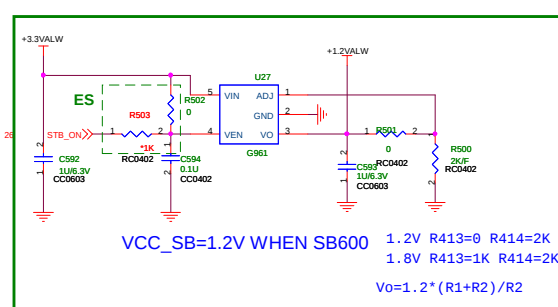
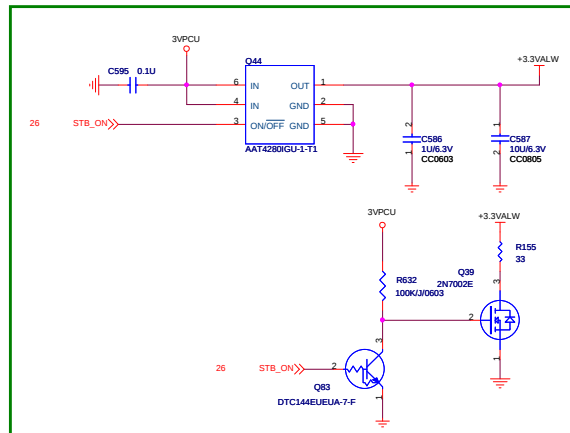


1.2V R413=0 R414=2K
V0=1.2*(R1+R2)/R2



Part 3 of 4

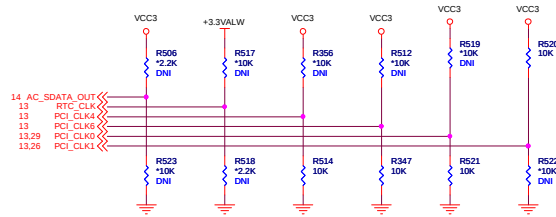
POWER



VCC_SB=1.2V WHEN SB600 1.2V R413=0 R414=2K
1.8V R413=1K R414=2K
V0=1.2*(R1+R2)/R2

REQUIRED STRAPS

SB600 HAS AN INTERNAL PD FOR AC_SDOUT_OUT
SB600 HAS AN INTERNAL PU FOR RTC_CLK

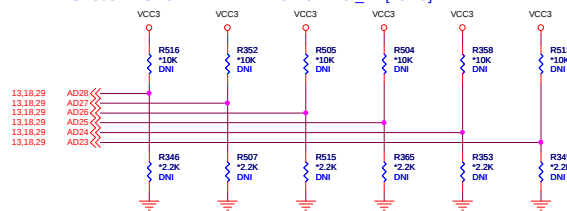


SB600 Internal PD 10K

	AC_SDOUT	RTC_CLK	PCI_CLK4	PCI_CLK6	PCI_CLK0	PCI_CLK1
PULL HIGH	USE DEBUG STRAPS	INTERNAL RTC DEFAULT	USE INT. PLL48	CPU IF=K8	ROM TYPE: H, H = PCI ROM H, L = SPI ROM L, H = LPC ROM L, L = FWH ROM	DEFAULT
PULL LOW	IGNORE DEBUG STRAPS DEFAULT	EXT. RTC (PD on X1, apply 32KHz to RTC_CLK)	USE EXT. 48MHZ DEFAULT	CPU IF=P4 DEFAULT		

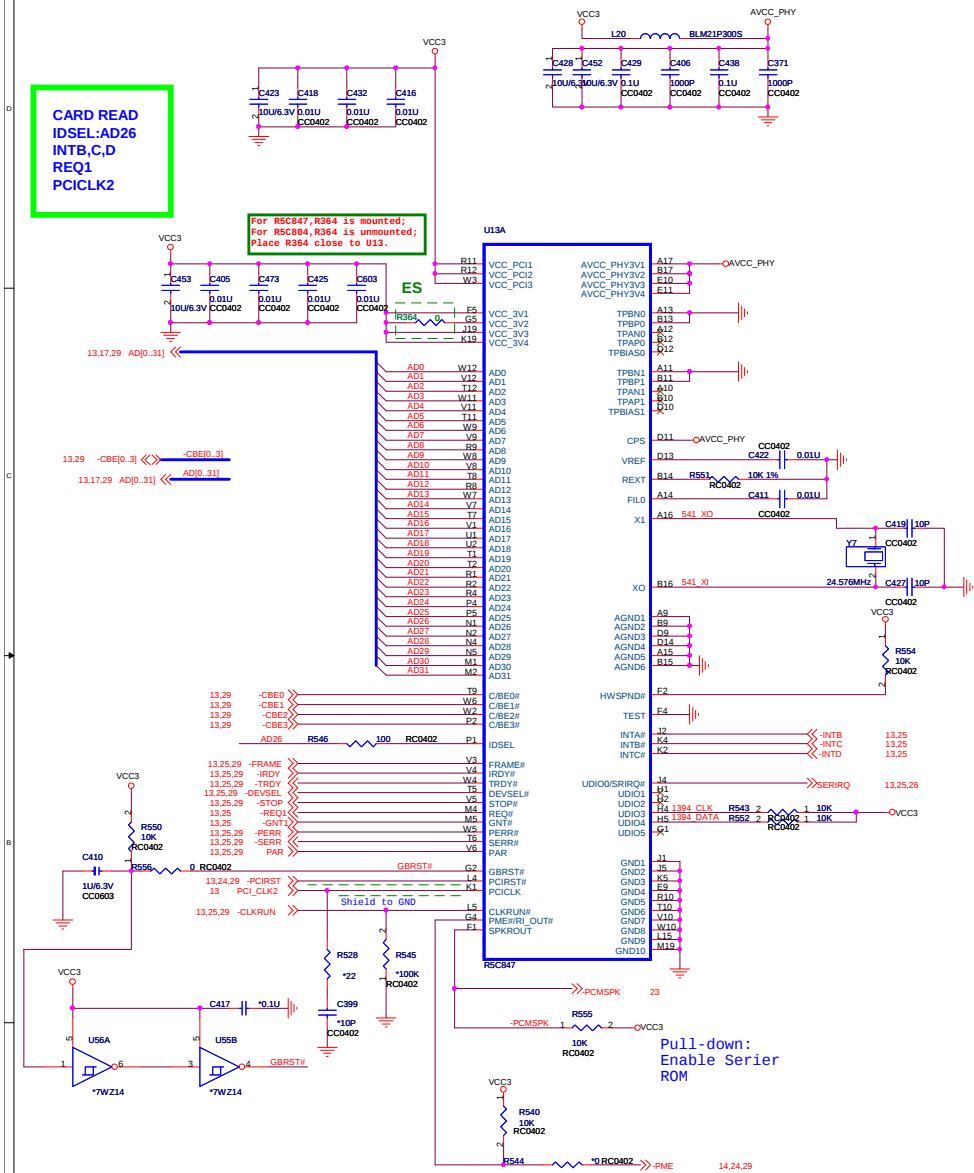
DEBUG STRAPS

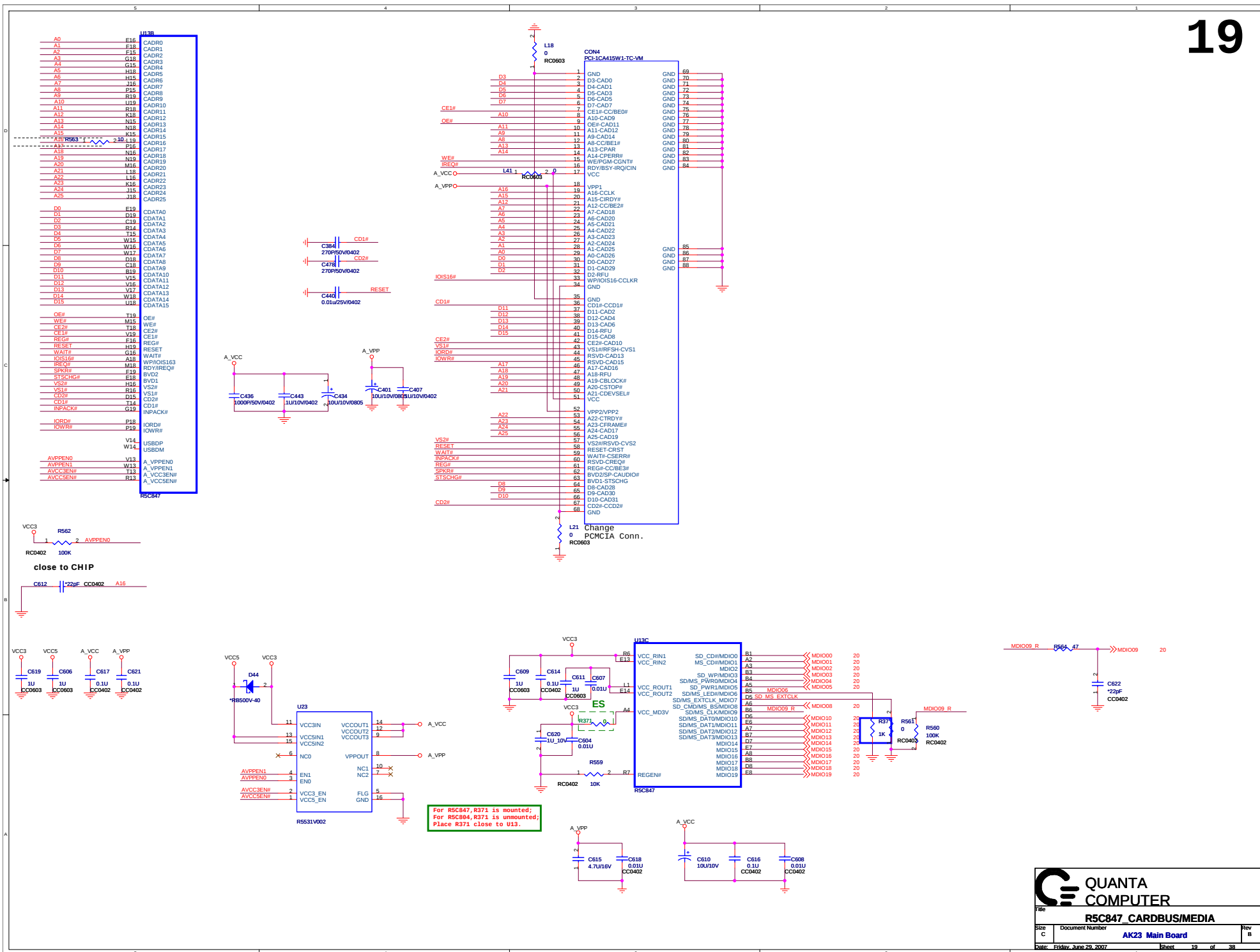
SB600 HAS 15K INTERNAL PU FOR PCI_AD[28:23]



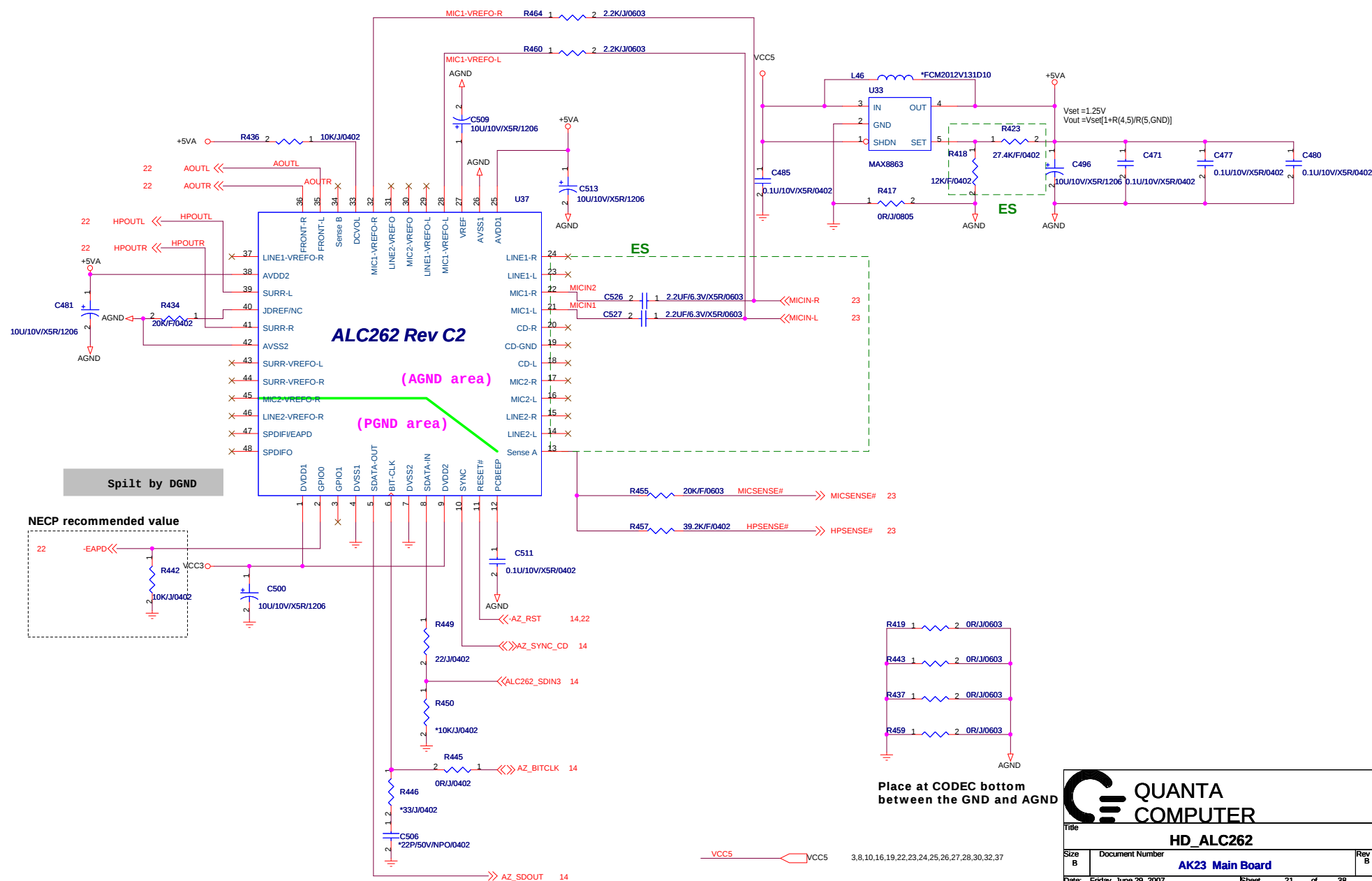
	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	BOOTFAILTIMER DISABLED DEFAULT
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS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

For R5C847, R364 is mounted;
For R5C804, R364 is unmounted;
Place R364 close to U13.





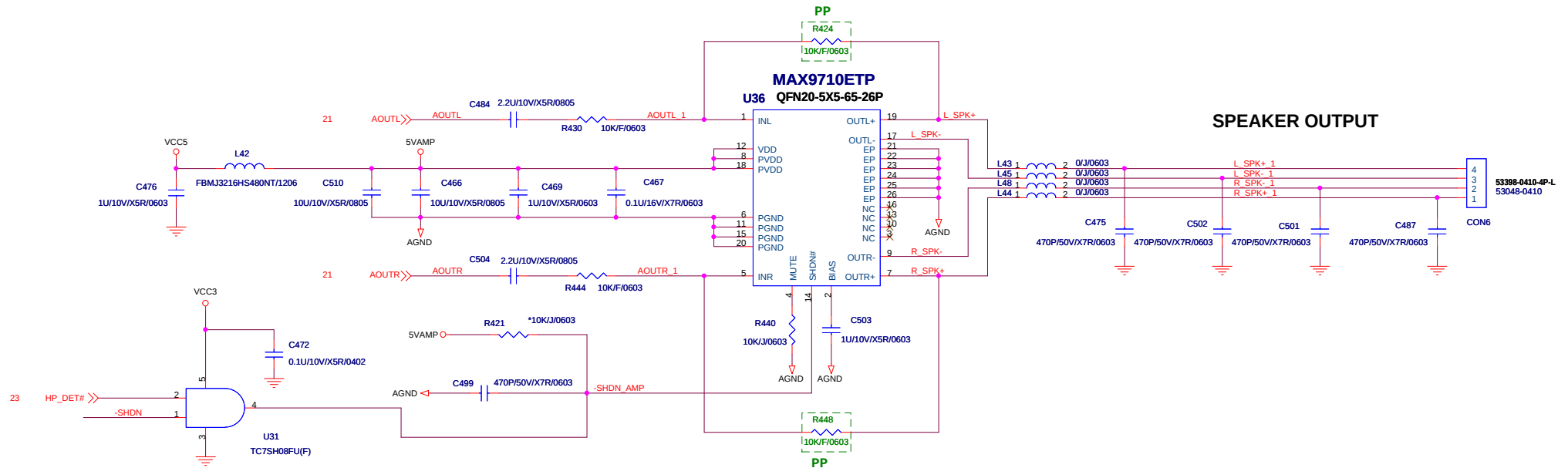




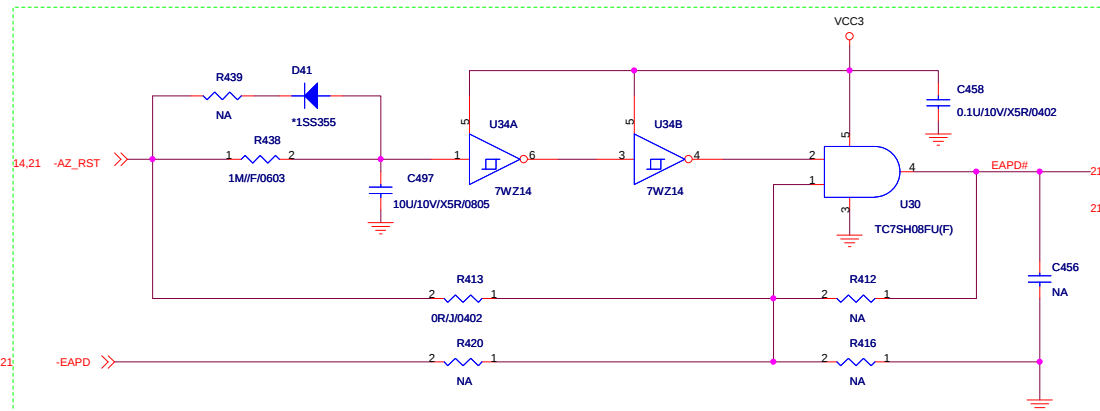
Audio AMP.

AUDIO AMPLIFIER

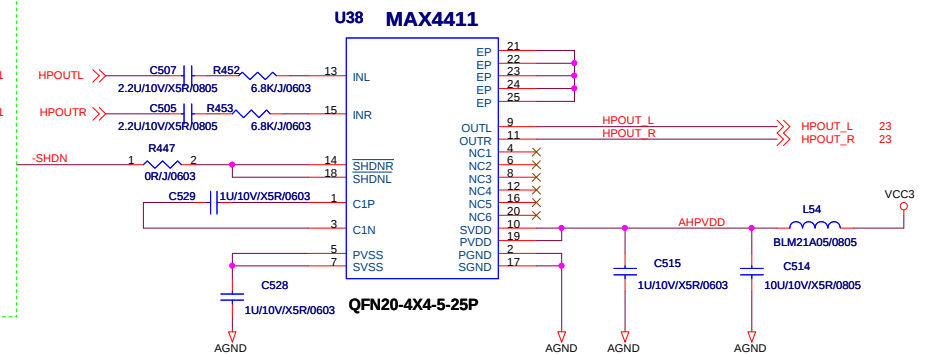
22



NECP recommend EAPD Control circuit for Vista



H.P AMPLIFIER



VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,23,24,25,26,28,29,30,31,32,33,37
VCC5 3,8,10,16,19,21,23,24,25,26,27,28,30,32,37

QUANTA COMPUTER			
Title Audio Board			
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MIC-IN

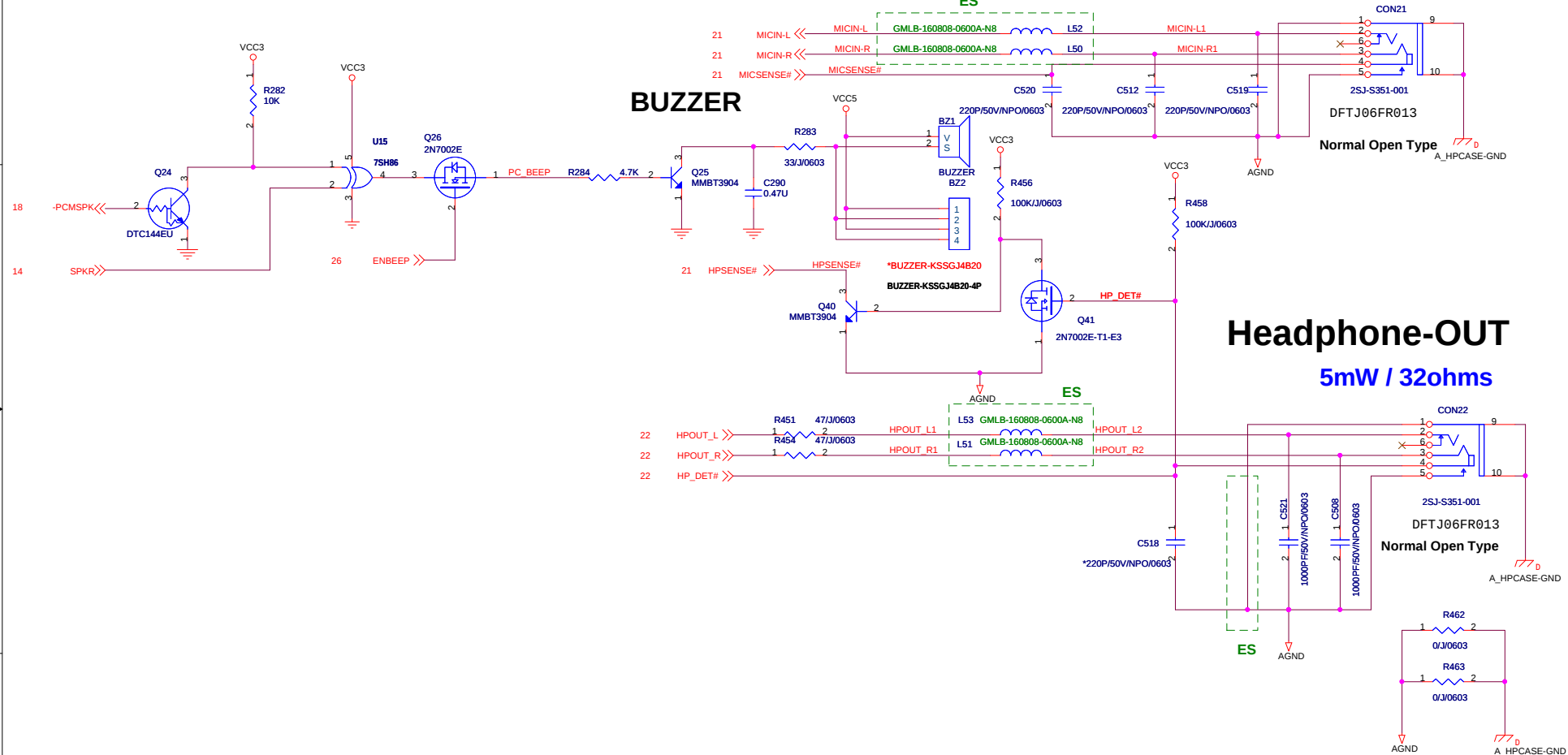
23

Max. 100mVrms input for Mic-IN

BUZZER

Headphone-OUT

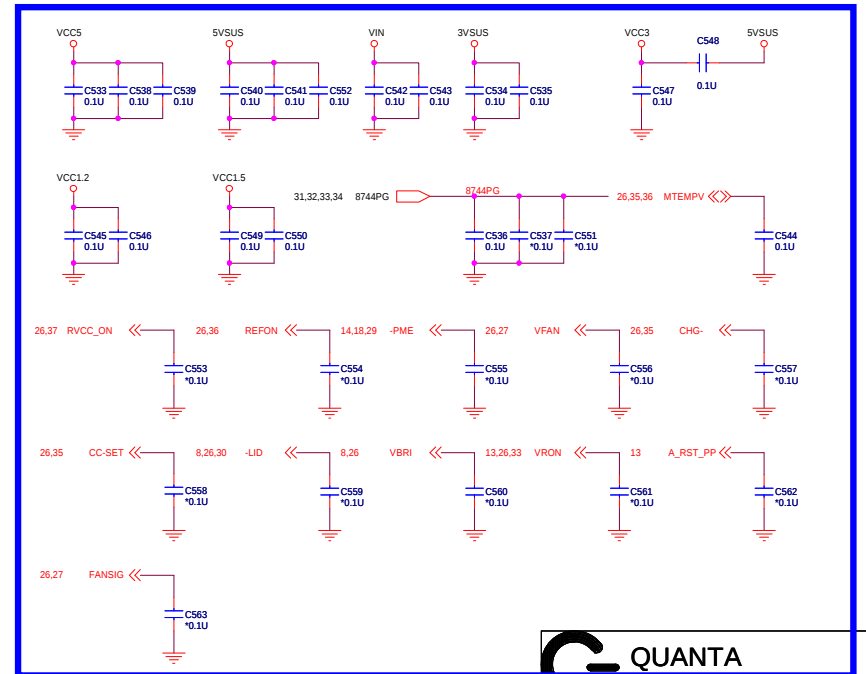
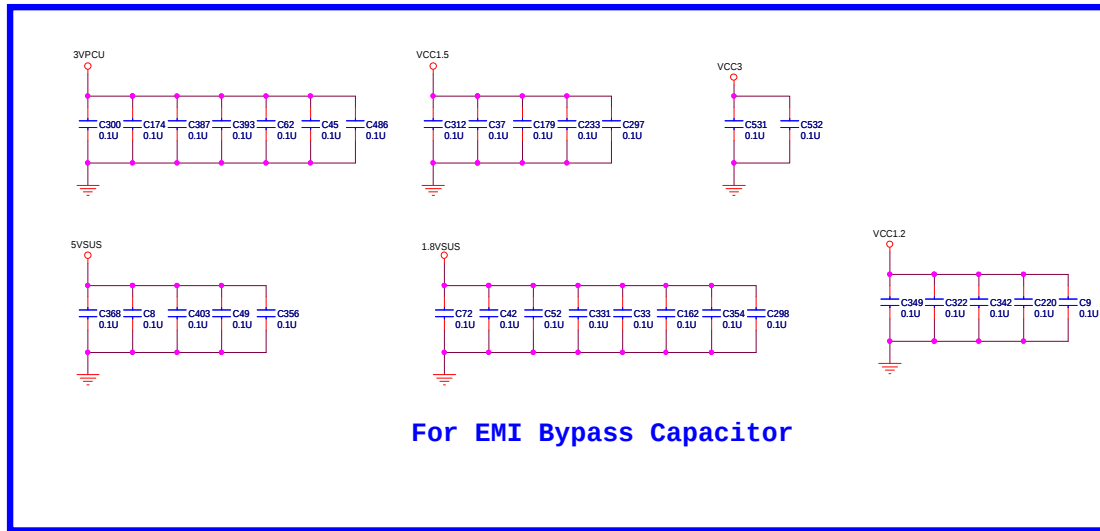
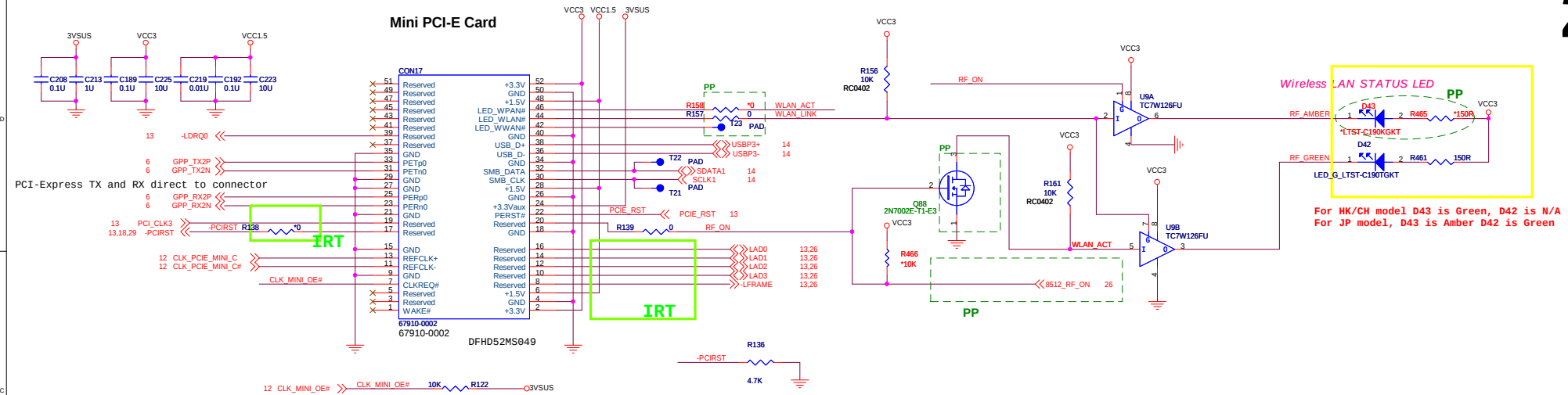
5mW / 32ohms



VCC3	VCC3	3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,24,25,26,28,29,30,31,32,33,37
5VPCU	5VPCU	8,13,32,34,37
VCC5	VCC5	3,8,10,16,19,21,22,24,25,26,27,28,30,32,37

QUANTA
COMPUTER

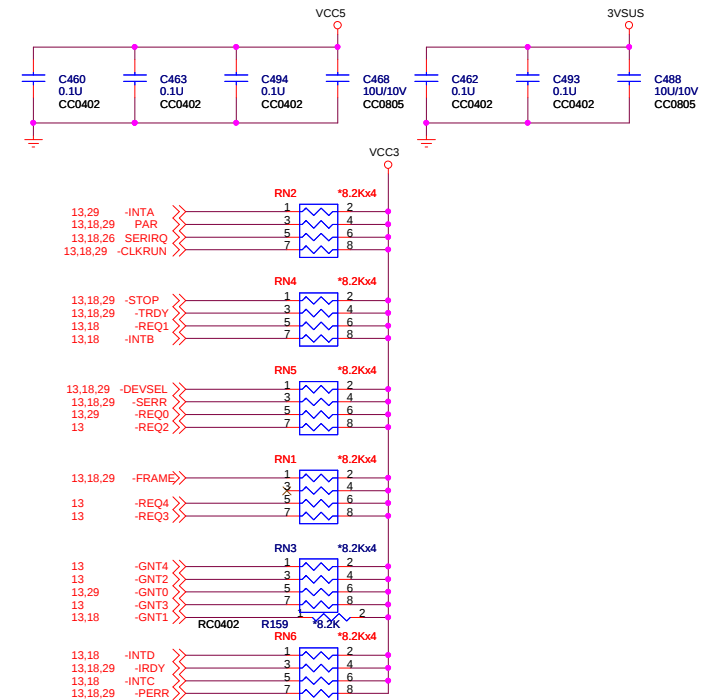
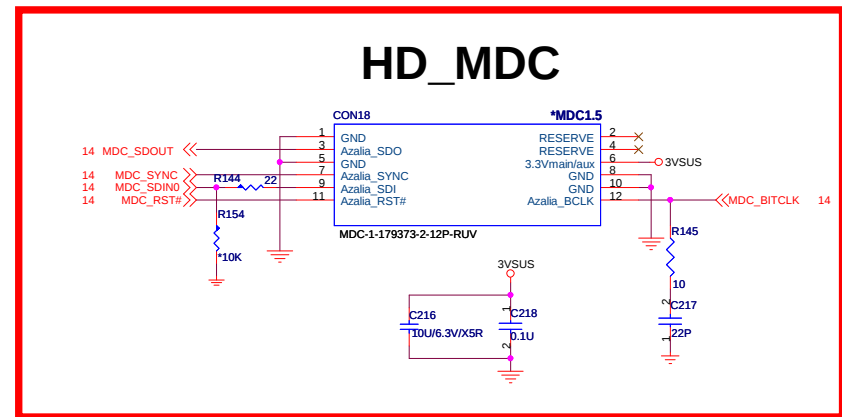
Title			BUZZER & AUDIO/BOARD
Size	Document Number	AK23 Main Board	
Custom			
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			Rev B



VCC3	VCC3	3.5, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 28, 29, 30, 31, 32, 33, 37
3VSUS	3VSUS	9, 14, 25, 29, 32, 33, 37
VCC1.5	VCC1.5	4, 33, 37

QUANTA COMPUTER	
Title: Mini PCI-E Card	
Size: Custom	Document Number: AK23 Main Board
Date: Thursday, June 28, 2007	Sheet: 24 of 38

For JP model don't have HD_MDC



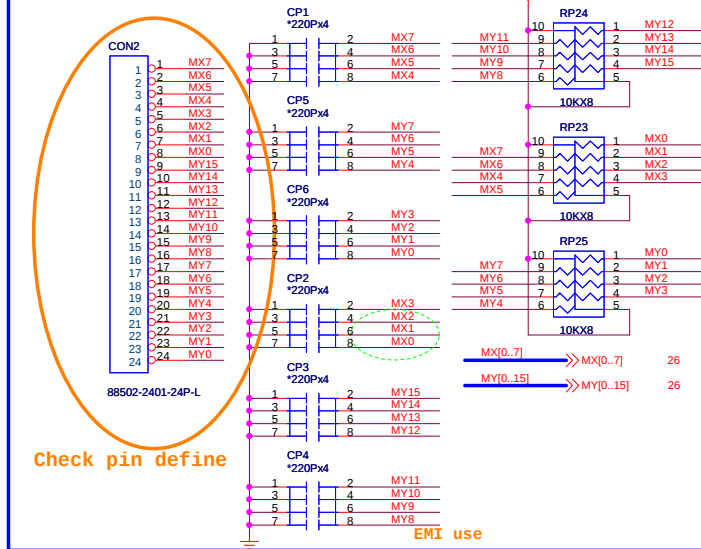
VCC3	VCC3	3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,28,29,30,31,32,33
3VSUS	3VSUS	9,14,24,29,32,33,37
VCC5	VCC5	3,8,10,16,19,21,22,23,24,26,27,28,30,32,37

QUANTA
COMPUTER

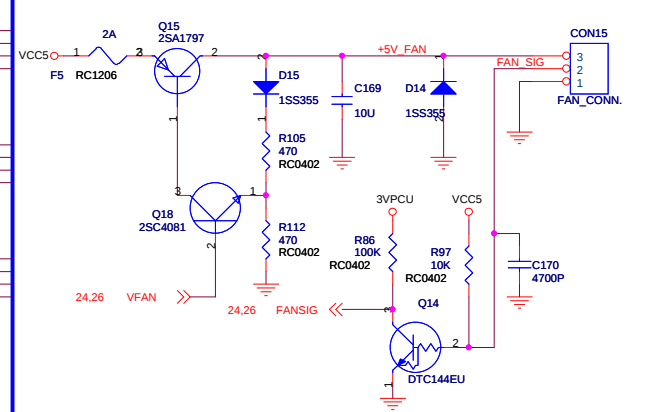
HD_MDC

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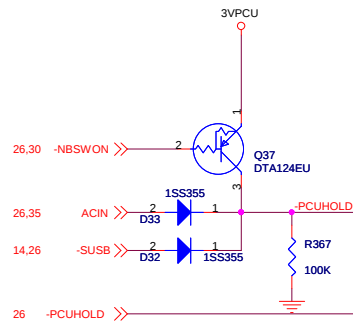
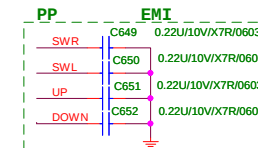
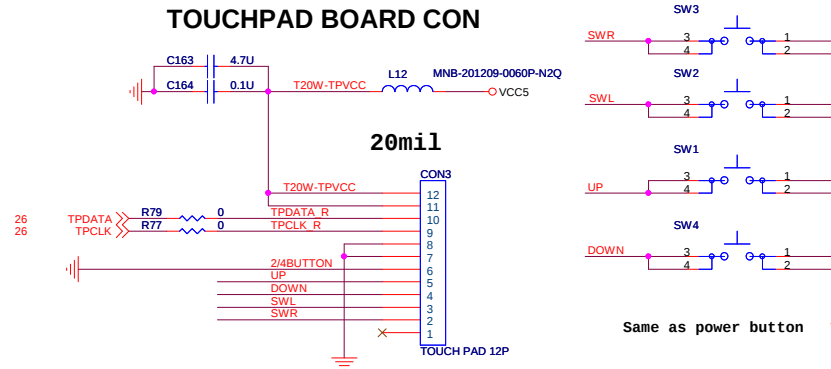
INT. KEYBOARD



FAN Circuit



TOUCHPAD BOARD CON



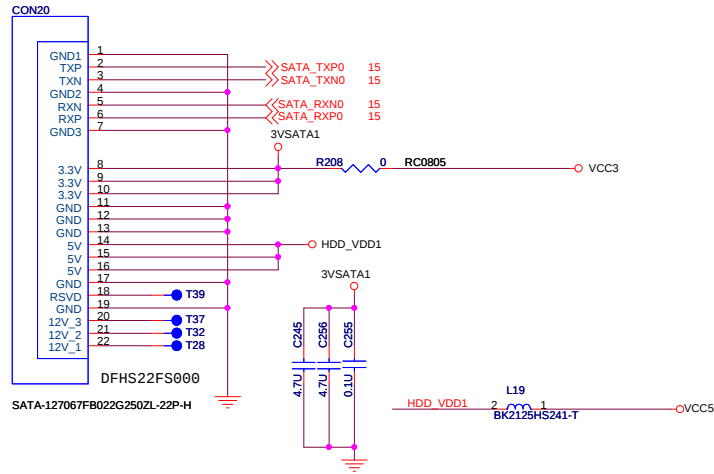
3VPCU 3VPCU 16,24,26,31,32,34,36
VCC5 VCC5 3,8,10,16,19,21,22,23,24,25,26,28,30,32,37



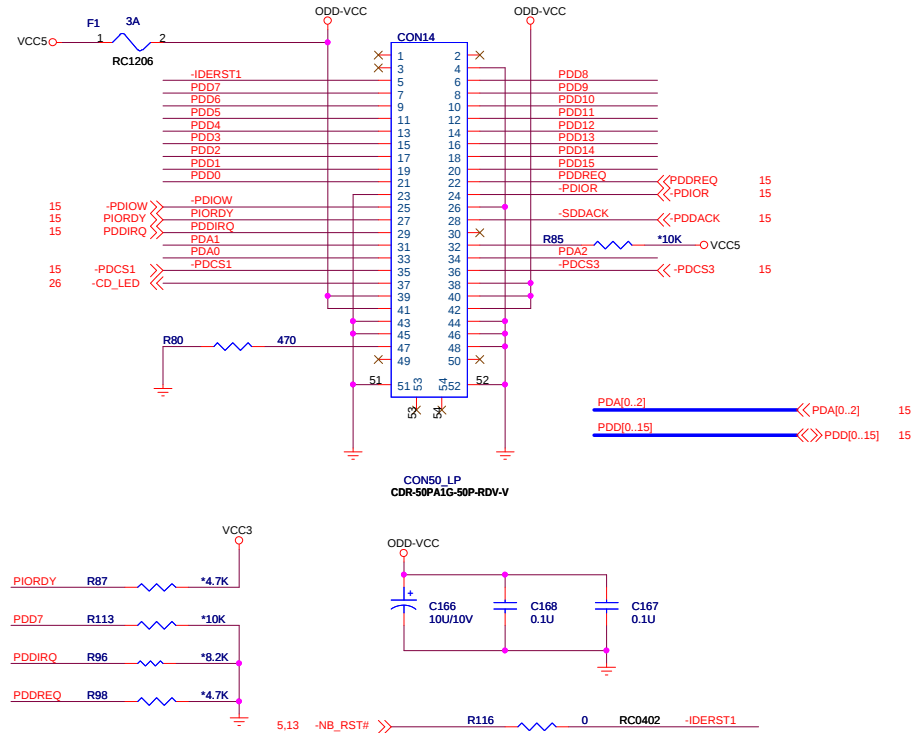
QUANTA
COMPUTER

INT.KB &TP CONN			
Size	Document Number	Rev B	
Custom	AK23 Main Board		
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SATA_TOP(MASTER)

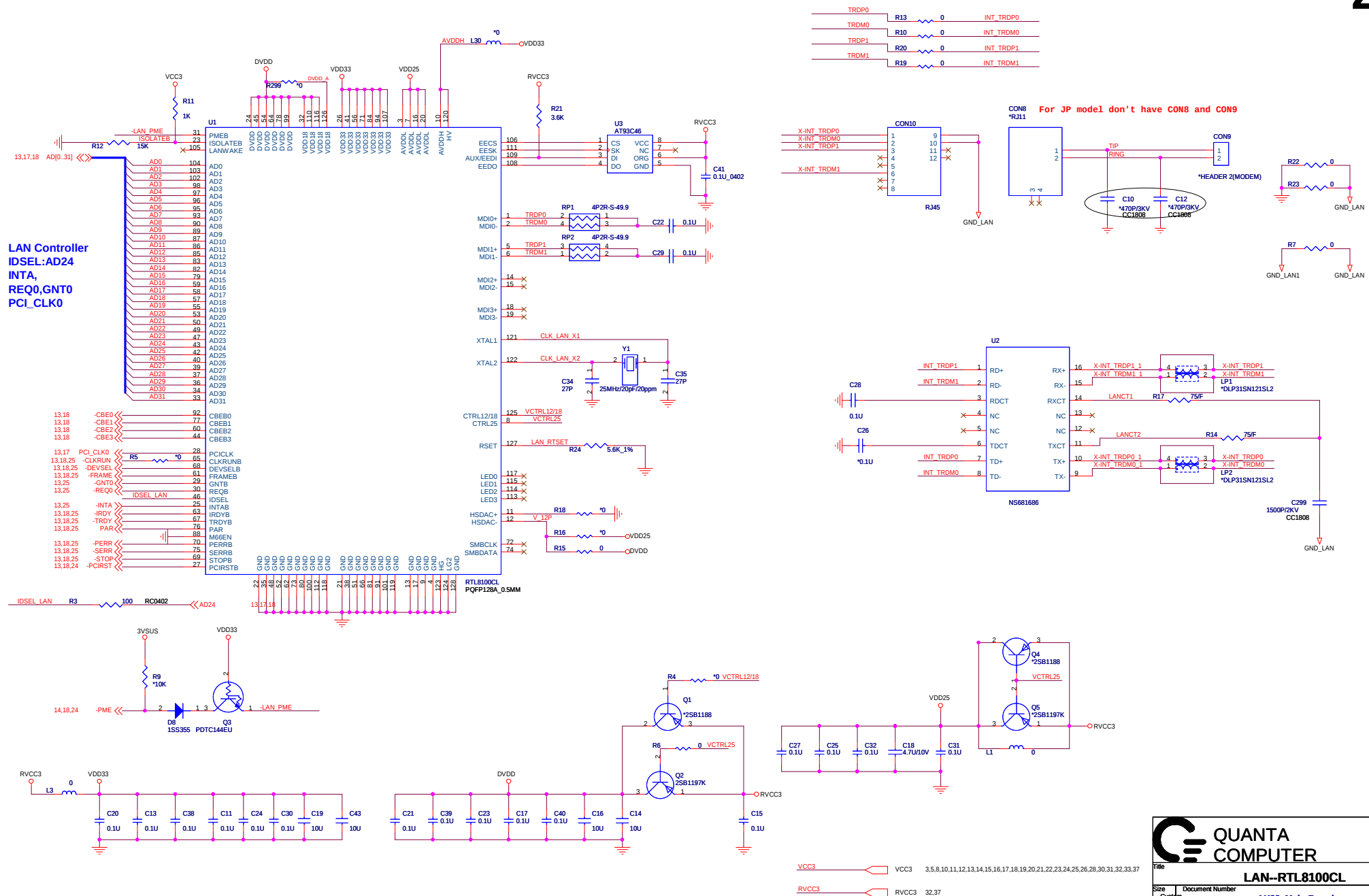


ODD Connector



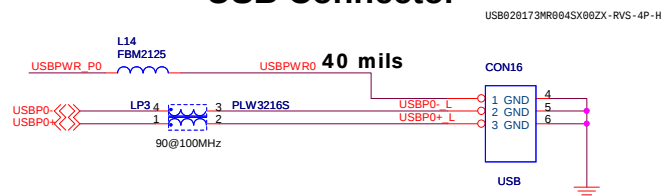
VCC3 VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,29,30,31,32,33,37
VCC5 VCC5 3,8,10,16,19,21,22,23,24,25,26,27,30,32,37

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Title		
SATA(HDD),PATA(ODD) CONNECT		
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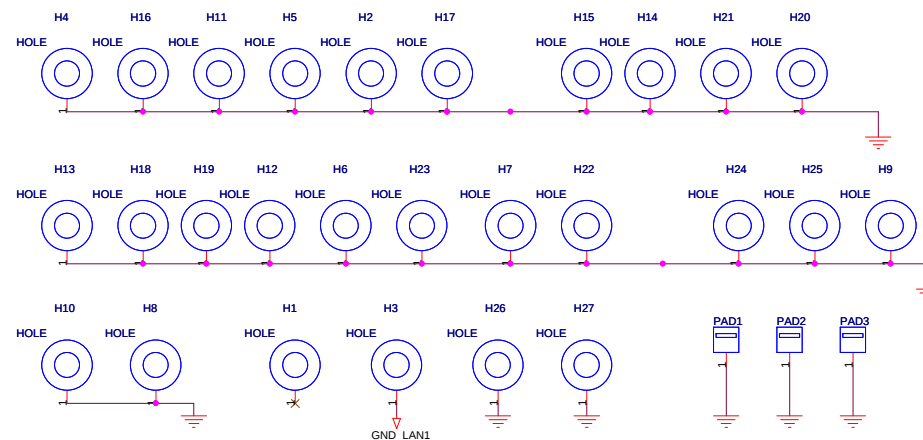
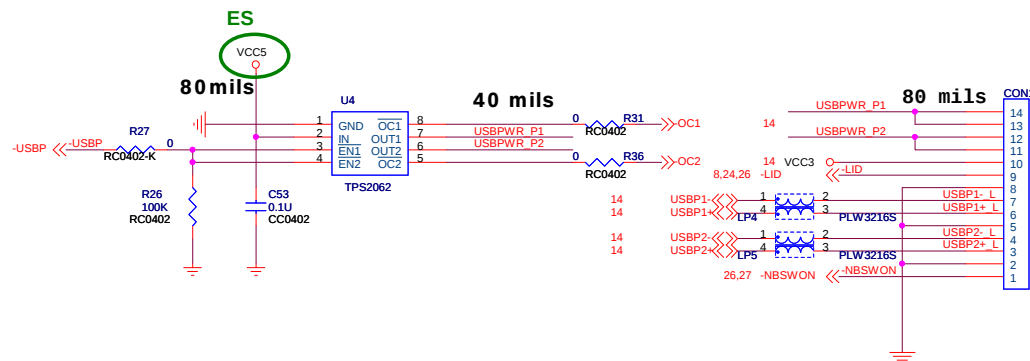
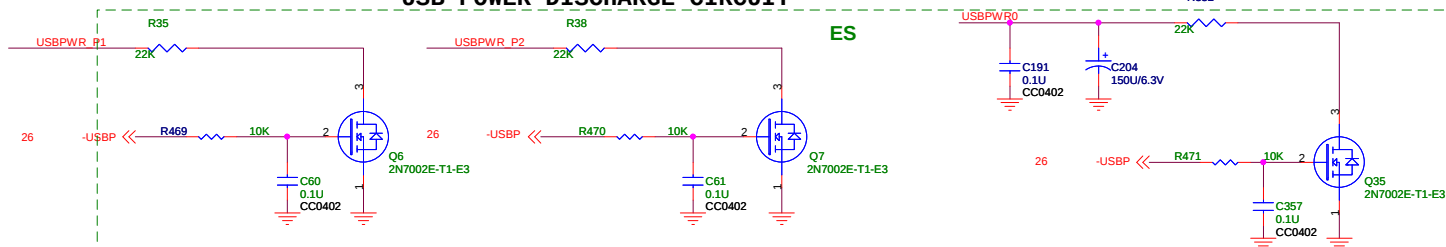


			
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Title LAN--RTL8100CL			
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USB Connector



USB POWER DISCHARGE CIRCUIT



VCC3 VCC3 3,5,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,28,29,31,32,33,37

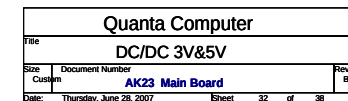
5VSUS 5VSUS 24,31,32,33,37

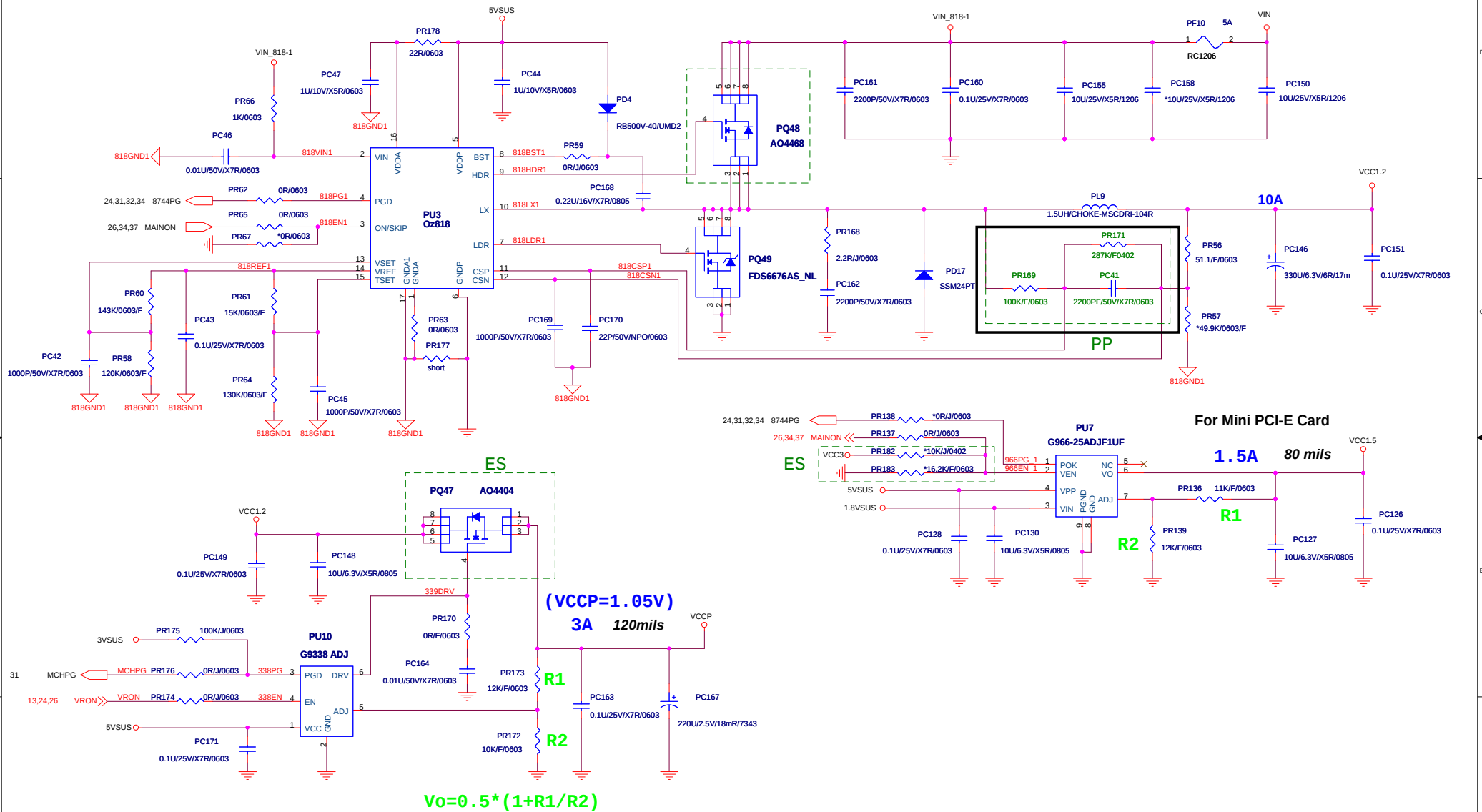


Title	USB PORT/USB board conn
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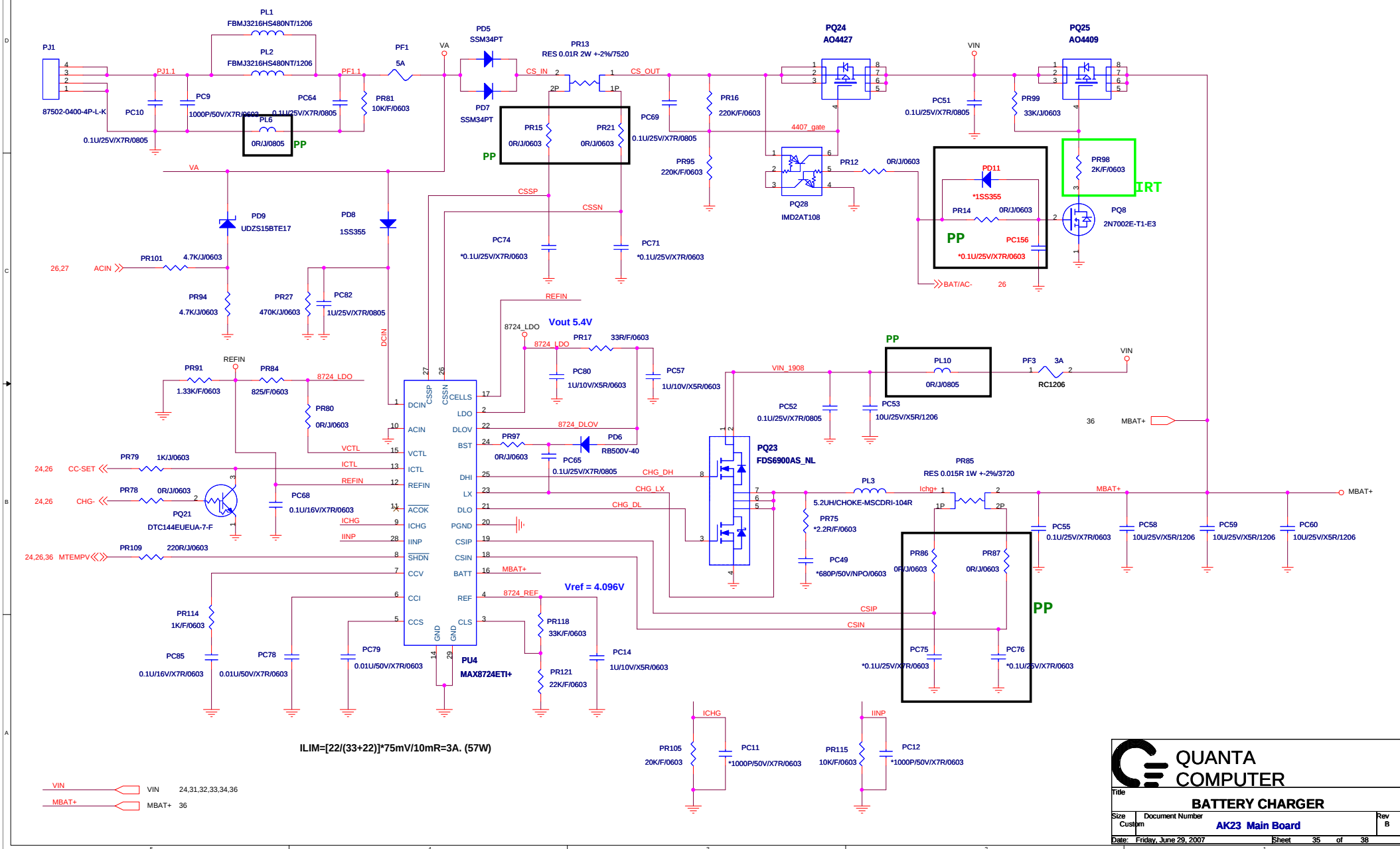


QUANTA
COMPUTER

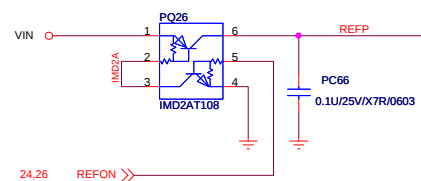
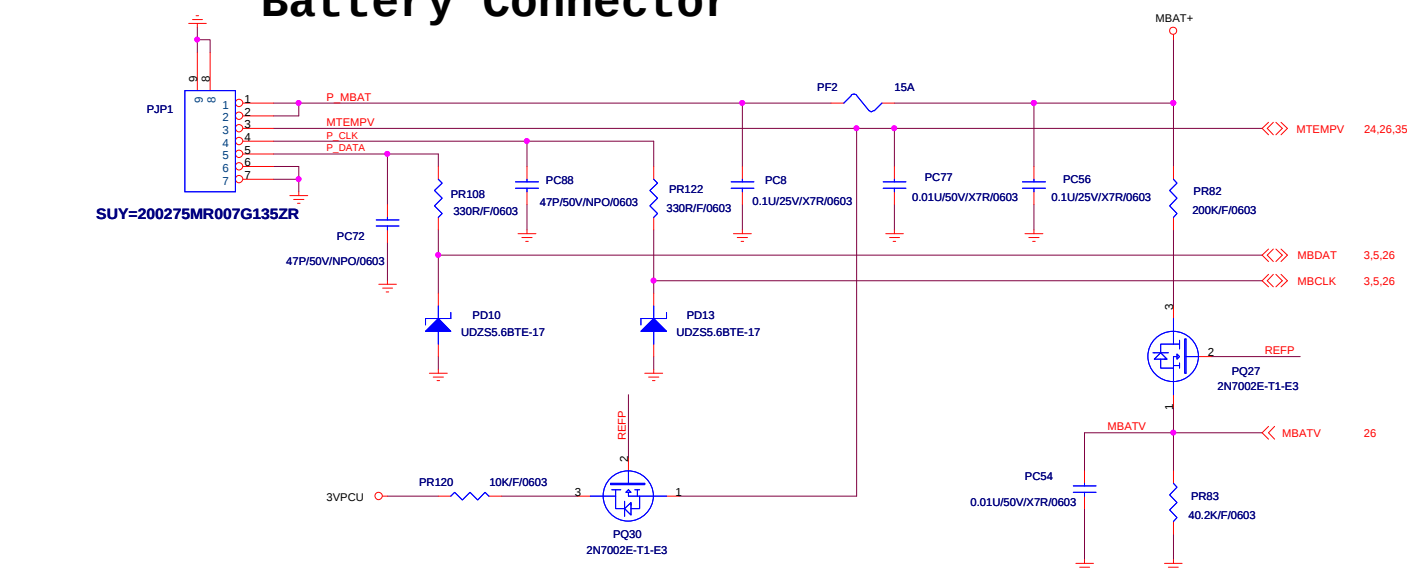
Title		
VCC1.2/VCCP/VCC1.5		
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Battery Charger

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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 :

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

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

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

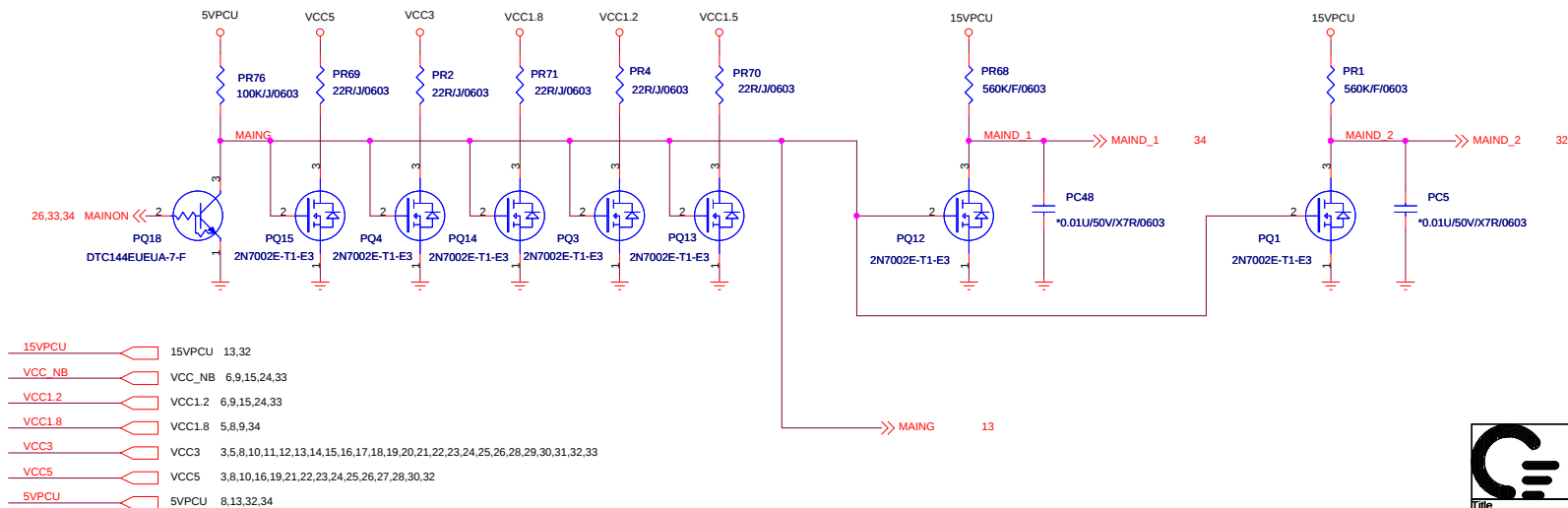
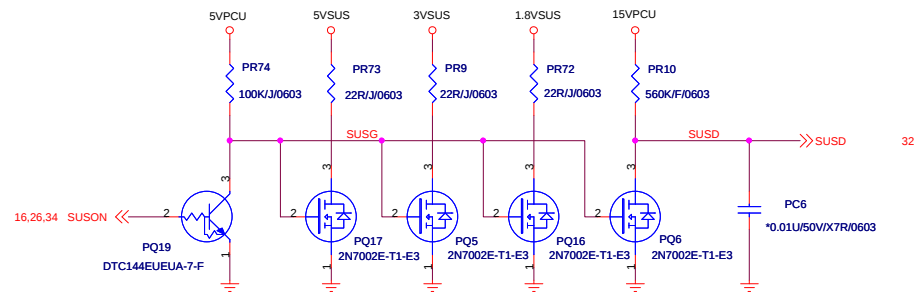
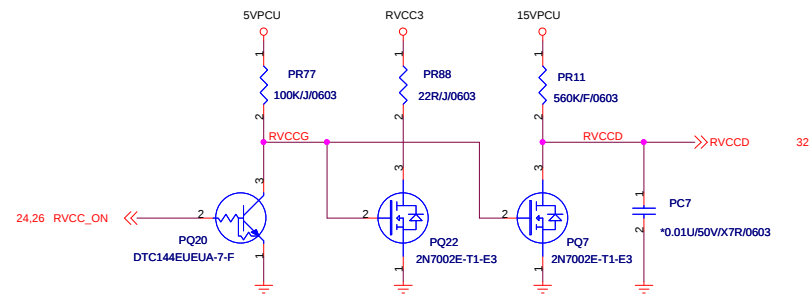
$$6.0V \times 40.2 / (200 + 40.2) = 1.004V$$

3VPCU 3VPCU 16,24,26,27,31,32,34
 VIN VIN 24,31,32,33,34,35
 MBAT+ MBAT+ 35

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Battery Connector

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RVCC3	RVCC3	29,32
1.8VSUS	1.8VSUS	5,7,9,11,24,33,34
3VSUS	3VSUS	9,14,24,25,29,32,33
5VSUS	5VSUS	24,31,32,33
RVCCD	RVCCD	32
SUSD	SUSD	32
MAIND_1	MAIND_1	34
MAIND_2	MAIND_2	32

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^ ES2 Change list(Rev 2A)

0323:

- 1.Change SB460 to SB600;
- 2.Change TI1510 to R5C847;
- 3.Change EC WINBOND 541 to ITE8512;
- 4.Remove ATI DDR2-667 workaround;

0325:

- 1.Remove 1394 function circuit;
- 2.Delete U59 Express power switch circuit;

0327:

Page 12: Change R89 from 4.7K to 0 and reserve C176 for SB600;

Page 20: Change Media Card CONN to reverse model;

Page 21: Change C526,C527 value to 2.2uF and Delete C516, C517, C522-C525 for NECP requirement;

Page 23: Change L49 to 0ohm for NECP requirement;

Page 24: Remove RF Switch and Let EC(Pin:PWM4/GPA4) control Enable/Disable function;

Page 26: Reserve 10K Pull-up resistor for -VOLUME;

0329:

Page 26: Add R342 for KB_NEW use;

Page 30: Change USB Power line from 5VSUS to VCC5 and Add USB Power discharge circuit for NECP requirement;

0403:

Page 16: Reserve R503,add R502 for lable no found issue;

Delete the original reserved Page 37:VGA power;

0409:

Page 13:ADD R360 and R363 for the selection of R5C847 and R5C804;

Page 18:ADD R364 for the selection of R5C847 and R5C804;

Page 19:ADD R371 for the selection of R5C847 and R5C804;

0411:

Page 21:Change the Value of R423 and R418 to 27.4K and 12K for NECP request;

0413:

Page 20:Change C623 to 2.2uF from 47uF for NECP request;

0418:

Page 33:Change PR171 from 97.6K to 51.1K,Change PC41 from 3300PF/50V/X7R/0603 to 0.01UF/50V/X7R/0603,

Change PR169 from 100K/F/0603 to 20K/F/0603,Change PQ47 from AO4468 to AO4404 for current limit setting of VCC1.2;

^ ES2 to PP Change list(Rev 3A)

0511:

Page 33:Change PR171 from 51.1K to 287K,Change PR169 from 20K to 100K,Change PC41 from 0.01UF to 2200PF for current limit setting of VCC1.2;

Page 35:Add PD11 and PC156,but no mount it;

0514:

Page 14:Delete R243 for leaving more space to the trace layout;

0515:

Page 3:Delete R166,D18,C224,U10,C222,Q20 for leaving more space to add PCIE_PVDD Power Sequence Requirement circuit;

Page 13:Add and Reserve AMD PCIE_PVDD Power Sequence Requirement circuit;

Page 15:Delete R403,R468,R493,R490,U53,R494,R495,C567 for leaving more space to add PCIE_PVDD Power Sequence Requirement circuit;

0519:

Page3:Add and Reserve C222,C224,C226,C227,C228 to H_INIT#,H_IGNNE#,H_STPCLK#,H_SMI#,H_INTR signal for AMD recommendation;

Page13:Using VRON to control PCIE_PVDD Power Sequence Requirement circuit;

0521:

Page3:Change R102 to 62ohm from 75ohm for following Intel CPU Spec;

Page5:Change R76 to 127ohm from 100ohm,R78 to 61.9ohm from 51ohm for following Intel CPU Spec;

Page9:ADD RC415MD Power Up Sequence to follow VDDR3/VDDL33/AVDD power up after VDD_MEM and VDD18 for AMD recommendation;

Page22:Change R424,R448 from 11K to 10K due to change gain of internal speaker;

0523:

Page11:Delete C341 for EMI layout suggestion;

Page24:Add Q88 and Delete D35 for WLAN LED driver schedule requirement of NECP(Reserve R158,R466,D43,R465);

Page26:Add C648 for EMI solution;

Page27:Add C649,C650,C651,C652 for EMI solution;

Page35:Add PL6,PL10,PR15,PR21,PR86,PR87 and Reserve PC75,PC76 for EMI solution;

0524:

Page14:Add and Reserve R592,C653 for EMI solution;

^ PP to IRT Change list

Page13: Add R166,R167,C229 from ATI suggestion

Del B15, Add B19 from ATI suggestion

Page24: Delete R142, RP27,RP26,R126 and change to short circuit for non-necessary parts.

 QUANTA COMPUTER			
Change list			
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