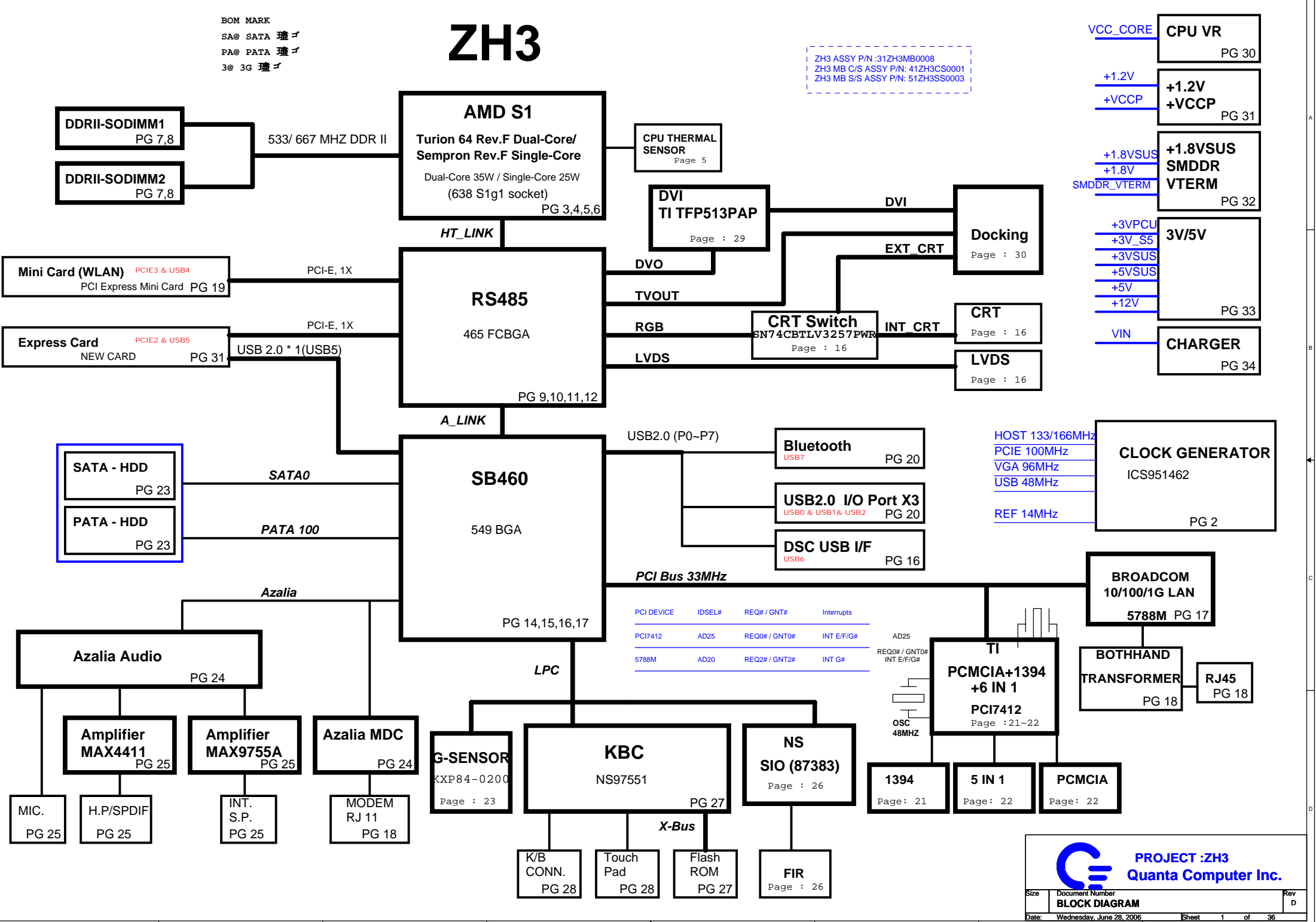


# ZH3

BOM MARK  
 SA@ SATA 璽  
 PA@ PATA 璽  
 3@ 3G 璽

ZH3 ASSY P/N: 31ZH3MB0008  
 ZH3 MB C/S ASSY P/N: 41ZH3CS0001  
 ZH3 MB S/S ASSY P/N: 51ZH3SS0003



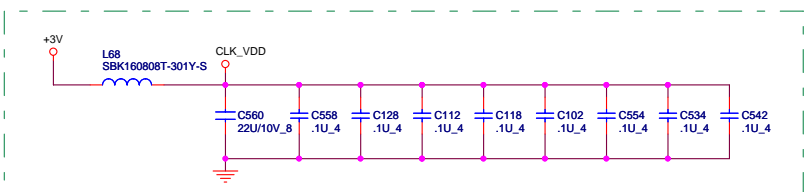
PCI DEVICE	IDSEL#	REQ# / GNT#	Interrupts
PCI7412	AD25	REQ0# / GNT0#	INT E/F/G#
5788M	AD20	REQ2# / GNT2#	INT G#

- HOST 133/166MHz
- PCIE 100MHz
- VGA 96MHz
- USB 48MHz
- REF 14MHz

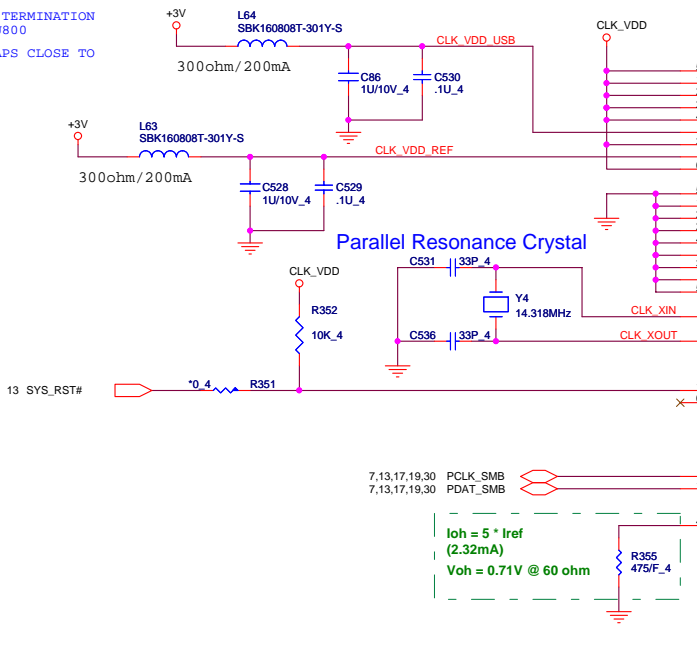
**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size Document Number Rev D  
**BLOCK DIAGRAM**

Date: Wednesday, June 28, 2006 Sheet 1 of 36



- 1- PLACE ALL SERIAL TERMINATION RESISTORS CLOSE TO U800
- 2- PUT DECOUPLING CAPS CLOSE TO Clock Gen. POWER PIN



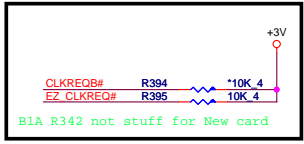
$I_{oh} = 5 * I_{ref}$   
 (2.32mA)  
 $V_{oh} = 0.71V @ 60 \text{ ohm}$

EXT CLK FREQUENCY SELECT TABLE(MHZ)

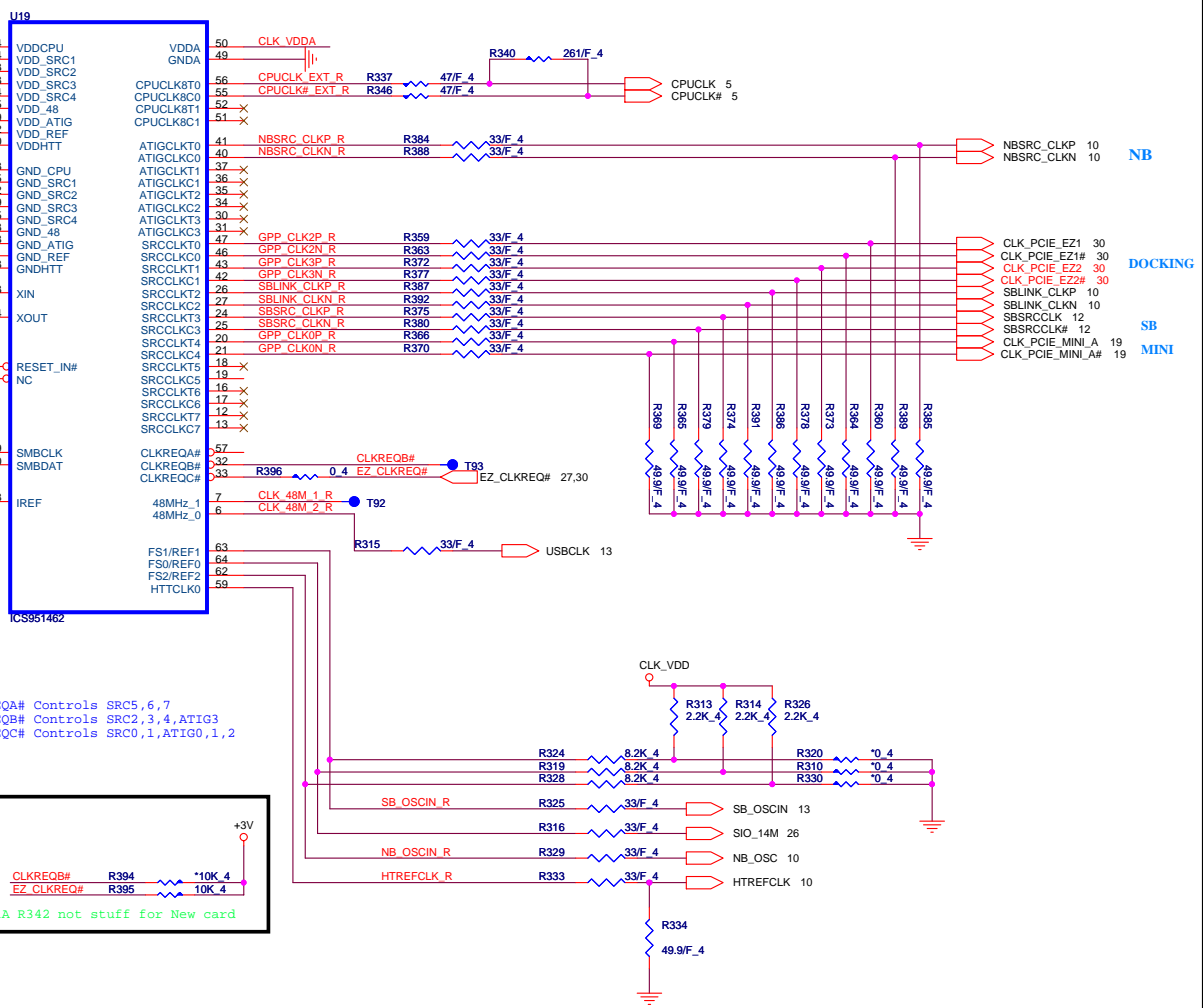
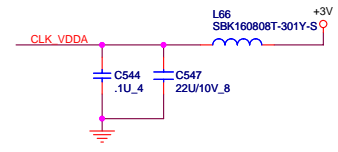
FS2	FS1	FS0	CPU	SRCCLK [2:1]	HTT	PCI	USB	COMMENT
0	0	0	HI-Z	100.00	HI-Z	HI-Z	48.00	Reserved
0	0	1	X	100.00	X/3	X/6	48.00	Reserved
0	1	0	180.00	100.00	60.00	30.00	48.00	Reserved
0	1	1	220.00	100.00	36.56	73.12	48.00	Reserved
1	0	0	100.00	100.00	66.66	33.33	48.00	Reserved
1	0	1	133.33	100.00	66.66	33.33	48.00	Reserved
1	1	1	200.00	100.00	66.66	33.33	48.00	Normal ATHLON64 operation

Check AMD clock

CLKREQA# Controls SRC5,6,7  
 CLKREQB# Controls SRC2,3,4,ATIG3  
 CLKREQC# Controls SRC0,1,ATIG0,1,2



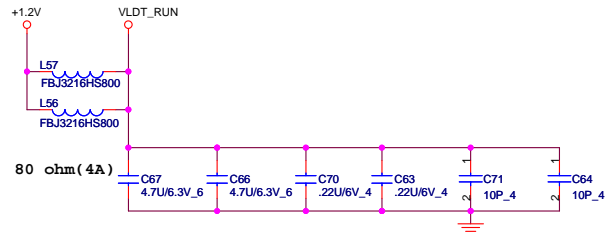
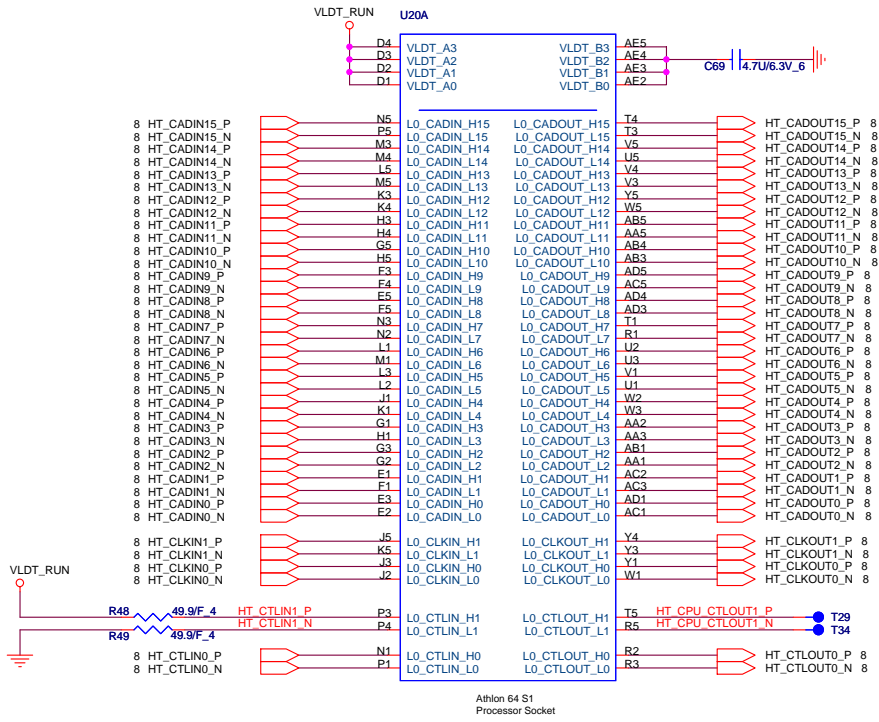
B1A R342 not stuff for New card





# PROCESSOR HYPERTRANSPORT INTERFACE

VLDT\_Ax AND VLDT\_Bx ARE CONNECTED TO THE LDT\_RUN POWER SUPPLY THROUGH THE PACKAGE OR ON THE DIE. IT IS ONLY CONNECTED ON THE BOARD TO DECOUPLING NEAR THE CPU PACKAGE

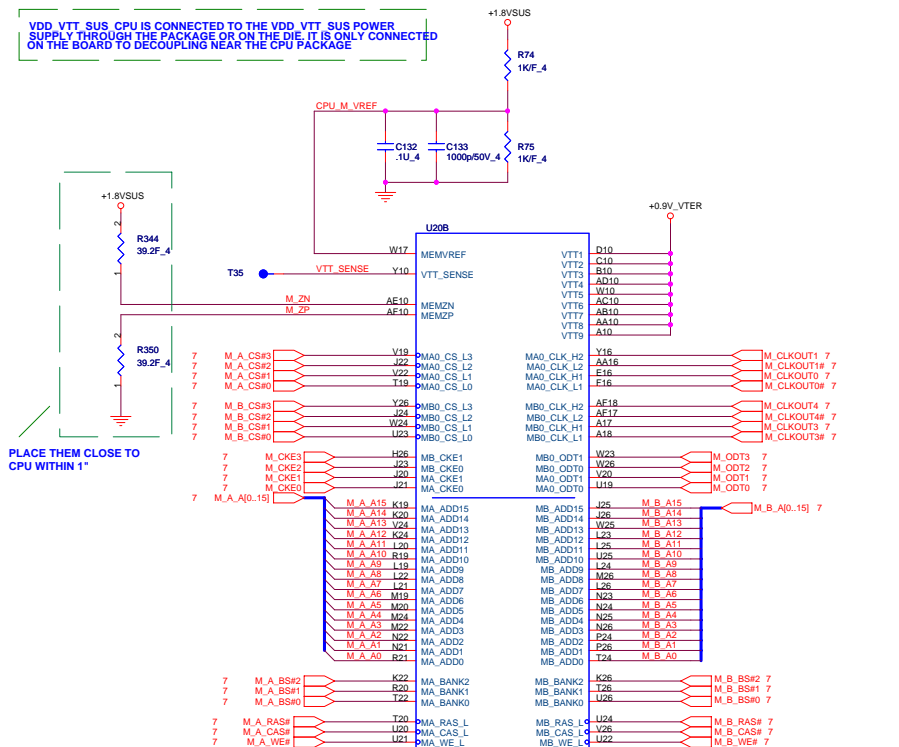


## LAYOUT: Place bypass cap on topside of board

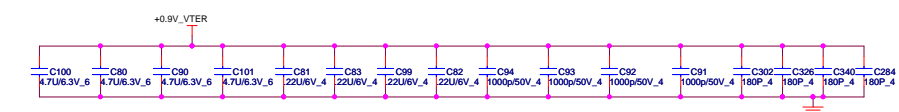
NEAR HT POWER PINS THAT ARE NOT CONNECTED DIRECTLY TO DOWNSTREAM HT DEVICE, BUT CONNECTED INTERNALLY TO OTHER HT POWER PINS  
PLACE CLOSE TO VLDT0 POWER PINS



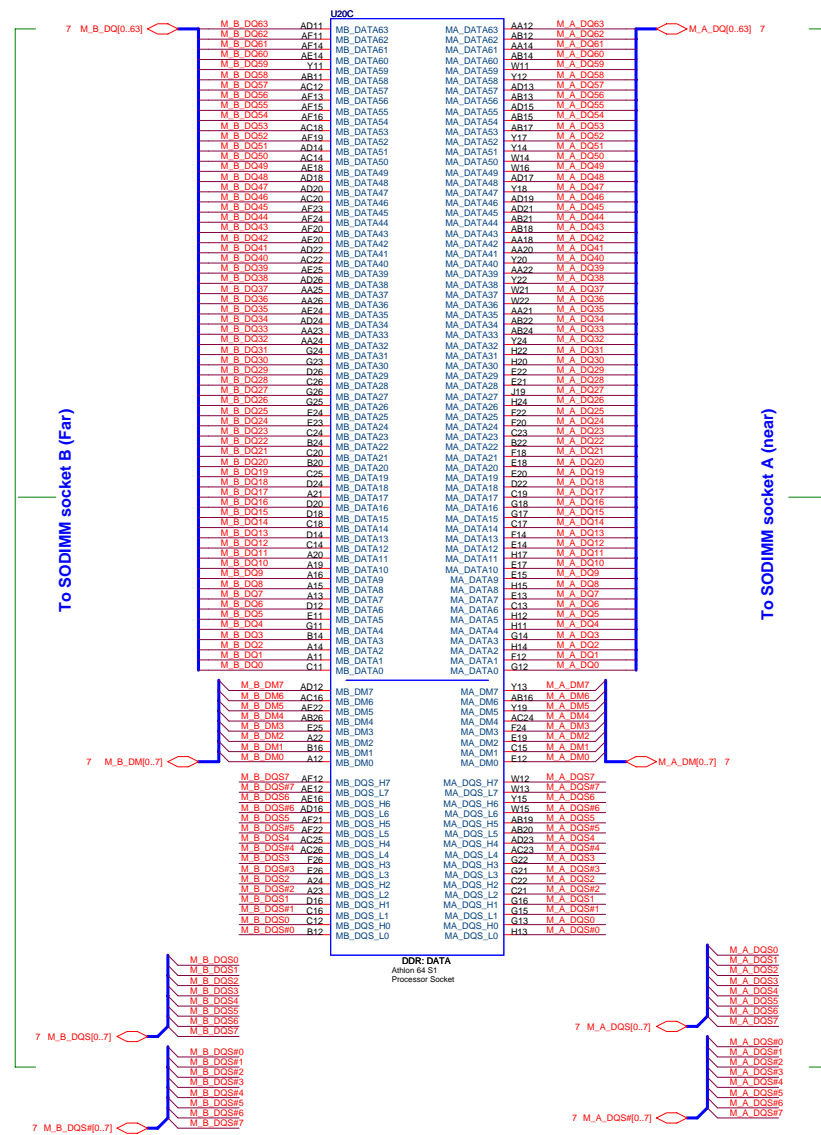
VDD VTT SUS CPU IS CONNECTED TO THE VDD VTT SUS POWER SUPPLY THROUGH THE PACKAGE OR ON THE DIE. IT IS ONLY CONNECTED ON THE BOARD TO DECOUPLING NEAR THE CPU PACKAGE



PLACE THEM CLOSE TO CPU WITHIN 1"



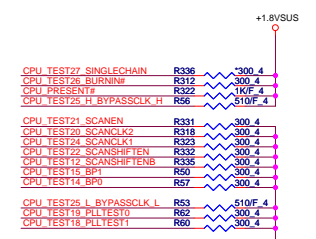
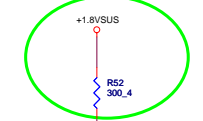
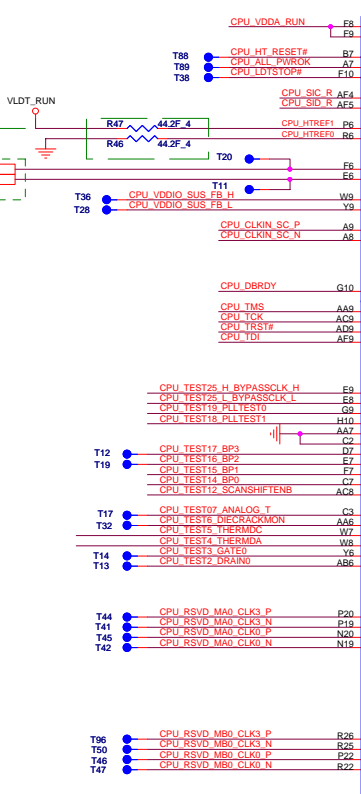
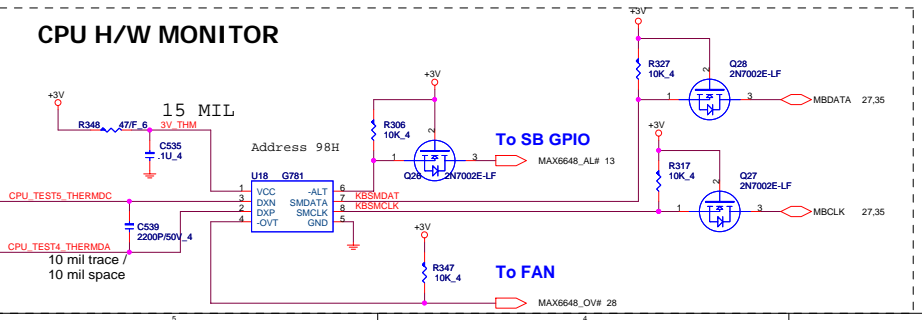
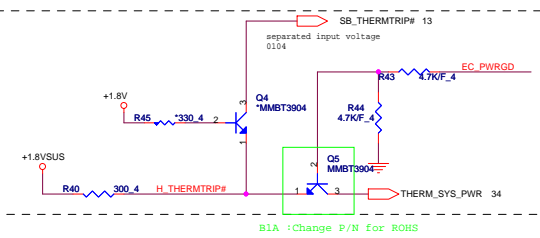
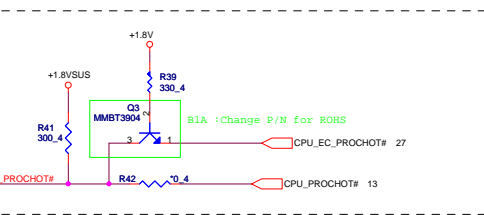
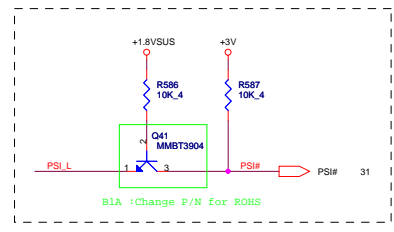
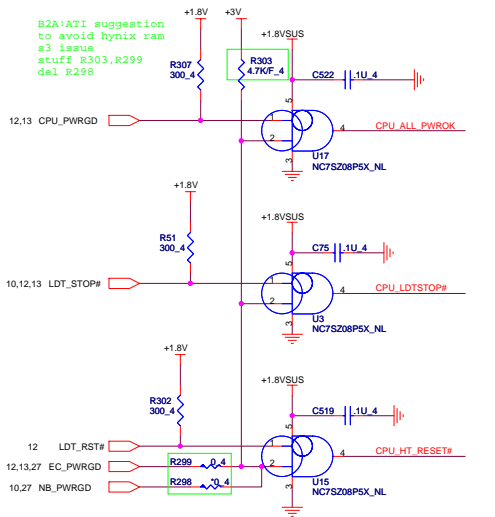
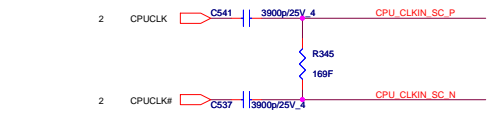
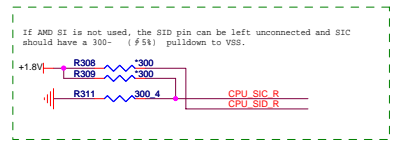
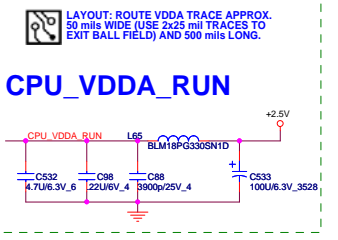
### Processor DDR2 Memory Interface



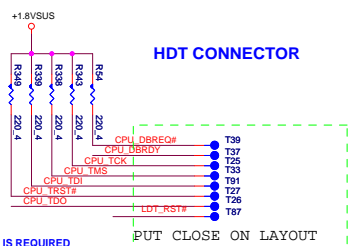
DDR II: CMD/CTRL/CLK  
Athlon 64 S1  
Processor Socket

DDR: DATA  
Athlon 64 S1  
Processor Socket

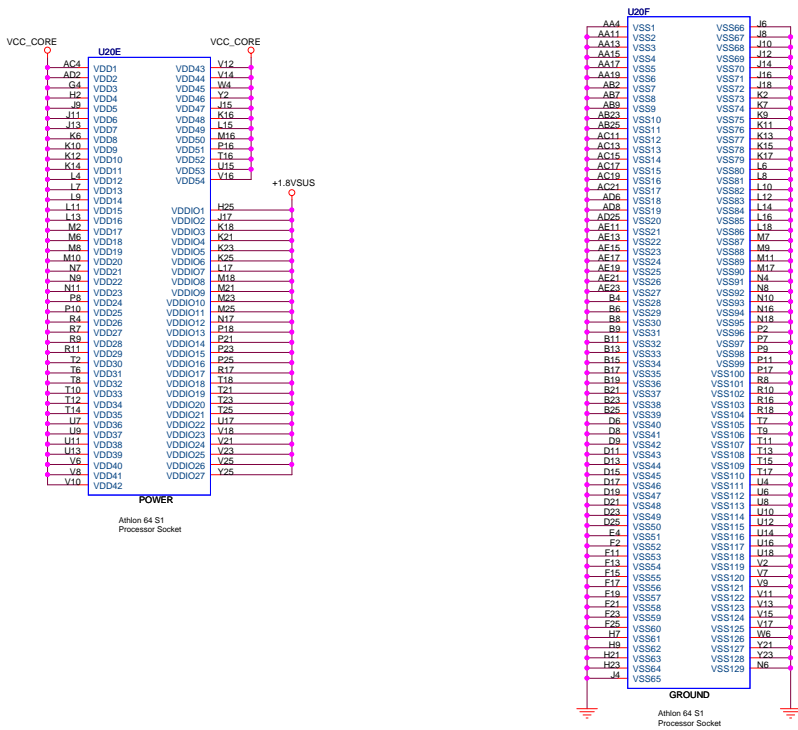
# ATHLON Control and Debug



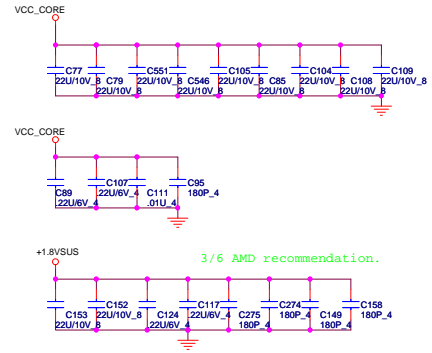
IF no use which Net need pull-up or down



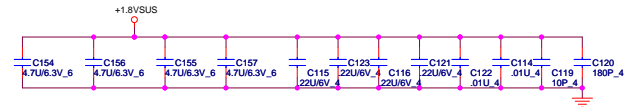
NOTE: HDT TERMINATION IS REQUIRED FOR REV. Ax SILICON ONLY.



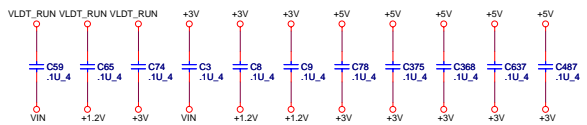
### BOTTOMSIDE DECOUPLING



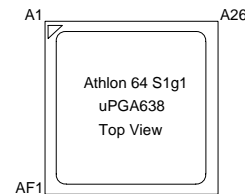
### DECOUPLING BETWEEN PROCESSOR AND DIMMs PLACE CLOSE TO PROCESSOR AS POSSIBLE



## PROCESSOR POWER AND GROUND

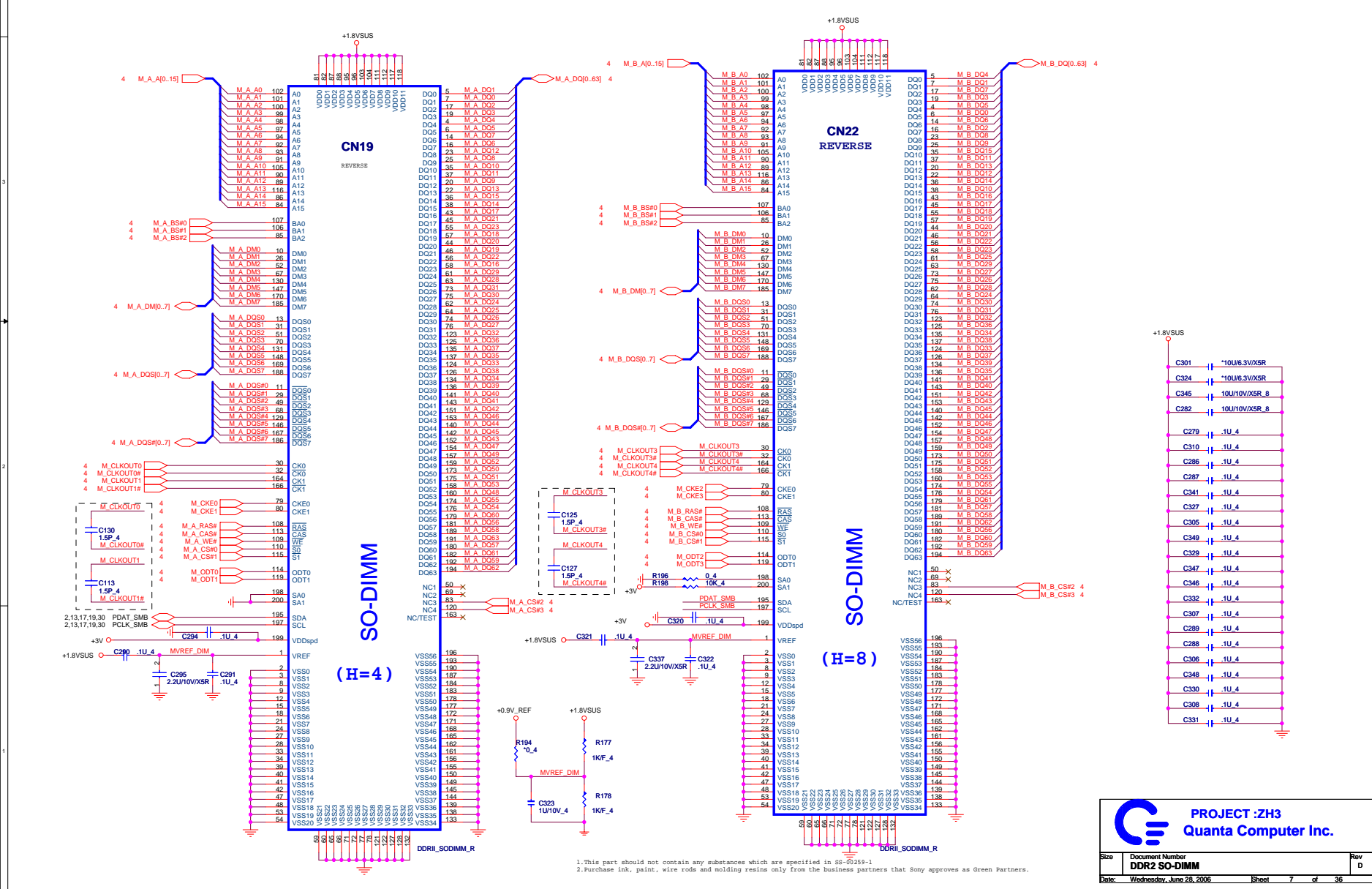
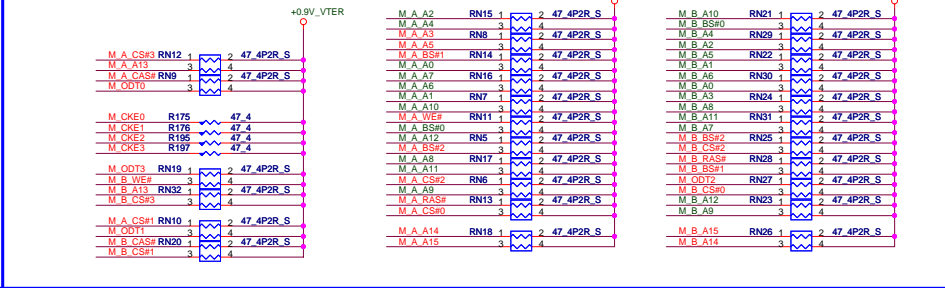
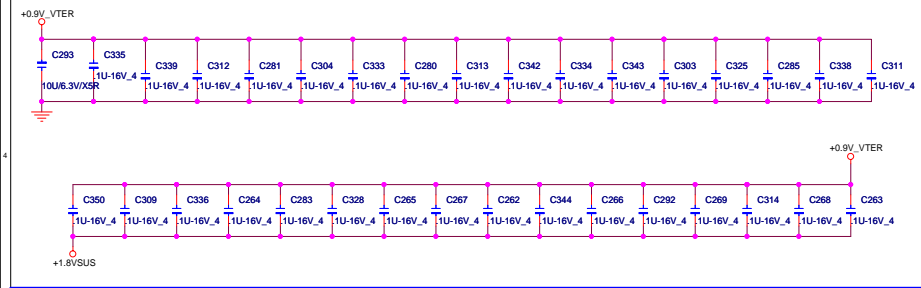


3/6 :ADD 0.1U CAPACITOR TO CROSS POWER PLANE.



# TERMINATOR DECOUPLING CAPACITOR

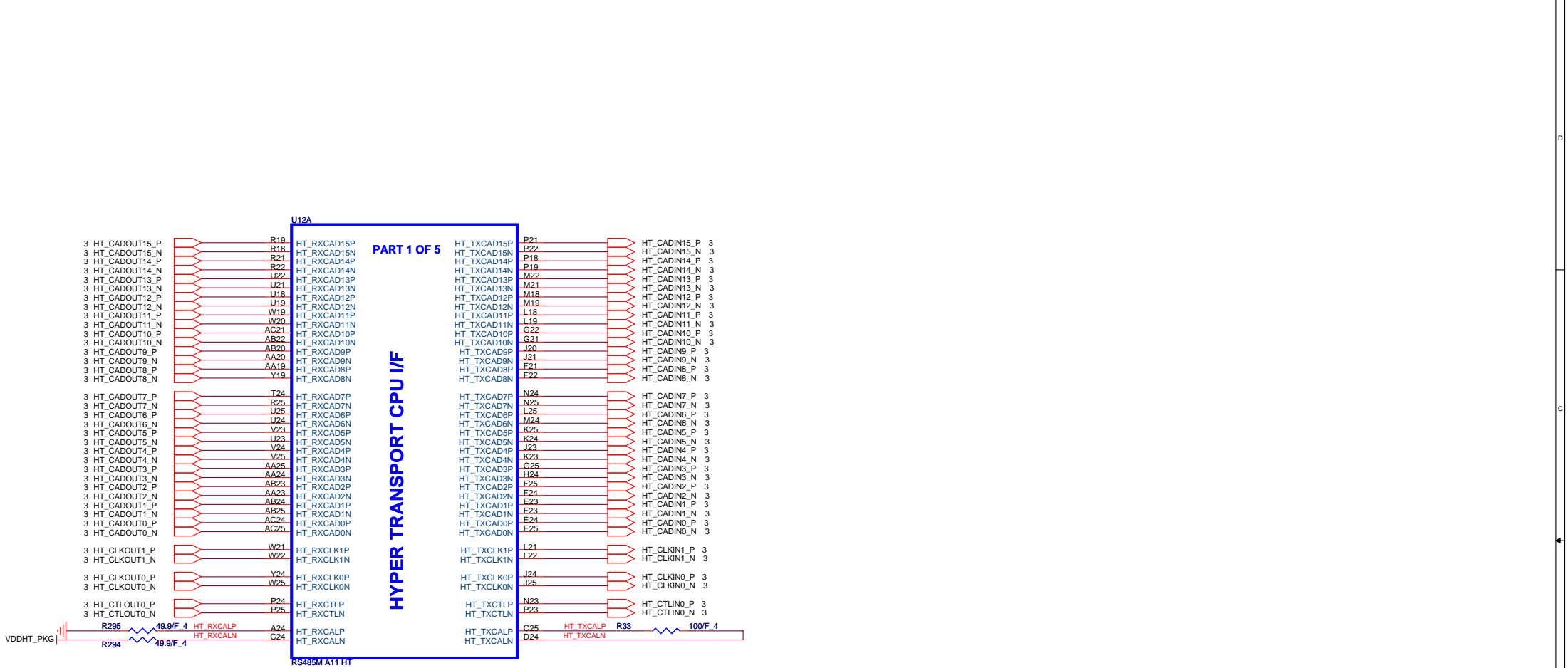
# DDR2 TERMINATOR



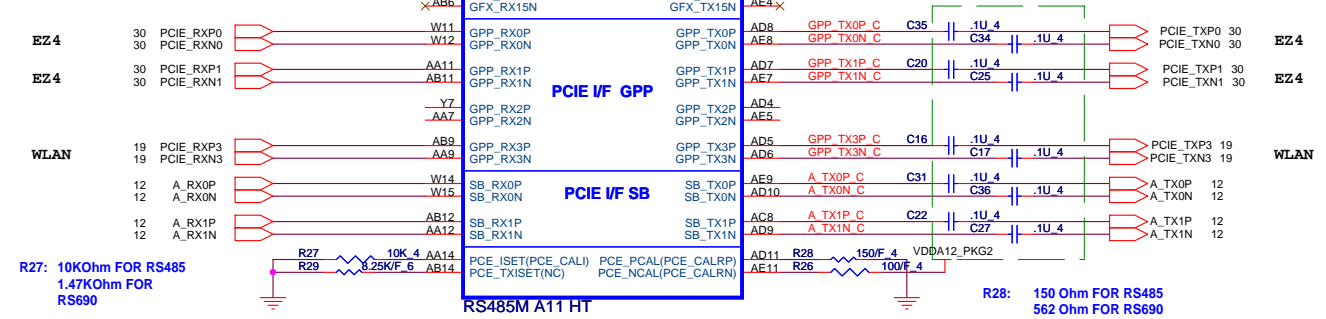
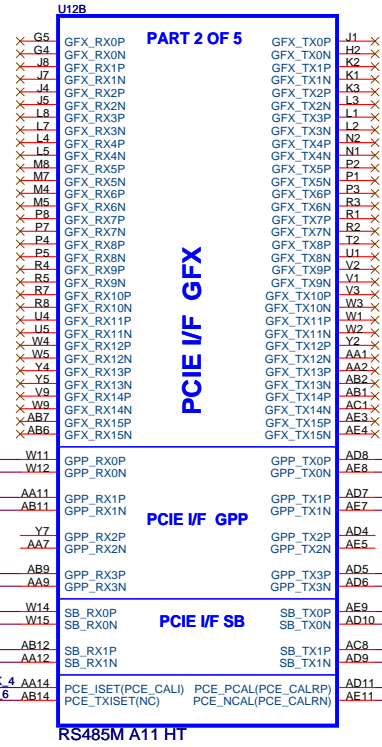
**PROJECT :ZH3**  
**Quanta Computer Inc.**

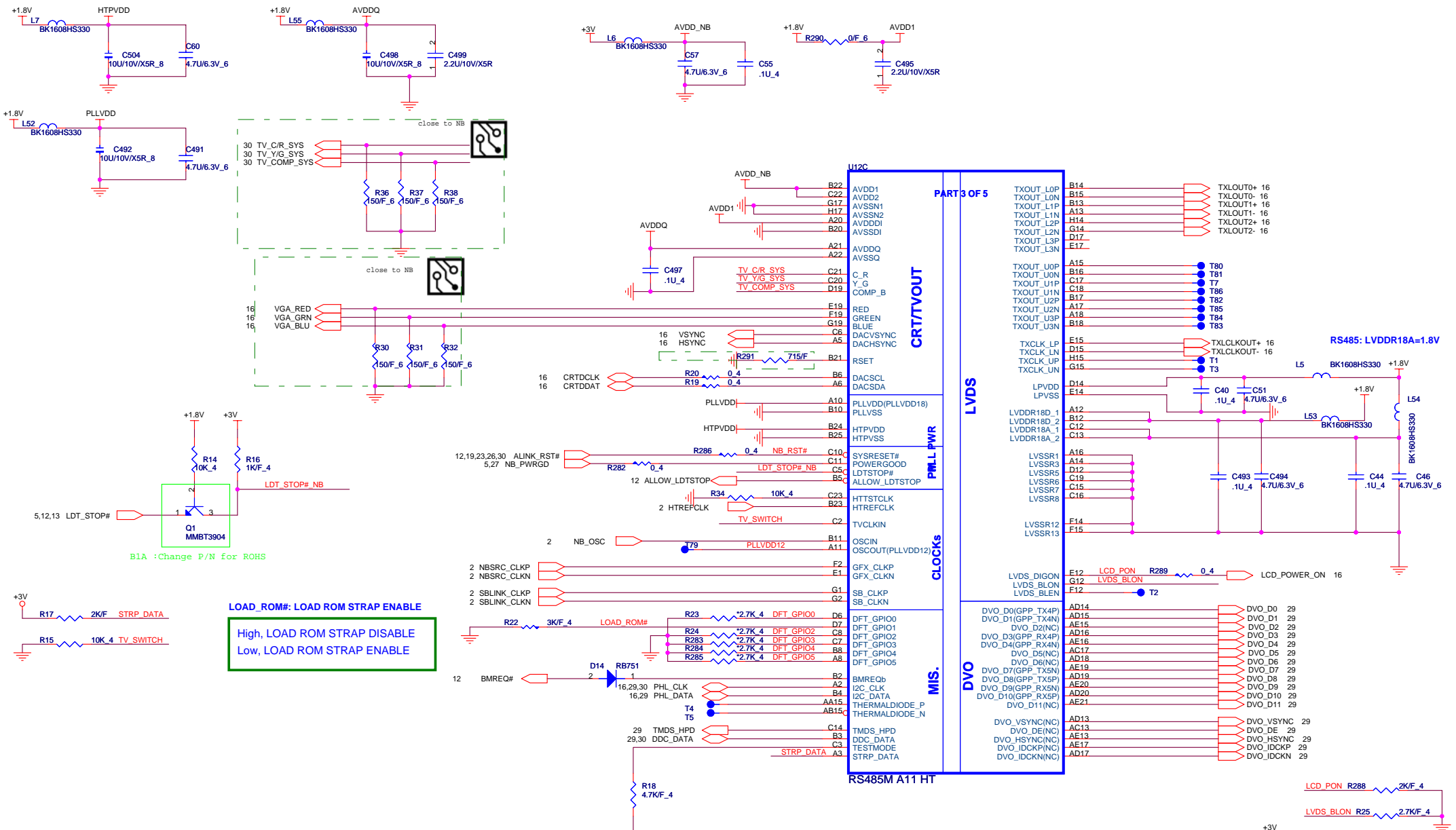
Size: \_\_\_\_\_ Document Number: **DDR2 SO-DIMM** Rev: **D**  
Date: **Wednesday, June 28, 2006** Sheet: **7** of **36**

1. This part should not contain any substances which are specified in 68-00259-1.  
2. Purchase ink, paint, wire rods and molding resins only from the business partners that Sony approves as Green Partners.



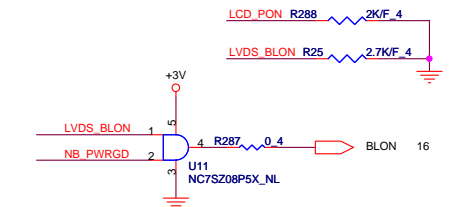


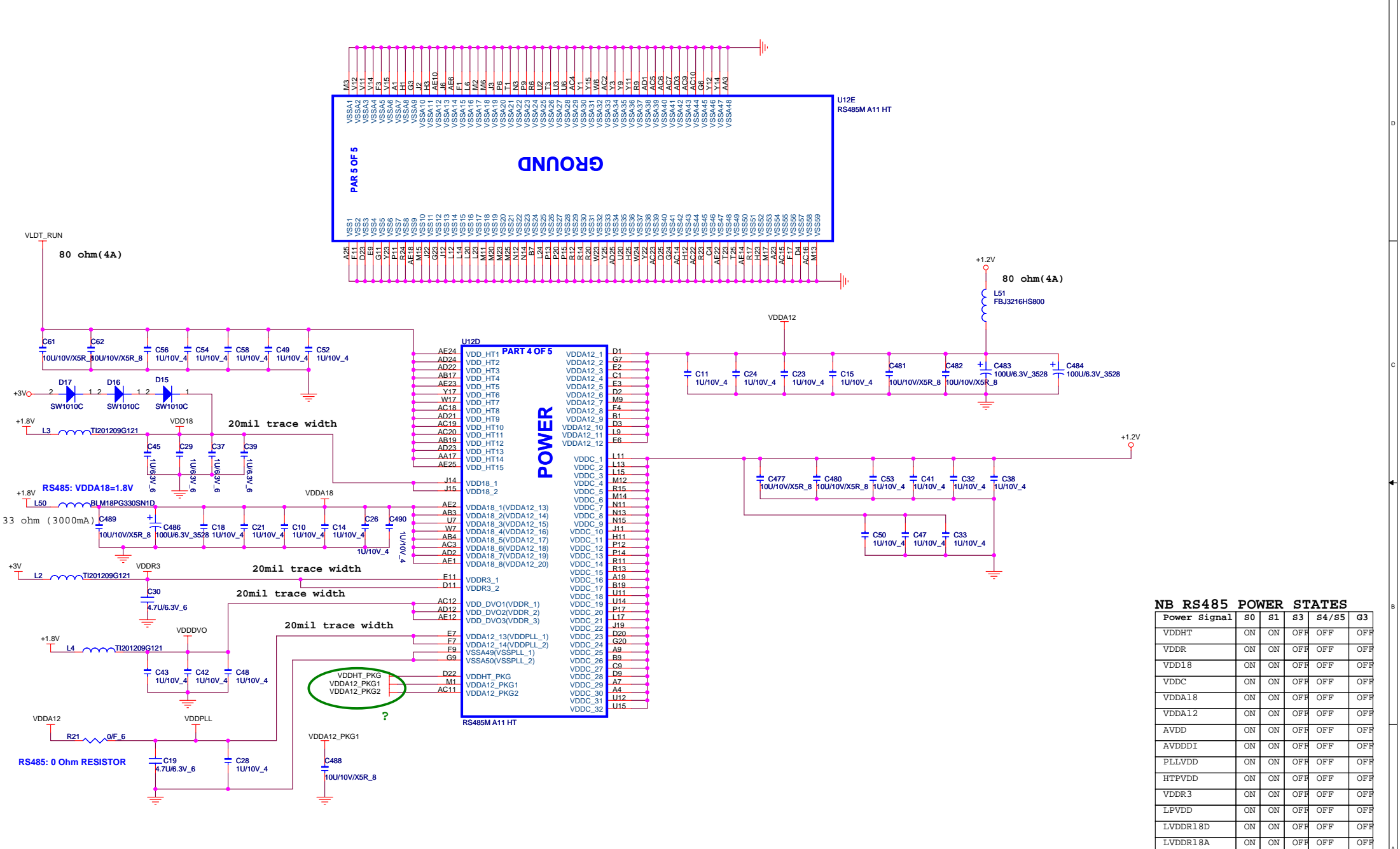




**LOAD\_ROM# : LOAD ROM STRAP ENABLE**  
 High, LOAD ROM STRAP DISABLE  
 Low, LOAD ROM STRAP ENABLE


	RS485	RS690
OSCOUT(A11)	OSCOUT	PLLVDD12
DVO_D0(AD14)	DVO_D0	GPP_TX4P
DVO_D1(AD15)	DVO_D1	GPP_TX4N
DVO_D3(AD16)	DVO_D3	GPP_RX4P
DVO_D4(AE16)	DVO_D4	GPP_RX4N
DVO_D7(AE19)	DVO_D7	GPP_TX5N
DVO_D8(AD19)	DVO_D8	GPP_TX5P
DVO_D9(AE20)	DVO_D9	GPP_RX5N
DVO_D10(AD20)	DVO_D10	GPP_RX5P





**NB RS485 POWER STATES**

Power Signal	S0	S1	S3	S4/S5	G3
VDDHT	ON	ON	OFF	OFF	OFF
VDDR	ON	ON	OFF	OFF	OFF
VDD18	ON	ON	OFF	OFF	OFF
VDDA18	ON	ON	OFF	OFF	OFF
VDDA12	ON	ON	OFF	OFF	OFF
AVDD	ON	ON	OFF	OFF	OFF
AVDDDI	ON	ON	OFF	OFF	OFF
PLLVD	ON	ON	OFF	OFF	OFF
HTPVDD	ON	ON	OFF	OFF	OFF
VDDR3	ON	ON	OFF	OFF	OFF
LPVDD	ON	ON	OFF	OFF	OFF
LVDDR18D	ON	ON	OFF	OFF	OFF
LVDDR18A	ON	ON	OFF	OFF	OFF

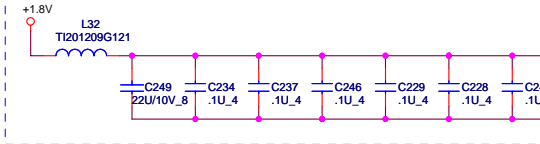


**PROJECT :ZH3**  
**Quanta Computer Inc.**

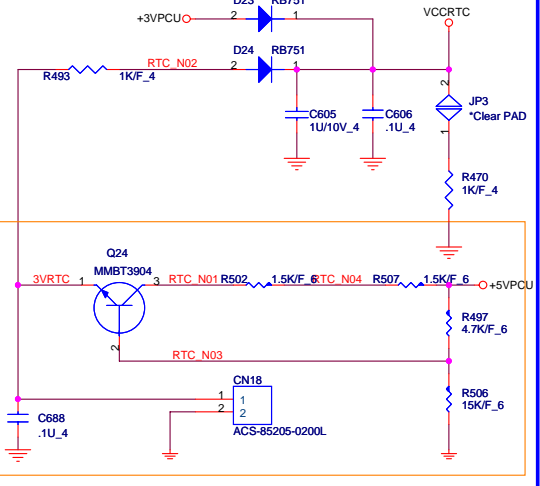
Size	Document Number	Rev
	<b>RS485-POWER</b>	<b>D</b>
Date:	Wednesday, June 28, 2006	Sheet 11 of 36

SB CALIBRATION RESISTOR VALUE		
	SB600	SB460
R173	562 OHM 1%	150 OHM 1%
R172	2.05K 1%	150 OHM 1%
R174	0 ohm	4.12K 1%

### PCIE Power



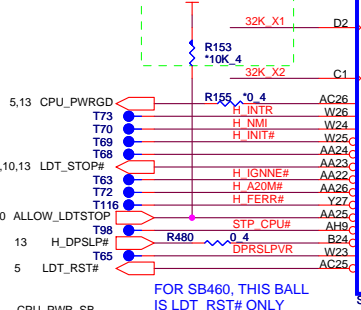
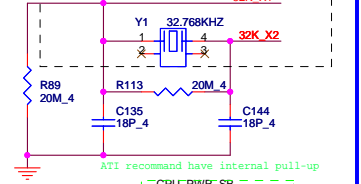
### RTC



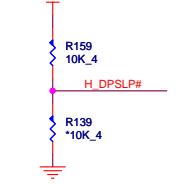
# SB-1

D3A: Due to remove bridge battery, Add RTC circuit,

ATI Recommend Vendor: NSK Part Number: NXG 32.768KAE12FUD 16 PPM.



FOR SB460, THIS BALL IS LDT\_RST# ONLY



## SB460 SB 27x27mm

Part 1 of 4

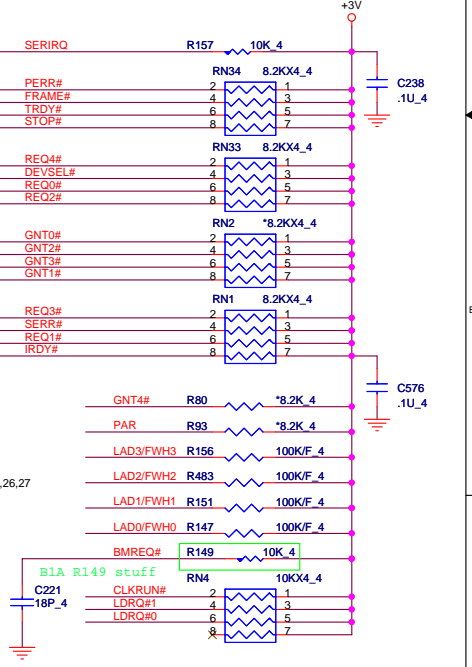
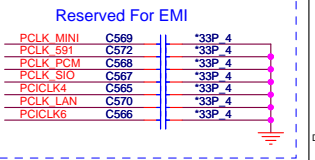
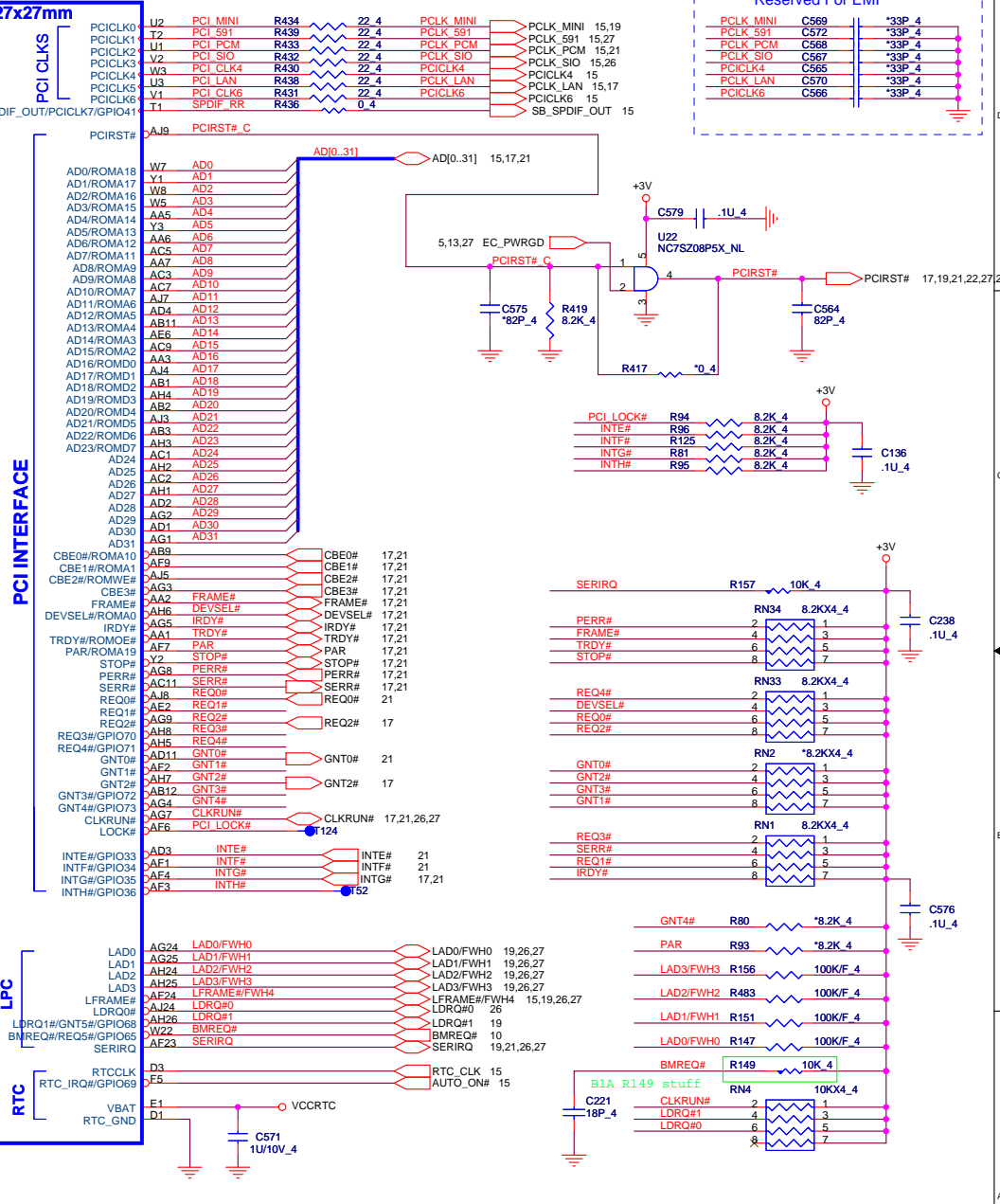
### PCI EXPRESS INTERFACE

### PCI INTERFACE

### LPC

### RTC

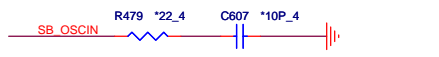
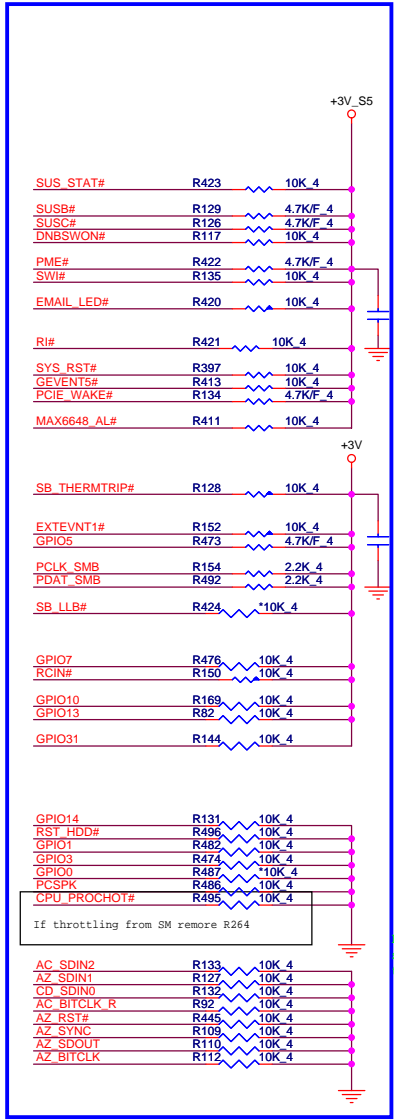
### CPU



## PROJECT :ZH3

### Quanta Computer Inc.

Size	Document Number	Rev
	<b>SB460M PCIE/PCI/CPULPC IF</b>	D
Date: Wednesday, June 28, 2006		Sheet 12 of 36

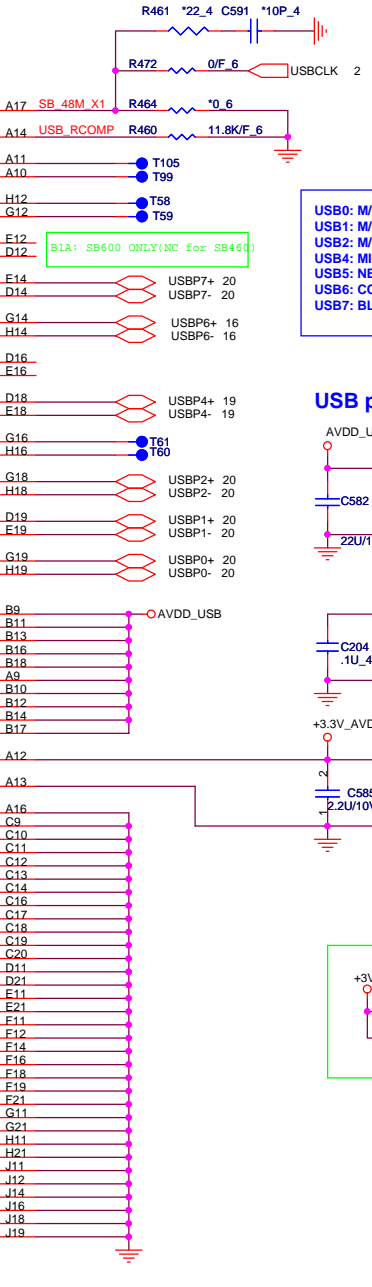
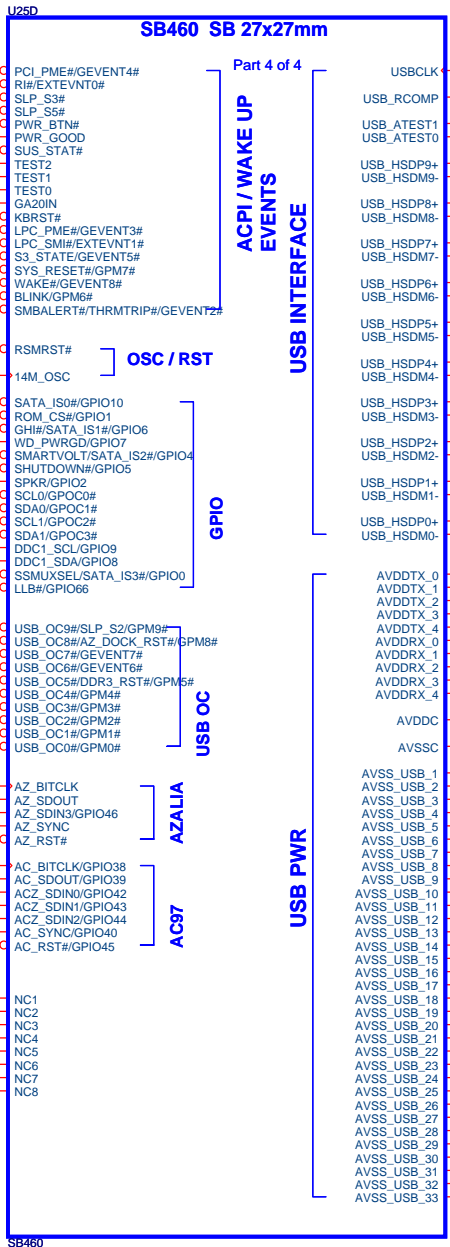


Delay 20ms after S5 powerOK

D3A: Modify NET of HIGHT\_G\_INT & LOW\_G\_INT contact to GPM3 & 4, Add net of USB\_OCP3 & USB\_OCP4 contact to location :RN3

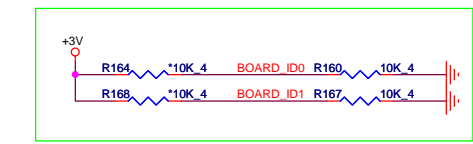
B2A: ATI suggestion, The signal should be pull down to ground through 10k resistor.

SB-2



USB0: M/B IO  
USB1: M/B IO  
USB2: M/B IO  
USB3: MINI CARD(3G)  
USB5: NEW CARD  
USB6: CCD  
USB7: BLUETOOTH

USB power



Board ID	ID1	ID0	
00			SATA
01			PATA
10			
11			

**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size: Document Number  
**SB460M ACPI/GPIO/USB/AC97** Rev D

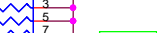
Date: Wednesday, June 28, 2006 Sheet 13 of 36

USB power use S3 power, But Over current signal datasheet is S5 only, But ATI FAE say use S3 is ok

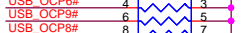
D3A : Remove RPI



B1A: Change from +3V\_SUS to +3V\_S5



USB\_OCP7#  
USB\_OCP6#  
USB\_OCP9#  
USB\_OCP8#



B1A: Change from +3V\_SUS to +3V\_S5



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



B1A: ADD MB ID



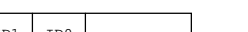
B1A: ADD MB ID



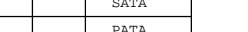
B1A: ADD MB ID



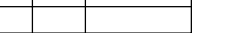
B1A: ADD MB ID



B1A: ADD MB ID



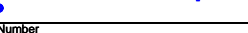
B1A: ADD MB ID



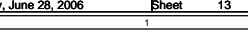
B1A: ADD MB ID



B1A: ADD MB ID



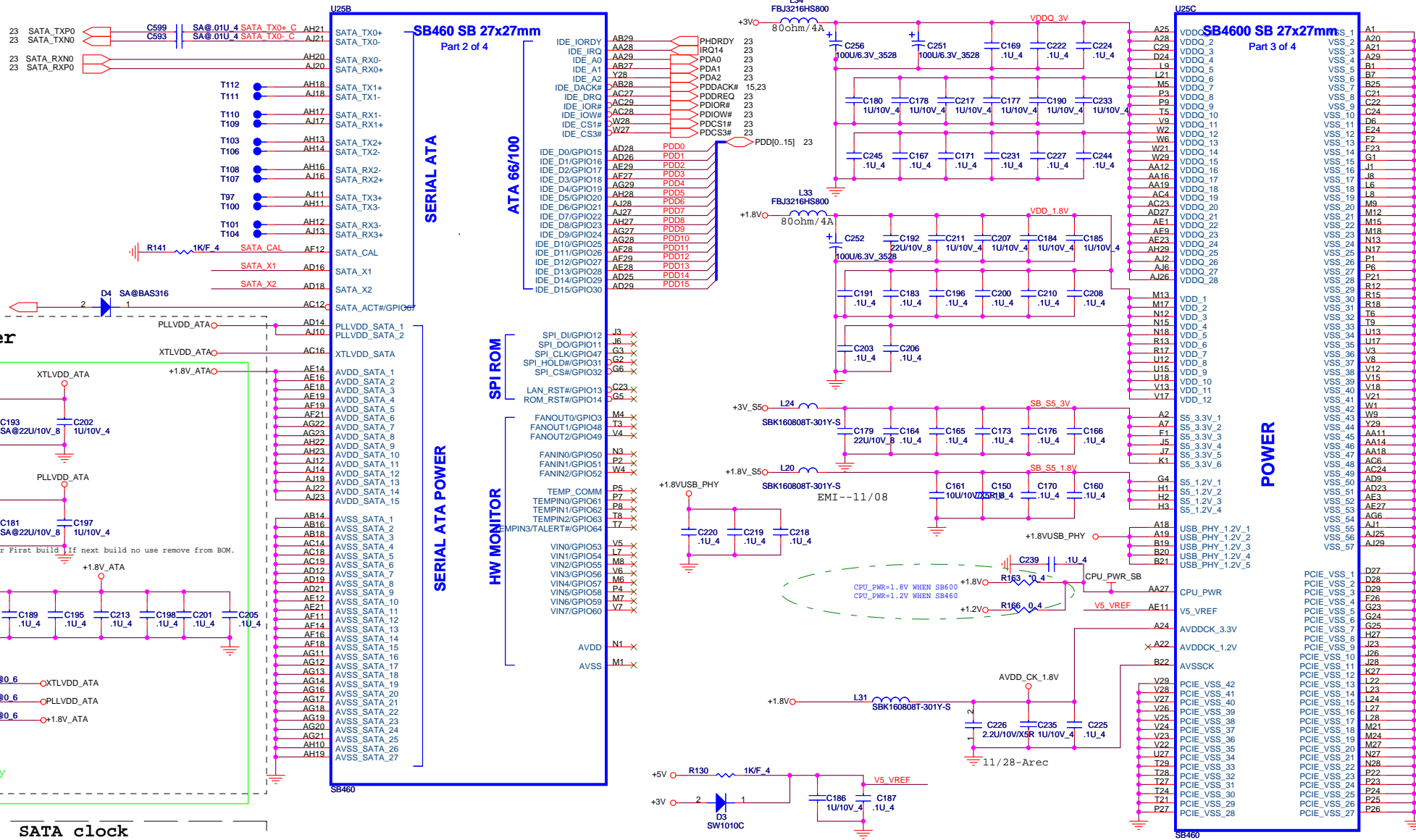
B1A: ADD MB ID



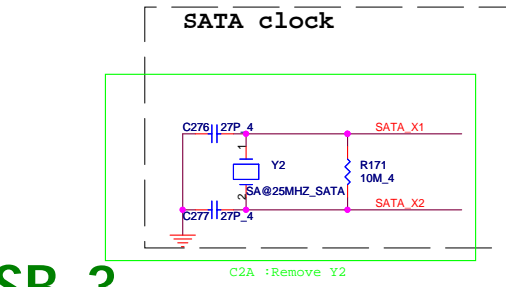
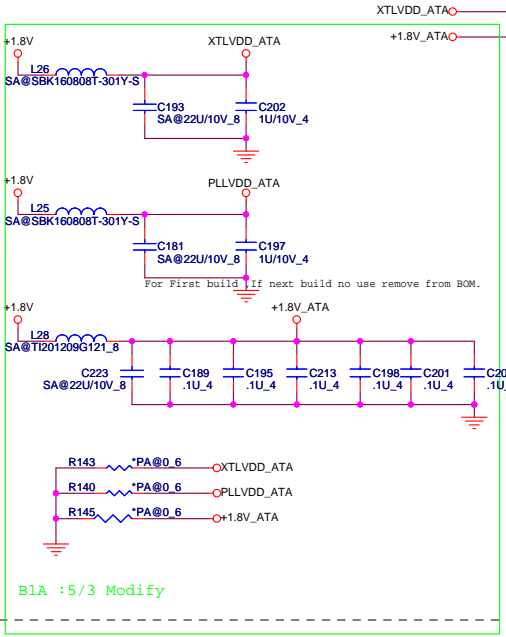
B1A: ADD MB ID



B1A: ADD MB ID



**SATA Power**



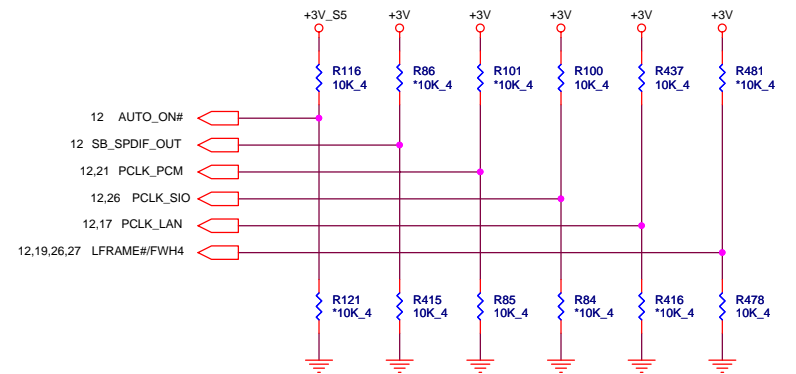
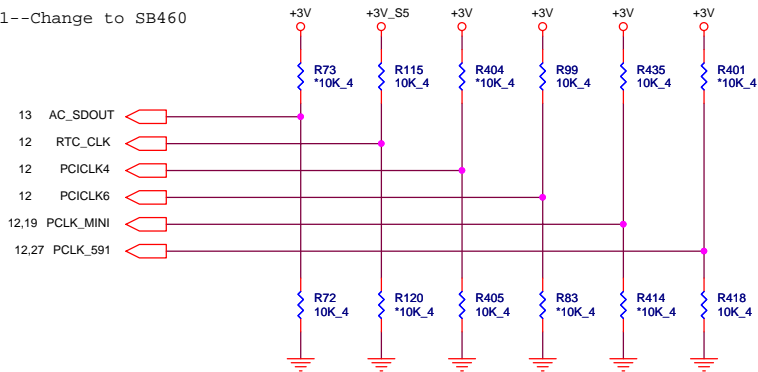
**SB-3**

C2A :Remove Y2

**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>SB450M HDD/POWER/DECOUPLING</b>	D
Date:	Wednesday, June 28, 2006	Sheet 14 of 36



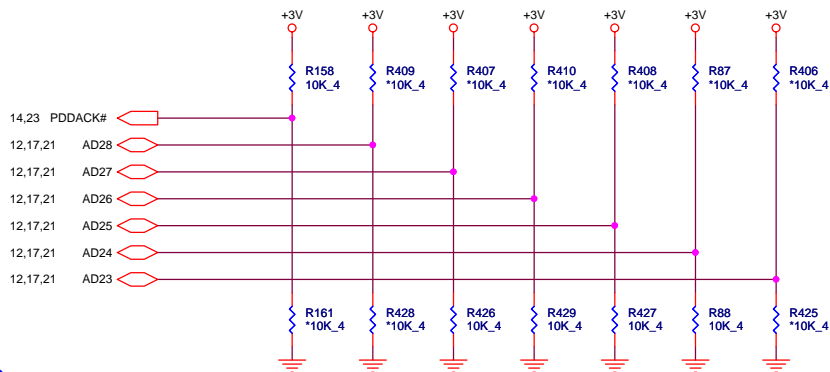


## REQUIRED STRAPS


		PCLK_MINI PCLK_591				
PULL HIGH	AC_SDOUT	RTC_CLK	PCI_CLK4	PCI_CLK6	PCI_CLK0	PCI_CLK1
		USE DEBUG STRAPS <i>DEFAULT</i>	INTERNAL RTC <i>DEFAULT</i>	USE INT. PLL48	CPU IF=K8	ROM TYPE: H, H = PCI ROM H, L = LPC TYPE I ROM L, H = LPC TYPE II ROM <i>DEFAULT</i>
PULL LOW	IGNORE DEBUG STRAPS <i>DEFAULT</i>	EXTERNAL RTC	USE EXT. 48MHZ <i>DEFAULT</i>	CPU IF=P4 <i>DEFAULT</i>	L, L = FWH ROM NOTE: FOR SB460, PCI_CLK[8:7] ARE CONNECTED TO SUBSTRATE BALLS PCI_CLK[1:0]	

		AUTO_ON#	SB_SPDIF_OUT	PCLK_PCM	PCLK_SIO	PCLK_LAN	LFRAME#
PULL HIGH	ACPWRON	SPDIF_OUT	PCI_CLK2	PCI_CLK3	PCI_CLK5	LFRAME#	
	MANUAL PWR ON <i>DEFAULT</i>	SIO 24MHz	XTAL MODE NOT SUPPORTED	USB PHY POWERDOWN DISABLE <i>DEFAULT</i>	PCIE_CM_SET LOW <i>DEFAULT</i>	ENABLE THERMTRIP# <i>DEFAULT</i>	
PULL LOW	AUTO PWR ON	SIO 48MHz <i>DEFAULT</i>	48MHZ OSC MODE <i>DEFAULT</i>	USB PHY POWERDOWN ENABLE	PCIE_CM_SET HIGH BIOS ENABLE	DISABLE THERMTRIP# AFTER STARTUP	

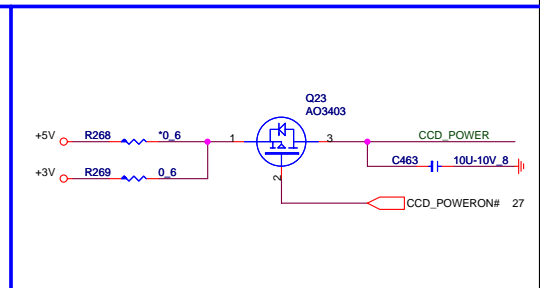
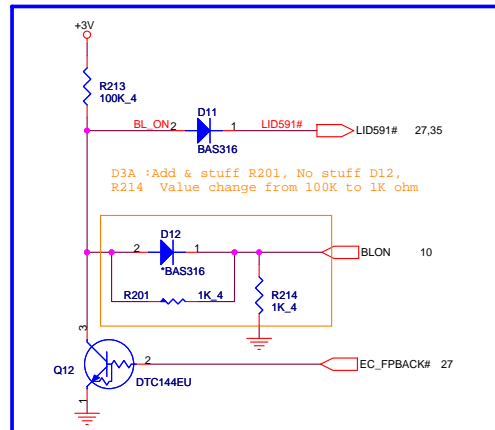
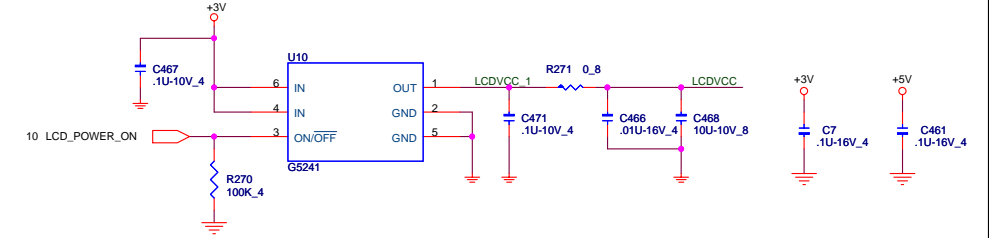
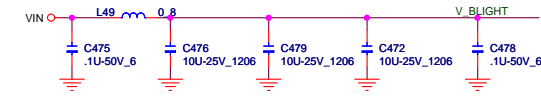
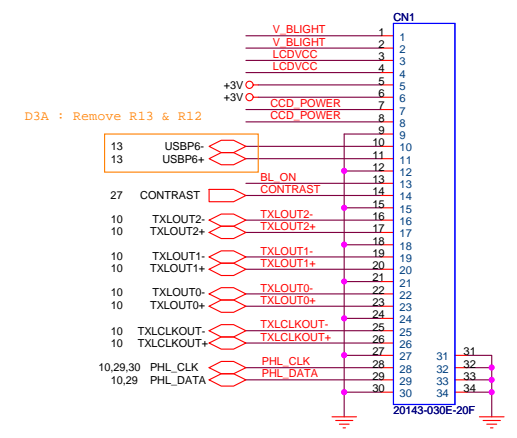
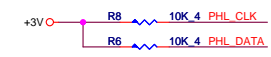
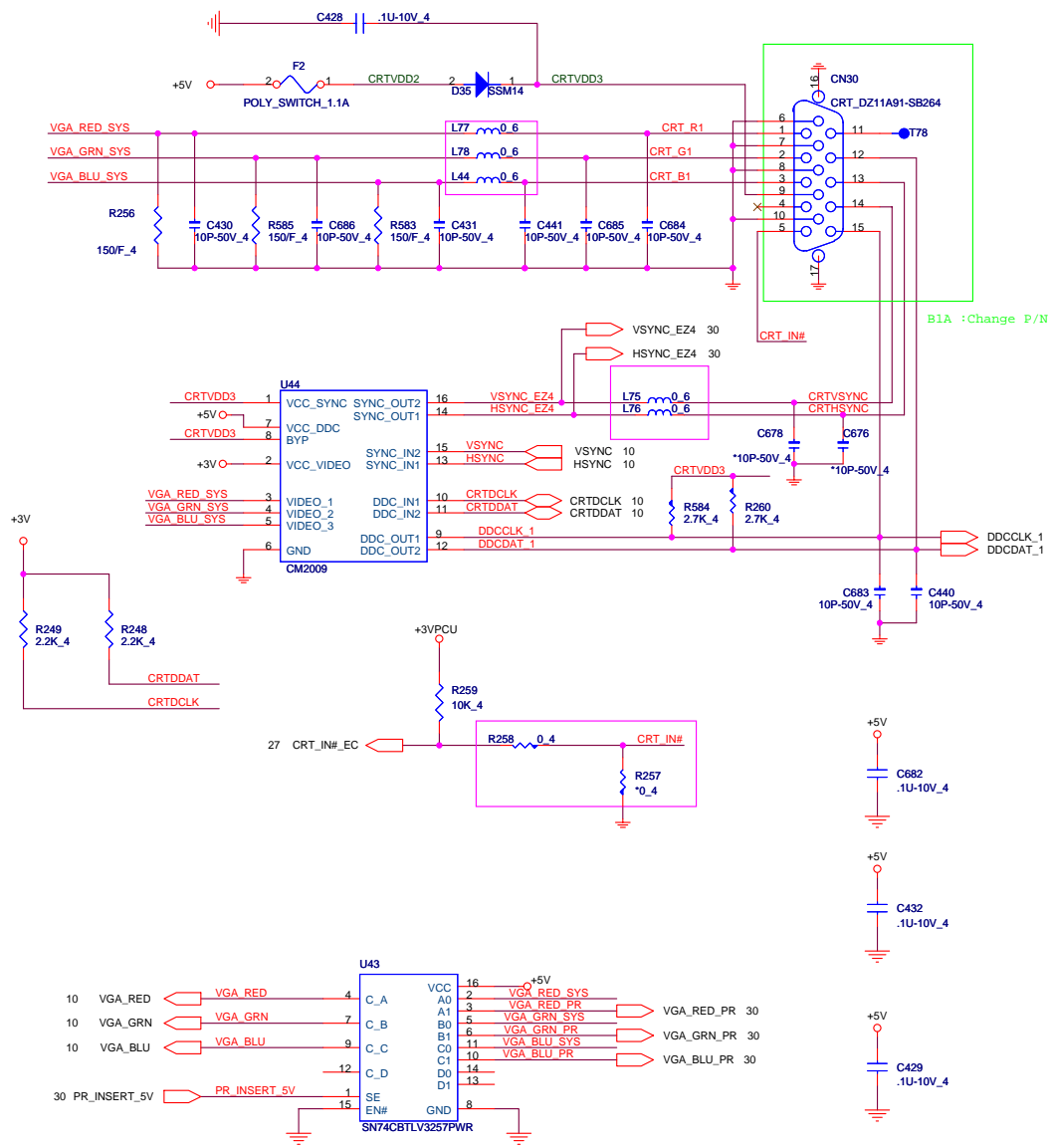
## DEBUG STRAPS



		PDDACK#	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET <i>DEFAULT</i>	Reserved	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	Reserved	
PULL LOW	USE SHORT RESET		USE PCI PLL <i>DEFAULT</i>	USE ACPI BCLK <i>DEFAULT</i>	USE IDE PLL <i>DEFAULT</i>	USE DEFAULT PCIE STRAPS <i>DEFAULT</i>		



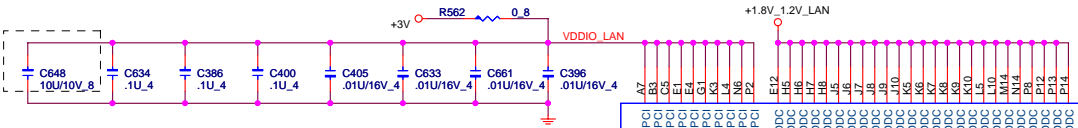
Size	Document Number <b>SB460M STRAPS</b>	Rev D
Date:	Wednesday, June 28, 2006	Sheet 15 of 36



**PROJECT :ZH3**  
**Quanta Computer Inc.**

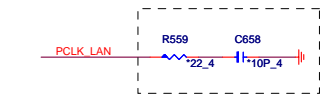
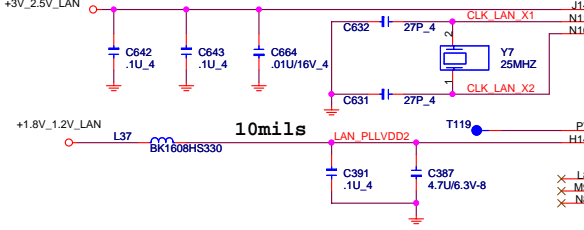
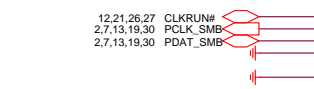
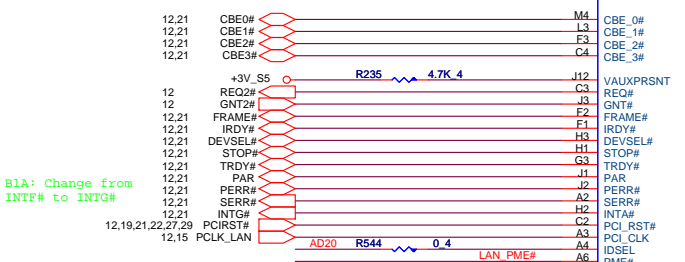
Size	Document Number	Rev
	VGA Ports, LID, DSC	D
Date:	Thursday, June 29, 2006	Sheet 16 of 36



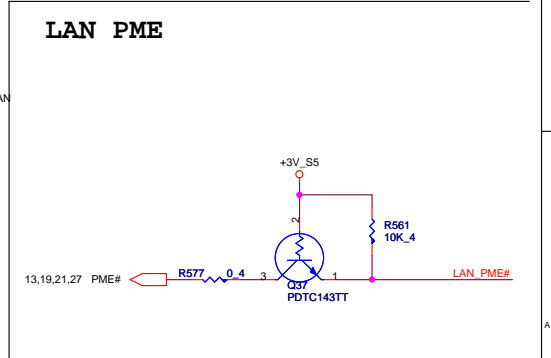
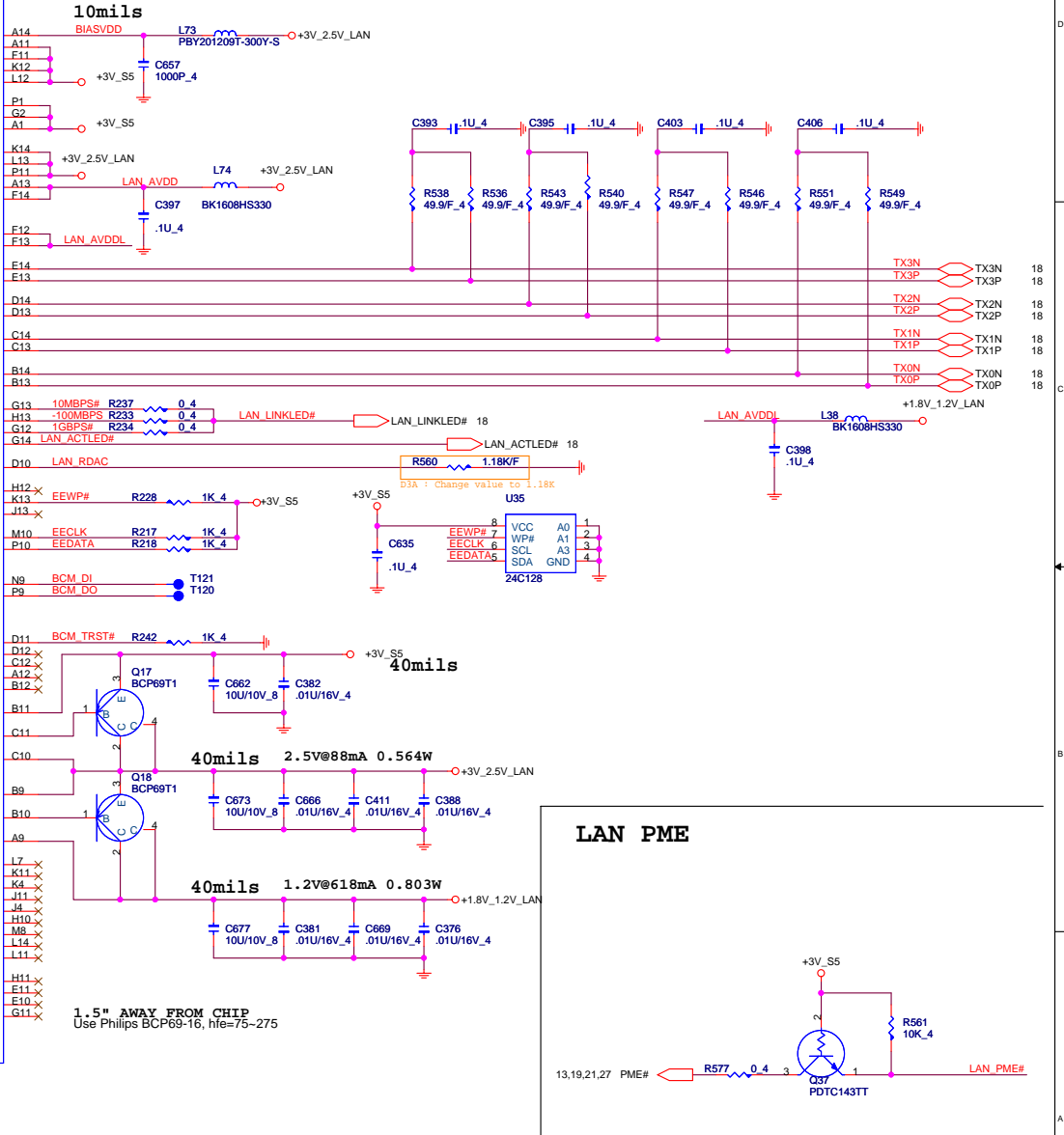
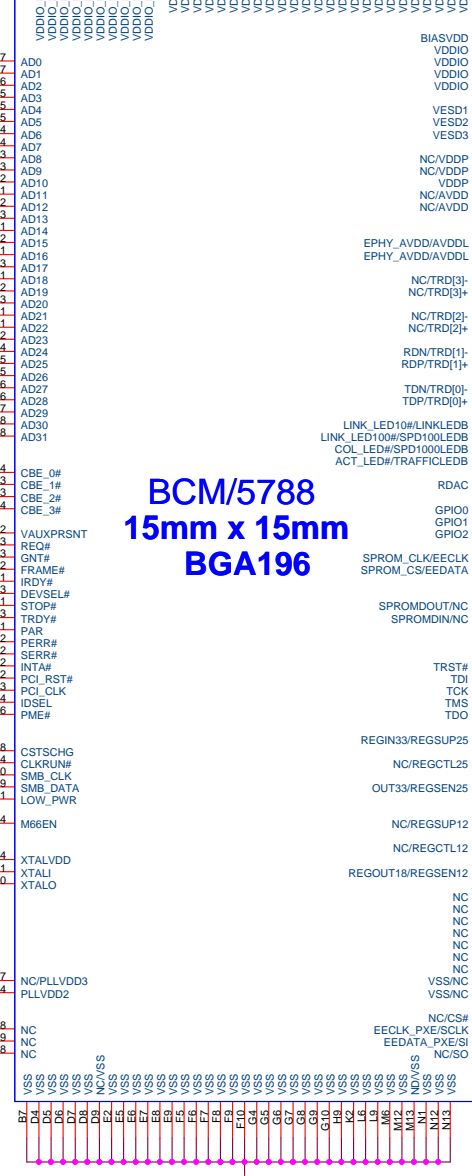


Voltage Rail	5788M
VDDIO_PCI	+3V
+3V_2.5V_LAN	2.5V
+1.8V_1.2V_LAN	1.2V

**LAN BCM5788:**  
AD20 REQ2#  
GNT2# INTG#

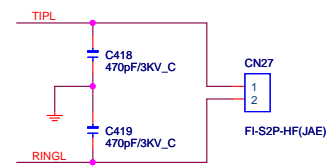
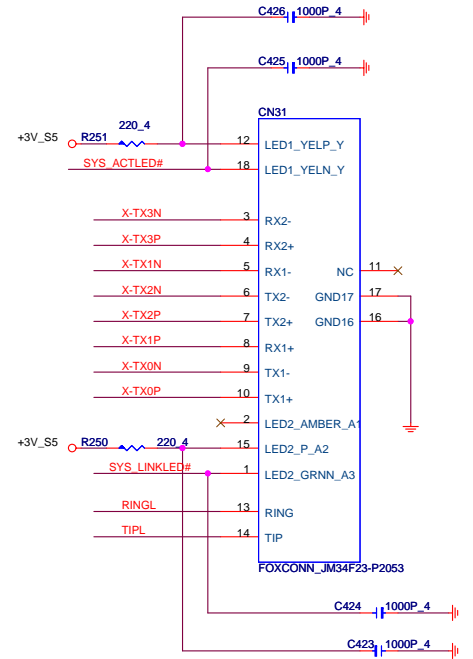
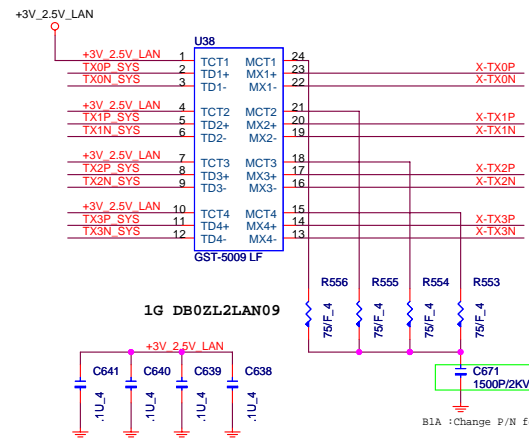
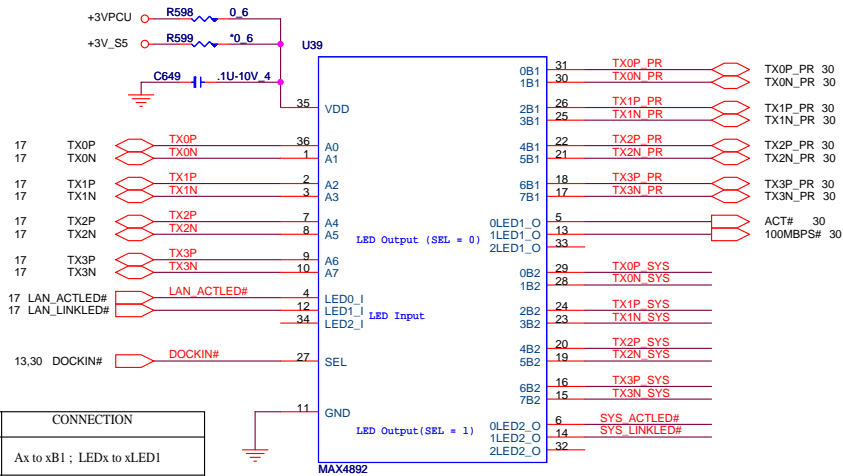


## BCM/5788 15mm x 15mm BGA196



**PROJECT :ZH3**  
**Quanta Computer Inc.**

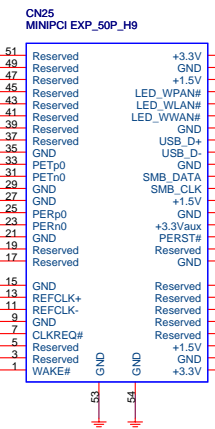
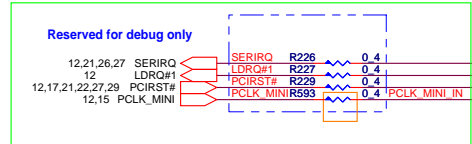
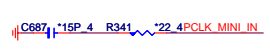
Size	Document Number	Rev D
	<b>BCM5788M LAN</b>	
Date:	Wednesday, June 28, 2006	Sheet 17 of 36



# WLAN MINI CARD

B1A:These signals of reserve have be used by wireless module of Foxconn BG. These signals impact IPC. I remove signal line in order to solve the WLAN issue.

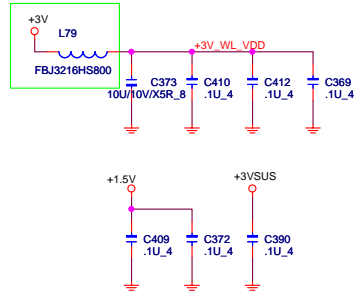
C2A :add RC in PCIK\_MINI (R=22ohm,C=15P)  
D3A :Modify circuit



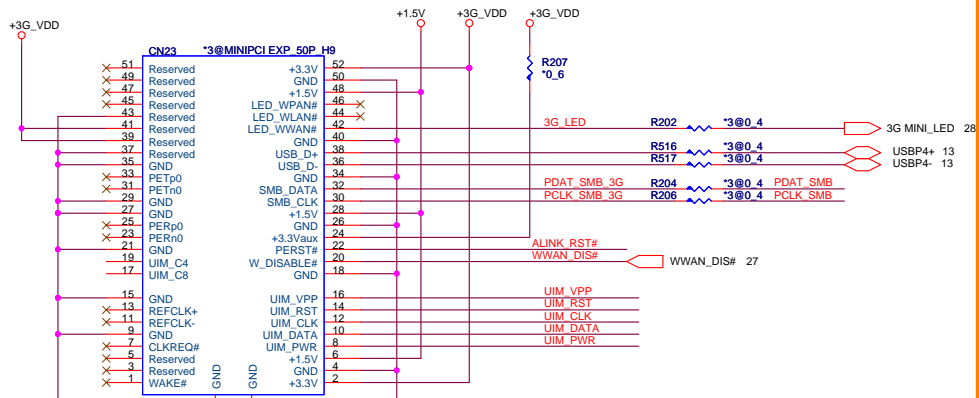
NO SUPPORT USB

Reserved for debug only

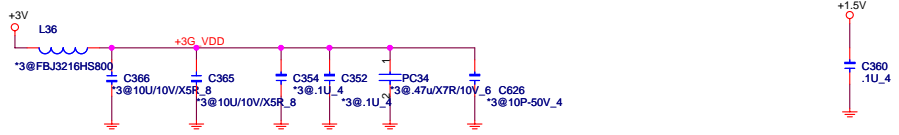
C2A :Add L79



# 3G MINI CARD

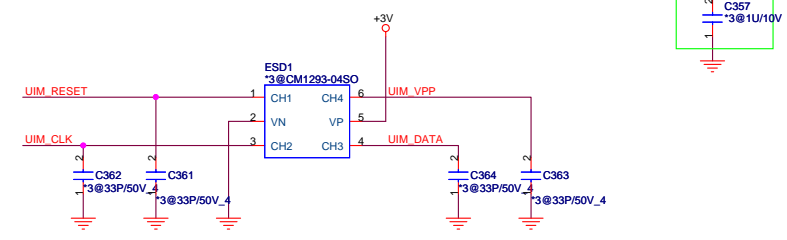
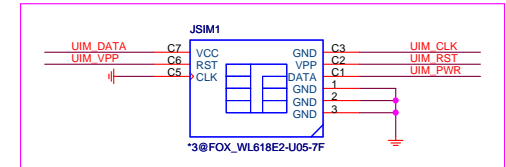


D3A: No stuff material of 3G function.

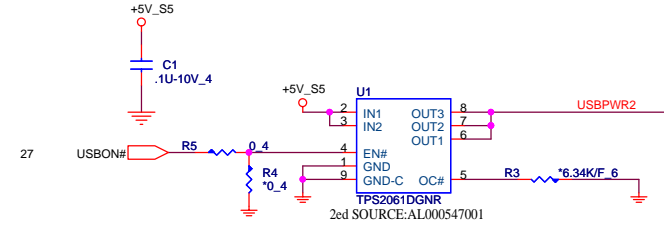
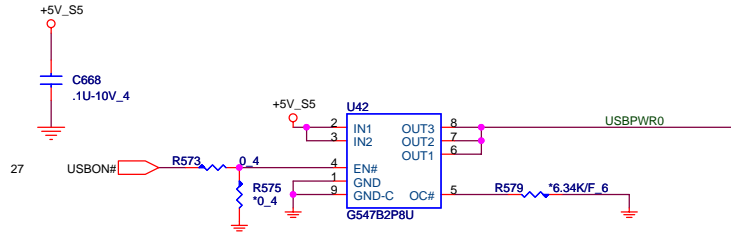


# SIM CARD

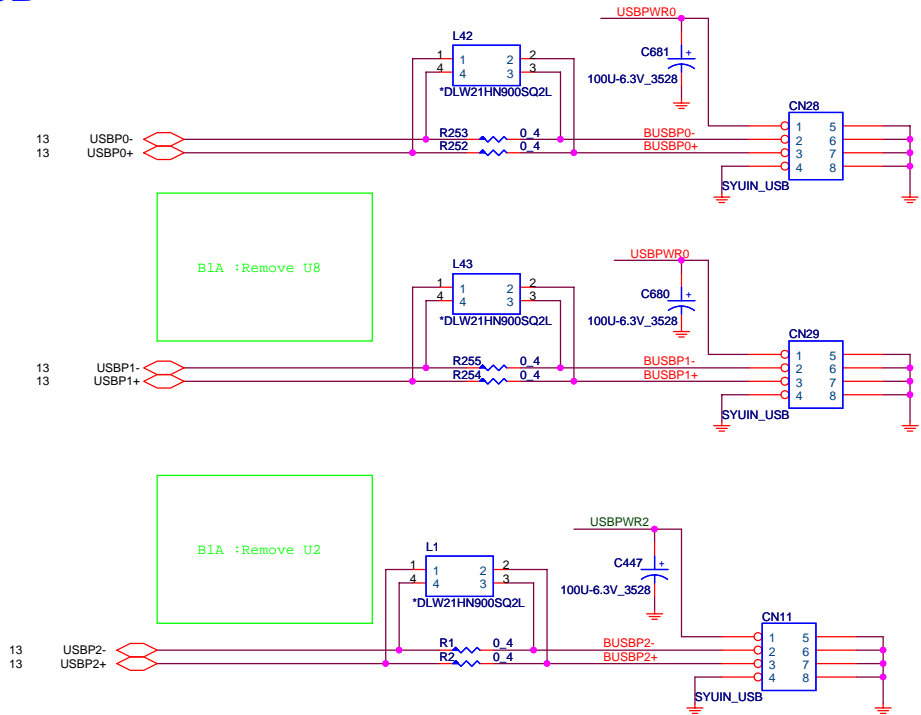
B1A: Change footprint  
C2A: Change footprint & modify SIM card PIN define



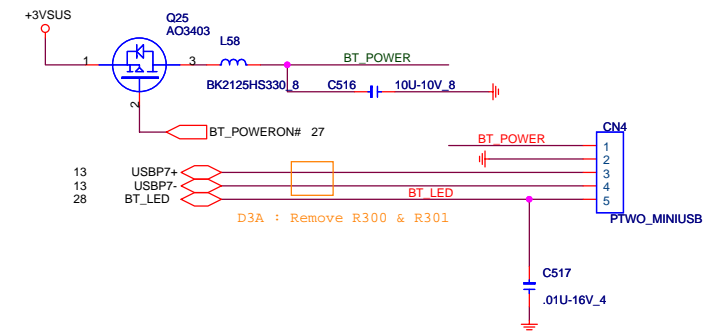
# USB POWER SUPPLY



# USB

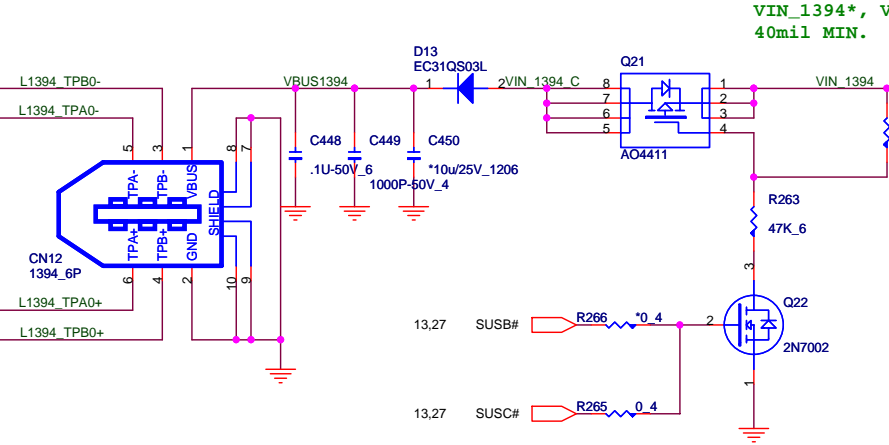
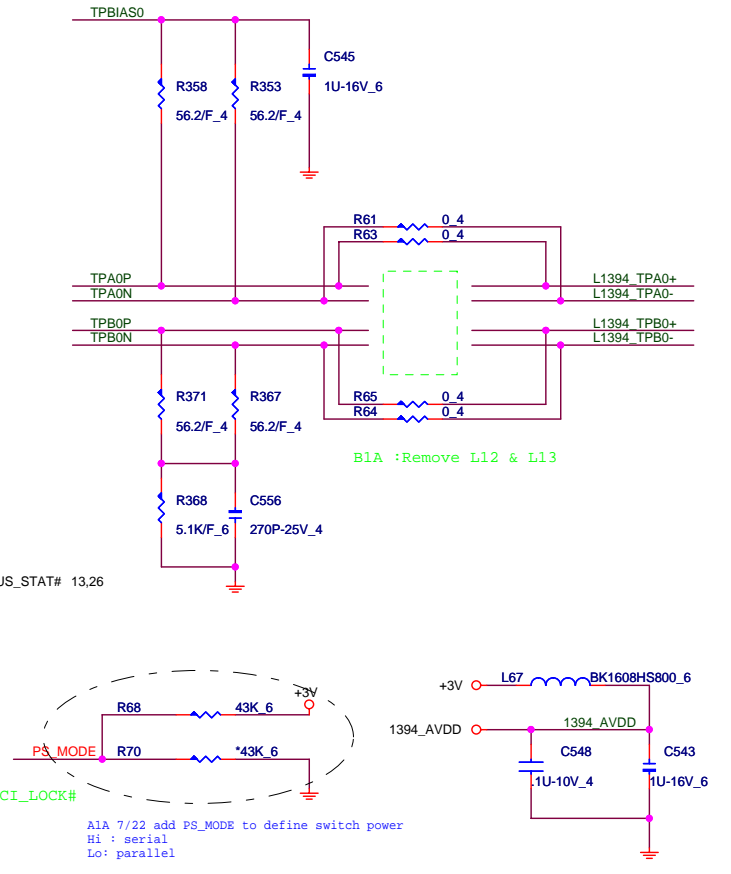
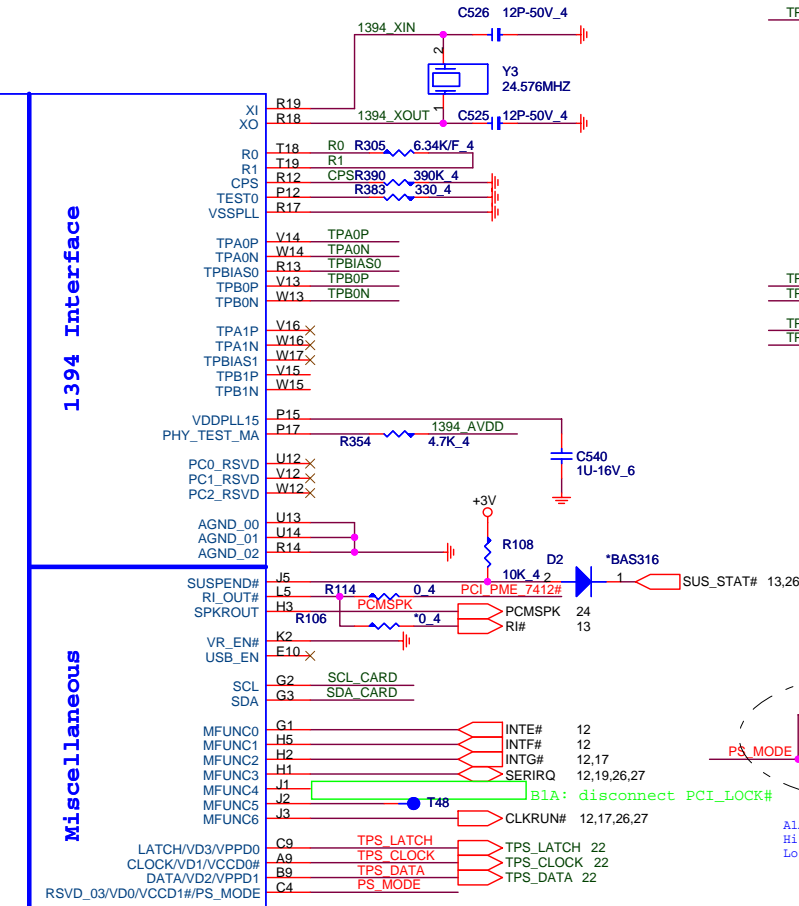
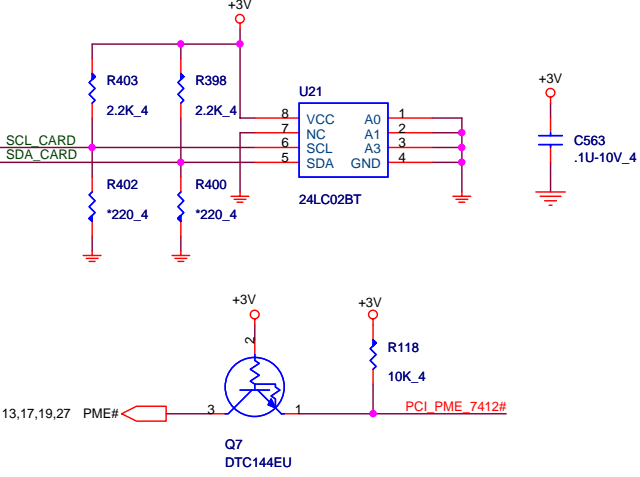
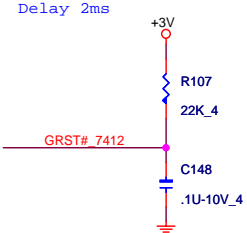
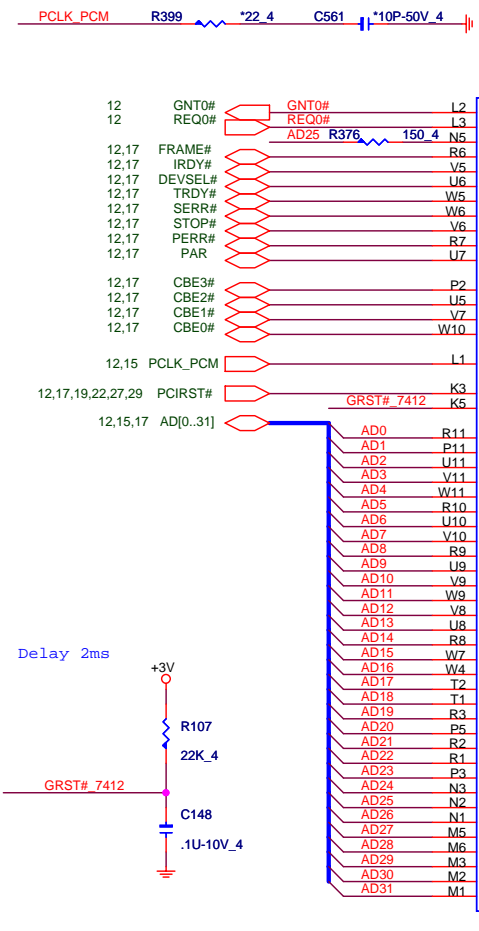


# BLUETOOTH MODULE CONNECTOR



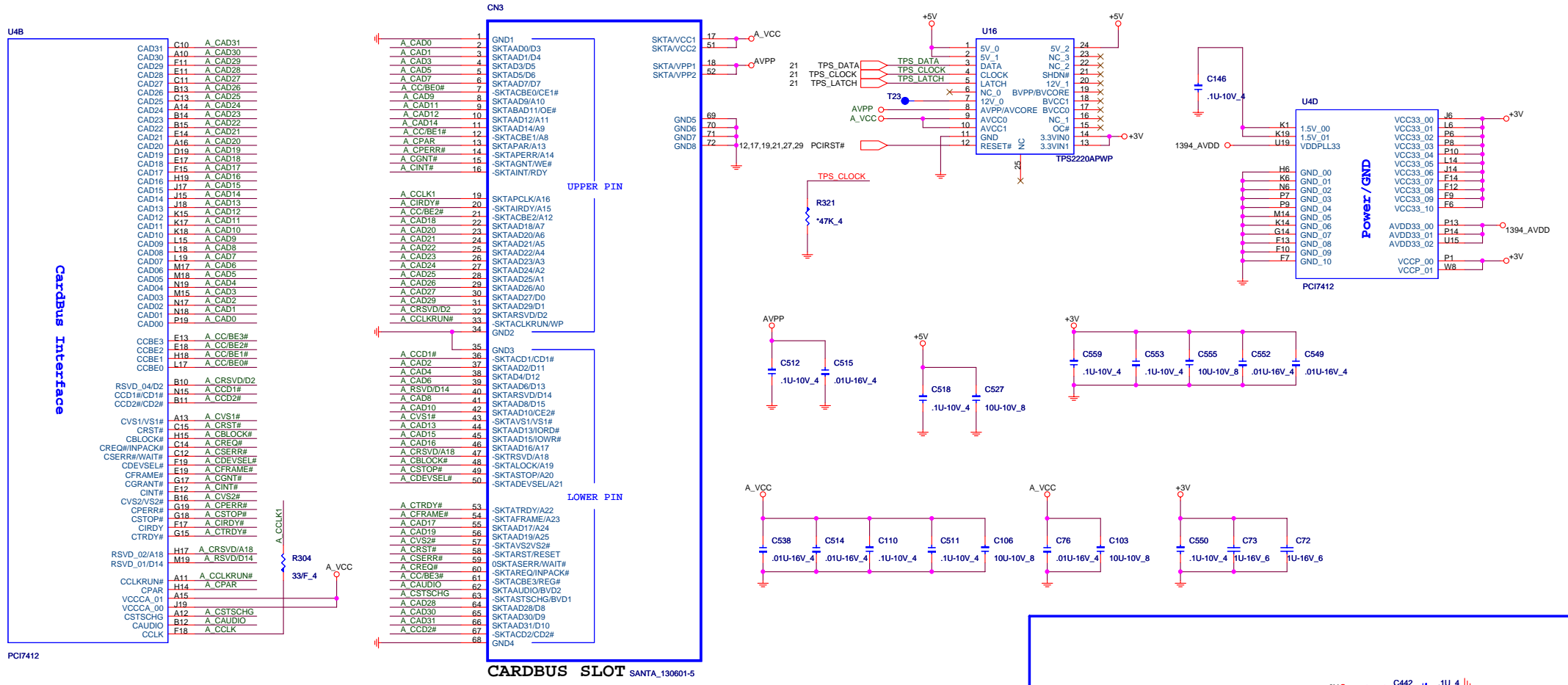
**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>BLUETOOTH , USB</b>	<b>D</b>
Date:	Wednesday, June 28, 2006	Sheet 20 of 36

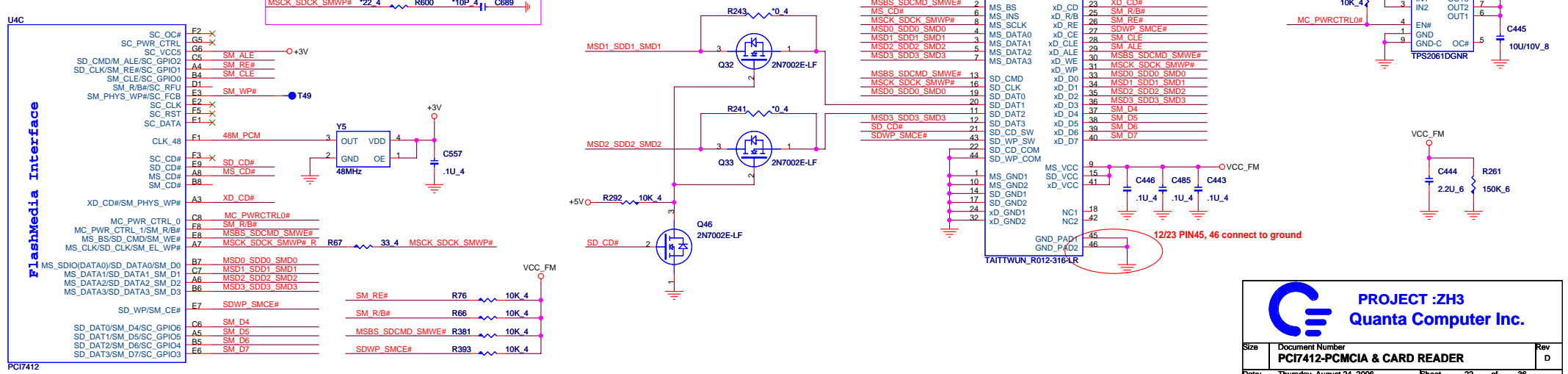



**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>PCI7412-IEEE1394</b>	D
Date:	Friday, July 28, 2006	Sheet 21 of 36



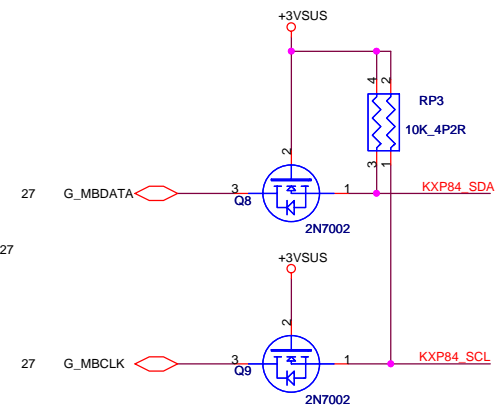
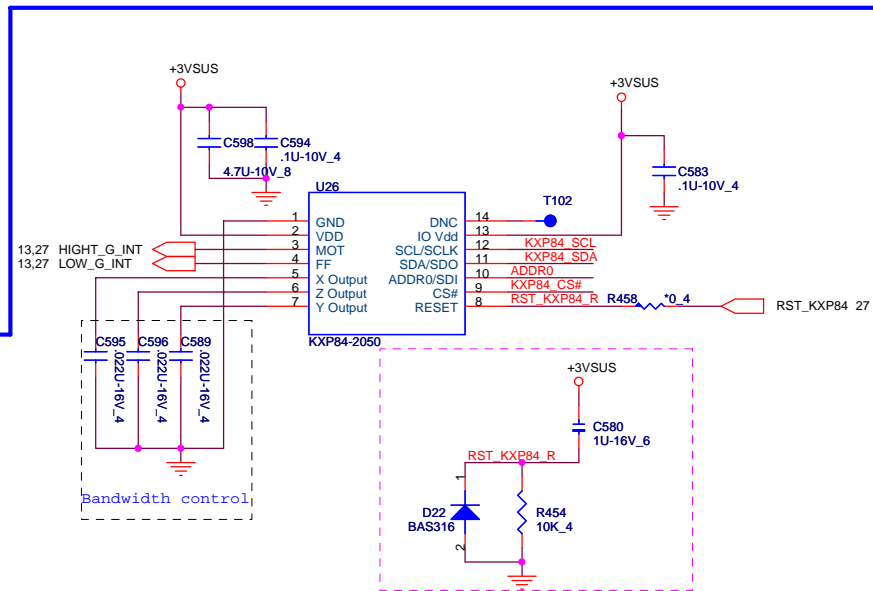
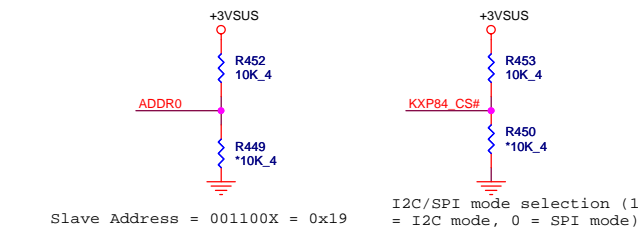
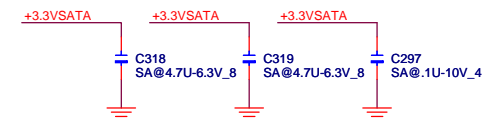
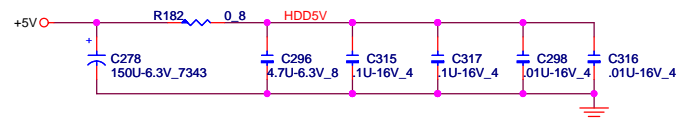
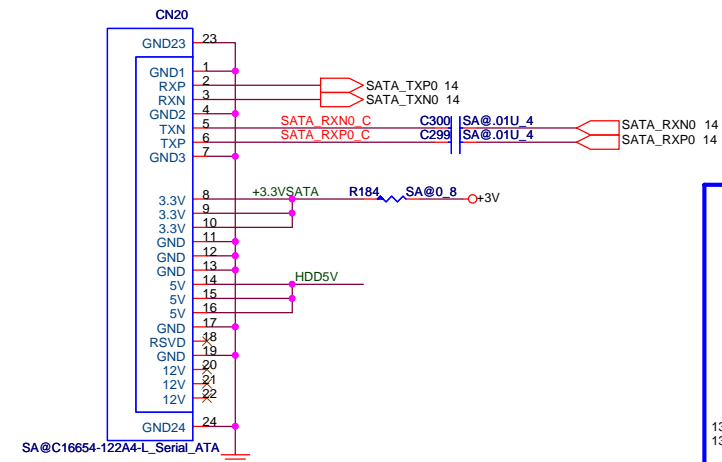
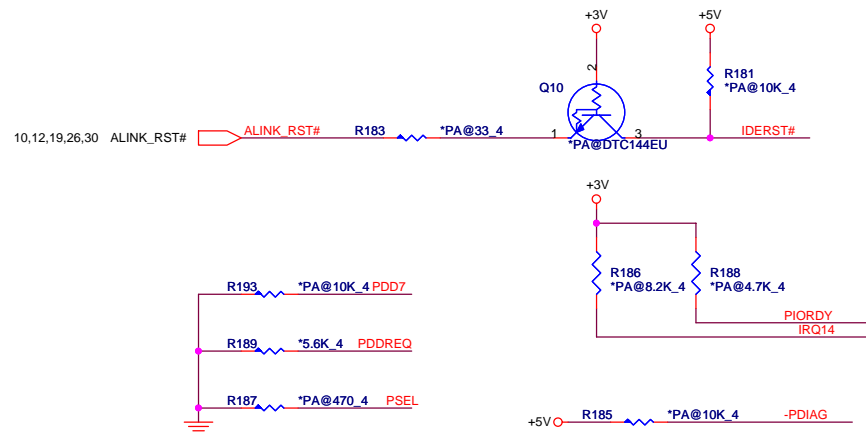
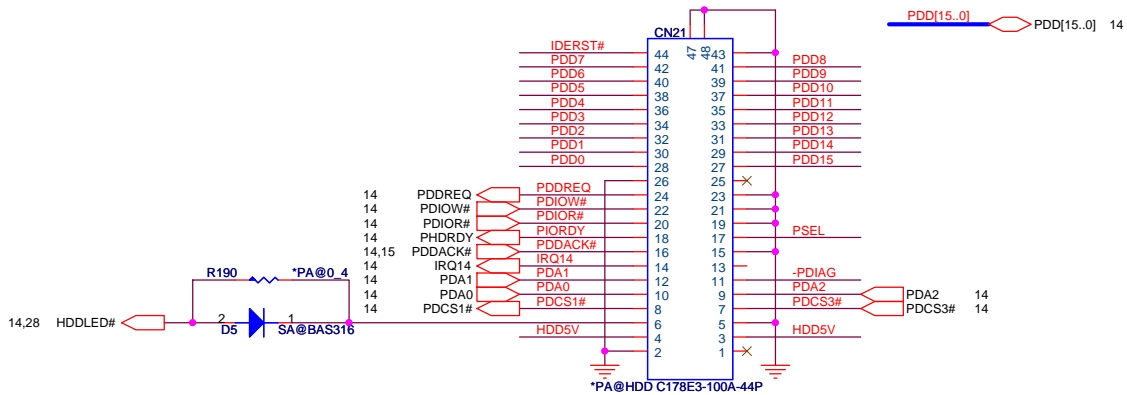
### 5-IN-1 Card Reader





**PROJECT :ZH3**  
**Quanta Computer Inc.**

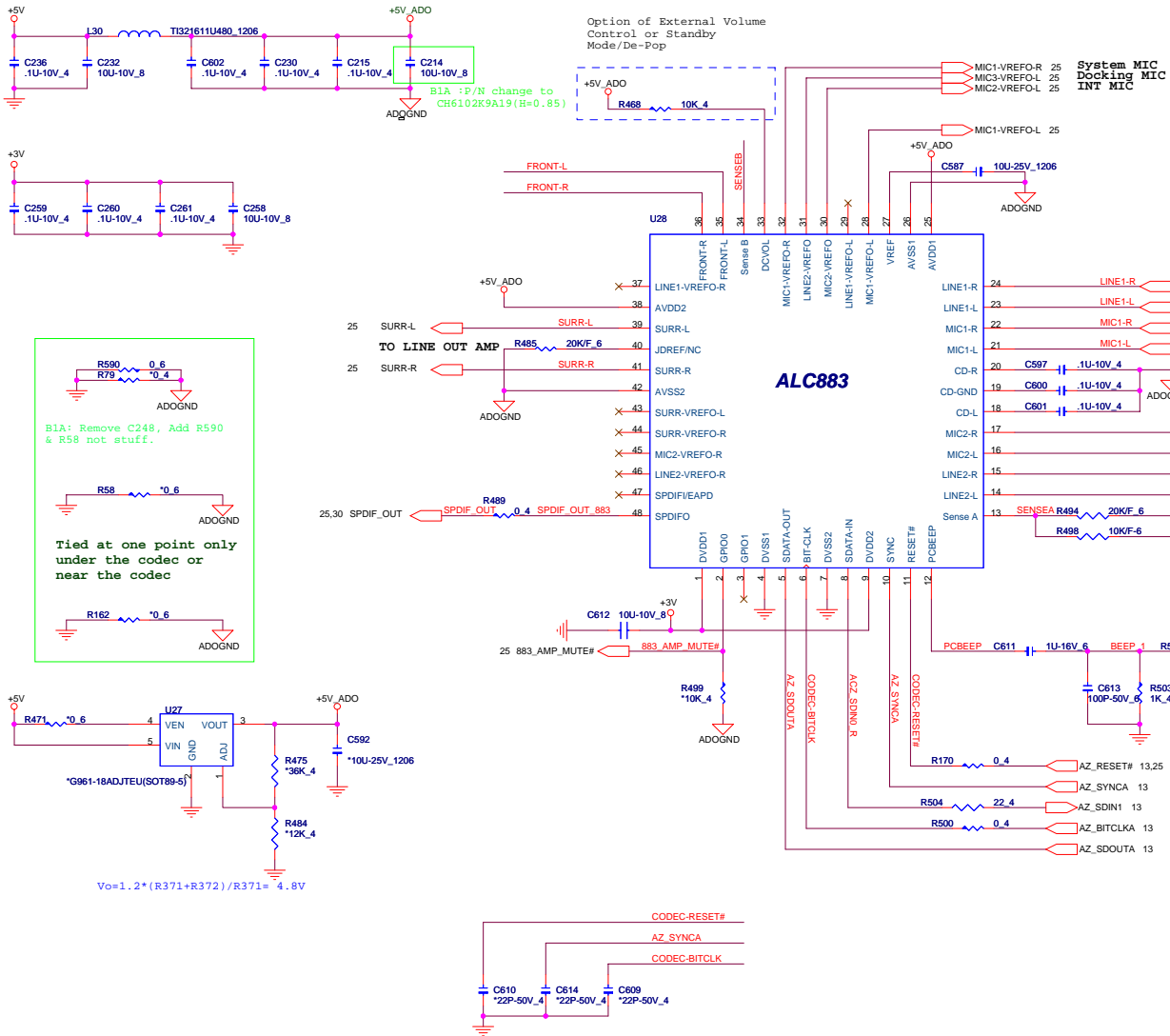
Size	Document Number	Rev	D
	<b>PCI7412-PCMCIA &amp; CARD READER</b>		
Date:	Thursday, August 24, 2006	Sheet	22 of 36



Slave Address = 001100X = 0x19

I2C/SPI mode selection (1 = I2C mode, 0 = SPI mode)

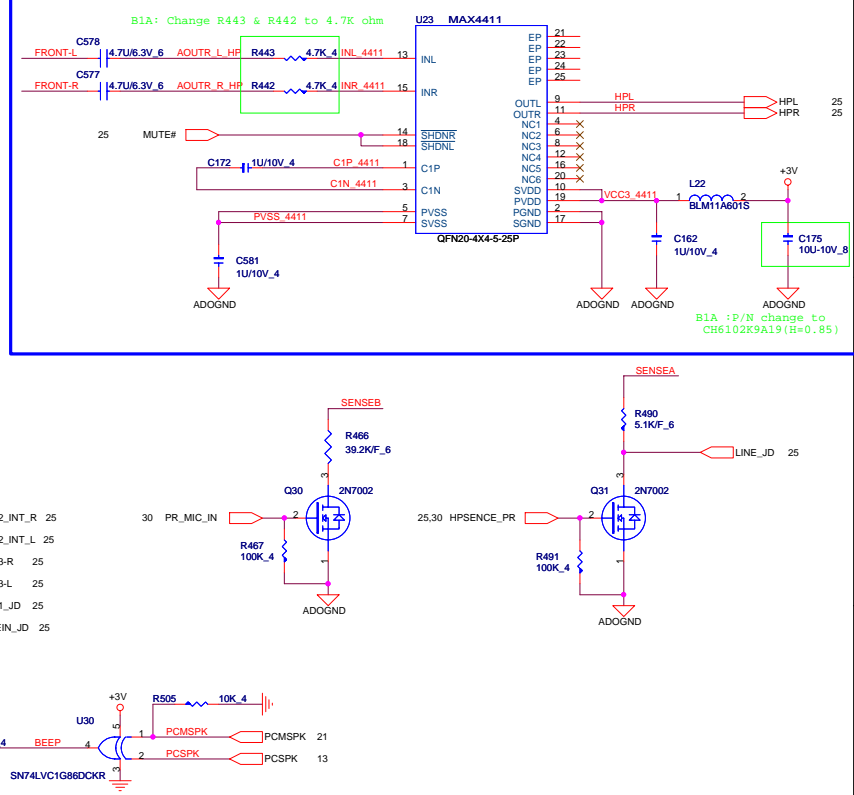
# CODEC (ALC883)



B1A: Remove C248, Add R590 & R58 not stuff.

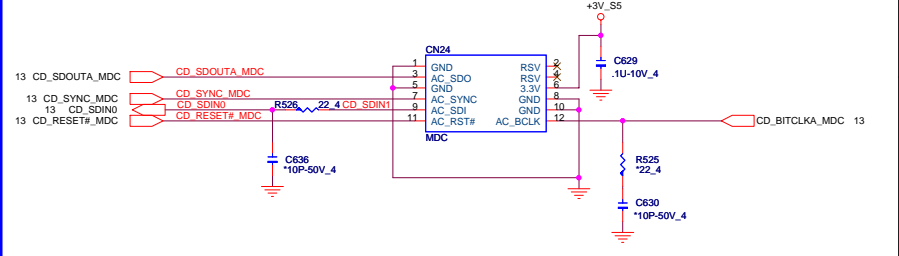
Tied at one point only under the codec or near the codec

# LINE OUT Amplifier

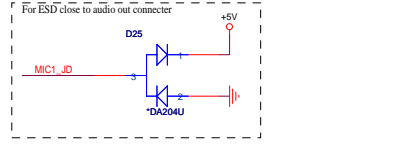
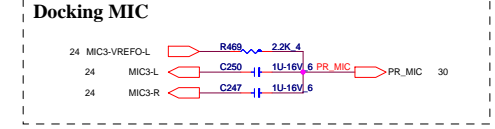
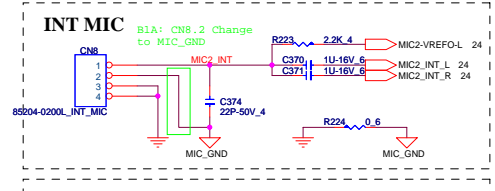
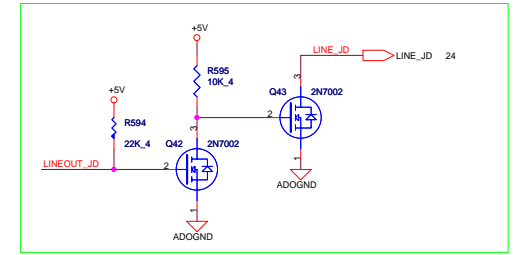
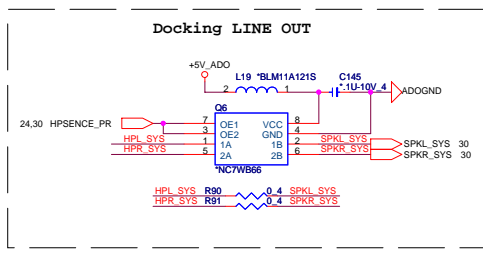
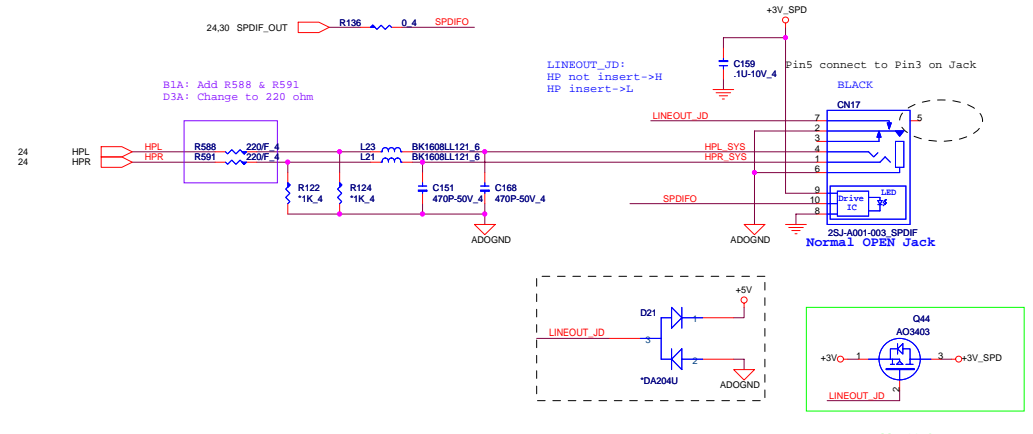
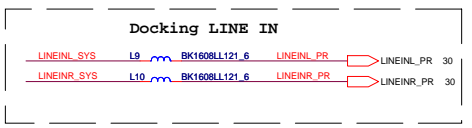
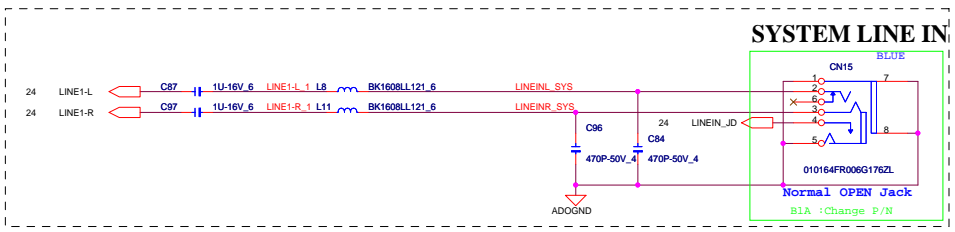
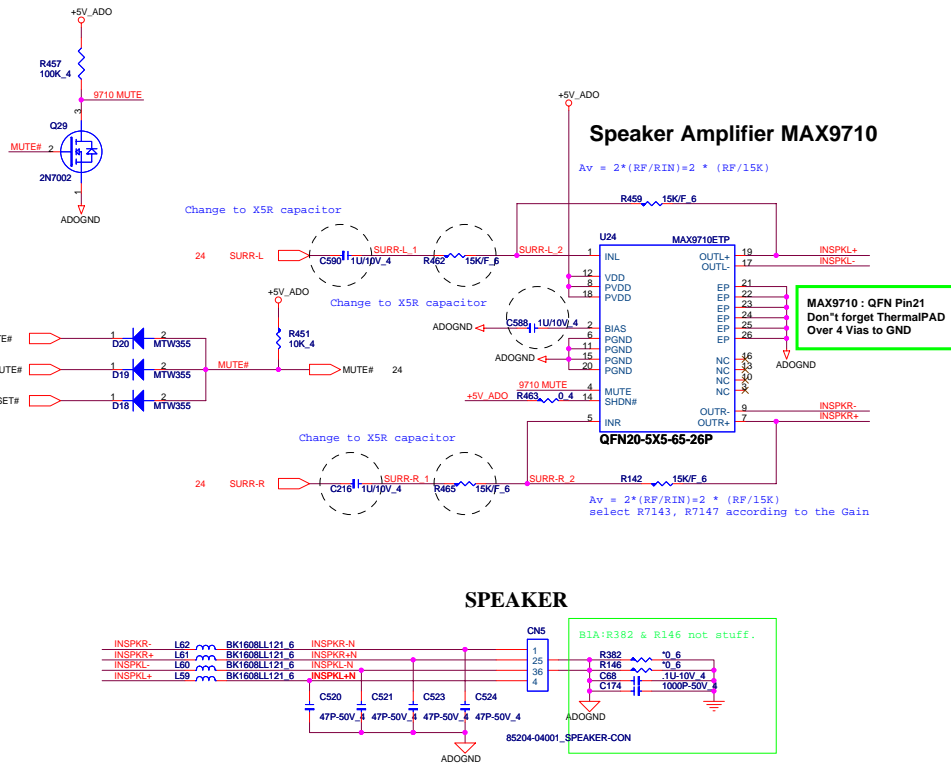


# MDC

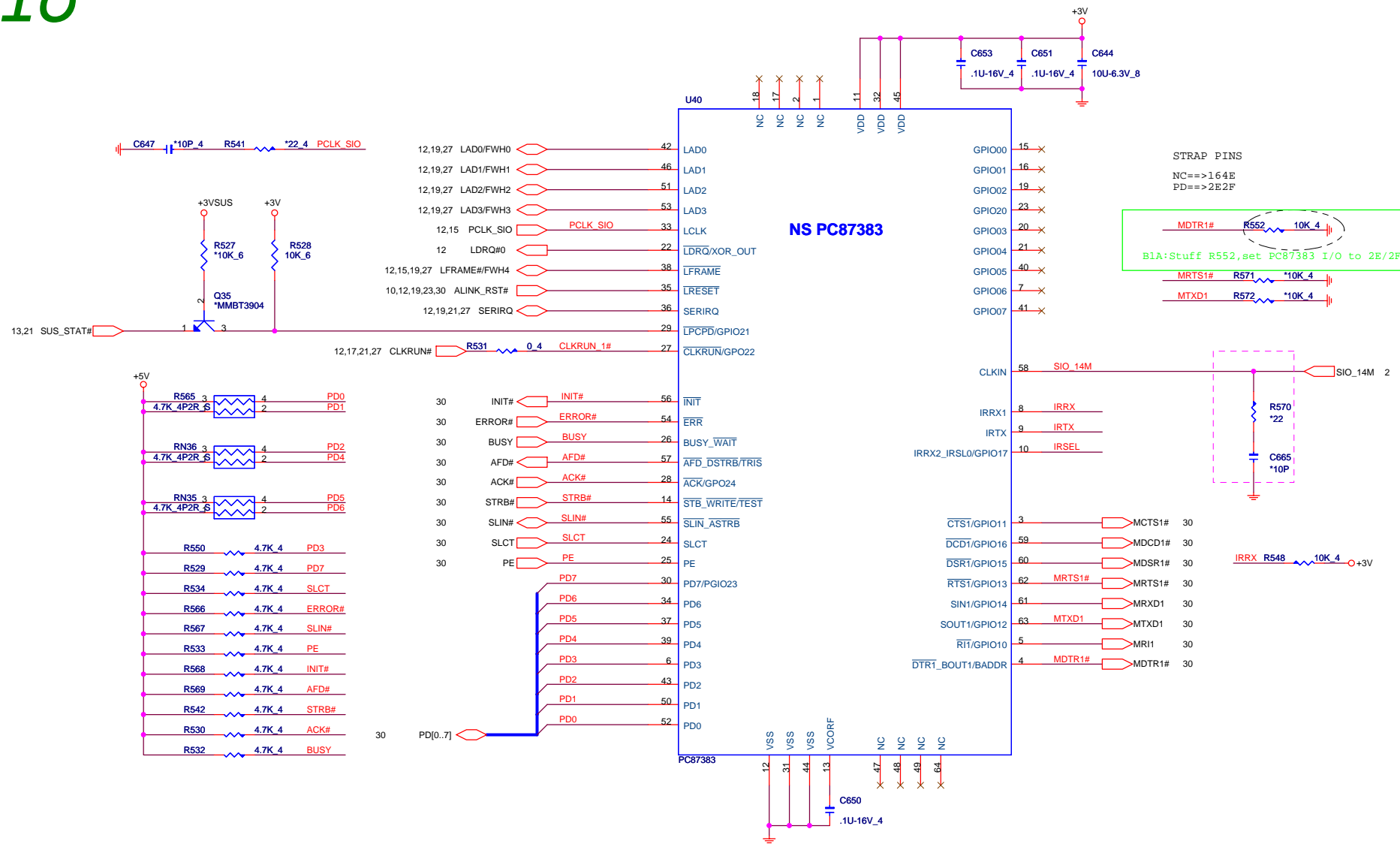
# For MDC Module







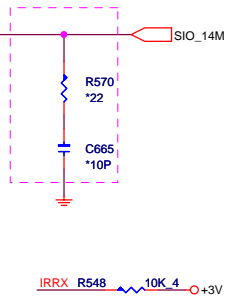
# SIO



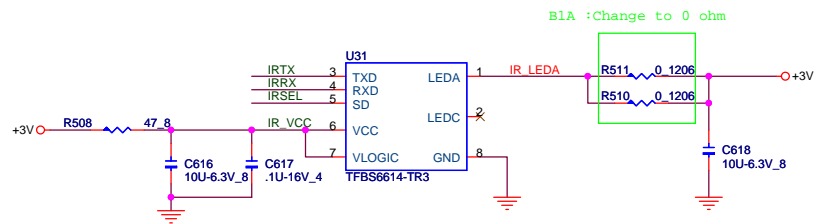
STRAP PINS  
 NC==>164E  
 PD==>2E2F

MDTR1# R552 10K 4  
 B1A:Stuiff R552,set PC87383 I/O to 2E/2F

MRTS1# R571 \*10K 4  
 MTXD1 R572 \*10K 4



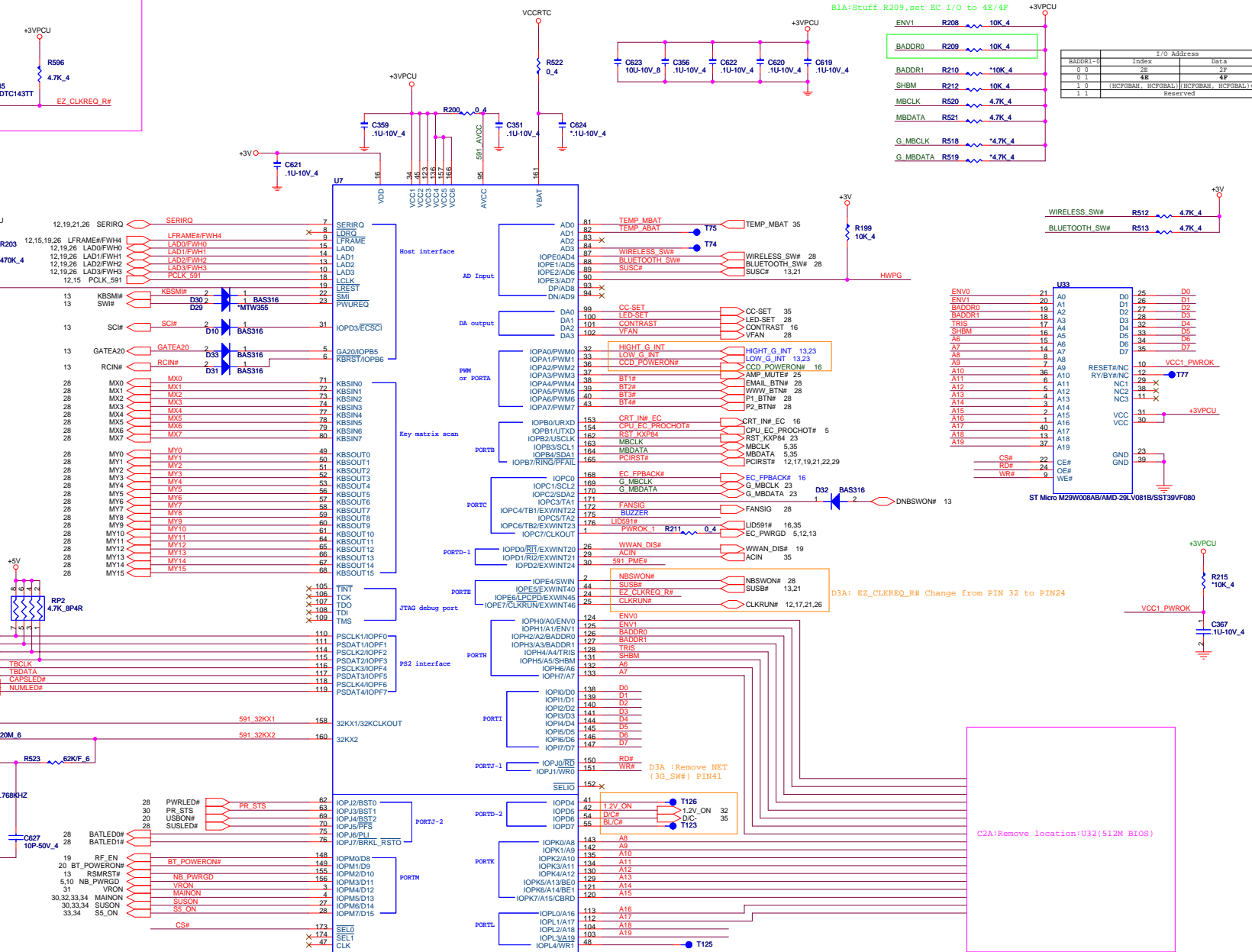
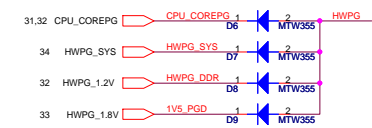
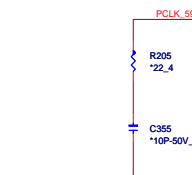
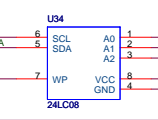
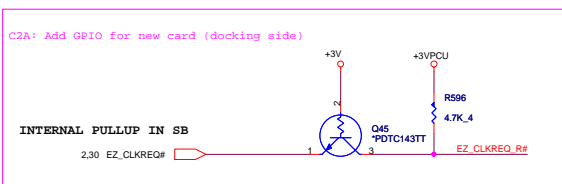
## FIR



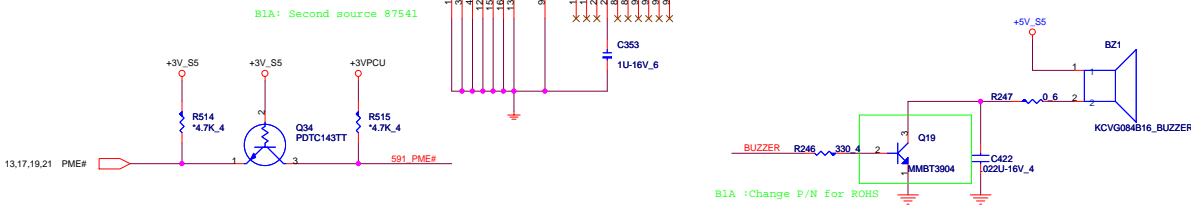
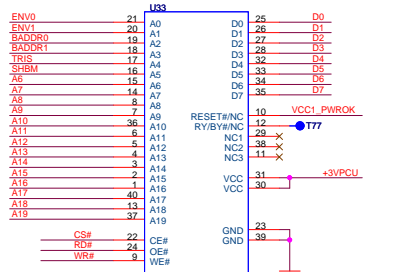
**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size Custom Document Number  
**SIO (87383) & FIR** Rev D

Date: Thursday, June 29, 2006 Sheet 26 of 36

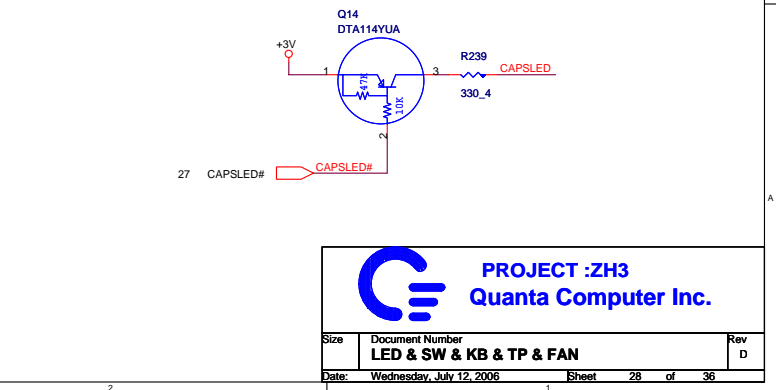
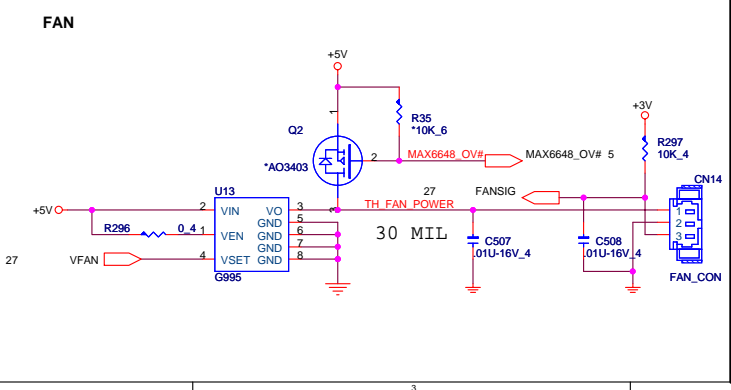
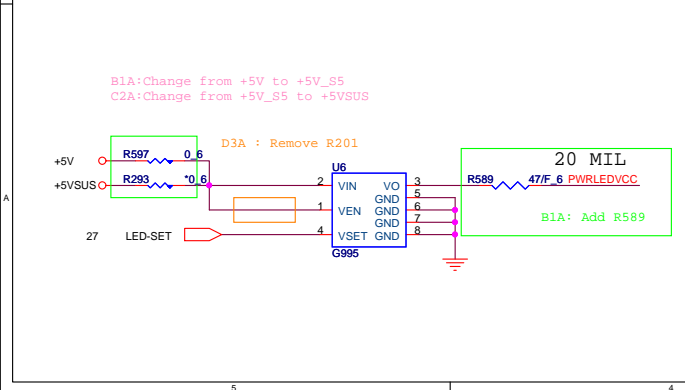
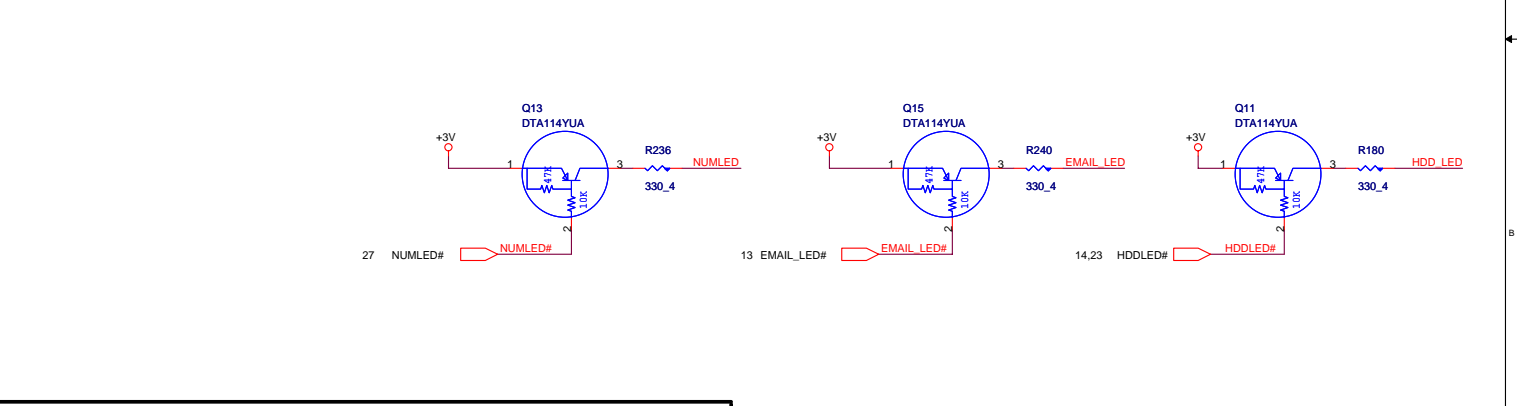
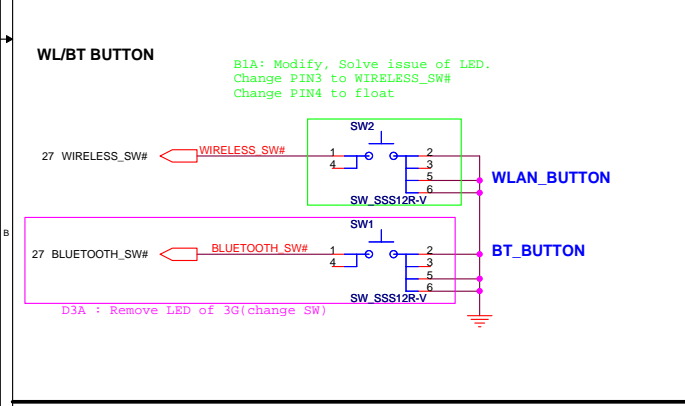
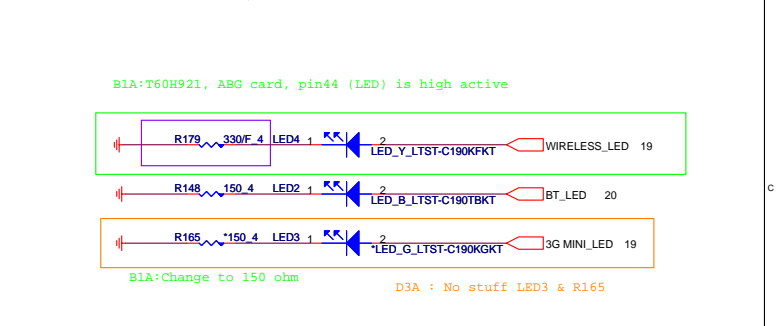
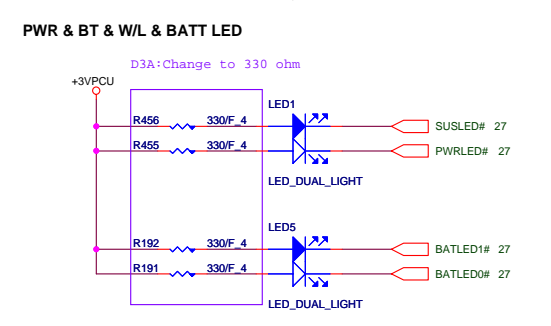
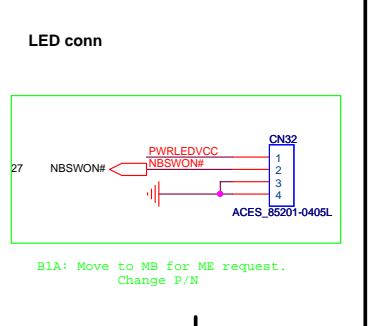
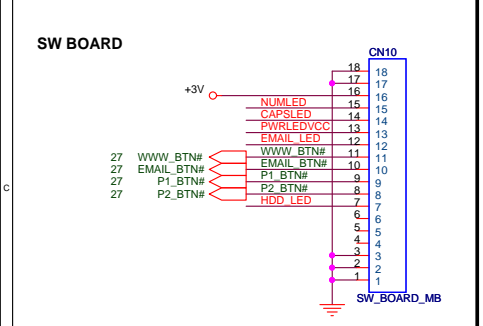
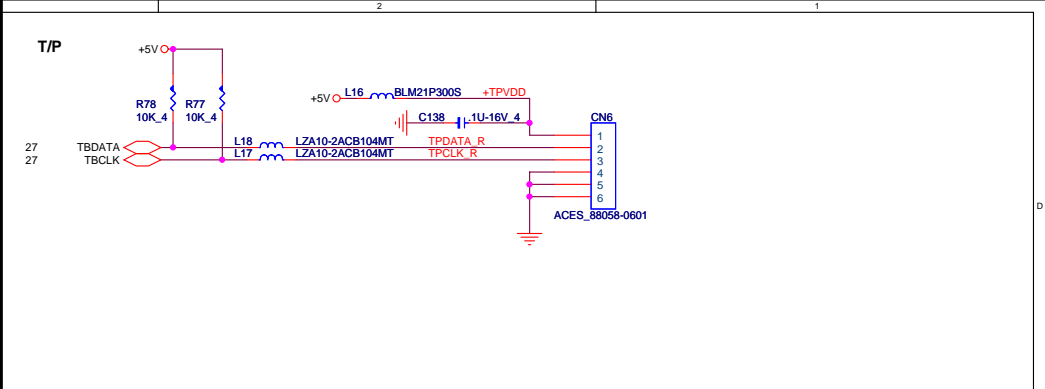
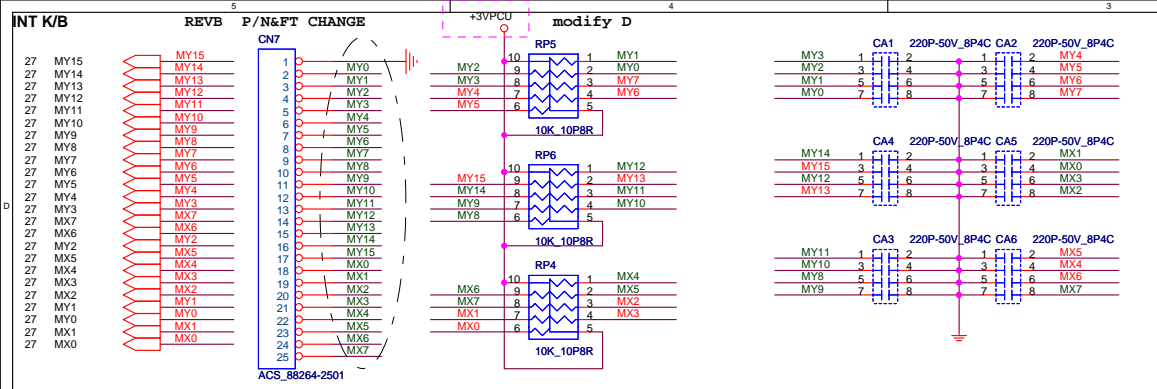


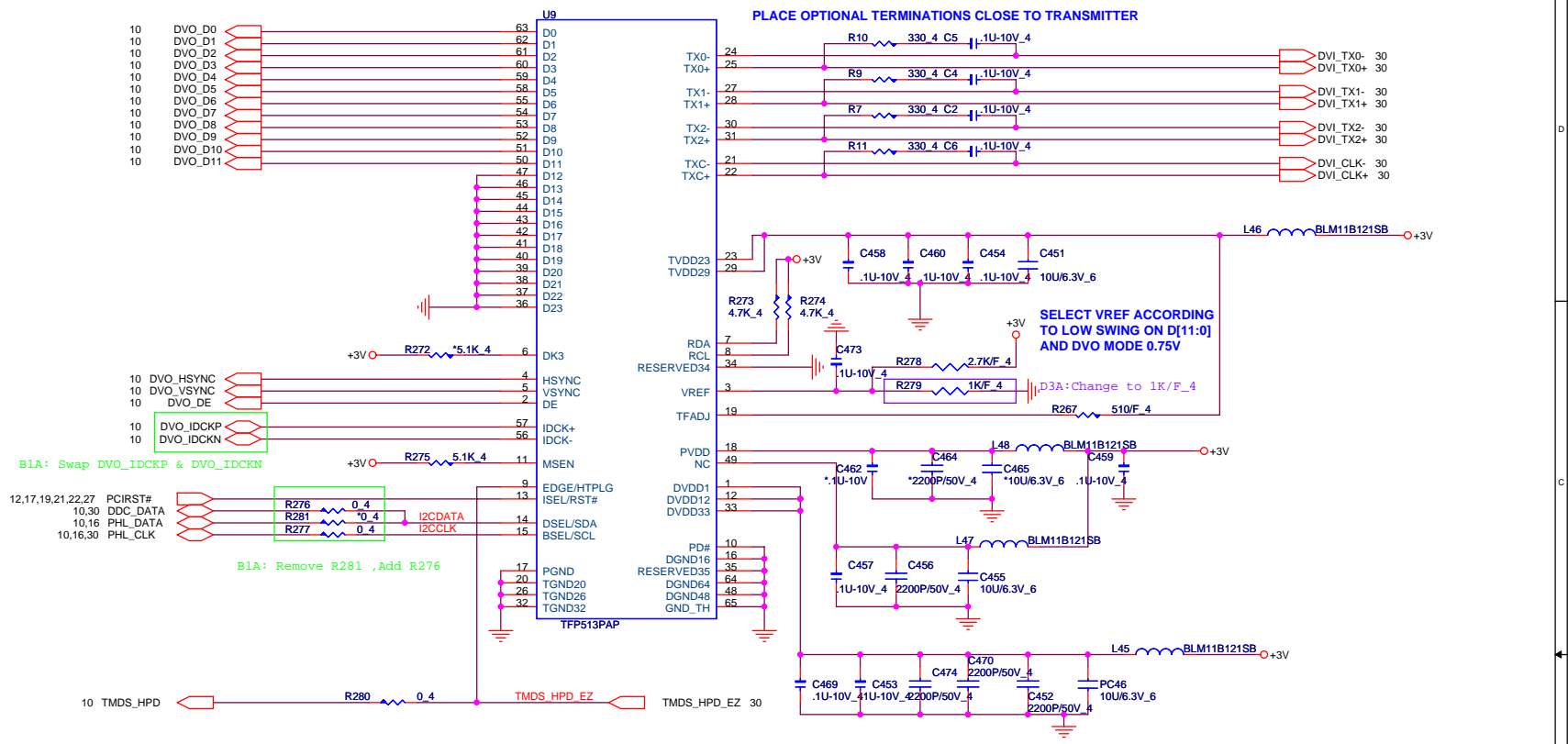
I/O Address			
BADDR1-0	Index	Data	
0 0	2E	2F	
0 1	4E	4F	
1 0	(HCFG0AH, HCFG0B1, HCFG0BAH, HCFG0B1+1)	Reserved	
1 1	Reserved		



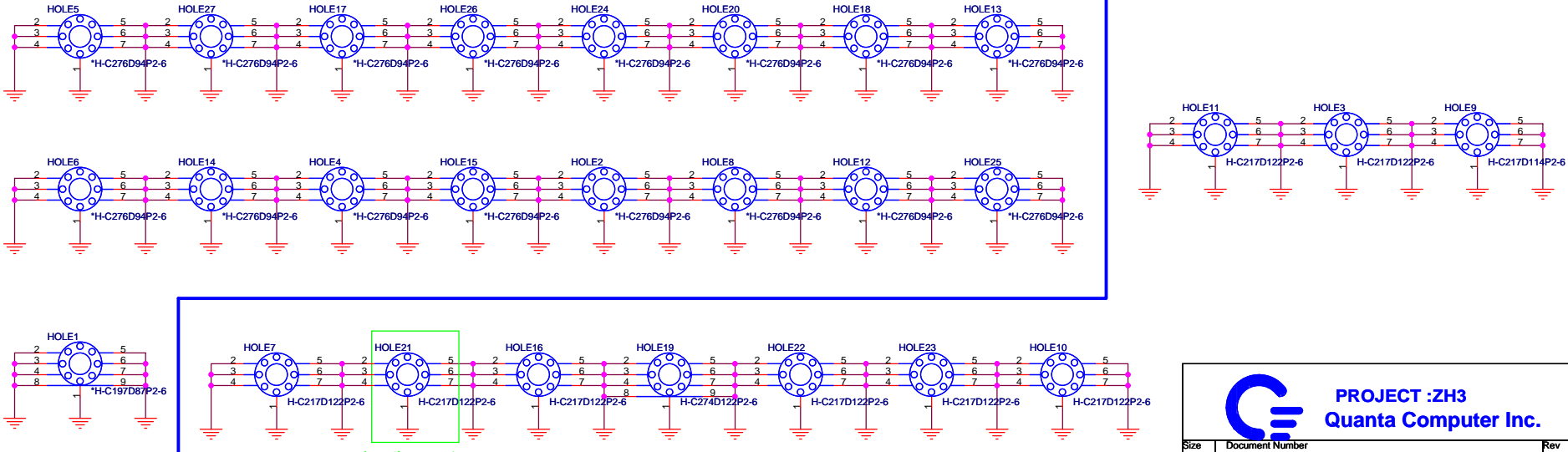
**PROJECT :ZH3**  
**Quanta Computer Inc.**


Size: 97551 & FLASH  
Document Number: 97551 & FLASH  
Date: Monday, July 17, 2006  
Rev D  
Sheet 27 of 36





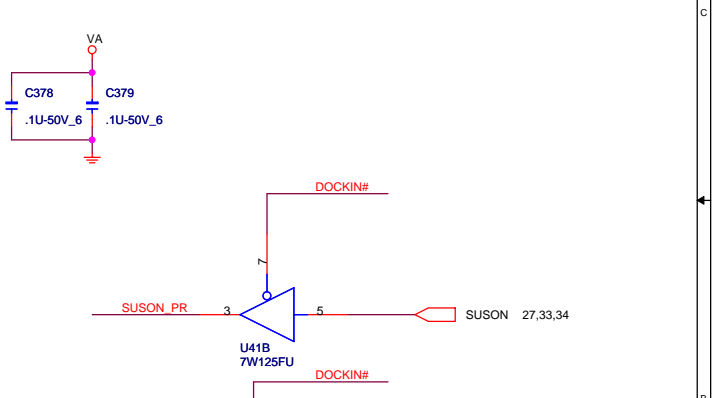
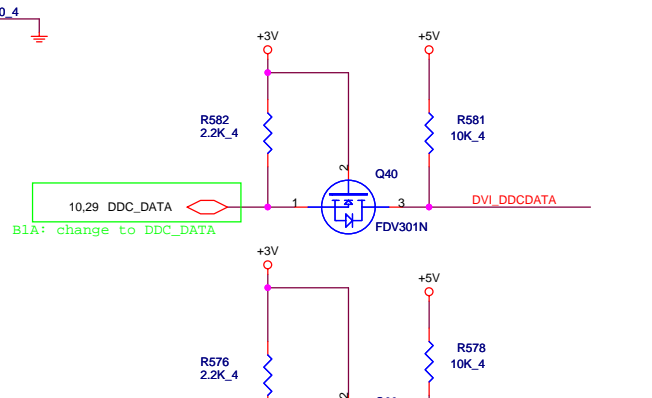
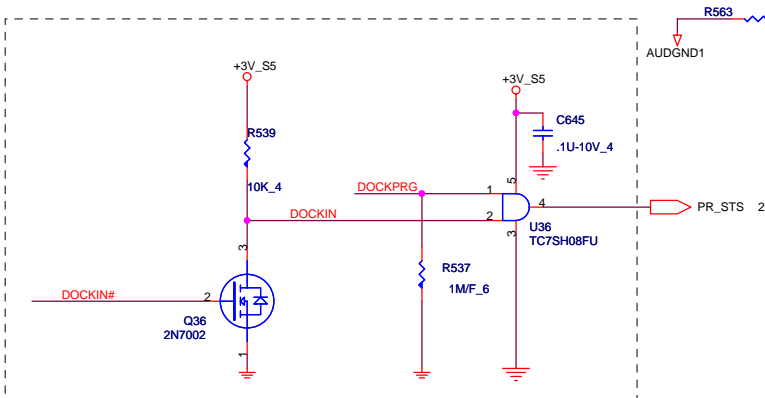
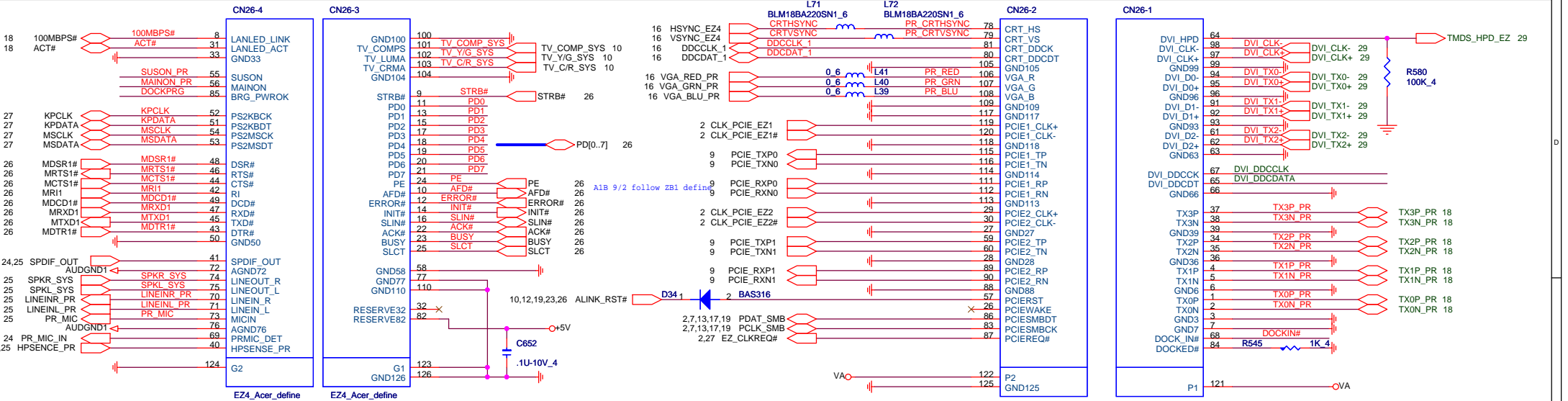
# HOLE





**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>CH7307&amp; HOLE</b>	<b>D</b>
Date:	Wednesday, July 12, 2006	Sheet 29 of 36



SPKL SYS	C414	220P-50V_4
SPKR SYS	C667	220P-50V_4
LINEINL_PR	C674	220P-50V_4
LINEINR_PR	C420	220P-50V_4
PR_MIC_IN	C675	47P-50V_4
PR_MIC	C672	47P-50V_4
100MBPS#	C679	1000P-50V_4
ACT#	C435	1000P-50V_4
TV_COMP_SYS	C417	10P-50V_4
TV_Y/G_SYS	C416	10P-50V_4
TV_C/R_SYS	C415	10P-50V_4

PR_CRTHSYNC	C654	*10P-50V_4
PR_CRTVSYNC	C659	*10P-50V_4
PR_BLU	C407	10P-50V_4
PR_GRN	C408	10P-50V_4
PR_RED	C413	10P-50V_4
CRTHSYNC	C855	*10P-50V_4
CRTVSYNC	C860	*10P-50V_4
DDCCLK_1	C401	10P-50V_4
DDCCDAT_1	C402	10P-50V_4

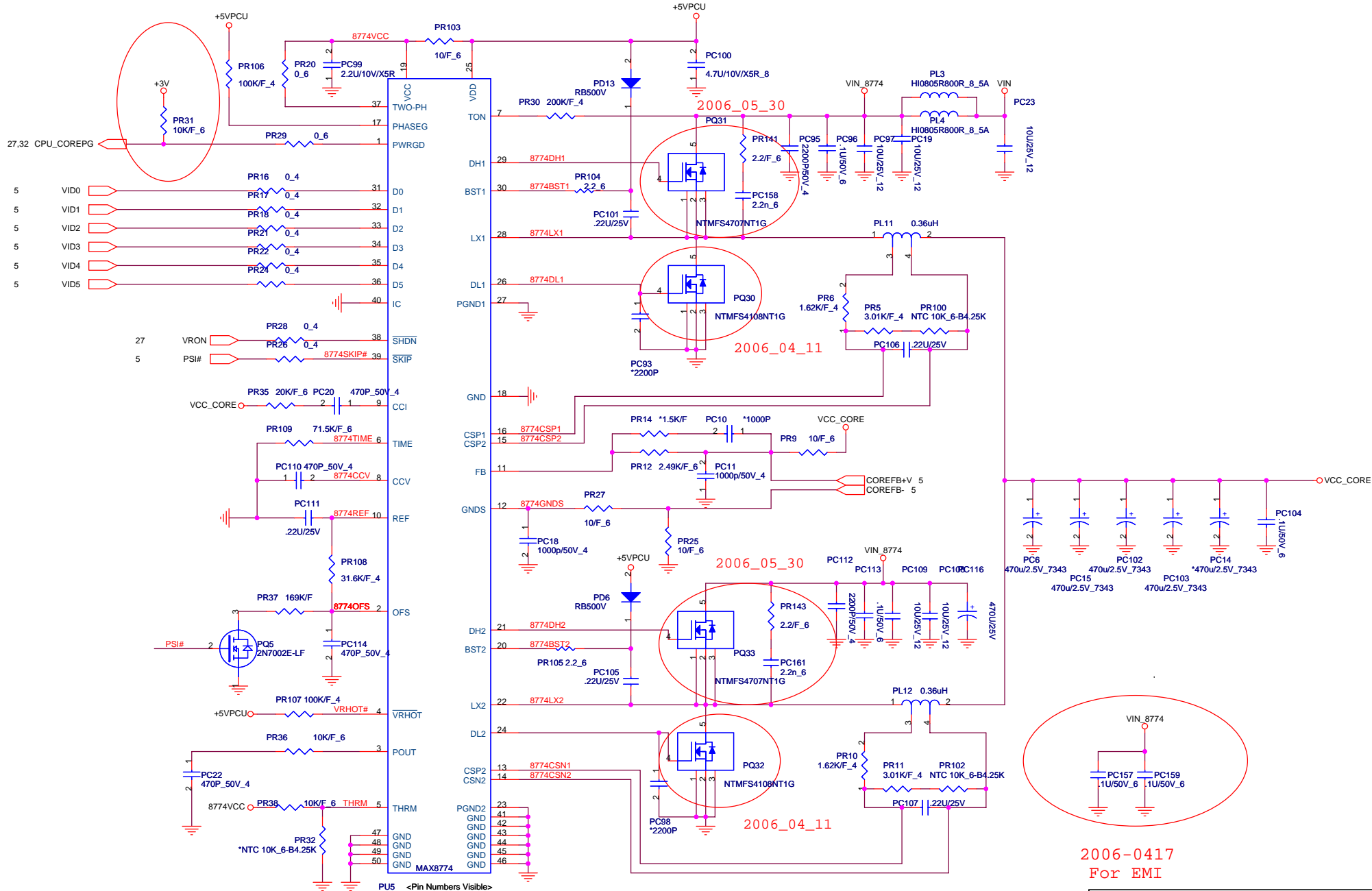
B1A: Remove C421, C427, C433, C434, C436, C437, C438, C439

**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>EZ4 CONN</b>	D

Date: Wednesday, June 28, 2006 Sheet 30 of 36

2006\_03\_06 for AMD



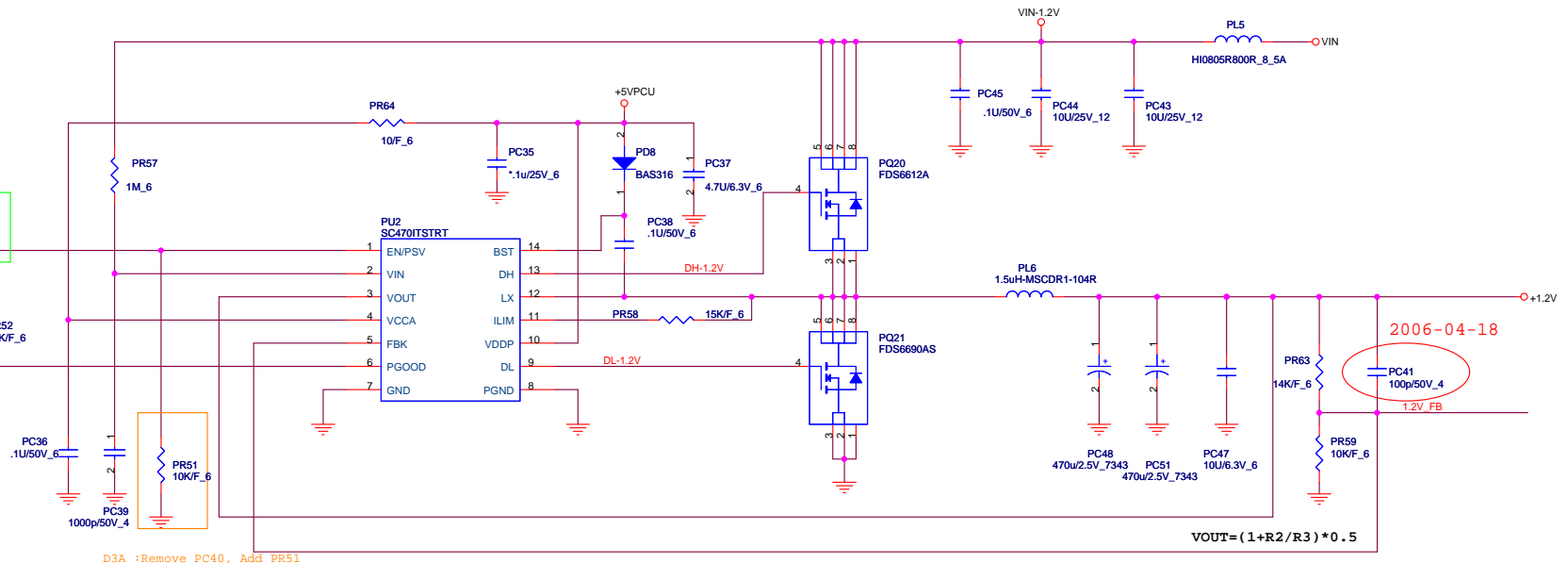
PUS <Pin Numbers Visible>  
 B1A: PUS Change footprint to -50P

2006-0417  
 For EMI

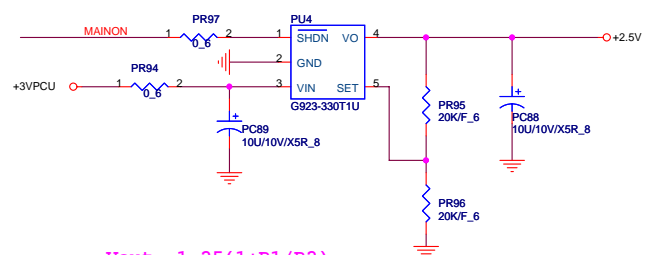
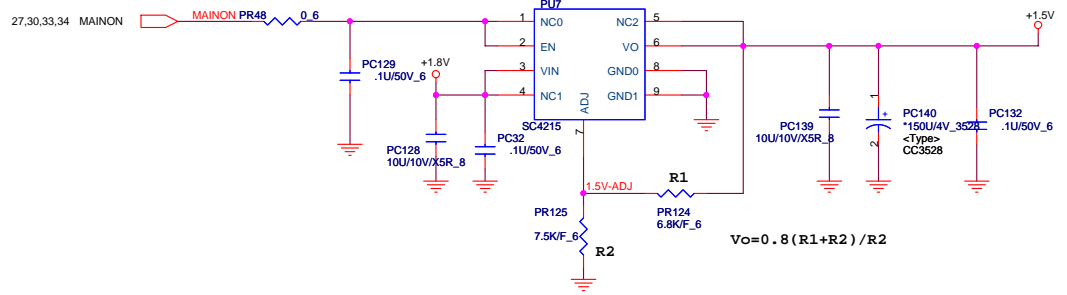
**PROJECT :ZH3**  
**Quanta Computer Inc.**

Size	Document Number	Rev
	<b>CPU CORE MAX8760</b>	D
Date:	Wednesday, July 12, 2006	Sheet 31 of 36

C2A :Modify to EC control ,  
Remove PR66, Stuff PR65



D3A :Remove PC40, Add PR51

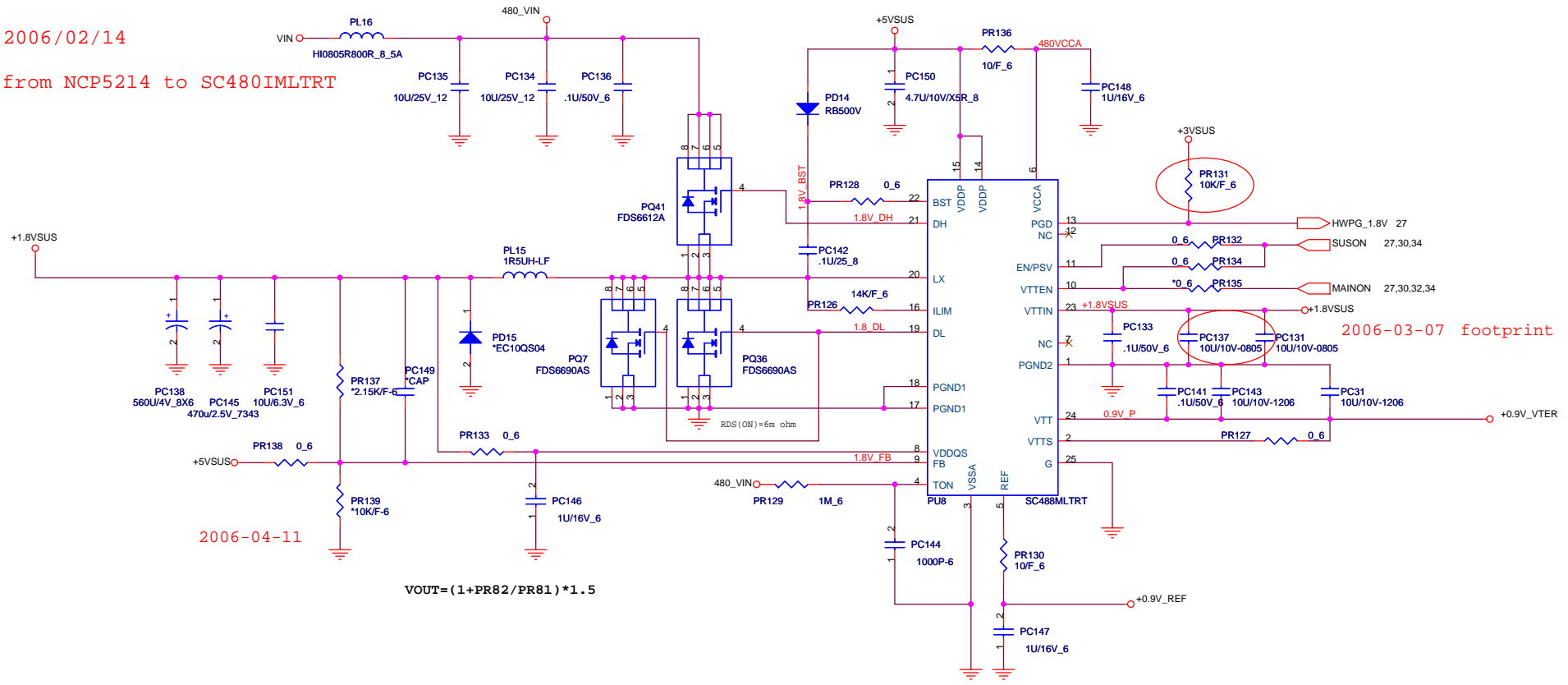


Size	Document Number	Rev
Custom	+1.2V & NBRUN	D
Date:	Wednesday, June 28, 2006	Sheet 32 of 36



2006/02/14

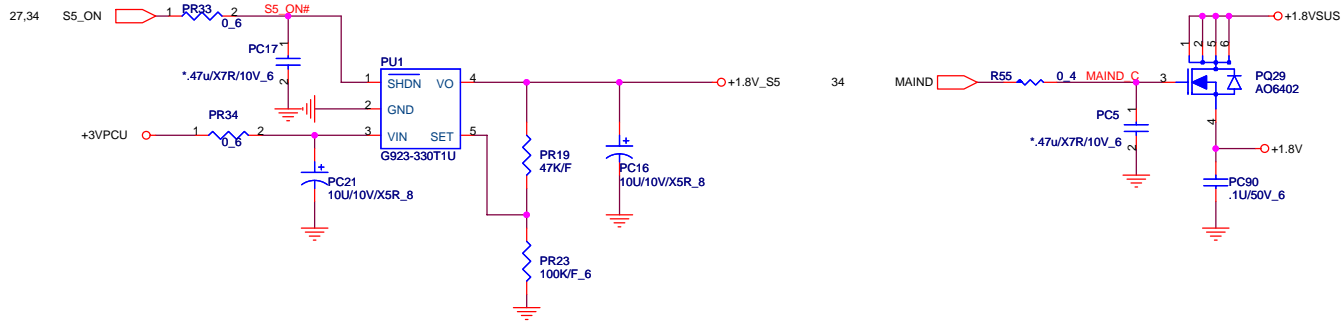
change from NCP5214 to SC480IMLTRT



2006-04-11

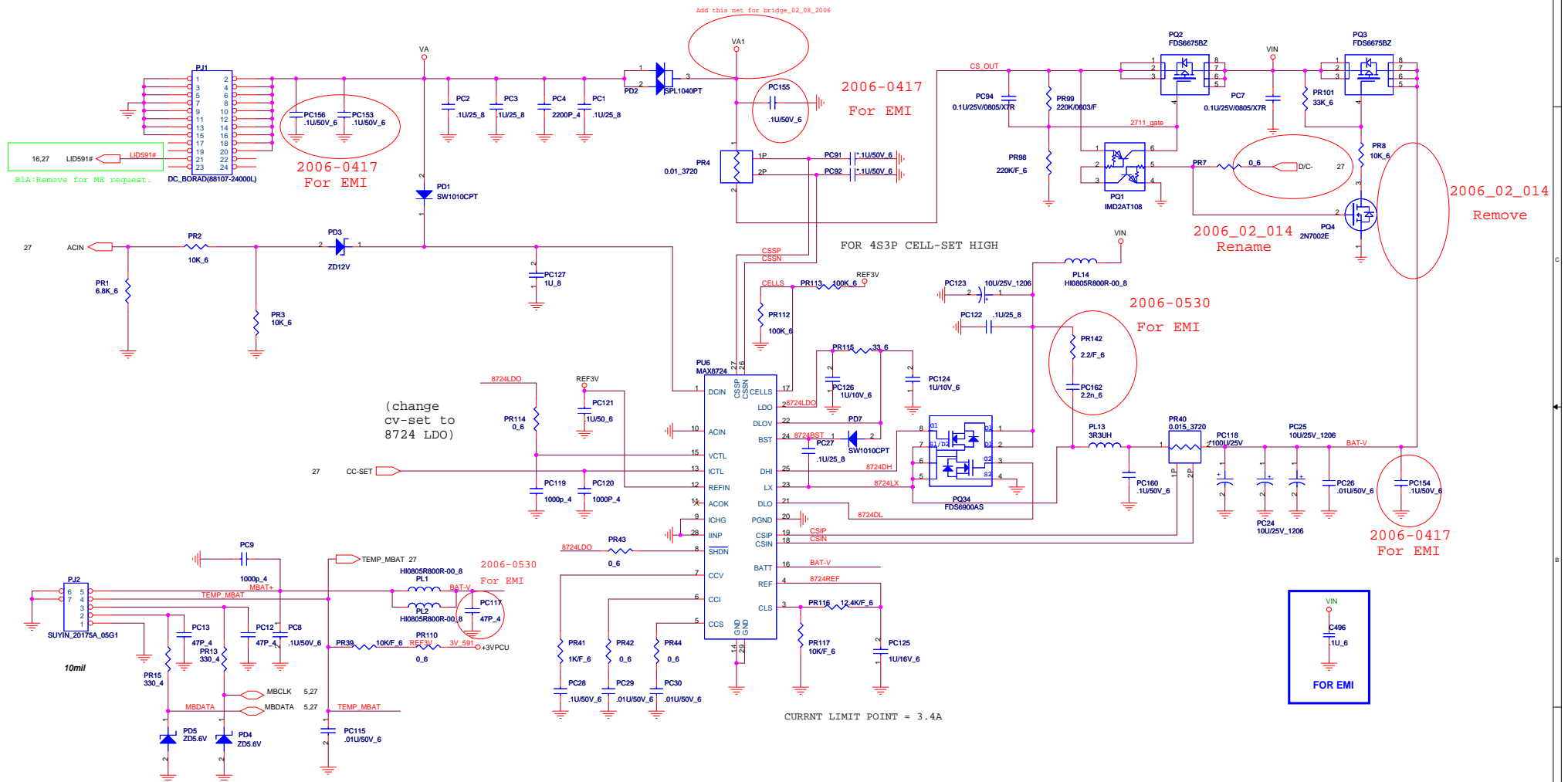
$$V_{OUT} = (1 + \frac{PR82}{PR81}) * 1.5$$

2006-03-07 footprint



$$\begin{aligned} V_{out} &= 1.25(1 + R1/R2) \\ &= 1.25(1 + 44K/100K) \\ &= 1.8V \end{aligned}$$





# Change list

Item	Fixed Issue	Modify List	Schematic Rev.	PG#
1	New card issue.	NC_EN# connect the PIN4 & PIN17 of CN2 and PIN11 & PIN12 of CN14	B	13,31
2	New card issue.	Change from USB8 to USB5 for new card.	B	13,31
3	Lan issue.	Signal change from INTF to INTG	B	12,17
4	INT MIC issue.	CN8.2 change from MIC2_INT to MIC_GND	B	25
5	Wireless LED issue.	SW2.1 change from GND to wireless_sw#, SW2.2 change from wireless_sw# to GND. PIN3,4 is float	B	28
6	DVI issue	Q40.1 change from PHL_DATA to DDC_DATA	B	29,30
7	RAMP test			
8				
9				
10				
1				
2				
3				
4				
5				
6				
7				
8				
1				
2				
3				