

**Revision : 1.3**

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25	ALC888B

[illegible]

**Model Name:GA-MA74GMT-S2**

### Component value change history


**Version:1.3**

**P-Code: U98102-0**

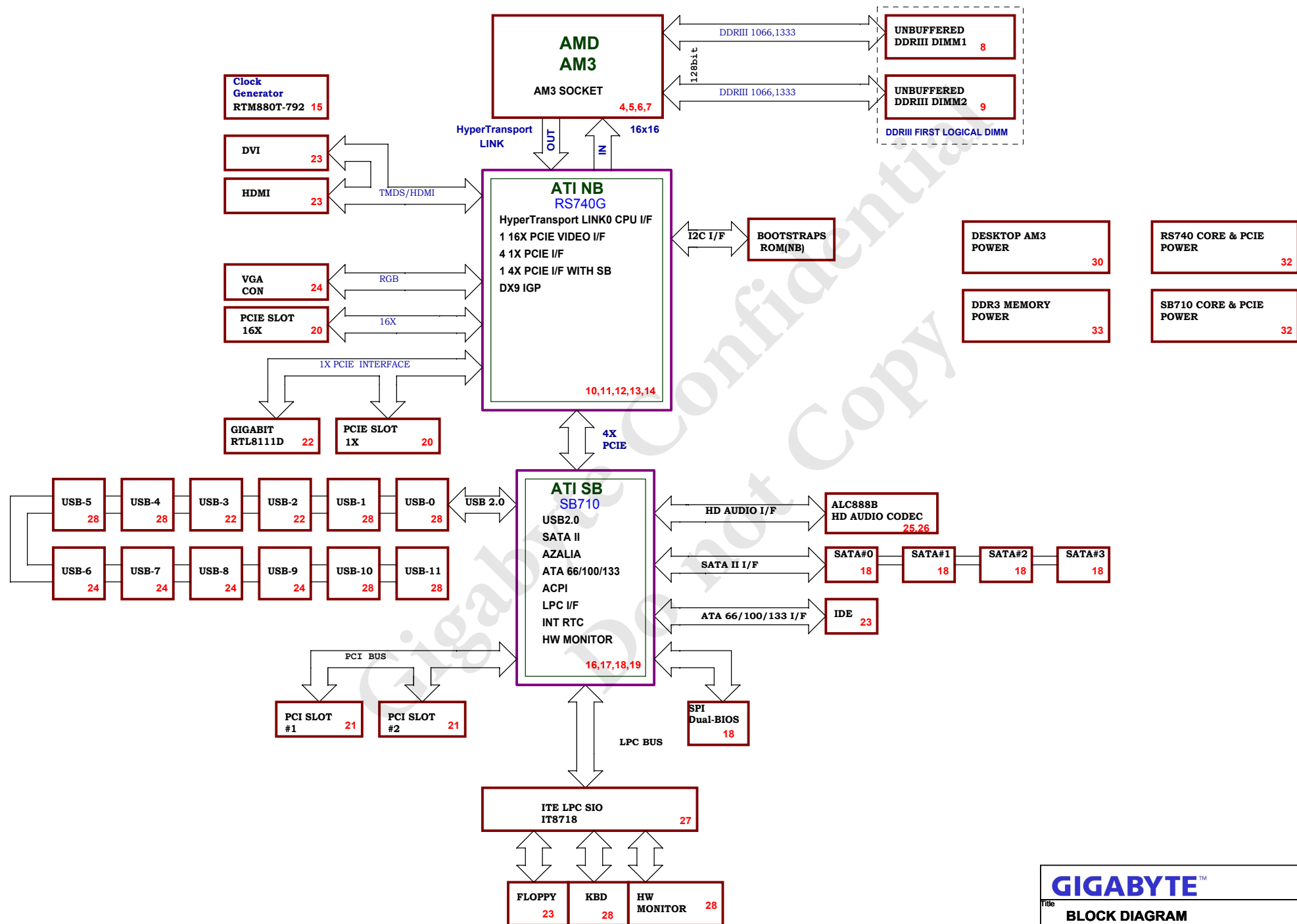
[illegible]

### Circuit or PCB layout change for next version

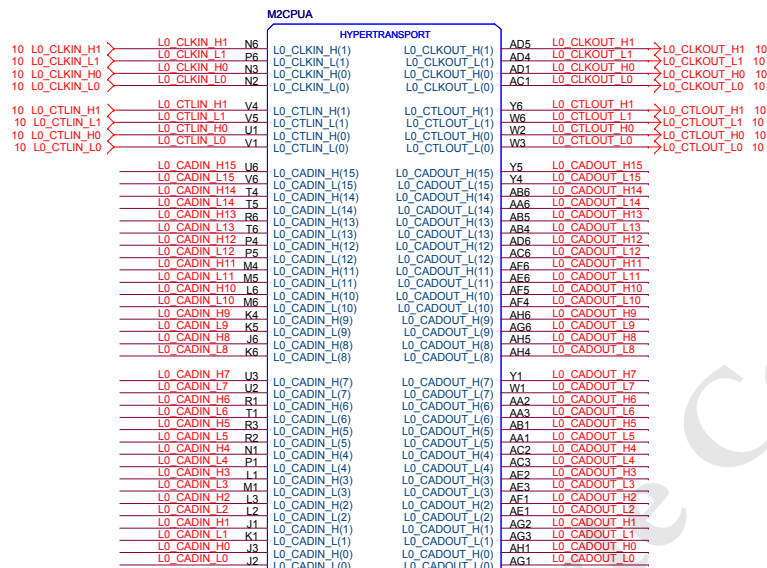
[illegible]

			
Title			
BOM & PCB HISTORY			
Size	Document Number	Rev	
Custom	GA-MA74GMT-S2	1.3	
Date:	Thursday, April 15, 2010	Sheet	2 of 33

# RS740 CUSTOMER DESKTOP REFERENCE DESIGN



L0\_CADIN\_L[0..15] < L0\_CADIN\_L[0..15] 10  
L0\_CADIN\_H[0..15] < L0\_CADIN\_H[0..15] 10  
L0\_CADOUT\_L[0..15] < L0\_CADOUT\_L[0..15] 10  
L0\_CADOUT\_H[0..15] < L0\_CADOUT\_H[0..15] 10



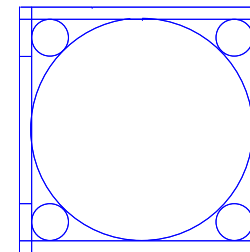
CPU-SK941AM3/S/GF[10SC1-A01941-01R]

CPU\_VDD\_RUN = VCORE  
CPU\_VDDA\_RUN = VDDA25  
VLDT\_RUN = VCC12\_HT  
CPU\_VDDIO\_SUS = DDR15V  
CPU\_VDDR = CPU\_VDDR12

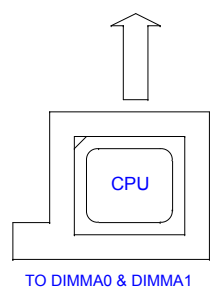
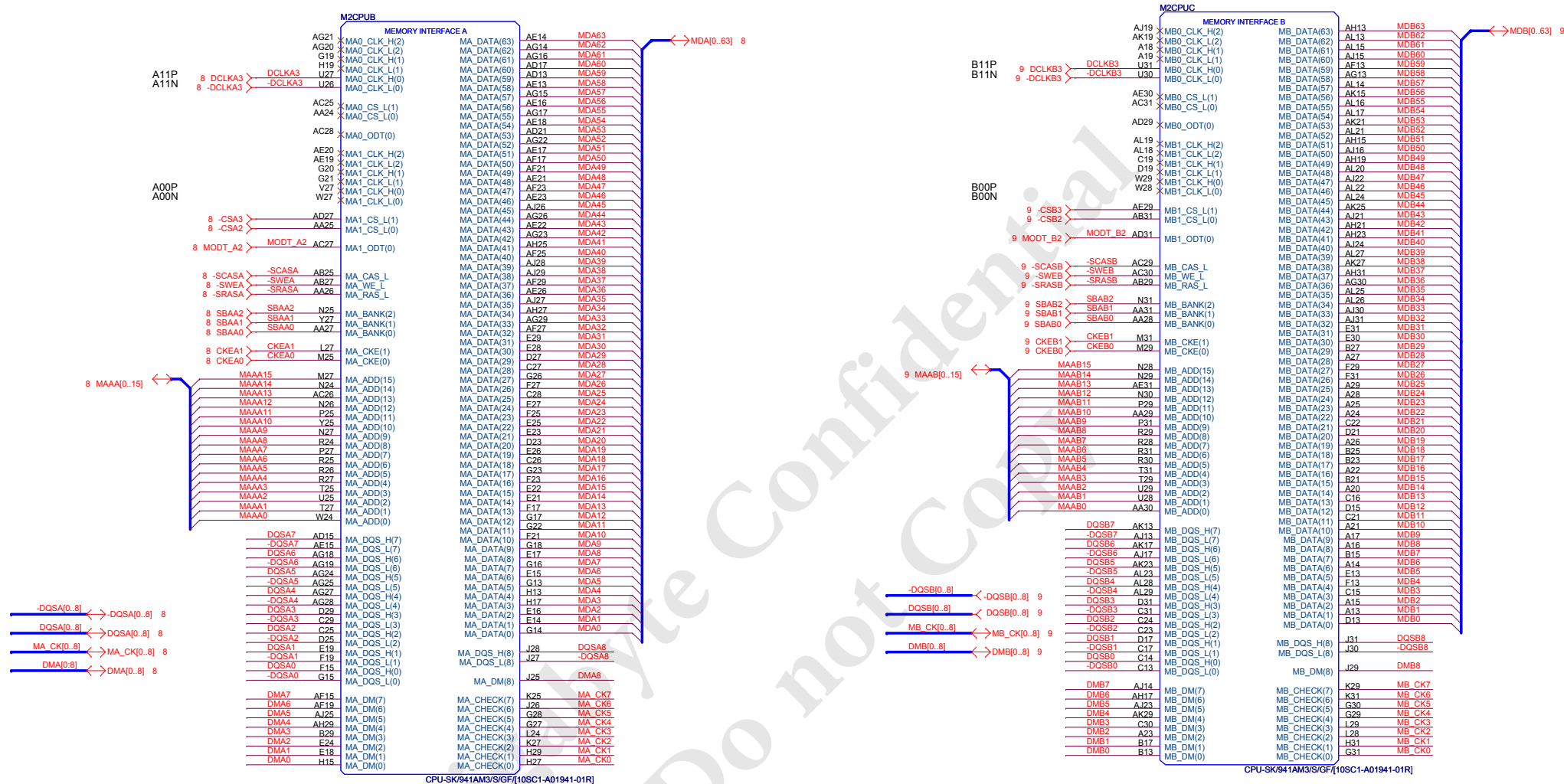
VLDT\_A = VCC12\_HT  
VLDT\_B = HT12B

M2CPU

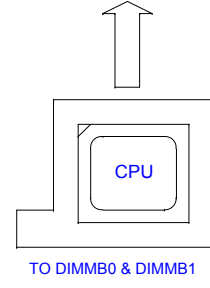
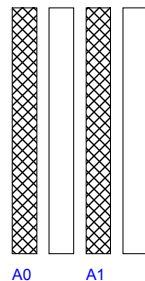
AM2RM/PP/BU/PB[12KRC-04K812-11R]



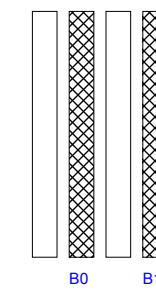
GIGABYTE™			
Title			
CPU HYPER TRANSPORT			
Size	Document Number	Rev	
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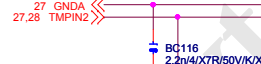
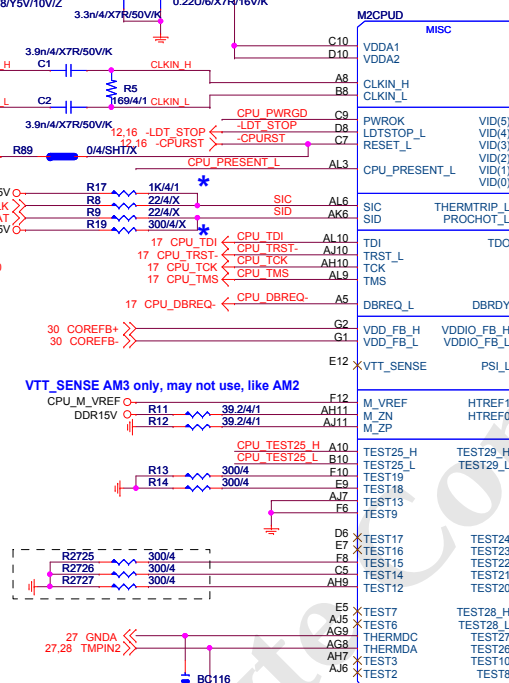
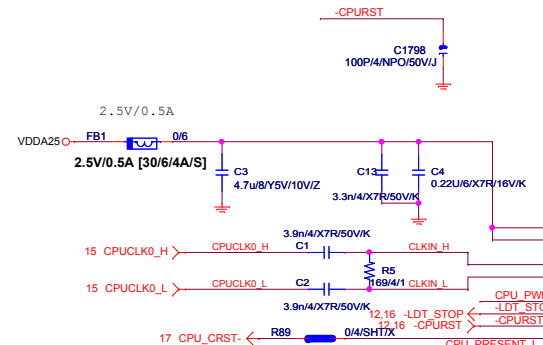
## MEM CHA



## MEM CHB

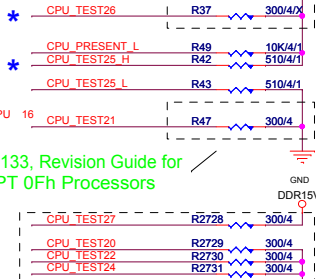
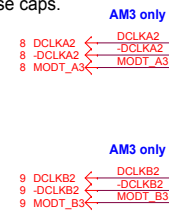


GIGABYTE™			
CPU DDRIII MEMORY			
Title	CPU DDRIII MEMORY		Rev
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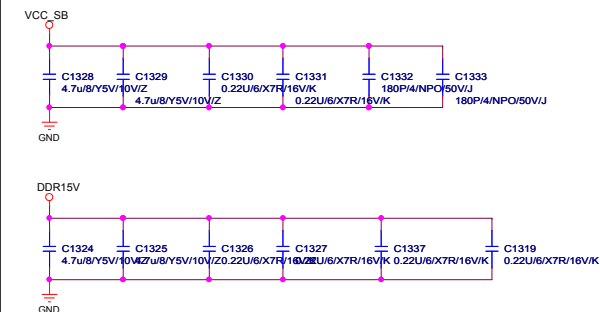


CPU-SK/941AM3/S/GF/[10SC1-A01941-01R]  
LAYOUT: Route trace 50 mils wide and

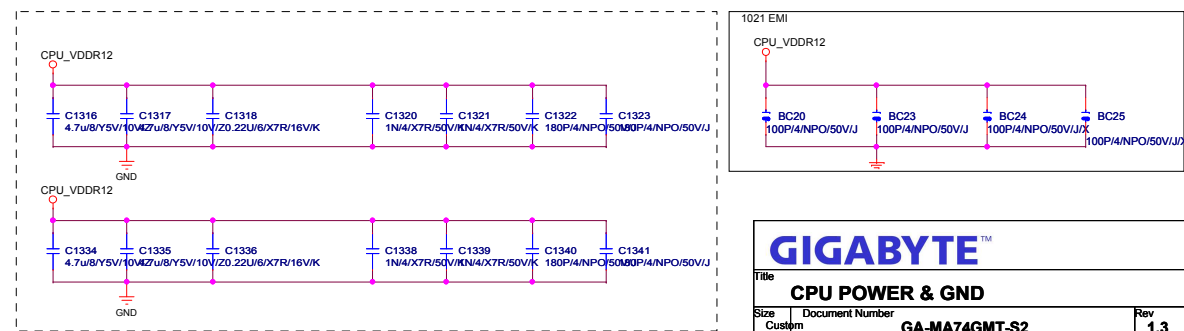
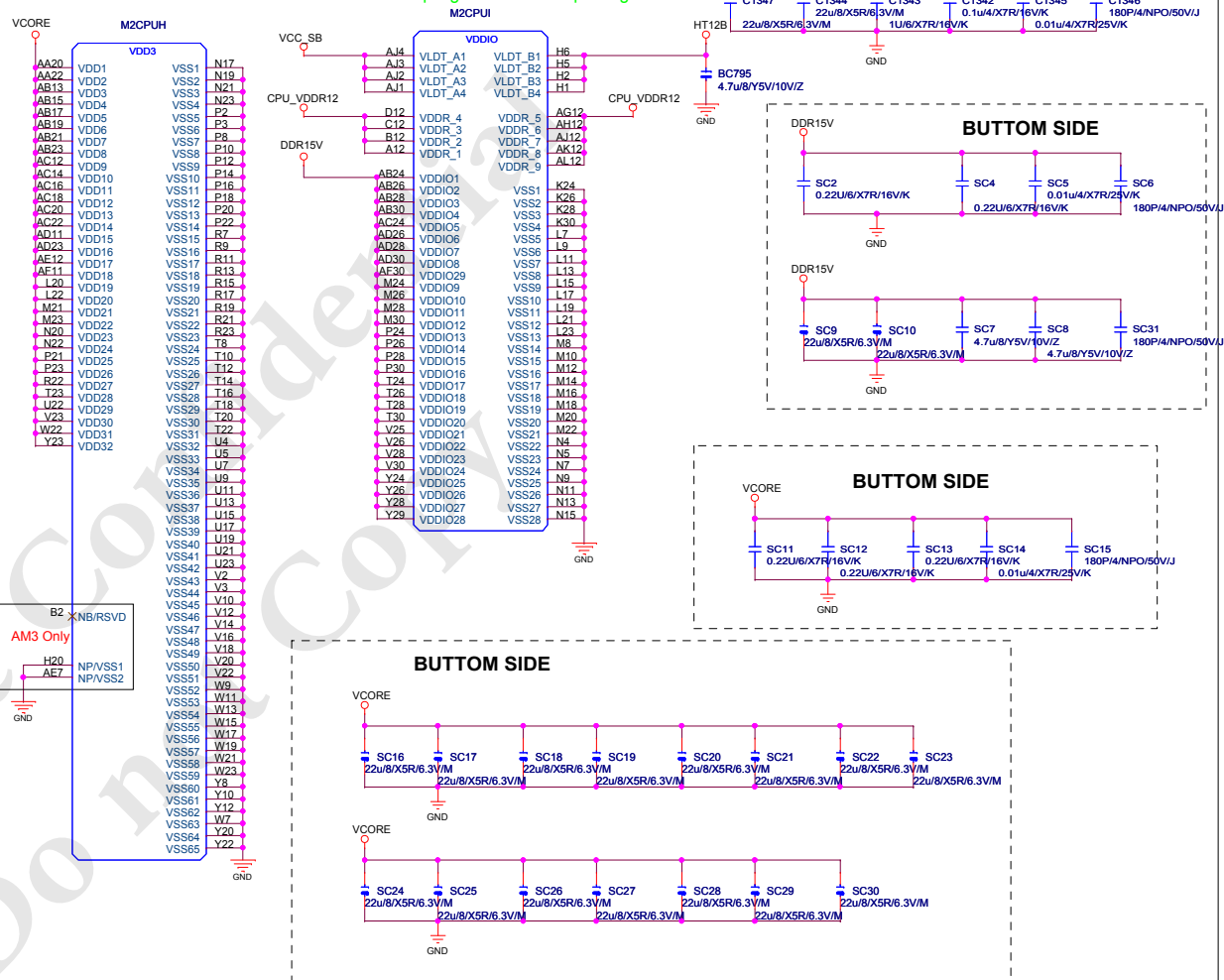
500 to 750 mils long between these caps.

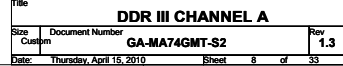


## Erratum 133, Revision Guide for AMD NPT 0Fh Processors



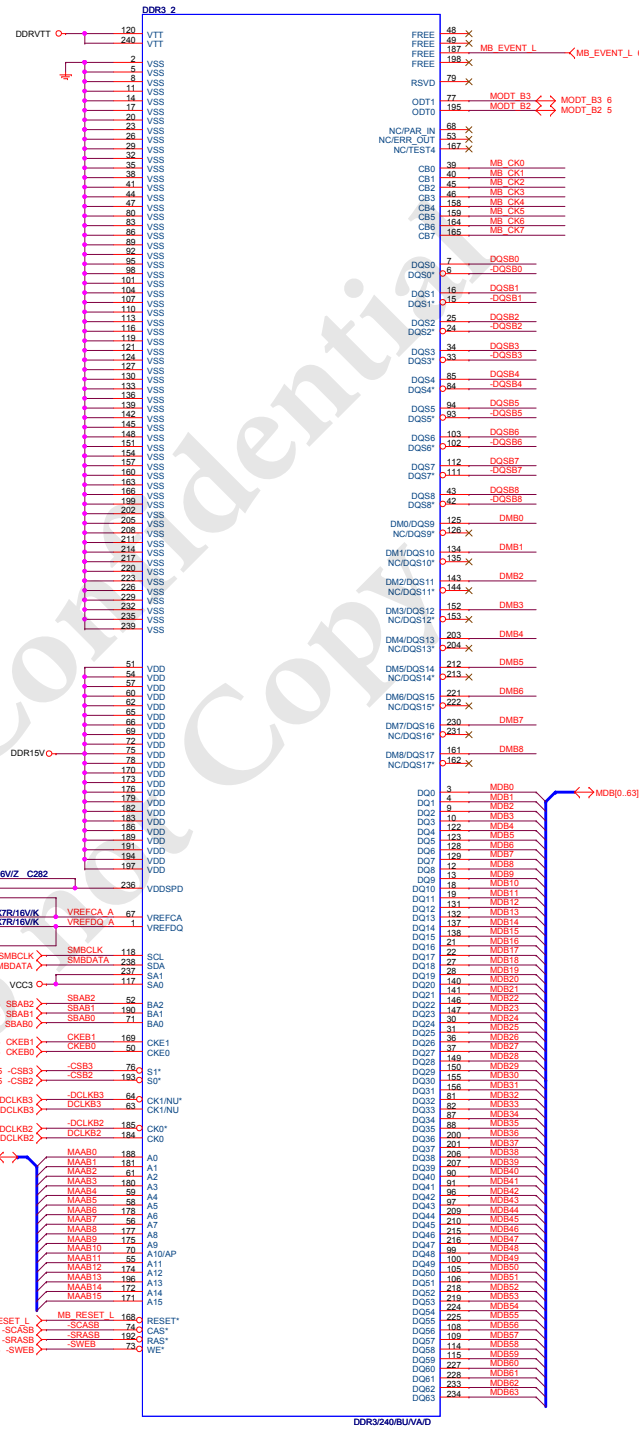
H22 Missing pins on package and socket used for mechanical keying. =>AM3



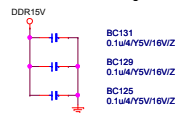
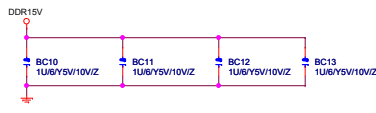




-DQSB[0..8] <-> DQSB[0..8] 5  
DQSB[0..8] <-> DQSB[0..8] 5  
DMB[0..8] <-> DMB[0..8] 5  
MODT\_B[0..3] <-> MODT\_B[0..3] 5,6  
MB\_CK[0..7] <-> MB\_CK[0..7] 5



### DDR15V Decouple



**GIGABYTE**

Title: **DDR III CHANNEL B**

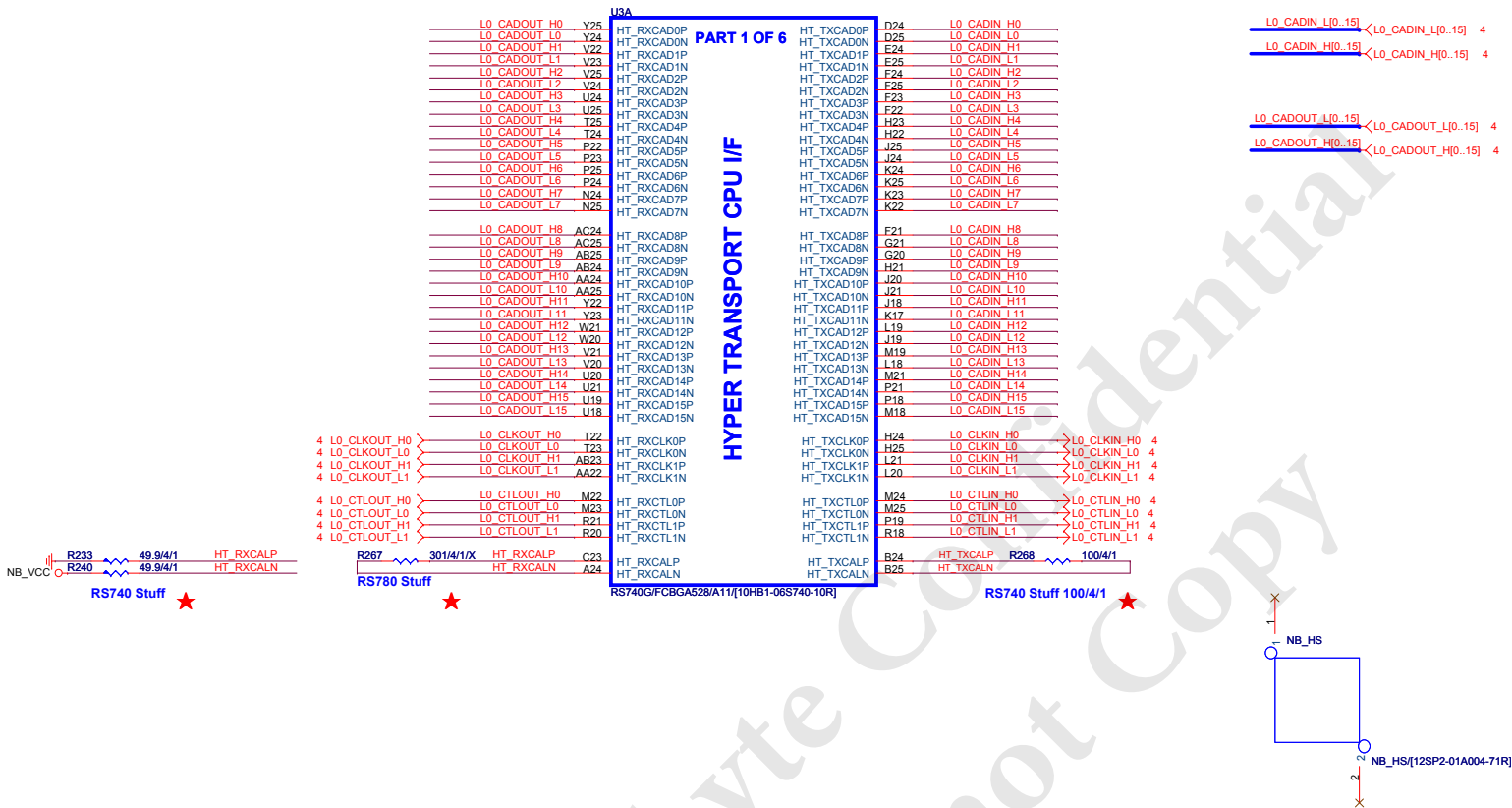
Size: **GA-MA74GMT-S2**

Docum: **GA-MA74GMT-S2**

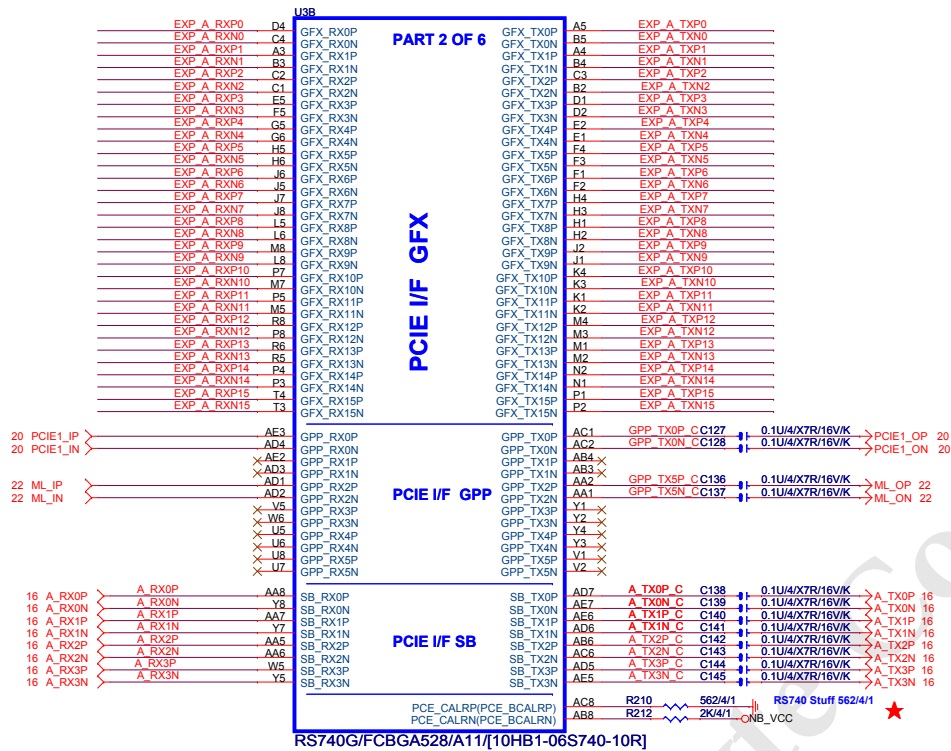
Date: **Thursday, April 15, 2010**

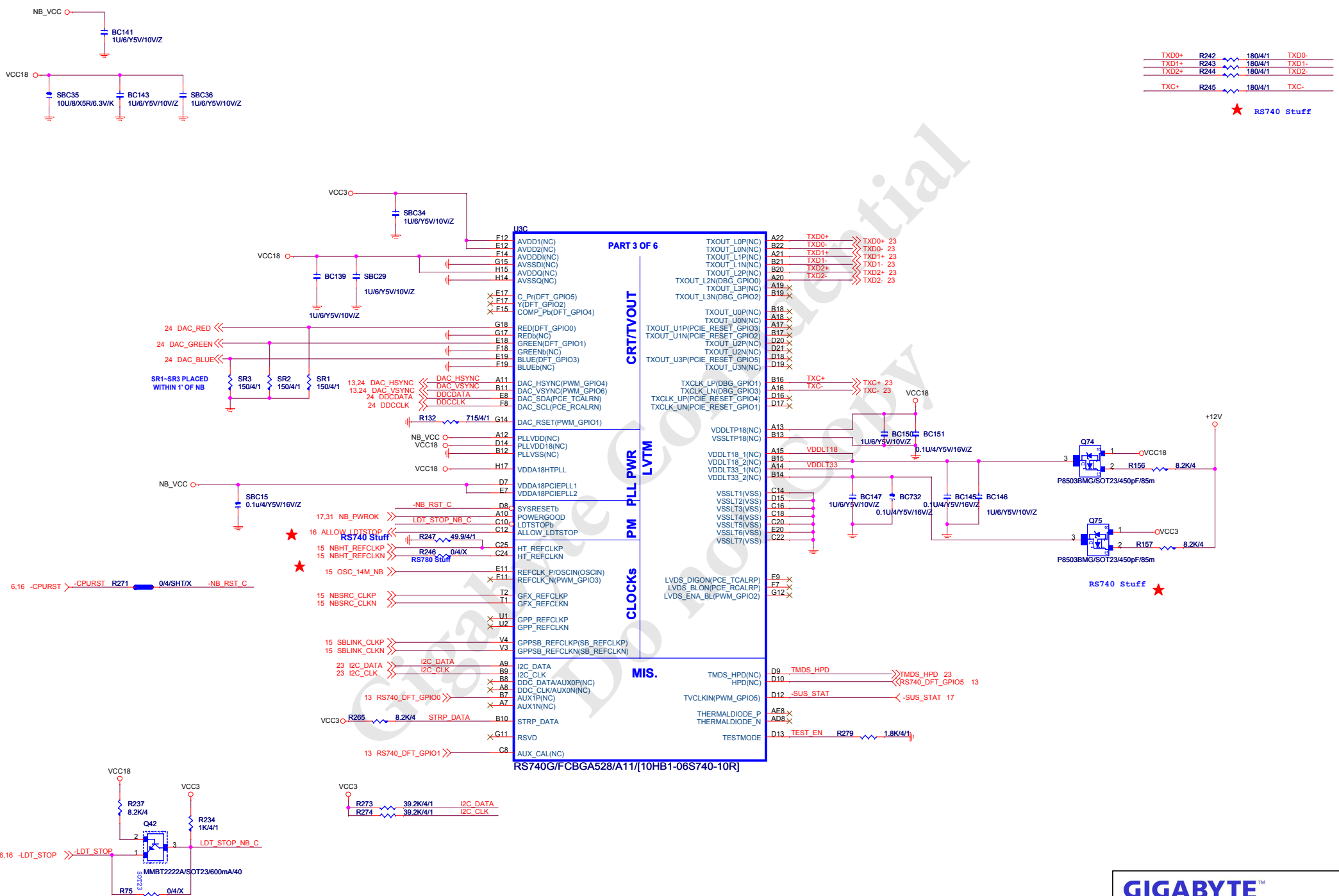
Sheet: **9** of **33**

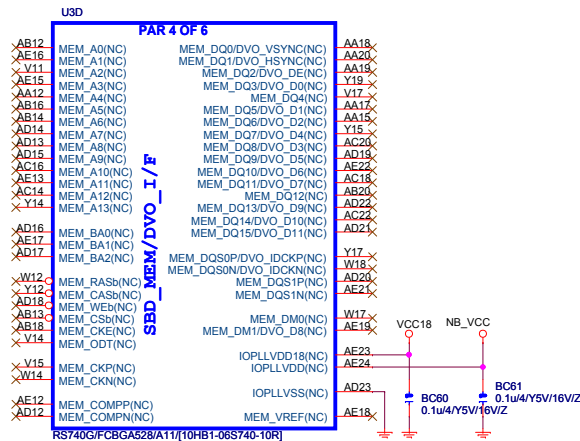
Rev: **1.3**



EXP\_A\_RXP[0..15] >>> EXP\_A\_RXP[0..15] 20 EXP\_A\_TXP[0..15] >>> EXP\_A\_TXP[0..15] 20  
EXP\_A\_RXN[0..15] >>> EXP\_A\_RXN[0..15] 20 EXP\_A\_TXN[0..15] >>> EXP\_A\_TXN[0..15] 20







## RS740/RX780/RS780 STRAPS

Note: for RS780, change R232 to 150R as AUX\_CAL, place close to pin C8

12 RS740\_DFT\_GPIO1 >> R272 RS740 non-Stuff 150/4/1X

Note: for RX780, R217 (RX780\_DFT\_GPIO1) to 3K accordingly

12,24 DAC\_VSYNC << RS780 Stuff R276 3K/4/1X >> VCC3

12 RS740\_DFT\_GPIO5 >> R280 RS740 Stuff 3K/4/1 >> VCC3

Note: for RX780, change following pull-down resistor to 3K accordingly  
R912 (RX780\_DFT\_GPIO5)

Note: for RX780, change following pull-down resistor to 3K accordingly  
R913 (RX780\_DFT\_GPIO4)  
R218 (RX780\_DFT\_GPIO3)  
R911 (RX780\_DFT\_GPIO2)

12 RS740\_DFT\_GPIO0 >> RS740 Stuff R288 3K/4/1X >> VCC3

12,24 DAC\_HSYNC << R285 RS780 Stuff 3K/4/1X >> VCC3

Note: for RX780, change following pull-down resistor to 3K accordingly  
R219 (RX780\_DFT\_GPIO0)

## RS740/RX780/RS780: LOAD\_EEPROM\_STRAPS

Selects Loading of STRAPS from EPROM

1 : Bypass the loading of EEPROM straps and use Hardware Default Values  
0 : I2C Master can load strap values from EEPROM if connected, or use default values if not connected

RS740: pin DFT\_GPIO1

RX780: pin DFT\_GPIO1

RS780: pin SUS\_STAT#

## RS740/RX780/RS780: STRAP\_DEBUG\_BUS\_GPIO\_ENABLE

Enables the Test Debug Bus using GPIO and/or memory IO

1 : Disable (RS740/RS780); Enable (RX780)

0 : Enable (RS740/RS780); Disable (RX780)

RS740: pin DFT\_GPIO5

RX780: pin DFT\_GPIO5

RS780: pin VSYNC

## RS740: STRAP\_PCIE\_SB/GPP\_CFG[2:0] (Pins: RS740\_DFT\_GPIO[4:2])

These pin straps are used to configure PCI-E GPP mode.

111: register defined (register default to Config E) default

110: 4-0-0-0-0 Config A

101: 4-4-0-0-0 Config B

100: 4-2-2-0-0 Config C

011: 4-2-1-1-0 Config D

010: 4-1-1-1-1 Config E

others: register defined (default to Config E)

## RX780: STRAP\_PCIE\_GPP\_CFG[2:0] (Pins: RX780\_DFT\_GPIO[4:2])

111: 1-1-1-1-1 Mode L default

110: 1-1-1-1-1 Mode L

101: 2-0-2-0-2-0 Mode C2

100: 2-0-2-0-1-1 Mode K

011: 2-0-1-1-1-1 Mode E

010: 1-1-1-1-1-1 Mode L

001: 4-0-0-0-1-1 Mode C

000: 4-0-0-0-2-0 Mode B

## RS780: STRAP\_PCIE\_GPP\_CFG[2:0] (configure thru register setting)

1-1-1-1-1-1 Mode L default

1-1-1-1-1-1 Mode L

2-0-2-0-2-0 Mode C2

2-0-2-0-1-1 Mode K

2-0-1-1-1-1 Mode E

1-1-1-1-1-1 Mode L

4-0-0-0-1-1 Mode C

4-0-0-0-2-0 Mode B

## RS740/RX780/RS780: SIDE-PORT MEMORY ENABLE

Enables Side port memory

1. Disable (RS740/RS780)

0 : Enable (RS740/RS780)

RS740: pin DFT\_GPIO0

RS780: pin HSYNC

RX780: Not Applicable

## RX780/RS780: STRAP\_DEBUG\_BUS\_PCIE\_ENABLE

Enables Test debug bus

using PCIE bus

1. Disable (can be enabled

thru nbcfg register)

0 : Enable

RX780: pin DFT\_GPIO0

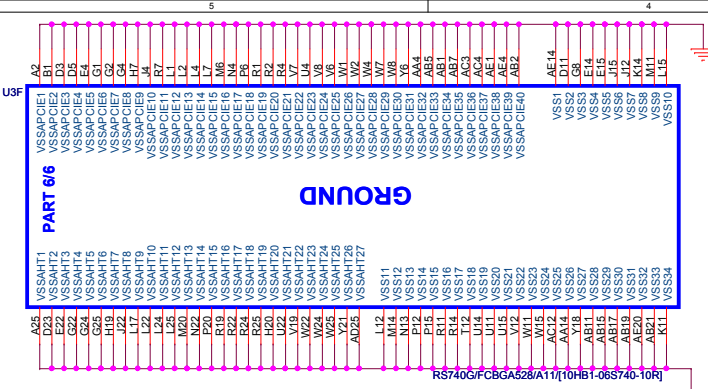
RS780: configurable thru register

setting only

RS740: Not supported

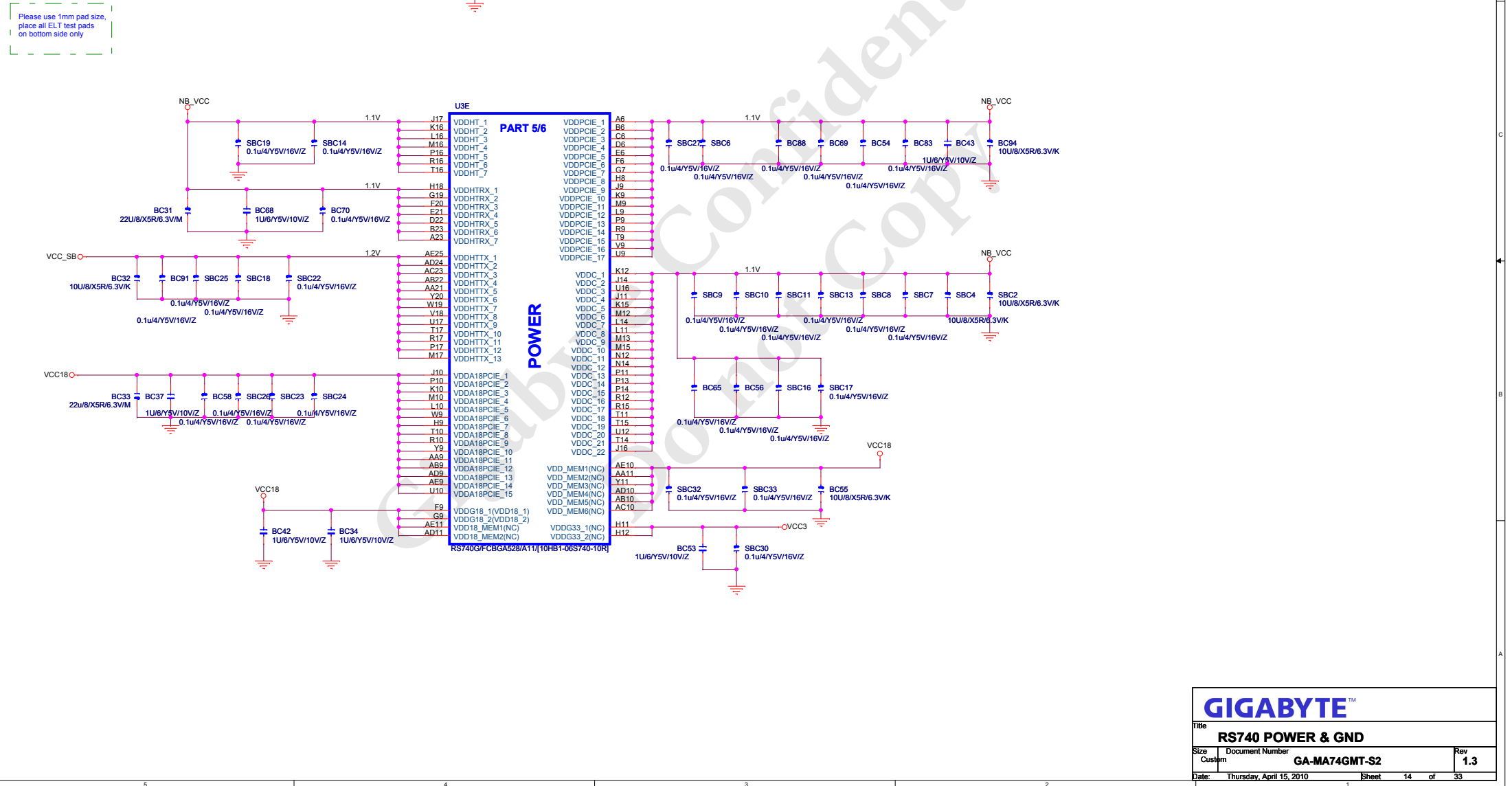
**GIGABYTE**™

Title			RS740 STRAP
Size	Document Number	Rev	
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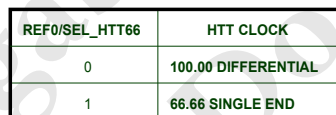
RS740/RX780/RS780 POWER DIFFERENCE TABLE

PIN NAME	RS740	RX780	RS780	PIN NAME	RS740	RX780	RS780
VDDHT	NC	+1.1V	+1.1V	IOPLLVD	+1.2V	NC	+1.1V
VDDHTRX	NC	+1.1V	+1.1V	AVDD	+3.3V	NC	+3.3V
VDDHTTX	+1.2V	+1.2V	+1.2V	AVDDDI	+1.8V	NC	+1.8V
VDDA18PCIE	NC	+1.8V	+1.8V	AVDDQ	+1.8V	NC	+1.8V
VDD18	+1.8V	+1.8V	+1.8V	PLLVD	+1.2V	NC	+1.1V
VDD18_MEM	NC	NC	+1.8V	PLLVD18	+1.8V	NC	+1.8V
VDDPCIE	+1.2V	+1.1V	+1.1V	VDDA18PCIEPLL	+1.2V	+1.8V	+1.8V
VDDC	+1.2V	+1.1V	+1.1V	VDDA18HTPLL	+1.8V	+1.8V	+1.8V
VDD_MEM	+1.8V	NC	+1.8V(DDR2) +1.5V(DDR3)	VDDLTP18	+1.8V	NC	+1.8V
VDD33	+3.3V	NC	+3.3V	VDDLTP18	+1.8V	NC	+1.8V
IOPLLVD18	+1.8V	NC	+1.8V	VDDLTP33	+3.3V	NC	NC





- |                         |                 |
|-------------------------|-----------------|
|                         | OSC_14M_NB      |
| RS740                   | 3.3V 33R serial |
| RX780                   | 1.8V 82.5R/130R |
| RS780<br>(Single-ended) | 1.1V 158R/90.9R |



REF1/SEL_SATA	SRC6/SATA
0	100.00 DIFFERENTIAL SPREADING SRC CLOCK
1	100.00 NON-SPREADING DIFFERENTIAL SATA CLOCK

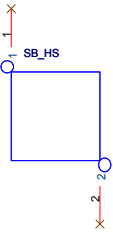
NB CLOCKS	RS740	RX780	RS780	
HT_REFCLKP	66M SE(SE)	100M DIFF	100M DIFF	
HT_REFCLKN	NC	100M DIFF	100M DIFF	
REFCLK_P				
REFCLK_N	14M SE (3.3V)	14M SE (1.8V)	14M SE (1.1V) vref	100M DIFF
GFX_REFCLK*	100M DIFF	100M DIFF	100M DIFF	100M DIFF
GPP_REFCLK	NC	100M DIFF	100M DIFF(OUT)	
GPSPB_REFCLK	100M DIFF	100M DIFF	100M DIFF	

\* the GEX\_REFCLK input is required for all cases

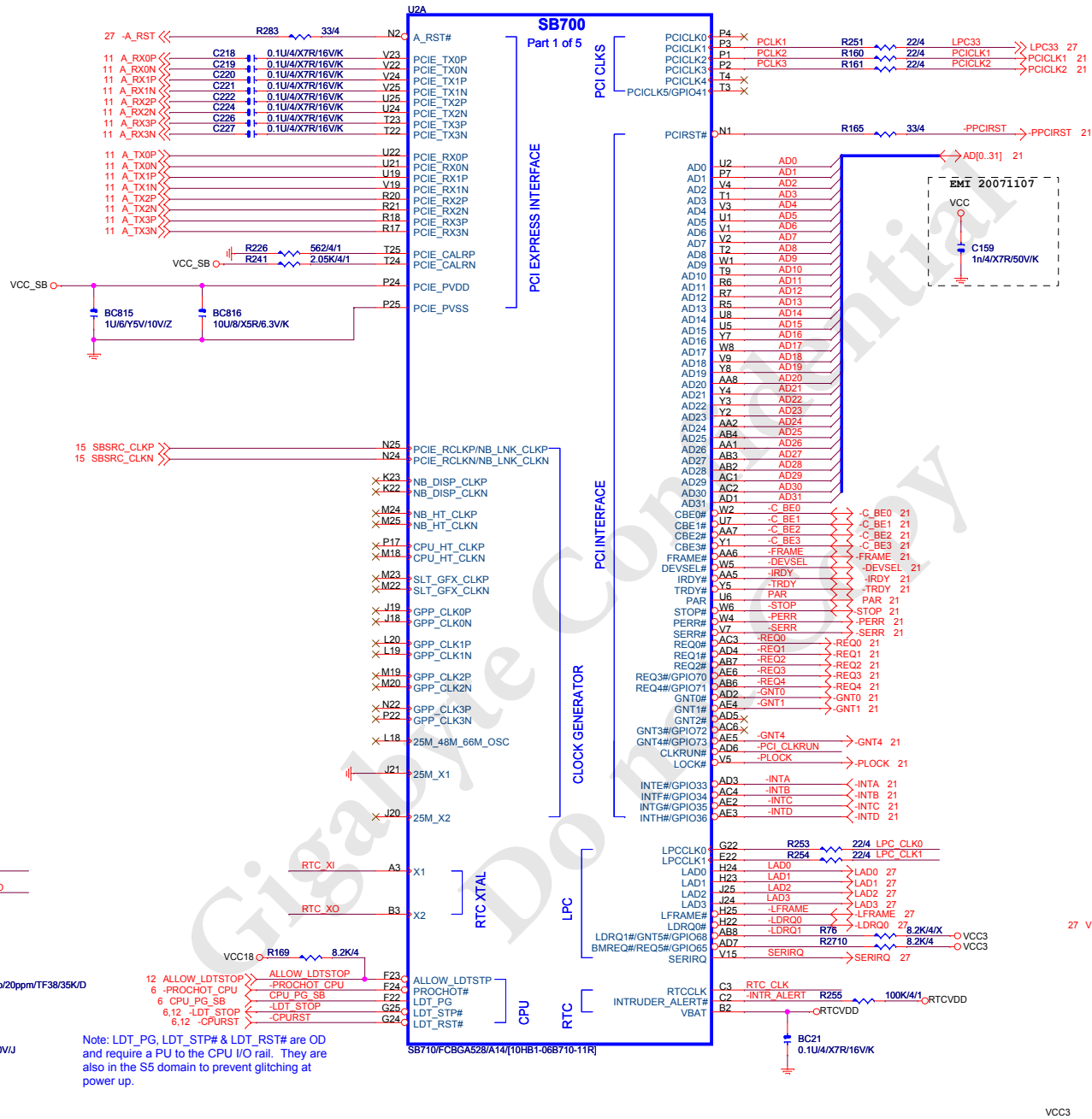


PLACE THESE PCIE AC COUPLING  
CAPS CLOSE TO U600

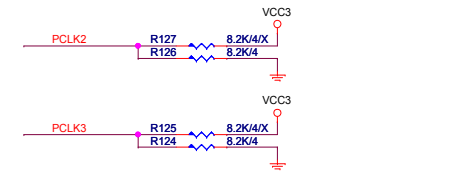
## S.B HEATSINK



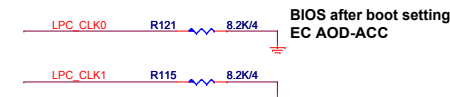
SB\_HS[12SP2-030005-42R\_12SP2-030005-43R]



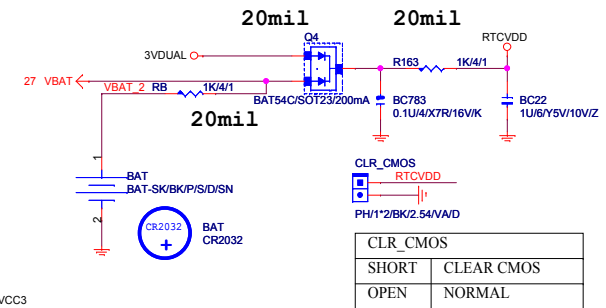
Note: LDT\_PG, LDT\_STP# & LDT\_RST# are OD and require a PU to the CPU I/O rail. They are also in the S5 domain to prevent glitching at power up.



PULL	PCLK2	PCLK3
HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	USE DEBUG STRAPS
LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT



PULL	LPC_CLK0	LPC_CLK1
HIGH	IMC ENABLED AOD Extreme	CLKGEN ENABLED
LOW	IMC DISABLED DEFAULT	CLKGEN DISABLED DEFAULT



CLR_CMOS	
SHORT	CLEAR CMOS
OPEN	NORMAL

NOT ADD ICT FOR RTCVDD PIN

**GIGABYTE™**

ATI SB710 PCIE/PCI/CPU/LPC

Size Custom

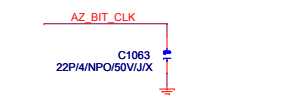
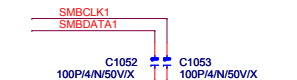
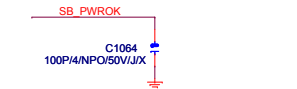
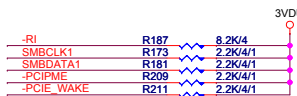
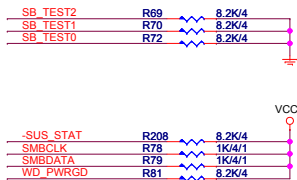
Document Number GA-M74GMT-S2

Date: Thursday, April 15, 2010

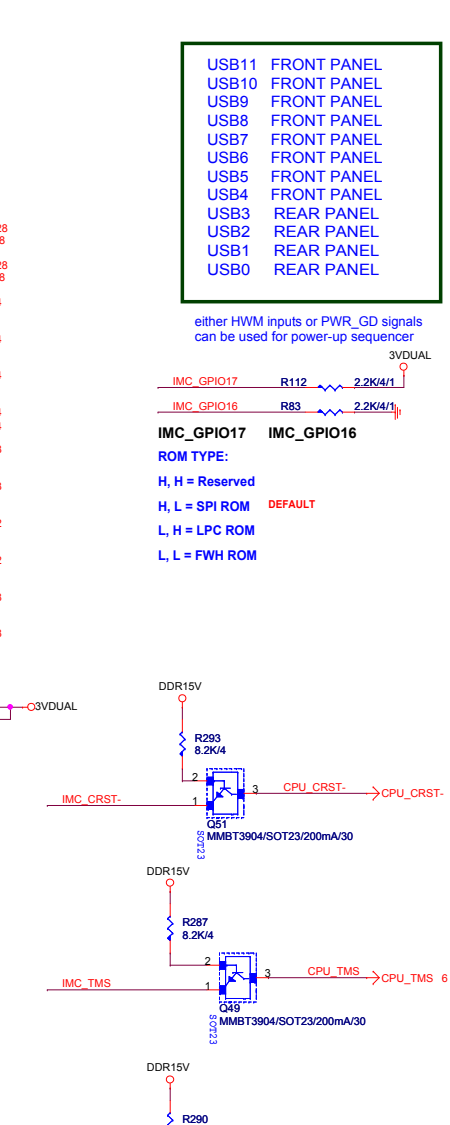
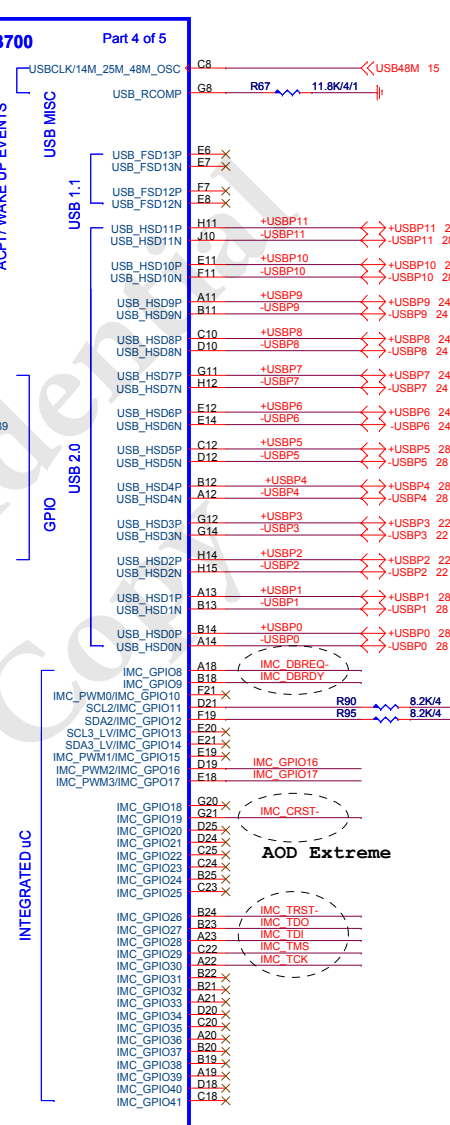
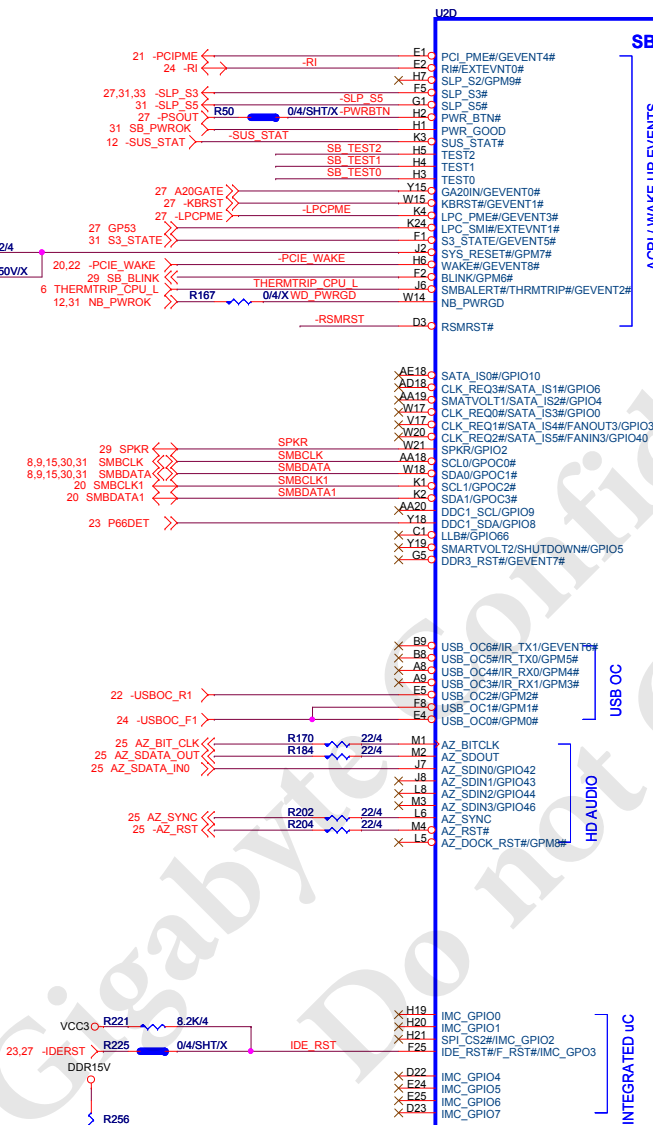
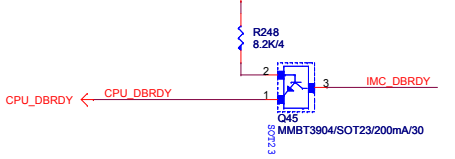
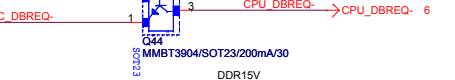
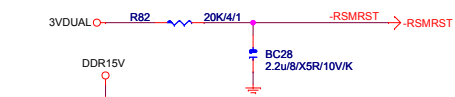
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Rev 1.3





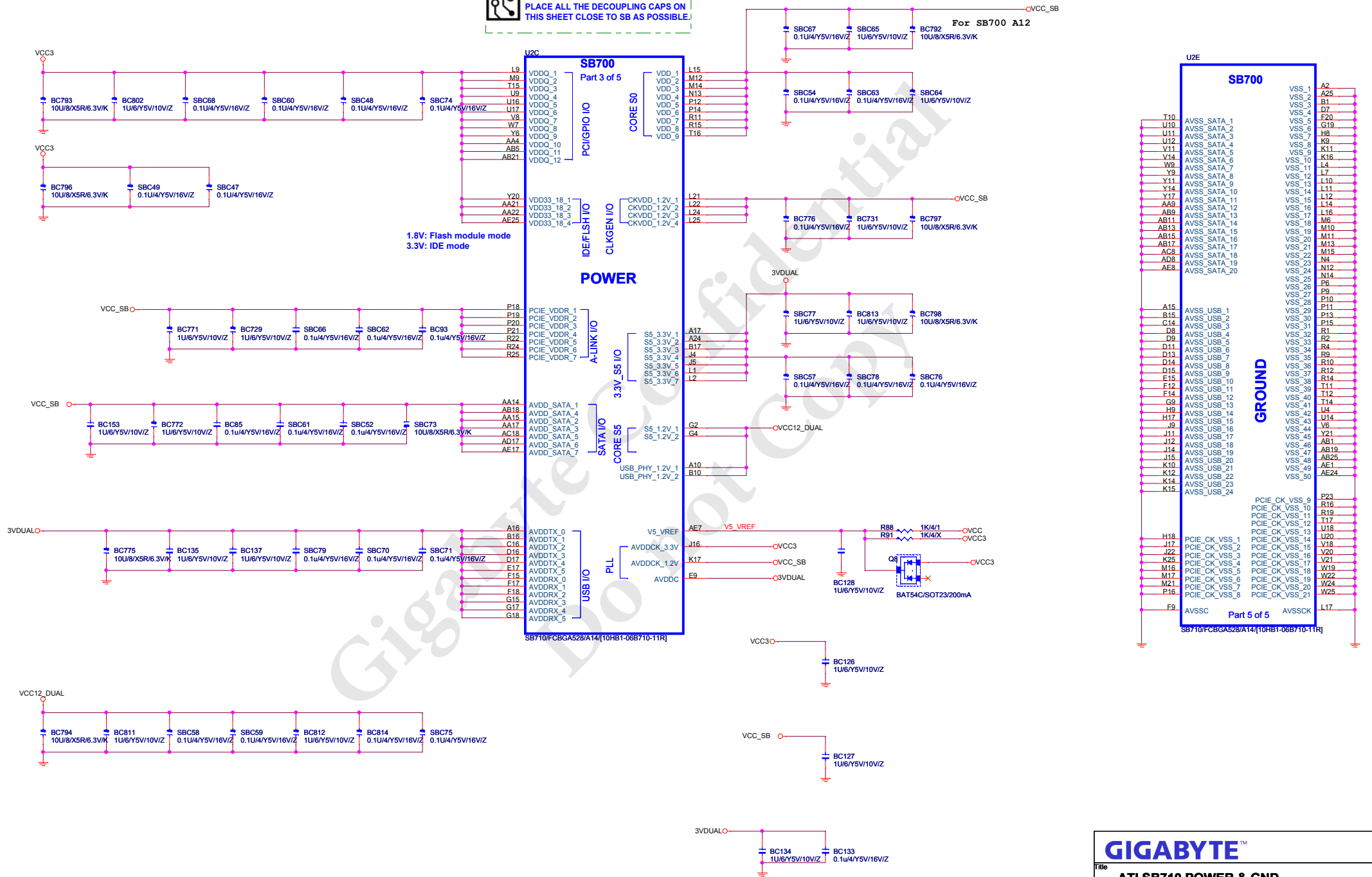
**AZ\_RST#**  
 PULL HIGH ENABLE PCI MEM BOOT  
 PULL LOW DISABLE PCI MEM BOOT  
 DEFAULT

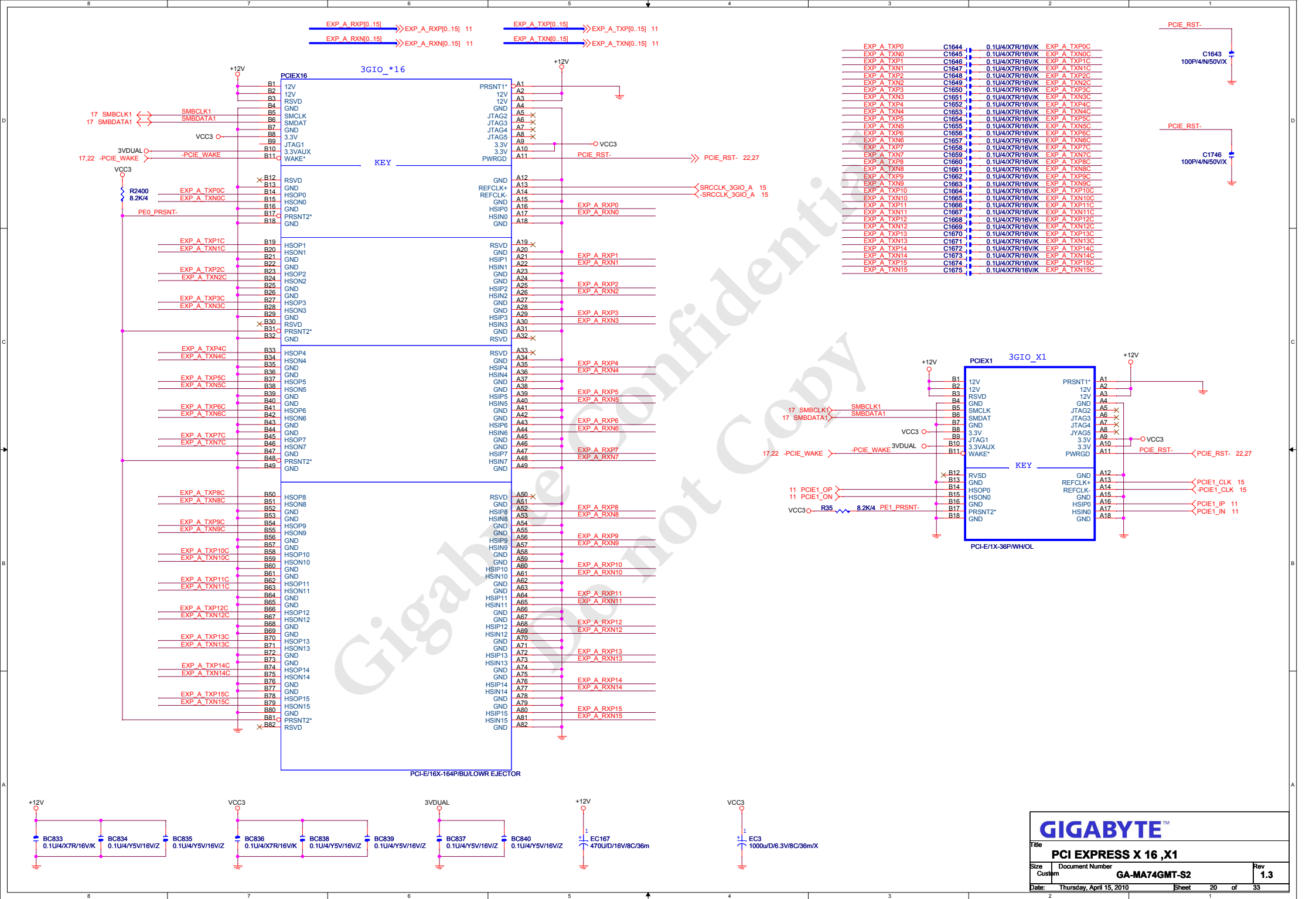






PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.

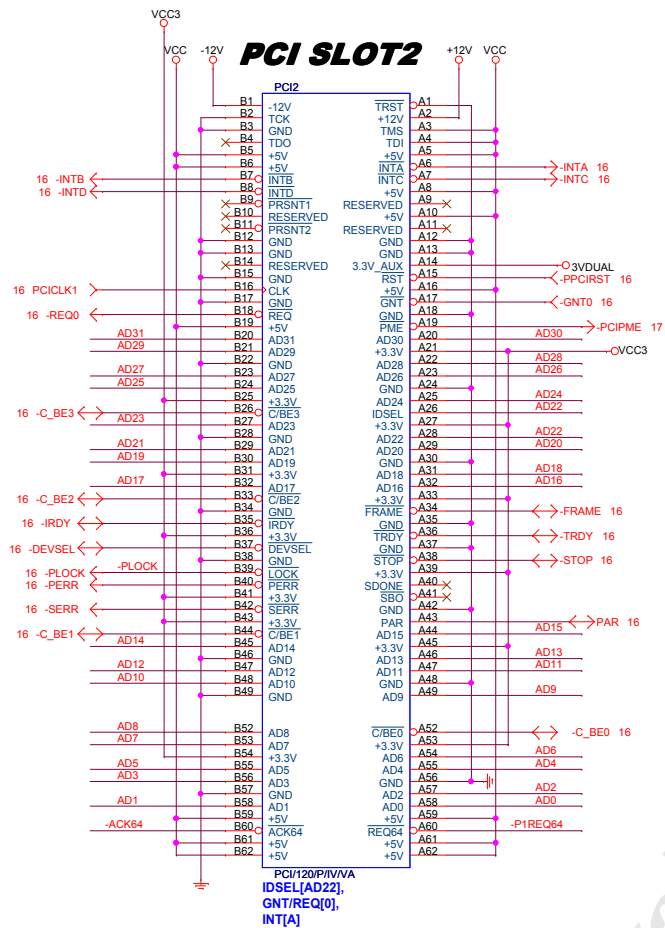




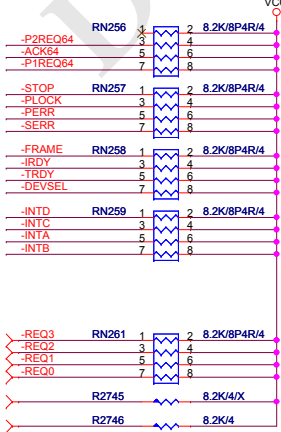
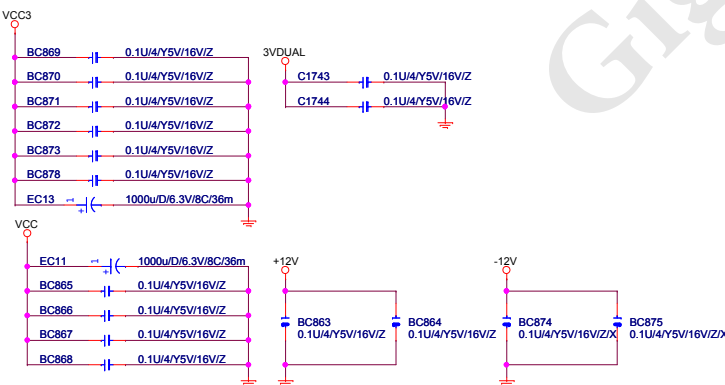
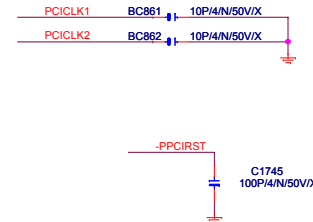
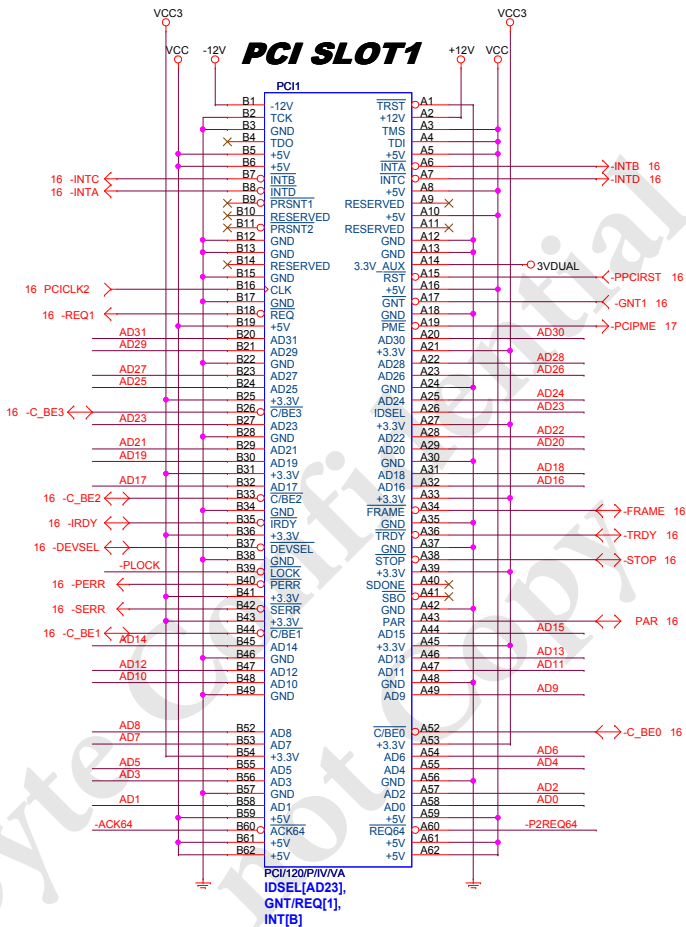
# PCI SLOT 1,2

16 AD[0..31] <=> ADIO\_31[1]

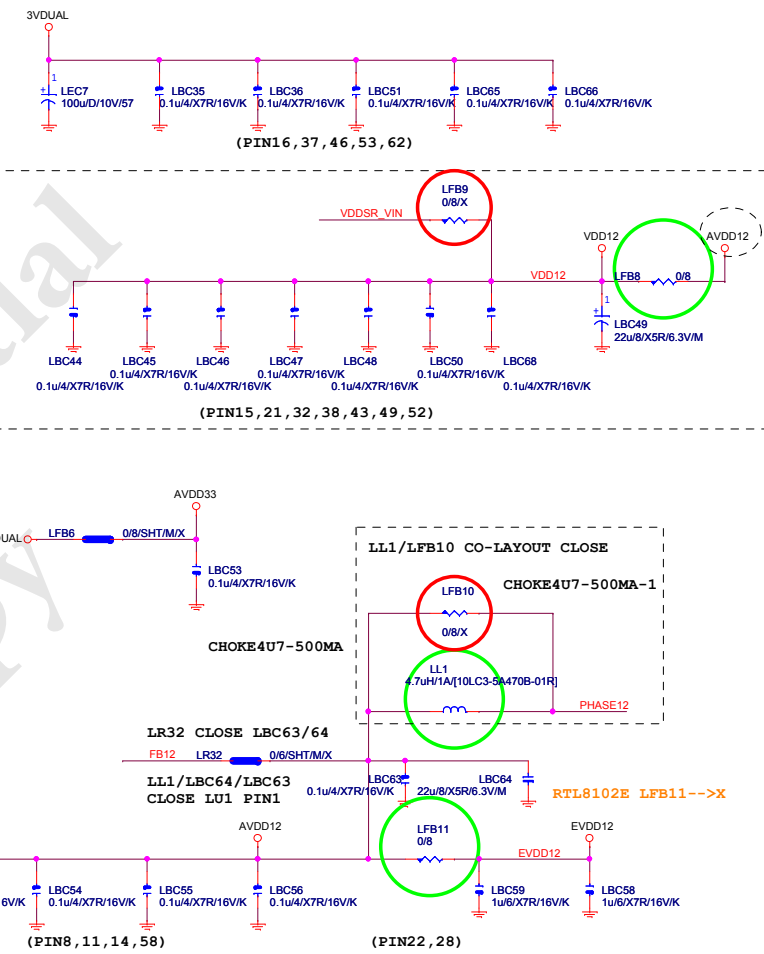
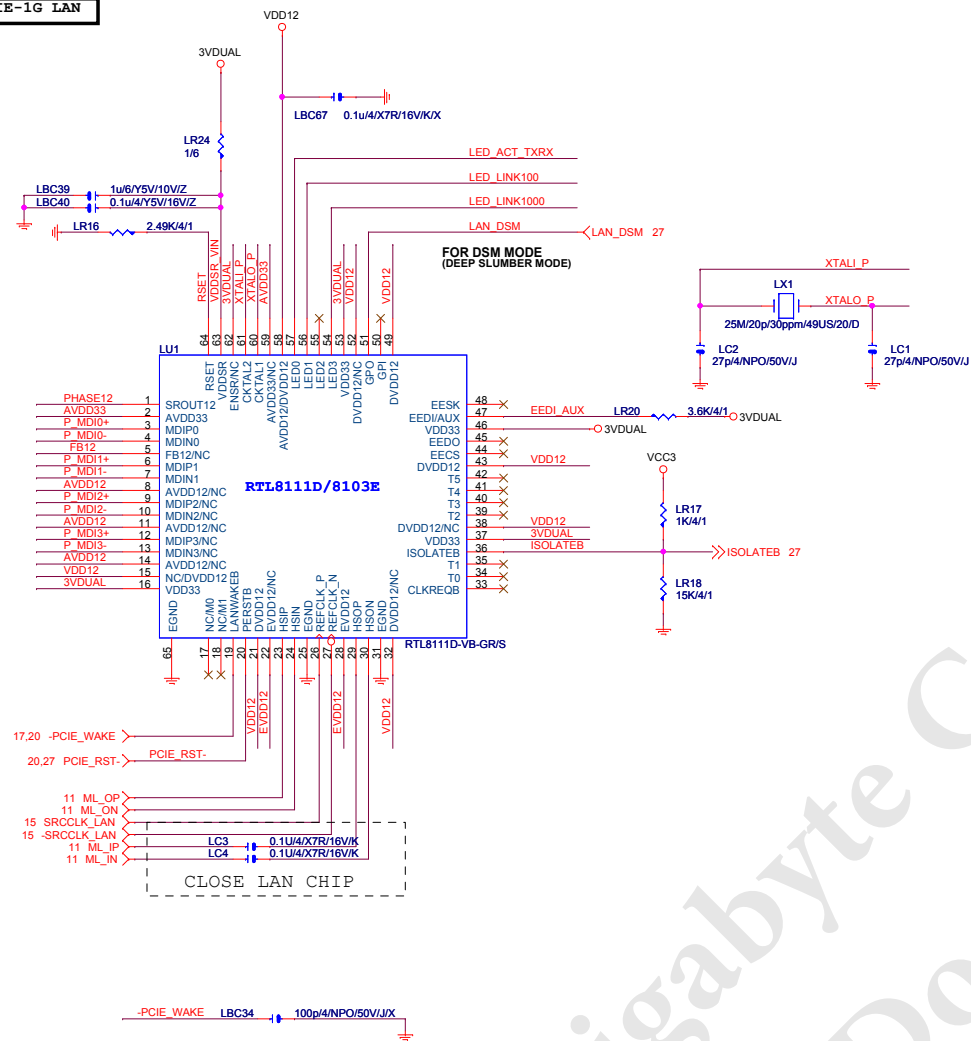
## PCI SLOT2



## PCI SLOT1

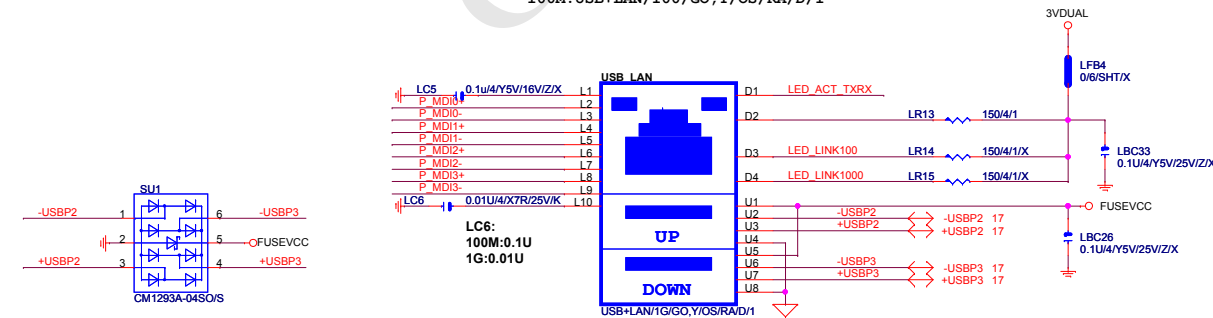


# PCIE-1G LAN

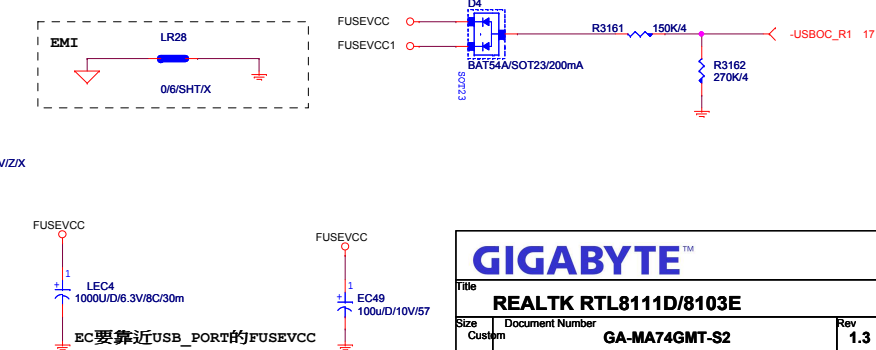


# USB LAN CONNECTOR

RTL8101E :L1+L10-->AVDD18+0.1U(BIOS DISABLE MDI-X FUNCTION)  
 1G :USB+LAN/1G/GO, Y/OS/RA/D/1  
 100M:USB+LAN/100/GO, Y/OS/RA/D/1

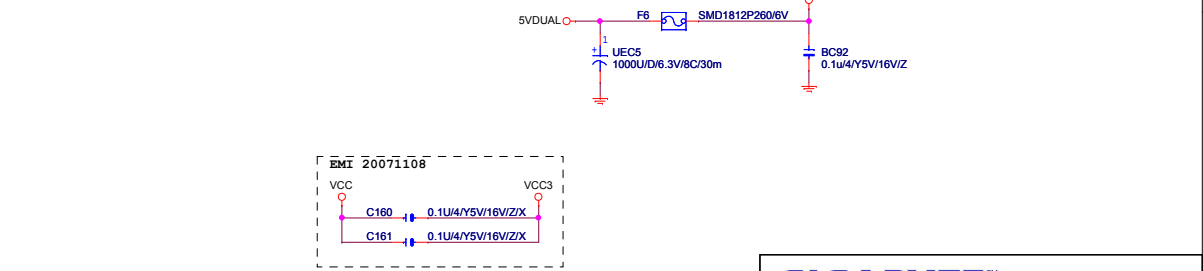
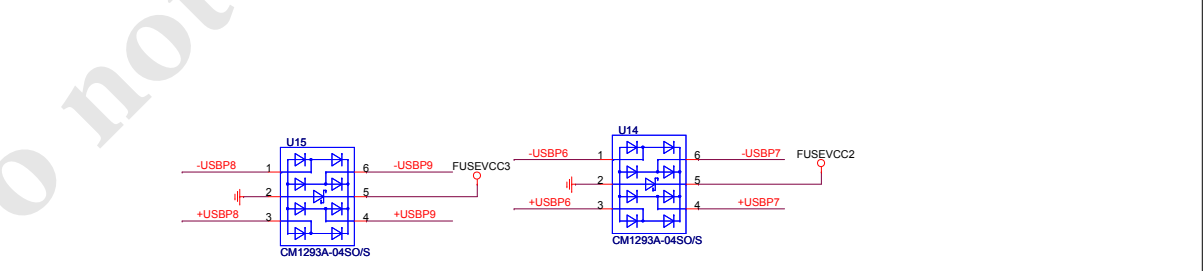
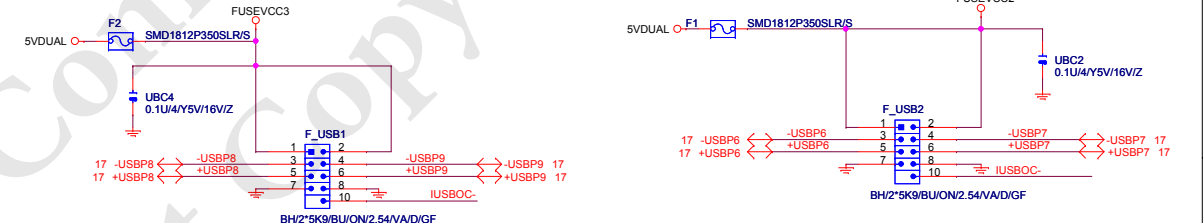
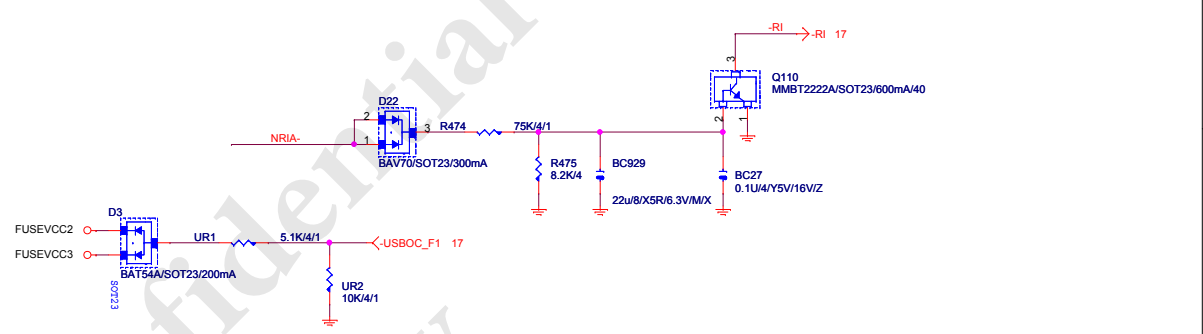
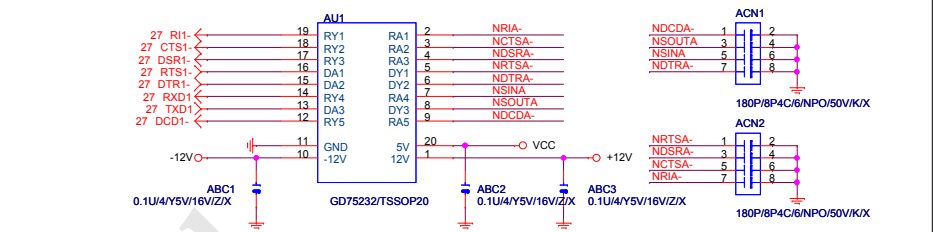
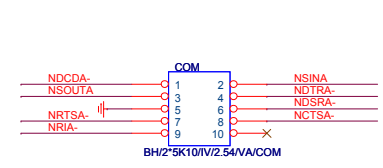
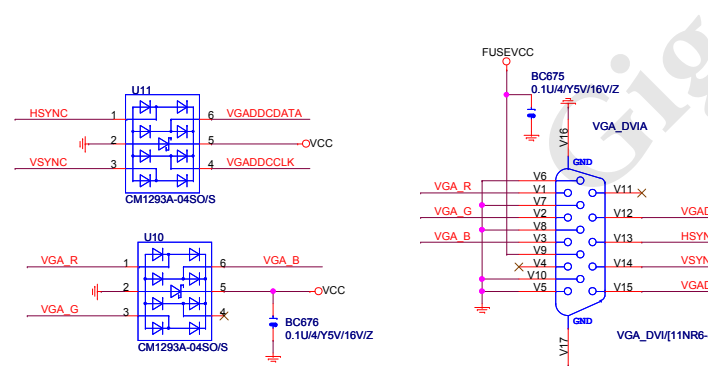
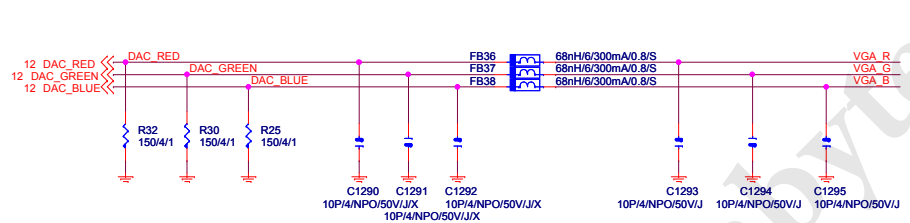
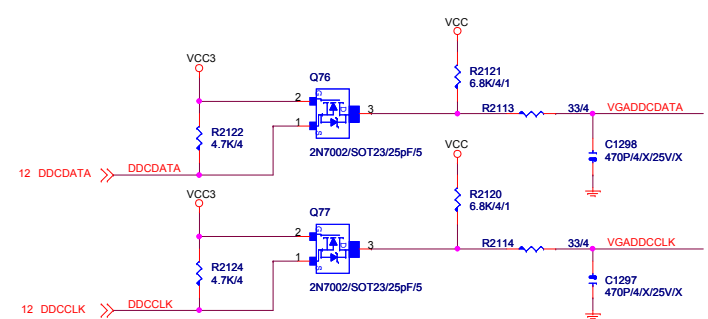
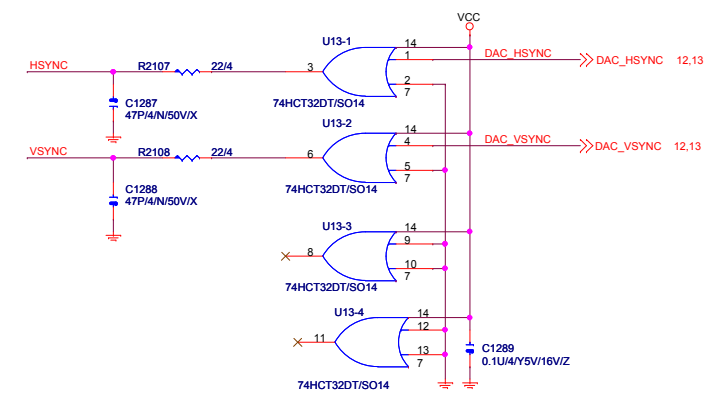


# USB LAN

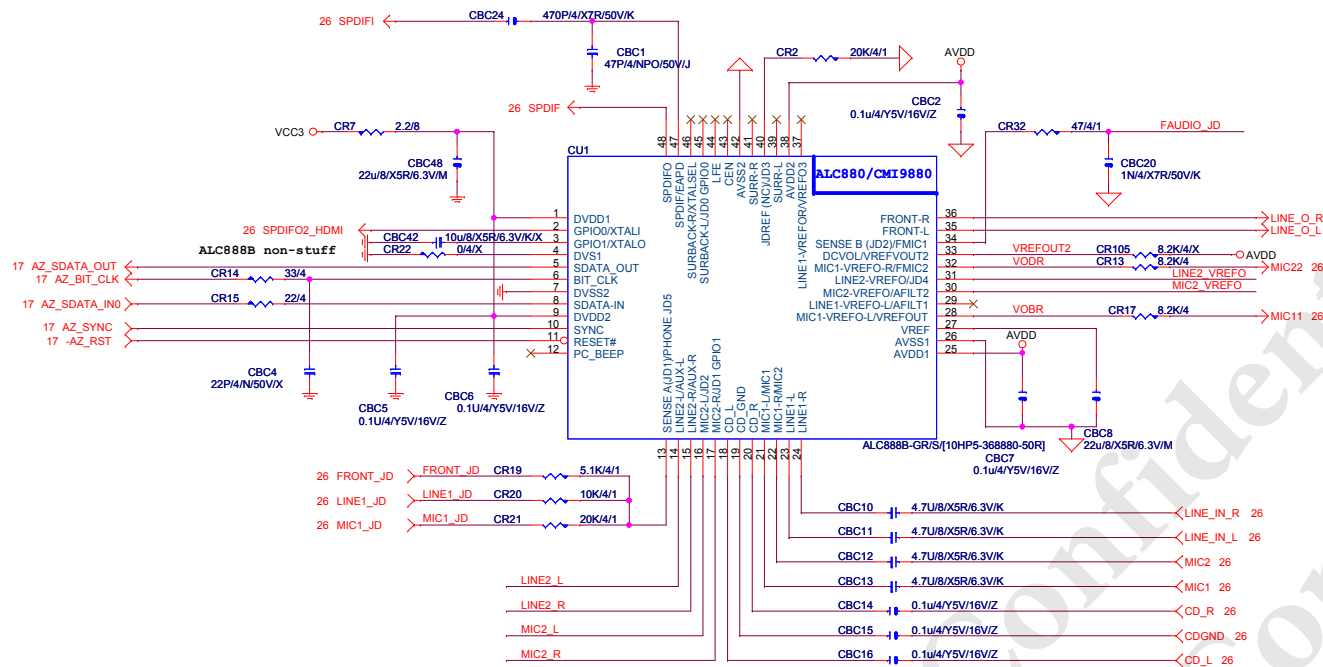




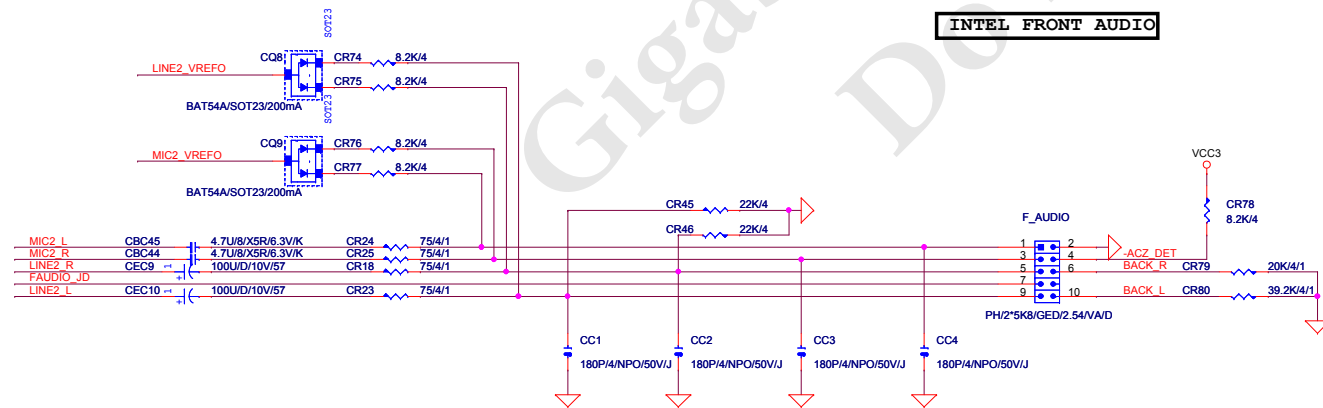








# INTEL FRONT AUDIO



AZALIA CODEC

ALC892/ALC888B/ Colay

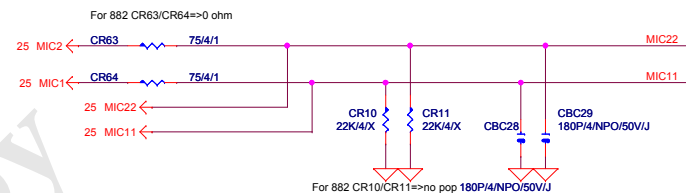
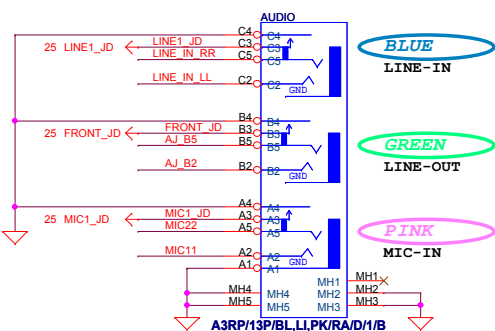
	ALC892	ALC888B
CR22	X	X
CBC42	10uF/X5R	X
CR12	O	X
CR16	X	O

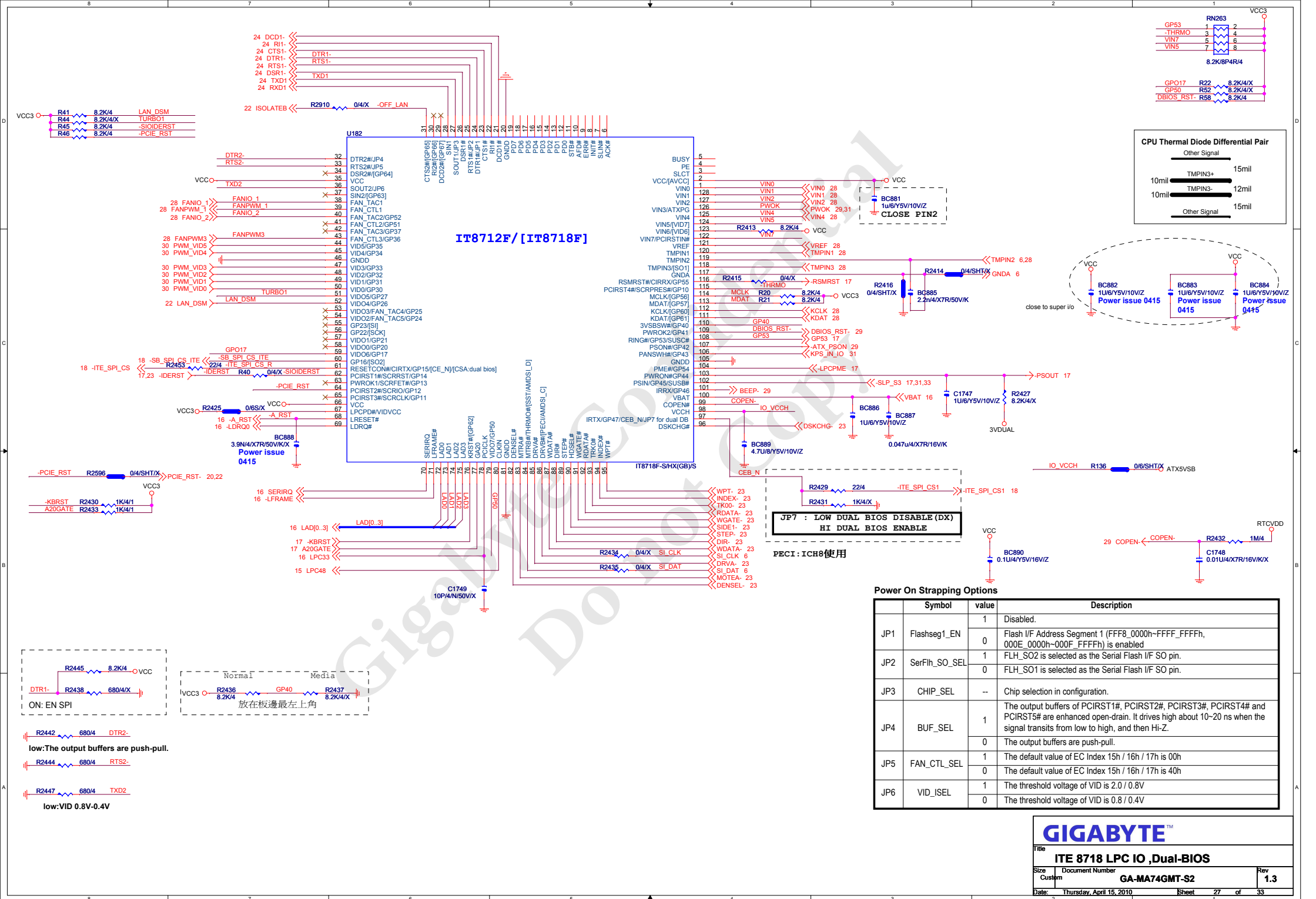
**GIGABYTE**

Title ALC888B CODEC

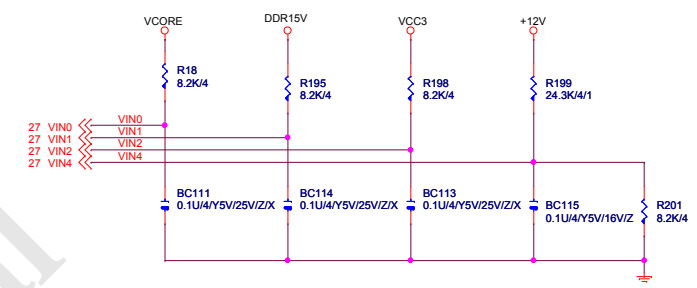
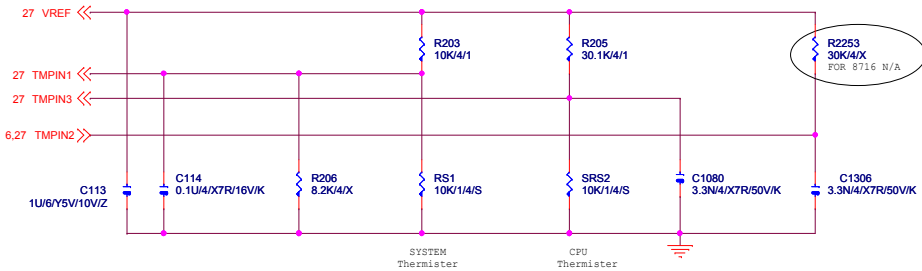
Size Custom Document Number GA-MA74GMT-S2 Rev 1.3

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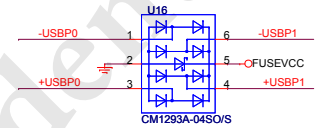
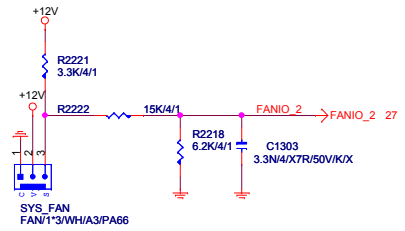




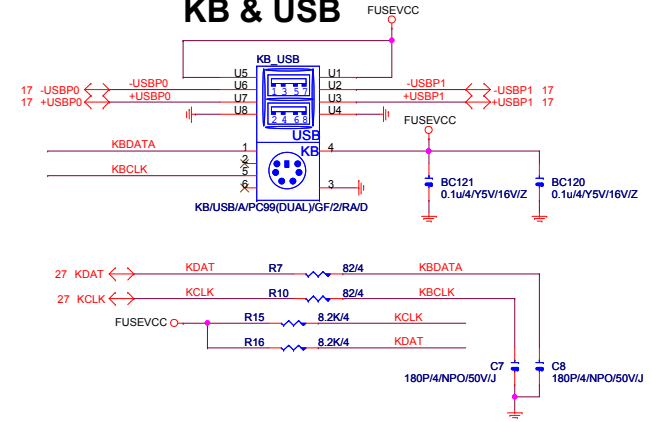
# Hardware Monitor circuits



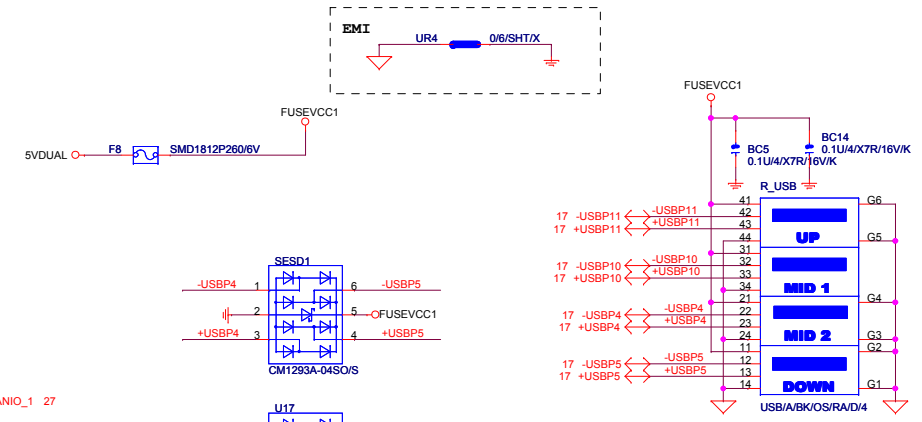
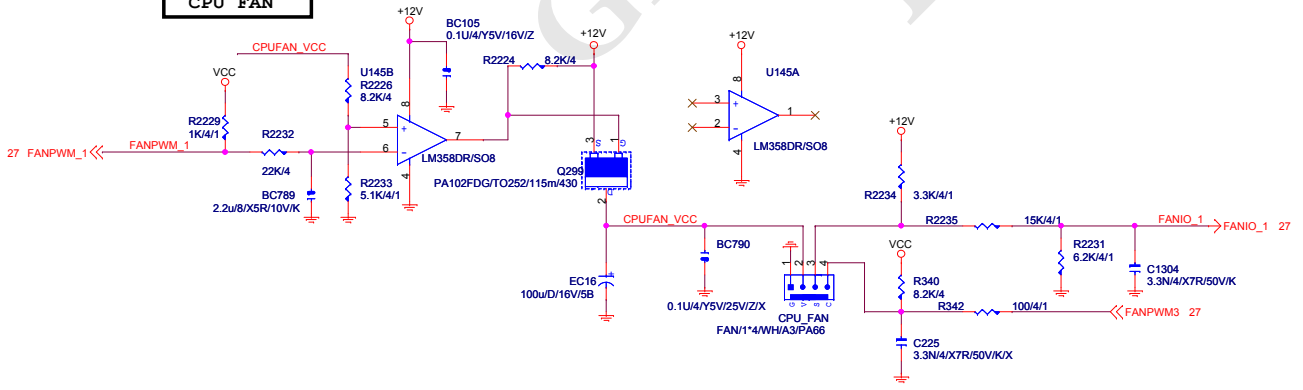
## SYSTEM FAN



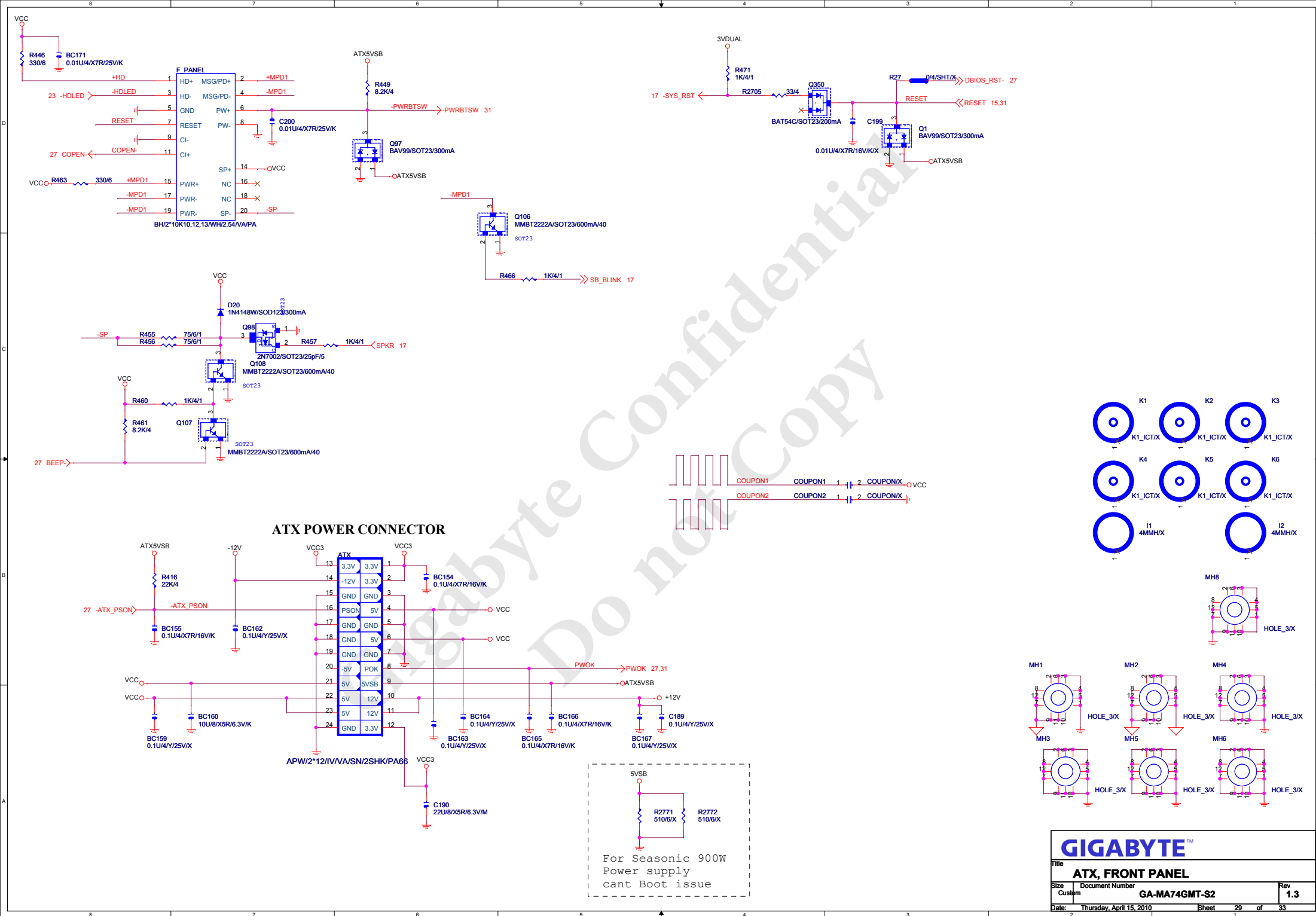
## KB & USB



## CPU FAN

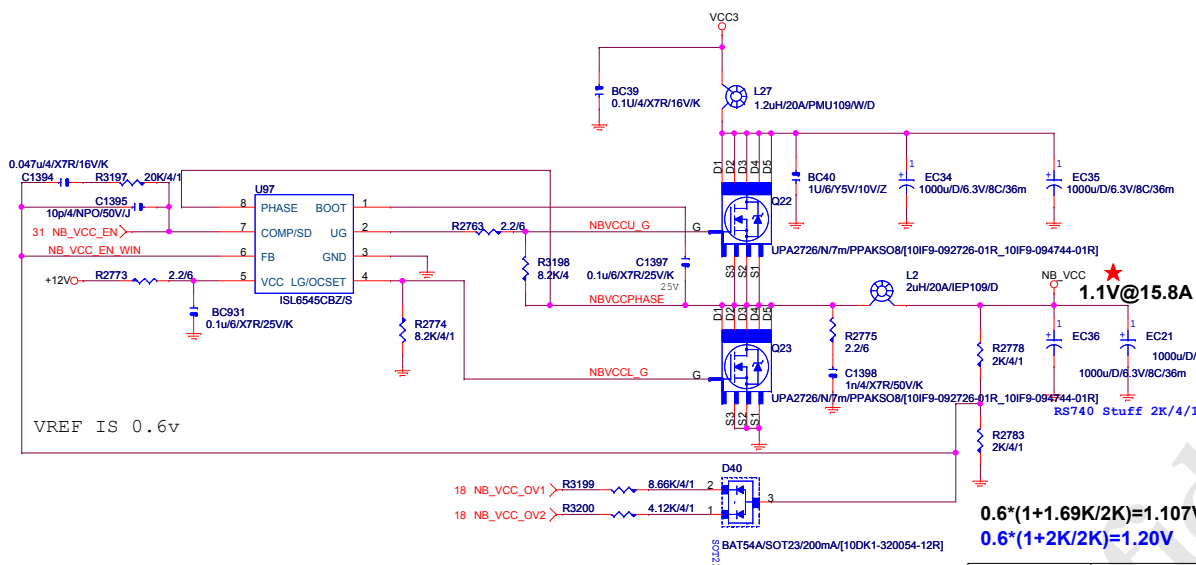


<b>GIGABYTE</b>		
Title <b>FAN/HWMO ,KB/USB</b>		
Size	Document Number	Rev
Custom	<b>GA-M74GMT-S2</b>	<b>1.3</b>
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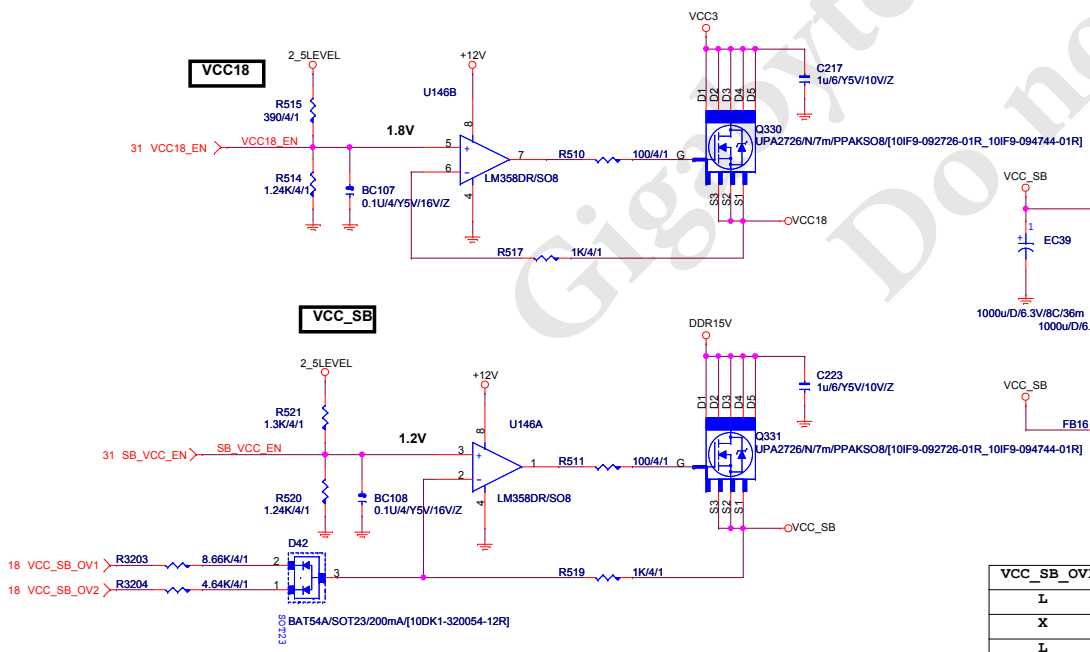
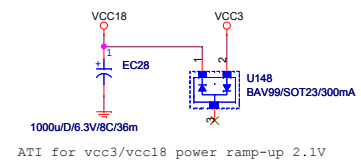
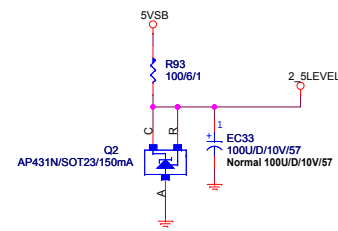




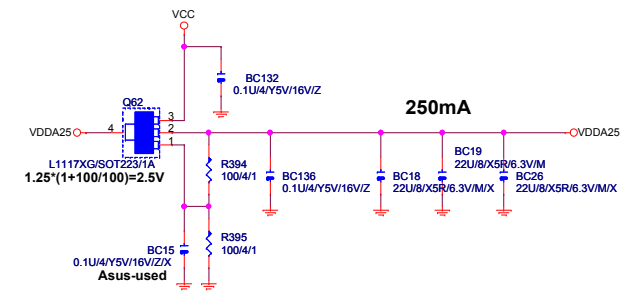
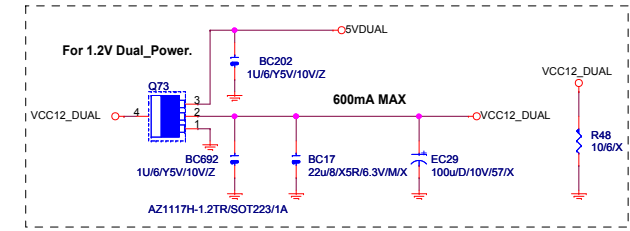
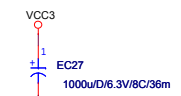


$0.6 \times (1 + 1.69K/2K) = 1.107V$   
 $0.6 \times (1 + 2K/2K) = 1.20V$      1.20V for RS740

NB_VCC_OV1	NB_VCC_OV2	NB_VCC	NB_VCC
L	X	1.20V	1.30V
X	L	1.30V	1.40V
L	L	1.40V	1.50V



VCC_SB_OV1	VCC_SB_OV2	VCC_SB
L	X	1.30V
X	L	1.40V
L	L	1.50V



**GIGABYTE**

Title: NB/SB POWER, VCC12HT, VDDA25, VCC12Dual

Size: Custom

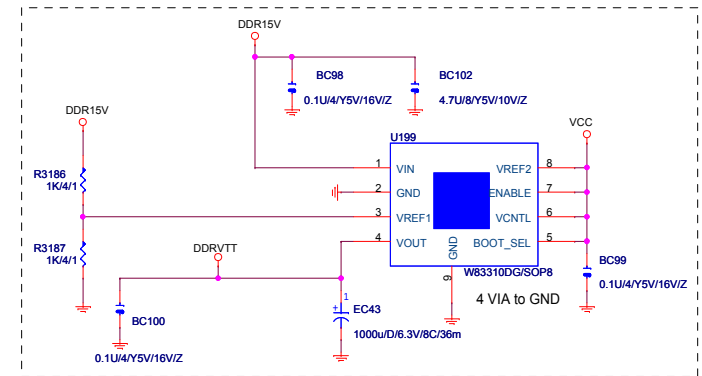
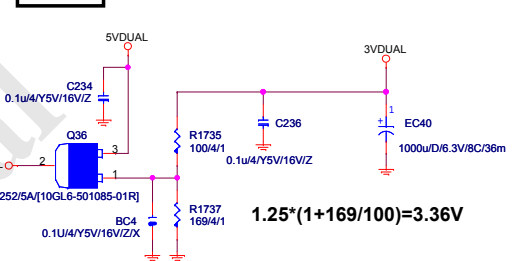
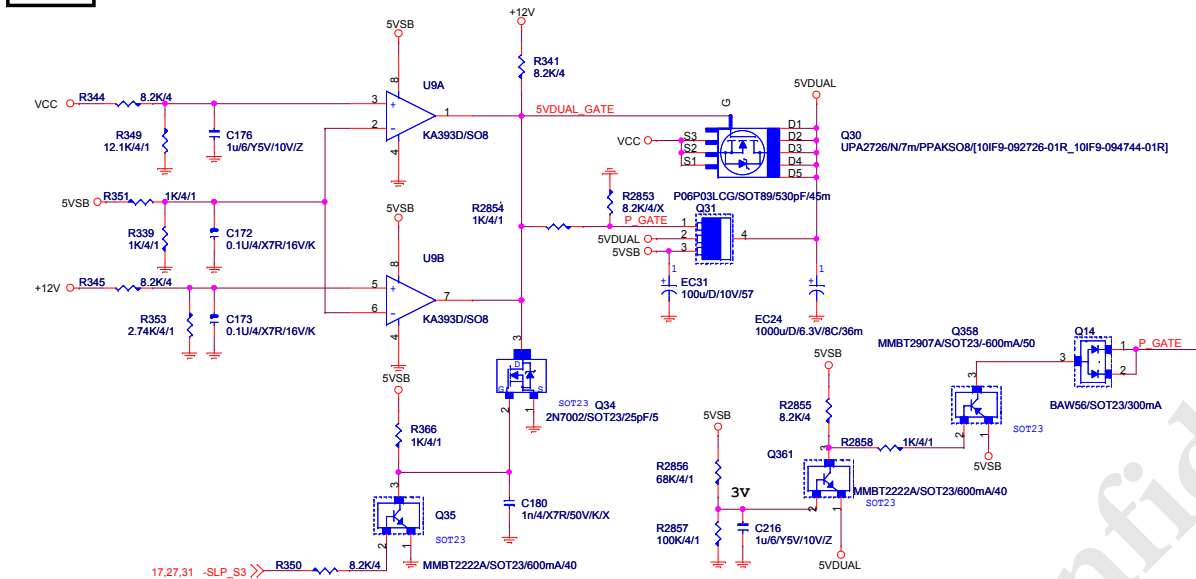
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DDR18V_OV1	DDR18V_OV2	DDR18V_OV3	DDR18V_OV4	DDR15V
X	X	X	L	2.00V
L	X	X	L	2.05V
X	L	X	L	2.10V
L	L	X	L	2.15V
X	X	L	L	2.20V
L	X	L	L	2.25V
X	L	L	L	2.30V
L	L	L	L	2.35V