

## SHEET

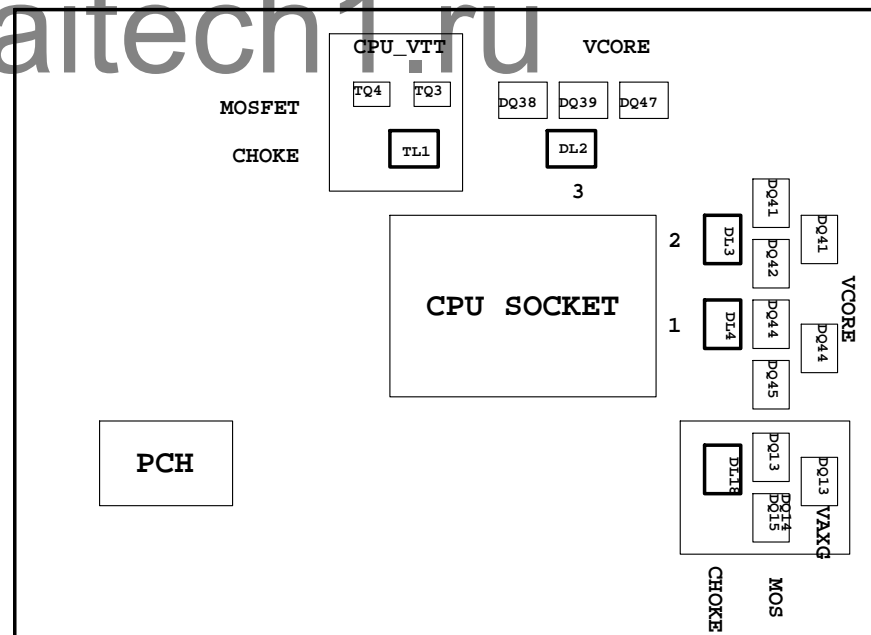
## TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESSX4 SLOT / PCIE X1 SLOT
16	PCI SLOT 1~2
17	I/O ITE8728
18	COM, LPT, TPM
19	Dual BIOS
20	VIA2021
21	REAR AUDIO JACK
22	ISL95836_VCORE_1
23	ISL95836_VCORE_2
24	DISCRETE POWER
25	PCH CORE / VOLTAGE CONSOLE
26	RT8120_CPU_VTT
27	VCCSA POWER

## SHEET

## TITLE

28	F_PANEL , F_USB
29	ATX POWER, CLOCK GEN
30	HWM,KB/MS , FAN CTRL
31	ARTHEROS AR8161/AR8151
32	mSATA
33	RT8120_DDR POWER
34	DVI
35	
36	
37	
38	
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40	



Gigabyte Technology

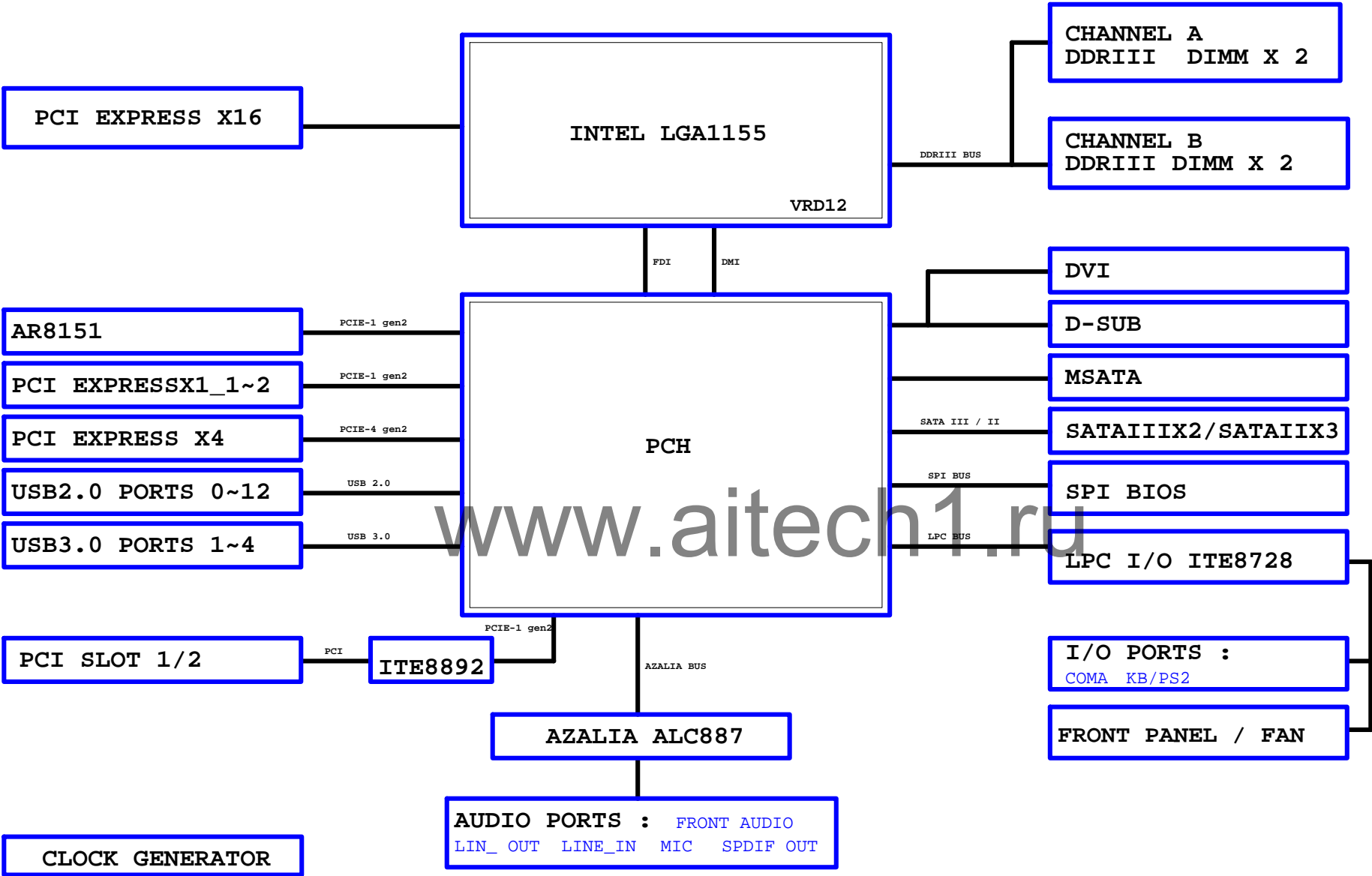
Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-Z77-DS3H	1.0
Date:	Wednesday, March 28, 2012	Sheet 1 of 35

### Component value change history

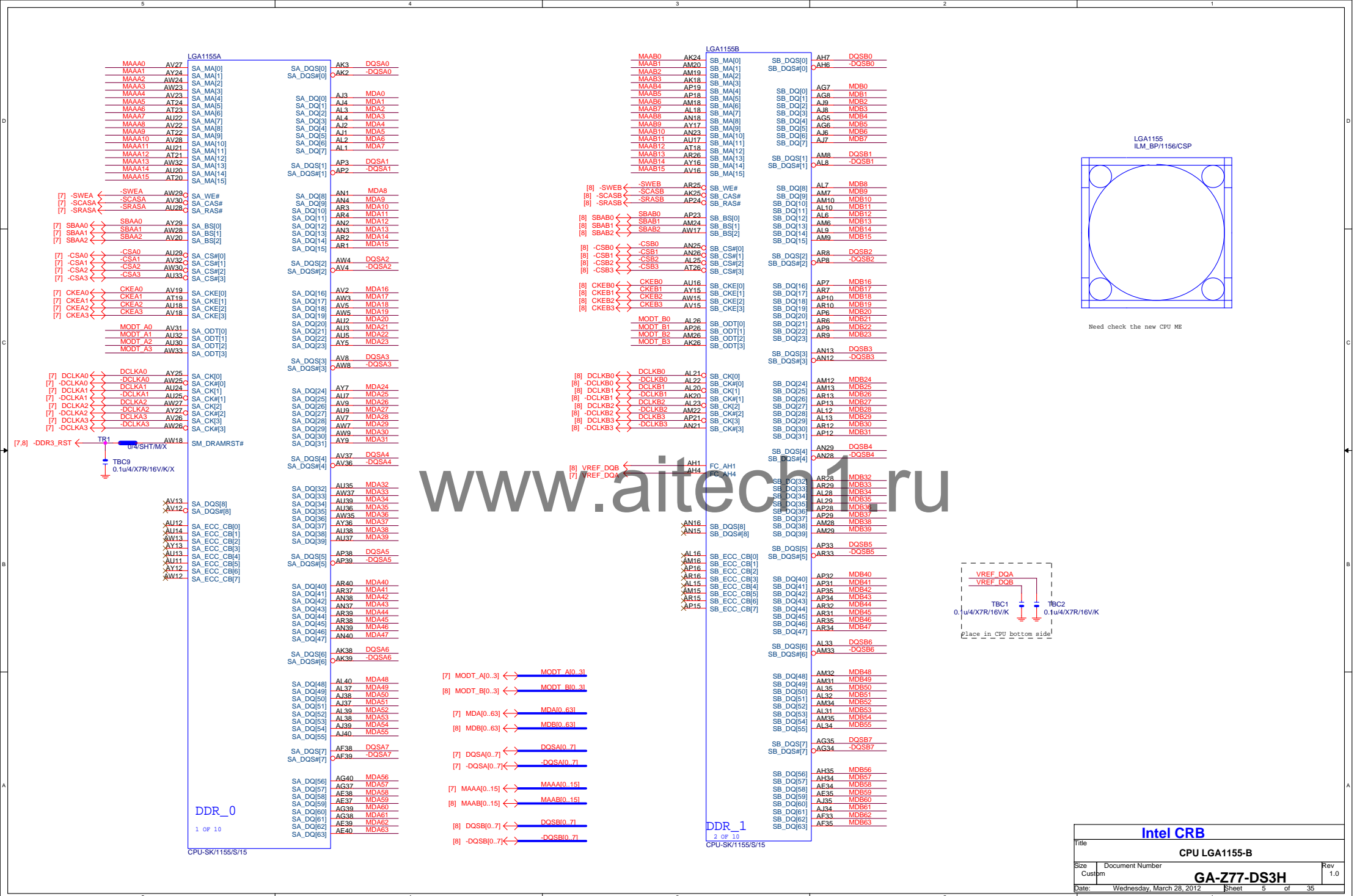
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[illegible]

BLOCK DIAGRAM

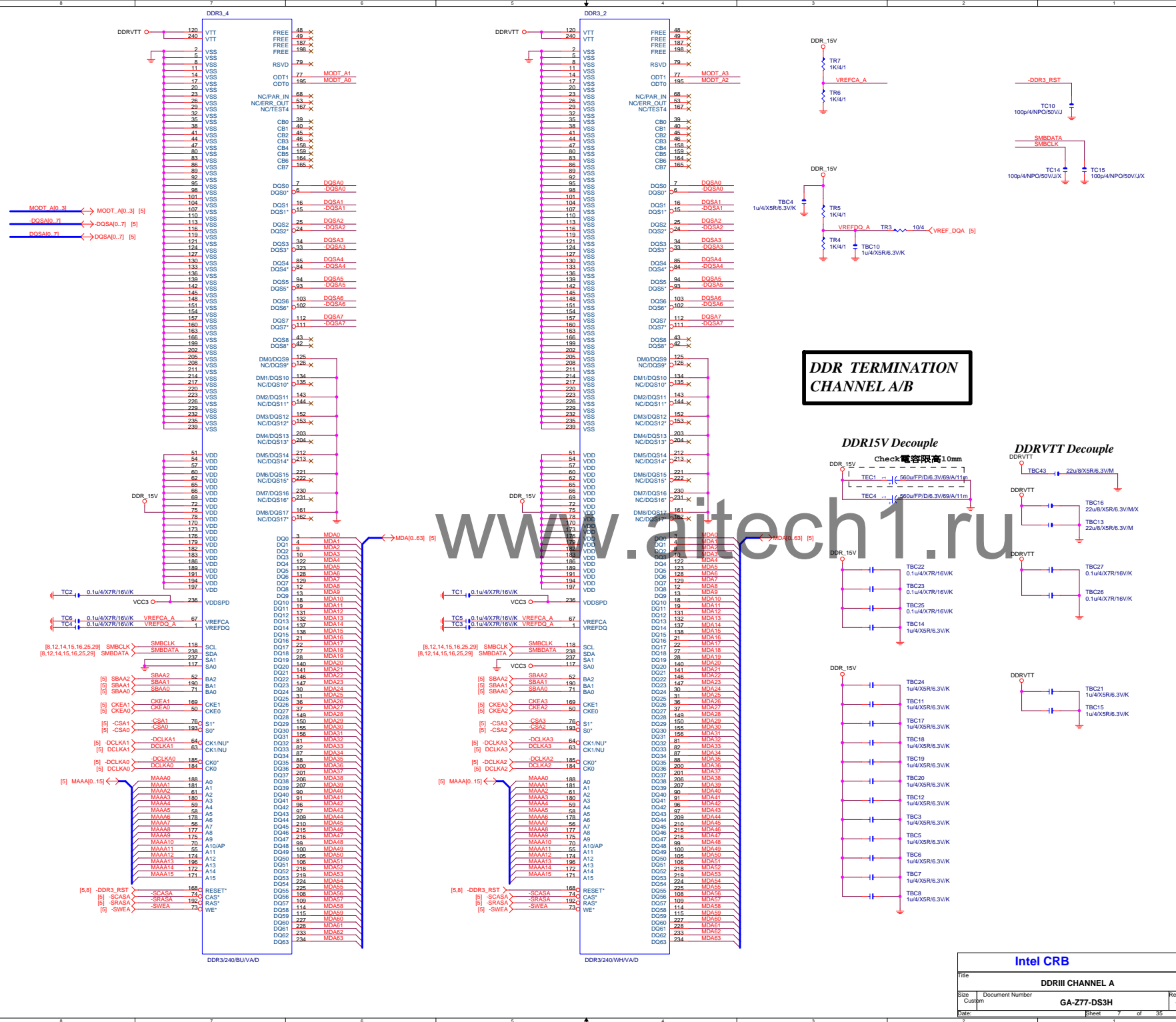






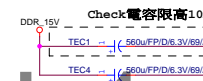




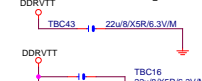


DDR TERMINATION CHANNEL A/B

DDR15V Decouple



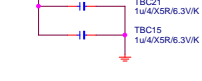
DDRVRTT Decouple



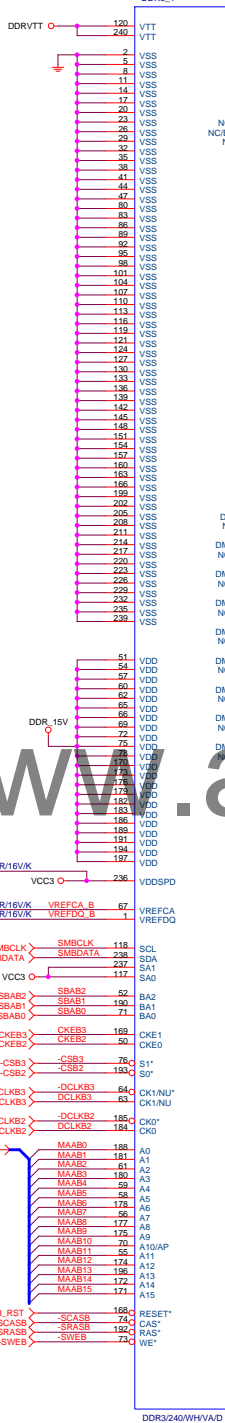
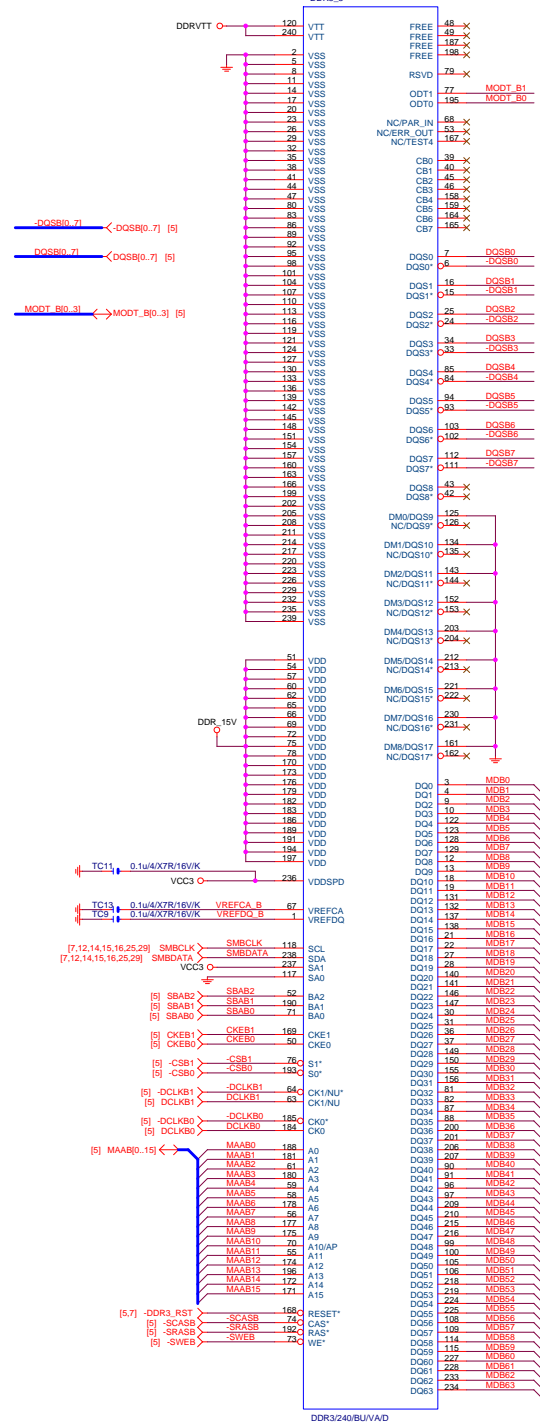
DDR15V Decouple



DDRVRTT Decouple



Intel CRB			
Title			
DDRIII CHANNEL A			
Size			
Custom			
Document Number			
GA-Z77-DS3H			
Date:			
Sheet 7 of 35			
Rev 1.0			



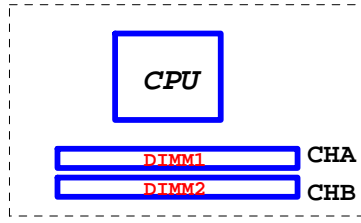
DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ  
DDR3 clock=533MHZ  
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s  
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ  
DDR3 clock=667MHZ  
DDR3 single channel bandwidth=10.6GB/s  
DDR3 dual channel bandwidth=21GB/s

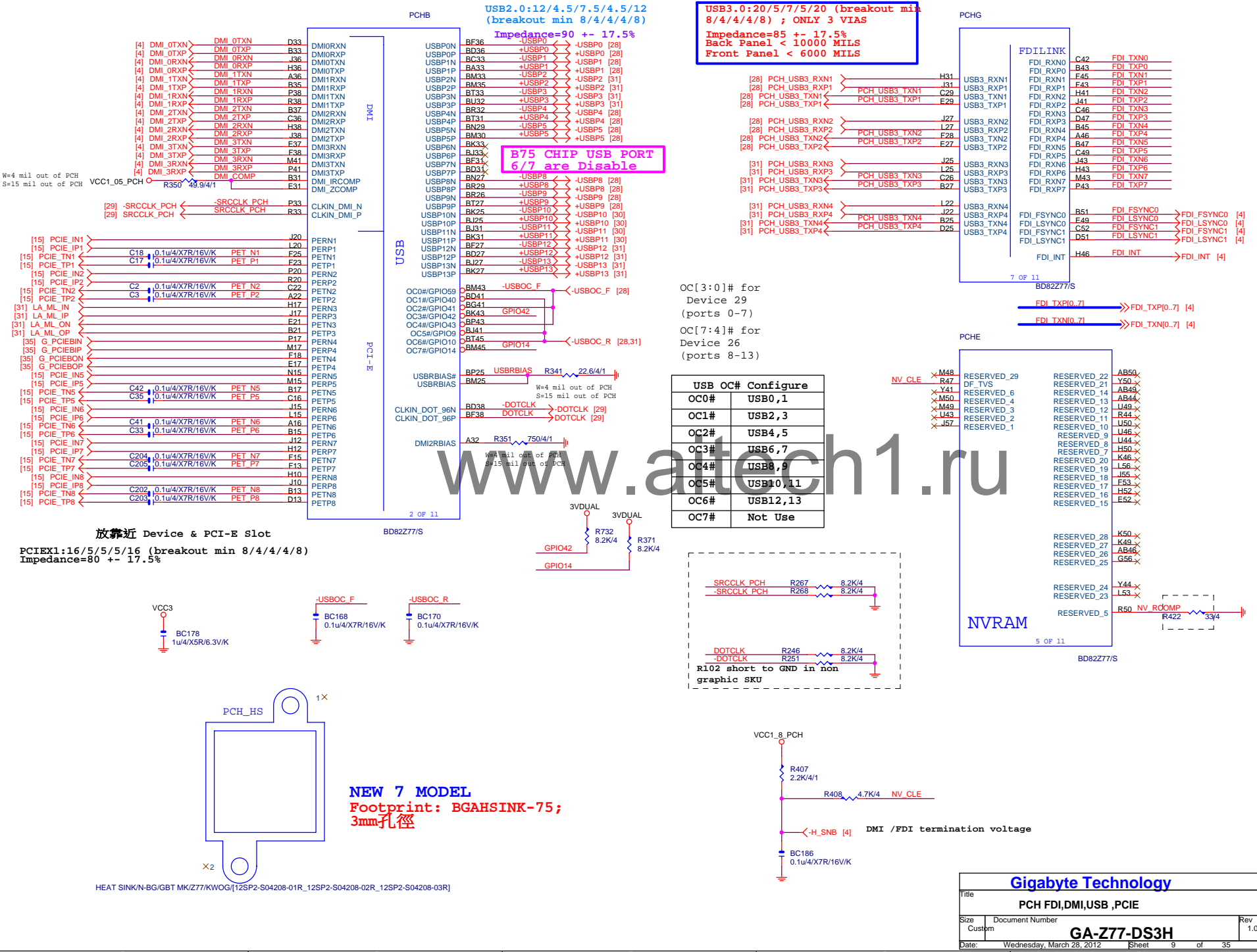
DDR3 1600MHZ  
DDR3 clock=800MHZ  
DDR3 single channel bandwidth=12.8GB/s  
DDR3 dual channel bandwidth=25.6GB/s

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Intel CRB			
Title			
DDR3 CHANNEL B			
Size			
Custom			
Document Number			
GA-Z77-DS3H			
Date			
Rev			
1.0			





USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS

B75 CHIP USB PORT  
6/7 are Disable

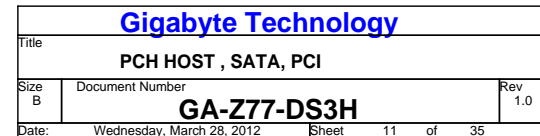
OC[3:0]# for Device 29 (ports 0-7)  
OC[7:4]# for Device 26 (ports 8-13)

USB OC# Configure	
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

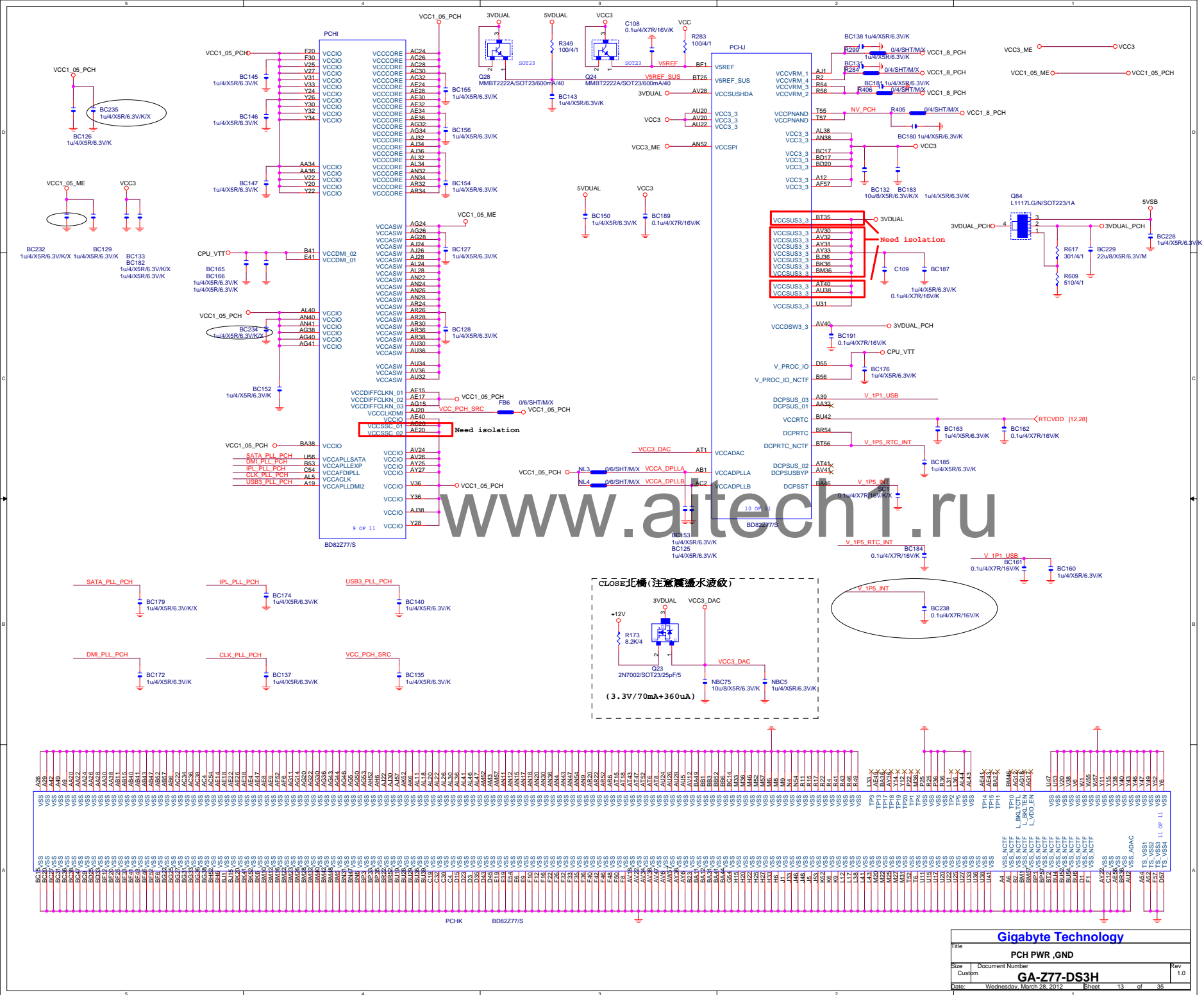
Gigabyte Technology			
Title			
PCH FDI,DMI,USB,PCIE			
Size	Document Number	Rev	
Custom		GA-Z77-DS3H	
Date:	Wednesday, March 28, 2012	Sheet	9 of 35



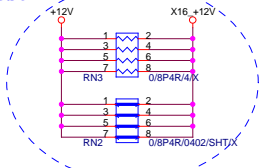
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5% PCHC







+12 protect  
short-wire  
test



PCIE16:16/5/5/5/16

EXP\_RXP0\_15I >>> EXP\_RXP0\_15I [4]  
EXP\_RXN0\_15I >>> EXP\_RXN0\_15I [4]  
EXP\_TXP0\_15I >>> EXP\_TXP0\_15I [4]  
EXP\_TXN0\_15I >>> EXP\_TXN0\_15I [4]

EXP_TXP0	C43	0.22u/4/X5R/6.3V/K/EXP TXP0C
EXP_TXN0	C36	0.22u/4/X5R/6.3V/K/EXP TXN0C
EXP_TXP1	C47	0.22u/4/X5R/6.3V/K/EXP TXP1C
EXP_TXN1	C49	0.22u/4/X5R/6.3V/K/EXP TXN1C
EXP_TXP2	C52	0.22u/4/X5R/6.3V/K/EXP TXP2C
EXP_TXN2	C54	0.22u/4/X5R/6.3V/K/EXP TXN2C
EXP_TXP3	C57	0.22u/4/X5R/6.3V/K/EXP TXP3C
EXP_TXN3	C59	0.22u/4/X5R/6.3V/K/EXP TXN3C
EXP_TXP4	C62	0.22u/4/X5R/6.3V/K/EXP TXP4C
EXP_TXN4	C64	0.22u/4/X5R/6.3V/K/EXP TXN4C
EXP_TXP5	C65	0.22u/4/X5R/6.3V/K/EXP TXP5C
EXP_TXN5	C67	0.22u/4/X5R/6.3V/K/EXP TXN5C
EXP_TXP6	C69	0.22u/4/X5R/6.3V/K/EXP TXP6C
EXP_TXN6	C71	0.22u/4/X5R/6.3V/K/EXP TXN6C
EXP_TXP7	C76	0.22u/4/X5R/6.3V/K/EXP TXP7C
EXP_TXN7	C75	0.22u/4/X5R/6.3V/K/EXP TXN7C
EXP_TXP8	C79	0.22u/4/X5R/6.3V/K/EXP TXP8C
EXP_TXN8	C80	0.22u/4/X5R/6.3V/K/EXP TXN8C
EXP_TXP9	C81	0.22u/4/X5R/6.3V/K/EXP TXP9C
EXP_TXN9	C82	0.22u/4/X5R/6.3V/K/EXP TXN9C
EXP_TXP10	C86	0.22u/4/X5R/6.3V/K/EXP TXP10C
EXP_TXN10	C87	0.22u/4/X5R/6.3V/K/EXP TXN10C
EXP_TXP11	C90	0.22u/4/X5R/6.3V/K/EXP TXP11C
EXP_TXN11	C91	0.22u/4/X5R/6.3V/K/EXP TXN11C
EXP_TXP12	C92	0.22u/4/X5R/6.3V/K/EXP TXP12C
EXP_TXN12	C93	0.22u/4/X5R/6.3V/K/EXP TXN12C
EXP_TXP13	C95	0.22u/4/X5R/6.3V/K/EXP TXP13C
EXP_TXN13	C96	0.22u/4/X5R/6.3V/K/EXP TXN13C
EXP_TXP14	C97	0.22u/4/X5R/6.3V/K/EXP TXP14C
EXP_TXN14	C98	0.22u/4/X5R/6.3V/K/EXP TXN14C
EXP_TXP15	C99	0.22u/4/X5R/6.3V/K/EXP TXP15C
EXP_TXN15	C100	0.22u/4/X5R/6.3V/K/EXP TXN15C

PCI-E REV:1.1--> 2.5GHZ

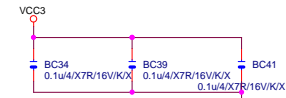
PCE-E X1(單向) BANDWITH=2.5GHZ\*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHZ\*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWITH=2.5GHZ\*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHZ\*(8b/10b)X16X2=64Gb/s=8GB/s

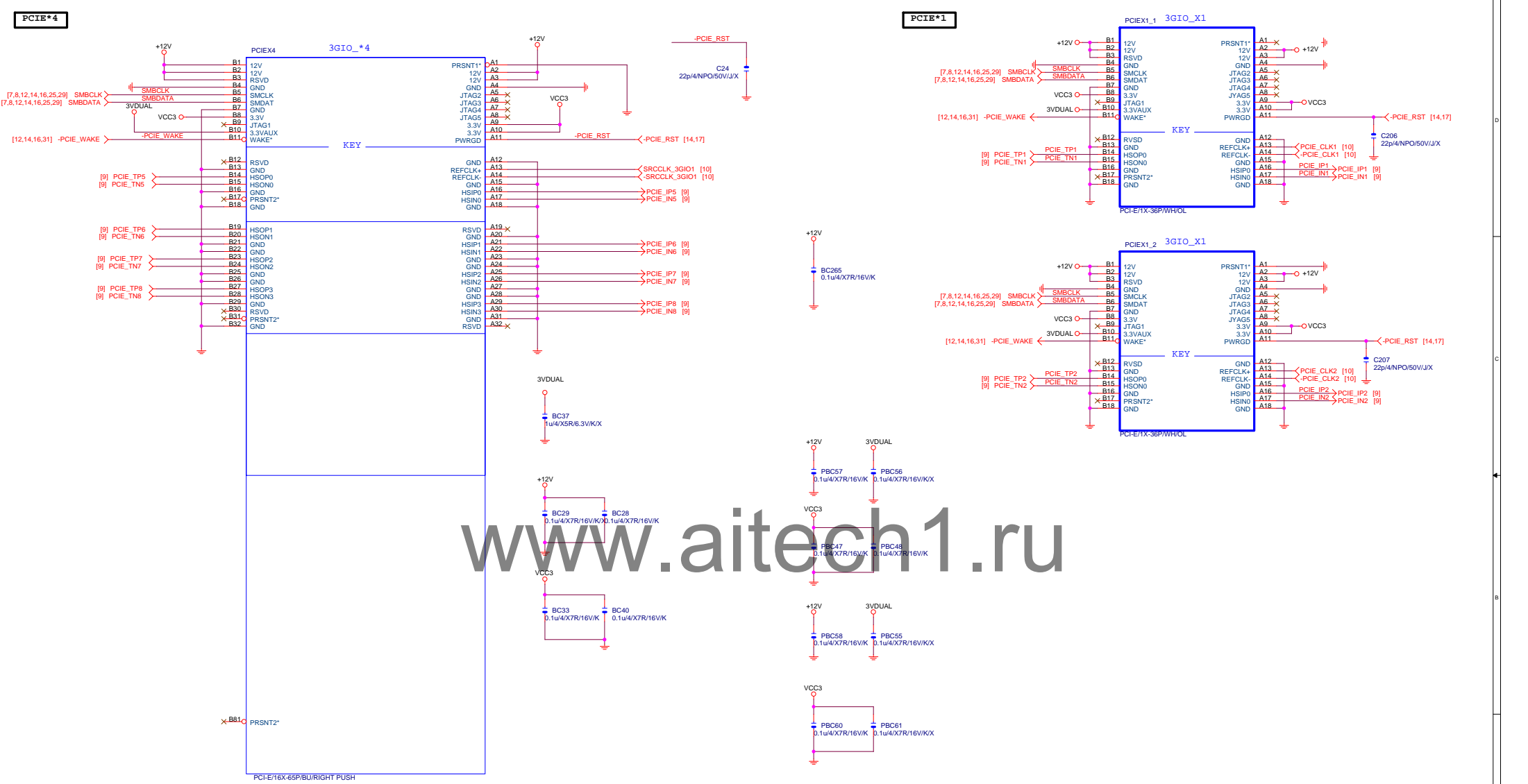
PCI-E REV:2.0--> 5GHZ



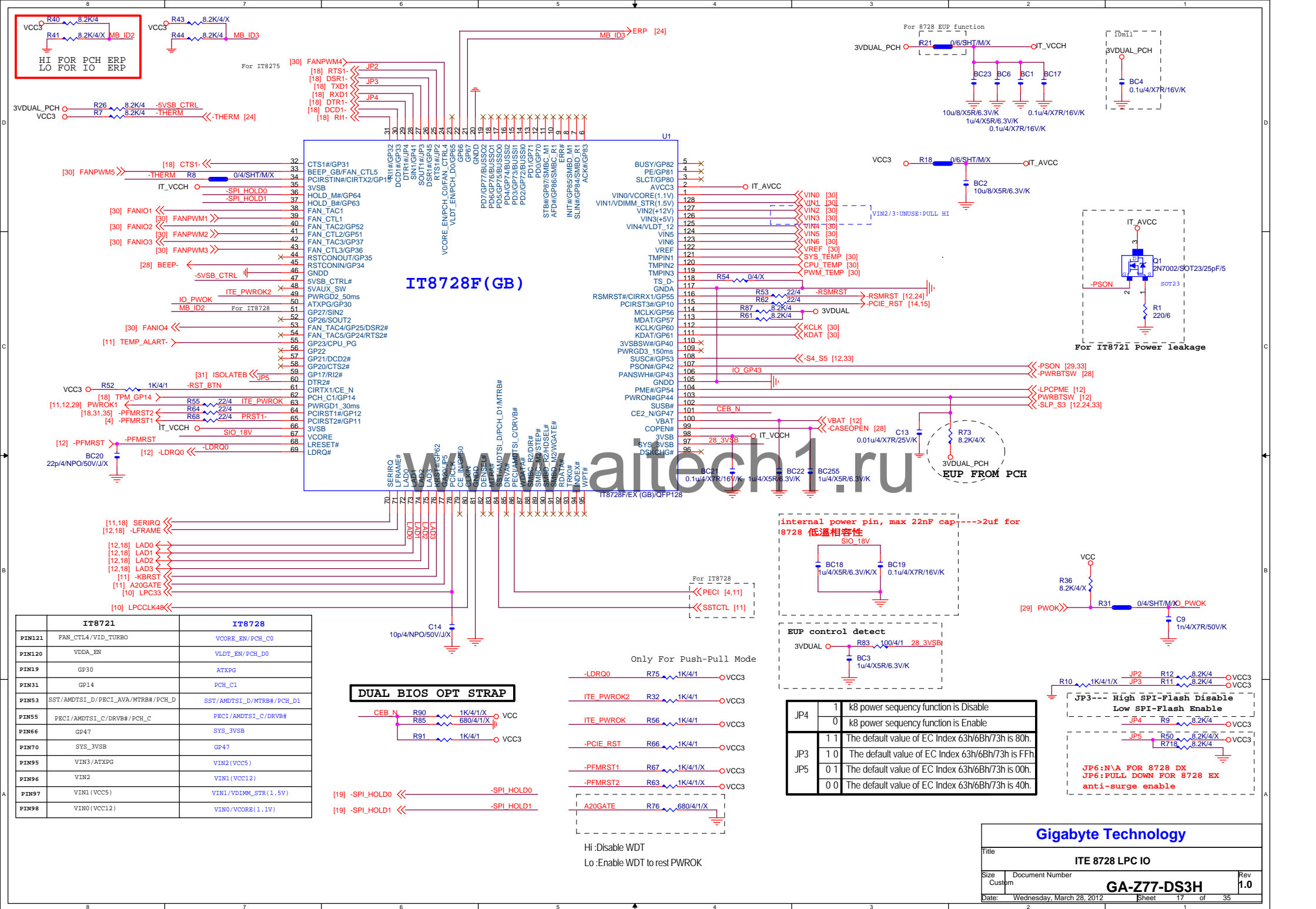
Gigabyte Technology

Title			PCI EXPRESS * 16
Size	Document Number	GA-Z77-DS3H	
Custom			Rev 1.0
Date:	Wednesday, March 28, 2012	Sheet	14 of 35

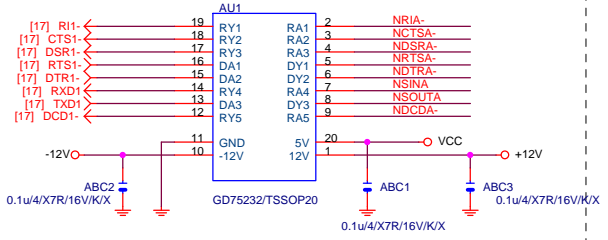




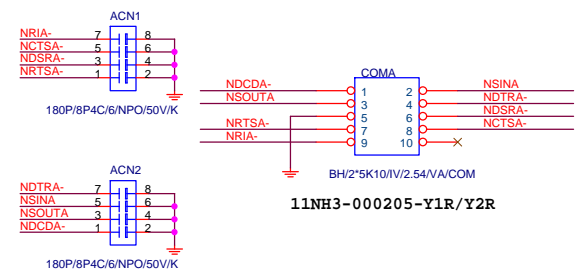
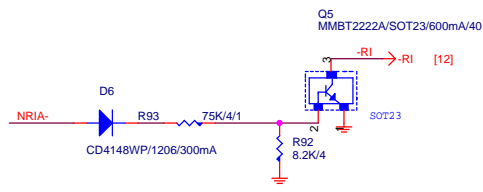




# COMA

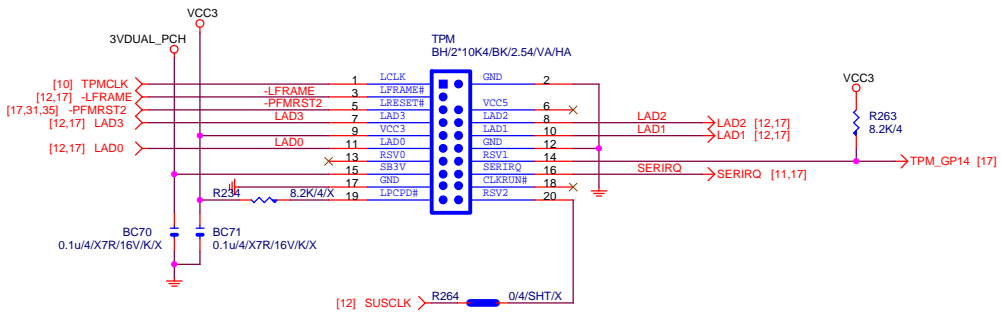


# COM RI



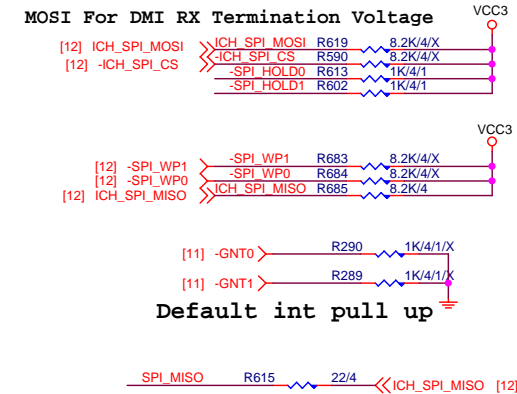
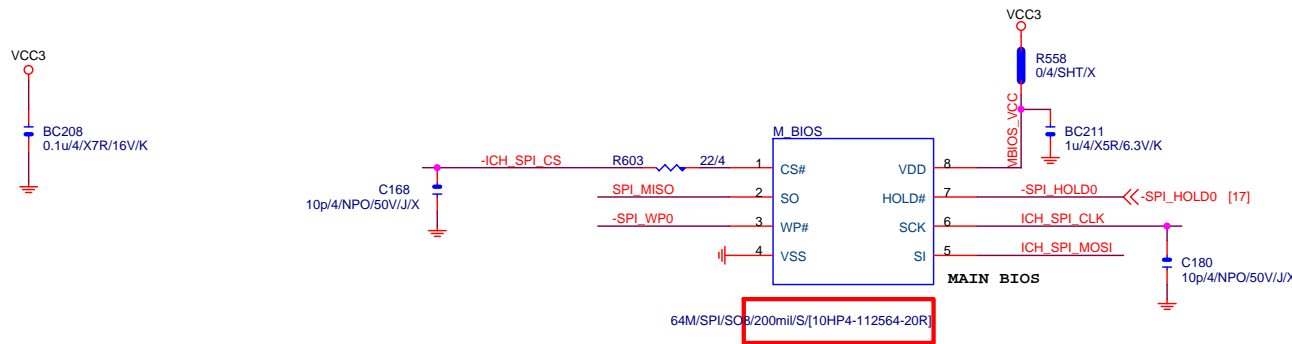
# LPT PORT

# TPM



Gigabyte Technology			
Title			
COM & Print			
Size	Document Number	Rev	
Custom	GA-Z77-DS3H	1.0	
Date:	Wednesday, March 28, 2012	Sheet	18 of 35

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BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

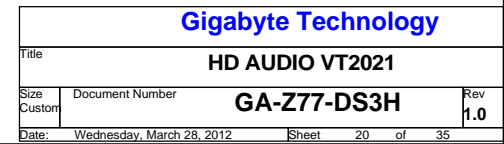
1 means floating  
 0 means PD 1K

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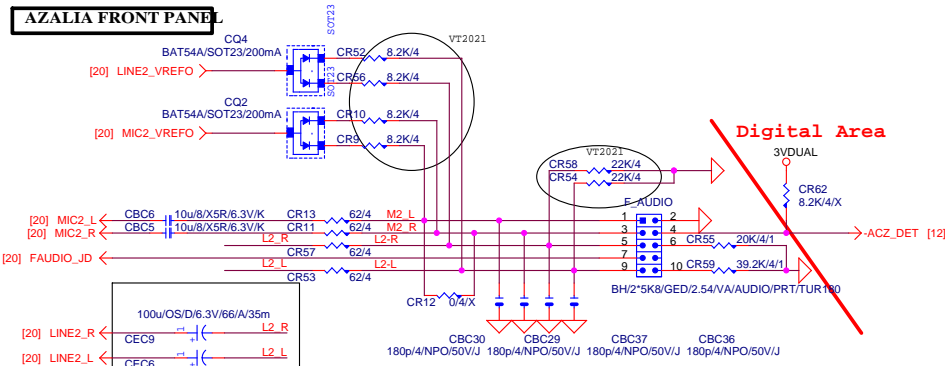
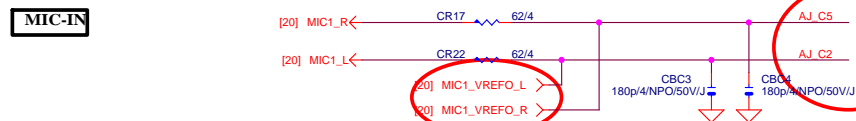
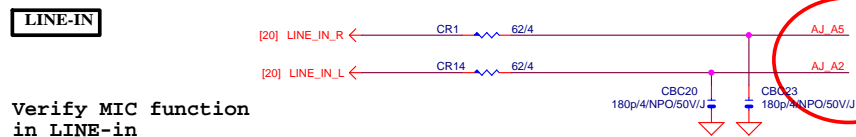
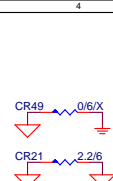
Gigabyte Technology			
Title		BIOS	
Size	Document Number	GA-Z77-DS3H	
Custom			Rev 1.0
Date:	Wednesday, March 28, 2012	Sheet	19 of 35

CR26: 20K/4/0.1% @ALC889A  
CR26: 20K/4/1% @others

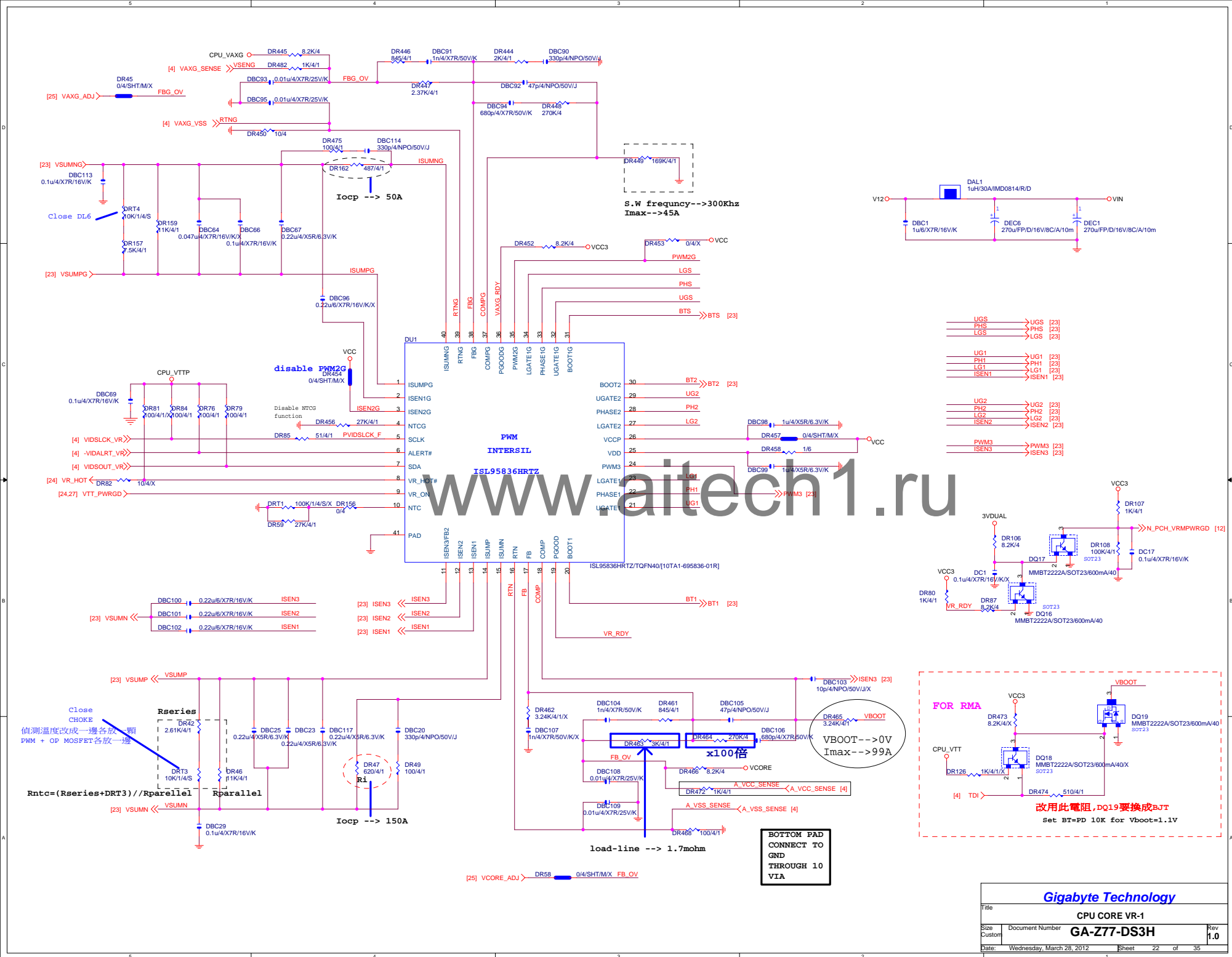
CR34 20K/4/1 VT1708S :5.1K + 100PF  
CBC40 100p/4/NF0/50V/J/X

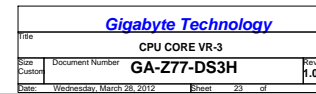




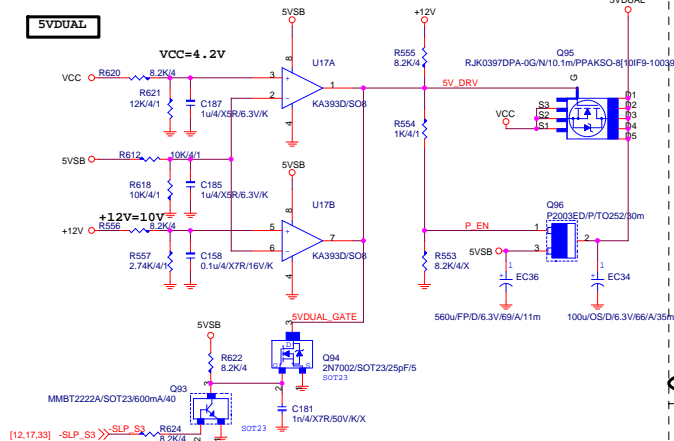


<b>Gigabyte Technology</b>			
Title			
<b>AUDIO JACK</b>			
Size Custom	Document Number	<b>GA-Z77-DS3H</b>	Rev <b>1.0</b>
Date:	Wednesday, March 28, 2012	Sheet 21 of 35	

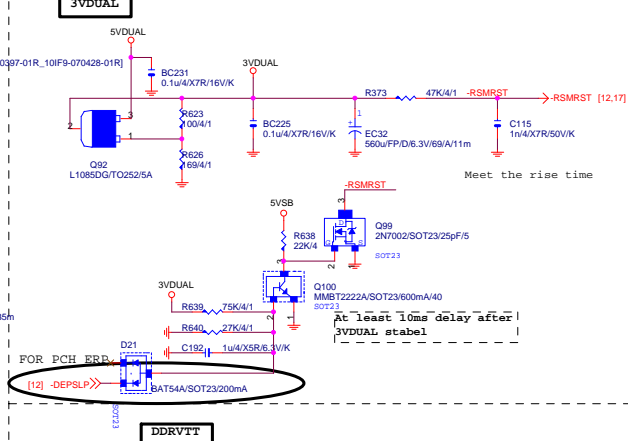




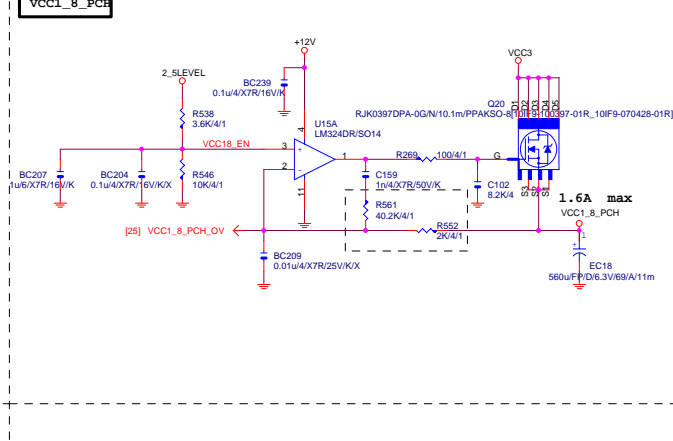
# 5VDUAL



# 3VDUAL



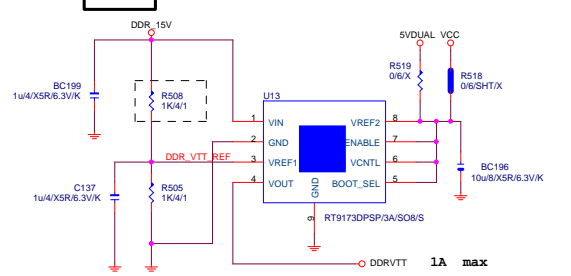
# VCC1\_8\_PCH



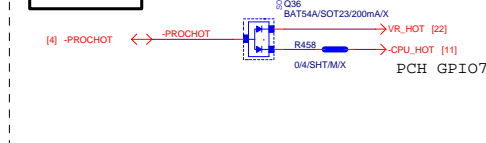
# I/O ErP Control



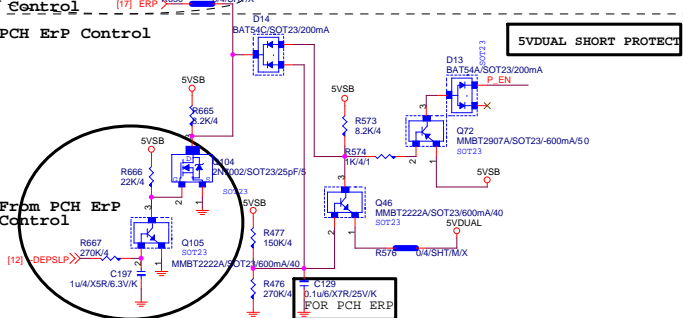
# DDRVTT



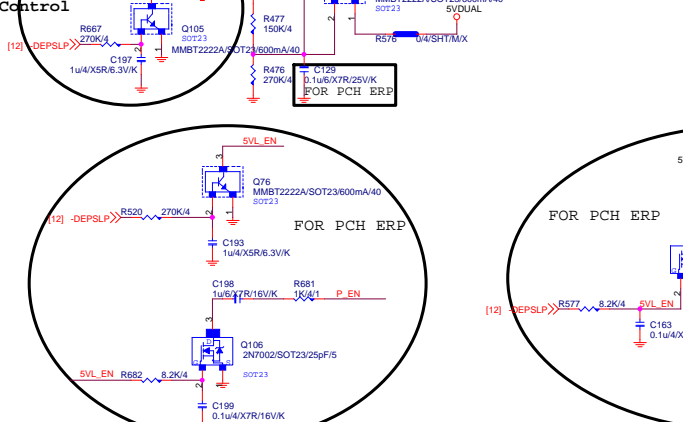
# OTP PROTECT



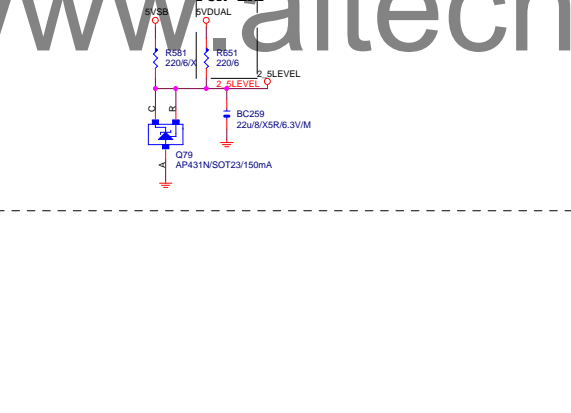
# From I/O ErP Control



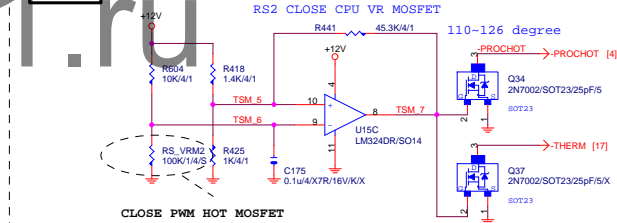
# From PCH ErP Control



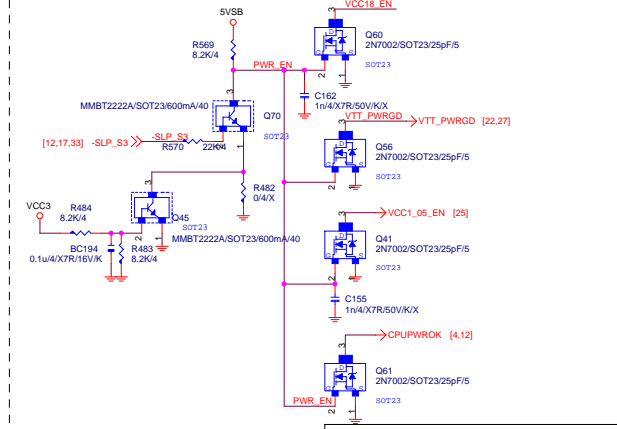
# FOR ERP



# -PROHOT



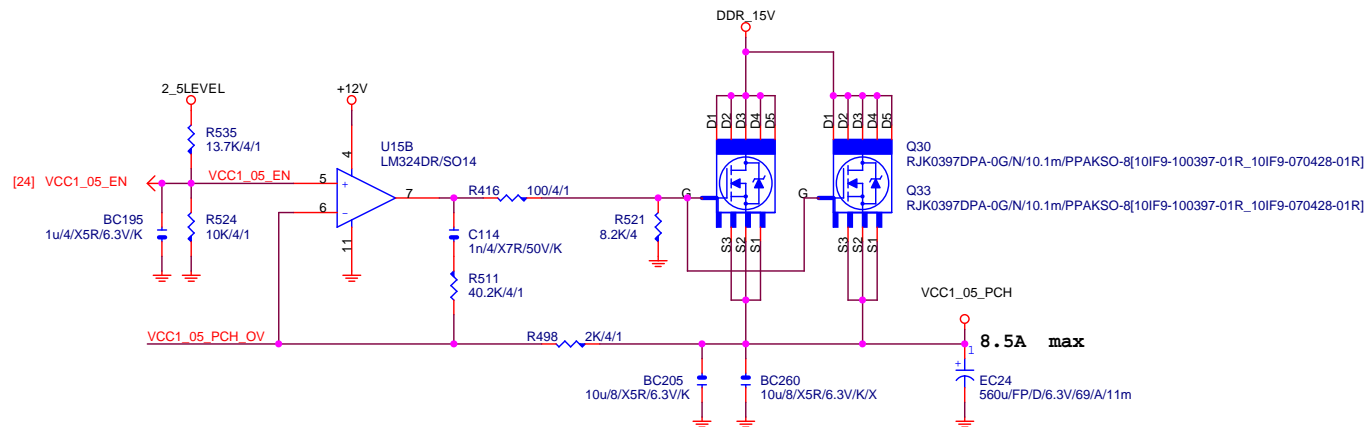
# FOR PCH ERP



# Gigabyte Technology

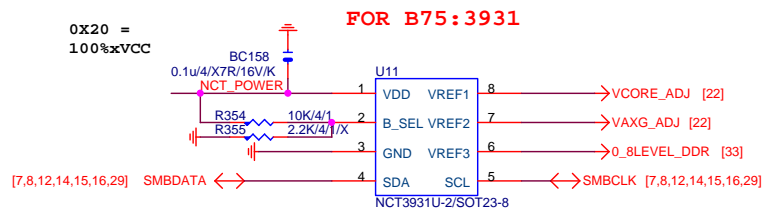
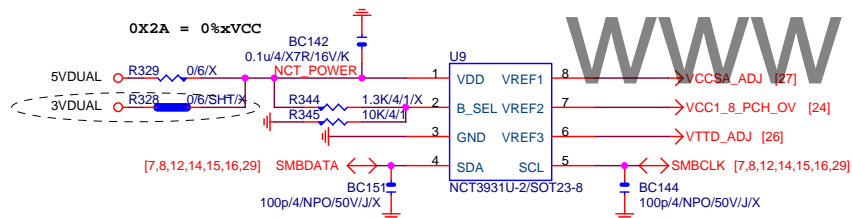
DISCRETE POWER		
Size C	Document Number	GA-Z77-DS3H
Date	Wednesday, March 28, 2012	Sheet 24 of 35
Rev	1.0	

# VCC1\_05\_PCH



# Voltage console

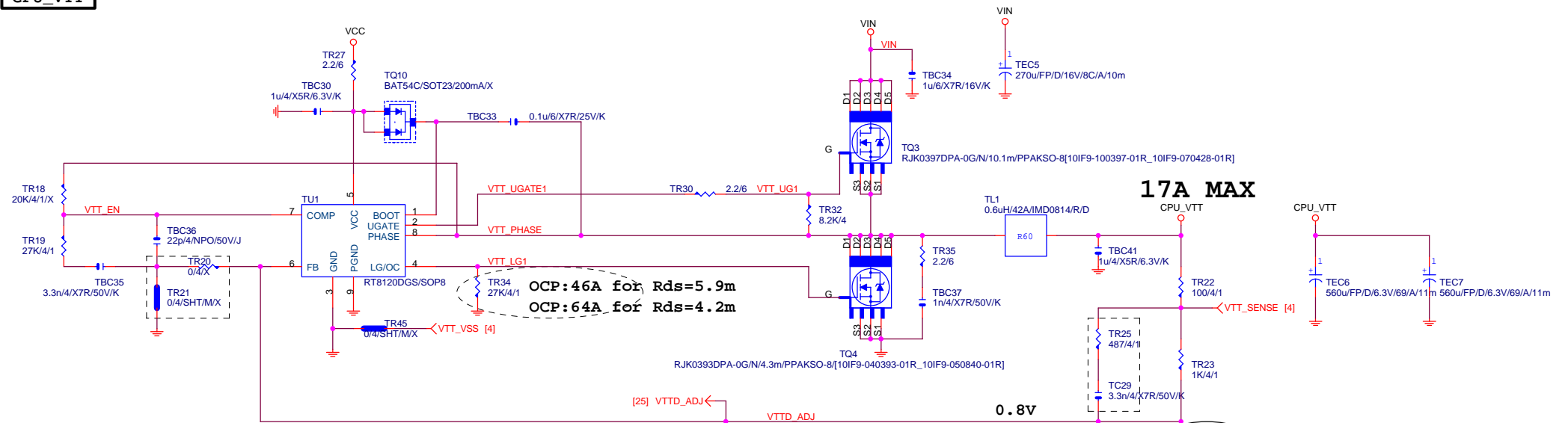
ADDRESS	0X2A	0X20	0X22	0X26
R1 (K)	OPEN	10	1.3	3
R2 (K)	10	OPEN	3.9	2.2
%VCC	0	100	75	42



up6262	0X2A	0X20
VREF1	VCC1_05_PCH	VCORE
VREF2	VCC1_8_PCH	VCCSA
VREF3	CPU_VTT	DDR

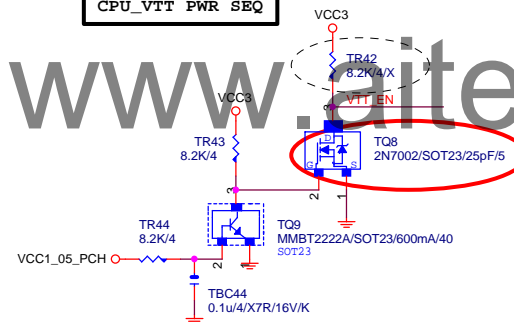
Gigabyte Technology		
Title		
PCH CORE / VOLTAGE CONSOLE		
Size	Document Number	Rev
B	GA-Z77-DS3H	1.0
Date:	Wednesday, March 28, 2012	Sheet 25 of 35

## CPU\_VTT



$$\text{OCP: } 46A = \text{Roset} * \text{Iocset} / \text{Rds(on)} \\ = 27K * 10uA / 5.9m$$

CPU_VTT	PWR	SEQ
0	0	0
0	0	1
0	0	2
0	0	3
0	0	4
0	0	5
0	0	6
0	0	7
0	0	8
0	0	9
0	0	10
0	0	11
0	0	12
0	0	13
0	0	14
0	0	15
0	0	16
0	0	17
0	0	18
0	0	19
0	0	20
0	0	21
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0	0	29
0	0	30
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0	0	135
0	0	136
0	0	137
0	0	1

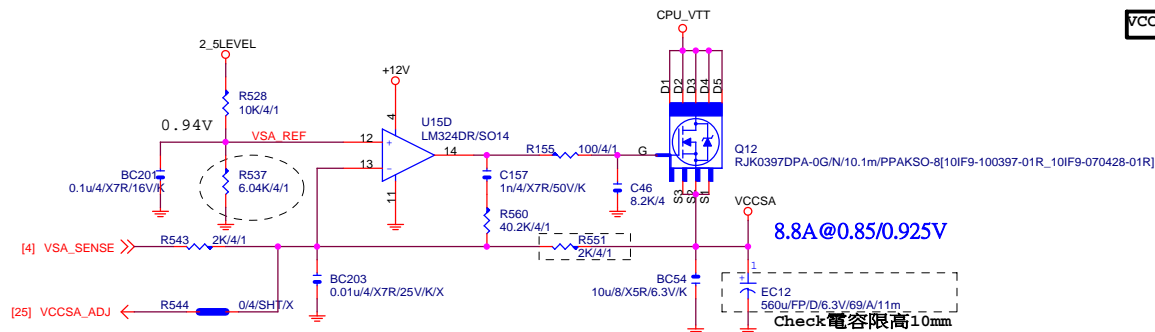


	VTT_SEL
HI	1.05V
LO	1.0V

According intel  
CDI/IBP#476733, 固定1.05V



VCC\_SA



8.8A@0.85/0.925V

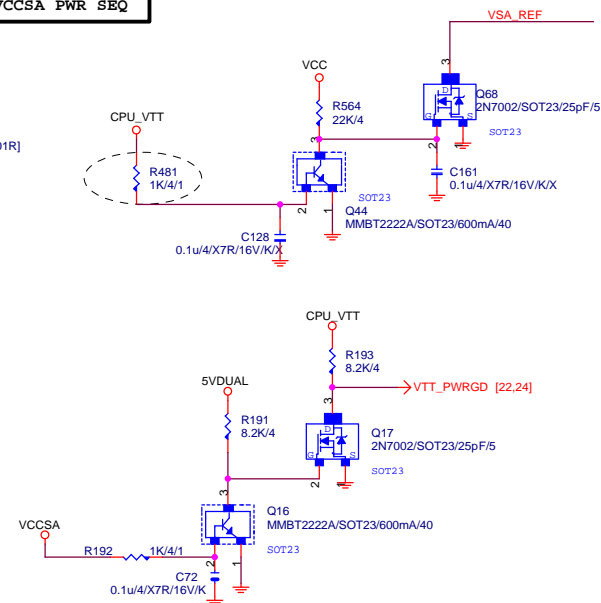
Check電容限高10mm

PDG 1.01

	VSA_SEL
HI	0.85V
LO	0.925V

According intel  
CDI/IBP#476733, 固定0.925v

VCCSA PWR SEQ

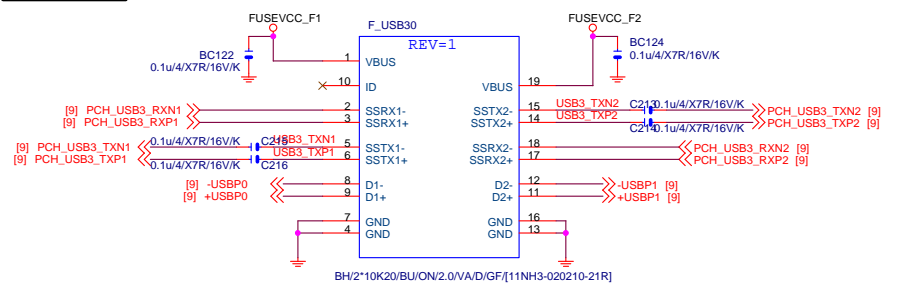


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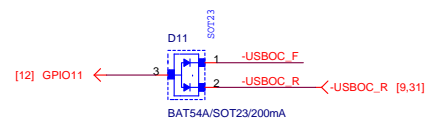
Gigabyte Technology

Title		
VCCSA POWER		
Size	Document Number	Rev
Custom	GA-Z77-DS3H	1.0
Date:	Wednesday, March 28, 2012	Sheet 27 of 35

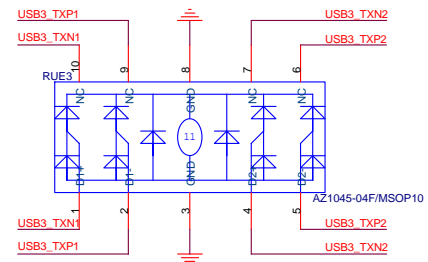
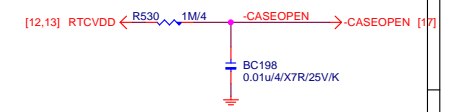
# FRONT USB1



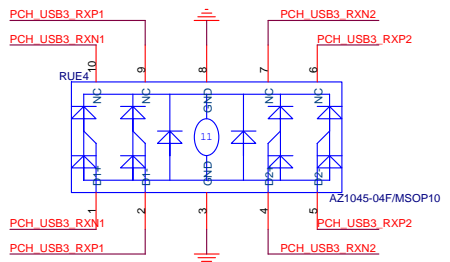
# F\_USB POWER PROTECT



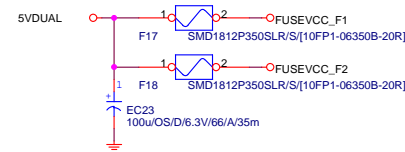
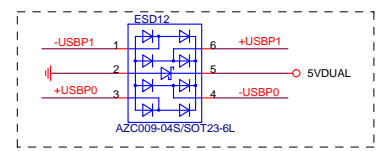
# CASE OPEN



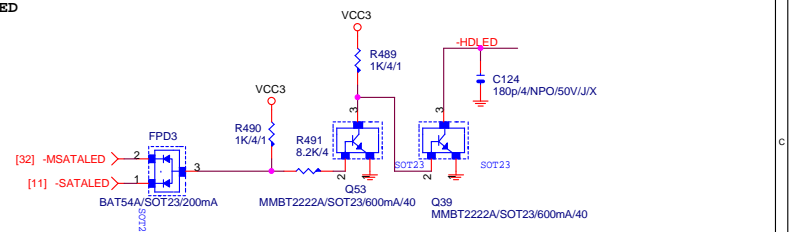
ESD Close to connector



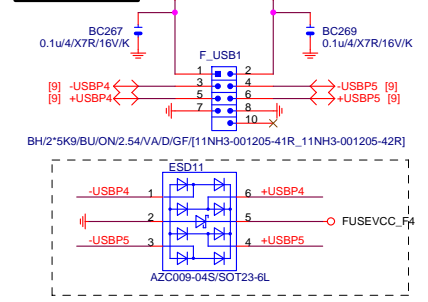
ESD Close to connector



# SATA LED

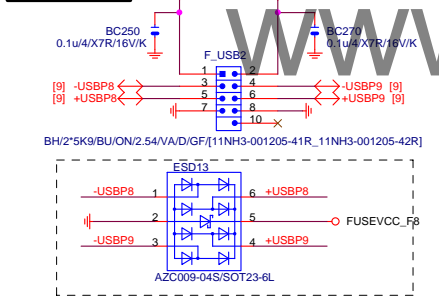


# FRONT USB1



ESD Close to connector

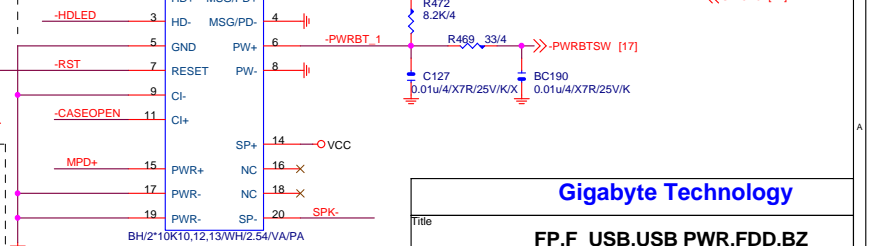
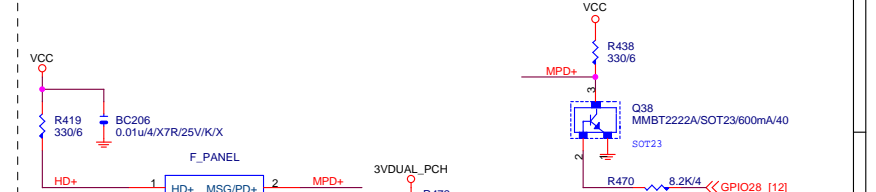
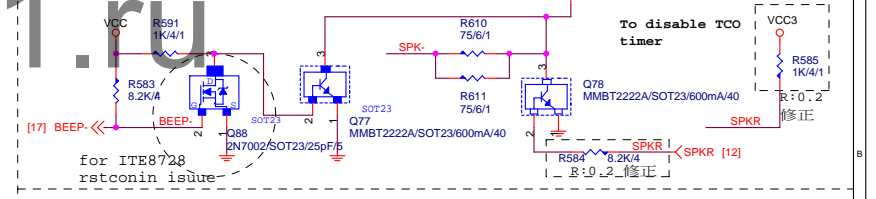
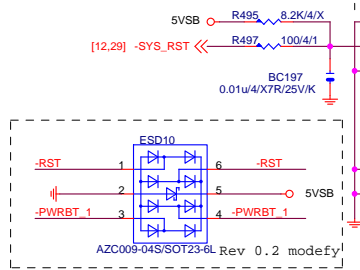
# FRONT USB2



ESD Close to connector

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# INTEL FRONT PANEL



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Title			
FF,P_USB,USB PWR,FDD,BZ			
Size	Document Number	GA-Z77-DS3H	
Custom		Rev 1.0	
Date:	Wednesday, March 28, 2012	Sheet	28 of 35

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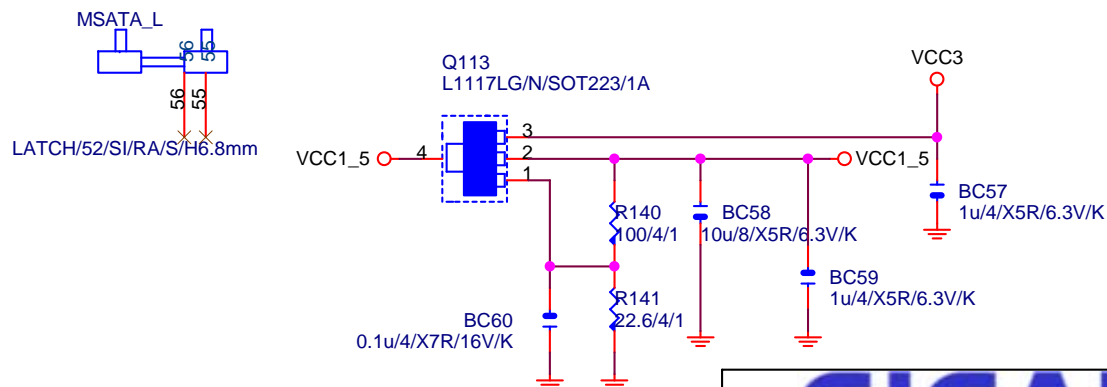
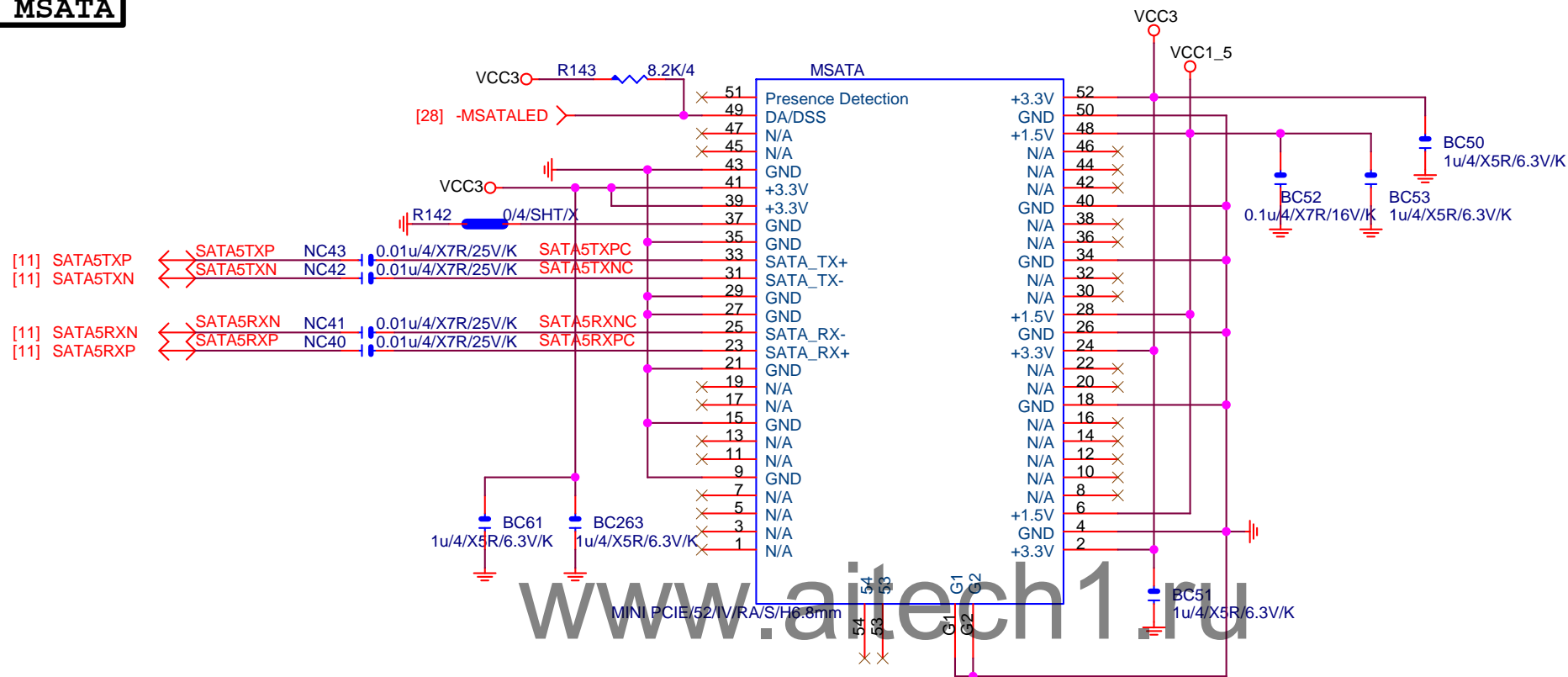


Title			
<b>ATX POWER CONNECTOR</b>			
Size Custom	Document Number	<b>GA-Z77-DS3H</b>	Rev <b>1.0</b>
Date:	Wednesday, March 28, 2012	Sheet 29 of 35	





# MSATA



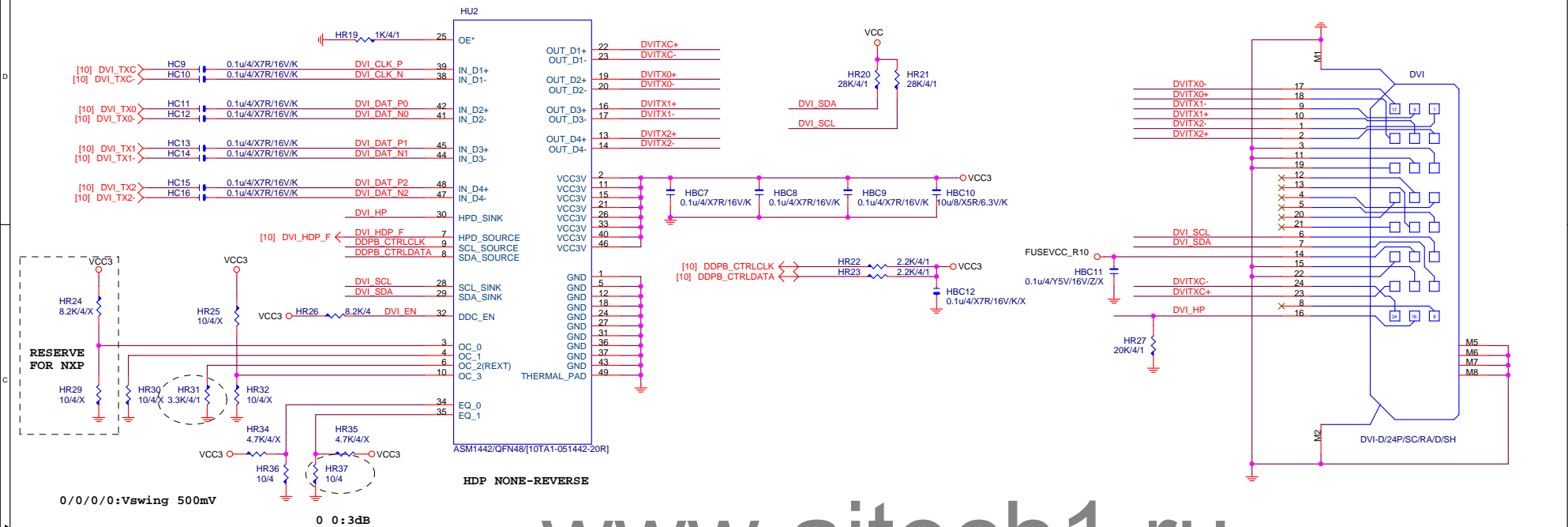
**GIGABYTE™**

Title		
<b>MSATA</b>		
Size A	Document Number <b>GA-Z77-DS3H</b>	Rev <b>1.0</b>
Date:	Wednesday, March 28, 2012	Sheet 32 of 35



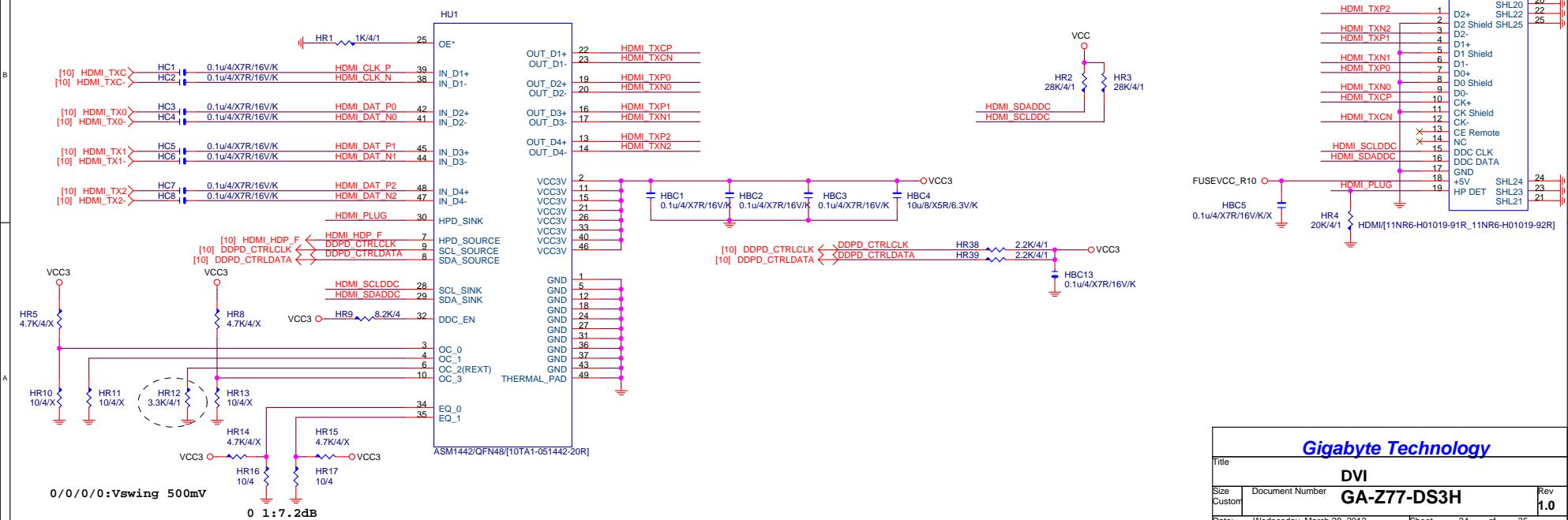


## DVI LEVEL SHIFT



HDMI LEVEL SHIFT
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HDMI : 20/4/6/4/20  
Impedance=85 +- 17.5%



## Gigabyte Technology

Title			
DVI			
Size Custom	Document Number	GA-Z77-DS3H	Rev 1.0
Date:	Wednesday, March 28, 2012	Sheet 34 of 35	

