

Model Name: GA-Z77MX-D3H TH

SHEET TITLE Revision 1.0

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 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 Switch
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*1 SLOT
18	ITE 8728 LPC IO
19	KB_USB,R_USB
20	HWM,FAN CTRL,OV,-PROCHOT
21	DUAL BIOS
22	FP,FUSB,SPK,SATALED
23	VIA VT2021
24	REAR AUDIO JACK
25	ARTHEROS AR8161/AR8151
26	DISCRETE POWER
27	ATX, CLK GEN

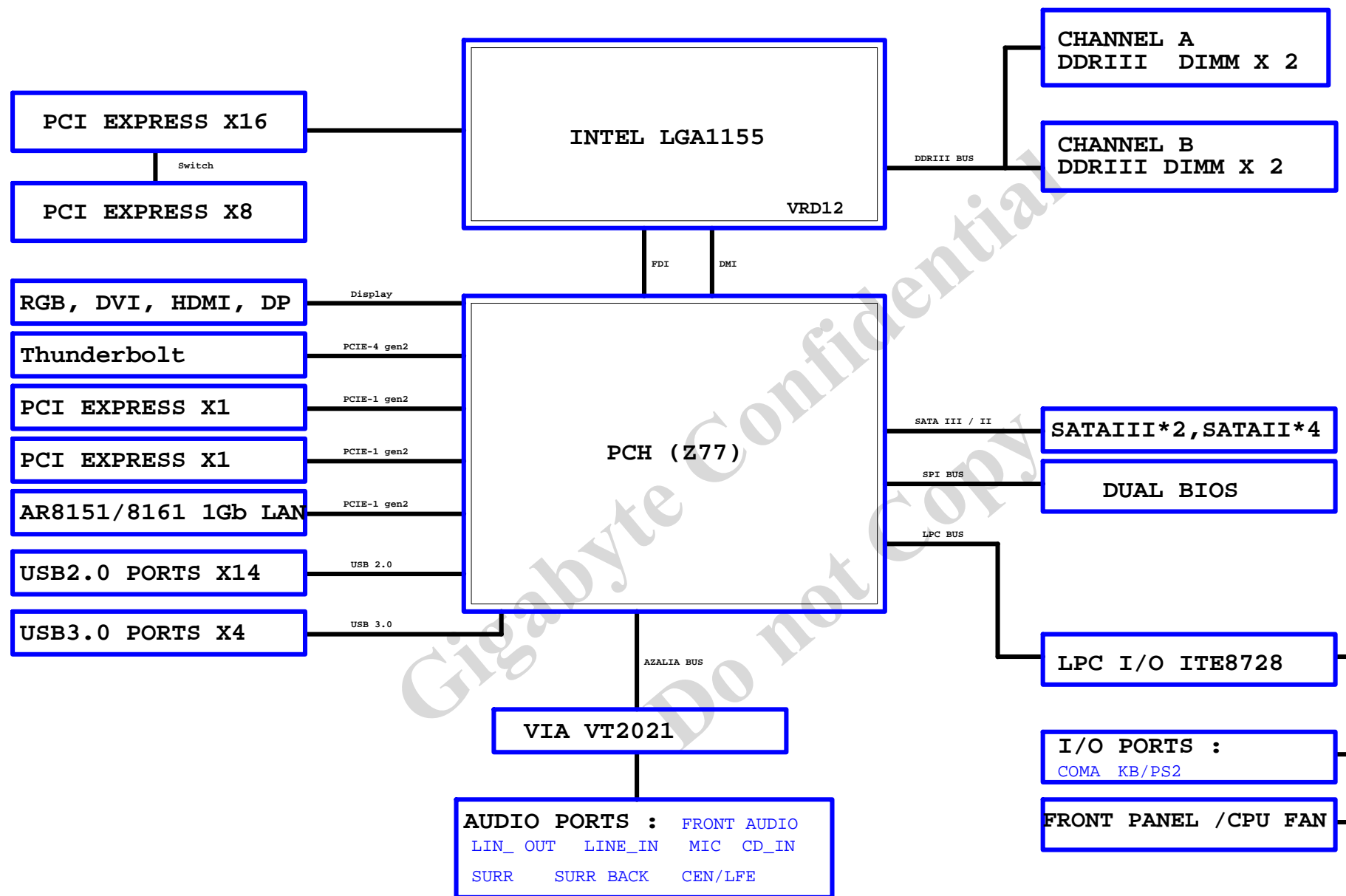
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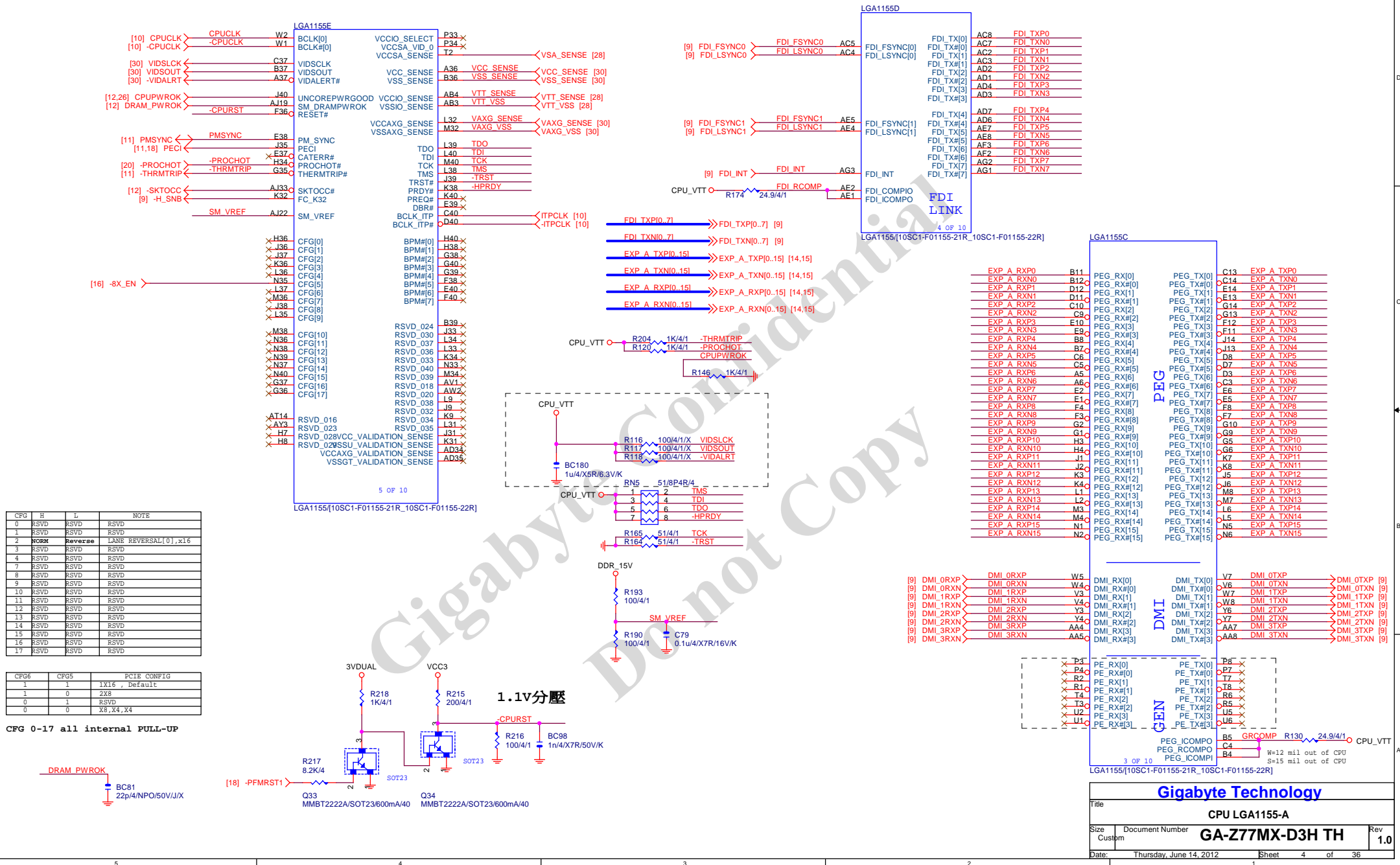
28	RT8120_CPU_VTT
29	RT8120_DDR POWER
30	VCORE CHIL CHL3564_1
31	VCORE CHIL CHL3564_2
32	TPM
33	HDMI/DVI,R_USB30
34	DP & DVI Switch
35	Thunderbolt-1
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Custom			
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BLOCK DIAGRAM





LGA1155A

MAAA0	AV27	SA_MA[0]	SA_DQS[0]	AK3	DQSA0
MAAA1	AY24	SA_MA[1]	SA_DQS[0]	AK2	-DQSA0
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MAAA3	AW23	SA_MA[3]			
MAAA4	AV23	SA_MA[4]	SA_DQ[0]	AJ3	MDA0
MAAA5	AT24	SA_MA[5]	SA_DQ[1]	AJ4	MDA1
MAAA6	AT23	SA_MA[6]	SA_DQ[2]	AL3	MDA2
MAAA7	AU22	SA_MA[7]	SA_DQ[3]	AL4	MDA3
MAAA8	AV22	SA_MA[8]	SA_DQ[4]	AJ2	MDA4
MAAA9	AT22	SA_MA[9]	SA_DQ[5]	AJ1	MDA5
MAAA10	AV28	SA_MA[10]	SA_DQ[6]	AL2	MDA6
MAAA11	AU21	SA_MA[11]	SA_DQ[7]	AL1	MDA7
MAAA12	AT21	SA_MA[12]			
MAAA13	AW32	SA_MA[13]	SA_DQS[1]	AP3	DQSA1
MAAA14	AU20	SA_MA[14]	SA_DQS[1]	AP2	-DQSA1
MAAA15	AT20	SA_MA[15]			
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		SA_RAS#	SA_DQ[10]	AR3	MDA10
			SA_DQ[11]	AR4	MDA12
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			SA_DQ[15]	AR1	MDA15
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[7] -CSA2	-CSA2	SA_CS#			
[7] -CSA3	-CSA3	SA_CS#			
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[7] CKEA1	CKEA1	SA_CKE[1]	SA_DQ[17]	AW3	MDA17
[7] CKEA2	CKEA2	SA_CKE[2]	SA_DQ[18]	AV5	MDA18
[7] CKEA3	CKEA3	SA_CKE[3]	SA_DQ[19]	AW5	MDA19
			SA_DQ[20]	AU2	MDA20
			SA_DQ[21]	AJ3	MDA21
			SA_DQ[22]	AJ5	MDA22
			SA_DQ[23]	AY5	MDA23
			SA_DQS[3]	AV8	DQSA3
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[7] -DCLKA0	-DCLKA0	SA_CK#	SA_DQ[25]	AJ7	MDA25
[7] DCLKA1	DCLKA1	SA_CK[1]	SA_DQ[26]	AV9	MDA26
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[7] DCLKA3	DCLKA3	SA_CK[3]	SA_DQ[30]	AW9	MDA30
[7] -DCLKA3	-DCLKA3	SA_CK#	SA_DQ[31]	AY9	MDA31
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			SA_DQ[32]	AJ35	MDA32
			SA_DQ[33]	AW37	MDA33
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			SA_DQ[46]	AN39	MDA46
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			SA_DQ[48]	AL40	MDA48
			SA_DQ[49]	AL37	MDA49
			SA_DQ[50]	AJ38	MDA50
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			SA_DQ[59]	AE37	MDA59
			SA_DQ[60]	AG39	MDA60
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DDR_0

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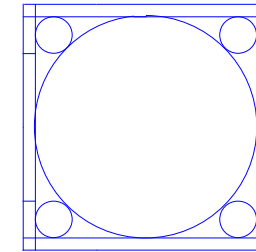
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MAAB3	AK18	SB_MA[3]	SB_DQ[0]	AG7	MDB0
MAAB4	AP19	SB_MA[4]	SB_DQ[1]	AG8	MDB1
MAAB5	AP18	SB_MA[5]	SB_DQ[2]	AJ9	MDB2
MAAB6	AM18	SB_MA[6]	SB_DQ[3]	AJ8	MDB3
MAAB7	AL18	SB_MA[7]	SB_DQ[4]	AG5	MDB4
MAAB8	AY17	SB_MA[8]	SB_DQ[5]	AG6	MDB5
MAAB9	AY17	SB_MA[9]	SB_DQ[6]	AJ6	MDB6
MAAB10	AN23	SB_MA[10]	SB_DQ[7]	AJ7	MDB7
MAAB11	AU17	SB_MA[11]			
MAAB12	AT18	SB_MA[12]	SB_DQS[1]	AM8	DQSB1
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[8] DCLKB1	DCLKB1	SB_CK[1]	SB_DQ[27]	AP13	MDB27
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[8] -DCLKB2	-DCLKB2	SB_CK#	SB_DQ[30]	AL12	MDB30
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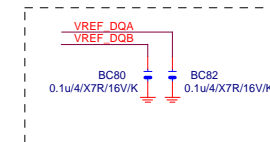
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CR
CPU RETAINTION/X

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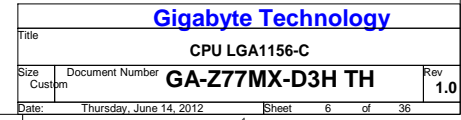


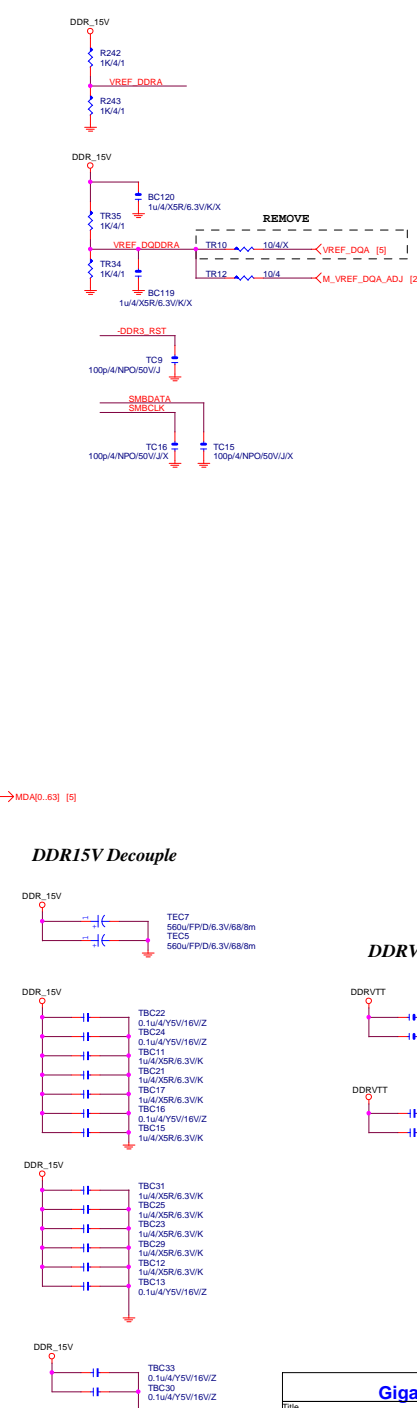
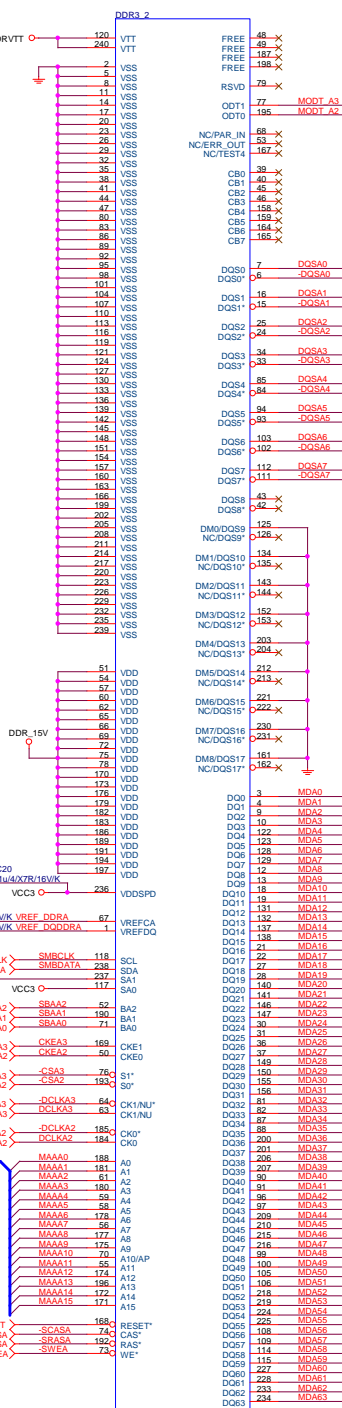
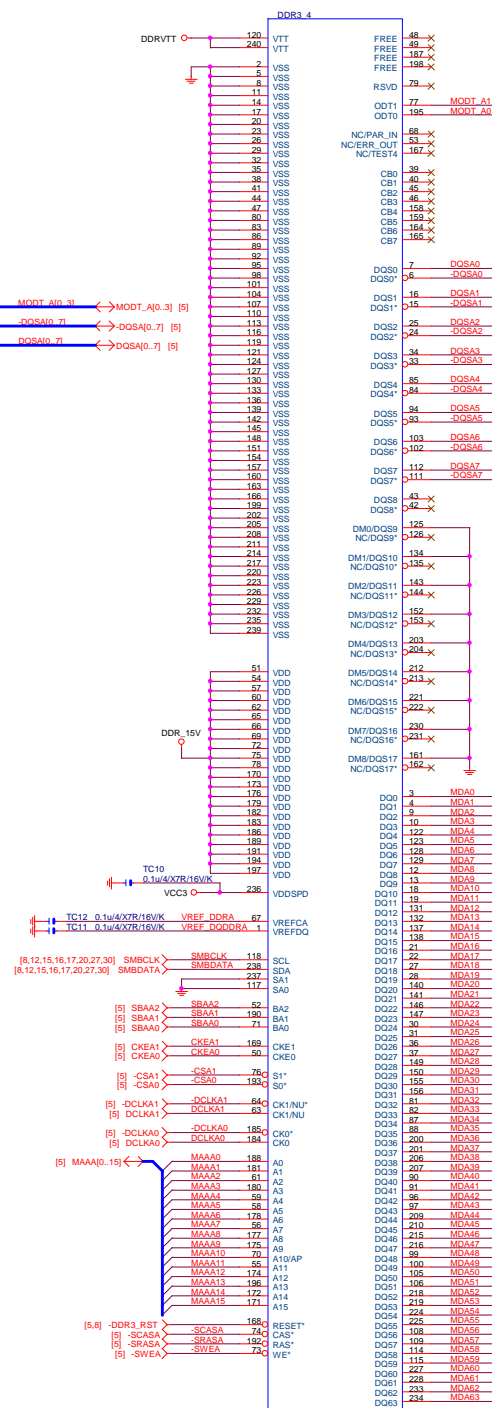
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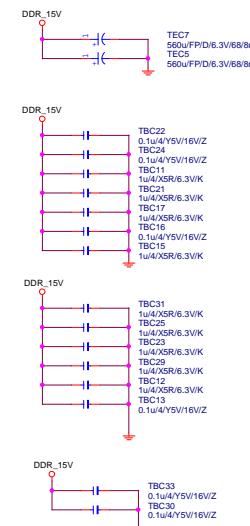
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Size				GA-Z77MX-D3H TH	
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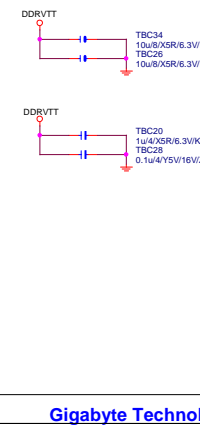




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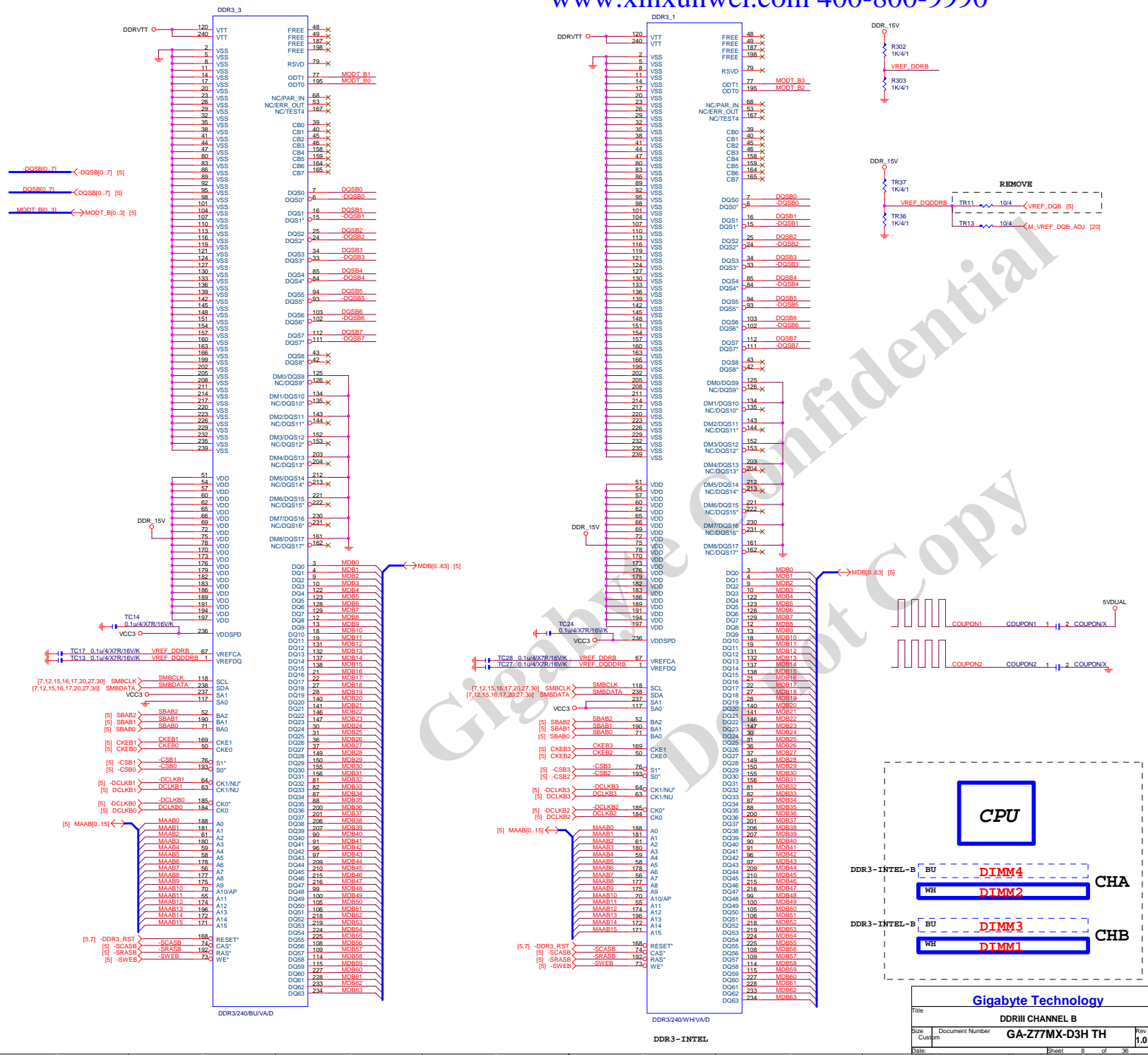


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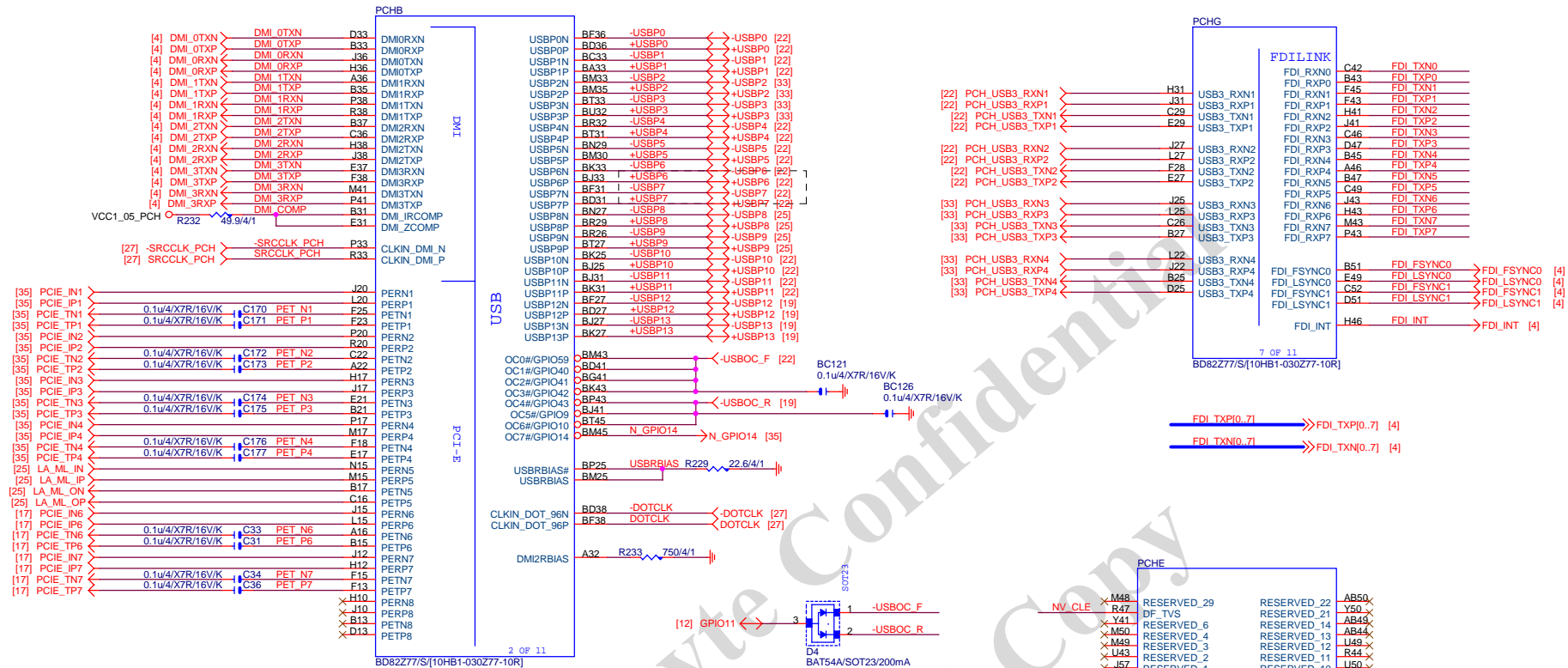


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Size Custom	Document Number	GA-Z77MX-D3H TH		
Date:		Sheet	7 of 36	

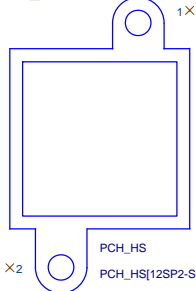


X1 X1 LAN Thunderbolt



BGAHSINK-75

SB_HEATSIN



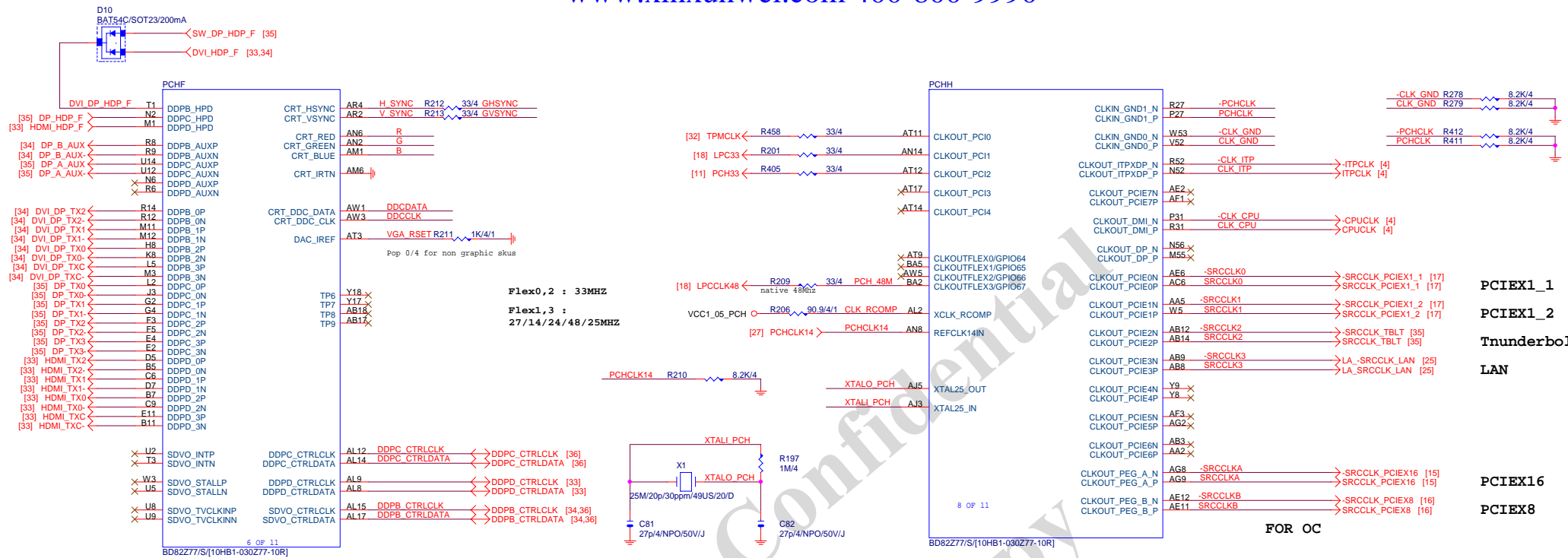
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PCH FDI,DMI,USB,PCIE,NVRAM

GA-Z77MX-D3H TH

1.0

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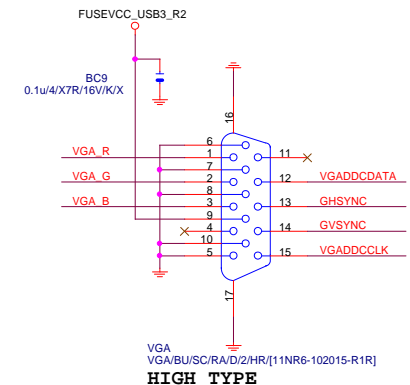
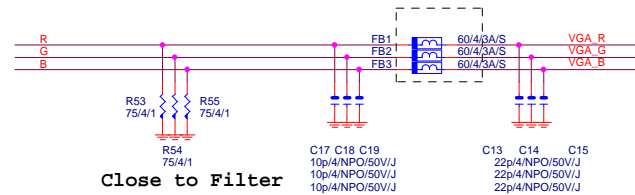
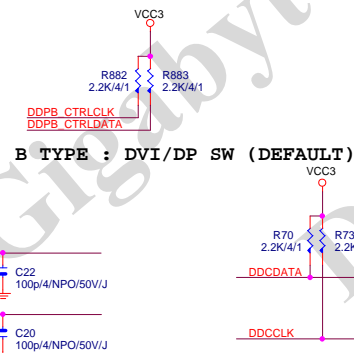
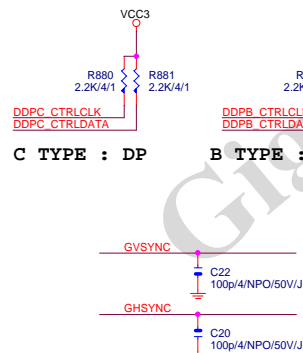
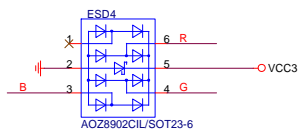
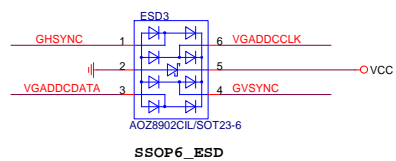
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C TYPE : DP

D TYPE : HDMI

C TYPE : DP

B TYPE : DVI/DP SW (DEFAULT)

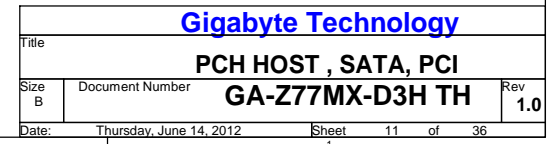


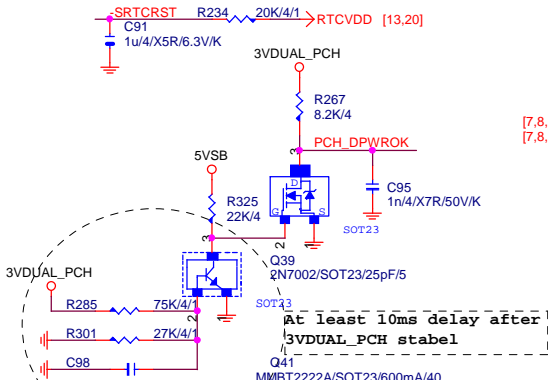
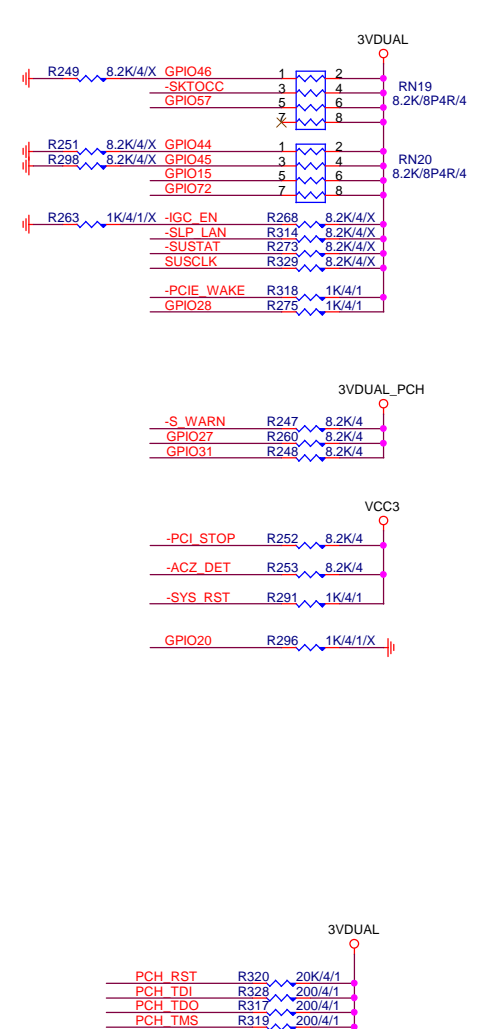
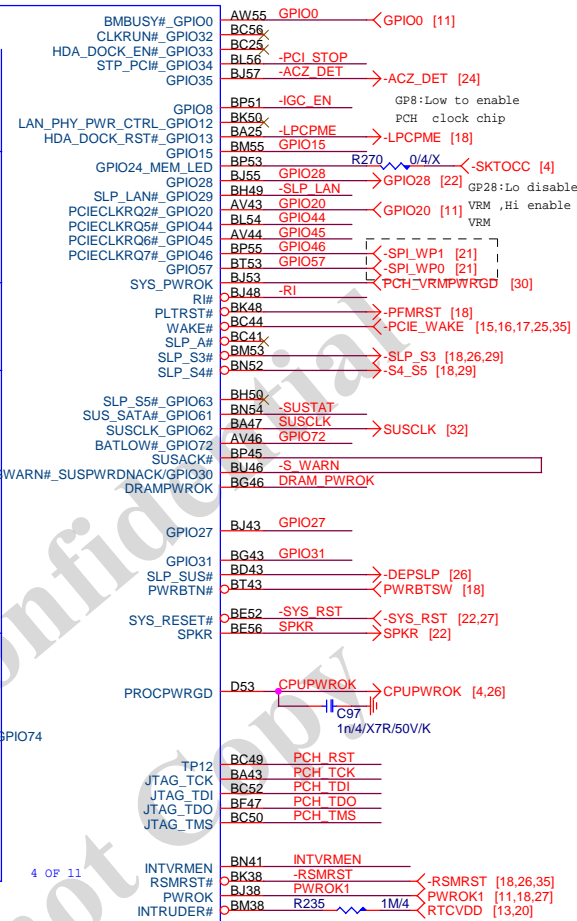
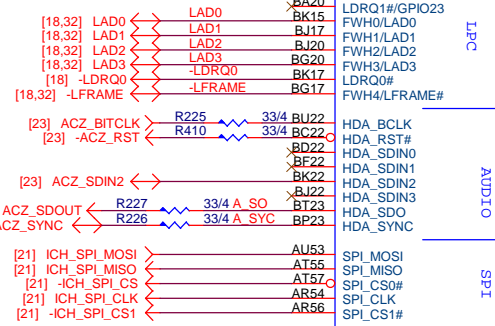
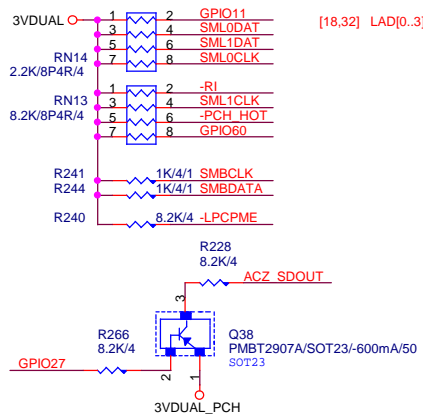
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PCH DISPLAY, CLK BUFFER

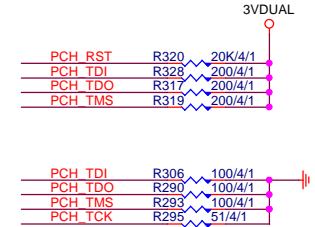
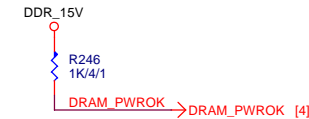
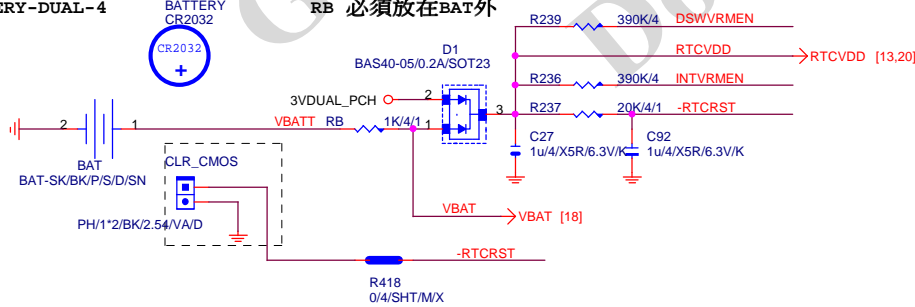
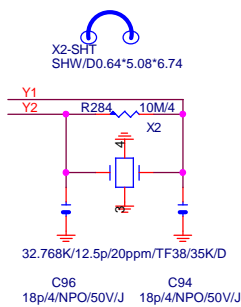
Size	Document Number	Rev
Custom	GA-Z77MX-D3H TH	1.0

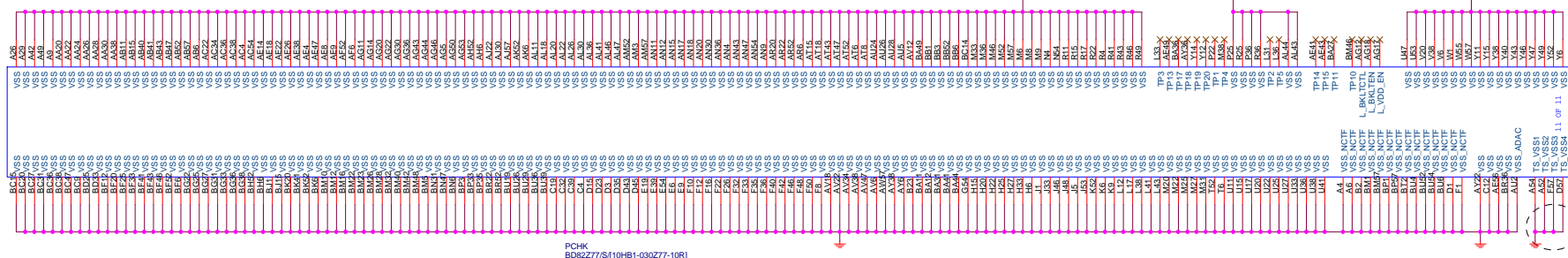
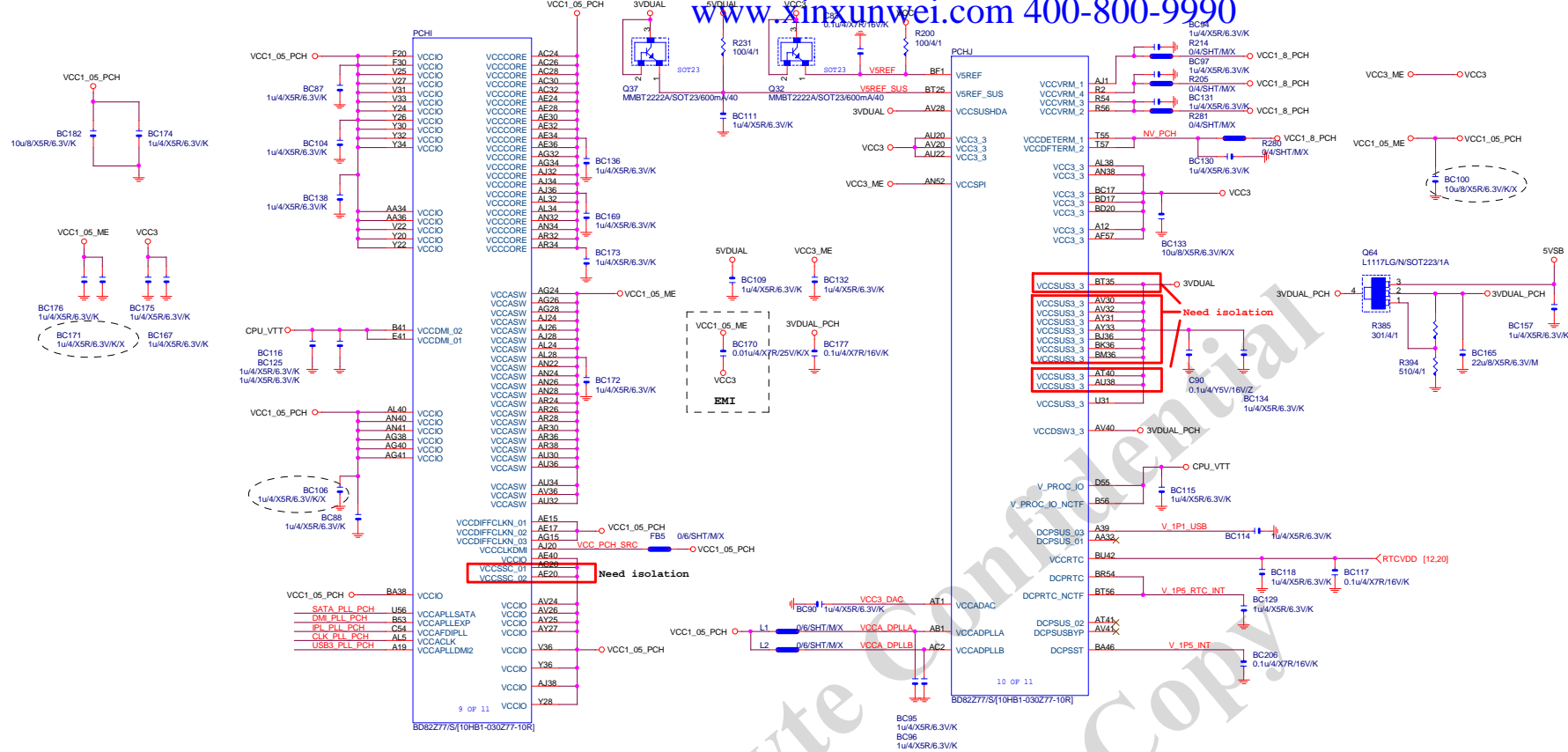
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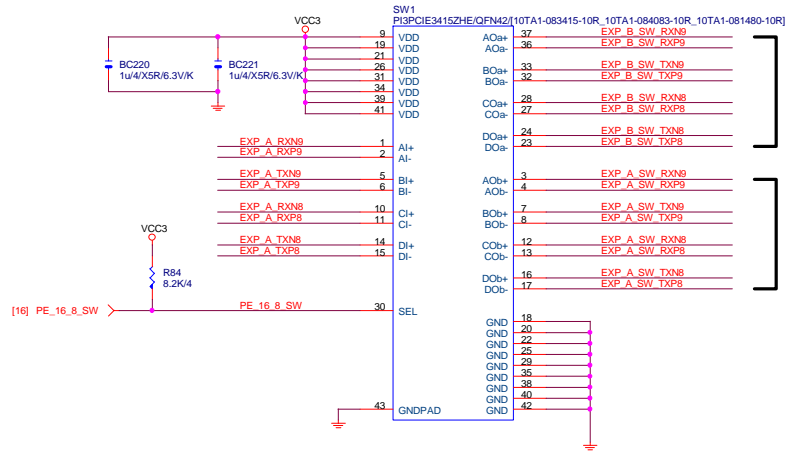


BATTERY-DUAL-4

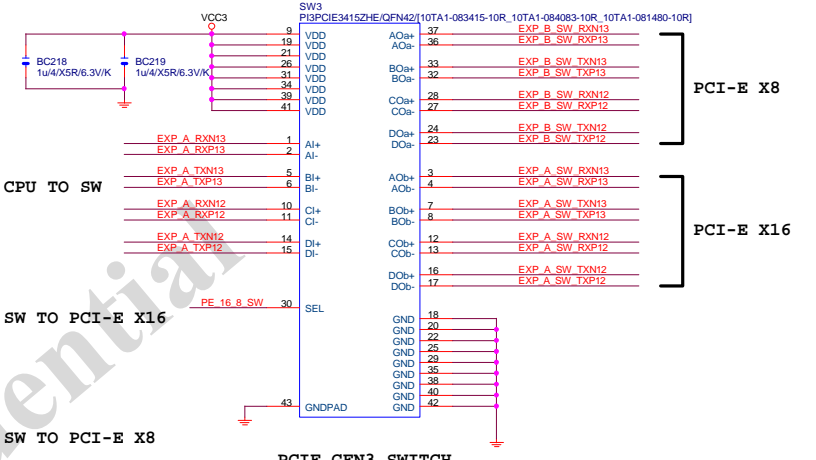
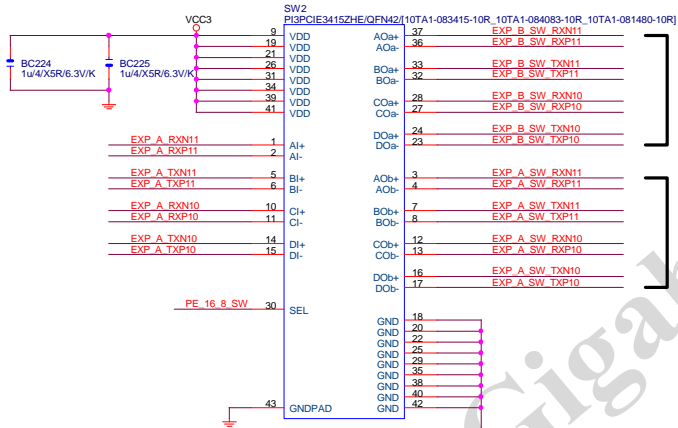




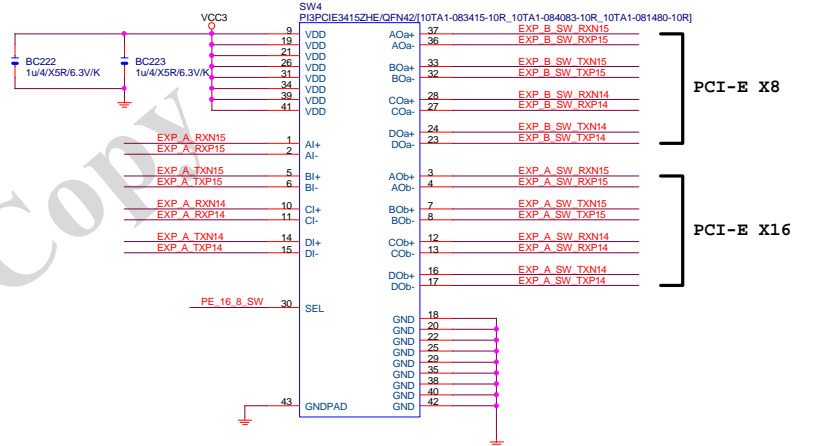
Function	SEL
xI--> xOa	L
xI--> xOb	H



PCI-E GEN3 SWITCH



PCI-E GEN3 SWITCH



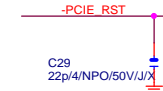
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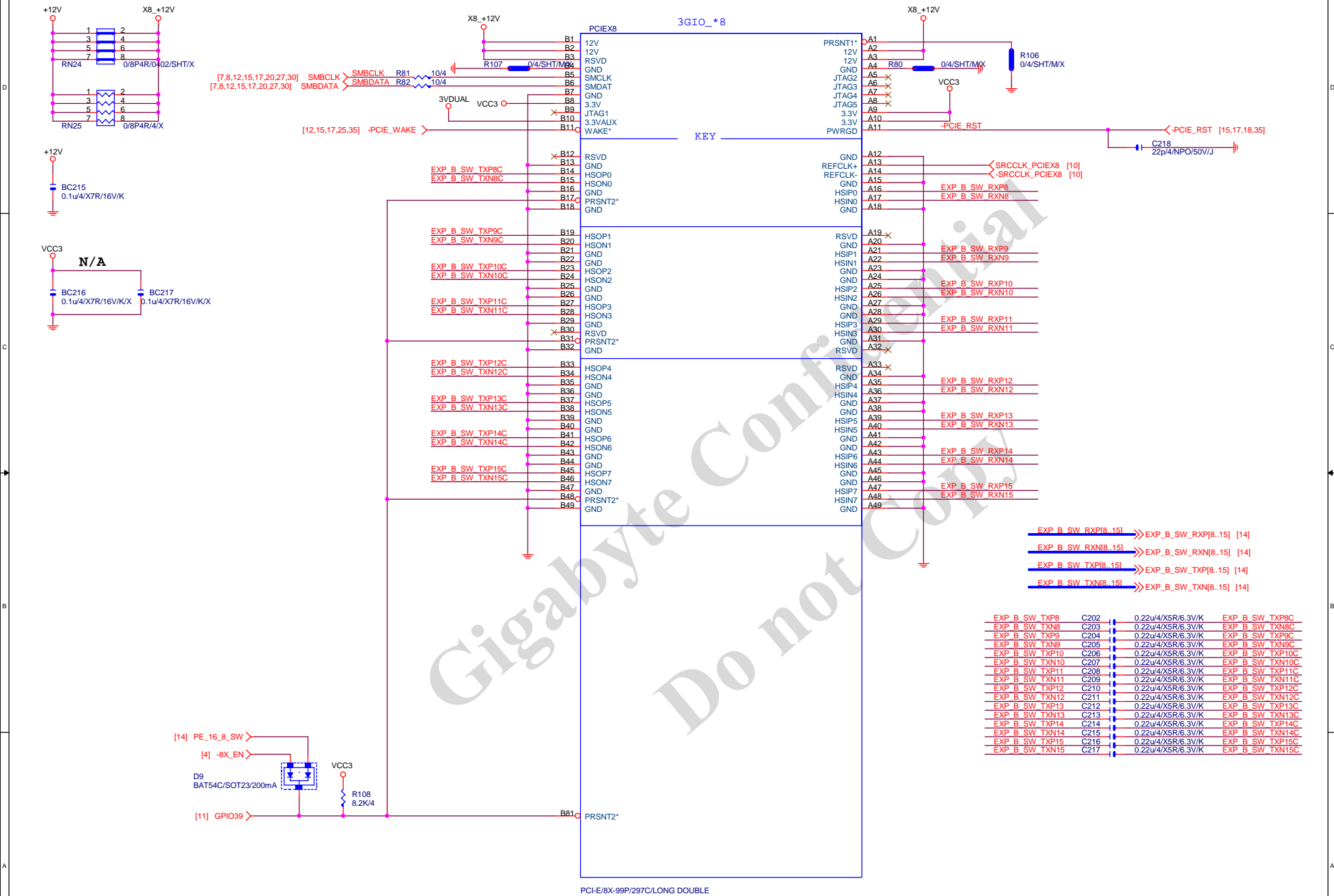
PCI EXPRESS X16 SWITCH

GA-Z77MX-D3H TH

Rev 1.0

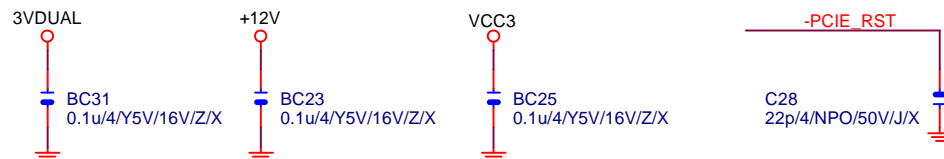
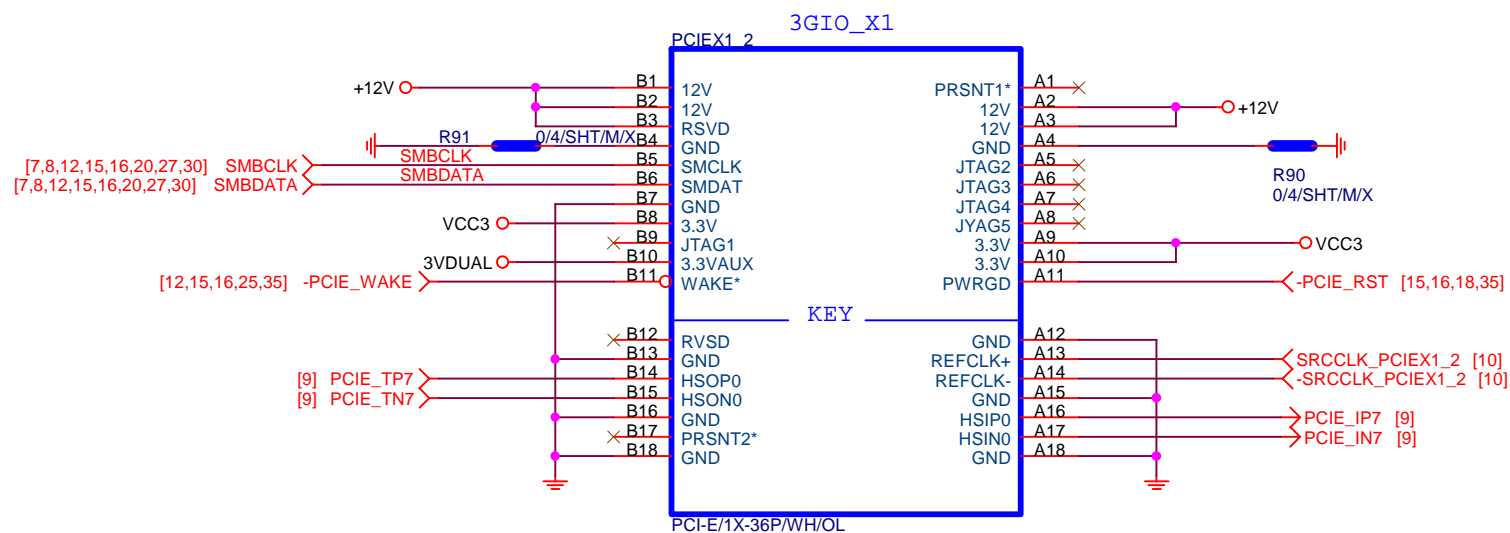
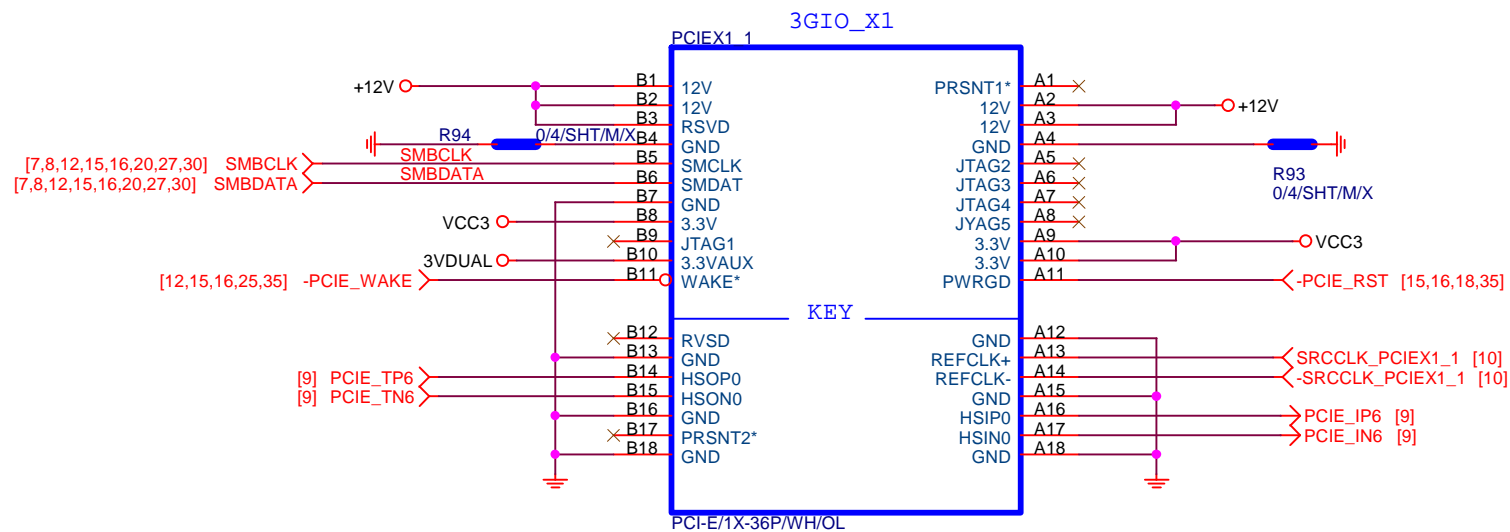
Date: Thursday, June 14, 2012 Sheet 14 of 36





Gigabyte Technology

Title			
PCI EXPRESS X 8 PORT			
GA-Z77MX-D3H TH			
Size	Document Number	Rev	
Custom		1.0	
Date:	Thursday, June 14, 2012	Sheet	16 of 36

**Gigabyte Technology**

Title

PCI EXPRESS X 1 PORTSize
Custom

Document Number

GA-Z77MX-D3H THRev
1.0

Date:

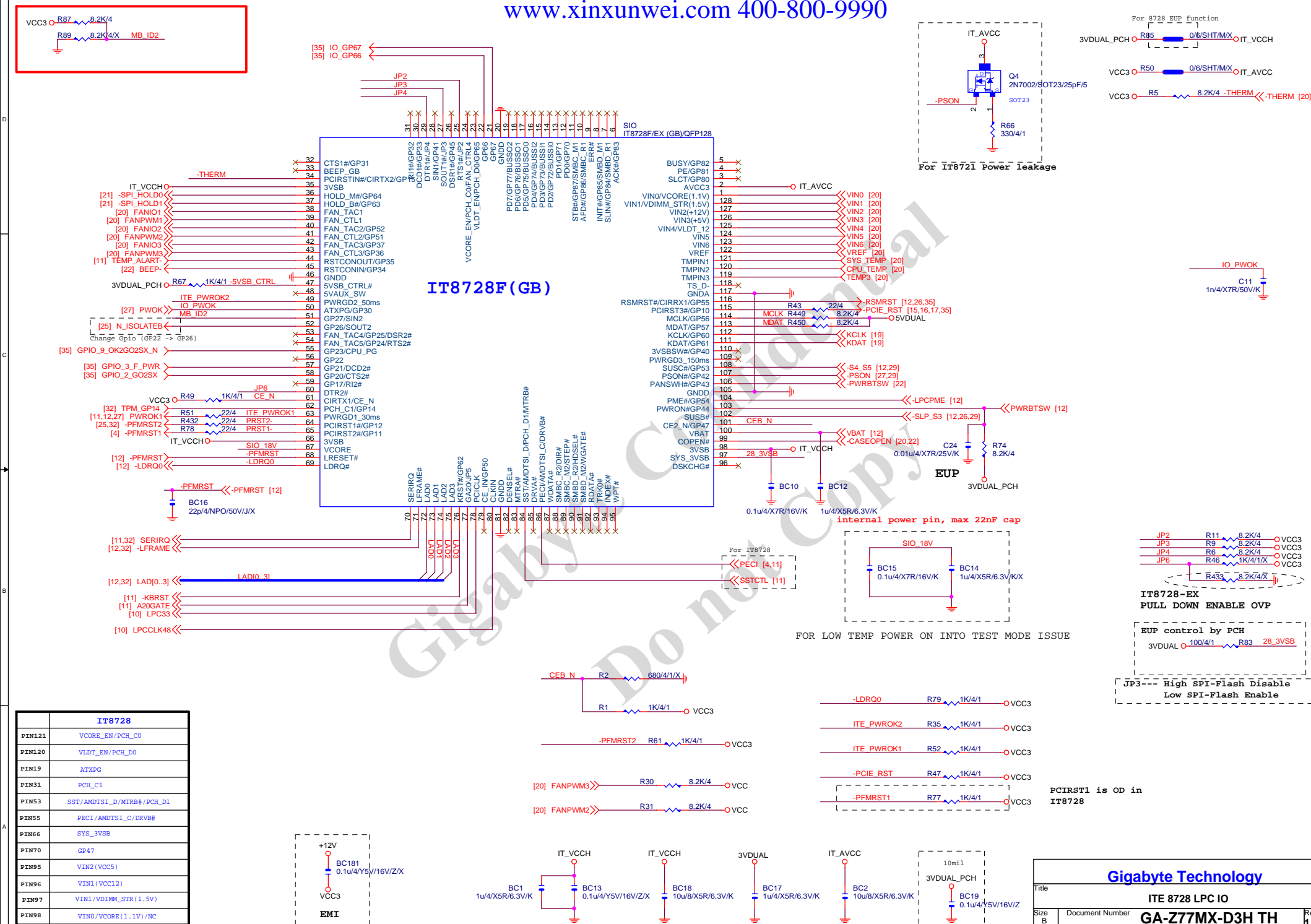
Thursday, June 14, 2012

Sheet

17

of

36



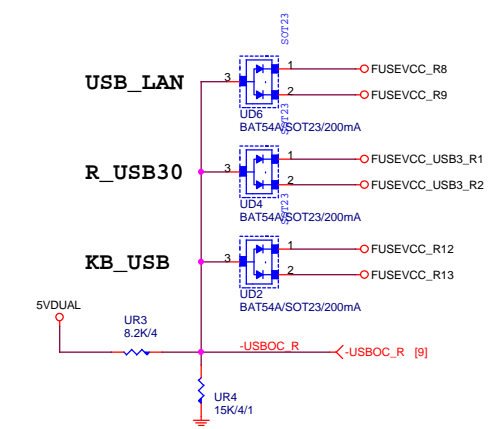
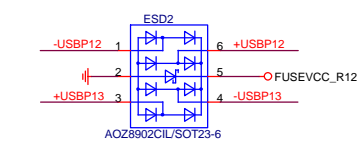
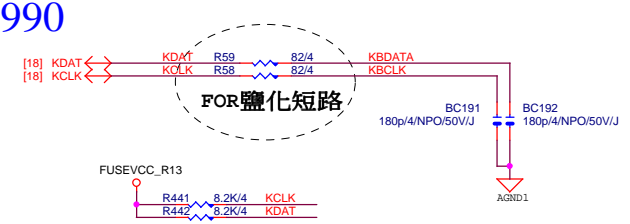
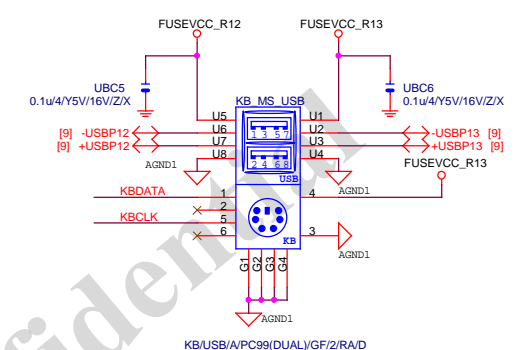
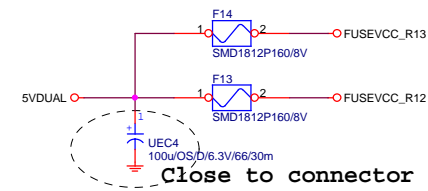
	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRV#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VING/VCORE(1.3V)/NC

COM

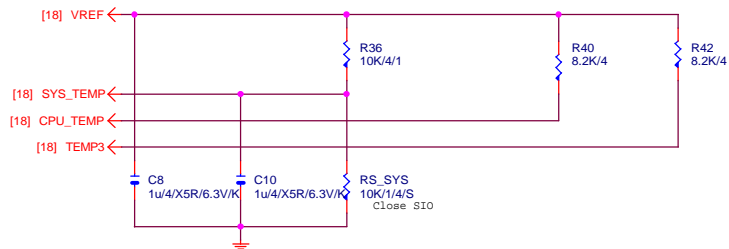
COM_R1

KB_USB

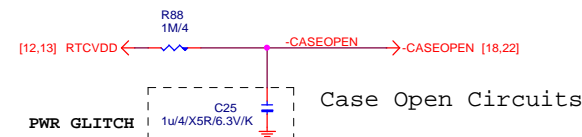
USB2.0 PWR



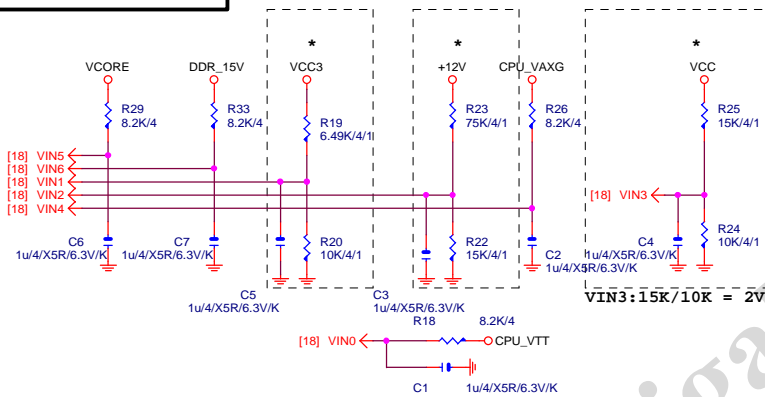
TEMP H/W MONITOR



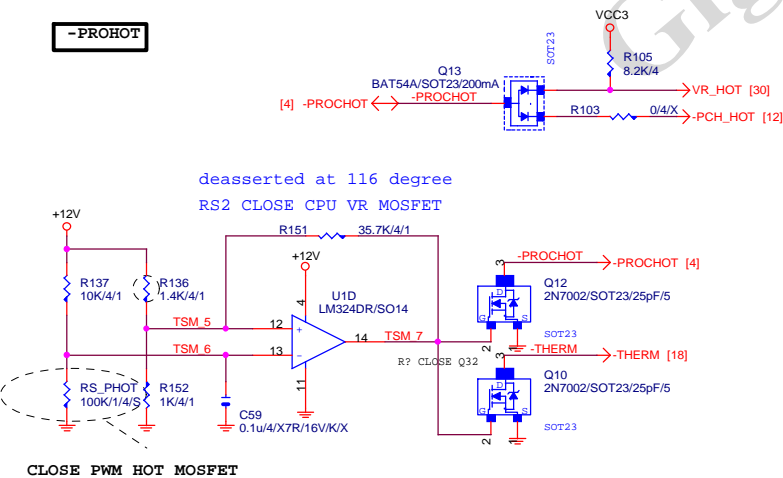
CASE OPEN



VOLTAGE-- H/W MONITOR

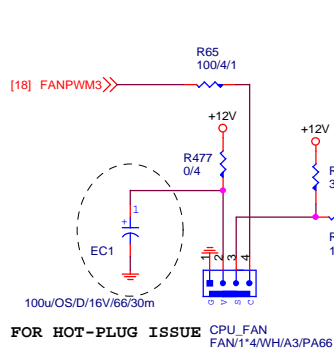


-PROHOT

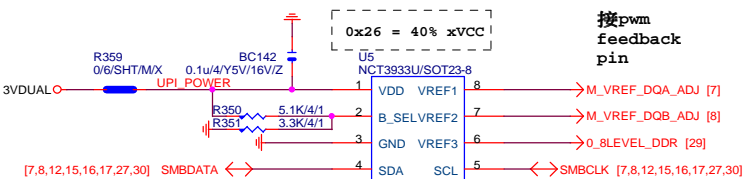
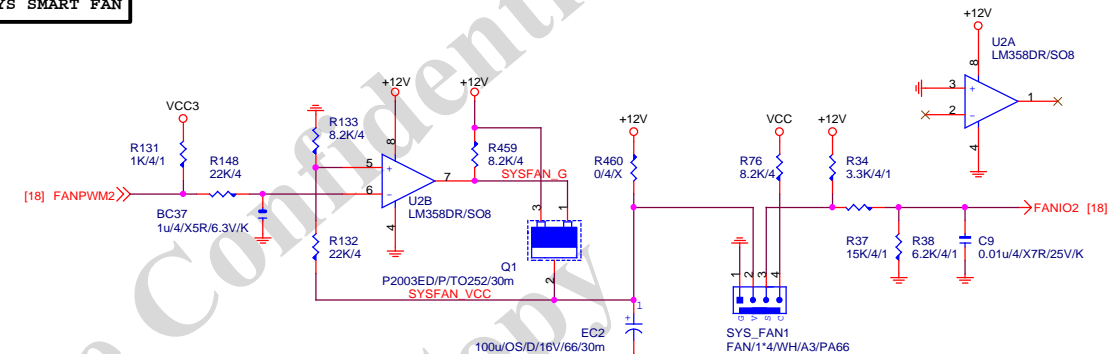


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CPU SMART FAN



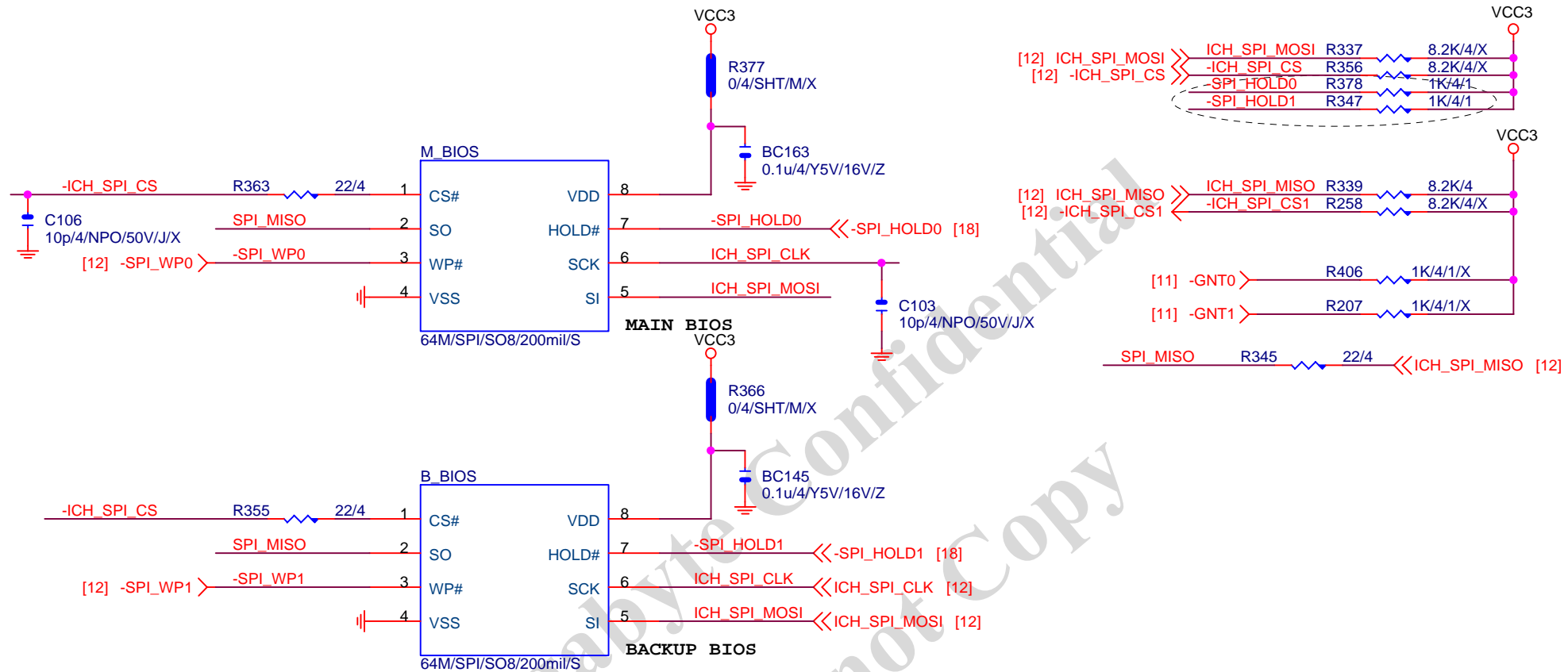
SYS SMART FAN



Gigabyte Technology

Title		HWM,FAN CTRL,OV	
Size	Document Number	GA-Z77MX-D3H TH	
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DUAL BIOS



B65使用64M BIOS

使用H67暫用32M

H61使用32M BIOS

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

1 means floating
0 means PD 1K

Gigabyte Technology

Title

DUAL BIOS

Size
A

Document Number

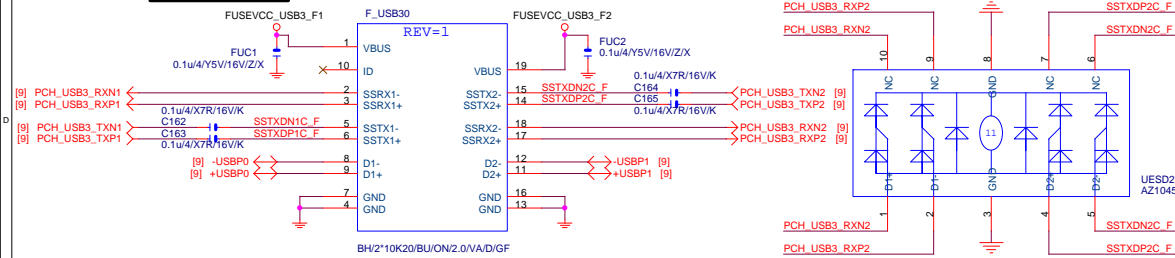
GA-Z77MX-D3H TH

Rev
1.0

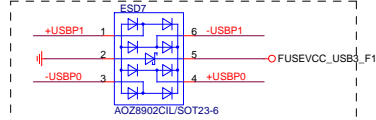
Date: Thursday, June 14, 2012

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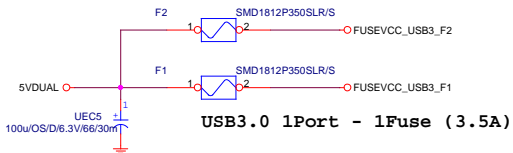
Front USB3.0



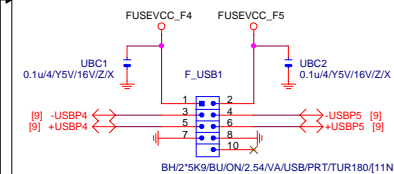
BLUE



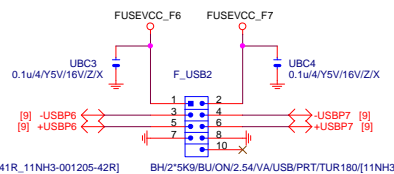
Close to connector



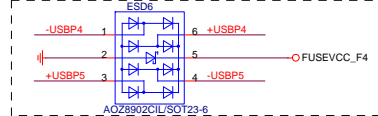
FRONT USB1



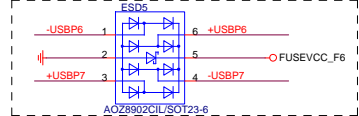
FRONT USB2



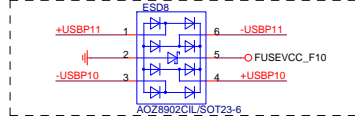
Close to connector



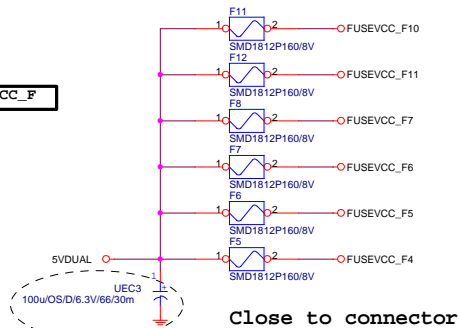
Close to connector



Close to connector



FUSEVCC_F



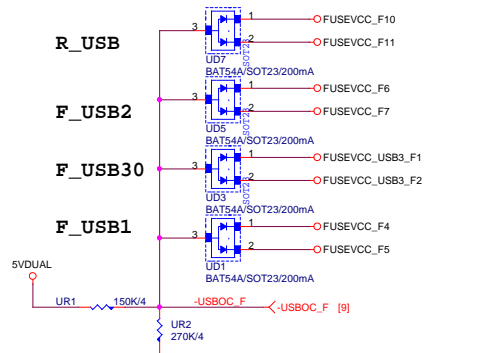
Close to connector

R_USB

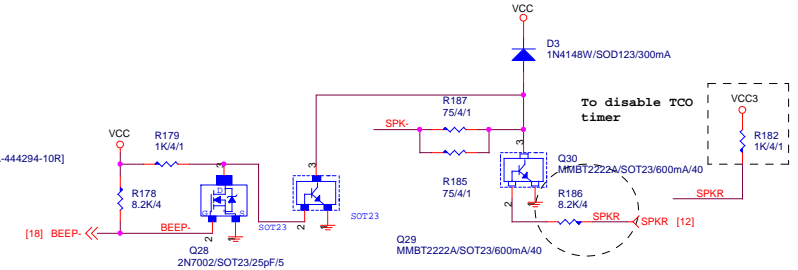
F_USB2

F_USB30

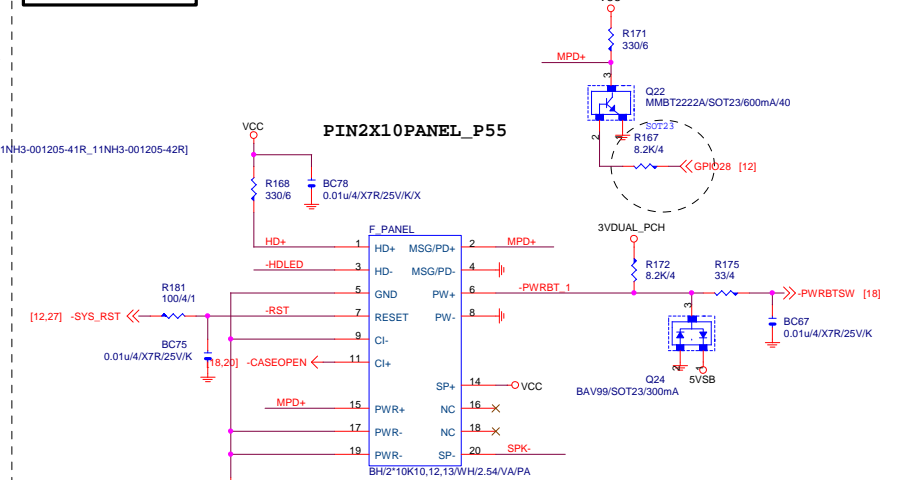
F_USB1



SPKR

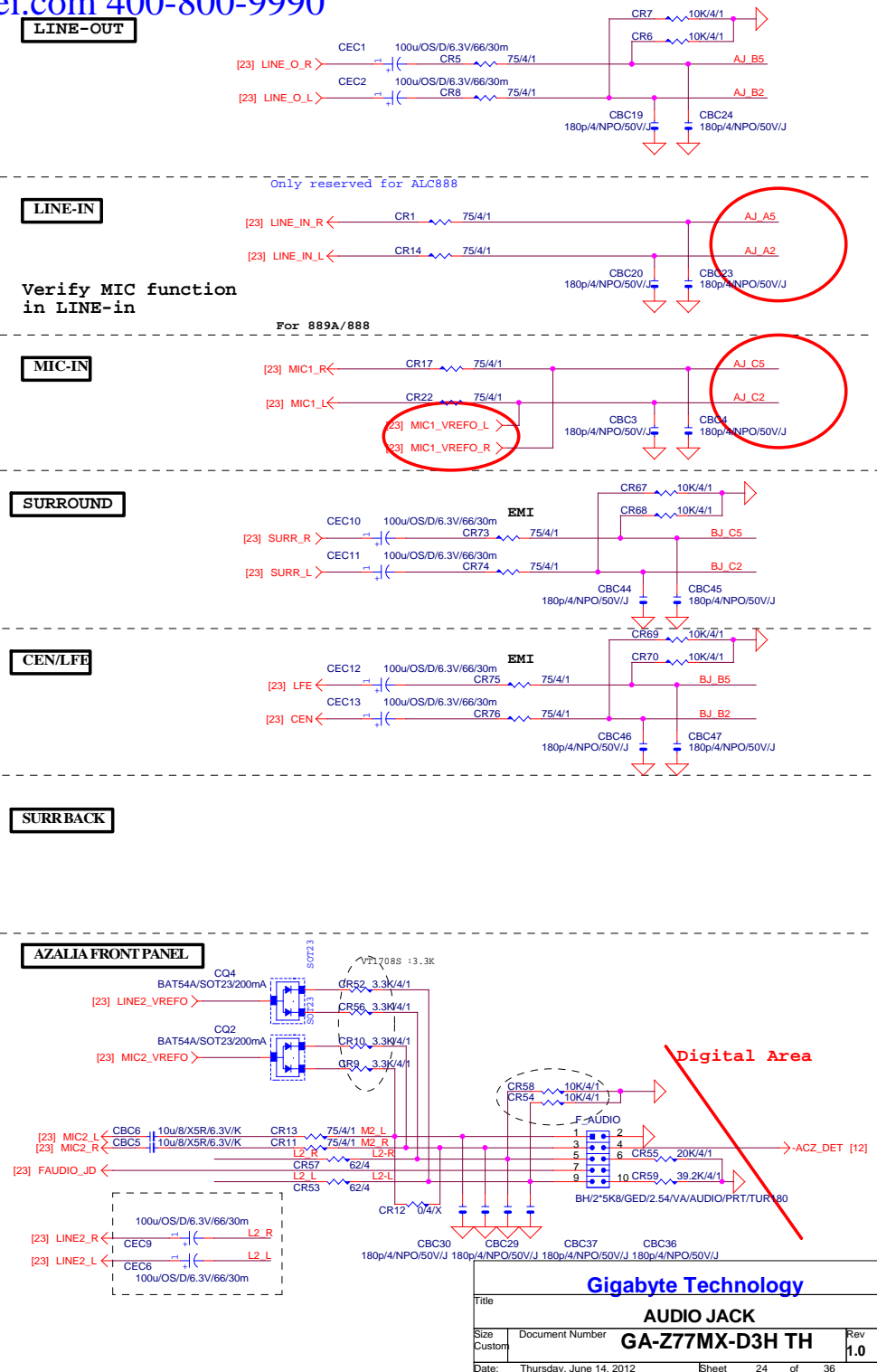
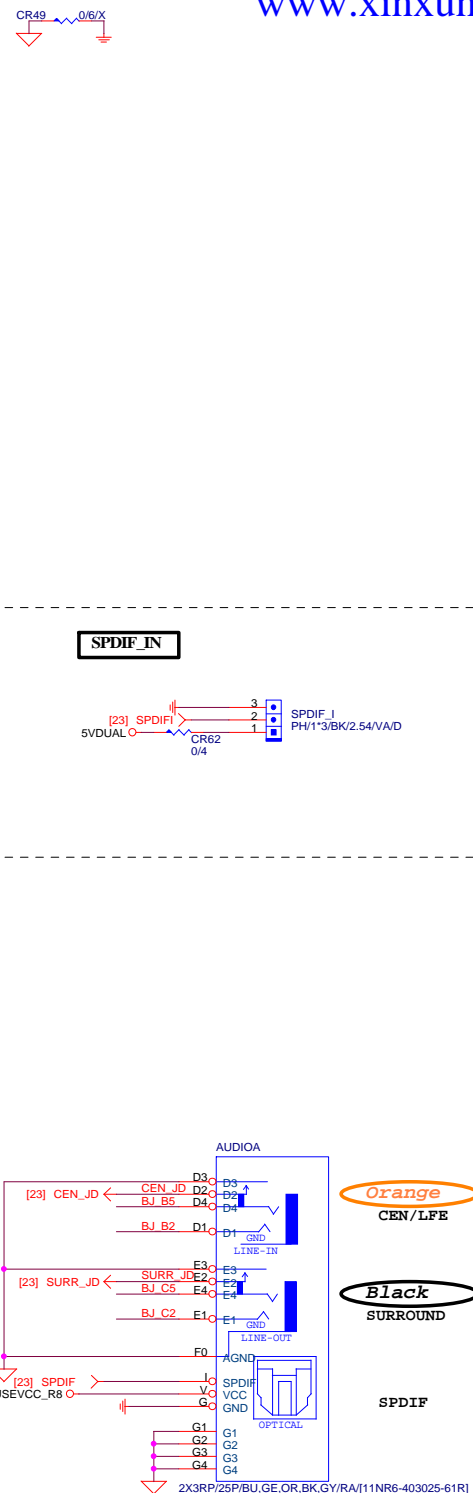
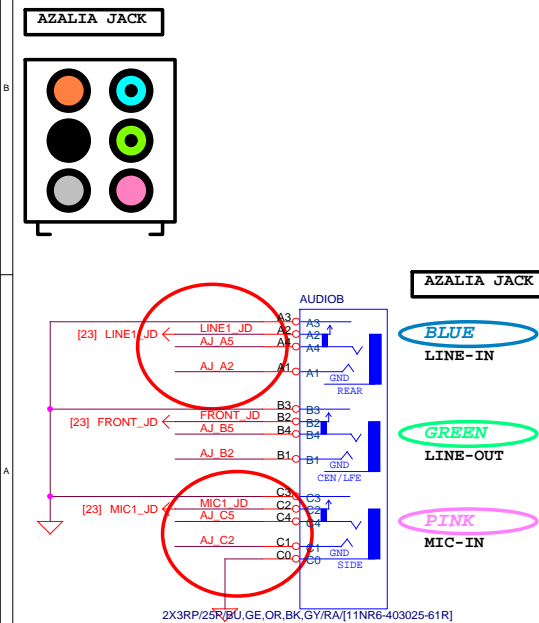
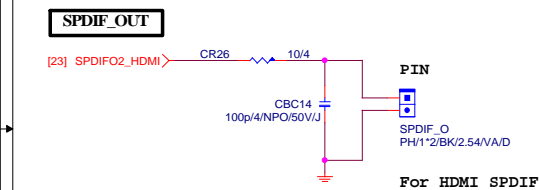
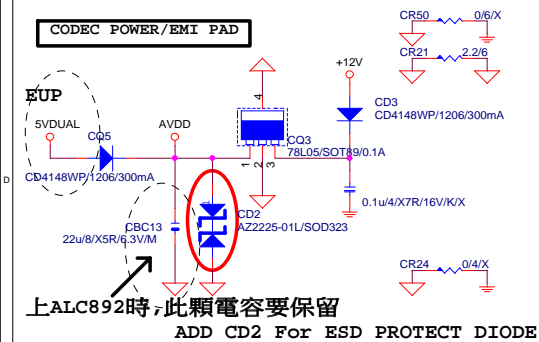


INTEL FRONT PANEL



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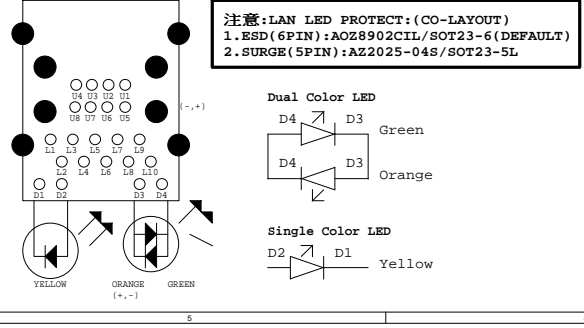
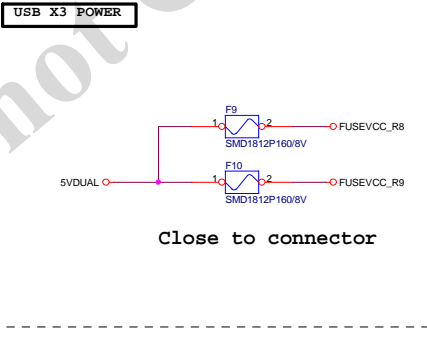
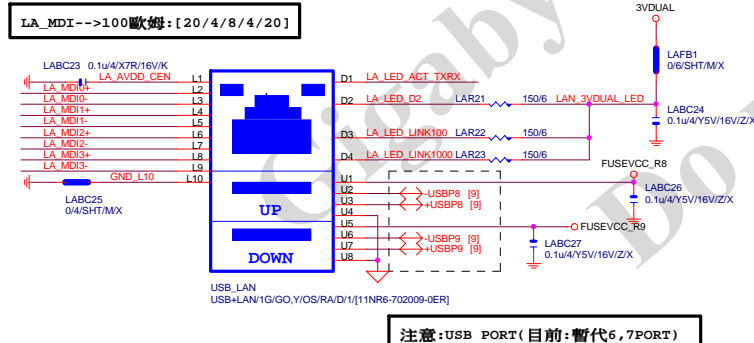
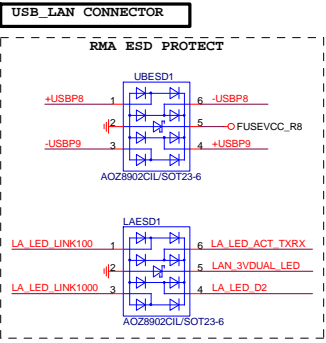
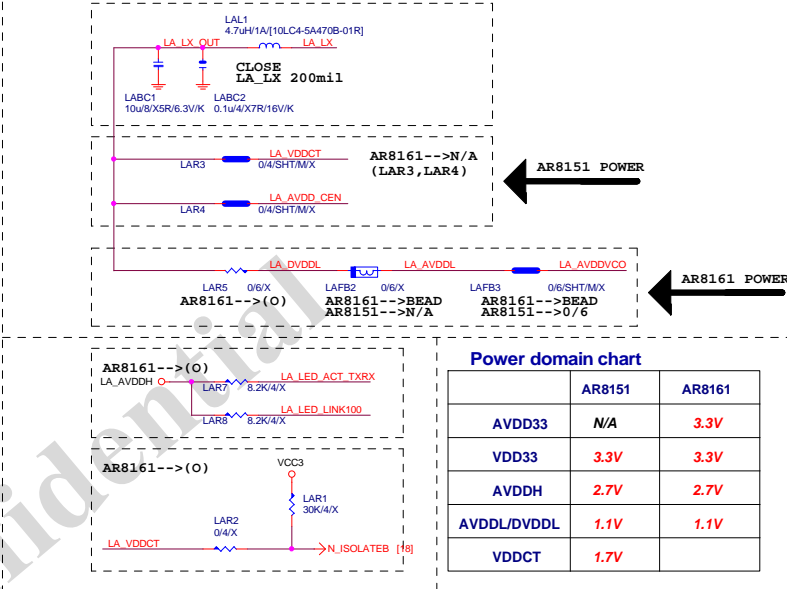
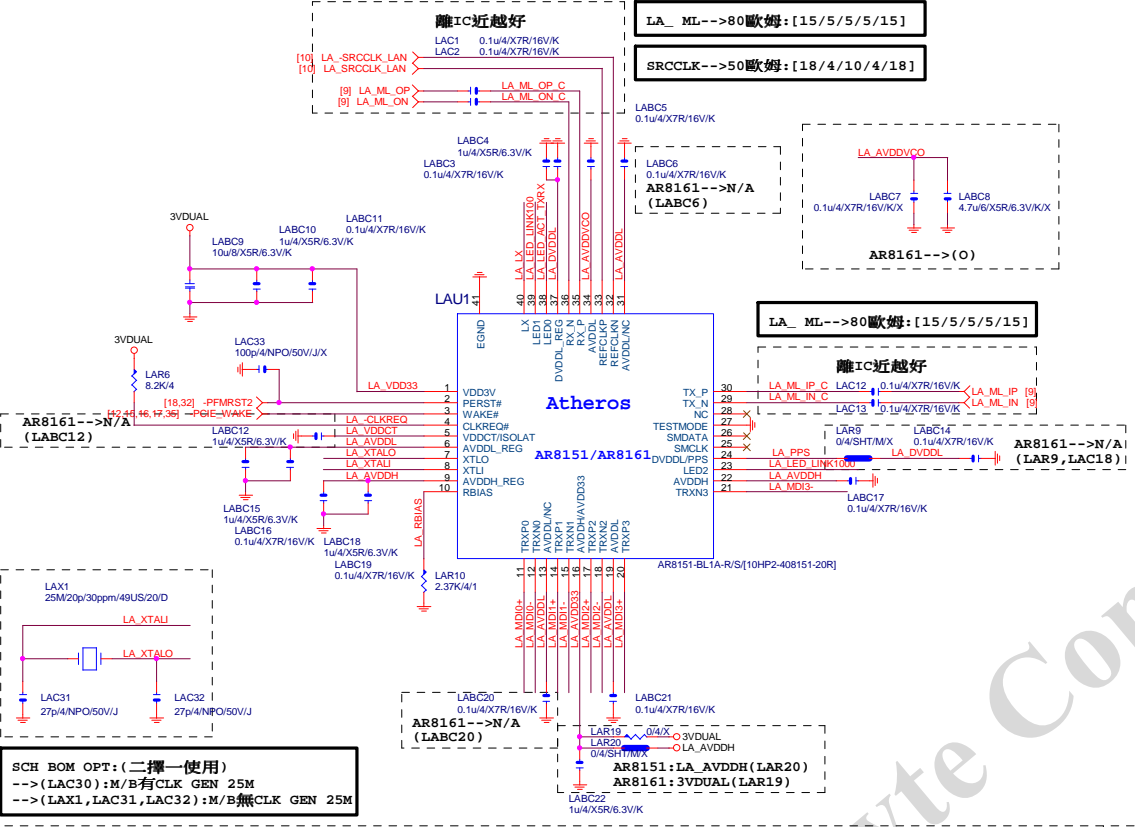
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FP,F_USB,USB PWR,SPKR,SATA LED			
Size	Document Number	GA-Z77MX-D3H TH	
Date:	Thursday, June 14, 2012	Sheet	22 of 36
		Rev	1.0



LAN:AR8151/AR8161

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NEW DESIGN ONLY FOR INTERNAL SWR
AR8151: LAR3(O), LAR5(X)
AR8161: LAR5(O), LAR3/LAR4(X)

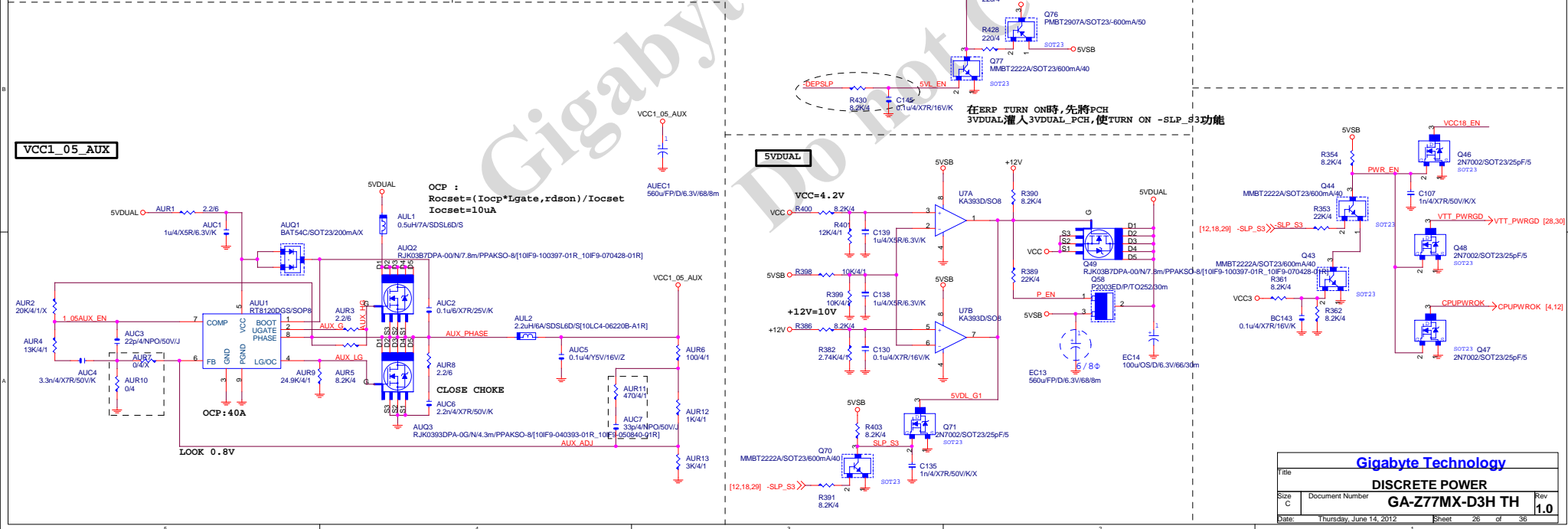
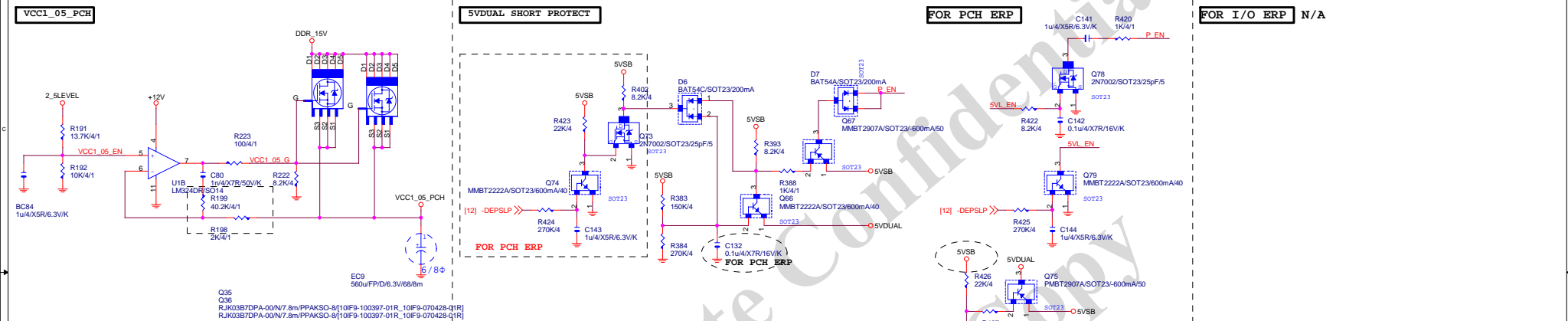
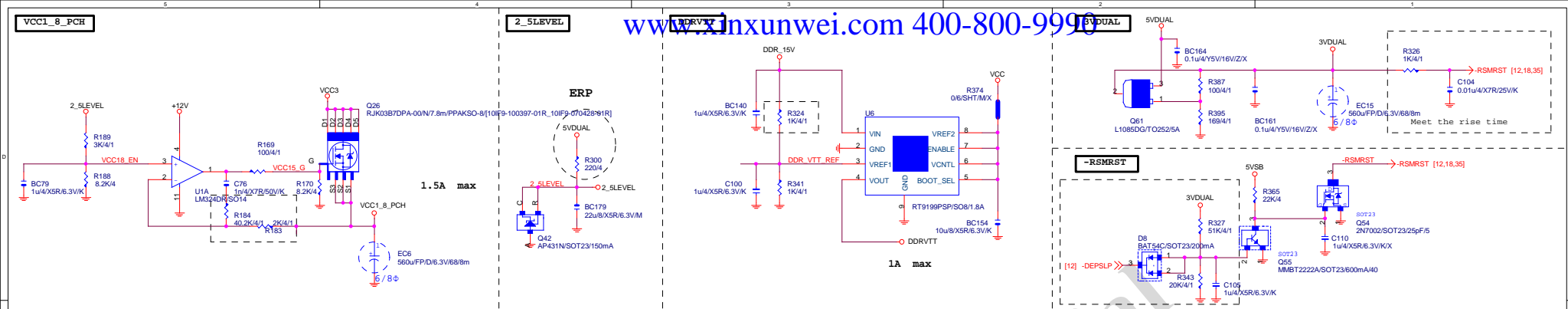


注意: USB PORT (目前: 暫代 6, 7 PORT)
USB-->90歐姆: [15/4.5/7.5/4.5/15]

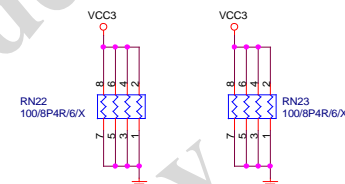
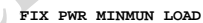
料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN (8 core)	FOXCONN
11NR6-702009-92R	1G LAN (8 core)	UDE
11NR6-702009-11R	1G LAN (12core/RED)	UDE
11NR6-702009-12R	1G LAN (8 core/RED)	FOXCONN

USB_LAN BOM區分:

- (紅色/12CORE/三倍): USB+LAN/1G/GO, Y/OS/RA/D/1/RED
- (黑色/12CORE): USB+LAN/1G/GO, Y/OS/RA/D/1
- (黑色/8CORE): USB+LAN/1G/GO, Y/OS/RA/D/8C

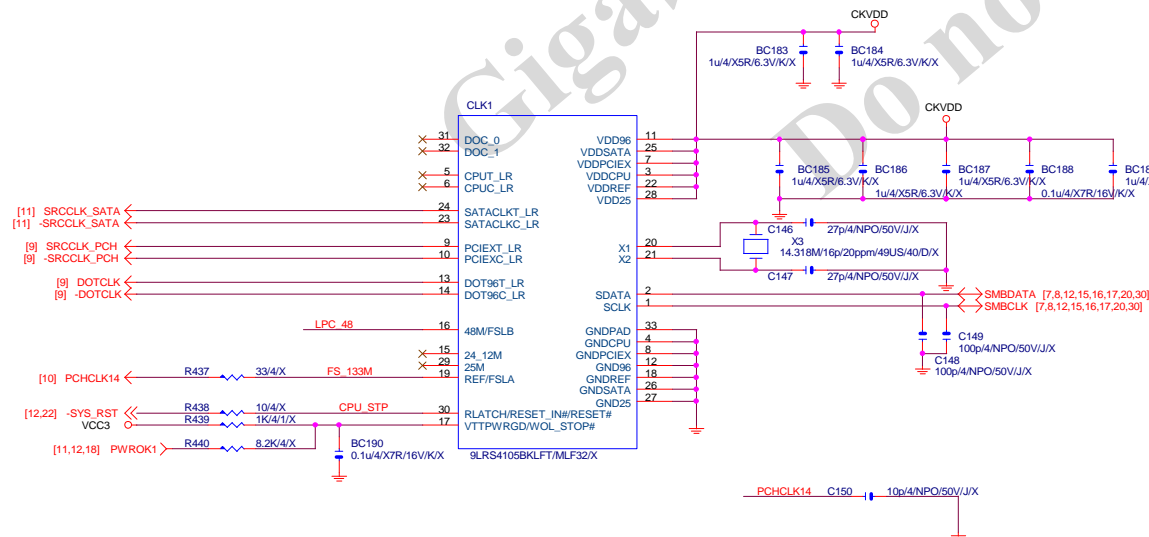
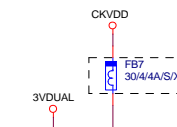
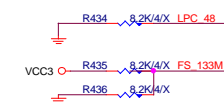


ATXX4 POWER CONNECTOR



CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M



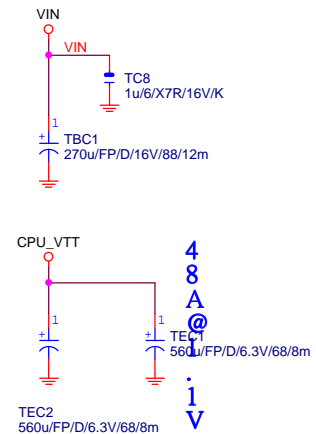
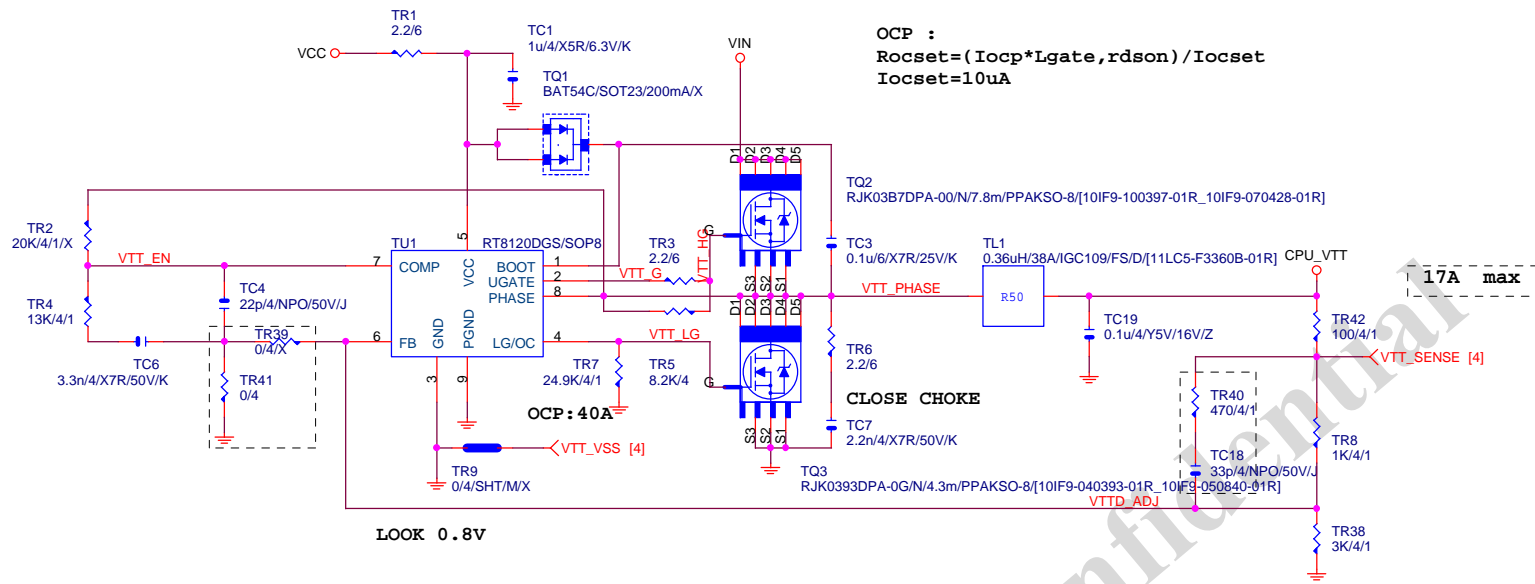
Gigabyte Technology

ATX CONNECTOR

GA-Z77MX-D3H TH

1.0

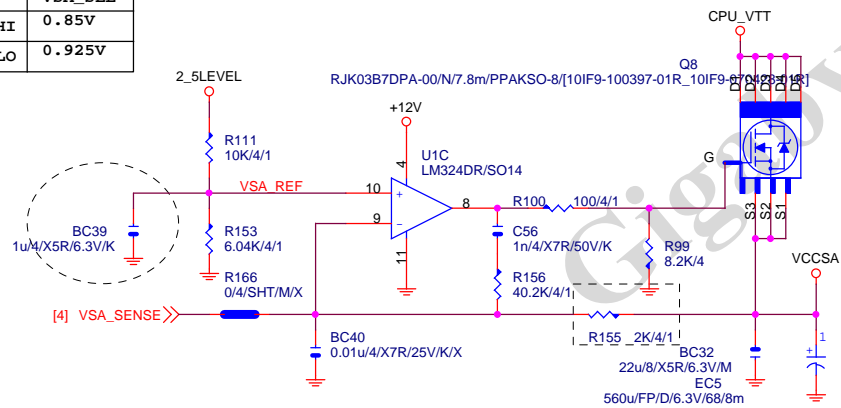
CPU_VTT



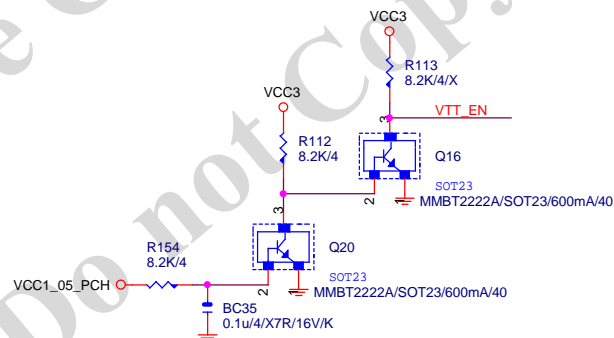
VCCSA

PDG 0.8

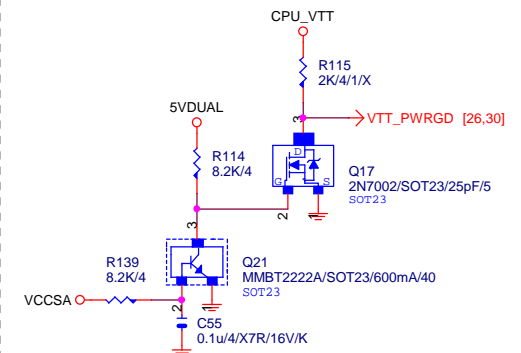
	VSA_SEL
HI	0.85V
LO	0.925V



CPU_VTT PWR SEQ



VTT_PWRGD



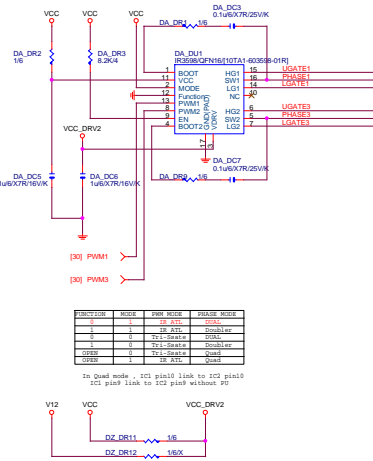
GIGABYTE™

Title			
IR3570_CPU_VTT & DDR_1			
Size	Document Number		Rev
Custom	GA-Z77MX-D3H TH		1.0
Date:	Thursday, June 14, 2012	Sheet	28 of 36

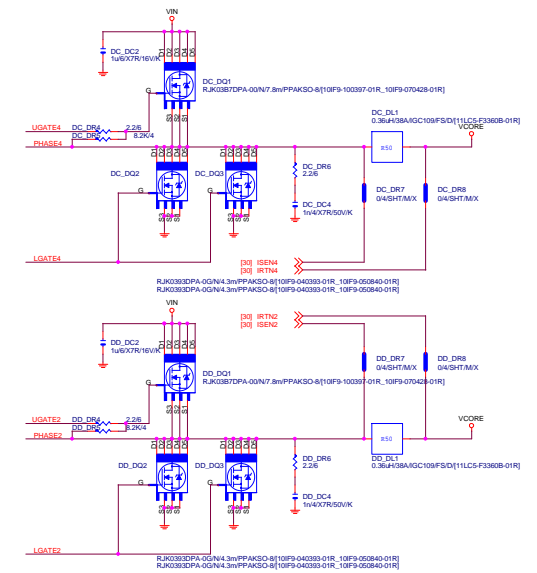
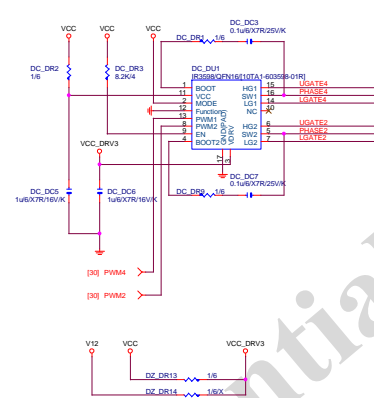


Size Custom	Document Number	GA-Z77MX-D3H TH	Rev 1.0
Date:	Thursday, June 14, 2012	Sheet 29 of 36	

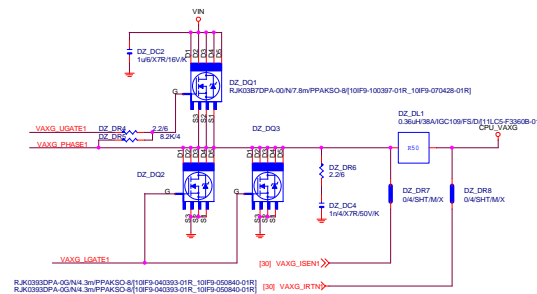
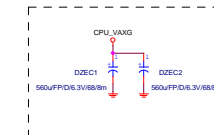
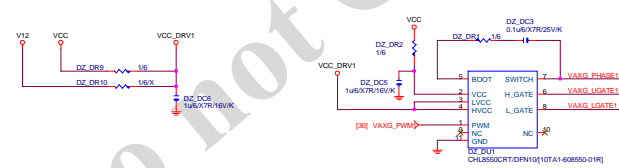
VCORE Phase 1,3



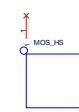
VCORE Phase 4,2



VAXG Phase

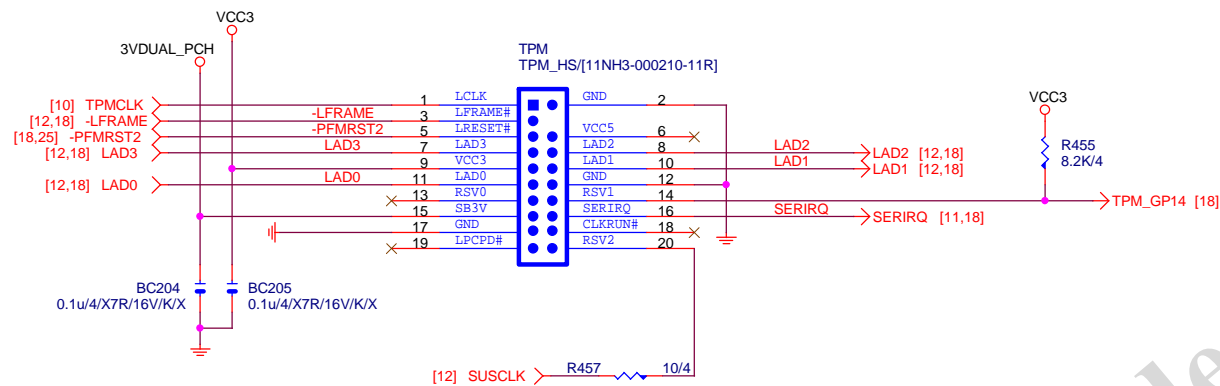


MOS HEATSINK



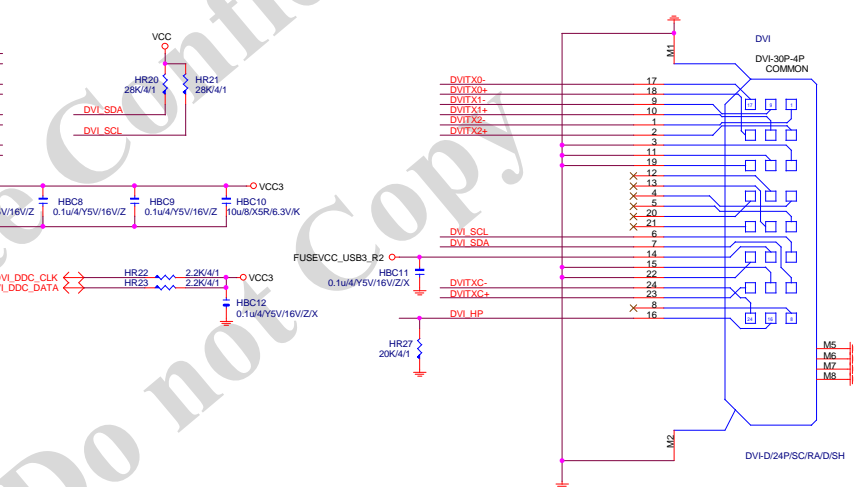
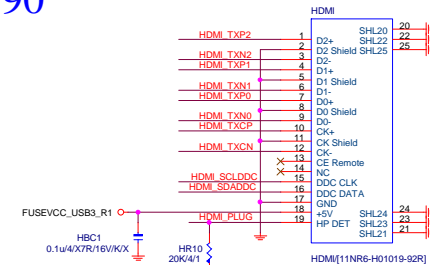
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TPM

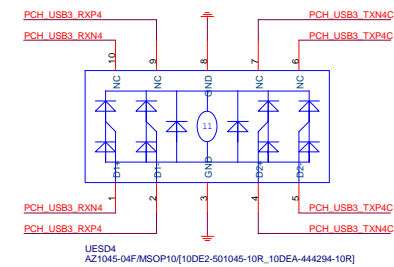
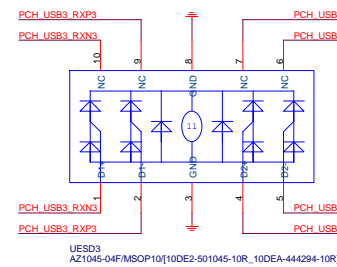
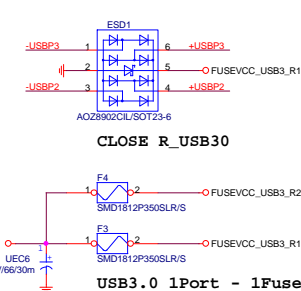


LPT PORT

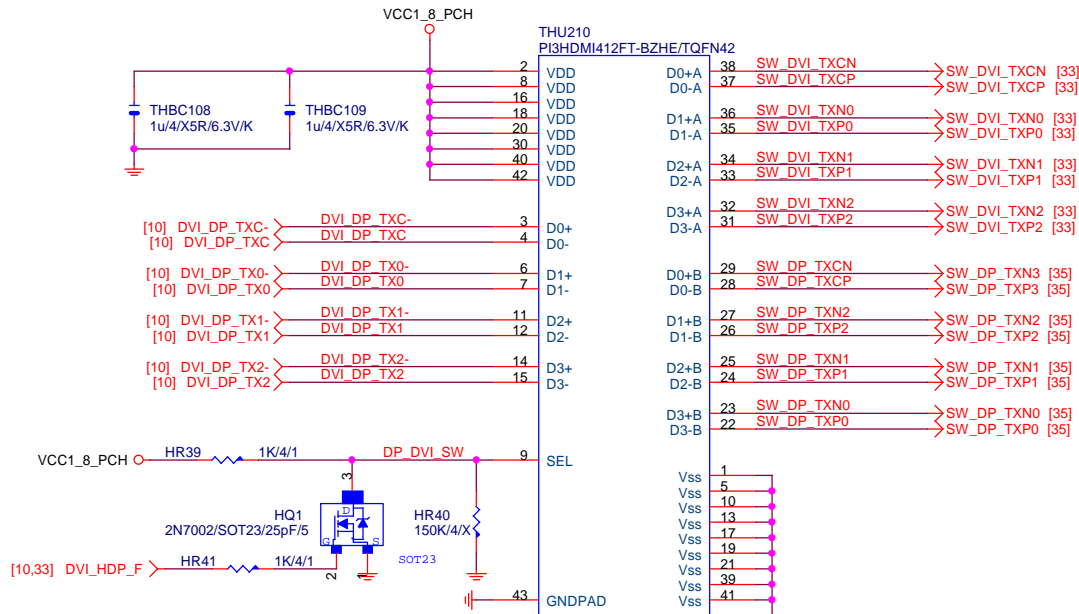
Gigabyte Technology			
Title			
LPT, TPM			
Size	Document Number	GA-Z77MX-D3H TH	
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The schematic diagram illustrates the internal circuitry of the USB3.0 1Port - 1Fuse (3.5A) module. It features a central USB3.0 controller (USB3.0.0) and two USB3.0 PHYs (USB3.0.1 and USB3.0.2). The module is powered by a 5VDC source (FUSEVCC_USB3_0) and connected to a USB3.0 cable (USB3_0). The schematic includes various components such as resistors, capacitors, and diodes, and shows the internal connections between the module and the power source and the USB3.0 cable. The module is labeled 'USB3.0 1Port - 1Fuse (3.5A)'.



DP & DVI Switch

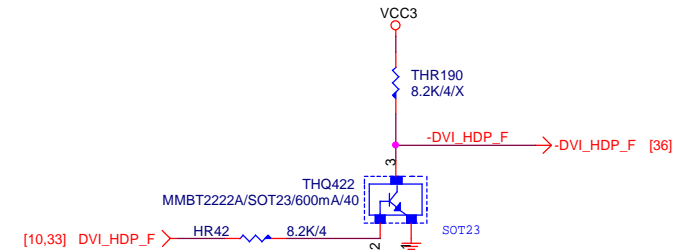


DVI

Thunderbolt
(DEFAULT)

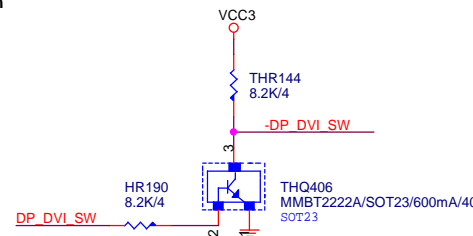
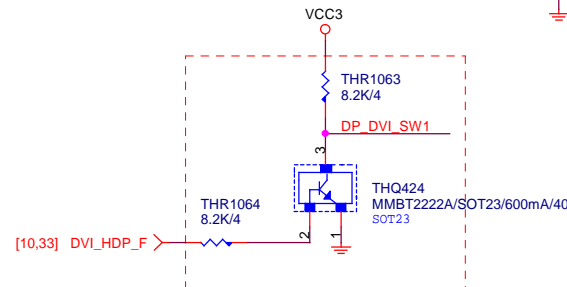
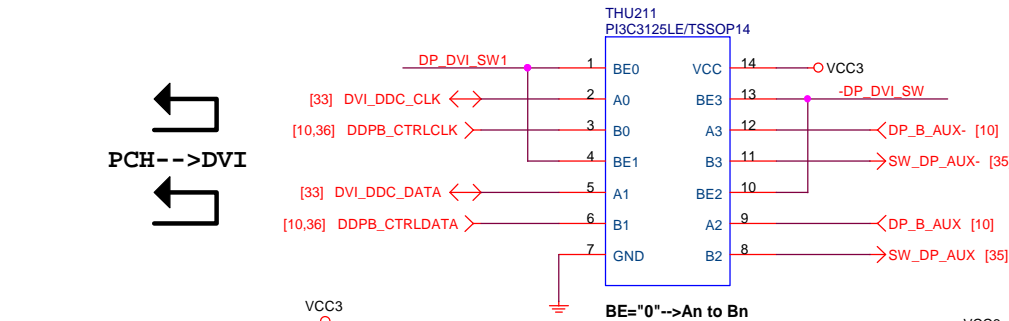
SEL="0"-->A-->DVI
SEL="1"-->B-->Thunderbolt (Default)

Priority: DVI > mDP



PCH-->DVI

PCH-->TB (B)



Gigabyte Technology

Title			HDMI/DVI, USB30	
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DP differential 100 ohm

TH104

Cassia Ridge(104B2-G05510-10R)

Display Port

PCIe

CIO

MISC

+12V TB

Close to TD1

VCC

GND

Power Rail	Current
VCC3P3_POC	10mA
VCC3V3_LC	240mA
VCC1V05_LC	1A
VCC1V05_CIO	3A

Power Sequence
VCC3P3_POC -> VCC1_05_LC -> VCC3V3_LC -> VCC1V05_CIO

Low	Low	HI	Low to trigger PCN GMI
Low	HI	HI	Default
HI	Low	Low	Default
HI	HI	HI	Default

Power Rail	Current	84/85	83	80
VCC3P3_POC	100mA	ON	ON	ON
VCC3_LC	600mA	OFF	ON	ON
VCC1_05_LC	1A	OFF	ON	ON
VCC1_05_CIO	4A	OFF	ON	ON

VCC3_LC

VCC1_05_LC

VCC1_05_CIO

VCC3_LC

VCC1_05_CIO

VCC1_05_LC

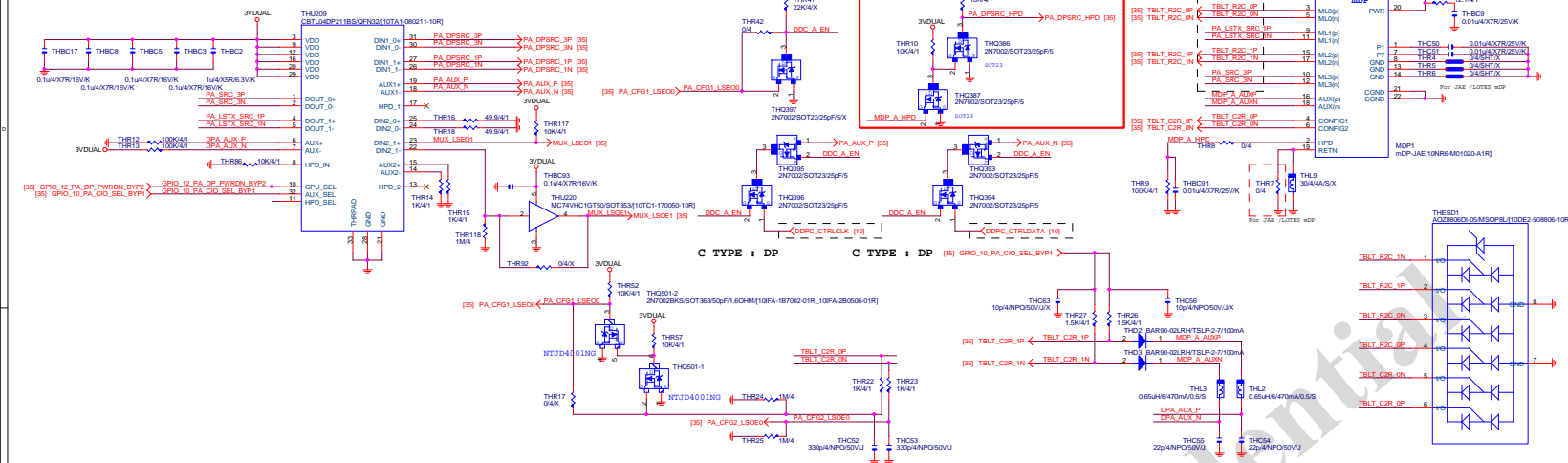
Gigabyte Technology

HDM/DVI/R USB30

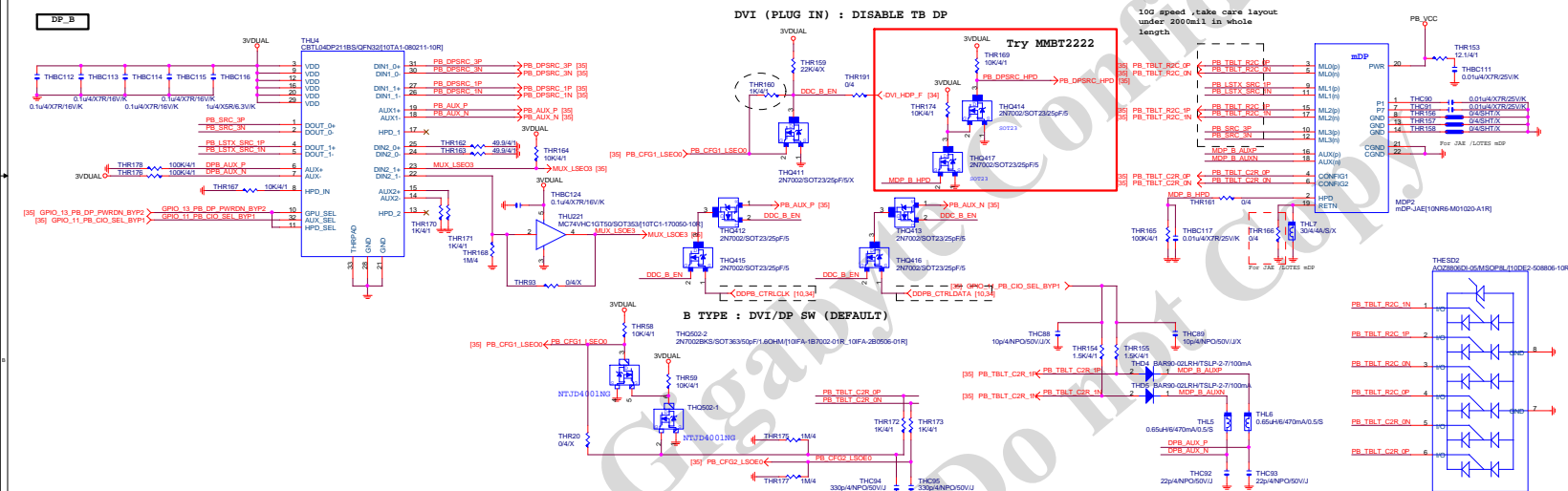
GA-Z77MX-D3H TH

Date: Thursday, June 14, 2012 Sheet 35 of 36

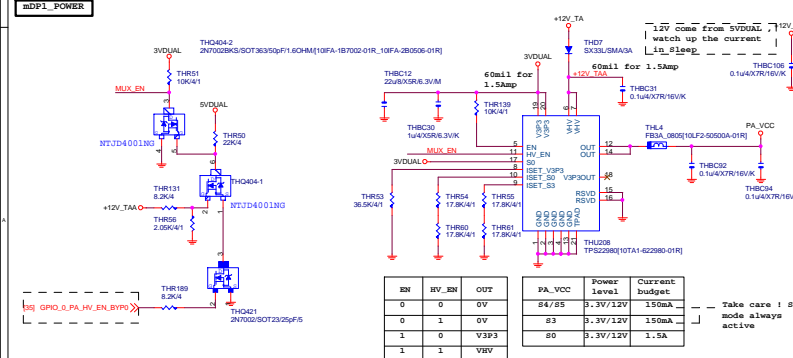
DP_A



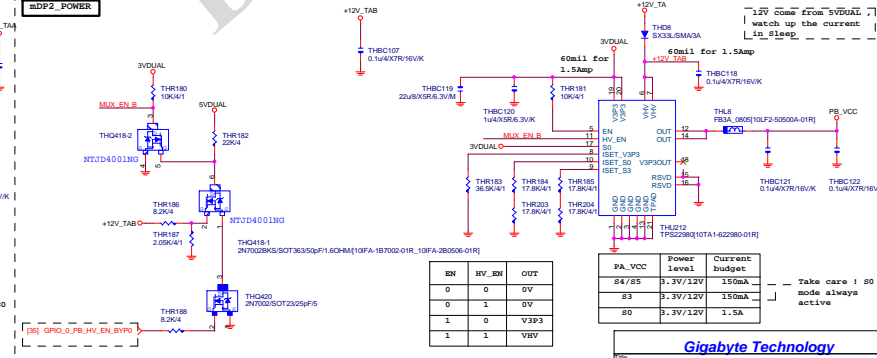
DP_B



MDP1_POWER



MDP2_POWER



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File: HDM/DVI/ USB30
 Date: Document Number: GA-Z77MX-D3H TH
 Date: Thursday, June 14, 2012
 Version: 1.0