

Model Name: GA-Z77MX-D3H TH

SHEET TITLE Revision 1.1

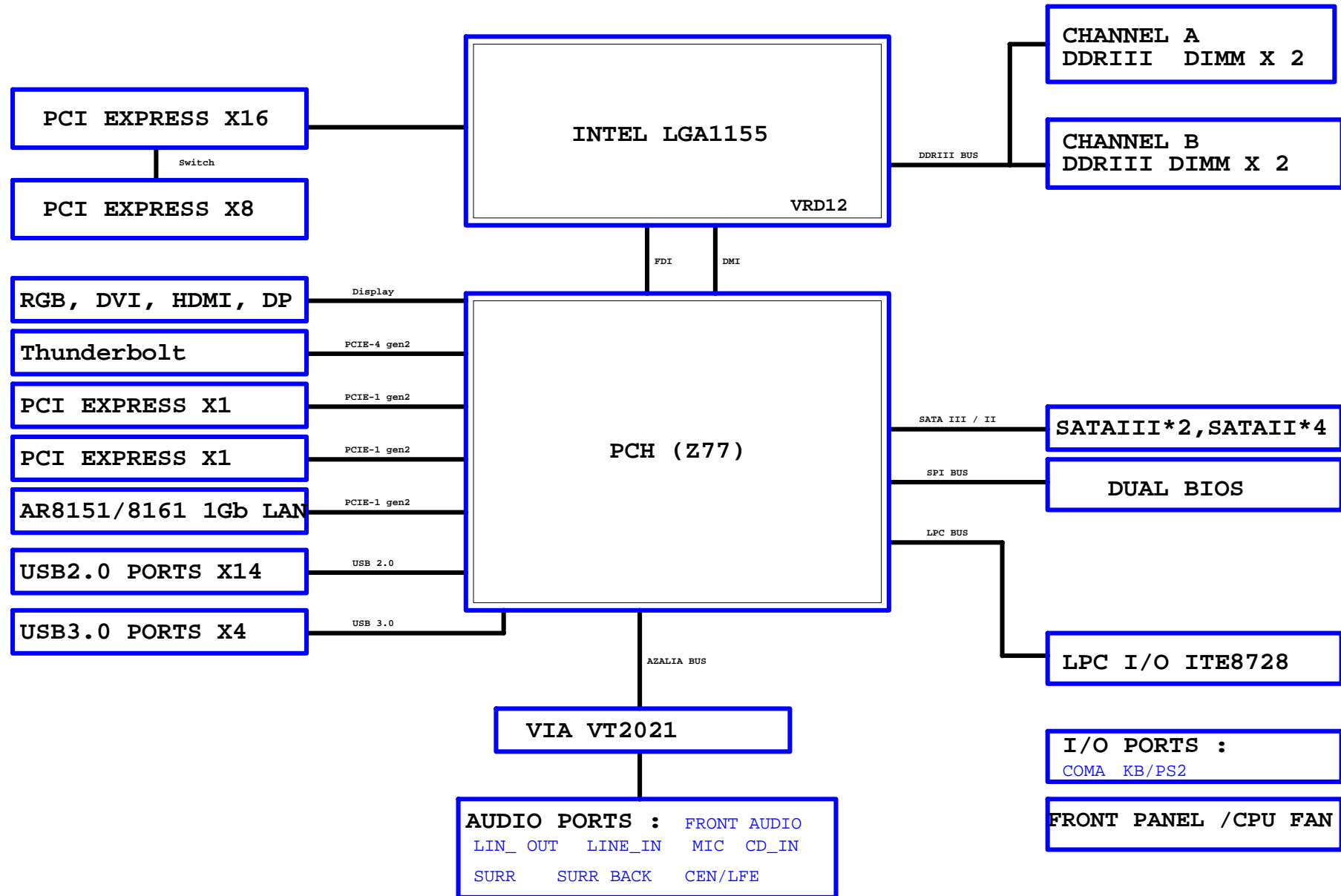
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 Switch
15	PCI 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

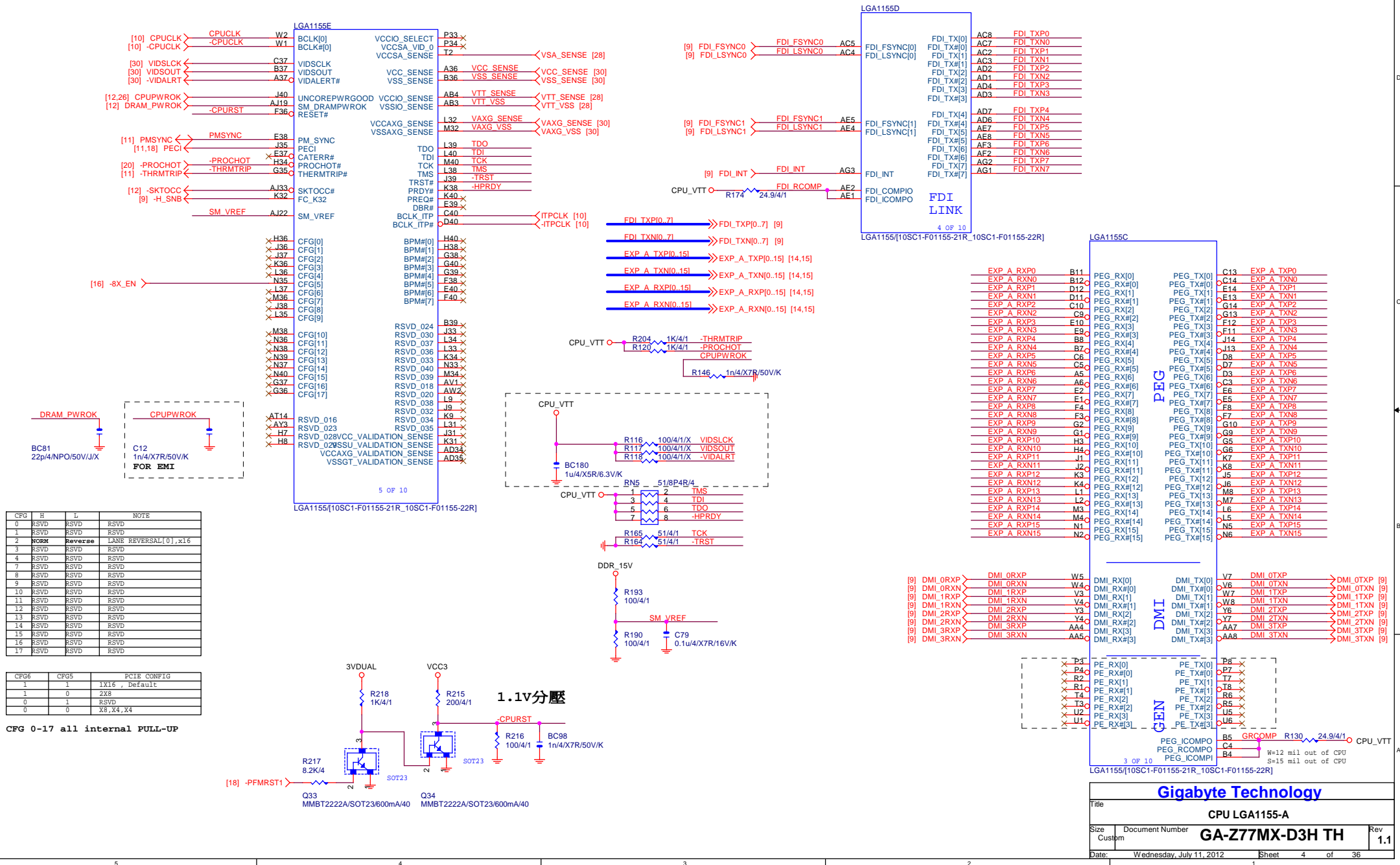
SHEET TITLE

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
36	Thunderbolt-2

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BLOCK DIAGRAM



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Title			CPU LGA1155-A
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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]			
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MAAA5	AT24	SA_MA[5]	SA_DQ[1]	AJ4	MDA1
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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
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MAAA12	AT21	SA_MA[12]			
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			SA_DQ[8]	AR4	MDA11
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[7] SBAA2	SBAA2	AV20	SA_BS[2]	AR2	MDA14
			SA_DQ[10]	AR1	MDA15
			SA_DQ[11]		
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[7] -CSA2	-CSA2	AW30	SA_CS#		
[7] -CSA3	-CSA3	AU33	SA_CS#		
[7] CKEA0	CKEA0	AV19	SA_CKE[0]	AV2	MDA16
[7] CKEA1	CKEA1	AT19	SA_CKE[1]	AW3	MDA17
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[7] CKEA3	CKEA3	AV18	SA_CKE[3]	AW5	MDA19
			SA_DQ[16]	AU2	MDA20
			SA_DQ[17]	AJ3	MDA21
			SA_DQ[18]	AJ5	MDA22
			SA_DQ[19]	AY5	MDA23
			SA_DQ[20]		
			SA_DQ[21]		
			SA_DQ[22]		
			SA_DQ[23]		
			SA_DQS[3]	AV8	DQSA3
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			SA_DQ[30]	SA_DQ[31]	
[7,8] -DDR3_RST		AW18	SM_DRAMRST#	AW9	MDA30
				AY9	MDA31
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			SA_DQ[33]	AW37	MDA33
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			SA_DQ[35]	AJ36	MDA35
			SA_DQ[36]	AW35	MDA36
			SA_DQ[37]	AY36	MDA37
			SA_DQ[38]	AJ38	MDA38
			SA_DQ[39]	AJ37	MDA39
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			SA_DQS[5]	AP39	-DQSA5
			SA_DQ[40]	AR40	MDA40
			SA_DQ[41]	AR37	MDA41
			SA_DQ[42]	AN38	MDA42
			SA_DQ[43]	AN37	MDA43
			SA_DQ[44]	AR39	MDA44
			SA_DQ[45]	AR38	MDA45
			SA_DQ[46]	AN39	MDA46
			SA_DQ[47]	AN40	MDA47
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			SA_DQ[49]	AL37	MDA49
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			SA_DQ[60]	AG39	MDA60
			SA_DQ[61]	AG38	MDA61
			SA_DQ[62]	AE39	MDA62
			SA_DQ[63]	AE40	MDA63

DDR_0

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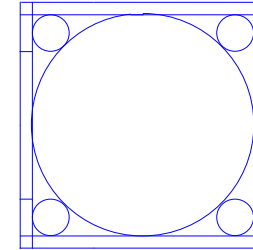
LGA1155B

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MAAB2	AM19	SB_MA[2]			
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
MAAB13	AR26	SB_MA[13]	SB_DQS[1]	AL8	-DQSB1
MAAB14	AY16	SB_MA[14]			
MAAB15	AV16	SB_MA[15]			
[8] -SWEB	-SWEB	AR25	SB_WE#	AM7	MDB8
[8] -SCASB	-SCASB	AK25	SB_CAS#	AM10	MDB10
[8] -SRASB	-SRASB	AP24	SB_RAS#	AL10	MDB11
			SB_DQ[8]	AL6	MDB12
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			SB_CS#		
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[8] -CSB1	-CSB1	AN26	SB_CS#	AP8	-DQSB2
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[8] CKEB2	CKEB2	AW15	SB_CKE[2]	AP10	MDB18
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			SB_ODT[0]	AP6	MDB20
			SB_ODT[1]	AR6	MDB21
			SB_ODT[2]	AP9	MDB22
			SB_ODT[3]	AR9	MDB23
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[8] -DCLKB2	-DCLKB2	AM22	SB_CK#	AL13	MDB29
[8] DCLKB3	DCLKB3	AP21	SB_CK[3]	AL12	MDB30
[8] -DCLKB3	-DCLKB3	AN21	SB_CK#	AP12	MDB31
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				AL29	MDB35
				AP28	MDB36
				AP29	MDB37
				AM28	MDB38
				AM29	MDB39
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			SB_DQS[5]	AR33	-DQSB5
			SB_DQ[40]	AP32	MDB40
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			SB_DQ[42]	AP35	MDB42
			SB_DQ[43]	AP34	MDB43
			SB_DQ[44]	AR32	MDB44
			SB_DQ[45]	AR31	MDB45
			SB_DQ[46]	AR35	MDB46
			SB_DQ[47]	AR34	MDB47
			SB_DQS[6]	AL33	DQSB6
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			SB_DQ[49]	AL35	MDB49
			SB_DQ[50]	AL32	MDB50
			SB_DQ[51]	AM34	MDB51
			SB_DQ[52]	AL31	MDB52
			SB_DQ[53]	AM35	MDB53
			SB_DQ[54]	AL34	MDB54
			SB_DQ[55]	AL34	MDB55
			SB_DQS[7]	AG35	DQSB7
			SB_DQS[7]	AG34	-DQSB7
			SB_DQ[56]	AH35	MDB56
			SB_DQ[57]	AH34	MDB57
			SB_DQ[58]	AE34	MDB58
			SB_DQ[59]	AE35	MDB59
			SB_DQ[60]	AJ35	MDB60
			SB_DQ[61]	AJ34	MDB61
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			SB_DQ[63]	AF35	MDB63

DDR_1

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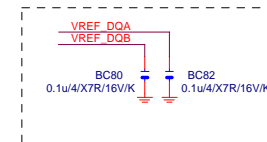
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CR
CPU RETAINTION/X

LGA1155_P

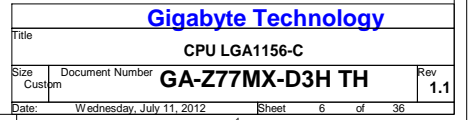


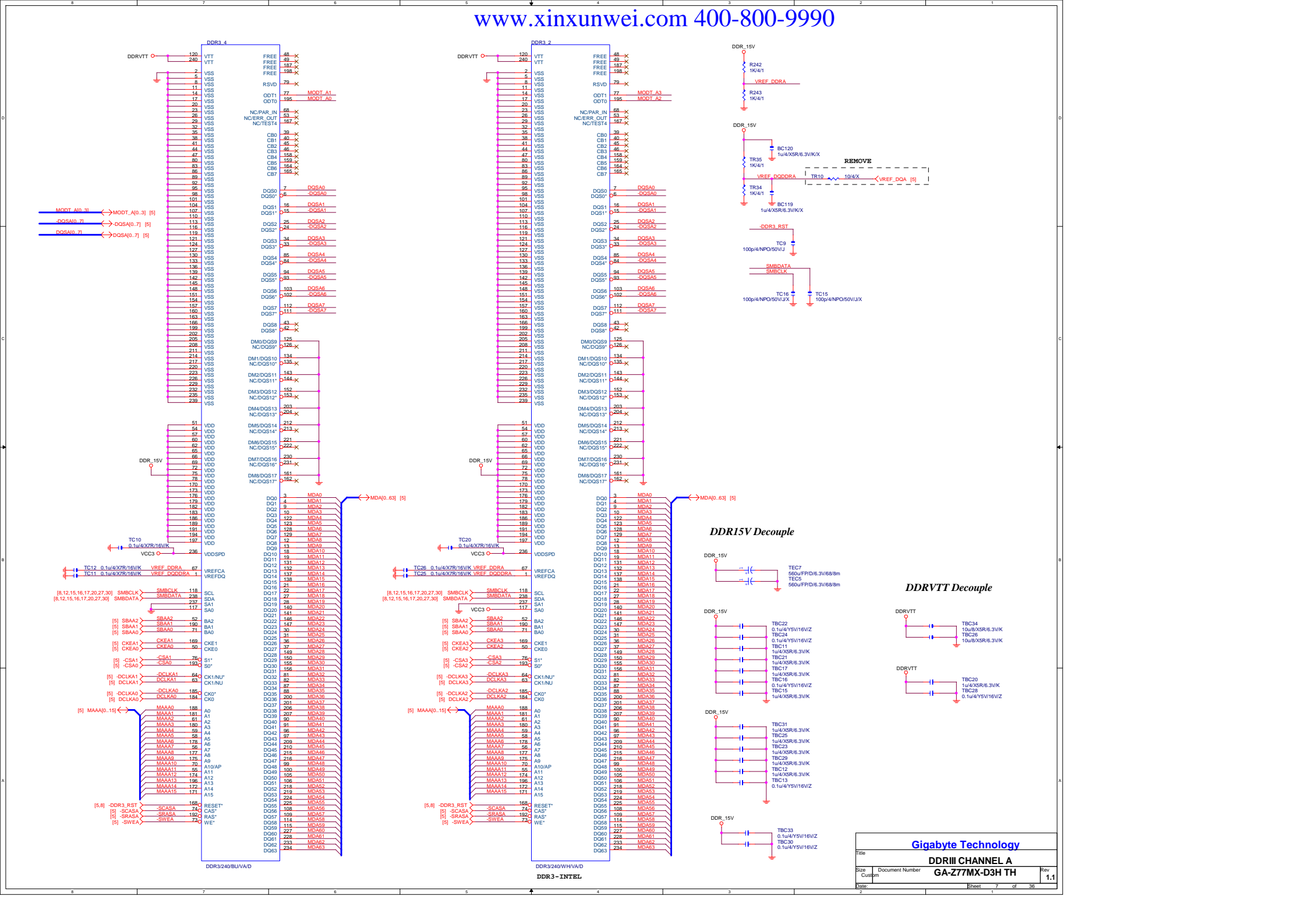
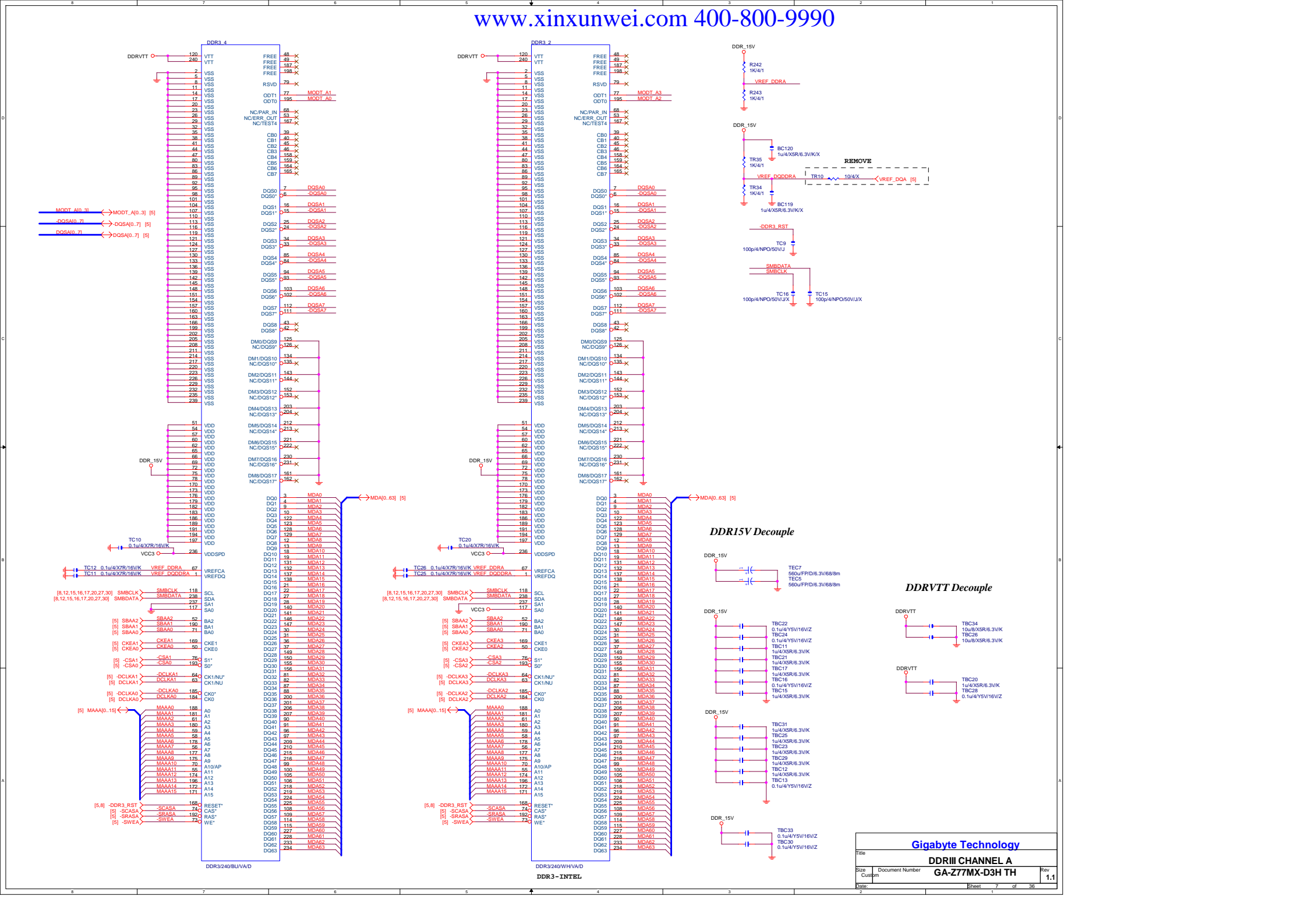
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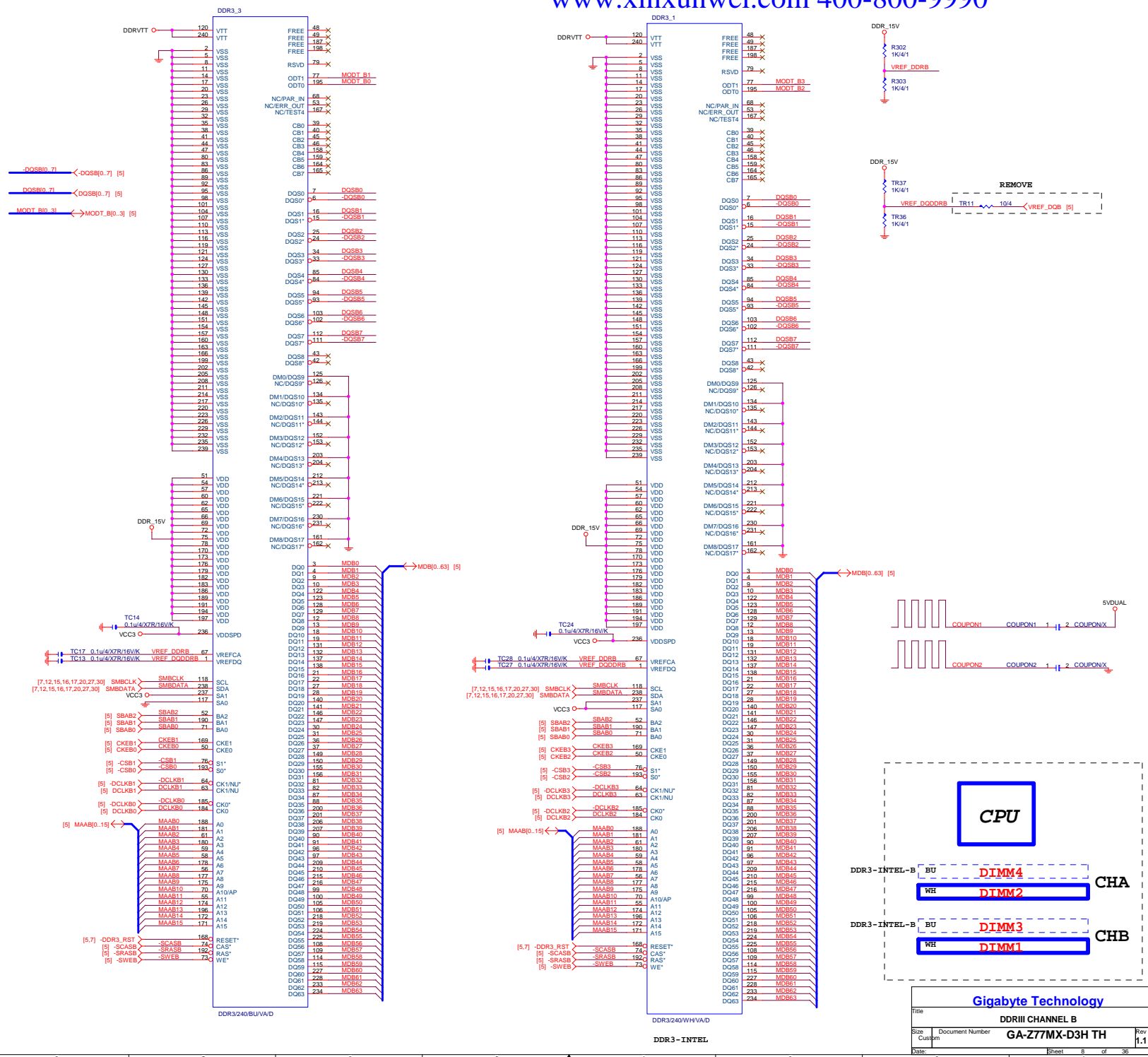


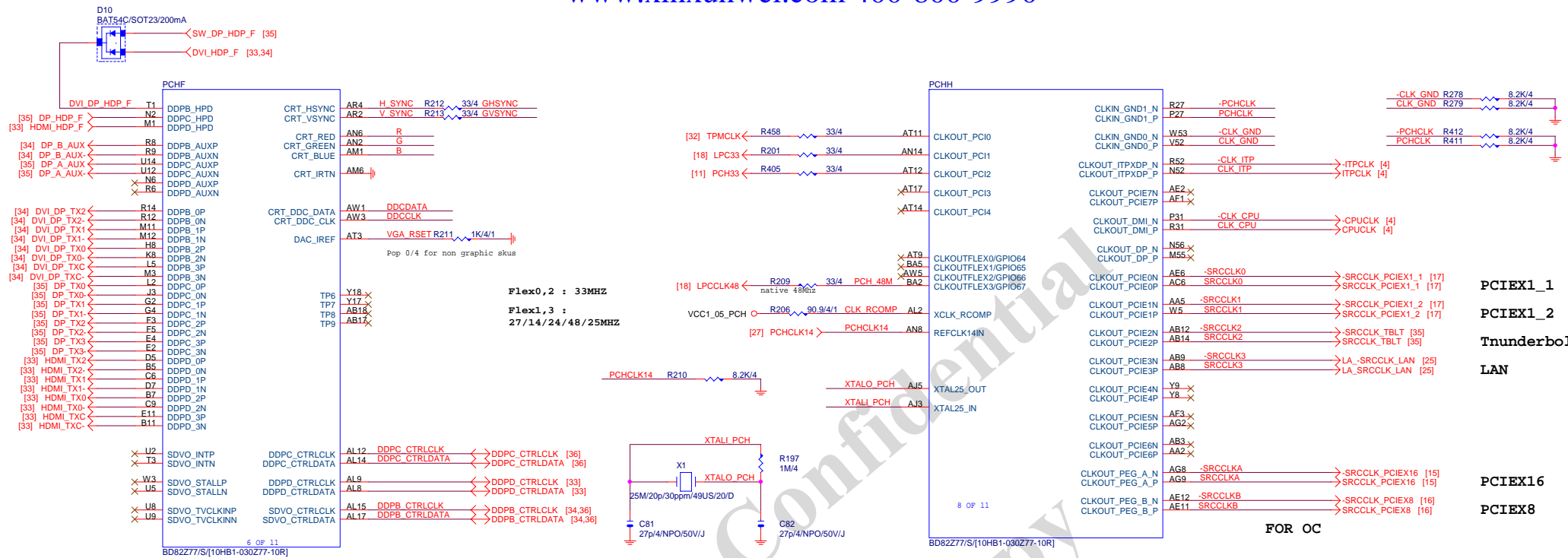
Gigabyte Technology

Title				CPU LGA1156-B	
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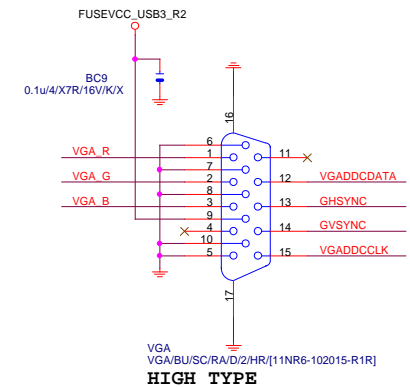
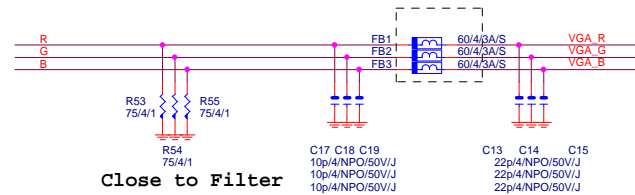
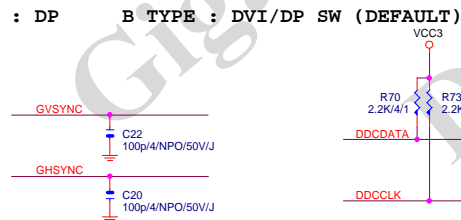
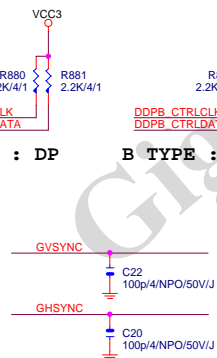
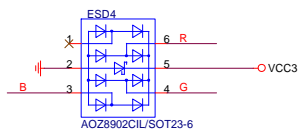
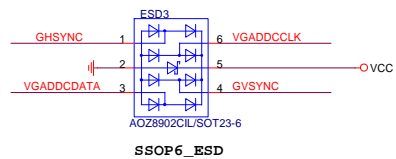
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C TYPE : DP

D TYPE : HDMI

C TYPE : DP

B TYPE : DVI/DP SW (DEFAULT)

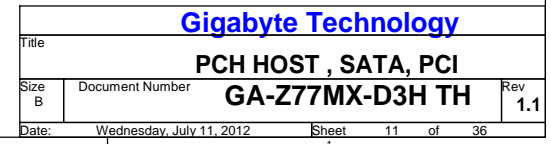


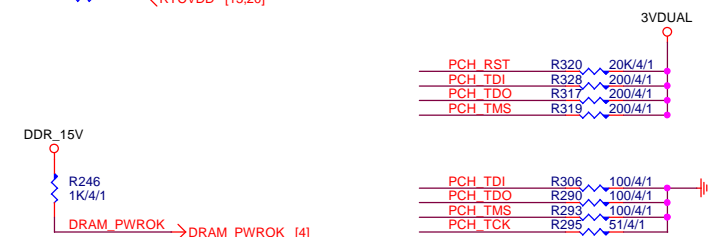
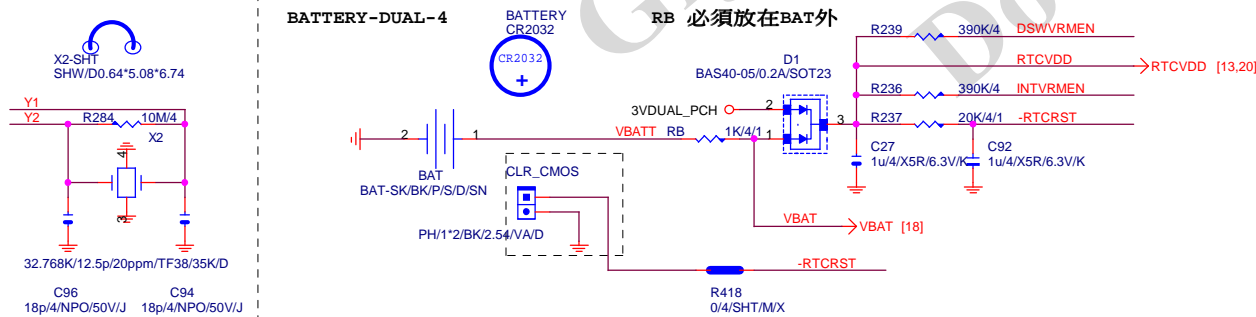
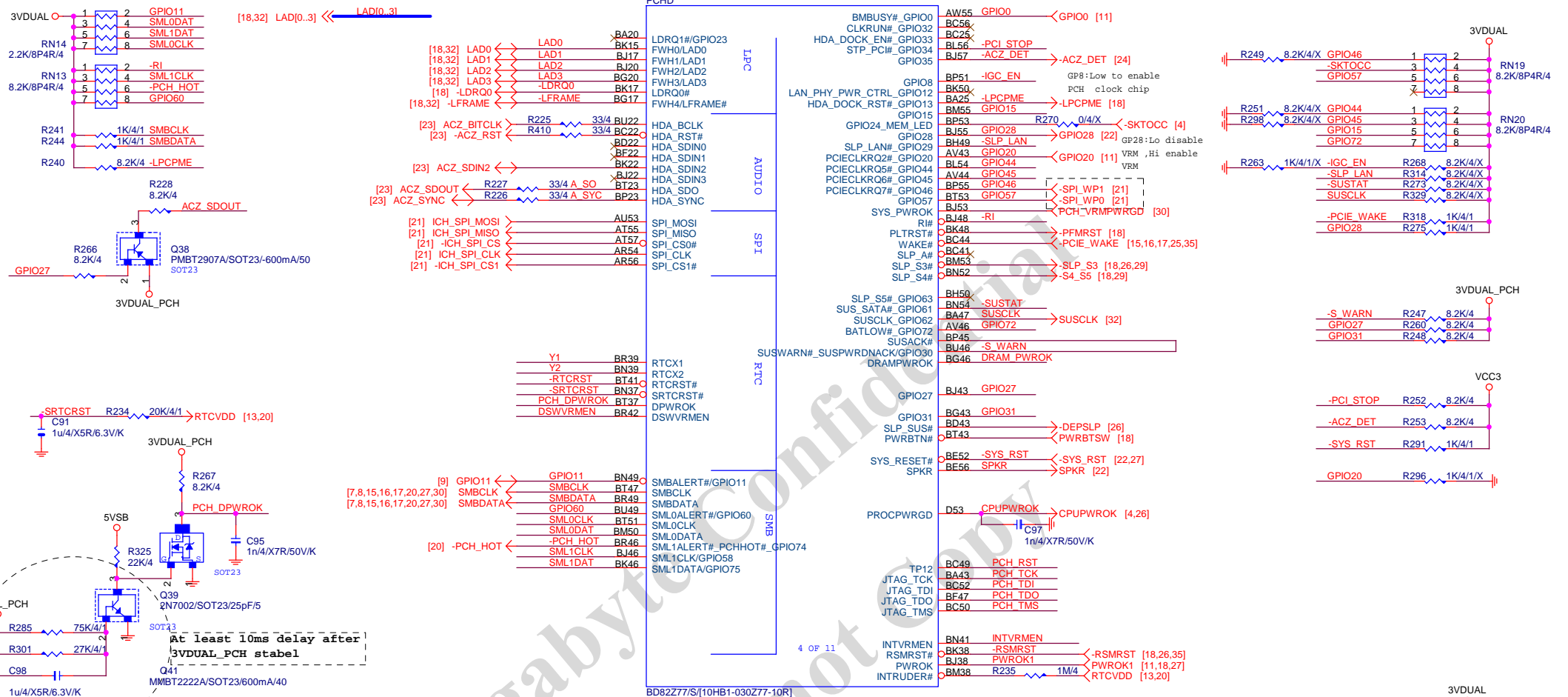
Gigabyte Technology

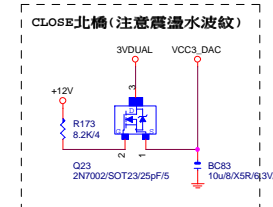
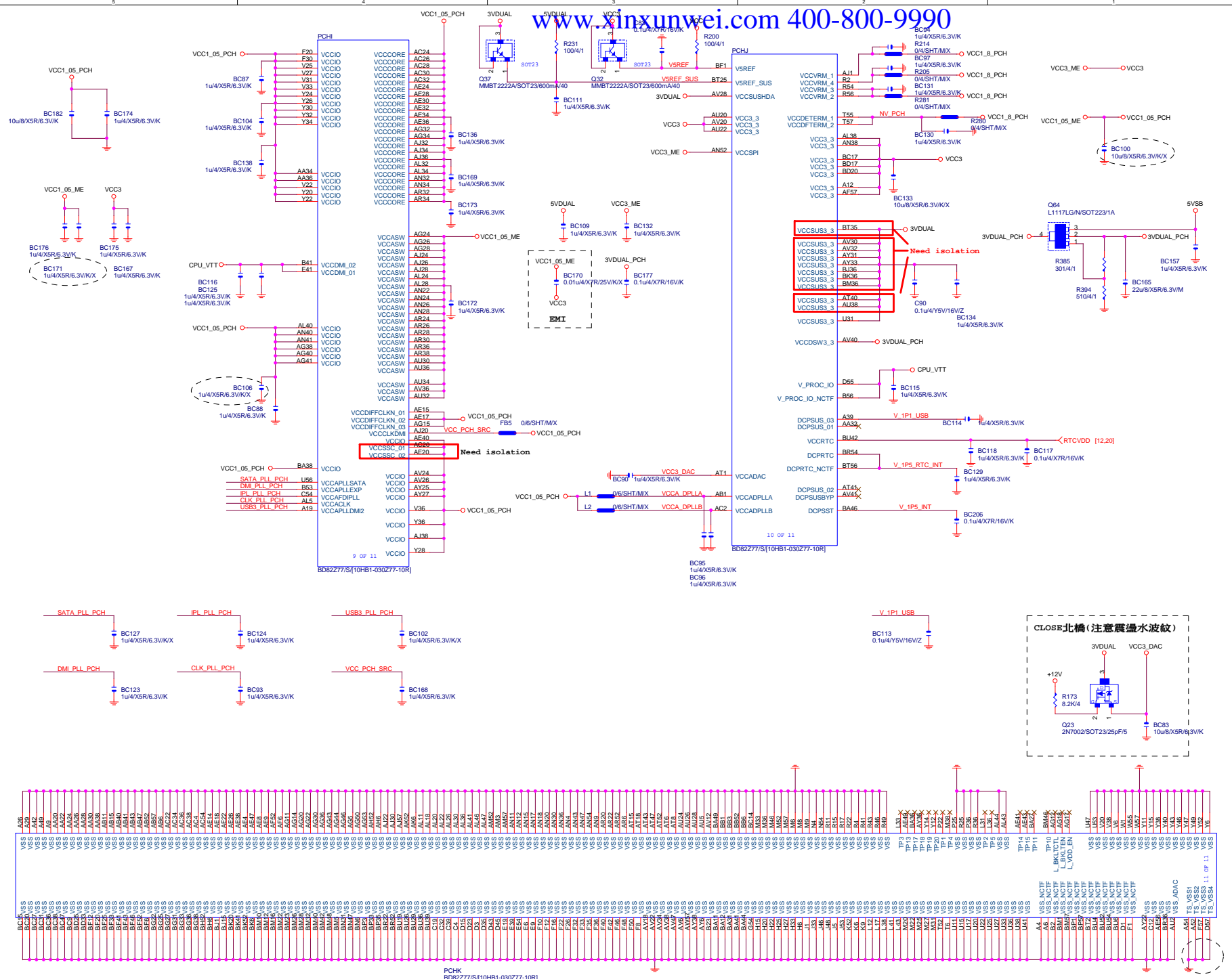
PCH DISPLAY, CLK BUFFER

GA-Z77MX-D3H TH

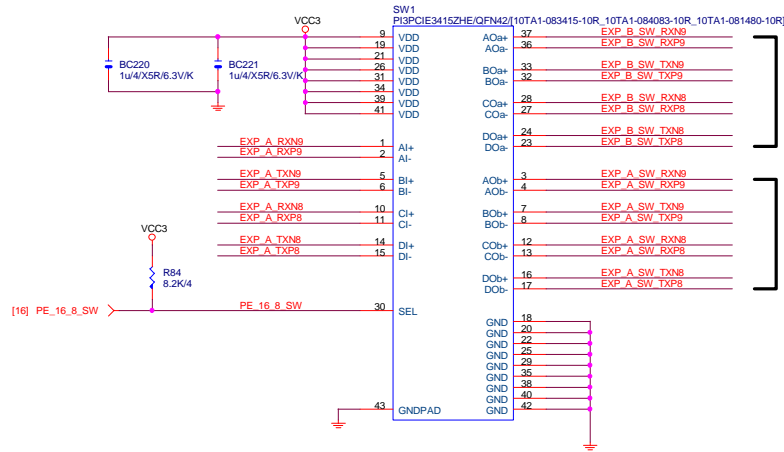
Title	Document Number	Rev
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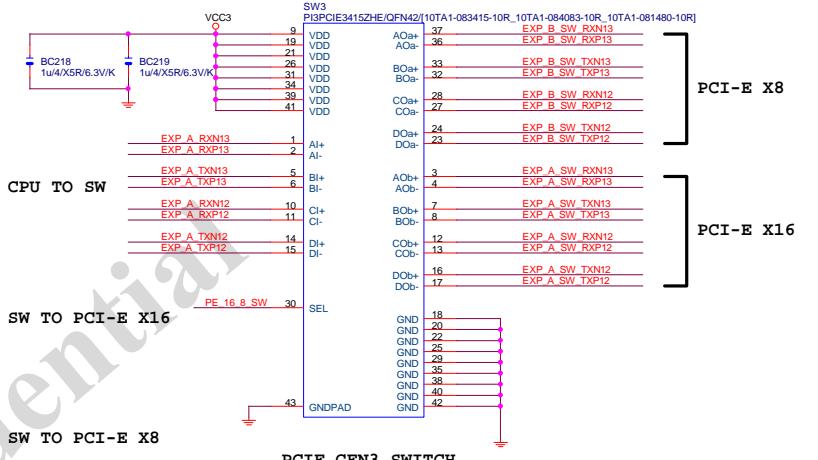
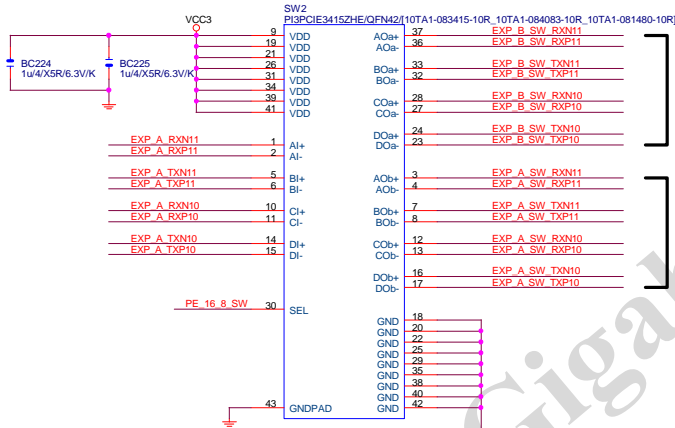




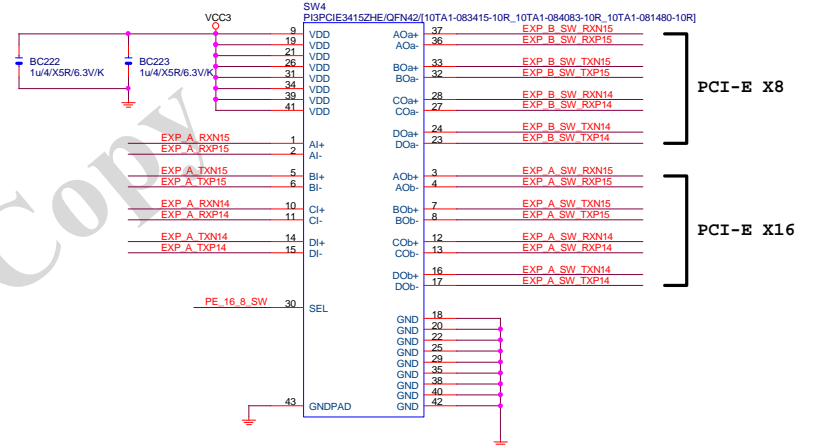
Function	SEL
xI--> xOa	L
xI--> xOb	H



PCI-E GEN3 SWITCH



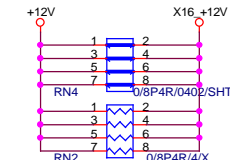
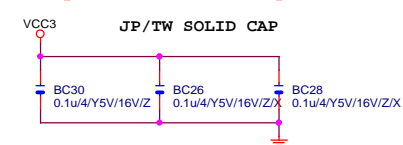
PCI-E GEN3 SWITCH



Gigabyte Technology

PCI EXPRESS X16 SWITCH

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EXP A RXP0[0..15] >> EXP_A_RXP[0..15] [4,14]
EXP A RXN0[0..15] >> EXP_A_RXN[0..15] [4,14]
EXP A TXP0[0..15] >> EXP_A_TXP[0..15] [4,14]
EXP A TXN0[0..15] >> EXP_A_TXN[0..15] [4,14]

EXP A TXP0	C32	0.22u4/X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C30	0.22u4/X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C35	0.22u4/X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C37	0.22u4/X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C39	0.22u4/X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C41	0.22u4/X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C43	0.22u4/X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C45	0.22u4/X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C46	0.22u4/X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C49	0.22u4/X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C50	0.22u4/X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C51	0.22u4/X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C52	0.22u4/X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C54	0.22u4/X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C57	0.22u4/X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C58	0.22u4/X5R/6.3V/K	EXP A TXN7C
EXP A SW TXP8	C60	0.22u4/X5R/6.3V/K	EXP A SW TXP8C
EXP A SW TXN8	C61	0.22u4/X5R/6.3V/K	EXP A SW TXN8C
EXP A SW TXP9	C62	0.22u4/X5R/6.3V/K	EXP A SW TXP9C
EXP A SW TXN9	C63	0.22u4/X5R/6.3V/K	EXP A SW TXN9C
EXP A SW TXP10	C64	0.22u4/X5R/6.3V/K	EXP A SW TXP10C
EXP A SW TXN10	C65	0.22u4/X5R/6.3V/K	EXP A SW TXN10C
EXP A SW TXP11	C66	0.22u4/X5R/6.3V/K	EXP A SW TXP11C
EXP A SW TXN11	C67	0.22u4/X5R/6.3V/K	EXP A SW TXN11C
EXP A SW TXP12	C68	0.22u4/X5R/6.3V/K	EXP A SW TXP12C
EXP A SW TXN12	C70	0.22u4/X5R/6.3V/K	EXP A SW TXN12C
EXP A SW TXP13	C72	0.22u4/X5R/6.3V/K	EXP A SW TXP13C
EXP A SW TXN13	C73	0.22u4/X5R/6.3V/K	EXP A SW TXN13C
EXP A SW TXP14	C74	0.22u4/X5R/6.3V/K	EXP A SW TXP14C
EXP A SW TXN14	C75	0.22u4/X5R/6.3V/K	EXP A SW TXN14C
EXP A SW TXP15	C77	0.22u4/X5R/6.3V/K	EXP A SW TXP15C
EXP A SW TXN15	C78	0.22u4/X5R/6.3V/K	EXP A SW TXN15C

EXP A SW RXP8[0..15] >> EXP_A_SW_RXP[8..15] [14]
EXP A SW RXN8[0..15] >> EXP_A_SW_RXN[8..15] [14]
EXP A SW TXP8[0..15] >> EXP_A_SW_TXP[8..15] [14]
EXP A SW TXN8[0..15] >> EXP_A_SW_TXN[8..15] [14]

PCI-E REV:1.1--> 2.5GHZ

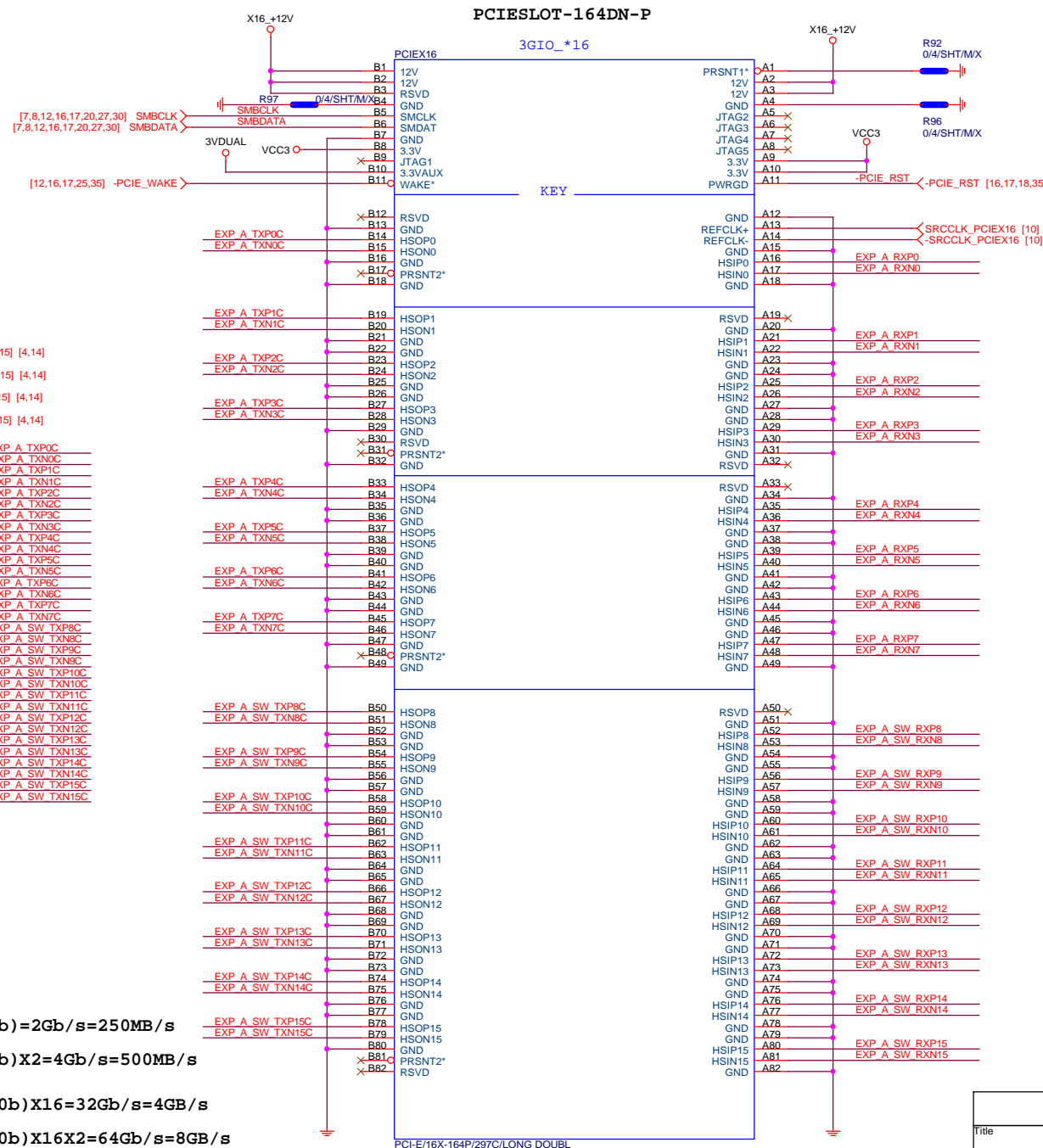
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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

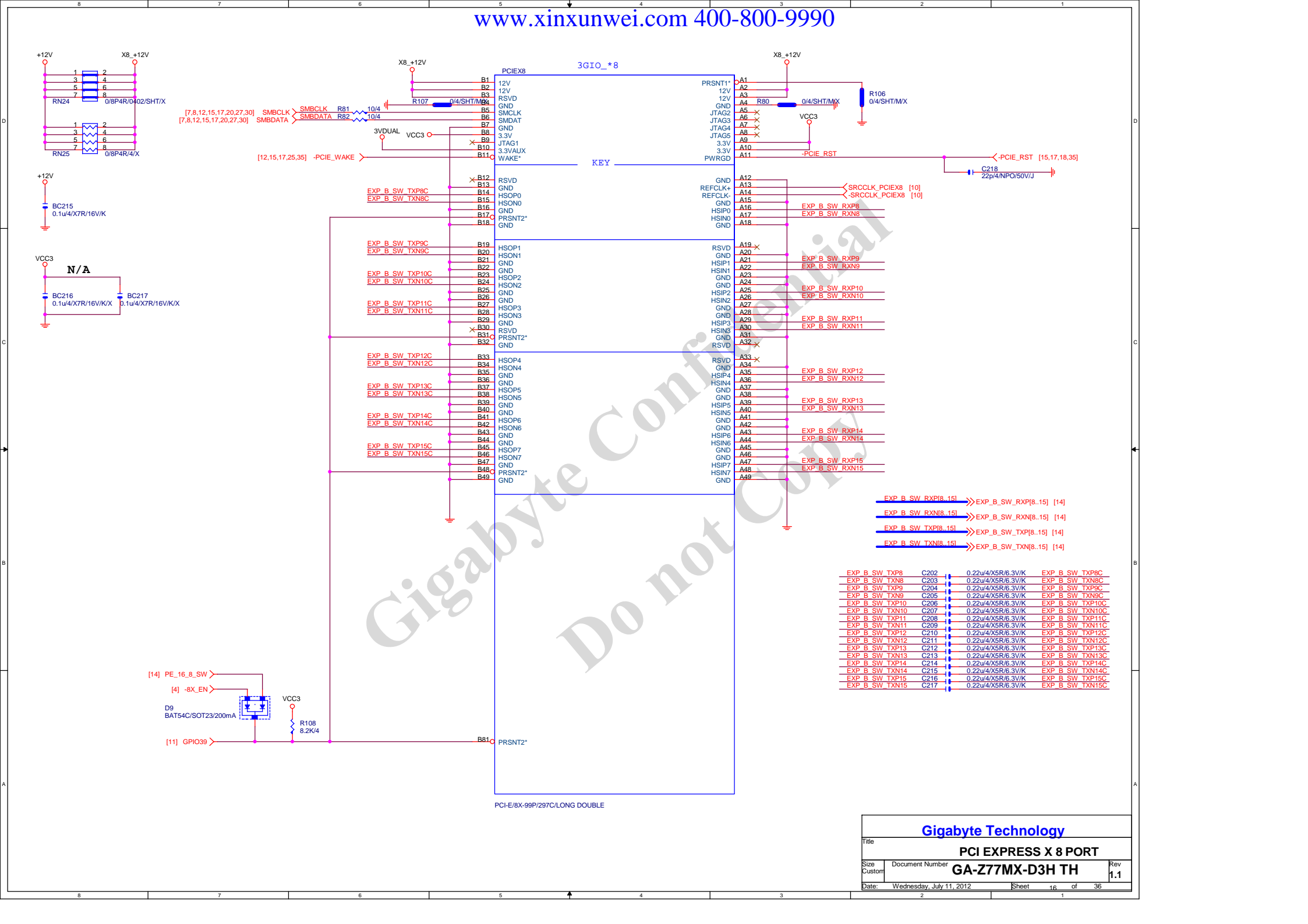
PCI-E REV:2.0--> 5GHZ

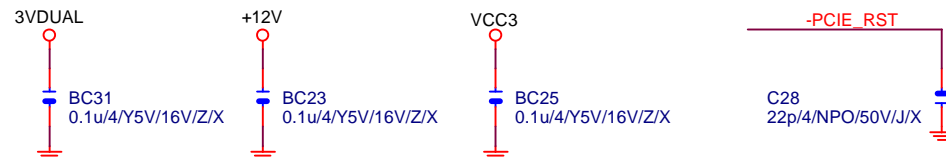
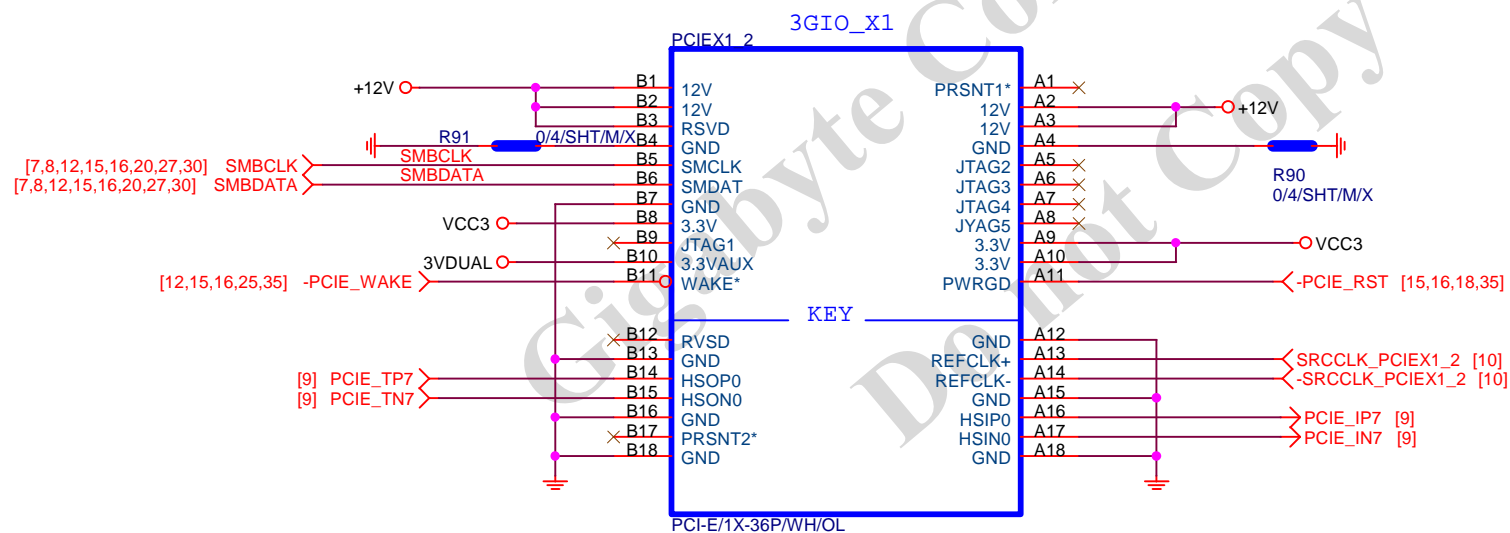
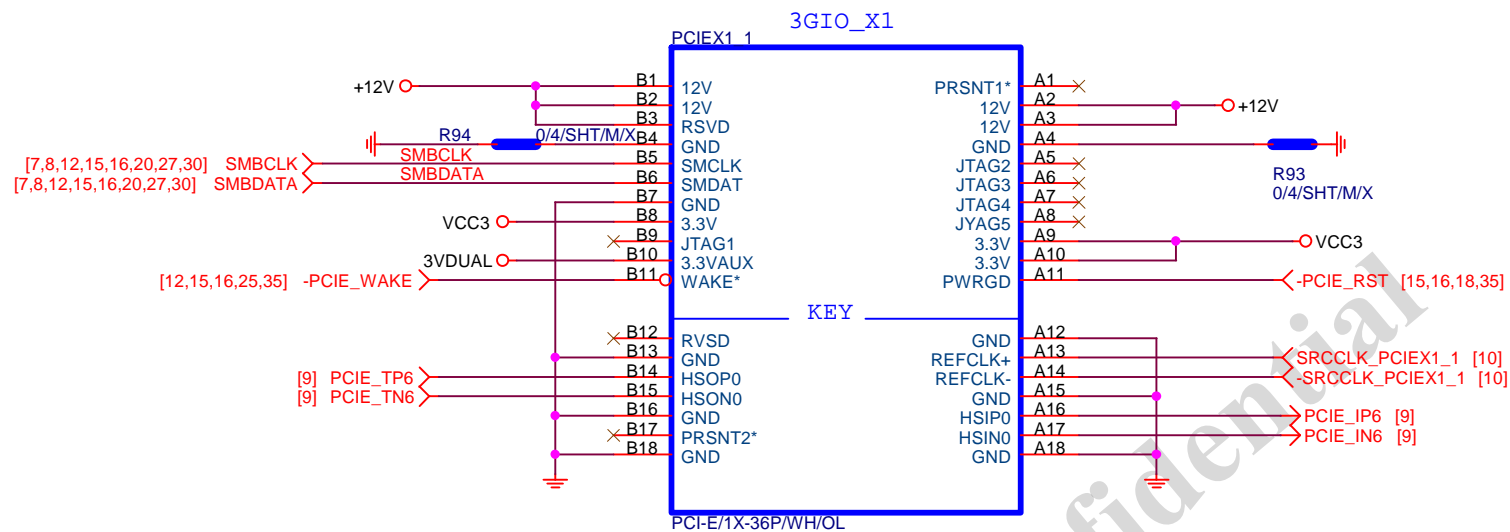


PCI-E/16x-164P/297C/LONG DOUBL

Gigabyte Technology

Title			
PCI EXPRESS X 16 PORT			
Size	Document Number	Rev	
Custom	GA-Z77MX-D3H TH	1.1	
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**Gigabyte Technology**

Title

PCI EXPRESS X 1 PORTSize
Custom

Document Number

GA-Z77MX-D3H THRev
1.1

Date:

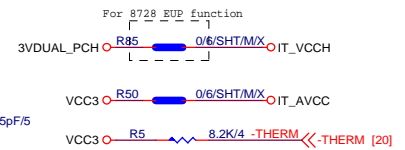
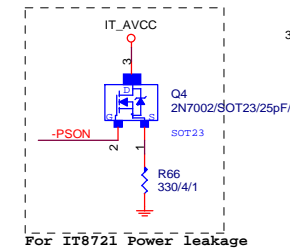
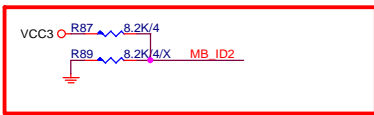
Wednesday, July 11, 2012

Sheet

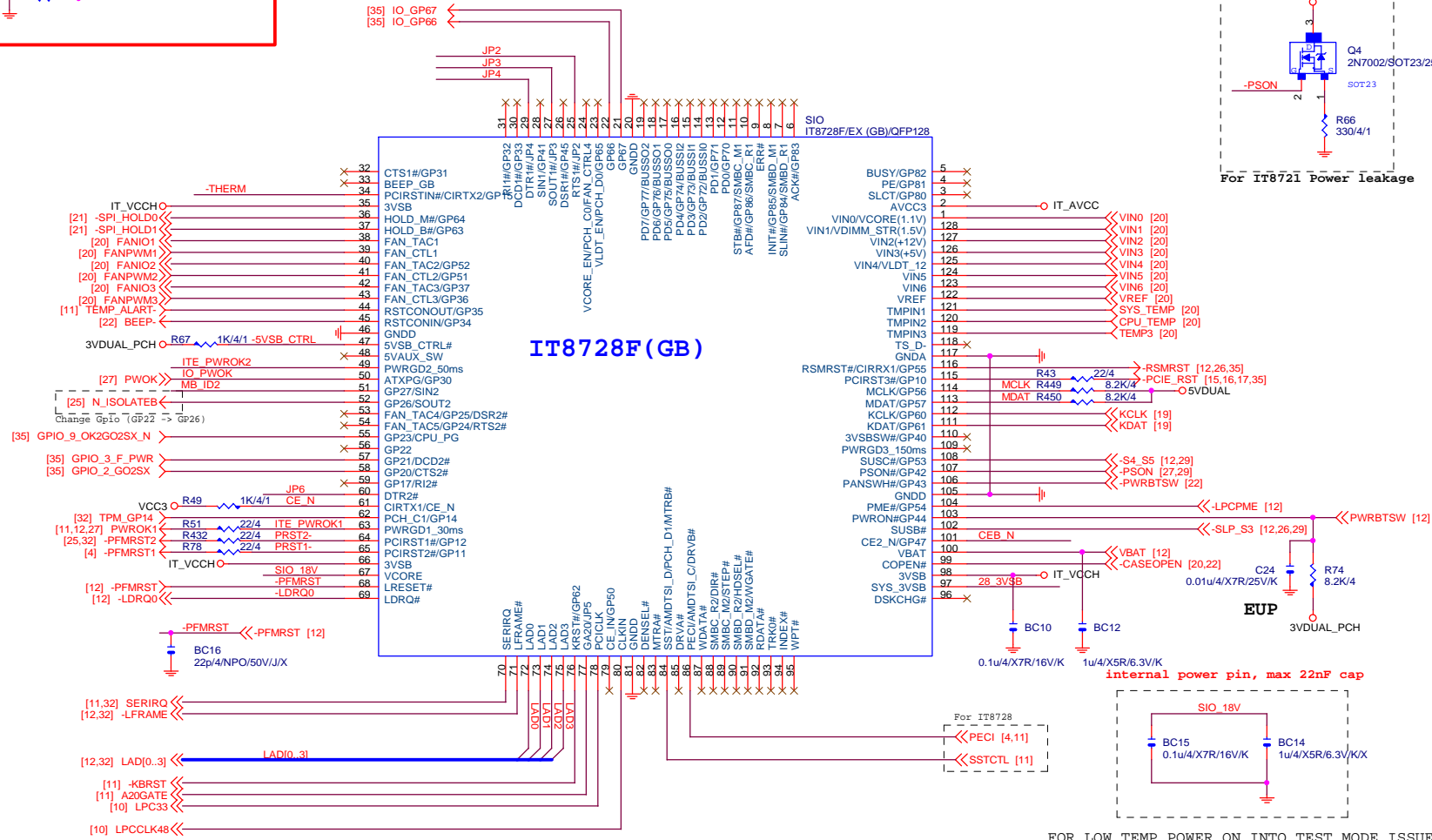
17

of

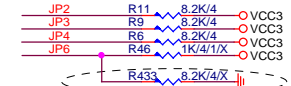
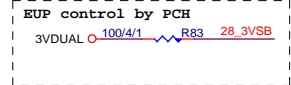
36



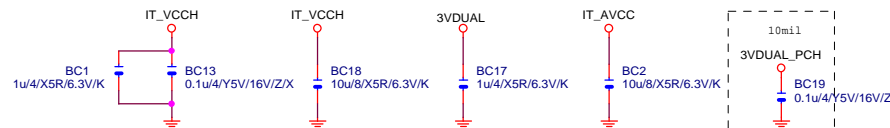
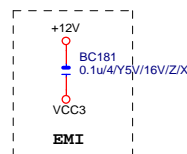
IT8728F(GB)



FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

IT8728-EX
PULL DOWN ENABLE OVPJP3--- High SPI-Flash Disable
Low SPI-Flash Enable

IT8728	
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTB#/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	VIN0/VCORE (1.1V)/NC



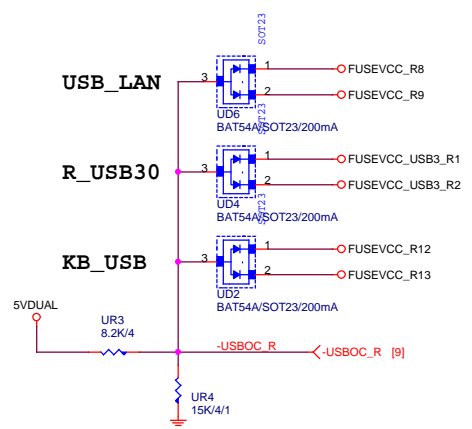
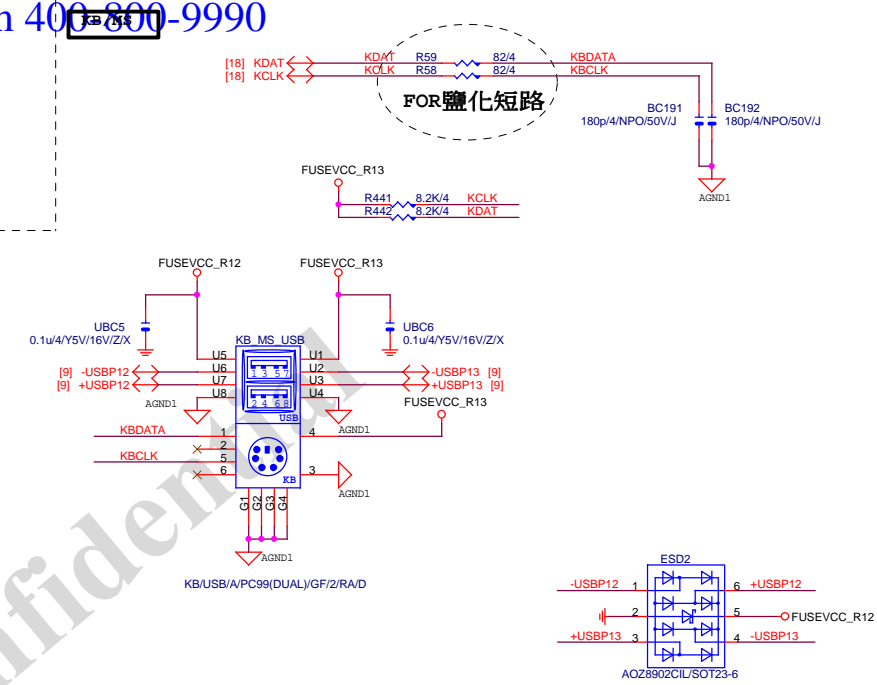
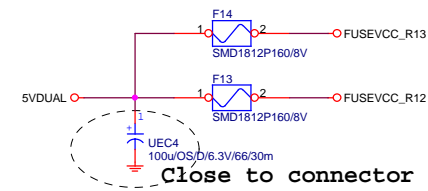
Gigabyte Technology		
ITE 8728 LPC IO		
Title	Document Number	Rev
	GA-Z77MX-D3H TH	1.1
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COM

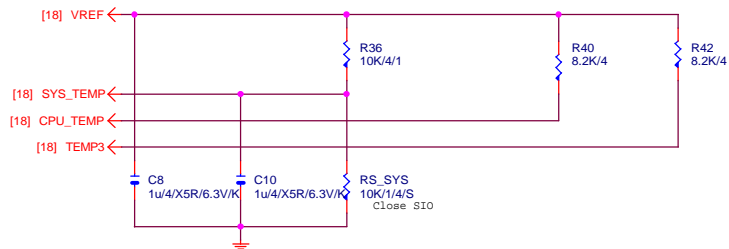
COM_R1

KB_USB

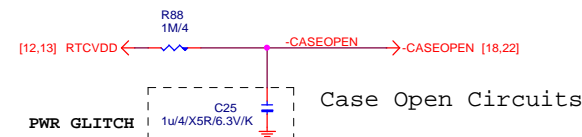
USB2.0 PWR



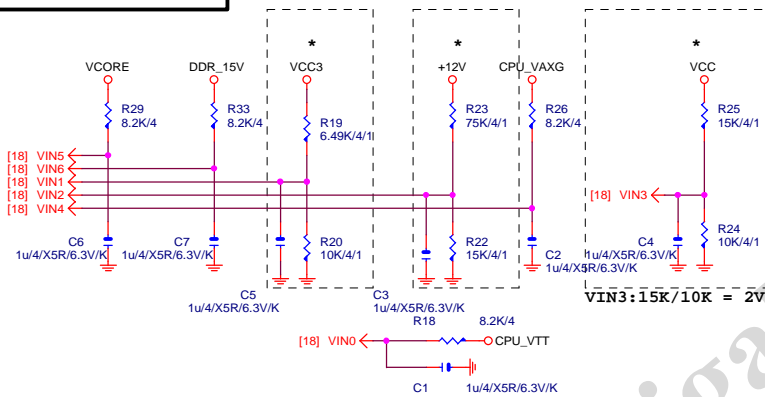
TEMP H/W MONITOR



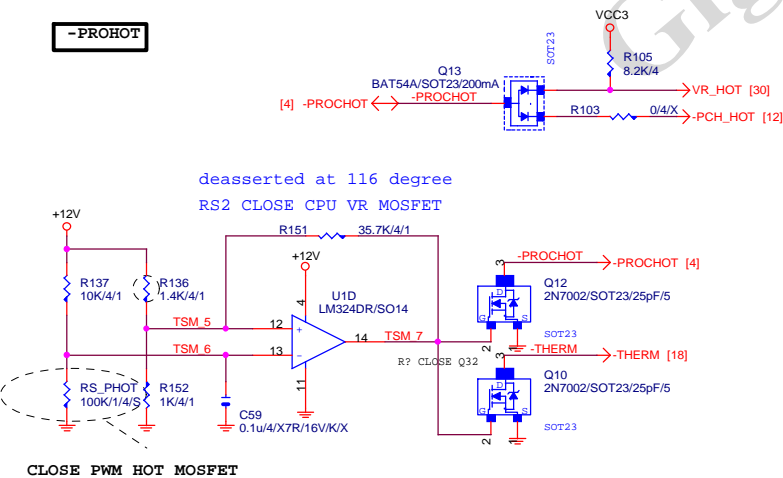
CASE OPEN



VOLTAGE-- H/W MONITOR

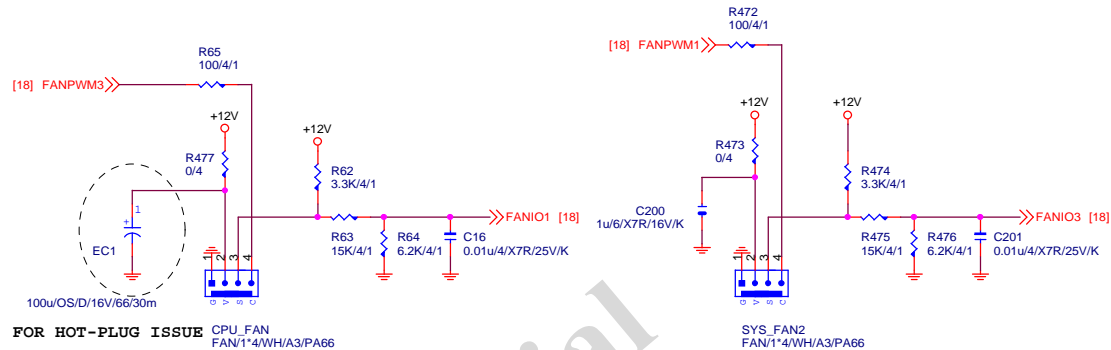


-PROHOT

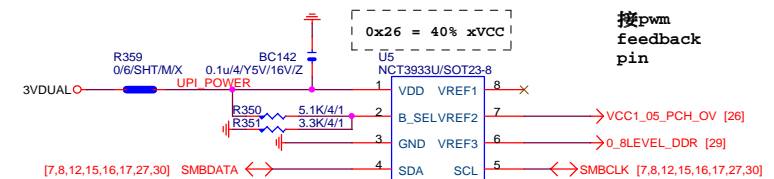
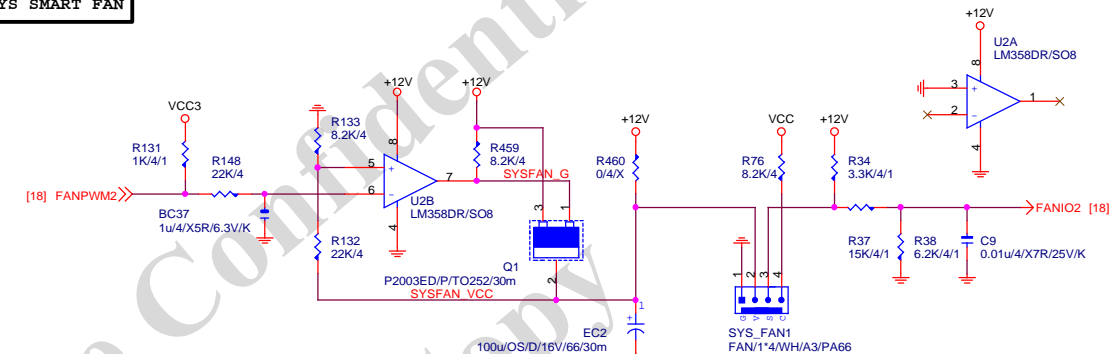


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CPU SMART FAN



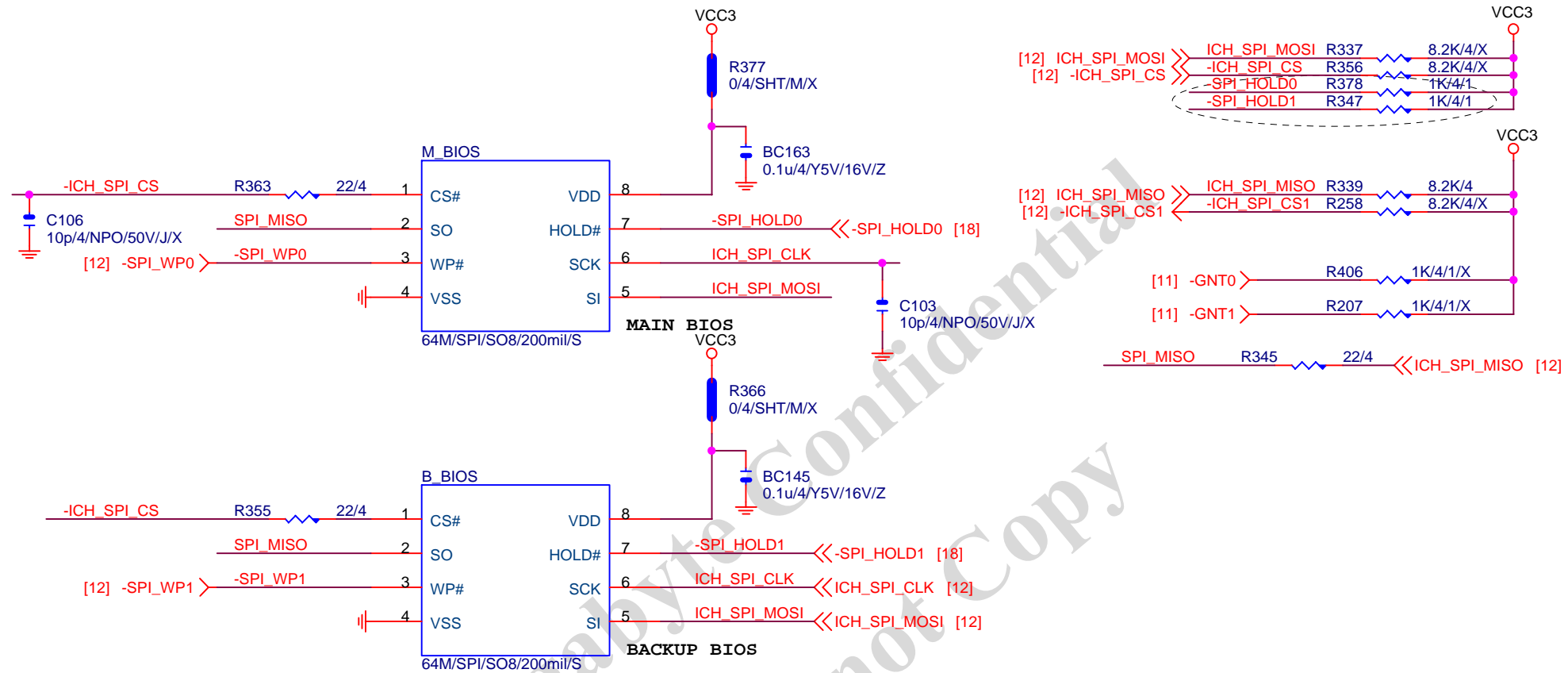
SYS SMART FAN



Gigabyte Technology

Title		HWM,FAN CTRL,OV	
Size	Document Number	GA-Z77MX-D3H TH	
Custom		Rev 1.1	
Date:	Wednesday, July 11, 2012	Sheet	20 of 36

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

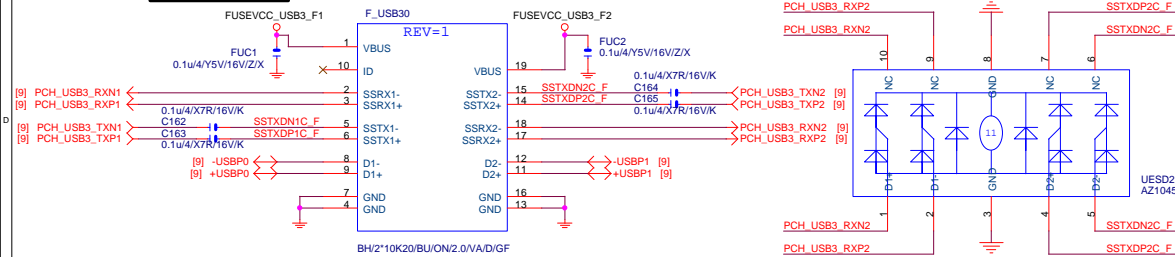
GA-Z77MX-D3H TH

Rev 1.1

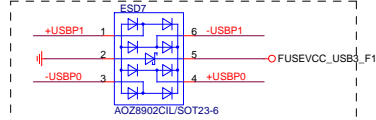
Date: Wednesday, July 11, 2012

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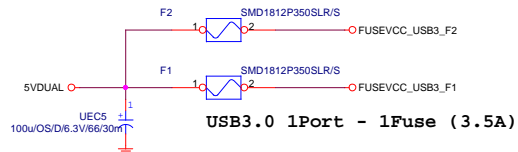
Front USB3.0



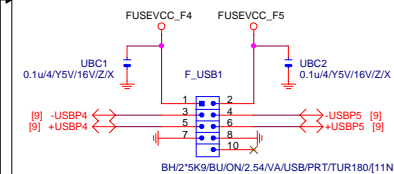
BLUE



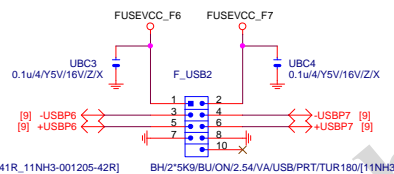
Close to connector



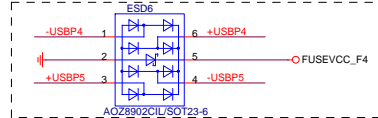
FRONT USB1



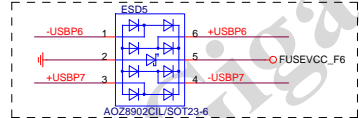
FRONT USB2



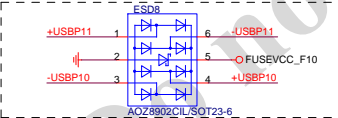
Close to connector



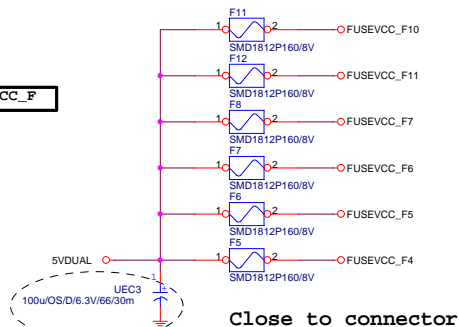
Close to connector



Close to connector



FUSEVCC_F



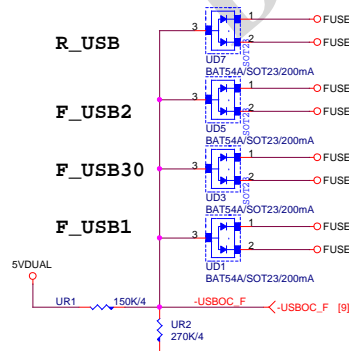
Close to connector

R_USB

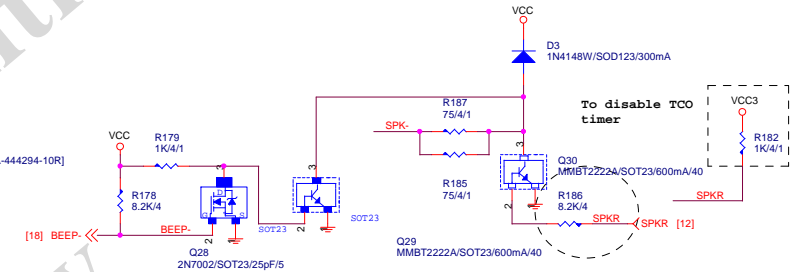
F_USB2

F_USB30

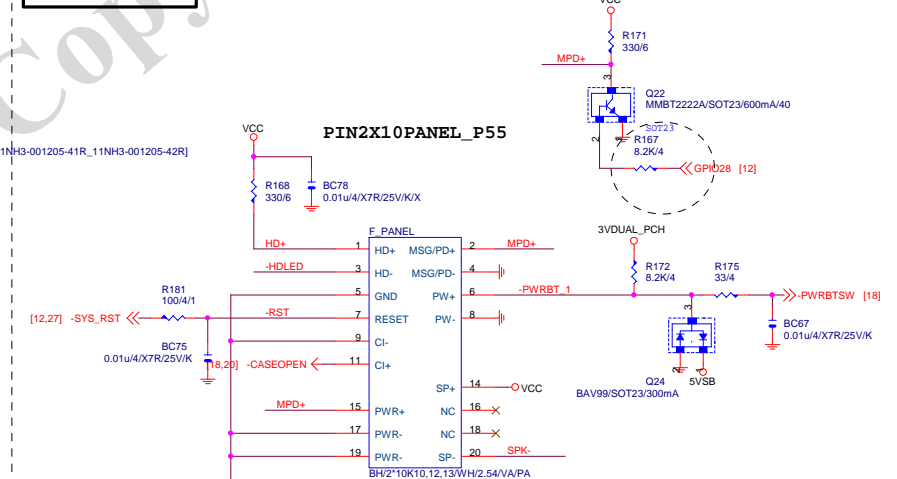
F_USB1



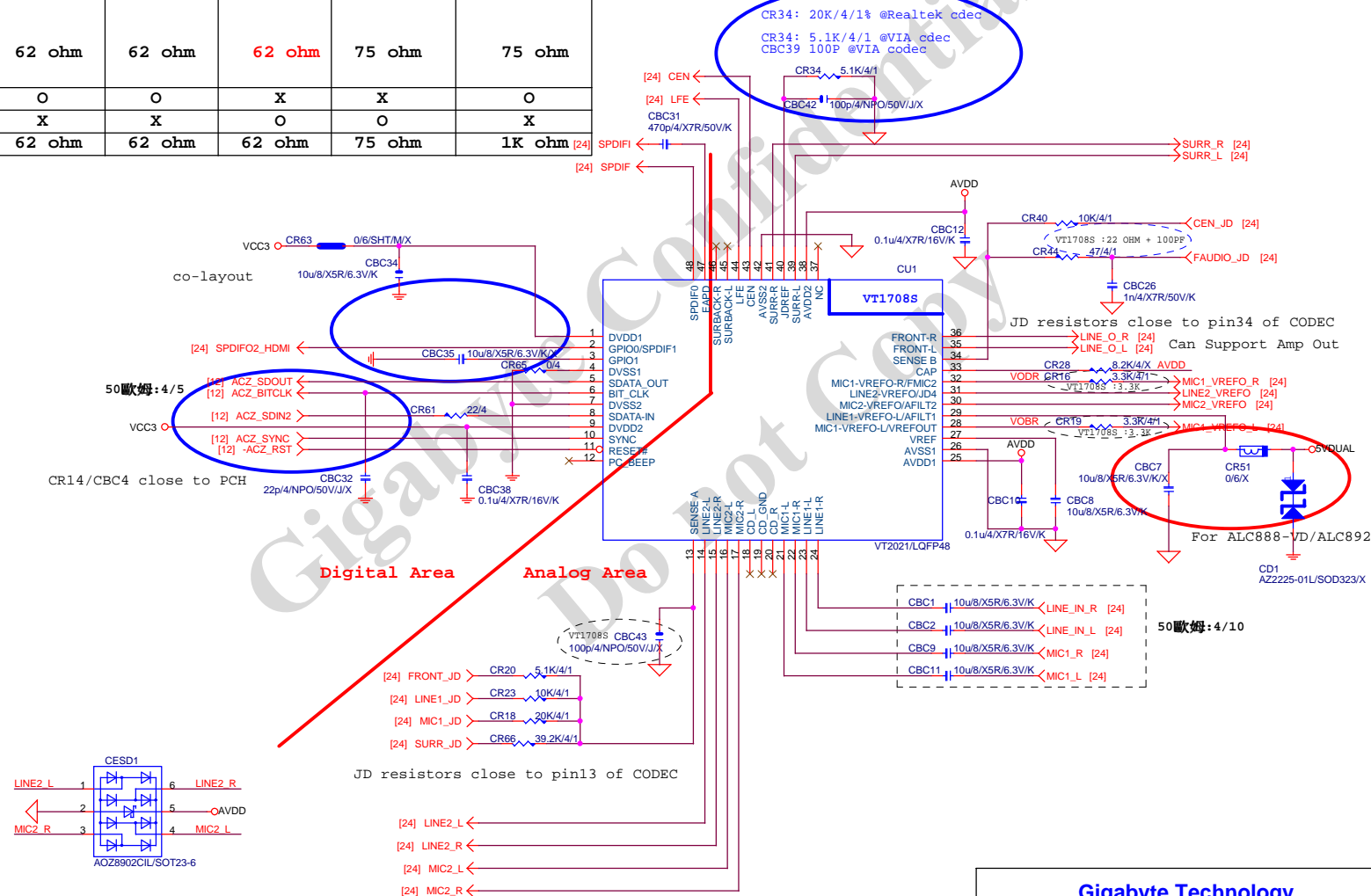
SPKR



INTEL FRONT PANEL

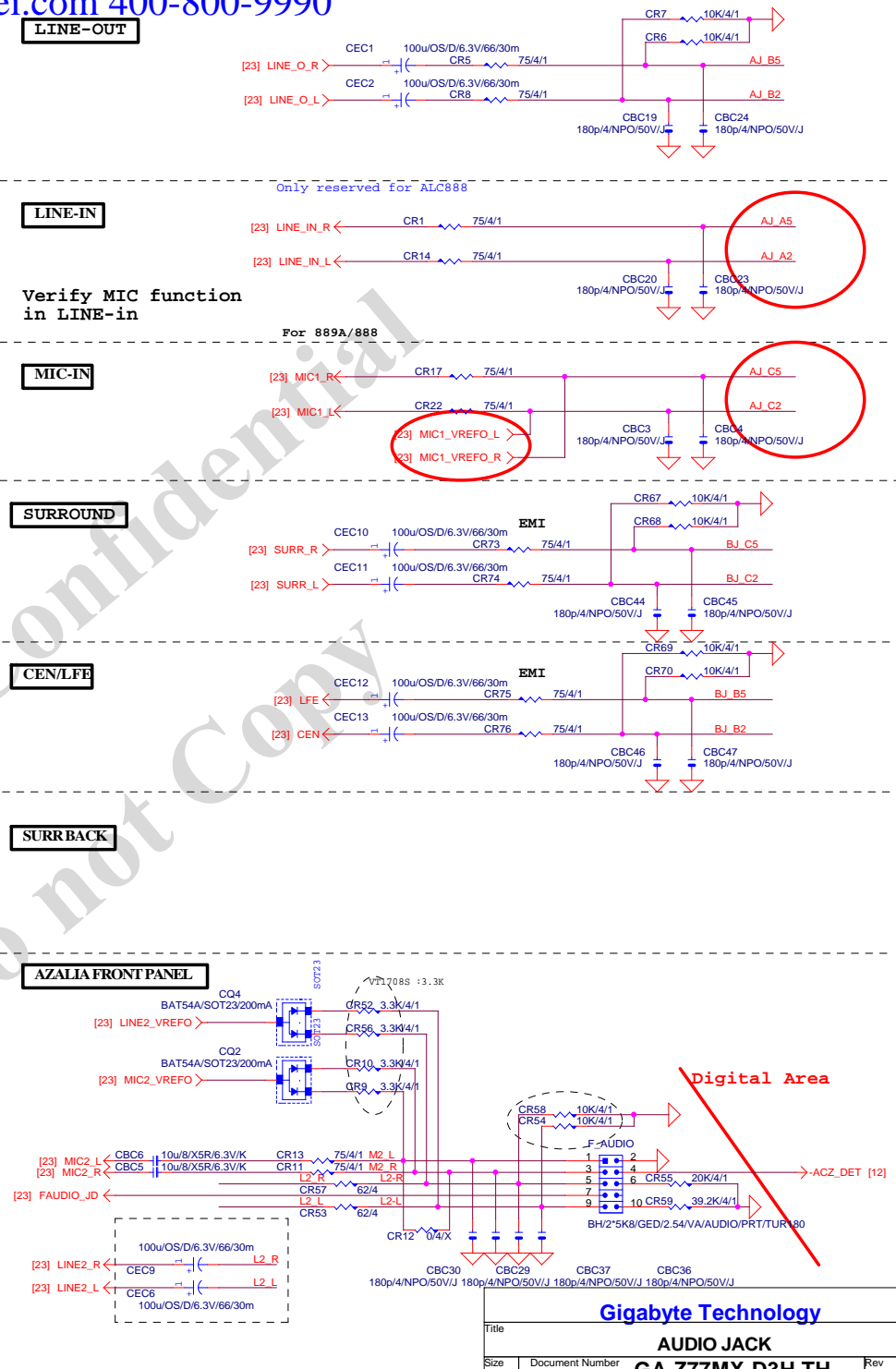
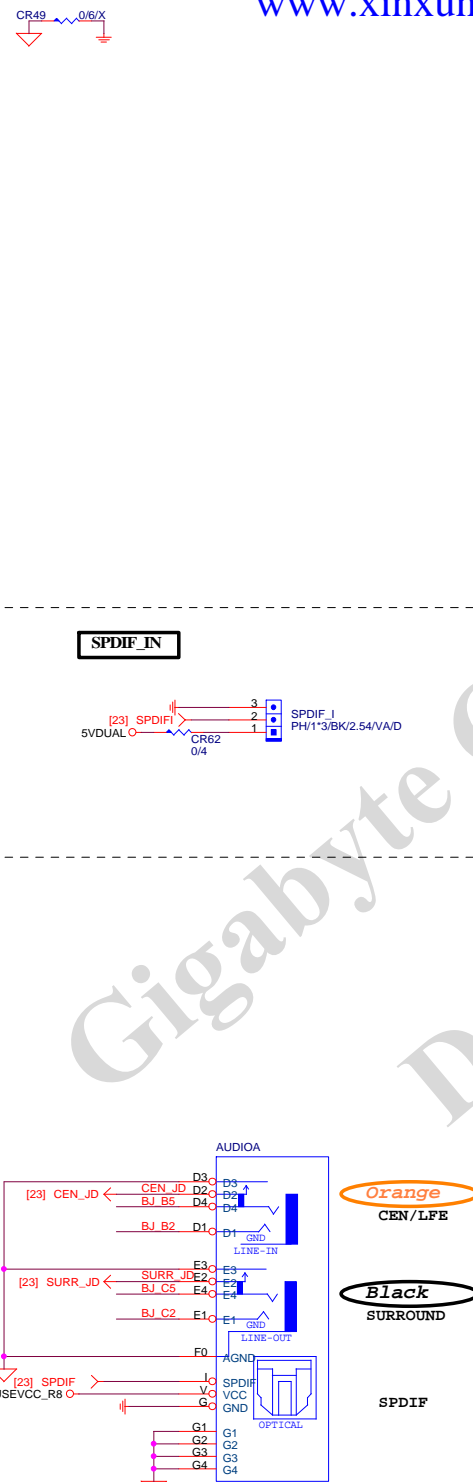
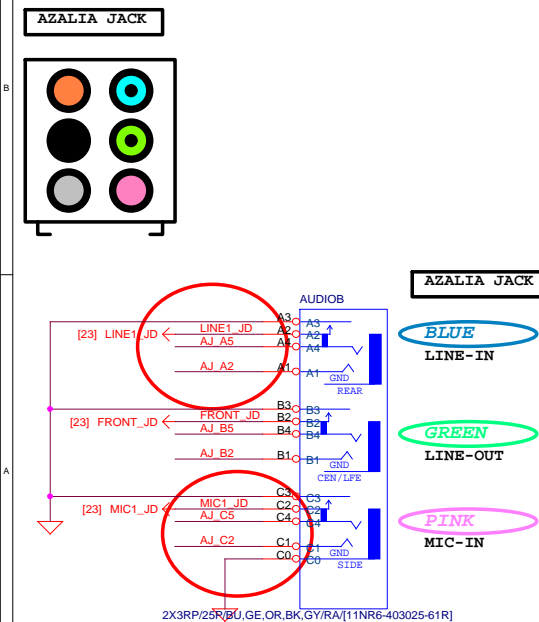
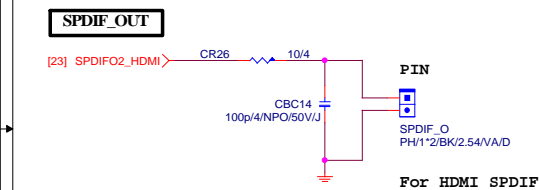
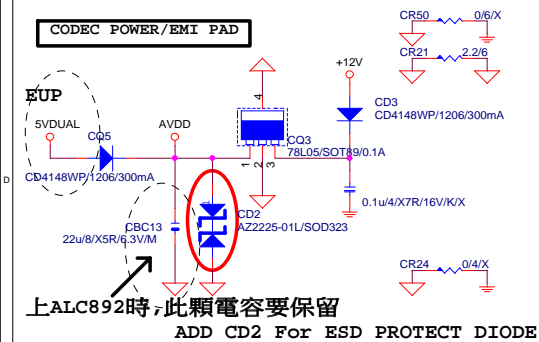


	ALC662	ALC887-VD2	ALC889	VT1708S	VT1708SCE
CR65	X	X	O	O	X
CR64	X	X	X	X	0.1u/4
CBC35	O	O	X	X	O
CR44/CBC6	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P
CR31	X	O	O	O	O
CR30	O	X	X	X	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1
CR34	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CBC39/CBC40	N/A	N/A	N/A	100P/4	100P/4
CR6/CR7/CR54/CR58	22K/4	22K/4	22K/4	10K/4	10K/4
CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	O	O	X	X	O
CD2/CD3/CQ3/CQ5	X	X	O	O	X
CR1/CR14/CR17/CR22	62 ohm	62 ohm	62 ohm	75 ohm	1K ohm



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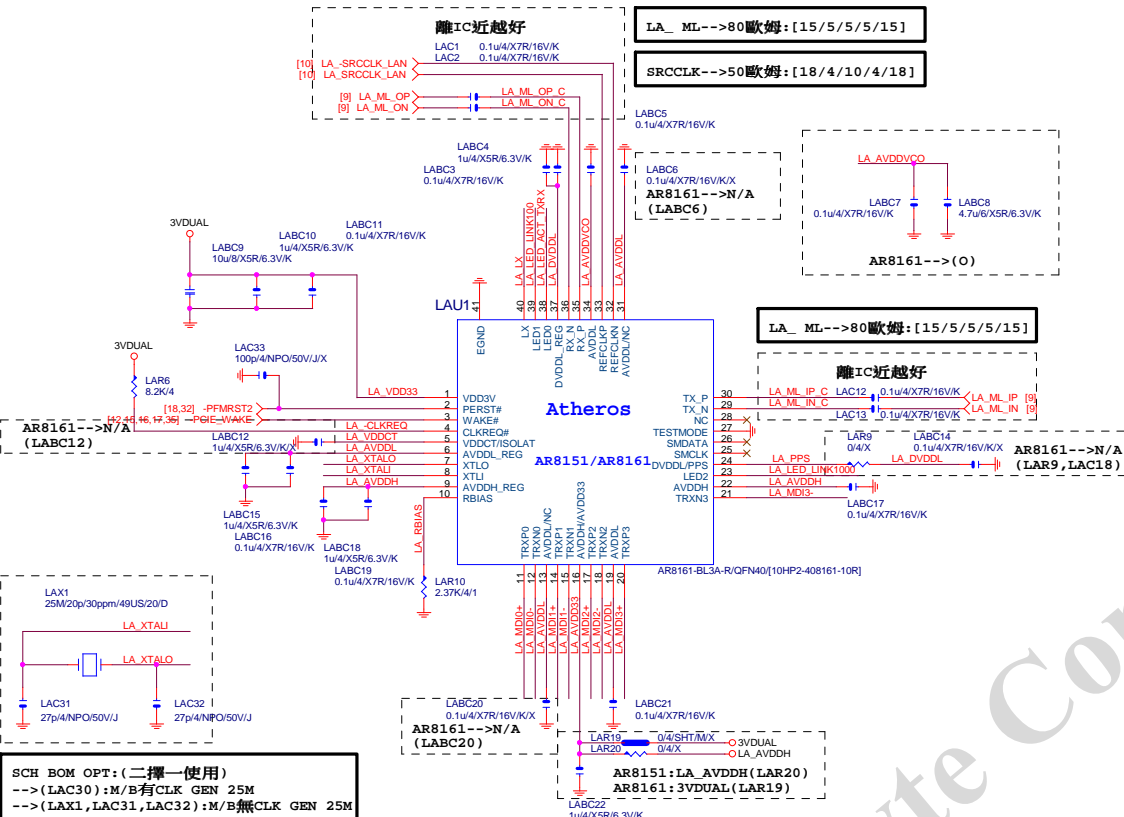
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HD AUDIO			
Size	Document Number	Rev	
Custom	GA-Z77MX-D3H TH	1.1	
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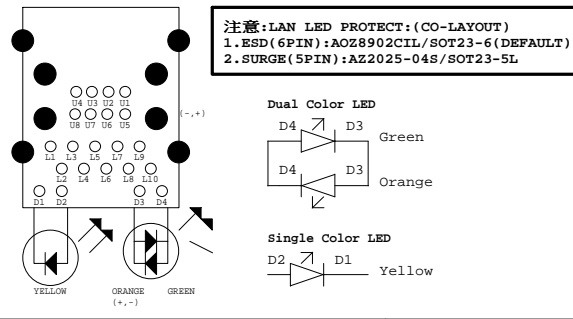
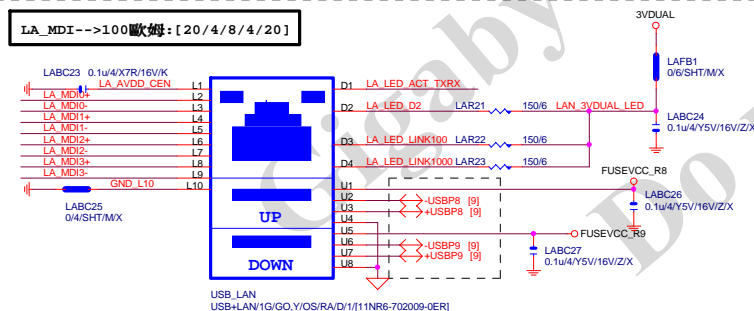
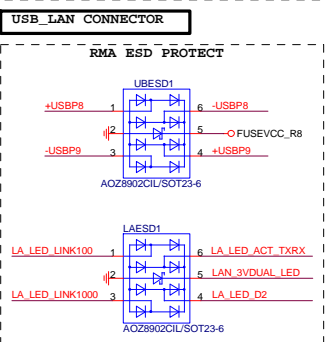
LAN:AR8151/AR8161

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



SCH BOM OPT: (二擇一使用)
-->(LAC30): M/B有CLK GEN 25M
-->(LAX1, LAC31, LAC32): M/B無CLK GEN 25M

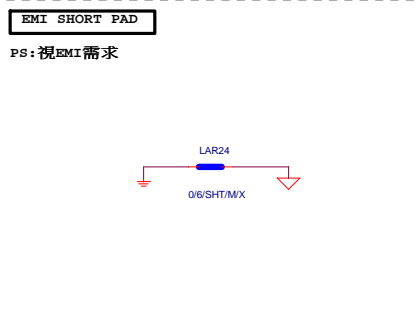
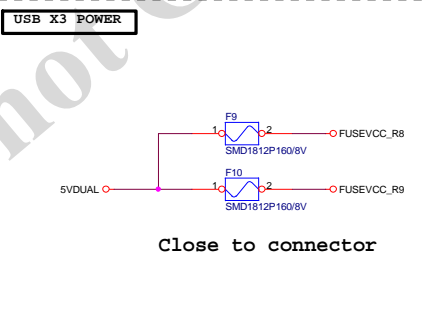


注意: USB PORT (目前: 暫代 6, 7 PORT)
USB-->90歐姆: [15/4.5/7.5/4.5/15]

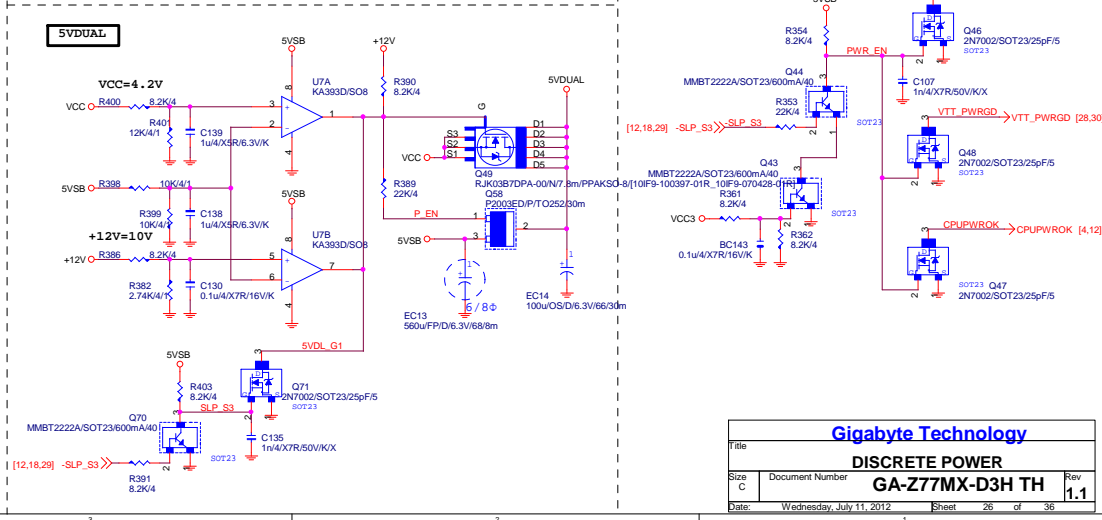
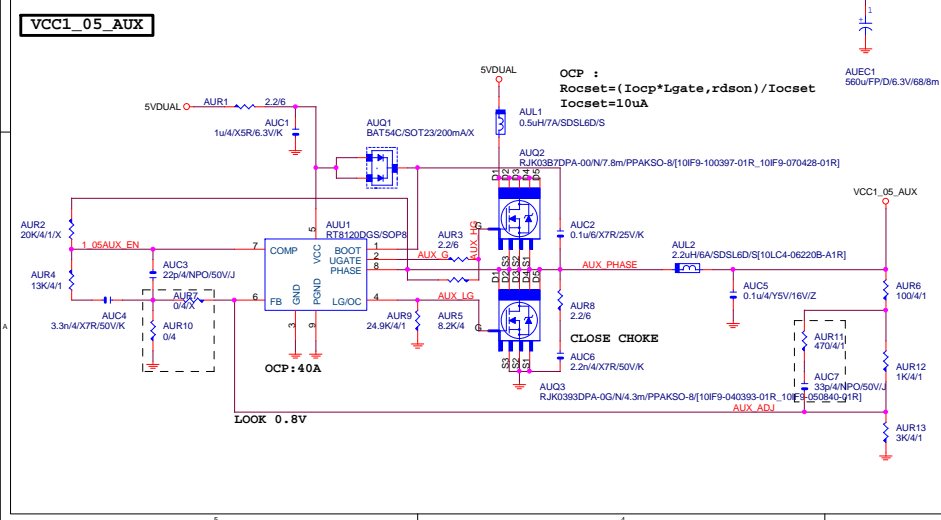
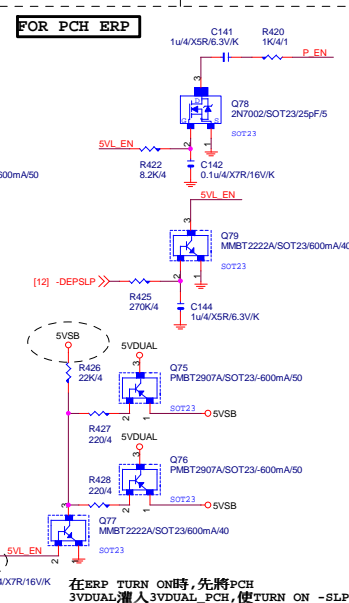
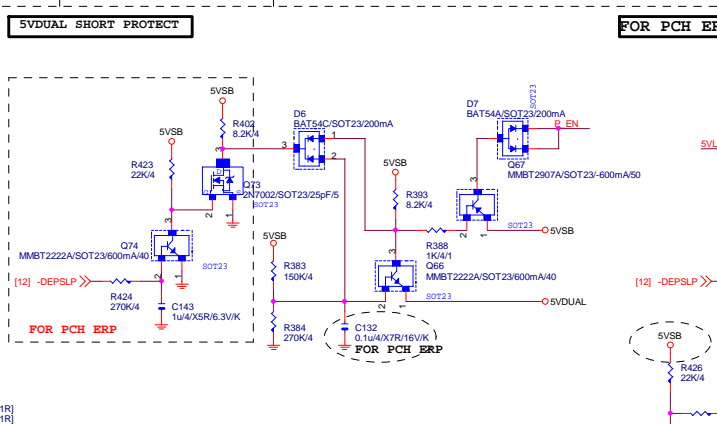
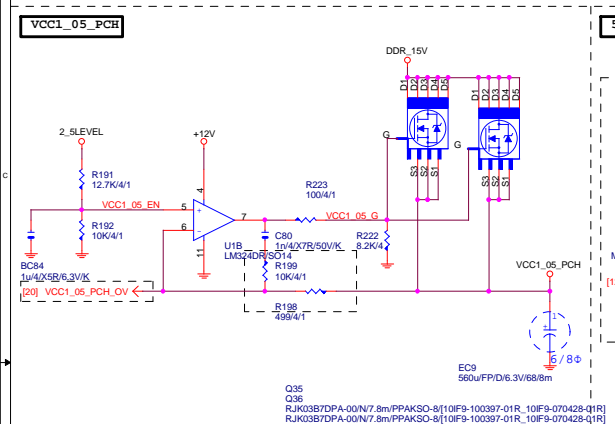
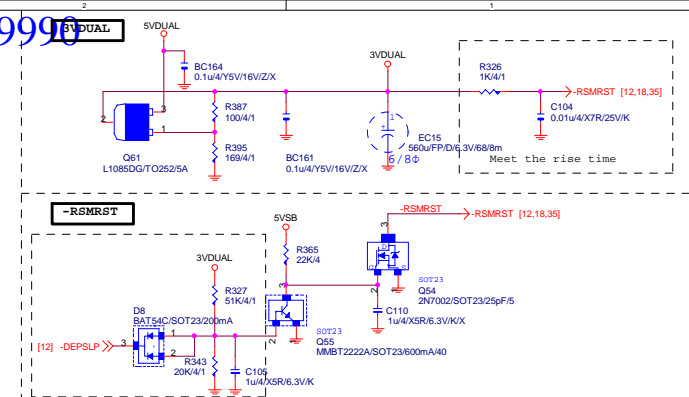
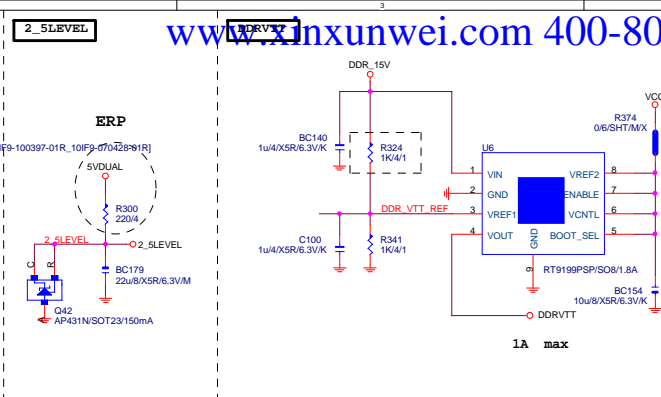
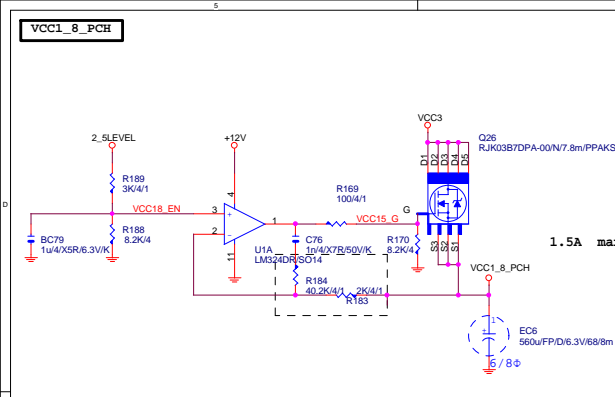
料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN (8 core)	FOXCONN
11NR6-702009-92R	1G LAN (8 core)	UDE
11NR6-702009-11R	1G LAN (12core/RED)	UDE
11NR6-702009-12R	1G LAN (8 core/RED)	FOXCONN

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

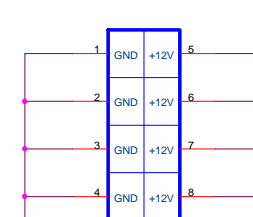
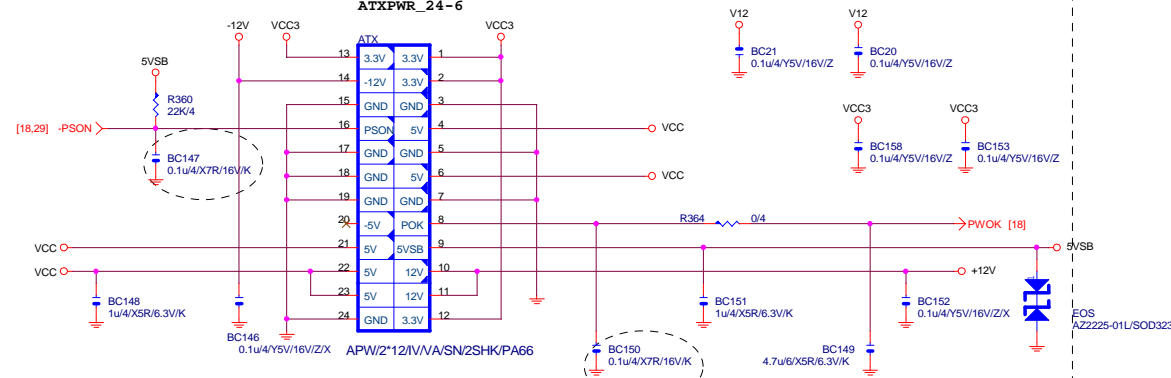


Gigabyte Technology			
File			
ARTHEROS AR8151/AR8161			
Size	Document Number	Rev	
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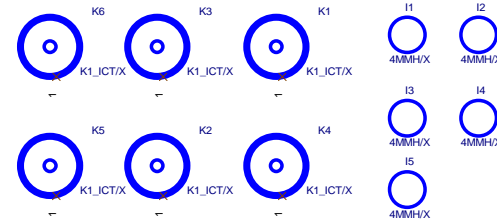
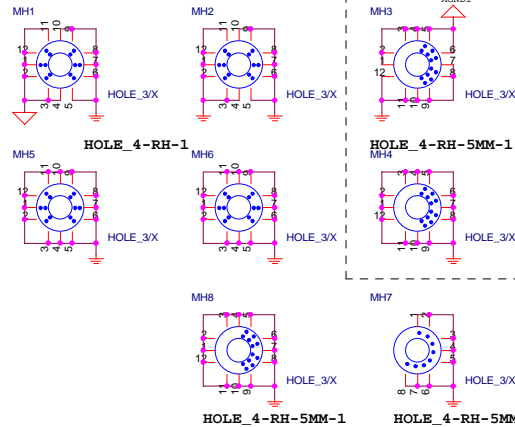


ATXX24 POWER CONNECTOR

ATXPWR_24-6

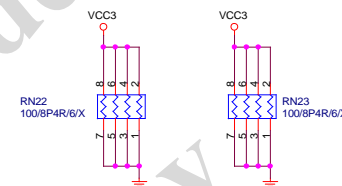


ATXPW2X4-6

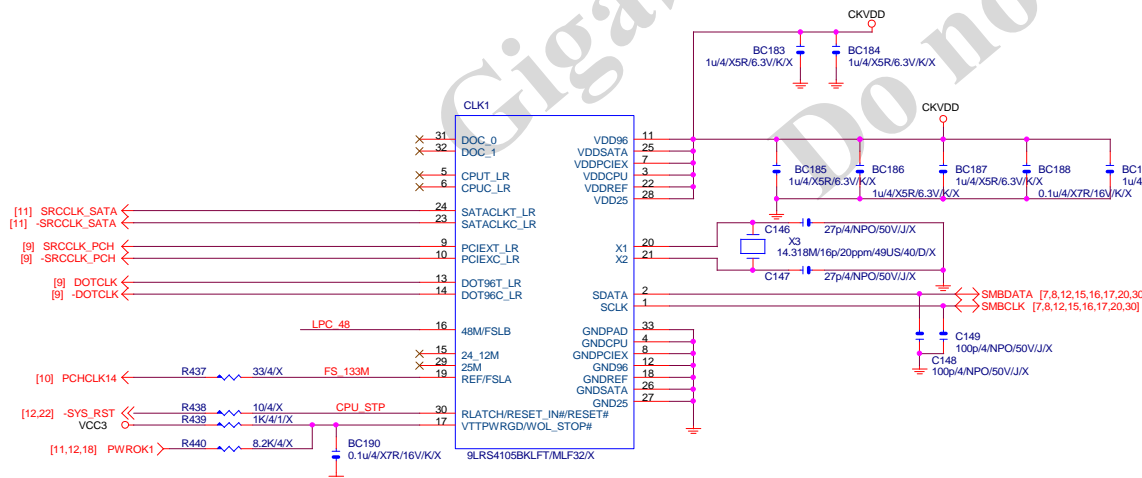


To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD

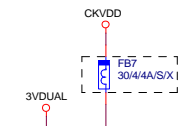
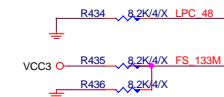


CLK GEN



CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M



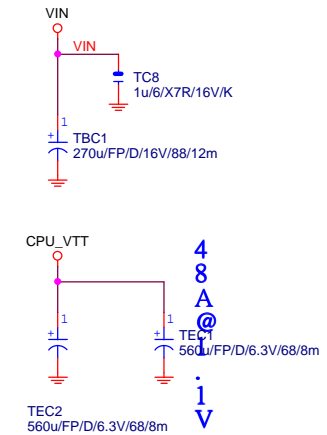
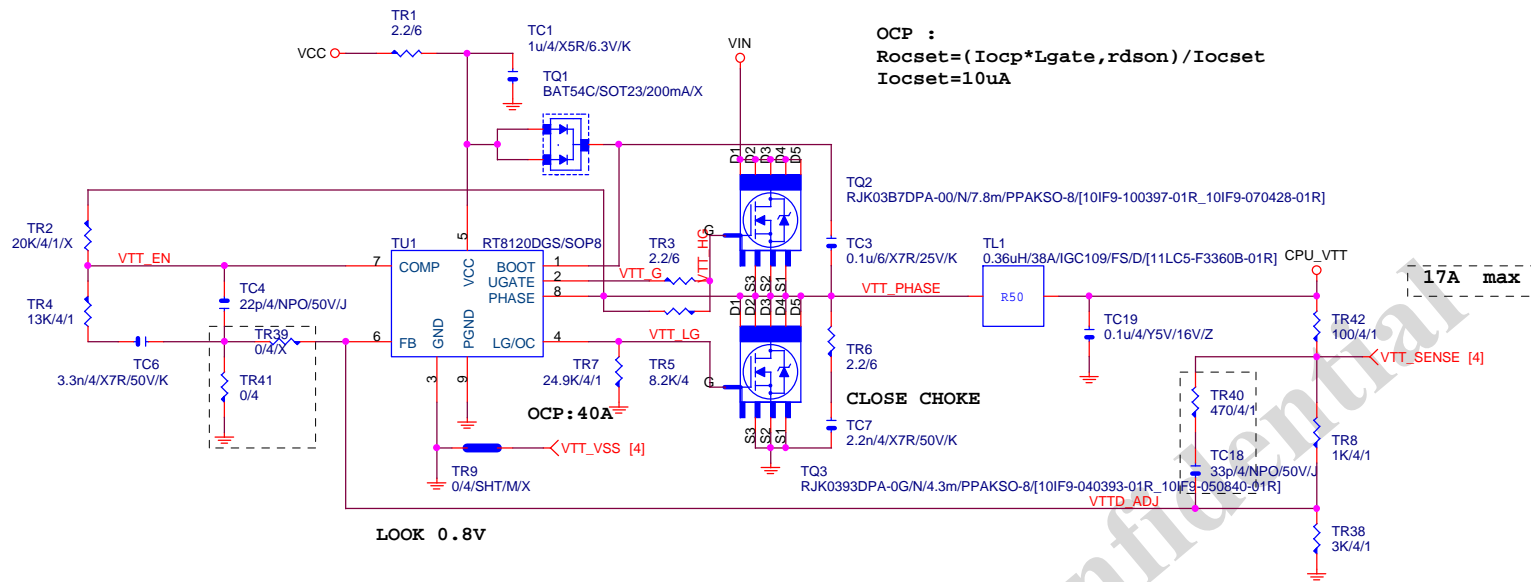
Gigabyte Technology

ATX CONNECTOR

GA-Z77MX-D3H TH

Rev 1.1

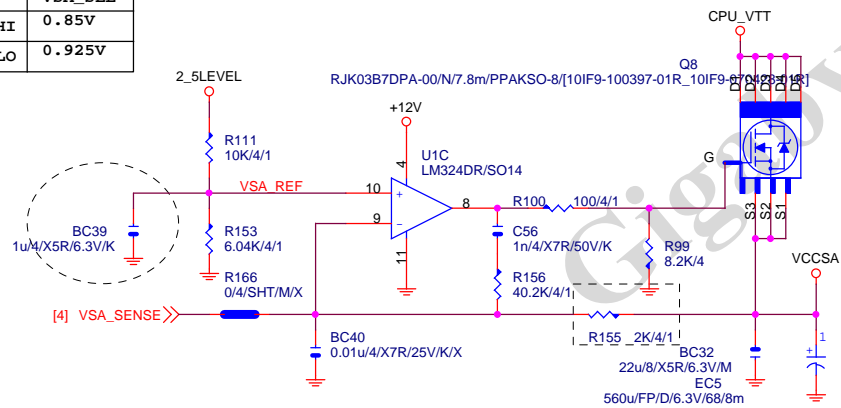
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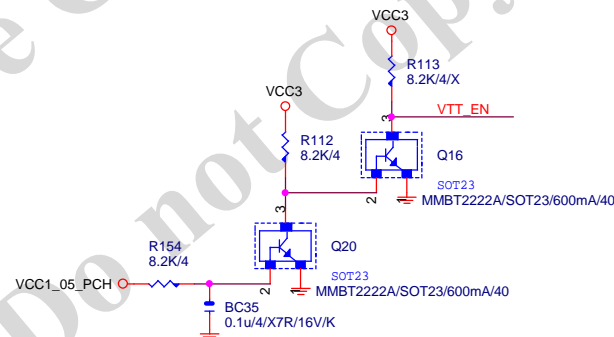
VCCSA

PDG 0.8

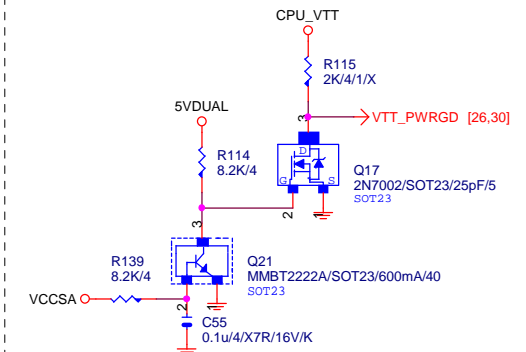
	VSA_SEL
HI	0.85V
LO	0.925V



CPU_VTT	PWR	SEQ
0.70	0.80	0.90
0.60	0.70	0.80
0.50	0.60	0.70
0.40	0.50	0.60
0.30	0.40	0.50
0.20	0.30	0.40
0.10	0.20	0.30
0.00	0.10	0.20



VTT_PWRGD

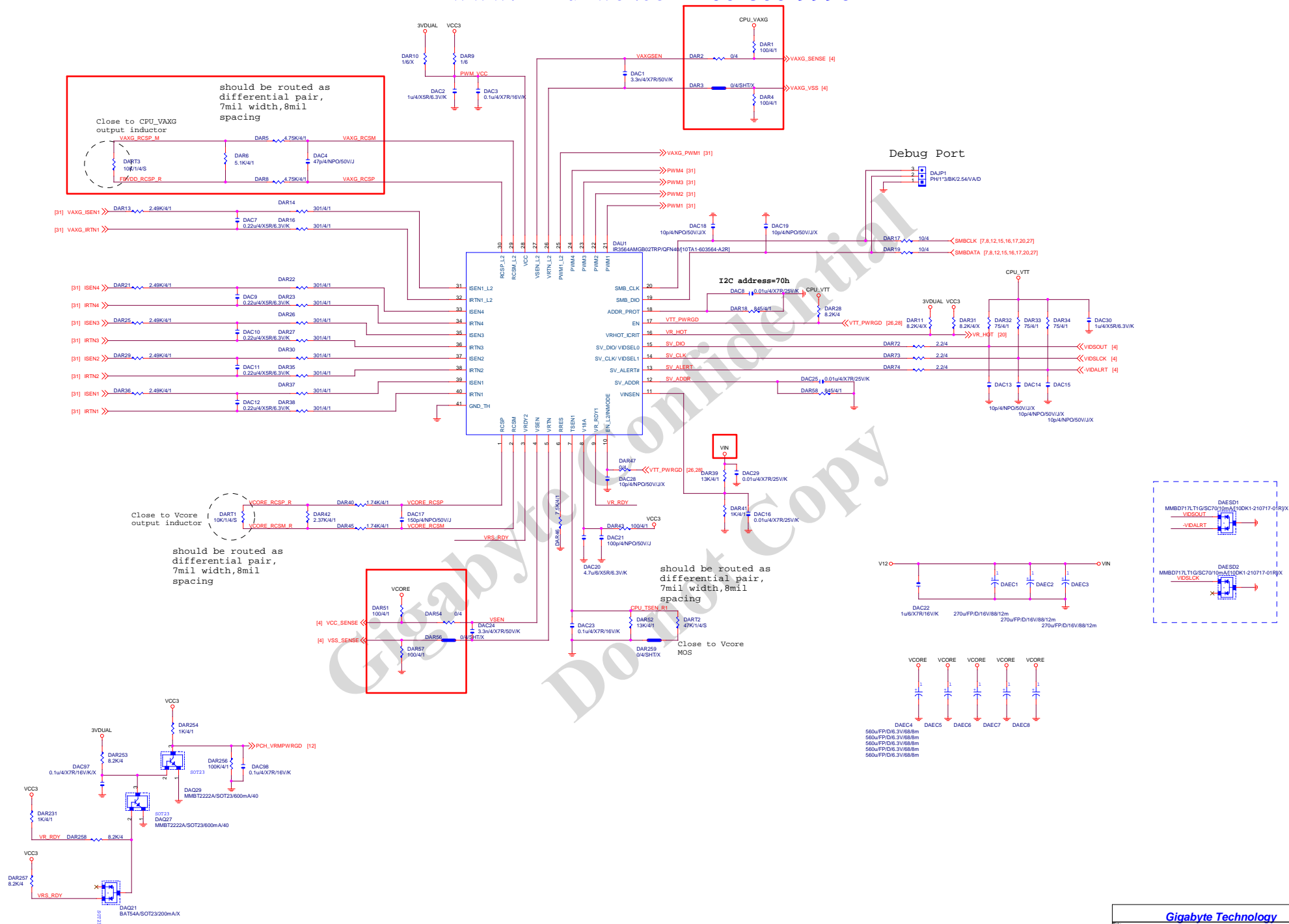


GIGABYTE™

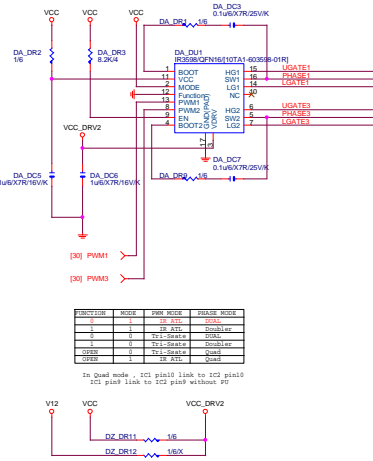
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IR3570_CPU_VTT & DDR_1			
Size	Document Number	Rev	
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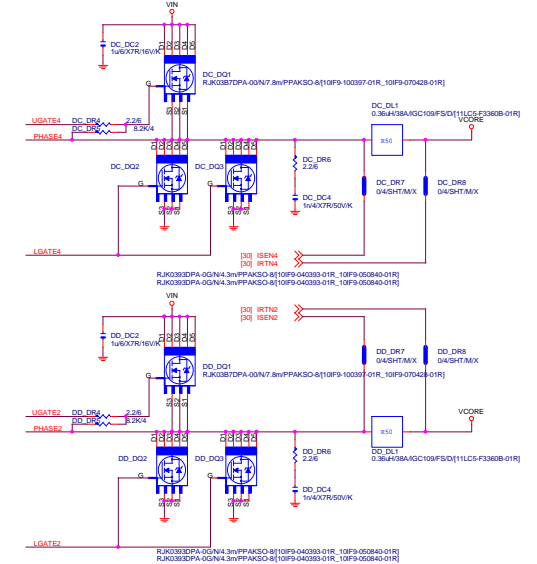
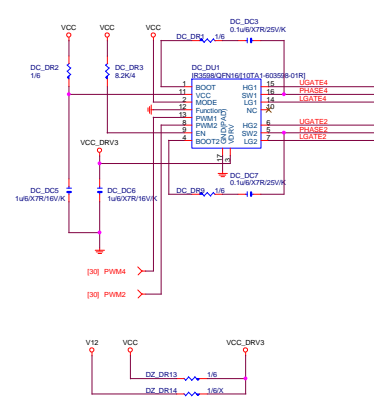
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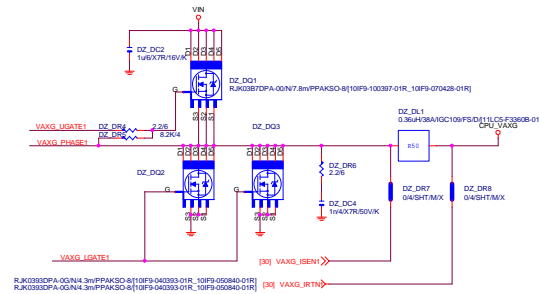
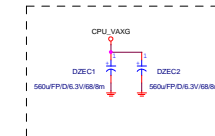
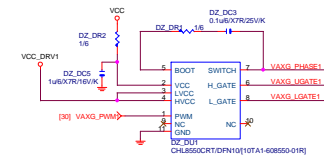
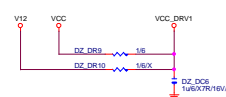
VCORE Phase 1,3



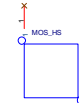
VCORE Phase 4,2



VAXG Phase

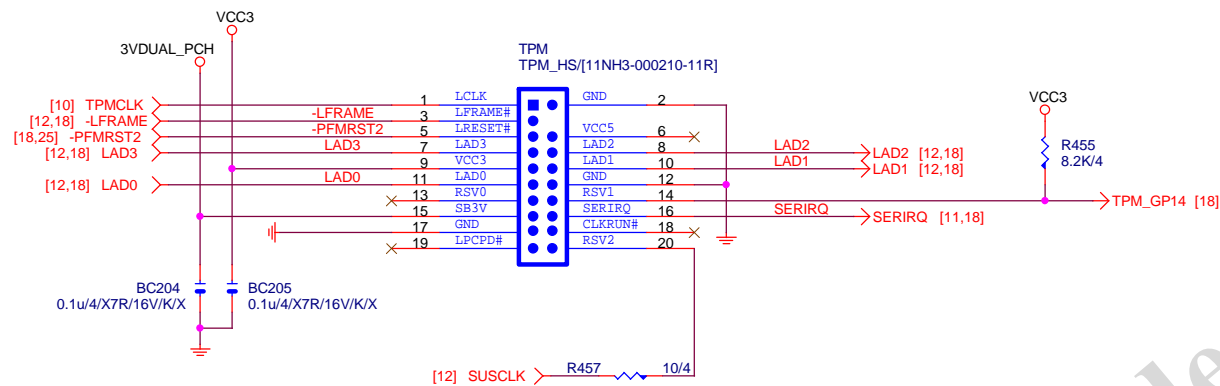


MOS HEATSINK



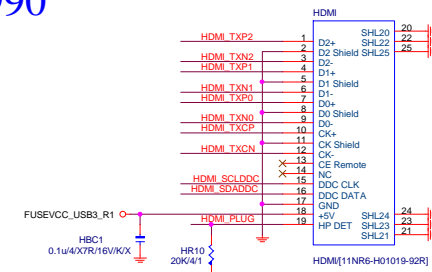
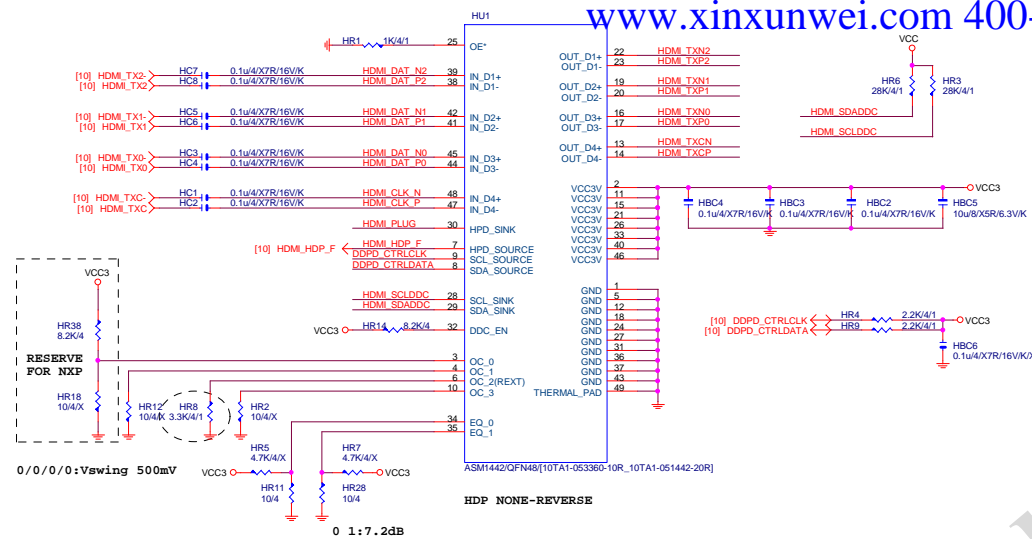
MOSHSINK-DRMOS-7UD3H

TPM

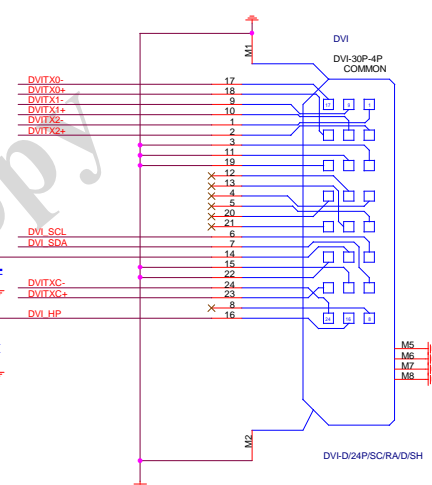
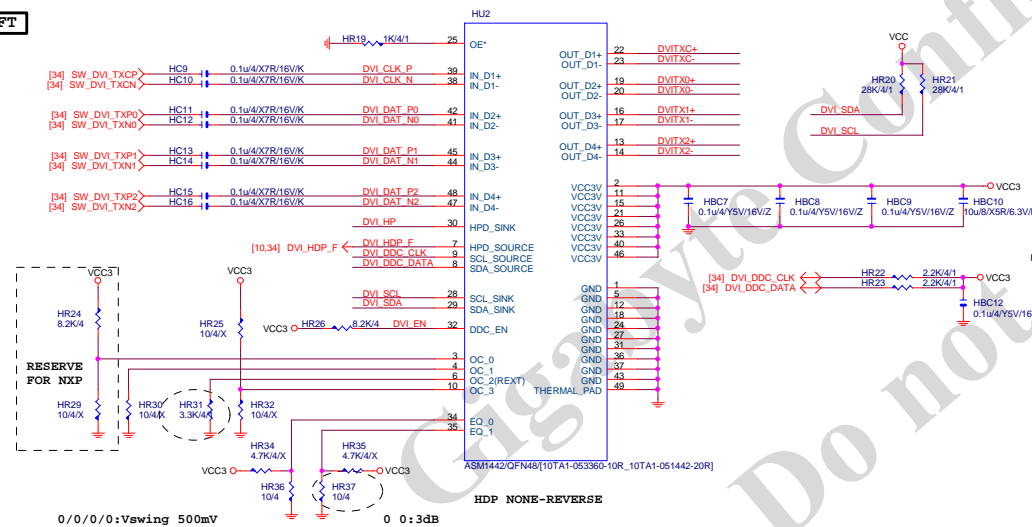


LPT PORT

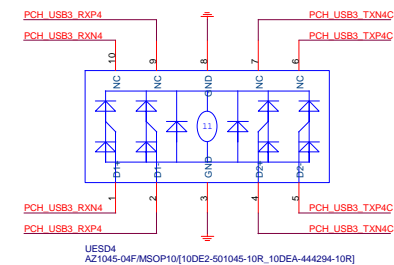
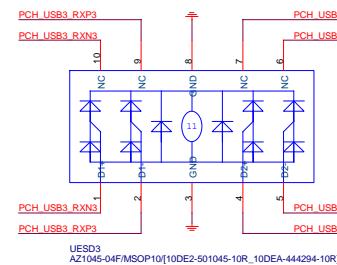
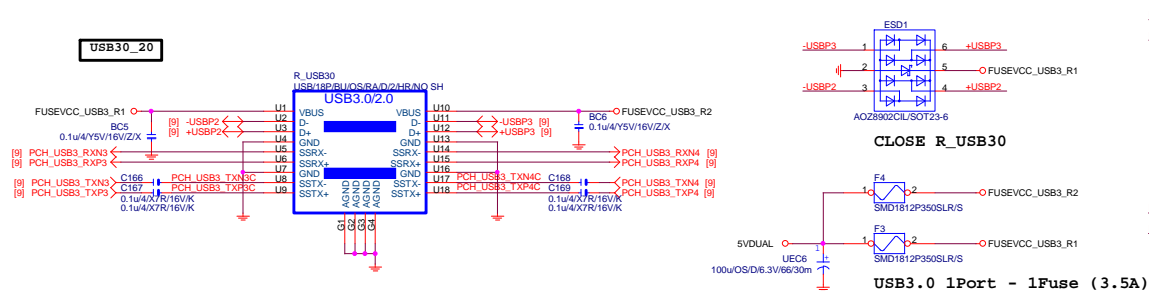
Gigabyte Technology			
Title			
LPT, TPM			
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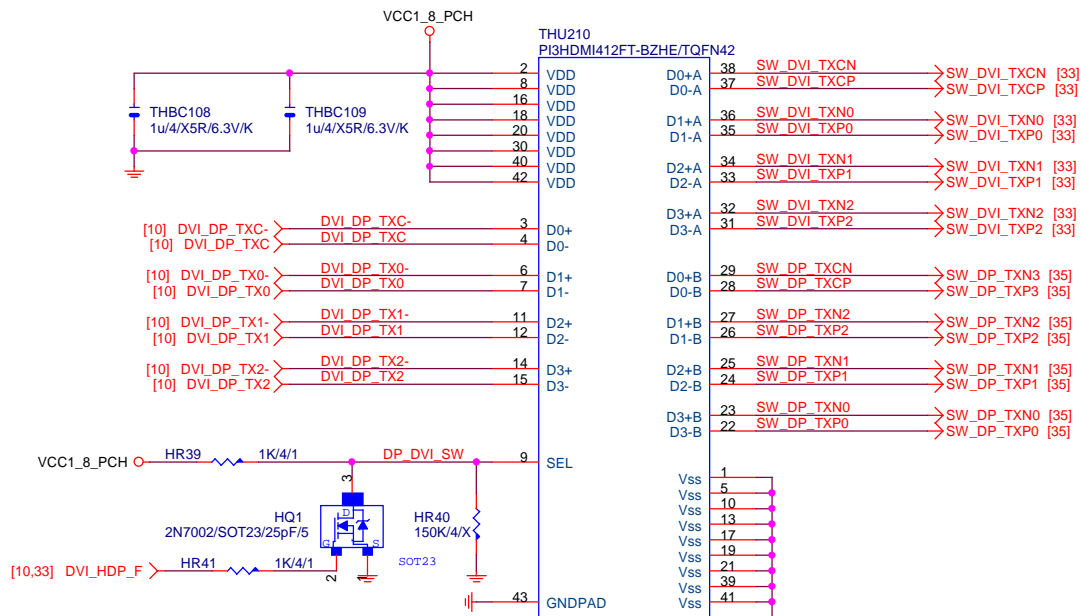
DVI LEVEL SHIFT



USB30_20



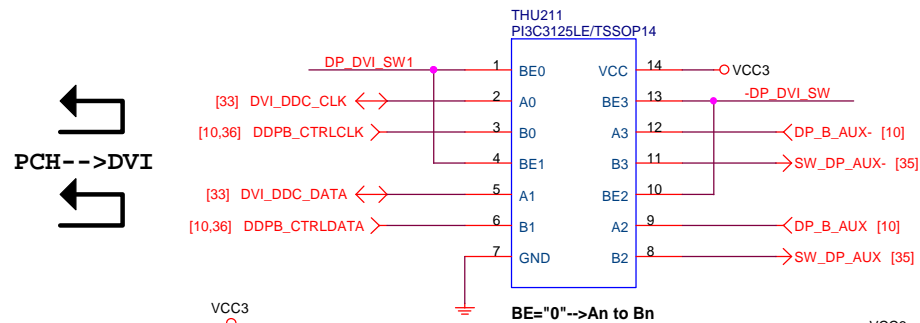
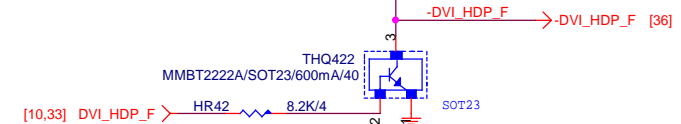
DP & DVI Switch



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

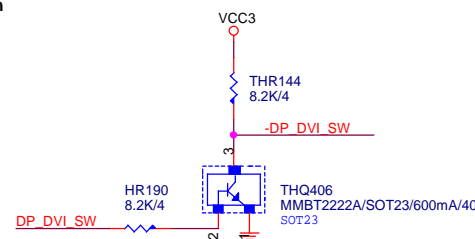
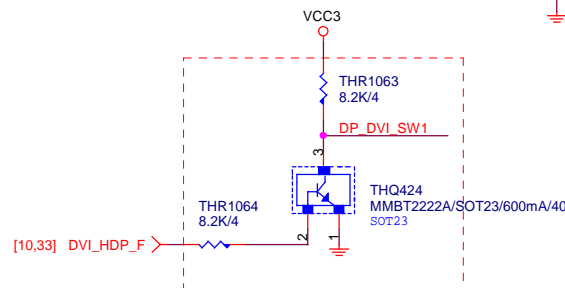
Priority: DVI > mDP

DVI

Thunderbolt
(DEFAULT)

BE="0"-->An to Bn

PCH-->TB (B)



Gigabyte Technology

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