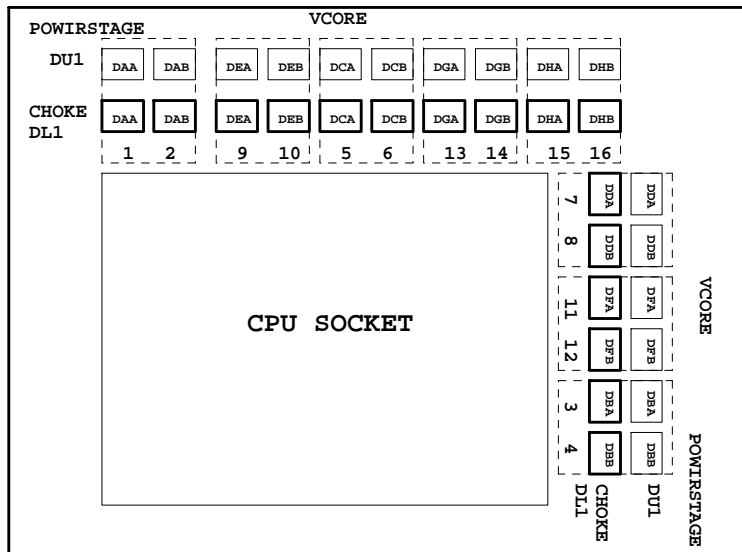


01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	DP / DVI / HDMI
15	PCI EXPRESS*16/*8 SWITCH
16	PCI EXPRESS*16 SLOT
17	PCI EXPRESS*8 SLOT
18	PCI EXPRESS*4 SLOT
19	PCI EXPRESS*1 SLOTS X3
20	ITE 8892
21	PCI SLOT 1
22	SATA3 SWITCH
23	USB3_eSATA, KB_USB3
24	Marvell 9172
25	ALC898
26	REAR AUDIO JACK
27	Headphone Audio Amplifier
28	IR3563B PWM Controller
29	IR3553 Power Stage PH_01-04
30	IR3553 Power Stage PH_05-08
31	IR3553 Power Stage PH_09-12
32	IR3553 Power Stage PH_13-16
33	IR3570_DDR PWM Controller
34	IR3598-DDR Driver

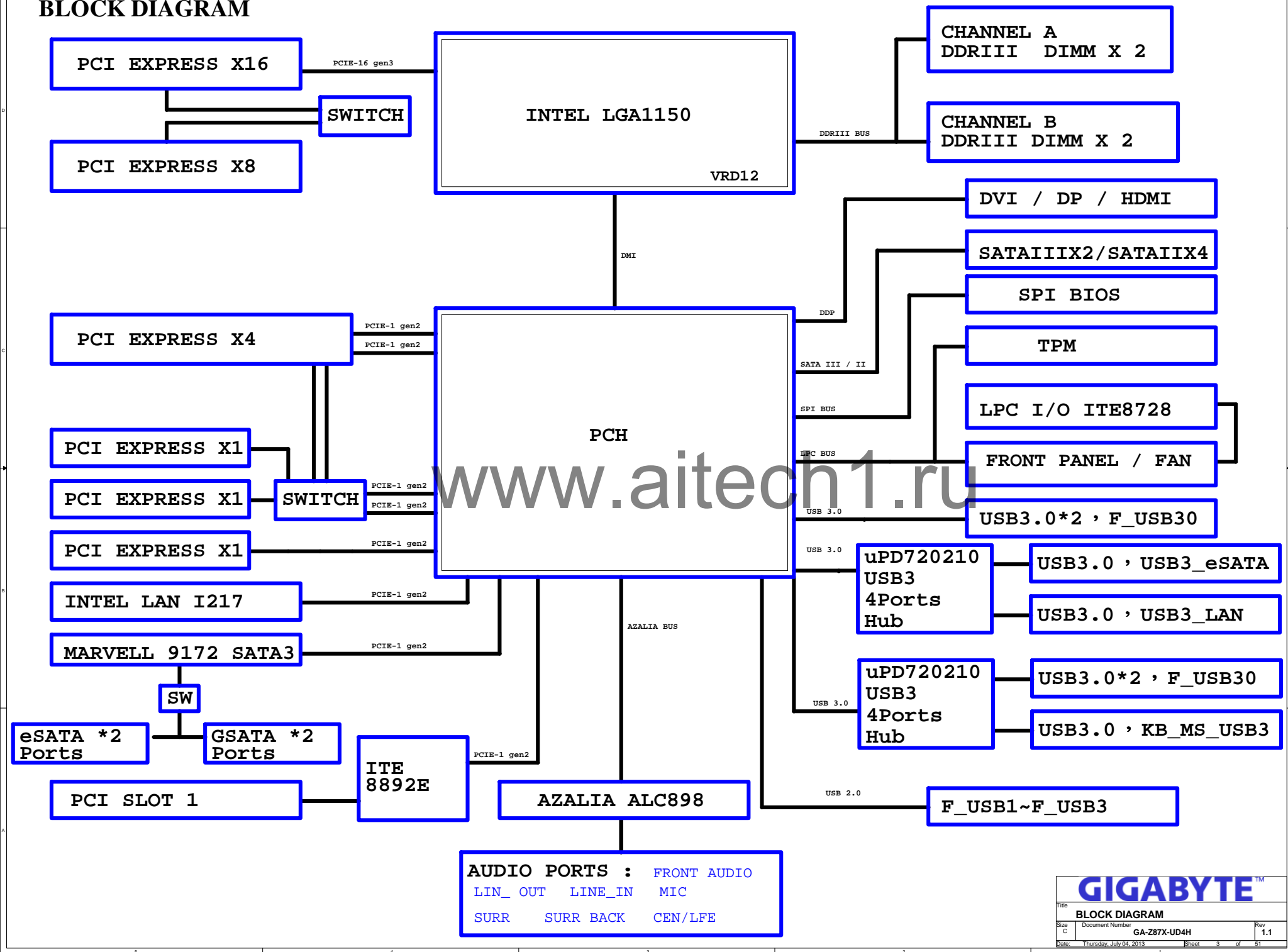
35	DISCRETE POWER I
36	DISCRETE POWER II
37	INTEL LAN I217
38	uPD720210 USB3 4Ports Hub-1A
39	uPD720210 USB3 4Ports Hub-1B
40	F_USB 3.0 from PCH
41	F_USB 2.0
42	Dual BIOS
43	ITE8728 LPC I/O
44	FAN CTRL, H/W Monitor
45	F_PANEL , COM, PROCHOT#
46	Port80, O.V., Voltage Measure
47	ATX POWER, CLOCK GEN
48	TABLE LIST
49	uPD720210 USB3 4Ports Hub-2A
50	uPD720210 USB3 4Ports Hub-2b
51	VCC1_05_ME, VCC3_ME

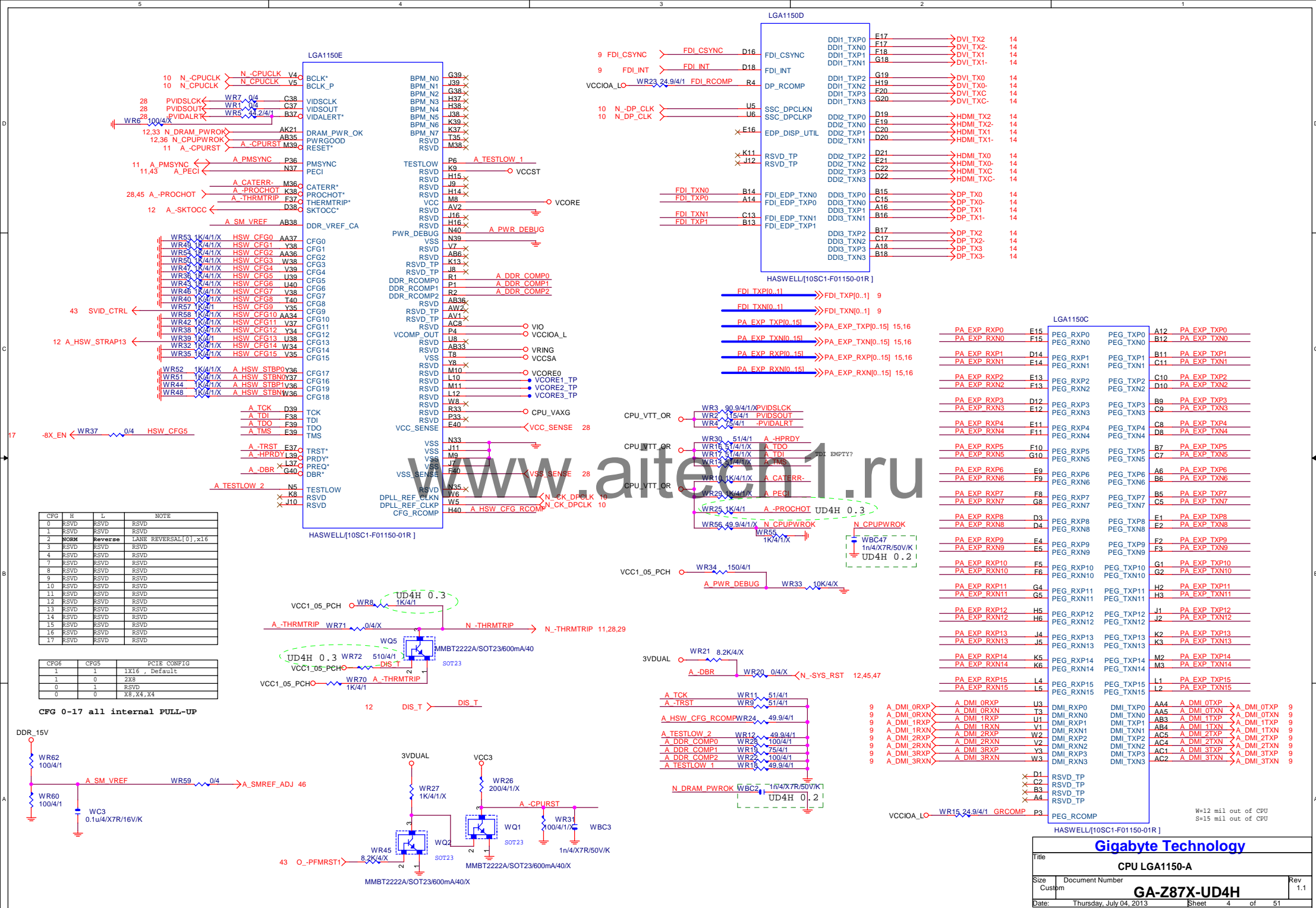


Gigabyte Technology

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BLOCK DIAGRAM



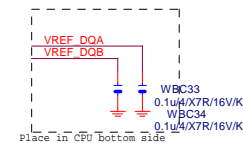
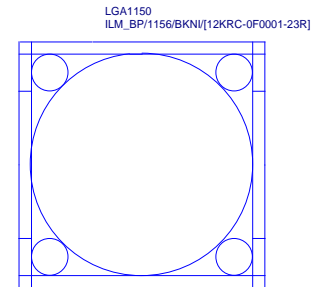


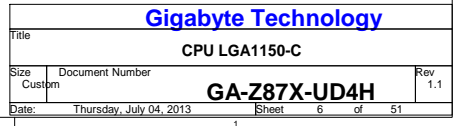
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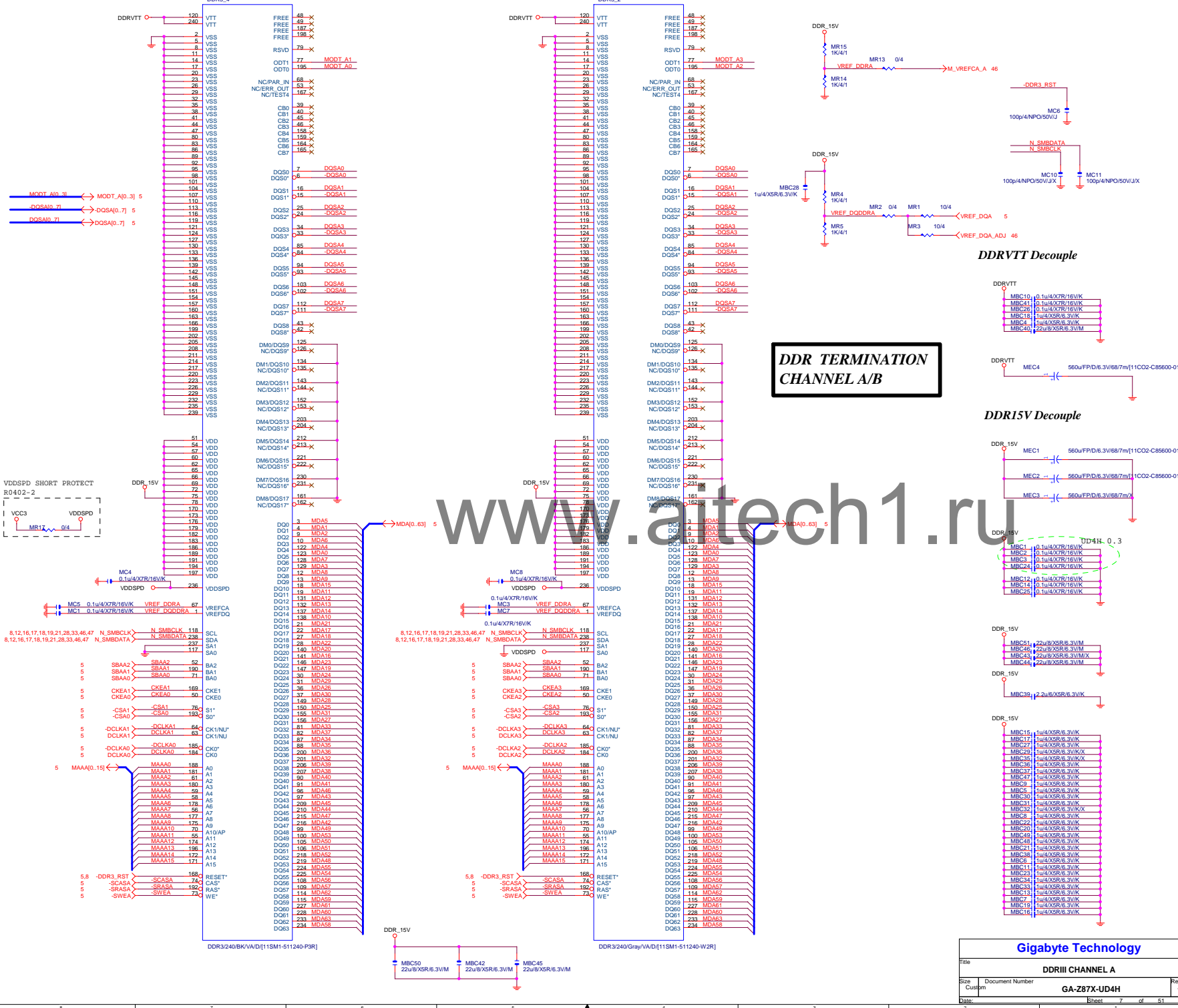
HASWELL/[10SC1-F01150-01R]

		LGA1150B			
MAAB0	AL19	DDR1_MAO	DDR1_D00	AE34	MD80
MAAB1	AK23	DDR1_MAI	DDR1_D01	AE35	MD81
MAAB2	AM22	DDR1_MA2	DDR1_D02	AG35	MD82
MAAB3	AM23	DDR1_MA3	DDR1_D03	AH35	MD83
MAAB4	AL24	DDR1_MA4	DDR1_D04	AD34	MD84
MAAB5	AL23	DDR1_MA5	DDR1_D05	AD35	MD85
MAAB6	AY24	DDR1_MA6	DDR1_D06	AG34	MD86
MAAB7	AV25	DDR1_MA7	DDR1_D07	AH24	MD87
MAAB8	AW25	DDR1_MA8	DDR1_D08	AL34	MD88
MAAB9	AW25	DDR1_MA9	DDR1_D09	AL35	MD89
MAAB10	AP18	DDR1_MA10	DDR1_D010	AK31	MD90
MAAB11	AV26	DDR1_MA11	DDR1_D011	AK31	MD91
MAAB12	AV26	DDR1_MA12	DDR1_D012	AK34	MD92
MAAB13	AR15	DDR1_MA13	DDR1_D013	AK35	MD93
MAAB14	AV27	DDR1_MA14	DDR1_D014	AK32	MD94
MAAB15	AY28	DDR1_MA15	DDR1_D015	AL32	MD95
			DDR1_D016	AN34	MD96
MODT_B0	AM17	DDR1_ODT0	DDR1_D017	AP34	MD97
MODT_B1	AL16	DDR1_ODT1	DDR1_D018	AN31	MD99
MODT_B2	AM16	DDR1_ODT2	DDR1_D019	AP31	MD93
MODT_B3	AK15	DDR1_ODT3	DDR1_D020	AN35	MD90
			DDR1_D021	AP35	MD96
			DDR1_D022	AN32	MD98
	AM26	DDR1_EC00	DDR1_D023	AP32	MD92
	AM25	DDR1_EC01	DDR1_D024	AM28	MD28
	AP25	DDR1_EC02	DDR1_D025	AR29	MD27
	AL26	DDR1_EC03	DDR1_D026	AR28	MD30
	AP26	DDR1_EC04	DDR1_D027	AL29	MD24
	AL25	DDR1_EC05	DDR1_D028	AL28	MD29
	AR26	DDR1_EC06	DDR1_D029	AP29	MD26
	AR25	DDR1_EC07	DDR1_D030	AP28	MD31
		DDR1_D031	DDR1_D032	AP12	MD32
SBA80	AK17	DDR1_BA0	DDR1_D033	AP12	MD33
SBA87	AL18	DDR1_BA1	DDR1_D034	AL12	MD34
SBA82	AW28	DDR1_BA2	DDR1_D035	AL13	MD35
			DDR1_D036	AP13	MD37
CKE80	AW29	DDR1_CKE0	DDR1_D037	AM13	MD38
CKE81	AY29	DDR1_CKE1	DDR1_D038	AM12	MD39
CKE82	AU28	DDR1_CKE2	DDR1_D039	AR9	MD45
CKE83	AU29	DDR1_CKE3	DDR1_D040	AP9	MD41
			DDR1_D041	AR6	MD47
CS80	AP17	DDR1_CS_N0	DDR1_D042	AP6	MD43
CS81	AN14	DDR1_CS_N1	DDR1_D043	AR10	MD44
CS82	AN17	DDR1_CS_N2	DDR1_D044	AP10	MD40
CS83	AL15	DDR1_CS_N3	DDR1_D045	AR7	MD46
			DDR1_D046	AP7	MD42
			DDR1_D047	AM9	MD53
CLKB80	AM20	DDR1_CLK_P0	DDR1_D048	AL9	MD52
CLKB80	AM21	DDR1_CLK_P1	DDR1_D049	AL6	MD80
CLKB81	AP22	DDR1_CLK_P0	DDR1_D050	AL7	MD85
CLKB81	AN21	DDR1_CLK_N1	DDR1_D051	AM10	MD48
			DDR1_D052	AL10	MD49
CLKB82	AP20	DDR1_CLK_P2	DDR1_D053	AM6	MD86
CLKB82	AN21	DDR1_CLK_N2	DDR1_D054	AM7	MD85
CLKB83	AP19	DDR1_CLK_P3	DDR1_D055	AM7	MD85
CLKB83	AN20	DDR1_CLK_N3	DDR1_D056	AM6	MD81
			DDR1_D057	AM7	MD80
SGAS8	AP16	DDR1_CAS*	DDR1_D058	AM7	MD89
	AL20	DDR1_CAS*	DDR1_D059	AM6	MD83
SWAS8	AM18	DDR1_RAS*	DDR1_D060	AM6	MD86
SWEB	AK16	DDR1_WE*	DDR1_D061	AM6	MD87
			DDR1_D062	AF6	MD88
	AB39	DDR_VREF_DQ0	DDR1_D063	AF7	MD82
	AB40	DDR_VREF_DQ1	DDR1_D064	AF35	DO80
			DDR1_D065	AL33	

HASWELL/[10SC1-F01150-01R]

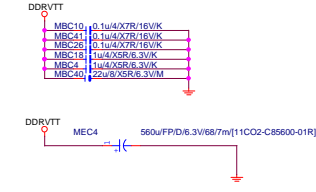




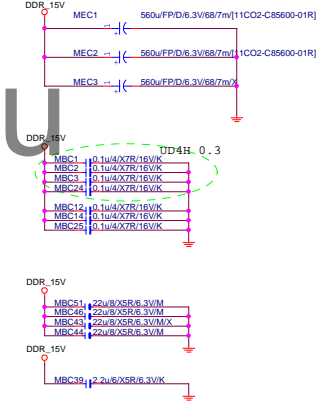


DDR TERMINATION
CHANNEL A/B

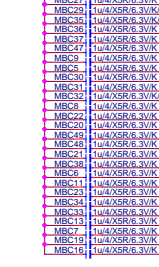
DDRVT Decouple



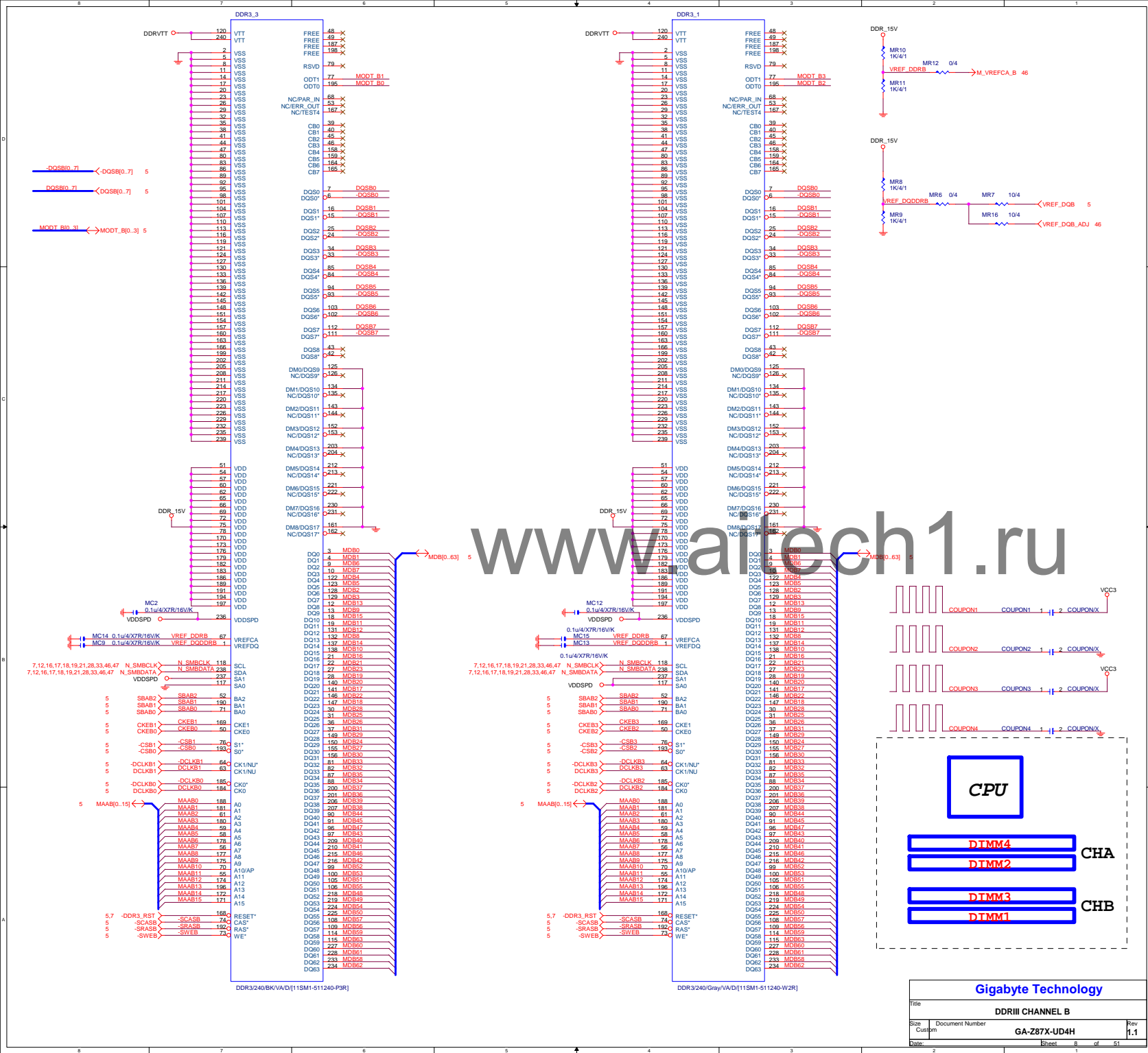
DDR15V Decouple

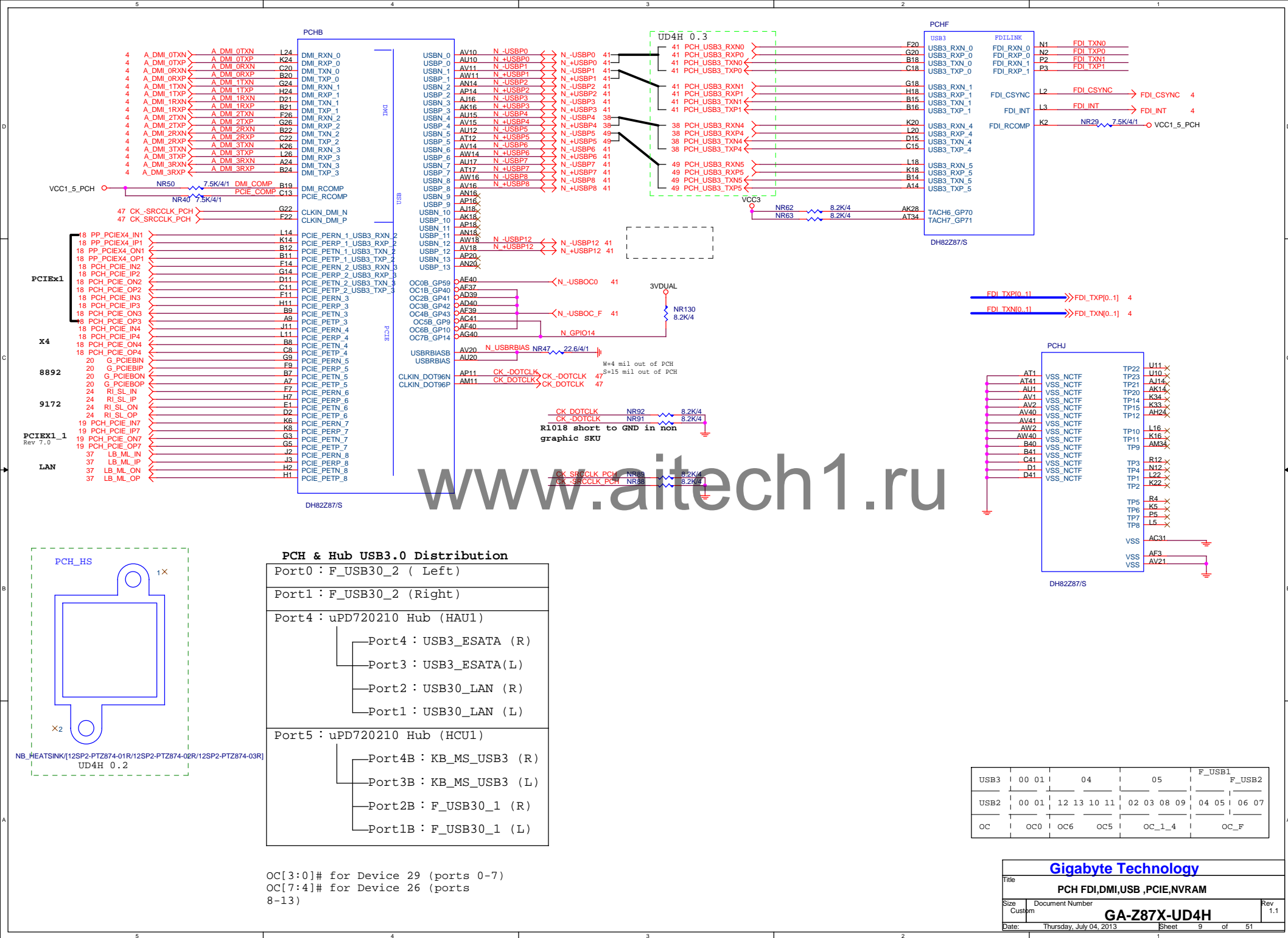


DDR15V

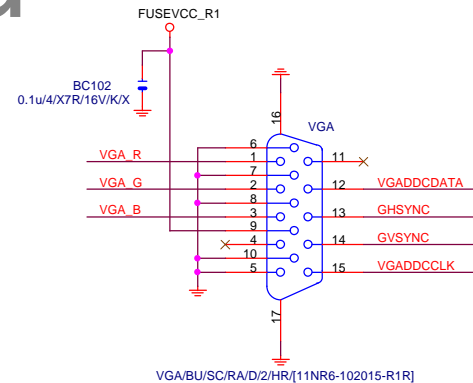
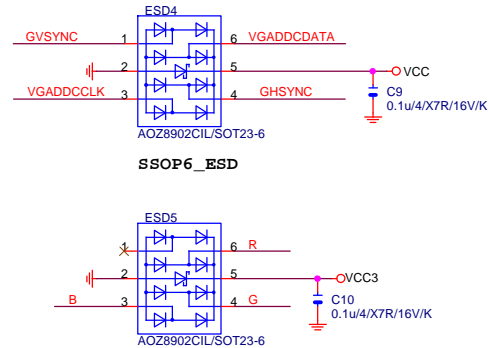
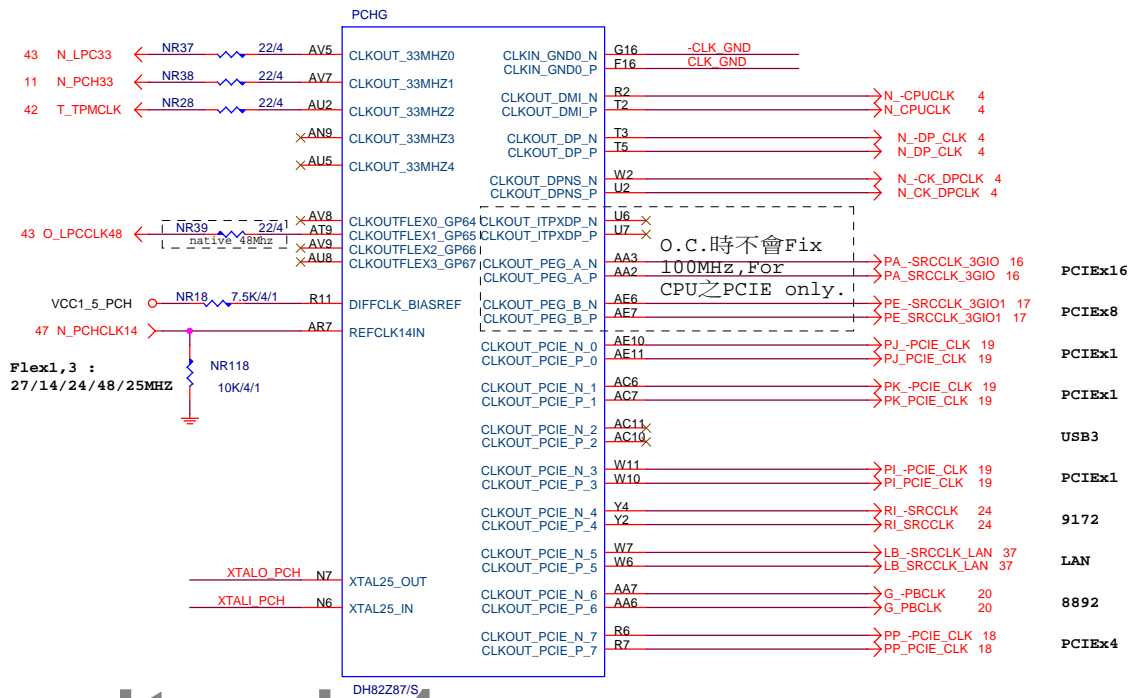
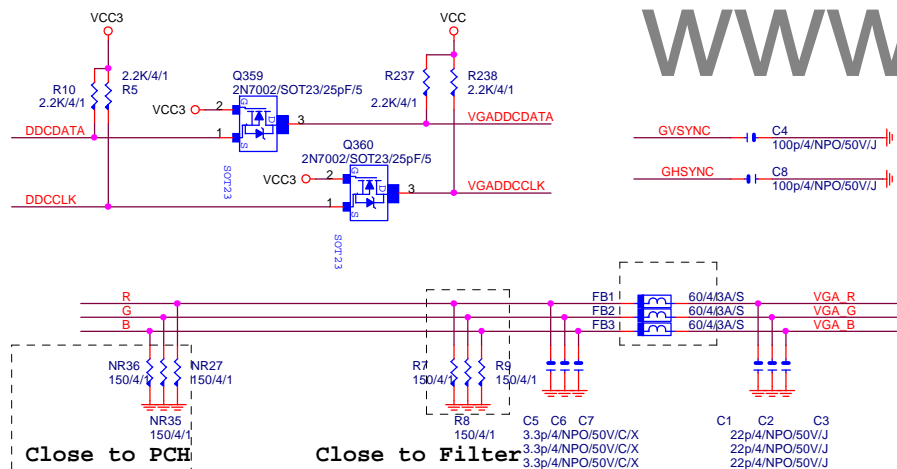
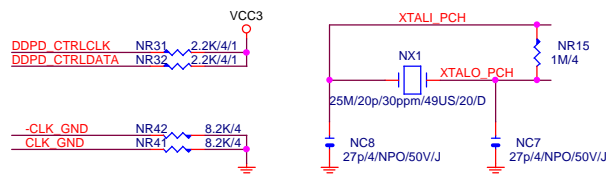
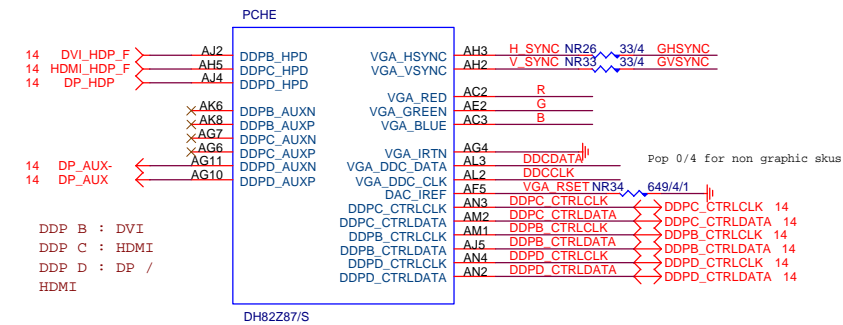


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Title			
DDR3 CHANNEL A			
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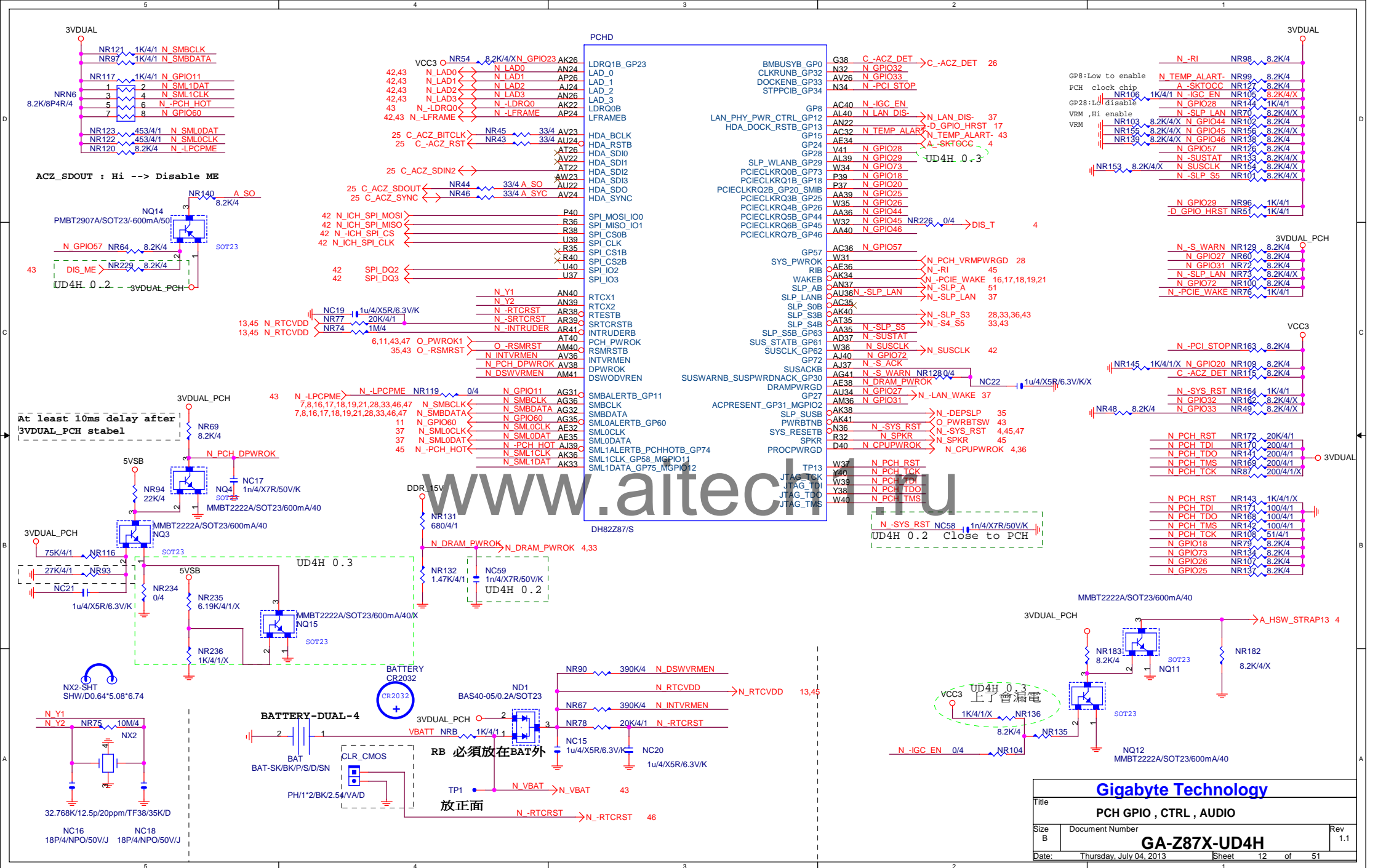


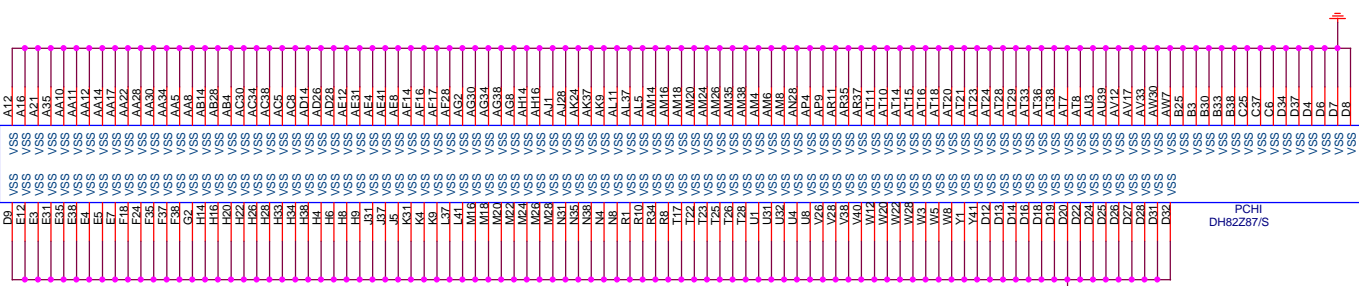
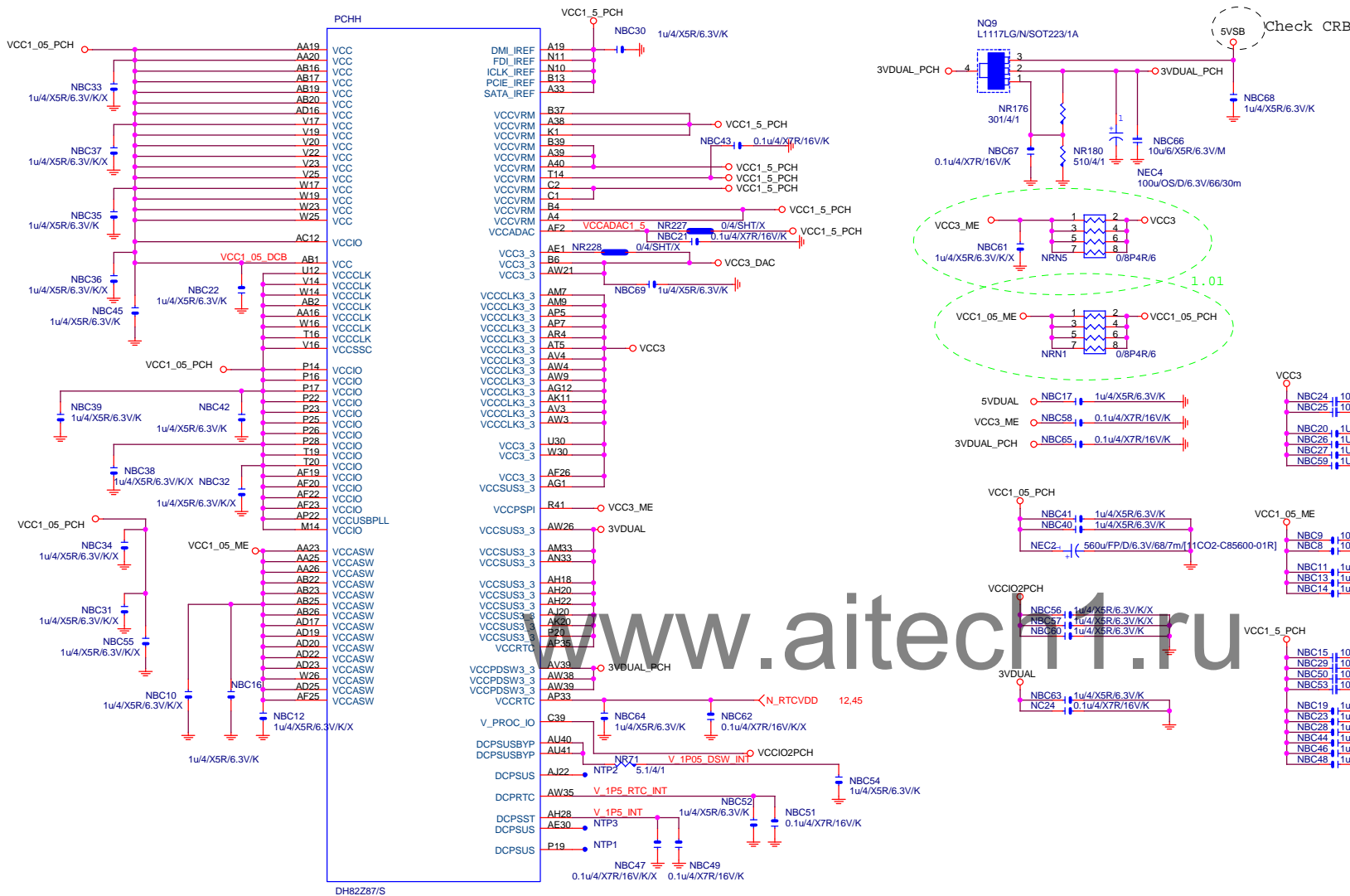
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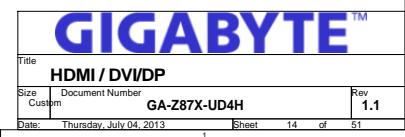
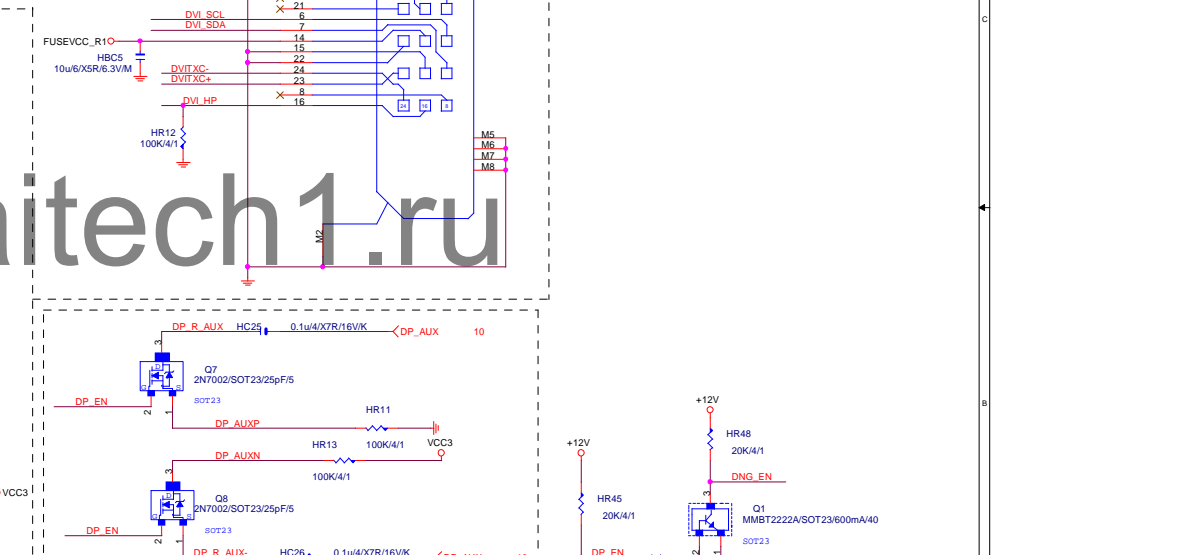
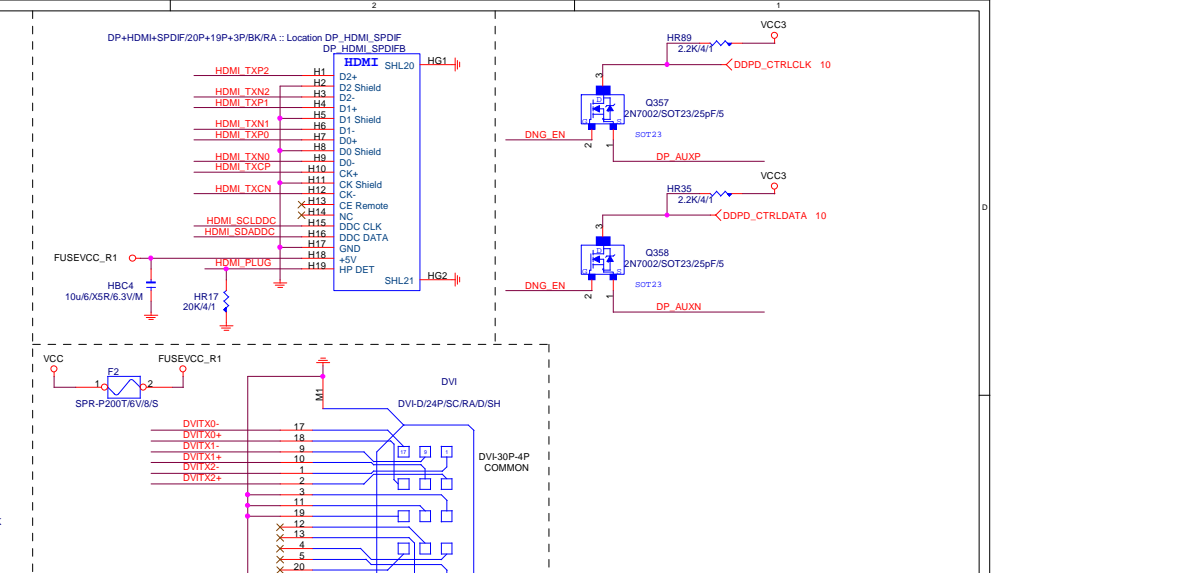


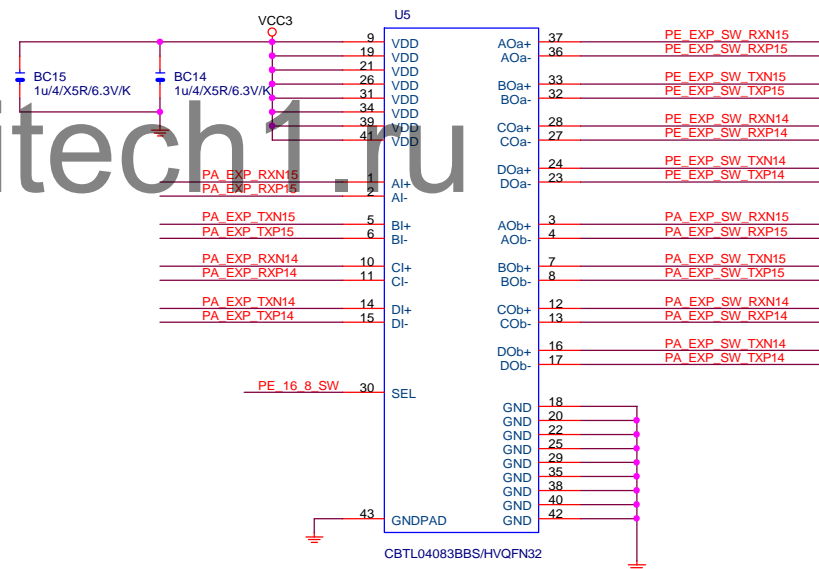
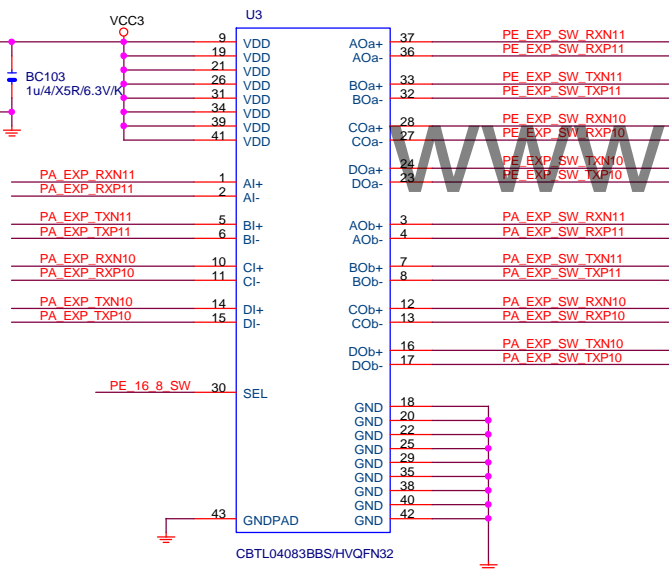
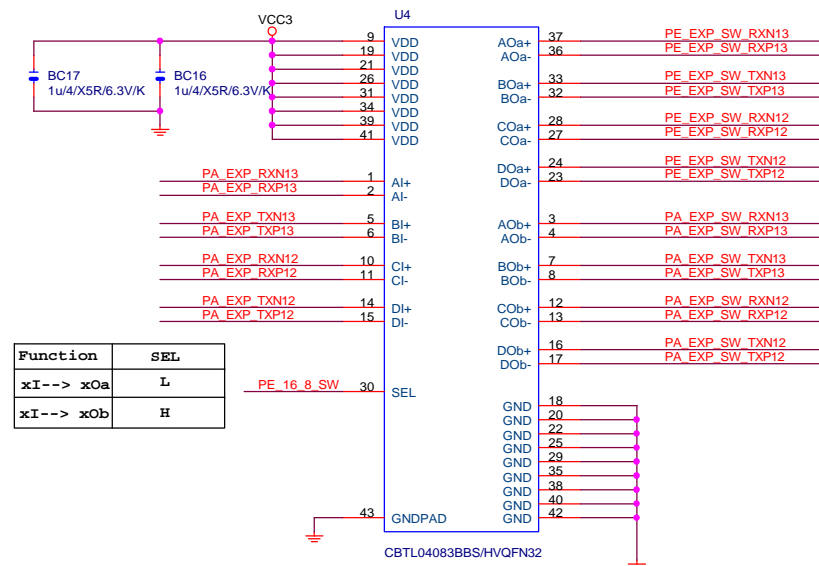
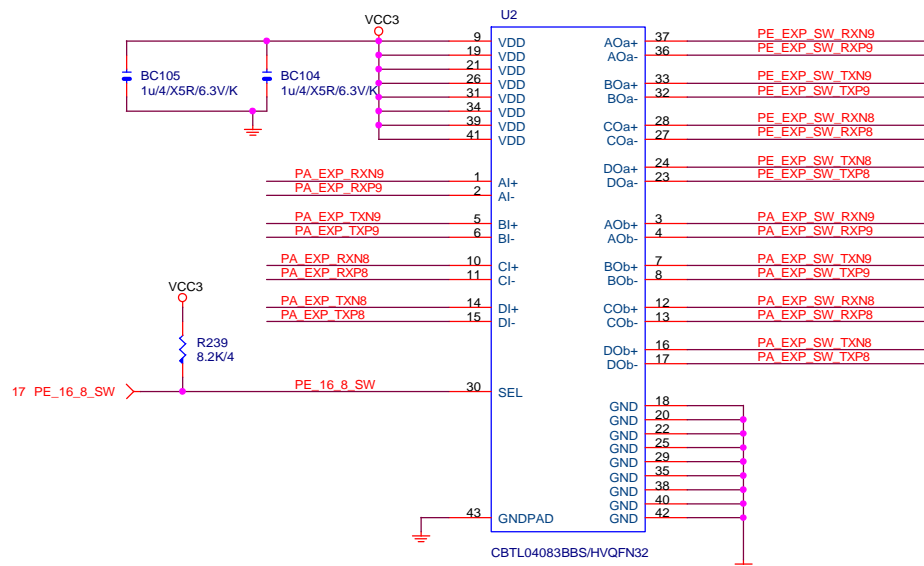
Gigabyte Technology

Title					
PCH DISPLAY ,CLK BUFFER					
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PA_EXP_SW_RXP[8..15] >> PA_EXP_SW_RXP[8..15] 16

PA_EXP_SW_RXN[8..15] >> PA_EXP_SW_RXN[8..15] 16

PA_EXP_SW_TXP[8..15] >> PA_EXP_SW_TXP[8..15] 16

PA_EXP_SW_TXN[8..15] >> PA_EXP_SW_TXN[8..15] 16

PE_EXP_SW_RXP[8..15] >> PE_EXP_SW_RXP[8..15] 17

PE_EXP_SW_RXN[8..15] >> PE_EXP_SW_RXN[8..15] 17

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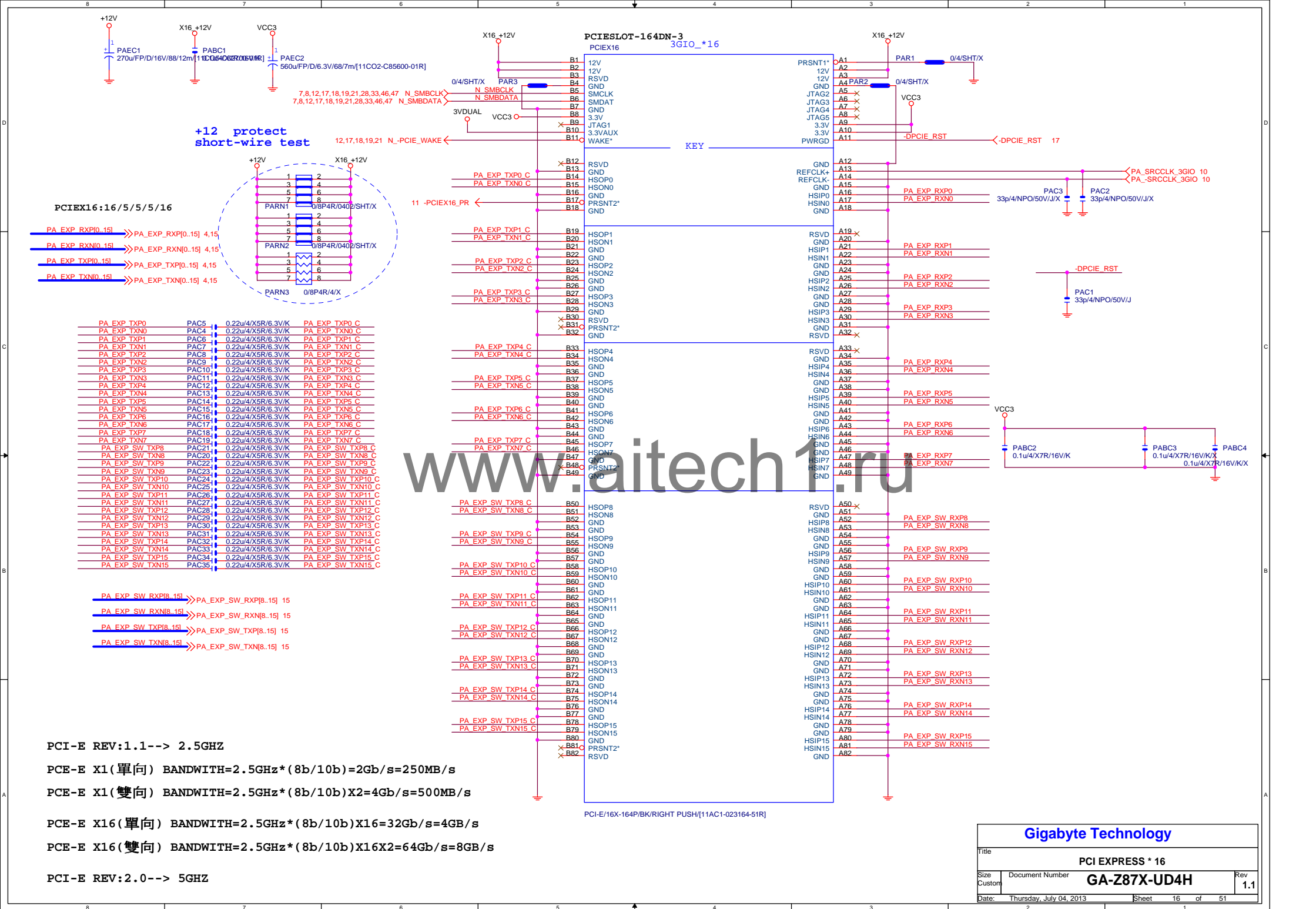
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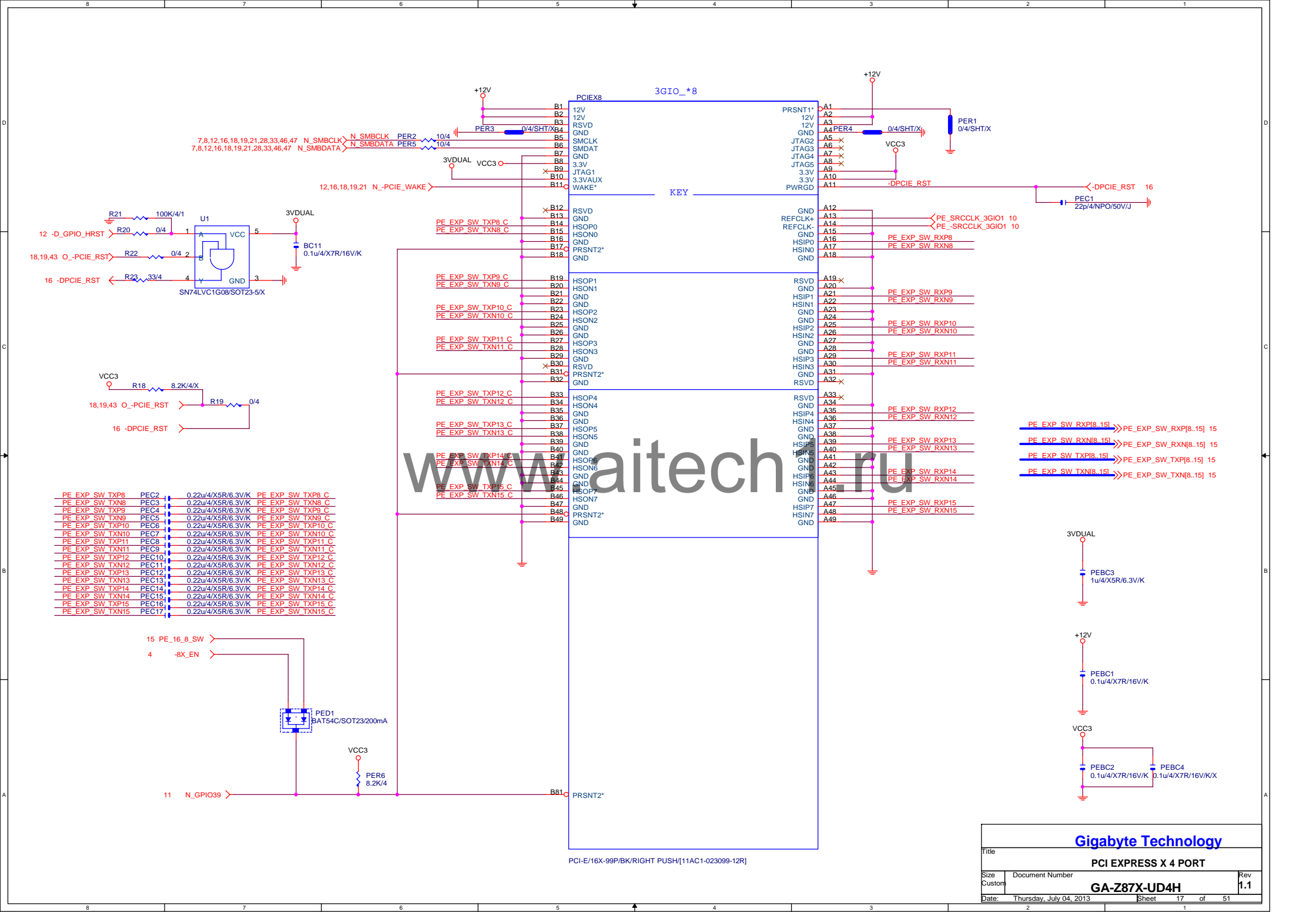
PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] 4,16

PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] 4,16

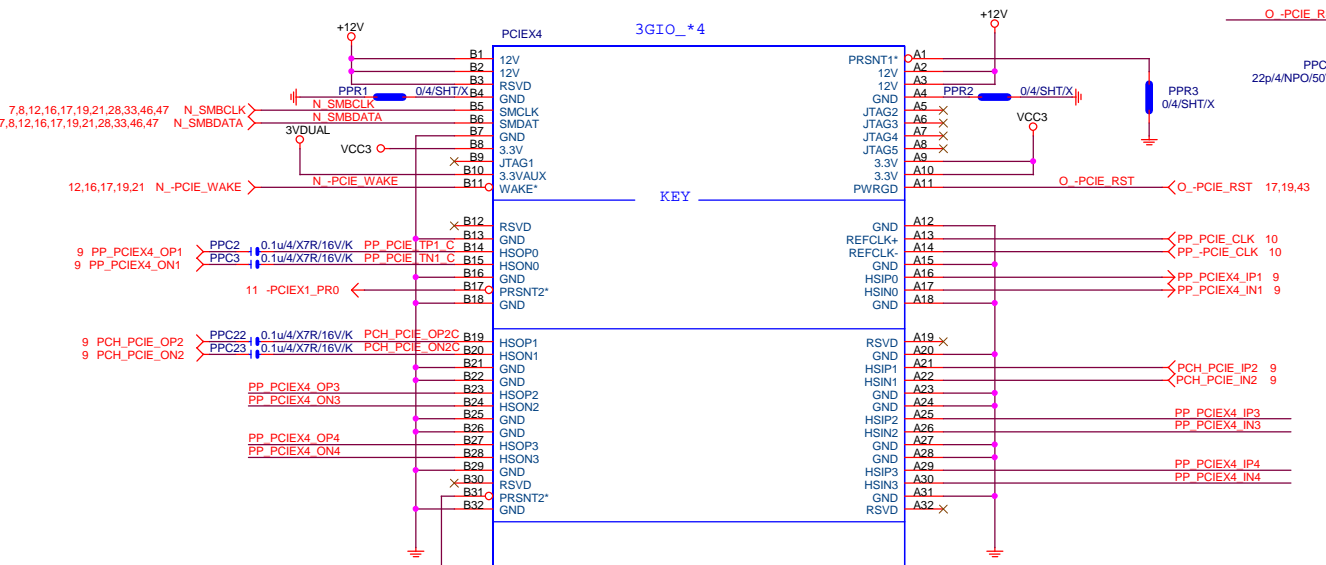
PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] 4,16

PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 4,16





PCIE*4

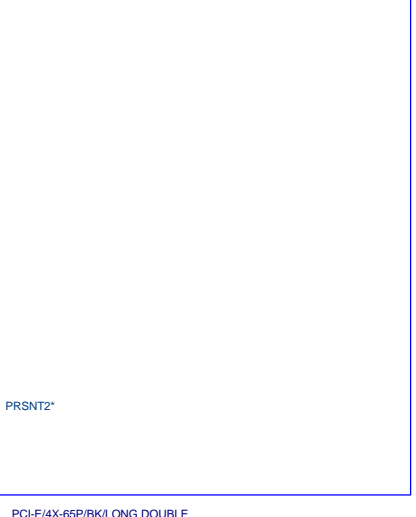
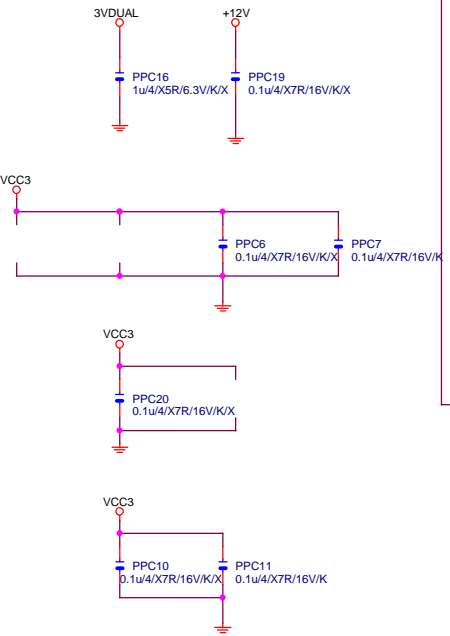


BIOS只偵測此pin(GPIO48)
Lo: 設為1個x4
Hi: 設為4個x1

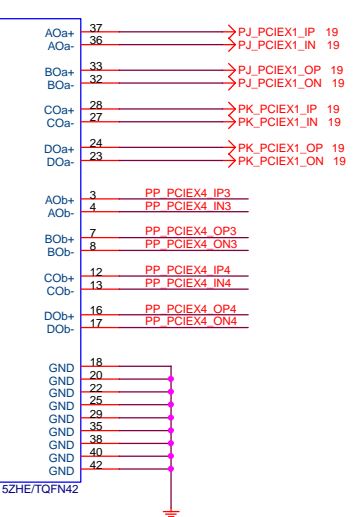
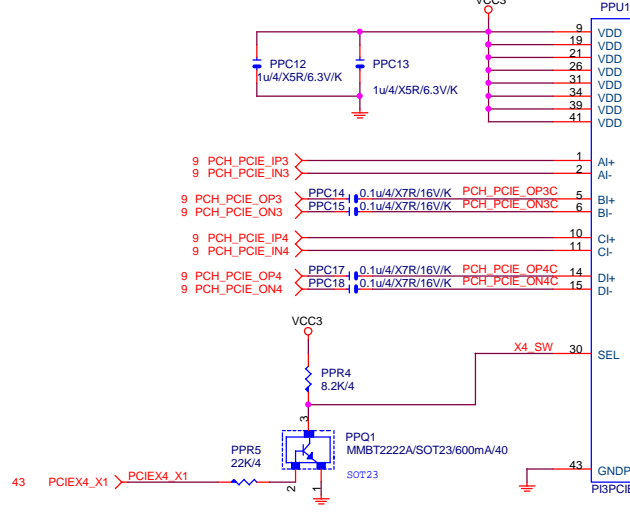
11 N_PCIE_4_SW ← N_PCIE_4_SW

通知BIOS DETECTED DEVICE

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PCI-E/4-65P/BK/LONG DOUBLE



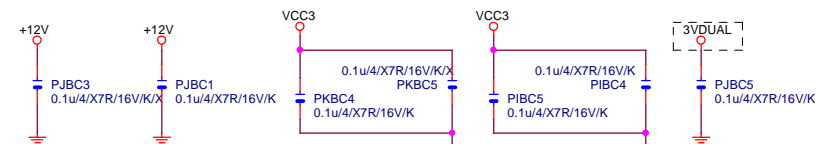
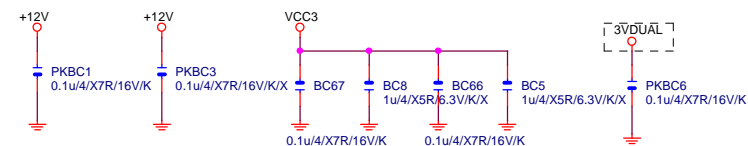
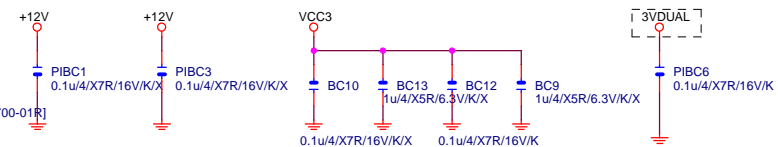
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xI--> xOa	L;PCIE*4 SLOT-->X1
xI--> xOb	H;PCIE*4 SLOT-->X4

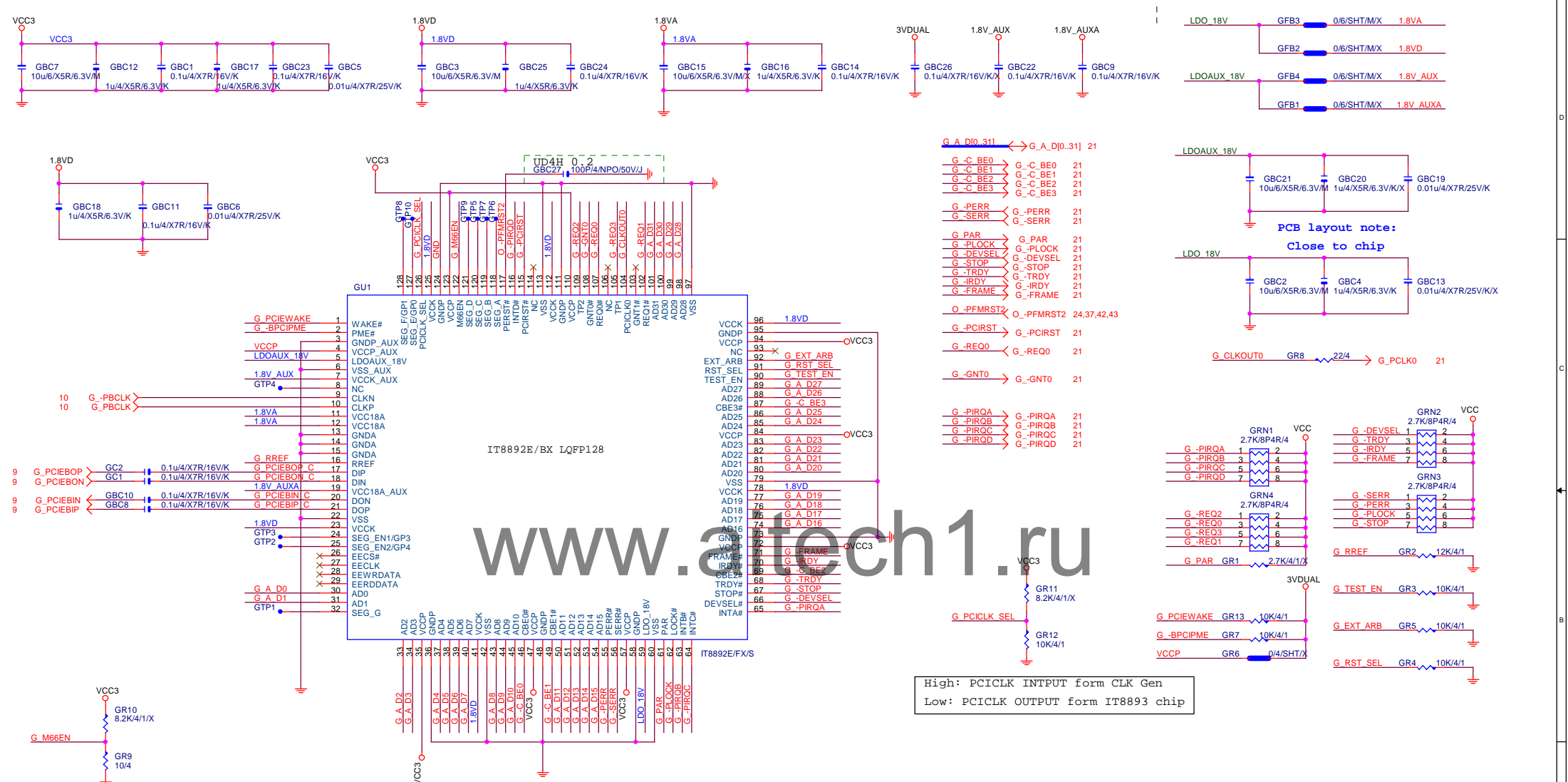
Title
PCIE_X4

Size Custom
Document Number
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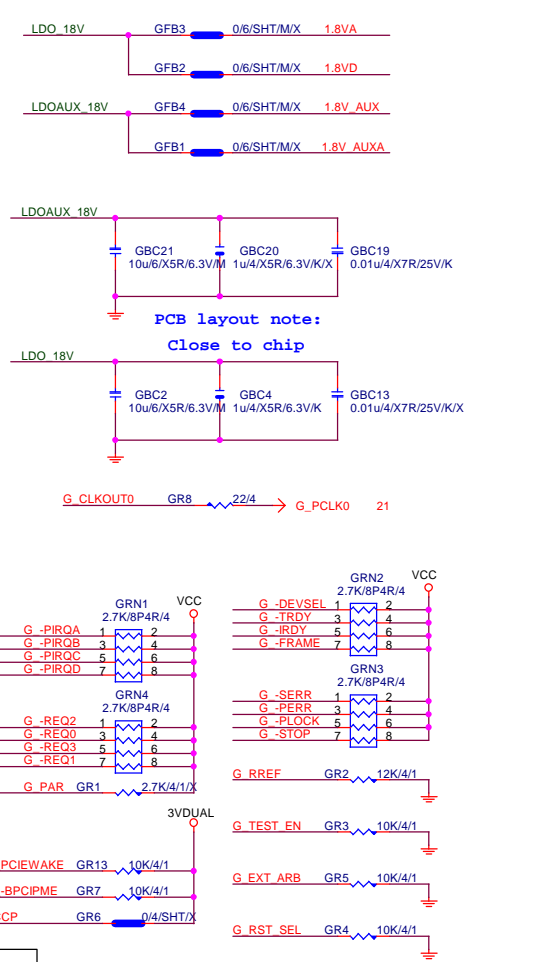
Rev
1.1





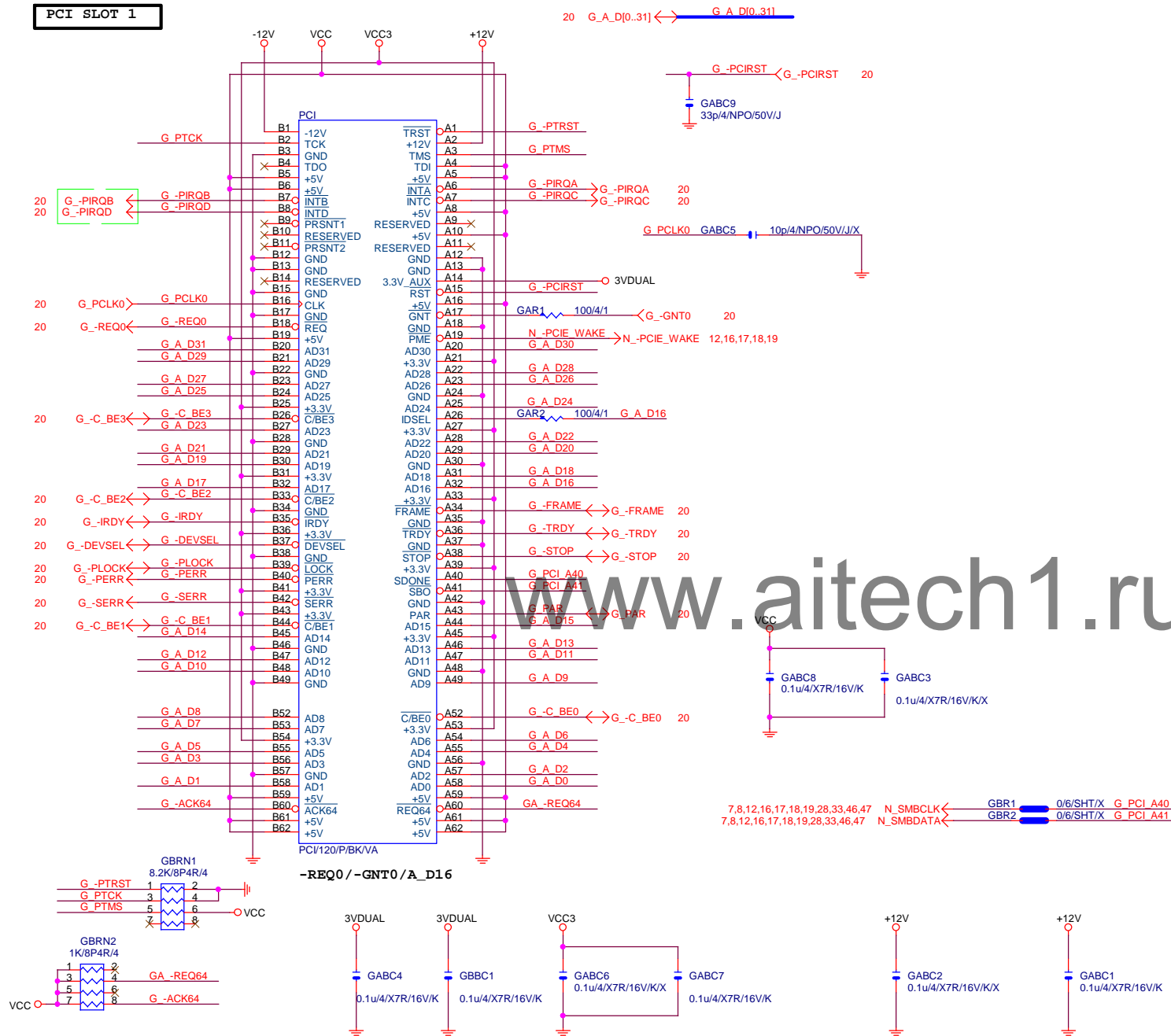
High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip



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IT8892E			
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PCI SLOT 1



GIGABYTE™

Title
PCI SLOT 1&2

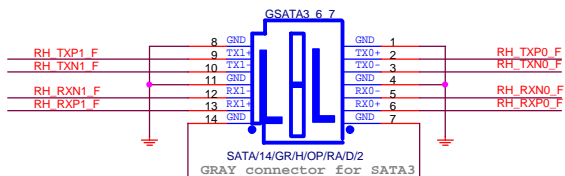
Size B Document Number

GA-Z87X-UD4H

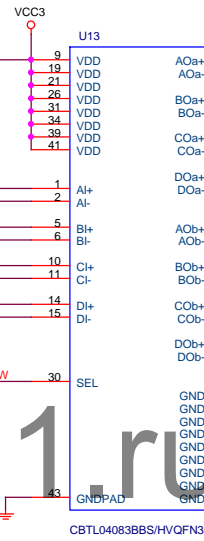
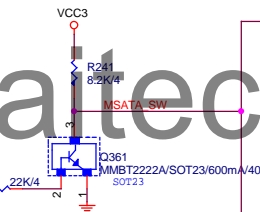
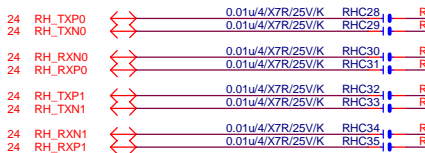
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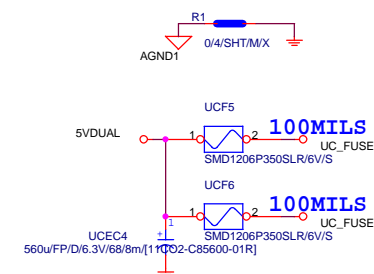
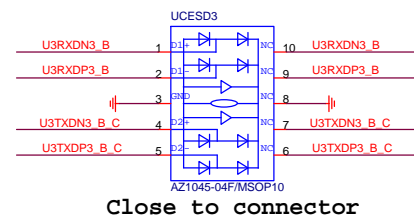
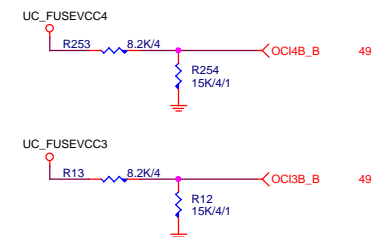
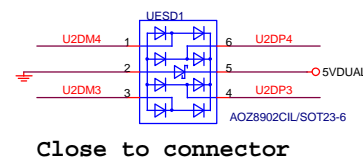
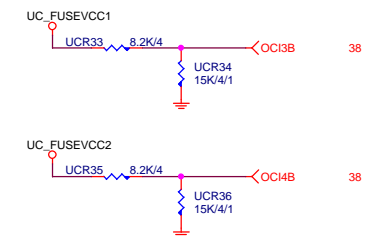


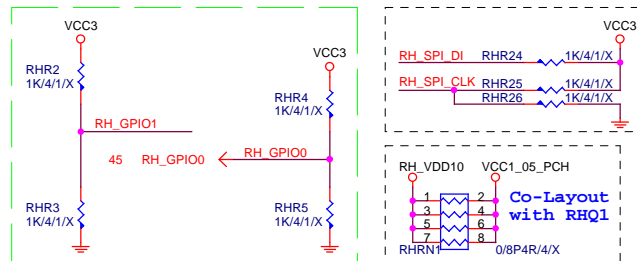
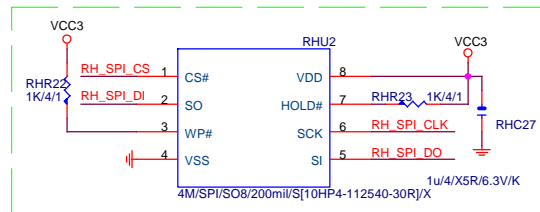
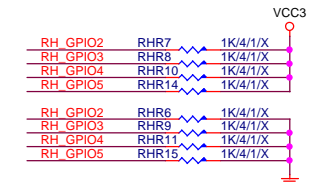
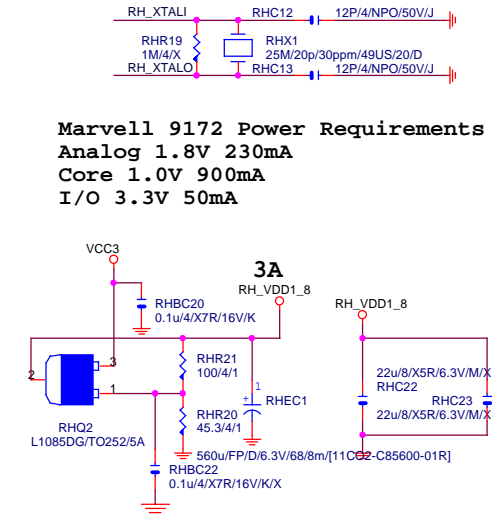
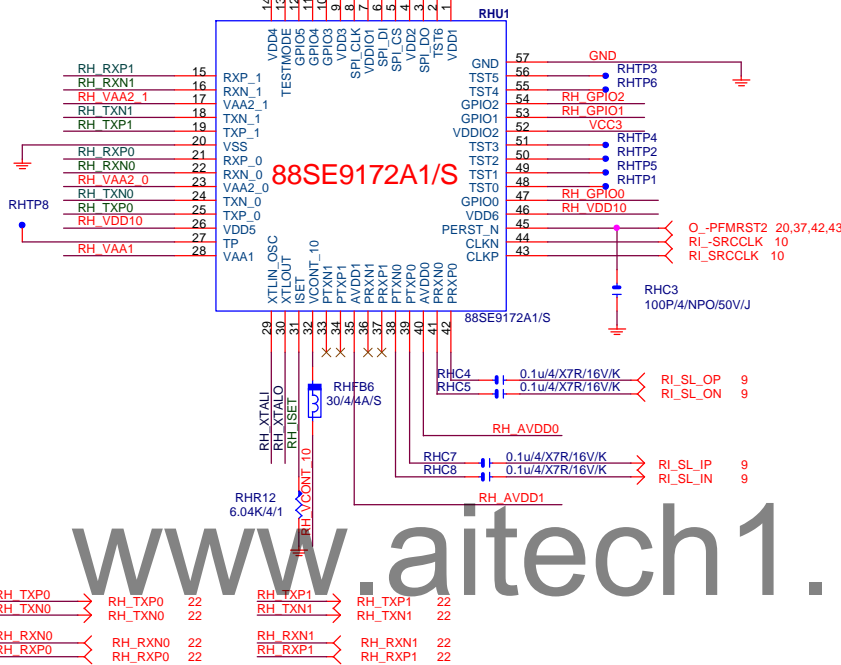
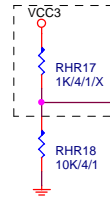
eSATA

Front
SATA

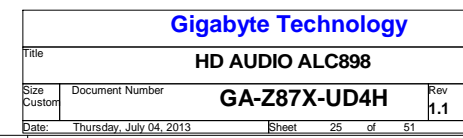
Function	SEL
xI--> xOa	L
xI--> xOb	H

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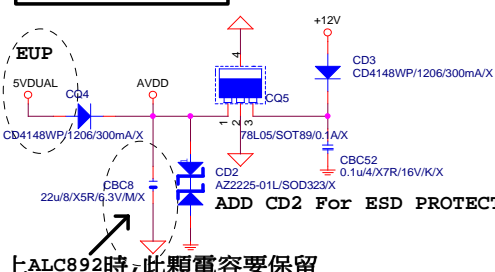




JD resistors close to pin34 of CODEC

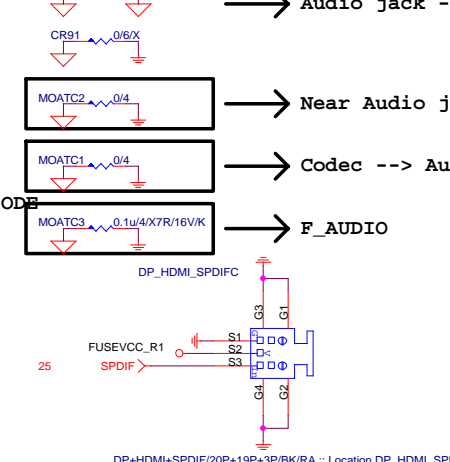


CODEC POWER/EMI PAD



上ALC892時,此顆電容要保留

Audio jack --> USB



LINE-OUT

Near Audio jack left

Codec --> Audio jack

F_AUDIO

LINE-IN

MIC-IN

SURROUND

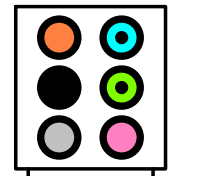
CEN/LFE

SURRBACK

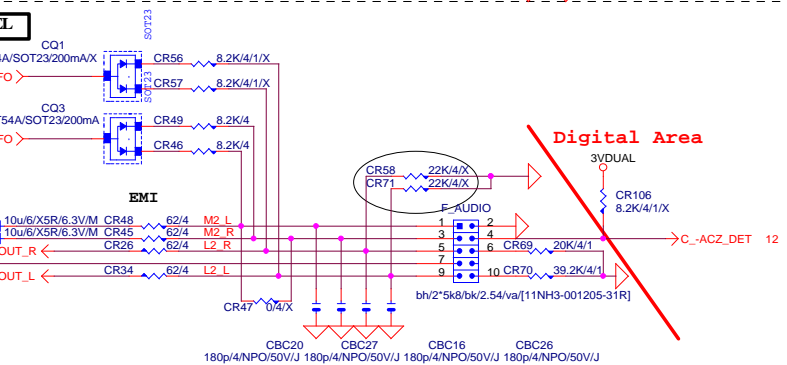
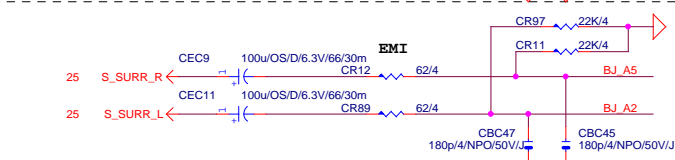
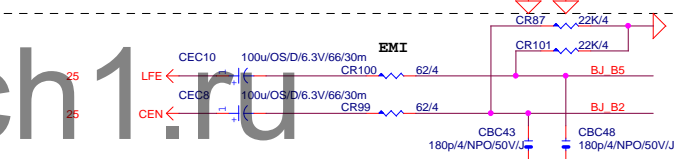
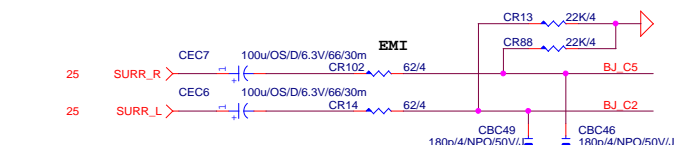
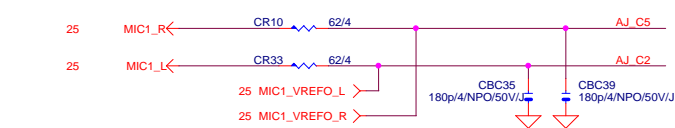
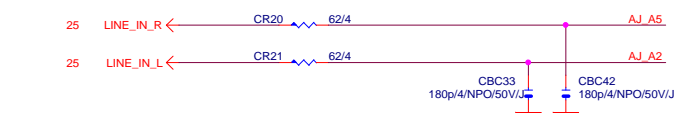
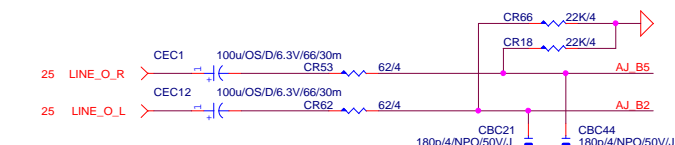
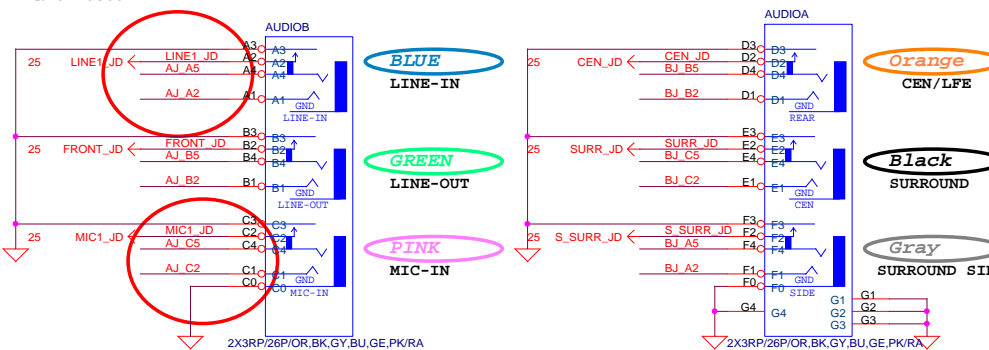
AZALIA FRONT PANEL

AZALIA JACK

BTX AZALIA CONNECTOR



11NR6-403007-21R

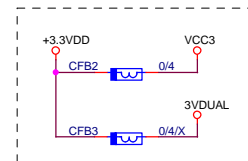
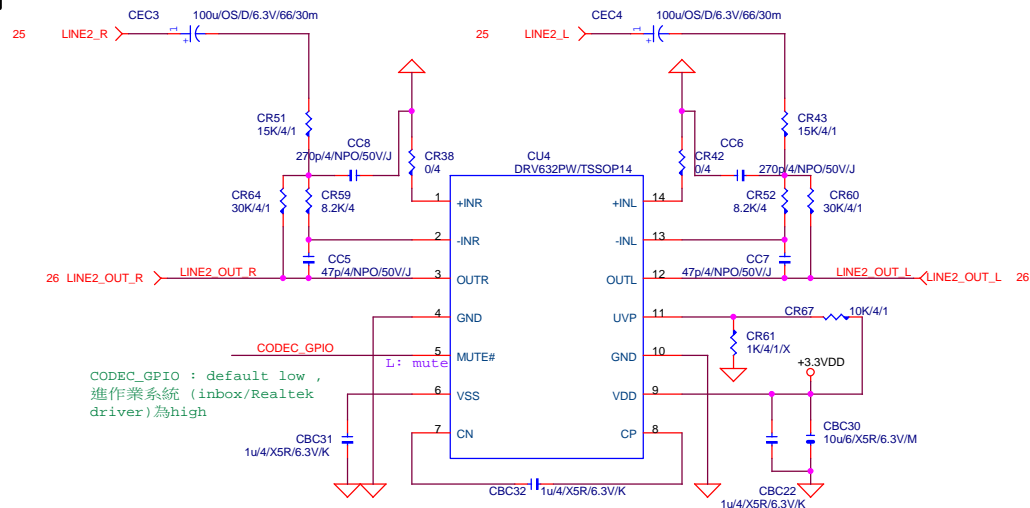


Digital Area

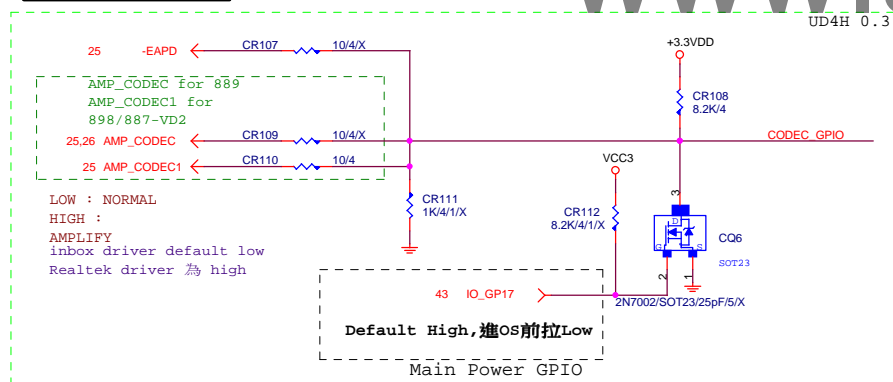
Gigabyte Technology

Title			AUDIO JACK
Size			GA-Z87X-UD4H
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HEADPHONE



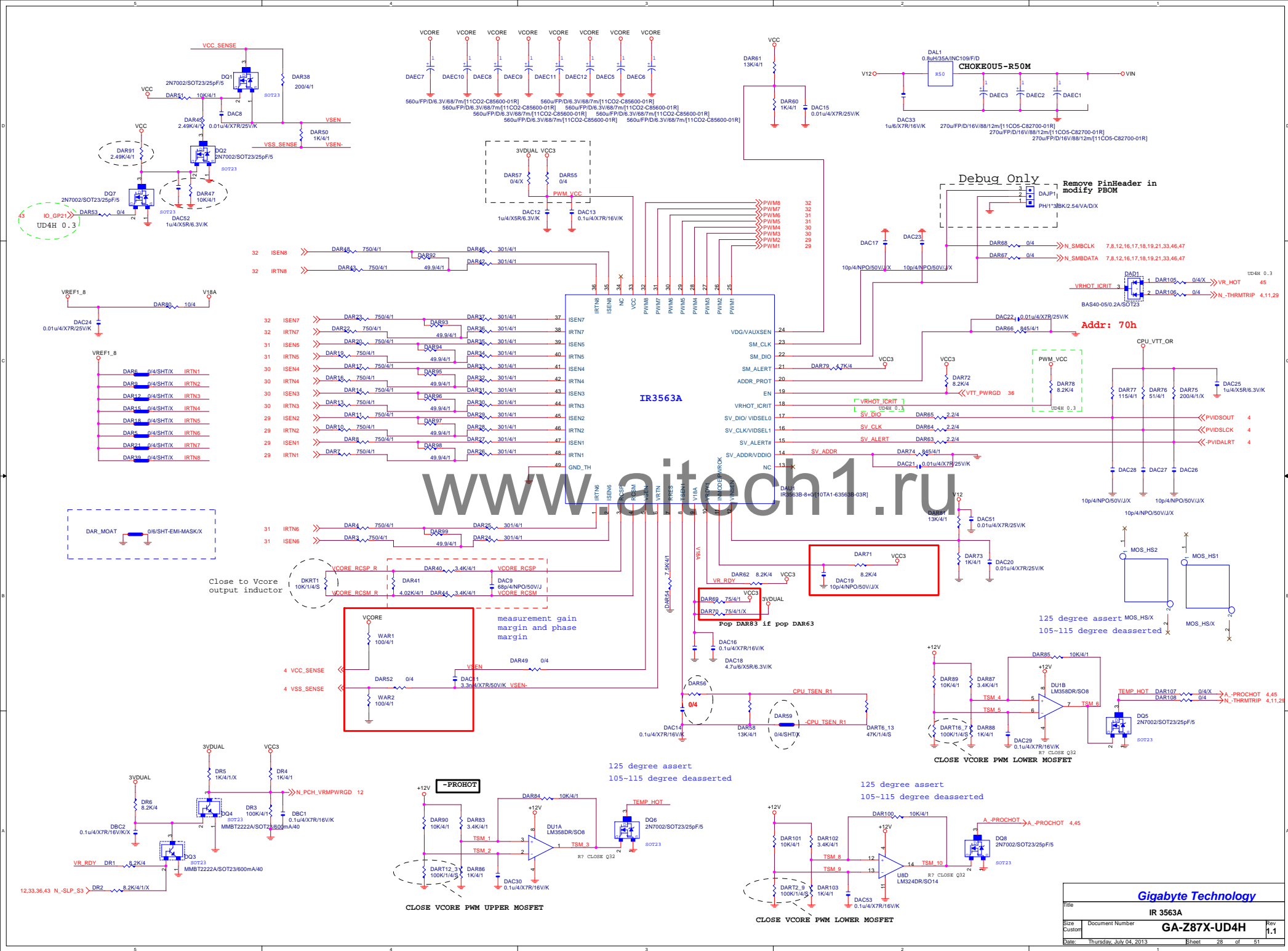
For Pop Noise

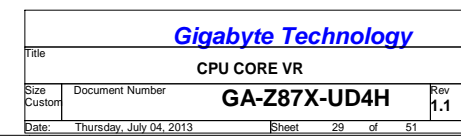
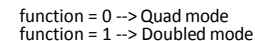
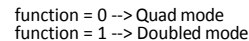


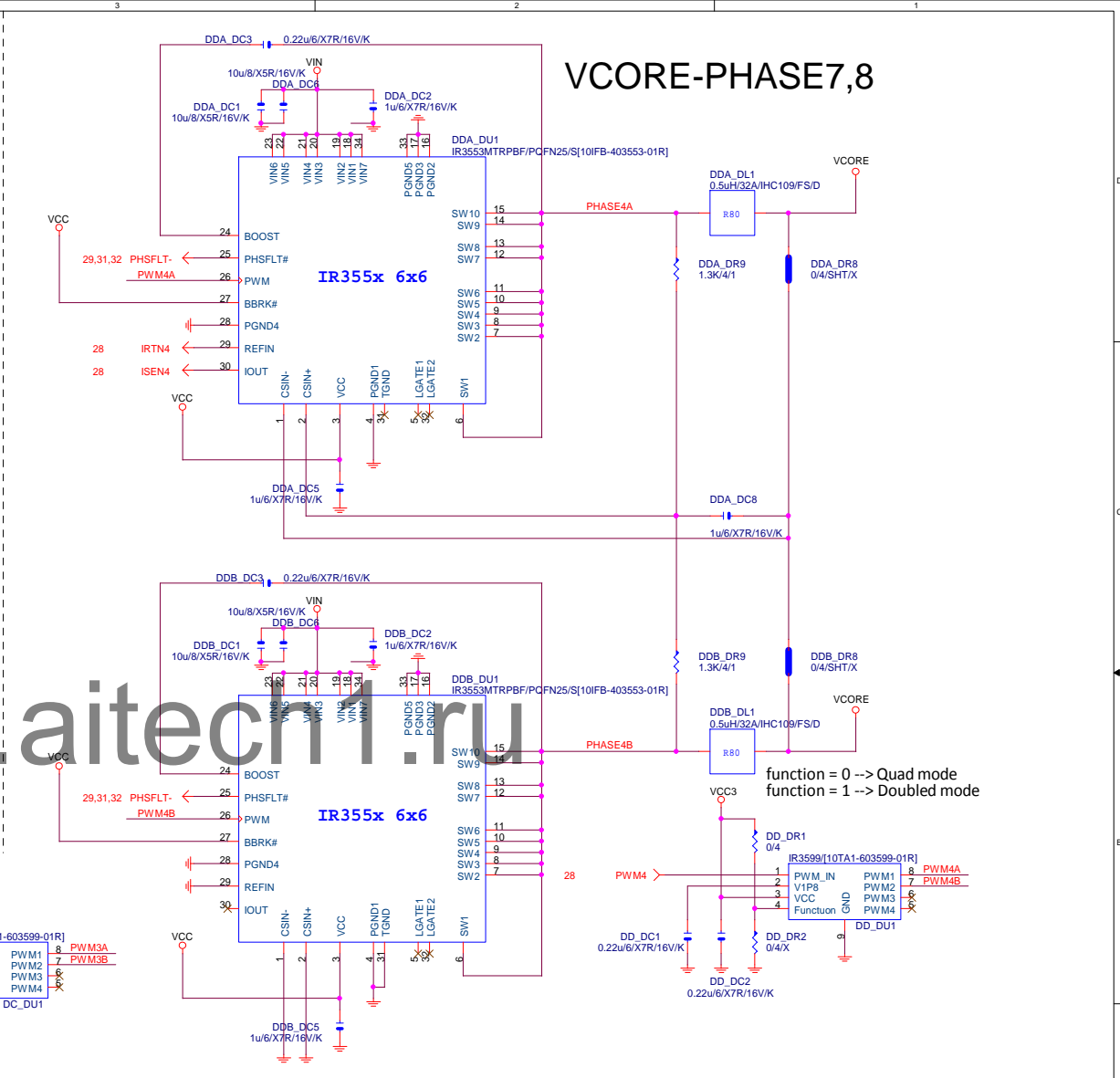
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Gigabyte Technology

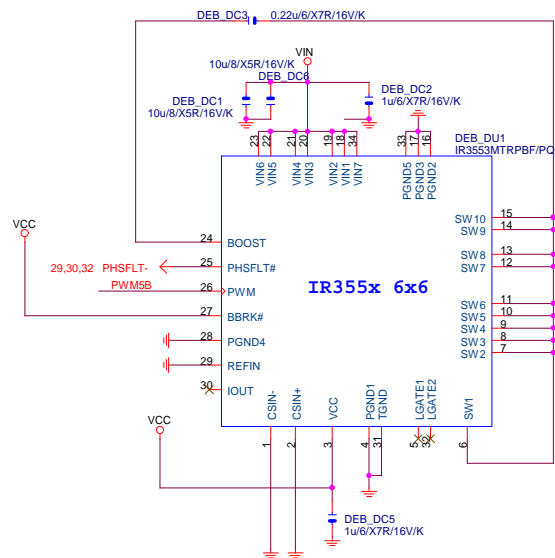
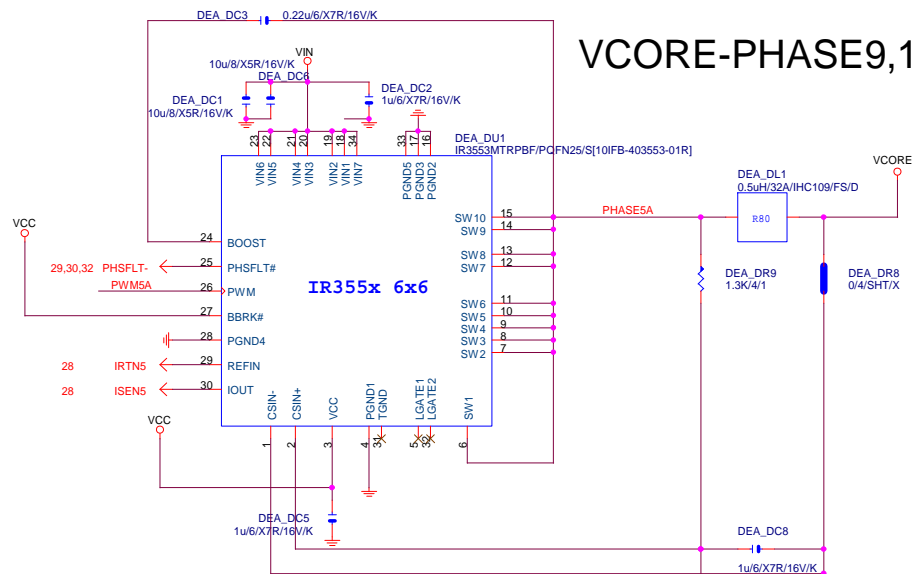
Title			
8-CH DAC & Anti-Pop / Mute			
Size	Document Number	GA-Z87X-UD4H	
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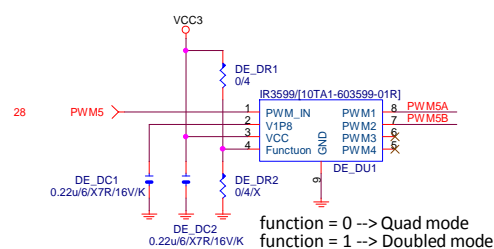




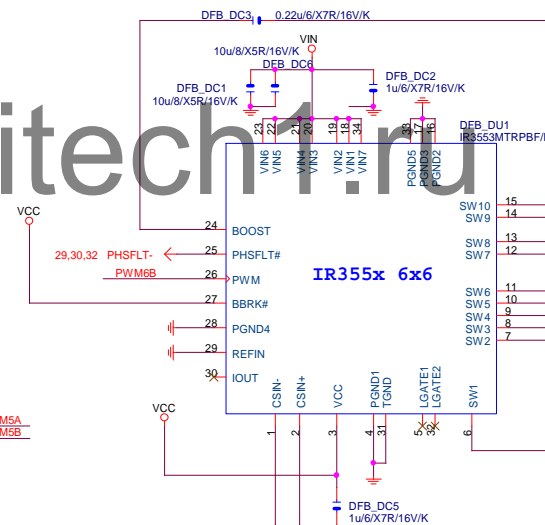
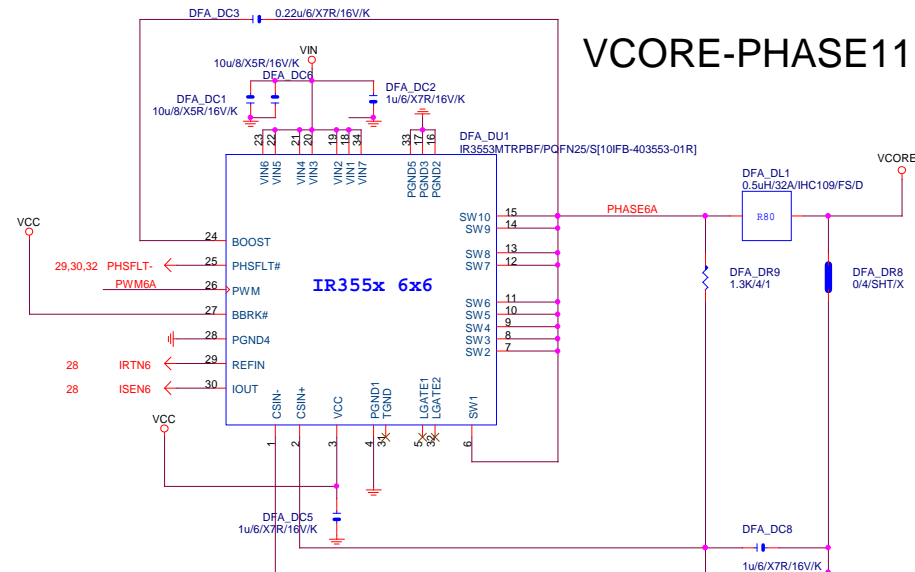
VCORE-PHASE9,10



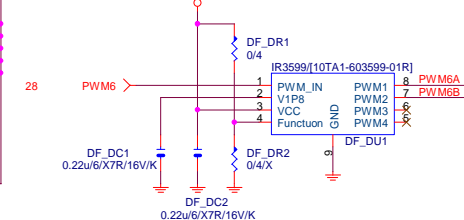
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VCORE-PHASE11,12



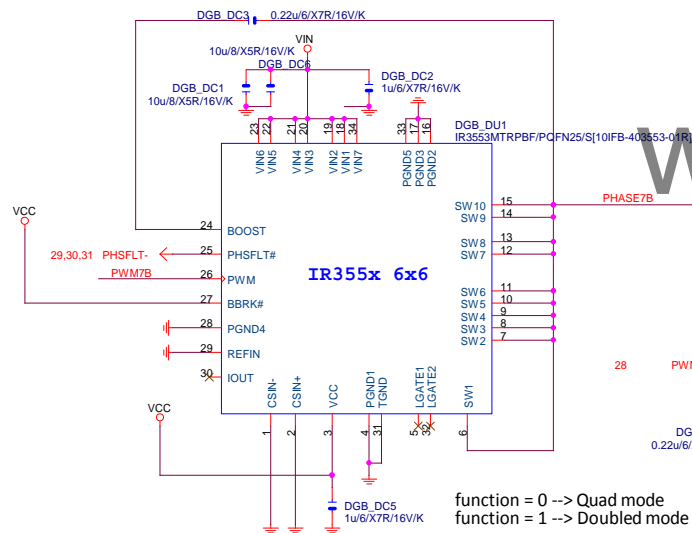
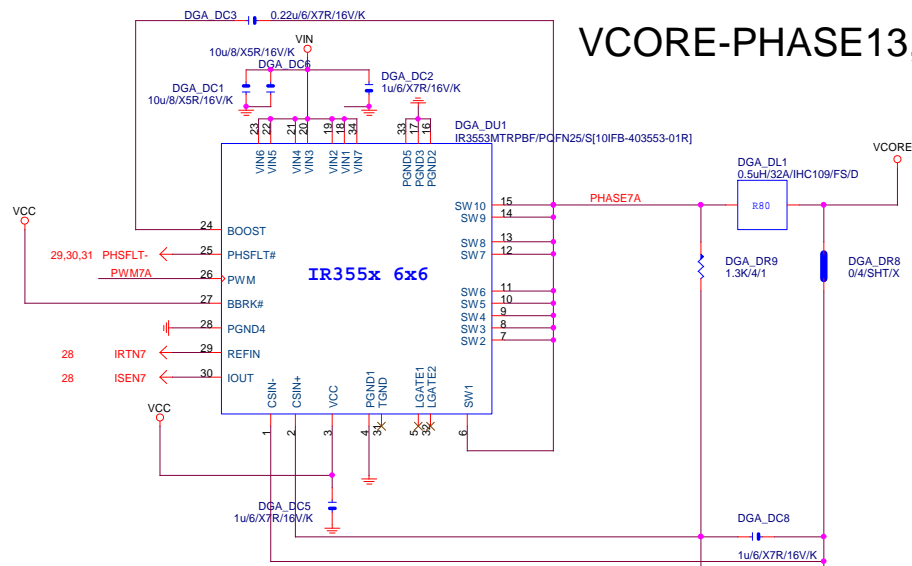
function = 0 --> Quad mode
function = 1 --> Doubled mode



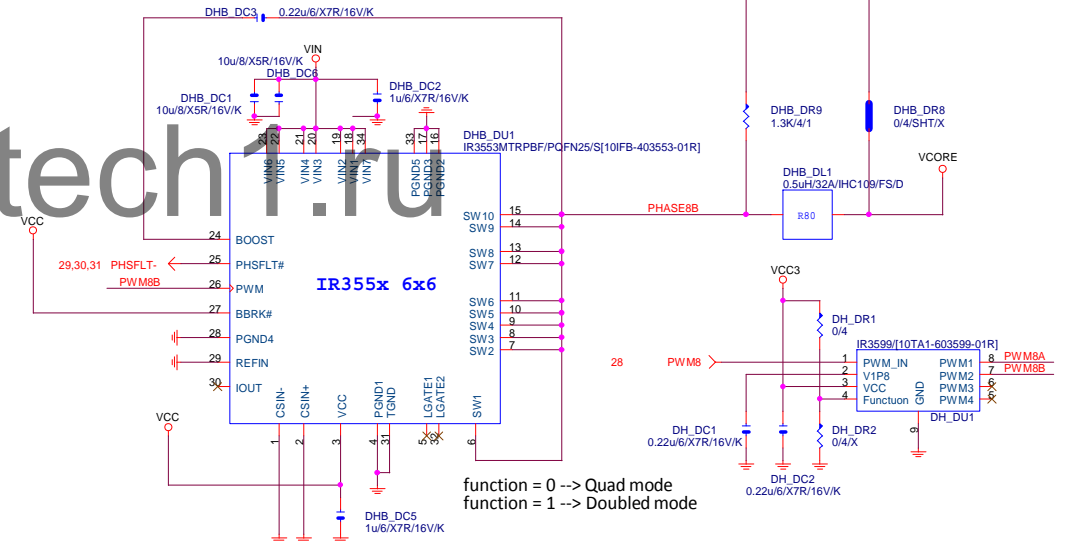
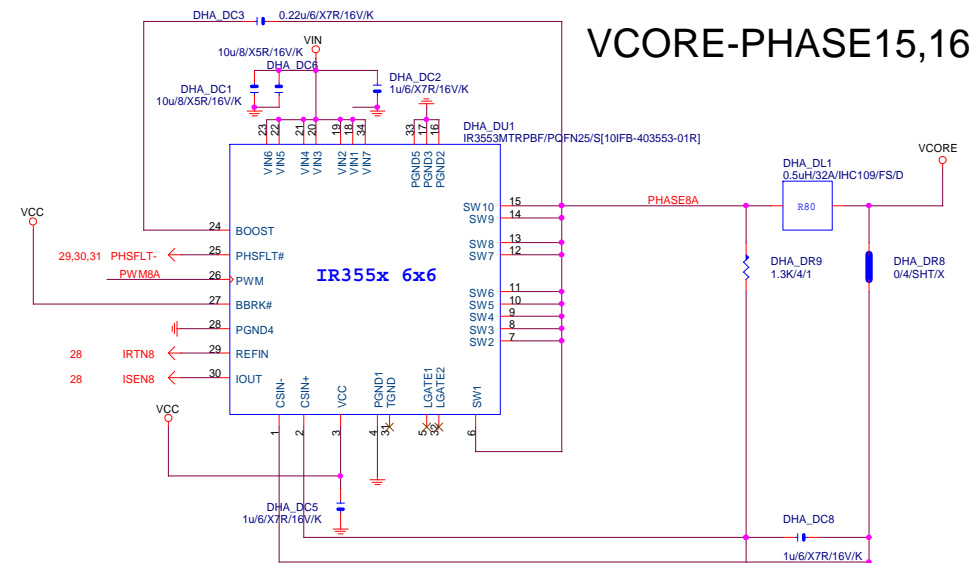
Gigabyte Technology

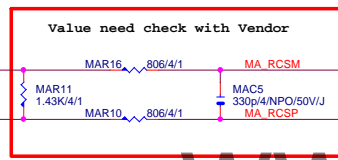
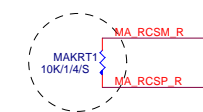
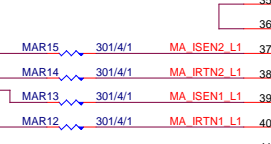
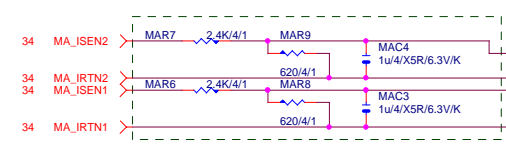
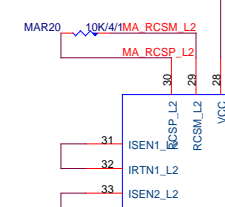
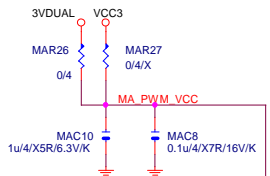
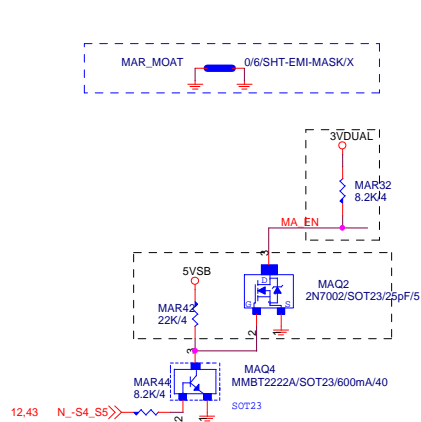
Title		IR3553-VCORE	
Size	Document Number	GA-Z87X-UD4H	
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Date:	Thursday, July 04, 2013	Sheet	31 of 51

VCORE-PHASE13,14



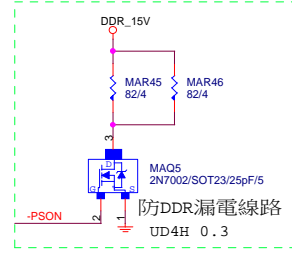
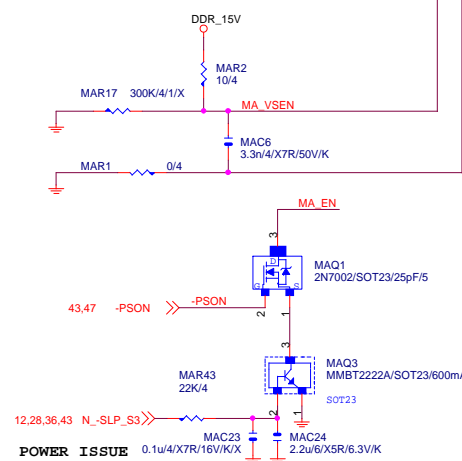
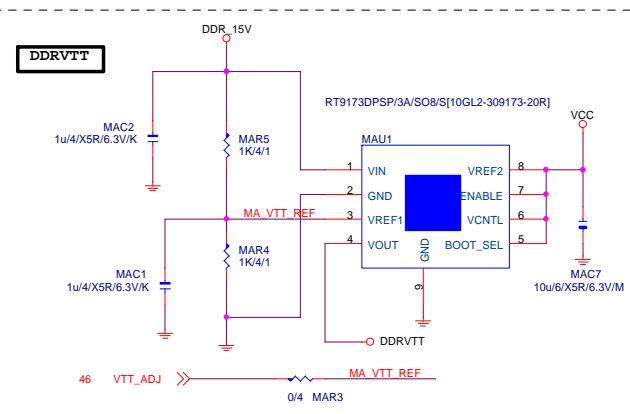
VCORE-PHASE15,16



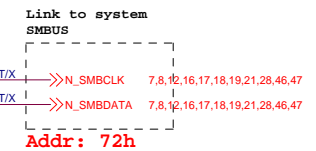
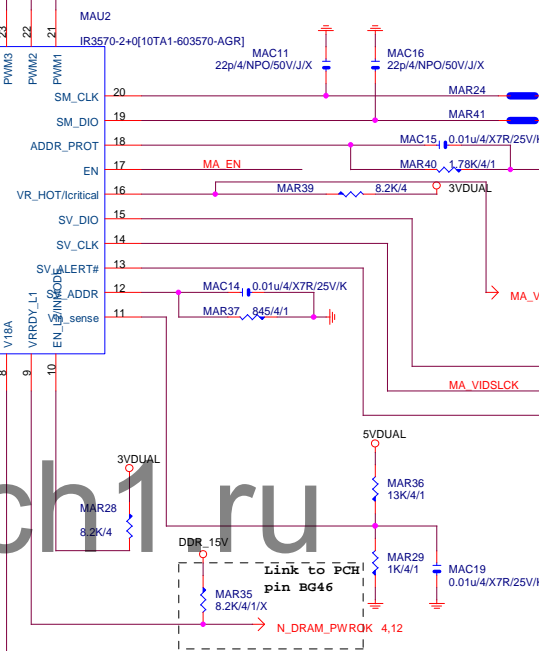


Close to DDR
output
inductor

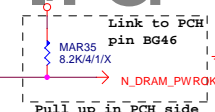
should be routed as
differential pair,
7mil width, 8mil
spacing



IR3570



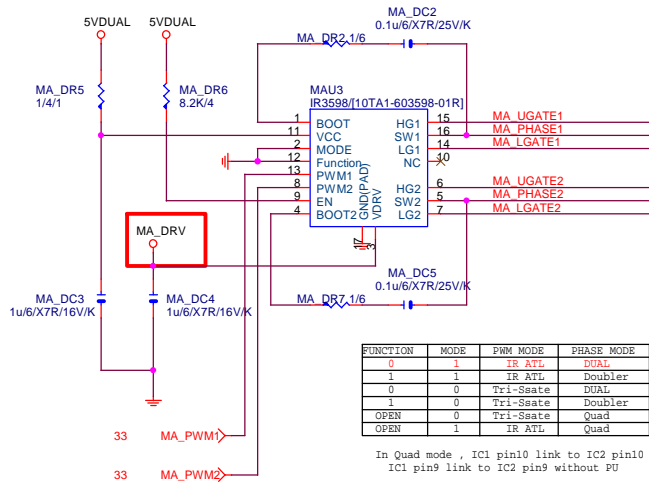
Addr: 72h



Pull up in PCH side

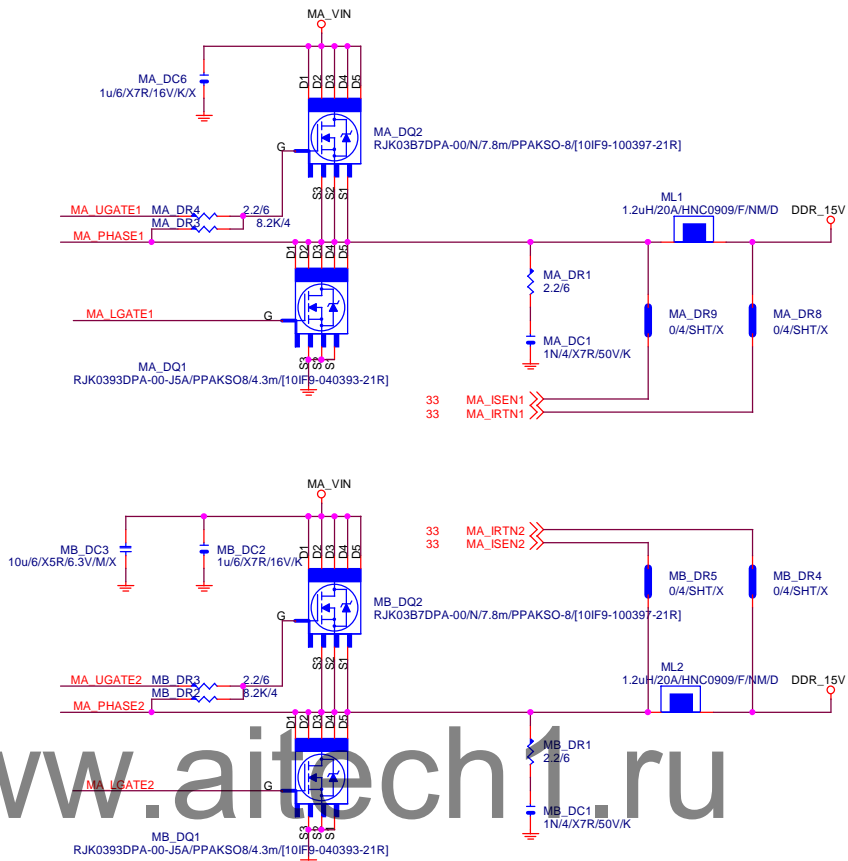
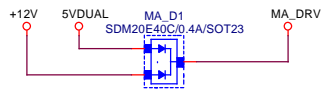
GIGABYTE™			
Title DDR POWER IR3570			
Size Custom	Document Number GA-Z87X-UD4H	Rev 1.1	
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DDR_15V

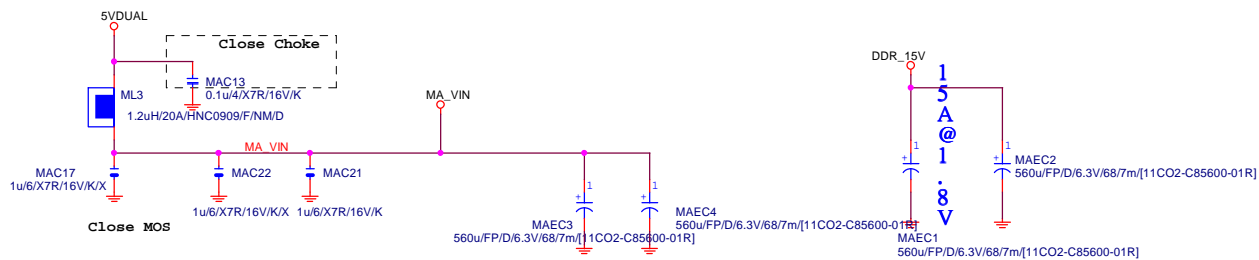


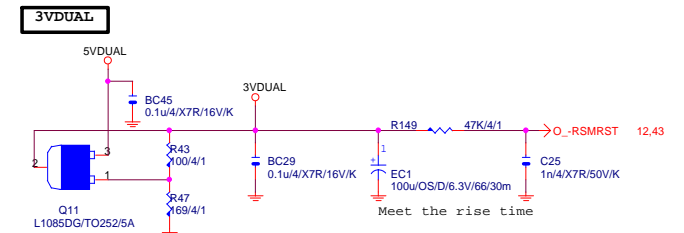
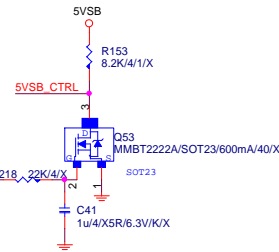
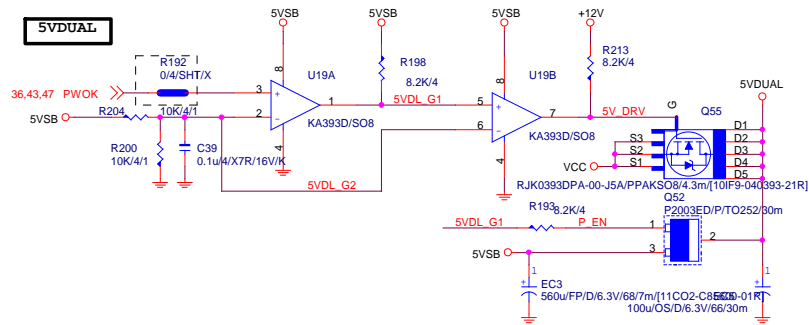
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Saate	DUAL
1	0	Tri-Saate	Doubler
OPEN	0	Tri-Saate	Quad
OPEN	1	IR ATL	Quad

In Quad mode, IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU

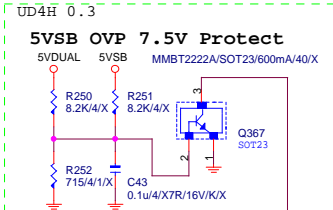
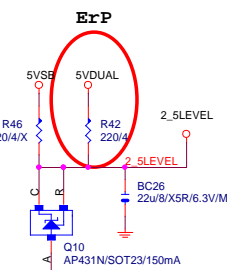
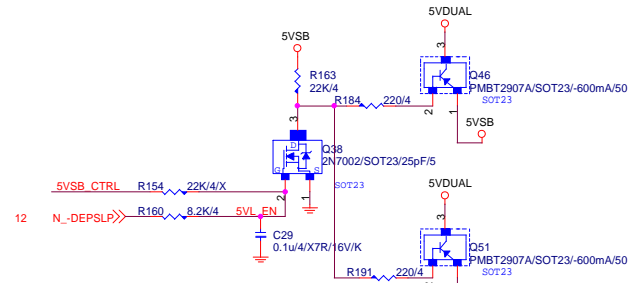
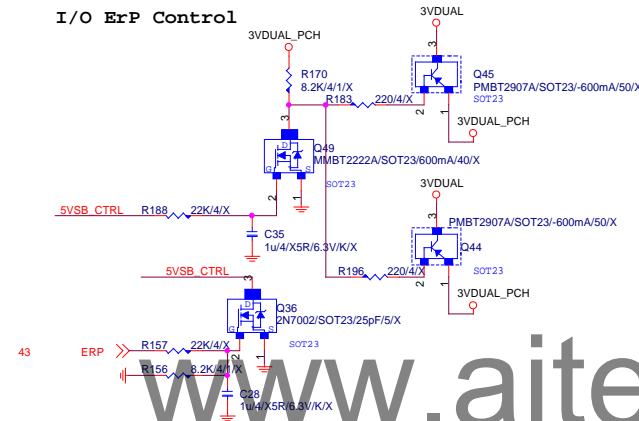


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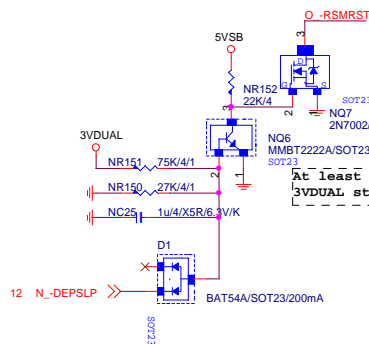
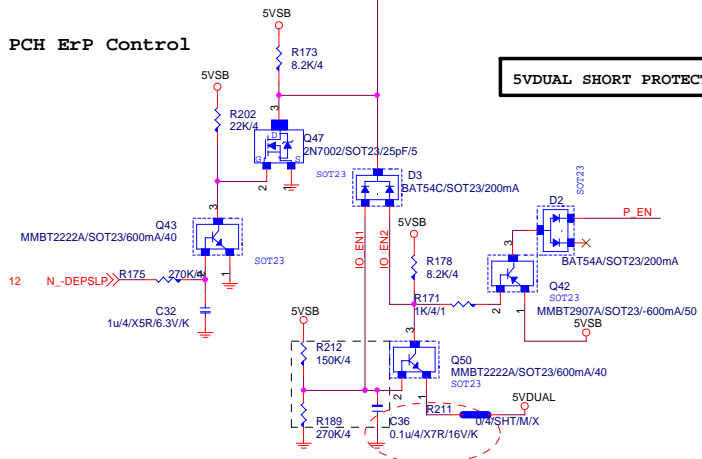




I/O ErP Control

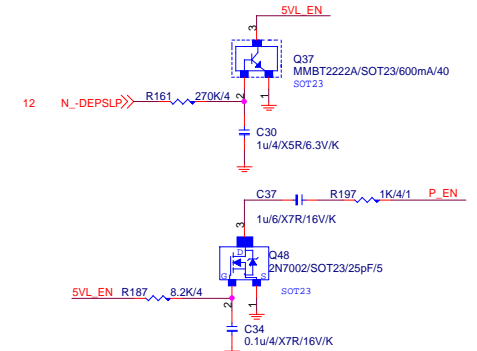


PCH ErP Control



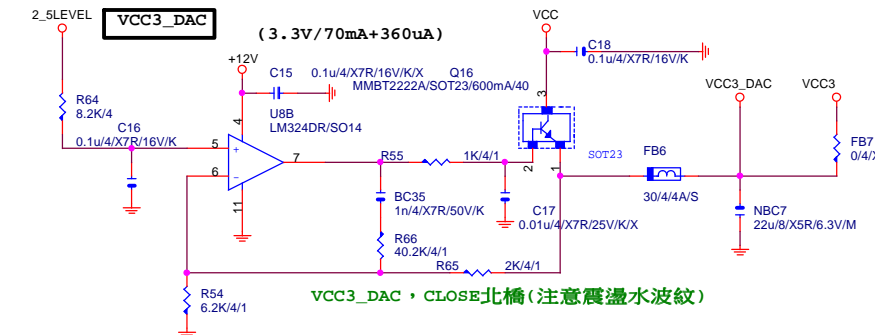
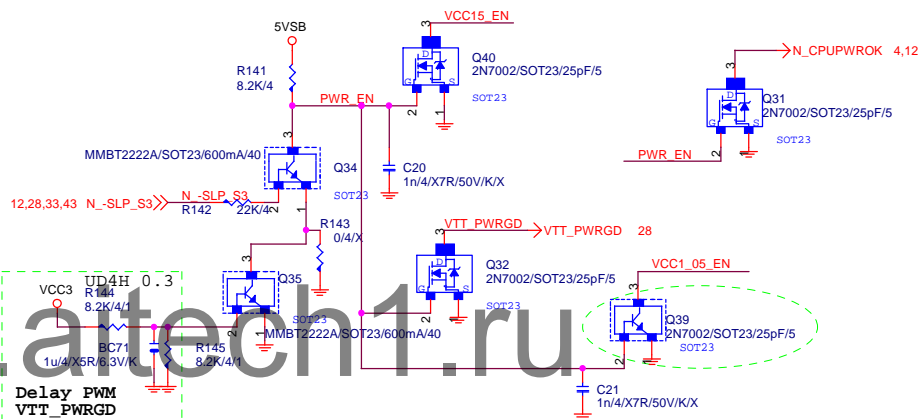
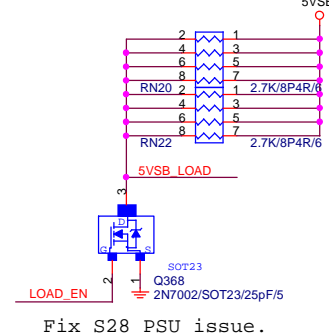
At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH

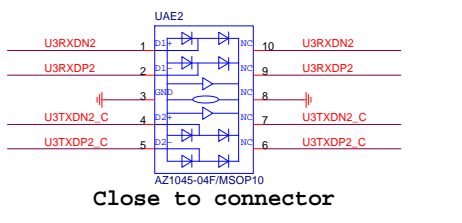
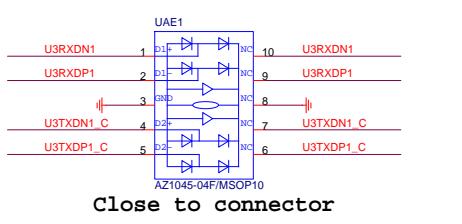
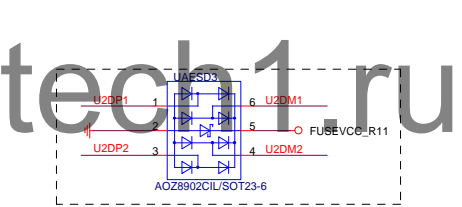
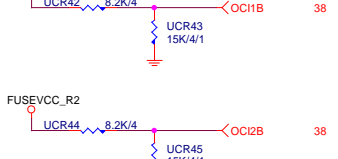
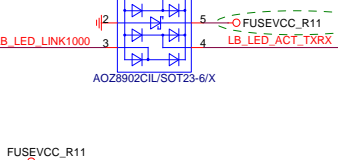
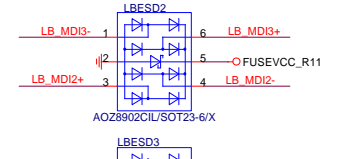
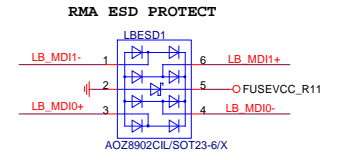
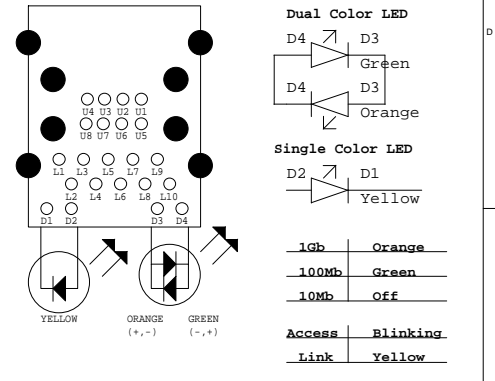
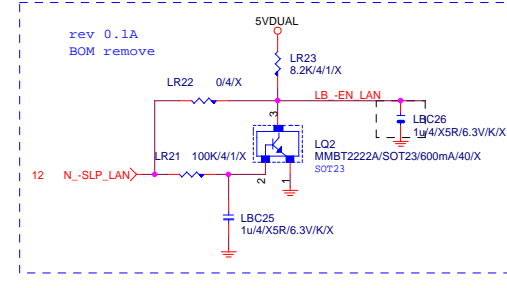
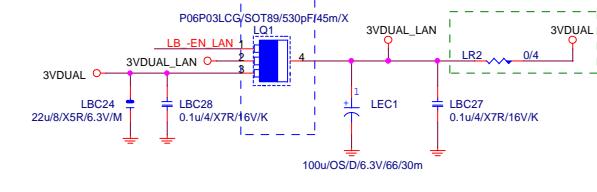
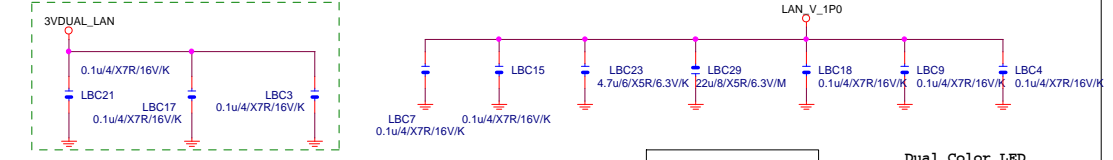
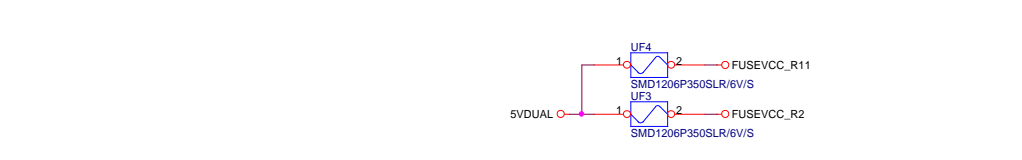
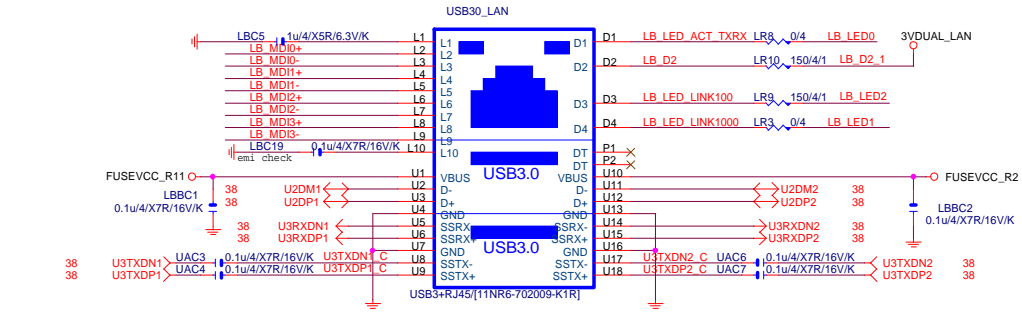
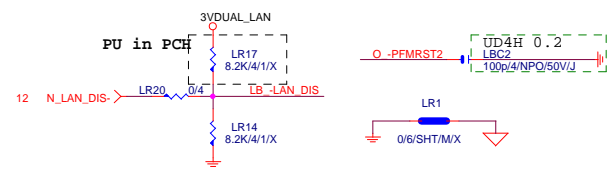
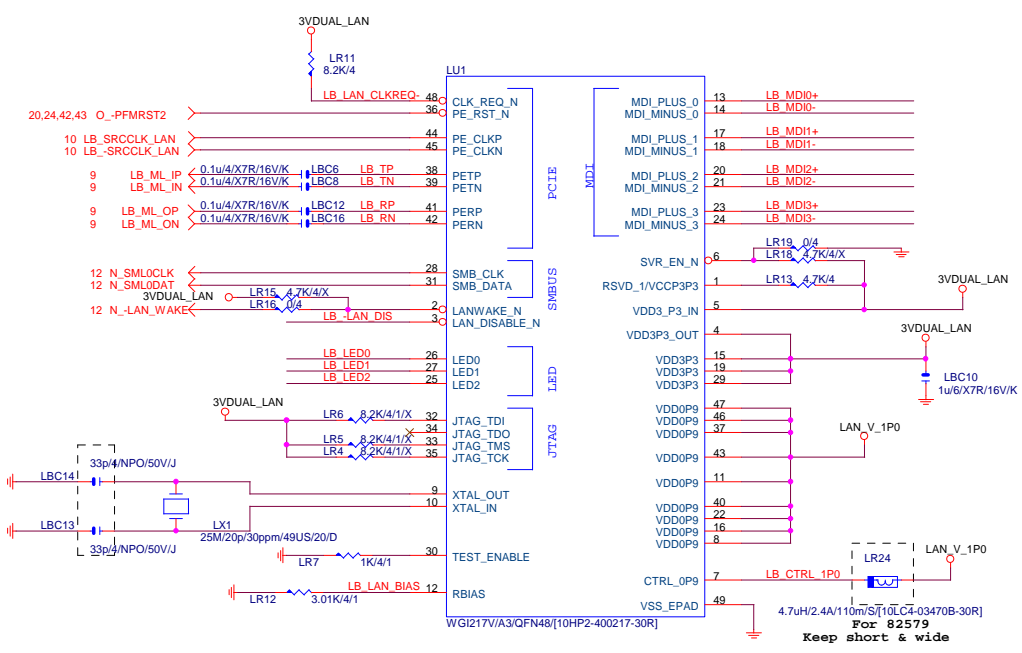
Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V




Gigabyte Technology

Title			
DISCRETE POWER 1			
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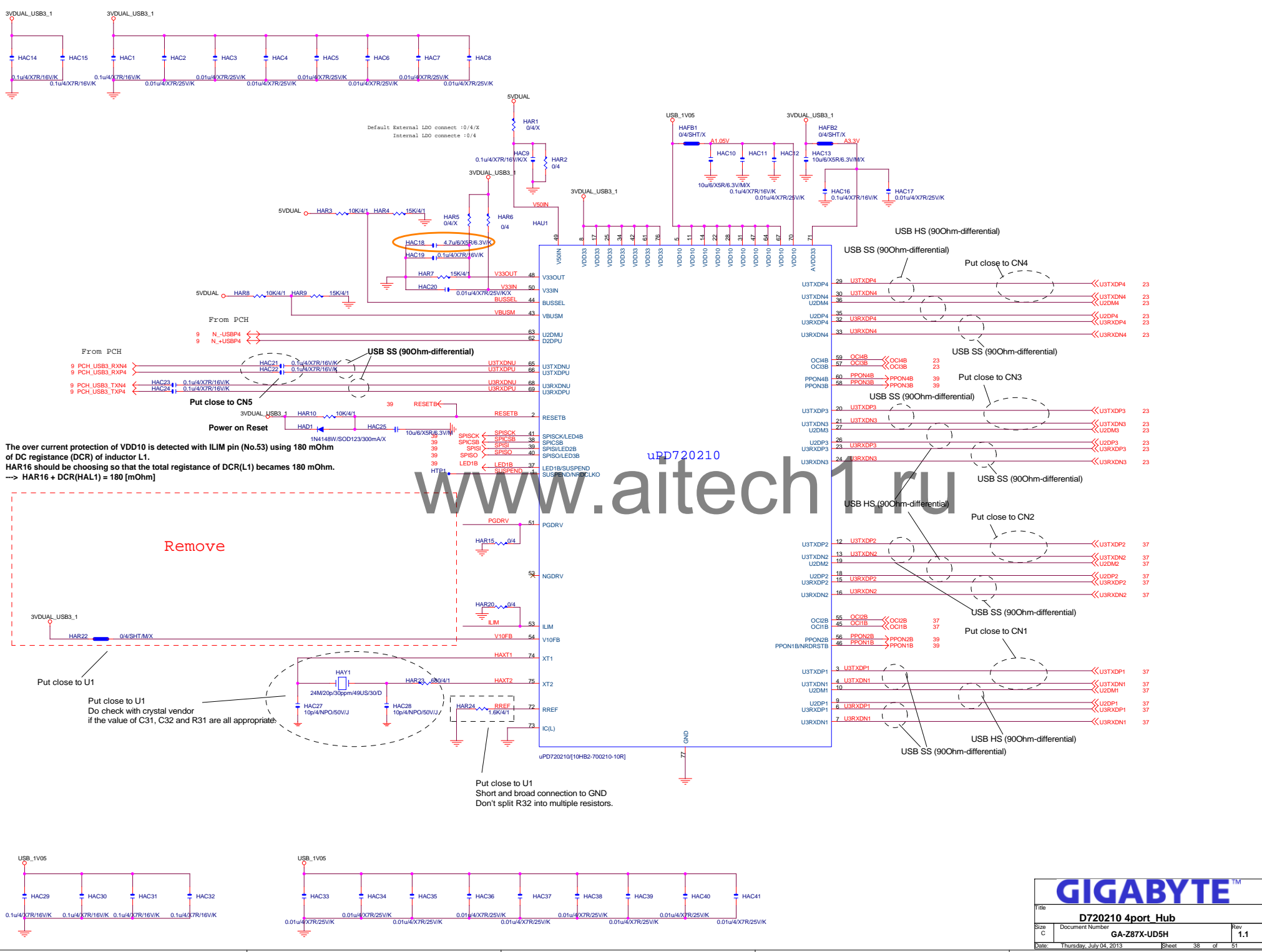






INTEL LAN i217V

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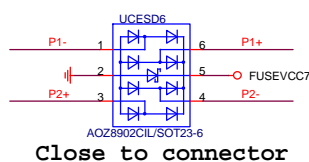
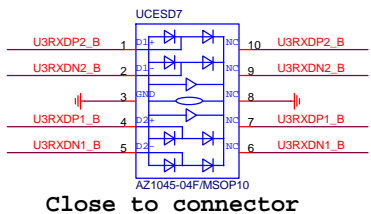
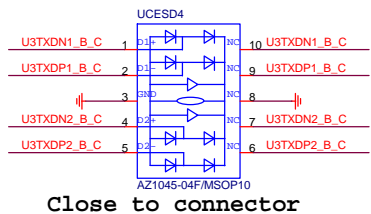
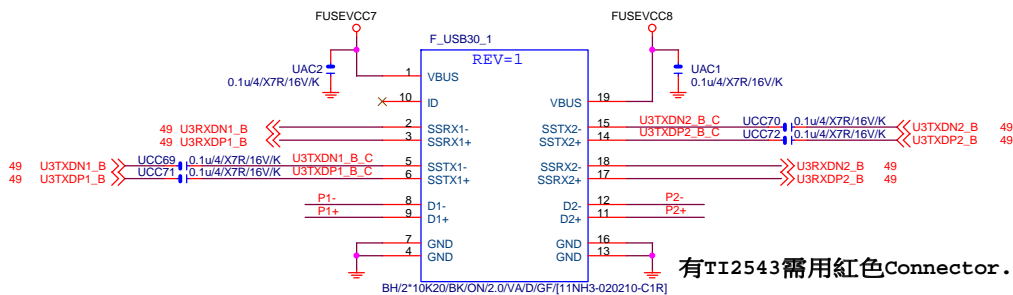


The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.
HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.
→ HAR16 + DCR(HAL1) = 180 [mOhm]

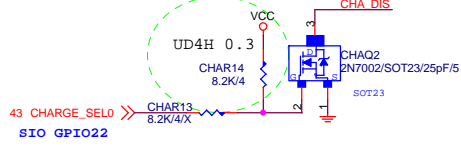
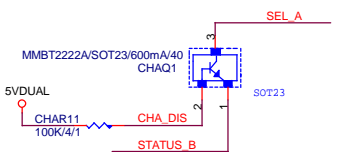
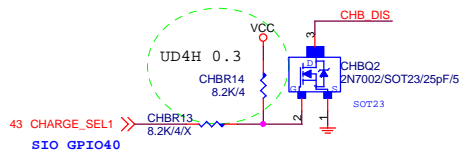
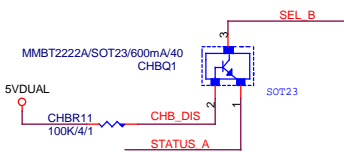
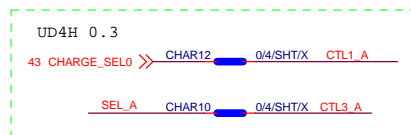
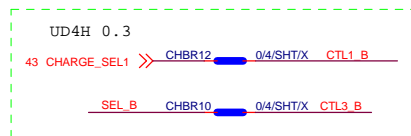
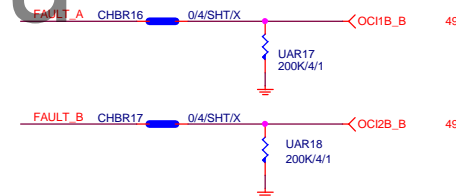
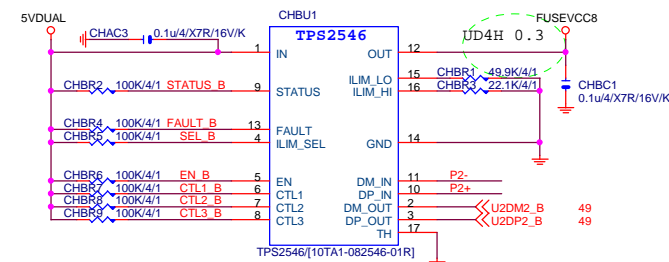
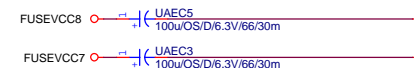
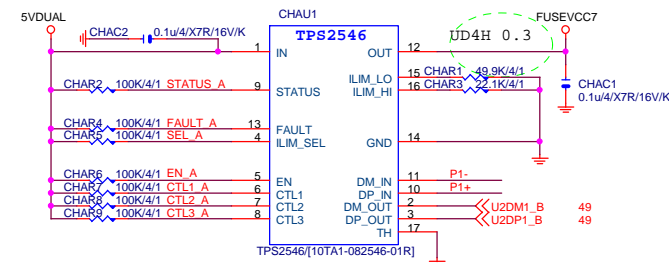
Remove

Put close to U1
Do check with crystal vendor
if the value of C31, C32 and R31 are all appropriate.

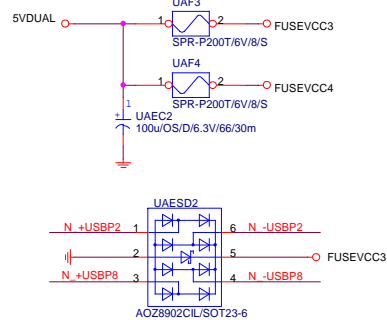
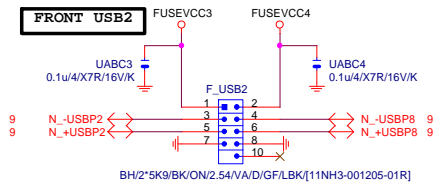
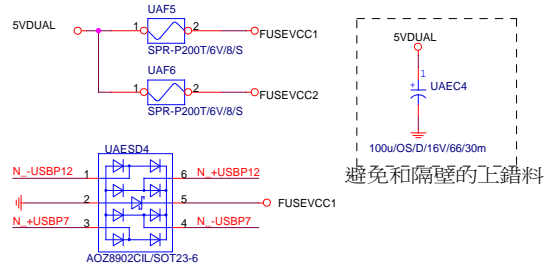
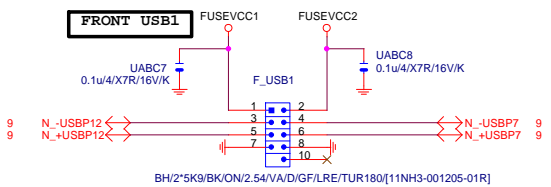
Put close to U1
Short and broad connection to GND
Don't split R32 into multiple resistors.



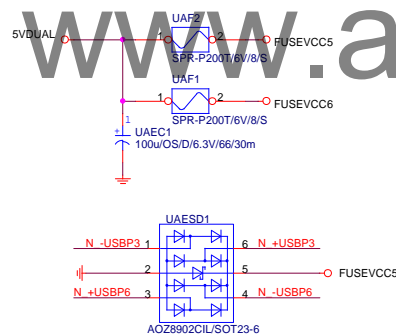
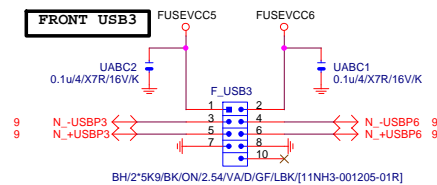
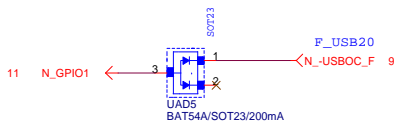
TI2543內建Fuse，移除UAFB1~2.



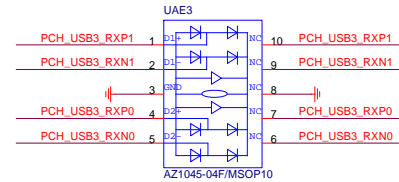
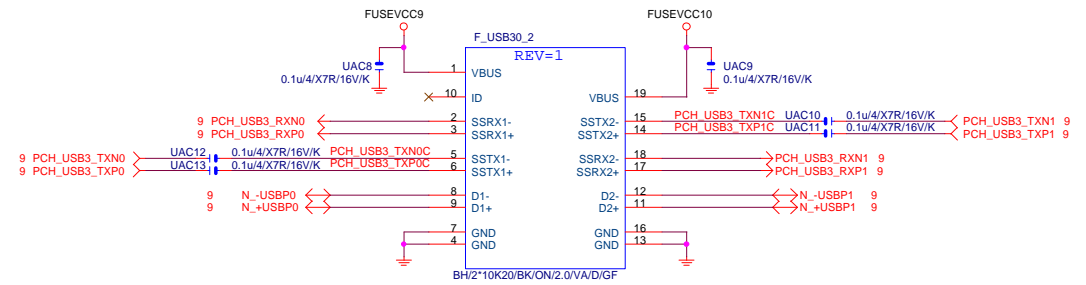
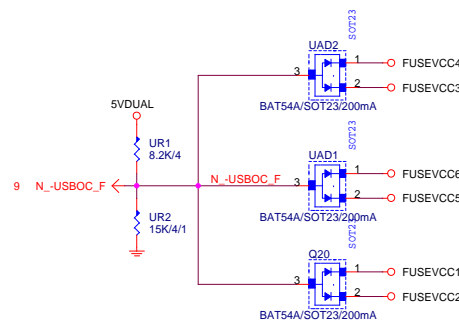
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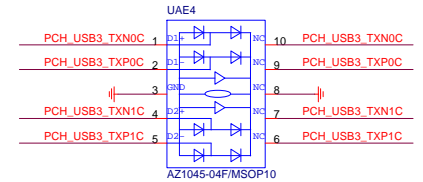
Close to connector



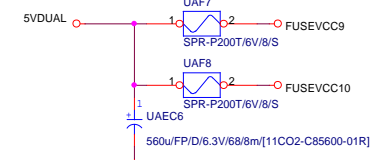
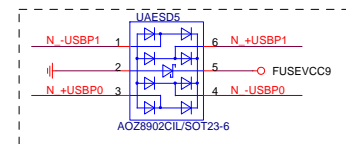
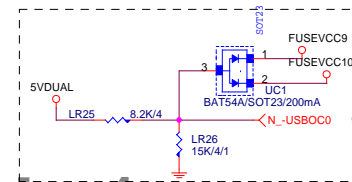
Close to connector



Close to connector

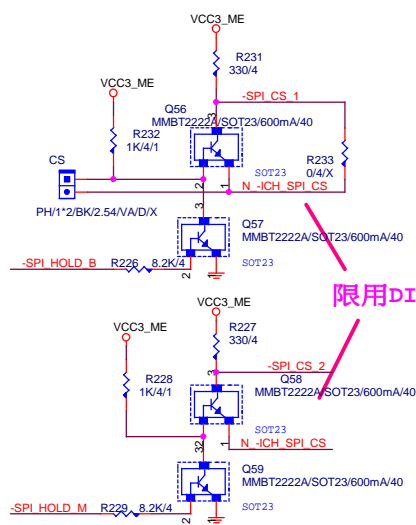


Close to connector

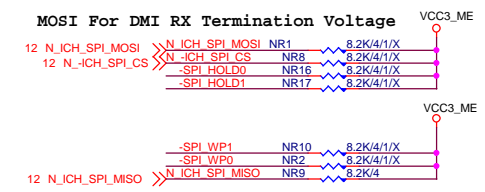
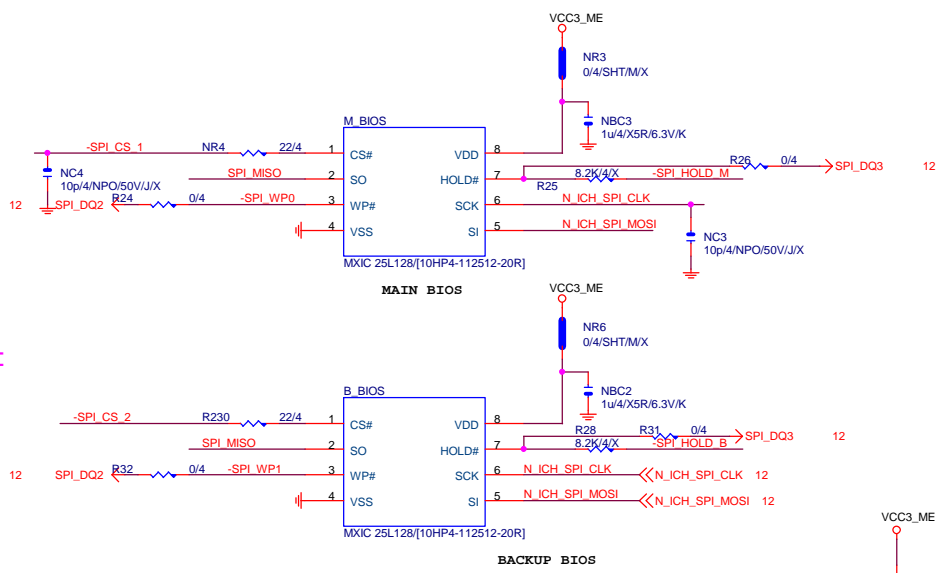


GIGABYTE

Title	FRONT USB 2.0, F_USB30_2	
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限用DII



1 means floating
0 means PD 1K



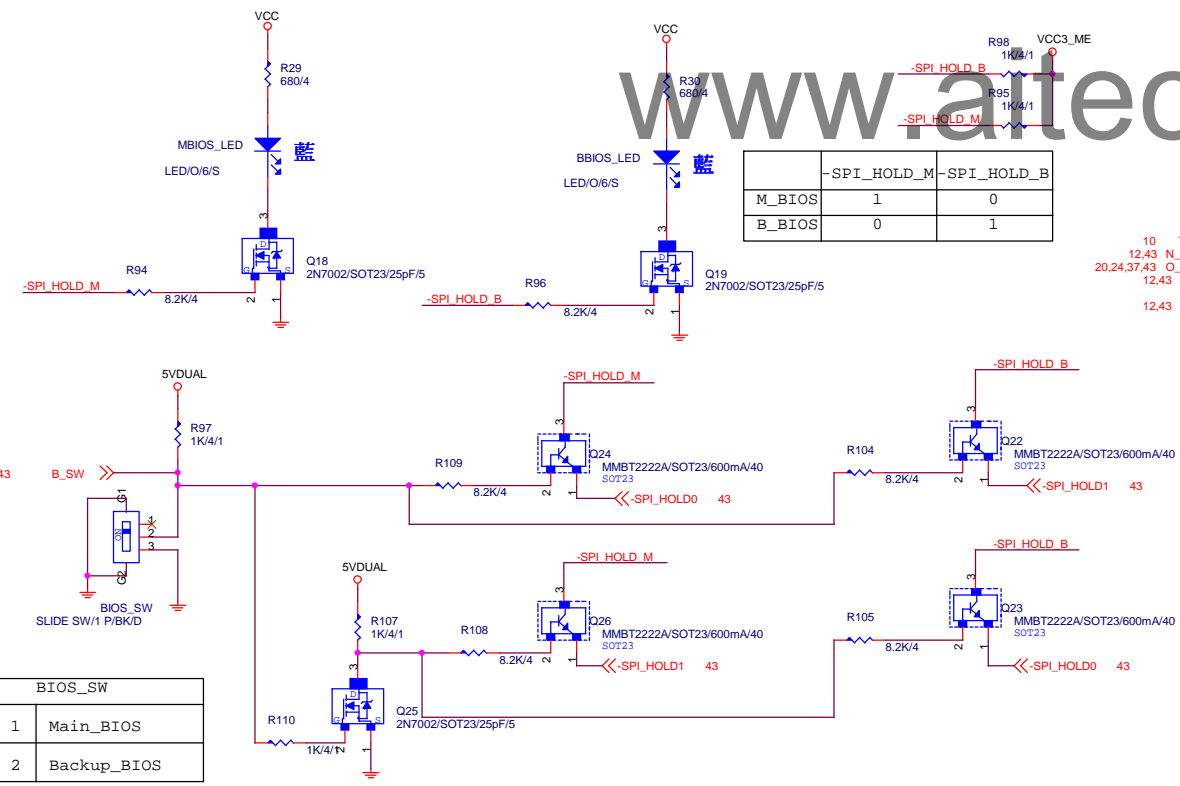
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

SPI ROM

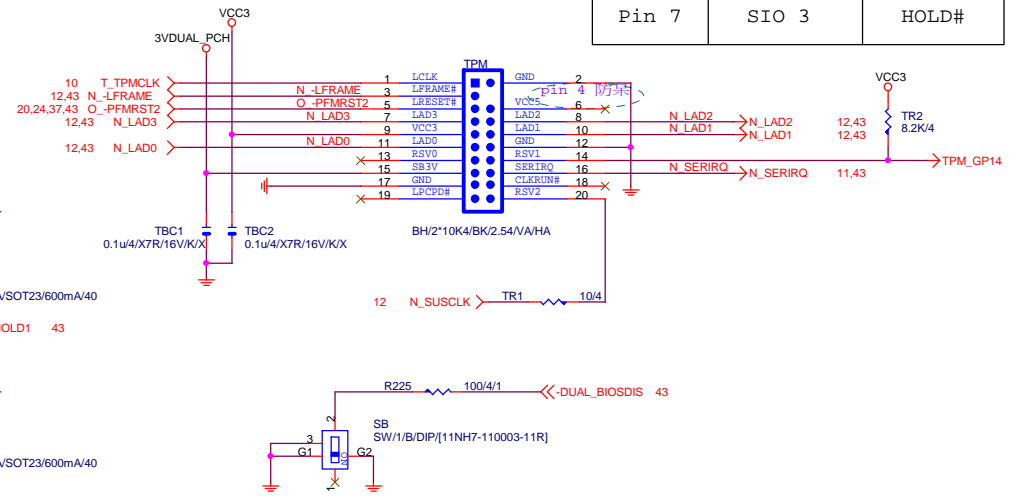
	Quad I/O	Traditional
Pin 2	SIO 1	S0
Pin 3	SIO 2	WP#
Pin 5	SIO 0	SI
Pin 7	SIO 3	HOLD#

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	-SPI_HOLD_M	-SPI_HOLD_B
M_BIOS	1	0
B_BIOS	0	1



BIOS_SW	
1	Main_BIOS
2	Backup_BIOS



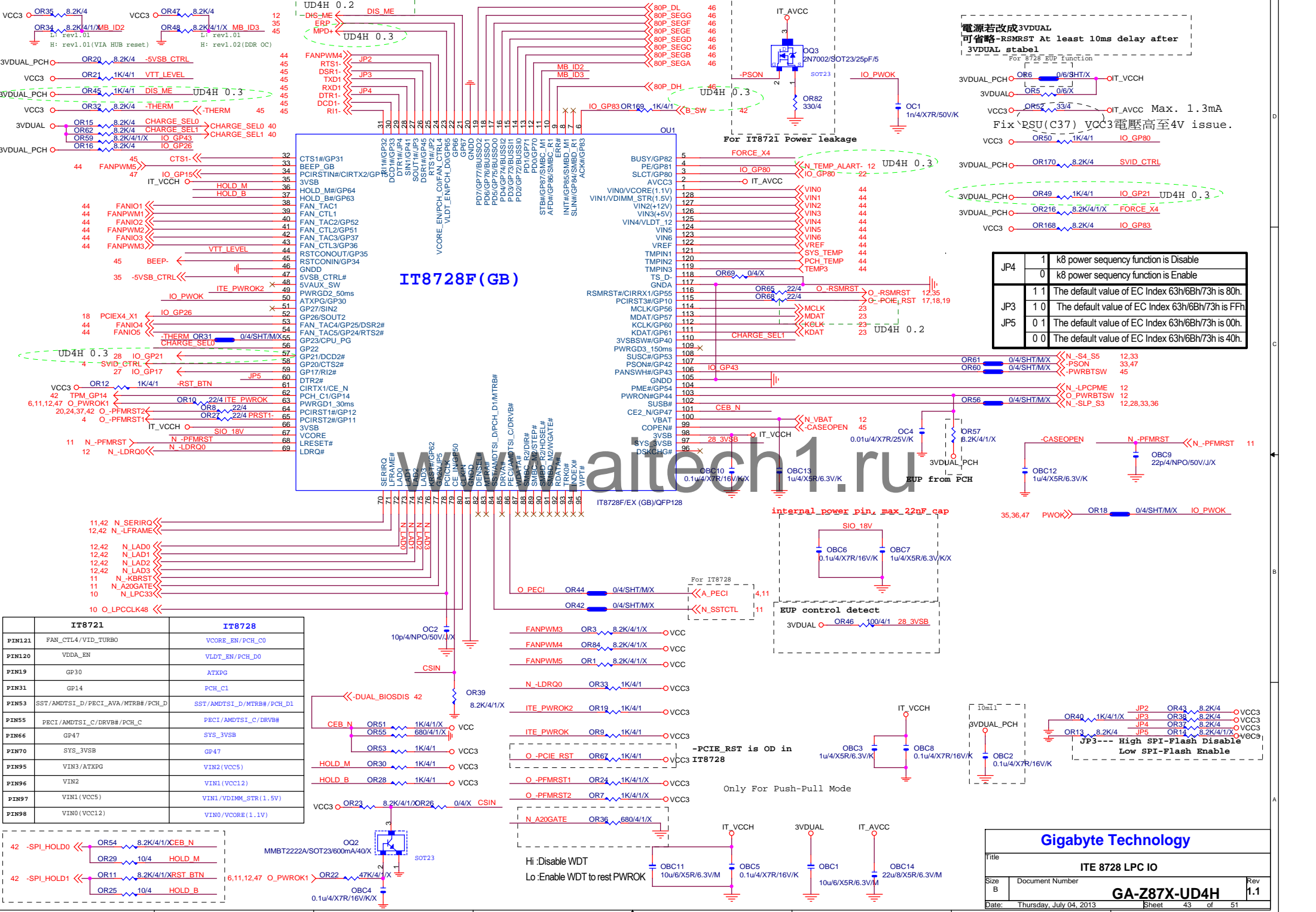
SB	
1	Disable
2	Enable

Gigabyte Technology

Title: **Dual BIOS**

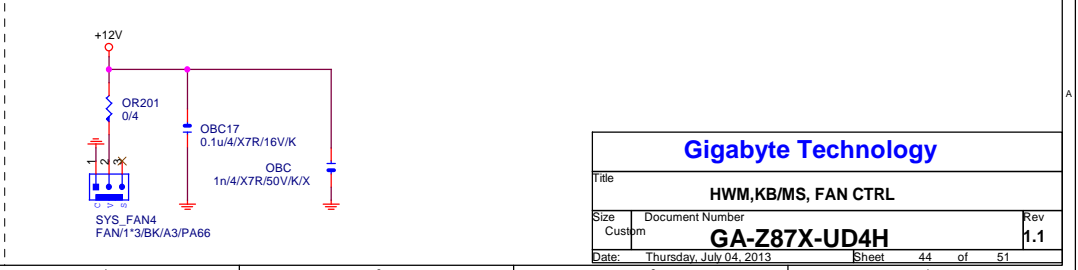
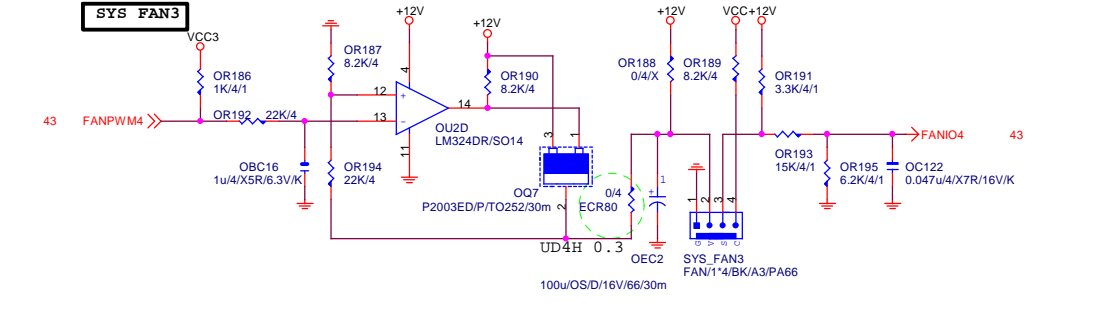
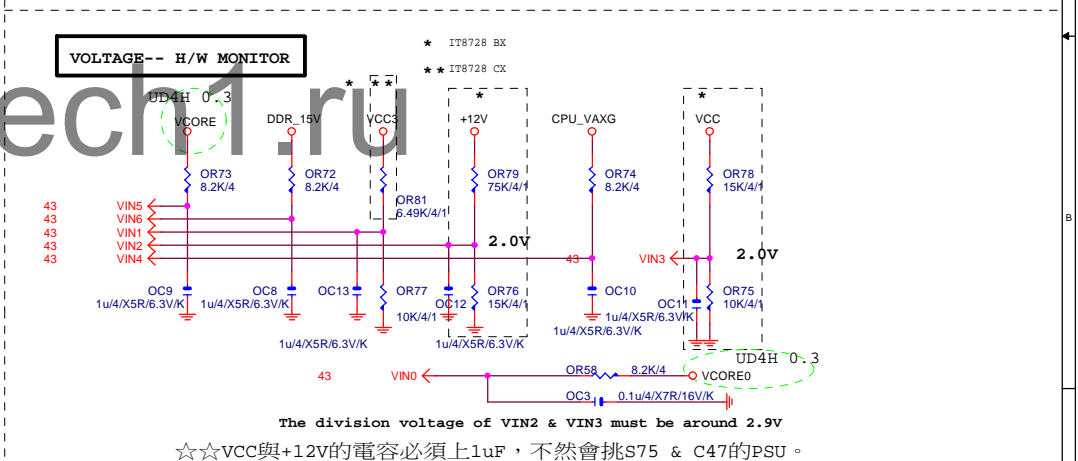
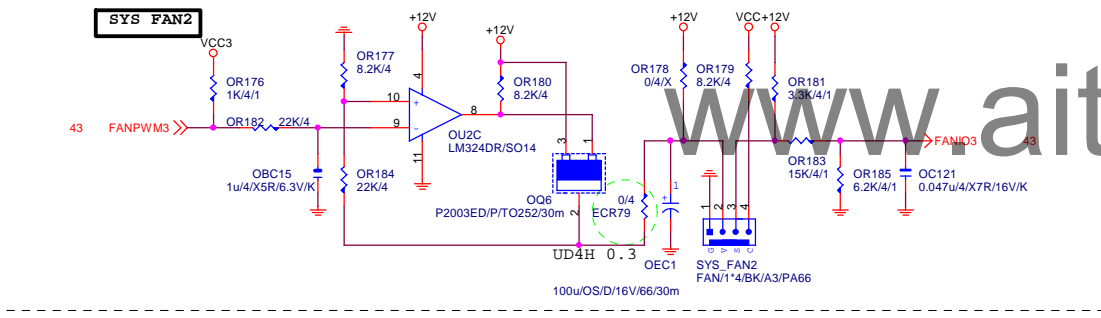
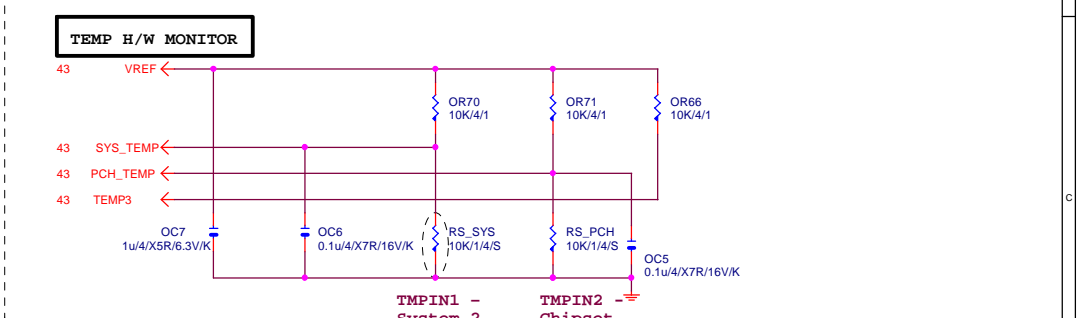
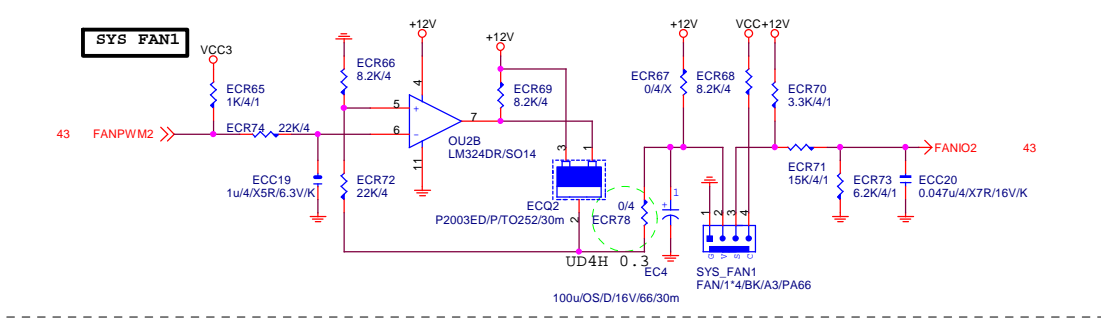
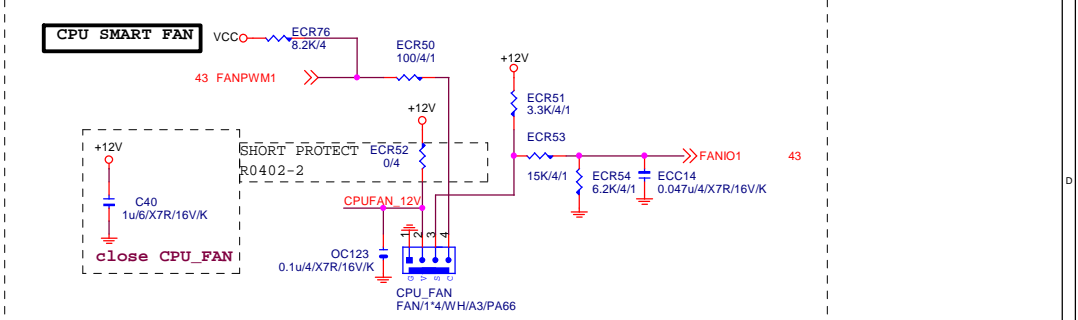
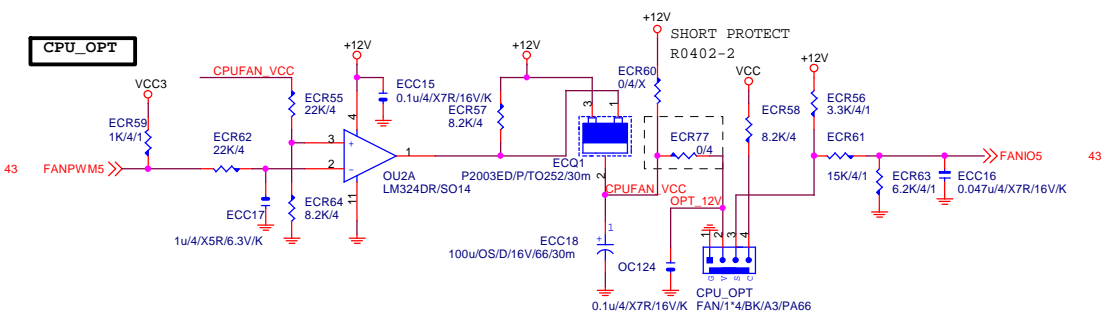
Size Custom: Document Number **GA-Z87X-UD4H** Rev **1.1**

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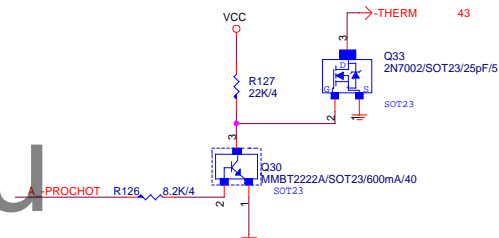
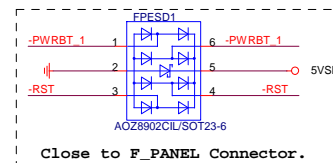
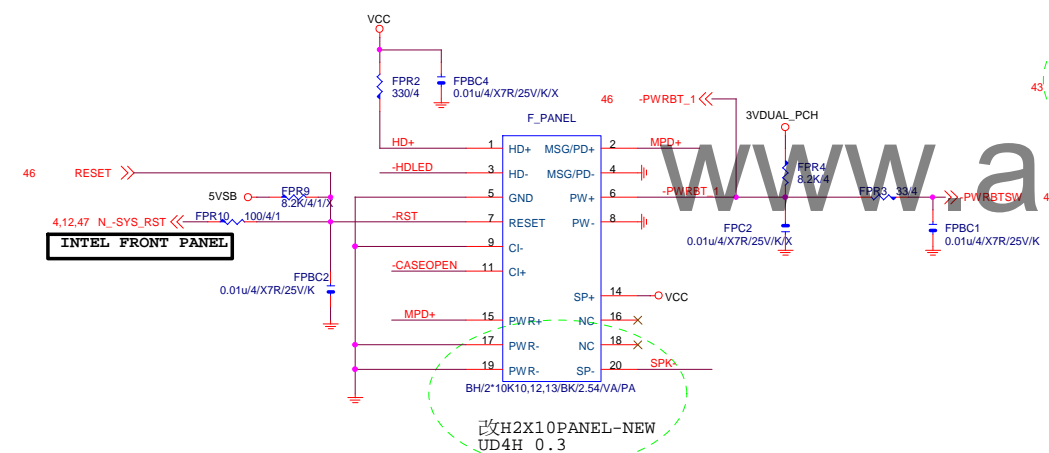
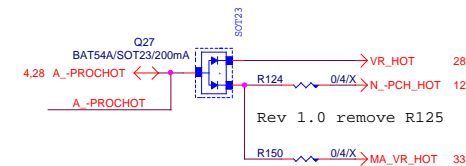
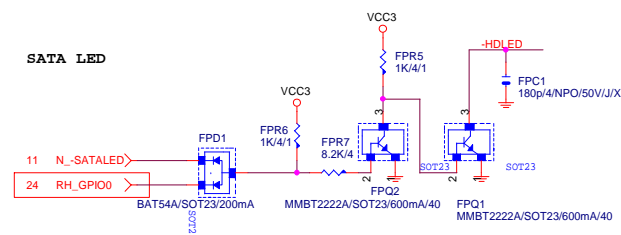
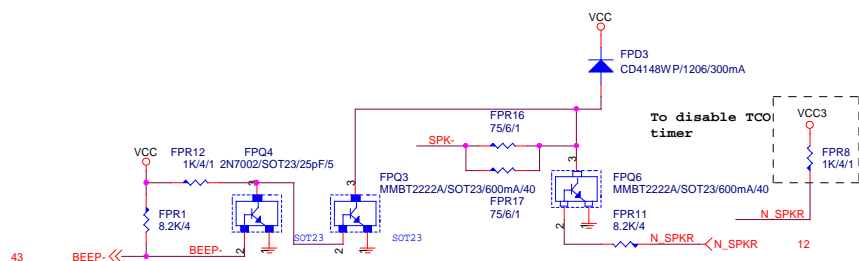
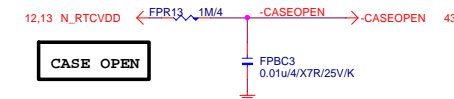
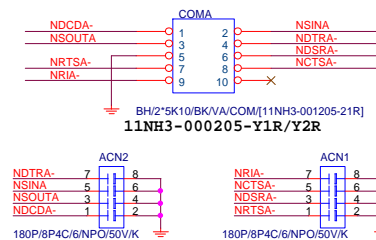
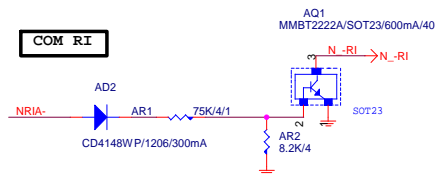
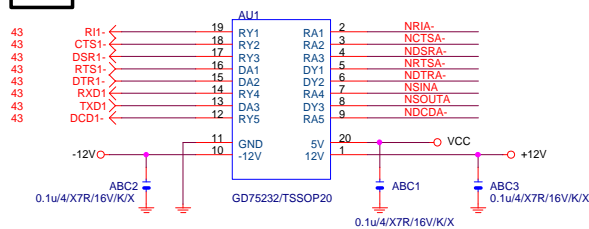


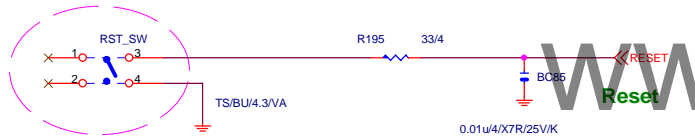
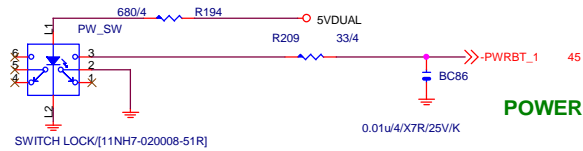
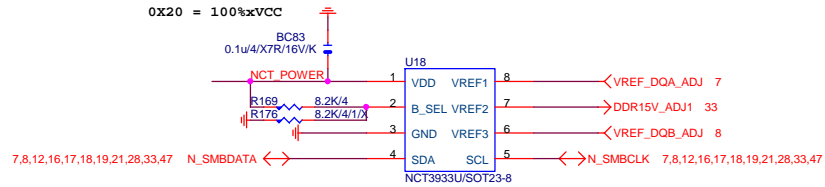
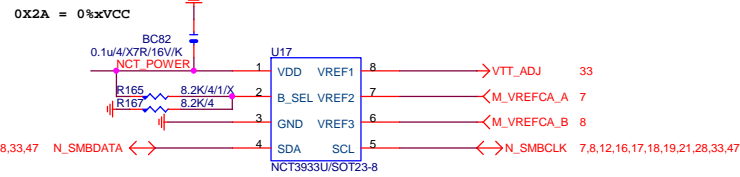
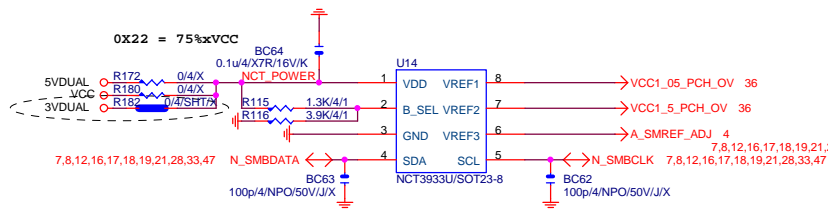
	IT8721	IT8728
PIN121	FAN_CTL4/VID_TURBO	VCORE_EN/PCH_C0
PIN120	VDDA_EN	VLDI_EN/PCH_D0
PIN19	GP30	ATXP_G
PIN31	GP14	PCH_C1
PIN53	SST/AMDTSI_D/PECI_AVA/MTRB#/PCH_D	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRV##/PCH_C	PECI/AMDTSI_C/DRV#
PIN66	GP47	SYS_3VSB
PIN70	SYS_3VSB	GP47
PIN95	VIN3/ATXP_G	VIN2(VCC5)
PIN96	VIN2	VIN1(VCC12)
PIN97	VIN1(VCC5)	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0(VCC12)	VIN0/VCORE(1.1V)

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

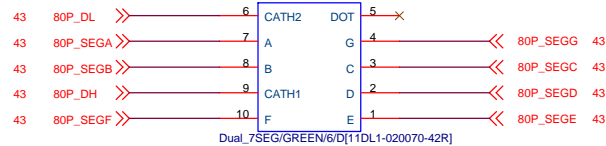
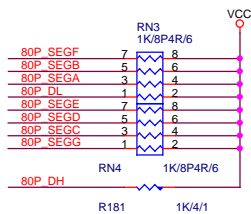


Gigabyte Technology			
Title HWM,KB/MS, FAN CTRL			
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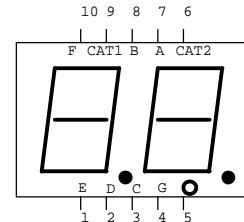


80 PORT



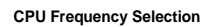
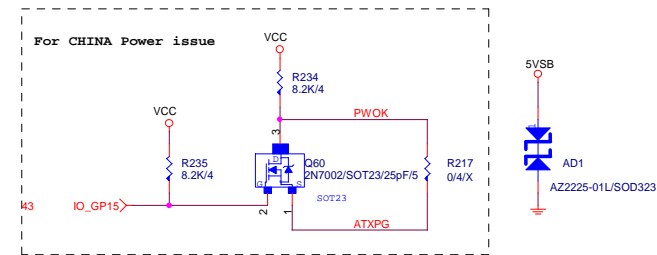
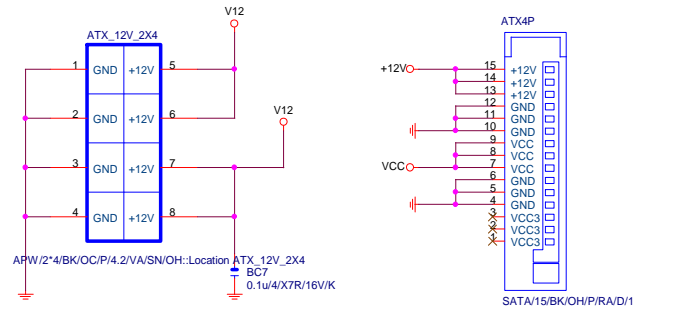
COMMON CATHODE

Physical Package
(TOP VIEW)

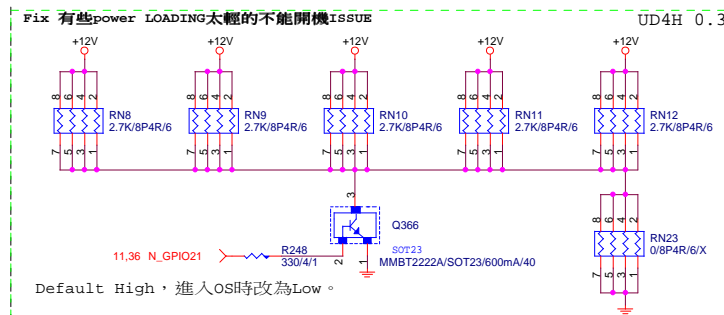


GIGABYTE™			
Title			
RST, PWR, CLR_CMOS			
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Title R&D 155



CLK GEN CK505



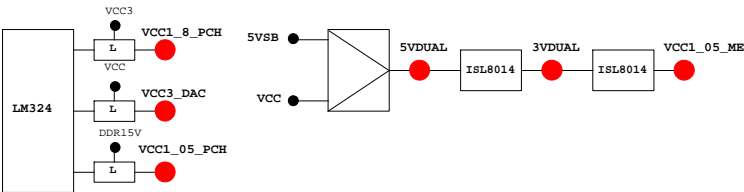
Title			
ATX POWER CONNECTOR			
Size Custom	Document Number	GA-Z87X-UD4H	Rev 1.1
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PCH GPIO LIST TABLE				
PIN NAME	PWR	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI -PECI_REQ	N/A
GP1/TACH1	MAIN		GPI ICH_FAN_TACH1	N/A
GP2/PIRQ#	MAIN		GPI -PIRQE	P/U 8.2K VCC3
GP3/PIRQ#	MAIN		GPI -PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI -PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI -PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI ICH_FAN_TACH2	N/A
GP7/TACH3	MAIN		GPI ICH_FAN_TACH3	N/A
GP8	STBY	H	GPO GPIO8	P/U 8.2K 3VDUAL
GP9/OC5#	STBY		NATIVE OC5#	N/A
GP10/OC6#	STBY		NATIVE OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE -SMBALERT	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI LAN_PHY_PWR_CTRL	P/U 8.2K 3VDUAL
GP13	STBY	L	GPI GPIO13	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE OC7#	N/A
GP15	STBY	L	GPO GPIO15	N/A
GP16	MAIN		GPI -SKTOCC	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI ICH_FAN_TACH0	N/A
GP18	MAIN		NATIVE MB_ID0	P/D 8.2K GND
GP19	MAIN		GPI -LAN1_ISO	P/U 8.2K VCC3
GP20	MAIN		NATIVE LED_CTL	P/U 1K VCC3
GP21	MAIN		GPI VCC18_FCH_OV2	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI VCORE_OV3	P/U 8.2K VCC3
GP23	MAIN		NATIVE -LDRQ1	P/U 8.2K VCC3
GP24	STBY	L	GPO TLS	P/U 8.2K 3VDUAL
GP25	STBY		NATIVE -CPU_STOP	P/U 8.2K 3VDUAL
GP26	STBY		NATIVE -ACZ_DET	P/U 8.2K 3VDUAL
GP27	STBY	H	GPO GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO GPIO28	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI GPIO29	N/A
GP30	STBY	H-Z	GPI S_PWR_ACK	P/U 100K 3VDUAL
GP31	STBY	H-Z	GPI N/A(Reverse)	P/U 8.2K VCC3
GP32	MAIN	H	GPO MB_ID1	P/D 8.2K GND
GP33	MAIN	H	GPO LOAD-LINE	P/U 1K VCC3
GP34	MAIN	H-Z	GPI -PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO GPIO35	P/U 8.2K VCC3
GP36	MAIN		GPI -LAN1_DSM	P/U 8.2K VCC3
GP37	MAIN		GPI N/A	P/U 8.2K VCC3
GP38	MAIN	H-Z	GPI VCORE_OV2	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI -LAN_DSM	P/U 8.2K VCC3
GP40	STBY		NATIVE OC1#	N/A
GP41	STBY		NATIVE OC2#	N/A
GP42	STBY		NATIVE OC3#	N/A
GP43	STBY		NATIVE OC4#	N/A
GP44	STBY	L	NATIVE N/A	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE -LPCPME	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE PWR_LED	P/U 8.2K 3VDUAL
GP47	STBY		NATIVE PSI_LED	P/U 8.2K 3VDUAL
GP48	MAIN	H-Z	IN EN_PWM	P/U 8.2K VCC3
GP49	MAIN	H-Z	IN VCC18_OV1	P/U 8.2K VCC3
GP50	MAIN		NATIVE -REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE -GNT1	N/A
GP52	MAIN		NATIVE -REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE -GNT2	N/A
GP54	MAIN		NATIVE -REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE -GNT3	N/A
GP56	STBY		NATIVE N/A(Reverse)	P/U 8.2K 3VDUAL
GP57	STBY	H-Z	IN VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE -SUSTAT	N/A
GP62	STBY	L	NATIVE SUSCLK	N/A
GP63	STBY	L	NATIVE GPIO63	N/A
GP64	MAIN	L	NATIVE CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY		NATIVE 1_05V_OV1	P/U 8.2K 3VDUAL
GP74	STBY	H-Z	NATIVE 1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE N/A(Reverse)	P/U 8.2K 3VDUAL

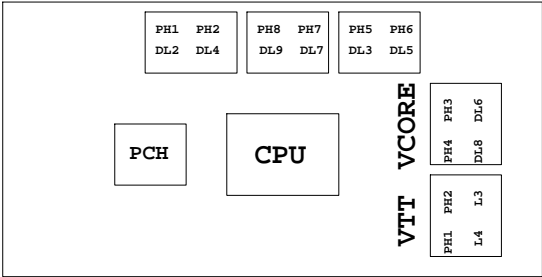
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRXL/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBD_R	2X PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBD_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



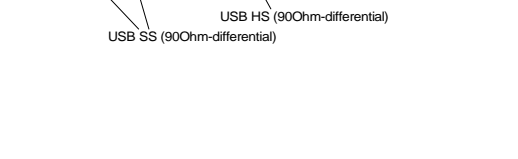
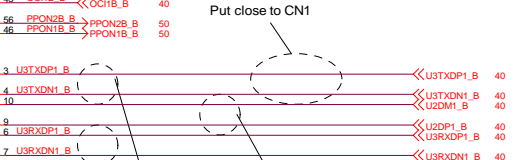
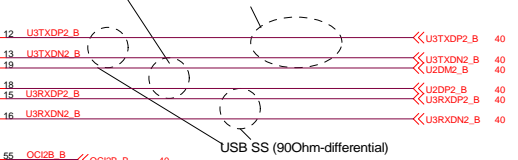
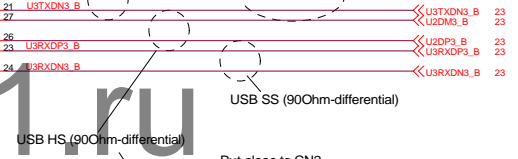
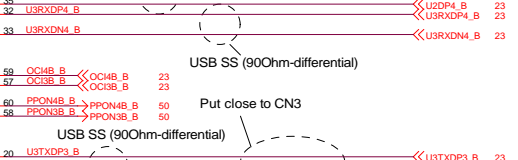
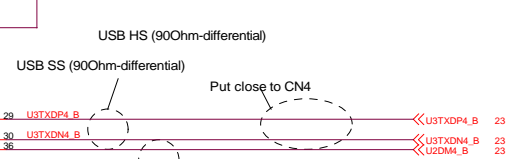
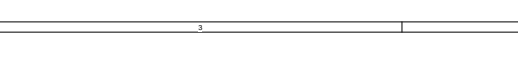
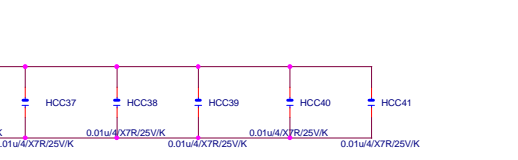
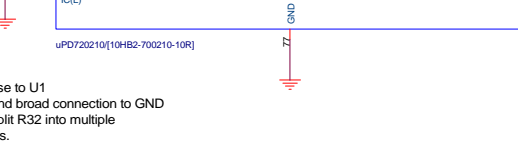
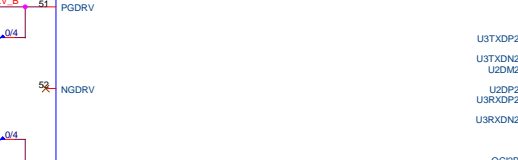
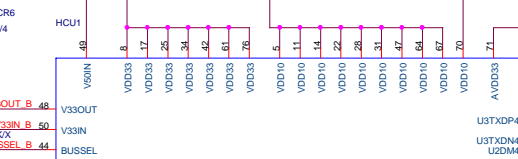
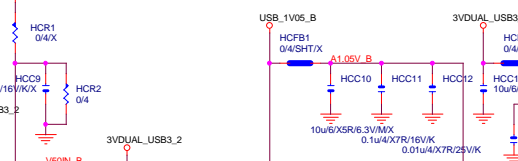
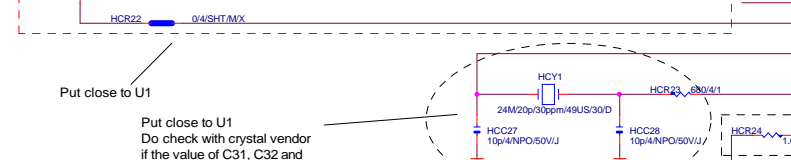
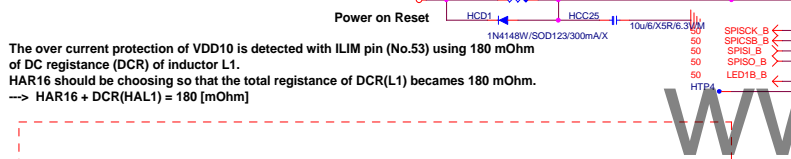
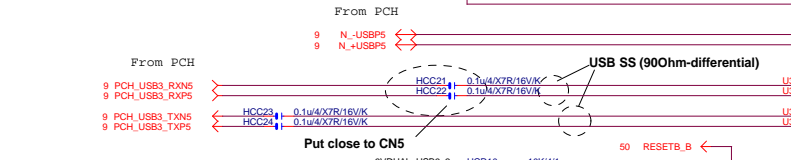
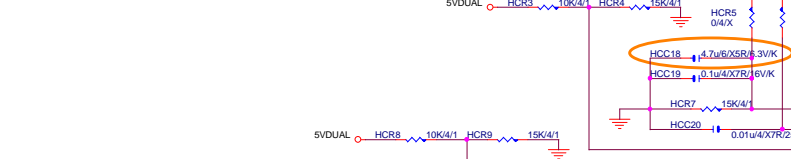
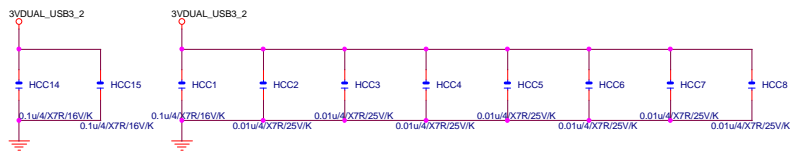
BIOS超電壓對應表：

散熱模組料號：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

Gigabyte Technology			
Title	TABLE LIST		
Size C	Document Number	GA-Z87X-UD4H	Rev 1.1
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The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.
HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.
--> HAR16 + DCR(HAL1) = 180 [mOhm]

Remove

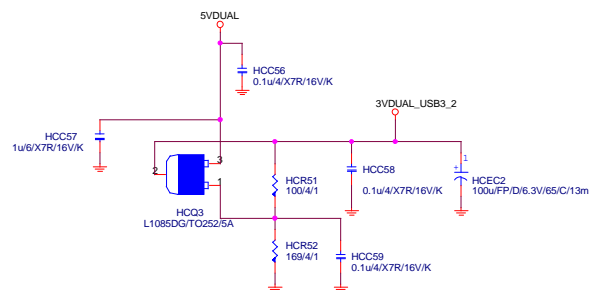
Put close to U1
Do check with crystal vendor
if the value of C31, C32 and
R31 are all appropriate.

Put close to U1
Short and broad connection to GND
Don't split R32 into multiple
resistors.

uP720210

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GIGABYTE™		
Title D720210 4port Hub B		
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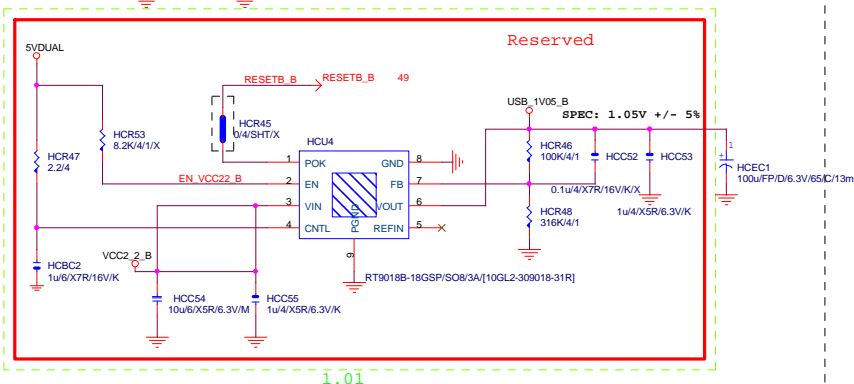
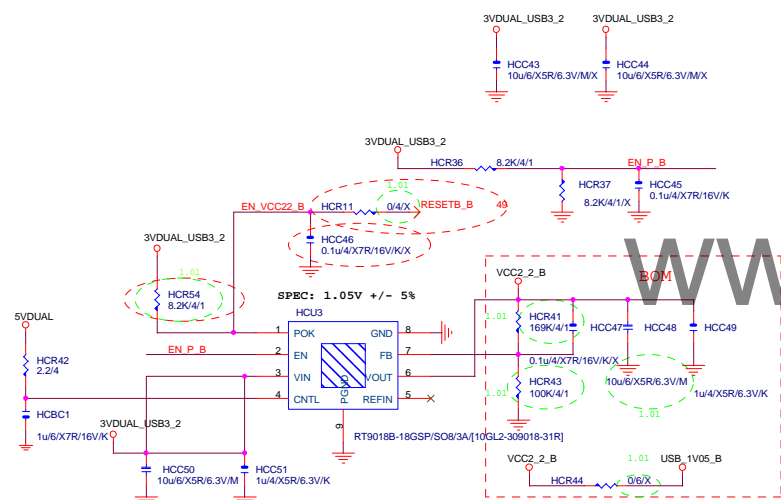
49 PPN2B_B

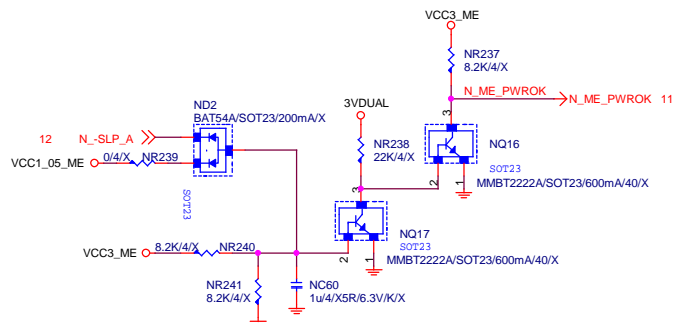
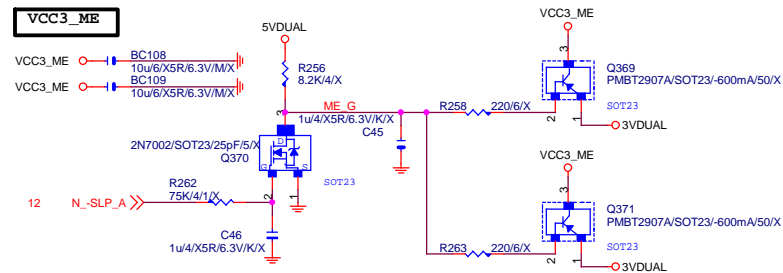
HCR35 10K/4/1/X

HCR40 10K/4/1

3V_DUAL_USB3

49 PPN1B_B ← PPN1B_B HCR38 10K/4/1 3VDUAL_U
HCR39 10K/4/1/X





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