

Model Name: GA-Z87X-OC

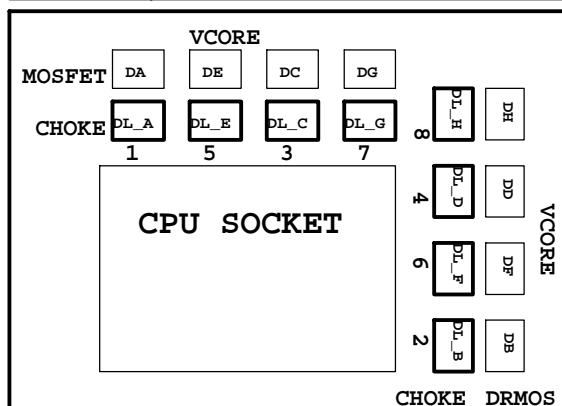
Rev 1.1

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCH HDMI/DP
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*1 SLOTS X1
18	PCI EXPRESS X8 X4 SWITCH
19	PCI EXPRESS*4 SLOT (CPU)
20	PCI EXPRESS*4 SLOT (PCH)
21	ITE 8892
22	PCI SLOT 1&2
23	ALC892
24	REAR AUDIO JACK
25	Dual BIOS
26	IR3563A PWM
27	IR3550-VCORE

SHEET TITLE

28	IR3570-DDR PWM
29	IR3598-DDR POWER
30	5VDUAL, 3VDAUL, ERP
31	PCH1.05V, PCH1.5V, VCC3_DAC
32	I/O ITE8728
33	KB/USB3
34	F_PANEL , F_USB , PHOT
35	F_USB 2.0
36	F_USB 3.0
37	ATX POWER, CLOCK GEN
38	HWM, FAN CTRL
39	INTEL I217
40	Highly switch
41	RST, PWR, CLR_CMOS
42	IT 8790
43	FAN CTRL
44-45	RENESAS USB3.0 HUB_A
46-48	RENESAS USB3.0 HUB_B
49	TABLE LIST



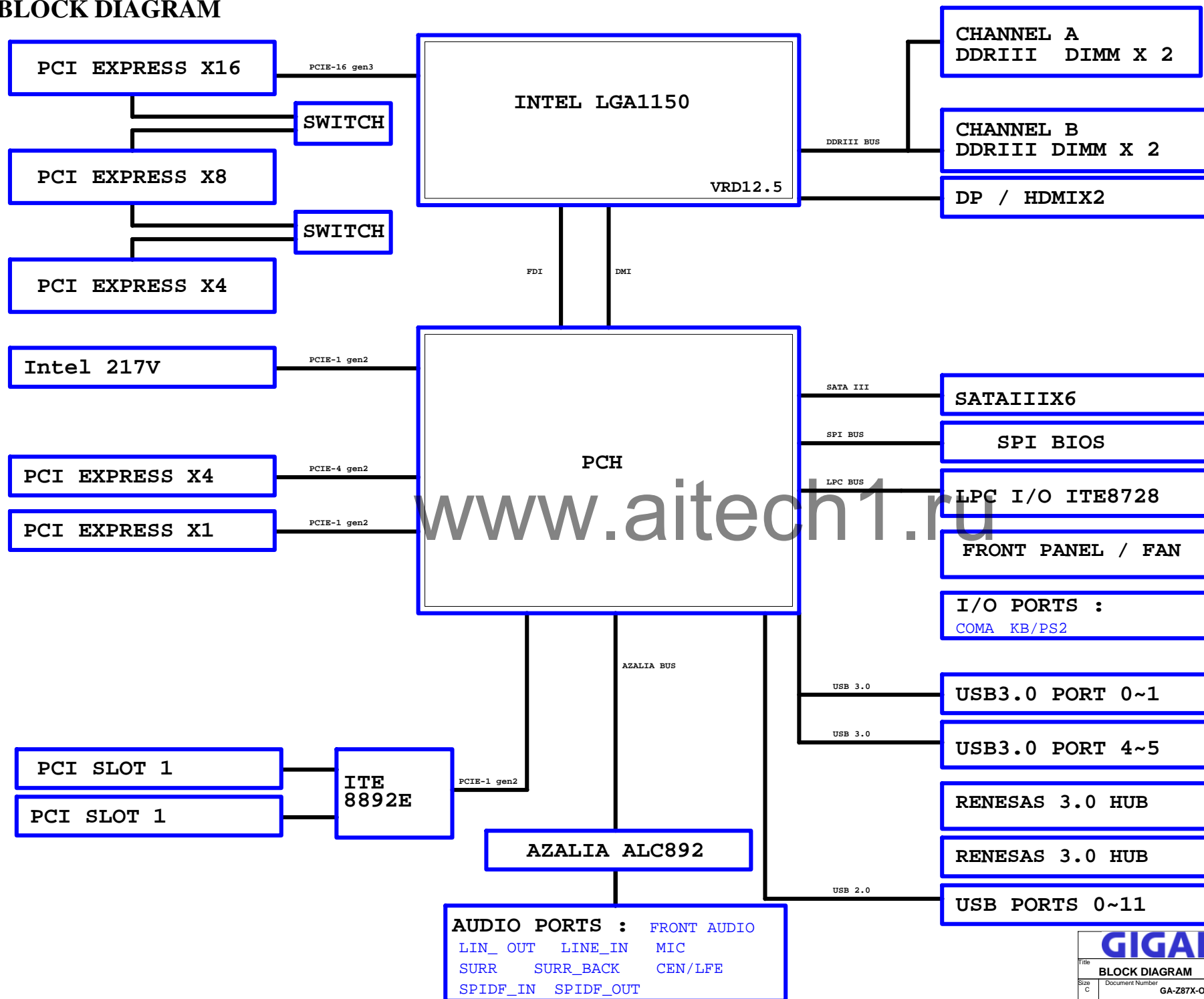
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Title Cover Sheet		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013 Sheet 1 of 49		

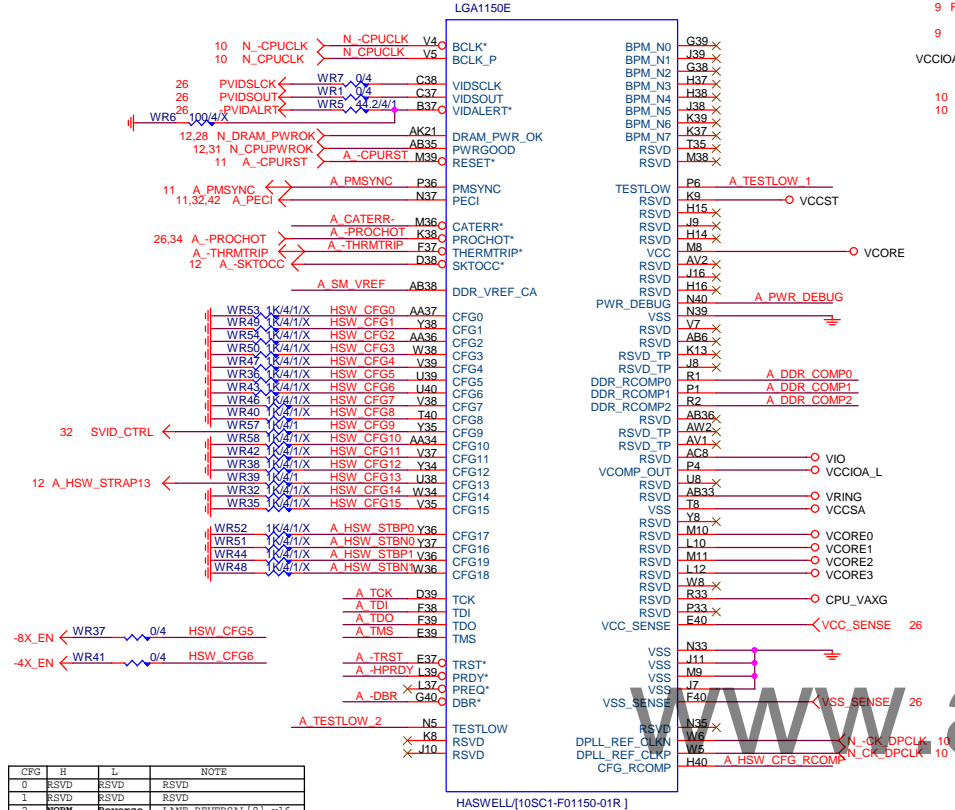
Component value change history

[illegible]

DATE	Change Item	Reason
2012/12/21	REV0.1 Z87X-OC 0.1 gerber out	
2013/02/18	0.2B modify SATA 線路	
2013/03/08	1.0B modify 8790 線路 1.0B modify FAN 線路	
2013/03/29	1.01B modify HUB 線路 1.01B modify PCIE_SW 線路 1.01B modify OTP 線路	
2012/04/12	1.02B modify 文字面	
2013/04/16	1.03B modify OC_IGNITION 線路	
2013/05/10	1.04 modify PCIE 線路	
2013/06/10	1.05 modify CLK 線路	
2013/07/01	1.1 modify PCB 版本 文字面	

BLOCK DIAGRAM

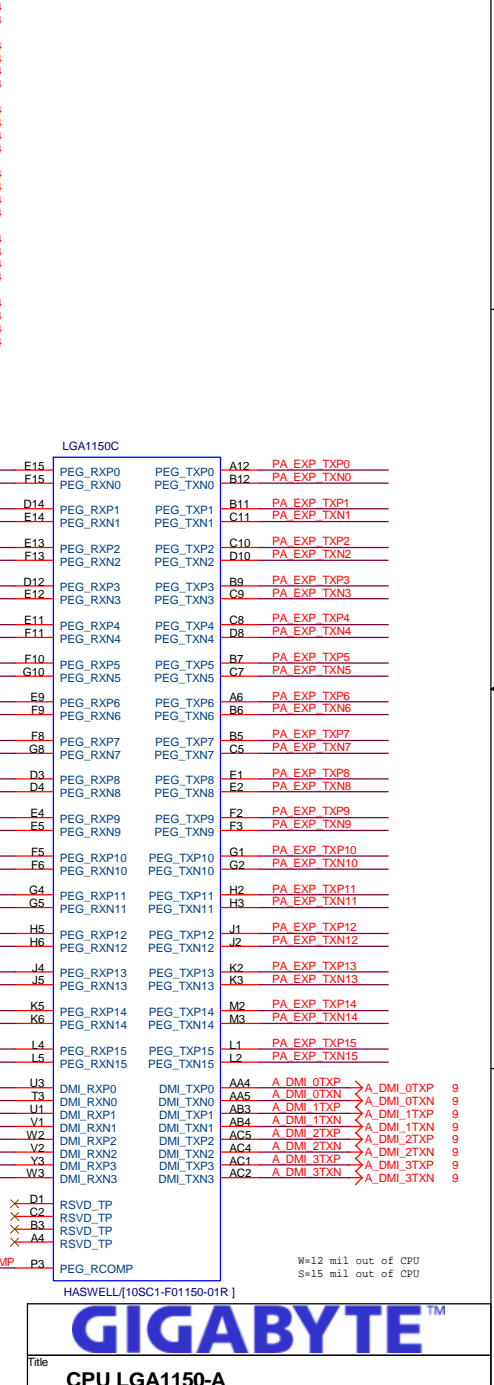
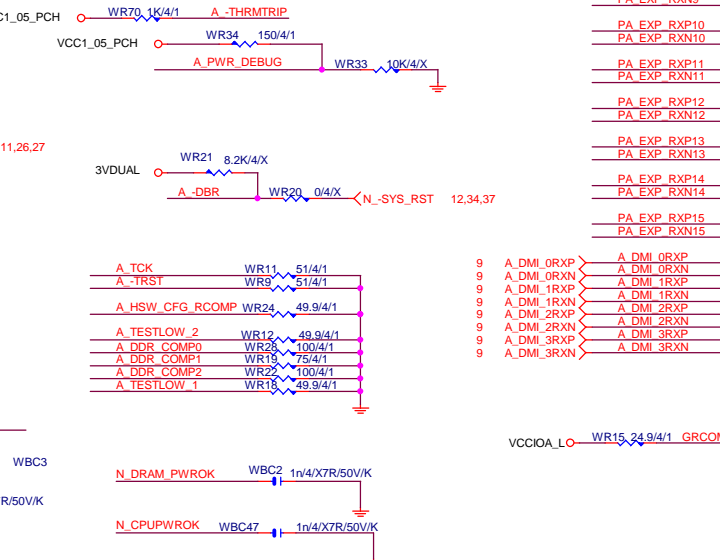
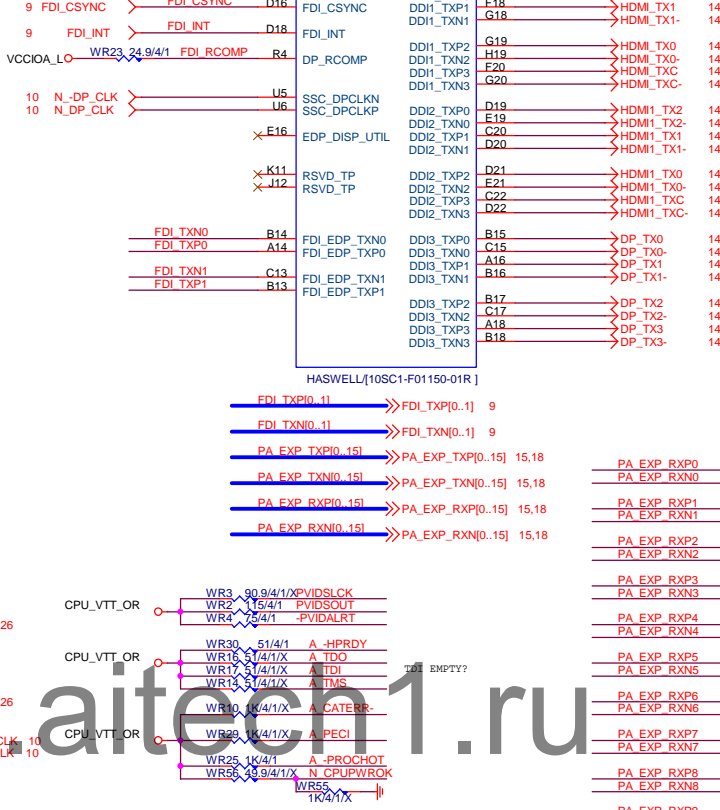
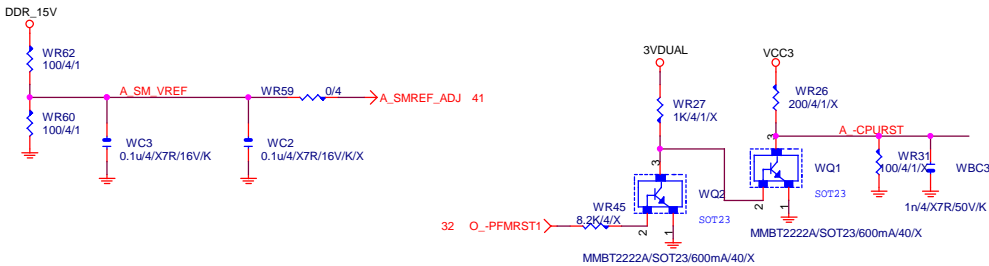




CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1x16 , Default
1	0	2x8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP



Title

CPU LGA1150-A

Size

Document Number

GA-Z87X-OC

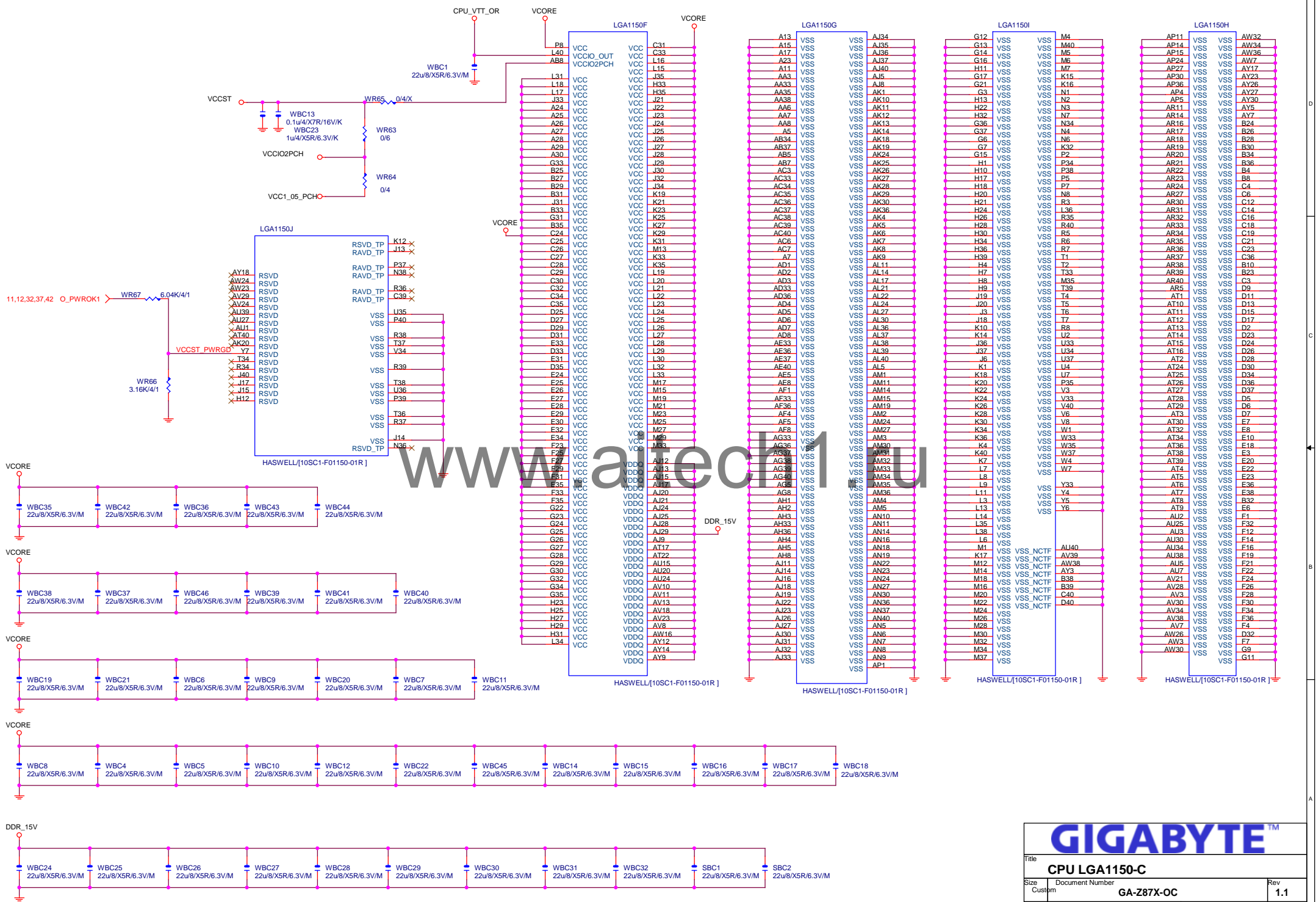
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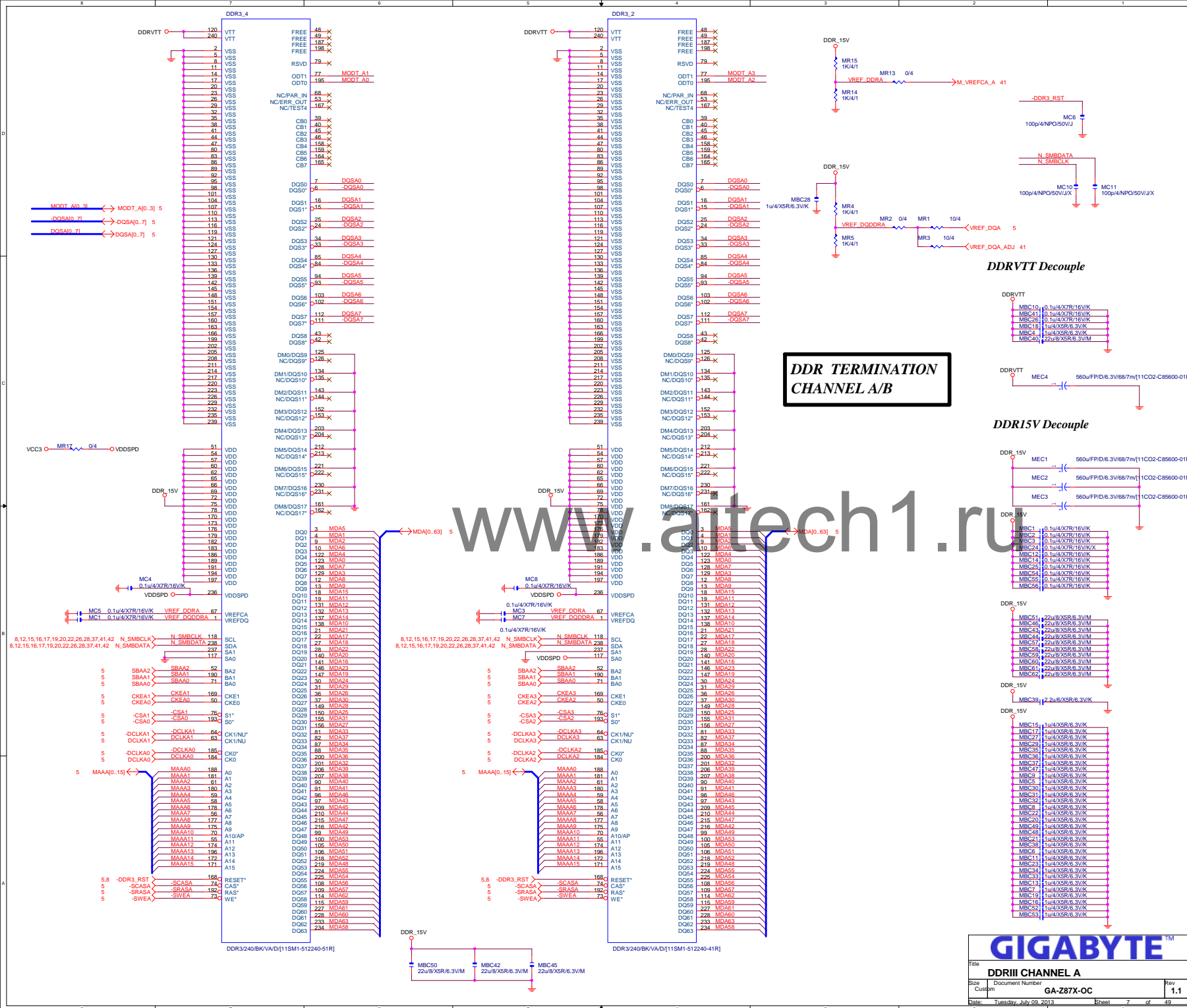
Tuesday, July 09, 2013

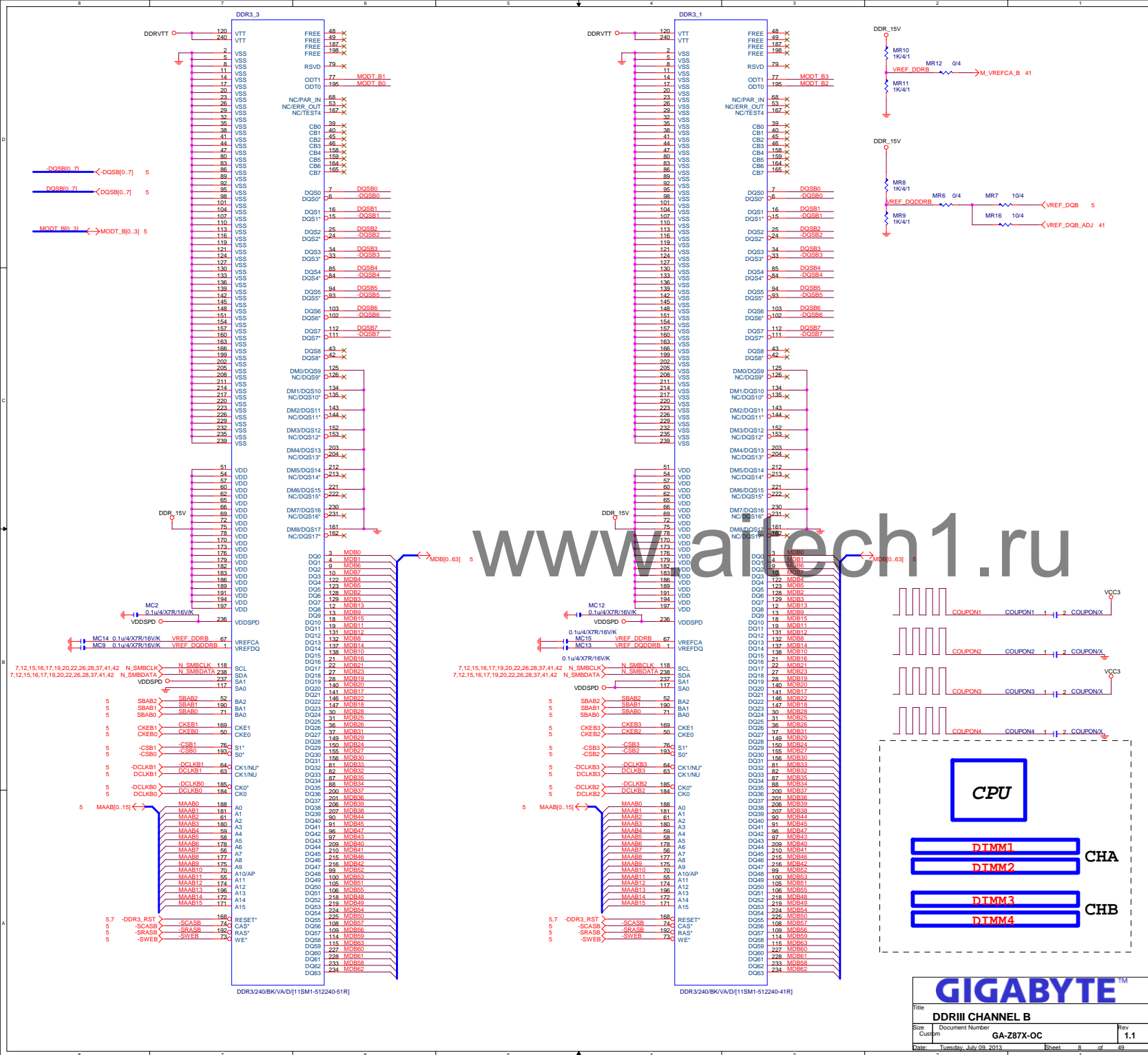
Sheet 4 of 49

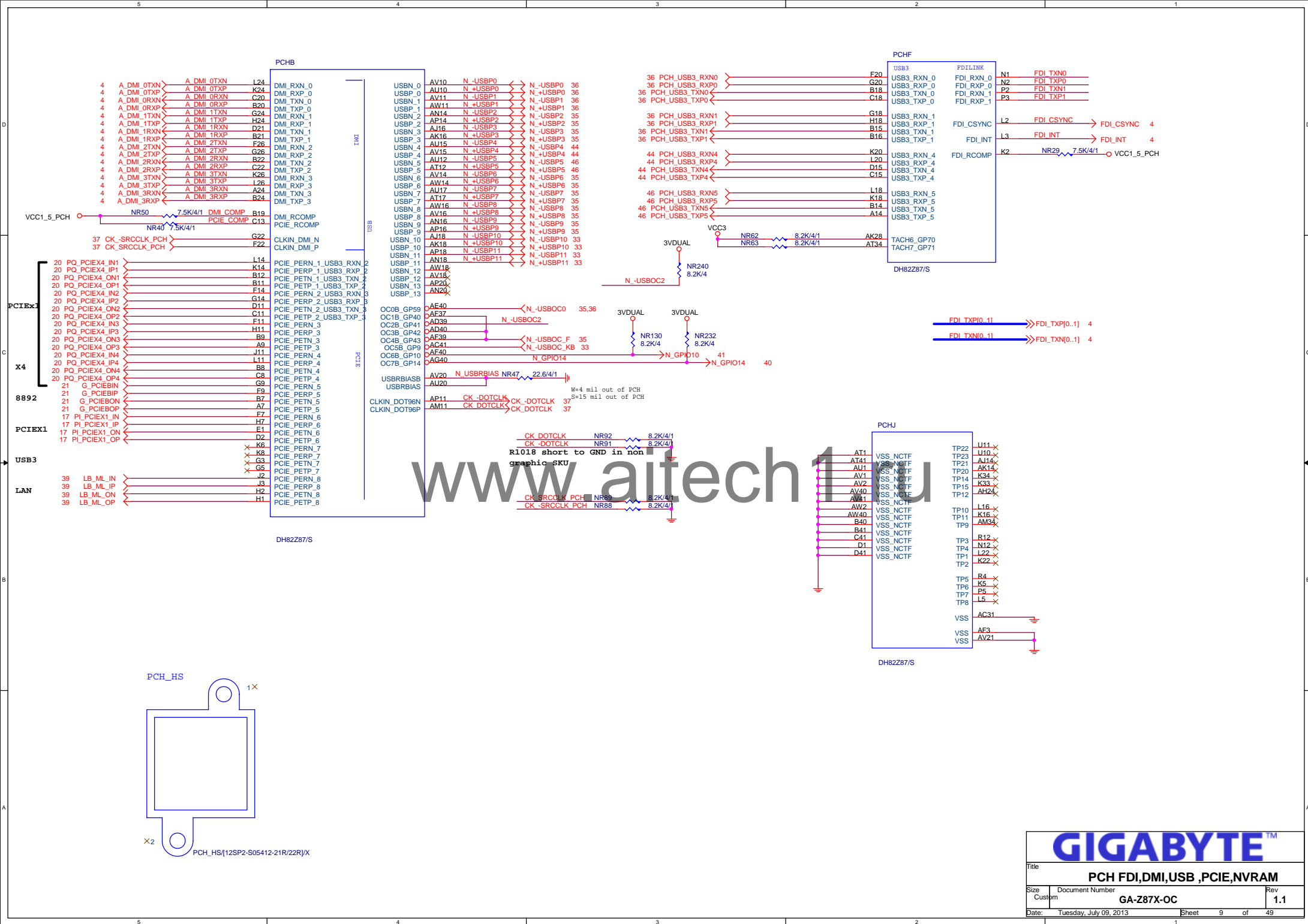
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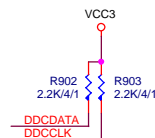
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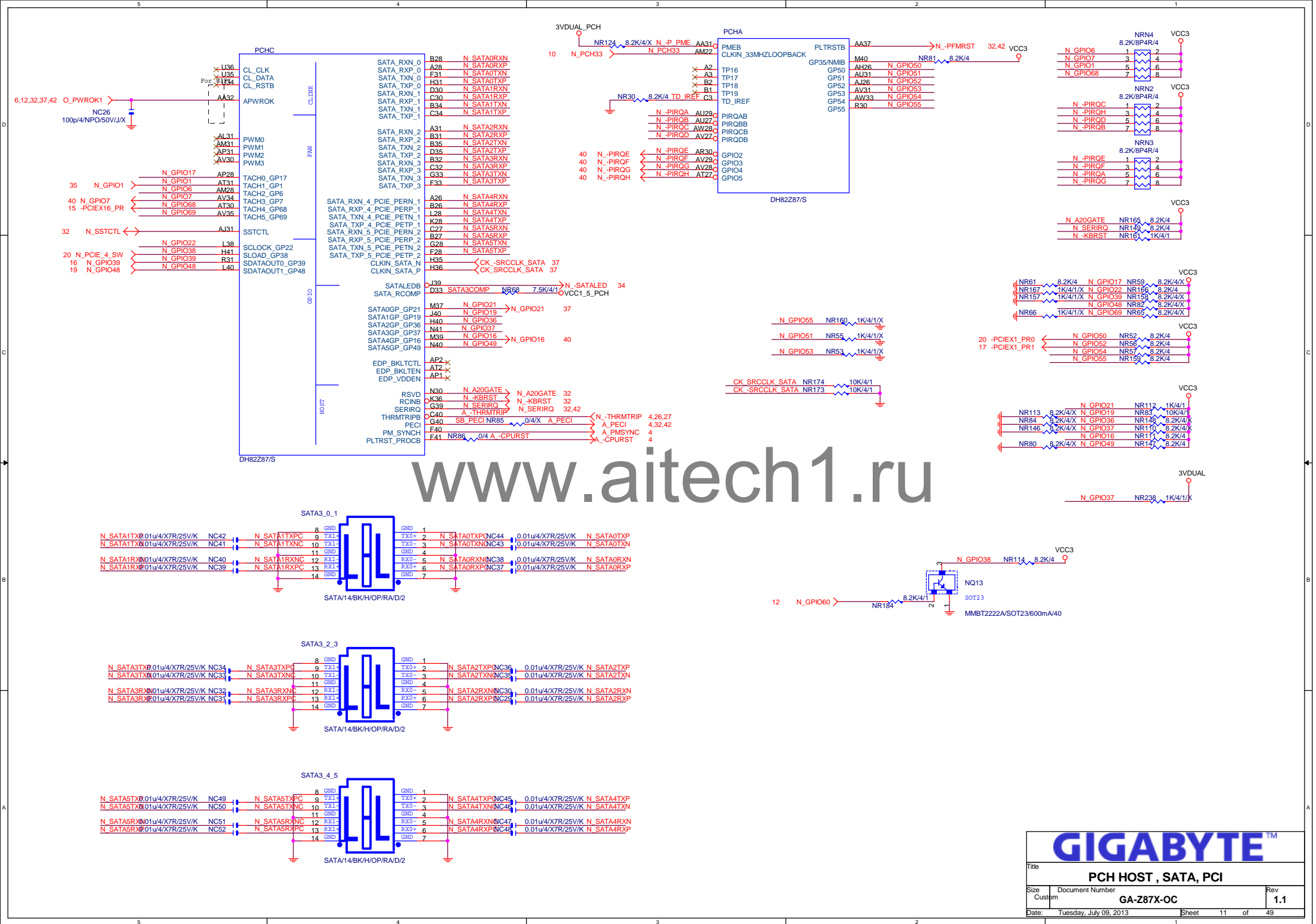




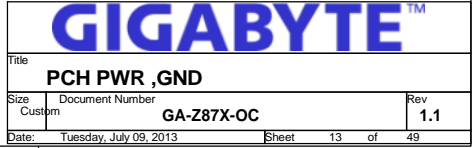


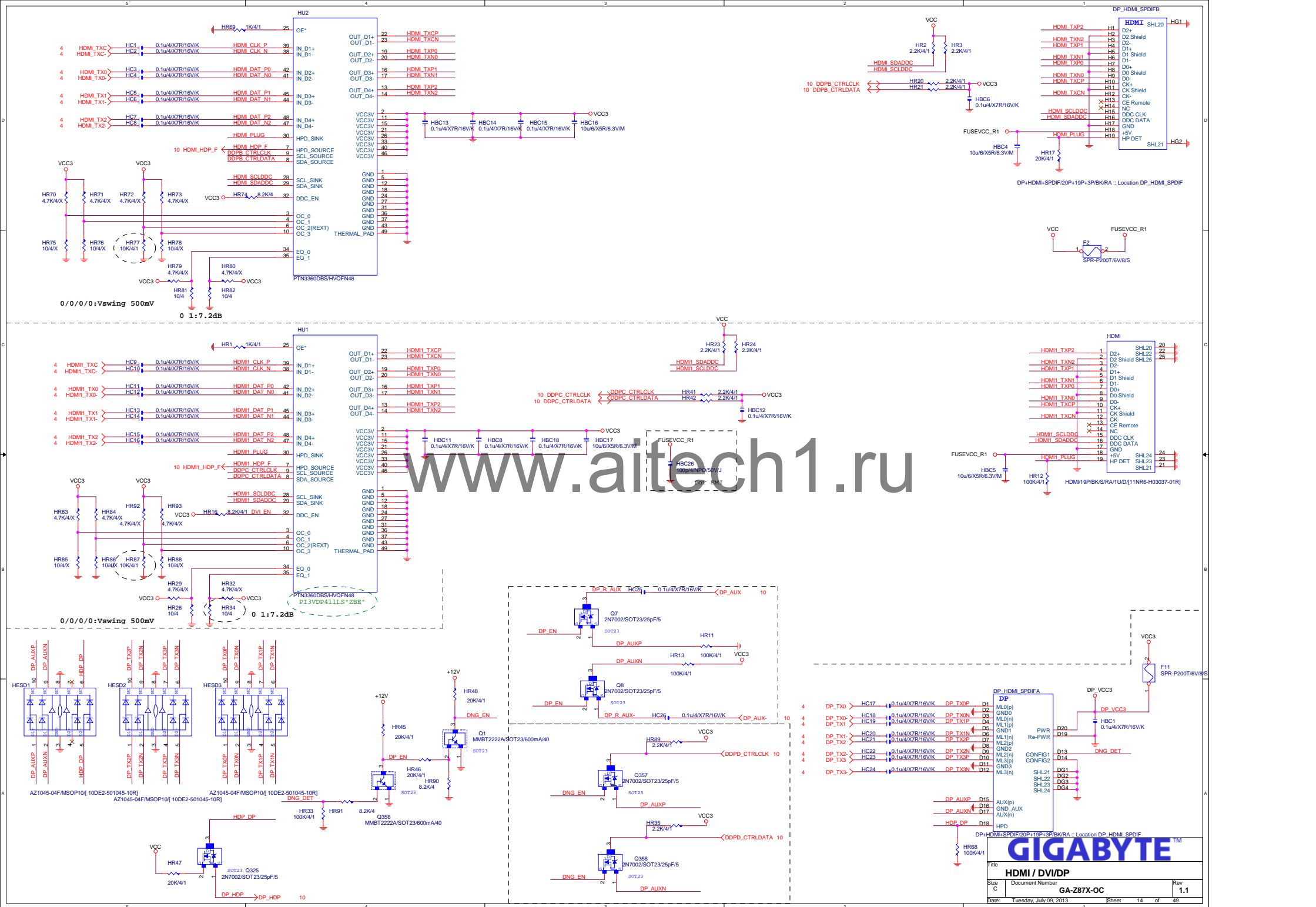


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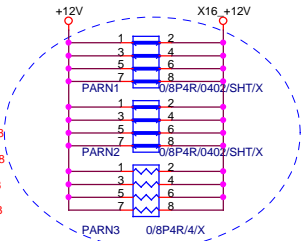








**+12 protect
short-wire test**



PCIE16:16/5/5/16

PA_EXP_RXP0_15] >> PA_EXP_RXP0[0..15] 4,18
PA_EXP_RXN0_15] >> PA_EXP_RXN0[0..15] 4,18
PA_EXP_TXP0_15] >> PA_EXP_TXP0[0..15] 4,18
PA_EXP_TXN0_15] >> PA_EXP_TXN0[0..15] 4,18

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0 C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0 C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1 C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1 C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2 C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2 C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3 C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3 C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4 C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4 C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5 C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5 C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6 C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6 C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7 C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7 C
PA_EXP_SW_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8 C
PA_EXP_SW_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8 C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9 C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9 C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10 C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10 C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11 C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11 C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12 C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12 C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13 C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13 C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14 C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14 C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15 C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN15 C

PA_EXP_SW_RXP8_15] >> PA_EXP_SW_RXP8[8..15] 18
PA_EXP_SW_RXN8_15] >> PA_EXP_SW_RXN8[8..15] 18
PA_EXP_SW_TXP8_15] >> PA_EXP_SW_TXP8[8..15] 18
PA_EXP_SW_TXN8_15] >> PA_EXP_SW_TXN8[8..15] 18

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

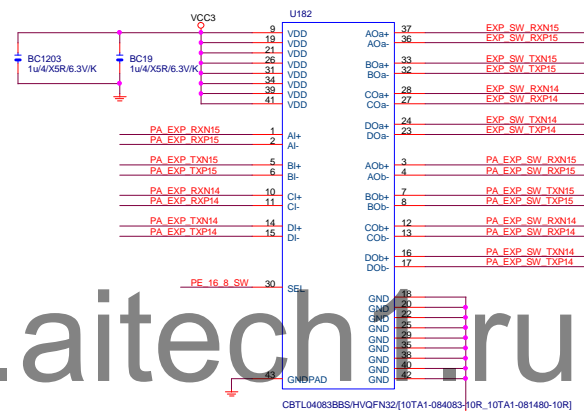
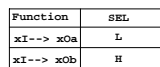
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

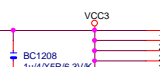
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PCI-E/16X-164P/BK/RIGHT PUSH/[11AC1-023164-81R]

GIGABYTE™			
Title PCI EXPRESS * 16			
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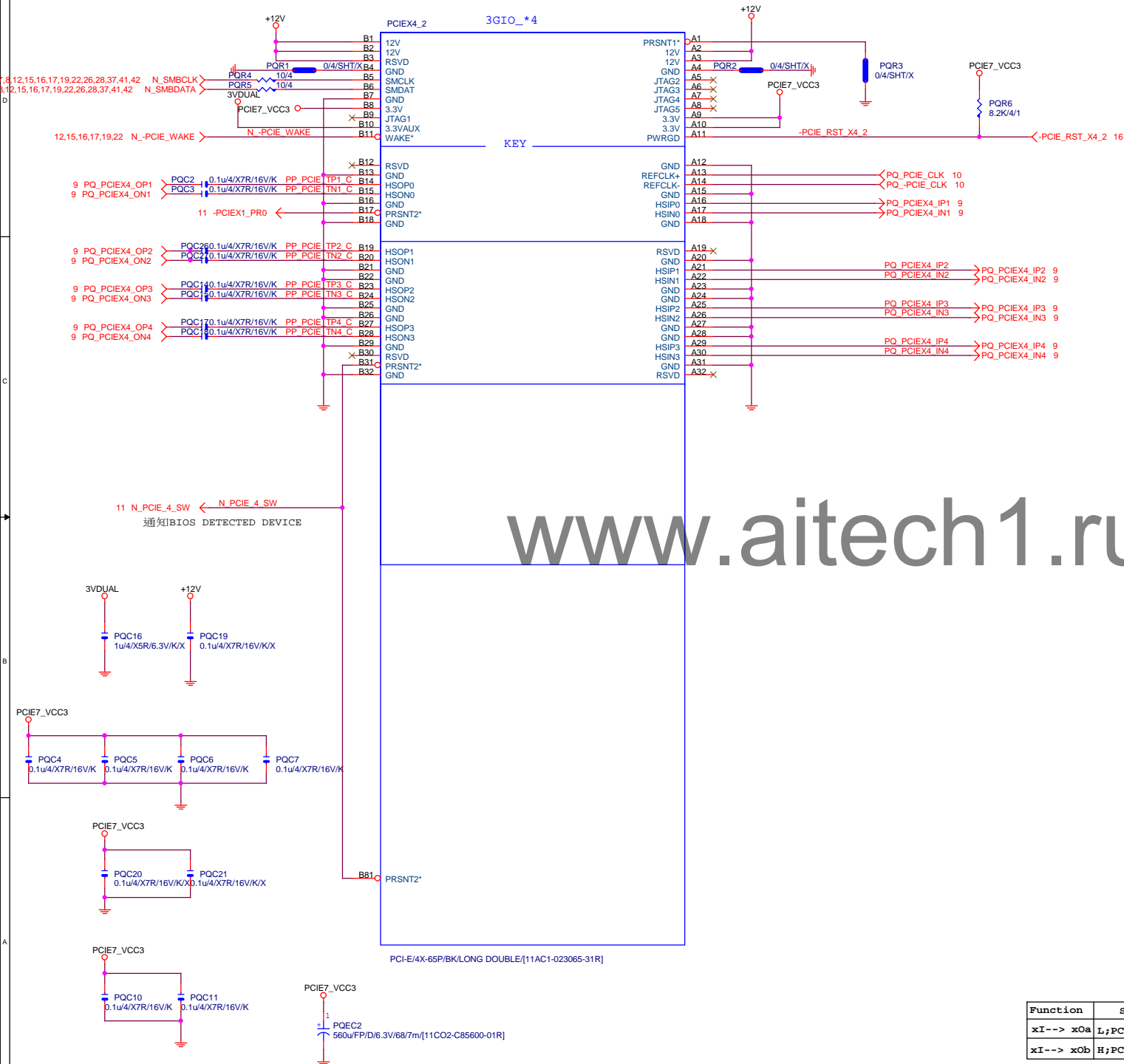


<u>PA_EXP_SW_RXIP[8..15]</u>	→ PA_EXP_SW_RXIP[8..15]	15
<u>PA_EXP_SW_RXIN[8..15]</u>	→ PA_EXP_SW_RXIN[8..15]	15
<u>PA_EXP_SW_TXIP[8..15]</u>	→ PA_EXP_SW_TXIP[8..15]	15
<u>PA_EXP_SW_TXIN[8..15]</u>	→ PA_EXP_SW_TXIN[8..15]	15
<u>PE_EXP_SW_RXIP[8..15]</u>	→ PE_EXP_SW_RXIP[8..15]	16
<u>PE_EXP_SW_RXIN[8..15]</u>	→ PE_EXP_SW_RXIN[8..15]	16
<u>PE_EXP_SW_TXIP[8..15]</u>	→ PE_EXP_SW_TXIP[8..15]	16
<u>PE_EXP_SW_TXIN[8..15]</u>	→ PE_EXP_SW_TXIN[8..15]	16



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

PCIE*4



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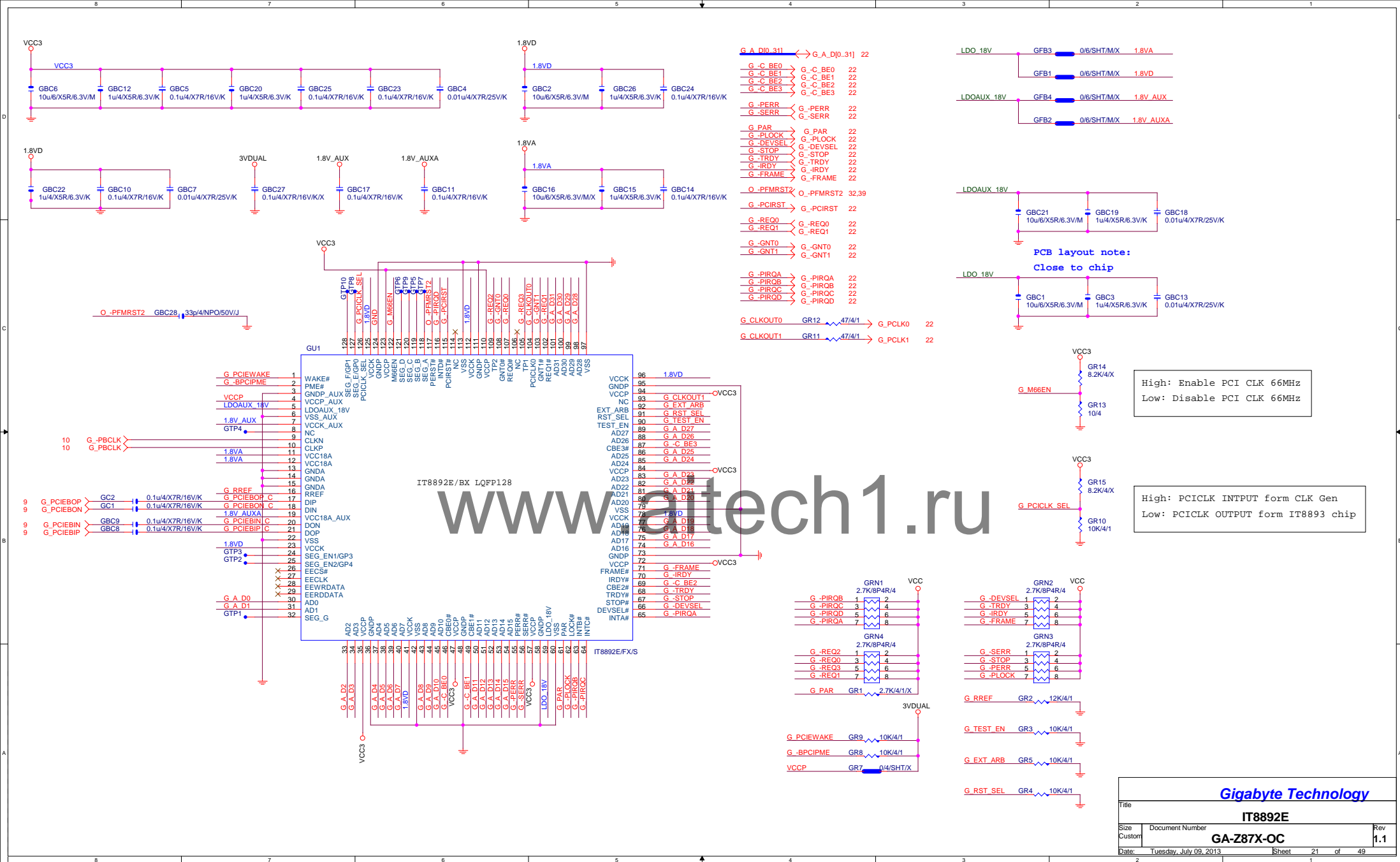
Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

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Title: **PCIE_X4**

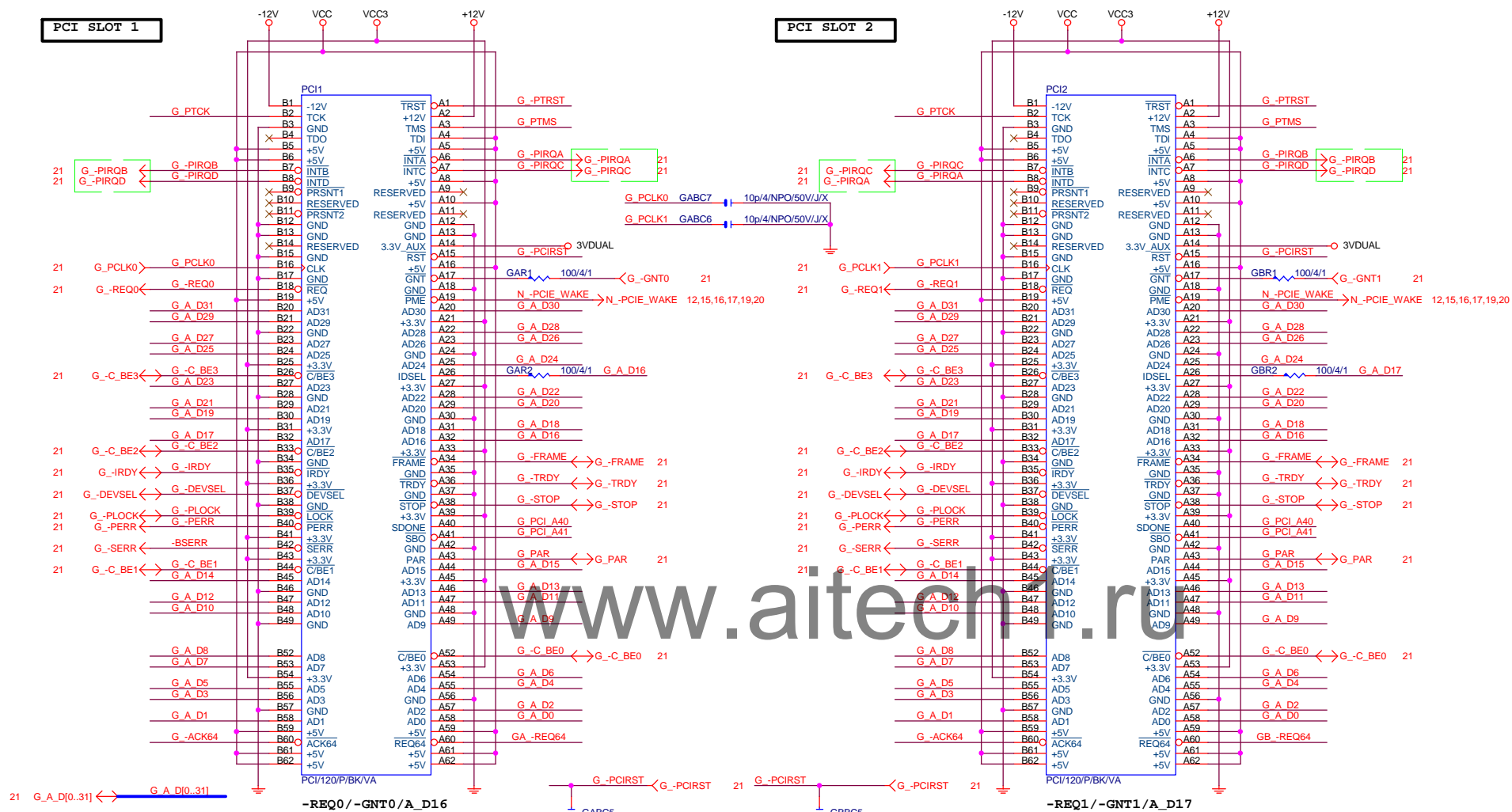
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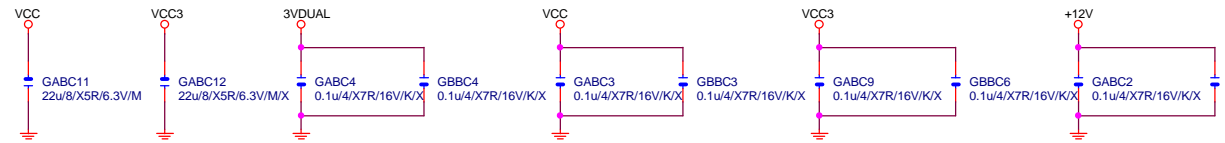
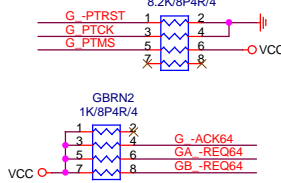
PCI SLOT 1

PCI SLOT 2



PCI PU

PCI CAP



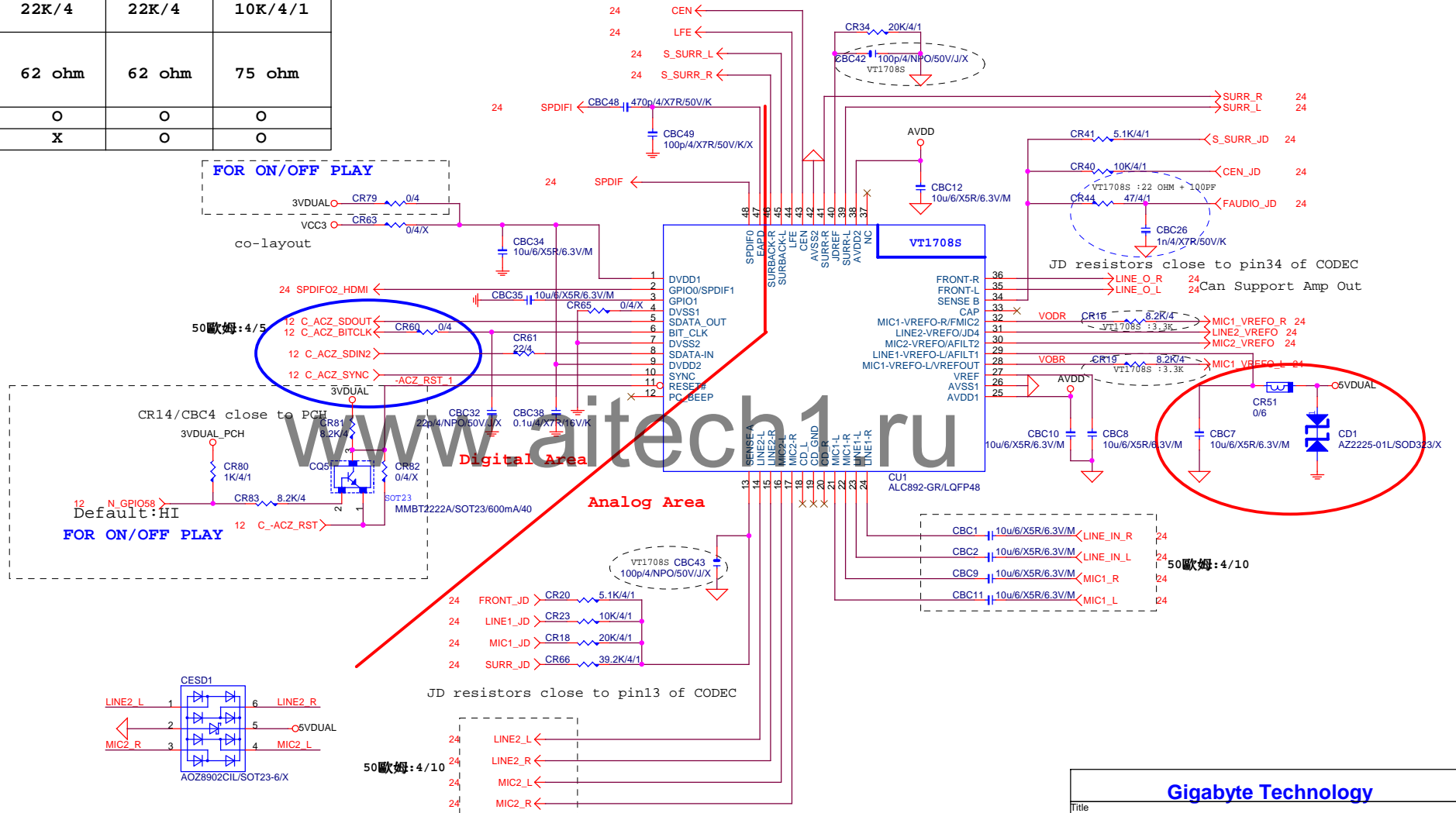
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PCI SLOT 1&2

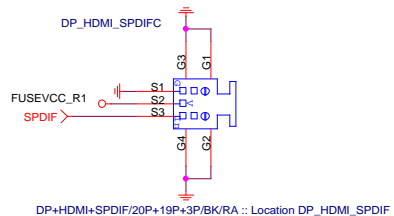
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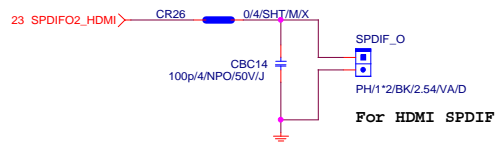
	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	X	O	O



CR49 0/6/SHT/M/X → Close F_AUDIO
 CR50 0/6/SHT/M/X → Close Codec
 CR21 2.2/6 → Audio jack <--> USB_LAN
 CR24 0/6/X → Under Audio jack



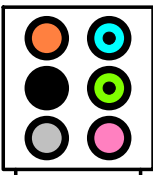
SPDIF_OUT



SPDIF_IN



AZALIA JACK

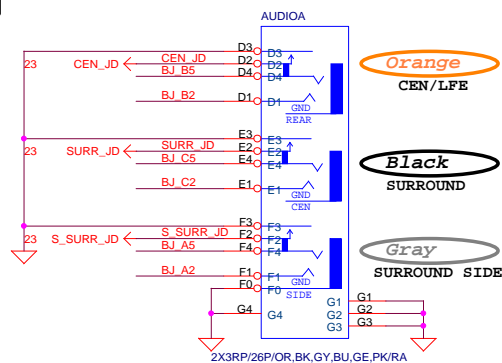
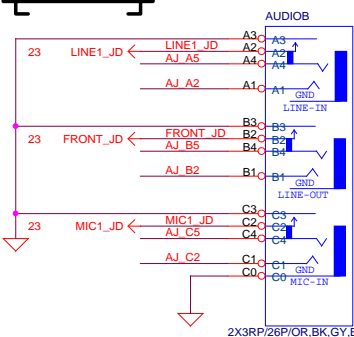


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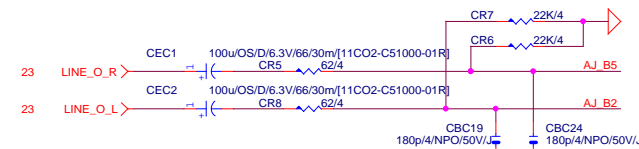
BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN



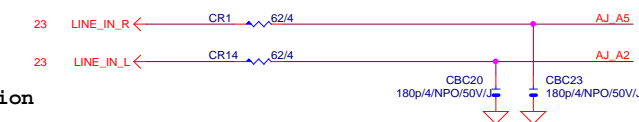
LINE-OUT



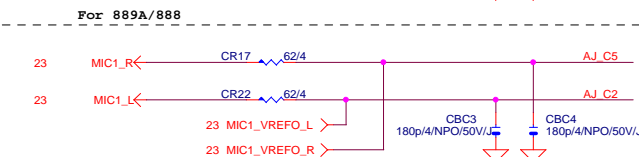
LINE-IN

Verify MIC function
in LINE-in

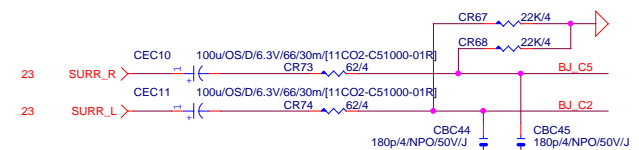
Only reserved for ALC888



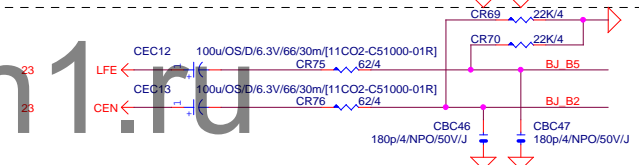
MIC-IN



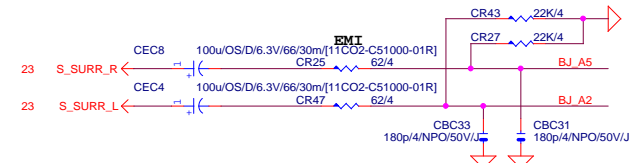
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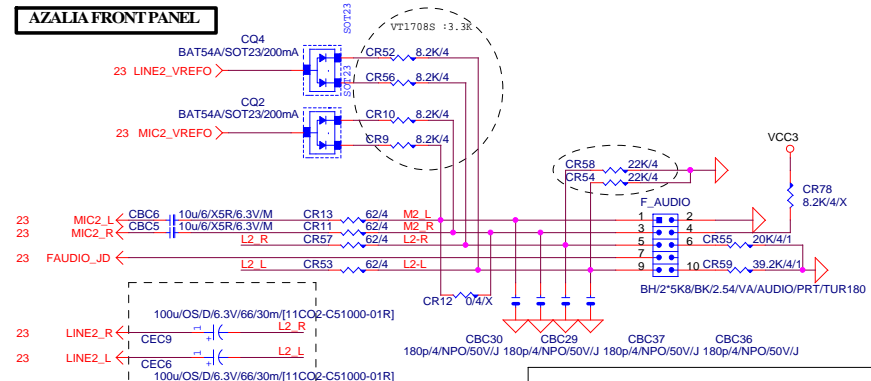
CEN/LFE



SURRBACK



AZALIA FRONT PANEL

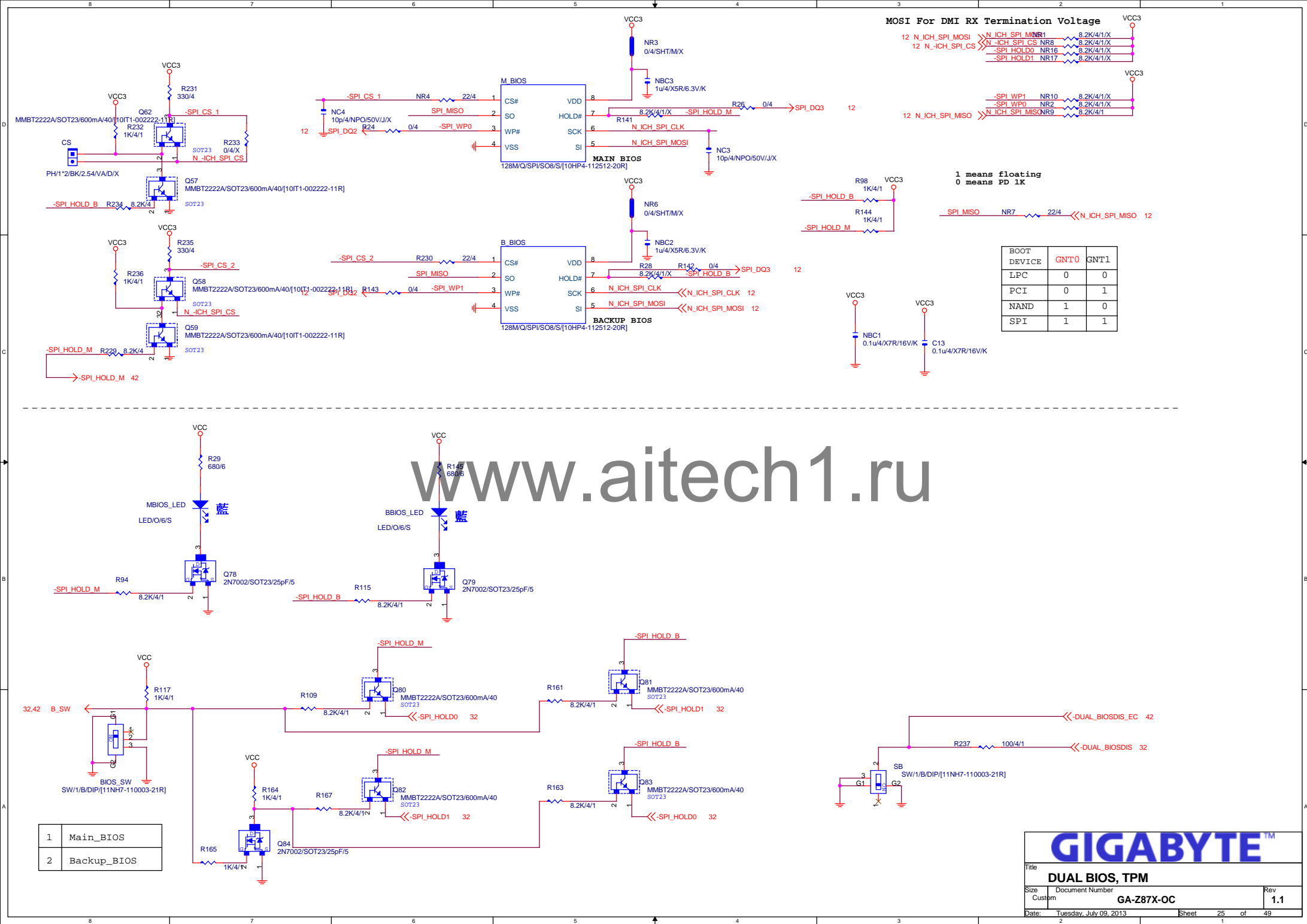


Gigabyte Technology

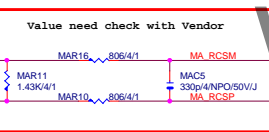
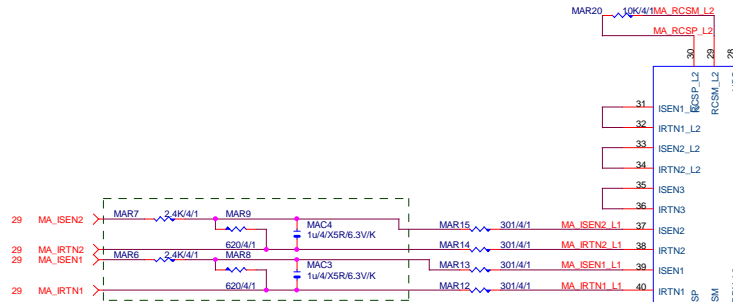
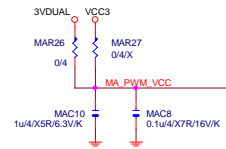
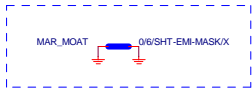
AUDIO JACK

GA-Z87X-OC

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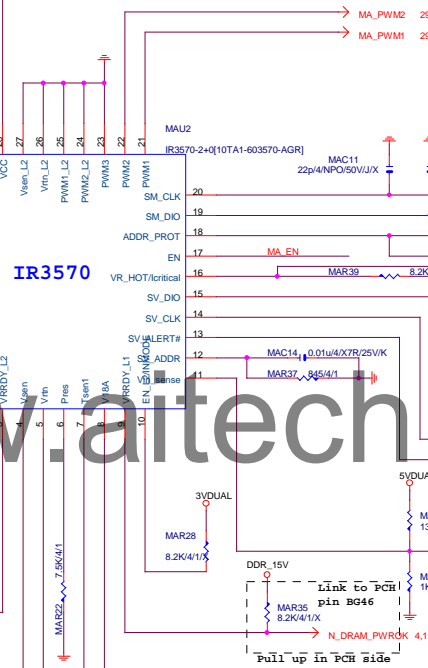
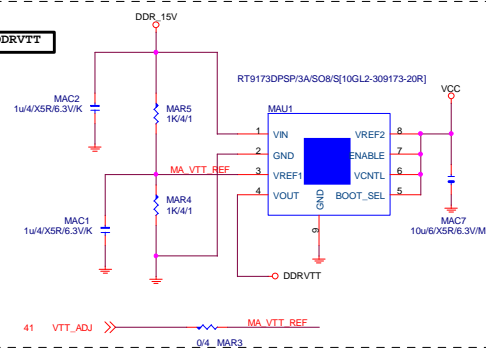
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Close to DDR output inductor

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

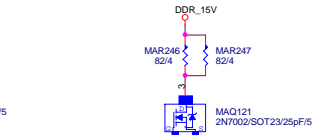
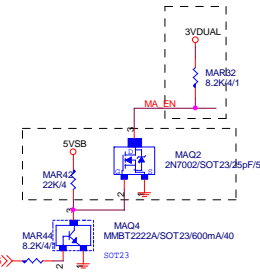
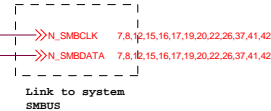
DDRVTT



Addr: 72h

Link to PCH pin BQ46

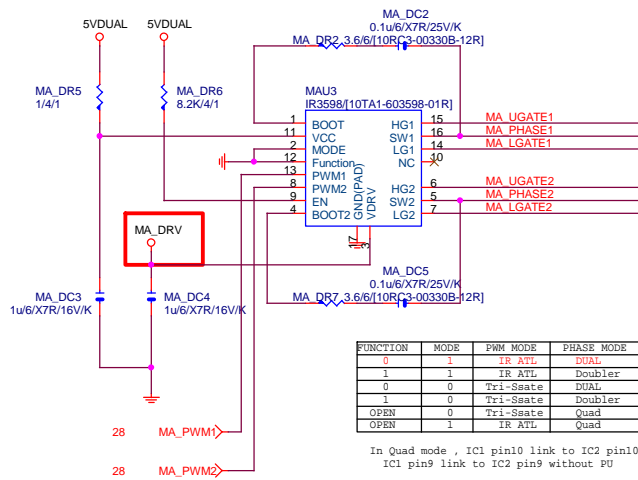
Full up in PCH side



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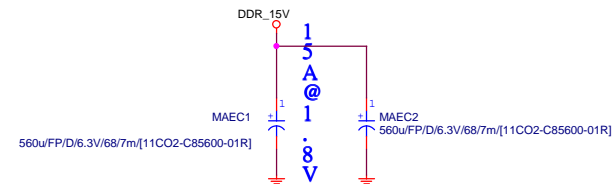
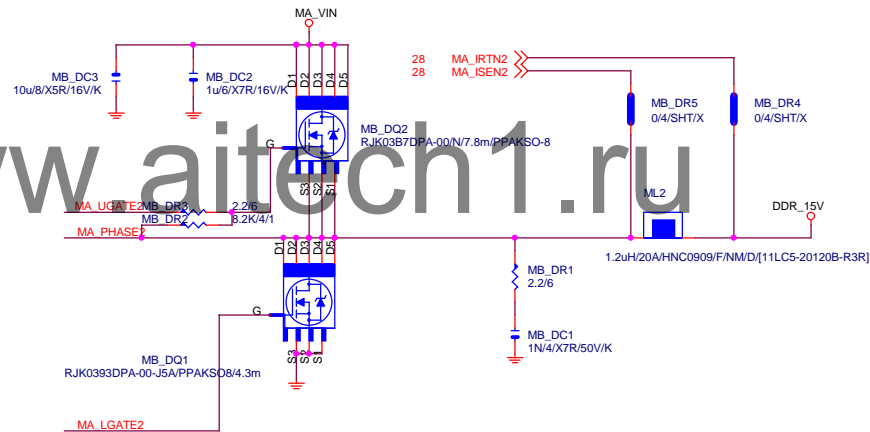
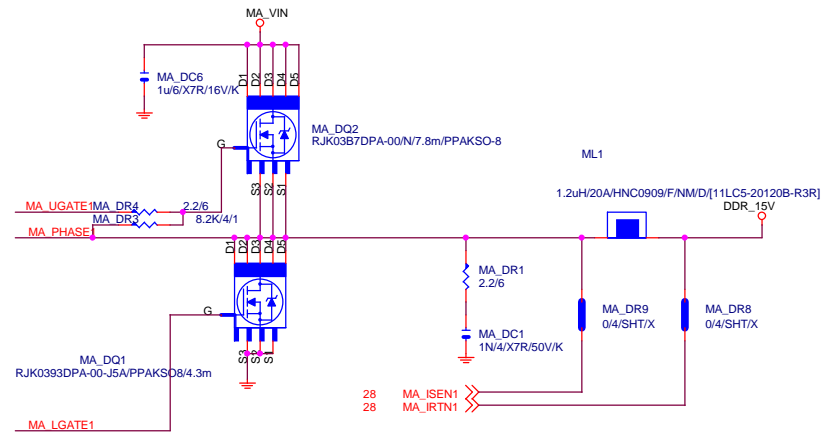
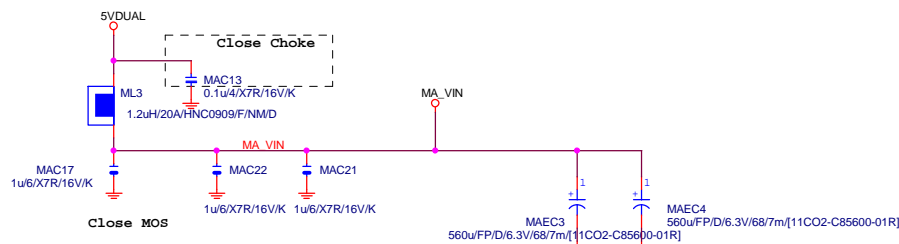
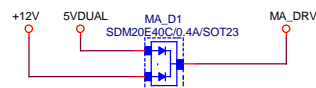
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Size	Document Number	Rev
C	GA-Z87X-OC	1.1
Date	Sheet	of
Tuesday, July 09, 2013	28	49

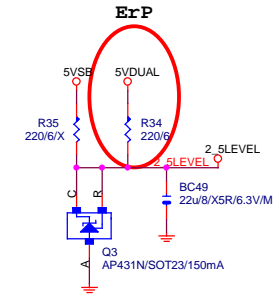
DDR_15V



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

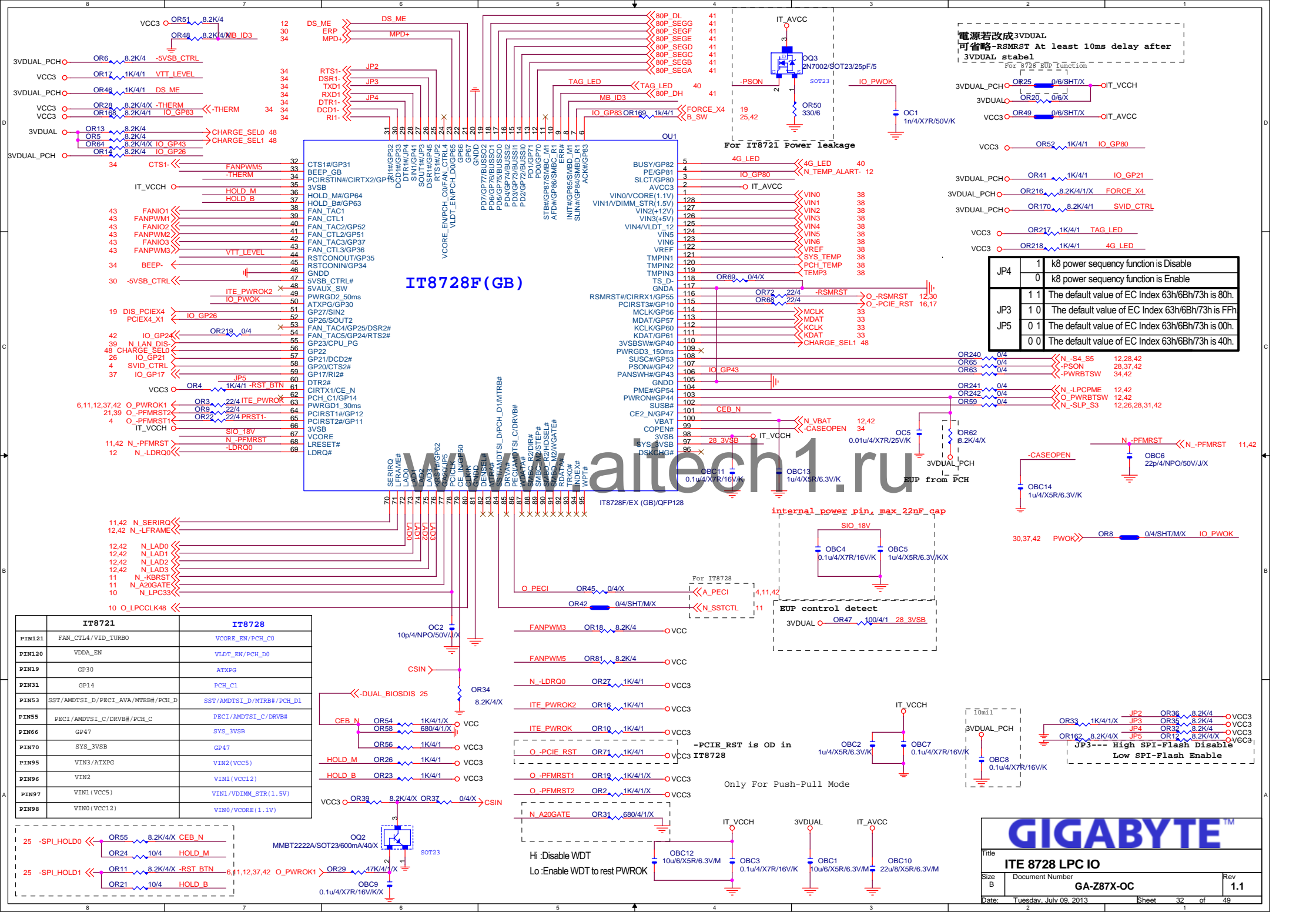
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU



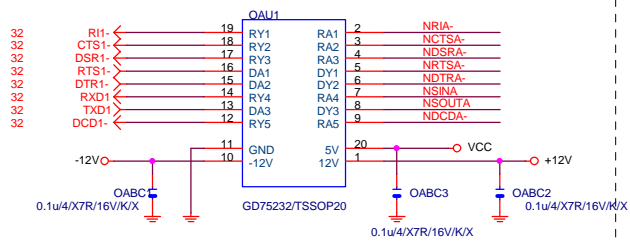
[illegible]

The schematic diagram illustrates the power distribution network for the PCH (Platform Controller Hub) power plane. It features a 12V input and a 2.5LEVEL input. The circuit includes a U6A LM324DR/SO14 op-amp, a U6A NJM234DR/SO14 op-amp, and various capacitors (NR14, NR13, NR11, NR12, NC6, NC5, NBC6, NBC5, NBC4, NEC1). The output is VCC1_5_PCH, which is connected to the PCH power plane. The current rating is 1.6A max.

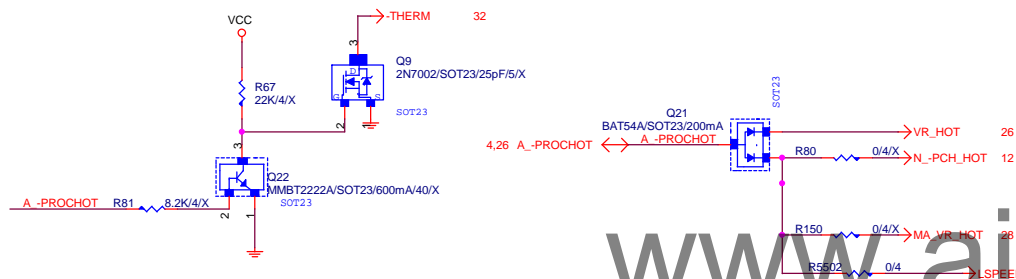
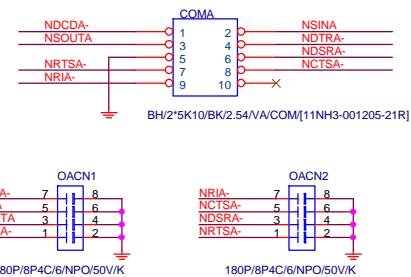
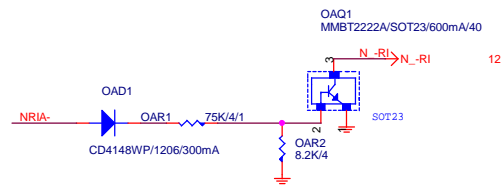
The circuit diagram shows a precision current source for a DAC. It features an op-amp (LM324DR/5014) configured as a voltage follower, a precision resistor network (R354, R357, R708), and a current source (Q108, Q109) using MMBT2222A/SOT23/600mA/40. The output is connected to a DAC (VCC3_DAC) and a load (FB17).



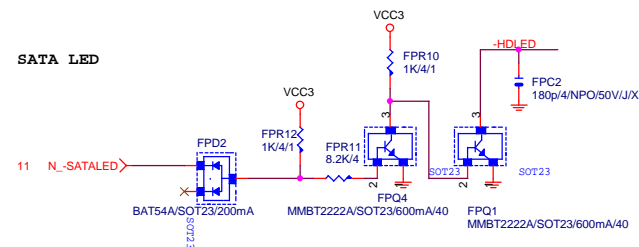
COMA



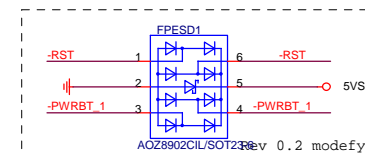
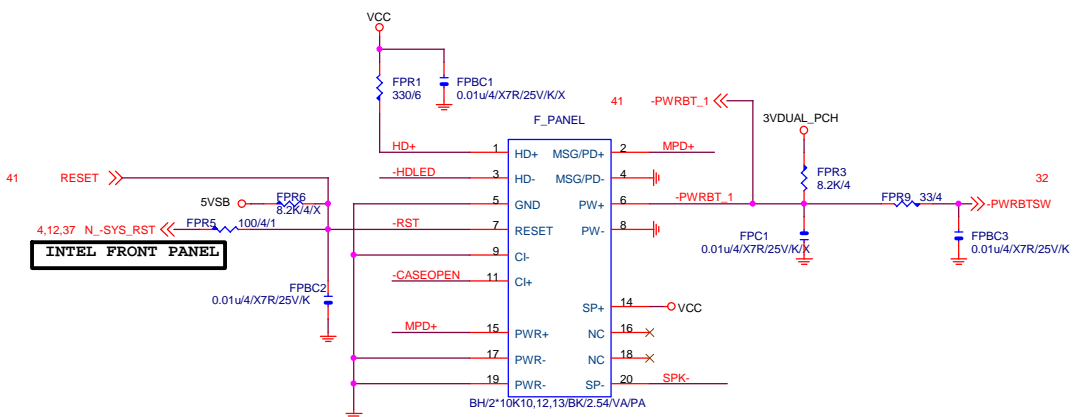
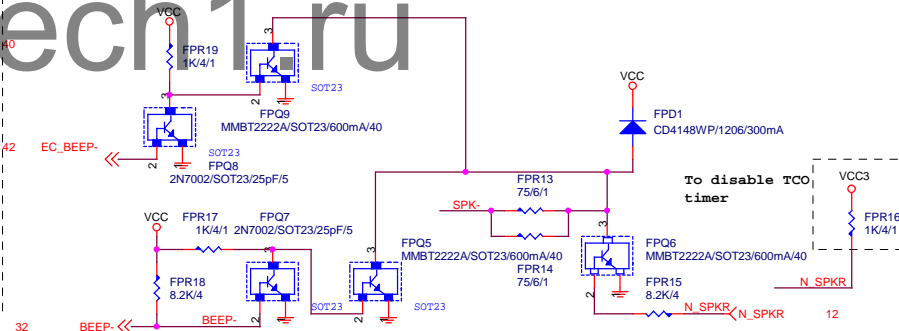
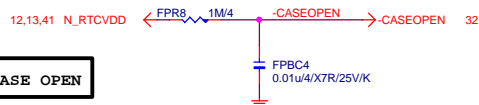
COM RI



SATA LED



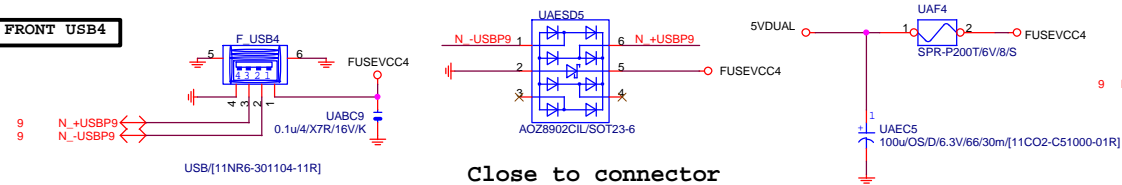
CASE OPEN



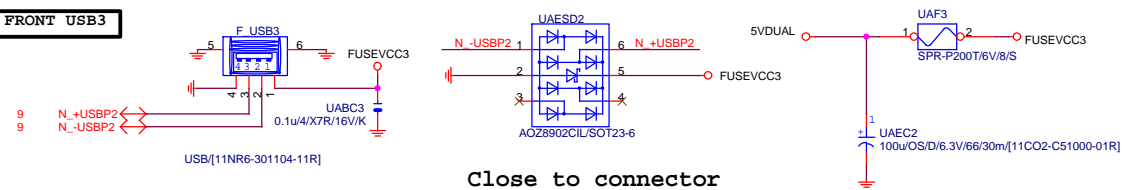
Close to connector

GIGABYTE™			
Title FP, COM, -PHOT			
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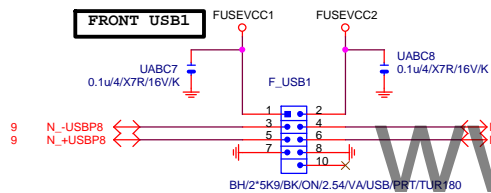
FRONT USB4



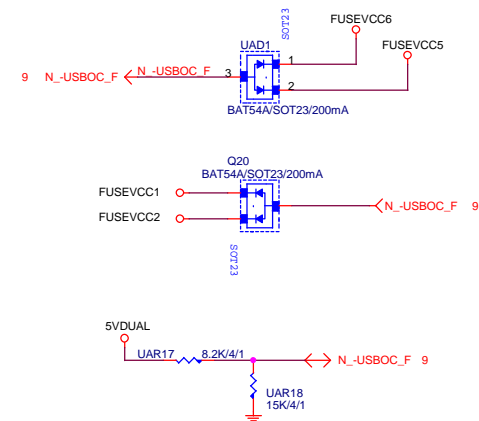
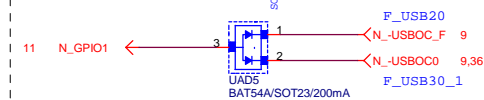
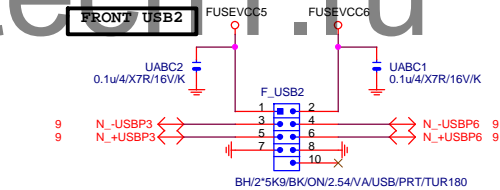
FRONT USB3



FRONT USB1

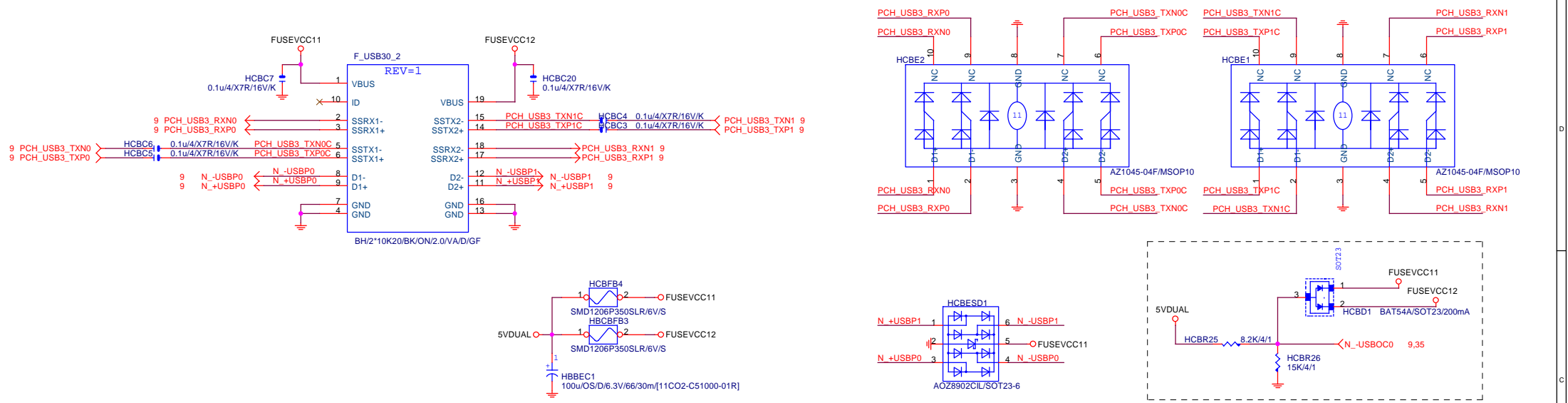


FRONT USB2



GIGABYTE™

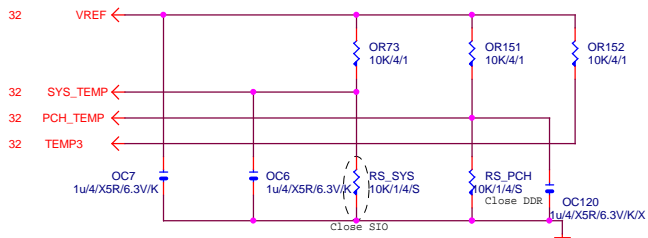
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Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 35	of 49



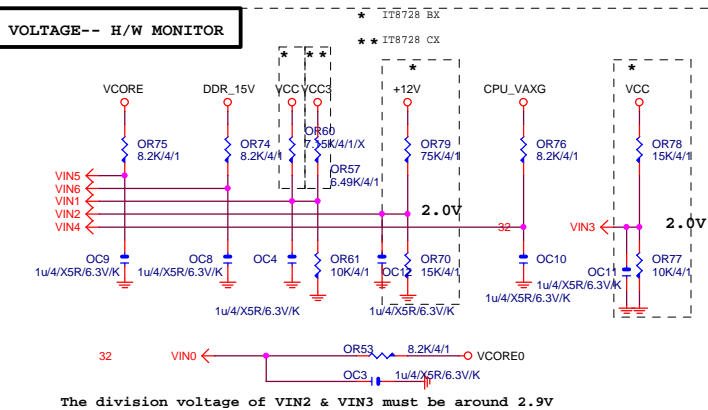
www.aitech1.ru

Title			
ATX POWER CONNECTOR, CLK GEN			
Size	Document Number	Rev	
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TEMP H/W MONITOR



VOLTAGE-- H/W MONITOR

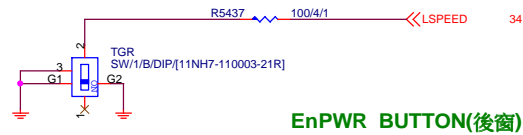


www.aitech1.ru

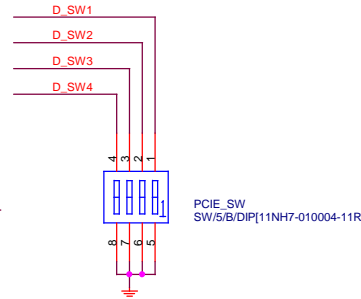
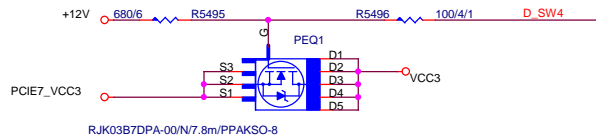
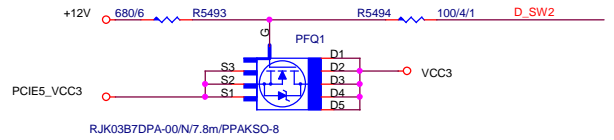
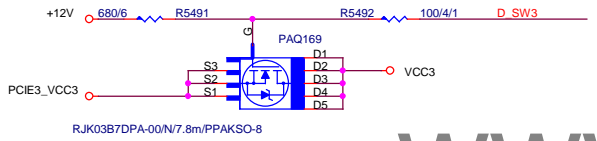
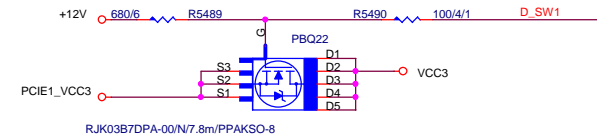
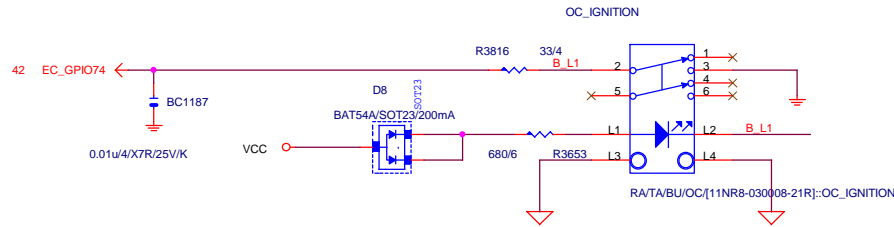
GIGABYTE™

Title			HWM, FAN CTRL	
Size	Custom	Document Number	GA-Z87X-OC	
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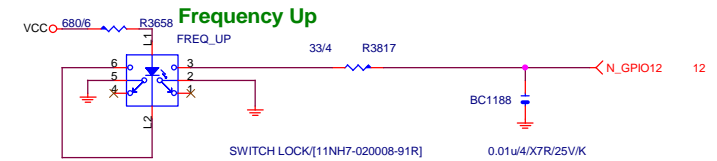
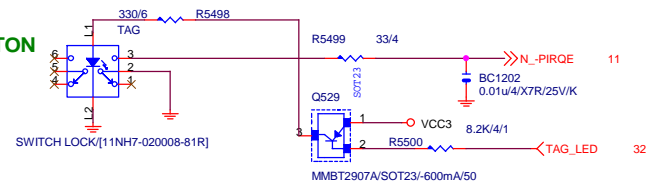
www.aitech1.ru



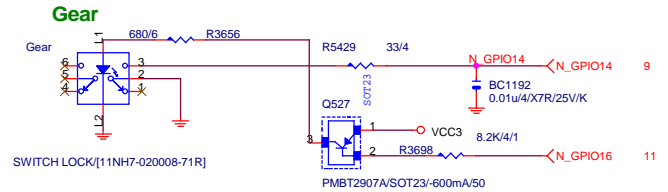
EnPWR BUTTON(後窗)



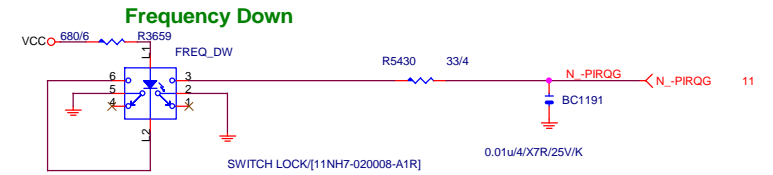
TAG BUTTON



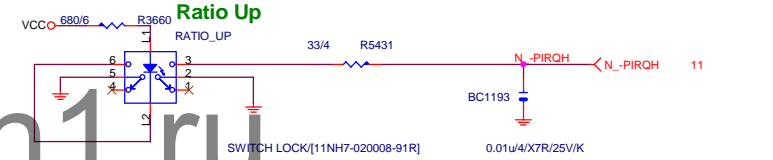
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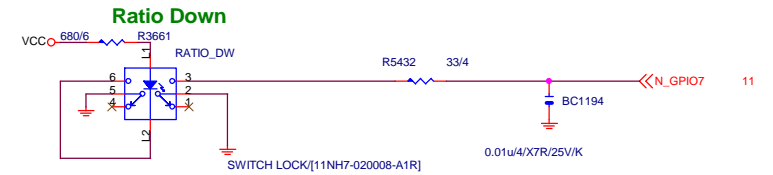
Gear



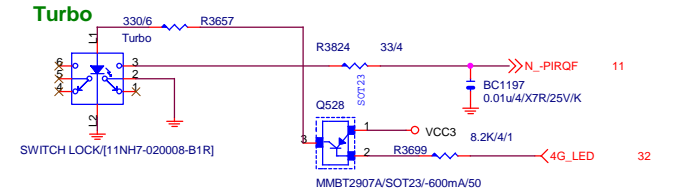
Frequency Down



Ratio Up

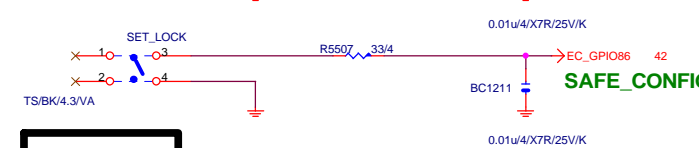
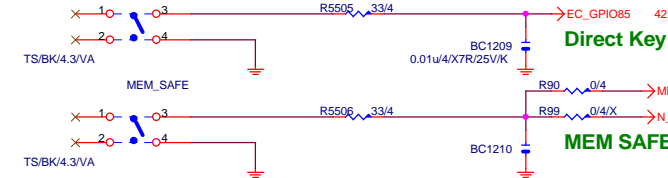
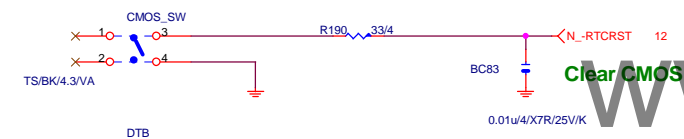
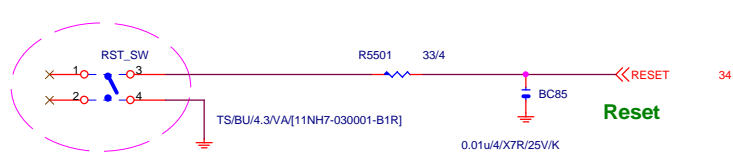
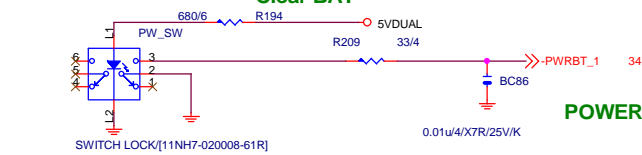
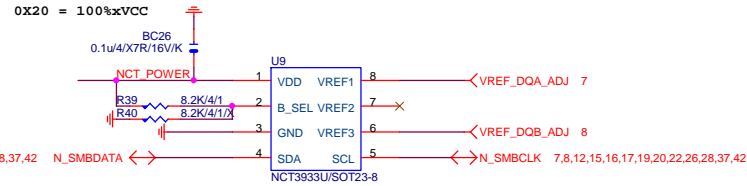
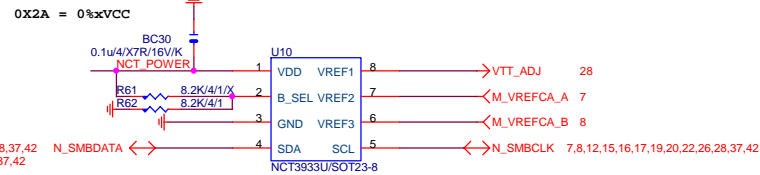
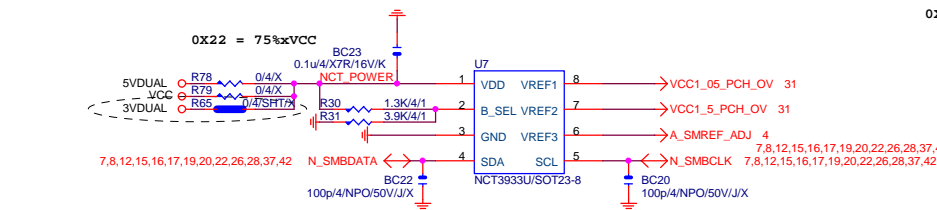


Ratio Down

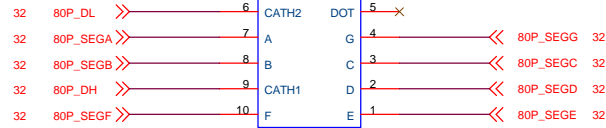
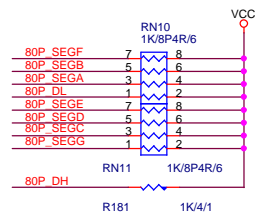


Turbo

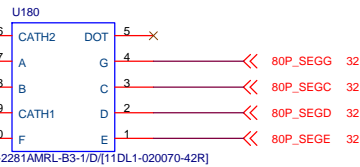
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Title		
SWITCH		
Size	Document Number	Rev
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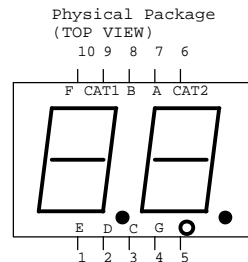
80 PORT



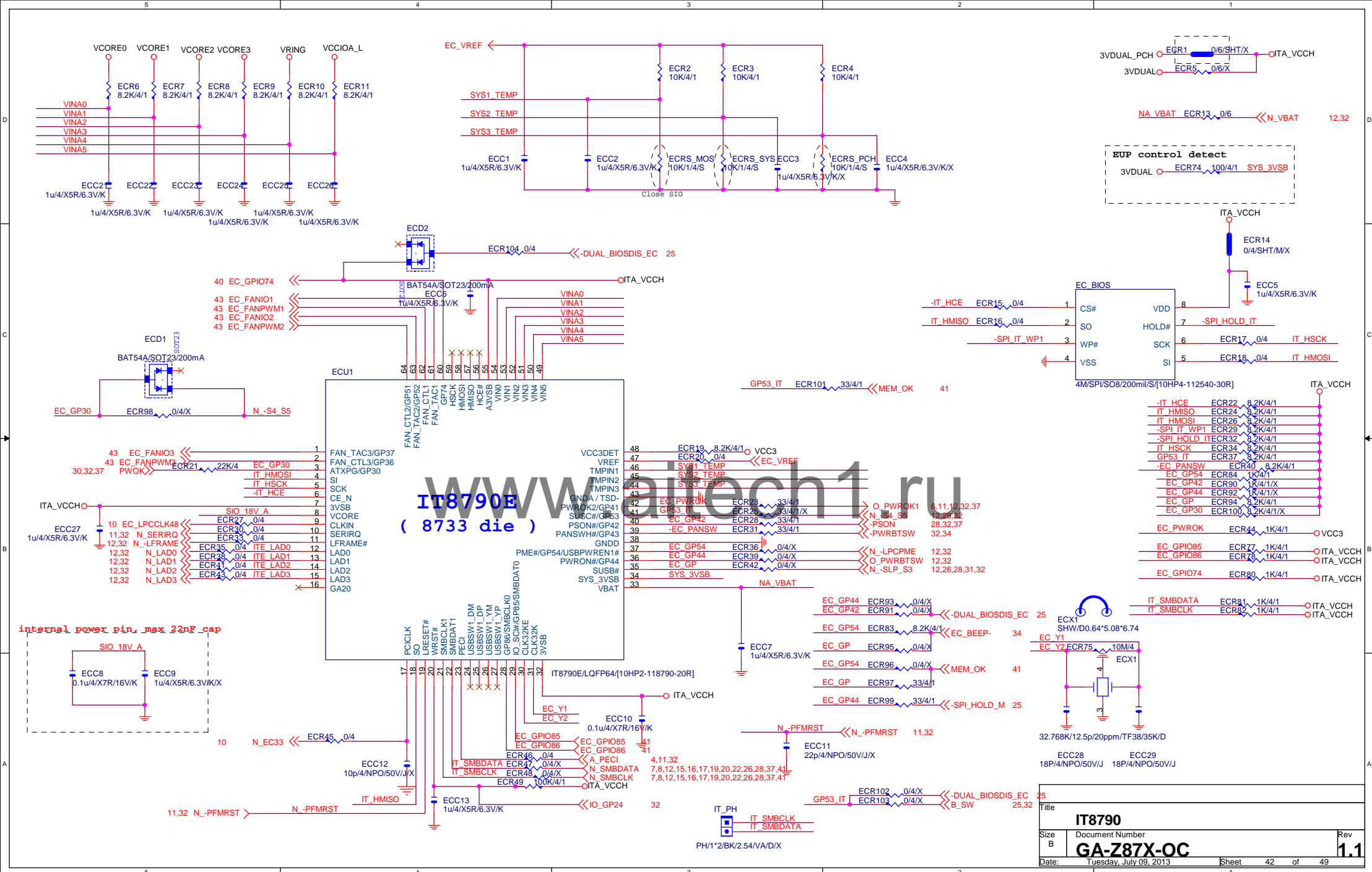
COMMON CATHODE



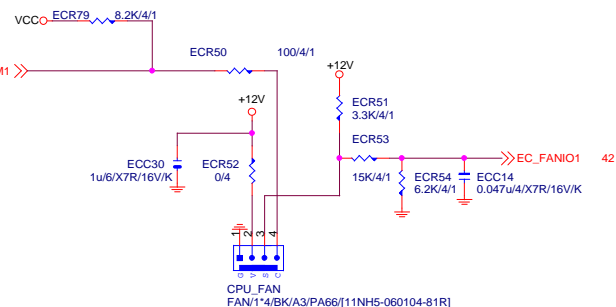
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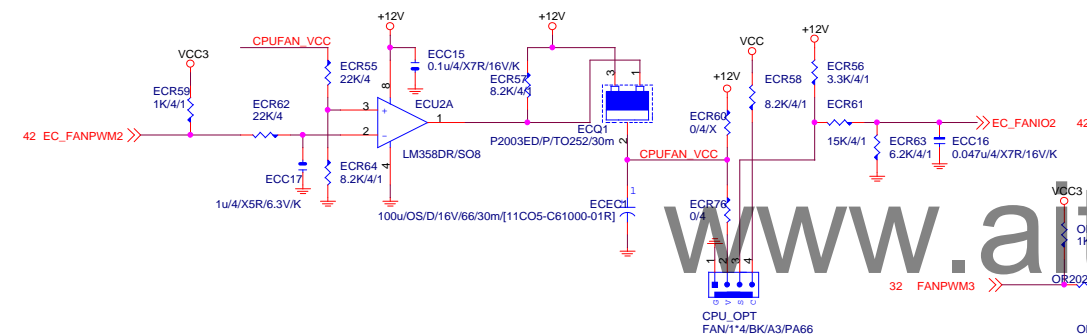
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Title			
RST, PWR, CLR_CMOS, OV			
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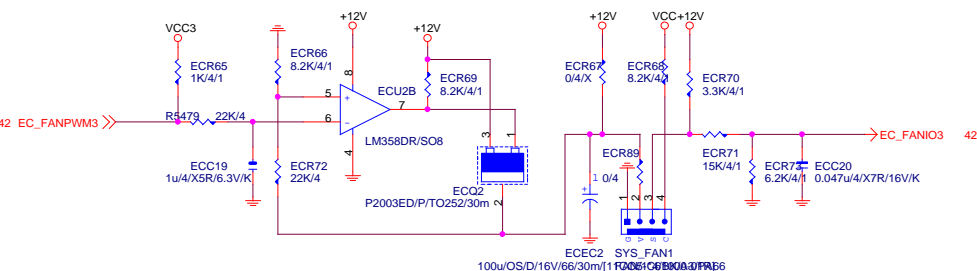
CPU SMART FAN



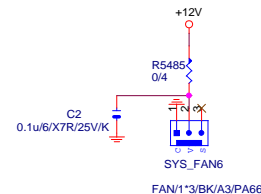
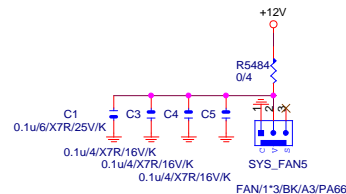
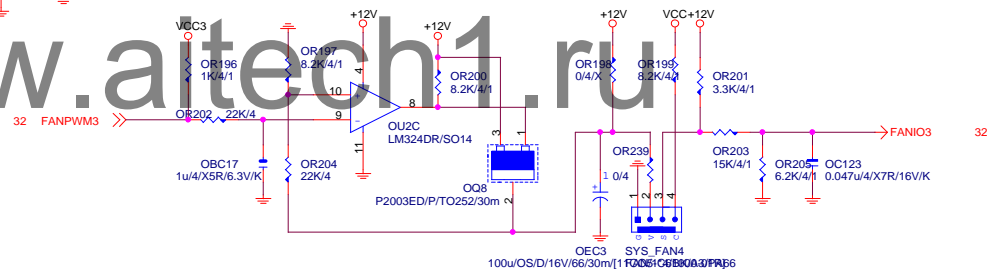
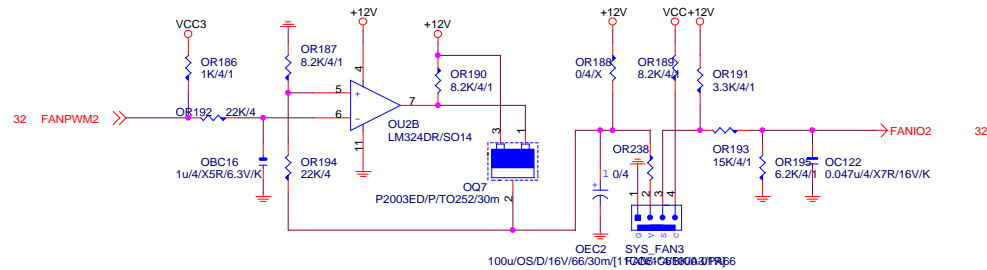
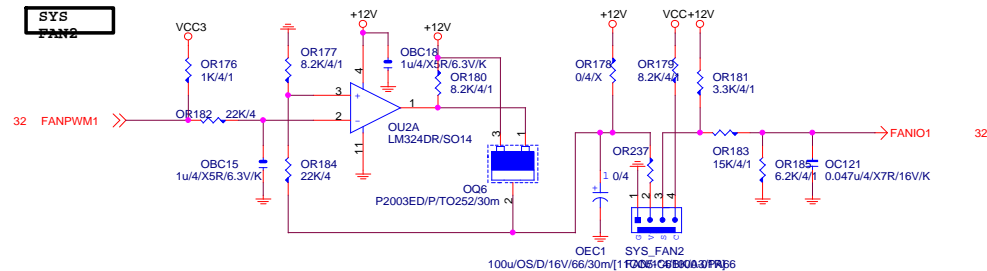
CPUOPT FAN



SYS FAN1

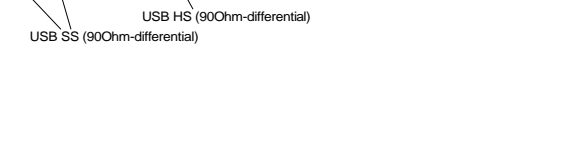
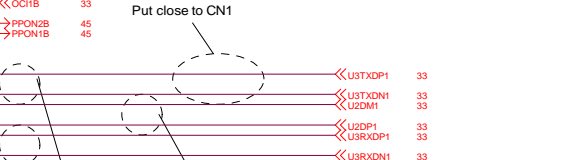
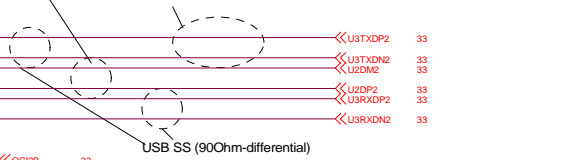
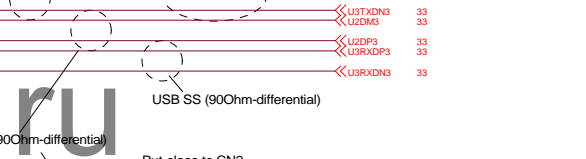
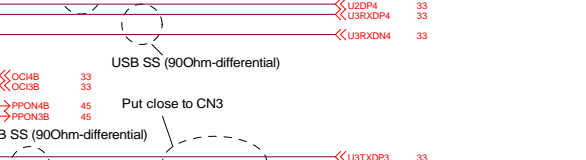
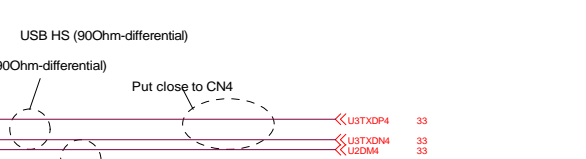
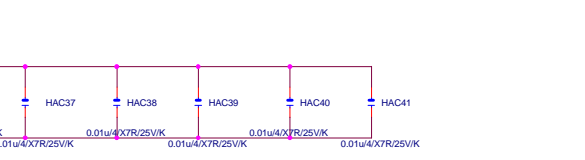
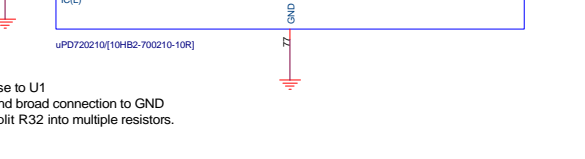
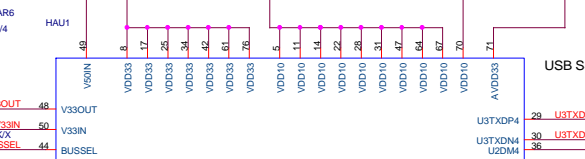
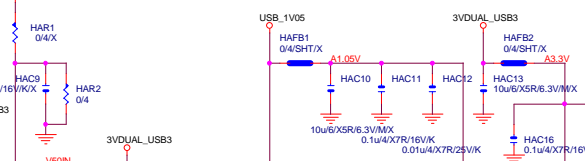
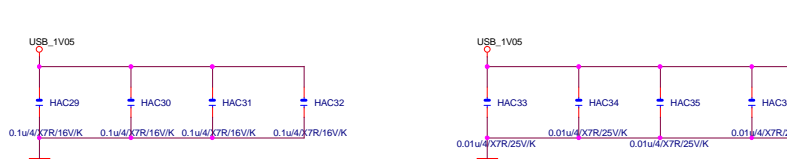
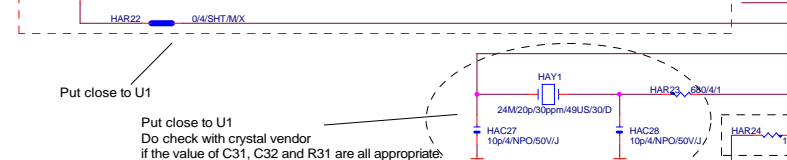
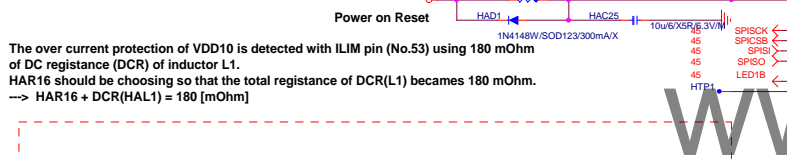
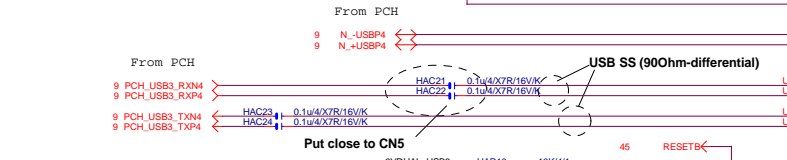
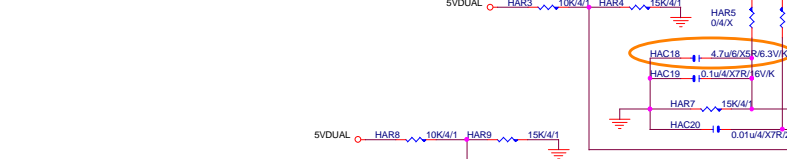
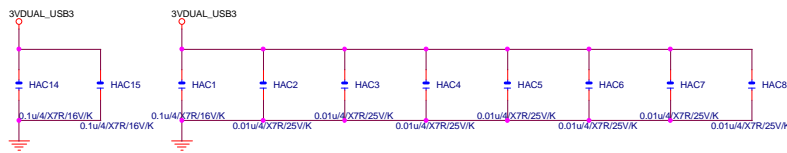


SYS FAN2



Gigabyte Technology

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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.

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN4

USB SS (90Ohm-differential)

Put close to CN3

USB SS (90Ohm-differential)

Put close to CN2

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

USB SS (90Ohm-differential)

Put close to CN1

USB HS (90Ohm-differential)

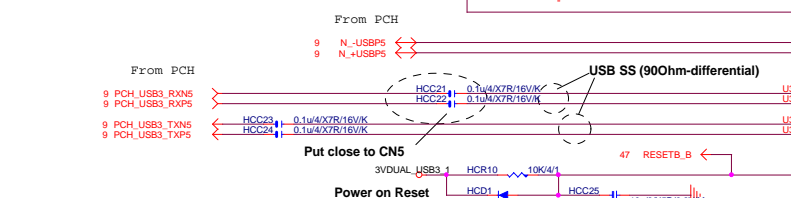
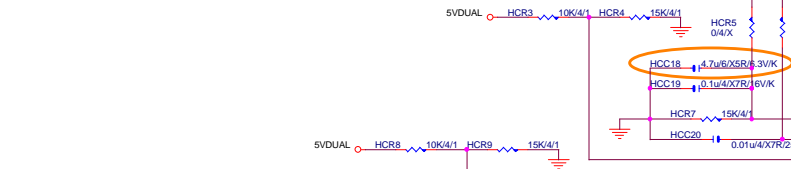
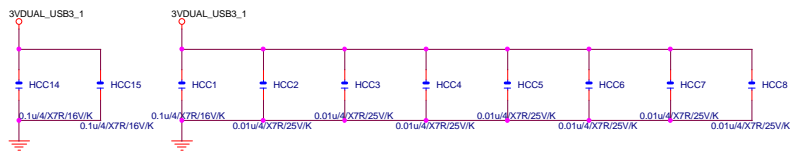
USB SS (90Ohm-differential)

Put close to CN1

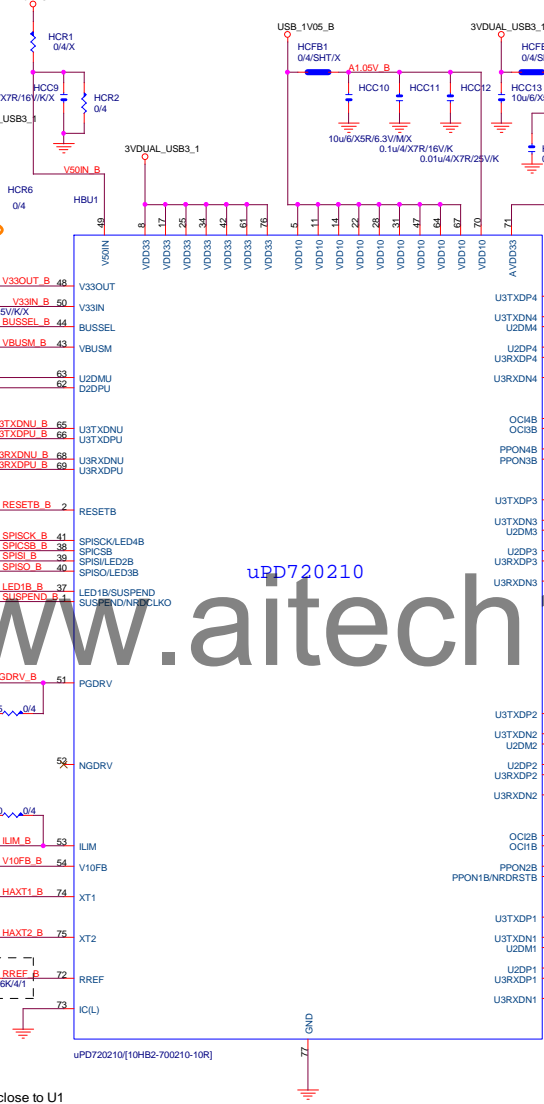
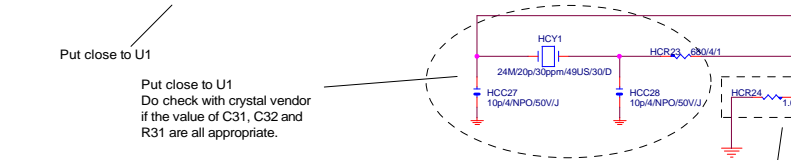
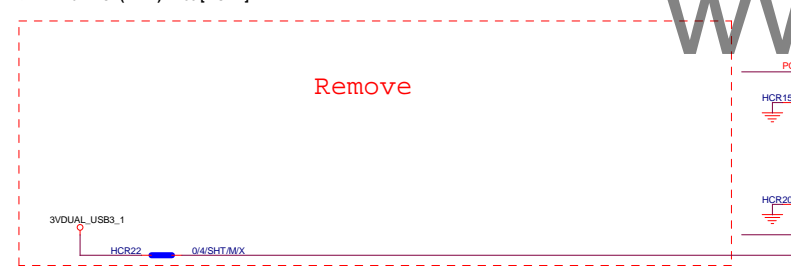
USB HS (90Ohm-differential)

The schematic diagram illustrates the power supply circuit for the USB3 interface. It features a 5VDUAL input connected to a network of capacitors (HAC56, HAC57, HAC58, HAC59) and resistors (HAR51, HAR52). A transformer (HAQ3, L1085DG/TO252/5A) is also shown in the circuit. The output is labeled 3VDUAL_USB3.

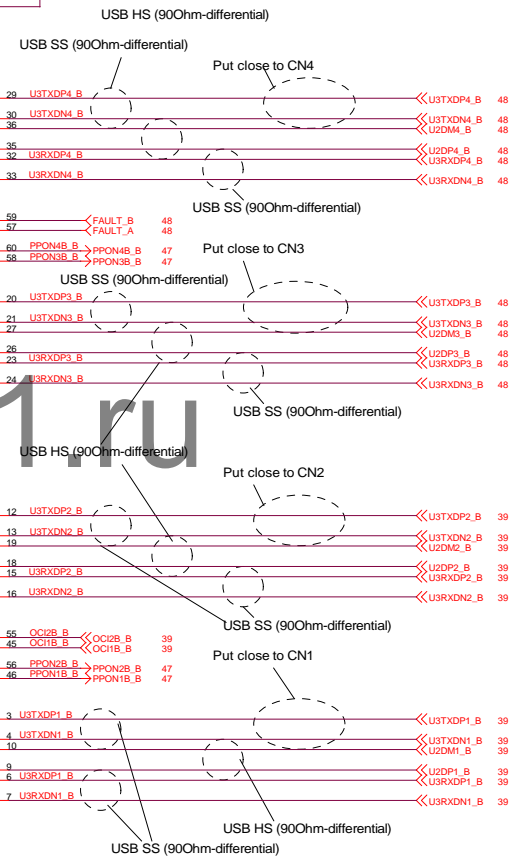
GIGABYTE™			
Title D720210 4port Hub			
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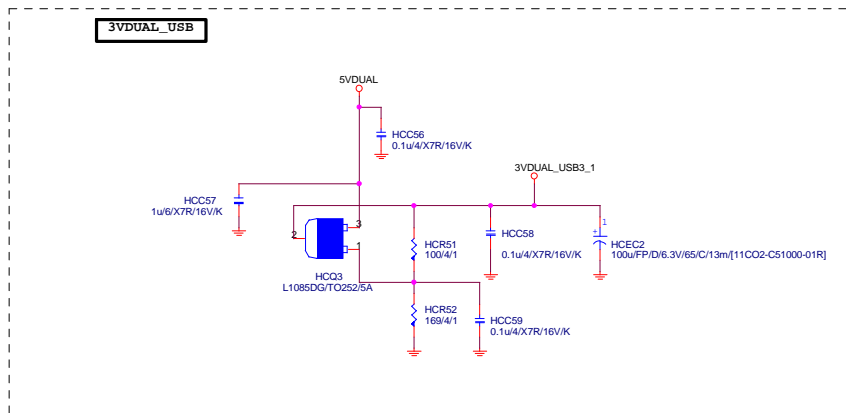


The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.
HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.
→ HAR16 + DCR(HAL1) = 180 [mOhm]

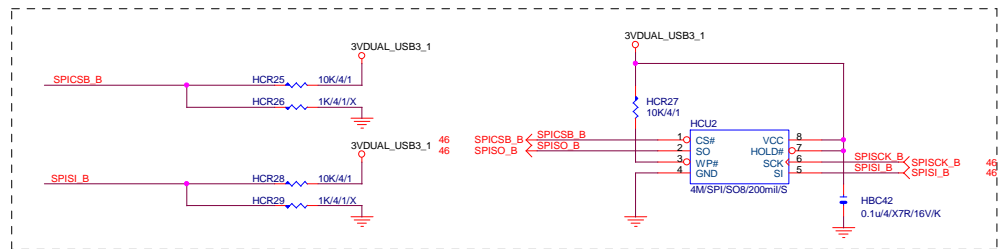


Put close to U1
Short and broad connection to GND
Don't split R32 into multiple resistors.

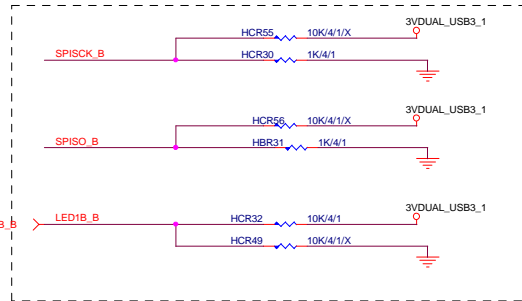




External SPI ROM ; SPI ROM attached mode

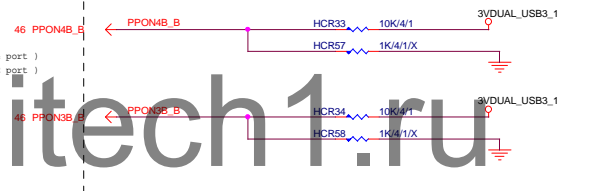


Battery Charging

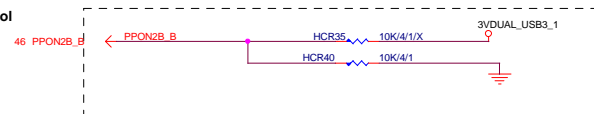


Number of Ports ; 4Ports mode

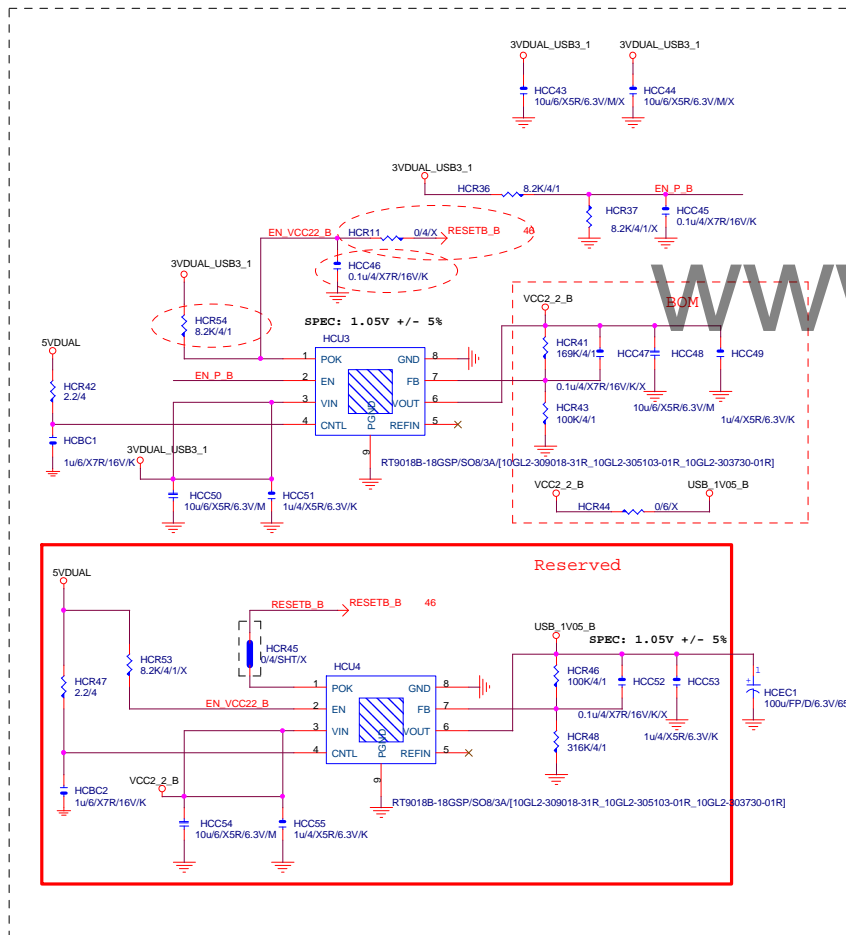
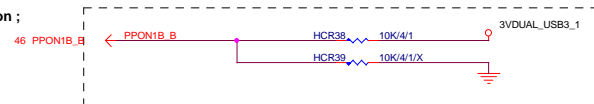
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)

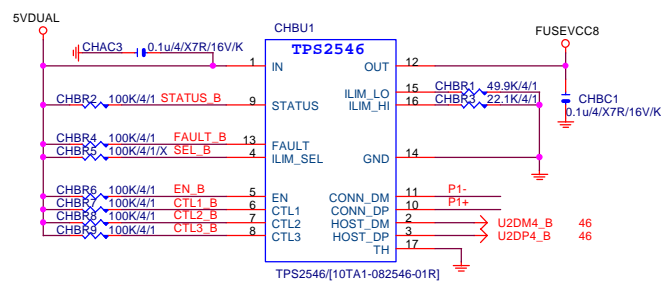
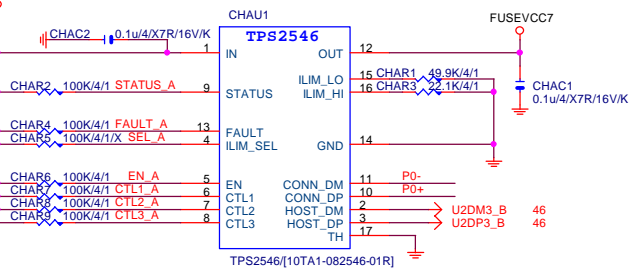
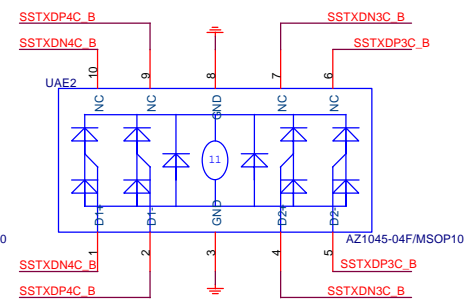
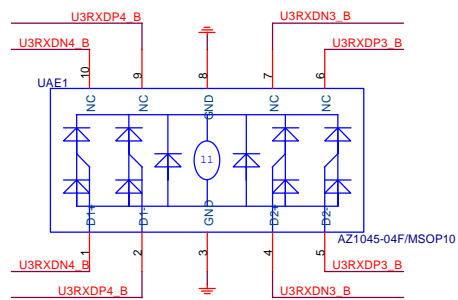
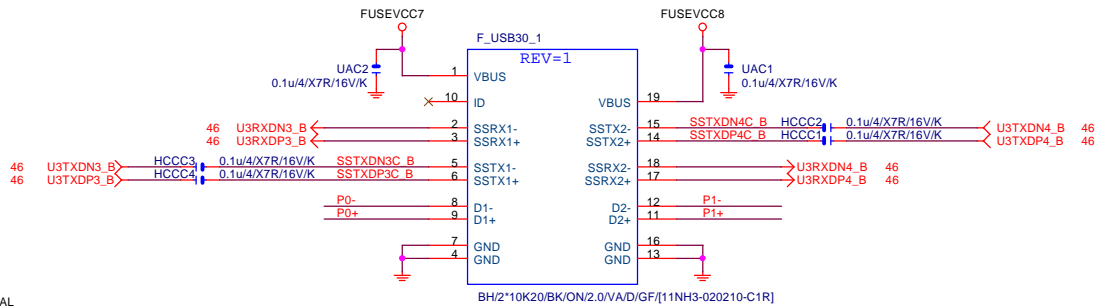


#5 VBUS Power Control ; Individual mode

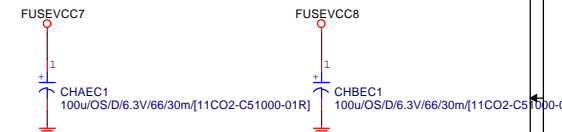
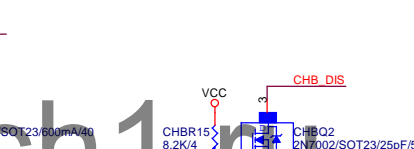
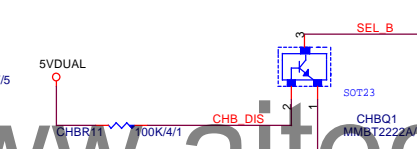
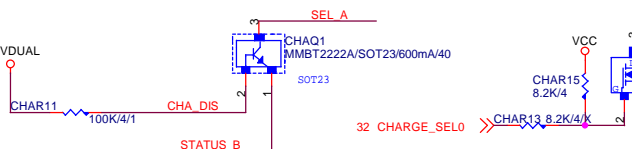
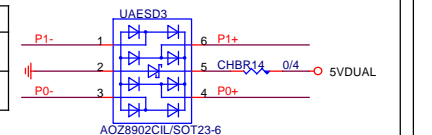


PPON1B Pin Function ; Port1 PPONB mode





	S0	S3/S4/S5
CHARGE_SEL0	1	0
CHARGE_SEL1	1	0



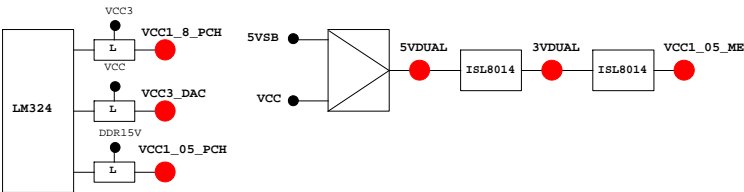
Title		
<Title>		
Size	Document Number	Rev
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI -PECI_REQ	N/A	
GP1/TACH1	MAIN		GPI ICH_FAN_TACH1	N/A	
GP2/PIRQ#	MAIN		GPI -PIRQE	P/U 8.2K VCC3	
GP3/PIRQ#	MAIN		GPI -PIRQF	P/U 8.2K 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 -SKT0CC	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	

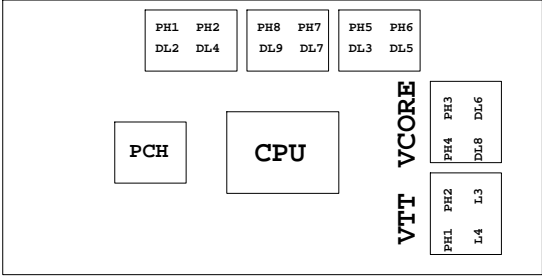
Super I/O ITE8720 GPIO Table

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/SMBC_R	3V PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_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

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TABLE LIST

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