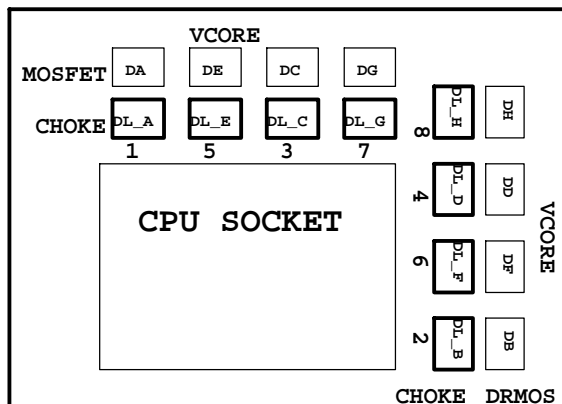


SHEET TITLE

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



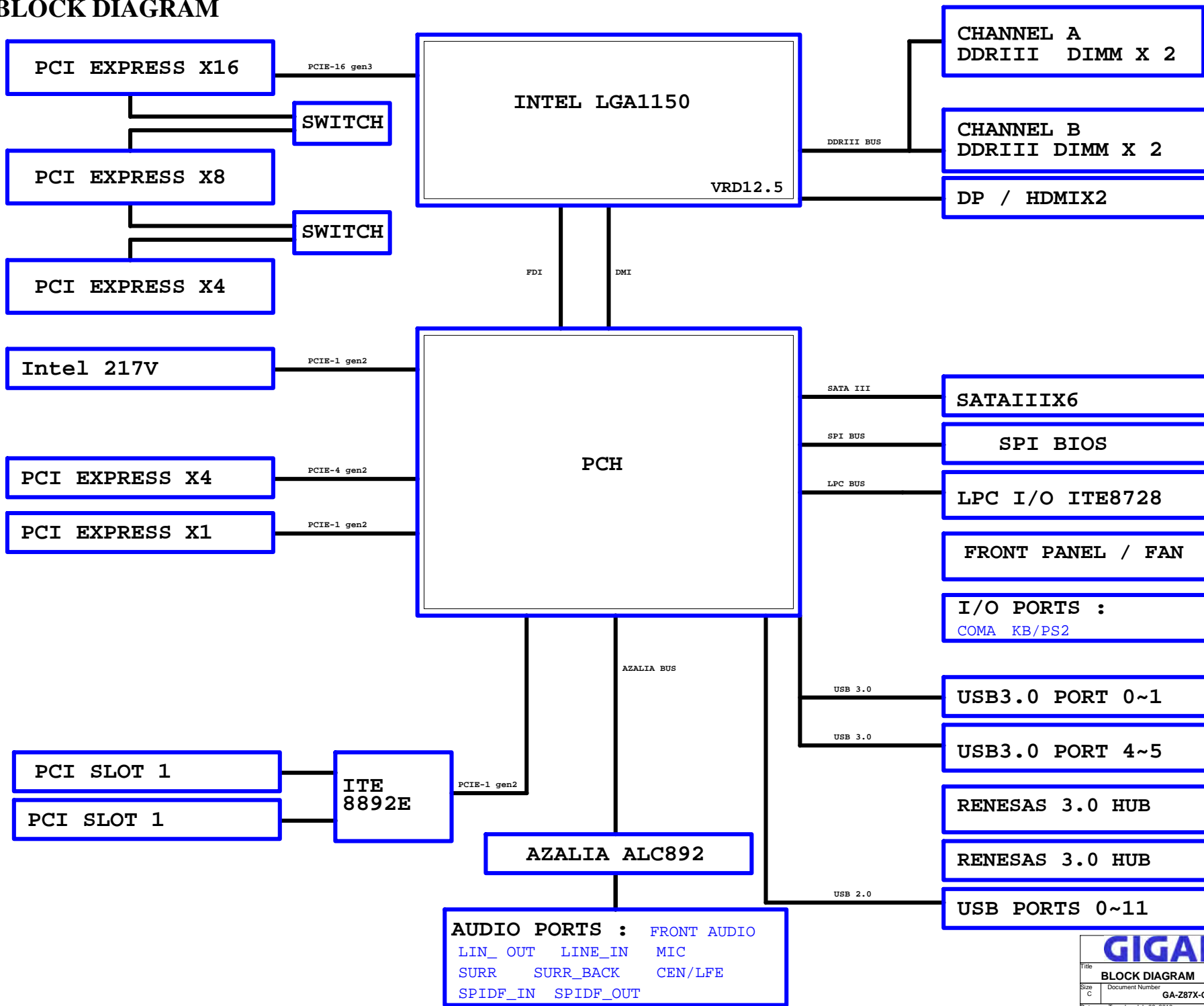
GIGABYTE™

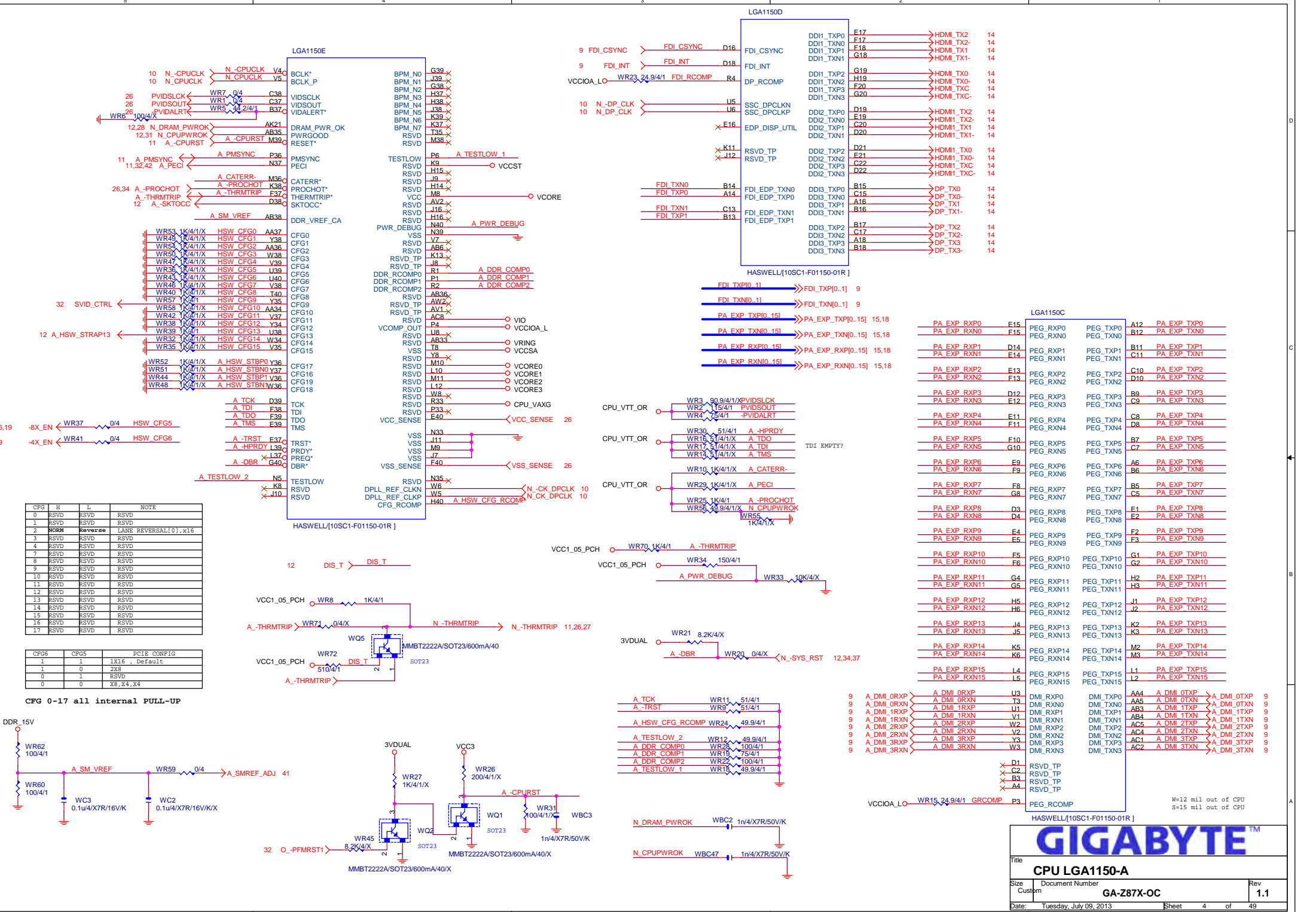
Title: **Cover Sheet**

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

Date: Tuesday, July 09, 2013 Sheet 1 of 49

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

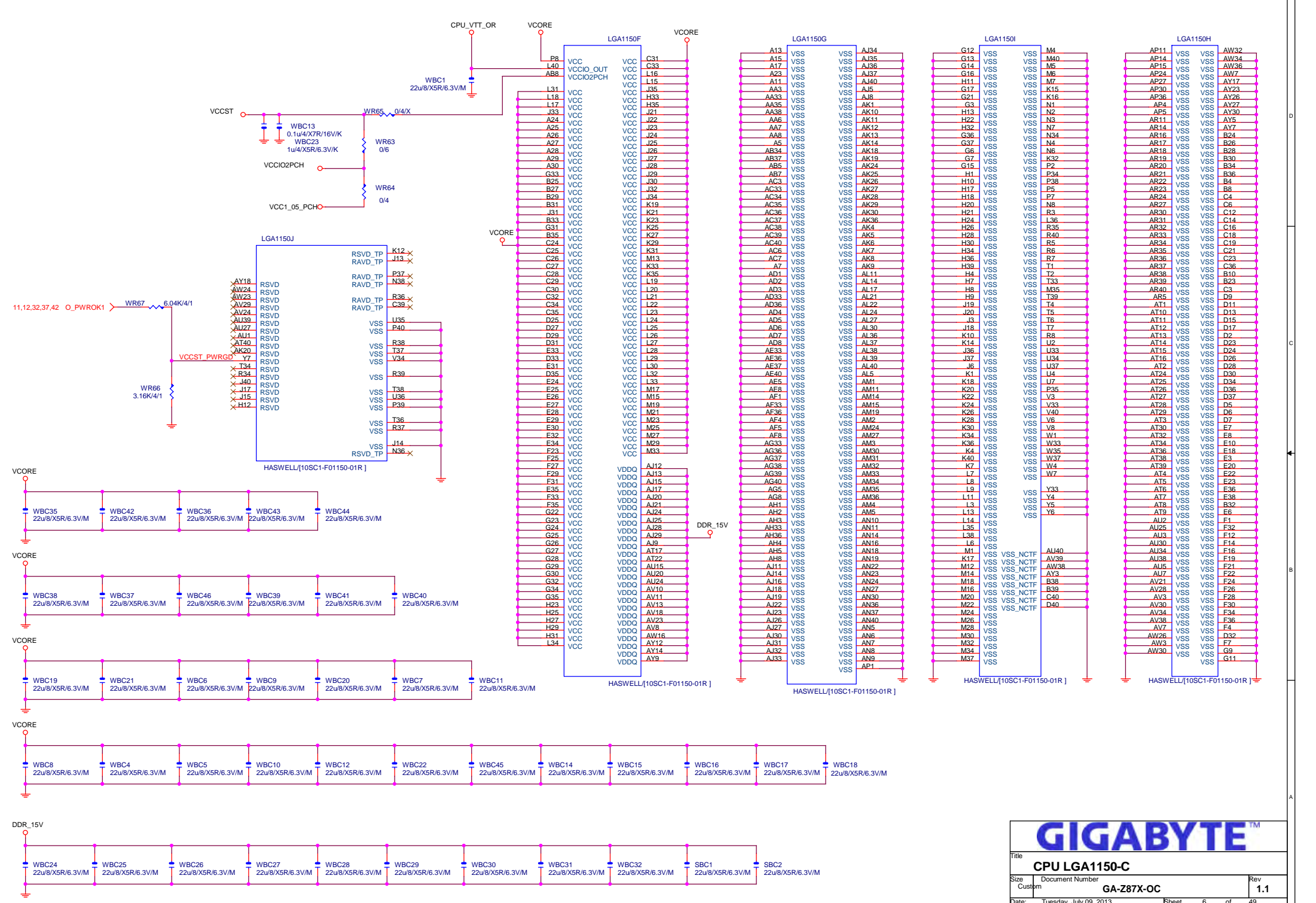
CFG6	CFG5	PCI-E CONFIG
1	1	1x16, Default
1	0	2x8
0	1	RSVD
0	0	x8, x4, x4

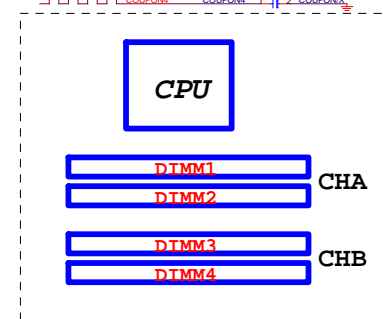
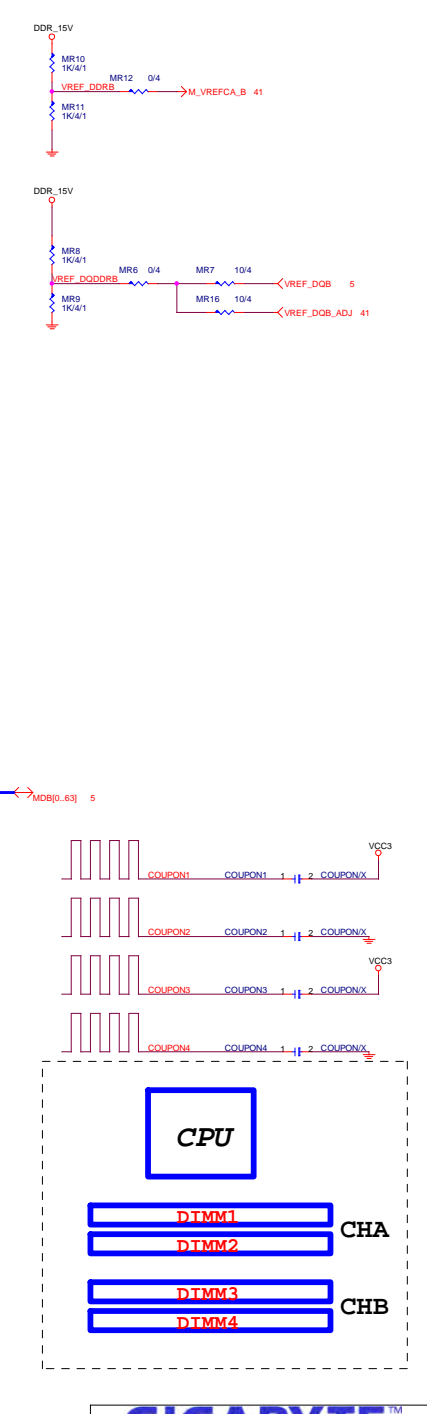
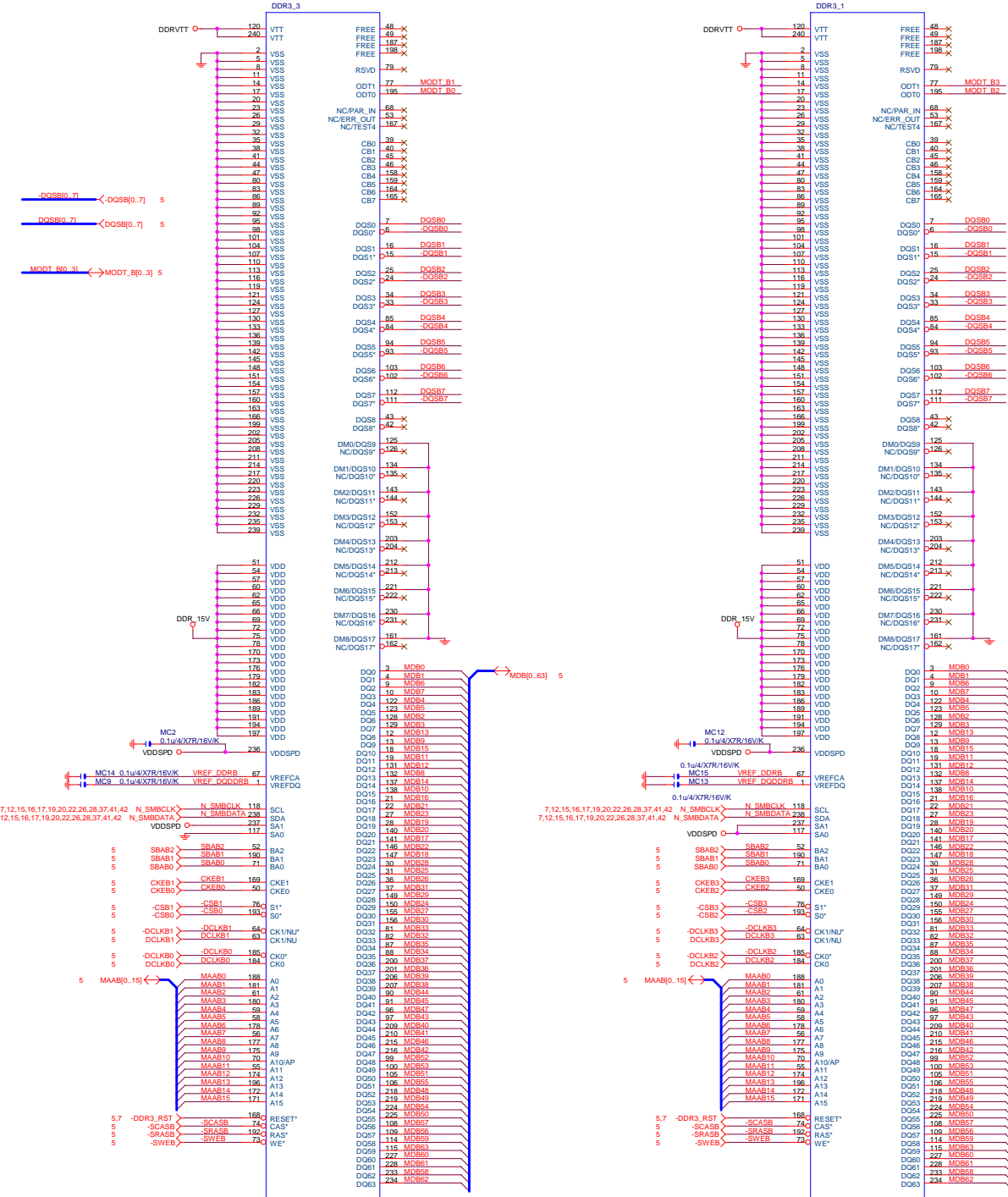
CFG 0-17 all internal PULL-UP

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Title CPU LGA1150-A		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 4	of 49

W=12 mil out of CPU
S=15 mil out of CPU



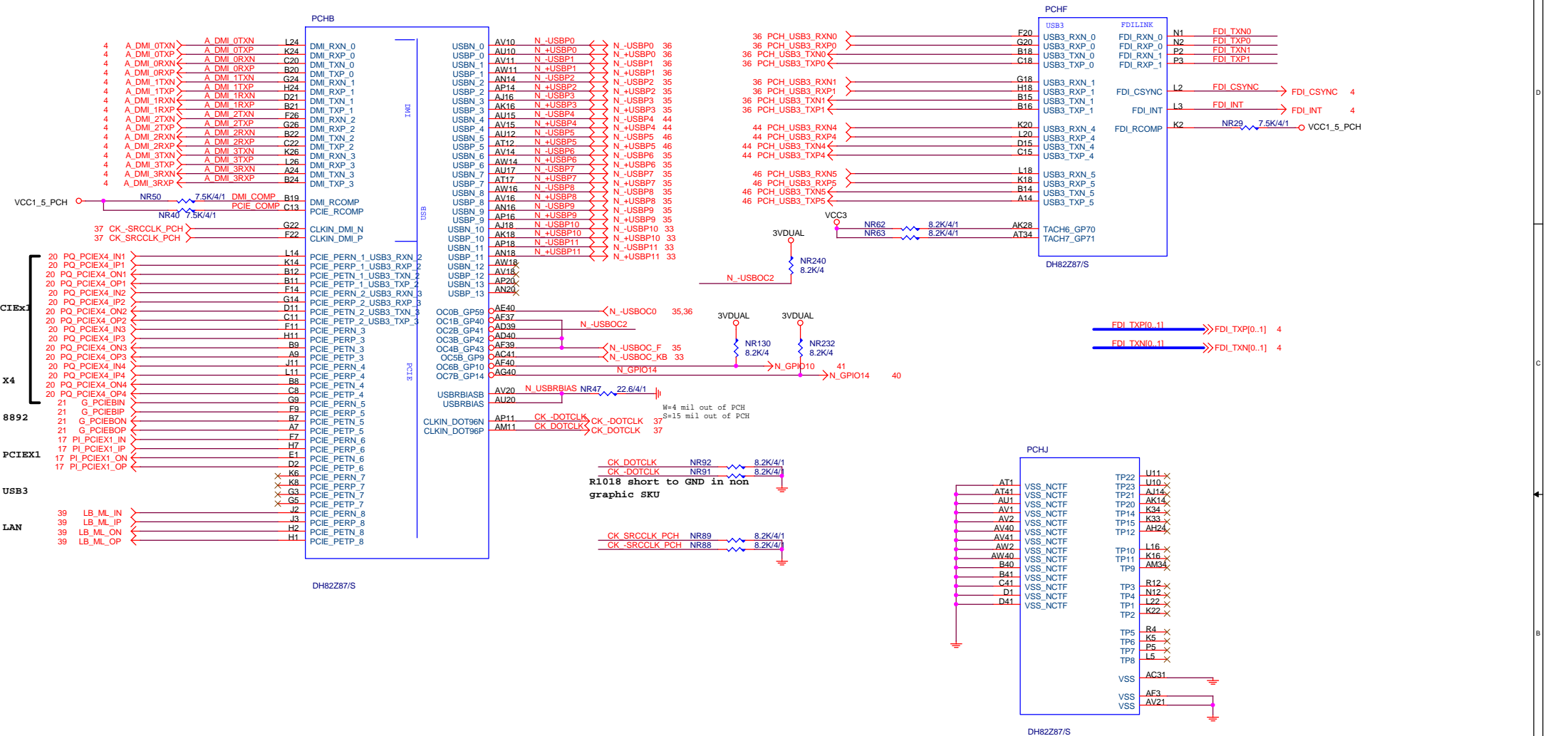


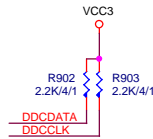
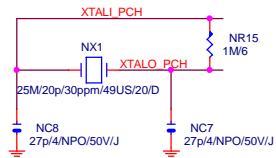
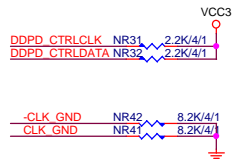
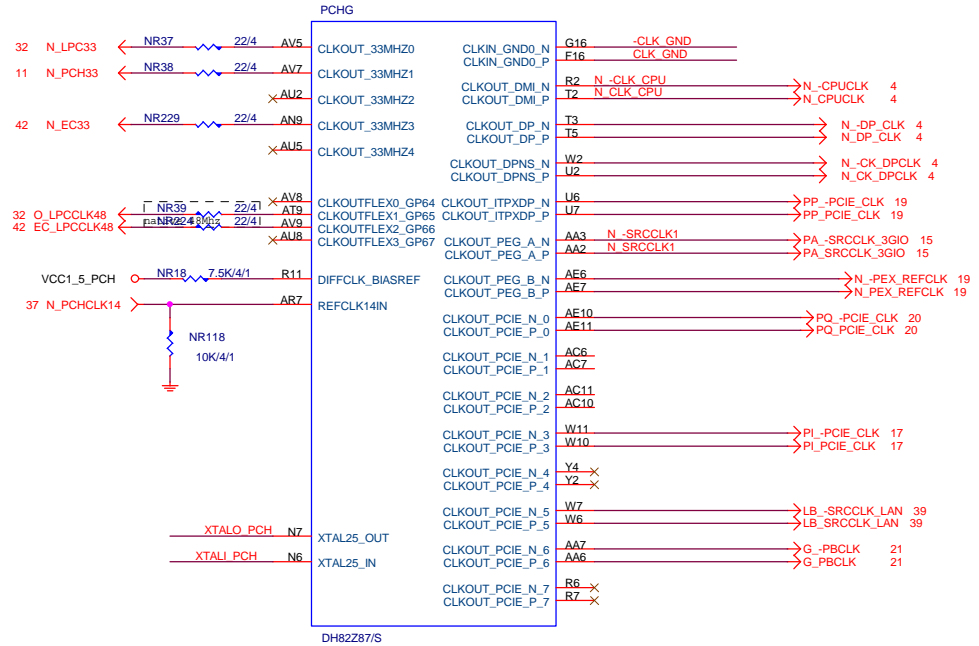
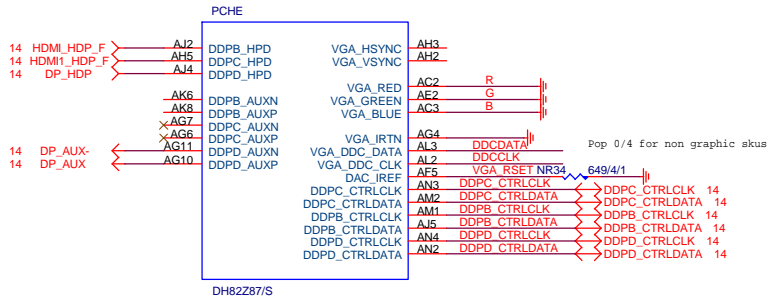
GIGABYTE

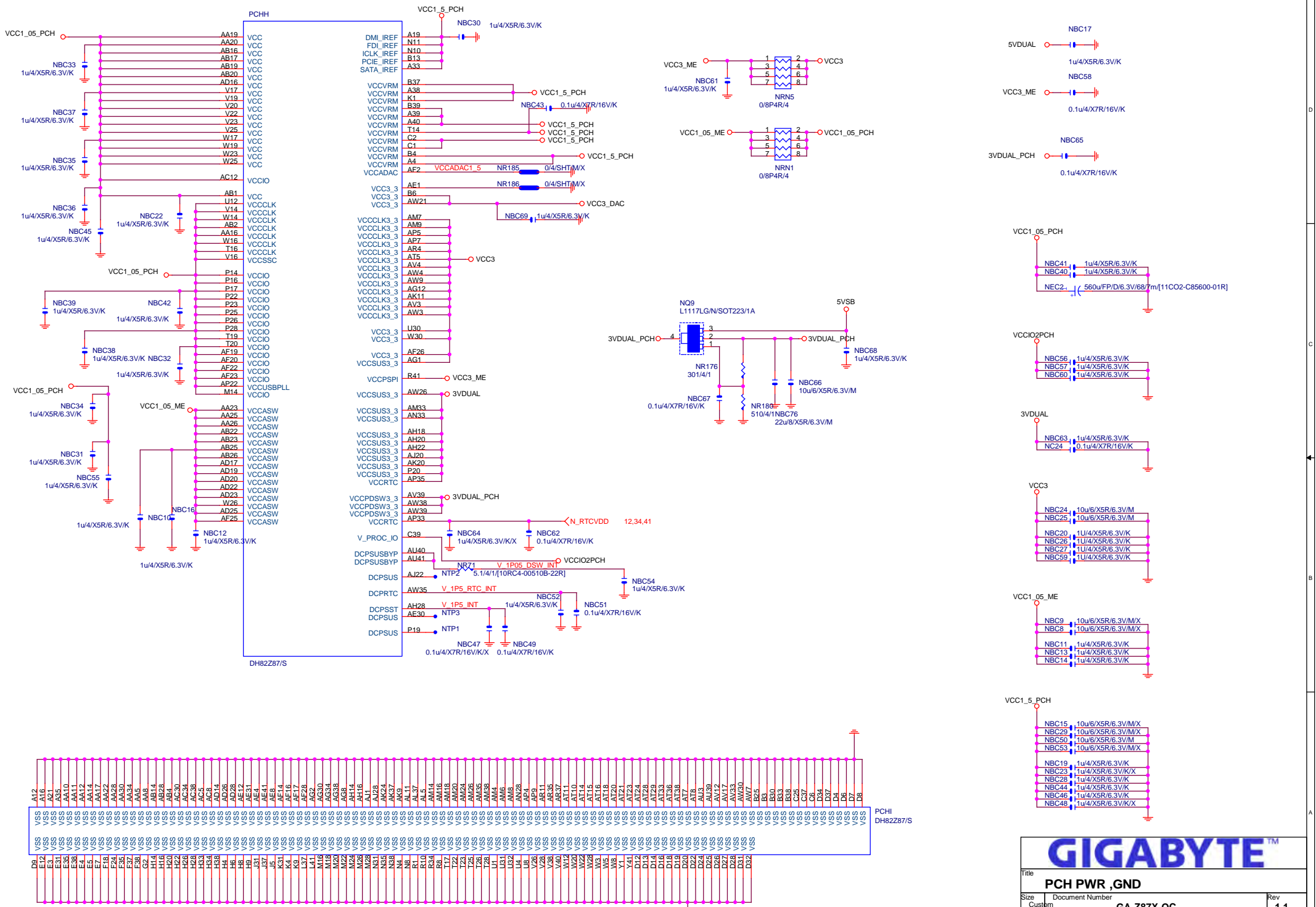
Title: **DDRIII CHANNEL B**

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

Date: Tuesday, July 09, 2013 Sheet: 8 of 89



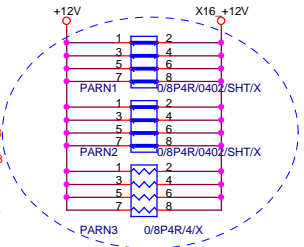




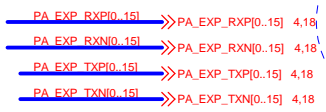
GIGABYTE™

Title PCH PWR ,GND		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 13	of 49

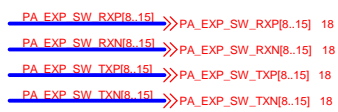
+12 protect short-wire test



PCIE16:16/5/5/16



PA_EXP_TXP0	PAC5	0.22u4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_SW_TXP8	PAC21	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC20	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u4/X5R/6.3V/K	PA_EXP_SW_TXN15_C



PCI-E REV:1.1--> 2.5GHZ

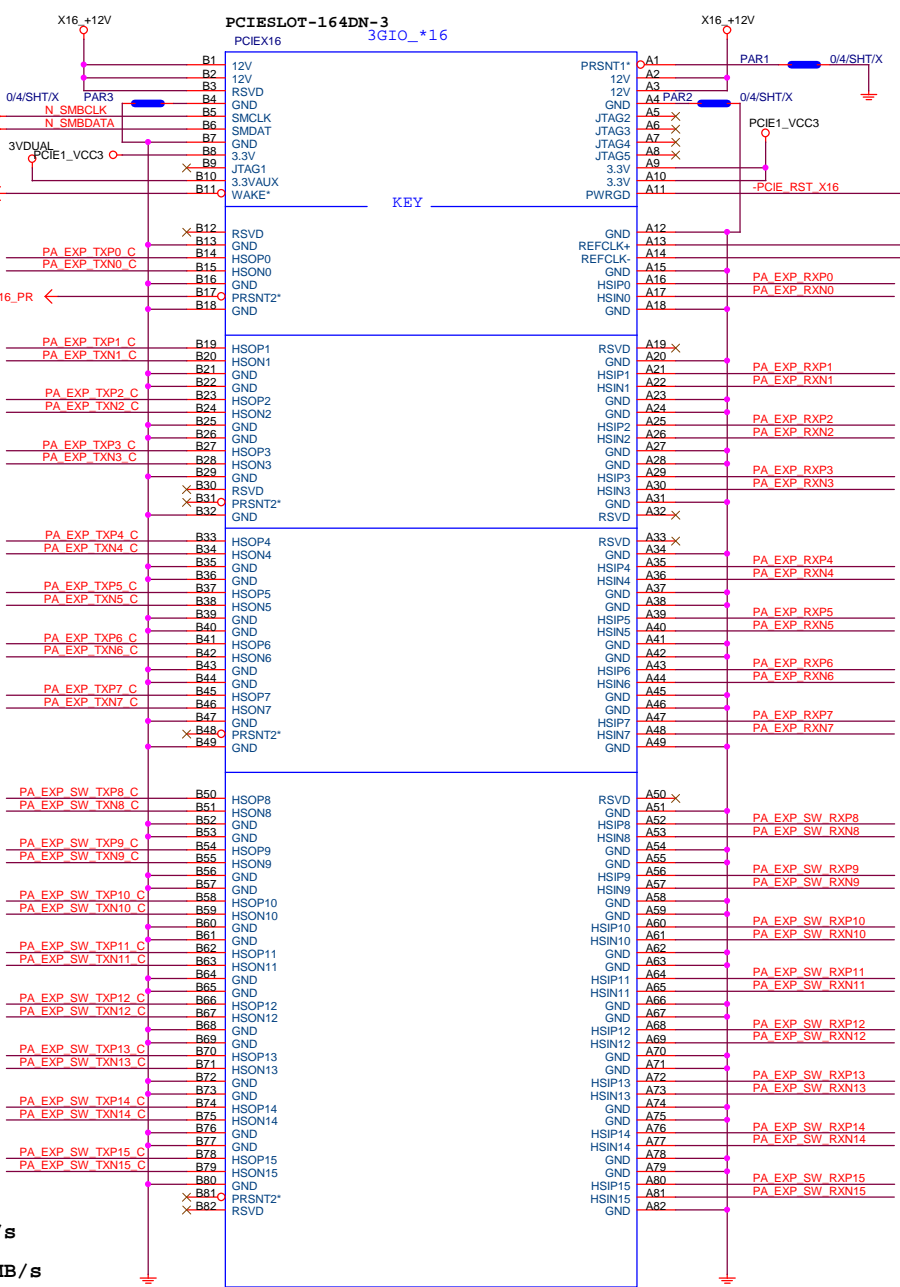
PCE-E X1(單向) BANDWIDTH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

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

PCE-E X16(單向) BANDWIDTH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

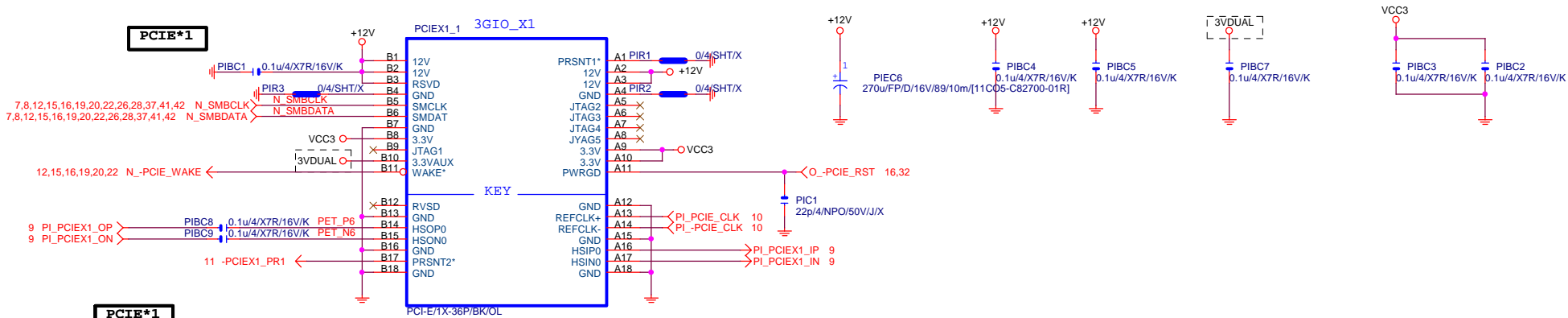
PCE-E X16(雙向) BANDWIDTH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ



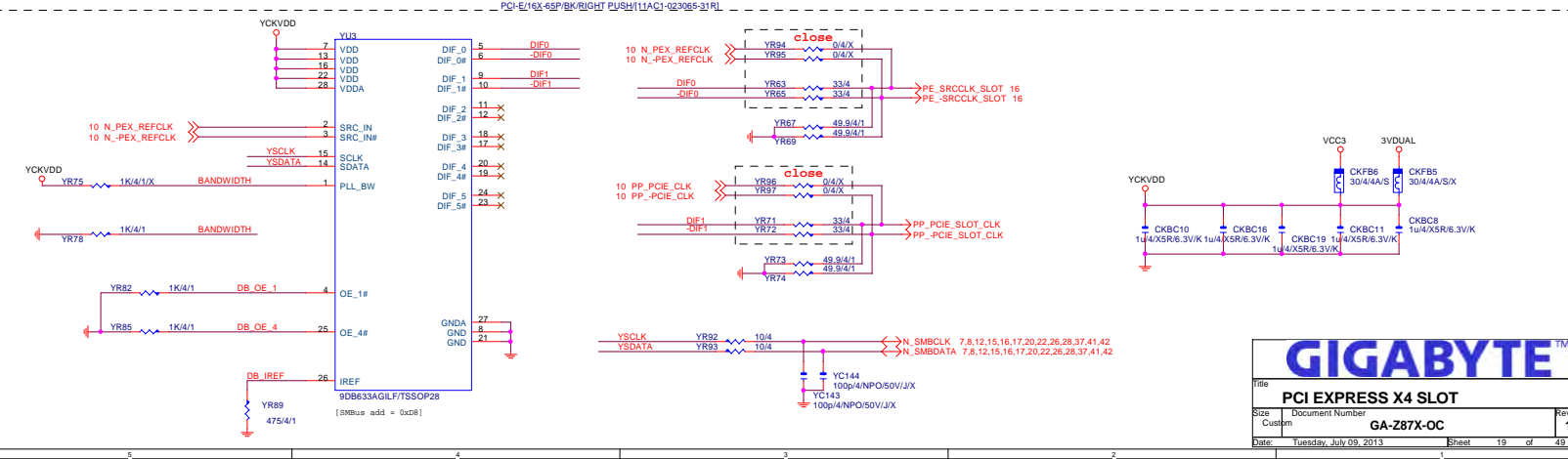
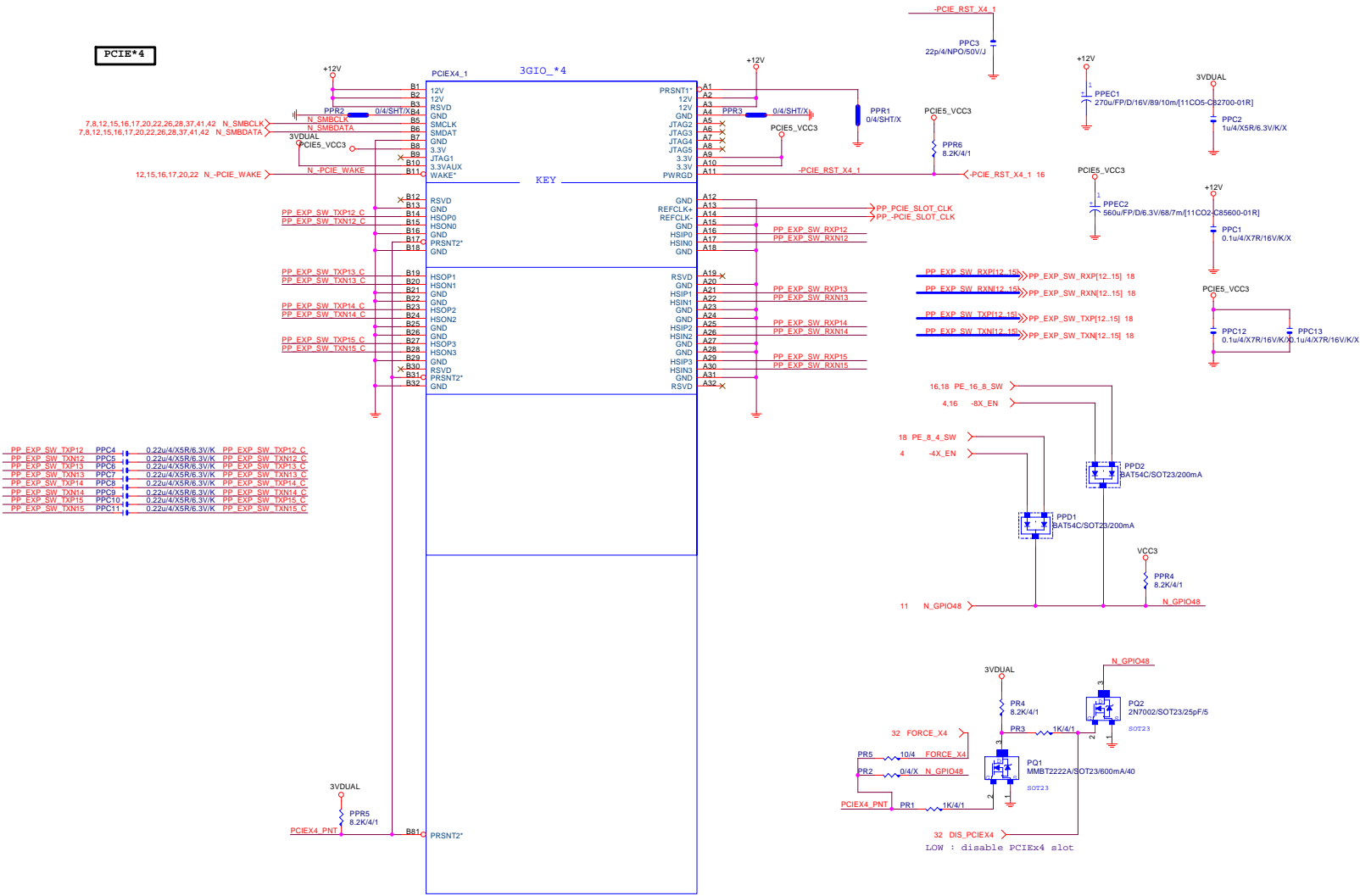
PCI-E/16x-164P/BK/RIGHT PUSH[11AC1-023164-81R]

GIGABYTE™		
Title PCI EXPRESS * 16		
Size	Document Number	Rev
Custom	GA-Z87X-OC	1.1
Date:	Tuesday, July 09, 2013	Sheet 15 of 49



GIGABYTE™		
Title PCIE_X1 1,2,3		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 17	of 49

PCIE*4



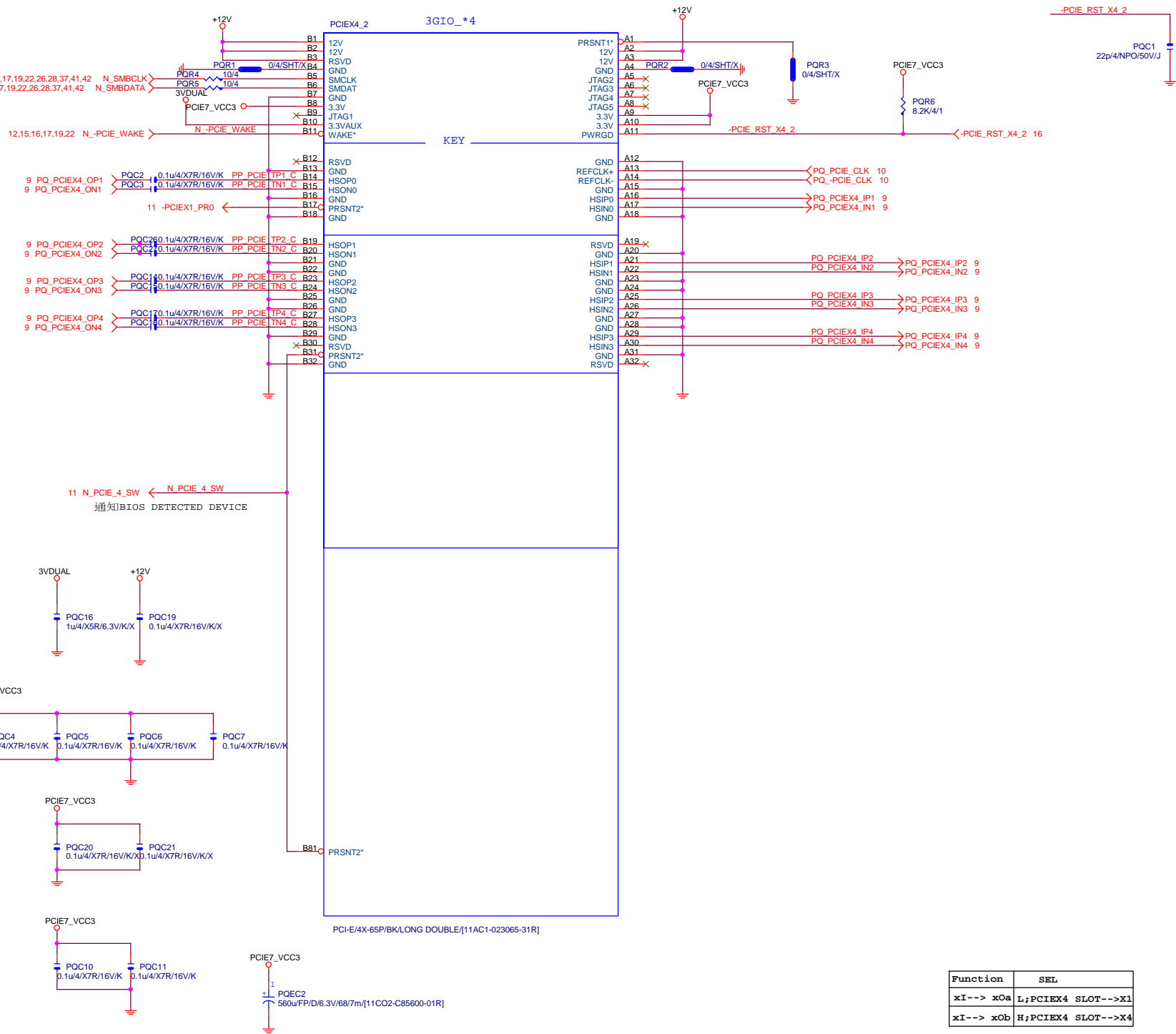
GIGABYTE™

File: **PCI EXPRESS X4 SLOT**

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

Date: Tuesday, July 09, 2013 Sheet: 19 of 49

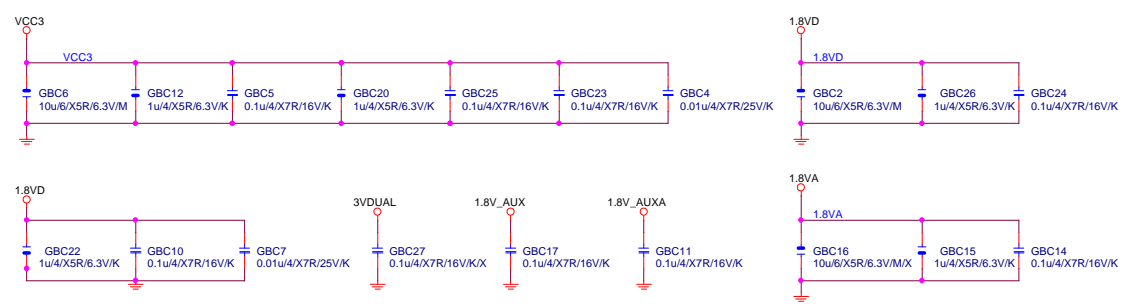
PCIE*4



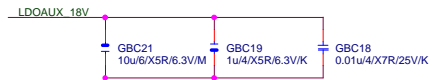
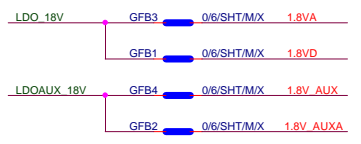
Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

GIGABYTE™

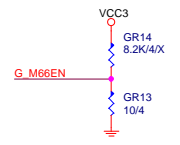
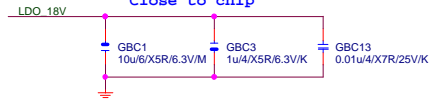
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Size Custom	Document Number GA-Z87X-OC	
Date: Tuesday, July 09, 2013	Sheet 20	of 49



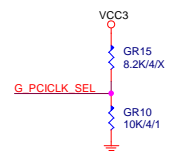
- G_A_D0_311 <-> G_A_D0_311 22
- G_C_BE0 G_C_BE0 22
- G_C_BE1 G_C_BE1 22
- G_C_BE2 G_C_BE2 22
- G_C_BE3 G_C_BE3 22
- G_PERR G_PERR 22
- G_SERR G_SERR 22
- G_PAR G_PAR 22
- G_PLOCK G_PLOCK 22
- G_DEVSEL G_DEVSEL 22
- G_STOP G_STOP 22
- G_TRDY G_TRDY 22
- G_IRDY G_IRDY 22
- G_FRAME G_FRAME 22
- O_PFMRS2 O_PFMRS2 32,39
- G_PCIIRST G_PCIIRST 22
- G_REQ0 G_REQ0 22
- G_REQ1 G_REQ1 22
- G_REQ2 G_REQ2 22
- G_REQ3 G_REQ3 22
- G_GNT0 G_GNT0 22
- G_GNT1 G_GNT1 22
- G_PIROA G_PIROA 22
- G_PIOB G_PIOB 22
- G_PIOC G_PIOC 22
- G_PIOD G_PIOD 22
- G_CLKOUT0 GR12 $47/4/1$ G_PCLK0 22
- G_CLKOUT1 GR11 $47/4/1$ G_PCLK1 22



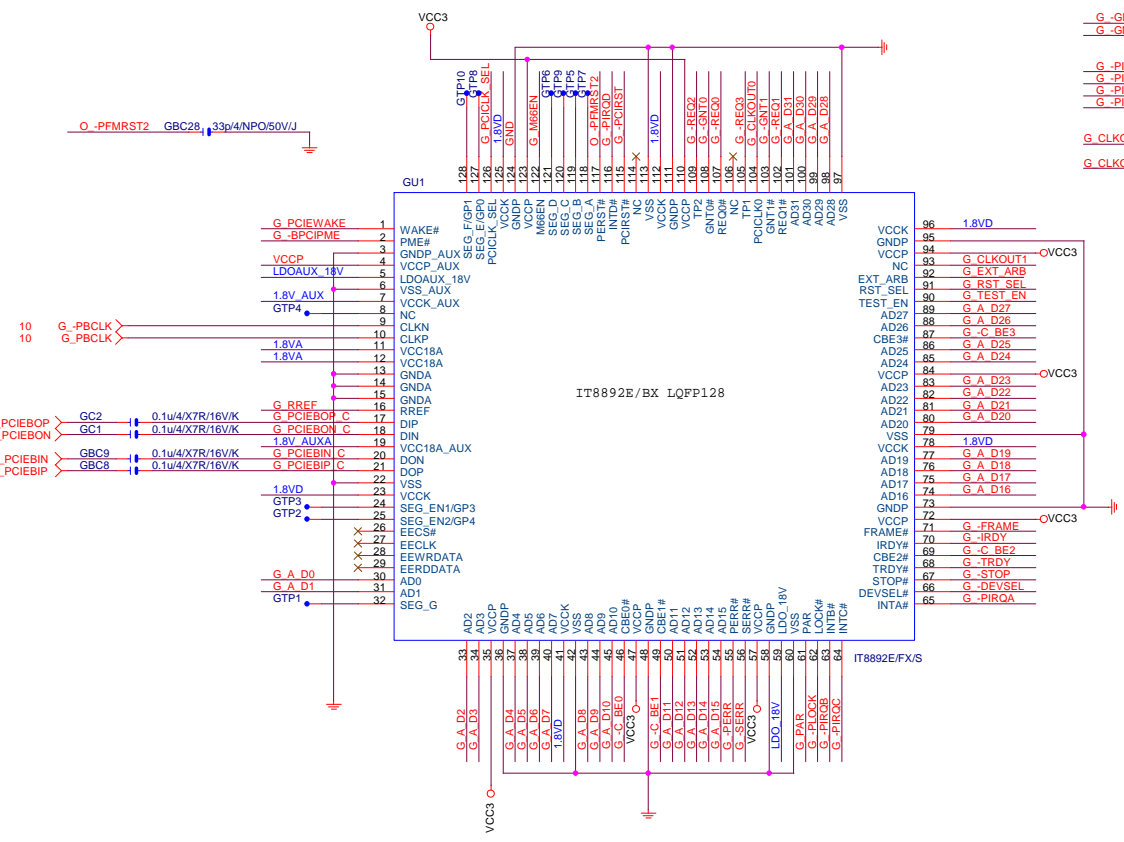
PCB layout note:
Close to chip



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

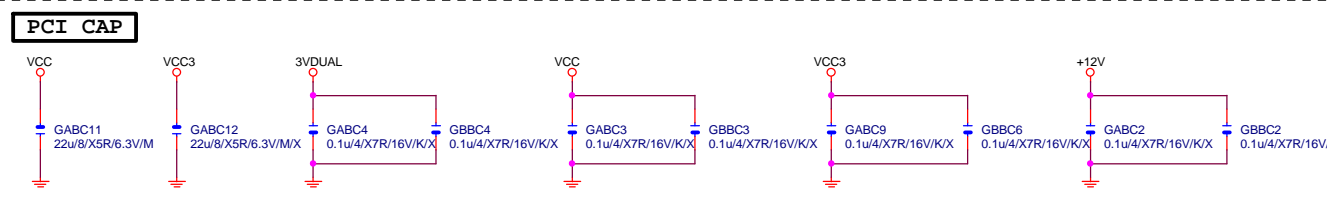
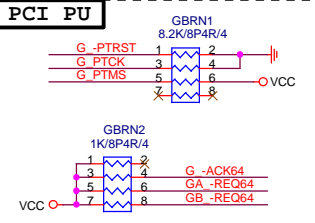
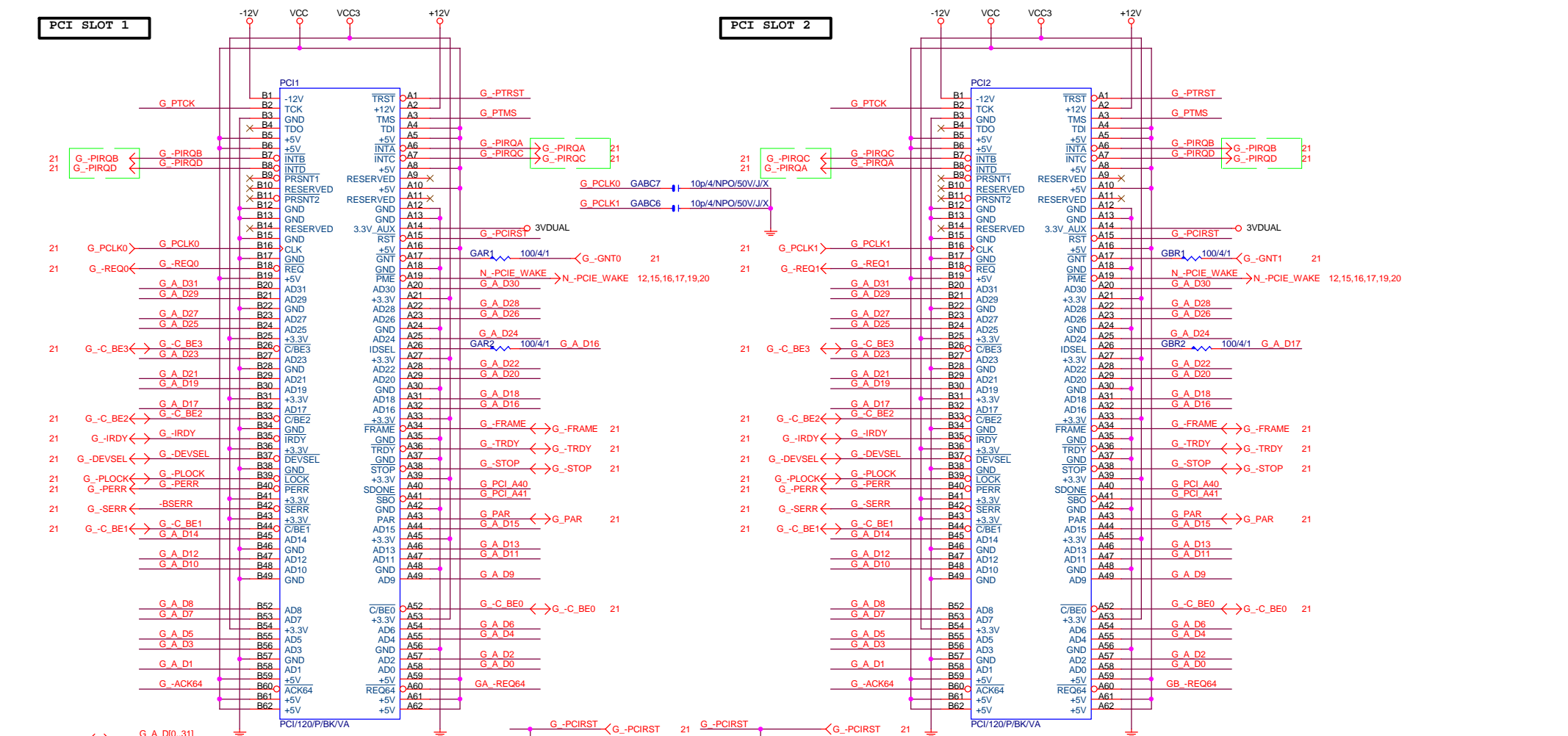


High: PCICLK INPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip



PCI SLOT 1

PCI SLOT 2



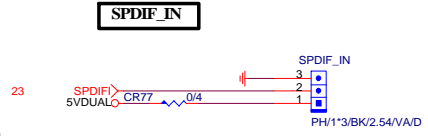
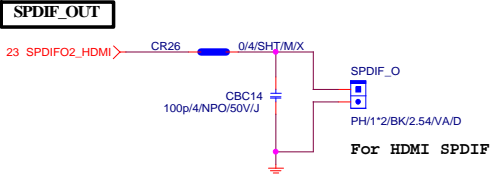
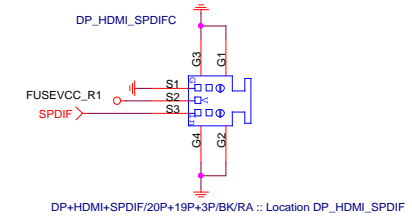
GIGABYTE™

PCI SLOT 1&2

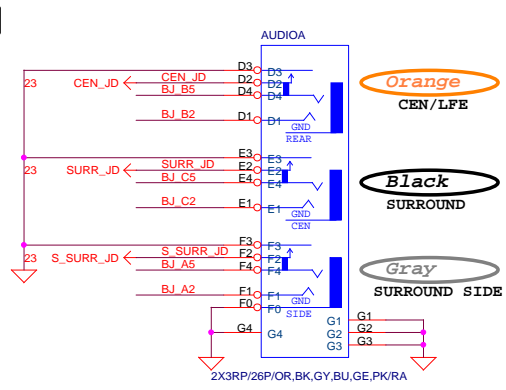
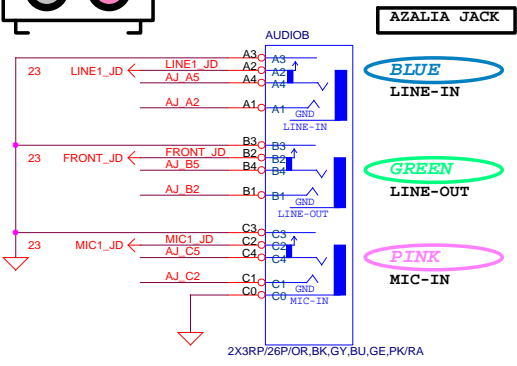
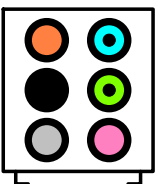
Size	Document Number	Rev
Custom	GA-Z87X-OC	1.1
Date:	Tuesday, July 09, 2013	Sheet 22 of 49

7,8,12,15,16,17,19,20,26,28,37,41,42 N_SMBCLK ← 0/6/SHT/X G_PCI A40
 7,8,12,15,16,17,19,20,26,28,37,41,42 N_SMBDATA ← GBR4 0/6/SHT/X G_PCI A41

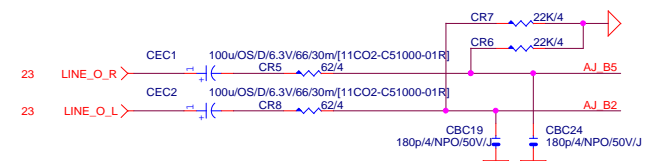
- CR49 0/6/SHT/MX → Close F_AUDIO
- CR50 0/6/SHT/MX → Close Codec
- CR21 ~2,2/6 → Audio jack <--> USB_LAN
- CR24 ~0/6/X → Under Audio jack



AZALIA JACK

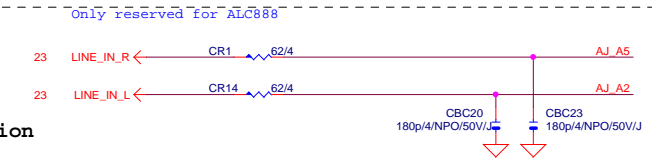


LINE-OUT

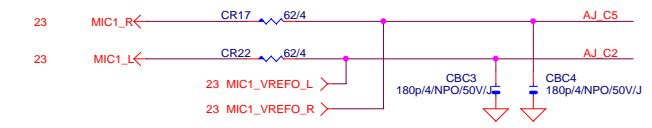


LINE-IN

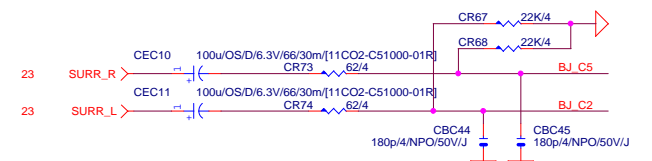
Verify MIC function in LINE-in



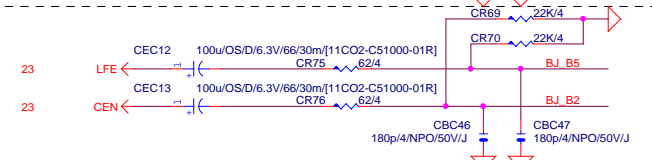
MIC-IN



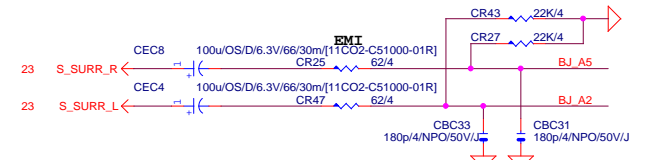
SURROUND



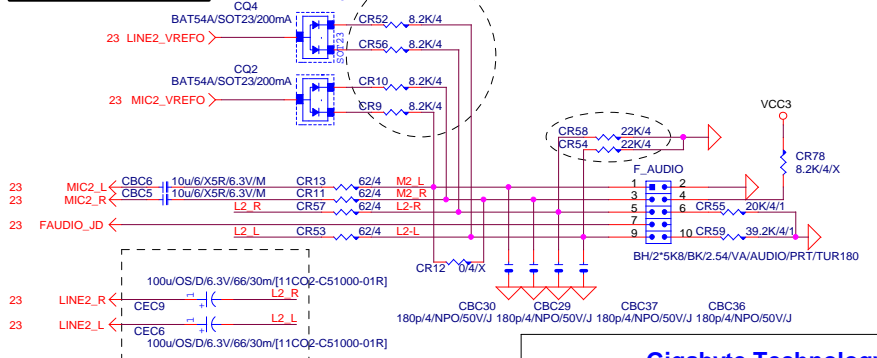
CEN/LFE



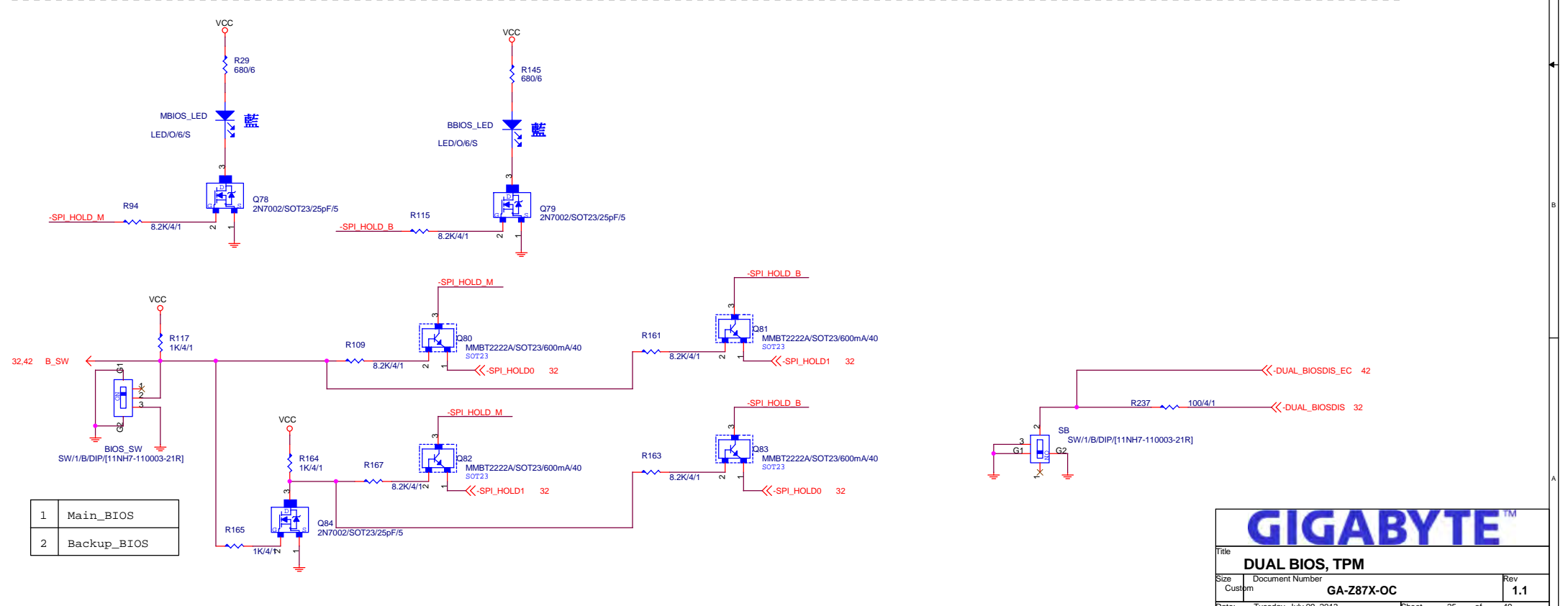
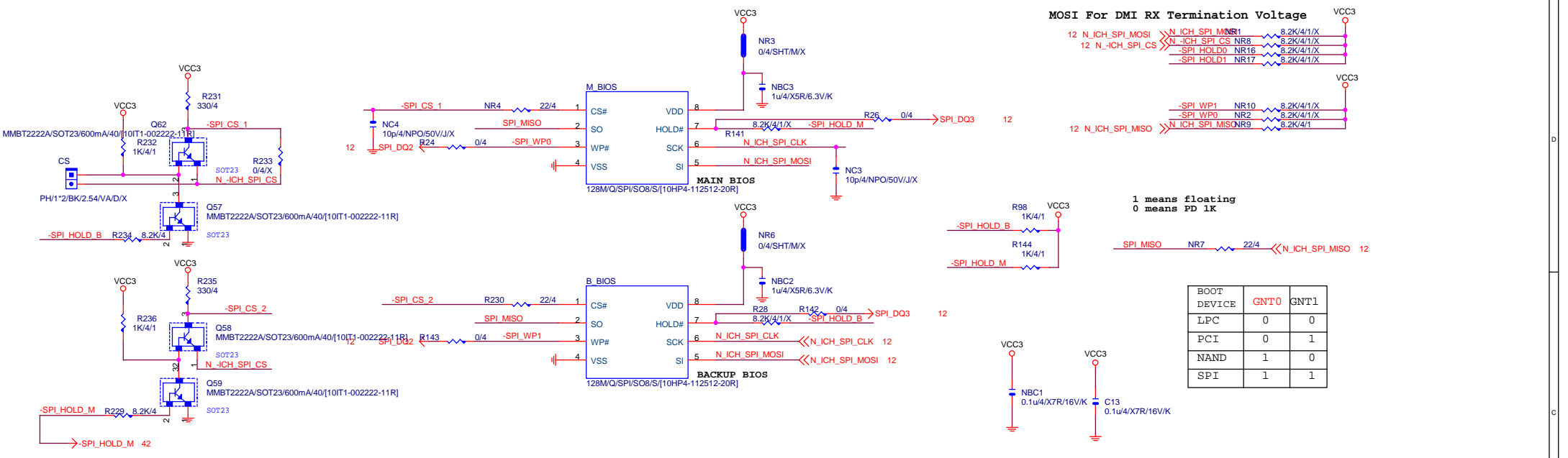
SURRBACK



AZALIA FRONT PANEL



Gigabyte Technology			
AUDIO JACK			
GA-Z87X-OC			
Size Custom	Document Number	Rev	1.1
Date: Tuesday, July 09, 2013	Sheet	24	of 49



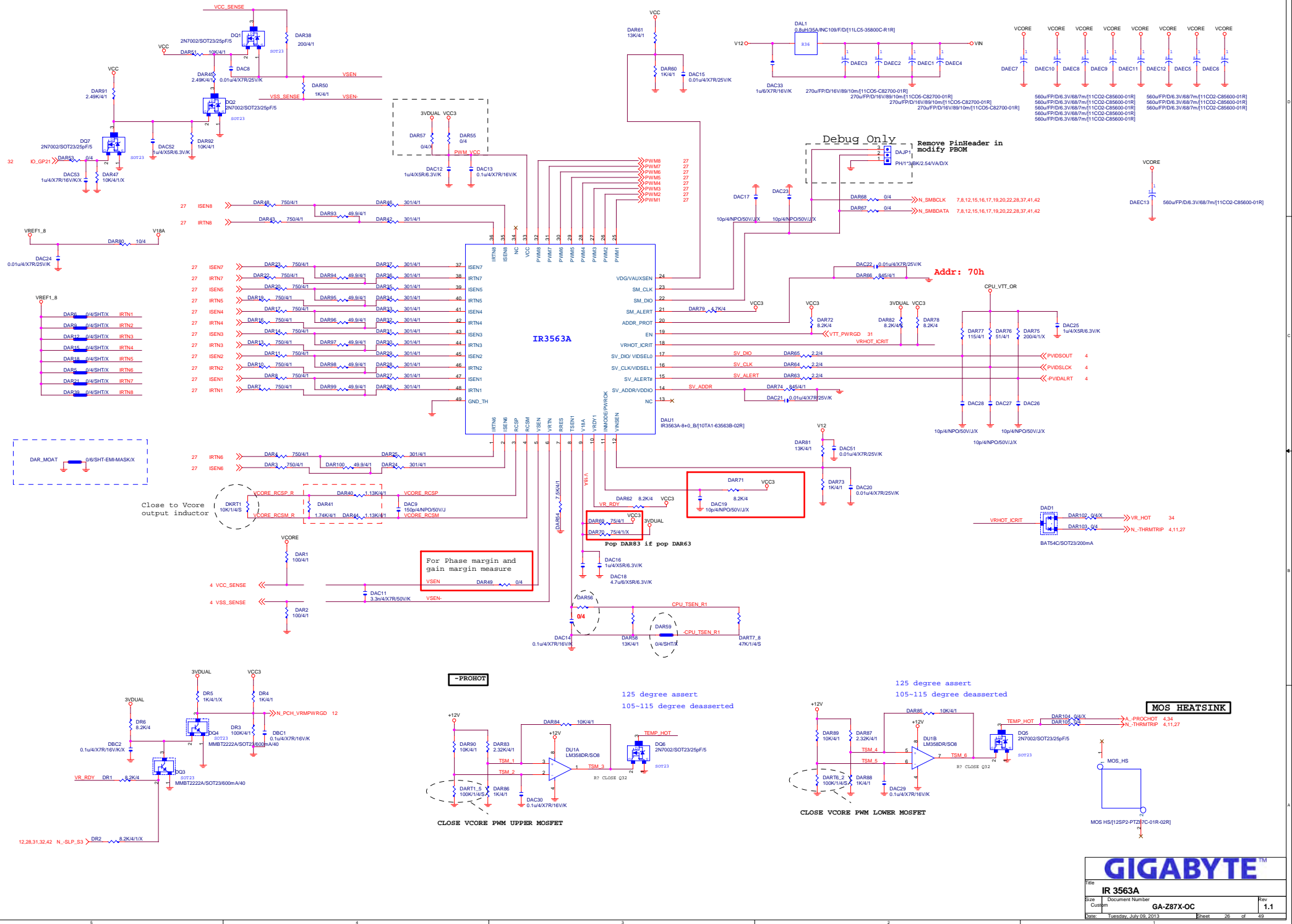
1	Main_BIOS
2	Backup_BIOS

GIGABYTE™

Title: **DUAL BIOS, TPM**

Size	Document Number	Rev
Custom	GA-Z87X-OC	1.1

Date: Tuesday, July 09, 2013 Sheet 25 of 49



IR3563A

Debug Only
Remove PinHeader in modify PBOM

For Phase margin and gain margin measure
VSEN DAR49

Addr: 70h

125 degree assert
105-115 degree deasserted

125 degree assert
105-115 degree deasserted

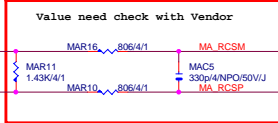
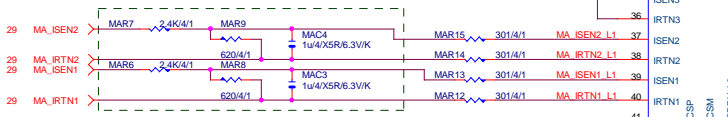
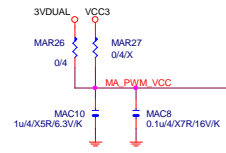
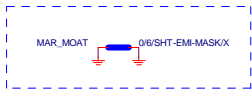
MOS HEATSINK

CLOSE VCC PWM UPPER MOSFET

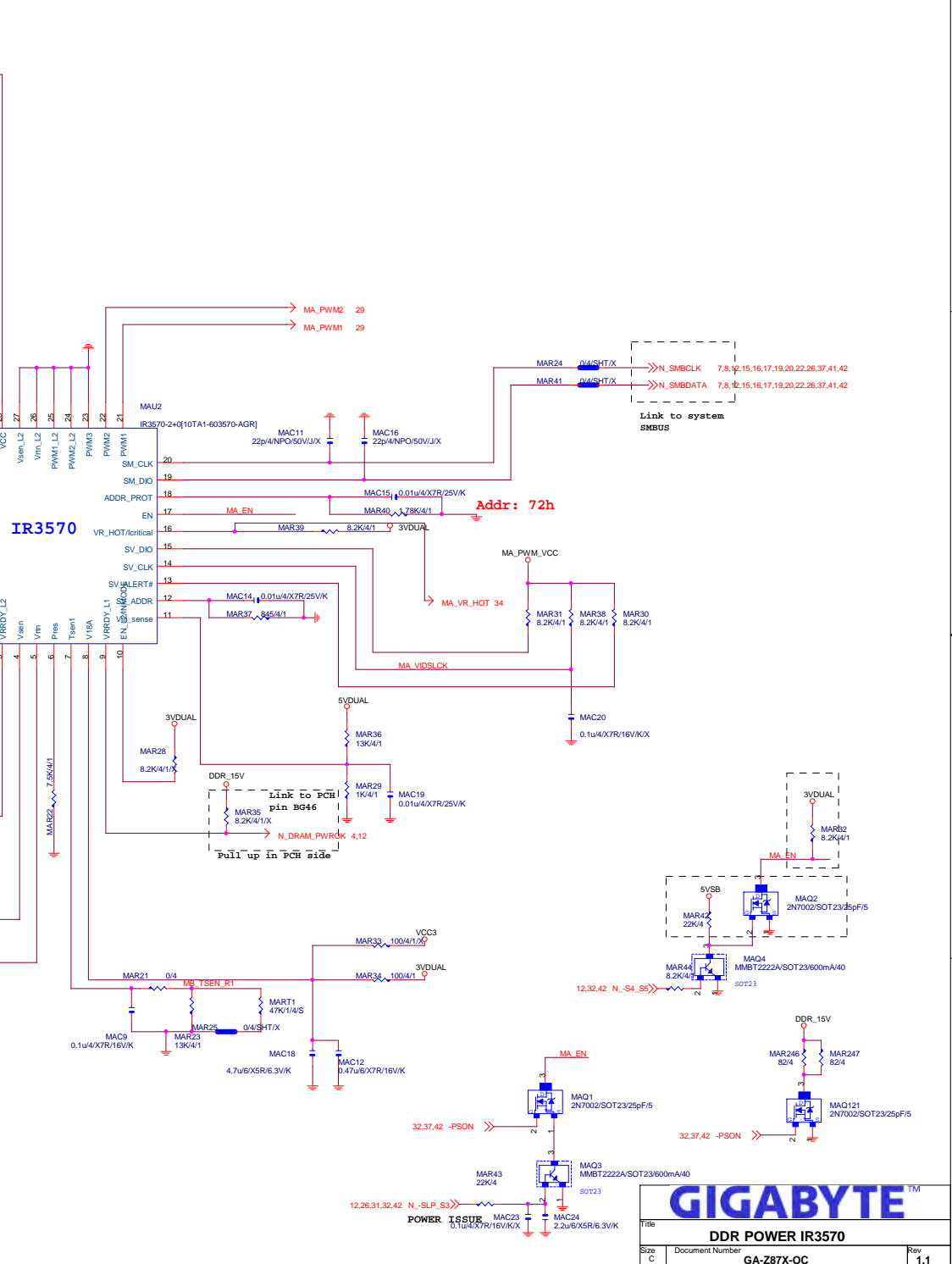
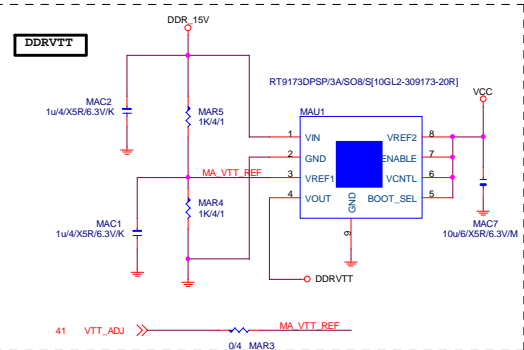
CLOSE VCC PWM LOWER MOSFET

GIGABYTE

Title: IR 3563A
 Size: Document Number
 Custom: GA-Z87X-OC
 Date: Tuesday, July 09, 2013
 Sheet: 26 of 49

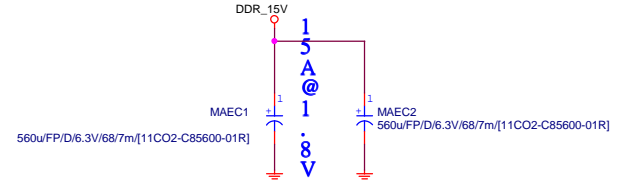
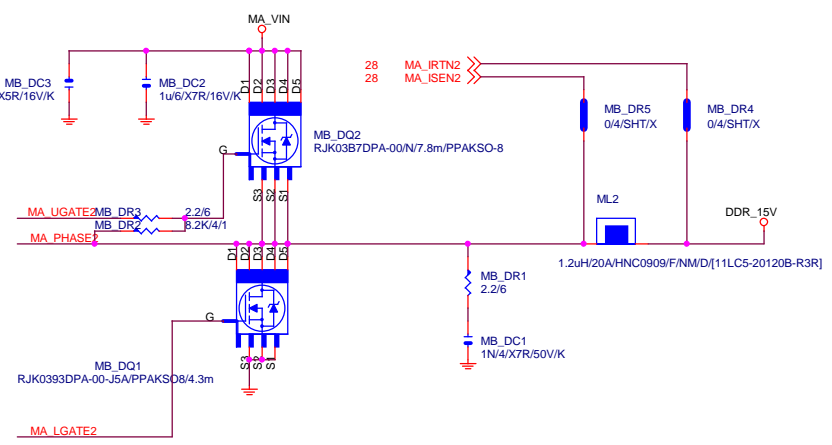
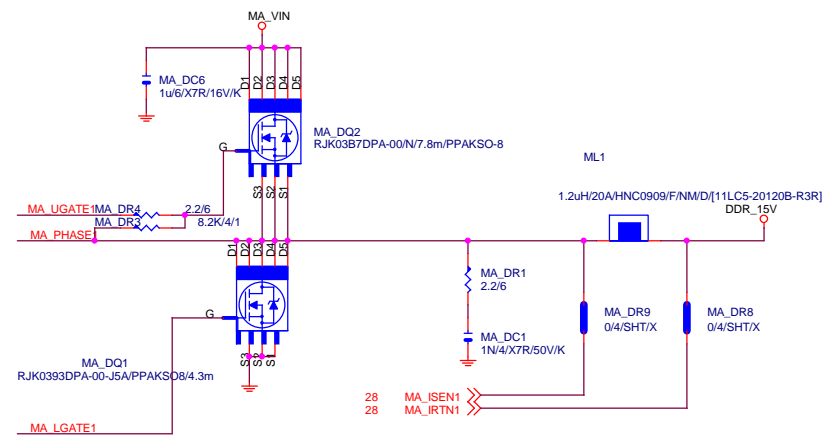
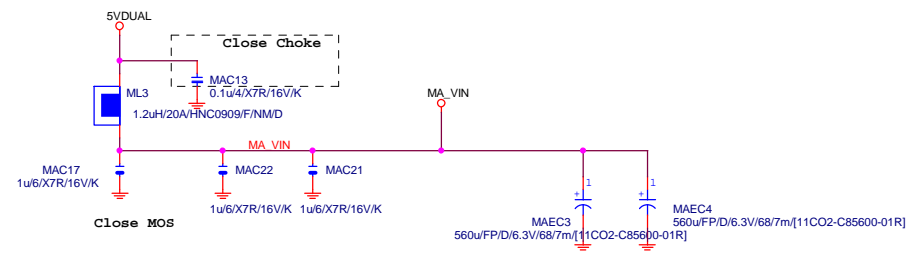
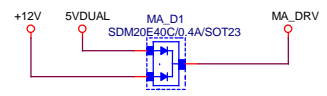
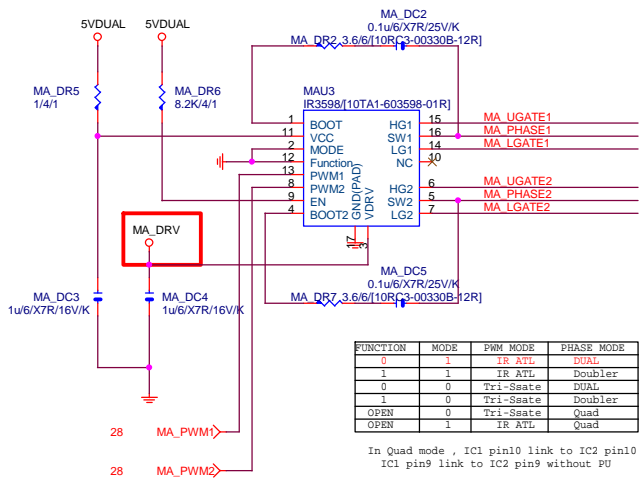


Close to DDR output inductor
should be routed as differential pair, 7mil width, 8mil spacing



GIGABYTE™		
DDR POWER IR3570		
File	Document Number	Rev
	GA-Z87X-OC	1.1
Date:	Tuesday, July 09, 2013	Sheet 28 of 49

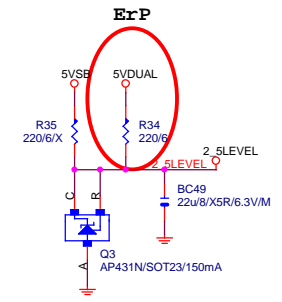
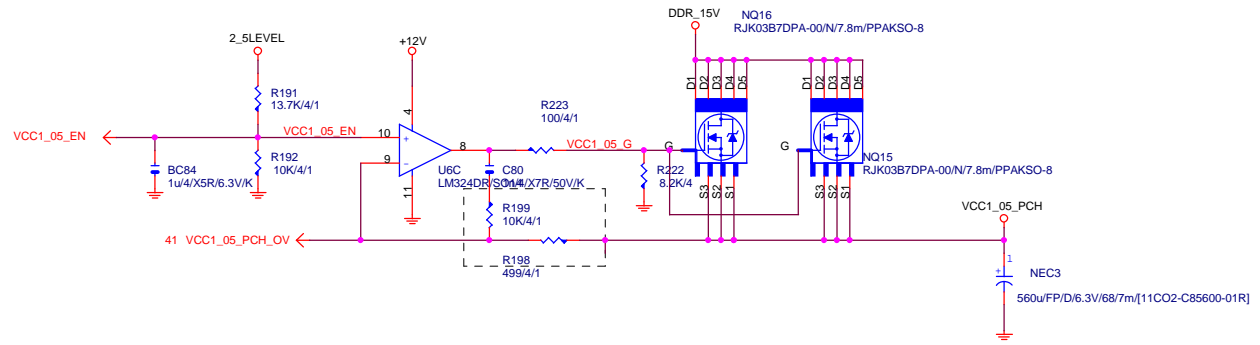
DDR_15V



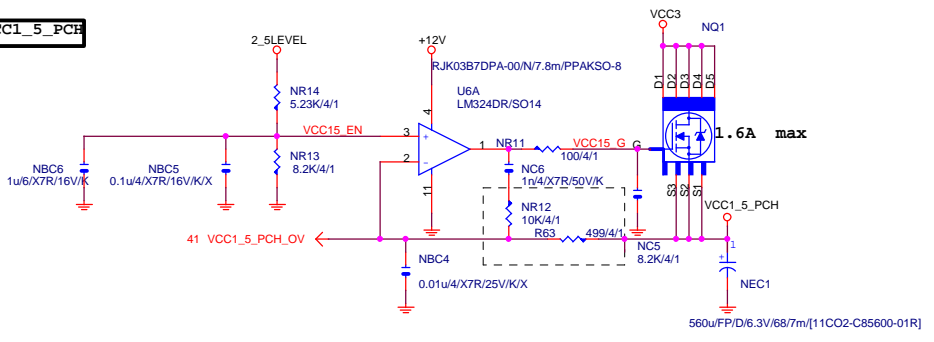
GIGABYTE™

Title IR3570		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 29	of 49

VCC1_05_PCH

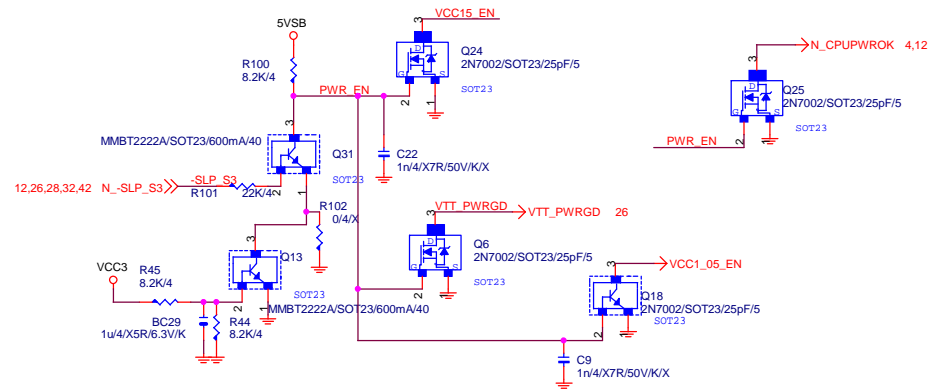


VCC1_5_PCH



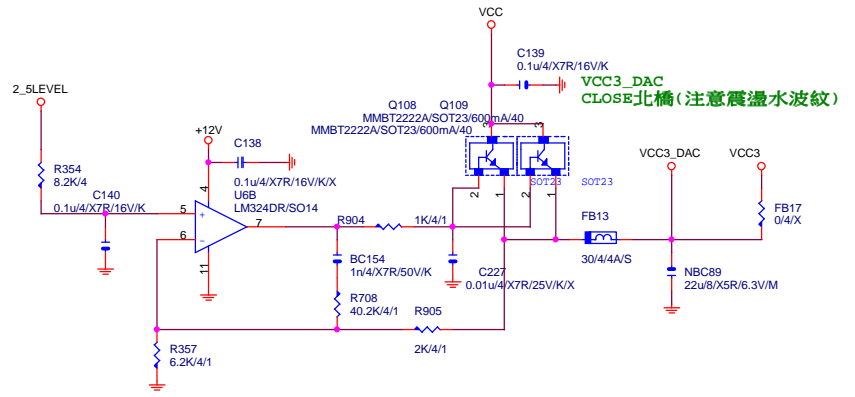
Rise/Fall max 50us
 Rise:20% - 80%
 Fall :2V- 0.8V

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

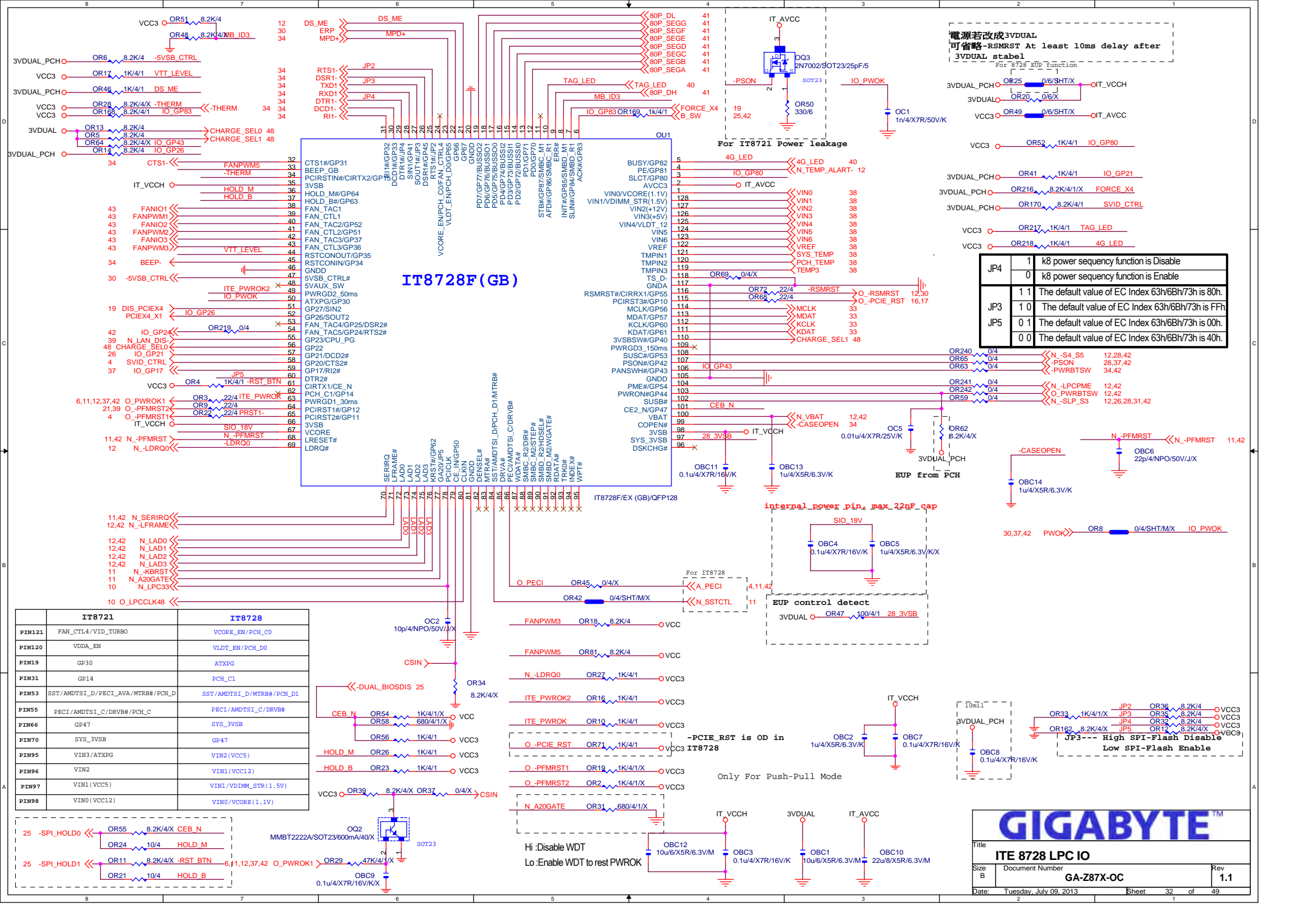


VCC3_DAC

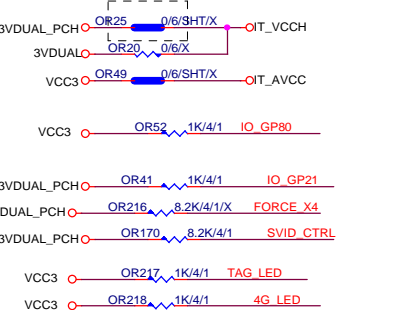
(3.3V/70mA+360uA)



GIGABYTE™		
Title VCC 1.05 PCH, VCC1.5 PCH, CC3 DAC		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 31	of 49



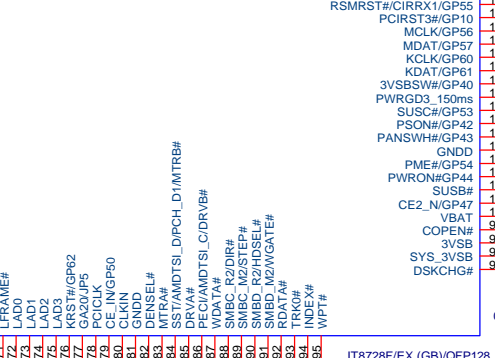
電源若改成3VDUAL
可省略-RSMRST At least 10ms delay after
3VDUAL stabler
For 8728 EUP function



For IT8721 Power leakage



IT8728F(GB)



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.
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.

	IT8721	IT8728
PIN121	FAN_CTL4/VID_TURBO	VCORE_EN/PCH_C0
PIN120	VDDA_EN	VLDT_EN/PCH_D0
PIN19	GP30	ATXPG
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/ATXPG	VIN2(VCC5)
PIN96	VIN2	VIN1(VCC12)
PIN97	VIN1(VCC5)	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0(VCC12)	VIN0/VCORE(1.1V)

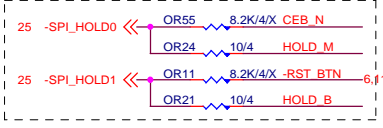
GIGABYTE™

ITE 8728 LPC IO

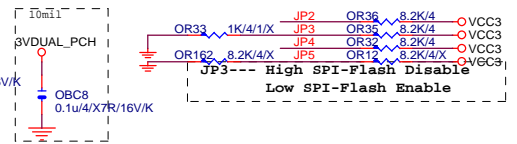
GA-Z87X-OC

Rev 1.1

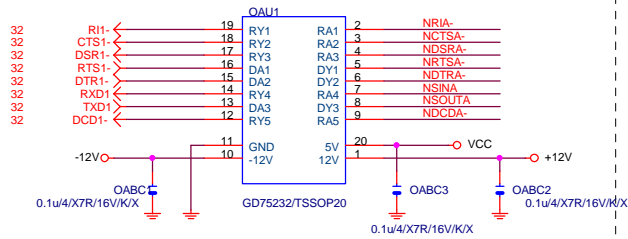
Date: Tuesday, July 09, 2013 Sheet 32 of 49



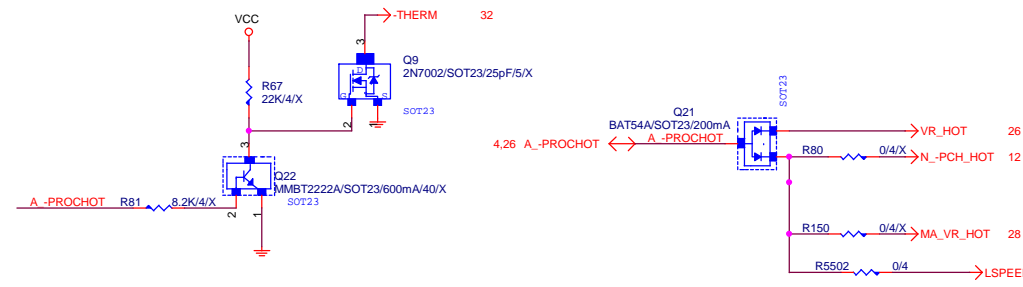
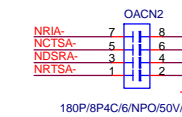
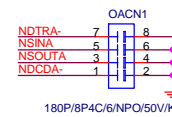
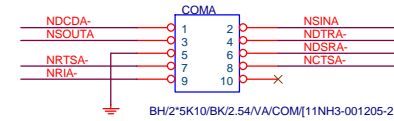
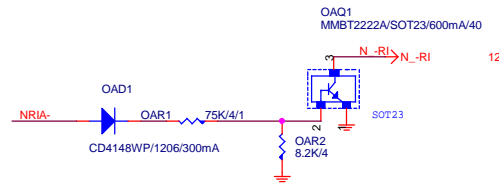
Hi : Disable WDT
Lo : Enable WDT to rest PWROK



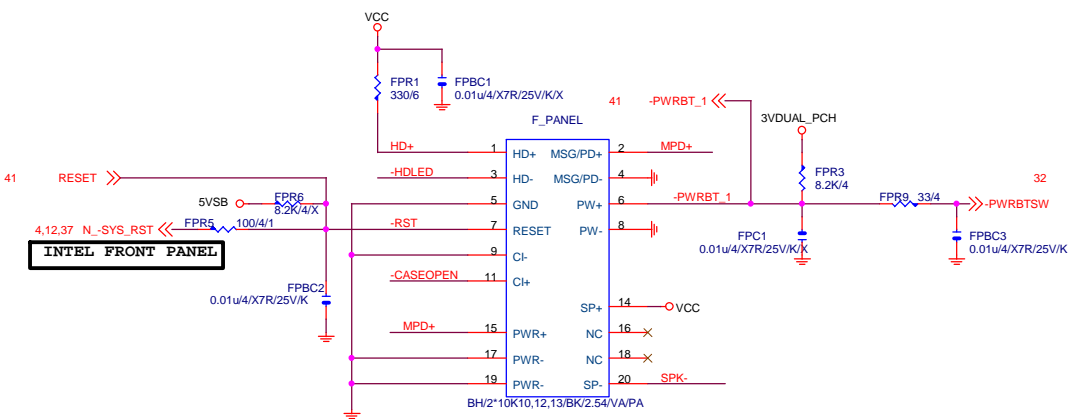
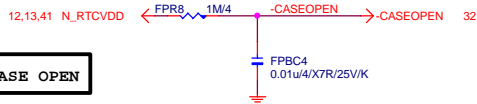
COMA



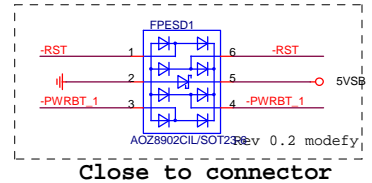
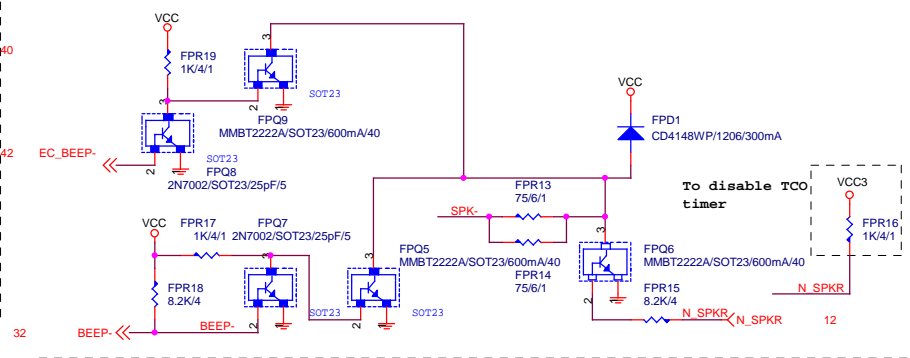
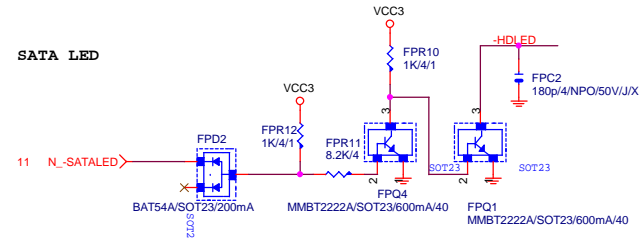
COM RI



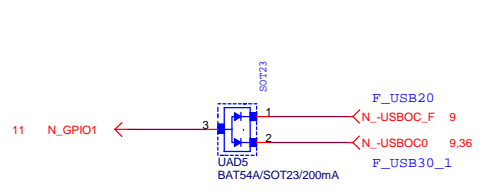
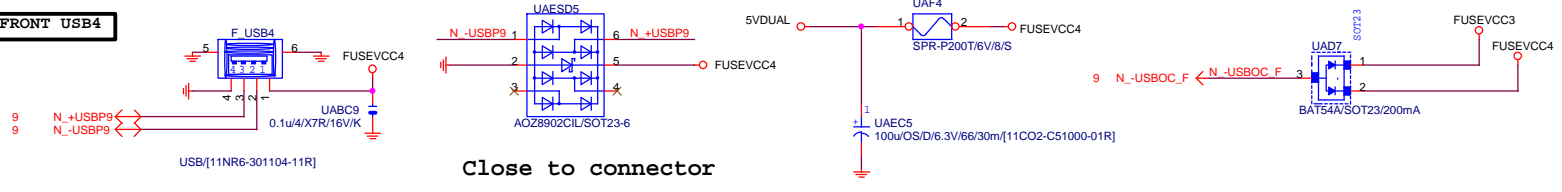
CASE OPEN



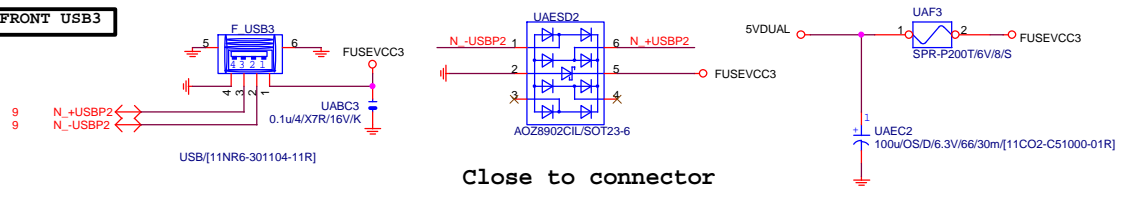
SATA LED



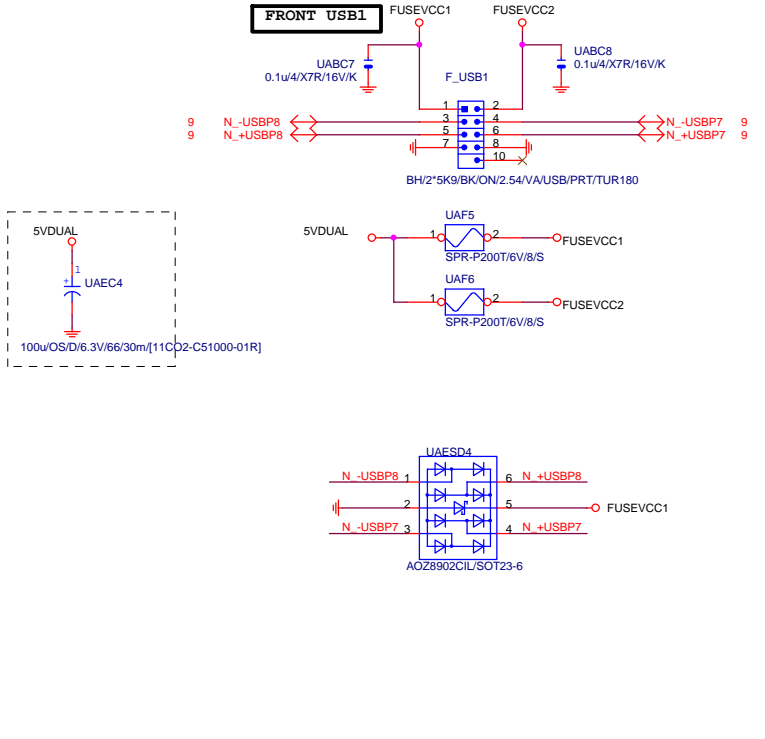
FRONT USB4



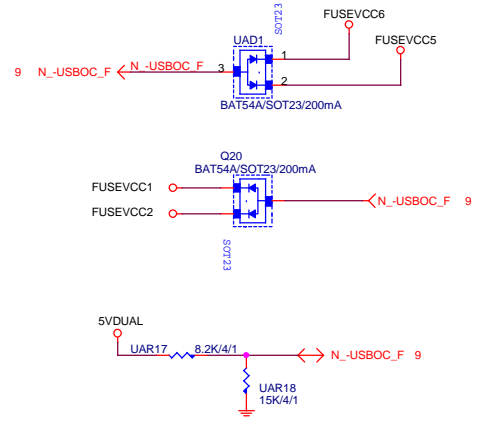
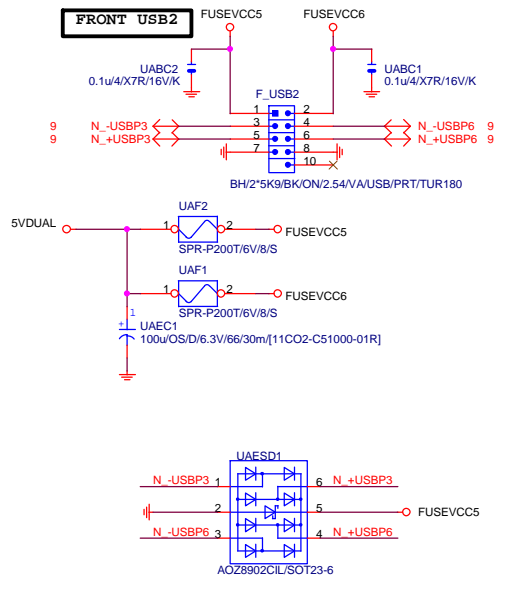
FRONT USB3

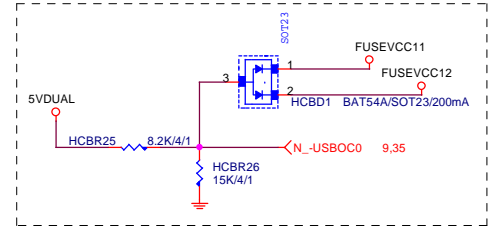
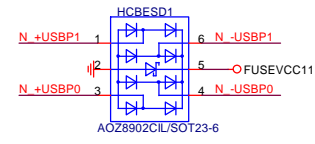
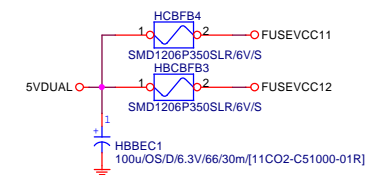
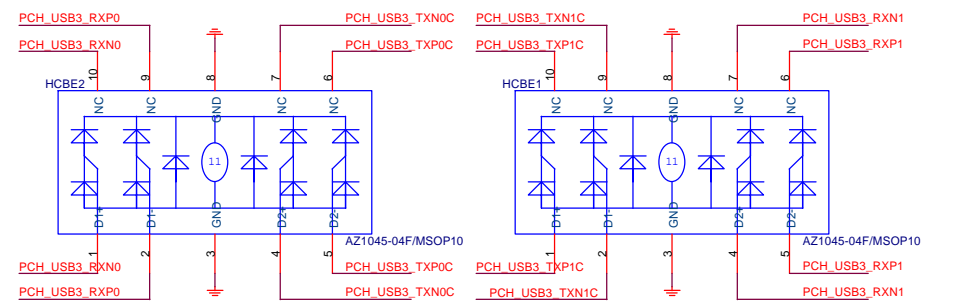
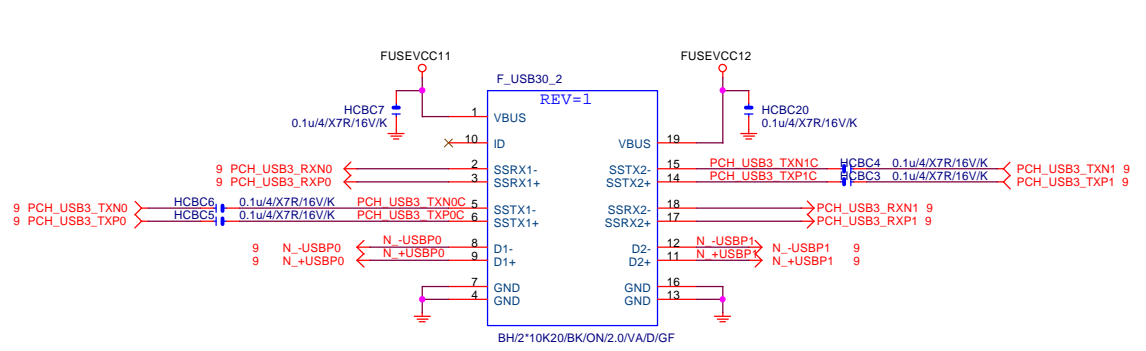


FRONT USB1



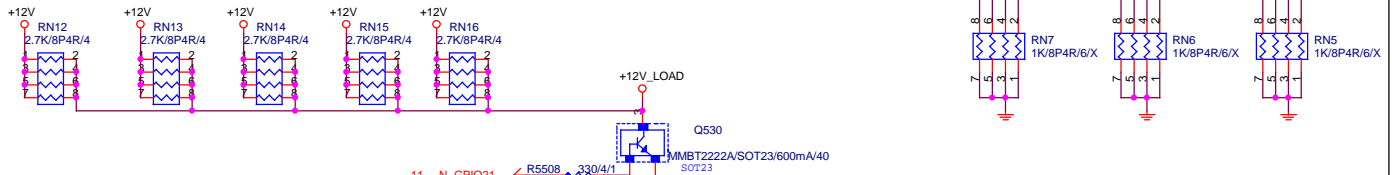
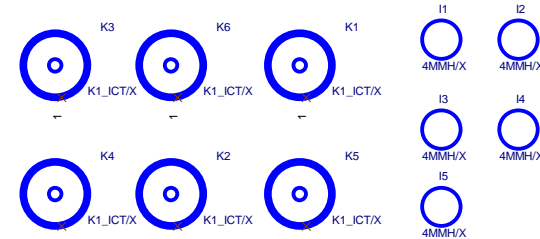
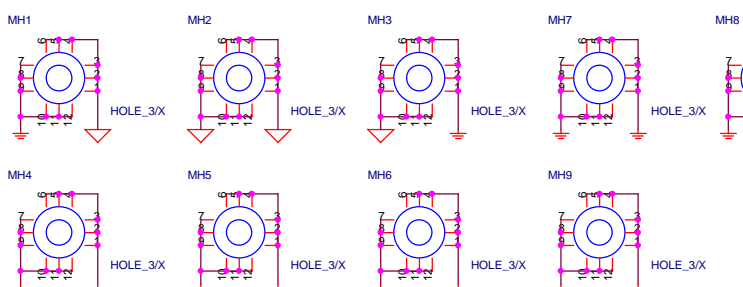
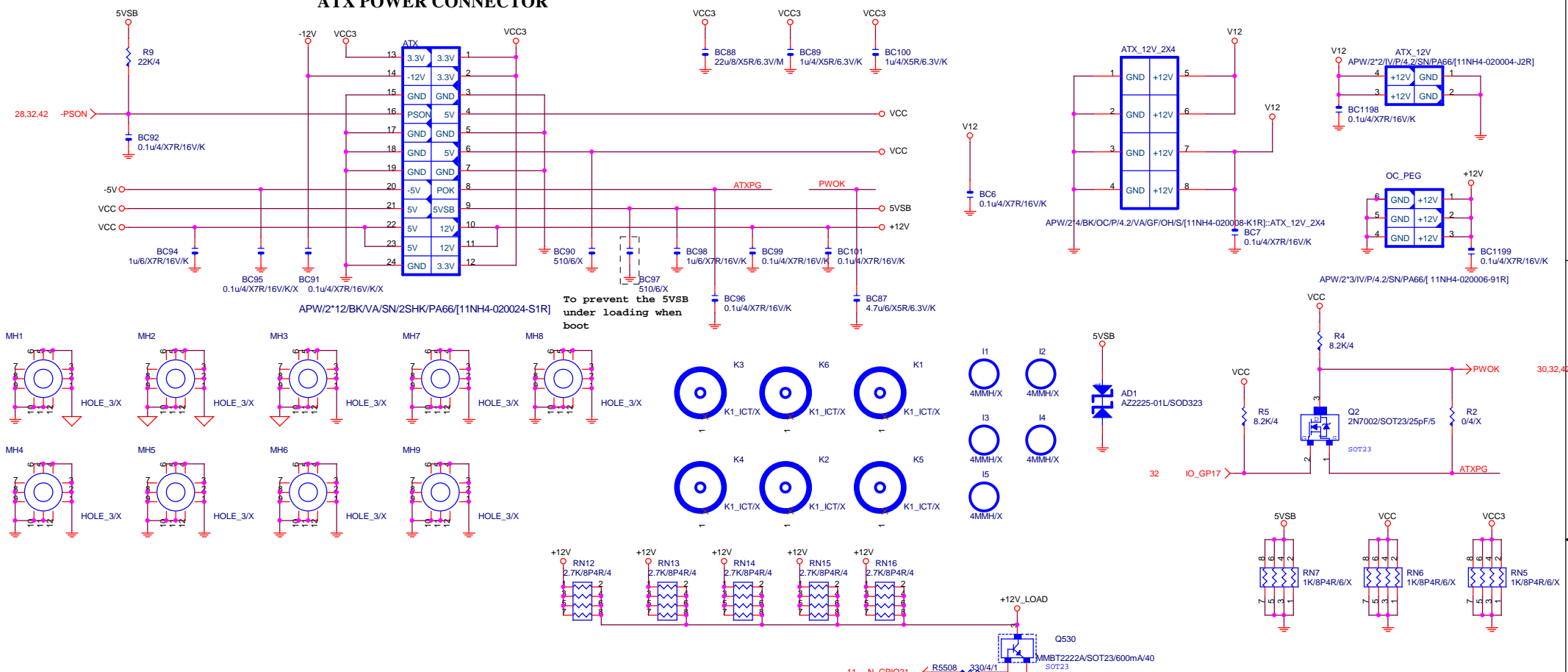
FRONT USB2





Title		
<Title>		
Size	Document Number	Rev
Custpm	GA-Z87X-OC	1.1
Date:	Tuesday, Jul 09, 2013	Sheet 36 of 49

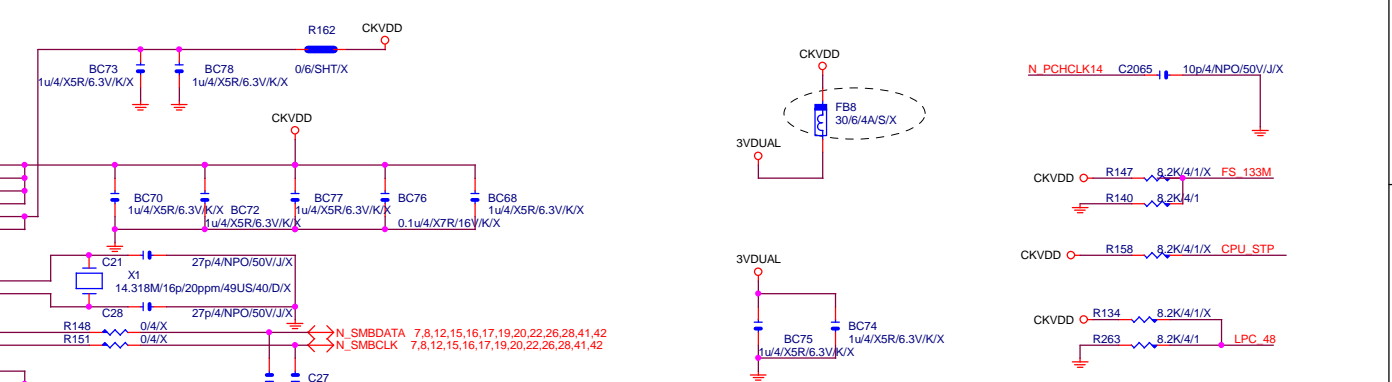
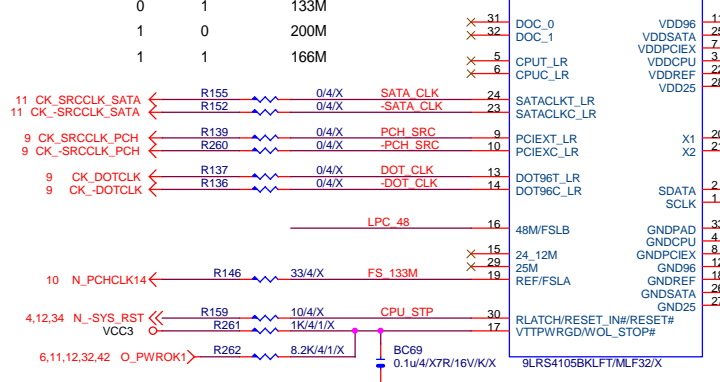
ATX POWER CONNECTOR



CLK GEN CK505

CPU Frequency Selection

FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M

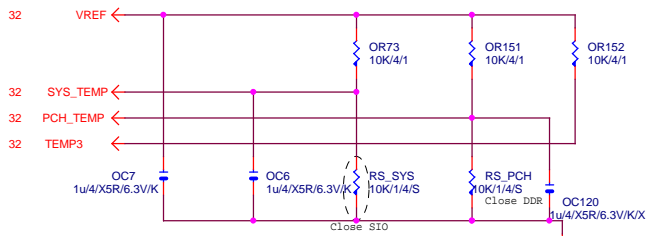


GIGABYTE™

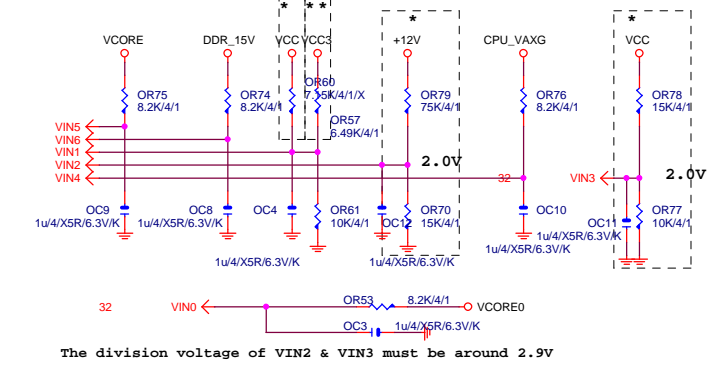
ATX POWER CONNECTOR, CLK GEN

Title	ATX POWER CONNECTOR, CLK GEN		
Size	Document Number	Rev	
Custom	GA-Z87X-OC	1.1	
Date:	Tuesday, July 09, 2013	Sheet	37 of 49

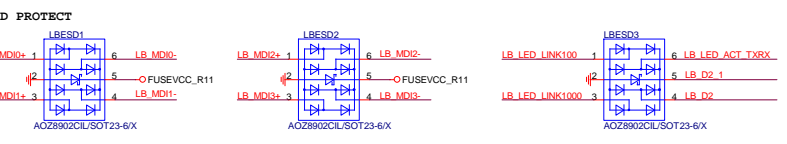
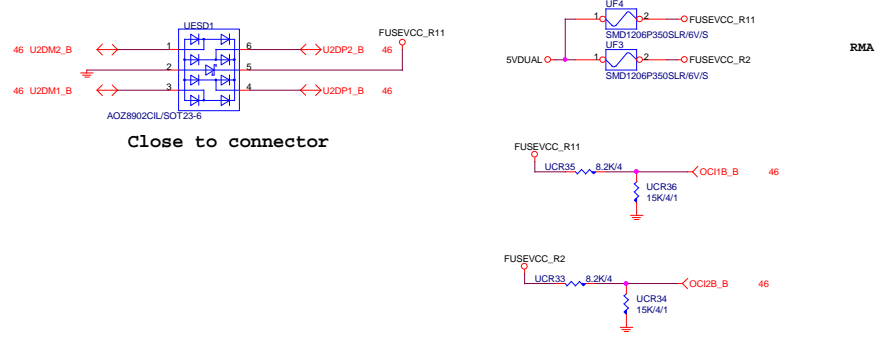
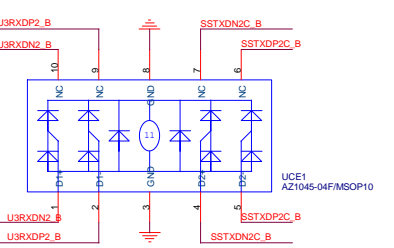
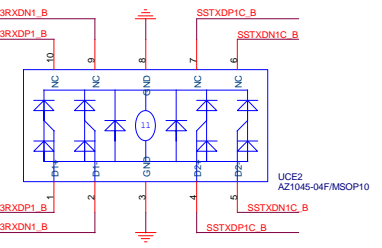
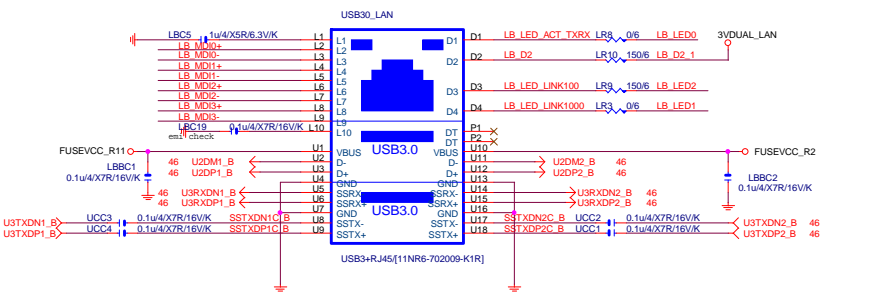
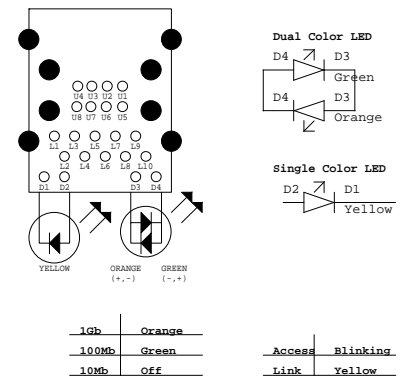
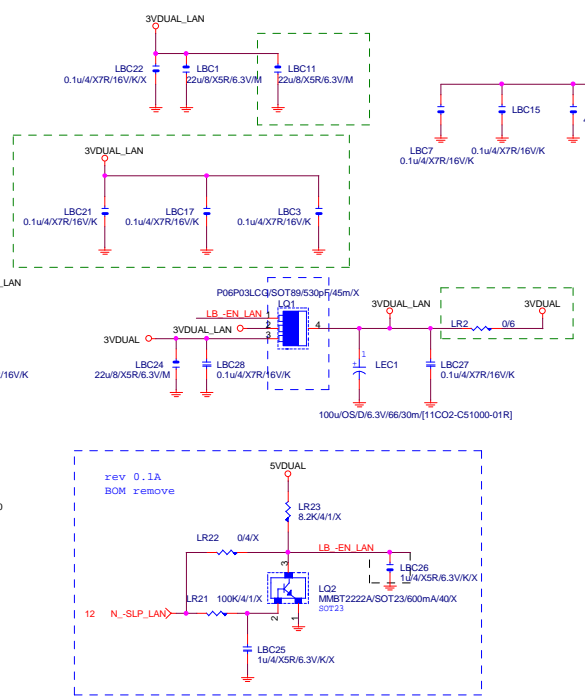
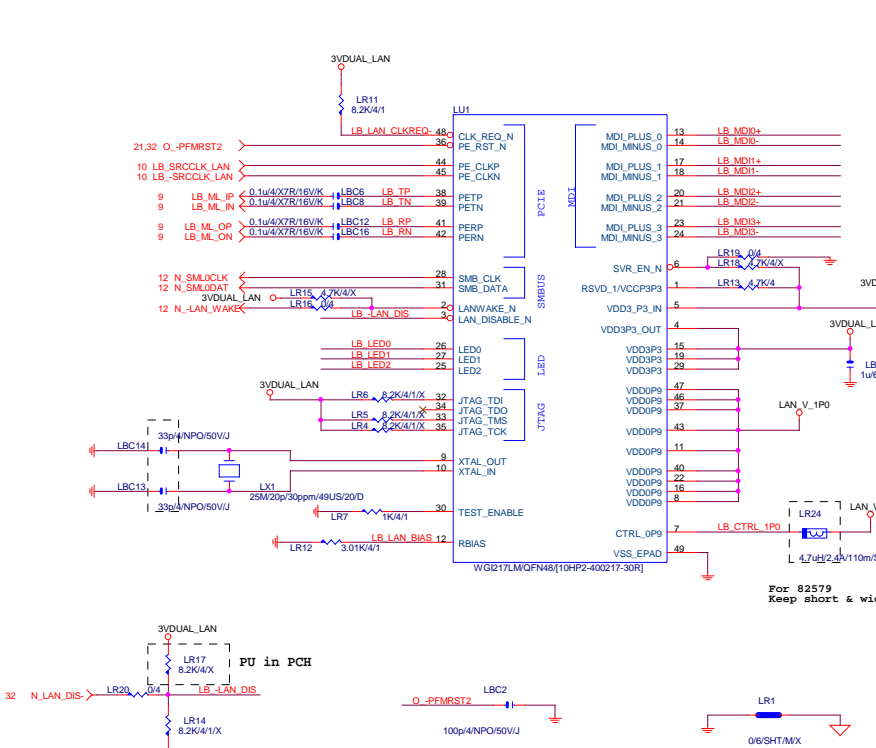
TEMP H/W MONITOR

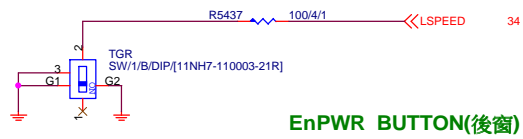


VOLTAGE-- H/W MONITOR

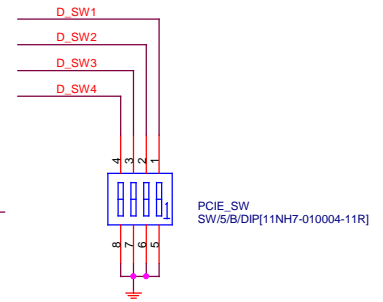
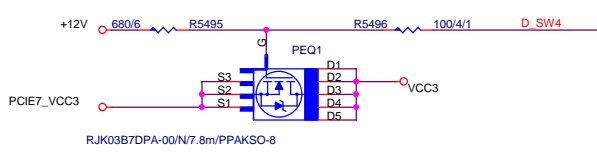
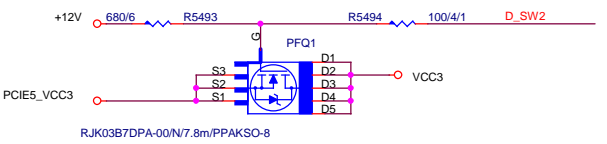
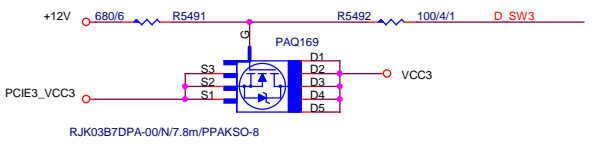
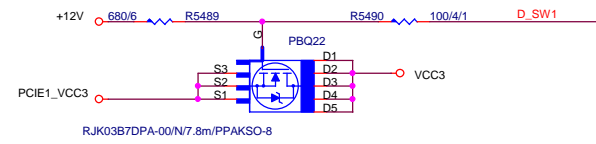
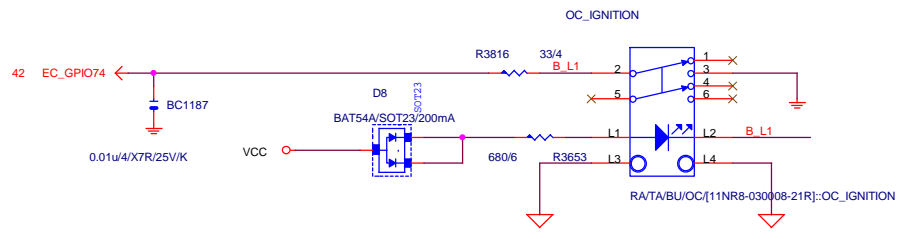


Title HWM, FAN CTRL		
Size Custom	Document Number GA-Z87X-OC	Rev 1.1
Date: Tuesday, July 09, 2013	Sheet 38	of 49

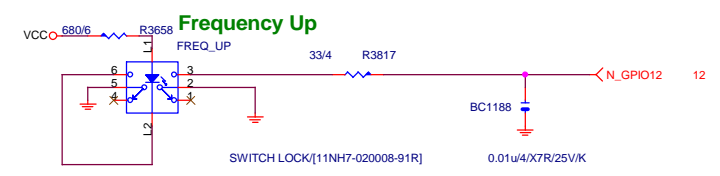




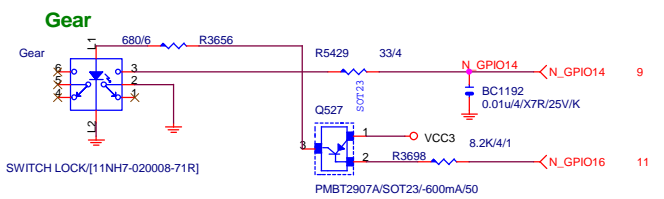
EnPWR BUTTON(後窗)



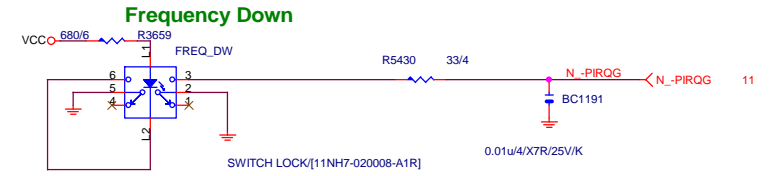
TAG BUTTON



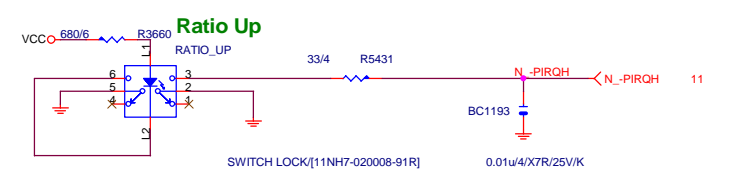
Frequency Up



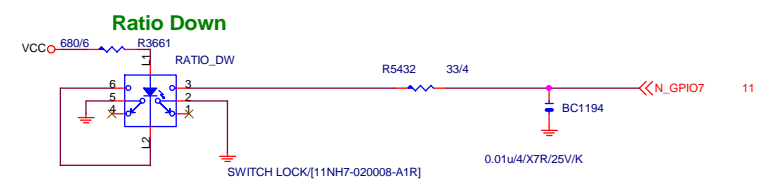
Gear



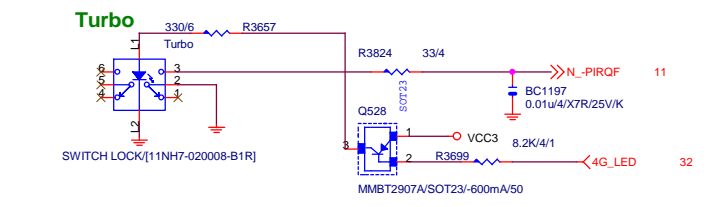
Frequency Down



Ratio Up

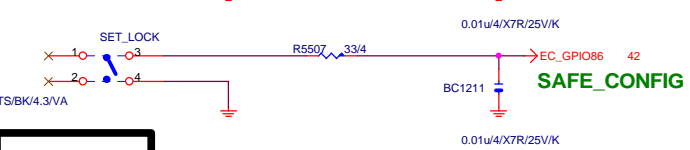
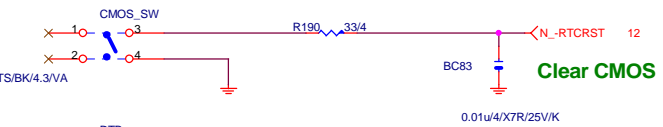
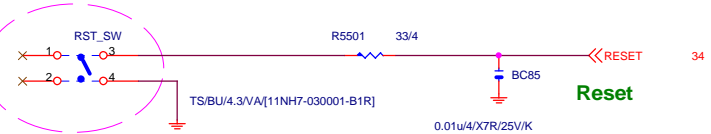
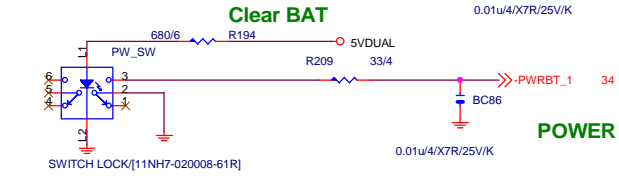
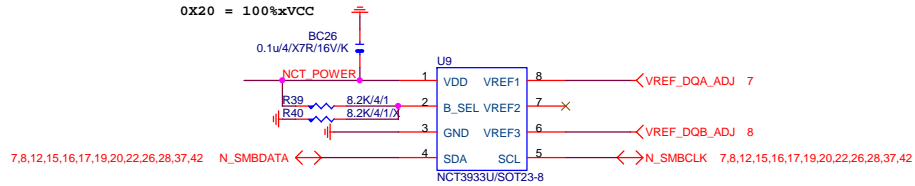
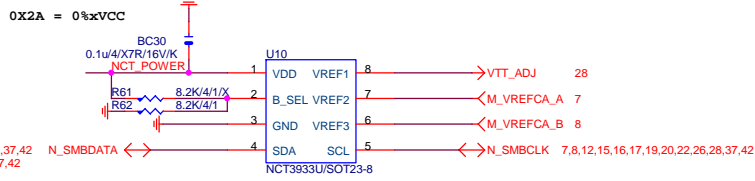
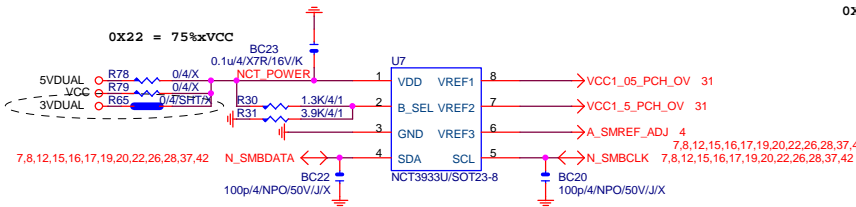


Ratio Down

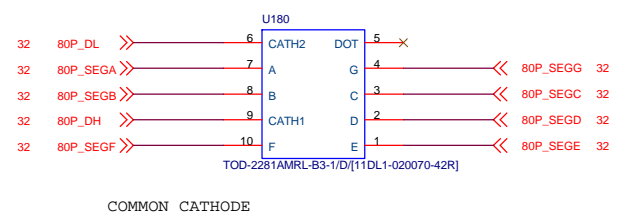
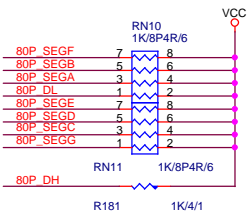


Turbo

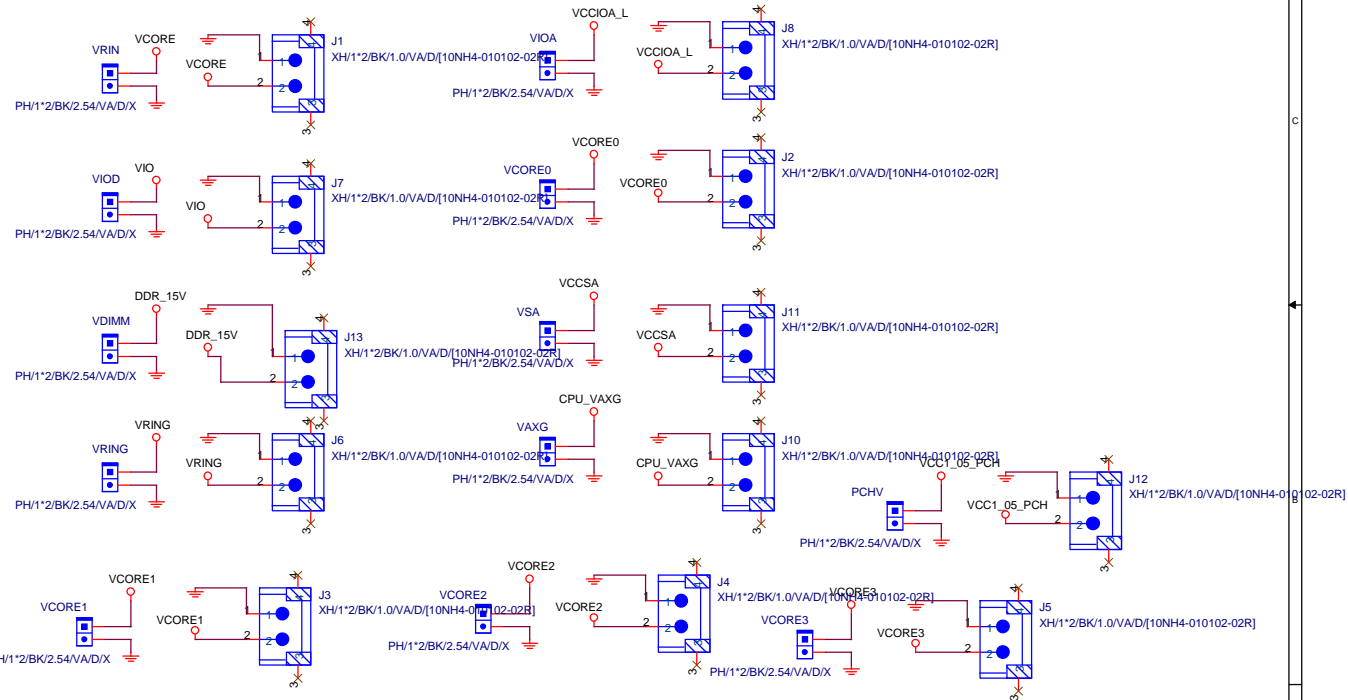
GIGABYTE™		
Title: SWITCH		
Size: Custom	Document Number: GA-Z87X-OC	Rev: 1.1
Date: Tuesday, July 09, 2013	Sheet: 40	of 49



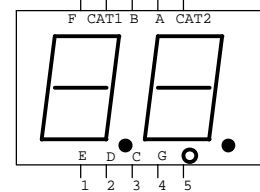
80 PORT



COMMON CATHODE



Physical Package (TOP VIEW)
10 9 8 7 6

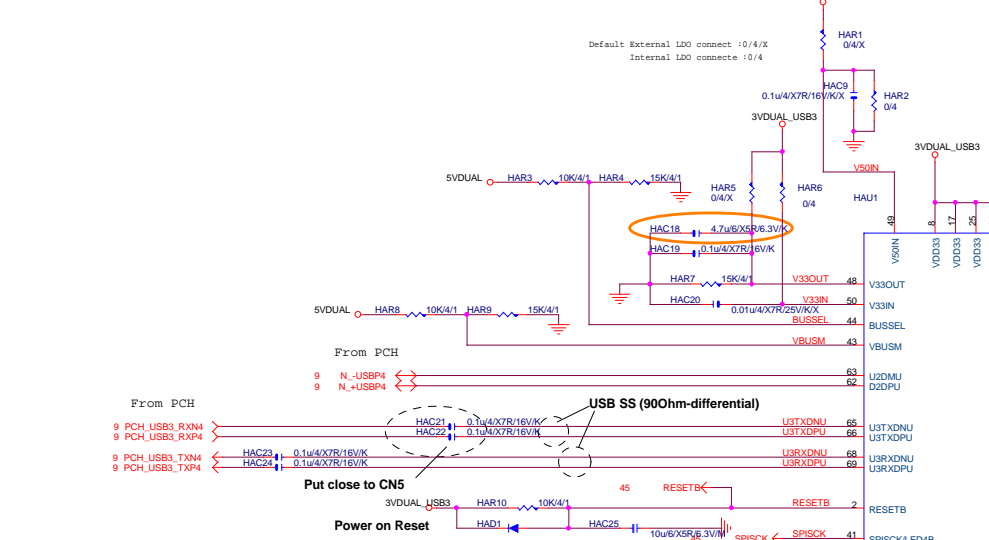
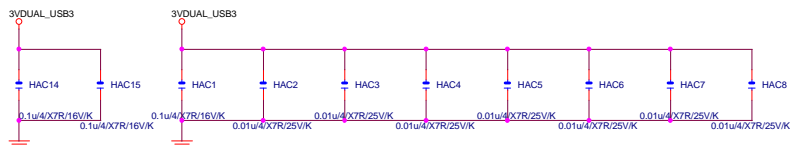


GIGABYTE™

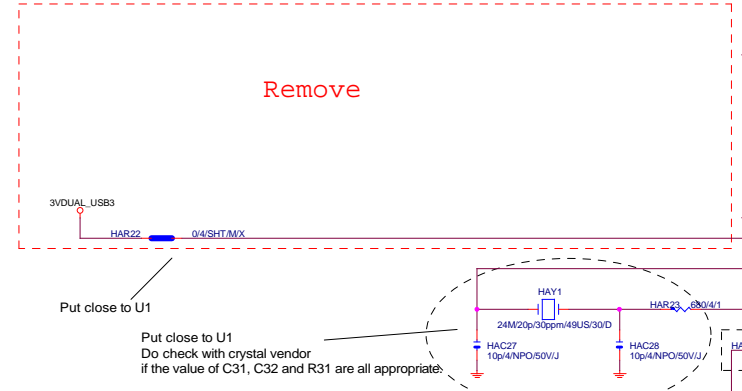
Title: **RST, PWR, CLR_CMOS, OV**

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

Date: Tuesday, July 09, 2013 Sheet 41 of 49



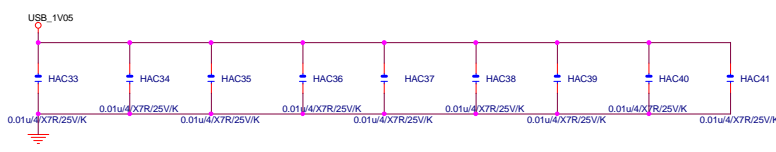
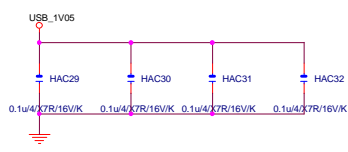
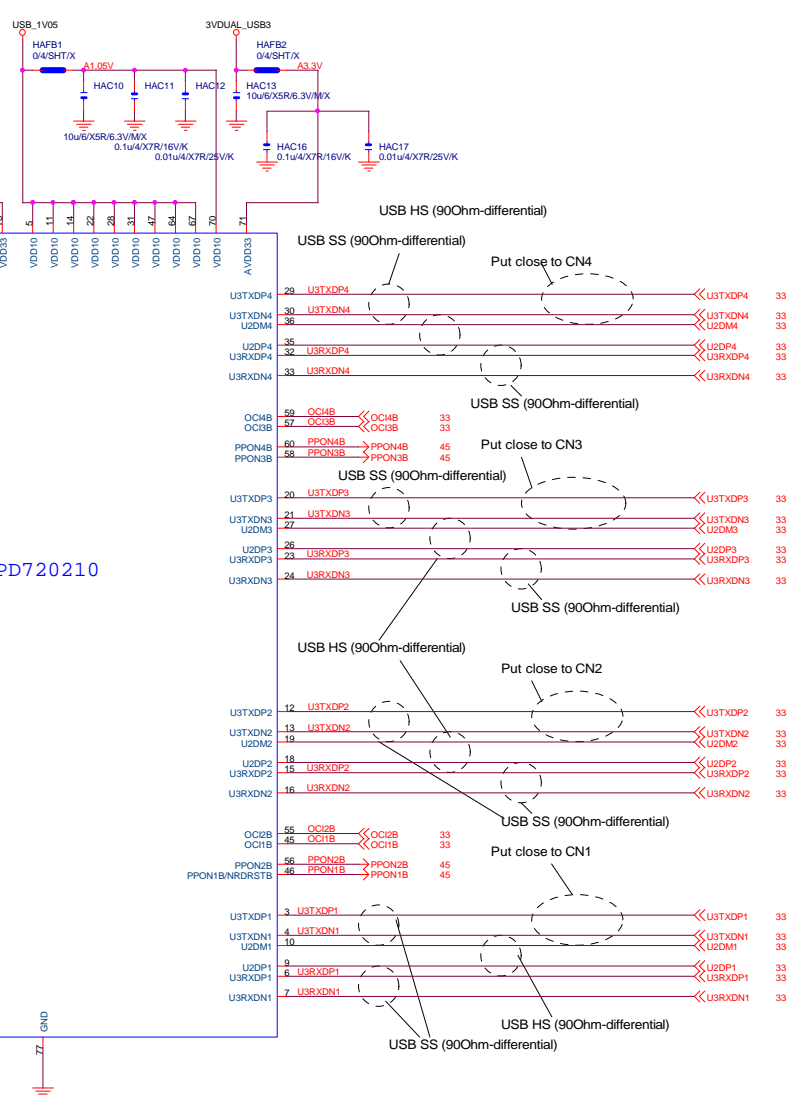
The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.
 HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.
 → HAR16 + DCR(HAL1) = 180 [mOhm]



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



uPD720210



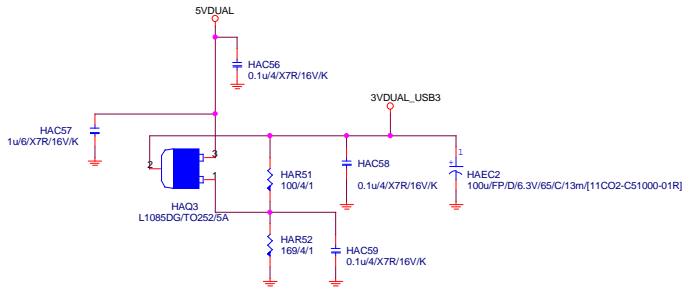
GIGABYTE™

Title: **D720210 4port Hub**

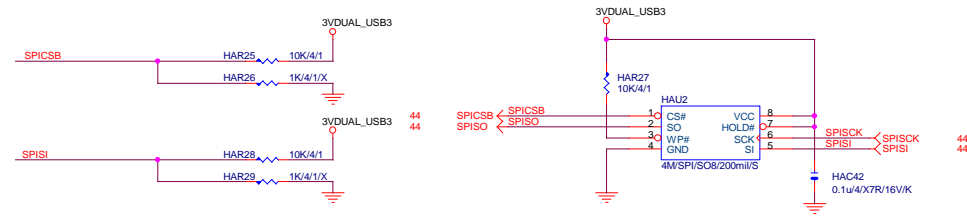
Size: C Document Number: **GA-Z87X-OC** Rev: **1.1**

Date: Tuesday, July 09, 2013 Sheet: 44 of 49

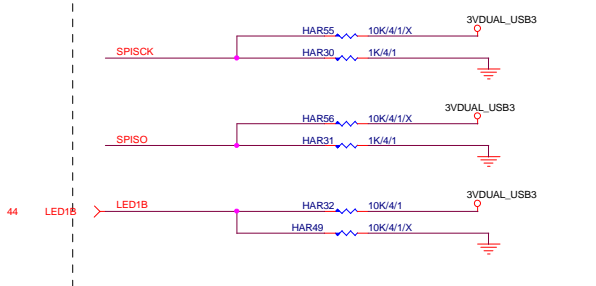
3VDUAL_USB



External SPI ROM ; SPI ROM attached mode

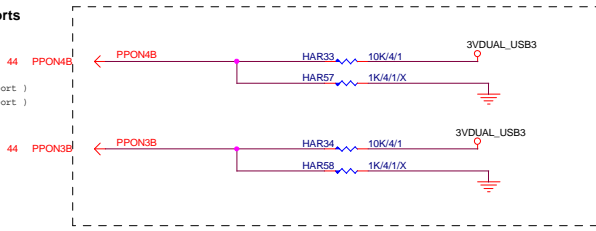


Battery Charging

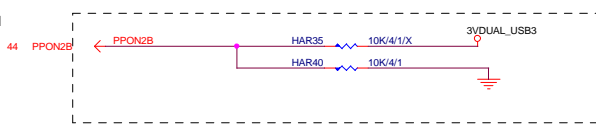


Number of Ports ; 4Ports mode

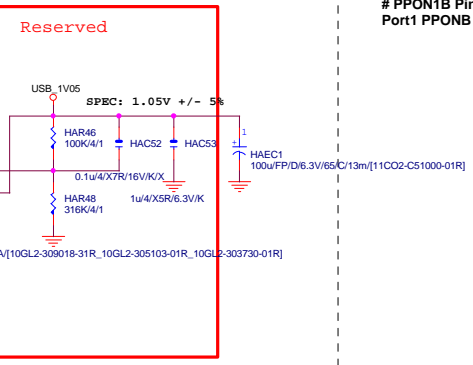
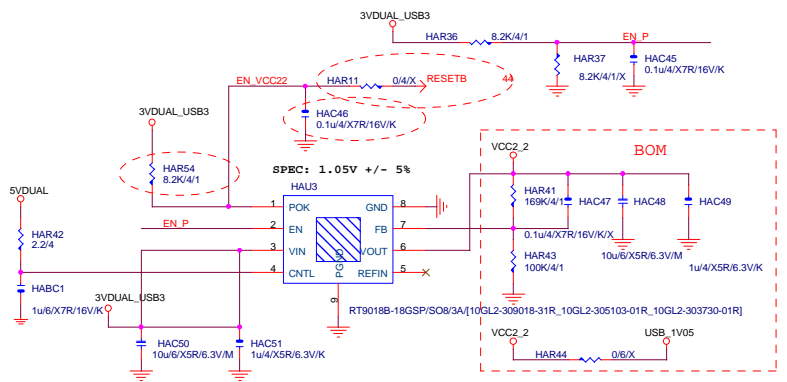
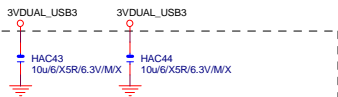
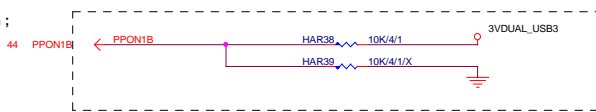
PPON3B / PPON4B : H / H (4 port)
 PPON3B / PPON4B : L / L (2 port)

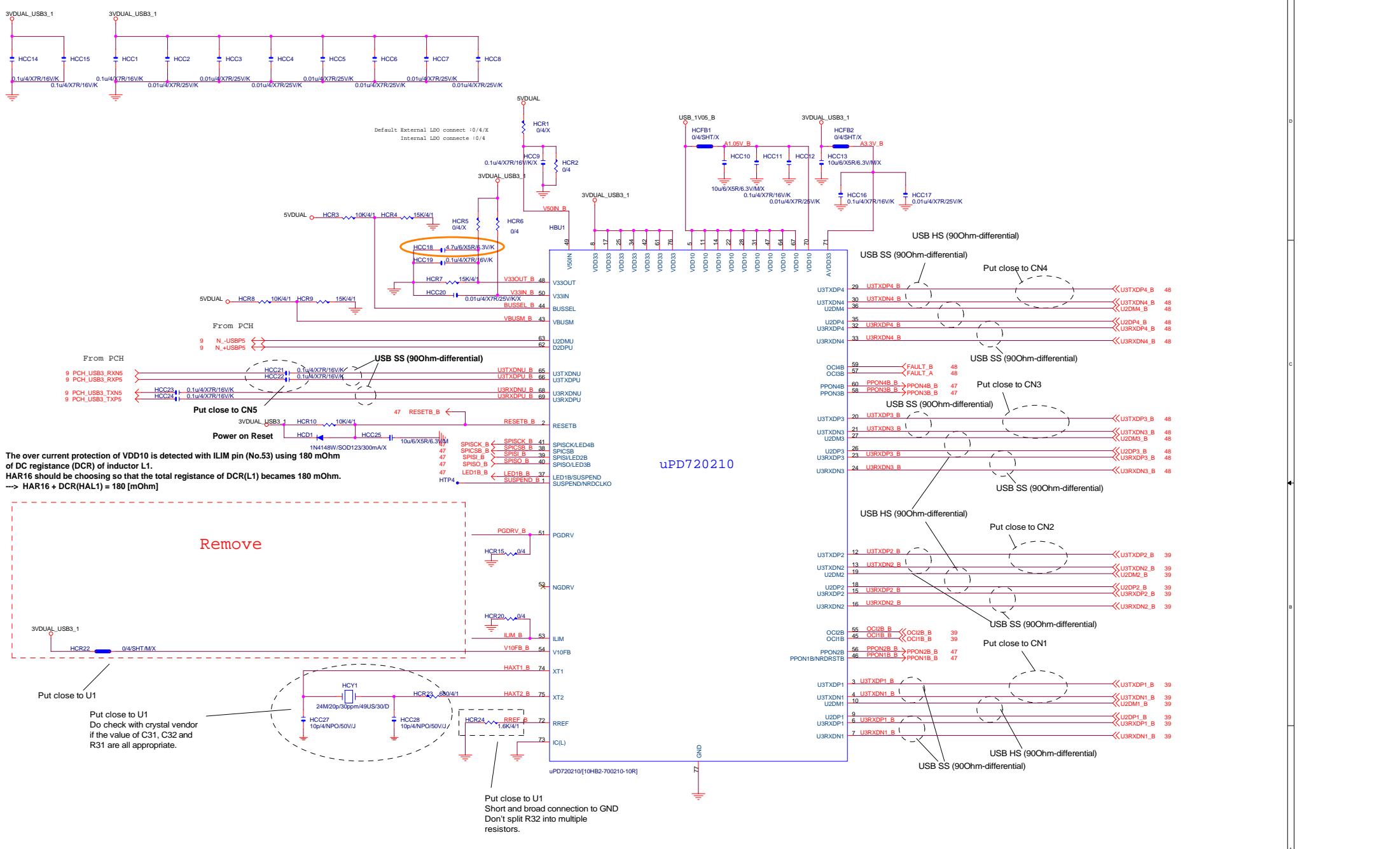


#5 VBUS Power Control ; Individual mode

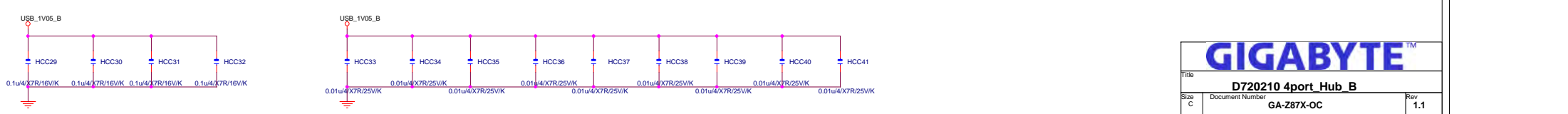
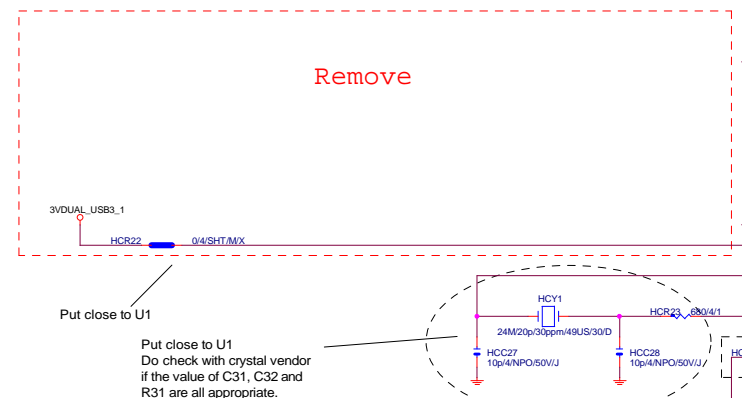


PPON1B Pin Function ; Port1 PPONB mode

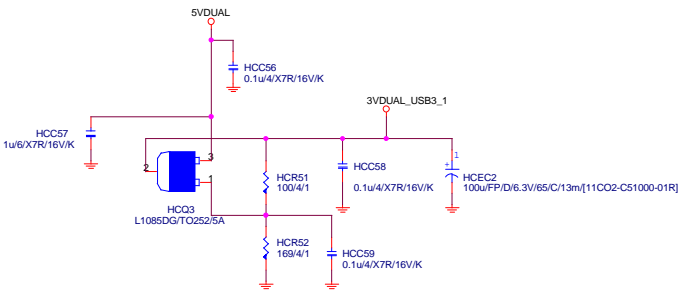




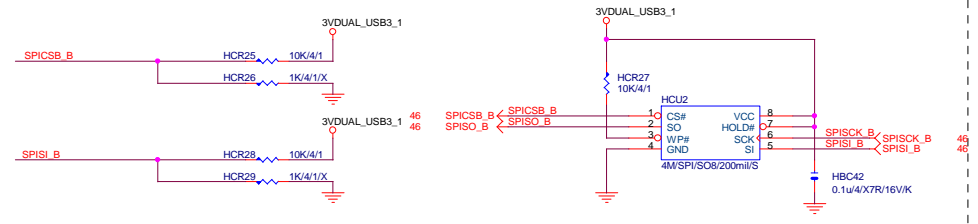
The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.
 HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.
 → HAR16 + DCR(HAL1) = 180 [mOhm]



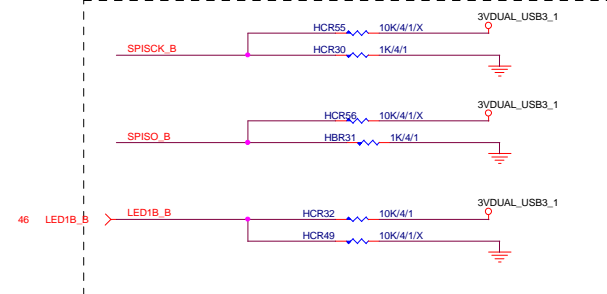
3VDUAL_USB



External SPI ROM ; SPI ROM attached mode

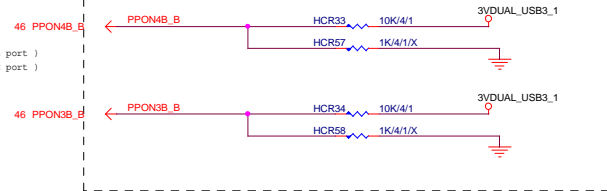


Battery Charging

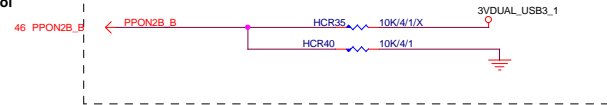


Number of Ports ; 4Ports mode

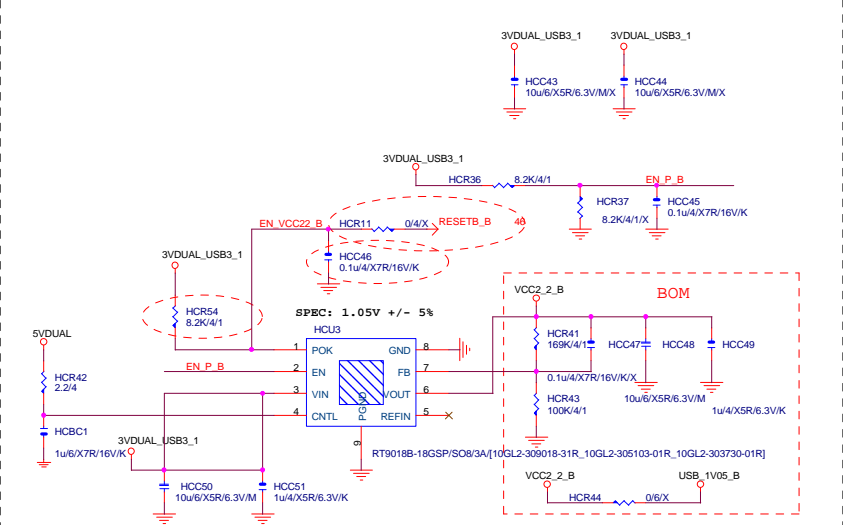
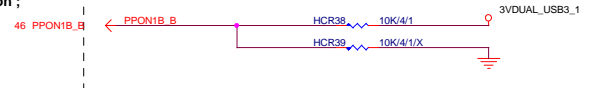
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



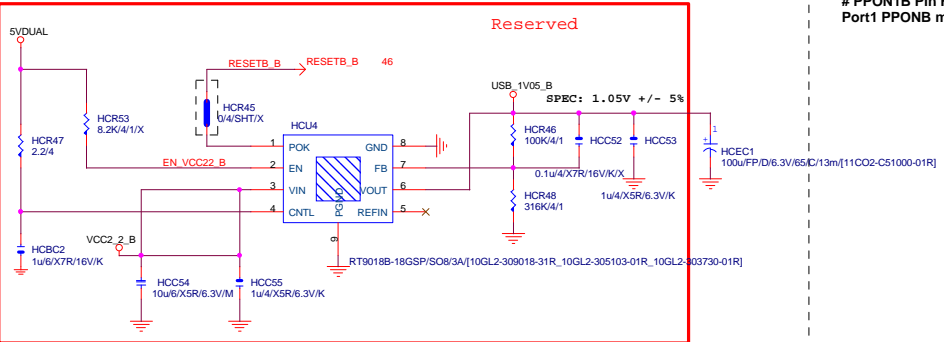
#5 VBUS Power Control ; Individual mode

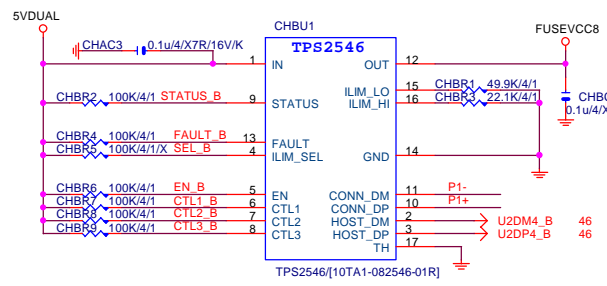
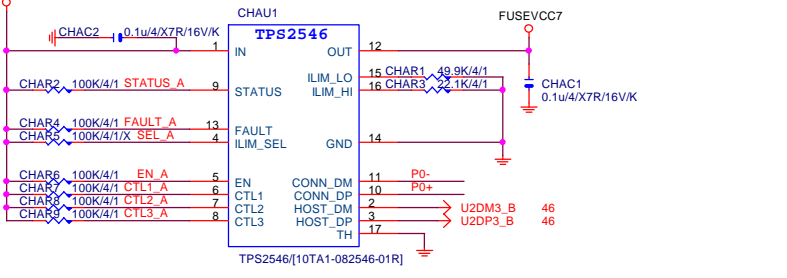
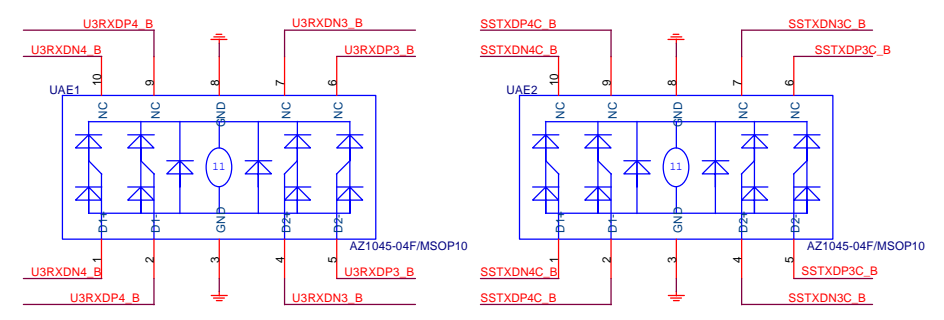
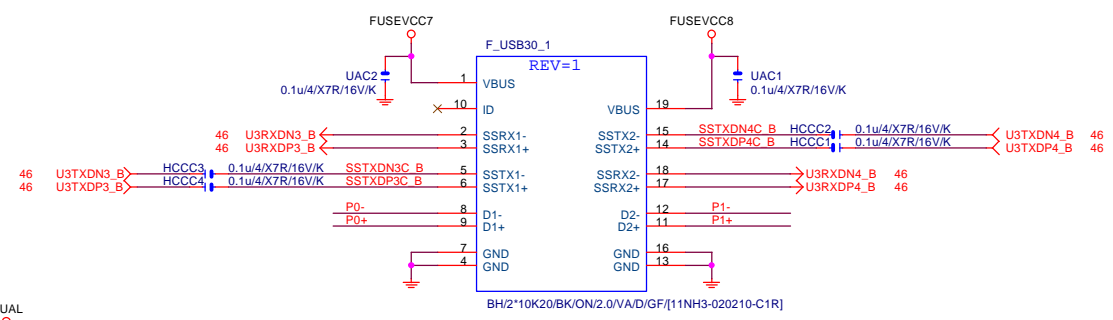


PPON1B Pin Function ; Port1 PPONB mode

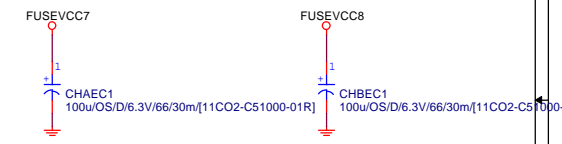
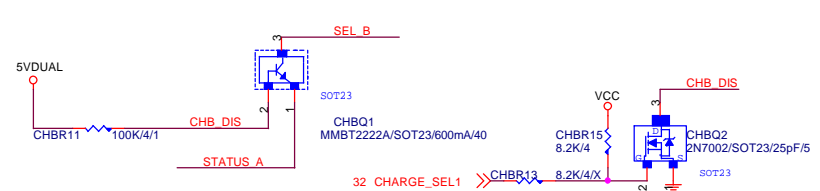
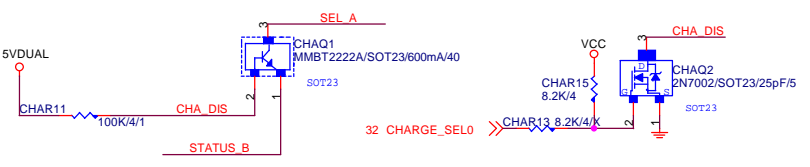
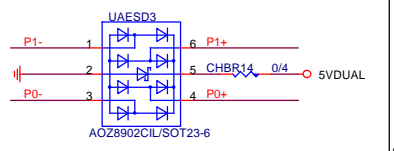


Reserved





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

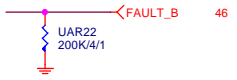
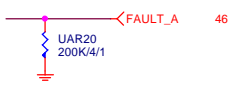


32 CHARGE_SEL0 >> CHAR12 0/4/SHT/X CTL1_A

32 CHARGE_SEL1 >> CHBR12 0/4/SHT/X CTL1_B

SEL A CHAR10 0/4/SHT/X CTL3_A

SEL B CHBR10 0/4/SHT/X CTL3_B



Title <Title>		
Size	Document Number GA-Z87X-OC	Rev 1.1
Date:	Tuesday, July 09, 2013	Sheet 48 of 49

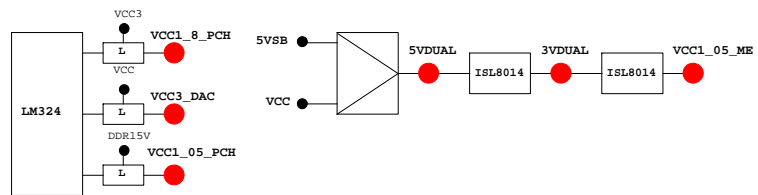
PCH GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE
GP0	MAIN	H-Z	-PECI_REQ	N/A
GP1/TACH1	MAIN		ICH_FAN_TACH1	N/A
GP2/PIRQE#	MAIN		-PIRQE	F/U 8.2K VCC3
GP3/PIRQF#	MAIN		-PIRQF	F/U 8.2K VCC3
GP4/PIRQG#	MAIN		-PIRQG	F/U 8.2K VCC3
GP5/PIRQH#	MAIN		-PIRQH	F/U 8.2K VCC3
GP6/TACH2	MAIN		ICH_FAN_TACH2	N/A
GP7/TACH3	MAIN		ICH_FAN_TACH3	N/A
GP8	STBY	H	GPO	F/U 8.2K 3VDUAL
GP9/OC5#	STBY		OC5#	N/A
GP10/OC6#	STBY		OC6#	N/A
GP11/SMBALERT#	STBY		-SMBALERT	F/U 8.2K 3VDUAL
GP12	STBY	L	LAN_PHY_PWR_CTLR	F/U 8.2K 3VDUAL
GP13	STBY	L	GPIO13	F/U 8.2K 3VDUAL
GP14/OC7#	STBY		OC7#	N/A
GP15	STBY	L	GPIO15	N/A
GP16	MAIN		-SKTOCC	F/U 8.2K VCC3
GP17/TACH0	MAIN		ICH_FAN_TACH0	N/A
GP18	MAIN		MB_ID0	F/D 8.2K GND
GP19	MAIN		-LAN1_ISO	F/U 8.2K VCC3
GP20	MAIN		LED_CTL	F/U 1K VCC3
GP21	MAIN		VCC18_FCH_OV2	F/U 8.2K VCC3
GP22	MAIN	H-Z	VCORE_OV3	F/U 8.2K VCC3
GP23	MAIN		-LDRQ1	F/U 8.2K VCC3
GP24	STBY	L	GPO	F/U 8.2K 3VDUAL
GP25	STBY		-CPU_STOP	F/U 8.2K 3VDUAL
GP26	STBY		-ACZ_DET	F/U 8.2K 3VDUAL
GP27	STBY	H	GPO	F/U 8.2K 3VDUAL
GP28	STBY	H	GPO	F/U 8.2K 3VDUAL
GP29	STBY	L	GPIO29	N/A
GP30	STBY	H-Z	S_PWR_ACK	F/U 100K 3VDUAL
GP31	STBY	H-Z	GPI	N/A(Reverse) F/U 8.2K VCC3
GP32	MAIN	H	GPO	MB_ID1 F/D 8.2K GND
GP33	MAIN	H	GPO	LOAD-LINE F/U 1K VCC3
GP34	MAIN	H-Z	GPI	-PCI_STOP F/U 8.2K VCC3
GP35	MAIN	L	GPO	GPIO35 F/U 8.2K VCC3
GP36	MAIN		-LAN1_DSM	F/U 8.2K VCC3
GP37	MAIN		GPI	N/A F/U 8.2K VCC3
GP38	MAIN	H-Z	GPI	VCORE_OV2 F/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	-LAN_DSM F/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 F/U 8.2K 3VDUAL
GP45	STBY		NATIVE	-LPCPME F/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	PWR_LED F/U 8.2K 3VDUAL
GP47	STBY		NATIVE	PSI_LED F/U 8.2K 3VDUAL
GP48	MAIN	H-Z	IN	EN_PWM F/U 8.2K VCC3
GP49	MAIN	H-Z	IN	VCC18_OV1 F/U 8.2K VCC3
GP50	MAIN		NATIVE	-REQ1 F/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1 N/A
GP52	MAIN		NATIVE	-REQ2 F/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2 N/A
GP54	MAIN		NATIVE	-REQ3 F/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3 N/A
GP56	STBY		NATIVE	N/A(Reverse) F/U 8.2K 3VDUAL
GP57	STBY	H-Z	IN	VCORE_OV1 F/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC F/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0# N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse) F/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 F/U 8.2K 3VDUAL
GP73	STBY		NATIVE	1_05V_OV1 F/U 8.2K 3VDUAL
GP74	STBY	H-Z	NATIVE	1_05V_OV2 F/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse) F/U 8.2K 3VDUAL

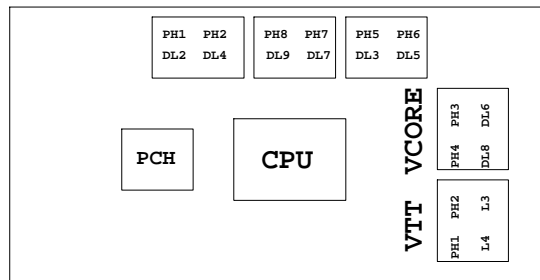
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1_ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SFI_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#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	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/BUSS11	SB_LED1_C	
PD4/GP74/BUSS12	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSS10	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMB_C_R	SE PIN	FST_2X8
INIT#/GP85/SMB_D_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMB_C_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
FANSWH#/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/SMB_D_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下:



BIOS超電壓對應表:

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

散熱模組料號:

8IBP:
1.12SP2-01A001-Y1R/Y2R
2.12SP2-01A001-Z1R/Z2R
(HYBRID模組)包材階

	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

GIGABYTETM

Title: **TABLE LIST**

Size: Document Number **GA-Z87X-OC** Rev: **1.1**

Date: Tuesday, July 09, 2013 Sheet: 49 of 49