

Model Name: GA-Z97X-GAMING 5 1.01

SHEET

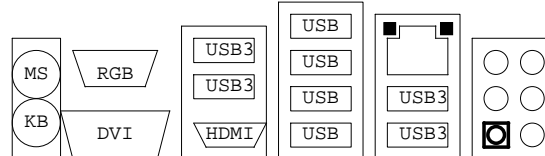
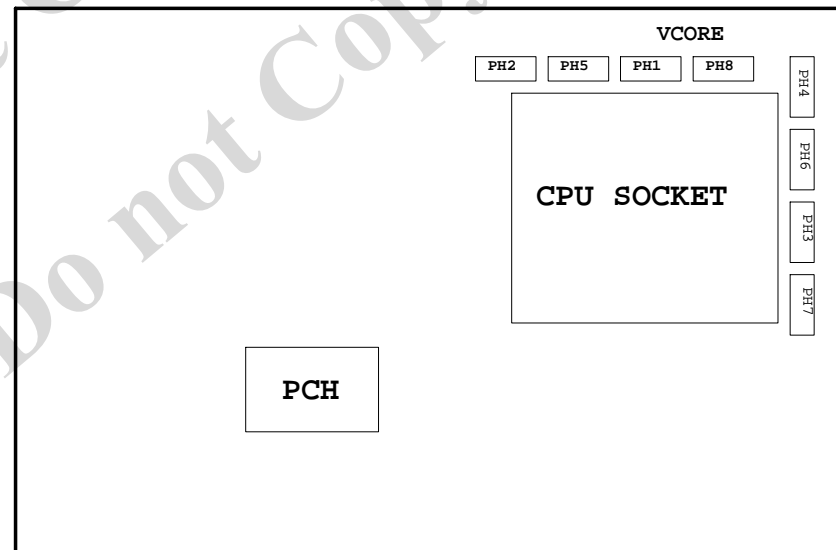
TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*8 SLOT
16	PCI EXPRESS*16 SWITCH
17	PCI EXPRESS*4 SLOT
18	PCI EXPRESS*1 1,2,3 SLOT
19	ITE8892E
20	PCI SLOT
21	ALC1150 CODEC
22	REAR AUDIO JACK
23	ITE8620
24	COM/KB_MS/R_USB/PROHOT/USB PROTECT
25	IR3563B
26	IR3598 VCORE Phase 1, 4, 2, 5
27	DDR POWER

SHEET

TITLE

28	DISCRETE POWER
29	DUAL BIOS
30	FP,F_USB,USB PWR,BZ
31	ATX POWER CONNECTOR
32	H/W MONITOR,FAN CTRL
33	DVI
34	HDMI_USB30
35	ARTHEROS E2201
36	M.2_SATA_EXPRESS
37	TABLE LIST
38	IR3598 VCORE Phase 6, 8, 3, 7
39	
40	



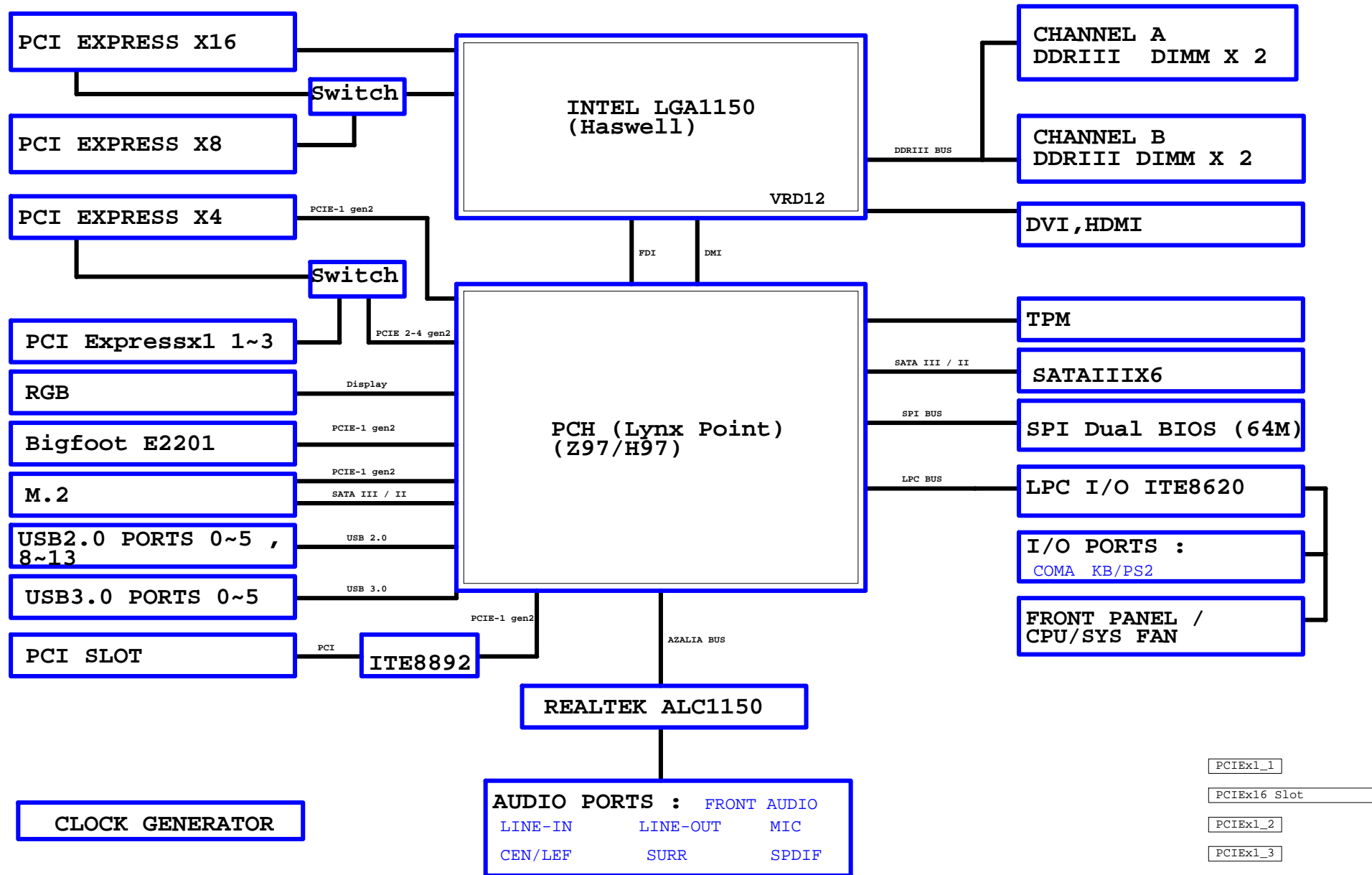
Gigabyte Technology

Title		
Cover Sheet		
Size	Document Number	Rev
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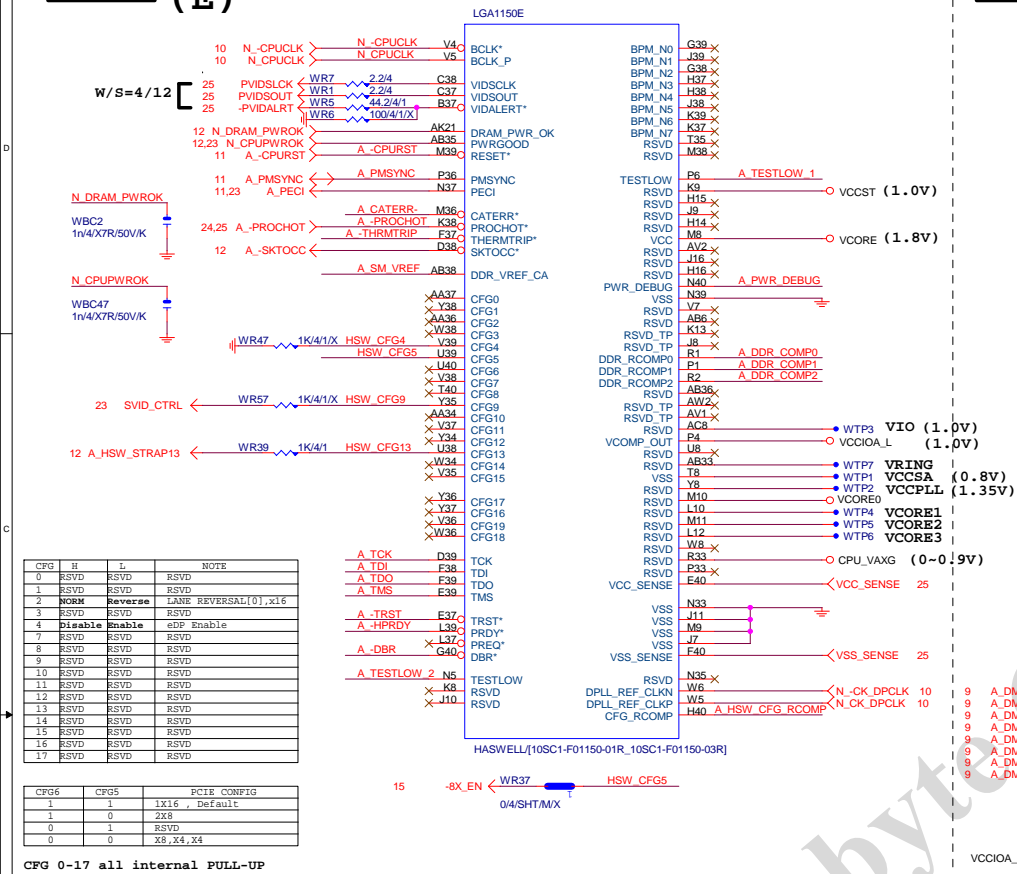
# BLOCK DIAGRAM

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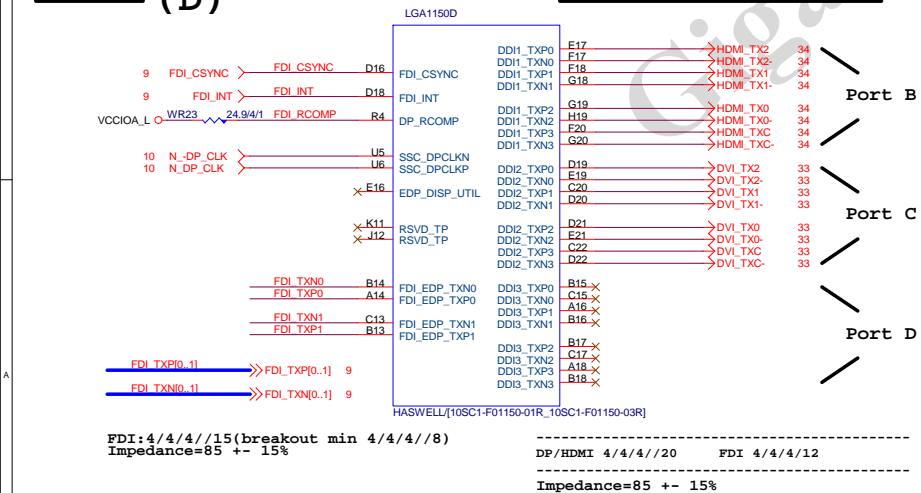


- PCIEx1\_1
- PCIEx16 Slot
- PCIEx1\_2
- PCIEx1\_3
- PCIEx8
- PCI Slot
- PCIEx4

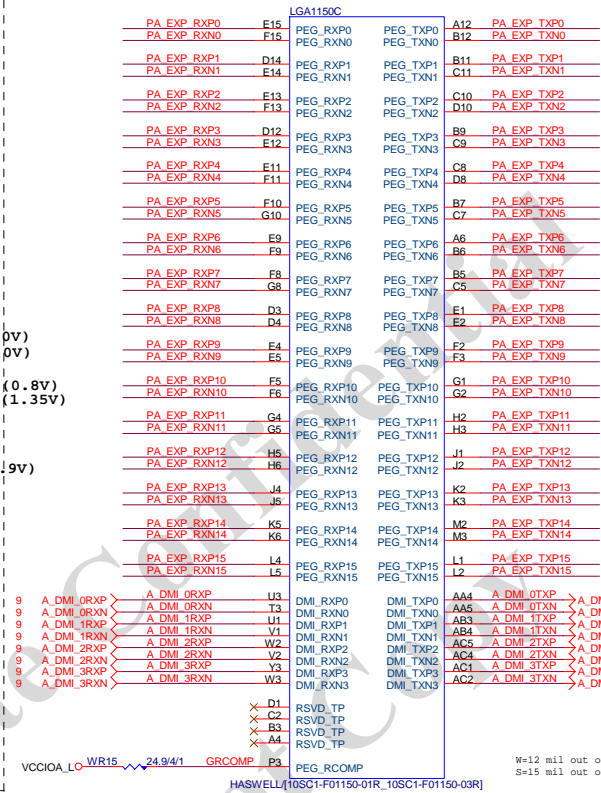
LGA1150 (E)



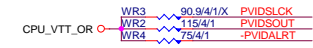
LGA1150 (D)



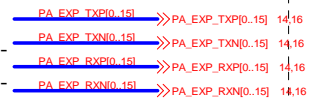
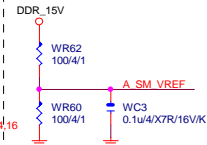
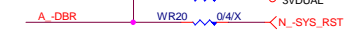
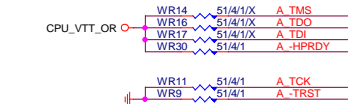
LGA1155 (C)



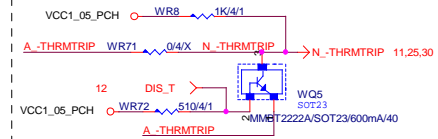
## CPU SVID



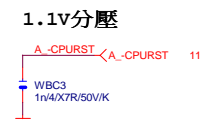
## CPU PU/PD



THRMTRIP DISABLE FOR Z87 OVERCLOCK

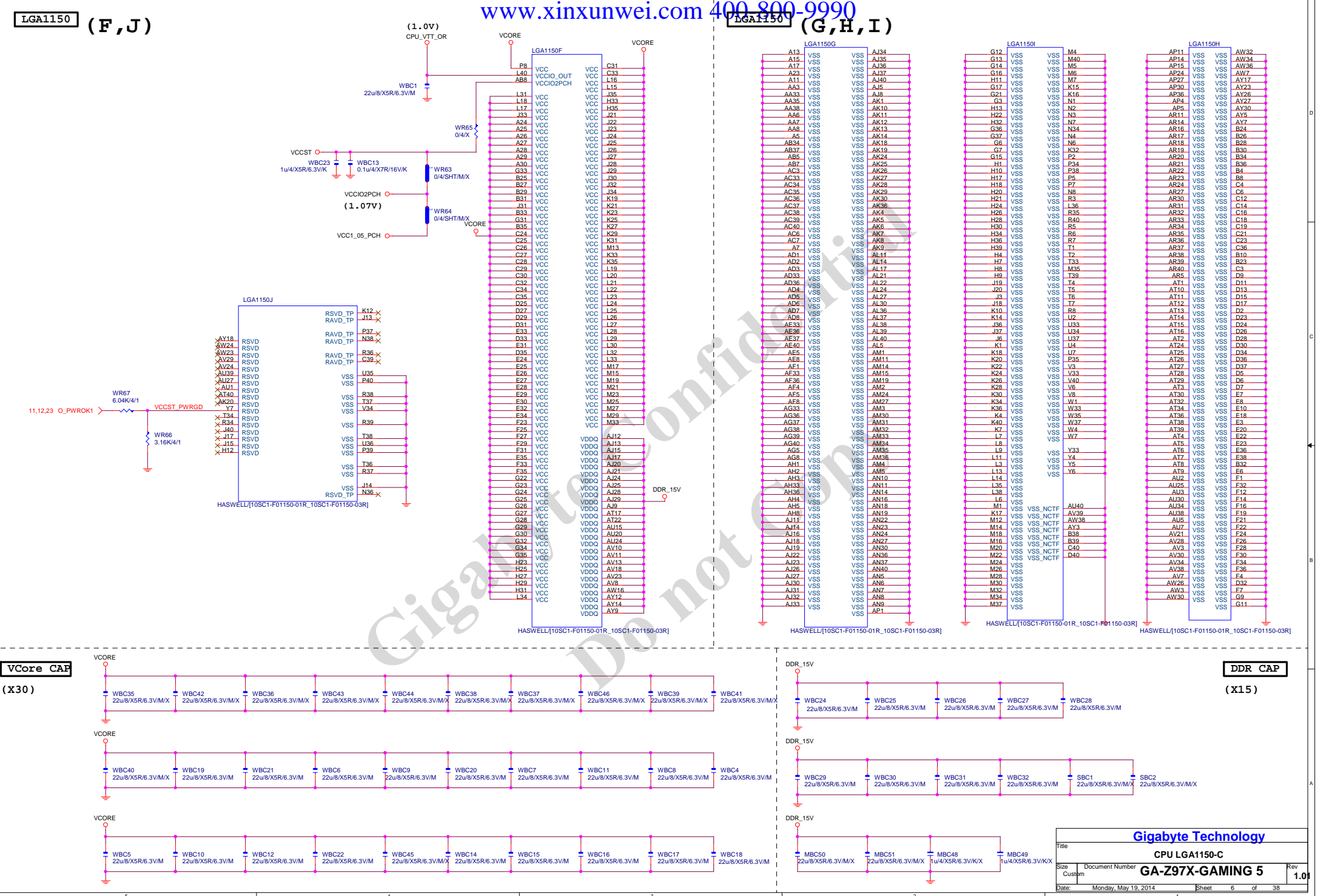


**-CPURST**



1.1V分壓





LGA1150 (F, J)

LGA1150 (G, H, I)

VCore CAP

DDR CAP

(X30)

(X15)

Gigabyte Technology

CPU LGA1150-C

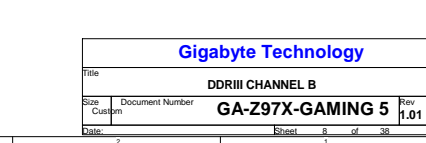
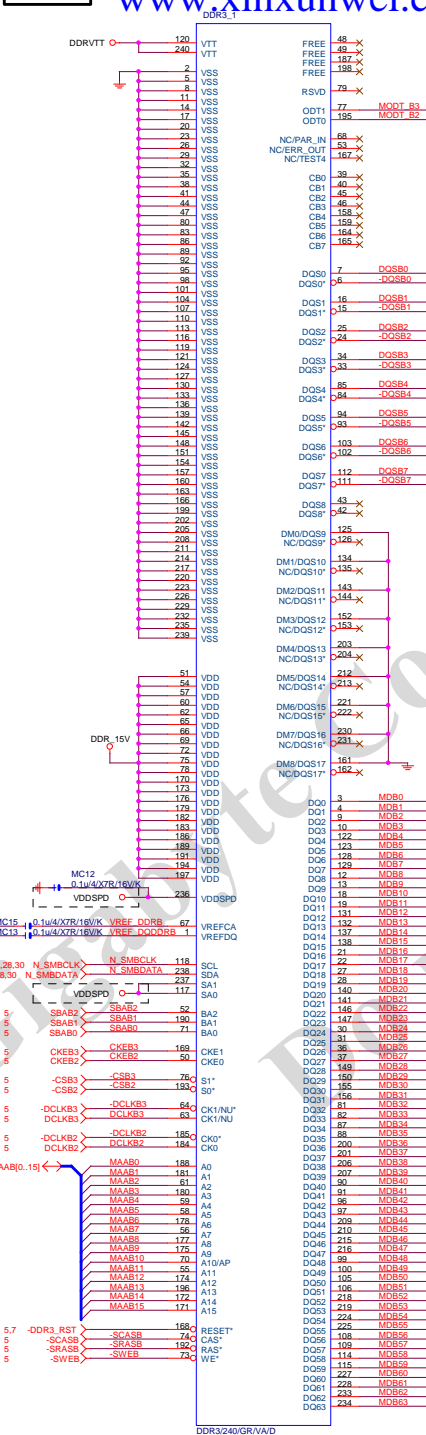
GA-Z97X-GAMING 5

Rev 1.01

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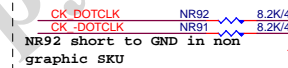
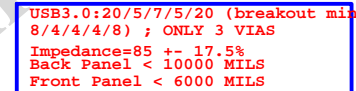




PCHB Impedance=



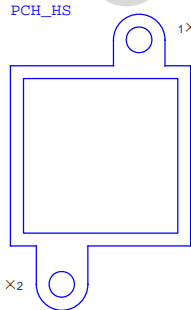
Impedance=85 +- 17.5%



Z97/S

usb2.0 5/7/5//12  
usb3.0 5/7/5//20

**PCH (J)**



## USB TABLE

```
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)
```

## Gigabyte Technology

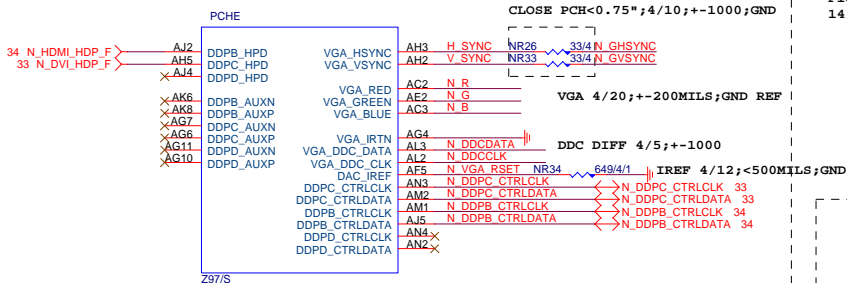
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Size	Document Number	<b>GA-Z97X-GAMING 5</b>
Custom		

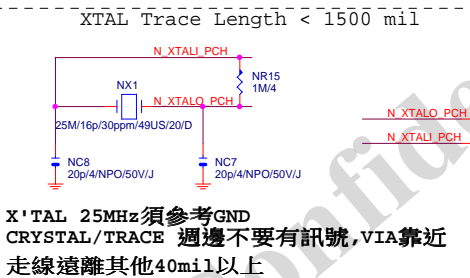
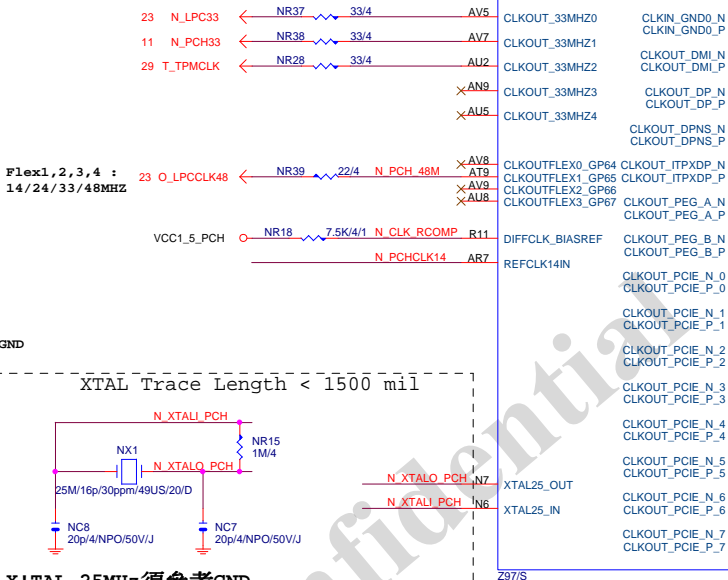
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# PCH (E)

www.kinunwei.com 400-800-9990



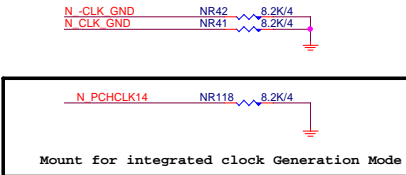
VGA DISABLE	
R,G,B	NC OR GND
IRTN / IREF	GND
VGA_HSYNC, VGA_VSYNC, DDC_CLK, DDC_DATA	NC
POWER VCCADAC(AF2), VCCADACBG(AE1)	GND



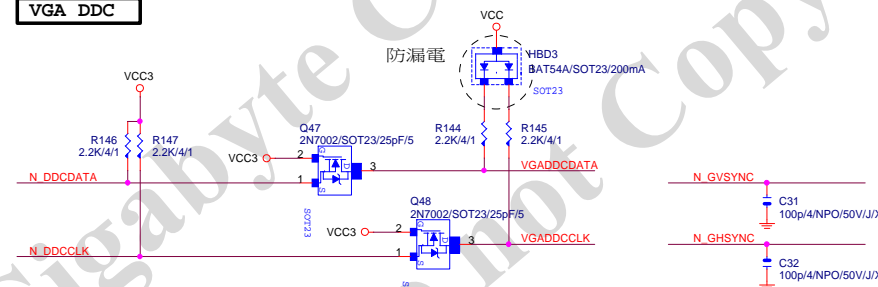
M2 Clock需接Clock#0

Differential Clock:18/4/6/4/18  
Impedance=90 +- 15%

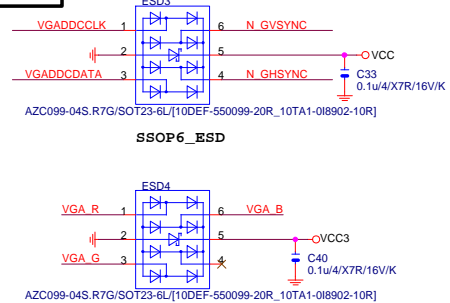
## PCH CLK PD



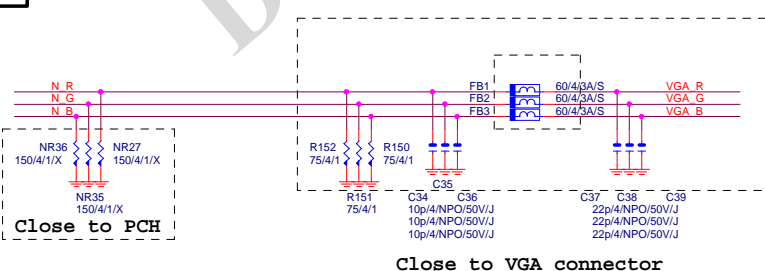
## VGA DDC



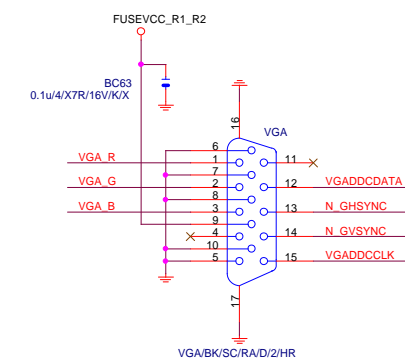
## VGA ESD



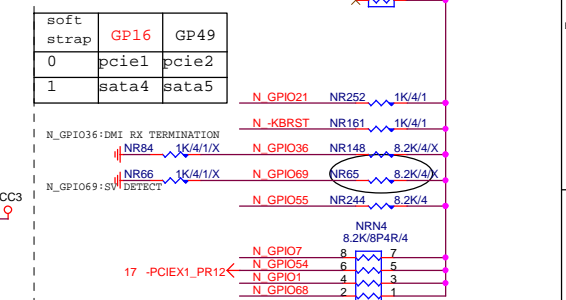
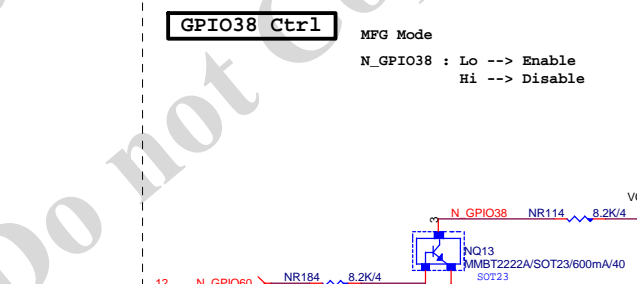
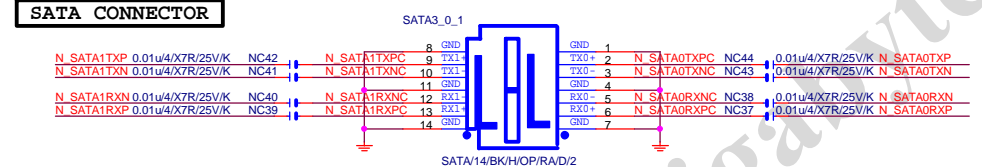
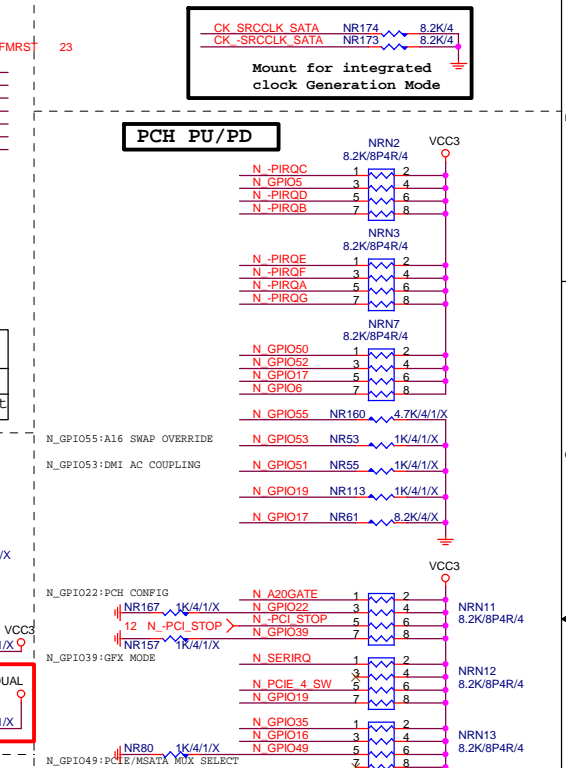
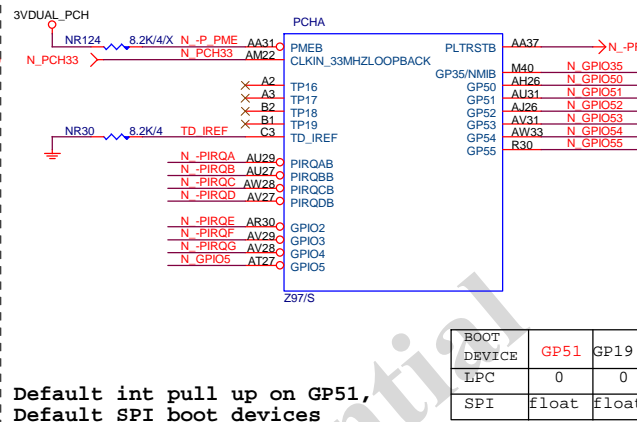
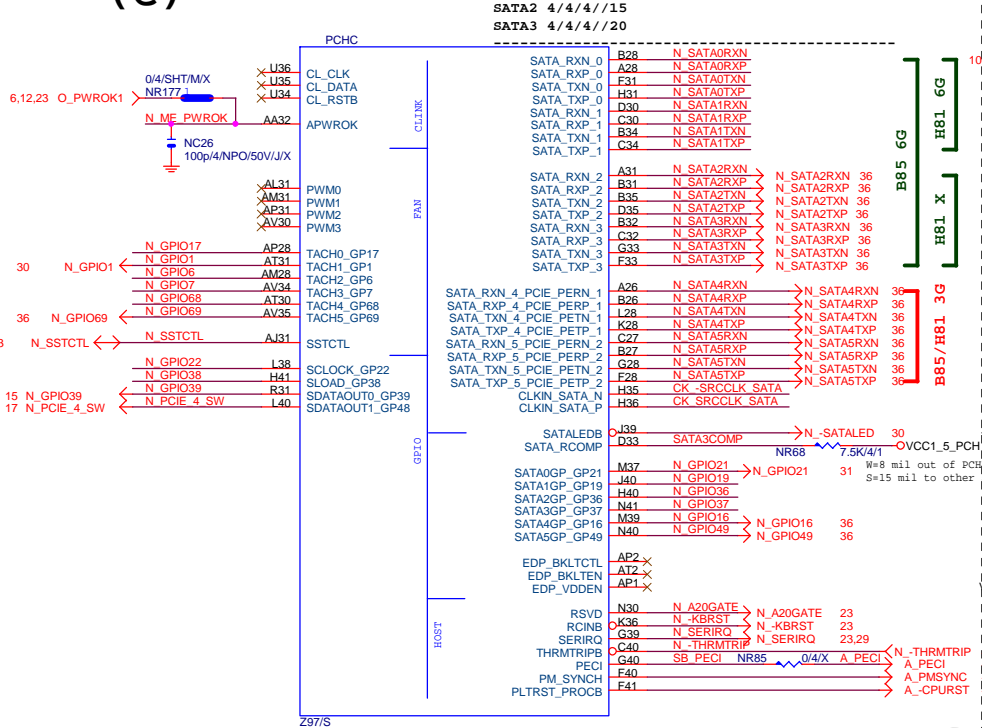
## VGA DDC



## VGA CONNECTOR



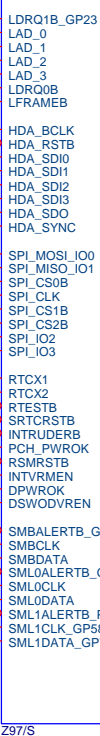
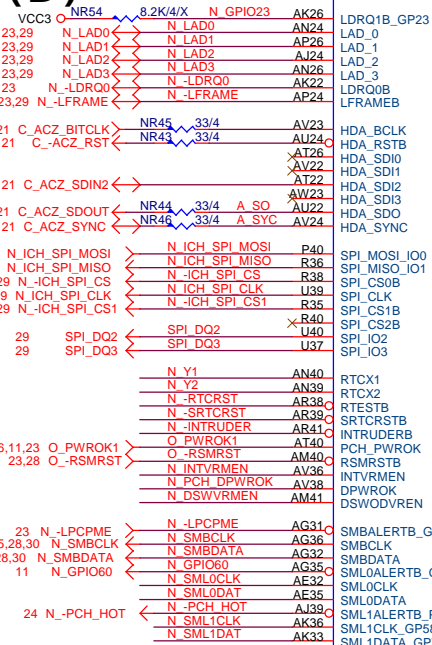
Gigabyte Technology			
Title			
PCH DISPLAY_CLK BUFFER			
Size	Document Number	GA-Z97X-GAMING 5	
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PCH

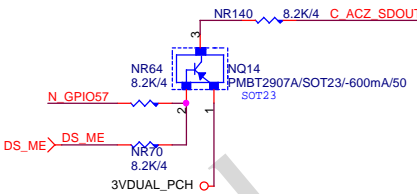
(D)

PCHD



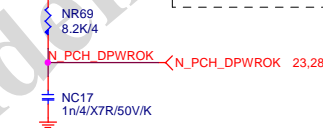
ACZ\_SDOUT

C\_ACZ\_SDOUT : HI --> ME Enable  
 Lo --> ME Disable  
 HI: disable ME and override SPI Flash Access Permissions

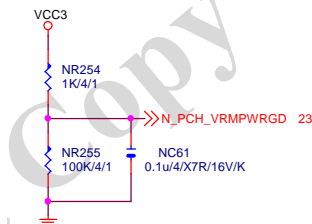


PCH\_DPWROK

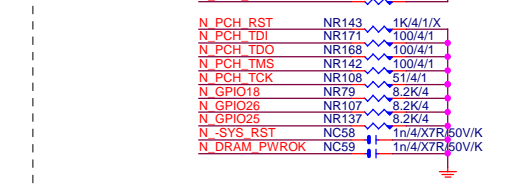
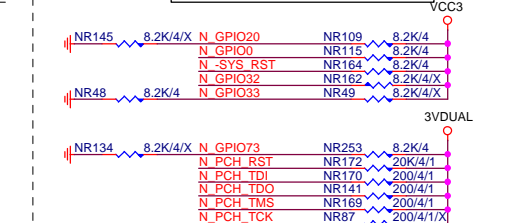
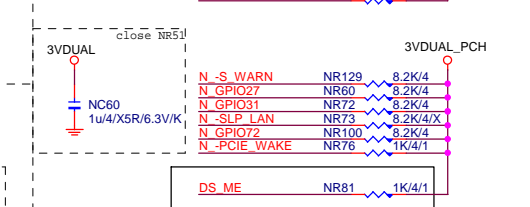
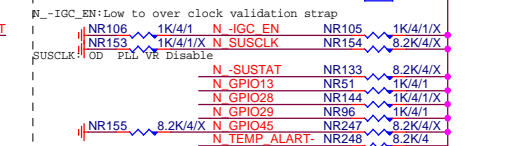
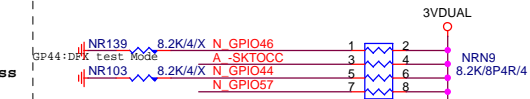
At least 10ms delay after  
 3VDUAL\_PCH stable



For IT8620 Ctrl



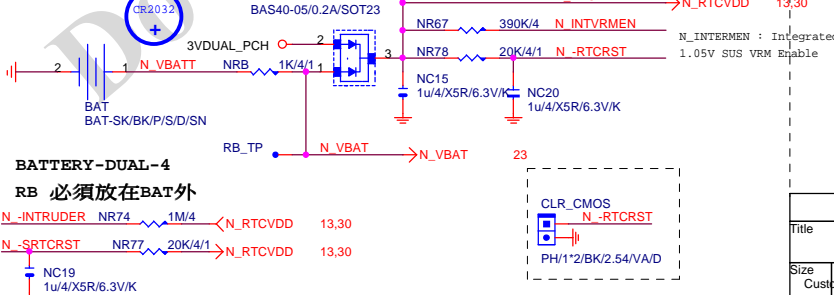
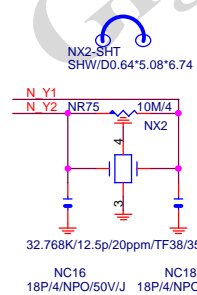
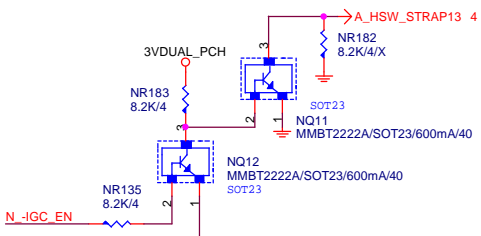
PCH PU/PD



HSW\_STRAP13

32.768KHZ

CLR\_CMOS



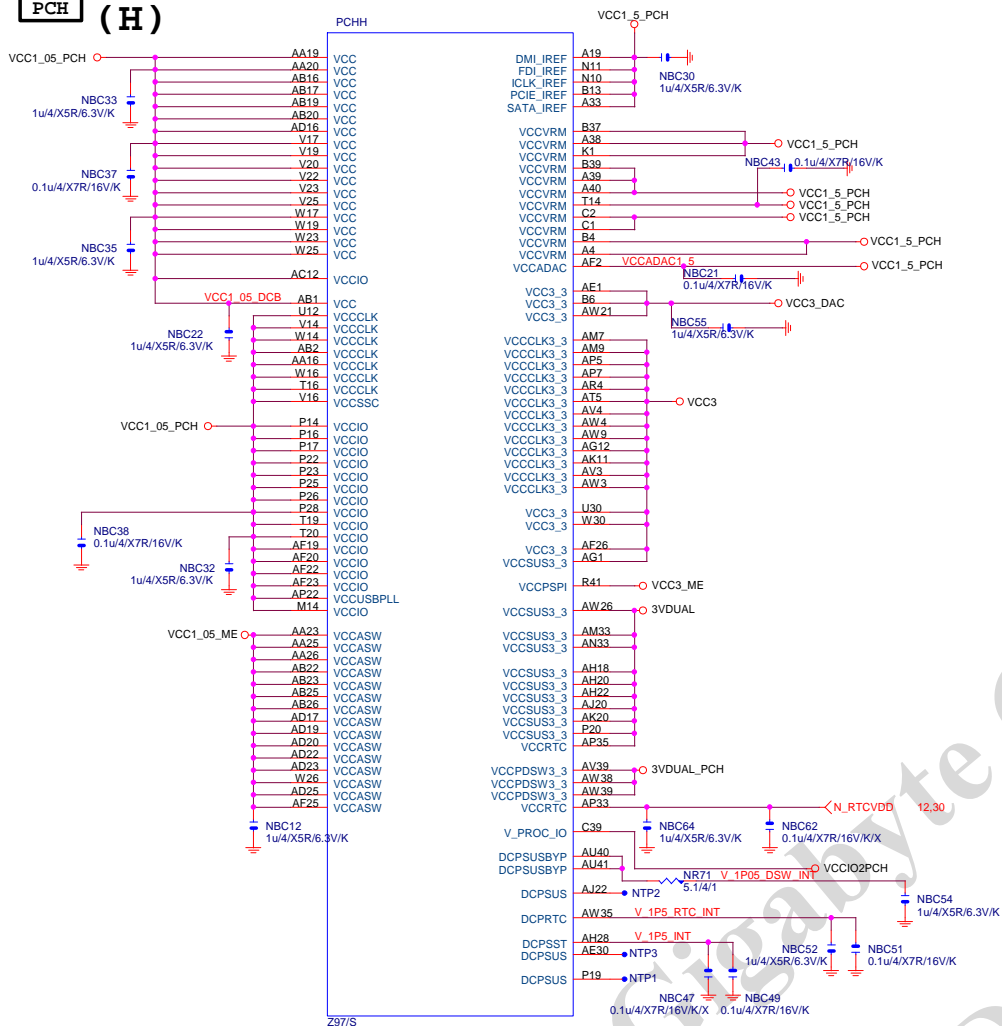
CLR\_CMOS

N\_RTICRST  
 N\_RTICRST  
 PH/1\*2/BK/2.54/VA/D

Gigabyte Technology

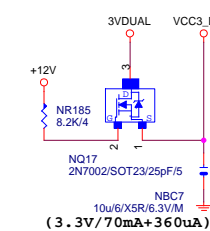
PCH GPIO , CTRL , AUDIO			
Size	Document Number	GA-Z97X-GAMING 5	
Custom			Rev 1.01
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## PCH (H)

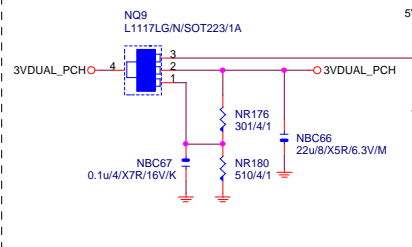


## VCC3\_DAC

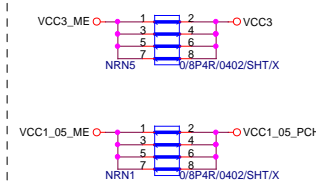
CLOSE北橋(注意震盪水波紋)



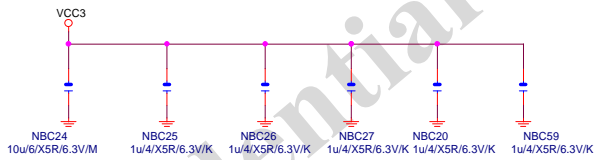
## 3VDUAL\_PCH



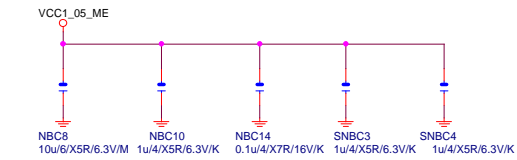
## SHT\_PWR



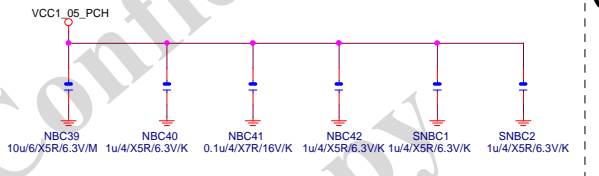
(3.3V)(X6)



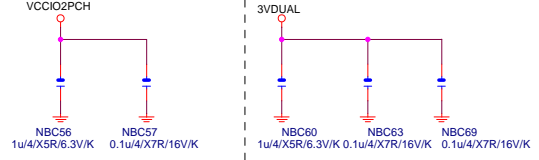
(1.05V)(X5)



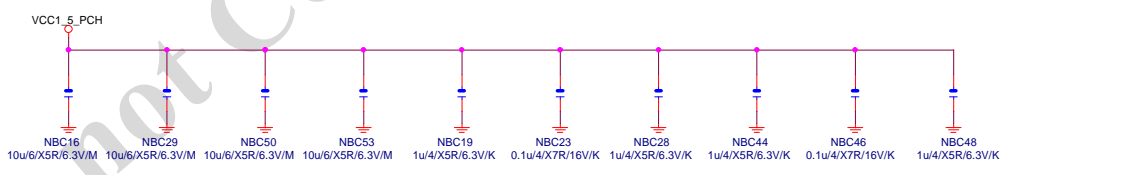
(1.05V)(X6)



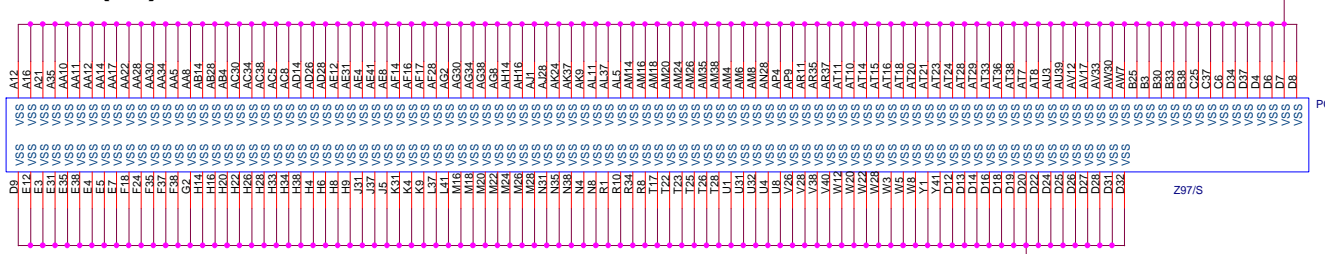
(1.05V)(X2)(3.3V)(X3)



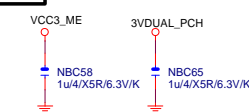
(1.5V)(X10)



## PCH (I)



## CAP



Gigabyte Technology

Title			PCH PWR ,GND
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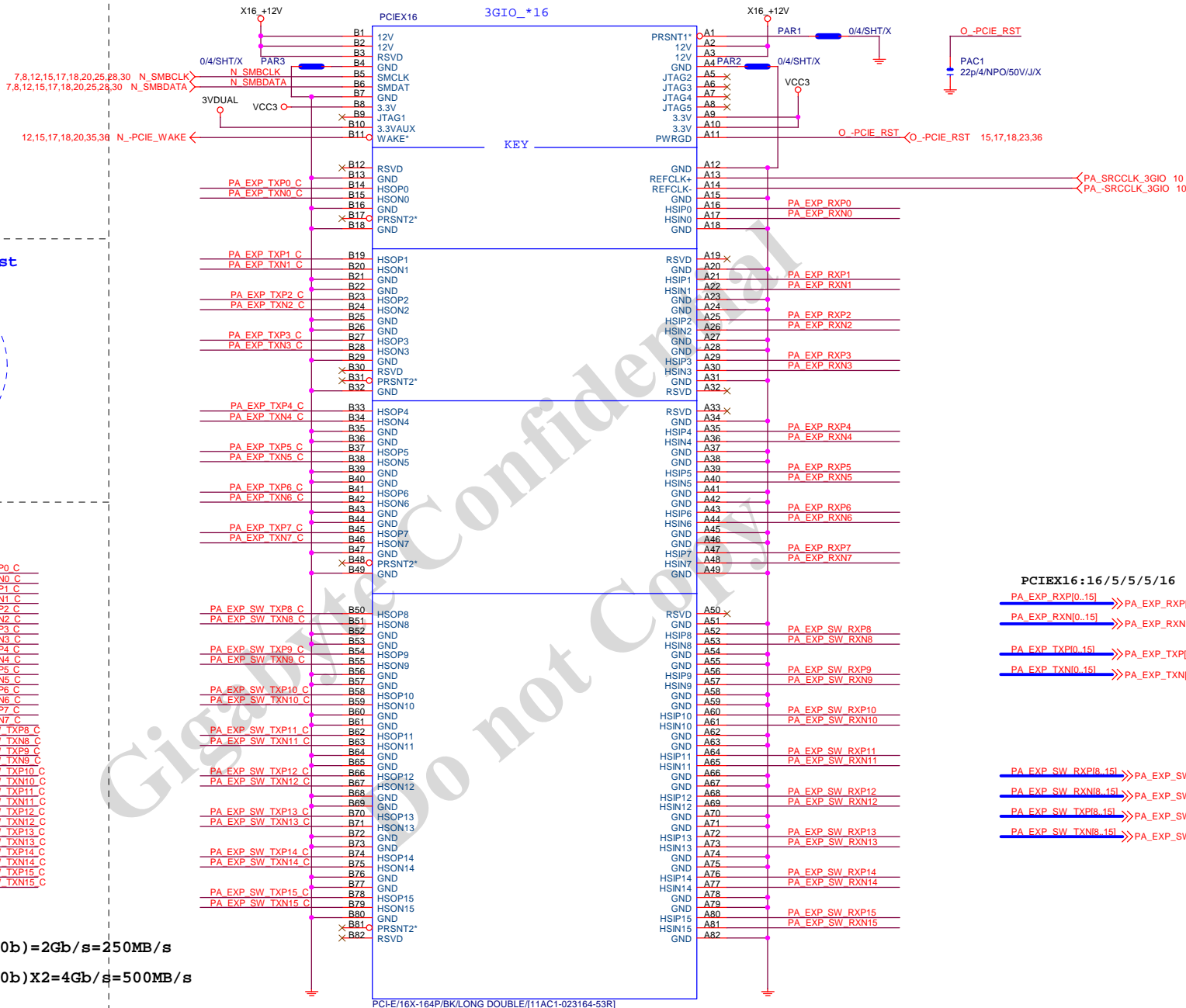


## PCIEX16 SLO

```
+12 protect
short-wire test
```

PA EXP TXP0	PAC5	0.22uH/45K6R6 3V/K	PA EXP TXP0 C
PA EXP TXP1	PAC6	0.22uH/45K6R6 3V/K	PA EXP TXP0 C
PA EXP TXP1	PAC7	0.22uH/45K6R6 3V/K	PA EXP TXN1 G
PA EXP TXP2	PAC8	0.22uH/45K6R6 3V/K	PA EXP TXN1 G
PA EXP TXP2	PAC9	0.22uH/45K6R6 3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22uH/45K6R6 3V/K	PA EXP TXP3 C
PA EXP TXP3	PAC11	0.22uH/45K6R6 3V/K	PA EXP TXN3 G
PA EXP TXP4	PAC12	0.22uH/45K6R6 3V/K	PA EXP TXP4 C
PA EXP TXP4	PAC13	0.22uH/45K6R6 3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22uH/45K6R6 3V/K	PA EXP TXP5 C
PA EXP TXP5	PAC15	0.22uH/45K6R6 3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22uH/45K6R6 3V/K	PA EXP TXP6 G
PA EXP TXP6	PAC17	0.22uH/45K6R6 3V/K	PA EXP TXN6 G
PA EXP TXP7	PAC18	0.22uH/45K6R6 3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22uH/45K6R6 3V/K	PA EXP TXN7 C
PA EXP SW TPX8	PAC20	0.22uH/45K6R6 3V/K	PA EXP SW TPX8 C
PA EXP SW TXP8	PAC21	0.22uH/45K6R6 3V/K	PA EXP SW TXN8 G
PA EXP SW TXP9	PAC22	0.22uH/45K6R6 3V/K	PA EXP SW TXP9 C
PA EXP SW TXP9	PAC23	0.22uH/45K6R6 3V/K	PA EXP SW TXN9 G
PA EXP SW TXP10	PAC24	0.22uH/45K6R6 3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22uH/45K6R6 3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22uH/45K6R6 3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22uH/45K6R6 3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22uH/45K6R6 3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22uH/45K6R6 3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22uH/45K6R6 3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22uH/45K6R6 3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22uH/45K6R6 3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22uH/45K6R6 3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22uH/45K6R6 3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22uH/45K6R6 3V/K	PA EXP SW TXN15 C

PCI-E REV:2.0--&gt; 5GHZ



PCIEX16:16/5/5/5/16

PA\_EXP\_RXP[0..15]  $\searrow$  PA\_EXP\_RXP[0..15] 1.10

PA\_EXP\_RXN[0..15]  $\gg$  PA\_EXP\_RXN[0..15] 4.16

PA EXP TXP[0..15] >> PA EXP TXP[0..15] 4:16

PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXN[0..15] 4,16

```
PA_EXP_SW_RXP[8..15] >> PA_EXP_SW_RXP[8..15]
```

```
RA_EXB_SW_TYP[8:15] ..
```

PA EXP SW TXN[8..15] \ PA EXP SW TXN[8..15]

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## Gigabyte Technology

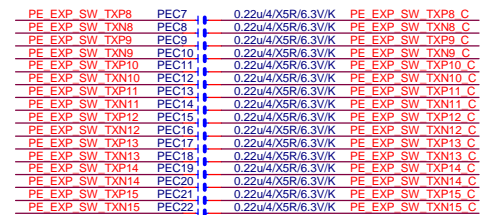
PCI EXPRESS \* 16

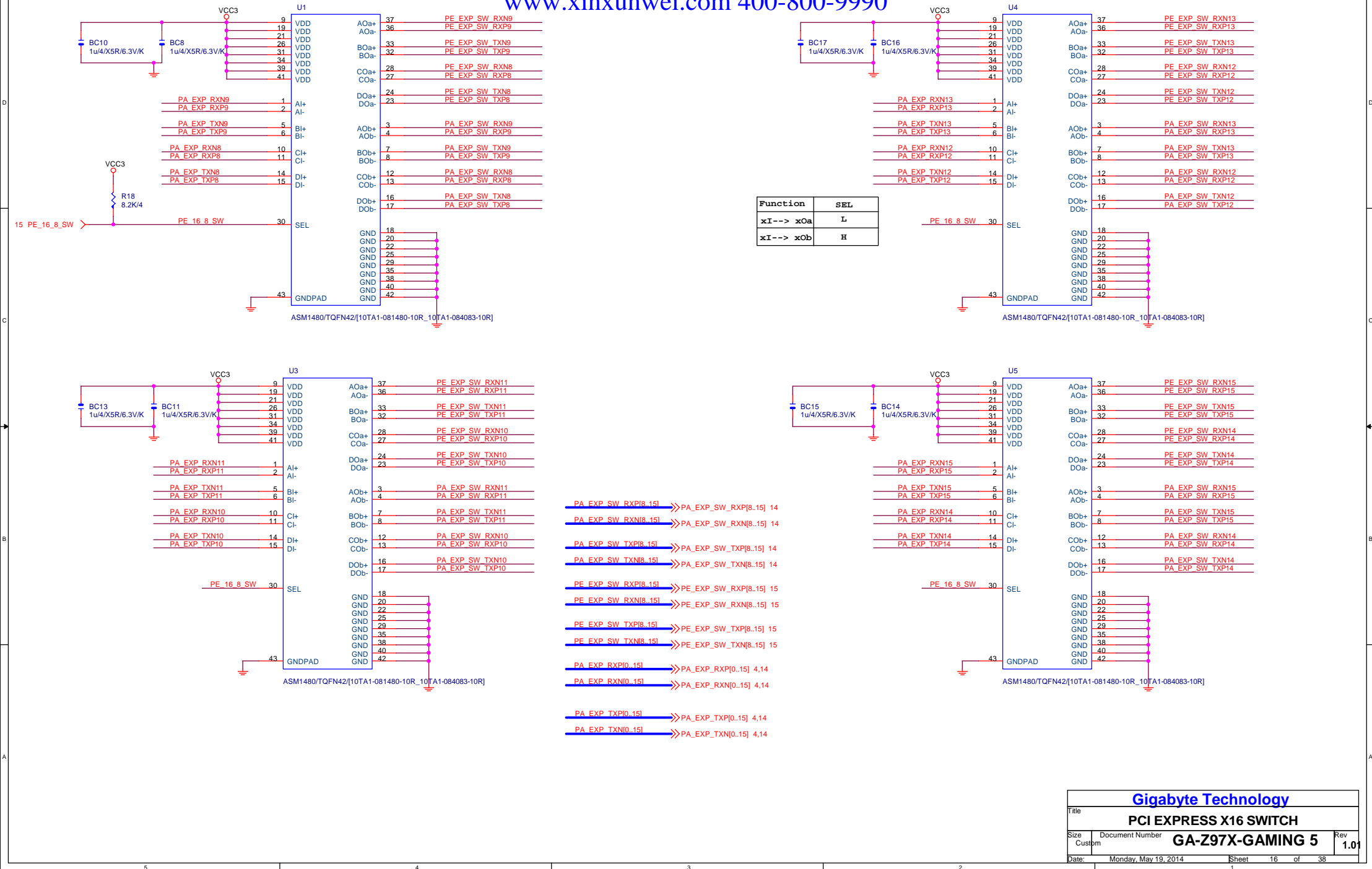
Document Number **GA-797X-GAMIN**

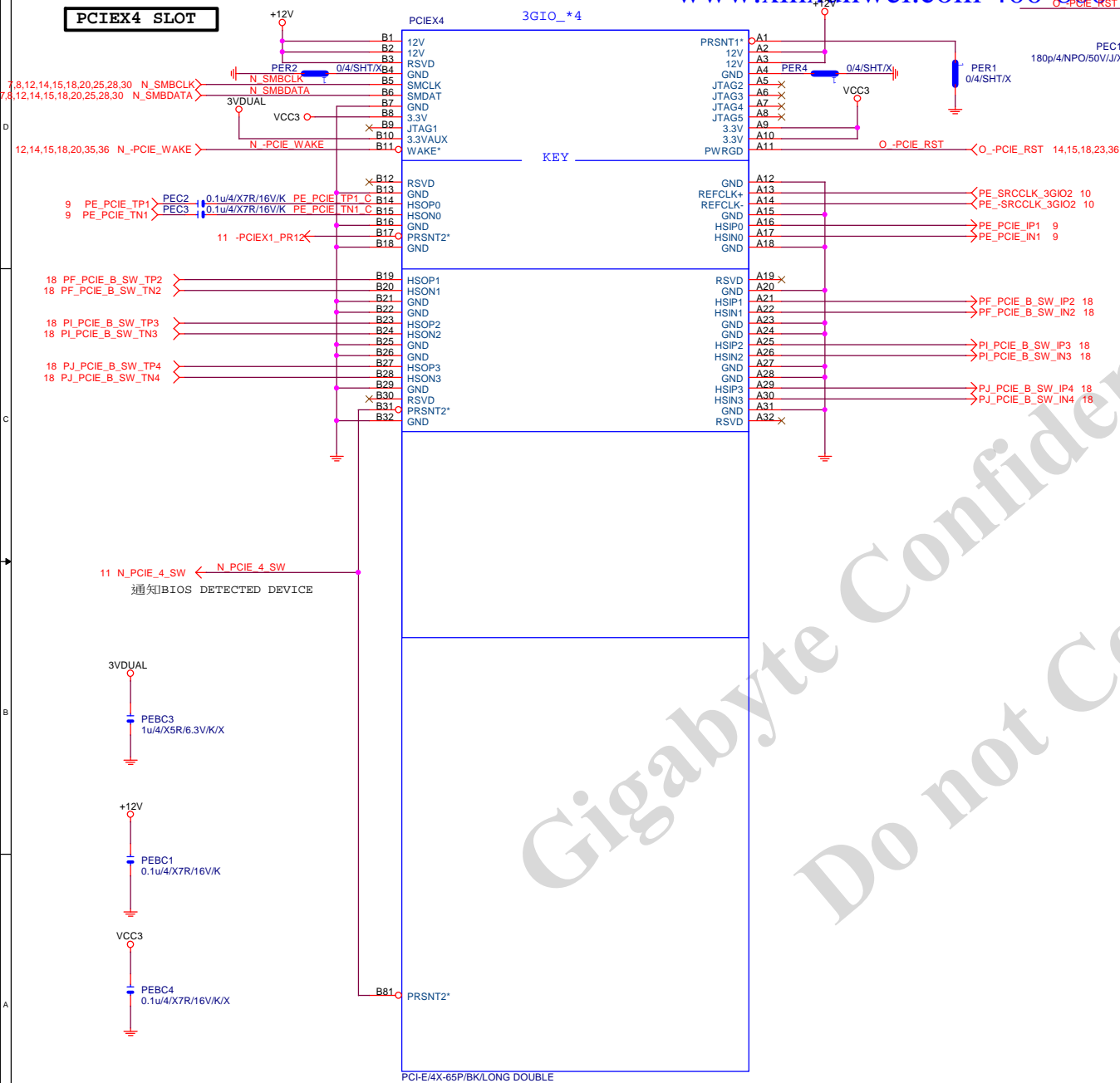
Monday, May 19, 2014

2	1
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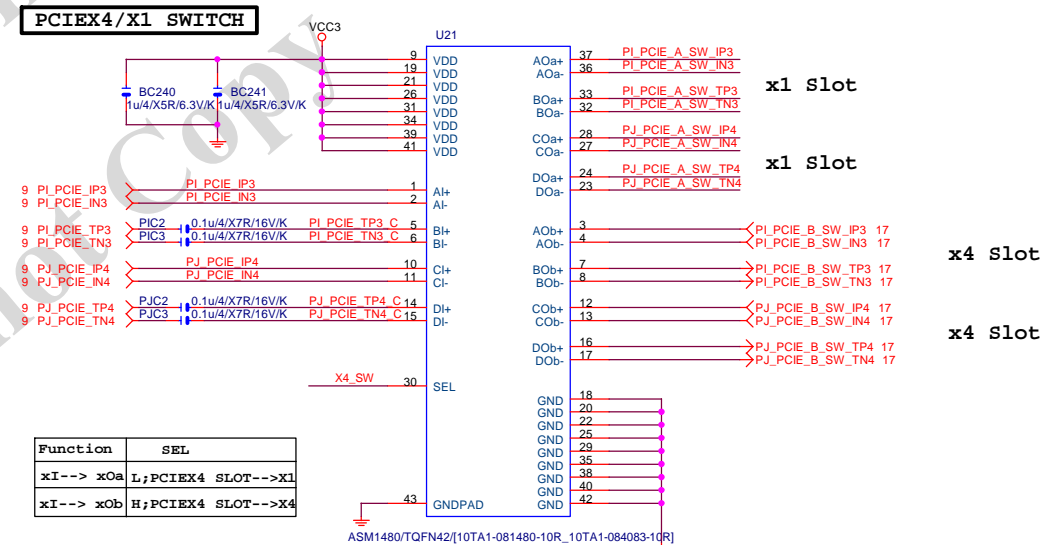
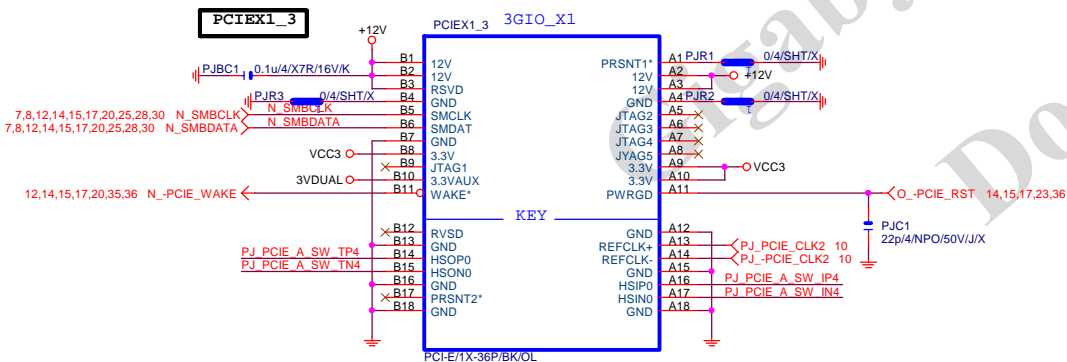




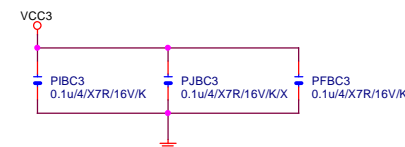
	N_PCIE_4_SW (PCH_GPIO48)	PCIEX4_X1 (SIO_GPIO27)
PCIEX1,PCIEX4 --> X1 (Default)	H	H
PCIEX4 No devices PCIEX4 -> X1	H	H
PCIEX4 Have devices PCIEX4 -> X4 PCIEX1_1/2 --> N/A	L	L

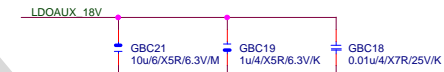
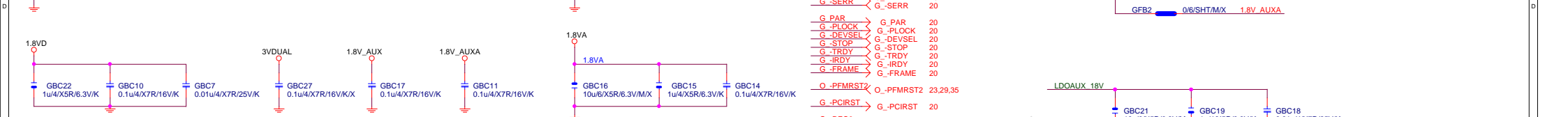
## Gigabyte Technology

Title	PCIE_X1 1,2	
Size	Document Number	Rev
Custom	GA-Z97X-GAMING 5	1.01
Date:	Monday, May 19, 2014	Sheet 17 of 38



Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X
xI--> x0b	H;PCIEX4 SLOT-->X





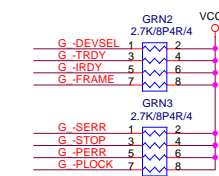
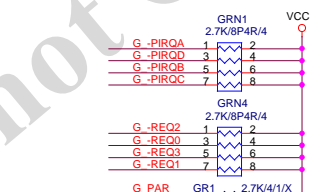
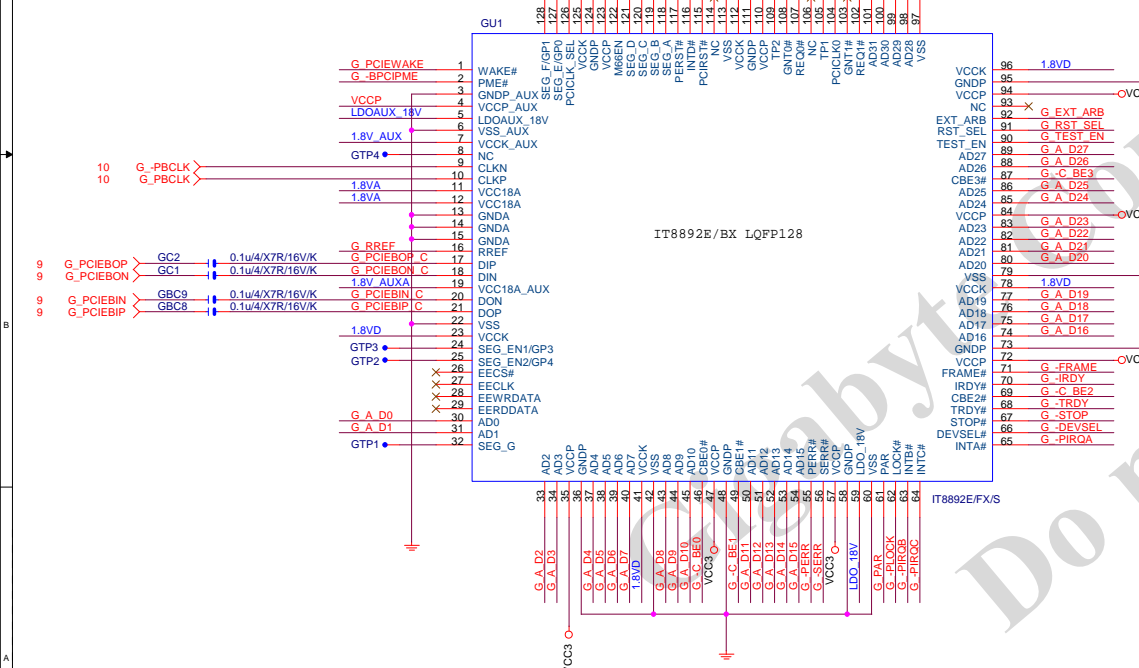
PCB layout note:  
Close to the chip

LDO 18V

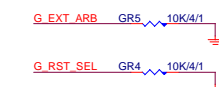
GBC1  
10uF/6.3V/5R/6.3V/M

GBC3  
1uF/4/X5R/6.3V/K

GBC13  
0.01uF/4/X7R/25V/K



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







AZALIA CODEC

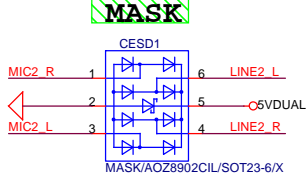
Thermal pad is DGND

Thermal pad is DGND

Digital Area

Analog Area

SMOATR1 MASK/0/6/X  
0/6/X For AGND/GND  
moat under Codec  
\_Body



EAPD: Default L  
H : ON  
L : OFF

Close to ALC1150

金屬外罩+  
GND切割  
AUDIO\_HS[11NH1-00297S-01R]


(IT8620 GP26)  
23 G\_PLED >> CR131 2.2/4  
23,30 MPD- >> CR132 2.2/4/X  
若上MPD-，則需改成P.U.  
5VDUAL 於F\_PANEL page.

MOAT LED

C\_LED

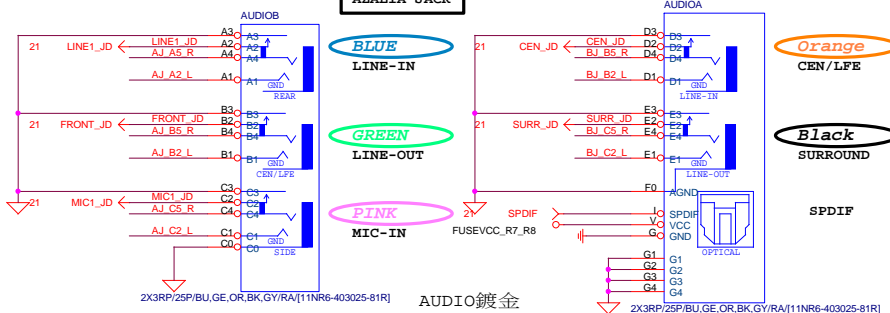
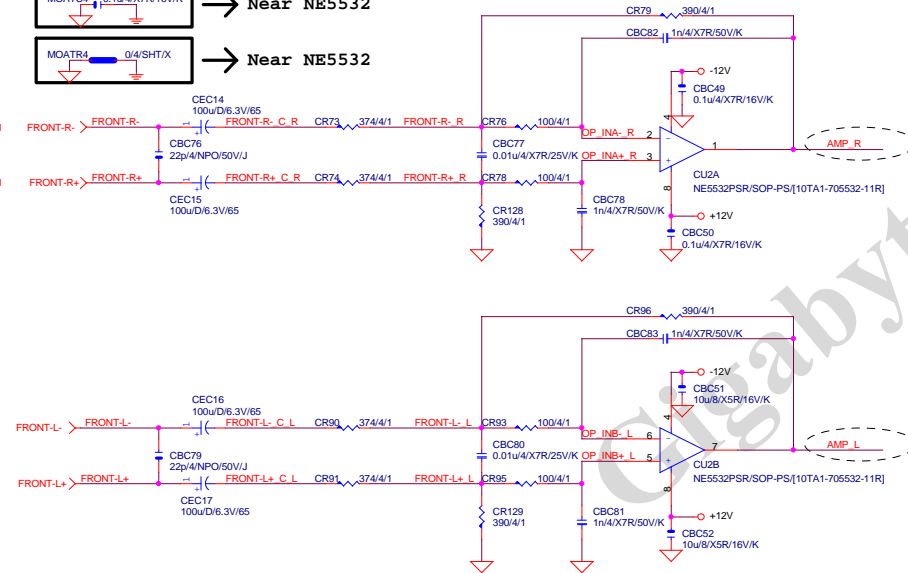
Gigabyte Technology

Title			HD AUDIO ALC887B-VD2/VT1708SVT2021
Size	Document Number	GA-Z97X-GAMING 5	
Custom		Rev	1.01
Date:	Monday, May 19, 2014	Sheet	21 of 38

MOATR3  → Near F\_AUDIO(各打2 VIA hole)

MOATC3 0.1u/4/X7R/16V/K → Near CODEC

MOATR4 0/4/SHT/X → Near NE5532

[illegible]

21 MIC1\_R ← CR29 62/4 → AJ\_C5\_R

21 MIC1\_L ← CR32 62/4 → AJ\_C2\_L

21 MIC1\_VREFO\_L

21 MIC1\_VREFO\_R

180p/4NPO/50V/J CBC19

180p/4NPO/50V/J CBC22

21 LFE\_R CEN9 22k/4 CR50 62/4

21 CEN\_L CEN10 22k/4 CR41 62/4

LFE CEN

180p/4 NPO/50V/J

180p/4 NPO/50V/J

180p/4 NPO/50V/J

180p/4 NPO/50V/J

The schematic diagram illustrates the audio section of the TDA1564Q1, divided into an EMI (Electromagnetic Interference) section and a Digital Area.

**EMI Section:**

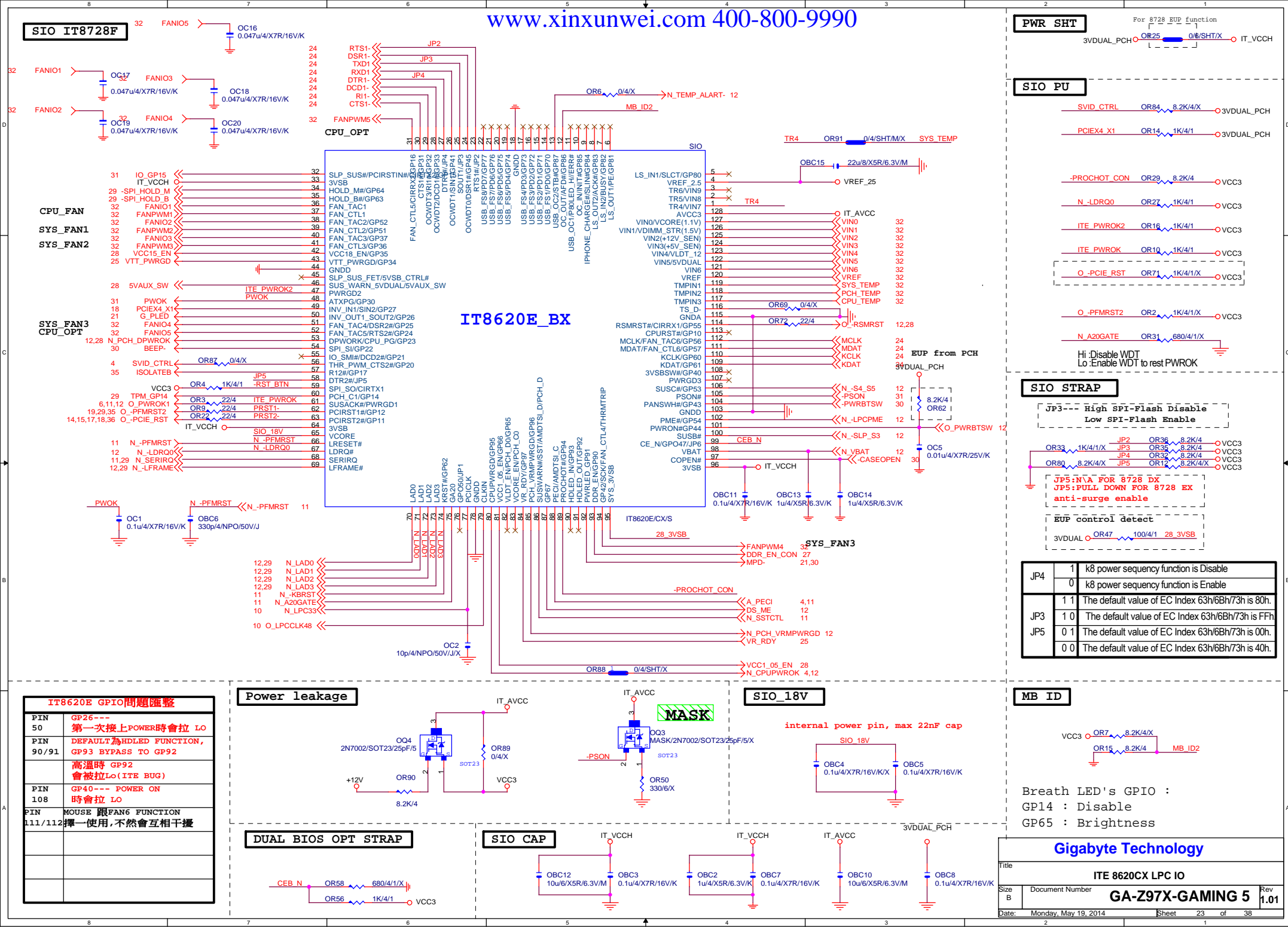
- Input Filters:** Two input filters are shown, each consisting of a 10μF/6.3V/MS capacitor (CBC20 and CBC15) in parallel with a 100Ω/6.3V/MS resistor (CEC12 and CEC13).
- Op-Amp Configuration:** The op-amp is configured with a feedback network consisting of a 100kΩ/4 resistor (CR2) and a 100kΩ/4 resistor (CR11) in parallel, and a 100kΩ/4 resistor (CR3) in parallel with a 100kΩ/4 resistor (CR12).
- Output Stage:** The output stage consists of a 100kΩ/4 resistor (CR26) and a 100kΩ/4 resistor (CR27) in parallel, connected to a 100kΩ/4 resistor (CR31) and a 100kΩ/4 resistor (CR32) in parallel.

**Digital Area:**

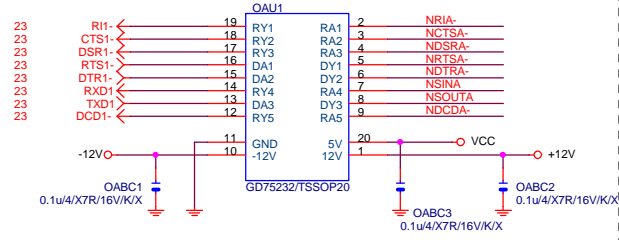
- DAC/ADC Converter:** A 10-bit DAC/ADC converter is shown, consisting of a 100kΩ/4 resistor (CR26) and a 100kΩ/4 resistor (CR27) in parallel, connected to a 100kΩ/4 resistor (CR31) and a 100kΩ/4 resistor (CR32) in parallel.
- Power Supply:** The circuit is powered by a 100kΩ/4 resistor (CR26) and a 100kΩ/4 resistor (CR27) in parallel, connected to a 100kΩ/4 resistor (CR31) and a 100kΩ/4 resistor (CR32) in parallel.

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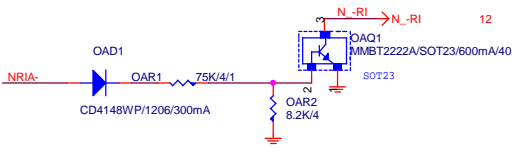
Title			
AUDIO JACK			
Size	Document Number	GA-Z97X-GAMING 5	Rev
Custom			1.01
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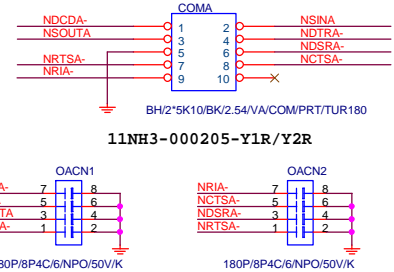
COMA



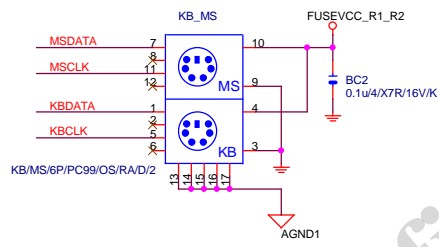
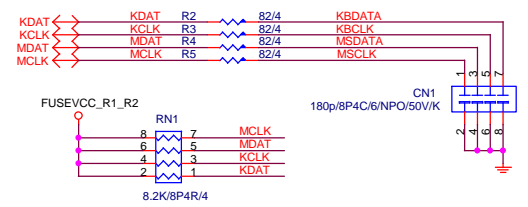
COM R1



COM BUFFER



KB/USB



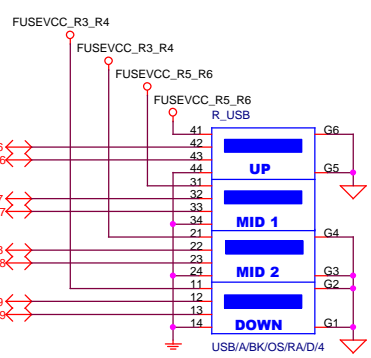
PROHOT



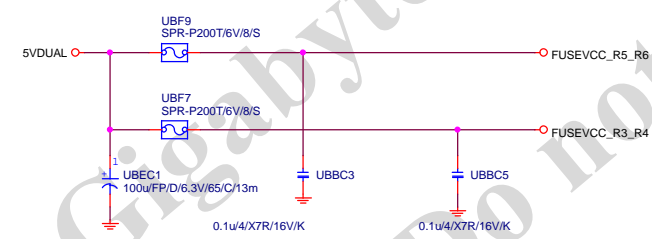
Thunderbolt pin header

Removed

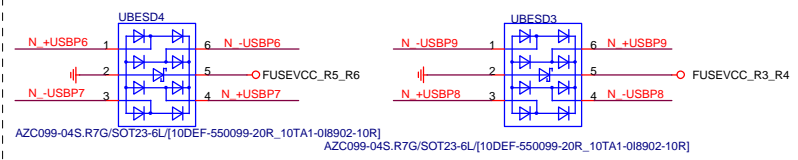
R\_USB



USB20 FUSE



USB20 ESD PROTECT

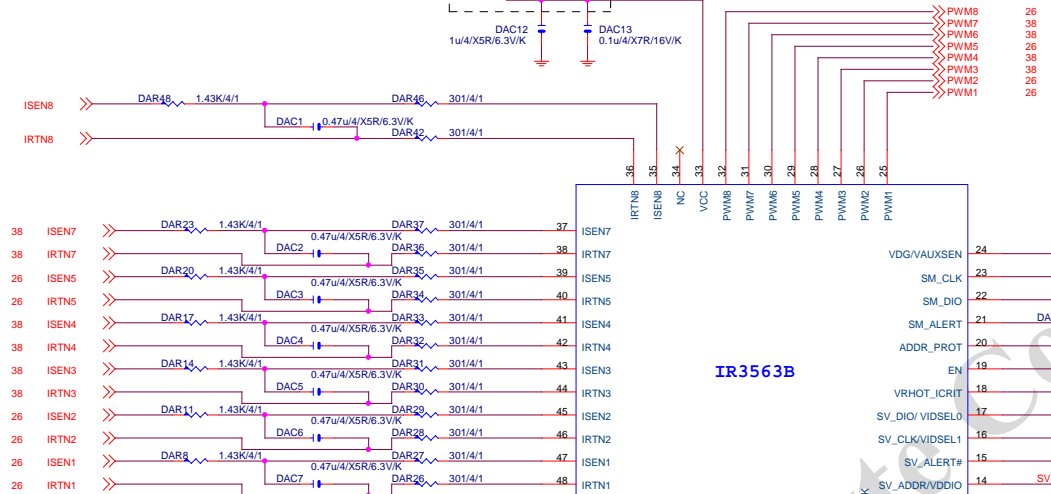
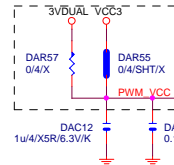


-PROHOT

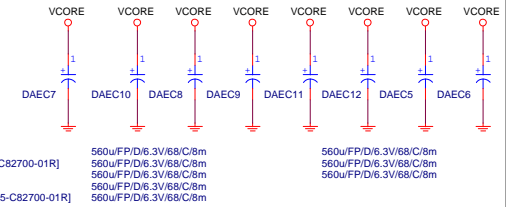
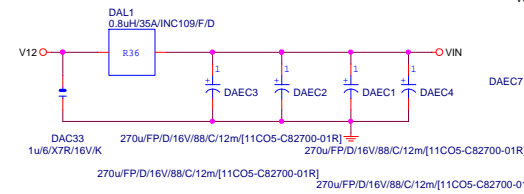
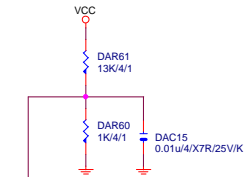
OTP:132度 / PCB THERMAL TRIP:122 度  
125 degree assert, 105~115 degree deasserted

0.1不上件  
0.2上件

CLOSE Vcore PWM UPPER MOSFET

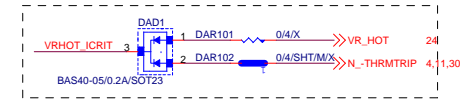


IR3563B



Debug Only

Remove  
PinHeader in  
modify PBOM



Addr: 70h

MOS HEATSINK

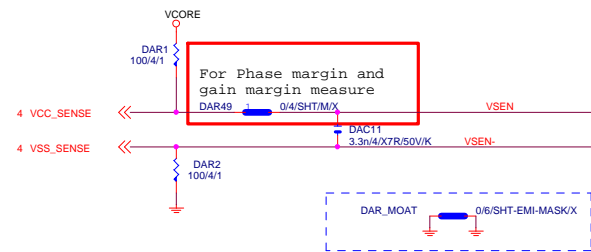
MOS\_HS

MOS\_HS2

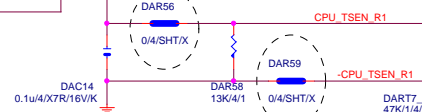
MOS HS(12SP2-S07924-01R\_12SP2-S07924-02R\_12SP2-S07924-03R)

Close to  
Vcore  
output  
inductor

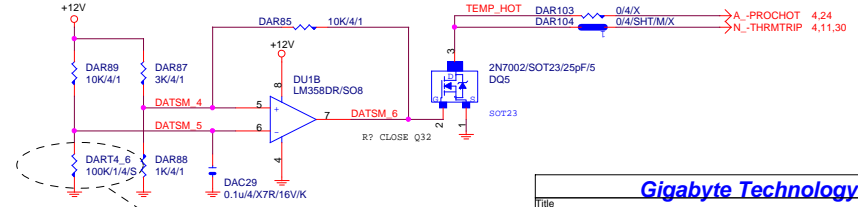
For Phase margin and  
gain margin measure



Pop DAR83 if pop DAR63



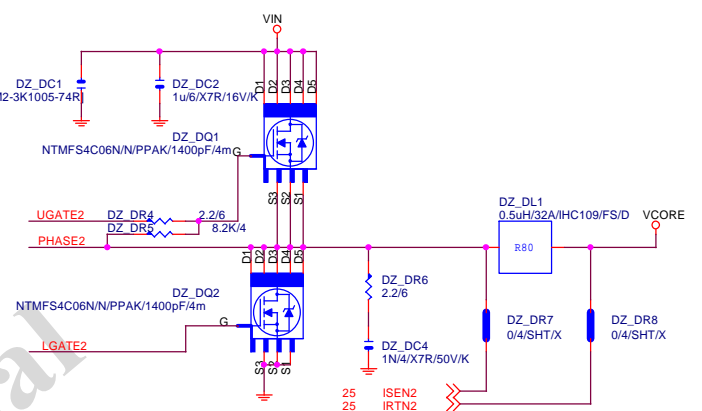
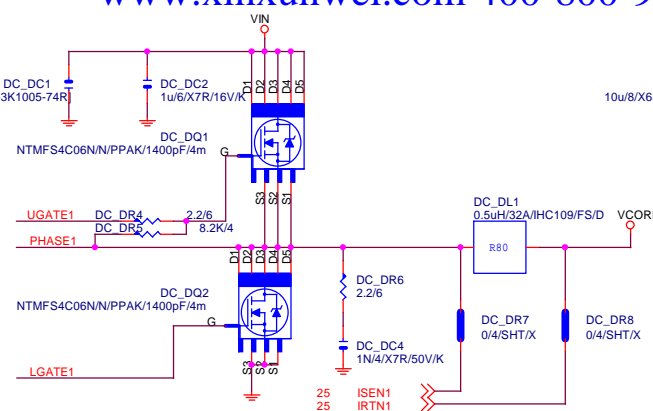
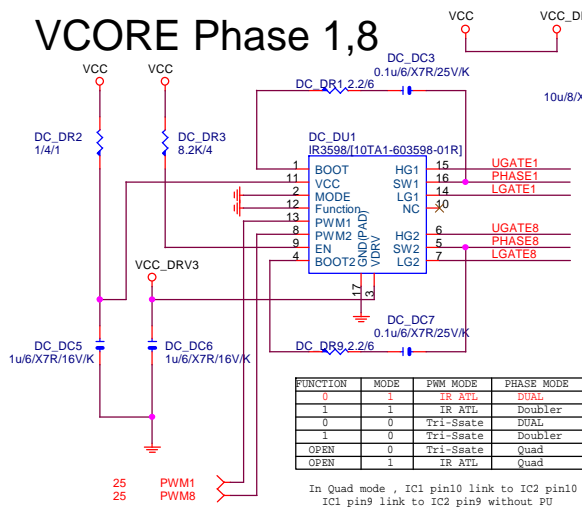
125 degree assert, 105~115 degree deasserted



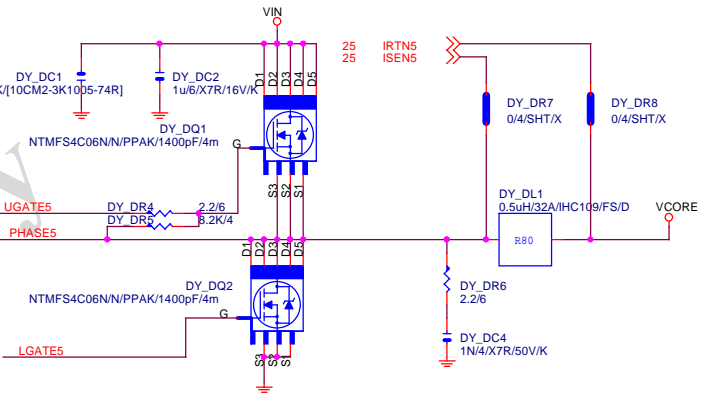
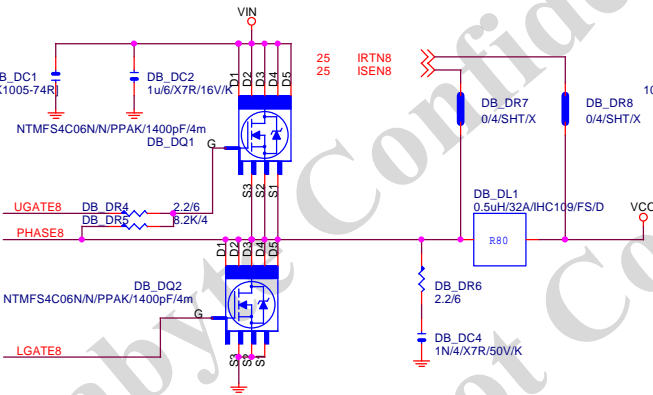
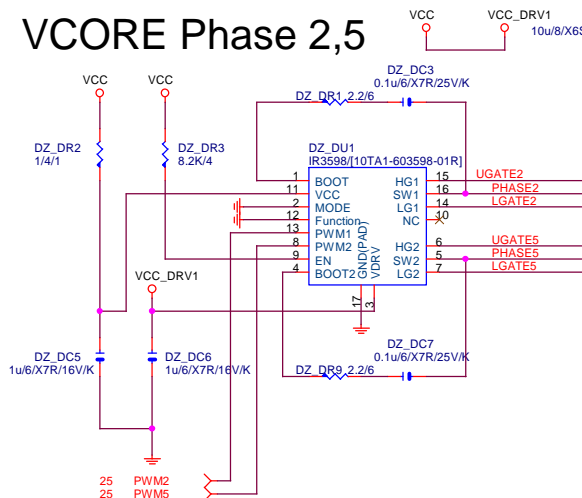
CLOSE Vcore PWM LOWER MOSFET

Gigabyte Technology			
IR 3563A			
GA-Z97X-GAMING 5			
Title	Document Number	Rev	1.01
Size	Custom		
Date:	Monday, May 19, 2014	Sheet	25 of 38

## VCORE Phase 1,8



## VCORE Phase 2,5

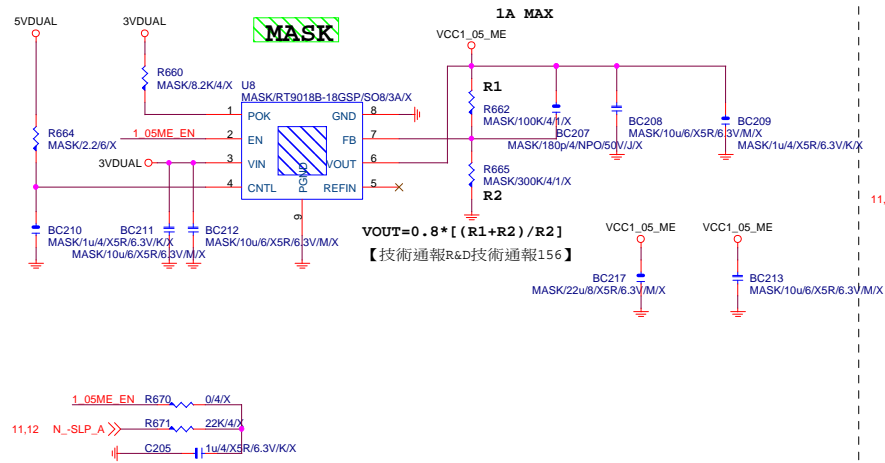


Gigabyte Technology

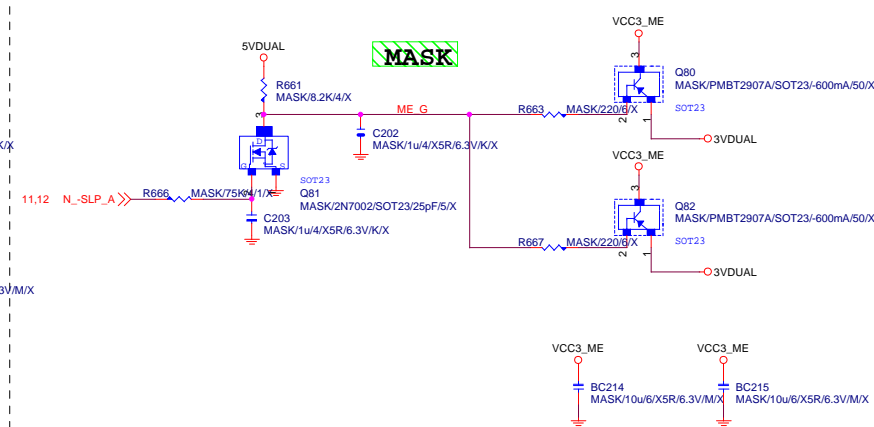
Title			CPU CORE IR3563B
Size	Document Number	GA-Z97X-GAMING 5	
Custom			Rev 1.01
Date:	Monday, May 19, 2014	Sheet	26 of 38



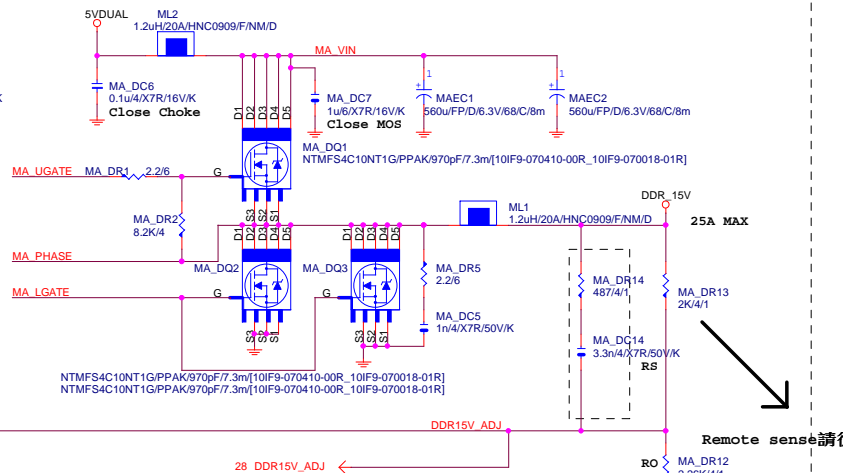
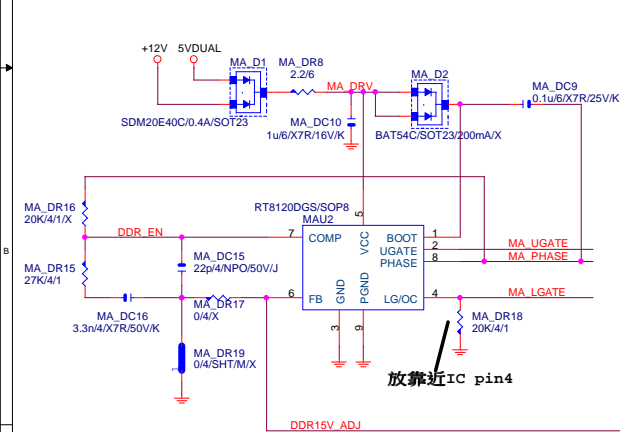
VCC1\_05\_ME



VCC3\_ME



DDR 15V



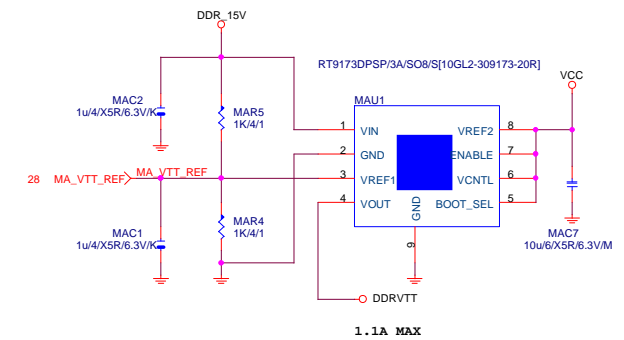
VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1  
IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A  
Coefficient=1.7(85°C), 1(105°C)

VIN Ripple current=4.7X1.7=7.99A(85°C)  
-->故固態電容須2X7.99=15.98>11.45A

OCP:35.82A for Rds=6.7m for vishay@4.5V  
OCP:72.727A for Rds=3.3m for renesas@10V  
OCP:48A=RoSet\*Iocset / Rds(on)  
=12K\*10uA / [5/5]

DDRVTT



Gigabyte Technology

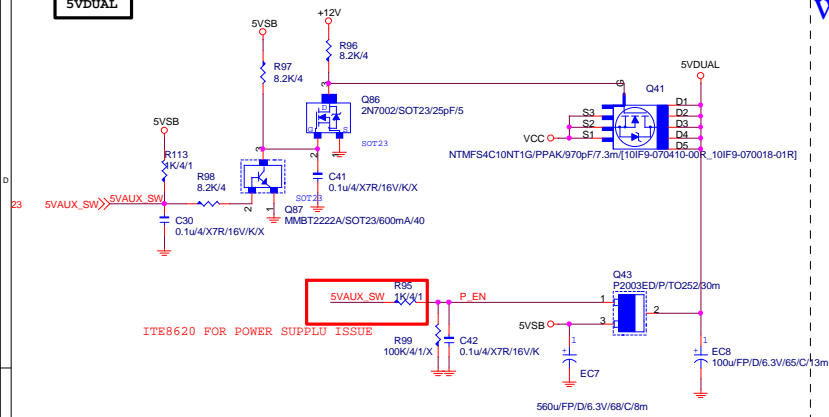
DDR15V/M3 POWER

GA-Z97X-GAMING 5

Rev 1.01

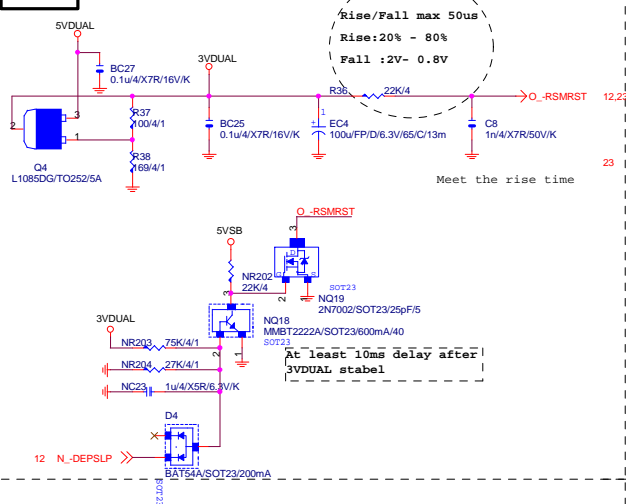
Date: Monday, May 19, 2014 Sheet 27 of 38

## 5VDUAL

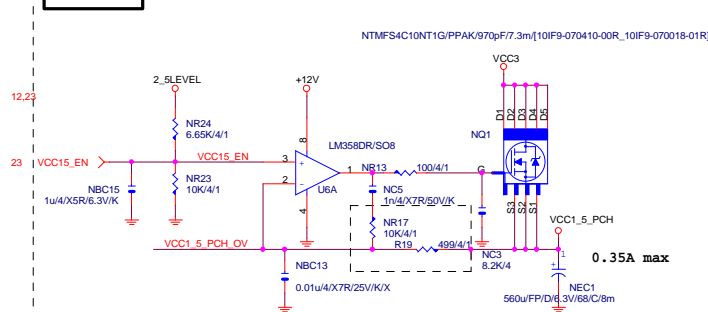


## www.xinxunwei.com 400-800-9990

## 5VDUAL

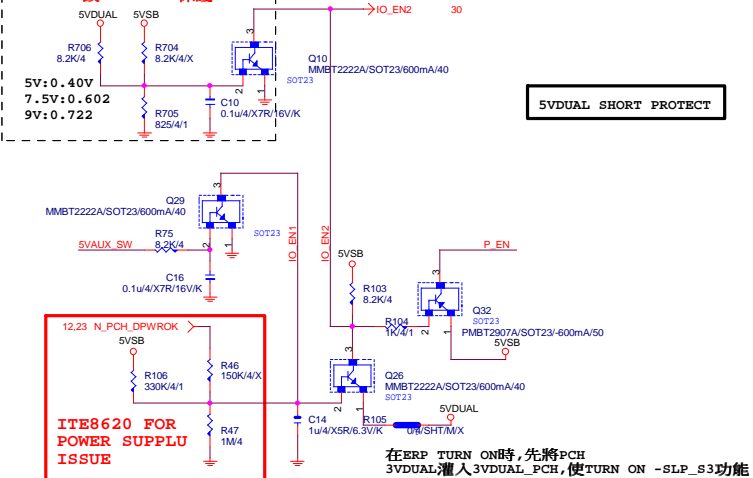


## VCC1\_5\_PCH

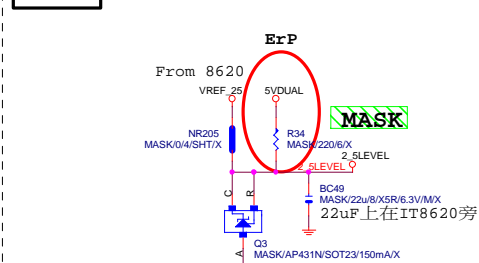


## 5VSB OVP:7.5V protection

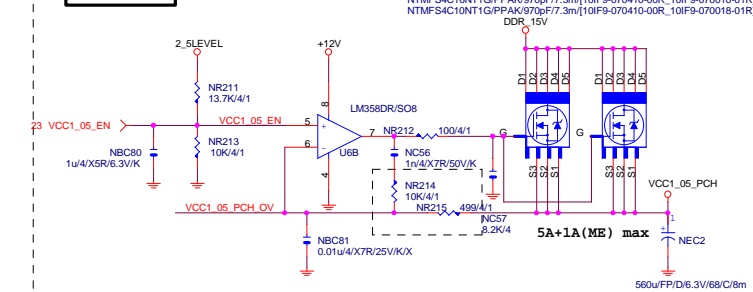
NOTE 82:改5VDUAL 6V保護



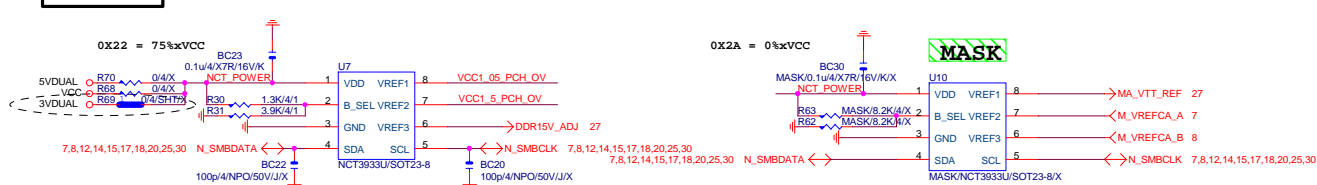
## 2\_5LEVEL



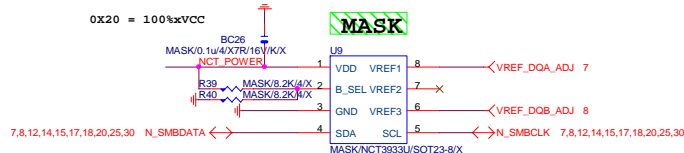
## VCC1\_05\_PCH



## OVER VOLTAGE

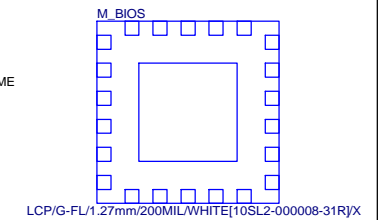
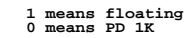


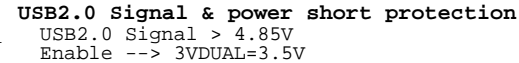
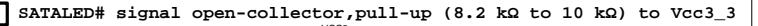
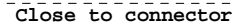
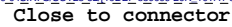
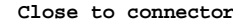
NCT3933	0X2A	0X20	0X22
VREF1	DDRVT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDBR_DQ	SMREF



## Gigabyte Technology

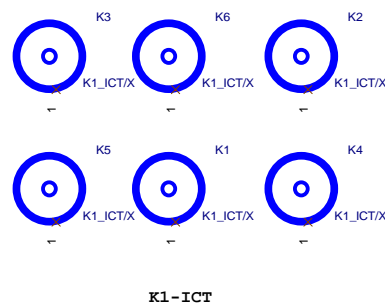
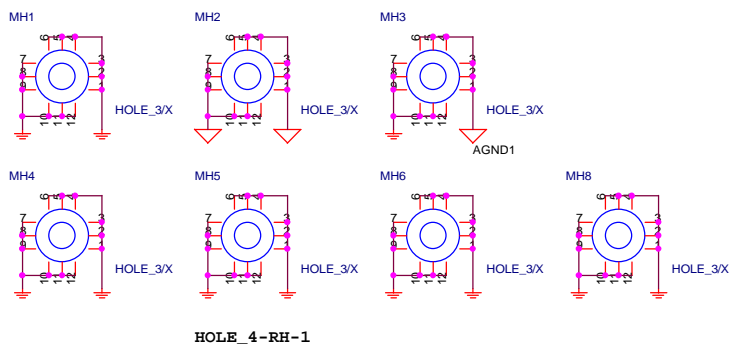
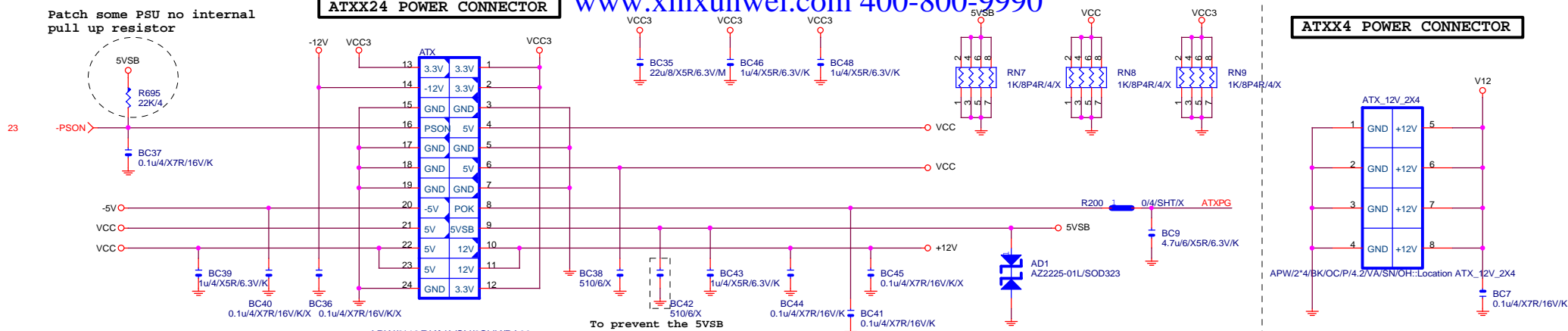
DISCRETE POWER			
Title	Document Number	GA-Z97X-GAMING 5	Rev 1.01
Size	Custom		
Date	Monday, May 19, 2014	Sheet 28 of 38	





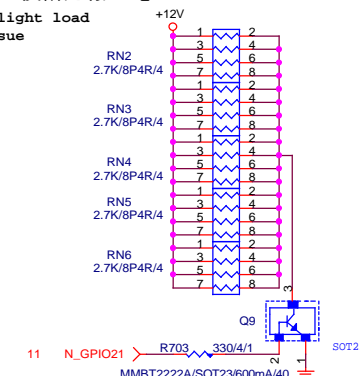
# ATXX24 POWER CONNECTOR

# ATXX4 POWER CONNECTOR



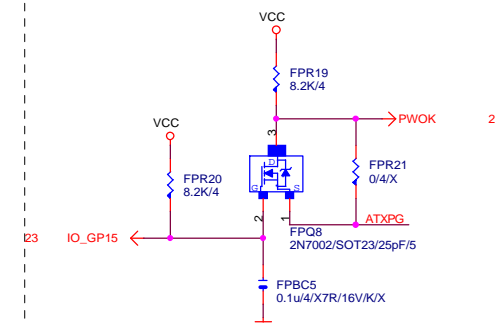
## 【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



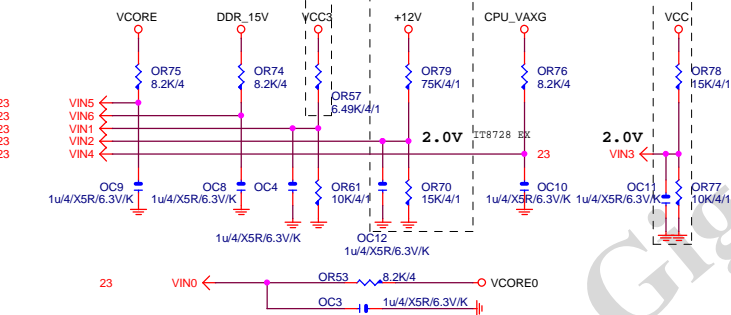
## PWOK PATCH

## 【技術通報R&D技術通報154】

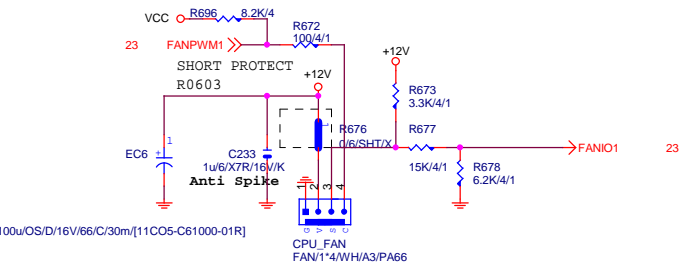


Gigabyte Technology

Title			ATX POWER CONNECTOR	
Size	Document Number	GA-Z97X-GAMING 5		Rev
Custom				1.01
Date:	Monday, May 19, 2014	Sheet	31	of 38

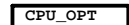
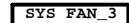
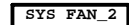


CPU SMART FAN

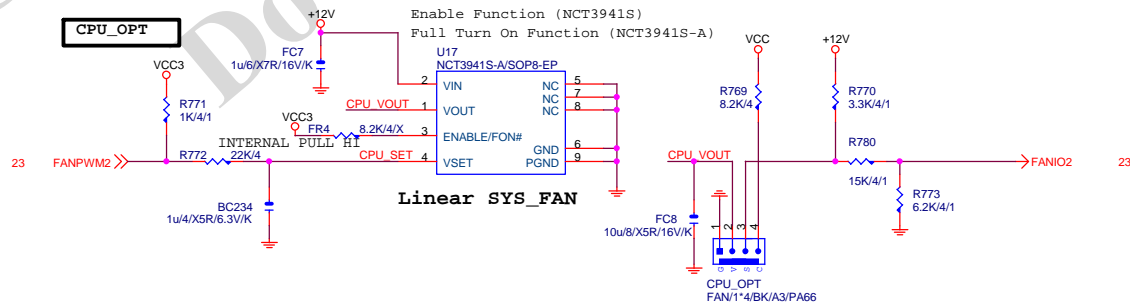


Enable Function (NCT3941S)  
Full Turn On Function  
(NCT3941S-A)

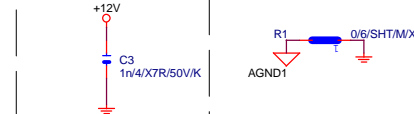
SYS FAN\_1



Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)



FOR EMI ONLY

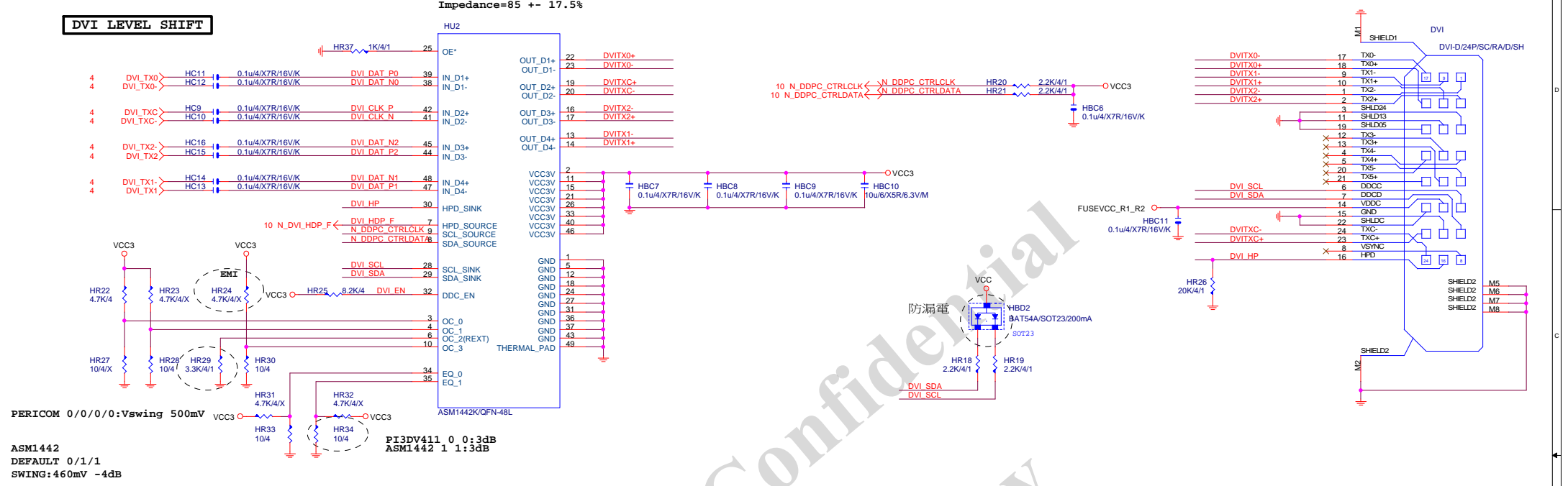


## Gigabyte Technology

Title			
HWM,KB/MS, FAN CTRL			
Size	Document Number		Rev
Custom	GA-Z97X-GAMING 5		1.01
Date:	Monday, May 19, 2014	Sheet	32 of 38



DVI LEVEL SHIFT

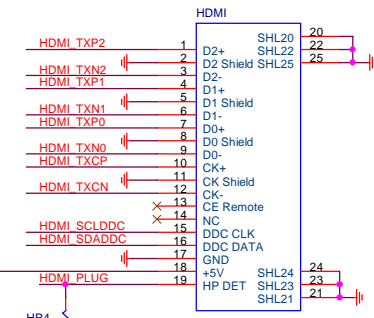
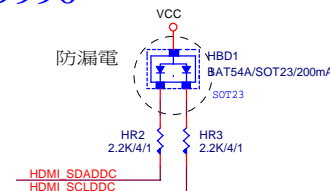
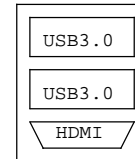
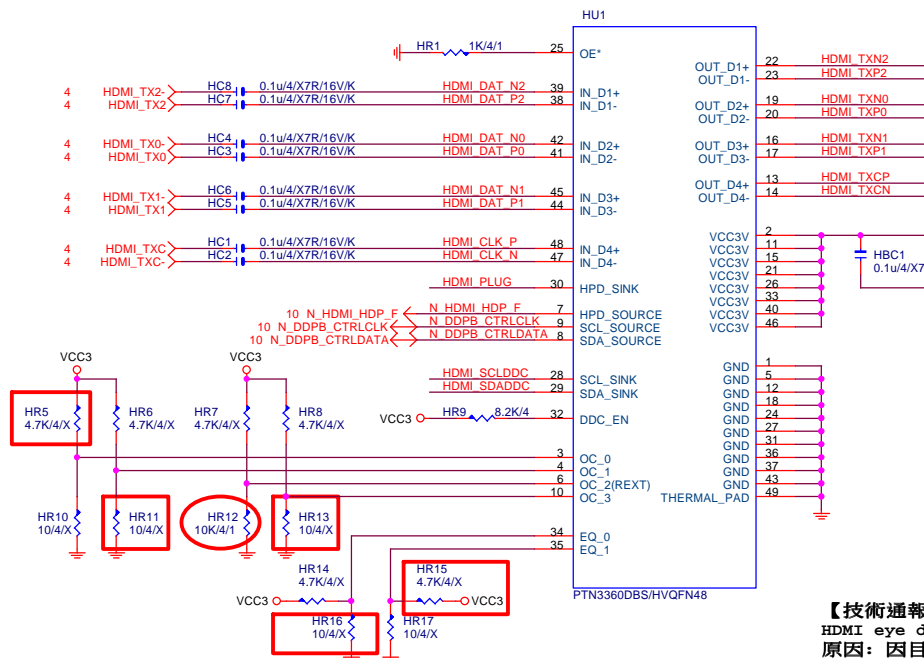


# HDMI LEVEL SHIFT

HDMI:20/4/6/4/30

www.xinxunwei.com 400-800-9990

Impedance=85 +- 17.5%



HDMI與R\_USB共用一個料件

PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K  
ASM1442:紅色框要上,HR12:3.16K

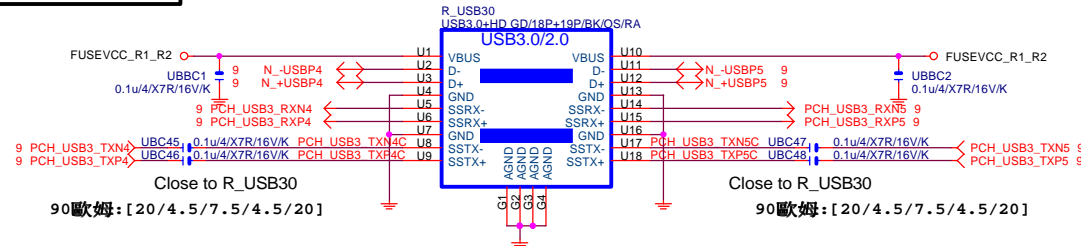
## 【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

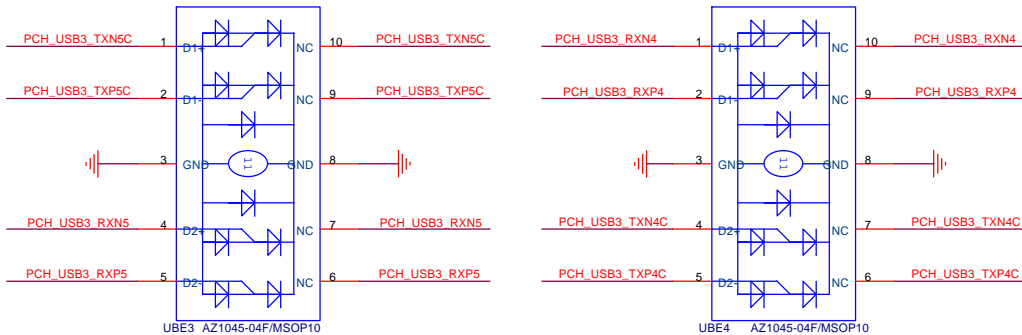
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

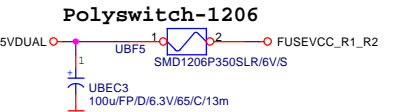
## USB30\_20 CONNECT



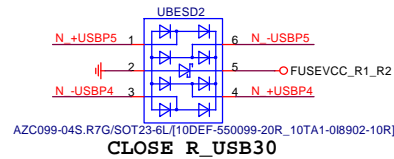
## USB30 ESD PROTECT



## USB30 PWR



## USB20 ESD PROTECT



USB3.0 1Port - 1Fuse (3.5A)

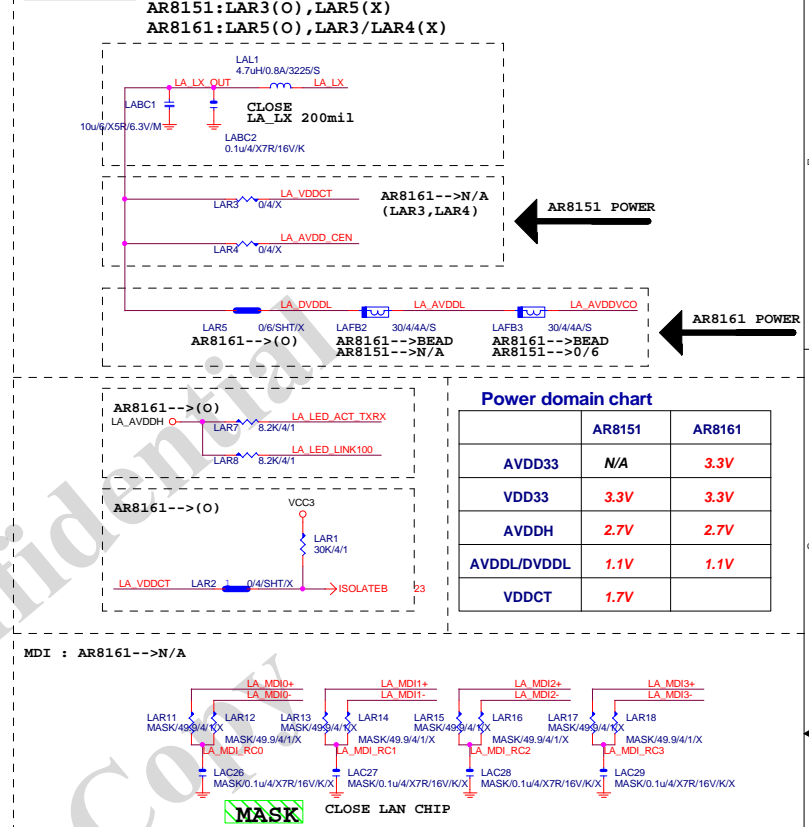
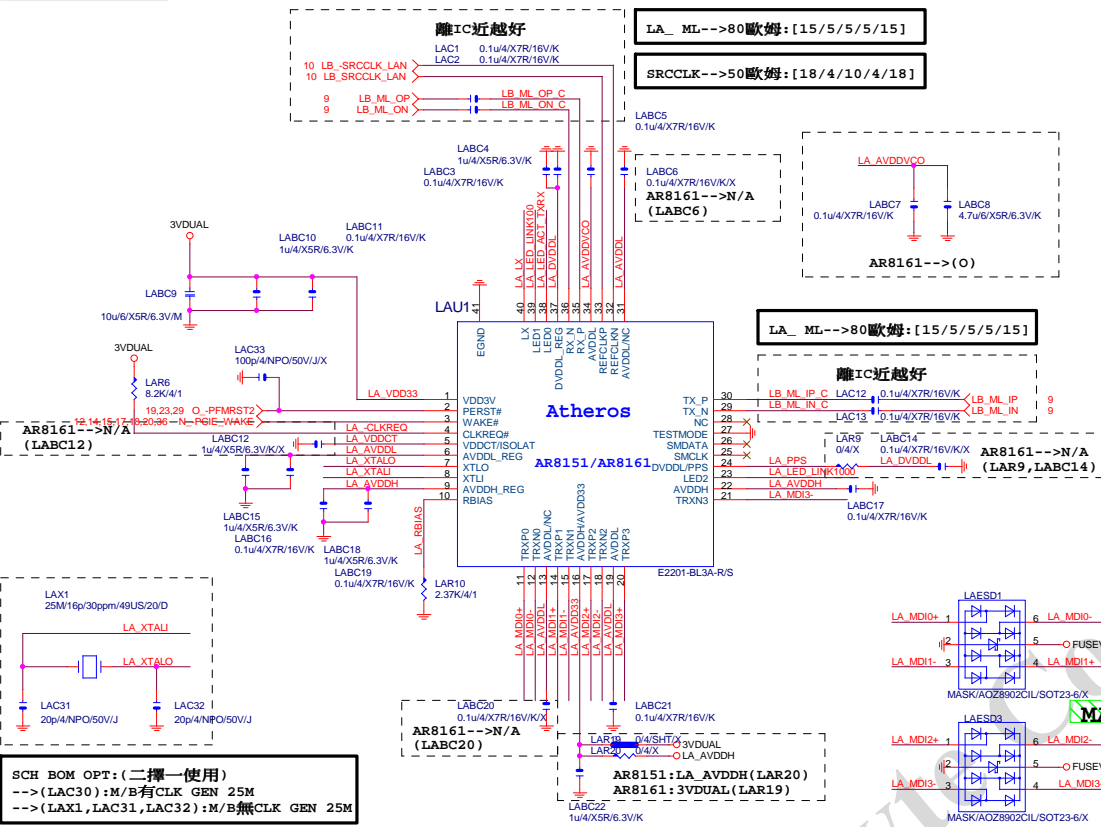
## Gigabyte Technology

Title			
HDMI			
Size	Document Number	GA-Z97X-GAMING 5	
Custpm			Rev 1.0
Date:	Monday, May 19, 2014	Sheet	34 of 38

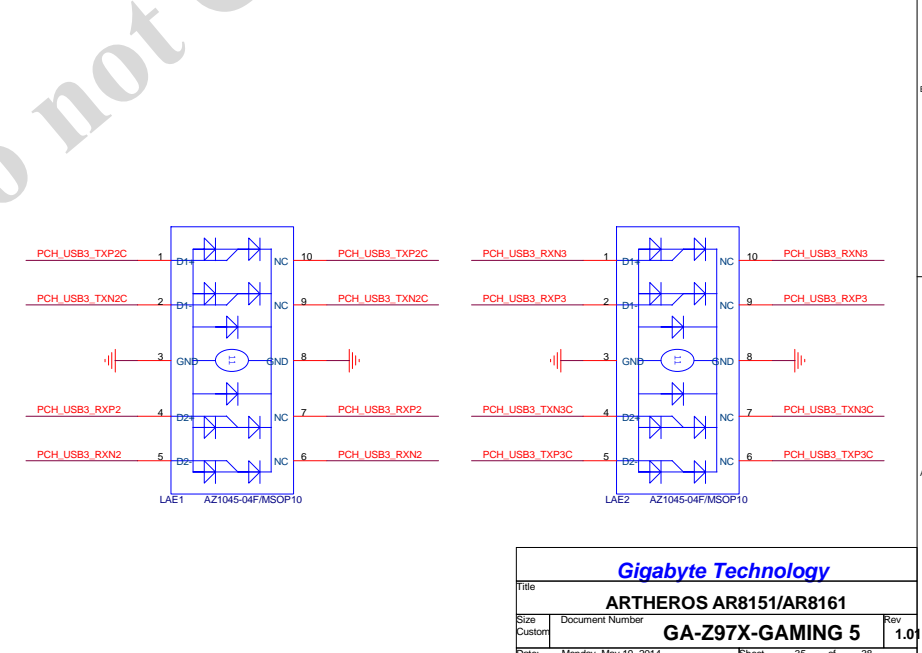
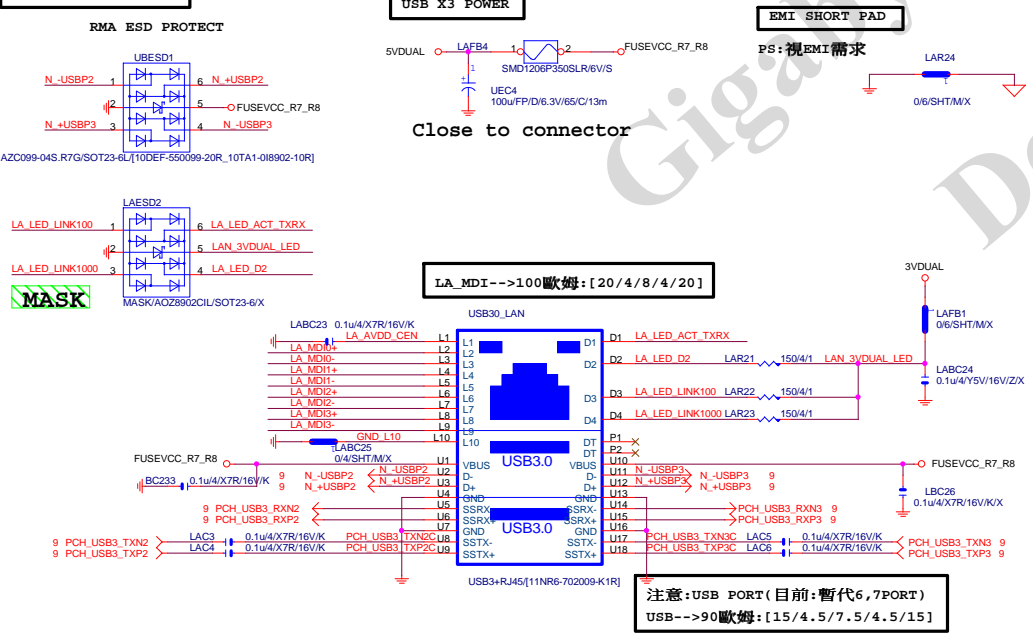
LAN:AR8151/AR8161

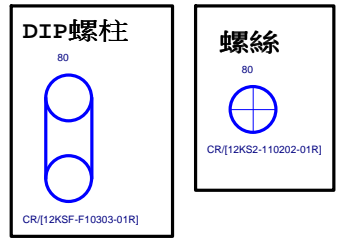
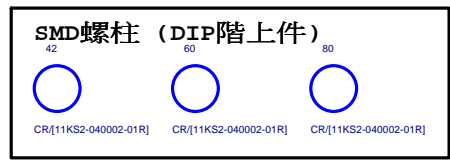
LAN POWER NEW DESI

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



## USB\_LAN CONNECTOR





SATA EXPRESS料號

單層:11NR6-C10118-01R

**雙層:11NR6-C10236-01R**

M2 SLOT M KEY料號

嘉澤:10NR5-130067-31R

鴻海:10NR5-130067-32R

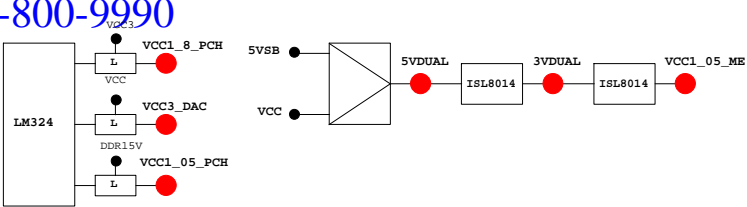
<b>Gigabyte Technology</b>			
Title			
<b>M2_SATA_EXPRESS</b>			
Size	Document Number	<b>GA-Z97X-GAMING 5</b>	Rev
Custom			<b>1.0</b>
Date:	Monday, May 19, 2014	Sheet	36 of 38

PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI0	N/A	
GP1/TACH1	MAIN		GPI01	N/A	
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	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	PCIE1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPI07	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPI08	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPI012	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPI015(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPI016	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPI017	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPI019	P/U 8.2K VCC3
GP20	MAIN		GPI	GPI020	P/U 8.2K VCC3
GP21	MAIN		GPI	GPI021	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPI022	P/U 8.2K VCC3
GP23	MAIN		GPI	GPI023	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPI027	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPI029	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPI039	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPI044	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPI045	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPI046	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPI048	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPI049	P/U 8.2K 3VDUAL
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	Mobile Only	N/A
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	GPI063	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			Mobile Only	N/A
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

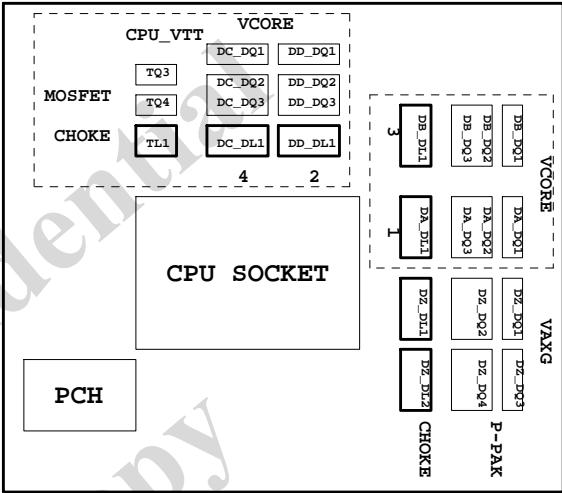
Super I/O ITE8720 GPIO Table

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/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/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	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/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/SMBC_R	SEC_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/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

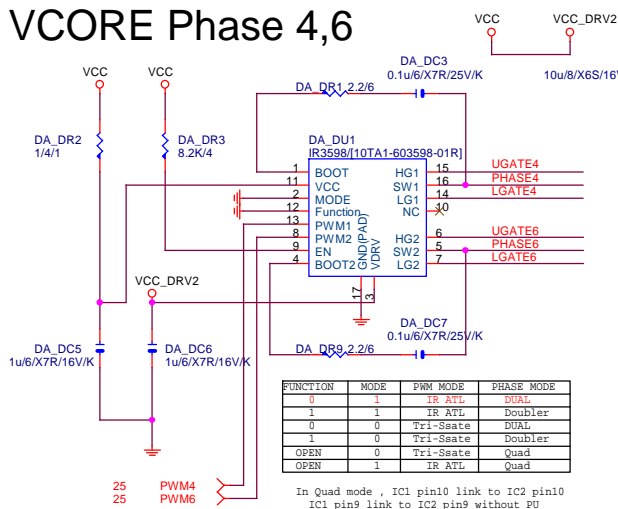
線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

Z77-D3H :  
PCH :  
12SP2-S05511-01R/02R/03R  
MOSFET :  
12SP2-S08924-01R/02R/03R

	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

## VCORE Phase 4,6



## VCORE Phase 3,7

