

Model Name: GA-Z97N-WIFI

Revision 1.0

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,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	ITE 8620 LPC IO
16	COM,KB_USB20
17	HWM,FAN CTRL,OV,-PROCHOT
18	DUAL BIOS
19	FP,FUSB,SPK,SATALED
20	Realtek ALC892-GR
21	REAR AUDIO JACK
22	INTEL LAN I217V(A)
23	ARTHEROS LAN AR8161B(B)
24	DISCRETE POWER
25	ATX
26	RT8120_DDR POWER,M3 POWER
27	VCORE ISL95820_1

SHEET

TITLE

28	VCORE ISL95820_2
29	DVI-I
30	HDMI*2
31	mSATA, Mini-PCIe

Gigabyte Technology

Cover Sheet

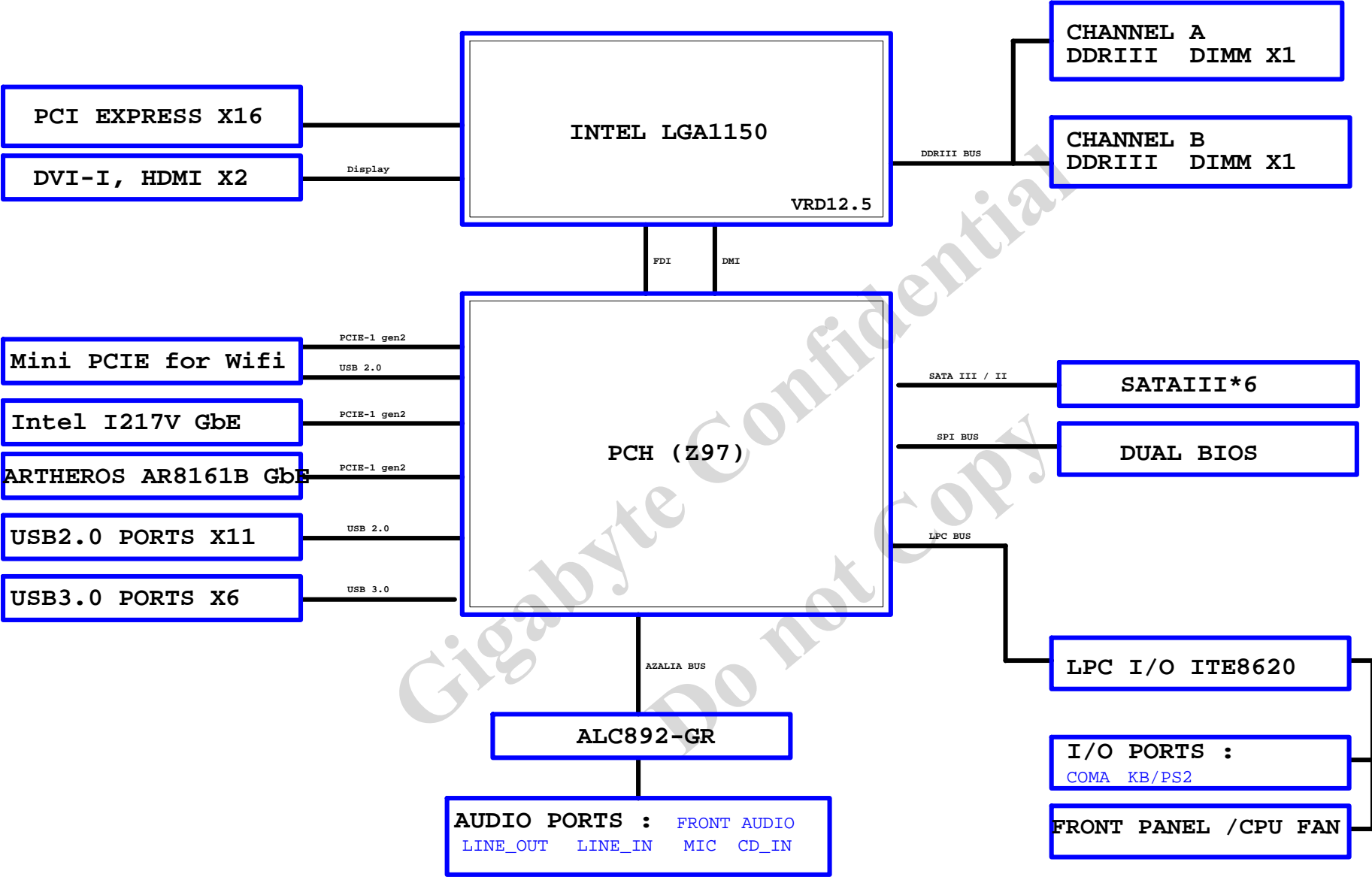
Title	Document Number		Rev
Size	GA-Z97N-WIFI		1.0
Custom			
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Revision 1.0

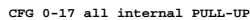
2014/03/21

[illegible][illegible]

BLOCK DIAGRAM



(E)



(D)

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FDI_TXN[0..1] >> FDI_TXN[0..1] [9]

(C)

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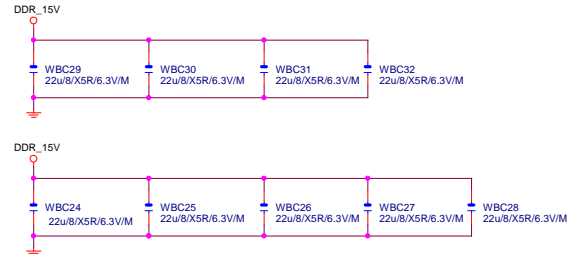
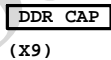
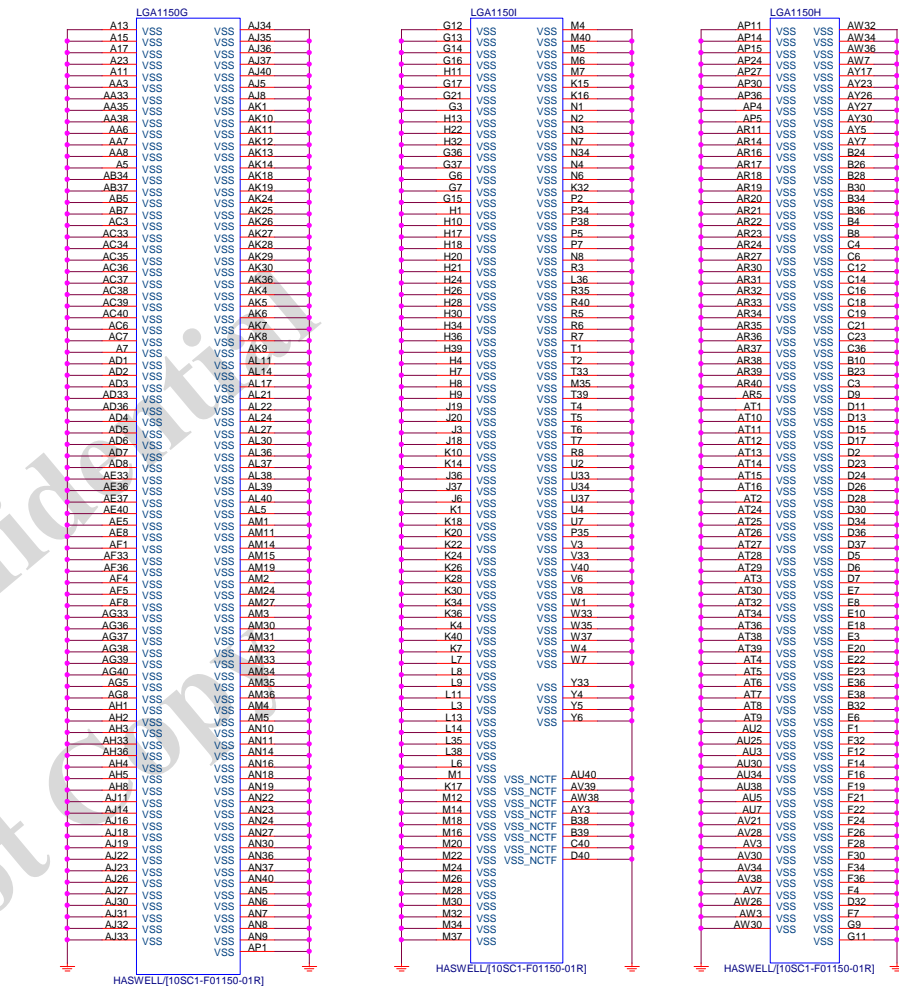
D:HDMI-2

THRMTRIP DISABLE

Title				CPU LGA1150-A			
Size	Document Number	GA-Z97N-WIFI				Rev	1.0
Custom							
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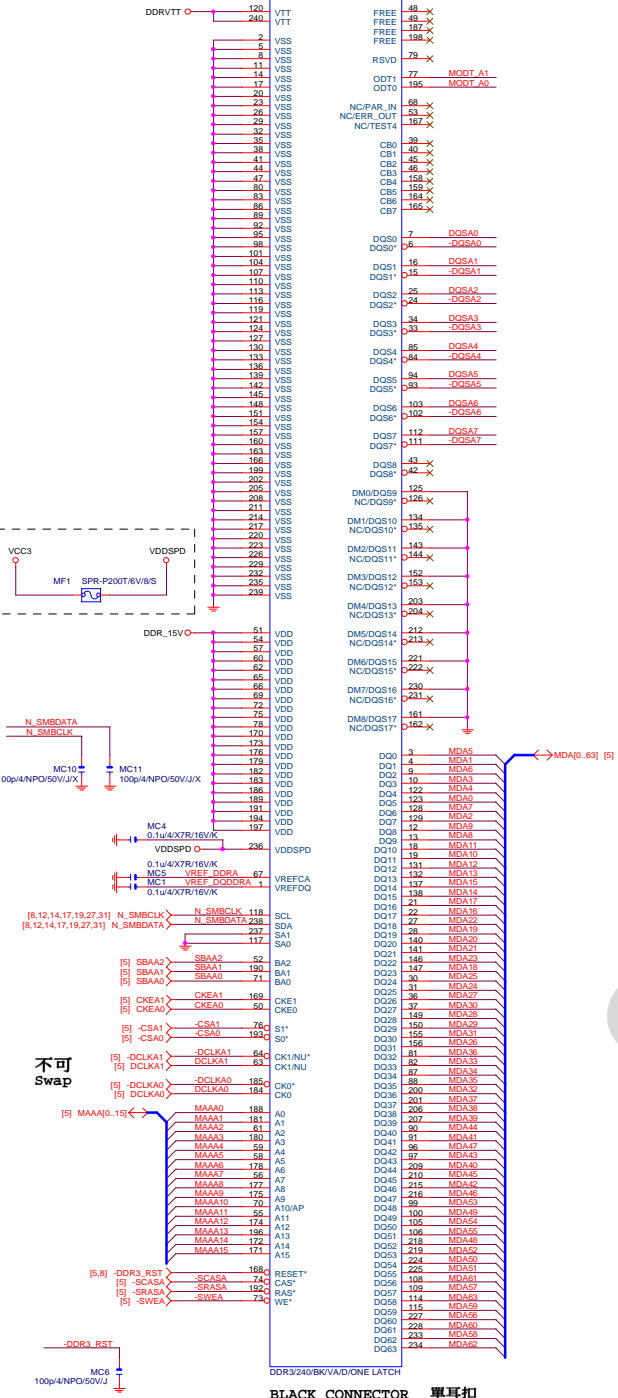
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MAAA5	AW18	DDR0_M5	DDR0_D05
MAAA6	AV17	DDR0_M6	DDR0_D06
MAAA7	AT18	DDR0_M7	DDR0_D07
MAAA8	AU18	DDR0_M8	DDR0_D08
MAAA9	AT19	DDR0_M9	DDR0_D09
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SBAA2	SBAA2	DDR0_BA2	DDR0_D033
CKEA0	CKEA0	DDR0_CKE0	DDR0_D034
CKEA1	CKEA1	DDR0_CKE1	DDR0_D035
CSA0	CSA0	DDR0_CS_N0	DDR0_D036
CSA1	CSA1	DDR0_CS_N1	DDR0_D037
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DCLKA3	DCLKA3	DDR0_CLK_P3	DDR0_D041
RSVD	RSVD	DDR0_RSVD	DDR0_D042
SRASA	SRASA	DDR0_RAS*	DDR0_D043
SWEA	SWEA	DDR0_WE*	DDR0_D044
SCASA	SCASA	DDR0_CAS*	DDR0_D045
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LGA1155 (G,H,I)



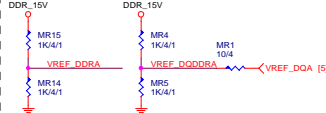
DDR3

(A)

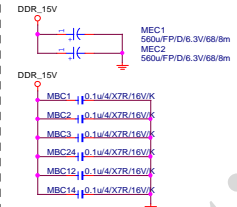


DDR3

DDR3 VREF



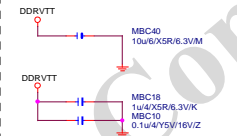
DDR15V Decouple



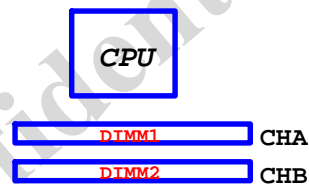
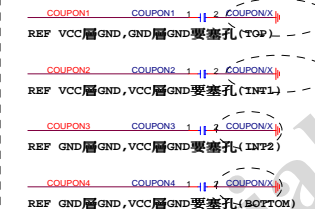
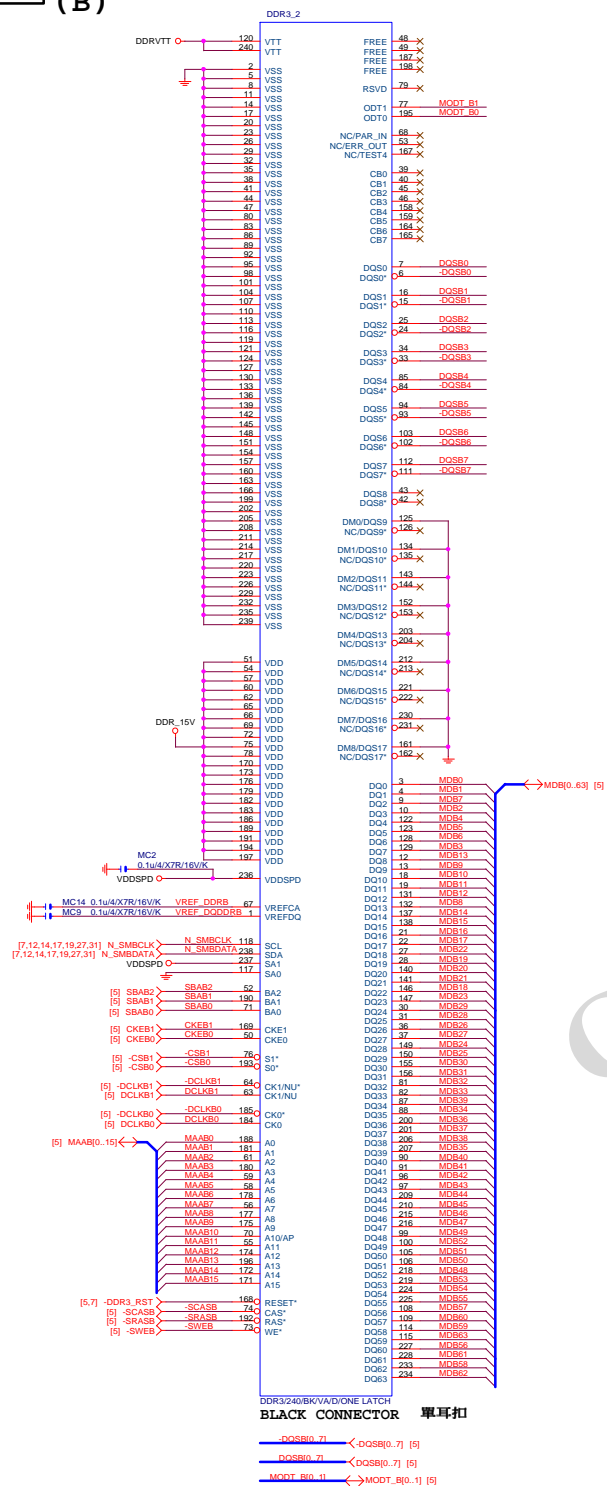
DDR15V



DDRVTT Decouple



(B)



PCH

(B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +/- 17.5%

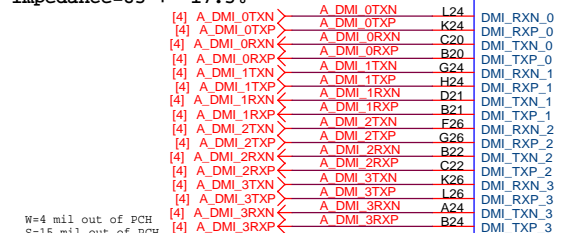
USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)

Impedance=90 +/- 17.5%

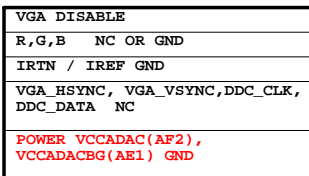
PCHB

B85: Port 6/7 N/A

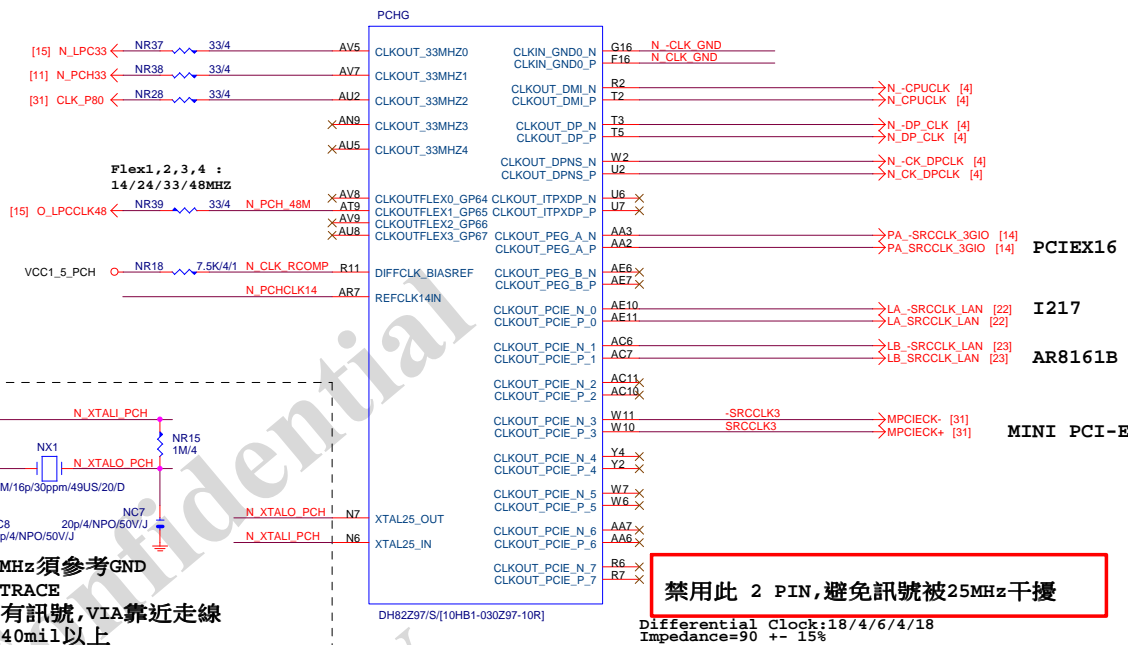
H81: Port 6/7/12/13 N/A



(E)



(G)



NR42 8.2K/4
NR41 8.2K/4

N_PCHCLK14 NR118 8.2K/4

ESD3

VGADDCDATA 1 6 VGADDCCLK

2 5

N_GVSYN 3 4 N_GHSYN

ESD4

VGA_G 1 6 VGA_B

2 5

VGA_R 3 4

ESD3

ESD4

AZC099-04S R7G/SOT23-6L [10DEF-550099-20R_10TA1-018902-10R]

AZC099-04S R7G/SOT23-6L [10DEF-550099-20R_10TA1-018902-10R]

Close to Filter

(C)

PCHC [REDACTED] 888 AL CATALDYN

Z97+I217V N/A





N SATA2TXP	0.01u/4/X7R/25
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```
** B85 Port 4&5 SATA2.0
- - - - -
```



5

Direct connections

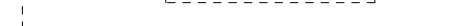




(A)







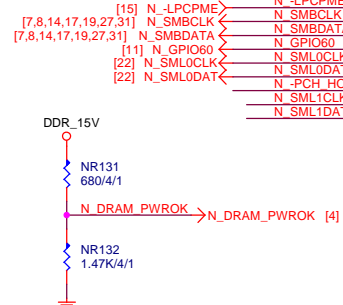
107-111

507:5015

10



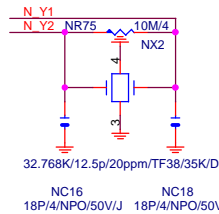
(D)



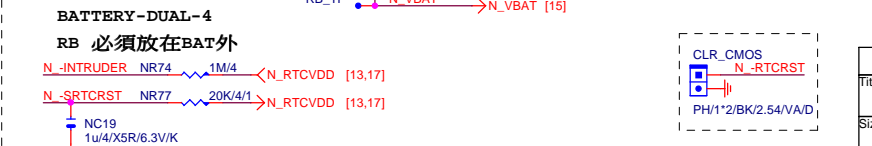
HSW_STRAP13



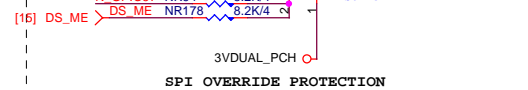
32.768KHZ



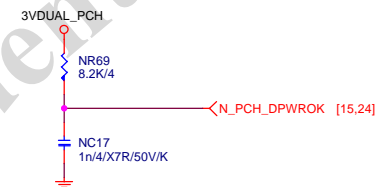
CLR_CMOS



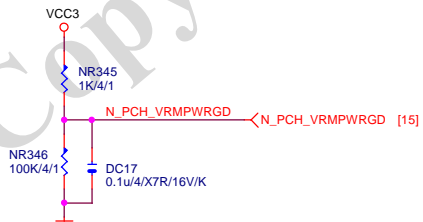
ACZ_SDOUT



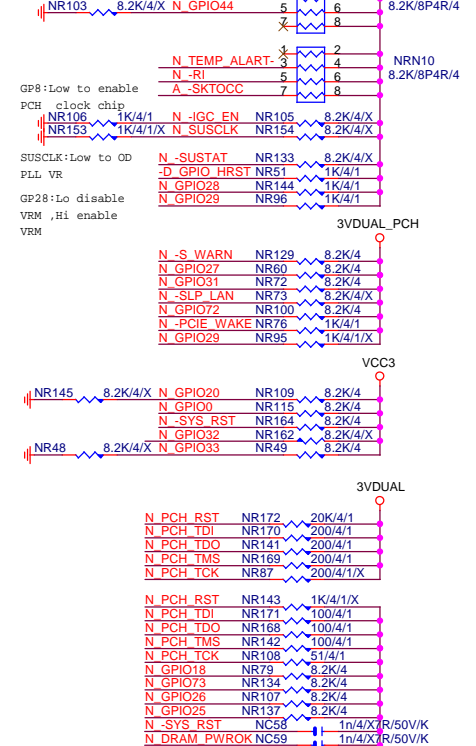
PCH_DPWROK



CPU VRMPWRGD



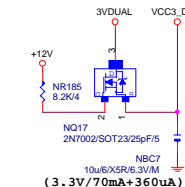
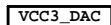
PCH	PU/PD
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Gigabyte Technology

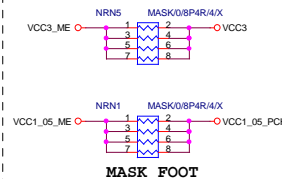
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PCH GPIO , CTRL , AUDIO			
Size	Document Number		Rev
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(H)

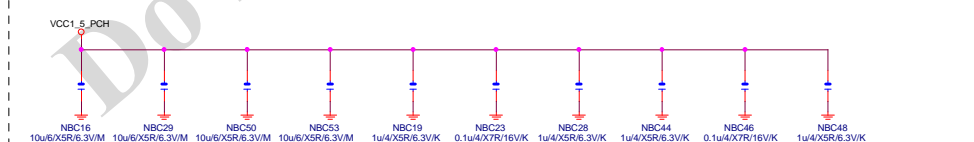
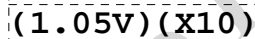
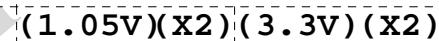
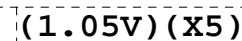


H97 N/A

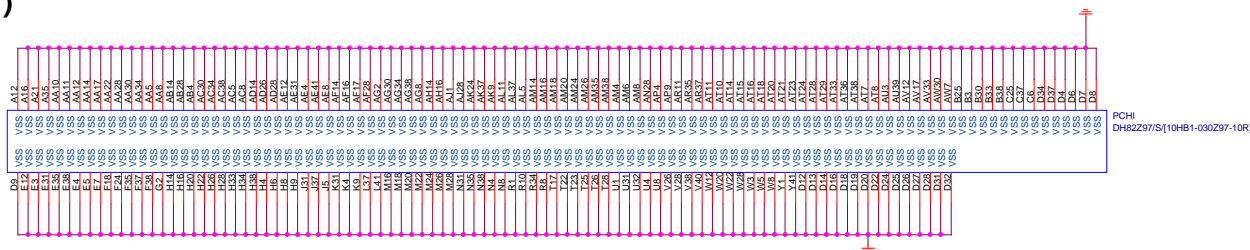
Z97+I217 N/A



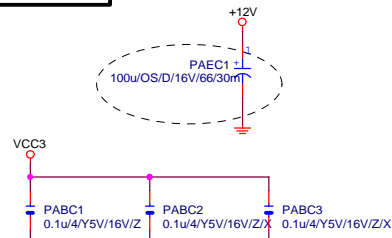
(3.3V) (X6)



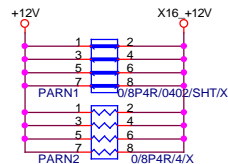
(I)



PCIEX16 CAP



PCIEX16 PROTECT SHT

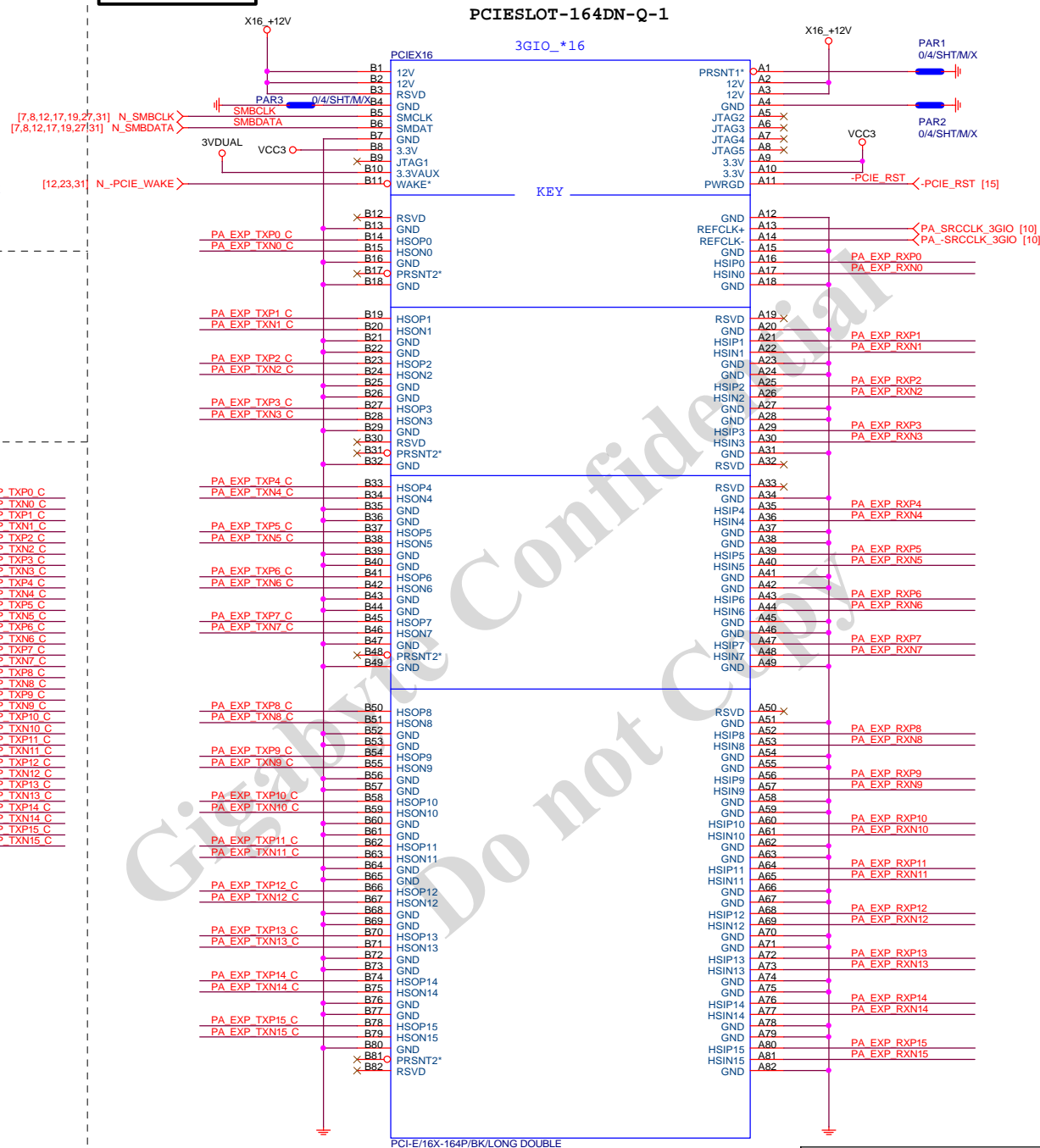


PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22uF/4X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22uF/4X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22uF/4X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22uF/4X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22uF/4X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22uF/4X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22uF/4X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22uF/4X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22uF/4X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22uF/4X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22uF/4X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22uF/4X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22uF/4X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22uF/4X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22uF/4X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22uF/4X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22uF/4X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22uF/4X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22uF/4X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22uF/4X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22uF/4X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22uF/4X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22uF/4X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22uF/4X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22uF/4X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22uF/4X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22uF/4X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22uF/4X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22uF/4X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22uF/4X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22uF/4X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22uF/4X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXP0.[15] >>> PA_EXP_RXP0.[15] [4]
 PA EXP RXN0.[15] >>> PA_EXP_RXN0.[15] [4]
 PA EXP TXP0.[15] >>> PA_EXP_TXP0.[15] [4]
 PA EXP TXN0.[15] >>> PA_EXP_TXN0.[15] [4]

PCIEX16 SLOT



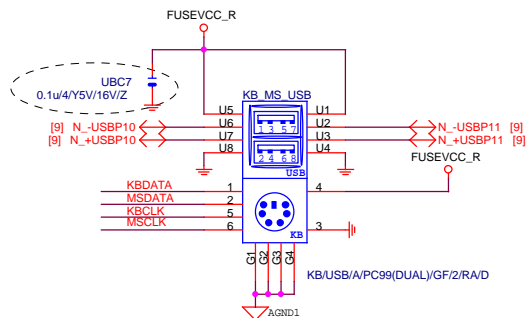
PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

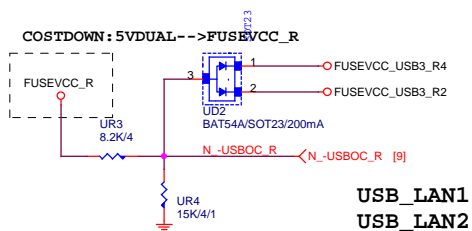
Gigabyte Technology

Title		
PCI EXPRESS * 16		
Size	Document Number	Rev
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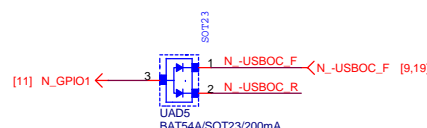
KB/MS



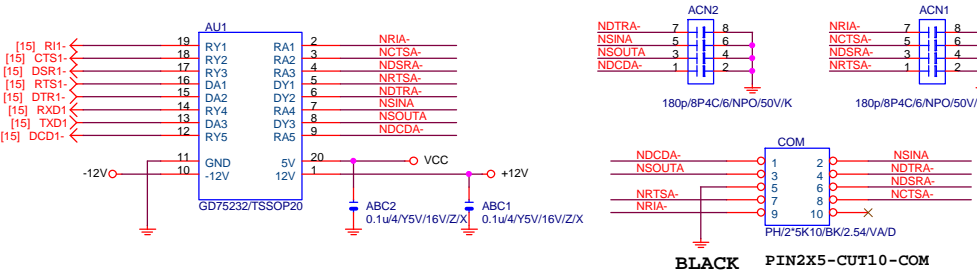
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USB POWER PROTECT



COM

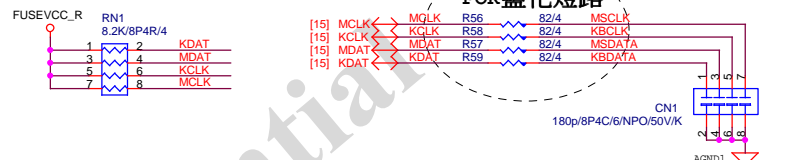


USB2.0 PWR



Close to connector
KB MS USB 2-Port 2.0A

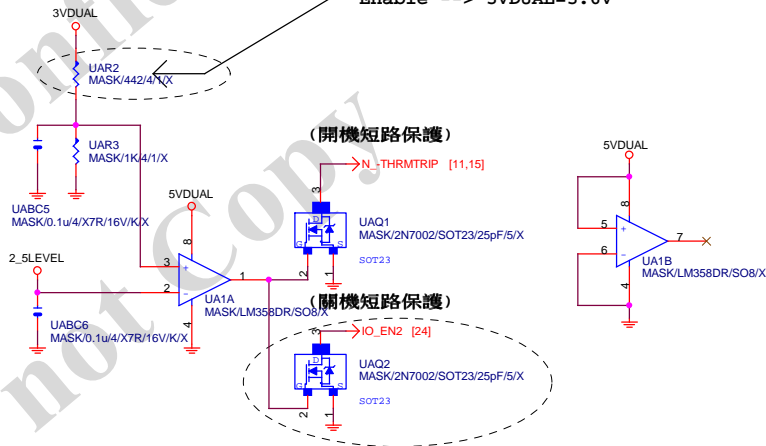
KB MS



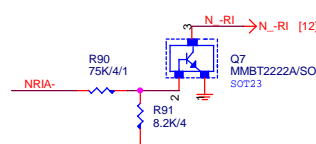
USB2.0 Short Power Protection

N/A

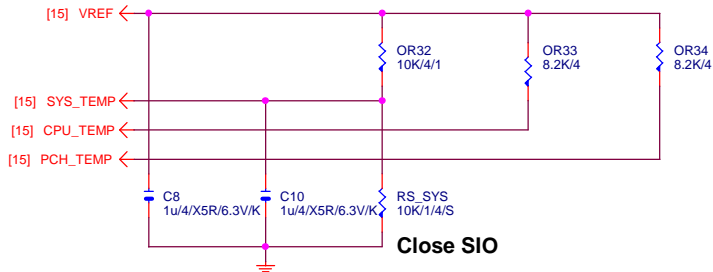
```
USB2.0 Signal & power short protection
  USB2.0 Signal > 4.85V
  Enable --> 3VDDIAT=3.6V
```



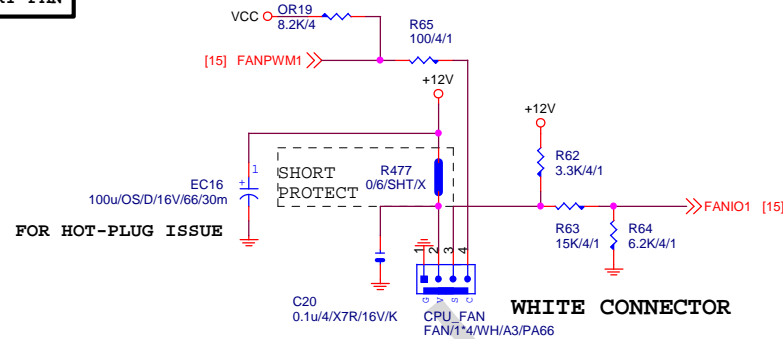
COM RI



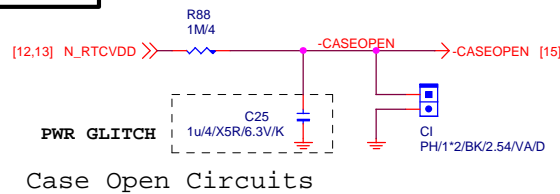
TEMP H/W MONITOR



CPU SMART FAN

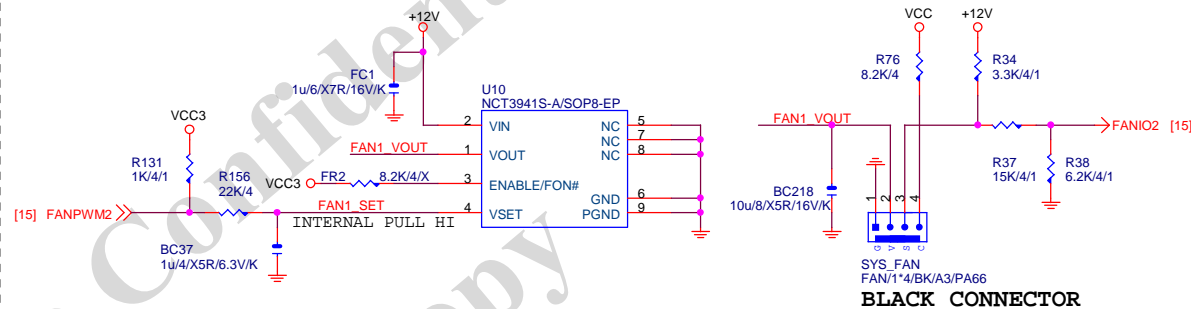


CASE OPEN



SYS SMART FAN

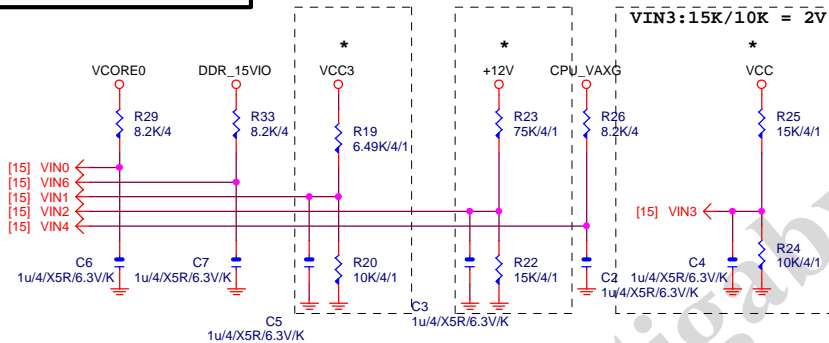
Linear SYS_FAN



VOLTAGE-- H/W MONITOR

VIN2:75K/15K = 2V

VIN3:15K/10K = 2V

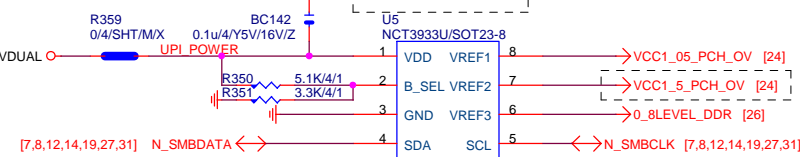


VCORE0	VCC3	+12V	VCC	CPU_VAXG	VCORE	DDR_15V
VIN0	VIN1	VIN2	VIN3	VIN4	VIN5	VIN6

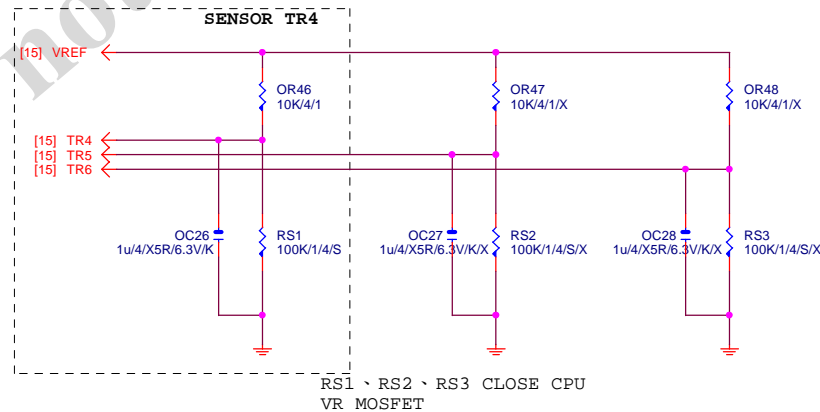
OV NCT3933

接pwm feedback pin

0x26 = 40% xVCC



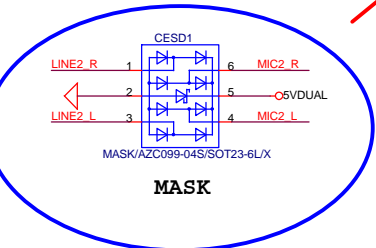
-PROHOT



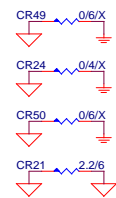
Gigabyte Technology

Title			HWM,FAN CTRL,OV
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CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	O	O	X	X	O
CD2/CD3/CQ3/CQ5	X	X	O	O	X
CR1/CR14/CR17/CR22	62 ohm	62 ohm	62 ohm	75 ohm	1K ohm

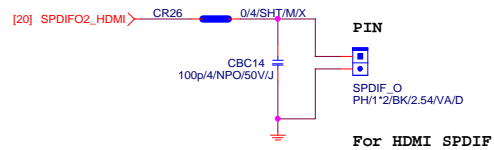


CODEC POWER/EMI PAD

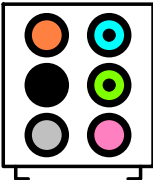


ADD CD2 For ESD PROTECT DIODE

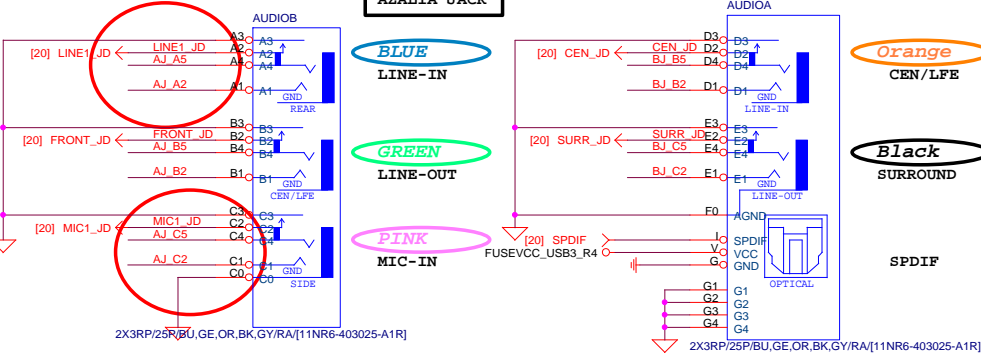
SPDIF_OUT



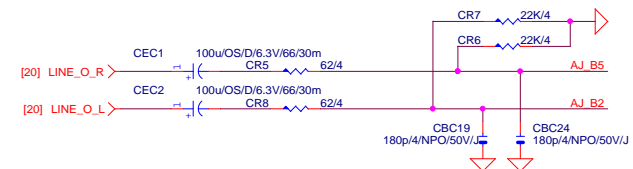
AZALIA JACK



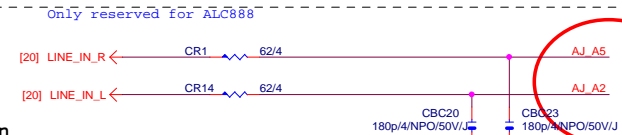
AZALIA JACK

BLUE
LINE-INGREEN
LINE-OUTPINK
MIC-IN

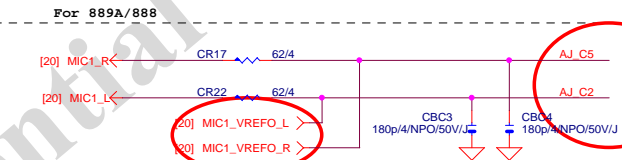
LINE-OUT



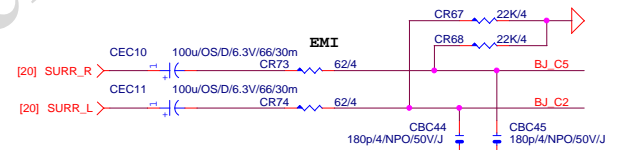
LINE-IN

Verify MIC function
in LINE-in

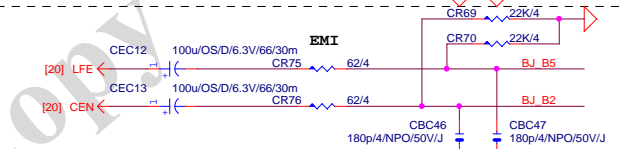
MIC-IN



SURROUND

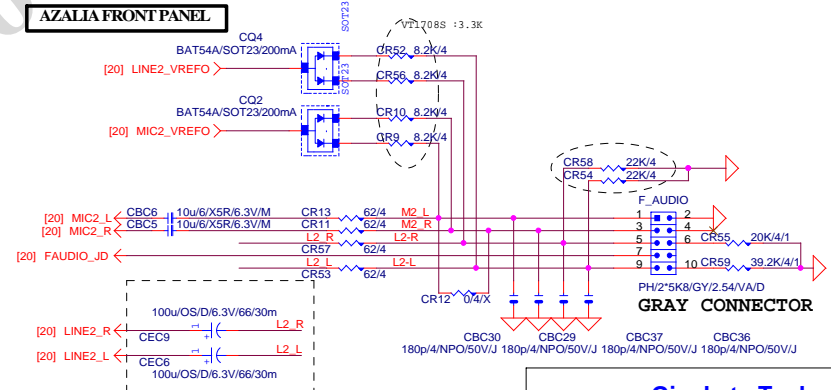


CEN/LFE



SURRBACK

AZALIA FRONT PANEL



Gigabyte Technology

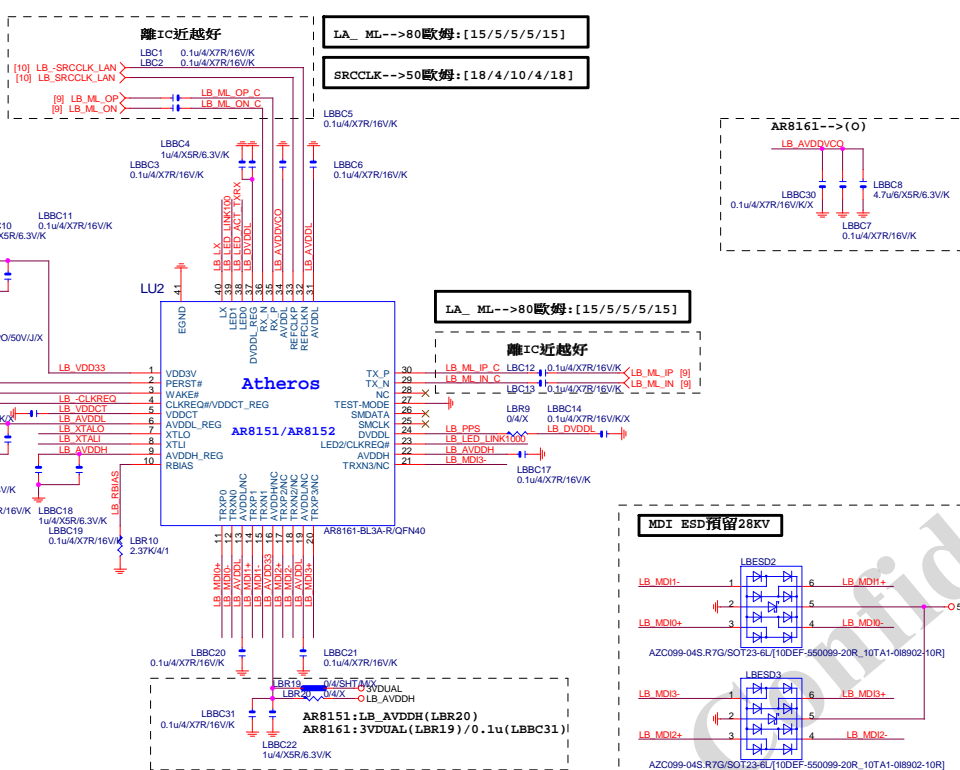
AUDIO JACK

GA-Z97N-WIFI

Rev
1.0

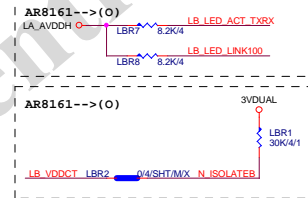
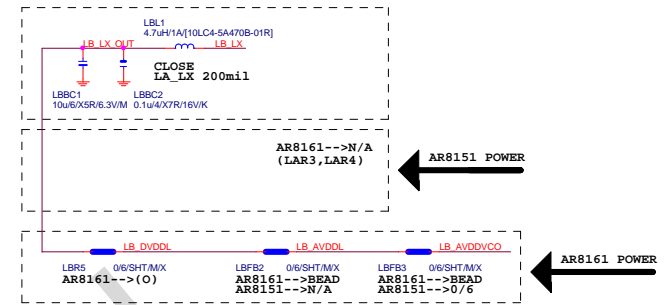
Title	Document Number	Rev
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LAN:AR8161B



LAN POWER

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

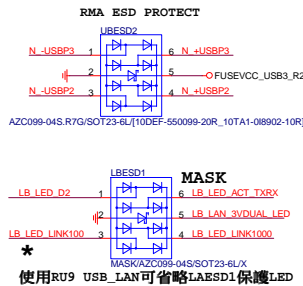


MDI : AR8161-->N/A

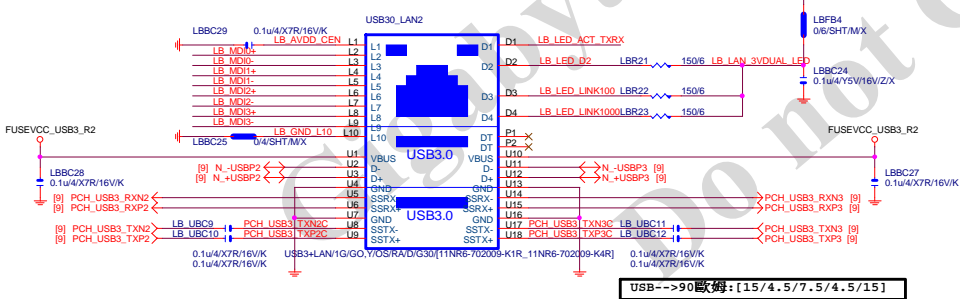
Power domain chart

	AR8151	AR8161
AVDD33	N/A	3.3V
VDD33	3.3V	3.3V
AVDDH	2.7V	2.7V
AVDDL/DVDDL	1.1V	1.1V
VDDCT	1.7V	

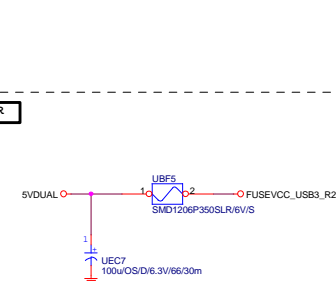
USB_LAN CONNECTOR



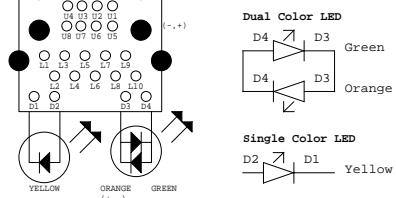
LA_MDI-->100欧姆:[20/4/8/4/20]



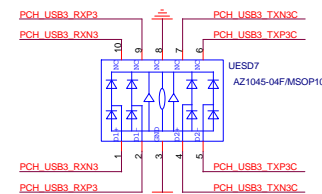
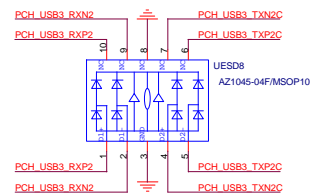
USB X3 POWER



注意:LAN LED PROTECT:(CO-LAYOUT)
1.ESD(6PIN):AOZ8902CIL/SOT23-6(DEFAULT)
2.SURGE(5PIN):AZ2025-04S/SOT23-5L



USB30 ESD PROTECT

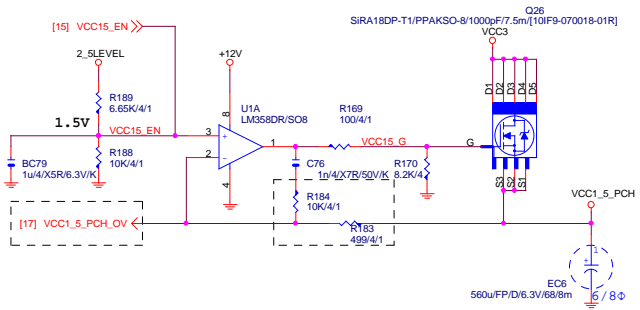


EMI SHORT PAD

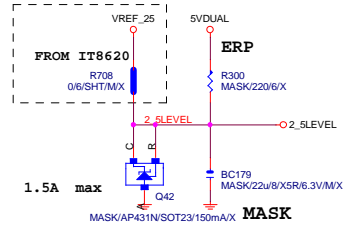
PS:視EMI需求



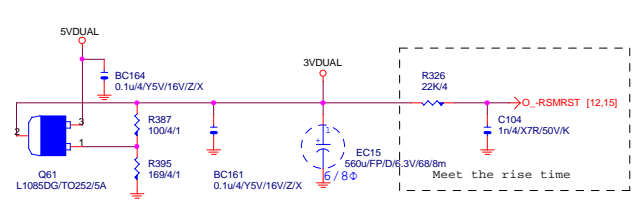
VCC1_5_PCH



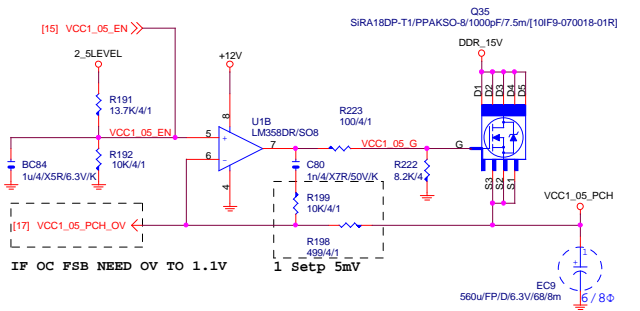
2_SLEVEL



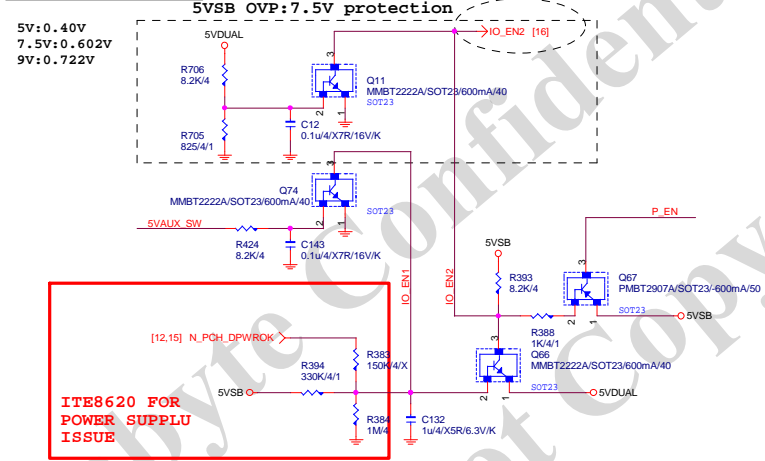
3VDUAL



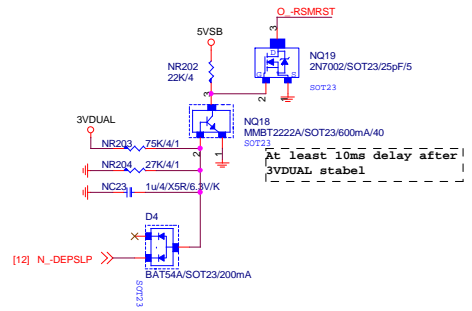
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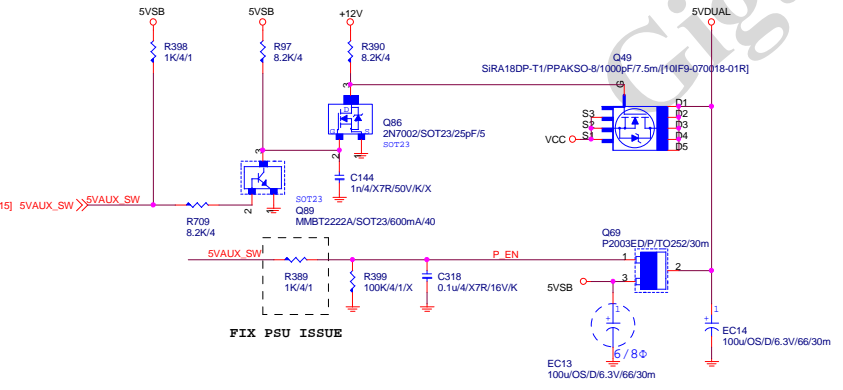
5VDUAL SHORT PROTECT



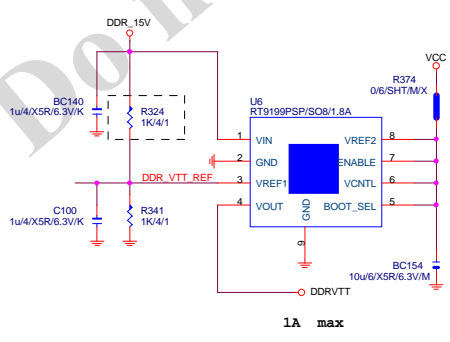
-RSMRST



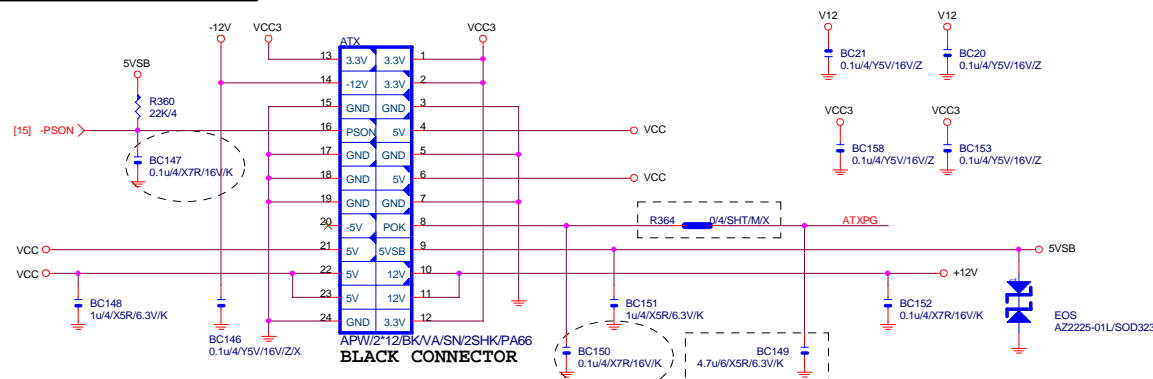
5VDUAL



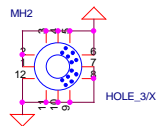
DDRVTT



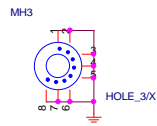
ATXX24 POWER CONNECTOR



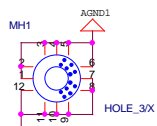
MB LOCATION



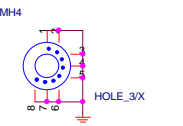
HOLE_4-RH-5MM-1



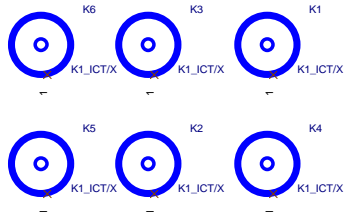
HOLE_4-RH-5MM-5PIN-1



HOLE_4-RH-5MM-1

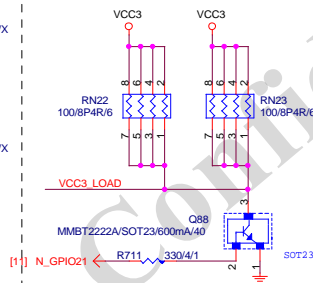


HOLE_4-RH-5MM-5PIN-1

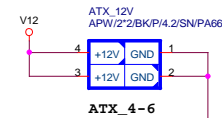


To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



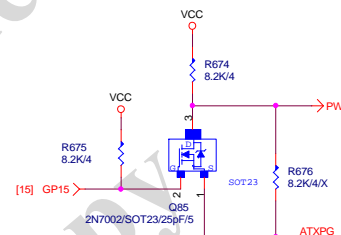
ATXX4 POWER CONNECTOR



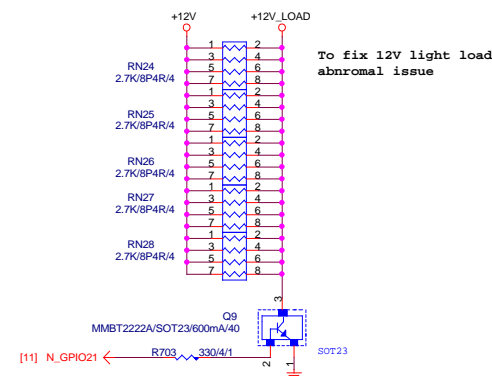
BLACK CONNECTOR

PWOK PATCH

【技術通報R&D技術通報154】



【技術通報R&D技術通報153】



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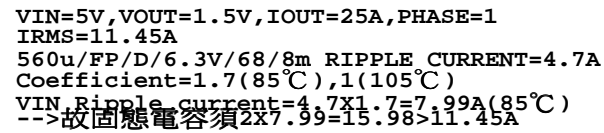
ATX CONNECTOR

GA-Z97N-WIFI

Rev 1.0

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DDR15V



PWR SEQ

[15] DDR_EN_CON >> DDR_EN

From DDR_15V source
10 mils trace to SIO

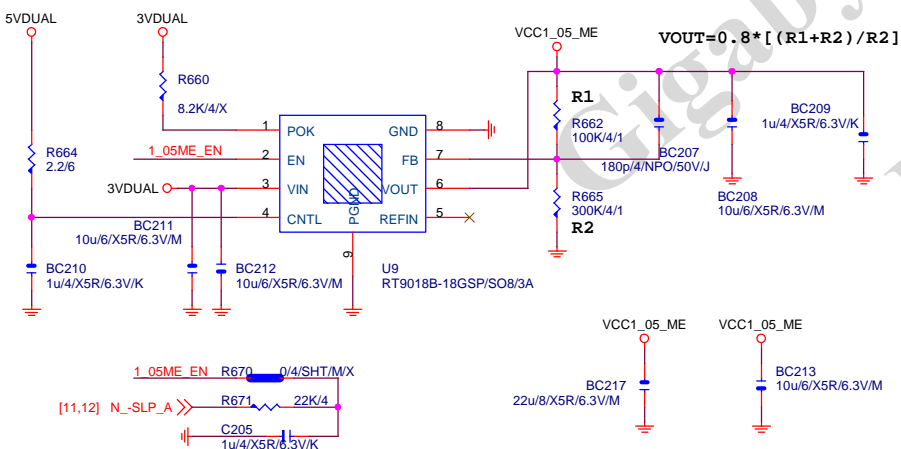

$$0.8 \cdot [1 + 2K/2.26K] = 1.509V$$

VCC1_05_ME

Z97 N/A

Z97+I217V STUFF

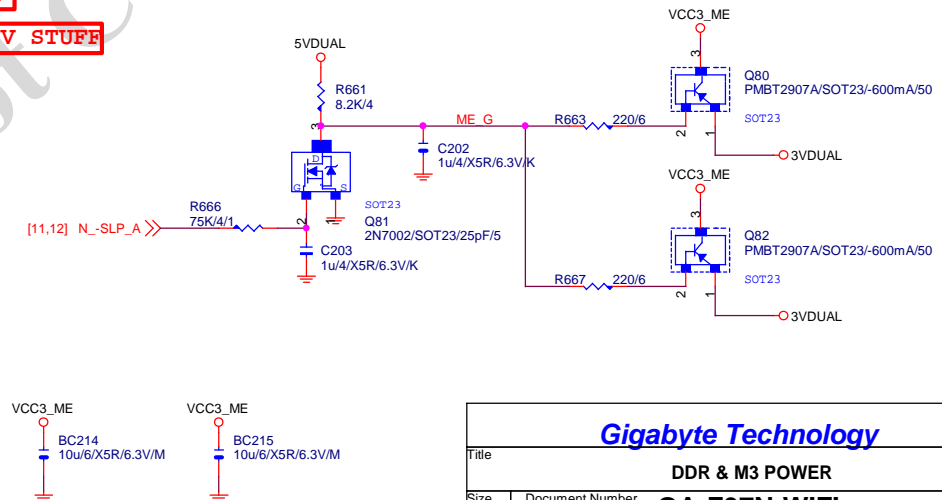
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME

Z97 N/A

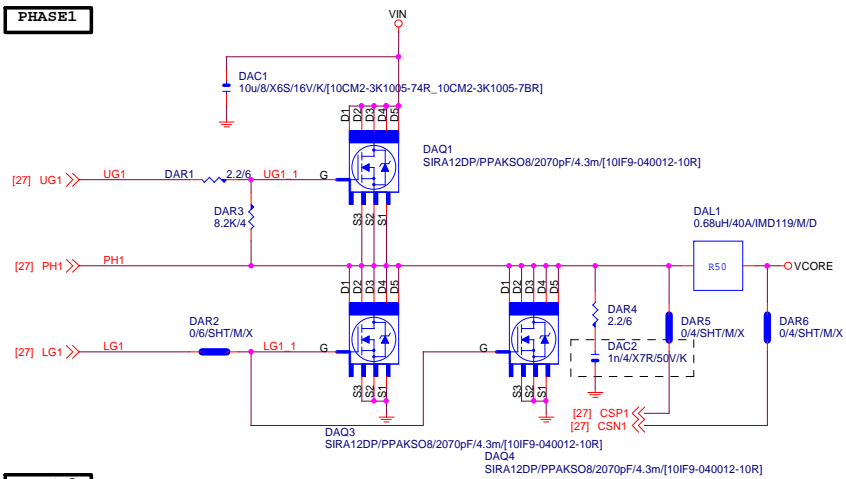
Z97+I217V STUFF



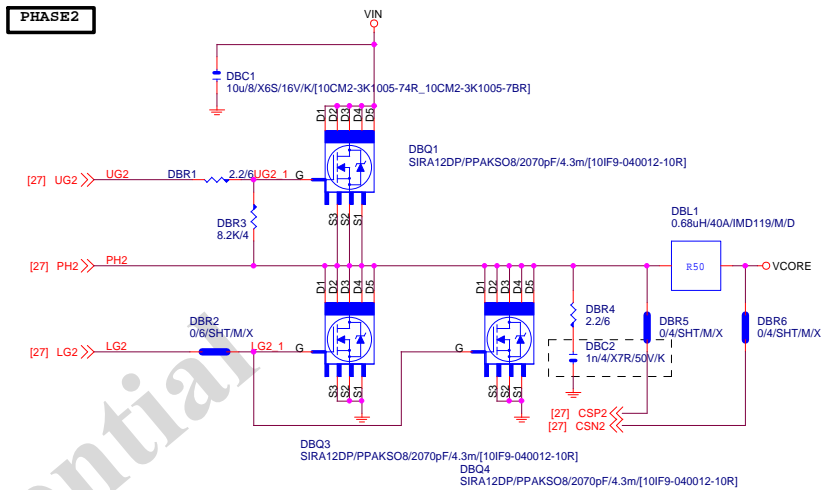
Gigabyte Technology

Title			
DDR & M3 POWER			
Size B	Document Number	GA-Z97N-WIFI	Rev 1.0
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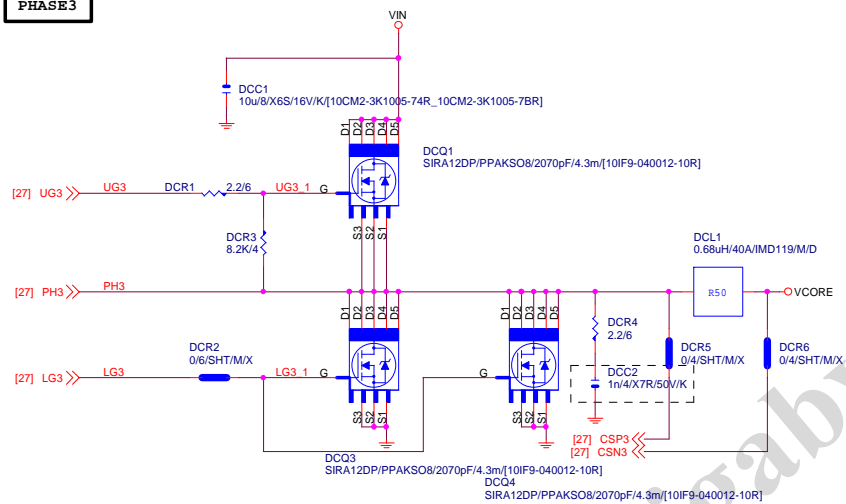
PHASE1



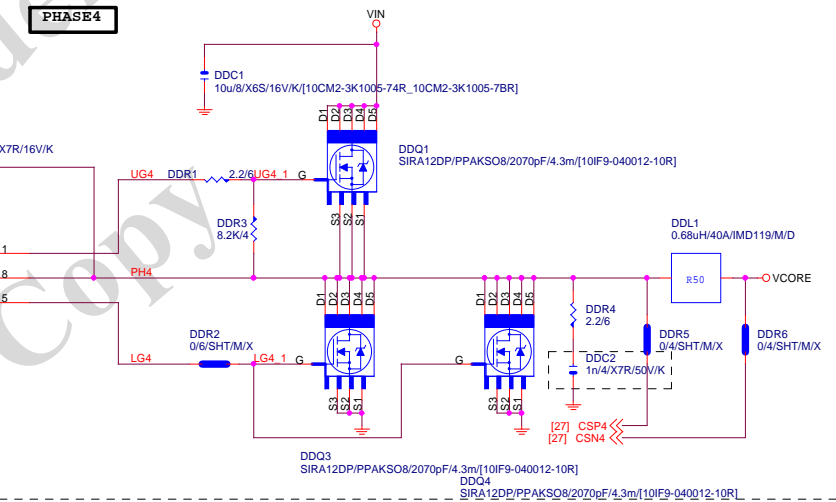
PHASE2



PHASE3

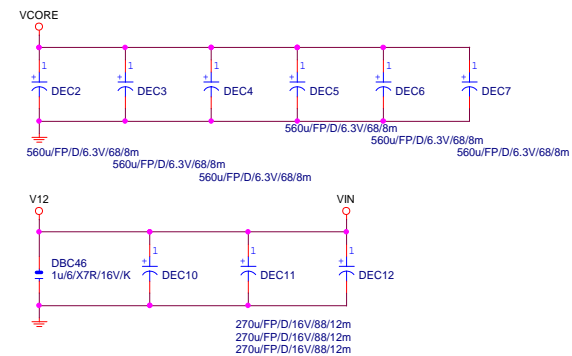


PHASE4



MOS HEATSINK

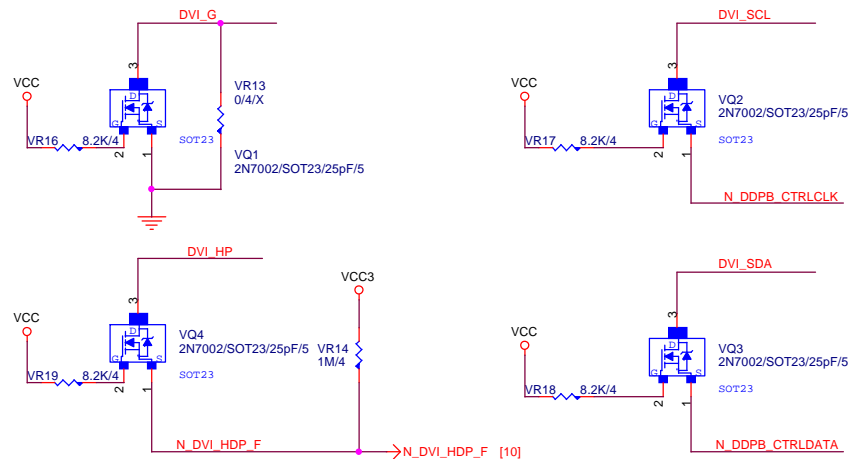
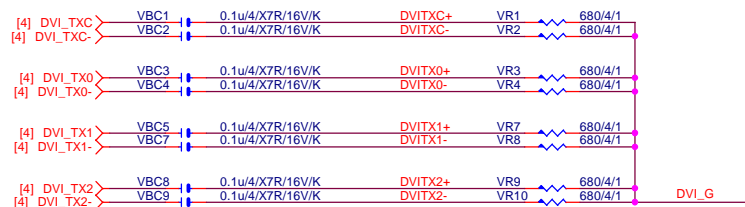
N/A



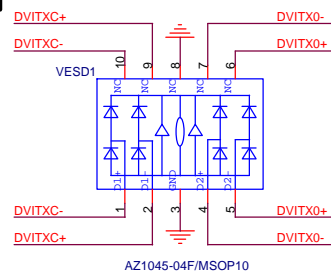
Gigabyte Technology

Title			
CPU CORE VR-2			
Size			
Custom	Document Number	GA-Z97N-WIFI	
Date:	Wednesday, April 02, 2014	Sheet	28 of 31

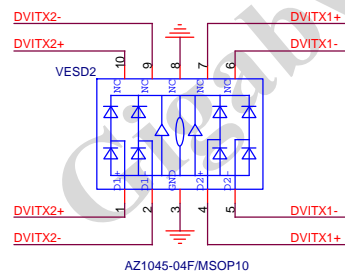
DVI NON LEVEL SHIFT



DVI ESD

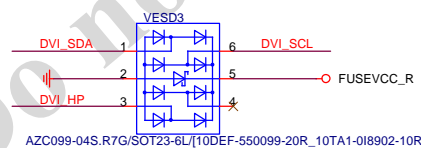
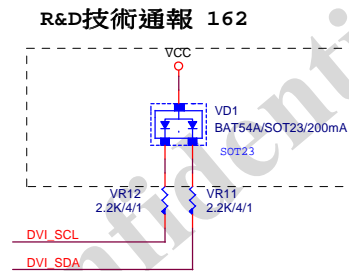


Close to connector

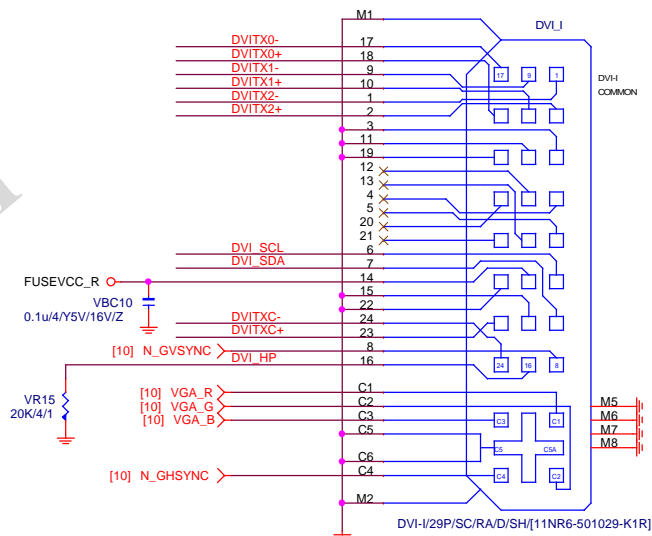


Close to connector

DVI-I PH/PD



DVI-I CONNECTOR



```

| INSERT TRANSFER CONNECTOR
| TO DISABLE DDC_EN FOR VGA
| CSM FAIL.

```

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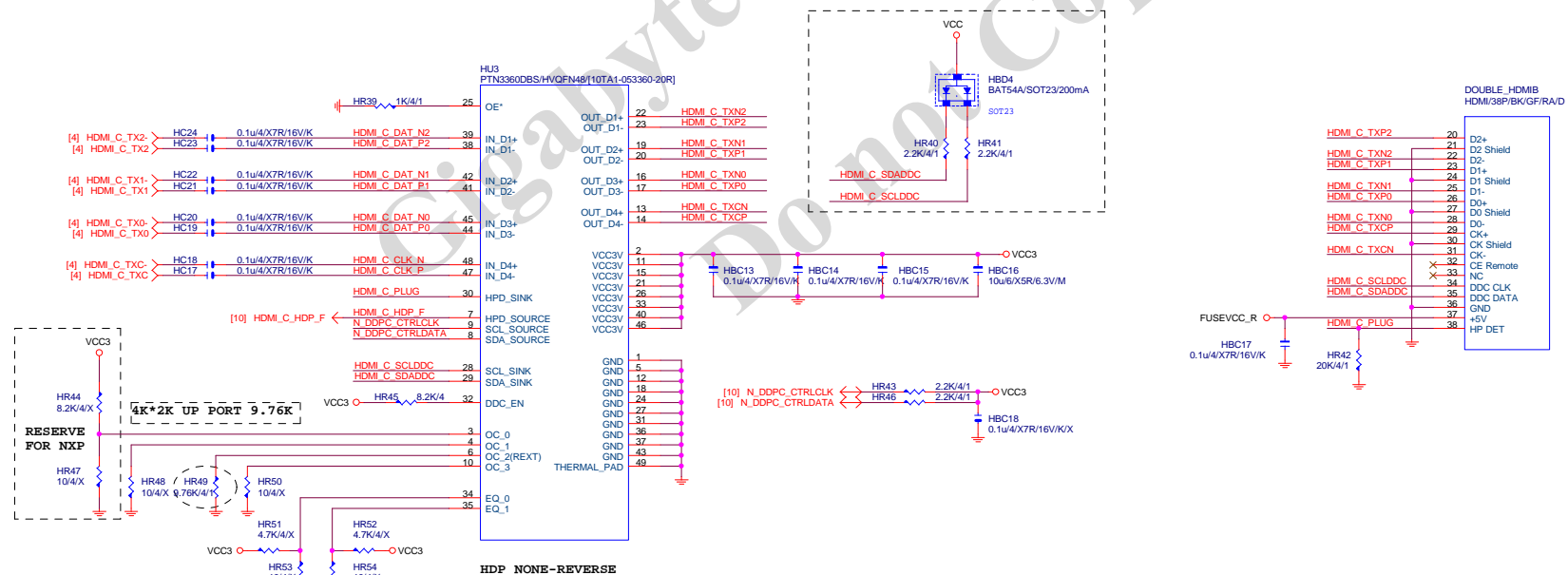
DVI-I

GA-Z97N-WIFI

Rev
1.0

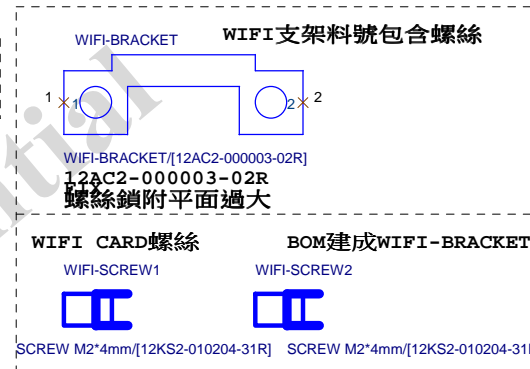
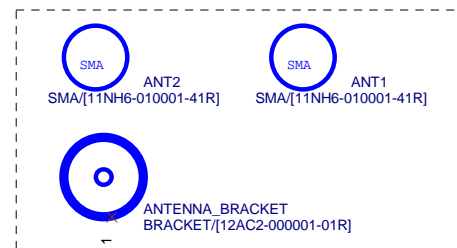
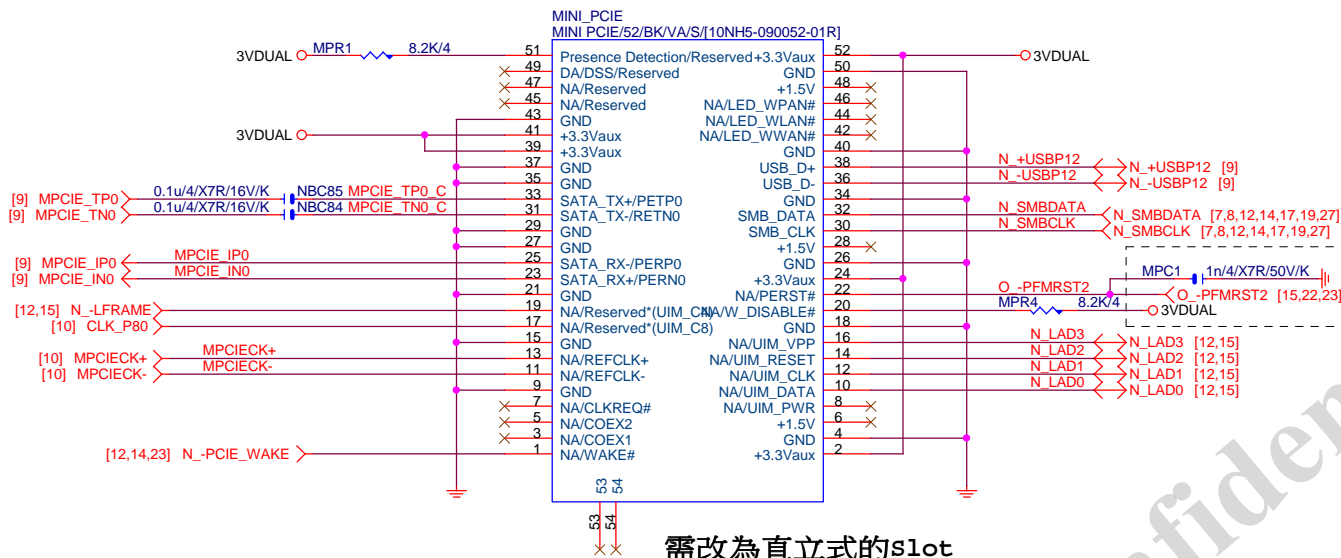
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HDMI LEVEL SHIFT



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Mini PCIE



WIFI_MODULE
WI-FI WITH BT MINI CARD INTEL/[20CB1-027260-00R]

Intel 7260 - 2x2 11ac combo

mSATA Slot

N/A

Gigabyte Technology

Title		
MINI PCIE		
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