

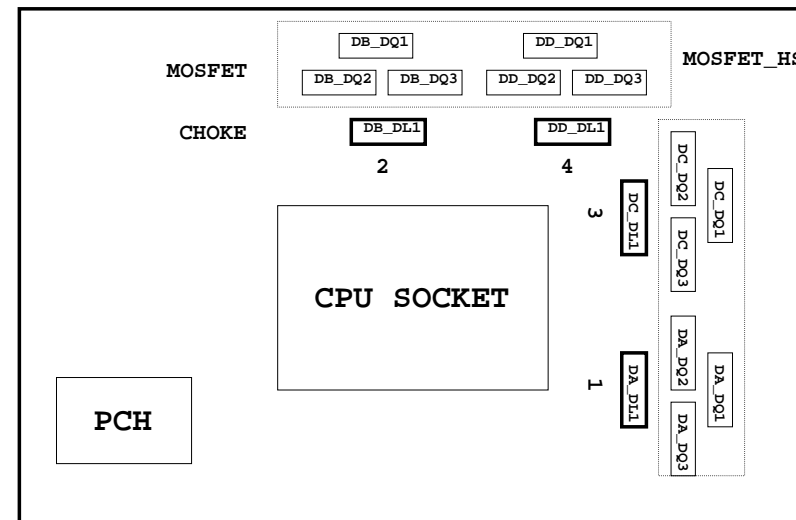
SHEET	TITLE
-------	-------

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	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2&3
18	I/O ITE8620 CX
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM
21	ALC1150 CODEC
22	REAR AUDIO JACK
23	VCORE PWM_ISL95820-1
24	VCORE PWM_ISL95820-2
25	ME POWER & DDR15V
26	M.2 & SATA EXPRESS
27	DISCRETE POWER

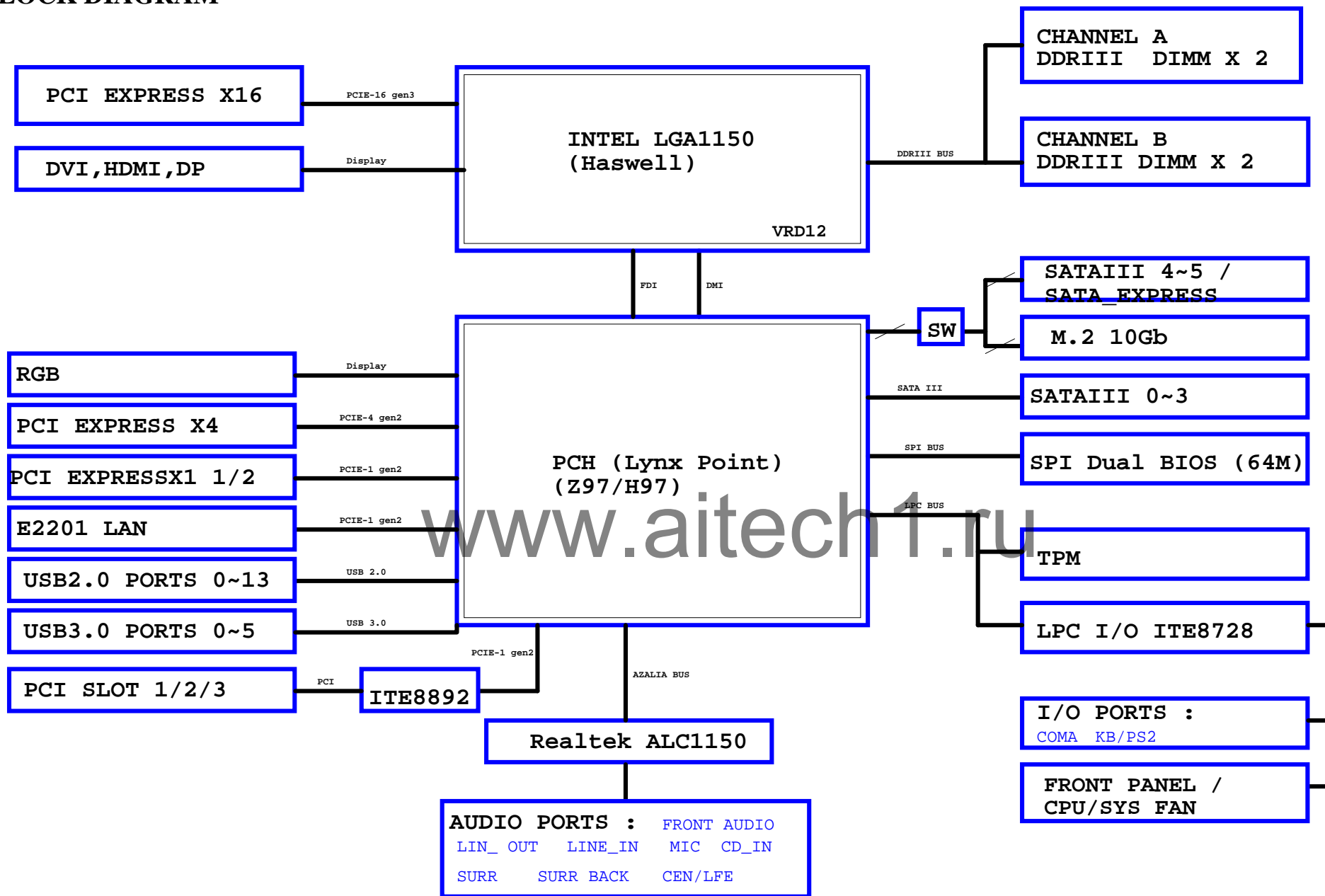
NCP3933 OVER VOLTAGE

SHEET	TITLE
-------	-------

28	F_PANEL , F_USB2.0/3.0
29	ATX POWER
30	HWM , KB/MS , FAN CTRL
31	Bigfoot E2201 LAN
32	DVI
33	HDMI , DP
34	TABLE LIST
35	
36	
37	
38	
39	
40	



BLOCK DIAGRAM



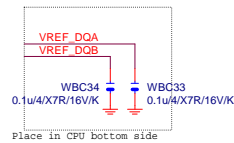
LGA1150 (A)

LGA1150A	
MAAA0 AU13	DDR0_MA0
MAAA1 AV16	DDR0_MA1
MAAA2 AU16	DDR0_MA2
MAAA3 AW17	DDR0_MA3
MAAA4 AU17	DDR0_MA4
MAAA5 AW18	DDR0_MA5
MAAA6 AV17	DDR0_MA6
MAAA7 AT18	DDR0_MA7
MAAA8 AU18	DDR0_MA8
MAAA9 AT19	DDR0_MA9
MAAA10 AW11	DDR0_MA10
MAAA11 AV19	DDR0_MA11
MAAA12 AU19	DDR0_MA12
MAAA13 AY10	DDR0_MA13
MAAA14 AT20	DDR0_MA14
MAAA15 AU21	DDR0_MA15
MODT_A0 AW10	DDR0_ODT0
MODT_A1 AY8	DDR0_ODT1
MODT_A2 AW9	DDR0_ODT2
MODT_A3 AU8	DDR0_ODT3
AW33	DDR0_ECC0
AV33	DDR0_ECC1
AU31	DDR0_ECC2
AV31	DDR0_ECC3
AT33	DDR0_ECC4
AU33	DDR0_ECC5
AT31	DDR0_ECC6
AW31	DDR0_ECC7
SBA00 SBA01	DDR0_BA0
SBA01 SBA02	DDR0_BA1
SBA02 SBA03	DDR0_BA2
CKEA0 CKEA1	DDR0_CKE0
CKEA1 CKEA2	DDR0_CKE1
CKEA2 CKEA3	DDR0_CKE2
CSA0 CSA1	DDR0_CS_N0
CSA1 CSA2	DDR0_CS_N1
CSA2 CSA3	DDR0_CS_N2
CSA3 DCLKA0	DDR0_CLK_P0
DCLKA0 DCLKA1	DDR0_CLK_P1
DCLKA1 DCLKA2	DDR0_CLK_P2
DCLKA2 DCLKA3	DDR0_CLK_P3
DCLKA3 RSVD	DDR0_RSVD
AW12	DDR0_RAS*
SRASA SWEA	DDR0_WE*
SCASA	DDR0_CAS*
WR61 AK22	DDR0_RESET
WC4	
0.1u4/X7R/16V/KX	

HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

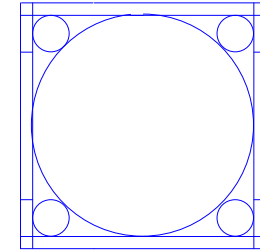
LGA1150 (B)

LGA1150B	
MAAB0 AL19	DDR1_MA0
MAAB1 AK23	DDR1_MA1
MAAB2 AM22	DDR1_MA2
MAAB3 AL23	DDR1_MA3
MAAB4 AP23	DDR1_MA4
MAAB5 AY24	DDR1_MA5
MAAB6 AY24	DDR1_MA6
MAAB7 AV25	DDR1_MA7
MAAB8 AU26	DDR1_MA8
MAAB9 AW25	DDR1_MA9
MAAB10 AP18	DDR1_MA10
MAAB11 AY25	DDR1_MA11
MAAB12 AV26	DDR1_MA12
MAAB13 AR15	DDR1_MA13
MAAB14 AV27	DDR1_MA14
MAAB15 AY28	DDR1_MA15
MODT_B0 AM17	DDR1_ODT0
MODT_B1 AL18	DDR1_ODT1
MODT_B2 AM16	DDR1_ODT2
MODT_B3 AK15	DDR1_ODT3
AM26	DDR1_ECC0
AP25	DDR1_ECC1
AP26	DDR1_ECC2
AL26	DDR1_ECC3
AL25	DDR1_ECC4
AR26	DDR1_ECC5
AR25	DDR1_ECC6
SBA00 SBA01	DDR1_BA0
SBA01 SBA02	DDR1_BA1
SBA02 SBA03	DDR1_BA2
CKEB0 CKEB1	DDR1_CKE0
CKEB1 CKEB2	DDR1_CKE1
CKEB2 CKEB3	DDR1_CKE2
CSB0 CSB1	DDR1_CS_N0
CSB1 CSB2	DDR1_CS_N1
CSB2 CSB3	DDR1_CS_N2
CSB3 DCLKB0	DDR1_CLK_P0
DCLKB0 DCLKB1	DDR1_CLK_P1
DCLKB1 DCLKB2	DDR1_CLK_P2
DCLKB2 DCLKB3	DDR1_CLK_P3
DCLKB3 RSVD	DDR1_RSVD
SCASB	DDR1_CAS*
SRASB SWEB	DDR1_RAS*
SWEB	DDR1_WE*
VREF_DOA	DDR_VREF_DQ0
VREF_DQB	DDR_VREF_DQ1



HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (CR)

LGA1150
ILM_BP_CR/115X/NORMAL NI

DDR BUS

(7) MODT_A[0..3]	MODT_A[0..3]
(8) MODT_B[0..3]	MODT_B[0..3]
(7) MDA[0..63]	MDA[0..63]
(8) MDB[0..63]	MDB[0..63]
(7) DQSA[0..7]	DQSA[0..7]
(7) DQSA[0..7]	-DQSA[0..7]
(7) MAAA[0..15]	MAAA[0..15]
(8) MAAB[0..15]	MAAB[0..15]
(8) DQSB[0..7]	DQSB[0..7]
(8) -DQSB[0..7]	-DQSB[0..7]

Gigabyte Technology

Title			
CPU LGA1150-B			
Size	Document Number		Rev
Custom	GA-H97-Gaming 3		1.0
Date:	Thursday, April 24, 2014	Sheet	5 of 34

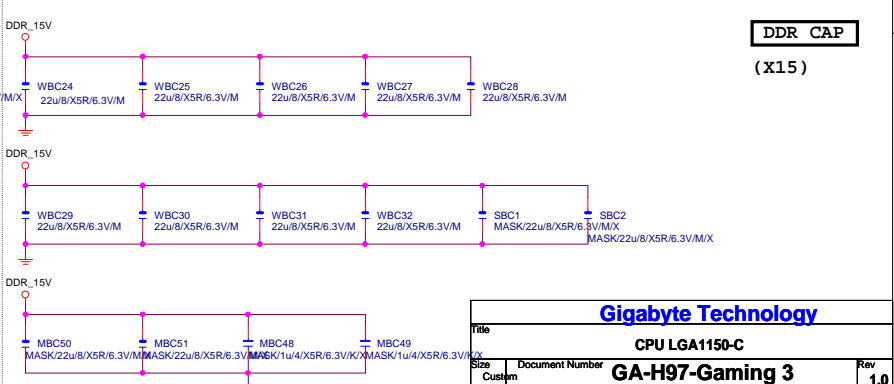
(F, J)



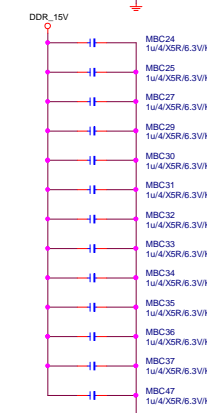
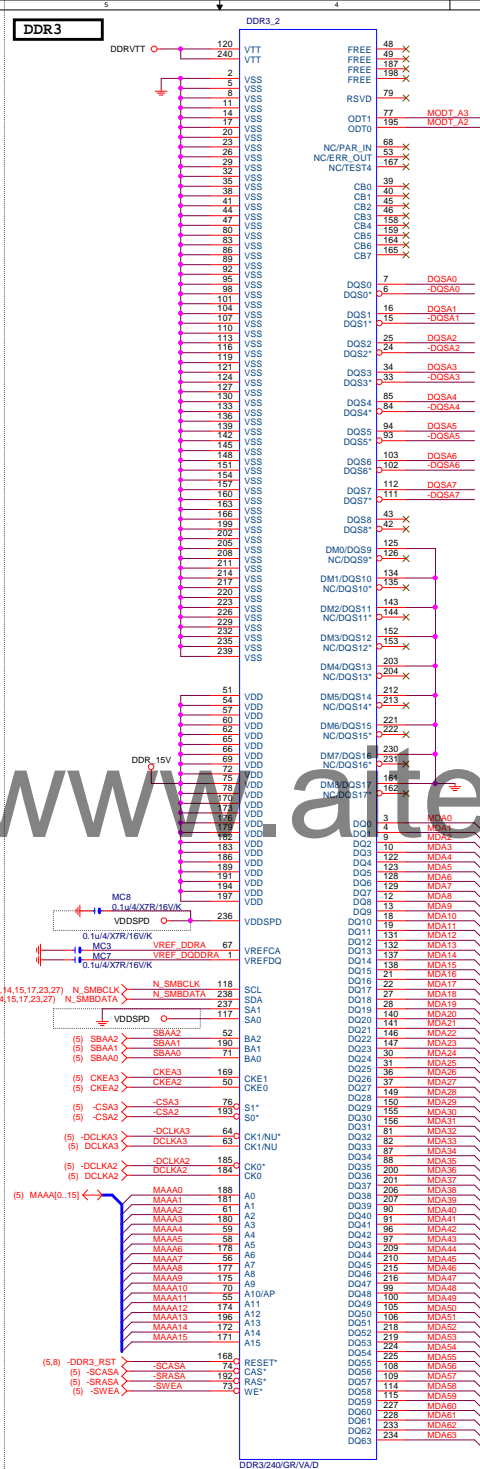
LGA1150G



(X30)

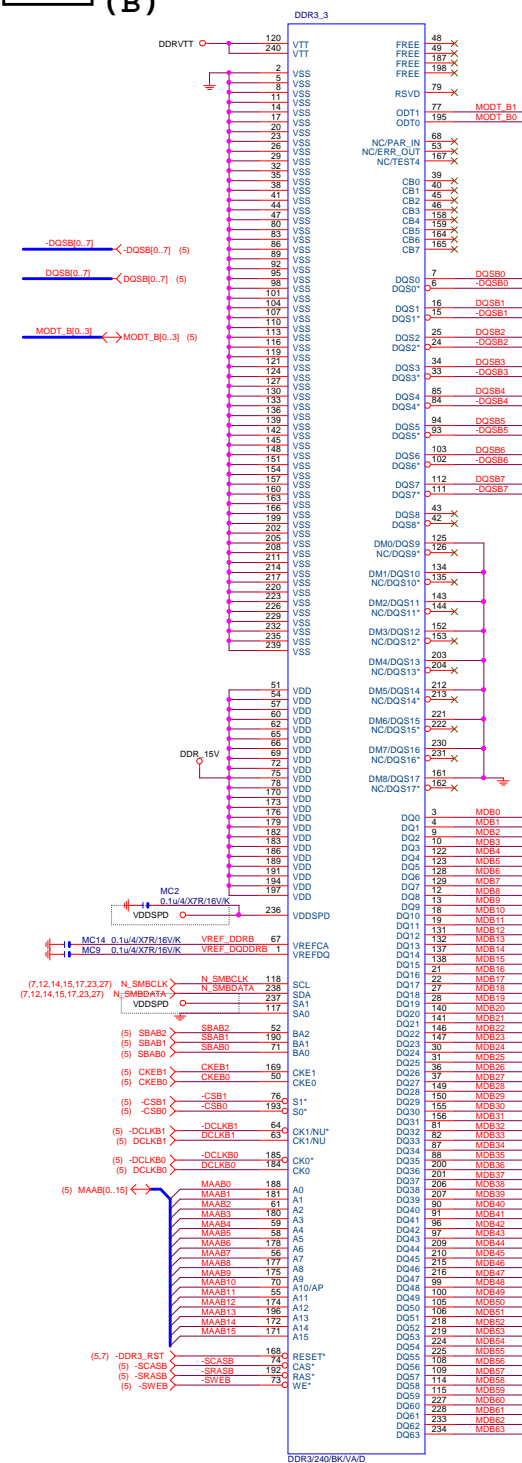


(X15)



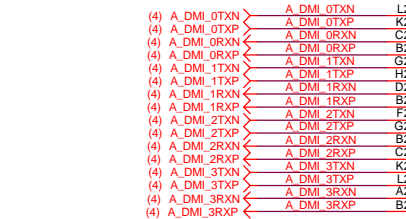
DDR3

(B)



PCH (B)

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



VCC1_5_PCH
W=8 mil out of PCH
S=15 mil to other signals

REAR USB3.0

LAN E2201

ITE8892 PCI Bridge

PCIEX4 port1

PCIEX4 port2

PCIEX4 port3

PCIEX1_1

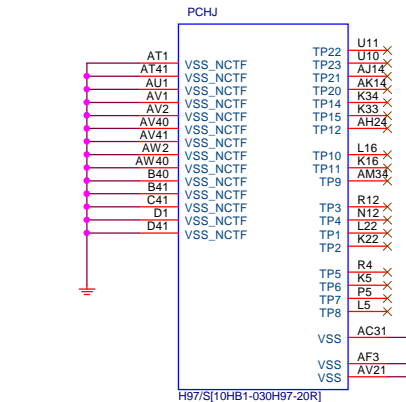
PCIEX4 port4

PCIEX1_2

電容放靠近 Device & PCI-E Slot

PCIEX1:15/4/4/15 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCH (J)



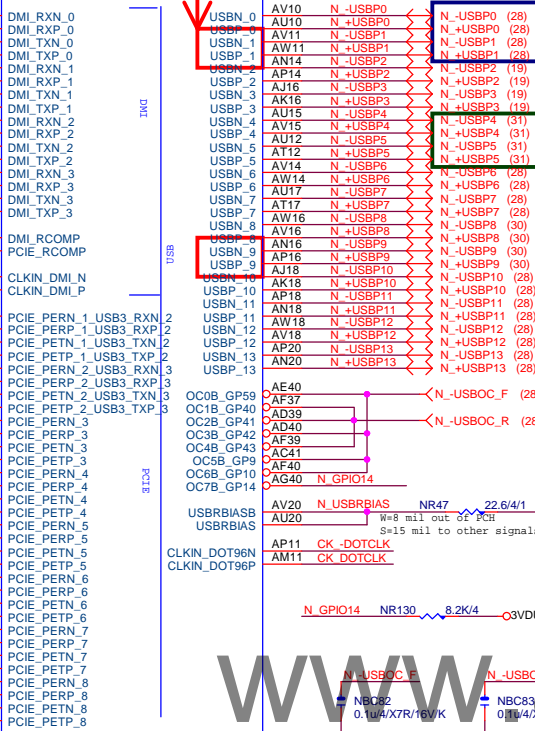
H97/S[10HB1-030H97-20R]

USB Port 1/9一定要接出來,For Debug port test (Logo)

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCHB

B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A



H97/S[10HB1-030H97-20R]

PCH PCIE ,DMI 15/4/4/4//15
usb2.0 12/5/7/5//12
usb3.0 20/5/7/5//20

PCH (F)

USB3.0 : 20/5/7/5/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

Port要對應

H81:USB3.0 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

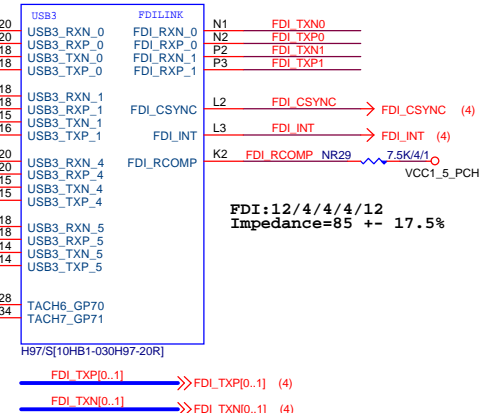
H81:12/13 N/A

H81:12/13 N/A

H81:12/13 N/A

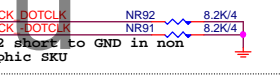
H81:12/13 N/A

USB TABLE



USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

Mount for integrated clock Generation Mode



NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

NR92 short to GND in non graphic SKU

PCH H/S

BGAHSINK-Z97X-SLI

PCH_HS

1X

2X

3X

4X

5X

6X

7X

8X

9X

10X

11X

12X

13X

14X

15X

16X

17X

18X

19X

20X

21X

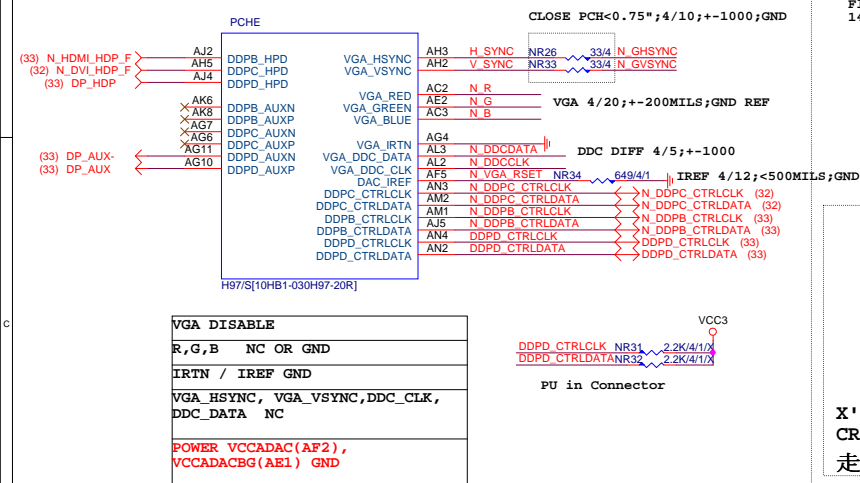
22X

23X

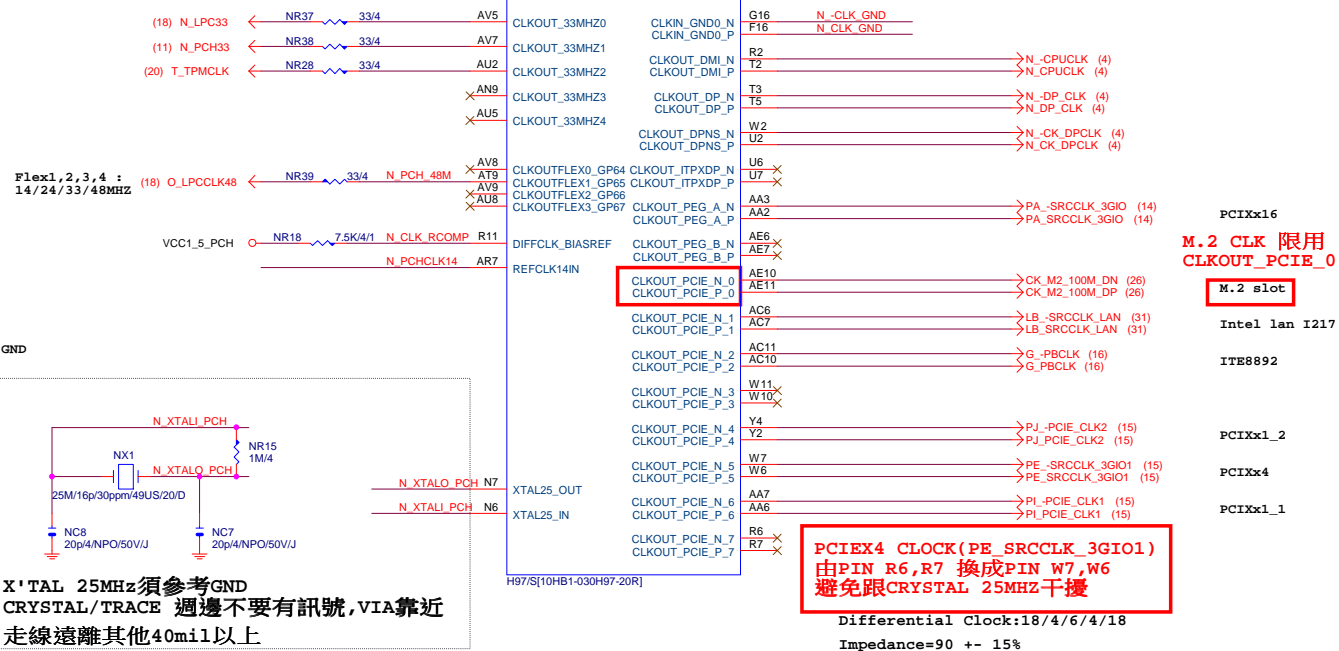
Gigabyte Technology

Title		
PCH FDI,DMI,USB ,PCIE		
Size	Document Number	Rev
Custom	GA-H97-Gaming 3	1.0
Date:	Thursday, April 24, 2014	Sheet 9 of 34

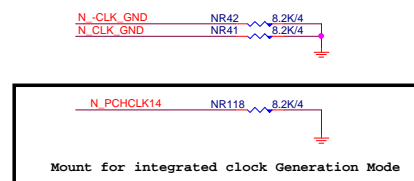
PCH (E)



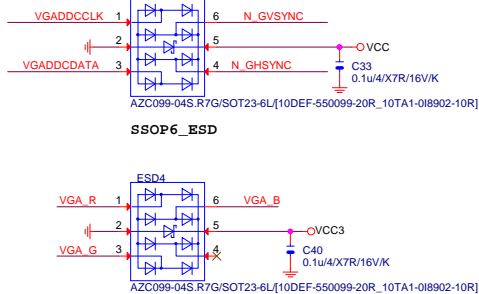
PCH (G)



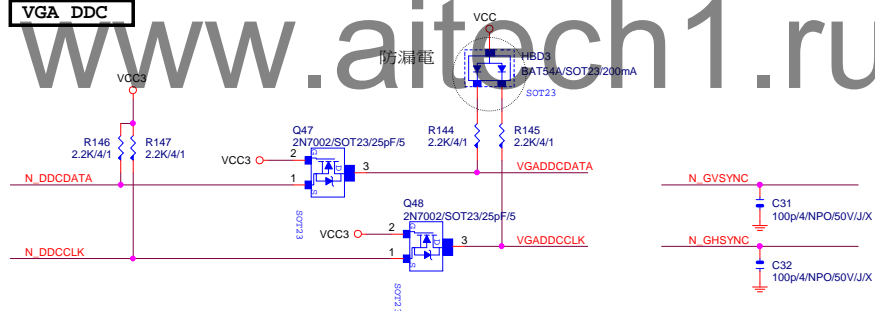
PCH CLK PD



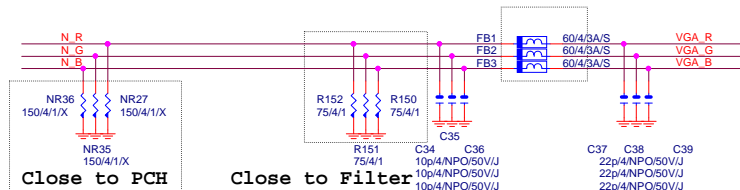
VGA ESD



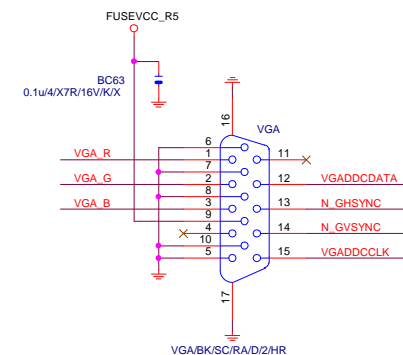
VGA DDC



VGA DDC

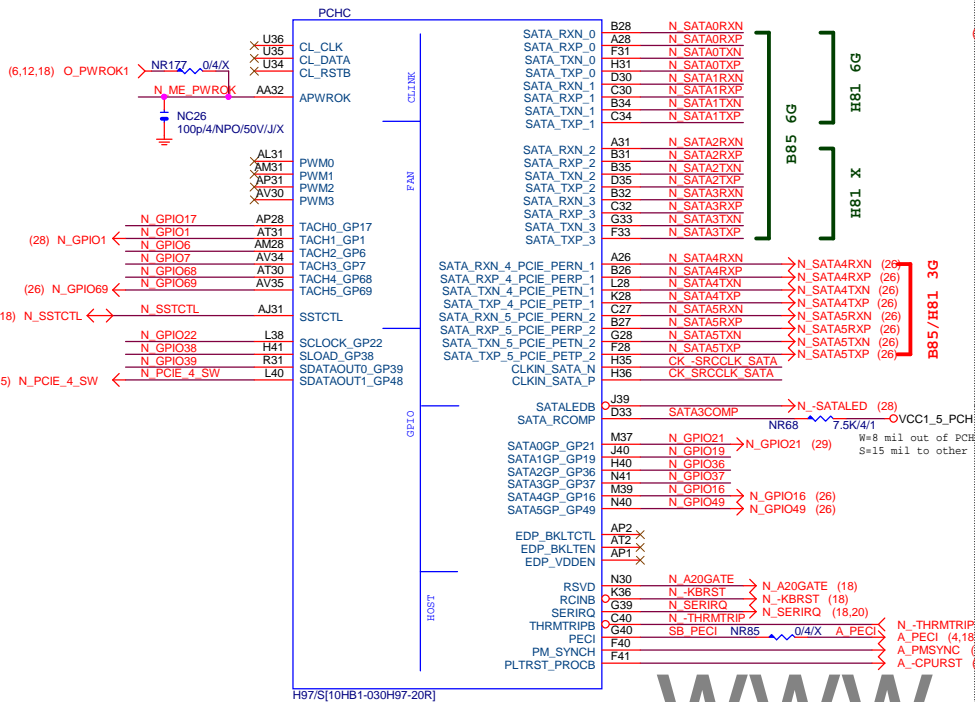


VGA CONNECTOR

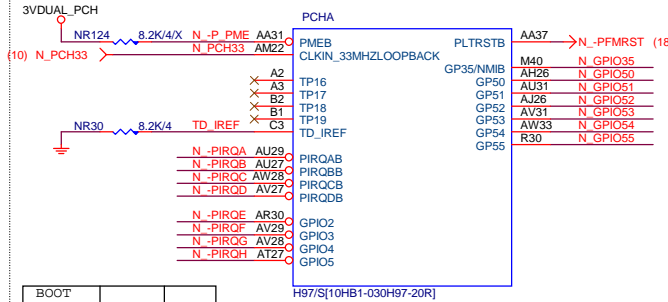


PCH (C)

SATA3 : 20/4/4/20 (breakout min 8/4/4/8)
Impedance=85 +- 17.5%



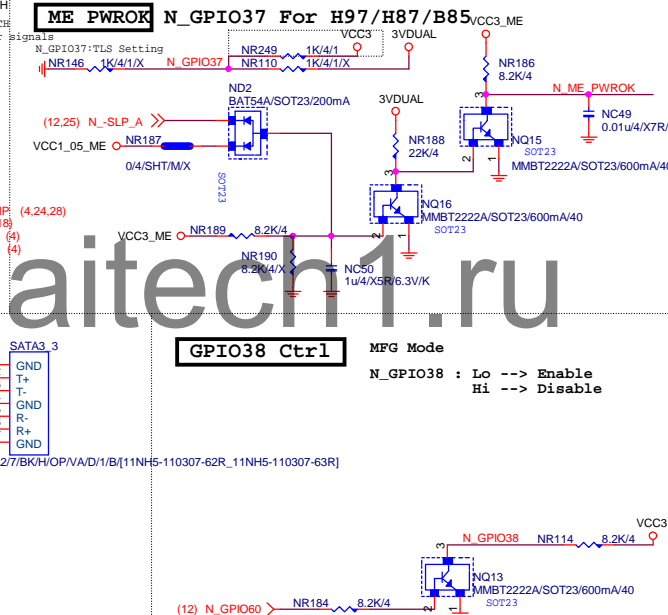
PCH (A)



BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

Default int pull up on GP51,
Default SPI boot devices

ME PWROK

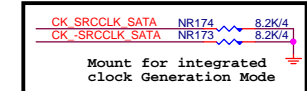


GPIO38 Ctrl

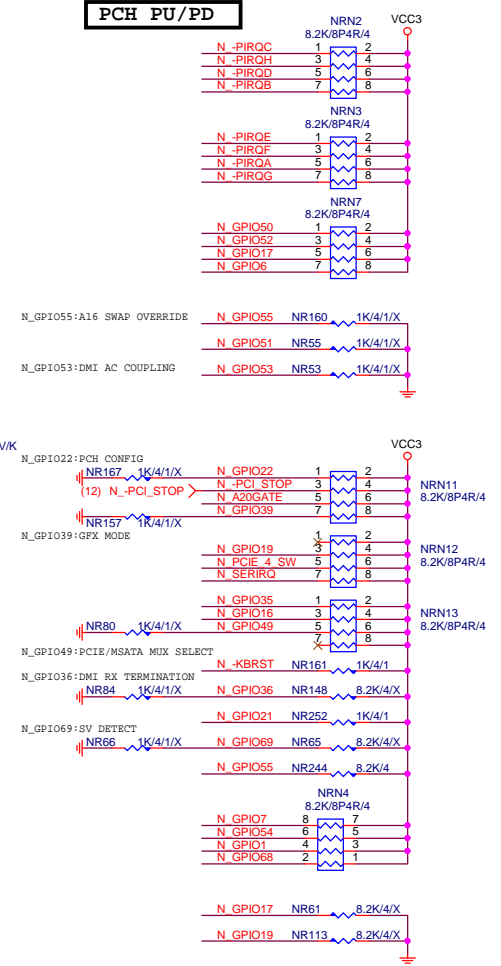
MFG Mode

N_GPIO38 : Lo --> Enable
Hi --> Disable

PCH CLK PD



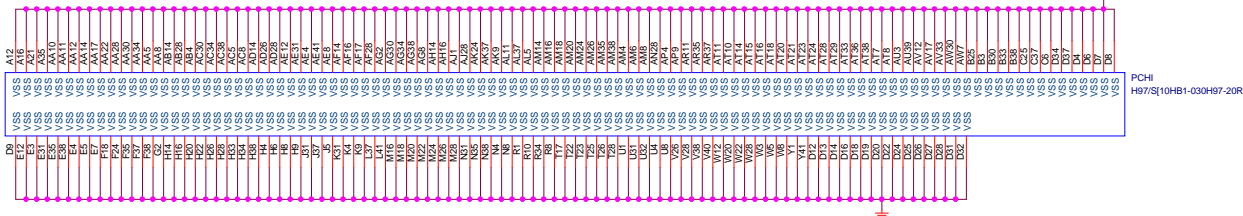
PCH PU/PD



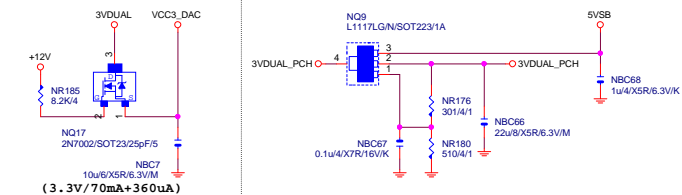
Gigabyte Technology

Title			PCH HOST , SATA, PCI		
Size	Document Number	Rev		1.0	
Date			Thursday, April 24, 2014		
Sheet			34		

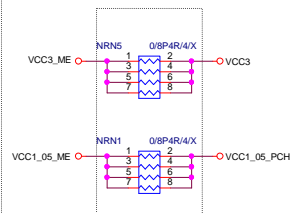
PCH (I)



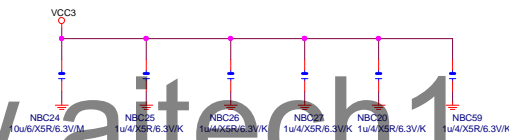
3VDUAL_PCH



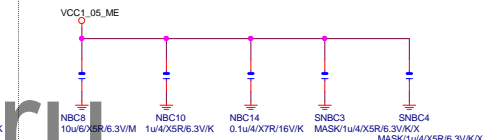
For SBA support



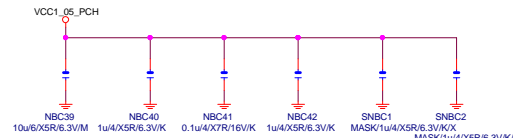
(3.3V) (X6)



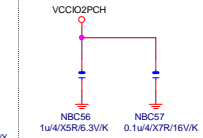
(1.05V) (x5)



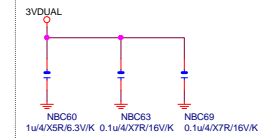
(1.05V) (x6)



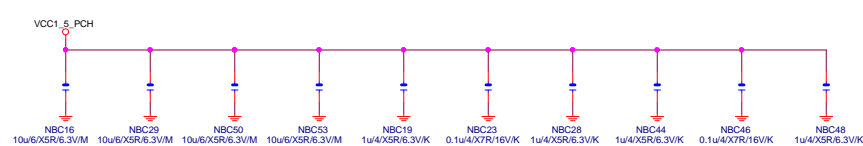
(1.05V)(x2)



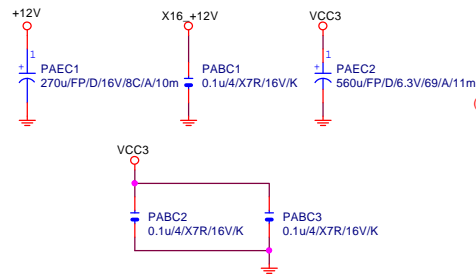
) (3.3V) (X3)



(1.5V) (x10)

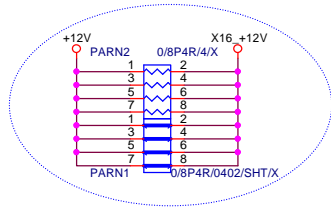


PCIEX16 CAP



PCIEX16 PROTECT SHT

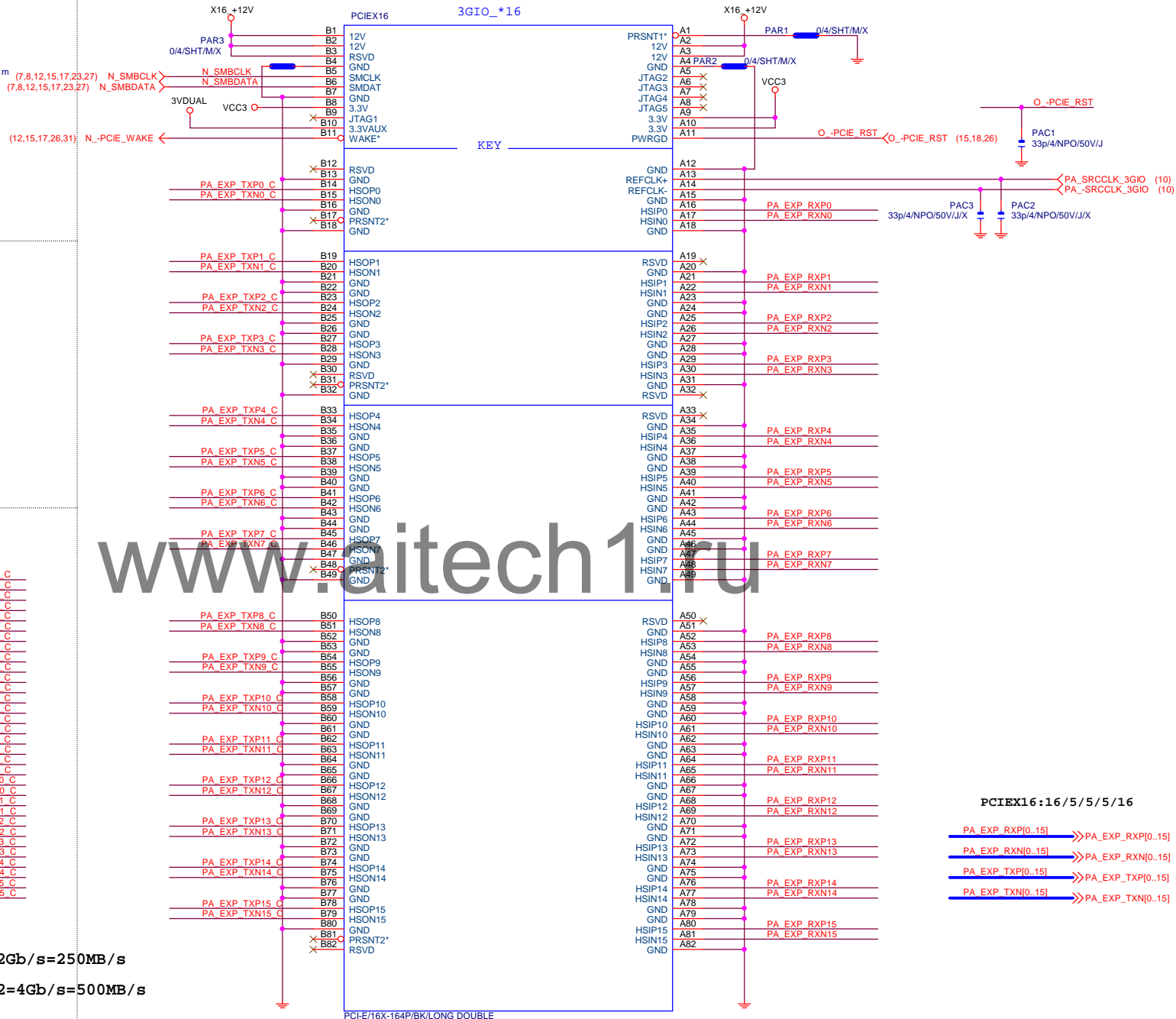
+12 protect
short-wire test



PCIEX16 AC CAP

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 TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PCIEX16 SLOT



PCIEX16:16/5/5/16

PA EXP RXP[0..15] >>> PA_EXP_RXP[0..15] (4)
PA EXP RXN[0..15] >>> PA_EXP_RXN[0..15] (4)
PA EXP TXP[0..15] >>> PA_EXP_TXP[0..15] (4)
PA EXP TXN[0..15] >>> PA_EXP_TXN[0..15] (4)

PCI-E REV:1.1--> 2.5GHZ

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

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

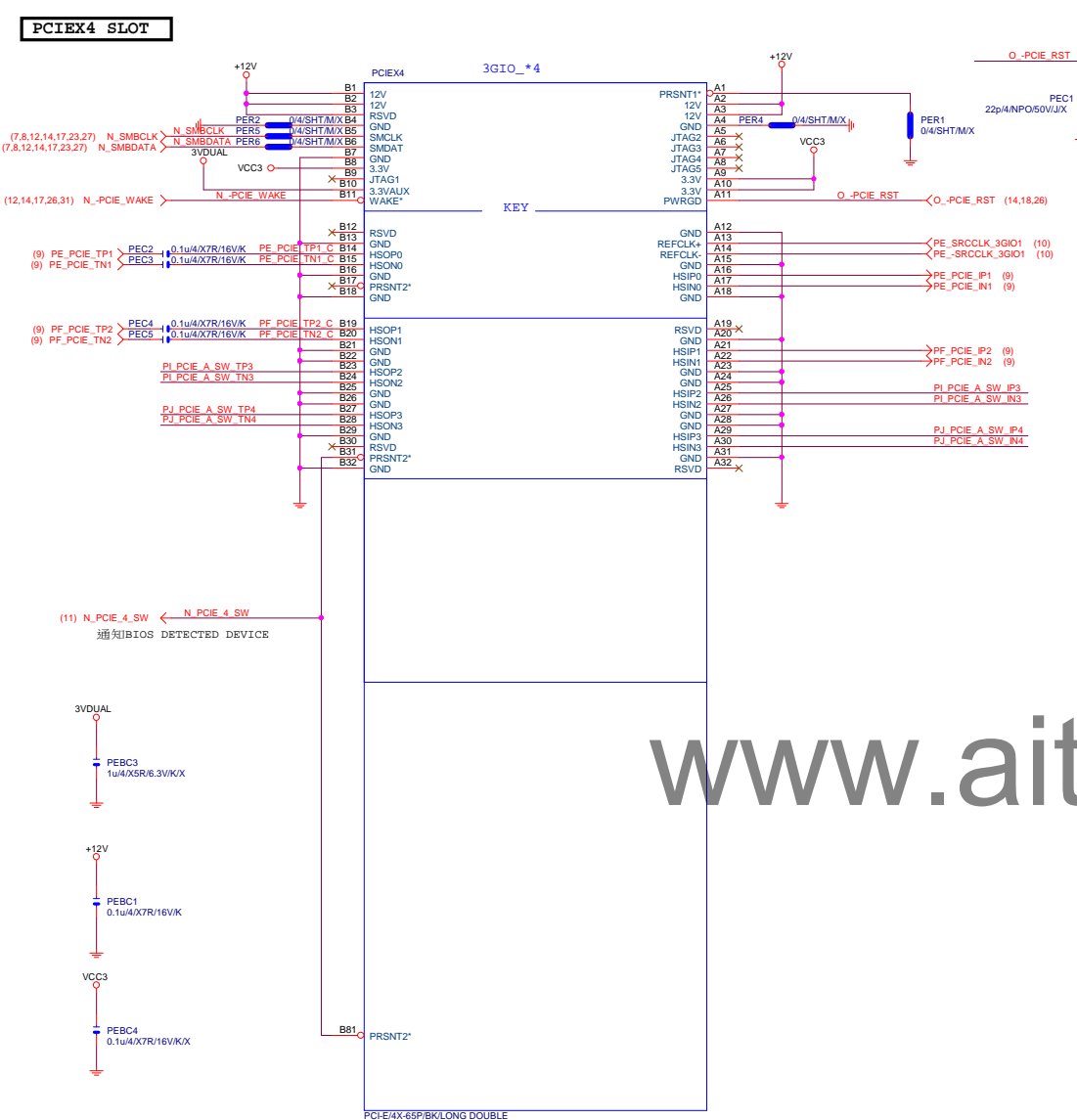
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

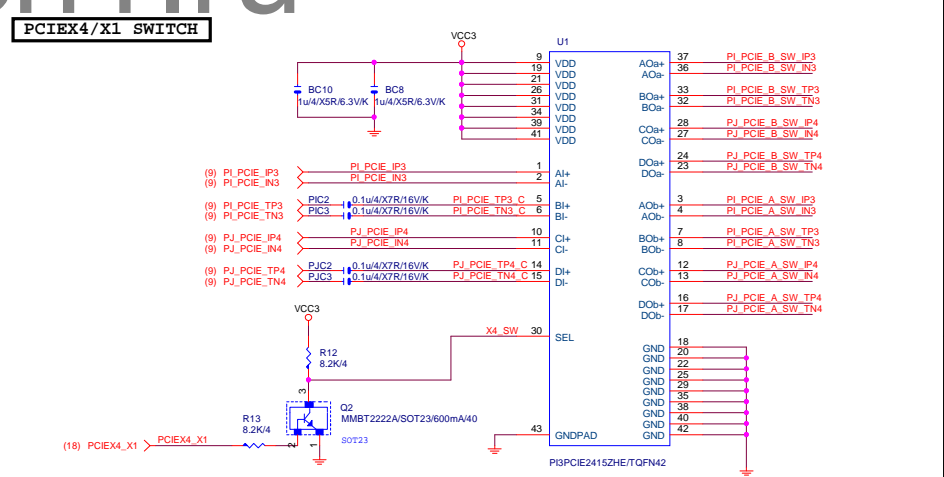
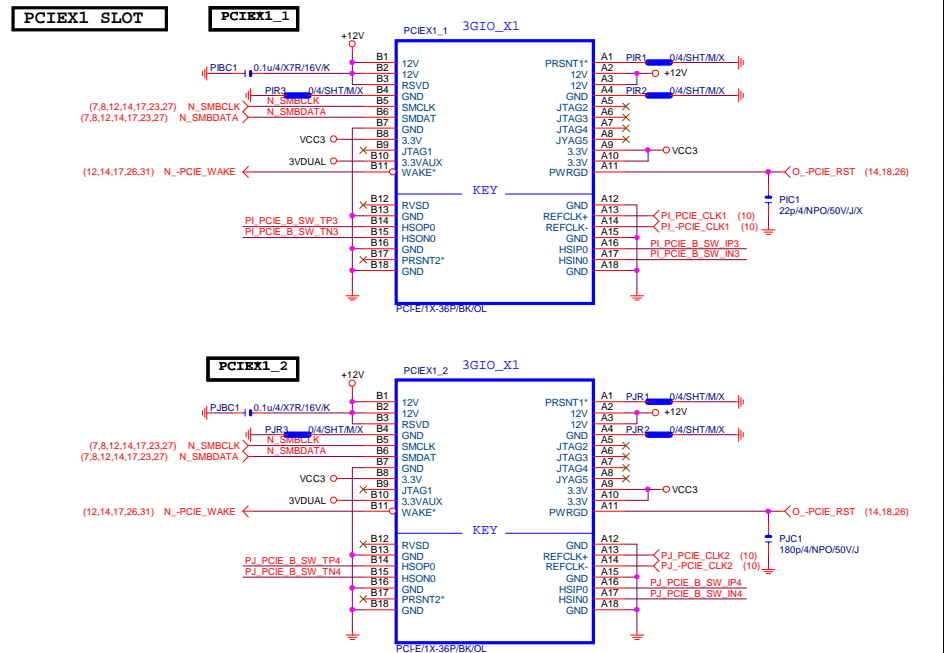
PCI-E REV:2.0--> 5GHZ

Gigabyte Technology

Title			PCI EXPRESS * 16
Size	Document Number		GA-H97-Gaming 3
	Rev		1.0
Date:		Thursday, April 24, 2014	Sheet 14 of 34

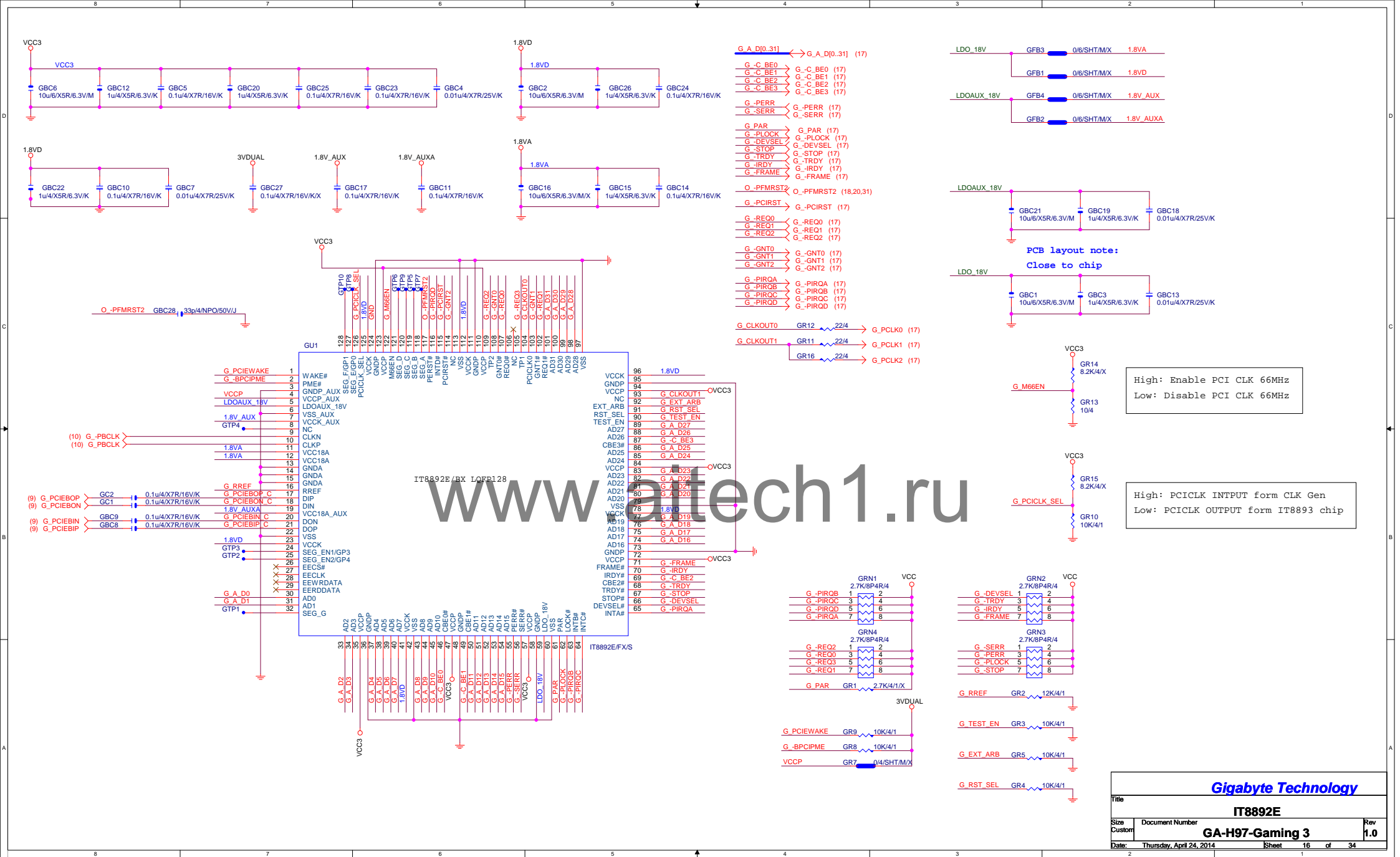


	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
P	H	H
C	H	H
I	L	L
E	L	L
X	L	L
4	L	L

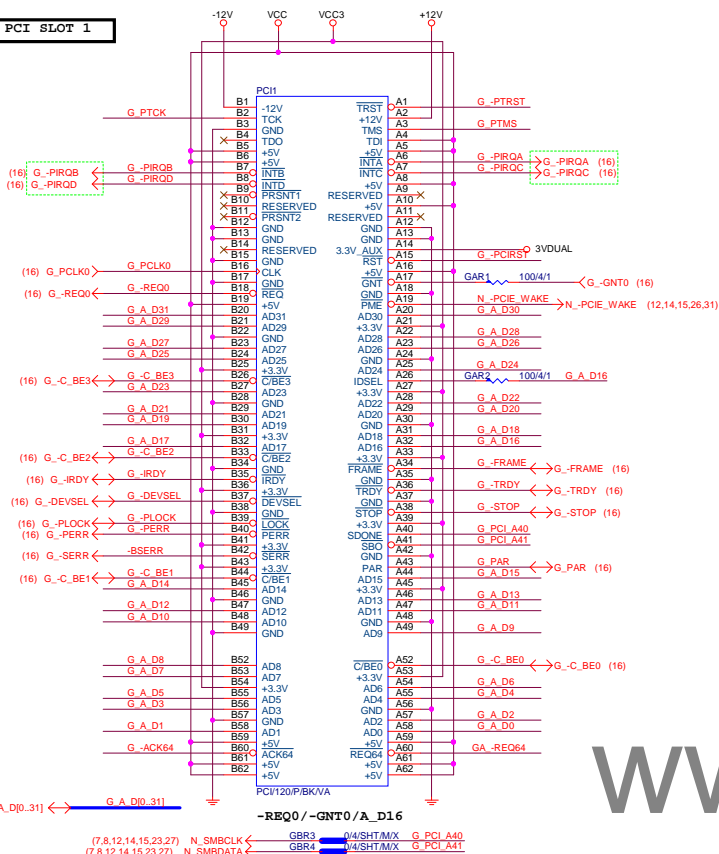


Function	SEL
xI--> xOA	L;PCIEX4 SLOT-->X1
xI--> xOB	H;PCIEX4 SLOT-->X4

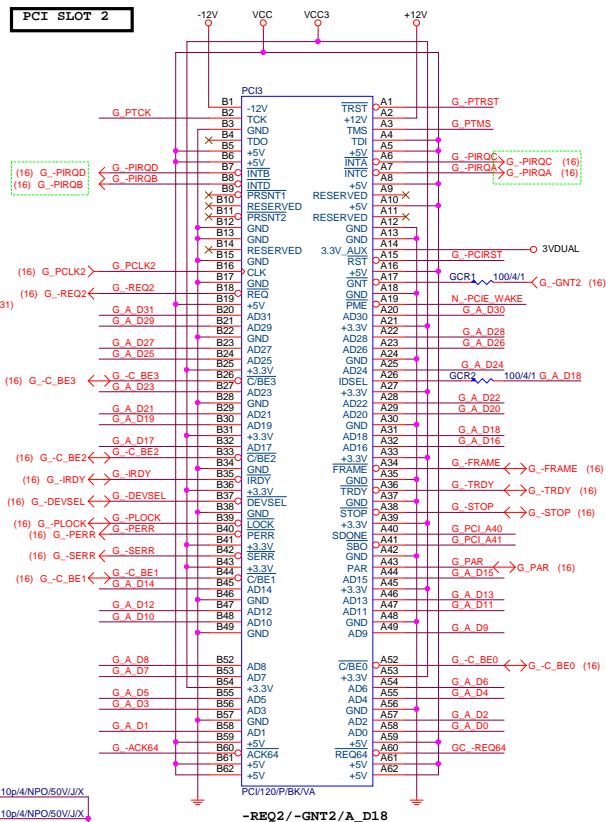
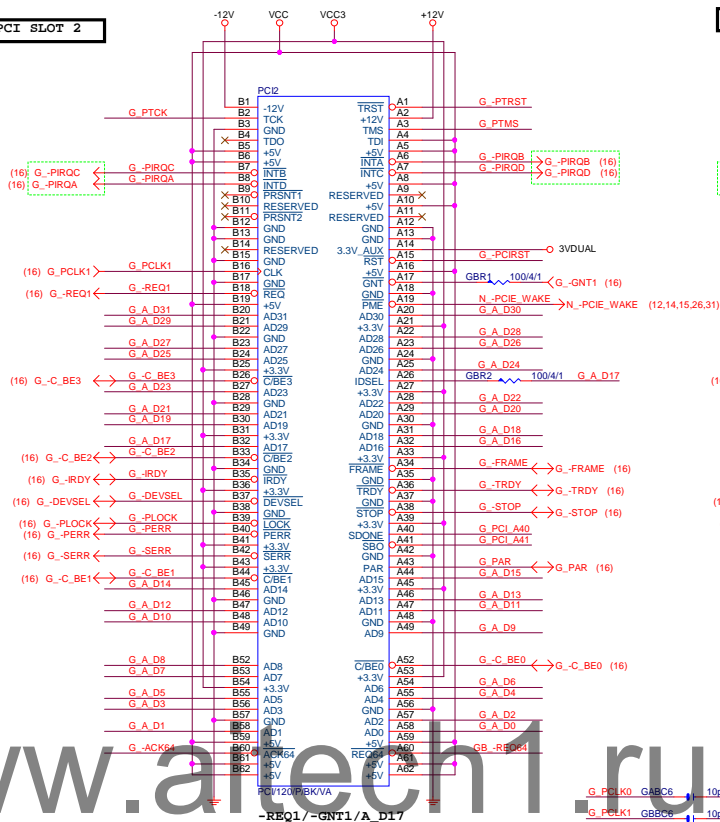
Gigabyte Technology		
Title	PCIE X1 1.2	
Size	Document Number	Rev
Custom	GA-H97-Gaming 3	1.0
Date:	Thursday, April 24, 2014	Sheet 15 of 34



PCI SLOT 1

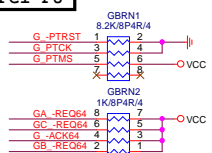


PCI SLOT 2

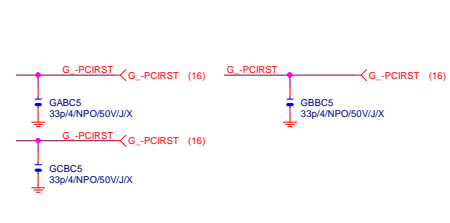
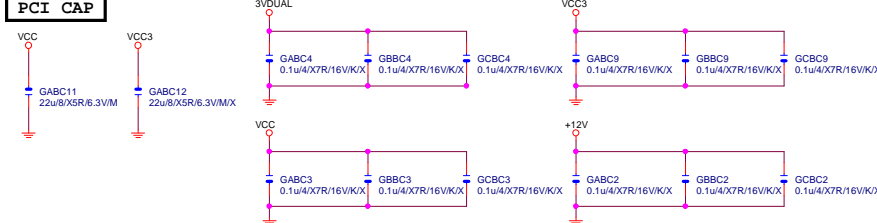


www.a1tech1.ru

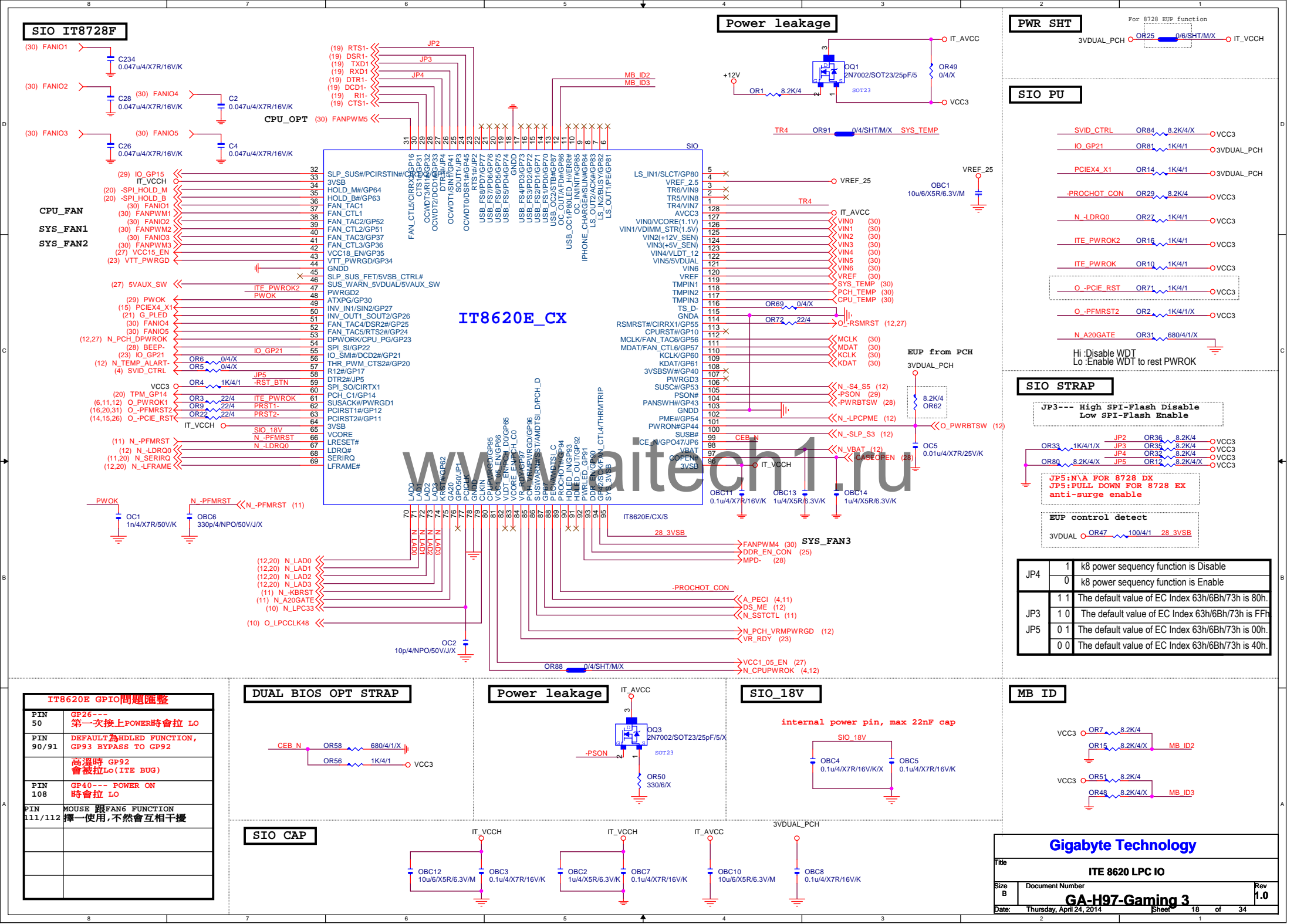
PCI PU



PCI CAP



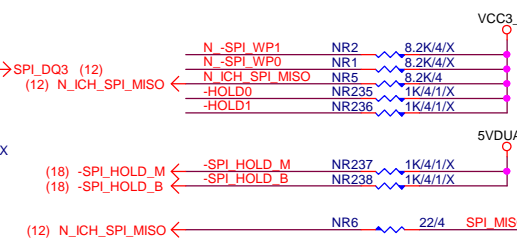
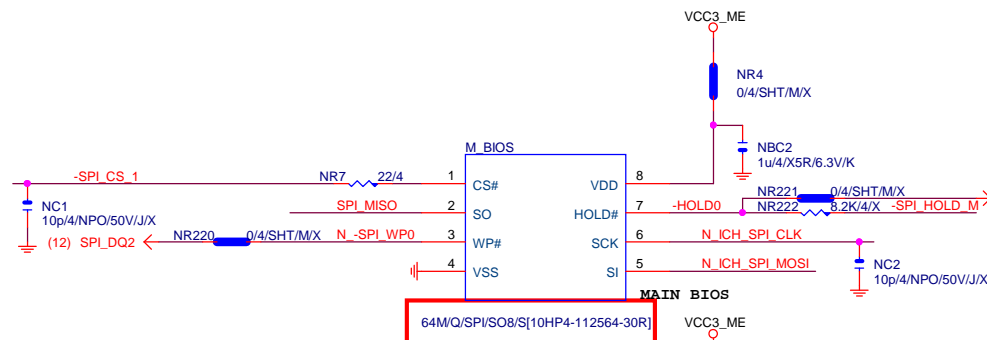
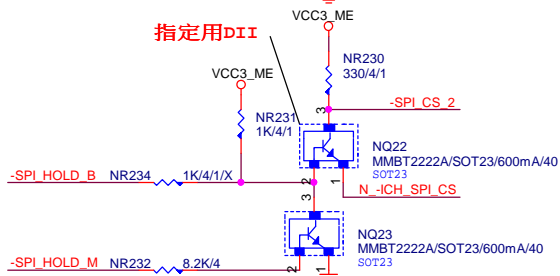
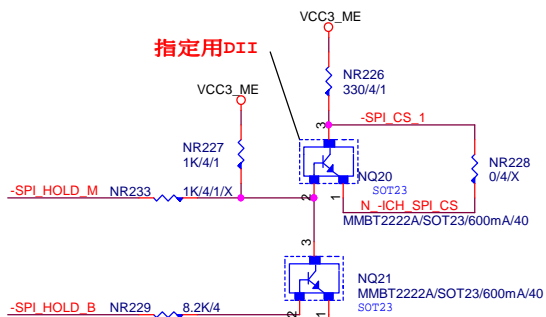
GIGABYTE™			
PCI SLOT 1&2			
Size	Document Number	Rev	1.0
Customer	GA-H97-Gaming 3		
Date	Thursday, April 24, 2014	Sheet	17 of 34



DUAL BIOS

MOSI For DMI RX Termination Voltage

(12) N_ICH_SPI_MOSI	N_ICH_SPI_MOSI	NR10	8.2K/4/X
(12) N_ICH_SPI_CS	N_ICH_SPI_CS	NR9	8.2K/4/X
(12) N_ICH_SPI_CS1	N_ICH_SPI_CS1	NR246	8.2K/4/X
(18) -SPI_HOLD_M	-SPI_HOLD_M	NR3	1K/4/1
(18) -SPI_HOLD_B	-SPI_HOLD_B	NR11	1K/4/1

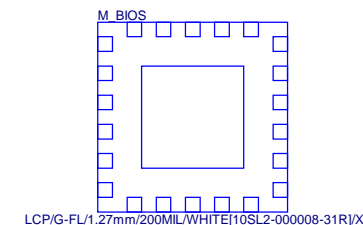
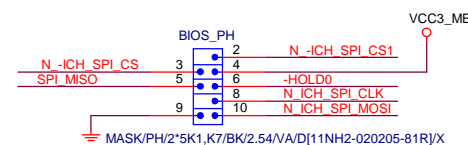
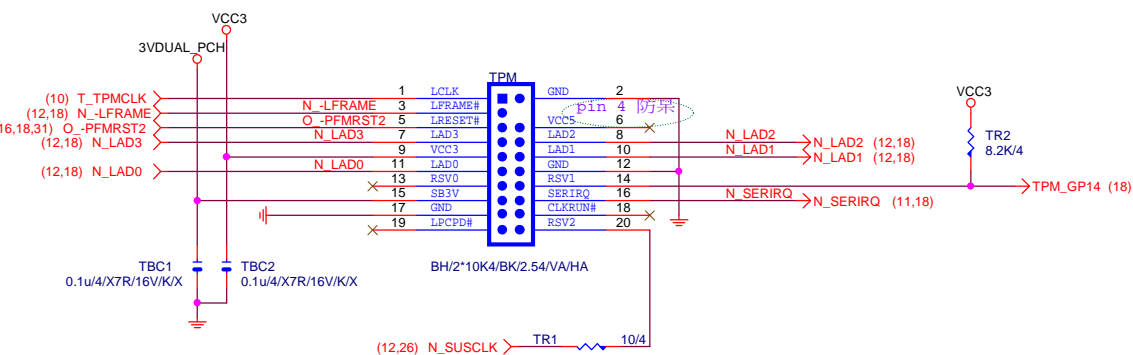


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

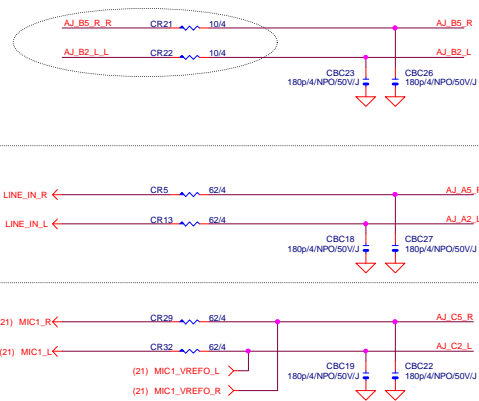
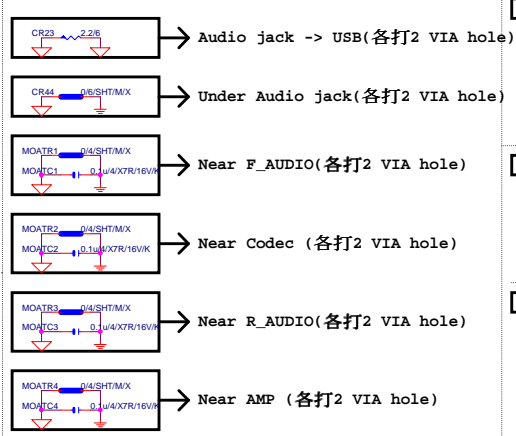
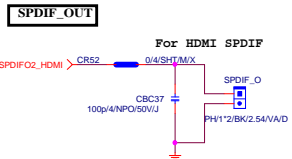
TPM CONNECT

BIOS Debug port

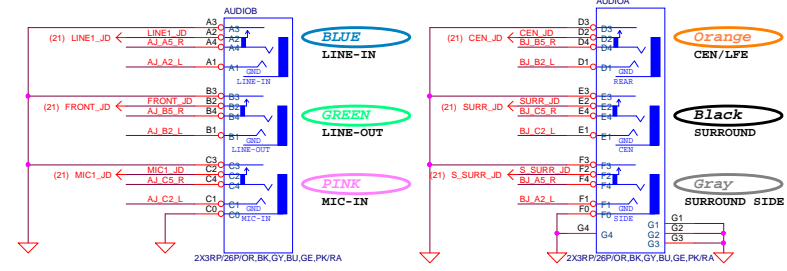
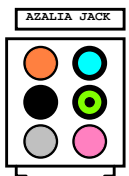
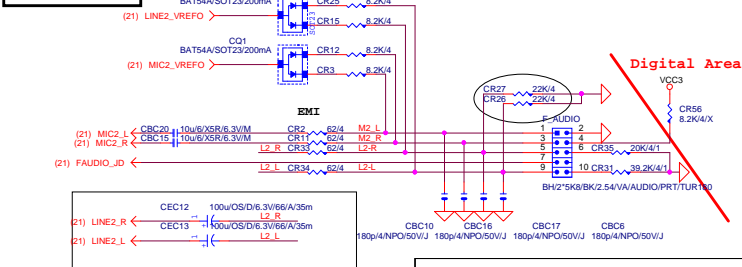
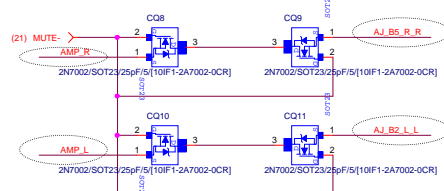
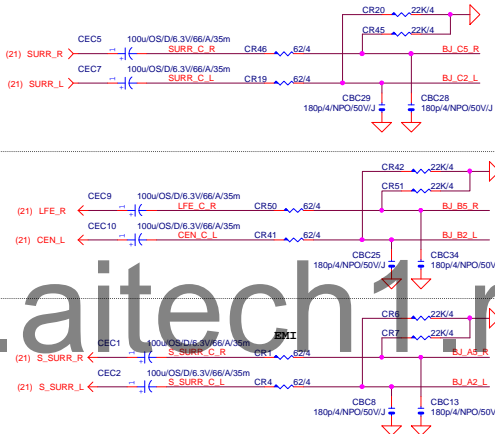


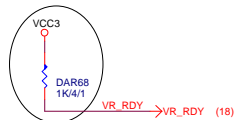
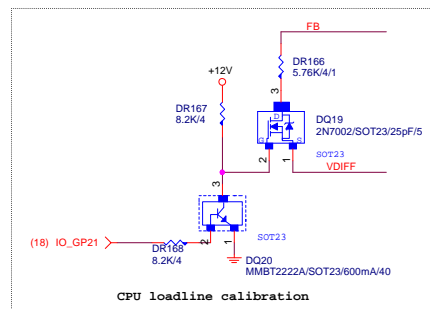
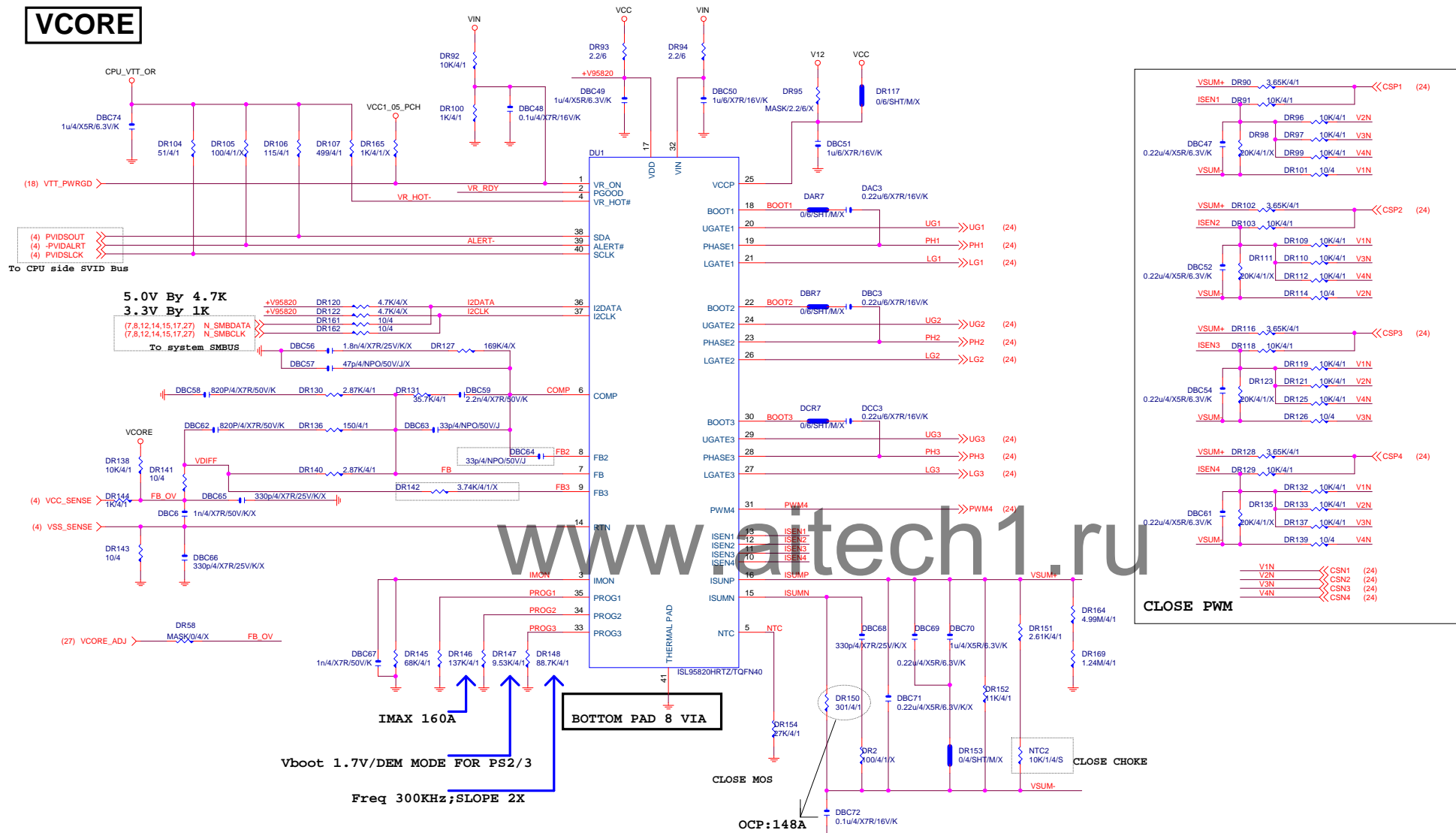
Gigabyte Technology

Title		BIOS	
Size	Document Number	GA-H97-Gaming 3	
Custom		Rev 1.0	
Date:	Thursday, April 24, 2014	Sheet	20 of 34



放大倍率： $V_{OUT} = [R2 \cdot (V^+ - V^-)] / R1$
 $= \{390 \cdot [(+1.2) - (-1.2)]\} / 374 = 2.5$



VCORE

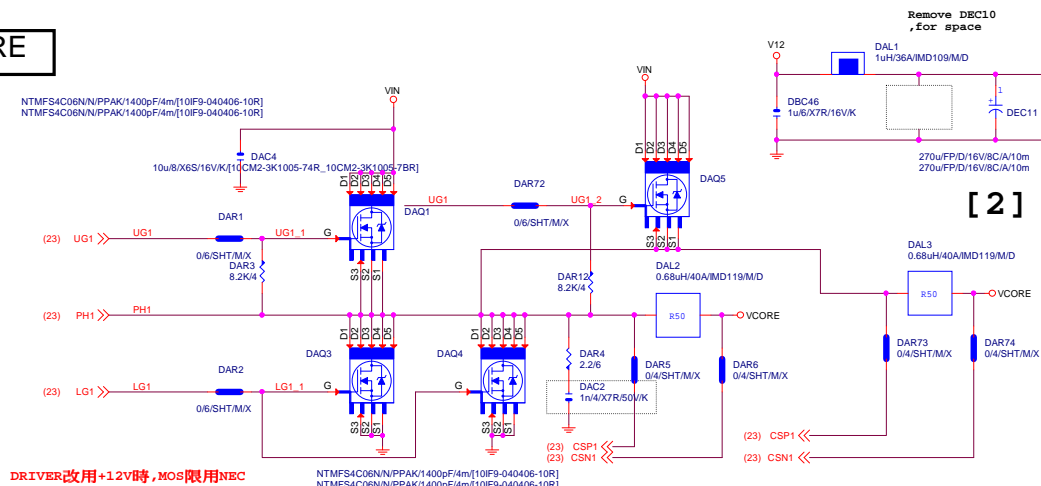
VCORE各層切割

- 第一層:VCORE
- 第二層:VCORE
- 第三層:GND
- 第四層:VCORE

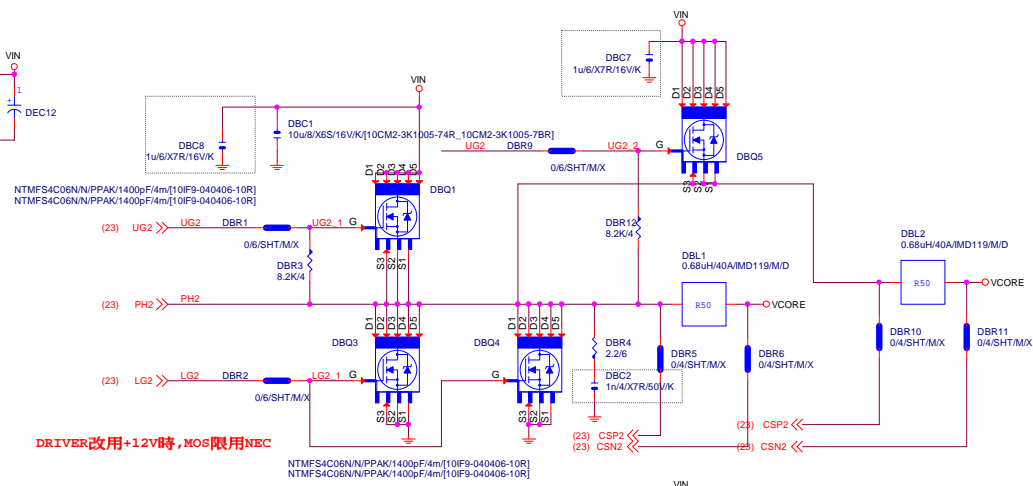
Gigabyte Technology			
Title VCORE_ ISL95820			
Size Custom	Document Number Z97X-Gaming3		Rev 1
Date: Thursday, April 24, 2014	Sheet 23	of 34	

VCORE

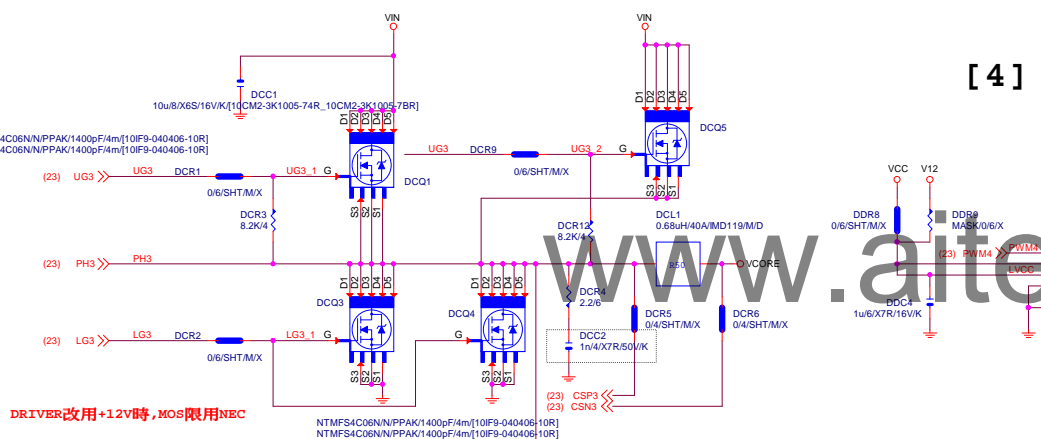
[1]



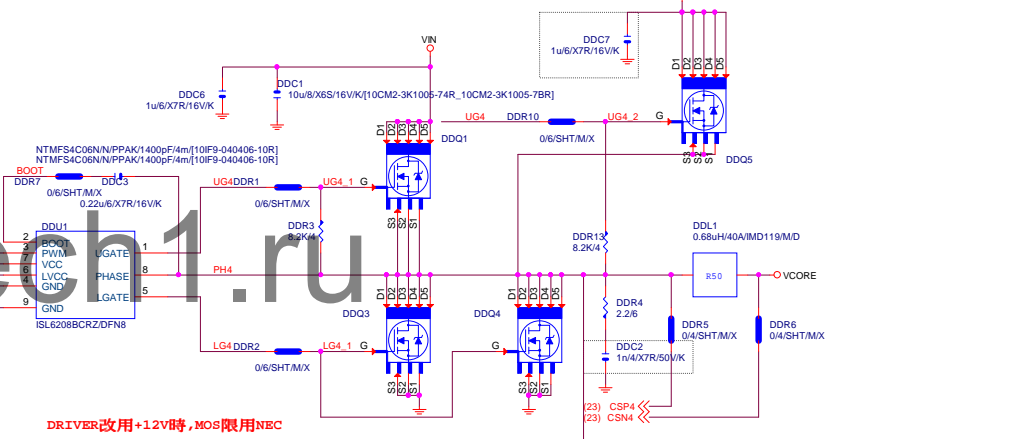
[2]



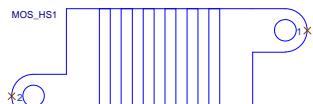
[3]



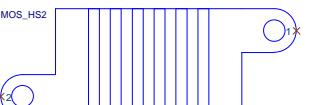
[4]



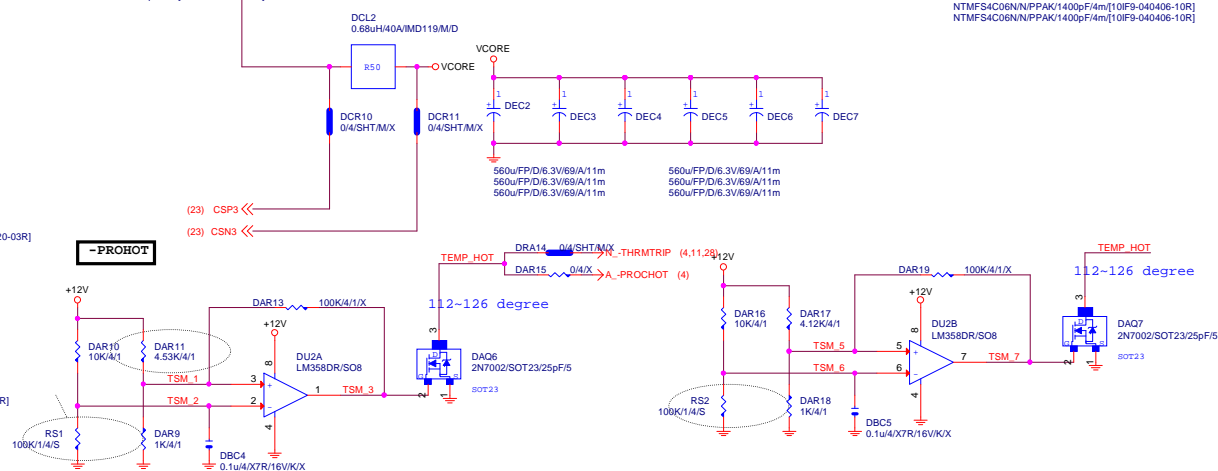
MOSFET HEATSINK



MOS_HeatSink/Z97X-Gaming 3[12SP2-S07920-01R_12SP2-S07920-02R_12SP2-S07920-03R]

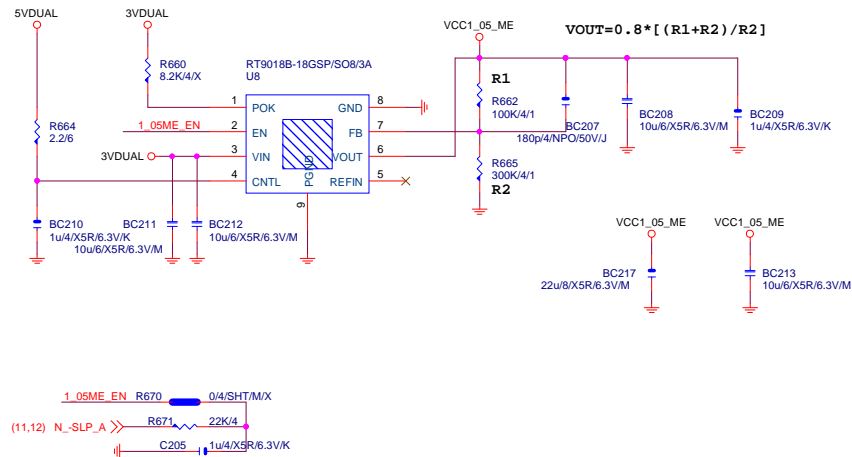


MOS_HeatSink/Z97X-Gaming 3[12SP2-S07920-01R_12SP2-S07920-02R_12SP2-S07920-03R]

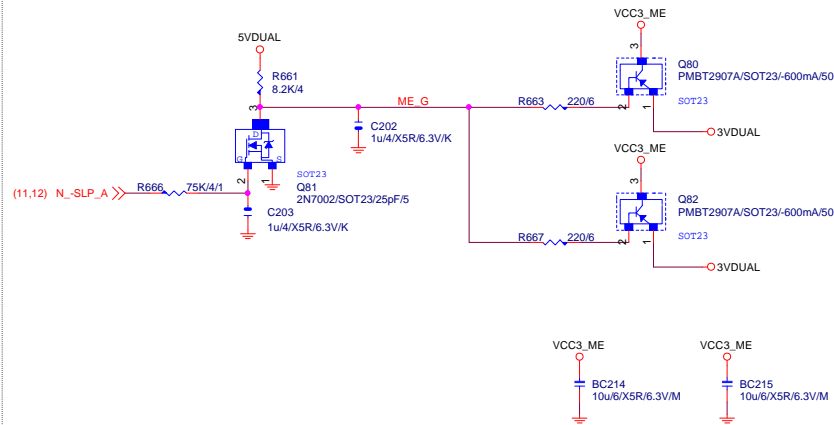


Gigabyte Technology			
Title	ISL95820_2		
Size	Document Number	Z97X-Gaming3	
Custom			Rev 1.0
Date	Thursday, April 24, 2014	Sheet	24 of 34

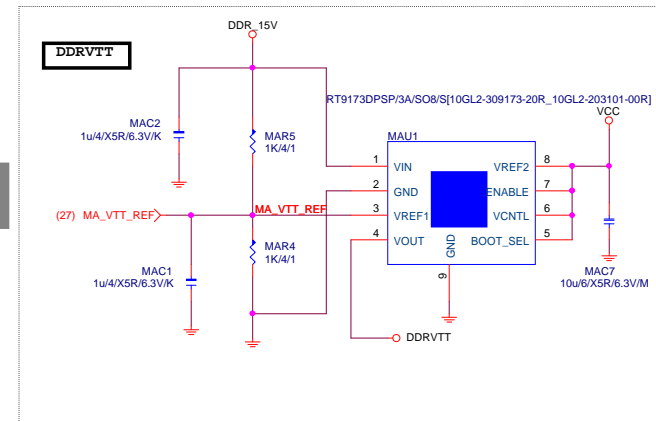
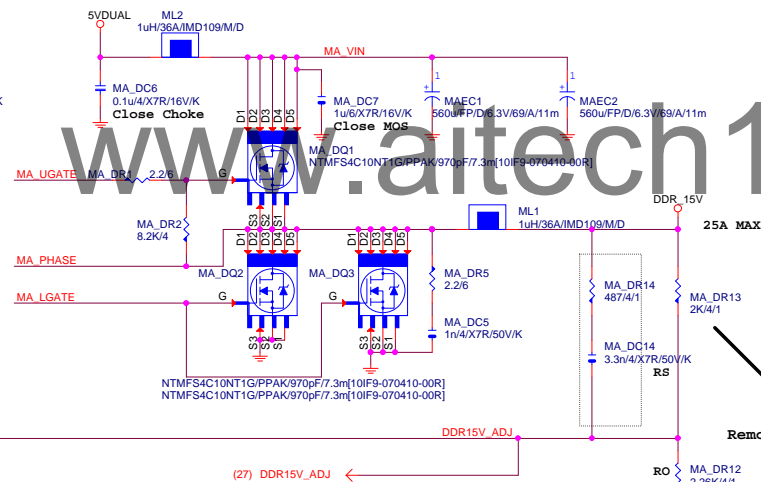
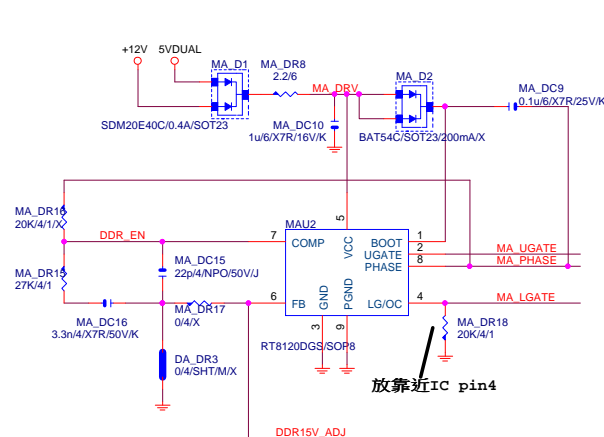
VCC1_05_ME



VCC3_ME



DDR_15V



PWR_SEQ

DDR_EN < DDR_EN_CON (18)

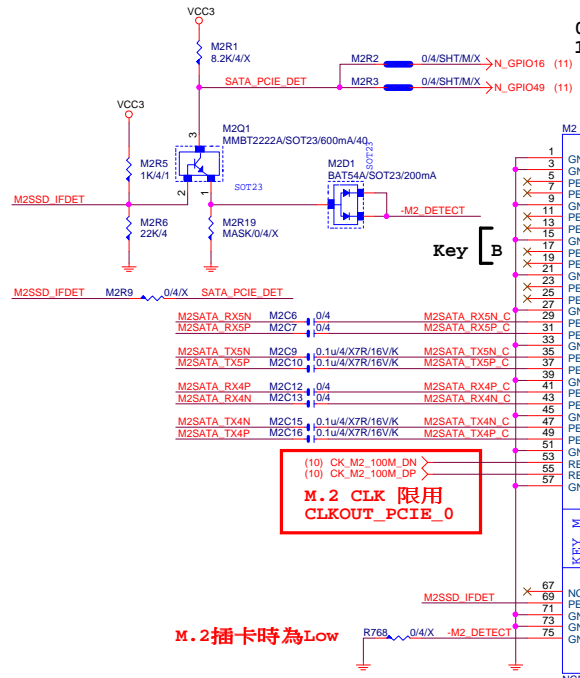
VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A

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]

Remote sense請從最重的負載端點拉回

GIGABYTE™			
Title	RT8120_DDR_15V		
Size	Document Number	Rev	
Custom	GA-H97-Gaming 3	1.0	
Date:	Thursday, April 24, 2014	Sheet	25 of 34



M.2 SLOT

0 : PCIE M.2
1 : SATA M.2

Key [B]

M.2 CLK 限用
CLKOUT_PCIE_0

M.2插卡時為Low

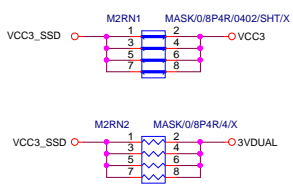
M2 SLOT M KEY料號

嘉澤:10NR5-130067-31R
鴻海:10NR5-130067-32R

SATA EXPRESS

M2

Function	SEL
xI--> x0a	L
xI--> x0b	H



Key [B]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

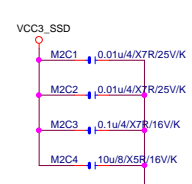
Key [M]

Key [M]

Key [M]

Key [M]

Key [M]



Key [B]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

Key [M]

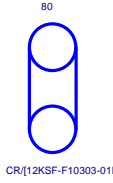
Key [M]

Key [M]

SMD螺柱 (DIP階上件)



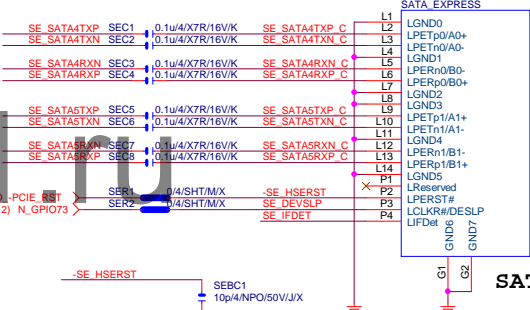
DIP螺柱



螺絲



SATA EXPRESS CONNECTOR

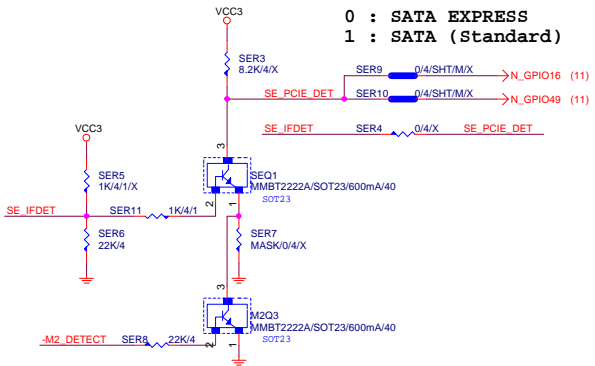


SATA EXPRESS料號

單層:11NR6-C10118-01R

雙層:11NR6-C10236-01R

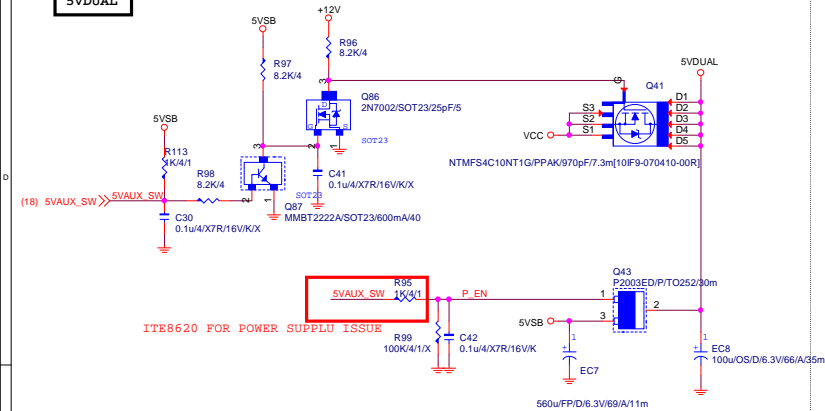
0 : SATA EXPRESS
1 : SATA (Standard)



GIGABYTE

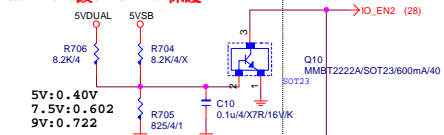
Title	M2_SATA_EXPRESS	Rev	1.0
Size	Custom	Document Number	GA-H97-Gaming 3
Date:	Thursday, April 24, 2014	Sheet	26 of 34

5VDUAL

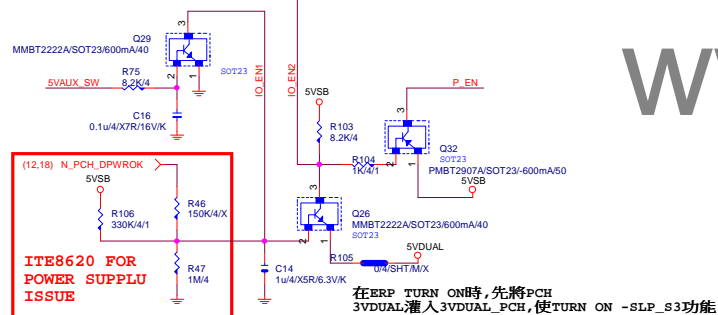


```
.....
5VSB OVP:7.5V protection
```

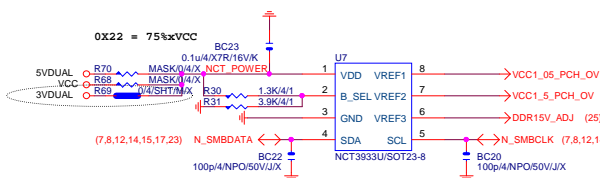
NOTE 82:改5VDUAL 6v保護



5VDUAL SHORT PROTECT

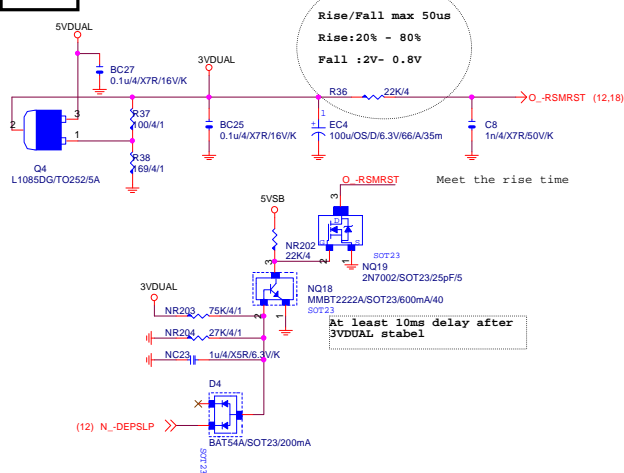


OVER VOLTAGE

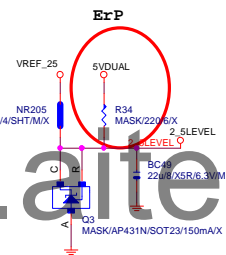


NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DO	SMREF

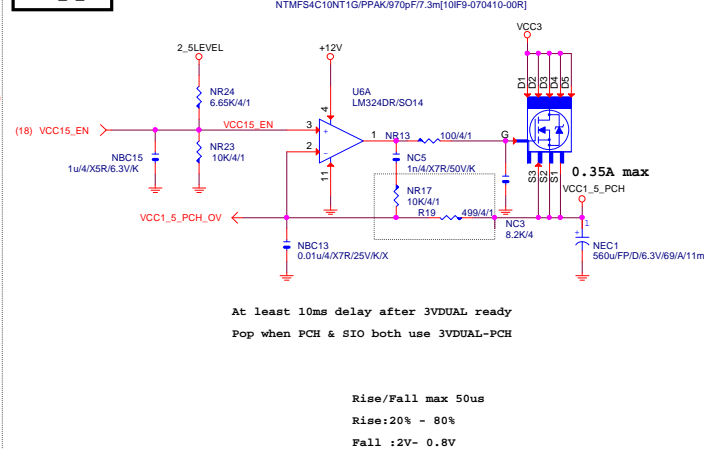
3VDUAL



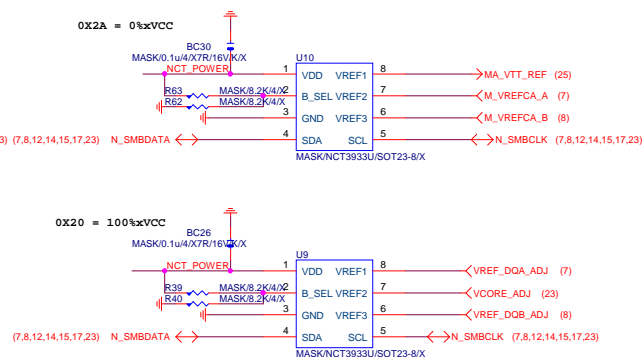
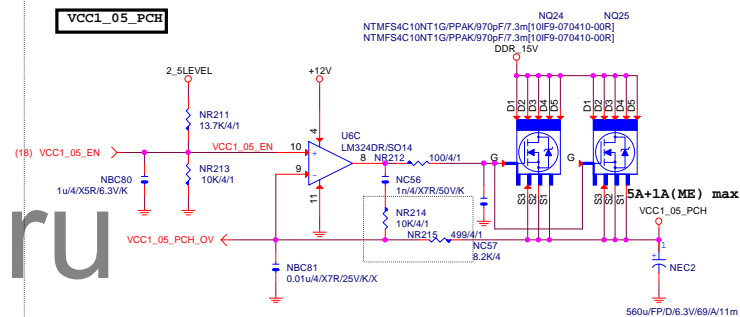
2 5LEVEL



VCC1_8_PCH

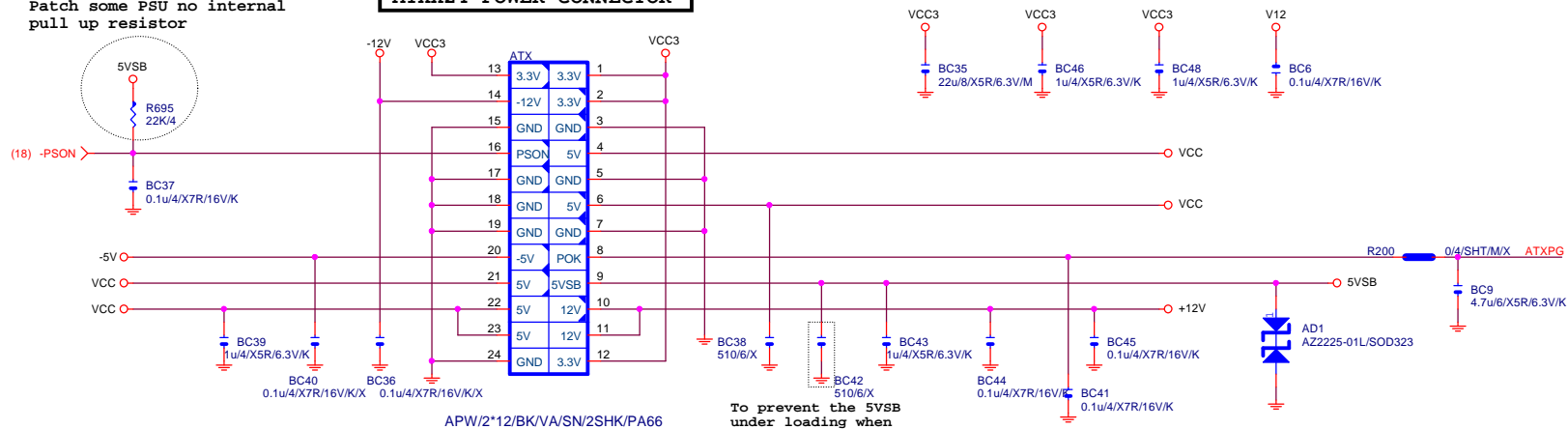


VCC1 05 PCH



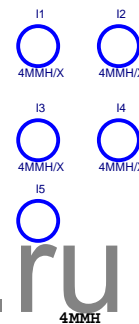
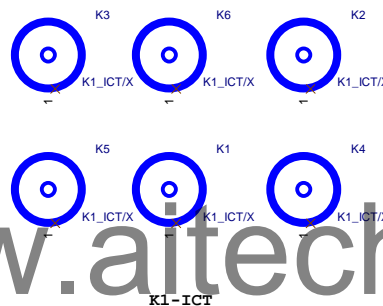
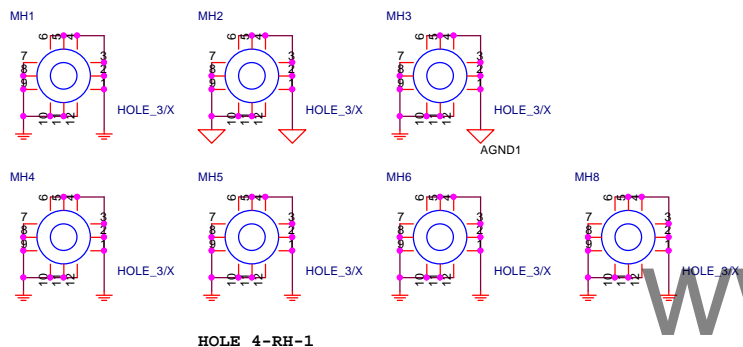
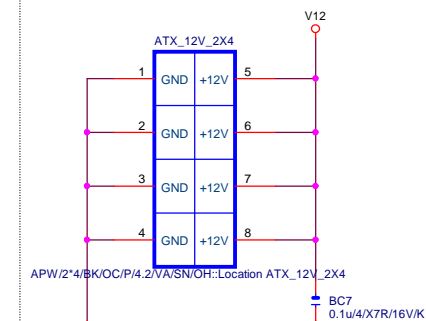
Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR



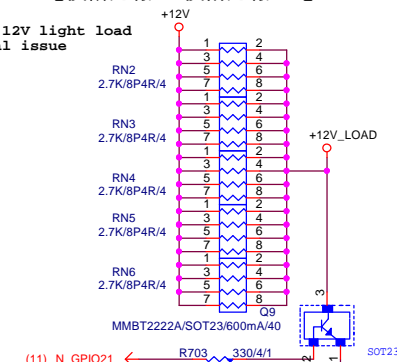
APW/2*12/BK/VA/SN/2SHK/PA66

ATXX4 POWER CONNECTOR



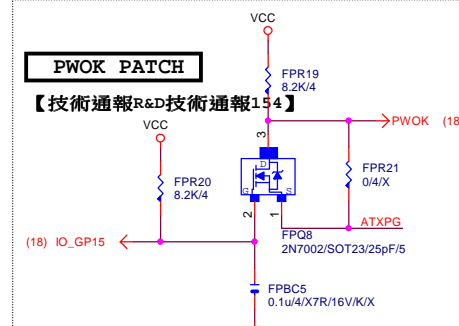
【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



PWOK PATCH

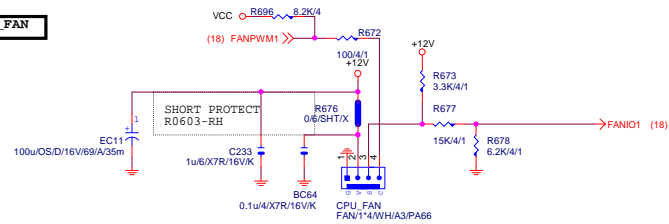
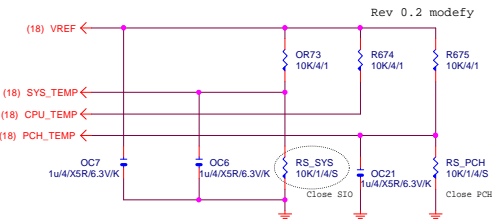
【技術通報R&D技術通報154】



Gigabyte Technology

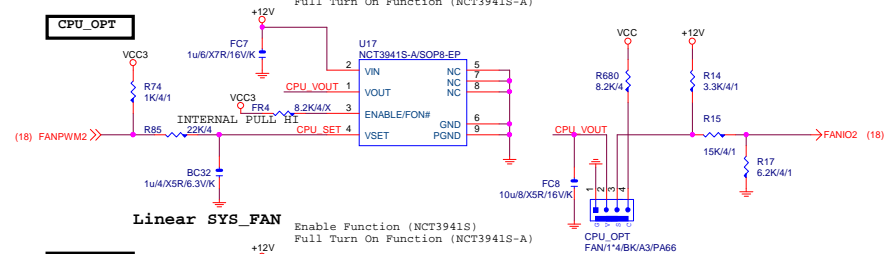
Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-H97-Gaming 3	1.0
Date:	Thursday, April 24, 2014	Sheet 29 of 34

TEMP H/W MONITOR



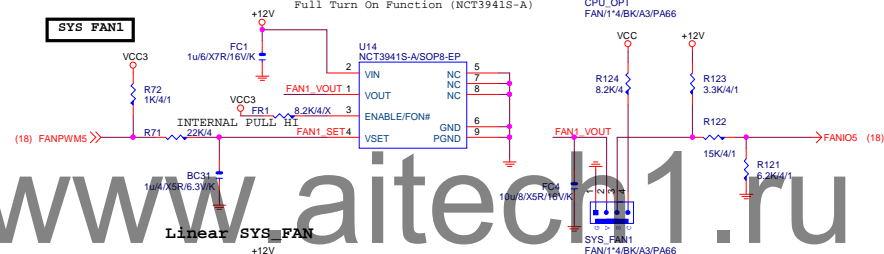
Linear SYS_FAN

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

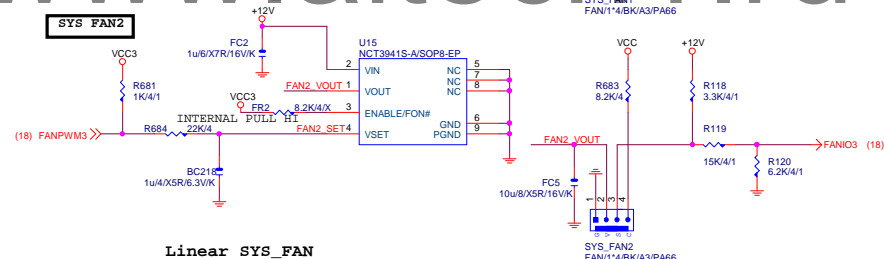


Linear SYS_FAN

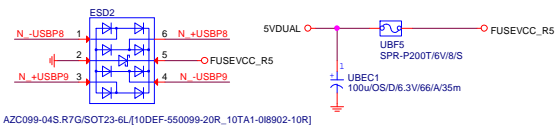
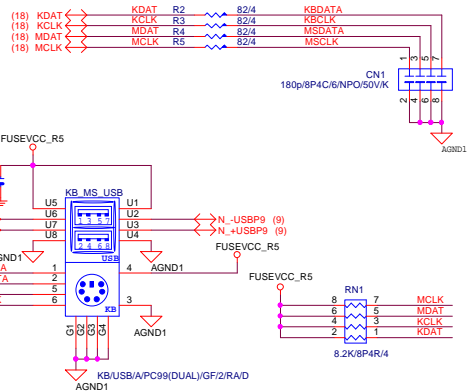
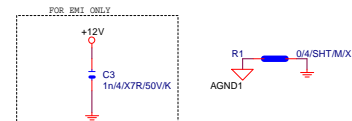
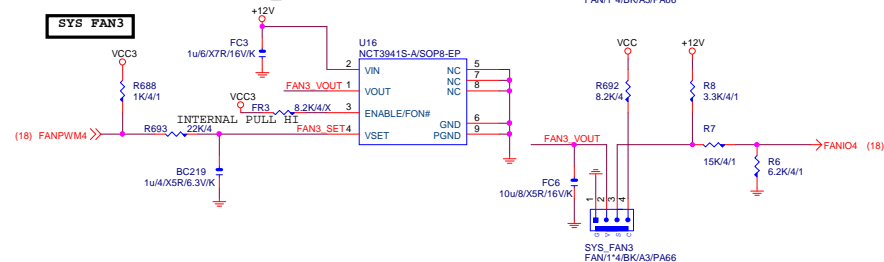
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYS FAN2

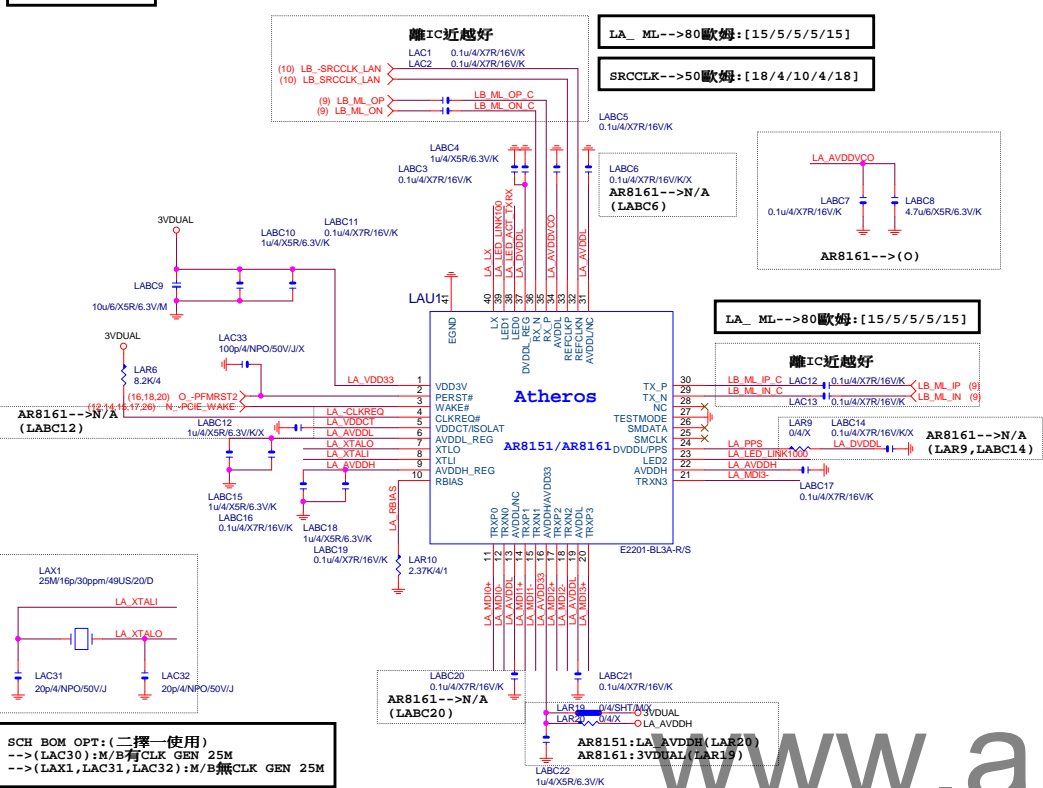


Linear SYS_FAN

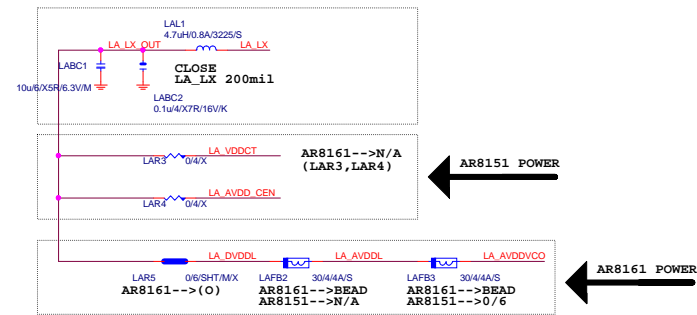


Gigabyte Technology

Title				HWM,KB/MS, FAN CTRL			
Size	Document Number						Rev
Custom	GA-H97-Gaming 3						1.0
Date:	Thursday, April 24, 2014			Sheet	30	of	34

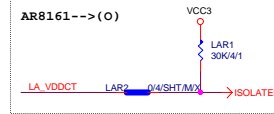
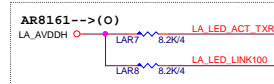


```
NEW DESIGN ONLY FOR INTERNAL SWR
AR8151:LAR3(O),LAR5(X)
AR8161:LAR5(O),LAR3/LAR4(X)
```

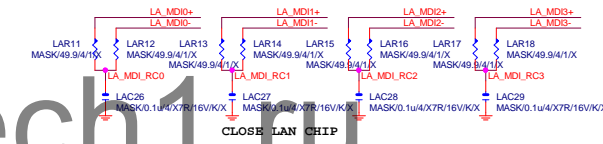


Power domain chart

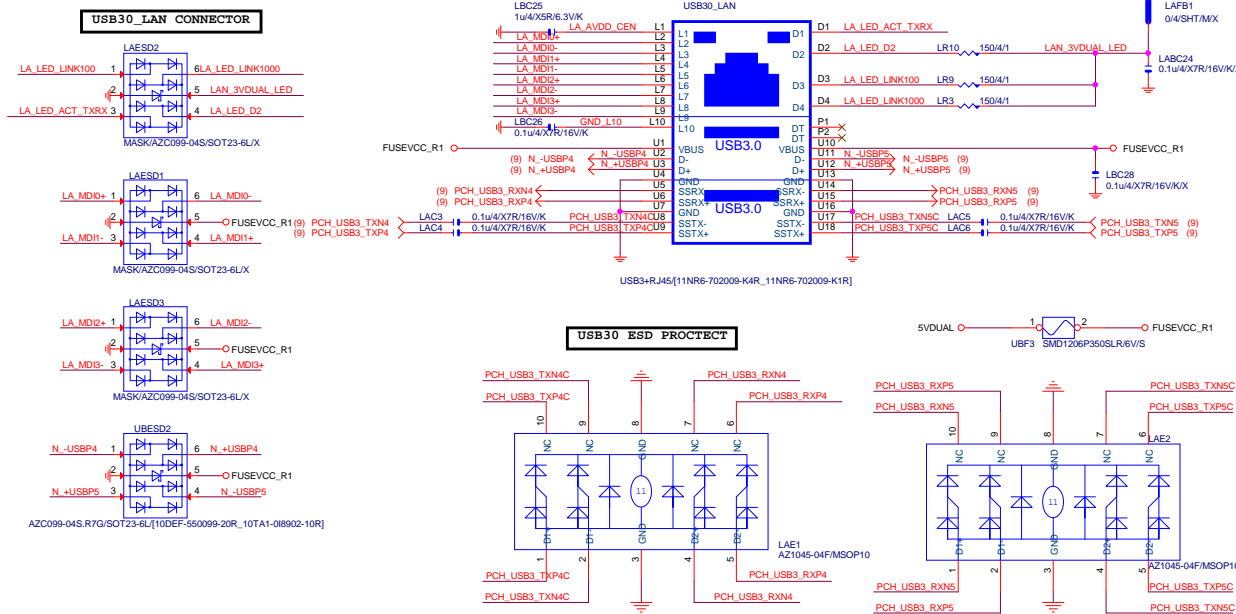
	AR8151	AR8161
AVDD33	N/A	3.3V
VDD33	3.3V	3.3V
AVDDH	2.7V	2.7V
AVDDL/DVDDL	1.1V	1.1V
VDDCT	1.7V	



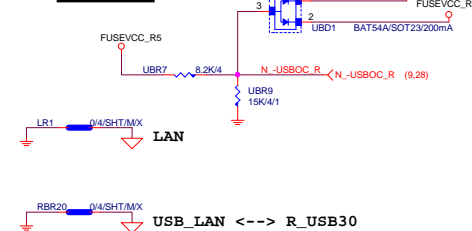
MDI : AR8161-->N/A



LA_MDI-->100歐姆:[20/4/10/4/20]

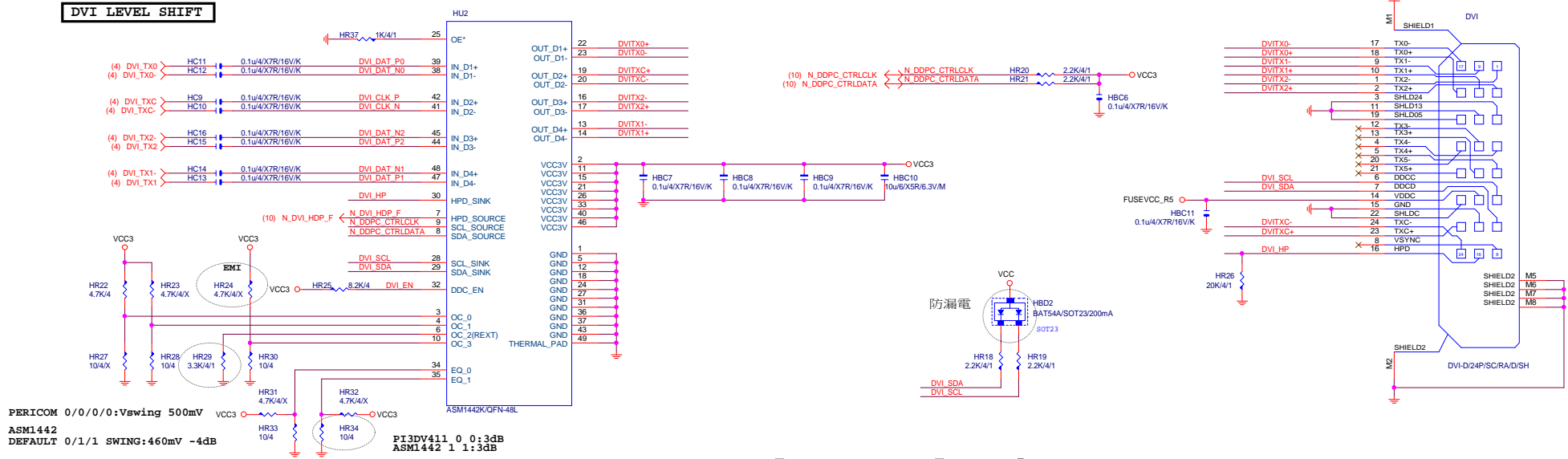


-USB0C_R



DVI LEVEL SHIFT

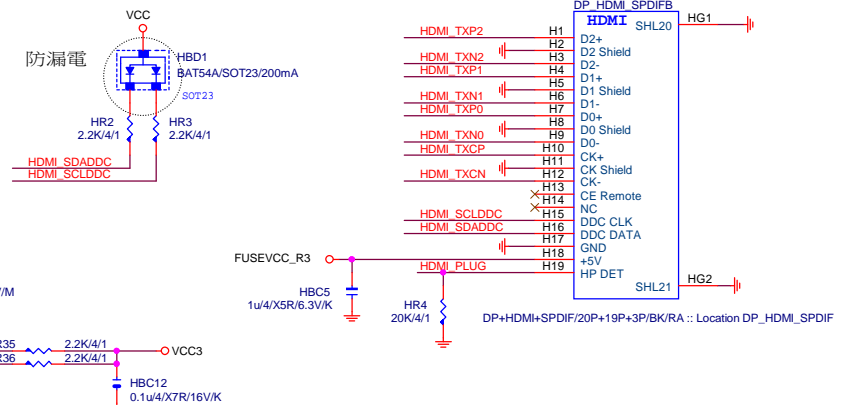
DVI:15/4/4/4/15
Impedance=85 +- 17.5%



www.aitech1.ru

Gigabyte Technology			
Title			
DVI			
Size	Document Number	Rev	
Custom	GA-H97-Gaming 3	1.0	
Date:	Thursday, April 24, 2014	Sheet	32 of 34

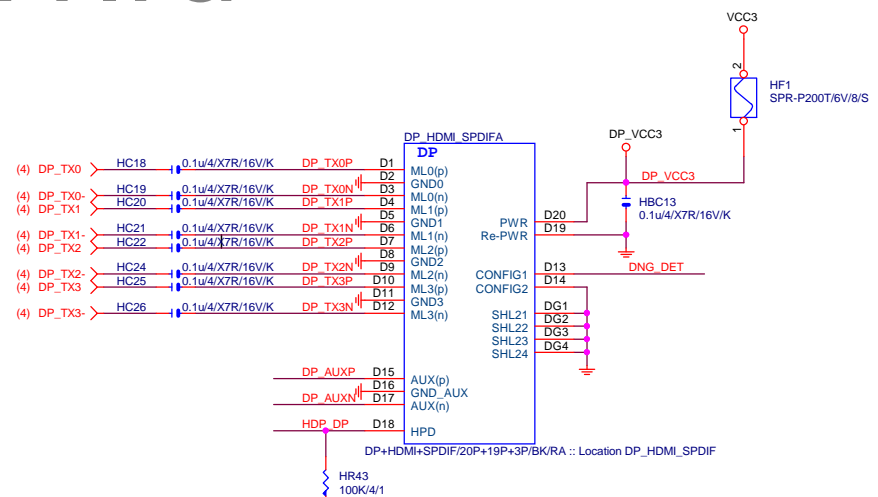
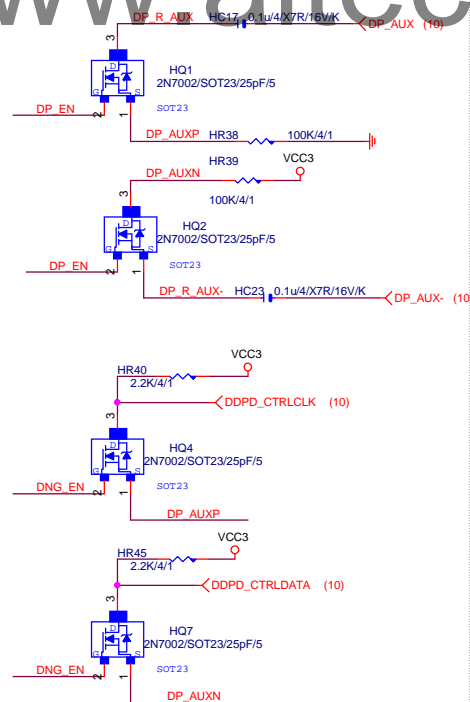
HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



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)

ASM1442:紅色框要上,HR12:3.16K

www.aitech1.ru



Title			
HDMI & USB			
Size	Document Number	Rev	
Custom	GA-H97-Gaming 3	1.0	
Date:	Thursday, April 24, 2014	Sheet	33 of 34

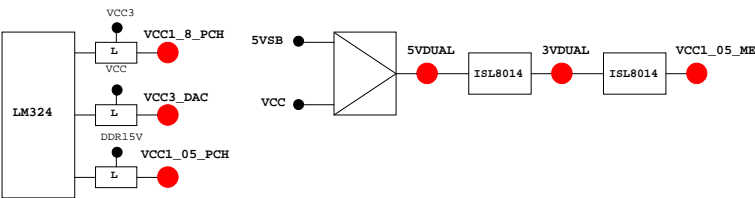
PCB GPIO LIST TABLE

PIN NAME	PWR	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPIO0	N/A
GP1/TACH1	MAIN	GPI	GPIO1	N/A
GP2/PIRQE#	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	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN	MAIN	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPIO8	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	GPIO12
GP13	STBY	L	GPI	LPCPME#
GP14/OC7#	STBY	NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)
GP16	MAIN	MAIN	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN	MAIN	GPIO17	P/U 8.2K VCC3
GP18	MAIN	MAIN	GPIO18	P/U 8.2K VCC3
GP19	MAIN	MAIN	GPIO19	P/U 8.2K VCC3
GP20	MAIN	MAIN	GPIO20	P/U 8.2K VCC3
GP21	MAIN	MAIN	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPIO22	P/U 8.2K VCC3
GP23	MAIN	MAIN	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#
GP25	STBY		Mobile Only	N/A
GP26	STBY		Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27
GP28	STBY	H	GPO	PWR LED
GP29	STBY	L	GPI	GPIO29
GP30	STBY	H-Z	GPI	Mobile Only
GP31	STBY	H-Z	GPI	Mobile Only
GP32	MAIN	H	GPO	N/A
GP33	MAIN	H	GPO	N/A
GP34	MAIN	H-Z	GPI	~PCI_STOP
GP35	MAIN	L	GPO	~ACZ_DET
GP36	MAIN	MAIN	GPI	N/A
GP37	MAIN	MAIN	GPI	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect
GP39	MAIN	H-Z	GPI	GPIO39
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	GPIO44
GP45	STBY	NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46
GP47	STBY		Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48
GP49	MAIN	H-Z	IN	GPIO49
GP50	MAIN	NATIVE	~REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	~GNT1
GP52	MAIN	NATIVE	~REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	~GNT2
GP54	MAIN	NATIVE	~REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	~GNT3
GP56	STBY	NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1
GP58	STBY	H-Z	NATIVE	F_USB_OC
GP59	STBY	NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)
GP61	STBY	L	NATIVE	~SUSTAT
GP62	STBY	L	NATIVE	SUSCLK
GP63	STBY	L	NATIVE	GPIO63
GP64	MAIN	L	NATIVE	CLKOUTFLEX0
GP65	MAIN	L	NATIVE	CLKOUTFLEX1
GP66	MAIN	L	NATIVE	CLKOUTFLEX2
GP67	MAIN	L	NATIVE	CLKOUTFLEX3
GP72	STBY	H-Z	NATIVE	VCORE_OV4
GP73	STBY		Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2
GP75	STBY	H-Z	NATIVE	N/A(Reverse)

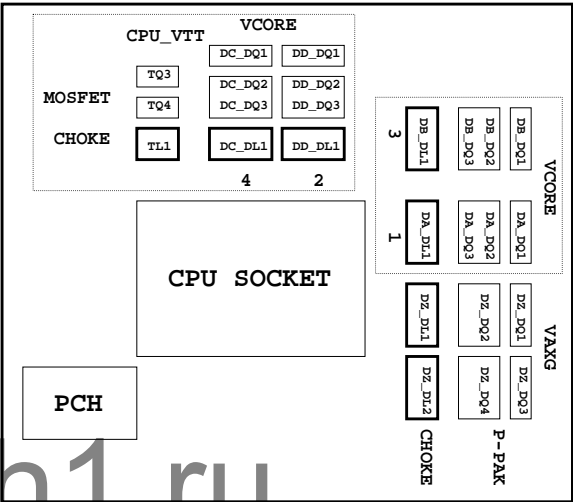
Super I/O ITE8720 GPIO Table

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#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/SEN	LOW_PWR_1	
VIDO5/GP27/SEN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSB5W#/GP40	CSI_F0	BSEL166_1
SUSCH#/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	2X PIN	FST_2X8
INIT#/GP85/SMBD_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	
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/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 Termination
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

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

散熱模組料號：

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

Gigabyte Technology			
TABLE LIST			
Size C	Document Number	Rev	
		1.0	
Date	Thursday, April 24, 2014	Sheet	34 of 34