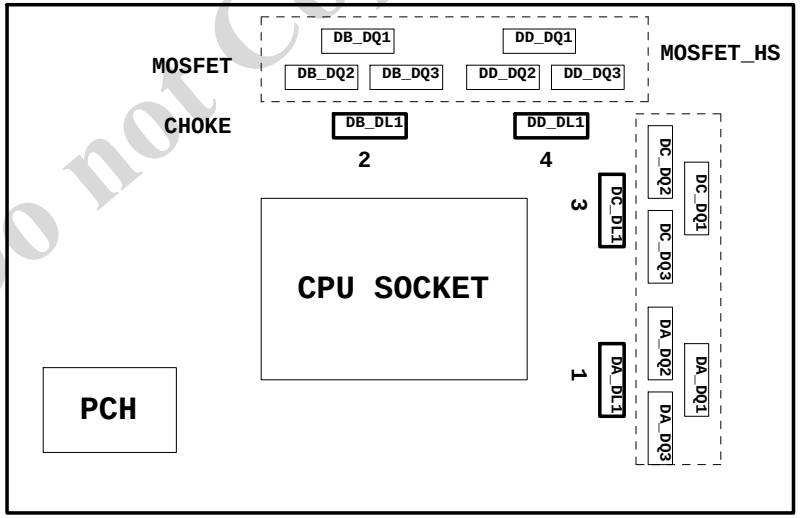
Model Name: GA-Z97X-SLI

1.11

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
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM SLB9635TT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE PWM_IR3564a
24	VCORE+DDR PWM IR3553+IR3598
25	ME POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET	TITLE
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	LAN INTEL i217
32	DVI
33	HDMI , R_USB30
34	TABLE LIST
35	
36	
37	
38	
39	
40	



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Thursday, June 26, 2014 | Sheet 1 of 35

GA-Z97X-SLI

Component value change history

Data	Change Item	Reason
0.1-11	1. M_BIOS要加腳座,腳座放在SMD,BIOS零件放在DIP區	
	2. PCH_HS & MOS_HS 料號要UPDATE	
0.2	1. ADD PCH_HS & MOS_HS料號	
	2. HR2/3/18/19 28K/4/1 --> 2.2K/4/1	
	3.N_GPIO73 NR134 Change to NR253	
	4.ADD SER11	
	5.背面電容移除	
	6. M2螺絲 M2_80A M2_80B	
	7.anti pop	
	8. DR130/DR140 2.87K/4/1 , DAR11 4.99K/4/1, DAR17:4.12K/4/1	
	9. ESD IC 指定 : AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]	
	10. PCIEX8 update料號:11AC1-023099-12R	
10A-0303	1. DAC4/DBC1/DCC1/DDC1 : 10u/8/X6S/16V/K/[10CM2-3K1005-74R_10CM2-3K1005-7BR]	
	2. VCORE / Non-Vcore 指定用 VISHAY	
	3. VGA指定用 : VGA/BK/SC/RA/D/2/HR/[11NR6-103015-12R]	
10B-0411	1. UPDATE Z97 料號:10HB1-030Z97-20R	
10C-0425	1. SATA EXPRESS CAP : SEC1~SEC8 CHANGE TO 0.1u/4/X7R/16V/K	
10D-0509	1. MA_DQ1~MA_DQ3 --> NTMFS4C10NT1G/PPAK/970pF/7.3m/[10IF9-070410-00R]	
11A-0603	1. AUDIO LED 模組線路 MASK --> Non-MASK (N_GPIO20 MB_ID =Low for Rev1.1)	
11C-0623	1. SATA/SATA EXPRESS /M2 AC couple cap change to short pad	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/10/18	1. H87-D3H 1.12 修改成 Z97-D3H 0.1	
2013/11/14 PCB:0.2	1. All 0ohm SHORT PAD (包含0402,0603,0805,8P4R) 2. 文字面: M.2(加孔位說明) & 10Gb/s分開一點 , DVI/VGA移出來 3. Update M2 control circuit 4. Fix Audio shut-down noise 5. Add DVI level shifter 6. Add 2_5LEVEL 外加AP431 7. 背面電容mask (包含CPU & PCH) 8. CPU_OPT & SYS_FAN1 FAN Control change 9. Update "NGFF-M-75P-8CM-1" & "C0402-2" 10. DFM check	
PCB:1.0 PCB:1.1 PCB:1.11	1. 文字面 Z97X-SLI Rev0.2 --> Z97X-SLI Rev1.0 1. AUDIO LED 模組線路 MASK --> Non-MASK 1. SATA/SATA EXPRESS /M2 AC couple cap change to short pad	

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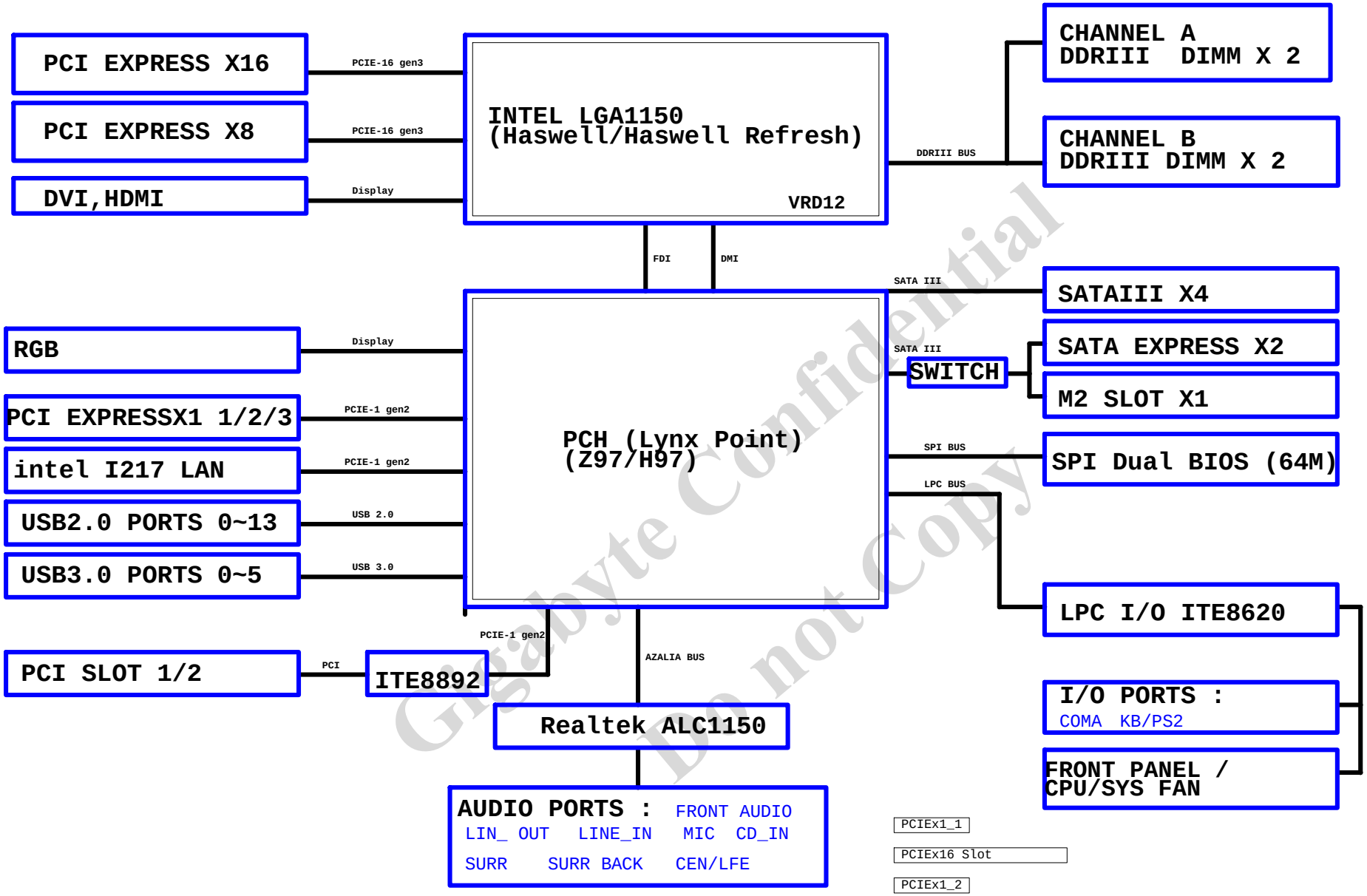
Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

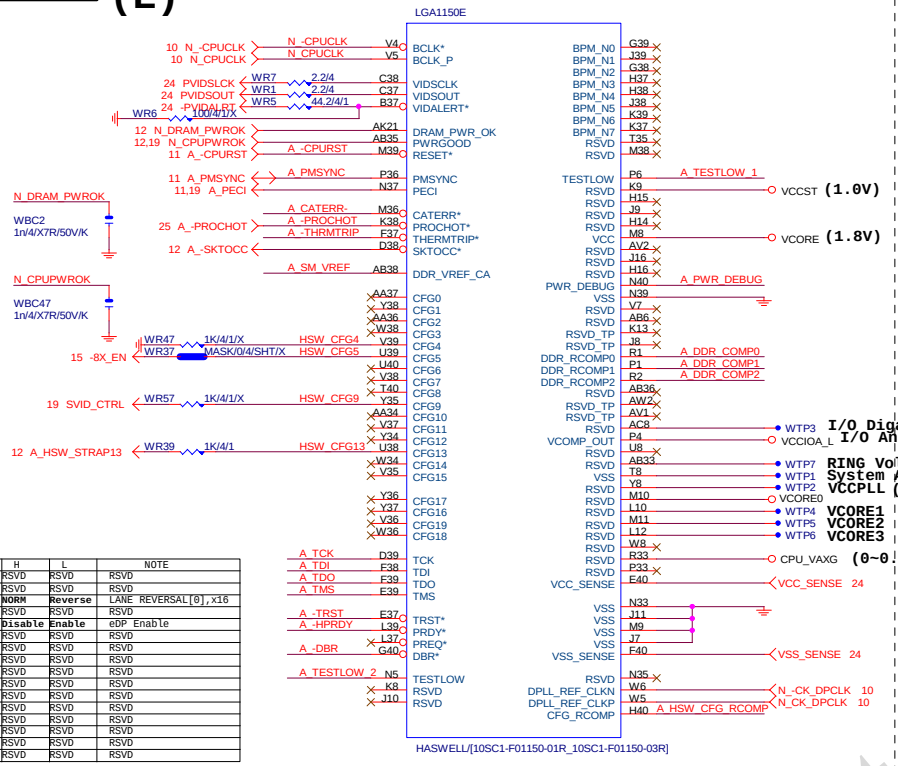
Date: Thursday, June 26, 2014 | Sheet 2 of 35

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 3 of 35		

LGA1150 (E)



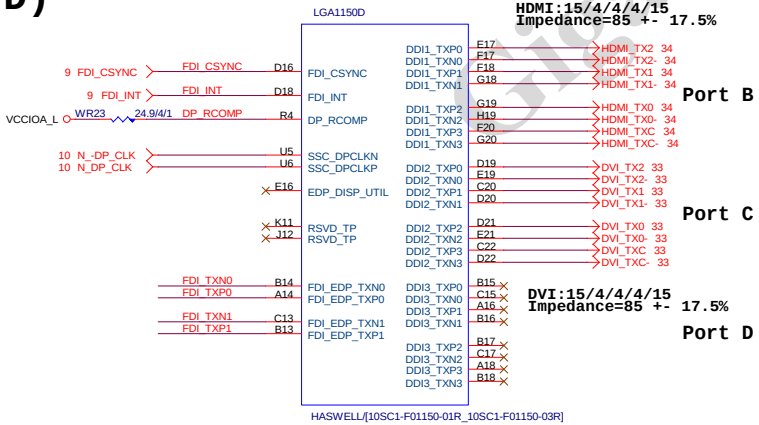
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP

LGA1150 (D)

HDMI 需接Port B For WHQL

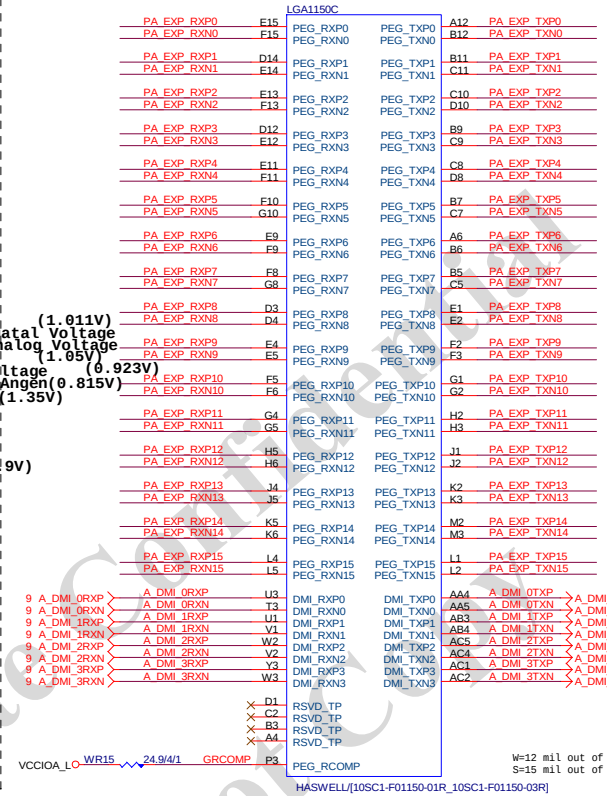


FDI:12/4/4/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

FDI_TXP[0..1] FDI_TXP[0..1] 9
FDI_TXN[0..1] FDI_TXN[0..1] 9

LGA1155 (C)

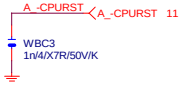
PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



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

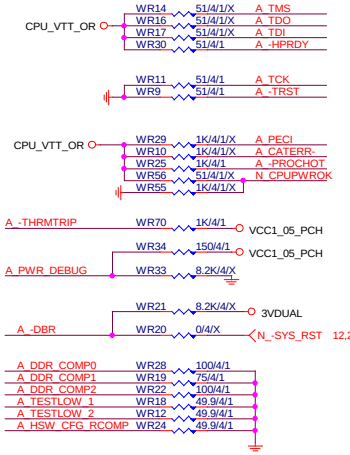
PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] 14,16
PA_EXP_TXN[0..15] PA_EXP_TXN[0..15] 14,16
PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] 14,16
PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] 14,16

-CPURST

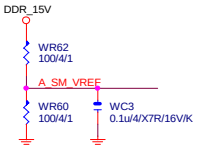


CPU SVID

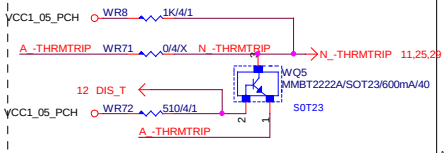
CPU PU/PD



SM REF



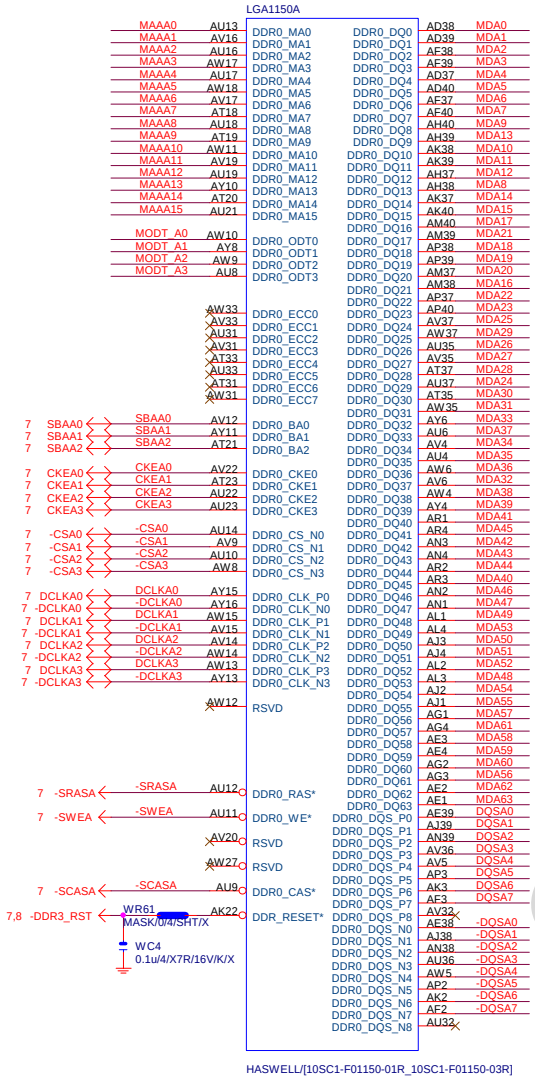
THRMTRIP DISABLE



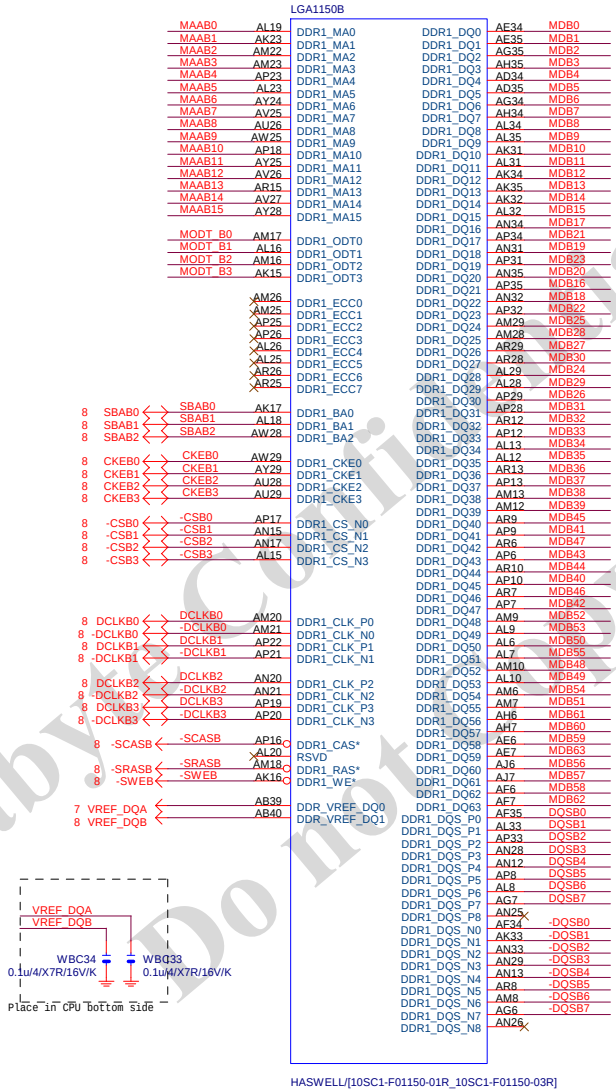
Gigabyte Technology

Title	CPU LGA1150-A		
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 4 of 35		

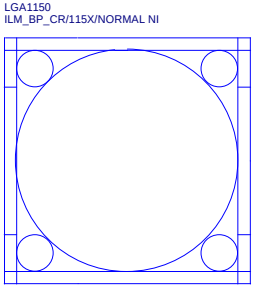
LGA1150 (A)



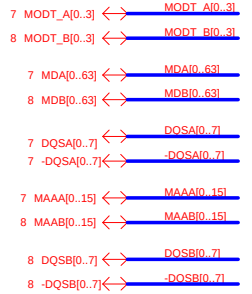
LGA1150 (B)



LGA1150 (CR)

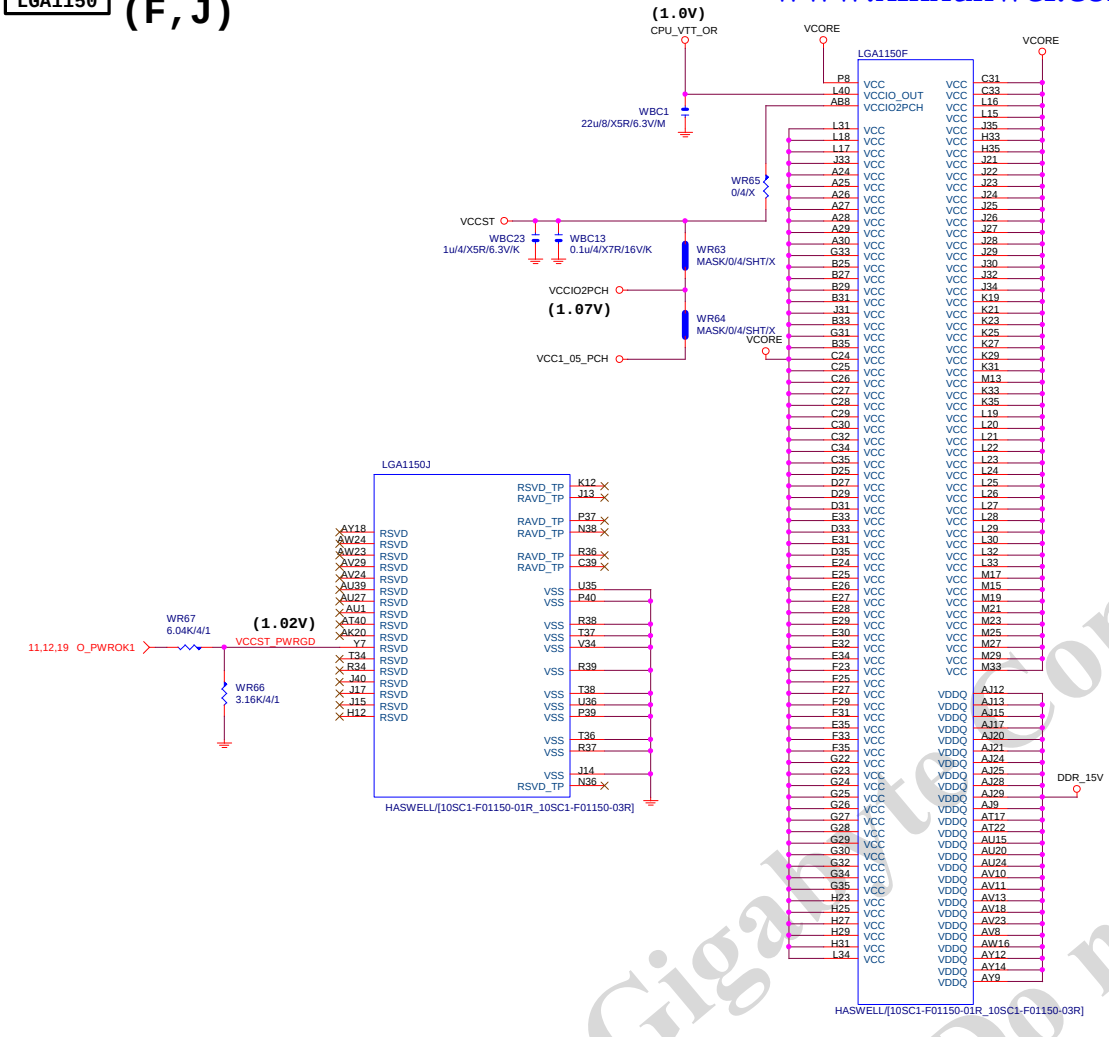


DDR BUS

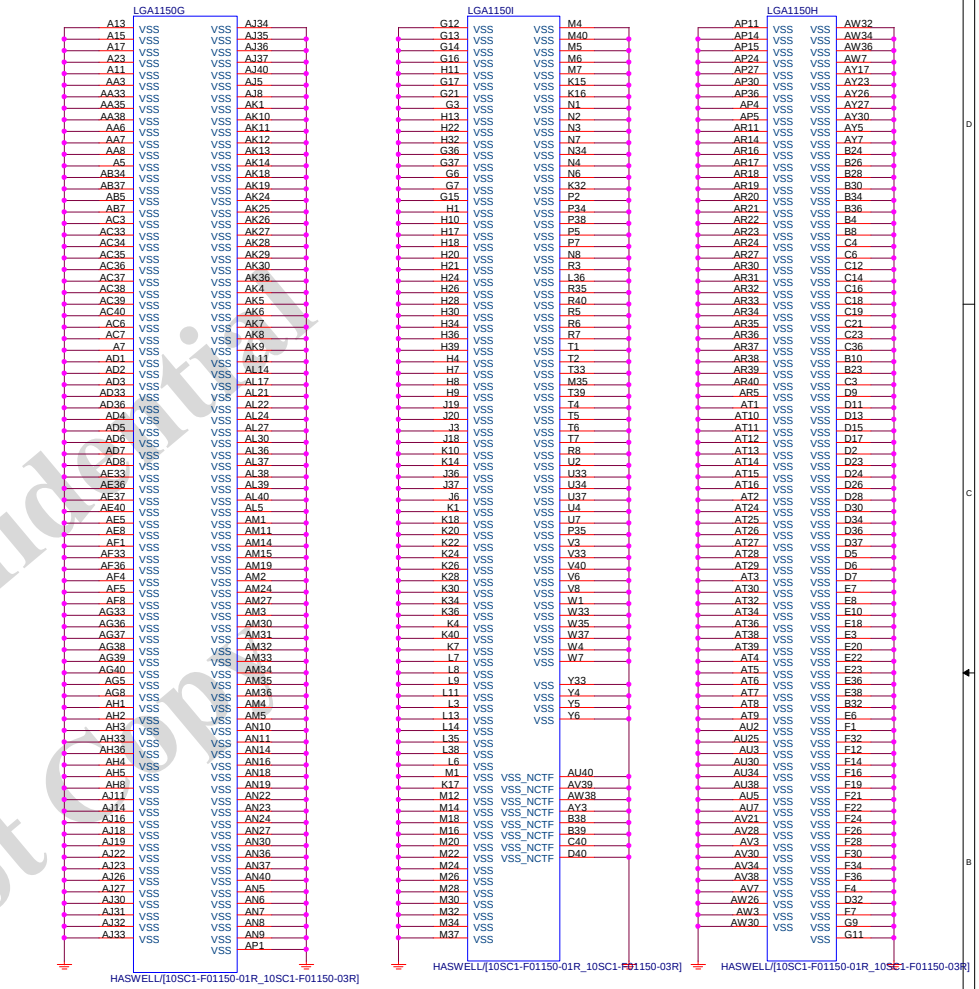


Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 5 of 35		

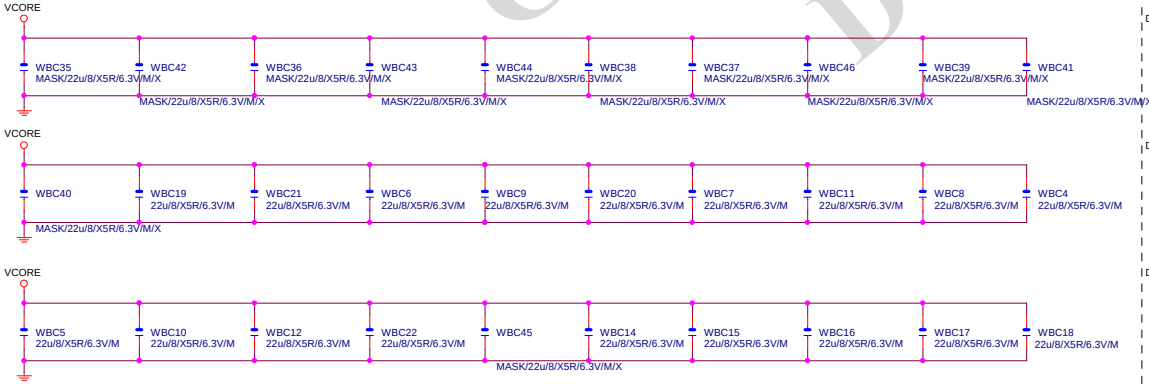
LGA1150 (F,J)



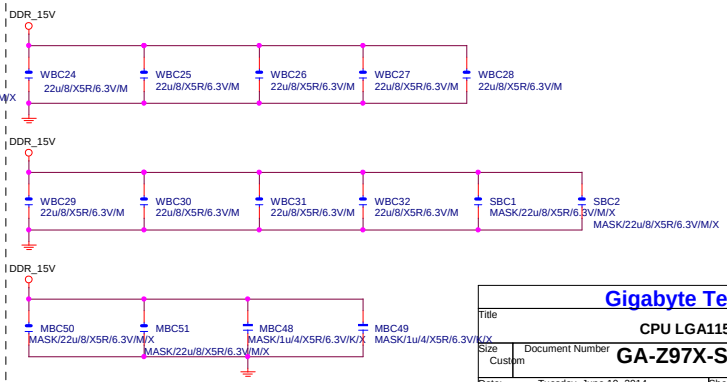
LGA1150 (G,H,I)



VCore CAP (X30)



DDR CAP (X15)



Gigabyte Technology		
Title	CPU LGA1150-C	
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 6 of 35	

DDR3 (A)

DDR3_4

DDRVTT

DDR3_2

DDR3 VREF

DDR_15V

MR15 1K/4/1

MR14 1K/4/1

VREF_DDRA MR13 MASK/0/4/SHT/X M_VREFCA_A 28

MR4 1K/4/1

MR5 1K/4/1

MBC28 1u/4/X5R/6.3V/K

VREF_DDDDRA MR1 10/4 VREF_DQA 5

MR3 10/4/X VREF_DQA_ADJ 28

MODT_A[0..3] 5

-DQSA[0..7] 5

DQSA[0..7] 5

-DDR3_RST

MC6 100p/4/NPO/50V/J

N_SMBDATA

N_SMBCLK

MC10 100p/4/NPO/50V/J/X

MC11 100p/4/NPO/50V/J/X

VDDSPD SHORT PROTECT

R0402-2

VCC3

VDDSPD

MF1 SPR-P200T/6V/8/S

MC4 0.1u/4/X7R/16V/K

MC5 0.1u/4/X7R/16V/K VREF_DDRA 67

MC1 0.1u/4/X7R/16V/K VREF_DDDDRA 1

MC8 0.1u/4/X7R/16V/K

MC3 0.1u/4/X7R/16V/K VREF_DDRA 67

MC7 0.1u/4/X7R/16V/K VREF_DDDDRA 1

MDA[0..63] 5

DDR3/240/BK/VA/D

DDR3/240/GR/VA/D

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

DDRVTT Decouple

MEC1 560u/FP/D/6.3V/69/A/11m

MEC2 560u/FP/D/6.3V/69/A/11m

MEC3 560u/FP/D/6.3V/69/A/11m

MBC43 22u/8/X5R/6.3V/M

MBC44 22u/8/X5R/6.3V/M

MBC39 22u/8/X5R/6.3V/M

MBC40 22u/8/X5R/6.3V/M

MBC5 0.1u/4/X7R/16V/K

MBC6 0.1u/4/X7R/16V/K

MBC7 0.1u/4/X7R/16V/K

MBC8 2.2u/6/X5R/6.3V/K

MBC18 0.1u/4/X7R/16V/K

MBC26 0.1u/4/X7R/16V/K

MBC41 0.1u/4/X7R/16V/K

MBC4 1u/4/X5R/6.3V/K

MBC10 1u/4/X5R/6.3V/K

MBC9 1u/4/X5R/6.3V/K

MBC11 1u/4/X5R/6.3V/K

MBC12 1u/4/X5R/6.3V/K

MBC13 1u/4/X5R/6.3V/K

MBC14 1u/4/X5R/6.3V/K

MBC15 1u/4/X5R/6.3V/K

MBC16 1u/4/X5R/6.3V/K

MBC17 1u/4/X5R/6.3V/K

MBC19 1u/4/X5R/6.3V/K

MBC20 1u/4/X5R/6.3V/K

MBC21 1u/4/X5R/6.3V/K

MBC22 1u/4/X5R/6.3V/K

MBC23 1u/4/X5R/6.3V/K

MBC24 1u/4/X5R/6.3V/K

MBC25 1u/4/X5R/6.3V/K

MBC27 1u/4/X5R/6.3V/K

MBC29 1u/4/X5R/6.3V/K

MBC30 1u/4/X5R/6.3V/K

MBC31 1u/4/X5R/6.3V/K

MBC32 1u/4/X5R/6.3V/K

MBC33 1u/4/X5R/6.3V/K

MBC34 1u/4/X5R/6.3V/K

MBC35 1u/4/X5R/6.3V/K

MBC36 1u/4/X5R/6.3V/K

MBC37 1u/4/X5R/6.3V/K

MBC47 1u/4/X5R/6.3V/K

Gigabyte Technology

Title: DDRIII CHANNEL A

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: | Sheet 7 of 35

DDR3 (B)

DDR3_3

DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s

COUPON

CPU

DIMM4 (黑色)
DIMM2 (灰色)
CHA

DIMM3 (黑色)
DIMM1 (灰色)
CHB

Gigabyte Technology

Title: DDRIII CHANNEL B

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: | Sheet 8 of 35

PCH (B)

USB Port 1/9—定要接出來,For Debug Port test 1001

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

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

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

PCHB

A_DMI_0TXN L24
A_DMI_0TXP K24
A_DMI_0RXN C20
A_DMI_0RXP B20
A_DMI_1TXN G24
A_DMI_1TXP H24
A_DMI_1RXN D21
A_DMI_1RXP B21
A_DMI_2TXN F26
A_DMI_2TXP G26
A_DMI_2RXN B22
A_DMI_2RXP C22
A_DMI_3TXN K26
A_DMI_3TXP L26
A_DMI_3RXN A24
A_DMI_3RXP B24

DMI_RXN_0 DMI_RXP_0 DMI_TXN_0 DMI_TXP_0 DMI_RXN_1 DMI_RXP_1 DMI_TXN_1 DMI_TXP_1 DMI_RXN_2 DMI_RXP_2 DMI_TXN_2 DMI_TXP_2 DMI_RXN_3 DMI_RXP_3 DMI_TXN_3 DMI_TXP_3

VCC1_5_PCH
NR50 7.5K/4/1 DMI_COMP B19
PCIE_COMP C13
NR40 7.5K/4/1
W=8 mil out of PCH
S=15 mil to other signals
CK_-SRCCLK_PCH G22
CK_SRCCLK_PCH F22

DMI_RCOMP
PCIE_RCOMP
CLKIN_DMI_N
CLKIN_DMI_P

USBN_0 AV10 N_-USBP0 29
USBP_0 AU10 N_+USBP0 29
USBN_1 AV11 N_-USBP1 29
USBP_1 AW11 N_+USBP1 29
USBN_2 AN14 N_-USBP2 20
USBP_2 AP14 N_+USBP2 20
USBN_3 AJ16 N_-USBP3 20
USBP_3 AK16 N_+USBP3 20
USBN_4 AU15 N_-USBP4 32
USBP_4 AV15 N_+USBP4 32
USBN_5 AU12 N_-USBP5 32
USBP_5 AT12 N_+USBP5 32
USBN_6 AV14 N_-USBP6 29
USBP_6 AW14 N_+USBP6 29
USBN_7 AU17 N_-USBP7 29
USBP_7 AT17 N_+USBP7 29
USBN_8 AW16 N_-USBP8 31
USBP_8 AV16 N_+USBP8 31
USBN_9 AN16 N_-USBP9 31
USBP_9 AP16 N_+USBP9 31
USBN_10 AJ18 N_-USBP10 29
USBP_10 AK18 N_+USBP10 29
USBN_11 AP18 N_-USBP11 29
USBP_11 AN18 N_+USBP11 29
USBN_12 AW18 N_-USBP12 29
USBP_12 AV18 N_+USBP12 29
USBN_13 AP20 N_-USBP13 29
USBP_13 AN20 N_+USBP13 29

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

REAR USB3.0
B85/H81:USB N\A

20 PCH_USB3_RXN2 L14
20 PCH_USB3_RXP2 K14
20 PCH_USB3_TXN2 B12
20 PCH_USB3_TXP2 B11
20 PCH_USB3_RXN3 F14
20 PCH_USB3_RXP3 G14
20 PCH_USB3_TXN3 D11
20 PCH_USB3_TXP3 C11

PCIE_PERN_1_USB3_RXN_2
PCIE_PERP_1_USB3_RXP_2
PCIE_PETN_1_USB3_TXN_2
PCIE_PETP_1_USB3_TXP_2
PCIE_PERN_2_USB3_RXN_3
PCIE_PERP_2_USB3_RXP_3
PCIE_PETN_2_USB3_TXN_3
PCIE_PETP_2_USB3_TXP_3

LAN i217v
32 LB_ML_IN F11
32 LB_ML_IP H11
32 LB_ML_ON B9
32 LB_ML_OP A9

ITE8892 PCI Bridge
17 G_PCIEBIN J11
17 G_PCIEBIP L11
17 G_PCIEBON B8
17 G_PCIEBOP C8

PCIEX1 port1
15 PI_PCIE_IN1 G9
15 PI_PCIE_IP1 F9
15 PI_PCIE_TN1 B7
15 PI_PCIE_TP1 A7

PCIEX1 port2
15 PJ_PCIE_IN2 F7
15 PJ_PCIE_IP2 H7
15 PJ_PCIE_TN2 E1
15 PJ_PCIE_TP2 D2

PCIEX1 port3
15 PK_PCIE_IN3 K6
15 PK_PCIE_IP3 K8
15 PK_PCIE_TN3 G3
15 PK_PCIE_TP3 G5

PCIE_PERN_3 J2
PCIE_PERP_3 J3
PCIE_PETN_3 H2
PCIE_PETP_3 H1

放靠近 Device & PCI-E Slot

Z97/S/[10HB1-030Z97-20R]

OC0B_GP59 AE40 N_-USBOC_F 29
OC1B_GP40 AF37
OC2B_GP41 AD39 N_-USBOC_R 29,32
OC3B_GP42 AD40
OC4B_GP43 AE39
OC5B_GP9 AC41
OC6B_GP10 AE40
OC7B_GP14 AG40 N_GPIO14

USBRBIASB AV20 N_USBRBIAS NR47 22.6/4/1
USBRBIAS AU20
W=8 mil out of PCH
S=15 mil to other signals

CLKIN_DOT96N AP11 CK_-DOTCLK
CLKIN_DOT96P AM11 CK_DOTCLK

N_GPIO14 NR130 8.2K/4 3VDUAL

N_-USBOC_F NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R NBC83 0.1u/4/X7R/16V/K

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

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

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

PCHF

29 PCH_USB3_RXN0 F20 USB3_RXN_0 FDI_RXN_0 N1 FDI_TXN0
29 PCH_USB3_RXP0 G20 USB3_RXP_0 FDI_RXP_0 N2 FDI_TXP0
29 PCH_USB3_TXN0 B18 USB3_TXN_0 FDI_RXN_1 P2 FDI_TXN1
29 PCH_USB3_TXP0 C18 USB3_TXP_0 FDI_RXP_1 P3 FDI_TXP1

29 PCH_USB3_RXN1 G18 USB3_RXN_1
29 PCH_USB3_RXP1 H18 USB3_RXP_1 FDI_CSYNC L2 FDI_CSYNC 4
29 PCH_USB3_TXN1 B15 USB3_TXN_1
29 PCH_USB3_TXP1 B16 USB3_TXP_1 FDI_INT L3 FDI_INT 4

32 PCH_USB3_RXN4 K20 USB3_RXN_4 FDI_RCOMP K2 FDI_RCOMP NR29 7.5K/4/1
32 PCH_USB3_RXP4 L20 USB3_RXP_4 VCC1_5_PCH
32 PCH_USB3_TXN4 D15 USB3_TXN_4
32 PCH_USB3_TXP4 C15 USB3_TXP_4

32 PCH_USB3_RXN5 L18 USB3_RXN_5
32 PCH_USB3_RXP5 K18 USB3_RXP_5
32 PCH_USB3_TXN5 B14 USB3_TXN_5
32 PCH_USB3_TXP5 A14 USB3_TXP_5

VCC3
NR62 8.2K/4 AK28 TACH6_GP70
NR63 8.2K/4 AT34 TACH7_GP71

Z97/S/[10HB1-030Z97-20R]

FDI:12/4/4/4/12
Impedance=85 +- 17.5%

FDI_TXP[0..1] FDI_TXP[0..1] 4
FDI_TXN[0..1] FDI_TXN[0..1] 4

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

CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4
Mount for integrated clock Generation Mode

CK_DOTCLK NR92 8.2K/4
CK_-DOTCLK NR91 8.2K/4
NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

AT1 AT41 AU1 AV1 AV2 AV40 AV41 AW2 AW40 B40 B41 C41 D1 D41 VSS_NCTF

TP22 U11 TP23 U10 TP21 AJ14 TP20 AK14 TP14 K34 TP15 K33 TP12 AH24
TP10 L16 TP11 K16 TP9 AM34
TP3 R12 TP4 N12 TP1 L22 TP2 K22
TP5 R4 TP6 K5 TP7 P5 TP8 L5
VSS AC31 VSS AF3 VSS AV21

Z97/S/[10HB1-030Z97-20R]

PCH H/S

BGAHSINK-Z97X-SLI

PCH_HS

PCH_HS/[12SP2-S04554-01R_12SP2-S04554-02R_12SP2-S04554-03R]

USB TABLE

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

USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Tuesday, June 10, 2014 | Sheet 9 of 35

PCH (E)

PCHE

CLOSE PCH<0.75";4/10;+-1000;GND

VGA 4/20;+-200MILS;GND REF

DDC DIFF 4/5;+-1000

IREF 4/12;<500MILS;GND

Z97/S/[10HB1-030Z97-20R]

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

PCH (G)

PCHG

Flex1,2,3,4 : 14/24/33/48MHZ

X'TAL 25MHz須參考GND
CRYSTAL/TRACE 週邊不要有訊號,VIA靠近
走線遠離其他40mil以上

M.2 CLK 限用 CLKOUT_PCIE_0

PCIEX4 CLOCK(PE_SRCCLK_3GIO1)
由PIN R6,R7 換成PIN W7,W6
避免跟CRYSTAL 25MHZ干擾

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

Z97/S/[10HB1-030Z97-20R]

PCH CLK PD

Mount for integrated clock Generation Mode

VGA DDC

VGA CONNECTOR

VGA/BK/SC/RA/D/2/HR/[11NR6-103015-12R]

VGA ESD

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

SSOP6_ESD

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

VGA DDC

Close to PCH

Close to Filter

Gigabyte Technology			
Title: PCH DISPLAY ,CLK BUFFER			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 10 of 35		

PCH (C)

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

SATA2 4/4/4//15
SATA3 4/4/4//20

PCHC

CL_CLK
CL_DATA
CL_RSTB
APWROK
PWM0
PWM1
PWM2
PWM3
TACH0_GP17
TACH1_GP1
TACH2_GP6
TACH3_GP7
TACH4_GP68
TACH5_GP69
SSTCTL
SCLOCK_GP22
SLOAD_GP38
SDATAOUT0_GP39
SDATAOUT1_GP48

CLINK
FAN
GPIO
HOST

SATA_RXN_0 B28 N_SATA0RXN — N_SATA0RXN 27
SATA_RXP_0 A28 N_SATA0RXP — N_SATA0RXP 27
SATA_TXN_0 F31 N_SATA0TXN — N_SATA0TXN 27
SATA_TXP_0 H31 N_SATA0TXP — N_SATA0TXP 27
SATA_RXN_1 D30 N_SATA1RXN — N_SATA1RXN 27
SATA_RXP_1 C30 N_SATA1RXP — N_SATA1RXP 27
SATA_TXN_1 B34 N_SATA1TXN — N_SATA1TXN 27
SATA_TXP_1 C34 N_SATA1TXP — N_SATA1TXP 27

H81 6G

SATA_RXN_2 A31 N_SATA2RXN — N_SATA2RXN 27
SATA_RXP_2 B31 N_SATA2RXP — N_SATA2RXP 27
SATA_TXN_2 B35 N_SATA2TXN — N_SATA2TXN 27
SATA_TXP_2 D35 N_SATA2TXP — N_SATA2TXP 27
SATA_RXN_3 B32 N_SATA3RXN — N_SATA3RXN 27
SATA_RXP_3 C32 N_SATA3RXP — N_SATA3RXP 27
SATA_TXN_3 G33 N_SATA3TXN — N_SATA3TXN 27
SATA_TXP_3 F33 N_SATA3TXP — N_SATA3TXP 27

B85 6G
H81 X

SATA_RXN_4_PCIE_PERN_1 A26 N_SATA4RXN — N_SATA4RXN 27
SATA_RXP_4_PCIE_PERP_1 B26 N_SATA4RXP — N_SATA4RXP 27
SATA_TXN_4_PCIE_PETN_1 L28 N_SATA4TXN — N_SATA4TXN 27
SATA_TXP_4_PCIE_PETP_1 K28 N_SATA4TXP — N_SATA4TXP 27
SATA_RXN_5_PCIE_PERN_2 C27 N_SATA5RXN — N_SATA5RXN 27
SATA_RXP_5_PCIE_PERP_2 B27 N_SATA5RXP — N_SATA5RXP 27
SATA_TXN_5_PCIE_PETN_2 G28 N_SATA5TXN — N_SATA5TXN 27
SATA_TXP_5_PCIE_PETP_2 F28 N_SATA5TXP — N_SATA5TXP 27

B85/H81 3G

CLKIN_SATA_N H35 CK_-SRCCLK_SATA
CLKIN_SATA_P H36 CK_SRCCLK_SATA

SATALEDB J39 — N_-SATALED 29
SATA_RCOMP D33 SATA3COMP — NR68 7.5K/4/1 — VCC1_5_PCH

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

SATA0GP_GP21 M37 N_GPIO21 — N_GPIO21 30
SATA1GP_GP19 J40 N_GPIO19
SATA2GP_GP36 H40 N_GPIO36
SATA3GP_GP37 N41 N_GPIO37
SATA4GP_GP16 M39 N_GPIO16 — N_GPIO16 27
SATA5GP_GP49 N40 N_GPIO49 — N_GPIO49 27

EDP_BKLTCTL AP2
EDP_BKLTEN AT2
EDP_VDDEN AP1

RSVD N30 N_A20GATE — N_A20GATE 19
RCINB K36 N_-KBRST — N_-KBRST 19
SERIRQ G39 N_SERIRQ — N_SERIRQ 19
THRMTRIPB C40 N_-THRMTRIP — SB_PECI NR85 0/4/X A_PECI — N_-THRMTRIP A_PECI 4,19 4,25,29
PECI G40
PM_SYNCH F40 — A_PMSYNC 4
PLTRST_PROCB F41 — A_-CPURST 4

Z97/S/[10HB1-030Z97-20R]

6,12,19 O_PWROK1 — NR177 0/4/X — N_ME_PWROK — AA32
NC26 100p/4/NPO/50V/J/X

29 N_GPIO1
27 N_GPIO69
19 N_SSTCTL
15 N_GPIO39

PCH (A)

3VDUAL_PCH
NR124 8.2K/4/X N_-P_PME — N_PCH33 AM22 — 10 N_PCH33
NR30 8.2K/4 TD_IREF

PCHA
PMEB
CLKIN_33MHZLOOPBACK
TP16 TP17 TP18 TP19 TD_IREF
PIRQAB PIRQBB PIRQCB PIRQDB
GPIO2 GPIO3 GPIO4 GPIO5
PLTRSTB — AA37 — N_-PFMRST 19
GP35/NMIB
GP50 GP51 GP52 GP53 GP54 GP55

N_-PIRQA AU29
N_-PIRQB AU27
N_-PIRQC AW28
N_-PIRQD AV27
N_-PIRQE AR30
N_-PIRQF AV29
N_-PIRQG AV28
N_-PIRQH AT27

M40 N_GPIO35
AH26 N_GPIO50
AU31 N_GPIO51
AJ26 N_GPIO52
AV31 N_GPIO53
AW33 N_GPIO54
R30 N_GPIO55

Z97/S/[10HB1-030Z97-20R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

Default int pull up on GP51,
Default SPI boot devices

ME PWROK N_GPIO37 For H97/H87/B85

N_GPIO37:TLS Setting
NR146 1K/4/1/X — N_GPIO37 — NR249 1K/4/1/X — VCC3 — 3VDUAL — NR110 1K/4/1/X

12,26 N_-SLP_A
NR187 MASK/0/4/SHT/X — VCC1_05_ME
ND2 BAT54A/SOT23/200mA
S0T23

3VDUAL
NR188 22K/4
NQ16 MMBT2222A/SOT23/600mA/40 S0T23

VCC3_ME
NR189 8.2K/4
NR190 8.2K/4/X
NC50 1u/4/X5R/6.3V/K

VCC3_ME
NR186 8.2K/4
N_ME_PWROK
NC49 0.01u/4/X7R/25V/K
NQ15 S0T23 MMBT2222A/SOT23/600mA/40

GPIO38 Ctrl

MFG Mode

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

VCC3
N_GPIO38 NR114 8.2K/4
NQ13 MMBT2222A/SOT23/600mA/40 S0T23
12 N_GPIO60 NR184 8.2K/4

PCH CLK PD

CK_SRCCLK_SATA NR174 8.2K/4
CK_-SRCCLK_SATA NR173 8.2K/4

Mount for integrated clock Generation Mode

PCH PU/PD

NRN2 8.2K/8P4R/4
N_-PIRQC
N_-PIRQH
N_-PIRQD
N_-PIRQB

NRN3 8.2K/8P4R/4
N_-PIRQE
N_-PIRQF
N_-PIRQA
N_-PIRQG

NRN7 8.2K/8P4R/4
N_GPIO50
N_GPIO52
N_GPIO17
N_GPIO6

N_GPIO55:A16 SWAP OVERRIDE — N_GPIO55 NR160 1K/4/1/X
N_GPIO51 NR55 1K/4/1/X
N_GPIO53:DMI AC COUPLING — N_GPIO53 NR53 1K/4/1/X

N_GPIO22:PCH CONFIG
12 N_-PCI_STOP — NR167 1K/4/1/X — NR157 1K/4/1/X
N_GPIO39:GFX MODE

NRN11 8.2K/8P4R/4
N_-PCI_STOP
N_A20GATE
N_GPIO22
N_GPIO39

NRN12 8.2K/8P4R/4
N_GPIO19
N_GPIO48
N_SERIRQ

NRN13 8.2K/8P4R/4
N_GPIO35
N_GPIO16
N_GPIO49

N_GPIO49:PCIE/MSATA MUX SELECT
N_-KBRST NR161 1K/4/1
N_GPIO36:DMI RX TERMINATION
NR84 1K/4/1/X — N_GPIO36 NR148 8.2K/4/X
N_GPIO21 NR252 1K/4/1
N_GPIO69:SV DETECT
NR66 1K/4/1/X — N_GPIO69 NR65 8.2K/4/X
N_GPIO55 NR244 8.2K/4

NRN4 8.2K/8P4R/4
N_GPIO7
N_GPIO54
N_GPIO1
N_GPIO68

N_GPIO17 NR61 8.2K/4/X
N_GPIO19 NR113 8.2K/4/X

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Title: PCH HOST , SATA, PCI

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Tuesday, June 10, 2014 | Sheet 11 of 35

PCH (D)

PCHD

VCC3 NR54 8.2K/4/X N_GPIO23 AK26 — LDRQ1B_GP23
19 N_LAD0 N_LAD0 AN24 — LAD_0
19 N_LAD1 N_LAD1 AP26 — LAD_1
19 N_LAD2 N_LAD2 AJ24 — LAD_2
19 N_LAD3 N_LAD3 AN26 — LAD_3
19 N_-LDRQ0 N_-LDRQ0 AK22 — LDRQ0B
19 N_-LFRAME N_-LFRAME AP24 — LFRAMEB

22 C_ACZ_BITCLK NR45 33/4 AV23 — HDA_BCLK
22 C_-ACZ_RST NR43 33/4 AU24 — HDA_RSTB
AT26 — HDA_SDI0
AV22 — HDA_SDI1
22 C_ACZ_SDIN2 AT22 — HDA_SDI2
AW23 — HDA_SDI3
22 C_ACZ_SDOUT NR44 33/4 A_SO AU22 — HDA_SDO
22 C_ACZ_SYNC NR46 33/4 A_SYC AV24 — HDA_SYNC

21 N_ICH_SPI_MOSI N_ICH_SPI_MOSI P40 — SPI_MOSI_IO0
21 N_ICH_SPI_MISO N_ICH_SPI_MISO R36 — SPI_MISO_IO1
21 N_-ICH_SPI_CS N_-ICH_SPI_CS R38 — SPI_CS0B
21 N_ICH_SPI_CLK N_ICH_SPI_CLK U39 — SPI_CLK
21 N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 R35 — SPI_CS1B
R40 — SPI_CS2B
21 SPI_DQ2 SPI_DQ2 U40 — SPI_IO2
21 SPI_DQ3 SPI_DQ3 U37 — SPI_IO3

N_Y1 AN40 — RTCX1
N_Y2 AN39 — RTCX2
N_-RTCRST AR38 — RTESTB
N_-SRTCRST AR39 — SRTCRSTB
N_-INTRUDER AR41 — INTRUDERB
6,11,19 O_PWROK1 O_PWROK1 AT40 — PCH_PWROK
19,28 O_-RSMRST O_-RSMRST AM40 — RSMRSTB
N_INTVRMEN AV36 — INTVRMEN
N_PCH_DPWROK AV38 — DPWROK
N_DSWVRMEN AM41 — DSWODVREN

19 N_-LPCPME N_-LPCPME AG31 — SMBALERTB_GP11
7,8,14,15,18,24,28 N_SMBCLK N_SMBCLK AG36 — SMBCLK
7,8,14,15,18,24,28 N_SMBDATA N_SMBDATA AG32 — SMBDATA
11 N_GPIO60 N_GPIO60 AG35 — SML0ALERTB_GP60
32 N_SML0CLK N_SML0CLK AE32 — SML0CLK
32 N_SML0DAT N_SML0DAT AE35 — SML0DATA
N_-PCH_HOT AJ39 — SML1ALERTB_PCHHOTB_GP74
N_SML1CLK AK36 — SML1CLK_GP58_MGPIO11
N_SML1DAT AK33 — SML1DATA_GP75_MGPIO12

BMBUSYB_GP0 G38 N_GPIO0
CLKRUNB_GP32 N32 N_GPIO32
DOCKENB_GP33 AV26 N_GPIO33
STPPCIB_GP34 N34 N_-PCI_STOP → N_-PCI_STOP 11
GP8 AC40 N_-IGC_EN
LAN_PHY_PWR_CTRL_GP12 AL40 N_LAN_DIS- → N_LAN_DIS- 32
HDA_DOCK_RSTB_GP13 AN22 N_GPIO13
GP15 AC32 N_TEMP_ALART- → N_TEMP_ALART- 19
GP24 AE34 A_-SKTOCC → A_-SKTOCC 4
GP28 V41 N_GPIO28
SLP_WLANB_GP29 AL39 N_GPIO29
PCIECLKRQ0B_GP73 W34 N_GPIO73 → N_GPIO73 27
PCIECLKRQ1B_GP18 P39 N_GPIO18
PCIECLKRQ2B_GP20_SMIB P37 N_GPIO20
PCIECLKRQ3B_GP25 AA39 N_GPIO25
PCIECLKRQ4B_GP26 W35 N_GPIO26
PCIECLKRQ5B_GP44 AA36 N_GPIO44
PCIECLKRQ6B_GP45 W32 N_GPIO45 NR245 MASK/0/4/SHT/X → DIS_T 4
PCIECLKRQ7B_GP46 AA40 N_GPIO46

GP57 AC36 N_GPIO57
SYS_PWROK W31 → N_PCH_VRMPWRGD 19
RIB AE36 N_-RI → N_-RI 20
WAKEB AK34 N_-PCIE_WAKE → N_-PCIE_WAKE 14,15,18,27
SLP_AB AN37 N_-SLP_A → N_-SLP_A 11,26
SLP_LANB AU36 N_-SLP_LAN
SLP_S0B AC35
SLP_S3B AK40 N_-SLP_S3 → N_-SLP_S3 19
SLP_S4B AT35 N_-S4_S5 → N_-S4_S5 19
SLP_S5B_GP63 AA35
SUS_STATB_GP61 AD37 N_-SUSTAT
SUSCLK_GP62 W36 N_SUSCLK → N_SUSCLK 27
GP72 AJ40 N_GPIO72
SUSACKB AJ37
SUSWARNB_SUSPWRDNACK_GP30 AG41 N_-S_WARN
DRAMPWRGD AE38 N_DRAM_PWROK
GP27 AU34 N_GPIO27 → N_-LAN_WAKE 32
ACPRESENT_GP31_MGPIO2 AM36 N_GPIO31
SLP_SUSB AK38 N_-DEPSLP → N_-DEPSLP 28
PWRBTNB AK41 O_PWRBTSW → O_PWRBTSW 19
SYS_RESETB N36 N_-SYS_RST → N_-SYS_RST 4,29
SPKR R32 N_SPKR → N_SPKR 29
PROCPWRGD D40 N_CPUPWROK → N_CPUPWROK 4,19

TP13 W37 N_PCH_RST
JTAG_TCK Y40 N_PCH_TCK
JTAG_TDI W39 N_PCH_TDI
JTAG_TDO Y38 N_PCH_TDO
JTAG_TMS W40 N_PCH_TMS

Z97S/[10HB1-030Z97-20R]

DDR_15V
NR131 680/4/1
N_DRAM_PWROK → N_DRAM_PWROK 4
NR132 1.47K/4/1

ACZ_SDOUT

SPI OVERRIDE PROTECTION

C_ACZ_SDOUT : HI --> ME Enable
Lo --> ME Disable

NR140 8.2K/4 C_ACZ_SDOUT
NQ14 PMBT2907A/SOT23/-600mA/50 S0T23
N_GPIO57 NR64 8.2K/4
19 DS_ME DS_ME NR178 8.2K/4
3VDUAL_PCH

PCH_DPWROK

3VDUAL_PCH
NR69 8.2K/4
N_PCH_DPWROK → N_PCH_DPWROK 19,28
NC17 1n/4/X7R/50V/K

At least 10ms delay after 3VDUAL_PCH stabel

For IT8620 Ctrl

VCC3
DAR62 1K/4/1
N_PCH_VRMPWRGD 19
DAR66 100K/4/1
DAC23 0.1u/4/X7R/16V/K

N_GPIO20
Rev1.0 --> MB_ID3 : Hi
Rev1.1 --> MB_ID3 : Low

PCH PU/PD

3VDUAL
GP44:DFX test Mode
NR103 8.2K/4/X N_GPIO44
NR139 8.2K/4/X N_GPIO46
A_-SKTOCC
N_GPIO57
NRN9 8.2K/8P4R/4
N_-IGC_EN:Low to over clock validation strap
NR106 1K/4/1 N_-IGC_EN NR105 8.2K/4/X
NR153 1K/4/1/X N_SUSCLK NR154 8.2K/4/X
SUSCLK : Lo --> OD PLL VR Disable
N_-SUSTAT NR133 8.2K/4/X
N_GPIO13 NR51 1K/4/1
N_GPIO28 NR144 1K/4/1
N_GPIO29 NR96 1K/4/1
NR155 8.2K/4/X N_GPIO45 NR247 8.2K/4/X
N_TEMP_ALART- NR248 8.2K/4

3VDUAL_PCH
N_-S_WARN NR129 8.2K/4
N_GPIO27 NR60 8.2K/4
N_GPIO31 NR72 8.2K/4
N_-SLP_LAN NR73 8.2K/4/X
N_GPIO72 NR100 8.2K/4
N_-PCIE_WAKE NR76 1K/4/1
DS_ME NR81 1K/4/1

VCC3
NR145 1K/4/1 N_GPIO20 NR109 8.2K/4/X
N_GPIO0 NR115 8.2K/4
N_-SYS_RST NR164 8.2K/4
N_GPIO32 NR162 8.2K/4/X
NR48 8.2K/4 N_GPIO33 NR49 8.2K/4/X

3VDUAL
NR134 8.2K/4/X N_GPIO73 NR253 8.2K/4
N_PCH_RST NR172 20K/4/1
N_PCH_TDI NR170 200/4/1
N_PCH_TDO NR141 200/4/1
N_PCH_TMS NR169 200/4/1
N_PCH_TCK NR87 200/4/1/X
N_PCH_RST NR143 1K/4/1/X
N_PCH_TDI NR171 100/4/1
N_PCH_TDO NR168 100/4/1
N_PCH_TMS NR142 100/4/1
N_PCH_TCK NR108 51/4/1
N_GPIO18 NR79 8.2K/4
N_GPIO26 NR107 8.2K/4
N_GPIO25 NR137 8.2K/4
N_-SYS_RST NC58 1n/4/X7R/50V/K
N_DRAM_PWROK NC59 1n/4/X7R/50V/K

NRN6 8.2K/8P4R/4
3VDUAL
N_-PCH_HOT
N_GPIO60
N_-LPCPME
N_-RI
N_SML1CLK NR117 1K/4/1
N_SML1DAT NR120 1K/4/1
N_SML0CLK NR122 499/4/1
N_SML0DAT NR123 499/4/1
N_SMBCLK NR121 1K/4/1
N_SMBDATA NR97 1K/4/1

HSW_STRAP13

3VDUAL_PCH
NR182 8.2K/4/X → A_HSW_STRAP13 4
NR183 8.2K/4
NQ11 MMBT2222A/SOT23/600mA/40 S0T23
NQ12 MMBT2222A/SOT23/600mA/40 S0T23
N_-IGC_EN NR135 8.2K/4

32.768KHZ

NX2-SHT SHW/D0.64*5.08*6.74
N_Y1
N_Y2 NR75 10M/4 NX2
32.768K/12.5p/20ppm/TF38/35K/D
NC16 18P/4/NPO/50V/J
NC18 18P/4/NPO/50V/J

CLR_CMOS

BATTERY CR2032
BAT BAT-SK/BK/P/S/D/SN
N_VBATT NRB 1K/4/1
ND1 BAS40-05/0.2A/SOT23
3VDUAL_PCH
NR90 390K/4 N_DSWVRMEN
N_RTCVDD → N_RTCVDD 13,29
NR67 390K/4 N_INTVRMEN
N_INTERMEN : Integrated 1.05V SUS VRM Enable
NR78 20K/4/1 N_-RTCRST
NC15 1u/4/X5R/6.3V/K
NC20 1u/4/X5R/6.3V/K
RB_TP
N_VBAT → N_VBAT 19

BATTERY-DUAL-4
RB 必须放在BAT外

N_-INTRUDER NR74 1M/4 → N_RTCVDD 13,29
N_SRTCRST NR77 20K/4/1 → N_RTCVDD 13,29
NC19 1u/4/X5R/6.3V/K

CLR_CMOS
N_-RTCRST
PH/1*2/BK/2.54/VA/D

Gigabyte Technology
Title: PCH GPIO , CTRL , AUDIO
Size: Custom
Document Number: GA-Z97X-SLI
Rev: 1.11
Date: Tuesday, June 10, 2014
Sheet 12 of 35

PCH (H)

PCHH

VCC1_05_PCH
VCC1_05_ME
VCC1_05_DCB
VCC1_5_PCH
VCC3
VCC3_ME
VCC3_DAC
3VDUAL
3VDUAL_PCH
VCCIO2PCH
N_RTCVDD 12,29
V_1P05_DSW_INT
V_1P5_RTC_INT
V_1P5_INT
NTP1
NTP2
NTP3
V_PROC_IO

NBC33 1u/4/X5R/6.3V/K
NBC37 0.1u/4/X7R/16V/K
NBC35 1u/4/X5R/6.3V/K
NBC22 1u/4/X5R/6.3V/K
NBC38 0.1u/4/X7R/16V/K
NBC32 1u/4/X5R/6.3V/K
NBC12 1u/4/X5R/6.3V/K
NBC30 1u/4/X5R/6.3V/K
NBC43 0.1u/4/X7R/16V/K
NBC21 0.1u/4/X7R/16V/K
NBC55 1u/4/X5R/6.3V/K
NBC64 1u/4/X5R/6.3V/K
NBC62 0.1u/4/X7R/16V/K/X
NBC54 1u/4/X5R/6.3V/K
NBC52 1u/4/X5R/6.3V/K
NBC51 0.1u/4/X7R/16V/K
NBC47 0.1u/4/X7R/16V/K/X
NBC49 0.1u/4/X7R/16V/K
NR71 5.1/4/1

Z97/S/[10HB1-030Z97-20R]

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

3VDUAL
VCC3_DAC
+12V
NR185 8.2K/4
NQ17 2N7002/SOT23/25pF/5
NBC7 10u/6/X5R/6.3V/M
(3.3V/70mA+360uA)

3VDUAL_PCH

NQ9 L1117LG/N/SOT223/1A
5VSB
3VDUAL_PCH
NR176 301/4/1
NR180 510/4/1
NBC66 22u/8/X5R/6.3V/M
NBC67 0.1u/4/X7R/16V/K
NBC68 1u/4/X5R/6.3V/K

SHT PWR

NRN5 0/8P4R/4/X
VCC3_ME
VCC3
NRN1 0/8P4R/4/X
VCC1_05_ME
VCC1_05_PCH

CAP

VCC3_ME
3VDUAL_PCH
NBC58 1u/4/X5R/6.3V/K
NBC65 1u/4/X5R/6.3V/K

(3.3V)(X6)

VCC3
NBC24 10u/6/X5R/6.3V/M
NBC25 1u/4/X5R/6.3V/K
NBC26 1u/4/X5R/6.3V/K
NBC27 1u/4/X5R/6.3V/K
NBC20 1u/4/X5R/6.3V/K
NBC59 1u/4/X5R/6.3V/K

(1.05V)(X5)

VCC1_05_ME
NBC8 10u/6/X5R/6.3V/M
NBC10 1u/4/X5R/6.3V/K
NBC14 0.1u/4/X7R/16V/K
SNBC3 MASK/1u/4/X5R/6.3V/K/X
SNBC4 MASK/1u/4/X5R/6.3V/K/X

(1.05V)(X6)

VCC1_05_PCH
NBC39 10u/6/X5R/6.3V/M
NBC40 1u/4/X5R/6.3V/K
NBC41 0.1u/4/X7R/16V/K
NBC42 1u/4/X5R/6.3V/K
SNBC1 MASK/1u/4/X5R/6.3V/K/X
SNBC2 MASK/1u/4/X5R/6.3V/K/X

(1.05V)(X2)

VCCIO2PCH
NBC56 1u/4/X5R/6.3V/K
NBC57 0.1u/4/X7R/16V/K

(3.3V)(X3)

3VDUAL
NBC60 1u/4/X5R/6.3V/K
NBC63 0.1u/4/X7R/16V/K
NBC69 0.1u/4/X7R/16V/K

(1.5V) (X10)

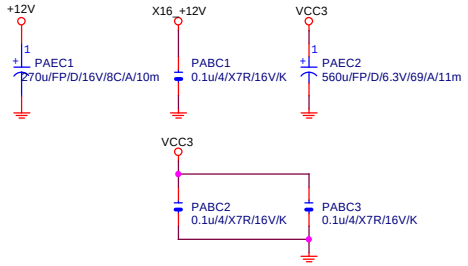
VCC1_5_PCH
NBC16 10u/6/X5R/6.3V/M
NBC29 10u/6/X5R/6.3V/M
NBC50 10u/6/X5R/6.3V/M
NBC53 10u/6/X5R/6.3V/M
NBC19 1u/4/X5R/6.3V/K
NBC23 0.1u/4/X7R/16V/K
NBC28 1u/4/X5R/6.3V/K
NBC44 1u/4/X5R/6.3V/K
NBC46 0.1u/4/X7R/16V/K
NBC48 1u/4/X5R/6.3V/K

PCH (I)

PCHI
Z97/S/[10HB1-030Z97-20R]

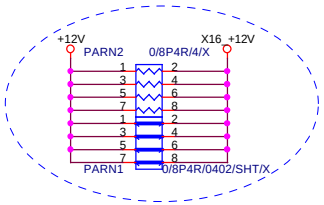
Gigabyte Technology	
Title	PCH PWR ,GND
Size: Custom	Document Number: GA-Z97X-SLI
Rev	1.11
Date: Tuesday, June 10, 2014	Sheet 13 of 35

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_SW_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN15_C

PCI-E REV:1.1--> 2.5GHZ

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

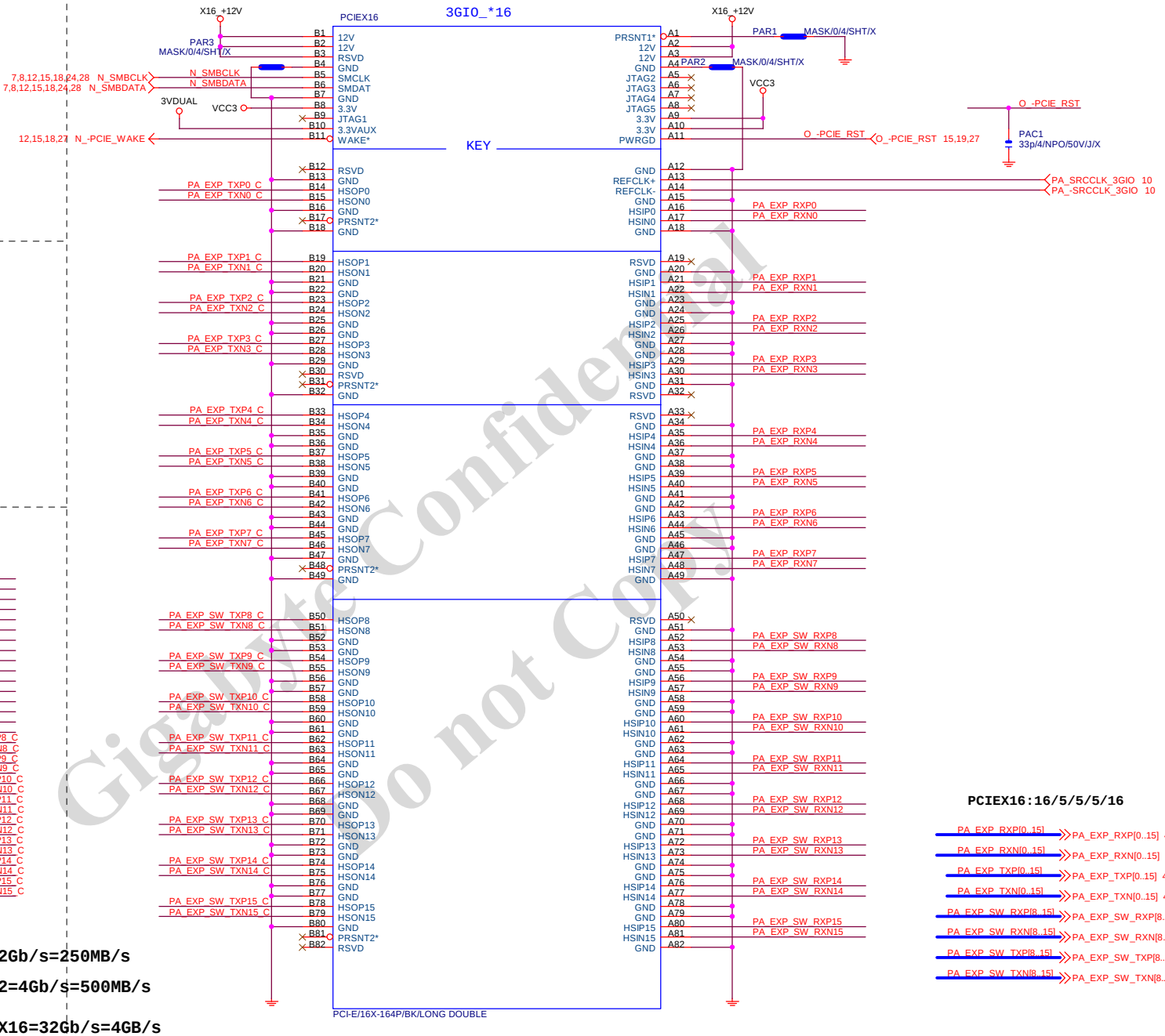
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

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

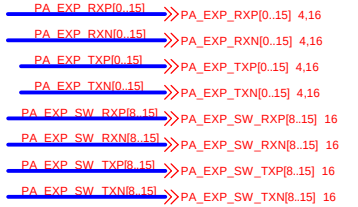
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

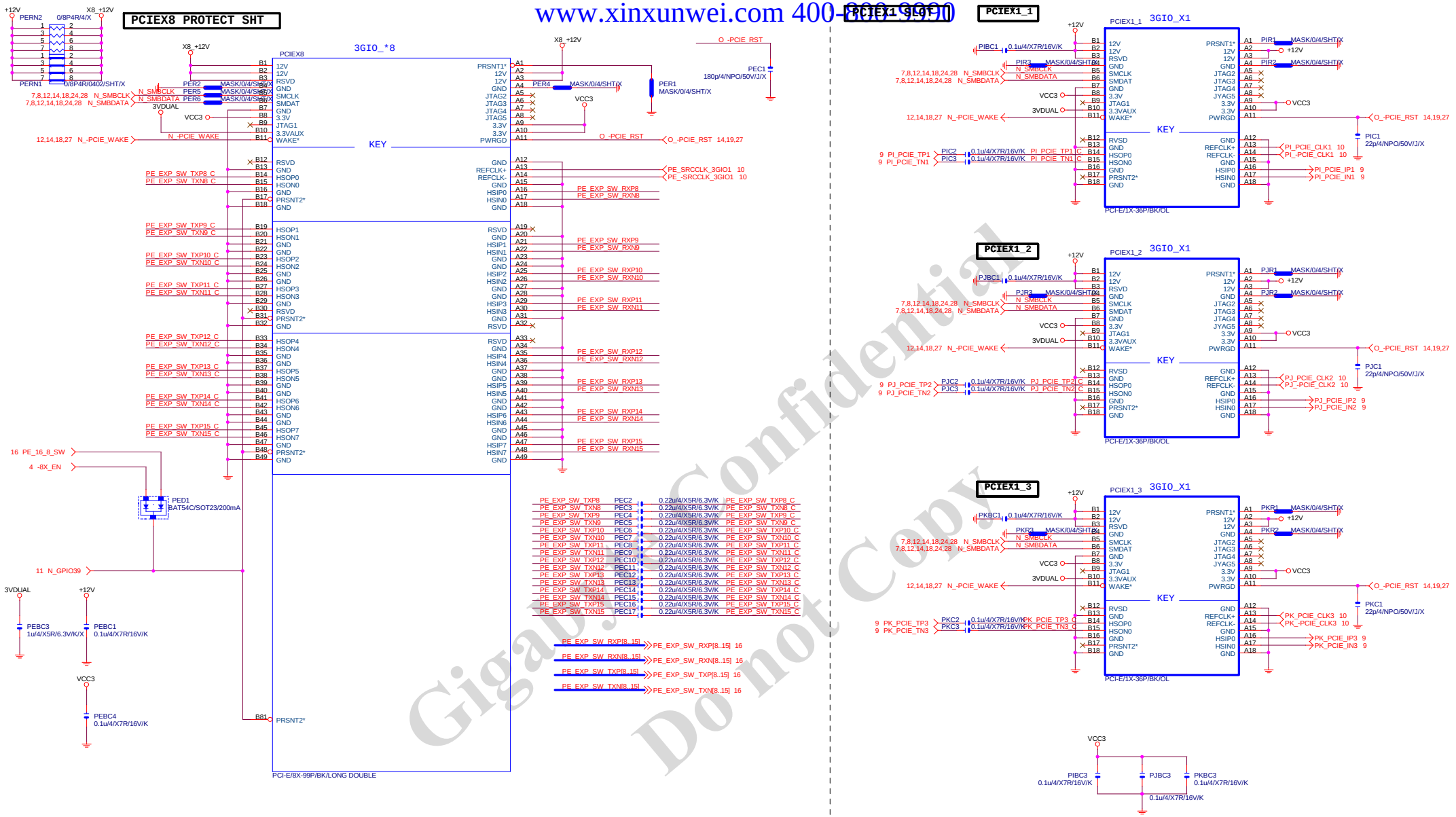
PCIEX16 SLOT



PCIEX16:16/5/5/5/16

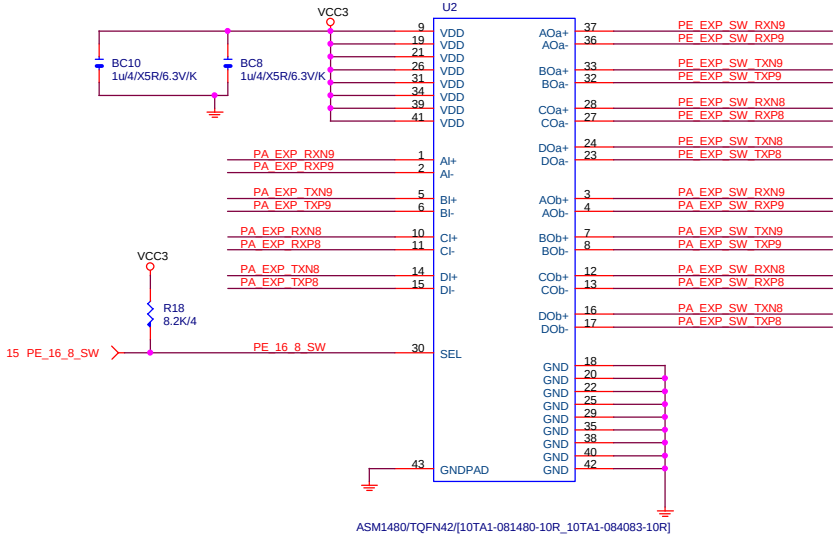


Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014		Sheet 14 of 35	

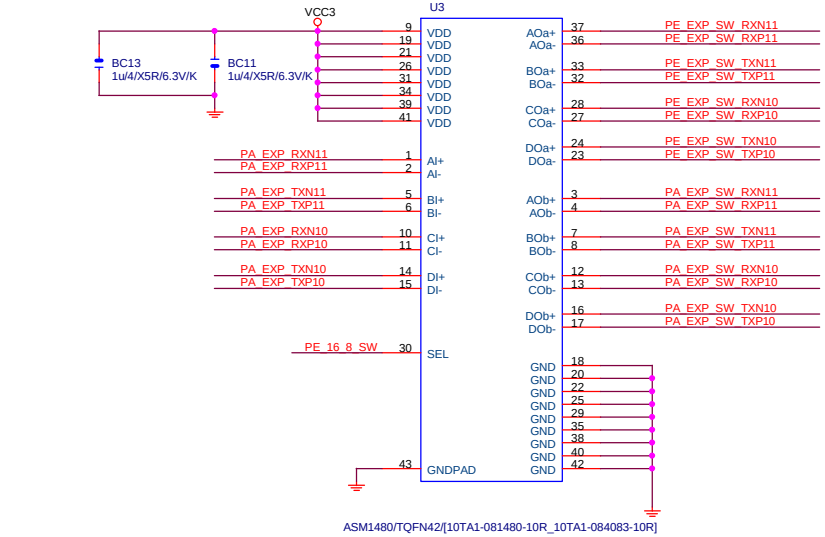


Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

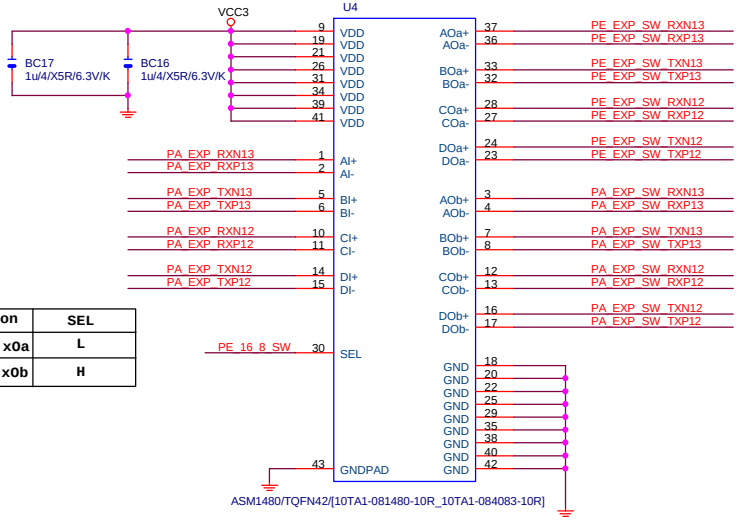
Gigabyte Technology			
Title: PCIE_X1 1,2,3			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014		Sheet 15 of 35	



ASM1480/TQFN42/[10TA1-081480-10R_10TA1-084083-10R]

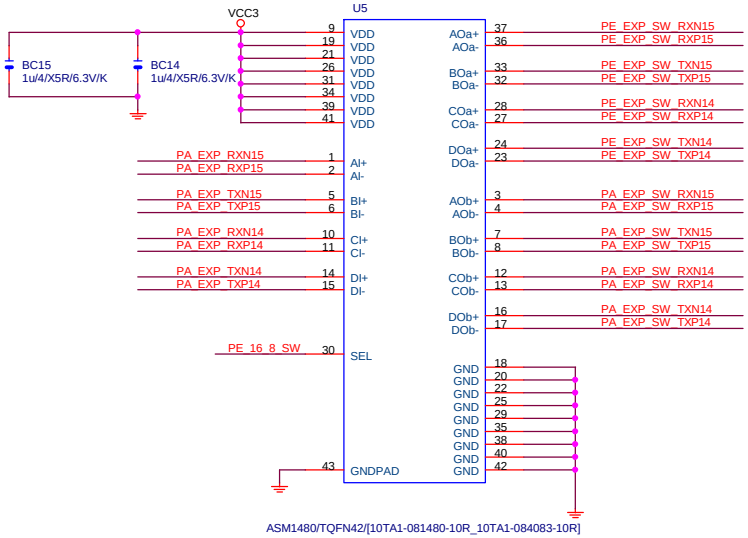


ASM1480/TQFN42/[10TA1-081480-10R_10TA1-084083-10R]



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

ASM1480/TQFN42/[10TA1-081480-10R_10TA1-084083-10R]

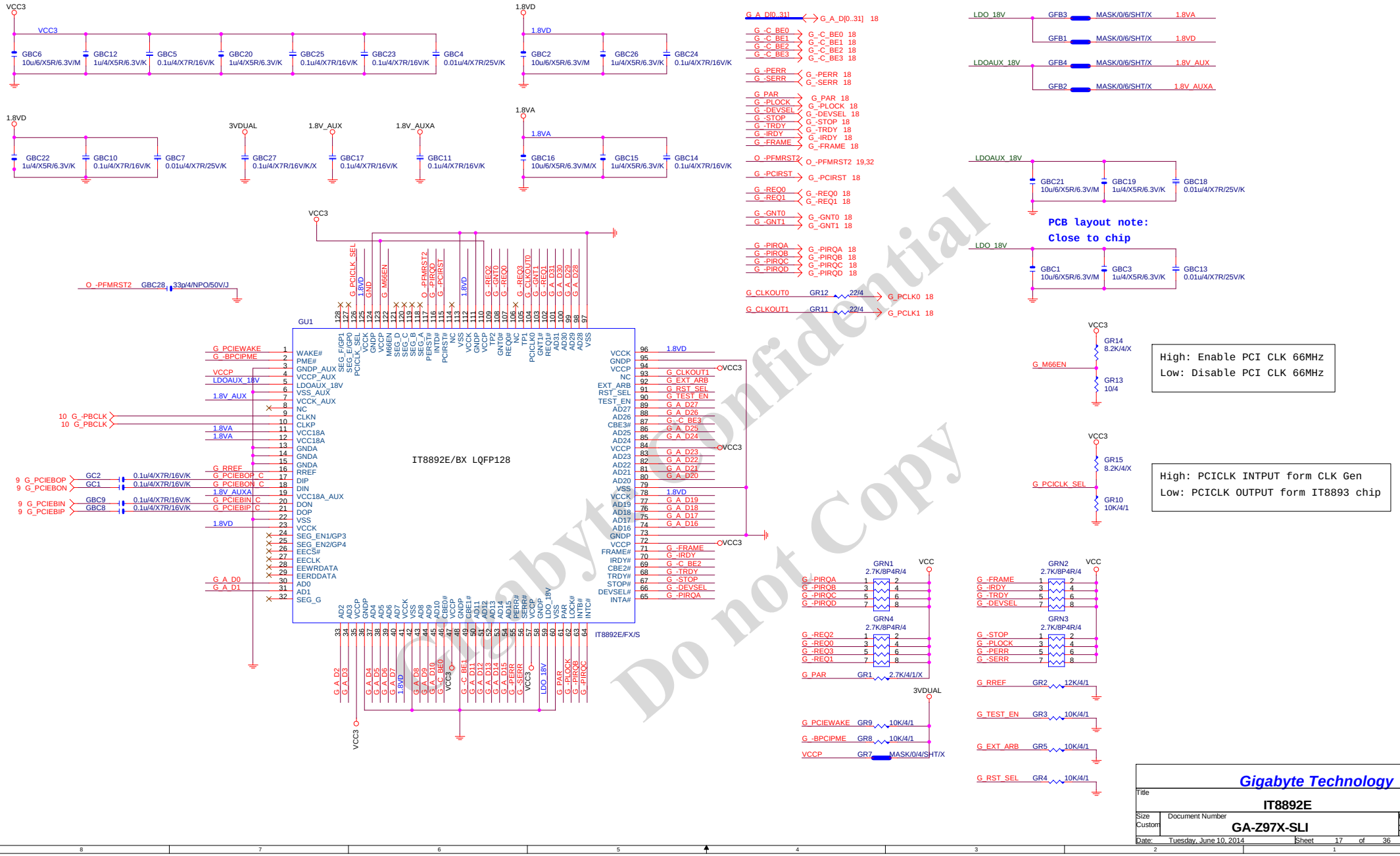


ASM1480/TQFN42/[10TA1-081480-10R_10TA1-084083-10R]

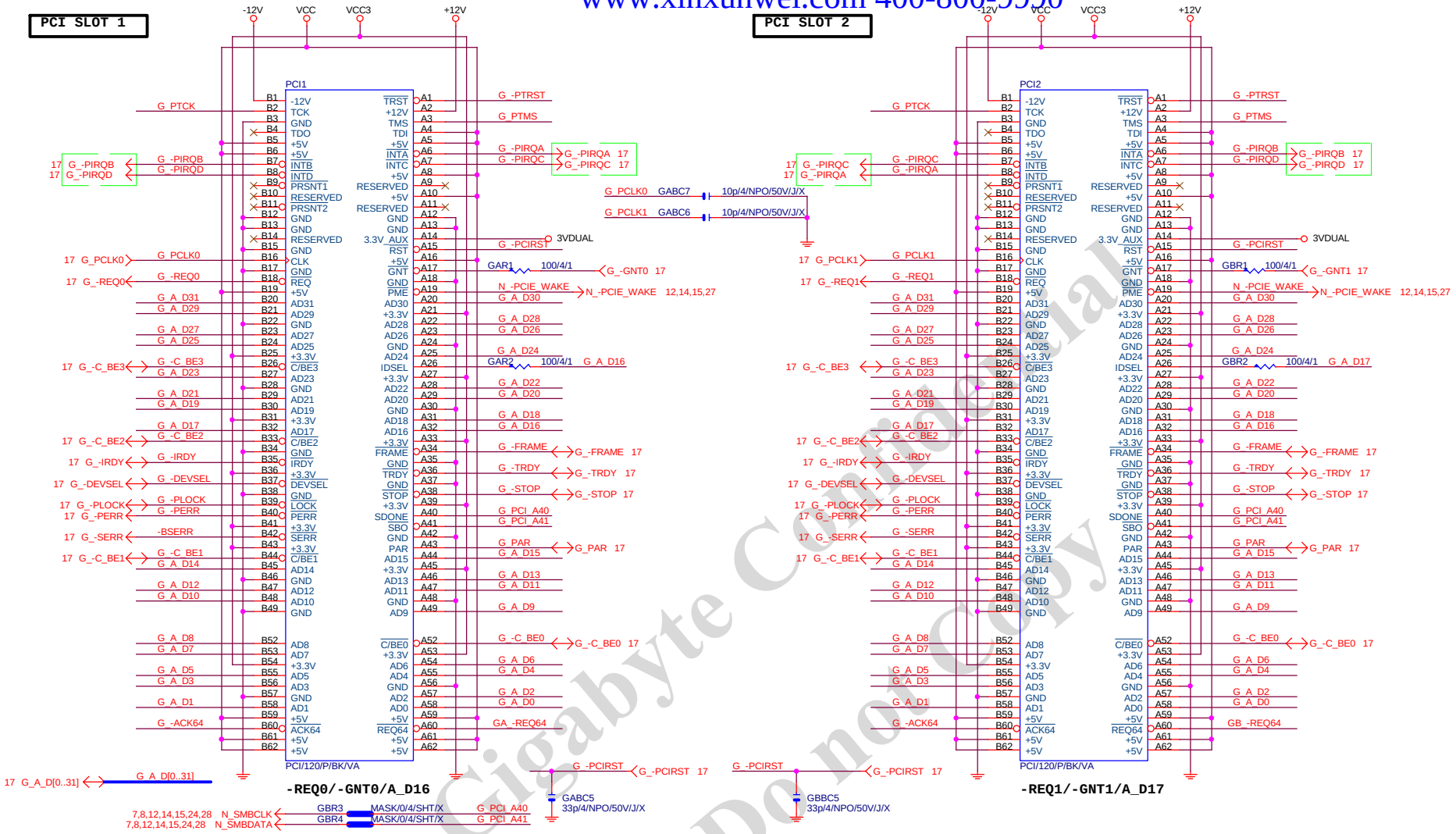
PA_EXP_SW_RXP[8..15] → PA_EXP_SW_RXP[8..15] 14
PA_EXP_SW_RXN[8..15] → PA_EXP_SW_RXN[8..15] 14
PA_EXP_SW_TXP[8..15] → PA_EXP_SW_TXP[8..15] 14
PA_EXP_SW_TXN[8..15] → PA_EXP_SW_TXN[8..15] 14
PE_EXP_SW_RXP[8..15] → PE_EXP_SW_RXP[8..15] 15
PE_EXP_SW_RXN[8..15] → PE_EXP_SW_RXN[8..15] 15
PE_EXP_SW_TXP[8..15] → PE_EXP_SW_TXP[8..15] 15
PE_EXP_SW_TXN[8..15] → PE_EXP_SW_TXN[8..15] 15
PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 4,14
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 4,14
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 4,14
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 4,14

GIGABYTE™

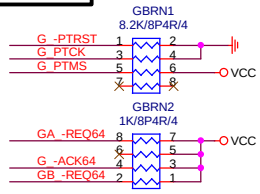
Title: PCI EXPRESS X8 SWITCH		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 16 of 35	



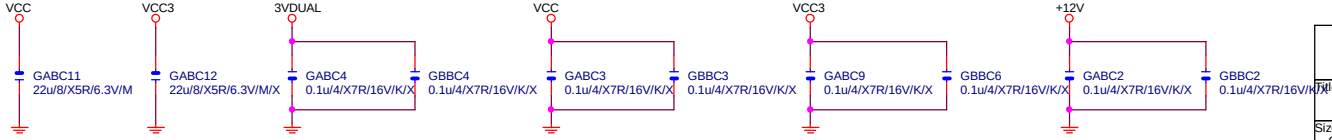
Gigabyte Technology			
Title: IT8892E			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 17 of 36		



PCI PU



PCI CAP



GIGABYTE™

Title: PCI SLOT 1&2		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 18 of 36	

SIO IT8728F

SYS_FAN3

CPU_OPT

CPU_FAN

SYS_FAN1

SYS_FAN2

IT8620E_CX

IT8620E/CX/S

-PCIE_RST is OD in IT8728

EUP from PCH

PWR SHT

SIO PU

Hi :Disable WDT

Lo :Enable WDT to rest PWROK

SIO STRAP

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

JP5:N\A FOR 8728 DX
JP5:PULL DOWN FOR 8728 EX
anti-surge enable

EUP control detect

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

IT8620E GPIO問題匯整

PIN 50	GP26--- 第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT為HDLED FUNCTION, GP93 BYPASS TO GP92
	高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾

DUAL BIOS OPT STRAP

Power leakage

SIO_18V

internal power pin, max 22nF cap

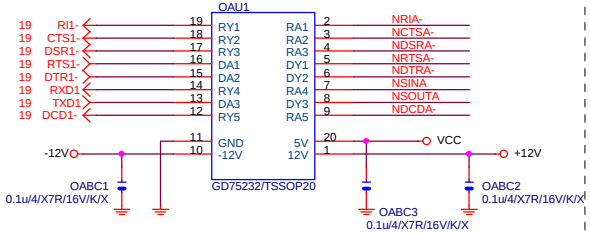
MB ID

SIO CAP

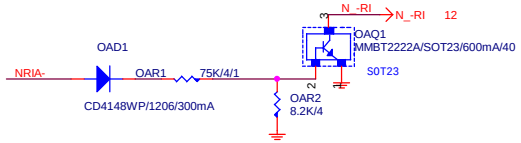
Gigabyte Technology

Title	ITE 8620 LPC IO	
Size B	Document Number GA-Z97X-SLI	Rev 1.11
Date: Tuesday, June 10, 2014	Sheet 19 of 36	

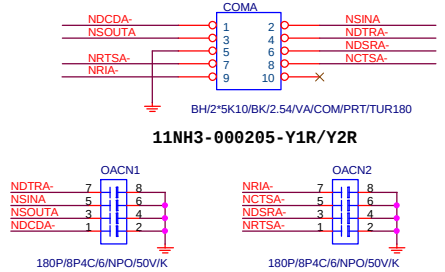
COMA



COM RI

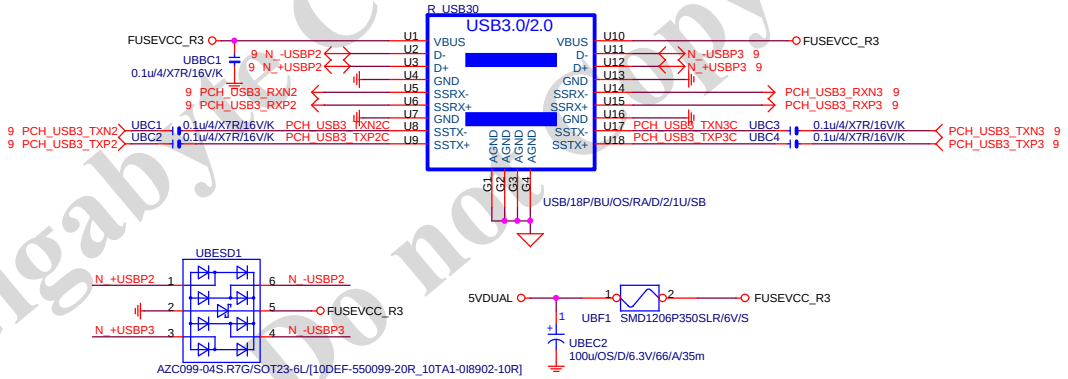


COM BUFFER

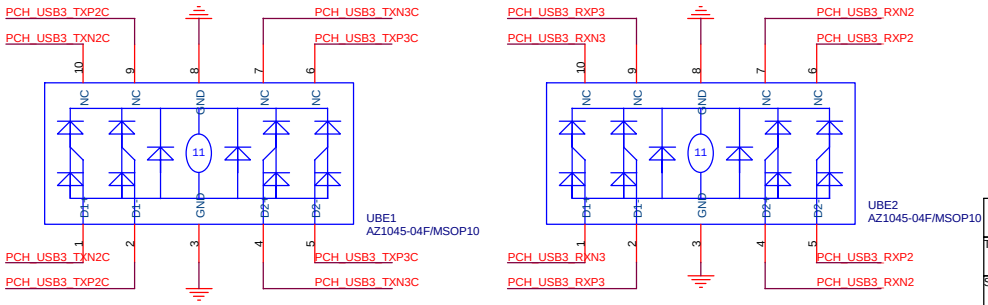


R_USB

R_USB30

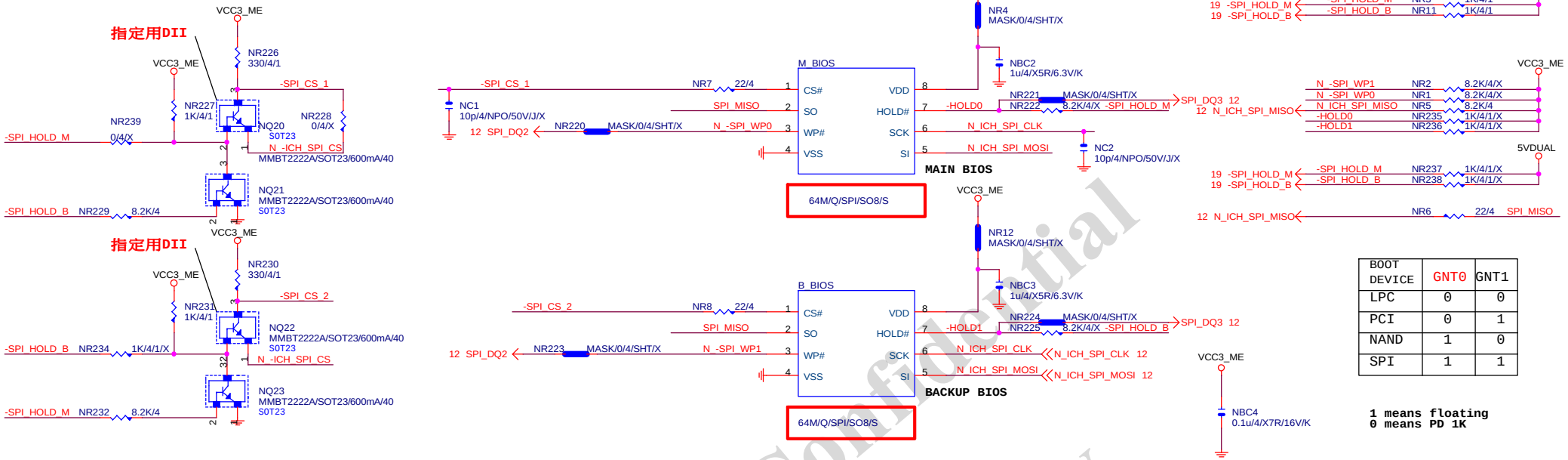


CLOSE R_USB30



Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 20 of 35	

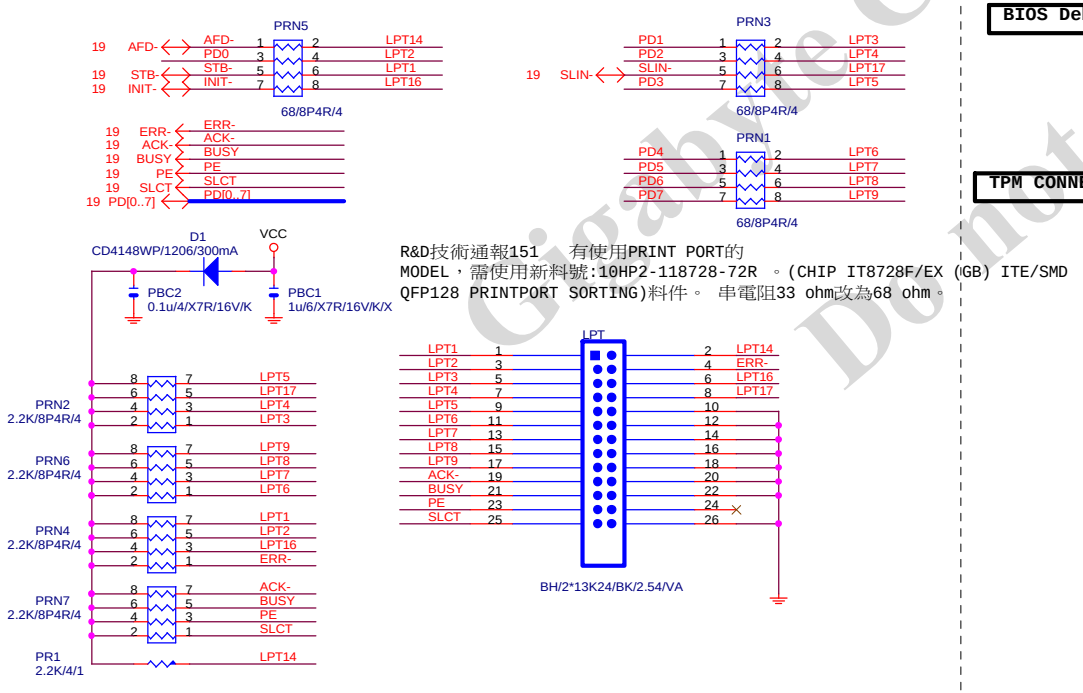
DUAL BIOS



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

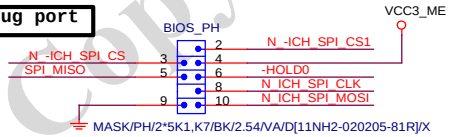
1 means floating
0 means PD 1K

LPT PORT

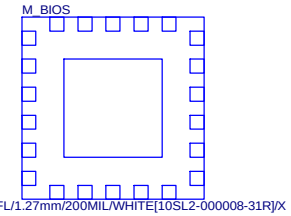


R&D技術通報151　有使用PRINT PORT的
MODEL，需使用新料號:10HP2-118728-72R 。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。 串電阻33 ohm改為68 ohm。

BIOS Debug port

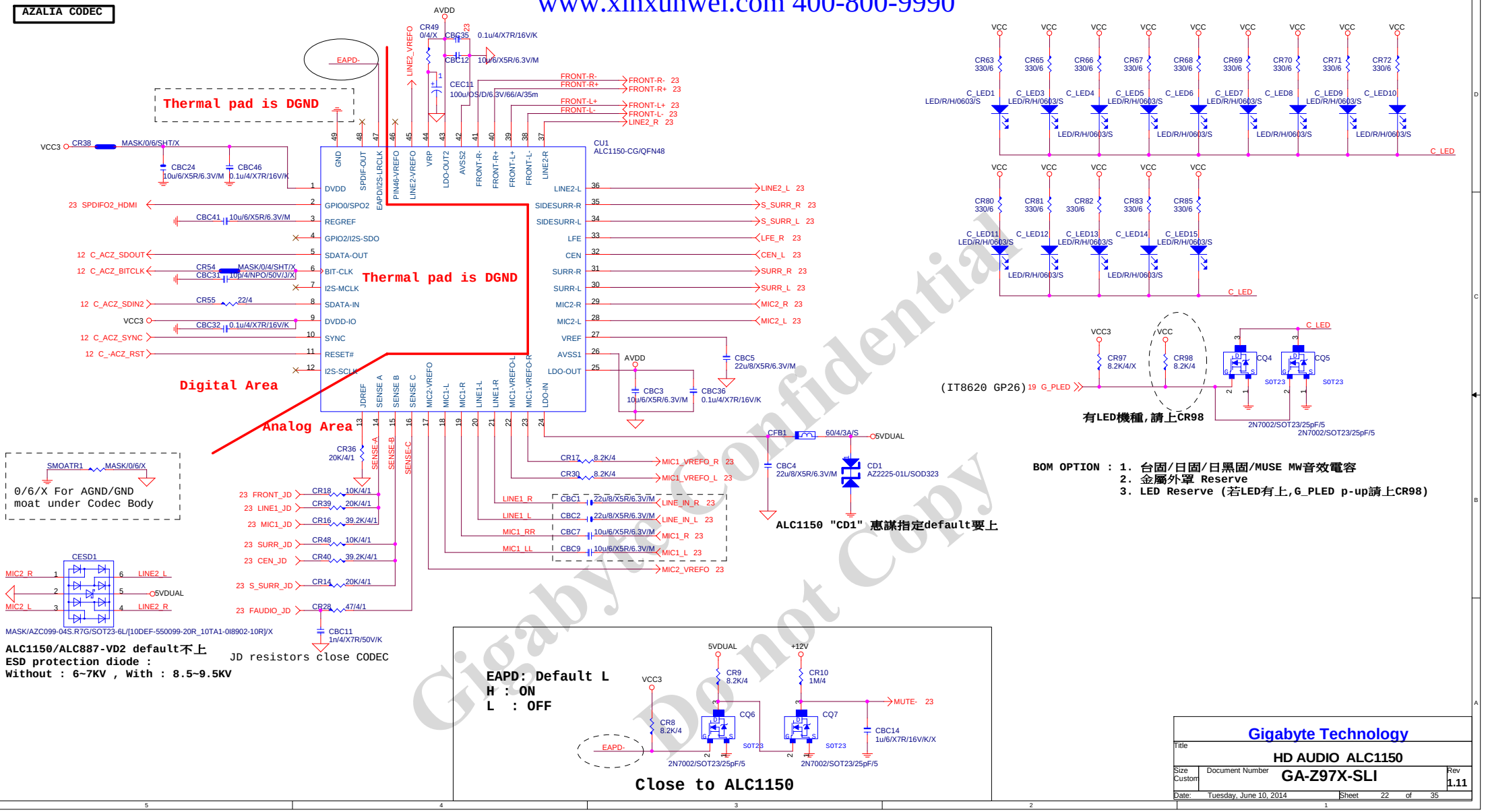


TPM CONNECT



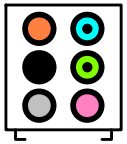
Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 21 of 36	

AZALIA CODEC



Gigabyte Technology		
Title	HD AUDIO ALC1150	
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 22 of 35	

AZALIA JACK



CR23 2.2/6 → Audio jack -> USB(各打2 VIA hole)

CR44 MASK/0/6/SHT/X → Under Audio jack(各打2 VIA hole)

MOATR1 MASK/0/4/SHT/X, MOATC1 0.1u/4/X7R/16V/K → Near F_AUDIO(各打2 VIA hole)

MOATR2 MASK/0/4/SHT/X, MOATC2 0.1u/4/X7R/16V/K → Near Codec (各打2 VIA hole)

MOATR3 MASK/0/4/SHT/X, MOATC3 0.1u/4/X7R/16V/K → Near R_AUDIO(各打2 VIA hole)

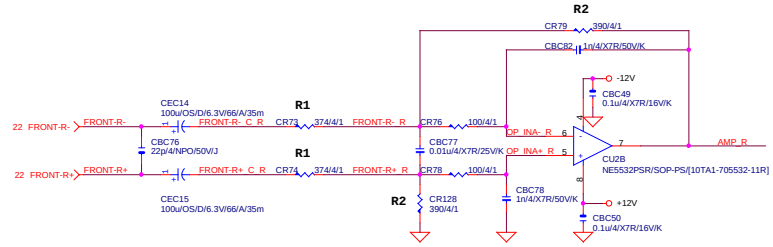
MOATR4 MASK/0/4/SHT/X, MOATC4 0.1u/4/X7R/16V/K → Near AMP (各打2 VIA hole)

SPDIF_OUT

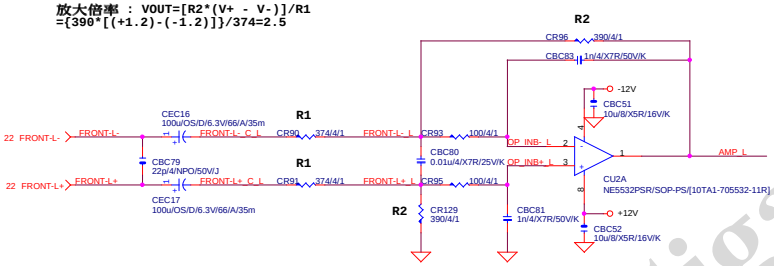
For HDMI SPDIF

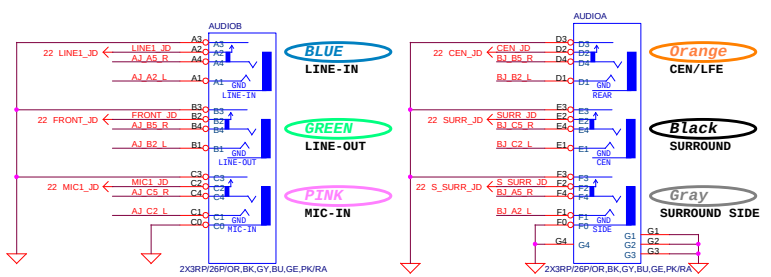
22 SPDIFO2_HDMI — CR52 MASK/0/4/SHT/X — SPDIF_O — CBC37 100p/4/NPO/50V/J — PH/1*2/BK/2.54/VA/D

Differential to Single-End AMPLIFIED

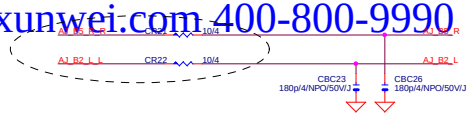


放大倍率 : VOUT=[R2*(V+ - V-)]/R1
={390*[(+1.2)-(-1.2)]}/374=2.5



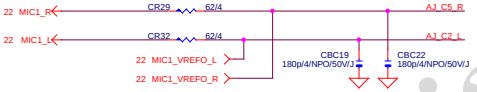


LINE-OUT

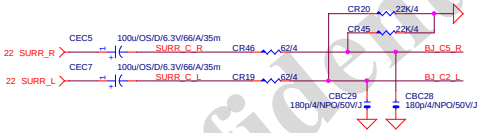


LINE-IN

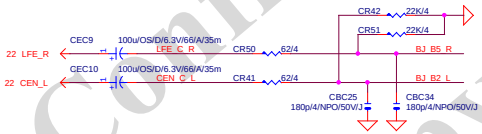
MIC-IN



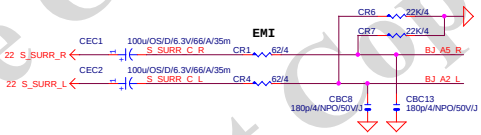
SURROUND

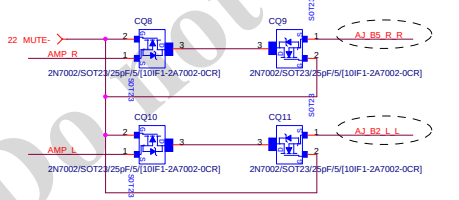


CEN/LFE

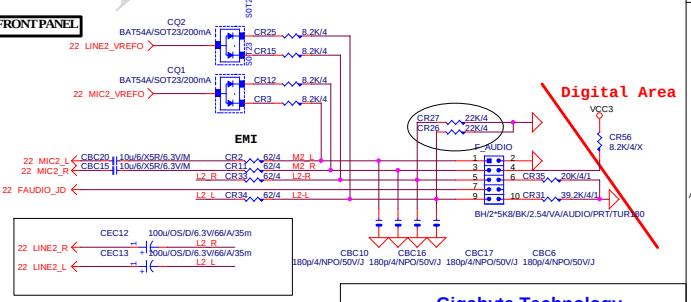


SURR BACK





AZALIA FRONT PANEL



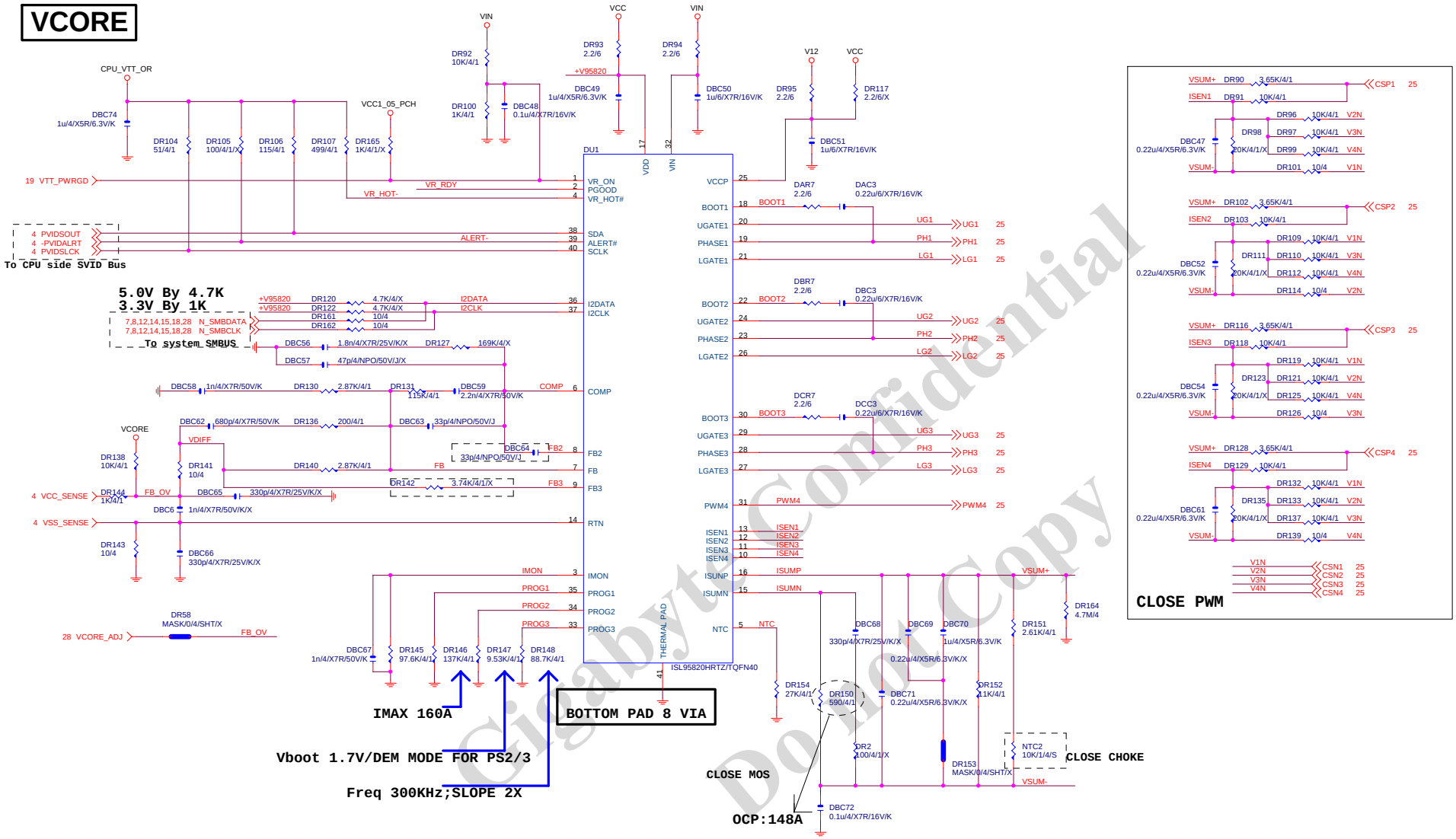
Gigabyte Technology

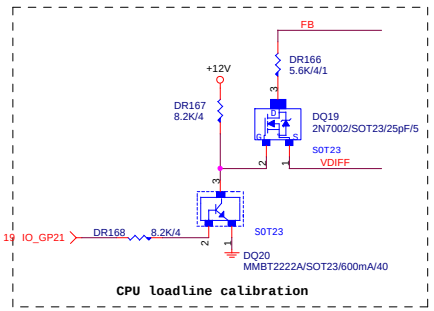
Title: AUDIO JACK

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Tuesday, June 10, 2014 | Sheet 23 of 35

VCORE



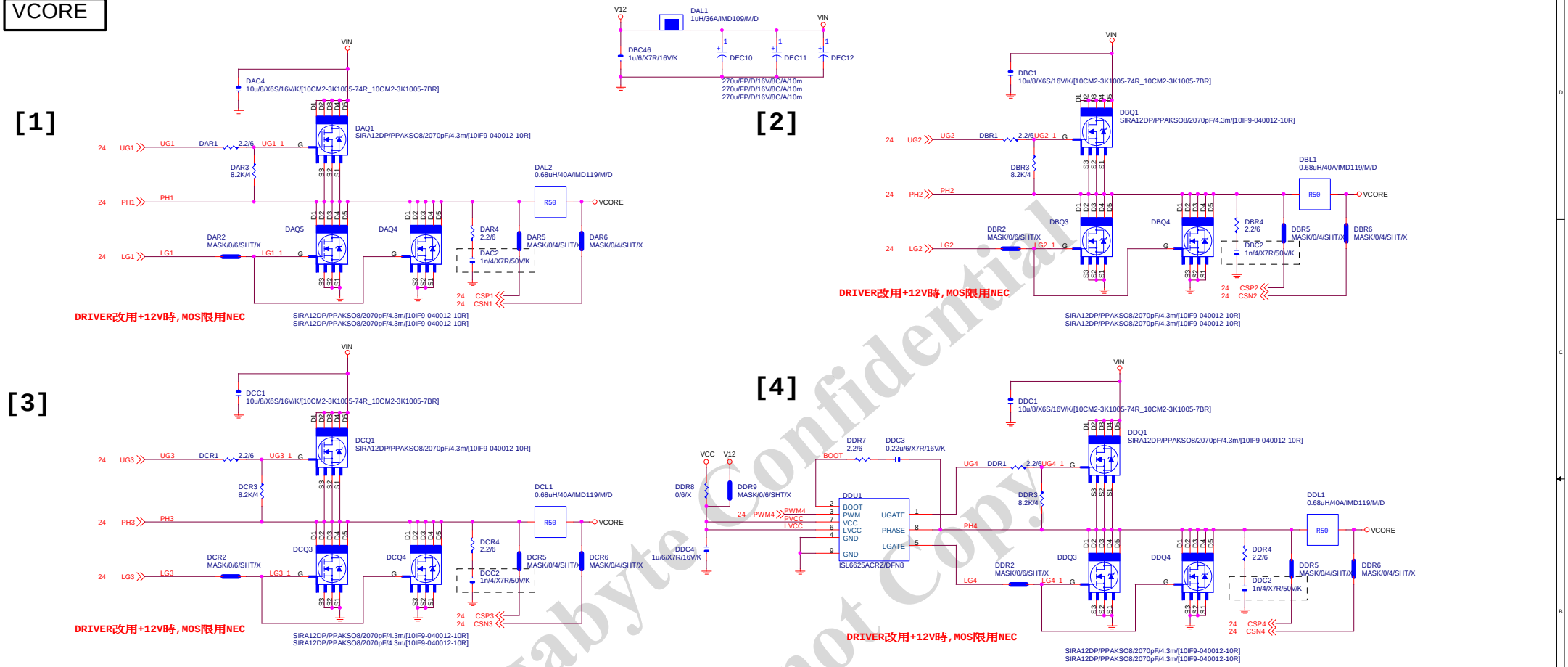


VCORE各層切割

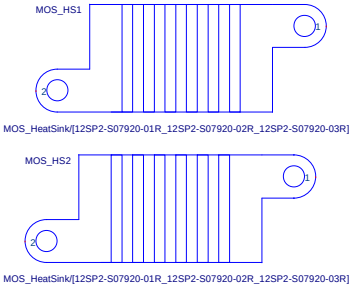
第一層:VCORE
第二層:VCORE
第三層:GND
第四層:VCORE

Gigabyte Technology	
Title	VCORE_ ISL95820
Size: Custom	Document Number: GA-Z97X-SLI
Rev	1.11
Date: Tuesday, June 10, 2014	Sheet 24 of 35

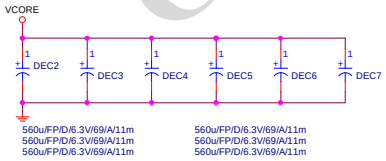
VCORE

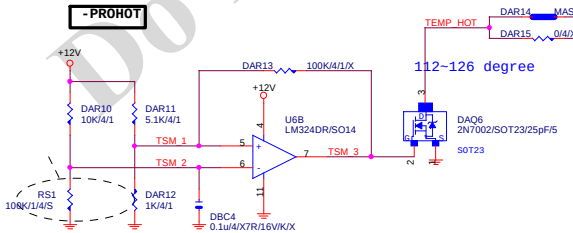


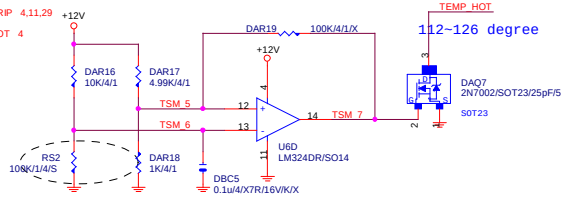
MOSFET HEATSINK



MOSHSINK-Z97X-SLI

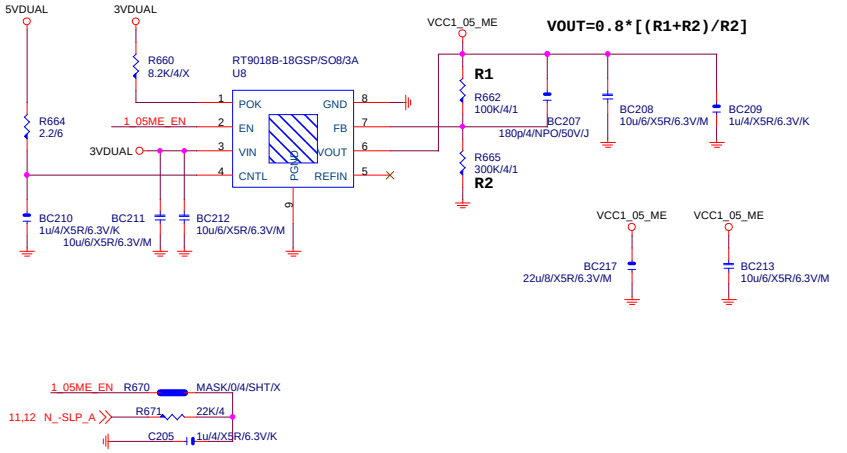




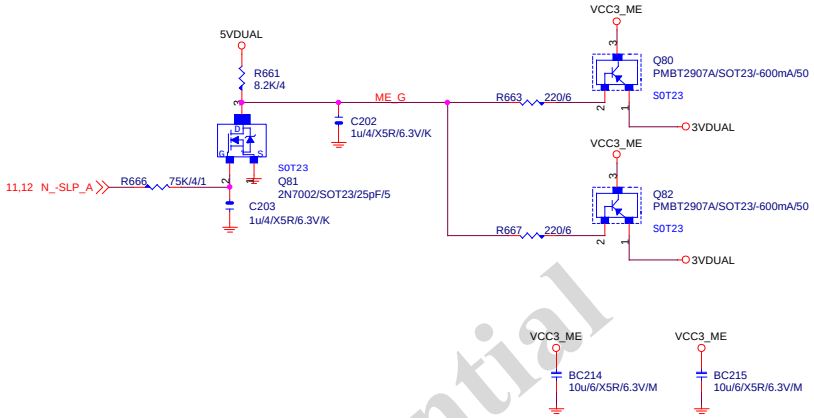


Gigabyte Technology		
Title	ISL95820_2	
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 25 of 35	

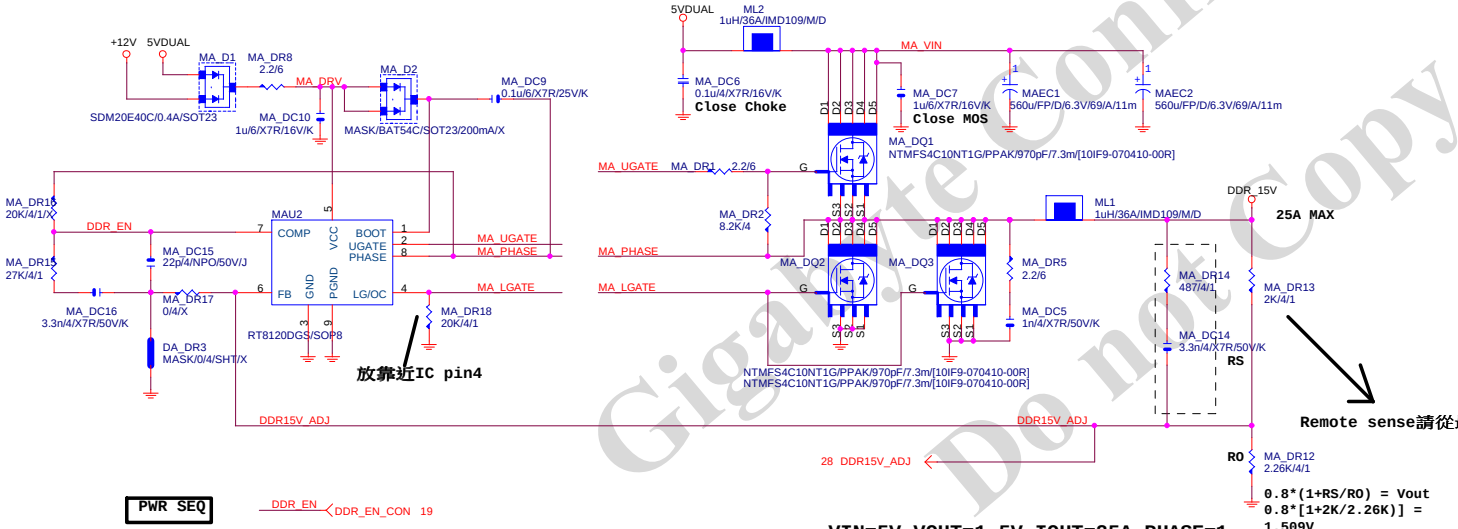
VCC1_05_ME



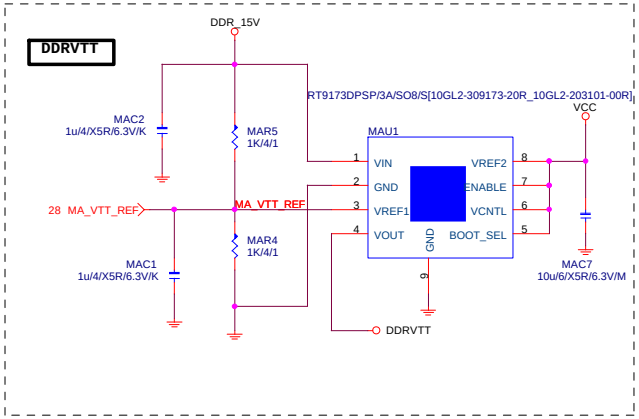
VCC3_ME



DDR_15V



DDRVTT



PWR SEQ

DDR_EN — DDR_EN_CON 19

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℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->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]

GIGABYTE™

Title: RT8120_DDR_15V		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 26 of 35	

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

M.2 SLOT

M.2 CLK 限用
CLKOUT_PCIE_0

M.2插卡時為LOW

M2R12,M2R13,M2R14 改0/4/X

NGFF_M_SSD[10NR5-130067-31R_10NR5-130067-32R]

M2 SLOT M KEY料號

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

SATA EXPRESS

PCH

ASM1480/TQFN42/[10TA1-081480-10R_10TA1-084083-10R]

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

M2

0 : SATA EXPRESS
1 : SATA (Standard)

連接PCH GPIO69
GPIO69 PU HI 要移除

SMD螺柱 (DIP階上件)

M2_42 CR/[11KS2-040002-01R]
M2_60 CR/[11KS2-040002-01R]
M2_80 CR/[11KS2-040002-01R]

DIP螺柱

M2_80A CR/[12KSF-F10303-01R]

螺絲

M2_80B CR/[12KS2-110202-01R]

SATA EXPRESS CONNECTOR

SATA EXPRESS/36P/BK/H/RA/D/GF/2/[11NR6-C10236-03R]::Location SATA_EXPRESS

SATA EXPRESS料號

單層:11NR6-C10118-02R
雙層:11NR6-C10236-02R

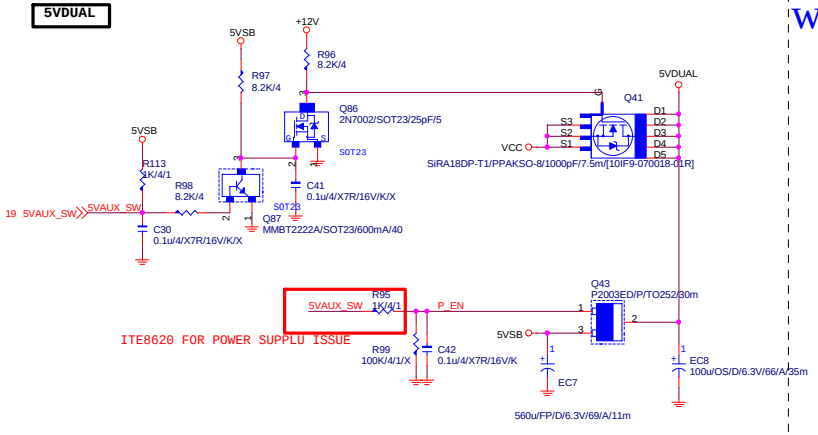
SATA CONNECTOR

SATA/14/BK/H/OP/RA/D/2

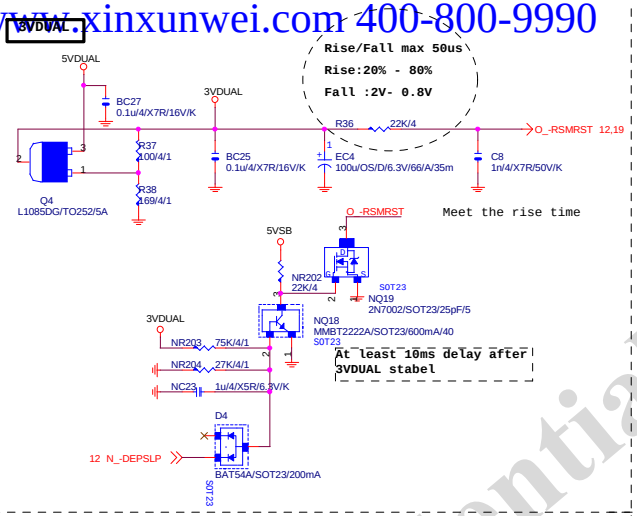
GIGABYTE

Title	M2_SATA_EXPRESS	
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Wednesday, June 25, 2014	Sheet 27 of 35	

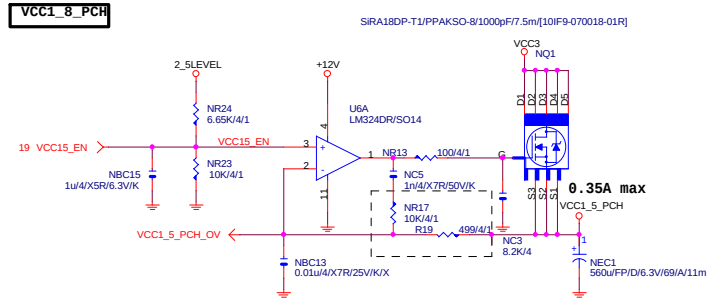
5VDUAL



3VDUAL



VCC1_8_PCH



At least 10ms delay after 3VDUAL ready

Pop when PCH & SIO both use 3VDUAL-PCH

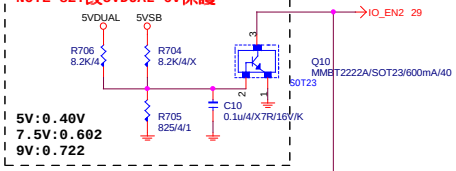
Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V

5VSB OVP發生時 : 5VDUAL=0.8V --> 解除時,須拔POWER CORE 才可開機

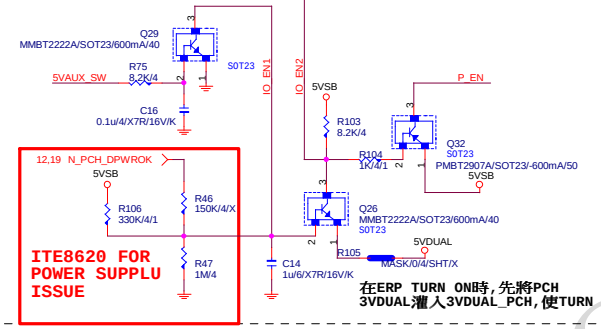
5VDUAL OVP發生時 : 5VDUAL=6.0V --> 解除時則恢復正常

5VSB OVP:7.5V protection

NOTE 82:改5VDUAL 6v保護

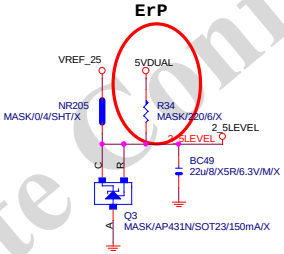


5VDUAL SHORT PROTECT

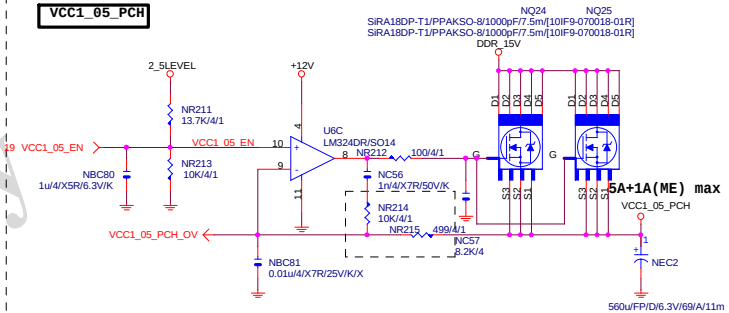


在ERP TURN ON時,先將PCH 3VDUAL灌入3VDUAL_PCH,使TURN_ON -SLP_S3功能

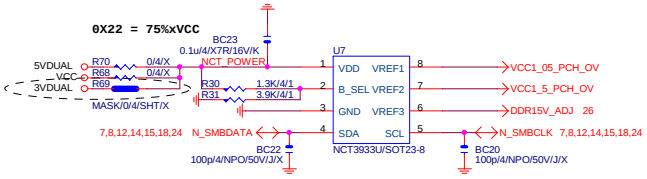
2_5LEVEL

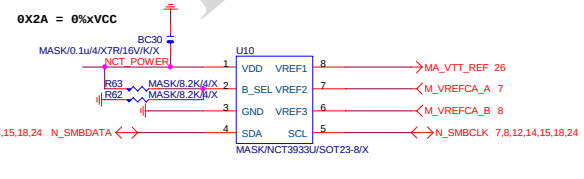


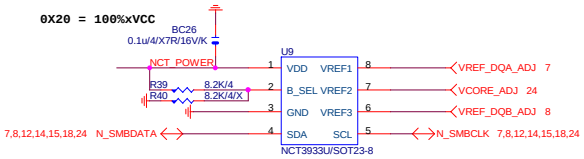
VCC1_05_PCH



OVER VOLTAGE







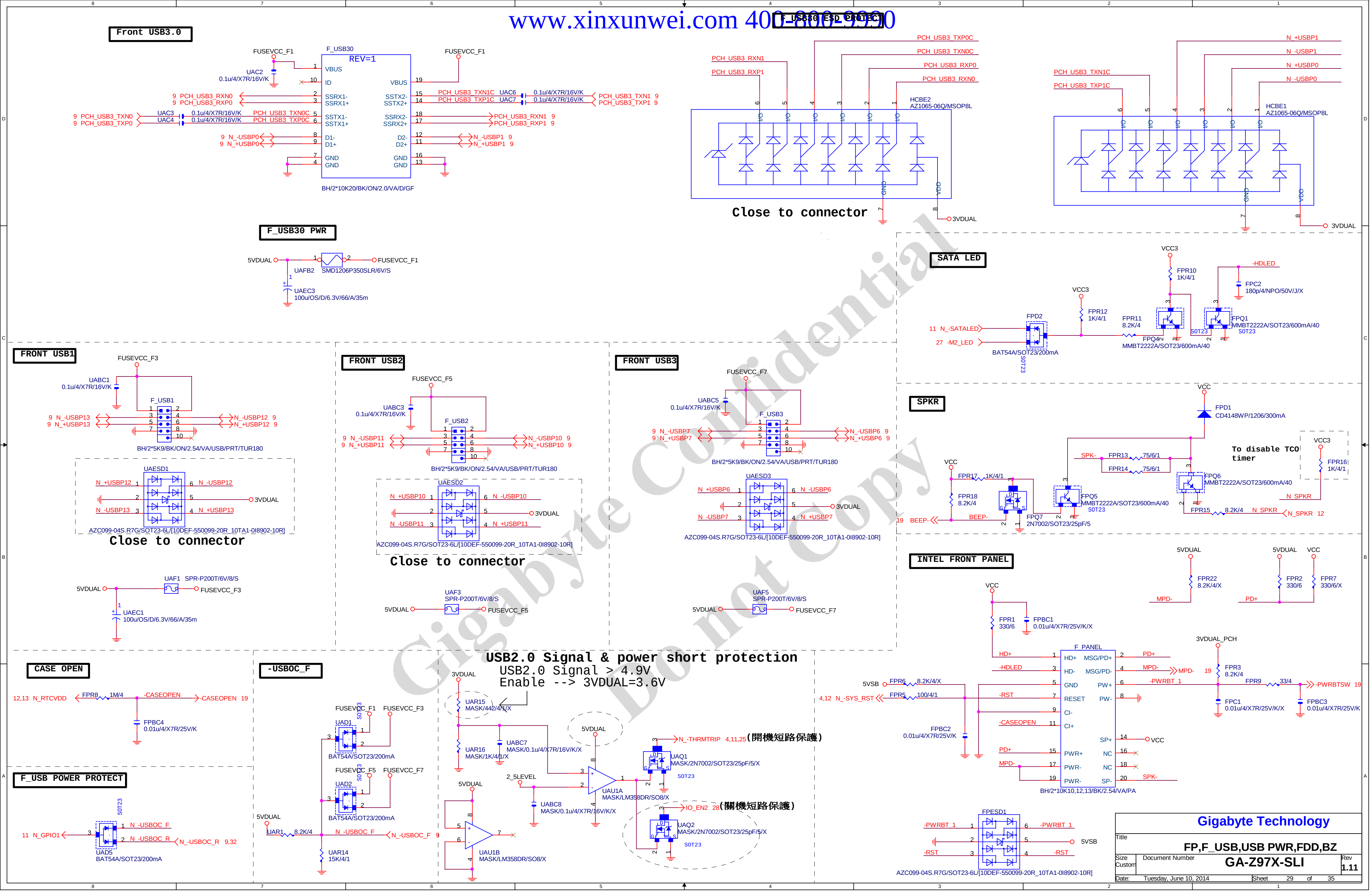
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

Title: DISCRETE POWER

Size: Custom | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Tuesday, June 10, 2014 | Sheet 28 of 35



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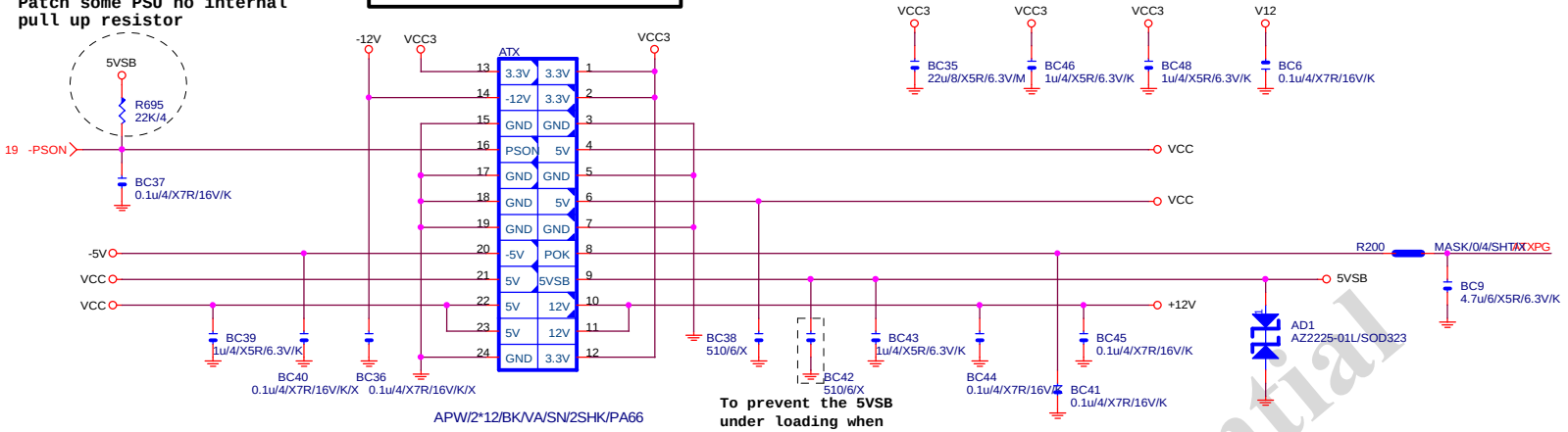
Front USB3.0
F_USB30
REV=1
VBUS
ID
SSRX1-
SSRX1+
SSTX1-
SSTX1+
D1-
D1+
GND
SSTX2-
SSTX2+
SSRX2-
SSRX2+
D2-
D2+
FUSEVCC_F1
UAC2
0.1u/4/X7R/16V/K
BH/2*10K20/BK/ON/2.0/VA/D/GF
PCH_USB3_RXN0
PCH_USB3_RXP0
PCH_USB3_TXN0
PCH_USB3_TXP0
PCH_USB3_TXN0C
PCH_USB3_TXP0C
PCH_USB3_TXN1C
PCH_USB3_TXP1C
PCH_USB3_TXN1
PCH_USB3_TXP1
PCH_USB3_RXN1
PCH_USB3_RXP1
N_-USBP0
N_+USBP0
N_-USBP1
N_+USBP1
F_USB30 ESD PROTECT
HCBE2
AZ1065-06Q/MSOP8L
HCBE1
AZ1065-06Q/MSOP8L
Close to connector
3VDUAL
F_USB30 PWR
5VDUAL
UAFB2
SMD1206P350SLR/6V/S
UAEC3
100u/OS/D/6.3V/66/A/35m
FRONT USB1
FUSEVCC_F3
UABC1
0.1u/4/X7R/16V/K
F_USB1
N_-USBP13
N_+USBP13
N_-USBP12
N_+USBP12
BH/2*5K9/BK/ON/2.54/VA/USB/PRT/TUR180
UAESD1
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]
Close to connector
UAF1 SPR-P200T/6V/8/S
UAEC1
100u/OS/D/6.3V/66/A/35m
FRONT USB2
FUSEVCC_F5
UABC3
0.1u/4/X7R/16V/K
F_USB2
N_-USBP11
N_+USBP11
N_-USBP10
N_+USBP10
UAESD2
Close to connector
UAF3
SPR-P200T/6V/8/S
FRONT USB3
FUSEVCC_F7
UABC5
0.1u/4/X7R/16V/K
F_USB3
N_-USBP7
N_+USBP7
N_-USBP6
N_+USBP6
UAESD3
UAF5
SPR-P200T/6V/8/S
SATA LED
VCC3
FPR10
1K/4/1
-HDLED
FPC2
180p/4/NPO/50V/J/X
FPR12
1K/4/1
FPR11
8.2K/4
FPQ1
MMBT2222A/SOT23/600mA/40
FPQ4
MMBT2222A/SOT23/600mA/40
FPD2
BAT54A/SOT23/200mA
N_-SATALED
-M2_LED
SPKR
VCC
FPD1
CD4148WP/1206/300mA
SPK-
FPR13 75/6/1
FPR14 75/6/1
To disable TCO timer
FPR16
1K/4/1
FPQ6
MMBT2222A/SOT23/600mA/40
FPQ5
MMBT2222A/SOT23/600mA/40
FPR17 1K/4/1
FPR18
8.2K/4
FPQ7
2N7002/SOT23/25pF/5
BEEP-
FPR15 8.2K/4
N_SPKR
INTEL FRONT PANEL
5VDUAL
FPR22
8.2K/4/X
MPD-
FPR2
330/6
FPR7
330/6/X
PD+
FPR1
330/6
FPBC1
0.01u/4/X7R/25V/K/X
F_PANEL
HD+
HD-
GND
RESET
CI-
CI+
PWR+
PWR-
MSG/PD+
MSG/PD-
PW+
PW-
SP+
NC
SP-
BH/2*10K10,12,13/BK/2.54/VA/PA
3VDUAL_PCH
FPR3
8.2K/4
FPR9 33/4
-PWRBTSW
FPC1
0.01u/4/X7R/25V/K/X
FPBC3
0.01u/4/X7R/25V/K
5VSB
FPR6 8.2K/4/X
FPR5 100/4/1
N_-SYS_RST
-RST
-CASEOPEN
-PWRBT_1
FPBC2
0.01u/4/X7R/25V/K
FPESD1
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]
CASE OPEN
N_RTCVDD
FPR8 1M/4
FPBC4
0.01u/4/X7R/25V/K
-USBOC_F
FUSEVCC_F1
UAD1
BAT54A/SOT23/200mA
UAD2
BAT54A/SOT23/200mA
UAR1 8.2K/4
N_-USBOC_F
UAR14
15K/4/1
F_USB POWER PROTECT
N_GPIO1
N_-USBOC_F
N_-USBOC_R
UAD5
BAT54A/SOT23/200mA
USB2.0 Signal & power short protection
USB2.0 Signal > 4.9V
Enable --> 3VDUAL=3.6V
UAR15
MASK/442/4/1/X
UAR16
MASK/1K/4/1/X
UABC7
MASK/0.1u/4/X7R/16V/K/X
2_5LEVEL
UABC8
MASK/0.1u/4/X7R/16V/K/X
UAU1A
MASK/LM358DR/SO8/X
UAU1B
MASK/LM358DR/SO8/X
N_-THRMTRIP
(開機短路保護)
UAQ1
MASK/2N7002/SOT23/25pF/5/X
IO_EN2
(關機短路保護)
UAQ2
MASK/2N7002/SOT23/25pF/5/X
Gigabyte Technology
Title
FP,F_USB,USB PWR,FDD,BZ
Size Custom
Document Number
GA-Z97X-SLI
Rev 1.11
Date: Tuesday, June 10, 2014
Sheet 29 of 35

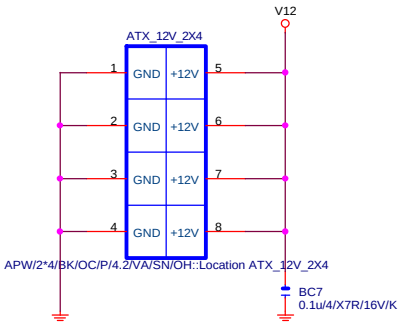
ATXX24 POWER CONNECTOR

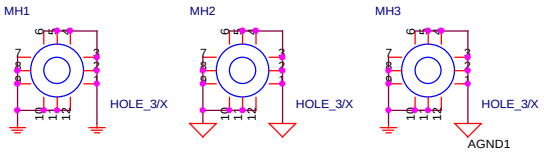
Patch some PSU no internal pull up resistor



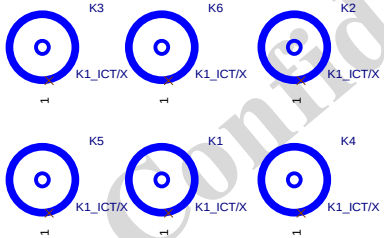
To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR





HOLE_4-RH-1

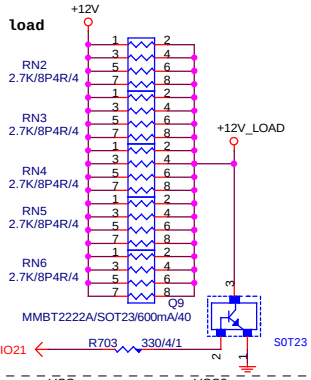


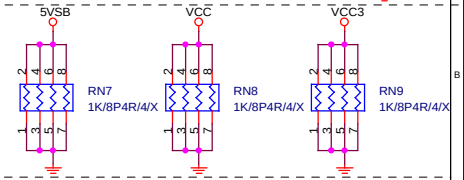
K1-ICT

4MMH

【技術通報R&D技術通報153】

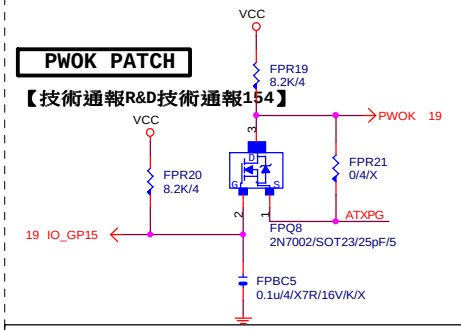
To fix 12V light load abnromal issue





PWOK PATCH

【技術通報R&D技術通報154】

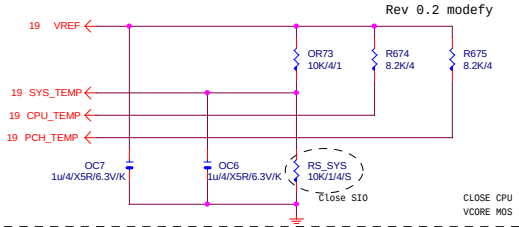


Gigabyte Technology

Title	ATX POWER CONNECTOR	
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 30 of 35	

TEMP H/W MONITOR

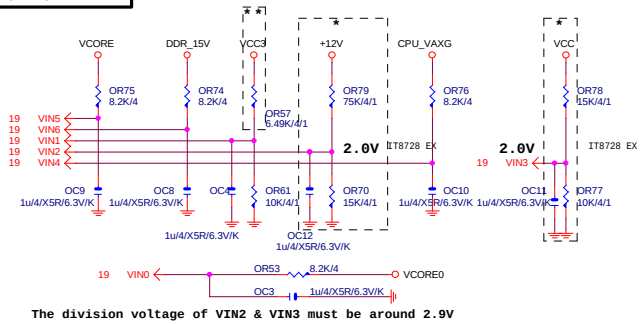
Rev 0.2 modefy



VOLTAGE-- H/W MONITOR

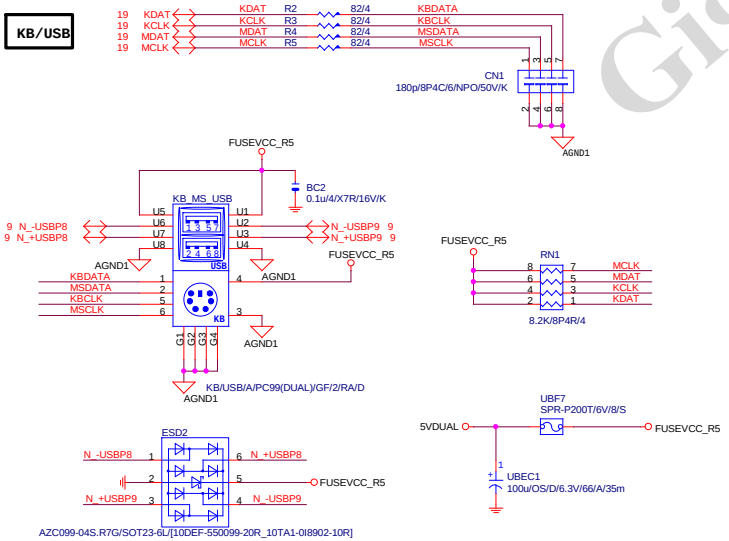
★ IT8728 BX
★★ IT8728 CX

VIN2 must +12V input
VIN3 must VCC input

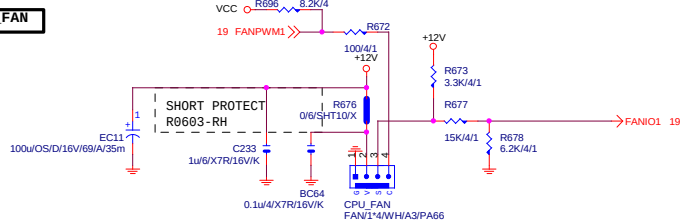


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



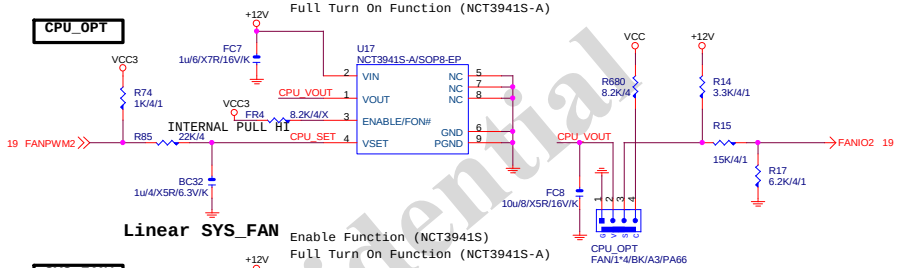
CPU_FAN



Linear SYS_FAN

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

CPU_OPT

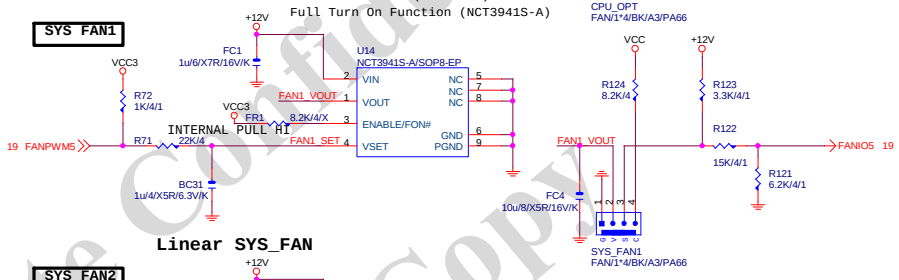


IT8728 EX
IT8728 EX

Linear SYS_FAN

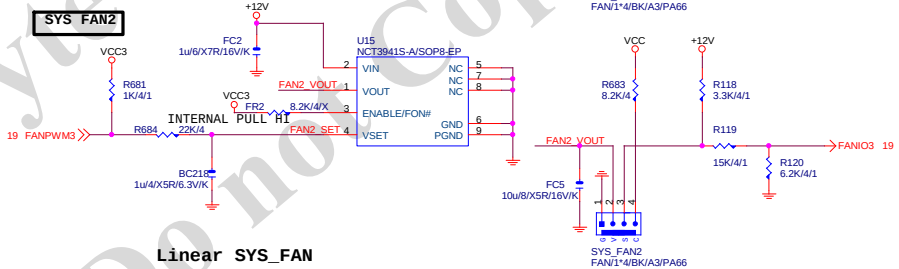
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

SYS_FAN1



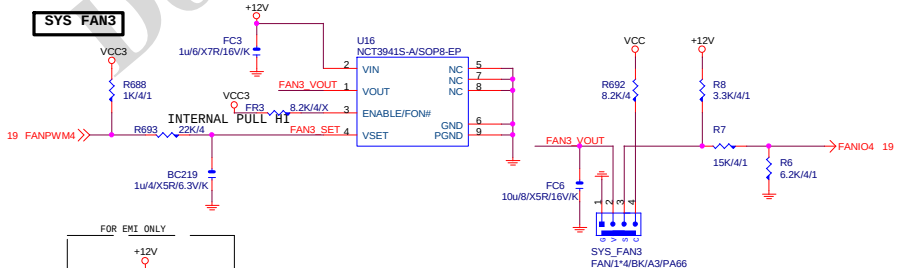
Linear SYS_FAN

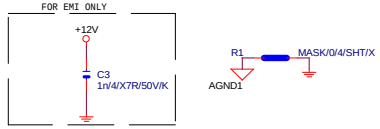
SYS_FAN2



Linear SYS_FAN

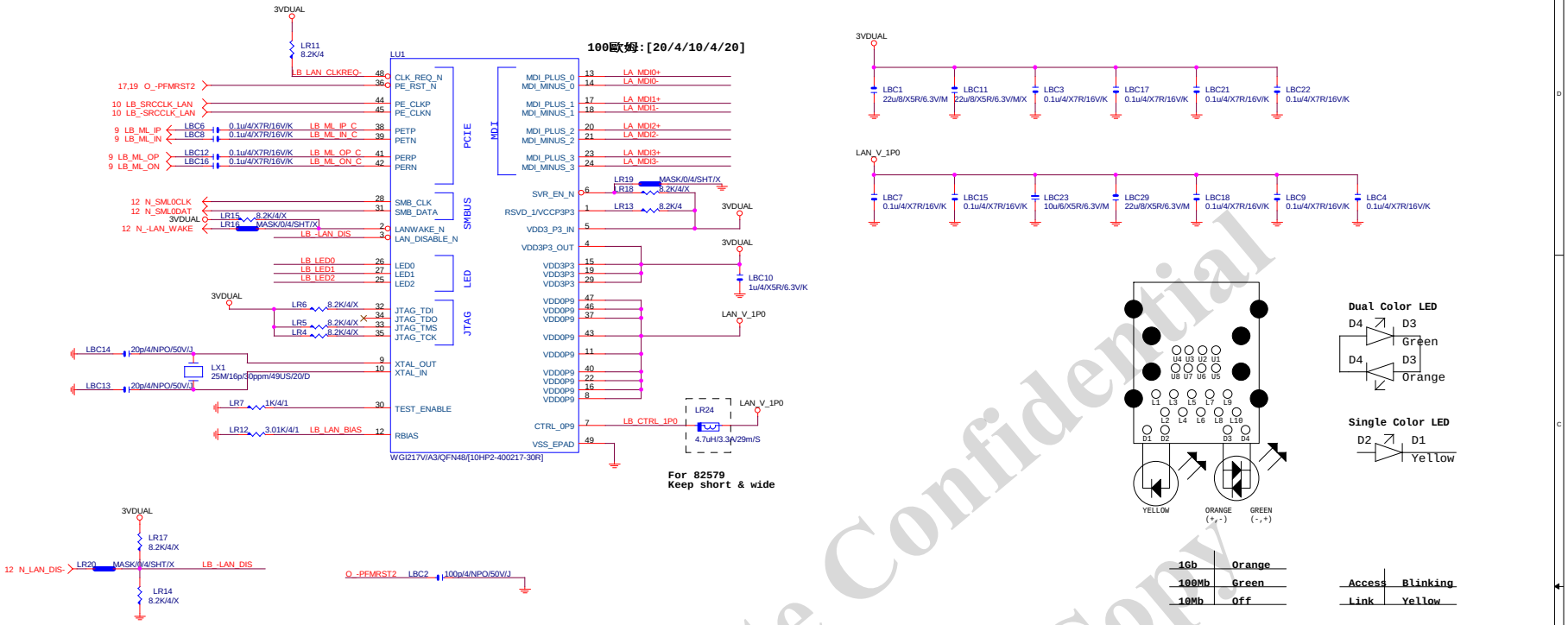
SYS_FAN3





Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 31 of 35	

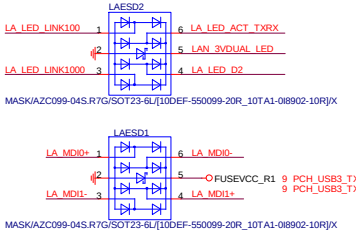
LAN:INTEL I217



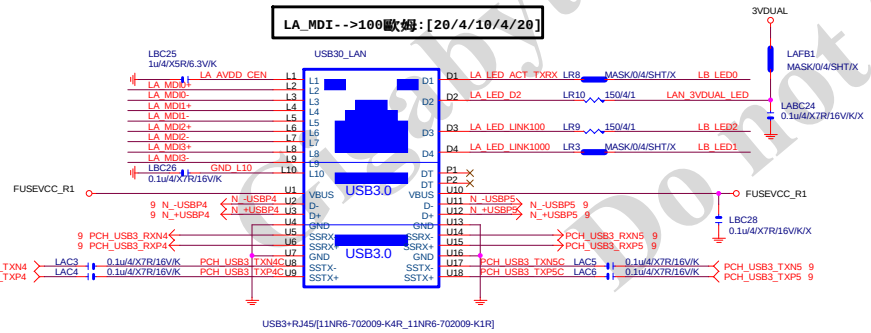
1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

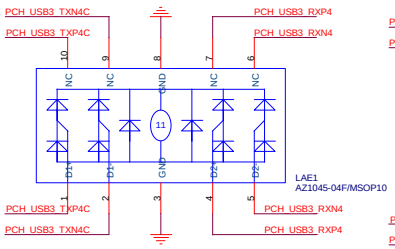
USB30_LAN CONNECTOR

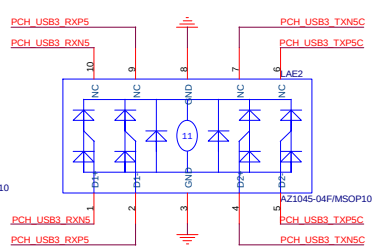


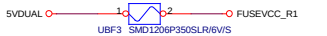
LA_MDI-->100歐姆:[20/4/10/4/20]



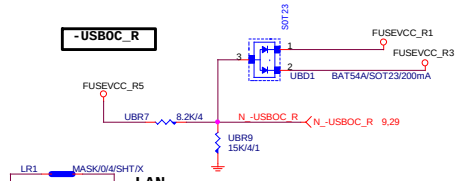
USB30 ESD PROCTECT







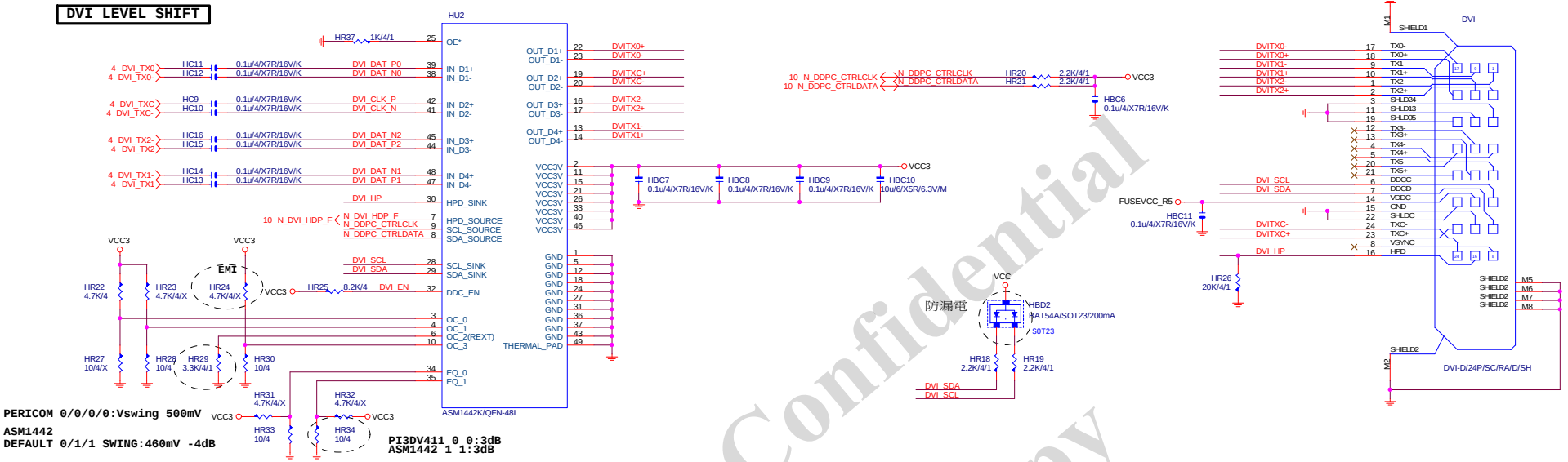
-USBOC_R



Gigabyte Technology			
Title: INTEL LAN I217			
Size: Custom	Document Number: GA-Z97X-SLI		Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 32 of 35		

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

DVI LEVEL SHIFT



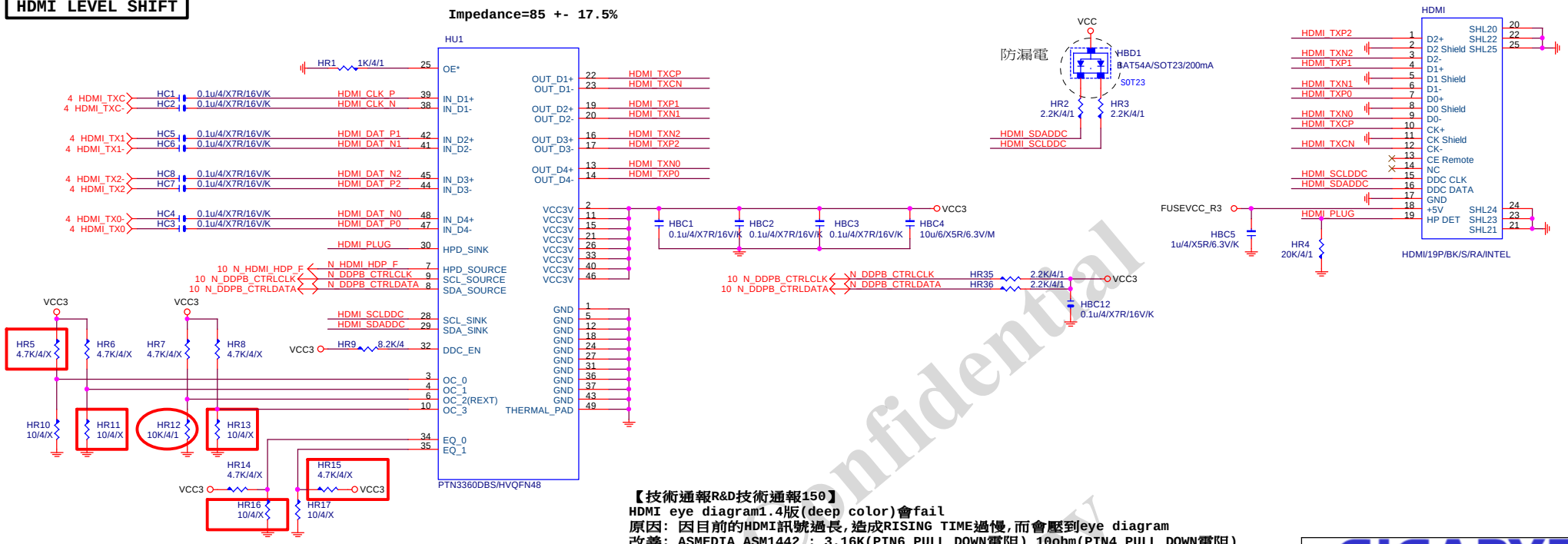
PERICOM 0/0/0/0:Vswing 500mV
ASM1442
DEFAULT 0/1/1 SWING:460mV -4dB

PI3DV411 0 0:3dB
ASM1442 1 1:3dB

Gigabyte Technology		
Title: TI TSB43AB23 1394		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 33 of 35	

HDMI LEVEL SHIFT

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



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)

GIGABYTE™

Title: HDMI & USB		
Size: Custom	Document Number: GA-Z97X-SLI	Rev: 1.11
Date: Tuesday, June 10, 2014	Sheet 34 of 35	

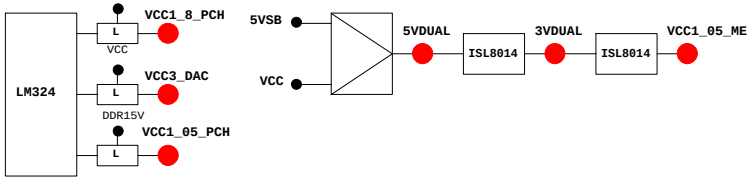
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	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		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	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	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	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	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	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	GPIO39	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	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	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	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			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

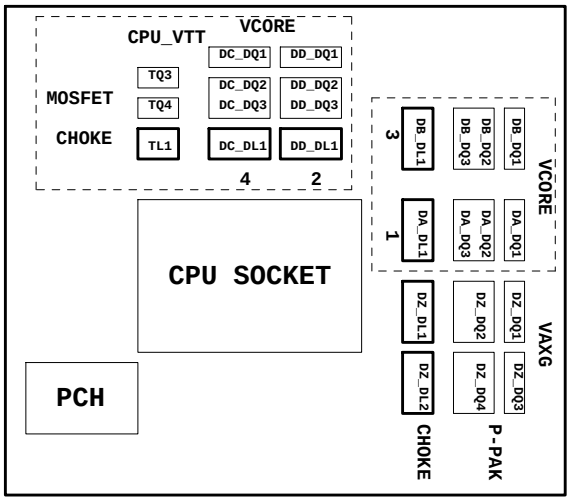
Super I/O ITE8720 GPIO Table

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#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/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/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/BUSSO0	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

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Title: TABLE LIST

Size: C | Document Number: GA-Z97X-SLI | Rev: 1.11

Date: Tuesday, June 10, 2014 | Sheet 35 of 35