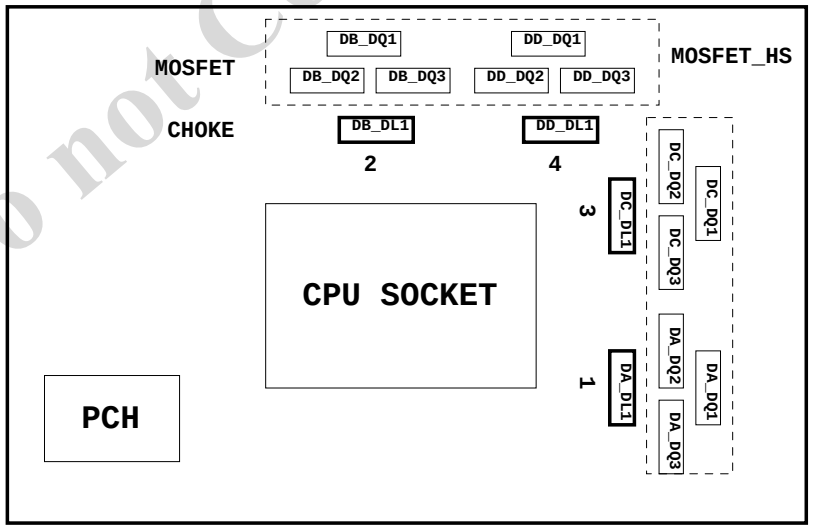
Model Name: GA-Z97-D3H

1.0

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
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	



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Title: Cover Sheet

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GA-Z97-D3H

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	
	3. F_USB30硬殼料號,M2 & SATA EXPRESS料號	
	4. SLOT顏色確認	
0.2		
H97-D3H	1. Z97 --> H97	
	2. NCT3933只保留U7,其餘移除,包含MR3/MR16 10/4	
	3. INTEL SBA enable : N_GPIO37	
	4. VCORE MOSFET改上一下一,注意擺放位置,Thermistor位置(注意:阻值不同)	
0.3	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. Remove M_BIOS SOCKET	
	11. Vcore P-PAK 改成 : SIRA12DP/PPAKSO8/2070pF/4.3m/[10IF9-040012-10R_10IF9-040406-10R]	
	12. Non-Vcore P-PAK 改成 : SiRA18DP-T1/PPAKSO-8/1000pF/7.5m/[10IF9-070018-01R_10IF9-070410-00R]	
10A-0307	1. REMOVE M2RN2	
	2. VCORE / Non-Vcore 指定用 VISHAY	
	3. VGA指定用 : VGA/BK/SC/RA/D/2/HR/[11NR6-103015-12R]	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/10/18	1. H87-D3H 1.12 修改成 Z97-D3H 0.1	
2013/01/10 PCB:0.2	1. DVI add level shifter IC 2. Fix M2 & SATA EXPRESS circuit 3. CPU_OPT & SYS_FAN1 FAN Control change	
PCB:0.3	1. All 0ohm SHORT PAD (包含0402,0603,0805,8P4R) 2. Vcore 一上二下 --> 另一顆是否mask? 3. Remove BIOS_PH 4. Update "NGFF-M-75P-8CM-1" & "C0402-2" 5. Add "SER11" for M2 control circuit 6. Fix Audio pop noise 7. 2_5LEVEL control , NR205 改R0402-2-SHORT10 8. 背面電容mask (包含CPU & PCH) 9. DFM check 10. BIOS_PH 改成 MASK	
PCB:1.0	1. All 0ohm SHORT PAD (包含0402,0603,0805,8P4R)	

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Title: BOM & PCB MODIFY HISTORY

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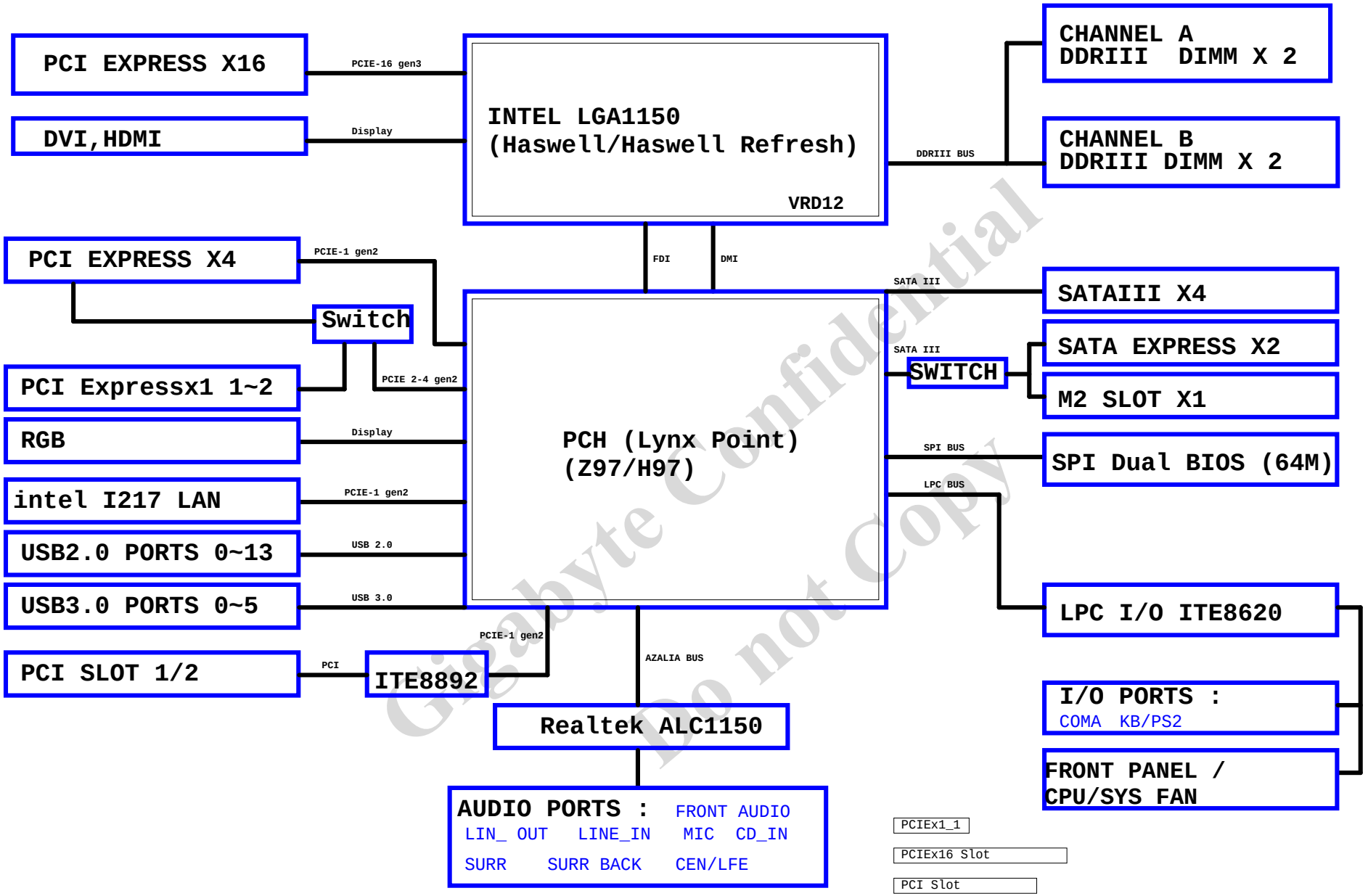
BLOCK DIAGRAM



Gigabyte Technology			
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LGA1150 (E)

LGA1150E

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

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

LGA1155 (C)

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

LGA1150C

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

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

LGA1150 (D)

HDMI 需接Port B For WHQL

LGA1150D

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

Port B

Port C

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

Port D

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

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

-CPURST

1.1V分壓

CPU SVID

CPU PU/PD

SM REF

THRMTRIP DISABLE

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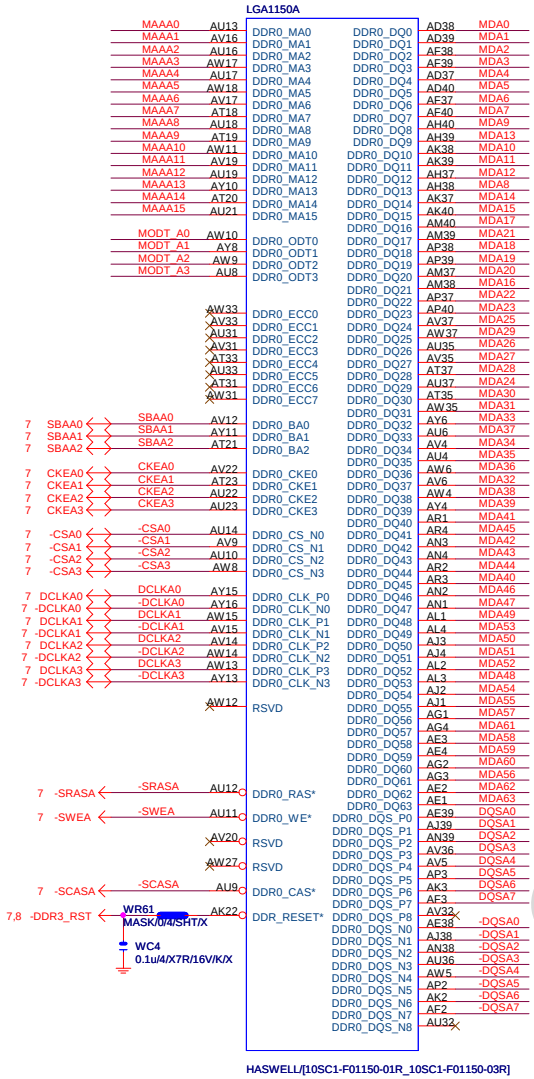
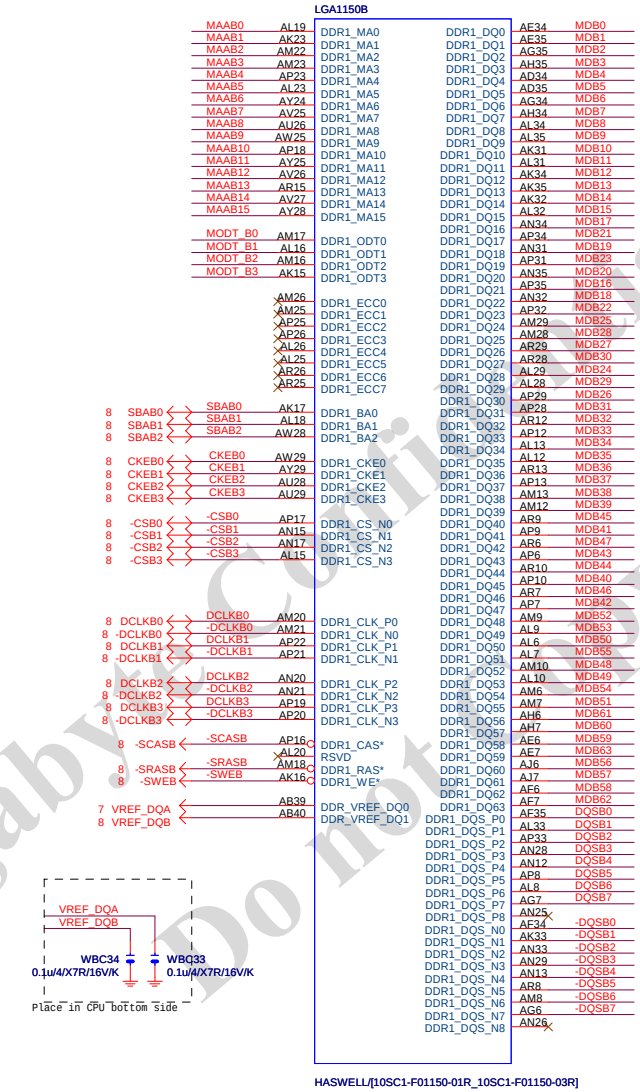
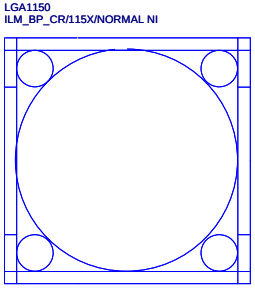
LGA1150 (A)



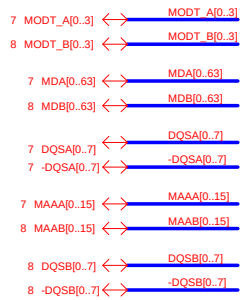
LGA1150 (B)



LGA1150 (CR)



DDR BUS



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LGA1150 (F,J)

(1.0V)
CPU_VTT_OR
VCORE
VCORE
WBC1 22u/8/X5R/6.3V/M
WR65 0/4/X
VCCST
WBC23 1u/4/X5R/6.3V/K
WBC13 0.1u/4/X7R/16V/K
WR63 MASK/0/4/SHT/X
VCCIO2PCH
(1.07V)
WR64 MASK/0/4/SHT/X
VCORE
VCC1_05_PCH
LGA1150F
P8 L40 AB8
VCC VCCIO_OUT VCCIO2PCH
L31 L18 L17 J33 A24 A25 A26 A27 A28 A29 A30 G33 B25 B27 B29 B31 J31 B33 G31 B35 C24 C25 C26 C27 C28 C29 C30 C32 C34 C35 D25 D27 D29 D31 E33 D33 E31 D35 E24 E25 E26 E27 E28 E29 E30 E32 E34 F23 F25 F27 F29 F31 E35 F33 F35 G22 G23 G24 G25 G26 G27 G28 G29 G30 G32 G34 G35 H23 H25 H27 H29 H31 L34
VCC
C31 C33 L16 L15 J35 H33 H35 J21 J22 J23 J24 J25 J26 J27 J28 J29 J30 J32 J34 K19 K21 K23 K25 K27 K29 K31 M13 K33 K35 L19 L20 L21 L22 L23 L24 L25 L26 L27 L28 L29 L30 L32 L33 M17 M15 M19 M21 M23 M25 M27 M29 M33
VDDQ
A12 A13 A15 A17 A23 A11 AA3 AA33 AA35 AA38 AA6 AA7 AA8 A5 AB34 AB37 AB5 AB7 AC3 AC33 AC34 AC35 AC36 AC37 AC38 AC39 AC40 AC6 AC7 A7 AD1 AD2 AD3 AD33 AD36 AD4 AD5 AD6 AD7 AD8 AE33 AE36 AE37 AE40 AE5 AE8 AF1 AF33 AF36 AF4 AF5 AF8 AG33 AG36 AG37 AG38 AG39 AG40 AG5 AG8 AH1 AH2 AH3 AH33 AH36 AH4 AH5 AH8 AJ11 AJ14 AJ16 AJ18 AJ19 AJ22 AJ23 AJ26 AJ27 AJ30 AJ31 AJ32 AJ33
VSS
AJ34 AJ35 AJ36 AJ37 AJ40 AJ5 AJ8 AK1 AK10 AK11 AK12 AK13 AK14 AK18 AK19 AK24 AK25 AK26 AK27 AK28 AK29 AK30 AK36 AK4 AK5 AK6 AK7 AK8 AK9 AL11 AL14 AL17 AL21 AL22 AL24 AL27 AL30 AL36 AL37 AL38 AL39 AL40 AL5 AM1 AM11 AM14 AM15 AM19 AM2 AM24 AM27 AM3 AM30 AM31 AM32 AM33 AM34 AM35 AM36 AM4 AM5 AN10 AN11 AN14 AN16 AN18 AN19 AN22 AN23 AN24 AN27 AN30 AN36 AN37 AN40 AN5 AN6 AN7 AN8 AN9 AP1
DDR_15V
LGA1150J
RSVD_TP RAVD_TP
K12 J13 P37 N38 R36 C39 U35 P40 R38 T37 V34 R39 T38 U36 P39 T36 R37 J14 N36
RSVD
AY18 AW24 AW23 AV29 AV24 AU39 AU27 AU1 AT40 AK20 Y7 T34 R34 J40 J17 J15 H12
VSS
U35 P40 R38 T37 V34 R39 T38 U36 P39 T36 R37 J14
WR67 6.04K/4/1
(1.02V)
VCCST_PWRGD
11,12,18 O_PWROK1
WR66 3.16K/4/1
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (G,H,I)

LGA1150G
A13 A15 A17 A23 A11 AA3 AA33 AA35 AA38 AA6 AA7 AA8 A5 AB34 AB37 AB5 AB7 AC3 AC33 AC34 AC35 AC36 AC37 AC38 AC39 AC40 AC6 AC7 A7 AD1 AD2 AD3 AD33 AD36 AD4 AD5 AD6 AD7 AD8 AE33 AE36 AE37 AE40 AE5 AE8 AF33 AF36 AF4 AF5 AF8 AG33 AG36 AG37 AG38 AG39 AG40 AG5 AG8 AH1 AH2 AH3 AH33 AH36 AH4 AH5 AH8 AJ11 AJ14 AJ16 AJ18 AJ19 AJ22 AJ23 AJ26 AJ27 AJ30 AJ31 AJ32 AJ33
VSS
AJ34 AJ35 AJ36 AJ37 AJ40 AJ5 AJ8 AK1 AK10 AK11 AK12 AK13 AK14 AK18 AK19 AK24 AK25 AK26 AK27 AK28 AK29 AK30 AK36 AK4 AK5 AK6 AK7 AK8 AK9 AL11 AL14 AL17 AL21 AL22 AL24 AL27 AL30 AL36 AL37 AL38 AL39 AL40 AL5 AM1 AM11 AM14 AM15 AM19 AM2 AM24 AM27 AM3 AM30 AM31 AM32 AM33 AM34 AM35 AM36 AM4 AM5 AN10 AN11 AN14 AN16 AN18 AN19 AN22 AN23 AN24 AN27 AN30 AN36 AN37 AN40 AN5 AN6 AN7 AN8 AN9 AP1
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150I
G12 G13 G14 G16 H11 G17 G21 G3 H13 H22 H32 G36 G37 G6 G7 G15 H1 H10 H17 H18 H20 H21 H24 H26 H28 H30 H34 H36 H39 H4 H7 H8 H9 J19 J20 J3 J18 K10 K14 J36 J37 J6 K1 K18 K20 K22 K24 K26 K28 K30 K34 K36 K4 K40 K7 L7 L8 L9 L11 L3 L13 L14 L35 L38 L6 M1 K17 M12 M14 M18 M16 M20 M22 M24 M26 M28 M30 M32 M34 M37
VSS
M4 M40 M5 M6 M7 K15 K16 N1 N2 N3 N7 N34 N4 N6 K32 P2 P34 P38 P5 P7 N8 R3 L36 R35 R40 R5 R6 R7 T1 T2 T33 M35 T39 T4 T5 T6 T7 R8 U2 U33 U34 U37 U4 U7 P35 V3 V33 V40 V6 V8 W1 W33 W35 W37 W4 W7 Y33 Y4 Y5 Y6
VSS_NCTF
AU40 AV39 AW38 AY3 B38 B39 C40 D40
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150H
AP11 AP14 AP15 AP24 AP27 AP30 AP36 AP4 AP5 AR11 AR14 AR16 AR17 AR18 AR19 AR20 AR21 AR22 AR23 AR24 AR27 AR30 AR31 AR32 AR33 AR34 AR35 AR36 AR37 AR38 AR39 AR40 AR5 AT1 AT10 AT11 AT12 AT13 AT14 AT15 AT16 AT2 AT24 AT25 AT26 AT27 AT28 AT29 AT3 AT30 AT32 AT34 AT36 AT38 AT39 AT4 AT5 AT6 AT7 AT8 AT9 AU2 AU25 AU3 AU30 AU34 AU38 AU5 AU7 AV21 AV28 AV3 AV30 AV34 AV38 AV7 AW26 AW3 AW30
VSS
AW32 AW34 AW36 AW7 AY17 AY23 AY26 AY27 AY30 AY5 AY7 B24 B26 B28 B30 B34 B36 B4 B8 C4 C6 C12 C14 C16 C18 C19 C21 C23 C36 B10 B23 C3 D9 D11 D13 D15 D17 D2 D23 D24 D26 D28 D30 D34 D36 D37 D5 D6 D7 E7 E8 E10 E18 E3 E20 E22 E23 E36 E38 B32 E6 F1 F32 F12 F14 F16 F19 F21 F22 F24 F26 F28 F30 F34 F36 F4 D32 F7 G9 G11
HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

VCore CAP (X30)

VCORE
WBC35 MASK/22u/8/X5R/6.3V/M/X
WBC42 MASK/22u/8/X5R/6.3V/M/X
WBC36 MASK/22u/8/X5R/6.3V/M/X
WBC43 MASK/22u/8/X5R/6.3V/M/X
WBC44 MASK/22u/8/X5R/6.3V/M/X
WBC38 MASK/22u/8/X5R/6.3V/M/X
WBC37 MASK/22u/8/X5R/6.3V/M/X
WBC46 MASK/22u/8/X5R/6.3V/M/X
WBC39 MASK/22u/8/X5R/6.3V/M/X
WBC41 MASK/22u/8/X5R/6.3V/M/X

VCORE
WBC40 MASK/22u/8/X5R/6.3V/M/X
WBC19 22u/8/X5R/6.3V/M
WBC21 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M
WBC9 22u/8/X5R/6.3V/M
WBC20 22u/8/X5R/6.3V/M
WBC7 22u/8/X5R/6.3V/M
WBC11 22u/8/X5R/6.3V/M
WBC8 22u/8/X5R/6.3V/M
WBC4 22u/8/X5R/6.3V/M

VCORE
WBC5 22u/8/X5R/6.3V/M
WBC10 22u/8/X5R/6.3V/M
WBC12 22u/8/X5R/6.3V/M
WBC22 22u/8/X5R/6.3V/M
WBC45 MASK/22u/8/X5R/6.3V/M/X
WBC14 22u/8/X5R/6.3V/M
WBC15 22u/8/X5R/6.3V/M
WBC16 22u/8/X5R/6.3V/M
WBC17 22u/8/X5R/6.3V/M
WBC18 22u/8/X5R/6.3V/M

DDR CAP (X15)

DDR_15V
WBC24 22u/8/X5R/6.3V/M
WBC25 22u/8/X5R/6.3V/M
WBC26 22u/8/X5R/6.3V/M
WBC27 22u/8/X5R/6.3V/M
WBC28 22u/8/X5R/6.3V/M

DDR_15V
WBC29 22u/8/X5R/6.3V/M
WBC30 22u/8/X5R/6.3V/M
WBC31 22u/8/X5R/6.3V/M
WBC32 22u/8/X5R/6.3V/M
SBC1 MASK/22u/8/X5R/6.3V/M/X
SBC2 MASK/22u/8/X5R/6.3V/M/X

DDR_15V
MBC50 MASK/22u/8/X5R/6.3V/M/X
MBC51 MASK/22u/8/X5R/6.3V/M/X
MBC48 MASK/1u/4/X5R/6.3V/K/X
MBC49 MASK/1u/4/X5R/6.3V/K/X

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DDR3 (A)

DDR3_4

DDRVTT
VTT
VSS
FREE
RSVD
ODT1
ODT0
NC/PAR_IN
NC/ERR_OUT
NC/TEST4
CB0
CB1
CB2
CB3
CB4
CB5
CB6
CB7
DQS0
DQS0*
DQS1
DQS1*
DQS2
DQS2*
DQS3
DQS3*
DQS4
DQS4*
DQS5
DQS5*
DQS6
DQS6*
DQS7
DQS7*
DQS8
DQS8*
DM0/DQS9
NC/DQS9*
DM1/DQS10
NC/DQS10*
DM2/DQS11
NC/DQS11*
DM3/DQS12
NC/DQS12*
DM4/DQS13
NC/DQS13*
DM5/DQS14
NC/DQS14*
DM6/DQS15
NC/DQS15*
DM7/DQS16
NC/DQS16*
DM8/DQS17
NC/DQS17*
VDD
MODT_A1
MODT_A0
DQSA0
-DQSA0
DQSA1
-DQSA1
DQSA2
-DQSA2
DQSA3
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DQSA4
-DQSA4
DQSA5
-DQSA5
DQSA6
-DQSA6
DQSA7
-DQSA7
MDA0
MDA1
MDA2
MDA3
MDA4
MDA5
MDA6
MDA7
MDA8
MDA9
MDA10
MDA11
MDA12
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MDA52
MDA53
MDA54
MDA55
MDA56
MDA57
MDA58
MDA59
MDA60
MDA61
MDA62
MDA63
DDR3/240/BK/VA/D

MODT_A[0..3] 5
-DQSA[0..7] 5
DQSA[0..7] 5
MDA[0..63] 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

DDR_15V
MC4 0.1u/4/X7R/16V/K
MC5 0.1u/4/X7R/16V/K
MC1 0.1u/4/X7R/16V/K
VREF_DDRA
VREF_DQDDRA
VREFCA
VREFDQ

8,12,14,15,17,23,27 N_SMBCLK
8,12,14,15,17,23,27 N_SMBDATA
SCL
SDA
SA1
SA0
SBAA2
SBAA1
SBAA0
BA2
BA1
BA0
CKEA1
CKEA0
CKE1
CKE0
-CSA1
-CSA0
S1*
S0*
-DCLKA1
DCLKA1
CK1/NU*
CK1/NU
-DCLKA0
DCLKA0
CK0*
CK0
MAAA[0..15]
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12
A13
A14
A15
5,8 -DDR3_RST
-SCASA
-SRASA
-SWEA
RESET*
CAS*
RAS*
WE*

DDR3_2

DDRVTT
MODT_A3
MODT_A2
MDA[0..63] 5
MC8 0.1u/4/X7R/16V/K
MC3 0.1u/4/X7R/16V/K
MC7 0.1u/4/X7R/16V/K
VDDSPD
VREF_DDRA
VREF_DQDDRA
8,12,14,15,17,23,27 N_SMBCLK
8,12,14,15,17,23,27 N_SMBDATA
5 MAAA[0..15]
5,8 -DDR3_RST
DDR3/240/GR/VA/D

DDR3_VREF

DDR_15V
MR15 1K/4/1
MR13 MASK/0/4/SHT/X
M_VREFCA_A 27
MR14 1K/4/1
MBC28 1u/4/X5R/6.3V/K
MR4 1K/4/1
VREF_DQDDRA
MR1 10/4
VREF_DQA 5
MR3 10/4/X
VREF_DQA_ADJ 27
MR5 1K/4/1

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

DDR_15V
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

DDR_15V
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

DDR_15V
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

DDRVTT Decouple

DDRVTT
MBC39 22u/8/X5R/6.3V/M
MBC40 22u/8/X5R/6.3V/M

DDRVTT
MBC18 0.1u/4/X7R/16V/K
MBC26 0.1u/4/X7R/16V/K
MBC41 0.1u/4/X7R/16V/K

DDRVTT
MBC4 1u/4/X5R/6.3V/K
MBC10 1u/4/X5R/6.3V/K

DDR_15V
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-Z97-D3H		Rev: 1.0
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DDR3 (B)

DDR3_3

DDRVTT

DDR_15V

MC2 0.1u/4/X7R/16V/K

MC14 0.1u/4/X7R/16V/K VREF_DDRB

MC9 0.1u/4/X7R/16V/K VREF_DQDDRB

VDDSPD

VREFCA

VREFDQ

N_SMBCLK

N_SMBDATA

SCL

SDA

SA1

SA0

BA2

BA1

BA0

CKE1

CKE0

S1*

S0*

CK1/NU*

CK1/NU

CK0*

CK0

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12 A13 A14 A15

RESET*

CAS*

RAS*

WE*

DDR3/240/BK/VA/D

DDR3

DDR3_1

MC12 0.1u/4/X7R/16V/K

MC15 0.1u/4/X7R/16V/K VREF_DDRB

MC13 0.1u/4/X7R/16V/K VREF_DQDDRB

DDR3/240/GR/VA/D

DDR3 VREF

MR10 1K/4/1

MR12 MASK/0/4/SHT/X

MR11 1K/4/1

VREF_DDRB

VM_VREFCA_B 27

MR8 1K/4/1

MR7 10/4

MR16 10/4/X

MR9 1K/4/1

VREF_DQDDRB

VREF_DQB 5

VREF_DQB_ADJ 27

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

COUPON1 COUPON1 1 2 COUPON/X

COUPON2 COUPON2 1 2 COUPON/X

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-Z97-D3H	Rev: 1.0
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PCH (B)

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

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

DMI:12/4/4/4/12(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

Port要對應

H81:USB3.0 N\A
B85/H81: 6/7 N\A
H81:12/13 N\A

PCHB

DH82Z97/S/[10HB1-030Z97-10R]

REAR USB3.0

LAN i217v

ITE8892 PCI Bridge

PCIEX4 port1

PCIEX4 port2

PCIEX4 port3
PCIEX1_1

PCIEX4 port4
PCIEX1_2

電容放靠近 Device & PCI-E Slot

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

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%

PCHF

DH82Z97/S/[10HB1-030Z97-10R]

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

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

PCH (J)

PCHJ

DH82Z97/S/[10HB1-030Z97-10R]

PCH H/S

BGAHSINK-Z97X-SLI

PCH_HS

PCH_HS/[12SP2-S04554-11R_12SP2-S04554-12R_12SP2-S04554-13R]

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-Z97-D3H | Rev: 1.0

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PCH (E)

PCHE

DH82Z97/S/[10HB1-030Z97-10R]

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

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

DDC DIFF 4/5;+-1000

IREF 4/12;<500MILS;GND

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

DH82Z97/S/[10HB1-030Z97-10R]

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

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%

PCIXx16
M.2 CLK 限用 CLKOUT_PCIE_0
M.2 slot
Intel lan I217
ITE8892
PCIXx1_2
PCIXx4
PCIXx1_1

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-Z97-D3H		Rev: 1.0
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PCH (C)

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

PCHC

DH82Z97/S/[10HB1-030Z97-10R]

PCH (A)

PCHA

DH82Z97/S/[10HB1-030Z97-10R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

Default int pull up on GP51,
Default SPI boot devices

PCH CLK PD

Mount for integrated clock Generation Mode

PCH PU/PD

ME PWROK N_GPIO37 For H97/H87/B85

SATA3 CONNECTOR

[Z87/H87] all SATA3
SATA3(From Z87) - 黑色
SATA3(From Marvell) - 灰色
[B85] SATA2+SATA3
SATA2(From B85) - 黑色
SATA3(From B85) - 白色

SATA2/7/BK/H/OP/VA/D/1/B/[11NH5-110307-62R_11NH5-110307-63R]

GPIO38 Ctrl

MFG Mode

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

Gigabyte Technology

Title: PCH HOST , SATA, PCI

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Date: Friday, February 28, 2014 | Sheet 11 of 34

PCH (D)

PCHD

DH82Z97/S/[10HB1-030Z97-10R]

ACZ_SDOUT

SPI OVERRIDE PROTECTION

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

PCH_DPWROK

At least 10ms delay after 3VDUAL_PCH stabel

For IT8620 Ctrl

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4

RB 必須放在BAT外

Gigabyte Technology

Title: PCH GPIO , CTRL , AUDIO

Size: Custom | Document Number: GA-Z97-D3H | Rev: 1.0

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PCH (H)

PCHH

DH82Z97/S[10HB1-030Z97-10R]

VCC1_05_PCH
VCC1_05_DCB
VCC1_05_ME
VCC1_5_PCH
VCC3
VCC3_DAC
VCC3_ME
3VDUAL
3VDUAL_PCH
VCCIO2PCH
N_RTCVDD 12,28

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
NR71 5.1/4/1
V_1P05_DSW_INT
NTP2
V_1P5_RTC_INT
V_1P5_INT
NTP3
NTP1
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

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

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

3VDUAL_PCH

NQ9 L1117LGN/SOT223/1A
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
NRN1 0/8P4R/4/X

CAP

NBC58 1u/4/X5R/6.3V/K
NBC65 1u/4/X5R/6.3V/K

(3.3V)(X6)

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)

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)

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)

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

(3.3V)(X3)

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

(1.5V) (X10)

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
DH82Z97/S[10HB1-030Z97-10R]

Gigabyte Technology			
Title: PCH PWR ,GND			
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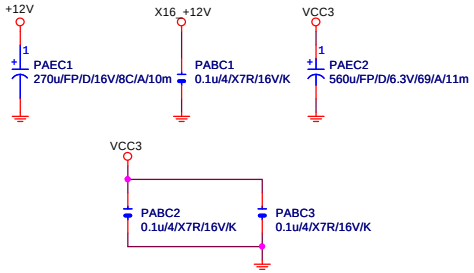
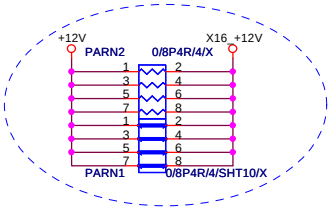
PCIEX16 CAP



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_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_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

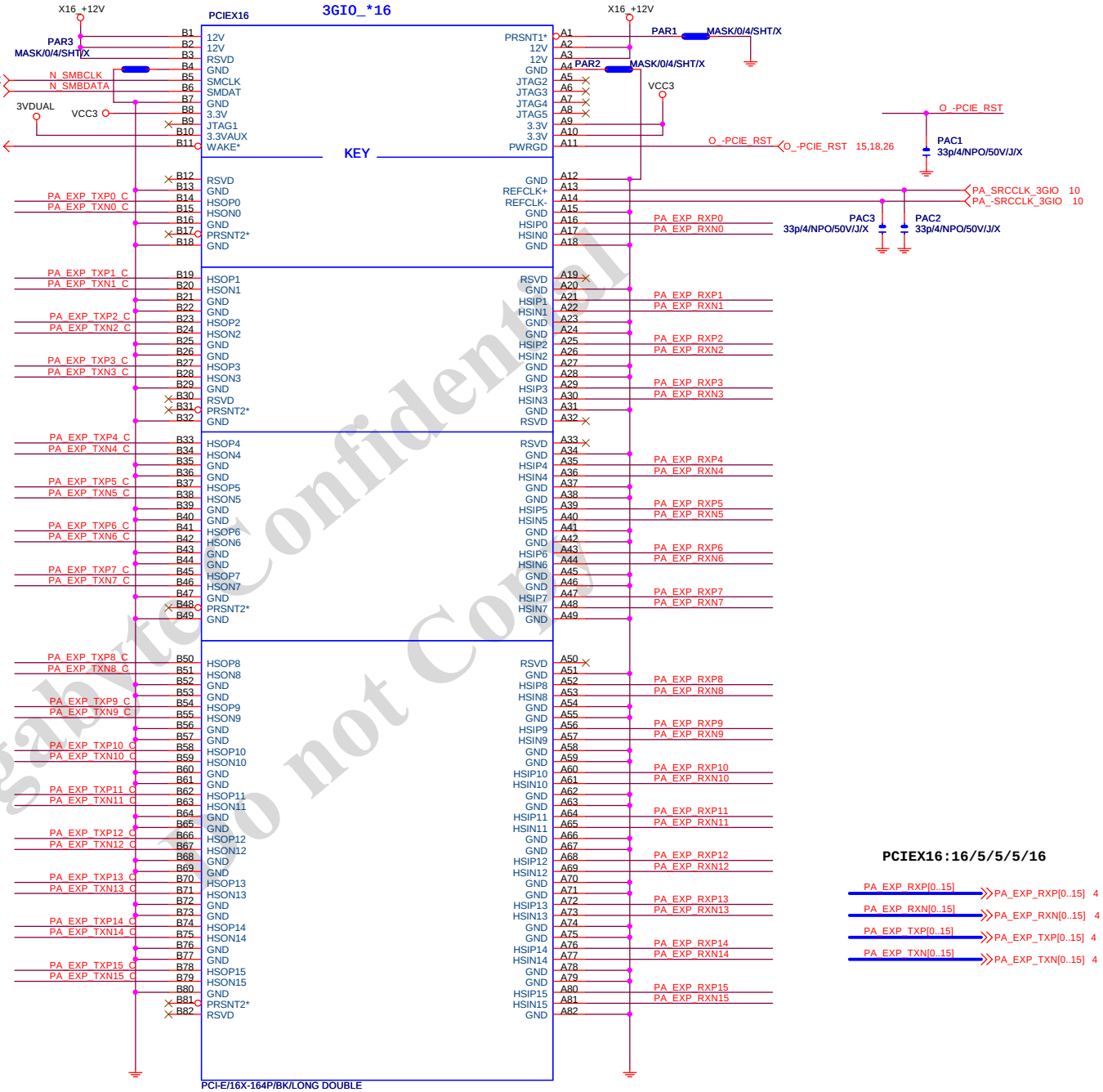
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DN-Q



PCIEX16:16/5/5/5/16

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

Gigabyte Technology		
Title: PCI EXPRESS * 16		
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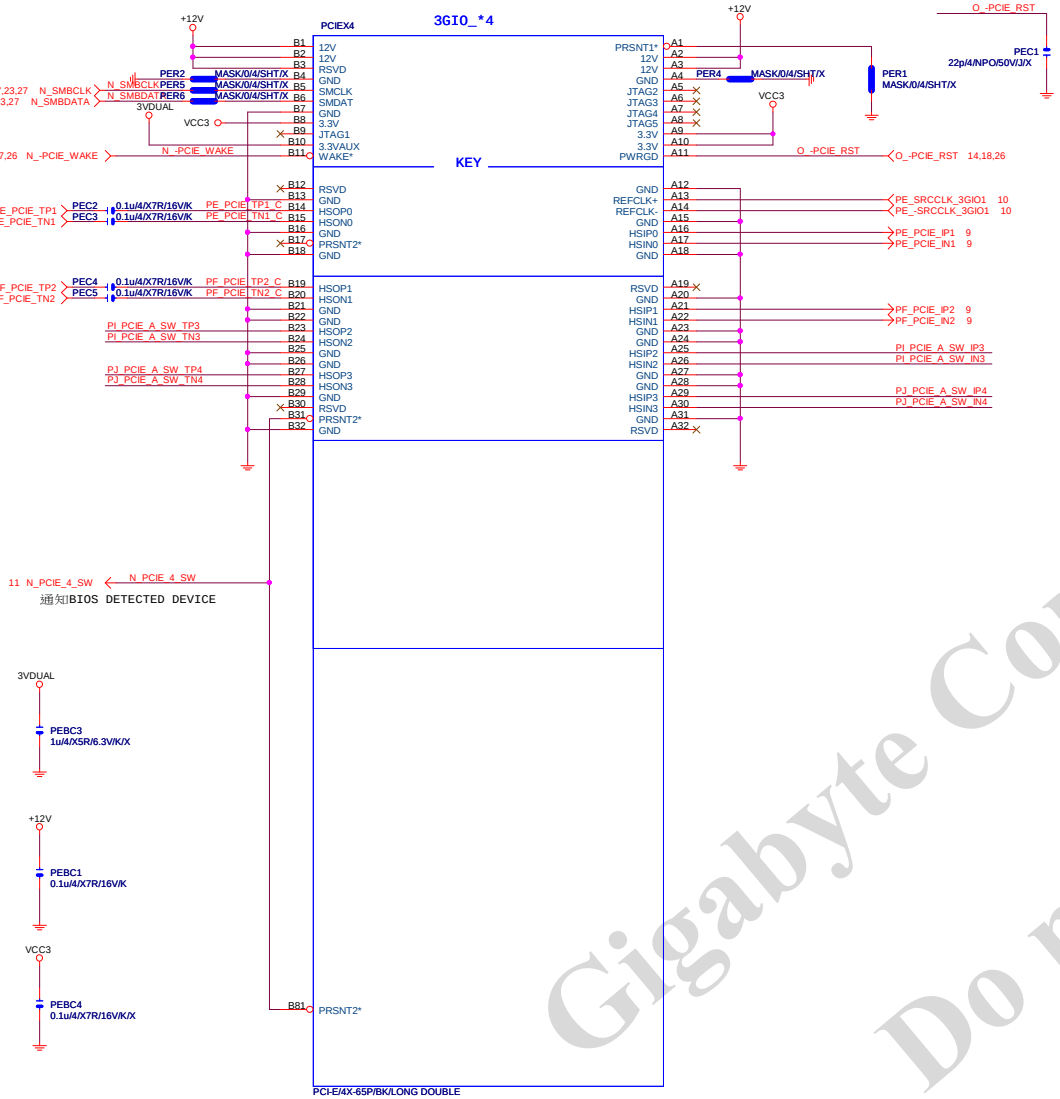
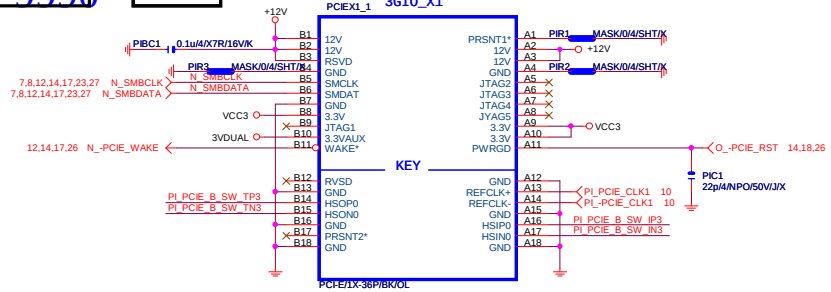
PCIEX4 SLOT

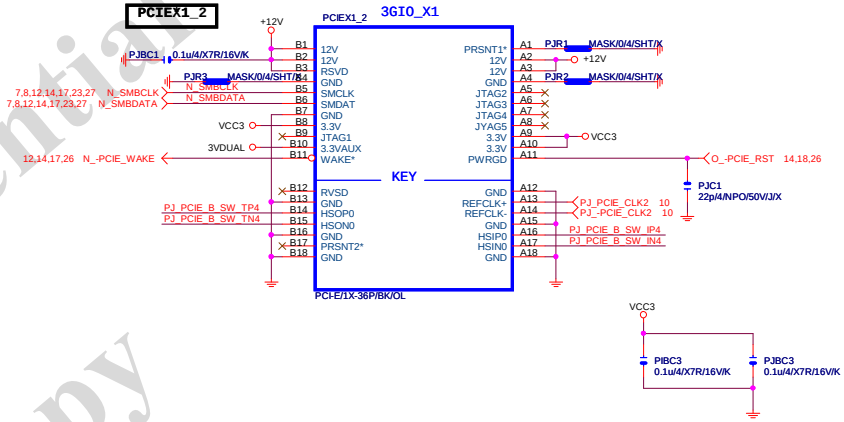


	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
PCIEX4 No devices	H	H
PCIEX4 -> X1	H	H
PCIEX4 Have devices		
PCIEX4 -> X4	L	L
PCIEX1_1/2 --> N/A		

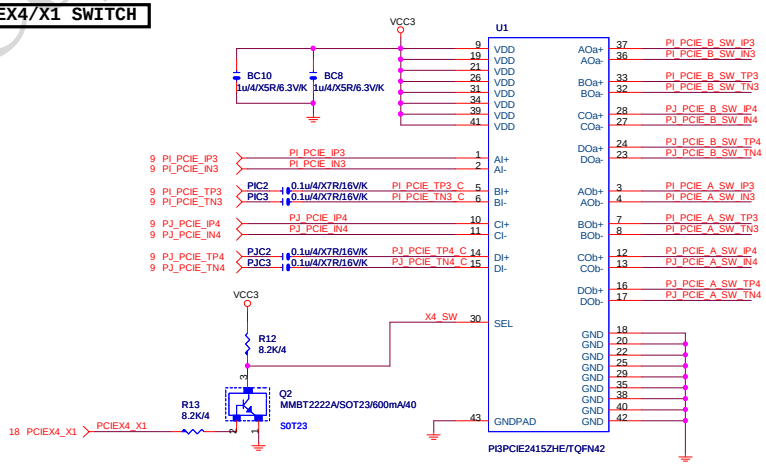
PCIEX1_1



PCIEX1_2



PCIEX4/X1 SWITCH



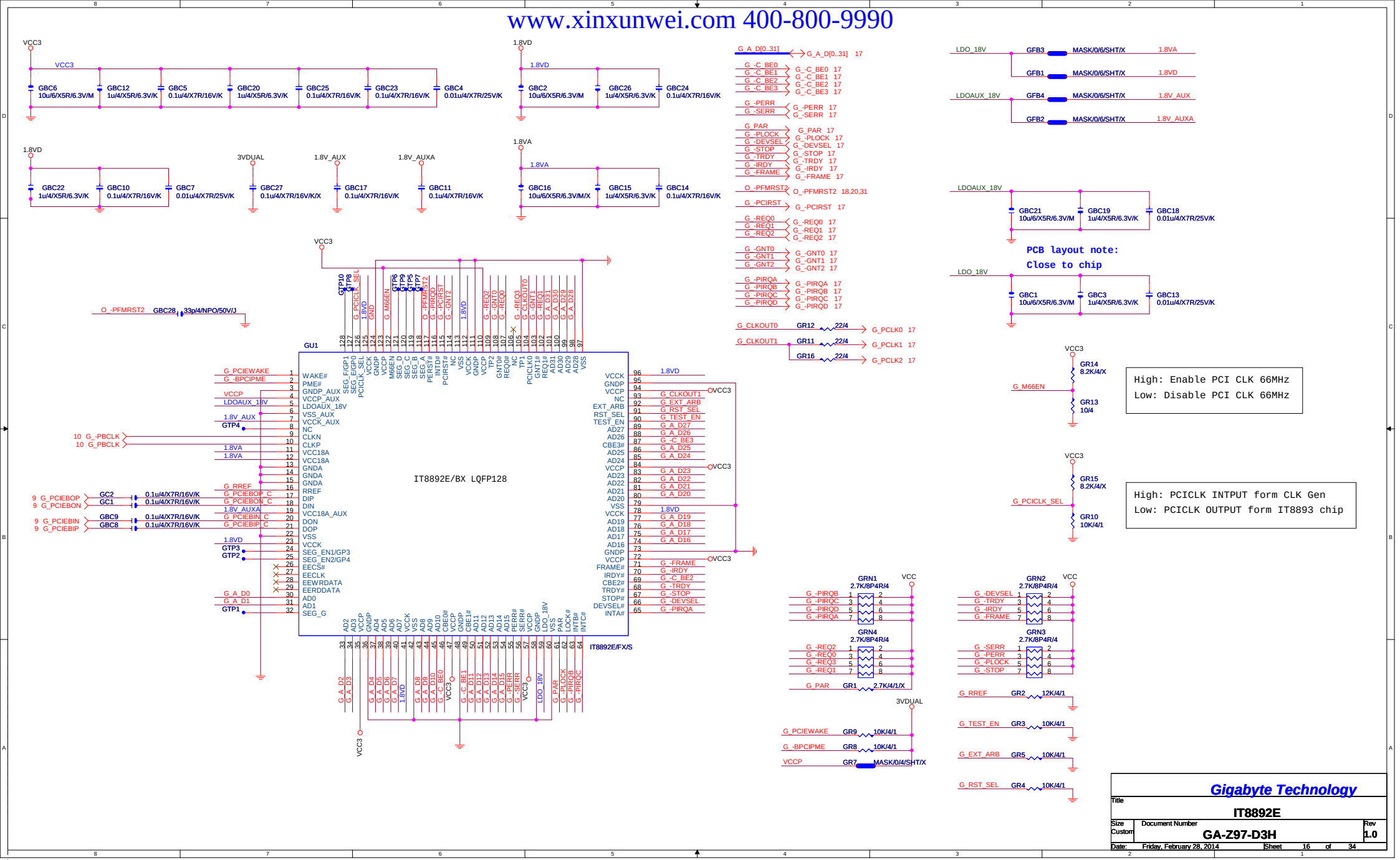
Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X1
xI--> x0b	H;PCIEX4 SLOT-->X4

Gigabyte Technology

Title: PCIE_X1 1,2

Size: Custom | Document Number: GA-Z97-D3H | Rev: 1.0

Date: Friday, February 28, 2014 | Sheet 15 of 34



Gigabyte Technology

Title	IT8892E	
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
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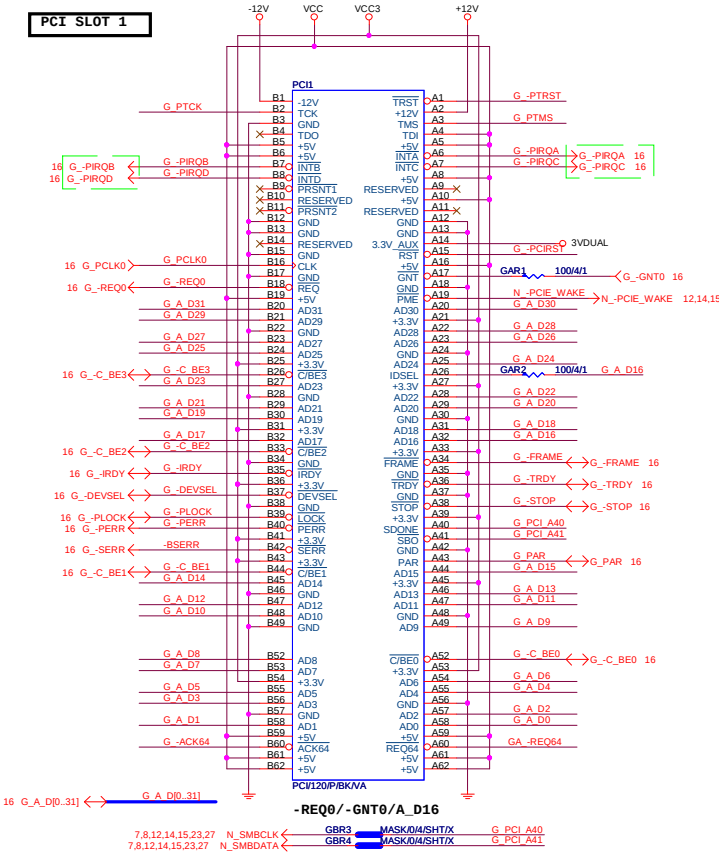
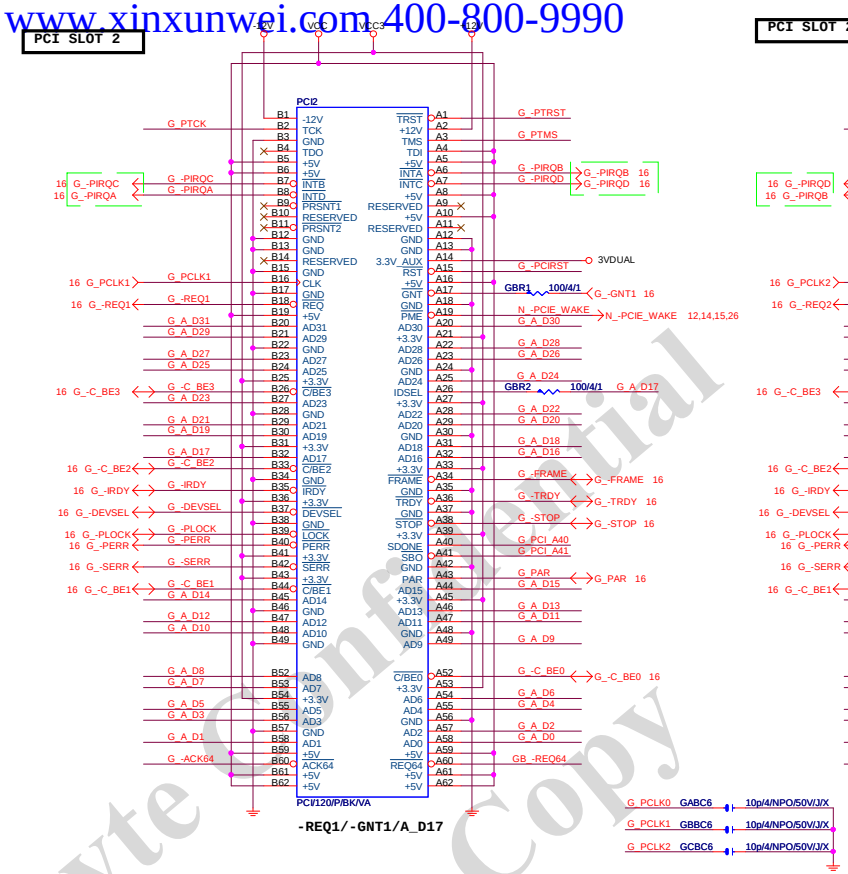
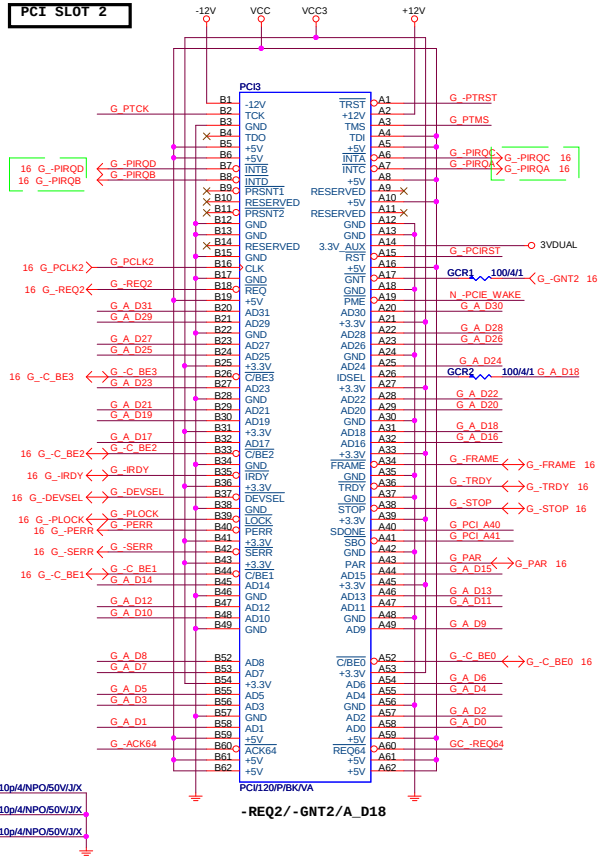
PCI SLOT 1



PCI SLOT 2

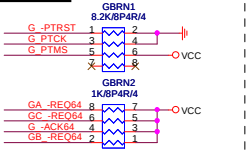


PCI SLOT 2

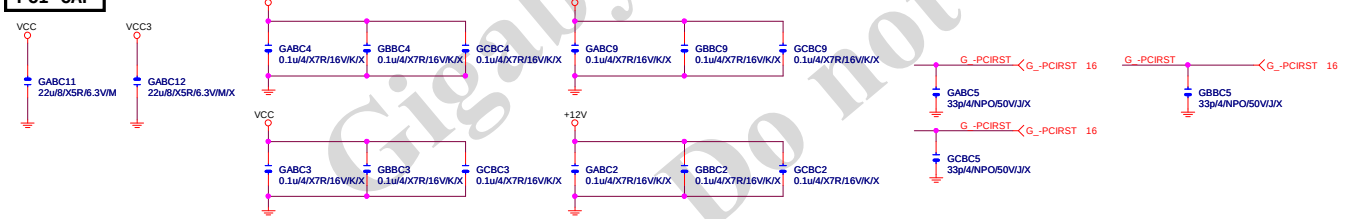


G_PCLK0 GABC6 10p/4/NPO/50V/J/X
G_PCLK1 GBBC6 10p/4/NPO/50V/J/X
G_PCLK2 GCBC6 10p/4/NPO/50V/J/X

PCI PU



PCI CAP



GIGABYTE™

Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
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SIO IT8728F

IT8620E_CX

Power leakage

PWR SHT

SIO PU

SIO STRAP

DUAL BIOS OPT STRAP

SIO_18V

MB ID

SIO CAP

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

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.

Gigabyte Technology

Title: ITE 8620 LPC IO

Size: B | Document Number: GA-Z97-D3H | Rev: 1.0

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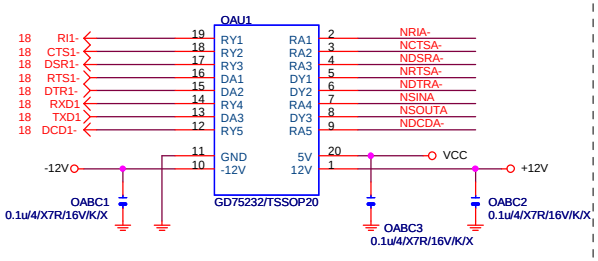
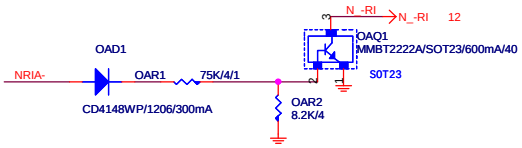
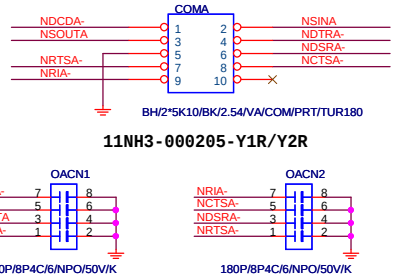
COMA



COM RI

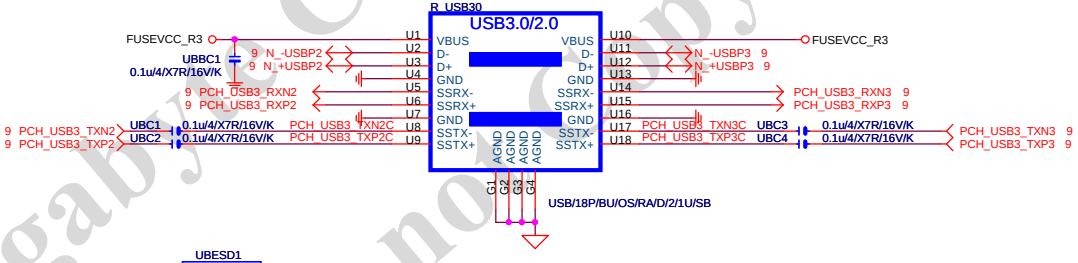


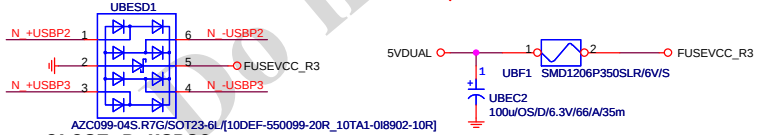
COM BUFFER



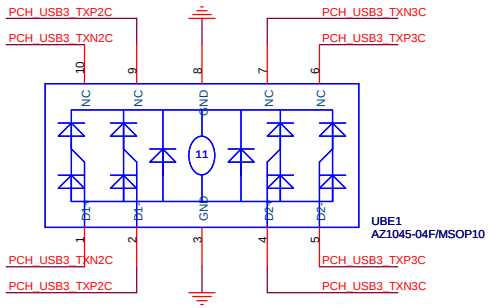
R_USB

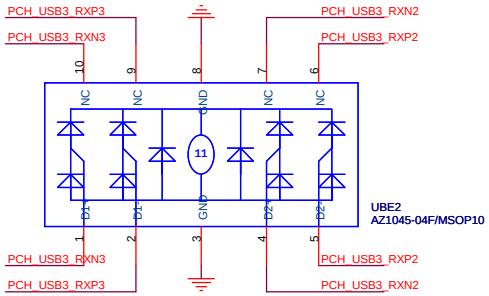
R_USB30





CLOSE R_USB30





Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
NR227 1K/4/1
-SPI_CS_1
-SPI_HOLD_M NR233 1K/4/1/X
NQ20 SOT23
N_-ICH_SPI_CS
NR228 0/4/X
MMBT2222A/SOT23/600mA/40
NQ21 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_B NR229 8.2K/4

指定用DII

VCC3_ME
NR230 330/4/1
NR231 1K/4/1
-SPI_CS_2
-SPI_HOLD_B NR234 1K/4/1/X
NQ22 MMBT2222A/SOT23/600mA/40 SOT23
N_-ICH_SPI_CS
NQ23 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_M NR232 8.2K/4

M_BIOS

VCC3_ME
NR4 MASK/0/4/SHT/X
NBC2 1u/4/X5R/6.3V/K
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
12 SPI_DQ2 NR220 MASK/0/4/SHT/X N_-SPI_WP0
CS# VDD
SO HOLD#
WP# SCK
VSS SI
NR221 MASK/0/4/SHT/X
NR222 8.2K/4/X -SPI_HOLD_M
-HOLD0
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS
64M/Q/SPI/SO8/S[10HP4-112564-30R]

B_BIOS

VCC3_ME
NR12 MASK/0/4/SHT/X
NBC3 1u/4/X5R/6.3V/K
-SPI_CS_2 NR8 22/4
SPI_MISO
12 SPI_DQ2 NR223 MASK/0/4/SHT/X N_-SPI_WP1
CS# VDD
SO HOLD#
WP# SCK
VSS SI
NR224 MASK/0/4/SHT/X
NR225 8.2K/4/X -SPI_HOLD_B
-HOLD1
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
BACKUP BIOS
64M/Q/SPI/SO8/S[10HP4-112564-30R]

MOSI For DMI RX Termination Voltage

VCC3_ME
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

VCC3_ME
N_-SPI_WP1 NR2 8.2K/4/X
N_-SPI_WP0 NR1 8.2K/4/X
N_ICH_SPI_MISO NR5 8.2K/4
-HOLD0 NR235 1K/4/1/X
-HOLD1 NR236 1K/4/1/X
12 SPI_DQ3
12 N_ICH_SPI_MISO

5VDUAL
18 -SPI_HOLD_M -SPI_HOLD_M NR237 1K/4/1/X
18 -SPI_HOLD_B -SPI_HOLD_B NR238 1K/4/1/X
12 N_ICH_SPI_MISO NR6 22/4 SPI_MISO

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

1 means floating
0 means PD 1K

VCC3_ME
NBC4 0.1u/4/X7R/16V/K

TPM CONNECT

VCC3
3VDUAL_PCH
10 T_TPMCLK
12,18 N_-LFRAME
16,18,31 O_-PFMRST2
12,18 N_LAD3
12,18 N_LAD0
TPM
LCLK LFRAME# LRESET# LAD3 VCC3 LAD0 RSV0 SB3V GND LPCPD#
GND VCC5 LAD2 LAD1 GND RSV1 SERIRQ CLKRUN# RSV2
pin 4 防漏
N_LAD2 12,18
N_LAD1 12,18
N_SERIRQ 11,18
TBC1 0.1u/4/X7R/16V/K/X
TBC2 0.1u/4/X7R/16V/K/X
BH/2*10K4/BK/2.54/VA/HA
12,26 N_SUSCLK TR1 10/4

VCC3
TR2 8.2K/4
TPM_GP14 18

BIOS Debug port

VCC3_ME
BIOS_PH
N_-ICH_SPI_CS
SPI_MISO
N_-ICH_SPI_CS1
-HOLD0
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
MASK/PH/2*5K1,K7/BK/2.54/VA/D[11NH2-020205-81R]/X

M_BIOS
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X

Gigabyte Technology

Title: BIOS

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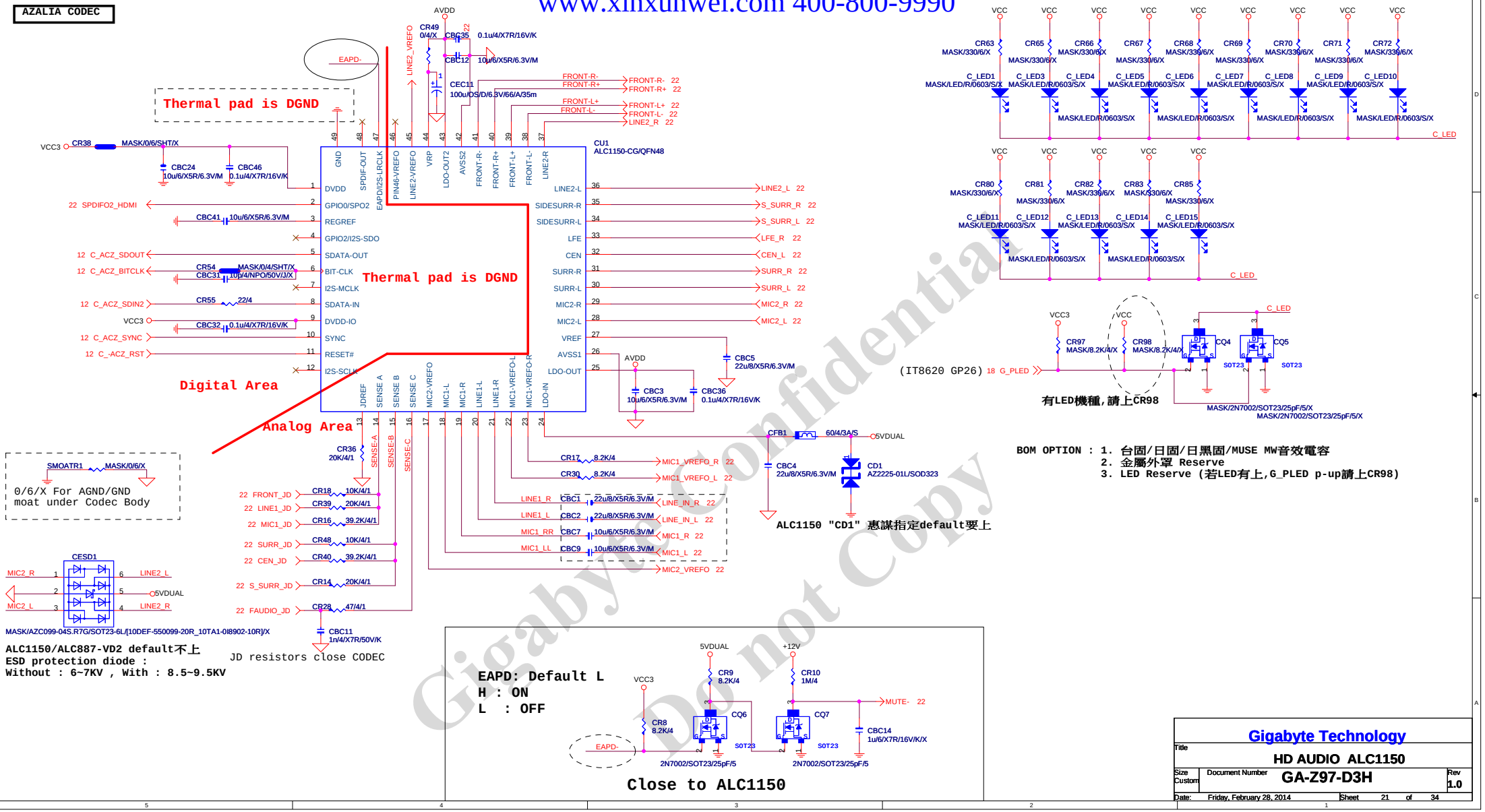
AZALIA CODEC



BOM OPTION : 1. 台固/日固/日黑固/MUSE MW音效電容
2. 金屬外罩 Reserve
3. LED Reserve (若LED有上,G_PLED p-up請上CR98)

Gigabyte Technology		
Title: HD AUDIO ALC1150		
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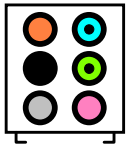
AZALIA JACK



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)

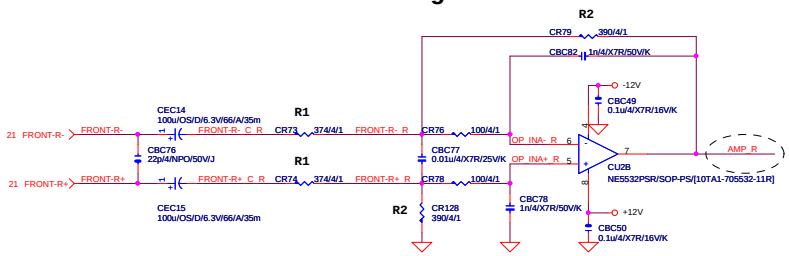
MOATR4 MASK/0/4/SHT/X, MOATC4 0.1u/4/X7R/16V/K → Near AMP (各打2 VIA hole)

SPDIF_OUT

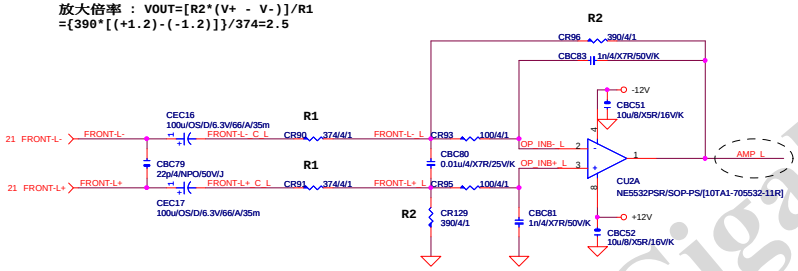
For HDMI SPDIF

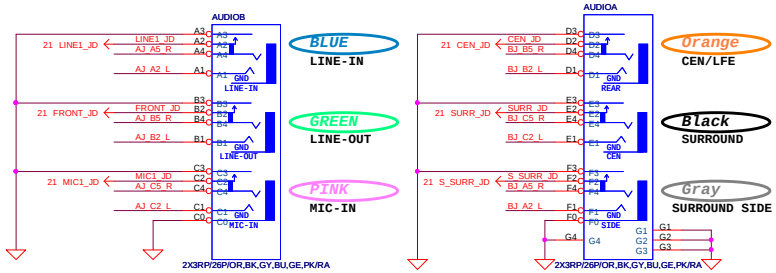
21 SPDIFO2_HDMI — CR52 MASK/0/4/SHT/X — SPDIF_O — CBC37 100p/4/NPO/50V/J — PH/1*2/BK/2.54/VA/D

Differential to Single-End AMPLIFIED



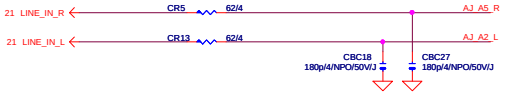
放大倍率 : VOUT=[R2*(V+ - V-)]/R1
={390*[(+1.2)-(-1.2)]}/374=2.5



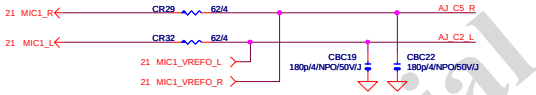


LINE-OUT

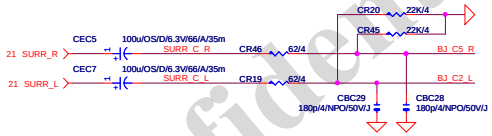
LINE-IN



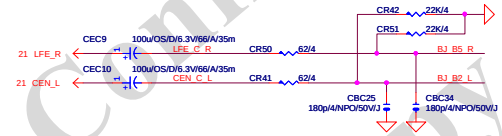
MIC-IN



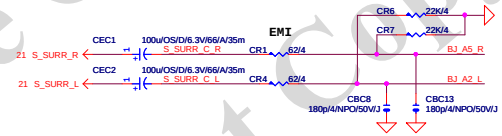
SURROUND

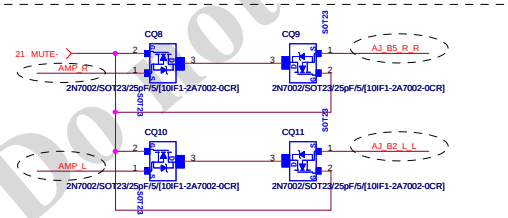


CEN/LFE

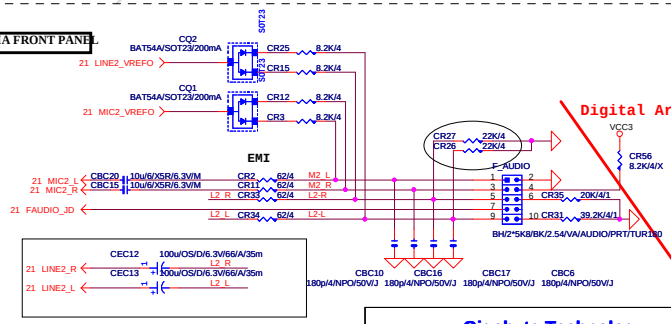


SURR BACK



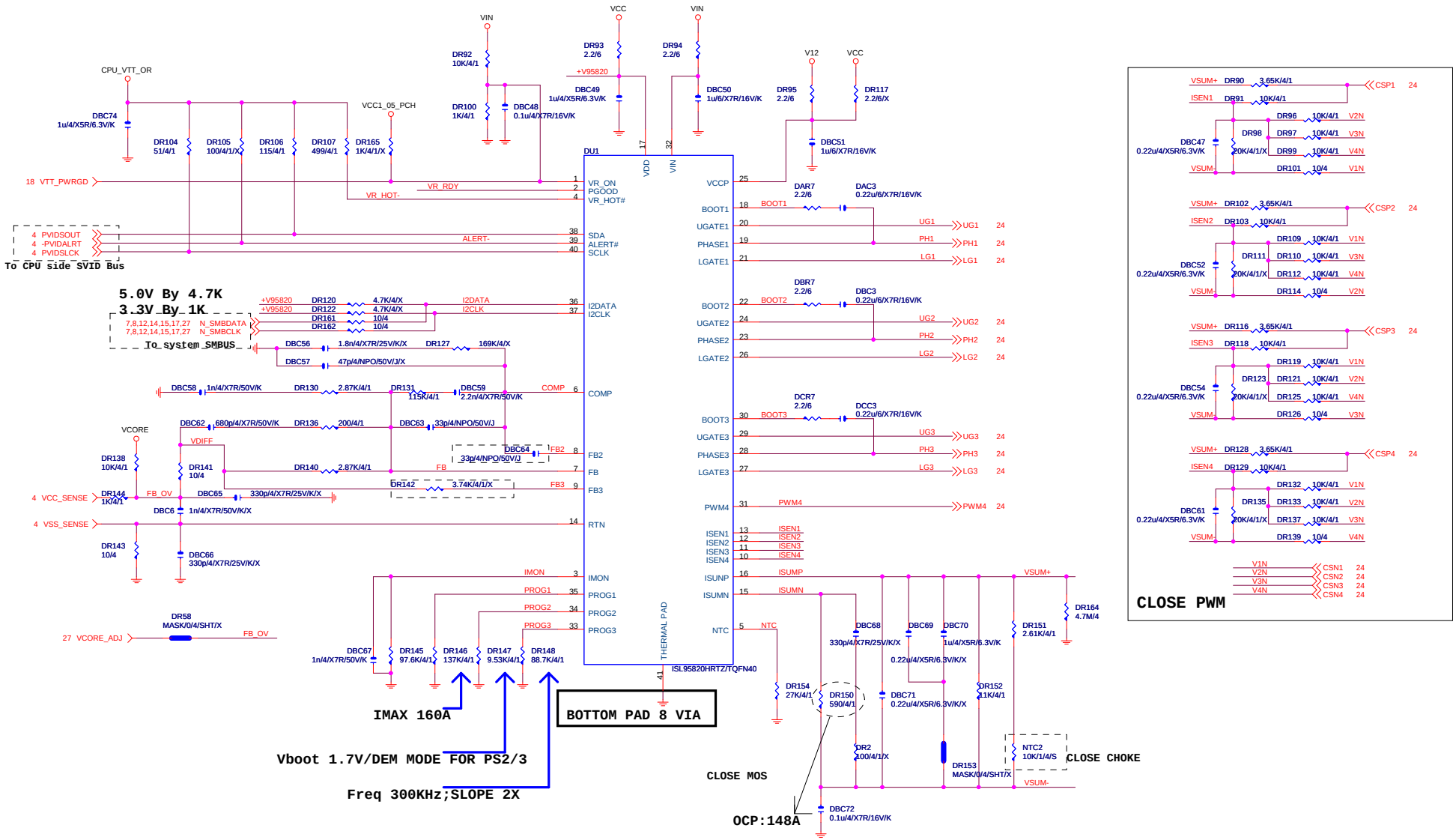


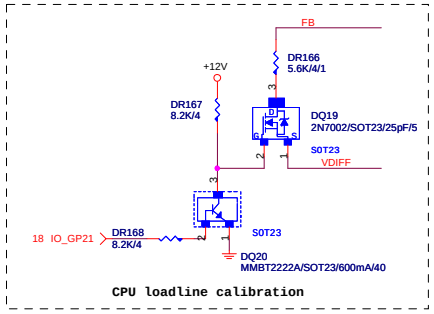
AZALIA FRONT PANEL

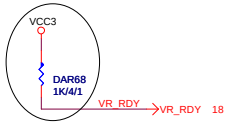


Gigabyte Technology

Title	AUDIO JACK	
Size Custom	Document Number GA-Z97-D3H	Rev 1.0
Date: Friday, February 28, 2014	Sheet 22 of 34	







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-Z97-D3H		Rev: 1.0
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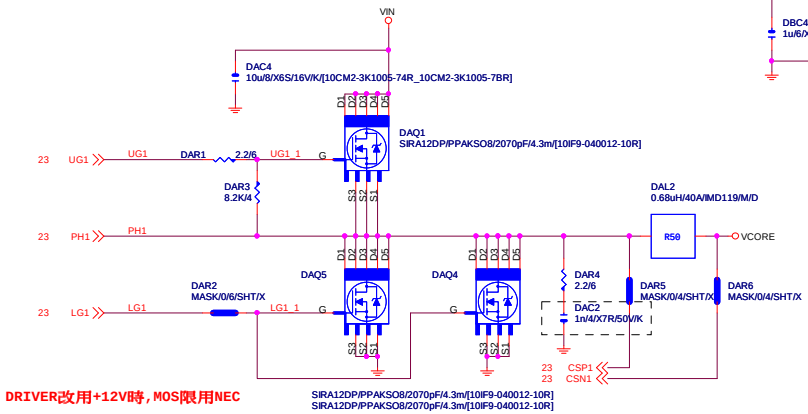
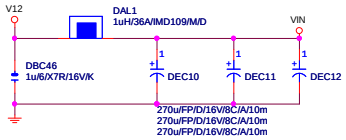
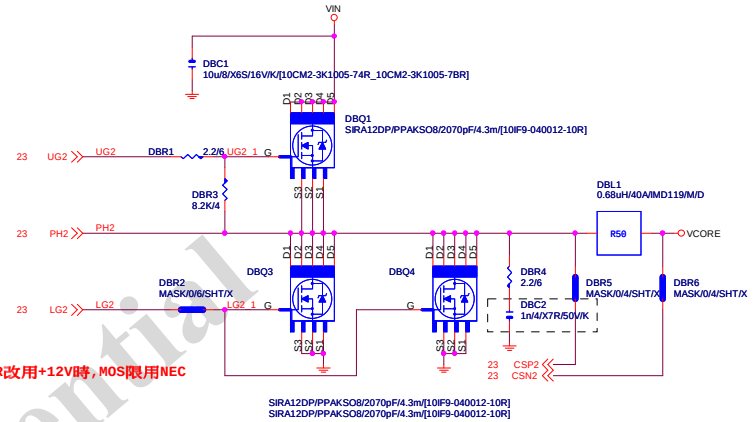
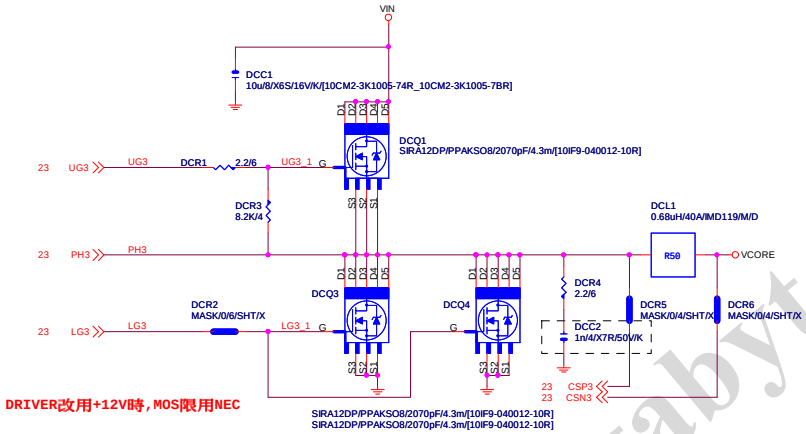
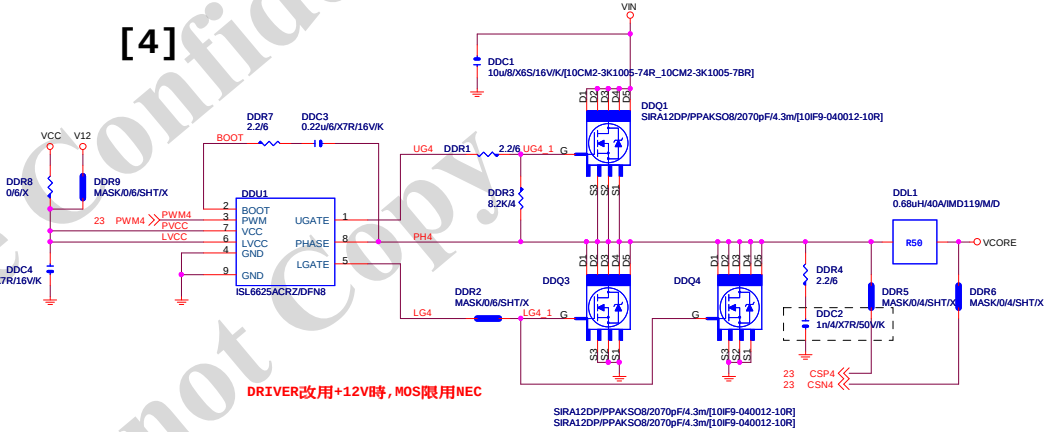
VCORE



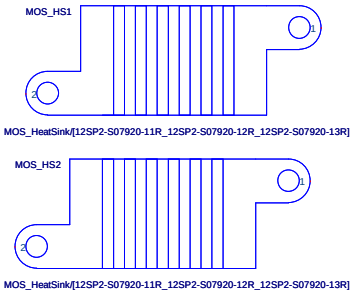


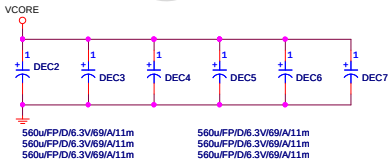


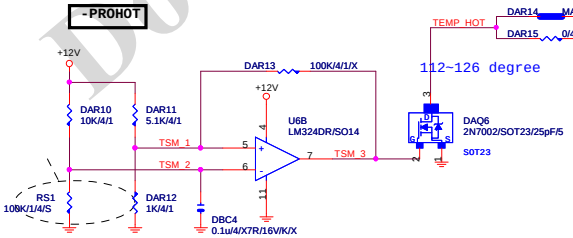


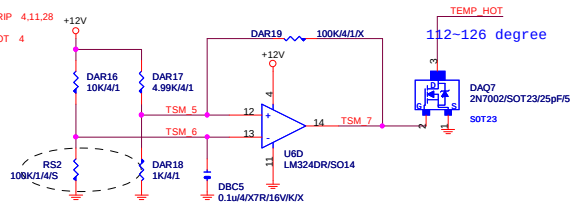


MOSFET HEATSINK





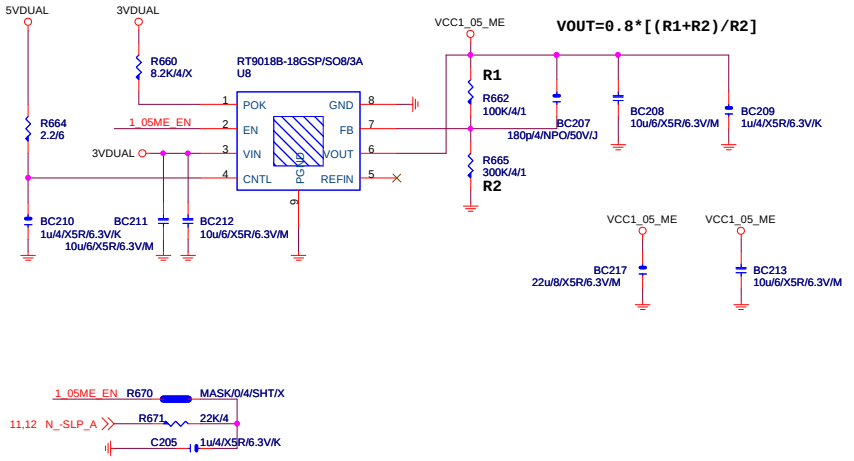




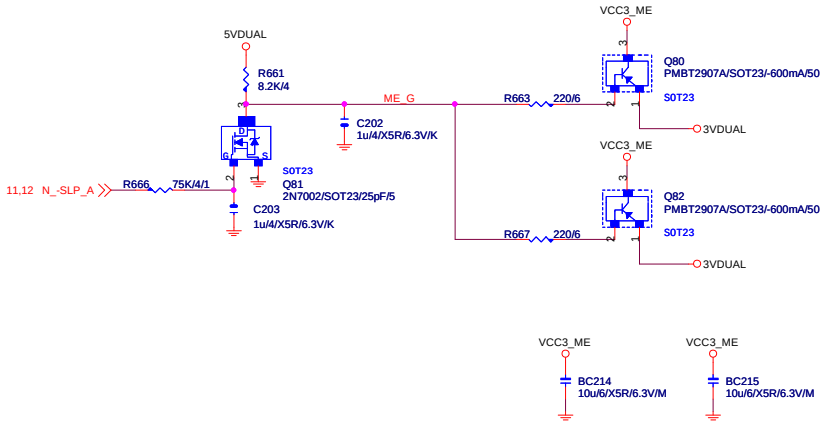
MOSHSINK-Z97X-SLI

Gigabyte Technology		
Title	ISL95820_2	
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
Date: Thursday, March 06, 2014	Sheet 24 of 34	

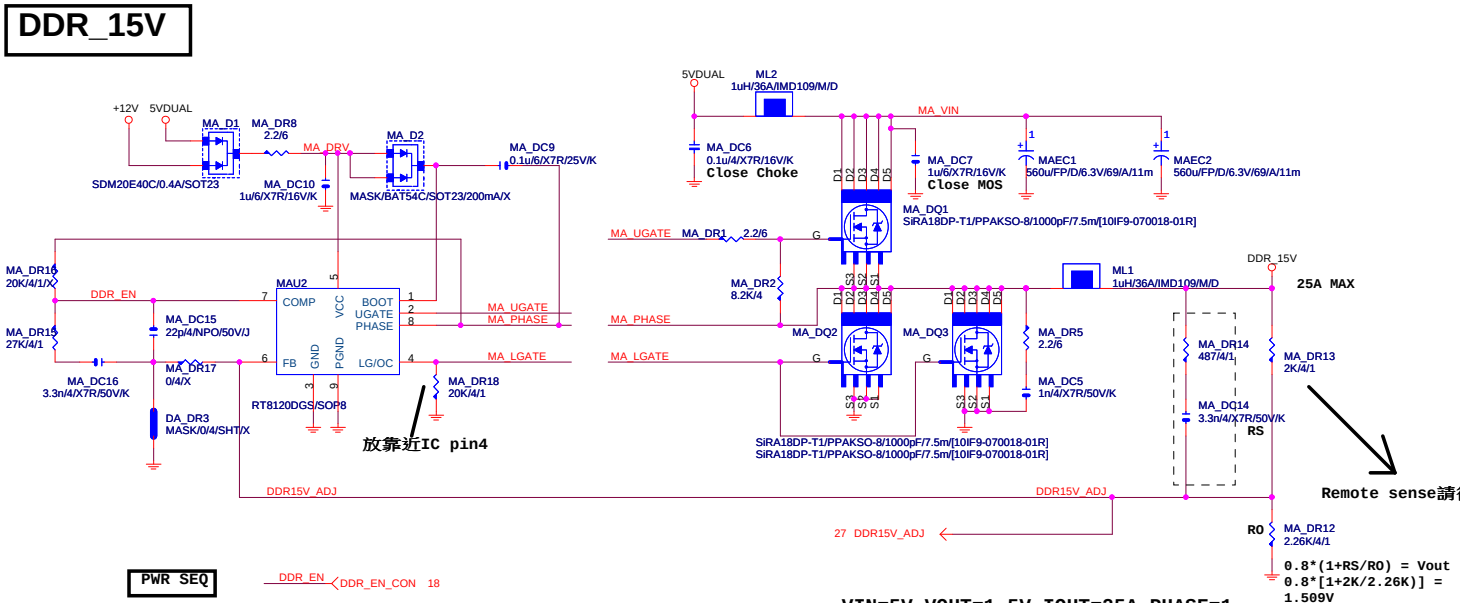
VCC1_05_ME



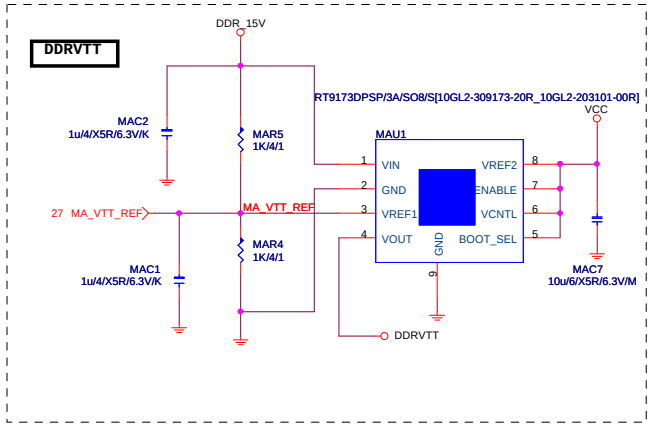
VCC3_ME



DDR_15V



DDRVTT



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℃),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]

0.8*(1+RS/RO) = Vout
0.8*[1+2K/2.26K)] =
1.509V

GIGABYTE™

Title	RT8120_DDR_15V	
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
Date: Thursday, March 06, 2014	Sheet 25 of 34	

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

M.2 SLOT

M2 SLOT M KEY料號

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

M.2插卡時為LOW

M.2 CLK 限用 CLKOUT_PCIE_0

M2R12,M2R13,M2R14 改0/4/X

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

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/[11NR6-C10118-01R]::Location SATA_EXPRESS

SATA EXPRESS料號

單層:11NR6-C10118-01R
雙層:11NR6-C10236-01R

SATA EXPRESS

PCH

M2

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

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

0 : SATA EXPRESS
1 : SATA (Standard)

連接PCH GPIO69
GPIO69 PU HI 要移除

Title	M2_SATA_EXPRESS
Size	Custom
Document Number	GA-Z97-D3H
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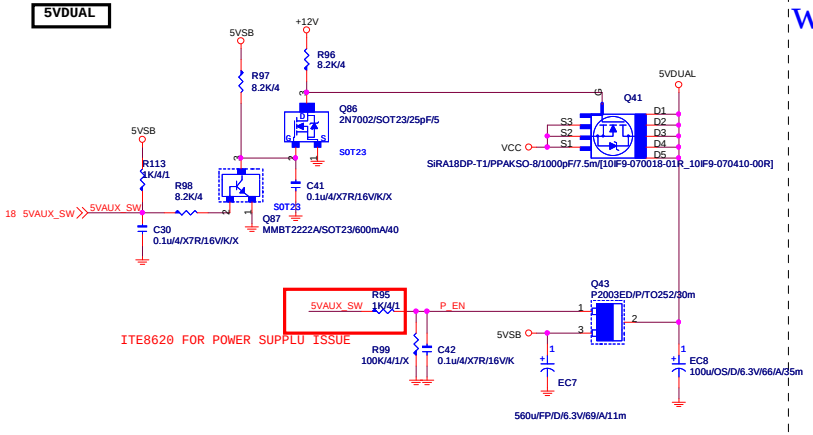
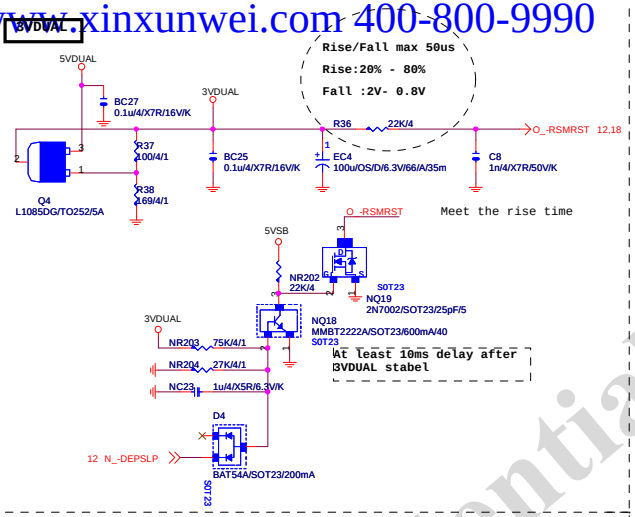
Date:	Friday, February 28, 2014
Sheet	26 of 34

5VDUAL

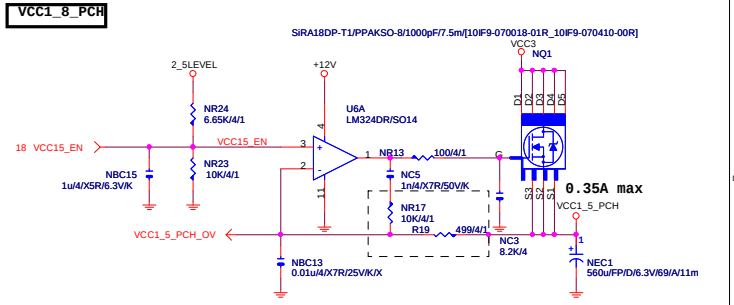


5VSB OVP發生時 : 5VDUAL=0.8V --> 解除時,須拔POWER CORE 才可開機
5VDUAL OVP發生時 : 5VDUAL=6.0V --> 解除時則恢復正常

3VDUAL



VCC1_8_PCH

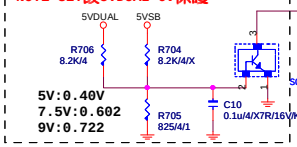


At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH

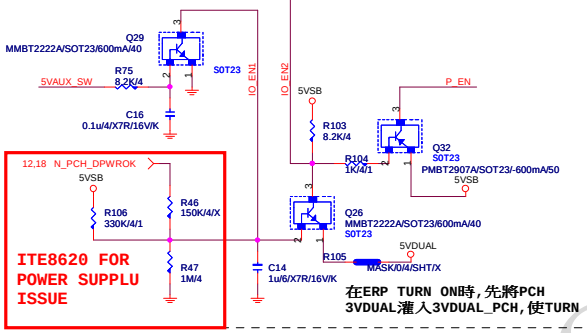
Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V

5VSB OVP:7.5V protection

NOTE 82:改5VDUAL 6v保護

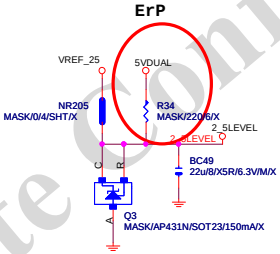


5VDUAL SHORT PROTECT

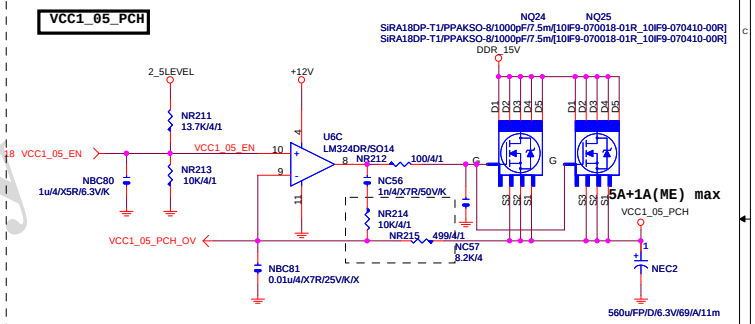


在ERP TURN ON時,先將PCH 3VDUAL灌入3VDUAL_PCH,使TURN ON -SLP_S3功能

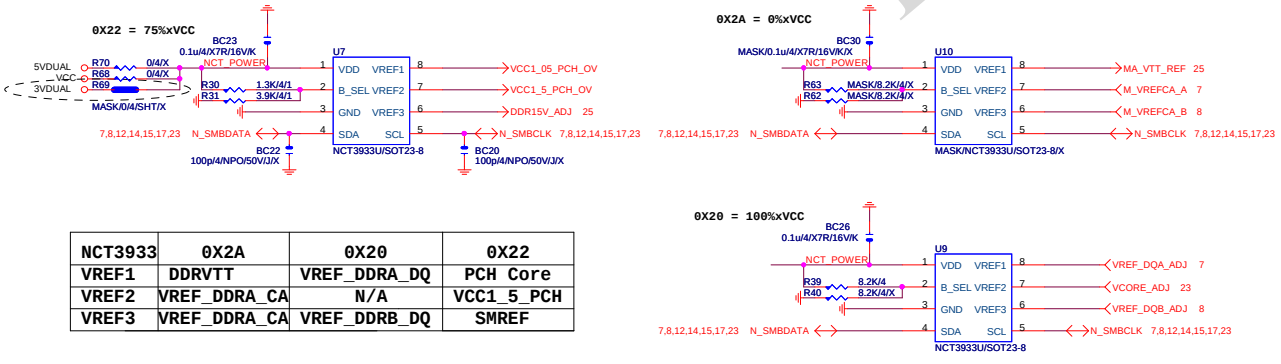
2_5LEVEL



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

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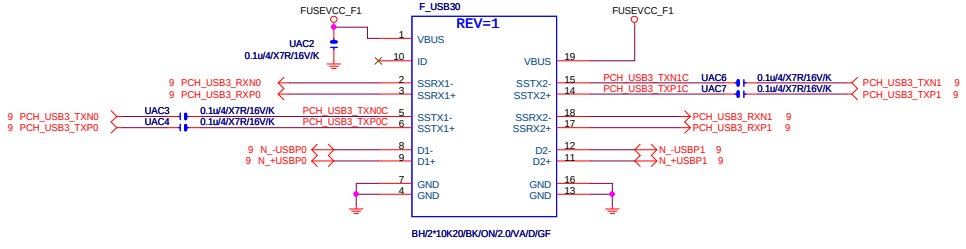
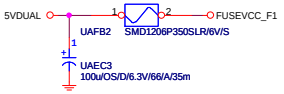
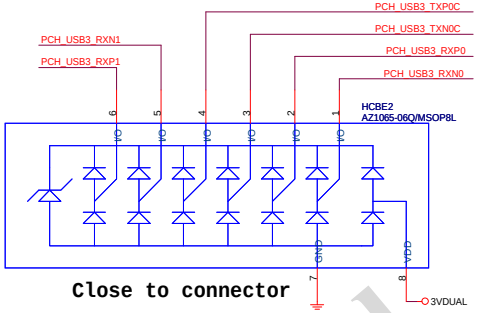
Front USB3.0

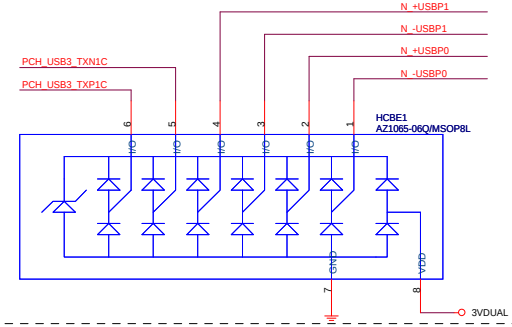


F_USB30 PWR

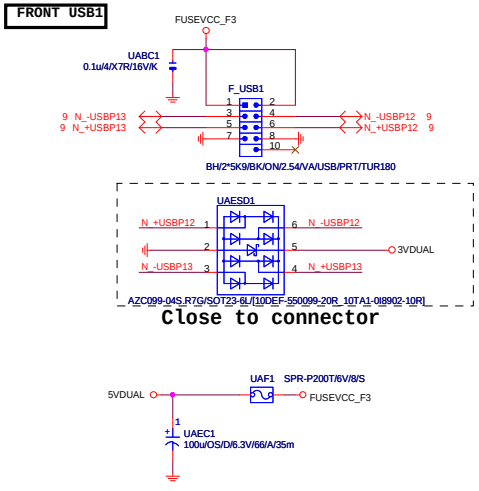


USB3.0 ESD PROTECT

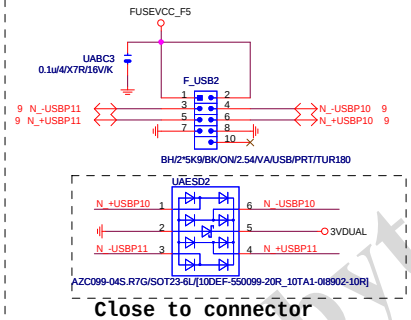




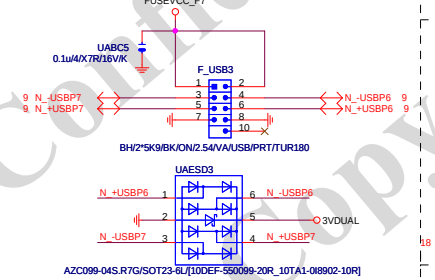
FRONT USB1



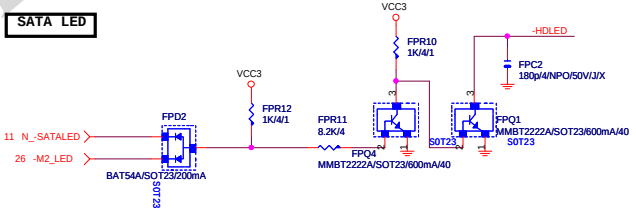
FRONT USB2



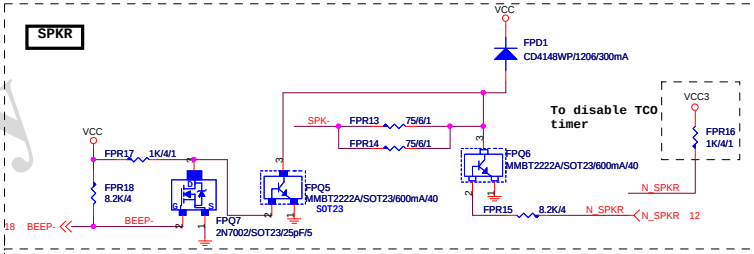
FRONT USB3



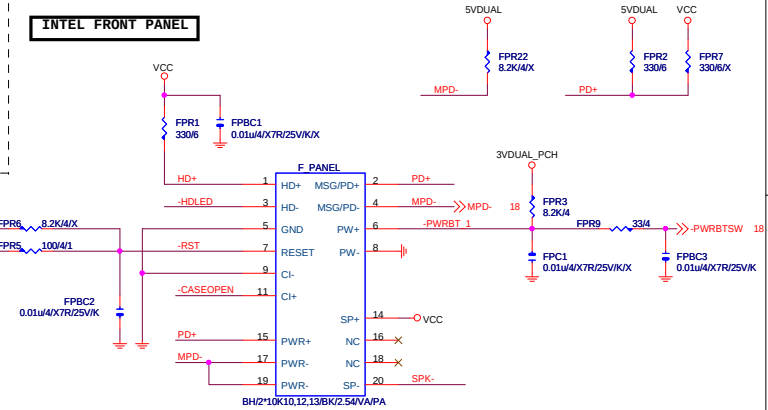
SATA LED



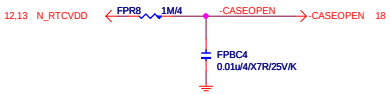
SPKR



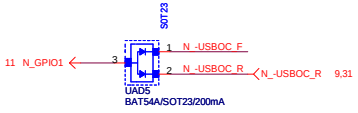
INTEL FRONT PANEL



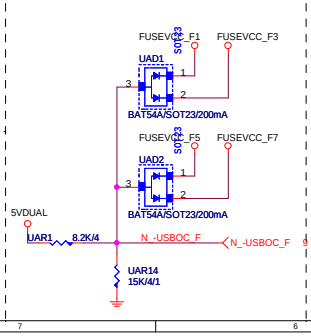
CASE OPEN



F_USB POWER PROTECT

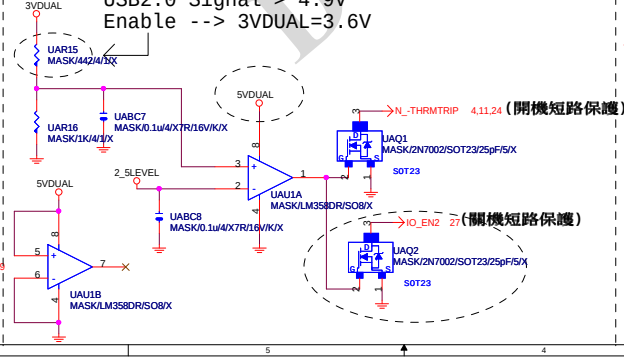


-USBOC_F



USB2.0 Signal & power short protection

USB2.0 Signal > 4.9V
Enable --> 3VDUAL=3.6V



Gigabyte Technology		
Title	FP,F_USB,USB PWR,FDD,BZ	
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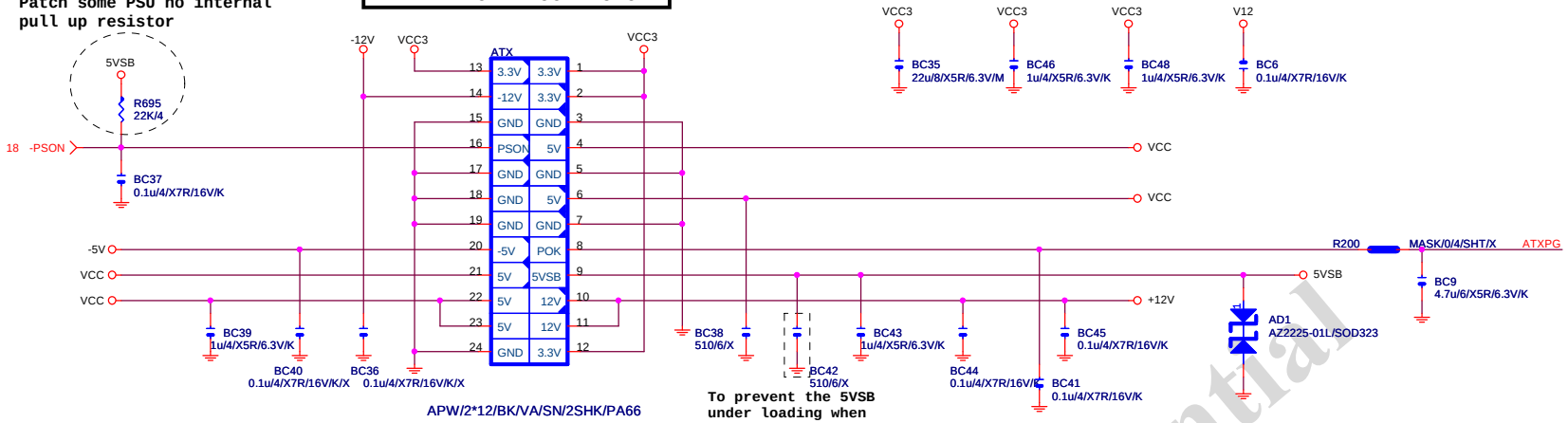
ATXX24 POWER CONNECTOR

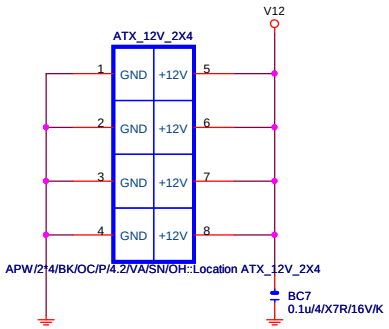
Patch some PSU no internal pull up resistor



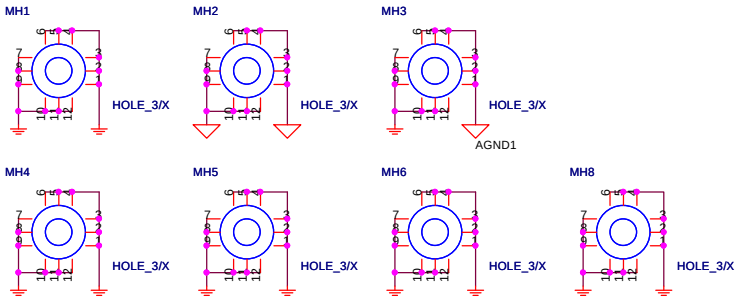
APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR



APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4



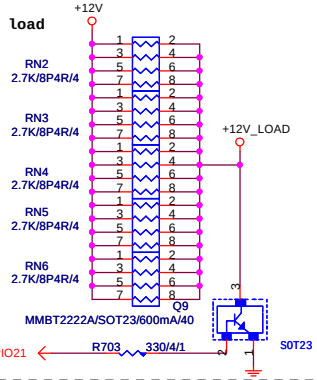
HOLE_4-RH-1

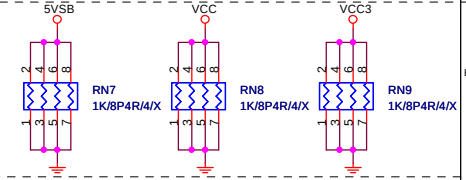
K1-ICT

4MMH

【技術通報R&D技術通報153】

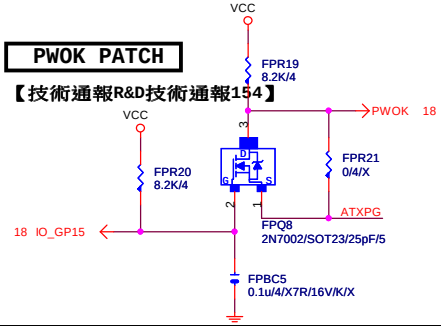
To fix 12V light load abnromal issue





PWOK PATCH

【技術通報R&D技術通報154】



Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
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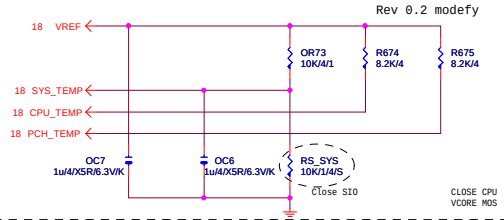
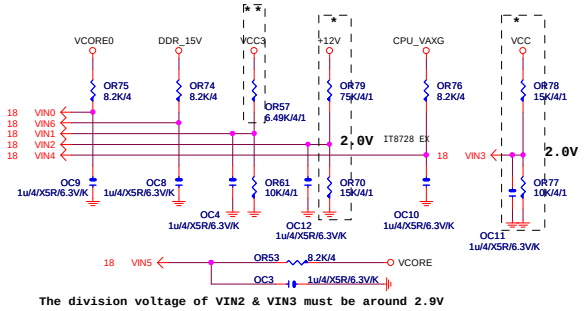
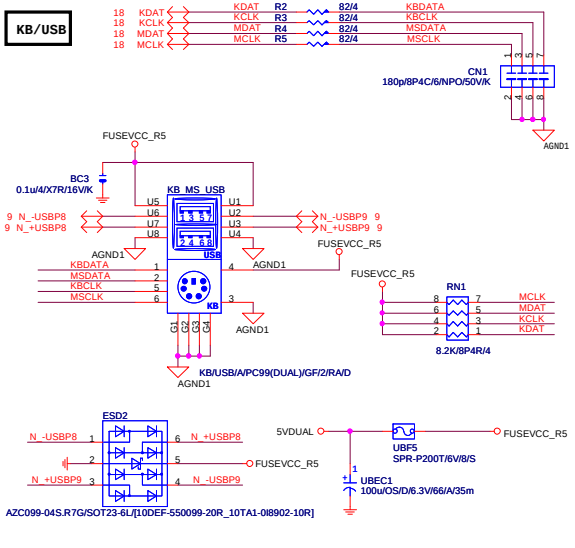
TEMP H/W MONITOR



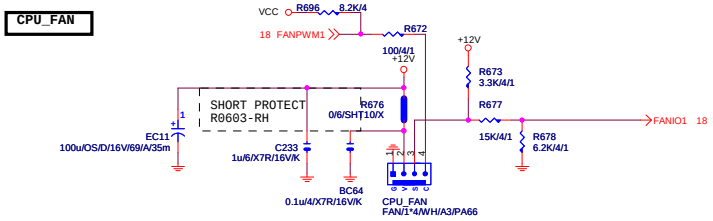


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



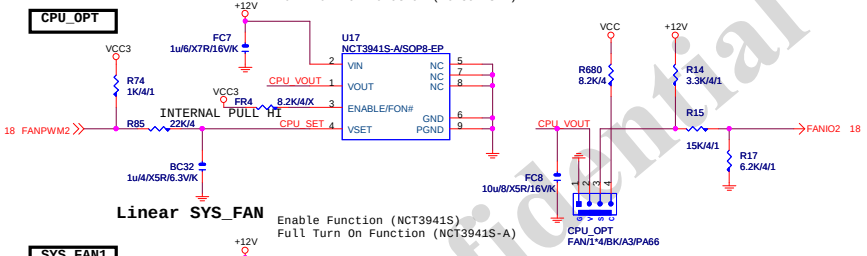
CPU_FAN



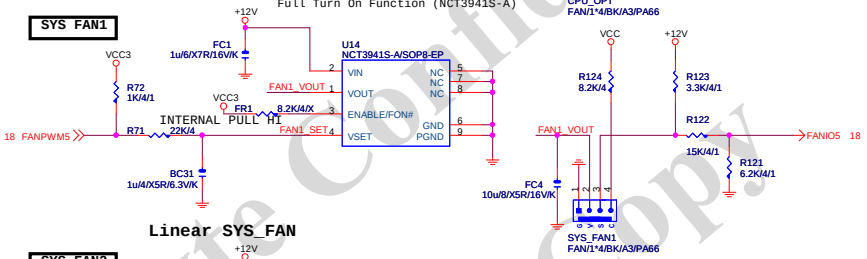
Linear SYS_FAN

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

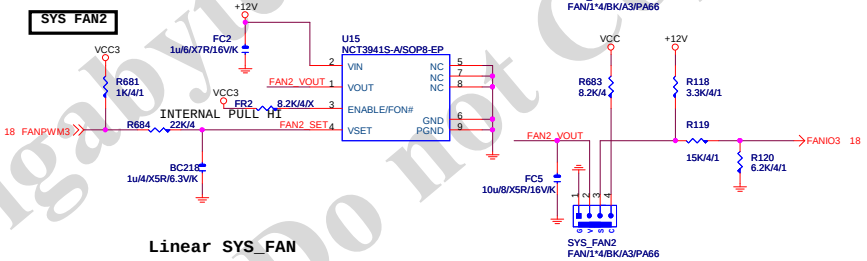
CPU_OPT



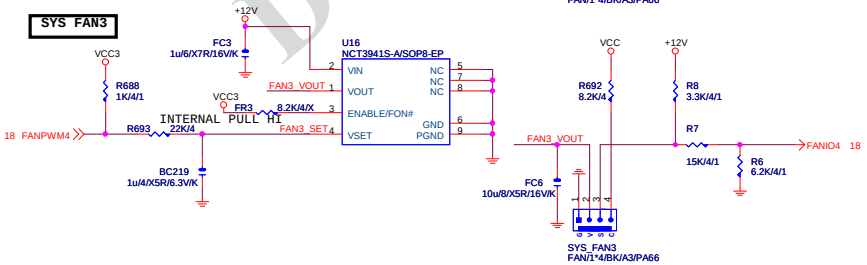
SYS FAN1

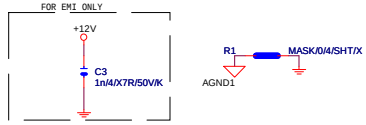


SYS FAN2



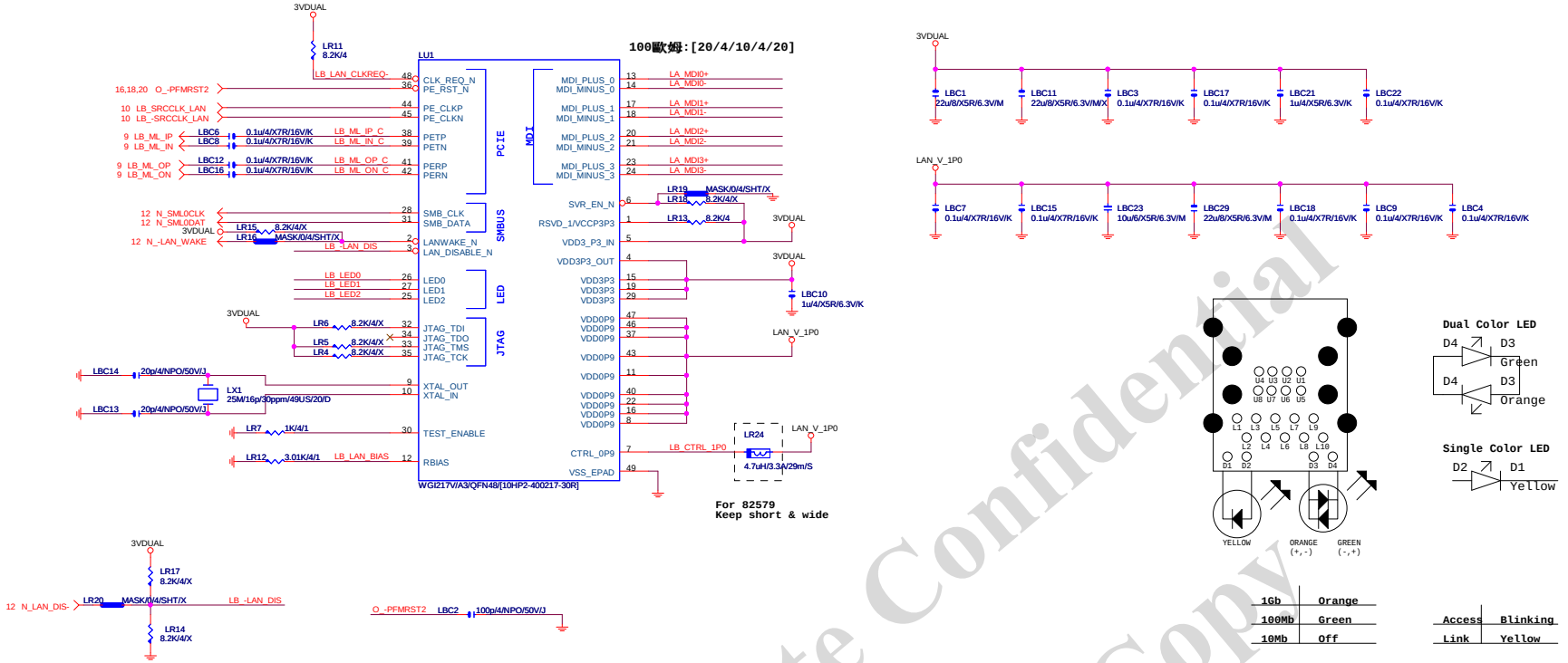
SYS FAN3



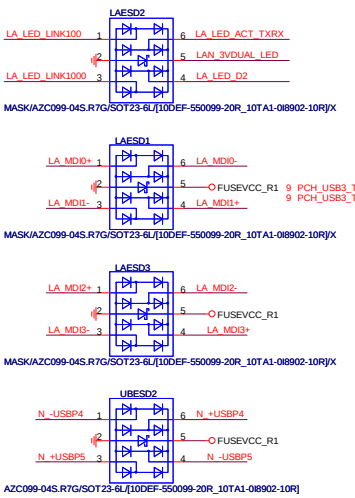


Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.0
Date: Friday, February 28, 2014	Sheet 30 of 34	

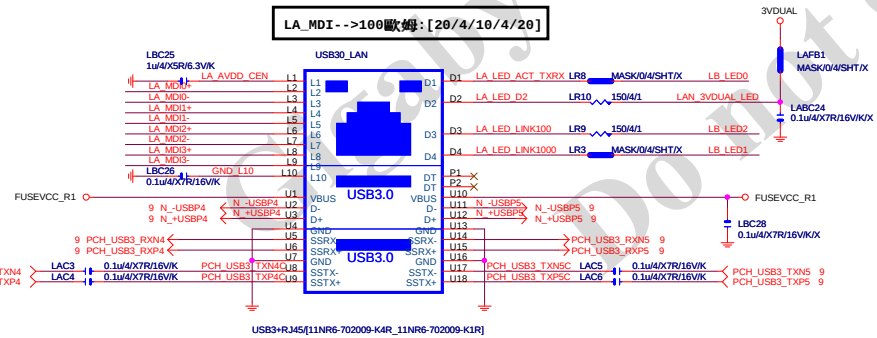
LAN:INTEL I217



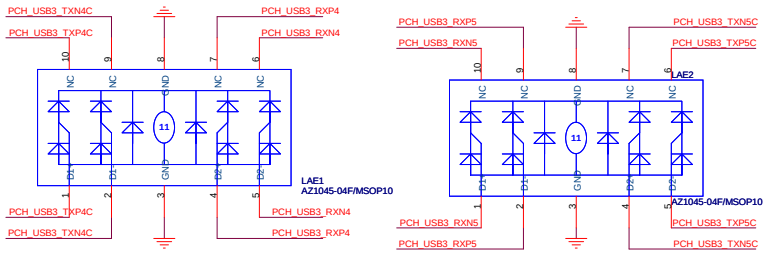
USB30_LAN CONNECTOR

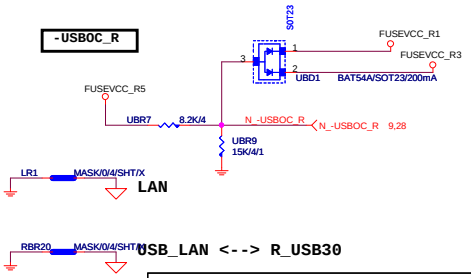


LA_MDI-->100歐姆:[20/4/10/4/20]



USB30 ESD PROCTECT





Title	INTEL LAN I217
Size / Custom	Document Number: GA-Z97-D3H
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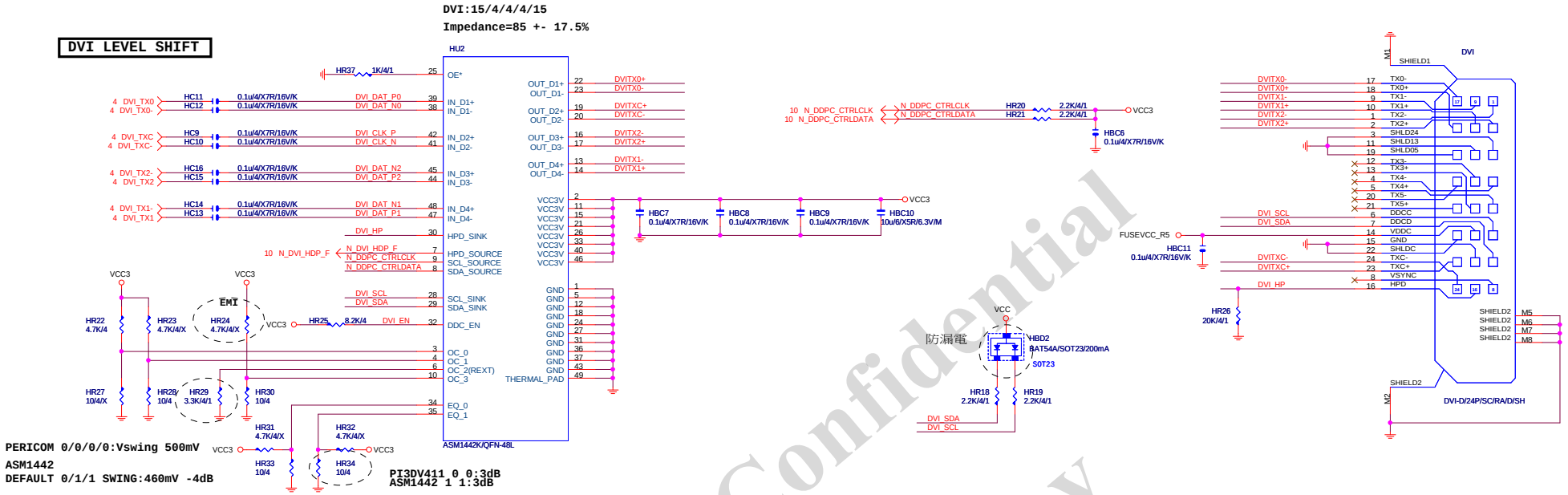
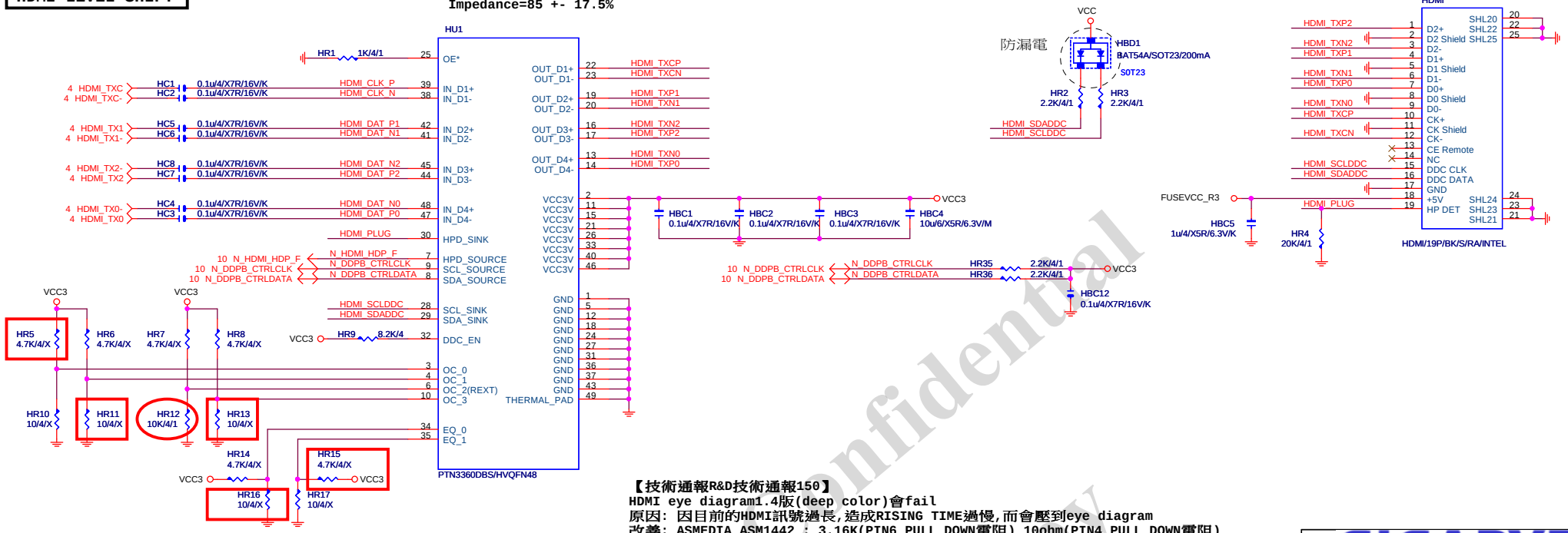
Gigabyte Technology



Gigabyte Technology			
Title: DVI			
Size: Custom	Document Number: GA-Z97-D3H		Rev: 1.0
Date: Friday, February 28, 2014	Sheet 32 of 34		

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-Z97-D3H		Rev: 1.0
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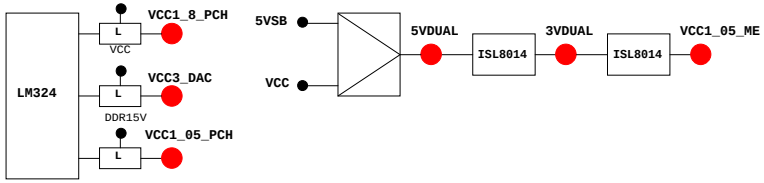
PCH GPIO LIST TABLE

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

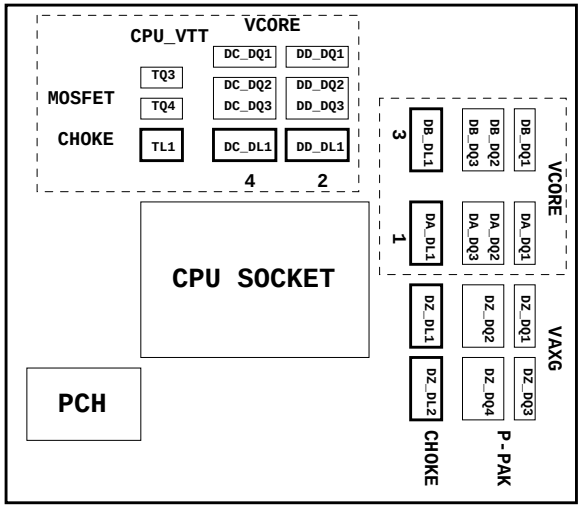
Super I/O ITE8720 GPIO Table

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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