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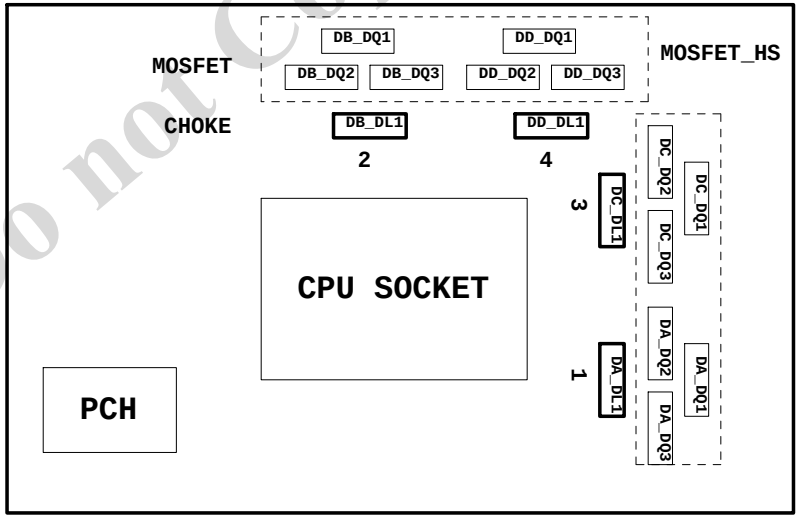
Model Name: GA-Z97-D3H

1.1

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]	
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	

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)	
PCB:1.1	1. AUDIO LED 模組線路 MASK --> Non-MASK	

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Title: BOM & PCB MODIFY HISTORY

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BLOCK DIAGRAM

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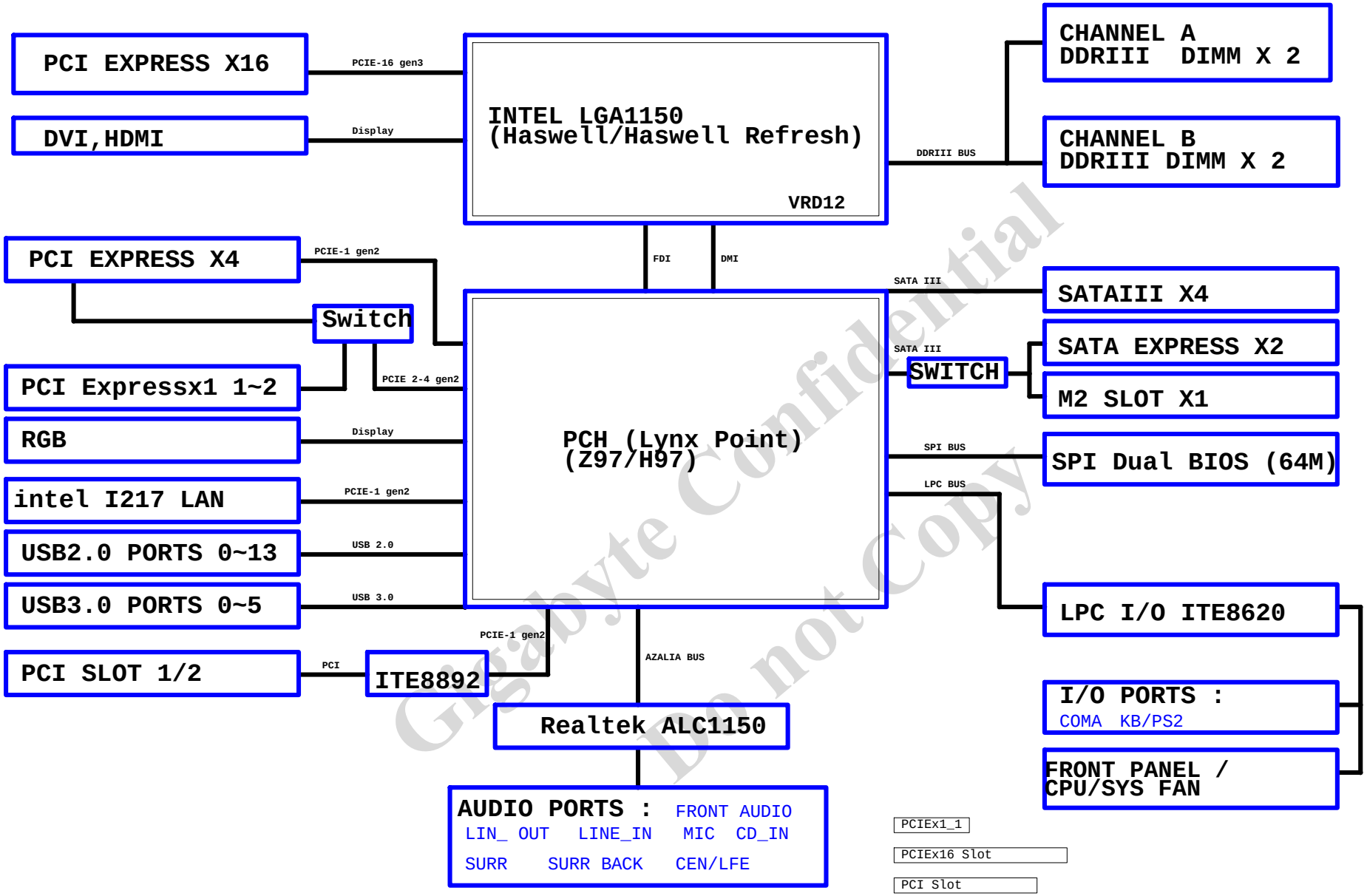

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Title: BLOCK DIAGRAM		
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LGA1150 (E)

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

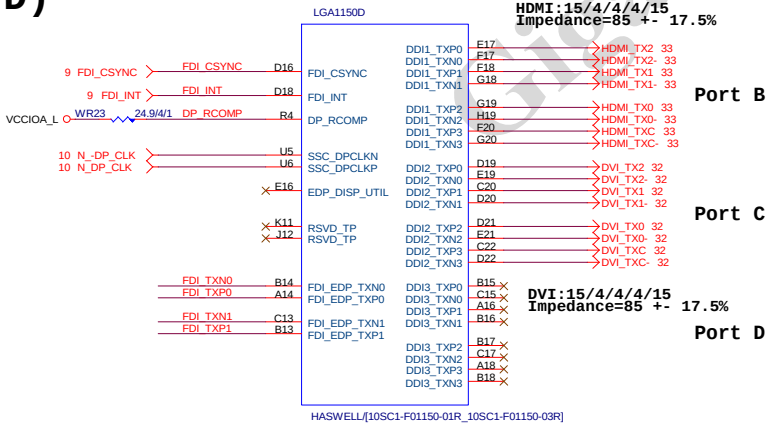
CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

CFG 0-17 all internal PULL-UP

LGA1150 (D)

HDMI 需接Port B For WHQL

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

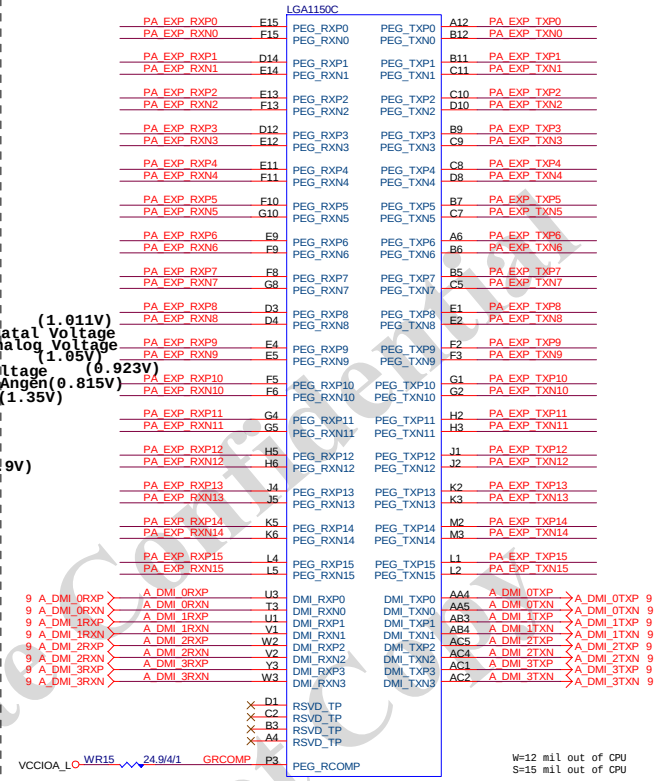


FDI:12/4/4/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

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

LGA1155 (C)

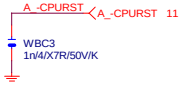
PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



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

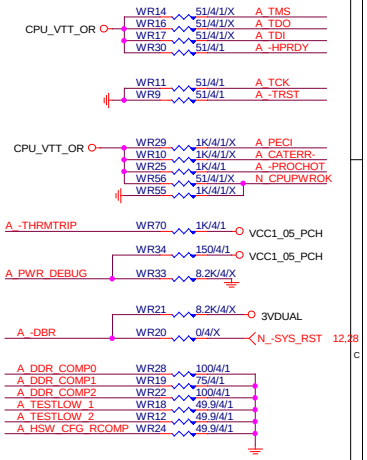
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 14
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 14
PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 14
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 14

1.1V分壓

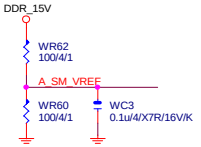


CPU SVID

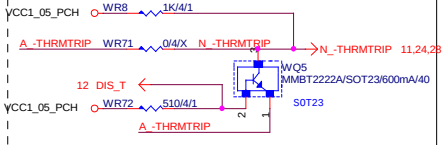
CPU PU/PD



SM REF



THRMTRIP DISABLE



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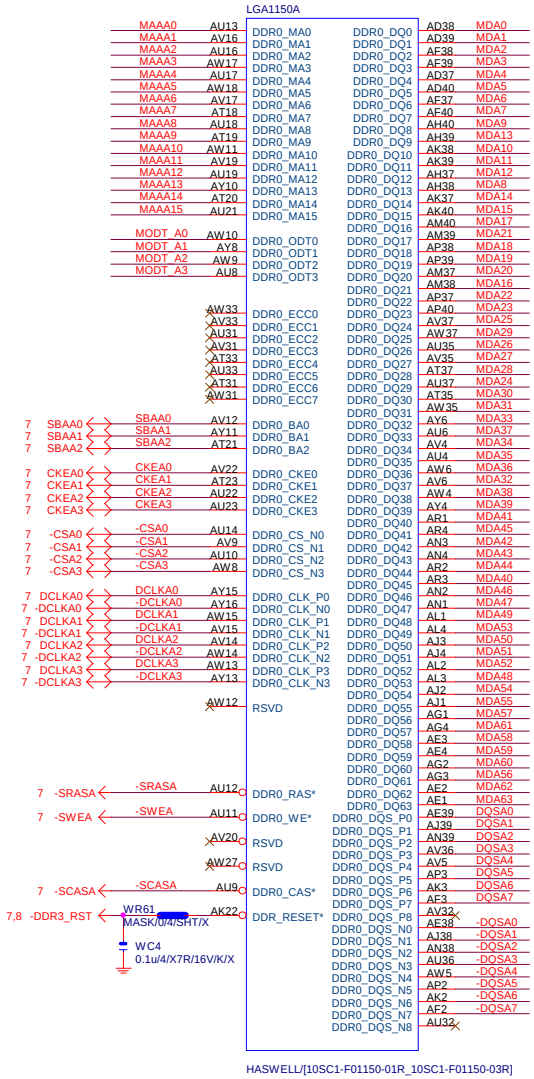
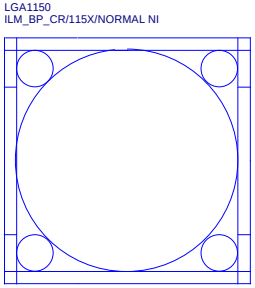
LGA1150 (A)

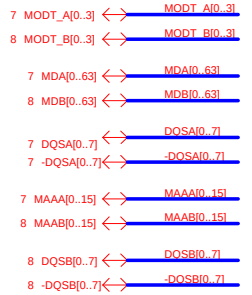


LGA1150 (B)

LGA1150 (CR)



DDR BUS



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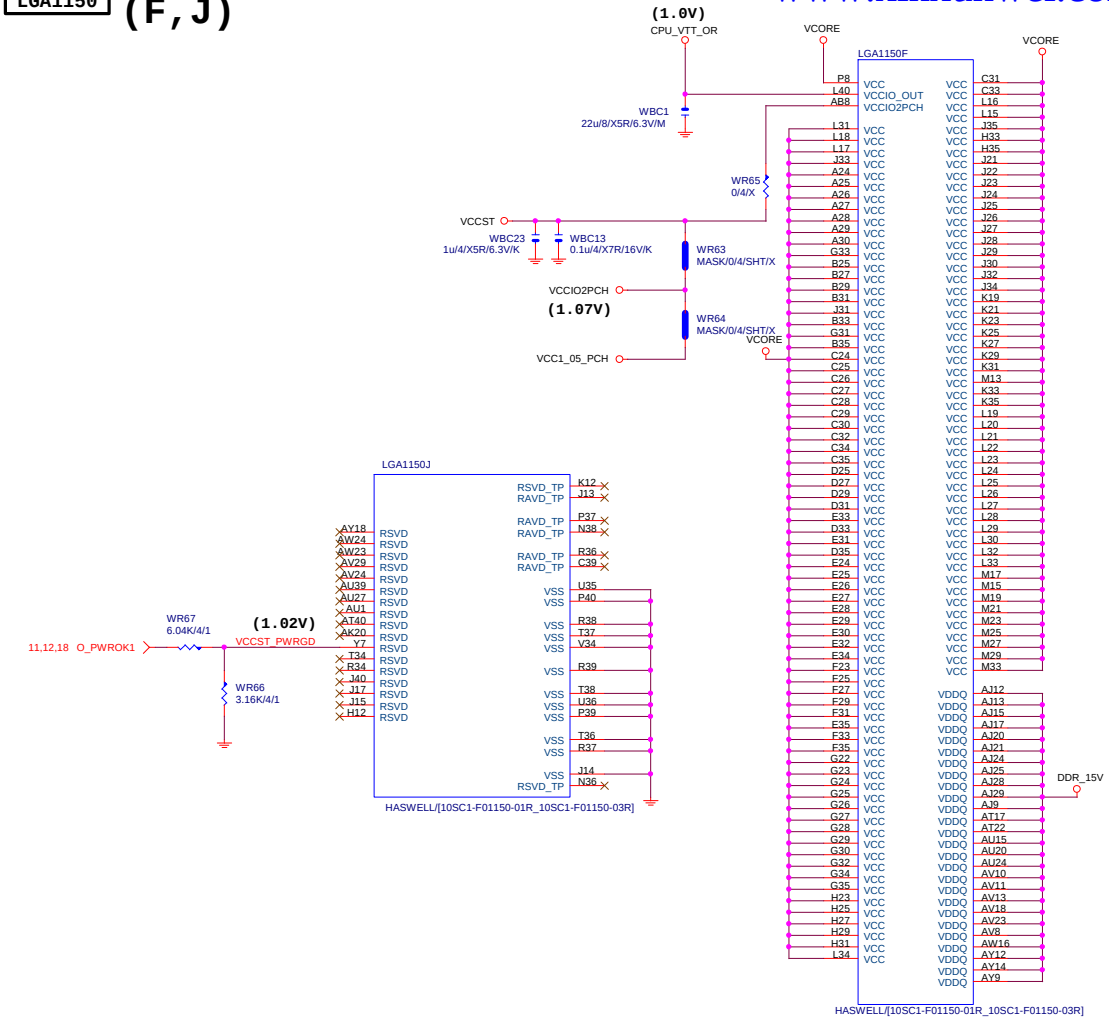
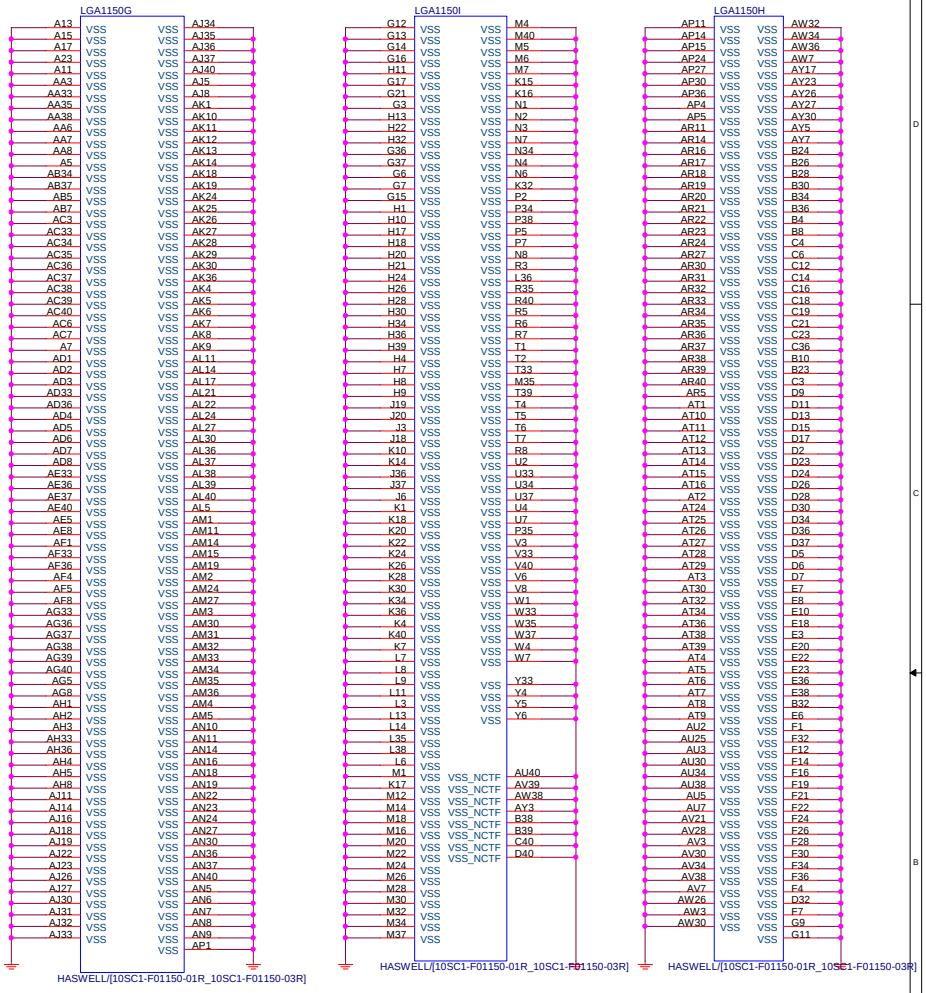
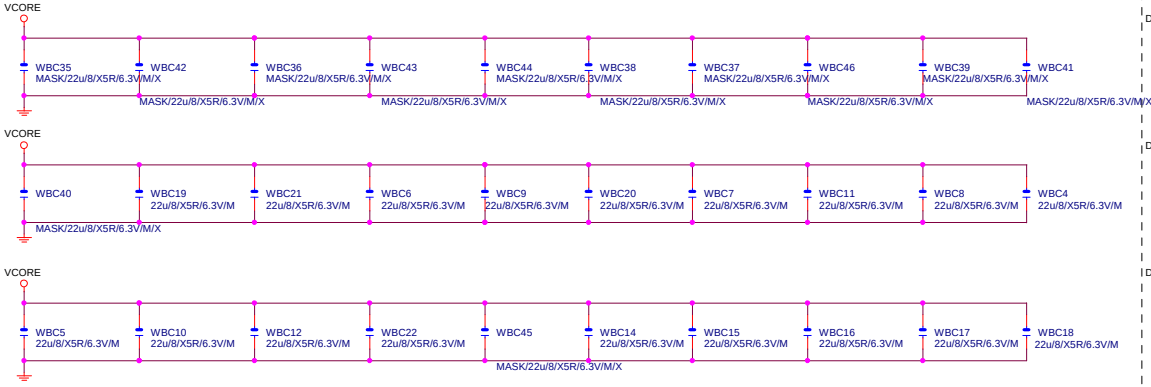
LGA1150 (F,J)



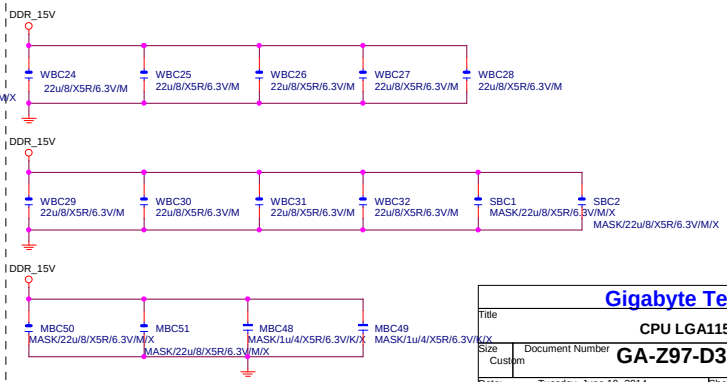
LGA1150 (G,H,I)



VCore CAP (X30)



DDR CAP (X15)



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Title	CPU LGA1150-C		
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DDR3 (A)

DDR3_4

DDRVTT

VTT, VSS, RSVD, ODT1, ODT0, NC/PAR_IN, NC/ERR_OUT, NC/TEST4, CB0–CB7, DQS0–DQS8, DM0/DQS9–DM8/DQS17, VDD, DQ0–DQ63

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

DDR_15V

MC4 0.1u/4/X7R/16V/K
VDDSPD
MC5 0.1u/4/X7R/16V/K VREF_DDRA 67
MC1 0.1u/4/X7R/16V/K VREF_DDDRA 1
VREFCA
VREFDQ

8,12,14,15,17,23,27 N_SMBCLK
8,12,14,15,17,23,27 N_SMBDATA
SCL, SDA, SA1, SA0

5 SBAA2 SBAA1 SBAA0
BA2, BA1, BA0

5 CKEA1 CKEA0
CKE1, CKE0

5 -CSA1 -CSA0
S1*, S0*

5 -DCLKA1 DCLKA1
CK1/NU*, CK1/NU

5 -DCLKA0 DCLKA0
CK0*, CK0

5 MAAA[0..15]
A0–A15, A10/AP

5,8 -DDR3_RST
5 -SCASA
5 -SRASA
5 -SWEA
RESET*, CAS*, RAS*, WE*

MDA[0..63] 5

DDR3/240/BK/VA/D

DDR3_2

DDRVTT

VTT, VSS, RSVD, ODT1, ODT0, NC/PAR_IN, NC/ERR_OUT, NC/TEST4, CB0–CB7, DQS0–DQS8, DM0/DQS9–DM8/DQS17, VDD, DQ0–DQ63

DDR_15V

MC8 0.1u/4/X7R/16V/K
VDDSPD
MC3 0.1u/4/X7R/16V/K VREF_DDRA 67
MC7 0.1u/4/X7R/16V/K VREF_DDDRA 1
VREFCA
VREFDQ

8,12,14,15,17,23,27 N_SMBCLK
8,12,14,15,17,23,27 N_SMBDATA
SCL, SDA, SA1, SA0

5 SBAA2 SBAA1 SBAA0
BA2, BA1, BA0

5 CKEA3 CKEA2
CKE1, CKE0

5 -CSA3 -CSA2
S1*, S0*

5 -DCLKA3 DCLKA3
CK1/NU*, CK1/NU

5 -DCLKA2 DCLKA2
CK0*, CK0

5 MAAA[0..15]
A0–A15, A10/AP

5,8 -DDR3_RST
5 -SCASA
5 -SRASA
5 -SWEA
RESET*, CAS*, RAS*, WE*

MDA[0..63] 5

DDR3/240/GR/VA/D

DDR3 VREF

DDR_15V

MR15 1K/4/1
VREF_DDRA MR13 MASK/0/4/SHT/X M_VREFCA_A 27
MR14 1K/4/1

DDR_15V

MBC28 1u/4/X5R/6.3V/K
MR4 1K/4/1
VREF_DDDDRA MR1 10/4 VREF_DQA 5
MR5 1K/4/1
MR3 10/4/X VREF_DQA_ADJ 27

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

DDRVTT Decouple

DDRVTT

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

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

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

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

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Title: DDRIII CHANNEL A		
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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) CHA
DIMM2 (灰色)

DIMM3 (黑色) CHB
DIMM1 (灰色)

Gigabyte Technology

Title: DDRIII CHANNEL B

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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 28
USBP_0 AU10 N_+USBP0 28
USBN_1 AV11 N_-USBP1 28
USBP_1 AW11 N_+USBP1 28
USBN_2 AN14 N_-USBP2 19
USBP_2 AP14 N_+USBP2 19
USBN_3 AJ16 N_-USBP3 19
USBP_3 AK16 N_+USBP3 19
USBN_4 AU15 N_-USBP4 31
USBP_4 AV15 N_+USBP4 31
USBN_5 AU12 N_-USBP5 31
USBP_5 AT12 N_+USBP5 31
USBN_6 AV14 N_-USBP6 28
USBP_6 AW14 N_+USBP6 28
USBN_7 AU17 N_-USBP7 28
USBP_7 AT17 N_+USBP7 28
USBN_8 AW16 N_-USBP8 30
USBP_8 AV16 N_+USBP8 30
USBN_9 AN16 N_-USBP9 30
USBP_9 AP16 N_+USBP9 30
USBN_10 AJ18 N_-USBP10 28
USBP_10 AK18 N_+USBP10 28
USBN_11 AP18 N_-USBP11 28
USBP_11 AN18 N_+USBP11 28
USBN_12 AW18 N_-USBP12 28
USBP_12 AV18 N_+USBP12 28
USBN_13 AP20 N_-USBP13 28
USBP_13 AN20 N_+USBP13 28

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

OC0B_GP59 AE40 N_-USBOC_F 28
OC1B_GP40 AF37
OC2B_GP41 AD39 N_-USBOC_R 28,31
OC3B_GP42 AD40
OC4B_GP43 AF39
OC5B_GP9 AC41
OC6B_GP10 AF40
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

DMI PCIE USB

REAR USB3.0
19 PCH_USB3_RXN2 L14
19 PCH_USB3_RXP2 K14
19 PCH_USB3_TXN2 B12
19 PCH_USB3_TXP2 B11

LAN i217v
31 LB_ML_IN F14
31 LB_ML_IP H11
31 LB_ML_ON B9
31 LB_ML_OP A9

ITE8892 PCI Bridge
19 PCH_USB3_RXN3 G14
19 PCH_USB3_RXP3 D11
19 PCH_USB3_TXN3 C11
19 PCH_USB3_TXP3 F11
16 G_PCIEBIN J11
16 G_PCIEBIP L11
16 G_PCIEBON B8
16 G_PCIEBOP C8

PCIEX4 port1
15 PE_PCIE_IN1 G9
15 PE_PCIE_IP1 F9
15 PE_PCIE_TN1 B7
15 PE_PCIE_TP1 A7

PCIEX4 port2
15 PF_PCIE_IN2 F7
15 PF_PCIE_IP2 H7
15 PF_PCIE_TN2 E1
15 PF_PCIE_TP2 D2

PCIEX4 port3 PCIEX1_1
15 PI_PCIE_IN3 K6
15 PI_PCIE_IP3 K8
15 PI_PCIE_TN3 G3
15 PI_PCIE_TP3 G5

PCIEX4 port4 PCIEX1_2
15 PJ_PCIE_IN4 J2
15 PJ_PCIE_IP4 J3
15 PJ_PCIE_TN4 H2
15 PJ_PCIE_TP4 H1

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
PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

電容放靠近 Device & PCI-E Slot

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

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%

Port要對應

H81:USB3.0 N\A

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

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

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

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

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

PCHF
USB3 FDILINK
Z97/S/[10HB1-030Z97-20R]

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

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

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 TP23 TP21 TP20 TP14 TP15 TP12 TP10 TP11 TP9 TP3 TP4 TP1 TP2 TP5 TP6 TP7 TP8
U11 U10 AJ14 AK14 K34 K33 AH24 L16 K16 AM34 R12 N12 L22 K22 R4 K5 P5 L5 AC31 AF3 AV21 VSS
Z97/S/[10HB1-030Z97-20R]

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: 1.1

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PCH (E)

PCHE

33 N_HDMI_HDP_F
32 N_DVI_HDP_F

AJ2 DDPB_HPD
AH5 DDPC_HPD
AJ4 DDPD_HPD
AK6 DDPB_AUXN
AK8 DDPB_AUXP
AG7 DDPC_AUXN
AG6 DDPC_AUXP
AG11 DDPD_AUXN
AG10 DDPD_AUXP

VGA_HSYNC AH3 H_SYNC
VGA_VSYNC AH2 V_SYNC
VGA_RED AC2 N_R
VGA_GREEN AE2 N_G
VGA_BLUE AC3 N_B
VGA_IRTN AG4
VGA_DDC_DATA AL3 N_DDCDATA
VGA_DDC_CLK AL2 N_DDCCLK
DAC_IREF AF5 N_VGA_RSET
DDPC_CTRLCLK AN3 N_DDPC_CTRLCLK
DDPC_CTRLDATA AM2 N_DDPC_CTRLDATA
DDPB_CTRLCLK AM1 N_DDPB_CTRLCLK
DDPB_CTRLDATA AJ5 N_DDPB_CTRLDATA
DDPD_CTRLCLK AN4
DDPD_CTRLDATA AN2

NR26 33/4 N_GHSYNC
NR33 33/4 N_GVSYNC
NR34 649/4/1

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

18 N_LPC33 NR37 33/4 AV5 CLKOUT_33MHZ0
11 N_PCH33 NR38 33/4 AV7 CLKOUT_33MHZ1
20 T_TPMCLK NR28 33/4 AU2 CLKOUT_33MHZ2
AN9 CLKOUT_33MHZ3
AU5 CLKOUT_33MHZ4

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

18 O_LPCCLK48 NR39 33/4 N_PCH_48M AV8 CLKOUTFLEX0_GP64
AT9 CLKOUTFLEX1_GP65
AV9 CLKOUTFLEX2_GP66
AU8 CLKOUTFLEX3_GP67

VCC1_5_PCH NR18 7.5K/4/1 N_CLK_RCOMP R11 DIFFCLK_BIASREF
N_PCHCLK14 AR7 REFCLK14IN

CLKIN_GND0_N G16 N_-CLK_GND
CLKIN_GND0_P F16 N_CLK_GND
CLKOUT_DMI_N R2 N_-CPUCLK 4
CLKOUT_DMI_P T2 N_CPUCLK 4
CLKOUT_DP_N T3 N_-DP_CLK 4
CLKOUT_DP_P T5 N_DP_CLK 4
CLKOUT_DPNS_N W2 N_-CK_DPCLK 4
CLKOUT_DPNS_P U2 N_CK_DPCLK 4
CLKOUT_ITPXDP_N U6
CLKOUT_ITPXDP_P U7
CLKOUT_PEG_A_N AA3 PA_-SRCCLK_3GIO 14
CLKOUT_PEG_A_P AA2 PA_SRCCLK_3GIO 14
CLKOUT_PEG_B_N AE6
CLKOUT_PEG_B_P AE7
CLKOUT_PCIE_N_0 AE10 CK_M2_100M_DN 26
CLKOUT_PCIE_P_0 AE11 CK_M2_100M_DP 26
CLKOUT_PCIE_N_1 AC6 LB_-SRCCLK_LAN 31
CLKOUT_PCIE_P_1 AC7 LB_SRCCLK_LAN 31
CLKOUT_PCIE_N_2 AC11 G_-PBCLK 16
CLKOUT_PCIE_P_2 AC10 G_PBCLK 16
CLKOUT_PCIE_N_3 W11
CLKOUT_PCIE_P_3 W10
CLKOUT_PCIE_N_4 Y4 PJ_-PCIE_CLK2 15
CLKOUT_PCIE_P_4 Y2 PJ_PCIE_CLK2 15
CLKOUT_PCIE_N_5 W7 PE_-SRCCLK_3GIO1 15
CLKOUT_PCIE_P_5 W6 PE_SRCCLK_3GIO1 15
CLKOUT_PCIE_N_6 AA7 PI_-PCIE_CLK1 15
CLKOUT_PCIE_P_6 AA6 PI_PCIE_CLK1 15
CLKOUT_PCIE_N_7 R6
CLKOUT_PCIE_P_7 R7

N_XTALO_PCH N7 XTAL25_OUT
N_XTALI_PCH N6 XTAL25_IN

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

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

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

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

N_XTALI_PCH
NR15 1M/4
NX1
N_XTALO_PCH
25M/16p/30ppm/49US/20/D
NC8 20p/4/NPO/50V/J
NC7 20p/4/NPO/50V/J

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

PCH CLK PD

N_-CLK_GND NR42 8.2K/4
N_CLK_GND NR41 8.2K/4
N_PCHCLK14 NR118 8.2K/4

Mount for integrated clock Generation Mode

VGA DDC

VCC
防漏電
HBD3 BAT54A/SOT23/200mA SOT23
VCC3
R146 2.2K/4/1
R147 2.2K/4/1
Q47 2N7002/SOT23/25pF/5
R144 2.2K/4/1
R145 2.2K/4/1
N_DDCDATA
VGADDCDATA
Q48 2N7002/SOT23/25pF/5
N_DDCCLK
VGADDCCLK
SOT23
N_GVSYNC
C31 100p/4/NPO/50V/J/X
N_GHSYNC
C32 100p/4/NPO/50V/J/X

VGA CONNECTOR

FUSEVCC_R5
BC63 0.1u/4/X7R/16V/K/X
VGA
VGA_R
VGA_G
VGA_B
VGADDCDATA
N_GHSYNC
N_GVSYNC
VGADDCCLK

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

VGA ESD

ESD3
VGADDCDATA
VGADDCCLK
N_GHSYNC
N_GVSYNC
VCC
C33 0.1u/4/X7R/16V/K
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

SSOP6_ESD

ESD4
VGA_R
VGA_B
VGA_G
VCC3
C40 0.1u/4/X7R/16V/K
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

VGA DDC

N_R
N_G
N_B
NR36 150/4/1/X
NR27 150/4/1/X
NR35 150/4/1/X
Close to PCH
R152 75/4/1
R150 75/4/1
R151 75/4/1
C35
C34 10p/4/NPO/50V/J
C36 10p/4/NPO/50V/J
FB1
FB2
FB3
60/4/3A/S
VGA_R
VGA_G
VGA_B
C37 22p/4/NPO/50V/J
C38 22p/4/NPO/50V/J
C39 22p/4/NPO/50V/J
Close to Filter

Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
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PCH (C)

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

PCHC

CL_CLK, CL_DATA, CL_RSTB — CLINK
APWROK
PWM0, PWM1, PWM2, PWM3 — FAN
TACH0_GP17, TACH1_GP1, TACH2_GP6, TACH3_GP7, TACH4_GP68, TACH5_GP69
SSTCTL
SCLOCK_GP22, SLOAD_GP38, SDATAOUT0_GP39, SDATAOUT1_GP48 — GPIO
RSVD, RCINB, SERIRQ, THRMTRIPB, PECI, PM_SYNCH, PLTRST_PROCB — HOST

SATA_RXN_0 B28 N_SATA0RXN
SATA_RXP_0 A28 N_SATA0RXP
SATA_TXN_0 F31 N_SATA0TXN
SATA_TXP_0 H31 N_SATA0TXP
SATA_RXN_1 D30 N_SATA1RXN
SATA_RXP_1 C30 N_SATA1RXP
SATA_TXN_1 B34 N_SATA1TXN
SATA_TXP_1 C34 N_SATA1TXP
SATA_RXN_2 A31 N_SATA2RXN
SATA_RXP_2 B31 N_SATA2RXP
SATA_TXN_2 B35 N_SATA2TXN
SATA_TXP_2 D35 N_SATA2TXP
SATA_RXN_3 B32 N_SATA3RXN
SATA_RXP_3 C32 N_SATA3RXP
SATA_TXN_3 G33 N_SATA3TXN
SATA_TXP_3 F33 N_SATA3TXP

B85 6G
H81 6G
H81 X

SATA_RXN_4_PCIE_PERN_1 A26 N_SATA4RXN 26
SATA_RXP_4_PCIE_PERP_1 B26 N_SATA4RXP 26
SATA_TXN_4_PCIE_PETN_1 L28 N_SATA4TXN 26
SATA_TXP_4_PCIE_PETP_1 K28 N_SATA4TXP 26
SATA_RXN_5_PCIE_PERN_2 C27 N_SATA5RXN 26
SATA_RXP_5_PCIE_PERP_2 B27 N_SATA5RXP 26
SATA_TXN_5_PCIE_PETN_2 G28 N_SATA5TXN 26
SATA_TXP_5_PCIE_PETP_2 F28 N_SATA5TXP 26
CLKIN_SATA_N H35 CK_-SRCCLK_SATA
CLKIN_SATA_P H36 CK_SRCCLK_SATA

B85/H81 3G

SATALEDB J39 N_-SATALED 28
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 29
SATA1GP_GP19 J40 N_GPIO19
SATA2GP_GP36 H40 N_GPIO36
SATA3GP_GP37 N41 N_GPIO37
SATA4GP_GP16 M39 N_GPIO16 N_GPIO16 26
SATA5GP_GP49 N40 N_GPIO49 N_GPIO49 26

EDP_BKLTCTL AP2
EDP_BKLTEN AT2
EDP_VDDEN AP1

RSVD N30 N_A20GATE N_A20GATE 18
RCINB K36 N_-KBRST N_-KBRST 18
SERIRQ G39 N_SERIRQ N_SERIRQ 18,20
THRMTRIPB C40 N_-THRMTRIP N_-THRMTRIP 4,24,28
PECI G40 SB_PECI NR85 0/4/X A_PECI A_PECI 4,18
PM_SYNCH F40 A_PMSYNC 4
PLTRST_PROCB F41 A_-CPURST 4

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

6,12,18 O_PWROK1 — NR177 0/4/X — N_ME_PWROK AA32
NC26 100p/4/NPO/50V/J/X

28 N_GPIO1
26 N_GPIO69
18 N_SSTCTL
15 N_PCIE_4_SW

PCH (A)

3VDUAL_PCH
NR124 8.2K/4/X N_-P_PME AA31
10 N_PCH33 N_PCH33 AM22
NR30 8.2K/4 TD_IREF

PCHA
PMEB, CLKIN_33MHZLOOPBACK, TP16, TP17, TP18, TP19, TD_IREF, PIRQAB, PIRQBB, PIRQCB, PIRQDB, GPIO2, GPIO3, GPIO4, GPIO5, GP35/NMIB, GP50, GP51, GP52, GP53, GP54, GP55, PLTRSTB

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

AA37 N_-PFMRST 18
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
NR110 1K/4/1/X
VCC3_ME VCC3 3VDUAL

ND2 BAT54A/SOT23/200mA
12,25 N_-SLP_A
VCC1_05_ME
NR187 MASK/0/4/SHT/X
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

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

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
NR167 1K/4/1/X N_GPIO22
12 N_-PCI_STOP N_-PCI_STOP
N_A20GATE
NR157 1K/4/1/X N_GPIO39
N_GPIO39:GFX MODE

NRN11 8.2K/8P4R/4
NRN12 8.2K/8P4R/4
NRN13 8.2K/8P4R/4

N_GPIO19
N_PCIE_4_SW
N_SERIRQ
N_GPIO35
N_GPIO16
N_GPIO49

NR80 1K/4/1/X
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

SATA3 CONNECTOR

SATA3_0
N_SATA0TXP NC43 0.01u/4/X7R/25V/K N_SATA0TXPC
N_SATA0TXN NC44 0.01u/4/X7R/25V/K N_SATA0TXNC
N_SATA0RXN NC38 0.01u/4/X7R/25V/K N_SATA0RXNC
N_SATA0RXP NC37 0.01u/4/X7R/25V/K N_SATA0RXPC
GND T+ T- GND R- R+ GND
SATA2/7/BK/H/OP/VA/D/1/B/[11NH5-110307-62R_11NH5-110307-63R]

[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

SATA3_3
N_SATA3TXP NC34 0.01u/4/X7R/25V/K N_SATA3TXPC
N_SATA3TXN NC33 0.01u/4/X7R/25V/K N_SATA3TXNC
N_SATA3RXN NC32 0.01u/4/X7R/25V/K N_SATA3RXNC
N_SATA3RXP NC31 0.01u/4/X7R/25V/K N_SATA3RXPC
GND T+ T- GND R- R+ GND
SATA2/7/BK/H/OP/VA/D/1/B/[11NH5-110307-62R_11NH5-110307-63R]

SATA3_1
N_SATA1TXP NC42 0.01u/4/X7R/25V/K N_SATA1TXPC
N_SATA1TXN NC41 0.01u/4/X7R/25V/K N_SATA1TXNC
N_SATA1RXN NC40 0.01u/4/X7R/25V/K N_SATA1RXNC
N_SATA1RXP NC39 0.01u/4/X7R/25V/K N_SATA1RXPC
GND T+ T- GND R- R+ GND
SATA2/7/BK/H/OP/VA/D/1/B/[11NH5-110307-62R_11NH5-110307-63R]

SATA3_2
N_SATA2TXP NC36 0.01u/4/X7R/25V/K N_SATA2TXPC
N_SATA2TXN NC35 0.01u/4/X7R/25V/K N_SATA2TXNC
N_SATA2RXN NC30 0.01u/4/X7R/25V/K N_SATA2RXNC
N_SATA2RXP NC29 0.01u/4/X7R/25V/K N_SATA2RXPC
GND T+ T- GND R- R+ GND
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

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

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PCH (D)

PCHD

LDRQ1B_GP23
LAD_0
LAD_1
LAD_2
LAD_3
LDRQ0B
LFRAMEB
HDA_BCLK
HDA_RSTB
HDA_SDI0
HDA_SDI1
HDA_SDI2
HDA_SDI3
HDA_SDO
HDA_SYNC
SPI_MOSI_IO0
SPI_MISO_IO1
SPI_CS0B
SPI_CLK
SPI_CS1B
SPI_CS2B
SPI_IO2
SPI_IO3
RTCX1
RTCX2
RTESTB
SRTCRSTB
INTRUDERB
PCH_PWROK
RSMRSTB
INTVRMEN
DPWROK
DSWODVREN
SMBALERTB_GP11
SMBCLK
SMBDATA
SML0ALERTB_GP60
SML0CLK
SML0DATA
SML1ALERTB_PCHHOTB_GP74
SML1CLK_GP58_MGPIO11
SML1DATA_GP75_MGPIO12

BMBUSYB_GP0
CLKRUNB_GP32
DOCKENB_GP33
STPPCIB_GP34
GP8
LAN_PHY_PWR_CTRL_GP12
HDA_DOCK_RSTB_GP13
GP15
GP24
GP28
SLP_WLANB_GP29
PCIECLKRQ0B_GP73
PCIECLKRQ1B_GP18
PCIECLKRQ2B_GP20_SMIB
PCIECLKRQ3B_GP25
PCIECLKRQ4B_GP26
PCIECLKRQ5B_GP44
PCIECLKRQ6B_GP45
PCIECLKRQ7B_GP46
GP57
SYS_PWROK
RIB
WAKEB
SLP_AB
SLP_LANB
SLP_S0B
SLP_S3B
SLP_S4B
SLP_S5B_GP63
SUS_STATB_GP61
SUSCLK_GP62
GP72
SUSACKB
SUSWARNB_SUSPWRDNACK_GP30
DRAMPWRGD
GP27
ACPRESENT_GP31_MGPIO2
SLP_SUSB
PWRBTNB
SYS_RESETB
SPKR
PROCPWRGD
TP13
JTAG_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS

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

VCC3 NR54 8.2K/4/X N_GPIO23 AK26
18,20 N_LAD0 N_LAD0 AN24
18,20 N_LAD1 N_LAD1 AP26
18,20 N_LAD2 N_LAD2 AJ24
18,20 N_LAD3 N_LAD3 AN26
18 N_-LDRQ0 N_-LDRQ0 AK22
18,20 N_-LFRAME N_-LFRAME AP24
21 C_ACZ_BITCLK NR45 33/4 AV23
21 C_-ACZ_RST NR43 33/4 AU24
21 C_ACZ_SDIN2 AT22
21 C_ACZ_SDOUT NR44 33/4 A_SO AU22
21 C_ACZ_SYNC NR46 33/4 A_SYC AV24
20 N_ICH_SPI_MOSI N_ICH_SPI_MOSI P40
20 N_ICH_SPI_MISO N_ICH_SPI_MISO R36
20 N_-ICH_SPI_CS N_-ICH_SPI_CS R38
20 N_ICH_SPI_CLK N_ICH_SPI_CLK U39
20 N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 R35
20 SPI_DQ2 SPI_DQ2 U40
20 SPI_DQ3 SPI_DQ3 U37
N_Y1 AN40
N_Y2 AN39
N_-RTCRST AR38
N_-SRTCRST AR39
N_-INTRUDER AR41
6,11,18 O_PWROK1 O_PWROK1 AT40
18,27 O_-RSMRST O_-RSMRST AM40
N_INTVRMEN AV36
N_PCH_DPWROK AV38
N_DSWVRMEN AM41
18 N_-LPCPME N_-LPCPME AG31
7,8,14,15,17,23,27 N_SMBCLK N_SMBCLK AG36
7,8,14,15,17,23,27 N_SMBDATA N_SMBDATA AG32
11 N_GPIO60 N_GPIO60 AG35
31 N_SML0CLK N_SML0CLK AE32
31 N_SML0DAT N_SML0DAT AE35
N_-PCH_HOT AJ39
N_SML1CLK AK36
N_SML1DAT AK33

G38 N_GPIO0
N32 N_GPIO32
AV26 N_GPIO33
N34 N_-PCI_STOP → N_-PCI_STOP 11
AC40 N_-IGC_EN
AL40 N_LAN_DIS-
AN22 N_GPIO13 → N_LAN_DIS- 31
AC32 N_TEMP_ALART-
AE34 A_-SKTOCC → N_TEMP_ALART- 18, A_-SKTOCC 4
V41 N_GPIO28
AL39 N_GPIO29
W34 N_GPIO73 → N_GPIO73 26
P39 N_GPIO18
P37 N_GPIO20
AA39 N_GPIO25
W35 N_GPIO26
AA36 N_GPIO44
W32 N_GPIO45 NR245 MASK/0/4/SHT/X → DIS_T 4
AA40 N_GPIO46
AC36 N_GPIO57
W31
AE36 N_-RI → N_PCH_VRMPWRGD 18, N_-RI 19
AK34 N_-PCIE_WAKE → N_-PCIE_WAKE 14,15,17,26
AN37 N_-SLP_A → N_-SLP_A 11,25
AU36 N_-SLP_LAN
AC35
AK40 N_-SLP_S3 → N_-SLP_S3 18
AT35 N_-S4_S5 → N_-S4_S5 18
AA35
AD37 N_-SUSTAT
W36 N_SUSCLK → N_SUSCLK 20,26
AJ40 N_GPIO72
AJ37
AG41 N_-S_WARN
AE38 N_DRAM_PWROK
AU34 N_GPIO27 → N_-LAN_WAKE 31
AM36 N_GPIO31
AK38 N_-DEPSLP → N_-DEPSLP 27
AK41 O_PWRBTSW → O_PWRBTSW 18
N36 N_-SYS_RST → N_-SYS_RST 4,28
R32 N_SPKR → N_SPKR 28
D40 N_CPUPWROK → N_CPUPWROK 4,18
W37 N_PCH_RST
Y40 N_PCH_TCK
W39 N_PCH_TDI
Y38 N_PCH_TDO
W40 N_PCH_TMS

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
18 DS_ME DS_ME NR178 8.2K/4
3VDUAL_PCH

PCH_DPWROK

3VDUAL_PCH
NR69 8.2K/4
N_PCH_DPWROK → N_PCH_DPWROK 18,27
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 18
DAR66 100K/4/1
DAC23 0.1u/4/X7R/16V/K

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 8.2K/4/X N_GPIO20 NR109 8.2K/4
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
S0T23
NQ11 MMBT2222A/SOT23/600mA/40
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
RB_TP
N_VBAT → N_VBAT 18
NR90 390K/4 N_DSWVRMEN
N_RTCVDD → N_RTCVDD 13,28
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

BATTERY-DUAL-4
RB 必須放在BAT外

N_-INTRUDER NR74 1M/4 → N_RTCVDD 13,28
N_-SRTCRST NR77 20K/4/1 → N_RTCVDD 13,28
NC19 1u/4/X5R/6.3V/K

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

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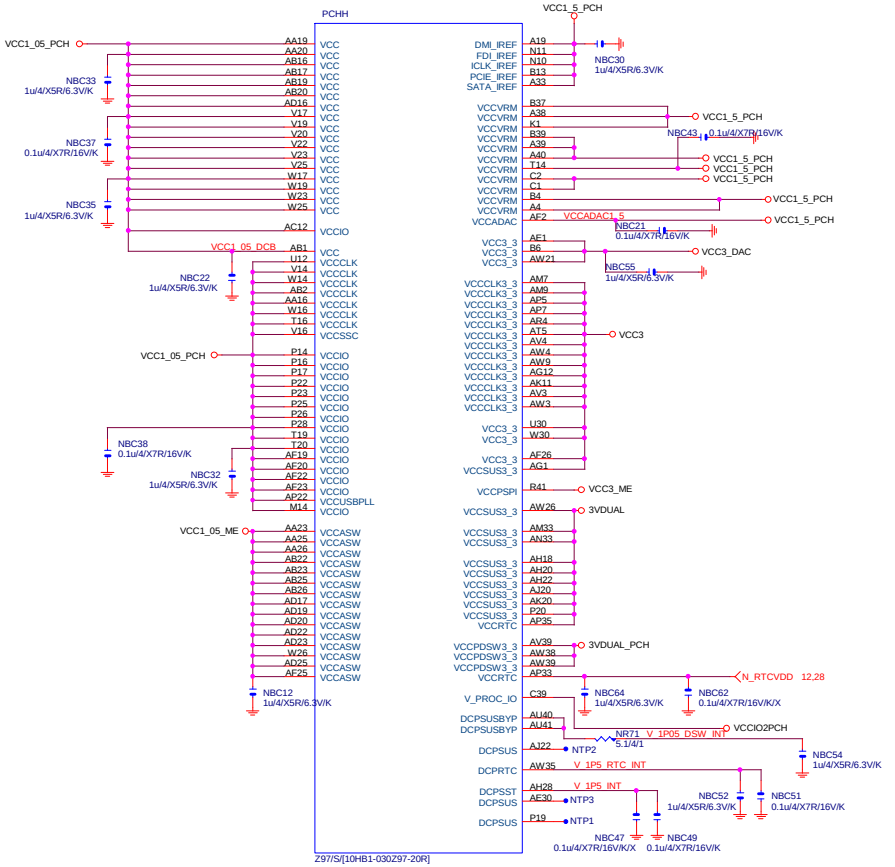
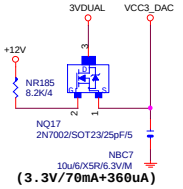
PCH (H)



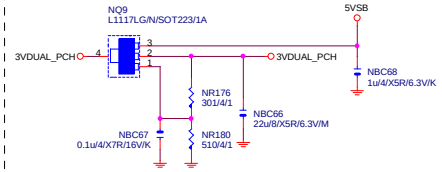
VCC3_DAC

CLOSE北橋(注意震盪水波紋)

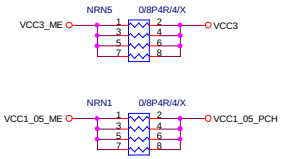


(3.3V/70mA+360uA)

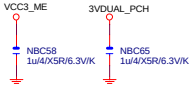
3VDUAL_PCH



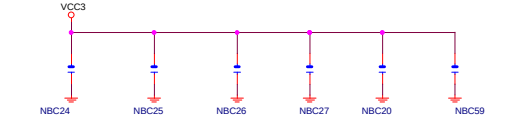
SHT PWR



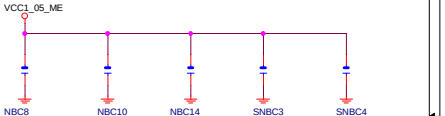
CAP



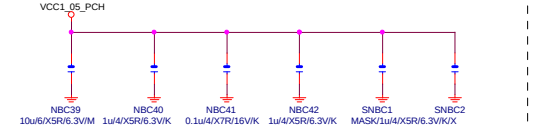
(3.3V)(X6)



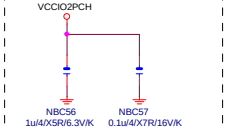
(1.05V)(X5)



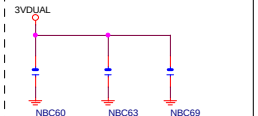
(1.05V)(X6)



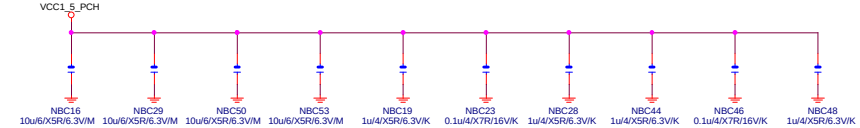
(1.05V)(X2)



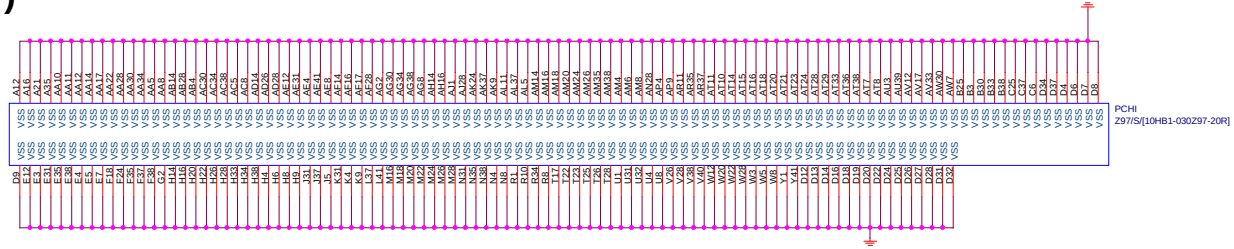
(3.3V)(X3)



(1.5V) (X10)



PCH (I)



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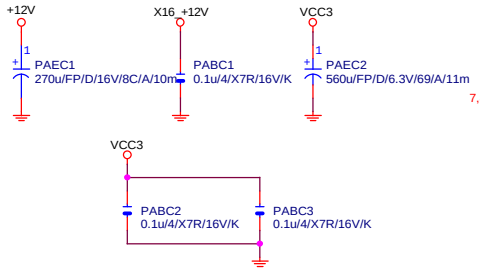
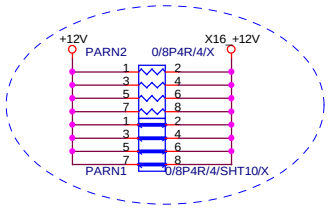
PCIEX16 CAP



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

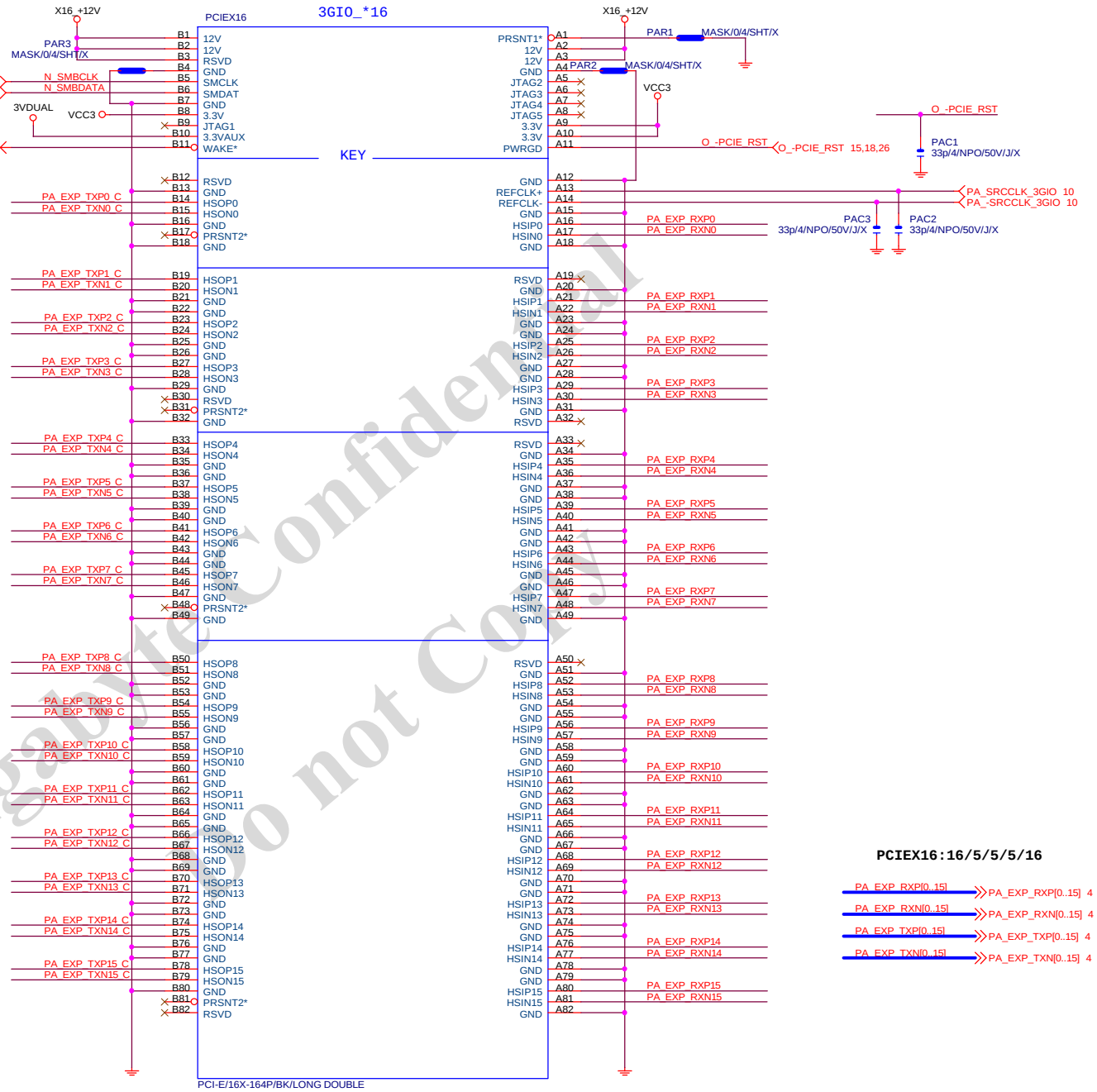
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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



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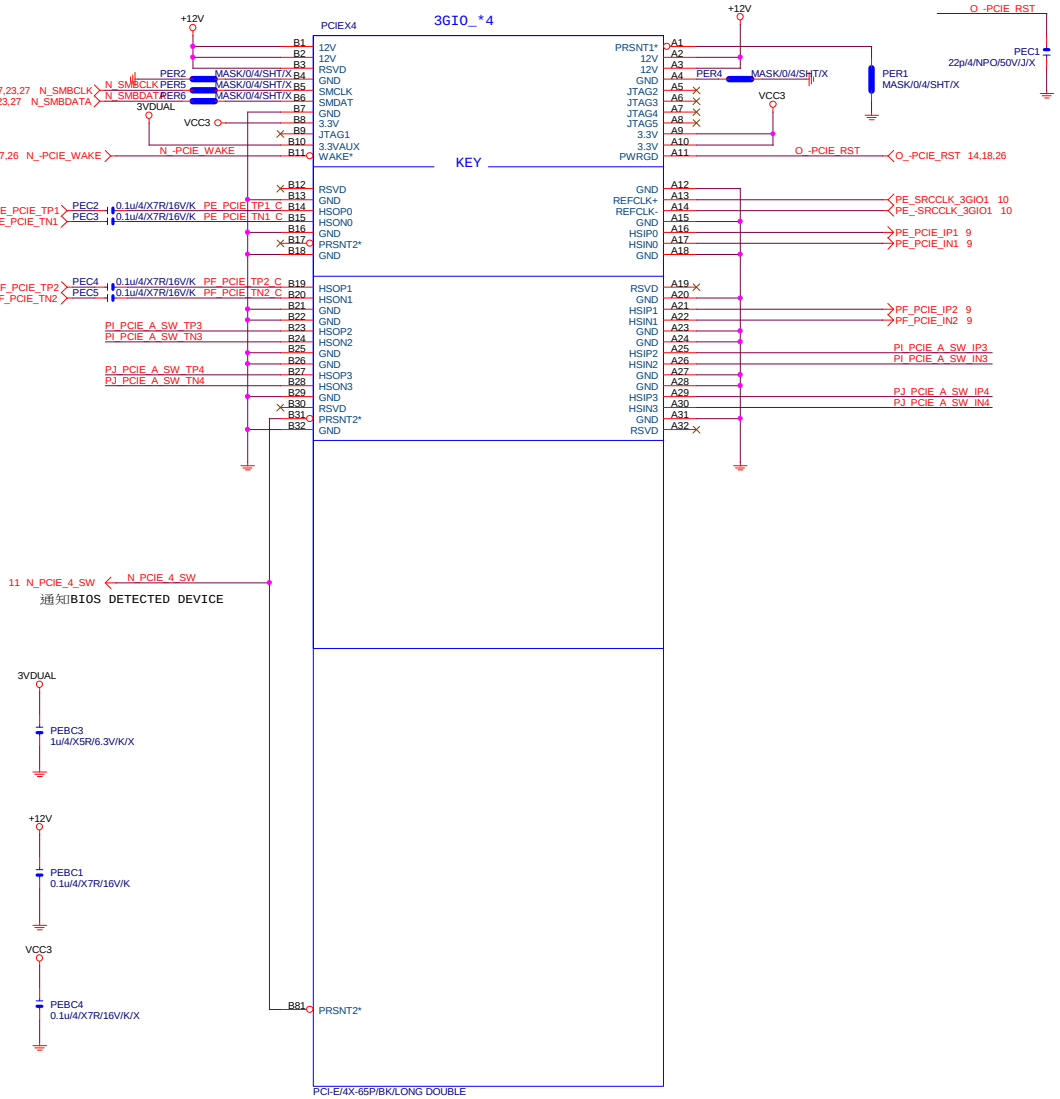
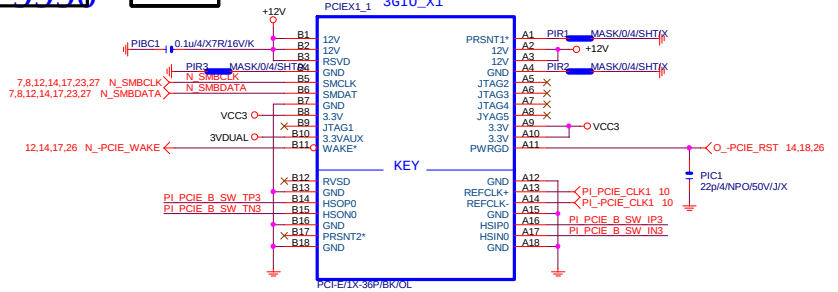
PCIEX4 SLOT



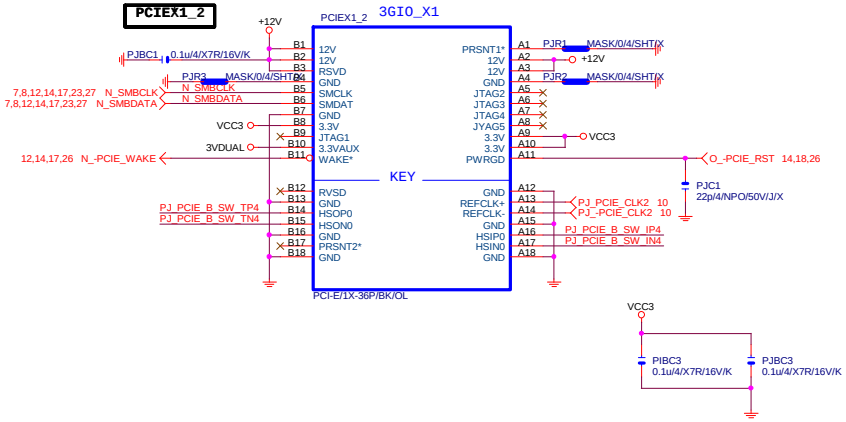
	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
P IEX1,PCIEX4 --> X1 (Default)	H	H
PCIEX4 No devices PCIEX4 -> X1	H	H
PCIEX4 Have devices PCIEX4 -> X4 PCIEX1_1/2 --> N/A	L	L

PCIEX1 SLOT

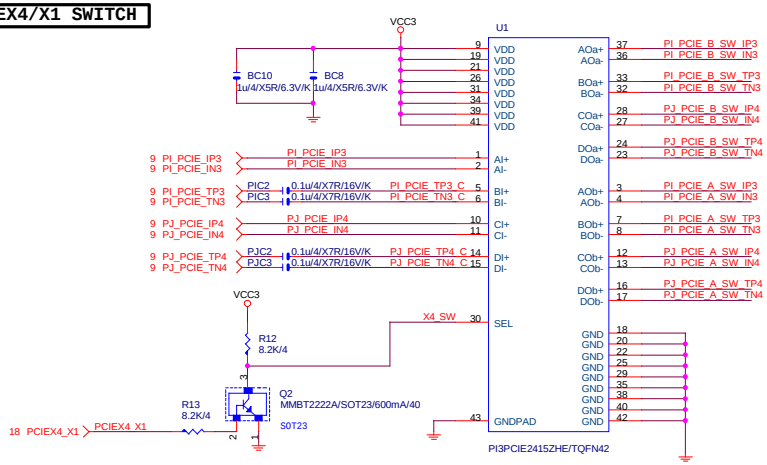
PCIEX1_1



PCIEX1_2



PCIEX4/X1 SWITCH



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

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Title: PCIE_X1 1,2

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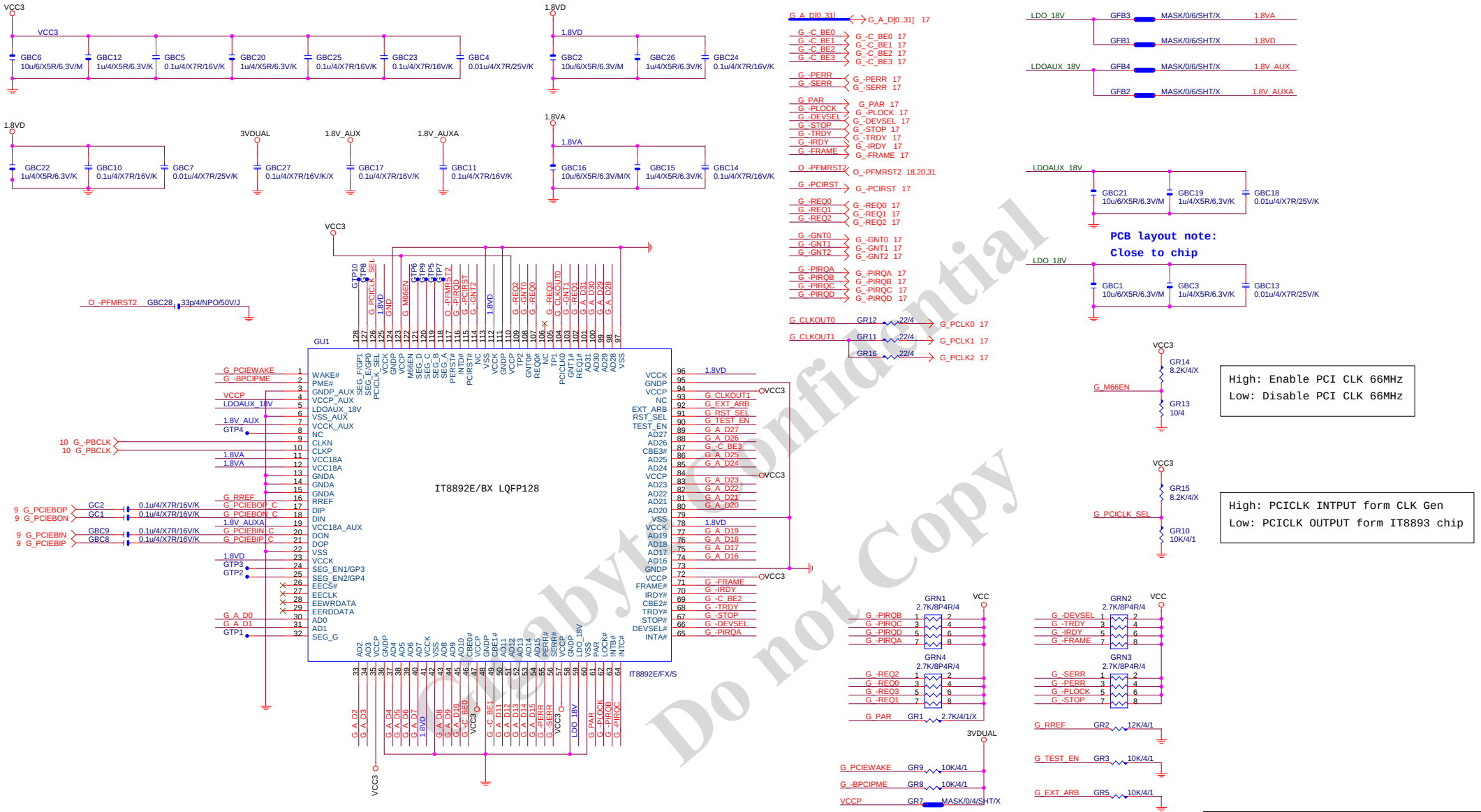

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Title	IT8892E	
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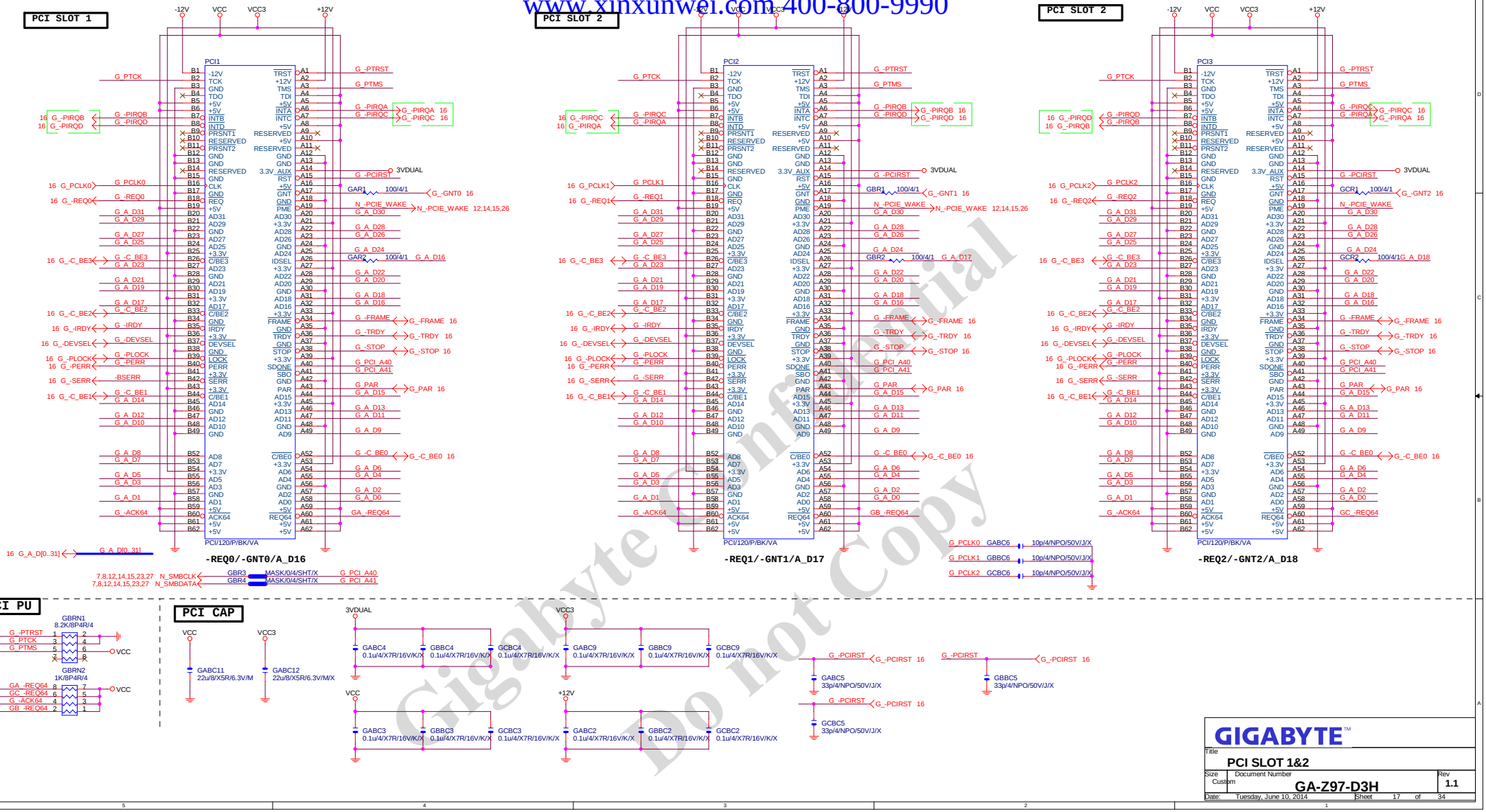

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SIO IT8728F

30 FANIO1 — C234 0.047u/4/X7R/16V/K
30 FANIO2 — C28 0.047u/4/X7R/16V/K
30 FANIO4 — C2 0.047u/4/X7R/16V/K
30 FANIO3 — C26 0.047u/4/X7R/16V/K
30 FANIO5 — C4 0.047u/4/X7R/16V/K

CPU_OPT

30 FANPWM5

CPU_FAN
SYS_FAN1
SYS_FAN2

IT8620E_CX

SIO

SLP_SUS#/PCIRSTIN#/GP16
3VSB
HOLD_M#/GP64
HOLD_B#/GP63
FAN_TAC1
FAN_CTL1
FAN_TAC2/GP52
FAN_CTL2/GP51
FAN_TAC3/GP37
FAN_CTL3/GP36
VCC18_EN/GP35
VTT_PWRGD/GP34
GNDD
SLP_SUS_FET/5VSB_CTRL#
SUS_WARN_5VDUAL/5VAUX_SW
PWRGD2
ATXPG/GP30
INV_IN1/SIN2/GP27
INV_OUT1_SOUT2/GP26
FAN_TAC4/DSR2#/GP25
FAN_TAC5/RTS2#/GP24
DPWORK/CPU_PG/GP23
SPI_SI/GP22
IO_SMI#/DCD2#/GP21
THR_PWM_CTS2#/GP20
R12#/GP17
DTR2#/JP5
SPI_SO/CIRTX1
PCH_C1/GP14
SUSACK#/PWRGD1
PCIRST1#/GP12
PCIRST2#/GP11
3VSB
VCORE
LRESET#
LDRQ#
SERIRQ
LFRAME#

LS_IN1/SLCT/GP80
VREF_2.5
TR6/VIN9
TR5/VIN8
TR4/VIN7
AVCC3
VIN0/VCORE(1.1V)
VIN1/VDIMM_STR(1.5V)
VIN2(+12V_SEN)
VIN3(+5V_SEN)
VIN4/VLDT_12
VIN5/5VDUAL
VIN6
VREF
TMPIN1
TMPIN2
TMPIN3
TS_D-
GNDA
RSMRST#/CIRRX1/GP55
CPURST#/GP10
MCLK/FAN_TAC6/GP56
MDAT/FAN_CTL6/GP57
KCLK/GP60
KDAT/GP61
3VSBSW#/GP40
PWRGD3
SUSC#/GP53
PSON#
PANSWH#/GP43
GNDD
PME#/GP54
PWRON#/GP44
SUSB#
CE_N/GPO47/JP6
VBAT
COPEN#
3VSB

IT8620E/CX/S

Power Leakage

+12V — OR1 8.2K/4 — OQ1 2N7002/SOT23/25pF/5 SOT23 — IT_AVCC / OR49 0/4/X / VCC3

PWR SHT

For 8728 EUP function
3VDUAL_PCH — OR25 MASK/0/6/SHT/X — IT_VCCH

SIO PU

SVID_CTRL — OR84 8.2K/4/X — VCC3
IO_GP21 — OR81 1K/4/1 — 3VDUAL_PCH
PCIEX4_X1 — OR14 1K/4/1 — 3VDUAL_PCH
-PROCHOT_CON — OR29 8.2K/4 — VCC3
N_-LDRQ0 — OR27 1K/4/1 — VCC3
ITE_PWROK2 — OR16 1K/4/1 — VCC3
ITE_PWROK — OR10 1K/4/1 — VCC3
O_-PCIE_RST — OR71 1K/4/1/X — VCC3
O_-PFMRST2 — OR2 1K/4/1/X — VCC3
N_A20GATE — OR31 680/4/1/X

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

SIO STRAP

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

JP2 OR36 8.2K/4 VCC3
OR33 1K/4/1/X JP3 OR35 8.2K/4 VCC3
JP4 OR32 8.2K/4 VCC3
OR80 8.2K/4/X JP5 OR12 8.2K/4/X VCC3

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

EUP control detect
3VDUAL — OR47 100/4/1 28_3VSB

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

CEB_N — OR58 680/4/1/X — OR56 1K/4/1 — VCC3

Power leakage

IT_AVCC — OQ3 MASK/2N7002/SOT23/25pF/5/X SOT23 — -PSON — OR50 330/6/X

SIO_18V

internal power pin, max 22nF cap

SIO_18V — OBC4 0.1u/4/X7R/16V/K/X — OBC5 0.1u/4/X7R/16V/K

SIO CAP

IT_VCCH — OBC12 10u/6/X5R/6.3V/M — OBC3 0.1u/4/X7R/16V/K
IT_VCCH — OBC2 1u/4/X5R/6.3V/K — OBC7 0.1u/4/X7R/16V/K
IT_AVCC — OBC10 10u/6/X5R/6.3V/M
3VDUAL_PCH — OBC8 0.1u/4/X7R/16V/K

MB ID

VCC3 — OR7 8.2K/4 — OR15 8.2K/4/X — MB_ID2
VCC3 — OR51 8.2K/4/X — OR48 8.2K/4 — MB_ID3

GPIO86
Rev1.0 --> MB_ID3 : Hi
Rev1.1 --> MB_ID3 : Low

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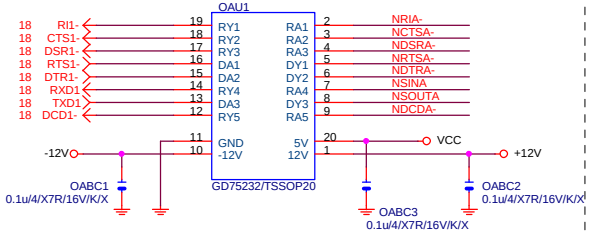
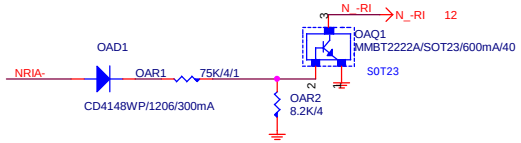
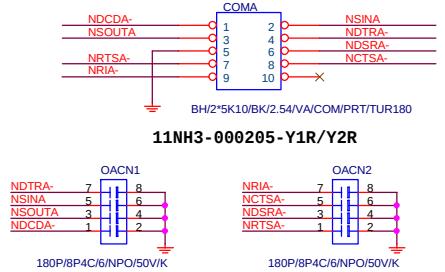
COMA



COM RI

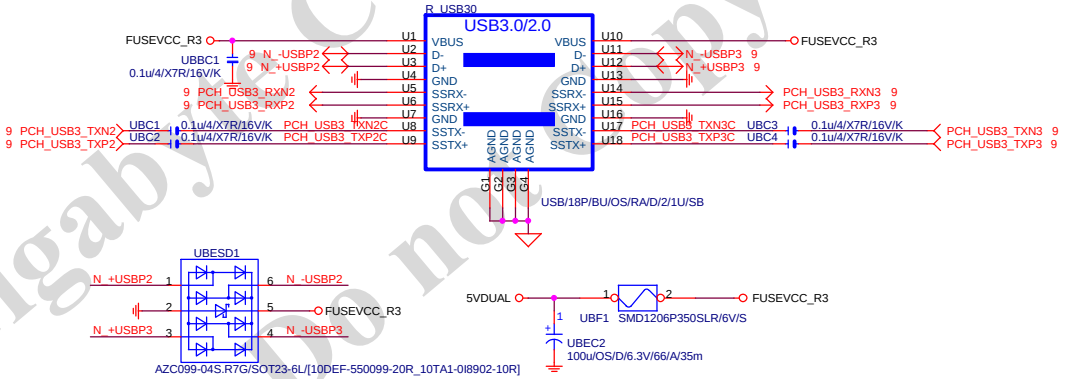


COM BUFFER

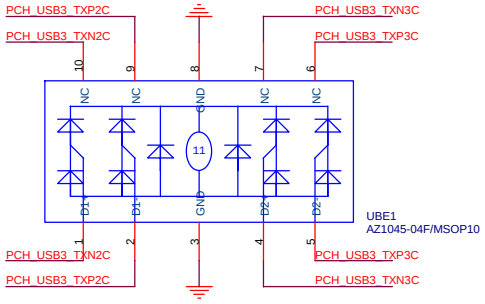


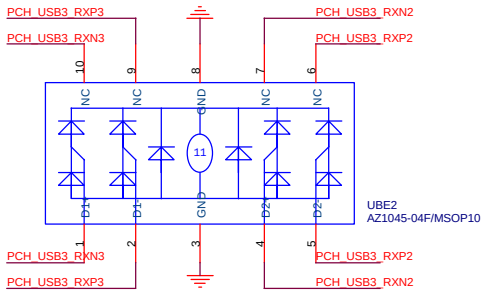
R_USB

R_USB30



CLOSE R_USB30





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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
NR227 1K/4/1
-SPI_CS_1
NQ20 SOT23
N_-ICH_SPI_CS
NR228 0/4/X
-SPI_HOLD_M NR233 1K/4/1/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
NQ22 MMBT2222A/SOT23/600mA/40 SOT23
N_-ICH_SPI_CS
-SPI_HOLD_B NR234 1K/4/1/X
NQ23 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_M NR232 8.2K/4

MAIN BIOS

M_BIOS
-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
64M/Q/SPI/SO8/S[10HP4-112564-30R]
VCC3_ME
NR4 MASK/0/4/SHT/X
NBC2 1u/4/X5R/6.3V/K
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
SPI_DQ3 12
12 N_ICH_SPI_MISO

BACKUP BIOS

B_BIOS
-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
64M/Q/SPI/SO8/S[10HP4-112564-30R]
VCC3_ME
NR12 MASK/0/4/SHT/X
NBC3 1u/4/X5R/6.3V/K
NR224 MASK/0/4/SHT/X
NR225 8.2K/4/X -SPI_HOLD_B
-HOLD1
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
SPI_DQ3 12
N_ICH_SPI_CLK 12
N_ICH_SPI_MOSI 12

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

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

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

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# VCC5 LAD3 LAD2 LAD1 LAD0 RSV0 SB3V SERIRQ CLKRUN# RSV2 GND
pin 4 防靜
N_LFRAME
O_-PFMRST2
N_LAD3
N_LAD0
N_LAD2
N_LAD1
N_SERIRQ
N_LAD2 12,18
N_LAD1 12,18
N_SERIRQ 11,18
VCC3
TR2 8.2K/4
TPM_GP14 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

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

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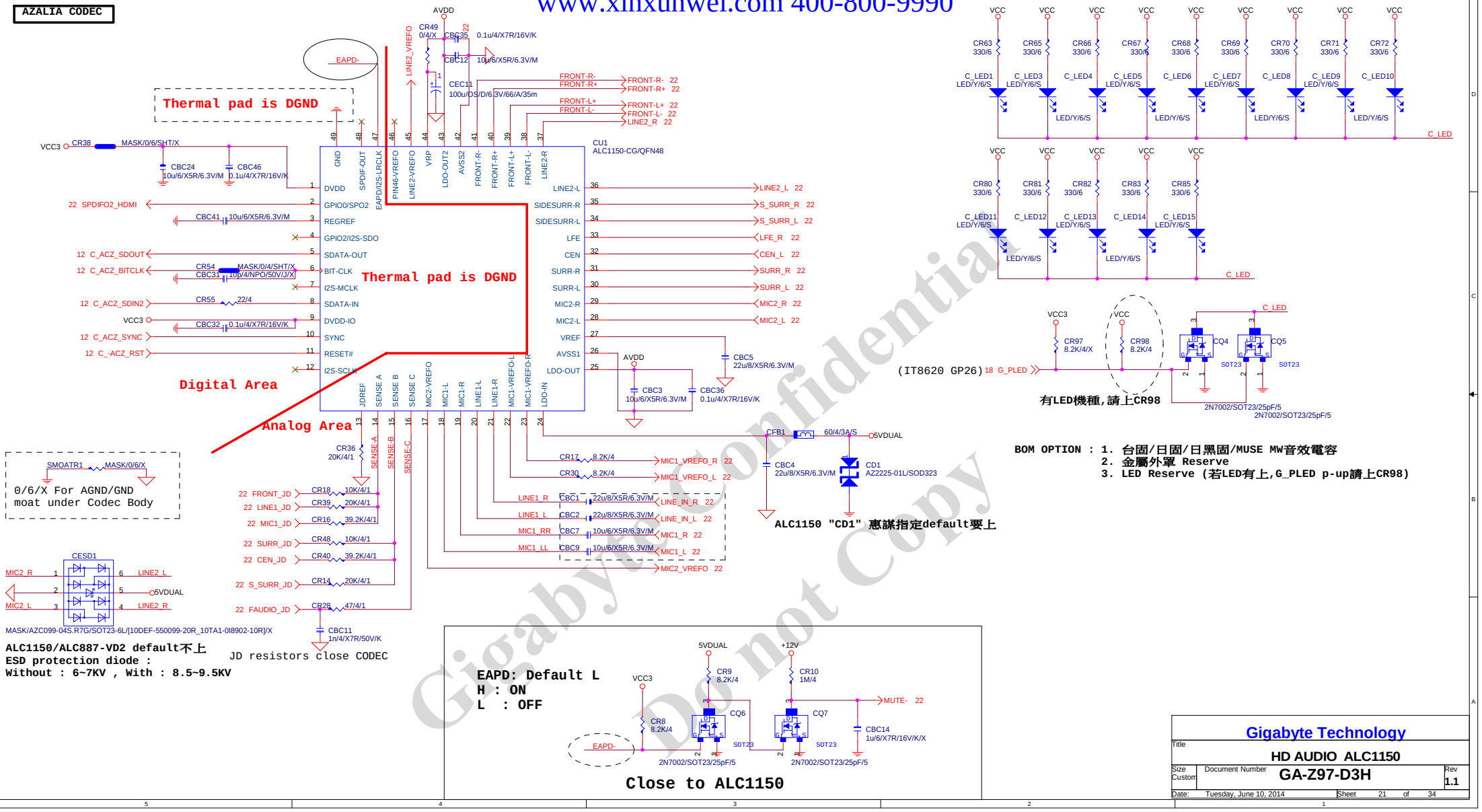
AZALIA CODEC



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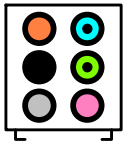
AZALIA JACK



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)

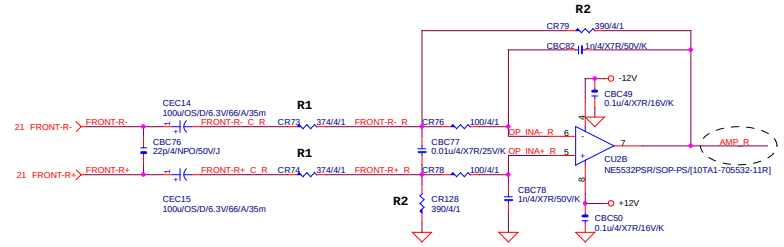
MOATR4 MASK/0/4/SHT/X, MOATC4 0.1u/4/X7R/16V/K → Near AMP (各打2 VIA hole)

SPDIF_OUT

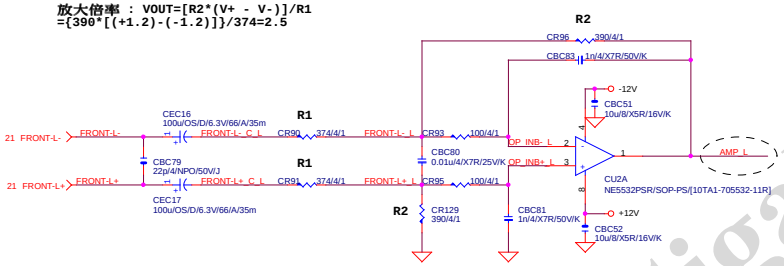
For HDMI SPDIF

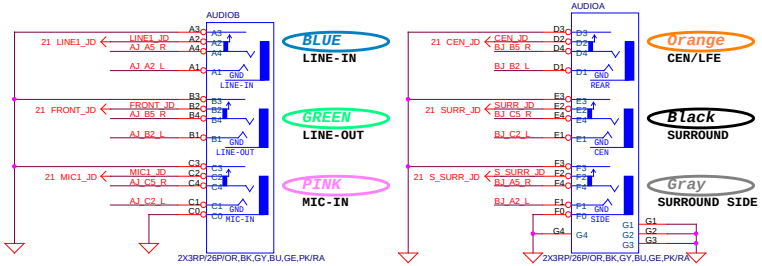
21 SPDIFO2_HDMI — CR52 MASK/0/4/SHT/X — SPDIF_O — CBC37 100p/4/NPO/50V/J — PH/1*2/BK/2.54/VA/D

Differential to Single-End AMPLIFIED

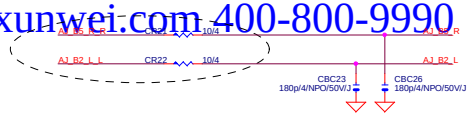


放大倍率 : VOUT=[R2*(V+ - V-)]/R1
={390*[(+1.2)-(-1.2)]}/374=2.5

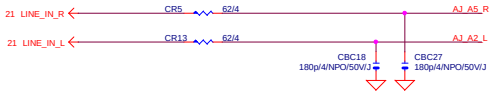




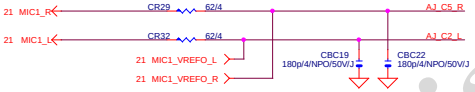
LINE-OUT



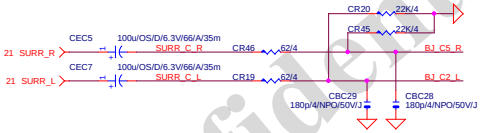
LINE-IN



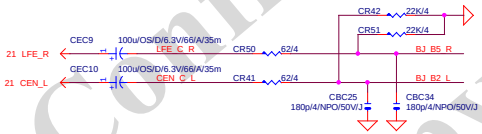
MIC-IN



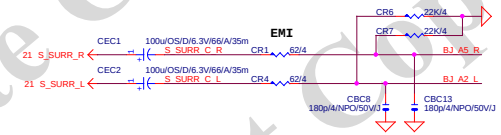
SURROUND

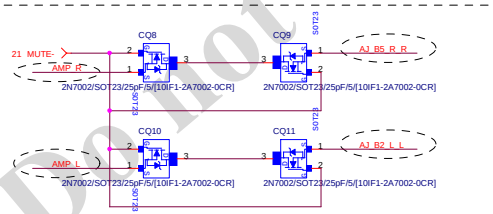


CEN/LFE

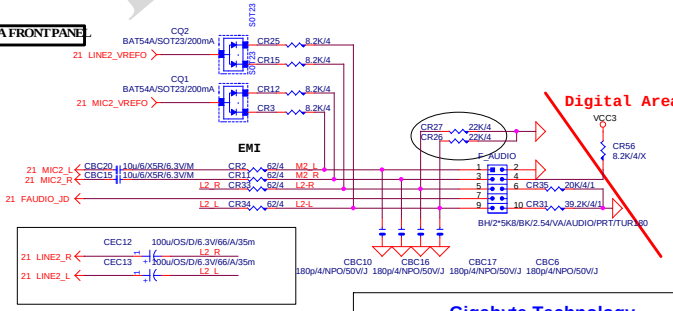


SURR BACK





AZALIA FRONT PANEL



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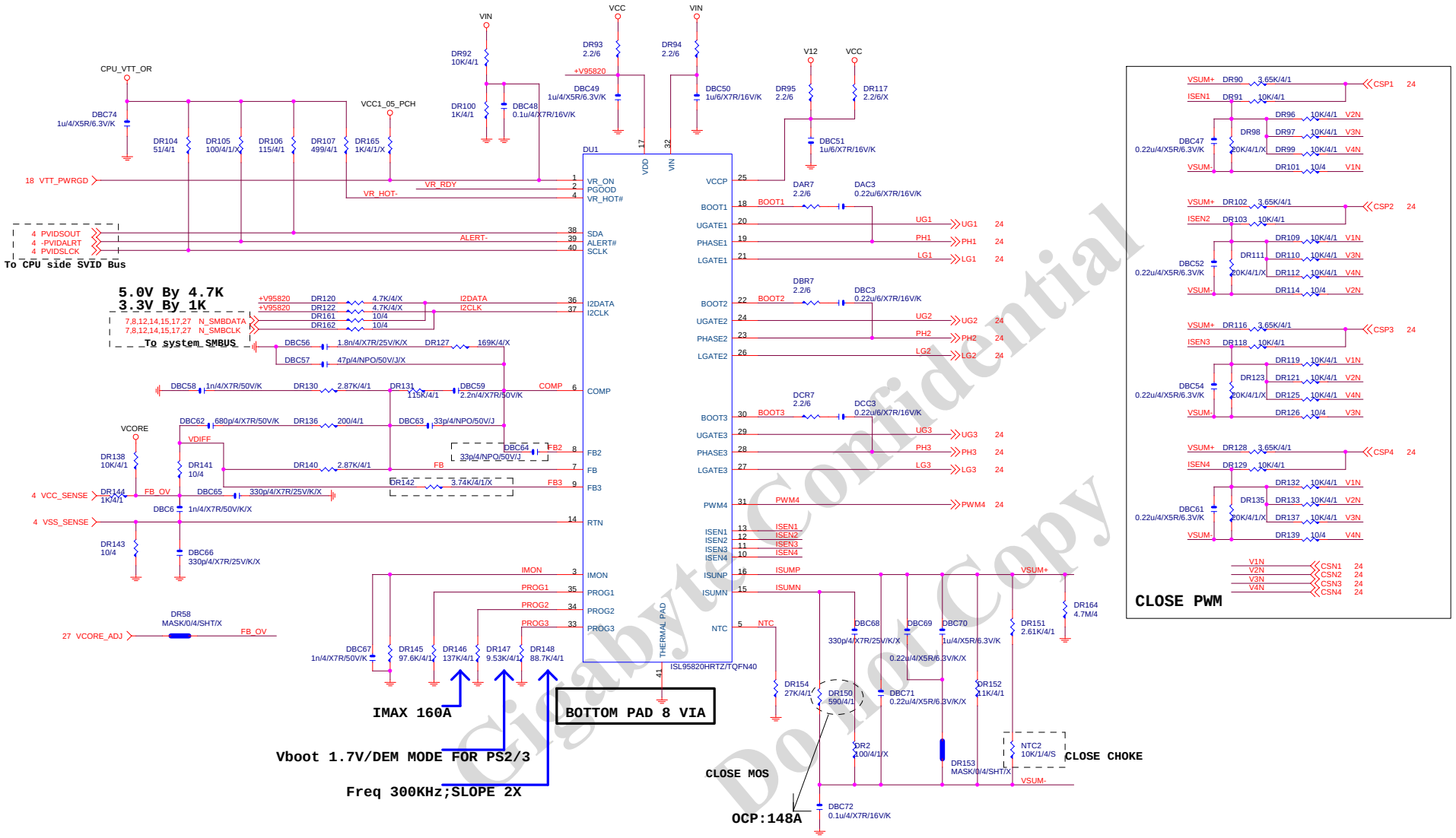

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VCORE各層切割

第一層:VCORE
第二層:VCORE
第三層:GND
第四層:VCORE

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Title: VCORE_ ISL95820		
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.1
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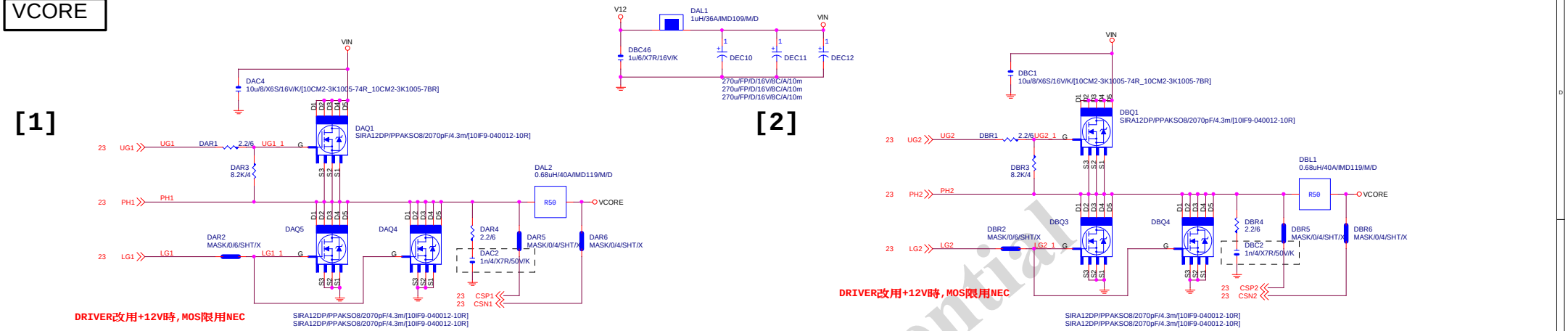
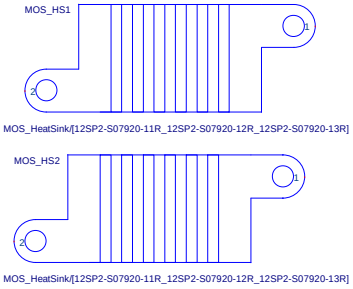
VCORE



MOSFET HEATSINK



MOSHSINK-Z97X-SLI

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Title	ISL95820_2
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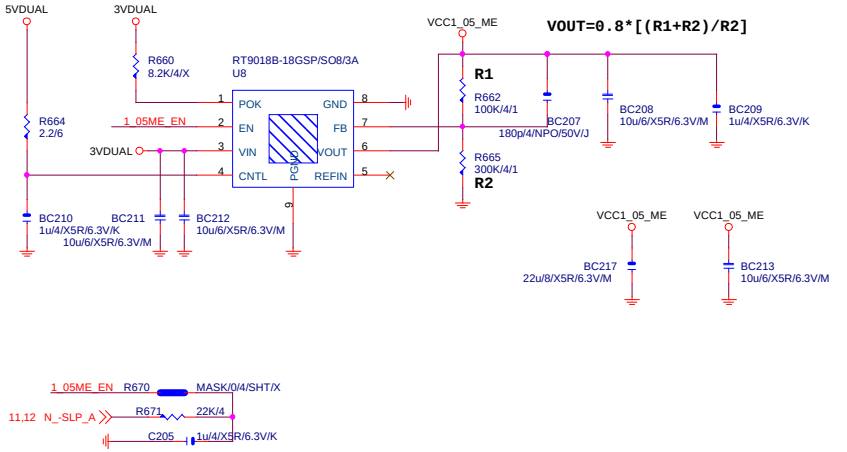
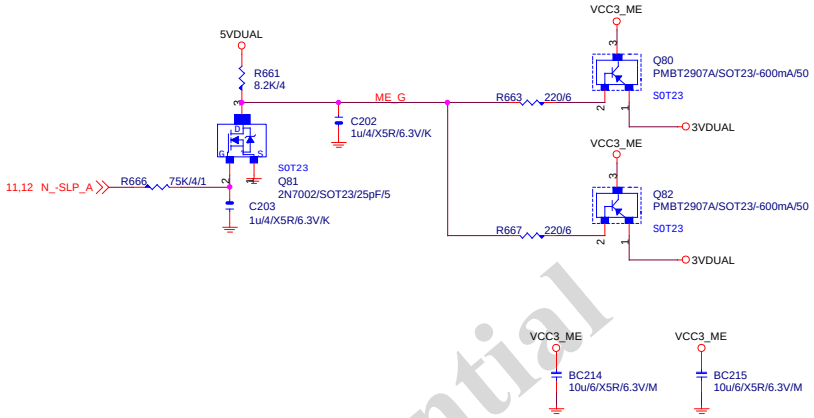
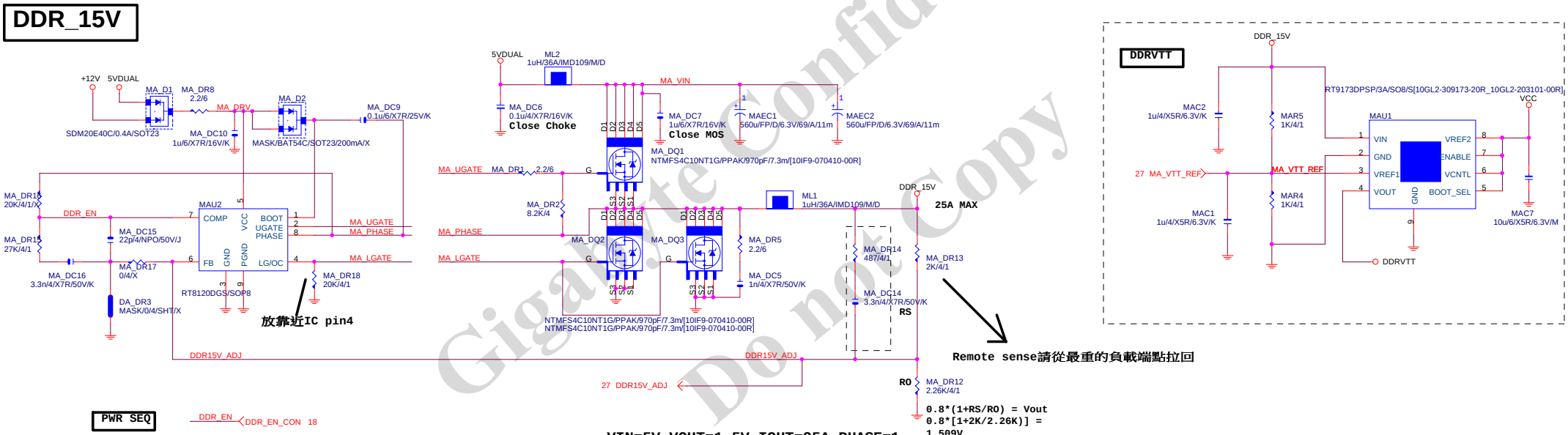
VCC1_05_ME



VCC3_ME



DDR_15V



DDRVTT

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]

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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

M2R12,M2R13,M2R14 改0/4/X

M.2 CLK 限用
CLKOUT_PCIE_0

SATA EXPRESS

PCH

M2

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

SATA EXPRESS CONNECTOR

SATA EXPRESS/18P/BK/H/RA/D/GF/1/[11NR6-C10118-03R]::Location SATA_EXPRESS

0 : SATA EXPRESS
1 : SATA (Standard)

SATA EXPRESS料號
單層:11NR6-C10118-02R
雙層:11NR6-C10236-02R

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

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

連接PCH GPIO69
GPIO69 PU HI 要移除

SMD螺柱 (DIP階上件)
M2_42 M2_60 M2_80
CR/[11KS2-040002-01R] CR/[11KS2-040002-01R] CR/[11KS2-040002-01R]

DIP螺柱
M2_80A
CR/[12KSF-F10303-01R]

螺絲
M2_80B
CR/[12KS2-110202-01R]

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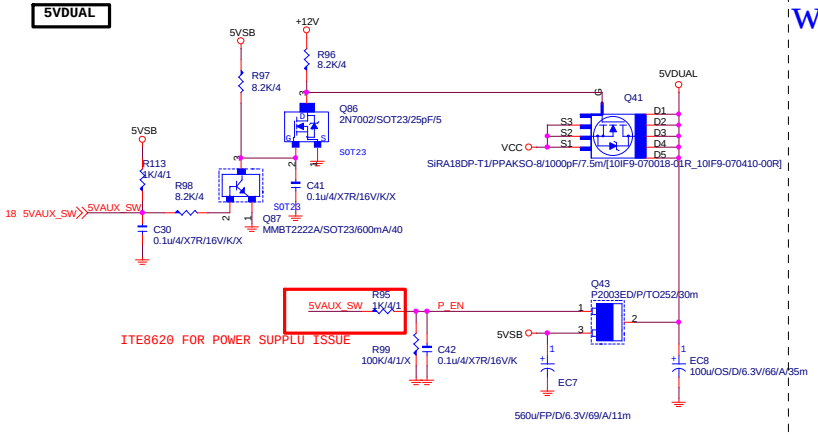
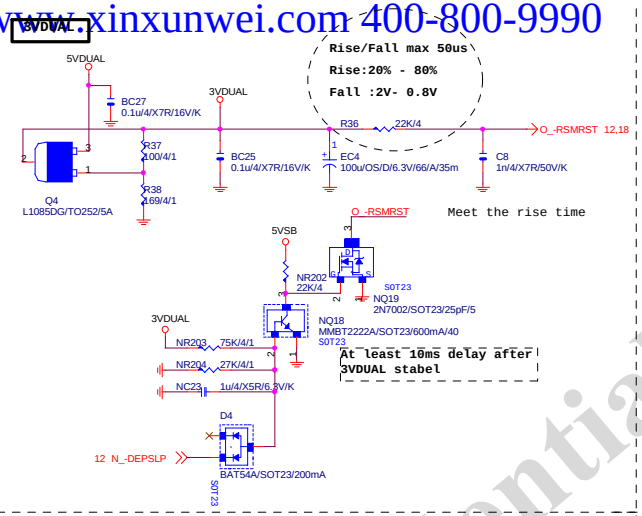
5VDUAL

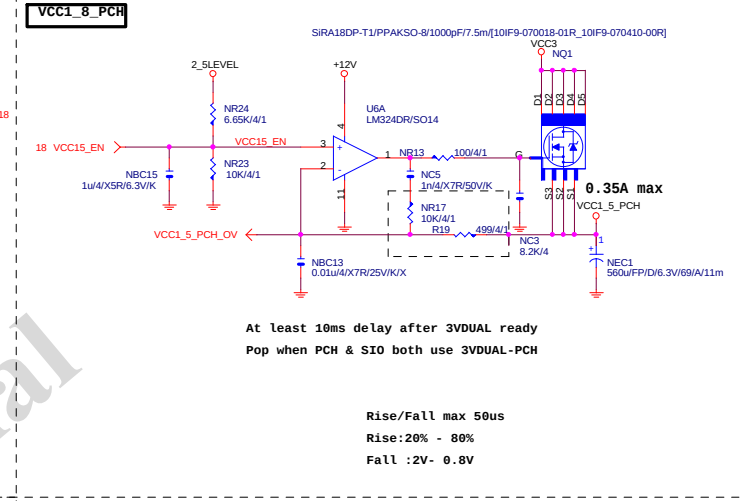


5VSB OVP發生時 : 5VDUAL=0.8V --> 解除時,須拔POWER CORE 才可開機
5VDUAL OVP發生時 : 5VDUAL=6.0V --> 解除時則恢復正常

3VDUAL



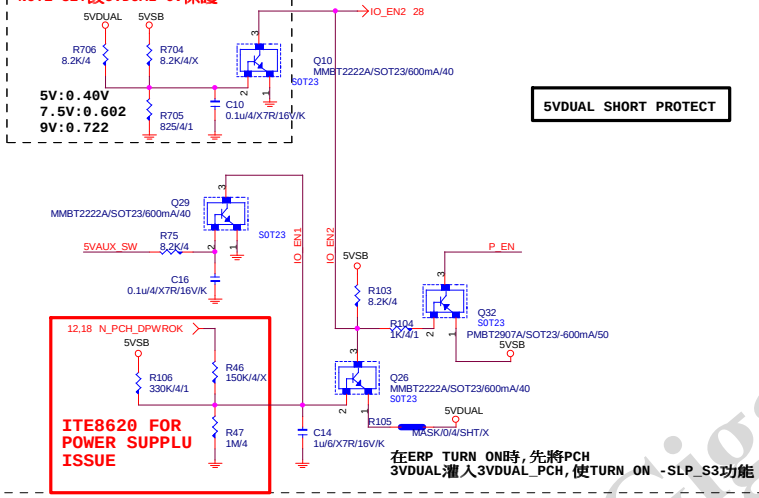
VCC1_8_PCH



5VSB OVP:7.5V protection

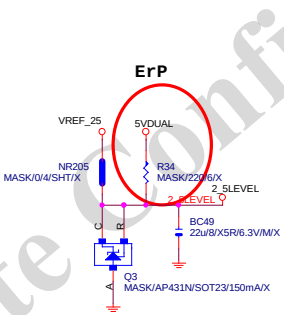
NOTE 82:改5VDUAL 6v保護

5VDUAL SHORT PROTECT

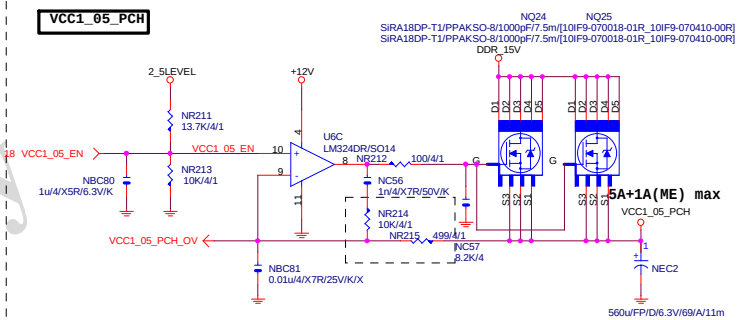


在ERP TURN ON時,先將PCH 3VDUAL灌入3VDUAL_PCH,使TURN_ON -SLP_S3功能

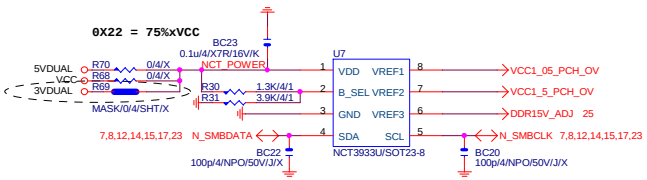
2_5LEVEL

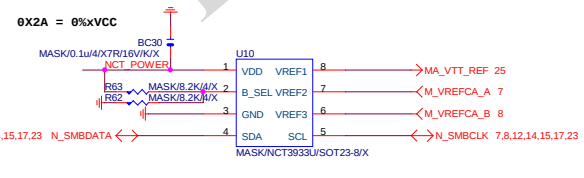


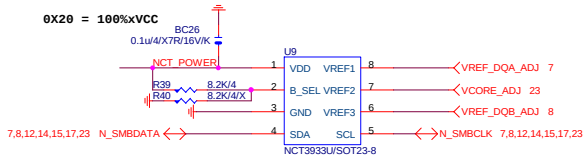
VCC1_05_PCH



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

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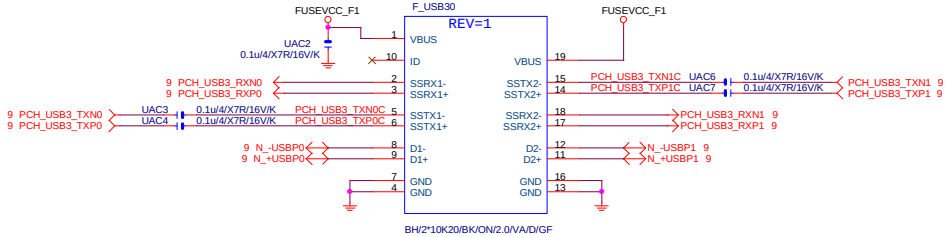
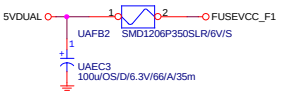
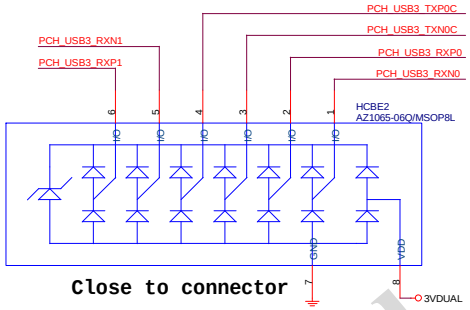
Front USB3.0



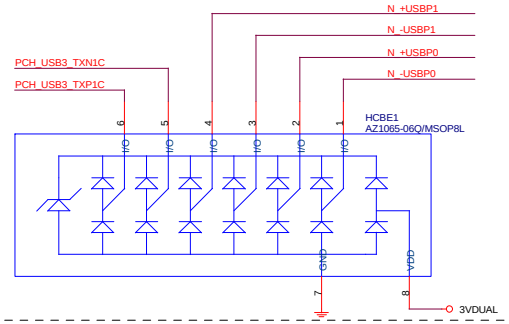
F_USB30 PWR



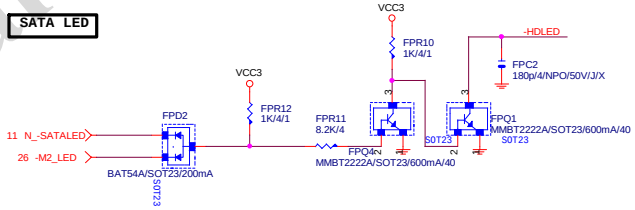
USB 3.0 ESD PROTECT



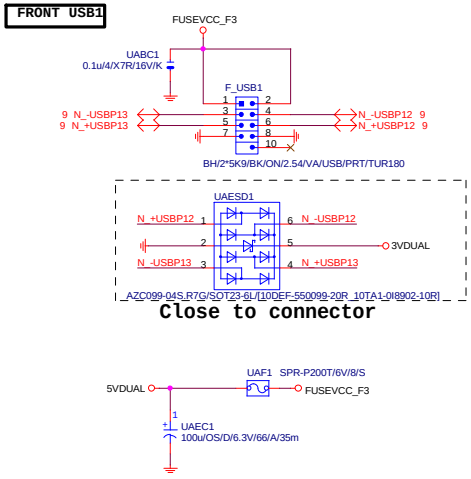
Close to connector



SATA LED

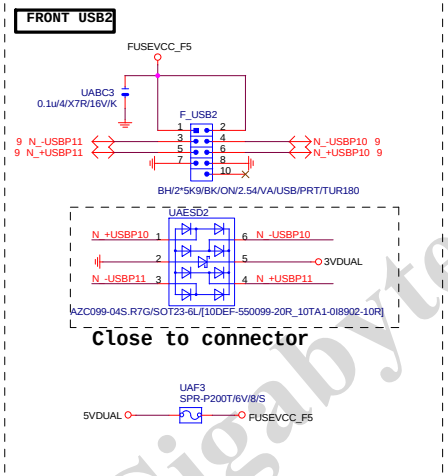


FRONT USB1



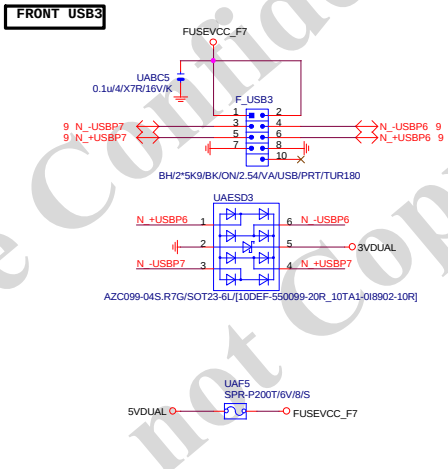
Close to connector

FRONT USB2

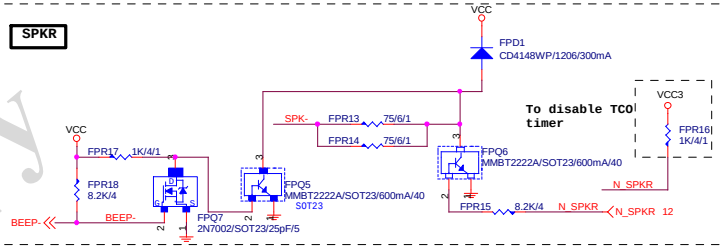


Close to connector

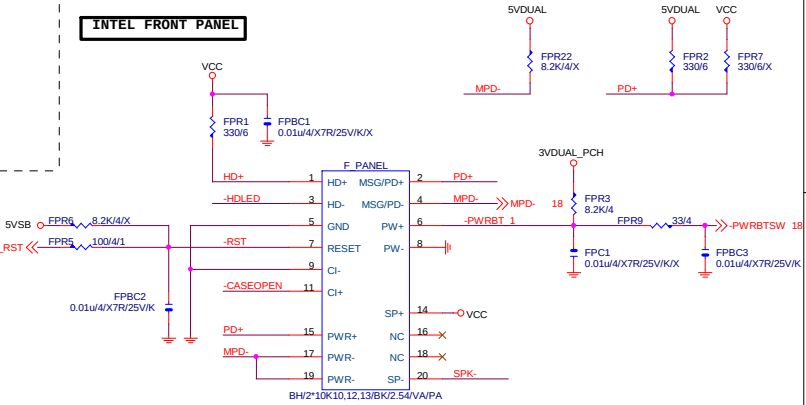
FRONT USB3



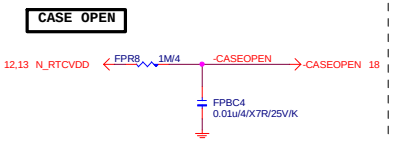
SPKR



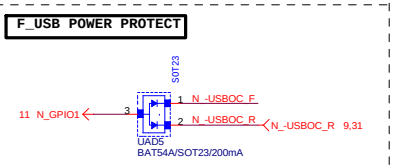
INTEL FRONT PANEL



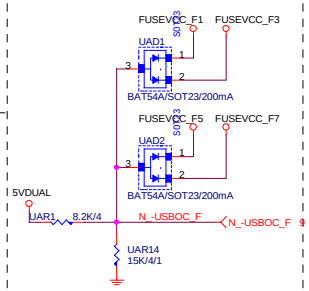
CASE OPEN



F_USB POWER PROTECT

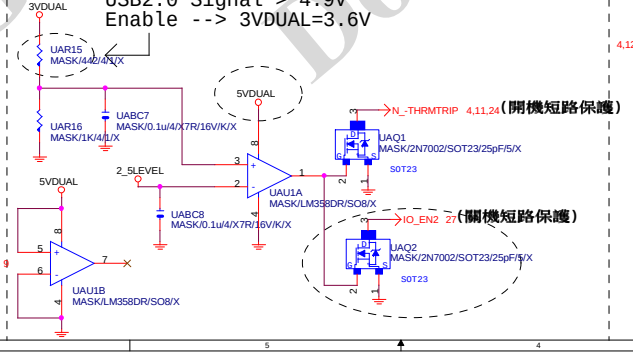


-USBOC_F



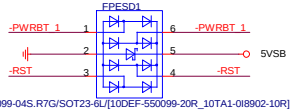
USB2.0 Signal & power short protection

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



(開機短路保護)

(開機短路保護)



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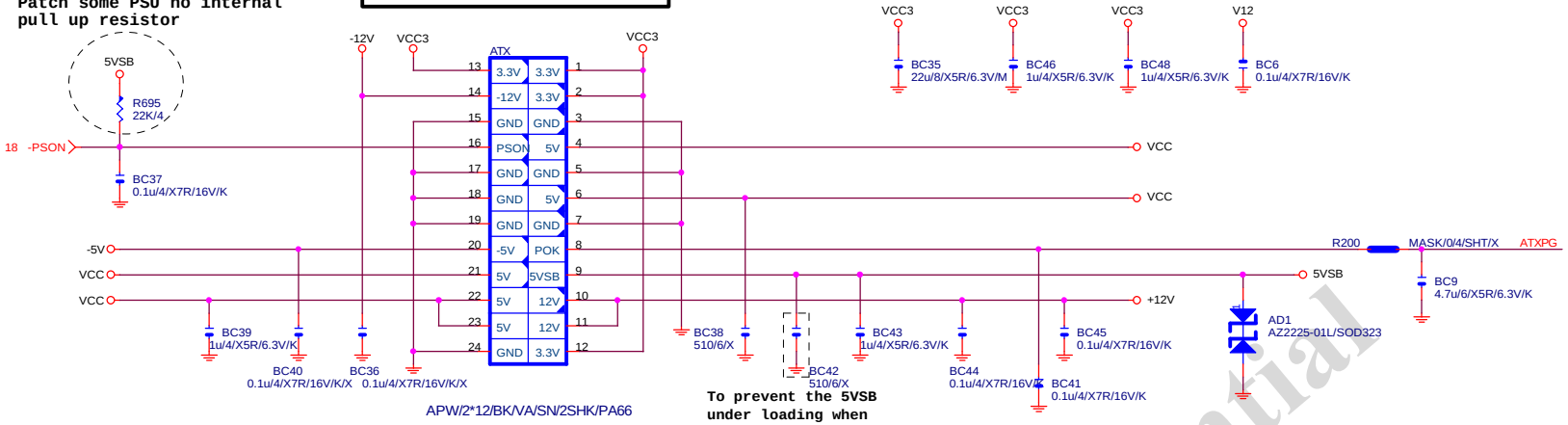
Patch some PSU no internal pull up resistor

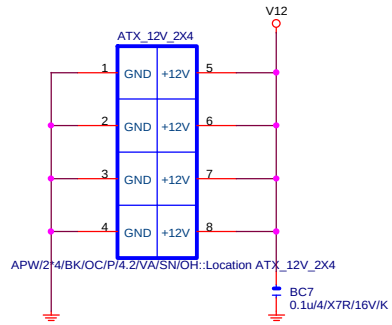
ATXX24 POWER CONNECTOR



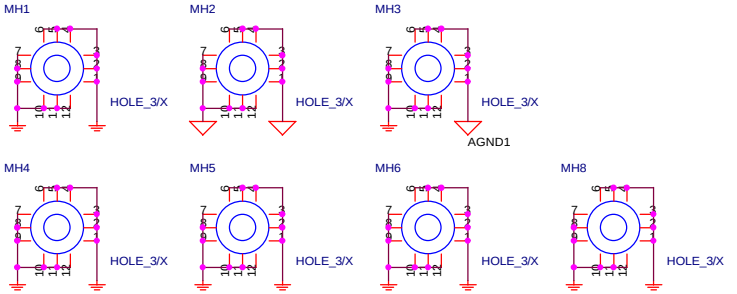
APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

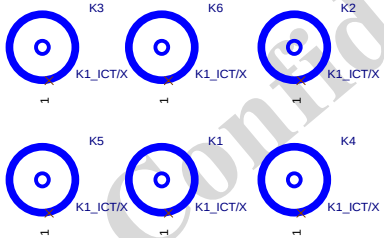
ATXX4 POWER CONNECTOR



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



HOLE_4-RH-1

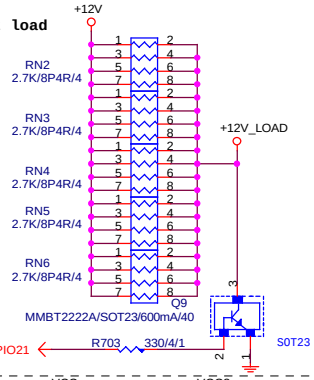


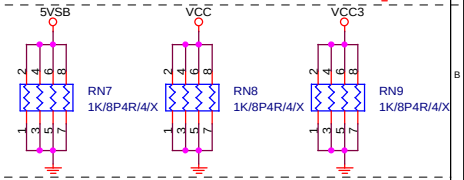
K1-ICT

4MMH

【技術通報R&D技術通報153】

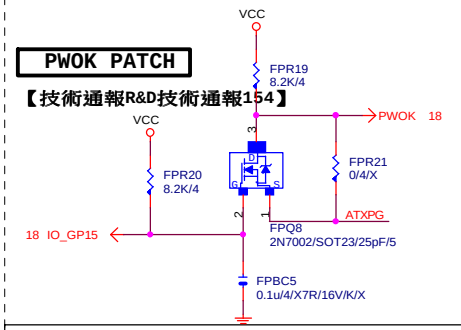
To fix 12V light load abnromal issue





PWOK PATCH

【技術通報R&D技術通報154】



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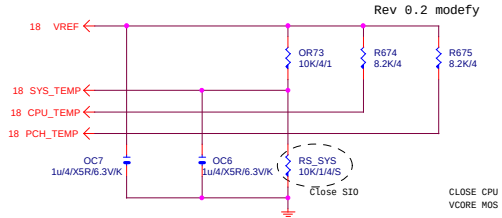
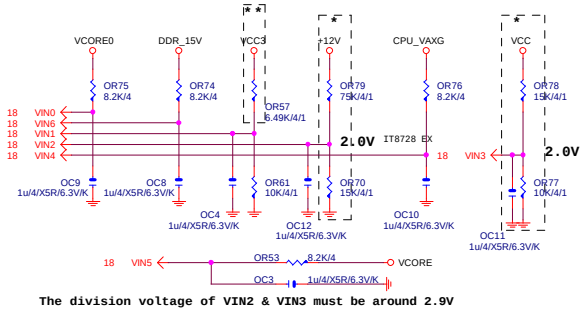
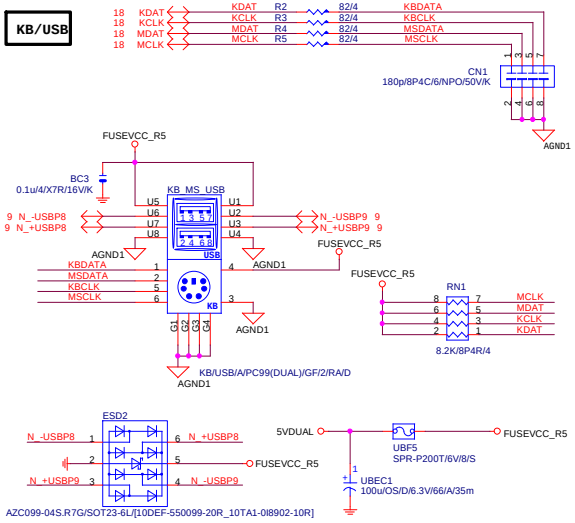
TEMP H/W MONITOR



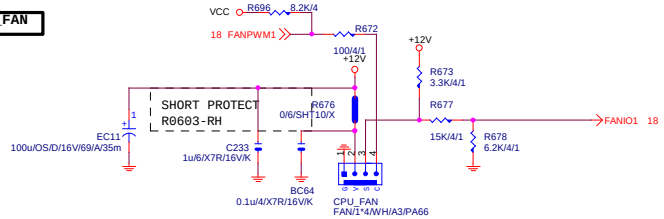


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



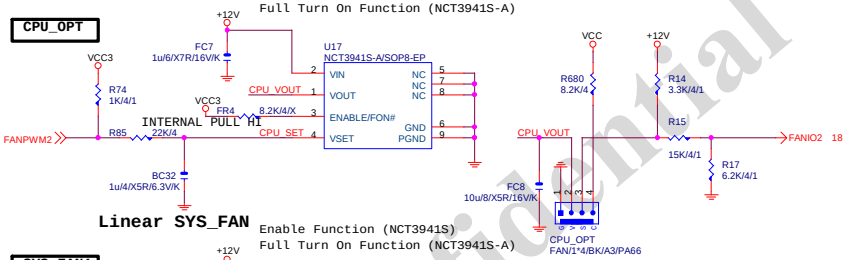
CPU_FAN



Linear SYS_FAN

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

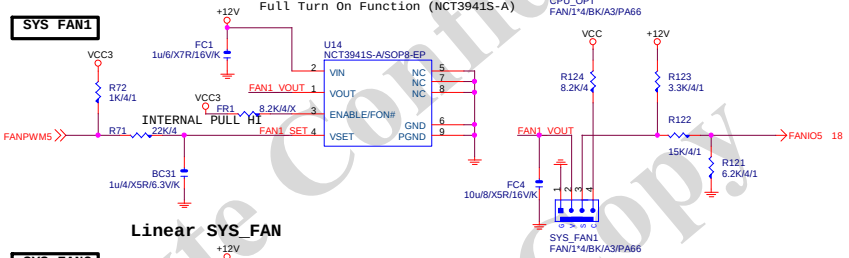
CPU_OPT



Linear SYS_FAN

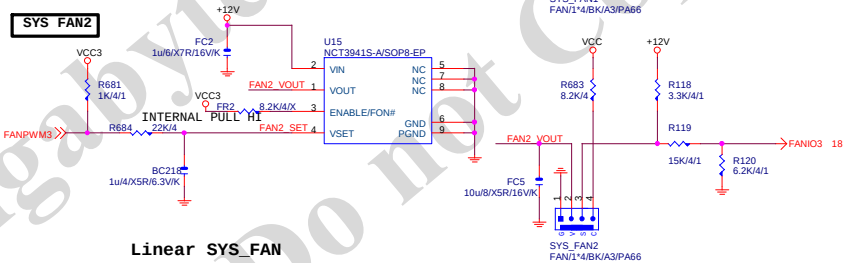
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

SYS FAN1



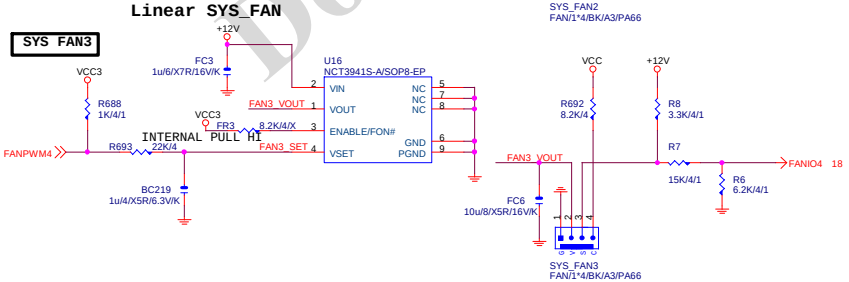
Linear SYS_FAN

SYS FAN2



Linear SYS_FAN

SYS FAN3



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Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z97-D3H	Rev: 1.1
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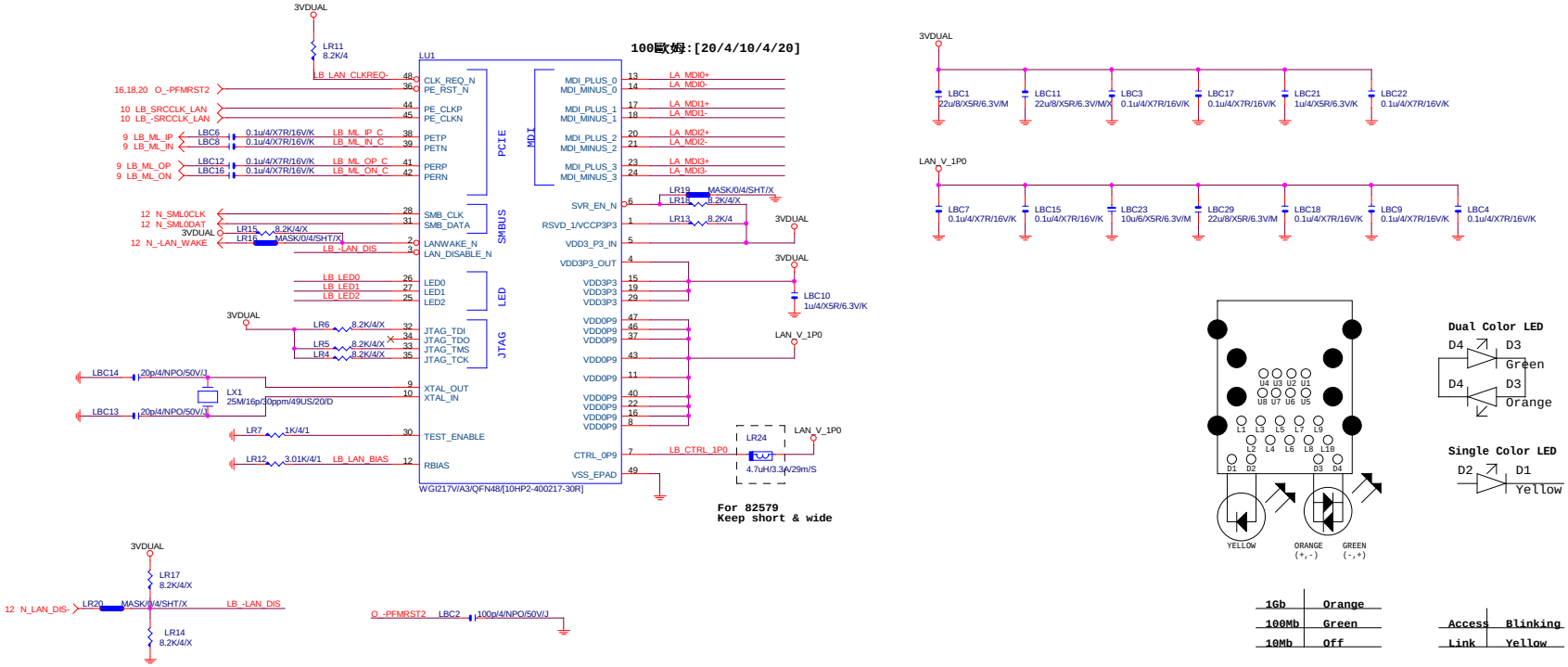
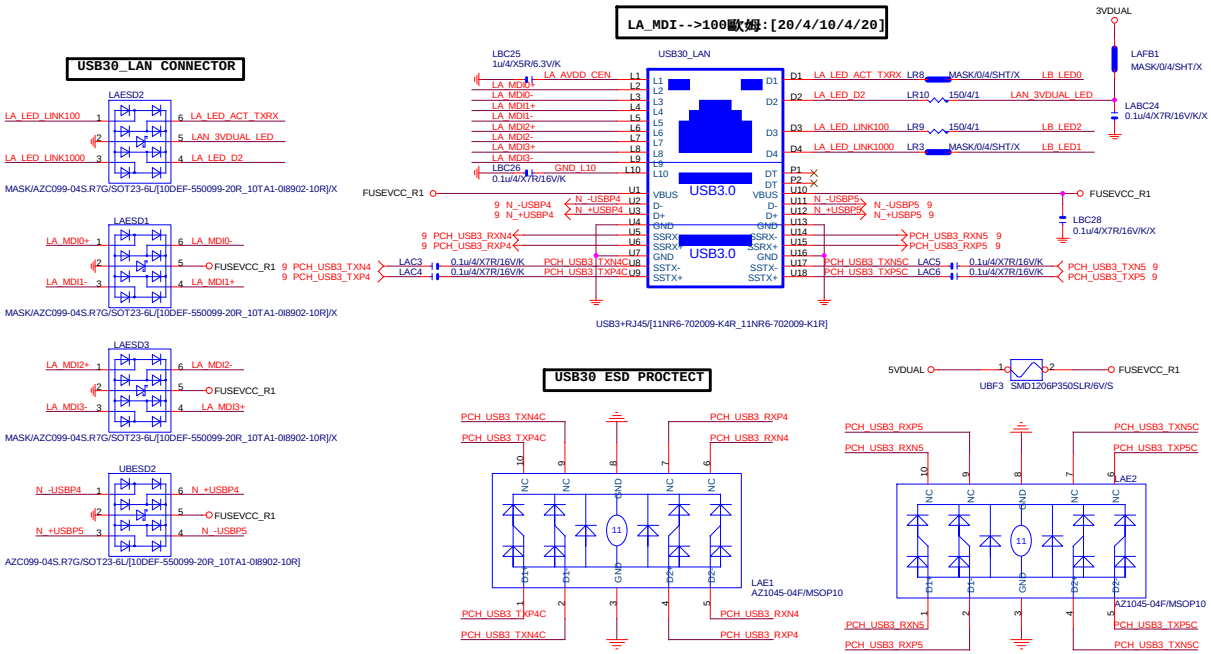
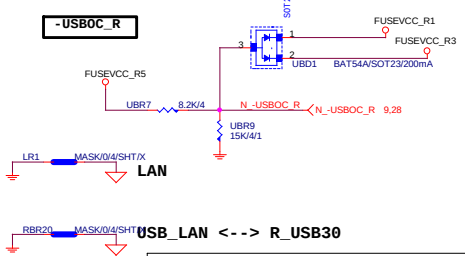


1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow





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Size: Custom | Document Number: GA-Z97-D3H | Rev: 1.1

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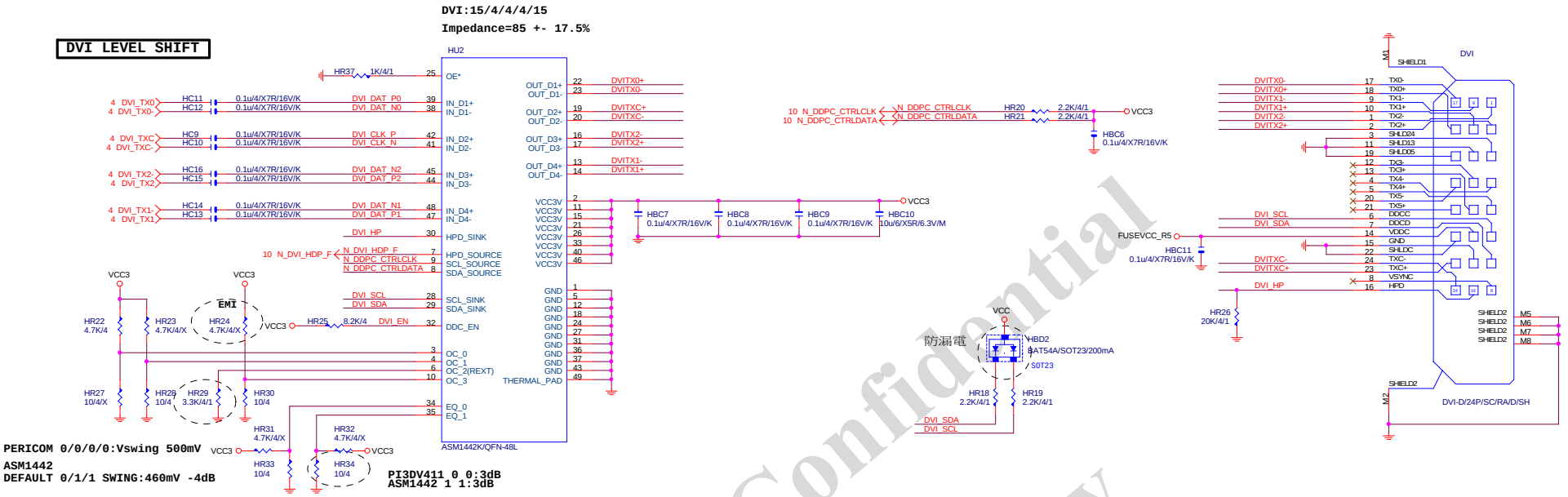

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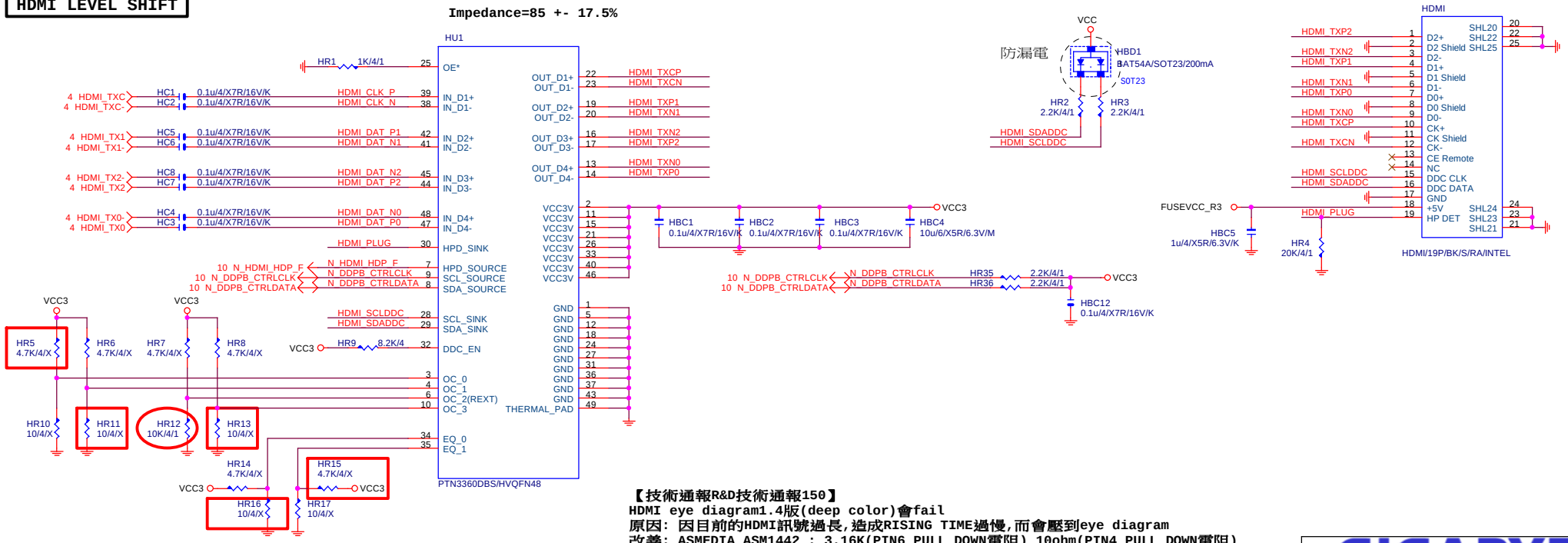
HDMI LEVEL SHIFT

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



【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)

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

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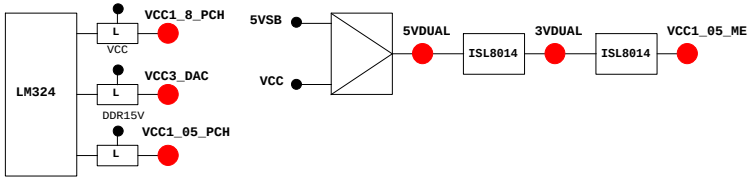
PCH GPIO LIST TABLE

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

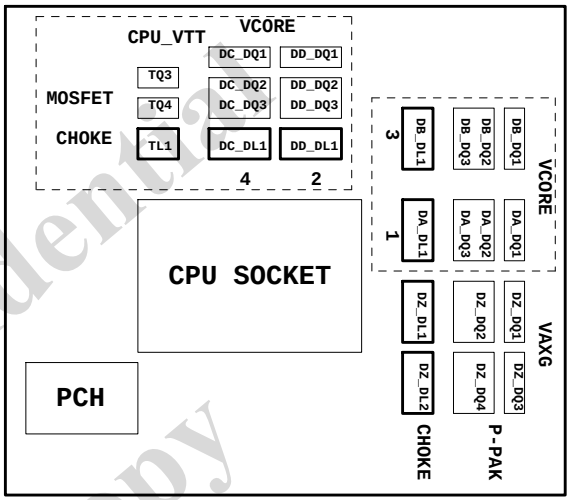
Super I/O ITE8720 GPIO Table

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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