Model Name: GA-Z97X-UD3H

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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
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08	DDR III CHANNEL B
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11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
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15	PCI EXPRESS*8 SLOT
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19	ITE8892E
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21	ALC1150 CODEC
22	REAR AUDIO JACK
23	ITE8620
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26	ISL95820 VCORE Phase 8
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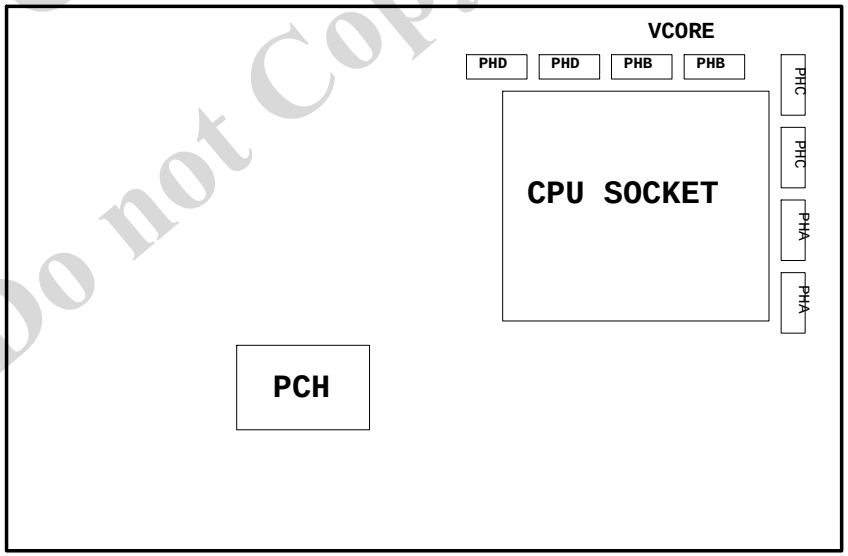
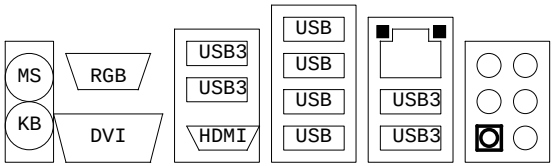
29	DUAL BIOS
30	FP,F_USB,USB PWR,BZ
31	ATX POWER CONNECTOR
32	H/W MONITOR,FAN CTRL
33	DVI
34	HDMI_USB30
35	INTEL LAN I2I7
36	M.2_SATA_EXPRESS
37	TABLE LIST
39	
40	





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Title: Cover Sheet

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Date: Tuesday, April 08, 2014 | Sheet 1 of 37

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GA-Z97X-UD3H

Component value change history

Data	Change Item	Reason
2014/2/26 10A	PCB ：興英 精誠 ,(全成信沒承認) 1.LBC2 100P/4 / GBC28 22P/4 REMOVE FOR Glitch 2. VCORE / Non-Vcore 指定用 VISHAY 3. VGA指定用 ： VGA/BK/SC/RA/D/2/HR/[11NR6-103015-12R]	
2014/3/14 10B	1. AUDIO change to "11NR6-403025-A1R" 2. R_USB change to "11NR6-304016-09R/11NR6-304016-12R"	
2014/3/21 Z97X-UD3H-BK 10A	1. PCH_HS : 12SP2-S05574-11R 2. MOS_HS1 : 12SP2-S07924-41R ; MOS_HS2 : 12SP2-S07924-51R	

Circuit or PCB layout change

DATE	Change Item	Reason

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Title: BOM & PCB MODIFY HISTORY

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BLOCK DIAGRAM

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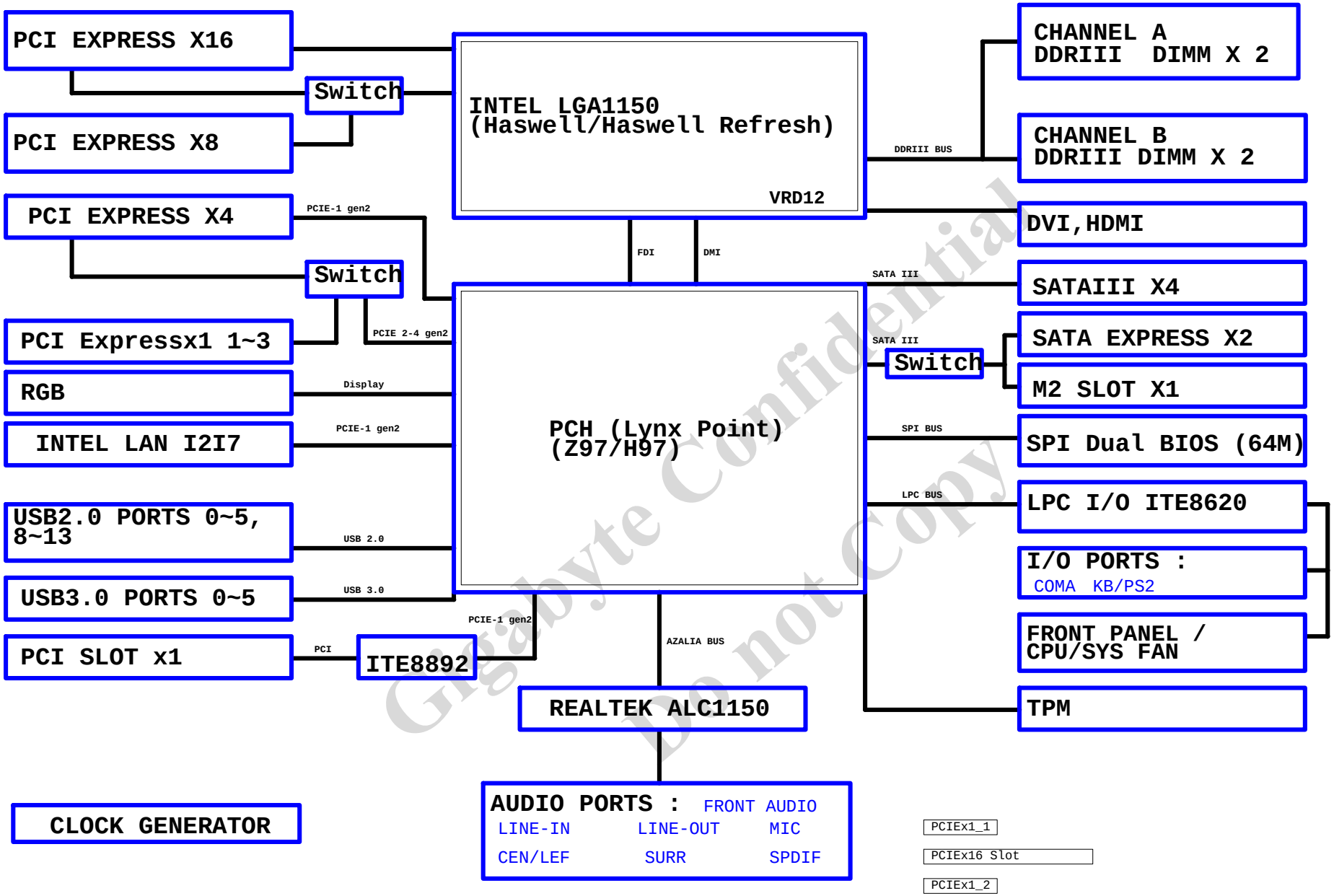

PCIEx1_1

PCIEx16 Slot

PCIEx1_2

PCIEx1_3

PCIEx8

PCI Slot

PCIEx4

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Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: Z97X-UD3H		Rev: 1.0
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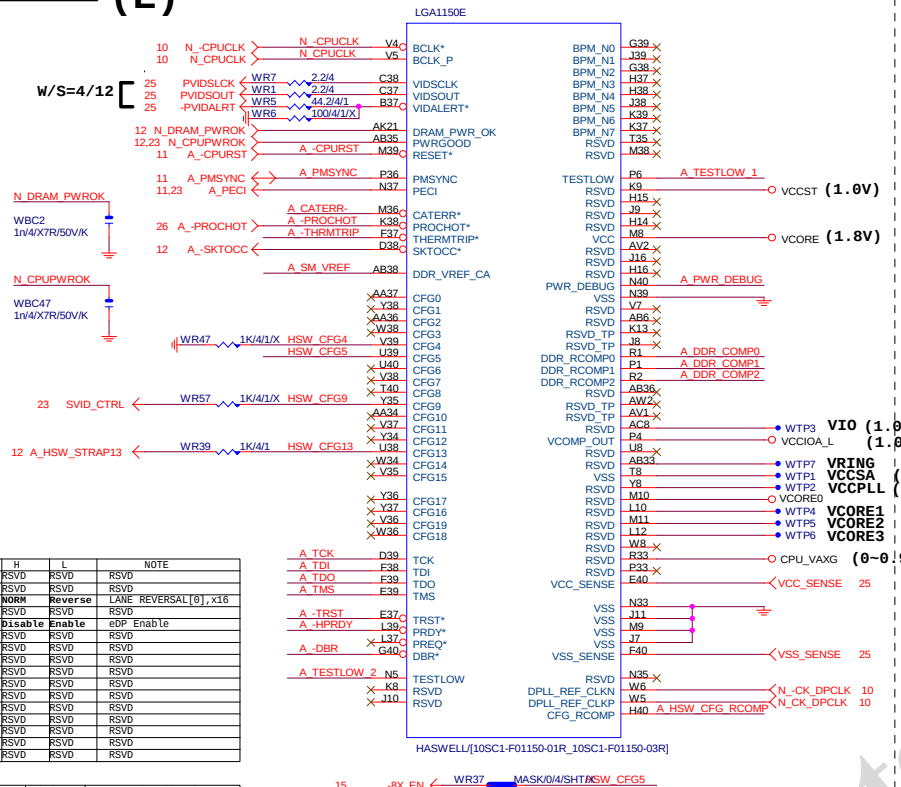
LGA1150 (E)



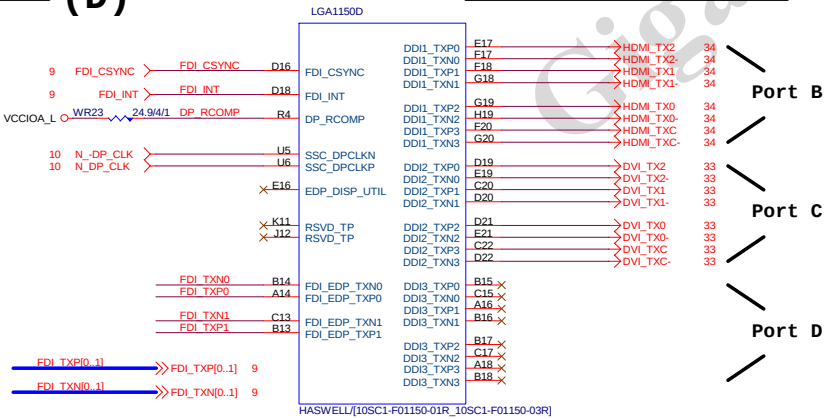
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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



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

DP/HDMI 4/4/4//20 FDI 4/4/4/12
Impedance=85 +- 15%

LGA1155 (C)

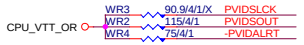
CPU PEG 5/5/5//20 Impedance=80 +- 15%

DMI 4/4/4//15 Impedance=85 +- 15%

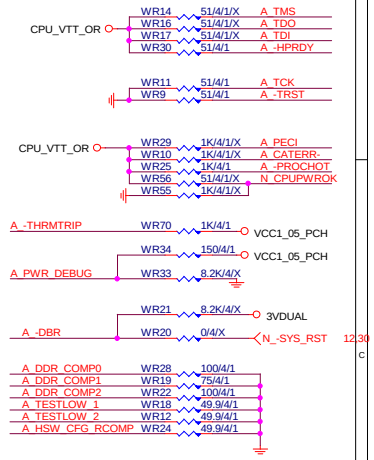
-CPURST

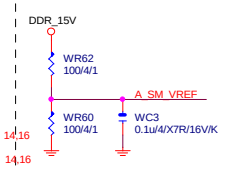
1.1V分壓

CPU SVID

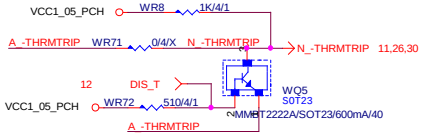


CPU PU/PD





THRMTRIP DISABLE FOR Z87 OVERCLOCK



Gigabyte Technology		
Title: CPU LGA1150-A		
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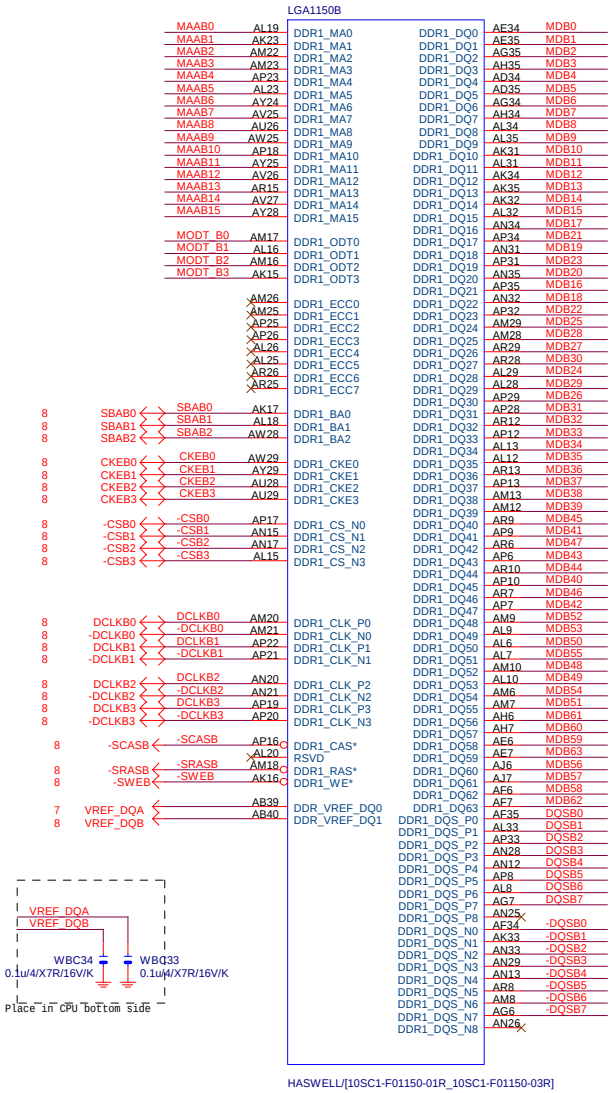
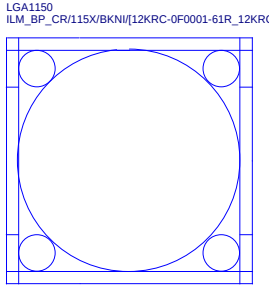
LGA1150 (A)

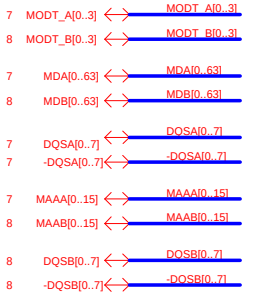
LGA1150 (B)



LGA1150 (CR)



DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
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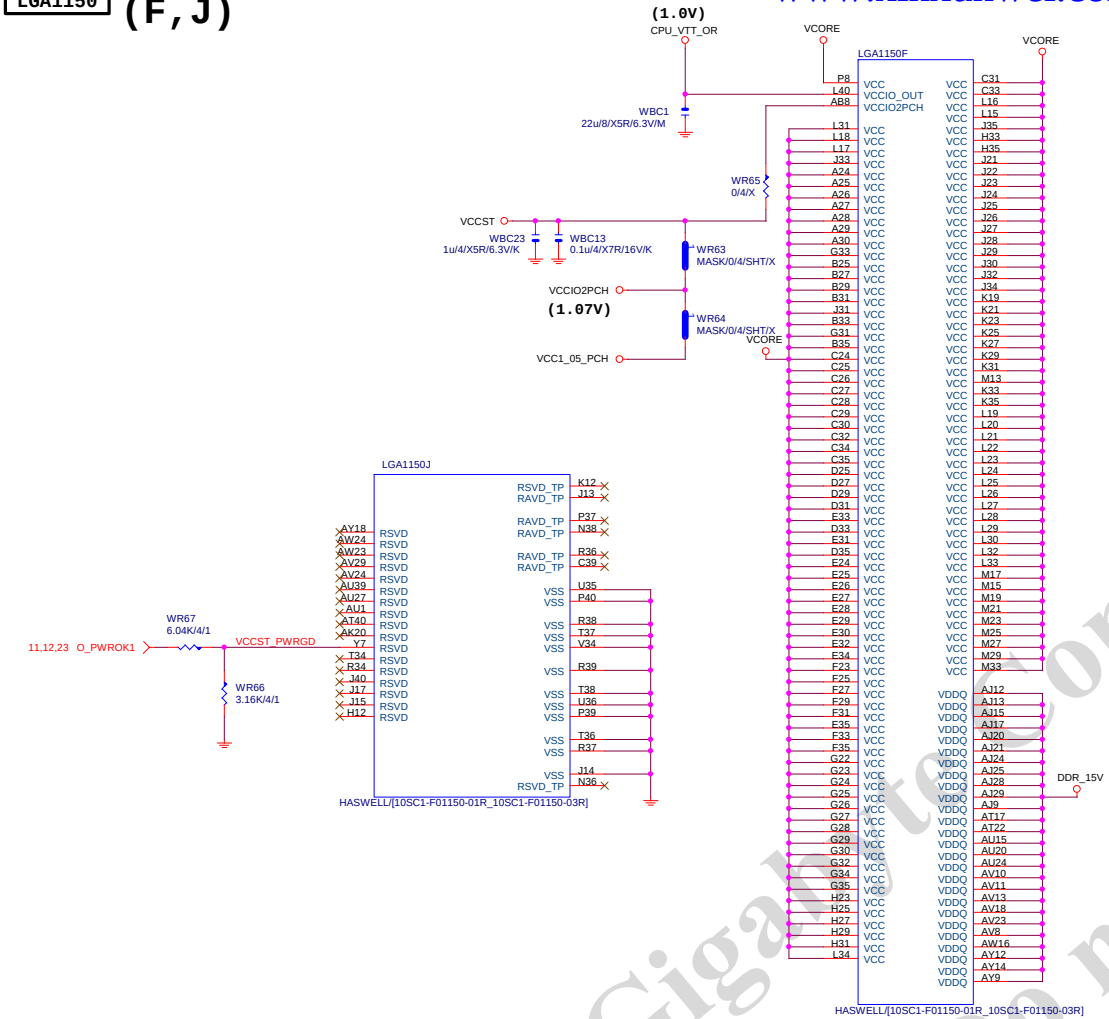
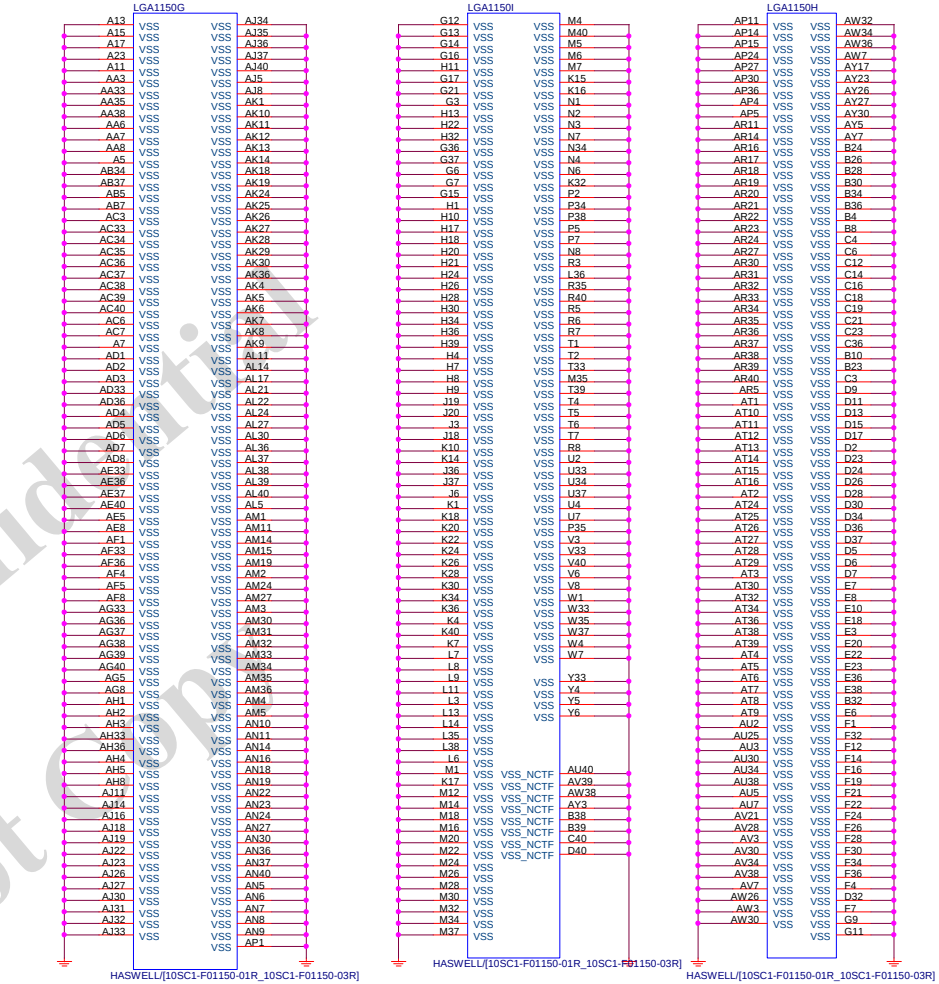
LGA1150 (F,J)



LGA1150 (G,H,I)



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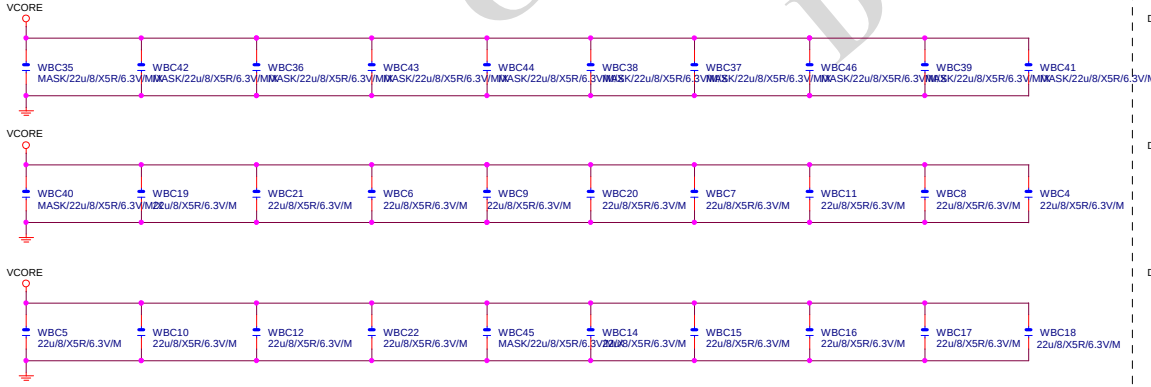
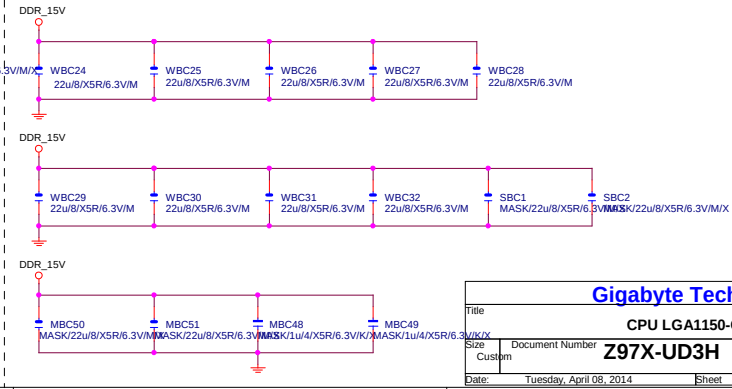
VCore CAP (X30)



DDR CAP (X15)



Gigabyte Technology		
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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

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

DDR_15V

VDDSPD SHORT PROTECT
R0603
VCC3
MF1 SPR-P200T/6V/8/S
VDDSPD

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

8,12,14,15,17,18,20,25,28 N_SMBCLK
8,12,14,15,17,18,20,25,28 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] 5 → A0–A15, A10/AP

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

MDA[0..63] 5

DDR3/240/BK/VA/D

DDR3

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

DDR_15V

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

8,12,14,15,17,18,20,25,28 N_SMBCLK
8,12,14,15,17,18,20,25,28 N_SMBDATA
SCL, SDA, SA1, SA0

SBAA2, SBAA1, SBAA0 → BA2, BA1, BA0
CKEA3, CKEA2 → CKE1, CKE0
-CSA3, -CSA2 → S1*, S0*
-DCLKA3, DCLKA3 → CK1/NU*, CK1/NU
-DCLKA2, DCLKA2 → CK0*, CK0

MAAA[0..15] 5 → A0–A15, A10/AP

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

MDA[0..63] 5

DDR3/240/GR/VA/D

DDR3 VREF

DDR_15V
MR15 1K/4/1
MR14 1K/4/1
VREF_DDRA
MR13 MASK/0/4/SHT/X
M_VREFCA_A 28

DDR_15V
MBC28 1u/4/X5R/6.3V/K
MR4 1K/4/1
MR5 1K/4/1
VREF_DDDDRA
MR1 10/4 VREF_DQA 5
MR3 10/4/X VREF_DQA_ADJ 28

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

DDR_15V
MEC1 560u/FP/D/6.3V/68/C/8m
MEC2 560u/FP/D/6.3V/68/C/8m
MEC3 560u/FP/D/6.3V/68/C/8m
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 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
DIMM2
CHA
DIMM3
DIMM1
CHB

Gigabyte Technology

Title: DDRIII CHANNEL B
Size: Custom | Document Number: Z97X-UD3H | Rev: 1.0
Date: | Sheet 8 of 37

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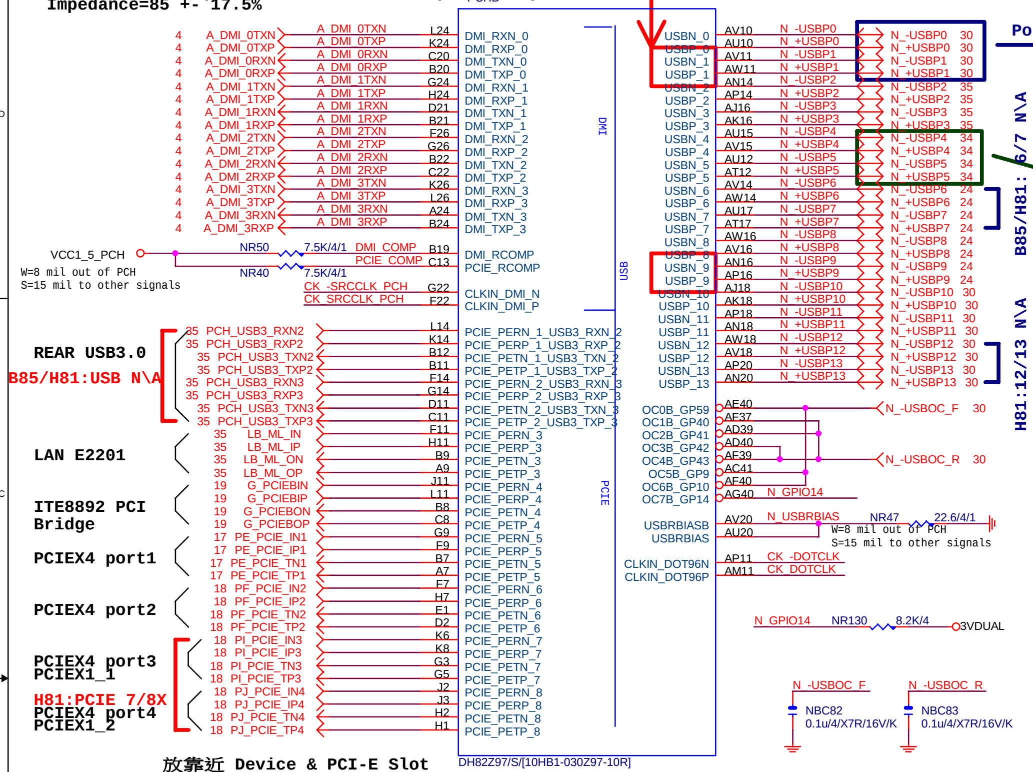
PCH (B)

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

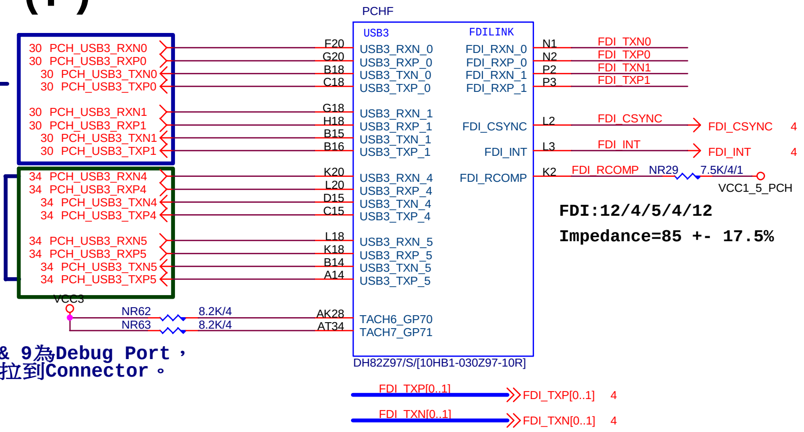
USB Port 1/9一定要接出來,For Debug port test (logo)

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 15%



放靠近 Device & PCI-E Slot

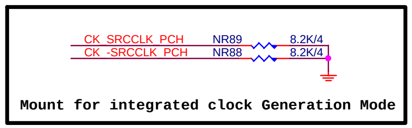
PCH (F)

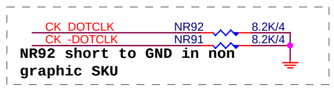


FDI:12/4/5/4/12
Impedance=85 +- 17.5%

Port1 & 9為Debug Port，
一定要拉到Connector。

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

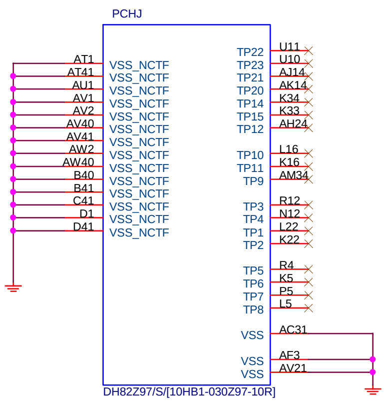




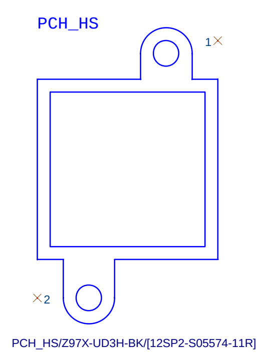
PCH PCIE ,DMI 4/4/4//15 Impedance=85 +- 15%

usb2.0 5/7/5//12
usb3.0 5/7/5//20 Impedance=85 +- 15%

PCH (J)



PCH H/S



USB TABLE

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

USB Usage & OC# Configure			
OC0#	USB0,1	F_USB30	FUSEVCC_F1_F2
OC1#	USB2,3	USB30_LAN	FUSEVCC_R7_R8
OC2#	USB4,5	HDMI & R_USB3	FUSEVCC_R1_R2
OC3#	USB6,7	4 Ports R_USB (Up)	FUSEVCC_R5_R6
OC4#	USB8,9	4 Ports R_USB (Down)	FUSEVCC_R3_R4
OC5#	USB10,11	F_USB2	FUSEVCC_F5_F6
OC6#	USB12,13	F_USB1	FUSEVCC_F3_F4
OC7#	Not Use		

Gigabyte Technology
Title: PCH FDI,DMI,USB ,PCIE
Size: Custom Document Number: Z97X-UD3H Rev: 1.0
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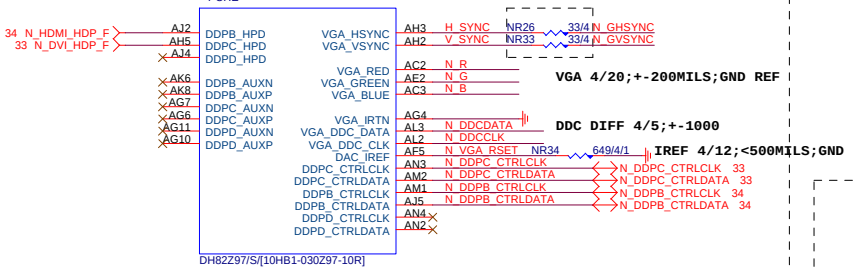
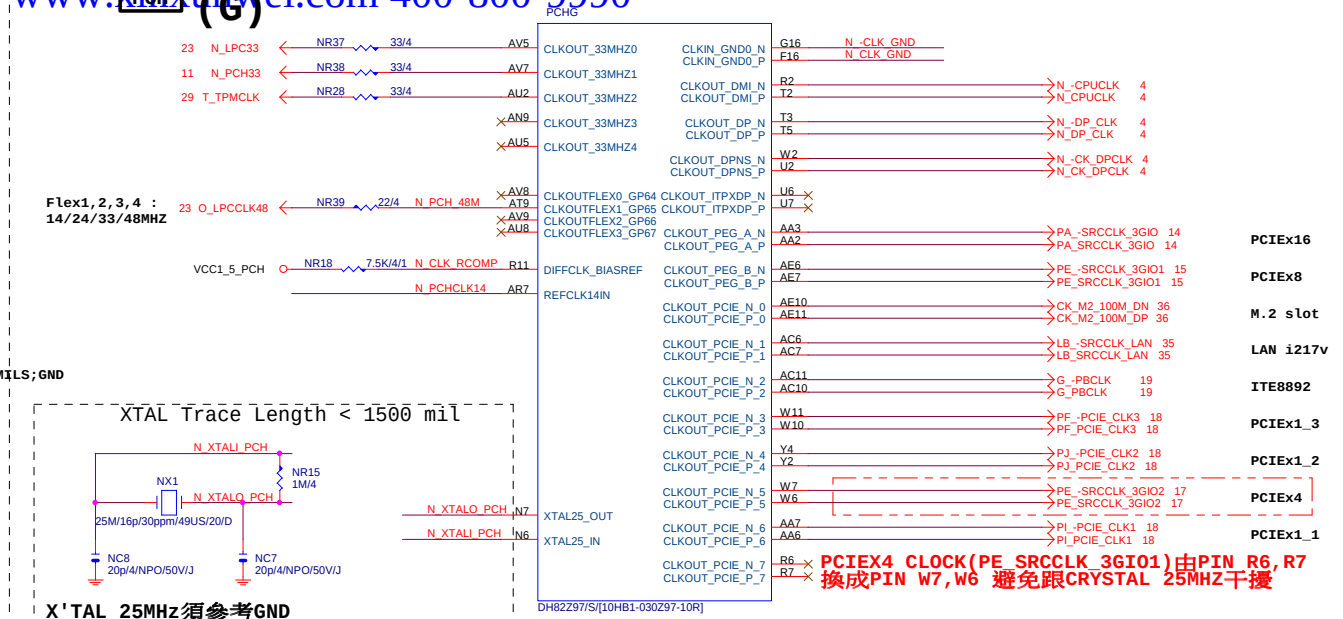
PCH (E)



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

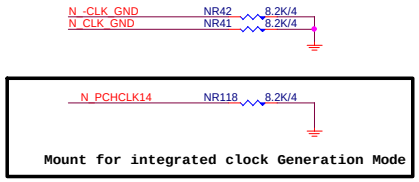
PCH (G)



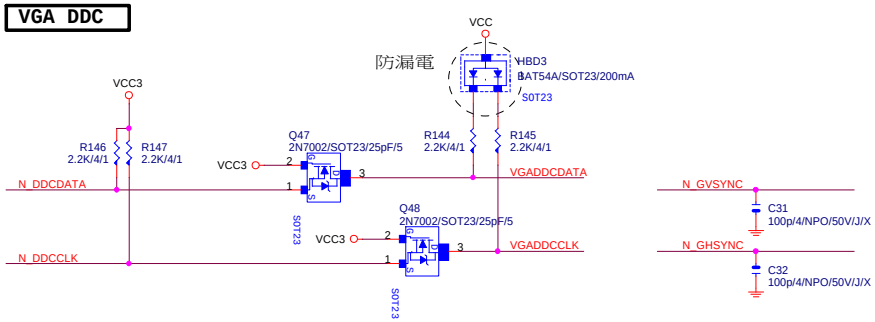
M2 Clock需接Clock#0

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

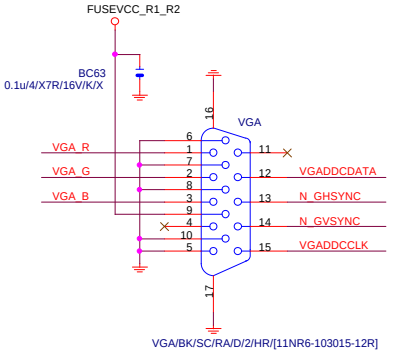
PCH CLK PD



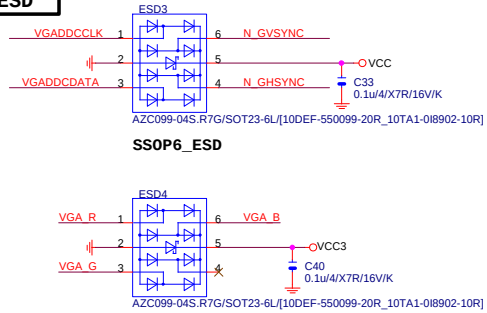
VGA DDC



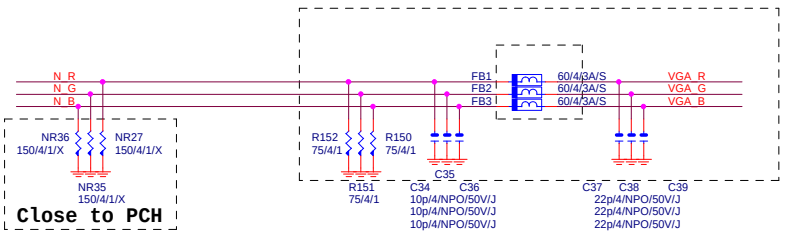
VGA CONNECTOR



VGA ESD



VGA DDC



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%

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

PCHC

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

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 → N_SATA2RXN 36
SATA_RXP_2 B31 N_SATA2RXP → N_SATA2RXP 36
SATA_TXN_2 B35 N_SATA2TXN → N_SATA2TXN 36
SATA_TXP_2 D35 N_SATA2TXP → N_SATA2TXP 36
SATA_RXN_3 B32 N_SATA3RXN → N_SATA3RXN 36
SATA_RXP_3 C32 N_SATA3RXP → N_SATA3RXP 36
SATA_TXN_3 G33 N_SATA3TXN → N_SATA3TXN 36
SATA_TXP_3 F33 N_SATA3TXP → N_SATA3TXP 36

H81 6G, B85 6G

SATA_RXN_4_PCIE_PERN_1 A26 N_SATA4RXN → N_SATA4RXN 36
SATA_RXP_4_PCIE_PERP_1 B26 N_SATA4RXP → N_SATA4RXP 36
SATA_TXN_4_PCIE_PETN_1 L28 N_SATA4TXN → N_SATA4TXN 36
SATA_TXP_4_PCIE_PETP_1 K28 N_SATA4TXP → N_SATA4TXP 36
SATA_RXN_5_PCIE_PERN_2 C27 N_SATA5RXN → N_SATA5RXN 36
SATA_RXP_5_PCIE_PERP_2 B27 N_SATA5RXP → N_SATA5RXP 36
SATA_TXN_5_PCIE_PETN_2 G28 N_SATA5TXN → N_SATA5TXN 36
SATA_TXP_5_PCIE_PETP_2 F28 N_SATA5TXP → N_SATA5TXP 36

H81 X, B85/H81 3G

CLKIN_SATA_N H35 CK_-SRCCLK_SATA
CLKIN_SATA_P H36 CK_SRCCLK_SATA

SATALEDB J39 → N_-SATALED 30
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 31
SATA1GP_GP19 J40 N_GPIO19
SATA2GP_GP36 H40 N_GPIO36
SATA3GP_GP37 N41 N_GPIO37
SATA4GP_GP16 M39 N_GPIO16 → N_GPIO16 36
SATA5GP_GP49 N40 N_GPIO49 → N_GPIO49 36

EDP_BKLTCTL AP2
EDP_BKLTEN AT2
EDP_VDDEN AP1

RSVD N30 N_A20GATE → N_A20GATE 23
RCINB K36 N_-KBRST → N_-KBRST 23
SERIRQ G39 N_SERIRQ → N_SERIRQ 23,29
THRMTRIPB C40 N_-THRMTRIP → N_-THRMTRIP
PECI G40 SB_PECI — NR85 0/4/X — A_PECI → A_PECI
PM_SYNCH F40 → A_PMSYNC
PLTRST_PROCB F41 → A_-CPURST

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

PCH (A)

PCHA

3VDUAL_PCH — NR124 8.2K/4/X — N_-P_PME AA31
N_PCH33 AM22
PMEB, CLKIN_33MHZLOOPBACK
PLTRSTB AA37 → N_-PFMRS
GP35/NMIB
TP16 A2, TP17 A3, TP18 B2, TP19 B1, TD_IREF C3
NR30 8.2K/4 TD_IREF
N_-PIRQA AU29, N_-PIRQB AU27, N_-PIRQC AW28, N_-PIRQD AV27
PIRQAB, PIRQBB, PIRQCB, PIRQDB
N_-PIRQE AR30, N_-PIRQF AV29, N_-PIRQG AV28, N_GPIO5 AT27
GPIO2, GPIO3, GPIO4, GPIO5
M40 N_GPIO35, AH26 N_GPIO50, AU31 N_GPIO51, AJ26 N_GPIO52, AV31 N_GPIO53, AW33 N_GPIO54, R30 N_GPIO55

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

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

ME PWROK

VCC3_ME — NR186 8.2K/4 — N_ME_PWROK
ND2 BAT54A/SOT23/200mA
12,27 N_-SLP_A — NR187 MASK/0/4/SHORT — VCC1_05_ME
3VDUAL — NR188 22K/4 — NQ15 S0T23 MMBT2222A/SOT23/600mA/40
NC49 0.01u/4/X7R/25V/K
NQ16 MMBT2222A/SOT23/600mA/40 S0T23
4,26,30 VCC3_ME — NR189 8.2K/4 — NR190 8.2K/4/X — NC50 1u/4/X5R/6.3V/K
NR119 1K/4/1/X → VCC3
3VDUAL
TLS Setting enable for SBA
NR146 1K/4/1/X N_GPIO37 NR110 1K/4/1/X

N_GPIO37 For H97/H87/B85

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_GPIO5, 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 NR160 4.7K/4/1/X
N_GPIO55:A16 SWAP OVERRIDE — N_GPIO53 NR53 1K/4/1/X
N_GPIO53:DMI AC COUPLING — N_GPIO51 NR55 1K/4/1/X
N_GPIO19 NR113 1K/4/1/X
N_GPIO17 NR61 8.2K/4/X

N_GPIO22:PCH CONFIG — NR167 1K/4/1/X N_A20GATE, N_GPIO22, 12 N_-PCI_STOP, N_PCI_STOP, NR157 1K/4/1/X N_GPIO39
NRN11 8.2K/8P4R/4
N_GPIO39:GFX MODE — N_SERIRQ, N_PCIE_4_SW, N_GPIO19
NRN12 8.2K/8P4R/4
N_GPIO35, N_GPIO16, N_GPIO49
NRN13 8.2K/8P4R/4
N_GPIO49:PCIE/MSATA MUX SELECT — NR80 1K/4/1/X

soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

N_GPIO21 NR252 1K/4/1
N_-KBRST NR161 1K/4/1
N_GPIO36:DMI RX TERMINATION — NR84 1K/4/1/X N_GPIO36 NR148 8.2K/4/X
N_GPIO69:SVID 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
17 -PCIEX1_PR12

SATA CONNECTOR

SATA3_0_1

N_SATA1TXP 0.01u/4/X7R/25V/K NC42 → N_SATA1TXPC 9 TX1+ → N_SATA0TXPC NC44 0.01u/4/X7R/25V/K N_SATA0TXP
N_SATA1TXN 0.01u/4/X7R/25V/K NC41 → N_SATA1TXNC 10 TX1- → N_SATA0TXNC NC43 0.01u/4/X7R/25V/K N_SATA0TXN
N_SATA1RXN 0.01u/4/X7R/25V/K NC40 → N_SATA1RXNC 12 RX1- → N_SATA0RXNC NC38 0.01u/4/X7R/25V/K N_SATA0RXN
N_SATA1RXP 0.01u/4/X7R/25V/K NC39 → N_SATA1RXPC 13 RX1+ → N_SATA0RXPC NC37 0.01u/4/X7R/25V/K N_SATA0RXP
GND 8, 11, 14 / GND 1, 4, 7

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

GPIO38 Ctrl

MFG Mode

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

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

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PCH (D)

PCHD

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

ACZ_SDOUT

C_ACZ_SDOUT : HI --> ME Enable
Lo --> ME Disable
HI:disable ME and override SPI Flash Access Permissions

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 必须放在BAT外

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Title	PCH GPIO , CTRL , AUDIO
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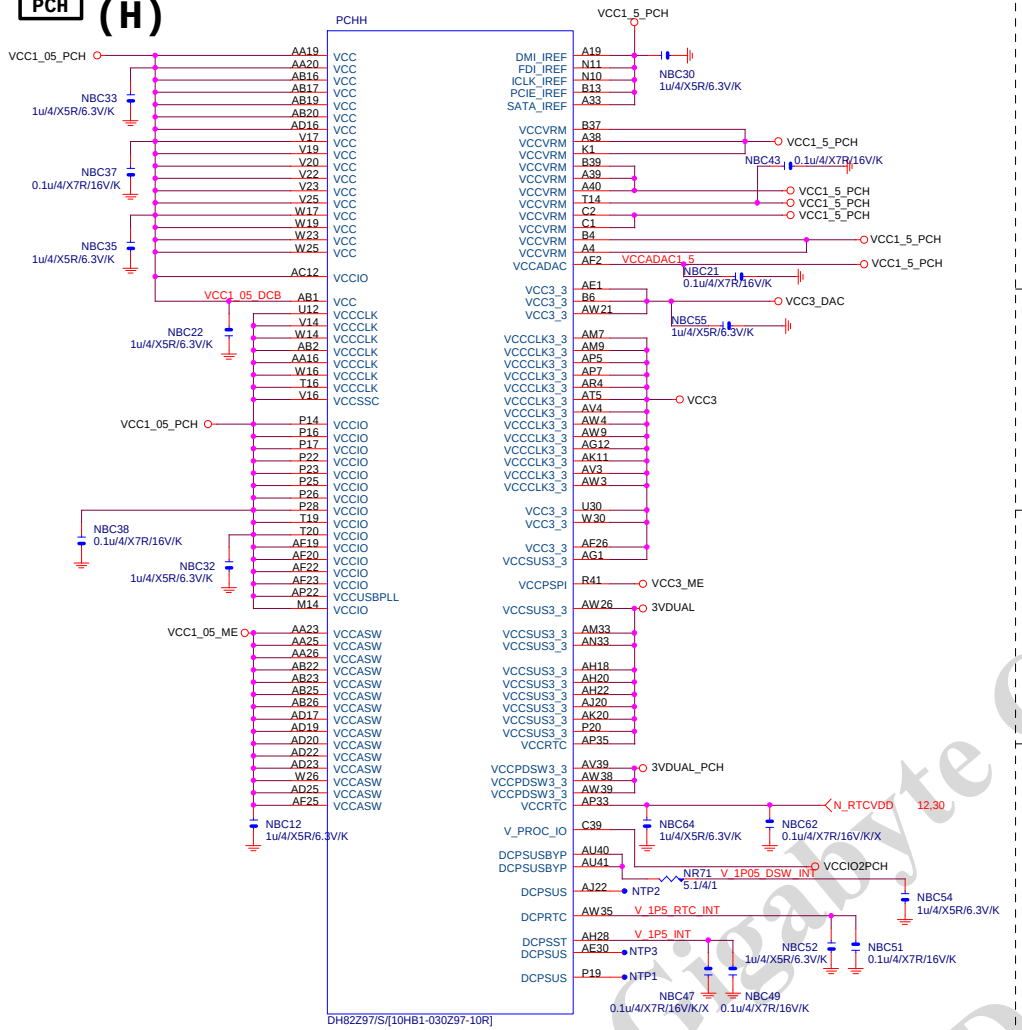
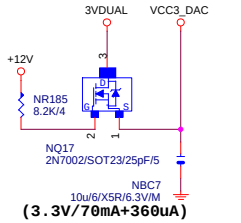
PCH (H)



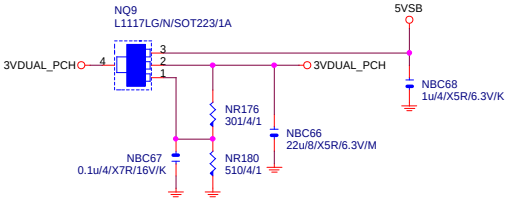
VCC3_DAC

CLOSE北橋(注意震盪水波紋)

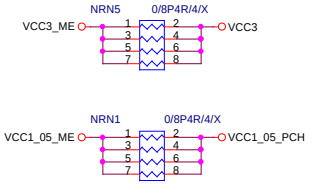


(3.3V/70mA+360uA)

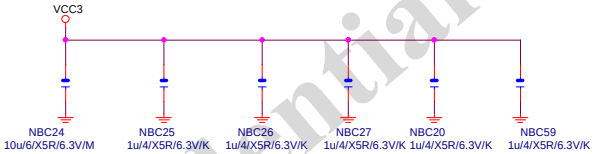
3VDUAL_PCH



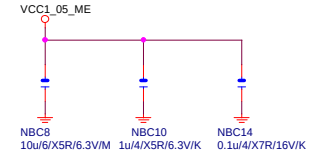
SHT PWR



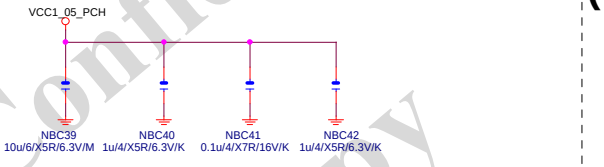
(3.3V)(X6)



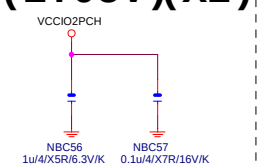
(1.05V)(X5)



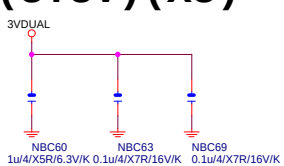
(1.05V)(X6)



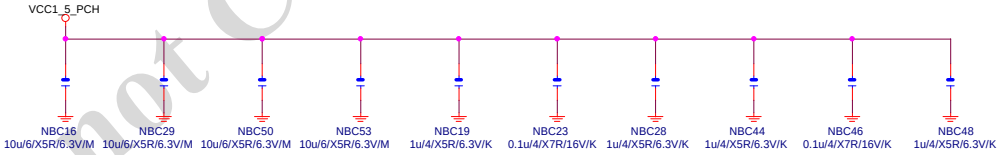
(1.05V)(X2)



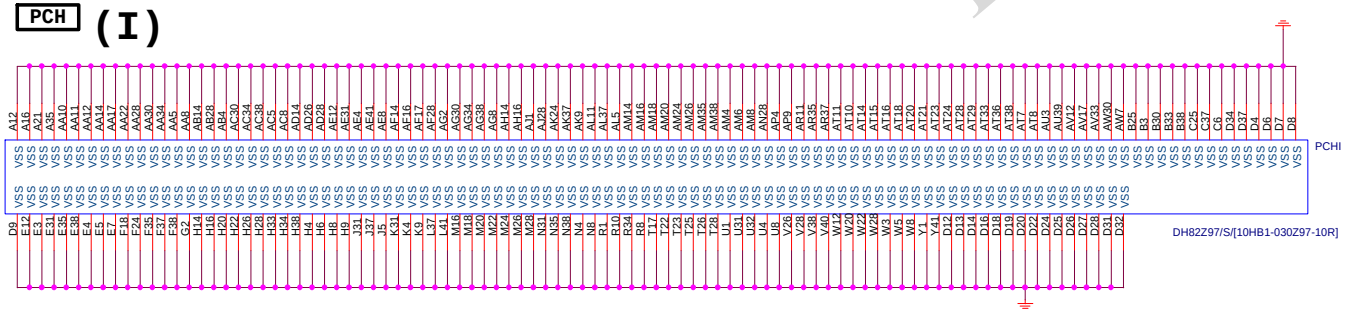
(3.3V)(X3)



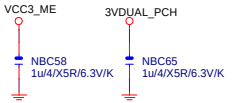
(1.5V) (X10)

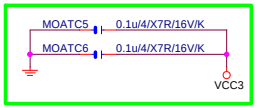


PCH (I)



CAP





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Title: PCH PWR ,GND		
Size: Custom	Document Number: Z97X-UD3H	Rev: 1.0
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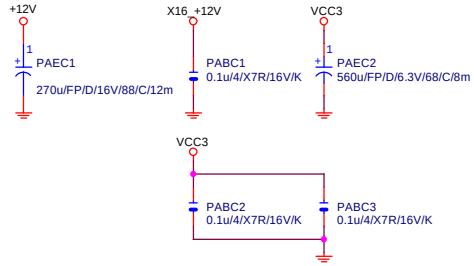
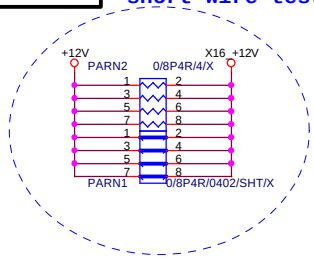
PCIEX16 CAP



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	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_SW_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN15_C

PCI-E REV:1.1--> 2.5GHZ

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

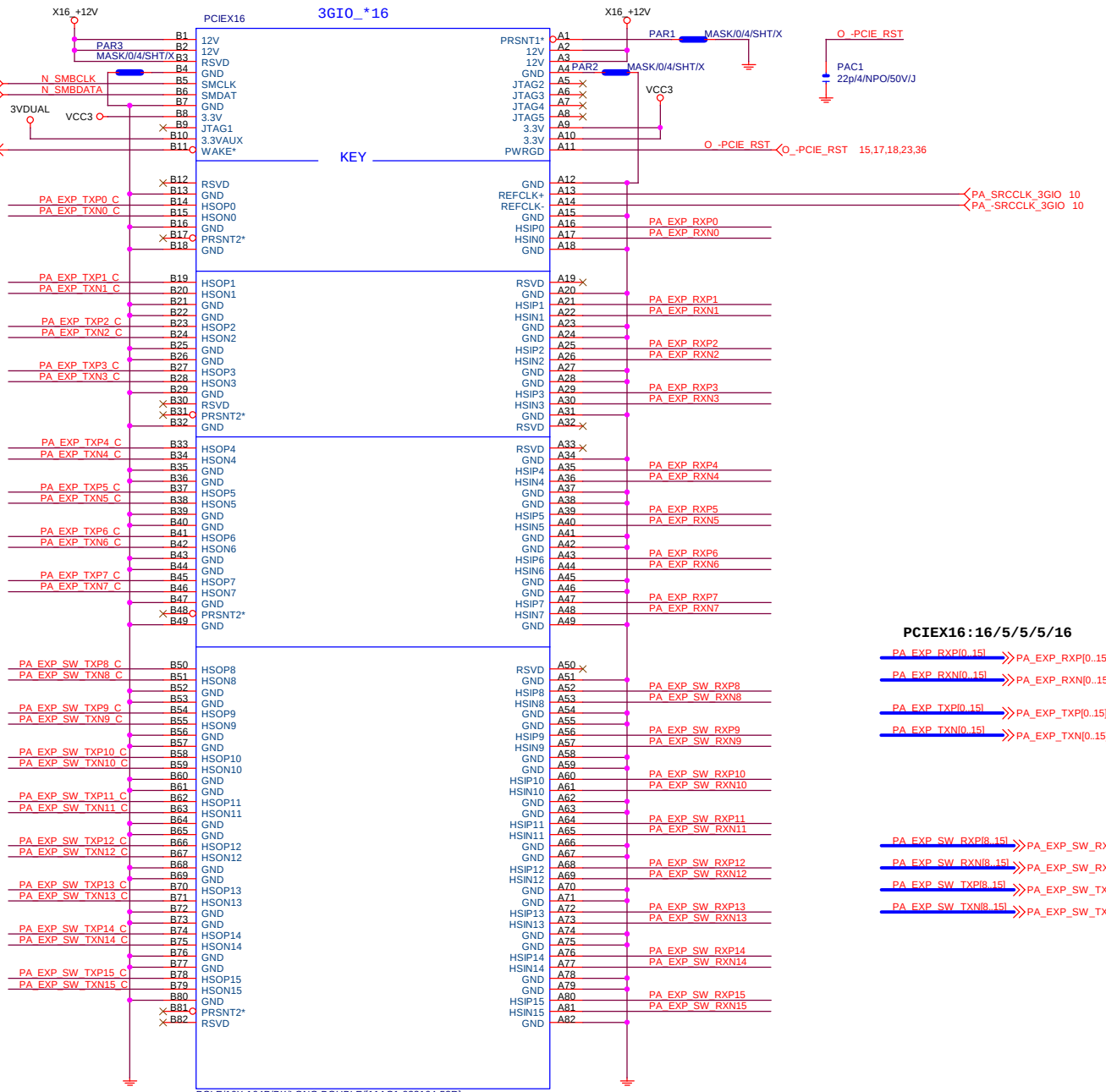
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

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

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT



PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 4,16
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 4,16
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 4,16
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 4,16
PA_EXP_SW_RXP[8..15] → PA_EXP_SW_RXP[8..15] 16
PA_EXP_SW_RXN[8..15] → PA_EXP_SW_RXN[8..15] 16
PA_EXP_SW_TXP[8..15] → PA_EXP_SW_TXP[8..15] 16
PA_EXP_SW_TXN[8..15] → PA_EXP_SW_TXN[8..15] 16

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Title	PCI EXPRESS * 16	
Size: Custom	Document Number: Z97X-UD3H	Rev: 1.0
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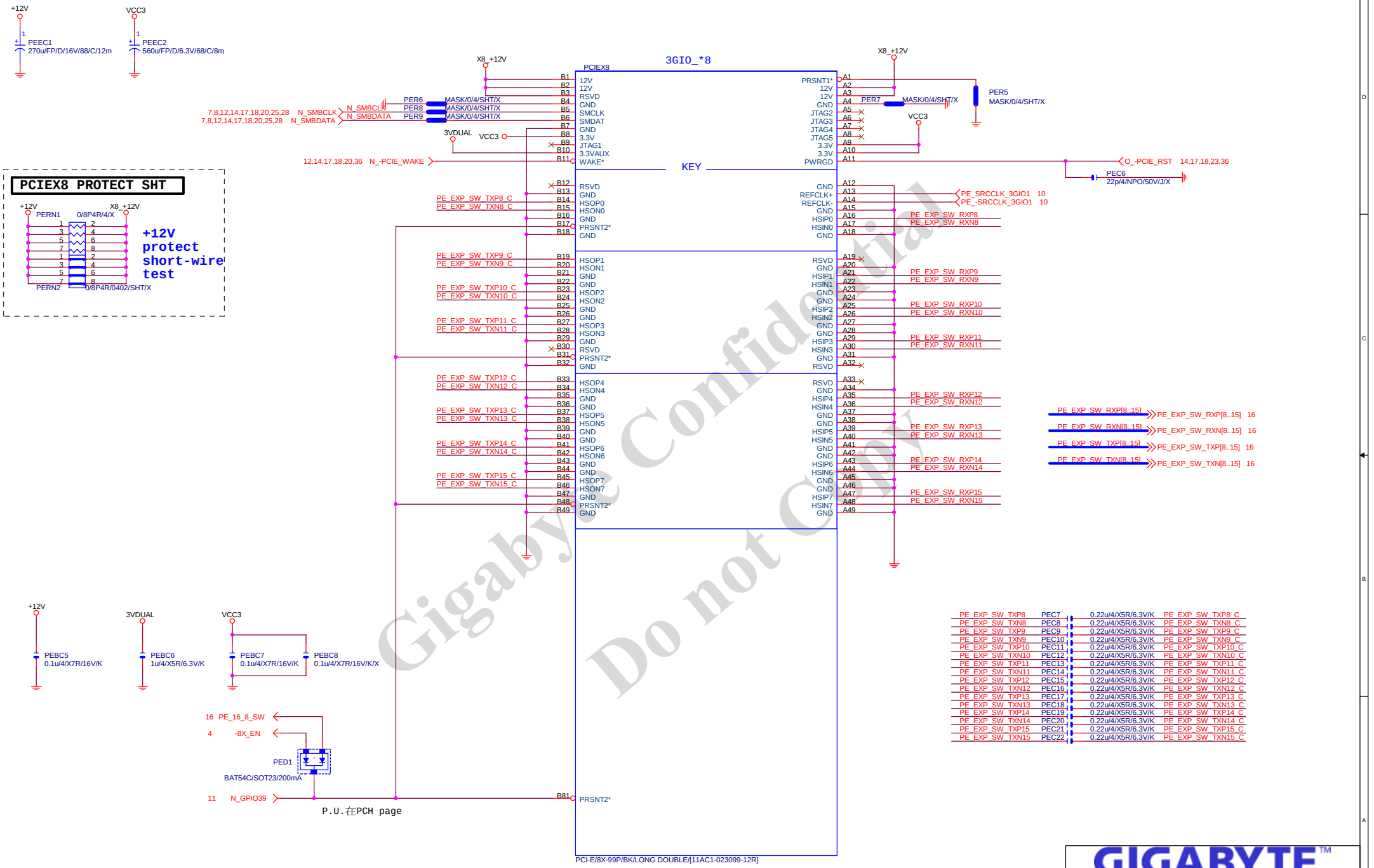

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PE_EXP_SW_TXP8	PEC7	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8	PEC8	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN8_C
PE_EXP_SW_TXP9	PEC9	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9	PEC10	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN9_C
PE_EXP_SW_TXP10	PEC11	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10	PEC12	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN10_C
PE_EXP_SW_TXP11	PEC13	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP11_C
PE_EXP_SW_TXN11	PEC14	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN11_C
PE_EXP_SW_TXP12	PEC15	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP12_C
PE_EXP_SW_TXN12	PEC16	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN12_C
PE_EXP_SW_TXP13	PEC17	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP13_C
PE_EXP_SW_TXN13	PEC18	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN13_C
PE_EXP_SW_TXP14	PEC19	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP14_C
PE_EXP_SW_TXN14	PEC20	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN14_C
PE_EXP_SW_TXP15	PEC21	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP15_C
PE_EXP_SW_TXN15	PEC22	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN15_C

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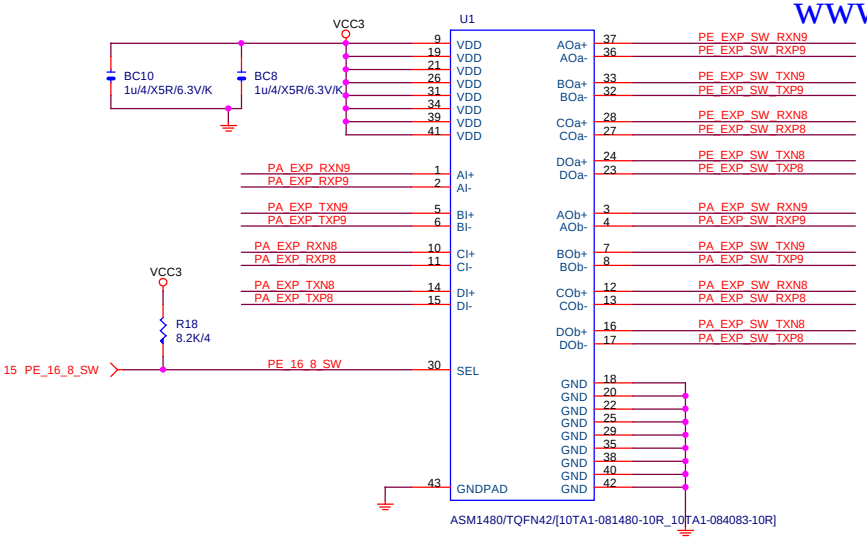
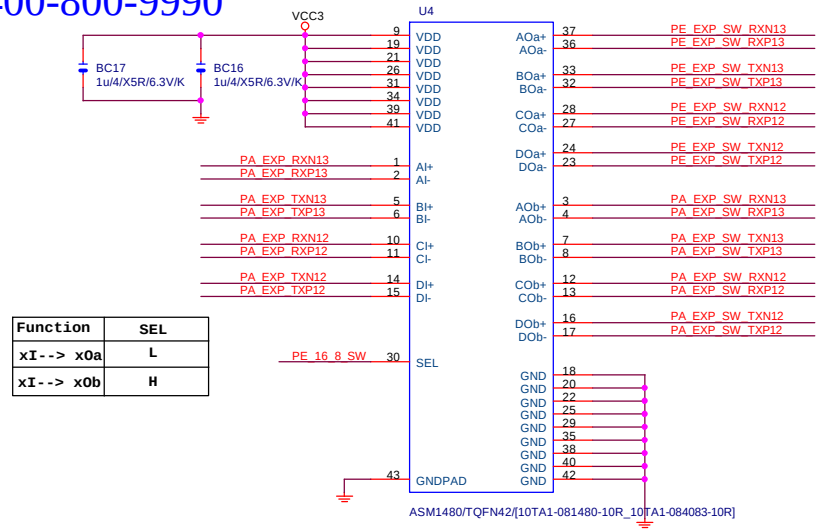
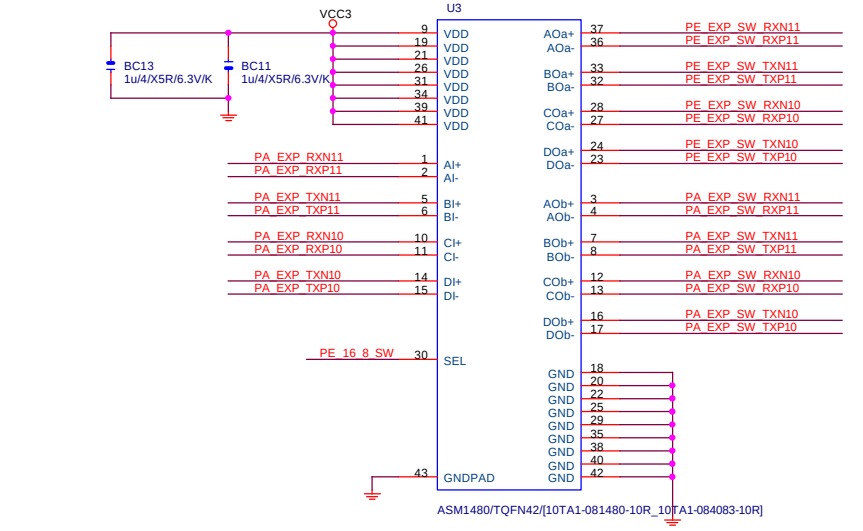
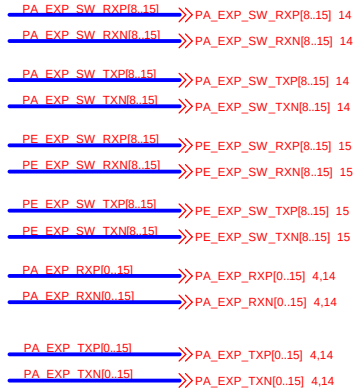
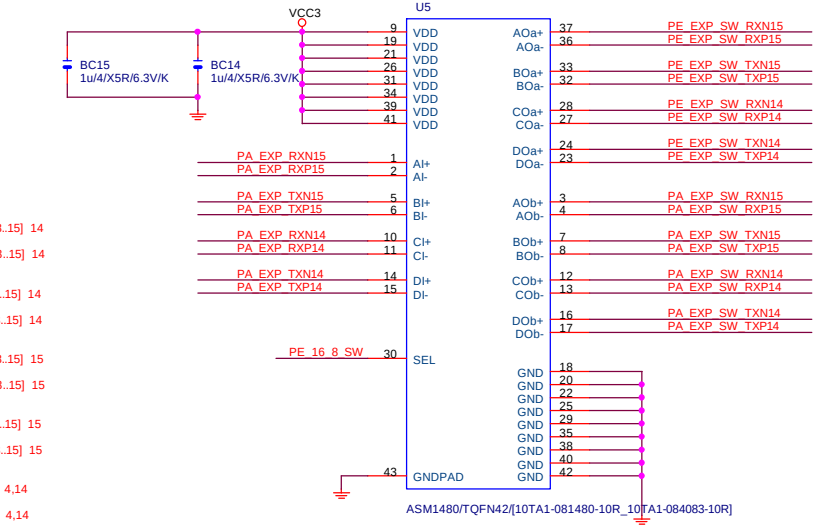




Function	SEL
xI--> xOa	L
xI--> xOb	H







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Title: PCI EXPRESS X16 SWITCH		
Size: Custom	Document Number: Z97X-UD3H	Rev: 1.0
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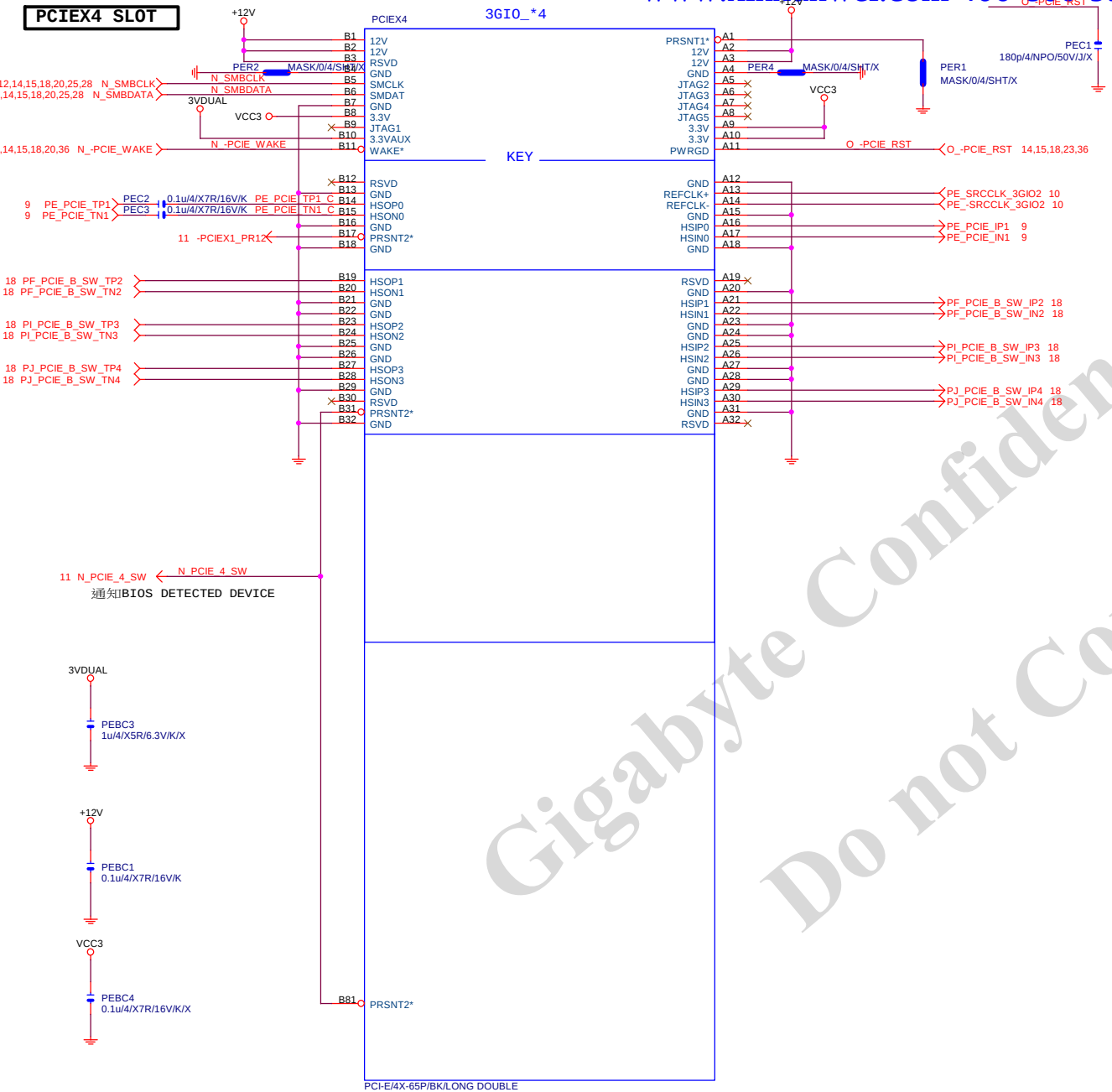

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	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO27)
P EX1,PCIEX4 --> X1 (Default)	H	H
PCIEX4 No devices PCIEX4 -> X1	H	H
PCIEX4 Have devices PCIEX4 -> X4 PCIEX1_1/2 --> N/A	L	L

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Title	PCIE_X1 1,2	
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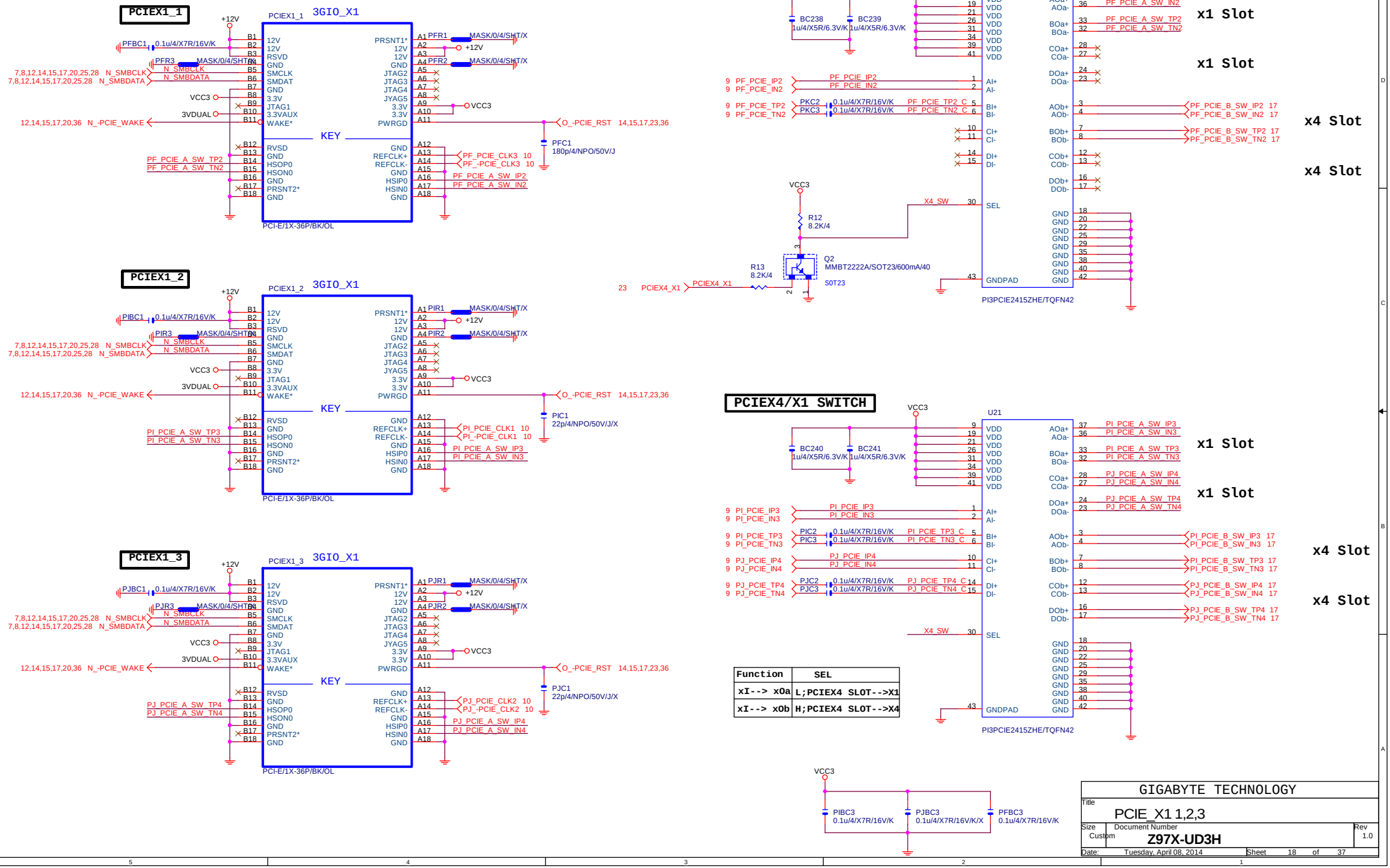
PCIEX1 SLOT



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

Title	PCIE_X1 1,2,3
Size	Custom
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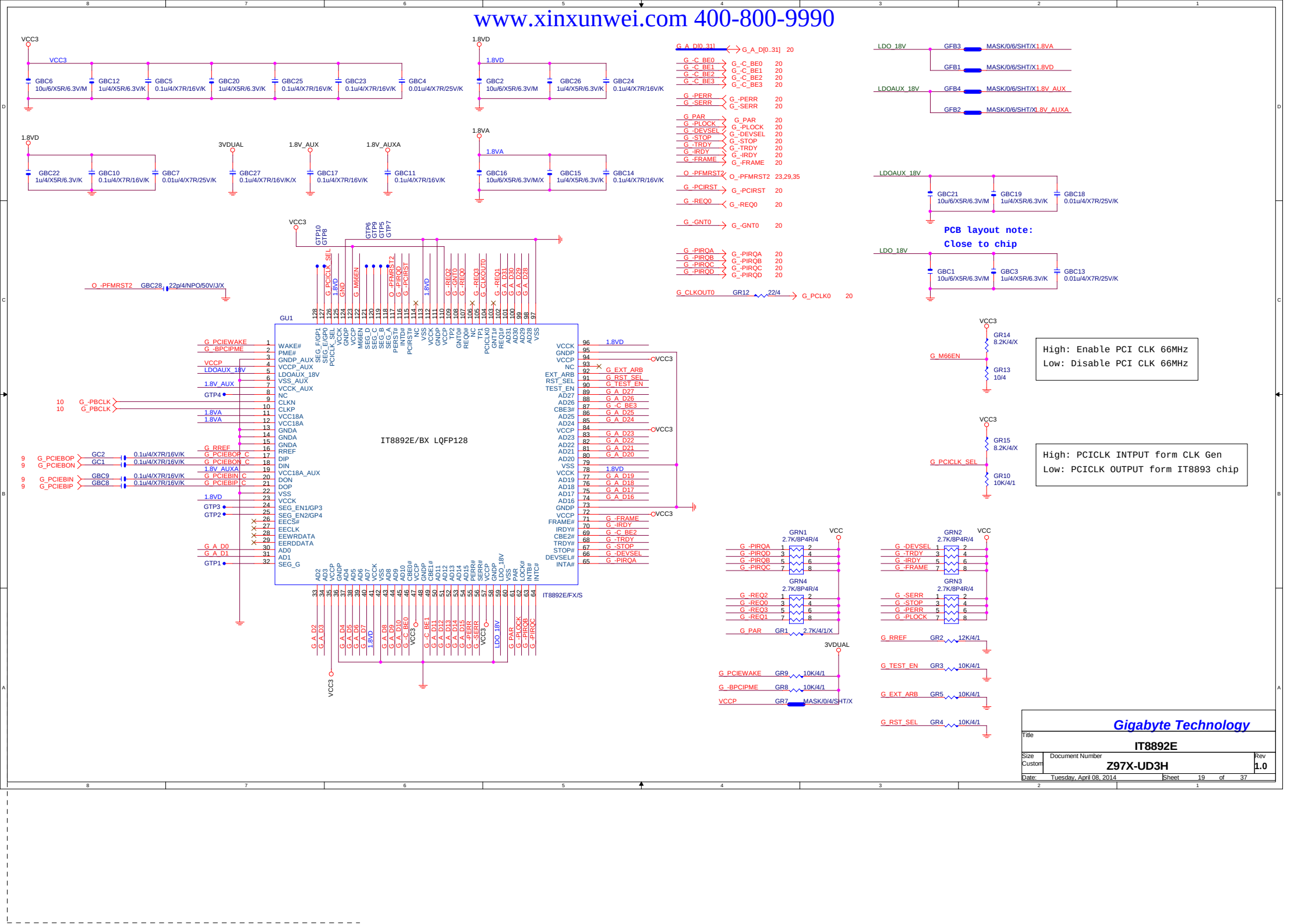

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Title: IT8892E			
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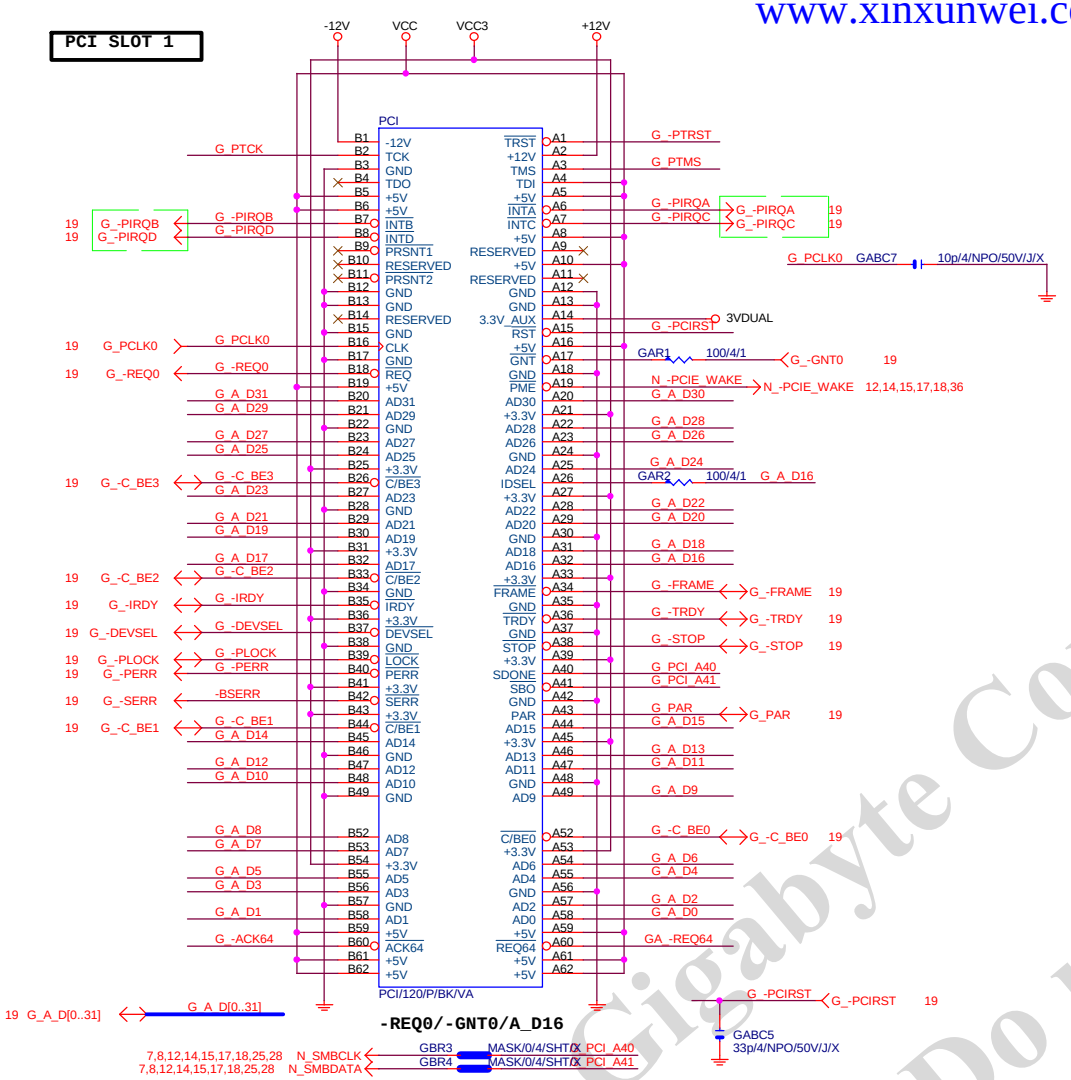
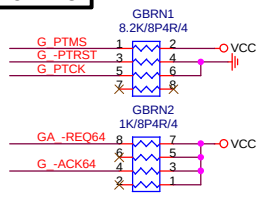
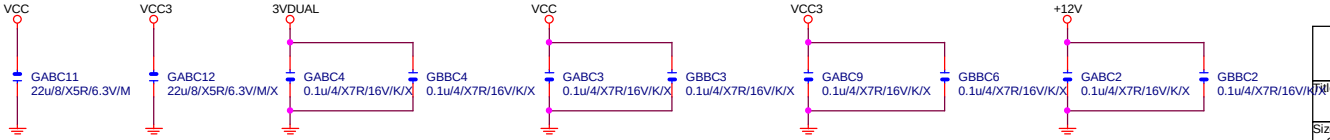
PCI SLOT 1



PCI PU



PCI CAP



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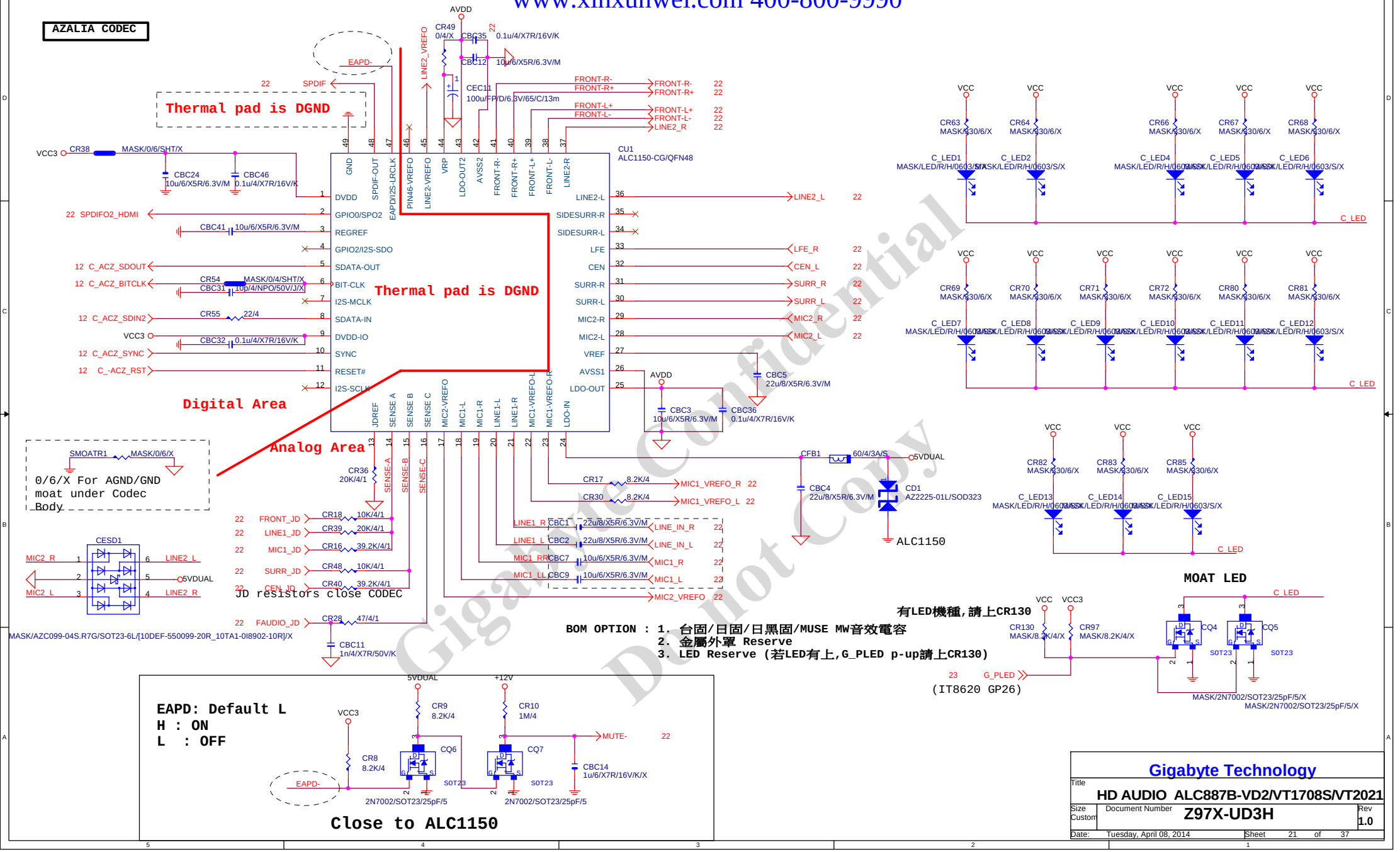
AZALIA CODEC



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Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021			
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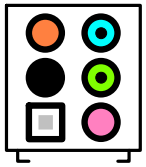
AZALIA JACK



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

21 SPDIFO2_HDMI — CR52 1 MASK/0/4/SHT/X — SPDIF_O

CBC37 100p/4/NPO/50V/J

PH/1*2/BK/2.54/VA/D

For HDMI SPDIF

Differential to Single-End AMPLIFIED

FRONT-R- / FRONT-R+ → CEC14 100u/FP/D/6.3V/65/C/13m, CBC76 22p/4/NPO/50V/J, CEC15 100u/FP/D/6.3V/65/C/13m → FRONT-R-_C_R, FRONT-R+_C_R (CR73, CR74 374/4/1) → FRONT-R-_R, FRONT-R+_R (CR76, CR78 100/4/1) → OP_INA-_R, OP_INA+_R → CU2A NE5532PSR/SOP-PS/[10TA1-705532-11R] → AMP_R

CR79 390/4/1, CBC82 1n/4/X7R/50V/K, -12V CBC49 0.1u/4/X7R/16V/K, +12V CBC50 0.1u/4/X7R/16V/K, CBC77 0.01u/4/X7R/25V/K, CBC78 1n/4/X7R/50V/K, CR128 390/4/1

FRONT-L- / FRONT-L+ → CEC16 100u/FP/D/6.3V/65/C/13m, CBC79 22p/4/NPO/50V/J, CEC17 100u/FP/D/6.3V/65/C/13m → FRONT-L-_C_L, FRONT-L+_C_L (CR90, CR91 374/4/1) → FRONT-L-_L, FRONT-L+_L (CR93, CR95 100/4/1) → OP_INB-_L, OP_INB+_L → CU2B NE5532PSR/SOP-PS/[10TA1-705532-11R] → AMP_L

CR96 390/4/1, CBC83 1n/4/X7R/50V/K, -12V CBC51 10u/8/X5R/16V/K, +12V CBC52 10u/8/X5R/16V/K, CBC80 0.01u/4/X7R/25V/K, CBC81 1n/4/X7R/50V/K, CR129 390/4/1

AZALIA JACK

AUDIOB: LINE1_JD (AJ_A5_R, AJ_A2_L) → BLUE LINE-IN; FRONT_JD (AJ_B5_R, AJ_B2_L) → GREEN LINE-OUT; MIC1_JD (AJ_C5_R, AJ_C2_L) → PINK MIC-IN

AUDIOA: CEN_JD (BJ_B5_R, BJ_B2_L) → Orange CEN/LFE; SURR_JD (BJ_C5_R, BJ_C2_L) → Black SURROUND; SPDIF → SPDIF

FUSEVCC_R7_R8

2X3RP/25P/OR,BK,BU,GR,RE/RA/[11NR6-403025-A1R]

LINE-OUT

CR22 10/4, CR23 10/4 → AJ_B2_L_L, AJ_B5_R

CBC23 180p/4/NPO/50V/J, CBC26 180p/4/NPO/50V/J

LINE-IN

21 LINE_IN_R — CR5 62/4 — AJ_A5_R

21 LINE_IN_L — CR13 62/4 — AJ_A2_L

CBC18 180p/4/NPO/50V/J, CBC27 180p/4/NPO/50V/J

MIC-IN

21 MIC1_R — CR29 62/4 — AJ_C5_R

21 MIC1_L — CR32 62/4 — AJ_C2_L

21 MIC1_VREFO_L, 21 MIC1_VREFO_R

CBC19 180p/4/NPO/50V/J, CBC22 180p/4/NPO/50V/J

SURROUND

21 SURR_R — CEC5 100u/FP/D/6.3V/65/C/13m — SURR_C_R CR46 62/4 — BJ_C5_R

21 SURR_L — CEC7 100u/FP/D/6.3V/65/C/13m — SURR_C_L CR19 62/4 — BJ_C2_L

CR20 22K/4, CR45 22K/4

CBC29 180p/4/NPO/50V/J, CBC28 180p/4/NPO/50V/J

CEN/LFE

21 LFE_R — CEC9 100u/FP/D/6.3V/65/C/13m — LFE_C_R CR50 62/4 — BJ_B5_R

21 CEN_L — CEC10 100u/FP/D/6.3V/65/C/13m — CEN_C_L CR41 62/4 — BJ_B2_L

CR42 22K/4, CR51 22K/4

CBC25 180p/4/NPO/50V/J, CBC34 180p/4/NPO/50V/J

21 MUTE- → AMP_R → CQ8, CQ9 2N7002/SOT23/25pF/5/[10IF1-2A7002-0CR] → AJ_B5_R_R

AMP_L → CQ10, CQ11 2N7002/SOT23/25pF/5/[10IF1-2A7002-0CR] → AJ_B2_L_L

AZALIA FRONT PANEL

CQ2 BAT54A/SOT23/200mA, 21 LINE2_VREFO — CR25 8.2K/4, CR15 8.2K/4

CQ1 BAT54A/SOT23/200mA, 21 MIC2_VREFO — CR12 8.2K/4, CR3 8.2K/4

EMI

21 MIC2_L — CBC20 10u/6/X5R/6.3V/M — CR2 62/4 — M2_L

21 MIC2_R — CBC15 10u/6/X5R/6.3V/M — CR11 62/4 — M2_R

21 FAUDIO_JD — L2_R CR33 62/4 L2-R; L2_L CR34 62/4 L2-L

CR27 22K/4, CR26 22K/4 → F_AUDIO → CR35 20K/4/1, CR31 39.2K/4/1

BH/2*5K8/BK/2.54/VA/AUDIO/PRT/TUR180

CR56 8.2K/4/X

21 LINE2_R, 21 LINE2_L — CEC12 100u/FP/D/6.3V/65/C/13m — L2_R, L2_L — CEC13 100u/FP/D/6.3V/65/C/13m

CBC10 180p/4/NPO/50V/J, CBC16 180p/4/NPO/50V/J, CBC17 180p/4/NPO/50V/J, CBC6 180p/4/NPO/50V/J

Digital Area

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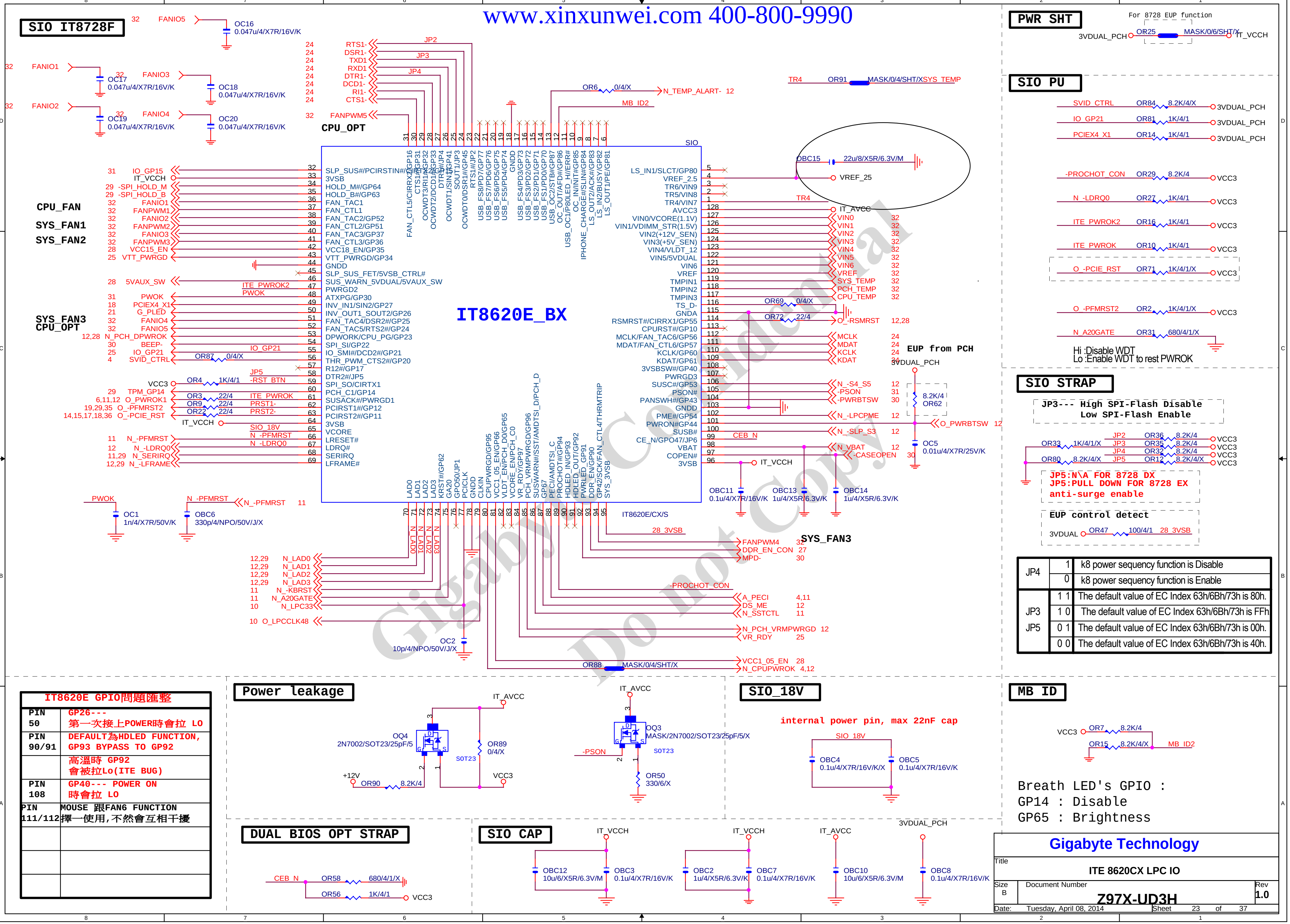

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

Breath LED's GPIO :
GP14 : Disable
GP65 : Brightness

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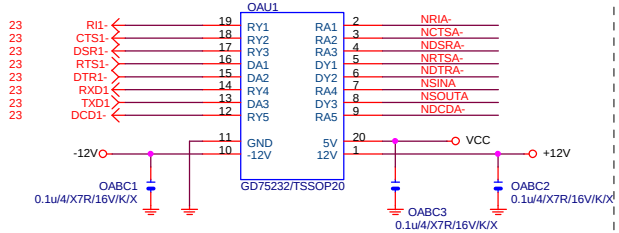
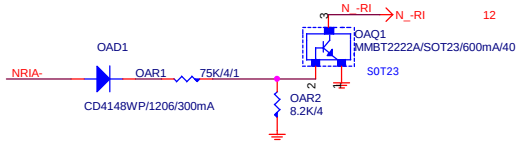
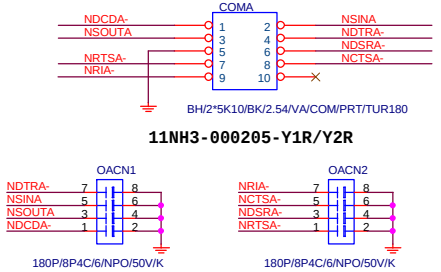
COMA



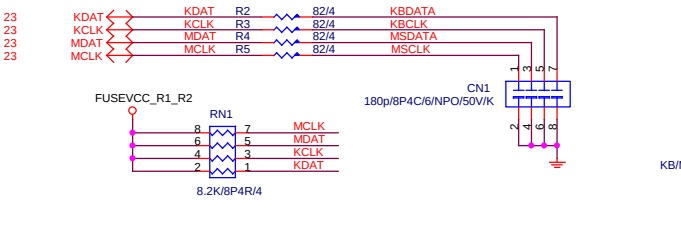
COM RI



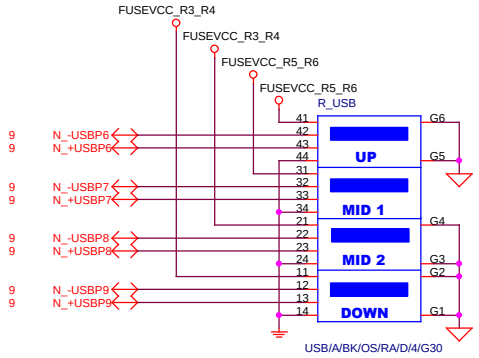
COM BUFFER



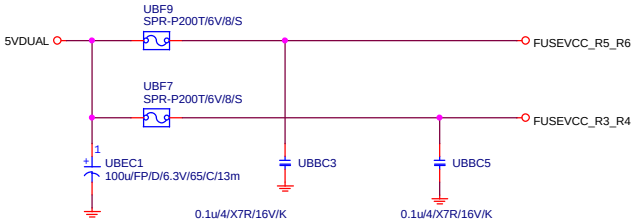
KB/USB



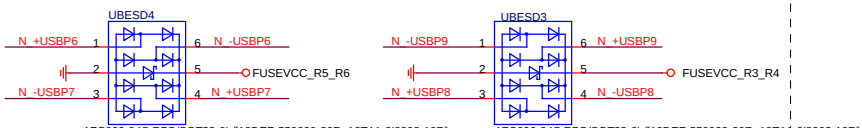
R_USB



USB20 FUSE



USB20 ESD PROCTECT



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Title: COM/ PROHOT/ R_USB		
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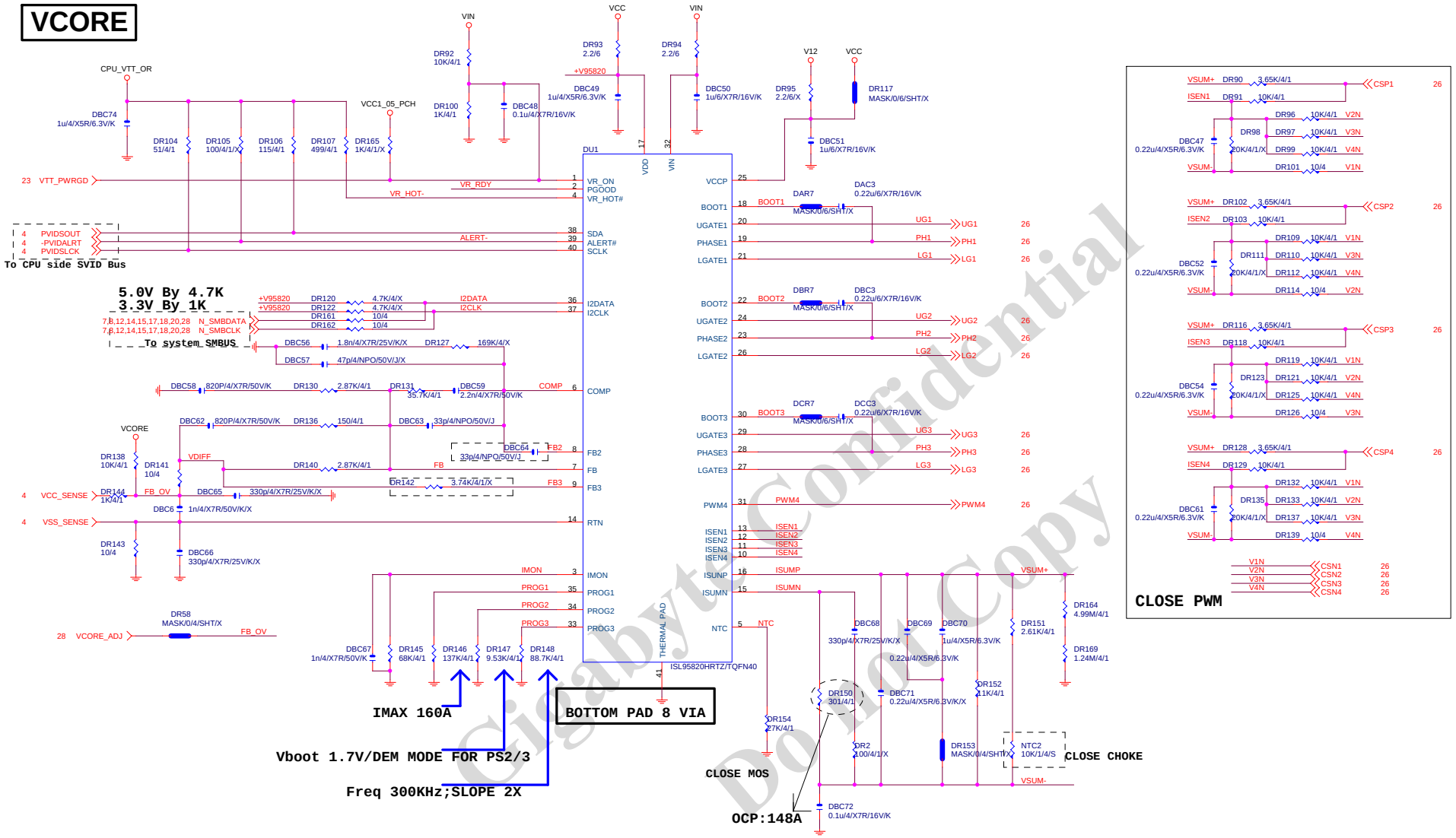
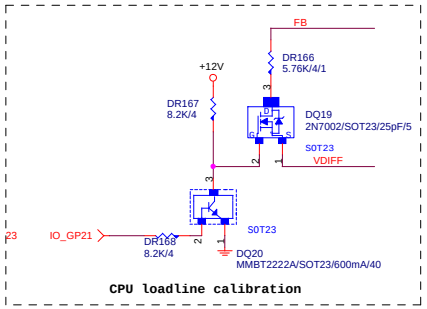
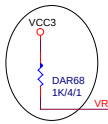
VCORE







VCORE各層切割

第一層:VCORE
第二層:VCORE
第三層:GND
第四層:VCORE

Gigabyte Technology			
Title: VCORE_ ISL95820			
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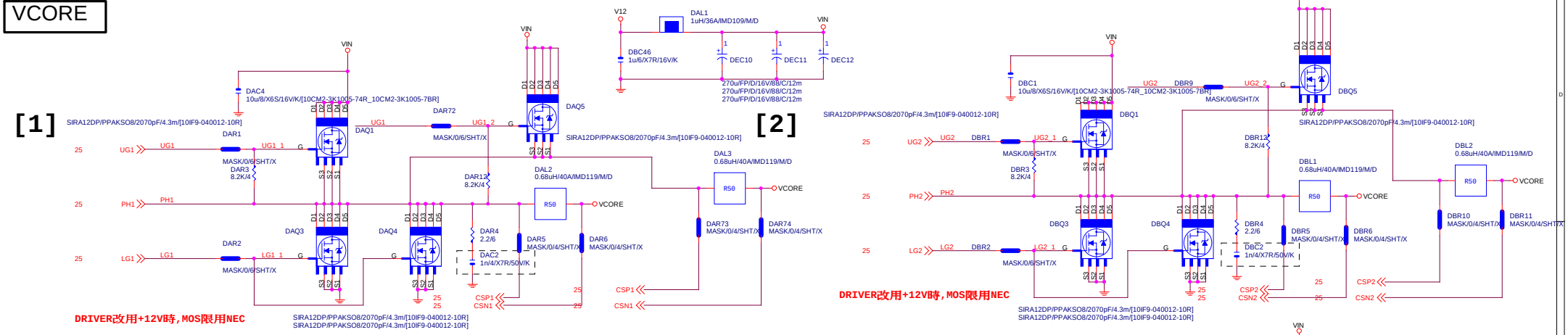

MOSFET HEATSINK

MOSHSINK-Z97X-SLI

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Title	ISL95820_2
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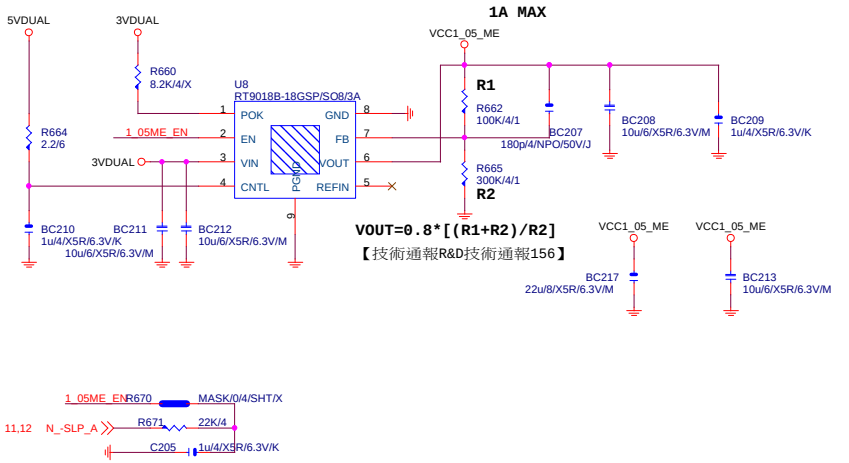
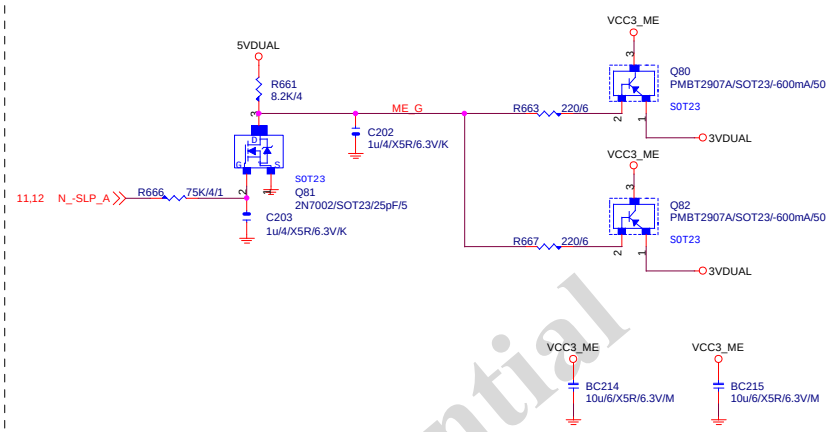
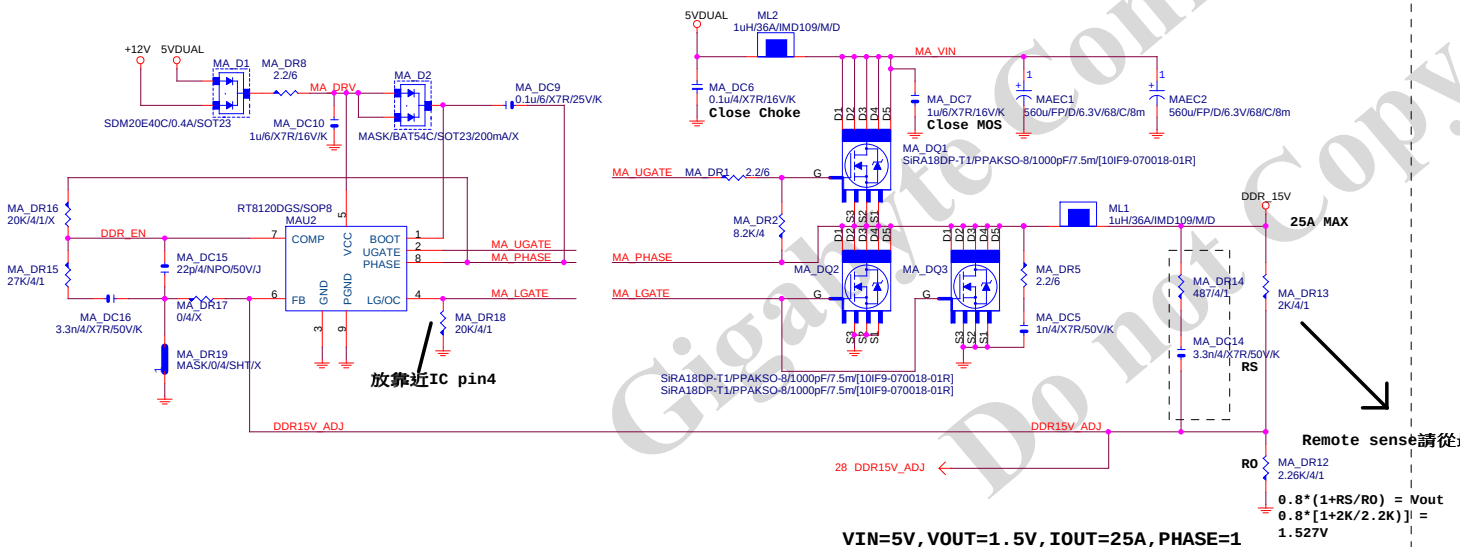
VCC1_05_ME



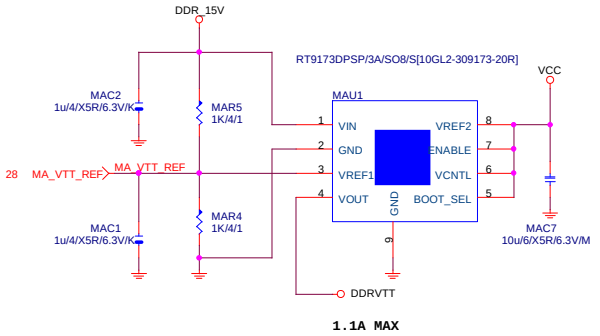
VCC3_ME



DDR_15V



DDRVTT



PWR SEQ

DDR_EN → DDR_EN_CON 23

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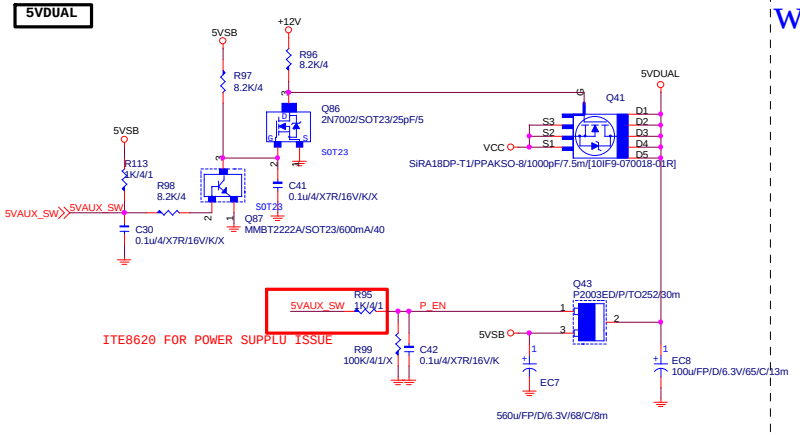
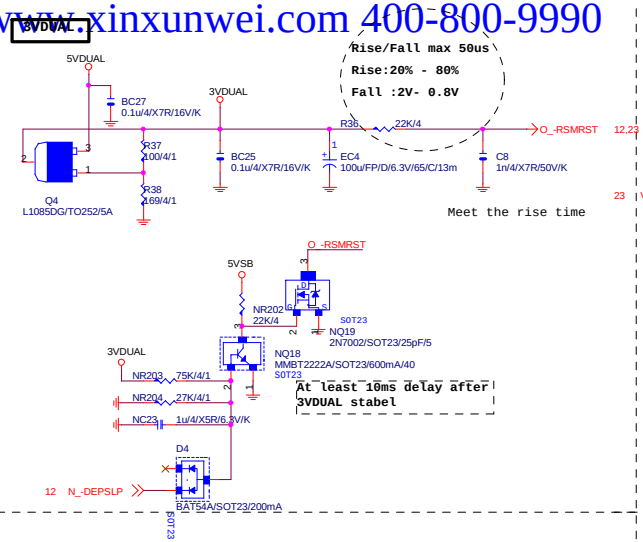
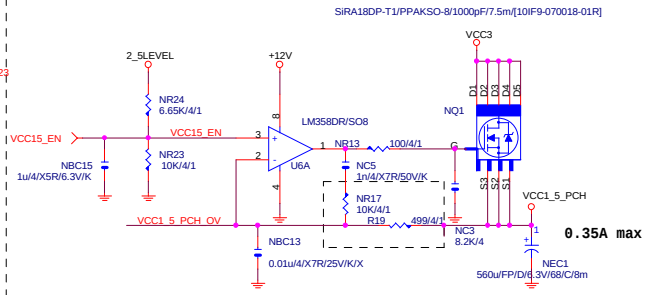
5VDUAL



3VDUAL

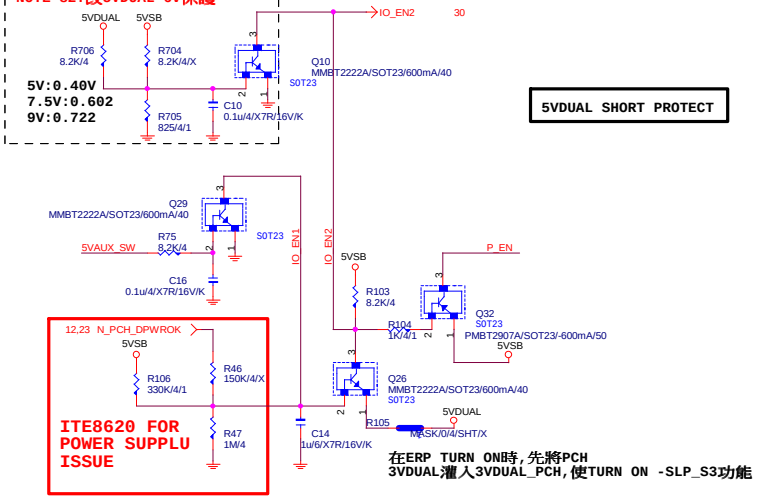


VCC1_5_PCH



5VSB OVP:7.5V protection

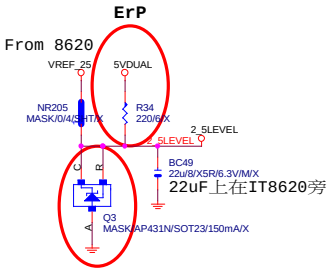
NOTE 82:改5VDUAL 6v保護



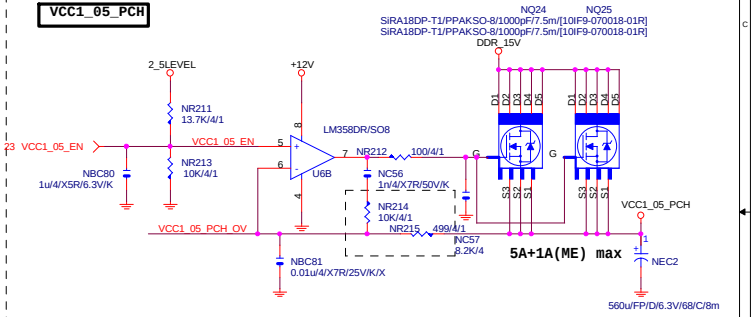
5VDUAL SHORT PROTECT

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

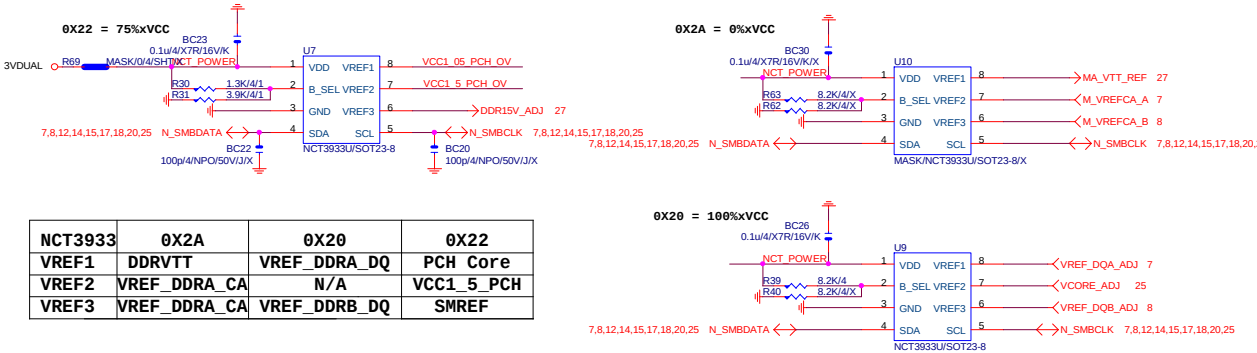
2_5LEVEL



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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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
NR227 1K/4/1
NR228 0/4/X
NQ20 S0T23
-SPI_CS_1
N_-ICH_SPI_CS
MMBT2222A/SOT23/600mA/40
NQ21 MMBT2222A/SOT23/600mA/40 S0T23
-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 S0T23
-SPI_HOLD_B NR234 1K/4/1/X
N_-ICH_SPI_CS
NQ23 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_M NR232 8.2K/4

VCC3_ME
NR4 MASK/0/4/SHT/X
NBC2 1u/4/X5R/6.3V/K

M_BIOS
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
SPI_DQ2 NR220 MASK/0/4/SHT/X -SPI_WP0
CS# VDD
SO HOLD#
WP# SCK
VSS SI
-HOLD0 NR221 MASK/0/4/SHT/X NR222 8.2K/4/X -SPI_HOLD_M
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS
64M/Q/SPI/SO8/S

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
23 -SPI_HOLD_M -SPI_HOLD_M NR3 1K/4/1
23 -SPI_HOLD_B -SPI_HOLD_B NR11 1K/4/1

VCC3_ME
SPI_DQ3 12
12 N_ICH_SPI_MISO
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
23 -SPI_HOLD_M -SPI_HOLD_M NR237 1K/4/1/X
23 -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

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

1 means floating
0 means PD 1K

TPM CONNECT

VCC3
3VDUAL_PCH
TPM
10 T_TPMCLK
12,23 N_-LFRAME
19,23,35 O_-PFMRST2
12,23 N_LAD3
12,23 N_LAD0
LCLK LFRAME# LRESET# LAD3 VCC3 LAD0 RSV0 SB3V GND LPCPD#
GND LAD2 LAD1 GND RSV1 SERIRQ CLKRUN# RSV2
pin 4 防异
VCC5
N_LAD2 N_LAD1 N_SERIRQ
12,23 12,23 11,23
VCC3 TR2 8.2K/4
TPM_GP14 23
TBC1 0.1u/4/X7R/16V/K/X
TBC2 0.1u/4/X7R/16V/K/X
BH/2*10K4/BK/2.54/VA/HA
12,36 N_SUSCLK TR1 10/4

BIOS Debug port

VCC3_ME
BIOS_PH
N_-ICH_SPI_CS
SPI_MISO
N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 12
-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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Front USB3.0

F_USB30 REV=1

BH/2*10K20/BK/ON/2.0/VA/D/GF

F_USB30 ESD PROTECT

UAE1 AZ1065-06Q/MSOP8L

UAE2 AZ1065-06Q/MSOP8L

F_USB30 PWR

SMD1206P350SLR/6V/S

UAEC3 100u/FP/D/6.3V/65/C/13m

Close to connector

FRONT USB1

F_USB1

BH/2*5K9/BK/ON/2.54/VA/USB/PRT/TUR180

UAESD1 AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

Close to connector

UAF1 SPR-P200T/6V/8/S

UAEC1 560u/FP/D/6.3V/68/C/8m

FRONT USB2

F_USB2

BH/2*5K9/BK/ON/2.54/VA/USB/PRT/TUR180

UAESD2 AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

Close to connector

UAF3 SPR-P200T/6V/8/S

共用一個560uF

-USBOC_R

UBD1 BAT54A/SOT23/200mA

UBD3 BAT54A/SOT23/200mA

UBR7 8.2K/4

UBR9 15K/4/1

-USBOC_F

UAD1 BAT54A/SOT23/200mA

UAR1 8.2K/4

UAR14 15K/4/1

SATA LED

SATALED# signal open-collector,pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3

FPD2 BAT54A/SOT23/200mA

FPQ9 MMBT2222A/SOT23/600mA/40

FPQ10 MMBT2222A/SOT23/600mA/40

SPKR

FPD1 CD4148WP/1206/300mA

To disable TCO timer

FPQ6 MMBT2222A/SOT23/600mA/40

FPQ5 MMBT2222A/SOT23/600mA/40

FPQ7 2N7002/SOT23/25pF/5

CASE OPEN

FPBC4 0.01u/4/X7R/25V/K

F_USB POWER PROTECT

UAD5 BAT54A/SOT23/200mA

USB2.0 Signal & power short protection

USB2.0 Signal > 4.85V

Enable --> 3VDUAL=3.6V

UAQ1 MASK/2N7002/SOT23/25pF/5/X

UAQ2 MASK/2N7002/SOT23/25pF/5/X

UA1A MASK/LM358DR/SO8/X

UA1B MASK/LM358DR/SO8/X

(開機短路保護)

(開機短路保護)

INTEL FRONT PANEL

F_PANEL

BH/2*10K10,12,13/BK/2.54/VA/PA

FPESD1 AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

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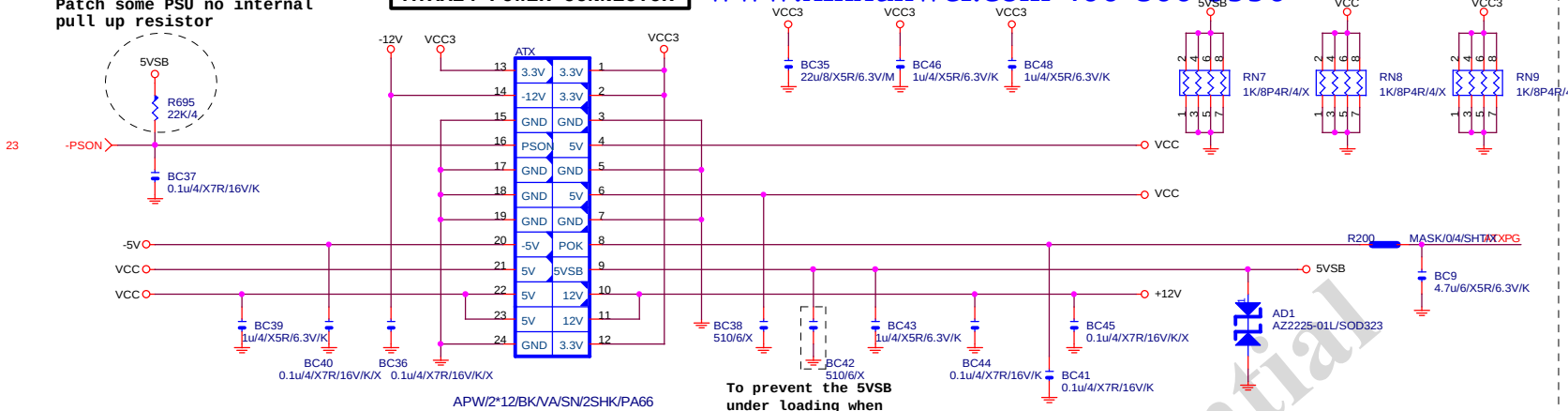
Patch some PSU no internal pull up resistor

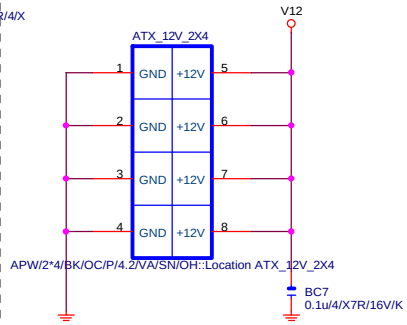
ATXX24 POWER CONNECTOR

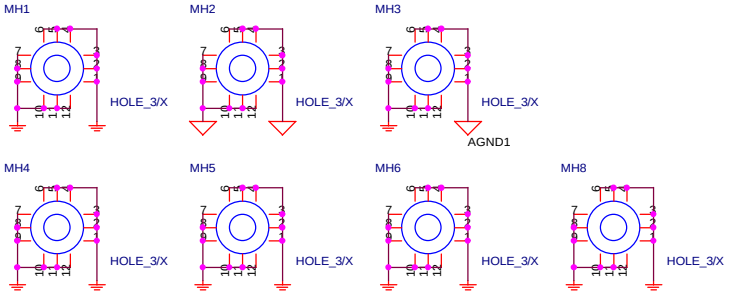


APW/2*12/BK/VA/SN/2SHK/PA66

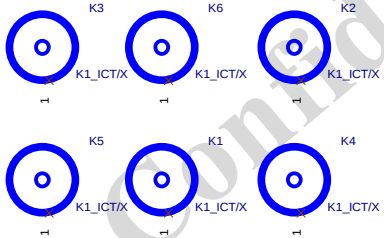
To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR





HOLE_4-RH-1

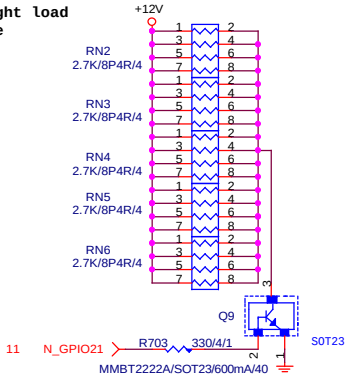


K1-ICT

4MMH

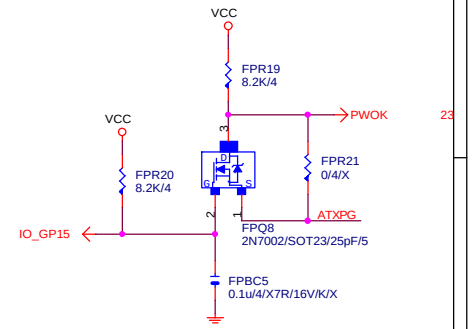
【技術通報R&D技術通報153】

To fix 12V light load abnromal issue



PWOK PATCH

【技術通報R&D技術通報154】



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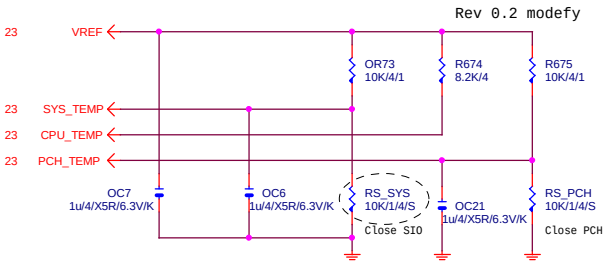
TEMP H/W MONITOR

CLOSE CPU
VCORE EN

Rev 0.2 modefy

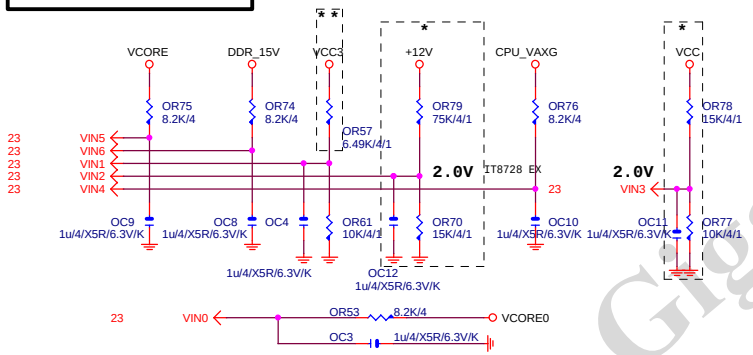


Thrmtrip#改用LM358做

VOLTAGE-- H/W MONITOR

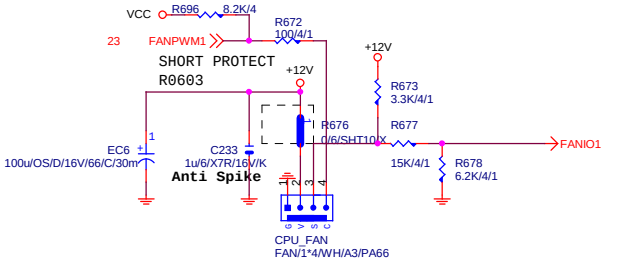
* IT8728 BX
** IT8728 CX

VIN2 must +12V input
VIN3 must VCC input



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

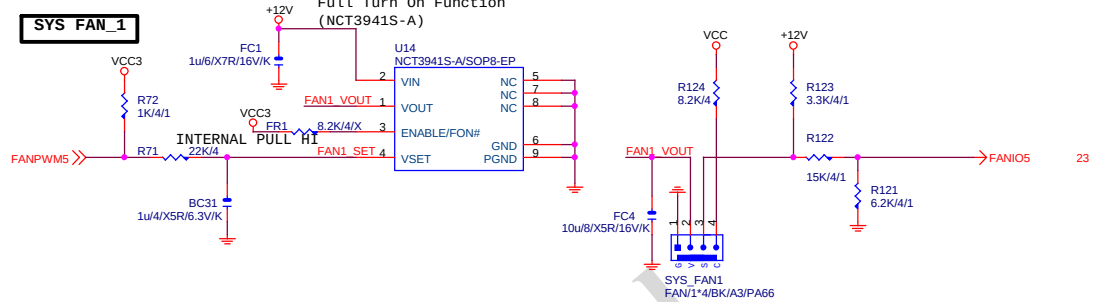
CPU SMART FAN



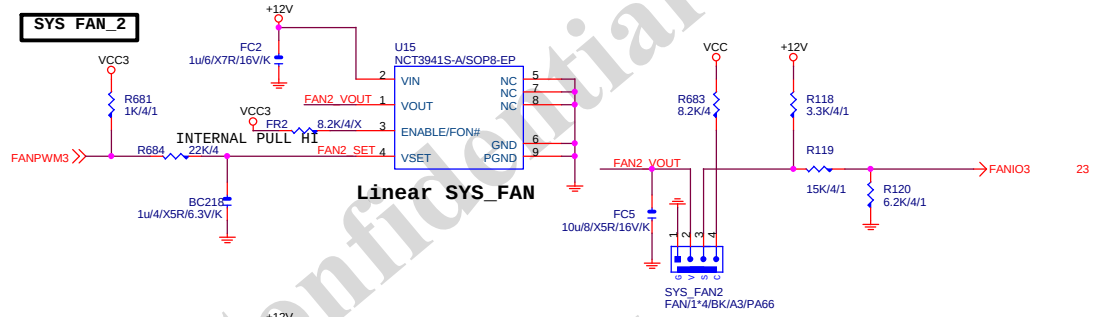
Linear SYS_FAN

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

SYS FAN_1

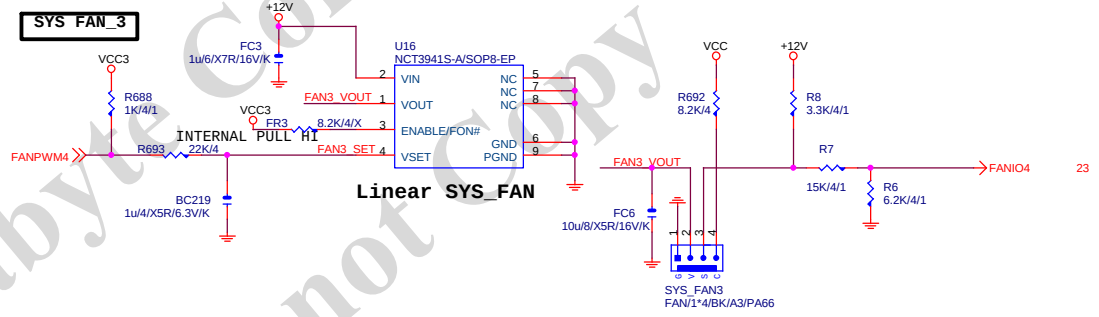


SYS FAN_2



Linear SYS_FAN

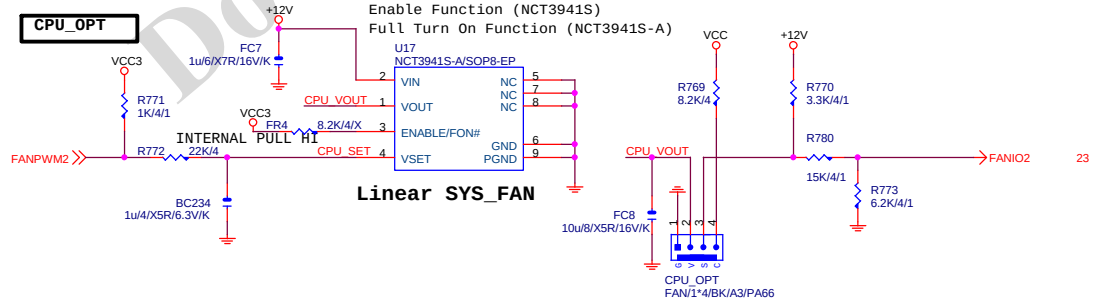
SYS FAN_3



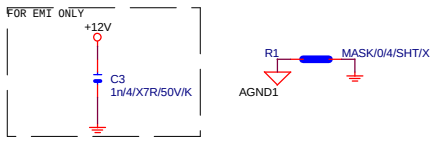
Linear SYS_FAN

CPU_OPT

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



Linear SYS_FAN



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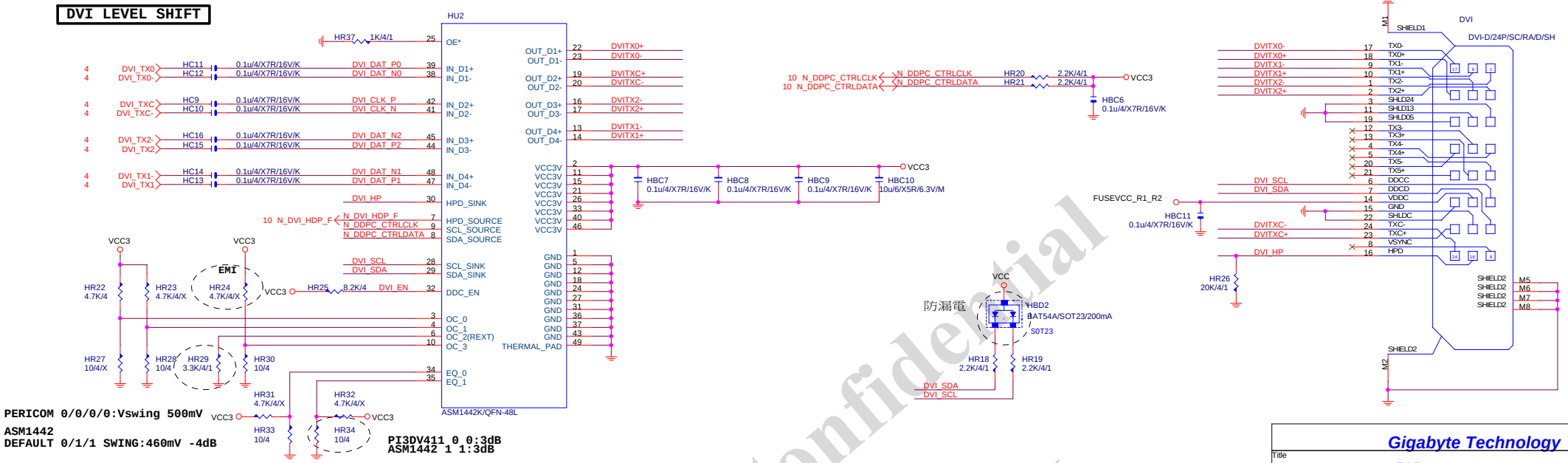
DVI:15/4/4/4/15
Impedance=85 +- 17.5%

DVI LEVEL SHIFT



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

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

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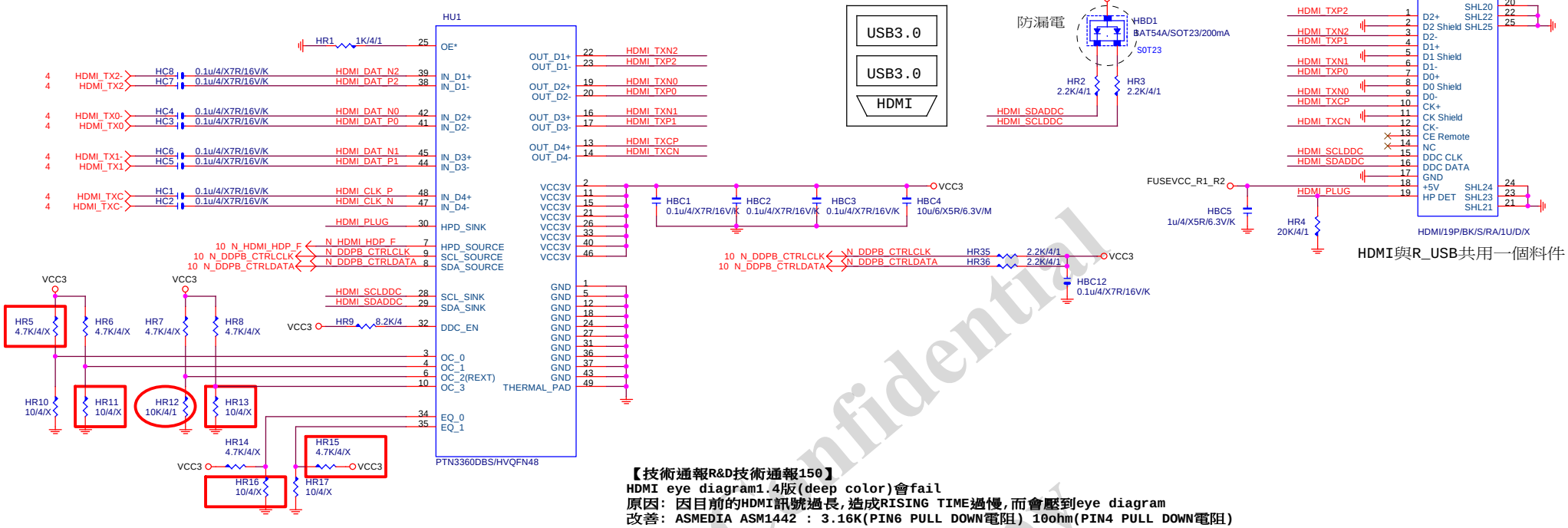
HDMI LEVEL SHIFT

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

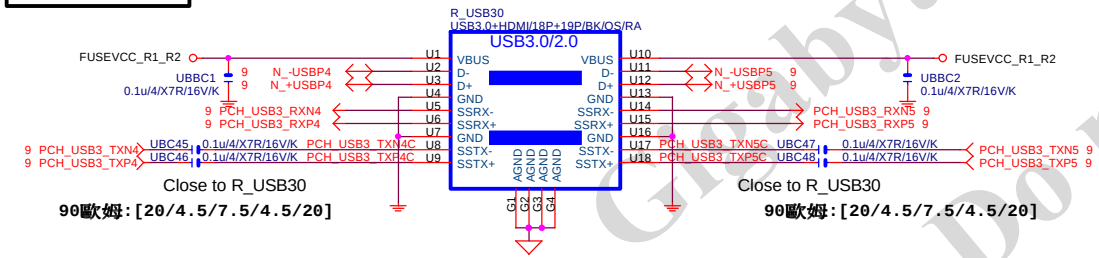


HDMI與R_USB共用一個料件

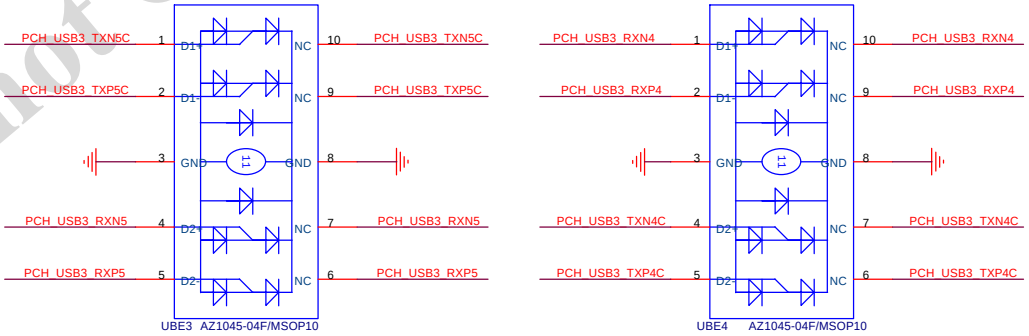
【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

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

USB30_20 CONNECT

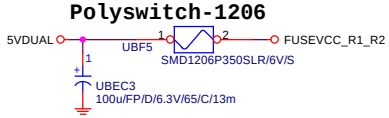


USB30 ESD PROCTECT

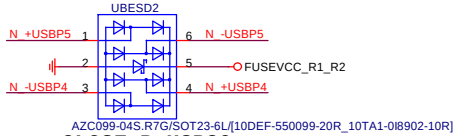


USB30 PWR

Polyswitch-1206



USB20 ESD PROCTECT



CLOSE R_USB30

USB3.0 1Port - 1Fuse (3.5A)

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LAN:INTEL I217

100歐姆:[20/4/10/4/20]

3VDUAL
LR11 8.2K/4
LB_LAN_CLKREQ-
LU1
CLK_REQ_N
PE_RST_N
PE_CLKP
PE_CLKN
PETP
PETN
PERP
PERN
PCIE
MDI
MDI_PLUS_0 MDI_MINUS_0 LA_MDI0+ LA_MDI0-
MDI_PLUS_1 MDI_MINUS_1 LA_MDI1+ LA_MDI1-
MDI_PLUS_2 MDI_MINUS_2 LA_MDI2+ LA_MDI2-
MDI_PLUS_3 MDI_MINUS_3 LA_MDI3+ LA_MDI3-
19,23,29 O_-PFMRST2
10 LB_SRCCLK_LAN
10 LB_-SRCCLK_LAN
9 LB_ML_IP LBC6 0.1u/4/X7R/16V/K LB_ML_IP_C LBC8 0.1u/4/X7R/16V/K LB_ML_IN_C 9 LB_ML_IN
9 LB_ML_OP LBC12 0.1u/4/X7R/16V/K LB_ML_OP_C LBC16 0.1u/4/X7R/16V/K LB_ML_ON_C 9 LB_ML_ON
SVR_EN_N LR19 MASK/0/4/SHT/X LR18 8.2K/4/X
RSVD_1/VCCP3P3 LR13 8.2K/4 3VDUAL
VDD3_P3_IN
VDD3P3_OUT
VDD3P3 LBC10 1u/4/X5R/6.3V/K
VDD0P9 LAN_V_1P0
12 N_SML0CLK
12 N_SML0DAT
3VDUAL LR15 8.2K/4/X LR16 MASK/0/4/SHT/X
12 N_-LAN_WAKE
SMB_CLK
SMB_DATA
SMBUS
LANWAKE_N
LAN_DISABLE_N
LB_-LAN_DIS
LB_LED0
LB_LED1
LB_LED2
LED0
LED1
LED2
LED
3VDUAL LR6 8.2K/4/X LR5 8.2K/4/X LR4 8.2K/4/X
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TCK
JTAG
LBC14 20p/4/NPO/50V/J
LBC13 20p/4/NPO/50V/J
LX1 25M/16p/30ppm/49US/20/D
XTAL_OUT
XTAL_IN
LR7 1K/4/1
TEST_ENABLE
LR12 3.01K/4/1 LB_LAN_BIAS
RBIAS
CTRL_0P9
LB_CTRL_1P0
LR24 4.7uH/3.3A/29m/S
LAN_V_1P0
VSS_EPAD
WGI217V/A3/QFN48/[10HP2-400217-30R]

For 82579
Keep short & wide

O_-PFMRST2 LBC2 100p/4/NPO/50V/J/X
3VDUAL
LR17 8.2K/4/X
12 N_LAN_DIS- LR20 MASK/0/4/SHT/X -LAN_DIS
LR14 8.2K/4/X

3VDUAL
LBC1 22u/8/X5R/6.3V/M
LBC11 22u/8/X5R/6.3V/M/X
LBC3 0.1u/4/X7R/16V/K
LBC17 0.1u/4/X7R/16V/K
LBC21 0.1u/4/X7R/16V/K
LBC22 0.1u/4/X7R/16V/K

LAN_V_1P0
LBC7 0.1u/4/X7R/16V/K
LBC15 0.1u/4/X7R/16V/K
LBC23 10u/6/X5R/6.3V/M
LBC29 22u/8/X5R/6.3V/M
LBC18 0.1u/4/X7R/16V/K
LBC9 0.1u/4/X7R/16V/K
LBC4 0.1u/4/X7R/16V/K

LAESD1
LA_MDI0+ LA_MDI0- LA_MDI1- LA_MDI1+ FUSEVCC_R7_R8
MASK/AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]/X

LAESD3
LA_MDI2+ LA_MDI2- LA_MDI3- LA_MDI3+ FUSEVCC_R7_R8
MASK/AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]/X

U4 U3 U2 U1
U8 U7 U6 U5
L1 L3 L5 L7 L9
L2 L4 L6 L8 L10
D1 D2 D3 D4
YELLOW ORANGE (+,-) GREEN (-,+)

Dual Color LED
D4 D3 Green
D4 D3 Orange

Single Color LED
D2 D1 Yellow

1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

USB_LAN CONNECTOR

RMA ESD PROTECT

UBESD1
N_-USBP2 N_+USBP2 N_+USBP3 N_-USBP3 FUSEVCC_R7_R8
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

LAESD2
LA_LED_LINK100 LA_LED_ACT_TXRX
LA_LED_LINK1000 LA_LED_D2 LAN_3VDUAL_LED
MASK/AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]/X

USB X3 POWER

5VDUAL LAFB4 SMD1206P350SLR/6V/S FUSEVCC_R7_R8
UEC4 100u/FP/D/6.3V/65/C/13m

Close to connector

EMI SHORT PAD

PS:視EMI需求

LAR24 MASK/0/4/SHT/X

LA_MDI-->100歐姆:[20/4/8/4/20]

LBC25 1u/4/X5R/6.3V/K
LA_AVDD_CEN
LA_MDI0+ LA_MDI0- LA_MDI1+ LA_MDI1- LA_MDI2+ LA_MDI2- LA_MDI3+ LA_MDI3-
GND_L10
LBC24 0.1u/4/X7R/16V/K

USB30_LAN
USB3.0
USB3.0
D1 D2 D3 D4 P1 P2 U10 U11 U12 U13 U14 U15 U16 U17 U18
DT DT VBUS N_-USBP3 N_+USBP3 GND SSRX- SSRX+ GND SSTX- SSTX+
LR8 MASK/0/4/SHT/X LED0
LA_LED_D2 LR10 150/4/1 LAN_3VDUAL_LED
LA_LED_LINK100 LR9 150/4/1 LB_LED2
LA_LED_LINK1000 LR3 MASK/0/4/SHT/X LED1

3VDUAL
LAFB1 MASK/0/6/SHT/X
LABC24 0.1u/4/X7R/16V/K/X

FUSEVCC_R7_R8
BC233 0.1u/4/X7R/16V/K
N_-USBP2 N_+USBP2
LBC26 0.1u/4/X7R/16V/K/X

PCH_USB3_RXN2 PCH_USB3_RXP2
PCH_USB3_TXN2 PCH_USB3_TXP2
LAC3 LAC4 0.1u/4/X7R/16V/K
PCH_USB3_TXN2C PCH_USB3_TXP2C
PCH_USB3_RXN3 PCH_USB3_RXP3
PCH_USB3_TXN3C PCH_USB3_TXP3C
LAC5 LAC6 0.1u/4/X7R/16V/K
PCH_USB3_TXN3 PCH_USB3_TXP3

USB3+RJ45/[11NR6-702009-K4R_11NR6-702009-K1R]

注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

PCH_USB3_TXP2C PCH_USB3_TXN2C PCH_USB3_RXP2 PCH_USB3_RXN2
LAE1 AZ1045-04F/MSOP10

PCH_USB3_RXN3 PCH_USB3_RXP3 PCH_USB3_TXN3C PCH_USB3_TXP3C
LAE2 AZ1045-04F/MSOP10

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

鴻海:10NR5-130067-32R
M2 SLOT M KEY料號
嘉澤:10NR5-130067-31R

M.2 CLK 限用
CLKOUT_PCIE_0

M2R12, M2R14改0/4/X
M2R13改0/4

M.2插卡時為LOW

PCH

SATA EXPRESS

M2

0 : SATA EXPRESS
1 : SATA (Standard)

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

連接PCH GPIO69
GPIO69 PU HI 要移除

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

DIP螺柱
M2_80A CR/[12KSF-F10303-01R]

螺絲
M2_80B CR/[12KS2-110202-01R]

SATA EXPRESS料號
單層:11NR6-C10118-01R
雙層:11NR6-C10236-01R

GIGABYTE

Title	M2_SATA_EXPRESS	
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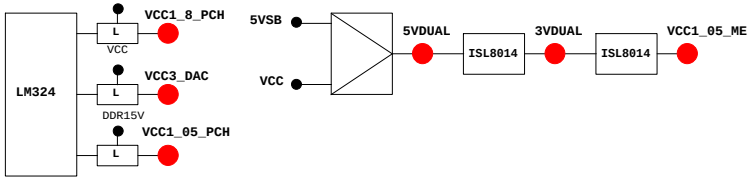
PCH GPIO LIST TABLE

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

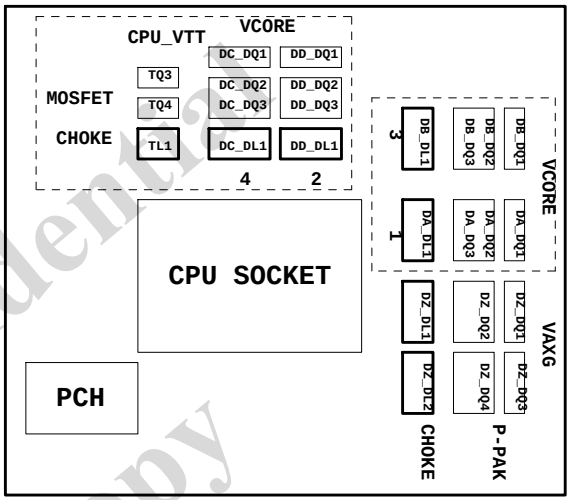
Super I/O ITE8720 GPIO Table

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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