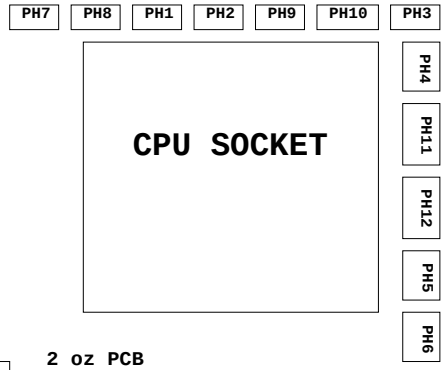
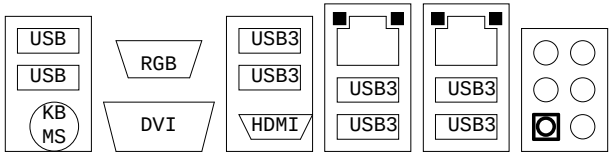
Model Name: GA-Z97X-UD5H

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 EXPRESSx16 SLOT
15	PCI EXPRESSx8 SLOT
16	PCI EXPRESSx4 SLOT
17	PCI EXPRESSx16 x8 x4 Switch
18	PCI EXPRESSx1 Slot 1 & 2
19	ITE8892E PCIe to PCI Bridge
20	PCI SLOT 1 & 2
21	ALC1150 CODEC
22	REAR AUDIO JACK
23	ITE8620CX LPC IO
24	COM/KB_MS_USB/PROHOT/USB PROTECT
25	IR3563B
26	IR3598 VCORE Phase 1~6
27	IR3598 VCORE Phase 7~12
28	DISCRETE POWER
29	DUAL BIOS

SHEET	TITLE
30	FP,F_USB,BZ
31	ATX POWER CONNECTOR
32	H/W MONITOR,FAN CTRL
33	DVI
34	HDMI & USB30
35	ARTHEROS E2201 (Bigfoot)
36	M.2_SATA_EXPRESS
37	IR3570 DDR PWM
38	IR3598 DDR1.5V 2-Phase
39	Intel i217V GbE LAN
40	Marvell 9172 SATA6Gx2
41	uPD720210 USB3.0 Hub
42	uPD720210 USB3.0 Hub_Power
43	M3 Power
44	RST, PWR, CLR_CMOS Button
45	TABLE LIST





2 oz PCB

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Title	Cover Sheet	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
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GA-Z97X-UD5H

Component value change history

Data	Change Item	Reason
2014-03-26	Build 10A Bom ,modify from UD5H 10E BOM , change the HEatsink S/N to black editin12SP2-PTZ975-11R	For Black edtion MP ,包材有所不同
2014-03-31	1. 100u/6.3V cap remove Nichicon part 11CO2-C51000-02R for the bad ESR to apply in AUDIO	Build 10B Bom
2014-04-24	SEC1 ~ SWC8 change to 0.1u from 0.01u for SATA EXPRESS	Build 10C Bom
2014-04-25	Follow 10C BOM , Change to 1.01 PCB , OR7 remove, pop OR15 for MB ID check.	Build 10G Bom
2014-05-12	MA_DQ1/2/3 & MB_DQ1/2/3 change to 10IF9-070410-00R from 10IF9-070018-01R	Build 10H Bom
2014-05-30	Add the Audio LED C_LED1~C_LED15 & necessary parts in BOM for 1.1 PCB N_GPIO20 change to low for LED MB-ID, pop NR145,depop NR109	
2014-06-22	Reduce SATA & SATA EXPRESS AC CAP or 0ohm with 1.11 PCB	Build 11E Bom

Circuit or PCB layout change

DATE	Change Item	Reason
2014-03-26	Build 1.0 ,modify from Z97X-UD5H 1.0	
2014-04-25	Build 1.01	Adj net SE_IFDET
2014-05-30	Build 1.1	For AUDIO LED request
2014-06-22	Build 1.11	Reduce SATA & SATA EXPRESS AC CAP or 0ohm

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Title: BOM & PCB MODIFY HISTORY

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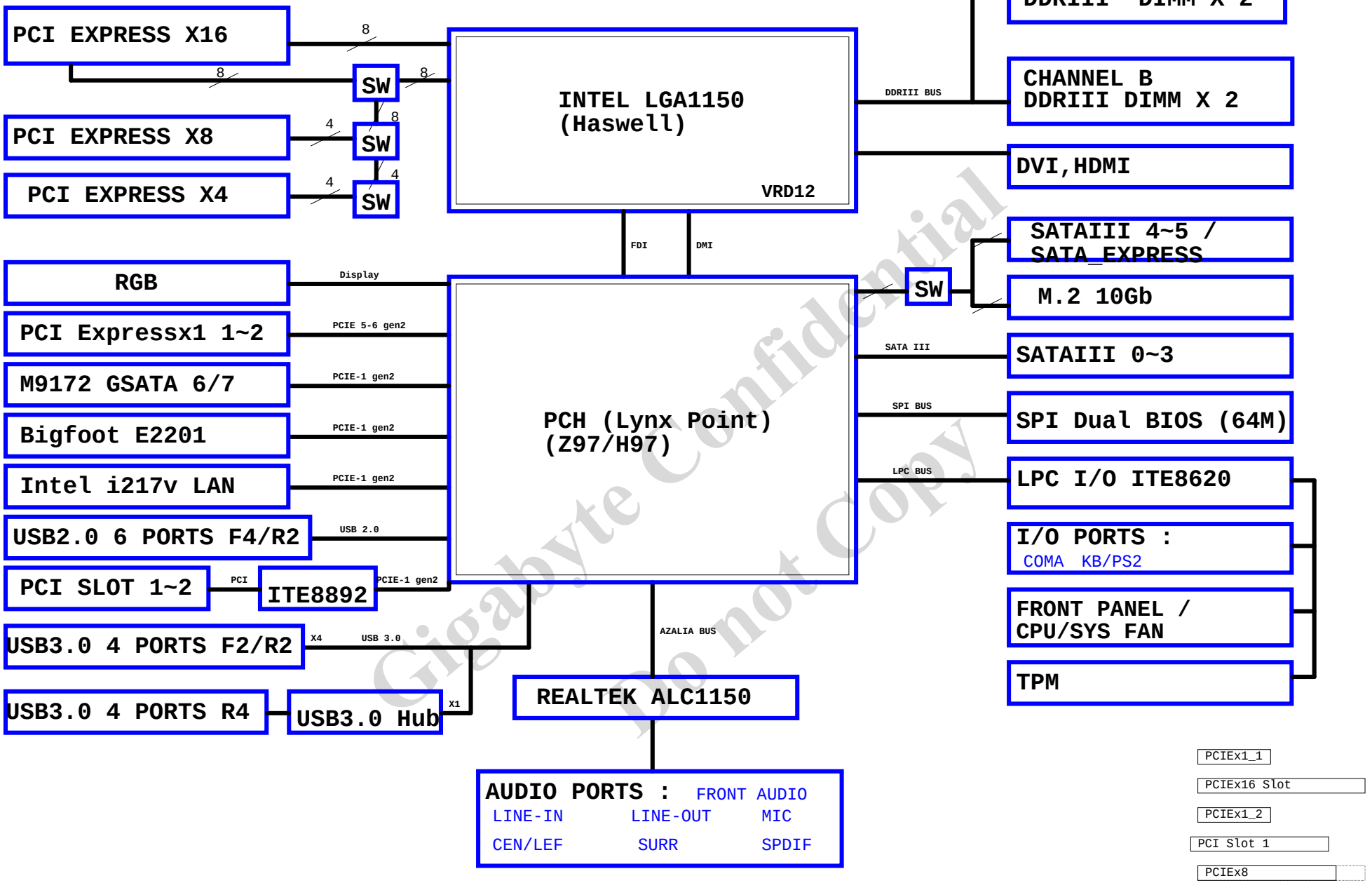
BLOCK DIAGRAM



PCIEx1_1
PCIEx16 Slot
PCIEx1_2
PCI Slot 1
PCIEx8
PCI Slot 2
PCIEx4

Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-Z97X-UD5H	Rev: 1.11
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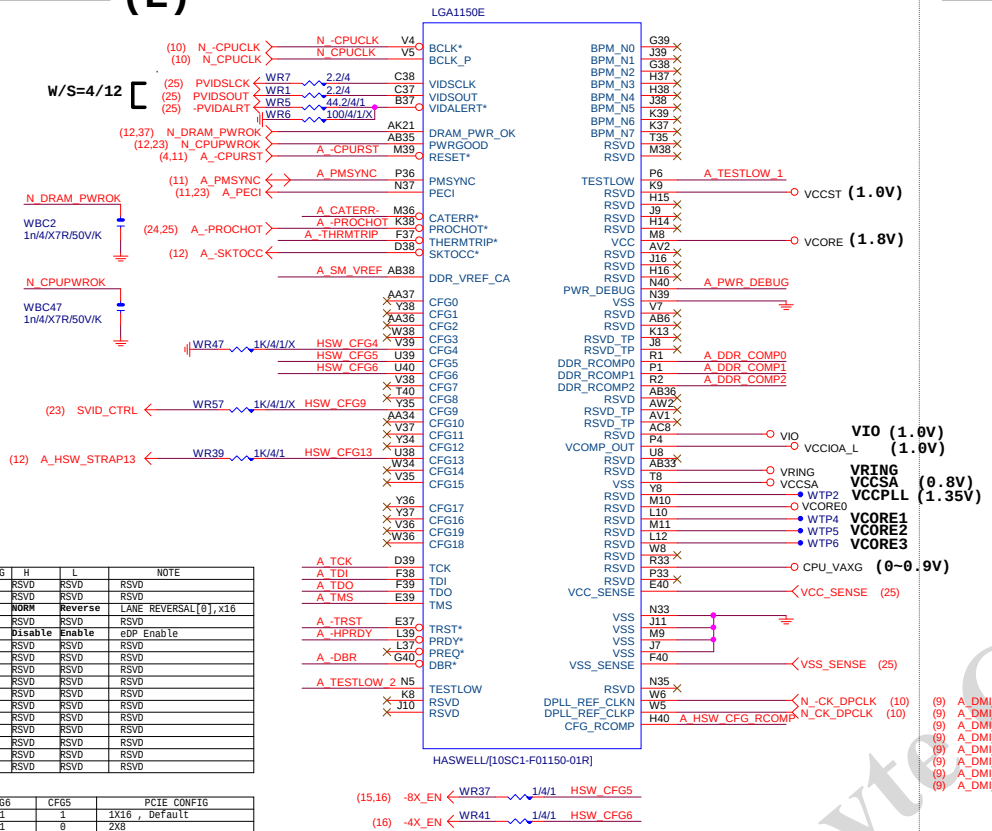
LGA1150 (E)



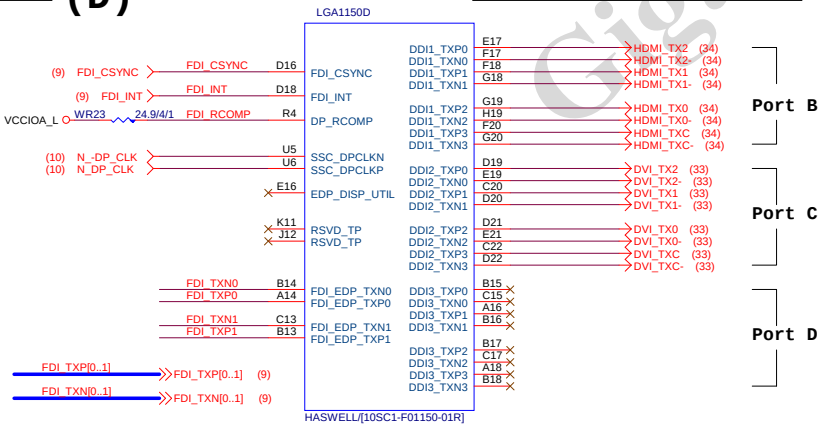
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

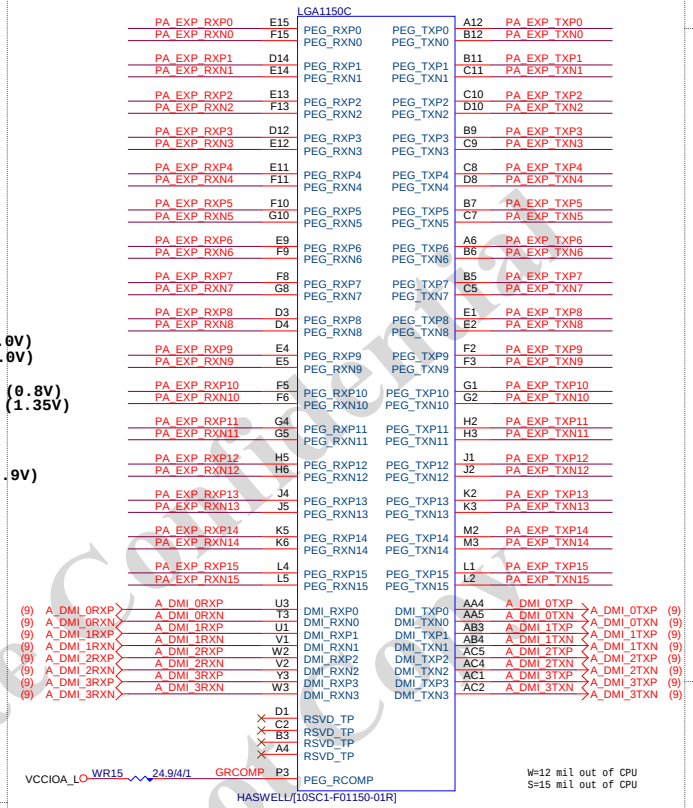


FDI:4/4/4//15(breakout min 4/4/4//8)
Impedance=85 +- 15%

DP/HDMI 4/4/4//20 FDI 4/4/4/12

Impedance=85 +- 15%

LGA1155 (C)



W=12 mil out of CPU
S=15 mil out of CPU

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

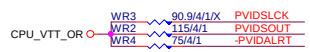
DMI 4/4/4//15 Impedance=85 +- 15%

-CPURST

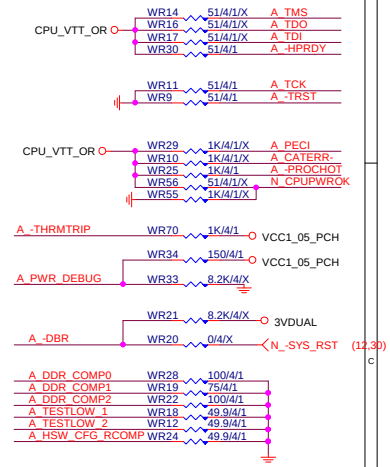
1.1V分壓

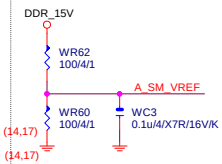
Remove分壓電阻

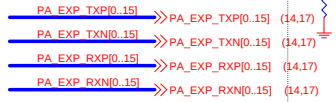
CPU SVID



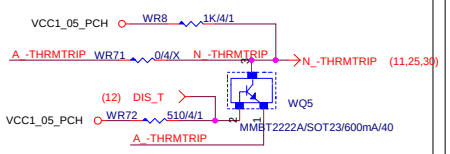
CPU PU/PD







THRMTRIP DISABLE FOR Z87 OVERCLOCK



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Title	CPU LGA1150-A
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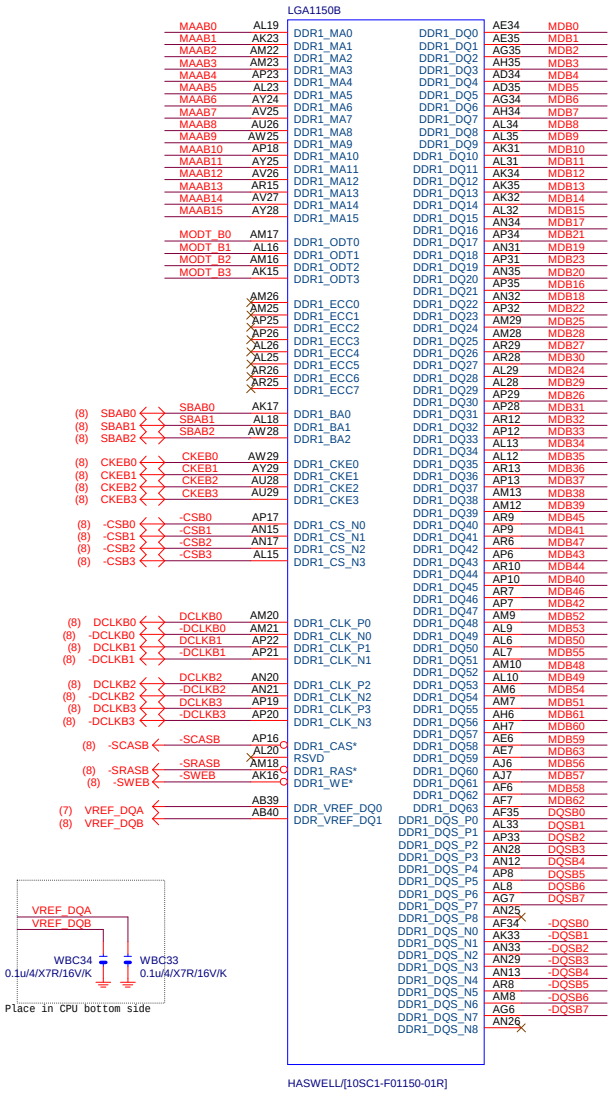
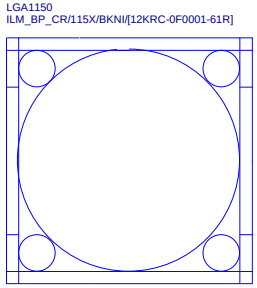
LGA1150 (A)

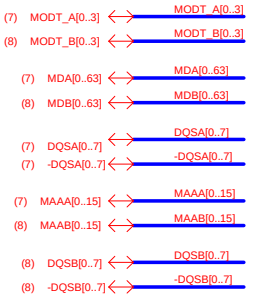
LGA1150 (B)



LGA1150 (CR)



DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
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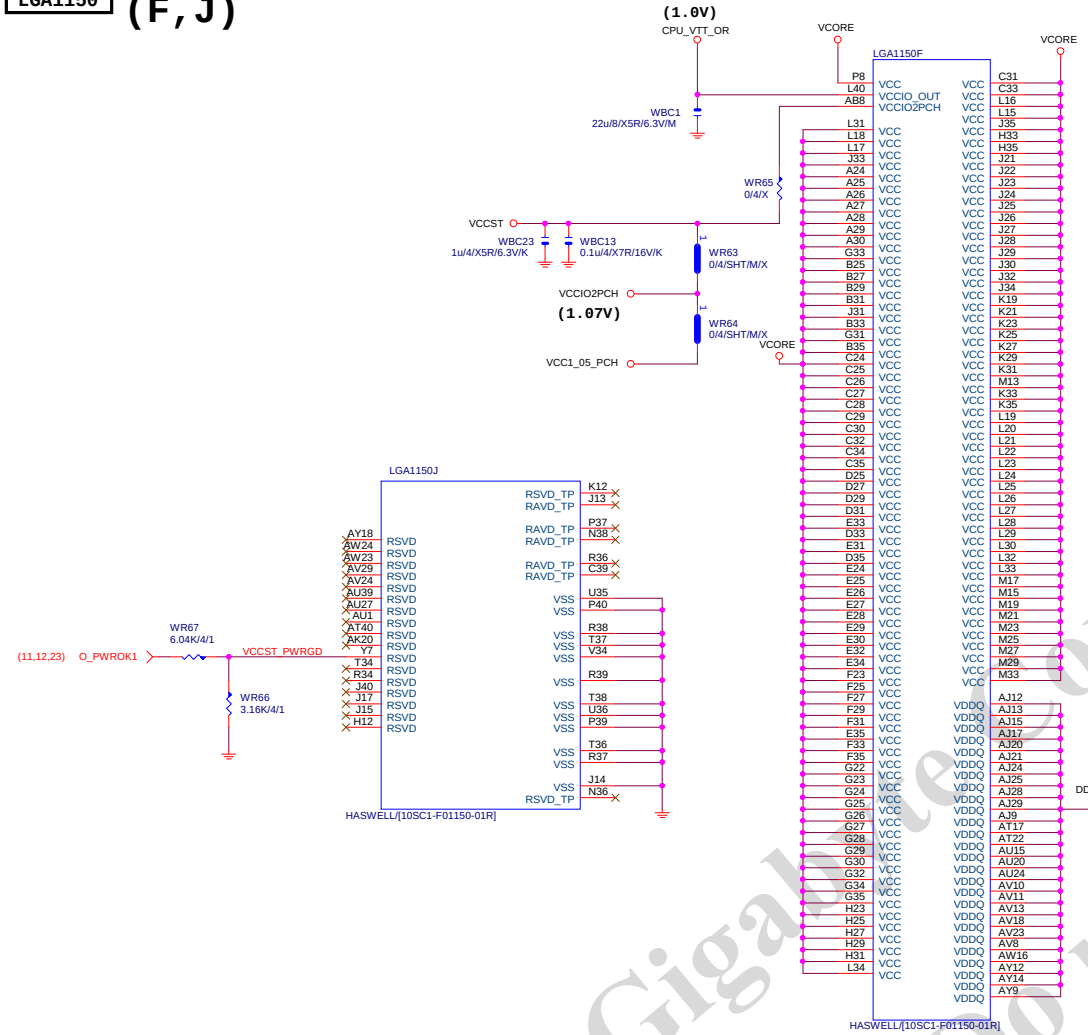
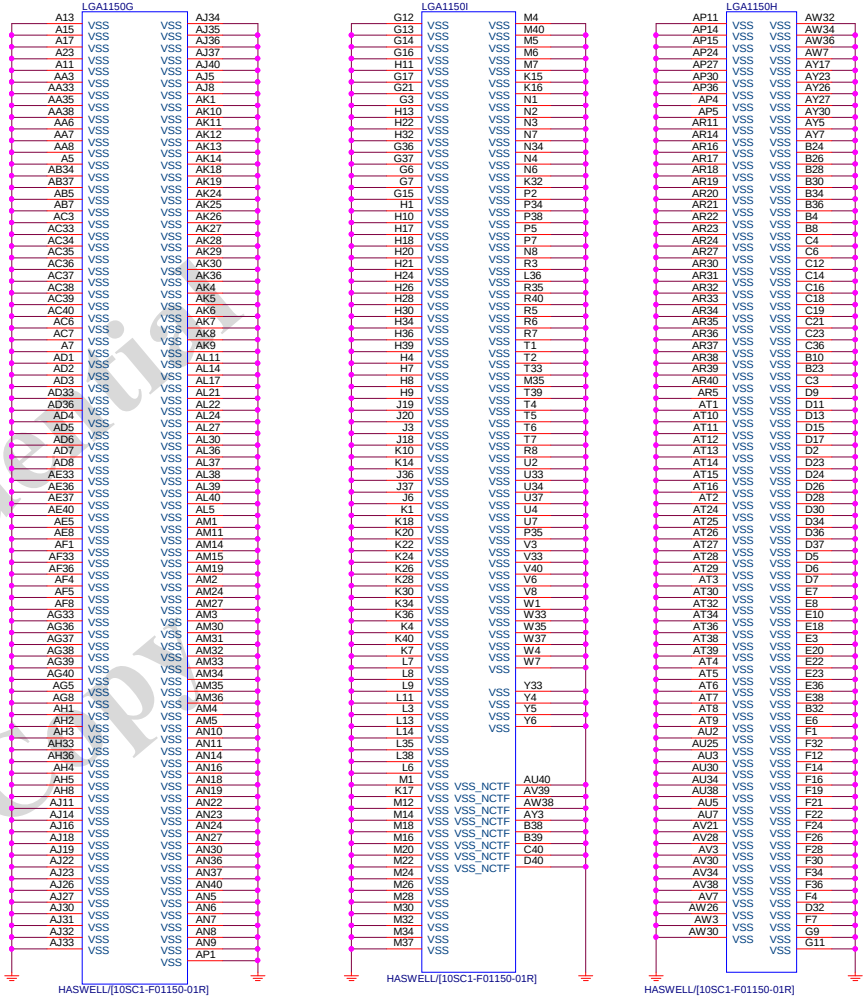
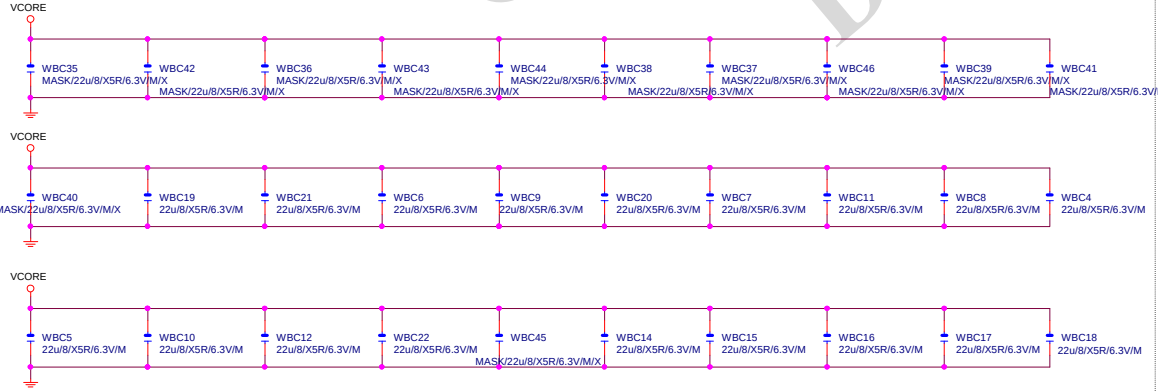
LGA1150 (F,J)



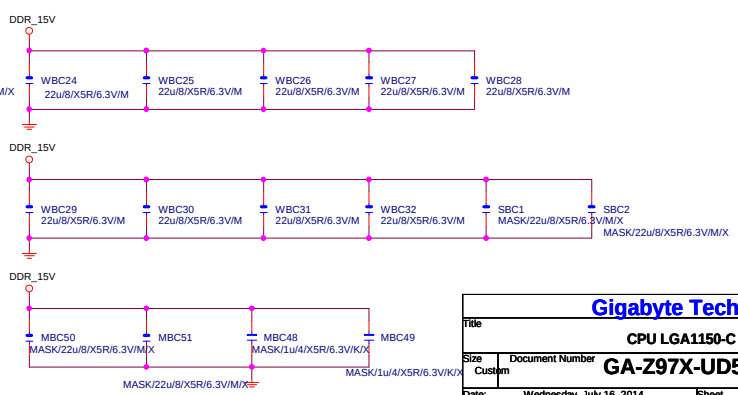
LGA1150 (G,H,I)



VCore CAP (X30)



DDR CAP (X15)



Gigabyte Technology			
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
CB1
CB2
CB3
CB4
CB5
CB6
CB7
DQS0
DQS0*
DQS1
DQS1*
DQS2
DQS2*
DQS3
DQS3*
DQS4
DQS4*
DQS5
DQS5*
DQS6
DQS6*
DQS7
DQS7*
DQS8
DQS8*
DM0/DQS9
DM1/DQS10
DM2/DQS11
DM3/DQS12
DM4/DQS13
DM5/DQS14
DM6/DQS15
DM7/DQS16
DM8/DQS17
VDD
VDDSPD
VREFCA
VREFDQ
SCL
SDA
SA1
SA0
BA2
BA1
BA0
CKE1
CKE0
S1*
S0*
CK1/NU*
CK1/NU
CK0*
CK0
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12
A13
A14
A15
RESET*
CAS*
RAS*
WE*

MODT_A[0..3]
-DQSA[0..7]
DQSA[0..7]
-DDR3_RST
N_SMBDATA
N_SMBCLK
MC6 100p/4/NPO/50V/J
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
DDR_15V
VDDSPD SHORT PROTECT R0603
VCC3
MF1 SRR-P200T/6V/B/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_DQDDRA
MDA[0..63]
MAAA[0..15]
DDR3/240/BK/VA/D

DDR3_2

DDR3/240/GR/VA/D

DDR3 VREF

DDR_15V
MR15 1K/4/1
MR14 1K/4/1
VREF_DDRA MR13 MASK/10/4/X M_VREFCA_A (28)
MBC28 1u/4/X5R/6.3V/K
MR4 1K/4/1
MR5 1K/4/1
VREF_DQDDRA MR1 10/4 VREF_DQA (5)
MR3 MASK/10/4/X VREF_DQA_ADJ (28)

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

MEC1 560u/FP/D/6.3V/68/C/8m
MEC2 560u/FP/D/6.3V/68/C/8m
MBC43 22u/8/X5R/6.3V/M
MBC44 22u/8/X5R/6.3V/M
MBC5 0.1u/4/X7R/16V/K
MBC6 0.1u/4/X7R/16V/K
MBC7 0.1u/4/X7R/16V/K
MBC8 2.2u/6/X5R/6.3V/K
MBC9 1u/4/X5R/6.3V/K
MBC11 1u/4/X5R/6.3V/K
MBC12 1u/4/X5R/6.3V/K
MBC13 1u/4/X5R/6.3V/K
MBC14 1u/4/X5R/6.3V/K
MBC15 1u/4/X5R/6.3V/K
MBC16 1u/4/X5R/6.3V/K
MBC17 1u/4/X5R/6.3V/K
MBC19 1u/4/X5R/6.3V/K
MBC20 1u/4/X5R/6.3V/K
MBC21 1u/4/X5R/6.3V/K
MBC22 1u/4/X5R/6.3V/K
MBC23 1u/4/X5R/6.3V/K

DDRVTT Decouple

MBC39 22u/8/X5R/6.3V/M
MBC40 22u/8/X5R/6.3V/M
MBC18 0.1u/4/X7R/16V/K
MBC26 0.1u/4/X7R/16V/K
MBC41 0.1u/4/X7R/16V/K
MBC4 1u/4/X5R/6.3V/K
MBC10 1u/4/X5R/6.3V/K
MBC24 1u/4/X5R/6.3V/K
MBC25 1u/4/X5R/6.3V/K
MBC27 1u/4/X5R/6.3V/K
MBC29 1u/4/X5R/6.3V/K
MBC30 1u/4/X5R/6.3V/K
MBC31 1u/4/X5R/6.3V/K
MBC32 1u/4/X5R/6.3V/K
MBC33 1u/4/X5R/6.3V/K
MBC34 1u/4/X5R/6.3V/K
MBC35 1u/4/X5R/6.3V/K
MBC36 1u/4/X5R/6.3V/K
MBC37 1u/4/X5R/6.3V/K
MBC47 1u/4/X5R/6.3V/K

Gigabyte Technology	
Title	DDRIII CHANNEL A
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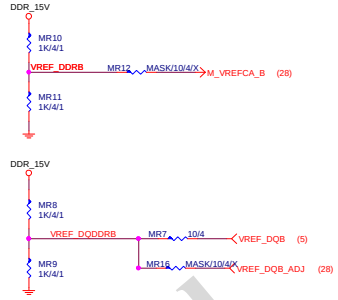
DDR3 (B)

DDR3

DDR3_VREF



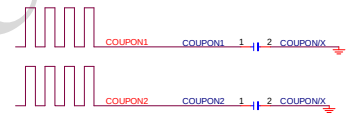
DDR3 1066,1333,1600MHZ BANDWIDTH

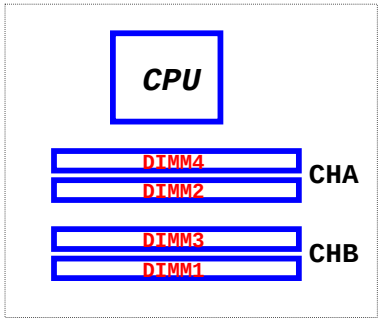
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

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





Gigabyte Technology			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
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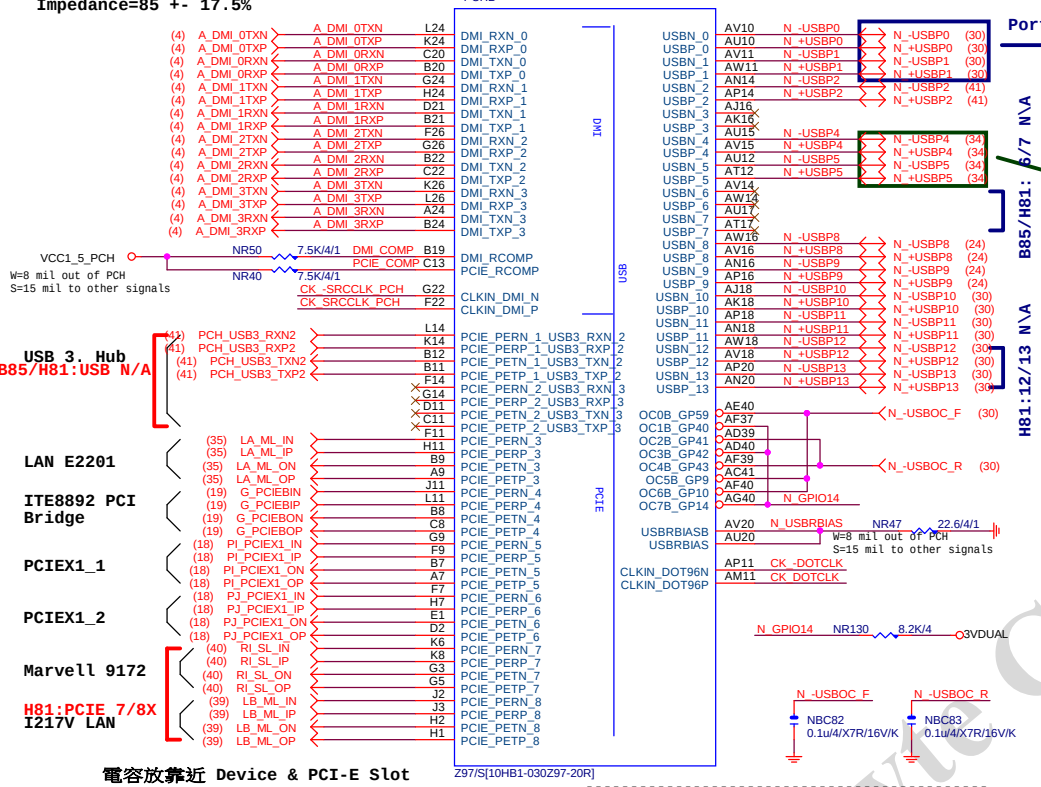
PCH (B)

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

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



Port要對應

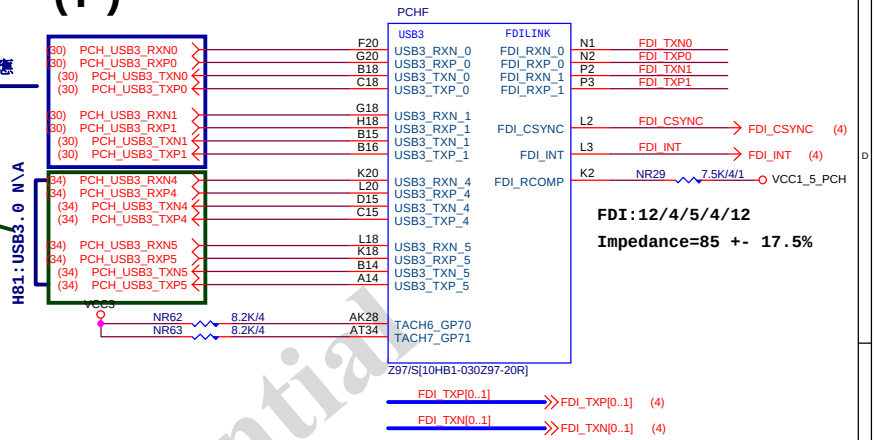
B85/H81: 6/7 N\A

H81:USB3.0 N\A

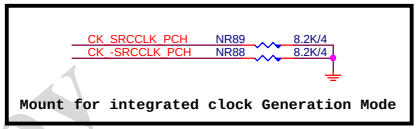
H81:12/13 N\A

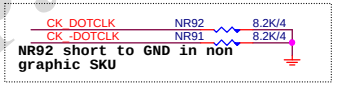
PCH PCIE ,DMI 4/4/4//15 Impedance=85 +- 15%
usb2.0 5/7/5//12
usb3.0 5/7/5//20 Impedance=85 +- 15%

PCH (F)

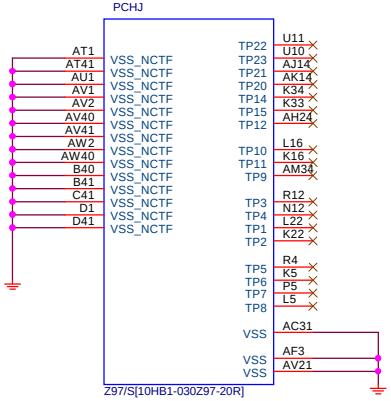


USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

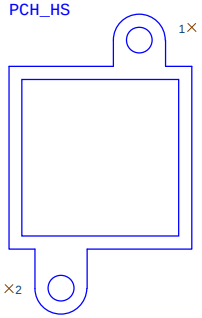




PCH (J)



PCH H/S



MOS heatsink + PCH heatsink
,Black editon

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 (U3 Hub)	USB3_LAN1	UC_FUSEVCC34
		USB3_LAN2	UC_FUSEVCC12
	USB3	N/A	
OC2#	USB4,5	HDMI & R_USB3	FUSEVCC_R1_R2
OC3#	USB6,7	N/A	
OC4#	USB8,9	KB_MS_USB	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	
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PCH (E)

PCHE

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

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

DDC DIFF 4/5;+-1000

IREF 4/12;<500MILS;GND

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

VGA DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC,DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

PCH (G)

PCHG

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

XTAL Trace Length < 1500 mil

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

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

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

PCH CLK PD

Mount for integrated clock Generation Mode

VGA DDC

防漏電

VGA CONNECTOR

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

VGA ESD

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

SSOP6_ESD

VGA DDC

Close to PCH

Close to VGA connector

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

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

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
H81 X

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)

B85/H81 3G

CLKIN_SATA_N H35 CK_-SRCCLK_SATA
CLKIN_SATA_P H36 CK_SRCCLK_SATA

SATALEDB J39
SATA_RCOMP D33 SATA3COMP — N_-SATALED (30)
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 (4,25,30)
PECI G40 SB_PECI — NR85 0/4/X — A_PECI — A_PECI (4,23)
PM_SYNCH F40 — A_PMSYNC (4)
PLTRST_PROCB F41 — A_-CPURST (4)

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

(6,12,23) O_PWROK1 — NR177 0/4/X — N_ME_PWROK — AA32
NC26 100p/4/NPO/50V/J/X

(30) N_GPIO1
(36) N_GPIO69
(23) N_SSTCTL
(15) N_GPIO39
(16) N_GPIO48

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 C3

PCHA
PMEB
CLKIN_33MHZLOOPBACK
TP16 A2
TP17 A3
TP18 B2
TP19 B1
TD_IREF C3
PIRQAB
PIRQBB
PIRQCB
PIRQDB
GPIO2
GPIO3
GPIO4
GPIO5
PLTRSTB — AA37 — N_-PFMRST (23)
GP35/NMIB
GP50 M40 N_GPIO35
GP51 AH26 N_GPIO50
GP52 AU31 N_GPIO51
GP53 AJ26 N_GPIO52
GP54 AV31 N_GPIO53
GP55 AW33 N_GPIO54
R30 N_GPIO55

N_-PIRQA AU29
N_-PIRQB AU27
N_-PIRQC AW28
N_-PIRQD AV27
N_-PIRQE AR30
N_-PIRQF AV29
N_-PIRQG AV28
N_GPIO5 AT27

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

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

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 1 2
N_GPIO5 3 4
N_-PIRQD 5 6
N_-PIRQB 7 8

NRN3 8.2K/8P4R/4
N_-PIRQE 1 2
N_-PIRQF 3 4
N_-PIRQA 5 6
N_-PIRQG 7 8

NRN7 8.2K/8P4R/4
N_GPIO50 1 2
N_GPIO52 3 4
N_GPIO17 5 6
N_GPIO6 7 8

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 — NRN11 8.2K/8P4R/4
(12) N_-PCI_STOP — N_GPIO22
NR157 1K/4/1/X — N_-PCI_STOP
N_GPIO39:GFX MODE — N_GPIO39
N_SERIRQ — NRN12 8.2K/8P4R/4
N_GPIO19
N_GPIO48
N_GPIO35 — NRN13 8.2K/8P4R/4
N_GPIO16
N_GPIO49
NR80 1K/4/1/X
N_GPIO49:PCIE/MSATA MUX SELECT

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
NR66 1K/4/1/X — N_GPIO69 NR65 8.2K/4/X
N_GPIO69:SVID DETECT
N_GPIO55 NR244 8.2K/4

NRN4 8.2K/8P4R/4
N_GPIO7 8 7
N_GPIO54 6 5
N_GPIO1 4 3
N_GPIO68 2 1

ME PWROK

VCC3_ME
NR186 8.2K/4
N_ME_PWROK
NC49 0.01u/4/X7R/25V/K

ND2 BAT54A/SOT23/200mA
(12,43) N_-SLP_A
VCC1_05_ME
NR187 1/4/1
SOT23

3VDUAL
NR188 22K/4
NQ15 MMBT2222A/SOT23/600mA/40

NQ16 MMBT2222A/SOT23/600mA/40
NR189 8.2K/4 — VCC3_ME
NR190 8.2K/4/4/X
NC50 1u/4/X5R/6.3V/K
NR119 1K/4/1/X — VCC3

TLS Setting enable for SBA
3VDUAL
NR146 1K/4/1/X — N_GPIO37 — NR110 1K/4/1/X

SATA CONNECTOR

SATA3_0_1
MASK/0.01u/4/X7R/25V/K/X
MASK/0.01u/4/X7R/25V/K/X
N_SATA1TXP NC42 — N_SATA1TXPC 9 TX1+
N_SATA1TXN NC41 — N_SATA1TXNC 10 TX1-
11 GND
N_SATA1RXN NC40 — N_SATA1RXNC 12 RX1-
N_SATA1RXP NC39 — N_SATA1RXPC 13 RX1+
14 GND
MASK/0.01u/4/X7R/25V/K/X
MASK/0.01u/4/X7R/25V/K/X

8 GND
GND 1
TX0+ 2 — N_SATA0TXPC — NC44 — N_SATA0TXP
TX0- 3 — N_SATA0TXNC — NC43 — N_SATA0TXN
GND 4
RX0- 5 — N_SATA0RXNC — NC38 — N_SATA0RXN
RX0+ 6 — N_SATA0RXPC — NC37 — N_SATA0RXP
GND 7

MASK/0.01u/4/X7R/25V/K/X
MASK/0.01u/4/X7R/25V/K/X
MASK/0.01u/4/X7R/25V/K/X
MASK/0.01u/4/X7R/25V/K/X

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
(12) N_GPIO60 — NR184 8.2K/4

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PCH (D)

PCHD

VCC3 NR54 8.2K/4/X N_GPIO23 AK26
(23,29) N_LAD0 AN24
(23,29) N_LAD1 AP26
(23,29) N_LAD2 AJ24
(23,29) N_LAD3 AN26
(23) N_-LDRQ0 AK22
(23,29) N_-LFRAME AP24

(21) C_ACZ_BITCLK NR45 33/4 AV23
(21) C_-ACZ_RST NR43 33/4 AU24
AT26
AV22
(21) C_ACZ_SDIN2 AT22
AW23
(21) C_ACZ_SDOUT NR44 33/4 A_SO AU22
(21) C_ACZ_SYNC NR46 33/4 A_SYC AV24

(29) N_ICH_SPI_MOSI P40
(29) N_ICH_SPI_MISO R36
(29) N_-ICH_SPI_CS R38
(29) N_ICH_SPI_CLK U39
(29) N_-ICH_SPI_CS1 R35
R40
SPI_DQ2 U40
(29) SPI_DQ2
(29) SPI_DQ3 U37

N_Y1 AN40
N_Y2 AN39
N_-RTCRST AR38
N_-SRTCRST AR39
N_-INTRUDER AR41
(6,11,23) O_PWROK1 AT40
(23,28) O_-RSMRST AM40
N_INTVRMEN AV36
N_PCH_DPWROK AV38
N_DSWVRMEN AM41

(23) N_-LPCPME AG31
4,15,16,18,20,25,28,30,37) N_SMBCLK AG36
15,16,18,20,25,28,30,37) N_SMBDATA AG32
(11) N_GPIO60 AG35
(39) N_SML0CLK AE32
(39) N_SML0DAT AE35
(24) N_-PCH_HOT AJ39
N_SML1CLK AK36
N_SML1DAT AK33

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

G38 N_GPIO0
N32 N_GPIO32
AV26 N_GPIO33
N34 N_-PCI_STOP → N_-PCI_STOP (11)
AC40 N_-IGC_EN
AL40
AN22 N_GPIO13 → N_LAN_DIS- (39)
AC32 N_TEMP_ALART- → N_TEMP_ALART- (23)
AE34 A_-SKTOCC → A_-SKTOCC (4)
V41 N_GPIO28
AL39 N_GPIO29
W34 N_GPIO73 → N_GPIO73 (36)
P39 N_GPIO18
P37 N_GPIO20
AA39 N_GPIO25
W35 N_GPIO26 NR245 0/4/SHT/M/X
AA36 N_GPIO44
W32 N_GPIO45 1 → DIS_T (4) (23)
AA40 N_GPIO46 → N_GPIO46 (44)
AC36 N_GPIO57
W31
AE36 N_-RI → N_PCH_VRMPWRGD (12,23)
AK34 N_-PCIE_WAKE → N_-RI (24)
AN37 N_-SLP_A → N_-PCIE_WAKE (14,15,16,18,20,35,36)
AU36 N_-SLP_LAN → N_-SLP_A (11,43)
AC35
AK40 N_-SLP_S3 → N_-SLP_S3 (23)
AT35 N_-S4_S5 → N_-S4_S5 (23)
AA35
AD37 N_-SUSTAT
W36 N_SUSCLK → N_SUSCLK (29,36)
AJ40 N_GPIO72
AJ37
AG41 N_-S_WARN
AE38 N_DRAM_PWROK
AU34 N_GPIO27 → N_-LAN_WAKE (39)
AM36 N_GPIO31
AK38 N_-DEPSLP → N_-DEPSLP (28)
AK41 O_PWRBTSW → O_PWRBTSW (23)
N36 N_-SYS_RST → N_-SYS_RST (4,30)
R32 N_SPKR → N_SPKR (30)
D40 N_CPUPWROK → N_CPUPWROK (4,23)
W37 N_PCH_RST
Y40 N_PCH_TCK
W39 N_PCH_TDI
Y38 N_PCH_TDO
W40 N_PCH_TMS

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

DDR_15V
NR131 680/4/1
N_DRAM_PWROK → N_DRAM_PWROK (4,37)
NR132 1.47K/4/1

ACZ_SDOUT

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

HI:disable ME and override SPI Flash Access Permissions

NR140 8.2K/4 C_ACZ_SDOUT
NR64 8.2K/4
NQ14 PMBT2907A/SOT23/-600mA/50 SOT23
N_GPIO57
DS_ME → DS_ME (23)
NR70 8.2K/4
3VDUAL_PCH

PCH_DPWROK

3VDUAL_PCH
At least 10ms delay after 3VDUAL_PCH stabel
NR69 8.2K/4
N_PCH_DPWROK → N_PCH_DPWROK (23,28)
NC17 1n/4/X7R/50V/K

For IT8620 Ctrl

VCC3
NR254 1K/4/1
N_PCH_VRMPWRGD (12,23)
NR255 100K/4/1
NC61 0.1u/4/X7R/16V/K

PCH PU/PD

3VDUAL
NR139 8.2K/4/X N_GPIO46
GP44:DFX test Mode A_-SKTOCC
NR103 8.2K/4/X N_GPIO44
N_GPIO57
NRN9 8.2K/8P4R/4

N_-IGC_EN:Low to over clock validation strap
NR106 1K/4/1 N_-IGC_EN NR105 1K/4/1/X
NR153 1K/4/1/X N_SUSCLK NR154 8.2K/4/X
SUSCLK: OD PLL VR Disable
N_-SUSTAT NR133 8.2K/4/X
N_GPIO13 NR51 1K/4/1
N_GPIO28 NR144 1K/4/1/X
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

close NR51
3VDUAL
NC60 1u/4/X5R/6.3V/K

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

3VDUAL
NR134 8.2K/4/X N_GPIO73 NR253 8.2K/4
N_PCH_RST NR172 20K/4/1
N_PCH_TDI NR170 200/4/1
N_PCH_TDO NR141 200/4/1
N_PCH_TMS NR169 200/4/1
N_PCH_TCK NR87 200/4/1/X

N_PCH_RST NR143 1K/4/1/X
N_PCH_TDI NR171 100/4/1
N_PCH_TDO NR168 100/4/1
N_PCH_TMS NR142 100/4/1
N_PCH_TCK NR108 51/4/1
N_GPIO18 NR79 8.2K/4
N_GPIO26 NR107 8.2K/4
N_GPIO25 NR137 8.2K/4
N_-SYS_RST NC58 1n/4/X7R/50V/K
N_DRAM_PWROK NC59 1n/4/X7R/50V/K

NRN6 8.2K/8P4R/4
3VDUAL
N_-RI 8
N_GPIO60 6
N_-LPCPME 4
N_-PCH_HOT 2
7
5
3
1

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

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

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
3VDUAL_PCH
N_VBATT NRB 1K/4/1
ND1 BAS40-05/0.2A/SOT23
RB_TP
N_VBAT (23)

NR90 390K/4 N_DSWVRMEN
N_RTCVDD (12,13,30)
NR67 390K/4 N_INTVRMEN
N_INTERMEN : Integrated 1.05V SUS VRM Enable
NR78 20K/4/1 N_-RTCRST (44)
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 (12,13,30)
N_-SRTCRST NR77 20K/4/1 N_RTCVDD (12,13,30)
NC19 1u/4/X5R/6.3V/K

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

Gigabyte Technology

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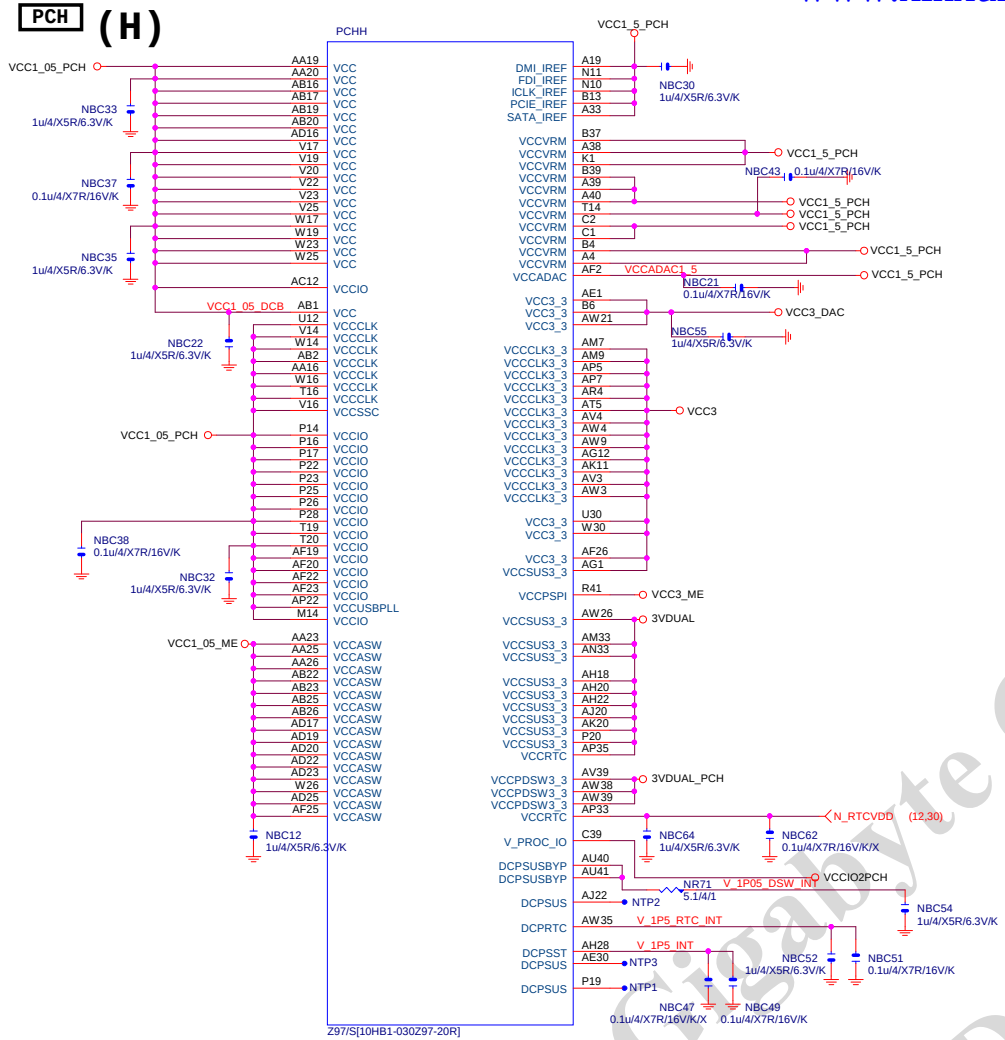
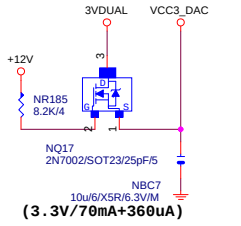
PCH (H)



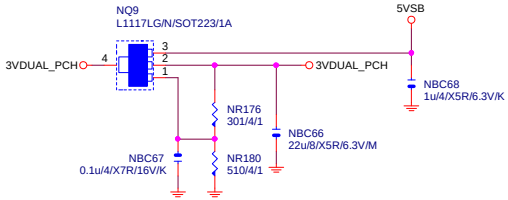
VCC3_DAC

CLOSE北橋(注意震盪水波紋)

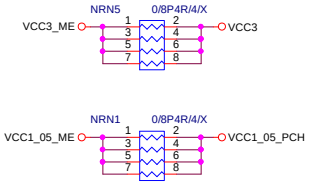


(3.3V/70mA+360uA)

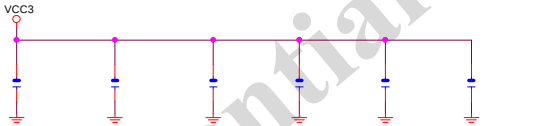
3VDUAL_PCH



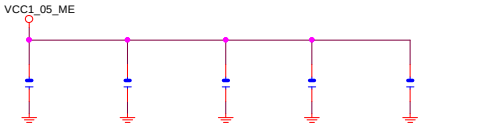
SHT PWR



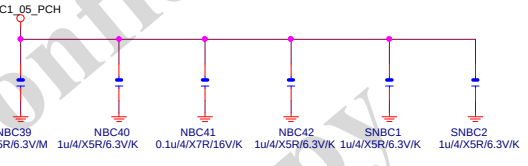
(3.3V)(X6)



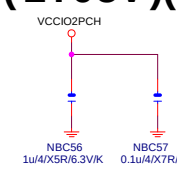
(1.05V)(X5)



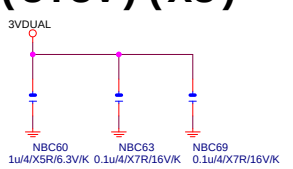
(1.05V)(X6)



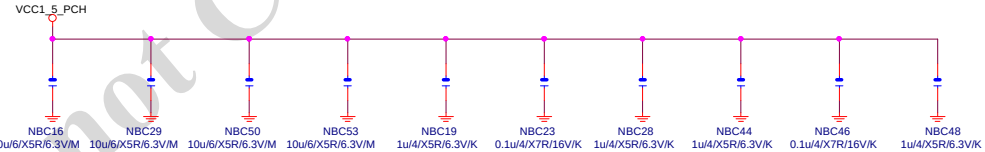
(1.05V)(X2)



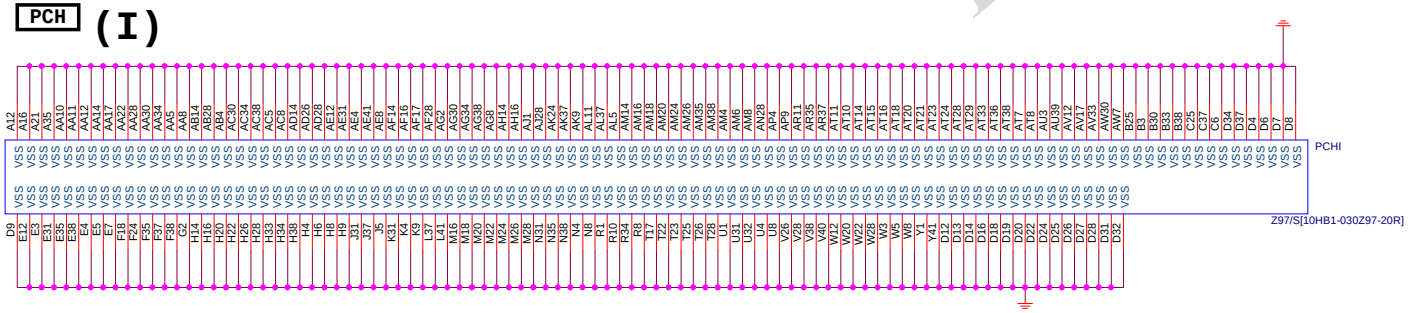
(3.3V)(X3)



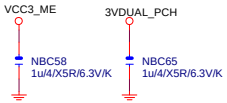
(1.5V) (X10)

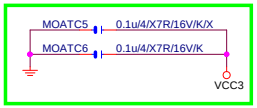


PCH (I)

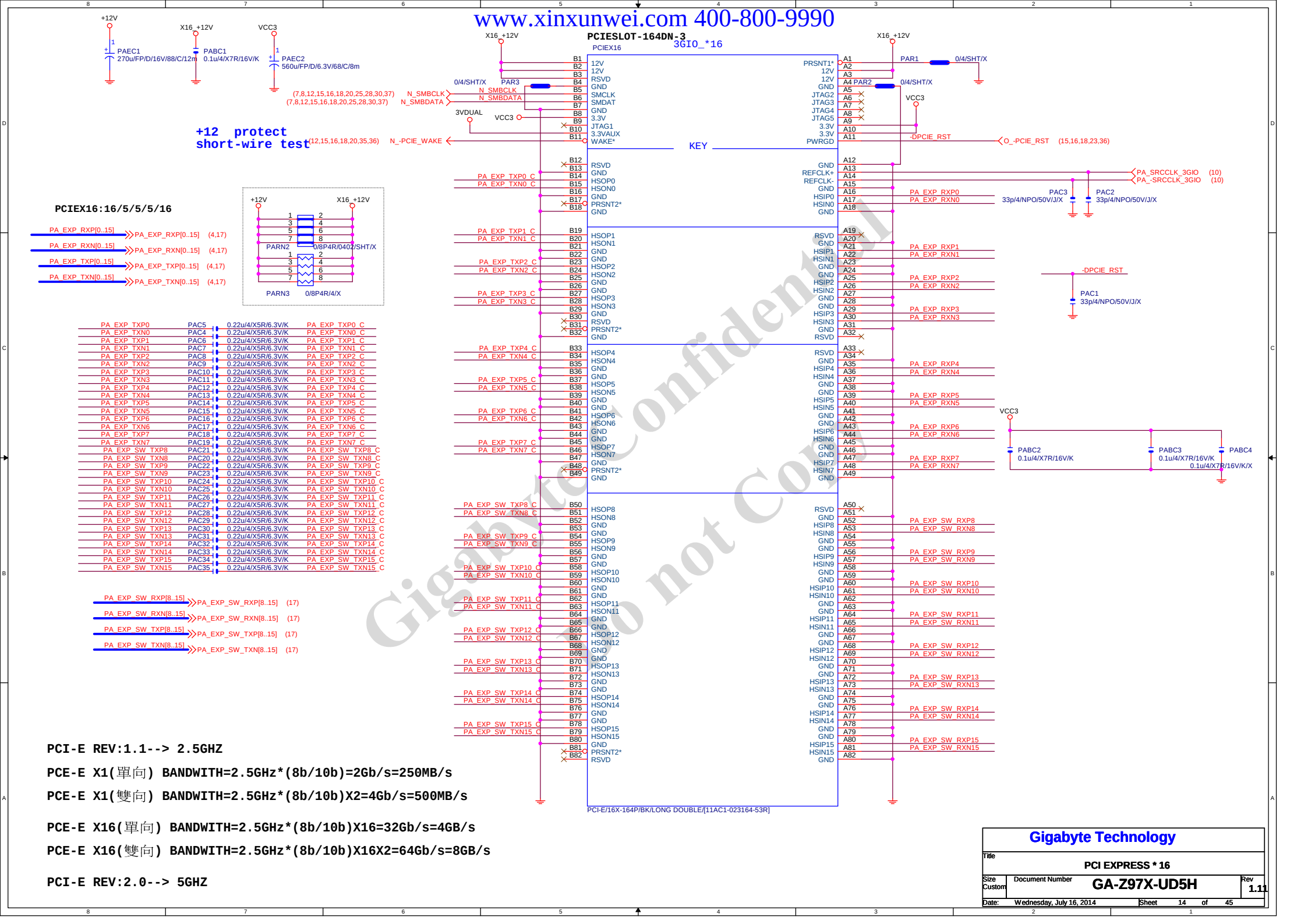


CAP





Gigabyte Technology			
Title: PCH PWR ,GND			
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 13 of 45		



PCI-E REV:1.1--> 2.5GHZ

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

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

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

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

PCI-E REV:2.0--> 5GHZ

Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-Z97X-UD5H
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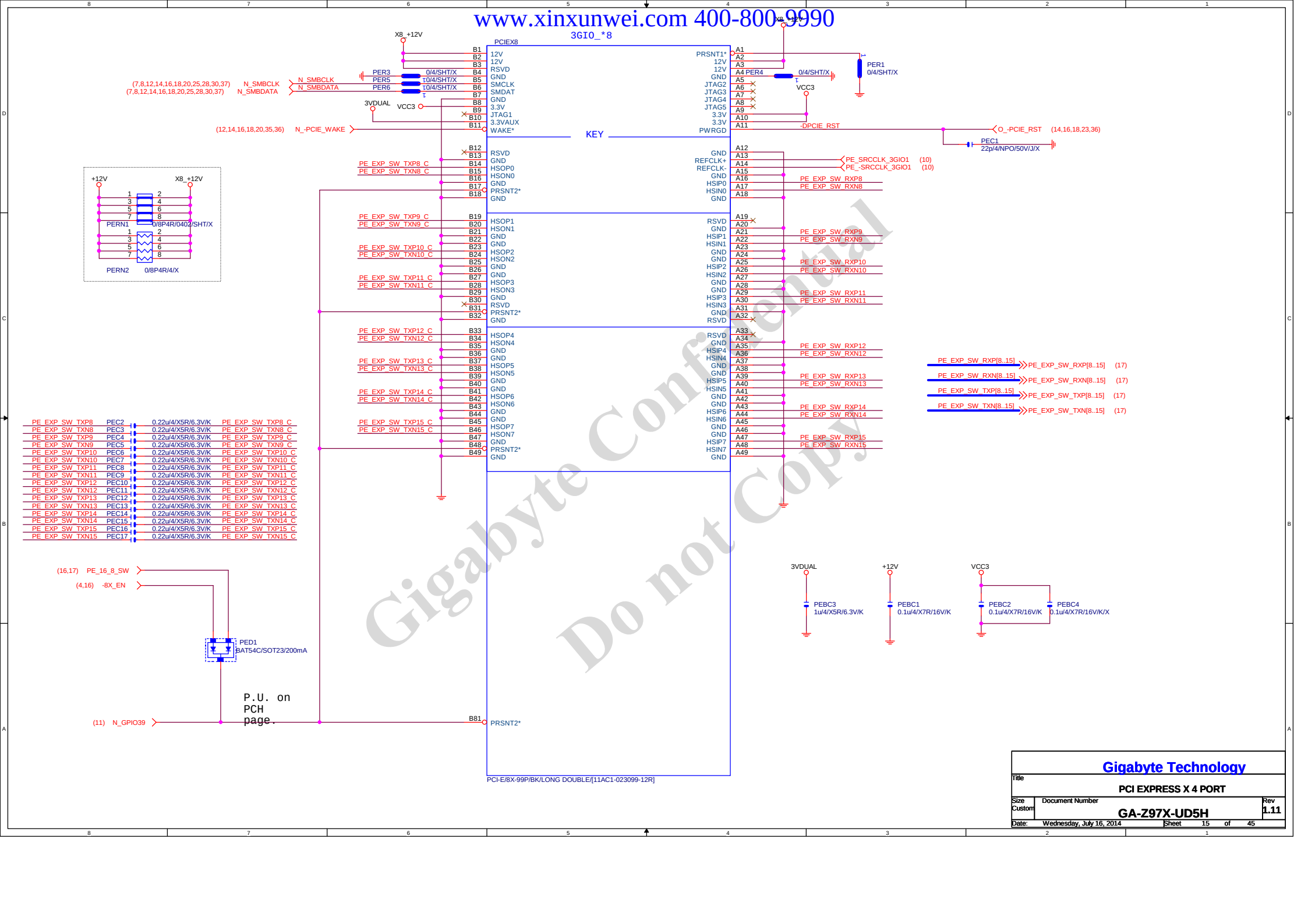
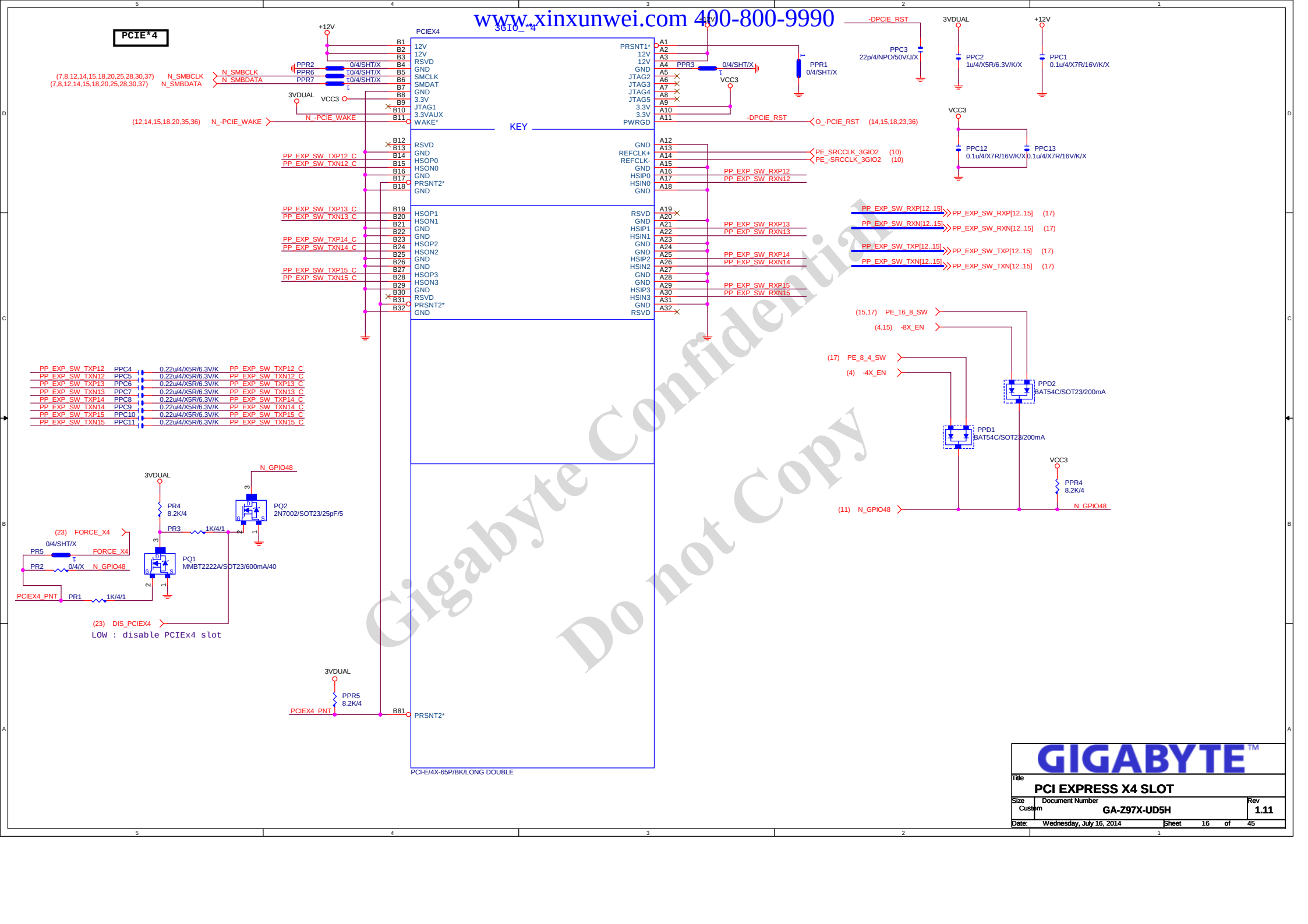
Date: Wednesday, July 16, 2014	Sheet 14 of 45

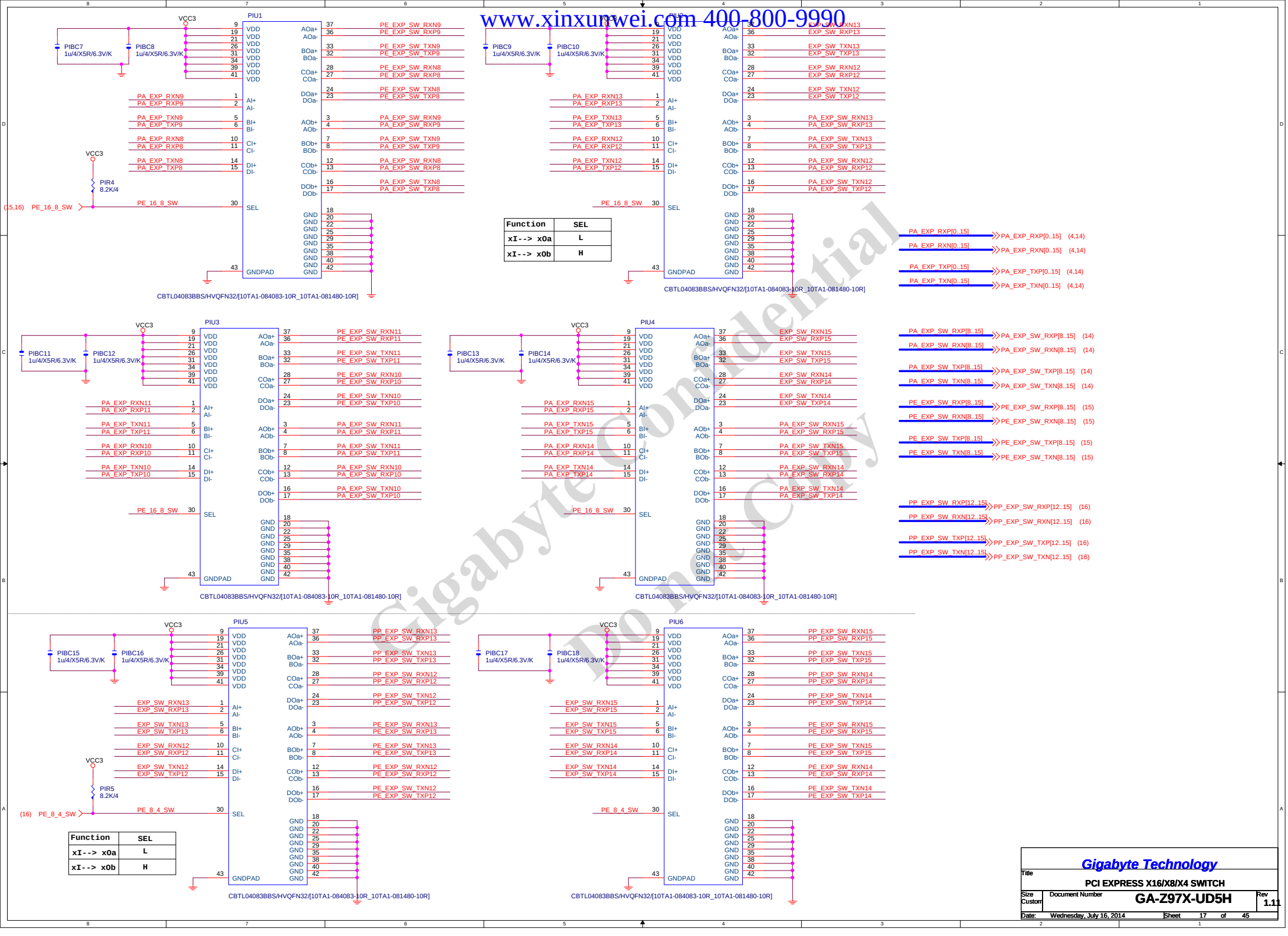


Gigabyte Technology	
Title	PCI EXPRESS X 4 PORT
Size: Custom	Document Number: GA-Z97X-UD5H
Rev: 1.11	
Date: Wednesday, July 16, 2014	Sheet 15 of 45



GIGABYTE™

Title	PCI EXPRESS X4 SLOT	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 16 of 45	



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

PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] (4,14)
PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] (4,14)
PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] (4,14)
PA_EXP_TXN[0..15] PA_EXP_TXN[0..15] (4,14)

PA_EXP_SW_RXP[8..15] PA_EXP_SW_RXP[8..15] (14)
PA_EXP_SW_RXN[8..15] PA_EXP_SW_RXN[8..15] (14)
PA_EXP_SW_TXP[8..15] PA_EXP_SW_TXP[8..15] (14)
PA_EXP_SW_TXN[8..15] PA_EXP_SW_TXN[8..15] (14)
PE_EXP_SW_RXP[8..15] PE_EXP_SW_RXP[8..15] (15)
PE_EXP_SW_RXN[8..15] PE_EXP_SW_RXN[8..15] (15)
PE_EXP_SW_TXP[8..15] PE_EXP_SW_TXP[8..15] (15)
PE_EXP_SW_TXN[8..15] PE_EXP_SW_TXN[8..15] (15)

PP_EXP_SW_RXP[12..15] PP_EXP_SW_RXP[12..15] (16)
PP_EXP_SW_RXN[12..15] PP_EXP_SW_RXN[12..15] (16)
PP_EXP_SW_TXP[12..15] PP_EXP_SW_TXP[12..15] (16)
PP_EXP_SW_TXN[12..15] PP_EXP_SW_TXN[12..15] (16)

Gigabyte Technology			
Title	PCI EXPRESS X16/X8/X4 SWITCH		
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
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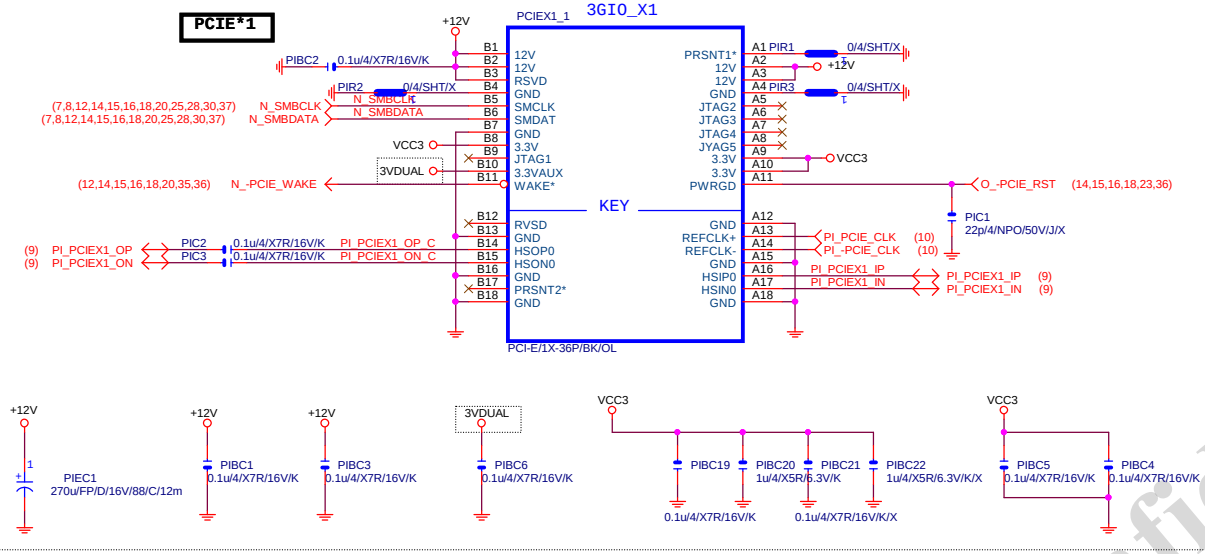
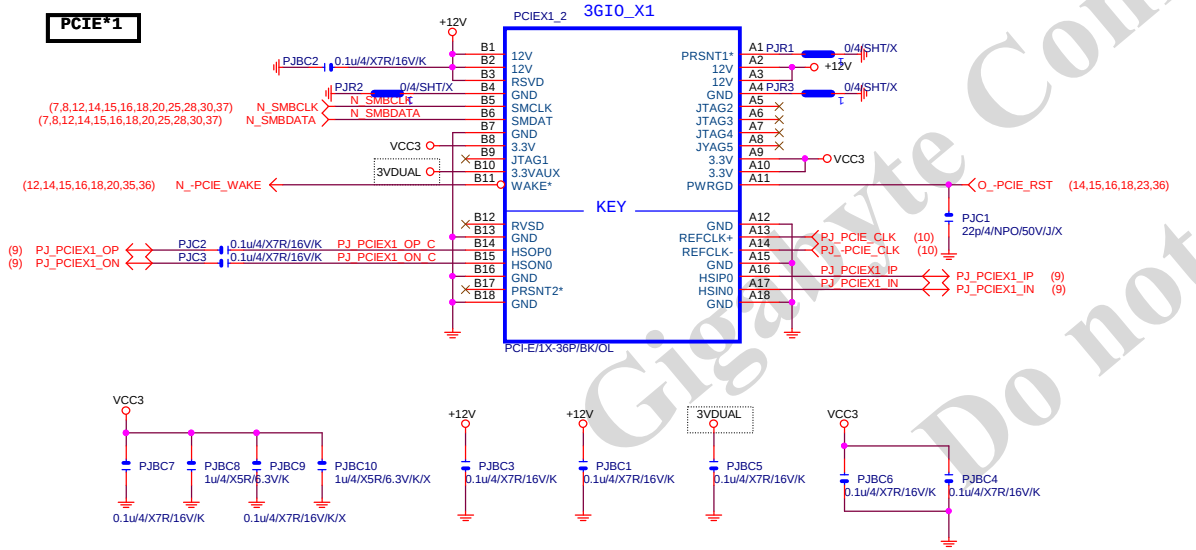
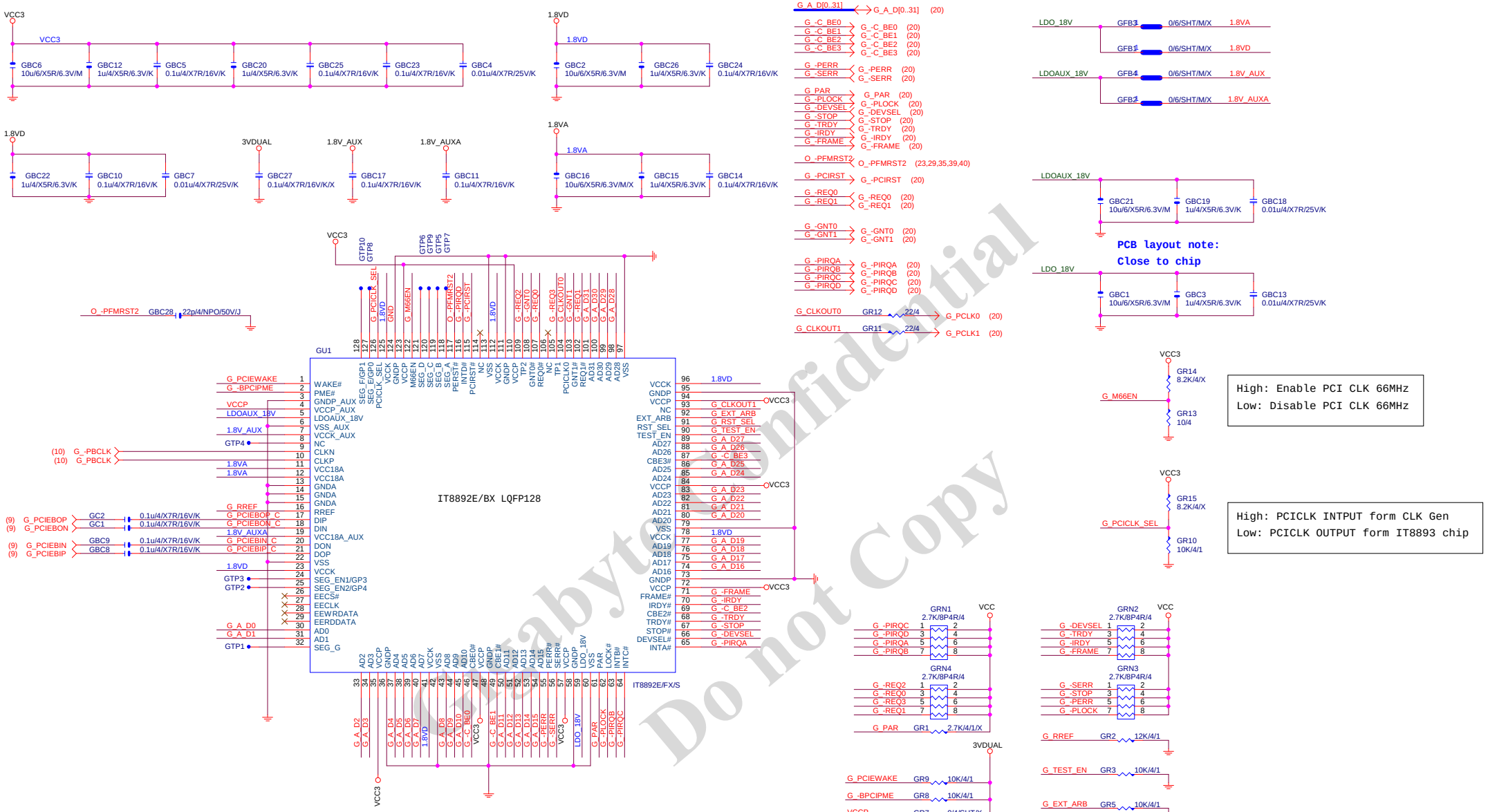




Gigabyte Technology			
Title: PCI EXPRESS X1 SLOT			
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 18 of 45		



Gigabyte Technology		
Title	IT8892E	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
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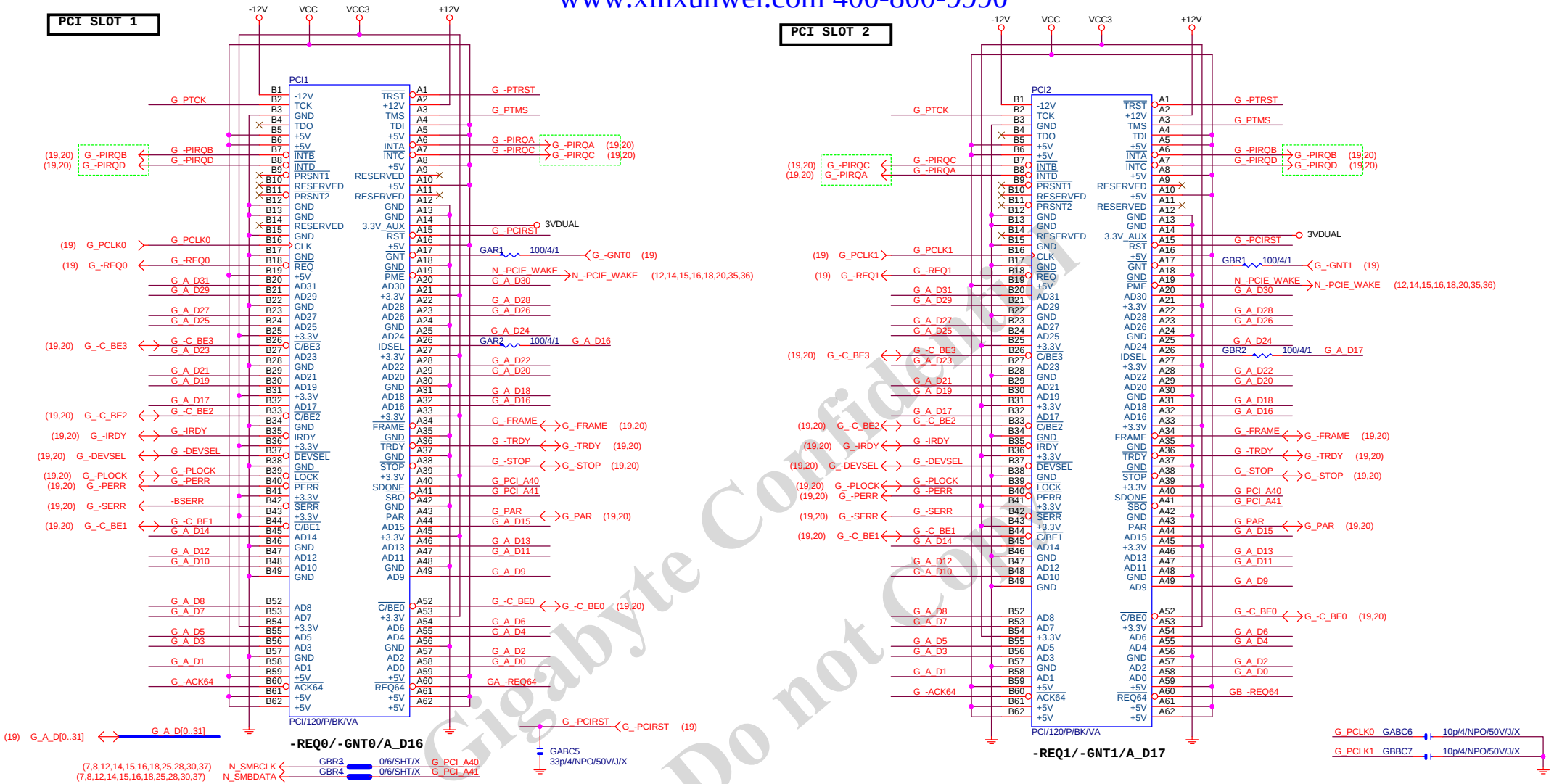
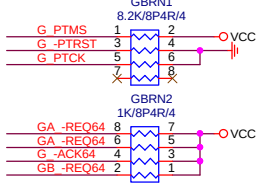
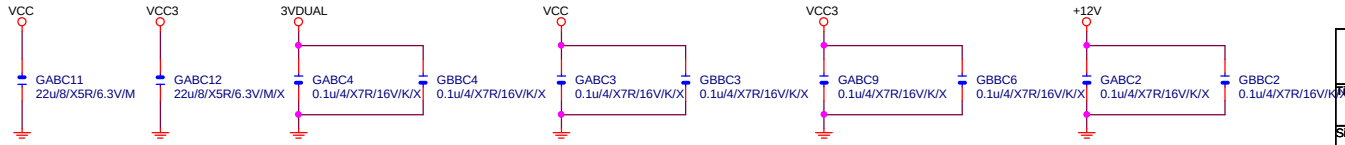


PCI PU



PCI CAP



GIGABYTE™

Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
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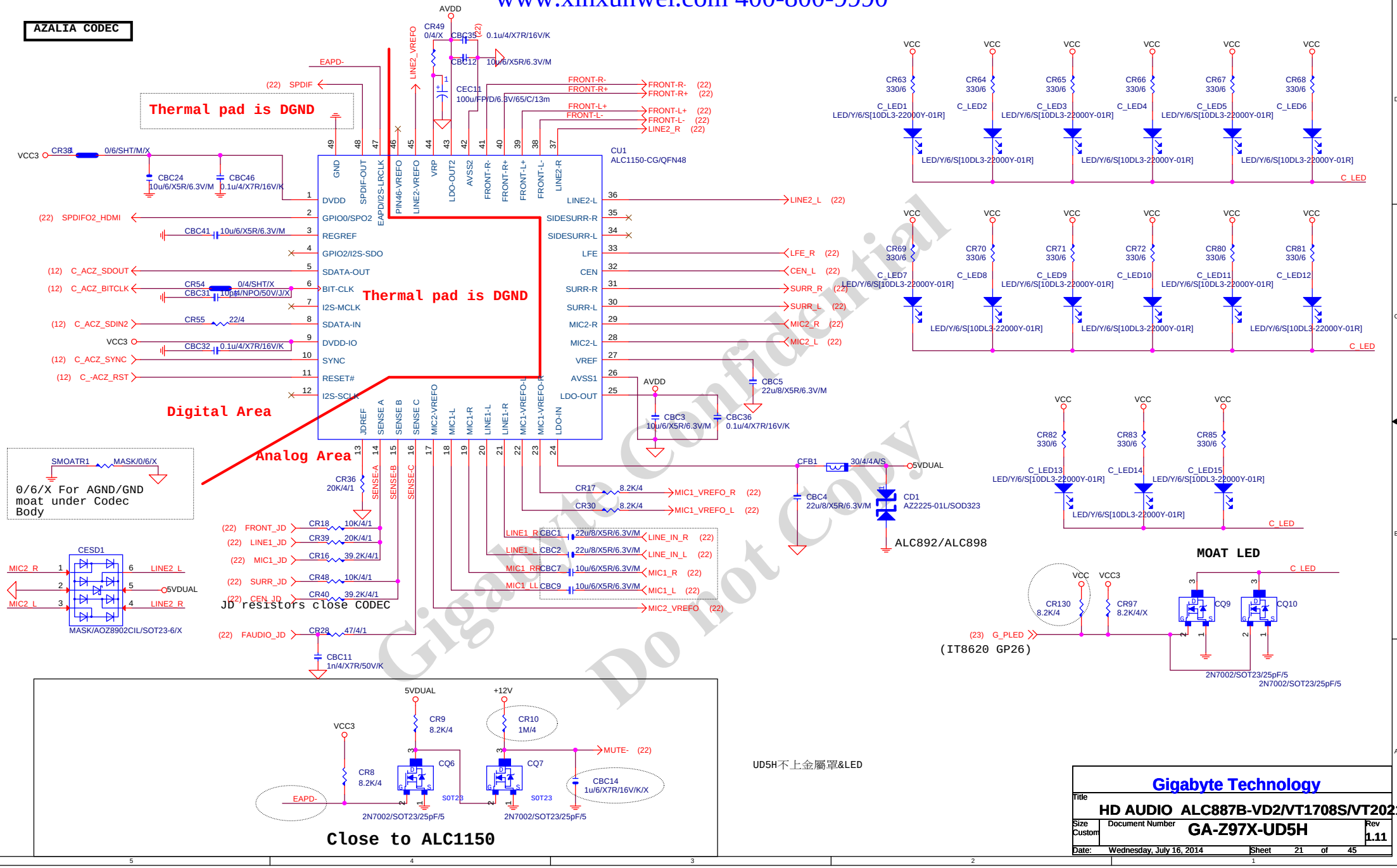
AZALIA CODEC



Gigabyte Technology			
Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021			
Size: Custom	Document Number: GA-Z97X-UD5H		Rev: 1.11
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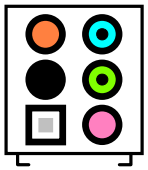
AZALIA JACK



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

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

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

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

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

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

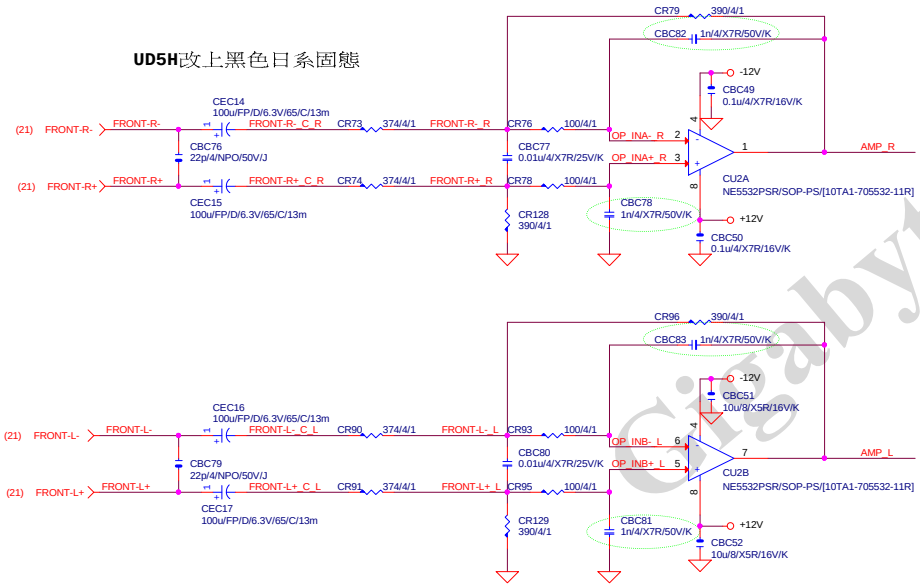
SPDIF_OUT

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

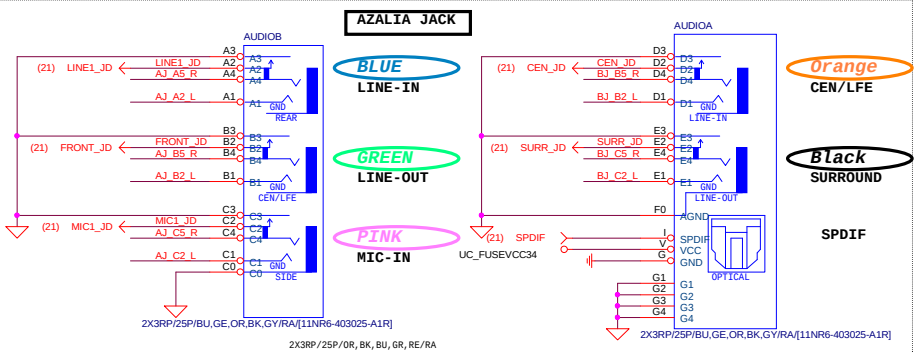
For HDMI SPDIF

Differential to Single-End AMPLIFIED

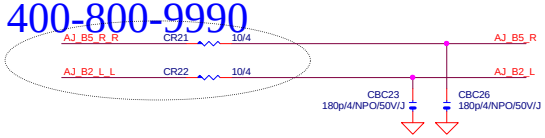
UD5H改上黑色日系固態



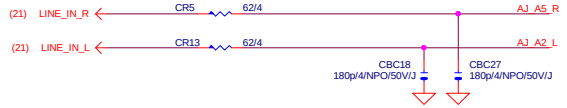
AZALIA JACK



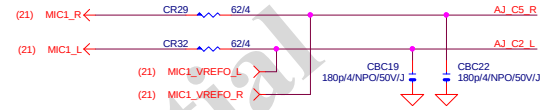
LINE-OUT



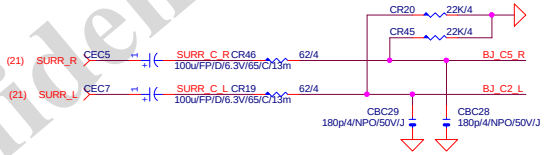
LINE-IN



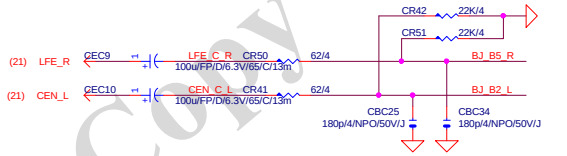
MIC-IN



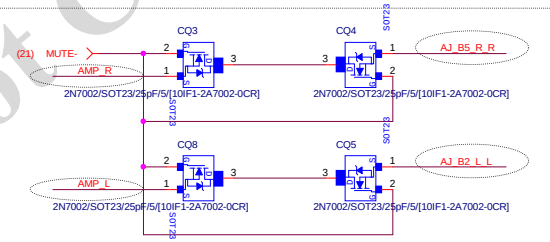
SURROUND



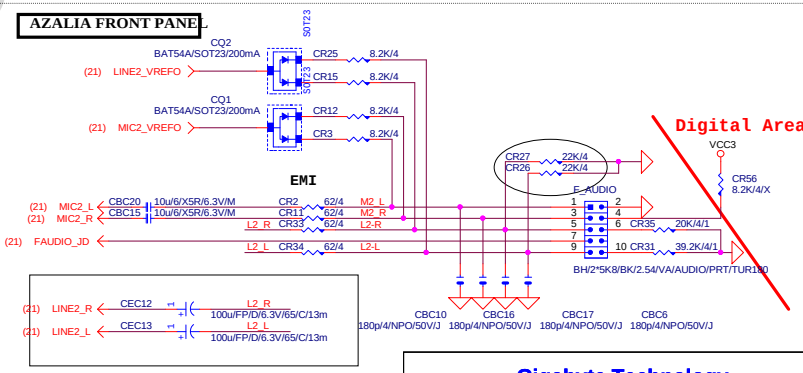
CEN/LFE



Anti Pop



AZALIA FRONT PANEL



Gigabyte Technology

Title: AUDIO JACK

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SIO IT8728F

CPU_OPT

IT8620E_BX

PWR SHT

SIO PU

SIO STRAP

SIO_18V

MB ID

Power leakage

DUAL BIOS OPT STRAP

SIO CAP

IT8620E GPIO問題匯整	
PIN 50	GP26--- 第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT為HDLED FUNCTION, GP93 BYPASS TO GP92
	高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾

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

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

Gigabyte Technology

Title: ITE 8620CX LPC IO

Size: B | Document Number: GA-Z97X-UD5H | Rev: 1.11

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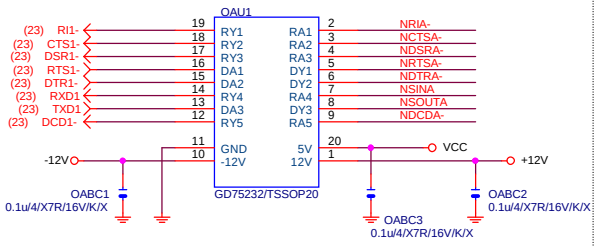
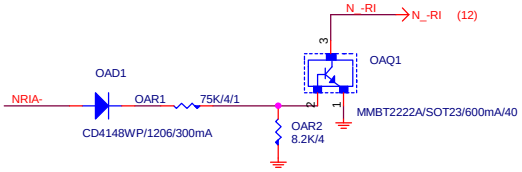
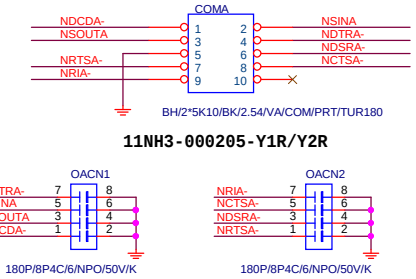
COMA



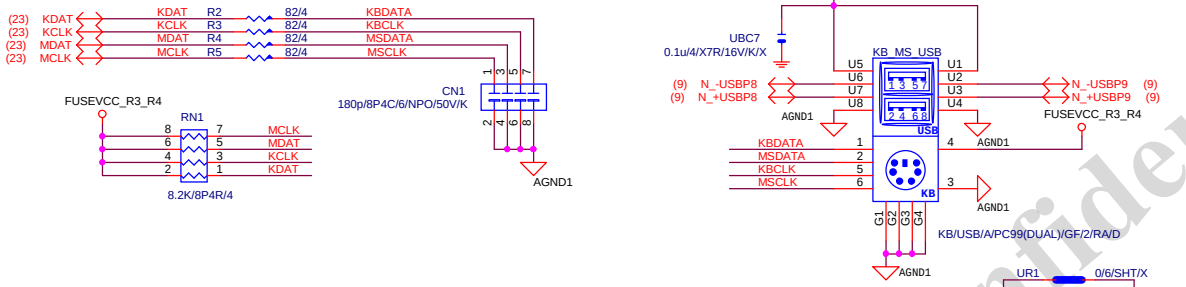
COM RI



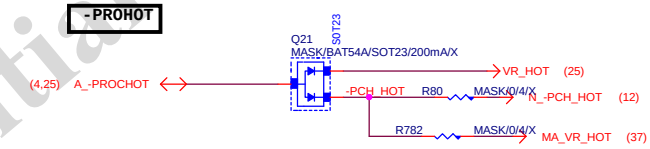
COM BUFFER



KB/MS/USB



-PROHOT

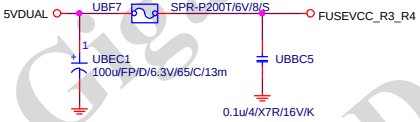


Thunderbolt pin header

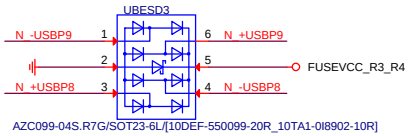
Removed

R_USB

USB20 FUSE



USB20 ESD PROCTECT



Gigabyte Technology		
Title: COM/ PROHOT/ R_USB		
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-PROHOT

OTP:132度 / PCB THERMAL TRIP:122 度

125 ~130degree assert

CLOSE VCORE PWM UPPER MOSFET

Debug Only

Remove PinHeader in modify PBOM

Addr: 70h

MOS HEATSINK

IR3563B

DAU1 IR3563BMGB03TRP/QFN48/[10TA1-63563B-07R]

Close to Vcore output inductor

For Phase margin and gain margin measure

Pop DAR83 if pop DAR63

125 ~130degree assert

CLOSE VCORE PWM LOWER MOSFET

MOS HS/[12SP2-PTZ975-01R_12SP2-PTZ975-02R_12SP2-PTZ975-03R]/X

Title	IR 3563A
Size	Custom
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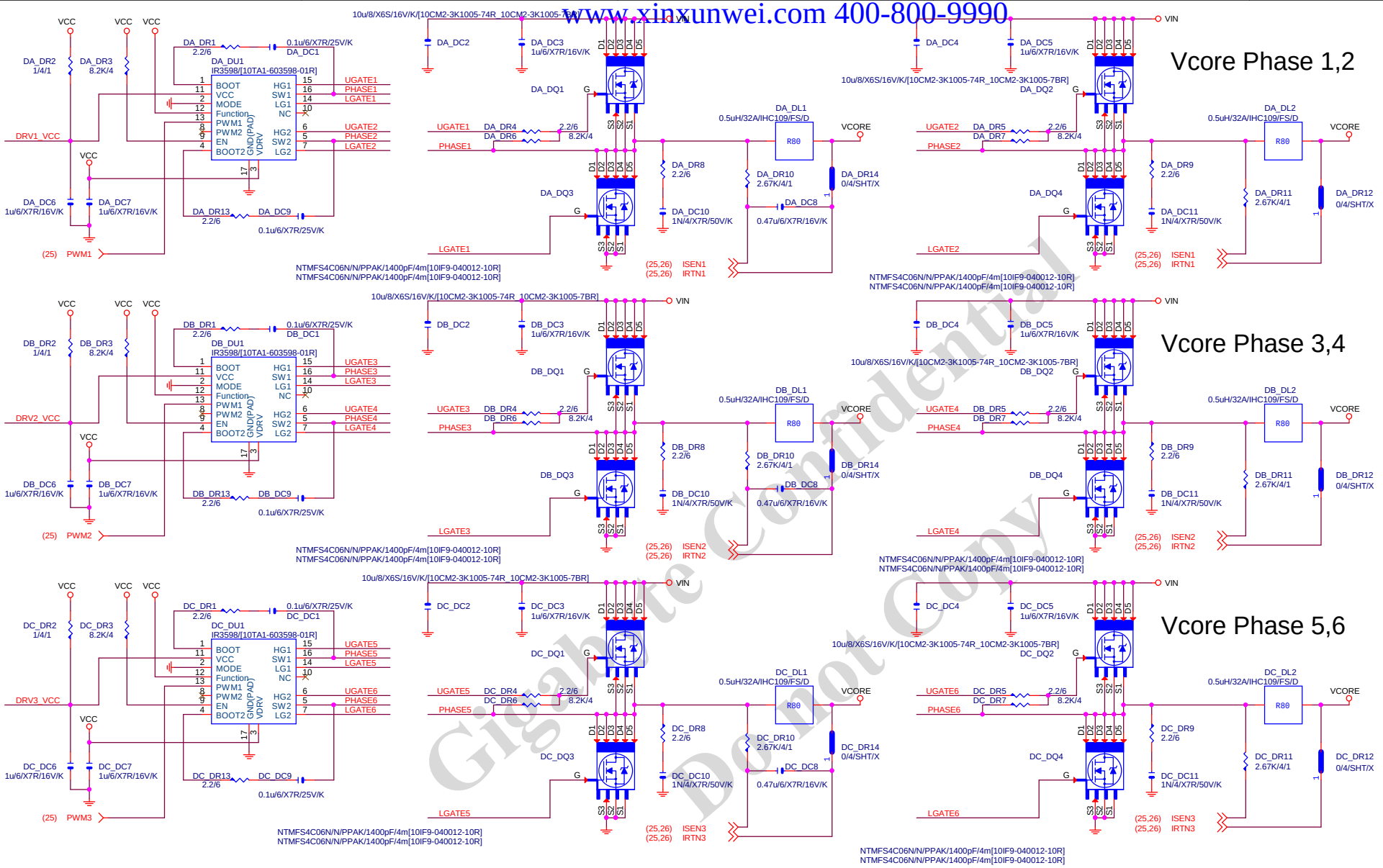

FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Ssate	DUAL
1	0	Tri-Ssate	Doubler
OPEN	0	Tri-Ssate	Quad
OPEN	1	IR ATL	Quad

function = 0 --> Quad mode
function = 1 --> Doubled mode

In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU

GIGABYTE TECHNOLOGY	
Title	CPU CORE_IR3563B
Size: Custom	Document Number: GA-Z97X-UD5H
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Date:	Wednesday, July 16, 2014
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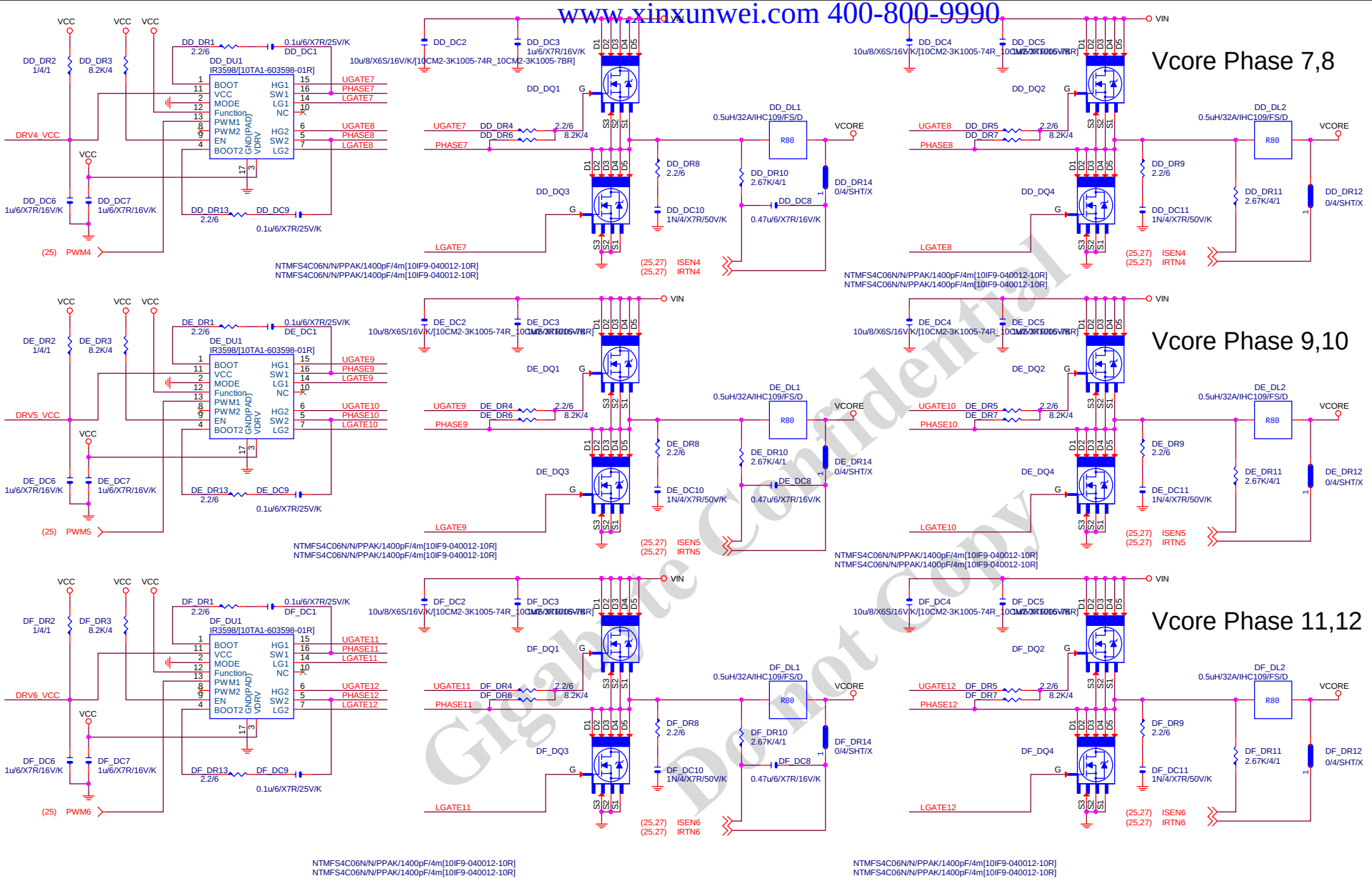

FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Ssate	DUAL
1	0	Tri-Ssate	Doubler
OPEN	0	Tri-Ssate	Quad
OPEN	1	IR ATL	Quad

function = 0 --> Quad mode
function = 1 --> Doubled mode

In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU

GIGABYTE TECHNOLOGY

Title: CPU CORE_IR3563B

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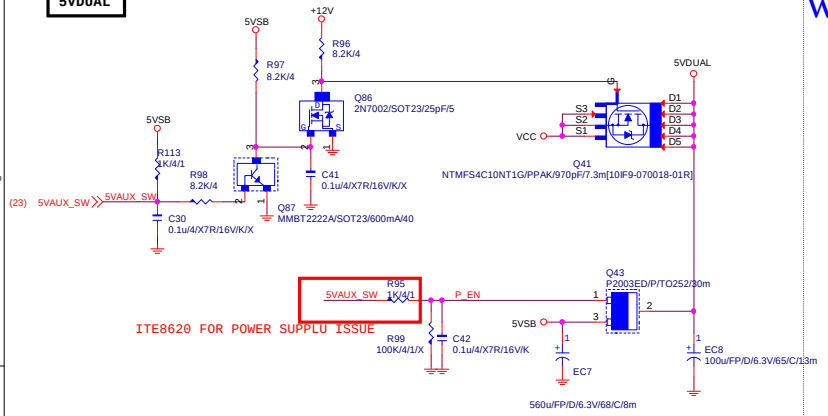
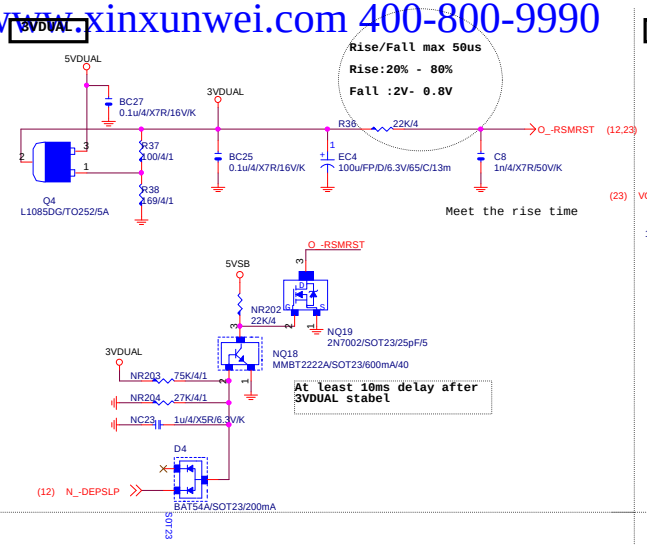
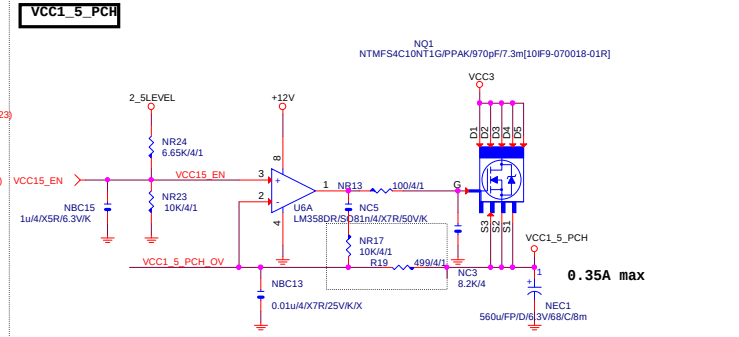
5VDUAL



3VDUAL

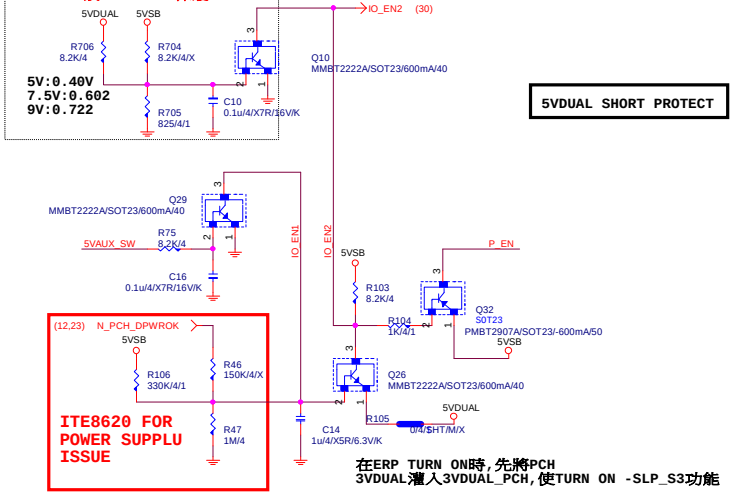


VCC1_5_PCH

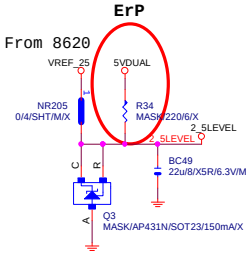


5VSB OVP:7.5V protection

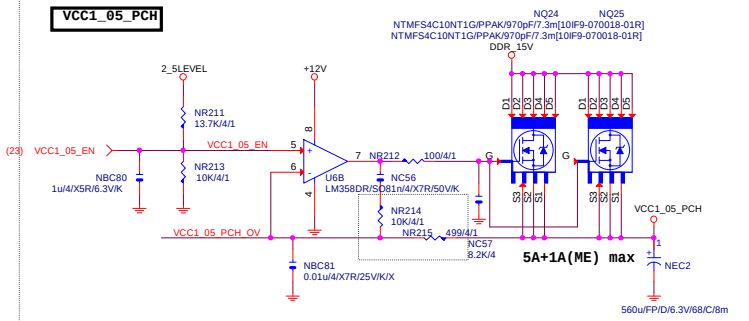
NOTE 82:改5VDUAL 6v保護



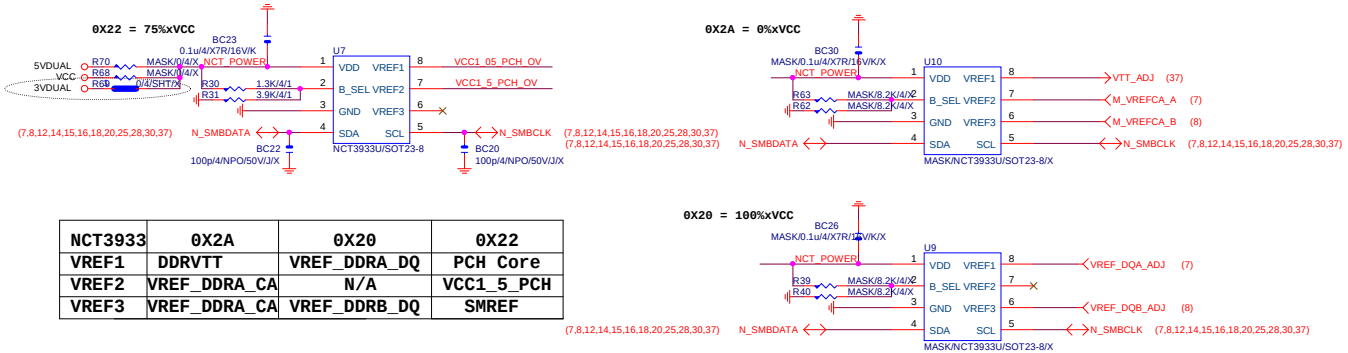
2_5LEVEL



VCC1_05_PCH



OVER VOLTAGE



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

Gigabyte Technology

Title: DISCRETE POWER

Size: Custom | Document Number: GA-Z97X-UD5H | Rev: 1.11

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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
-SPI_CS_1
NR227 1K/4/1
NR228 0/4/X
NQ20 S0T23
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
-SPI_CS_2
NR231 1K/4/1
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

MAIN BIOS

M_BIOS
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
(12,29) SPI_DQ2 NR220 0/4/SHT/X N_-SPI_WP0
CS# VDD SO HOLD# WP# SCK VSS SI
NR4 0/4/SHT/M/X
NBC2 1u/4/X5R/6.3V/K
-HOLD0 NR221 0/4/SHT/X NR222 MASK/8.2K/4/X -SPI_HOLD_M
SPI_DQ3 (12,29)
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
128M/Q/SPI/SO8/S

BACKUP BIOS

B_BIOS
-SPI_CS_2 NR8 22/4
SPI_MISO
(12,29) SPI_DQ2 NR233 0/4/SHT/X N_-SPI_WP1
CS# VDD SO HOLD# WP# SCK VSS SI
NR12 0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K
-HOLD1 NR224 0/4/SHT/X NR225 MASK/8.2K/4/X -SPI_HOLD_B
SPI_DQ3 (12,29)
N_ICH_SPI_CLK (12)
N_ICH_SPI_MOSI (12,29)
128M/Q/SPI/SO8/S

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

MOSI For DMI RX Termination Voltage

(12,29) 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
(12,29) N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 NR246 8.2K/4/X
-SPI_HOLD_M NR3 1K/4/1
-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
(12,29) N_ICH_SPI_MISO N_ICH_SPI_MISO NR5 8.2K/4
-HOLD0 NR235 1K/4/1/X
-HOLD1 NR236 1K/4/1/X

5VDUAL
-SPI_HOLD_M NR237 1K/4/1/X
-SPI_HOLD_B NR238 1K/4/1/X

(12,29) 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

3VDUAL_PCH
VCC3
TPM
(10) T_TPMCLK LCLK
(12,23) N_-LFRAME LFRAME#
(19,23,35,39,40) O_-PFMRST2 LRESET#
(12,23) N_LAD3 LAD3
(12,23) N_LAD0 LAD0
N_LAD3 LAD2 LAD1
N_LAD0 VCC3 GND RSV0 SB3V GND LPCPD# SERIRQ CLKRUN# RSV1 RSV2
pin 4 防禁
N_LAD2 (12,23)
N_LAD1 (12,23)
N_SERIRQ (11,23)
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
VCC3
TR2 8.2K/4
TPM_GP14 (23)

VCC
NR256 680/4/1
MBIOS_LED 藍
LED/O/6/S
NQ26 2N7002/SOT23/25pF/5
NR258
-SPI_HOLD_M 8.2K/4

VCC
NR257 680/4/1
BBIOS_LED 藍
LED/O/6/S
NQ27 2N7002/SOT23/25pF/5
NR259
-SPI_HOLD_B 8.2K/4

BIOS Debug port

BIOS_PH
N_-ICH_SPI_CS
SPI_MISO
N_-ICH_SPI_CS1 (12,29)
-HOLD0
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
MASK/PH/2*5K1,K7/BK/2.54/VA/D[11NH2-020205-81R]/X

VCC3_ME

5VDUAL
NR260 1K/4/1
(23) B_SW
BIOS_SW
SLIDE SW/1 P/BK/D

-SPI_HOLD_M
NR262 8.2K/4
NQ29 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD0 (23,29)

-SPI_HOLD_B
NR261 8.2K/4
NQ28 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD1 (23,29)

5VDUAL
NR263 1K/4/1
NR266 1K/4/1
NQ32 2N7002/SOT23/25pF/5

-SPI_HOLD_M
NR265 8.2K/4
NQ31 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD1 (23,29)

-SPI_HOLD_B
NR264 8.2K/4
NQ30 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD0 (23,29)

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

R237 100/4/1
-DUAL_BIOSDIS (23)
SB
SLIDE SW/1 P/BK/D

SB:Single BIOS	
1	Disable
2	Enable

Gigabyte Technology

Title: DUAL BIOS, TPM

Size: Custom | Document Number: GA-Z97X-UD5H | Rev: 1.11

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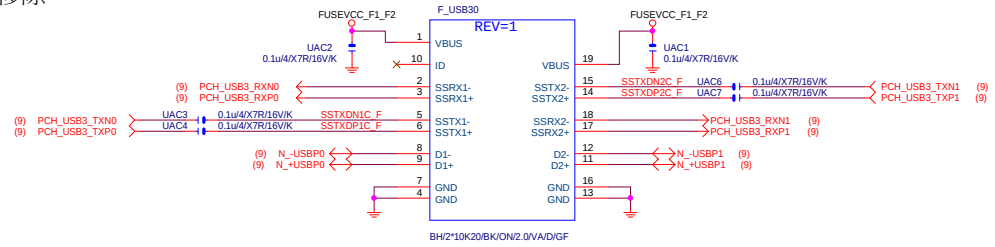
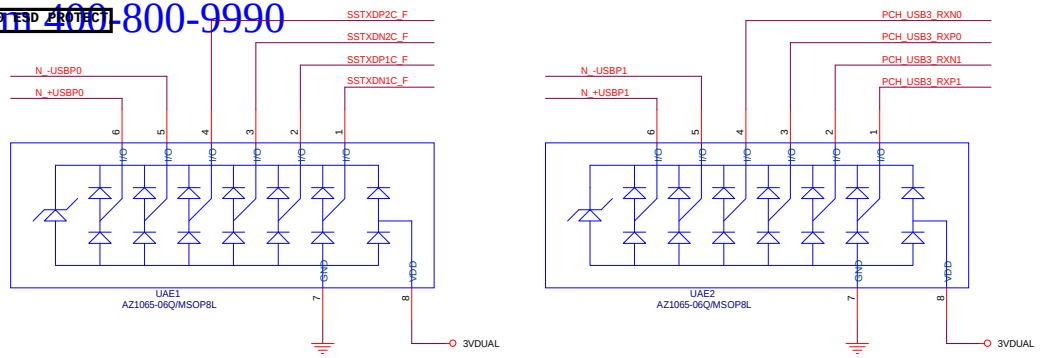
0.2
移除

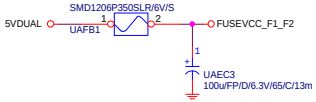
Front USB3.0



F_USB30 ESD PROTECT



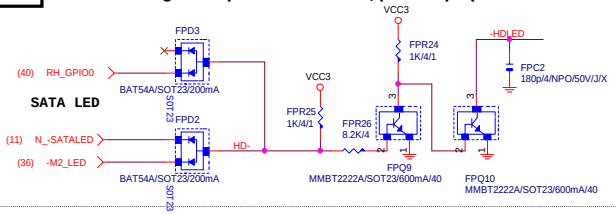
F_USB30 PWR



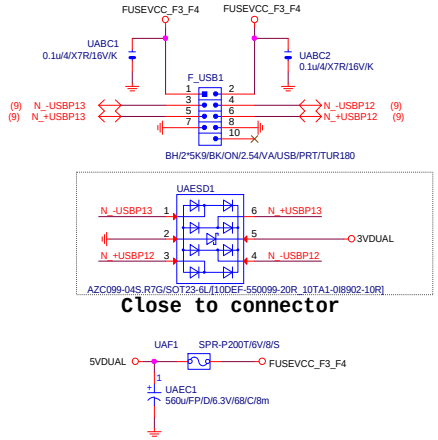
Close to connector

SATA LED

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

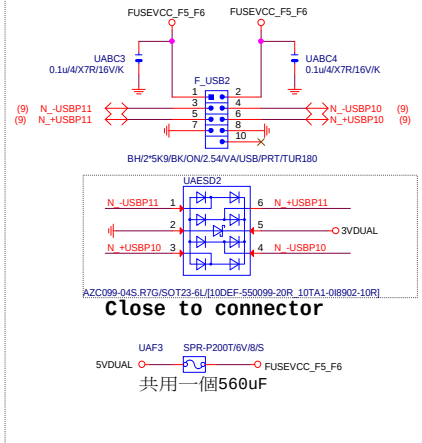


FRONT USB1



Close to connector

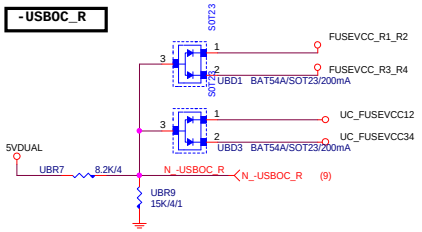
FRONT USB2



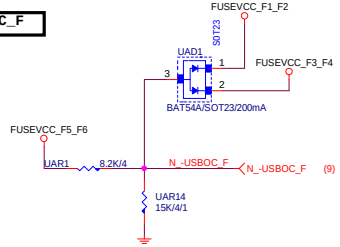
Close to connector

共用一個560uF

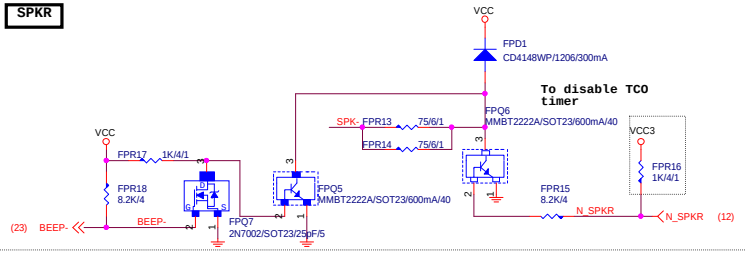
-USBOC_R



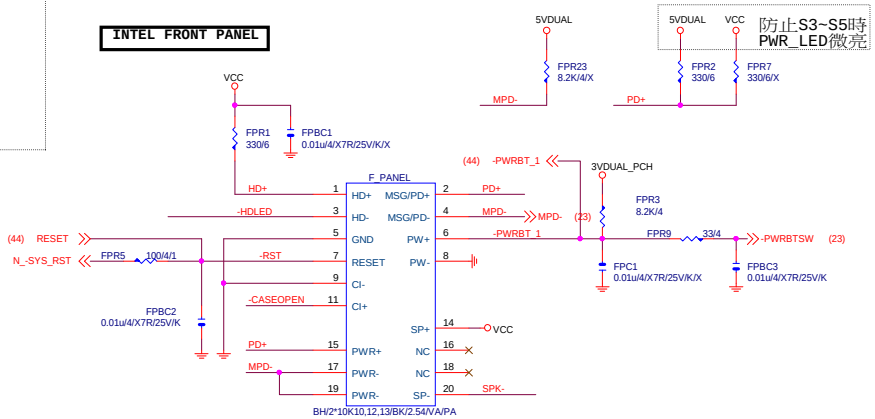
-USBOC_F



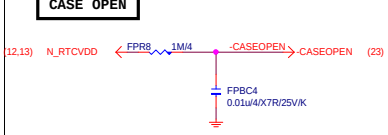
SPKR



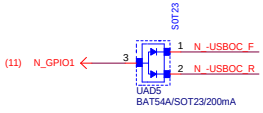
INTEL FRONT PANEL



CASE OPEN



F_USB POWER PROTECT

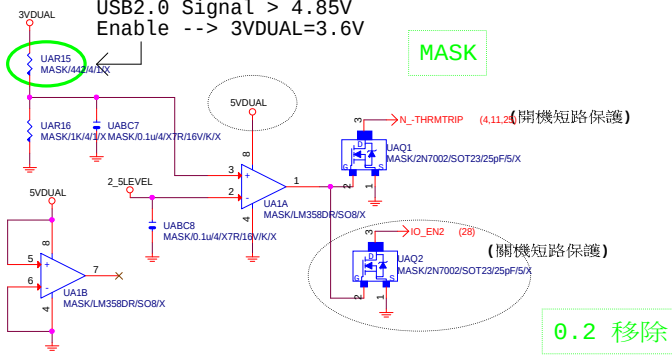


USB2.0 Signal & power short protection

USB2.0 Signal > 4.85V

Enable --> 3VDUAL=3.6V

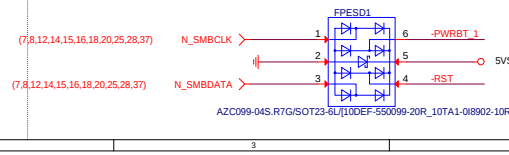
MASK



(開機短路保護)

(開機短路保護)

0.2 移除



Gigabyte Technology	
Title	FP,F_USB,USB PWR,FDD,BZ
Size: Custom	Document Number: GA-Z97X-UD5H
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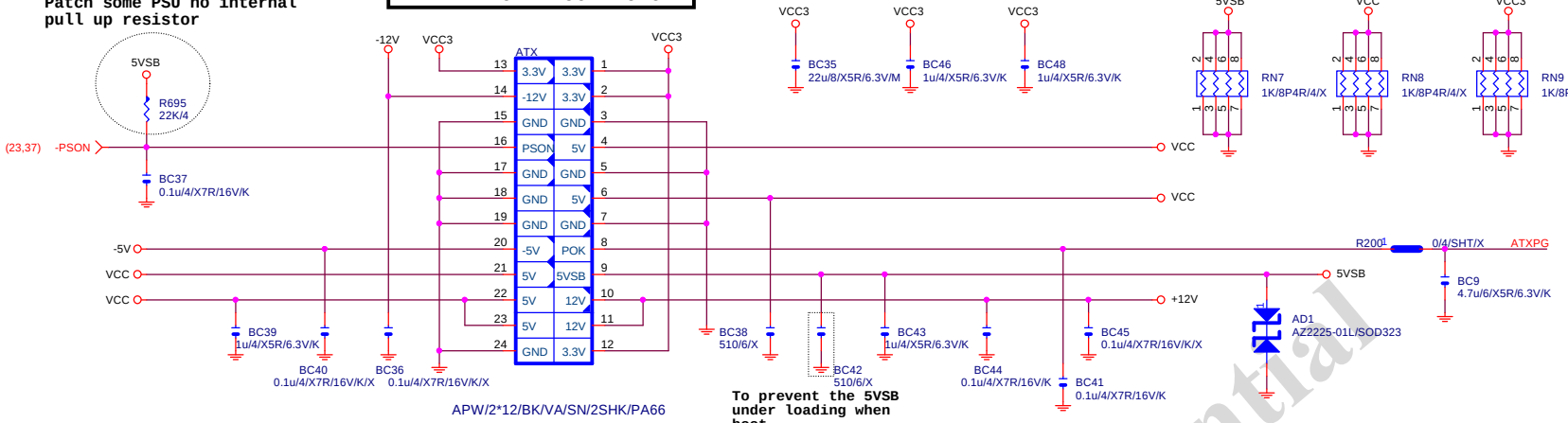
Patch some PSU no internal pull up resistor

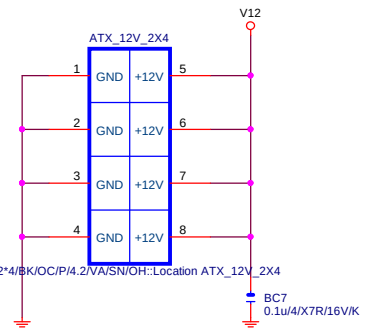
ATXX24 POWER CONNECTOR



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

To prevent the 5VSB under loading when boot

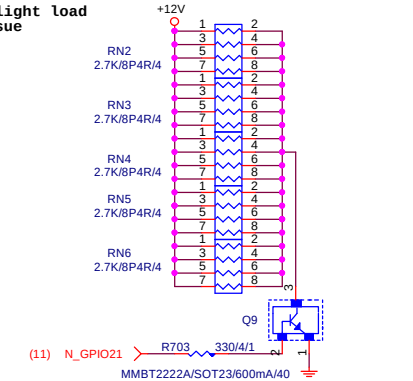
ATXX4 POWER CONNECTOR

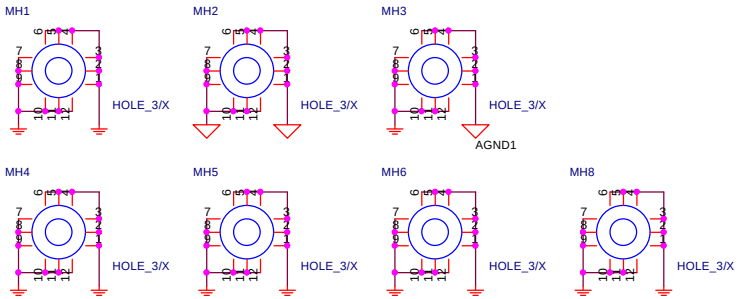


APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

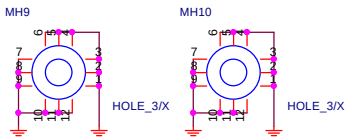


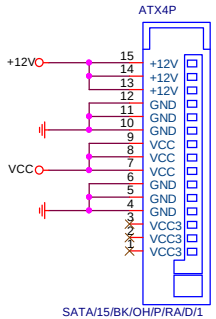


HOLE_4-RH-1

K1-ICT

4MMH

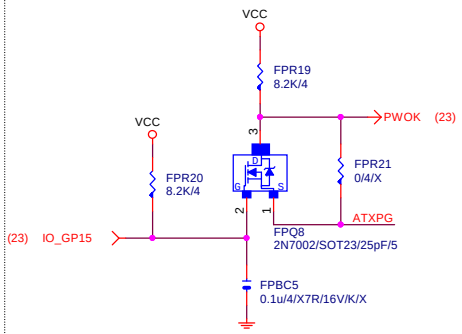




SATA/15/BK/OH/P/RA/D/1

PWOK PATCH

【技術通報R&D技術通報154】



Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 31 of 45	

TEMP H/W MONITOR

CLOSE CPU VCORE SMI

Rev 0.2 modefy

(23) VREF
(23) SYS_TEMP
(23) CPU_TEMP
(23) PCH_TEMP

OR73 10K/4/1
R674 10K/4/1
R675 10K/4/1
OC7 1u/4/X5R/6.3V/K
OC6 1u/4/X5R/6.3V/K
RS_SYS 10K/1/4/S
Close SIO
OC21 1u/4/X5R/6.3V/K
RS_PCH 10K/1/4/S
Close PCH

Thrmtrip#改用LM358做

VOLTAGE-- H/W MONITOR

* IT8728 BX
* * IT8728 CX

VIN2 must +12V input
VIN3 must VCC input

VCORE DDR_15V VCC3 +12V CPU_VAXG VCC

OR75 8.2K/4
OR74 8.2K/4
OR57 6.49K/4/1
OR79 75K/4/1
OR76 8.2K/4
OR78 15K/4/1

(23) VIN5
(23) VIN6
(23) VIN1
(23) VIN2
(23) VIN4

2.0V
IT8728 EK
2.0V
(23) VIN3

OC9 1u/4/X5R/6.3V/K
OC8 1u/4/X5R/6.3V/K
OC4
OR61 10K/4/1
OR70 15K/4/1
OC10 1u/4/X5R/6.3V/K
OC11 1u/4/X5R/6.3V/K
OR77 10K/4/1
1u/4/X5R/6.3V/K
OC12 1u/4/X5R/6.3V/K

(23) VIN0
OR53 8.2K/4
VCORE0
OC3 1u/4/X5R/6.3V/K

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

CPU SMART FAN

VCC R696 8.2K/4
(23) FANPWM1
R672 100/4/1
SHORT PROTECT R0603
+12V
R673 3.3K/4/1
R676 0/6/SHT/X
R677
15K/4/1
R678 6.2K/4/1
FANIO1 (23)
EC6 100u/OS/D/16V/66/C/30m
C233 1u/6/X7R/16V/K
Anti Spike
CPU_FAN
FAN/1*4/WH/A3/PA66

Linear SYS_FAN

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

SYS FAN_1

+12V
VCC3
FC1 1u/6/X7R/16V/K
U14 NCT3941S-A/SOP8-EP
VIN VOUT ENABLE/FON# VSET NC NC NC GND PGND
FAN1_VOUT
FAN1_SET
FR1 8.2K/4/X
INTERNAL PULL HI
R72 1K/4/1
R71 22K/4
(23) FANPWM5
BC31 1u/4/X5R/6.3V/K
R124 8.2K/4
R123 3.3K/4/1
R122
15K/4/1
R121 6.2K/4/1
FANIO5 (23)
FC4 10u/8/X5R/16V/K
SYS_FAN1
FAN/1*4/BK/A3/PA66

SYS FAN_2

FC2 1u/6/X7R/16V/K
U15 NCT3941S-A/SOP8-EP
FAN2_VOUT
FAN2_SET
FR2 8.2K/4/X
R681 1K/4/1
R684 22K/4
(23) FANPWM3
BC218 1u/4/X5R/6.3V/K
R683 8.2K/4
R118 3.3K/4/1
R119
15K/4/1
R120 6.2K/4/1
FANIO3 (23)
FC5 10u/8/X5R/16V/K
SYS_FAN2
FAN/1*4/BK/A3/PA66

SYS FAN_3

FC3 1u/6/X7R/16V/K
U16 NCT3941S-A/SOP8-EP
FAN3_VOUT
FAN3_SET
FR3 8.2K/4/X
R688 1K/4/1
R693 22K/4
(23) FANPWM4
BC219 1u/4/X5R/6.3V/K
R692 8.2K/4
R8 3.3K/4/1
R7
15K/4/1
R6 6.2K/4/1
FANIO4 (23)
FC6 10u/8/X5R/16V/K
SYS_FAN3
FAN/1*4/BK/A3/PA66

CPU_OPT

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

FC7 1u/6/X7R/16V/K
U17 NCT3941S-A/SOP8-EP
CPU_VOUT
CPU_SET
FR4 8.2K/4/X
R771 1K/4/1
R772 22K/4
(23) FANPWM2
BC234 1u/4/X5R/6.3V/K
R769 8.2K/4
R770 3.3K/4/1
R780
15K/4/1
R773 6.2K/4/1
FANIO2 (23)
FC8 10u/8/X5R/16V/K
CPU_OPT
FAN/1*4/BK/A3/PA66

SHORT PROTECT R0603
R783 0/6/SHT/X
SYS_FAN4
BC235 1u/6/X7R/16V/K
Anti Spike
FAN/1*3/BK/A3/PA66

FOR EMI ONLY
C3 1n/4/X7R/50V/K
R1 0/4/SHT/M/X
AGND1

Gigabyte Technology

Title: HWM,KB/MS, FAN CTRL

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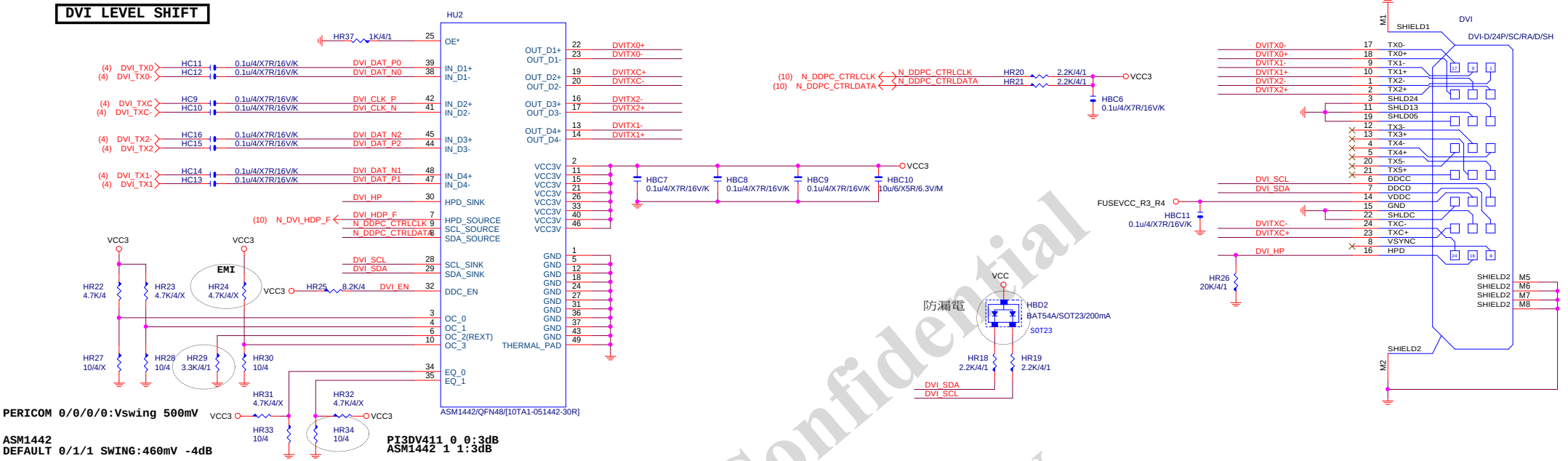
DVI:15/4/4/4/15
Impedance=85 +- 17.5%

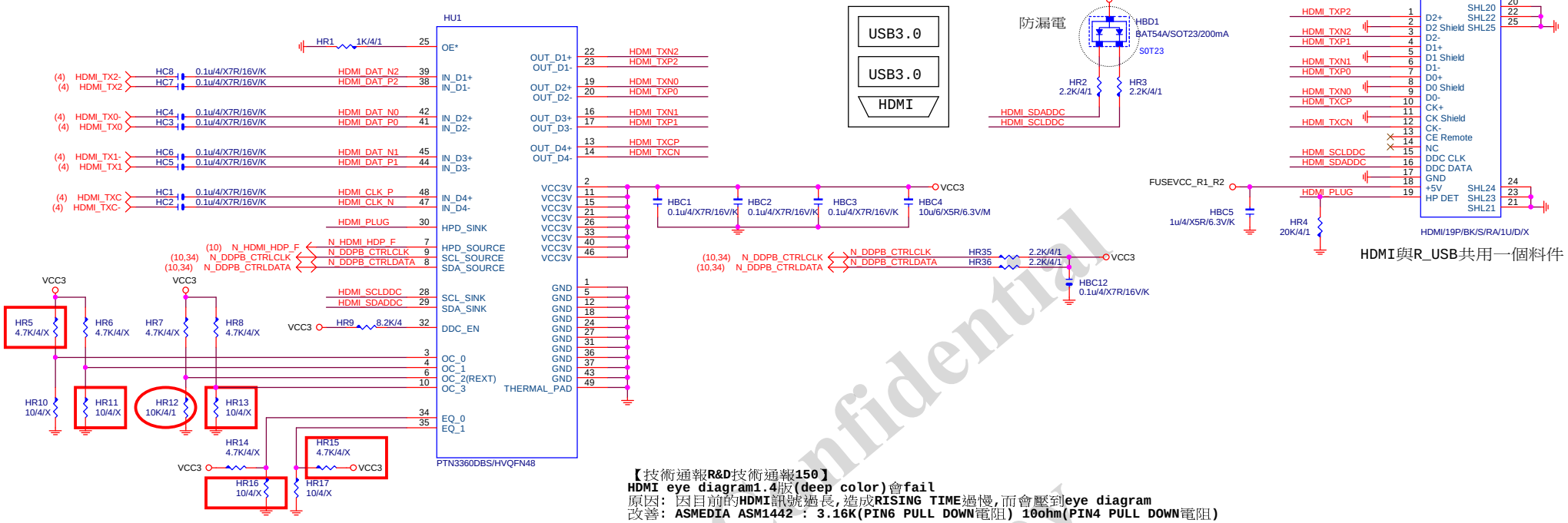
DVI LEVEL SHIFT



Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 33 of 45	

HDMI LEVEL SHIFT

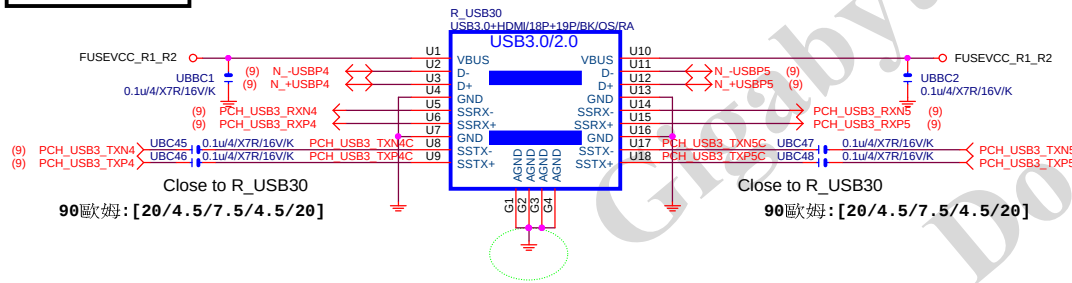
HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



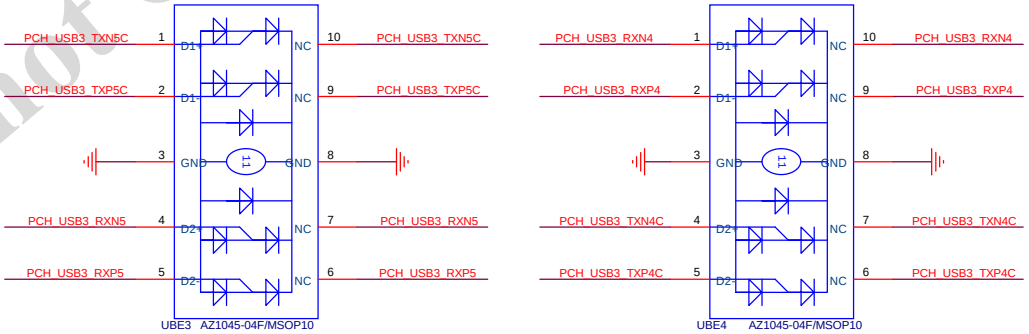
【技術通報**R&D**技術通報**150**】
HDMI eye diagram1.4版**(deep color)**會**fail**
原因: 因目前的**HDMI**訊號過長,造成**RISING TIME**過慢,而會壓到**eye diagram**
改善: **ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN**電阻**) 10ohm(PIN4 PULL DOWN**電阻**)**

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**

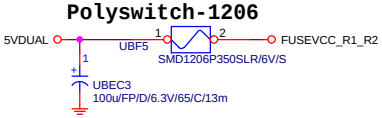
USB30_20 CONNECT



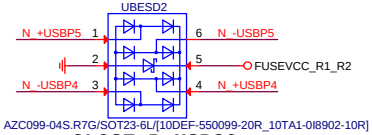
USB30 ESD PROCTECT



USB30 PWR



USB20 ESD PROCTECT



CLOSE R_USB30

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

Title	HDMI
Size / Custom	Document Number: GA-Z97X-UD5H
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Date:	Wednesday, July 16, 2014
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LAN:AR8151/AR8161

離IC近越好

LAC1 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K
(10) LA_-SRCCLK_LAN
(10) LA_SRCCLK_LAN
(9) LA_ML_OP
(9) LA_ML_ON
LA_ML_OP_C
LA_ML_ON_C

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LABC5 0.1u/4/X7R/16V/K
LABC4 1u/4/X5R/6.3V/K
LABC3 0.1u/4/X7R/16V/K
LABC6 0.1u/4/X7R/16V/K/X
AR8161-->N/A (LABC6)

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K
LABC8 4.7u/6/X5R/6.3V/K
AR8161-->(0)

3VDUAL
LABC10 1u/4/X5R/6.3V/K
LABC11 0.1u/4/X7R/16V/K
LABC9 10u/6/X5R/6.3V/M

LA_LX
LA_LED_ACT_TXRX
LA_DVDDL
LA_AVDDVCO
LA_AVDDL

LAU1
EGND
LX
LED1
LED0
DVDDL_REG
RX_P
RX_N
AVDDL
REFCLKP
REFCLKN
AVDDL/NC

Atheros
AR8151/AR8161
E2201-BL3A-R/S

VDD3V
PERST#
WAKE#
CLKREQ#
VDDCT/ISOLAT
AVDDL_REG
XTLO
XTLI
AVDDH_REG
RBIAS

TX_P
TX_N
NC
TESTMODE
SMDATA
SMCLK
DVDDL/PPS
LED2
AVDDH
TRXN3

TRXP0
TRXN0
AVDDL/NC
TRXP1
TRXN1
AVDDH/AVDD33
TRXP2
TRXN2
AVDDL
TRXP3

3VDUAL
LAC33 100p/4/NPO/50V/J/X
LAR6 8.2K/4
(19,23,29,39,40) O_-PFMRST2
(12,14,15,16,18,20,36) N_-PCIE_WAKE
LA_VDD33
LA_-CLKREQ
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH
LA_RBIAS

AR8161-->N/A (LABC12)

LABC12 1u/4/X5R/6.3V/K/X
LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LAR10 2.37K/4/1

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LA_ML_IP_C
LA_ML_IN_C
LAC12 0.1u/4/X7R/16V/K
LAC13 0.1u/4/X7R/16V/K
LA_ML_IP (9)
LA_ML_IN (9)

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-

LAR9 0/4/X
LABC14 0.1u/4/X7R/16V/K/X
LA_DVDDL
AR8161-->N/A (LAR9,LABC14)
LABC17 0.1u/4/X7R/16V/K

LAX1 25M/16p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC31 20p/4/NPO/50V/J
LAC32 20p/4/NPO/50V/J

LABC20 0.1u/4/X7R/16V/K/X
AR8161-->N/A (LABC20)

LABC21 0.1u/4/X7R/16V/K
LAR18 0/4/SHT/X
LAR19 MASK/0/4/X
3VDUAL
LA_AVDDH
AR8151:LA_AVDDH(LAR20)
AR8161:3VDUAL(LAR19)
LABC22 1u/4/X5R/6.3V/K

LAESD1
LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
UC_FUSEVCC34
MASK/AOZ8902CIL/SOT23-6/X

LAESD3
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-
UC_FUSEVCC34
MASK/AOZ8902CIL/SOT23-6/X

SCH BOM OPT:(二擇一使用)
-->(LAC30):M/B有CLK GEN 25M
-->(LAX1,LAC31,LAC32):M/B無CLK GEN 25M

LAN POWER

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

LAL1 4.7uH/0.8A/3225/S
LA_LX_OUT
LA_LX
LABC1 10u/6/X5R/6.3V/M
CLOSE
LA_LX 200mil
LABC2 0.1u/4/X7R/16V/K

LA_VDDCT
LAR3 0/4/X
AR8161-->N/A (LAR3,LAR4)
AR8151 POWER
LA_AVDD_CEN
LAR4 0/4/X

LA_DVDDL
LA_AVDDL
LA_AVDDVCO
LAR5 0/6/SHT/X
AR8161-->(0)
LAFB2 30/4/4A/S
AR8161-->BEAD
AR8151-->N/A
LAFB3 30/4/4A/S
AR8161-->BEAD
AR8151-->0/6
AR8161 POWER

AR8161-->(0)
LA_AVDDH
LAR7 8.2K/4
LA_LED_ACT_TXRX
LA_LED_LINK100
LAR8 8.2K/4

AR8161-->(0)
VCC3
LAR1 30K/4/1
LA_VDDCT
LAR2 0/4/SHT/X
ISOLATEB (23)

Power domain chart

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

MDI : AR8161-->N/A

LA_MDI0+ LA_MDI0-
LA_MDI1+ LA_MDI1-
LA_MDI2+ LA_MDI2-
LA_MDI3+ LA_MDI3-
LAR11 MASK/49.9/4/1/X
LAR12 MASK/49.9/4/1/X
LAR13 MASK/49.9/4/1/X
LAR14 MASK/49.9/4/1/X
LAR15 MASK/49.9/4/1/X
LAR16 MASK/49.9/4/1/X
LAR17 MASK/49.9/4/1/X
LAR18 MASK/49.9/4/1/X
LA_MDI_RC0
LA_MDI_RC1
LA_MDI_RC2
LA_MDI_RC3
LAC26 MASK/0.1u/4/X7R/16V/K/X
LAC27 MASK/0.1u/4/X7R/16V/K/X
LAC28 MASK/0.1u/4/X7R/16V/K/X
LAC29 MASK/0.1u/4/X7R/16V/K/X

CLOSE LAN CHIP

USB_LAN CONNECTOR

RMA ESD PROTECT

UBESD1
U2DP3_B
U2DM3_B
U2DM4_B
U2DP4_B
UC_FUSEVCC34
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

LAESD2
LA_LED_LINK100
LA_LED_D2
LA_LED_ACT_TXRX
LAN_3VDUAL_LED
LA_LED_LINK1000
MASK/AOZ8902CIL/SOT23-6/X

USB X3 POWER

5VDUAL
LAFB4 SMD1206P350SLR/6V/S
UC_FUSEVCC34
UEC4 100u/FP/D/6.3V/65/C/13m

Close to connector

EMI SHORT PAD

PS:視EMI需求

LAR24 0/6/SHT/M/X

UC_FUSEVCC34
UCR1 8.2K/4
OCI3B4B_B (41)
UCR2 15K/4/1

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN1
LABC23 0.1u/4/X7R/16V/K
LA_AVDD_CEN
LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-
GND_L10
LABC25 0/4/SHT/M/X
LABC27 0.1u/4/X7R/16V/K
USB3.0
USB3+RJ45/[11NR6-702009-K1R]

LA_LED_ACT_TXRX
LA_LED_D2
LAR21 150/4/1
LAN_3VDUAL_LED
LA_LED_LINK100
LAR22 150/4/1
LA_LED_LINK1000
LAR23 150/4/1

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

UC_FUSEVCC34
LABC26 0.1u/4/X7R/16V/K/X

(41) U2DM3_B
(41) U2DP3_B
(41) U2DM4_B (41)
(41) U2DP4_B (41)

(41) U3RXDN3_B
(41) U3RXDP3_B
(41) U3RXDN4_B (41)
(41) U3RXDP4_B (41)

LAC3 0.1u/4/X7R/16V/K
LAC4 0.1u/4/X7R/16V/K
(41) U3TXDN3_B
(41) U3TXDP3_B
U3TXDN3_BC
U3TXDP3_BC
U3TXDN4_BC
U3TXDP4_BC
LAC5 0.1u/4/X7R/16V/K
LAC6 0.1u/4/X7R/16V/K
(41) U3TXDN4_B
(41) U3TXDP4_B

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

U3RXDN3_B
U3RXDP3_B
U3TXDN3_BC
U3TXDP3_BC
LAE1 AZ1045-04F/MSOP10

U3RXDN4_B
U3RXDP4_B
U3TXDN4_BC
U3TXDP4_BC
LAE2 AZ1045-04F/MSOP10

Gigabyte Technology

Title: ARTHEROS AR8151/AR8161
Size: Custom
Document Number: GA-Z97X-UD5H
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0: PCIE M.2
1: SATA M.2

SMD螺柱

CR/[11KS2-040002-01R]

DIP螺柱

CR/[12KSF-F10303-01R]

DIP螺絲

CR/[12KS2-110202-01R]

M2_SK

SKT3
SSD PIN OUT

KEY M

Key B

M.2 CLK 限用
CLKOUT_PCIE_0

SATA：GND.
PCIE：NC

M2插卡時為Low

M2/67/BK/RA/S/H4.2mm/M KEY

M2R12, M2R14改0/4/X
M2R13改0/4

PCH

SATA EXPRESS

SATA_EXPRESS

SATA EXPRESS/36P/BK/H/RA/D/GF/2::Location SATA_EXPRESS

SATA EXPRESS料號

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

M2 SLOT M KEY料號

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

M2

0: SATA EXPRESS
1: SATA (STandard)

CBTL04083BBS/HVQFN32/[10TA1-084083-10R_10TA1-081480-10R]

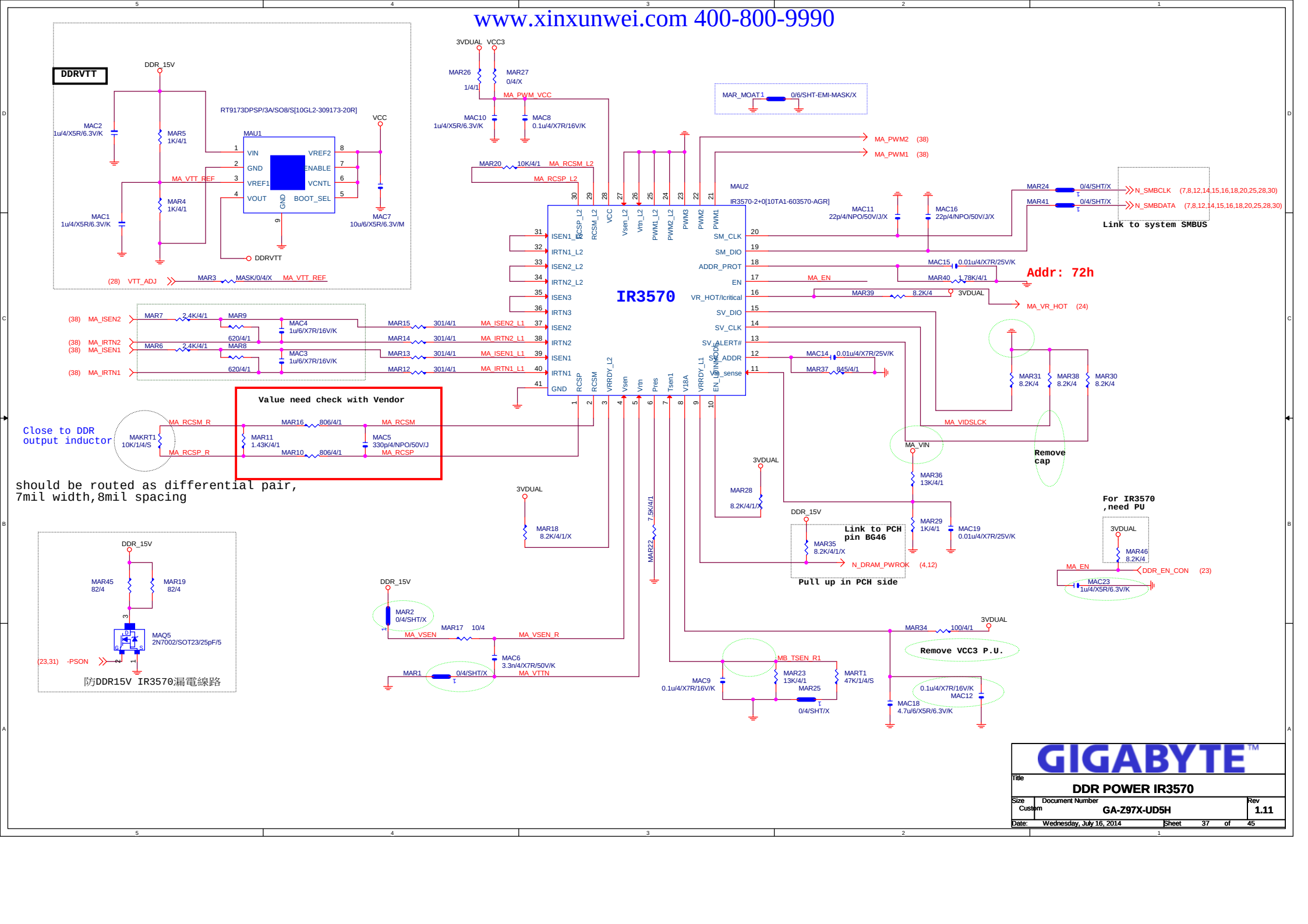
Function	SEL
xI--> xOa	L
xI--> xOb	H

Priority : M2 > SATA_EXPRESS

連接PCH GPIO69
GPIO69 PU HI 要移除

GIGABYTE

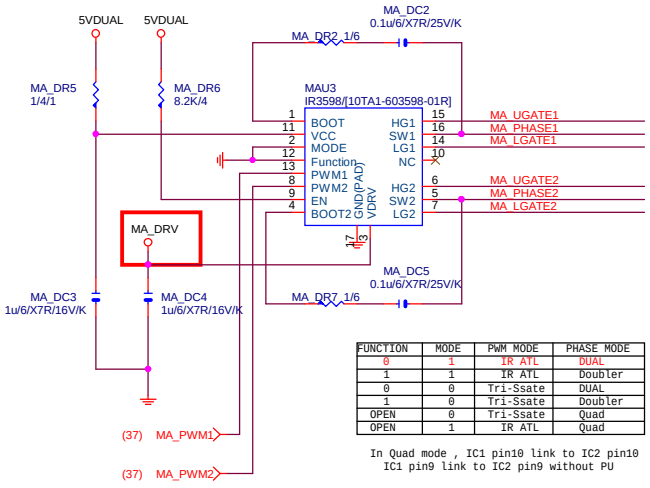
Title	M2_SATA_EXPRESS	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 36 of 45	



GIGABYTE™

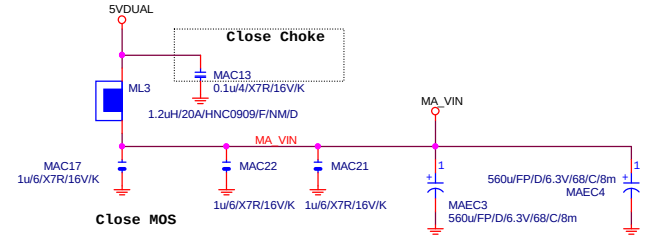
Title	DDR POWER IR3570	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 37 of 45	

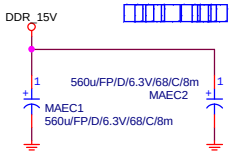
DDR_15V

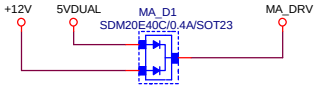


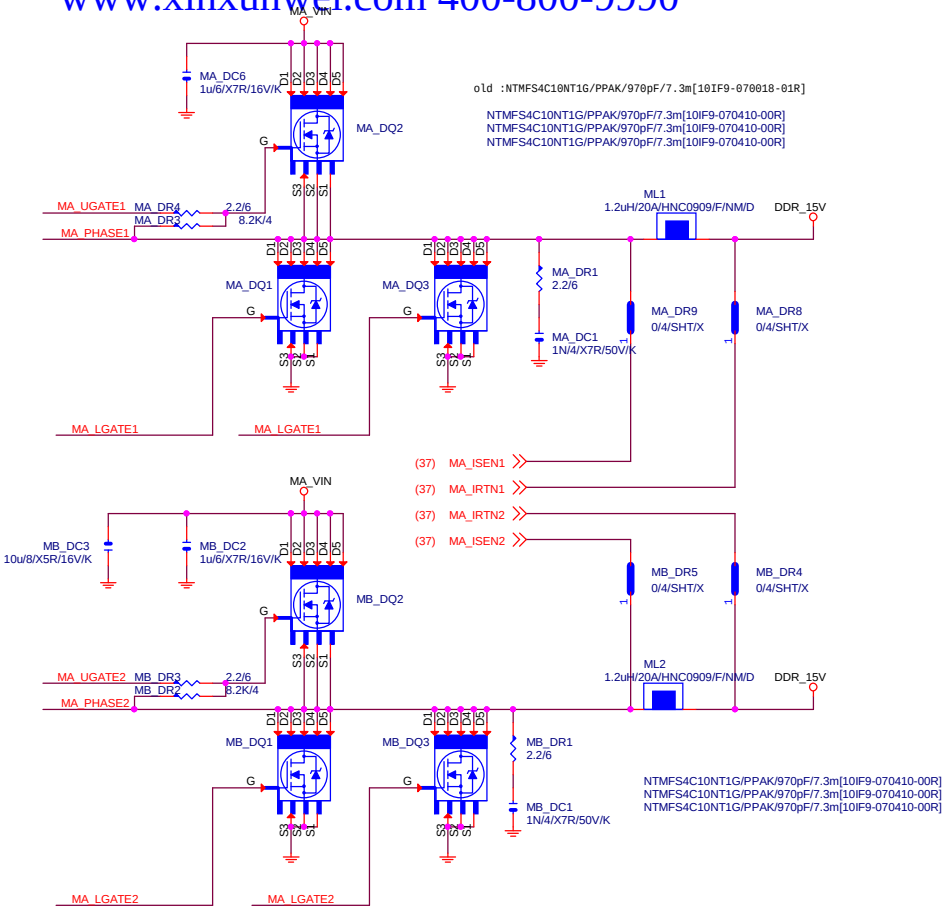
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Ssate	DUAL
1	0	Tri-Ssate	Doubler
OPEN	0	Tri-Ssate	Quad
OPEN	1	IR ATL	Quad

In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU



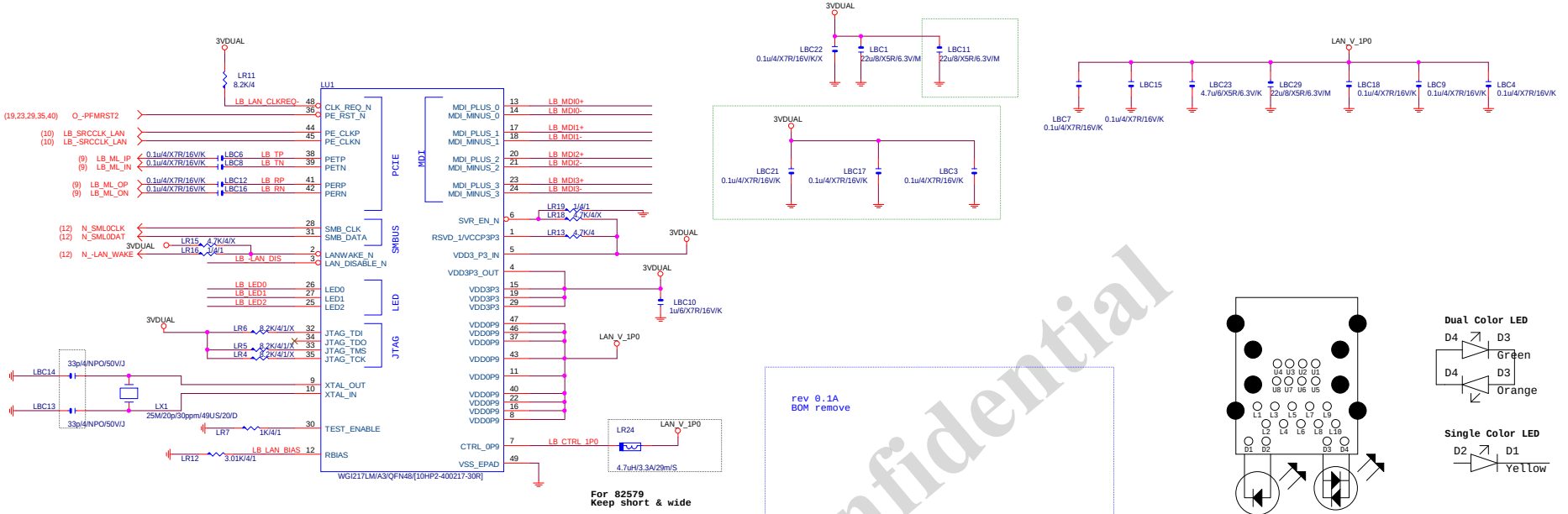






GIGABYTE™

Title	IR3570	
Size: Custom	Document Number: GA-Z97X-UD5H	Rev: 1.11
Date: Wednesday, July 16, 2014	Sheet 38 of 45	



For 82579
Keep short & wide

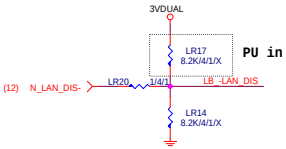
rev 0.1A
BOM remove

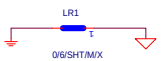
Dual Color LED

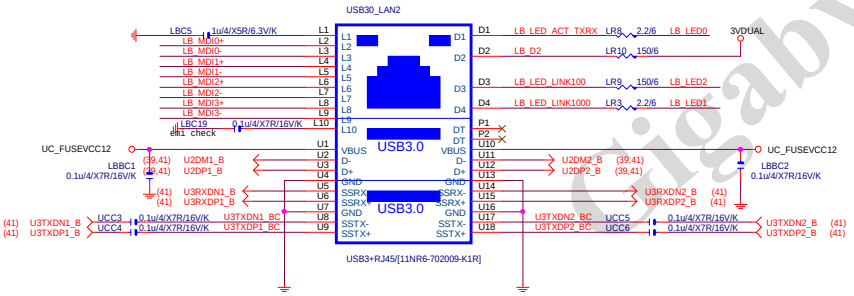
Single Color LED

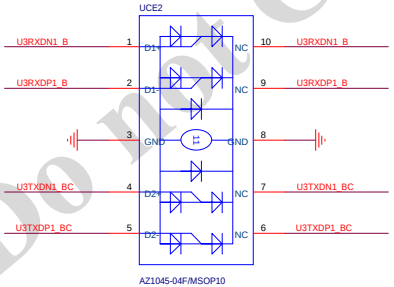
1Gb	Orange
100Mb	Green
10Mb	Off

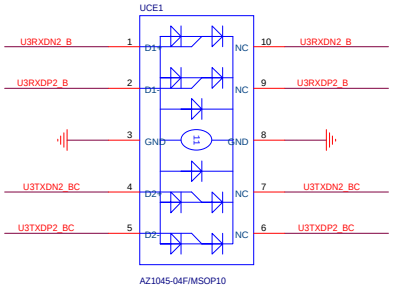
Access	Blinking
Link	Yellow

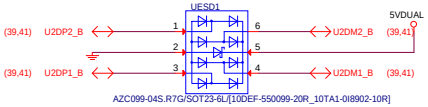




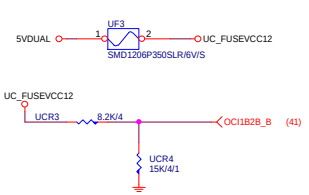




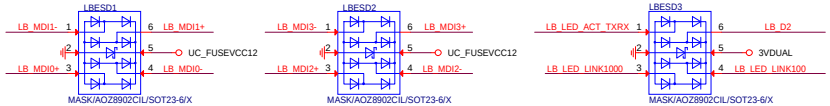




Close to connector



RMA ESD PROTECT



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Title	INTEL LAN i217V	
Size C	Document Number GA-Z97X-UD5H	Rev 1.11
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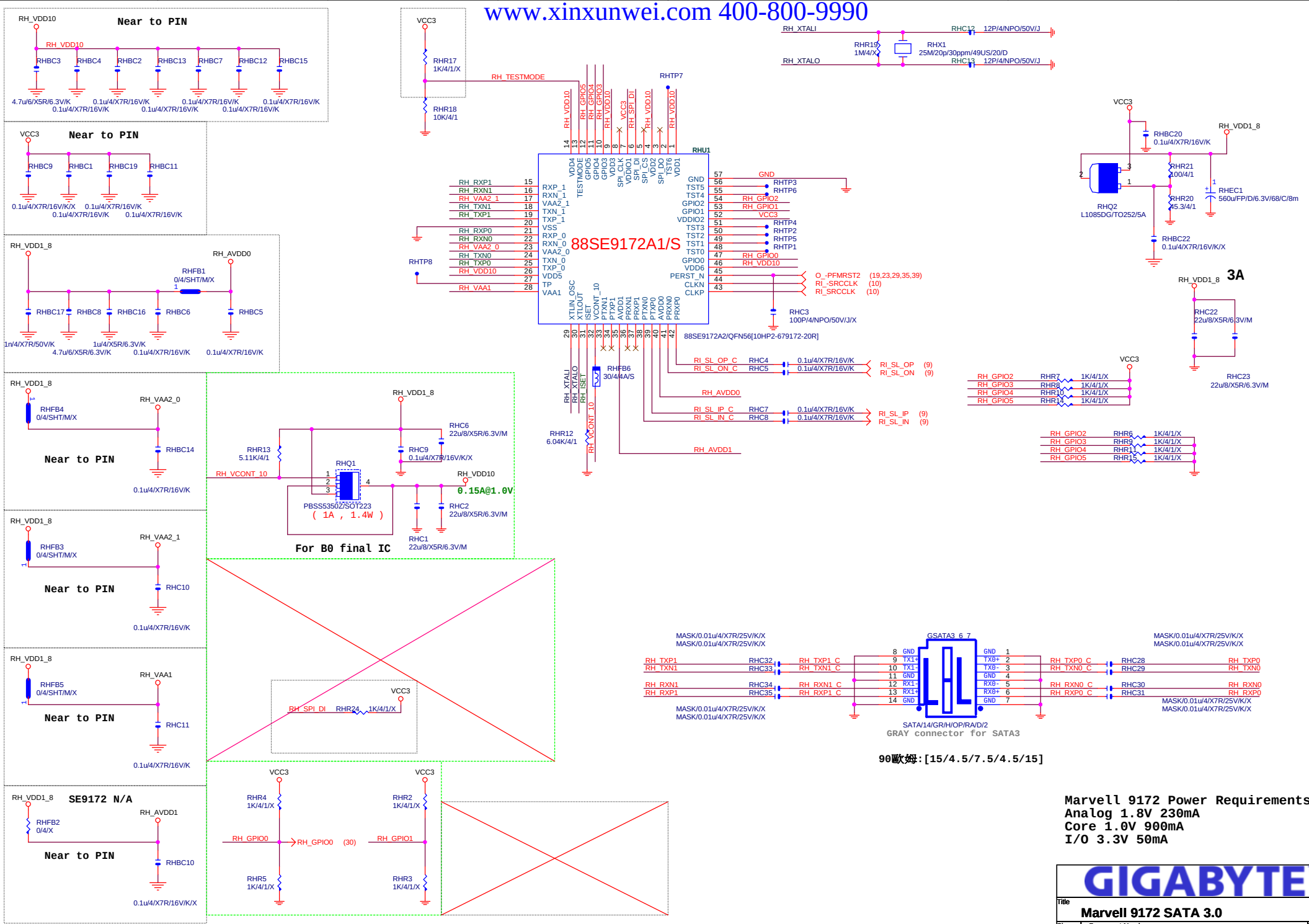

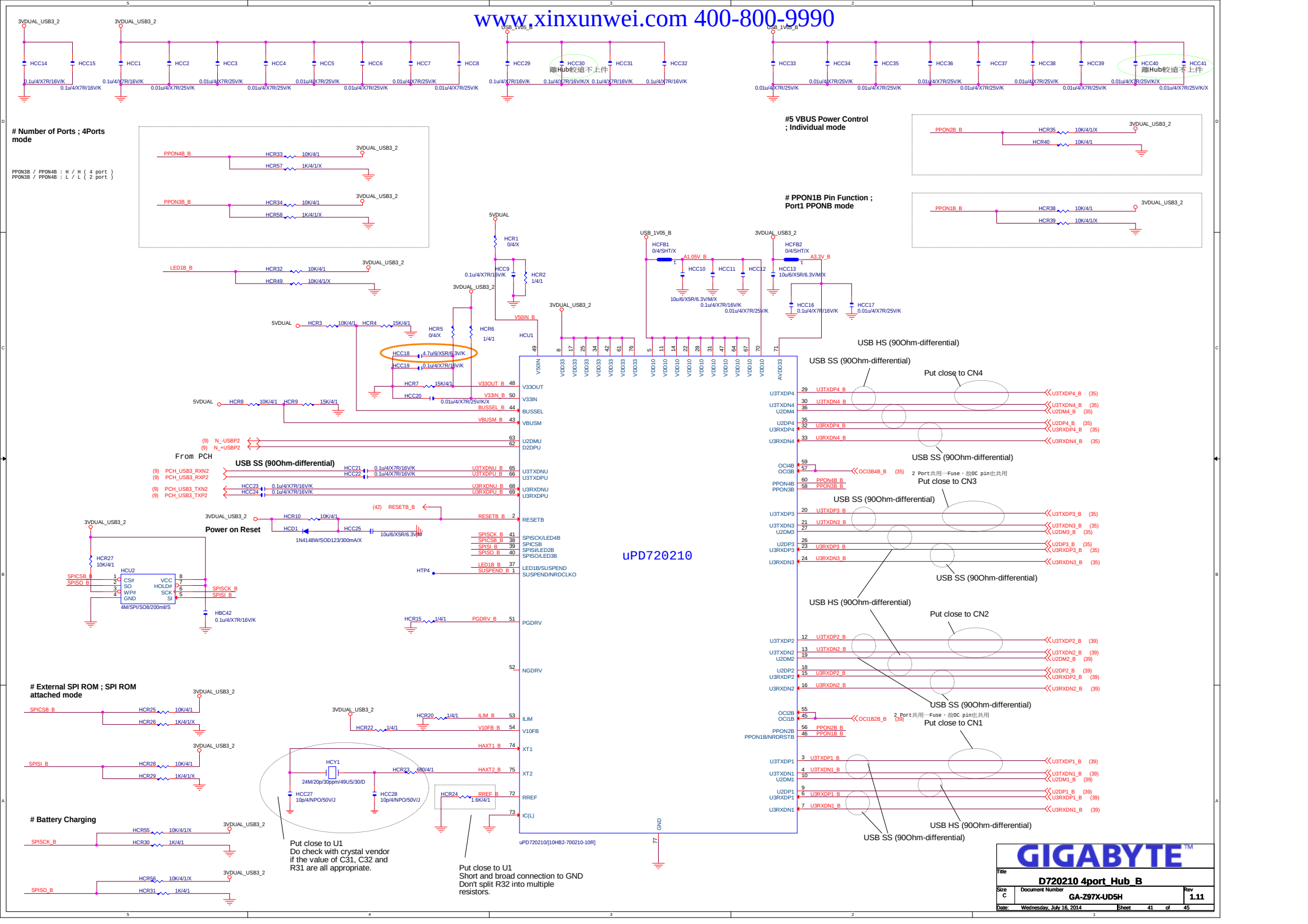

Title	D720210 4port_Hub_B		
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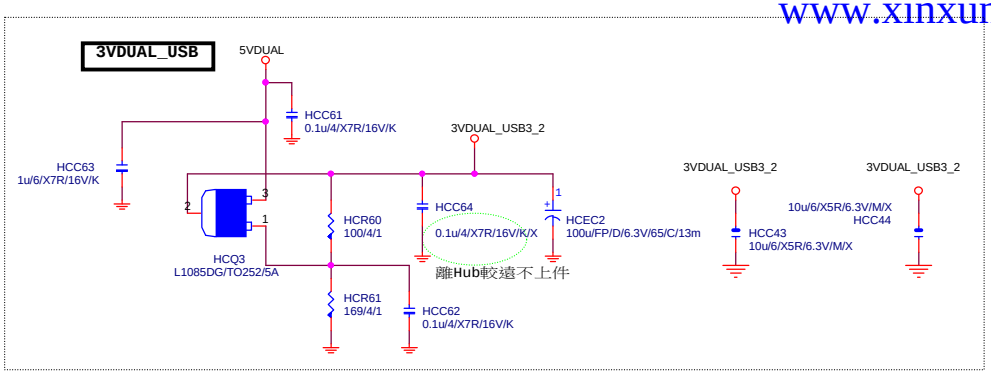
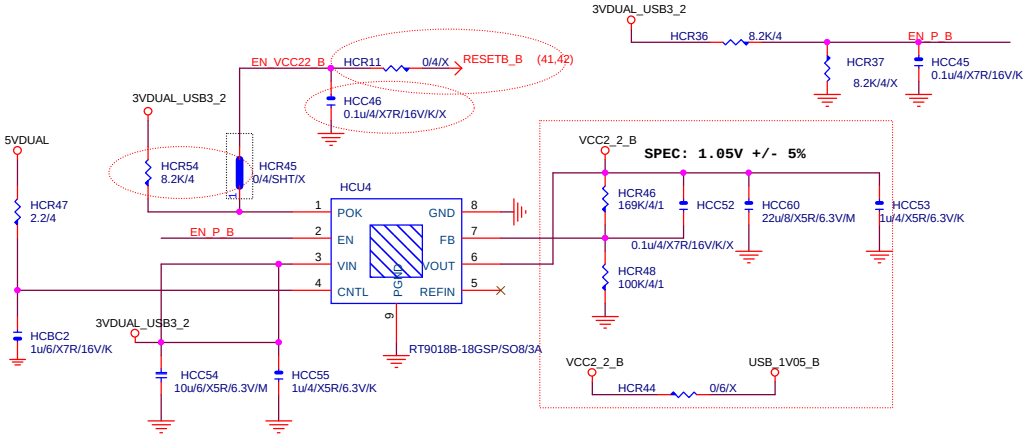
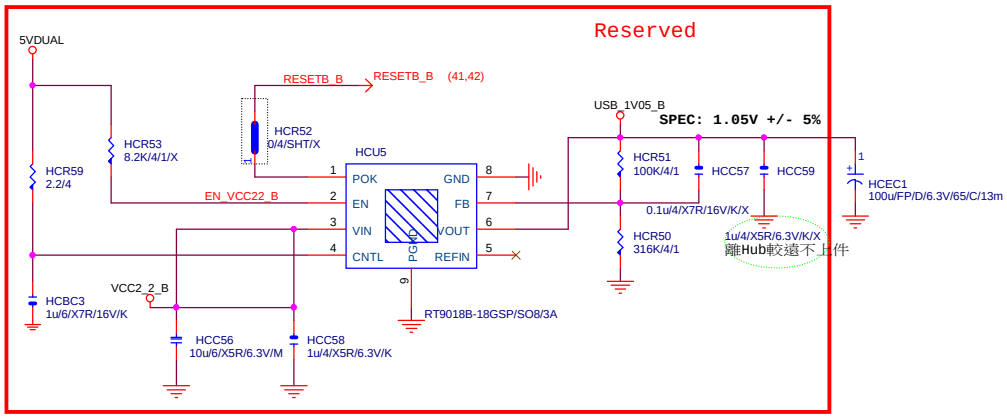
Date: Wednesday, July 16, 2014	Sheet 41 of 45		



USB1_05V power consumption is 0.7A (w/o onchip regulators)





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Title	D720210 4port_Hub_B	
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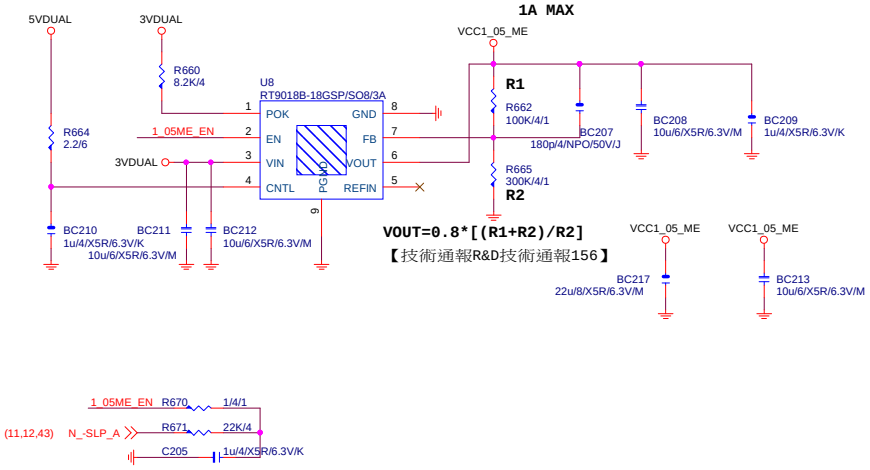
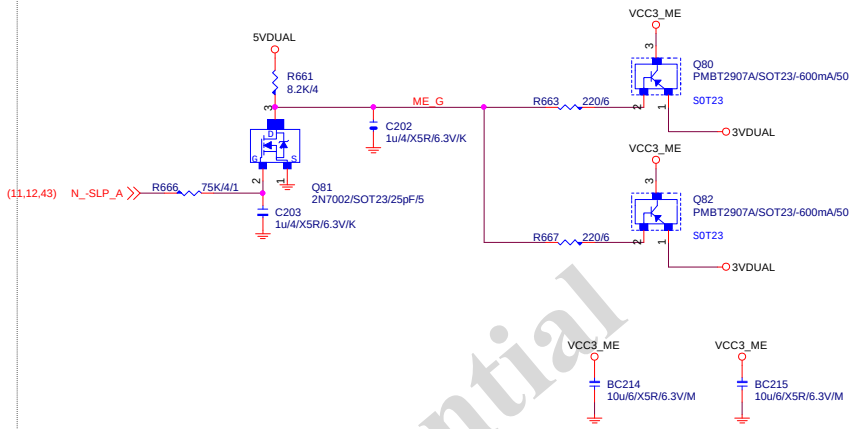
VCC1_05_ME

1A MAX



VCC3_ME



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Title: DDR15V / M3 POWER		
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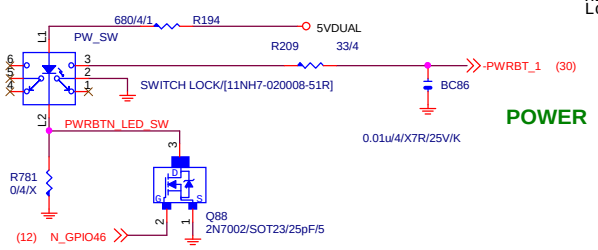
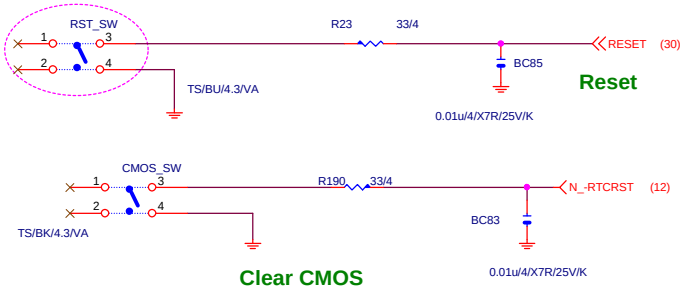
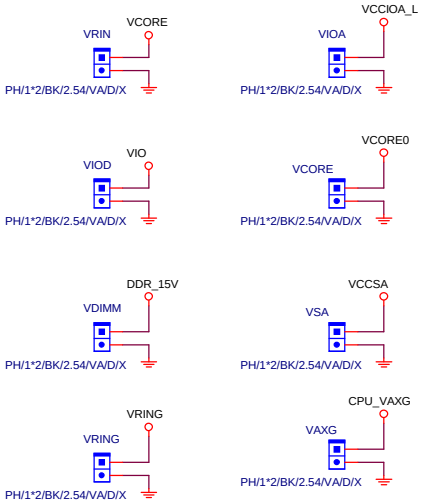
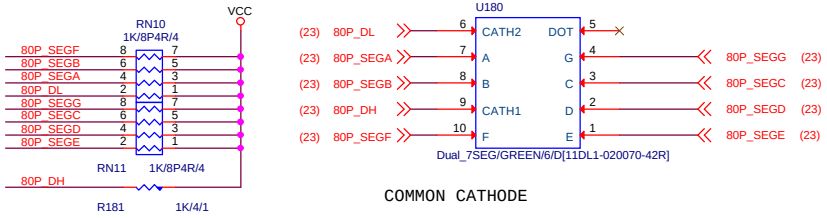
Hi : Button's LED ON
Lo : Button's LED OFF

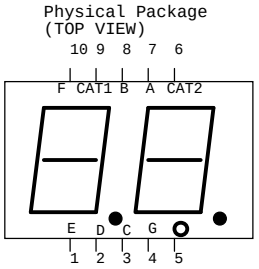






80 PORT





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Title: RST, PWR, CLR_CMOS, OV		
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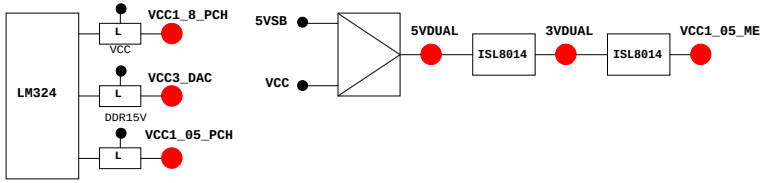
PCH GPIO LIST TABLE

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

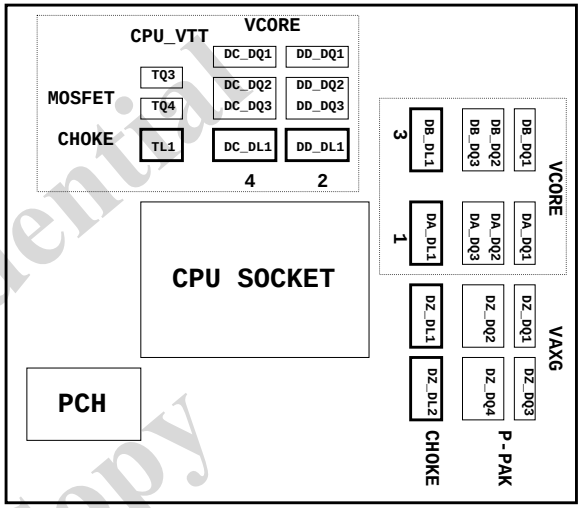
Super I/O ITE8720 GPIO Table

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

Gigabyte Technology
Title: TABLE LIST
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