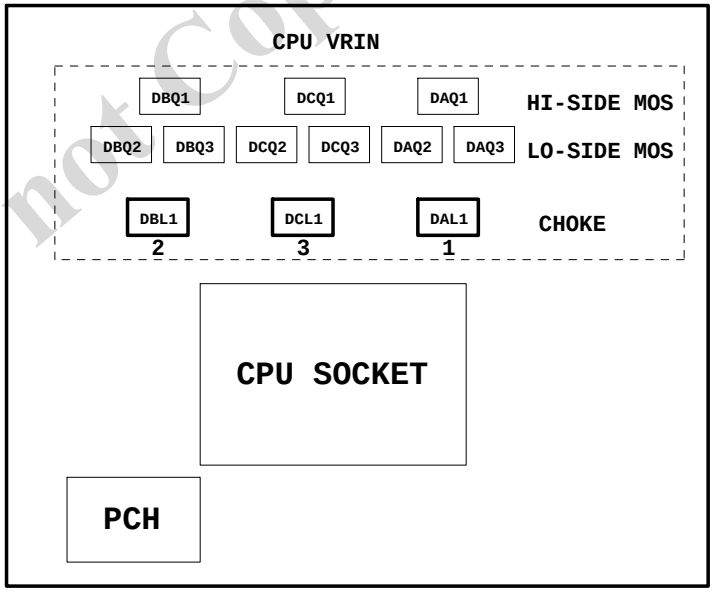
Model Name: GA-P81-D3

1.0

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCIEX1*2 , PCIEX4 SLOT
16	ITE8892 PCI BRIDGE
17	PCI SLOT 1&2
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	VCORE_ ISL95820_1
24	VCORE_ ISL95820_2
25	DDR15V / M3 POWER
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET	TITLE
28	F_PANEL , F_USB2.0/3.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	Realtek 8111F-VL
32	DVI
33	HDMI
34	TABLE LIST
35	
36	
37	
38	
39	
40	



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.0

Date: Wednesday, March 05, 2014 | Sheet 1 of 34

GA-P81-D3

Component value change history

Data	Change Item	Reason
0.1	E-BOM	
	1. CPU內圈電容移除	
0.2	1. C30要上?	
1.0A	1. 確認上RS1 or RS2?	
	2. PCB 1.0	
1.0B	1. 5VSB OVP --> 5VDUAL OVP	
	2. PCB 1.0 --> 1.01	
1.0C	1. R705 887/4/1 --> 825/4/1	
	2. Add MOSFET : Infineon	
1.0D	1. CPU_FAN change to "FAN/1*4/WH/A3/PA66"	
	1. CPU_FAN change to "FAN/1*4/WH/A3/PA66"	
1.0E	1. Remove WR57	
1.0F	1.Crystal (25MHZ / 32.768KHz) ref GND /width/space 2.CPU fan 0402-----'0603 3.DDR VDDSPD 0402-----'0603/POLU FUSE 4.POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 5.UPDTAE Footprint "PCIESLOT-164DN-Q-1"	
1.0G	1. Add F_USB20 power short protection	
1.0H	1. NX1 : 25MHz/12P , NC7,NC8 : 12P	
1.0I	1. ALC887-VD2改加強版	
1.0J	1. NX1 : 25MHz/12P , NC7,NC8 : 15P	
	2. ALC887-VD2改加強版	
P81-D3-10A	1. 確認H81的P-PAK用法 (只保留VISHAY , 將NXP移除)	
	2. DR51=40.2K/4/1 , DBC14=470P/4 , DBC27=0.47u/4	

Circuit or PCB layout change

DATE	Change Item	Reason
0.1	1. B85-HD3 Rev1.0 --> H81-HD3 Rev0.1	
0.2	1. 0ohm change to SHORT PAD 2. WBC15~WBC21 Change to "C0805-MASK" 3. Update GBR3/GBR4 footprint 4. U6的NET改走20mil 5. VCC3_DAC gate加粗8mil 6. NCT_POWER加粗至12mil 7. PCH 25MHz周圍走線遠離 8. ESD3 SWAP pin 9. LM324 pin5/7對調	
1.0	1. NX1,NC7,NC8,NR15 第二層切割改至GND層 2. Add NC9~NC12 放在NX1周圍	
1.02	1. Add O_-RSMRST control circuit	
1.03	1.Crystal (25MHZ / 32.768KHz) ref GND /width/space 2.CPU fan 0402-----'0603 3.DDR VDDSPD 0402-----'0603/POLU FUSE 4.POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 5.UPDTAE Footprint "PCIESLOT-164DN-Q-1"	
1.04 P81-D3	1. Add F_USB20 power short protection	
1.0	1. H81-D3 REV1.04 --> P81-D3 REV1.0 2. MOS_HS外框移除 , VGA外框移除	

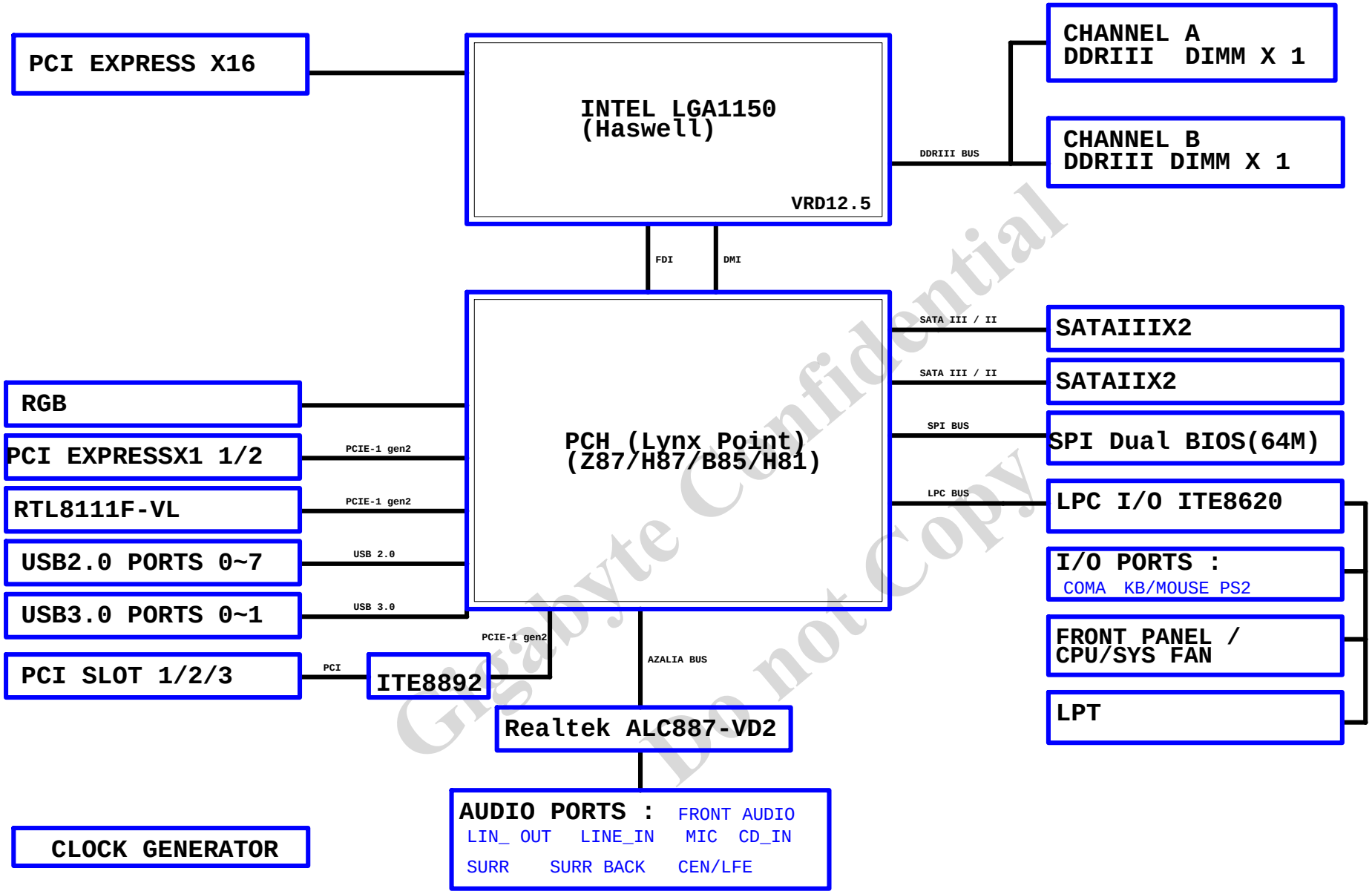
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.0

Date: Wednesday, March 19, 2014 | Sheet 2 of 34

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-P81-D3		Rev: 1.0
Date: Wednesday, March 05, 2014	Sheet 3 of 34		

LGA1150 (E)

W/S=4/12

LGA1150E

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

HSW_CFG9 : Disable CPU SVID

HSW_CFG13 : Improve CPU 125MHz over-clocking

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)

LGA1150D

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

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

DP/HDMI 15/4/4/4//15 FDI 12/4/4/4/12

Impedance=85 +- 15%

LGA1155 (C)

LGA1150C

(1.011V)

I/O Digatal Voltage
I/O Analog Voltage (1.05V)
System Angen(0.815V)
VCCPLL (1.35V)

RING/PLL Voltage
VCORE1
VCORE2
VCORE3

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

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

CPU PEG 20/5/4/5/20 Impedance=80 +- 15%

DMI 12/4/4/4//12 Impedance=85 +- 15%

CPU SVID

CPU PU/PD

SM REF

-CPURST

VCC3

1.1V分壓

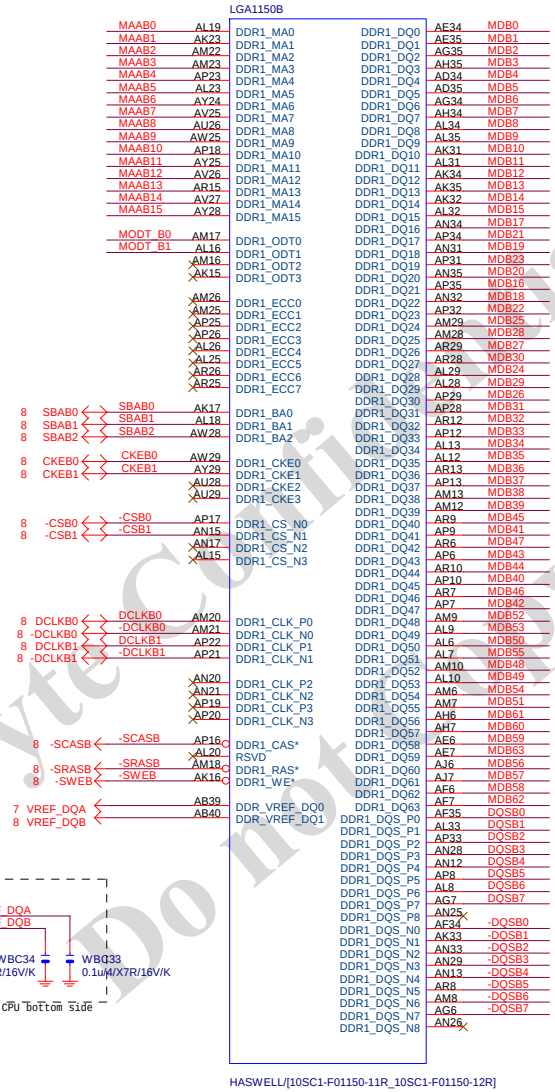
For IT8620 Ctrl

Gigabyte Technology

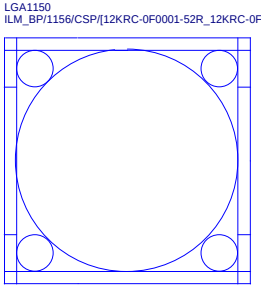
Title	CPU LGA1150-A	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
Date: Wednesday, March 05, 2014	Sheet 4 of 34	

LGA1150 (A)

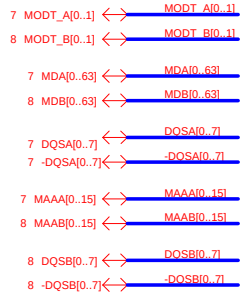
LGA1150 (B)



LGA1150 (CR)



DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.0
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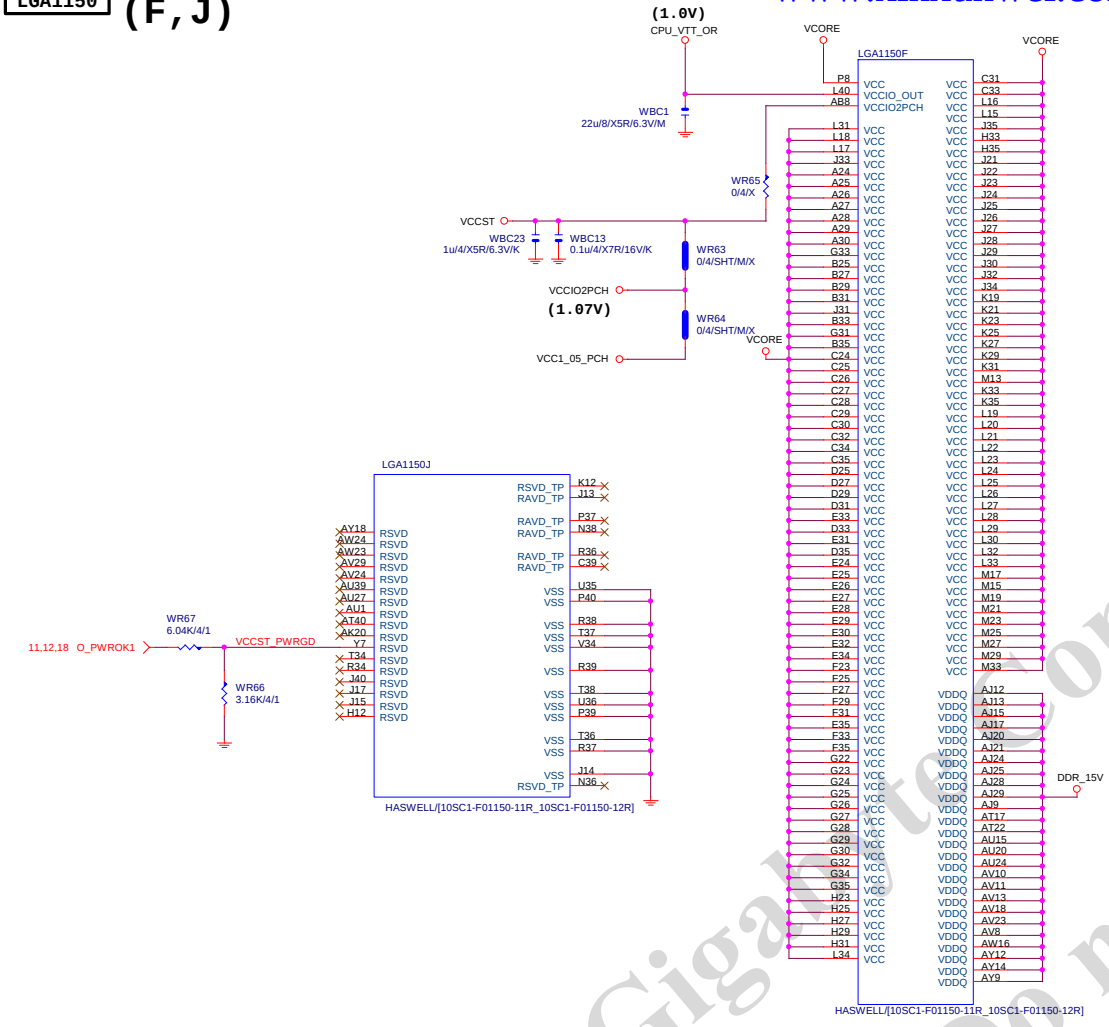
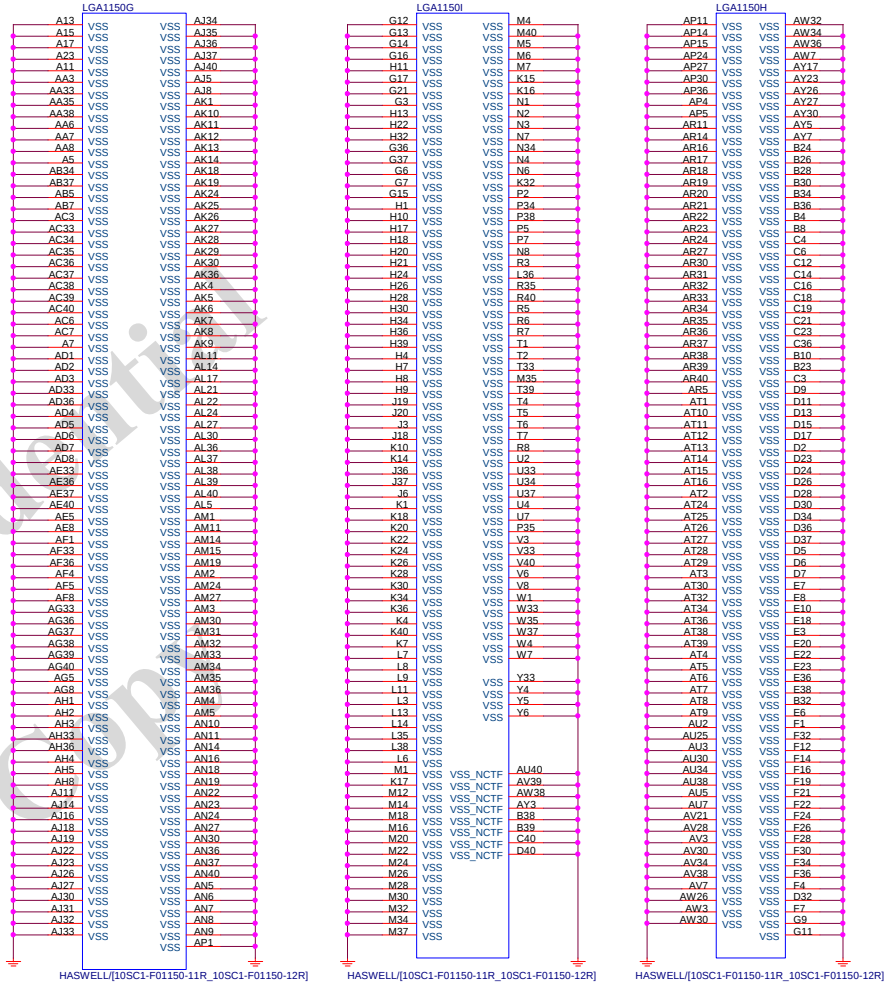
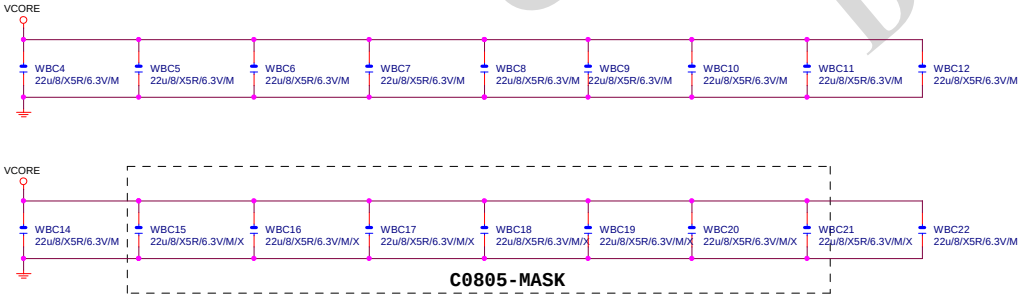
LGA1150 (F,J)



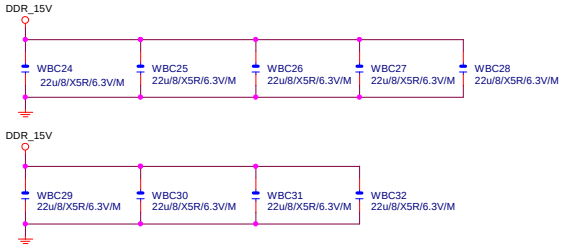
LGA1150 (G,H,I)



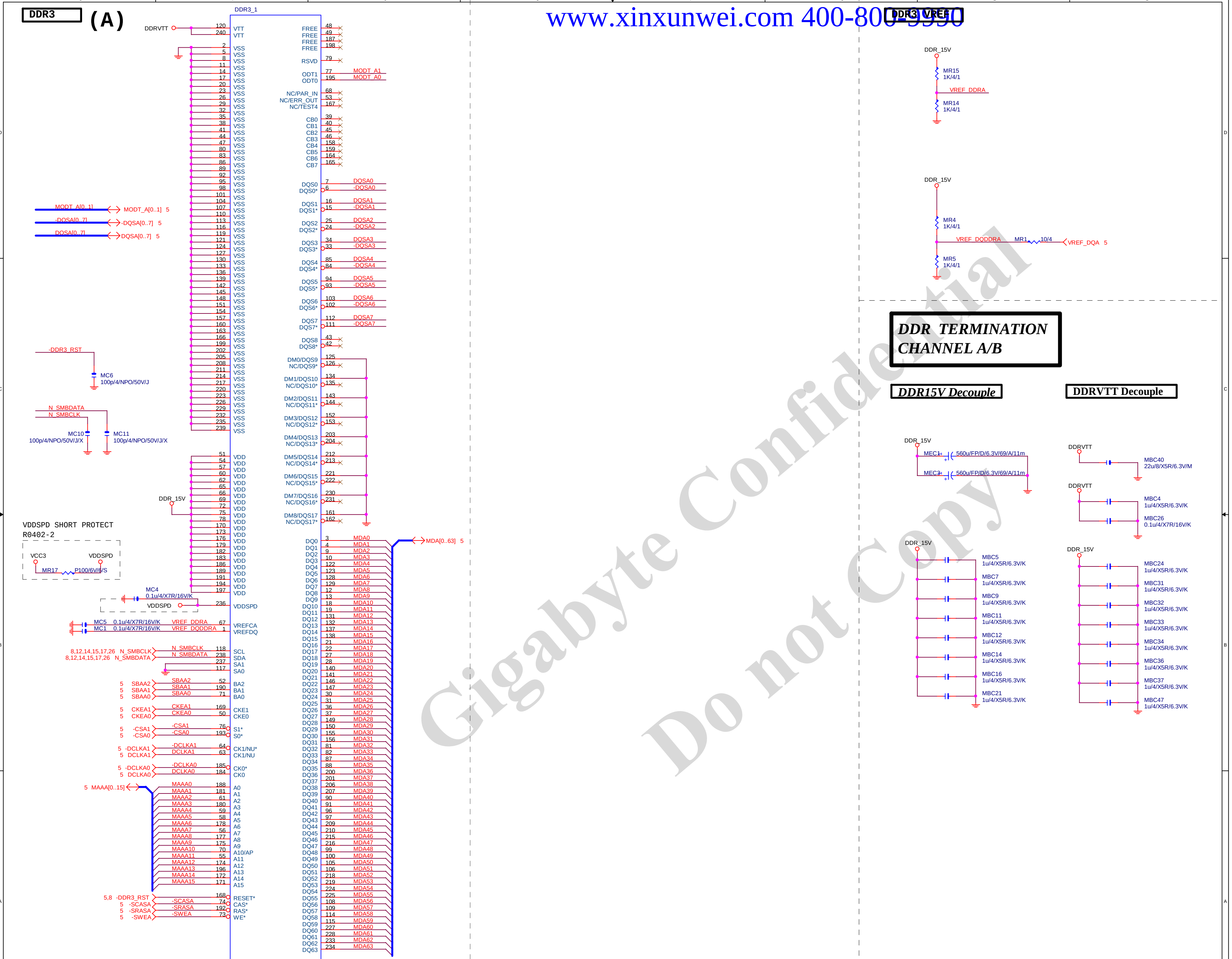
VCore CAP (X18)



DDR CAP (X9)



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
Date: Wednesday, March 05, 2014	Sheet 6 of 34	



DDR3 (A)
DDR3_1
DDR3/240/BK/VA/D
DDR3 VREF
DDR_15V
MR15 1K/4/1
VREF_DDRA
MR14 1K/4/1
MR4 1K/4/1
VREF_DQDDRA
MR1 10/4
VREF_DQA 5
MR5 1K/4/1
DDR TERMINATION CHANNEL A/B
DDR15V Decouple
DDRVTT Decouple
MEC1 560u/FP/D/6.3V/69/A/11m
MEC2 560u/FP/D/6.3V/69/A/11m
MBC40 22u/8/X5R/6.3V/M
MBC4 1u/4/X5R/6.3V/K
MBC26 0.1u/4/X7R/16V/K
VDDSPD SHORT PROTECT
R0402-2
VCC3
VDDSPD
MR17 P100/6V/8/S
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
MC6 100p/4/NPO/50V/J
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
-DDR3_RST
N_SMBDATA
N_SMBCLK
MODT_A[0..1] 5
-DQSA[0..7] 5
DQSA[0..7] 5
MDA[0..63] 5
5 MAAA[0..15]

Gigabyte Technology		
Title: DDRIII CHANNEL A		
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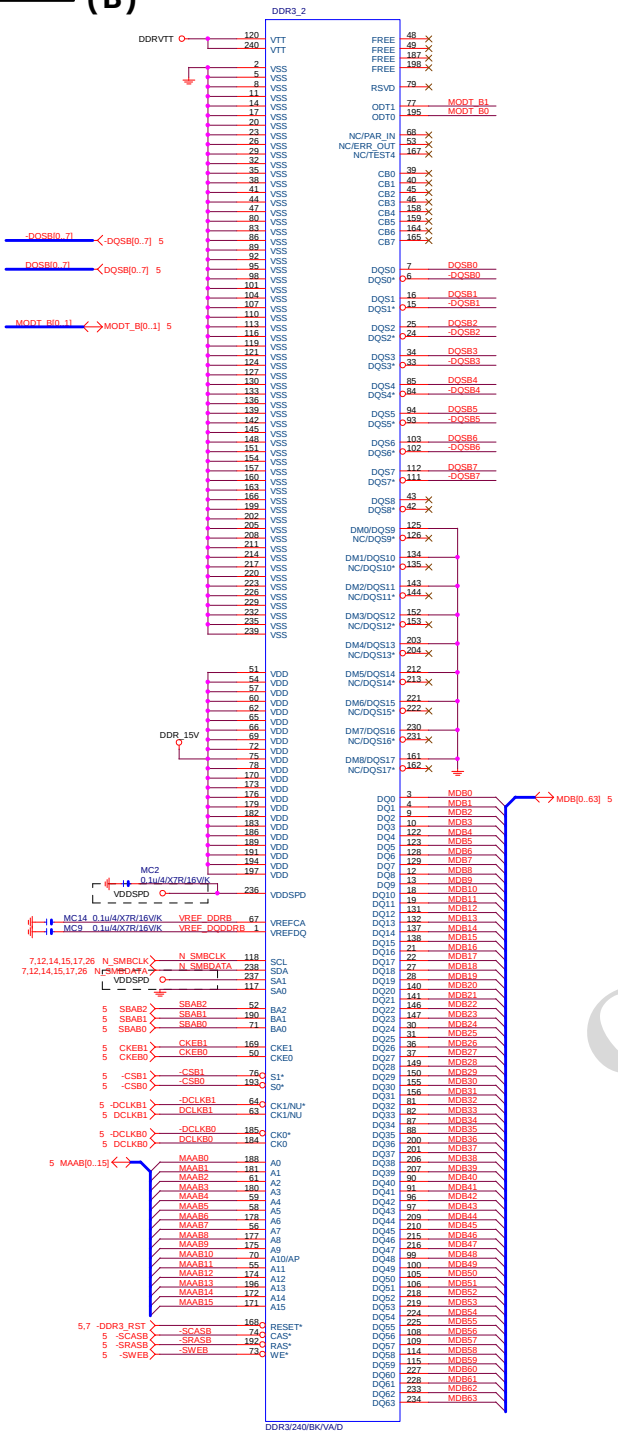
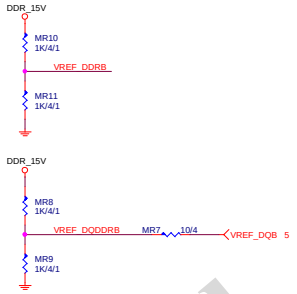
DDR3 (B)



DDR3_VREF



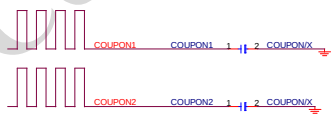
DDR3 1066,1333,1600MHZ BANDWIDTH

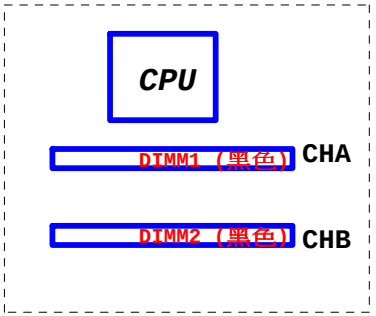
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

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	
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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%

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

PCHB

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

DMI_RCOMP PCIE_RCOMP CLKIN_DMI_N CLKIN_DMI_P USB

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3 PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8 PCIE

USBN_0 USBP_0 USBN_1 USBP_1 USBN_2 USBP_2 USBN_3 USBP_3 USBN_4 USBP_4 USBN_5 USBP_5 USBN_6 USBP_6 USBN_7 USBP_7 USBN_8 USBP_8 USBN_9 USBP_9 USBN_10 USBP_10 USBN_11 USBP_11 USBN_12 USBP_12 USBN_13 USBP_13

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14

USBRBIASB USBRBIAS

CLKIN_DOT96N CLKIN_DOT96P

B85/H81: 6/7 N\A

H81:12/13 N\A

H81:PCIE 7/8 N/A

PCIEX1 port1
PCIEX1 port2
LAN RTL8111F-VL
ITE8892 PCI Bridge

放靠近 Device & PCI-E Slot

H81/S/[10HB1-030H81-10R]

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

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

PCH (F)

Port要對應

PCHF

USB3 FDILINK

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

H81:USB3.0 N\A

H81/S/[10HB1-030H81-10R]

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

Mount for integrated clock Generation Mode

NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

H81/S/[10HB1-030H81-10R]

PCH H/S

LOW COST PCH HEATSINK

PCH_HS

NEW H81 MODEL
Footprint: BGAHSINK-75;
3mm孔徑

HEAT SINK/N-BG/GBT MK/Z87/KWOG/[12SP2-S04208-61R_12SP2-S04208-62R_12SP2-S04208-63R]

USB TABLE

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

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

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

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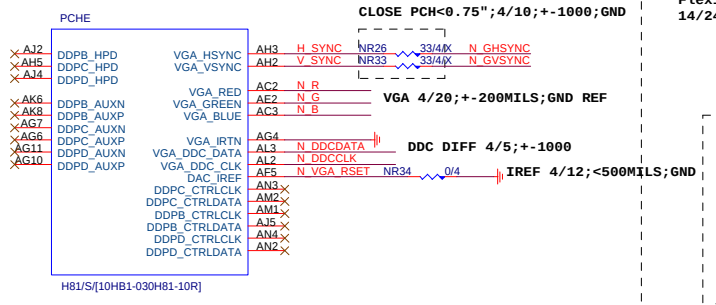
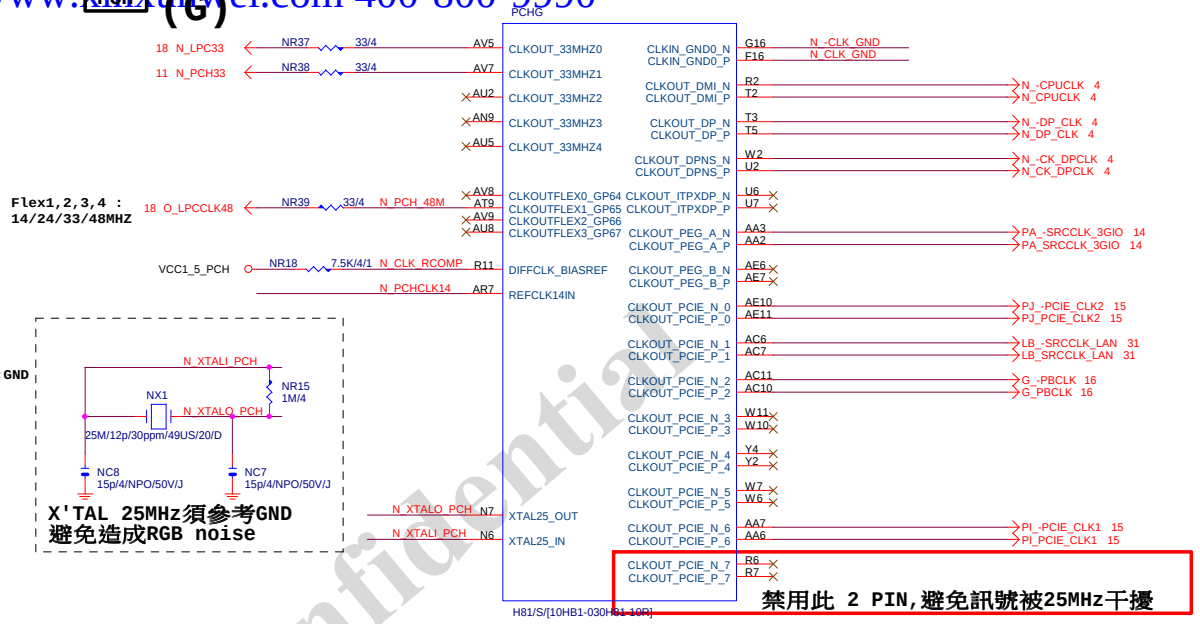
PCH (E)



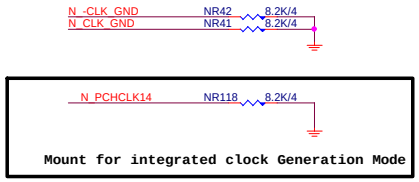
VGA DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC,DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

PCH (G)

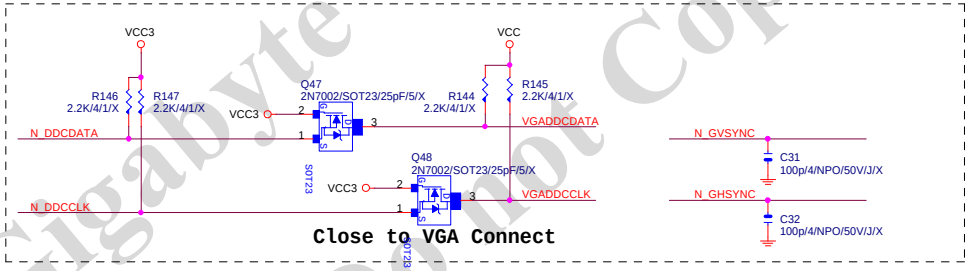


Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

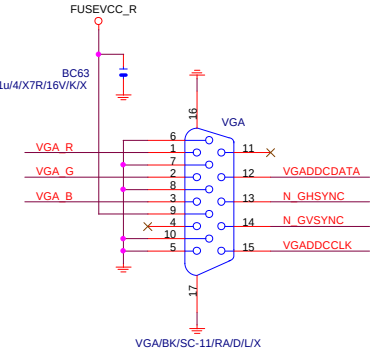
PCH CLK PD



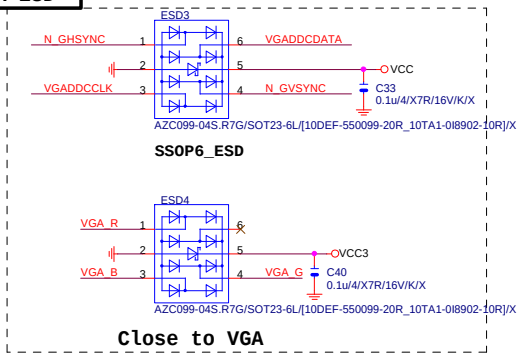
VGA DDC



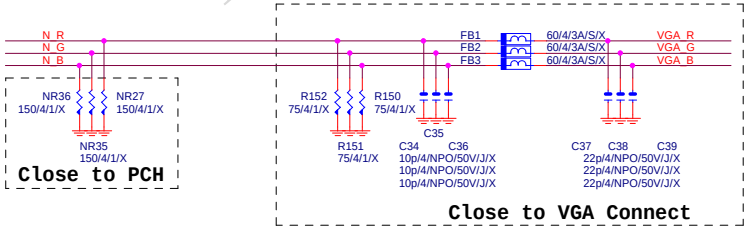
VGA CONNECTOR



VGA ESD



VGA DDC



Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
Date: Wednesday, March 19, 2014	Sheet 10 of 34	

PCH (C)

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

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

PCHC

CL_CLK, CL_DATA, CL_RSTB, APWROK
NC26 100p/4/NPO/50V/J/X
6,12,18 O_PWROK1 — NR177 0/4/SHT/M/X

PWM0, PWM1, PWM2, PWM3
TACH0_GP17, TACH1_GP1, TACH2_GP6, TACH3_GP7, TACH4_GP68, TACH5_GP69
18 N_SSTCTL — 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
SATA_RXP_2 B31
SATA_TXN_2 B35
SATA_TXP_2 D35
SATA_RXN_3 B32
SATA_RXP_3 C32
SATA_TXN_3 G33
SATA_TXP_3 F33

B85 6G
H81 6G
H81 X

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

B85/H81 3G

SATALEDB J39 — N_-SATALED 28
SATA_RCOMP D33 — SATA3COMP — NR68 7.5K/4/1 — VCC1_5_PCH
W=8 mil out of PCH
S=15 mil to other signals

SATA0GP_GP21 M37 N_GPIO21 — N_GPIO21 29
SATA1GP_GP19 J40 N_GPIO19
SATA2GP_GP36 H40 N_GPIO36
SATA3GP_GP37 N41 N_GPIO37
SATA4GP_GP16 M39 N_GPIO16
SATA5GP_GP49 N40 N_GPIO49

EDP_BKLTCTL AP2
EDP_BKLTEN AT2
EDP_VDDEN AP1

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

H81/S/[10HB1-030H81-10R]

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, TP17, TP18, TP19, TD_IREF
PIRQAB, PIRQBB, PIRQCB, PIRQDB
GPIO2, GPIO3, GPIO4, GPIO5

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

PLTRSTB AA37 — N_-PFMRST 18
GP35/NMIB M40 N_GPIO35
GP50 AH26 N_GPIO50
GP51 AU31 N_GPIO51
GP52 AJ26 N_GPIO52
GP53 AV31 N_GPIO53
GP54 AW33 N_GPIO54
GP55 R30 N_GPIO55

H81/S/[10HB1-030H81-10R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

GPIO37 PU ENABLE SBA
For H87 & B85

VCC3 3VDUAL
NR146 1K/4/1/X N_GPIO37 — NR251 1K/4/1/X, NR110 1K/4/1/X

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 — VCC3
N_-PIRQC, N_-PIRQH, N_-PIRQD, N_-PIRQB

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

NRN7 8.2K/8P4R/4 — VCC3
N_GPIO6, N_GPIO17, N_GPIO52, N_GPIO50

N_GPIO55 NR160 1K/4/1/X
N_GPIO51 NR55 1K/4/1/X
N_GPIO53 NR53 1K/4/1/X
N_GPIO17 NR61 8.2K/4/X
N_GPIO19 NR113 8.2K/4/X

soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

VCC3

NRN11 8.2K/8P4R/4
N_GPIO48, N_GPIO35, N_GPIO16

NRN12 8.2K/8P4R/4
N_SERIRQ, N_GPIO38, N_GPIO19, N_GPIO22
PCIE/MSATA MUX SELECT NR167 1K/4/1/X
MFG MODE NR80 1K/4/1/X N_GPIO49

NRN13 8.2K/8P4R/4
N_-PCI_STOP, N_A20GATE, N_GPIO39
PCH CONFIG — NR157 1K/4/1/X

GFX SELECT
DMI RX TERMINATION
N_-KBRST NR161 1K/4/1
NR84 1K/4/1/X N_GPIO36 NR148 8.2K/4/X

SV DETECT
NR66 1K/4/1/X N_GPIO69 NR65 8.2K/4/X
N_GPIO55 NR244 8.2K/4
N_GPIO21 NR250 1K/4/1

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

SATA CONNECTOR

SATA3_0
N_SATA0TXP NC43 0.01u/4/X7R/25V/K N_SATA0TXPC
N_SATA0TXN NC44 0.01u/4/X7R/25V/K N_SATA0TXNC
N_SATA0RXN NC38 0.01u/4/X7R/25V/K N_SATA0RXNC
N_SATA0RXP NC37 0.01u/4/X7R/25V/K N_SATA0RXPC
GND, T+, T-, GND, R-, R+, GND
SATA2/7/WH/H/OP/VA/D/1/B/PA66

WHITE CONNECTOR

SATA3_1
N_SATA1TXP NC42 0.01u/4/X7R/25V/K N_SATA1TXPC
N_SATA1TXN NC41 0.01u/4/X7R/25V/K N_SATA1TXNC
N_SATA1RXN NC40 0.01u/4/X7R/25V/K N_SATA1RXNC
N_SATA1RXP NC39 0.01u/4/X7R/25V/K N_SATA1RXPC
GND, T+, T-, GND, R-, R+, GND
SATA2/7/WH/H/OP/VA/D/1/B/PA66

WHITE CONNECTOR

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

** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0

SATA2_2
N_SATA4TXP NC45 0.01u/4/X7R/25V/K N_SATA4TXPC
N_SATA4TXN NC46 0.01u/4/X7R/25V/K N_SATA4TXNC
N_SATA4RXN NC47 0.01u/4/X7R/25V/K N_SATA4RXNC
N_SATA4RXP NC48 0.01u/4/X7R/25V/K N_SATA4RXPC
GND, T+, T-, GND, R-, R+, GND
SATA2/7/BK/H/OP/VA/D/1/B

BLACK CONNECTOR

SATA2_3
N_SATA5TXP NC27 0.01u/4/X7R/25V/K N_SATA5TXPC
N_SATA5TXN NC28 0.01u/4/X7R/25V/K N_SATA5TXNC
N_SATA5RXN NC25 0.01u/4/X7R/25V/K N_SATA5RXNC
N_SATA5RXP NC24 0.01u/4/X7R/25V/K N_SATA5RXPC
GND, T+, T-, GND, R-, R+, GND
SATA2/7/BK/H/OP/VA/D/1/B

BLACK CONNECTOR

GPIO38 Ctrl

MFG Mode

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

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

Title	PCH HOST , SATA, PCI
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Gigabyte Technology

PCH (D)

PCHD

H81/S/[10HB1-030H81-10R]

ACZ_SDOUT

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

PCH_DPWROK

For IT8620 Ctrl

PCH PU/PD

HSW_STRAP13

32.768KHZ

CLR_CMOS

BATTERY-DUAL-4
RB 必须放在BAT外

Gigabyte Technology

Title: PCH GPIO , CTRL , AUDIO

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.0

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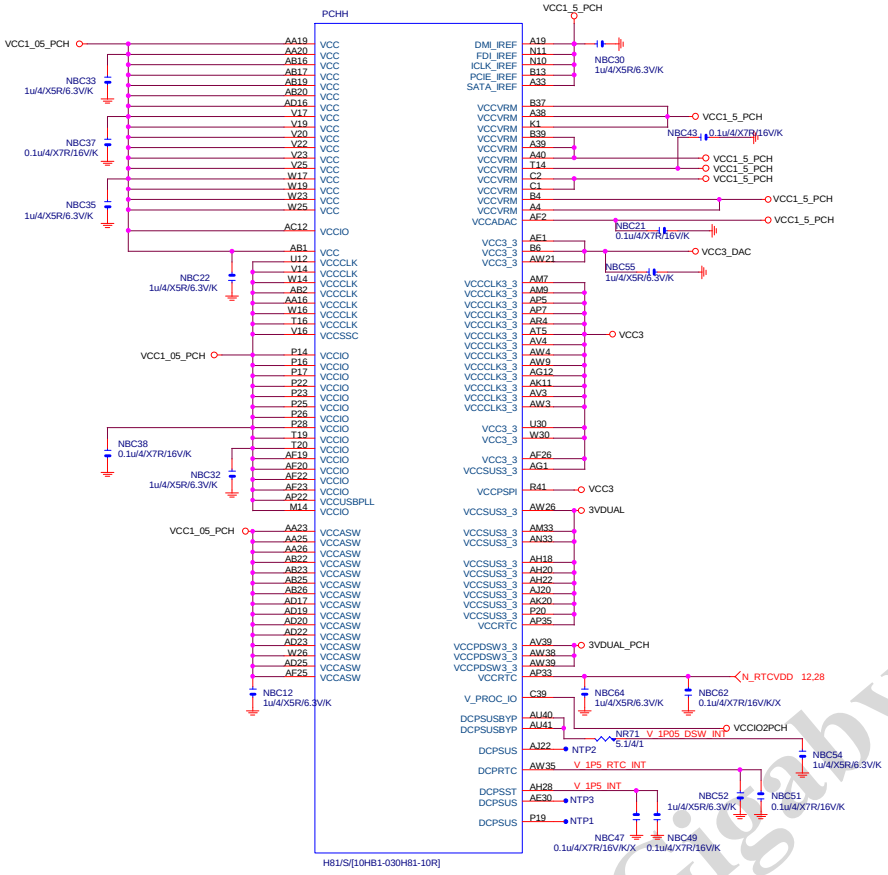
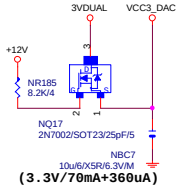
PCH (H)



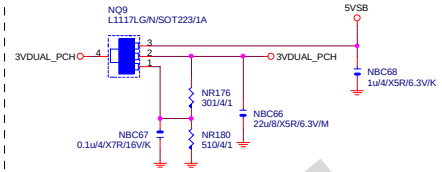
VCC3_DAC

CLOSE北橋(注意震盪水波紋)



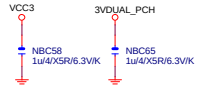
(3.3V/70mA+360uA)

3VDUAL_PCH

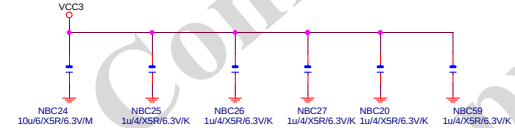


SHT PWR

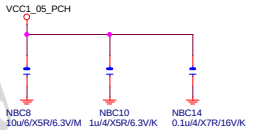
CAP



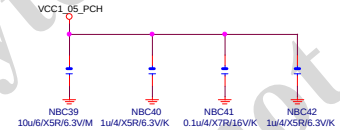
(3.3V)(X6)



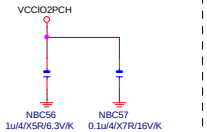
(1.05V)(X5)



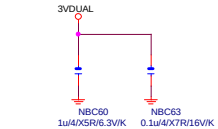
(1.05V)(X6)



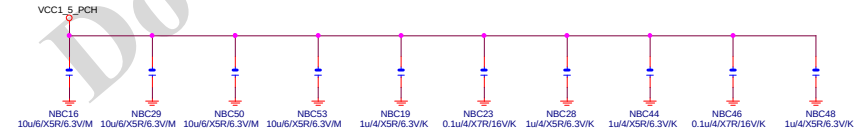
(1.05V)(X2)



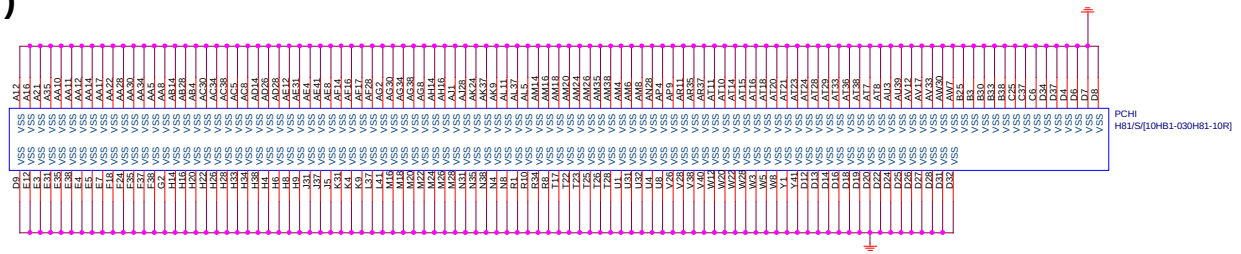
(3.3V)(X2)



(1.5V) (X10)



PCH (I)



Gigabyte Technology		
Title: PCH PWR ,GND		
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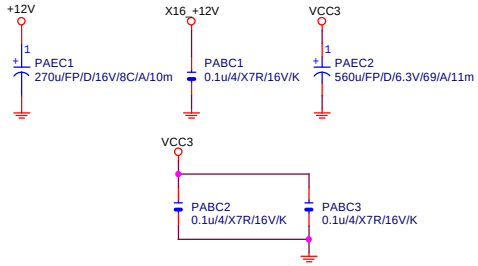
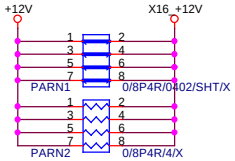
PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C

PCI-E REV:1.1--> 2.5GHZ

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

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

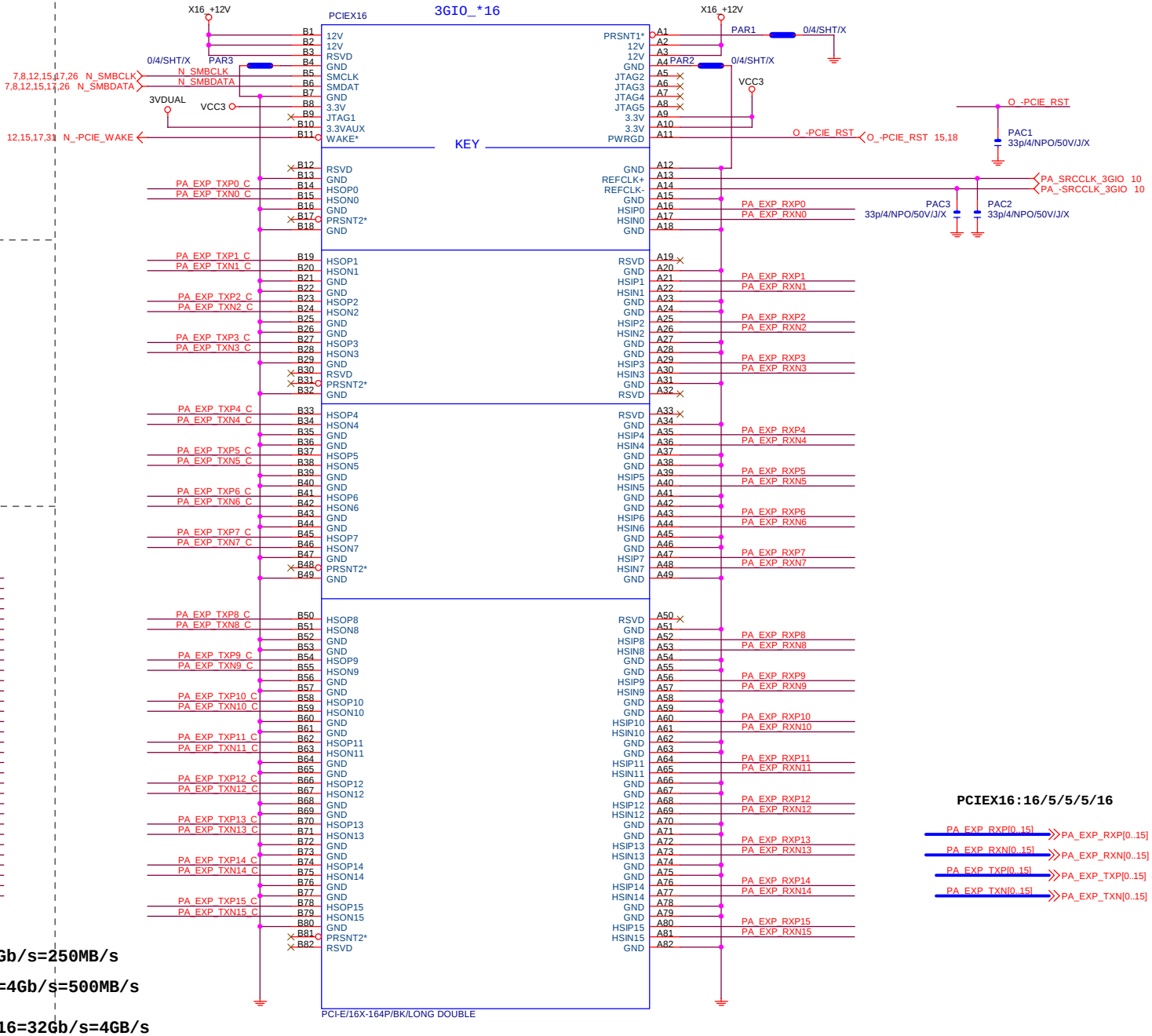
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DM-Q



PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 4

PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 4

PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 4

PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 4

Gigabyte Technology			
Title: PCI EXPRESS * 16			
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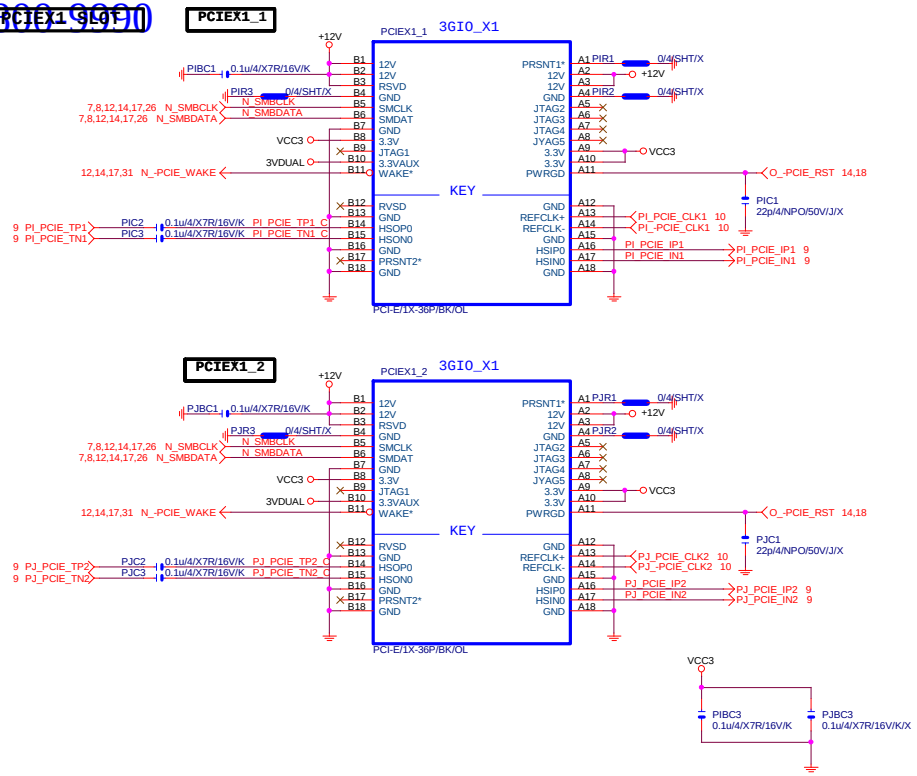

Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
Date: Wednesday, March 05, 2014	Sheet 15 of 34	

Gigabyte Technology		
Title	IT8892E	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
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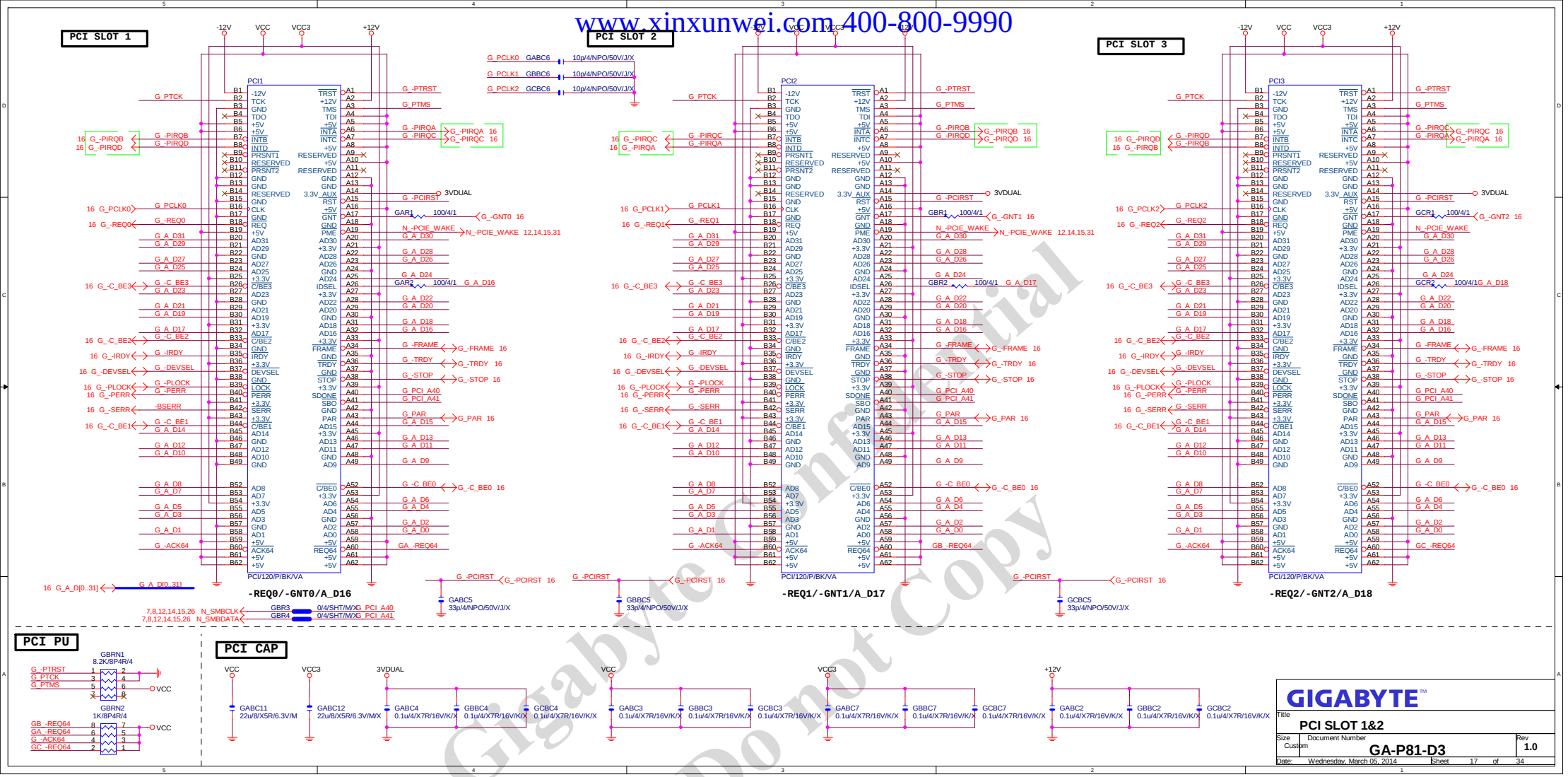

GIGABYTE™

Title: PCI SLOT 1&2

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SIO IT8620E_BX

IT8620E_BX

SYS_FAN3

【技術通報R&D技術通報151】
有使用PRINT PORT的 MODEL
需使用新料號:10HP2-118728-72R

CPU_FAN
SYS_FAN1
SYS_FAN2

IT8620E/CX/S

PWR SHT

For 8728 EUP function

3VDUAL_PCH OR25 0/6/SHT/X IT_VCCH

VCC3 OR49 0/6/SHT/X IT_AVCC

SIO PU

DS_ME OR46 1K/4/1 3VDUAL_PCH

SVID_CTRL OR84 8.2K/4 3VDUAL_PCH

-PROCHOT_CON OR85 8.2K/4 VCC3

N_-LDRQ0 OR27 1K/4/1 VCC3

ITE_PWROK2 OR16 1K/4/1 VCC3

ITE_PWROK1 OR10 1K/4/1 VCC3

O_-PCIE_RST OR19 1K/4/1/X VCC3

O_-PFMRST2 OR2 1K/4/1/X VCC3

N_A20GATE OR31 680/4/1/X

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

EUP_from PCH
3VDUAL_PCH
OR62 8.2K/4
O_PWRBTSW 12
OC5 0.01u/4/X7R/25V/K

SIO STRAP

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

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

ITE recommand

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

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

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

IT8620E GPIO問題匯整

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

DUAL BIOS OPT STRAP

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

Power leakage

IT_AVCC
QQ3 2N7002/SOT23/25pF/5
SOT23
-PSON
OR50 330/6

SIO_18V

internal power pin, max 22nF cap

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

MB ID

VCC3 OR7 8.2K/4
OR15 8.2K/4/X MB_ID2

SIO CAP

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

Gigabyte Technology

Title: ITE 8728 LPC IO

Size: Custom | Document Number: GA-P81-D3 | Rev: 1.0

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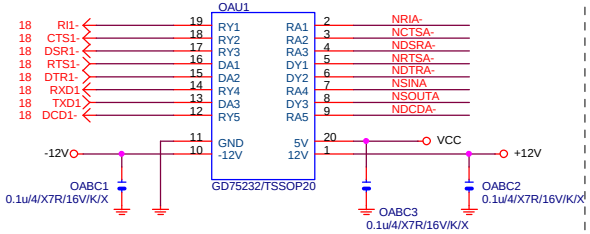
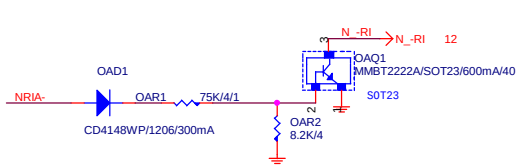
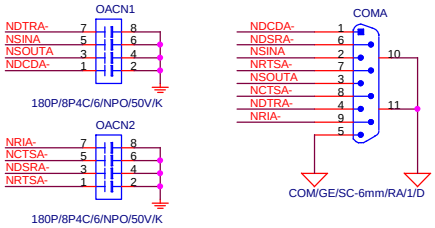
COMA



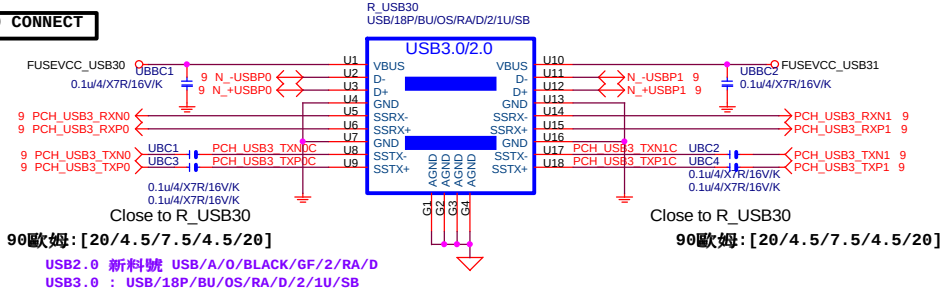
COM RI



COM BUFFER



R_USB30 CONNECT



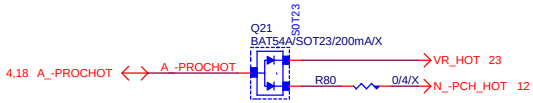
90歐姆:[20/4.5/7.5/4.5/20]

90歐姆:[20/4.5/7.5/4.5/20]

USB2.0 新料號 USB/A/O/BLACK/GF/2/RA/D

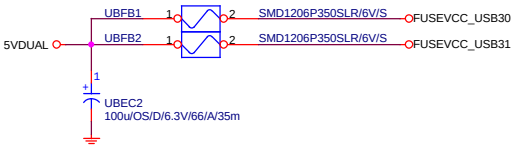
USB3.0 : USB/18P/BU/OS/RA/D/2/1U/SB

-PROHOT



USB30 PWR

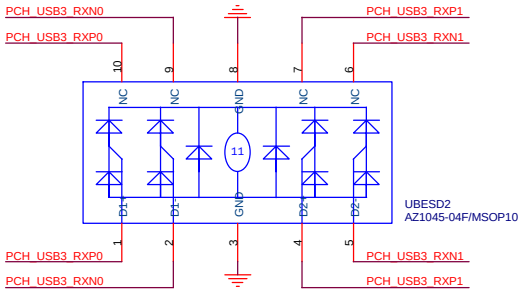
Polyswitch-1206



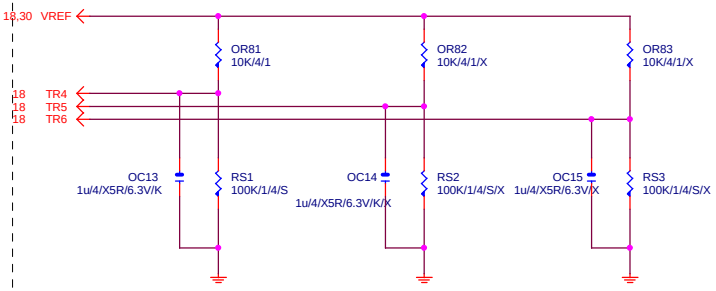
USB3.0 1Port - 1Fuse (3.5A)

Close to connector

USB30 ESD PROCTECT

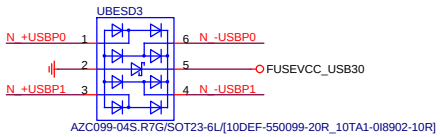


-PROHOT



RS1 close DBQ1、
RS2 close DDQ1、
RS3 close DAQ1、
Others close SIO

USB20 ESD PROCTECT



CLOSE R_USB30

Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
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DUAL BIOS

指定用DII

VCC3
NR226 330/4/1
-SPI_CS_1
NR227 1K/4/1
NQ20 S0T23
NR228 0/4/X
-SPI_HOLD_M NR233 1K/4/1/X
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
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

M_BIOS

VCC3
NR4 0/4/SHT/M/X
NBC2 1u/4/X5R/6.3V/K
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
12 SPI_DQ2 NR220 0/4/SHT/X N_-SPI_WP0
CS# SO WP# VSS VDD HOLD# SCK SI
-HOLD0 NR221 0/4/SHT/X NR222 8.2K/4/X -SPI_HOLD_M SPI_DQ3 12
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS
32M/SPI/SO8/200mil/S/[10HP4-112532-20R]

B_BIOS

VCC3
NR12 0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K
-SPI_CS_2 NR8 22/4
SPI_MISO
12 SPI_DQ2 NR223 0/4/SHT/X N_-SPI_WP1
CS# SO WP# VSS VDD HOLD# SCK SI
-HOLD1 NR224 0/4/SHT/X NR225 8.2K/4/X -SPI_HOLD_B SPI_DQ3 12
N_ICH_SPI_CLK N_ICH_SPI_CLK 12
N_ICH_SPI_MOSI N_ICH_SPI_MOSI 12
BACKUP BIOS
32M/SPI/SO8/200mil/S/[10HP4-112532-20R]

VCC3
NBC4 0.1u/4/X7R/16V/K

MOSI For DMI RX Termination Voltage

VCC3
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
18 -SPI_HOLD_M -SPI_HOLD_M NR3 1K/4/1
18 -SPI_HOLD_B -SPI_HOLD_B NR11 1K/4/1

VCC3
N_-SPI_WP1 NR2 8.2K/4/X
N_-SPI_WP0 NR1 8.2K/4/X
12 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
18 -SPI_HOLD_M -SPI_HOLD_M NR237 1K/4/1/X
18 -SPI_HOLD_B -SPI_HOLD_B NR238 1K/4/1/X

12 N_ICH_SPI_MISO NR6 22/4 SPI_MISO

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

1 means floating
0 means PD 1K

LPT PORT

PRN5
18 AFD- AFD- PD0 STB- INIT- LPT14 LPT2 LPT1 LPT16
18 STB-
18 INIT-
68/8P4R/4

PRN3
PD1 PD2 PD3 SLIN- LPT3 LPT4 LPT5 LPT17
18 SLIN-
68/8P4R/4

18 ERR-
18 ACK-
18 BUSY
18 PE
18 SLCT
18 PD[0..7]
ERR- ACK- BUSY PE SLCT PD[0..7]

PRN1
PD4 PD6 PD7 PD5 LPT6 LPT8 LPT9 LPT7
68/8P4R/4

D1 CD4148WP/1206/300mA
VCC
PBC2 0.1u/4/X7R/16V/K
PBC1 1u/6/X7R/16V/K/X

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

PRN2 2.2K/8P4R/4 LPT3 LPT4 LPT5 LPT17
PRN6 2.2K/8P4R/4 LPT6 LPT8 LPT9 ACK-
PRN4 2.2K/8P4R/4 LPT2 LPT1 LPT16 ERR-
PRN7 2.2K/8P4R/4 LPT7 BUSY PE SLCT
PR1 2.2K/4/1 LPT14

PCN2 180p/8P4C/6/NPO/50V/K
PCN3 180p/8P4C/6/NPO/50V/K
PCN1 180p/8P4C/6/NPO/50V/K
PCN4 180p/8P4C/6/NPO/50V/K
PC1 180p/4/NPO/50V/J

LPT
LPT1 LPT14 LPT2 ERR- LPT3 LPT16 LPT4 LPT17 LPT5 LPT6 LPT7 LPT8 LPT9 ACK- BUSY PE SLCT
27
26
LPT/PK/SC-6mm/RA/D

Gigabyte Technology

Title	BIOS	
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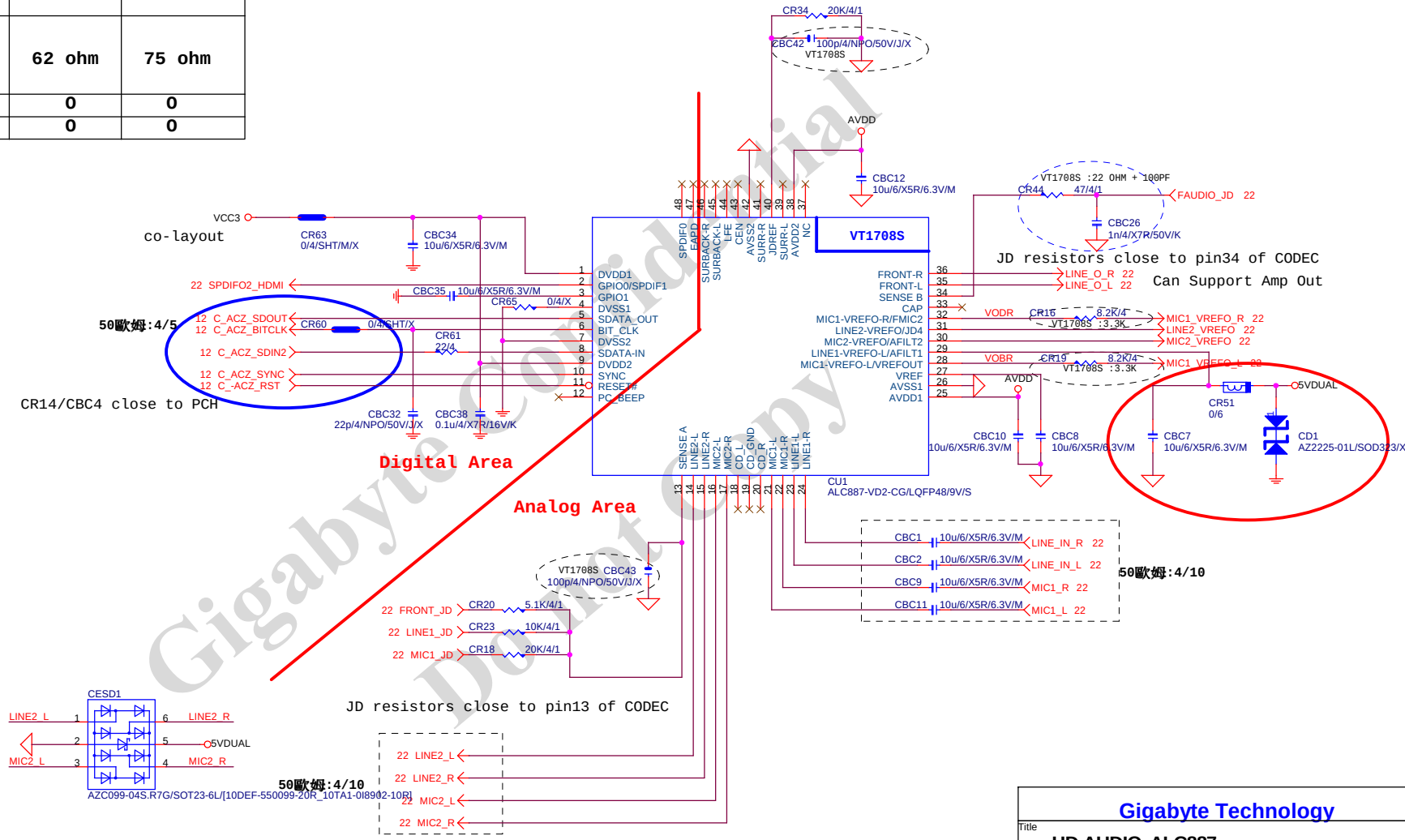
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	X	0	0



Gigabyte Technology

Title: HD AUDIO ALC887

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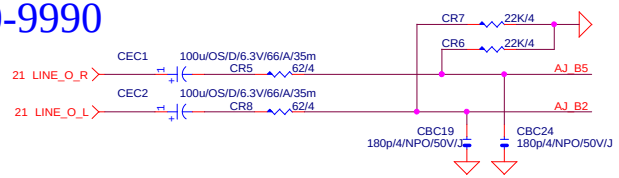
CR49 0/6/SHT/M/X → Close F_AUDIO

CR50 0/6/SHT/M/X → Close Codec

CR21 2.2/6 → Audio jack <--> USB_LAN

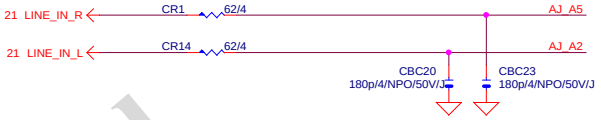
CR24 0/6/X → Under Audio jack

LINE-OUT



Only reserved for ALC888

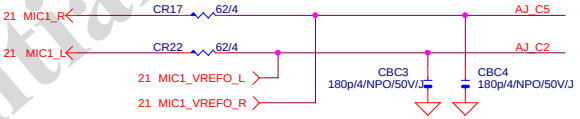
LINE-IN



Verify MIC function in LINE-in

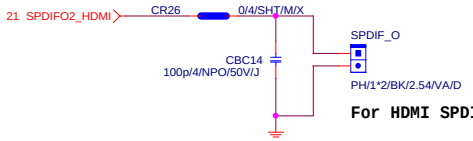
For 889A/888

MIC-IN



SURROUND

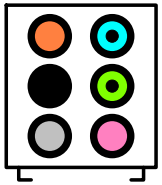
SPDIF_OUT



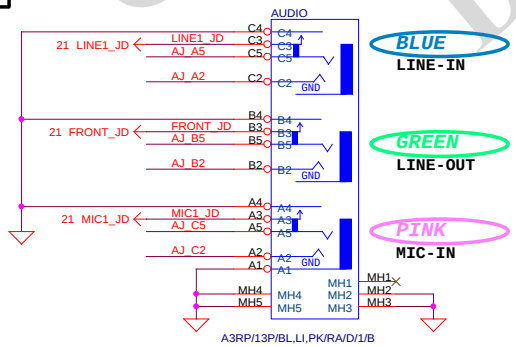
For HDMI SPDIF

CEN/LFE

AZALIA JACK

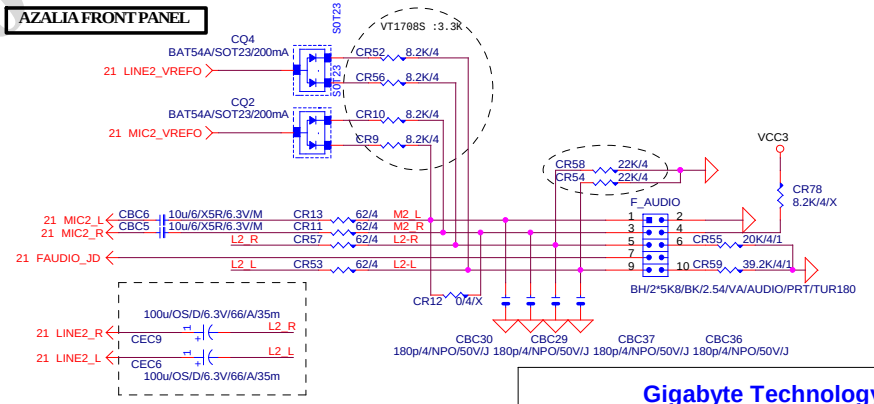


AZALIA JACK



SURR BACK

AZALIA FRONT PANEL



Gigabyte Technology			
Title: AUDIO JACK			
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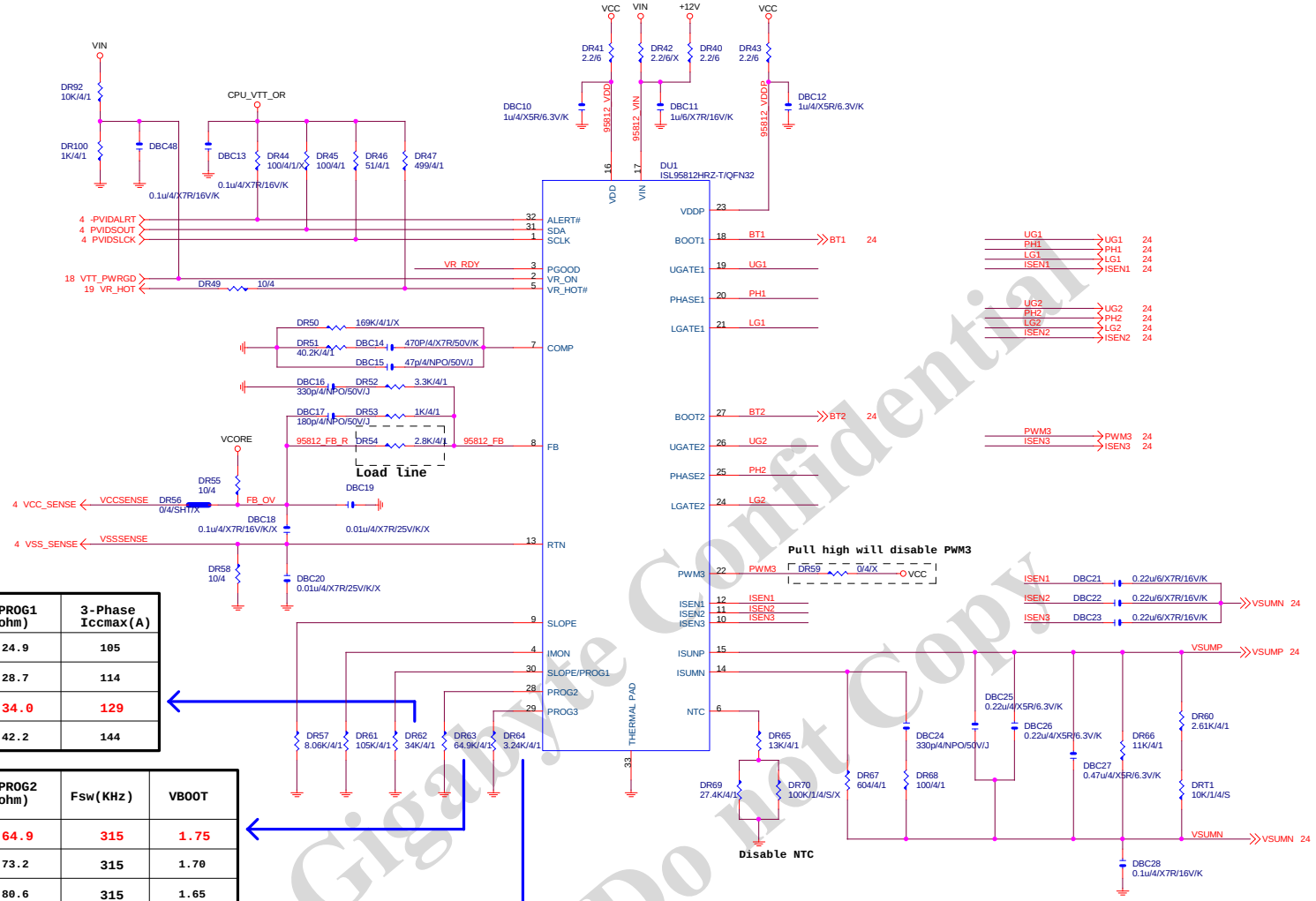
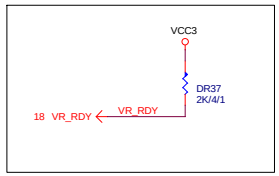


R_PROG1 (Kohm)	3-Phase Iccmax(A)
24.9	105
28.7	114
34.0	129
42.2	144

R_PROG2 (Kohm)	Fsw(KHz)	VBOOT
64.9	315	1.75
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
3.24	12
5.76	24
9.31	40
13.3	45



Gigabyte Technology		
Title: CPU CORE VR-1		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
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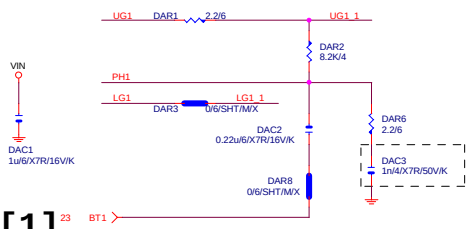
PHASE 1



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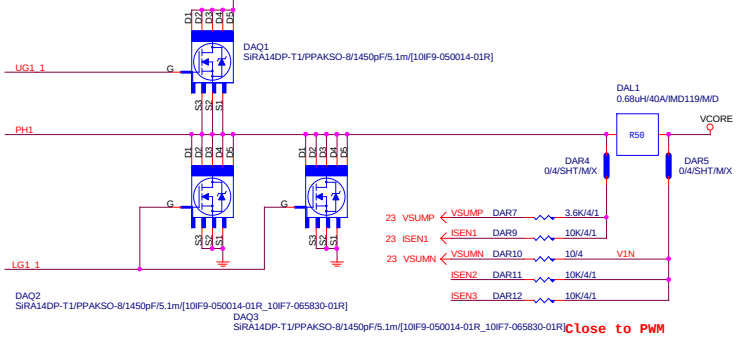
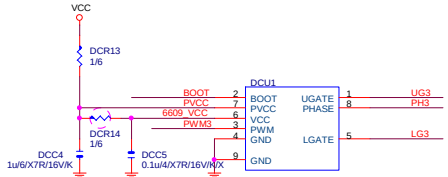
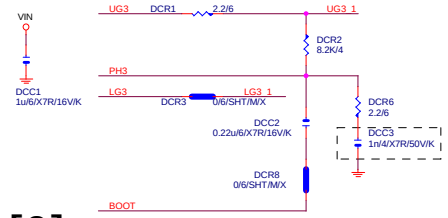


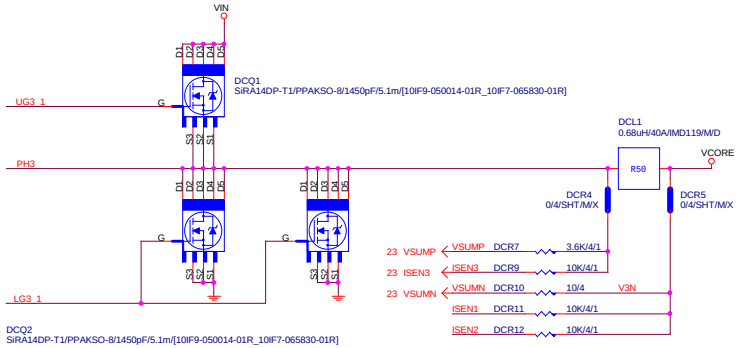
Close to PWM

PHASE 3



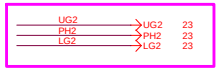


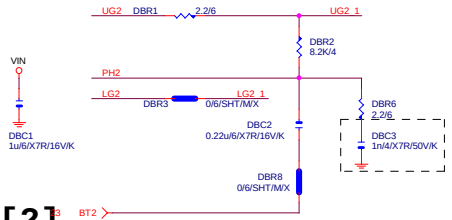
[3]



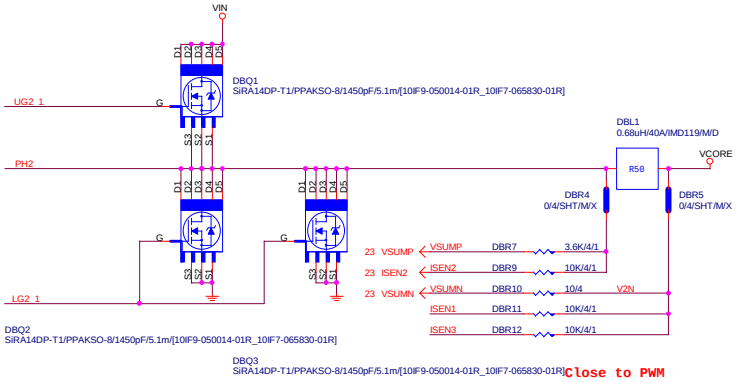
Close to PWM

PHASE 2



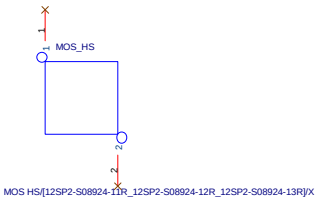


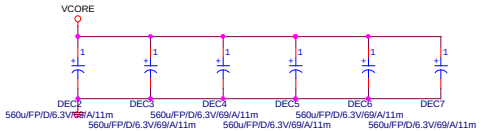
[2]

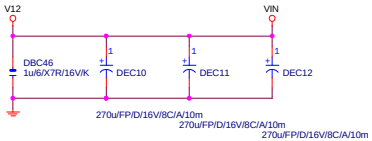


Close to PWM

MOSFET HEATSINK







Gigabyte Technology			
Title: CPU CORE VR-2			
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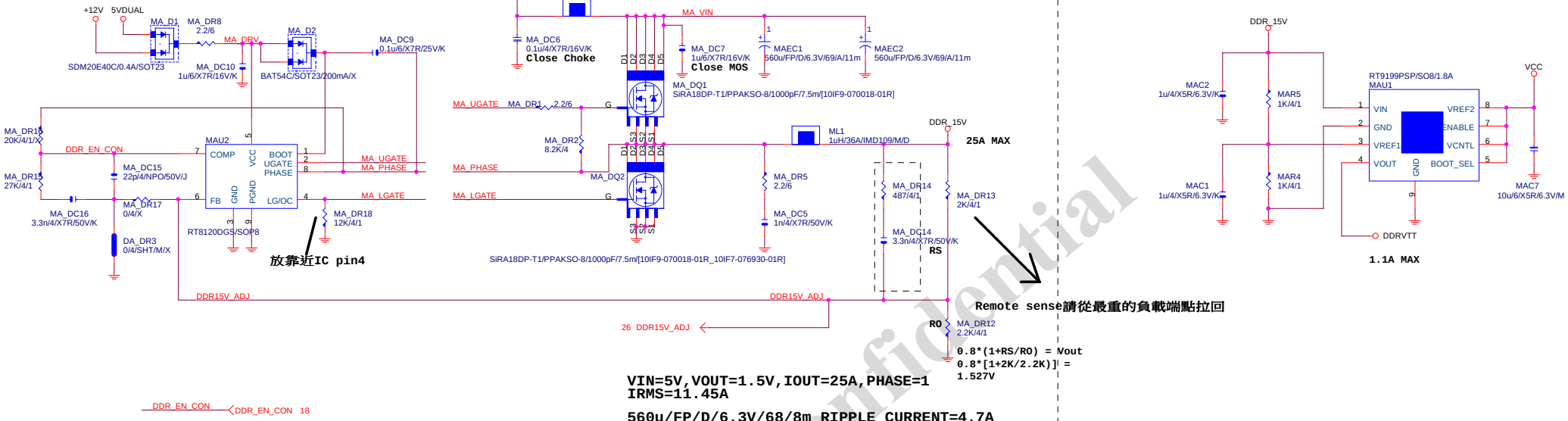
DDR_15V



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->故固態電容須2X7.99=15.98>11.45A

OCP:35.82A for Rds=6.7m for vishay@4.5V
OCP:72.727A for Rds=3.3m for renesas@10V
OCP:48A=Roset*Iocset / Rds(on)
=12K*10uA / [5//5]

DDRVTT

GIGABYTE™

Title	DDR15V / M3 POWER	
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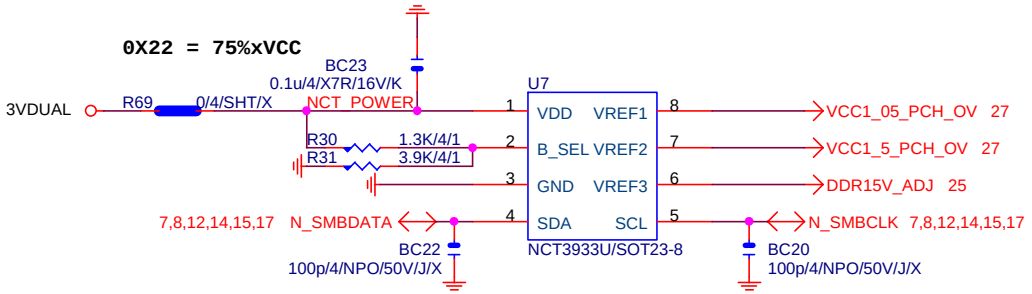
OVER VOLTAGE



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: CPU CORE VR-2

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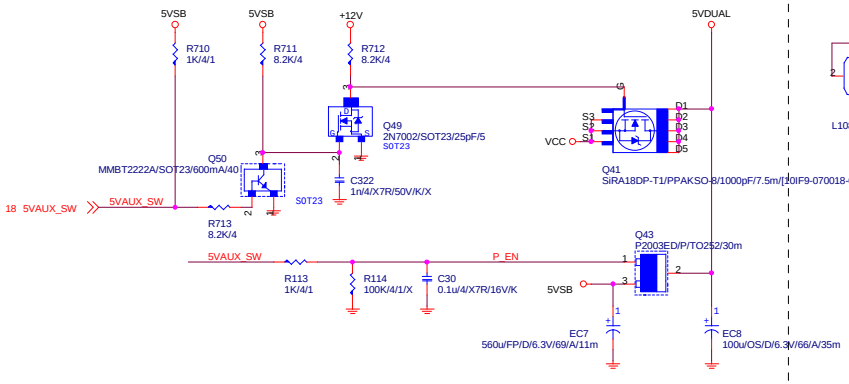
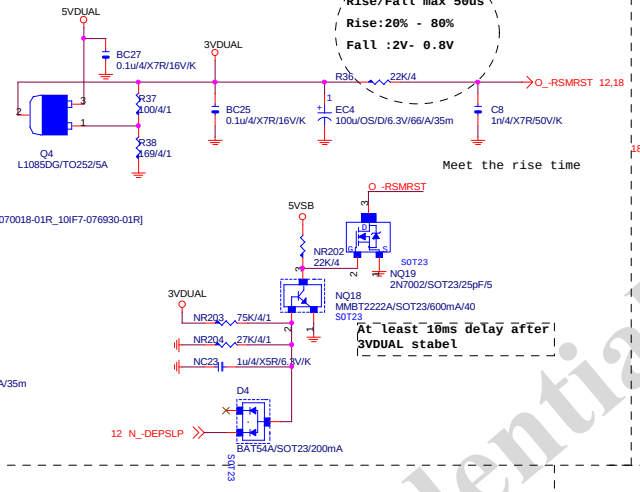
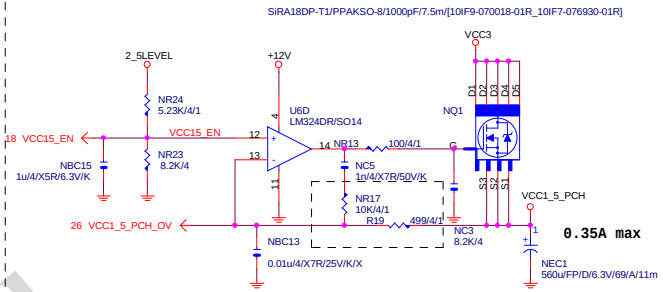
5VDUAL



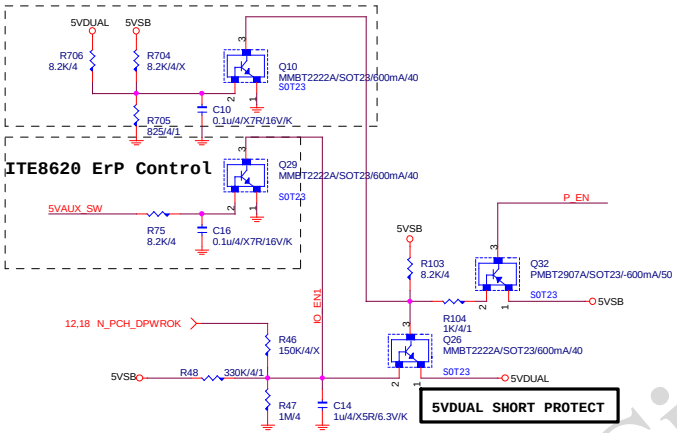
3VDUAL



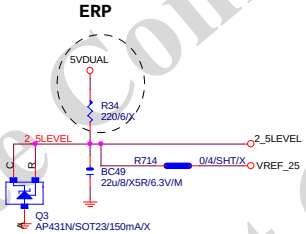
VCC1_5_PCH



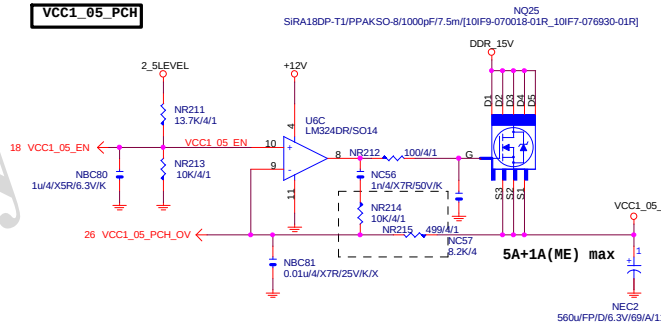
5VSB OVP發生時 : 5VDUAL=0.8V --> 解除時,須拔POWER CORE 才可開機
5VDUAL OVP發生時 : 5VDUAL=6V --> 解除時則恢復正常
5VDUAL OVP : 6V protection



ERP



VCC1_05_PCH



Gigabyte Technology			
Title: DISCRETE POWER			
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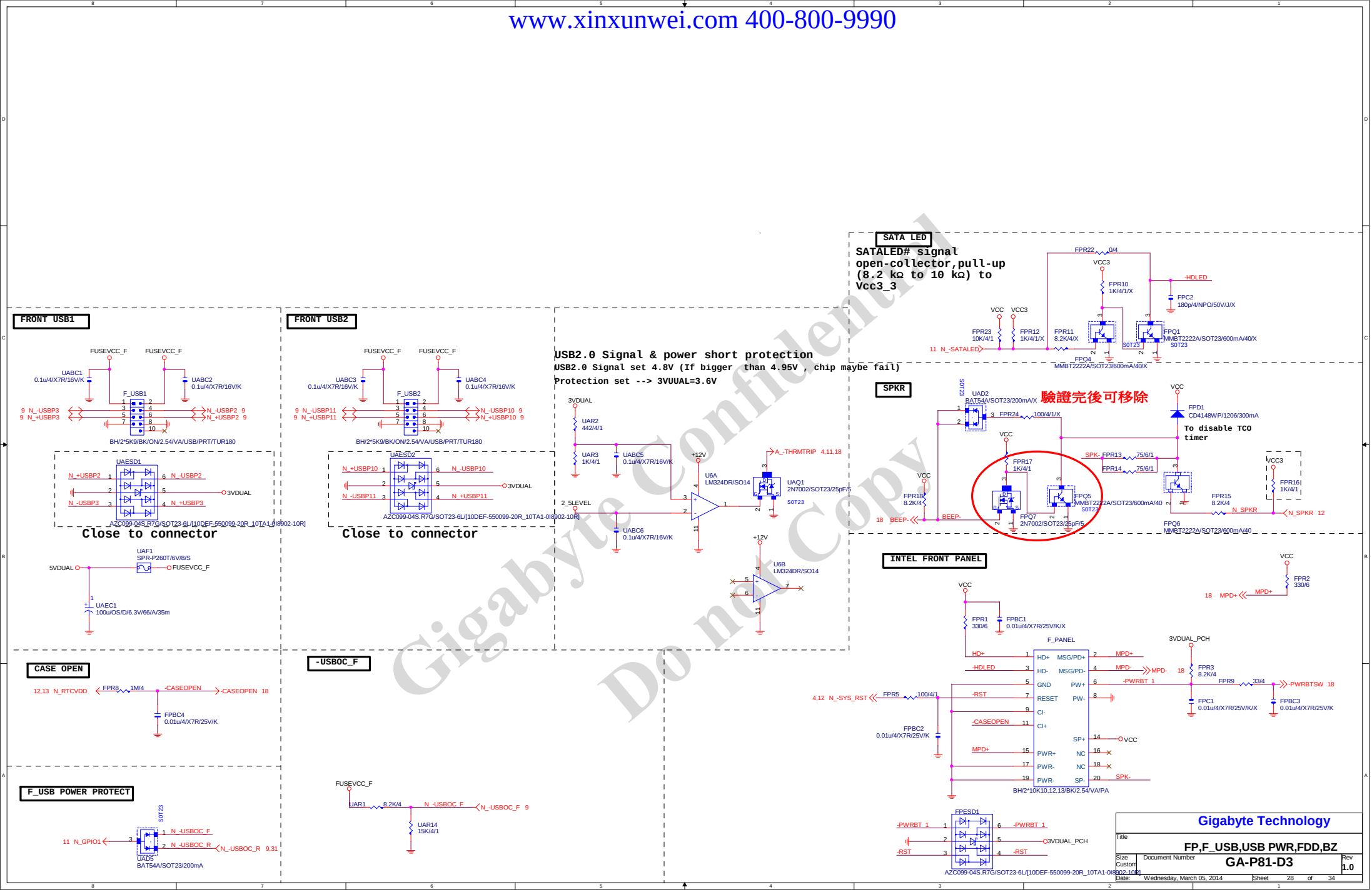

Gigabyte Technology			
Title	FP,F_USB,USB PWR,FDD,BZ		
Size: Custom	Document Number: GA-P81-D3		Rev: 1.0
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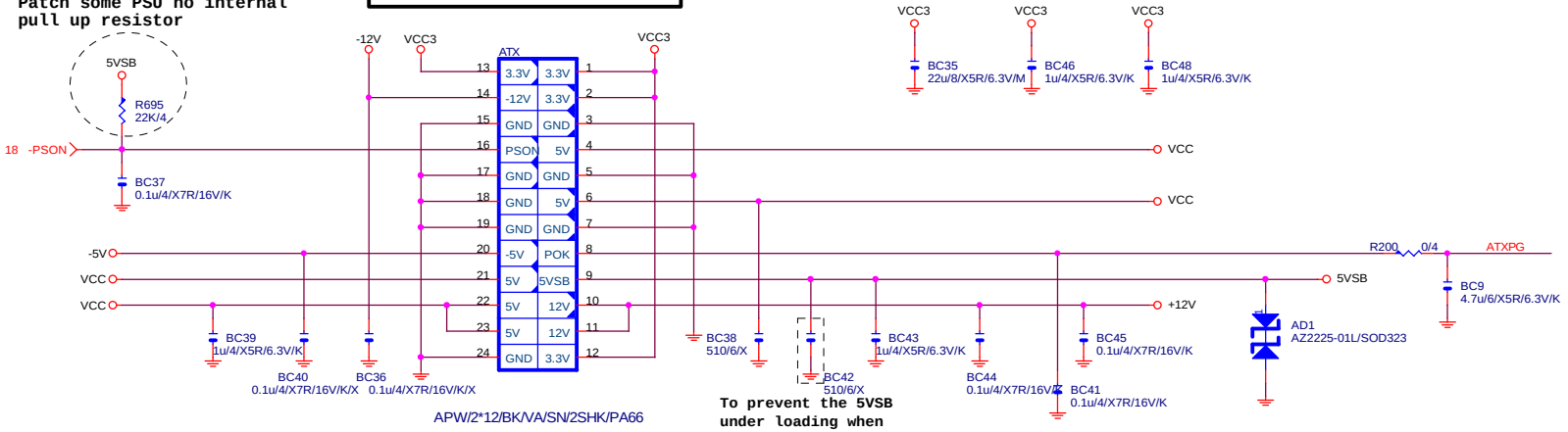
ATXX24 POWER CONNECTOR

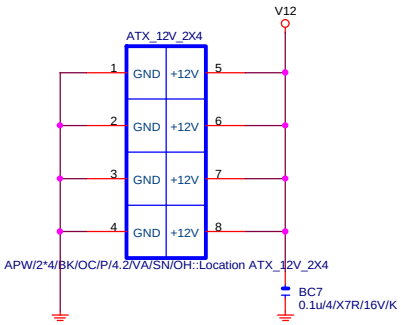
Patch some PSU no internal pull up resistor

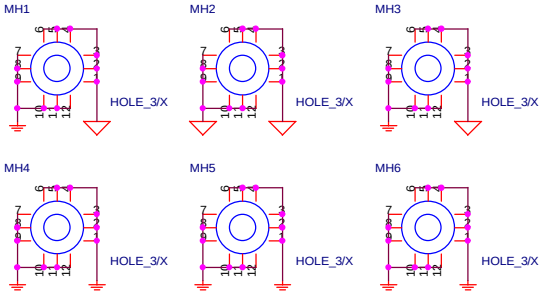


APW/2*12/BK/VA/SN/2SHK/PA66

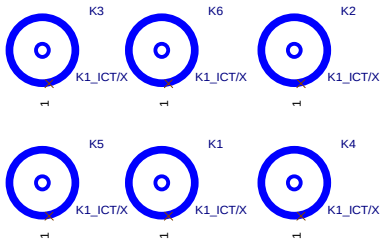
To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

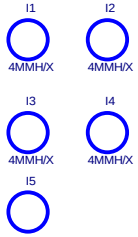




HOLE_4-RH-1



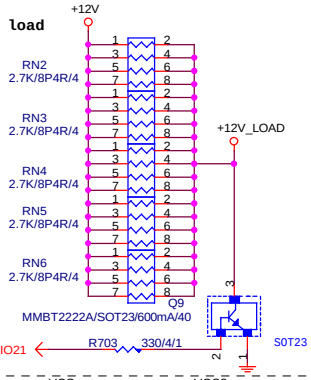
K1-ICT

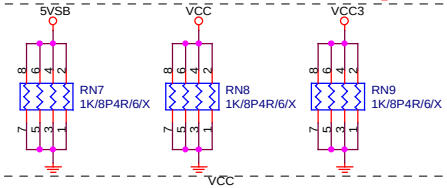


4MMH

【技術通報R&D技術通報153】

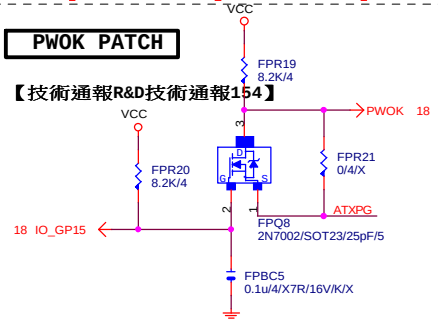
To fix 12V light load abnromal issue





PWOK PATCH

【技術通報R&D技術通報154】



Gigabyte Technology

Title	ATX POWER CONNECTOR	
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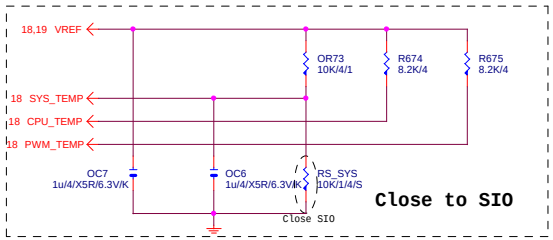
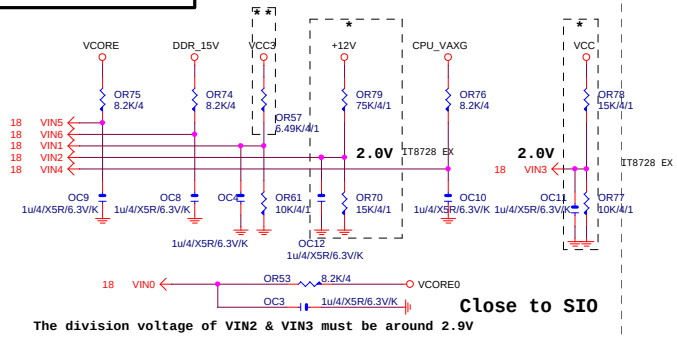
TEMP H/W MONITOR



VOLTAGE-- H/W MONITOR

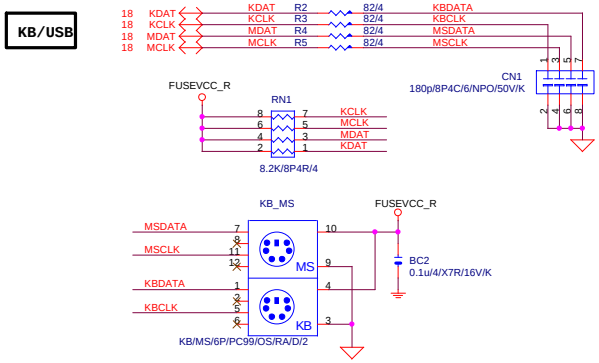
* IT8728 BX
** IT8728 CX

VIN2 must +12V input
VIN3 must VCC input

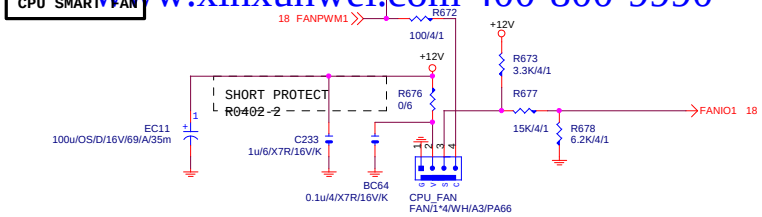


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



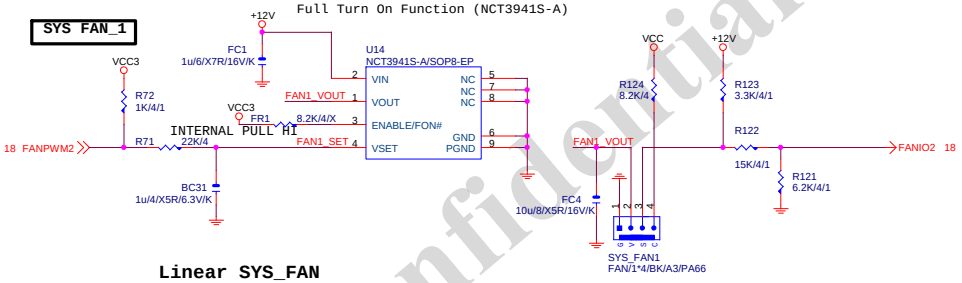
CPU SMART FAN



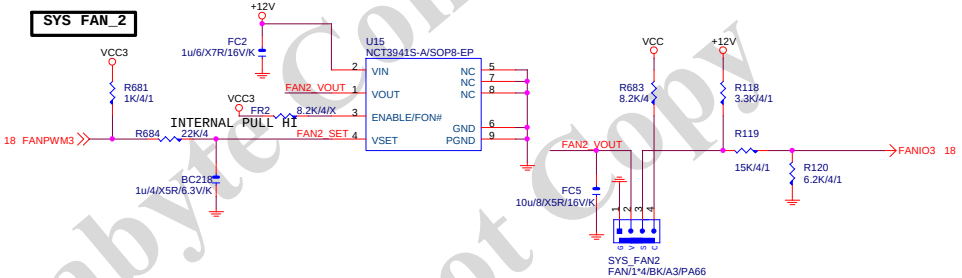
Linear SYS_FAN

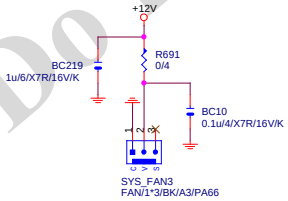
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

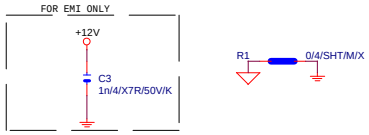
SYS FAN_1



SYS FAN_2







Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
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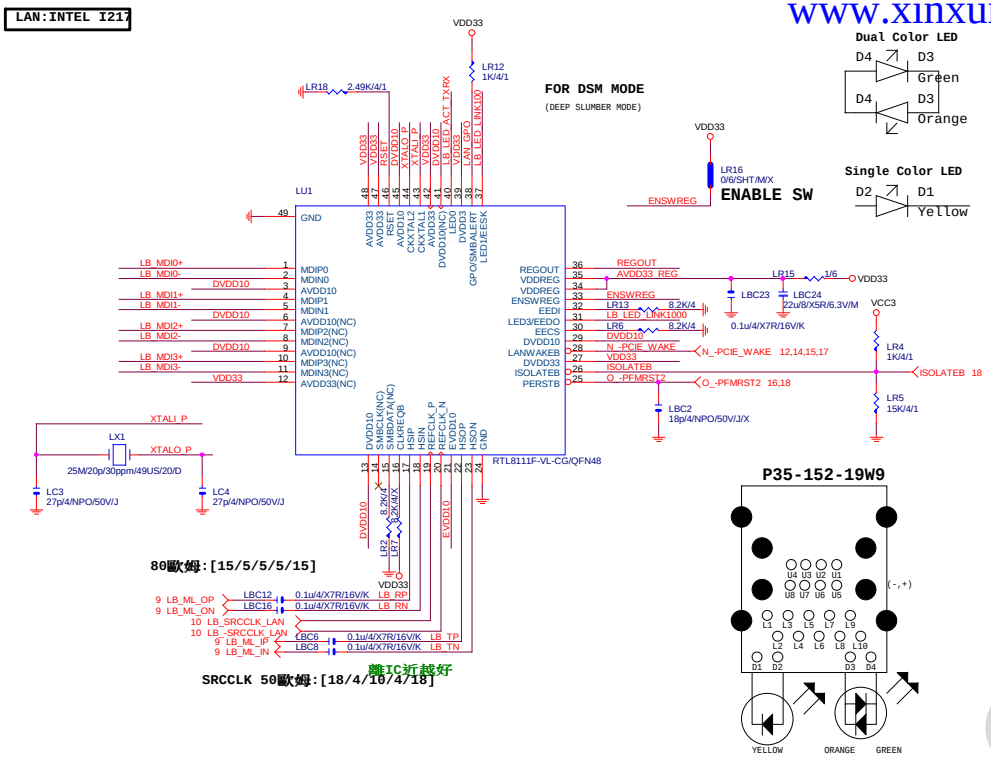
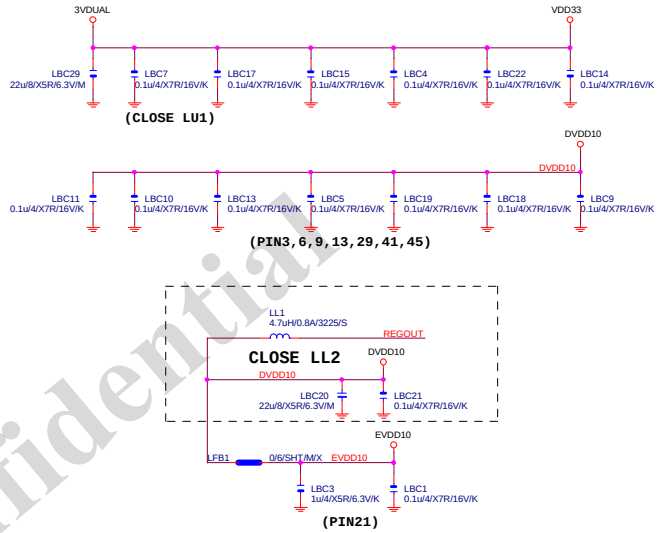
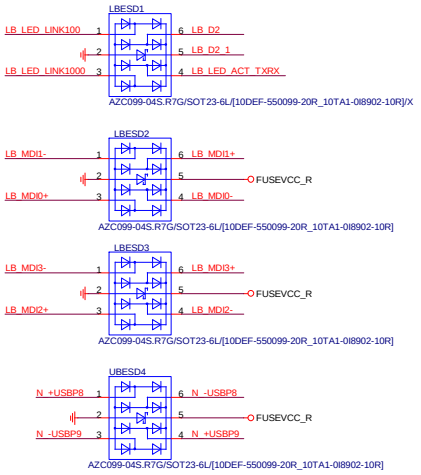
LAN:INTEL I217



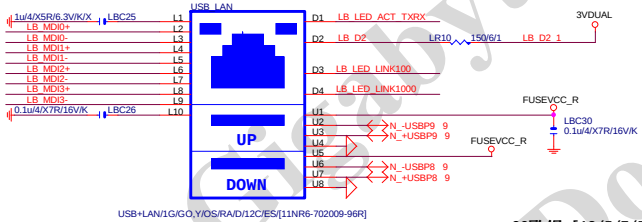


USB30_LAN CONNECTOR

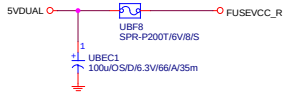


CLOSE USB_LAN

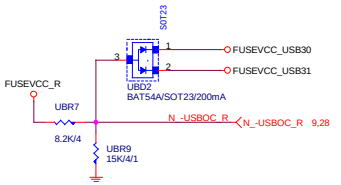
100歐姆:[20/4/8/4/20]

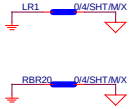


90歐姆:[12/5/7/7/12]



-USBOC_R





Gigabyte Technology		
Title: INTEL LAN I217		
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Gigabyte Technology			
Title: N/A			
Size: Custom	Document Number: GA-P81-D3		Rev: 1.0
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	Gigabyte Technology	
Title	N/A	
Size: Custom	Document Number: GA-P81-D3	Rev: 1.0
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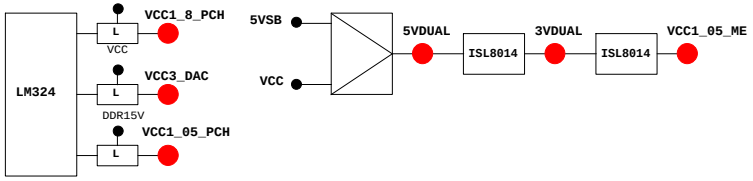
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

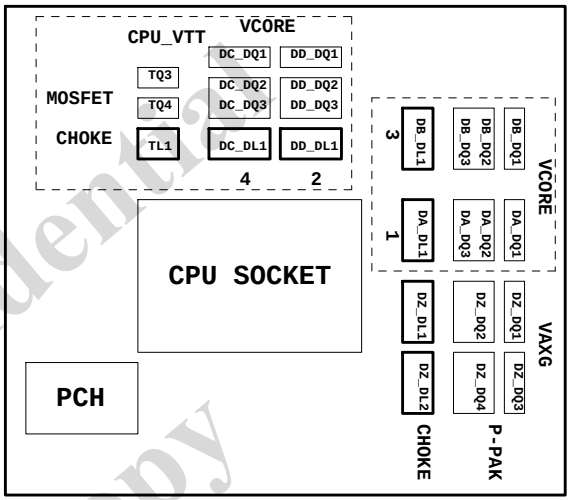
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

Gigabyte Technology
Title: TABLE LIST
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