Model Name: G1.Sniper B5

1.2

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	
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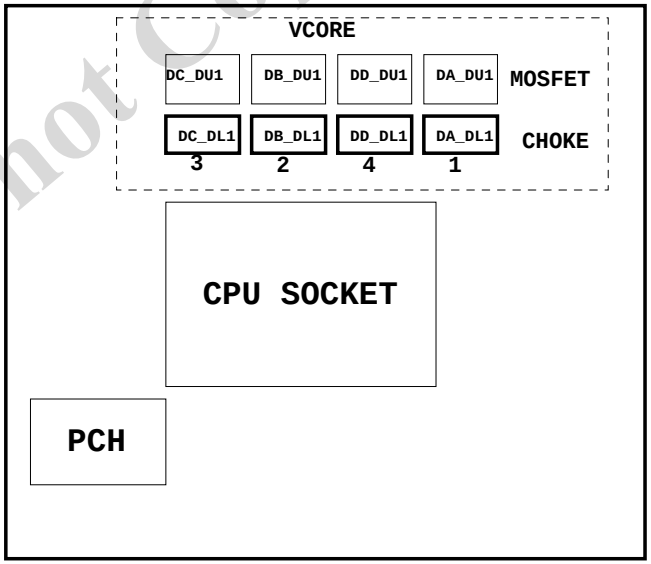

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Title	Cover Sheet	
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Date: Monday, May 19, 2014	Sheet 1 of 34	

G1.Sniper B5

Component value change history

Data	Change Item	Reason
0.1	E-BOM	
	1. 注意N_GPIO37上法(3VDUAL or VCC3)	
	2. CQ4 & CU2 socket & LED 用料問"樹人"	
	3. slot 改"綠配黑"	
0.2	1. PCH/MOS HEATSINK料號要指定Gaming名板	
	2. AUDIO 蓋子的料號要UPDATE ALC898專用	
	3. PCIEX4/PCIEX14/DDR3_1~DDR3_4/RCA修改料號	
1.0A-EBOM	1. CR79/CR96 1.1K/4/1 --> 499/4/1	
1.0A-PBOM	1. PCB加入:全成信	
10B	1. AUDIO & COAXIAL 改為鍍金料號	
11A	1. For PCH Rev.C2	
11B	1. Disable Anti-surge Function	
11C	1. 5VSB --> 5VDUAL OVP & Remove CD1:AZ2225	
11D	1. CPU_FAN change to "11NH5-060104-81R/85R"	
	2. Non-Vcore 請僅使用Renesas	
11E	0. PCB Rev1.11 1. AUDIO CR75/CR92 short pad 2. DDU1 PIN6/7 short 3. Crystal (25MHZ / 32.768KHz) ref GND /width/space 4. CPU fan 0402-----'0603 5. DDR VDDSPD 0402-----'0603/POLU FUSE 6. POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 7. UPDTAE Footprint "PCIESLOT-164DN-Q-1" 8. PE_SRCCLK_3GIO1/PE_-SRCCLK_3GIO1 change to PCH pin W6/W7	
11F	1. PCB Rev1.12 2. FRONT USB 2.0 OVP PROTECT 3. FAN Control change to NCT3941S	
11D --> 11G	1. PCB REV1.1 , X'TAL 25MHz(12P)+ NC7,NC8=10P	
11F --> 11H	1. PCB REV1.12 , X'TAL 25MHz(12P)+ NC7,NC8=12P	
1.2A-EBOM	1.Fix AUDIO ON-OFF POP NOISE	
1.2B-PBOM	1. CR78,CR95 750/4/1 --> 976/4/1 放大倍率:2倍-->1.80倍 2. G1.Sniper B5 Rev1.2 (new version) --> ITE8728 GP22 --> Lo G1.Sniper B5 Rev1.12 (old version) --> ITE8728 GP22 --> Hi	
12C-0519	1. Remove CR123	

Circuit or PCB layout change

DATE	Change Item	Reason
0.1	1. B85-HD3 Rev0.2修改 1. LAN --> I217 , AUDIO --> ALC898 0. Remove USB ESDIC "UAR1,UBR1" power 1ohm 1. 0 ohm --> short pad 2. 簡化CPU Config setting 3. 背板電容移除或mask (包含pch) 4. Remove BIOS "CS" pin 5. UBF9/UBF10 1206 --> 0805 6. N_GPIO37 pull-up to VCC3 7. +12V RN2~RN6要不要上? Add VCC/VCC3/5VSB dummy load 8. 5VSB/5VDUAL OVP protection 9. 預留N_PCH_DPWROK 控制線路 10. USB2.0 port2/3 , 4/5 swap	
0.2	1. Update AUDIO_HS footprint "AUDIO-SHIELD-G1B5"	
1.0	1. AUDIO GND-AGND 內部切割改15mil 2. CBC49/CBC50/CBC51/CBC52/CBC56/CBC69/CR105/CR110 從DGND改成AGND	
1.1	1. For PCH Rev.C2	
1.11	1. AUDIO CR75/CR92 short pad 2. DDU1 PIN6/7 short 3. Crystal (25MHZ / 32.768KHz) ref GND /width/space 4. CPU fan 0402-----'0603 5. DDR VDDSPD 0402-----'0603/POLU FUSE 6. POWER PAK / 1206 POLY FUSE UPDATE FOOTPRINT 7. UPDTAE Footprint "PCIESLOT-164DN-Q-1" 8. PE_SRCCLK_3GIO1/PE_-SRCCLK_3GIO1 change to PCH pin W6/W7	
1.12	1. FRONT USB 2.0 OVP PROTECT 2. FAN Control change to NCT3941S	
1.2	1.Fix AUDIO ON-OFF POP NOISE	
1.21	1. COUPON移位 2. X'TAL 25MHz rule 3. MR17 --> FUSE/0805	

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Title: BOM & PCB MODIFY HISTORY

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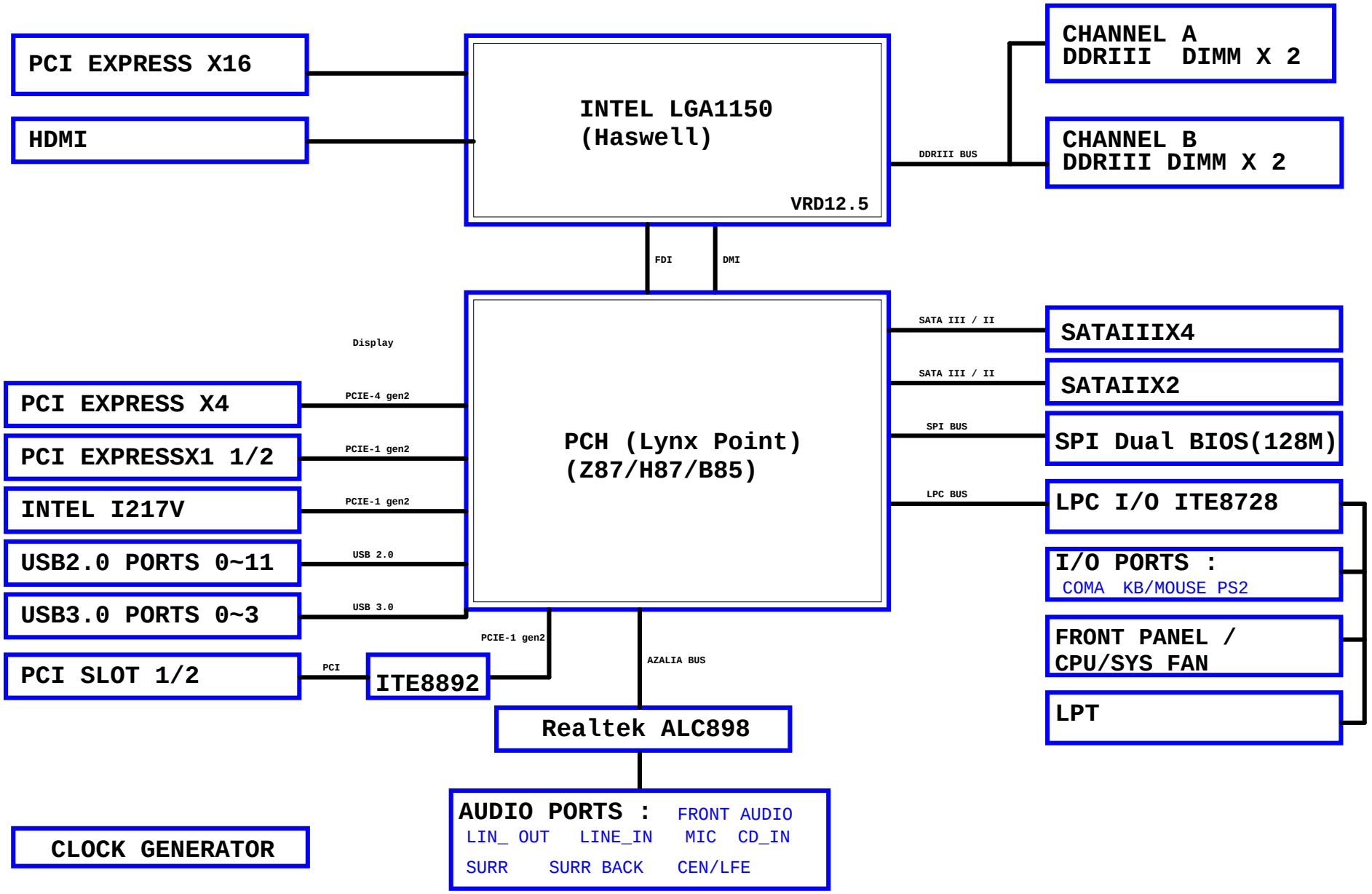
BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
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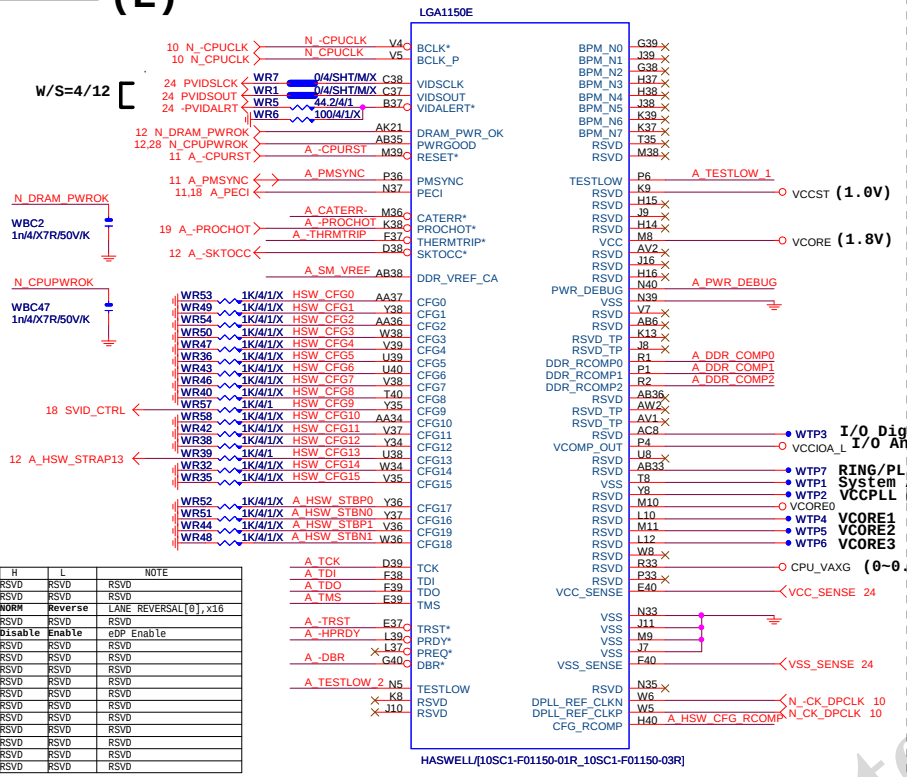
LGA1150 (E)

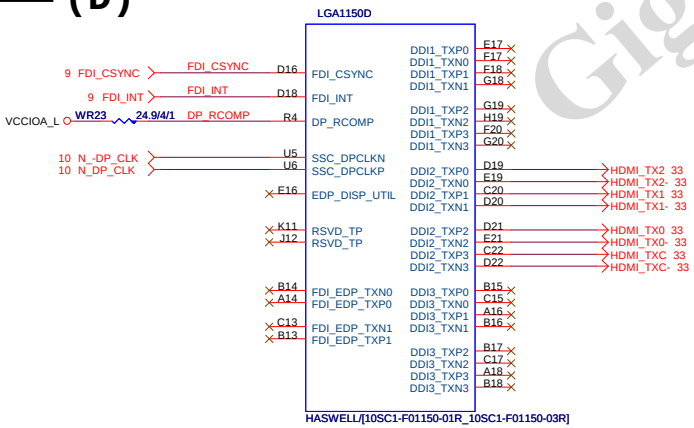


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

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

CFG 0-17 all internal PULL-UP

LGA1150 (D)



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

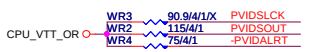
Impedance=85 +- 15%

LGA1155 (C)

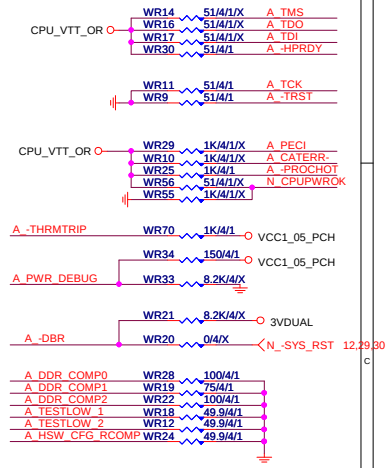
CPU PEG 20/5/4/5/20 Impedance=80 +- 15%

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

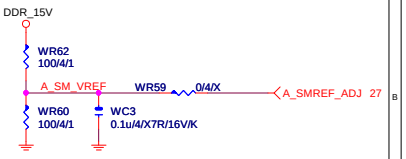
CPU SVID



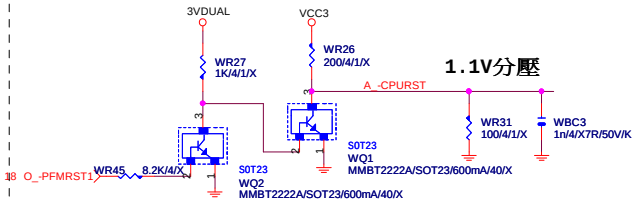
CPU PU/PD



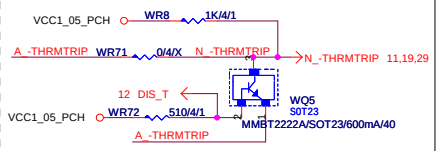
SM REF



-CPURST



THRMTRIP DISABLE FOR Z87 OVERCLOCK



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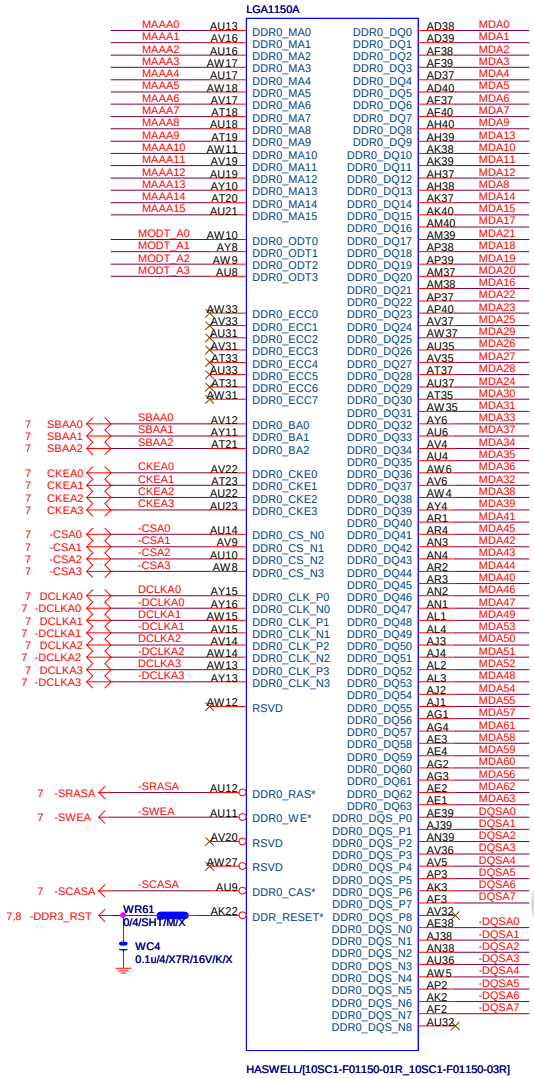
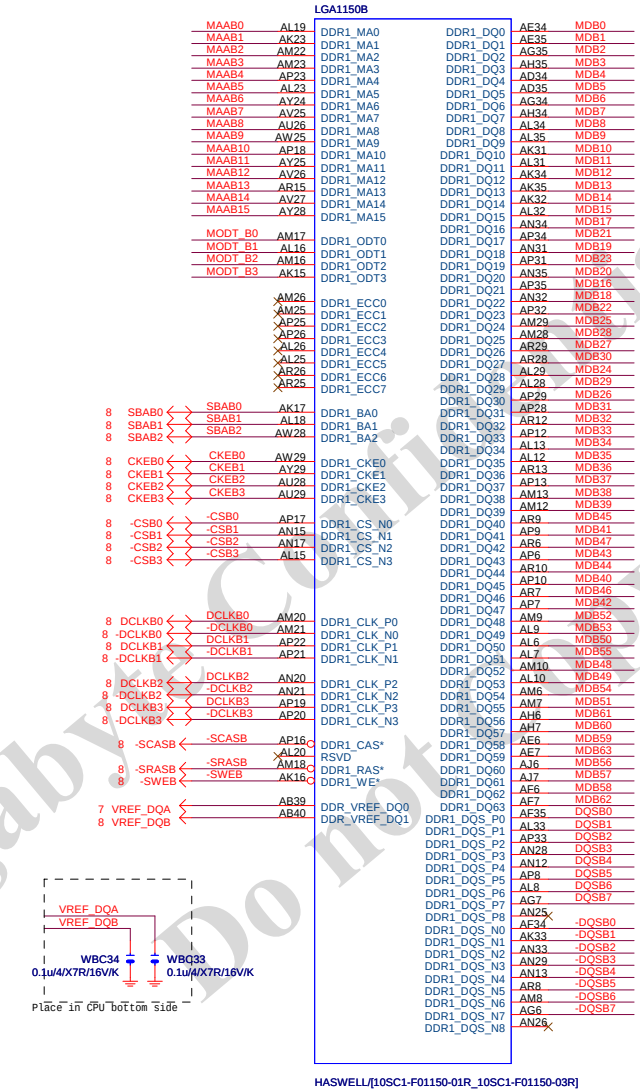
LGA1150 (A)

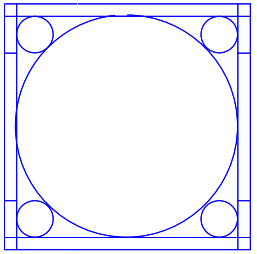


LGA1150 (B)

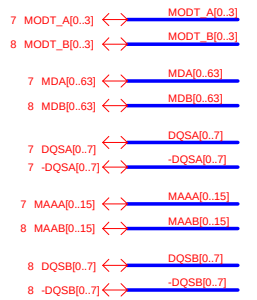


LGA1150 (CR)

LGA1150
ILM_BP/1156/BKNI/[12KRC-0F0001-61R_12KRC-0F0001-62R]



DDR BUS



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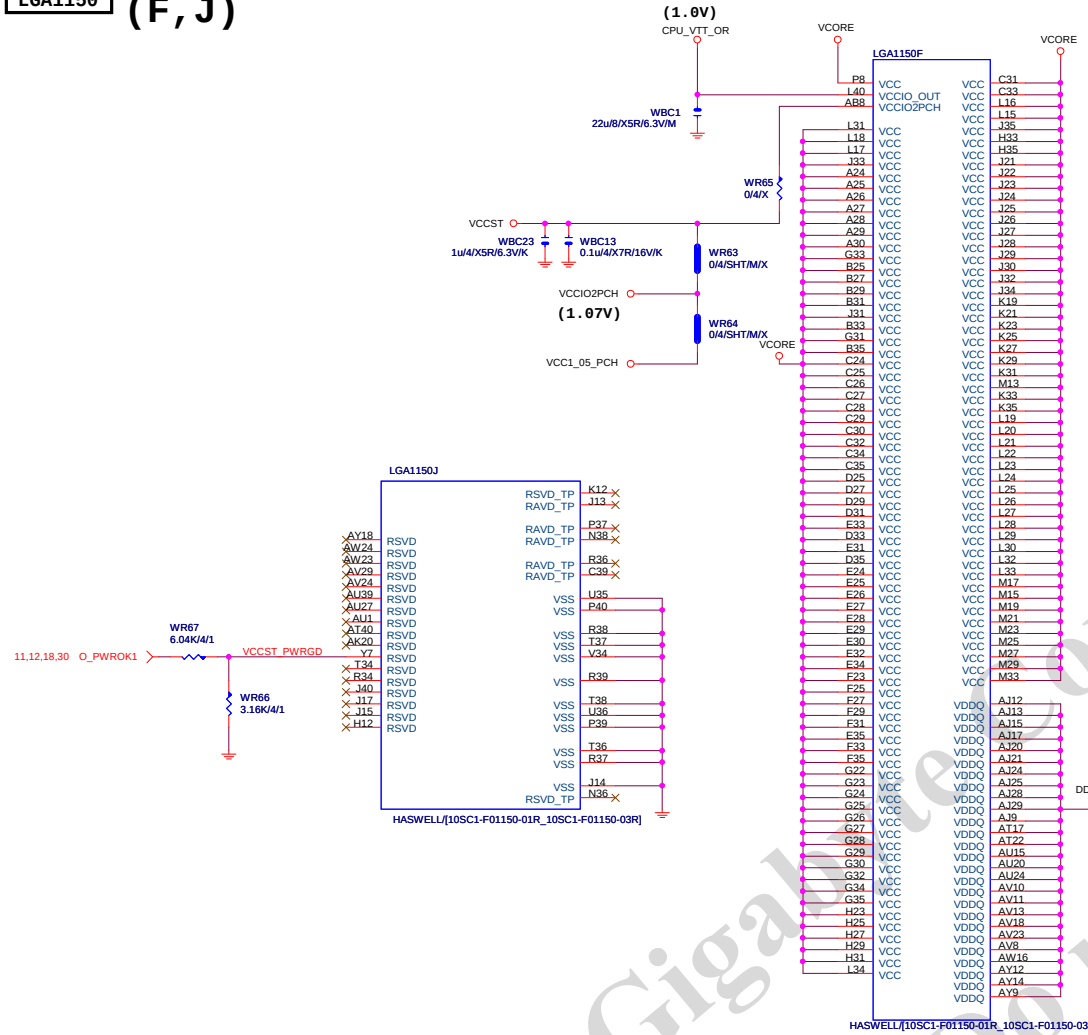
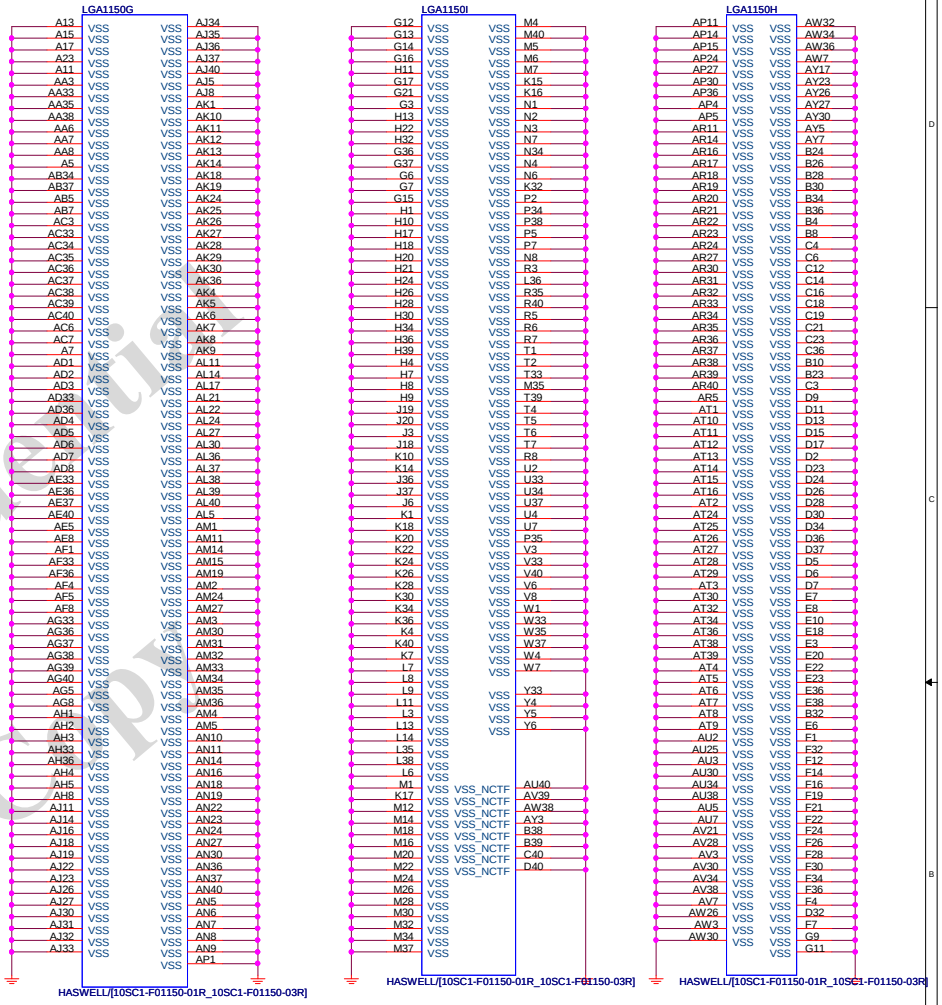
LGA1150 (F,J)

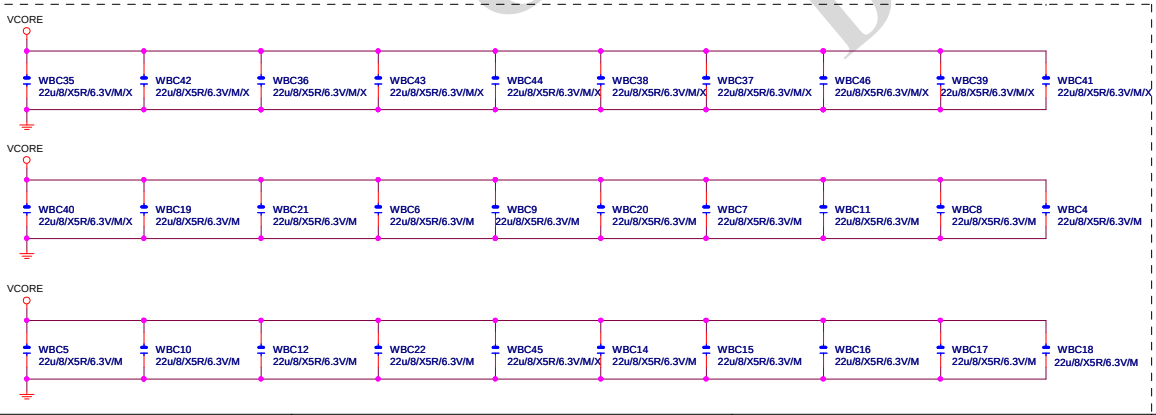


LGA1150 (G,H,I)



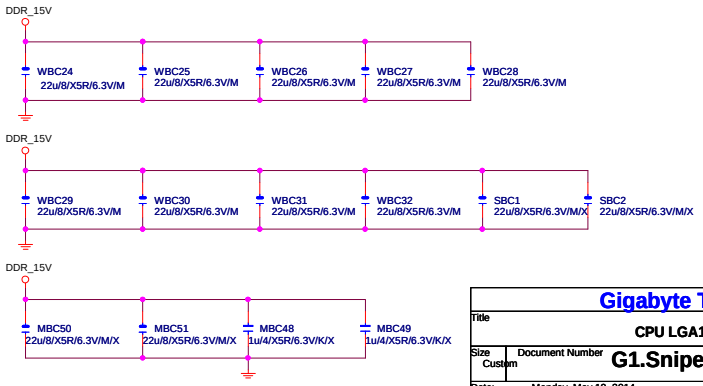
VCore CAP

(X30)



DDR CAP

(X15)



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Title: CPU LGA1150-C		
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DDR3 (A)

DDR3_4

DDRVTT
VTT
VSS
FREE
RSVD
ODT1
ODT0
NC/PAR_IN
NC/ERR_OUT
NC/TEST4
CB0
CB1
CB2
CB3
CB4
CB5
CB6
CB7
DQS0
DQS0*
DQS1
DQS1*
DQS2
DQS2*
DQS3
DQS3*
DQS4
DQS4*
DQS5
DQS5*
DQS6
DQS6*
DQS7
DQS7*
DQS8
DQS8*
DM0/DQS9
NC/DQS9*
DM1/DQS10
NC/DQS10*
DM2/DQS11
NC/DQS11*
DM3/DQS12
NC/DQS12*
DM4/DQS13
NC/DQS13*
DM5/DQS14
NC/DQS14*
DM6/DQS15
NC/DQS15*
DM7/DQS16
NC/DQS16*
DM8/DQS17
NC/DQS17*
VDD
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
DQ16
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DQ49
DQ50
DQ51
DQ52
DQ53
DQ54
DQ55
DQ56
DQ57
DQ58
DQ59
DQ60
DQ61
DQ62
DQ63
MODT_A1
MODT_A0
MODT_A[0..3]
-DQSA[0..7]
DQSA[0..7]
-DDR3_RST
MC6 100p/4/NPO/50V/J
N_SMBDATA
N_SMBCLK
MC10 100p/4/NPO/50V/J/X
MC11 100p/4/NPO/50V/J/X
VDDSPD SHORT PROTECT
R0402-2
VCC3
VDDSPD
MR17 P100/6V/0/S
MC4 0.1u/4/X7R/16V/K
MC5 0.1u/4/X7R/16V/K
MC1 0.1u/4/X7R/16V/K
VREF_DDRA
VREF_DQDDRA
VREFCA
VREFDQ
SCL
SDA
SA1
SA0
BA2
BA1
BA0
CKE1
CKE0
-CSA1
-CSA0
S1*
S0*
-DCLKA1
DCLKA1
CK1/NU*
CK1/NU
-DCLKA0
DCLKA0
CK0*
CK0
MAA0
MAA1
MAA2
MAA3
MAA4
MAA5
MAA6
MAA7
MAA8
MAA9
MAA10
MAA11
MAA12
MAA13
MAA14
MAA15
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12
A13
A14
A15
-DDR3_RST
-SCASA
-SRASA
-SWEA
RESET*
CAS*
RAS*
WE*
MDA0
MDA1
MDA2
MDA3
MDA4
MDA5
MDA6
MDA7
MDA8
MDA9
MDA10
MDA11
MDA12
MDA13
MDA14
MDA15
MDA16
MDA17
MDA18
MDA19
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MDA21
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MDA43
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MDA45
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MDA47
MDA48
MDA49
MDA50
MDA51
MDA52
MDA53
MDA54
MDA55
MDA56
MDA57
MDA58
MDA59
MDA60
MDA61
MDA62
MDA63
MDA[0..63]
DDR3/240/BK/VA/D/[11SM1-511240-P3R]

DDR3

DDR3_2

DDRVTT
MODT_A3
MODT_A2
DDR3/240/GE/VA/D/[11SM1-511240-Q2R]

DDR3_VREF

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

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

MEC1 560u/FP/D/6.3V/69/A/11m
MEC2 560u/FP/D/6.3V/69/A/11m
MEC3 560u/FP/D/6.3V/69/A/11m
MBC43 22u/8/X5R/6.3V/M
MBC44 22u/8/X5R/6.3V/M

DDRVTT Decouple

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

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

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

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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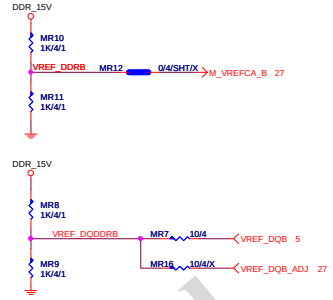
DDR3 (B)

DDR3_3

DDR3_1

DDR3 VREF



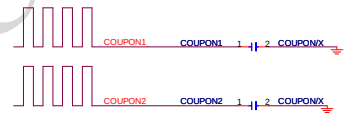
DDR3 1066,1333,1600MHZ BANDWIDTH

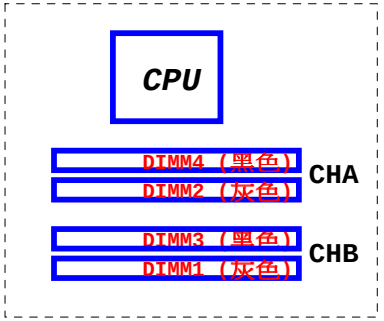
DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

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: G1.Sniper B5	Rev: 1.2
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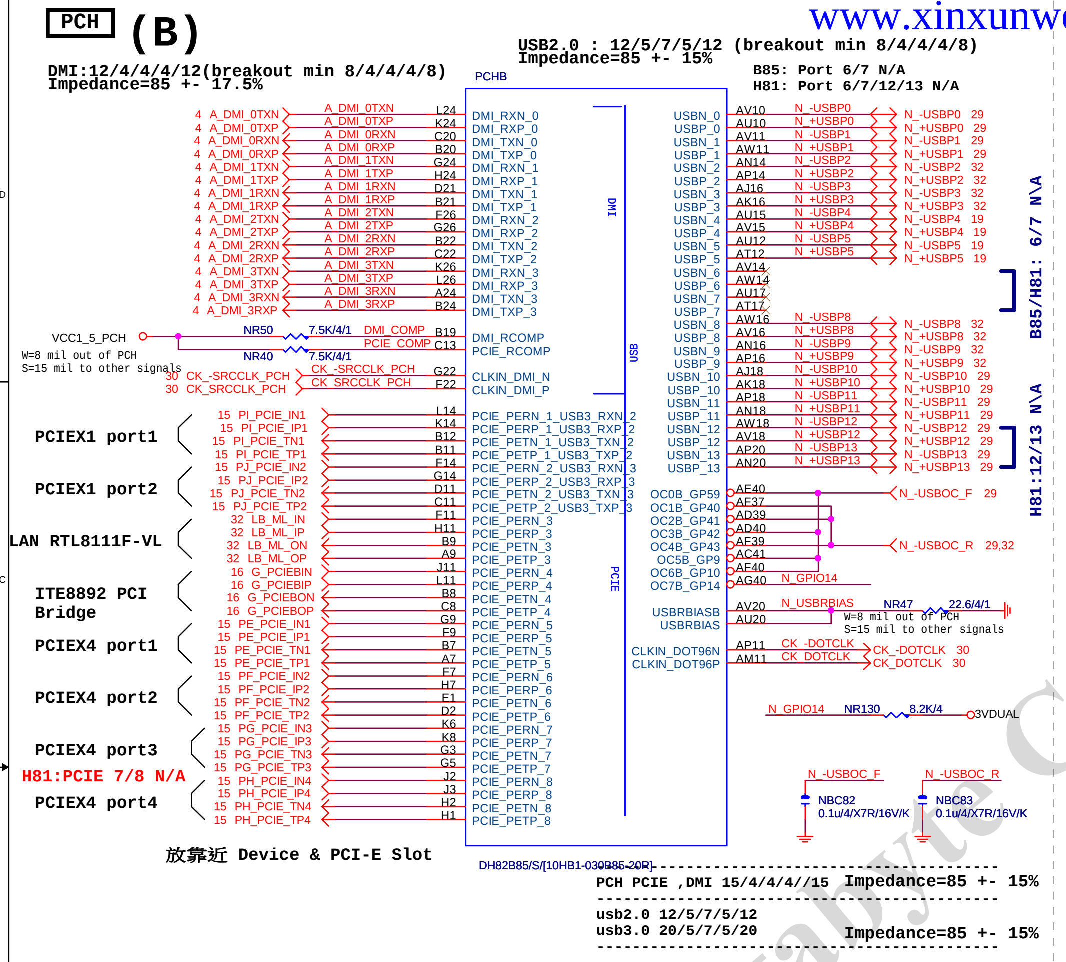
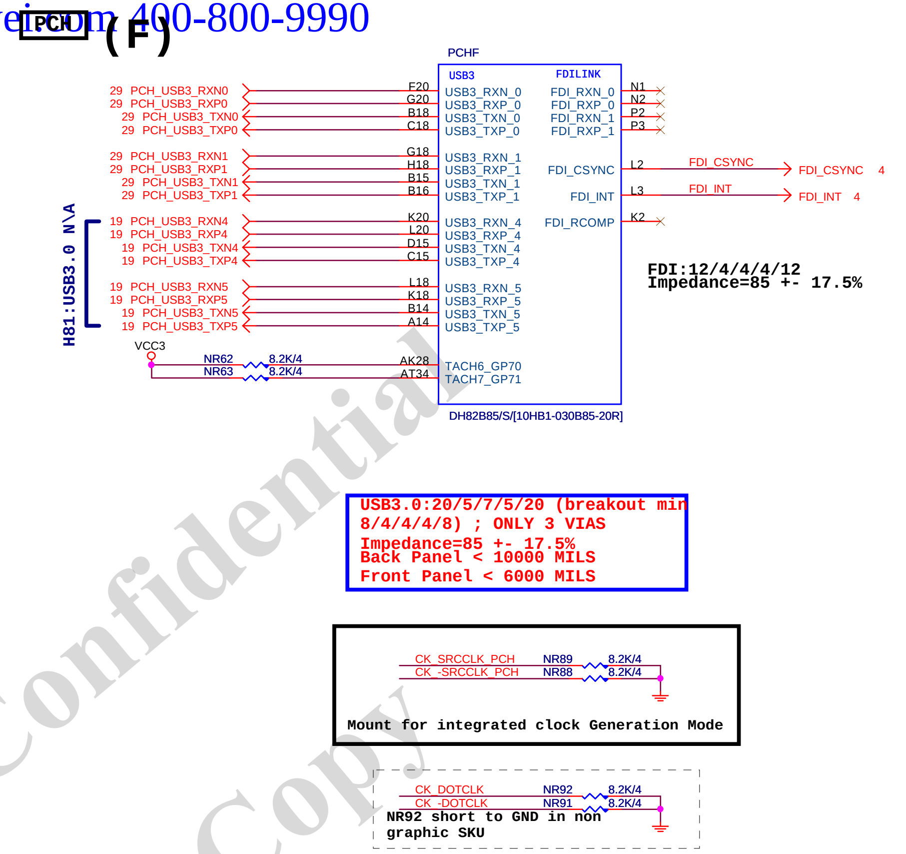
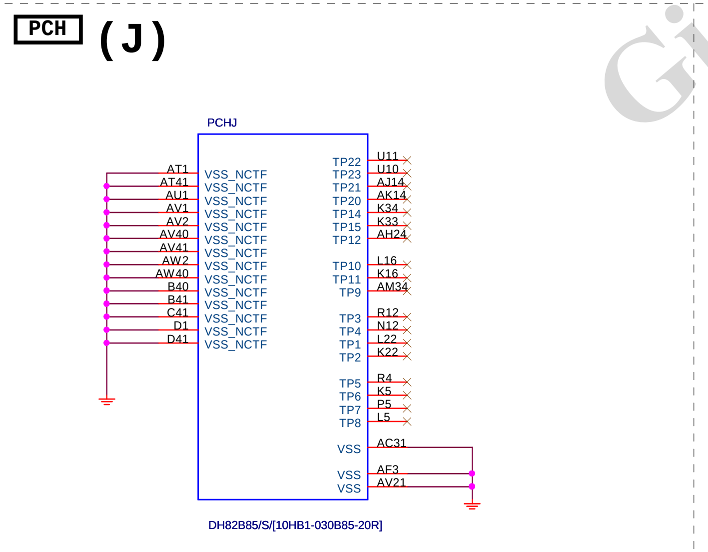
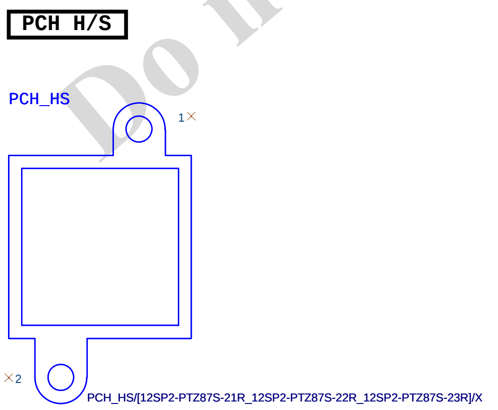


PCH (B)
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%
USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 15%
B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A
PCHB
VCC1_5_PCH
W=8 mil out of PCH
S=15 mil to other signals
PCIEX1 port1
PCIEX1 port2
LAN RTL8111F-VL
ITE8892 PCI Bridge
PCIEX4 port1
PCIEX4 port2
PCIEX4 port3
H81:PCIE 7/8 N/A
PCIEX4 port4
放靠近 Device & PCI-E Slot
B85/H81: 6/7 N\A
H81:12/13 N\A
N_-USBOC_F 29
N_-USBOC_R 29,32
N_GPIO14
N_USBRBIAS NR47 22.6/4/1
W=8 mil out of PCH
S=15 mil to other signals
CK_-DOTCLK 30
CK_DOTCLK 30
N_GPIO14 NR130 8.2K/4 3VDUAL
NBC82 0.1u/4/X7R/16V/K
NBC83 0.1u/4/X7R/16V/K
DH82B85/S/[10HB1-030B85-20R]
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)
PCHF
USB3
FDILINK
H81:USB3.0 N\A
FDI_CSYNC 4
FDI_INT 4
FDI:12/4/4/4/12
Impedance=85 +- 17.5%
VCC3
NR62 8.2K/4
NR63 8.2K/4
TACH6_GP70
TACH7_GP71
DH82B85/S/[10HB1-030B85-20R]
USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS
CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4
Mount for integrated clock Generation Mode
CK_DOTCLK NR92 8.2K/4
CK_-DOTCLK NR91 8.2K/4
NR92 short to GND in non graphic SKU





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		
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PCH (E)

PCHE

33 N_HDMI_HDP_F

DDPB_HPD AJ2
DDPC_HPD AH5
DDPD_HPD AJ4
DDPB_AUXN AK6
DDPB_AUXP AK8
DDPC_AUXN AG7
DDPC_AUXP AG8
DDPD_AUXN AG11
DDPD_AUXP AG10

VGA_HSYNC AH3
VGA_VSYNC AH2
VGA_RED AC2
VGA_GREEN AE2
VGA_BLUE AC3
VGA_IRTN AG4
VGA_DDC_DATA AL3 N_DDCDATA
VGA_DDC_CLK AL2 N_DDCCLK
DAC_IREF AF5 N_VGA_RSET NR34 0/4/SHT/MIX
DDPC_CTRLCLK AN3 N_DDPC_CTRLCLK → N_DDPC_CTRLCLK 33
DDPC_CTRLDATA AM2 N_DDPC_CTRLDATA → N_DDPC_CTRLDATA 33
DDPB_CTRLCLK AM1
DDPB_CTRLDATA AJ5
DDPD_CTRLCLK AN4
DDPD_CTRLDATA AN2

DH82B85/S/[10HB1-030B85-20R]

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

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

DDC DIFF 4/5;+-1000

IREF 4/12;<500MILS;GND

VGA DAC Disabling Guidelines

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

FDI Disabling Guidelines

PCH FDI_RXP[0:1] NC
PCH FDI_RXN[0:1] NC
CPU FDI_TXP[0:1] NC
CPU FDI_TXN[0:1] NC
FDI_RCOMP NC
FDI_IREF (N11)

PCH (G)

PCHG

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

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

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

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

CLKIN_GND0_N G16 N_-CLK_GND
CLKIN_GND0_P F16 N_CLK_GND

CLKOUT_DMI_N R2 → N_-CPUCLK 4
CLKOUT_DMI_P T2 → N_CPUCLK 4
CLKOUT_DP_N T3 → N_-DP_CLK 4
CLKOUT_DP_P T5 → N_DP_CLK 4
CLKOUT_DPNS_N W2 → N_-CK_DPCLK 4
CLKOUT_DPNS_P U2 → N_CK_DPCLK 4

CLKOUT_ITPXDP_N U6
CLKOUT_ITPXDP_P U7

CLKOUT_PEG_A_N AA3 → PA_-SRCCLK_3GIO 14
CLKOUT_PEG_A_P AA2 → PA_SRCCLK_3GIO 14 — PCIXx16
CLKOUT_PEG_B_N AE6
CLKOUT_PEG_B_P AE7

CLKOUT_PCIE_N_0 AE10 → PJ_-PCIE_CLK2 15
CLKOUT_PCIE_P_0 AE11 → PJ_PCIE_CLK2 15 — PCIXx1_2
CLKOUT_PCIE_N_1 AC6 → LB_-SRCCLK_LAN 32
CLKOUT_PCIE_P_1 AC7 → LB_SRCCLK_LAN 32 — RTL81111F-VL
CLKOUT_PCIE_N_2 AC11 → G_-PBCLK 16
CLKOUT_PCIE_P_2 AC10 → G_PBCLK 16 — ITE8892
CLKOUT_PCIE_N_3 W11
CLKOUT_PCIE_P_3 W10
CLKOUT_PCIE_N_4 Y4
CLKOUT_PCIE_P_4 Y2
CLKOUT_PCIE_N_5 W7 → PE_-SRCCLK_3GIO1 15
CLKOUT_PCIE_P_5 W6 → PE_SRCCLK_3GIO1 15 — PCIXx4
CLKOUT_PCIE_N_6 AA7 → PI_-PCIE_CLK1 15
CLKOUT_PCIE_P_6 AA6 → PI_PCIE_CLK1 15 — PCIXx1_1
CLKOUT_PCIE_N_7 R6
CLKOUT_PCIE_P_7 R7

N_XTALO_PCH N7 XTAL25_OUT
N_XTALI_PCH N6 XTAL25_IN

DH82B85/S/[10HB1-030B85-20R]

禁用此 2 PIN,避免訊號被25MHz干擾

Differential Clock:18/4/6/4/18

Impedance=90 +- 15%

N_XTALI_PCH
NR15 1M/4
NX1
N_XTALO_PCH
25M/12p/30ppm/49US/20/D
NC8 12p/4/NPO/50V/J
NC7 12p/4/NPO/50V/J

X'TAL 25MHz須參考GND
避免造成RGB noise
走線遠離其他40mil以上

PCH CLK PD

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

N_PCHCLK14 NR118 8.2K/4

Mount for integrated clock Generation Mode

VGA DDC

VCC3
R146 2.2K/4/1/X
R147 2.2K/4/1/X
N_DDCDATA
N_DDCCLK

VGA CONNECTOR

VGA ESD

VGA DDC

Gigabyte Technology			
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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

DH82B85/S/[10HB1-030B85-20R]

PCH (A)

PCHA

DH82B85/S/[10HB1-030B85-20R]

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	float	float

Default int pull up on GP51,
Default SPI boot devices

PCH CLK PD

Mount for integrated clock Generation Mode

PCH PU/PD

ME PWROK

GPIO37 PU ENABLE SBA
For H87&B85

SATA CONNECTOR

White connector for SATA3

[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

H81 Port 2/3 N/A

GPIO38 Ctrl

MFG Mode

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

soft strap	GP16	GP49
0	pcie1	pcie2
1	sata4	sata5

Gigabyte Technology

Title: PCH HOST , SATA, PCI

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PCH (D)

PCHD

DH82B85/S/[10HB1-030B85-20R]

ACZ_SDOUT

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

HI:disable ME and override SPI Flash Access Permissions

PCH_DPWROK

At least 10ms delay after 3VDUAL_PCH stabel

At least 40ns lead fall to 0V before 3VDUAL_PCH fall to 2V

PCH PU/PD

HSW_STRAP13

32.768KHZ

NX2-SHT SHW/D0.64*5.08*6.74

32.768K/12.5p/20ppm/TF38/35K/D

CLR_CMOS

BATTERY CR2032

BAT-SK/BK/P/S/D/SN

BATTERY-DUAL-4

RB 必須放在BAT外

Title	PCH GPIO , CTRL , AUDIO
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Gigabyte Technology

PCH (H)

PCHH

DH82B85/S/[10HB1-030B85-20R]

VCC1_05_PCH
VCC1_05_DCB
VCC1_05_ME
VCC1_5_PCH
VCC3
VCC3_DAC
VCC3_ME
3VDUAL
3VDUAL_PCH
VCCIO2PCH
N_RTCVDD 12,29

NBC33 1u/4/X5R/6.3V/K
NBC37 0.1u/4/X7R/16V/K
NBC35 1u/4/X5R/6.3V/K
NBC22 1u/4/X5R/6.3V/K
NBC38 0.1u/4/X7R/16V/K
NBC32 1u/4/X5R/6.3V/K
NBC12 1u/4/X5R/6.3V/K
NBC30 1u/4/X5R/6.3V/K
NBC43 0.1u/4/X7R/16V/K
NBC55 1u/4/X5R/6.3V/K
NR249 0/4/SHT/X
NR250 0/4/SHT/X
NBC64 1u/4/X5R/6.3V/K
NBC62 0.1u/4/X7R/16V/K/X
NR71 5.1/4/1
V_1P05_DSW_INT
NBC54 1u/4/X5R/6.3V/K
NTP2
V_1P5_RTC_INT
V_1P5_INT
NTP3
NTP1
NBC52 1u/4/X5R/6.3V/K
NBC51 0.1u/4/X7R/16V/K
NBC47 0.1u/4/X7R/16V/K/X
NBC49 0.1u/4/X7R/16V/K

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

+12V
NR185 8.2K/4
NQ17 2N7002/SOT23/25pF/5
NBC7 10u/6/X5R/6.3V/M
(3.3V/70mA+360uA)

3VDUAL_PCH

NQ9 L1117LGN/SOT223/1A
NR176 301/4/1
NR180 510/4/1
NBC66 22u/8/X5R/6.3V/M
NBC67 0.1u/4/X7R/16V/K
NBC68 1u/4/X5R/6.3V/K

SHT PWR

NRN5 0/8P4R/4/X
NRN1 0/8P4R/4/X

CAP

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

(3.3V)(X6)

NBC24 10u/6/X5R/6.3V/M
NBC25 1u/4/X5R/6.3V/K
NBC26 1u/4/X5R/6.3V/K
NBC27 1u/4/X5R/6.3V/K
NBC20 1u/4/X5R/6.3V/K
NBC59 1u/4/X5R/6.3V/K

(1.05V)(X5)

NBC8 10u/6/X5R/6.3V/M
NBC10 1u/4/X5R/6.3V/K
NBC14 0.1u/4/X7R/16V/K
SNBC3 1u/4/X5R/6.3V/K/X
SNBC4 1u/4/X5R/6.3V/K/X

(1.05V)(X6)

NBC39 10u/6/X5R/6.3V/M
NBC40 1u/4/X5R/6.3V/K
NBC41 0.1u/4/X7R/16V/K
NBC42 1u/4/X5R/6.3V/K
SNBC1 1u/4/X5R/6.3V/K/X
SNBC2 1u/4/X5R/6.3V/K/X

(1.05V)(X2)

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

(3.3V)(X2)

NBC60 1u/4/X5R/6.3V/K
NBC63 0.1u/4/X7R/16V/K
NBC84 0.1u/4/X7R/16V/K

(1.5V) (X10)

NBC16 10u/6/X5R/6.3V/M
NBC29 10u/6/X5R/6.3V/M
NBC50 10u/6/X5R/6.3V/M
NBC53 10u/6/X5R/6.3V/M
NBC19 1u/4/X5R/6.3V/K
NBC23 0.1u/4/X7R/16V/K
NBC28 1u/4/X5R/6.3V/K
NBC44 1u/4/X5R/6.3V/K
NBC46 0.1u/4/X7R/16V/K
NBC48 1u/4/X5R/6.3V/K

PCH (I)

PCHI
DH82B85/S/[10HB1-030B85-20R]

Gigabyte Technology	
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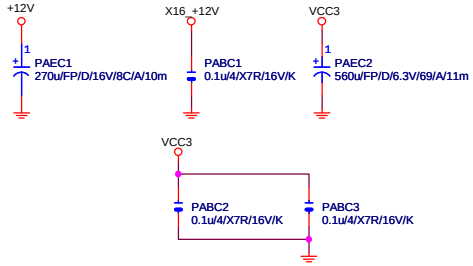
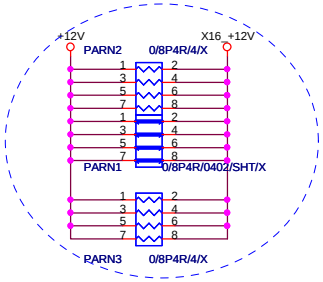
PCIEX16 CAP



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

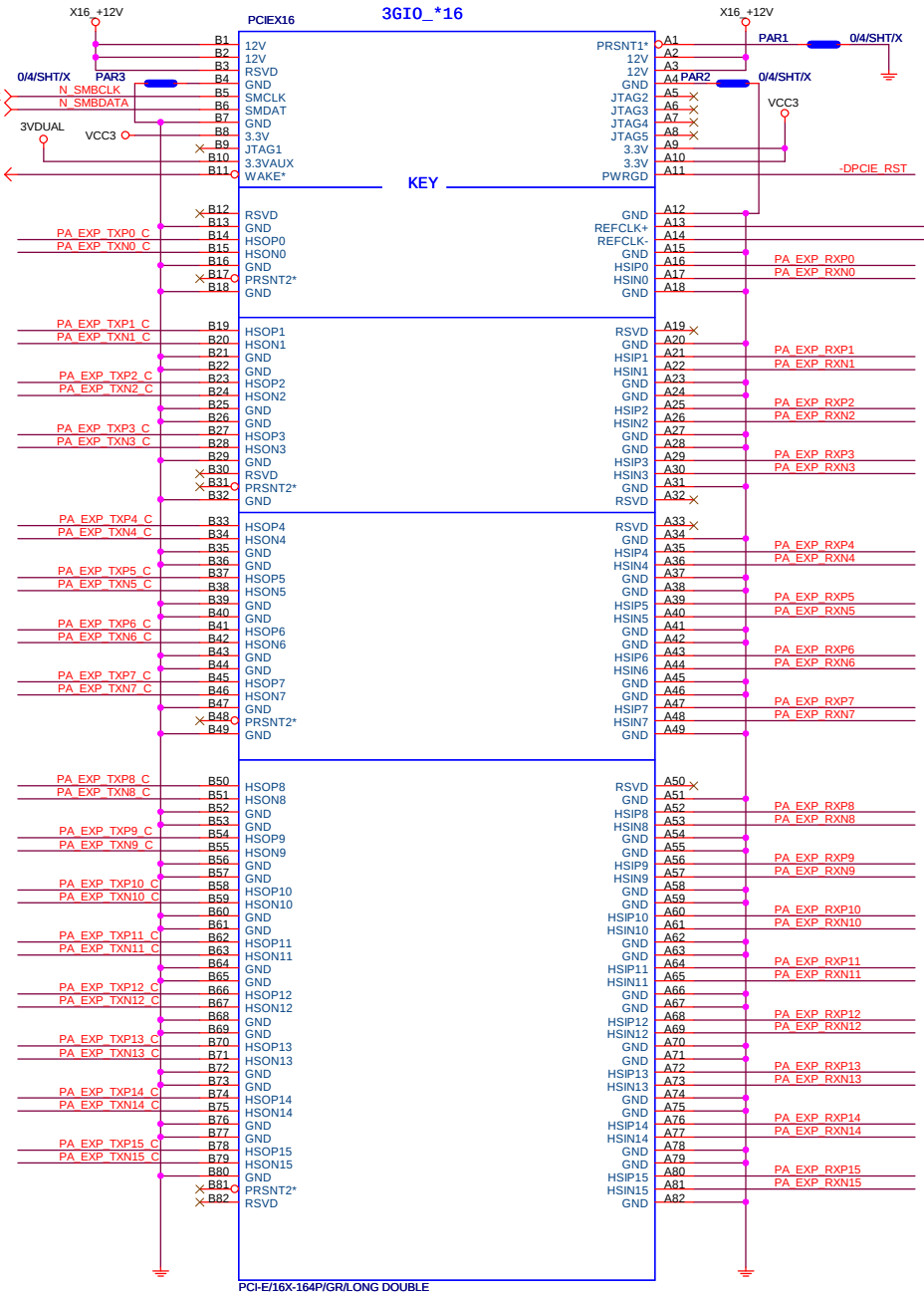
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

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

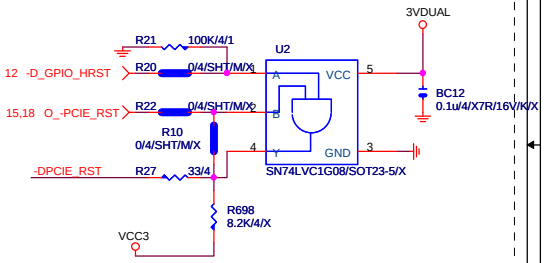
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

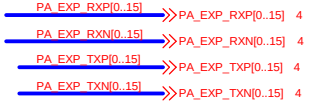
PCIEX16 SLOT



The auxillary reset circuit is only required for PCIe Gen3 margining and functional link training



PCIEX16:16/5/5/5/16



Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: G1.Sniper B5		Rev: 1.2
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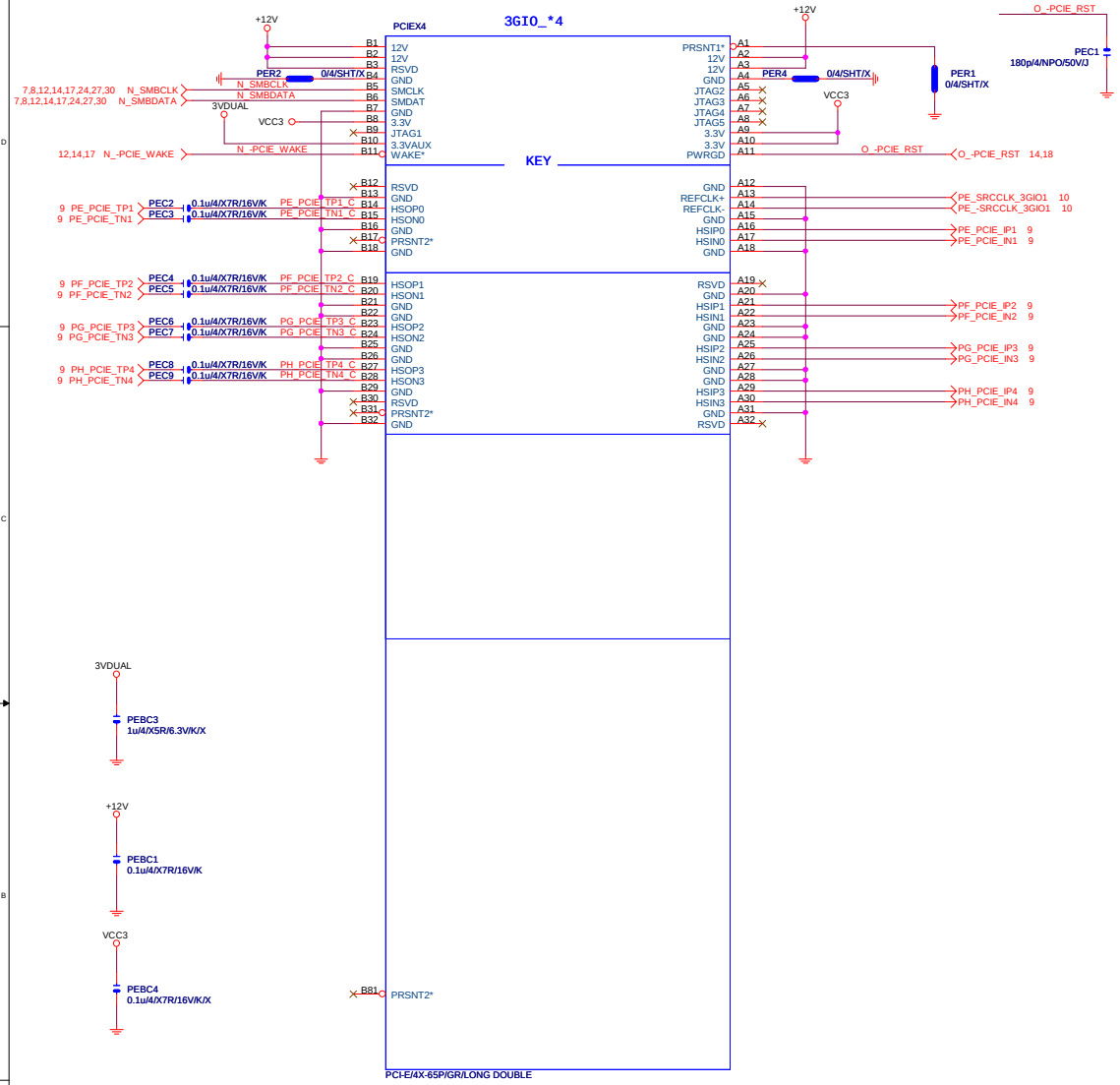
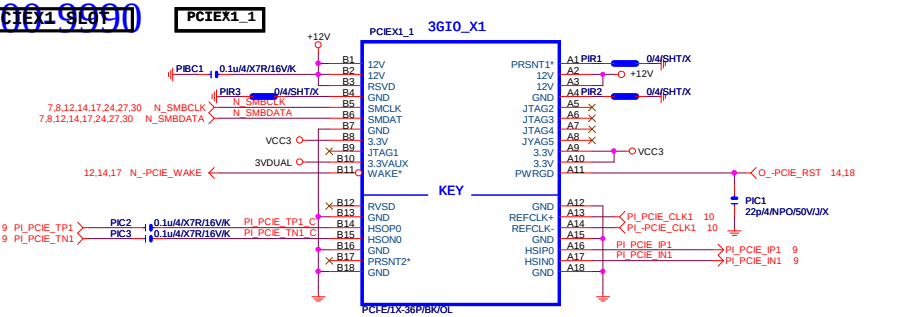
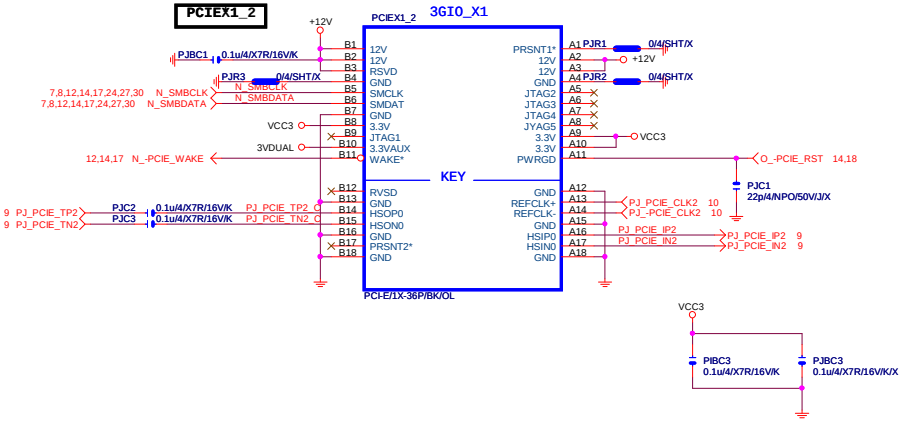
PCIEX4 SLOT



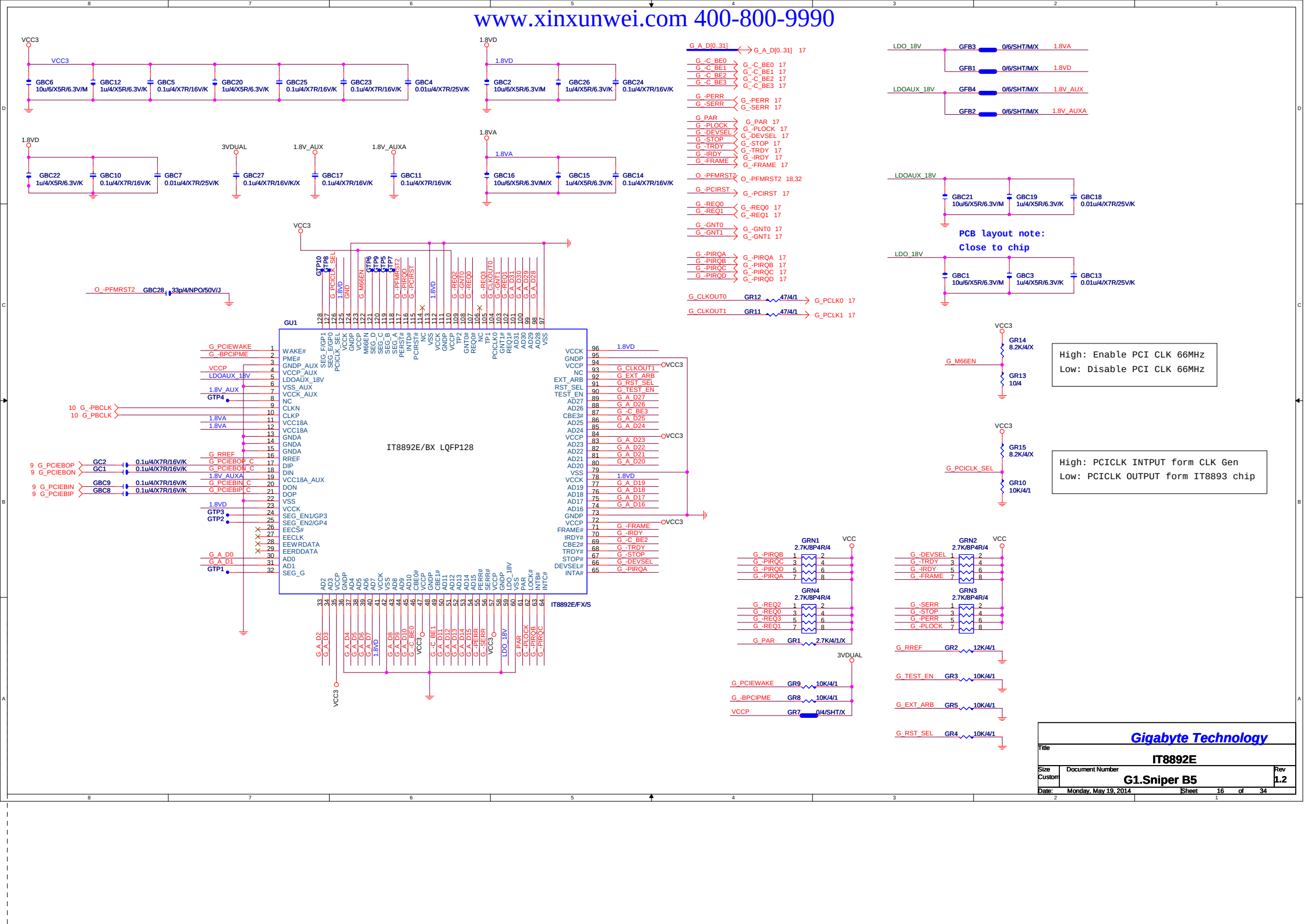
PCIEX1_1 SLOT



PCIEX1_2 SLOT



Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
Date: Monday, May 19, 2014	Sheet 15 of 34	



Gigabyte Technology			
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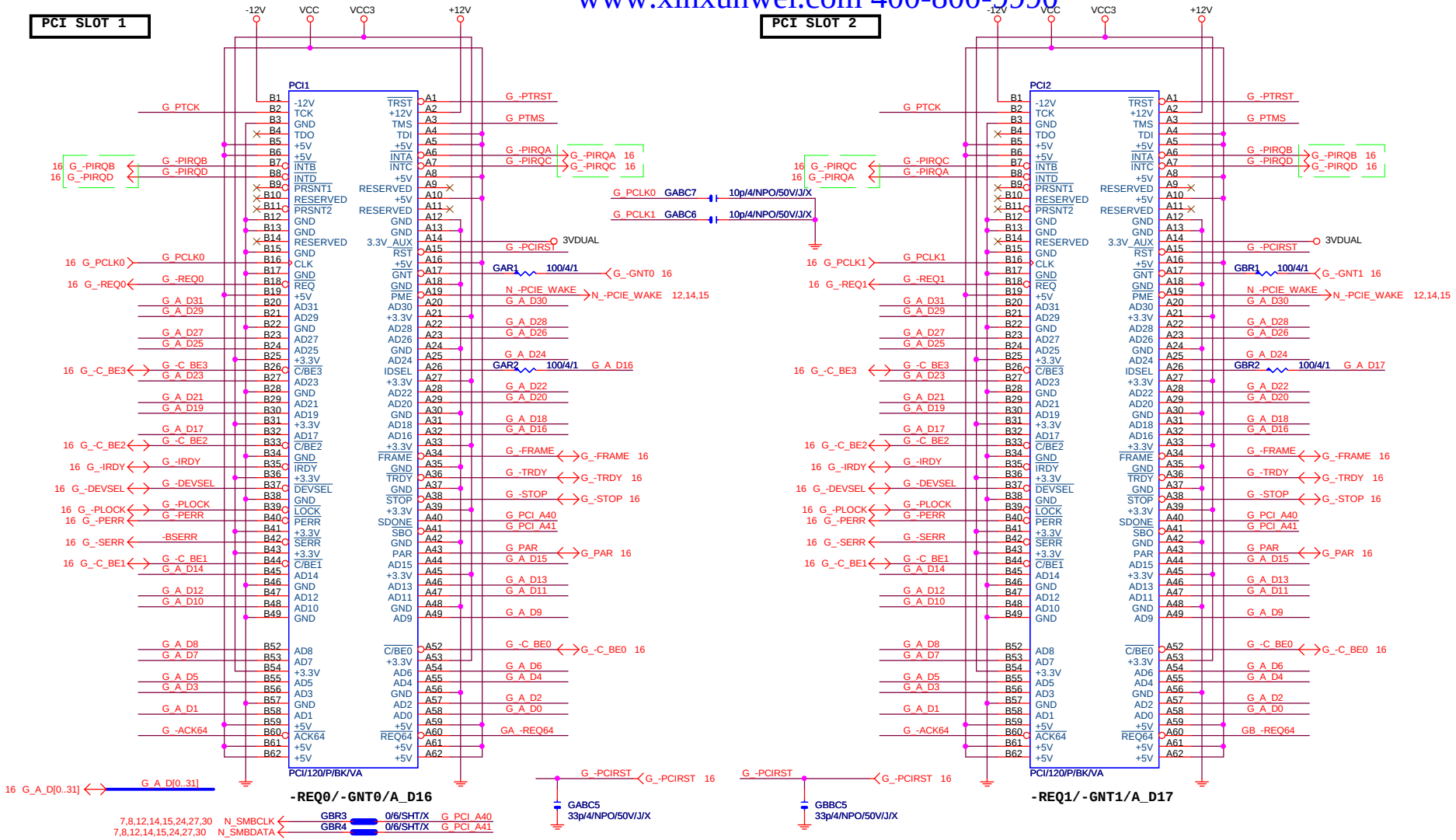
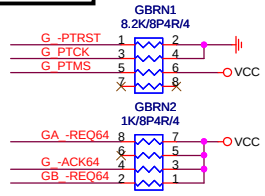
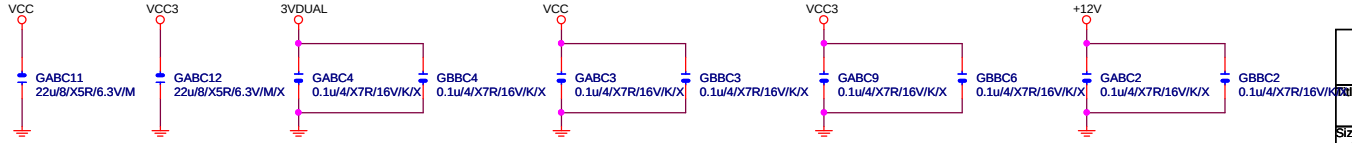
Size: Custom	Document Number: G1.Sniper B5		Rev: 1.2
Date: Monday, May 19, 2014	Sheet 16 of 34		



PCI PU



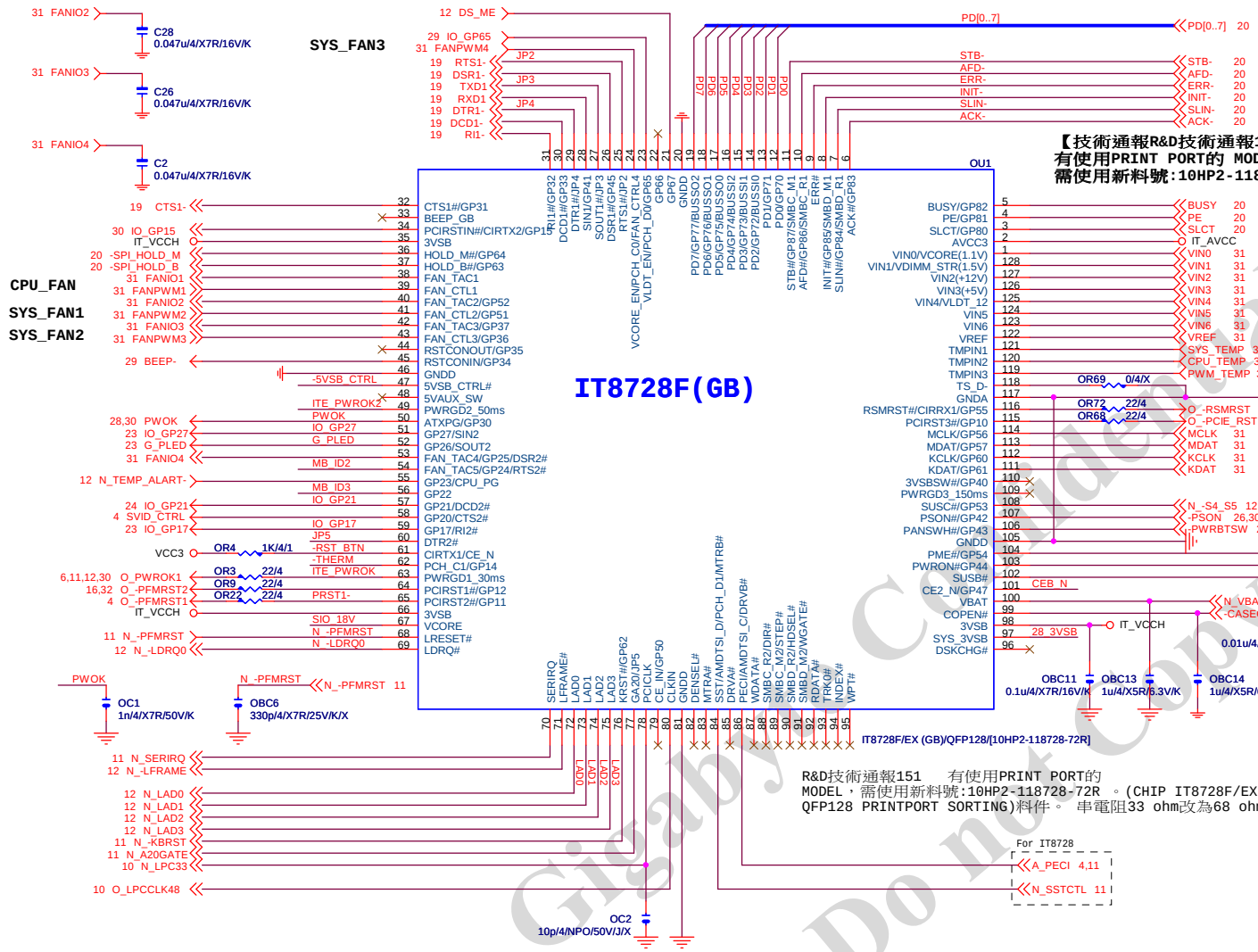
PCI CAP



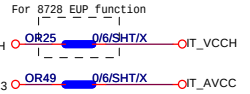
GIGABYTE™

Title: PCI SLOT 1&2		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
Date: Monday, May 19, 2014	Sheet 17 of 34	

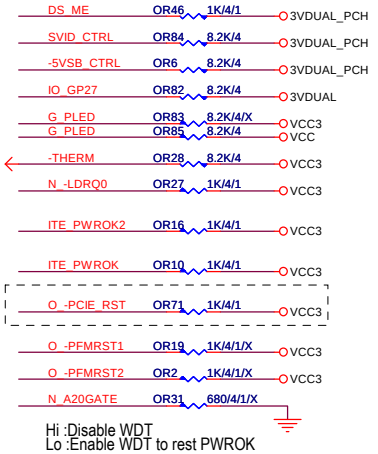
SIO IT8728F



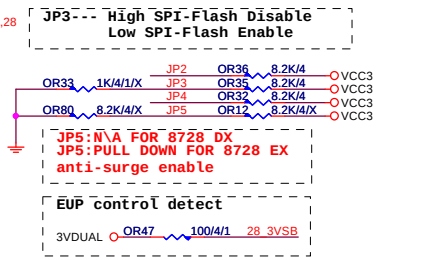
PWR SHT



SIO PU



SIO STRAP



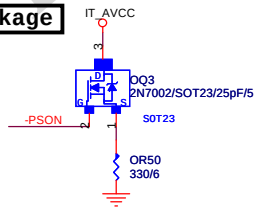
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

IT8728F NOTE

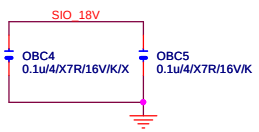
	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDT_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2(VCC5)
PIN96	VIN1(VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC

DUAL BIOS OPT STRAP

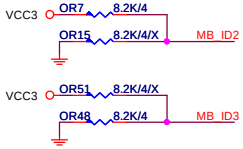
Power leakage



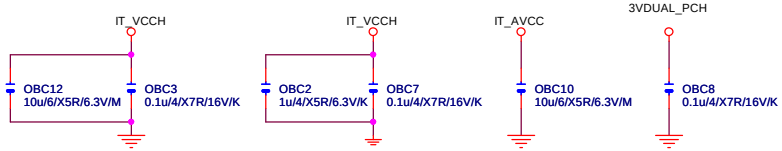
SIO_18V



MB ID



SIO CAP



Gigabyte Technology			
Title: ITE 8728 LPC IO			
Size: B	Document Number: G1.Sniper B5		Rev: 1.2
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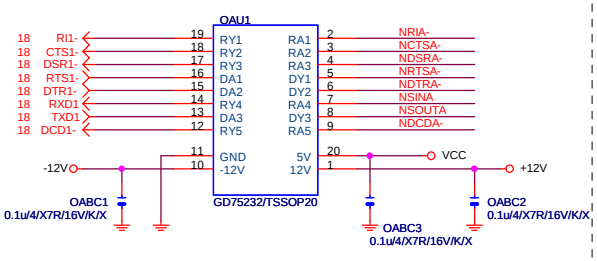
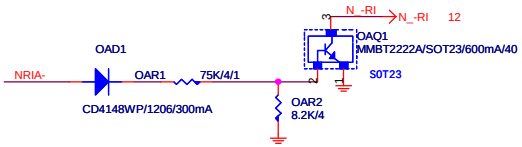
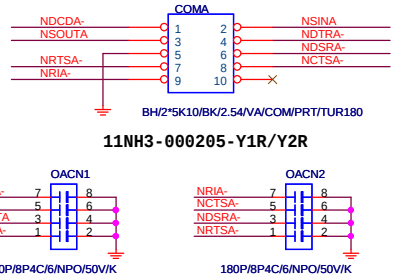
COMA



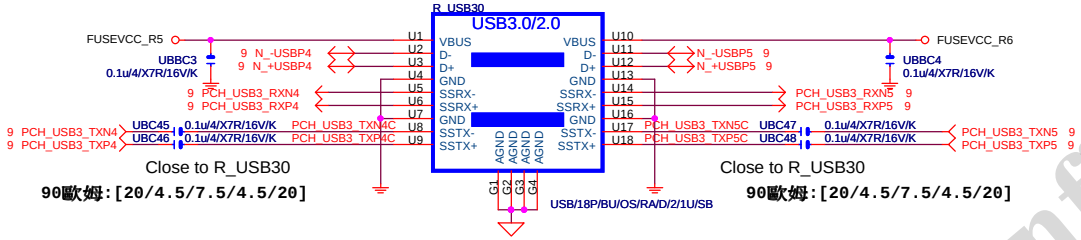
COM RI



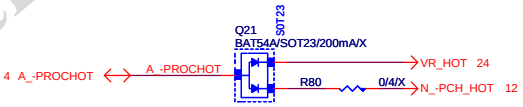
COM BUFFER



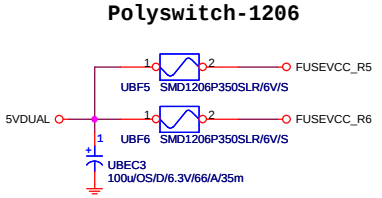
USB30_20 CONNECT



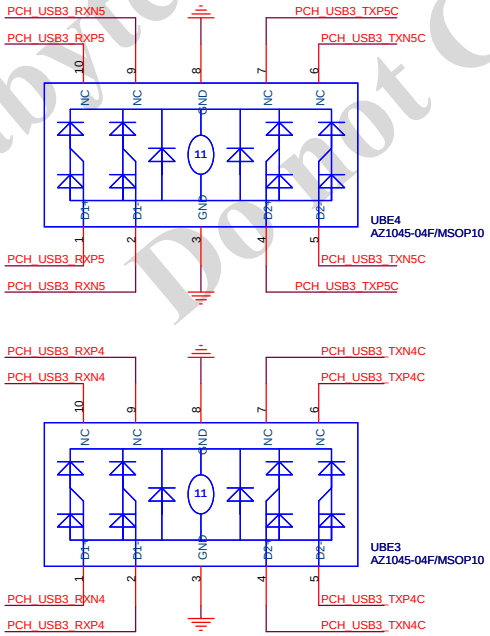
-PROHOT



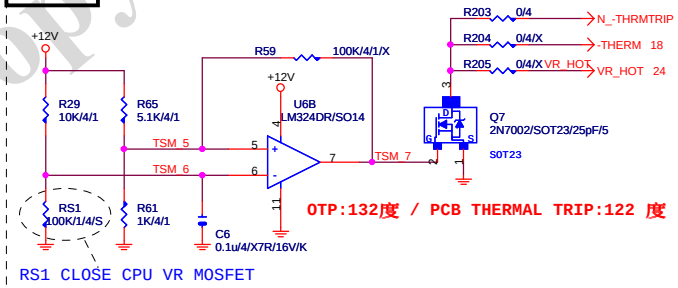
USB30 PWR



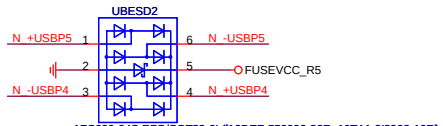
USB30 ESD PROCTECT



-PROHOT



USB20 ESD PROCTECT



Gigabyte Technology		
Title: COM & PROHOT/Dynamic O.C.		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
NR227 1K/4/1
-SPI_CS_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_ME
NR230 330/4/1
NR231 1K/4/1
-SPI_CS_2
NQ22 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_B NR234 1K/4/1/X
N_-ICH_SPI_CS
NQ23 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_M NR232 8.2K/4

M_BIOS
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/M/X -SPI_WP0
CS# SO WP# VSS VDD HOLD# SCK SI
-HOLD0 NR221 0/4/SHT/M/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
128M/Q/SPI/SO8/S

MOSI For DMI RX Termination Voltage

12 N_ICH_SPI_MOSI N_ICH_SPI_MOSI NR10 8.2K/4/X
12 N_-ICH_SPI_CS N_-ICH_SPI_CS NR9 8.2K/4/X
12 N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 NR246 8.2K/4/X
18 -SPI_HOLD_M -SPI_HOLD_M NR3 1K/4/1
18 -SPI_HOLD_B -SPI_HOLD_B NR11 1K/4/1

12 N_ICH_SPI_MISO N_-SPI_WP1 NR2 8.2K/4/X
N_-SPI_WP0 NR1 8.2K/4/X
N_ICH_SPI_MISO NR5 8.2K/4
-HOLD0 NR235 1K/4/1/X
-HOLD1 NR236 1K/4/1/X
5VDUAL
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

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

1 means floating
0 means PD 1K

LPT PORT

PRN5
18 AFD- AFD- 1 2 LPT14
18 STB- STB- 3 4 LPT1
PD0 5 6 LPT2
18 INIT- INIT- 7 8 LPT16
68/8P4R/4

PRN3
18 SLIN- PD1 1 2 LPT3
SLIN- 3 4 LPT17
PD2 5 6 LPT4
PD3 7 8 LPT5
68/8P4R/4

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

PRN1
PD4 1 2 LPT6
PD5 3 4 LPT7
PD6 5 6 LPT8
PD7 7 8 LPT9
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
8 7 LPT5
6 5 LPT4
4 3 LPT17
2 1 LPT3

PRN6 2.2K/8P4R/4
8 7 LPT9
6 5 LPT8
4 3 LPT7
2 1 LPT6

PRN4 2.2K/8P4R/4
8 7 LPT16
6 5 LPT2
4 3 LPT1
2 1 ERR-

PRN7 2.2K/8P4R/4
8 7 SLCT
6 5 PE
4 3 BUSY
2 1 ACK-

PR1 2.2K/4/1
LPT14

LPT
LPT1 1 2 LPT14
LPT2 3 4 ERR-
LPT3 5 6 LPT16
LPT4 7 8 LPT17
LPT5 9 10
LPT6 11 12
LPT7 13 14
LPT8 15 16
LPT9 17 18
ACK- 19 20
BUSY 21 22
PE 23 24
SLCT 25 26
BH/2*13K24/BK/2.54/VA

Gigabyte Technology

Title: BIOS
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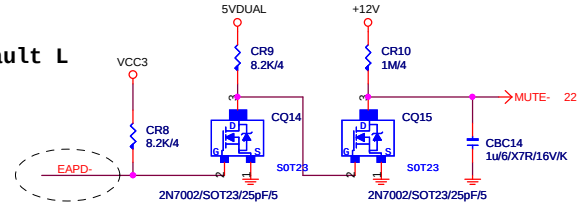
AZALIA CODEC : ALC662/ALC887-VD2/ALC889/VT1708S-CD/VT1708S-CE/VT2021 Colay

	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021	ALC898/ALC892
CR49	X	X	0	0	X	0	X
CBC36	0	0	X	X	0	X	0
CR28/CBC11	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF	47ohm+1nF
CR52	X	0	0	0	0	0	0
CR57	0	X	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R	22uF/X5R
CR36	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CR17/CR30/ CR25/CR15/CR12/CR3/	8.2K/4	8.2K/4	8.2K/4	3.3K/4/1	3.3K/4/1	3.3K/4/1	8.2K/4
CBC38/CBC39	X	X	X	100P/4	100P/4	X	X
CR10/CR8/CR20/CR45/ CR42/CR51/CR27/CR26	22K/4	22K/4	22K/4	10K/4/1	10K/4/1	10K/4/1	22K/4
CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR2/CR11/ CR14/CR24	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm	75 ohm	62 ohm
CFB1/CD1/CBC4/CBC8	0	0	X	X	0	X	0
CD2/CD3/CQ3/CQ4	X	X	0	0	X	0	X
CEC11	X	X	X	X	X	X	0
CESD6	X	X	X	0	0	0	X

EAPD: Default L
H : ON
L : OFF



Close to ALC898

CR36: 20K/4/1% @Realtek cdec
CR36: 5.1K/4/1 @VIA cdec
CBC38 100P @VIA codec

co-layout

50歐姆:4/5

CR60/CBC32 close to PCH

Digital Area

Analog Area

JD resistors close to pin34 of CODEC

Can Support Amp Out

50歐姆:4/10

JD resistors close to pin13 of CODEC

0/6/X For AGND/GND moat under Codec Body

ALC892/ALC898

ALC898-GR/LQFP48

AZC099-04S.R7G/SOT23-6L/(10DEF-550099-20R_10TA1-0I8902-10R)/X

Title	HD AUDIO ALC898
Size	Custom
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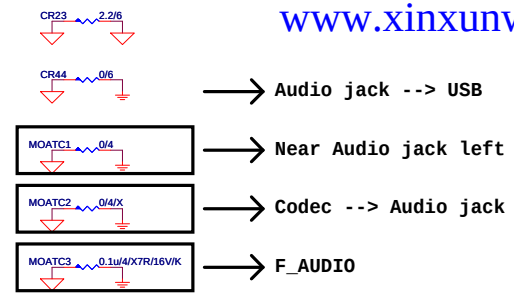
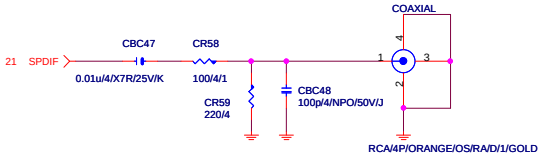
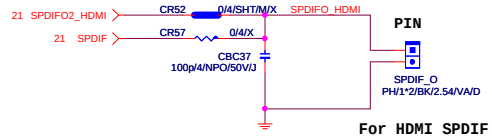
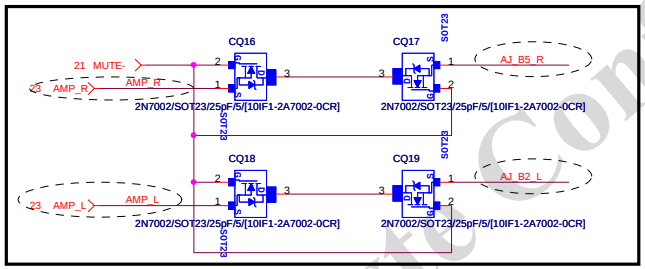


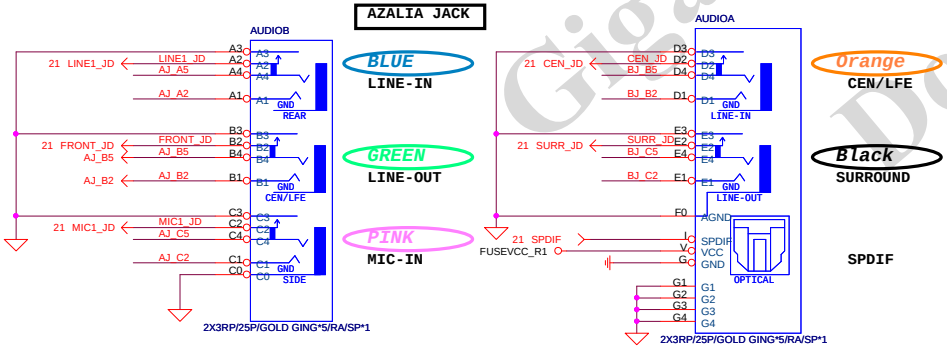




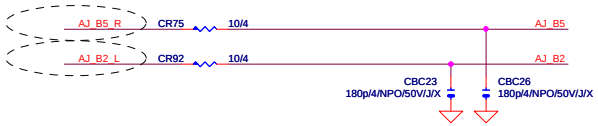


AZALIA JACK

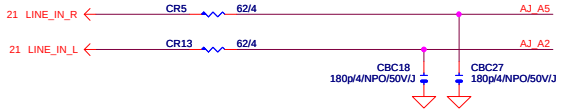
BTX AZALIA CONNECTOR



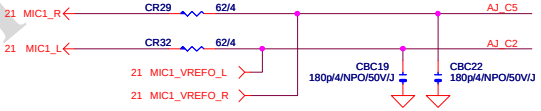
LINE-OUT



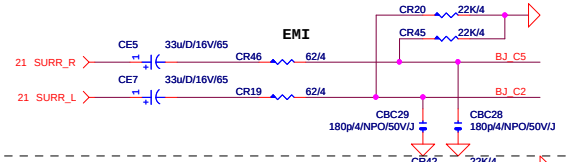
LINE-IN



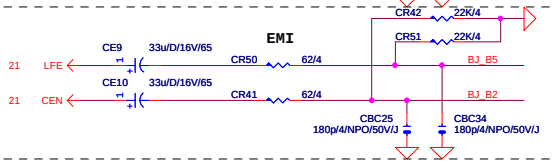
MIC-IN



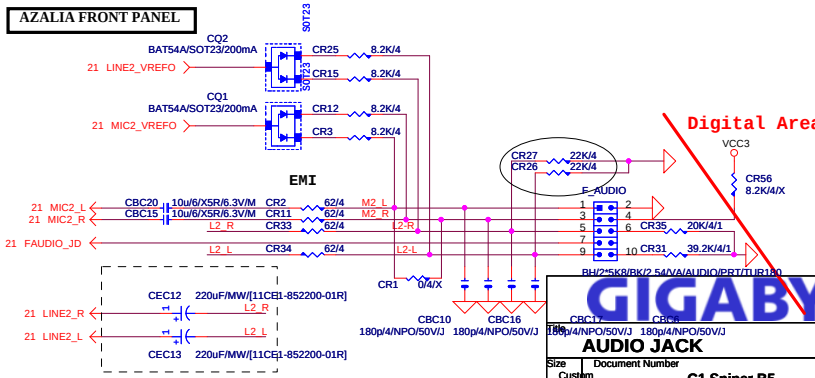
SURROUND



CEN/LFE



AZALIA FRONT PANEL



GIGABYTE™

AUDIO JACK

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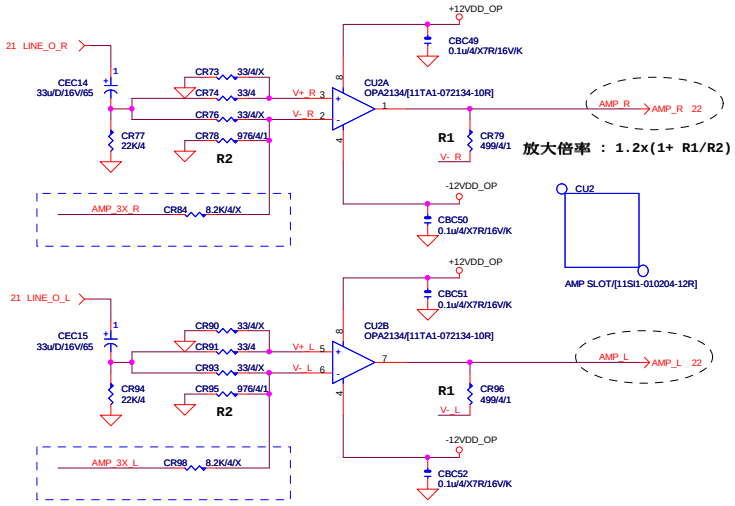
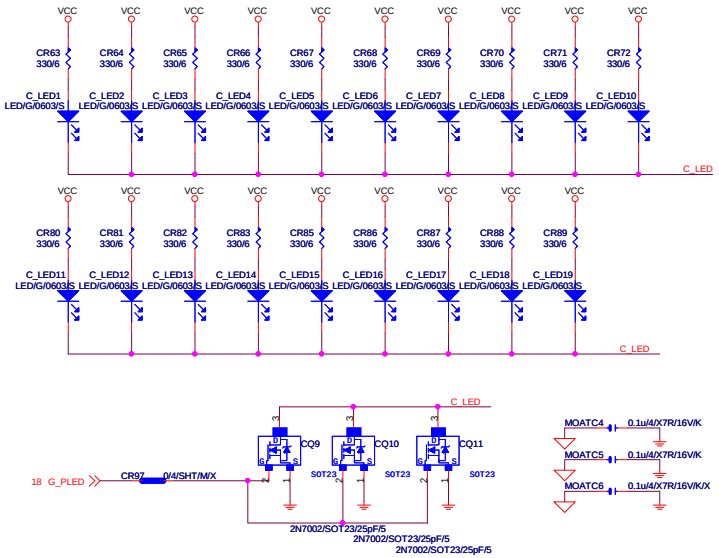
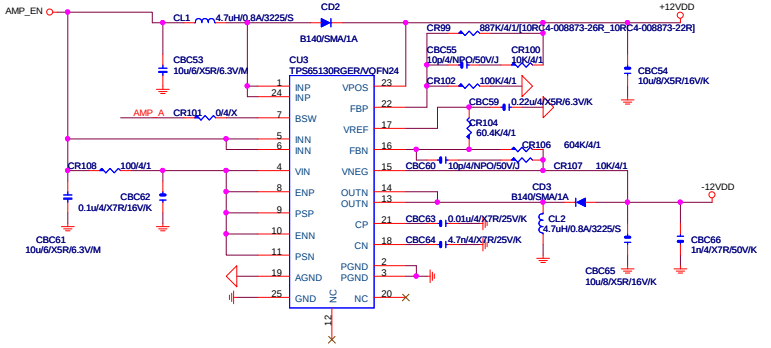
AMPLIFIED

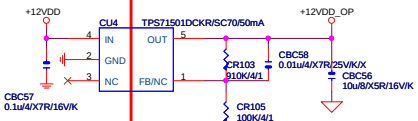


Analog Area

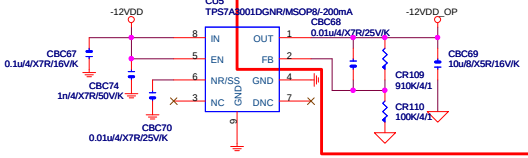


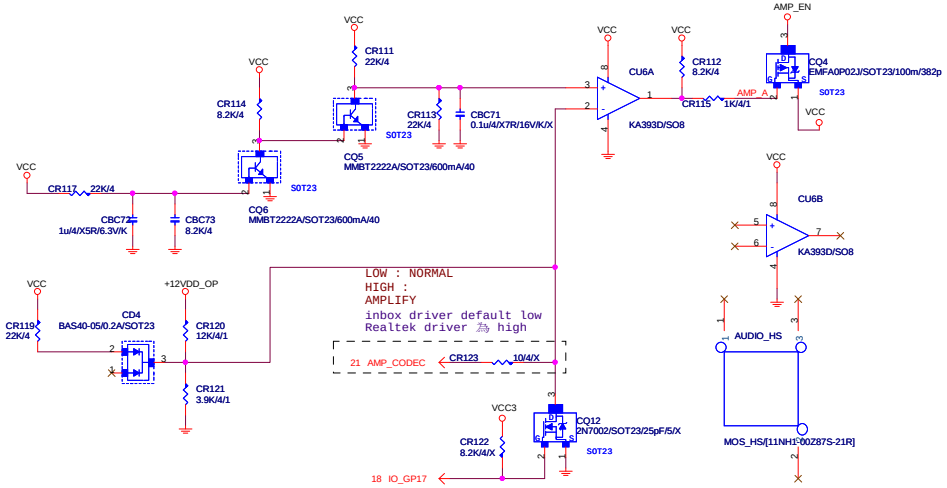


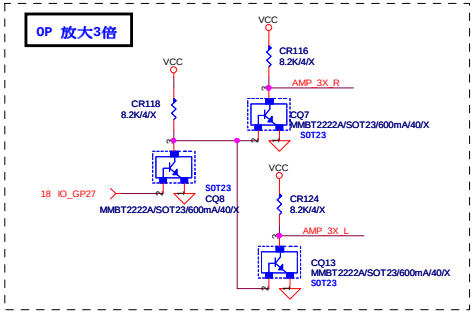
Digital Area



Analog Area







GIGABYTE™

Title: Audio Amplifier		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
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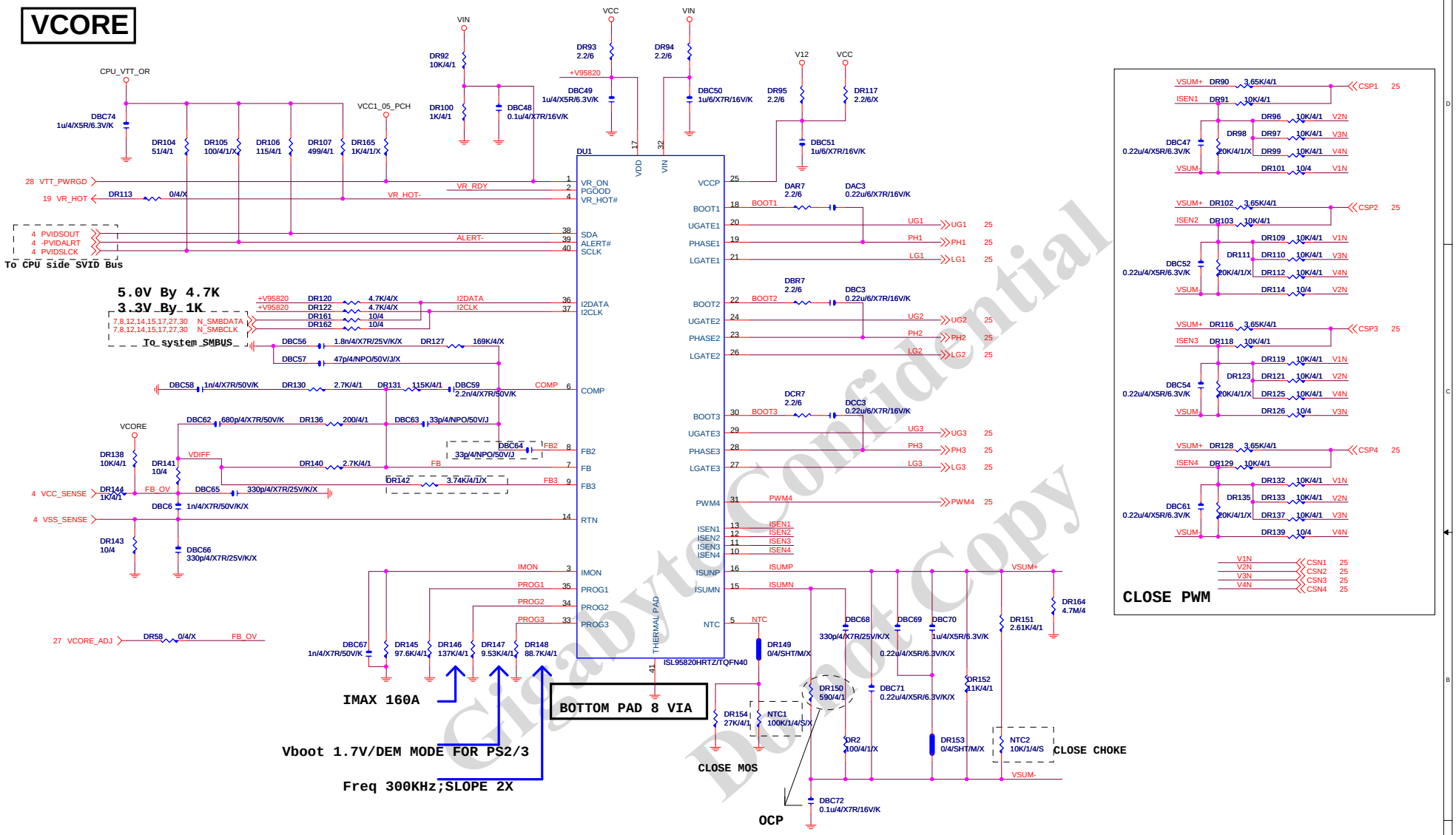
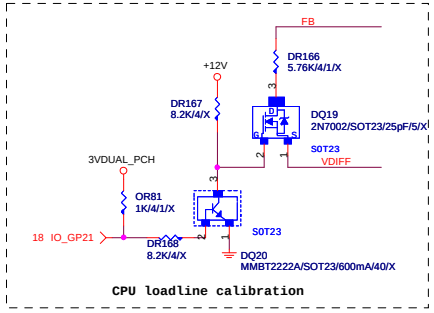
VCORE





Gigabyte Technology	
Title	VCORE_ ISL95820
Size: Custom	Document Number: G1.Sniper B5
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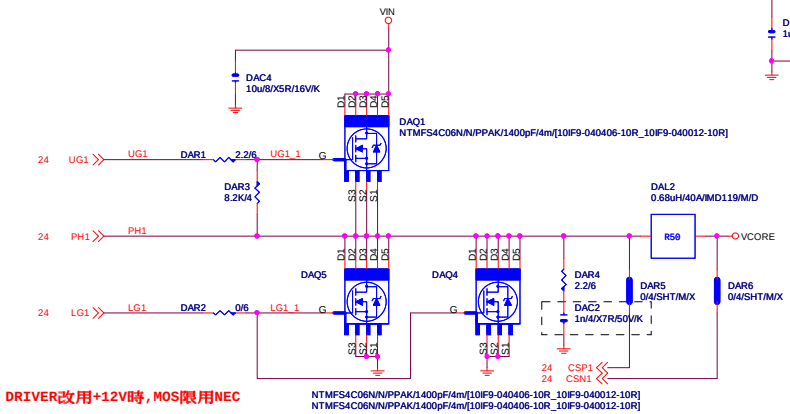
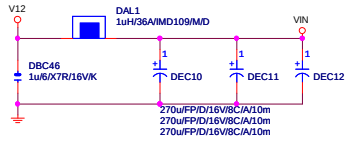
VCORE

[1]



DRIVER改用+12V時,MOS限用NEC

NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]



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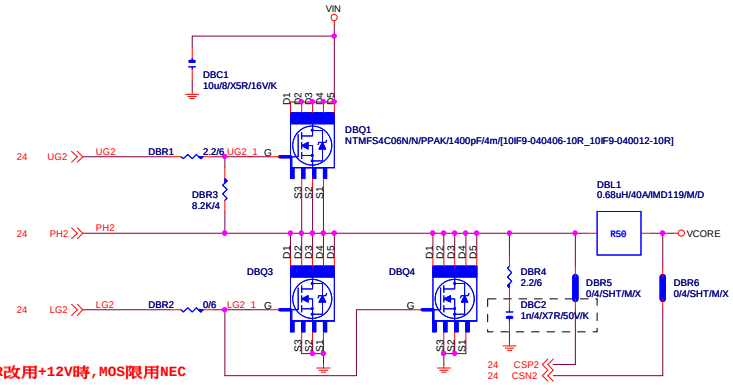
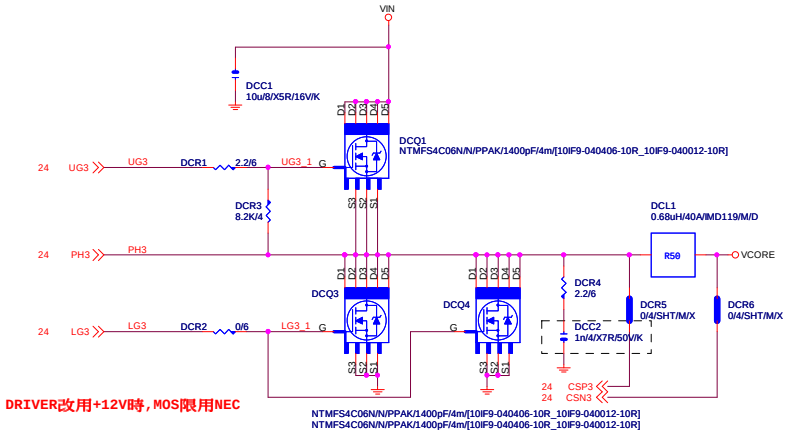


DRIVER改用+12V時,MOS限用NEC

NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

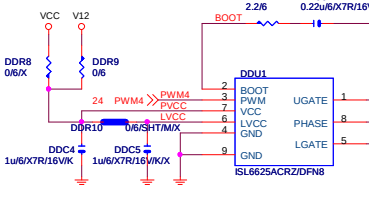
[3]



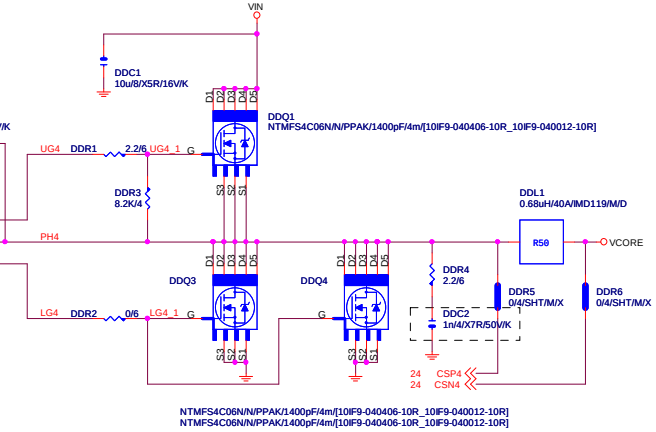
DRIVER改用+12V時,MOS限用NEC

NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]
NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

[4]



DRIVER改用+12V時,driver指定用ISL6625A
DRIVER改用VCC時,driver指定用ISL6608B



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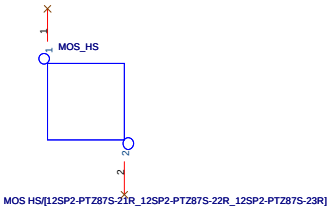
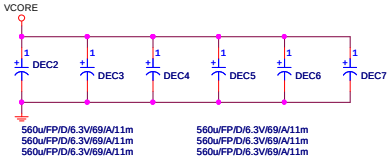
NTMFS4C06N/N/PPAK/1400pF/4m/[10IF9-040406-10R_10IF9-040012-10R]

DRIVER改用+12V時,MOS限用NEC

MOSFET HEATSINK



MOS HS/[12SP2-PTZ87S-21R_12SP2-PTZ87S-22R_12SP2-PTZ87S-23R]



Gigabyte Technology		
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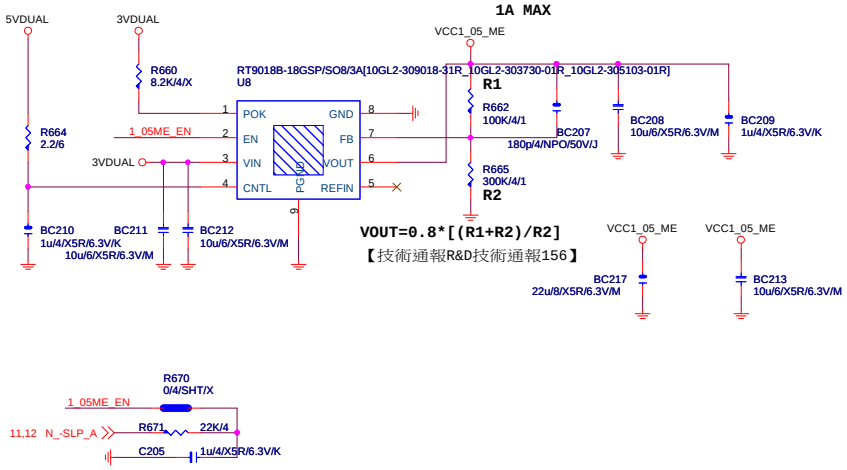
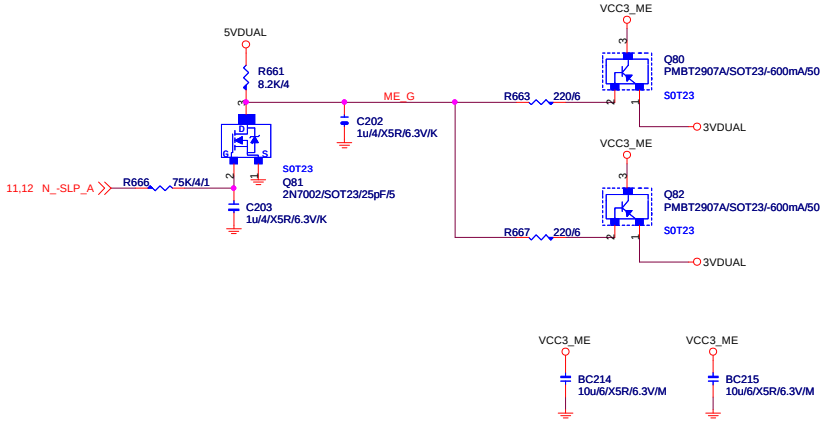
VCC1_05_ME

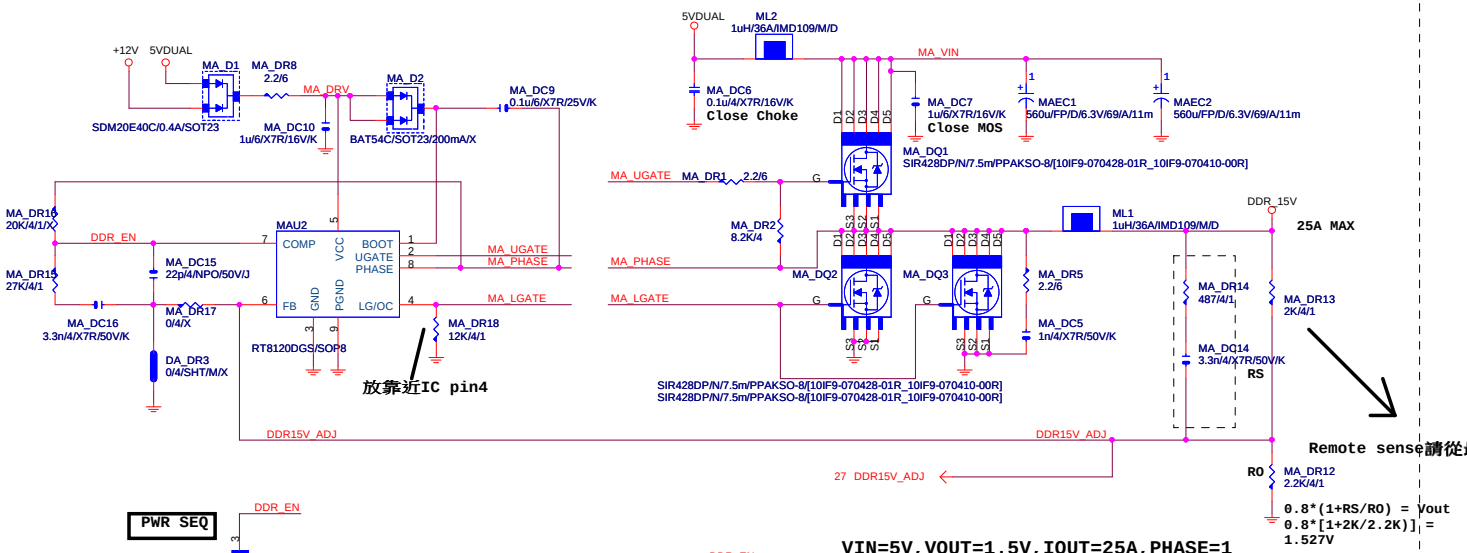
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值

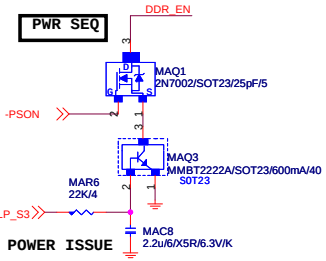


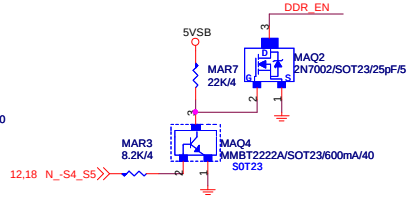
VCC3_ME



DDR_15V







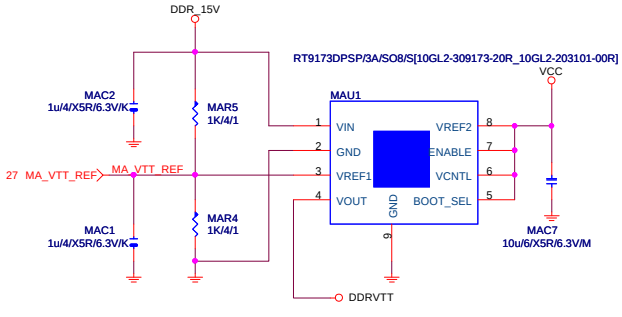
VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

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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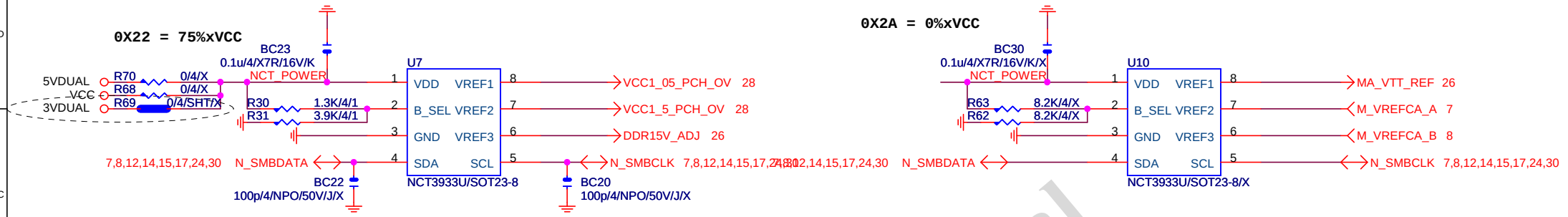
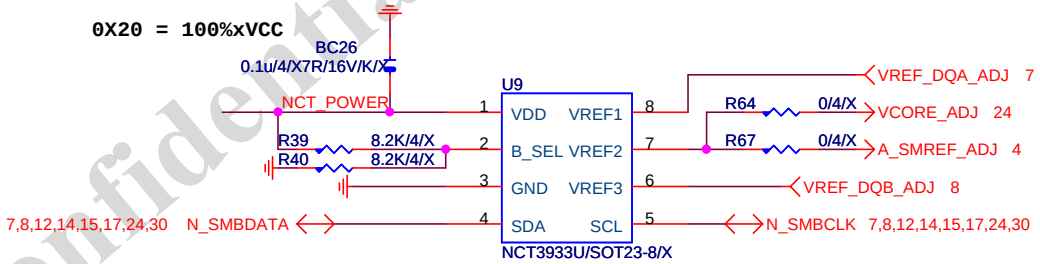
OVER VOLTAGE





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

Size: Custom | Document Number: G1.Sniper B5 | Rev: 1.2

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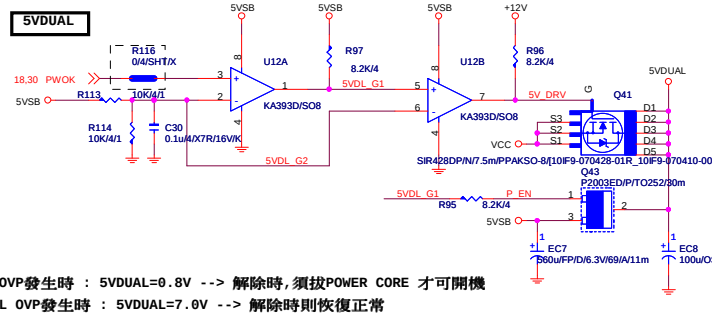
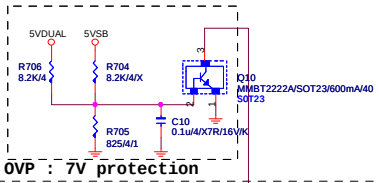
5VDUAL



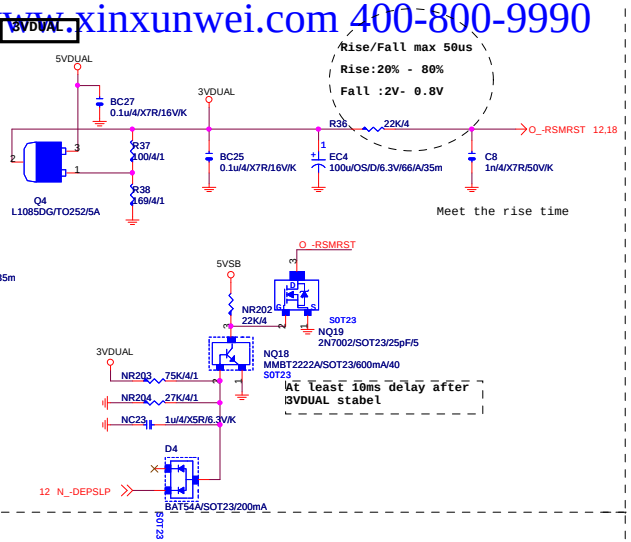
5VSB OVP發生時 : 5VDUAL=0.8V --> 解除時,須拔POWER CORE 才可開機

5VDUAL OVP發生時 : 5VDUAL=7.0V --> 解除時則恢復正常

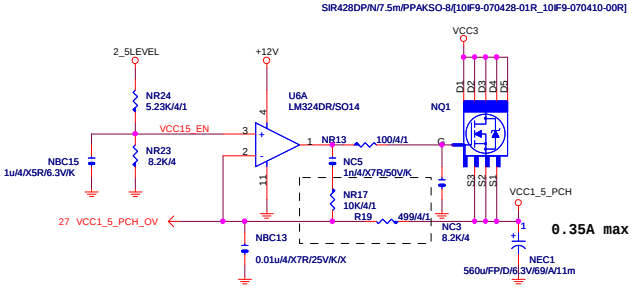


5VSB OVP : 7V protection

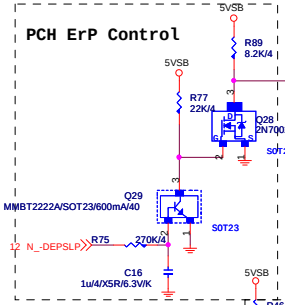
5VDUAL



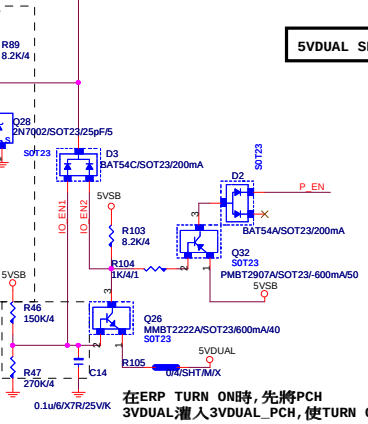
VCC1_5_PCH



PCH ErP Control

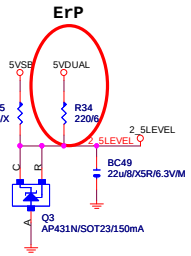


5VDUAL SHORT PROTECT

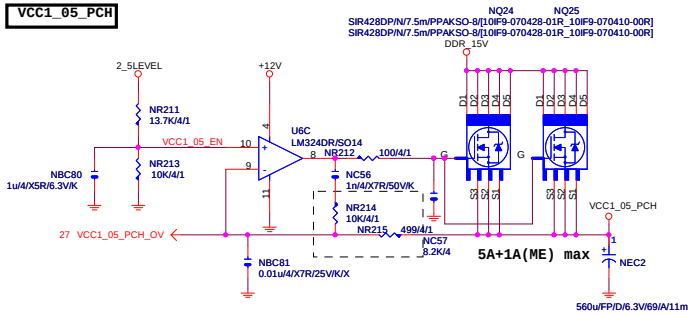


在ERP TURN ON時,先將PCH 3VDUAL灌入3VDUAL_PCH,使TURN ON -SLP_S3功能

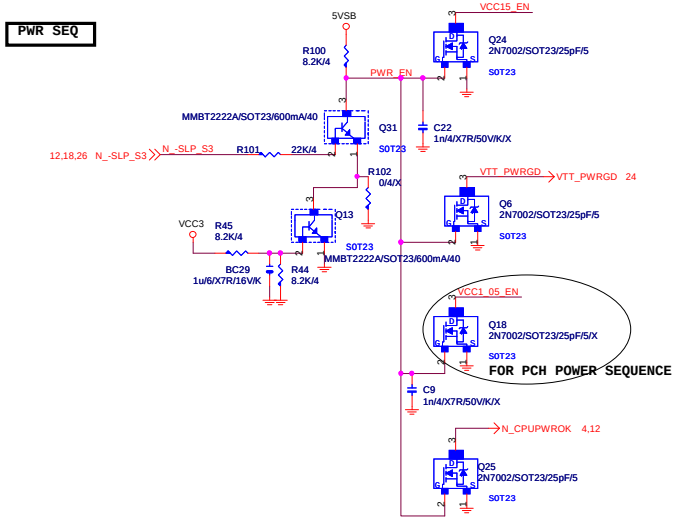
2_5LEVEL



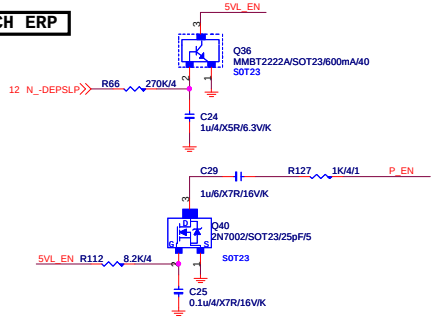
VCC1_05_PCH

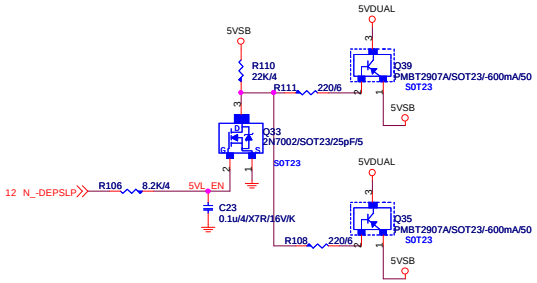


PWR SEQ



PCH ERP





Gigabyte Technology

Title	DISCRETE POWER		
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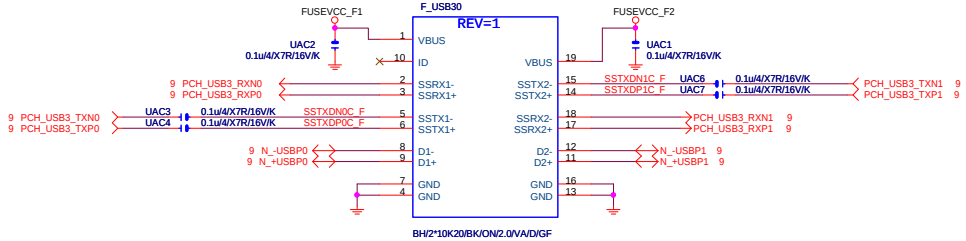
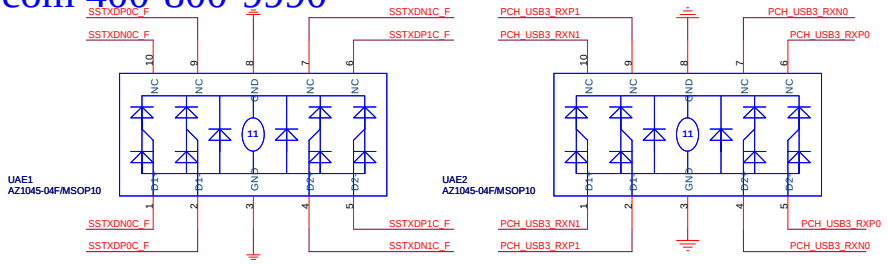
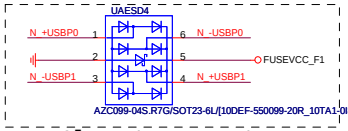
Front USB3.0



F_USB30 ESD PROTECT

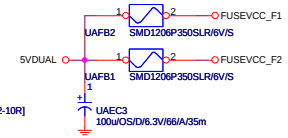


BLUE

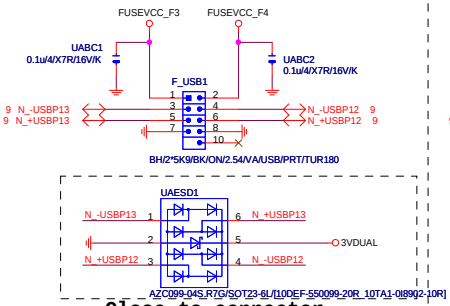


Close to connector

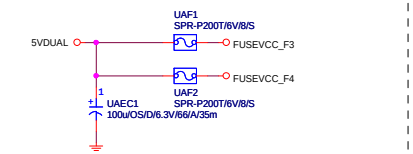
F_USB30 PWR



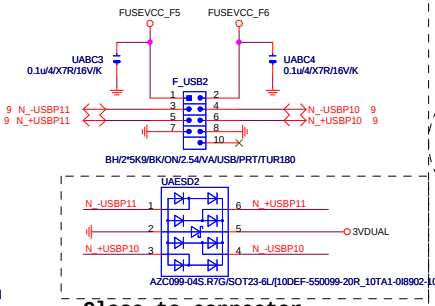
FRONT USB1



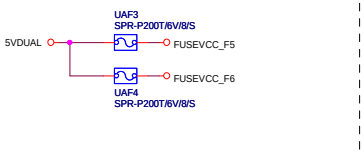
Close to connector



FRONT USB2



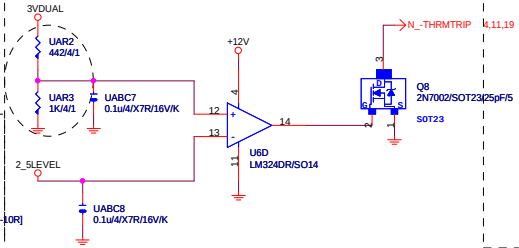
Close to connector



USB2.0 Signal & power short protection

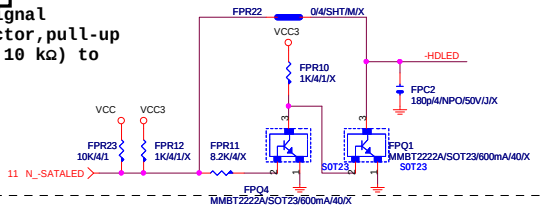
USB2.0 Signal > 4.8V

Enable --> 3VUUAL=3.6V

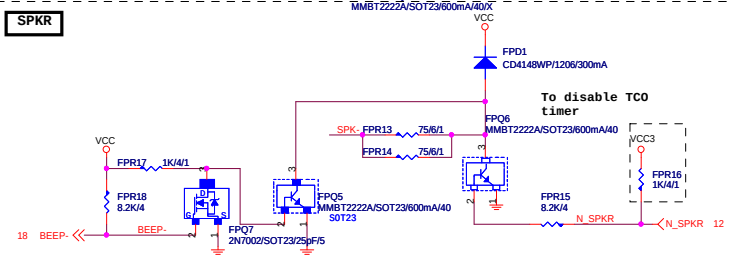


SATA LED

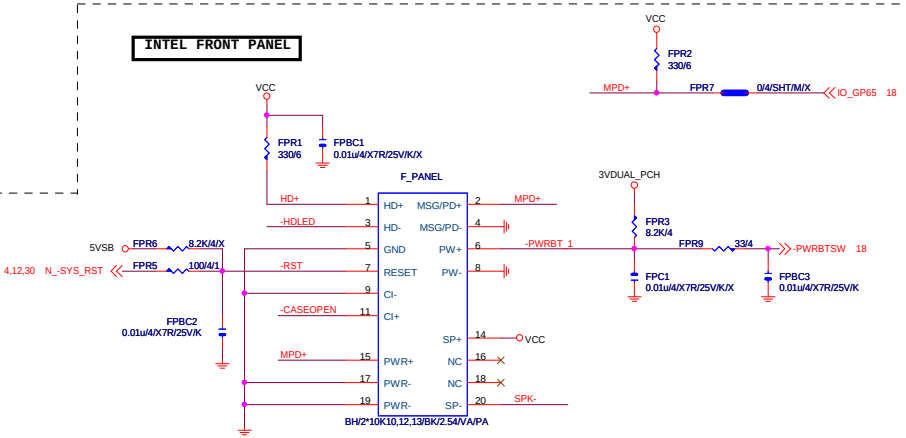
SATALED# signal open-collector,pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



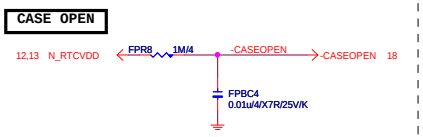
SPKR



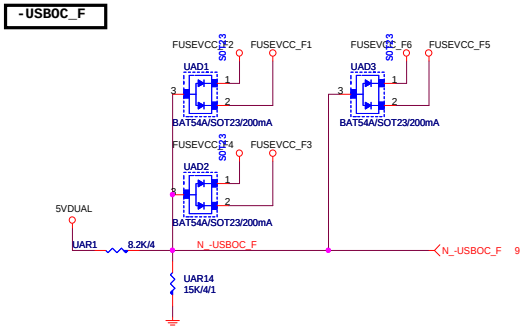
INTEL FRONT PANEL



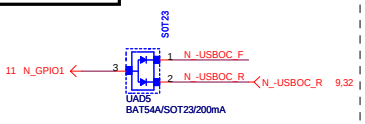
CASE OPEN



-USBOC_F



F_USB POWER PROTECT



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

Patch some PSU no internal pull up resistor

5VSB R695 22K/4

18,26 -PSON

BC37 0.1u/4/X7R/16V/K

ATX

13	3.3V	3.3V	1
14	-12V	3.3V	2
15	GND	GND	3
16	PSON	5V	4
17	GND	GND	5
18	GND	5V	6
19	GND	GND	7
20	-5V	POK	8
21	5V	5VSB	9
22	5V	12V	10
23	5V	12V	11
24	GND	3.3V	12

-12V VCC3 VCC3

-5V VCC VCC

BC39 1u/4/X5R/6.3V/K BC40 0.1u/4/X7R/16V/K/X BC36 0.1u/4/X7R/16V/K/X

VCC3: BC35 22u/8/X5R/6.3V/M, BC46 1u/4/X5R/6.3V/K, BC48 1u/4/X5R/6.3V/K

VCC, VCC, +12V

BC38 510/6/X BC42 510/6/X BC43 1u/4/X5R/6.3V/K BC44 0.1u/4/X7R/16V/K BC45 0.1u/4/X7R/16V/K BC41 0.1u/4/X7R/16V/K

5VSB R200 0/4 ATXPG

AD1 AZ2225-01L/SOD323

BC9 4.7u/6/X5R/6.3V/K

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

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

ATX_12V_2X4

1	GND	+12V	5
2	GND	+12V	6
3	GND	+12V	7
4	GND	+12V	8

V12

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

BC7 0.1u/4/X7R/16V/K

MH1 MH2 MH3 MH4 MH5 MH6 MH8 — HOLE_3/X, AGND1

HOLE_4-RH-1

K3 K6 K2 K5 K1 K4 — K1_ICT/X

K1-ICT

I1 I2 I3 I4 I5 — 4MMH/X

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

+12V

RN2 2.7K/8P4R/4
RN3 2.7K/8P4R/4
RN4 2.7K/8P4R/4
RN5 2.7K/8P4R/4
RN6 2.7K/8P4R/4

+12V_LOAD

Q9 MMBT2222A/SOT23/600mA/40

11 N_GPIO21 R703 330/4/1 SOT23

5VSB VCC VCC3

RN7 1K/8P4R/6/X RN8 1K/8P4R/6/X RN9 1K/8P4R/6/X

PWOK PATCH

【技術通報R&D技術通報154】

VCC

FPR19 8.2K/4

PWOK 18,28

VCC FPR20 8.2K/4

FPR21 0/4/X

ATXPG

FPQ8 2N7002/SOT23/25pF/5

18 IO_GP15

FPBC5 0.1u/4/X7R/16V/K/X

CLK GEN

CPU Frequency Selection

FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M

CKVDD CKR8 8.2K/4/X LPC_48 CKR1 8.2K/4/X

CKVDD CKR2 8.2K/4/X FS_133M CKR3 8.2K/4/X

CLK

DOC_0 DOC_1 CPUT_LR CPUC_LR SATACLKT_LR SATACLKC_LR PCIEXT_LR PCIEXC_LR DOT96T_LR DOT96C_LR 48M/FSLB 24_12M 25M REF/FSLA RLATCH/RESET_IN#/RESET# VTTPWRGD/WOL_STOP#

VDD96 VDDSATA VDDPCIEX VDDCPU VDDREF VDD25 GNDPAD GNDCPU GNDPCIEX GND96 GNDREF GNDSATA GND25 X1 X2 SDATA SCLK

11 CK_SRCCLK_SATA
11 CK_-SRCCLK_SATA
9 CK_SRCCLK_PCH
9 CK_-SRCCLK_PCH
9 CK_DOTCLK
9 CK_-DOTCLK
LPC_48
10 N_PCHCLK14 CKR4 33/4/X FS_133M
4,12,29 N_-SYS_RST CKR5 10/4/X CPU_STP
VCC3 CKR6 1K/4/1/X
6,11,12,18 O_PWROK1 CKR7 8.2K/4/X

CKBC8 0.1u/4/X7R/16V/K/X

9LRS4105BKLFT/MLF32/X

CKVDD: CKBC1 1u/4/X5R/6.3V/K/X, CKBC2 1u/4/X5R/6.3V/K/X

3VDUAL CKFB1 30/4/4A/S/X

CKVDD: CKBC3 1u/4/X5R/6.3V/K/X, CKBC4 1u/4/X5R/6.3V/K/X, CKBC5 1u/4/X5R/6.3V/K/X, CKBC6 0.1u/4/X7R/16V/K/X, CKBC7 1u/4/X5R/6.3V/K/X

CKC1 27p/4/NPO/50V/J/X
CKX1 14.318M/16p/20ppm/49US/40/D/X
CKC2 27p/4/NPO/50V/J/X

N_SMBDATA 7,8,12,14,15,17,24,27
N_SMBCLK 7,8,12,14,15,17,24,27

CKC4 100p/4/NPO/50V/J/X
CKC3 100p/4/NPO/50V/J/X

N_PCHCLK14 CKC5 10p/4/NPO/50V/J/X

Gigabyte Technology

Title: ATX POWER CONNECTOR

Size: Custom | Document Number: G1.Sniper B5 | Rev: 1.2

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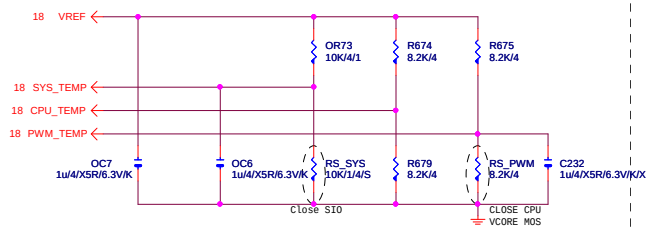
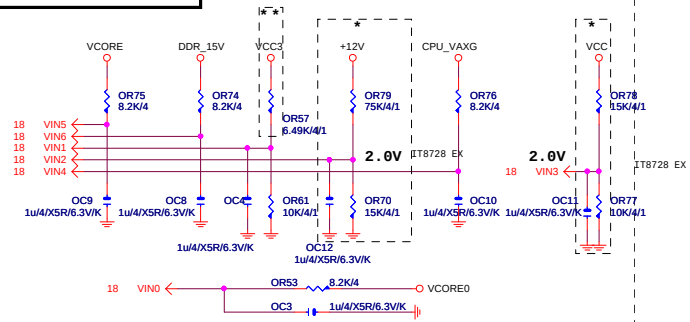
TEMP H/W MONITOR



VOLTAGE-- H/W MONITOR

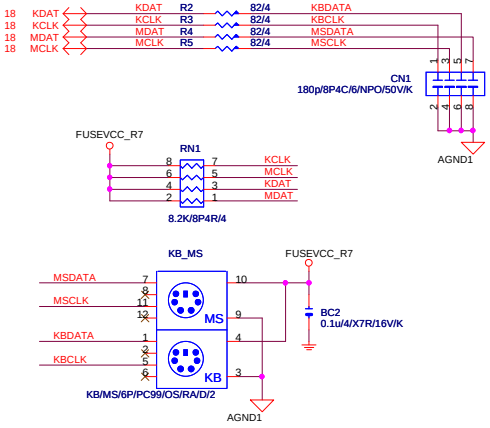
* * IT8728 EX
* * IT8728 CX

VIN2 must +12V input
VIN3 must VCC input

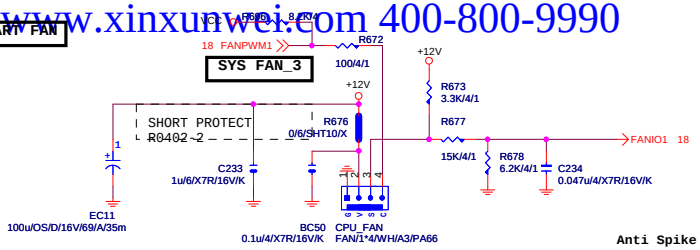


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



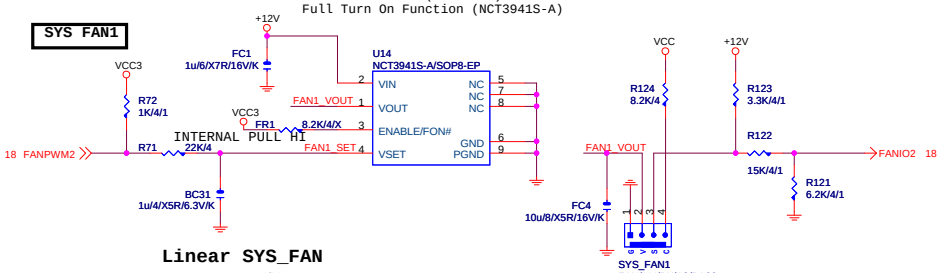
CPU SMART FAN



Anti Spike

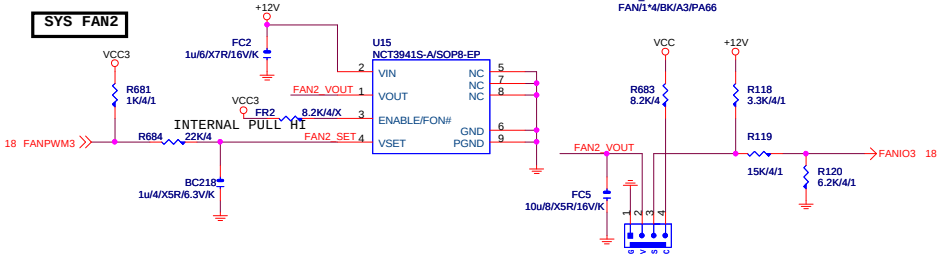
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

SYS FAN1



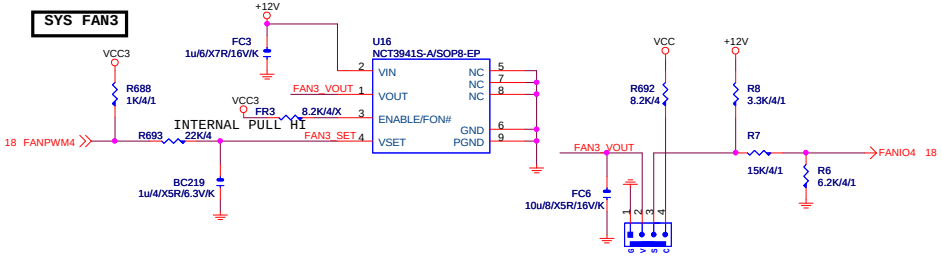
Linear SYS_FAN

SYS FAN2



Linear SYS_FAN

SYS FAN3



Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
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LAN:INTEL I217

100歐姆:[20/4/10/4/20]

LU1

WGI217V/A3/QFN48/[10HP2-400217-30R]

For 82579
Keep short & wide

Dual Color LED
D4 D3 Green
D4 D3 Orange

Single Color LED
D2 D1 Yellow

1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

100歐姆:[20/4/10/4/20]

90歐姆:[15/4.5/7.5/4.5/15]

USB_LAN

USB+LAN/1G/GO,Y/OS/RA/D/12C/ES/[11NR6-702009-96R]

LAN

USB_LAN <--> R_USB30_1

-USBOC_R

CLOSE USB30_LAN

R_USB30

R_USB

USB/A/O/BLACK/GF/2/RA/D

USB20 ESD PROCTECT

CLOSE R_USB30

Title	Gigabyte Technology
	INTEL LAN I217
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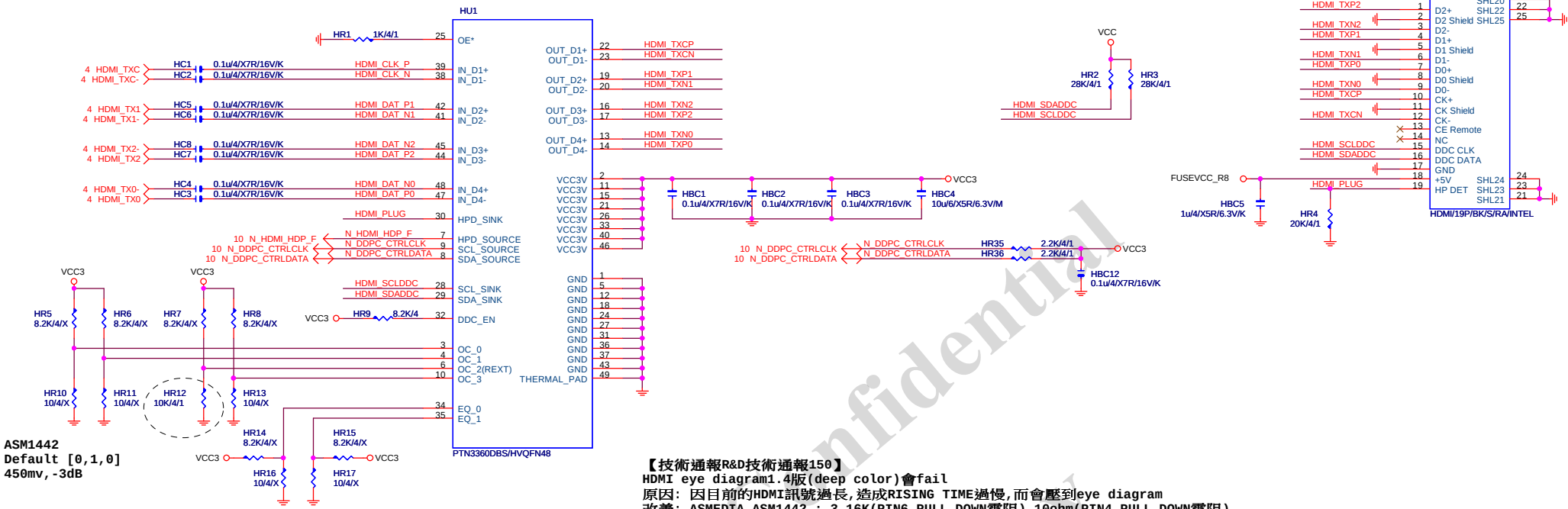
HDMI LEVEL SHIFT

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



ASM1442
Default [0,1,0]
450mv,-3dB

ASM1442 Default [0,0] 3dB
[0,1]6dB

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

GIGABYTE™

Title: HDMI		
Size: Custom	Document Number: G1.Sniper B5	Rev: 1.2
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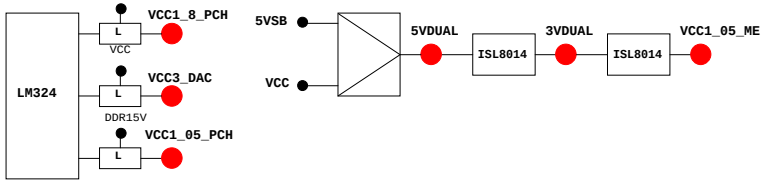
PCH GPIO LIST TABLE

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

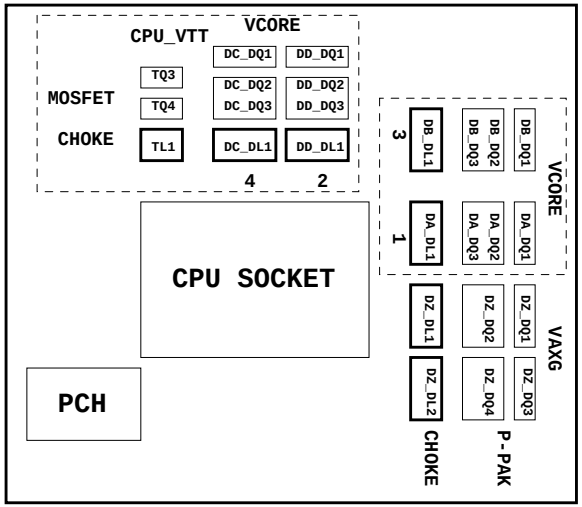
Super I/O ITE8720 GPIO Table

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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