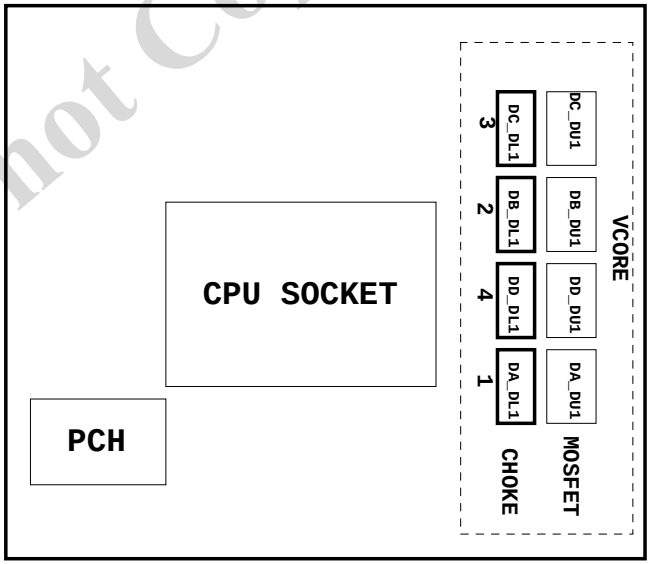
Model Name: GA-H97-HD3

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 ITE8620
19	COM, -PROHOT, R_USB
20	Dual BIOS / LPT
21	ALC887-VD2 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	



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Title	Cover Sheet	
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
Date: Thursday, February 20, 2014	Sheet 1 of 34	

GA-H97-HD3

Component value change history

Data	Change Item	Reason
2013/11/07 EBOM:01	Z97-DS3H-0.1 E-BOM	
2014/01/07 EBOM:01	H97-HD3-0.1 E-BOM	
2014/01/07 EBOM:02	1.add level shift IC ,Q3,R34	
2014/02/17 EBOM:10A	1.VR11,VR12,HR2,HR3 28K--->2.2K;NR24 5.6K-->6.65K,NR23 8.2K--->10K	
	2.DEL UAU1(LM358),UAQ1,UAQ2,UAR2,UAR3,UABC7,UABC8,R34,Q3,	
	3.ESD PROTECT DIODE改爲用AMC099加強版	
	4.DEL FPR6,PAC1,PEC1,DQ19,DQ20,DR166,DR167,DR168	
	5.DAC4,DDC1,DCC1,DBC1 限用10UF/X6S	
2014/03/07 PBOM:10B	1.FOR SINGLE BOM	
	2.DAC4,DDC1,DCC1,DBC1 限用10UF/X6S,SAMSUNG/MURATA	
	H97 CHIP 的VCORE/NON VCORE MOS限用ON	

Circuit or PCB layout change

DATE	Change Item	Reason
2013/10/15 PCB:0.1	由Z87-DS3H-1.1修改 ----------->Z97-DS3H-0.1	
2013/12/30 PCB:0.1	由Z97-DS3H-0.1修改	
	1.Spec CHANGE 移除SPDIF IN PIN HEADER/THUNDERBALL PIN HEADER;USB two port one fuse	
	2.Spec CHANGE DEL DVI level shift IC,OR68	3.add HBD3 防VGA CONTROL PIN漏電
	4.R676/R692 0603 ---->0603 SHORT-WIRE	5.update PCH heatsink footprint
	6.CR60/R200 0402 ---->SHORT MASK	8.修改HDLED線路;NOTE1202
	7.CR51/DCR2/DDR2/DBR2/DAR2/DDR9 0603----->0603 SHORT MASK	
	9.修正HD /POWER LED SCH	10.Swap DVI & HDMI port
	11.USB2.0/3.0 Signal & power short protection sch	12.CPU MOS改1上1下 FOR H97 SPEC
	13.OR68(CPU RESET) 不上件	14.F_USB30 ESD PROTECT(UAE1,UAE2,UAESD4)改成AZ1065
2014/01/09 PCB:0.2	1.Spec CHANGE add DVI level shift IC	
	2.統一,PWM_TEMP跟CPU_TEMP互換,同時PWM_TEMP換成PCH_TEMP	
	3.預留NR136電阻,NR205 OPEN	
2014/02/11 PCB:1.0	1.DAQ4,DBQ4,DCQ4,DDQ4 MASK	
	2.U9,U10,BC30,BC26,R62,R63,R39,R40 MASK	
	3.UAU1,UAQ1,UAQ2,UAR2,UAR3,UABC7,UABC8 MASK	
	4.LBESD1 MASK	
	5.NR205 SHORT ,R34,Q3 MASK	
	6.DQ19,DQ20,DR166,DR167,DR168 MASK	

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Title: BOM & PCB MODIFY HISTORY

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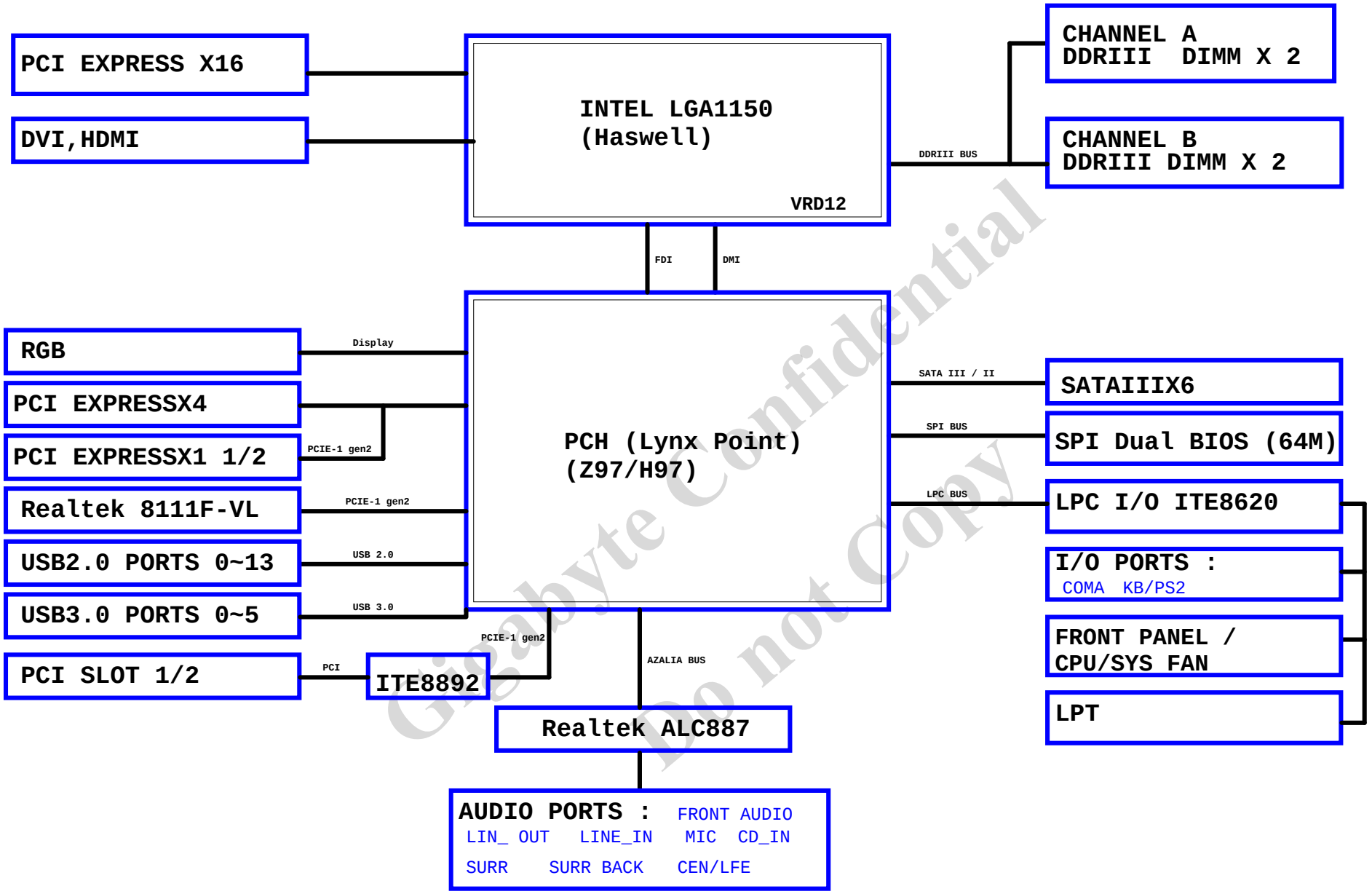
BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
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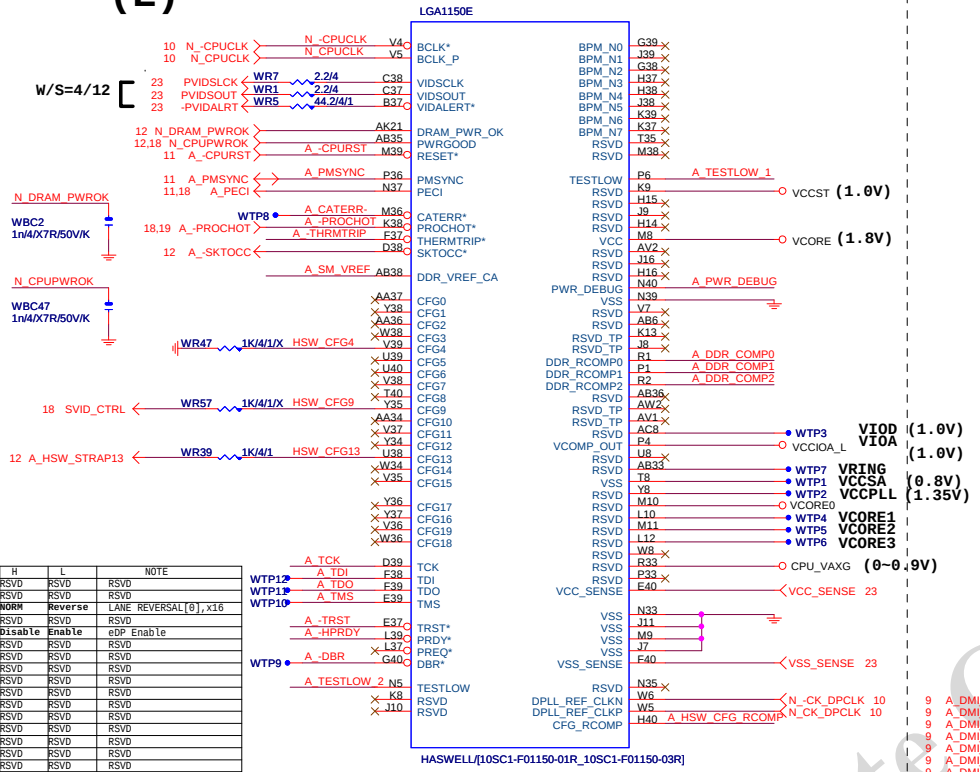
LGA1150 (E)

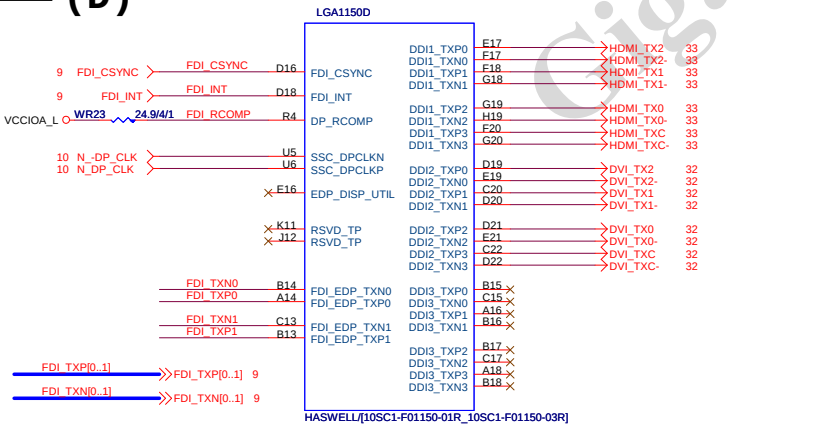


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

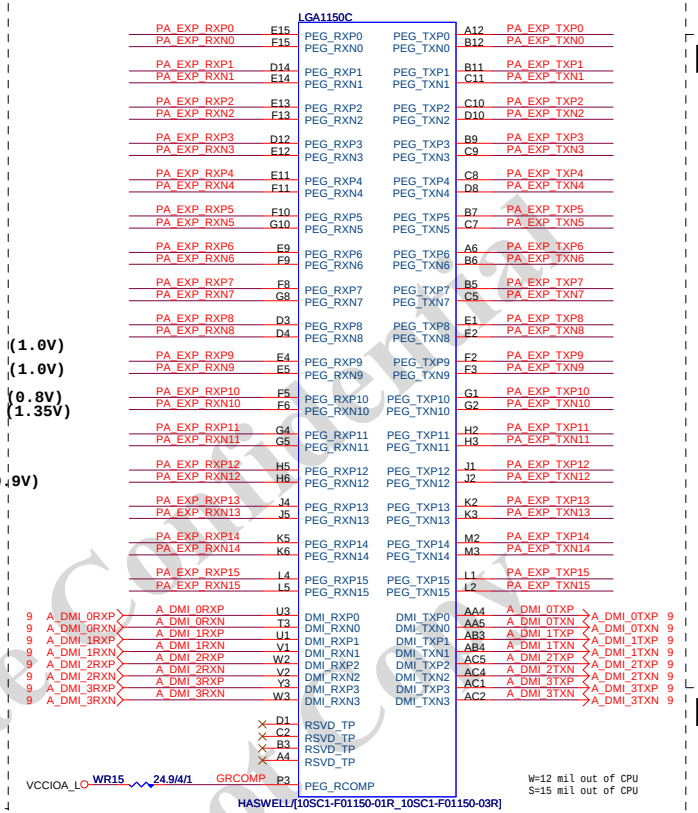


FDI:4/4/4//15(breakout min 4/4/4//8)
Impedance=85 +- 15%

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

Impedance=85 +- 15%

LGA1155 (C)



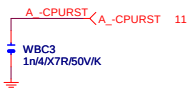
CPU PEG 5/5/5//20 Impedance=80 +- 15%

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

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

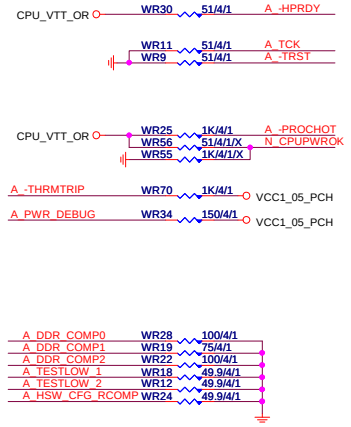
-CPURST

1.1V分壓

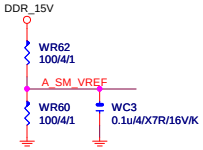


CPU SVID

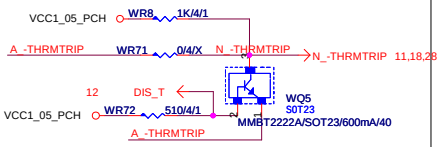
CPU PU/PD



SM REF



THRMTRIP DISABLE FOR Z87 OVERCLOCK



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Title: CPU LGA1150-A		
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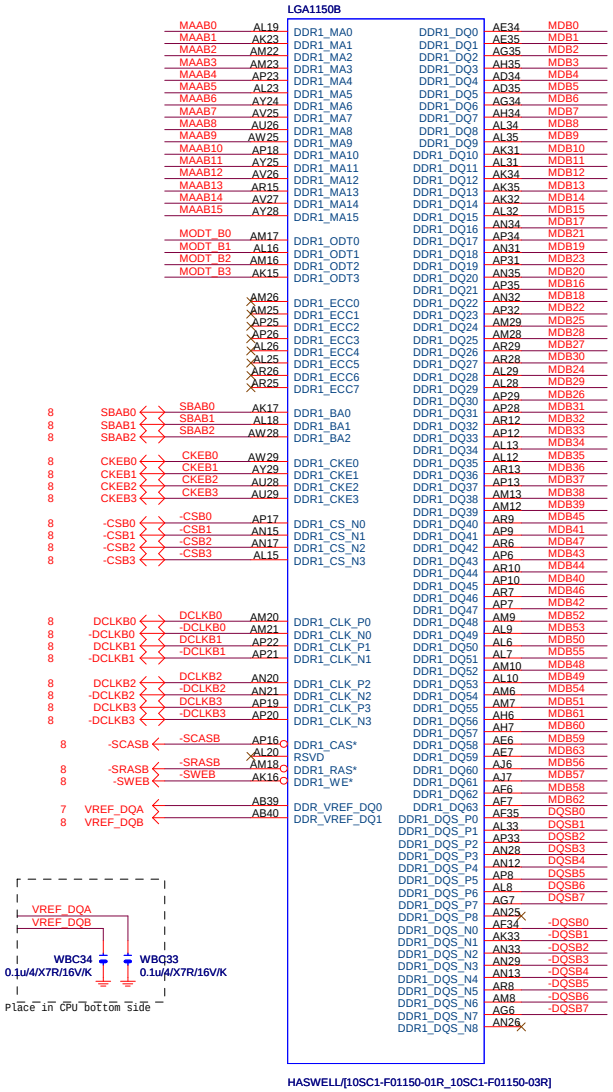
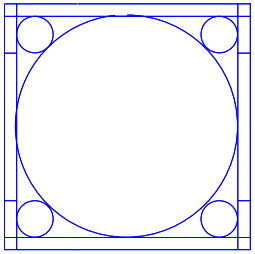
LGA1150 (A)

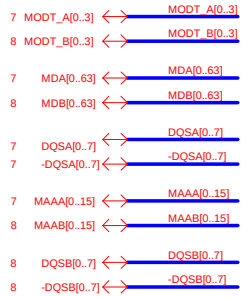
LGA1150 (B)



LGA1150 (CR)



DDR BUS



Gigabyte Technology			
Title: CPU LGA1150-B			
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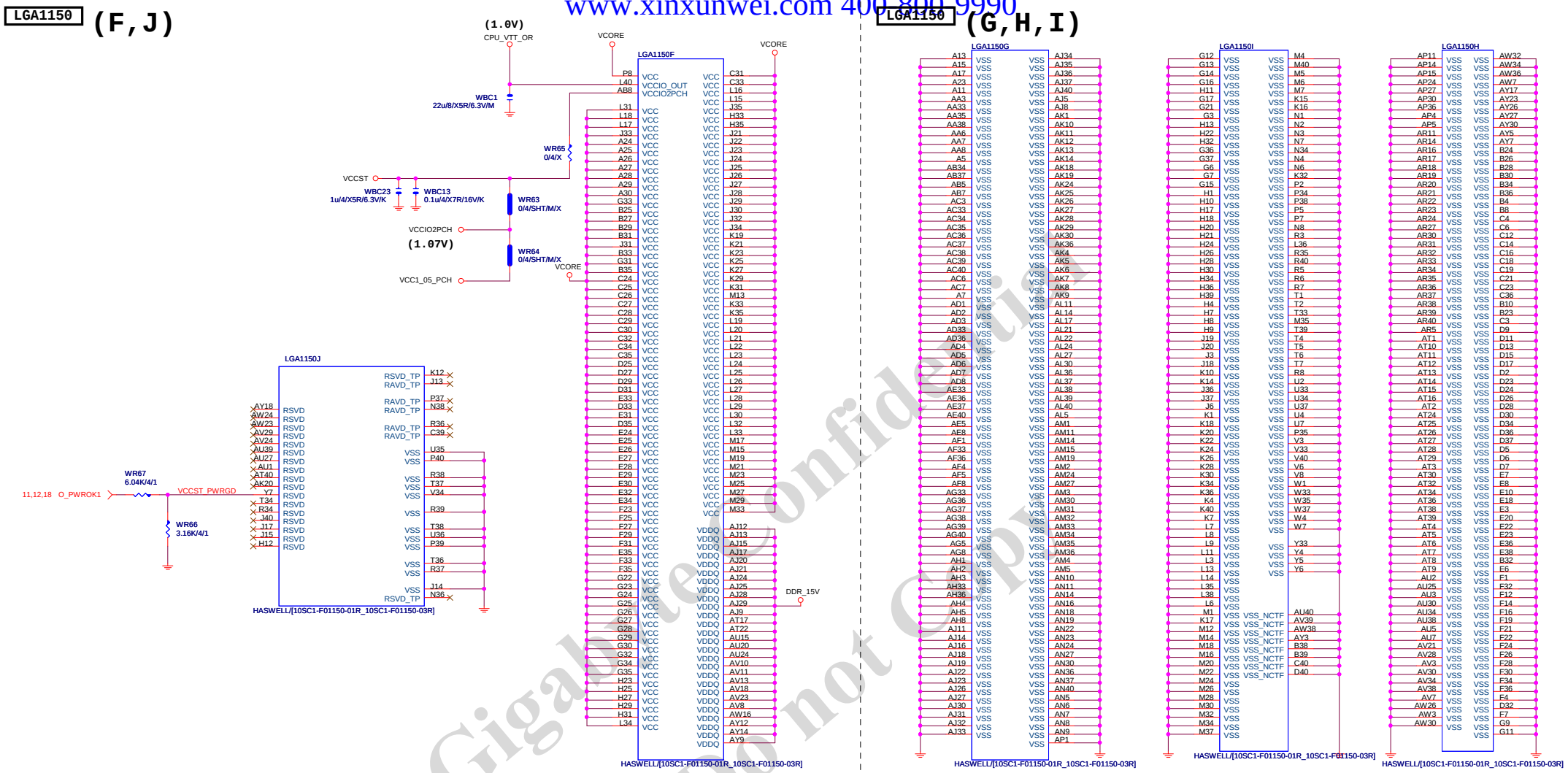
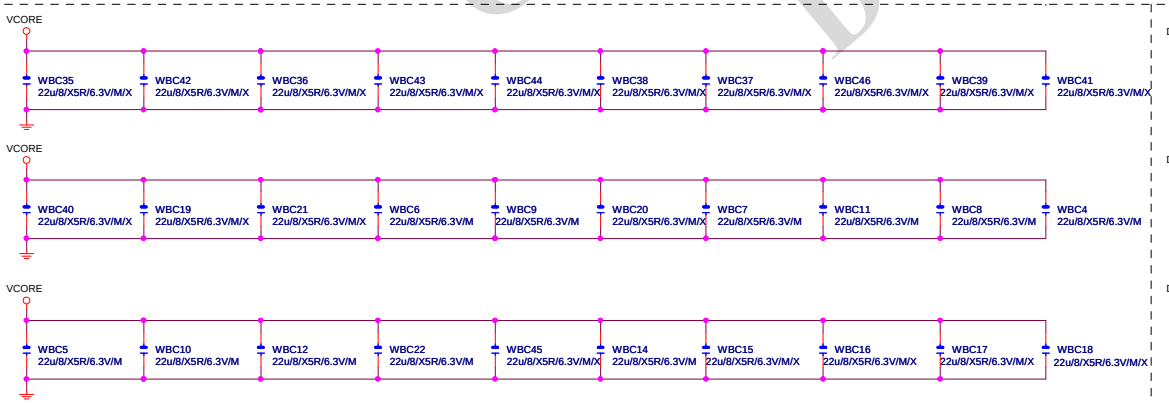
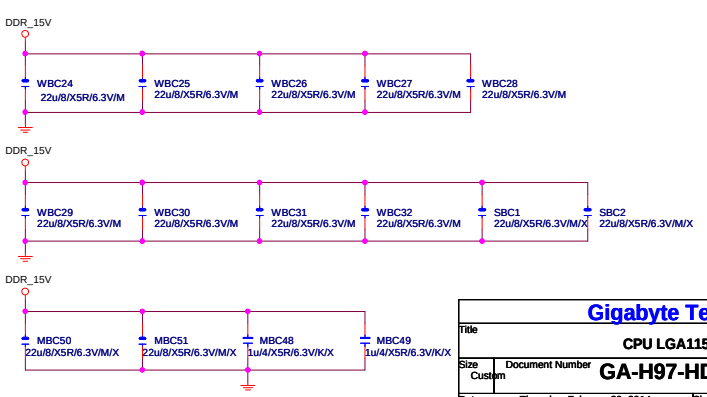


VCore CAP (X30)



DDR CAP (X15)



Gigabyte Technology		
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
DQ17
DQ18
DQ19
DQ20
DQ21
DQ22
DQ23
DQ24
DQ25
DQ26
DQ27
DQ28
DQ29
DQ30
DQ31
DQ32
DQ33
DQ34
DQ35
DQ36
DQ37
DQ38
DQ39
DQ40
DQ41
DQ42
DQ43
DQ44
DQ45
DQ46
DQ47
DQ48
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
MF1 SPR-P200T/6V/B/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
N_SMBCLK
N_SMBDATA
SCL
SDA
SA1
SA0
SBAA2
SBAA1
SBAA0
BA2
BA1
BA0
CKEA1
CKEA0
CKE1
CKE0
-CSA1
-CSA0
S1*
S0*
-DCLKA1
DCLKA1
CK1/NU*
CK1/NU
-DCLKA0
DCLKA0
CK0*
CK0
MAAA[0..15]
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*
MDA[0..63]
DDR3/240/BK/VA/D

DDR3_2

DDRVTT
MODT_A3
MODT_A2
MC8 0.1u/4/X7R/16V/K
MC3
MC7
0.1u/4/X7R/16V/K
DDR3/240/GR/VA/D

DDR3_VREF

DDR_15V
MR15 1K/4/1
MR13 0/4/SHT/X
MR14 1K/4/1
VREF_DDRA
M_VREFCA_A 26
MBC28 1u/4/X5R/6.3V/K
MR4 1K/4/1
MR5 1K/4/1
VREF_DQDDRA
MR1 10/4
MR3 10/4/X
VREF_DQA 5
VREF_DQA_ADJ 26

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

DDR3/240/BK/VA/D

DDR3

DDR3_1

DDR3/240/GR/VA/D

DDR3_VREF

DDR_15V

MR10 1K/4/1

MR11 1K/4/1

VREF_DDRB MR12 0/4/SHT/X M_VREFCA_B 26

MR8 1K/4/1

MR9 1K/4/1

VREF_DQDDRB MR7 10/4 VREF_DQB 5

MR16 10/4/X VREF_DQB_ADJ 26

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

COUPON1 COUPON1 1 2 COUPON/X

COUPON2 COUPON2 1 2 COUPON/X

CPU

DIMM4
DIMM2
CHA

DIMM3
DIMM1
CHB

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%

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

A_DMI_0TXN A_DMI_0TXP A_DMI_0RXN A_DMI_0RXP
A_DMI_1TXN A_DMI_1TXP A_DMI_1RXN A_DMI_1RXP
A_DMI_2TXN A_DMI_2TXP A_DMI_2RXN A_DMI_2RXP
A_DMI_3TXN A_DMI_3TXP A_DMI_3RXN A_DMI_3RXP

VCC1_5_PCH
NR50 7.5K/4/1 DMI_COMP
NR40 7.5K/4/1 PCIE_COMP
W=8 mil out of PCH
S=15 mil to other signals

DMI_RCOMP
PCIE_RCOMP
CK_-SRCCLK_PCH
CK_SRCCLK_PCH
CLKIN_DMI_N
CLKIN_DMI_P

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

AV10 N_-USBP0
AU10 N_+USBP0
AU11 N_-USBP1
AW11 N_+USBP1
AN14 N_-USBP2
AP14 N_+USBP2
AJ16 N_-USBP3
AK16 N_+USBP3
AU15 N_-USBP4
AV15 N_+USBP4
AU12 N_-USBP5
AT12 N_+USBP5
AV14 N_-USBP6
AW14 N_+USBP6
AU17 N_-USBP7
AT17 N_+USBP7
AW16 N_+USBP8
AV16 N_-USBP8
AN16 N_-USBP9
AP16 N_+USBP9
AJ18 N_-USBP10
AK18 N_+USBP10
AP18 N_-USBP11
AN18 N_+USBP11
AW18 N_-USBP12
AV18 N_+USBP12
AP20 N_-USBP13
AN20 N_+USBP13

N_-USBP0 28 … N_-USBP13 28

Port要對應

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

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14
AE40 AF37 AD39 AD40 AF39 AC41 AF40 AG40 N_GPIO14
N_-USBOC_F 28
N_-USBOC_R 28,31

USBRBIASB USBRBIAS
AV20 AU20 N_USBRBIAS NR47 22.6/4/1
W=8 mil out of PCH
S=15 mil to other signals

CLKIN_DOT96N CLKIN_DOT96P
AP11 CK_-DOTCLK
AM11 CK_DOTCLK

N_GPIO14 NR130 8.2K/4 3VDUAL

N_-USBOC_F NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R NBC83 0.1u/4/X7R/16V/K

REAR USB3.0
B85/H81:USB N\A

31 PCH_USB3_RXN2 PCH_USB3_RXP2 PCH_USB3_TXN2 PCH_USB3_TXP2 PCH_USB3_RXN3 PCH_USB3_RXP3 PCH_USB3_TXN3 PCH_USB3_TXP3
L14 K14 B12 B11 F14 G14 D11 C11
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

LAN AR8161

31 LB_ML_IN LB_ML_IP LB_ML_ON LB_ML_OP
F11 H11 B9 A9
PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3

ITE8892 PCI Bridge

16 G_PCIEBIN G_PCIEBIP G_PCIEBON G_PCIEBOP
J11 L11 B8 C8
PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4

PCIEX4 port1

15 PE_PCIE_IN1 PE_PCIE_IP1 PE_PCIE_TN1 PE_PCIE_TP1
G9 F9 B7 A7
PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5

PCIEX4 port2

15 PF_PCIE_IN2 PF_PCIE_IP2 PF_PCIE_TN2 PF_PCIE_TP2
H7 F7 E1 D2
PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6

PCIEX4 port3
PCIEX1_1

15 PI_PCIE_IN3 PI_PCIE_IP3 PI_PCIE_TN3 PI_PCIE_TP3
K6 K8 G3 G5
PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7

H81:PCIE 7/8X
PCIEX4 port4
PCIEX1_2

15 PJ_PCIE_IN4 PJ_PCIE_IP4 PJ_PCIE_TN4 PJ_PCIE_TP4
J2 J3 H2 H1
PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

放靠近 Device & PCI-E Slot

CHIP DH82H97 A0 INTEL/[10HB1-030H97-10R]

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

PCH (F)

PCHF

USB3 FDILINK

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

28 PCH_USB3_RXN1 PCH_USB3_RXP1 PCH_USB3_TXN1 PCH_USB3_TXP1
G18 H18 B15 B16
USB3_RXN_1 USB3_RXP_1 USB3_TXN_1 USB3_TXP_1

FDI_CSYNC L2 FDI_CSYNC 4
FDI_INT L3 FDI_INT 4
FDI_RCOMP K2 NR29 7.5K/4/1 VCC1_5_PCH

19 PCH_USB3_RXN4 PCH_USB3_RXP4 PCH_USB3_TXN4 PCH_USB3_TXP4
K20 L20 D15 C15
USB3_RXN_4 USB3_RXP_4 USB3_TXN_4 USB3_TXP_4

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

H81:USB3.0 N\A

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

CHIP DH82H97 A0 INTEL/[10HB1-030H97-10R]

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

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

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

CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4
Mount for integrated clock Generation Mode

CK_DOTCLK NR92 8.2K/4
CK_-DOTCLK NR91 8.2K/4
NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

AT1 AT41 AU1 AV1 AV2 AV40 AV41 AW2 AW40 B40 B41 C41 D1 D41
VSS_NCTF

TP22 TP23 TP21 TP20 TP14 TP15 TP12 TP10 TP11 TP9 TP3 TP4 TP1 TP2 TP5 TP6 TP7 TP8
U11 U10 AJ14 AK14 K34 K33 AH24 L16 K16 AM34 R12 N12 L22 K22 R4 K5 P5 L5

VSS AC31 AF3 AV21

CHIP DH82H97 A0 INTEL/[10HB1-030H97-10R]

PCH H/S

BGAHSINK_SB-9M

PCH_HS

HEAT SINK/N-BG/GBT MK/Z87/KWOG/[12SP2-S04208-91R_12SP2-S04208-92R_12SP2-S04208-93R]

USB TABLE

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

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

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-H97-HD3 | Rev: 1.0

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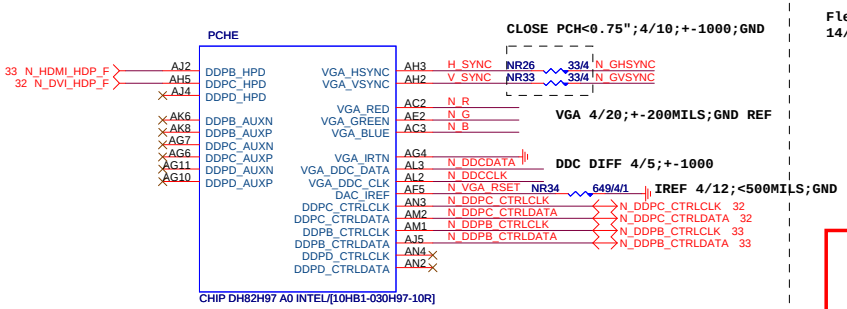
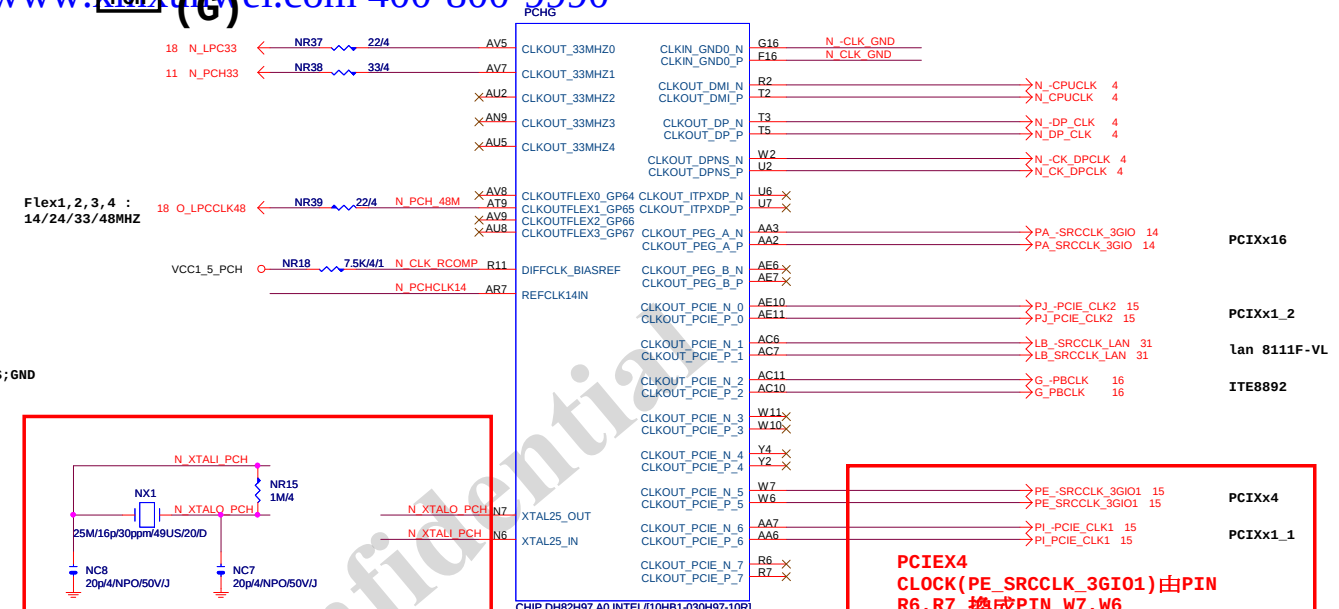
PCH (E)



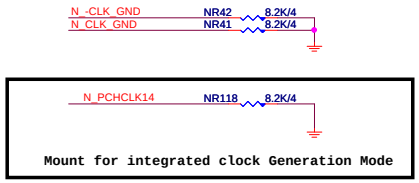
VGA DISABLE
R,G,B NC OR GND
IRTN / IREF GND
VGA_HSYNC, VGA_VSYNC,DDC_CLK, DDC_DATA NC
POWER VCCADAC(AF2), VCCADACBG(AE1) GND

PCH (G)

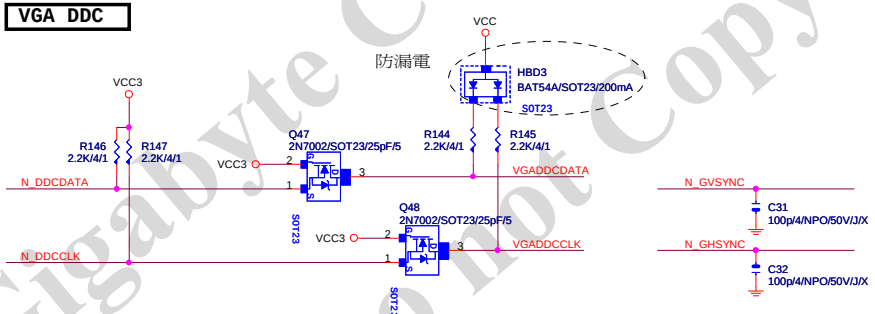


Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

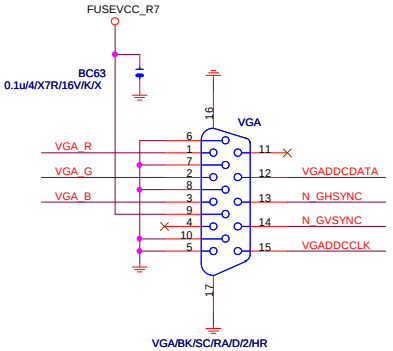
PCH CLK PD



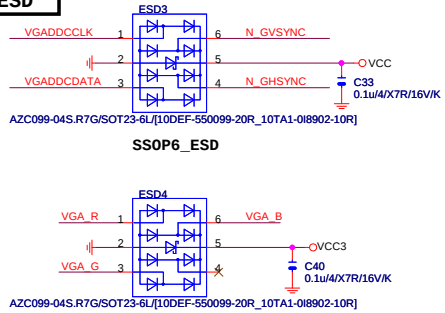
VGA DDC



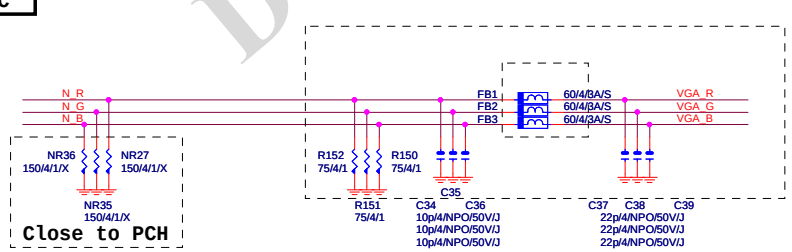
VGA CONNECTOR



VGA ESD



VGA DDC



Gigabyte Technology			
Title: PCH DISPLAY ,CLK BUFFER			
Size: Custom	Document Number: GA-H97-HD3		Rev: 1.0
Date: Thursday, February 20, 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 4/4/4//15
SATA3 4/4/4//20

PCHC

CHIP DH82H97 A0 INTEL/[10HB1-030H97-10R]

PCH (A)

PCHA

CHIP DH82H97 A0 INTEL/[10HB1-030H97-10R]

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

TLS Setting enable for SBA

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

Size: Custom | Document Number: GA-H97-HD3 | Rev: 1.0

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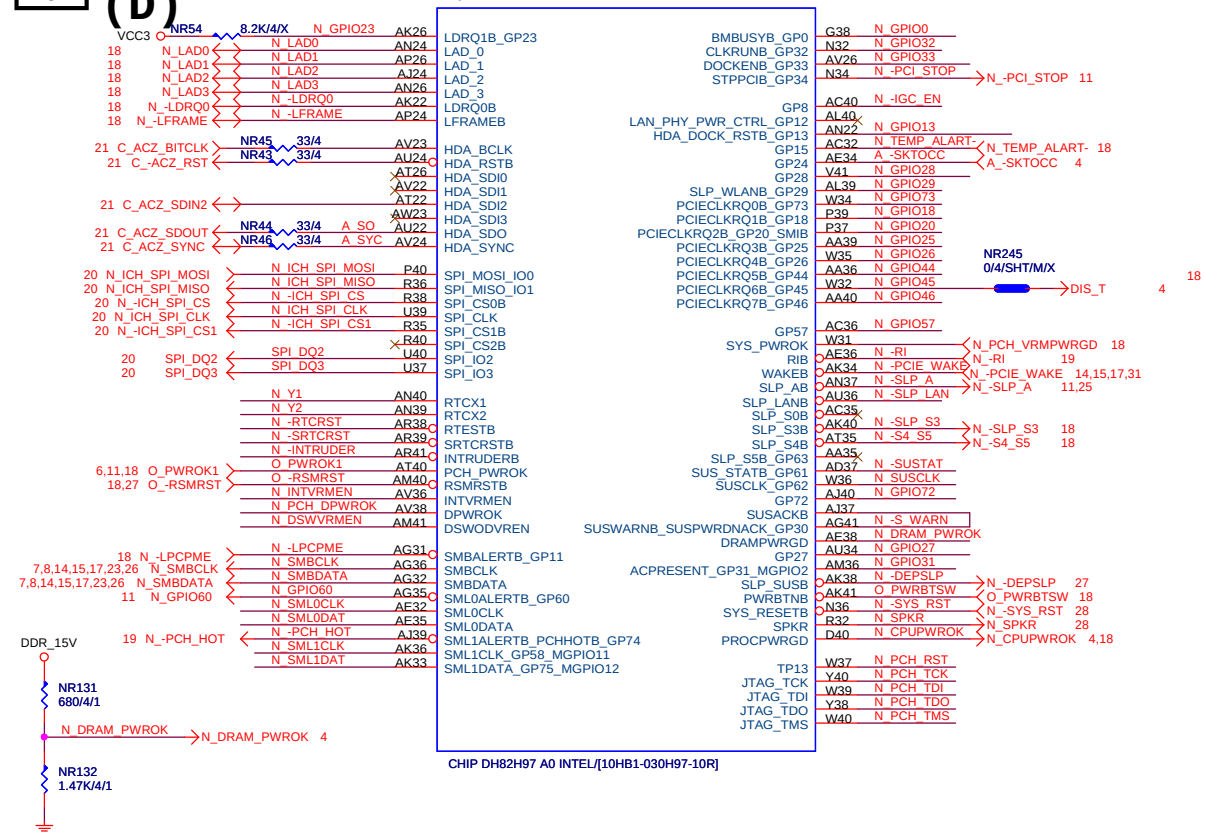
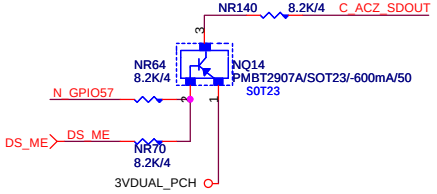
PCH (D)



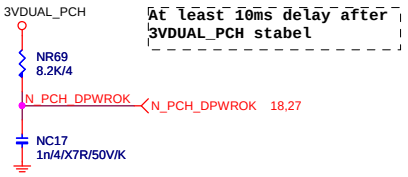
ACZ_SDOUT

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

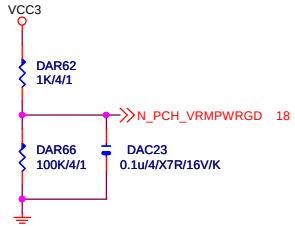


PCH_DPWROK

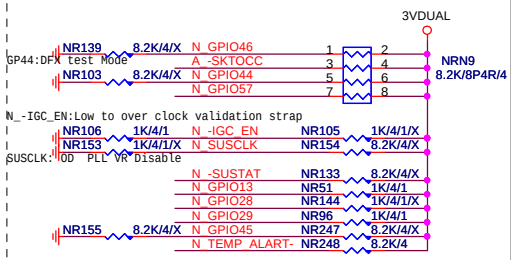
At least 10ms delay after 3VDUAL_PCH stabel

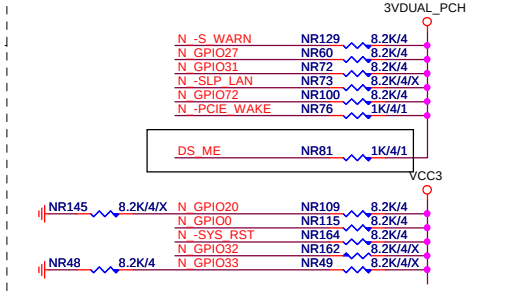


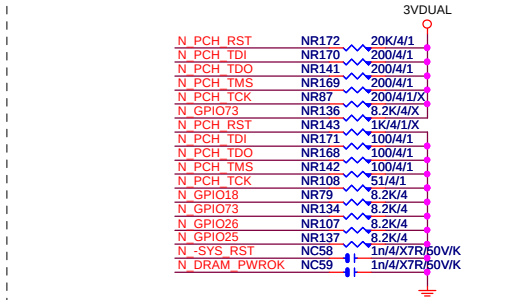
For IT8620 Ctrl

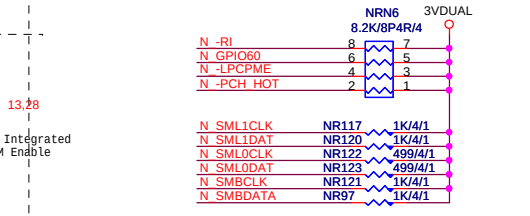


PCH PU/PD

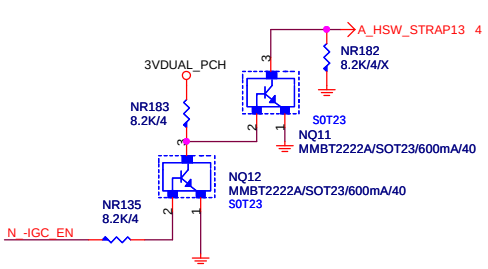




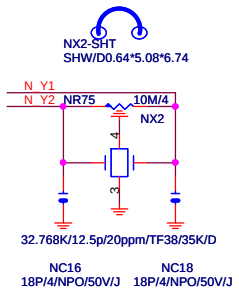




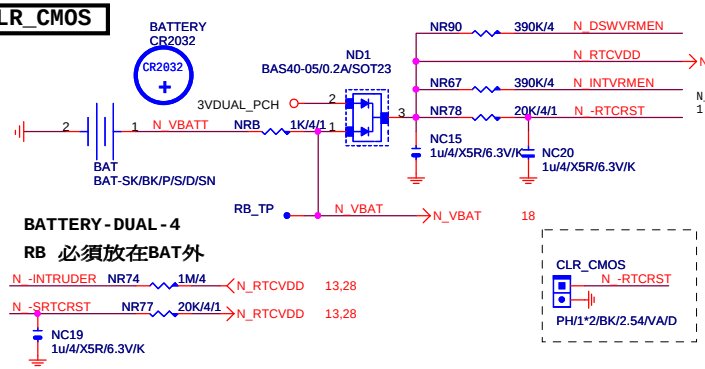
HSW_STRAP13



32.768KHZ



CLR_CMOS



Gigabyte Technology			
Title: PCH GPIO , CTRL , AUDIO			
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PCH (H)

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

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
Size: Custom	Document Number: GA-H97-HD3
Rev	1.0
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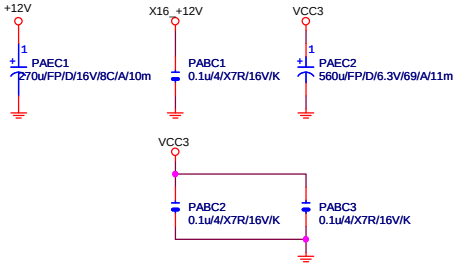
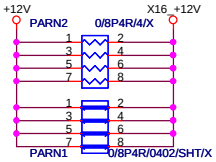
PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

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

PCI-E REV:1.1--> 2.5GHZ

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

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

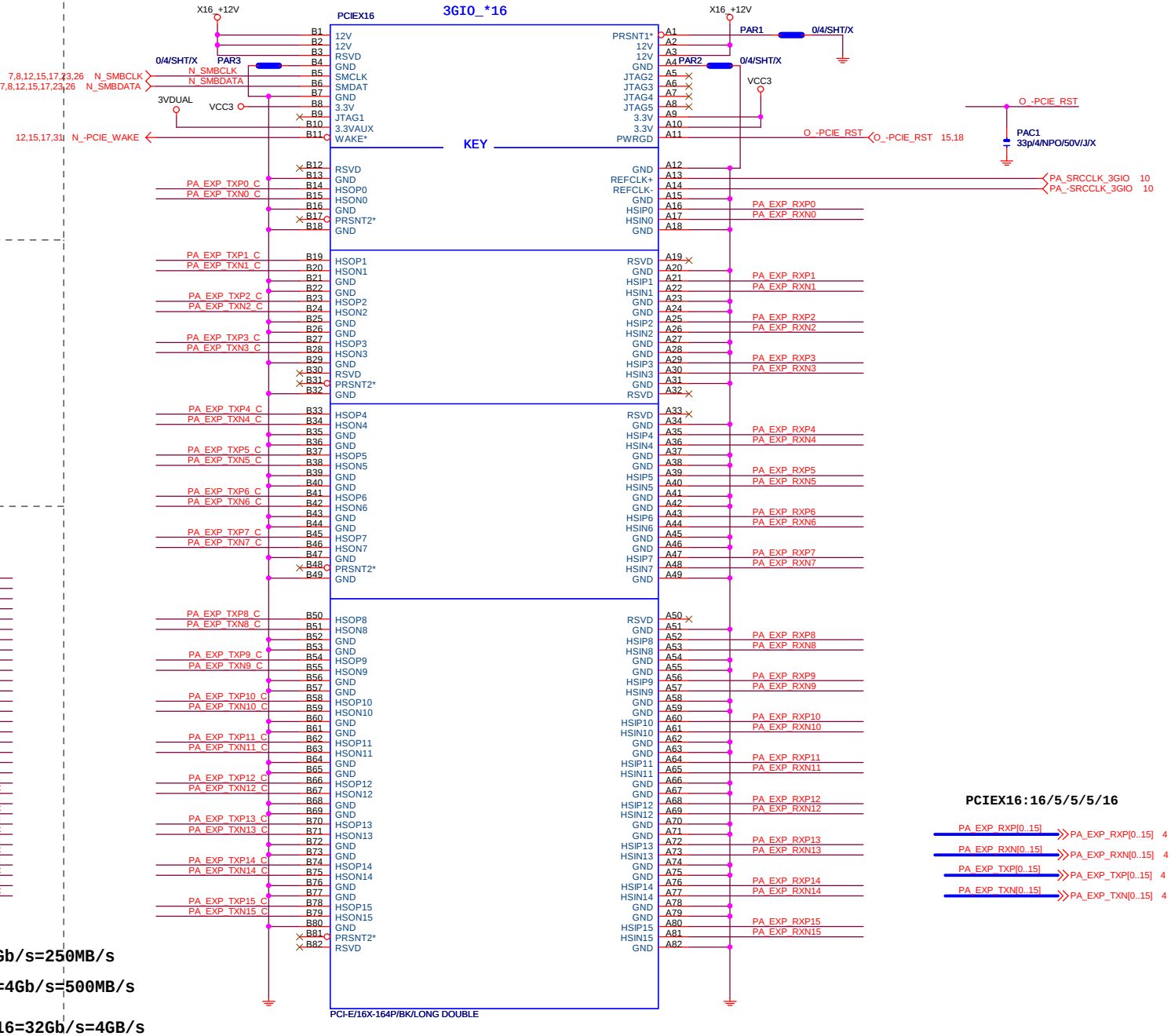
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DN-Q



PCIEX16:16/5/5/5/16

Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-H97-HD3		Rev: 0.2
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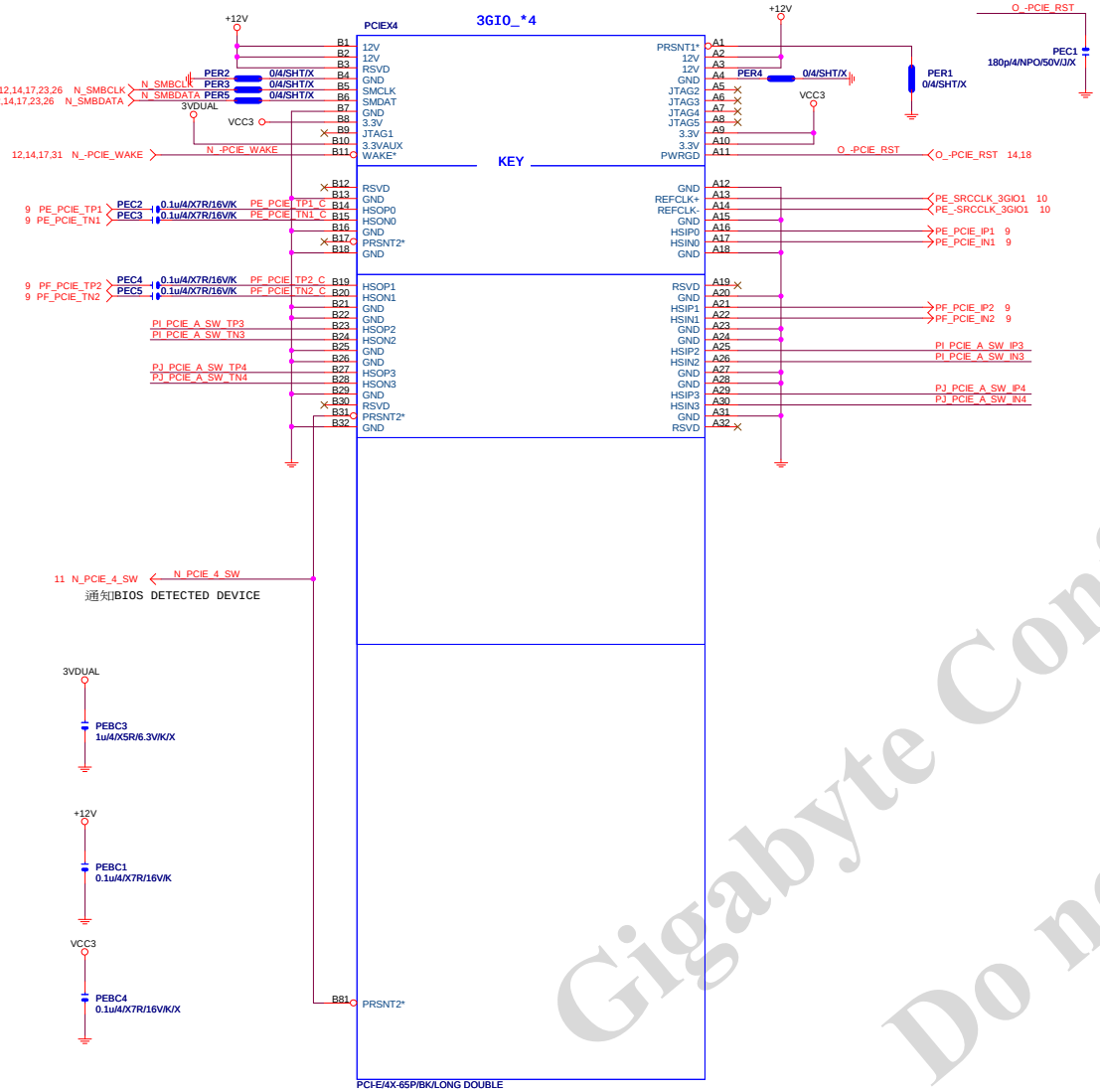
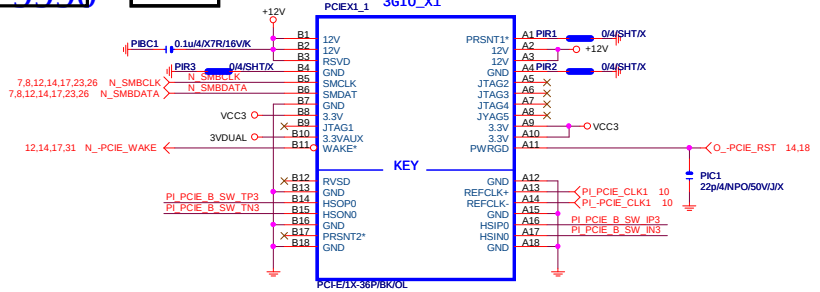
PCIEX4 SLOT

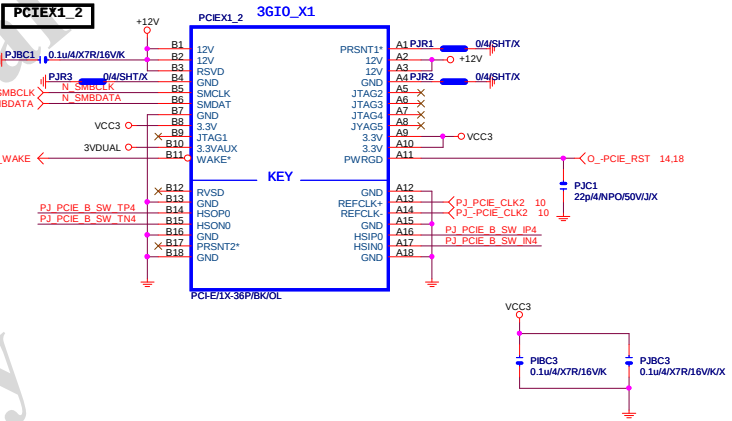


PCIEX4 SLOT	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO26)
PCIEX4 No devices	H	H
PCIEX4 -> X1	H	H
PCIEX4 Have devices	L	L
PCIEX4 -> X4	L	L
PCIEX1_1/2 --> N/A		

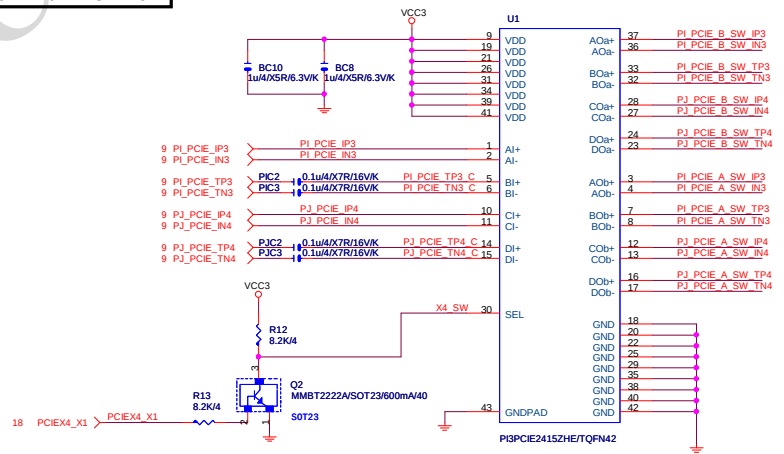
PCIEX1_1



PCIEX1_2



PCIEX4/X1 SWITCH



Algorithm 是先 check X4 有沒有卡. 決定要 1個 X4(X4卡優先) or 4 個 x1.

Function	SEL
xI--> x0a	L;PCIEX4 SLOT-->X1
xI--> x0b	H;PCIEX4 SLOT-->X4

Gigabyte Technology

Title: PCIE_X1 1,2,3

Size: Custom | Document Number: GA-H97-HD3 | Rev: 1.0

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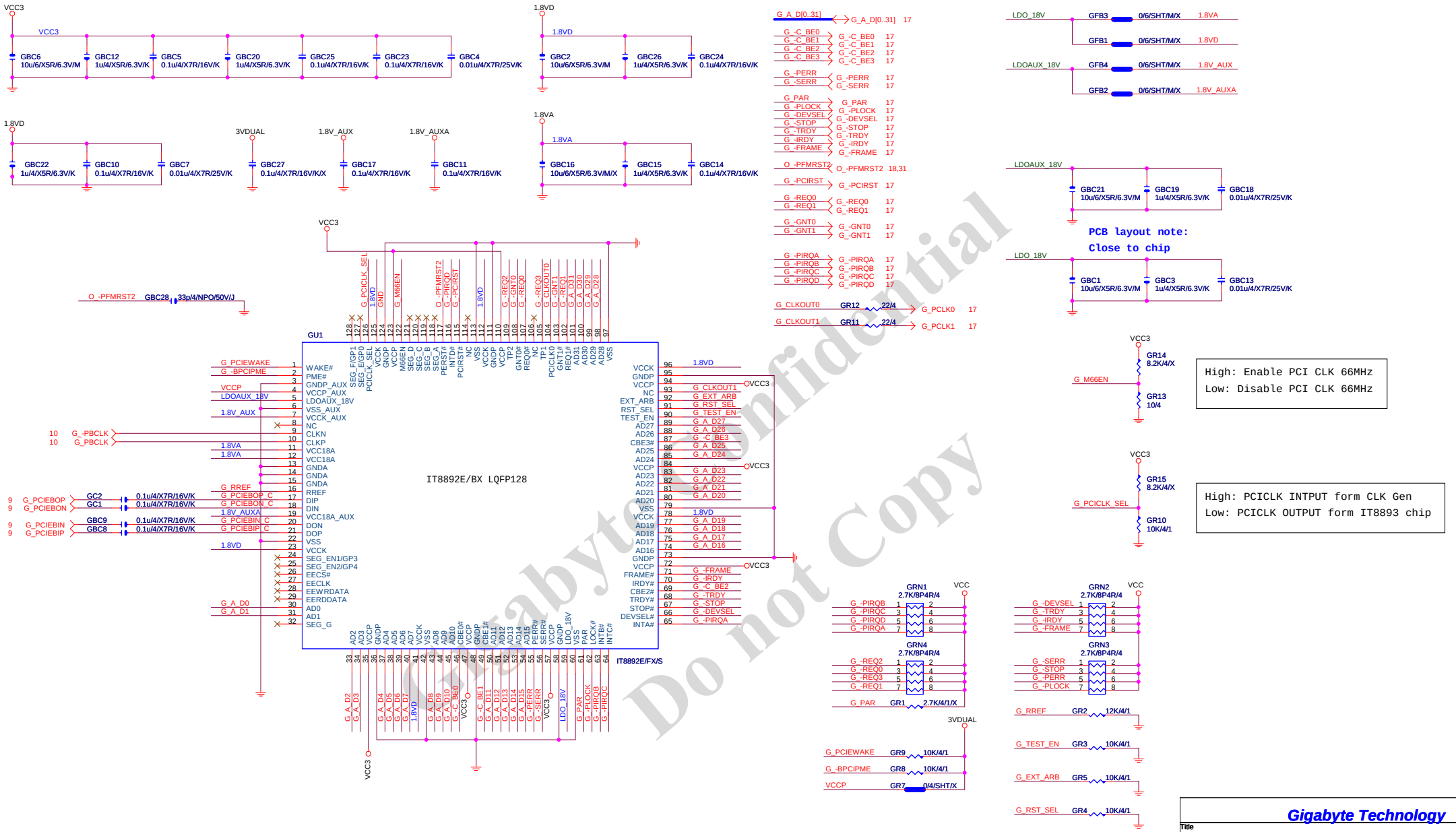
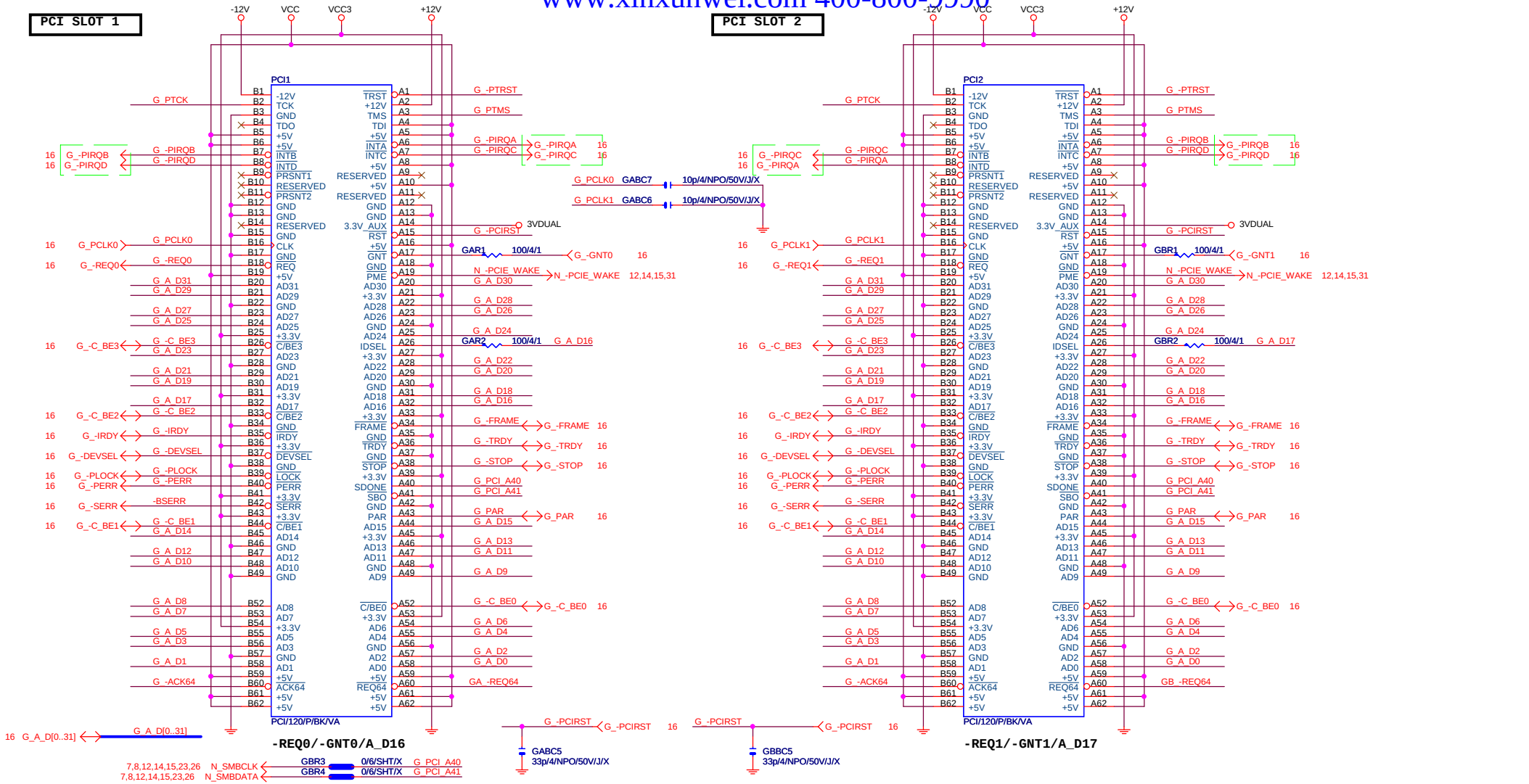


Gigabyte Technology		
Title: IT8892E		
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
Date: Thursday, February 20, 2014	Sheet 16 of 34	



SIO IT8728F

SYS_FAN3

CPU_OPT

CPU_FAN

SYS_FAN1

SYS_FAN2

IT8620E_BX

IT8620E/CX/S/[10HP2-118620-20R]

-PCIE_RST is OD in IT8728

EUP from PCH

PWR SHT

For 8728 EUP function

SIO PU

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

SIO STRAP

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

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

EUP control detect

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爲HDLED FUNCTION, GP93 BYPASS TO GP92
	高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾

DUAL BIOS OPT STRAP

Power leakage

SIO_18V

internal power pin, max 22nF cap

MB ID

SIO CAP

Gigabyte Technology

Title: ITE 8620 LPC IO

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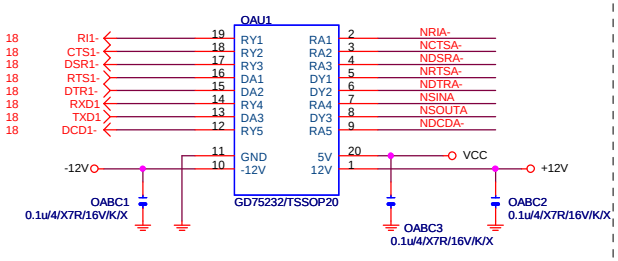
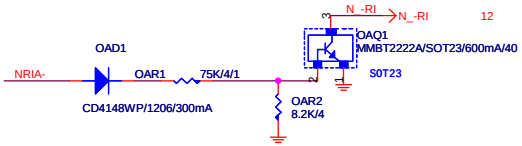
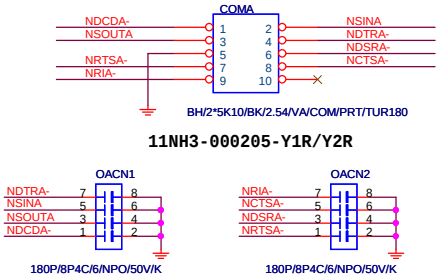
COMA



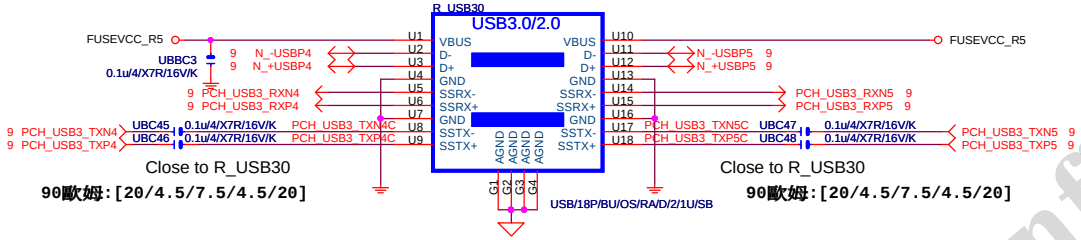
COM RI



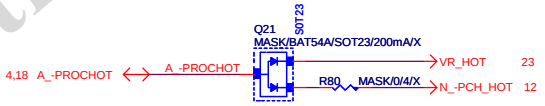
COM BUFFER



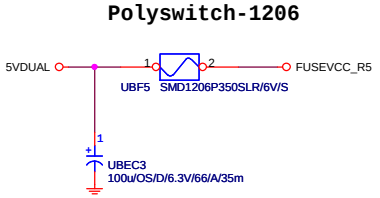
USB30_20 CONNECT



-PROHOT

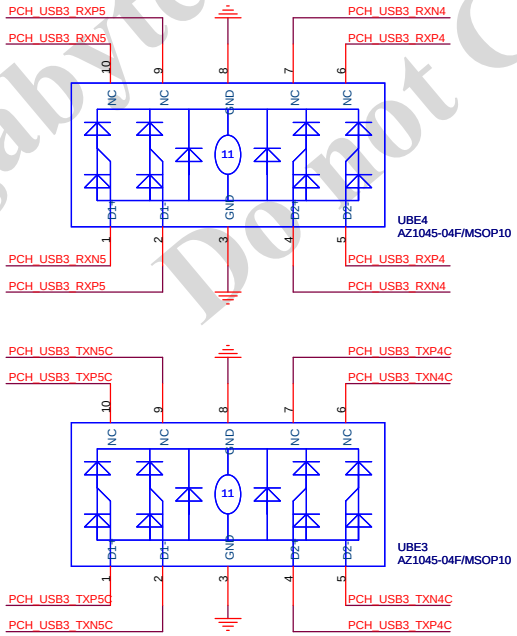


USB30 PWR



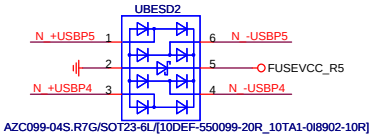
USB3.0 1Port - 1Fuse (3.5A)

USB30 ESD PROCTECT



Thunderbolt pin header

USB20 ESD PROCTECT



CLOSE R_USB30

AMC099加強版

Gigabyte Technology		
Title: COM/ PROHOT/ R_USB		
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DUAL BIOS

指定用DII

VCC3_ME
NR226 330/4/1
NR227 1K/4/1
NR228 0/4/X
NR239 0/4/X
NQ20 S0T23
NQ21 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_M
-SPI_CS_1
N_-ICH_SPI_CS
-SPI_HOLD_B NR229 8.2K/4

指定用DII

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

M_BIOS

NR4 0/4/SHT/M/X
NBC2 1u/4/X5R/6.3V/K
NC1 10p/4/NPO/50V/J/X
NR7 22/4
NR220 0/4/SHT/X
NR221 0/4/SHT/X
NR222 8.2K/4/X
NC2 10p/4/NPO/50V/J/X
-SPI_CS_1
SPI_MISO
SPI_DQ2
N_-SPI_WP0
-HOLD0
-SPI_HOLD_M
SPI_DQ3
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
CS# SO WP# VSS VDD HOLD# SCK SI
MAIN BIOS
64M/Q/SPI/SO8/S

B_BIOS

NR12 0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K
NR8 22/4
NR233 0/4/SHT/X
NR224 0/4/SHT/X
NR225 8.2K/4/X
-SPI_CS_2
SPI_MISO
SPI_DQ2
N_-SPI_WP1
-HOLD1
-SPI_HOLD_B
SPI_DQ3
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
CS# SO WP# VSS VDD HOLD# SCK SI
BACKUP BIOS
64M/Q/SPI/SO8/S
NBC4 0.1u/4/X7R/16V/K

MOSI For DMI RX Termination Voltage

N_ICH_SPI_MOSI	NR10	8.2K/4/X	
N_-ICH_SPI_CS	NR9	8.2K/4/X	
N_-ICH_SPI_CS1	NR246	8.2K/4/X	
-SPI_HOLD_M	NR3	1K/4/1	
-SPI_HOLD_B	NR11	1K/4/1	
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	
SPI_MISO	NR6	22/4	

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 68/8P4R/4
PRN3 68/8P4R/4
PRN1 68/8P4R/4
AFD- STB- PD0 INIT- ERR- ACK- BUSY PE SLCT PD[0..7]
LPT14 LPT1 LPT2 LPT16 LPT3 LPT17 LPT4 LPT5 LPT6 LPT7 LPT8 LPT9

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

PRN2 2.2K/8P4R/4
PRN6 2.2K/8P4R/4
PRN4 2.2K/8P4R/4
PRN7 2.2K/8P4R/4
PR1 2.2K/4/1

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改爲68 ohm。

LPT
BH/2*13K24/BK/2.54/VA

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

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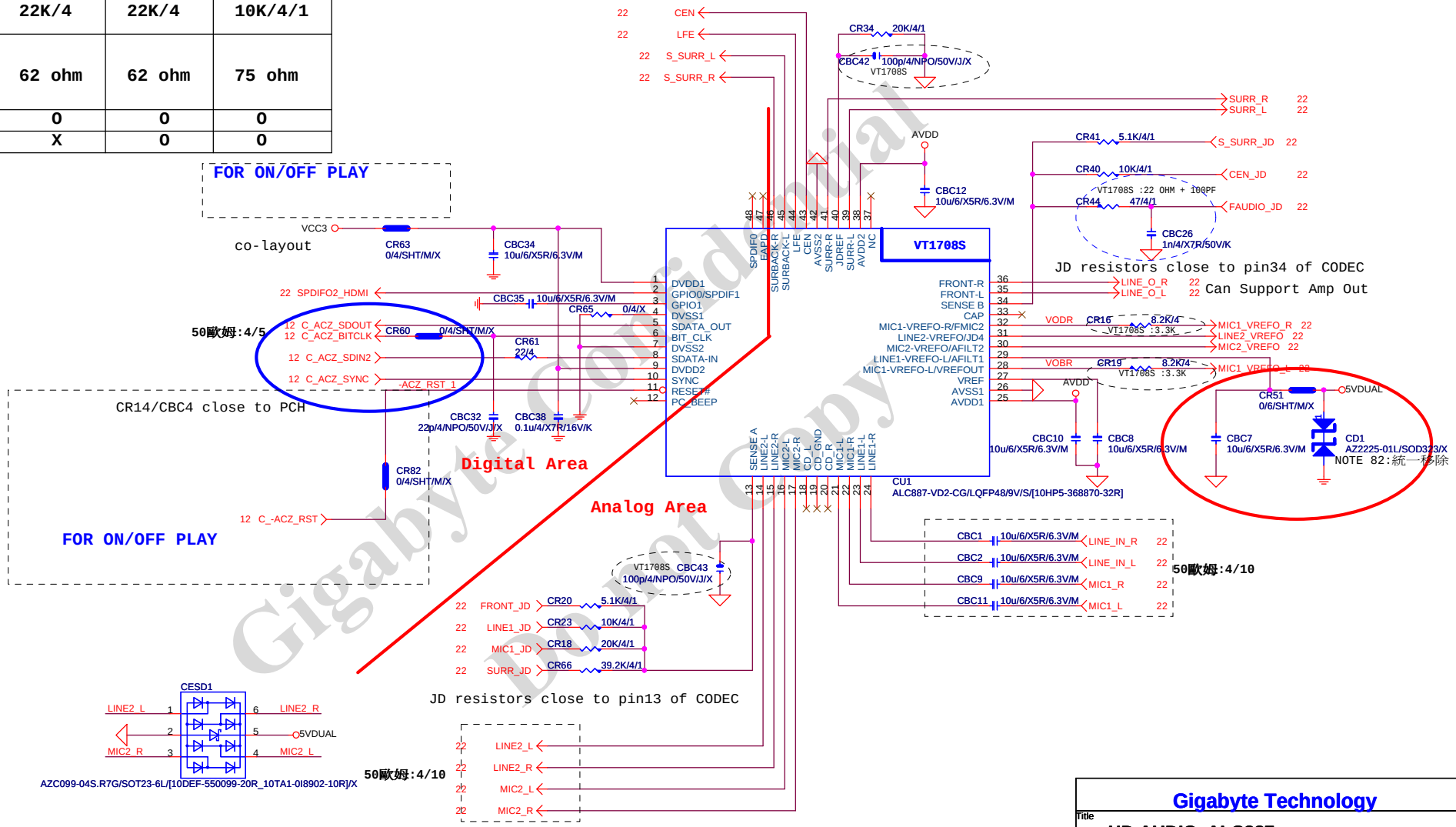
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	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

21 LINE_O_R — CEC1 100u/OS/D/6.3V/66/A/35m — CR5 62/4

21 LINE_O_L — CEC2 100u/OS/D/6.3V/66/A/35m — CR8 62/4

CR7 22K/4 — AJ_B5

CR6 22K/4 — AJ_B2

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

CBC24 180p/4/NPO/50V/J

Only reserved for ALC888

LINE-IN

21 LINE_IN_R — CR1 62/4 — AJ_A5

21 LINE_IN_L — CR14 62/4 — AJ_A2

CBC20 180p/4/NPO/50V/J

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

Verify MIC function in LINE-in

For 889A/888

MIC-IN

21 MIC1_R — CR17 62/4 — AJ_C5

21 MIC1_L — CR22 62/4 — AJ_C2

21 MIC1_VREFO_L

21 MIC1_VREFO_R

CBC3 180p/4/NPO/50V/J

CBC4 180p/4/NPO/50V/J

SURROUND

21 SURR_R — CEC10 100u/OS/D/6.3V/66/A/35m — CR73 62/4

21 SURR_L — CEC11 100u/OS/D/6.3V/66/A/35m — CR74 62/4

CR67 22K/4 — BJ_C5

CR68 22K/4 — BJ_C2

CBC44 180p/4/NPO/50V/J

CBC45 180p/4/NPO/50V/J

CEN/LFE

21 LFE — CEC12 100u/OS/D/6.3V/66/A/35m — CR75 62/4

21 CEN — CEC13 100u/OS/D/6.3V/66/A/35m — CR76 62/4

CR69 22K/4 — BJ_B5

CR70 22K/4 — BJ_B2

CBC46 180p/4/NPO/50V/J

CBC47 180p/4/NPO/50V/J

SURR BACK

21 S_SURR_R — CEC8 100u/OS/D/6.3V/66/A/35m — CR25 62/4

21 S_SURR_L — CEC4 100u/OS/D/6.3V/66/A/35m — CR47 62/4

EMI

CR43 22K/4 — BJ_A5

CR27 22K/4 — BJ_A2

CBC33 180p/4/NPO/50V/J

CBC31 180p/4/NPO/50V/J

SPDIF_OUT

21 SPDIFO2_HDMI — CR26 0/4/SHT/M/X — SPDIF_O

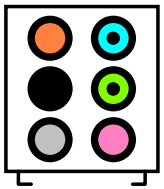
CBC14 100p/4/NPO/50V/J

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

For HDMI SPDIF

SPDIF_IN

AZALIA JACK



AUDIOB

21 LINE1_JD — LINE1_JD — AJ_A5 — AJ_A2 — LINE-IN

21 FRONT_JD — FRONT_JD — AJ_B5 — AJ_B2 — LINE-OUT

21 MIC1_JD — MIC1_JD — AJ_C5 — AJ_C2 — MIC-IN

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

BLUE LINE-IN

GREEN LINE-OUT

PINK MIC-IN

AUDIOA

21 CEN_JD — CEN_JD — BJ_B5 — BJ_B2 — REAR

21 SURR_JD — SURR_JD — BJ_C5 — BJ_C2 — CEN

21 S_SURR_JD — S_SURR_JD — BJ_A5 — BJ_A2 — SIDE

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

Orange CEN/LFE

Black SURROUND

Gray SURROUND SIDE

AZALIA FRONT PANEL

CQ4 BAT54A/SOT23/200mA

21 LINE2_VREFO

CQ2 BAT54A/SOT23/200mA

21 MIC2_VREFO

VT1708S :3.3K

CR52 8.2K/4

CR56 8.2K/4

CR10 8.2K/4

CR9 8.2K/4

VCC3

CR78 8.2K/4/X

CR58 22K/4

CR54 22K/4

F_AUDIO

21 MIC2_L — CBC6 10u/6/X5R/6.3V/M — CR13 62/4 — M2_L

21 MIC2_R — CBC5 10u/6/X5R/6.3V/M — CR11 62/4 — M2_R

L2_R CR57 62/4 L2-R

21 FAUDIO_JD

L2_L CR53 62/4 L2-L

CR55 20K/4/1

CR59 39.2K/4/1

CR12 0/4/X

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

21 LINE2_R — CEC9 100u/OS/D/6.3V/66/A/35m — L2_R

21 LINE2_L — CEC6 100u/OS/D/6.3V/66/A/35m — L2_L

CBC30 180p/4/NPO/50V/J

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

CBC37 180p/4/NPO/50V/J

CBC36 180p/4/NPO/50V/J

Gigabyte Technology

Title: AUDIO JACK

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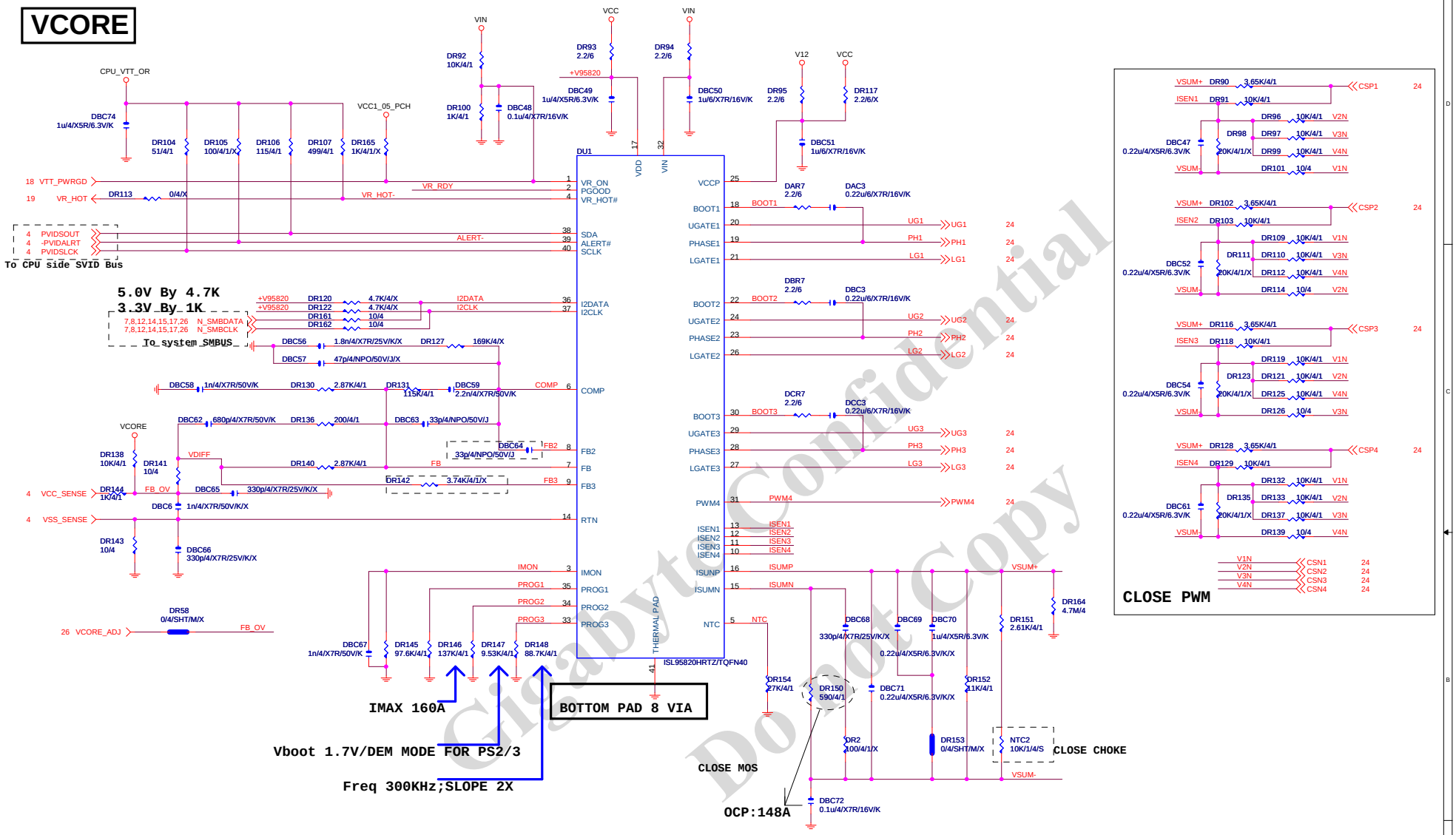
VCORE



Gigabyte Technology			
Title: VCORE_ ISL95820			
Size: Custom	Document Number: GA-H97-HD3		Rev: 1.0
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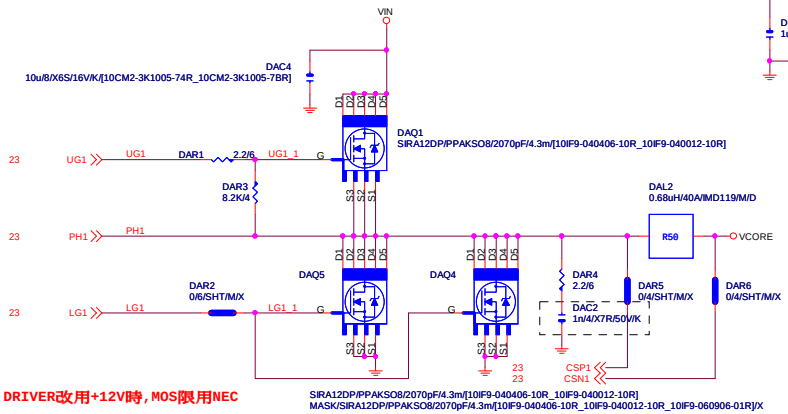
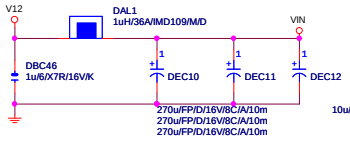
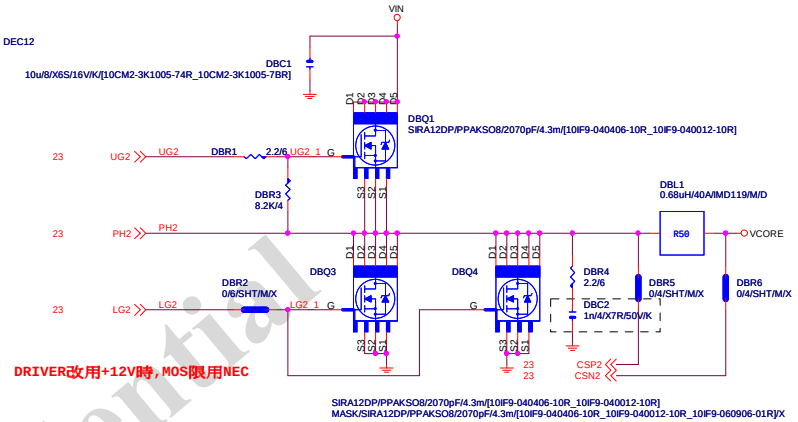
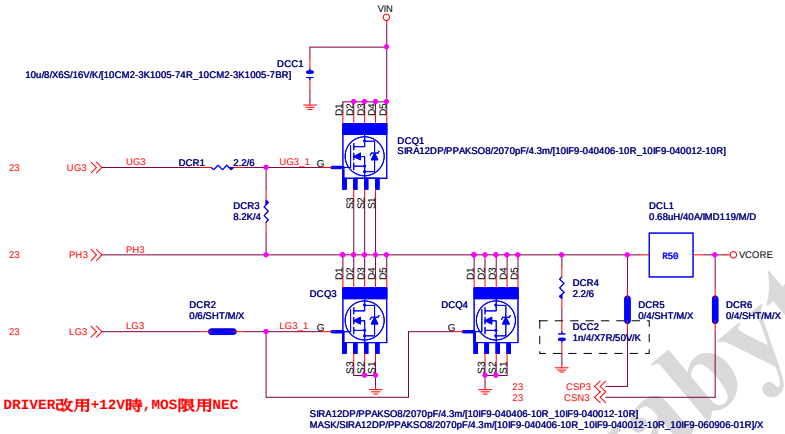
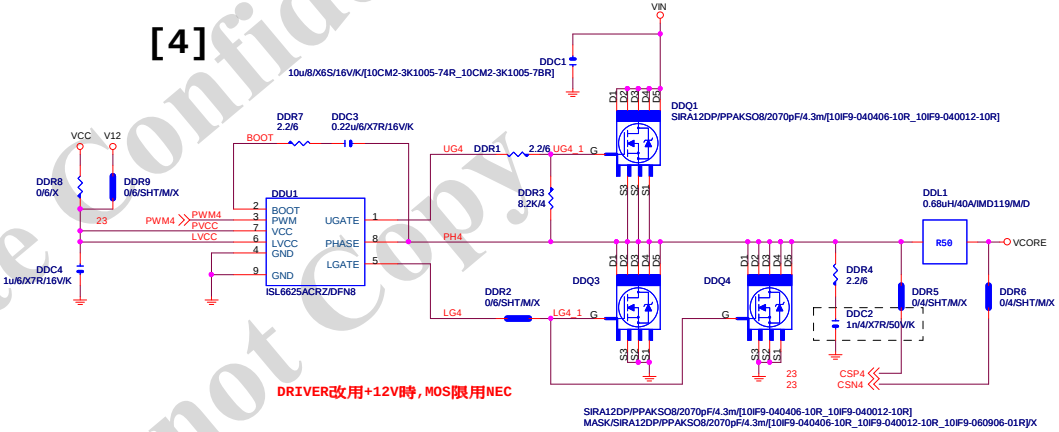
VCORE



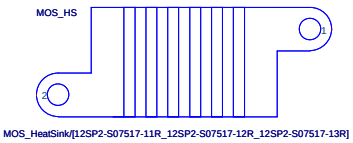


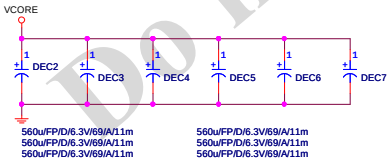






MOSFET HEATSINK





Gigabyte Technology		
Title	ISL95820_2	
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VCC1_05_ME

1A MAX

5VDUAL 3VDUAL

R660 8.2K/4/X

U8 RT9018B-18GSP/SO8/3A

POK GND EN FB VIN VOUT CNTL PGOD REFIN

1_05ME_EN

R664 2.2/6

BC210 1u/4/X5R/6.3V/K 10u/6/X5R/6.3V/M

BC211

BC212 10u/6/X5R/6.3V/M

VCC1_05_ME

R1

R662 100K/4/1

BC207 180p/4/NPO/50V/J

BC208 10u/6/X5R/6.3V/M

BC209 1u/4/X5R/6.3V/K

R665 300K/4/1

R2

VOUT=0.8*[(R1+R2)/R2]

【技術通報R&D技術通報156】

VCC1_05_ME BC217 22u/8/X5R/6.3V/M

VCC1_05_ME BC213 10u/6/X5R/6.3V/M

1_05ME_EN R670 0/4/SHT/M/X

11,12 N_-SLP_A R671 22K/4

C205 1u/4/X5R/6.3V/K

VCC3_ME

5VDUAL

R661 8.2K/4

C202 1u/4/X5R/6.3V/K

ME_G R663 220/6

Q80 PMBT2907A/SOT23/-600mA/50 SOT23

3VDUAL

VCC3_ME

11,12 N_-SLP_A R666 75K/4/1

C203 1u/4/X5R/6.3V/K

SOT23 Q81 2N7002/SOT23/25pF/5

R667 220/6

Q82 PMBT2907A/SOT23/-600mA/50 SOT23

3VDUAL

VCC3_ME BC214 10u/6/X5R/6.3V/M

VCC3_ME BC215 10u/6/X5R/6.3V/M

DDR_15V

+12V 5VDUAL

MA_D1 SDM20E40C/0.4A/SOT23

MA_DR8 2.2/6

MA_DRV

MA_D2 BAT54C/SOT23/200mA/X

MA_DC10 1u/6/X7R/16V/K

MA_DC9 0.1u/6/X7R/25V/K

5VDUAL ML2 1uH/36A/IMD109/M/D

MA_VIN

MA_DC6 0.1u/4/X7R/16V/K Close Choke

MA_DC7 1u/6/X7R/16V/K Close MOS

MAEC1 560u/FP/D/6.3V/69/A/11m

MAEC2 560u/FP/D/6.3V/69/A/11m

MA_DQ1 SiRA18DP-T1/PPAKSO-8/1000pF/7.5m/[10IF9-070410-00R_10IF9-070018-01R]

MA_UGATE MA_DR1 2.2/6

MA_DR2 8.2K/4

MA_PHASE

MA_LGATE

MA_DQ2

MA_DQ3

ML1 1uH/36A/IMD109/M/D

DDR_15V

25A MAX

MA_DR5 2.2/6

MA_DC5 1n/4/X7R/50V/K

MA_DR14 487/4/1

MA_DR13 2K/4/1

MA_DC14 3.3n/4/X7R/50V/K RS

SiRA18DP-T1/PPAKSO-8/1000pF/7.5m/[10IF9-070410-00R_10IF9-070018-01R]

SiRA18DP-T1/PPAKSO-8/1000pF/7.5m/[10IF9-070410-00R_10IF9-070018-01R]

MA_DR16 20K/4/1/X

DDR_EN

MA_DR15 27K/4/1

MA_DC15 22p/4/NPO/50V/J

MA_DC16 3.3n/4/X7R/50V/K

MA_DR17 0/4/X

DA_DR3 0/4/SHT/M/X

MAU2 RT8120DGS/SOP8

COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC

MA_UGATE MA_PHASE MA_LGATE

MA_DR18 20K/4/1

放靠近IC pin4

DDR15V_ADJ

26 DDR15V_ADJ

RO MA_DR12 2.26K/4/1

Remote sense請從最重的負載端點拉回

0.8*(1+RS/RO) = Vout

0.8*[1+2K/2.26K)] = 1.509V

PWR SEQ

DDR_EN DDR_EN_CON 18

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

DDR_15V

MAC2 1u/4/X5R/6.3V/K

MAR5 1K/4/1

MAU1 RT9173DPSP/3A/SO8/S

VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL

VCC

26 MA_VTT_REF MA_VTT_REF

MAC1 1u/4/X5R/6.3V/K

MAR4 1K/4/1

MAC7 10u/6/X5R/6.3V/M

DDRVTT

1.1A MAX

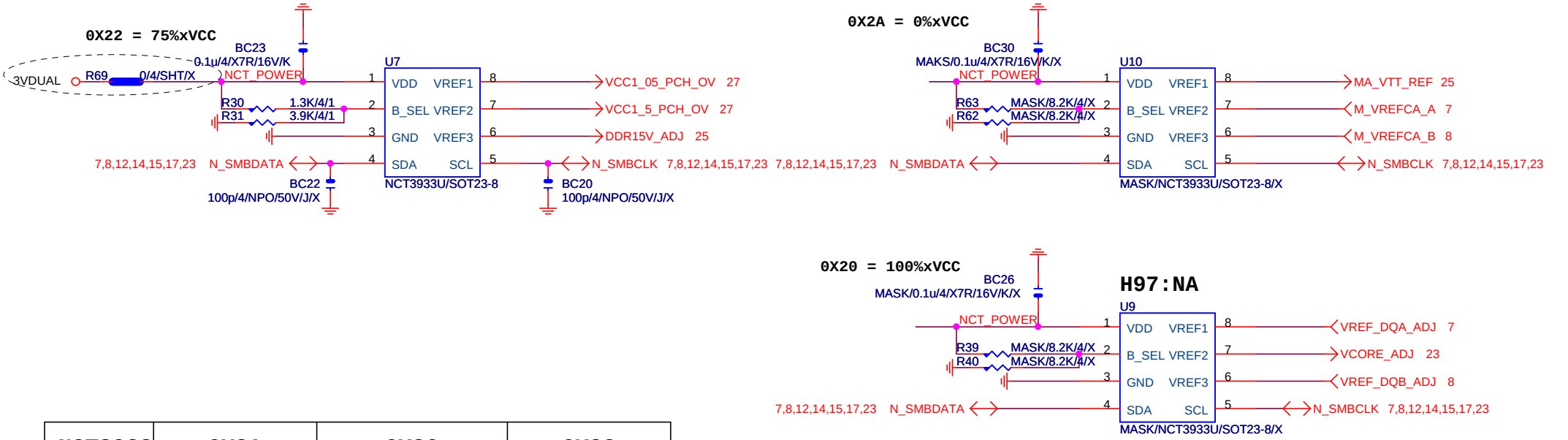
GIGABYTE™

Title: DDR15V / M3 POWER

Size: Custom | Document Number: GA-H97-HD3 | Rev: 1.0

Date: Wednesday, March 05, 2014 | Sheet 25 of 34

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

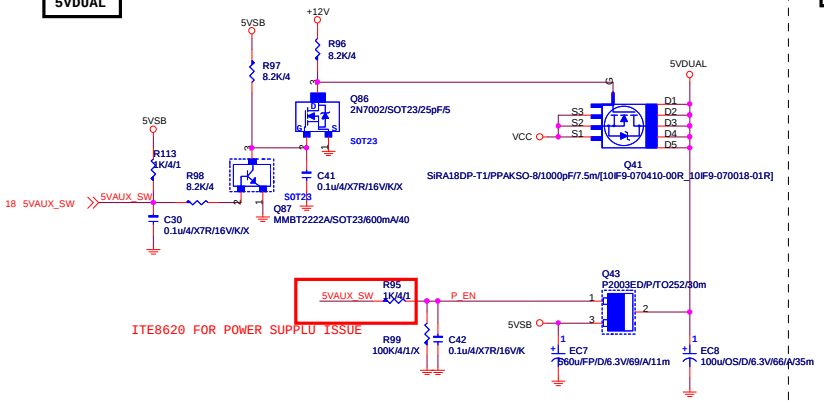
Gigabyte Technology

Title: CPU CORE VR-2

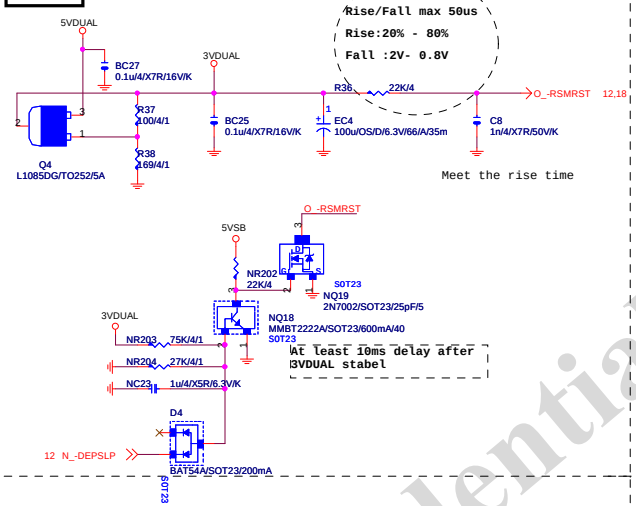
Size: Custom | Document Number: GA-H97-HD3 | Rev: 1.0

Date: Thursday, February 20, 2014 | Sheet 26 of 34

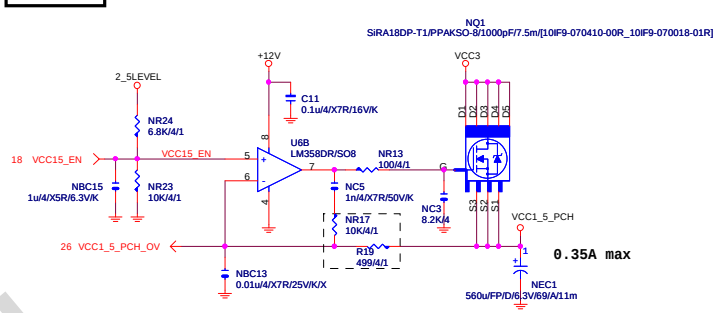
5VDUAL



3VDUAL

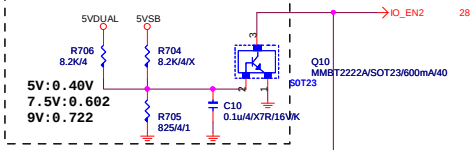


VCC1_5_PCH

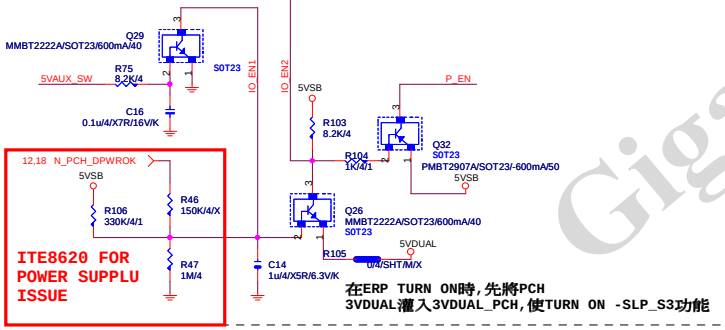


5VSB OVP:7.5V protection

NOTE 82:改5V DUAL,6v保護

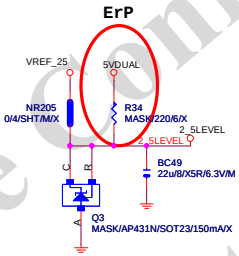


5VDUAL SHORT PROTECT

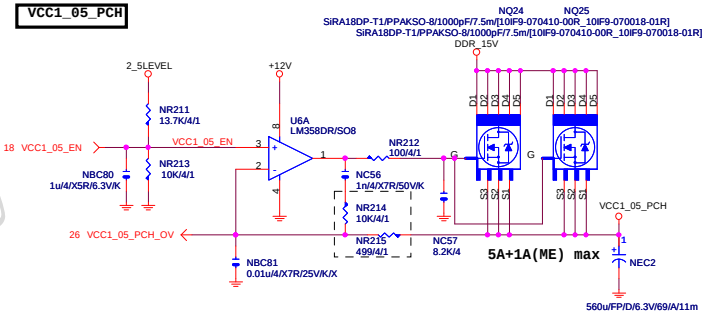


PCH ERP

2_5LEVEL



VCC1_05_PCH



PWR SEQ

Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
Date: Wednesday, March 05, 2014	Sheet 27 of 34	

Front USB3.0

F_USB30 REV=1

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

F_USB30 PWR

F_USB30 ESD PROTECT

Close to connector

Close to connector

SATA LED

SPKR

To disable TCO timer

FRONT USB1

Close to connector

FRONT USB2

Close to connector

FRONT USB3

AMC099加強版

AMC099加強版

INTEL FRONT PANEL

CASE OPEN

-USBOC_F

F_USB POWER PROTECT

USB2.0 Signal & power short protection

USB2.0 Signal > 4.85V

Enable --> 3VDUAL=3.5V

(開機短路保護)

(關機短路保護)

ALL MASK

Gigabyte Technology	
Title	FP,F_USB,USB PWR,BZ
Size: Custom	Document Number: GA-H97-HD3
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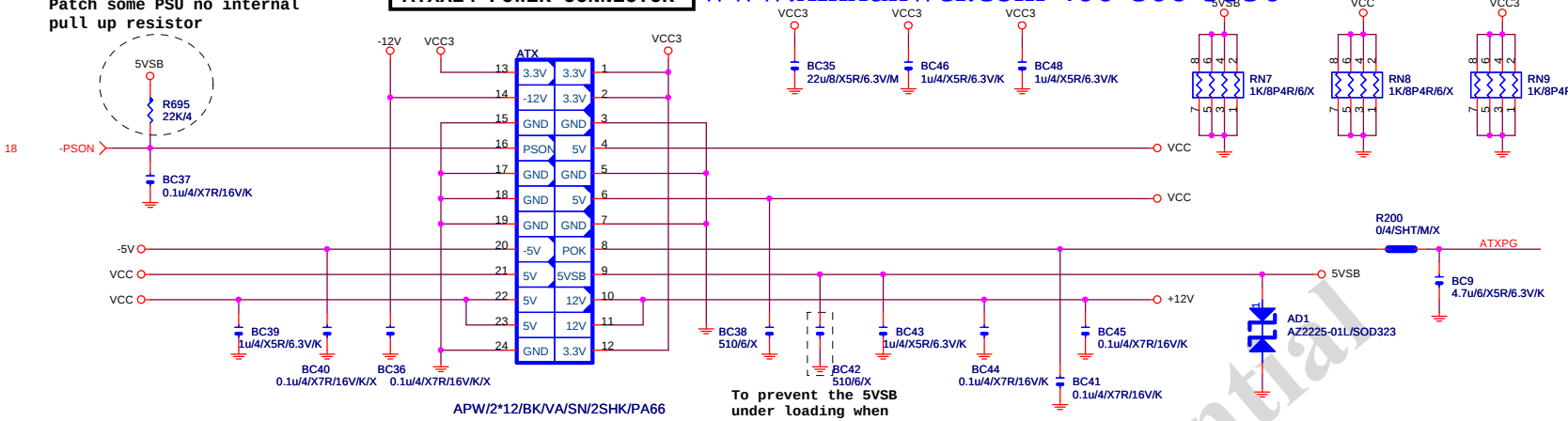
ATXX24 POWER CONNECTOR

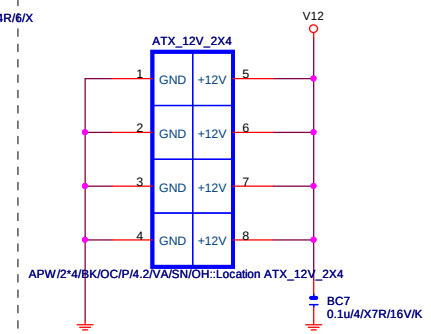
Patch some PSU no internal pull up resistor

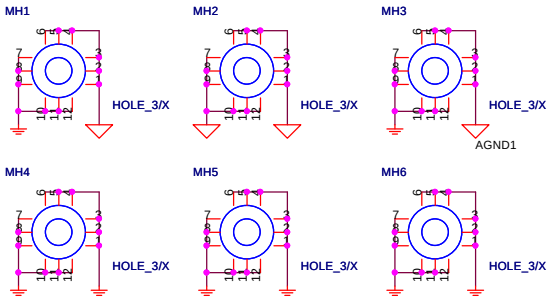


APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR





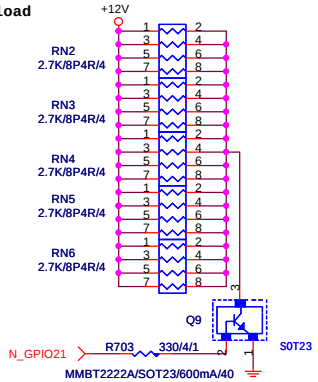
HOLE_4-RH-1

K1-ICT

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue



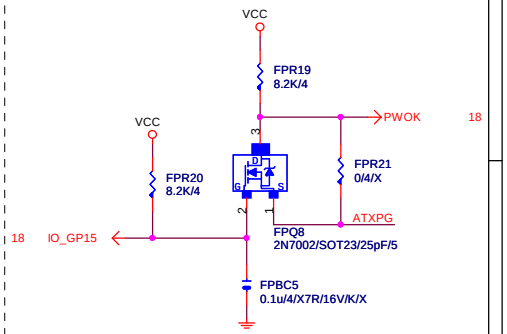
CLK GEN

CPU Frequency Selection

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

PWOK PATCH

【技術通報R&D技術通報154】



Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
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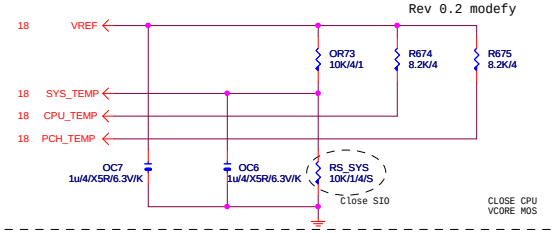
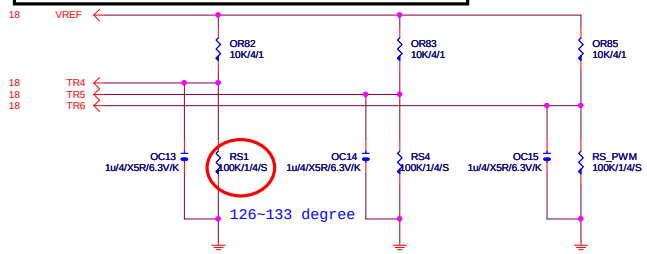
TEMP H/W MONITOR

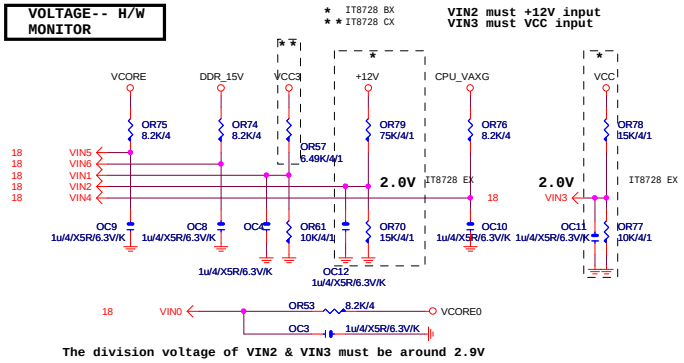


-PROCHOT:有mos heartsink不用prochot function



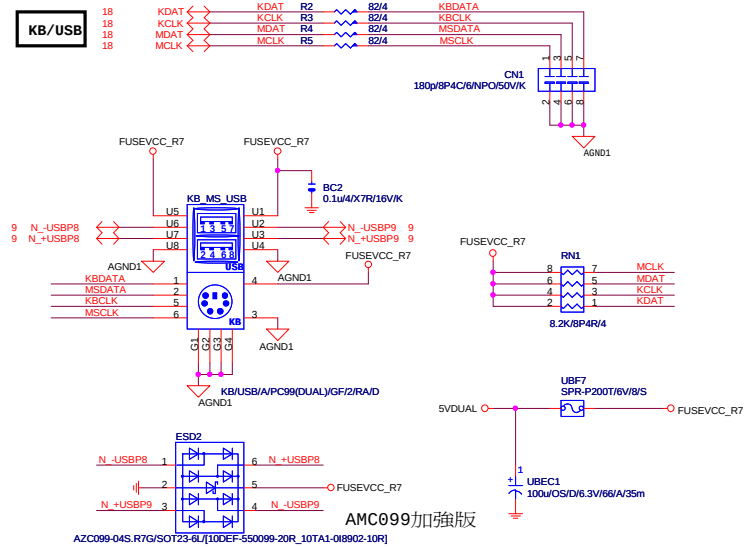
RS1、RS2、RS3 CLOSE CPU VR MOSFET

VOLTAGE-- H/W MONITOR

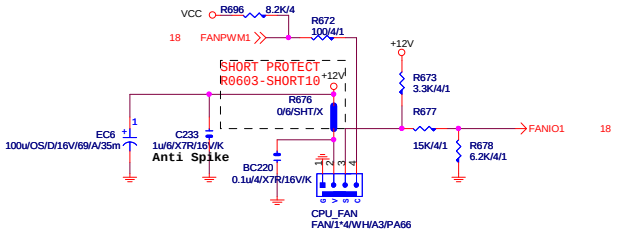


The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB



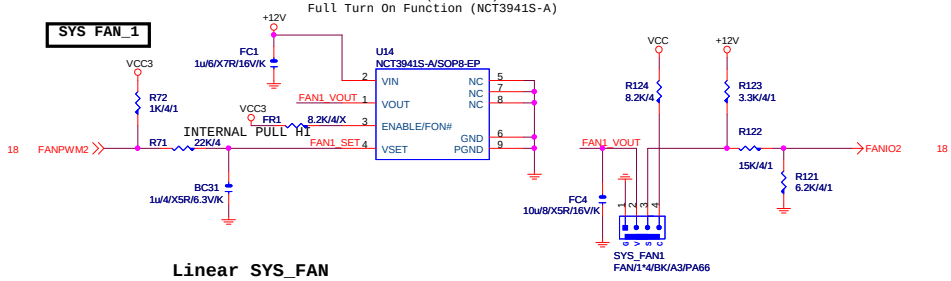
CPU_SMART_FAN



Linear SYS_FAN

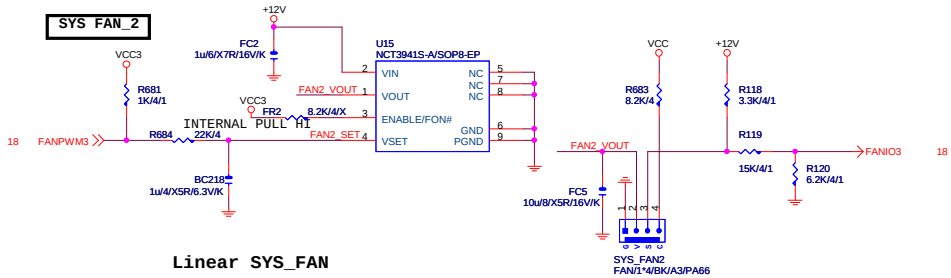
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)

SYS FAN_1



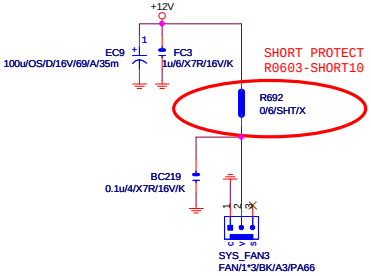
Linear SYS_FAN

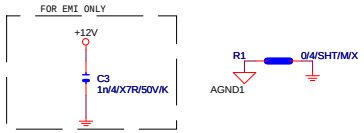
SYS FAN_2



Linear SYS_FAN

SYS FAN_3





Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
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LAN:INTEL I217

VDD33

LR12 1K/4/1

LR18 2.49K/4/1

FOR DSM MODE

(DEEP SLUMBER MODE)

Dual Color LED

D4 D3 Green

D4 D3 Orange

VDD33

LR16 0/6/SHT/M/X

ENSWREG

ENABLE SW

Single Color LED

D2 D1 Yellow

LU1

100歐姆:[20/4/8/4/20]

GND

MDIP0 MDIN0 AVDD10 MDIP1 MDIN1 AVDD10(NC) MDIP2(NC) MDIN2(NC) AVDD10(NC) MDIP3(NC) MDIN3(NC) AVDD33(NC)

LB_MDI0+ LB_MDI0- DVDD10 LB_MDI1+ LB_MDI1- DVDD10 LB_MDI2+ LB_MDI2- DVDD10 LB_MDI3+ LB_MDI3- VDD33

REGOUT VDDREG VDDREG ENSWREG EEDI LED3/EEDO EECS DVDD10 LANWAKEB DVDD33 ISOLATEB PERSTB

AVDD33_REG LR15 1/6 VDD33

LBC23 LBC24 22u/8/X5R/6.3V/M 0.1u/4/X7R/16V/K

LR13 8.2K/4 LB_LED_LINK1000

LR6 8.2K/4

N_-PCIE_WAKE 12,14,15,17

VDD33

ISOLATEB

O_-PFMRST2 16,18

LBC2 100p/4/NPO/50V/J

VCC3

LR4 1K/4/1

ISOLATEB 18

LR5 15K/4/1

RTL8111F-VL-CG/QFN48

XTALI_P XTALO_P

LX1 25M/16p/30ppm/49US/20/D

LC3 20p/4/NPO/50V/J

LC4 20p/4/NPO/50V/J

80歐姆:[15/5/5/5/15]

LB_ML_OP LB_ML_ON LB_SRCCLK_LAN LB_-SRCCLK_LAN LB_ML_IP LB_ML_IN

LBC12 LBC16 LBC6 LBC8 0.1u/4/X7R/16V/K

LB_RP LB_RN LB_TP LB_TN

離IC近越好

SRCCLK 50歐姆:[18/4/10/4/18]

P35-152-19W9

U4 U3 U2 U1 U8 U7 U6 U5 (-,+)

L1 L3 L5 L7 L9 L2 L4 L6 L8 L10

D1 D2 D3 D4

YELLOW ORANGE GREEN

3VDUAL VDD33

LBC29 22u/8/X5R/6.3V/M LBC7 LBC17 LBC15 LBC4 LBC22 LBC14 0.1u/4/X7R/16V/K

(CLOSE LU1)

DVDD10

LBC11 LBC10 LBC13 LBC5 LBC19 LBC18 LBC9 0.1u/4/X7R/16V/K

(PIN3,6,9,13,29,41,45)

LL1 4.7uH/1210/1250mA/0.1/S

REGOUT

CLOSE LL2

DVDD10

LBC20 22u/8/X5R/6.3V/M LBC21 0.1u/4/X7R/16V/K

LFB1 0/6/SHT/M/X EVDD10

LBC3 1u/4/X5R/6.3V/K LBC1 0.1u/4/X7R/16V/K

(PIN21)

USB30_LAN CONNECTOR

LBESD1 LB_LED_LINK100 LB_D2 LB_D2_1 LB_LED_LINK1000 LB_LED_ACT_TXRX

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

LBESD2 LB_MDI1- LB_MDI1+ FUSEVCC_R1 LB_MDI0+ LB_MDI0-

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

LBESD3 LB_MDI3- LB_MDI3+ FUSEVCC_R1 LB_MDI2+ LB_MDI2-

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

UBESD1 N_+USBP3 N_-USBP3 FUSEVCC_R1 N_-USBP2 N_+USBP2

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

CLOSE USB30_LAN

AMC099加強版

100歐姆:[20/4/8/4/20]

USB30_LAN

USB3+LAN/1G/GO,Y/OS/RA/D/G30/[11NR6-702009-K1R_11NR6-702009-K4R]

1u/4/X5R/6.3V/K/X LBC25

LB_MDI0+ LB_MDI0- LB_MDI1+ LB_MDI1- LB_MDI2+ LB_MDI2- LB_MDI3+ LB_MDI3-

0.1u/4/X7R/16V/K LBC26

FUSEVCC_R1

N_-USBP2 N_+USBP2

PCH_USB3_RXN2 PCH_USB3_RXP2

PCH_USB3_TXN2 PCH_USB3_TXP2

UBC5 UBC6 0.1u/4/X7R/16V/K PCH_USB3_TXN2C PCH_USB3_TXP2C

D1 D2 D3 D4 P1 P2 VBUS D- D+ GND SSRX- SSRX+ SSTX- SSTX+

LB_LED_ACT_TXRX LB_D2 LB_LED_LINK100 LB_LED_LINK1000

LR10 150/6/1 LB_D2_1

3VDUAL

90歐姆:[15/4.5/7.5/4.5/15]

FUSEVCC_R1

LBC30 0.1u/4/X7R/16V/K

N_-USBP3 N_+USBP3

PCH_USB3_RXN3 PCH_USB3_RXP3

UBC8 UBC7 0.1u/4/X7R/16V/K

PCH_USB3_TXN3 PCH_USB3_TXP3

5VDUAL

UBF10 SMD1206P350SLR/6V/S

FUSEVCC_R1

CLOSE USB30_LAN

PCH_USB3_RXP3 PCH_USB3_RXN3 PCH_USB3_TXN3C PCH_USB3_TXP3C

UBE1 AZ1045-04F/MSOP10

PCH_USB3_RXP2 PCH_USB3_RXN2 PCH_USB3_TXP2C PCH_USB3_TXN2C

UBE2 AZ1045-04F/MSOP10

-USBOC_R

SOT23

FUSEVCC_R1 FUSEVCC_R5

UBD1 BAT54A/SOT23/200mA

FUSEVCC_R7

UBR7 8.2K/4

UBR9 15K/4/1

N_-USBOC_R N_-USBOC_R 9,28

LR1 0/4/SHT/M/X

LAN

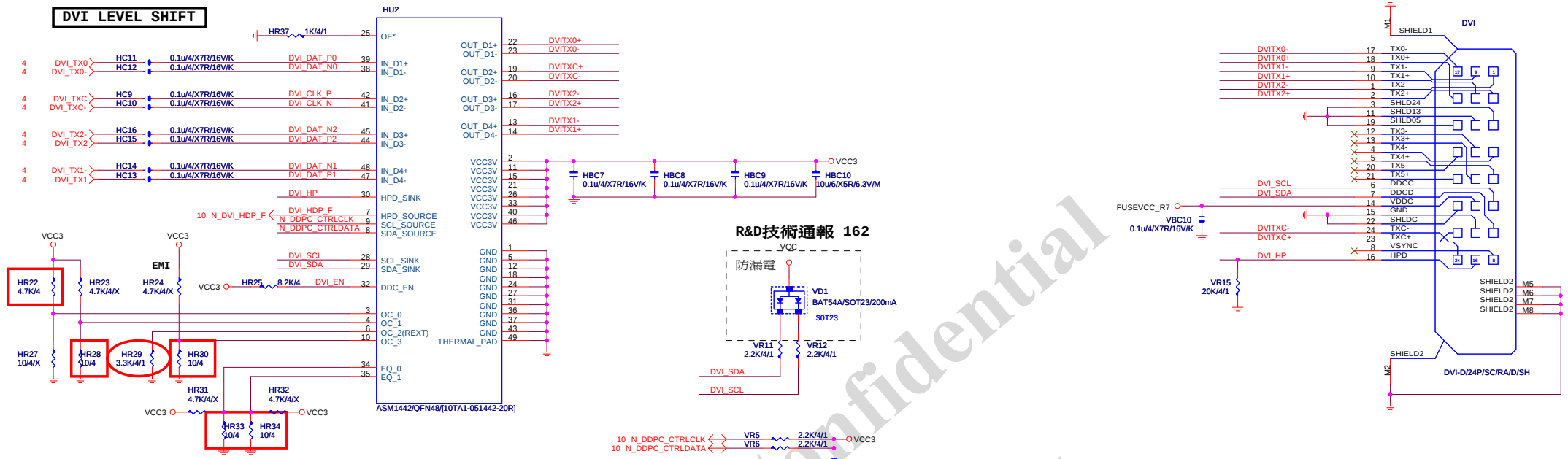
RBR20 0/4/SHT/M/X

USB_LAN <--> R_USB30_1

Title	Gigabyte Technology	
	INTEL LAN I217	
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
Date: Thursday, February 20, 2014	Sheet 31 of 34	

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

DVI LEVEL SHIFT

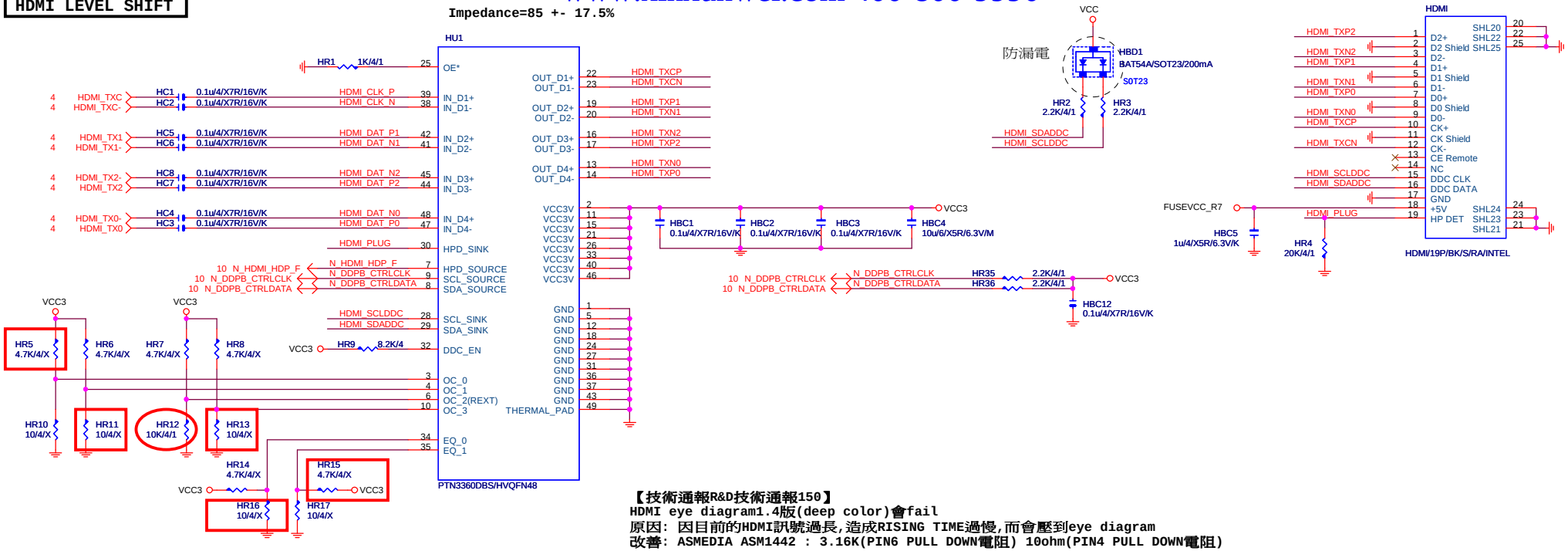


R&D技術通報 162

Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-H97-HD3	Rev: 1.0
Date: Thursday, February 20, 2014	Sheet 32 of 34	

HDMI LEVEL SHIFT

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



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

【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: GA-H97-HD3	Rev: 1.0
Date: Thursday, February 20, 2014	Sheet 33 of 34	

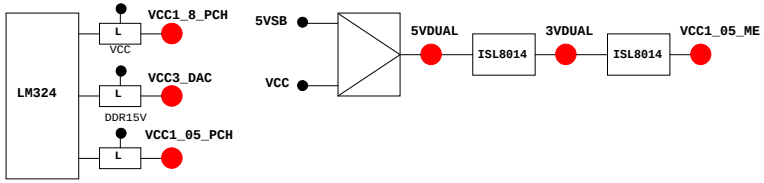
PCH GPIO LIST TABLE

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

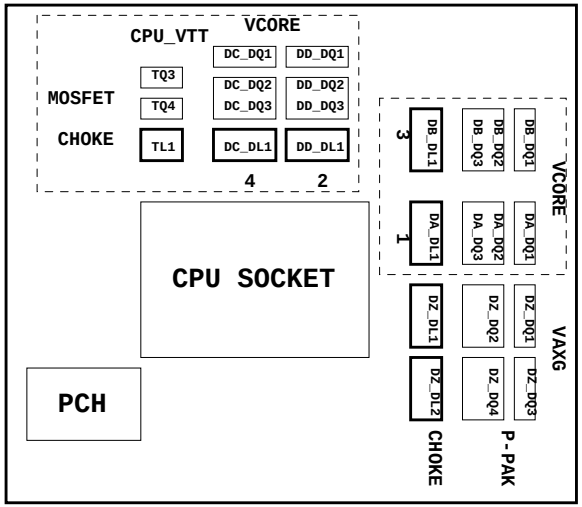
Super I/O ITE8720 GPIO Table

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
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