Model Name: GA-H97M-D3H

Revision 1.1

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 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*4 SLOT
16	PCI SLOT1,2
17	ITE 8620 LPC IO
18	COM,KB_MS_USB,USB30_20
19	HWM,FAN CTRL,OV,-PROCHOT
20	DUAL BIOS
21	FP,FUSB,SPK,SATALED
22	Realtek ALC892-GR
23	REAR AUDIO JACK
24	REALTEK RTL8111G
25	DISCRETE POWER
26	ATX ,TPM
27	VCORE ISL95820_1

SHEET	TITLE
28	VCORE ISL95820_2
29	RT8120_DDR POWER
30	LPT, M3 POWER
31	DVI, HDMI
32	IT8892E

Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-H97M-D3H | Rev: 1.1

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Model Name: GA-H97M-D3H

Revision 1.1

Component value change history

2014/09/15

Data	Change Item	Reason
2013/12/09	機構變更MOS_HS尺寸:長度大小由89修改為79mm,孔大小由D3mm修改為D4mm	
2013/12/11	MR.LIN:移除1 PORT 1 FUSE規格	
2013/12/12	MR.LIN:移除DVI LEVEL SHIFTER改成COSTDOWN設計方式	
2013/12/20	HDD LED/FUSB3.0 ESD PROTECTOR	
2013/12/24	MODIFY AP NOTE	
2013/12/26	MODIFY AP NOTE:USB防燒,IT8620斜插ISSUE	
2013/12/27	R0.1 GERBER OUT	
2014/1/13	AP NOTE:DVI LEVEL SHIFTER改回	
	PCH_HS,MOS_HS:9 SERIES	
	加回AP431 BOM VCC1_5_PCH_OV	
2014/1/16	AP NOTE(UATX):DVI LEVEL SHIFTER移除,BIOS DRIVING 800mV 2dB	
	BIOS_PH移除	
2014/1/27	COSTDOWN:5VDUAL-->FUSEVCC_R2,DEL UD7 BAT54A	
2014/1/28	AP NOTE:移除F_USB保護線路及AP431	
2014/2/10	CPU_FAN PIN2增加C319 0.1U/4/X7R/16V/K	
	Q47,Q48:2N7002 GATE~VCC3	
	FOOT MASK:ME PWROK,USB2.0 PROTECT,2_5LEVEL,VCC1_05_ME,VCC3_ME	
2014/2/18	NR177:SHT PAD;C136:0.1u/6/X7R/25V/K	
	Z97 Vcore High /low side Vishay: 10IF9-050014-01R SiRA14DP-T1 Non-Vcore High /low side Vishay: 10IF9-070018-01R SiRA18DP-T1	
2014/2/19	R1.0 GERBER OUT	
2014/04/11	Update Z97 Chipset 料號 [10HB1-030Z97-20R]	
2014/04/25	Update DDR RC	PBOM: 9MH97MD3H-00-10C
	R396: 27K -> 20K	
	R657: 487 -> 680	
	R380: 2.26K -> 2.15K	
2014/06/23	Update to R1.01	
	Remove SATA MLCC	

Circuit or PCB layout change

DATE	Change Item	Reason
2014/09/03	8111F > 8111G	
	Solid Cap > Audio Cap	
	U3 > U3 15KV	
	線路cost down	
2014/09/10	COSTDOWN:DEL	
	DDR input 560u/6.3V *2PCS, ,改用1pcs.	
	Fan刪100u	
2014/09/10	FOOTPRINT:XTALS-RH-N	

Gigabyte Technology			
Title: BOM & PCB MODIFY HISTORY			
Size: Custom	Document Number: GA-H97M-D3H		Rev: 1.1
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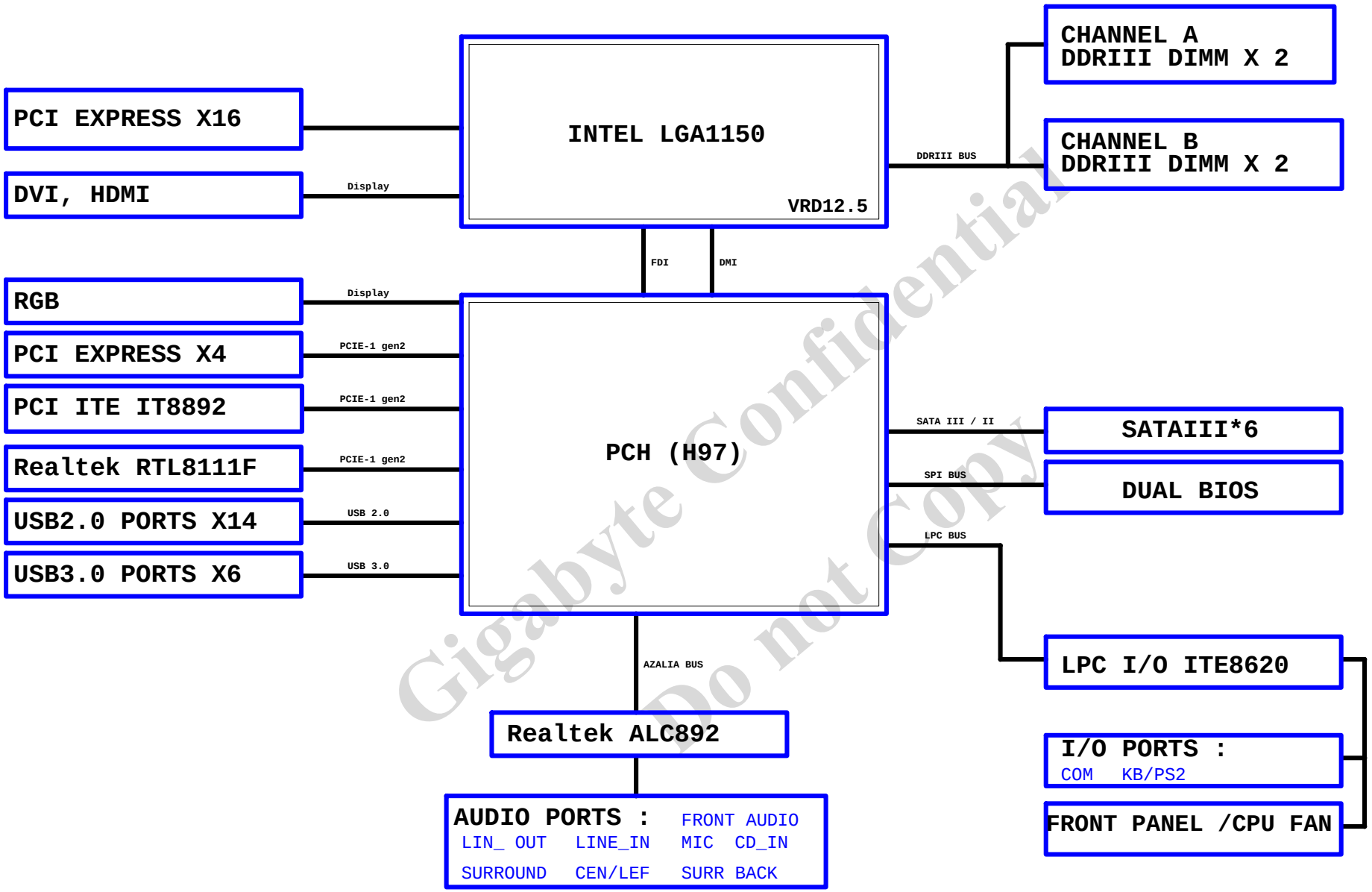
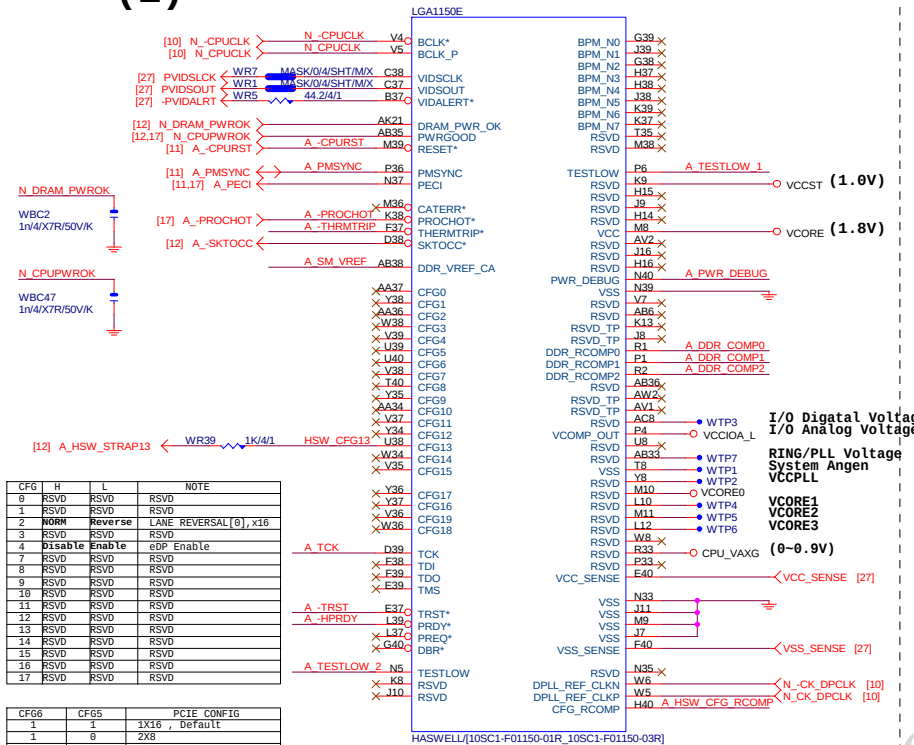
BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-H97M-D3H		Rev: 1.1
Date: Tuesday, September 16, 2014	Sheet 3 of 32		

LGA1150 (E)



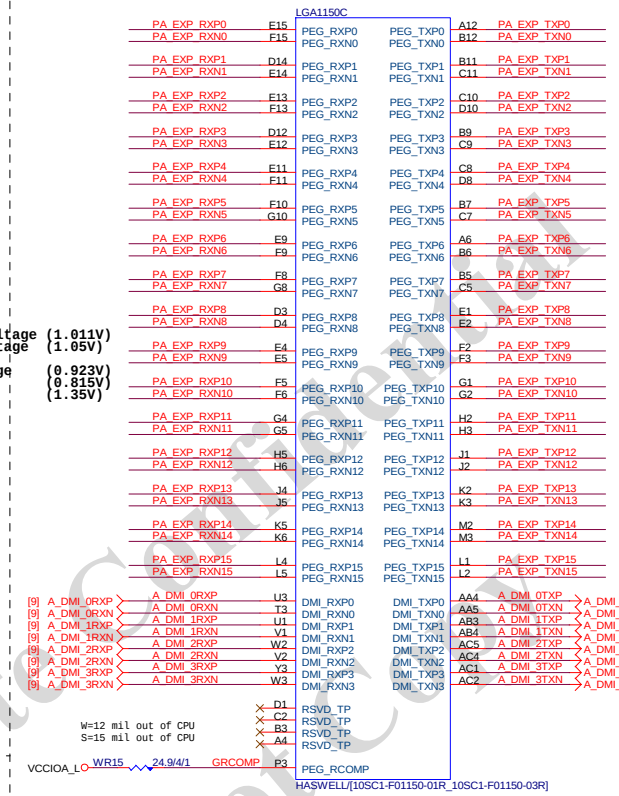
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD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

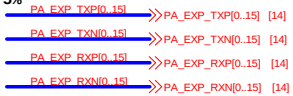
CFG 0-17 all internal PULL-UP

LGA1155 (C)

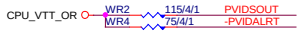
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



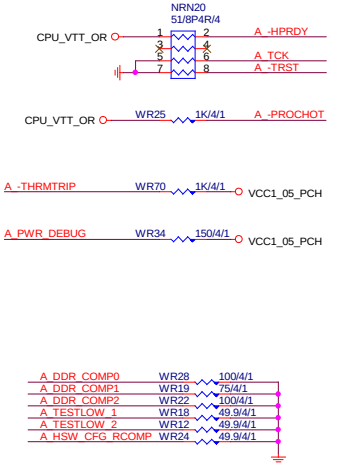
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%



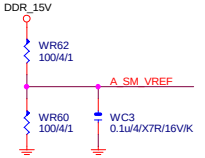
CPU SVID



CPU PU/PD

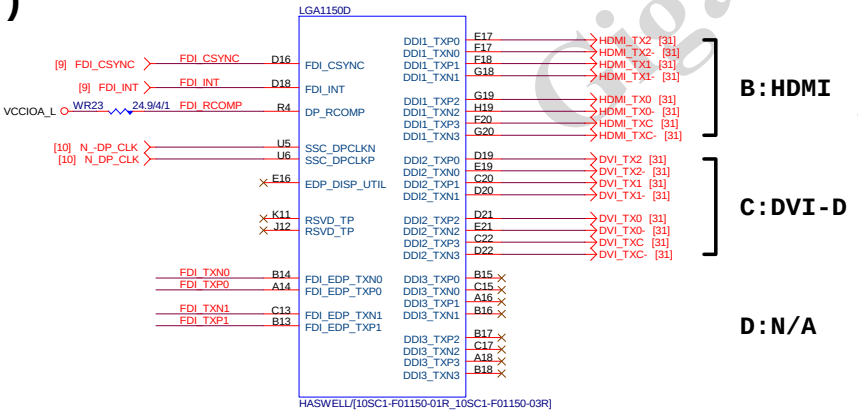


SM REF



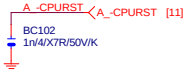
LGA1150 (D)

DVI-I + HDMI組態就是: DVI-I port B, HDMI port C
DVI-D + HDMI組態就是: DVI-D port C, HDMI port B

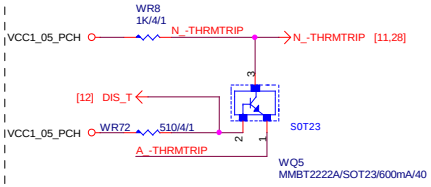


FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

-CPURST



THRMTRIP DISABLE



Title	CPU LGA1150-A		
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Gigabyte Technology

LGA1150 (A)

LGA1150A

MAAA0	AU13	DDR0_MA0	DDR0_DQ0	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_DQ1	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_DQ2	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
MAAA6	AV17	DDR0_MA6	DDR0_DQ6	AE37	MDA6
MAAA7	AT18	DDR0_MA7	DDR0_DQ7	AF40	MDA7
MAAA8	AU18	DDR0_MA8	DDR0_DQ8	AH40	MDA9
MAAA9	AT19	DDR0_MA9	DDR0_DQ9	AH39	MDA13
MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AK38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AK39	MDA11
MAAA12	AU19	DDR0_MA12	DDR0_DQ12	AH37	MDA12
MAAA13	AY10	DDR0_MA13	DDR0_DQ13	AH38	MDA8
MAAA14	AT20	DDR0_MA14	DDR0_DQ14	AK37	MDA14
MAAA15	AU21	DDR0_MA15	DDR0_DQ15	AK40	MDA15
			DDR0_DQ16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_DQ17	AM39	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_DQ19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AM38	MDA16
	AW33	DDR0_ECC0	DDR0_DQ22	AP37	MDA22
	AV33	DDR0_ECC1	DDR0_DQ23	AP40	MDA23
	AU31	DDR0_ECC2	DDR0_DQ24	AV37	MDA25
	AV31	DDR0_ECC3	DDR0_DQ25	AW37	MDA29
	AT33	DDR0_ECC4	DDR0_DQ26	AU35	MDA26
	AU33	DDR0_ECC5	DDR0_DQ27	AV35	MDA27
	AT31	DDR0_ECC6	DDR0_DQ28	AT37	MDA28
	AW31	DDR0_ECC7	DDR0_DQ29	AU37	MDA24
			DDR0_DQ30	AT35	MDA30
			DDR0_DQ31	AW35	MDA31
[7] SBAA0	SBAA0	AV12	DDR0_BA0	AY6	MDA33
[7] SBAA1	SBAA1	AY11	DDR0_BA1	AU6	MDA37
[7] SBAA2	SBAA2	AT21	DDR0_BA2	AV4	MDA34
				AU4	MDA35
[7] CKEA0	CKEA0	AV22	DDR0_CKE0	AW6	MDA36
[7] CKEA1	CKEA1	AT23	DDR0_CKE1	AV6	MDA32
[7] CKEA2	CKEA2	AU22	DDR0_CKE2	AW4	MDA38
[7] CKEA3	CKEA3	AU23	DDR0_CKE3	AY4	MDA39
				AR1	MDA41
[7] -CSA0	-CSA0	AU14	DDR0_CS_N0	AR4	MDA45
[7] -CSA1	-CSA1	AV9	DDR0_CS_N1	AN3	MDA42
[7] -CSA2	-CSA2	AU10	DDR0_CS_N2	AN4	MDA43
[7] -CSA3	-CSA3	AW8	DDR0_CS_N3	AR2	MDA44
				AR3	MDA40
[7] DCLKA0	DCLKA0	AY15	DDR0_CLK_P0	AN2	MDA46
[7] -DCLKA0	-DCLKA0	AY16	DDR0_CLK_N0	AN1	MDA47
[7] DCLKA1	DCLKA1	AW15	DDR0_CLK_P1	AL1	MDA49
[7] -DCLKA1	-DCLKA1	AV15	DDR0_CLK_N1	AL4	MDA53
[7] DCLKA2	DCLKA2	AY14	DDR0_CLK_P2	AJ3	MDA50
[7] -DCLKA2	-DCLKA2	AW14	DDR0_CLK_N2	AJ4	MDA51
[7] DCLKA3	DCLKA3	AW13	DDR0_CLK_P3	AL2	MDA52
[7] -DCLKA3	-DCLKA3	AV13	DDR0_CLK_N3	AL3	MDA48
				AJ2	MDA54
	AW12	RSVD		AJ1	MDA55
				AG1	MDA57
				AG4	MDA61
				AE3	MDA58
				AE4	MDA59
				AG2	MDA60
				AG3	MDA56
				AE2	MDA62
				AE1	MDA63
				AE39	DQSA0
			DDR0_DQS_P0	AJ39	DQSA1
			DDR0_DQS_P1	AN39	DQSA2
			DDR0_DQS_P2	AV36	DQSA3
			DDR0_DQS_P3	AV5	DQSA4
			DDR0_DQS_P4	AP3	DQSA5
			DDR0_DQS_P5	AK3	DQSA6
			DDR0_DQS_P6	AE3	DQSA7
			DDR0_DQS_P7	AV32	
			DDR0_DQS_P8	AE38	-DQSA0
			DDR0_DQS_N0	AJ38	-DQSA1
			DDR0_DQS_N1	AN38	-DQSA2
			DDR0_DQS_N2	AU36	-DQSA3
			DDR0_DQS_N3	AW5	-DQSA4
			DDR0_DQS_N4	AP2	-DQSA5
			DDR0_DQS_N5	AK2	-DQSA6
			DDR0_DQS_N6	AF2	-DQSA7
			DDR0_DQS_N7	AU32	
			DDR0_DQS_N8		
[7] -SRASA	-SRASA	AU12	DDR0_RAS*		
[7] -SWEA	-SWEA	AU11	DDR0_WE*		
	AV20	RSVD			
	AW27	RSVD			
[7] -SCASA	-SCASA	AU9	DDR0_CAS*		
[7,8] -DDR3_RST		AK22	DDR_RESET*		

WR61
MASK/0/4/SHT/M/X

WC4
0.1u/4/X7R/16V/K/X

HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (B)

LGA1150B

MAAB0	AL19	DDR1_MA0	DDR1_DQ0	AE34	MDB0
MAAB1	AK23	DDR1_MA1	DDR1_DQ1	AE35	MDB1
MAAB2	AM22	DDR1_MA2	DDR1_DQ2	AG35	MDB2
MAAB3	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_MA7	DDR1_DQ7	AH34	MDB7
MAAB8	AU26	DDR1_MA8	DDR1_DQ8	AL34	MDB8
MAAB9	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_MA11	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_MA12	DDR1_DQ12	AK34	MDB12
MAAB13	AR15	DDR1_MA13	DDR1_DQ13	AK35	MDB13
MAAB14	AV27	DDR1_MA14	DDR1_DQ14	AK32	MDB14
MAAB15	AY28	DDR1_MA15	DDR1_DQ15	AL32	MDB15
			DDR1_DQ16	AN34	MDB17
MODT_B0	AM17	DDR1_ODT0	DDR1_DQ17	AP34	MDB21
MODT_B1	AL16	DDR1_ODT1	DDR1_DQ18	AN31	MDB19
MODT_B2	AM16	DDR1_ODT2	DDR1_DQ19	AP31	MDB23
MODT_B3	AK15	DDR1_ODT3	DDR1_DQ20	AN35	MDB20
			DDR1_DQ21	AP35	MDB16
	AM26	DDR1_ECC0	DDR1_DQ22	AN32	MDB18
	AM25	DDR1_ECC1	DDR1_DQ23	AP32	MDB22
	AP25	DDR1_ECC2	DDR1_DQ24	AM29	MDB25
	AP26	DDR1_ECC3	DDR1_DQ25	AM28	MDB28
	AL26	DDR1_ECC4	DDR1_DQ26	AR29	MDB27
	AL25	DDR1_ECC5	DDR1_DQ27	AR28	MDB30
	AR26	DDR1_ECC6	DDR1_DQ28	AL29	MDB24
	AR25	DDR1_ECC7	DDR1_DQ29	AL28	MDB29
			DDR1_DQ30	AP29	MDB26
[8] SBAB0	SBAB0	AK17	DDR1_BA0	AP28	MDB31
[8] SBAB1	SBAB1	AL18	DDR1_BA1	AR12	MDB32
[8] SBAB2	SBAB2	AW28	DDR1_BA2	AP12	MDB33
				AL13	MDB34
[8] CKEB0	CKEB0	AW29	DDR1_CKE0	AL12	MDB35
[8] CKEB1	CKEB1	AY29	DDR1_CKE1	AR13	MDB36
[8] CKEB2	CKEB2	AU28	DDR1_CKE2	AP13	MDB37
[8] CKEB3	CKEB3	AU29	DDR1_CKE3	AM13	MDB38
				AM12	MDB39
[8] -CSB0	-CSB0	AP17	DDR1_CS_N0	AR9	MDB45
[8] -CSB1	-CSB1	AN15	DDR1_CS_N1	AP9	MDB41
[8] -CSB2	-CSB2	AN17	DDR1_CS_N2	AR6	MDB47
[8] -CSB3	-CSB3	AL15	DDR1_CS_N3	AP6	MDB43
				AR10	MDB44
				AP10	MDB40
				AR7	MDB46
				AP7	MDB42
[8] DCLKB0	DCLKB0	AM20	DDR1_CLK_P0	AM9	MDB52
[8] -DCLKB0	-DCLKB0	AM21	DDR1_CLK_N0	AL9	MDB53
[8] DCLKB1	DCLKB1	AP22	DDR1_CLK_P1	AL6	MDB50
[8] -DCLKB1	-DCLKB1	AP21	DDR1_CLK_N1	AL7	MDB55
				AM10	MDB48
[8] DCLKB2	DCLKB2	AN20	DDR1_CLK_P2	AL10	MDB49
[8] -DCLKB2	-DCLKB2	AN21	DDR1_CLK_N2	AM6	MDB54
[8] DCLKB3	DCLKB3	AP19	DDR1_CLK_P3	AM7	MDB51
[8] -DCLKB3	-DCLKB3	AP20	DDR1_CLK_N3	AH6	MDB61
				AH7	MDB60
[8] -SCASB	-SCASB	AP16	DDR1_CAS*	AE6	MDB59
		AL20	RSVD	AE7	MDB63
[8] -SRASB	-SRASB	AM18	DDR1_RAS*	AJ6	MDB56
[8] -SWEB	-SWEB	AK16	DDR1_WE*	AJ7	MDB57
				AF6	MDB58
[7] VREF_DQA	VREF_DQA	AB39	DDR_VREF_DQ0	AF7	MDB62
[8] VREF_DQB	VREF_DQB	AB40	DDR_VREF_DQ1	AE35	DQSB0
			DDR1_DQS_P0	AL33	DQSB1
			DDR1_DQS_P1	AP33	DQSB2
			DDR1_DQS_P2	AN28	DQSB3
			DDR1_DQS_P3	AN12	DQSB4
			DDR1_DQS_P4	AP8	DQSB5
			DDR1_DQS_P5	AL8	DQSB6
			DDR1_DQS_P6	AG7	DQSB7
			DDR1_DQS_P7	AN25	
			DDR1_DQS_P8	AE34	-DQSB0
			DDR1_DQS_N0	AK33	-DQSB1
			DDR1_DQS_N1	AN33	-DQSB2
			DDR1_DQS_N2	AL29	-DQSB3
			DDR1_DQS_N3	AN13	-DQSB4
			DDR1_DQS_N4	AR8	-DQSB5
			DDR1_DQS_N5	AM8	-DQSB6
			DDR1_DQS_N6	AG6	-DQSB7
			DDR1_DQS_N7	AN26	
			DDR1_DQS_N8		

VREF_DQA
VREF_DQB
WBC34 0.1u/4/X7R/16V/K
WBC33 0.1u/4/X7R/16V/K
Place in CPU bottom side

HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150 (CR)

CR
CPU RETAINTION/X

LGA1150_P

ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]

DDR BUS

[7] MODT_A[0..3] ↔ MODT_A[0..3]
[8] MODT_B[0..3] ↔ MODT_B[0..3]

[7] MDA[0..63] ↔ MDA[0..63]
[8] MDB[0..63] ↔ MDB[0..63]

[7] DQSA[0..7] ↔ DQSA[0..7]
[7] -DQSA[0..7] ↔ -DQSA[0..7]

[7] MAAA[0..15] ↔ MAAA[0..15]
[8] MAAB[0..15] ↔ MAAB[0..15]

[8] DQSB[0..7] ↔ DQSB[0..7]
[8] -DQSB[0..7] ↔ -DQSB[0..7]

Gigabyte Technology			
Title: CPU LGA1150-B			
Size: Custom	Document Number: GA-H97M-D3H		Rev: 1.1
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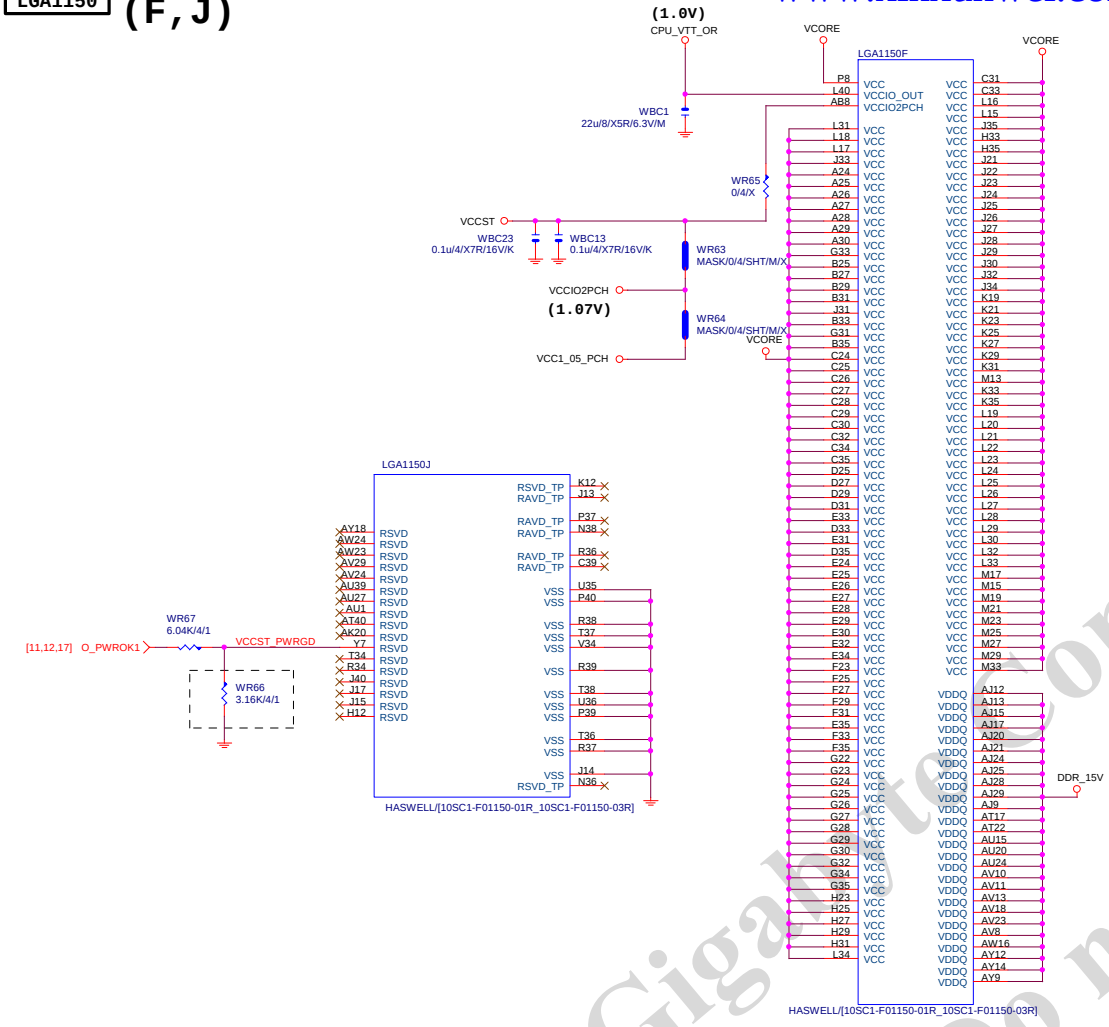
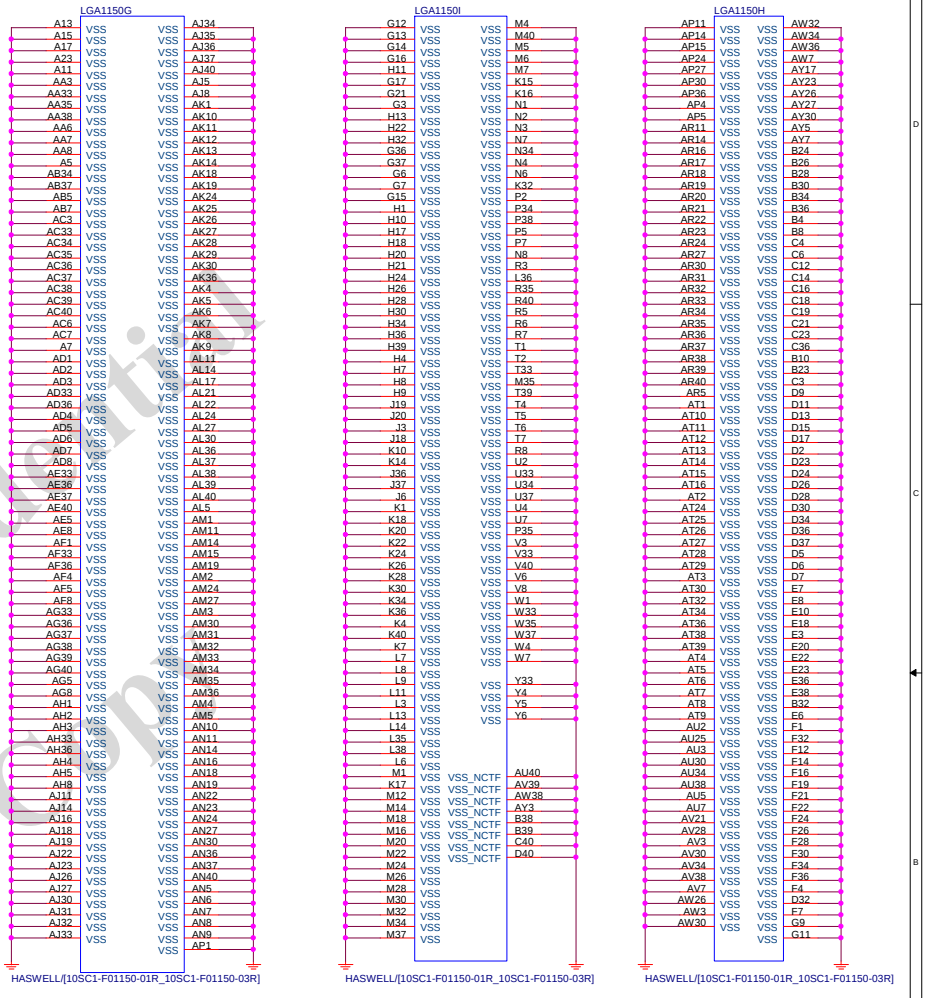
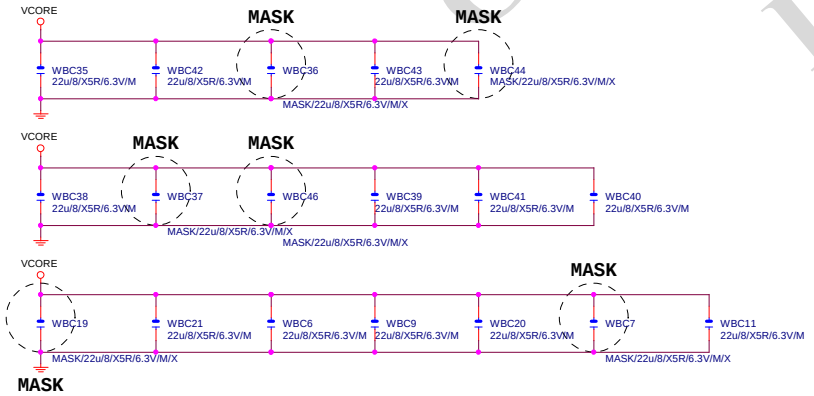
LGA1150 (F,J)



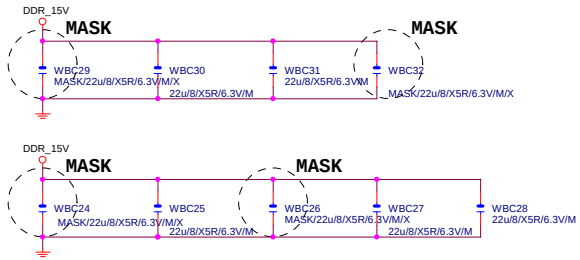
LGA1155 (G,H,I)



VCore CAP
(X12)



DDR CAP
(X5)



Gigabyte Technology		
Title: CPU LGA1150-C		
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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DDR3 (A)

DDR3_4

DDRVTT
DDR_15V
-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
VCC3
VDDSPD
MF1 SPR-P200T/6V/B/S
MC4 0.1u/4/X7R/16V/K/X
N/A
VDDSPD
MC5 VREF_DDRA 0.1u/4/X7R/16V/K/X
MC1 VREF_DQDDRA 0.1u/4/X7R/16V/K/X
VREFCA
VREFDQ
N_SMBCLK
N_SMBDATA
SBAA2
SBAA1
SBAA0
CKEA1
CKEA0
-CSA1
-CSA0
DCLKA1
DCLKA1
DCLKA0
DCLKA0
MAAA0
MAAA1
MAAA2
MAAA3
MAAA4
MAAA5
MAAA6
MAAA7
MAAA8
MAAA9
MAAA10
MAAA11
MAAA12
MAAA13
MAAA14
MAAA15
-DDR3_RST
-SCASA
-SRASA
-SWEA
MODT_A[0..3]
-DQSA[0..7]
DQSA[0..7]
MDA0
MDA1
MDA2
MDA3
MDA4
MDA5
MDA6
MDA7
MDA8
MDA9
MDA10
MDA11
MDA12
MDA13
MDA14
MDA15
MDA16
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MDA45
MDA46
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
BLACK CONNECTOR

DDR3_2

DDRVTT
DDR_15V
MC8 0.1u/4/X7R/16V/K/X
N/A
VDDSPD
MC3 VREF_DDRA 0.1u/4/X7R/16V/K/X
MC7 VREF_DQDDRA 0.1u/4/X7R/16V/K/X
VREFCA
VREFDQ
N_SMBCLK
N_SMBDATA
SBAA2
SBAA1
SBAA0
CKEA3
CKEA2
-CSA3
-CSA2
DCLKA3
DCLKA3
DCLKA2
DCLKA2
MAAA0
MAAA1
MAAA2
MAAA3
MAAA4
MAAA5
MAAA6
MAAA7
MAAA8
MAAA9
MAAA10
MAAA11
MAAA12
MAAA13
MAAA14
MAAA15
-DDR3_RST
-SCASA
-SRASA
-SWEA
MODT_A3
MODT_A2
MDA[0..63]

DDR3/240/GR/VA/D
GRAY CONNECTOR

DDR3 VREF

DDR_15V
MR15 1K/4/1
MR14 1K/4/1
MR4 1K/4/1
MR5 1K/4/1
VREF_DDRA
VREF_DQDDRA
VREF_DQA [5]

DDR15V Decouple

DDR_15V
MEC1 560u/FP/D/6.3V/68/8m
MEC2 560u/FP/D/6.3V/68/8m

DDR_15V
MBC1 0.1u/4/X7R/16V/K
MBC2 0.1u/4/X7R/16V/K
MBC3 0.1u/4/X7R/16V/K
MBC24 0.1u/4/X7R/16V/K/X
MBC12 0.1u/4/X7R/16V/K
MBC14 0.1u/4/X7R/16V/K

DDR_15V
MBC15 1u/4/X5R/6.3V/K
MBC17 1u/4/X5R/6.3V/K
MBC27 1u/4/X5R/6.3V/K/X
MBC29 1u/4/X5R/6.3V/K/X
MBC35 1u/4/X5R/6.3V/K/X
MBC36 1u/4/X5R/6.3V/K
MBC37 1u/4/X5R/6.3V/K/X
MBC47 1u/4/X5R/6.3V/K/X
MBC9 1u/4/X5R/6.3V/K/X

DDRVTT Decouple

DDRVTT
MBC40 10u/6/X5R/6.3V/M

DDRVTT
MBC18 1u/4/X5R/6.3V/K
MBC10 0.1u/4/X7R/16V/K

Gigabyte Technology

Title: DDRIII CHANNEL A

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DDR3 (B)

DDR3_3

DDRVTT

DDR_15V

-DQSB[0..7] -DQSB[0..7] [5]

DQSB[0..7] DQSB[0..7] [5]

MODT_B[0..3] MODT_B[0..3] [5]

MDB[0..63] [5]

N/A

MC2 0.1u/4/X7R/16V/K/X

MC14 0.1u/4/X7R/16V/K/X VREF_DDRB

MC9 0.1u/4/X7R/16V/K/X VREF_DDDRB

[7,12,14,15,16,19,21,27] N_SMBCLK

[7,12,14,15,16,19,21,27] N_SMBDATA

[5] SBAB2 [5] SBAB1 [5] SBAB0

[5] CKEB1 [5] CKEB0

[5] -CSB1 [5] -CSB0

[5] -DCLKB1 [5] DCLKB1

[5] -DCLKB0 [5] DCLKB0

[5] MAAB[0..15]

[5,7] -DDR3_RST

[5] -SCASB [5] -SRASB [5] -SWEB

DDR3/240/BK/VA/D

BLACK CONNECTOR

DDR3_1

MC12 0.1u/4/X7R/16V/K/X

MC15 0.1u/4/X7R/16V/K/X VREF_DDRB

MC13 0.1u/4/X7R/16V/K/X VREF_DDDRB

DDR3/240/GR/VA/D

GRAY CONNECTOR

DDR3 VREF

DDR_15V

MR10 1K/4/1

MR8 1K/4/1

MR11 1K/4/1

MR9 1K/4/1

VREF_DDRB

VREF_DDDRB

VREF_DQB [5]

COUPON

COUPON1 COUPON1 1 2 COUPON/X

COUPON2 COUPON2 1 2 COUPON/X

CPU

DIMM4 (黑)

DIMM2 (灰)

CHA

DIMM3 (黑)

DIMM1 (灰)

CHB

Gigabyte Technology

Title: DDRIII CHANNEL B

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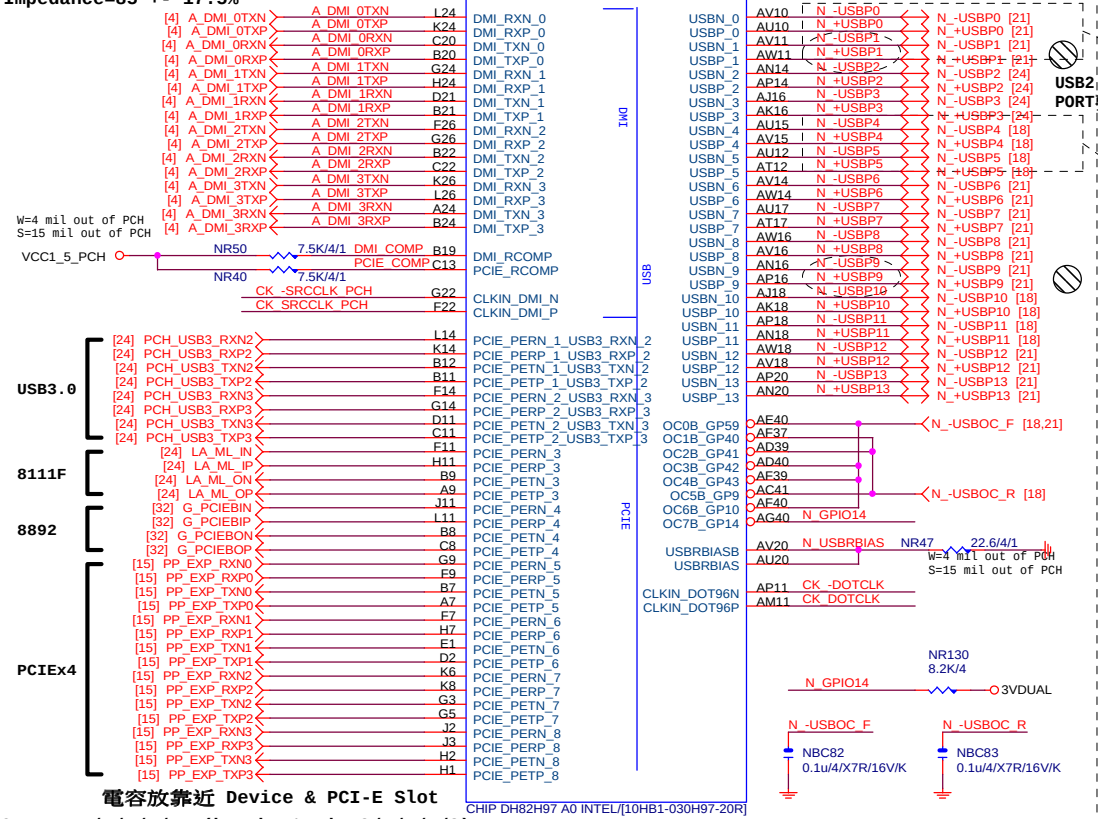
PCH (B)

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

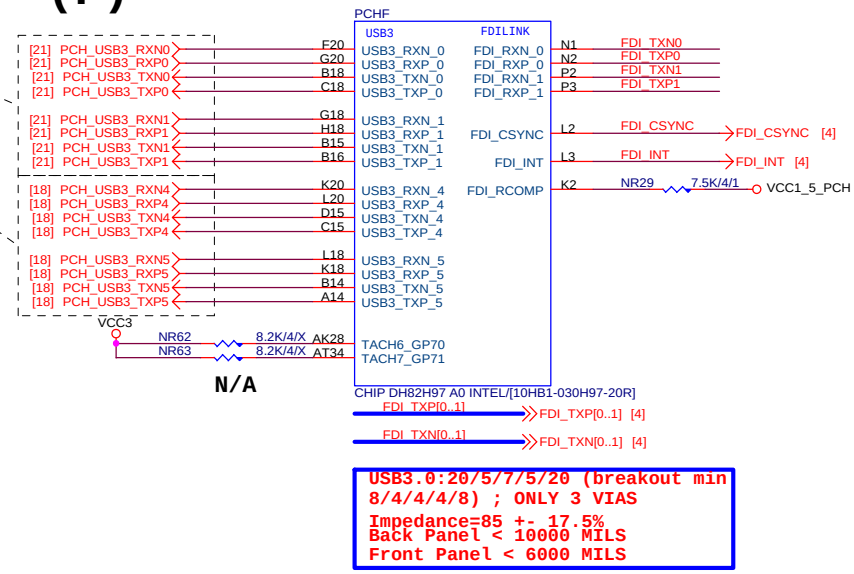
B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A



電容放靠近 Device & PCI-E Slot

PCIEX1:15/4/4/4/15 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

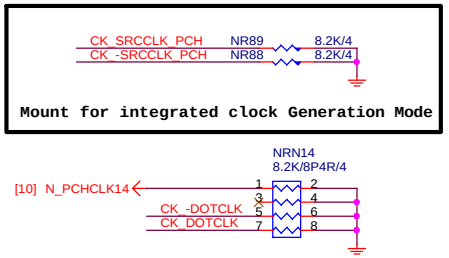
PCH (F)



N/A

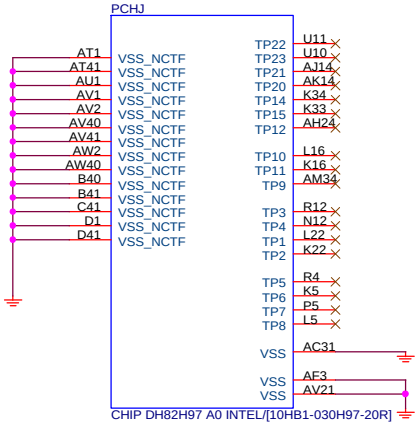
USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

PCH CLK PD



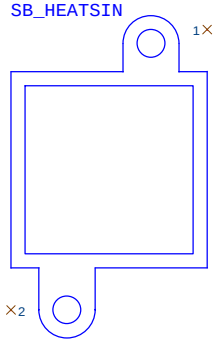
PCH (J)

PCH PCIE ,DMI 15/4/4/4//15
usb2.0 12/5/7/5//12
usb3.0 20/5/7/5//20



PCH H/S

9 Series PCH Heatsink



USB TABLE

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

USB OC#	Configure
OC0#	F_USB30
OC1#	R_USB30
OC2#	USB30_LAN
OC3#	F_USB3
OC4#	F_USB2
OC5#	KB_MS_USB
OC6#	F_USB1
OC7#	Not Use

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM

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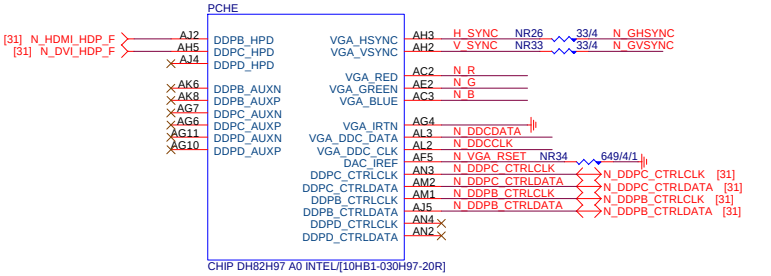
PCH (E)



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

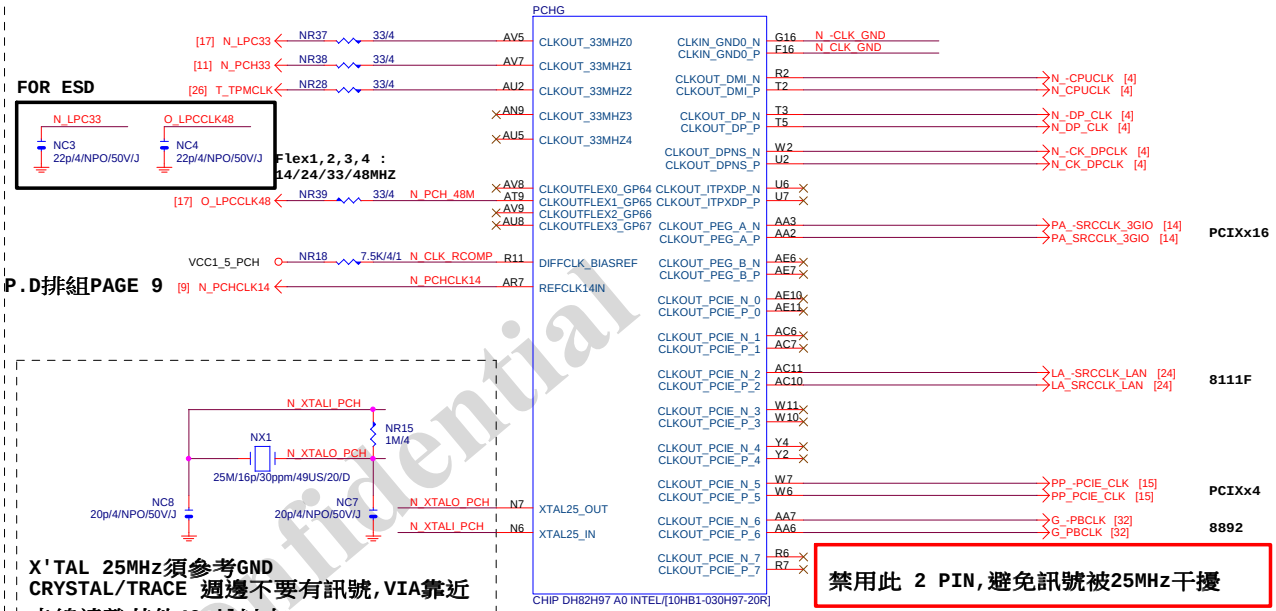
PCH (G)

FOR ESD

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

P.D排組PAGE 9

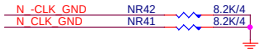
X'TAL 25MHz須參考GND
CRYSTAL/TRACE 週邊不要有訊號,VIA靠近
走線遠離其他40mil以上



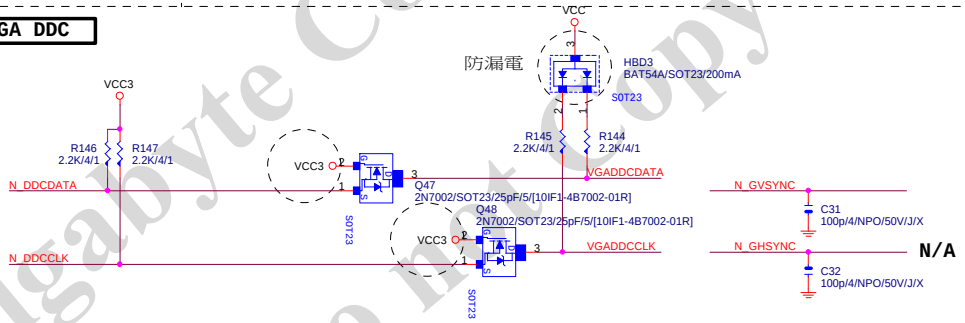
禁用此 2 PIN,避免訊號被25MHz干擾

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

PCH CLK PD

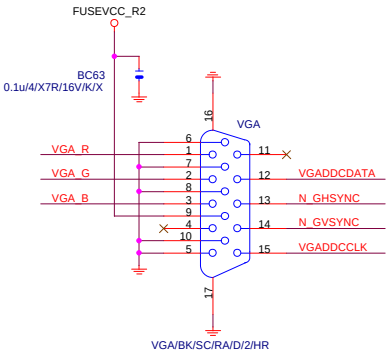


VGA DDC



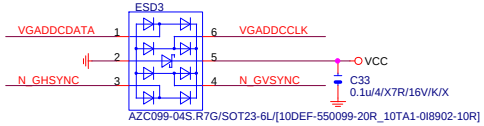
N/A

VGA CONNECTOR

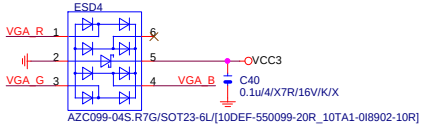


BLACK CONNECTOR

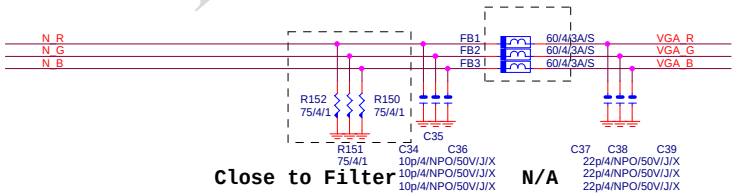
VGA ESD



SSOP6_ESD



VGA DDC



Close to Filter N/A

Gigabyte Technology			
Title	PCH DISPLAY ,CLK BUFFER		
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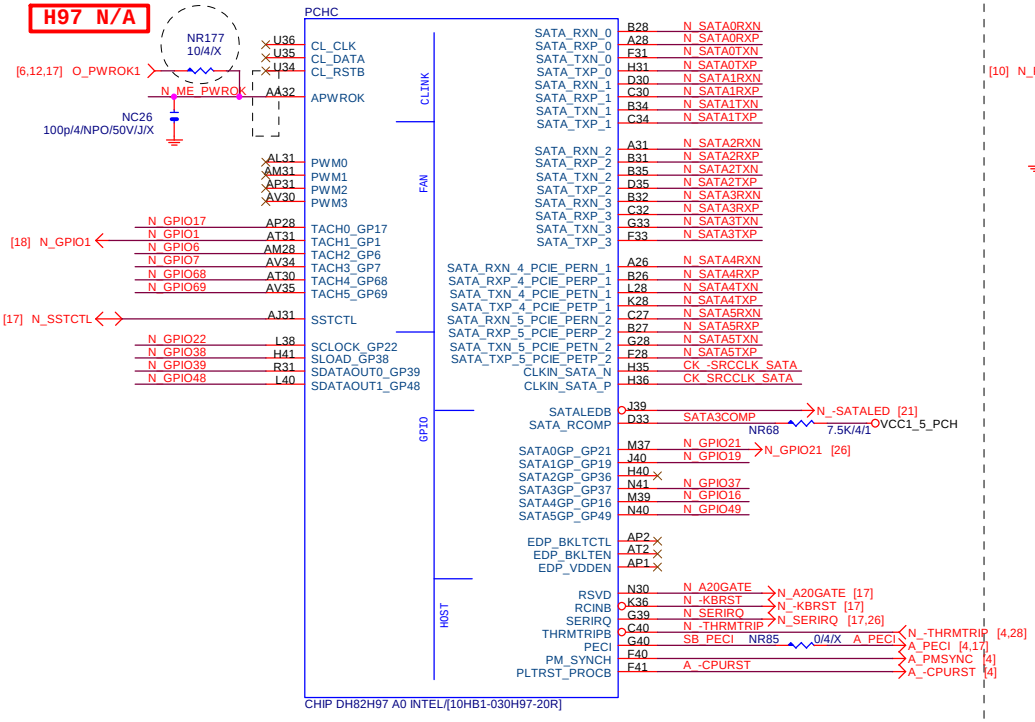
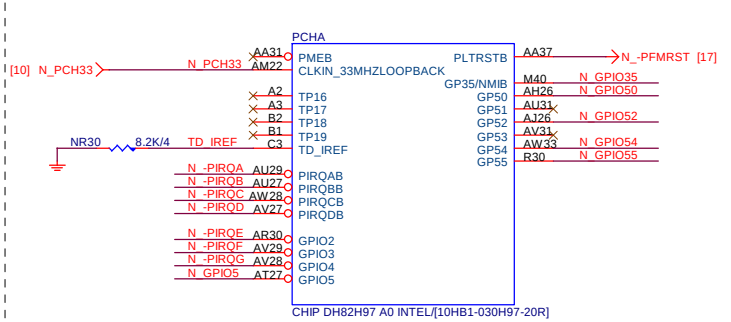
PCH (C)

H97 N/A

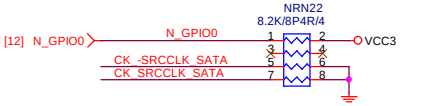
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



PCH (A)

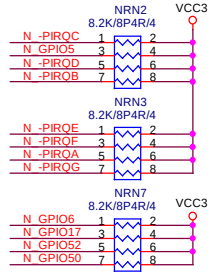


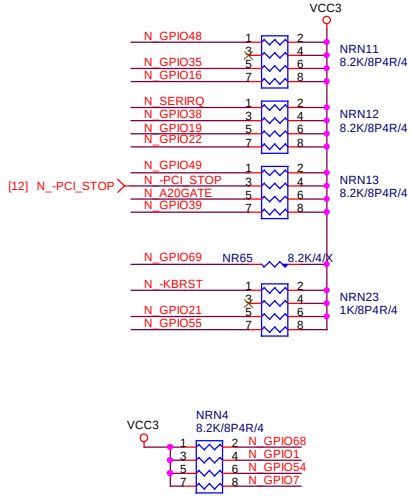
PCH CLK PD



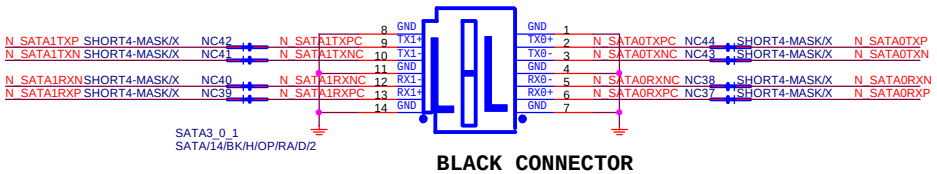
Mount for integrated clock Generation Mode

PCH PU/PD



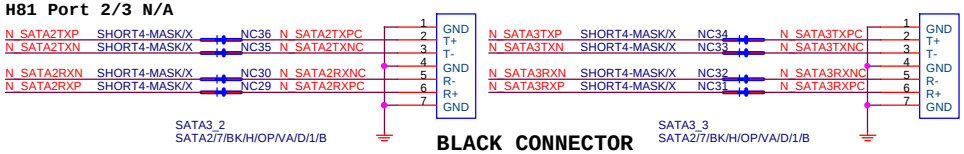


SATA CONNECTOR



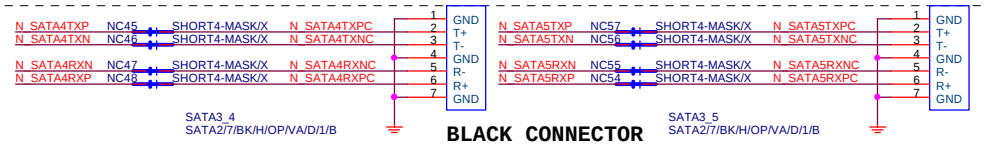
BLACK CONNECTOR

H81 Port 2/3 N/A



BLACK CONNECTOR

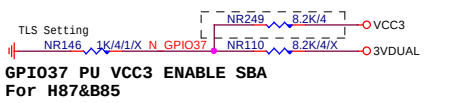
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0



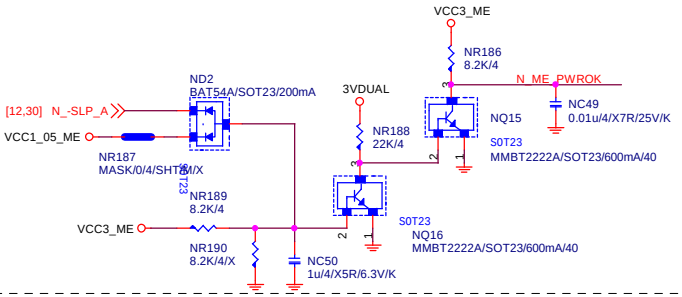
BLACK CONNECTOR

ME PWROK

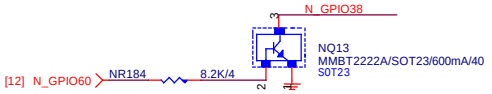
Z97 N/A



GPIO37 PU VCC3 ENABLE SBA
For H87&B85



GPIO38 Ctrl



Gigabyte Technology

Title	PCH HOST , SATA, PCI	
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PCH (D)

[22] C_ACZ_SDOUT — NRN15 33/8P4R/4 — A_SO
[22] C_ACZ_BITCLK — A_BCLK
[22] C_ACZ_SYNC — A_SYC
[22] C_ACZ_RST — A_RST

PCHD

[17,26] N_LAD0 — N_LAD0 — AK26 LDRQ1B_GP23
[17,26] N_LAD1 — N_LAD1 — AN24 LAD_0
[17,26] N_LAD2 — N_LAD2 — AP26 LAD_1
[17,26] N_LAD3 — N_LAD3 — AJ24 LAD_2
[17] N_-LDRQ0 — N_-LDRQ0 — AN26 LAD_3
[17,26] N_-LFRAME — N_-LFRAME — AK22 LDRQ0B
AP24 LFRAMEB

A_BCLK — AV23 HDA_BCLK
A_RST — AU24 HDA_RSTB
AT26 HDA_SDI0
AV22 HDA_SDI1
[22] C_ACZ_SDIN2 — AT22 HDA_SDI2
AW23 HDA_SDI3
A_SO — AU22 HDA_SDO
A_SYC — AV24 HDA_SYNC

[20] N_ICH_SPI_MOSI — P40 SPI_MOSI_IO0
[20] N_ICH_SPI_MISO — R36 SPI_MISO_IO1
[20] N_-ICH_SPI_CS — R38 SPI_CS0B
[20] N_ICH_SPI_CLK — U39 SPI_CLK
R35 SPI_CS1B
R40 SPI_CS2B
[20] SPI_DQ2 — U40 SPI_IO2
[20] SPI_DQ3 — U37 SPI_IO3

N_Y1 — AN40 RTCX1
N_Y2 — AN39 RTCX2
N_-RTCRST — AR38 RTESTB
N_-SRTCRST — AR39 SRTCRSTB
N_-INTRUDER — AR41 INTRUDERB
O_PWROK1 — AT40 PCH_PWROK
[6,11,17] O_PWROK1 — O_-RSMRST — AM40 RSMRSTB
[17,25] O_-RSMRST — N_INTVRMEN — AV36 INTVRMEN
N_PCH_DPWROK — AV38 DPWROK
N_DSWVRMEN — AM41 DSWODVREN

[17] N_-LPCPME — N_-LPCPME — AG31 SMBALERTB_GP11
[7,8,14,15,16,19,21,27] N_SMBCLK — N_SMBCLK — AG36 SMBCLK
[7,8,14,15,16,19,21,27] N_SMBDATA — N_SMBDATA — AG32 SMBDATA
[11] N_GPIO60 — N_GPIO60 — AG35 SML0ALERTB_GP60
N_SML0CLK — AE32 SML0CLK
N_SML0DAT — AE35 SML0DATA
N_-PCH_HOT — AJ39 SML1ALERTB_PCHHOTB_GP74
N_SML1CLK — AK36 SML1CLK_GP58_MGPIO11
N_SML1DAT — AK33 SML1DATA_GP75_MGPIO12

[17,26] N_LAD[0..3] — N_LAD[0..3]

BMBUSYB_GP0 — G38 — N_GPIO0 — N_GPIO0 [11]
CLKRUNB_GP32 — N32
DOCKENB_GP33 — AV26 — N_GPIO33
STPPCIB_GP34 — N34 — N_-PCI_STOP — N_-PCI_STOP [11]

GP8 — AC40 — N_-IGC_EN
LAN_PHY_PWR_CTRL_GP12 — AL40
HDA_DOCK_RSTB_GP13 — AN22 — -D_GPIO_HRST
GP15 — AC32 — N_TEMP_ALART- — N_TEMP_ALART- [17]
GP24 — AE34 — A_-SKTOCC — A_-SKTOCC [4]
GP28 — V41 — N_GPIO28
SLP_WLANB_GP29 — AL39 — N_GPIO29
PCIECLKRQ0B_GP73 — W34 — N_GPIO73
PCIECLKRQ1B_GP18 — P39 — N_GPIO18
PCIECLKRQ2B_GP20_SMIB — P37 — N_GPIO20
PCIECLKRQ3B_GP25 — AA39 — N_GPIO25
PCIECLKRQ4B_GP26 — W35 — N_GPIO26
PCIECLKRQ5B_GP44 — AA36 — N_GPIO44
PCIECLKRQ6B_GP45 — W32 — N_GPIO45 — NR245 MASK/0/4/SHT/M/X — DIS_T [4]
PCIECLKRQ7B_GP46 — AA40 — N_GPIO46

GP57 — AC36 — N_GPIO57
SYS_PWROK — W31 — N_PCH_VRMPWRGD [17]
RIB — AE36 — N_-RI [18]
WAKEB — AK34 — N_-PCIE_WAKE [14,15,24,32]
SLP_AB — AN37 — N_-SLP_A [11,30]
SLP_LANB — AU36
SLP_S0B — AC35
SLP_S3B — AK40 — N_-SLP_S3 [17]
SLP_S4B — AT35 — N_-S4_S5 [17]
SLP_S5B_GP63 — AA35
SUS_STATB_GP61 — AD37
SUSCLK_GP62 — W36 — N_SUSCLK — N_SUSCLK [26]
GP72 — AJ40 — N_GPIO72
SUSACKB — AJ37
SUSWARNB_SUSPWRDNACK_GP30 — AG41 — N_-S_WARN
DRAMPWRGD — AE38 — N_DRAM_PWROK
GP27 — AU34 — N_GPIO27
ACPRESENT_GP31_MGPIO2 — AM36 — N_GPIO31
SLP_SUSB — AK38 — N_-DEPSLP
PWRBTNB — AK41 — NTP4 — O_PWRBTSW [17]
SYS_RESETB — N36 — N_-SYS_RST — N_-SYS_RST [21]
SPKR — R32 — N_SPKR — N_SPKR [21]
PROCPWRGD — D40 — N_CPUPWROK — N_CPUPWROK [4,17]

TP13 — W37 — N_PCH_RST
JTAG_TCK — Y40 — N_PCH_TCK
JTAG_TDI — W39 — N_PCH_TDI
JTAG_TDO — Y38 — N_PCH_TDO
JTAG_TMS — W40 — N_PCH_TMS

CHIP DH82H97 A0 INTEL/[10HB1-030H97-20R]

DDR_15V
NR131 680/4/1
N_DRAM_PWROK — N_DRAM_PWROK [4]
NR132 1.47K/4/1

O_PWROK1
NC51 0.01u/4/X7R/25V/K/X
Reserve for EMI test

N_-SLP_S3 — NC60 100p/4/NPO/50V/J — ESD
N_-S4_S5 — NC61 100p/4/NPO/50V/J — ESD
N_CPUPWROK — NC62 100p/4/NPO/50V/J — ESD

ACZ_SDOUT

N/A

PCH_DPWROK

N_PCH_DPWROK — N_PCH_DPWROK [17]
NC17 1n/4/X7R/50V/K

for IT8620 Ctrl

VCC3
NR345 1K/4/1
N_PCH_VRMPWRGD — N_PCH_VRMPWRGD [17]
NR346 100K/4/1
DC17 0.1u/4/X7R/16V/K

PCH PU/PD

3VDUAL
N_SML1CLK
N_SML1DAT
N_GPIO29
NRN16 1K/8P4R/4

N_GPIO46
N_GPIO45
N_GPIO44
N_GPIO57
NRN9 8.2K/8P4R/4

A_-SKTOCC
N_TEMP_ALART-
N_-RI
NRN10 8.2K/8P4R/4

GP8:Low to enable PCH clock chip
NR106 1K/4/1 N_-IGC_EN
NR153 1K/4/1/X N_SUSCLK

SUSCLK:Low to OD PLL VR

-D_GPIO_HRST NR51 1K/4/1
N_GPIO28 NR144 1K/4/1

GP28:Lo disable VRM ,Hi enable VRM

3VDUAL_PCH
N_GPIO31
N_PCH_DPWROK
N_GPIO72
N_-S_WARN
NRN17 8.2K/8P4R/4

N_GPIO27 NR60 8.2K/4
N_-PCIE_WAKE NR76 1K/4/1

VCC3
N_GPIO20 NR109 8.2K/4
N_-SYS_RST NR164 8.2K/4
N_GPIO33 NR49 8.2K/4

REMOVE GPIO73 PULL HIGH

3VDUAL
N_GPIO73 NR348 8.2K/4/X
N_PCH_RST NR172 20K/4/1
N_PCH_TDI
N_PCH_TMS
N_PCH_TDO
NRN18 200/8P4R/4

N_PCH_TDI
N_PCH_TDO
N_PCH_TMS
N_PCH_TCK NR108 51/4/1
NRN19 100/8P4R/4

N_GPIO18
N_GPIO26
N_GPIO25
N_-SYS_RST NC58 1n/4/X7R/50V/K
N_DRAM_PWROK NC59 1n/4/X7R/50V/K
NRN24 8.2K/8P4R/4

NRN6 8.2K/8P4R/4
3VDUAL
N_-LPCPME
N_GPIO60
N_-PCH_HOT

NR122 499/4/1 N_SML0CLK
NR123 499/4/1 N_SML0DAT
NR121 1K/4/1 N_SMBCLK
NR97 1K/4/1 N_SMBDATA

HSW_STRAP13

3VDUAL_PCH
NR182 8.2K/4/X — A_HSW_STRAP13 [4]
NR183 8.2K/4
S0T23
NQ11 MMBT2222A/SOT23/600mA/40
NQ12 MMBT2222A/SOT23/600mA/40
S0T23
NR135 8.2K/4
N_-IGC_EN

32.768KHZ

FOOTPRINT:XTALS-RH-N

NX2-SHT SHW/D0.64*5.08*6.74
N_Y1
N_Y2
NR75 10M/4
NX2
32.768K/12.5p/20ppm/TF38/35K/D
NC16 18P/4/NPO/50V/J
NC18 18P/4/NPO/50V/J

CLR_CMOS

BATTERY CR2032
ND1 BAS40-05/0.2A/SOT23
3VDUAL_PCH
NR340 MASK/0/6/SHT/M/X
BAT BAT-SK/BK/P/S/D/SN
N_VBATT
NRB 1K/4/1
RB_TP
N_VBAT — N_VBAT [17]

NR90 390K/4 N_DSWVRMEN
N_RTCVDD — N_RTCVDD [13,19]
NR67 390K/4 N_INTVRMEN
NR78 20K/4/1 N_-RTCRST
NC15 1u/4/X5R/6.3V/K
NC20 1u/4/X5R/6.3V/K

BATTERY-DUAL-4

RB 必须放在BAT外

N_-INTRUDER NR74 1M/4 — N_RTCVDD [13,19]
N_-SRTCRST NR77 20K/4/1 — N_RTCVDD [13,19]
NC19 1u/4/X5R/6.3V/K

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

Gigabyte Technology

Title: PCH GPIO , CTRL , AUDIO

Size: Custom | Document Number: GA-H97M-D3H | Rev: 1.1

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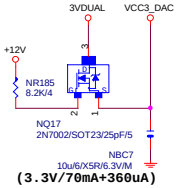
PCH (H)

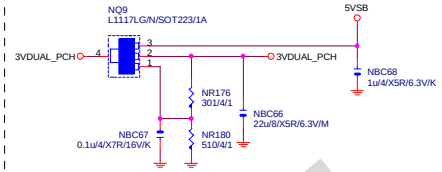
VCC3_DAC

CLOSE北橋(注意震盪水波紋)



(3.3V/70mA+360uA)

3VDUAL_PCH

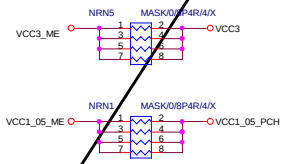


SHT PWR

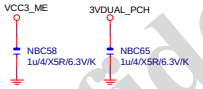
H97 N/A

MASK FOOT

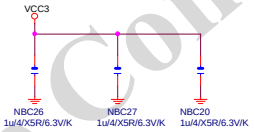
MASK



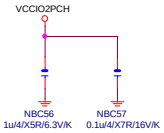
CAP



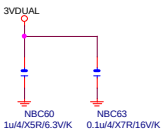
(3.3V)(X3)



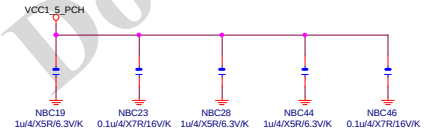
(1.05V)(X2)

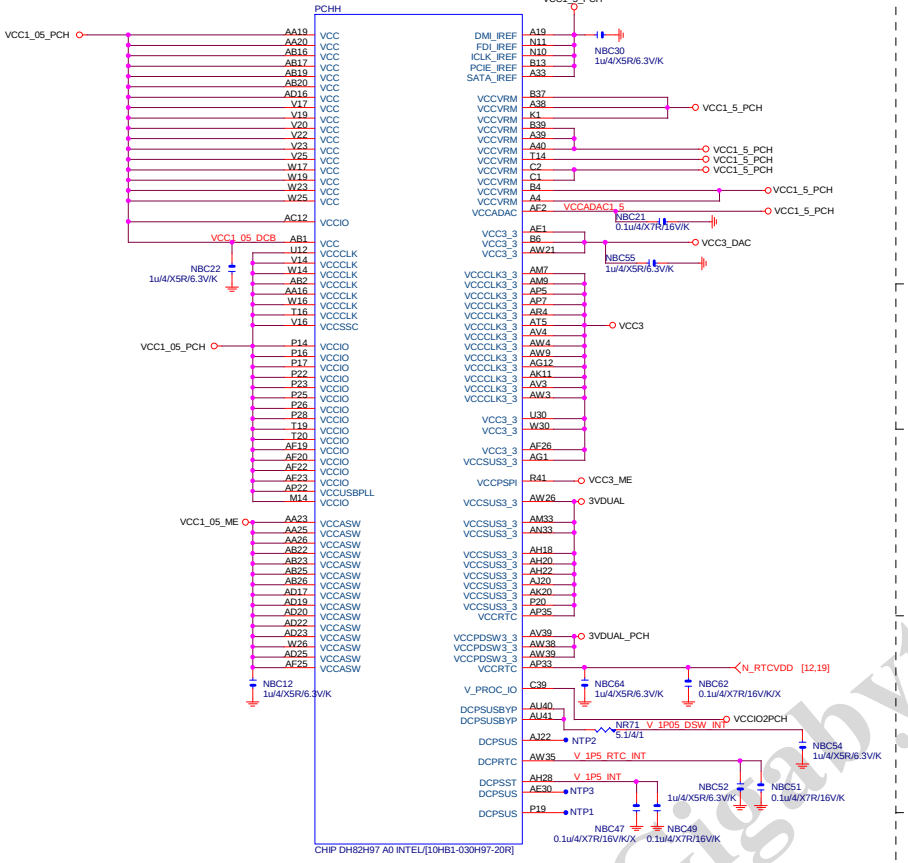


(3.3V)(X2)

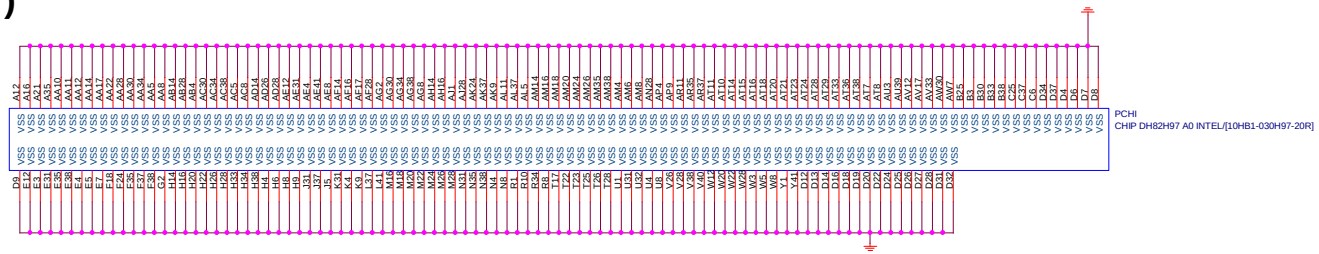


(1.5V) (X5)





PCH (I)



Gigabyte Technology			
Title: PCH PWR ,GND			
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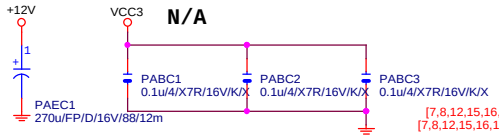
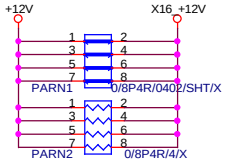
PCIEX16 CAP



PCIEX16 PROTECT SHT



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

PA_EXP_RXP[0..15] >> PA_EXP_RXP[0..15] [4]

PA_EXP_RXN[0..15] >> PA_EXP_RXN[0..15] [4]

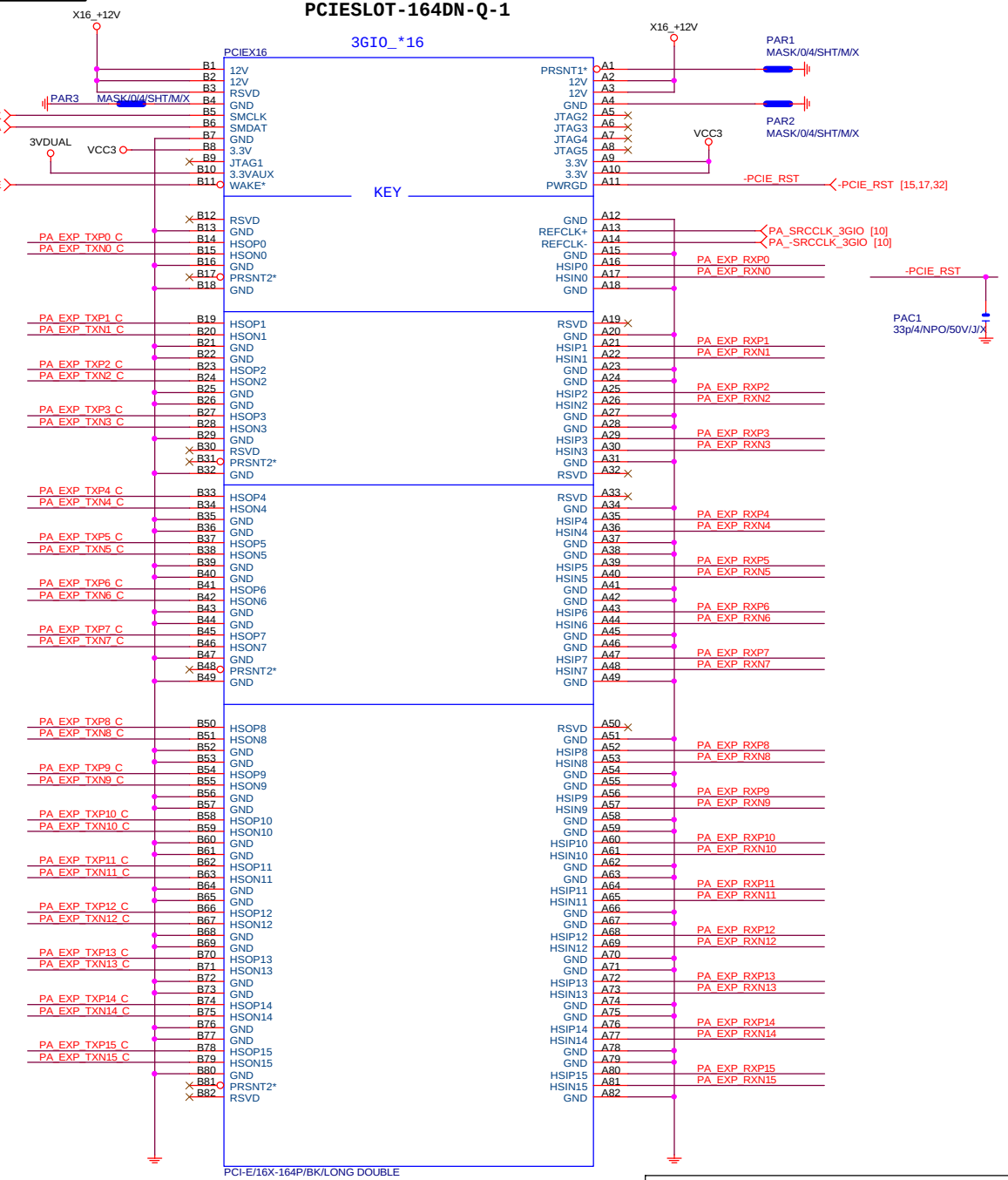
PA_EXP_TXP[0..15] >> PA_EXP_TXP[0..15] [4]

PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] [4]

PCIEX16 SLOT

PCIESLOT-164DN-Q-1

3GIO_*16



BLACK CONNECTOR

Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-H97M-D3H
Rev: 1.1	
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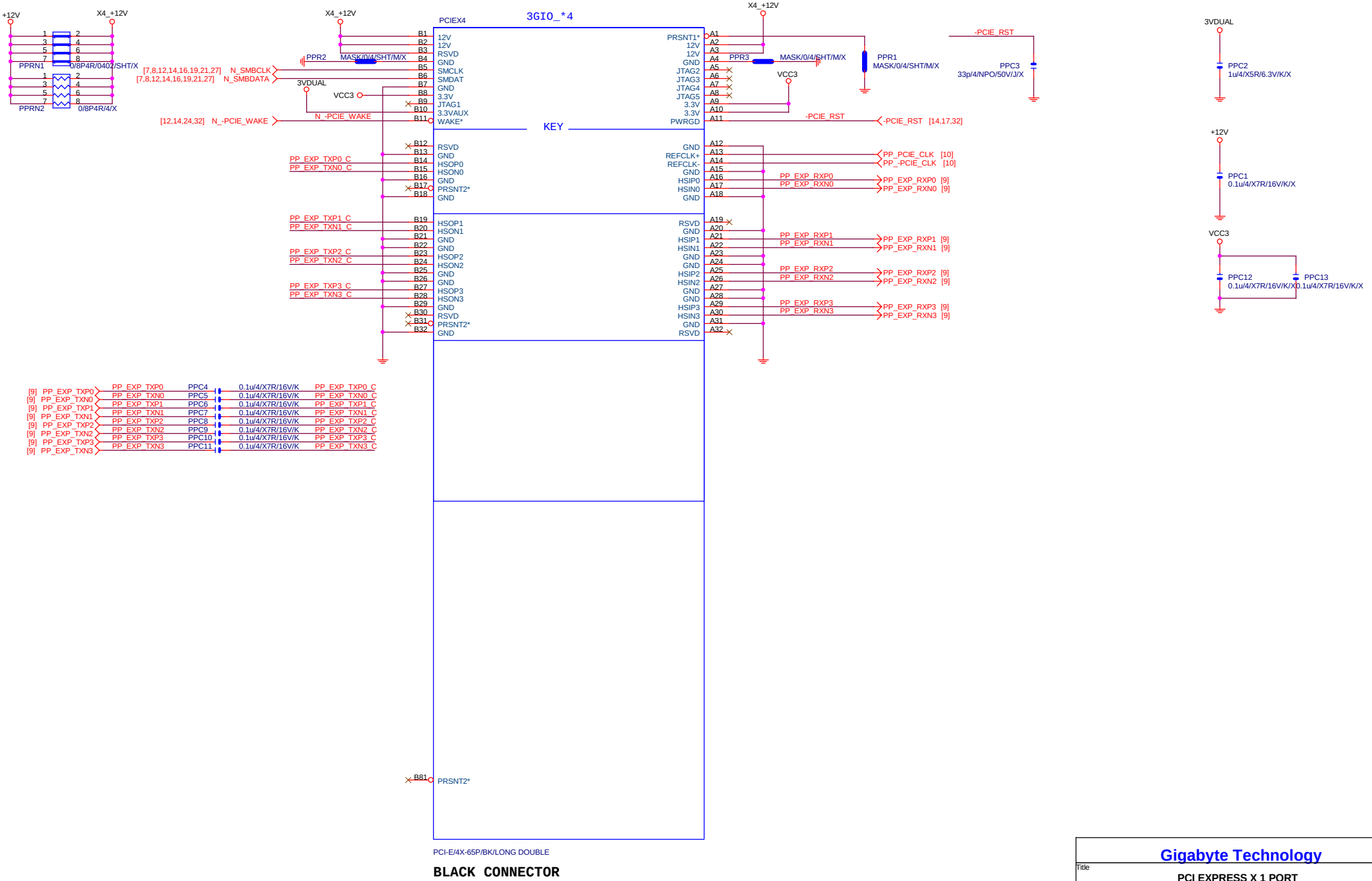
PCIESLOT-64D-98D-P



PCI-E/4X-65P/BK/LONG DOUBLE

BLACK CONNECTOR

Gigabyte Technology		
Title: PCI EXPRESS X 1 PORT		
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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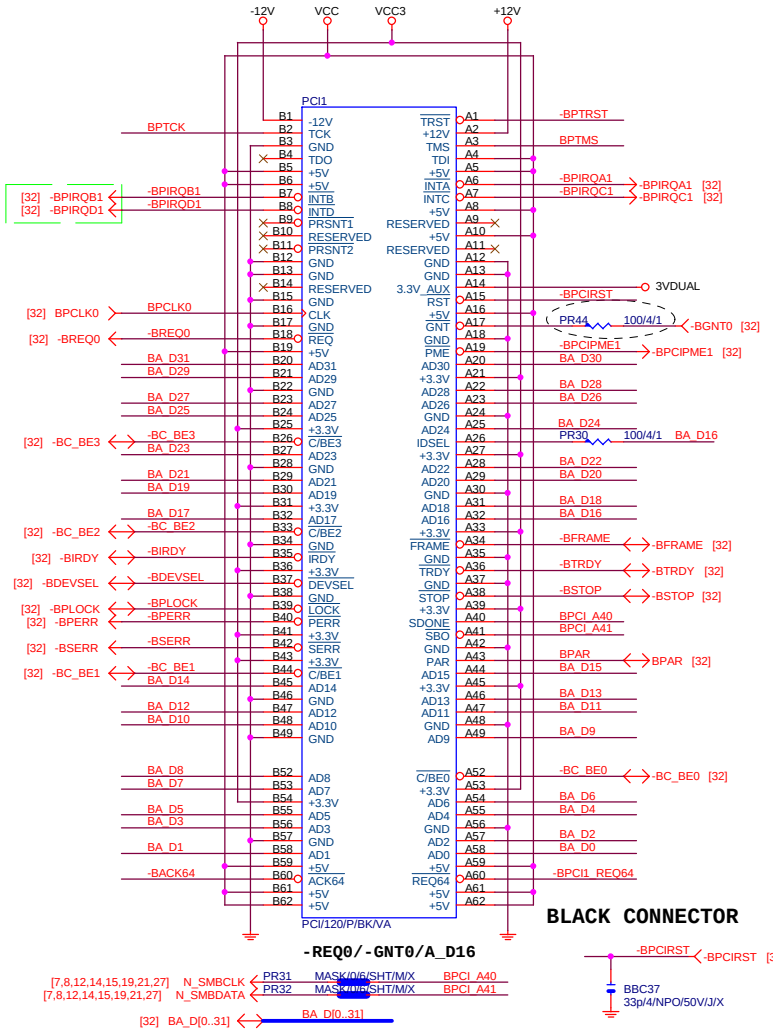
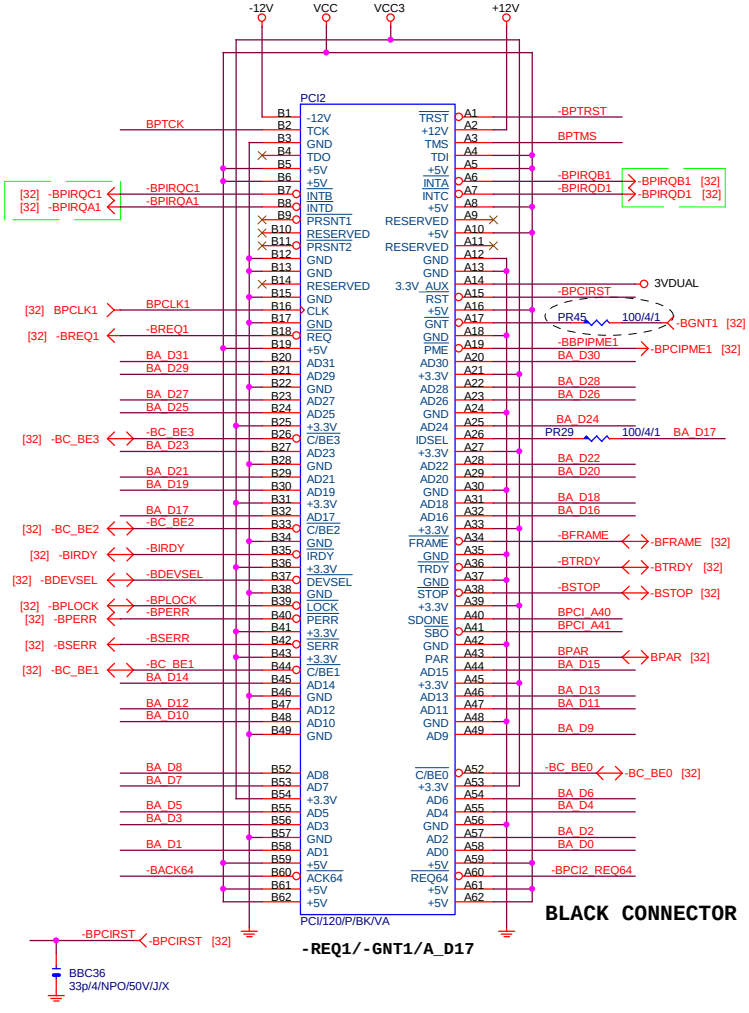
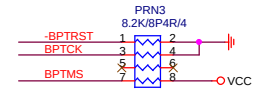
PCI SLOT 1



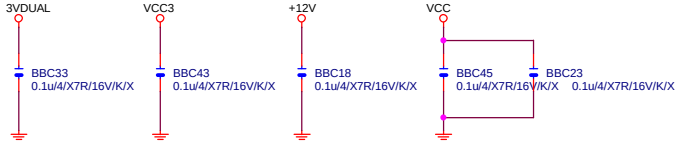
PCI SLOT 2

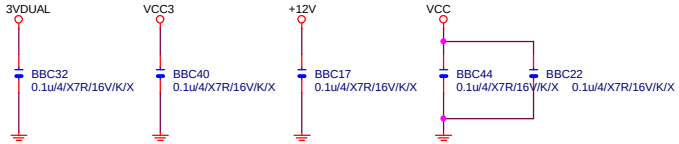


PCI PU



PCI CAP





Gigabyte Technology

Title: PCI SLOT 1&2

Size: Custom | Document Number: GA-H97M-D3H | Rev: 1.1

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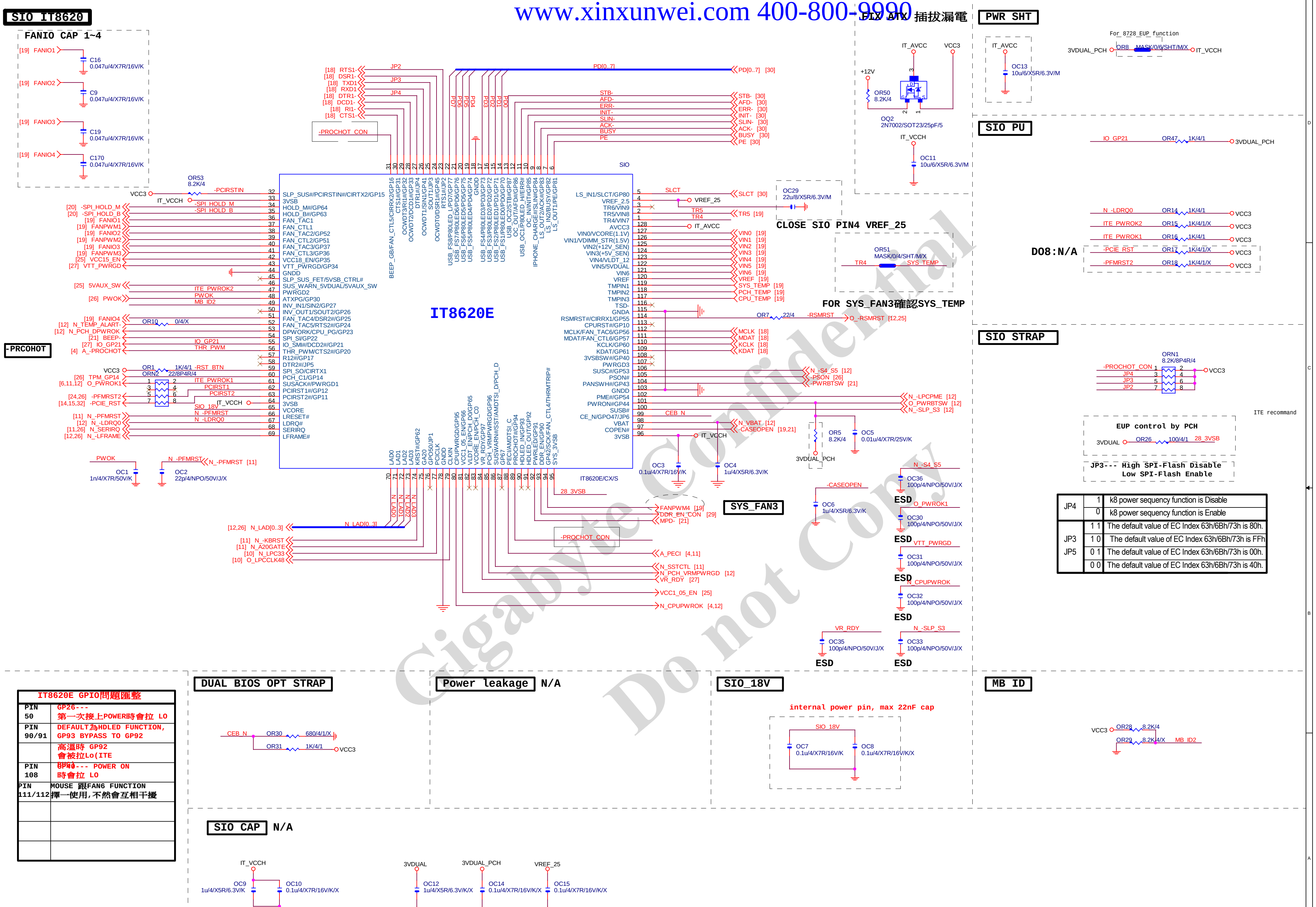

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

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

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

Gigabyte Technology

Title: ITE 8728 LPC IO

Size: C | Document Number: GA-H97M-D3H | Rev: 1.1

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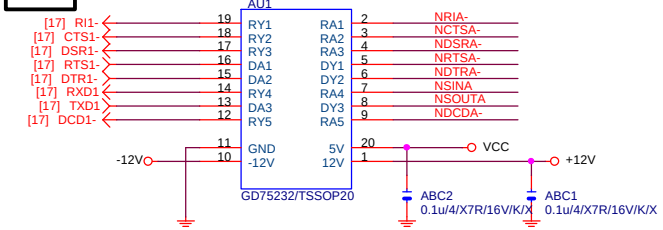
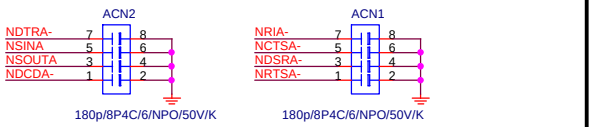
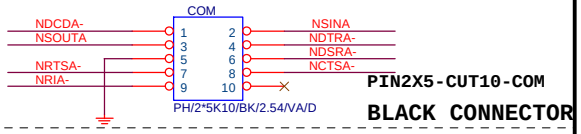
COM



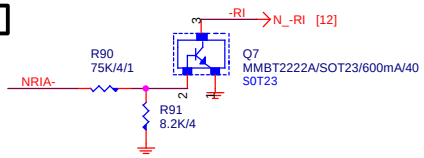




PIN2X5-CUT10-COM

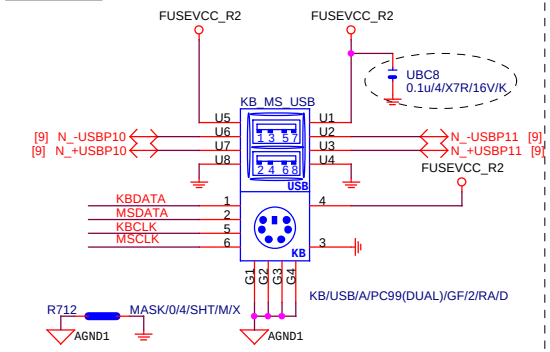
BLACK CONNECTOR

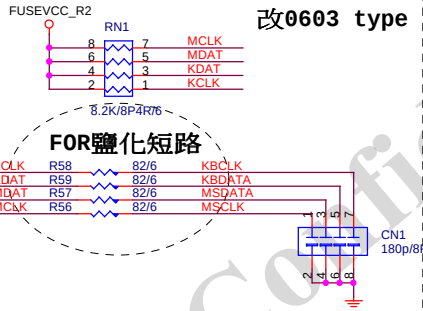
COM RI



KB/MS

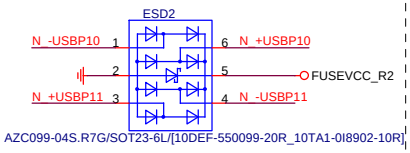
FUSEVCC_R2



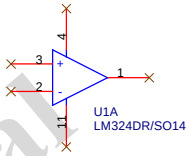


改0603 type

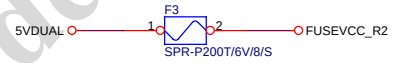
USB2.0 ESD



USB2.0 PWR



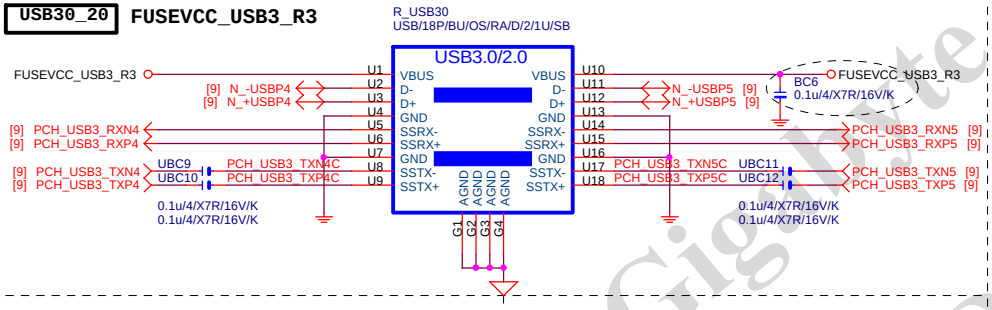
FUSE-0805



Close to connector

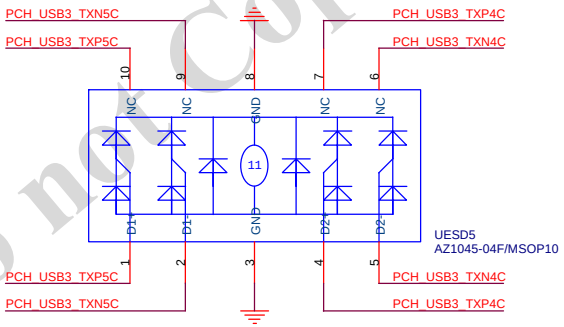
USB30_20

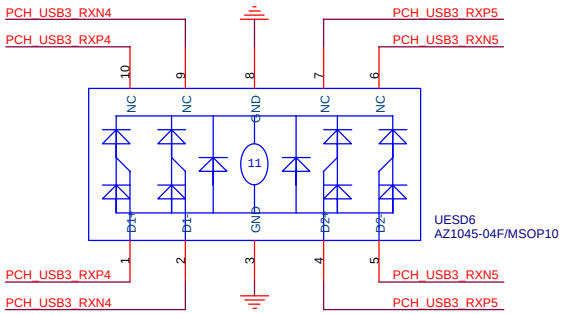
FUSEVCC_USB3_R3



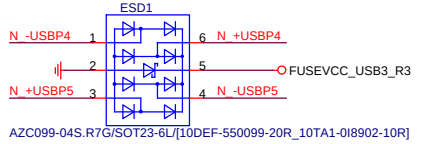
USB30_20 ESD PROCTECT

USB3.0 ESD



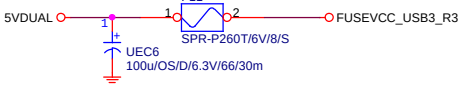


USB2.0 ESD



USB30_20 PWR

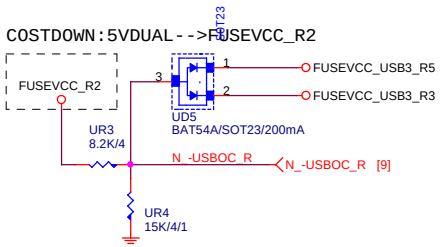
Polyswitch-1206



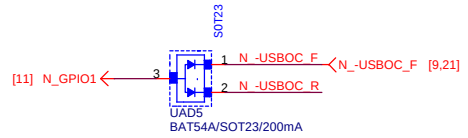
USB3.0 1Port - 1Fuse (3.5A)

-USBOC_R

COSTDOWN:5VDUAL-->FUSEVCC_R2



USB POWER PROTECT



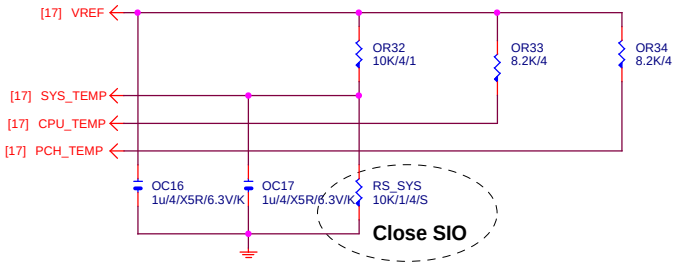
Gigabyte Technology

Title: COM,-RI,KB_USB,USB_ESATA,-PROCHOT

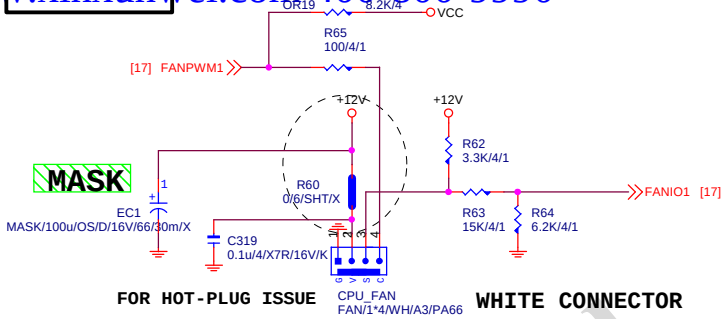
Size: Custom | Document Number: GA-H97M-D3H | Rev: 1.1

Date: Tuesday, September 16, 2014 | Sheet 18 of 32

TEMP H/W MONITOR



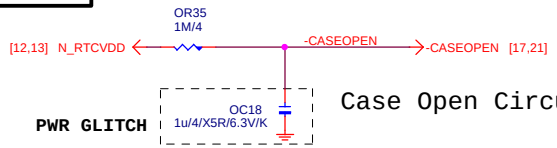
CPU SMART FAN



FOR HOT-PLUG ISSUE

WHITE CONNECTOR

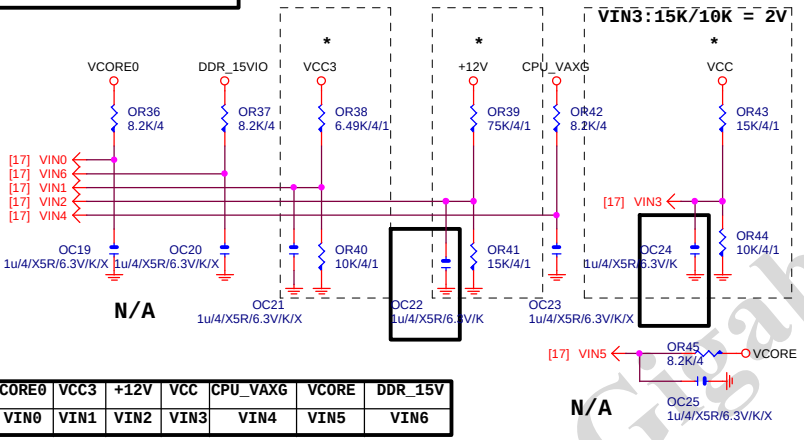
CASE OPEN



PWR GLITCH

Case Open Circuits

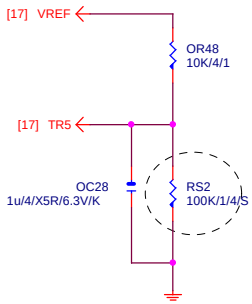
VOLTAGE-- H/W MONITOR



N/A

N/A

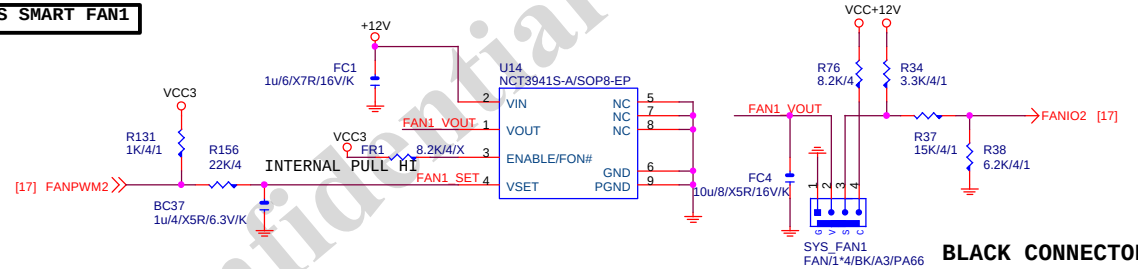
VCORE0	VCC3	+12V	VCC	CPU_VAXG	VCORE	DDR_15V
VIN0	VIN1	VIN2	VIN3	VIN4	VIN5	VIN6



RS2 CLOSE CPU VR MOSFET

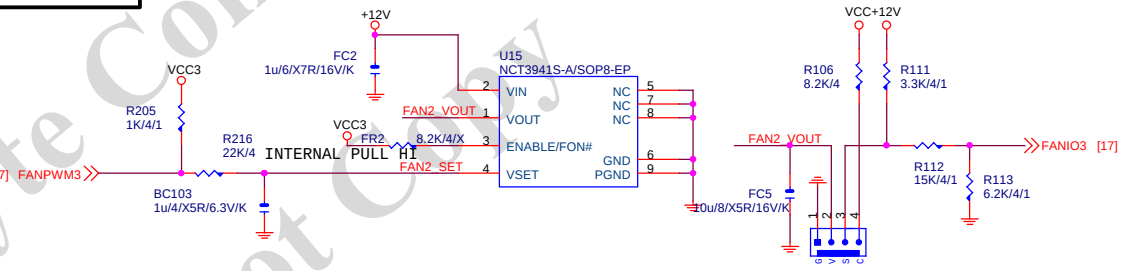
RS2 CLOSE MOSFET(VIN): DCQ1

SYS SMART FAN1



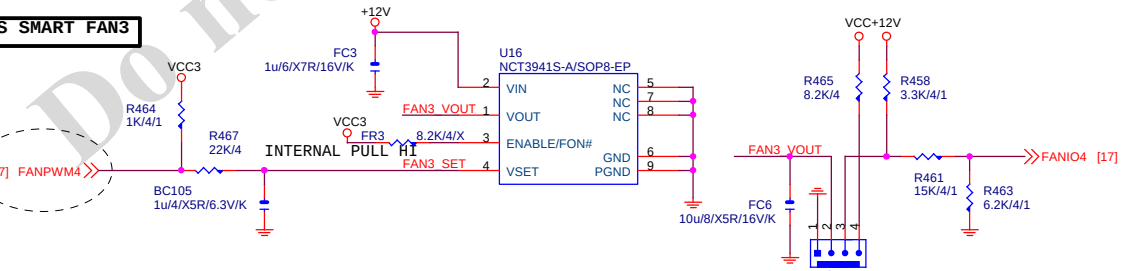
BLACK CONNECTOR

SYS SMART FAN2



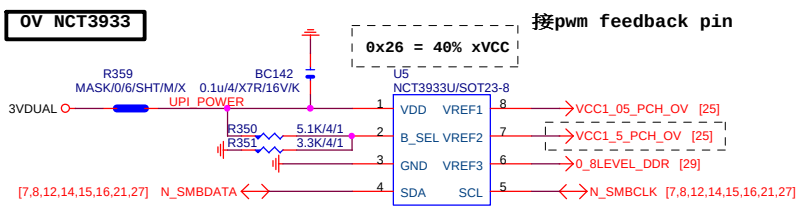
BLACK CONNECTOR

SYS SMART FAN3



BLACK CONNECTOR

OV NCT3933



Gigabyte Technology		
Title: HWM,FAN CTRL,OV		
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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BIOS DEBUG PORT

BIOS_PH R1.0 移除

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

M_BIOS
-SPI_CS_1 NR7 0/4/SHT/M/X
NC1 10p/4/NPO/50V/J/X
SPI_MISO
[12] SPI_DQ2 NR342 MASK/0/4/SHT/M/X N_-SPI_WP0
-HOLD0 NR341 MASK/0/4/SHT/M/X SPI_DQ3 [12]
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X

1	CS#	VDD	8
2	SO	HOLD#	7
3	WP#	SCK	6
4	VSS	SI	5

MAIN BIOS

64M/Q/SPI/SO8/S[10HP4-112564-30R]

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

VCC3_ME
NR12 MASK/0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K

B_BIOS
-SPI_CS_2 NR8 0/4/SHT/M/X
SPI_MISO
[12] SPI_DQ2 NR344 MASK/0/4/SHT/M/X N_-SPI_WP1
-HOLD1 NR343 MASK/0/4/SHT/M/X SPI_DQ3 [12]
N_ICH_SPI_CLK N_ICH_SPI_CLK [12]
N_ICH_SPI_MOSI N_ICH_SPI_MOSI [12]

1	CS#	VDD	8
2	SO	HOLD#	7
3	WP#	SCK	6
4	VSS	SI	5

BACKUP BIOS

64M/Q/SPI/SO8/S[10HP4-112564-30R]

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

1 means floating
0 means PD 1K

MOSI For DMI RX Termination Voltage

VCC3_ME
[17] -SPI_HOLD_M -SPI_HOLD_M NR3 1K/4/1
[17] -SPI_HOLD_B -SPI_HOLD_B NR11 1K/4/1

VCC3_ME
[12] N_ICH_SPI_MISO N_ICH_SPI_MISO NR5 8.2K/4

NR6 0/4/SHT/M/X
SPI_MISO N_ICH_SPI_MISO [12]

VCC3_ME
R3 330/4/1
-SPI_CS_1
R225 1K/4/1
S0T23
N_-ICH_SPI_CS N_-ICH_SPI_CS [12]
Q83 MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]
Q57 MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]
S0T23 指定用NXP
-SPI_HOLD_B
R226 8.2K/4

VCC3_ME
R227 330/4/1
-SPI_CS_2
R228 1K/4/1
S0T23
N_-ICH_SPI_CS
Q84 MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]
Q59 MMBT2222A/SOT23/600mA/40/[10IT1-002222-11R]
S0T23 指定用NXP
-SPI_HOLD_M
R229 8.2K/4

Gigabyte Technology

Title: DUAL BIOS

Size: Custom | Document Number: GA-H97M-D3H | Rev: 1.1

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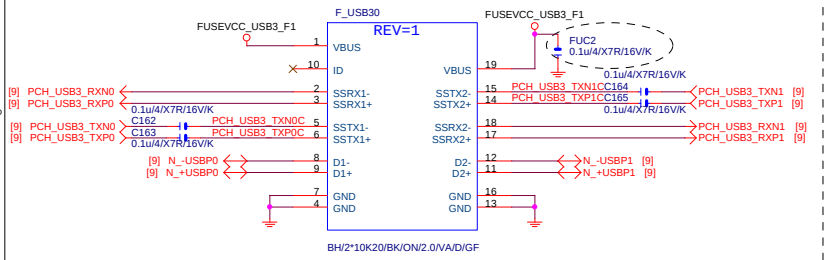
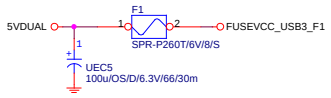
F_USB30 FUSEVCC_USB3_F1



BLACK CONNECTOR

F_USB30 PWR

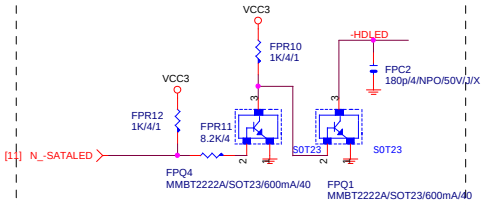
Polyswitch-1206



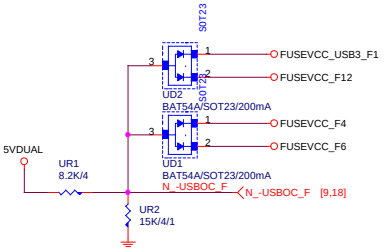
USB3.0 1Port - 1Fuse (3.5A)

Close to connector

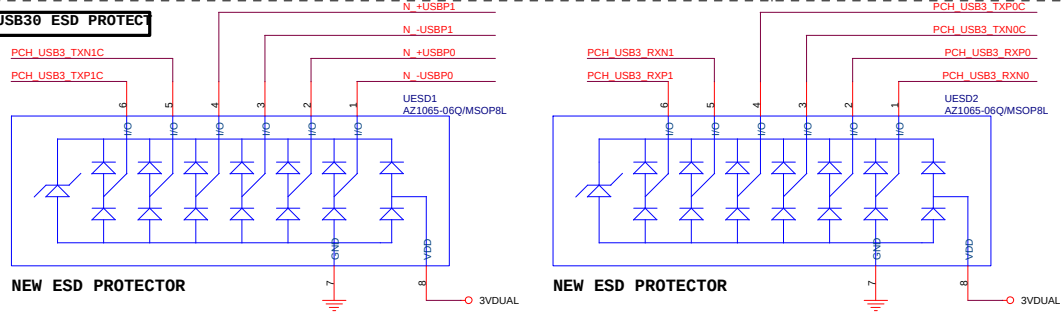
SATA LED



-USBOC_F



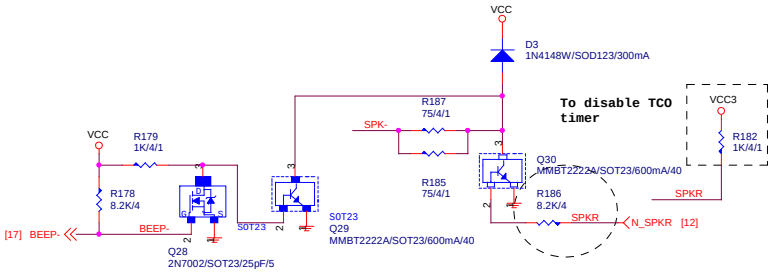
F_USB30 ESD PROTECT



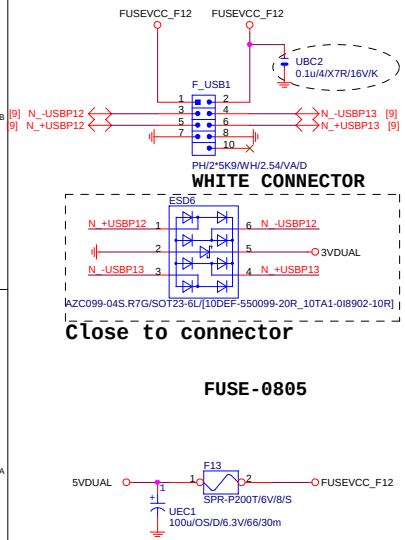
NEW ESD PROTECTOR

NEW ESD PROTECTOR

SPKR



FRONT USB1 FUSEVCC_F12

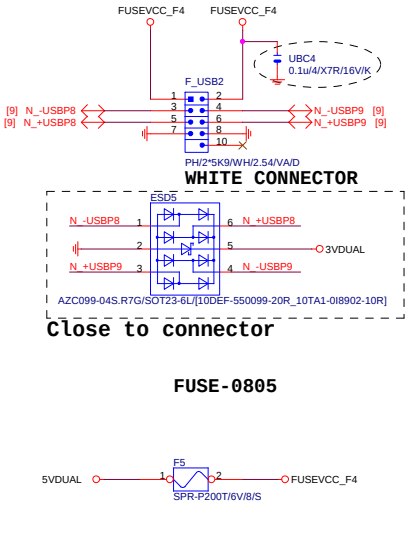


WHITE CONNECTOR

Close to connector

FUSE-0805

FRONT USB2 FUSEVCC_F4

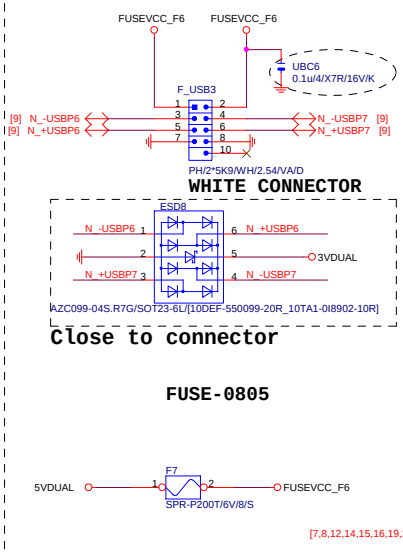


WHITE CONNECTOR

Close to connector

FUSE-0805

FRONT USB3 FUSEVCC_F6

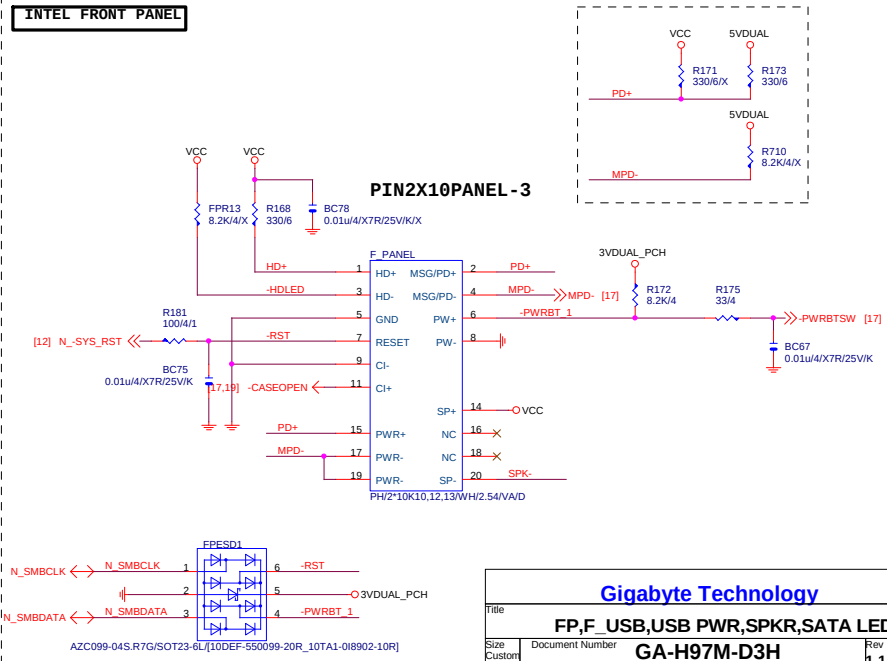


WHITE CONNECTOR

Close to connector

FUSE-0805

INTEL FRONT PANEL



Title	FP,F_USB,USB PWR,SPKR,SATA LED	
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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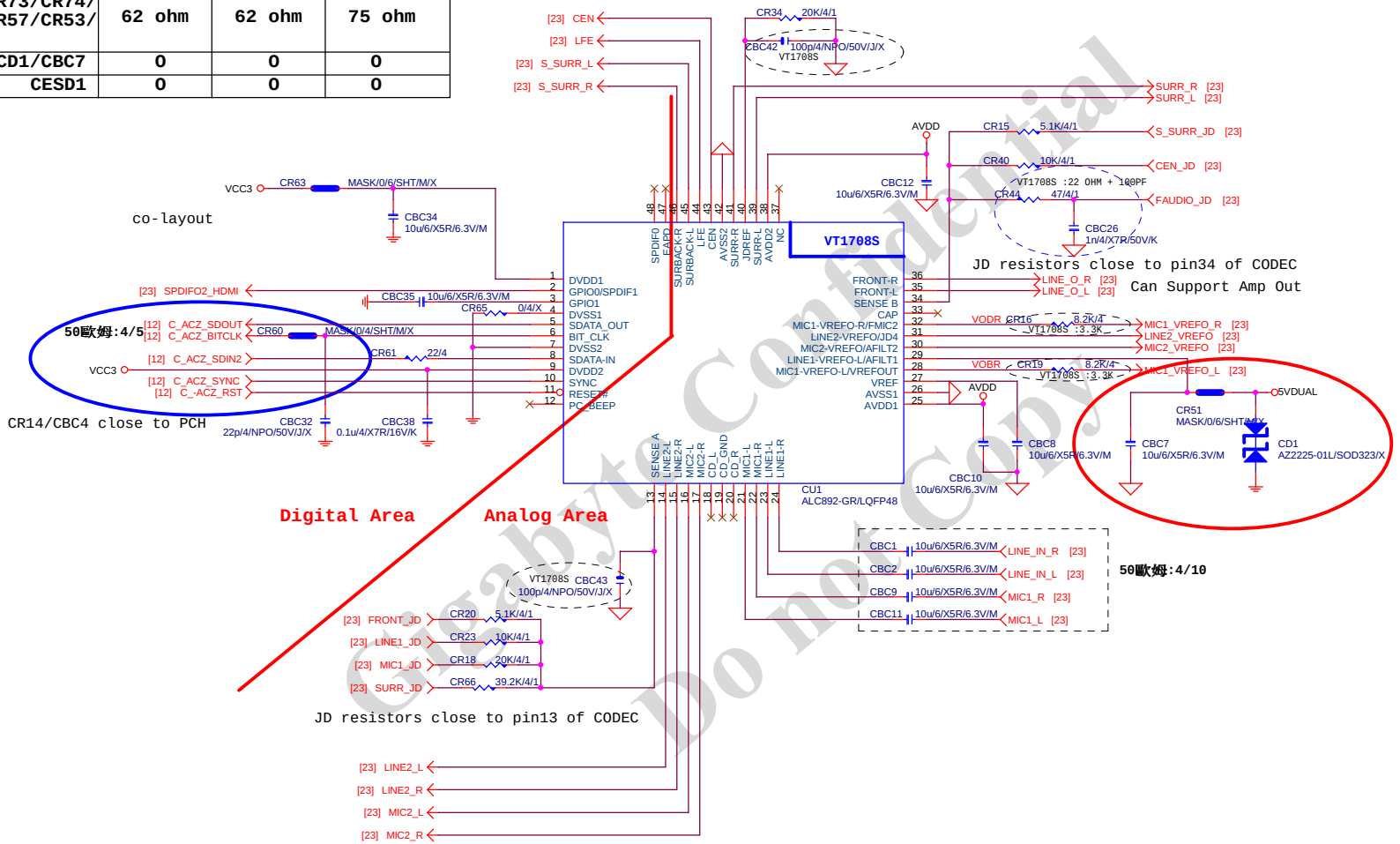
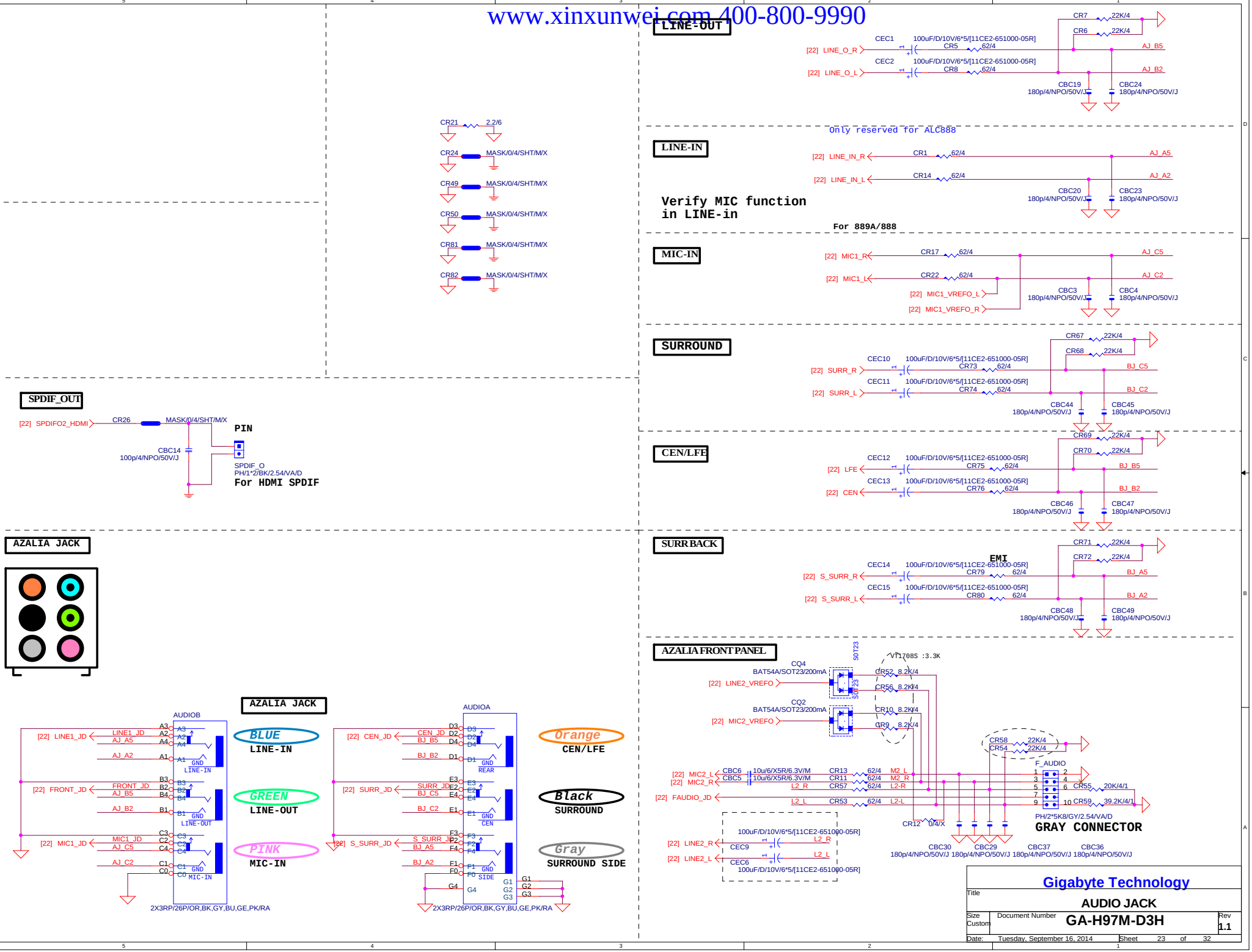
Gigabyte Technology

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
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	0	0	0

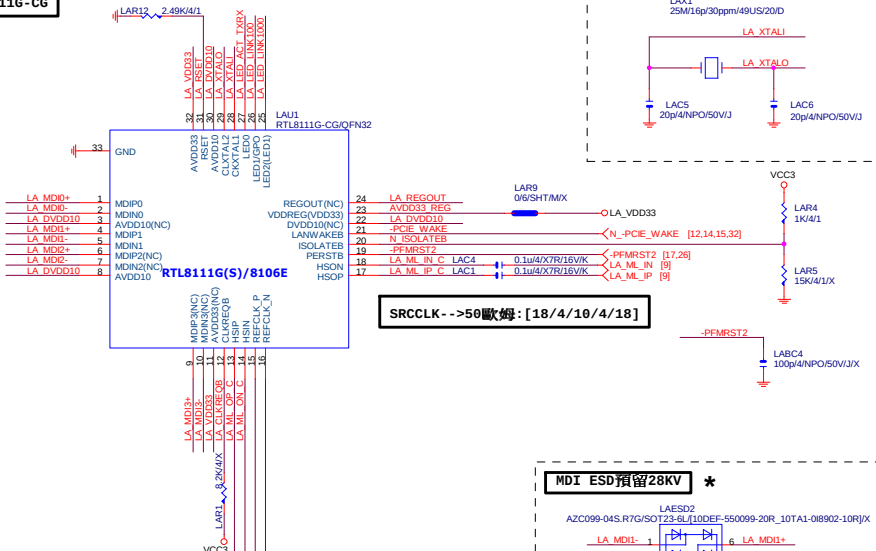


Gigabyte Technology			
Title: HD AUDIO ALC887B-VD2/VT1708S/VT2021			
Size: Custom	Document Number: GA-H97M-D3H		Rev: 1.1
Date: Tuesday, September 16, 2014	Sheet 22 of 32		



Gigabyte Technology		
Title	AUDIO JACK	
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
Date: Tuesday, September 16, 2014	Sheet 23 of 32	

LAN RTL8111G-CG

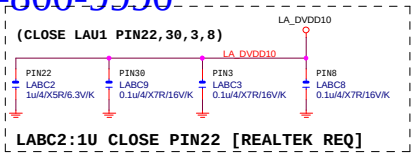


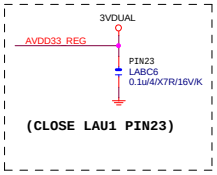
離IC近越好

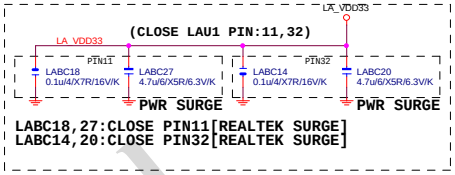
SRCCLK-->50歐姆:[18/4/10/4/18]

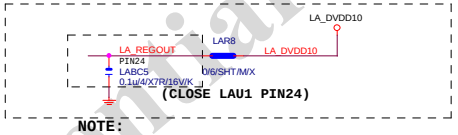
LA_ ML-->80歐姆:[15/5/5/5/15]

LAN POWER



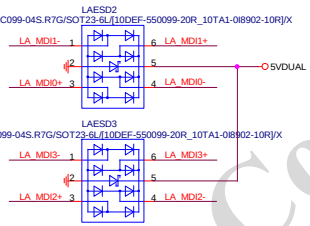






NOTE:
RT8106E:PIN3,11,22,24-->NC
LABC2LABC3,LABC5,LABC18,LABC27-->N/A

MDI ESD預留28KV *



BOM NOTICE *

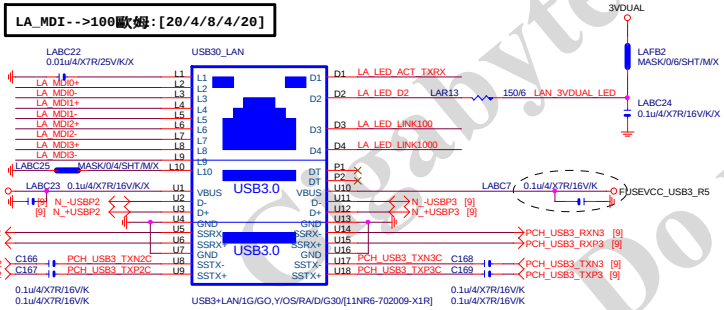
料號	規格	廠商
11NR6-702009-96R 1G LAN (12core)		UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		

1. 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
LAESD2,LAESD3:上件AZC398-04S

USB_LAN CONNECTOR

FUSEVCC_USB3_R5

LA_MDI-->100歐姆:[20/4/8/4/20]



使用RU9 USB_LAN可省略LAESD1保護LED

USB3+LAN/1G/GO,Y/OS/RA/D/G30/[11NR6-702009-X1R]

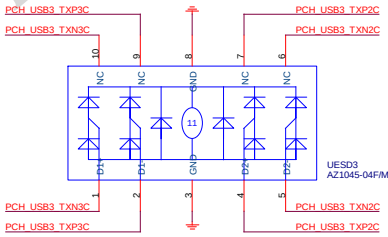
USB X3 POWER

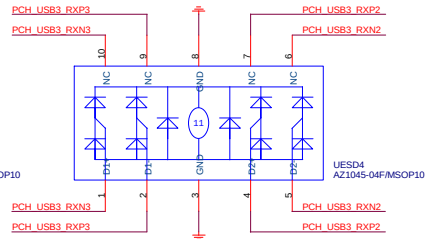
Polyswitch-1206

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

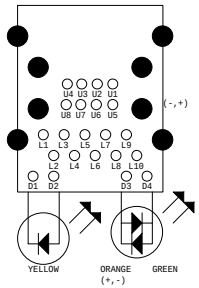
EMI SHORT PAD

PS:視EMI需求

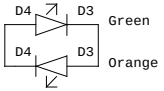




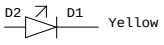
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]



Dual Color LED



Single Color LED



BOM NOTICE *

料號	規格	廠商
11NR6-702009-96R 1G LAN (12core)		UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		

1. 9KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
2. 28KV ESD BOM:
USB_LAN (RU9):11NR6-702009-96R
LAESD2,LAESD3:上件AZC398-04S

Gigabyte Technology			
Title: Realtek RTL8111G			
Size: Custom	Document Number: GA-H97M-D3H		Rev: 1.1
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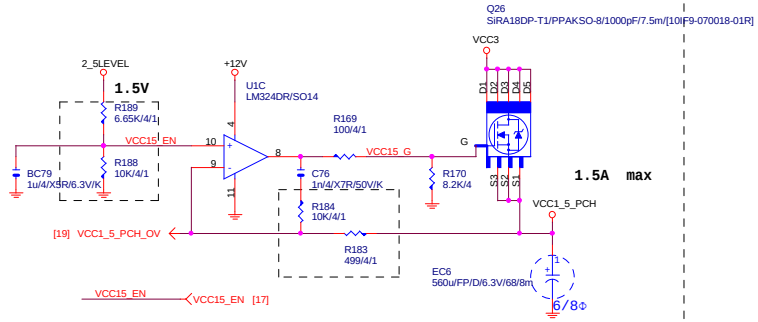
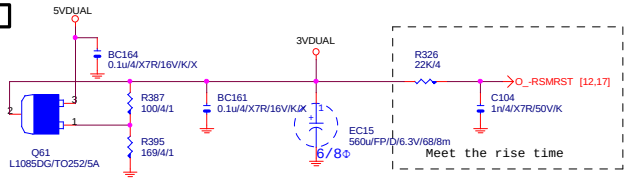
VCC1_5_PCH



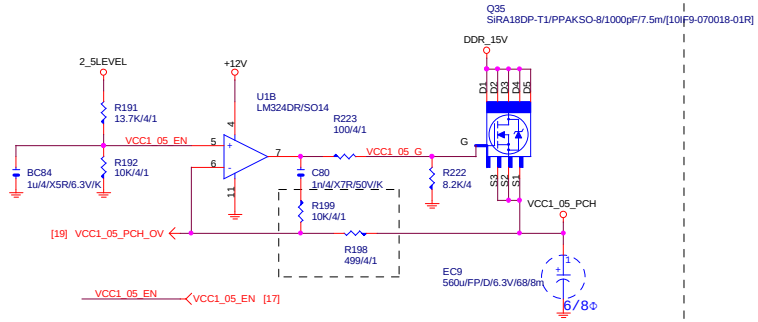
2_5LEVEL

3VDUAL

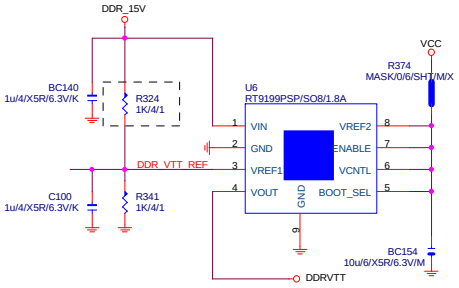


VCC1_05_PCH

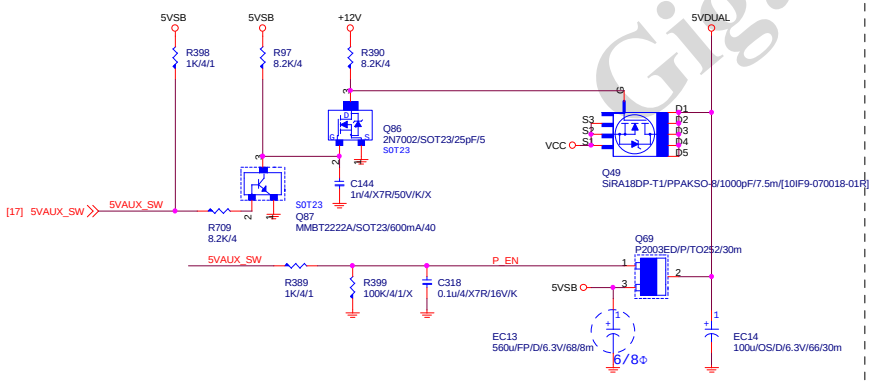
N/A



DDRVTT



5VDUAL



5VDUAL SHORT PROTECT

N/A

Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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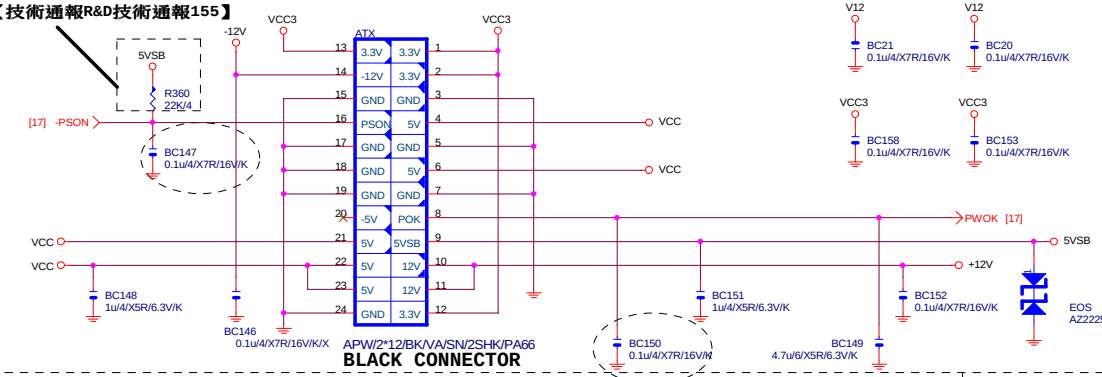
ATXX24 POWER CONNECTOR

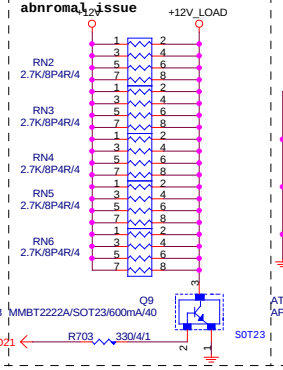
【技術通報R&D技術通報155】



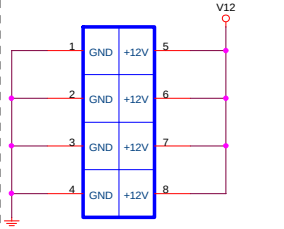
BLACK CONNECTOR

【技術通報R&D技術通報153】

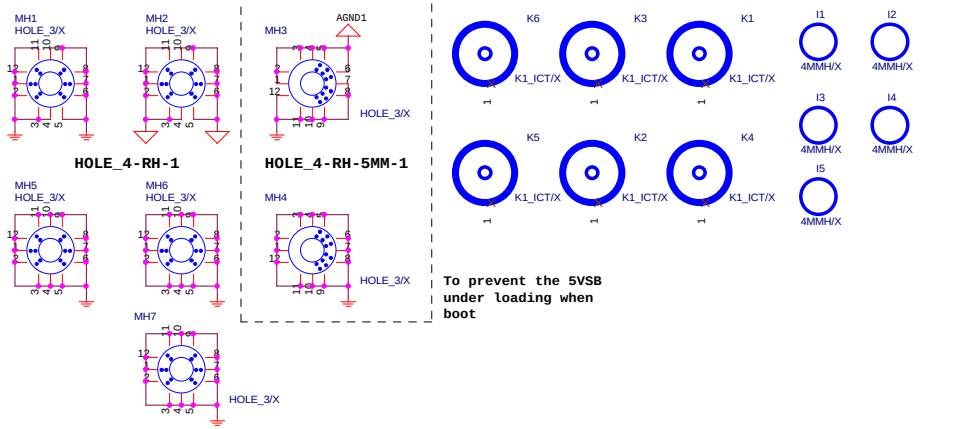
To fix 12V light load abnroma1 issue



ATXX4 POWER CONNECTOR

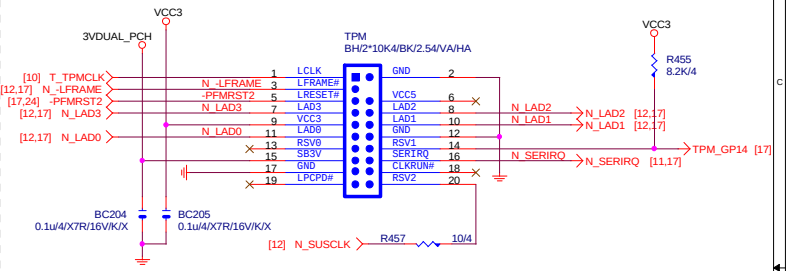


BLACK CONNECTOR

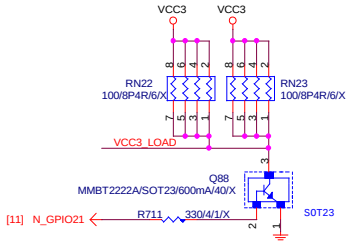


To prevent the 5VSB under loading when boot

TPM



FIX PWR MINMUN LOAD



Gigabyte Technology		
Title: ATX CONNECTOR		
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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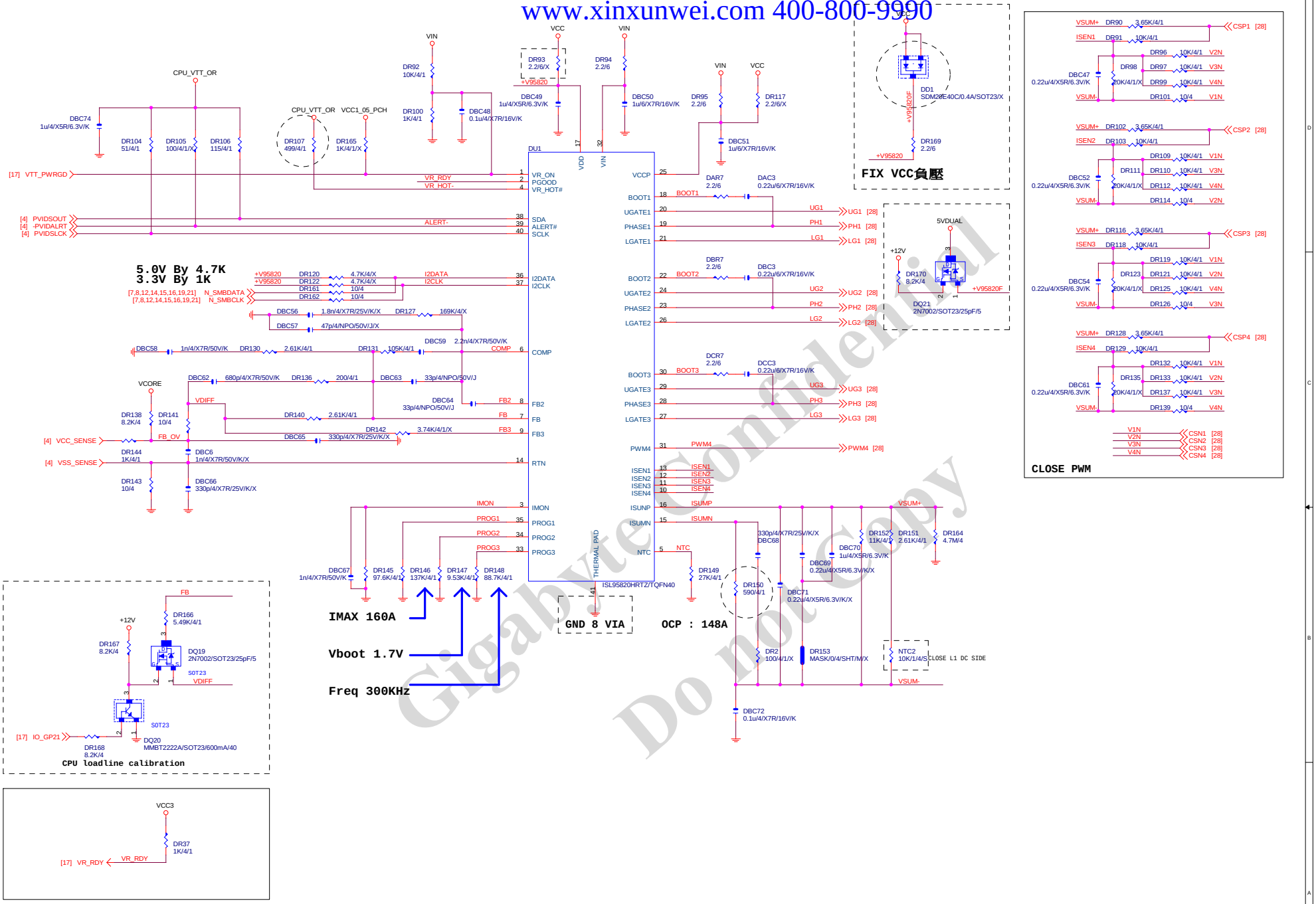

Gigabyte Technology			
Title	CPU CORE VR-1		
Size Custom	Document Number GA-H97M-D3H		Rev 1.1
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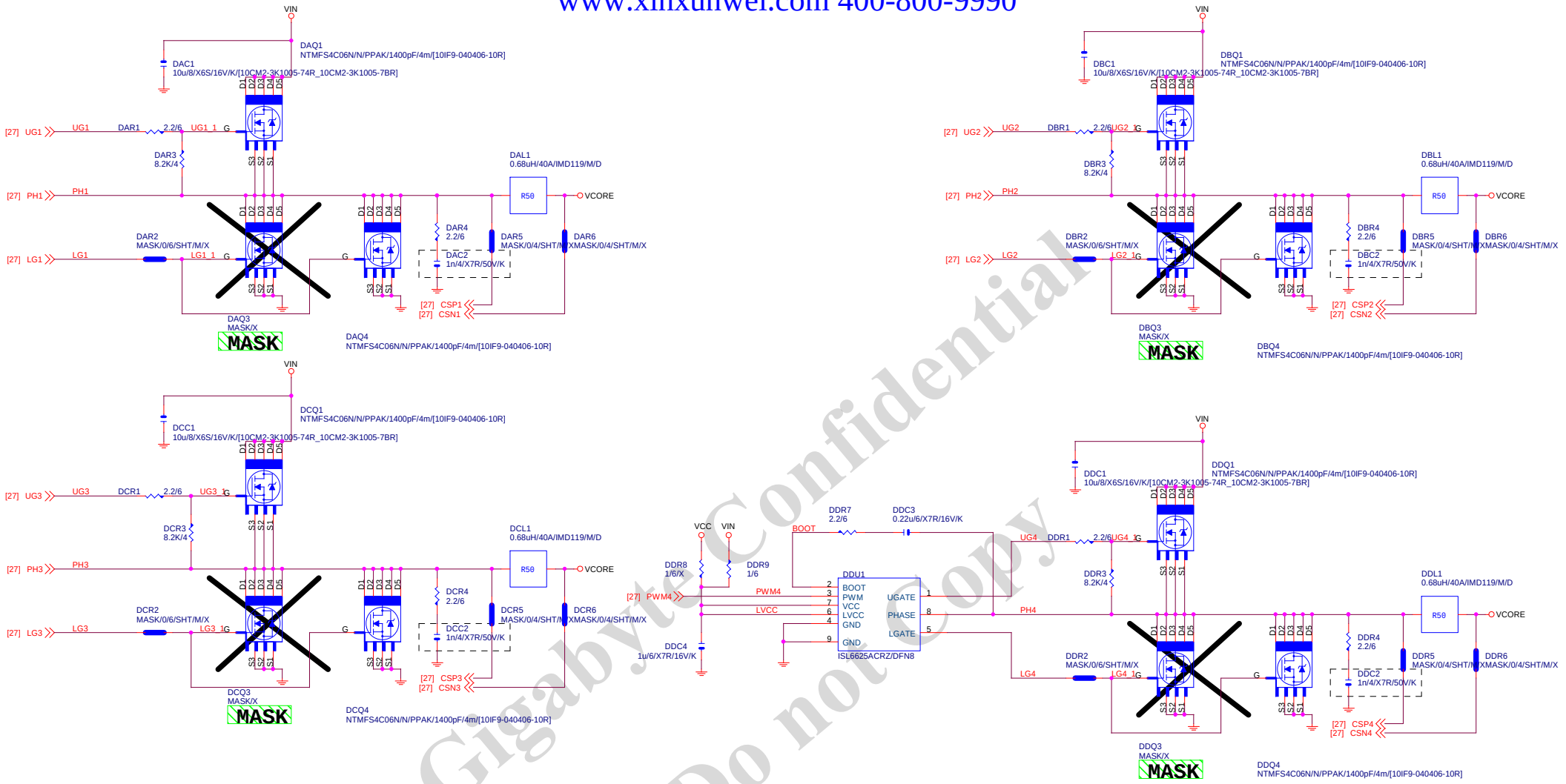
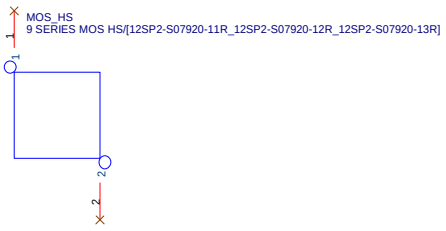
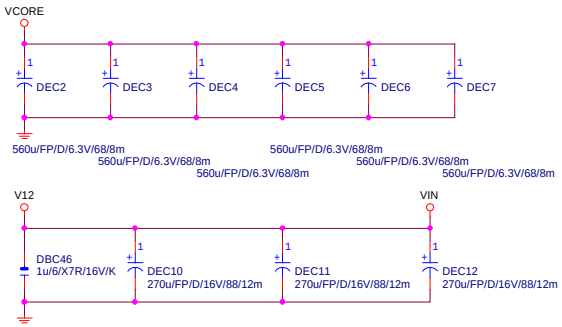


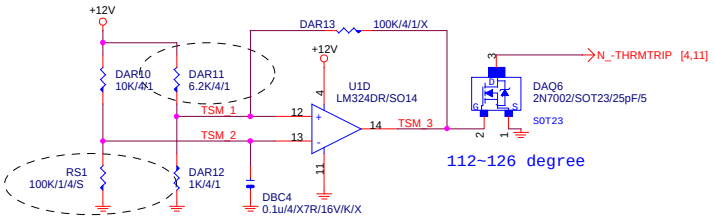


9 Series MOS Heatsink (Screw fix)

MOSHSINK-Z97X-SLI

H97 MODEL:一上一下,DAQ3,DBQ3,DCQ3,DDQ3改MASK FOOTPRINT





RS1 CLOSE MOSFET(VIN): DBQ1

Gigabyte Technology		
Title	CPU CORE VR-2	
Size: Custom	Document Number: GA-H97M-D3H	Rev: 1.1
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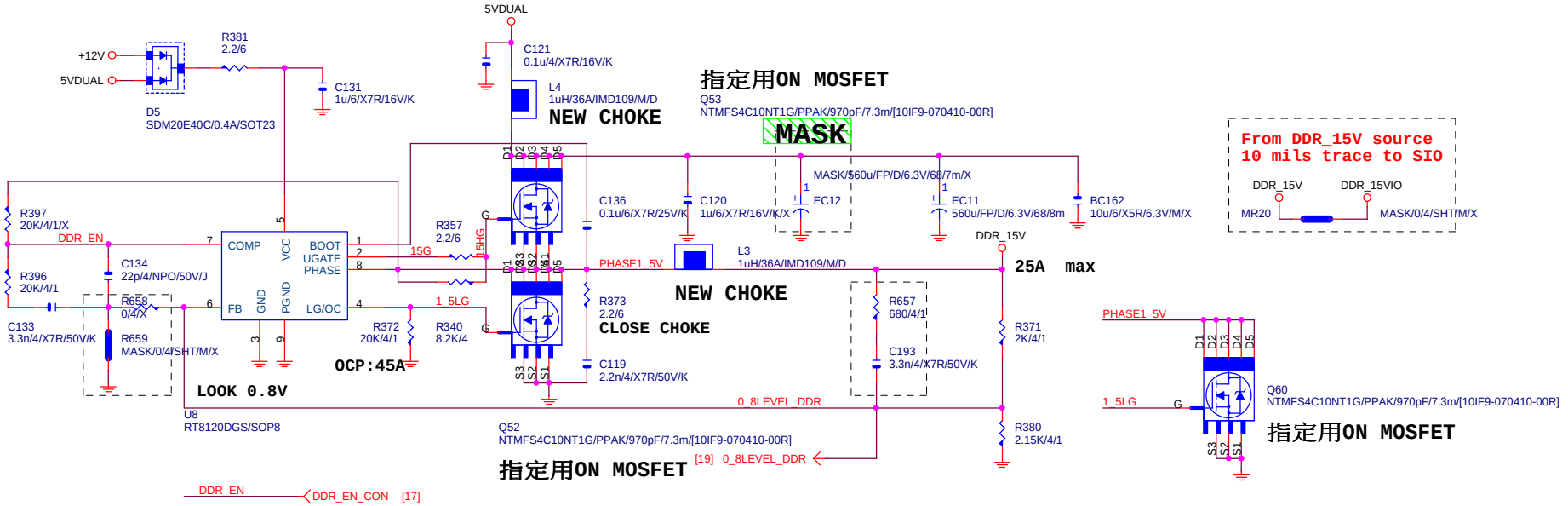
DDR15V



PWR SEQ

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

Rocset=(Iocp*Lgate,rdson)/Iocset
Rocset=(45A*6.7mOhm)/10uA = 30K
Iocset=10uA

Gigabyte Technology			
Title: DDR POWER			
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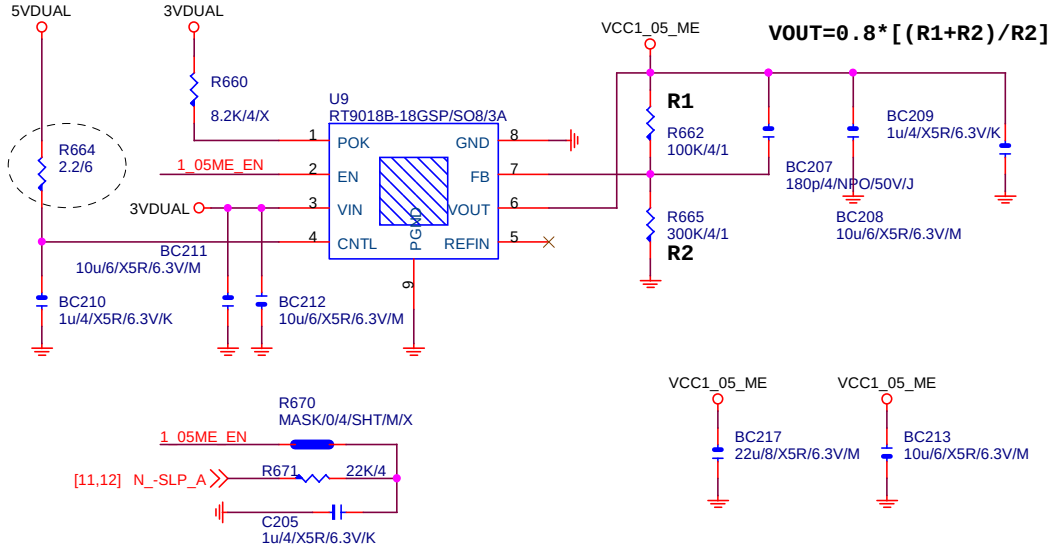
VCC1_05_ME

Z97 N/A

【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

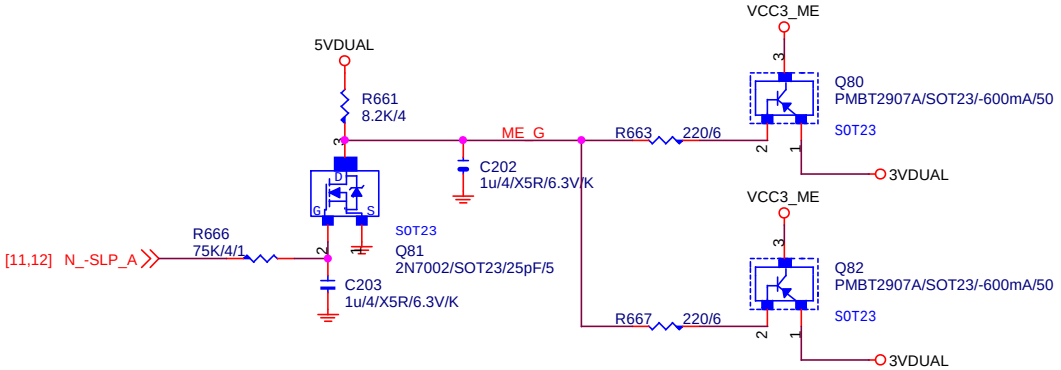
VOUT=0.8*[(R1+R2)/R2]

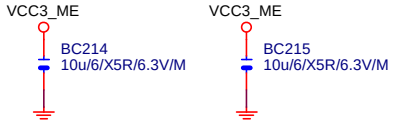


Second source
EM5103 - 10GL2-305103-01R
NCT3730S -
10GL2-303730-01R

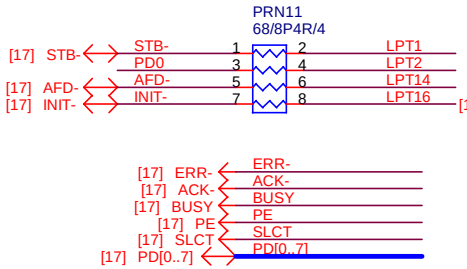
VCC3_ME

Z97 N/A

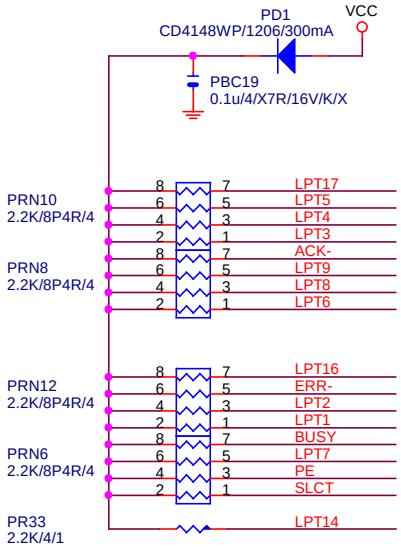


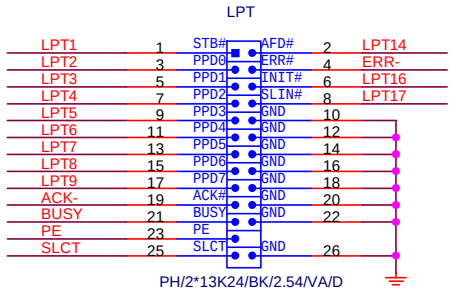


LPT PORT



【技術通報R&D技術通報151】
33ohm Change to 68ohm





Gigabyte Technology

Title	LPT	
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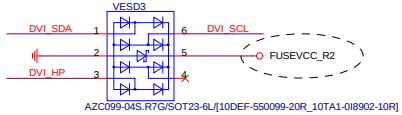
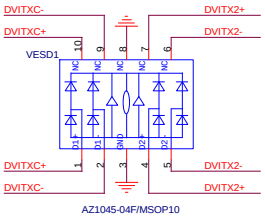
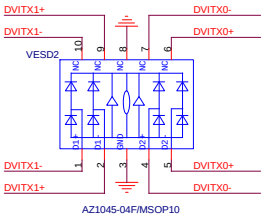
DVI LEVEL SHIFT



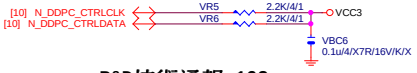
Close to connector



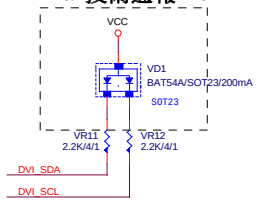
Close to connector

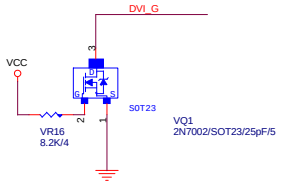


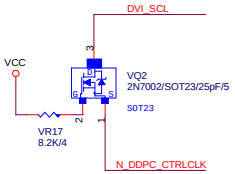
Close to connector

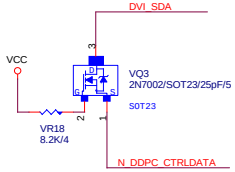


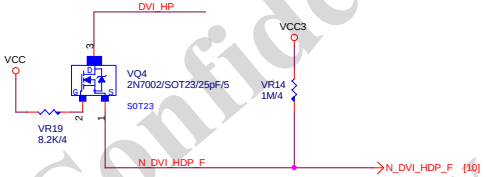
R&D技術通報 162

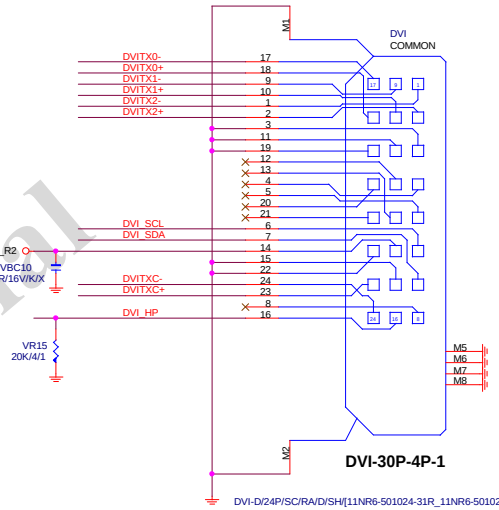




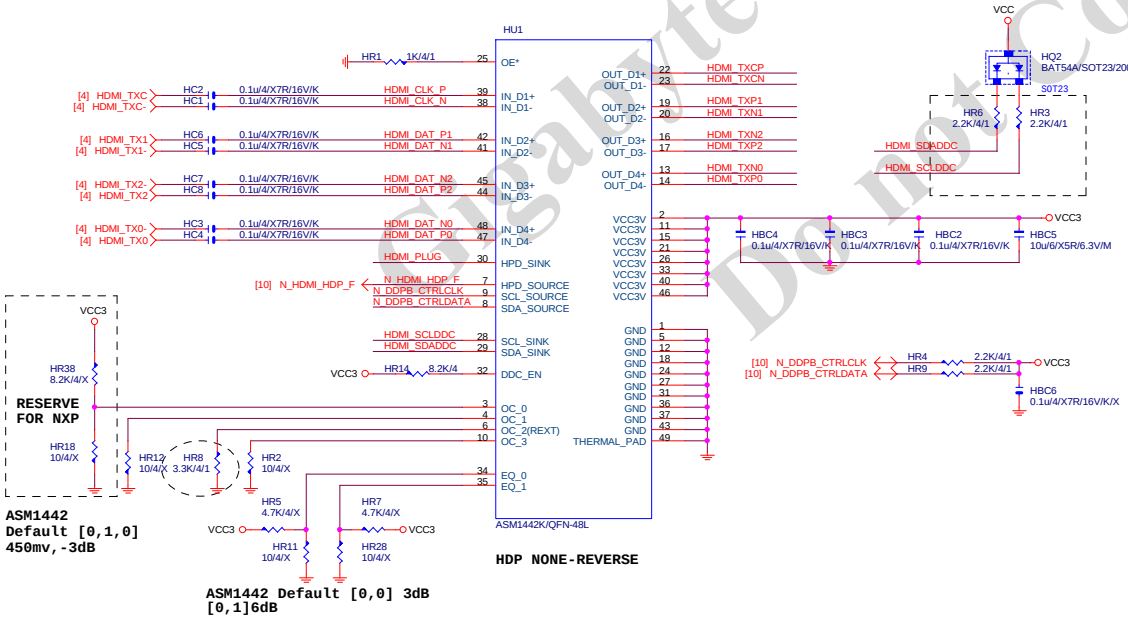


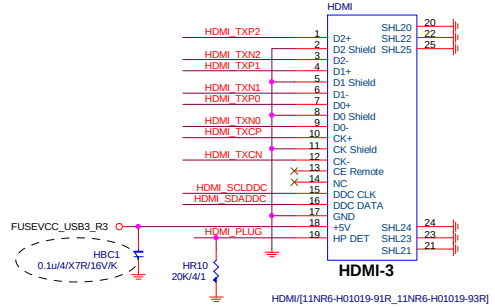






HDMI LEVEL SHIFT





Gigabyte Technology			
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PCIE TO PCI

PCI:5/4/5 Impedance=50 +- 15%

Co-Lay IT8893 (IT8893 CLKOUT1 N/A)

IT8892: PR24 -> 47ohm
IT8893: PR24 -> 22ohm

IT8892: PR46 -> X
IT8893: PR46 -> O

IT8892: PR19 -> O
IT8893: PR19 -> X

High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

IT8892

PCI slot

chipset side

IT8892E/BX LQFP128

IT8892E/FX/S

PCB layout note:
Close to chip

Title	ITE IT8892E
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