Model Name: GA-B150M-D3H DDR3 *rev 1.0*

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01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_LGA1150-D
08	DDR3 CHANNEL A
09	DDR3 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS
16	ITE 8628 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*4 SLOT
21	M.2X4
22	SATA EXPRESS
23	SWITCH
24	ASM1083 PCI BRIDGE
25	ASM1083 POWER
26	PCI SLOT 1&2
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SHEET	TITLE
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29	ISL95858_856 MOS_VCCGT
30	VCCSA_VCCIO_VCCPLL
31	RT8120_DDR_VDDQ
32	RT8120_PCH_VCC1_0_PCH
33	DISCRETE POWER
34	NCT3933
35	ATX POWER , A_-PROCHOT
36	KB_MS_USB
37	DVI CONN
38	PTN3356 - DP to VGA - IC
39	PTN3356 - DP to VGA - Conn
40	HDMI CONN
41	R_USB30
42	INTEL I219
43	USB30_LAN CONNECTOR-I219
44	Realtek ALC892
45	REAR AUDIO JACK
46	F_USB30
47	F_USB
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Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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Model Name: GA-B150M-D3H DDR3 *rev1.0*

Component value change history

2015/07/13

Data	Change Item	Reason
2015/04/20	修改M.2/SE PORT	
2015/04/23	1. SKYLAKE DP-VGA模組線路:NXP PTN3356 R1.06 2. Connector module release version:0.55	
2015/04/27	修改M.2/SE PORT R0.5	
2015/05/04	1. SKY LAKE 模組化線路 M.2(F)---M.2_S.E._PCI 切換線路 2. PCH_RT8237_04B and PCH_RT8120_06B模組線路 3. SWAP NET	
2015/05/05	I219: FOR ERP WAKE : ADD:LAQ1-->MMBT2222A/SOT23/600mA/40,LAQR1-->8.2K/4	
2015/07/03	R1.0: 1. SKYLAKE DP-VGA模組線路:PCH_RT8237_050B_150702A 2. PCH_RT8237_050B_150702A	
2015/07/13	Update DDR PWR 模組 (REV:0.30)	

Circuit or PCB layout change

DATE	Change Item	Reason

GIGABYTE™

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

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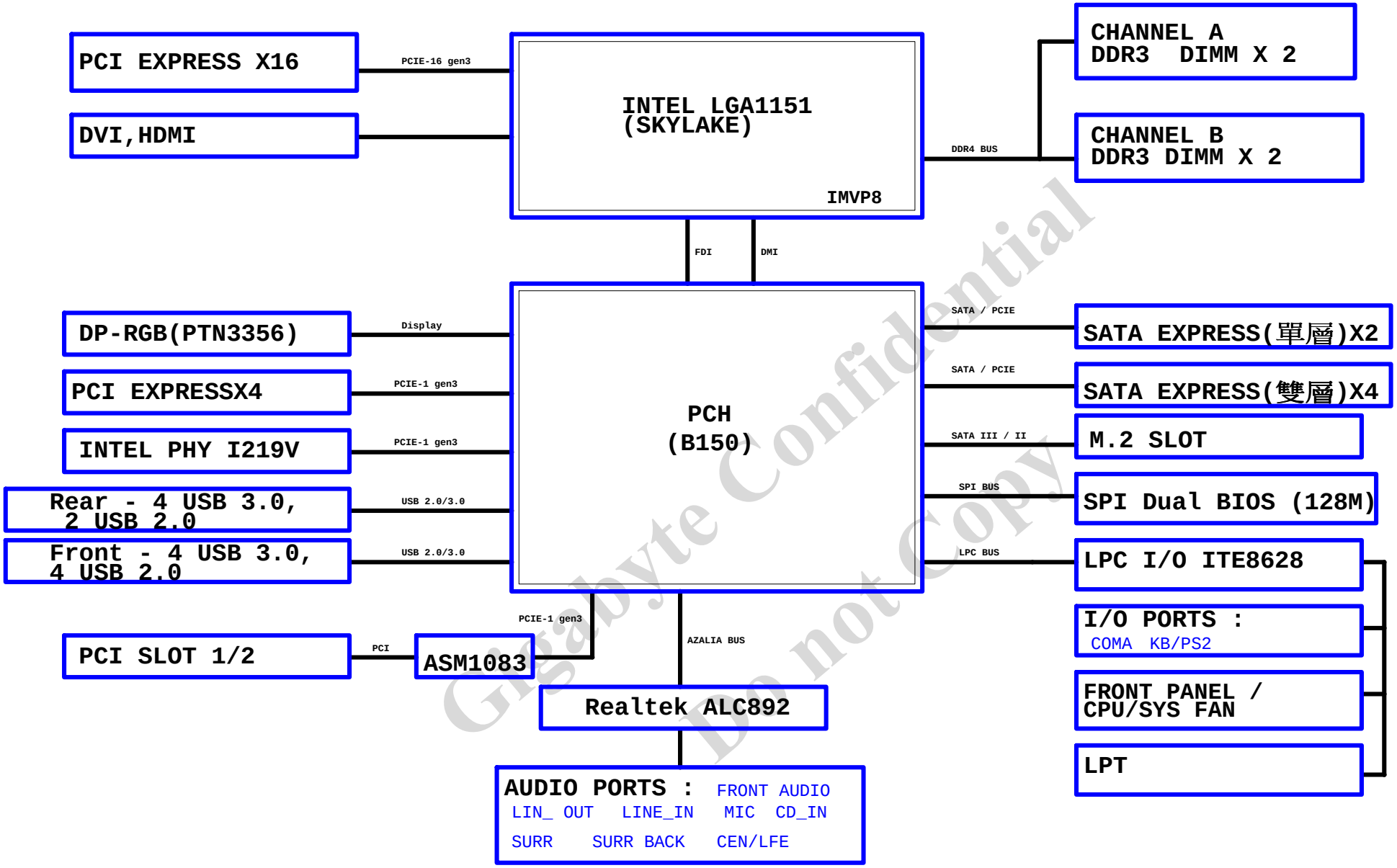
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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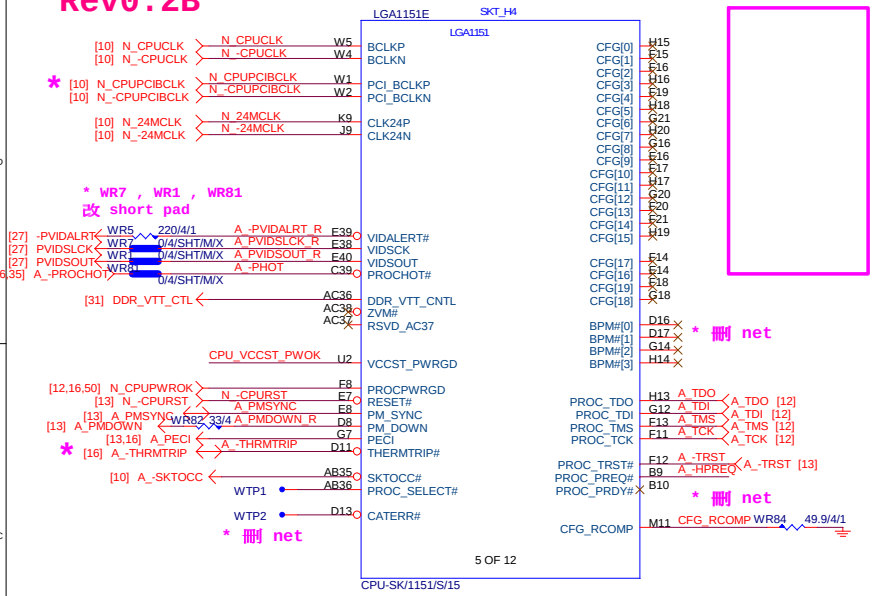
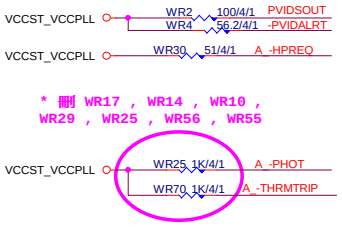
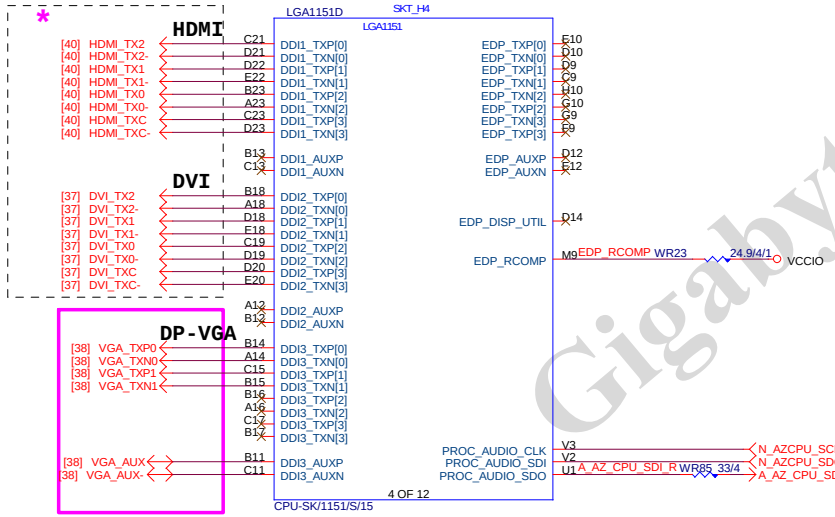
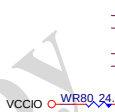
* Rev0.2B









G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R

---
4 layer HDMI/DP/eDP/======4/4/4//15
6 layer HDMI/DP/eDP/======4/5.5/4//15

Impedance=85 +- 15%

CFG[2]:x16 Lane Numbering Reversal. 1=NORMAL;0=reversal
CFG[4]: eDP enable:1:disable/0=enable
CFG[6:5]:PCI Express* Bifurcation; 11=1 x16 PCI Express;10=2x8 PCI Express
CFG[7]: PEG Training:1=(default) PEG Train immediately following RESET#;0=PEG Wait for BIOS

Bifurcation Config.	Signals Lanes CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] [19]
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] [19]
PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] [19]
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] [19]

---
4 layer PEG/DMI======4/4/4//15
6 layer PEG/DMI======4/5.5/4//15

Impedance=85 +- 15%

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

Title	CPU LGA1151-A
Size / Custom	Document Number: GA-B150M-D3H DDR3
Rev	1.0
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LGA1151A

SKT_H4

LGA1151

MDA0 AE38
MDA1 AE37
MDA2 AG38
MDA3 AG37
MDA4 AE39
MDA5 AE40
MDA6 AG39
MDA7 AG40
MDA8 AJ38
MDA9 AJ37
MDA10 AL38
MDA11 AL37
MDA12 AJ40
MDA13 AJ39
MDA14 AL39
MDA15 AL40
MDA16 AN38
MDA17 AN40
MDA18 AR38
MDA19 AR37
MDA20 AN39
MDA21 AN37
MDA22 AR39
MDA23 AR40
MDA24 AW37
MDA25 AU38
MDA26 AV35
MDA27 AW35
MDA28 AU37
MDA29 AV37
MDA30 AT35
MDA31 AU35
MDA32 AY8
MDA33 AW8
MDA34 AV6
MDA35 AU6
MDA36 AU8
MDA37 AV8
MDA38 AW6
MDA39 AY6
MDA40 AY4
MDA41 AV4
MDA42 AT1
MDA43 AT2
MDA44 AV3
MDA45 AW4
MDA46 AT4
MDA47 AT3
MDA48 AP2
MDA49 AM4
MDA50 AP3
MDA51 AM3
MDA52 AP4
MDA53 AM2
MDA54 AP1
MDA55 AM1
MDA56 AK3
MDA57 AH1
MDA58 AK4
MDA59 AH2
MDA60 AH4
MDA61 AK2
MDA62 AH3
MDA63 AK1

DDR0_DQ[0]
DDR0_DQ[1]
DDR0_DQ[2]
DDR0_DQ[3]
DDR0_DQ[4]
DDR0_DQ[5]
DDR0_DQ[6]
DDR0_DQ[7]
DDR0_DQ[8]
DDR0_DQ[9]
DDR0_DQ[10]
DDR0_DQ[11]
DDR0_DQ[12]
DDR0_DQ[13]
DDR0_DQ[14]
DDR0_DQ[15]
DDR0_DQ[16]/DDR0_DQ[32]
DDR0_DQ[17]/DDR0_DQ[33]
DDR0_DQ[18]/DDR0_DQ[34]
DDR0_DQ[19]/DDR0_DQ[35]
DDR0_DQ[20]/DDR0_DQ[36]
DDR0_DQ[21]/DDR0_DQ[37]
DDR0_DQ[22]/DDR0_DQ[38]
DDR0_DQ[23]/DDR0_DQ[39]
DDR0_DQ[24]/DDR0_DQ[40]
DDR0_DQ[25]/DDR0_DQ[41]
DDR0_DQ[26]/DDR0_DQ[42]
DDR0_DQ[27]/DDR0_DQ[43]
DDR0_DQ[28]/DDR0_DQ[44]
DDR0_DQ[29]/DDR0_DQ[45]
DDR0_DQ[30]/DDR0_DQ[46]
DDR0_DQ[31]/DDR0_DQ[47]
DDR0_DQ[32]/DDR1_DQ[0]
DDR0_DQ[33]/DDR1_DQ[1]
DDR0_DQ[34]/DDR1_DQ[2]
DDR0_DQ[35]/DDR1_DQ[3]
DDR0_DQ[36]/DDR1_DQ[4]
DDR0_DQ[37]/DDR1_DQ[5]
DDR0_DQ[38]/DDR1_DQ[6]
DDR0_DQ[39]/DDR1_DQ[7]
DDR0_DQ[40]/DDR1_DQ[8]
DDR0_DQ[41]/DDR1_DQ[9]
DDR0_DQ[42]/DDR1_DQ[10]
DDR0_DQ[43]/DDR1_DQ[11]
DDR0_DQ[44]/DDR1_DQ[12]
DDR0_DQ[45]/DDR1_DQ[13]
DDR0_DQ[46]/DDR1_DQ[14]
DDR0_DQ[47]/DDR1_DQ[15]
DDR0_DQ[48]/DDR1_DQ[32]
DDR0_DQ[49]/DDR1_DQ[33]
DDR0_DQ[50]/DDR1_DQ[34]
DDR0_DQ[51]/DDR1_DQ[35]
DDR0_DQ[52]/DDR1_DQ[36]
DDR0_DQ[53]/DDR1_DQ[37]
DDR0_DQ[54]/DDR1_DQ[38]
DDR0_DQ[55]/DDR1_DQ[39]
DDR0_DQ[56]/DDR1_DQ[40]
DDR0_DQ[57]/DDR1_DQ[41]
DDR0_DQ[58]/DDR1_DQ[42]
DDR0_DQ[59]/DDR1_DQ[43]
DDR0_DQ[60]/DDR1_DQ[44]
DDR0_DQ[61]/DDR1_DQ[45]
DDR0_DQ[62]/DDR1_DQ[46]
DDR0_DQ[63]/DDR1_DQ[47]

AU33 DDR0_ECC[0]
AT33 DDR0_ECC[1]
AW33 DDR0_ECC[2]
AV33 DDR0_ECC[3]
AU33 DDR0_ECC[4]
AV33 DDR0_ECC[5]
AW33 DDR0_ECC[6]
AY33 DDR0_ECC[7]

DDR CHANNEL A

1 OF12

DDR0_CKP[0]
DDR0_CKN[0]
DDR0_CKP[1]
DDR0_CKN[1]
DDR0_CKP[2]
DDR0_CKN[2]
DDR0_CKP[3]
DDR0_CKN[3]

DDR0_CKE[0]
DDR0_CKE[1]
DDR0_CKE[2]
DDR0_CKE[3]

DDR0_CS#[0]
DDR0_CS#[1]
DDR0_CS#[2]
DDR0_CS#[3]

DDR0_ODT[0]
DDR0_ODT[1]
DDR0_ODT[2]
DDR0_ODT[3]

DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]
DDR0_BA[1]/DDR0_CAB[6]/DDR0_BA[1]
DDR0_BA[2]/DDR0_CAA[5]/DDR0_BG[0]

DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]
DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]
DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]

DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]
DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]
DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]
DDR0_MA[3]
DDR0_MA[4]
DDR0_MA[5]/DDR0_CAA[0]/DDR0_MA[5]
DDR0_MA[6]/DDR0_CAA[2]/DDR0_MA[6]
DDR0_MA[7]/DDR0_CAA[4]/DDR0_MA[7]
DDR0_MA[8]/DDR0_CAA[3]/DDR0_MA[8]
DDR0_MA[9]/DDR0_CAA[1]/DDR0_MA[9]
DDR0_MA[10]/DDR0_CAB[7]/DDR0_MA[10]
DDR0_MA[11]/DDR0_CAA[7]/DDR0_MA[11]
DDR0_MA[12]/DDR0_CAA[6]/DDR0_MA[12]
DDR0_MA[13]/DDR0_CAB[0]/DDR0_MA[13]
DDR0_MA[14]/DDR0_CAA[9]/DDR0_BG[1]
DDR0_MA[15]/DDR0_CAA[8]/DDR0_ACT#

DDR0_PAR
DDR0_ALERT#

DDR0_DQSN[0]
DDR0_DQSN[1]
DDR0_DQSN[2]/DDR0_DQSN[4]
DDR0_DQSN[3]/DDR0_DQSN[5]
DDR0_DQSN[4]/DDR1_DQSN[0]
DDR0_DQSN[5]/DDR1_DQSN[1]
DDR0_DQSN[6]/DDR1_DQSN[4]
DDR0_DQSN[7]/DDR1_DQSN[5]

DDR0_DQSP[0]
DDR0_DQSP[1]
DDR0_DQSP[2]/DDR0_DQSP[4]
DDR0_DQSP[3]/DDR0_DQSP[5]
DDR0_DQSP[4]/DDR1_DQSP[0]
DDR0_DQSP[5]/DDR1_DQSP[1]
DDR0_DQSP[6]/DDR1_DQSP[4]
DDR0_DQSP[7]/DDR1_DQSP[5]

DDR0_DQSP[8]
DDR0_DQSP[8]

AW18 M_DCLKA0
AV18 M_-DCLKA0
AW17 M_DCLKA1
AY17 M_-DCLKA1
AW16 M_DCLKA2
AV16 M_-DCLKA2
AT16 M_DCLKA3
AU16 M_-DCLKA3

M_DCLKA0 [8]
M_-DCLKA0 [8]
M_DCLKA1 [8]
M_-DCLKA1 [8]
M_DCLKA2 [8]
M_-DCLKA2 [8]
M_DCLKA3 [8]
M_-DCLKA3 [8]

AY24 CKEA0
AW24 CKEA1
AV24 CKEA2
AV25 CKEA3

CKEA0 [8]
CKEA1 [8]
CKEA2 [8]
CKEA3 [8]

AW12 M_-CSA0
AU11 M_-CSA1
AV13 M_-CSA2
AV10 M_-CSA3

M_-CSA0 [8]
M_-CSA1 [8]
M_-CSA2 [8]
M_-CSA3 [8]

AW11 MODT_A0
AU14 MODT_A1
AU12 MODT_A2
AY10 MODT_A3

AY13 SBAA0
AV15 SBAA1
AW23 SBAA2

SBAA0 [8]
SBAA1 [8]
SBAA2 [8]

AW13 M_-SRASA
AV14 M_-SWEA
AY11 M_-SCASA

M_-SRASA [8]
M_-SWEA [8]
M_-SCASA [8]

AW15 MAAA0
AU18 MAAA1
AU17 MAAA2
AV19 MAAA3
AT19 MAAA4
AU20 MAAA5
AV20 MAAA6
AU21 MAAA7
AT20 MAAA8
AT22 MAAA9
AY14 MAAA10
AU22 MAAA11
AV22 MAAA12
AV12 MAAA13
AV23 MAAA14
AU24 MAAA15

AY15
AT23

AF39 M_-DQSA0
AK39 M_-DQSA1
AP39 M_-DQSA2
AU36 M_-DQSA3
AW7 M_-DQSA4
AU3 M_-DQSA5
AN3 M_-DQSA6
AJ3 M_-DQSA7

AF38 M_DQSA0
AK38 M_DQSA1
AP38 M_DQSA2
AV36 M_DQSA3
AV7 M_DQSA4
AU2 M_DQSA5
AN2 M_DQSA6
AJ2 M_DQSA7

AV32
AU32

CPU-SK/1151/S/15

LGA1151B

SKT_H4

LGA1151

MDB0 AD34
MDB1 AD35
MDB2 AG35
MDB3 AH35
MDB4 AE35
MDB5 AE34
MDB6 AG34
MDB7 AH34
MDB8 AK35
MDB9 AL35
MDB10 AK32
MDB11 AL32
MDB12 AK34
MDB13 AL34
MDB14 AK31
MDB15 AL31
MDB16 AP35
MDB17 AN35
MDB18 AN32
MDB19 AP32
MDB20 AN34
MDB21 AP34
MDB22 AN31
MDB23 AP31
MDB24 AL29
MDB25 AM29
MDB26 AP29
MDB27 AR29
MDB28 AM28
MDB29 AL28
MDB30 AR28
MDB31 AP28
MDB32 AR12
MDB33 AP12
MDB34 AM13
MDB35 AL13
MDB36 AR13
MDB37 AP13
MDB38 AM12
MDB39 AL12
MDB40 AP10
MDB41 AR10
MDB42 AR7
MDB43 AP7
MDB44 AR9
MDB45 AP9
MDB46 AR6
MDB47 AP6
MDB48 AM10
MDB49 AL10
MDB50 AM7
MDB51 AL7
MDB52 AM9
MDB53 AL9
MDB54 AM6
MDB55 AL6
MDB56 AJ6
MDB57 AJ7
MDB58 AF6
MDB59 AF7
MDB60 AH7
MDB61 AH6
MDB62 AE7
MDB63 AF6

DDR1_DQ[0]/DDR0_DQ[16]
DDR1_DQ[1]/DDR0_DQ[17]
DDR1_DQ[2]/DDR0_DQ[18]
DDR1_DQ[3]/DDR0_DQ[19]
DDR1_DQ[4]/DDR0_DQ[20]
DDR1_DQ[5]/DDR0_DQ[21]
DDR1_DQ[6]/DDR0_DQ[22]
DDR1_DQ[7]/DDR0_DQ[23]
DDR1_DQ[8]/DDR0_DQ[24]
DDR1_DQ[9]/DDR0_DQ[25]
DDR1_DQ[10]/DDR0_DQ[26]
DDR1_DQ[11]/DDR0_DQ[27]
DDR1_DQ[12]/DDR0_DQ[28]
DDR1_DQ[13]/DDR0_DQ[29]
DDR1_DQ[14]/DDR0_DQ[30]
DDR1_DQ[15]/DDR0_DQ[31]
DDR1_DQ[16]/DDR0_DQ[48]
DDR1_DQ[17]/DDR0_DQ[49]
DDR1_DQ[18]/DDR0_DQ[50]
DDR1_DQ[19]/DDR0_DQ[51]
DDR1_DQ[20]/DDR0_DQ[52]
DDR1_DQ[21]/DDR0_DQ[53]
DDR1_DQ[22]/DDR0_DQ[54]
DDR1_DQ[23]/DDR0_DQ[55]
DDR1_DQ[24]/DDR0_DQ[56]
DDR1_DQ[25]/DDR0_DQ[57]
DDR1_DQ[26]/DDR0_DQ[58]
DDR1_DQ[27]/DDR0_DQ[59]
DDR1_DQ[28]/DDR0_DQ[60]
DDR1_DQ[29]/DDR0_DQ[61]
DDR1_DQ[30]/DDR0_DQ[62]
DDR1_DQ[31]/DDR0_DQ[63]
DDR1_DQ[32]/DDR1_DQ[16]
DDR1_DQ[33]/DDR1_DQ[17]
DDR1_DQ[34]/DDR1_DQ[18]
DDR1_DQ[35]/DDR1_DQ[19]
DDR1_DQ[36]/DDR1_DQ[20]
DDR1_DQ[37]/DDR1_DQ[21]
DDR1_DQ[38]/DDR1_DQ[22]
DDR1_DQ[39]/DDR1_DQ[23]
DDR1_DQ[40]/DDR1_DQ[24]
DDR1_DQ[41]/DDR1_DQ[25]
DDR1_DQ[42]/DDR1_DQ[26]
DDR1_DQ[43]/DDR1_DQ[27]
DDR1_DQ[44]/DDR1_DQ[28]
DDR1_DQ[45]/DDR1_DQ[29]
DDR1_DQ[46]/DDR1_DQ[30]
DDR1_DQ[47]/DDR1_DQ[31]
DDR1_DQ[48]
DDR1_DQ[49]
DDR1_DQ[50]
DDR1_DQ[51]
DDR1_DQ[52]
DDR1_DQ[53]
DDR1_DQ[54]
DDR1_DQ[55]
DDR1_DQ[56]
DDR1_DQ[57]
DDR1_DQ[58]
DDR1_DQ[59]
DDR1_DQ[60]
DDR1_DQ[61]
DDR1_DQ[62]
DDR1_DQ[63]

AR25 DDR1_ECC[0]
AR26 DDR1_ECC[1]
AM26 DDR1_ECC[2]
AM25 DDR1_ECC[3]
AP26 DDR1_ECC[4]
AP25 DDR1_ECC[5]
AL25 DDR1_ECC[6]
AL26 DDR1_ECC[7]

DDR CHANNEL B

2 OF 12

DDR1_CKP[0]
DDR1_CKN[0]
DDR1_CKP[1]
DDR1_CKN[1]
DDR1_CKP[2]
DDR1_CKN[2]
DDR1_CKP[3]
DDR1_CKN[3]

DDR1_CKE[0]
DDR1_CKE[1]
DDR1_CKE[2]
DDR1_CKE[3]

DDR1_CS#[0]
DDR1_CS#[1]
DDR1_CS#[2]
DDR1_CS#[3]

DDR1_ODT[0]
DDR1_ODT[1]
DDR1_ODT[2]
DDR1_ODT[3]

DDR1_RAS#/DDR1_CAB[3]/DDR1_MA[16]
DDR1_WE#/DDR1_CAB[2]/DDR1_MA[14]
DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]

DDR1_BA[0]/DDR1_CAB[4]/DDR1_BA[0]
DDR1_BA[1]/DDR1_CAB[6]/DDR1_BA[1]
DDR1_BA[2]/DDR1_CAA[5]/DDR1_BG[0]

DDR1_MA[0]/DDR1_CAB[9]/DDR1_MA[0]
DDR1_MA[1]/DDR1_CAB[8]/DDR1_MA[1]
DDR1_MA[2]/DDR1_CAB[5]/DDR1_MA[2]
DDR1_MA[3]
DDR1_MA[4]
DDR1_MA[5]/DDR1_CAA[0]/DDR1_MA[5]
DDR1_MA[6]/DDR1_CAA[2]/DDR1_MA[6]
DDR1_MA[7]/DDR1_CAA[4]/DDR1_MA[7]
DDR1_MA[8]/DDR1_CAA[3]/DDR1_MA[8]
DDR1_MA[9]/DDR1_CAA[1]/DDR1_MA[9]
DDR1_MA[10]/DDR1_CAB[7]/DDR1_MA[10]
DDR1_MA[11]/DDR1_CAA[7]/DDR1_MA[11]
DDR1_MA[12]/DDR1_CAA[6]/DDR1_MA[12]
DDR1_MA[13]/DDR1_CAB[0]/DDR1_MA[13]
DDR1_MA[14]/DDR1_CAA[9]/DDR1_BG[1]
DDR1_MA[15]/DDR1_CAA[8]/DDR1_ACT#

DDR1_PAR
DDR1_ALERT#

DDR1_DQSN[0]/DDR0_DQSN[2]
DDR1_DQSN[1]/DDR0_DQSN[3]
DDR1_DQSN[2]/DDR0_DQSN[6]
DDR1_DQSN[3]/DDR0_DQSN[7]
DDR1_DQSN[4]/DDR1_DQSN[2]
DDR1_DQSN[5]/DDR1_DQSN[3]
DDR1_DQSN[6]
DDR1_DQSN[7]

DDR1_DQSP[0]/DDR0_DQSP[2]
DDR1_DQSP[1]/DDR0_DQSP[3]
DDR1_DQSP[2]/DDR0_DQSP[6]
DDR1_DQSP[3]/DDR0_DQSP[7]
DDR1_DQSP[4]/DDR1_DQSP[2]
DDR1_DQSP[5]/DDR1_DQSP[3]
DDR1_DQSP[6]
DDR1_DQSP[7]

DDR1_DQSP[8]
DDR1_DQSN[8]

AM20 M_DCLKB0
AM21 M_-DCLKB0
AP22 M_DCLKB1
AP21 M_-DCLKB1
AN20 M_DCLKB2
AN21 M_-DCLKB2
AP19 M_DCLKB3
AP20 M_-DCLKB3

M_DCLKB0 [9]
M_-DCLKB0 [9]
M_DCLKB1 [9]
M_-DCLKB1 [9]
M_DCLKB2 [9]
M_-DCLKB2 [9]
M_DCLKB3 [9]
M_-DCLKB3 [9]

AL29 CKEB0
AV29 CKEB1
AW29 CKEB2
AU29 CKEB3

CKEB0 [9]
CKEB1 [9]
CKEB2 [9]
CKEB3 [9]

AP17 M_-CSB0
AN15 M_-CSB1
AN17 M_-CSB2
AM15 M_-CSB3

M_-CSB0 [9]
M_-CSB1 [9]
M_-CSB2 [9]
M_-CSB3 [9]

AM16 MODT_B0
AL16 MODT_B1
AP15 MODT_B2
AL15 MODT_B3

AN18 M_-SRASB
AL17 M_-SWEB
AP16 M_-SCASB

M_-SRASB [9]
M_-SWEB [9]
M_-SCASB [9]

AL18 SBAB0
AM18 SBAB1
AW28 SBAB2

SBAB0 [9]
SBAB1 [9]
SBAB2 [9]

AL19 MAAB0
AL22 MAAB1
AM22 MAAB2
AM23 MAAB3
AP23 MAAB4
AL23 MAAB5
AW26 MAAB6
AY26 MAAB7
AU26 MAAB8
AW27 MAAB9
AP18 MAAB10
AU27 MAAB11
AV27 MAAB12
AR15 MAAB13
AY28 MAAB14
AU28 MAAB15

AL20
AY25

AF34 M_-DQSB0
AK33 M_-DQSB1
AN33 M_-DQSB2
AN29 M_-DQSB3
AN13 M_-DQSB4
AR8 M_-DQSB5
AM8 M_-DQSB6
AG6 M_-DQSB7

AF35 M_DQSB0
AL33 M_DQSB1
AP33 M_DQSB2
AN28 M_DQSB3
AN12 M_DQSB4
AP8 M_DQSB5
AL8 M_DQSB6
AG7 M_DQSB7

AN25
AN26

CPU-SK/1151/S/15

DDR_VREF_CA
DDR0_VREF_DQ
DDR1_VREF_DQ

AB40 VREF_CAB
AC40
AC39

VREF_CAB [8]
VREF_DQA [8]
VREF_DQB [9]

[8] MODT_A[0..3] MODT_A[0..3]
[9] MODT_B[0..3] MODT_B[0..3]

[8] MDA[0..63] MDA[0..63]
[9] MDB[0..63] MDB[0..63]

[8] M_DQSA[0..7] M_DQSA[0..7]
[8] M_-DQSA[0..7] M_-DQSA[0..7]

[8] MAAA[0..15] MAAA[0..15]
[9] MAAB[0..15] MAAB[0..15]

[9] M_DQSB[0..7] M_DQSB[0..7]
[9] M_-DQSB[0..7] M_-DQSB[0..7]

LGA1151

ILM_BP_CR/115X/NORMAL NI

Need check the new CPU ME

Gigabyte Technology		
Title: CPU LGA1151-B		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 5 of 52	

* 刪 WBC50 電容

VCCSA

* WBC51 , WBC52
VDDQ 改 VCCSA

WBC57
10u/8/X5R/6.3V/K

* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

* WR94 , WR59 , WR86 , WR60 , WR61 , WR62 , WR63 改 short pad

VCCST_VCCPLL
VCCSFUSEPRG

(06/24)

VCCSA — WR94 0/4/X — VCCST_VCCPLL

VCCIO

WBC69
10u/8/X5R/6.3V/K

* 刪 VCCGT 電容

VCCGT

LGA1151J SKT_H4
LGA1151

AA34 AA35 AA36 AA37 AA38 AB33 AB34 G36 G37 G38 G39 G40 H36 H38 H40 J36 J37 J38 J39 J40 K36 K38 K40 L34 L35 L36 L37 L38 L39 L40 M33 M34 M36 M38 M40 N34 N35 N36 N37 N38 N39 N40 P33 P34 P36 P38 P40 R34 R35 R36 R37 R38 R39 R40 T33 T34 T36 T38 T40 U34 U35 U36 U37 U38 U39 U40 V33 V34 V36 V38 V40 W34 W35 W36 W37 W38 Y33 Y34 Y36 Y38 — VCCGT

VCCGTX_F35 VCCGTX_G34 VCCGTX_G35 VCCGTX_H33 VCCGTX_H34 VCCGTX_J33 VCCGTX_J35 VCCGTX_K32 VCCGTX_K34 VCCGTX_L31 VCCGTX_L33 VCCGTX_M32 — F35 G34 G35 H33 H34 J33 J35 K32 K34 L31 L33 M32

WR59 0/4/SHT/M/X

VCCGT_SENSE — F39 — VCCGT_SENSE [27]
VSSGT_SENSE — F38 — VSSGT_SENSE [27]
VCCGTX_SENSE — F37
VSSGTX_SENSE — F36

[13] N_PCH_CPU_TI
[13] A_CPU_PCH_TO
WR88 33/4 A_CPU_PCH_TO_R

10 OF 12

CPU-SK/1151/S/15

VCCSA

LGA1151K SKT_H4
LGA1151

AA7 AB6 AB7 AB8 AC7 AC8 N7 P7 R7 T7 U7 Y6 Y7 Y8 W7 V7 AA6 — VCCSA

VCCIO

AK11 AK14 AK24 AJ23 M8 P8 T8 U8 W8 — VCCIO

VCCST_VCCPLL — V5
VCCSFUSEPRG — V6
VCCST_VCCPLL — V4

VCCST_V5
VCCST_V6
VCCPLL

VDDQ

VDDQ_AT18 VDDQ_AT21 VDDQ_AU13 VDDQ_AU15 VDDQ_AU19 VDDQ_AU23 VDDQ_AV11 VDDQ_AV17 VDDQ_AV21 VDDQ_AW10 VDDQ_AW14 VDDQ_AW25 VDDQ_AY12 VDDQ_AY16 VDDQ_AY18 VDDQ_AY23 — AT18 AT21 AU13 AU15 AU19 AU23 AV11 AV17 AV21 AW10 AW14 AW25 AY12 AY16 AY18 AY23

VCCPLL_OC — AJ9 — VCCPLL_S — WR86 0/4/SHT/M/X — VDDQ

* 刪 VCCPLL_OC

VCCOPC_AJ30 VCCOPC_AJ27 VCCOPC_AJ28 VCCOPC_AJ29 VCCOPC_AK27 — AJ30 AJ27 AJ28 AJ29 AK27 — WR60 0/4/SHT/M/X

VCCEOPIO VCCEOPIO — AJ25 AJ26 — WR61 0/4/SHT/M/X

VCC_OPC_1P8_AB37 — AB37 — WR62 0/4/SHT/M/X
VCC_OPC_1P8_AB38 — AB38 — WR63 0/4/SHT/M/X

VCCSA_SENSE — AD5
VCCIO_SENSE — AF4
VSS_SAIO_SENSE — AE4

* 刪 net

VCCOPC_SENSE — AK21
VCCEOPIO_SENSE — AJ24
VSSOPC_EOPIO_SENSE — AK22

10 OF 12

CPU-SK/1151/S/15

LGA1151L SKT_H4
LGA1151

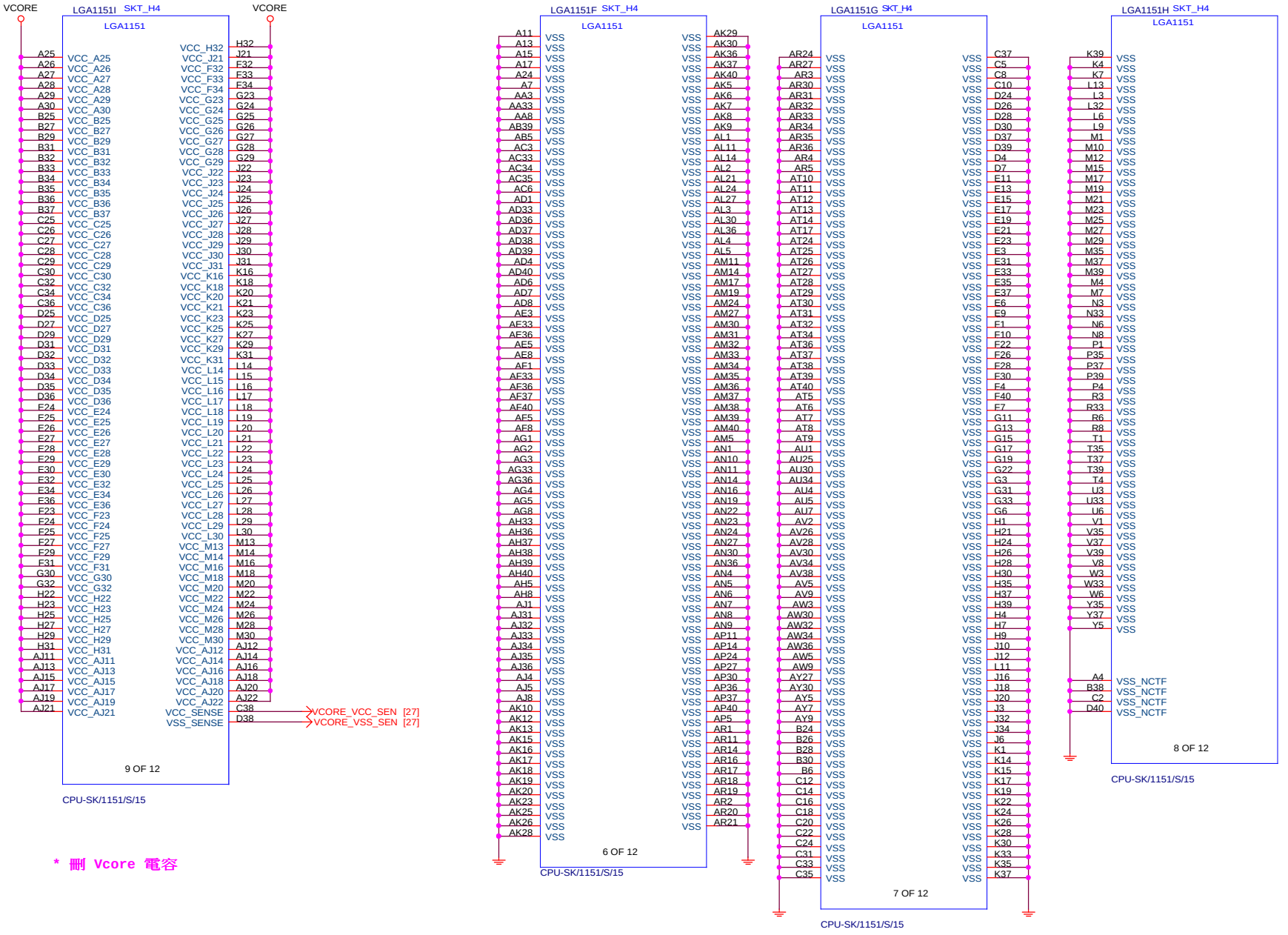
J8 J7 L8 K8 — RSVD_TP_J8 RSVD_TP_J7 RSVD_TP_L8 RSVD_TP_K8
AV1 AW2 — RSVD_TP_AV1 RSVD_TP_AW2
H8 K10 L10 J17 B39 J19 C40 — RSVD_H8 RSVD_K10 RSVD_L10 RSVD_J17 RSVD_B39 RSVD_J19 RSVD_C40
G8 AY3 — RSVD_G8 RSVD_AY3
D1 B3 — PROC_TRIGIN PROC_TRIGOUT
L12 K12 — RSVD_L12 RSVD_K12

RSVD_TP_H11 RSVD_TP_H12 — H11 H12
RSVD_TP_AW38 RSVD_TP_AV39 — AW38 AV39
RSVD_AU39 RSVD_AU40 — AU39 AU40
VSS_AT15 VSS_AR23 VSS_AR22 — AT15 AR23 AR22
RSVD_J15 RSVD_J14 — J15 J14
RSVD_AU9 RSVD_AU10 — AU9 AU10
RSVD_J13 RSVD_K13 RSVD_J11 — J13 K13 J11 — WR89 560/4/1
RSVD_D15 RSVD_K11 — D15 K11

12 OF 12

CPU-SK/1151/S/15

Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 6 of 52	



Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 7 of 52	

Rev:0.4

DDR3_4

DDR3_2

DDRVTT

VDDQ

VDDSPD

MODT_A[0..3] [5]

M_-DQSA[0..7] [5]

M_DQSA[0..7] [5]

VDDSPD SHORT PROTECT

VCC3 VDDSPD

MR22 R0805-SHORT10/X

FUSE-0805-SHORT10

MR15 1K/4/1

MR14 1K/4/1

MR17 0/4/SHT/M/X

MC16 0.022u/4/X7R/25V/K/X

MR18 24.9/4/1/X

VREF_DDRA

VREF_DDRB [9]

VREF_CAB [5]

-DDR3_RST

MC6 100p/4/NPO/50V/J

MR4 1K/4/1

MR5 1K/4/1

MR1 0/4/SHT/M/X

VREF_DQDDRA

VREF_DQA [5]

N_SMBDATA

N_SMBCLK

MC10 100p/4/NPO/50V/J/X

MC11 100p/4/NPO/50V/J/X

DDRVTT Decouple

MC17 0.022u/4/X7R/25V/K/X

MR19 24.9/4/1/X

MBC10 0.1u/4/X7R/16V/K

MBC41 0.1u/4/X7R/16V/K

MBC26 0.1u/4/X7R/16V/K

MBC18 1u/4/X5R/6.3V/K

MBC4 1u/4/X5R/6.3V/K

DDR TERMINATION CHANNEL A/B

若Power source 端PWM IC 已有擺放,則可刪除

MC4 0.1u/4/X7R/16V/K

MC5 0.1u/4/X7R/16V/K VREF_DDRA

MC1 0.1u/4/X7R/16V/K VREF_DQDDRA

MC8 0.1u/4/X7R/16V/K

MC3 0.1u/4/X7R/16V/K VREF_DDRA

MC7 0.1u/4/X7R/16V/K VREF_DQDDRA

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

MBC46 22u/8/X5R/6.3V/M

MBC15 1u/4/X5R/6.3V/K

MBC17 1u/4/X5R/6.3V/K

MBC27 1u/4/X5R/6.3V/K

MBC29 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

MBC9 1u/4/X5R/6.3V/K

MDA[0..63] [5]

[9,12,19,20,26,27,34] N_SMBCLK

[9,12,19,20,26,27,34] N_SMBDATA

[5] SBAA2 SBAA1 SBAA0

[5] CKEA1 CKEA0

[5] M_-CSA1 M_-CSA0

[5] M_-DCLKA1 M_DCLKA1

[5] M_-DCLKA0 M_DCLKA0

[5] MAAA[0..15]

[9,12] -DDR3_RST

[5] M_-SCASA [5] M_-SRASA [5] M_-SWEA

DDR3/240/BK/VA/D

DDR3/240/GY/VA/D

黑色

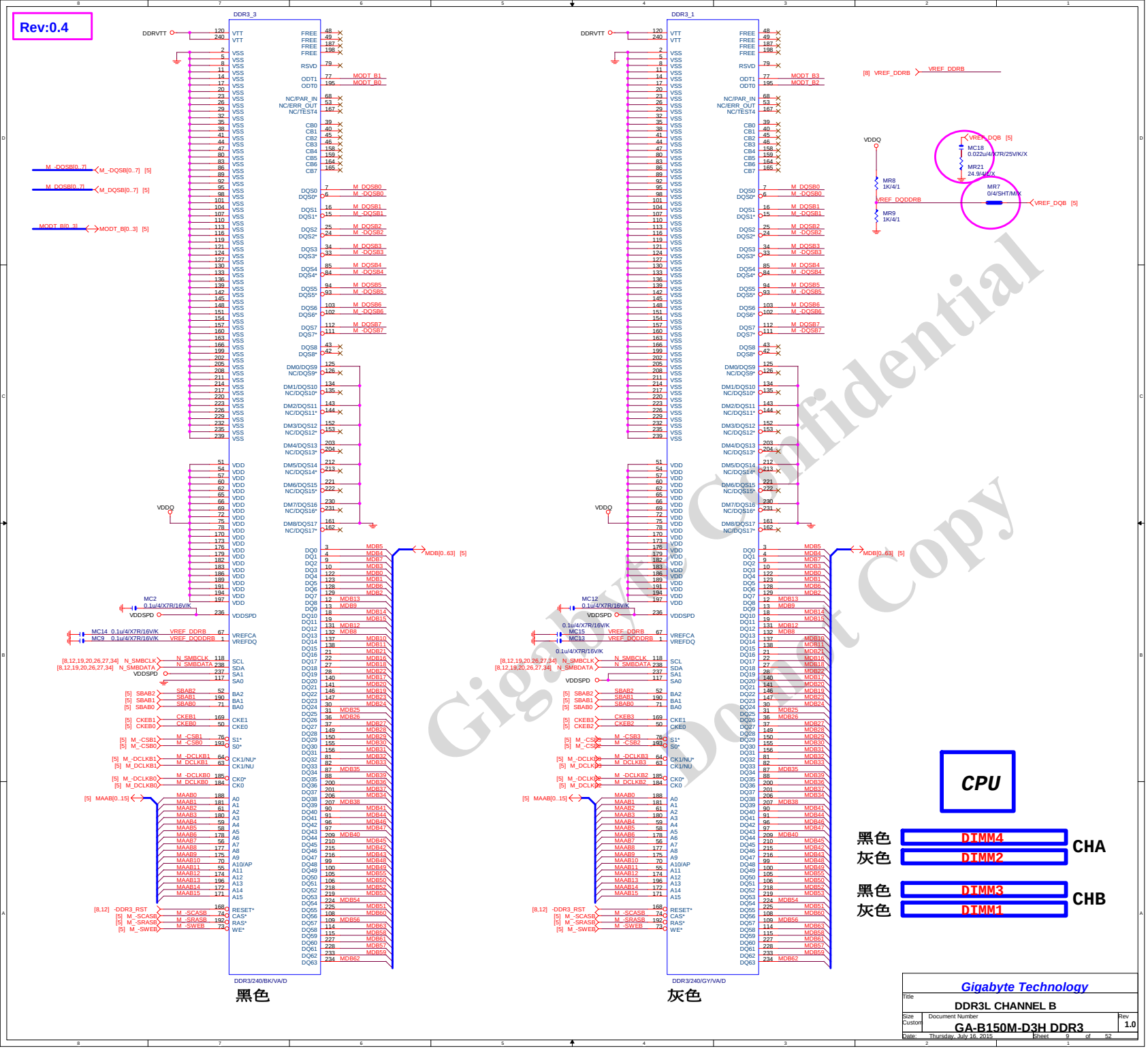
灰色

Gigabyte Technology

Title: DDR3L CHANNEL A

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 8 of 52



Rev 0.7

PCHE
SPT-H_PCH
GPP_I0/DDPB_HPD0
GPP_I1/DDPC_HPD1
GPP_I2/DDPD_HPD2
GPP_I3/DDPE_HPD3
GPP_I4/EDP_HPD
GPP_I7/DDPC_CTRLCLK
GPP_I8/DDPC_CTRLDATA
GPP_I5/DDPB_CTRLCLK
GPP_I6/DDPB_CTRLDATA
GPP_I9/DDPD_CTRLCLK
GPP_I10/DDPD_CTRLDATA
GPP_F14
GPP_F23
GPP_F22
GPP_G23
GPP_G22
GPP_G21
GPP_G20
GPP_H23
5 OF 12
CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R]

PCHG
SPT-H_PCH
GPP_A16/CLKOUT_48
CLKOUT_CPUNSSC_P
CLKOUT_CPUNSSC
CLKOUT_CPUBCLK_P
CLKOUT_CPUBCLK
XTAL24_OUT
XTAL24_IN
XCLK_BIASREF
RTCX1
RTCX2
GPP_B5/SRCCLKREQ0#
GPP_B6/SRCCLKREQ1#
GPP_B7/SRCCLKREQ2#
GPP_B8/SRCCLKREQ3#
GPP_B9/SRCCLKREQ4#
GPP_B10/SRCCLKREQ5#
GPP_H0/SRCCLKREQ6#
GPP_H1/SRCCLKREQ7#
GPP_H2/SRCCLKREQ8#
GPP_H3/SRCCLKREQ9#
GPP_H4/SRCCLKREQ10#
GPP_H5/SRCCLKREQ11#
GPP_H6/SRCCLKREQ12#
GPP_H7/SRCCLKREQ13#
GPP_H8/SRCCLKREQ14#
GPP_H9/SRCCLKREQ15#
CLKOUT_PCIE_N15
CLKOUT_PCIE_P15
CLKOUT_PCIE_N14
CLKOUT_PCIE_P14
CLKOUT_PCIE_N13
CLKOUT_PCIE_P13
CLKOUT_PCIE_N12
CLKOUT_PCIE_P12
CLKOUT_ITPXDP
CLKOUT_ITPXDP_P
CLKOUT_CPUPCIBCLK
CLKOUT_CPUPCIBCLK_P
CLKOUT_PCIE_N0
CLKOUT_PCIE_P0
CLKOUT_PCIE_N1
CLKOUT_PCIE_P1
CLKOUT_PCIE_N2
CLKOUT_PCIE_P2
CLKOUT_PCIE_N3
CLKOUT_PCIE_P3
CLKOUT_PCIE_N4
CLKOUT_PCIE_P4
CLKOUT_PCIE_N5
CLKOUT_PCIE_P5
CLKOUT_PCIE_N6
CLKOUT_PCIE_P6
CLKOUT_PCIE_N7
CLKOUT_PCIE_P7
CLKOUT_PCIE_N8
CLKOUT_PCIE_P8
CLKOUT_PCIE_N9
CLKOUT_PCIE_P9
CLKOUT_PCIE_N10
CLKOUT_PCIE_P10
CLKOUT_PCIE_N11
CLKOUT_PCIE_P11
7 OF 12
CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R]

CLK:4/15<1000;Guard GND

32.768KHZ

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

NRN1 8.2K/8P4R/4
VCC3
N_GPP_I3 NR7 8.2K/4
N_GPP_F23 NR12 8.2K/4
N_GPP_F22 NR248 8.2K/4
A_-SKTOCC NR16 8.2K/4
N_GPP_G22 NR18 8.2K/4
N_GPP_G21 NR20 8.2K/4/X
N_GPP_G20 NR22 8.2K/4/X
N_GPP_B5 N_GPP_B6 N_GPP_B7 N_GPP_B8
N_GPP_B10 NR17 8.2K/4/X
N_GPP_H0 NR19 8.2K/4

ON-BOARD DEVICE USED
NR286 0/4/SHT/M/X
N_GPP_B9 N_GPP_B10 NR287 0/4/X

SB_HEATSIN
PCH_HS
HEAT SINK/PCH/Z170-HD3/KG/[12SP2-S04207-21R_12SP2-S04207-22R_12SP2-S04207-23R]
B85M-D3H Series PCH Heatsink

PCIEX16
PCIEX4
ASM1083
I219V
M.2

CLOCK 4/4/4//15

XTALI_PCH_R
XTALI_PCH
XTALO_PCH
NR3 68/4/1
NR32 1M/4
NX1 24M/16p/30ppm/49US/50/D
NC8 22P/4/NPO/50V/J
NC7 27P/4/NPO/50V/J
CLK:4/15<1000 mils;Guard GND

Ans 3829642
Gigabyte Technology
Title: PCH CLOCK BUFFER
Size: Custom
Document Number: GA-B150M-D3H DDR3
Rev: 1.0
Date: Thursday, July 16, 2015
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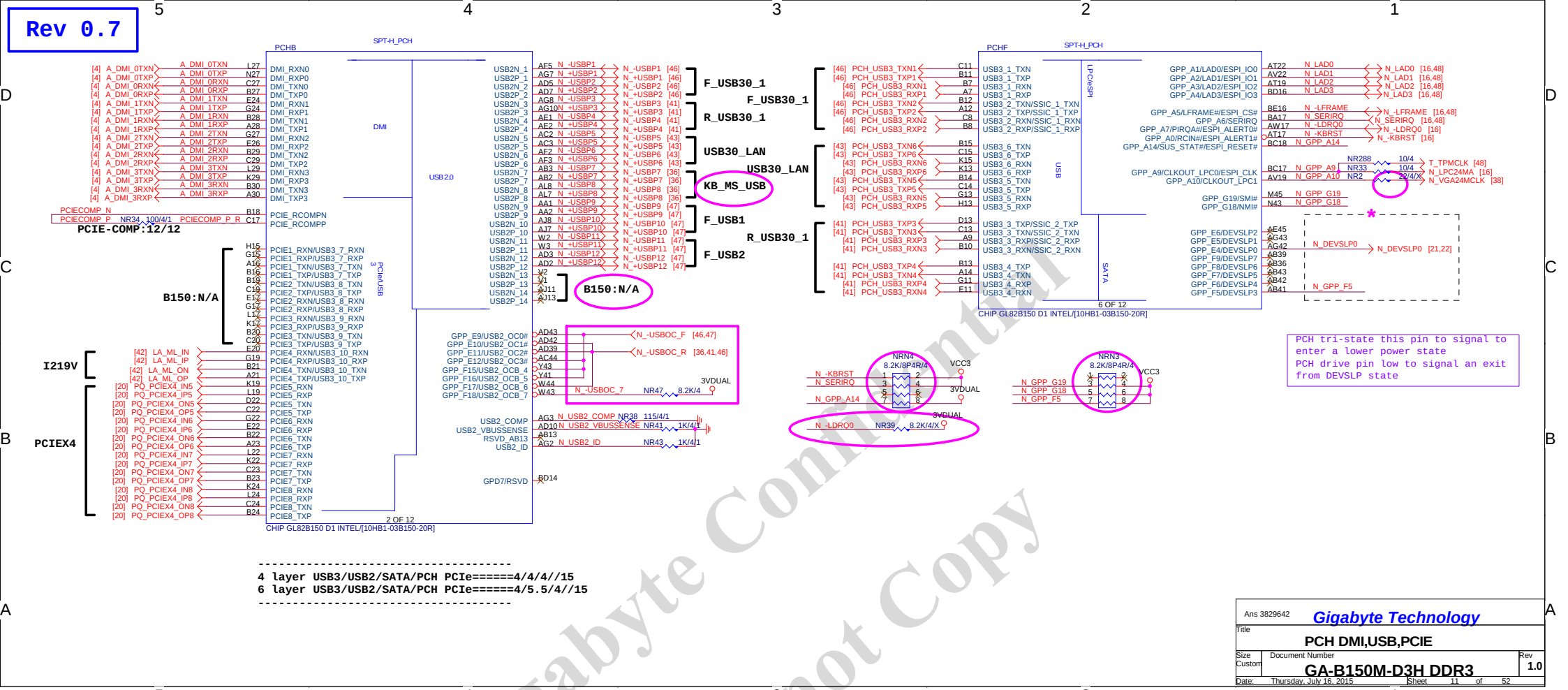
Rev 0.7



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4 layer USB3/USB2/SATA/PCH PCIe======4/4/4//15
6 layer USB3/USB2/SATA/PCH PCIe======4/5.5/4//15

Ans 3829642	Gigabyte Technology	
Title	PCH DMI,USB,PCIE	
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 11 of 52	

Rev 0.7

PCHD
SPT-H_PCH
AUDIO
SMBUS
JTAG
4 OF 12
CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R]

PCHK
SPT-H_PCH
11 OF 12
CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R]

PCHA
SPT-H_PCH
1 OF 12
CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R]

N_INTERMEN : Integrated
1.05V SUS VRM Enable

BATTERY-DUAL-4
RB 必須放在BAT外

At least 10ms delay after 3VDUAL_PCH stabel

For IT8620 Ctrl

For IT8620 Ctrl

CLR_CMOS

Ans 3829642

Gigabyte Technology

Title: PCH MISC

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 12 of 52

Rev 0.7

PCHC — SPT-H_PCH — CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R] — 3 OF 12

M.2 & SATA EXPRESS / PCI switch

S.W SWFU1

S.W SWFU2

S.W SWFU3

原生SATA3

B150:N/A

PCHJ — SPT-H_PCH — CHIP GL82B150 D1 INTEL/[10HB1-03B150-20R] — 10 OF 12

C1/D1 公版NC pin

1: SATA (STandard)
0: SATA EXPRESS

SATA3_0 SATA2/7/BK/H/OP/VA/D/1/B — BLACK CONNECTOR

SATA3_1 SATA2/7/BK/H/OP/VA/D/1/B

SATA3_2 SATA2/7/BK/H/OP/VA/D/1/B — BLACK CONNECTOR

SATA3_3 SATA2/7/BK/H/OP/VA/D/1/B

SATA3_4 SATA2/7/BK/H/OP/VA/D/1/B — BLACK CONNECTOR

SATA3_5 SATA2/7/BK/H/OP/VA/D/1/B

for sw

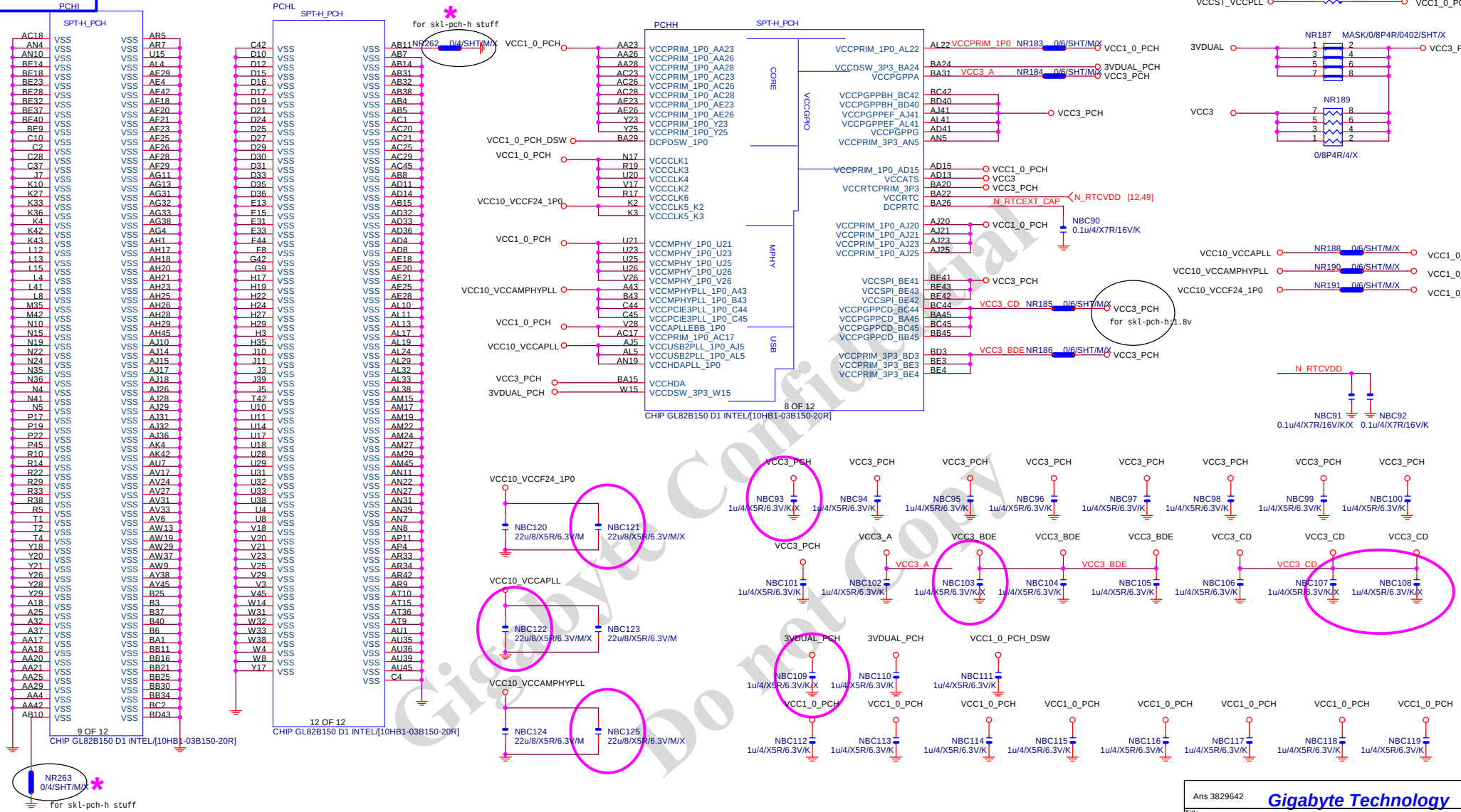
Ans 3829642 — Gigabyte Technology

Title: PCH SATA,PCIE,SATA_EXPRESS

Size: Custom — Document Number: GA-B150M-D3H DDR3 — Rev: 1.0

Date: Thursday, July 16, 2015 — Sheet 13 of 52

Rev 0.7



Ans 3829642	Gigabyte Technology		
Title	PCH PWR, GND		
Size Custom	Document Number GA-B150M-D3H DDR3		Rev 1.0
Date: Thursday, July 16, 2015	Sheet 14 of 52		

Rev 0.1

DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

3VDUAL

NR238 330/4

-SPI_CS_1

NQ20 MMBT2222A/SOT23/600mA/40 S0T23

CS1

N_-ICH_SPI_CS

N_-ICH_SPI_CS [12]

NQ21 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_B NR235 8.2K/4

指定用DII

3VDUAL

NR237 330/4

-SPI_CS_2

NQ22 MMBT2222A/SOT23/600mA/40 S0T23

CS2

N_-ICH_SPI_CS

NQ23 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_M NR234 8.2K/4

M_BIOS

-SPI_CS_1 NR105 22/4

SPI_MISO

[12] N_SPI_DQ2 NR222 0/4/SHT/M/X -SPI_WP0

NC4 10p/4/NPO/50V/J/X

CS# VDD

SO HOLD#

WP# SCK

VSS SI

3VDUAL NR102 0/4/SHT/M/X

NBC2 1u/4/X5R/6.3V/K

-HOLD0 NR221 0/4/SHT/M/X N_SPI_DQ3 [12]

N_ICH_SPI_CLK

N_ICH_SPI_MOSI

NC6 10p/4/NPO/50V/J/X

MAIN BIOS

128M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

B_BIOS

-SPI_CS_2 NR87 22/4

SPI_MISO

[12] N_SPI_DQ2 NR236 0/4/SHT/M/X -SPI_WP1

CS# VDD

SO HOLD#

WP# SCK

VSS SI

3VDUAL NR67 0/4/SHT/M/X

NBC3 1u/4/X5R/6.3V/K

-HOLD1 NR224 0/4/SHT/M/X N_SPI_DQ3 [12]

N_ICH_SPI_CLK N_ICH_SPI_CLK [12]

N_ICH_SPI_MOSI N_ICH_SPI_MOSI [12]

BACKUP BIOS

128M/Q/SPI/SO8/S

* (footprint 改 IC8-BIOS)

[16] -SPI_HOLD_B

[16] -SPI_HOLD_M

-SPI_HOLD_B CS1

-SPI_HOLD_M CS2

NRN17 1K/8P4R/4

3VDUAL

[12] N_ICH_SPI_MISO N_ICH_SPI_MISO NR98 8.2K/4

[12] N_ICH_SPI_MISO NR97 22/4 SPI_MISO

3VDUAL

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

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

1 means floating
0 means PD 1K

N/A

M_BIOS

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

* 試產先上 , PVT 移除

BIOS_PH MASK

BIOS_PH

N_-ICH_SPI_CS

N_ICH_SPI_MISO

N_SPI_DQ2

N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 [12]

3VDUAL

-HOLD0

N_ICH_SPI_CLK

N_ICH_SPI_MOSI

★Update 2015-01.29

MASK/PH/2*5K10/BK/2.54/VA/D/X

Footprint the same, confirmed by Graceing.

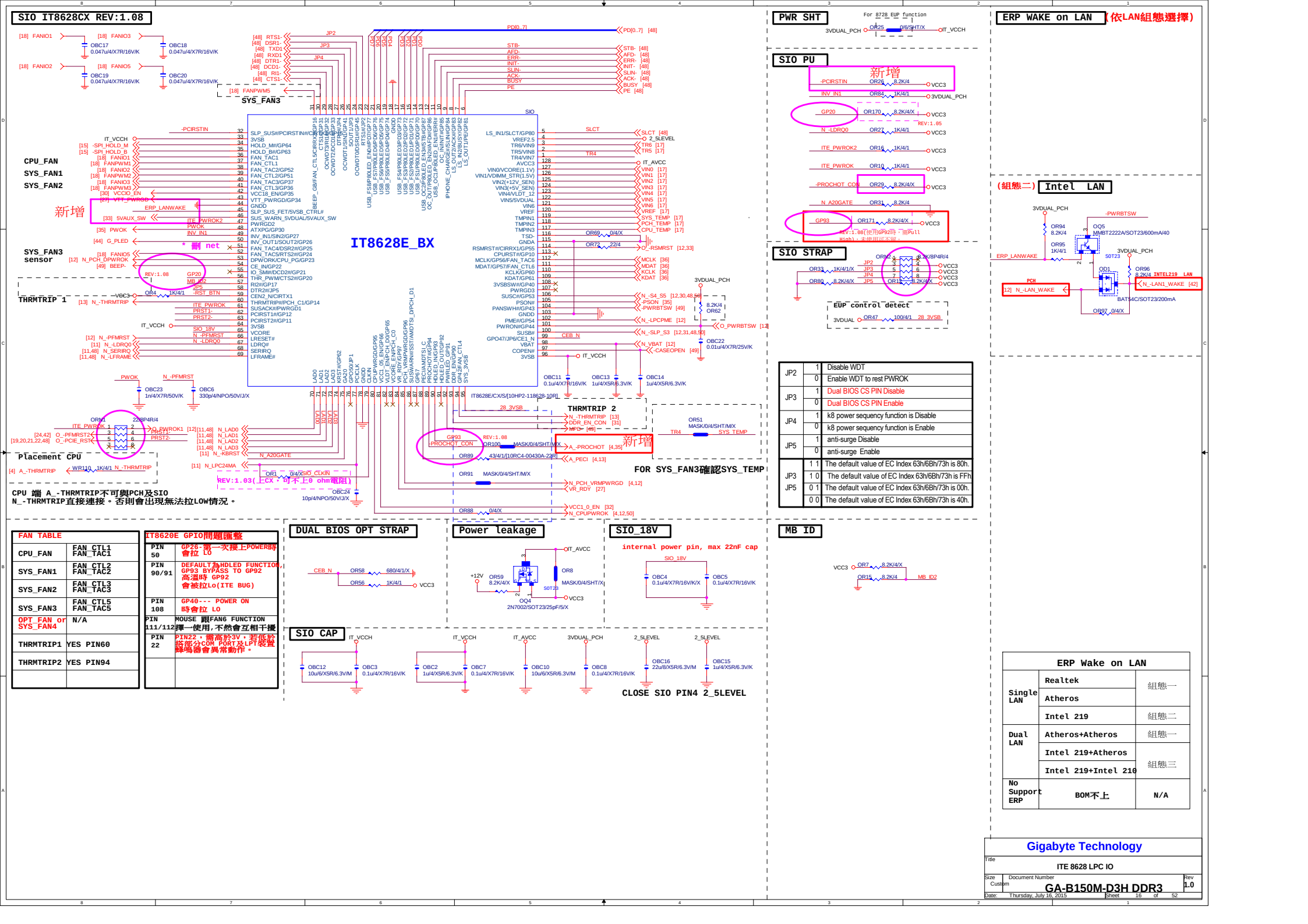
Use COM port pin header part.

Gigabyte Technology

Title: BIOS

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 15 of 52



FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN or SYS_FAN4	N/A
THRMTRIP1	YES PIN60
THRMTRIP2	YES PIN94

IT8620E GPIO問題施整	
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
PIN 22	PIN22，需高於3V，若低於此部分COM PORT及LPT裝置驅動器會異常動作。

JP2		
	1	Disable WDT
	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
	0	anti-surge 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.

ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	
	Intel 219	組態二
Dual LAN	Atheros+Atheros	組態一
	Intel 219+Atheros	組態三
	Intel 219+Intel 210	
No Support ERP	BOM不上	N/A

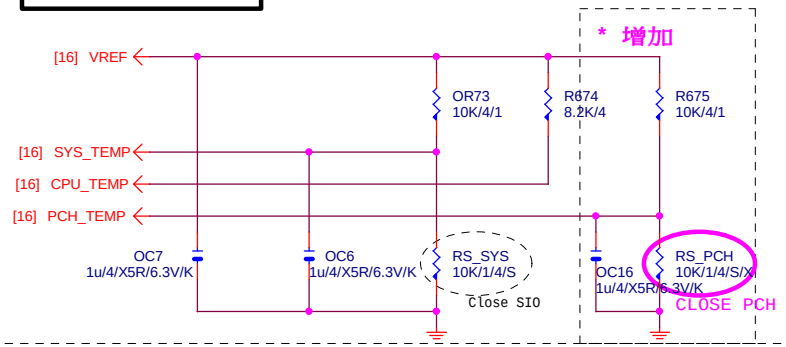
Gigabyte Technology

Title: ITE 8628 LPC IO

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

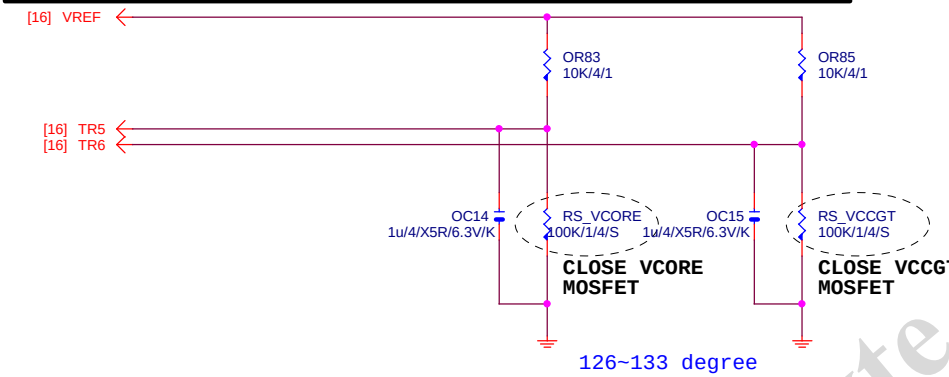
Date: Thursday, July 16, 2015 | Sheet 16 of 52

TEMP H/W MONITOR REV 1.08



RS_VCORE、RS_VCCGT CLOSE CPU VCORE & VCCGT MOSFET

-PROCHOT:有mos heartsink不用prochot function

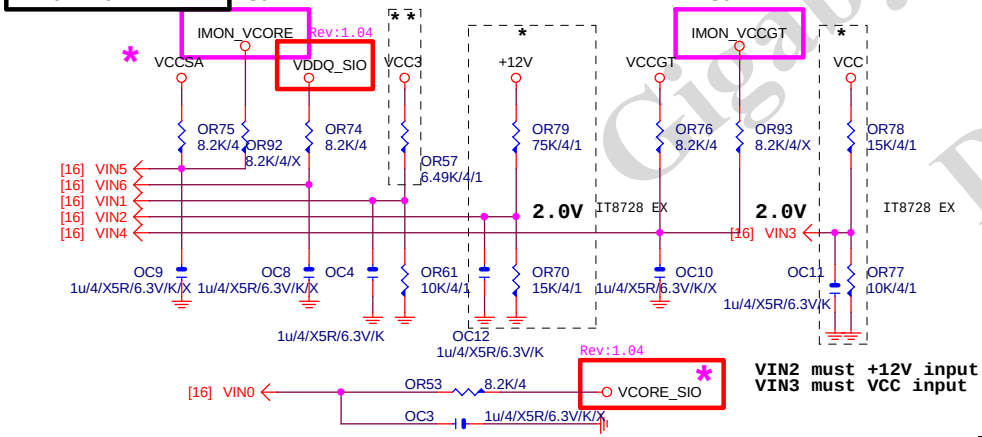


VOLTAGE-- H/W MONITOR

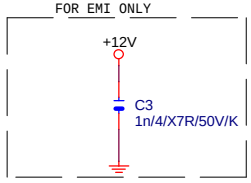
Connect to PWM

* IT8728 BX
** IT8728 CX

Connect to PWM



VIN2 must +12V input
VIN3 must VCC input

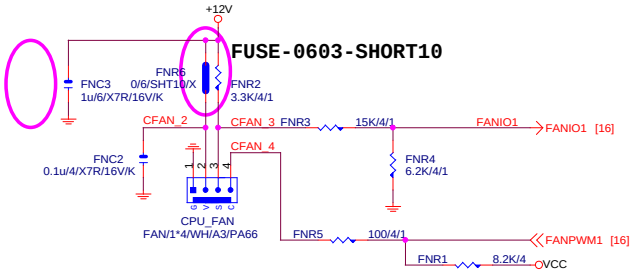


The division voltage of VIN2 & VIN3 must be around 2.9V

Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 17 of 52	

CPU SMART FAN

Rev: 0.7



★Update 2015-01-28

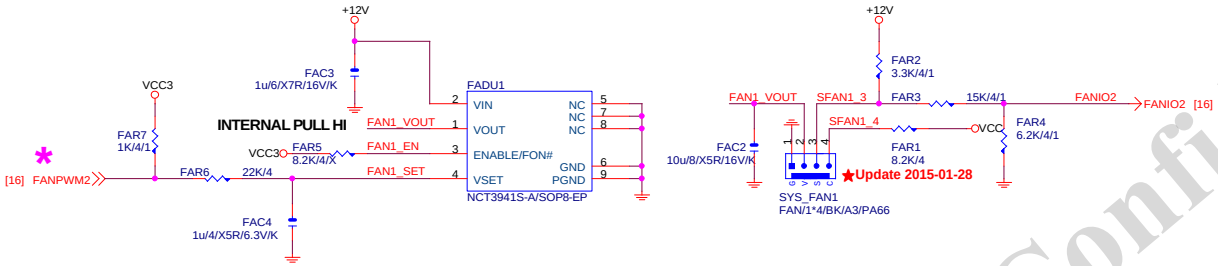
SYSTEM FAN1

Linear SYS_FAN

Enable Function (NCT3941S)

Full Turn On Function (NCT3941S-A)

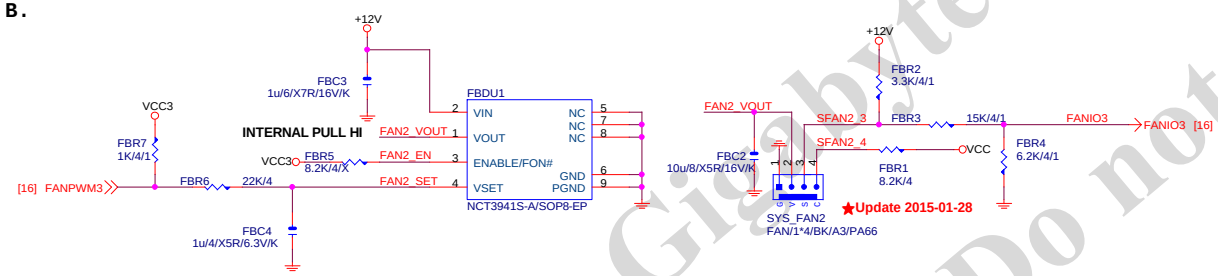
A.



★Update 2015-01-28

SYSTEM FAN2

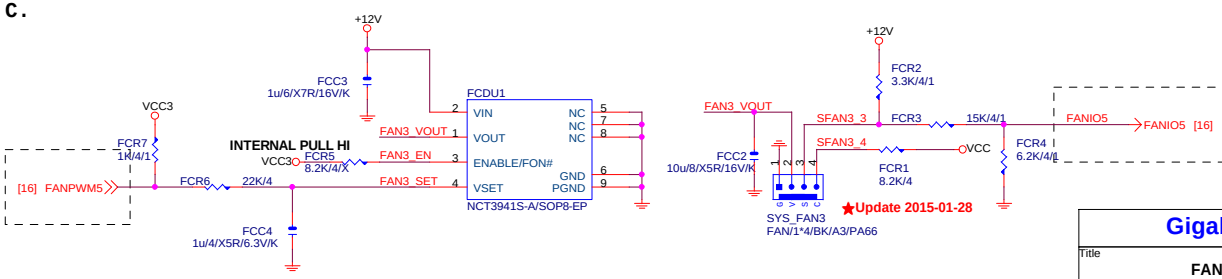
B.



★Update 2015-01-28

SYSTEM FAN3

C.

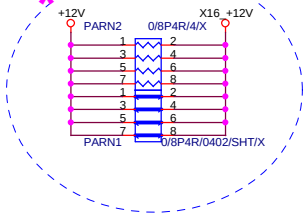


★Update 2015-01-28

Gigabyte Technology		
Title: FAN CTRL		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 18 of 52	

Rev 0.2

+12_protect short-wire test



PCIESLOT-164P

PCIEX16 3GIO_*16

KEY

PCI-E/16X-164P/GY/LONG DOUBLE/HK*2

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]

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	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	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

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 2.5GHZ

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

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

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

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

PCI-E REV:2.0--> 5GHZ

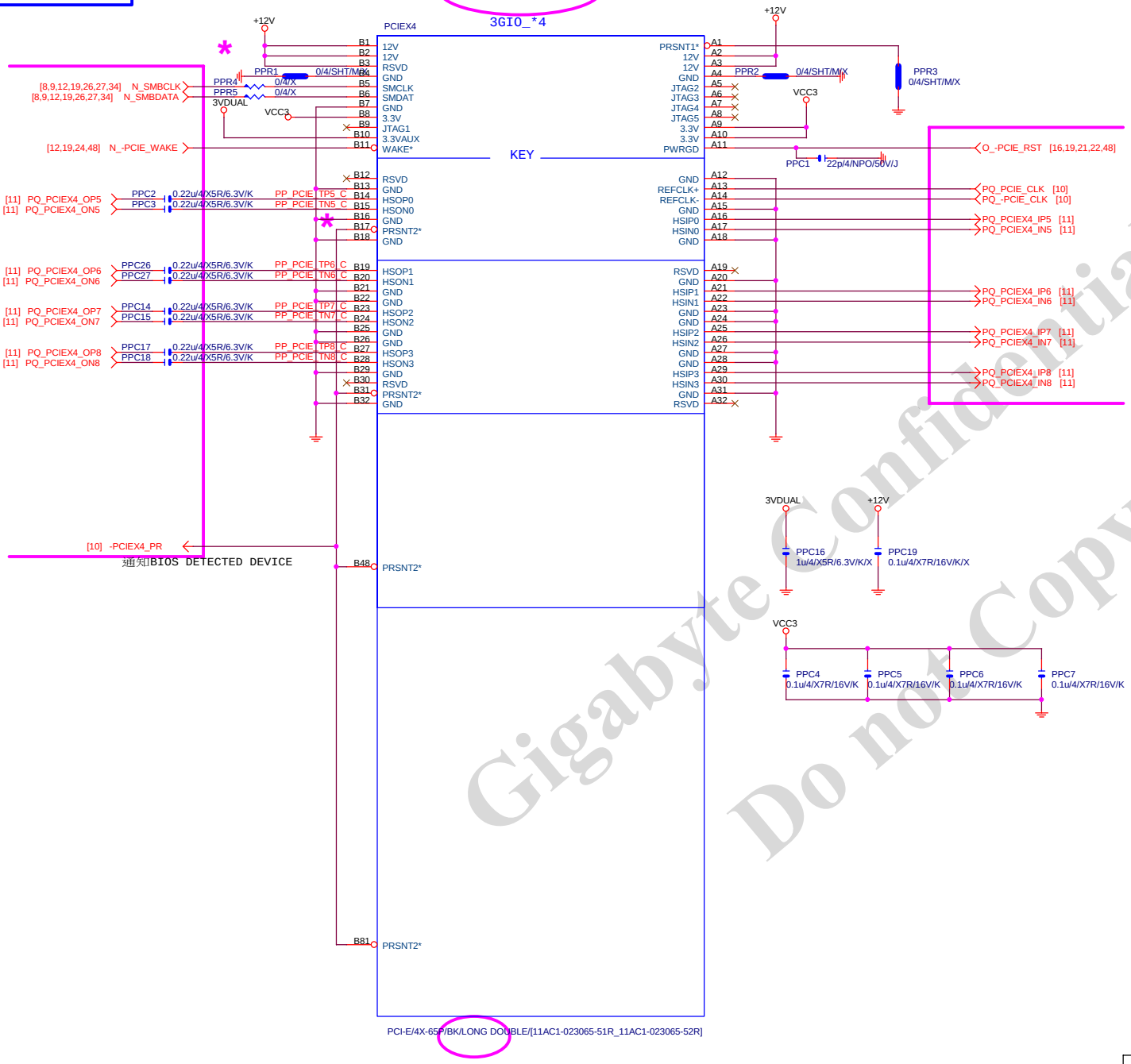
Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-B150M-D3H DDR3
Rev	1.0
Date: Thursday, July 16, 2015	Sheet 19 of 52

Rev 0.51

PCIE*4

PCIESLOT-64P-1

3GIO_*4



PCI-E/4X-65P/BK/LONG DOUBLE/[11AC1-023065-51R_11AC1-023065-52R]

Gigabyte Technology

Title: PCIE_X4

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

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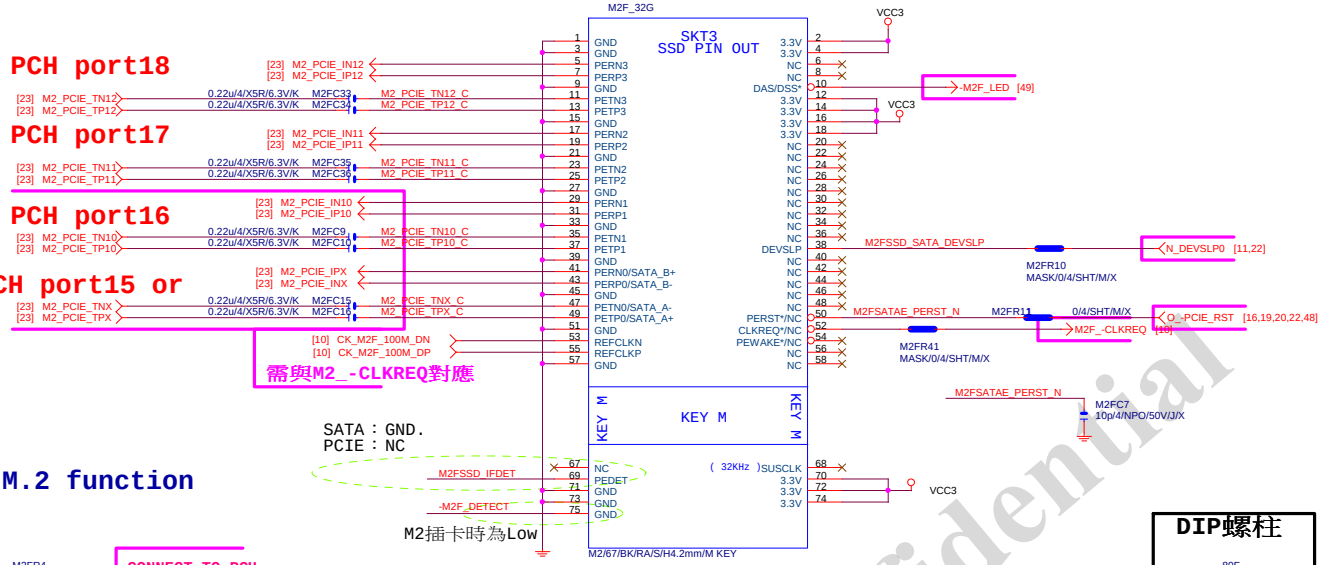
Rev 0.7

M.2 Lane4 from PCH port18

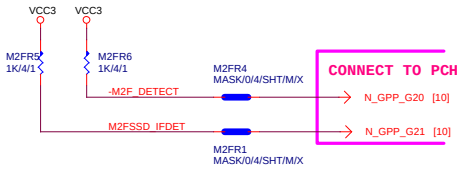
M.2 Lane3 from PCH port17

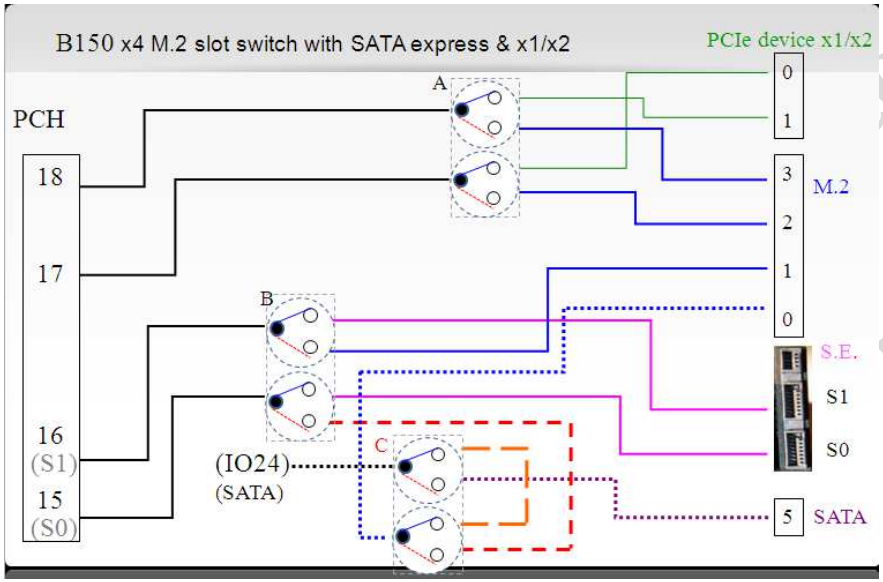
M.2 Lane2 from PCH port16

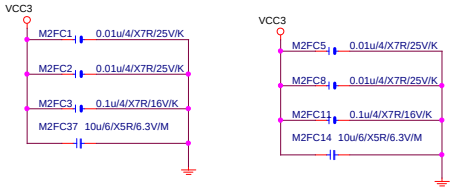
M.2 Lane2 from PCH port15 or port 24

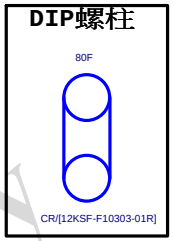


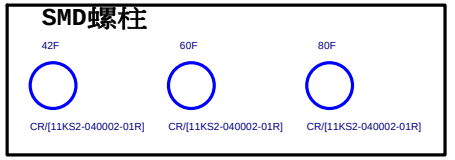
支援SATA and M.2 function











Gigabyte Technology	
Title	M.2 X4
Size / Custom	Document Number: GA-B150M-D3H DDR3
Rev	1.0
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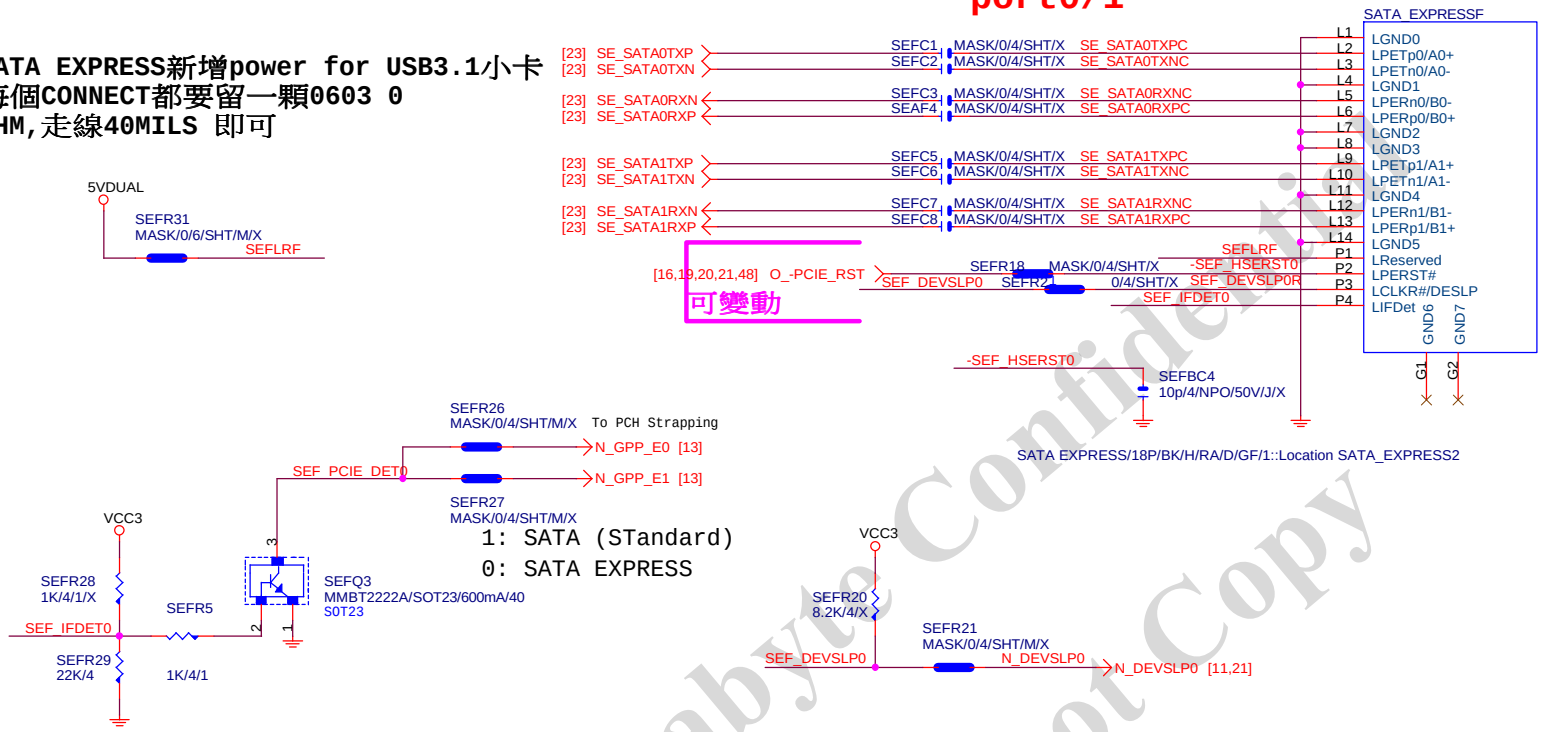
Sheet	21 of 52

Rev 0.7

To SATA3 port0/1

SATA EXPRESS新增power for USB3.1小卡
每個CONNECT都要留一顆0603 0 OHM,走線40MILS 即可



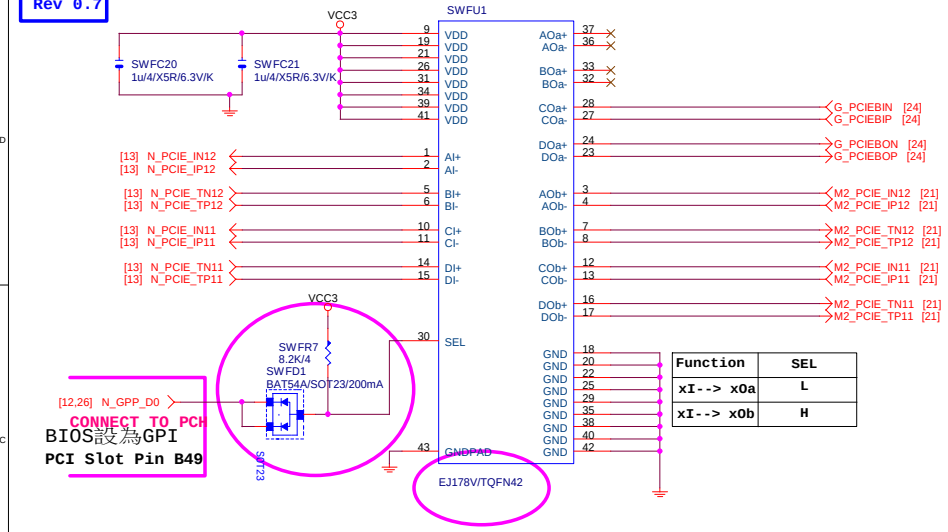
GIGABYTE Technology

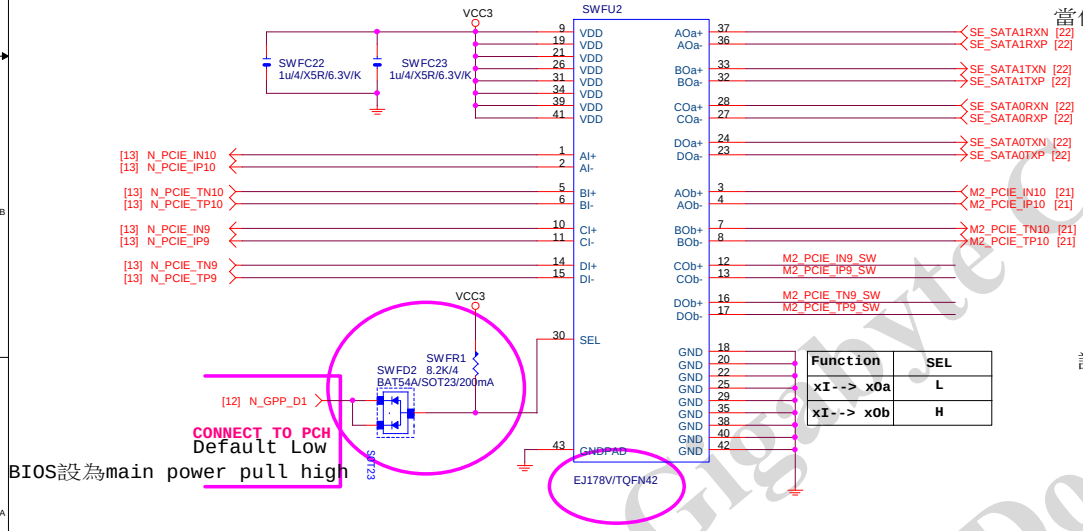
Title: SATA EXPRESS

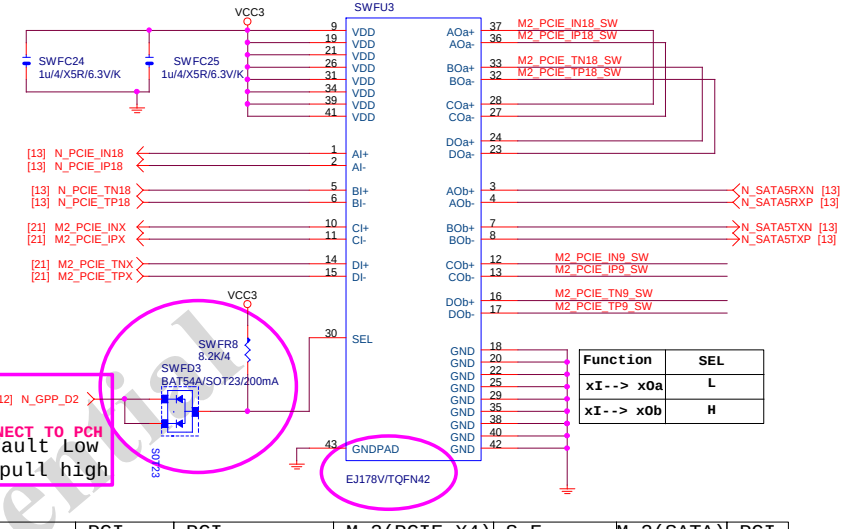
Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 22 of 52

Rev 0.7







當偵測到此組態

	PCI S.E. M.2(SATA)	PCI S.E. SATA S5	PCI M.2(PCIE_X2) SATA S5	M.2(PCIE_X4) SATA S5	S.E. M.2(SATA)	M.2(SATA)	PCI
N_GPP_D0	L	NA	L	H	H	H	L
N_GPP_G20	L	H	L	L	L	L	H
N_GPP_G21	L	H	H	H	L	L	H
N_GPP_E0	NA	L	NA	NA	L	H	H

設定為此組態

	PCI S.E. M.2(SATA)	PCI S.E. SATA S5	PCI M.2(PCIE_X2) SATA S5	M.2(PCIE_X4) SATA S5	S.E. M.2(SATA)	M.2(SATA)	PCI
N_GPP_D1	L	L	H	H	L	H	NA
N_GPP_D2	L	H	H	H	L	H	NA

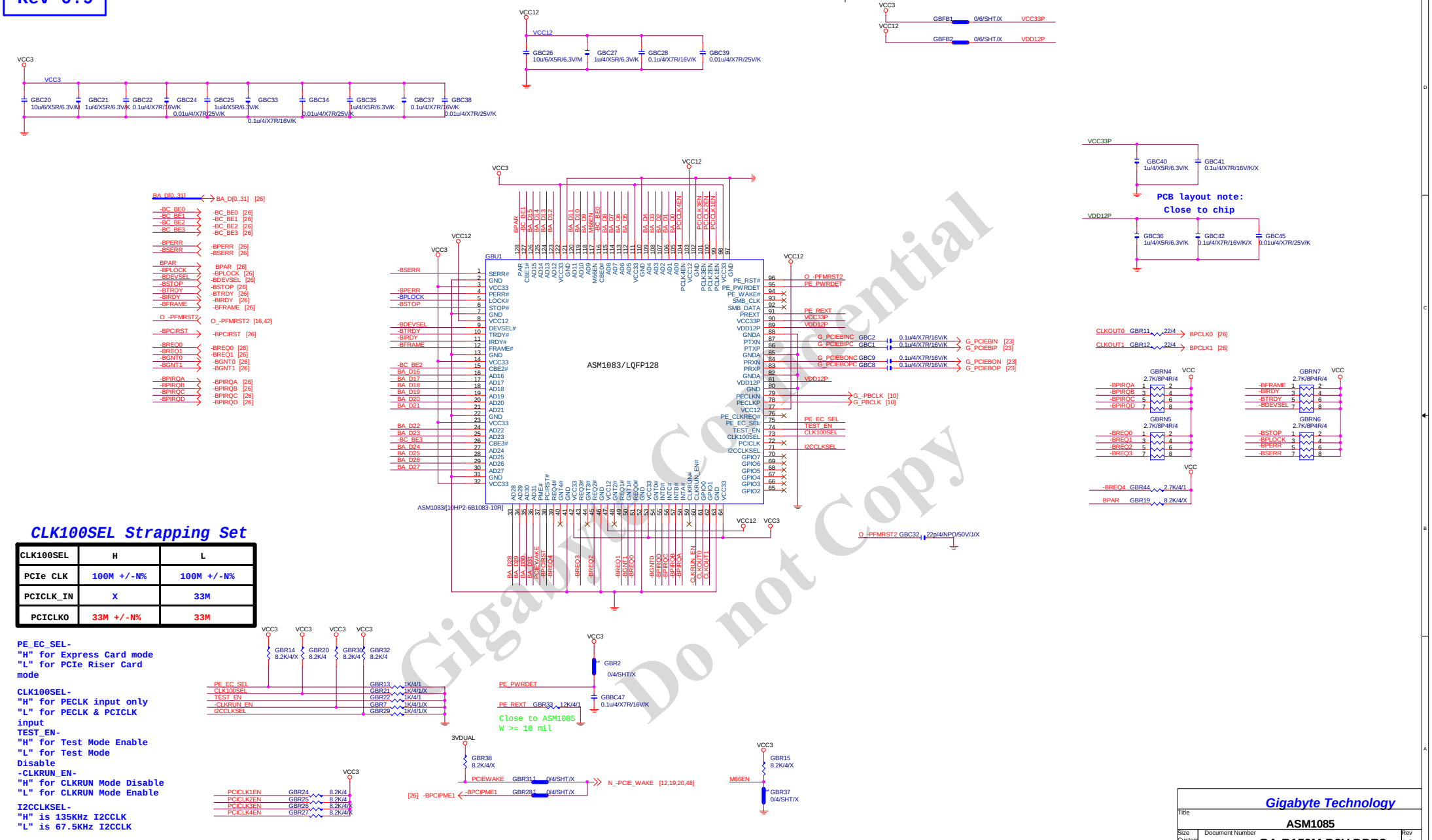
Gigabyte Technology

Title: PCI EXPRESS X16 SWITCH

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 23 of 52

Rev 0.9



CLK100SEL Strapping Set

CLK100SEL	H	L
PCIe CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLKO	33M +/-N%	33M

PE_EC_SEL-
"H" for Express Card mode
"L" for PCIe Riser Card mode

CLK100SEL-
"H" for PECLK input only
"L" for PECLK & PCICLK input

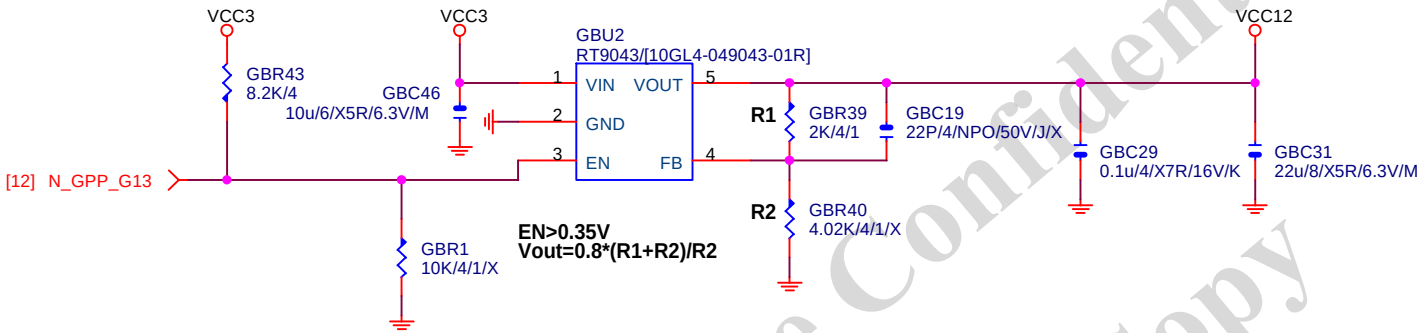
TEST_EN-
"H" for Test Mode Enable
"L" for Test Mode Disable

-CLKRUN_EN-
"H" for CLKRUN Mode Disable
"L" for CLKRUN Mode Enable

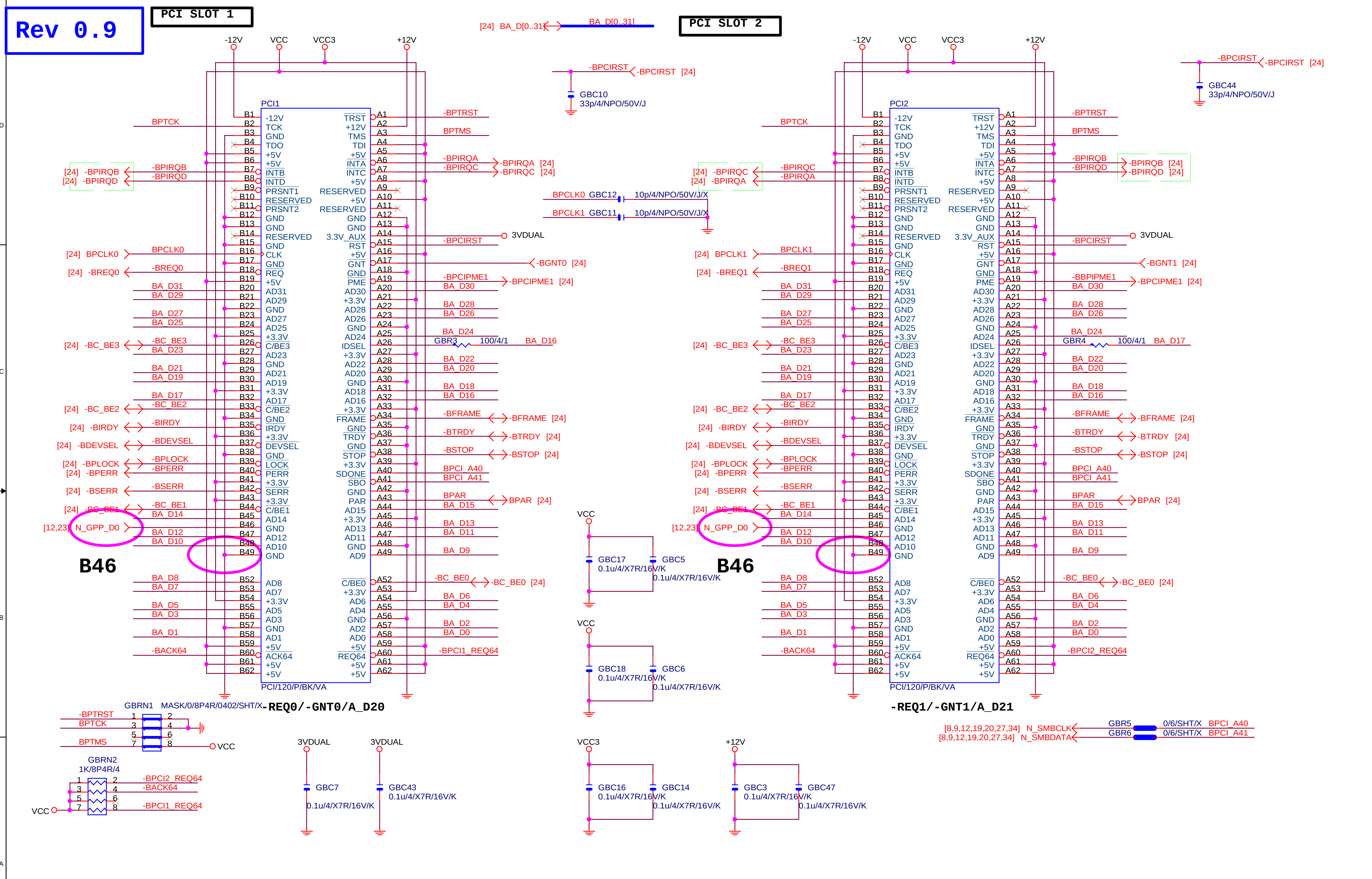
I2CCLKSEL-
"H" is 135KHz I2CCLK
"L" is 67.5KHz I2CCLK

Gigabyte Technology			
Title: ASM1085			
Size: Custom	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 24 of 52		

Rev 0.9



Gigabyte Technology		
Title: ASM1085 POWER		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 25 of 52	


Rev 0.9
PCI SLOT 1
PCI SLOT 2
[24] BA_D[0..31]
BA_D[0..31]
-BPCIRST
-BPCIRST [24]
GBC10
33p/4/NPO/50V/J
GBC44
33p/4/NPO/50V/J
-12V
VCC
VCC3
+12V
PCI1
PCI2
BPTCK
-BPTRST
BPTMS
-BPIRQA
-BPIRQB
-BPIRQC
-BPIRQD
-BPIRQA [24]
-BPIRQB [24]
-BPIRQC [24]
-BPIRQD [24]
BPCLK0 GBC12 10p/4/NPO/50V/J/X
BPCLK1 GBC11 10p/4/NPO/50V/J/X
3VDUAL
[24] BPCLK0
[24] BPCLK1
[24] -BREQ0
[24] -BREQ1
-BGNT0 [24]
-BGNT1 [24]
-BPCIPME1
-BBPIPME1
-BPCIPME1 [24]
GBR3 100/4/1 BA_D16
GBR4 100/4/1 BA_D17
[24] -BC_BE3
[24] -BC_BE2
[24] -BC_BE1
-BC_BE0 [24]
[24] -BIRDY
[24] -BDEVSEL
[24] -BPLOCK
[24] -BPERR
[24] -BSERR
-BFRAME [24]
-BTRDY [24]
-BSTOP [24]
BPAR [24]
BPCI_A40
BPCI_A41
[12,23] N_GPP_D0
B46
-BACK64
-BPCI1_REQ64
-BPCI2_REQ64
PCI/120/P/BK/VA
-REQ0/-GNT0/A_D20
-REQ1/-GNT1/A_D21
GBC17 0.1u/4/X7R/16V/K
GBC5 0.1u/4/X7R/16V/K
GBC18 0.1u/4/X7R/16V/K
GBC6 0.1u/4/X7R/16V/K
GBRN1 MASK/0/8P4R/0402/SHT/X
GBRN2 1K/8P4R/4
GBC7 0.1u/4/X7R/16V/K
GBC43 0.1u/4/X7R/16V/K
GBC16 0.1u/4/X7R/16V/K
GBC14 0.1u/4/X7R/16V/K
GBC3 0.1u/4/X7R/16V/K
GBC47 0.1u/4/X7R/16V/K
[8,9,12,19,20,27,34] N_SMBCLK
[8,9,12,19,20,27,34] N_SMBDATA
GBR5 0/6/SHT/X BPCI_A40
GBR6 0/6/SHT/X BPCI_A41

GIGABYTE™

Title: PCI SLOT 1&2

Size	Document Number	Rev
Custom	GA-B150M-D3H DDR3	1.0

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REV:0.15-IRON CHOKE

2014/12/25
1.新增DAR125.DAQ5(12V負壓線路)
2.DAR7改不上件

DC-LL --> 2.1mohm

DC-LL --> 3.1mohm

DAR44-->680 ohm
OCP-->140A

DAR71-->499 ohm
OCP-->74A

CLOSE DA_ DL1 DC SIDE

CLOSE DE_ DL1 DC SIDE

CLOSE ?

CLOSE ?

for ISL95856 DISABLE PH4

for ISL95856 DISABLE PH2,3

OPT4

OPT4 MASK

CLOSE PWM

OPT2

CLOSE PWM

8 VIA Connect GND lay

先上ISL95858,預留ISL95856 4PHASE

連接至PCH:GPP_G15

連接至PCH:GPP_G14

2014/12/19 REV:0.7
1. N_CPU_S連接至PCH:GPP_G15
2. N_GT_S連接至PCH:GPP_G14

GIGABYTE™

Title	ISL95858/95856_PWM	
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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VCORE

REV:0.15-IRON CHOKE

CLOSE TO VCORE POWER PLANE

VCORE_SIO VCORE

VCORE_VS MASK/0/4/SHT/X

VIN

DA_DQ1 NTMFS4C10NT1G/PPAK/970pF/7.3m

DA_DC1 10u/8/X6S/16V/K/[10CM2-3K1005-74R_10CM2-3K1005-7BR]

[27] UGATE1_A UGATE1_A DA_DR1 2.2/6 UG1_1A

DA_DR2 8.2K/4

[27] PHASE1_A PHASE1_A

[27] LGATE1_A LGATE1_A DA_DR3 MASK/0/6/SHT/M/X LG1_1A

DA_DQ2

L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A

無閃電

DA_DL1 0.5uH/40A/IMD109/M/NP/D

R50

VCORE

DA_DR4 2.2/6

DA_DC2 1n/4/X7R/50V/K

DA_DR5 MASK/0/4/SHT/X

DA_DR6 MASK/0/4/SHT/X

[27] CSP1_A
[27] CSN1_A

NTMFS4C06N/N/PPAK/1400pF/4m

VIN

DB_DQ1 NTMFS4C10NT1G/PPAK/970pF/7.3m

DB_DC1 10u/8/X6S/16V/K/[10CM2-3K1005-74R_10CM2-3K1005-7BR]

[27] UGATE2_A UGATE2_A DB_DR1 2.2/6 UG1_2A

DB_DR2 8.2K/4

[27] PHASE2_A PHASE2_A

[27] LGATE2_A LGATE2_A DB_DR3 MASK/0/6/SHT/M/X LG1_2A

DB_DQ2

L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A

無閃電

DB_DL1 0.5uH/40A/IMD109/M/NP/D

R50

VCORE

DB_DR4 2.2/6

DB_DC2 1n/4/X7R/50V/K

DB_DR5 MASK/0/4/SHT/X

DB_DR6 MASK/0/4/SHT/X

[27] CSP2_A
[27] CSN2_A

NTMFS4C06N/N/PPAK/1400pF/4m

VIN

DC_DQ1 NTMFS4C10NT1G/PPAK/970pF/7.3m

DC_DC1 10u/8/X6S/16V/K/[10CM2-3K1005-74R_10CM2-3K1005-7BR]

VCC VIN

DC_DR7 2.2/6

DC_DC3 0.22u/6/X7R/16V/K

BOOT_A

DC_DR8 1/6/X

DC_DR9 1/6

[27] PWM3_A

DC_DU1

BOOT PWM VCC LVCC GND UGATE PHASE LGATE GND

PWM3_A LVCC_A

DC_DC4 1u/6/X7R/16V/K

BOTTOM PAD
CONNECT TO GND
Through 2 VIAs

SL6625ACRZ/DFN8

UG3_A DC_DR1 UG3_1A 2.2/6

PH3_A

DC_DR2 8.2K/4

DC_DR3 MASK/0/6/SHT/M/X LG3_1A

LG3_A

L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A

無閃電

DC_DL1 0.5uH/40A/IMD109/M/NP/D

R50

VCORE

DC_DR4 2.2/6

DC_DC2 1n/4/X7R/50V/K

DC_DR5 MASK/0/4/SHT/X

DC_DR6 MASK/0/4/SHT/X

[27] CSP3_A
[27] CSN3_A

DC_DQ2 NTMFS4C06N/N/PPAK/1400pF/4m

OPT4(N/A) MASK

VIN

DD_DC1 MASK/10u/8/X6S/16V/K/[10CM2-3K1005-74R_10CM2-3K1005-7BR]/X

VCC VIN

DD_DR7 MASK/2.2/6/X

DD_DC3 MASK/0.22u/6/X7R/16V/K/X

BOOT4_A

DD_DR8 MASK/1/6/X

DD_DR9 MASK/1/6/X

[27] PWM4_A

DD_DU1

BOOT PWM VCC LVCC GND UGATE PHASE LGATE GND

PWM4_A LVCC4_A

DD_DC4 MASK/1u/6/X7R/16V/K/X

BOTTOM PAD
CONNECT TO GND
Through 2 VIAs

MASK/ISL6625ACRZ/DFN8/X

UG4_A DD_DR1 UG4_1A MASK/2.2/6/X

PH4_A

DD_DR2 MASK/8.2K/4/X

DD_DR3 MASK/0/6/SHT/M/X LG4_1A

LG4_A

DD_DQ2 MASK/X

L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A

DD_DL1 MASK/0.5uH/40A/IMD109/M/D/X

R50

VCORE

DD_DR4 MASK/2.2/6/X

DD_DC2 MASK/1n/4/X7R/50V/K/X

DD_DR5 MASK/0/4/SHT/X

DD_DR6 MASK/0/4/SHT/X

[27] CSP4_A
[27] CSN4_A

VCORE CAP

560u*4PCS
22u*10PCS

VCORE

DAEC3 DAEC6 DAEC7 DAEC8

560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

VCORE

WBC1 10u/8/X5R/6.3V/K WBC2 10u/8/X5R/6.3V/K

VCORE

WBC7 10u/8/X5R/6.3V/K WBC8 10u/8/X5R/6.3V/K

VCORE

WBC11 10u/8/X5R/6.3V/K WBC12 10u/8/X5R/6.3V/K WBC13 10u/8/X5R/6.3V/K WBC14 10u/8/X5R/6.3V/K

VCORE

WBC17 10u/8/X5R/6.3V/K WBC18 10u/8/X5R/6.3V/K

MOSHSINK

MOSHSINK-Z1704-HD3

MOS_HS1
HEAT SINK/[12SP2-S09325-31R_12SP2-S09325-31R_12SP2-S09325-33R]

X2

VIN CAP

270u*3PCS

V12

VIN

DAC36 1u/6/X7R/16V/K

DAEC14 DAEC15 DAEC16

270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]
270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]
270u/FP/D/16V/8C/A/10m/[11CO5-8C2700-09R]

GIGABYTE

Title	ISL95858_856_MOS	
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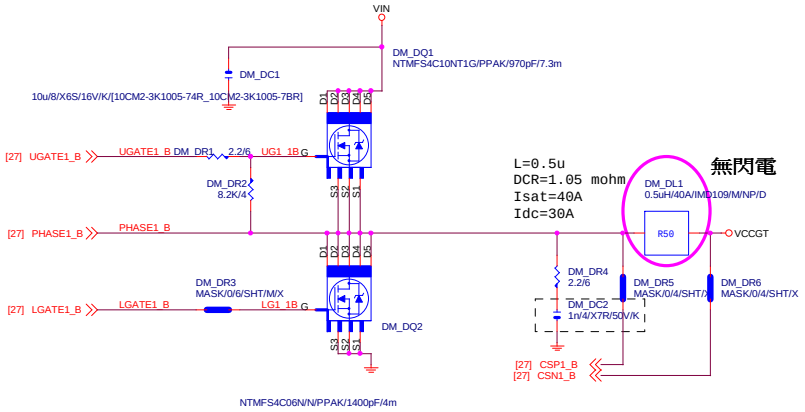
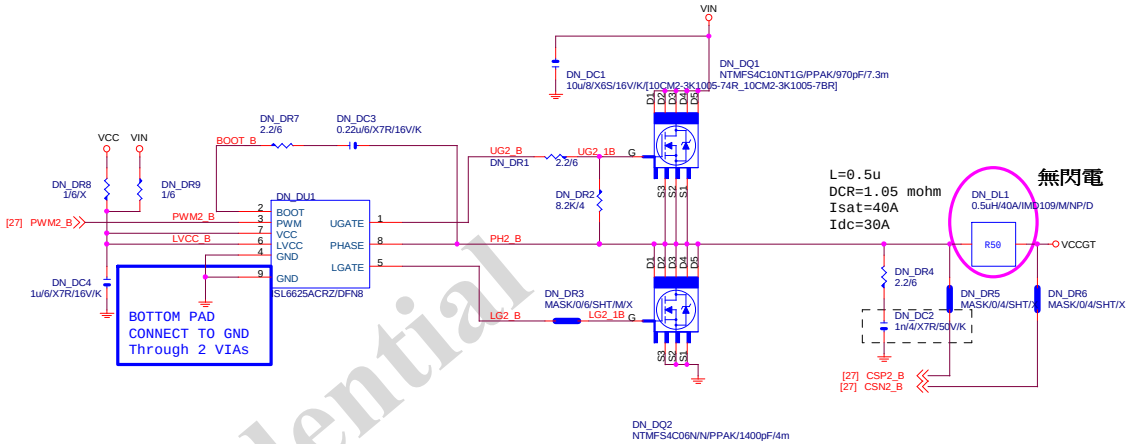
VCCGT

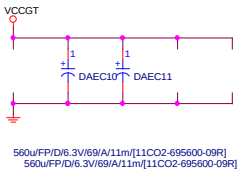
REV:0.15-IRON CHOKE

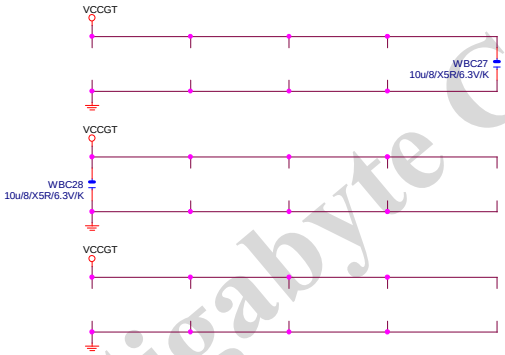




VCCGT CAP

560u*2PCS
22u*2PCS





GIGABYTE™

Title	ISL95858_MOS	
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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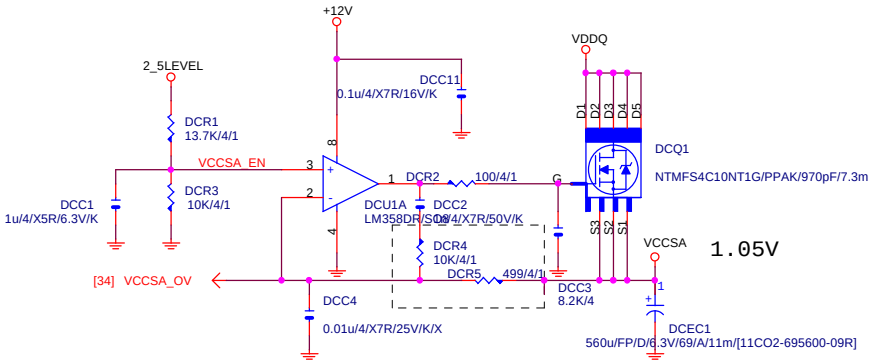
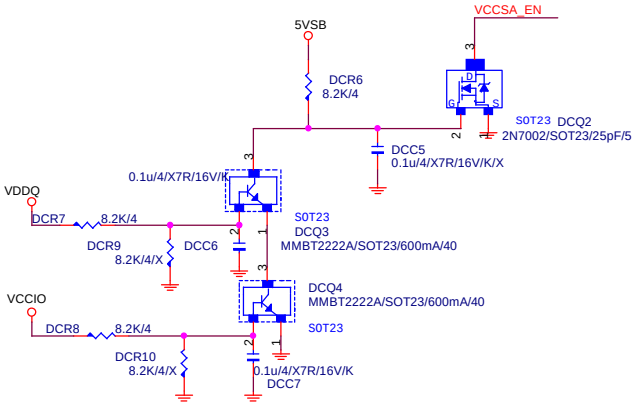
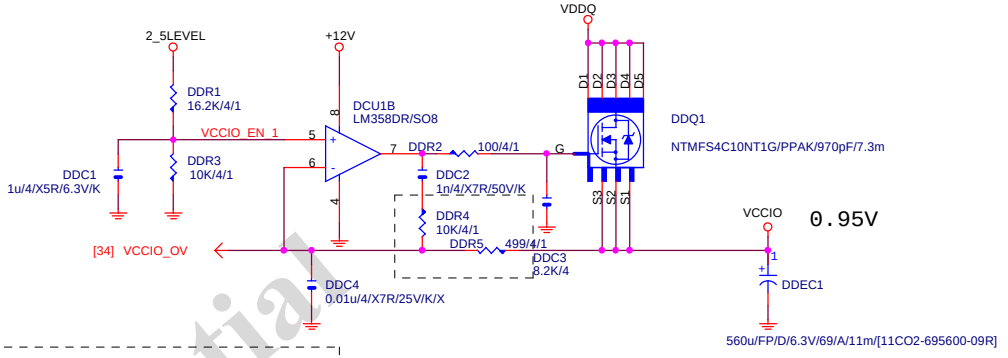
VCCSA

REV:0.4





VCCIO



VCCIO_EN_1 DDR10 0/4/SHT/MX VCCIO_EN [16]

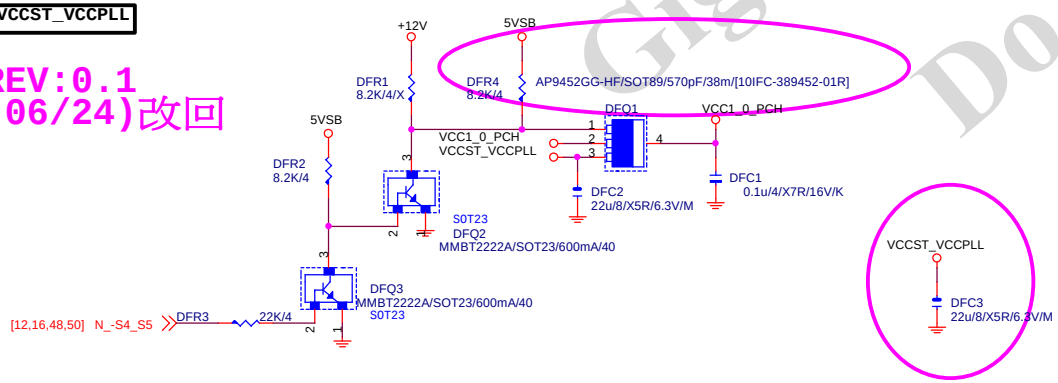
Connect to IT8620

VCCGT

放CPU端.

VCCST_VCCPLL

REV:0.1
(06/24)改回



GIGABYTE™

Title: VCCSA_VCCIO		
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DDR3

REV:0.28(IRON CHOKE)

L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

5VDUAL
MA_DR8 2.2/6
DRV_DDR
MA_DC10 1u/6/X7R/16V/K
MA_DR37 100K/4/1
VDDQ_GD
MA_DR41 8.2K/4
DDR_EN
[16] DDR_EN_CON
MA_DR39 0/4/X
Defaults 不上件
MA_DC15 0.1u/4/X7R/16V/K/X
MA_DC9 0.1u/6/X7R/25V/K
MA_UGATE
MA_PHASE
MA_LGATE
MAU2
RT8237C/D/DFN-10L/[10TA1-608237-01R]
EN PGOOD VCC BOOT UGATE PHASE FB CS RF GND LGATE
MA_RF
MA_DR45 470K/4/1
MA_DR15 95.3K/4/1
MA_DR19 470K/4/1/X
PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil
FS=290K
OCP=30A
VDDQ_SIO
VDDQ
DDR_VS
MASK/0/4/SHT/M/X
CLOSE TO DDR POWER PLANE

5VDUAL
MA_L2 47/4030/15A/S
BEAD
MA_DC6 0.1u/4/X7R/16V/K
Close Choke
MA_VIN
MA_DC7 1u/6/X7R/16V/K
Close MOS
MAEC1 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MA_DQ1 NTMFS4C10NT1G/PPAK/970pF/7.3m
無閃電 1uH/35A/IMD109/M/D
MA_L1 1uH/35A/IMD109/M/D
R50
MA_DR1 2.2/6
MA_DR2 8.2K/4
MA_DQ2
MA_DQ3
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
MA_DR9 2.2/6
MA_LG
NTMFS4C10NT1G/PPAK/970pF/7.3m
NTMFS4C10NT1G/PPAK/970pF/7.3m
VDDQ
MA_DR13 2K/4/1
MA_DC14 22p/4/NPO/50V/J/X
RS
RO
MA_DR12 2.15K/4/1
DDR_ADJ
[34] DDR_ADJ
SUPPORT DDR3
1.35V
L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A
1.52V:2K/4/1~2.21K/4/1
1.357V:2K/4/1~2.87K/4/1
Remote sense請從最重的負載端點拉回
0.8=1.357*[2.87K/(2K+2.87K)]
VDDQ
MAC60 22u/8/X5R/6.3V/M/X

PWR SEQ

5VDUAL
MAR9 8.2K/4
DDR_EN
MAQ5 2N7002/SOT23/25pF/5
SOT23
Close to RT8120
MAR10 8.2K/4
MAR11 100K/4/1
[16] DDR_EN_CON
MAQ6 2N7002/SOT23/25pF/5
SOT23
MAC9 1u/6/X7R/16V/K

MAU1上RT9045時上件
(N/A)
5VSB
MAR7 8.2K/4/X
MAQ2 2N7002/SOT23/25pF/5/X
SOT23
MAQ3
SOT23
2N7002/SOT23/25pF/5/X
[12,16,48,50] N_-SLP_S3
MA_VTT_REF
MAR6 8.2K/4
MAQ1 2N7002/SOT23/25pF/5/X
SOT23
MAR8 8.2K/4/X
MAQ4 MMBT2222A/SOT23/600mA/40/X
SOT23
[4] DDR_VTT_CTL

DDRVTT

VDDQ
MAC2 1u/4/X5R/6.3V/K
MAR5 1K/4/1
MAR4 1K/4/1
MAC1 0.01u/4/X7R/25V/K
[34] MA_VTT_REF
NCT3103S/SOP8/2A/[10GL2-203103-01R]
MAU1
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL
DDRVTT_EN
DDRVTT_BOOT
1.1A MAX
MAC7 10u/6/X5R/6.3V/M
DDRVTT

DDR_VTT_CTL MAR110 0/4 DDRVTT_EN
N_-SLP_S3 MAR111 0/4 DDRVTT_BOOT
MAU1上NCT3103S時上件(不可以改short pad)

DDR CAP

560u*2PCS 22u*1PCS 大電容 x4

VDDQ
MAEC4 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC6 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
WBC49 10u/8/X5R/6.3V/K

DDRVTT CAP

* 大電容 x0

DDRVTT
MAC5 22u/8/X5R/6.3V/M

GIGABYTE

Title	RT8120_DDR POWER	
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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VCC1_0_PCH

REV:0.5(IRON CHOKE)

CHOKE與CAP料號可變

5VDUAL
+12V
NPR22 0/6/X
NPD1 B140/SMA/1A/[10DK1-41SS14-03R]
NPD2 B320B/SMB/3A
NPL1 47/4030/15A/S
BEAD
P1V0_VIN_D
P1V0_VIN
注意耐壓
NPC1 0.1u/4/X7R/16V/K
Close Choke
NPC3 1u/6/X7R/16V/K
Close MOS
NPEC1 100u/OS/D/16V/69/A/35m

L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A

5VDUAL NPR1 2.2/6
DRV_PCH
NPC2 0.1u/6/X7R/25V/K
NPC4 1u/6/X7R/16V/K
NPR19 100K/4/1
PCH_1V0_GD

UGATE_PCH NPR2 2.2/6
NPQ1
NTMFS4C10NT1G/PPAK/970pF/7.3m
NPL2 1uH/18A/IMD0809/M/D
NPR4 8.2K/4

P1V0_PCH_EN
EN PGOOD VCC BOOT UGATE PHASE
FB CS RF GND LGATE
NPU1 RT8237/[10TA1-608237-01R]
UGATE_PCH
PHASE_PCH
LGATE_PCH

PHASE_PCH
LGATE_PCH
NPQ2
NTMFS4C10NT1G/PPAK/970pF/7.3m
NPR6 2.2/6
NPC7 1n/4/X7R/50V/K

NPC8 22p/4/NPO/50V/J/X
RS
NPR8 2K/4/1
NPEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

NPR12 280K/4/1
NPR20 470K/4/1/X
PCH_RF
NPR21
PCH_1V0_GD 470K/4/1

FS=290K
OCP=20A

P1V0_PCH_ADJ
[34] P1V0_PCH_ADJ

Remote sense請從最重的負載端點拉回

RO NPR13 4.12K/4/1
0.704*(1+RS/RO) = Vout

PWR SEQ

P1V0_PCH_EN NPR14 0/4/X VCC1_0_EN [16]
5VSB
NPR15 8.2K/4/X
NPQ4 2N7002/SOT23/25pF/5/X
SOT23
NPR5 MASK/0/4/SHT/M/X
3VDUAL
NPR16 8.2K/4
NPQ3 MMBT2222A/SOT23/600mA/40/X
SOT23
NPR17 8.2K/4/X
NPC9 0.1u/4/X7R/16V/K

VCC1_0_PCH
NPC10 22u/8/X5R/6.3V/M
請放置CHOKE一出來的地方

GIGABYTE™

Title	RT8237_PCH POWER	
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 32 of 52	

5VDUAL

REV:0.51

* 5Vdual , update from SKL 0.2B

+12V
Q30
NTMFS4C10NT1G/PPAK/970pF/7.3m
R57
8.2K/4
5VDUAL
5VDL_G1
5VSB
R51
8.2K/4
2N7002/SOT23/25pF/5
Q32
SOT23
Q54
MMBT2222A/SOT23/600mA/40
S0T23
C41
1n/4/X7R/50V/K/X
[16] 5VAUX_SW
R113
8.2K/4
VCC
D1
D2
D3
D4
D5
Q31
P2003ED/P/TO252/30m
P_EN
EC10
100u/OS/D/6.3V/66/A/35m
EC11
100u/OS/D/6.3V/66/A/35m
6/8Φ
R52
1K/4/1
R53
1K/4/1
R56
100K/4/1/X
C23
0.1u/4/X7R/16V/K
BC59
22u/8/X5R/6.3V/M
BC58
22u/8/X5R/6.3V/M

3VDUAL

Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V

5VDUAL
3VDUAL
BC27
0.1u/4/X7R/16V/K
Q4
L1085DG/TO252/5A
R37
100/4/1
R38
169/4/1
R36
22K/4
O_-RSMRST [12,16]
BC25
0.1u/4/X7R/16V/K
C9
22u/8/X5R/6.3V/M
C8
1n/4/X7R/50V/K
上22u 電容
Meet the rise time

3VDUAL_PCH

NQ9
L1117LG/N/SOT223/1A
3VDUAL_PCH
5VSB
NBC68
1u/4/X5R/6.3V/K
NR217
301/4/1
NBC66
22u/8/X5R/6.3V/M
NBC67
0.1u/4/X7R/16V/K
NR218
510/4/1

O_-RSMRST (不上件)

O_-RSMRST
5VSB
NR202
22K/4/X
S0T23
NQ19
2N7002/SOT23/25pF/5/X
3VDUAL
NQ18
MMBT2222A/SOT23/600mA/40/X
S0T23
NR203
75K/4/1/X
NR204
27K/4/1/X
NC23
1u/4/X5R/6.3V/K/X
At least 10ms delay after 3VDUAL stabel
D4
[12] N_-DEPSLP
BAT54A/SOT23/200mA/X
S0T23

Gigabyte Technology

Title: DISCRETE POWER

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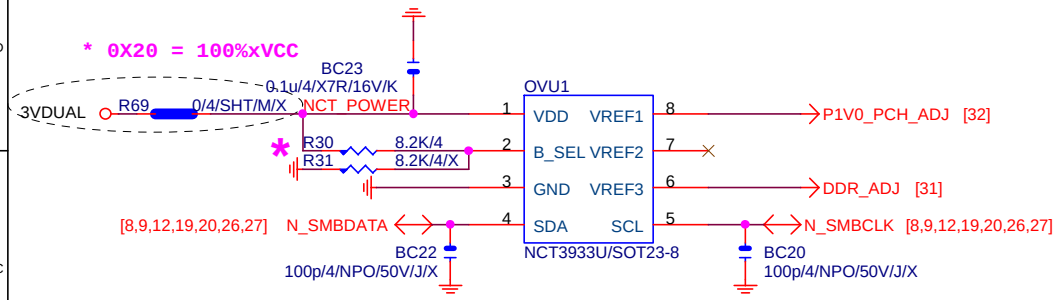
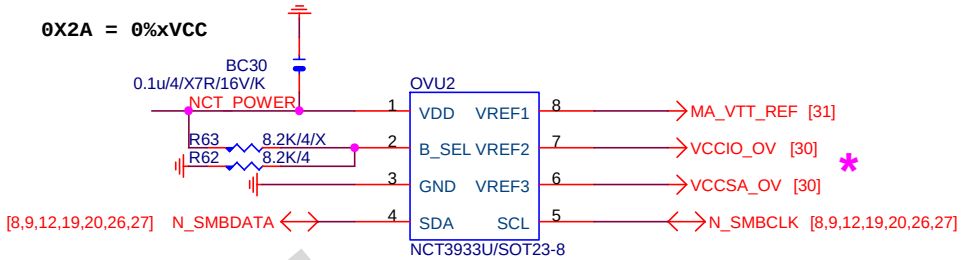
Date: Thursday, July 16, 2015 | Sheet 33 of 52

OVER VOLTAGE





0X22 = 75%xVCC

* 刪除 OVU3

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

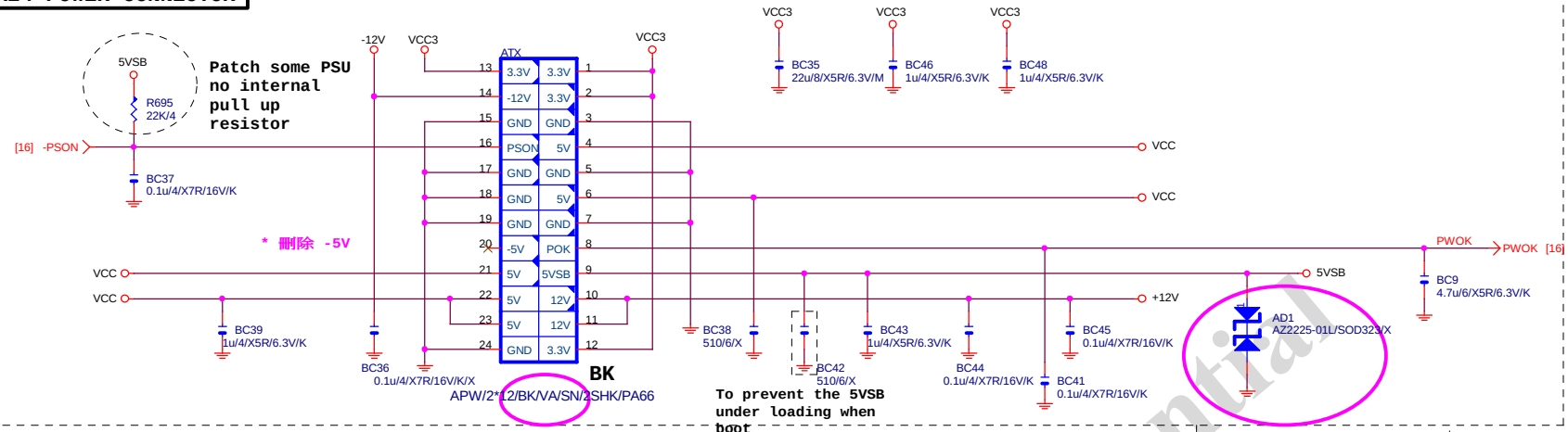
Gigabyte Technology

Title: CPU CORE VR-2

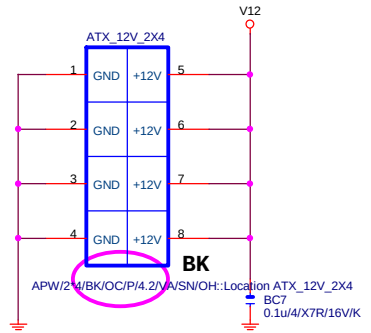
Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

Date: Thursday, July 16, 2015 | Sheet 34 of 52

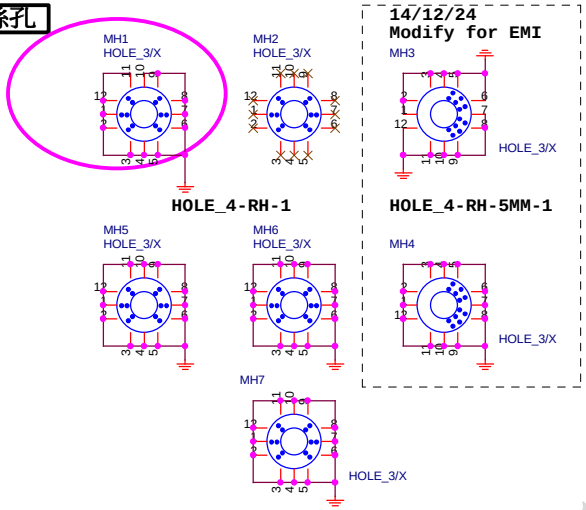
ATXX24 POWER CONNECTOR



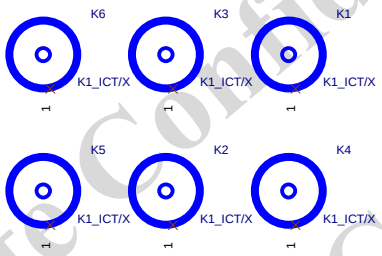
ATXX4 POWER CONNECTOR



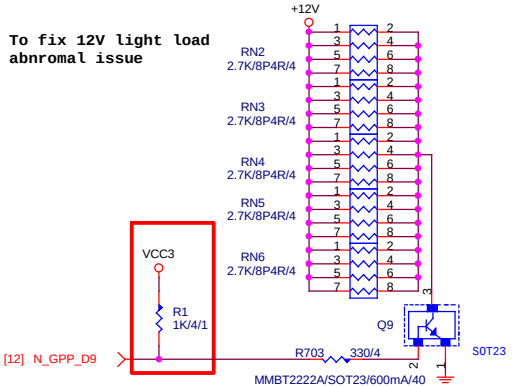
螺絲孔



固定孔/光學點

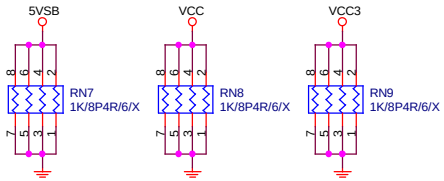


+12V DUMMY LOAD

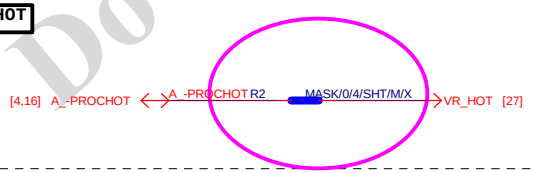


【技術通報R&D技術通報153】

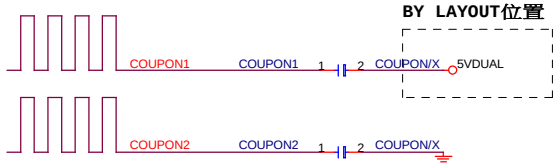
DUMMY LOAD



-PROHOT



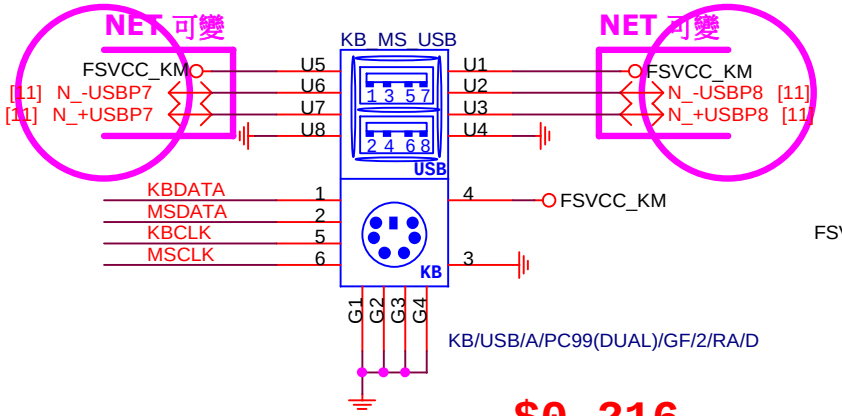
COUPON



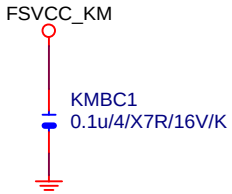
Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 35 of 52	

KB_MS_USB

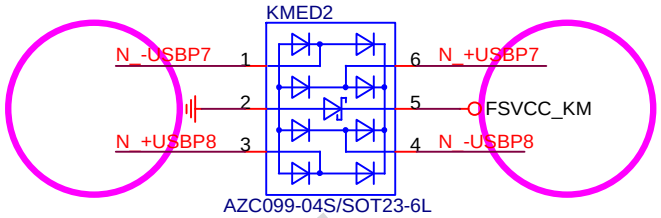
Rev: 0.7

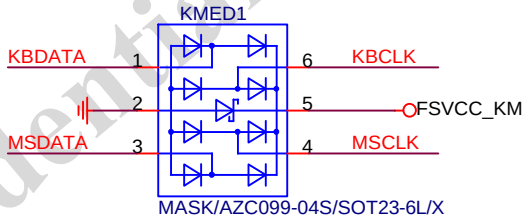


$0.216

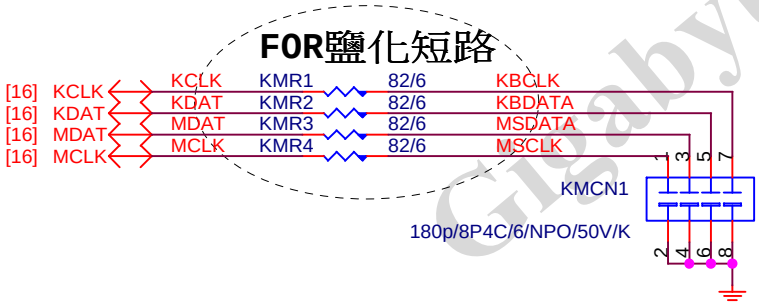


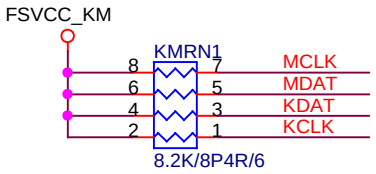
ESD



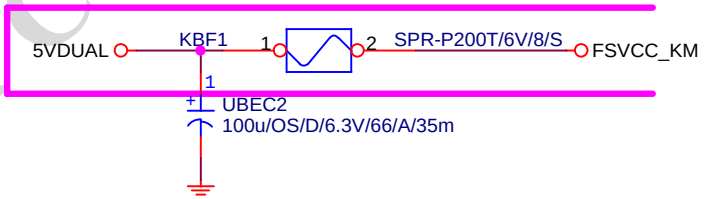


KB_MS_USB DAMPING/PU

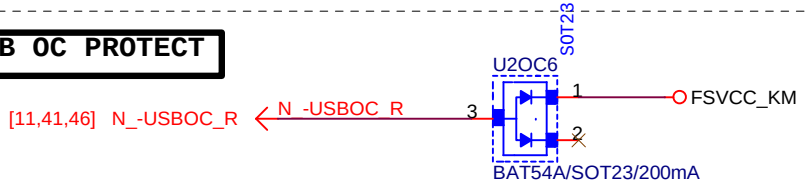




KB_MS_USB PWR



USB OC PROTECT



Gigabyte Technology			
Title: KB_MS_USB			
Size: A	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015		Sheet 36 of 52	

DVI

Rev: 0.7

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

NET 可變

[4] DVI_TXC
[4] DVI_TXC-
VBC1 0.1u/4/X7R/16V/K DVITXC+ VR1 680/4/1
VBC2 0.1u/4/X7R/16V/K DVITXC- VR2 680/4/1

[4] DVI_TX0
[4] DVI_TX0-
VBC3 0.1u/4/X7R/16V/K DVITX0+ VR3 680/4/1
VBC4 0.1u/4/X7R/16V/K DVITX0- VR4 680/4/1

[4] DVI_TX1
[4] DVI_TX1-
VBC5 0.1u/4/X7R/16V/K DVITX1+ VR7 680/4/1
VBC7 0.1u/4/X7R/16V/K DVITX1- VR8 680/4/1

[4] DVI_TX2
[4] DVI_TX2-
VBC8 0.1u/4/X7R/16V/K DVITX2+ VR9 680/4/1
VBC9 0.1u/4/X7R/16V/K DVITX2- VR10 680/4/1

DVI_G

VQ1
2N7002/SOT23/25pF/5
SOT23

VCC VR16 8.2K/4 VQ1_2

DVI_SCL

VQ2
2N7002/SOT23/25pF/5
SOT23

VCC VR17 8.2K/4 VQ2_2 N_DDPC_CTRLCLK

DVI_SDA

VQ3
2N7002/SOT23/25pF/5
SOT23

VCC VR18 8.2K/4 VQ3_2 N_DDPC_CTRLDATA

DVI PU

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VCC
防漏電
VD1
BAT54A/SOT23/200mA
SOT23

VR14 2.2K/4/1
VR13 2.2K/4/1

DVI_SDA
DVI_SCL

[10] N_DDPC_CTRLCLK
[10] N_DDPC_CTRLDATA
VR5 2.2K/4/1
VR6 2.2K/4/1
VCC3

VBC6
0.1u/4/X7R/16V/K/X

DVI_HP

VQ4
2N7002/SOT23/25pF/5
SOT23

VCC3
VR20 1M/4

VCC VR19 8.2K/4 VQ4_2 N_DVI_HDP_F [10]

DVI CONN

NET 可變

FSVCC_KM

DVI

DVITX0-
DVITX0+
DVITX1-
DVITX1+
DVITX2-
DVITX2+
DVI_SCL
DVI_SDA
DVITXC-
DVITXC+
DVI_HP

VR15 20K/4/1

M1 M2 M5 M6 M7 M8

COMMON

DVI-30P-4P-1

DVI-D/24P/SC/RA/D/SH

平躺式 DVI-D

11NR6-501024-31

ESD

NET 可變

FSVCC_KM
VBC10
0.1u/4/X7R/16V/K

VESD3
AZC099-04S/SOT23-6L

DVI_SDA
DVI_HP
DVI_SCL
FSVCC_KM

Close to connector

VESD2
AZ1045-04F/MSOP10

Close to connector

VESD1
* swap
AZ1045-04F/MSOP10

Close to connector

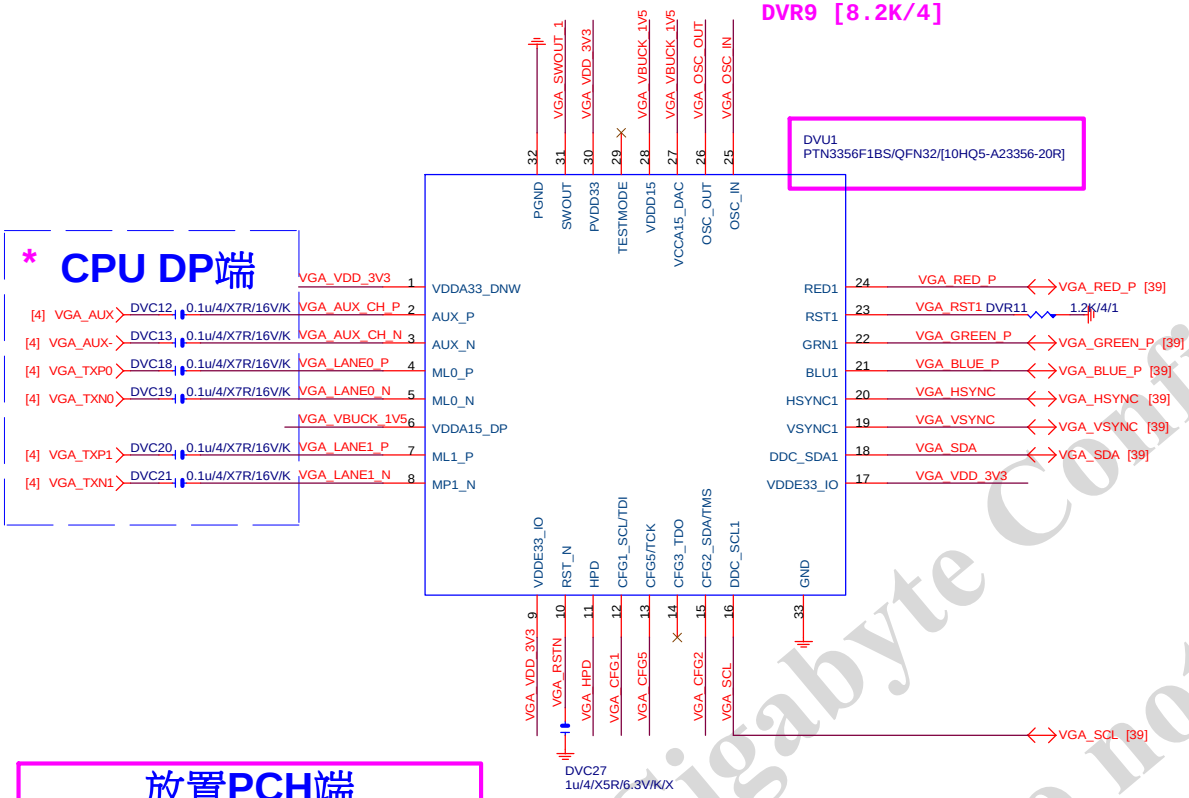
Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 37 of 52	

PTN3356 | R1.08

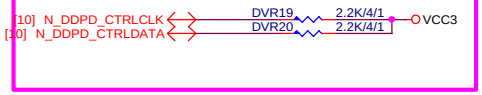
ROM PART: PTN3356R1BS/[10HQ5-A23356-10R]
FLASH PART: PTN3356F1BS/[10HQ5-A23356-20R]

省X'TAL COST DOWN:
1. 上件:
DVC28 [10p/4/NPO/50V/J]
DVC11 [10p/4/NPO/50V/J]~修改值
DVR10 [8.2K/4]
2. 删除:
DVX1 [25M/16p/30ppm/49US/20/D]
DVC10 [20p/4/NPO/50V/J]
DVR9 [8.2K/4]

* CPU DP端

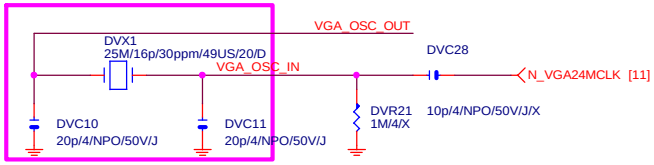


放置PCH端



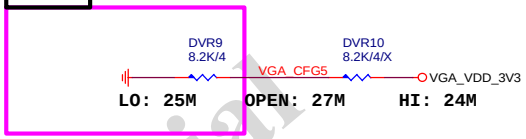
25M Crystal

FROM PCH 24MHZ ISSUE

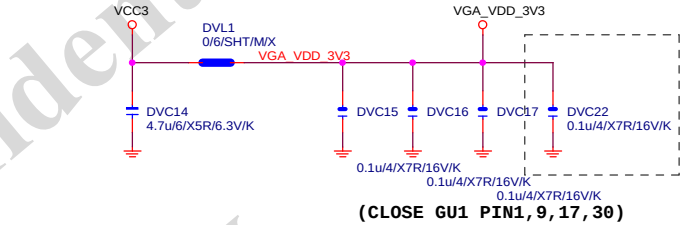


CFG5

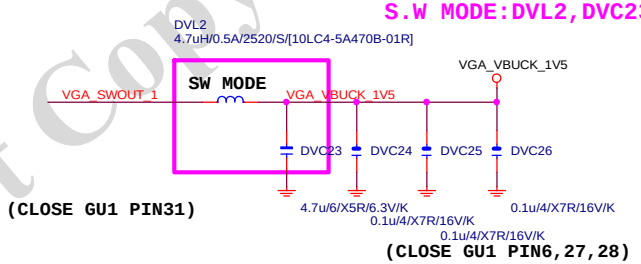
For Crystal Less



ADAPTER POWER



LDO MODE:DVL2,DVC23-->X
S.W MODE:DVL2,DVC23-->O

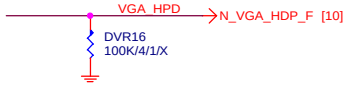


CFG1&2

Non-Compliant

HPD

PCH端 *



Gigabyte Technology			
Title: NXP-PTN3356			
Size: Custom	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015		Sheet 38 of 52	

VGA SIGNAL R1.08

漏電

VCC
DVD1
BAT54A/SOT23/200mA
S0T23
VGA_SDA_F
VGA_SCL_F
DVR2
2.2K/4/1
DVR3
2.2K/4/1
[38] VGA_SDA
[38] VGA_SCL
VGA_SDA
VGA_SCL

[38] VGA_VSYNC
VGA_VSYNC
DVR1
33/4
G_VSYNC
DVC2
10p/4/NPO/50V/J/X

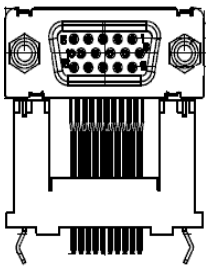
[38] VGA_HSYNC
VGA_HSYNC
DVR4
33/4
G_HSYNC
DVC3
10p/4/NPO/50V/J/X

[38] VGA_RED_P
[38] VGA_GREEN_P
[38] VGA_BLUE_P
VGA_RED_P
VGA_GREEN_P
VGA_BLUE_P
DVFB1
DVFB2
DVFB3
60/4/3A/S
60/4/3A/S
60/4/3A/S
G_VGA_R
G_VGA_G
G_VGA_B
DVR5
75/4/1
DVR7
75/4/1
DVR6
75/4/1
DVC4
DVC6
DVC5
10p/4/NPO/50V/J/X
10p/4/NPO/50V/J/X
10p/4/NPO/50V/J/X
DVC7
DVC9
DVC8
10p/4/NPO/50V/J
10p/4/NPO/50V/J
10p/4/NPO/50V/J

Close to Filter

FOR EMI

VGA CONN. 架高型VGA(BLACK)



FSVCC_KM
DVC1
0.1u/4/X7R/16V/K/X
VGA
G_VGA_R
G_VGA_G
G_VGA_B
VGA_SDA
G_HSYNC
G_VSYNC
VGA_SCL
VGA/BK/SC/RA/D/2/HR

VGA ESD

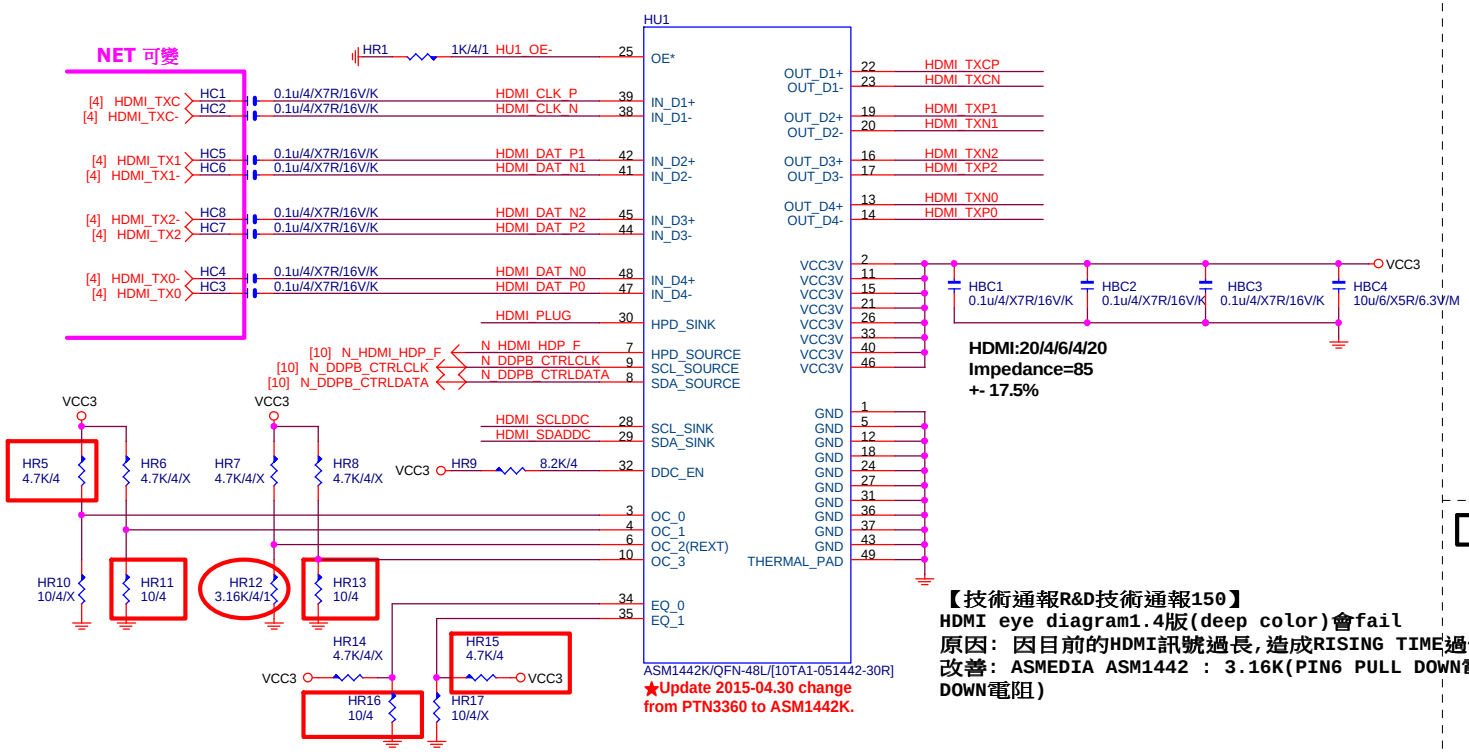
DVESD1
VGA_SCL
G_VSYNC
VCC
G_HSYNC
VGA_SDA
AZC099-04S/SOT23-6L

DVESD2
G_VGA_G
VCC3
G_VGA_R
G_VGA_B
AZC099-04S/SOT23-6L

Gigabyte Technology			
Title: NXP-PTN3356			
Size: Custom	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015	Sheet 39 of 52		

HDMI LEVEL SHIFT

Rev: 0.7



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

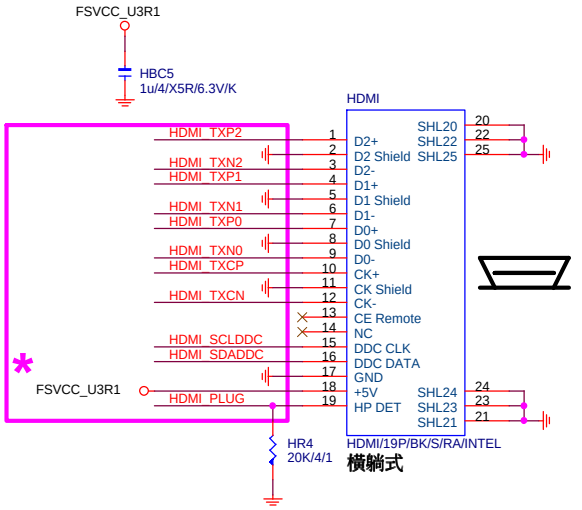
【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K

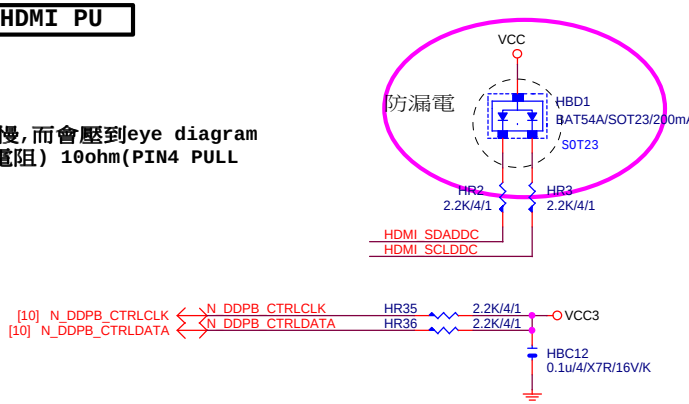
ASM1442:紅色框要上,HR12:3.16K

【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)

HDMI CONN



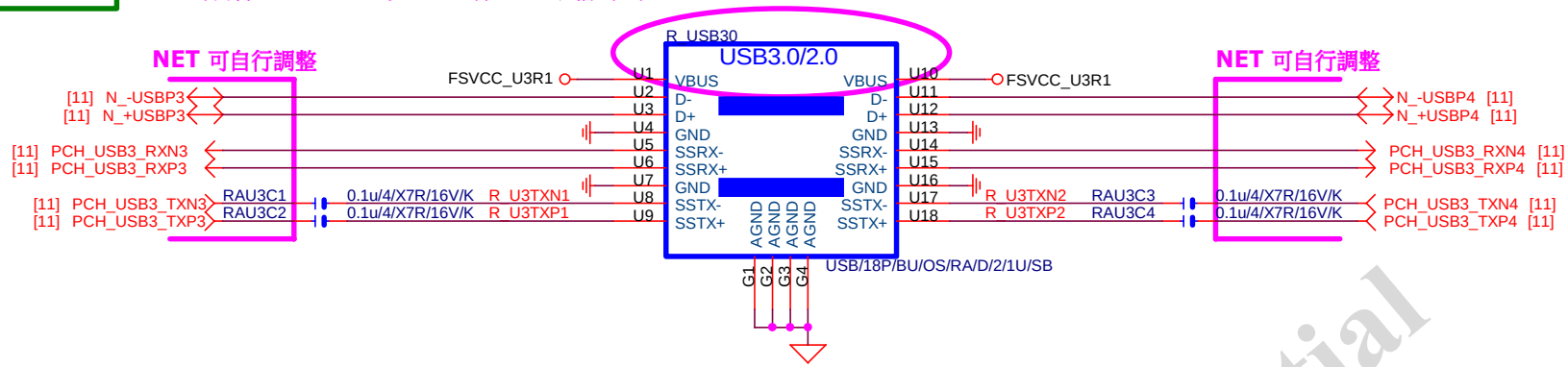
HDMI PU



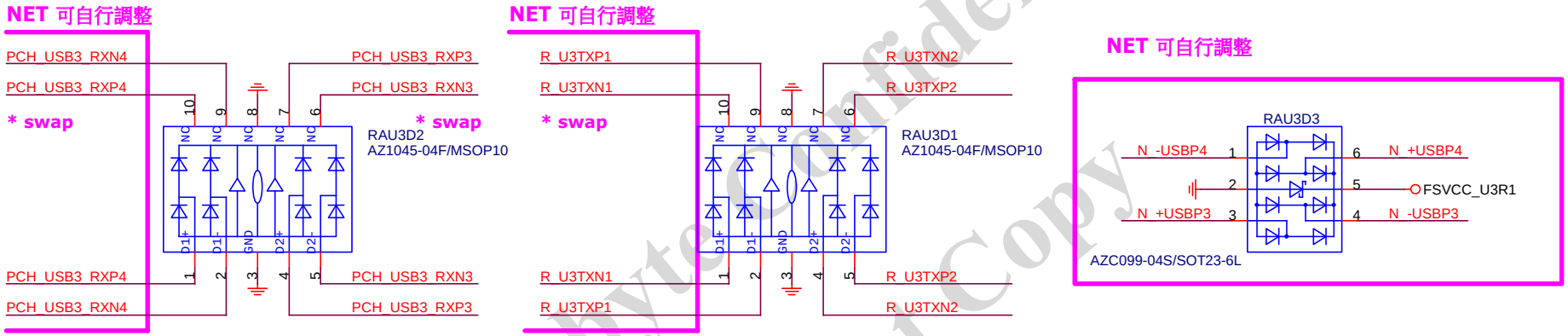
Gigabyte Technology			
Title: HDMI			
Size: Custom	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015		Sheet 40 of 52	

Rev: 0.7

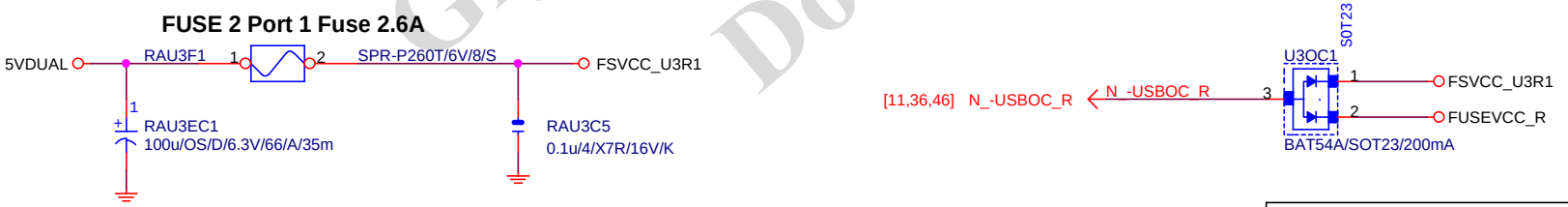
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



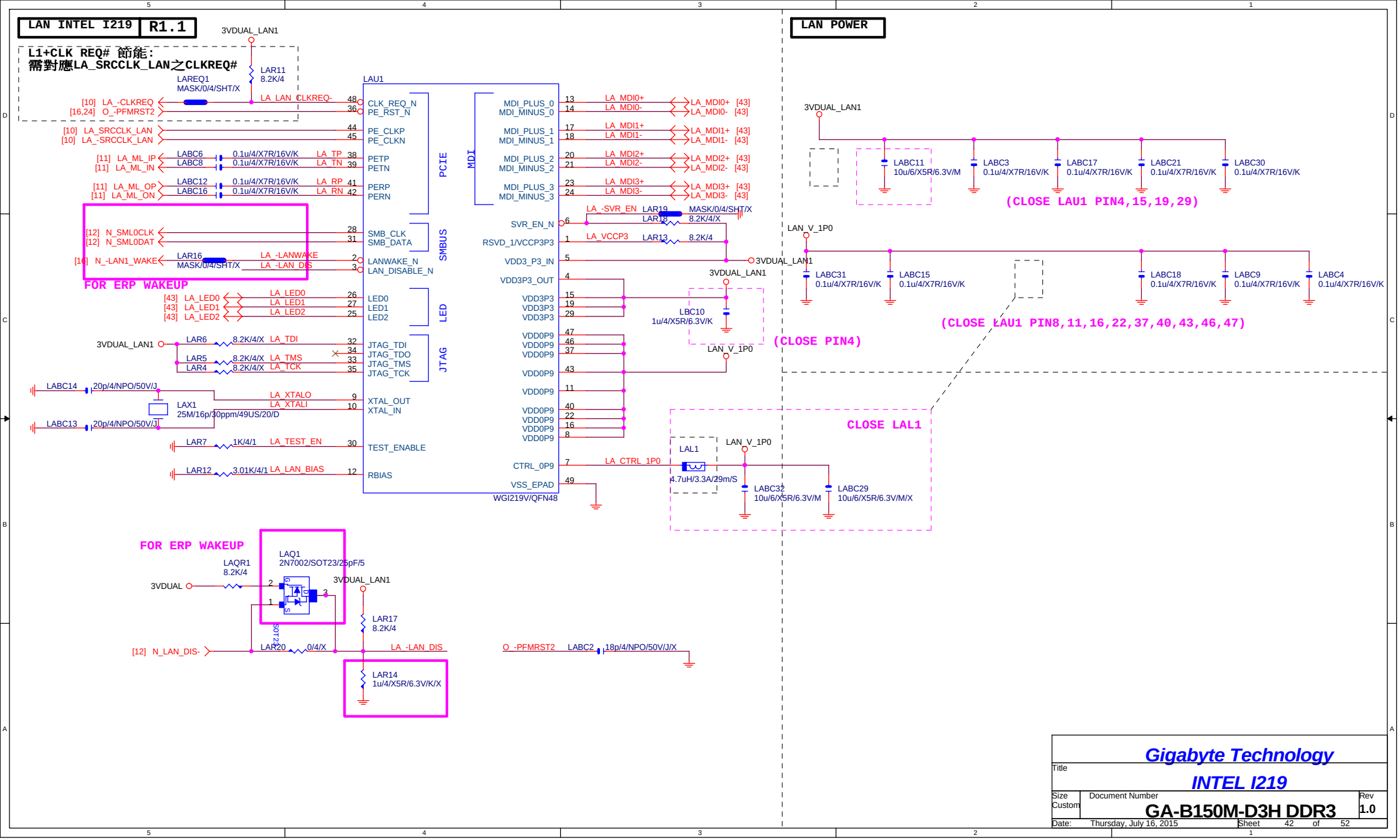
ESD



FUSE



Gigabyte Technology			
Title: R_USB30,USB_OC			
Size: Custom	Document Number: GA-B150M-D3H DDR3		Rev: 1.0
Date: Thursday, July 16, 2015		Sheet 41 of 52	


LAN INTEL I219 R1.1
L1+CLK REQ# 節能:
需對應LA_SRCCLK_LAN之CLKREQ#
3VDUAL_LAN1
LAR11 8.2K/4
LAREQ1 MASK/0/4/SHT/X
[10] LA_-CLKREQ
[16,24] O_-PFMRST2
LA_LAN_CLKREQ-
LAU1
CLK_REQ_N
PE_RST_N
PE_CLKP
PE_CLKN
[10] LA_SRCCLK_LAN
[10] LA_-SRCCLK_LAN
PCIE
MDI
[11] LA_ML_IP
[11] LA_ML_IN
LABC6 0.1u/4/X7R/16V/K
LABC8 0.1u/4/X7R/16V/K
LA_TP
LA_TN
PETP
PETN
[11] LA_ML_OP
[11] LA_ML_ON
LABC12 0.1u/4/X7R/16V/K
LABC16 0.1u/4/X7R/16V/K
LA_RP
LA_RN
PERP
PERN
MDI_PLUS_0
MDI_MINUS_0
MDI_PLUS_1
MDI_MINUS_1
MDI_PLUS_2
MDI_MINUS_2
MDI_PLUS_3
MDI_MINUS_3
LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-
[43]
LA_-SVR_EN
LAR19
LAR18
MASK/0/4/SHT/X
8.2K/4/X
SVR_EN_N
LA_VCCP3
LAR13 8.2K/4
RSVD_1/VCCP3P3
VDD3_P3_IN
3VDUAL_LAN1
VDD3P3_OUT
[12] N_SML0CLK
[12] N_SML0DAT
SMB_CLK
SMB_DATA
SMBUS
[16] N_-LAN1_WAKE
LAR16
MASK/0/4/SHT/X
LA_-LANWAKE
LA_-LAN_DIS
LANWAKE_N
LAN_DISABLE_N
FOR ERP WAKEUP
[43] LA_LED0
[43] LA_LED1
[43] LA_LED2
LED0
LED1
LED2
LED
VDD3P3
LBC10 1u/4/X5R/6.3V/K
LAN_V_1P0
(CLOSE PIN4)
3VDUAL_LAN1
LAR6 8.2K/4/X LA_TDI
LAR5 8.2K/4/X LA_TMS
LAR4 8.2K/4/X LA_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TCK
JTAG
VDD0P9
LABC14 20p/4/NPO/50V/J
LABC13 20p/4/NPO/50V/J
LAX1 25M/16p/30ppm/49US/20/D
LA_XTALO
LA_XTALI
XTAL_OUT
XTAL_IN
LAR7 1K/4/1 LA_TEST_EN
TEST_ENABLE
LAR12 3.01K/4/1 LA_LAN_BIAS
RBIAS
CTRL_0P9
LA_CTRL_1P0
VSS_EPAD
WGI219V/QFN48
CLOSE LAL1
LAL1
4.7uH/3.3A/29m/S
LABC32 10u/6/X5R/6.3V/M
LABC29 10u/6/X5R/6.3V/M/X
FOR ERP WAKEUP
LAQR1 8.2K/4
LAQ1 2N7002/SOT23/25pF/5
3VDUAL
LAR17 8.2K/4
SOT23
[12] N_LAN_DIS-
LAR20 0/4/X
LA_-LAN_DIS
LAR14 1u/4/X5R/6.3V/K/X
O_-PFMRST2
LABC2 18p/4/NPO/50V/J/X
LAN POWER
LABC11 10u/6/X5R/6.3V/M
LABC3 0.1u/4/X7R/16V/K
LABC17 0.1u/4/X7R/16V/K
LABC21 0.1u/4/X7R/16V/K
LABC30 0.1u/4/X7R/16V/K
(CLOSE LAU1 PIN4,15,19,29)
LAN_V_1P0
LABC31 0.1u/4/X7R/16V/K
LABC15 0.1u/4/X7R/16V/K
LABC18 0.1u/4/X7R/16V/K
LABC9 0.1u/4/X7R/16V/K
LABC4 0.1u/4/X7R/16V/K
(CLOSE LAU1 PIN8,11,16,22,37,40,43,46,47)
Gigabyte Technology
Title
INTEL I219
Size Custom
Document Number
GA-B150M-D3H DDR3
Rev 1.0
Date: Thursday, July 16, 2015
Sheet 42 of 52

USB_LAN CONNECTOR R1.1

RMA ESD PROTECT

note:可變更USB NAME

可變

N_+USBP6 1 6 N_-USBP6
2 5 FUSEVCC_R
N_-USBP5 3 4 N_+USBP5

LAUESD1
AZC099-04S/SOT23-6L

USB_LAN CONNECTOR

note:可變更USB NAME

[I219]

LABC22 0.1u/4/X7R/16V/K
LA_CN_L1
LA_CN_L10
LABC25 MASK/0/4/SHT/X

[42] LA_MDI0+ LA_MDI0+
[42] LA_MDI0- LA_MDI0-
[42] LA_MDI1+ LA_MDI1+
[42] LA_MDI1- LA_MDI1-
[42] LA_MDI2+ LA_MDI2+
[42] LA_MDI2- LA_MDI2-
[42] LA_MDI3+ LA_MDI3+
[42] LA_MDI3- LA_MDI3-

USB30_LAN

L1 L2 L3 L4 L5 L6 L7 L8 L9 L10
VBUS D- D+ GND SSRX- SSRX+ GND SSTX- SSTX+
USB3.0
USB3.0
D1 D2 D3 D4 DT DT VBUS D- D+ GND SSRX- SSRX+ GND SSTX- SSTX+

D1 LA_LED_ACT_TXRX → LAR8 MASK/0/4/SHT/X → LA_LED0 [42]
D2 LA_D2 → LAR10 330/4 LA_D2_1 → LA_LED2 [42]
D3 LA_LED_LINK100 → LAR9 330/4
D4 LA_LED_LINK1000 → LAR3 → LA_LED1 [42]

3VDUAL_LAN1
LAFB2 MASK/0/4/SHT/X
LABC24 0.1u/4/X7R/16V/K/X
MASK/0/4/SHT/X LAUBC7 0.1u/4/X7R/16V/K
FUSEVCC_R

FUSEVCC_R
[11] N_-USBP5
[11] N_+USBP5
[11] PCH_USB3_RXN5
[11] PCH_USB3_RXP5
[11] PCH_USB3_TXN5
[11] PCH_USB3_TXP5
LAUAC1 PCH_USB3_TXN5C
LAUAC2 PCH_USB3_TXP5C
0.1u/4/X7R/16V/K
0.1u/4/X7R/16V/K

可變

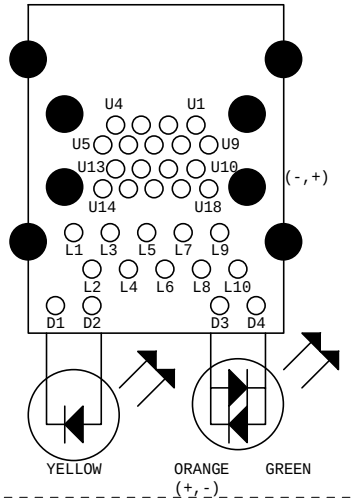
USB3+LAN/1G/GO,Y/OS/RA/D/G30

N_-USBP6 [11]
N_+USBP6 [11]
PCH_USB3_RXN6 [11]
PCH_USB3_RXP6 [11]
PCH_USB3_TXN6 [11]
PCH_USB3_TXP6 [11]
PCH_USB3_TXN6C LAUAC3
PCH_USB3_TXP6C LAUAC4
0.1u/4/X7R/16V/K
0.1u/4/X7R/16V/K

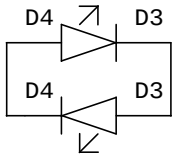
可變 可變 可變

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖

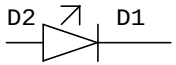


Dual Color LED



Green
Orange

Single Color LED



Yellow

LAN_COVER

FOOT PRINT:LAN_COVER

可變
[視SPEC需求]

[-D3H不加蓋]

PCH_USB3_TXP6C
PCH_USB3_TXN6C
PCH_USB3_TXP5C
PCH_USB3_TXN5C
PCH_USB3_RXP6
PCH_USB3_RXN6
PCH_USB3_RXP5
PCH_USB3_RXN5

10 9 8 7 6
NC NC GND NC NC
11
D1+ D1- GND D2+ D2-
1 2 3 4 5

note:可變更USB NAME
可變

LAU3ESD1
AZ1045-04F/MSOP10

LAU3ESD2
AZ1045-04F/MSOP10

USB POWER

note:可變更FUSE

可變

5VDUAL 1 LAUF1 2 FUSEVCC_R

SPR-P260T/6V/8/S

Close to connector
FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAR24 MASK/0/4/SHT/X

LAN POWER

note: lan power連接及電流

可變
3VDUAL_LAN1 LAPW1 MASK/0/4/SHT/M/X 3VDUAL_PCH
LAPW2 0/4/X 3VDUAL

*
*

Gigabyte Technology

Title: **LAN CONNECTOR-I219**

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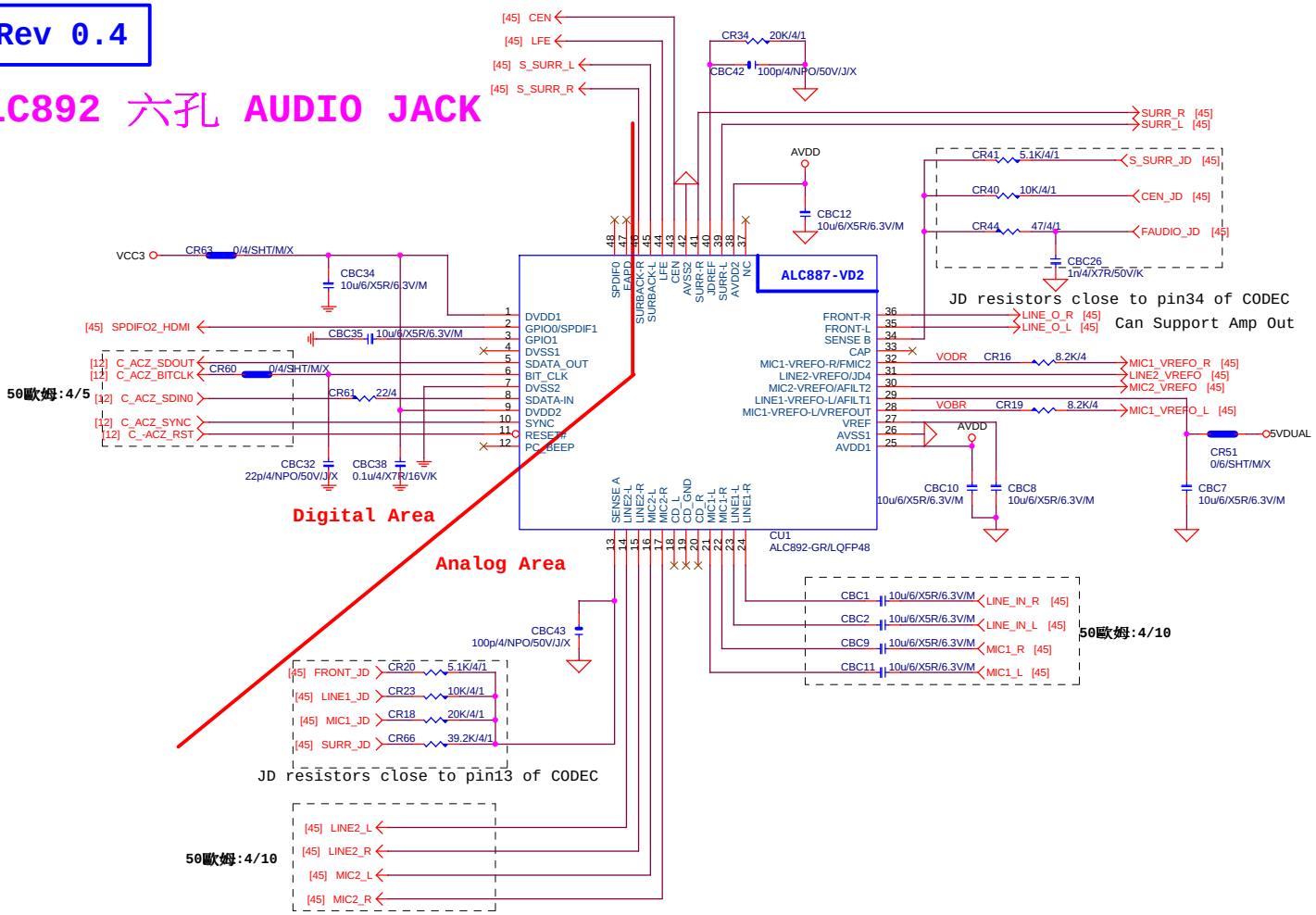
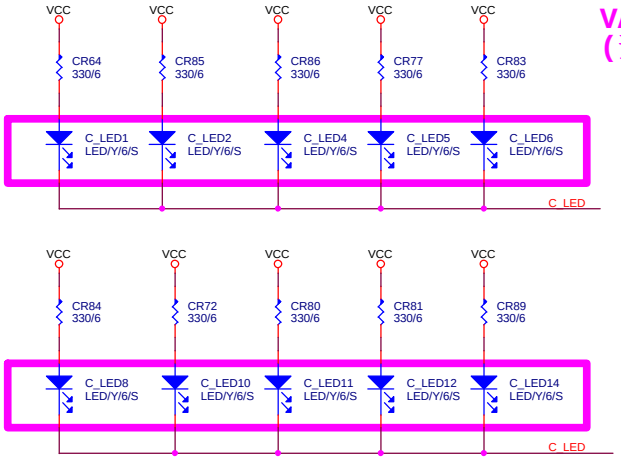
Rev 0.4

ALC892 六孔 AUDIO JACK

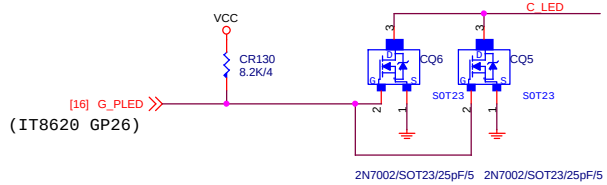


LAYOUT注意:螺絲孔下GND方式
1. MH1空間夠,下DGND
   空間不夠,改為Isolate
2. MH2一律改為Isolate

MH1	MH2
DGND	Isolate



VALUE可變,LED顏色請自行修改
(預設:低亮度黃色LED:LED/Y/6/S)



*料號後補

LAYOUT注意:要加
GND切割線

音效區域印刷

BOM OPTION :
1. Chemicon音效電容
2. 金屬外罩 Reserve (上件與否,依照各Model spec)
3. LED Reserve (上件與否和LED顏色,依照各Model spec)

Gigabyte Technology			
Title: HD AUDIO ALC892			
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Rev 0.4

CR49 MASK/0/6/SHT/M/X → Close F_AUDIO

CR50 MASK/0/6/SHT/M/X, MOATC1, 0.1u/4/X7R/16V/K/X → Close Codec

CR21 2.2/6 → Audio jack <--> USB_LAN

CR24 0/6/X → Under Audio jack

*量產前,0ohm改short pad

LINE-OUT

[44] LINE_O_R — CEC1 100uF/D/10V/6*5/[11CE2-651000-05R] — CR5 62/4 — CR7 22K/4 — CR6 22K/4 — AJ_B5

[44] LINE_O_L — CEC2 100uF/D/10V/6*5/[11CE2-651000-05R] — CR8 62/4 — AJ_B2

CBC19 180p/4/NPO/50V/J, CBC24 180p/4/NPO/50V/J

LINE-IN

[44] LINE_IN_R — CR1 62/4 — AJ_A5

[44] LINE_IN_L — CR14 62/4 — AJ_A2

CBC20 180p/4/NPO/50V/J, CBC23 180p/4/NPO/50V/J

MIC-IN

[44] MIC1_R — CR17 62/4 — AJ_C5

[44] MIC1_L — CR22 62/4 — AJ_C2

[44] MIC1_VREFO_L

[44] MIC1_VREFO_R

CBC3 180p/4/NPO/50V/J, CBC4 180p/4/NPO/50V/J

SURROUND

CEC10 100uF/D/10V/6*5/[11CE2-651000-05R] — [44] SURR_R — CR73 62/4 — CR67 22K/4 — CR68 22K/4 — BJ_C5

CEC11 100uF/D/10V/6*5/[11CE2-651000-05R] — [44] SURR_L — CR74 62/4 — BJ_C2

CBC44 180p/4/NPO/50V/J, CBC45 180p/4/NPO/50V/J

SPDIF_OUT

[44] 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

CEN/LFE

[44] LFE — CBC13 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR75 62/4 — CR69 22K/4 — CR70 22K/4 — BJ_B5

[44] CEN — CBC15 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR76 62/4 — BJ_B2

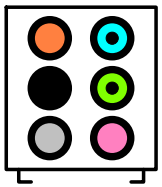
★Update 2015-04-10

CBC13/15/16/17 10u/6 --> 10u/8

For THD+N Low frequency

CBC46 180p/4/NPO/50V/J, CBC47 180p/4/NPO/50V/J

AZALIA JACK



AUDIOB

[44] LINE1_JD — LINE1_JD — AJ_A5 — AJ_A2 — LINE-IN

[44] FRONT_JD — FRONT_JD — AJ_B5 — AJ_B2 — LINE-OUT

[44] MIC1_JD — MIC1_JD — AJ_C5 — AJ_C2 — MIC-IN

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

AZALIA JACK

BLUE LINE-IN

GREEN LINE-OUT

PINK MIC-IN

AUDIOA

[44] CEN_JD — CEN_JD — BJ_B5 — BJ_B2 — CEN

[44] SURR_JD — SURR_JD — BJ_C5 — BJ_C2 — REAR

[44] 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

SURR BACK

EMI

[44] S_SURR_R — CBC16 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR25 62/4 — CR43 22K/4 — CR27 22K/4 — BJ_A5

[44] S_SURR_L — CBC17 10u/8/X5R/16V/K/[10CM2-011005-54R] — CR47 62/4 — BJ_A2

CBC33 180p/4/NPO/50V/J, CBC31 180p/4/NPO/50V/J

AZALIA FRONT PANEL

CQ4 BAT54A/SOT23/200mA — [44] LINE2_VREFO

CQ2 BAT54A/SOT23/200mA — [44] MIC2_VREFO

SOT23

CRN1 8.2K/8P4R/4

[44] MIC2_L — CBC6 10u/6/X5R/6.3V/M — CR13 62/4 — M2_L

[44] MIC2_R — CBC5 10u/6/X5R/6.3V/M — CR11 62/4 — M2_R

L2_R — CR57 62/4 — L2-R

[44] FAUDIO_JD — L2_L — CR53 62/4 — L2-L

F_AUDIO_H

VCC3

CR58 22K/4, CR54 22K/4

F_AUDIO

CR78 8.2K/4/X

CR55 20K/4/1

CR59 39.2K/4/1

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

[44] LINE2_R — CEC9 100uF/D/10V/6*5/[11CE2-651000-05R] — L2_R

[44] LINE2_L — CEC6 100uF/D/10V/6*5/[11CE2-651000-05R] — L2_L

CBC30 180p/4/NPO/50V/J/X, CBC29 180p/4/NPO/50V/J/X, CBC37 180p/4/NPO/50V/J/X, CBC36 180p/4/NPO/50V/J/X

Gigabyte Technology

Title: AUDIO JACK

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Rev: 0.7

Front USB3.0

NET 自行調整

F_USB30 REV=1

FSVCC_U3F1 → VBUS (1)

[11] PCH_USB3_RXN1 → SSRX1- (2)
[11] PCH_USB3_RXP1 → SSRX1+ (3)
[11] PCH_USB3_TXN1 → FAU3C1 0.1u/4/X7R/16V/K FU30_TXN1 → SSTX1- (5)
[11] PCH_USB3_TXP1 → FAU3C2 0.1u/4/X7R/16V/K FU30_TXP1 → SSTX1+ (6)
[11] N_-USBP1 → D1- (8)
[11] N_+USBP1 → D1+ (9)
GND (7, 4)

ID (10)

VBUS (19) → FSVCC_U3F1
SSTX2- (15) ← FU30_TXN2 ← FAU3C3 0.1u/4/X7R/16V/K
SSTX2+ (14) ← FU30_TXP2 ← FAU3C4 0.1u/4/X7R/16V/K
SSRX2- (18) → PCH_USB3_RXN2 [11]
SSRX2+ (17) → PCH_USB3_RXP2 [11]
D2- (12) → N_-USBP2 [11]
D2+ (11) → N_+USBP2 [11]
GND (16, 13)

BH/2*10K20/BK/ON/2.0/V/USB3.0/PRT

NET 自行調整

PCH_USB3_TXN2 [11]
PCH_USB3_TXP2 [11]

NET 自行調整

PCH_USB3_RXP1
PCH_USB3_RXN1
PCH_USB3_RXN2
PCH_USB3_RXP2

FAU3D1 AZ1045-04F/MSOP10

PCH_USB3_RXN1
PCH_USB3_RXP1
PCH_USB3_RXP2
PCH_USB3_RXN2

FAU3D3

N_-USBP1 ↔ N_+USBP1
3VDUAL
N_+USBP2 ↔ N_-USBP2

AZC099-04S/SOT23-6L

CLOSE F_USB30

F_USB30 PWR

5VDUAL → FAU3F1 → SPR-P260T/6V/8/S → FSVCC_U3F1

FAU3EC1 100u/OS/D/6.3V/66/A/35m

FAU3C5 0.1u/4/X7R/16V/K

NET 可自行調整

[11,47] N_-USBOC_F → N_-USBOC_F → U3OC3 SOT23 → FSVCC_U3F1

BAT54A/SOT23/200mA

FU30_TXP1
FU30_TXN1
FU30_TXN2
FU30_TXP2

FAU3D2 AZ1045-04F/MSOP10

FU30_TXN1
FU30_TXP1
FU30_TXP2
FU30_TXN2

CLOSE F_USB30

-USBOC_F

POWER 可自行調整

FSVCC_U3F1 → UAR1 8.2K/4 → N_-USBOC_F → N_-USBOC_F [11,47]

UAR2 15K/4/1

-USBOC_R

POWER 可自行調整

5VDUAL → UBR1 8.2K/4 → N_-USBOC_R → N_-USBOC_R [11,36,41]

UBR2 15K/4/1

* 接 PCH N_GPP_B21

PCH PU 3Vdual

[12] N_GPP_B20

UAD5 SOT23

N_-USBOC_F → N_-USBOC_F [11,47]
N_-USBOC_R → N_-USBOC_R [11,36,41]

BAT54A/SOT23/200mA

Gigabyte Technology		
Title: R_USB30,F_USB30, USB_OC		
Size: Custom	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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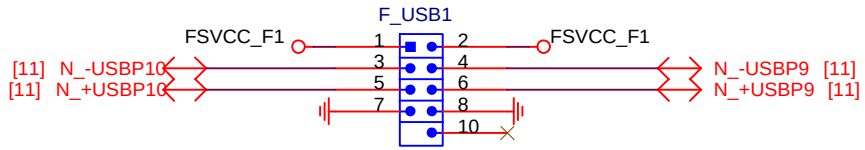
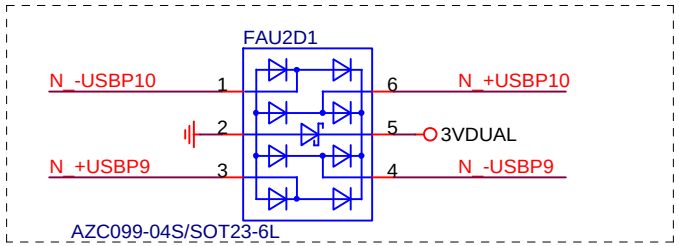
Rev: 0.7

FRONT USB1

NET 可變

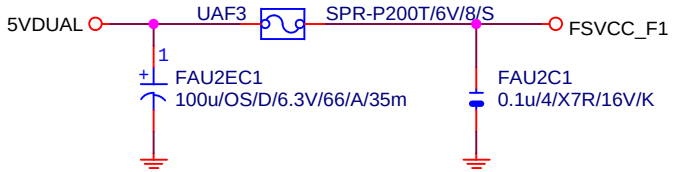
FUSB2X5-HS





Close to connector

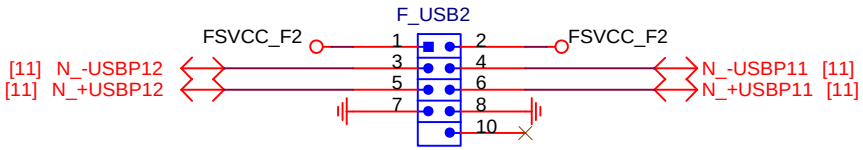
FUSE 2 Port 1 Fuse 2A

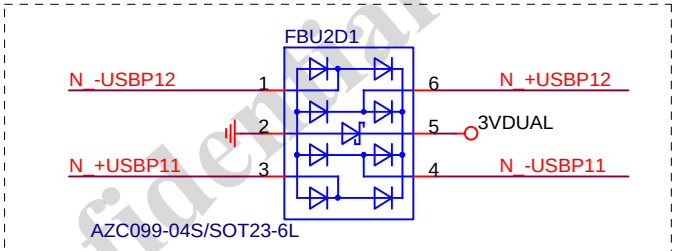


FRONT USB2

NET 可變

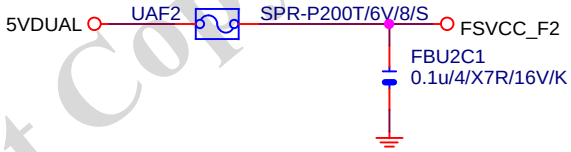
FUSB2X5-HS



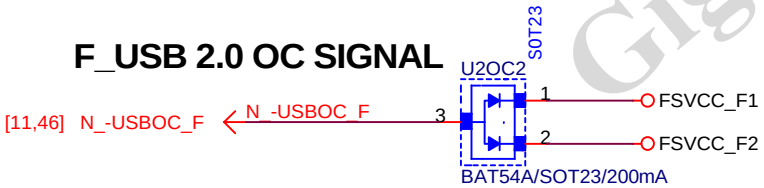


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



Gigabyte Technology		
Title: USB2.0		
Size: A	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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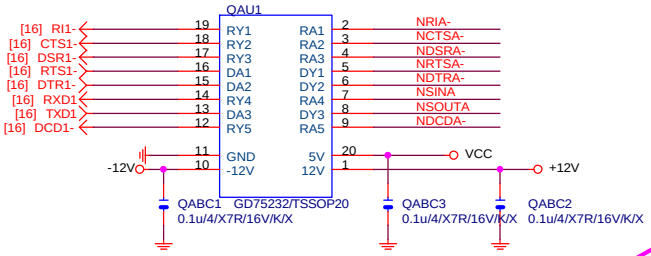
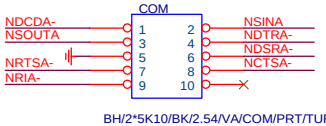
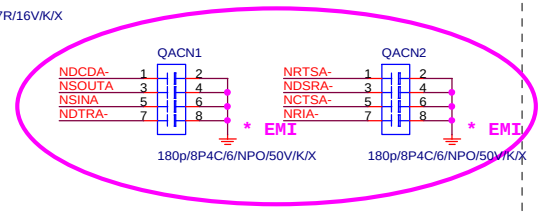
COM PORT

Rev: 0.7



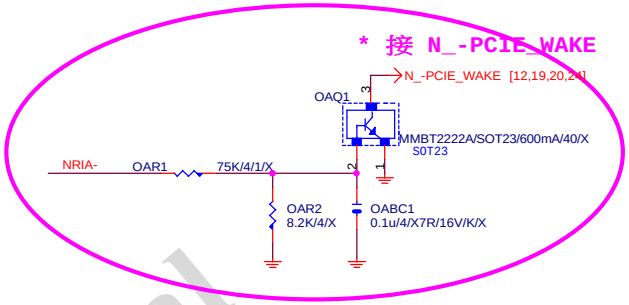


F_COM-HS

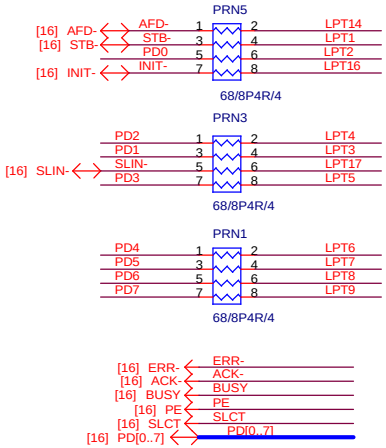


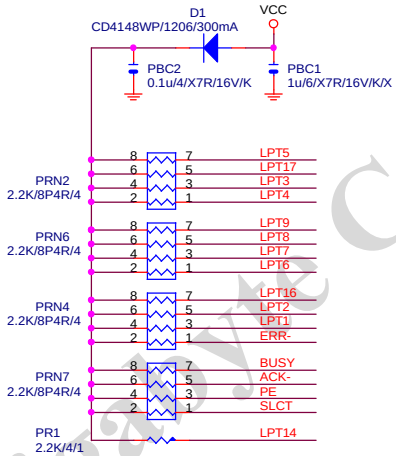
COM RI

N/A

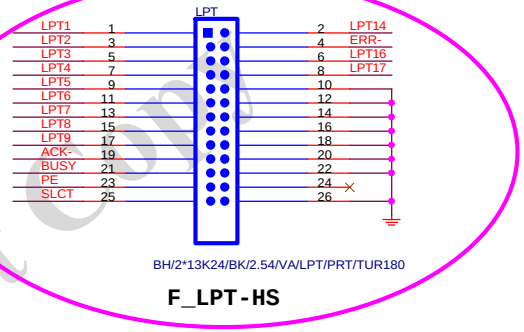


LPT PORT



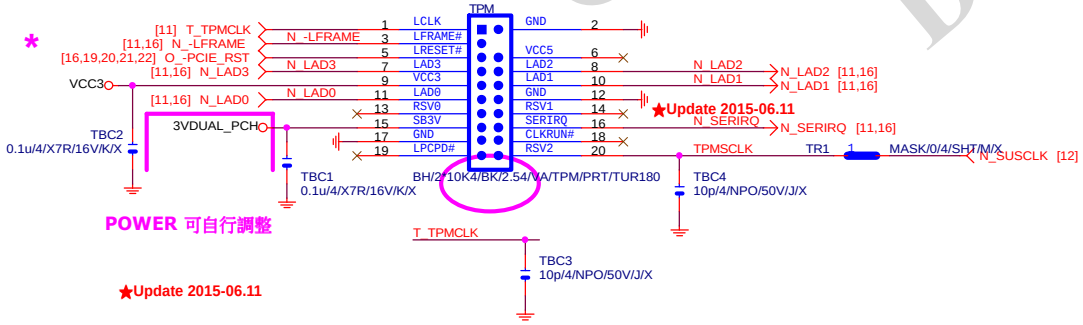


R&D技術通報151　有使用PRINT PORT的
MODEL，需使用新料號:10HP2-118728-72R 。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。 串電阻33 ohm改為68 ohm。



F_LPT-HS

TPM CONNECT



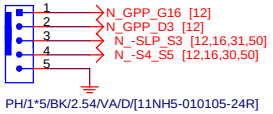
★Update 2015-06.11

POWER 可自行調整

★Update 2015-06.11

Thunderbolt

★Update 12-19



Gigabyte Technology		
Title: FP,F_USB,USB PWR,BZ		
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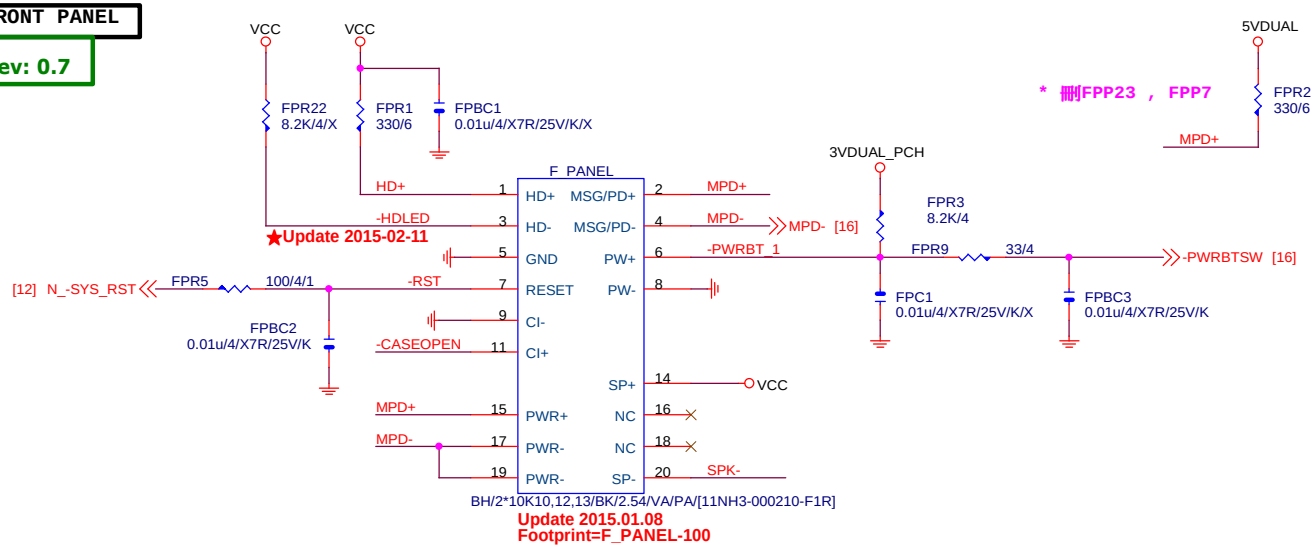
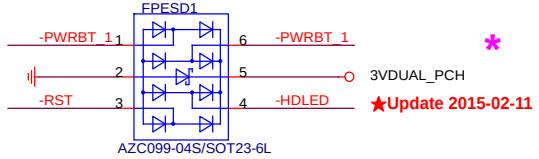
FRONT PANEL

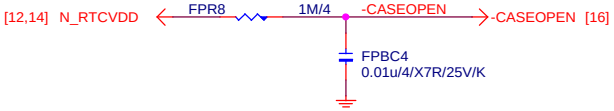
Rev: 0.7



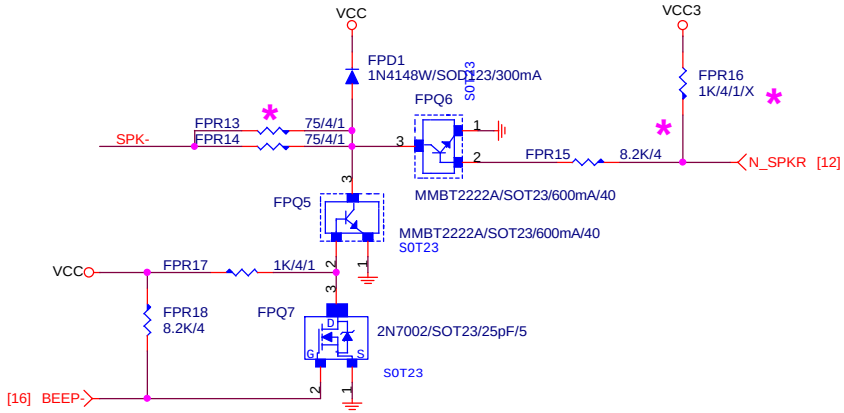
ESD



CASE OPEN



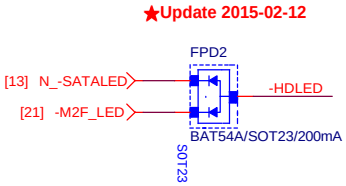
SPKR



For SPKR voltage issue. FPQ6=>2222, FPQ7=>7002

SATA LED

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



Gigabyte Technology		
Title: FRONT PANEL		
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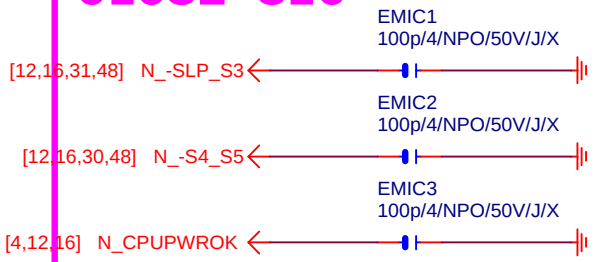
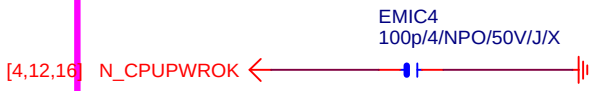
EMI/ESD R0.1

CLOSE SIO



CLOSE PCH



GIGABYTE™

Title: EMI/ESD		
Size: A	Document Number: GA-B150M-D3H DDR3	Rev: 1.0
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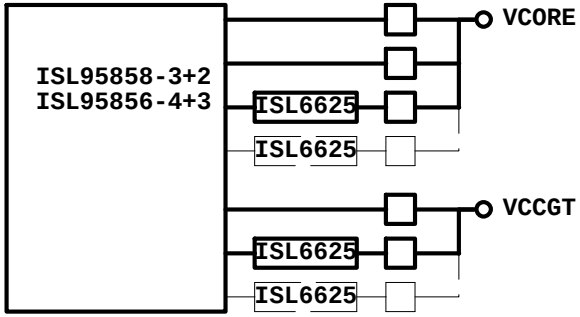
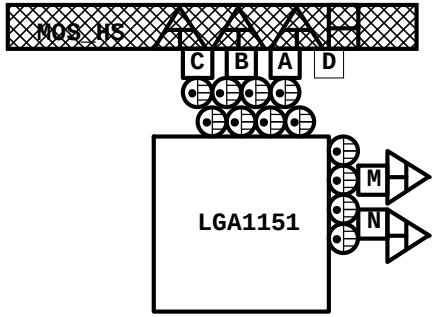
POWER BLOCK MAP

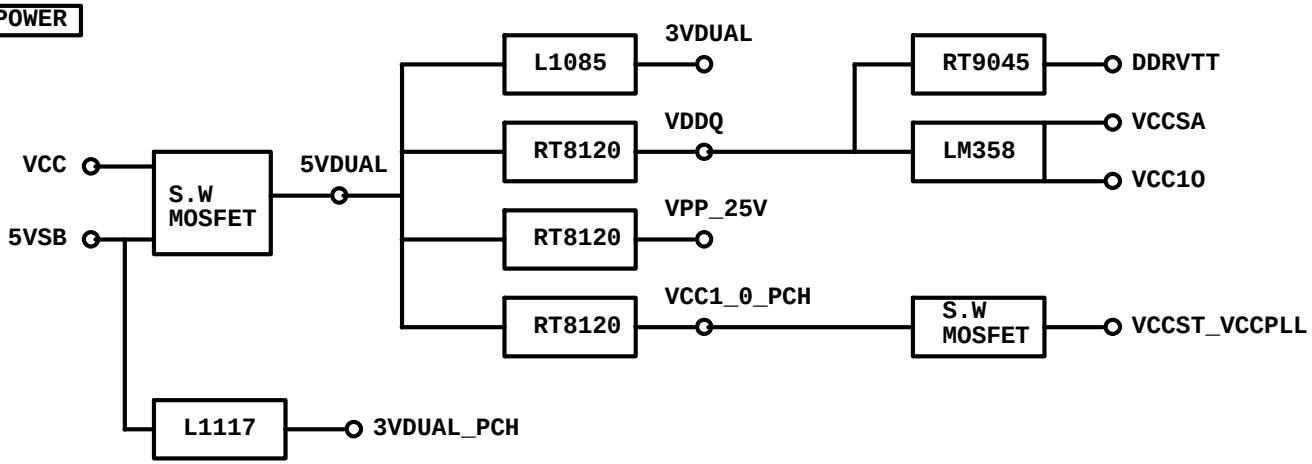
- **CPU**: VCORE, VCCGT, VCCSA, VCCIO, VDDQ, VCCST_VCCPLL, VCCSFUSEPRG
- **DDR4**: VDDQ, DDRVTT, VPP_25V, VDDSPD(VCC3)
- **PCH**: VCC1_0_PCH, VCC1_0_PCH_DSW, VCC10_VCCF24_1P0, VCC10_VCCAMPHYPLL, VCC10_VCCAPLL, VCC3_PCH, 3VDUAL_PCH, VCC3, N_RTCVDD
- **IT8628**: IT_VCCH, IT_AVCC, 2_5LEVEL
- **HM**: +12V, VCC, VCC3, VCORE, VCCGT(IMON_VCCGT), VDDQ, VCCSA(IMON_VCORE)

VCORE/VCCGT

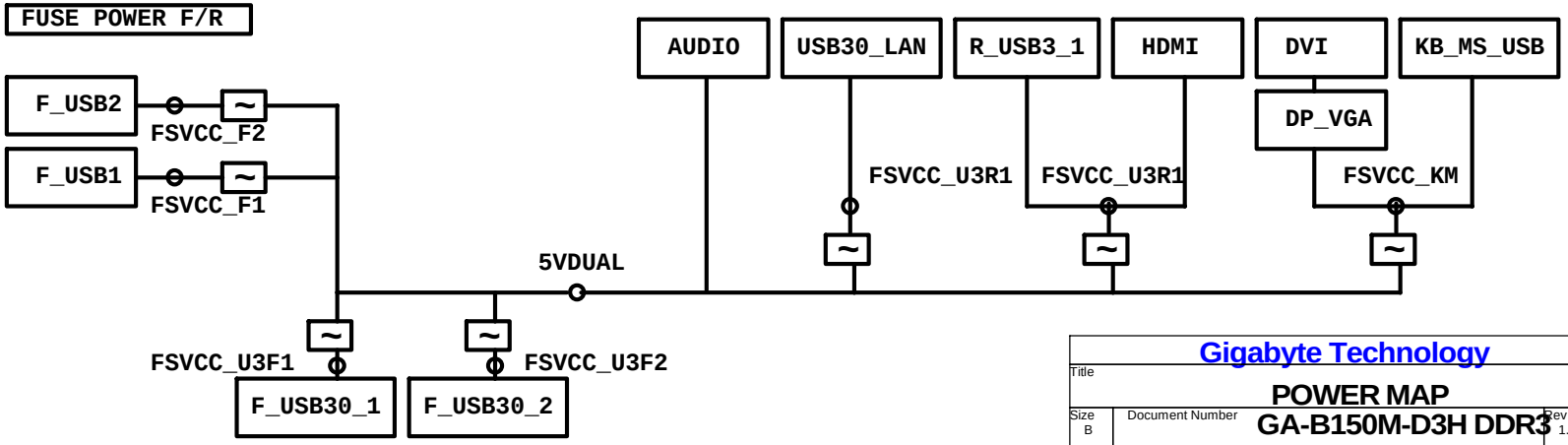




POWER



FUSE POWER F/R



Gigabyte Technology

Title	POWER MAP	
Size B	Document Number GA-B150M-D3H DDR3	Rev 1.0
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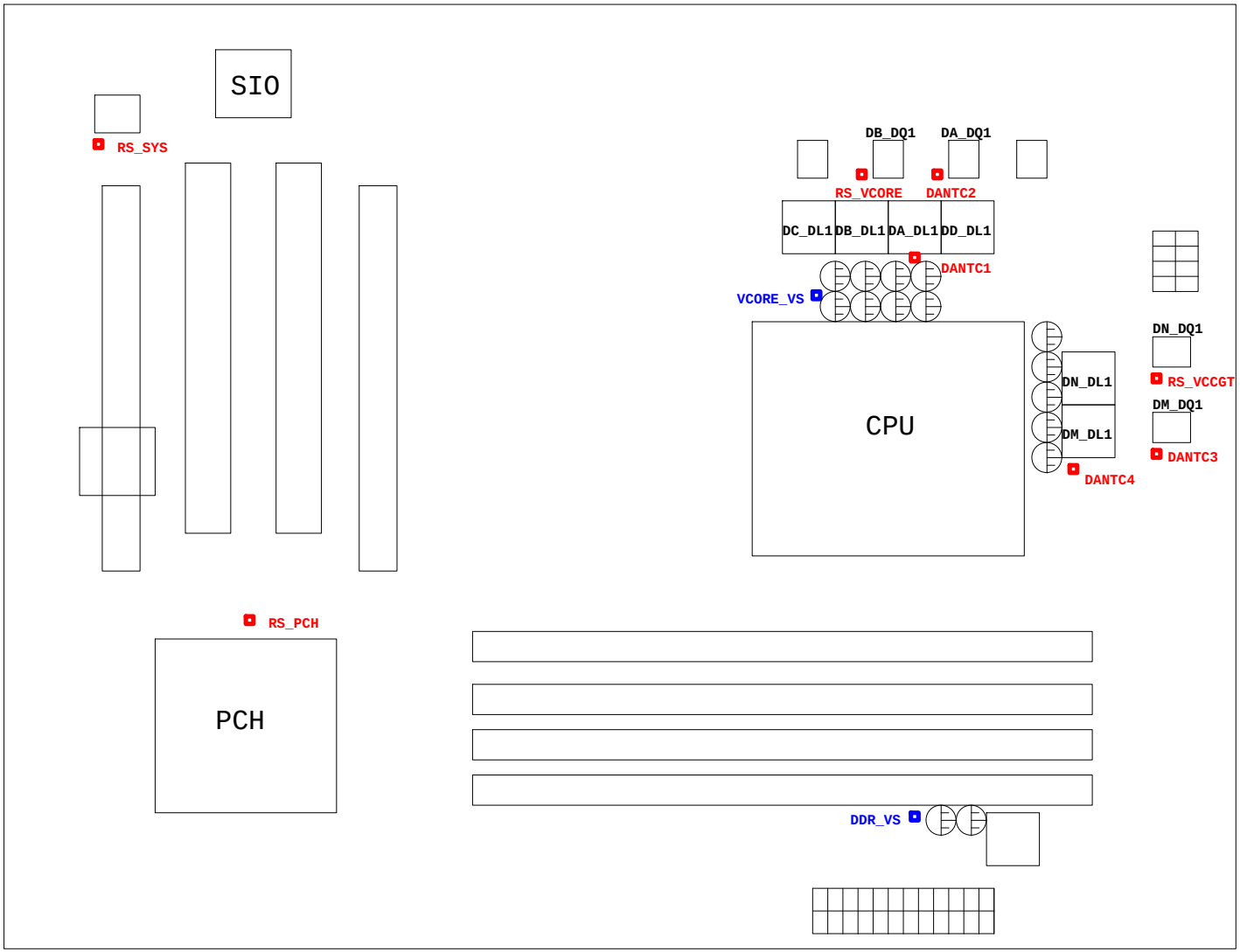

熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A

Gigabyte Technology

Title: NTC MAP

Size: Custom | Document Number: GA-B150M-D3H DDR3 | Rev: 1.0

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