

Model Name: GA-B250M-D3VX-SI rev 1.0

SHEET

TITLE

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	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH PWR
15	PCH GND
16	ITE 8686 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*4 & *1 SLOT
21	
22	DUAL BIOS
23	
24	
25	
26	
27	ISL95858 PWM-IRON
28	ISL95858 VCORE-IRON

SHEET

TITLE

29	ISL95858 VCCGT-IRON
30	VCCSA_VCCIO_VCCPLL
31	RT8237_DDR_BEAD
32	RT8068A_VPP
33	RT8237_PCH-BEAD
34	DISCRETE POWER
35	NCT3933
36	ATX POWER , A_-PROCHOT
37	KB_MS_USB
38	DVI CONN
39	RTD2168 - DP to VGA - IC
40	RTD2168 - DP to VGA - Conn
41	HDMI
42	REALTEK 8111G
43	USB30_LAN CONNECTOR-8111G
44	Realtek ALC887
45	REAR AUDIO JACK
46	ADUIO LED
47	F_USB30
48	F_USB
49	R_USB30
50	F_PANEL
51	M.2 X4 (Q)
52	M.2X4_S5 SWITCH
53	COM, LPT, TPM
54	EMI-ESD
55	POWER MAP
56	NTC MAP

Gigabyte Technology

Title			
Cover Sheet			
Size	Document Number	GA-B250M-D3VX-SI	Rev
Custom			1.0
Date:	Thursday, December 08, 2016	Sheet	1 of 58

**rev1.0**

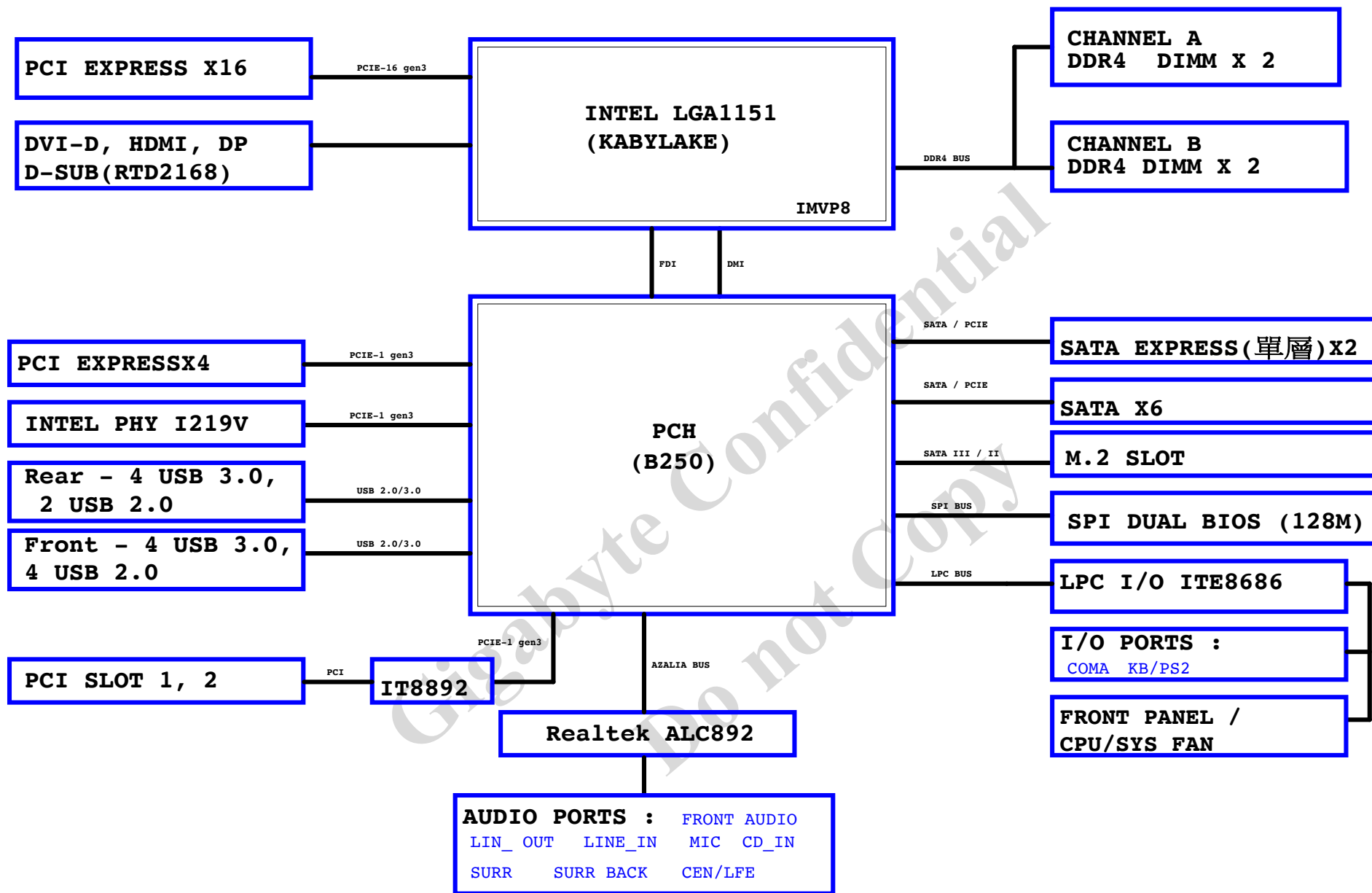
## Circuit or PCB layout change

### Component value change history

2016/11/03

[illegible][illegible]

# BLOCK DIAGRAM



[www.vinafix.com](http://www.vinafix.com)

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

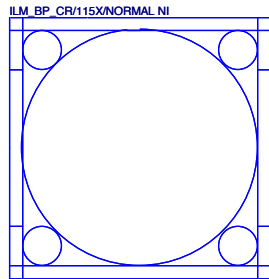
# \* 改DDR4 net

LGA1151A	SKT_H4
LGA1151	LGA1151
MDA0 AE38	DDR0_DQ[0]
MDA1 AE37	DDR0_DQ[1]
MDA2 AG38	DDR0_DQ[2]
MDA3 AG37	DDR0_DQ[3]
MDA4 AE39	DDR0_DQ[4]
MDA5 AE40	DDR0_DQ[5]
MDA6 AG39	DDR0_DQ[6]
MDA7 AG40	DDR0_DQ[7]
MDA8 AJ38	DDR0_DQ[8]
MDA9 AJ37	DDR0_DQ[9]
MDA10 AL38	DDR0_DQ[10]
MDA11 AL37	DDR0_DQ[11]
MDA12 AJ40	DDR0_DQ[12]
MDA13 AJ39	DDR0_DQ[13]
MDA14 AL39	DDR0_DQ[14]
MDA15 AL40	DDR0_DQ[15]
MDA16 AN38	DDR0_DQ[16]/DDR0_DQ[32]
MDA17 AN40	DDR0_DQ[17]/DDR0_DQ[33]
MDA18 AR38	DDR0_DQ[18]/DDR0_DQ[34]
MDA19 AR37	DDR0_DQ[19]/DDR0_DQ[35]
MDA20 AN39	DDR0_DQ[20]/DDR0_DQ[36]
MDA21 AN37	DDR0_DQ[21]/DDR0_DQ[37]
MDA22 AR40	DDR0_DQ[22]/DDR0_DQ[38]
MDA23 AR40	DDR0_DQ[23]/DDR0_DQ[39]
MDA24 AW37	DDR0_DQ[24]/DDR0_DQ[40]
MDA25 AW38	DDR0_DQ[25]/DDR0_DQ[41]
MDA26 AV35	DDR0_DQ[26]/DDR0_DQ[42]
MDA27 AW35	DDR0_DQ[27]/DDR0_DQ[43]
MDA28 AU37	DDR0_DQ[28]/DDR0_DQ[44]
MDA29 AU36	DDR0_DQ[29]/DDR0_DQ[45]
MDA30 AT35	DDR0_DQ[30]/DDR0_DQ[46]
MDA31 AU35	DDR0_DQ[31]/DDR0_DQ[47]
MDA32 AY8	DDR0_DQ[32]/DDR1_DQ[0]
MDA33 AW8	DDR0_DQ[33]/DDR1_DQ[1]
MDA34 AV6	DDR0_DQ[34]/DDR1_DQ[2]
MDA35 AU6	DDR0_DQ[35]/DDR1_DQ[3]
MDA36 AU8	DDR0_DQ[36]/DDR1_DQ[4]
MDA37 AV8	DDR0_DQ[37]/DDR1_DQ[5]
MDA38 AW6	DDR0_DQ[38]/DDR1_DQ[6]
MDA39 AV6	DDR0_DQ[39]/DDR1_DQ[7]
MDA40 AY4	DDR0_DQ[40]/DDR1_DQ[8]
MDA41 AV4	DDR0_DQ[41]/DDR1_DQ[9]
MDA42 AT1	DDR0_DQ[42]/DDR1_DQ[10]
MDA43 AT2	DDR0_DQ[43]/DDR1_DQ[11]
MDA44 AV3	DDR0_DQ[44]/DDR1_DQ[12]
MDA45 AW4	DDR0_DQ[45]/DDR1_DQ[13]
MDA46 AT3	DDR0_DQ[46]/DDR1_DQ[14]
MDA47 AT3	DDR0_DQ[47]/DDR1_DQ[15]
MDA48 AP2	DDR0_DQ[48]/DDR1_DQ[16]
MDA49 AM4	DDR0_DQ[49]/DDR1_DQ[17]
MDA50 AP3	DDR0_DQ[50]/DDR1_DQ[18]
MDA51 AM3	DDR0_DQ[51]/DDR1_DQ[19]
MDA52 AP4	DDR0_DQ[52]/DDR1_DQ[20]
MDA53 AM2	DDR0_DQ[53]/DDR1_DQ[21]
MDA54 AP1	DDR0_DQ[54]/DDR1_DQ[22]
MDA55 AM1	DDR0_DQ[55]/DDR1_DQ[23]
MDA56 AK3	DDR0_DQ[56]/DDR1_DQ[24]
MDA57 AK4	DDR0_DQ[57]/DDR1_DQ[25]
MDA58 AH2	DDR0_DQ[58]/DDR1_DQ[26]
MDA60 AH4	DDR0_DQ[59]/DDR1_DQ[27]
MDA61 AK2	DDR0_DQ[60]/DDR1_DQ[28]
MDA62 AH3	DDR0_DQ[61]/DDR1_DQ[29]
MDA63 AK1	DDR0_DQ[62]/DDR1_DQ[30]
	DDR0_DQ[63]/DDR1_DQ[31]
AU33	DDR0_ECC[0]
AT33	DDR0_ECC[1]
AW33	DDR0_ECC[2]
AV33	DDR0_ECC[3]
AU34	DDR0_ECC[4]
AV33	DDR0_ECC[5]
AW33	DDR0_ECC[6]
AY33	DDR0_ECC[7]

DDR CHANNEL A

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CPU-SK1151/S/GF

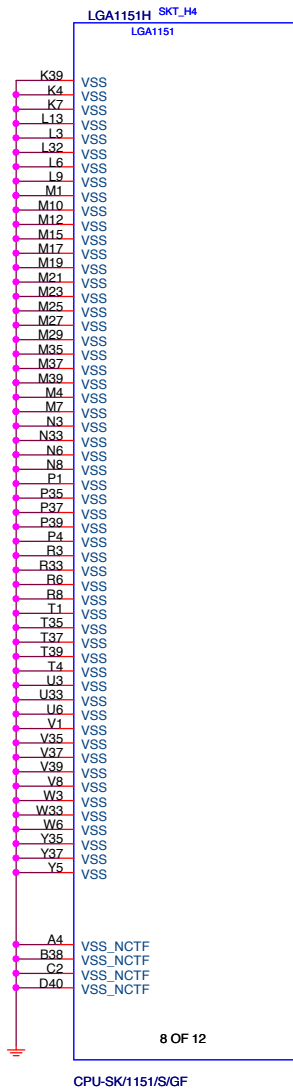
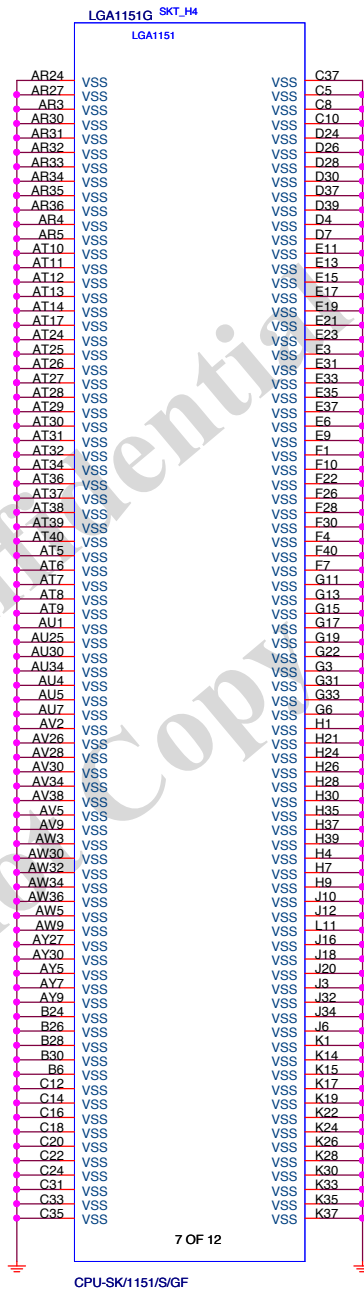
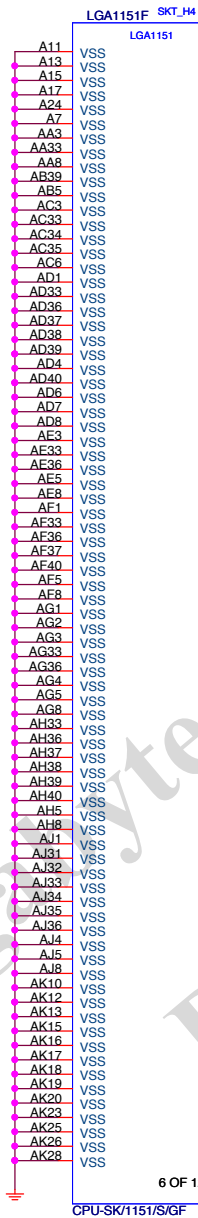
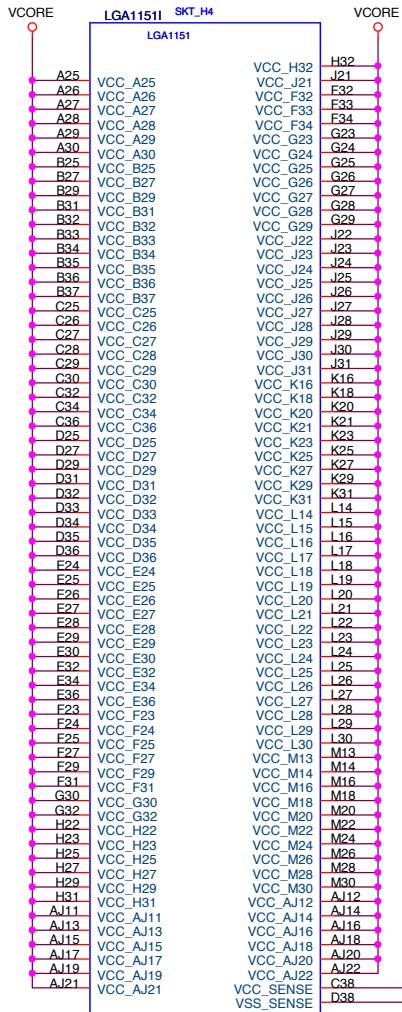


Need check the new CPU ME

DDR0_CKP[0]	AW18	M_DCLKA0	→	M_DCLKA0	[8]
DDR0_CKN[0]	AW18	M_DCLKA0	→	M_DCLKA0	[8]
DDR0_CKP[1]	AW17	M_DCLKA1	→	M_DCLKA1	[8]
DDR0_CKN[1]	AW17	M_DCLKA1	→	M_DCLKA1	[8]
DDR0_CKP[2]	AW16	M_DCLKA2	→	M_DCLKA2	[8]
DDR0_CKN[2]	AW16	M_DCLKA2	→	M_DCLKA2	[8]
DDR0_CKP[3]	AW16	M_DCLKA3	→	M_DCLKA3	[8]
DDR0_CKN[3]	AW16	M_DCLKA3	→	M_DCLKA3	[8]
DDR0_CKE[0]	AY24	CKEA0	→	CKEA0	[8]
DDR0_CKE[1]	AW24	CKEA1	→	CKEA1	[8]
DDR0_CKE[2]	AY24	CKEA2	→	CKEA2	[8]
DDR0_CKE[3]	AY25	CKEA3	→	CKEA3	[8]
DDR0_CS#0	AW12	M_CSA0	→	M_CSA0	[8]
DDR0_CS#1	AW11	M_CSA1	→	M_CSA1	[8]
DDR0_CS#2	AW13	M_CSA2	→	M_CSA2	[8]
DDR0_CS#3	AW10	M_CSA3	→	M_CSA3	[8]
DDR0_ODT[0]	AW11	MODT_A0	→	MODT_A0	[8]
DDR0_ODT[1]	AW14	MODT_A1	→	MODT_A1	[8]
DDR0_ODT[2]	AW12	MODT_A2	→	MODT_A2	[8]
DDR0_ODT[3]	AW10	MODT_A3	→	MODT_A3	[8]
DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]	AY13	SBA0A	→	SBA0A	[8]
DDR0_BA[1]/DDR0_CAB[6]/DDR0_BA[1]	AY15	SBA1A	→	SBA1A	[8]
DDR0_BA[2]/DDR0_CAA[5]/DDR0_BG[0]	AW23	BG_A0	→	BG_A0	[8]
DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]	AW13	MAAA16	→	MAAA16	[8]
DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]	AW14	MAAA14	→	MAAA14	[8]
DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]	AW11	MAAA15	→	MAAA15	[8]
DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]	AW15	MAAA0	→	MAAA0	[8]
DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]	AU18	MAAA1	→	MAAA1	[8]
DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]	AU17	MAAA2	→	MAAA2	[8]
DDR0_MA[3]	AV19	MAAA3	→	MAAA3	[8]
DDR0_MA[4]	AT19	MAAA4	→	MAAA4	[8]
DDR0_MA[5]/DDR0_CAA[0]/DDR0_MA[5]	AU20	MAAA5	→	MAAA5	[8]
DDR0_MA[6]/DDR0_CAA[2]/DDR0_MA[6]	AU20	MAAA6	→	MAAA6	[8]
DDR0_MA[7]/DDR0_CAA[4]/DDR0_MA[7]	AU21	MAAA7	→	MAAA7	[8]
DDR0_MA[8]/DDR0_CAA[3]/DDR0_MA[8]	AT22	MAAA8	→	MAAA8	[8]
DDR0_MA[9]/DDR0_CAA[1]/DDR0_MA[9]	AU14	MAAA10	→	MAAA10	[8]
DDR0_MA[10]/DDR0_CAB[7]/DDR0_MA[10]	AU22	MAAA11	→	MAAA11	[8]
DDR0_MA[11]/DDR0_CAA[7]/DDR0_MA[11]	AV22	MAAA12	→	MAAA12	[8]
DDR0_MA[12]/DDR0_CAA[6]/DDR0_MA[12]	AV12	MAAA13	→	MAAA13	[8]
DDR0_MA[13]/DDR0_CAB[0]/DDR0_MA[13]	AV23	BG_A1	→	BG_A1	[8]
DDR0_MA[14]/DDR0_CAA[9]/DDR0_BG[1]	AU24	M_ACT_A	→	M_ACT_A	[8]
DDR0_MA[15]/DDR0_CAA[8]/DDR0_ACT#	AY15	M_DDR_PARA	→	M_DDR_PARA	[8]
DDR0_PAR	AT23	M_ALERT_A	→	M_ALERT_A	[8]
DDR0_ALERT#					
DDR0_DQS[0]	AF39	M_DQSA0	→	M_DQSA0	[8]
DDR0_DQS[1]	AK39	M_DQSA1	→	M_DQSA1	[8]
DDR0_DQS[2]/DDR0_DQS[4]	AP39	M_DQSA2	→	M_DQSA2	[8]
DDR0_DQS[3]/DDR0_DQS[5]	AU36	M_DQSA3	→	M_DQSA3	[8]
DDR0_DQS[4]/DDR1_DQS[0]	AW7	M_DQSA4	→	M_DQSA4	[8]
DDR0_DQS[5]/DDR1_DQS[1]	AU3	M_DQSA5	→	M_DQSA5	[8]
DDR0_DQS[6]/DDR1_DQS[2]	AN3	M_DQSA6	→	M_DQSA6	[8]
DDR0_DQS[7]/DDR1_DQS[3]	AJ3	M_DQSA7	→	M_DQSA7	[8]
DDR0_DQSP[0]	AF38	M_DQSA0	→	M_DQSA0	[8]
DDR0_DQSP[1]	AK38	M_DQSA1	→	M_DQSA1	[8]
DDR0_DQSP[2]/DDR0_DQSP[4]	AP38	M_DQSA2	→	M_DQSA2	[8]
DDR0_DQSP[3]/DDR0_DQSP[5]	AV36	M_DQSA3	→	M_DQSA3	[8]
DDR0_DQSP[4]/DDR1_DQSP[0]	AV7	M_DQSA4	→	M_DQSA4	[8]
DDR0_DQSP[5]/DDR1_DQSP[1]	AU2	M_DQSA5	→	M_DQSA5	[8]
DDR0_DQSP[6]/DDR1_DQSP[2]	AN2	M_DQSA6	→	M_DQSA6	[8]
DDR0_DQSP[7]/DDR1_DQSP[3]	AJ2	M_DQSA7	→	M_DQSA7	[8]
DDR0_DQSP[8]	AV32	M_DQSA8	→	M_DQSA8	[8]
DDR0_DQSP[9]	AJ32	M_DQSA9	→	M_DQSA9	[8]

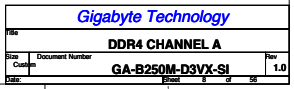
LGA1151B	SKT_H4
LGA1151	LGA1151
DDR1_DQ[0]/DDR0_DQ[16]	DDR1_CKP[0]
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DDR1_DQ[2]/DDR0_DQ[18]	DDR1_CKP[1]
DDR1_DQ[3]/DDR0_DQ[19]	DDR1_CKN[1]
DDR1_DQ[4]/DDR0_DQ[20]	DDR1_CKP[2]
DDR1_DQ[5]/DDR0_DQ[21]	DDR1_CKN[2]
DDR1_DQ[6]/DDR0_DQ[22]	DDR1_CKP[3]
DDR1_DQ[7]/DDR0_DQ[23]	DDR1_CKN[3]
DDR1_DQ[8]/DDR0_DQ[24]	
DDR1_DQ[9]/DDR0_DQ[25]	DDR1_CKE[0]
DDR1_DQ[10]/DDR0_DQ[26]	DDR1_CKE[1]
DDR1_DQ[11]/DDR0_DQ[27]	DDR1_CKE[2]
DDR1_DQ[12]/DDR0_DQ[28]	DDR1_CKE[3]
DDR1_DQ[13]/DDR0_DQ[29]	
DDR1_DQ[14]/DDR0_DQ[30]	DDR1_CS#0
DDR1_DQ[15]/DDR0_DQ[31]	DDR1_CS#1
DDR1_DQ[16]/DDR0_DQ[32]	DDR1_CS#2
DDR1_DQ[17]/DDR0_DQ[33]	DDR1_CS#3
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DDR1_DQ[26]/DDR0_DQ[42]	DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]
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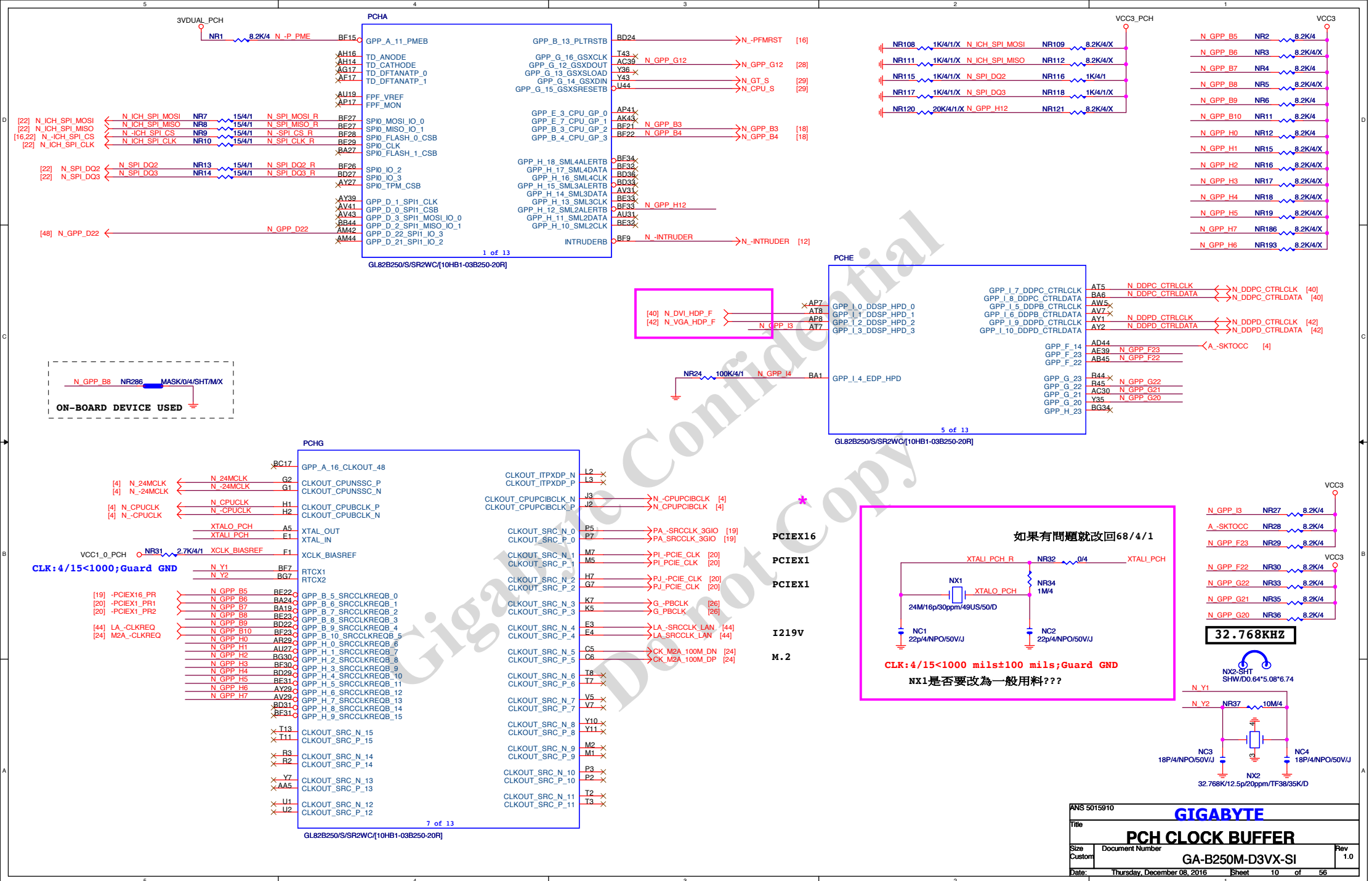
\* 刪 Vcore 電容



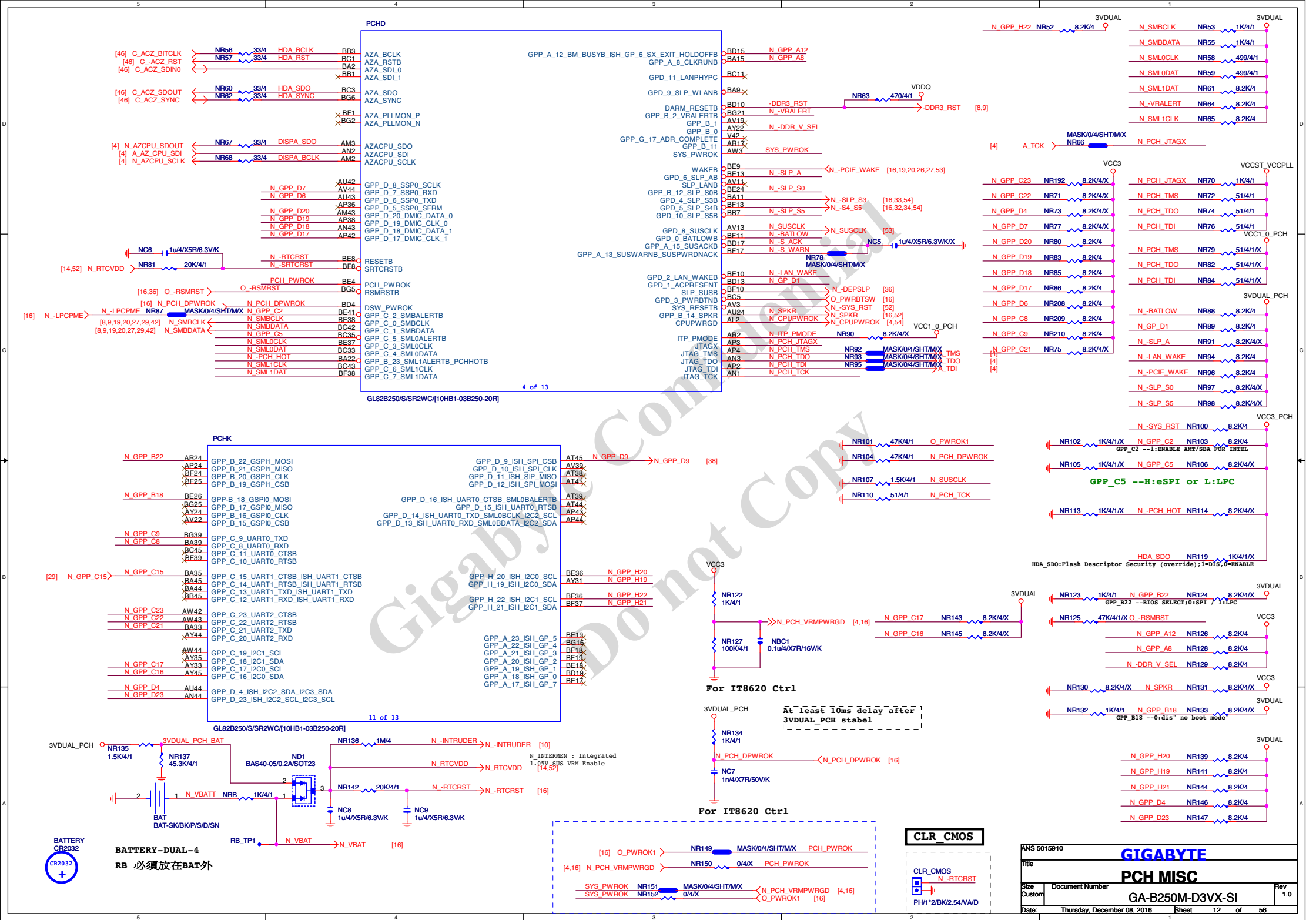




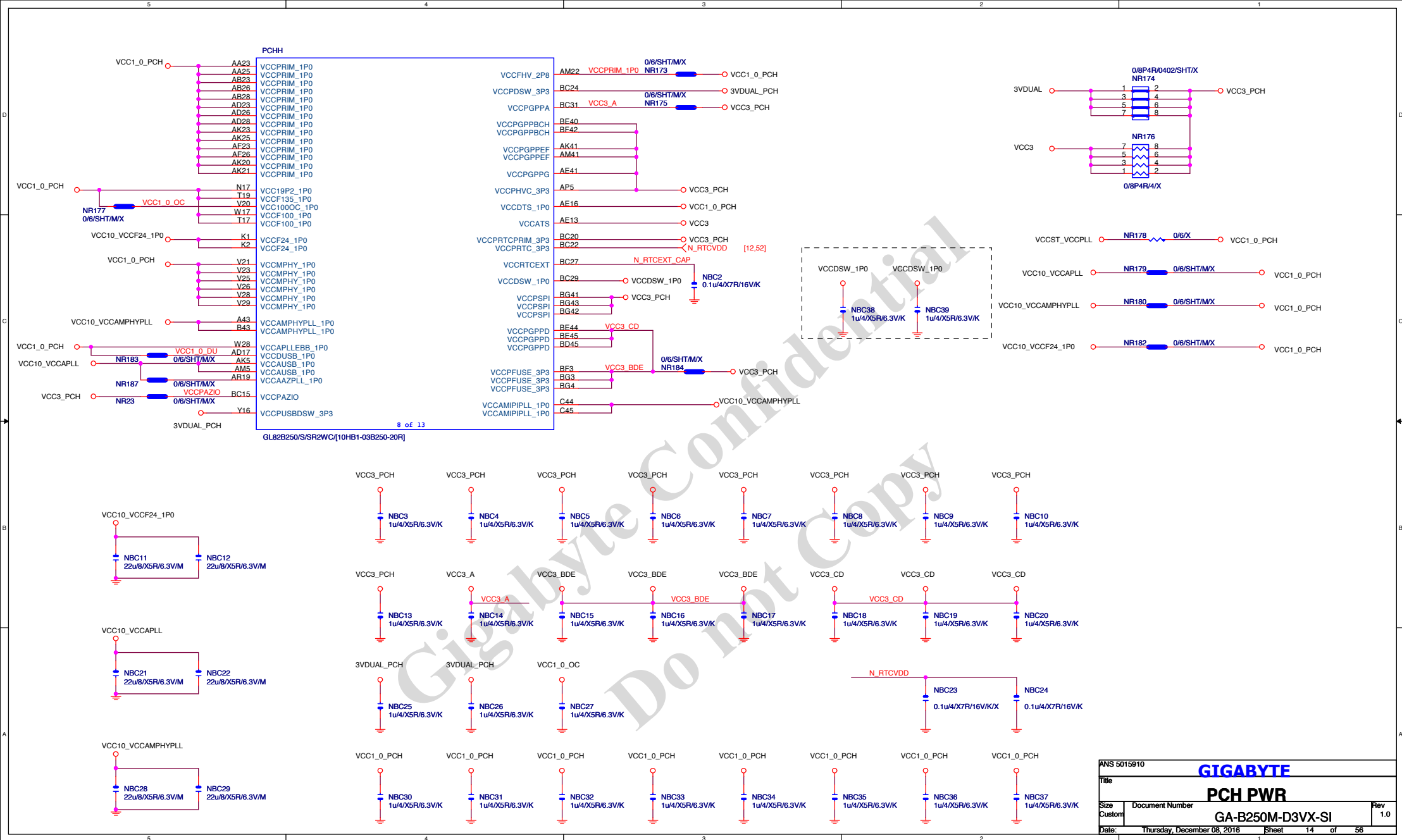














PCHI		
A25	VSS	A42
A30	VSS	D45
P22	VSS	BQ44
AV38	VSS	BE44
AV45	VSS	BF43
AV8	VSS	BF2
AY11	VSS	W29
AY19	VSS	A35
AY37	VSS	A40
AY4	VSS	AA1
AY42	VSS	AA17
AY8	VSS	AA18
B25	VSS	AA20
B3	VSS	C1
B30	VSS	AA26
B35	VSS	AA28
B4	VSS	AA29
B41	VSS	AB17
BA13	VSS	AC32
BA17	VSS	AE4
BA37	VSS	AE8
BA29	VSS	AF18
BA31	VSS	AF20
BA37	VSS	AF21
BA4	VSS	AF25
BA42	VSS	AF28
BA40	VSS	AF29
BC38	VSS	AF4
BC40	VSS	AF42
BC9	VSS	AG18
BD11	VSS	AG20
BD16	VSS	AG21
BD2	VSS	AG23
BD21	VSS	AG25
BD25	VSS	AG26
F2	VSS	AG28
F31	VSS	AG29
E6	VSS	AH11
E8	VSS	AH13
F39	VSS	AH30
F43	VSS	AH32
G4	VSS	AH33
G40	VSS	AH38
G42	VSS	AJ1
F6	VSS	AJ17
Q9	VSS	AJ18
H11	VSS	AJ20
H13	VSS	AJ21
H17	VSS	AJ23
H19	VSS	AJ25
H22	VSS	AJ26
H24	VSS	AJ28
H27	VSS	AJ29
H29	VSS	AJ45
H33	VSS	AK10
H35	VSS	AK14
H38	VSS	AK16
H4	VSS	AK17
H42	VSS	AK18
H9	VSS	AK26
J4	VSS	AK28
M36	VSS	AM14
M38	VSS	AN14
M4	VSS	AP19
M8	VSS	AR22
M9	VSS	AR27
N13	VSS	AU29
N15	VSS	AU33
N19	VSS	AV1
N22	VSS	AV10
N24	VSS	AV15
N31	VSS	AV24
N42	VSS	AV27
P10	VSS	AV33
P12	VSS	
AV35	VSS	

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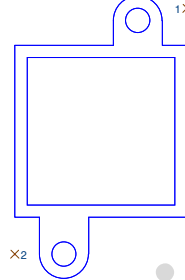
GL82B250/S/SR2WC[10HB1-03B250-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BE2	VSS[73]	AB25
BF43	VSS[74]	AB29
BF5	VSS[75]	AB4
BG18	VSS[76]	AB42
BG23	VSS[77]	AC10
BG28	VSS[78]	AC11
BG32	VSS[79]	AC14
BG37	VSS[80]	AC16
BG40	VSS[81]	AC38
BG9	VSS[83]	AC4
C1	VSS[84]	AC5
A12	VSS[85]	AC7
C2	VSS[86]	AC8
C37	VSS[87]	AD1
A6	VSS[88]	AD18
C9	VSS[89]	AD20
D1	VSS[90]	AD21
D10	VSS[91]	AD25
D12	VSS[92]	AD29
D15	VSS[93]	AD45
D16	VSS[94]	AE11
B12	VSS[95]	AE14
D19	VSS[96]	AE32
D21	VSS[97]	AE33
D24	VSS[98]	AE38
D25	VSS[99]	AK29
D29	VSS[100]	AK30
AG20	VSS[101]	AK32
D33	VSS[102]	AK35
D35	VSS[103]	AK39
D36	VSS[104]	AL4
D39	VSS[105]	AL42
D44	VSS[106]	AM10
D7	VSS[107]	AM11
P13	VSS[108]	AM13
P15	VSS[109]	AM17
P17	VSS[110]	AM19
P19	VSS[111]	AM24
P31	VSS[112]	AM27
P33	VSS[113]	AM29
P35	VSS[114]	AM32
P4	VSS[115]	AM33
P42	VSS[116]	AM4
P8	VSS[117]	AN45
R1	VSS[118]	AP10
R32	VSS[119]	AP11
T10	VSS[120]	AP13
T14	VSS[121]	AP15
T22	VSS[122]	AP22
T29	VSS[123]	AP27
T32	VSS[124]	AP31
T36	VSS[125]	AP33
T38	VSS[126]	AP34
Y38	VSS[127]	AP39
Y4	VSS[128]	T4
Y8	VSS[129]	W26
T42	VSS[130]	V16
T5	VSS[131]	V17
U4	VSS[132]	V18
U42	VSS[133]	V30
V10	VSS[134]	V32
V14	VSS[135]	V33
W3	VSS[136]	V38
AR13	VSS[137]	V4
AR31	VSS[138]	V8
AR33	VSS[139]	W18
AR4	VSS[140]	W20
AT10	VSS[141]	W21
AT13	VSS[142]	W23
AT35	VSS[143]	W25
AT37	VSS[144]	
AT42	VSS[145]	
AT45	VSS[146]	
Y13	VSS[147]	A44
Y14	VSS[148]	BE1
Y30	VSS[149]	BD1
Y32	VSS[150]	B1
Y33	VSS[151]	B2
BG14	VSS[152]	A3
	VSS[153]	A4
	VSS[154]	B44
	VSS[155]	B45
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GL82B250/S/SR2WC[10HB1-03B250-20R]

SB\_HEATSIN



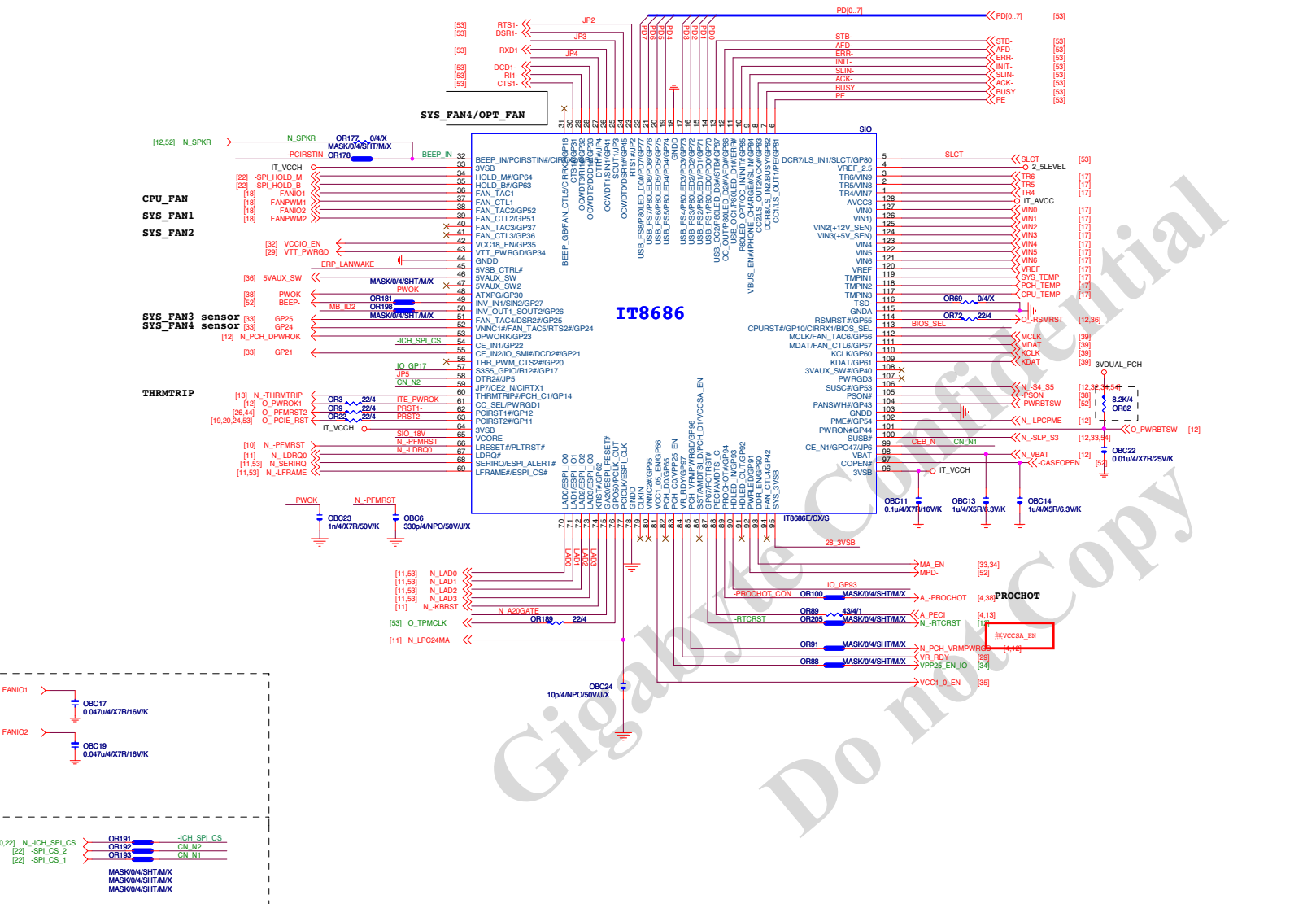
Only for B250M-Power

BGAHSINK\_SB-N

PCH\_HS  
PCH\_HS[12SP2-S03507-31R]

ANS 5015910			
GIGABYTE			
Title			
PCH GND			
Size	Document Number	Rev	
Custom	GA-B250M-D3VX-SI	1.0	
Date:	Thursday, December 08, 2016	Sheet	15 of 56

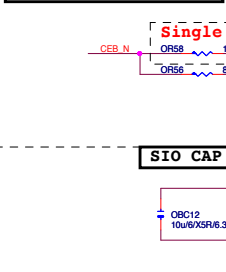




FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5

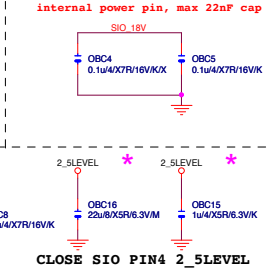
THRMTRIP	PIN56
PROCHOT	PIN89

DUAL BIOS OPT STRAP

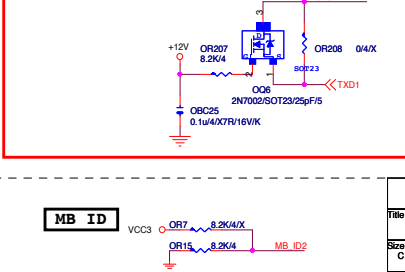


Placement CPU  
[4] A-THRMTRIP <= WR10 1K/4/1 N-THRMTRIP  
CPU 端 A-THRMTRIP不可與PCH及SIO  
N-THRMTRIP直接連接  
否則會出現無法拉LOW情況。

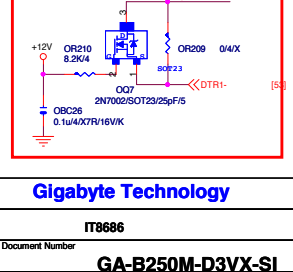
SIO\_18V



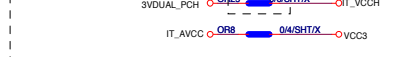
for LPC/eSPI power mode



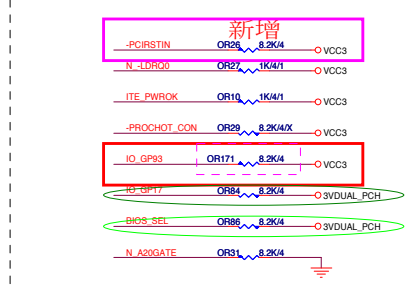
for LPC/eSPI power mode



PWR SHT

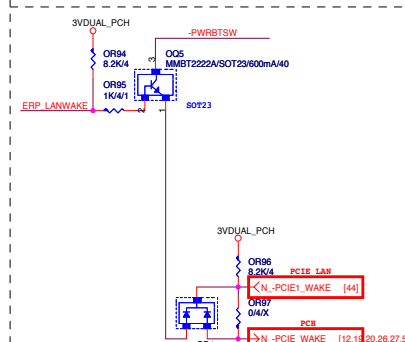


SIO PU

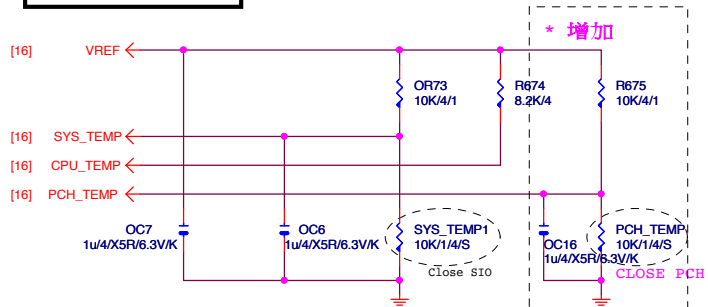


SIO STRAP

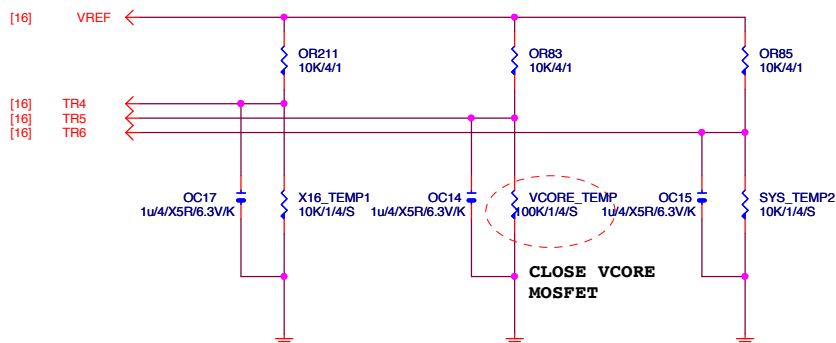
SIO STRAP	
JP2	1 Disable WDT to rest PWROK 0 Enable WDT to rest PWROK
JP3	Dual-BIOS CS pin mode select bit "0" See the below table
JP4	1 LPC/ESPI power VCCBT = 3.3V 0 LPC/ESPI power VCCBT = 1.8V
JP5	1 LPC I/F 0 ESPI I/F
JP6	1 Enable Dual BIOS Function (for GigaByte Only) 0 Disable Dual BIOS Function (for GigaByte Only)
JP7	Dual-BIOS CE pin mode select bit "1" See the below table
JP7	1 1 CE pin disable (Hold pin mode) 1 0 CE mode 1 0 1 CE mode 2 0 0 CE mode 3



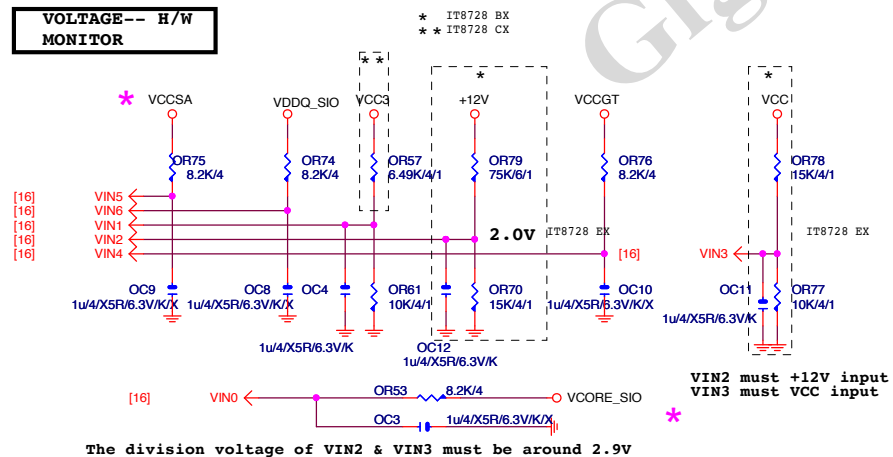
# TEMP H/W MONITOR



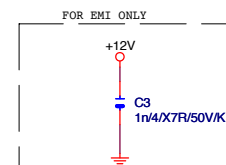
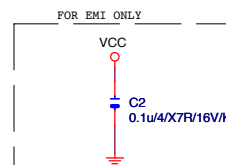
## 5個FAN時使用



# VOLTAGE-- H/W MONITOR



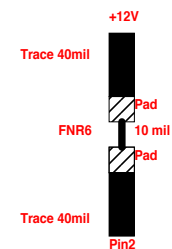
★Update 2015-04.24



Gigabyte Technology

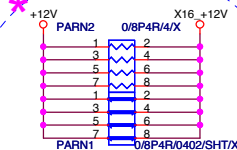
Title		
HWM,KB/MS, FAN CTRL		
Size	Document Number	Rev
Custom	GA-B250M-D3VX-SI	1.0
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## Rev: 0.8

[illegible]

**Rev 0.2**

+12 - protect  
short-wire test



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	0.22u4/X5VR/3W/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5VR/3W/K	PA EXP TXN0 C
PA EXP TXN1	PAC6	0.22u4/X5VR/3W/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5VR/3W/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5VR/3W/K	PA EXP TXP2 C
PA EXP TXN3	PAC9	0.22u4/X5VR/3W/K	PA EXP TXN3 C
PA EXP TXP3	PAC10	0.22u4/X5VR/3W/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5VR/3W/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5VR/3W/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5VR/3W/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5VR/3W/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5VR/3W/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5VR/3W/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5VR/3W/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/X5VR/3W/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/X5VR/3W/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5VR/3W/K	PA EXP TXP8 C
PA EXP TXN8	PAC20	0.22u4/X5VR/3W/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5VR/3W/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5VR/3W/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5VR/3W/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5VR/3W/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5VR/3W/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5VR/3W/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5VR/3W/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5VR/3W/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5VR/3W/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5VR/3W/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5VR/3W/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5VR/3W/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5VR/3W/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5VR/3W/K	PA EXP TXN15 C

**PCIEX16:16/5/5/5/16**

PCI-E REV:1.1--> 2.5GHZ

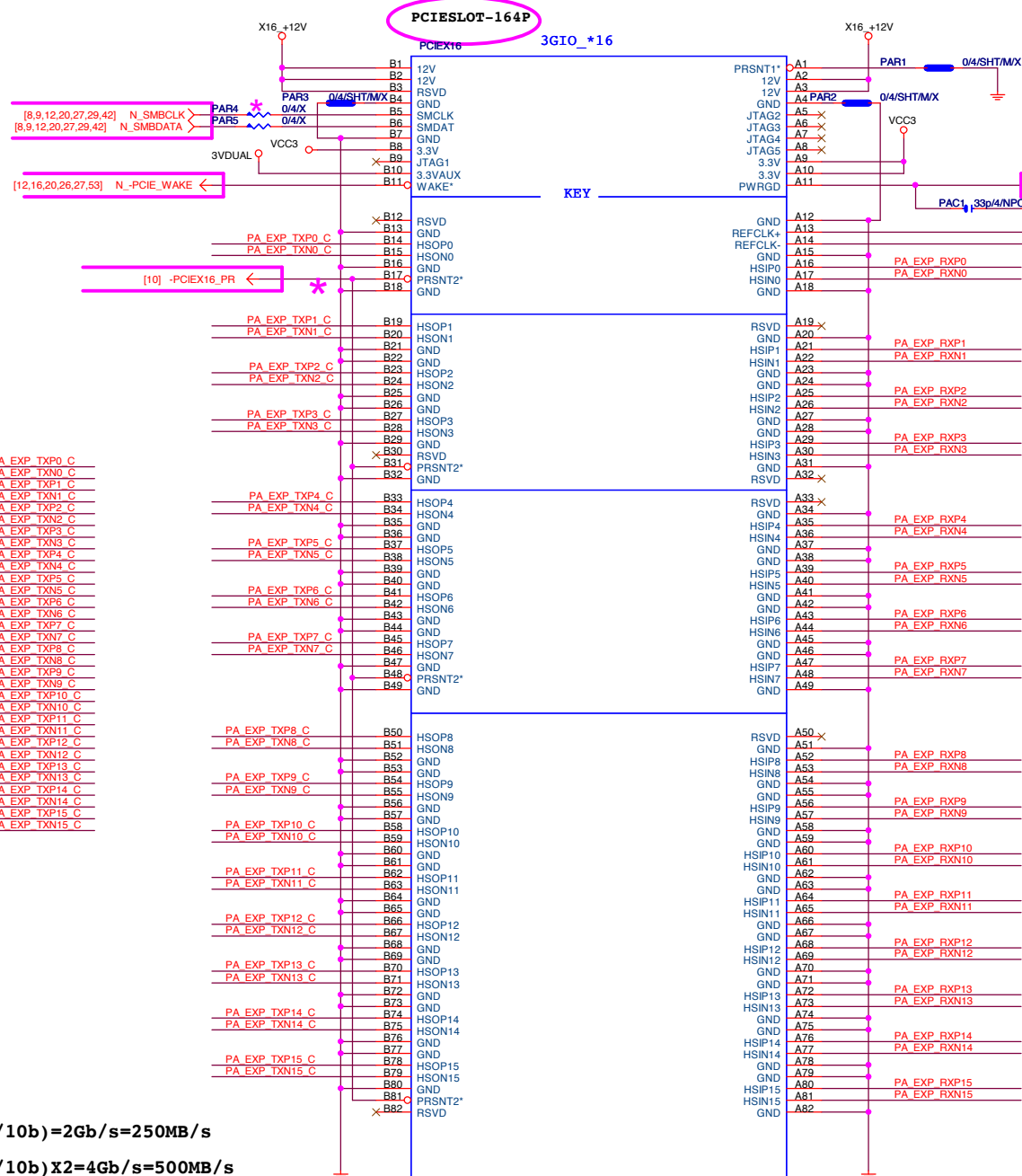
**PCE-E X1 (單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s**

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

**PCE-E X16(單向) BANDWIDTH=2.5GHz\*(8b/10b)x16=32Gb/s=4GB/s**

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

PCI-E REV:2.0--&gt; 5GHZ

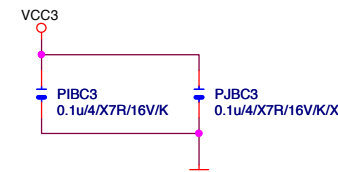
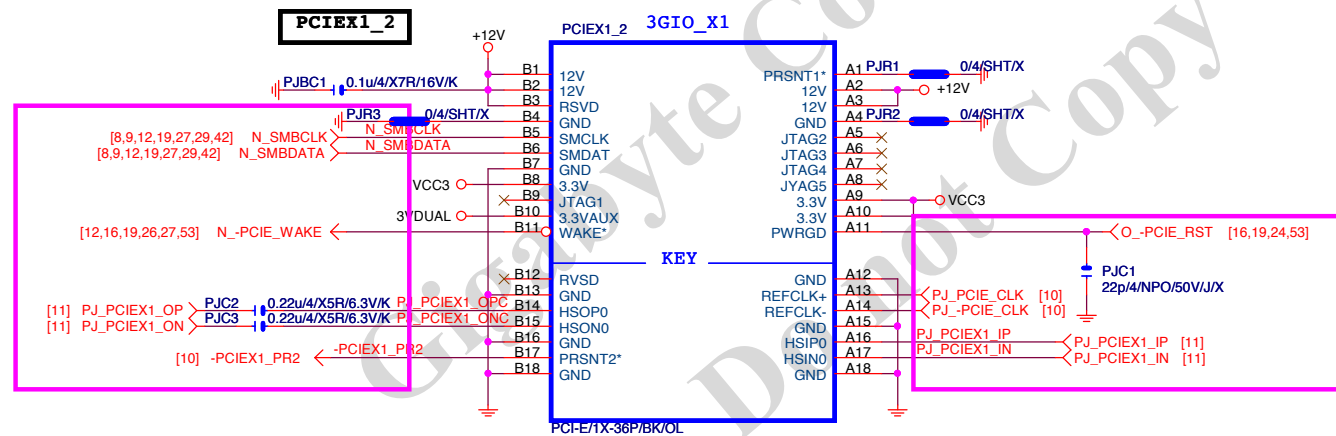
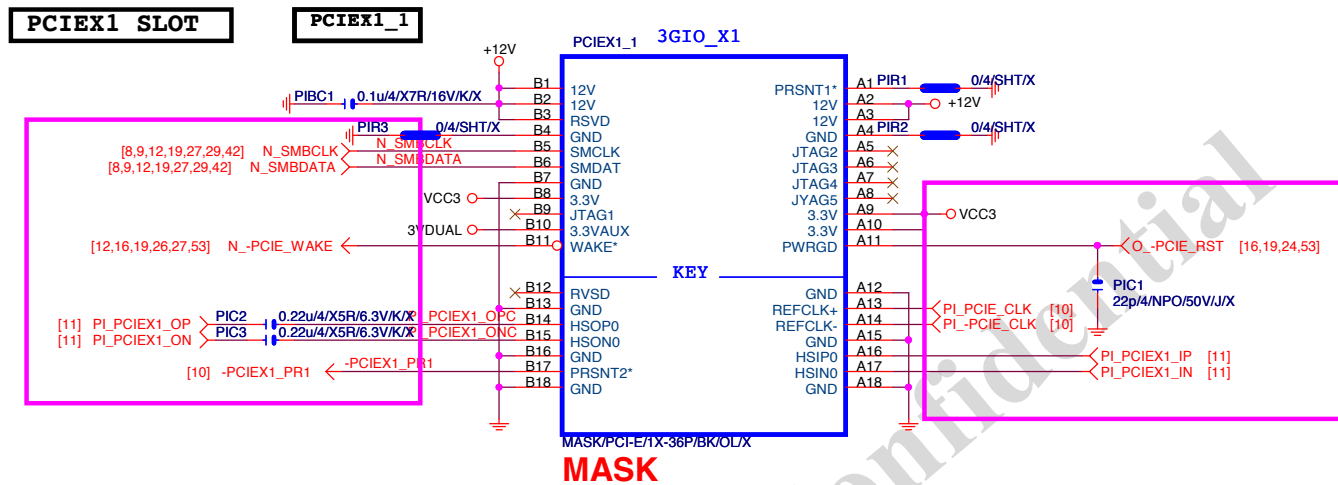


PCI-E/16X-164P/BK/LONG DOUBLE

黑色SLOT

## Gigabyte Technology

Title			
PCI EXPRESS * 16			
Size Custom	Document Number		Rev
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Title

PCIE\_X4

Size

Document Number

Rev

Custom

GA-B250M-D3VX-S1

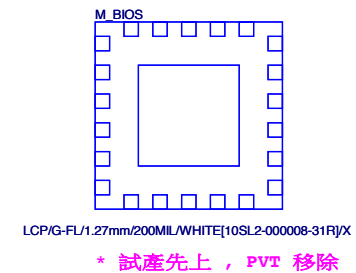
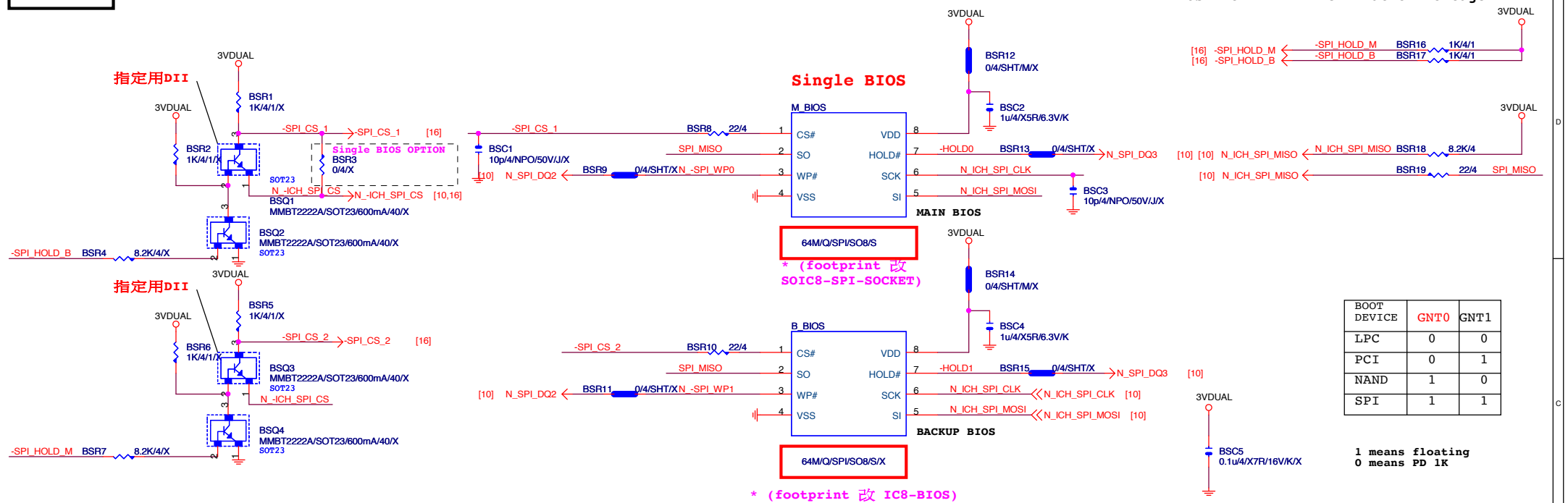
1.0

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**DUAL BIOS**

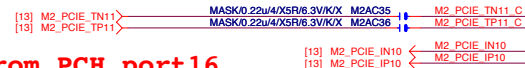
### MOSI For DMI RX Termination Voltage



## M.2 Lane4 from PCH port18



## M.2 Lane3 from PCH port17



## M.2 Lane2 from PCH port16

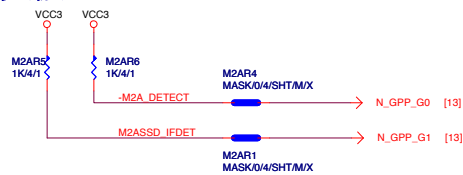


## M.2 Lane1 from PCH port15



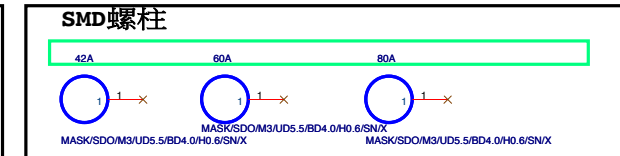
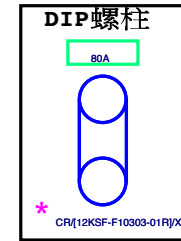
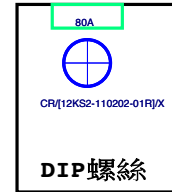
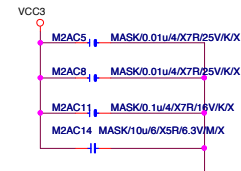
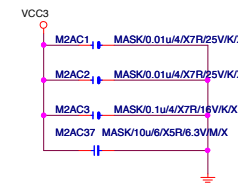
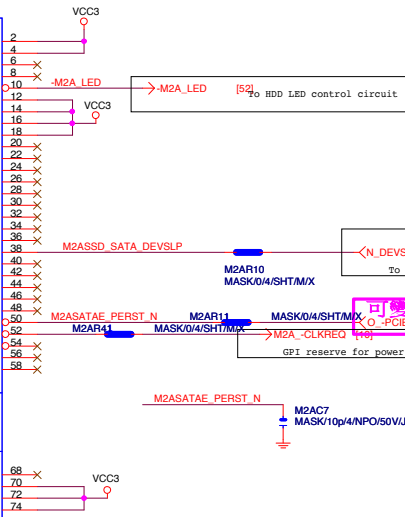
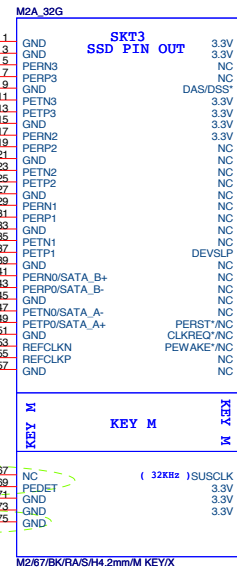
需與M2\_-CLKREQ對應

## 支援SATA and M.2 function

SATA : GND.  
PCIE : NC

M2插卡時為Low

\* Footprint : NGFF-M-8CM-09MM-SMD-MASK



\* Footprint : HOLE\_C236D165-A

M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡? GPP_G1	SATA Express 插何種硬碟? GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

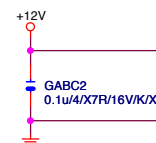
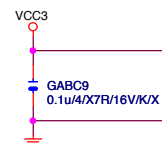
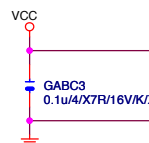
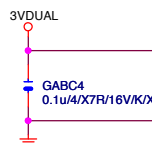
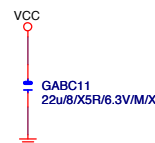
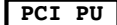
Gigabyte Technology

Title	M.2 X4		
Size	Custom	Document Number	Rev
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Sheet	24	of	56



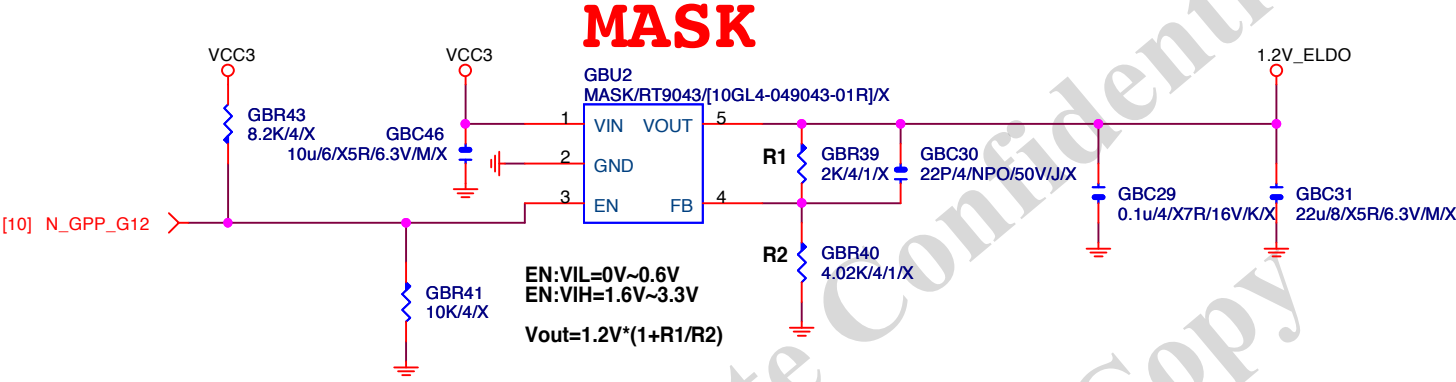


# MASK



Title			
PCI SLOT 1&2			
Size	Document Number	Rev	
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Date:	Thursday, December 08, 2016	Sheet	27 of 56

Rev 0.1



Gigabyte Technology

Title

ASM1085 POWER

Size  
Custom

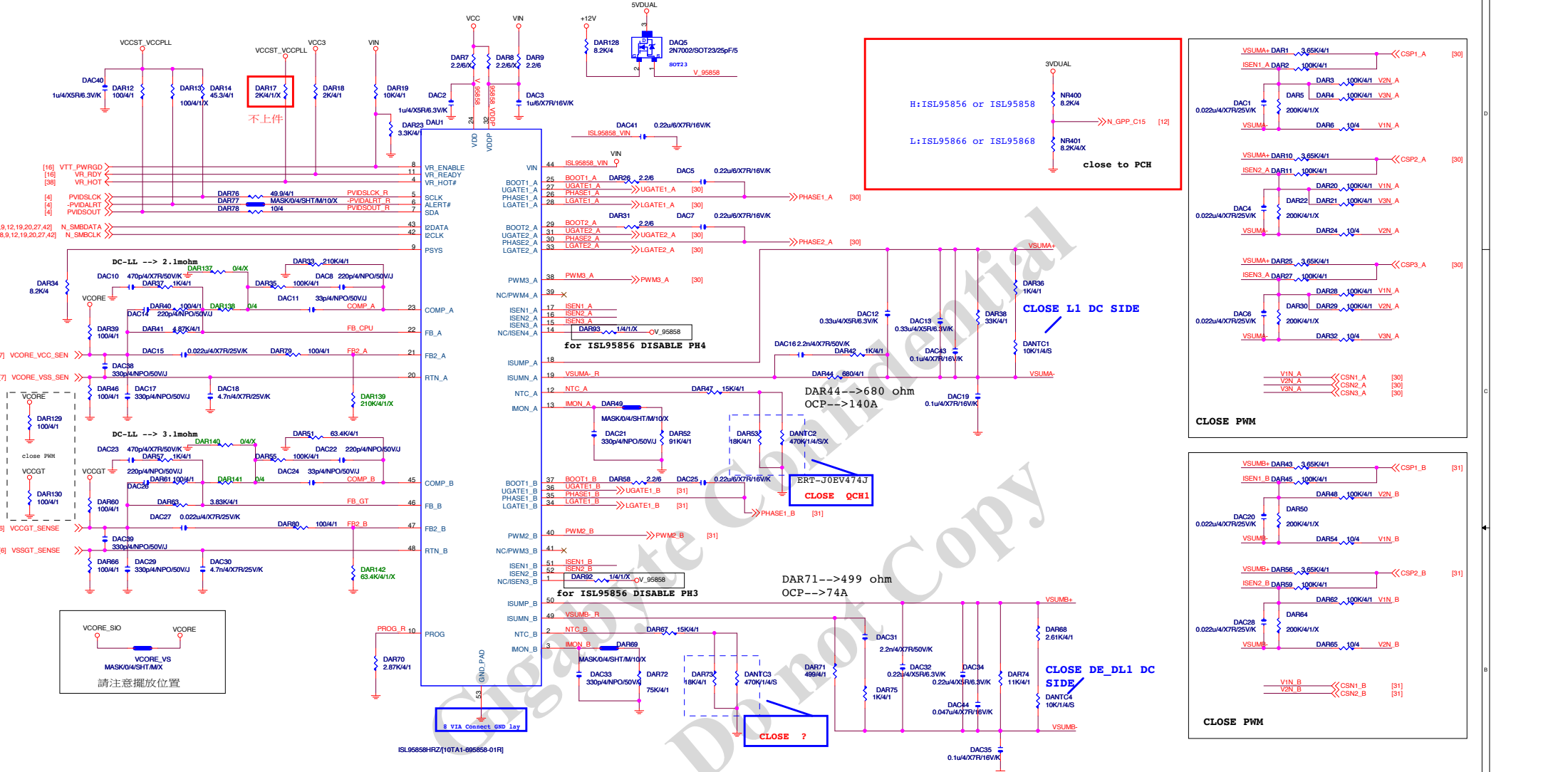
Document Number

GA-B250M-D3VX-SI

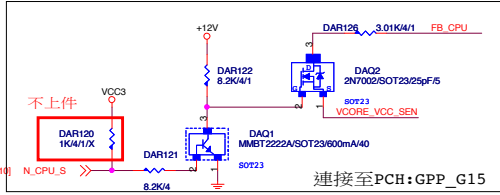
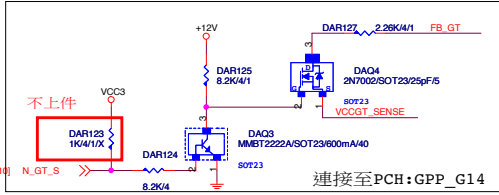
Rev  
1.0

Date: Thursday, December 08, 2016

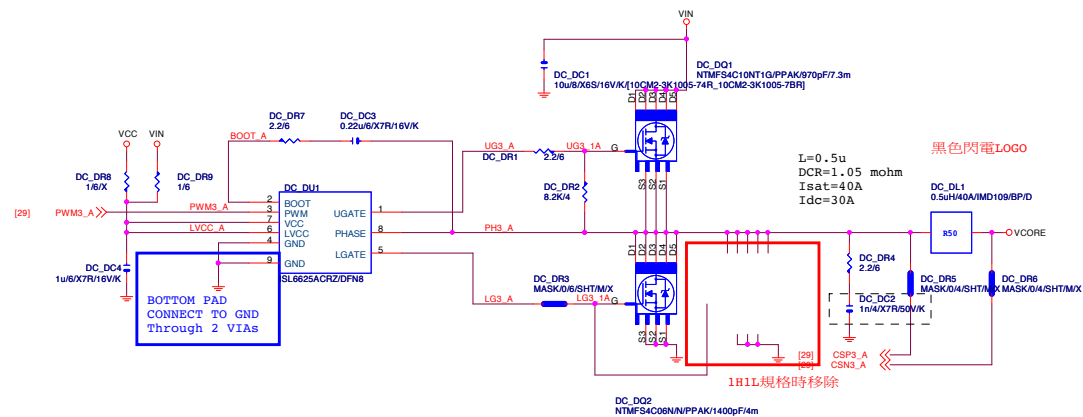
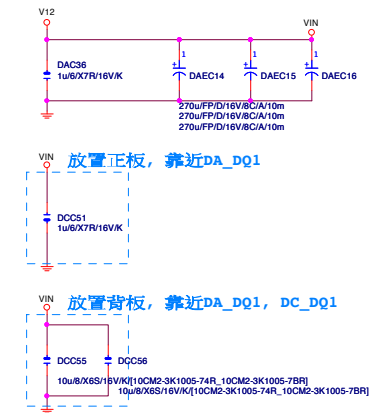
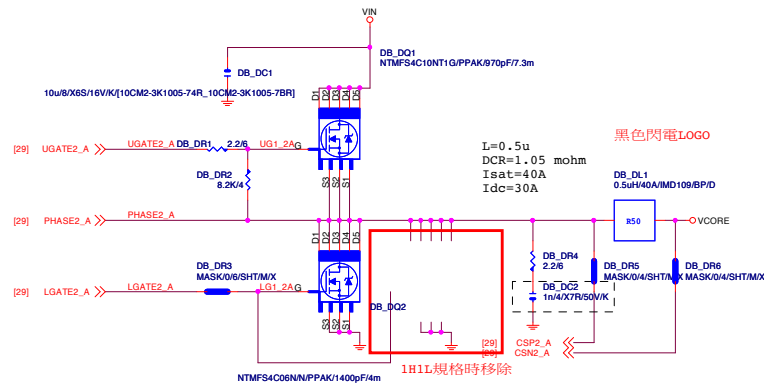
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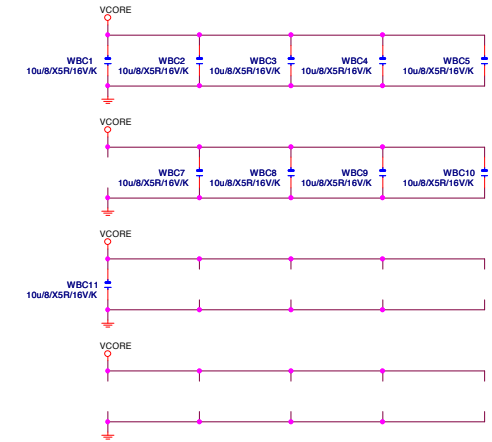
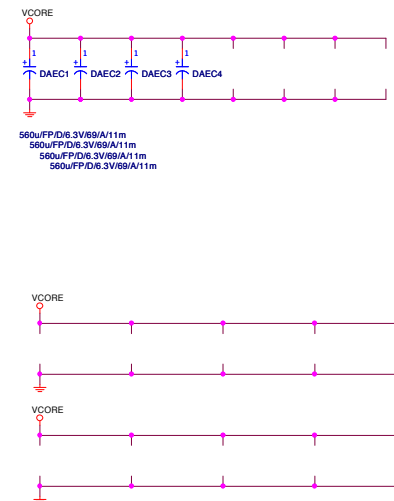
VCCORE	ISL9585B	ISL9586B	VCCGT	ISL9585B	ISL9586B
DAR137	X	V	DAR140	X	V
DAR138	V	X	DAR141	V	X
DAR139	X	V	DAR142	X	V
DAC15	V	X	DAC27	V	X
DAR79	V	X	DAR80	V	X
DAR33	V	X	DAR51	V	X



VCORE



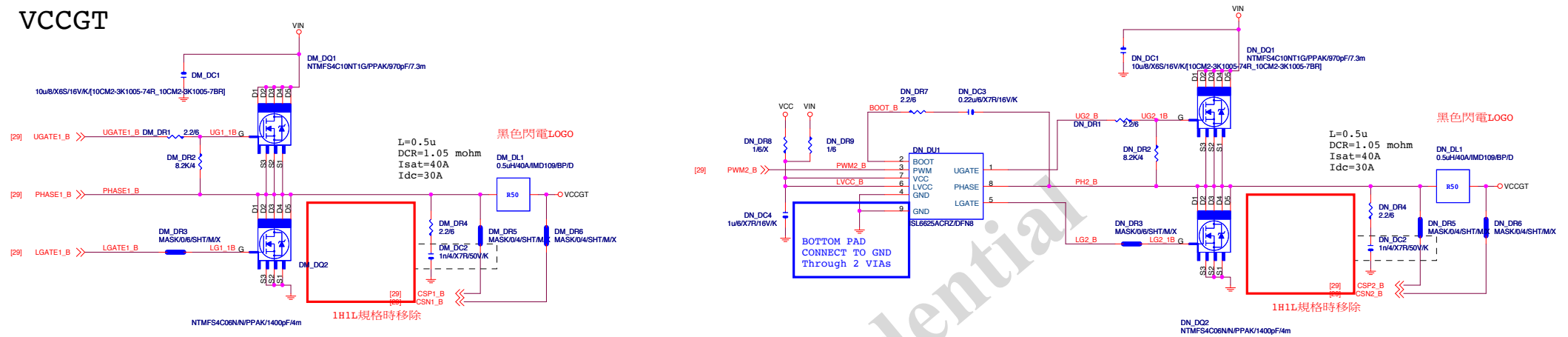
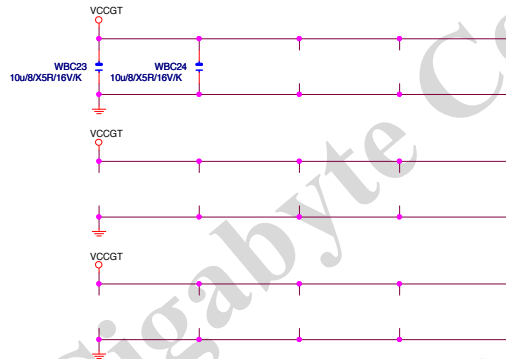
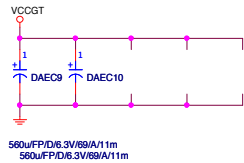
VCORE	CAP	560u*4PCS
		10u*10PCS



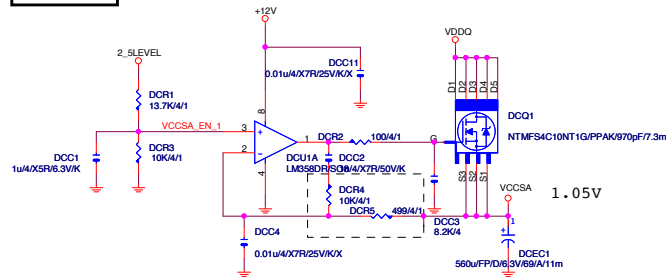
**GIGABYTE™**

Title			
ISL95868_MOS			
Size	Document Number	Rev	
Custom	GA-B250M-D3VX-SI	1.0	
Date:	Thursday, December 08, 2016	Sheet	30 of 56

## VCCGT

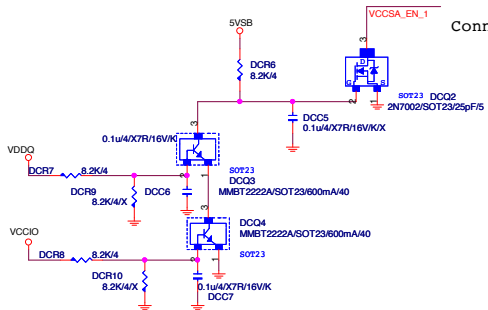
VCCGT CAP 560u\*2PCS  
10u\*2PCS

# VCCSA

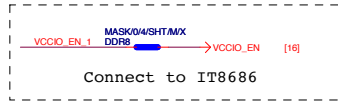
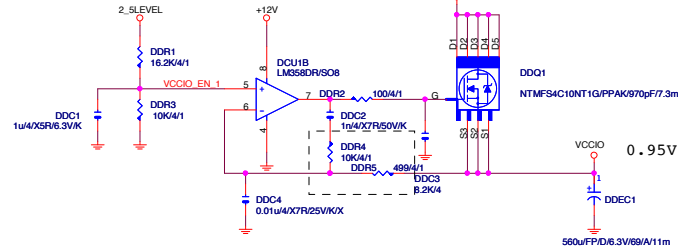


Connect to IT8793

Connect to IT8686



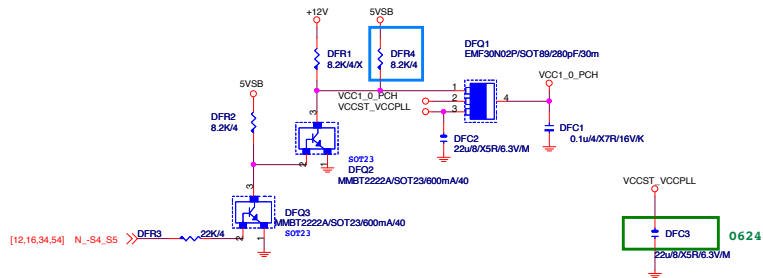
# VCCIO



Connect to IT8686

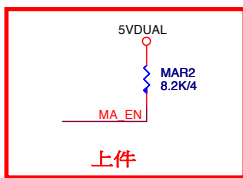
VCCGT  
放CPU端。

# VCCST\_VCCPLL

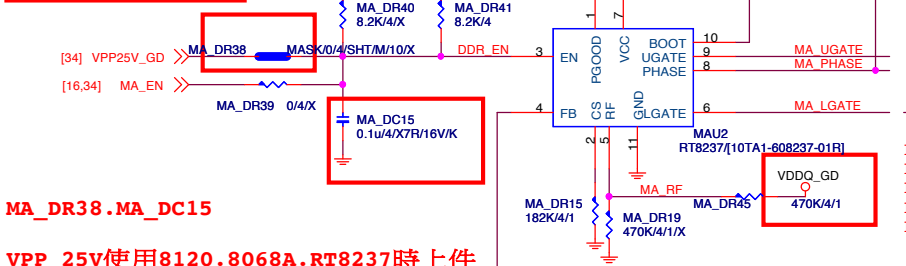




## DDR4

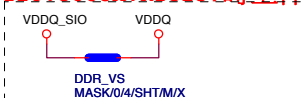


上件



MA DR38.MA DC15

**VPP 25V使用8120.8068A.RT8237時上件**



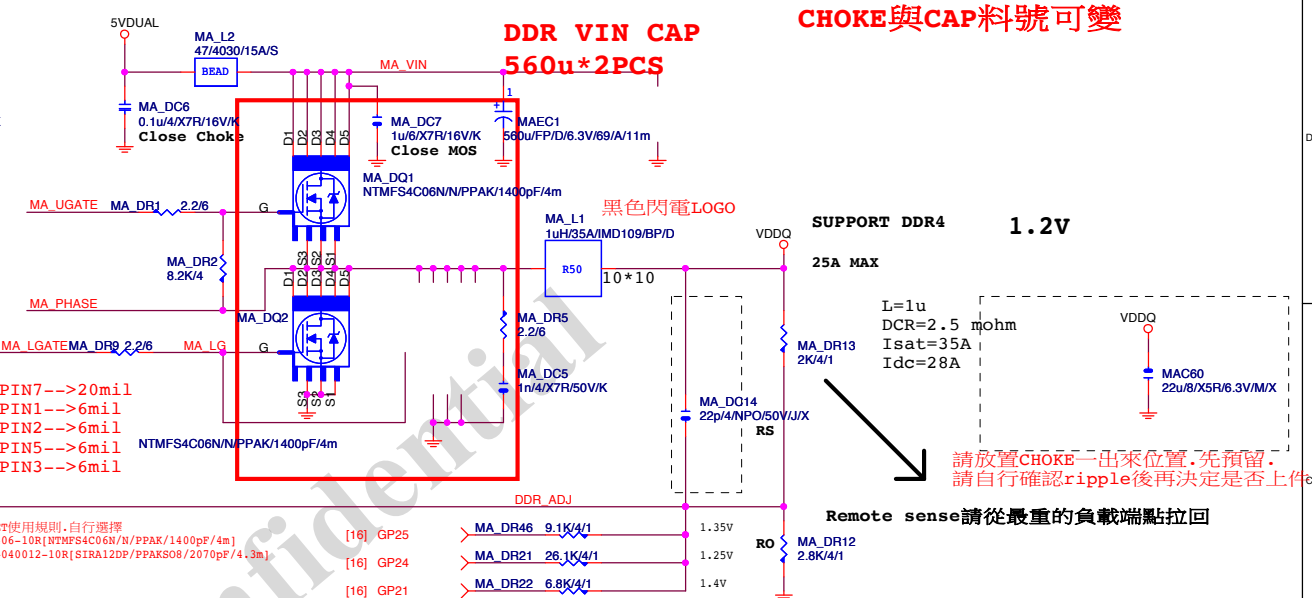
MAU1上RT9045時上件(不可MASK)

MA VIT REP

1u/4

\*

0.01u/4



請放置**CHOKE**一出來位置.先預留.  
請自行確認**ripple**後再決定是否上件

**PWR SEQ**

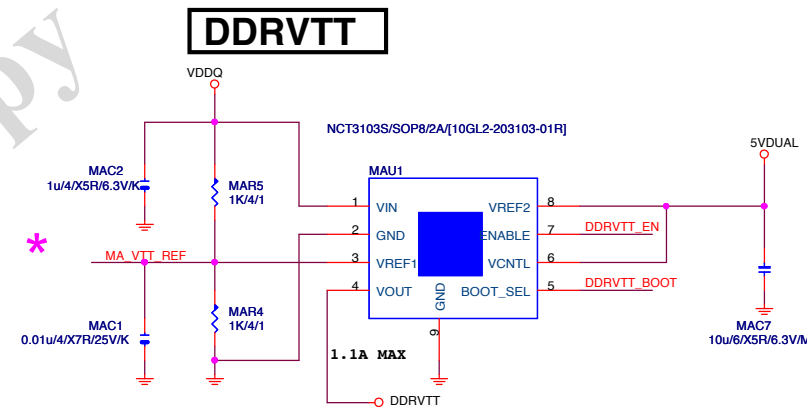
## CLOSE TO DDR POWER PLANE

For power sequence require

VPP\_25V使用8120時上件

MAU1上RT9045時上件(不可MASK)

MA VTT RE

**DDRVTT**

7  
\_VTT\_CTL >> DDR\_VTT\_CTL MAR110 MASK/0/4/SHT/M/10/X DDRVTT\_EN  
\_SLP\_S3 >> N\_SLP\_S3 MAR111 MASK/0/4/SHT/M/10/X DDRVTT\_BOOT

```
[4] DDR_VTT_CTL <
[12,16,54] N -SLP S3
```

# GIGABYTE

Title			
<b>RT8237_DDR4 POWER</b>			
Size	Document Number	Rev	
Custom	<b>GA-B250M-D3VX-SI</b>	<b>1.0</b>	
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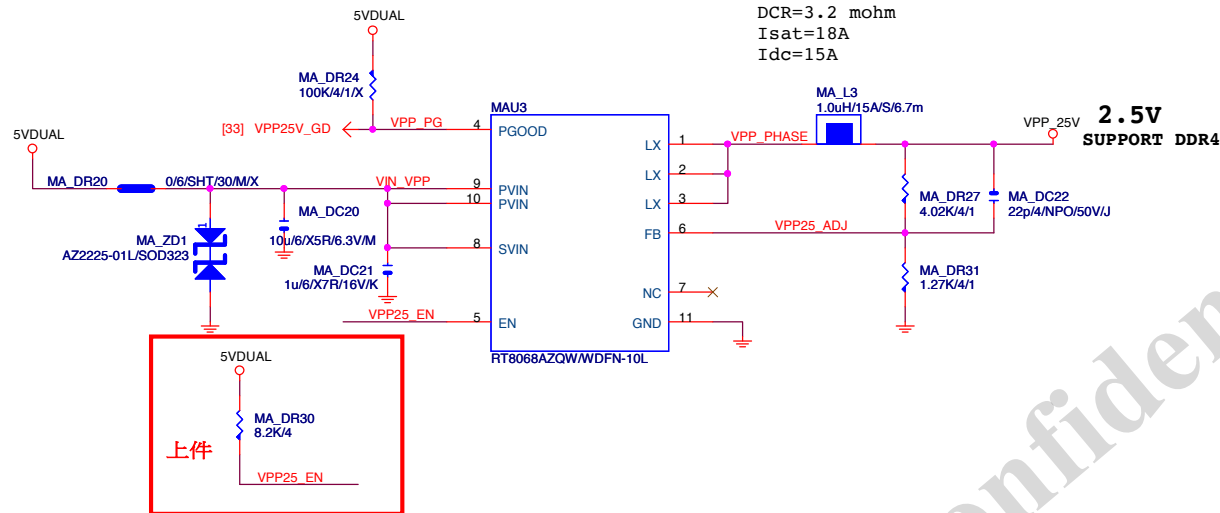
Size	Document Number	Rev
Custom	<b>GA-B250M-D3VX-SI</b>	<b>1.0</b>
Date:	Thursday, December 08, 2016	Sheet 33 of 56

REV:0.1

VPP\_25V

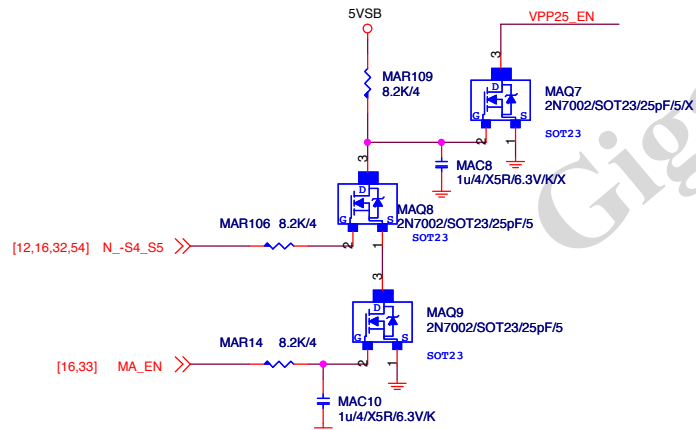
CHOKE與CAP料號可變

$L=1\mu$   
 $DCR=3.2\text{ mohm}$   
 $Isat=18A$   
 $Idc=15A$



PWR\_SEQ

\* 耐 MA\_DR32



[16] VPP25\_EN\_IO

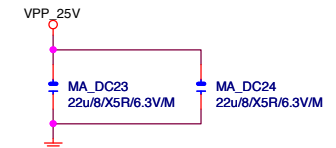
MASK0/4/SHT/M/X

MAR114

VPP25\_EN

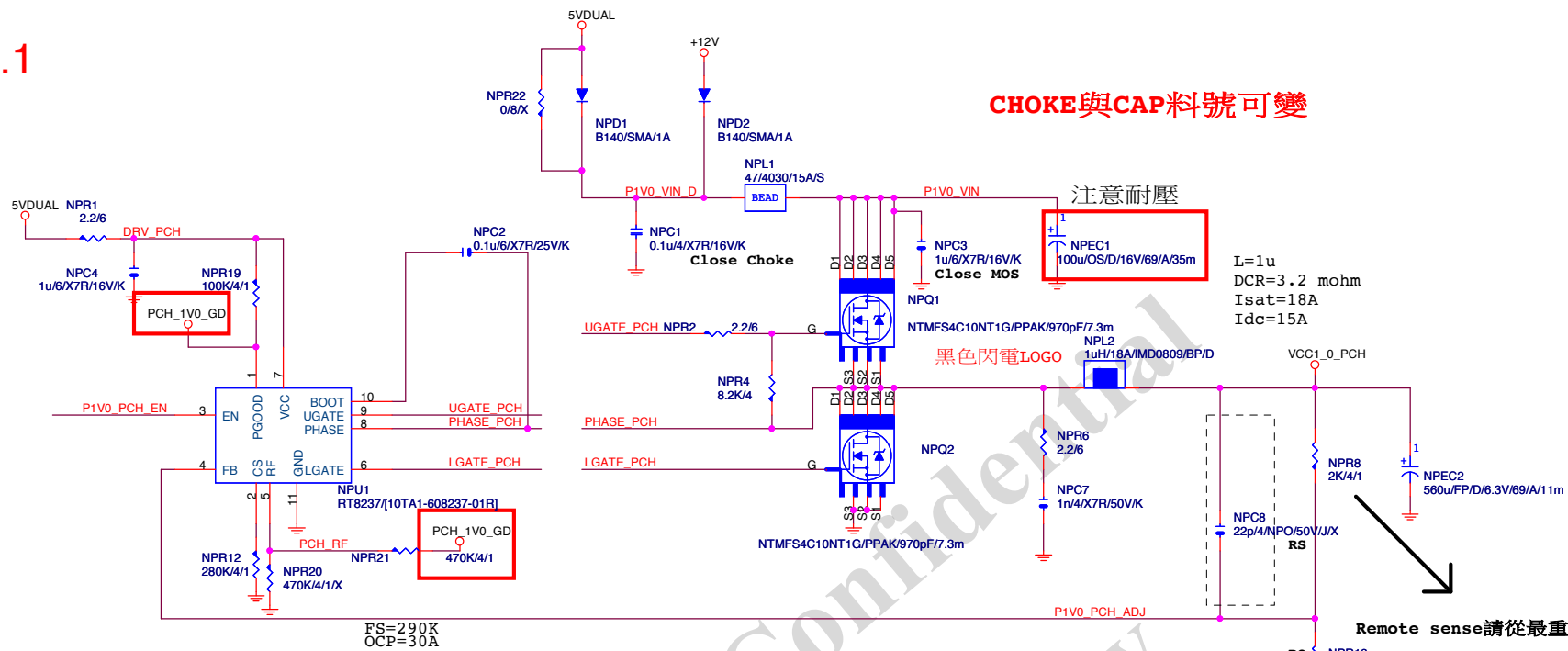
VPP CAP 22u\*1PCS

\* 大電容 x0




GIGABYTE™			
Title RT8068A_VPP25 POWER			
Size Custom	Document Number GA-B250M-D3VX-SI	Rev 1.0	
Date: Thursday, December 08, 2016	Sheet 34 of 56		

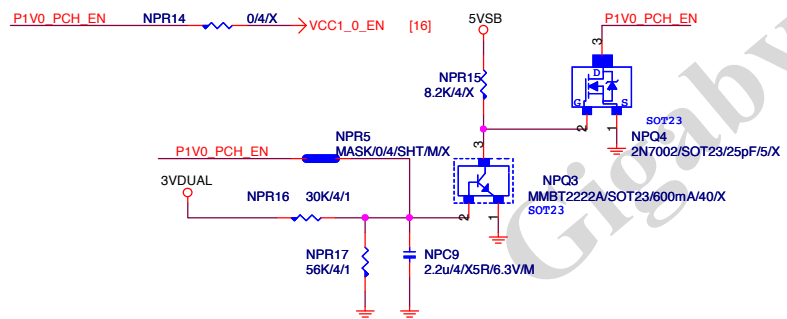
REV:0.1



**Remote sense**請從最重的負載端點拉回

RO  NPR13  
4.12K/4/1  
 $0.704 * (1 + RS/RO) = V_{out}$

請放置CHOKE一出來的地方



PWR SEQ

**GIGABYTE™**

## RT8237\_PCH POWER

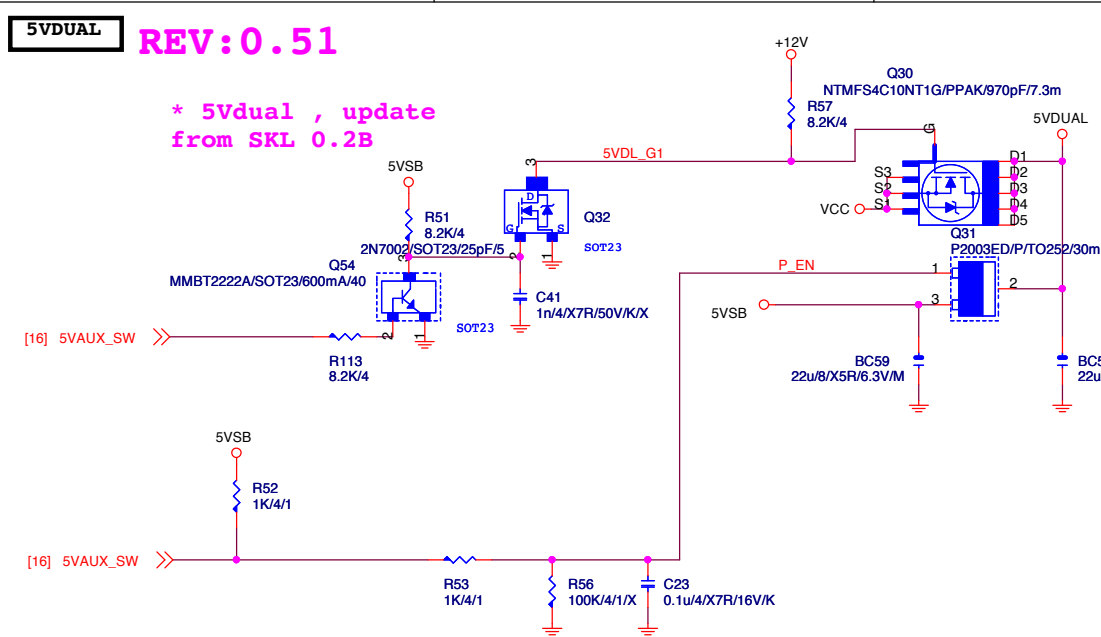
Size Custom	Document Number <b>GA-B250M-D3VX-SI</b>	Rev <b>1.0</b>
Date: Thursday, December 08, 2016	Sheet 35 of 56	

Rev  
**1.0**

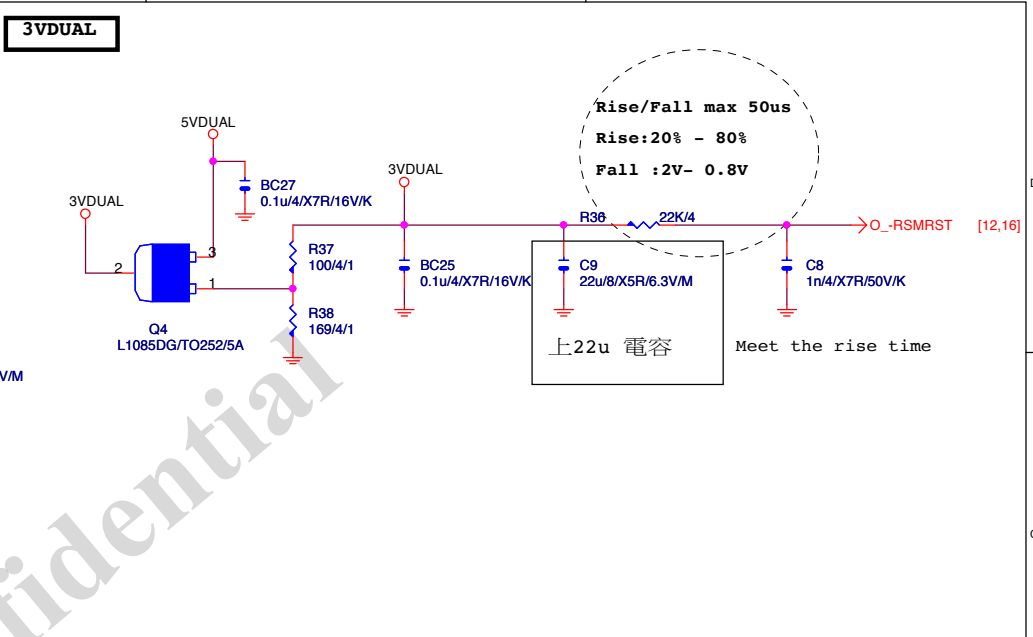
5VDUAL

REV:0.51

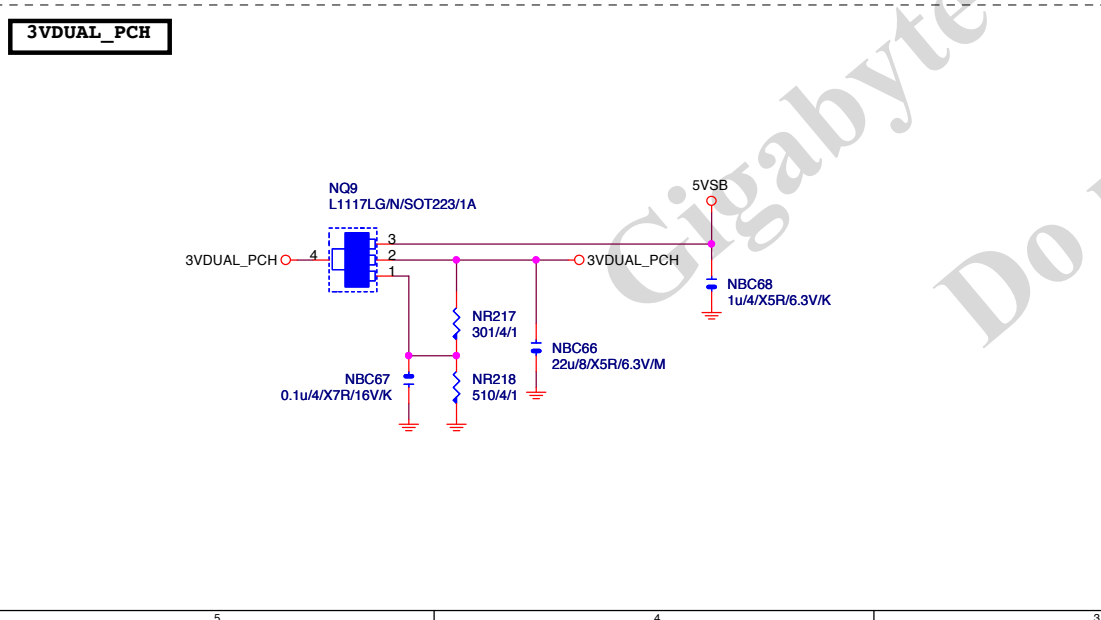
\* 5Vdual , update  
from SKL 0.2B



3VDUAL

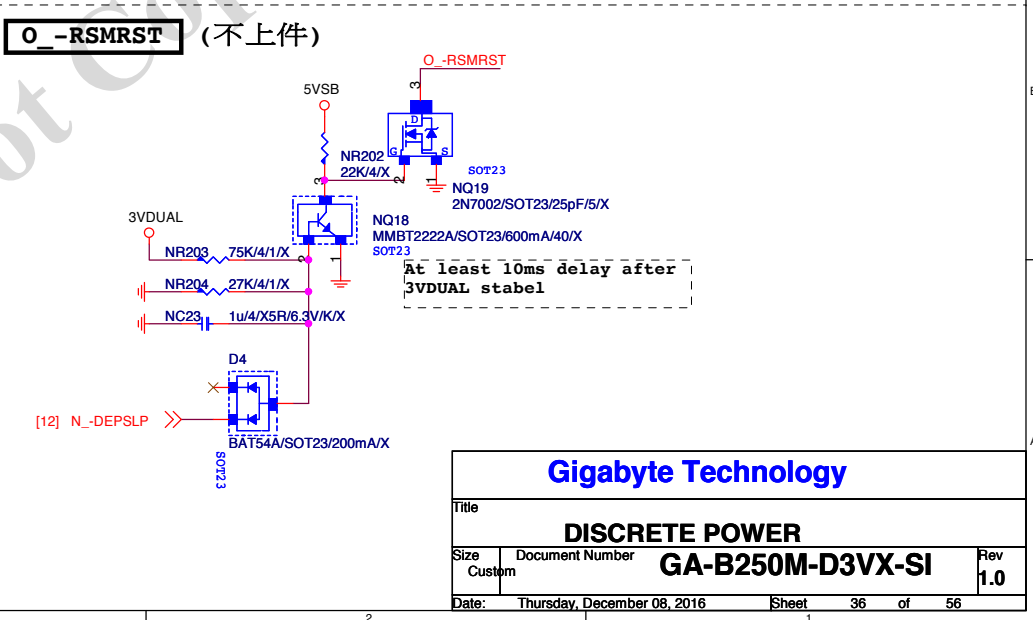


3VDUAL\_PCH



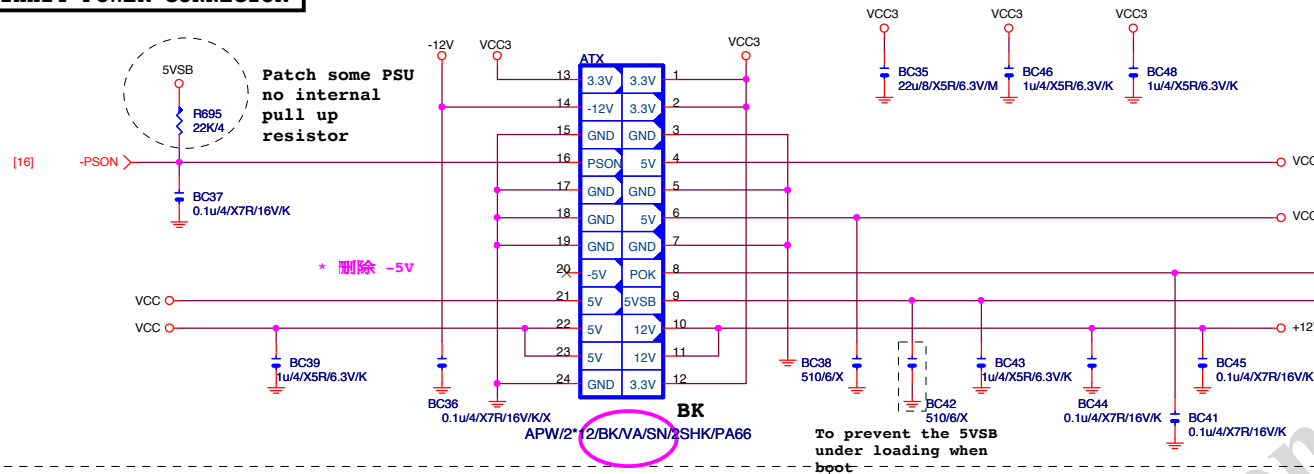
O\_-RSMRST

(不上件)

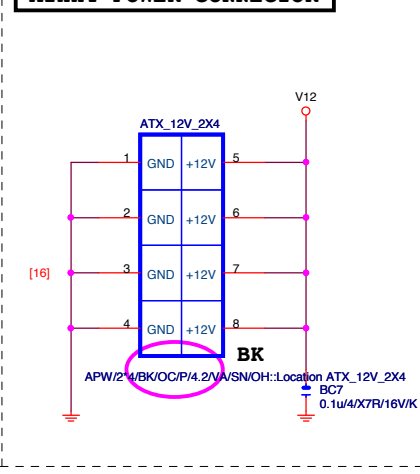


Gigabyte Technology			
Title			
DISCRETE POWER			
Size	Document Number	GA-B250M-D3VX-SI	
Custom			Rev 1.0
Date:	Thursday, December 08, 2016	Sheet	36 of 56

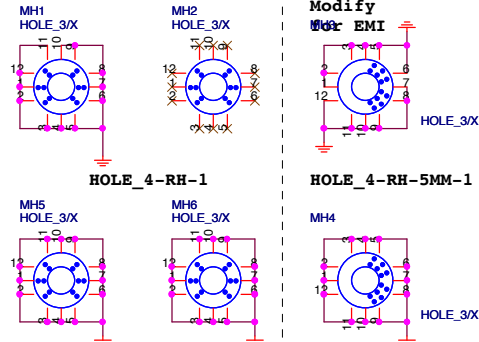
## ATXX24 POWER CONNECTOR



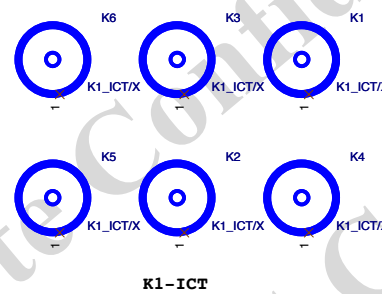
## ATXX4 POWER CONNECTOR



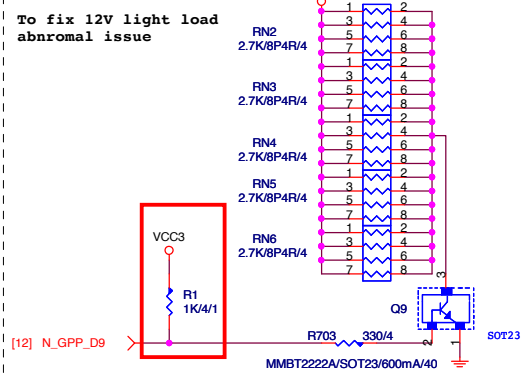
## 螺絲孔



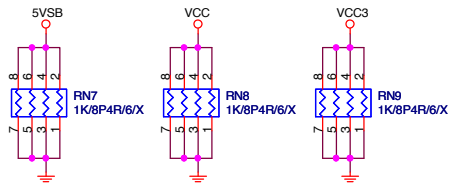
## 固定孔/光學點



## +12V DUMMY LOAD



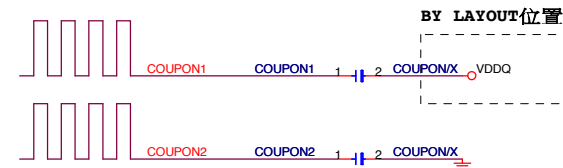
## DUMMY LOAD



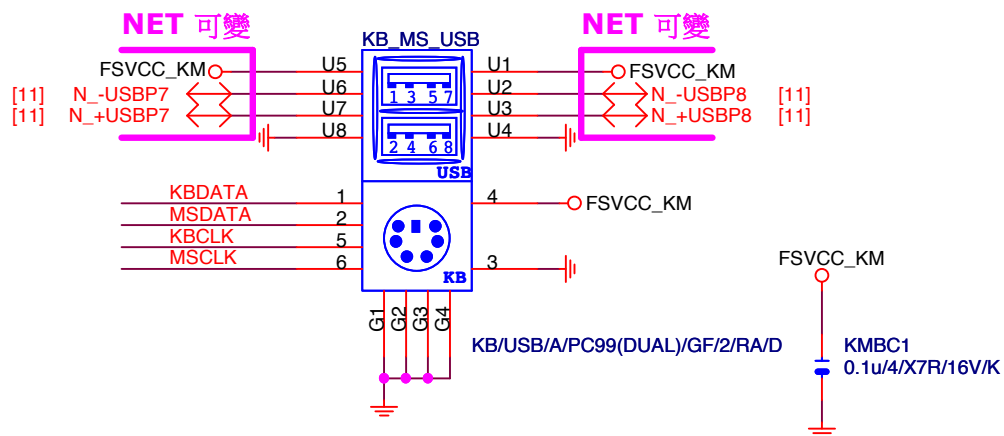
## -PROHOT



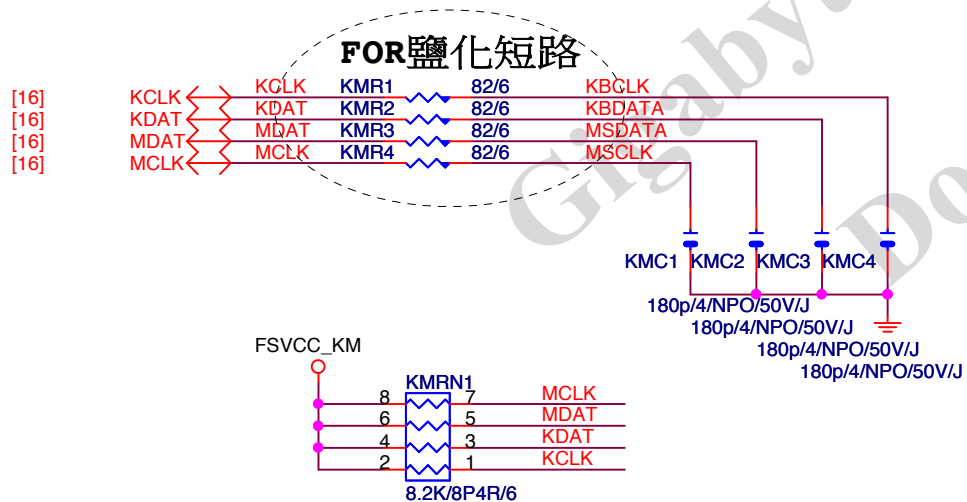
## COUPON



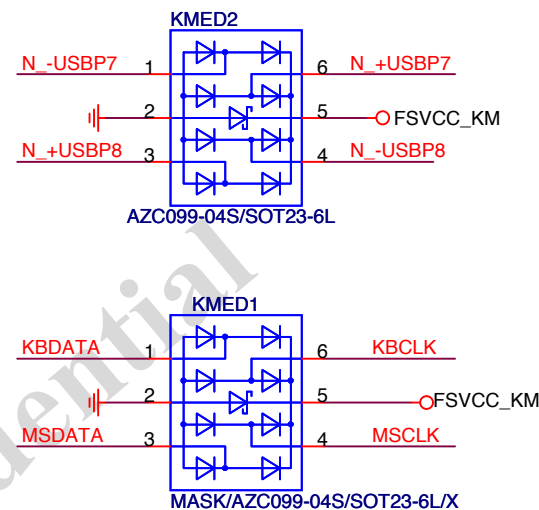
【技術通報R&D技術通報153】

**Rev: 0.7**

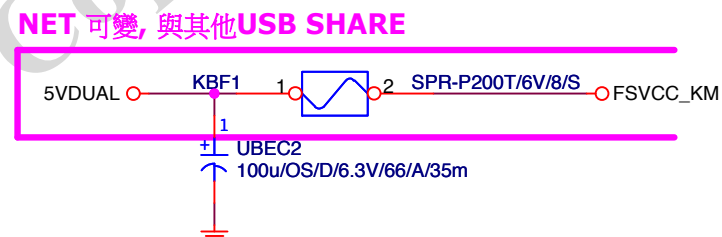
**KB MS USB DAMPING/PU**



## ESD



## KB MS USB PWR



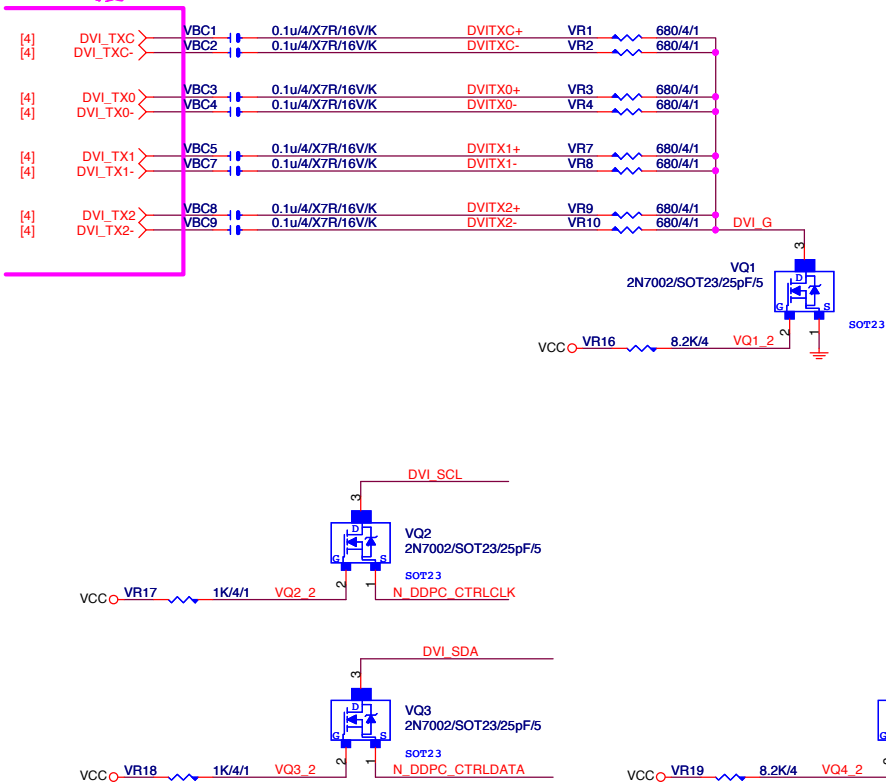
## USB OC PROTECT

## DVI

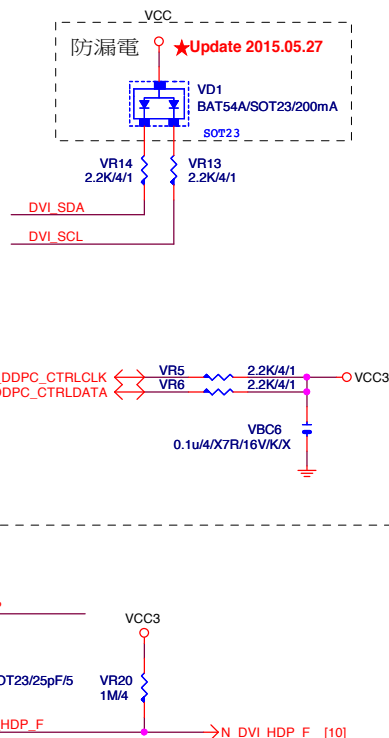
**Rev: 0.8**

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

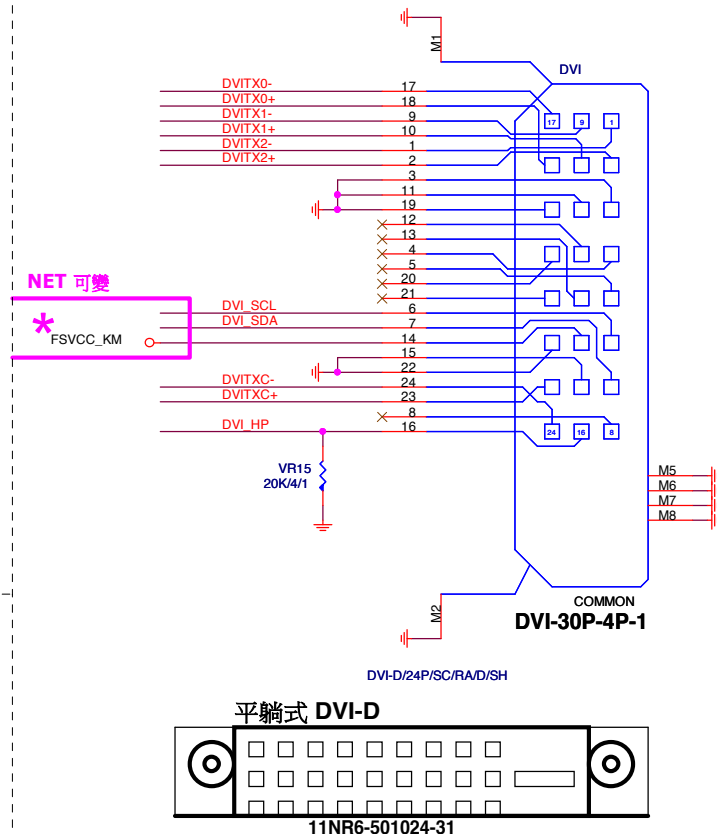
## NET 可變



DVI PU

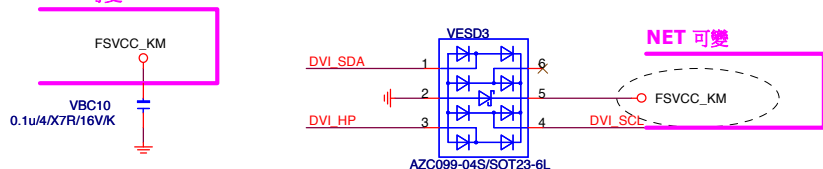


## DVI CONN



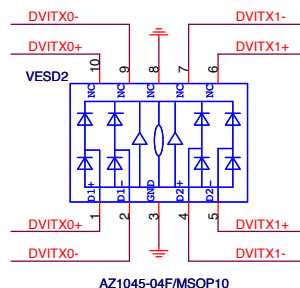
**ESD**

NET 可變



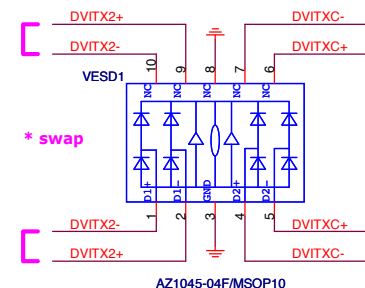
**Close to connector**

NET 可變



**Close to connector**

\* swap

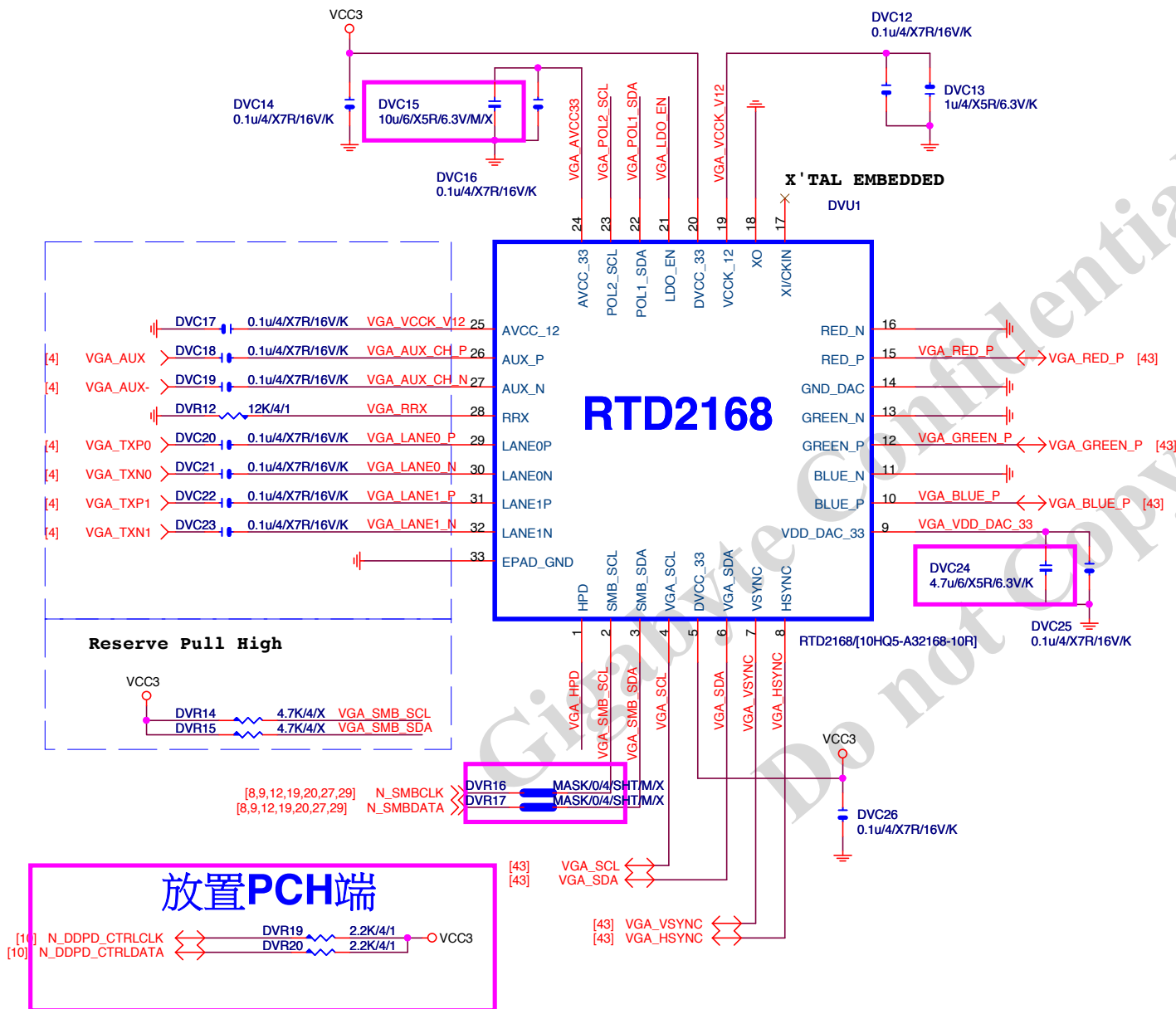


**Close to connector**

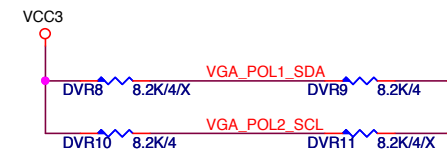
## Gigabyte Technology

Title			
<b>DVI</b>			
Size Custom	Document Number	<b>GA-B250M-D3VX-S</b>	Rev <b>1.0</b>
Date:	Thursday, December 08, 2016	Sheet 40 of 56	



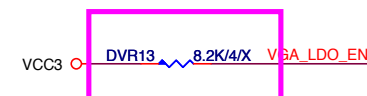
**POWER**

## Power on latch



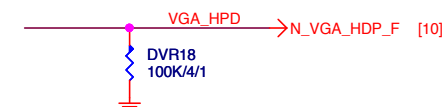
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	<b>ROM ONLY MODE</b>	EEPROM MODE

## Embedded LDO

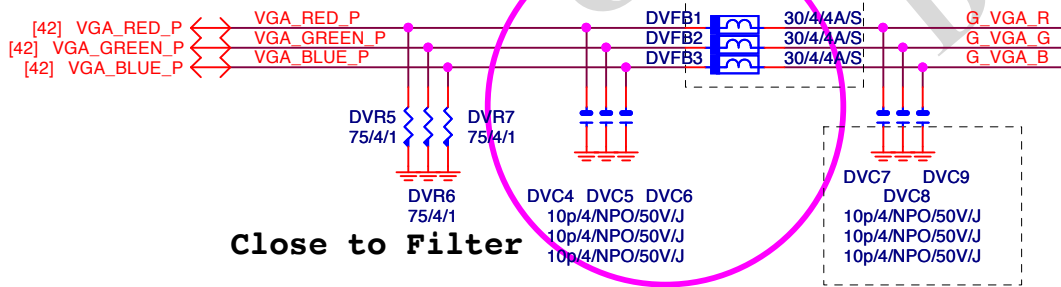
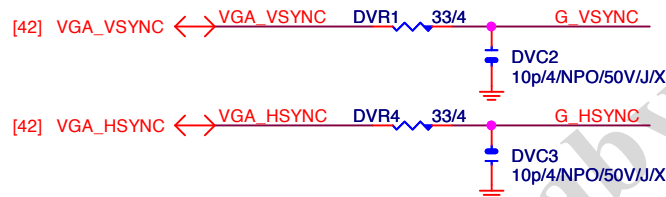
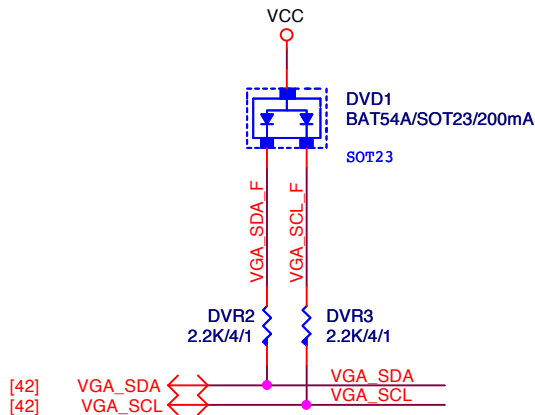


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

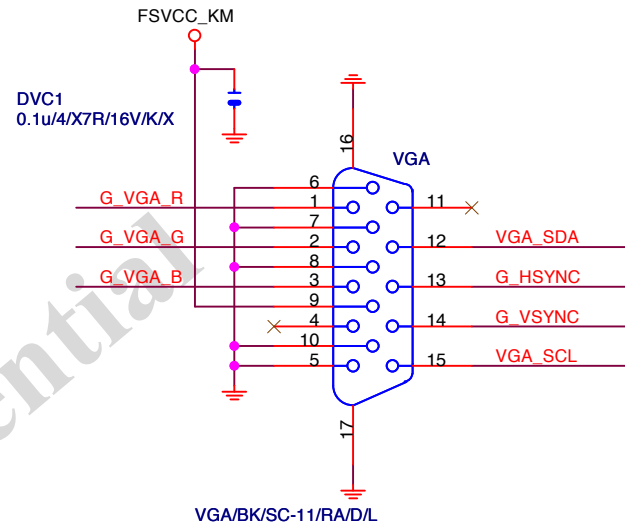
DP HPD



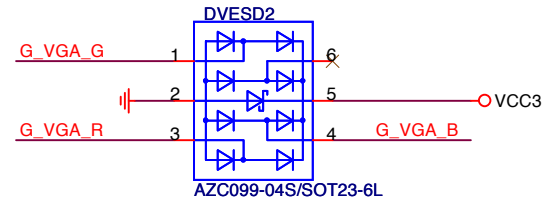
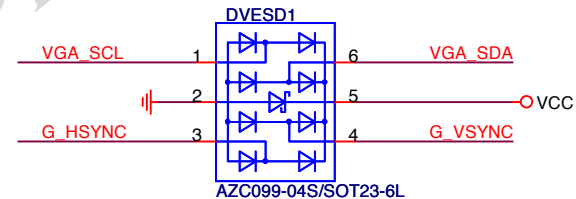
# VGA SIGNAL R1.03



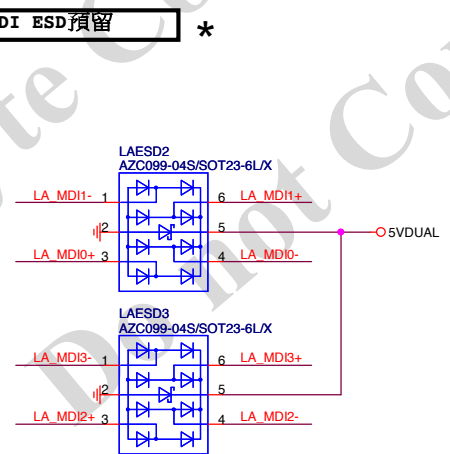
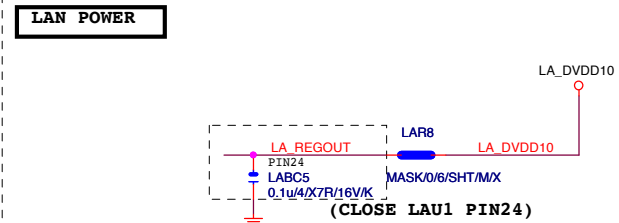
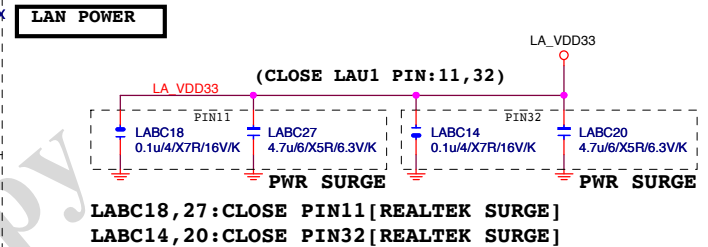
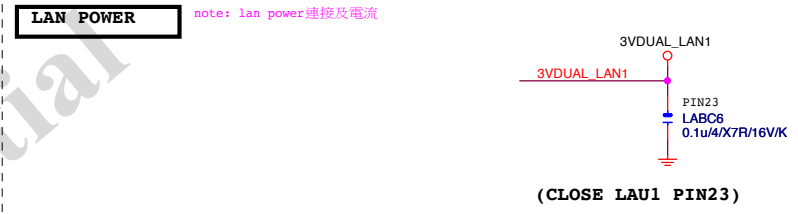
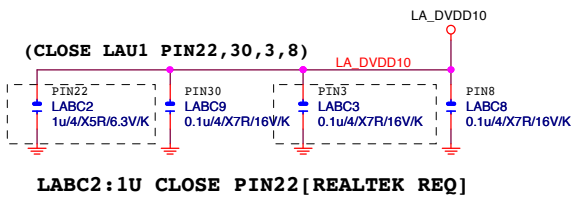
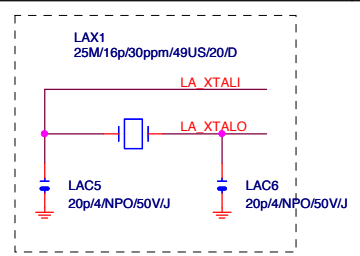
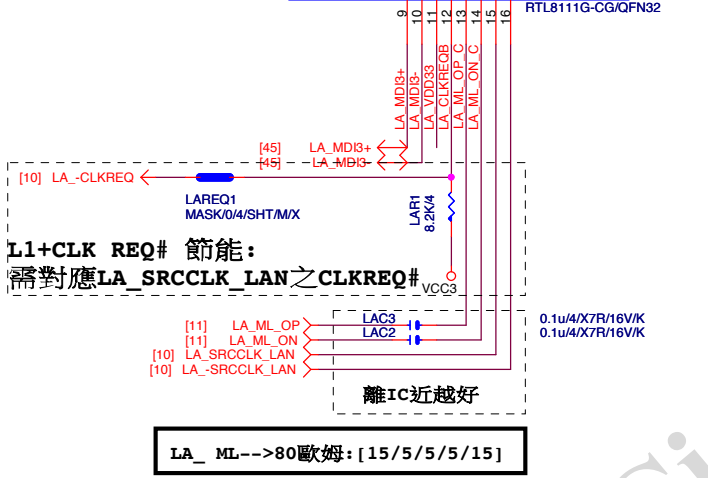
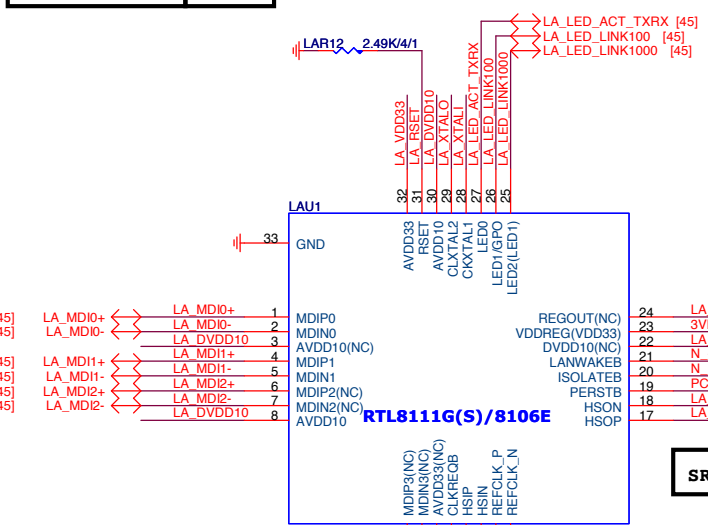
# VGA CONN.



# VGA ESD

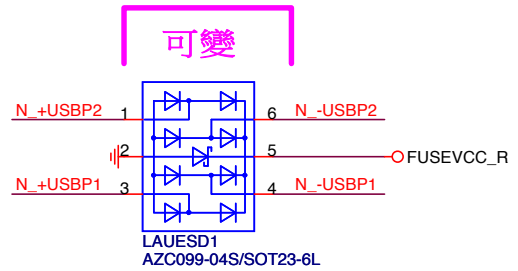


Gigabyte Technology			
Title DP-VGA RTD2168			
Size	Document Number	GA-B250M-D3VX-SI	
Custom			Rev 1.0
Date:	Thursday, December 08, 2016	Sheet	43 of 56

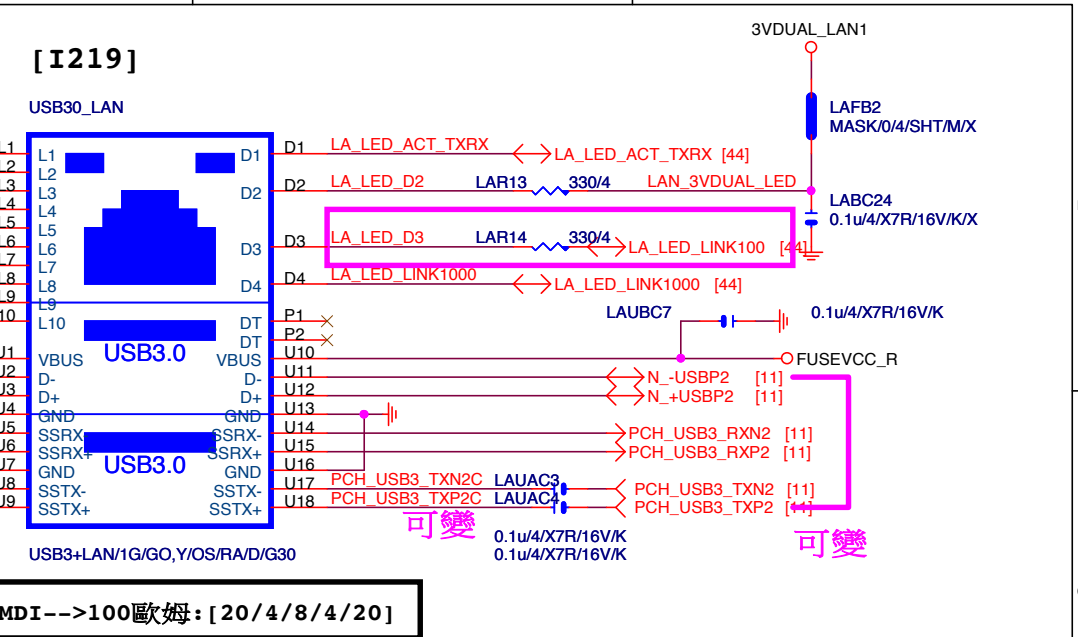


USB\_LAN CONNECTOR R1.1

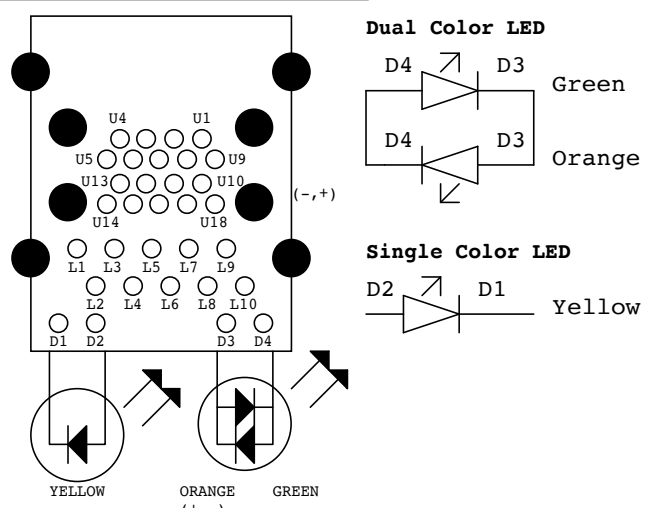
RMA ESD PROTECT note:可變更USB NAME



USB\_LAN CONNECTOR note:可變更USB NAME

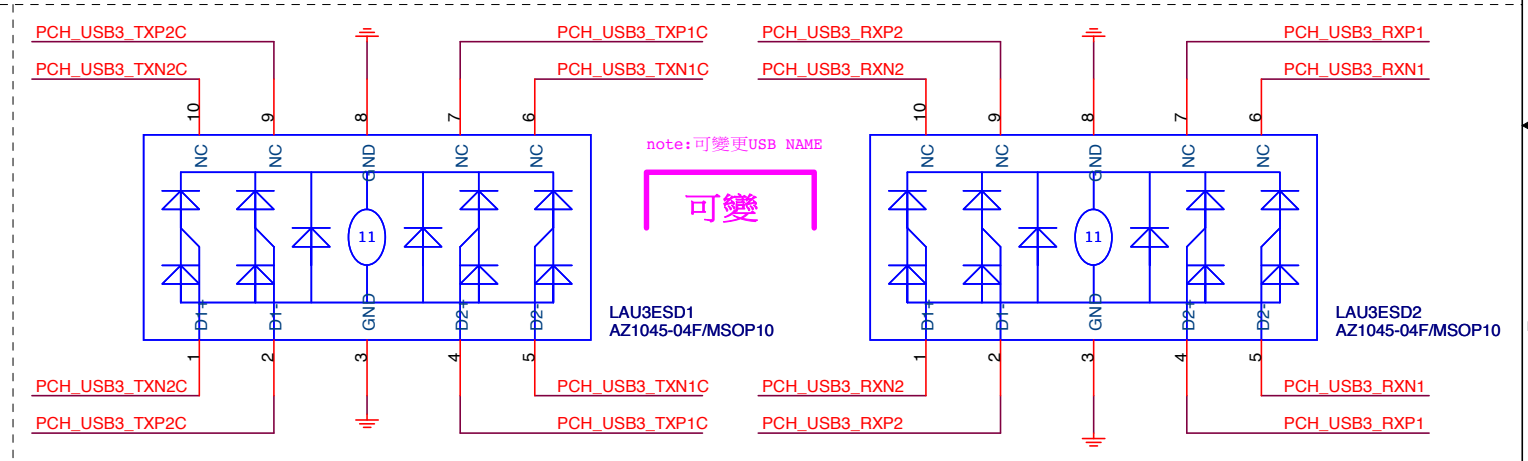


USB30\_LAN LAYOUT示意圖

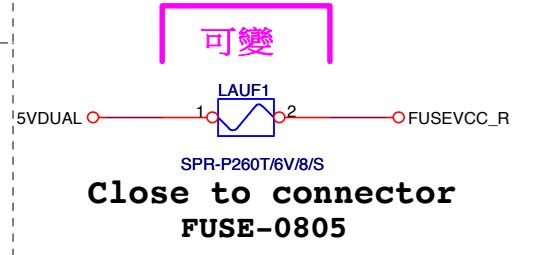


LAN\_COVER FOOT PRINT:LAN\_COVER

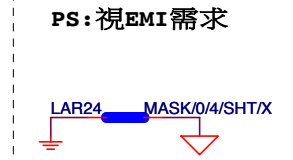
可變  
[-D3H不加蓋]



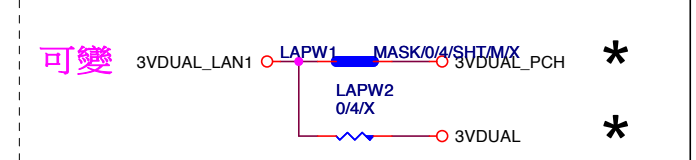
USB POWER note:可變更FUSE



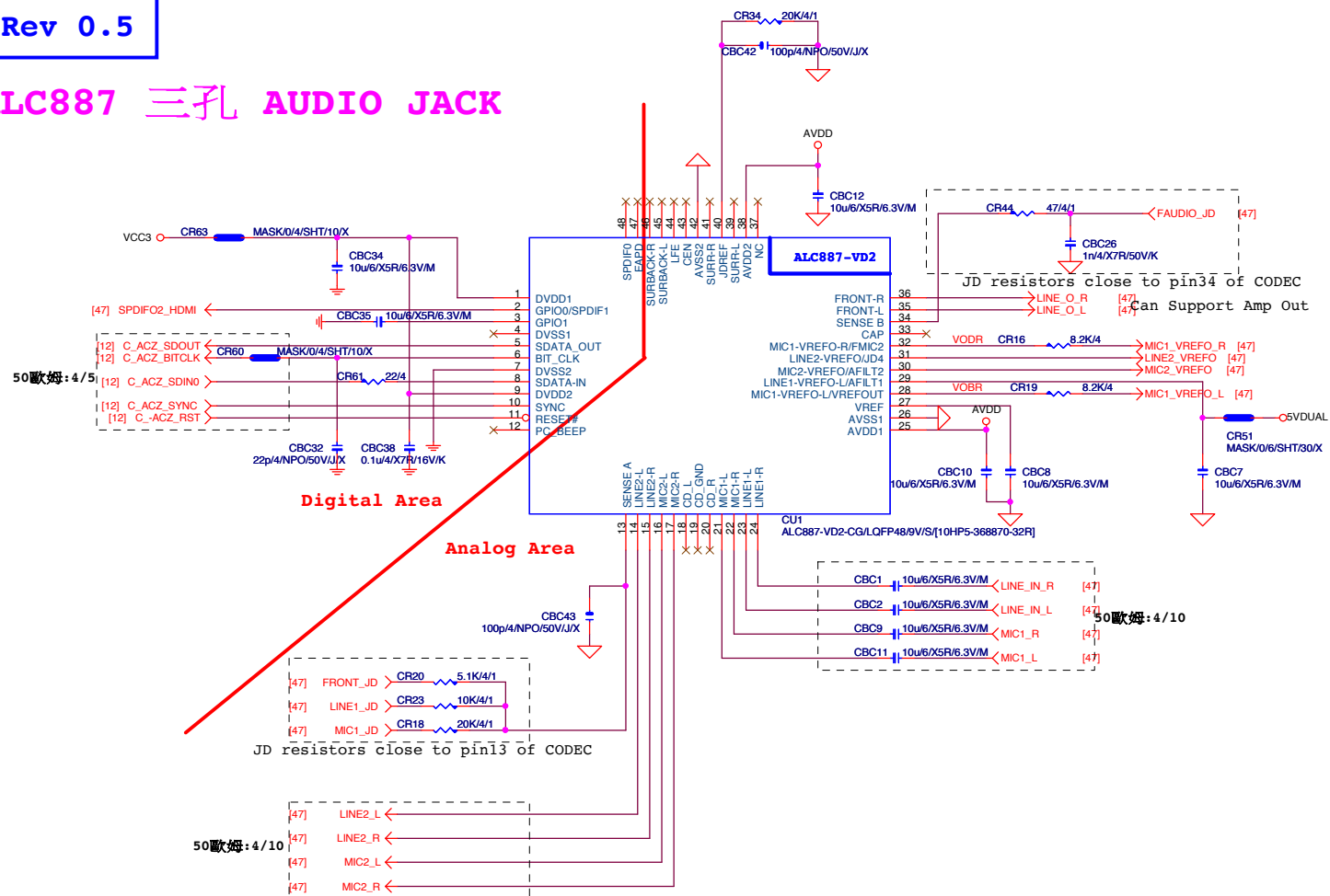
EMI SHORT PAD PS:視EMI需求



LAN POWER note: lan power連接及電流

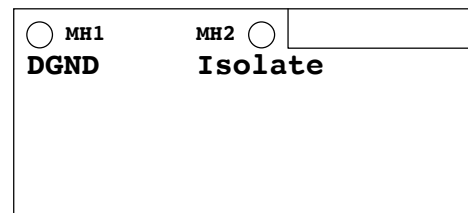


## ALC887 三孔 AUDIO JACK



**LAYOUT注意: 螺絲孔下GND方式**

1. MH1空間夠, 下DGND
2. MH2空間不夠, 改為Isolate



**LAYOUT注意: 要加GND切割線**



Rev 0.5

CR49 MASK/0/6/SHT/80/X → Close F\_AUDIO

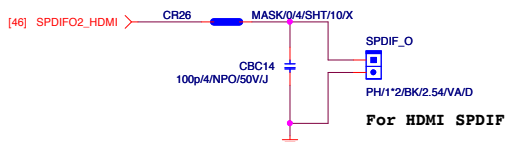
CR50 MASK/0/6/SHT/80/X → Close Codec  
MOA/TC1 0.1u/4/X7R/16V/K/X

CR21 2.2/6 → Audio jack <--> USB\_LAN

CR24 0.6/X → Under Audio jack

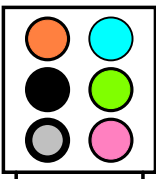
\*量産前,0ohm改short pad

### SPDIF\_OUT



### SPDIF\_IN

### AZALIA JACK

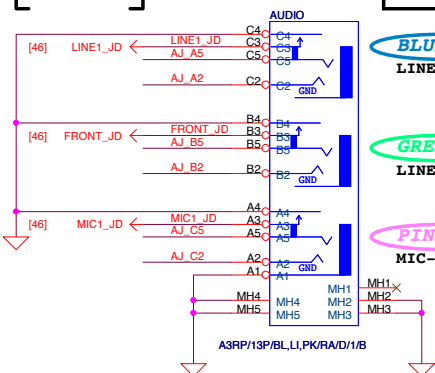


### AZALIA JACK

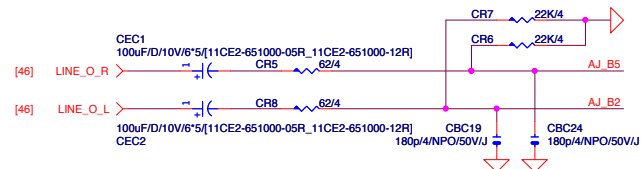
BLUE  
LINE-IN

GREEN  
LINE-OUT

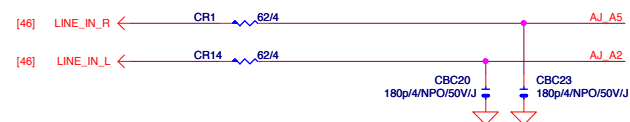
PINK  
MIC-IN



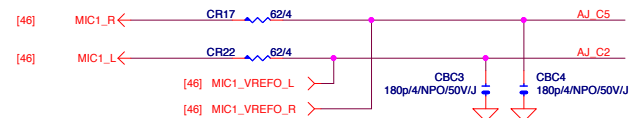
### LINE-OUT



### LINE-IN



### MIC-IN

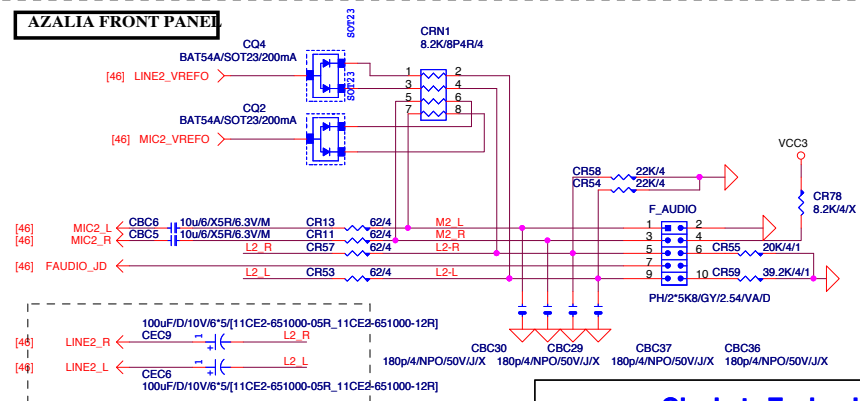


### SURROUND

### CEN/LFE

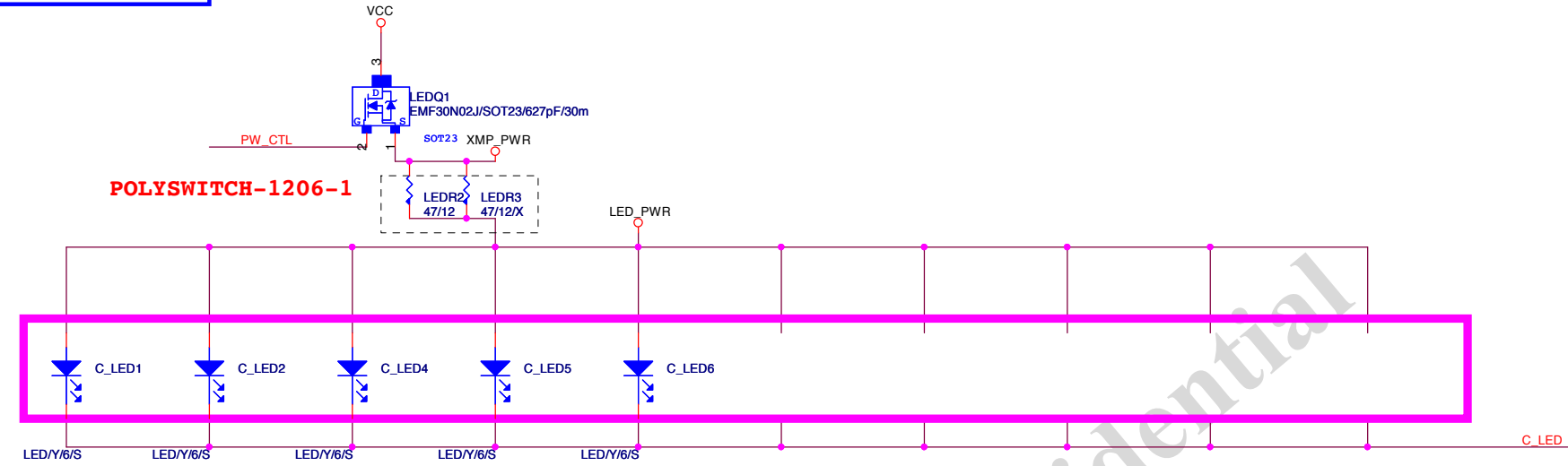
### SURR BACK

### AZALIA FRONT PANEL



Gigabyte Technology

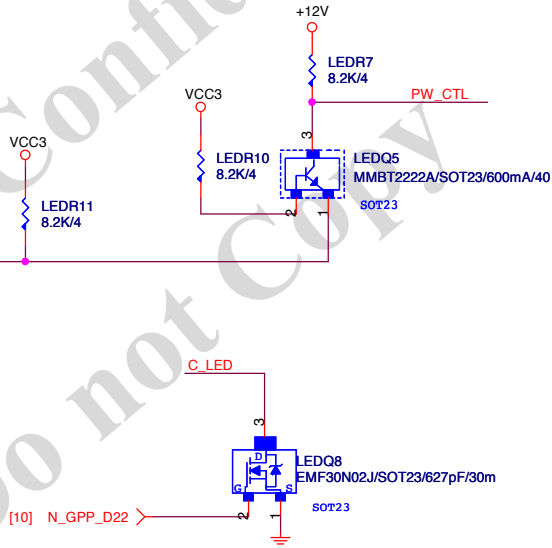
Title				Rev
AUDIO JACK				
Size	Document Number	GA-B250M-D3VX-SI		
Custom				
Date:	Thursday, December 08, 2016	Sheet	47 of 56	1.0



Ambient LED Control

	N_GPP_D22
Full Mode	H
OFF Mode	L

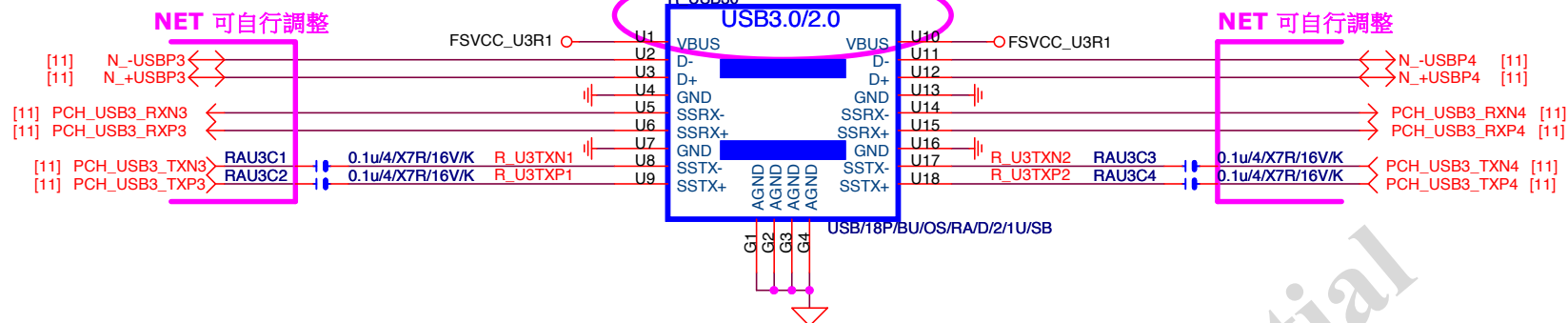
[10] N\_GPP\_D22  
ON/OFF



GIGABYTE™

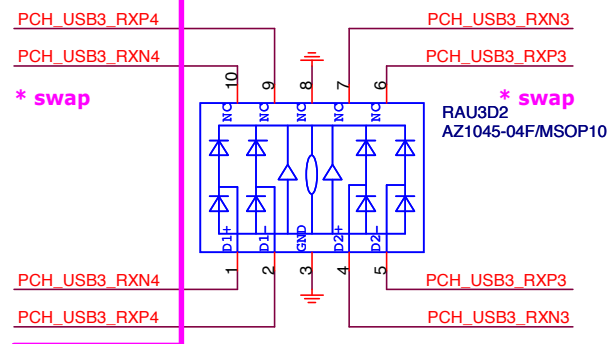
Title			Amient Single LED		
Size	Document Number		Rev		
Custom				1.0	
Date:	Thursday, December 08, 2016	Sheet	48	of	56



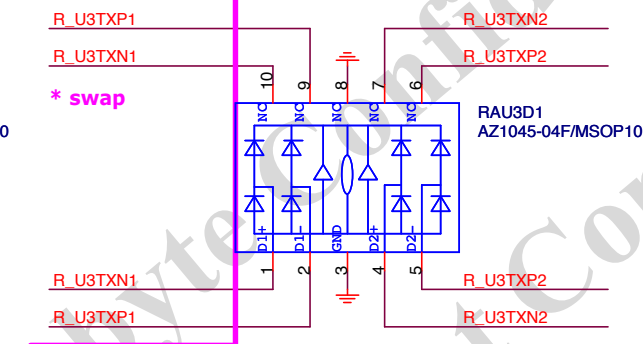


## ESD

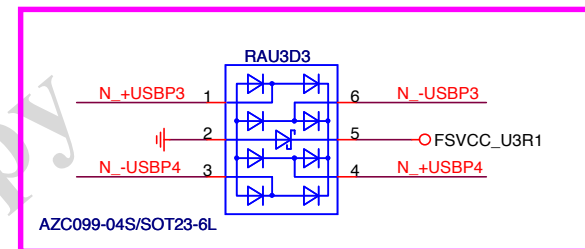
NET 可自行調整



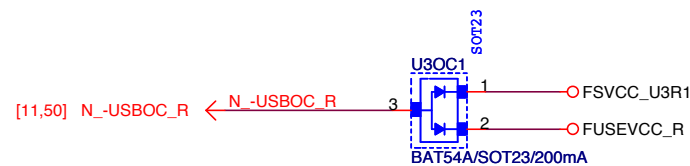
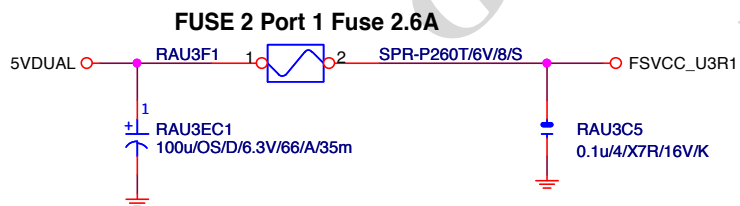
NET 可自行調整



NET 可自行調整

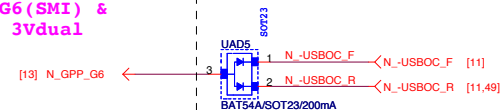
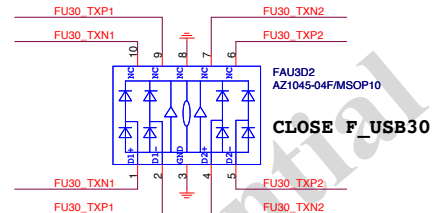


## FUSE



Gigabyte Technology

Title		R_USB30,USB_OC	
Size	Document Number	GA-B250M-D3VX-S	
Custom		Rev 1.0	
Date:	Thursday, December 08, 2016	Sheet	49 of 56

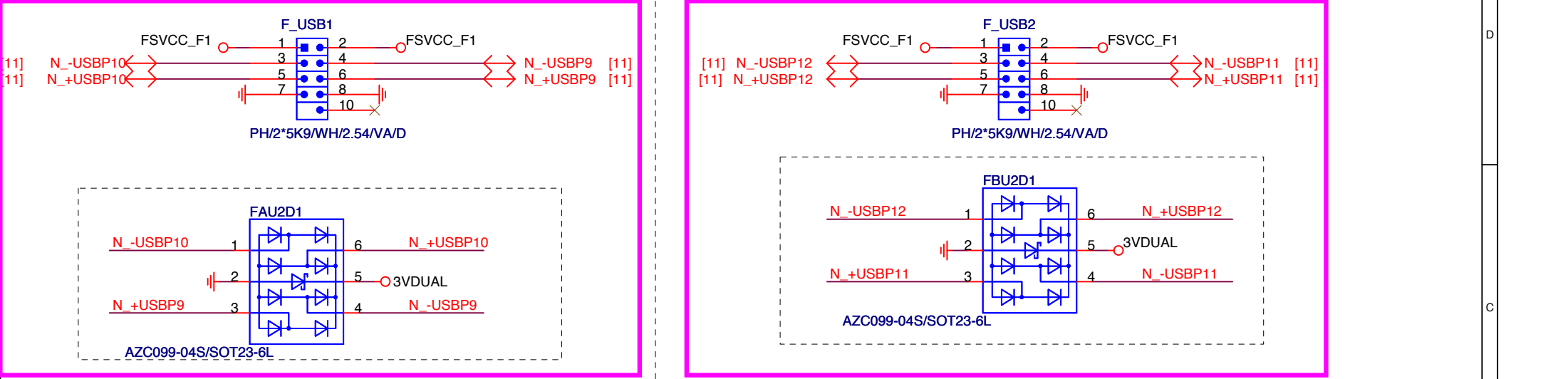


NET 可變

FUSB2X5-HS

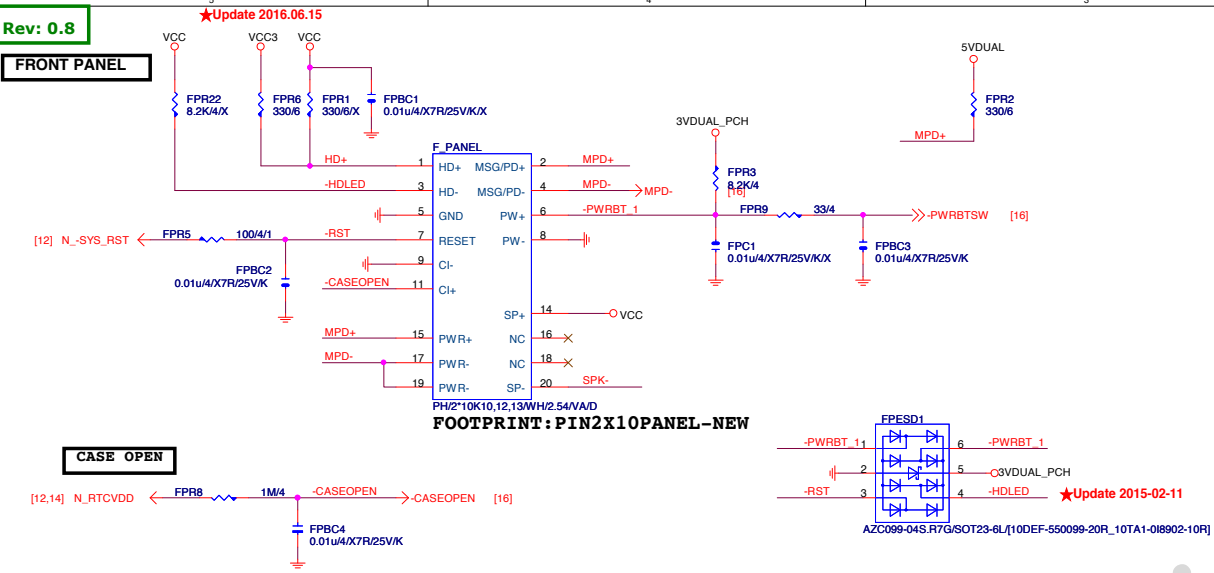
NET 可變

FUSB2X5-HS

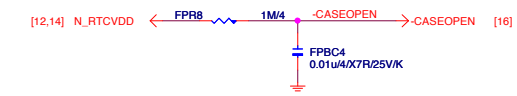


F\_USB 2.0 OC SIGNAL

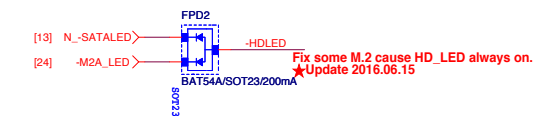
FRONT PANEL



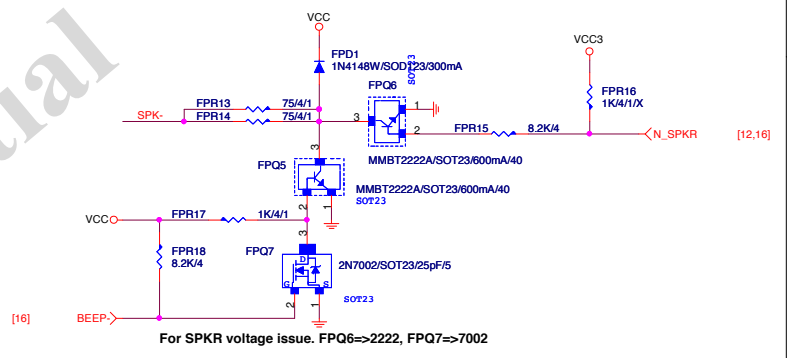
CASE OPEN



SATA/M.2 LED



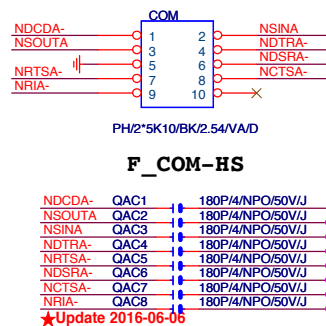
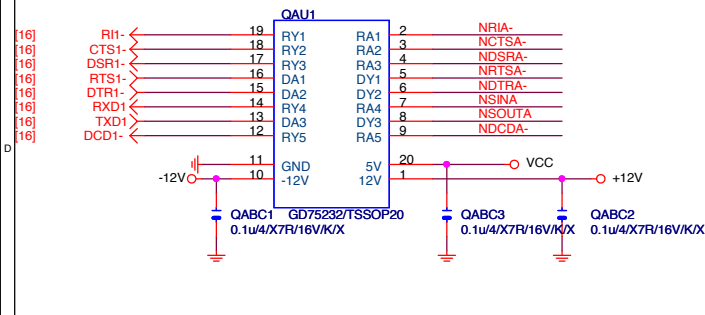
SPKR



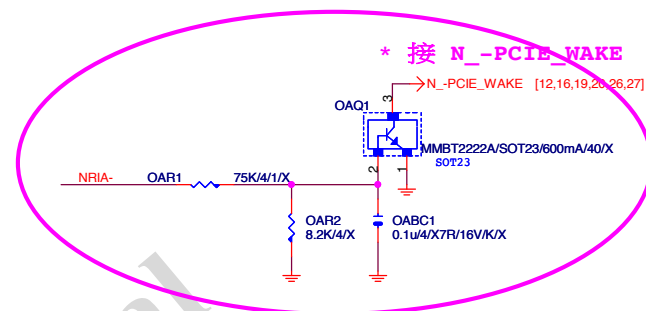
FRONT PANEL SHORT

Gigabyte Confidential  
Do not Copy

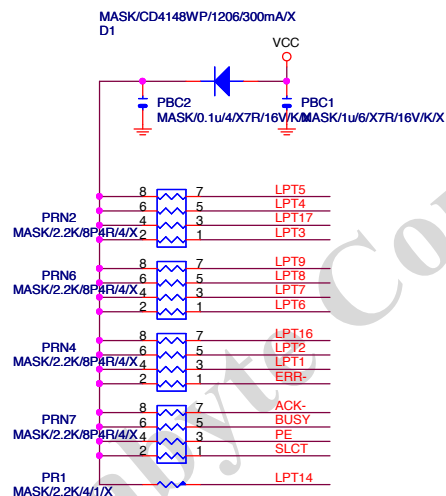
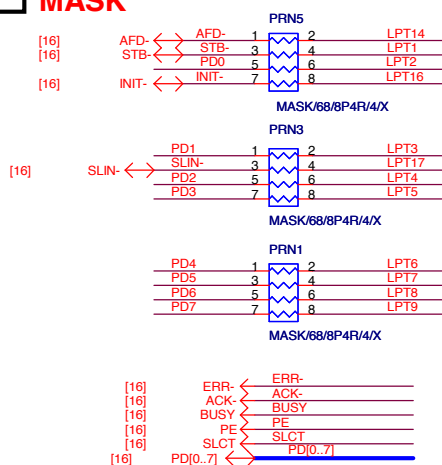
## COM PORT | Rev: 0.7



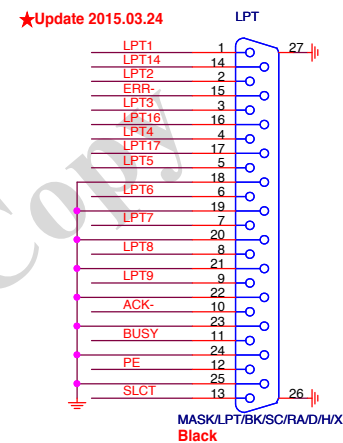
COM RI	N/A
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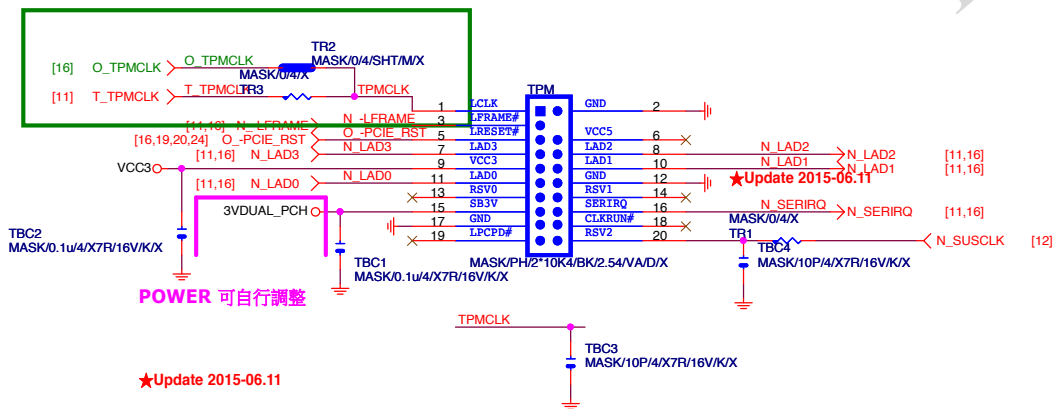
**LPT PORT MASK**



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  
OFFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



TPM CONNECT MASK

**Thunderbolt**

★Update 2015-12-29

**CLOSE SIO**EMIC1  
100p/4/NPO/50V/J/X

[12,16,33] N\_-SLP\_S3 ←

EMIC2  
100p/4/NPO/50V/J/X

[12,16,32,34] N\_-S4\_S5 ←

**CLOSE PCH**EMIC4  
100p/4/NPO/50V/J/X

[4,12] N\_CPUPWROK ←

**GIGABYTE™**

Title

**EM/ESD**Size  
A

Document Number

**GA-B250M-D3VX-SI**

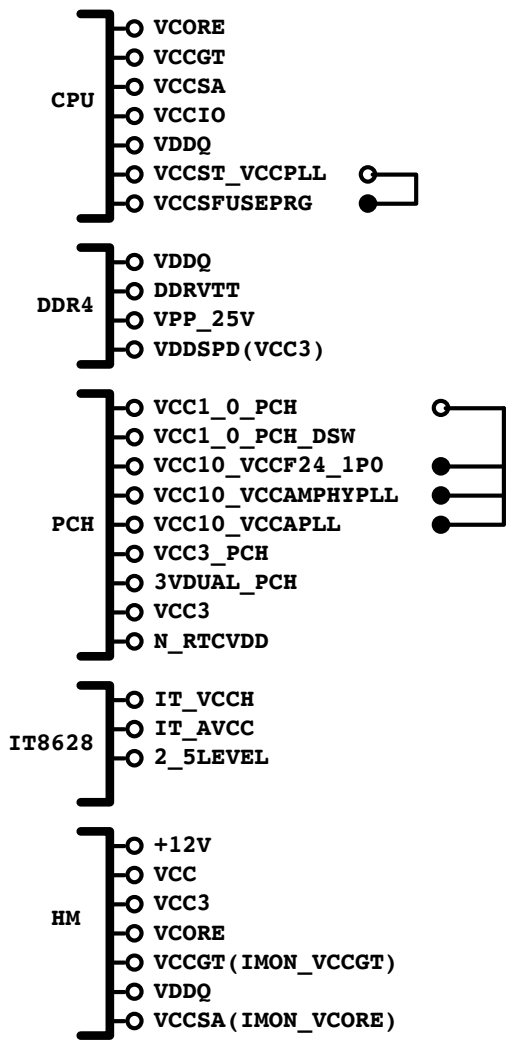
Rev

**1.0**

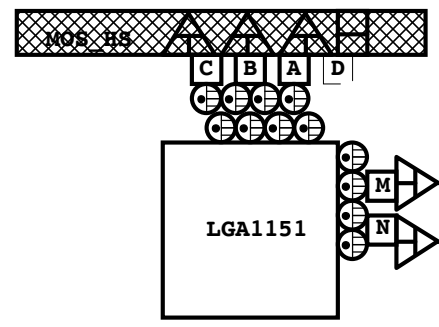
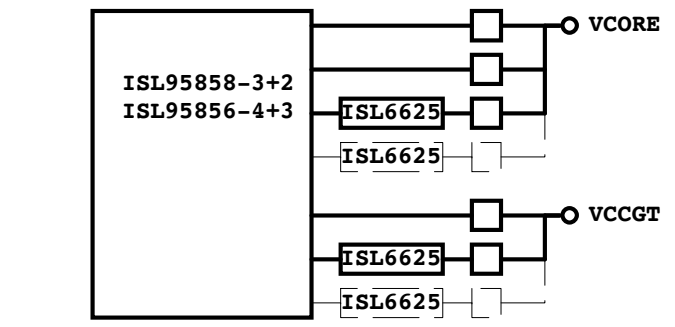
Date: Thursday, December 08, 2016

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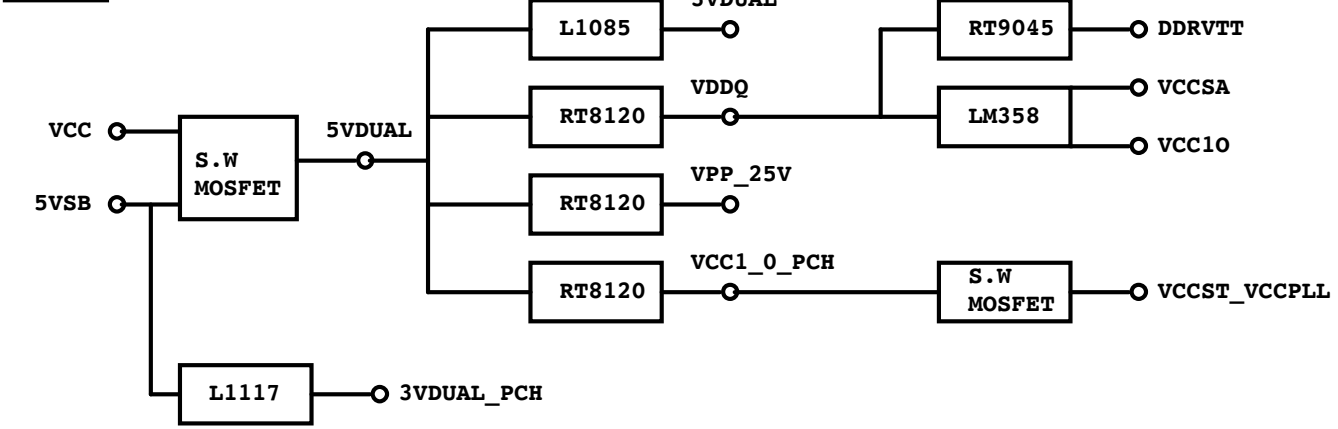
POWER BLOCK MAP



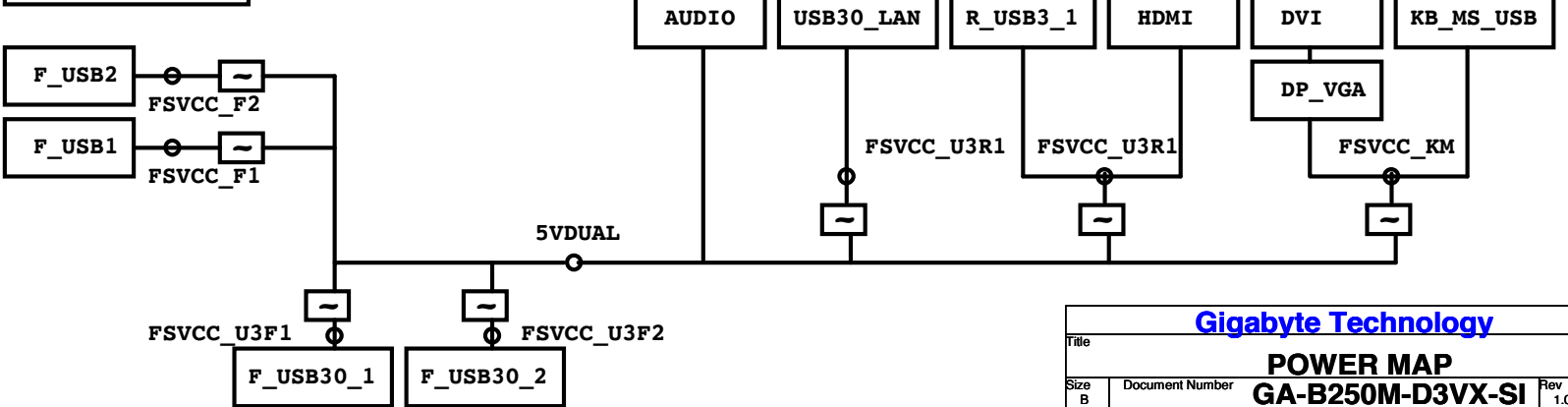
VCORE/VCCGT



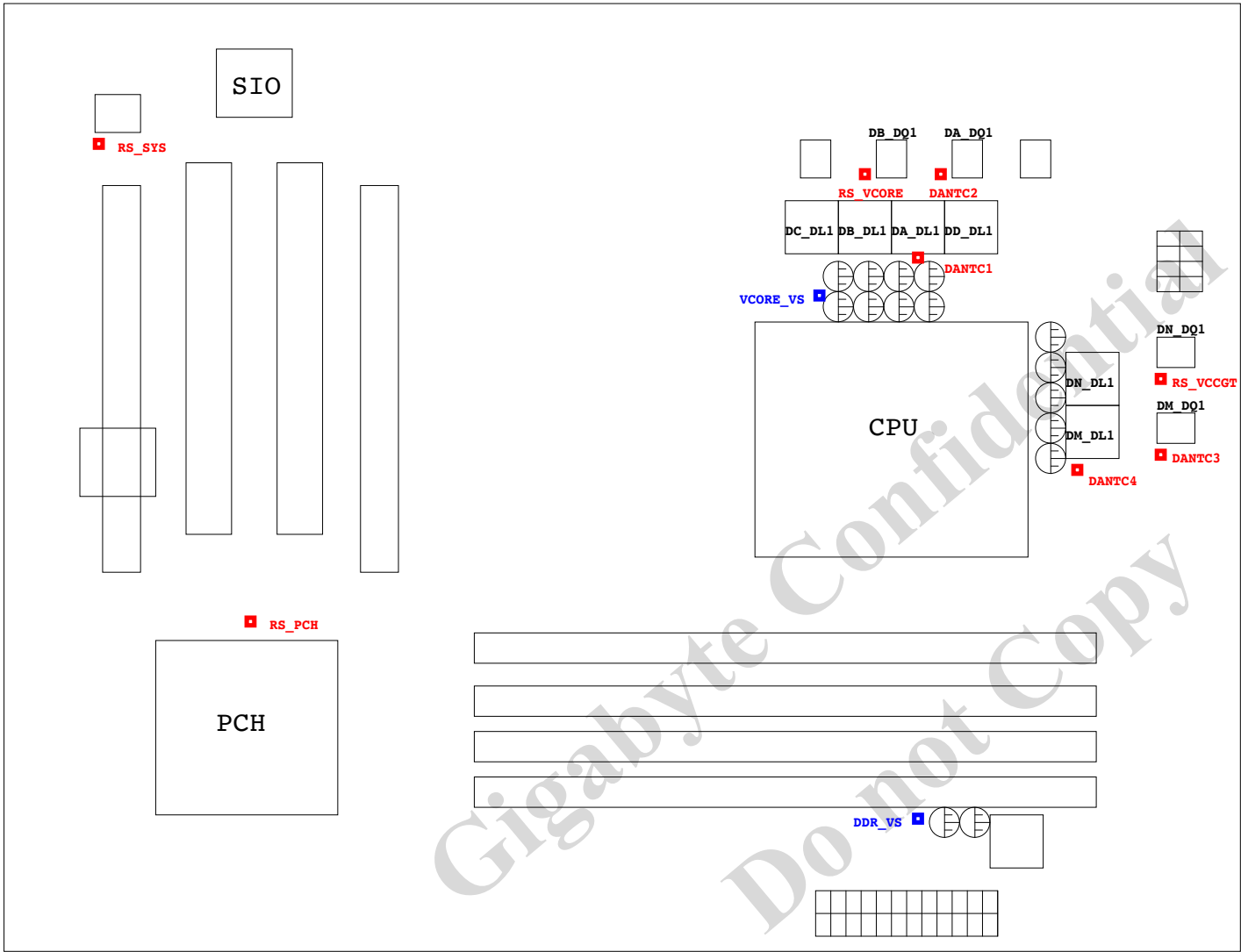
POWER



FUSE POWER F/R



Gigabyte Technology			
Title			
POWER MAP			
Size	Document Number	GA-B250M-D3VX-SI	Rev
B			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