Model Name: H310M DS2 2.0

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	SINGLE BIOS
18	FAN CTRL--SIO
19	HWM
20	PCI EXPRESS*16 SLOT
21	PCI EXPRESS*1 SLOT
22	SATA
23	ISL95858_856 PWM
24	ISL95858_856 MOS_VCORE
25	ISL95858_856 MOS_VCCGT
26	VCCSA_VCCIO_VCCPLL
27	RT8237_DDR_VDDQ

SHEET	TITLE
28	RT8068_VPP
29	RT8237_PCH_VCC1_0_PCH
30	DISCRETE POWER
31	ATX POWER , A_-PROCHOT
32	KB_MS_USB
33	RTD2168 - DP to VGA - IC
34	RTD2168 - DP to VGA - Conn
35	R_USB30
36	REALTEK - RTL8111G
37	USB20_LAN CONNECTOR-RTL8111G
38	Realtek ALC887
39	REAR AUDIO JACK
40	F_USB30
41	M.2X2
42	F_USB20
43	COM , LPT , TPM
44	F_PANEL
45	AUDIO LED
46	EMI/ESD
47	POWER MAP
48	TABLE LIST
49	NTC MAP
50	
51	

Gigabyte Technology

Title: **Cover Sheet**

Size: Custom | Document Number: **H310M DS2 2.0** | Rev: 1.0

Date: Thursday, June 14, 2018 | Sheet 1 of 49

Model Name: H310M DS2 2.0

rev:1.0

Component value change history

2018/06/08

Data	Change Item	Reason
2018/06/08	first release	9MH31MD22-00-10A

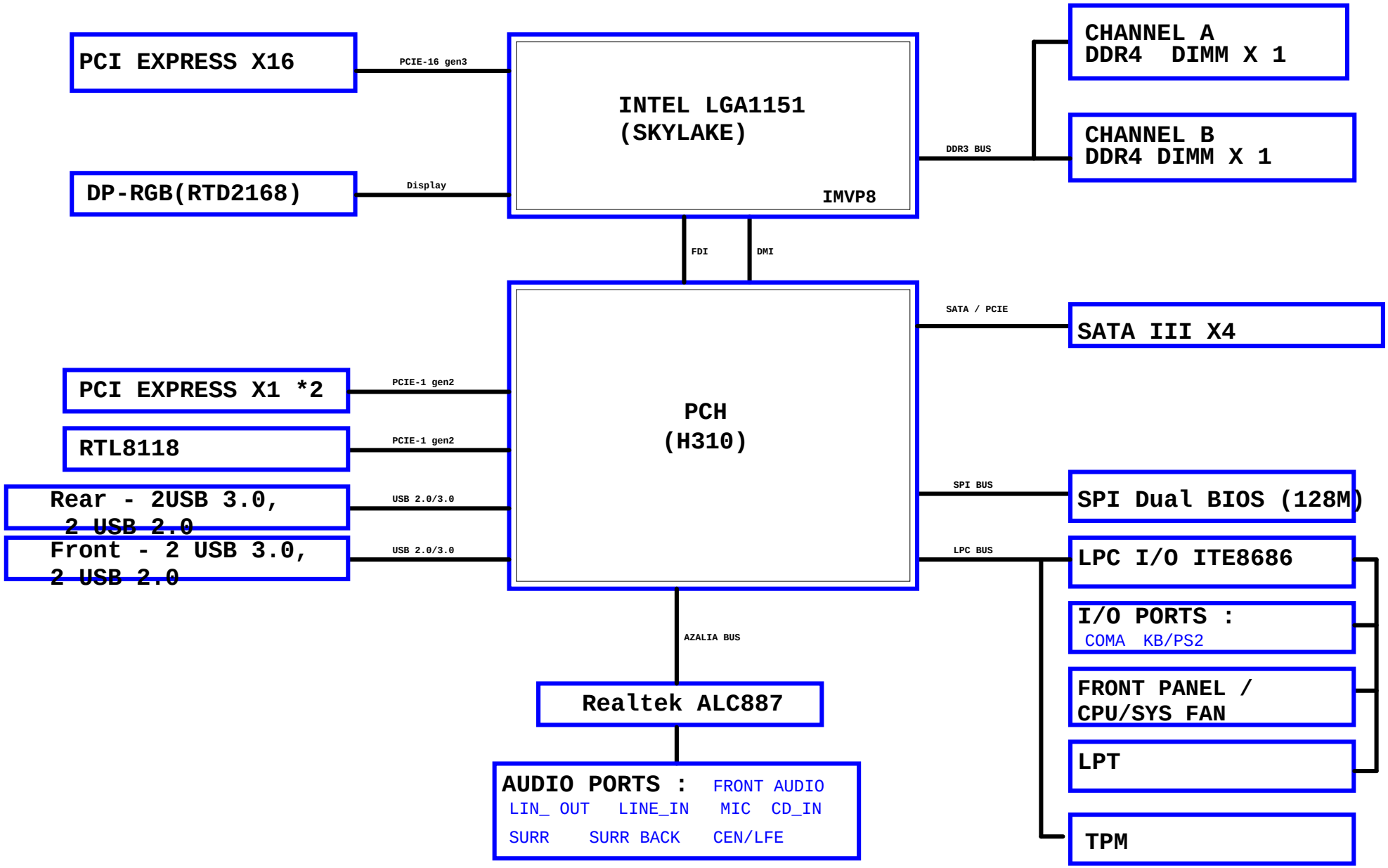
Circuit or PCB layout change

DATE	Change Item	Reason
2018/05/18	change to H310CM CHIPSET	9MH31MD22-00-10A

GIGABYTE™

Title			
BOM & PCB MODIFY HISTORY			
Size: Custom	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 2	of 49	

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018		Sheet 3 of 49	

CFL_R0.1

CFG[4]: 1=eDP enable / 0=eDP disable
CFG[7]: 1=PEG Train immediately following RESET
0=PEG Wait for BIOS

CFG[13]: 1=VCCSA Fixed Mode / 0=SVID Mode

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

TDO PULL HIGH 刪?

HDMI
DP-VGA
DVI

若有不上CODEC出貨的可能，請預留CLK and SDO對地電阻。

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

Title	CPU LGA1151-A
Size: Custom	Document Number: H310M DS2 2.0
Rev	1.0
Date:	Thursday, June 14, 2018
Sheet	4 of 49

Gigabyte Technology

CFL_R0.1

LGA1151A

SKT_H4

LGA1151

MDA0	AE38	DDR0_DQ[0]		AW18	M_DCLKA0	M_DCLKA0	8
MDA1	AE37	DDR0_DQ[1]		AW18	M_-DCLKA0	M_-DCLKA0	8
MDA2	AG38	DDR0_DQ[2]		AW17	M_DCLKA1	M_DCLKA1	8
MDA3	AG37	DDR0_DQ[3]		AY17	M_-DCLKA1	M_-DCLKA1	8
MDA4	AE39	DDR0_DQ[4]		AW16			
MDA5	AE40	DDR0_DQ[5]		AV16			
MDA6	AG39	DDR0_DQ[6]		AT16			
MDA7	AG40	DDR0_DQ[7]		AU16			
MDA8	AJ38	DDR0_DQ[8]					
MDA9	AJ37	DDR0_DQ[9]	DDR0_CKP[0]	AY24	CKEA0	CKEA0	8
MDA10	AL38	DDR0_DQ[10]	DDR0_CKN[0]	AW24	CKEA1	CKEA1	8
MDA11	AL37	DDR0_DQ[11]	DDR0_CKP[1]	AV24			
MDA12	AJ40	DDR0_DQ[12]	DDR0_CKN[1]	AV25			
MDA13	AJ39	DDR0_DQ[13]	DDR0_CKP[2]				
MDA14	AL39	DDR0_DQ[14]	DDR0_CKN[2]	AW12	M_-CSA0	M_-CSA0	8
MDA15	AL40	DDR0_DQ[15]	DDR0_CKP[3]	AU11	M_-CSA1	M_-CSA1	8
MDA16	AN38	DDR0_DQ[16]/DDR0_DQ[32]	DDR0_CKN[3]	AV13			
MDA17	AN40	DDR0_DQ[17]/DDR0_DQ[33]		AV10			
MDA18	AR38	DDR0_DQ[18]/DDR0_DQ[34]	DDR0_CKE[0]				
MDA19	AR37	DDR0_DQ[19]/DDR0_DQ[35]	DDR0_CKE[1]	AW11	MODT_A0		
MDA20	AN39	DDR0_DQ[20]/DDR0_DQ[36]	DDR0_CKE[2]	AU14	MODT_A1		
MDA21	AN37	DDR0_DQ[21]/DDR0_DQ[37]	DDR0_CKE[3]	AU12			
MDA22	AR39	DDR0_DQ[22]/DDR0_DQ[38]		AY10			
MDA23	AR40	DDR0_DQ[23]/DDR0_DQ[39]	DDR0_CS#[0]				
MDA24	AW37	DDR0_DQ[24]/DDR0_DQ[40]	DDR0_CS#[1]	AY13	SBAA0	SBAA0	8
MDA25	AU38	DDR0_DQ[25]/DDR0_DQ[41]	DDR0_CS#[2]	AV15	SBAA1	SBAA1	8
MDA26	AV35	DDR0_DQ[26]/DDR0_DQ[42]	DDR0_CS#[3]	AW23	BG_A0	BG_A0	8
MDA27	AW35	DDR0_DQ[27]/DDR0_DQ[43]					
MDA28	AU37	DDR0_DQ[28]/DDR0_DQ[44]	DDR0_ODT[0]	AW13	MAAA16		
MDA29	AV37	DDR0_DQ[29]/DDR0_DQ[45]	DDR0_ODT[1]	AV14	MAAA14		
MDA30	AT35	DDR0_DQ[30]/DDR0_DQ[46]	DDR0_ODT[2]	AY11	MAAA15		
MDA31	AU35	DDR0_DQ[31]/DDR0_DQ[47]	DDR0_ODT[3]				
MDA32	AY8	DDR0_DQ[32]/DDR1_DQ[0]		AW15	MAAA0		
MDA33	AW8	DDR0_DQ[33]/DDR1_DQ[1]		AU18	MAAA1		
MDA34	AV6	DDR0_DQ[34]/DDR1_DQ[2]		AU17	MAAA2		
MDA35	AU6	DDR0_DQ[35]/DDR1_DQ[3]		AV19	MAAA3		
MDA36	AU8	DDR0_DQ[36]/DDR1_DQ[4]		AT19	MAAA4		
MDA37	AV8	DDR0_DQ[37]/DDR1_DQ[5]		AU20	MAAA5		
MDA38	AW6	DDR0_DQ[38]/DDR1_DQ[6]		AV20	MAAA6		
MDA39	AY6	DDR0_DQ[39]/DDR1_DQ[7]		AU21	MAAA7		
MDA40	AY4	DDR0_DQ[40]/DDR1_DQ[8]		AT20	MAAA8		
MDA41	AV4	DDR0_DQ[41]/DDR1_DQ[9]		AT22	MAAA9		
MDA42	AT1	DDR0_DQ[42]/DDR1_DQ[10]		AY14	MAAA10		
MDA43	AT2	DDR0_DQ[43]/DDR1_DQ[11]		AU22	MAAA11		
MDA44	AV3	DDR0_DQ[44]/DDR1_DQ[12]		AV22	MAAA12		
MDA45	AW4	DDR0_DQ[45]/DDR1_DQ[13]		AV12	MAAA13		
MDA46	AT4	DDR0_DQ[46]/DDR1_DQ[14]		AV23	BG_A1	BG_A1	8
MDA47	AT3	DDR0_DQ[47]/DDR1_DQ[15]		AU24		M_-ACT_A	8
MDA48	AP2	DDR0_DQ[48]/DDR1_DQ[32]					
MDA49	AM4	DDR0_DQ[49]/DDR1_DQ[33]	DDR0_PAR	AY15		M_DDR_PARA	8
MDA50	AP3	DDR0_DQ[50]/DDR1_DQ[34]	DDR0_ALERT#	AT23		M_-ALERT_A	8
MDA51	AM3	DDR0_DQ[51]/DDR1_DQ[35]					
MDA52	AP4	DDR0_DQ[52]/DDR1_DQ[36]					
MDA53	AM2	DDR0_DQ[53]/DDR1_DQ[37]	DDR0_DQSN[0]	AF39	M_-DQSA0		
MDA54	AP1	DDR0_DQ[54]/DDR1_DQ[38]	DDR0_DQSN[1]	AK39	M_-DQSA1		
MDA55	AM1	DDR0_DQ[55]/DDR1_DQ[39]	DDR0_DQSN[2]/DDR0_DQSN[4]	AP39	M_-DQSA2		
MDA56	AK3	DDR0_DQ[56]/DDR1_DQ[40]	DDR0_DQSN[3]/DDR0_DQSN[5]	AU36	M_-DQSA3		
MDA57	AH1	DDR0_DQ[57]/DDR1_DQ[41]	DDR0_DQSN[4]/DDR1_DQSN[0]	AW7	M_-DQSA4		
MDA58	AK4	DDR0_DQ[58]/DDR1_DQ[42]	DDR0_DQSN[5]/DDR1_DQSN[1]	AU3	M_-DQSA5		
MDA59	AH2	DDR0_DQ[59]/DDR1_DQ[43]	DDR0_DQSN[6]/DDR1_DQSN[4]	AN3	M_-DQSA6		
MDA60	AH4	DDR0_DQ[60]/DDR1_DQ[44]	DDR0_DQSN[7]/DDR1_DQSN[5]	AJ3	M_-DQSA7		
MDA61	AK2	DDR0_DQ[61]/DDR1_DQ[45]					
MDA62	AH3	DDR0_DQ[62]/DDR1_DQ[46]	DDR0_DQSP[0]	AF38	M_DQSA0		
MDA63	AK1	DDR0_DQ[63]/DDR1_DQ[47]	DDR0_DQSP[1]	AK38	M_DQSA1		
			DDR0_DQSP[2]/DDR0_DQSP[4]	AP38	M_DQSA2		
AU33			DDR0_DQSP[3]/DDR0_DQSP[5]	AV36	M_DQSA3		
AT33	DDR0_ECC[0]		DDR0_DQSP[4]/DDR1_DQSP[0]	AV7	M_DQSA4		
AW33	DDR0_ECC[1]		DDR0_DQSP[5]/DDR1_DQSP[1]	AU2	M_DQSA5		
AV31	DDR0_ECC[2]		DDR0_DQSP[6]/DDR1_DQSP[4]	AN2	M_DQSA6		
AU31	DDR0_ECC[3]		DDR0_DQSP[7]/DDR1_DQSP[5]	AJ2	M_DQSA7		
AV33	DDR0_ECC[4]						
AW31	DDR0_ECC[5]						
AY31	DDR0_ECC[6]		DDR0_DQSP[8]	AV32			
	DDR0_ECC[7]		DDR0_DQSN[8]	AU32			

DDR CHANNEL A

1 OF12

LGA1151

CPU-SK/1151/S/GF

LGA1151B

SKT_H4

LGA1151

MDB0	AD34	DDR1_DQ[0]/DDR0_DQ[16]		AM20	M_DCLKB0	M_DCLKB0	9
MDB1	AD35	DDR1_DQ[1]/DDR0_DQ[17]		AM21	M_-DCLKB0	M_-DCLKB0	9
MDB2	AG35	DDR1_DQ[2]/DDR0_DQ[18]		AP22	M_DCLKB1	M_DCLKB1	9
MDB3	AH35	DDR1_DQ[3]/DDR0_DQ[19]		AP21	M_-DCLKB1	M_-DCLKB1	9
MDB4	AE35	DDR1_DQ[4]/DDR0_DQ[20]		AN20			
MDB5	AE34	DDR1_DQ[5]/DDR0_DQ[21]		AN21			
MDB6	AG34	DDR1_DQ[6]/DDR0_DQ[22]		AP19			
MDB7	AH34	DDR1_DQ[7]/DDR0_DQ[23]		AP20			
MDB8	AK35	DDR1_DQ[8]/DDR0_DQ[24]					
MDB9	AL35	DDR1_DQ[9]/DDR0_DQ[25]	DDR1_CKP[0]	AY29	CKEB0	CKEB0	9
MDB10	AK32	DDR1_DQ[10]/DDR0_DQ[26]	DDR1_CKN[0]	AV29	CKEB1	CKEB1	9
MDB11	AL32	DDR1_DQ[11]/DDR0_DQ[27]	DDR1_CKP[1]	AW29			
MDB12	AK34	DDR1_DQ[12]/DDR0_DQ[28]	DDR1_CKN[1]	AU29			
MDB13	AL34	DDR1_DQ[13]/DDR0_DQ[29]	DDR1_CKP[2]				
MDB14	AK31	DDR1_DQ[14]/DDR0_DQ[30]	DDR1_CKN[2]	AP17	M_-CSB0	M_-CSB0	9
MDB15	AL31	DDR1_DQ[15]/DDR0_DQ[31]	DDR1_CKP[3]	AN15	M_-CSB1	M_-CSB1	9
MDB16	AP35	DDR1_DQ[16]/DDR0_DQ[48]	DDR1_CKN[3]	AN17			
MDB17	AN35	DDR1_DQ[17]/DDR0_DQ[49]		AM15			
MDB18	AN32	DDR1_DQ[18]/DDR0_DQ[50]	DDR1_CKE[0]				
MDB19	AP32	DDR1_DQ[19]/DDR0_DQ[51]	DDR1_CKE[1]	AM16	MODT_B0		
MDB20	AN34	DDR1_DQ[20]/DDR0_DQ[52]	DDR1_CKE[2]	AL16	MODT_B1		
MDB21	AP34	DDR1_DQ[21]/DDR0_DQ[53]	DDR1_CKE[3]	AP15			
MDB22	AN31	DDR1_DQ[22]/DDR0_DQ[54]		AL15			
MDB23	AP31	DDR1_DQ[23]/DDR0_DQ[55]	DDR1_CS#[0]				
MDB24	AL29	DDR1_DQ[24]/DDR0_DQ[56]	DDR1_CS#[1]	AN18	MAAB16		
MDB25	AM29	DDR1_DQ[25]/DDR0_DQ[57]	DDR1_CS#[2]	AL17	MAAB14		
MDB26	AP29	DDR1_DQ[26]/DDR0_DQ[58]	DDR1_CS#[3]	AP16	MAAB15		
MDB27	AR29	DDR1_DQ[27]/DDR0_DQ[59]					
MDB28	AM28	DDR1_DQ[28]/DDR0_DQ[60]	DDR1_ODT[0]	AL18	SBAB0	SBAB0	9
MDB29	AL28	DDR1_DQ[29]/DDR0_DQ[61]	DDR1_ODT[1]	AM18	SBAB1	SBAB1	9
MDB30	AR28	DDR1_DQ[30]/DDR0_DQ[62]	DDR1_ODT[2]	AW28	BG_B0	BG_B0	9
MDB31	AP28	DDR1_DQ[31]/DDR0_DQ[63]	DDR1_ODT[3]				
MDB32	AR12	DDR1_DQ[32]/DDR1_DQ[16]		AL19	MAAB0		
MDB33	AP12	DDR1_DQ[33]/DDR1_DQ[17]		AL22	MAAB1		
MDB34	AM13	DDR1_DQ[34]/DDR1_DQ[18]		AM22	MAAB2		
MDB35	AL13	DDR1_DQ[35]/DDR1_DQ[19]		AM23	MAAB3		
MDB36	AR13	DDR1_DQ[36]/DDR1_DQ[20]		AP23	MAAB4		
MDB37	AP13	DDR1_DQ[37]/DDR1_DQ[21]		AL23	MAAB5		
MDB38	AM12	DDR1_DQ[38]/DDR1_DQ[22]		AW26	MAAB6		
MDB39	AL12	DDR1_DQ[39]/DDR1_DQ[23]		AY26	MAAB7		
MDB40	AP10	DDR1_DQ[40]/DDR1_DQ[24]		AU26	MAAB8		
MDB41	AR10	DDR1_DQ[41]/DDR1_DQ[25]		AW27	MAAB9		
MDB42	AR7	DDR1_DQ[42]/DDR1_DQ[26]		AP18	MAAB10		
MDB43	AP7	DDR1_DQ[43]/DDR1_DQ[27]		AU27	MAAB11		
MDB44	AR9	DDR1_DQ[44]/DDR1_DQ[28]		AV27	MAAB12		
MDB45	AP9	DDR1_DQ[45]/DDR1_DQ[29]		AR15	MAAB13		
MDB46	AR6	DDR1_DQ[46]/DDR1_DQ[30]		AY28	BG_B1	BG_B1	9
MDB47	AP6	DDR1_DQ[47]/DDR1_DQ[31]		AU28		M_-ACT_B	9
MDB48	AM10	DDR1_DQ[48]					
MDB49	AL10	DDR1_DQ[49]	DDR1_PAR	AL20		M_DDR_PARB	9
MDB50	AM7	DDR1_DQ[50]	DDR1_ALERT#	AY25		M_-ALERT_B	9
MDB51	AL7	DDR1_DQ[51]					
MDB52	AM9	DDR1_DQ[52]					
MDB53	AL9	DDR1_DQ[53]	DDR1_DQSN[0]/DDR0_DQSN[2]	AF34	M_-DQSB0		
MDB54	AM6	DDR1_DQ[54]	DDR1_DQSN[1]/DDR0_DQSN[3]	AK33	M_-DQSB1		
MDB55	AL6	DDR1_DQ[55]	DDR1_DQSN[2]/DDR0_DQSN[6]	AN33	M_-DQSB2		
MDB56	AJ6	DDR1_DQ[56]	DDR1_DQSN[3]/DDR0_DQSN[7]	AN29	M_-DQSB3		
MDB57	AJ7	DDR1_DQ[57]	DDR1_DQSN[4]/DDR1_DQSN[2]	AN13	M_-DQSB4		
MDB58	AF6	DDR1_DQ[58]	DDR1_DQSN[5]/DDR1_DQSN[3]	AR8	M_-DQSB5		
MDB59	AF7	DDR1_DQ[59]	DDR1_DQSN[6]	AM8	M_-DQSB6		
MDB60	AH7	DDR1_DQ[60]	DDR1_DQSN[7]	AG6	M_-DQSB7		
MDB61	AH6	DDR1_DQ[61]					
MDB62	AF7	DDR1_DQ[62]	DDR1_DQSP[0]/DDR0_DQSP[2]	AF35	M_DQSB0		
MDB63	AF6	DDR1_DQ[63]	DDR1_DQSP[1]/DDR0_DQSP[3]	AL33	M_DQSB1		
			DDR1_DQSP[2]/DDR0_DQSP[6]	AP33	M_DQSB2		
AR25			DDR1_DQSP[3]/DDR0_DQSP[7]	AN28	M_DQSB3		
AR26	DDR1_ECC[0]		DDR1_DQSP[4]/DDR1_DQSP[2]	AN12	M_DQSB4		
AM26	DDR1_ECC[1]		DDR1_DQSP[5]/DDR1_DQSP[3]	AP8	M_DQSB5		
AM25	DDR1_ECC[2]		DDR1_DQSP[6]	AL8	M_DQSB6		
AP26	DDR1_ECC[3]		DDR1_DQSP[7]	AG7	M_DQSB7		
AP25	DDR1_ECC[4]						
AL25	DDR1_ECC[5]			AN25			
AL26	DDR1_ECC[6]		DDR1_DQSP[8]	AN26			
	DDR1_ECC[7]		DDR1_DQSN[8]				

DDR CHANNEL B

2 OF 12

CPU-SK/1151/S/GF

			DDR_VREF_CA	AB40	VREF_CAB	VREF_CAB	8
			DDR0_VREF_DQ	AC40			
			DDR1_VREF_DQ	AC39	VREF_DQB	VREF_DQB	9

8 MODT_A[0..1] ↔ MODT_A[0..1]

9 MODT_B[0..1] ↔ MODT_B[0..1]

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]

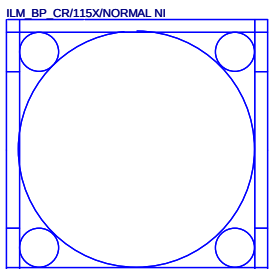
8 MAAA[0..16] ↔ MAAA[0..16]

9 MAAB[0..16] ↔ MAAB[0..16]

9 M_DQSB[0..7] ↔ M_DQSB[0..7]

9 M_-DQSB[0..7] ↔ M_-DQSB[0..7]

ILM_BP_CR/115X/NORMAL NI



Need check the new CPU ME

CPU-SK/1151/S/GF

Gigabyte Technology		
Title: CPU LGA1151-B		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 5 of 49	

CFL_R0.1

VCCSA

WBC57
22u/6/X5R/6.3V/M

VCCIO

WBC69
22u/6/X5R/6.3V/M

CPU POWER

VCCST_VCCPLL
VCCSFUSEPRG

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

VCCGT_SENSE
VSSGT_SENSE

F39 VCCGT_SENSE 23
F38 VSSGT_SENSE 23

10 OF 12

CPU-SK/1151/S/GF

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

CPU POWER

VCCST_VCCPLL
VCCSFUSEPRG
VCCST_VCCPLL

V5 VCCST
V6 VCCFUSEPRG
V4 VCCSFR

VDDQ

VDDQ_AT18 AT21 AU13 AU15 AU19 AU23 AV11 AV17 AV21 AW10 AW14 AW25 AY12 AY16 AY18 AY23

VCCPLL_OC — AJ9 VCCPLL_S

WR86
MASK/0/4/SHT/20/X

VDDQ

VCCSA_SENSE AD5
VCCIO_SENSE AF4
VSS_SAIO_SENSE AE4

11 OF 12

CPU-SK/1151/S/GF

LGA1151L SKT_H4
LGA1151

PEG_VIEW[0] J8
PEG_VIEW[1] J7
PEG_VIEW[2] L8
PEG_VIEW[3] K8
DDR_VIEW[0] AV1
DDR_VIEW[1] AW2
EXTBGREF H8
FIVR_PROBE_ANA[0] K10
FIVR_PROBE_ANA[1] L10
VCCCOREG0 J17
VCCCOREG1 B39
VCCCOREG3 C40
VCCCOREG4 J19
CPU_EDM[0] G8
CPU_EDM[1] AY3
CPU_TRIGGERIN D1
CPUTRIGGEROUT B3
HVM_CLK_P L12
HVM_CLK_N K12

RSVD_AC37 AC37
RSVD_AB35 AB35
RSVD_AB37 AB37
RSVD_AB38 AB38
RSVD_AJ22 AJ22
RSVD_D15 D15
RSVD_K11 K11

THERMDA1 J15 WTP2
THERMDC1 J14 WTP3
THERMDA2 AU9 WTP4
THERMDC2 AU10 WTP5

LGC_SPARE[0] J13
LGC_SPARE[1] K13
LGC_SPARE[2] J11

WR89 560/4/1

13 N_PCH_CPU_TI
13 A_CPU_PCH_TO
WR88 33/4 A_CPU_PCH_TO_R

12 OF 12

CPU-SK/1151/S/GF

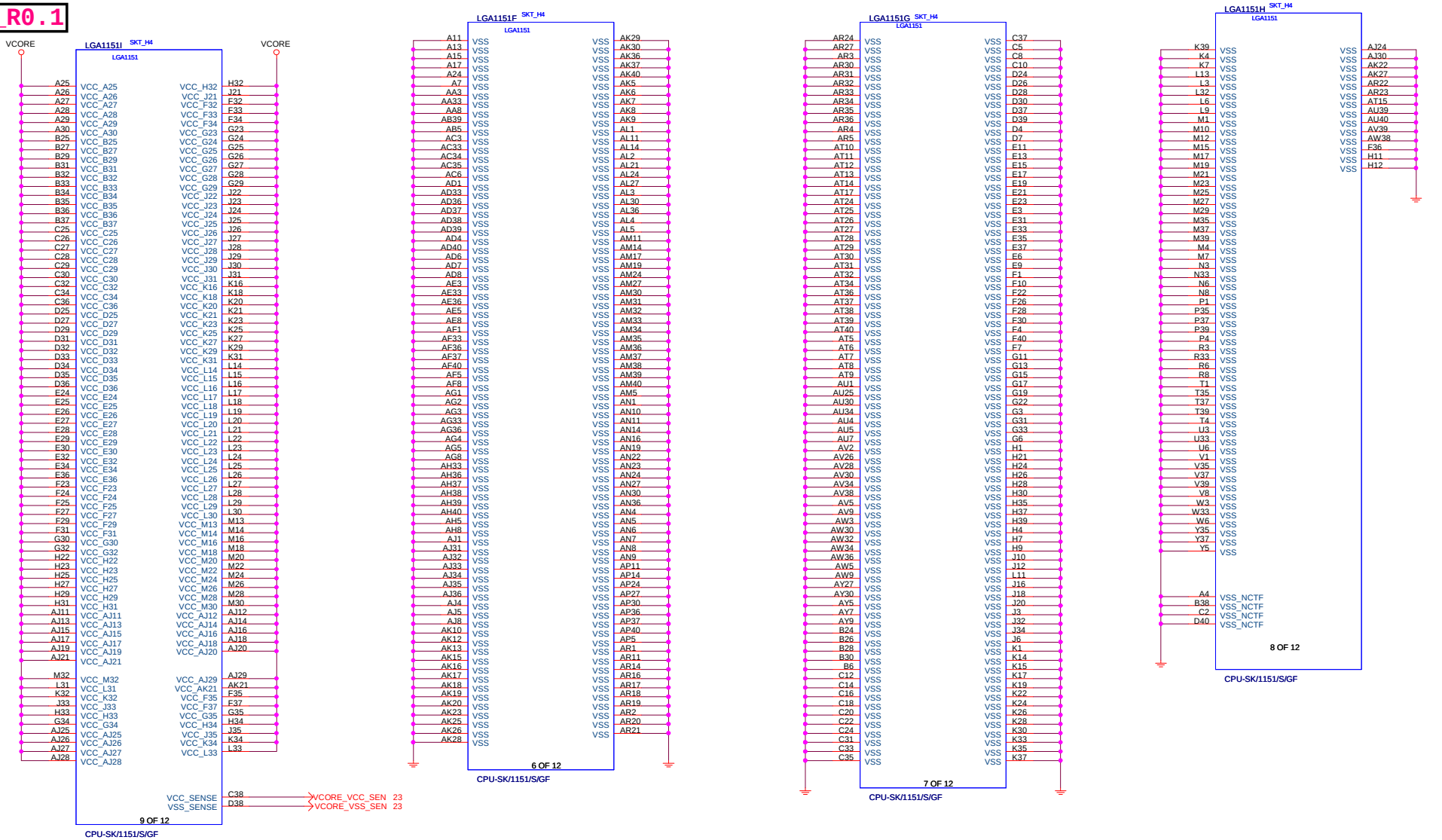
Gigabyte Technology

Title: CPU LGA1151-C

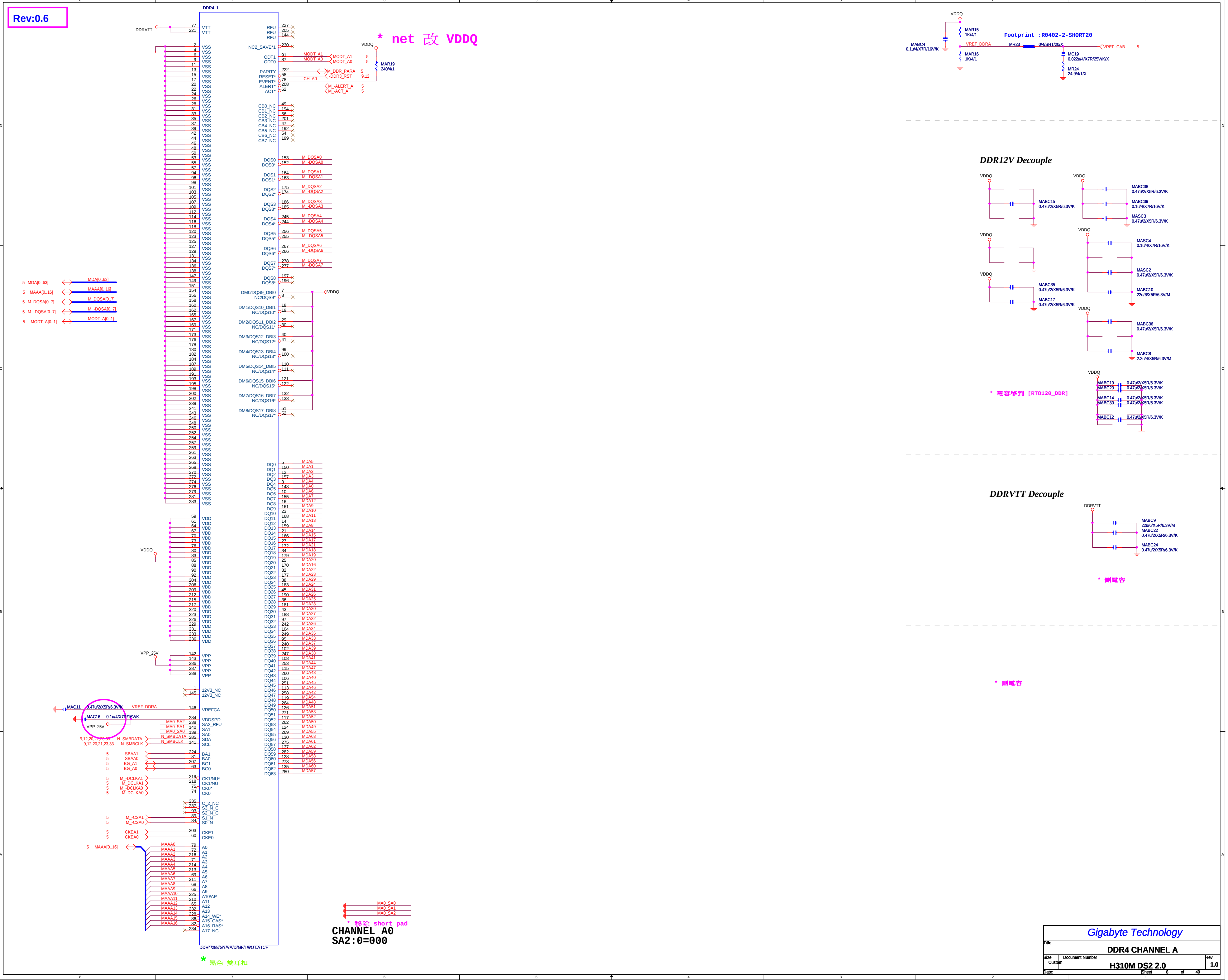
Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: Thursday, June 14, 2018 | Sheet 6 of 49

CFL_R0.1

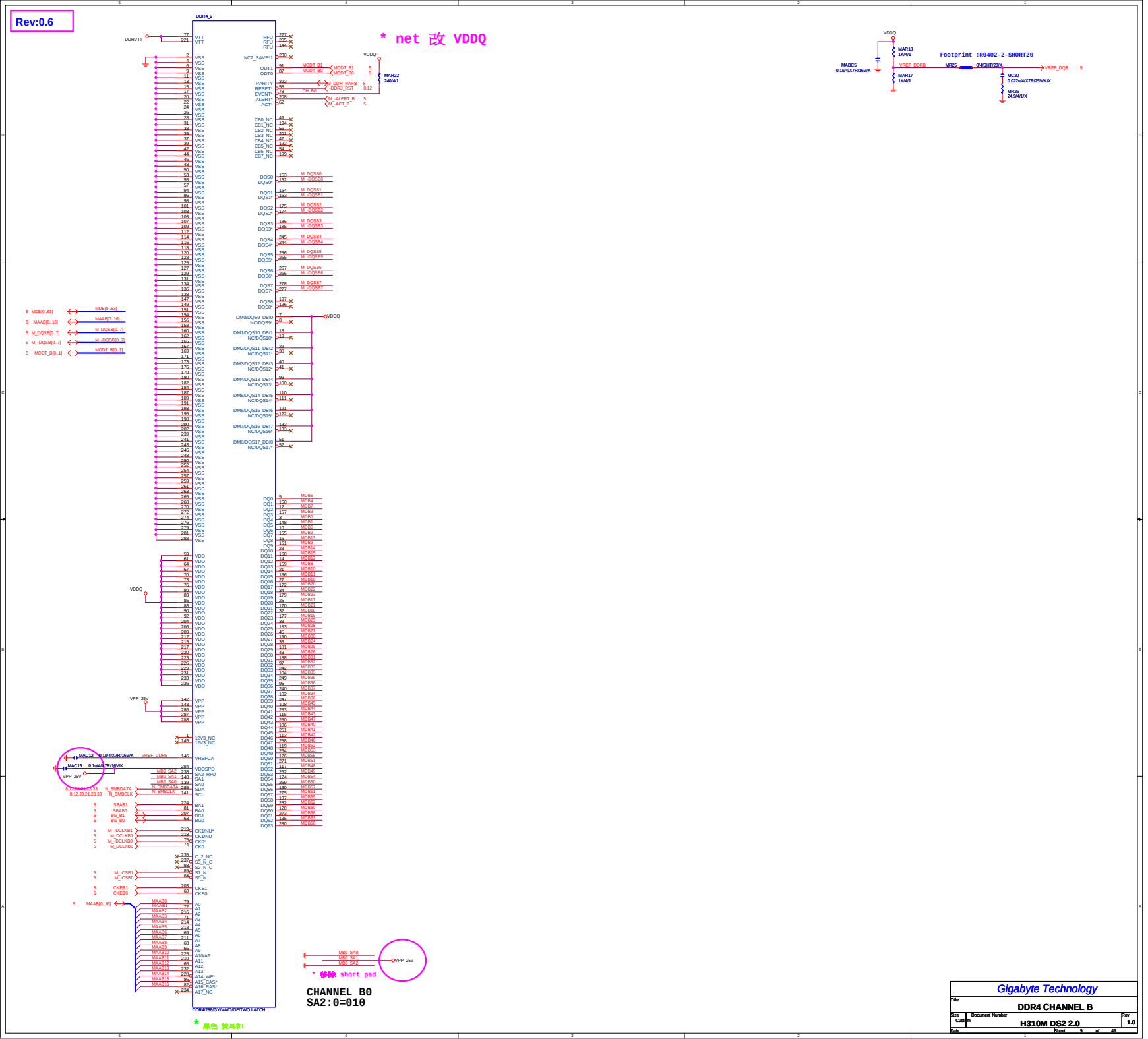


Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 7 of 49	



Rev:0.6
DDR4_1
* net 改 VDDQ
Footprint :R0402-2-SHORT20
DDR12V Decouple
* 電容移到 [RT8120_DDR]
DDRVTT Decouple
* 删電容
* 删電容
* 移除 short pad
CHANNEL A0
SA2:0=000
DDR4/288/GY/VA/D/GF/TWO LATCH
* 黑色 雙耳扣
Gigabyte Technology
Title
DDR4 CHANNEL A
Size Custom
Document Number
H310M DS2 2.0
Rev 1.0
Sheet 8 of 49

Rev:0.6

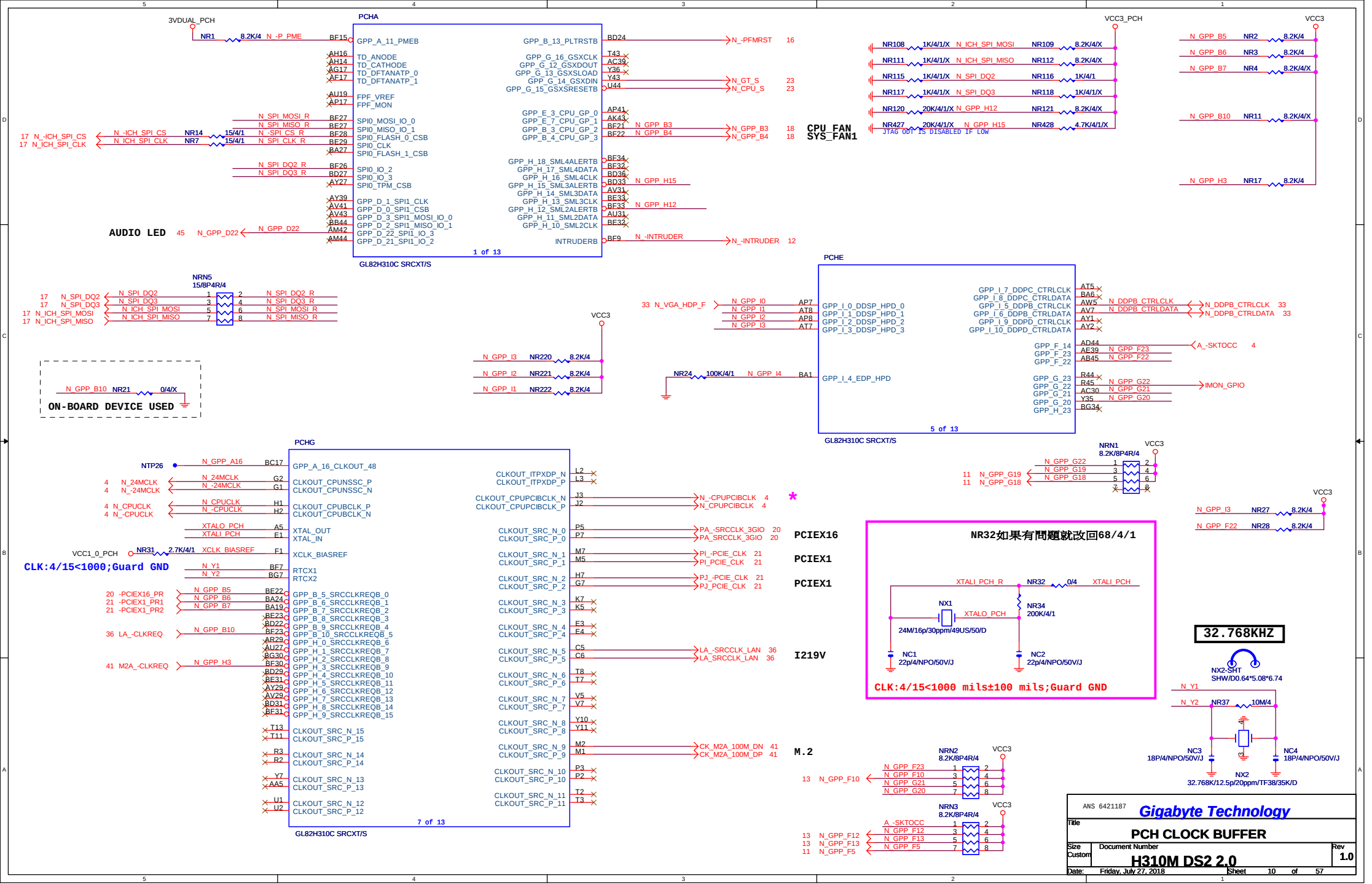


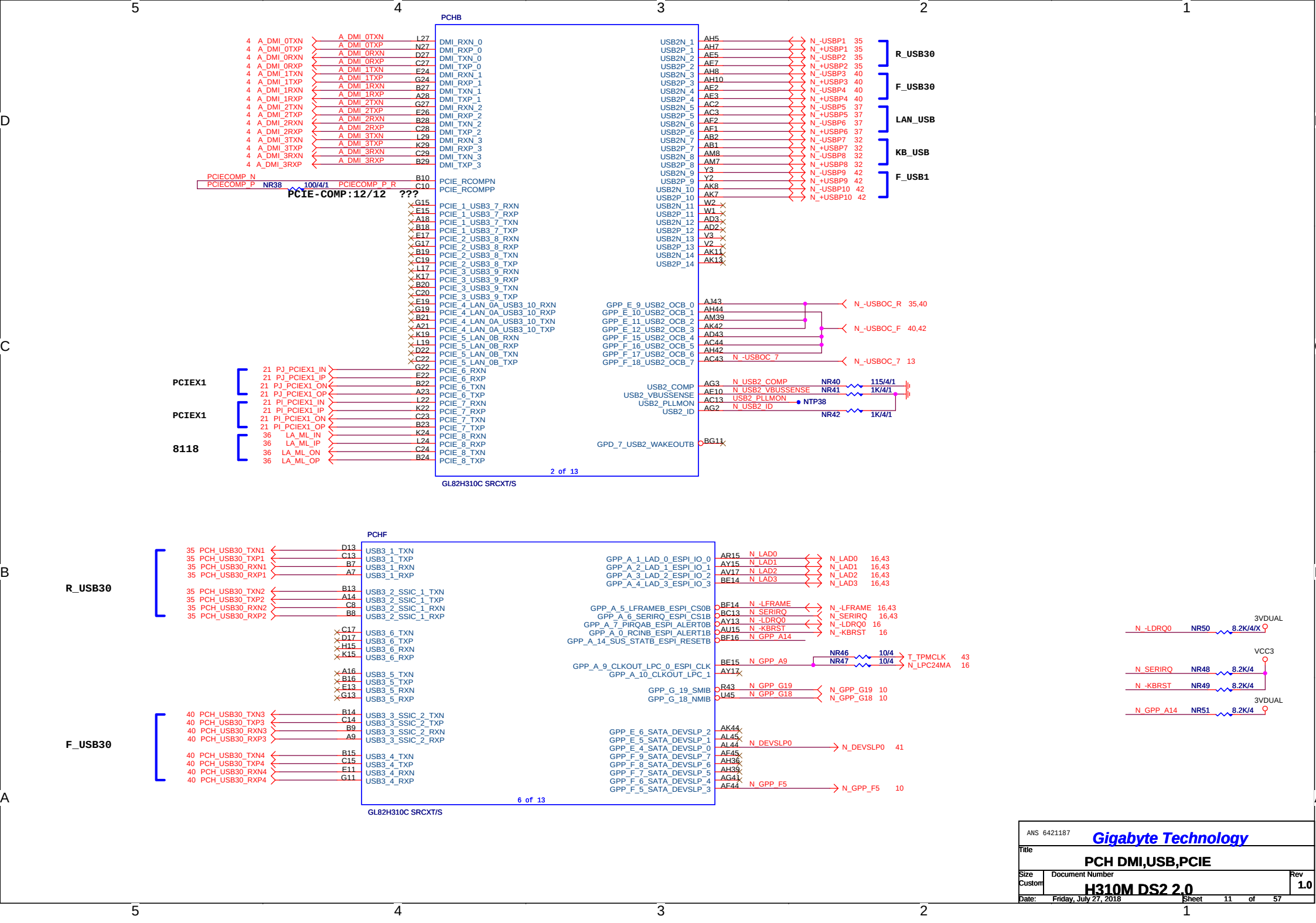
Gigabyte Technology

Title: DDR4 CHANNEL B

Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: | Sheet 9 of 49


PCHA
GL82H310C SRCXT/S
1 of 13
PCHE
5 of 13
PCHG
7 of 13
3VDUAL_PCH
VCC3_PCH
VCC3
VCC1_0_PCH
AUDIO LED
CPU_FAN
SYS_FAN1
ON-BOARD DEVICE USED
CLK:4/15<1000;Guard GND
PCIEX16
PCIEX1
PCIEX1
I219V
M.2
NR32如果有問題就改回68/4/1
CLK:4/15<1000 mils±100 mils;Guard GND
32.768KHZ
NX2-SHT
SHW/D0.64*5.08*6.74
NX2
32.768K/12.5p/20ppm/TF38/35K/D
ANS 6421187
Gigabyte Technology
PCH CLOCK BUFFER
H310M DS2 2.0
Rev 1.0
Friday, July 27, 2018
Sheet 10 of 57



ANS 6421187	Gigabyte Technology	
Title	PCH DMI,USB,PCIE	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Friday, July 27, 2018	Sheet 11 of 57	

PCHD

GL82H310C SRCXT/S

4 of 13

PCHK

GL82H310C SRCXT/S

11 of 13

FAN 0 RPM Control

FOR PWM MB ID

BATTERY-DUAL-4

RB 必須放在BAT外

N_INTERMEN : Integrated 1.05V SUS VRM Enable

At least 10ms delay after 3VDUAL_PCH stabel

For IT8620 Ctrl

GPP_C5 --H:eSPI or L:LPC

GPP_C2 --1:ENABLE AMT/SBA FOR INTEL

HDA_SDO:Flash Descriptor Security (override);1=DIS,0=ENABLE

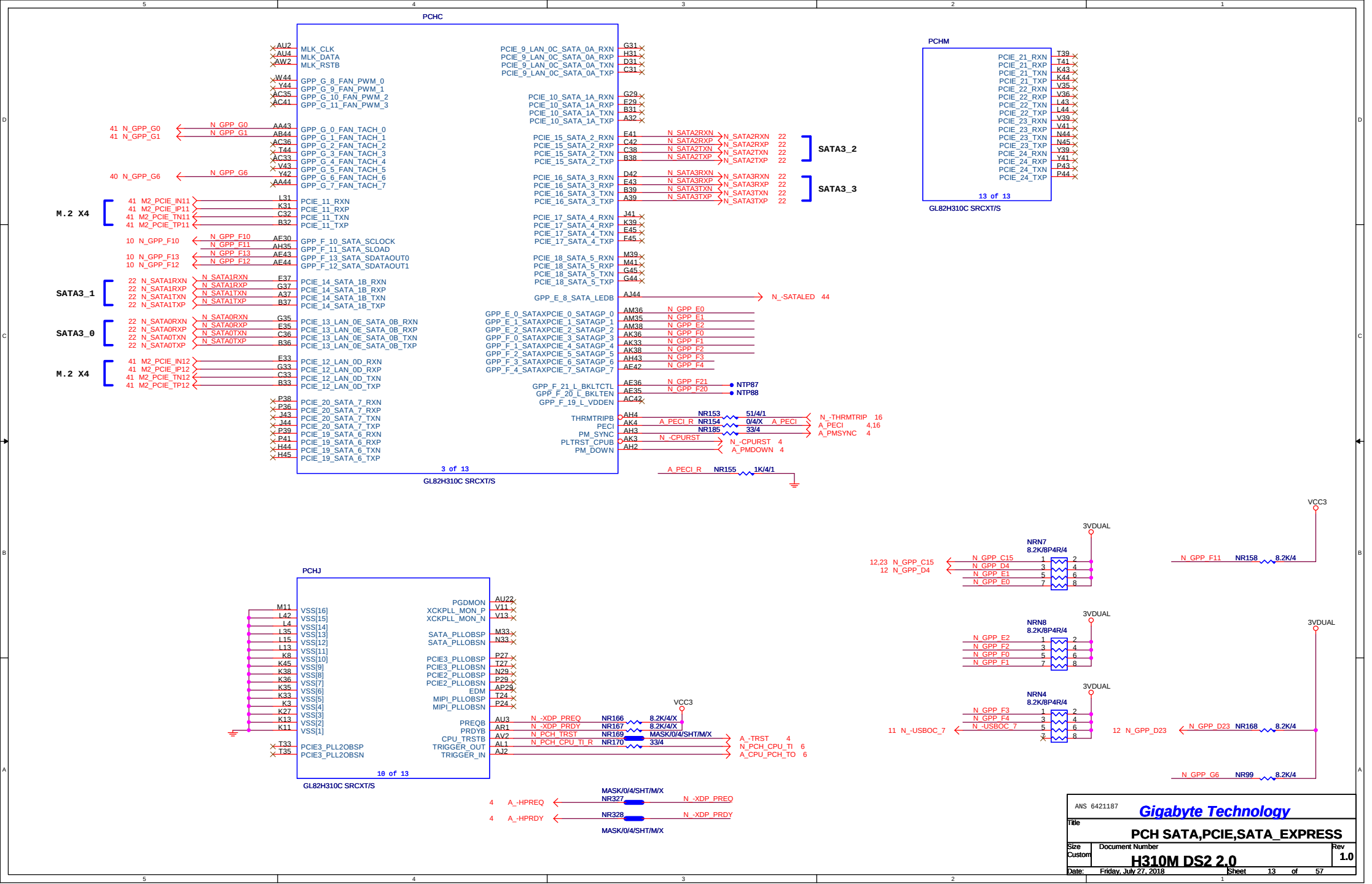
GPP_B22 --BIOS SELECT;0:SPI / 1:LPC

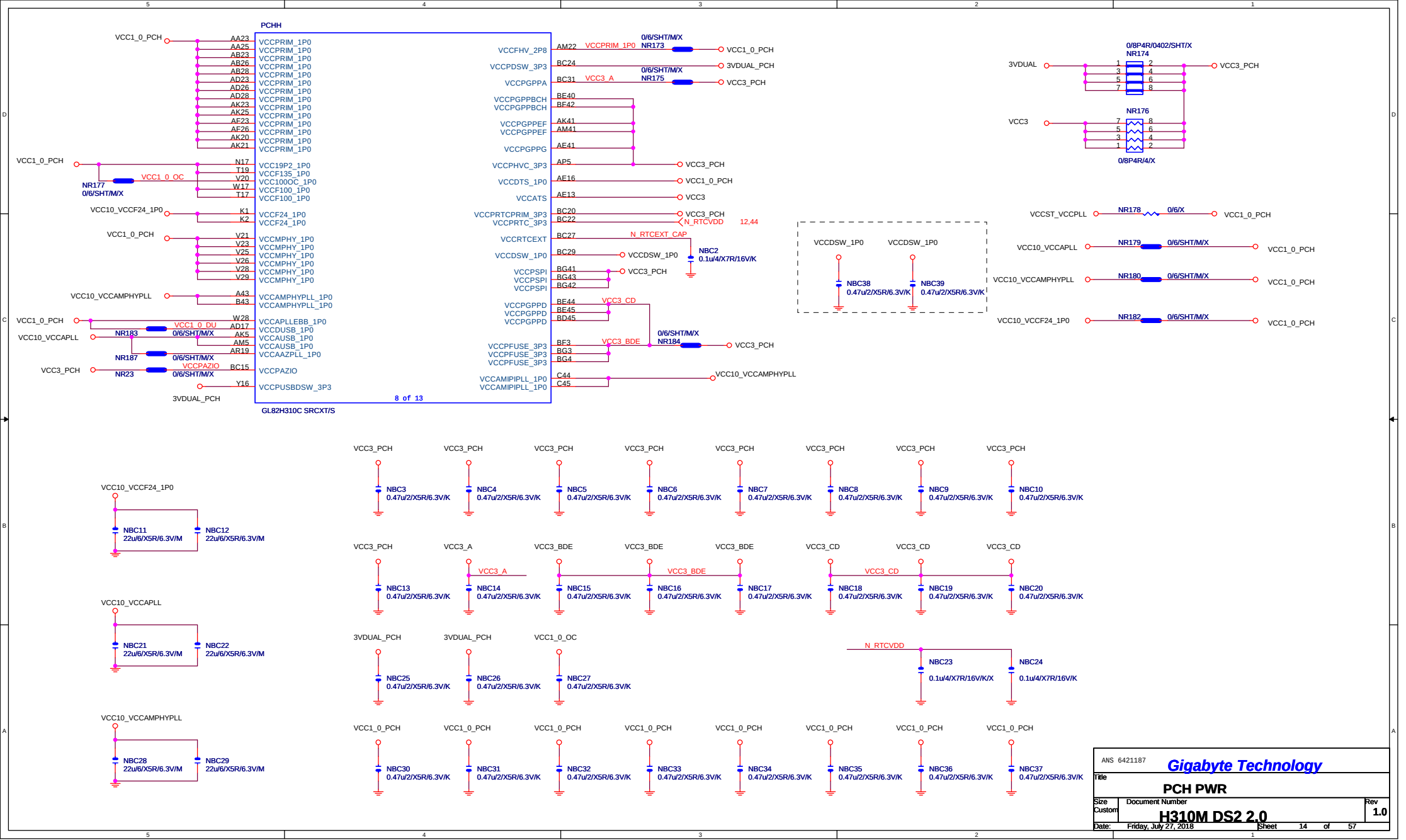
GPP_B18 --0:dis" no boot mode"

CLR_CMOS

Title	PCH MISC
Size	Custom
Document Number	H310M DS2 2.0
Rev	1.0
Date:	Friday, July 27, 2018
Sheet	12 of 57

ANS 6421187 Gigabyte Technology


PCHC
MLK_CLK
MLK_DATA
MLK_RSTB
GPP_G_8_FAN_PWM_0
GPP_G_9_FAN_PWM_1
GPP_G_10_FAN_PWM_2
GPP_G_11_FAN_PWM_3
GPP_G_0_FAN_TACH_0
GPP_G_1_FAN_TACH_1
GPP_G_2_FAN_TACH_2
GPP_G_3_FAN_TACH_3
GPP_G_4_FAN_TACH_4
GPP_G_5_FAN_TACH_5
GPP_G_6_FAN_TACH_6
GPP_G_7_FAN_TACH_7
PCIE_11_RXN
PCIE_11_RXP
PCIE_11_TXN
PCIE_11_TXP
GPP_F_10_SATA_SCLOCK
GPP_F_11_SATA_SLOAD
GPP_F_13_SATA_SDATAOUT0
GPP_F_12_SATA_SDATAOUT1
PCIE_14_SATA_1B_RXN
PCIE_14_SATA_1B_RXP
PCIE_14_SATA_1B_TXN
PCIE_14_SATA_1B_TXP
PCIE_13_LAN_0E_SATA_0B_RXN
PCIE_13_LAN_0E_SATA_0B_RXP
PCIE_13_LAN_0E_SATA_0B_TXN
PCIE_13_LAN_0E_SATA_0B_TXP
PCIE_12_LAN_0D_RXN
PCIE_12_LAN_0D_RXP
PCIE_12_LAN_0D_TXN
PCIE_12_LAN_0D_TXP
PCIE_20_SATA_7_RXN
PCIE_20_SATA_7_RXP
PCIE_20_SATA_7_TXN
PCIE_20_SATA_7_TXP
PCIE_19_SATA_6_RXN
PCIE_19_SATA_6_RXP
PCIE_19_SATA_6_TXN
PCIE_19_SATA_6_TXP
3 of 13
GL82H310C SRCXT/S
PCIE_9_LAN_0C_SATA_0A_RXN
PCIE_9_LAN_0C_SATA_0A_RXP
PCIE_9_LAN_0C_SATA_0A_TXN
PCIE_9_LAN_0C_SATA_0A_TXP
PCIE_10_SATA_1A_RXN
PCIE_10_SATA_1A_RXP
PCIE_10_SATA_1A_TXN
PCIE_10_SATA_1A_TXP
PCIE_15_SATA_2_RXN
PCIE_15_SATA_2_RXP
PCIE_15_SATA_2_TXN
PCIE_15_SATA_2_TXP
PCIE_16_SATA_3_RXN
PCIE_16_SATA_3_RXP
PCIE_16_SATA_3_TXN
PCIE_16_SATA_3_TXP
PCIE_17_SATA_4_RXN
PCIE_17_SATA_4_RXP
PCIE_17_SATA_4_TXN
PCIE_17_SATA_4_TXP
PCIE_18_SATA_5_RXN
PCIE_18_SATA_5_RXP
PCIE_18_SATA_5_TXN
PCIE_18_SATA_5_TXP
GPP_E_8_SATA_LEDB
GPP_E_0_SATAXPCIE_0_SATAGP_0
GPP_E_1_SATAXPCIE_1_SATAGP_1
GPP_E_2_SATAXPCIE_2_SATAGP_2
GPP_F_0_SATAXPCIE_3_SATAGP_3
GPP_F_1_SATAXPCIE_4_SATAGP_4
GPP_F_2_SATAXPCIE_5_SATAGP_5
GPP_F_3_SATAXPCIE_6_SATAGP_6
GPP_F_4_SATAXPCIE_7_SATAGP_7
GPP_F_21_L_BKLTCTL
GPP_F_20_L_BKLTEN
GPP_F_19_L_VDDEN
THRMTRIPB
PECI
PM_SYNC
PLTRST_CPUB
PM_DOWN
N_SATA2RXN
N_SATA2RXP
N_SATA2TXN
N_SATA2TXP
SATA3_2
N_SATA3RXN
N_SATA3RXP
N_SATA3TXN
N_SATA3TXP
SATA3_3
N_SATALED
N_GPP_E0
N_GPP_E1
N_GPP_E2
N_GPP_F0
N_GPP_F1
N_GPP_F2
N_GPP_F3
N_GPP_F4
N_GPP_F21
N_GPP_F20
NTP87
NTP88
A_PECI_R
NR153
NR154
NR185
51/4/1
0/4/X
33/4
N_-THRMTRIP
A_PECI
A_PMSYNC
N_-CPURST
A_PMDOWN
NR155
1K/4/1
PCHM
PCIE_21_RXN
PCIE_21_RXP
PCIE_21_TXN
PCIE_21_TXP
PCIE_22_RXN
PCIE_22_RXP
PCIE_22_TXN
PCIE_22_TXP
PCIE_23_RXN
PCIE_23_RXP
PCIE_23_TXN
PCIE_23_TXP
PCIE_24_RXN
PCIE_24_RXP
PCIE_24_TXN
PCIE_24_TXP
13 of 13
GL82H310C SRCXT/S
M.2 X4
SATA3_1
SATA3_0
M.2 X4
PCHJ
VSS[16]
VSS[15]
VSS[14]
VSS[13]
VSS[12]
VSS[11]
VSS[10]
VSS[9]
VSS[8]
VSS[7]
VSS[6]
VSS[5]
VSS[4]
VSS[3]
VSS[2]
VSS[1]
PCIE3_PLL2OBSP
PCIE3_PLL2OBSN
PGDMON
XCKPLL_MON_P
XCKPLL_MON_N
SATA_PLLOBSP
SATA_PLLOBSN
PCIE3_PLLOBSP
PCIE3_PLLOBSN
PCIE2_PLLOBSP
PCIE2_PLLOBSN
EDM
MIPI_PLLOBSP
MIPI_PLLOBSN
PREQB
PRDYB
CPU_TRSTB
TRIGGER_OUT
TRIGGER_IN
10 of 13
GL82H310C SRCXT/S
N_-XDP_PREQ
N_-XDP_PRDY
N_PCH_TRST
N_PCH_CPU_TI_R
NR166
NR167
NR169
NR170
8.2K/4/X
MASK/0/4/SHT/M/X
33/4
A_-TRST
N_PCH_CPU_TI
A_CPU_PCH_TO
VCC3
A_-HPREQ
A_-HPRDY
NR327
NR328
MASK/0/4/SHT/M/X
3VDUAL
NRN7
8.2K/8P4R/4
N_GPP_C15
N_GPP_D4
N_GPP_E1
N_GPP_E0
NRN8
N_GPP_E2
N_GPP_F2
N_GPP_F0
N_GPP_F1
NRN4
N_GPP_F3
N_GPP_F4
N_-USBOC_7
N_GPP_F11
NR158
N_GPP_D23
NR168
N_GPP_G6
NR99
8.2K/4
ANS 6421187
Gigabyte Technology
Title
PCH SATA,PCIE,SATA_EXPRESS
Size
Custom
Document Number
H310M DS2 2.0
Rev
1.0
Date:
Friday, July 27, 2018
Sheet
13
of
57


PCHH
VCC1_0_PCH
AA23 AA25 AB23 AB26 AB28 AD23 AD26 AD28 AK23 AK25 AF23 AF26 AK20 AK21
VCCPRIM_1P0
N17 T19 V20 W17 T17
VCC1_0_OC
VCC19P2_1P0 VCCF135_1P0 VCC100OC_1P0 VCCF100_1P0 VCCF100_1P0
NR177
0/6/SHT/M/X
VCC10_VCCF24_1P0
K1 K2
VCCF24_1P0 VCCF24_1P0
V21 V23 V25 V26 V28 V29
VCCMPHY_1P0
A43 B43
VCCAMPHYPLL_1P0 VCCAMPHYPLL_1P0
W28 AD17 AK5 AM5 AR19
VCCAPLLEBB_1P0 VCCDUSB_1P0 VCCAUSB_1P0 VCCAUSB_1P0 VCCAAZPLL_1P0
VCC1_0_DU
NR183
NR187
BC15
VCCPAZIO
NR23
Y16
VCCPUSBDSW_3P3
3VDUAL_PCH
8 of 13
GL82H310C SRCXT/S
AM22 VCCFHV_2P8
BC24 VCCPDSW_3P3
BC31 VCCPGPPA
BE40 BF42 VCCPGPPBCH
AK41 AM41 VCCPGPPEF
AE41 VCCPGPPG
AP5 VCCPHVC_3P3
AE16 VCCDTS_1P0
AE13 VCCATS
BC20 BC22 VCCPRTCPRIM_3P3 VCCPRTC_3P3
BC27 VCCRTCEXT
BC29 VCCDSW_1P0
BG41 BG43 BG42 VCCPSPI
BE44 BE45 BD45 VCCPGPPD
BF3 BG3 BG4 VCCPFUSE_3P3
C44 C45 VCCAMIPIPLL_1P0
0/6/SHT/M/X
NR173
NR175
VCC3_A
VCC3_CD
VCC3_BDE
NR184
N_RTCEXT_CAP
N_RTCVDD
12,44
NBC2
0.1u/4/X7R/16V/K
VCC1_0_PCH
3VDUAL_PCH
VCC3_PCH
VCC10_VCCAMPHYPLL
VCCDSW_1P0
NBC38
NBC39
0.47u/2/X5R/6.3V/K
0/8P4R/0402/SHT/X
NR174
NR176
0/8P4R/4/X
VCCST_VCCPLL
NR178
0/6/X
VCC10_VCCAPLL
NR179
0/6/SHT/M/X
VCC10_VCCAMPHYPLL
NR180
VCC10_VCCF24_1P0
NR182
NBC3 NBC4 NBC5 NBC6 NBC7 NBC8 NBC9 NBC10
NBC11 NBC12
22u/6/X5R/6.3V/M
NBC13 NBC14 NBC15 NBC16 NBC17 NBC18 NBC19 NBC20
NBC21 NBC22
NBC25 NBC26 NBC27
NBC23
0.1u/4/X7R/16V/K/X
NBC24
0.1u/4/X7R/16V/K
NBC28 NBC29
NBC30 NBC31 NBC32 NBC33 NBC34 NBC35 NBC36 NBC37
ANS 6421187
Gigabyte Technology
Title
PCH PWR
Size
Custom
Document Number
H310M DS2 2.0
Rev
1.0
Date:
Friday, July 27, 2018
Sheet
14
of
57

PCHI

A25	VSS	VSS	A42
A30	VSS	VSS	D45
P22	VSS	VSS	BG44
AV38	VSS	VSS	BF44
AV45	VSS	VSS	BF45
AV8	VSS	VSS	BF2
AY11	VSS	VSS	W29
AY19	VSS	VSS	A35
AY37	VSS	VSS	A40
AY4	VSS	VSS	A41
AY42	VSS	VSS	AA17
AY8	VSS	VSS	AA18
B25	VSS	VSS	AA20
B3	VSS	VSS	AA21
B30	VSS	VSS	AA26
B35	VSS	VSS	AA28
B4	VSS	VSS	AA29
B41	VSS	VSS	AB17
BA13	VSS	VSS	AC32
BA17	VSS	VSS	AE4
BA29	VSS	VSS	AE8
BA31	VSS	VSS	AF18
BA37	VSS	VSS	AF20
BA4	VSS	VSS	AF21
BA42	VSS	VSS	AF25
BB40	VSS	VSS	AF28
BC38	VSS	VSS	AF29
BC40	VSS	VSS	AF4
BC9	VSS	VSS	AF42
BD11	VSS	VSS	AG18
BD16	VSS	VSS	AG20
BD2	VSS	VSS	AG21
BD21	VSS	VSS	AG23
BD25	VSS	VSS	AG25
F2	VSS	VSS	AG26
E31	VSS	VSS	AG28
E6	VSS	VSS	AG29
E8	VSS	VSS	AH11
F39	VSS	VSS	AH13
F43	VSS	VSS	AH30
G4	VSS	VSS	AH32
G40	VSS	VSS	AH33
G42	VSS	VSS	AH38
F6	VSS	VSS	AJ1
G9	VSS	VSS	AJ17
H11	VSS	VSS	AJ18
H13	VSS	VSS	AJ20
H17	VSS	VSS	AJ21
H19	VSS	VSS	AJ23
H22	VSS	VSS	AJ25
H24	VSS	VSS	AJ26
H27	VSS	VSS	AJ28
H29	VSS	VSS	AJ29
H33	VSS	VSS	AJ45
H35	VSS	VSS	AK10
H38	VSS	VSS	AK14
H4	VSS	VSS	AK16
H42	VSS	VSS	AK17
H9	VSS	VSS	AK18
J4	VSS	VSS	AK26
M36	VSS	VSS	AK28
M38	VSS	VSS	AM14
M4	VSS	VSS	AN14
M8	VSS	VSS	AP19
M9	VSS	VSS	AR22
N13	VSS	VSS	AR27
N15	VSS	VSS	AU29
N19	VSS	VSS	AU33
N22	VSS	VSS	AV1
N24	VSS	VSS	AV10
N31	VSS	VSS	AV15
N42	VSS	VSS	AV24
P10	VSS	VSS	AV27
P12	VSS	VSS	AV33
AV35	VSS		

9 of 13

GL82H310C SRCXT/S

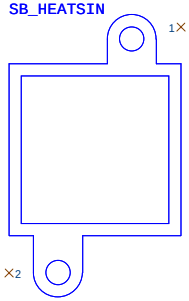
PCHL

BD34	VSS[70]	VSS[1]	AB18
BD39	VSS[71]	VSS[2]	AB20
BD7	VSS[72]	VSS[3]	AB21
BE2	VSS[73]	VSS[4]	AB25
BF43	VSS[74]	VSS[5]	AB29
BF5	VSS[75]	VSS[6]	AB4
BG18	VSS[76]	VSS[7]	AB42
BG23	VSS[77]	VSS[8]	AC10
BG28	VSS[78]	VSS[9]	AC11
BG32	VSS[79]	VSS[10]	AC14
BG37	VSS[80]	VSS[11]	AC16
BG40	VSS[81]	VSS[12]	AC38
BG9	VSS[83]	VSS[13]	AC4
C1	VSS[84]	VSS[14]	AC5
A12	VSS[85]	VSS[15]	AC7
C2	VSS[86]	VSS[16]	AC8
C37	VSS[87]	VSS[17]	AD1
A6	VSS[88]	VSS[18]	AD18
C9	VSS[89]	VSS[19]	AD20
D1	VSS[90]	VSS[20]	AD21
D10	VSS[91]	VSS[21]	AD25
D12	VSS[92]	VSS[22]	AD29
D15	VSS[93]	VSS[23]	AD45
D16	VSS[94]	VSS[24]	AE11
B12	VSS[95]	VSS[25]	AE14
D19	VSS[96]	VSS[26]	AE32
D21	VSS[97]	VSS[27]	AE33
D24	VSS[98]	VSS[28]	AE38
D25	VSS[99]	VSS[29]	AK29
D29	VSS[100]	VSS[30]	AK30
D30	VSS[101]	VSS[31]	AK32
D33	VSS[102]	VSS[32]	AK35
D35	VSS[103]	VSS[33]	AK39
D36	VSS[104]	VSS[34]	AL4
D39	VSS[105]	VSS[35]	AL42
D44	VSS[106]	VSS[36]	AM10
D7	VSS[107]	VSS[37]	AM11
P13	VSS[108]	VSS[38]	AM13
P15	VSS[109]	VSS[39]	AM17
P17	VSS[110]	VSS[40]	AM19
P19	VSS[111]	VSS[41]	AM24
P31	VSS[112]	VSS[42]	AM27
P33	VSS[113]	VSS[43]	AM29
P35	VSS[114]	VSS[44]	AM32
P4	VSS[115]	VSS[45]	AM33
P42	VSS[116]	VSS[46]	AM4
P8	VSS[117]	VSS[47]	AN45
R1	VSS[118]	VSS[48]	AP10
R32	VSS[119]	VSS[49]	AP11
T10	VSS[120]	VSS[50]	AP13
T14	VSS[121]	VSS[51]	AP15
T22	VSS[122]	VSS[52]	AP22
T29	VSS[123]	VSS[53]	AP27
T32	VSS[124]	VSS[54]	AP31
T36	VSS[125]	VSS[55]	AP33
T38	VSS[126]	VSS[56]	AP34
Y38	VSS[151]	VSS[57]	AP39
Y4	VSS[152]	VSS[127]	T4
Y8	VSS[153]	VSS[143]	W26
T42	VSS[154]	VSS[128]	V16
T5	VSS[155]	VSS[129]	V17
U4	VSS[156]	VSS[130]	V18
U42	VSS[157]	VSS[131]	V30
V10	VSS[158]	VSS[132]	V32
V14	VSS[159]	VSS[133]	V33
W3	VSS[144]	VSS[134]	V38
AR13	VSS[58]	VSS[135]	V4
AR31	VSS[59]	VSS[136]	V8
AR33	VSS[60]		
AR4	VSS[61]	VSS[138]	W18
AT10	VSS[62]	VSS[139]	W20
AT13	VSS[63]	VSS[140]	W21
AT35	VSS[64]	VSS[141]	W23
AT37	VSS[65]	VSS[142]	W25
AT42	VSS[66]		
AU11	VSS[67]	VSS_1	A44
AU17	VSS[68]	VSS_10	BE1
BD30	VSS[69]	VSS_11	BD1
W45	VSS[145]	VSS_14	B1
Y13	VSS[146]	VSS_15	A2
Y14	VSS[147]	VSS_16	B2
Y30	VSS[148]	VSS_17	A3
Y32	VSS[149]	VSS_18	A4
Y33	VSS[150]	VSS_2	B44
BG14	VSS_BG14	VSS_3	B45

12 of 13

GL82H310C SRCXT/S

SB_HEATSIN



業務指定使用B150M-EVO Heatsink

BGAHSINK_SB-N

PCH_HS

PCH_HS/[12SP2-030005-51R_12SP2-030005-52R_12SP2-030005-53R]

ANS 6421187 Gigabyte Technology

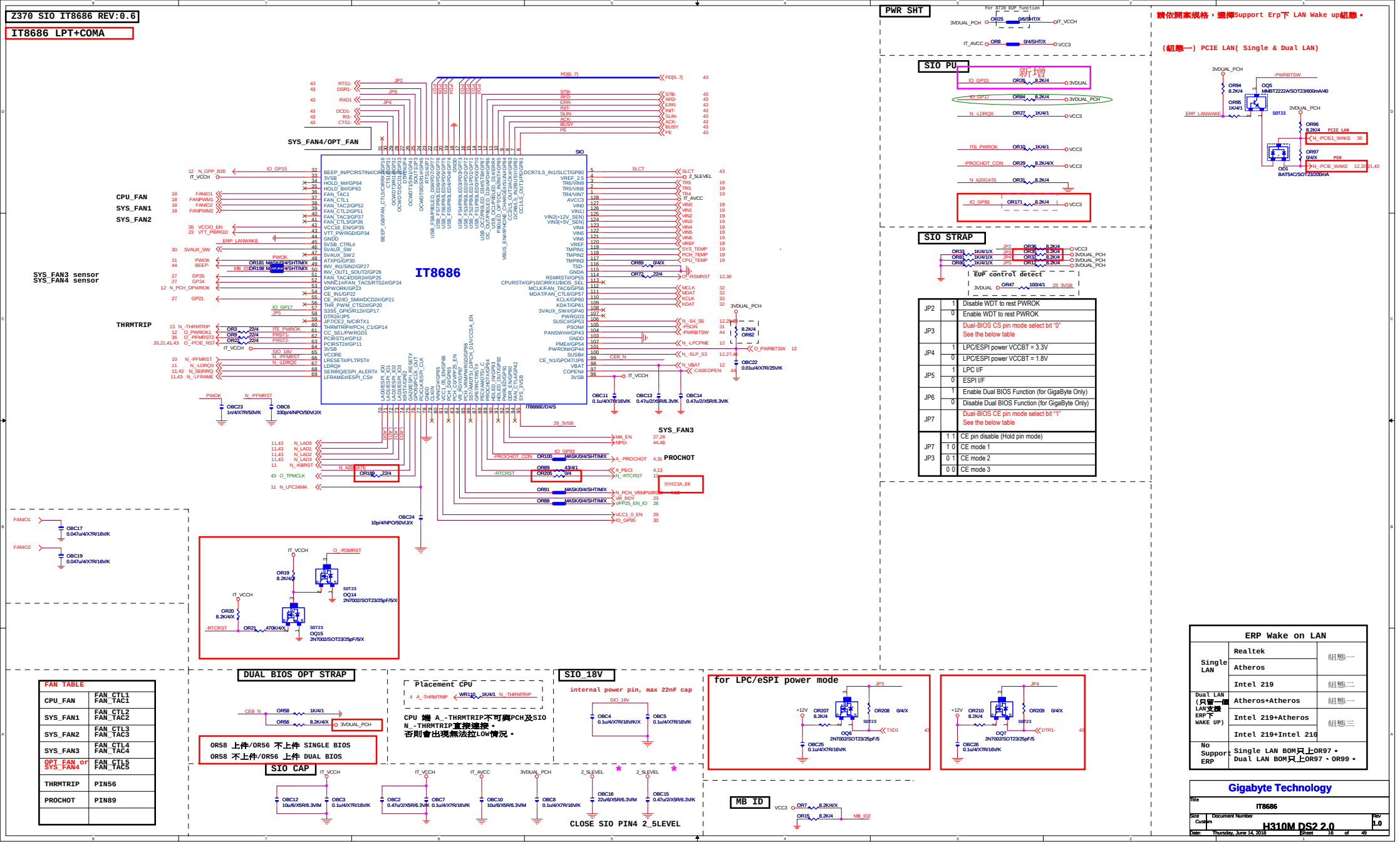
Title: PCH GND

Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: Friday, July 27, 2018 | Sheet 15 of 57

Z370 SIO IT8686 REV:0.6

IT8686 LPT+COMA



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

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 JP3	1 1	CE pin disable (Hold pin mode)
	1 0	CE mode 1
	0 1	CE mode 2
	0 0	CE mode 3

請依開案規格，選擇Support Erp下 LAN Wake up組態。

ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	
	Intel 219	組態二
Dual LAN (只要一個LAN支援ERP下WAKE UP)	Atheros+Atheros	組態一
	Intel 219+Atheros	組態三
	Intel 219+Intel 210	
No Support ERP	Single LAN BOM只上OR97。 Dual LAN BOM只上OR97、OR99。	

Gigabyte Technology

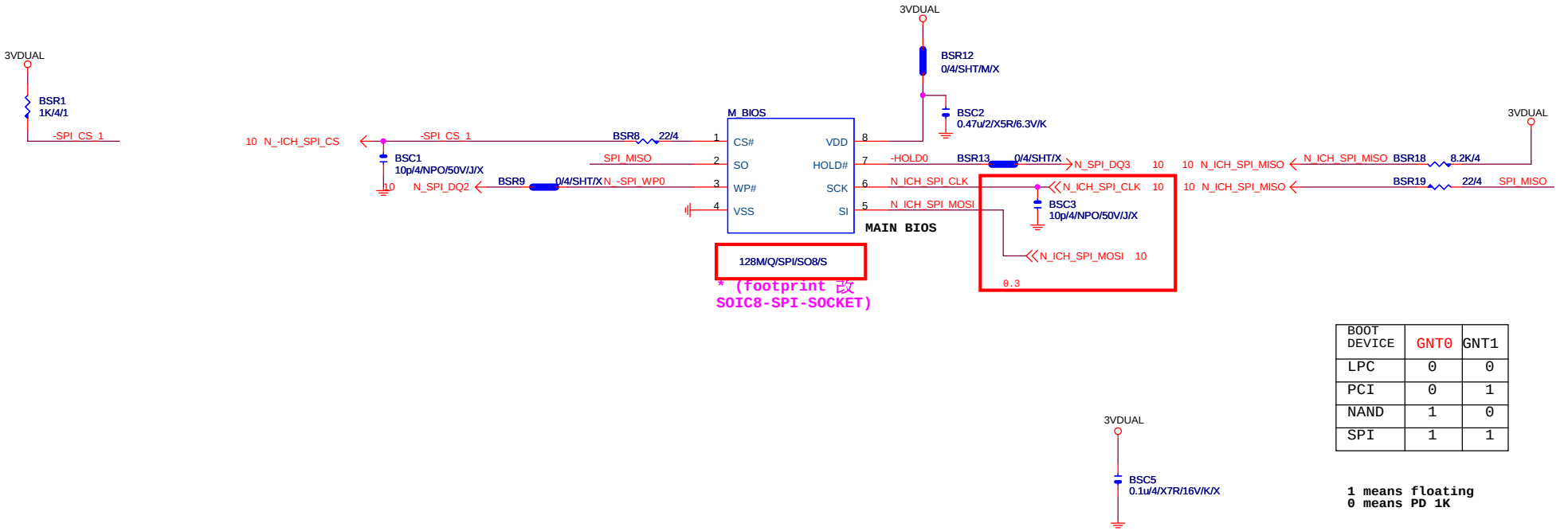
Title: IT8686

Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: Thursday, June 14, 2018 | Sheet 16 of 49

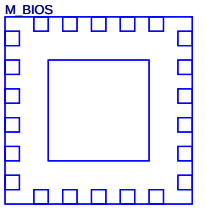
DUAL BIOS

MOSI For DMI RX Termination Voltage



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

1 means floating
0 means PD 1K



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

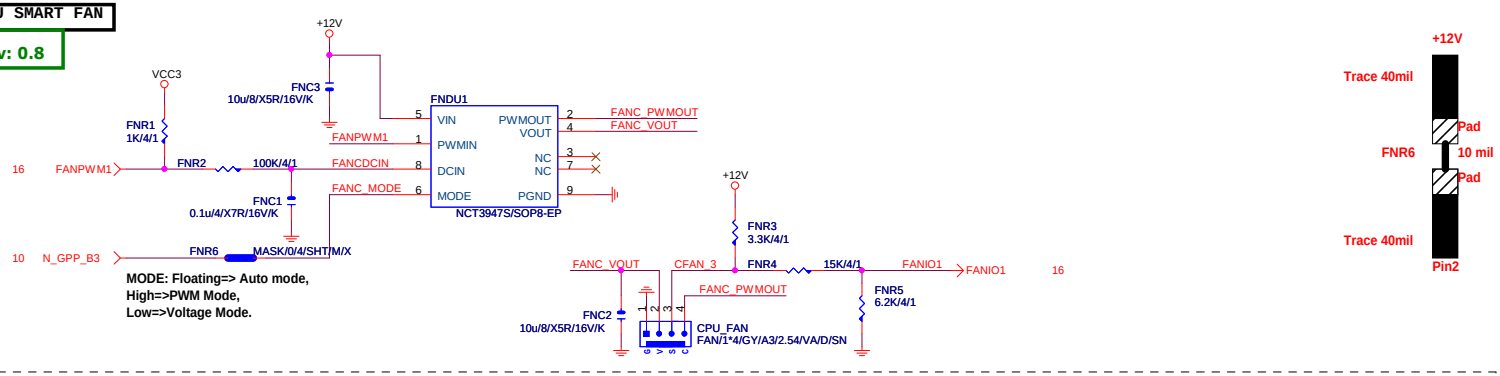
* 試產先上 ， PVT 移除

Gigabyte Technology

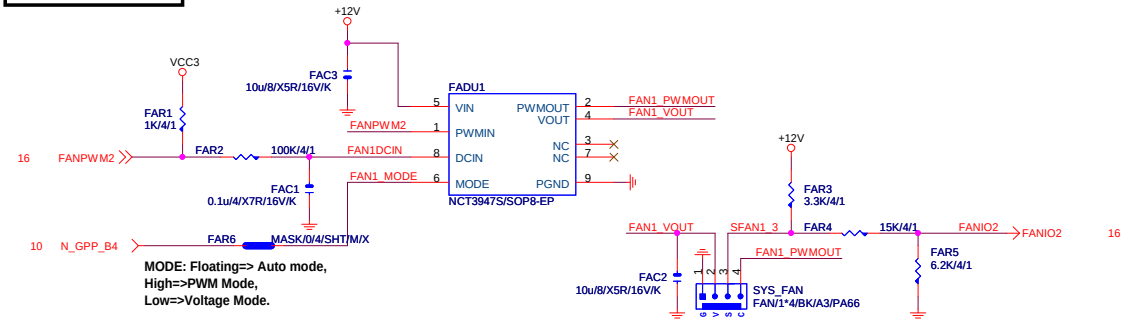
Title	BIOS	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 17 of 49	

CPU SMART FAN

Rev: 0.8

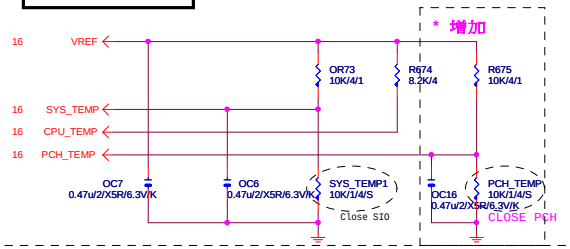


A. SYSTEM FAN1

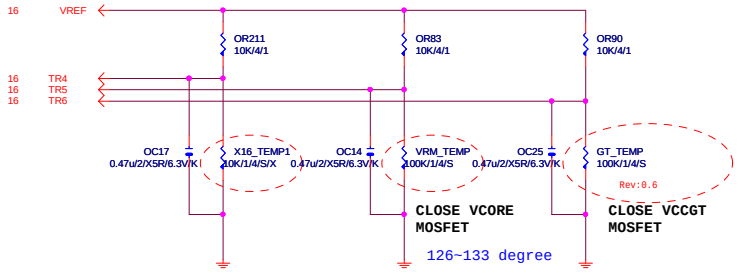


Gigabyte Technology			
Title: FAN CTRL			
Size: Custom	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018		Sheet 18 of 49	

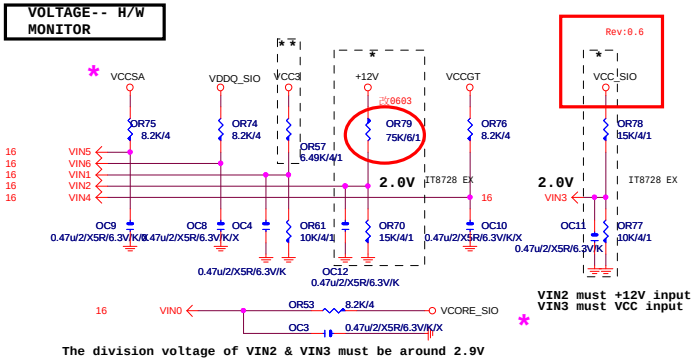
TEMP H/W MONITOR

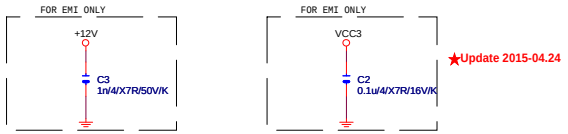


低階機種:3個FAN時使用



VOLTAGE-- H/W MONITOR

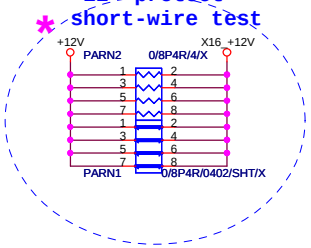




Gigabyte Technology			
Title: HWM,KB/MS, FAN CTRL			
Size: Custom	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018		Sheet 19 of 49	

Rev 0.2

+12 protect
short-wire test



PCIESLOT-164STH

PCIEX16

3GIO_*16

KEY

PCI-E/16X-164P/GY/LONG DOUBLE/HK*2/[11AC1-023164-D1R_11AC1-023164-D3R]

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

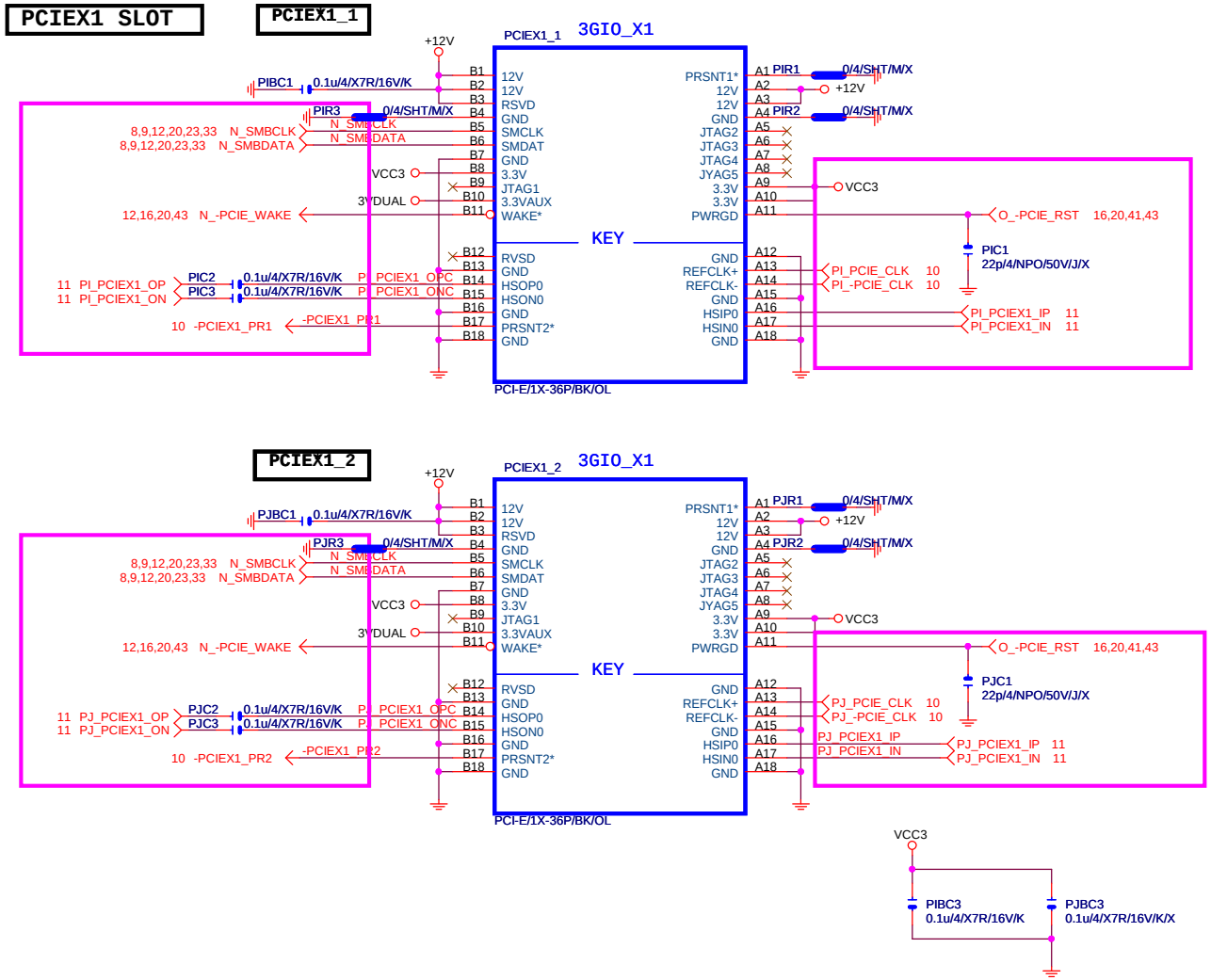
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

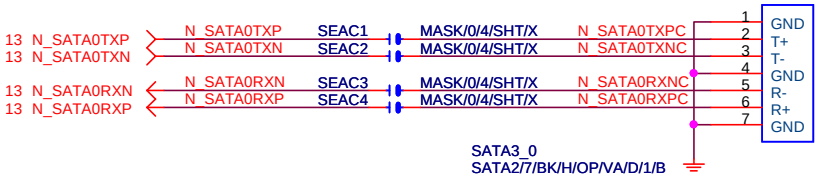
Gigabyte Technology		
Title: PCI EXPRESS * 16		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 20 of 49	

Rev 0.2

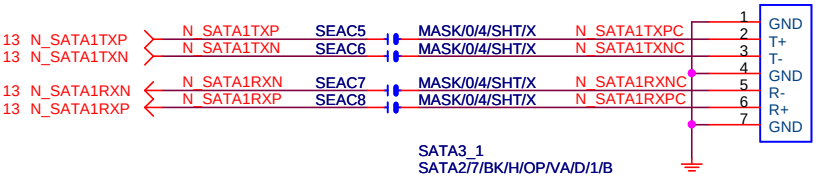


Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 21 of 49	

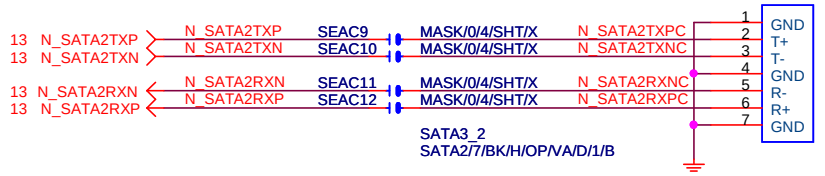
Rev 0.6



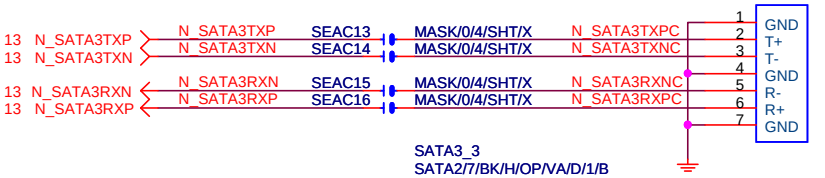
SATA3_0
SATA2/7/BK/H/OP/VA/D/1/B



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



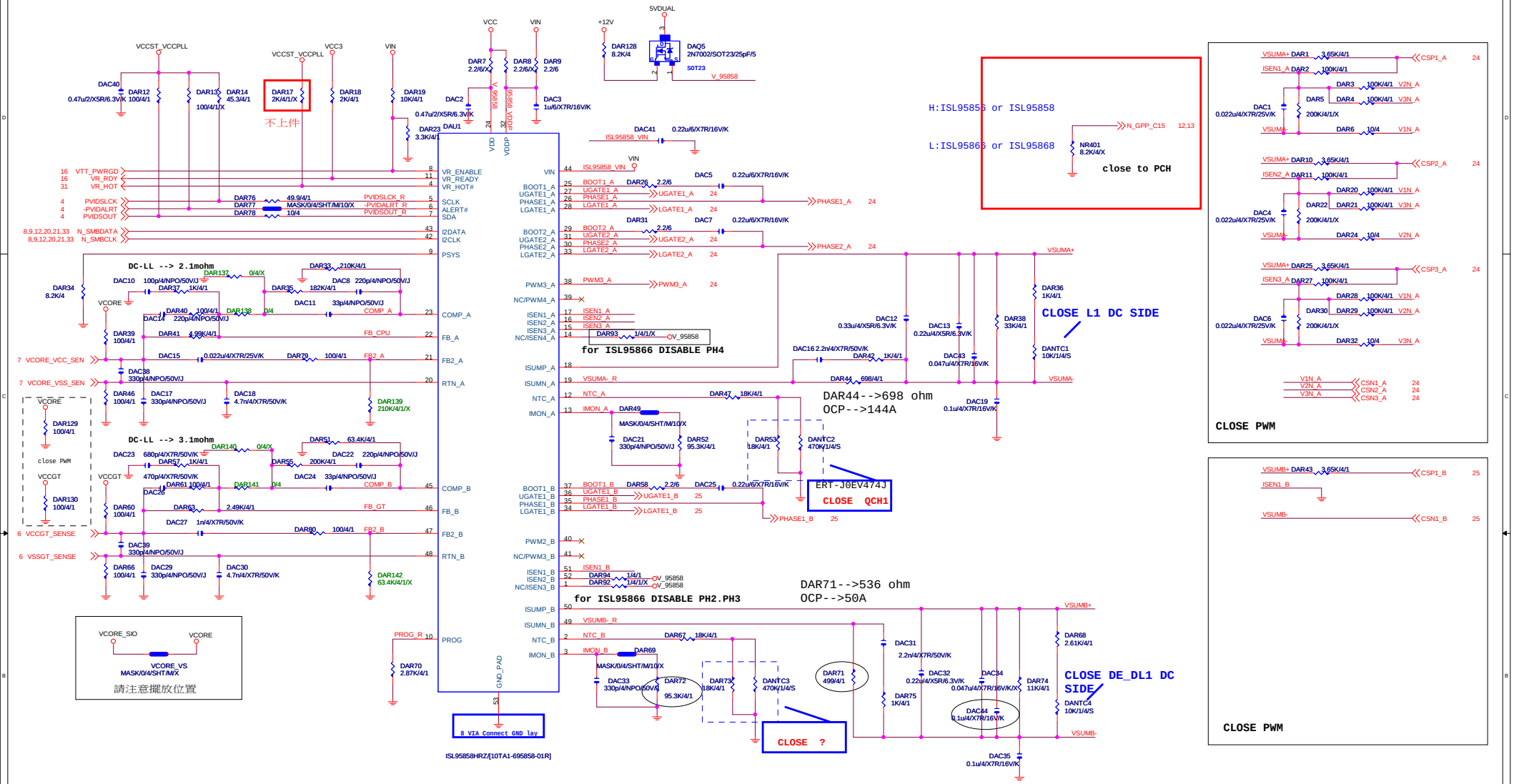
SATA3_2
SATA2/7/BK/H/OP/VA/D/1/B



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

Gigabyte Technology		
Title: SATA EXPRESS		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 22 of 49	

REV:0.2



VCORE	ISL95858	ISL95868
DAR137	X	V
DAR138	V	X
DAR139	X	V
DAC15	V	X
DAR79	V	X
DAR33	V	X

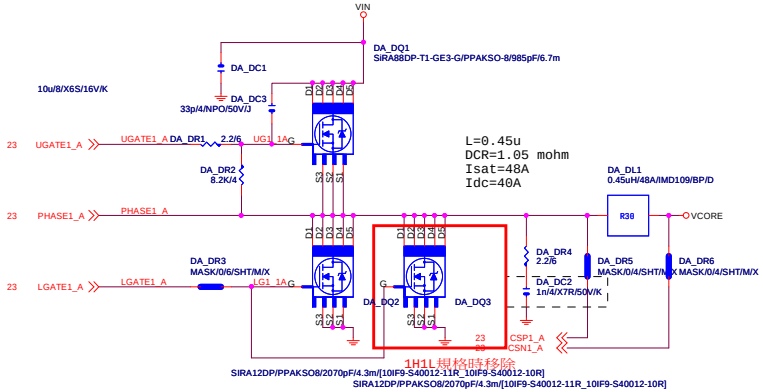
VCCGT	ISL95858	ISL95868
DAR140	X	V
DAR141	V	X
DAR142	X	V
DAC27	V	X
DAR80	V	X
DAR51	V	X

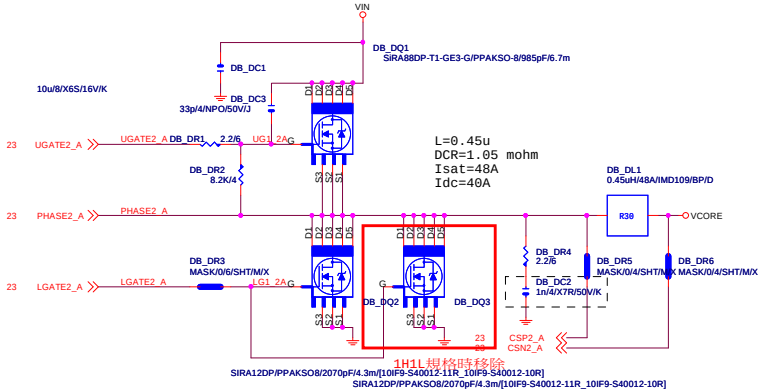
GIGABYTE™

Title	ISL95858_PWM	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 23 of 53	

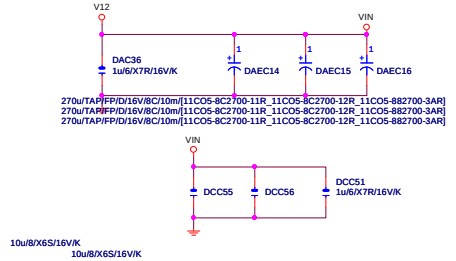
REV:0.2

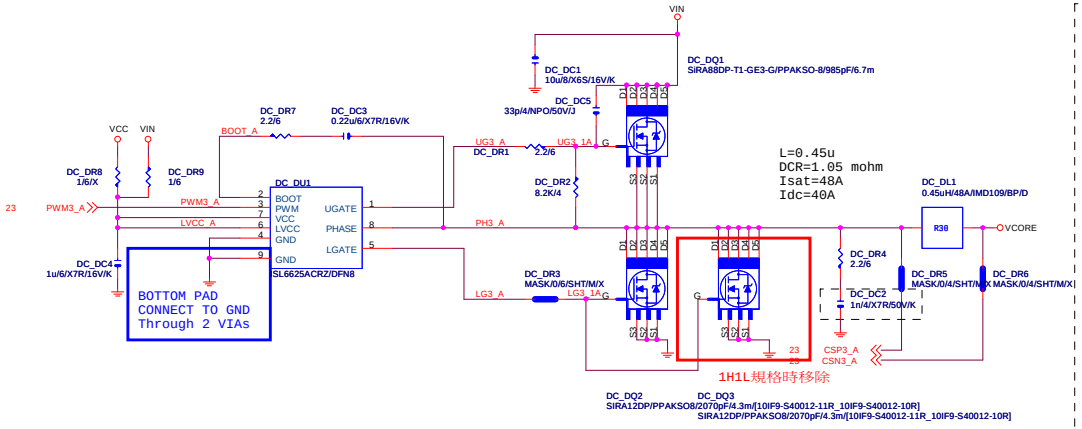
VCORE



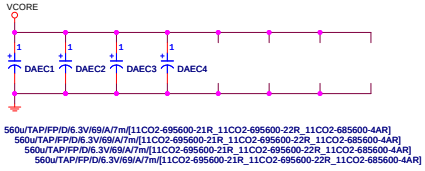


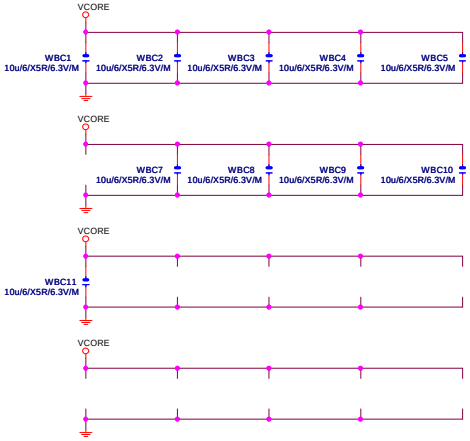
VIN CAP 270u*3PCS

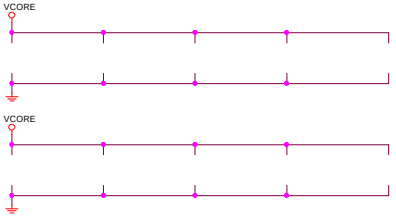




VCORE CAP 560u*4PCS 10u*10PCS





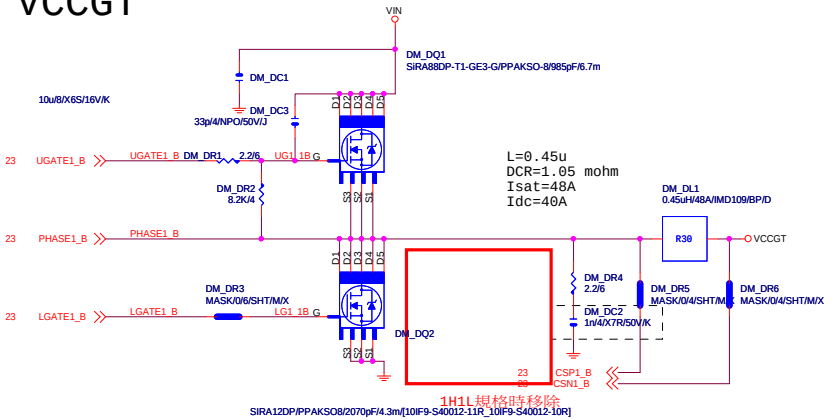


GIGABYTE™

Title	ISL95858_MOS	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 24 of 53	

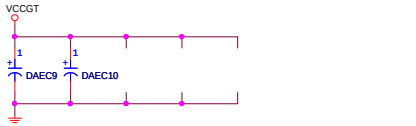
REV:0.2

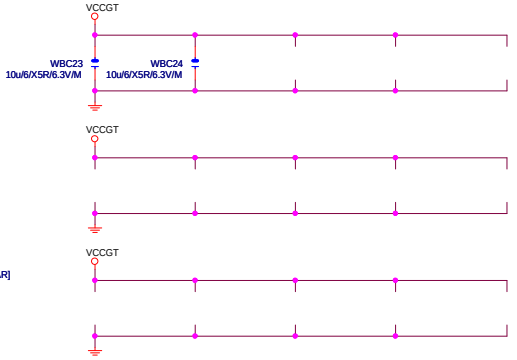
VCCGT



VCCGT CAP

560u*2PCS
10u*2PCS



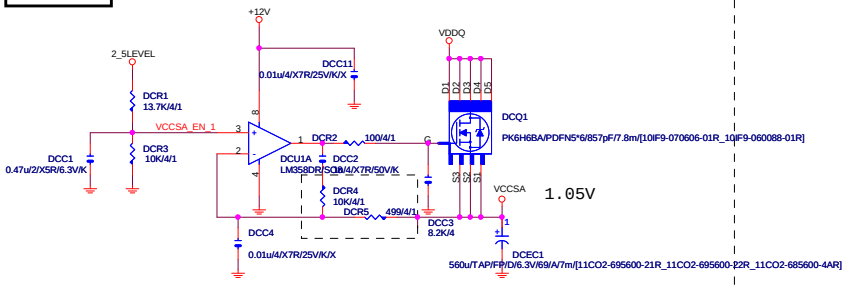


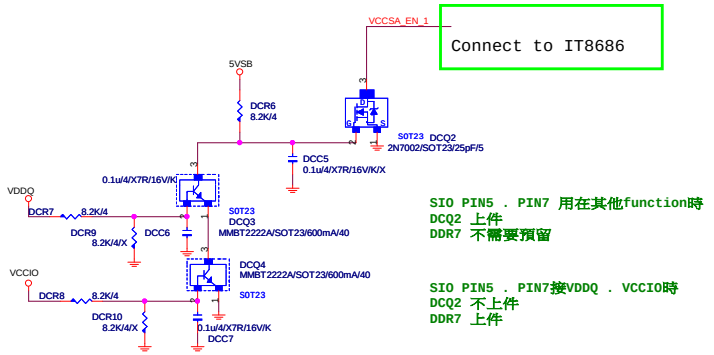
GIGABYTE™

Title: ISL95858_MOS		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 25 of 53	

REV:0.6

VCCSA

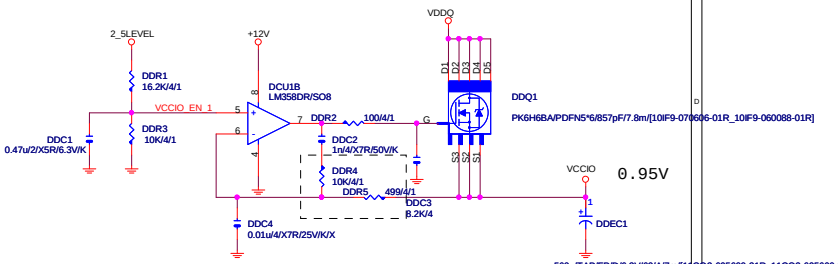




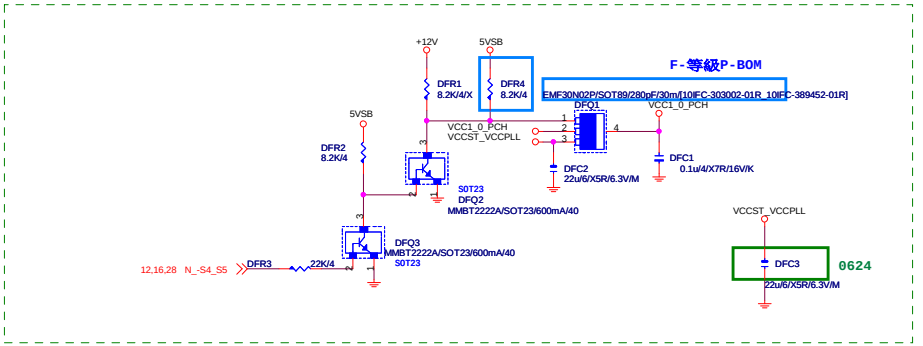
SIO PIN5 . PIN7 用在其他function時
DCQ2 上件
DDR7 不需要預留

SIO PIN5 . PIN7接VDDQ . VCCIO時
DCQ2 不上件
DDR7 上件

VCCIO



VCCST_VCCPLL



GIGABYTE™

Title	VCCSA_VCCIO_no 44E	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 26 of 49	

REV:0.4

DDR4

5VDUAL
MAR2
8.2K/4
MA_EN
上件

MA_DR38.MA_DC15

VPP_25V使用8120.8068A.RT8237時上件

VDDQ_SIO VDDQ
DDR_VS
MASK/0/4/SHT/M/X

FS=290K
OCP=40A

MOSFET請依MOSFET使用規則,自行選擇
ON-->10IF9-040406-10R[NTMFS4C06N/N/PPAK/1400pF/4m]
VISHAY-->10IF9-040012-10R[SIRA12DP/PPAKSO8/2070pF/4.3m]

PIN7-->20mil
PIN1-->6mil
PIN2-->6mil
PIN5-->6mil
PIN3-->6mil

MAU2
RT8237/[10TA1-608237-01R]

SIRA12DP/PPAKSO8/2070pF/4.3m/[10IF9-S40012-11R_10IF9-S40012-10R]

1H1L規格移除

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

MA_L2
47/4030/15A/S
BEAD
MA_DC6
0.1u/4/X7R/16V/K
Close Choke
MA_DC25
68p/4/NPO/50V/J/X
MA_DC7
1u/6/X7R/16V/K
Close MOS
MAEC1
560u/TAP/FP/D/6.3V/69/A/7m/[11CO2-695600-21R_11CO2-695600-22R_11CO2-685600-4AR]
MA_DQ1
SIRA12DP/PPAKSO8/2070pF/4.3m/[10IF9-S40012-11R_10IF9-S40012-10R]
MA_DQ2
SIRA12DP/PPAKSO8/2070pF/4.3m/[10IF9-S40012-11R_10IF9-S40012-10R]
MA_L1
1uH/35A/IMD109/BP/D
R50
10*10
MA_DR1 2.2/6
MA_DR2
8.2K/4
MA_DR5
2.2/6
MA_DC5
1n/4/X7R/50V/K
MA_DR9 2.2/6
MA_DC14
22p/4/NPO/50V/J/X
RS
MA_DR13
2K/4/1
RO
MA_DR12
2.8K/4/1
DDR_ADJ
MA_DR46 9.1K/4/1
MA_DR21 26.1K/4/1
MA_DR22 6.8K/4/1
1.35V
1.25V
1.4V

SUPPORT DDR4 1.2V
25A MAX

L=1u
DCR=2.5 mohm
Isat=35A
Idc=28A

MAC60
22u/6/X5R/6.3V/M/X

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

Remote sense請從最重的負載端點拉回

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)

DDRVTT

NCT3103S/SOP8/2A/[10GL2-203103-01R]
MAU1
MAC2
0.47u/2/X5R/6.3V/K
MAR5
1K/4/1
MA_VTT_REF
MAR4
1K/4/1
MAC1
0.01u/4/X7R/25V/K
MAC7
10u/6/X5R/6.3V/M
1.1A MAX
DDRVTT_EN
DDRVTT_BOOT
DDRVTT

DDR CAP

560u*4PCS 22u*2PCS

Footprint
EC6D8MM-RH-2
MAEC3
MAEC4
560u/TAP/FP/D/6.3V/69/A/7m/[11CO2-695600-21R_11CO2-695600-22R_11CO2-685600-4AR]
* 大電容 x4
WBC49
22u/6/X5R/6.3V/M

DDRVTT CAP

* 大電容 x0
MAC4
22u/6/X5R/6.3V/M

4 DDR_VTT_CTL
12,16,46 N_SLP_S3
DDR_VTT_CTL MAR110 MASK/0/4/SHT/M/10/X DDRVTT_EN
N_SLP_S3 MAR111 MASK/0/4/SHT/M/10/X DDRVTT_BOOT

GIGABYTE

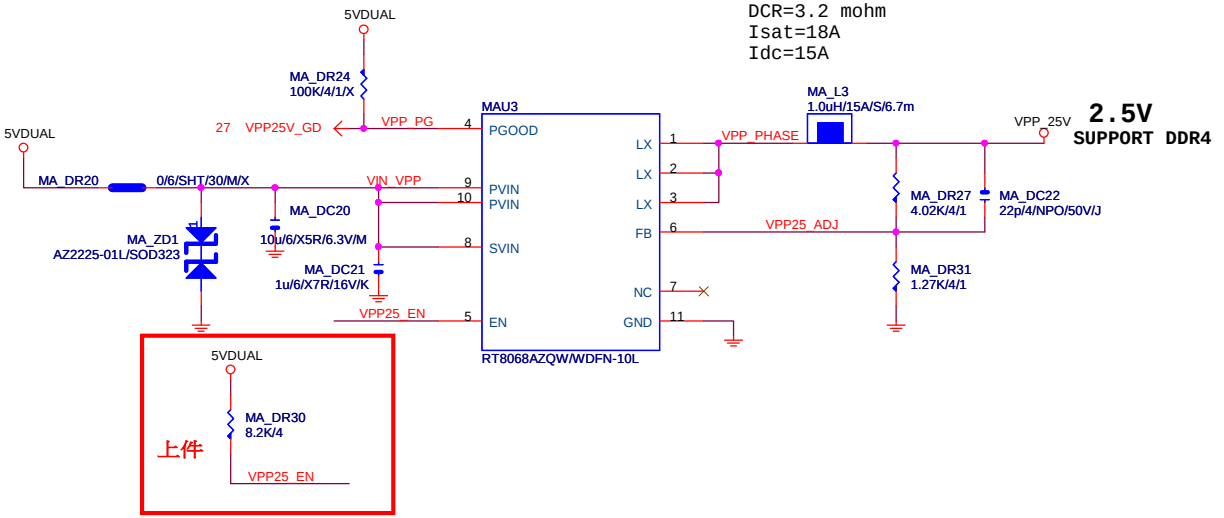
Title	RT8237_DDR4 POWER	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 27 of 49	

REV:0.4

VPP_25V

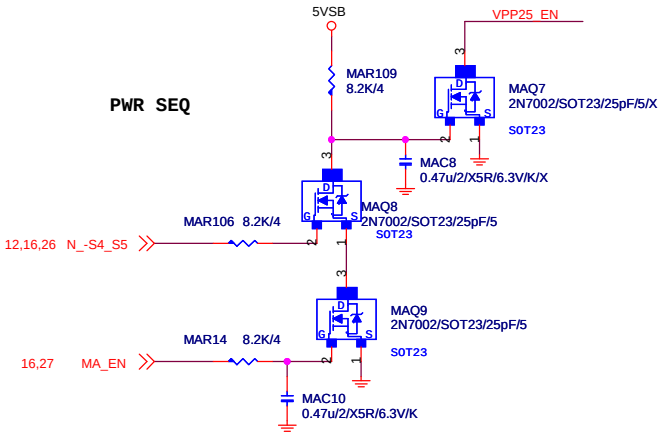
CHOKE與CAP料號可變

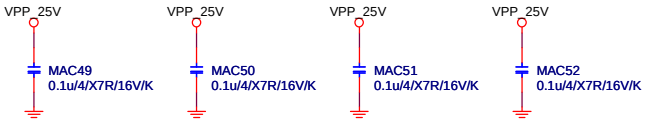
L=1u
DCR=3.2 mohm
Isat=18A
Idc=15A

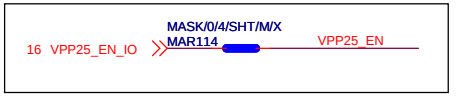


PWR SEQ

* 刪 MA_DR32

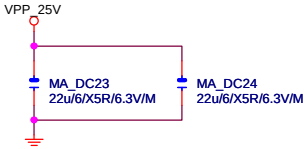






VPP CAP 22u*1PCS

* 大電容 x0



GIGABYTE™

Title: RT8068A_VPP25 POWER		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 28 of 49	

REV:0.5

CHOKE與CAP料號可變

5VDUAL
+12V
NPR22 0/8/X
NPD1 B140/SMA/1A
NPD2 B140/SMA/1A
NPL1 47/4030/15A/S
BEAD
P1V0_VIN_D
P1V0_VIN
注意耐壓
Close Choke
NPC1 0.1u/4/X7R/16V/K
NPC11 68p/4/NPO/50V/J/X
NPC3 1u/6/X7R/16V/K
Close MOS
NPQ1
NPEC1 100u/TAP/OS/D/16V/69/A/35m/[11CO5-691000-11R_11CO5-691000-12R_11CO5-661000-1AR]
DCR=3.2 mohm
Isat=18A
Idc=15A
PK6H6BA/PDFN5*6/857pF/7.8m/[10IF9-070606-01R_10IF9-060088-01R]
NPL2 1uH/18A/IMD0809/BP/D
VCC1_0_PCH
NPR4 8.2K/4
NPR6 2.2/6
NPC7 1n/4/X7R/50V/K
NPQ2
PK6H6BA/PDFN5*6/857pF/7.8m/[10IF9-070606-01R_10IF9-060088-01R]
NPC8 22p/4/NPO/50V/J/X
RS
NPR8 2K/4/1
NPEC2 560u/TAP/FP/D/6.3V/69/A/7m/[11CO2-695600-21R_11CO2-695600-22R_11CO
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
P1V0_PCH_ADJ

5VDUAL NPR1 2.2/6
DRV_PCH
NPC4 1u/6/X7R/16V/K
NPR19 100K/4/1
PCH_1V0_GD
NPC2 0.1u/6/X7R/25V/K
P1V0_PCH_EN
EN PGOOD VCC BOOT UGATE PHASE FB CS RF GND LGATE
UGATE_PCH
PHASE_PCH
LGATE_PCH
NPU1 RT8237/[10TA1-608237-01R]
PCH_RF
NPR21
PCH_1V0_GD
470K/4/1
NPR12 280K/4/1
NPR20 470K/4/1/X
FS=290K
OCP=30A

PWR SEQ

P1V0_PCH_EN NPR14 0/4/X VCC1_0_EN 16
5VSB
NPR15 8.2K/4/X
P1V0_PCH_EN
NPQ4 2N7002/SOT23/25pF/5/X
SOT23
P1V0_PCH_EN NPR5 MASK/0/4/SHT/20/X
3VDUAL
NPR16 30K/4/1
NPQ3 MMBT2222A/SOT23/600mA/40/X
SOT23
NPR17 56K/4/1
NPC9 2.2u/4/X5R/6.3V/M

VCC1_0_PCH
NPC10 22u/6/X5R/6.3V/M
請放置CHOKE一出來的地方

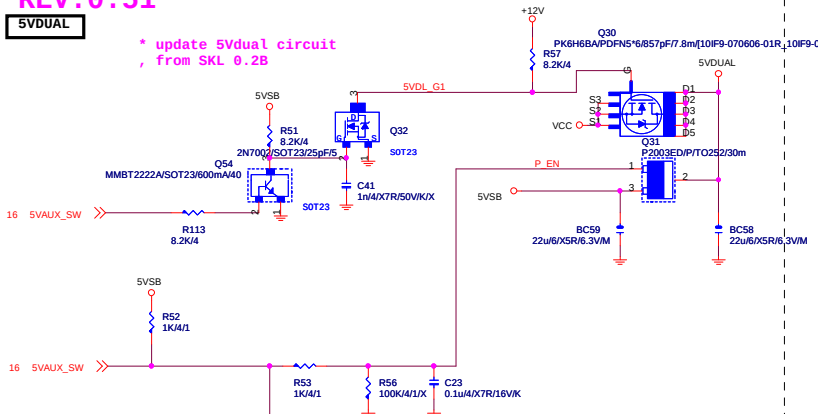
GIGABYTE

Title	RT8237_PCH POWER	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 29 of 49	

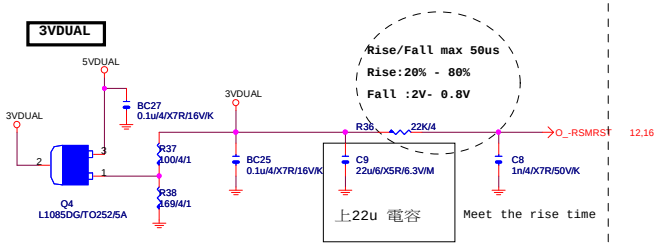
REV:0.51

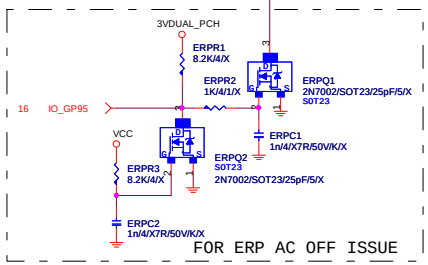
5VDUAL

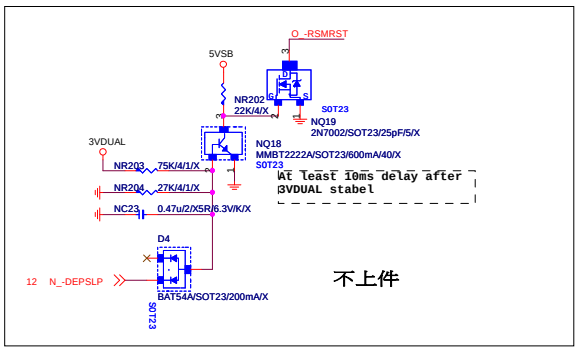
* update 5Vdual circuit
, from SKL 0.2B



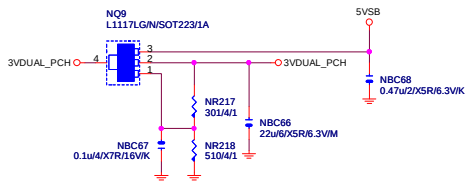
3VDUAL





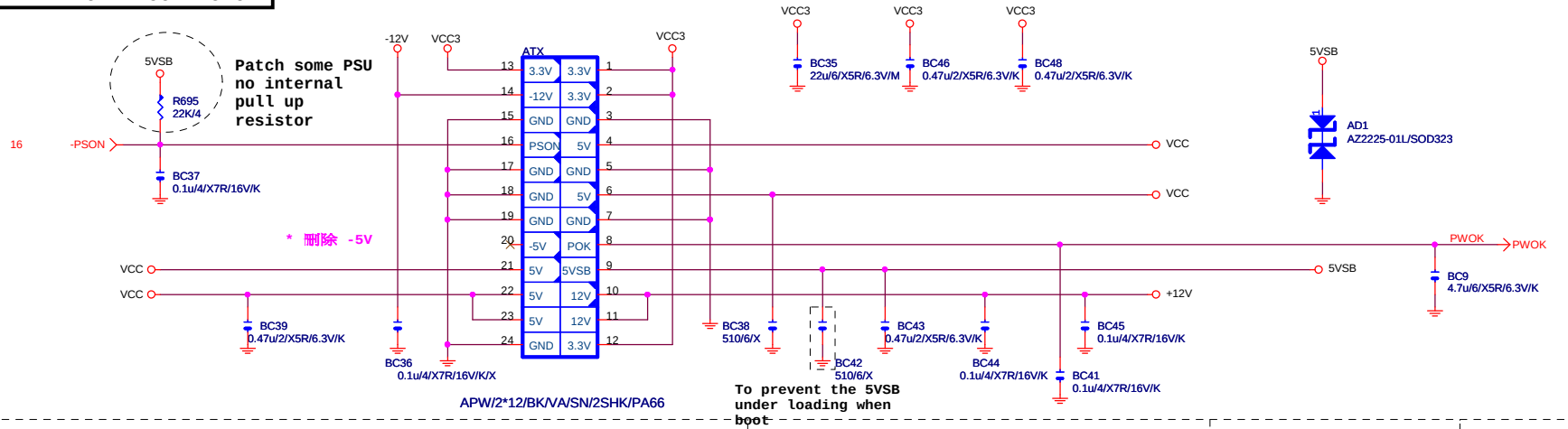


3VDUAL_PCH

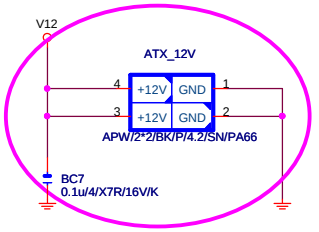


Gigabyte Technology			
Title: DISCRETE POWER			
Size: Custom	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 30 of 49		

ATXX24 POWER CONNECTOR

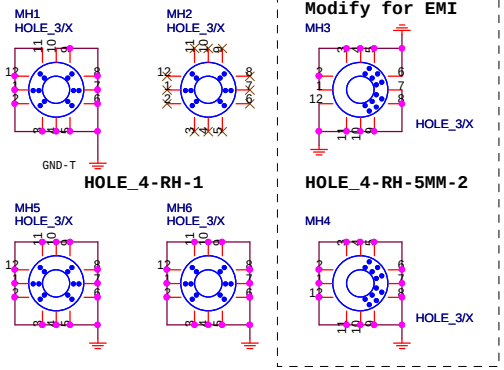


ATXX4 POWER CONNECTOR

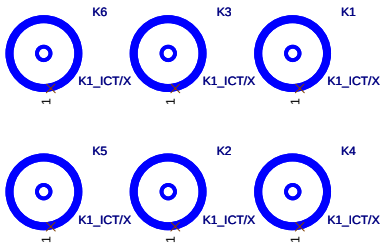


螺絲孔

MH1:GND-T
FOR EMI
TEST驗證

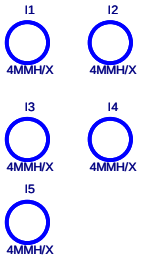


固定孔/光學點



K1-ICT

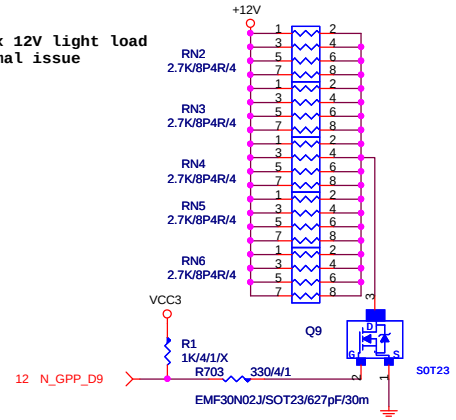
To prevent the 5VSB
under loading when
boot



4MMH

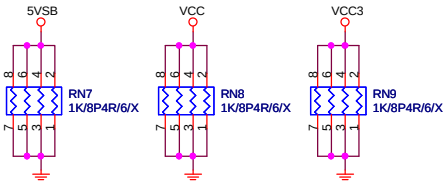
+12V DUMMY LOAD

To fix 12V light load
abnromal issue



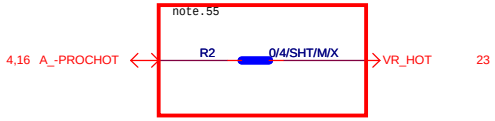
【技術通報R&D技術通報153】

DUMMY LOAD

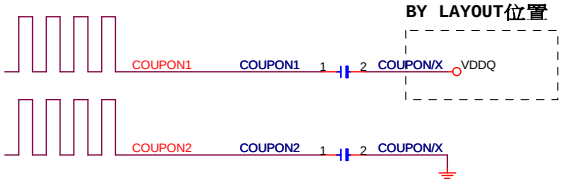


-PROHOT

* 保留 ?



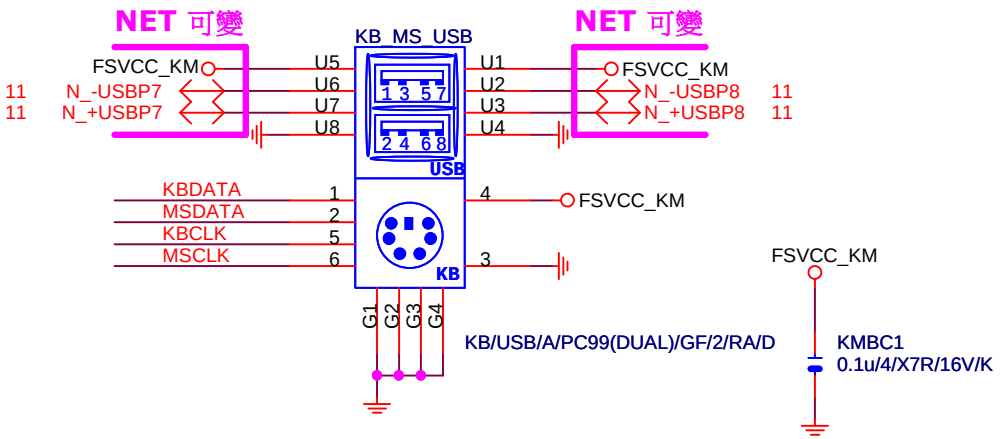
COUPON



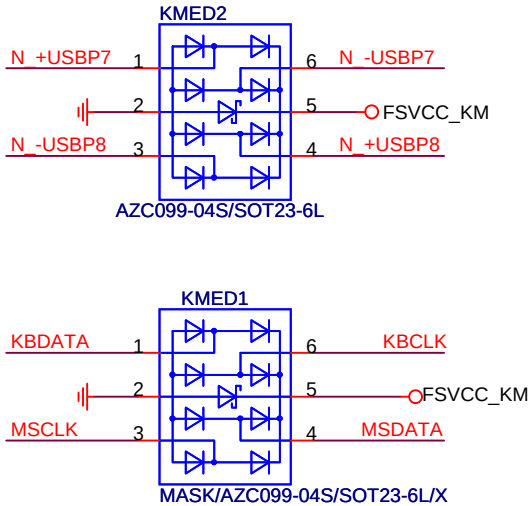
Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 31 of 49	

KB_MS_USB

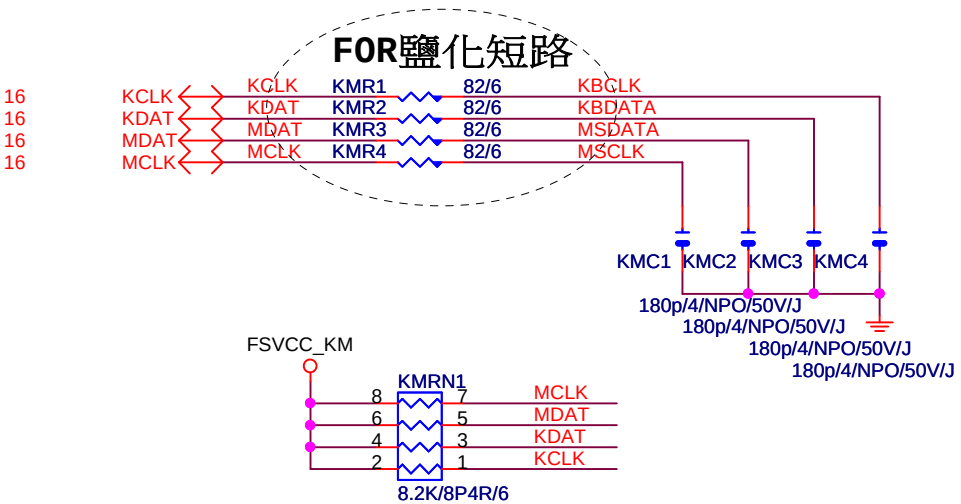
Rev: 0.7



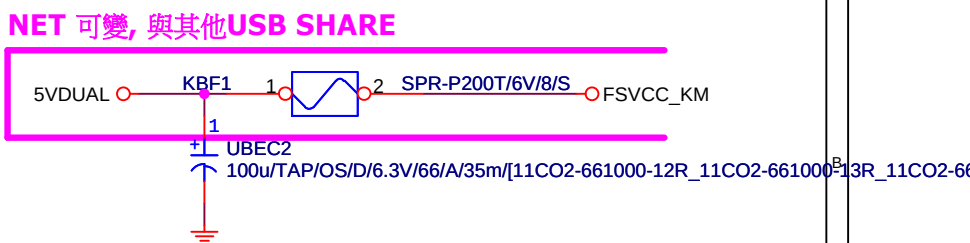
ESD



KB_MS_USB DAMPING/PU



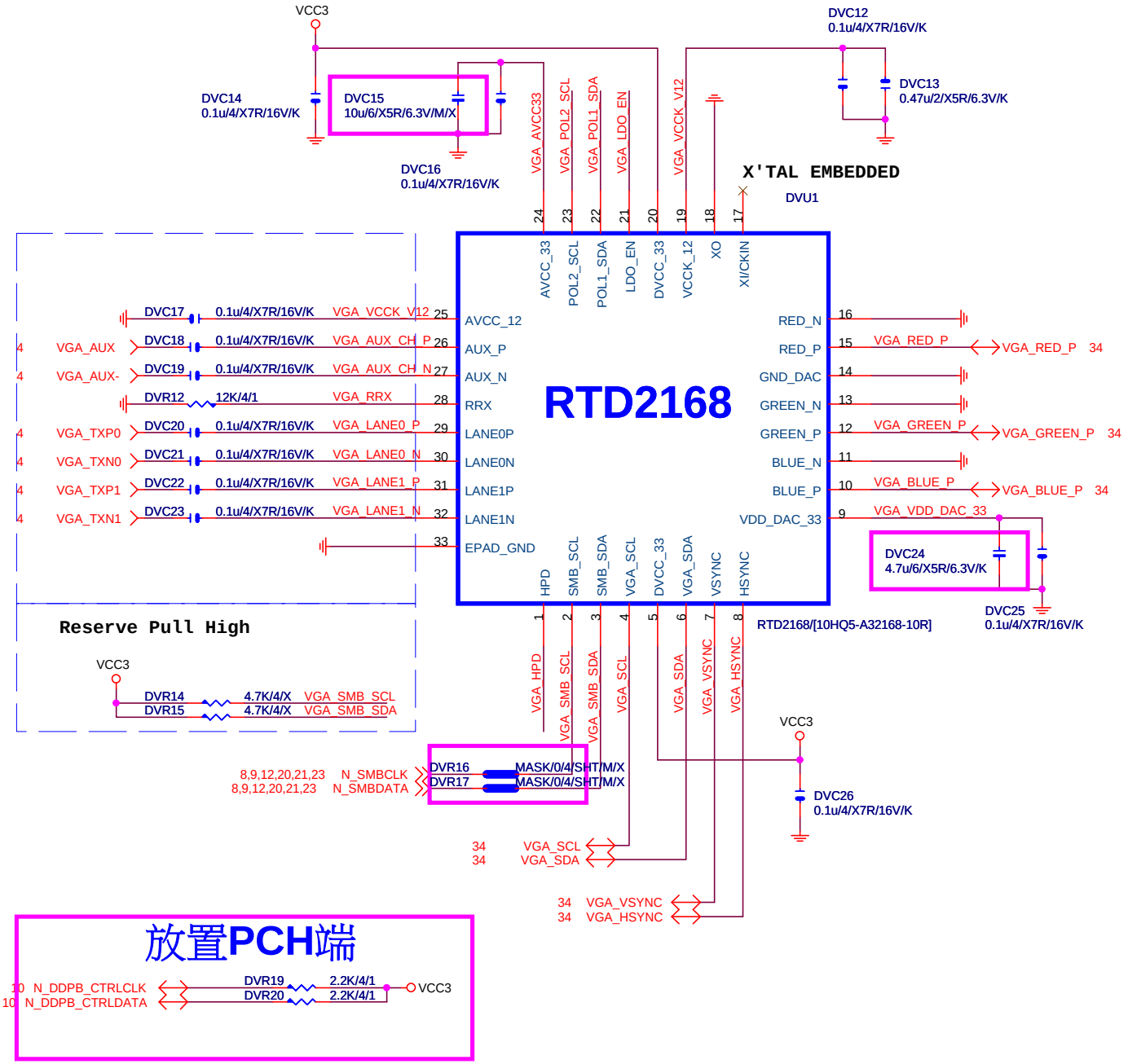
KB_MS_USB PWR



USB OC PROTECT

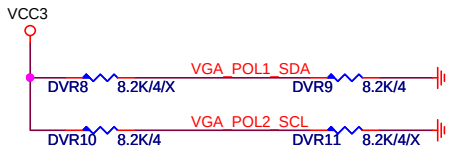
Gigabyte Technology		
Title: KB_MS_USB		
Size: A	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 32 of 49	

RTD2168 R2.0



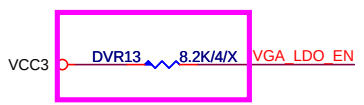
POWER

Power on latch



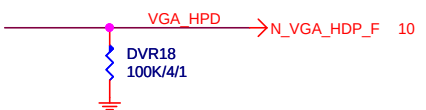
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE

Embedded LDO



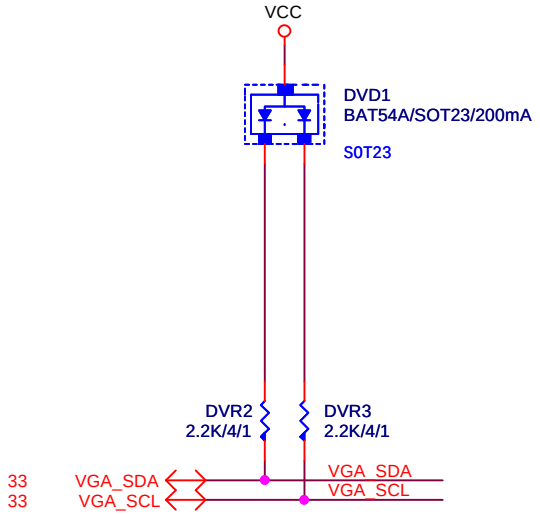
LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

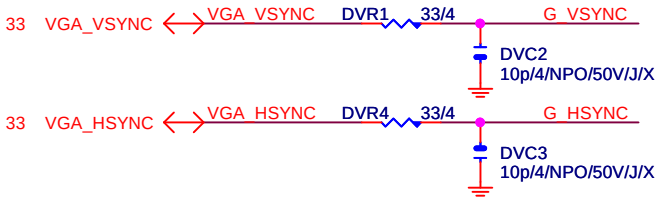
DP HPD

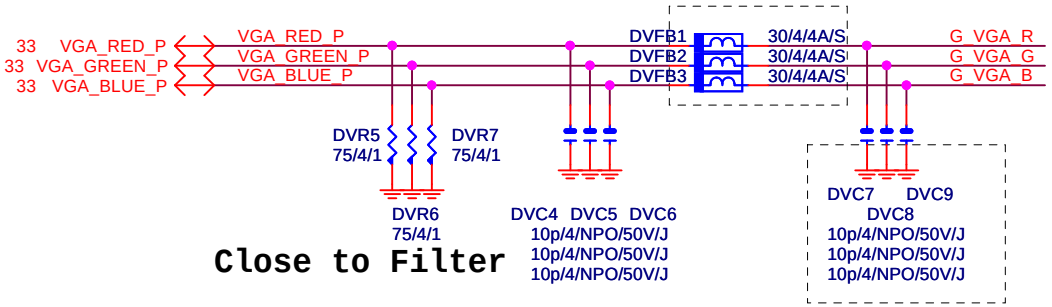


Gigabyte Technology			
Title: DP-VGA RTD2168			
Size: Custom	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018		Sheet 33 of 49	

VGA SIGNAL R2.0



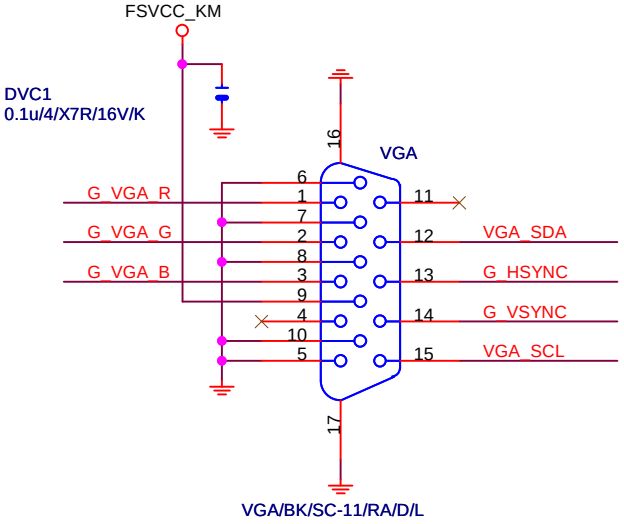




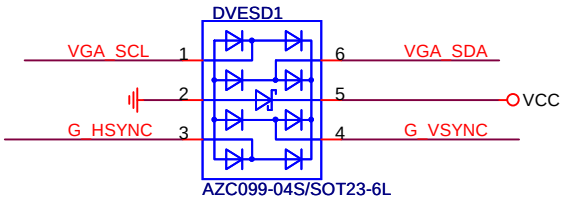
Close to Filter

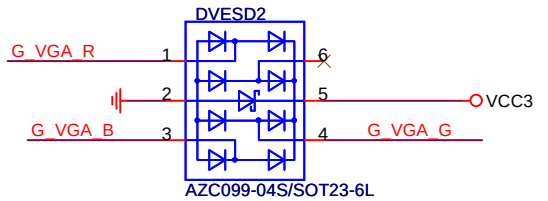
FOR EMI

VGA CONN.



VGA ESD

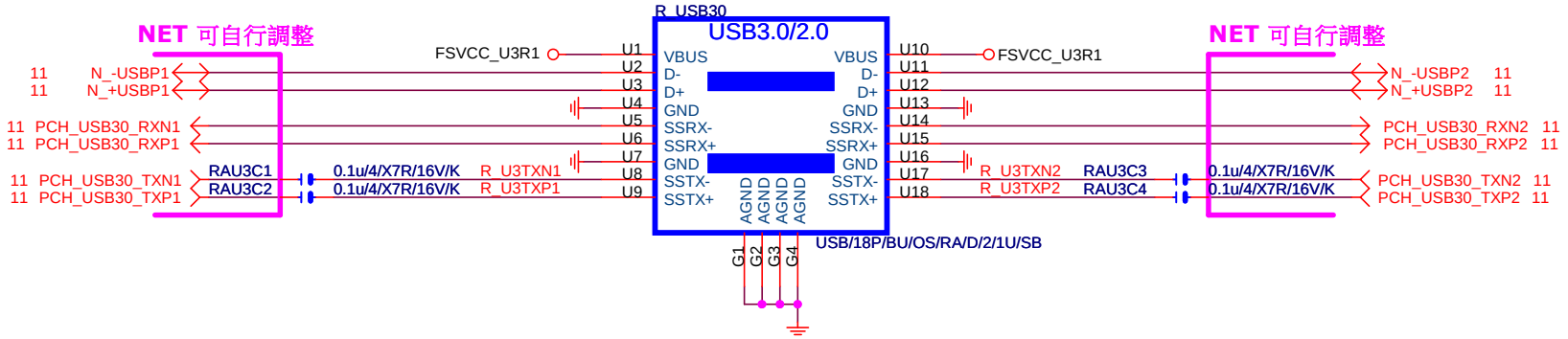




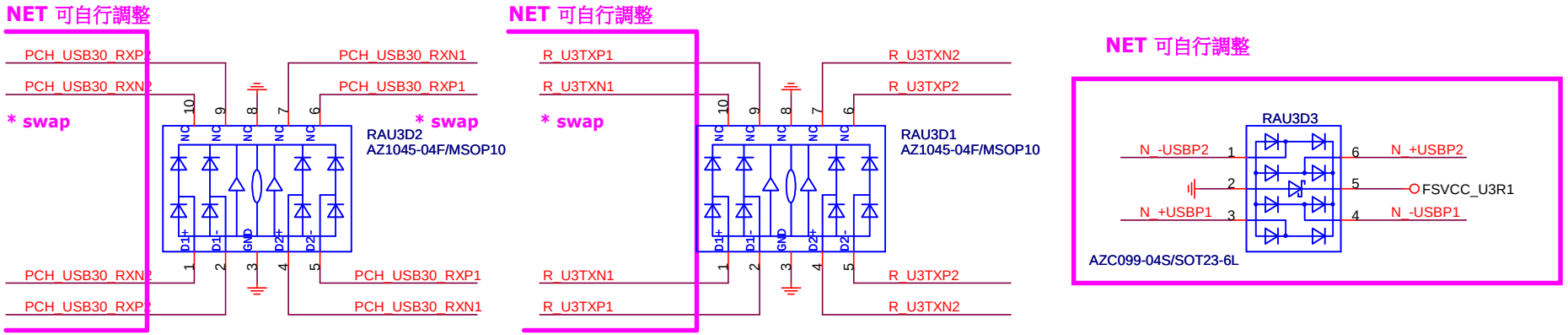
Title	Gigabyte Technology NXP-PTN3356	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 34 of 49	

Rev: 0.7

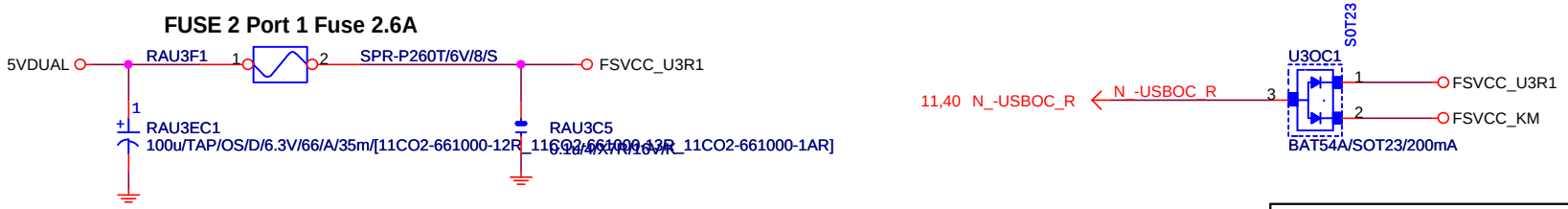
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



ESD

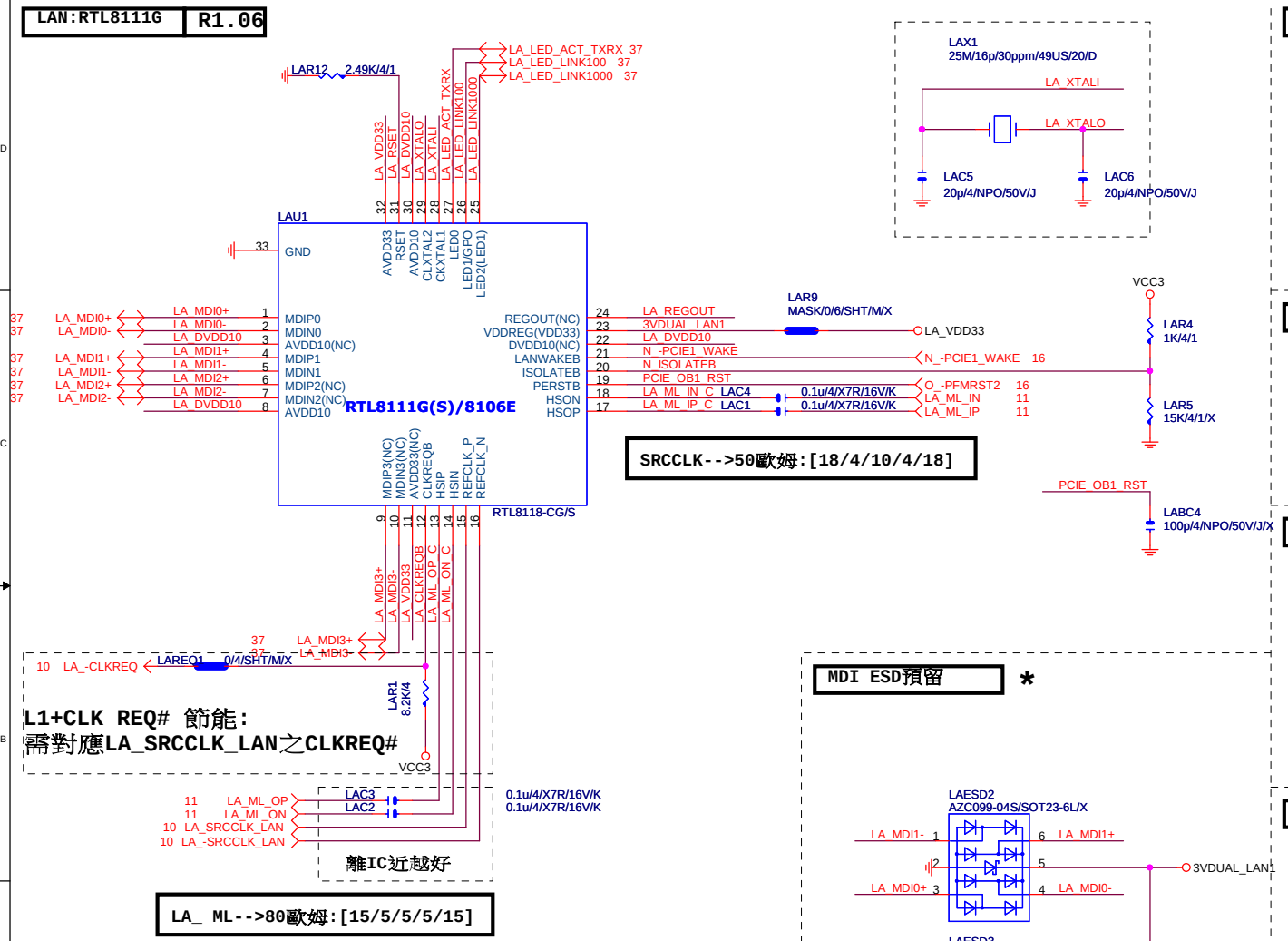


FUSE



Gigabyte Technology		
Title: R_USB30,USB_OC		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 35 of 49	

LAN:RTL8111G R1.06

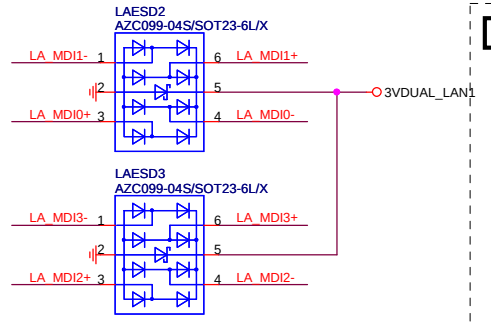


SRCCLK-->50歐姆:[18/4/10/4/18]

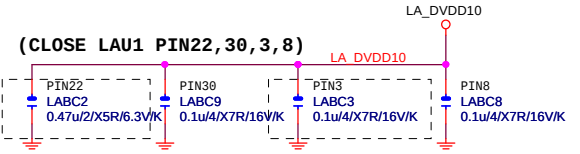
L1+CLK REQ# 節能:
需對應LA_SRCCLK_LAN之CLKREQ#

LA_ ML-->80歐姆:[15/5/5/5/15]

MDI ESD預留 *



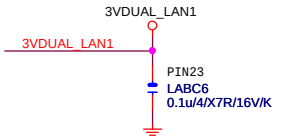
LAN POWER



LABC2:1U CLOSE PIN22[REALTEK REQ]

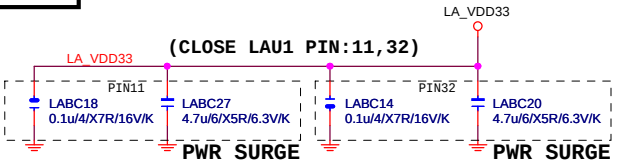
LAN POWER

note: lan power連接及電流



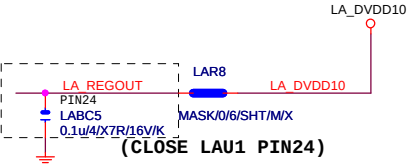
(CLOSE LAU1 PIN23)

LAN POWER



LABC18,27:CLOSE PIN11[REALTEK SURGE]
LABC14,20:CLOSE PIN32[REALTEK SURGE]

LAN POWER



(CLOSE LAU1 PIN24)

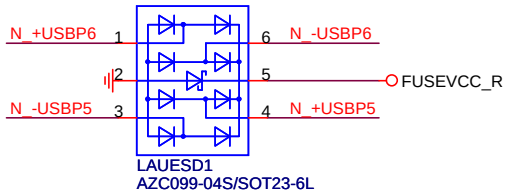
Gigabyte Technology		
Title: Realtek RTL8111GUS		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 36 of 49	

USB_LAN CONNECTOR R1.06

RMA ESD PROTECT

note:可變更USB NAME

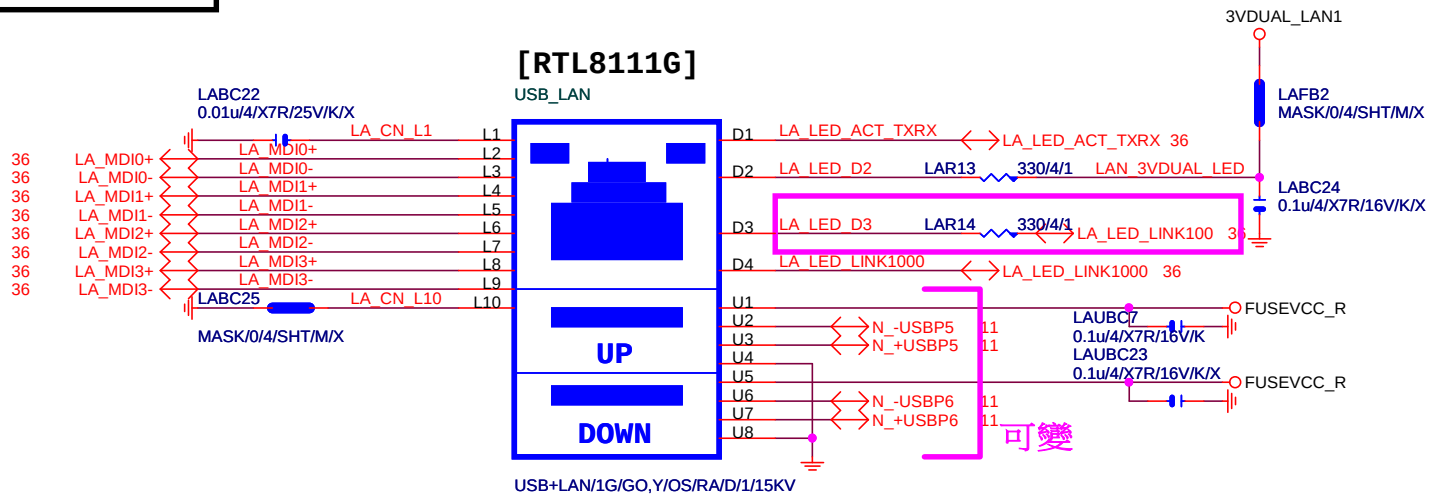
可變



USB_LAN CONNECTOR

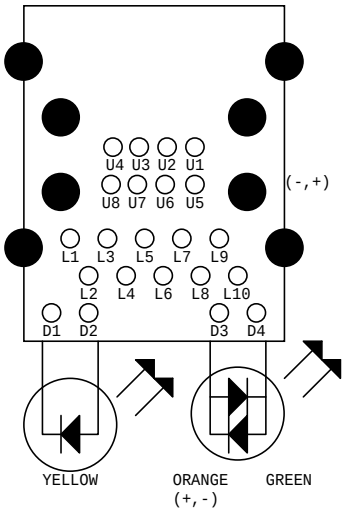
note:可變更USB NAME

[RTL8111G]

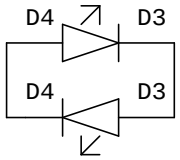


LA_MDI-->100歐姆:[20/4/8/4/20]

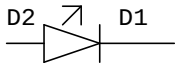
USB_LAN LAYOUT示意圖



Dual Color LED



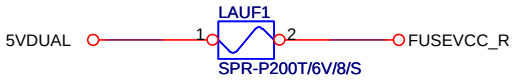
Single Color LED



USB POWER

note:可變更FUSE

可變



Close to connector

USB_LAN 2-Port 2.0A

FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAN POWER

note: lan power連接及電流

可變

Gigabyte Technology

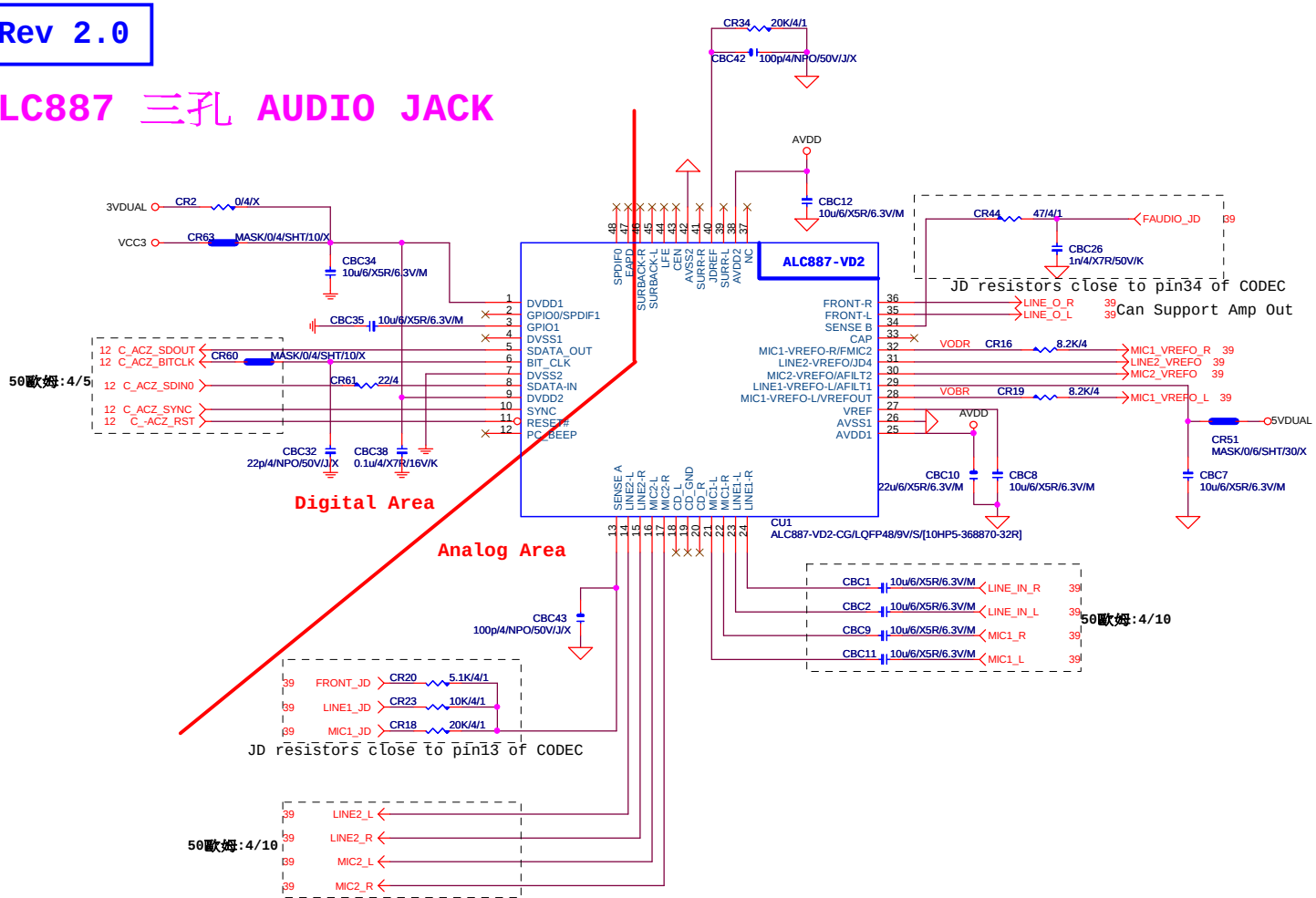
Title: **LAN CONNECTOR-RTL8111G**

Size	Document Number	Rev
Custom	H310M DS2 2.0	1.0

Date: Thursday, June 14, 2018 Sheet 37 of 49

Rev 2.0

ALC887 三孔 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

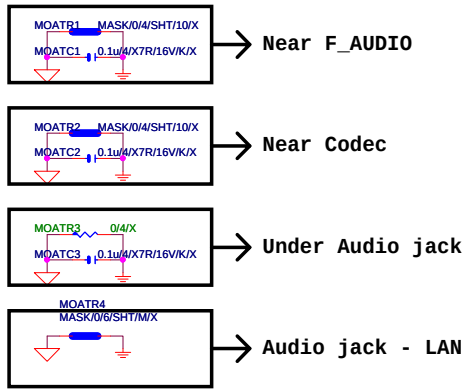
LAYOUT注意:要加

GND切割線

音效區域印刷

Gigabyte Technology		
Title: HD AUDIO ALC887		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 38 of 49	

Rev 2.01

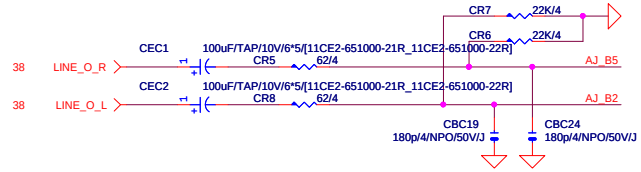


*量產前,0ohm改short pad

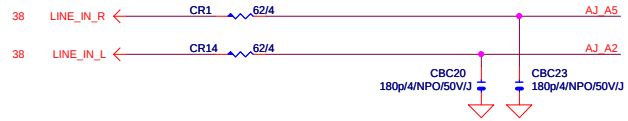
SPDIF_OUT

SPDIF_IN

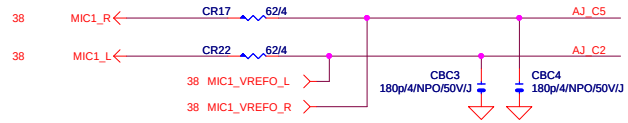
LINE-OUT



LINE-IN



MIC-IN

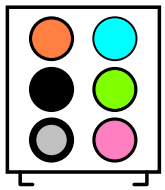


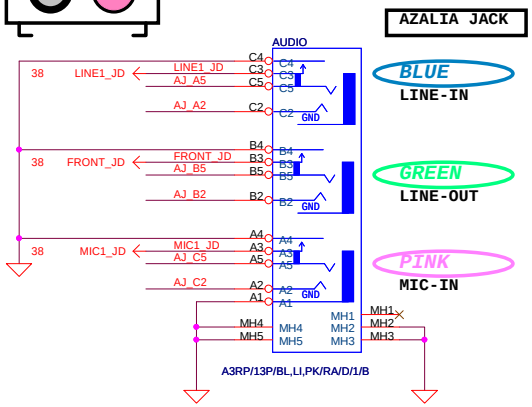
SURROUND

CEN/LFE

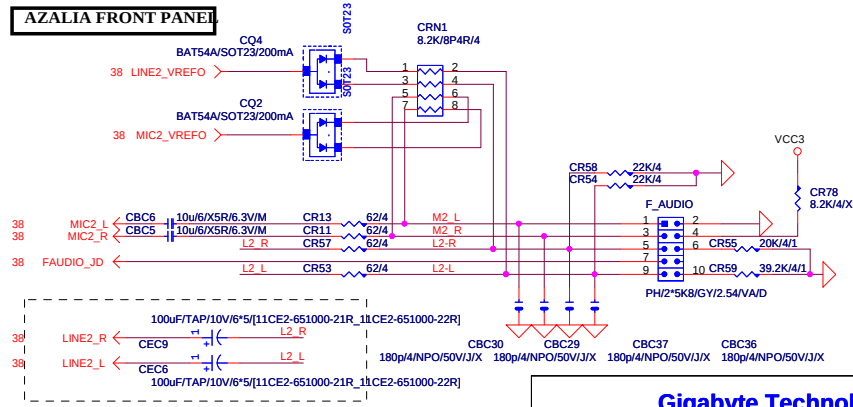
SURR BACK

AZALIA JACK



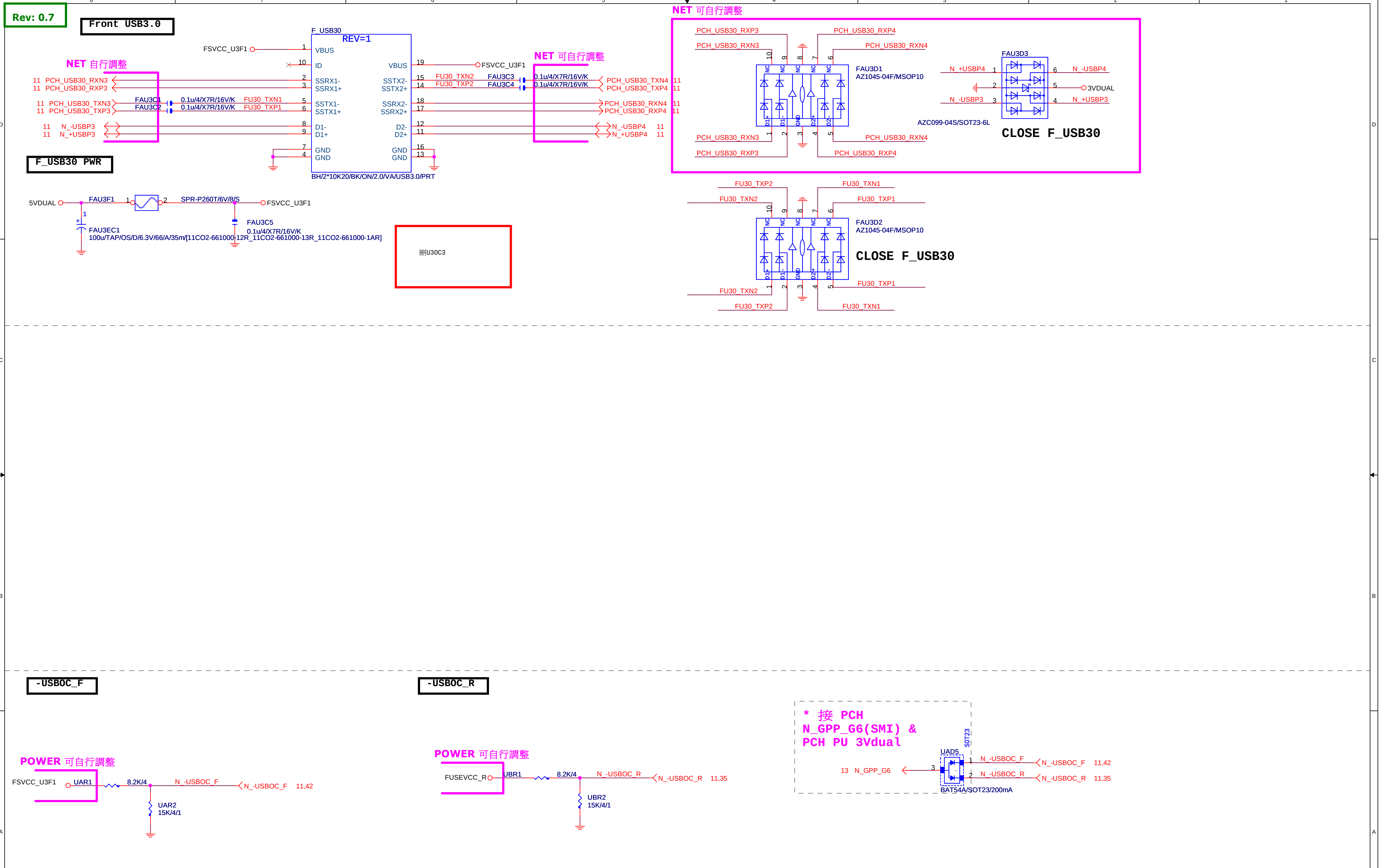


AZALIA FRONT PANEL



Gigabyte Technology

Title	AUDIO JACK	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 39 of 49	



Rev: 0.7
Front USB3.0
F_USB30
REV=1
FSVCC_U3F1
VBUS
ID
SSRX1-
SSRX1+
SSTX1-
SSTX1+
D1-
D1+
GND
SSTX2-
SSTX2+
SSRX2-
SSRX2+
D2-
D2+
BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
NET 自行調整
11 PCH_USB30_RXN3
11 PCH_USB30_RXP3
11 PCH_USB30_TXN3
11 PCH_USB30_TXP3
11 N_-USBP3
11 N_+USBP3
FAU3C1
FAU3C2
0.1u/4/X7R/16V/K
FU30_TXN1
FU30_TXP1
NET 可自行調整
FU30_TXN2
FU30_TXP2
FAU3C3
FAU3C4
PCH_USB30_TXN4 11
PCH_USB30_TXP4 11
PCH_USB30_RXN4 11
PCH_USB30_RXP4 11
N_-USBP4 11
N_+USBP4 11
F_USB30 PWR
5VDUAL
FAU3F1
SPR-P260T/6V/8/S
FAU3EC1
100u/TAP/OS/D/6.3V/66/A/35m/[11CO2-661000-12R_11CO2-661000-13R_11CO2-661000-1AR]
FAU3C5
0.1u/4/X7R/16V/K
刪U30C3
PCH_USB30_RXP3
PCH_USB30_RXN3
PCH_USB30_RXP4
PCH_USB30_RXN4
FAU3D1
AZ1045-04F/MSOP10
FAU3D3
N_+USBP4
N_-USBP4
N_-USBP3
N_+USBP3
3VDUAL
AZC099-04S/SOT23-6L
CLOSE F_USB30
FU30_TXP2
FU30_TXN2
FU30_TXN1
FU30_TXP1
FAU3D2
AZ1045-04F/MSOP10
CLOSE F_USB30
-USBOC_F
POWER 可自行調整
FSVCC_U3F1
UAR1
8.2K/4
N_-USBOC_F
N_-USBOC_F 11,42
UAR2
15K/4/1
-USBOC_R
POWER 可自行調整
FUSEVCC_R
UBR1
8.2K/4
N_-USBOC_R
N_-USBOC_R 11,35
UBR2
15K/4/1
* 接 PCH
N_GPP_G6(SMI) &
PCH PU 3Vdual
13 N_GPP_G6
UAD5
SOT23
N_-USBOC_F
N_-USBOC_R
N_-USBOC_F 11,42
N_-USBOC_R 11,35
BAT54A/SOT23/200mA

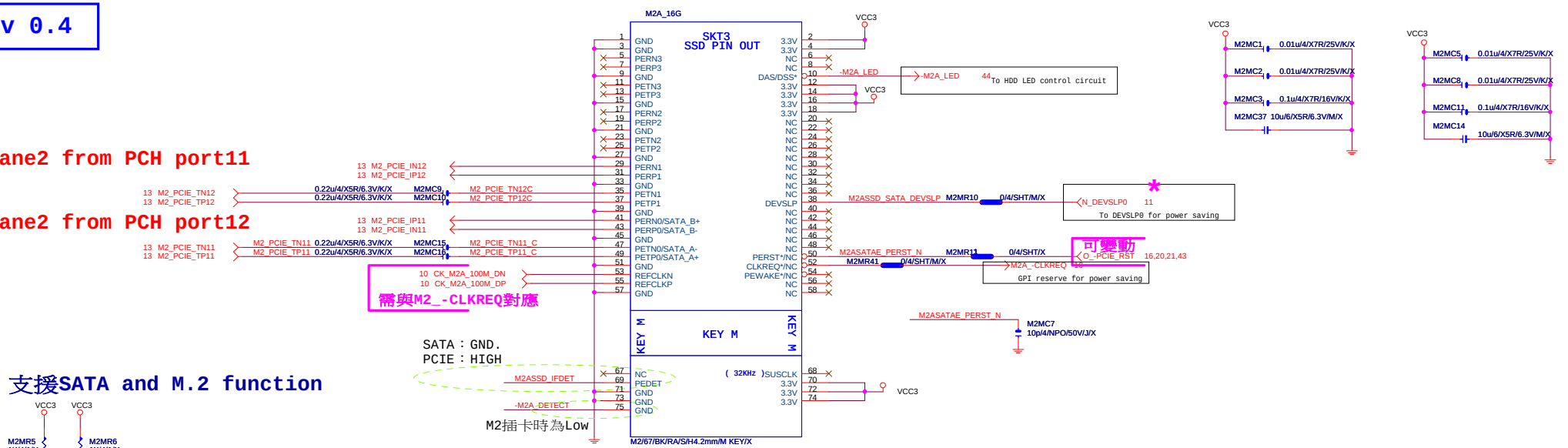
Gigabyte Technology

Title	R_USB30,F_USB30, USB_OC	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 40 of 49	

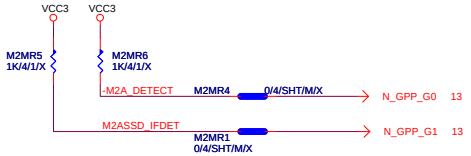
Rev 0.4

M.2 Lane2 from PCH port11

M.2 Lane2 from PCH port12

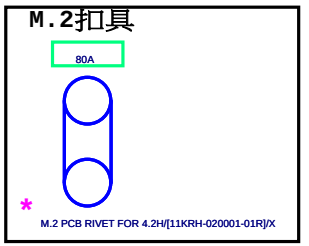


支援SATA and M.2 function

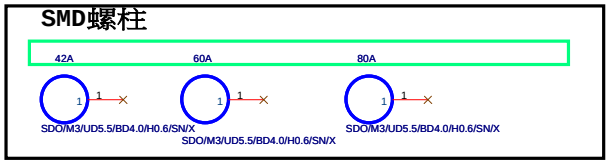


* Footprint : NGFF-M-75P-8CM-09MM-SMD
MASK:NGFF-M-8CM-09MM-SMD-MASK

M.2扣具



SMD螺柱



* Footprint : HOLE_165NP
MASK:HOLE_165NP-MASK

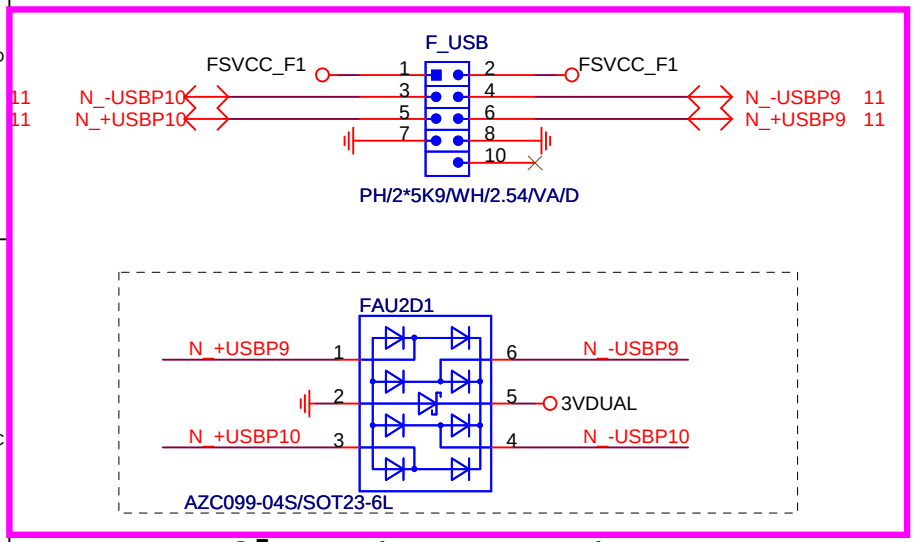
Gigabyte Technology		
Title: M.2 X4		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 41 of 49	

Rev: 0.7

FRONT USB1

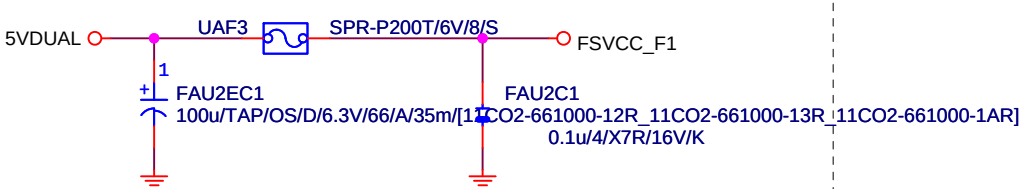
NET 可變

FUSB2X5-HS

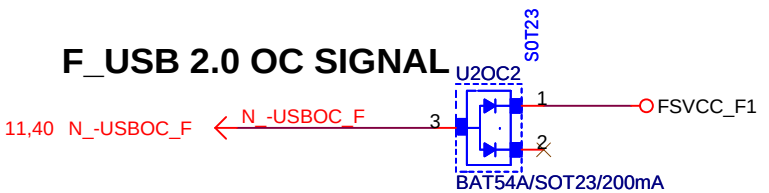


Close to connector

FUSE 2 Port 1 Fuse 2A



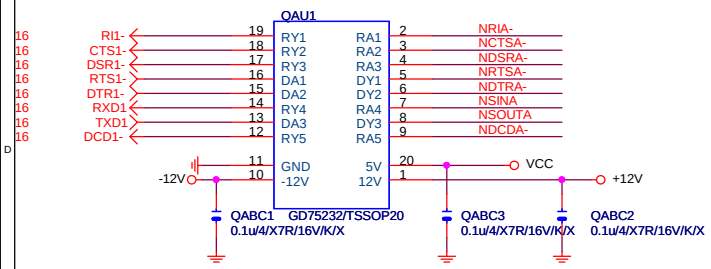
F_USB 2.0 OC SIGNAL

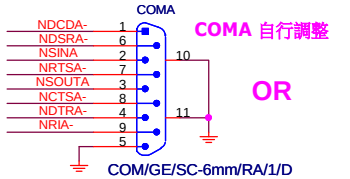


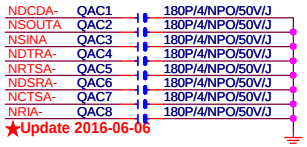
Gigabyte Technology			
Title: USB2.0			
Size: A	Document Number: H310M DS2 2.0		Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 42 of 49		

COM PORT

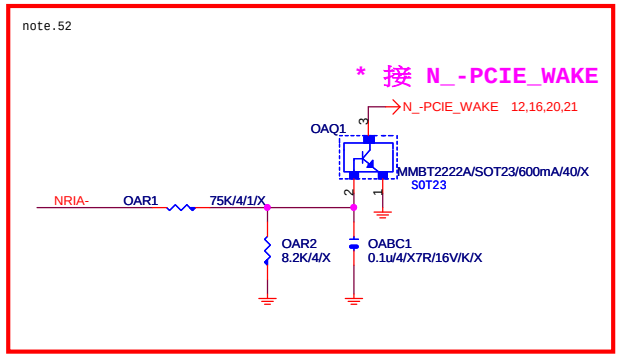
Rev: 0.7



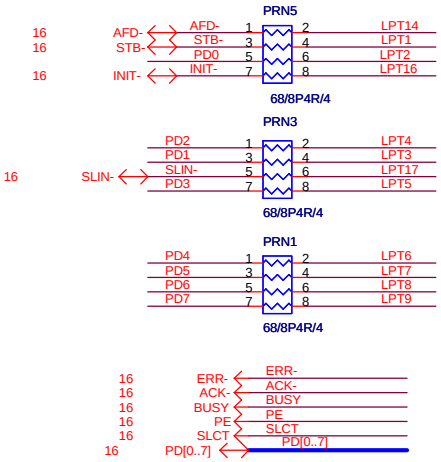


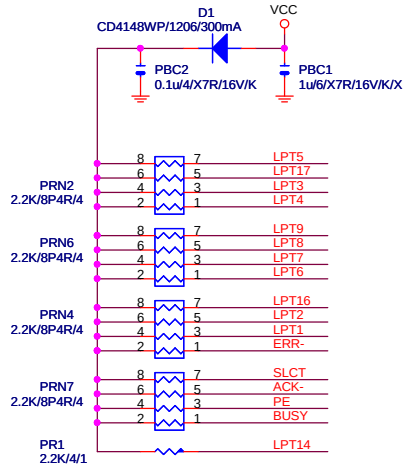


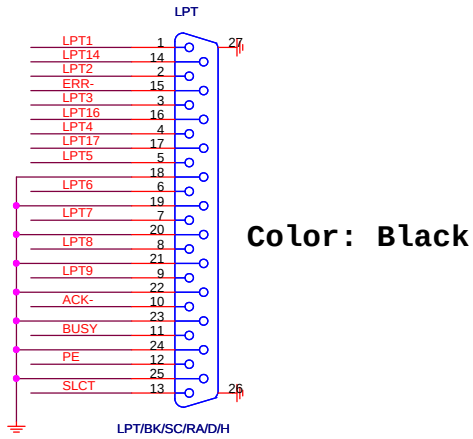
COM RI



LPT PORT

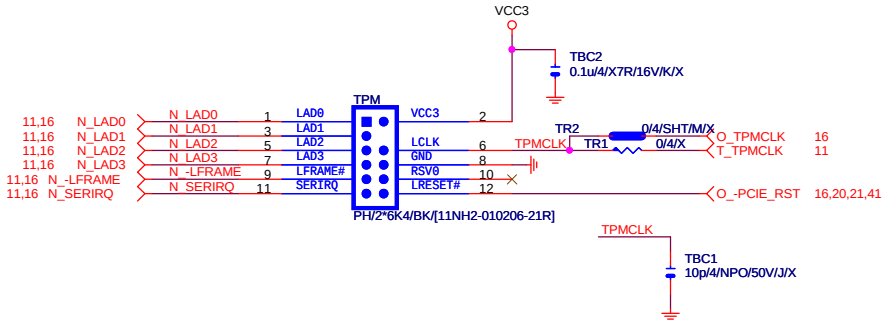






Color: Black

TPM CONNECT



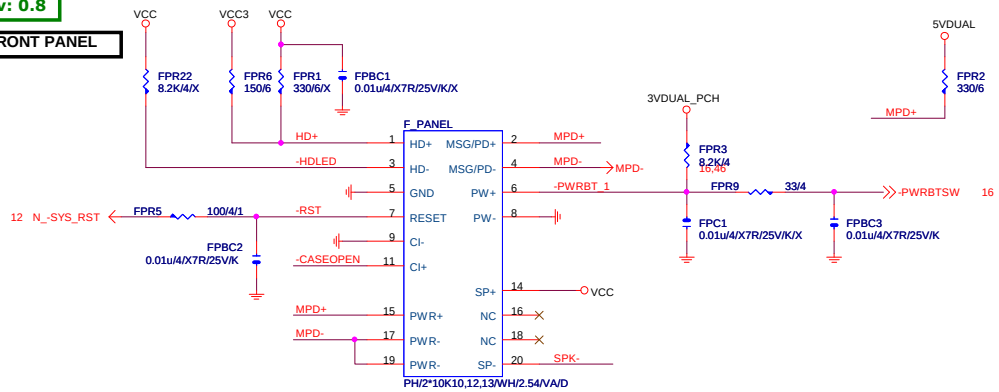
Thunderbolt (N/A)

Gigabyte Technology		
Title: FP,F_USB,USB PWR,BZ		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 43 of 49	

Rev: 0.8

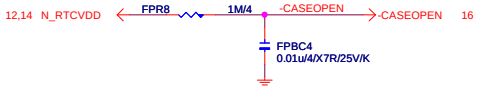
FRONT PANEL

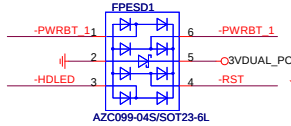
★Update 2016.06.15



FOOTPRINT:PIN2X10PANEL-NEW

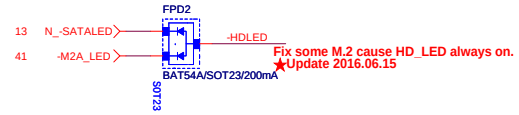
CASE OPEN





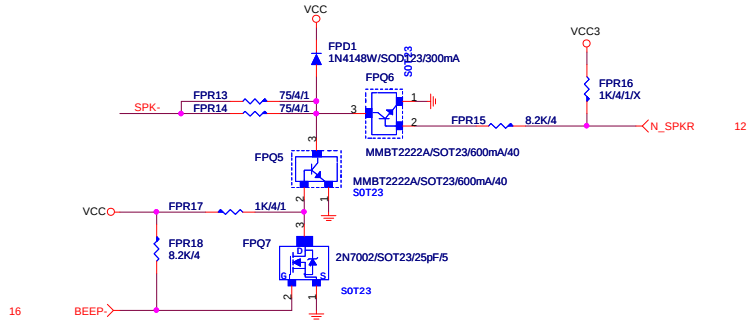
★Update 2015-02-11

SATA/M.2 LED



Fix some M.2 cause HD_LED always on.
★Update 2016.06.15

SPKR



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

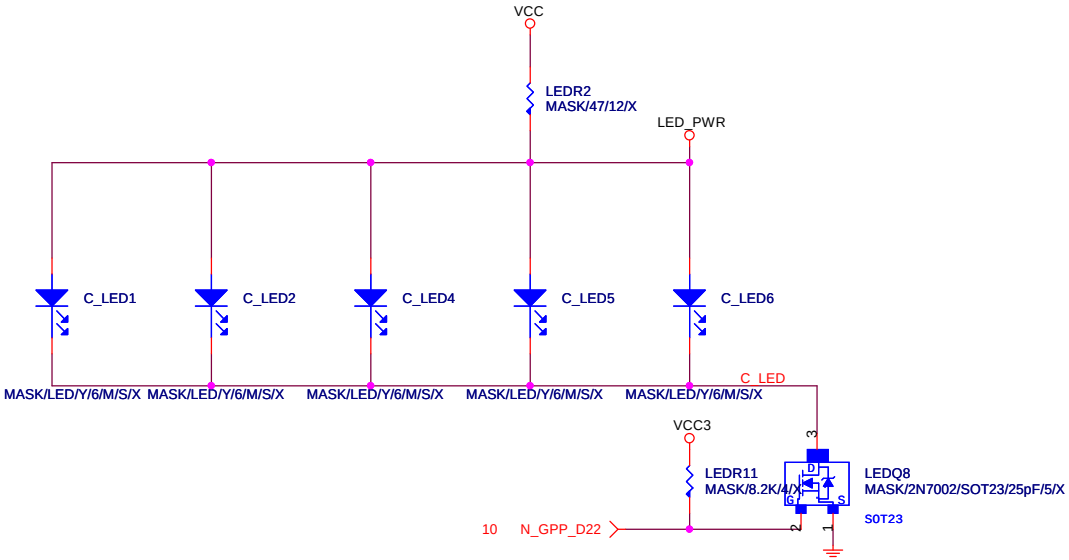
FRONT PANEL SHORT

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 44 of 49	

Rev 2.02

Ambient LED Control

	N_GPP_D22
ţ ill Mode	H
OFF Mode	L



GIGABYTE™

Title	Amient Single LED	
Size: Custom	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 45 of 49	

EMI/ESD R0.1

CLOSE SIO

CLOSE PCH

close to PCH (NR17)

R_USB30_2 & DVI 之間

close to SIO (PIN92)MPD-

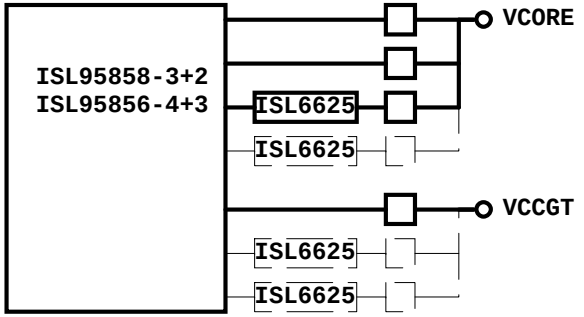
GIGABYTE™

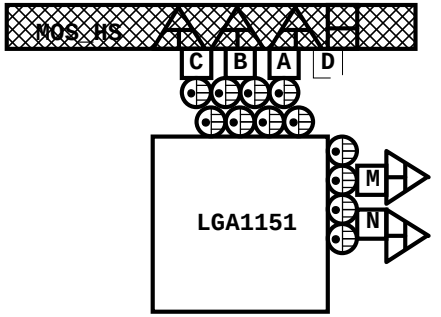
Title: EMI/ESD		
Size: A	Document Number: H310M DS2 2.0	Rev: 1.0
Date: Thursday, June 14, 2018	Sheet 46 of 49	

POWER BLOCK MAP

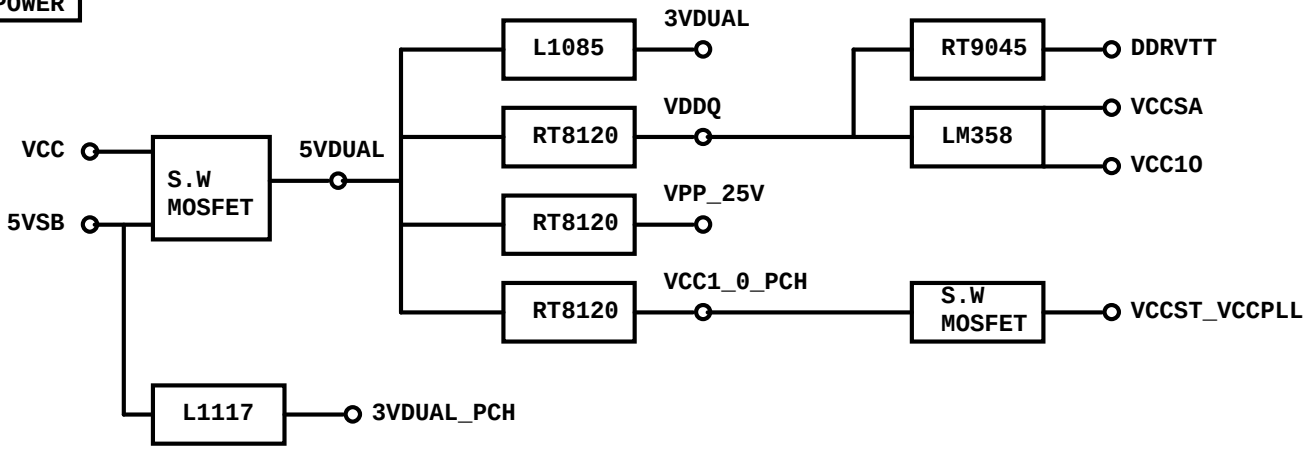
- **CPU**: VCORE, VCCGT, VCCSA, VCCIO, VDDQ, VCCST_VCCPLL, VCCSFUSEPRG
- **DDR4**: VDDQ, DDRVTT, VPP_25V, VDDSPD(VCC3)
- **PCH**: VCC1_0_PCH, VCC1_0_PCH_DSW, VCC10_VCCF24_1P0, VCC10_VCCAMPHYPLL, VCC10_VCCAPLL, VCC3_PCH, 3VDUAL_PCH, VCC3, N_RTCVDD
- **IT8628**: IT_VCCH, IT_AVCC, 2_5LEVEL
- **HM**: +12V,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

VCORE/VCCGT

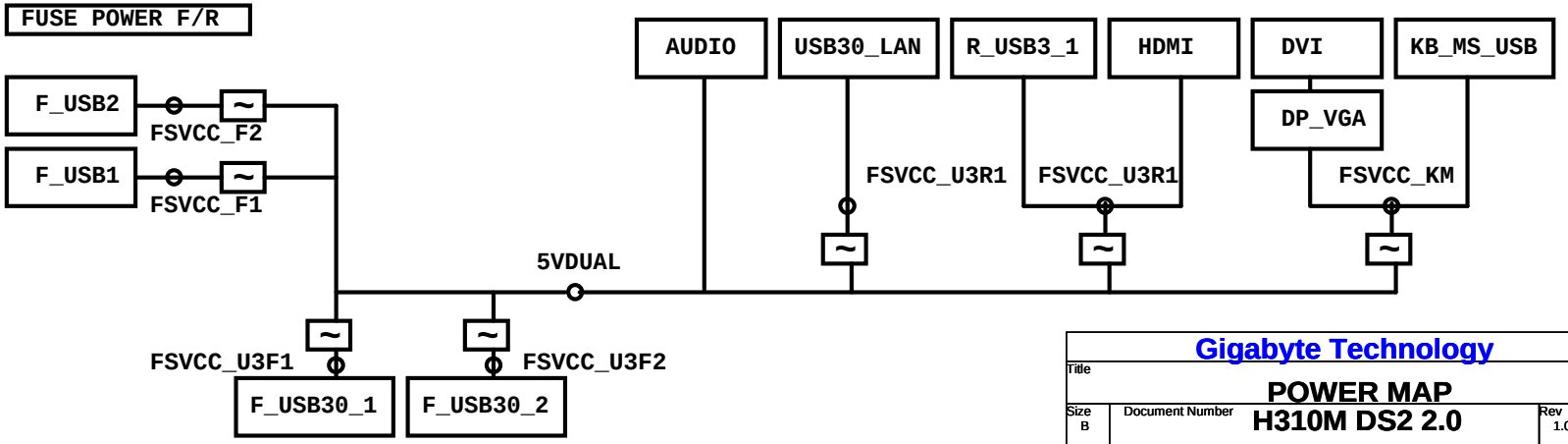




POWER



FUSE POWER F/R



Gigabyte Technology

Title	POWER MAP	
Size B	Document Number H310M DS2 2.0	Rev 1.0
Date: Thursday, June 14, 2018	Sheet 47 of 49	

固態電容料號.請自行修改

日系黑色固態	Capture Value
11C02-C85600-01R	560u/FP/D/6.3V/68/C/8m
11CO5-C82700-01R	270u/FP/D/16V/88/C/12m
11CO5-C61000-01R	100u/OS/D/16V/66/C/30m
11CO2-C51000-01R	100u/FP/D/6.3V/65/C/13m

日系一般固態	Capture Value
11CO2-685600-01R	560u/FP/D/6.3V/68/8m
11CO5-882700-01R	270u/FP/D/16V/88/12m
11CO5-661000-03R	100u/OS/D/16V/66/30m
11CO2-651000-02R	100u/OS/D/6.3V/66/30m

台系固態	Capture Value
11CO2-661000-09R	100u/OS/D/6.3V/66/A/35m
11CO5-691000-09R	100u/OS/D/16V/69/A/35m
11CO5-8C2700-09R	270u/FP/D/16V/8C/A/10m
11CO2-695600-09R	560u/FP/D/6.3V/69/A/11m

IRON CHOKE

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-M4500C-01R	0.5uH/40A/IMD109/M/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-M2500C-01R	0.5uH/20A/IMD0809/M/D	8*8	CHOKE1U-R50M-IF

Ferrite

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-F3500C-11R	0.5uH/32A/INCG109/FSI/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-F2500C-11R	0.5uH/25A/INC0809/F/D	8*8	CHOKE1U-R50M-IF
SMD	未建(SIUC1007-R30M-JJ1W)		10*7	CHOKE11X8MM-SMD

BEAD

	料號	Capture Value	SIZE	Footprint
DIP	10LFB-15470A-01R	47/4030/15A/S	4*3	BEADC8B-BPH_SMD

PWM料號

		料號	Capture Value	Footprint
PWM	ISL95856	10TA1-695856-01R		IC52QFN-6x6-G
PWM	ISL95858	10TA1-695858-01R		IC52QFN-6x6-G
PWM	IR35201	10TA1-635201-00R		IC56QFN-9VRS4339
PWM	IR3570	10TA1-603570-00R		IC40MLFP-ISL95835

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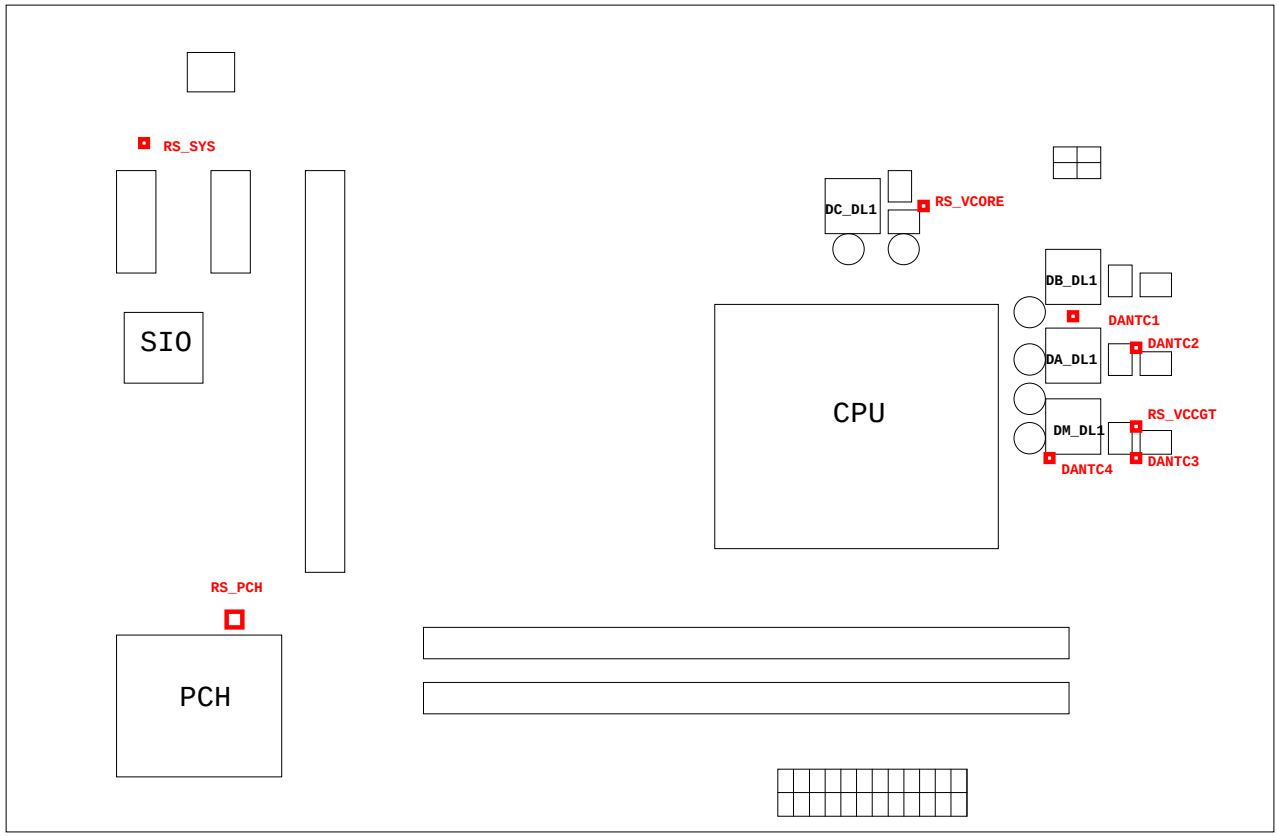
Title: RT8120_DDR4 POWER

Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: Thursday, June 14, 2018 | Sheet 48 of 49



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

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Size: Custom | Document Number: H310M DS2 2.0 | Rev: 1.0

Date: Thursday, June 14, 2018 | Sheet 49 of 49