Model Name: GA-Z270-GAMING 3

Rev 1.0

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SHEET	TITLE
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55	TI HDSS3212&TUSB321
56	Realtek ALC1220
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Gigabyte Technology

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Model Name: GA-Z270-GAMING 3

Component value change history

Data	Change Item	Reason
2016/10/25 PCB:0.1	1.PCB first release	
2016/10/26 PCB:1.0	1. Rear IO 2. DDR SLOT Changed RED	

9.0

Circuit or PCB layout change

DATE	Change Item	Reason
2016/10/25 PCB:0.1	1.PCB first release	
	2.線路由GA-Z270-Gaming K3 1.01 來修改 3. PCIE X16 LED MASK	
2016/10/26 PCB:1.0	1. LEDQ6 MASK open	

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Title: BOM & PCB MODIFY HISTORY

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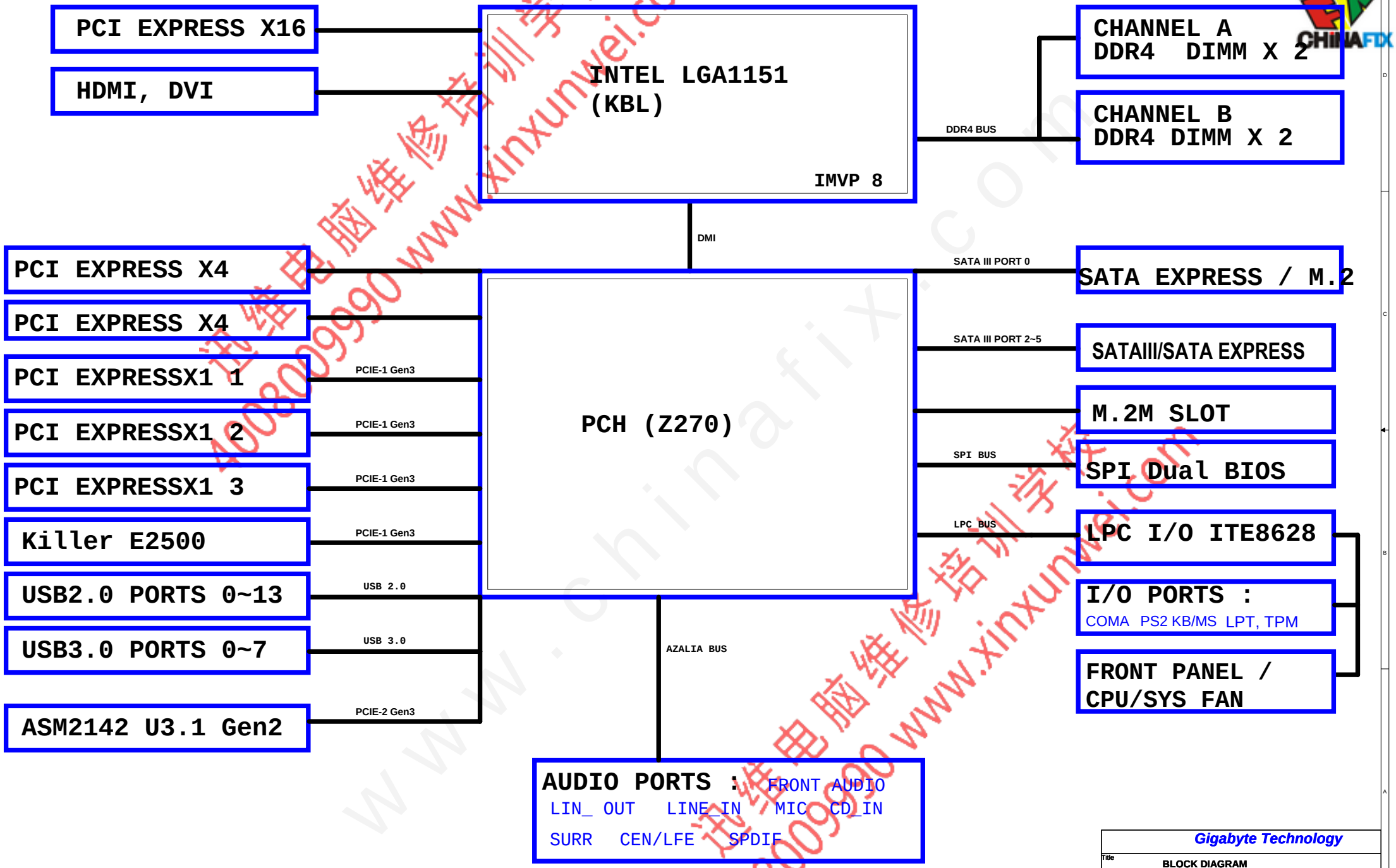
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
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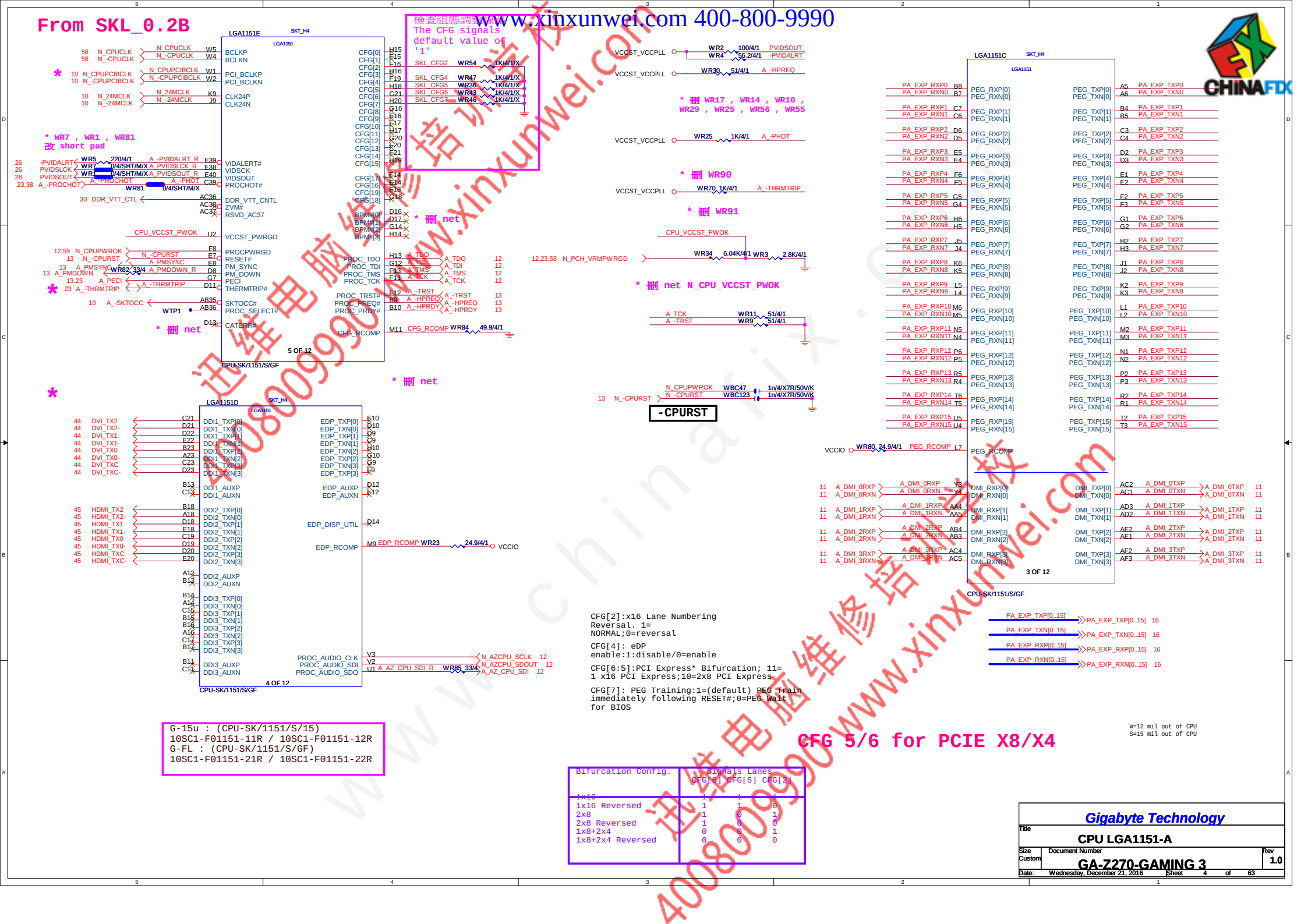

* WR7 , WR1 , WR81 改 short pad

* 刪 net

* 刪 net

* 刪 net

* 刪 WR17 , WR14 , WR10 , WR29 , WR25 , WR56 , WR55

* 刪 WR90

* 刪 WR91

* 刪 net N_CPU_VCCST_PWOK

CFG[2]:x16 Lane Numbering Reversal. 1= NORMAL;0=reversal

CFG[4]: eDP enable:1:disable/0=enable

CFG[6:5]:PCI Express* Bifurcation; 11= 1 x16 PCI Express;10=2x8 PCI Express

CFG[7]: PEG Training:1=(default) PEG Train immediately following RESET#;0=PEG Wait for BIOS

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

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

CFG 5/6 for PCIE X8/X4

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

Gigabyte Technology	
Title	CPU LGA1151-A
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* 改DDR4 net

LGA1151A

SKT_H4

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	AR39	DDR0_DQ[22]/DDR0_DQ[38]					
MDA23	AR40	DDR0_DQ[23]/DDR0_DQ[39]					
MDA24	AW37	DDR0_DQ[24]/DDR0_DQ[40]					
MDA25	AU38	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	AV37	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	AY6	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	AT4	DDR0_DQ[46]/DDR1_DQ[14]					
MDA47	AT3	DDR0_DQ[47]/DDR1_DQ[15]					
MDA48	AP2	DDR0_DQ[48]/DDR1_DQ[32]					
MDA49	AM4	DDR0_DQ[49]/DDR1_DQ[33]					
MDA50	AP3	DDR0_DQ[50]/DDR1_DQ[34]					
MDA51	AM3	DDR0_DQ[51]/DDR1_DQ[35]					
MDA52	AP4	DDR0_DQ[52]/DDR1_DQ[36]					
MDA53	AM2	DDR0_DQ[53]/DDR1_DQ[37]					
MDA54	AP1	DDR0_DQ[54]/DDR1_DQ[38]					
MDA55	AM1	DDR0_DQ[55]/DDR1_DQ[39]					
MDA56	AK3	DDR0_DQ[56]/DDR1_DQ[40]					
MDA57	AH1	DDR0_DQ[57]/DDR1_DQ[41]					
MDA58	AK4	DDR0_DQ[58]/DDR1_DQ[42]					
MDA59	AH2	DDR0_DQ[59]/DDR1_DQ[43]					
MDA60	AH4	DDR0_DQ[60]/DDR1_DQ[44]					
MDA61	AK2	DDR0_DQ[61]/DDR1_DQ[45]					
MDA62	AH3	DDR0_DQ[62]/DDR1_DQ[46]					
MDA63	AK1	DDR0_DQ[63]/DDR1_DQ[47]					
	AU33						
	AT33	DDR0_ECC[0]					
	AW33	DDR0_ECC[1]					
	AV31	DDR0_ECC[2]					
	AU31	DDR0_ECC[3]					
	AV33	DDR0_ECC[4]					
	AW31	DDR0_ECC[5]					
	AY31	DDR0_ECC[6]					
		DDR0_ECC[7]					

		DDR0_CKP[0]					
		DDR0_CKN[0]					
		DDR0_CKP[1]					
		DDR0_CKN[1]					
		DDR0_CKP[2]					
		DDR0_CKN[2]					
		DDR0_CKP[3]					
		DDR0_CKN[3]					
		DDR0_CKE[0]					
		DDR0_CKE[1]					
		DDR0_CKE[2]					
		DDR0_CKE[3]					
		DDR0_CS#[0]					
		DDR0_CS#[1]					
		DDR0_CS#[2]					
		DDR0_CS#[3]					
		DDR0_ODT[0]					
		DDR0_ODT[1]					
		DDR0_ODT[2]					
		DDR0_ODT[3]					
		DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]					
		DDR0_BA[1]/DDR0_CAB[6]/DDR0_BA[1]					
		DDR0_BA[2]/DDR0_CAA[5]/DDR0_BG[0]					
		DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]					
		DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]					
		DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]					
		DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]					
		DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]					
		DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]					
		DDR0_MA[3]					
		DDR0_MA[4]					
		DDR0_MA[5]/DDR0_CAA[0]/DDR0_MA[5]					
		DDR0_MA[6]/DDR0_CAA[2]/DDR0_MA[6]					
		DDR0_MA[7]/DDR0_CAA[4]/DDR0_MA[7]					
		DDR0_MA[8]/DDR0_CAA[3]/DDR0_MA[8]					
		DDR0_MA[9]/DDR0_CAA[1]/DDR0_MA[9]					
		DDR0_MA[10]/DDR0_CAB[7]/DDR0_MA[10]					
		DDR0_MA[11]/DDR0_CAA[7]/DDR0_MA[11]					
		DDR0_MA[12]/DDR0_CAA[6]/DDR0_MA[12]					
		DDR0_MA[13]/DDR0_CAB[0]/DDR0_MA[13]					
		DDR0_MA[14]/DDR0_CAA[9]/DDR0_BG[1]					
		DDR0_MA[15]/DDR0_CAA[8]/DDR0_ACT#					
		DDR0_PAR					
		DDR0_ALERT#					
		DDR0_DQSN[0]					
		DDR0_DQSN[1]					
		DDR0_DQSN[2]/DDR0_DQSN[4]					
		DDR0_DQSN[3]/DDR0_DQSN[5]					
		DDR0_DQSN[4]/DDR1_DQSN[0]					
		DDR0_DQSN[5]/DDR1_DQSN[1]					
		DDR0_DQSN[6]/DDR1_DQSN[4]					
		DDR0_DQSN[7]/DDR1_DQSN[5]					
		DDR0_DQSP[0]					
		DDR0_DQSP[1]					
		DDR0_DQSP[2]/DDR0_DQSP[4]					
		DDR0_DQSP[3]/DDR0_DQSP[5]					
		DDR0_DQSP[4]/DDR1_DQSP[0]					
		DDR0_DQSP[5]/DDR1_DQSP[1]					
		DDR0_DQSP[6]/DDR1_DQSP[4]					
		DDR0_DQSP[7]/DDR1_DQSP[5]					
		DDR0_DQSP[8]					
		DDR0_DQSN[8]					

AW18	M_DCLKA0	M_DCLKA0	8				
AV18	M_-DCLKA0	M_-DCLKA0	8				
AW17	M_DCLKA1	M_DCLKA1	8				
AY17	M_-DCLKA1	M_-DCLKA1	8				
AW16	M_DCLKA2	M_DCLKA2	8				
AV16	M_-DCLKA2	M_-DCLKA2	8				
AT16	M_DCLKA3	M_DCLKA3	8				
AU16	M_-DCLKA3	M_-DCLKA3	8				
AY24	CKEA0	CKEA0	8				
AW24	CKEA1	CKEA1	8				
AV24	CKEA2	CKEA2	8				
AV25	CKEA3	CKEA3	8				
AW12	M_CSA0	M_CSA0	8				
AU11	M_CSA1	M_CSA1	8				
AV13	M_CSA2	M_CSA2	8				
AV10	M_CSA3	M_CSA3	8				
AW11	MODT_A0						
AU14	MODT_A1						
AU12	MODT_A2						
AY10	MODT_A3						
AY13	SBAA0	SBAA0	8				
AV15	SBAA1	SBAA1	8				
AW23	BG_A0	BG_A0	8				
AW13	MAAA16						
AV14	MAAA14						
AY11	MAAA15						
AW15	MAAA0						
AU18	MAAA1						
AU17	MAAA2						
AV19	MAAA3						
AT19	MAAA4						
AU20	MAAA5						
AV20	MAAA6						
AU21	MAAA7						
AT20	MAAA8						
AT22	MAAA9						
AY14	MAAA10						
AU22	MAAA11						
AV22	MAAA12						
AV12	MAAA13						
AV23	BG_A1	BG_A1	8				
AU24		M_-ACT_A	8				
AY15		M_DDR_PARA	8				
AT23		M_-ALERT_A	8				
AF39	M_-DQSA0						
AK39	M_-DQSA1						
AP39	M_-DQSA2						
AU36	M_-DQSA3						
AW7	M_-DQSA4						
AU3	M_-DQSA5						
AN3	M_-DQSA6						
AJ3	M_-DQSA7						
AF38	M_DQSA0						
AK38	M_DQSA1						
AP38	M_DQSA2						
AV36	M_DQSA3						
AV7	M_DQSA4						
AU2	M_DQSA5						
AN2	M_DQSA6						
AJ2	M_DQSA7						
AV32							
AU32							

DDR CHANNEL A

1 OF12

LGA1151

CPU-SK/1151/S/GF

LGA1151B

SKT_H4

LGA1151

MDB0	AD34	DDR1_DQ[0]/DDR0_DQ[16]					
MDB1	AD35	DDR1_DQ[1]/DDR0_DQ[17]					
MDB2	AG35	DDR1_DQ[2]/DDR0_DQ[18]					
MDB3	AH35	DDR1_DQ[3]/DDR0_DQ[19]					
MDB4	AE35	DDR1_DQ[4]/DDR0_DQ[20]					
MDB5	AE34	DDR1_DQ[5]/DDR0_DQ[21]					
MDB6	AG34	DDR1_DQ[6]/DDR0_DQ[22]					
MDB7	AH34	DDR1_DQ[7]/DDR0_DQ[23]					
MDB8	AK35	DDR1_DQ[8]/DDR0_DQ[24]					
MDB9	AL35	DDR1_DQ[9]/DDR0_DQ[25]					
MDB10	AK32	DDR1_DQ[10]/DDR0_DQ[26]					
MDB11	AL32	DDR1_DQ[11]/DDR0_DQ[27]					
MDB12	AK34	DDR1_DQ[12]/DDR0_DQ[28]					
MDB13	AL34	DDR1_DQ[13]/DDR0_DQ[29]					
MDB14	AK31	DDR1_DQ[14]/DDR0_DQ[30]					
MDB15	AL31	DDR1_DQ[15]/DDR0_DQ[31]					
MDB16	AP35	DDR1_DQ[16]/DDR0_DQ[48]					
MDB17	AN35	DDR1_DQ[17]/DDR0_DQ[49]					
MDB18	AN32	DDR1_DQ[18]/DDR0_DQ[50]					
MDB19	AP32	DDR1_DQ[19]/DDR0_DQ[51]					
MDB20	AN34	DDR1_DQ[20]/DDR0_DQ[52]					
MDB21	AP34	DDR1_DQ[21]/DDR0_DQ[53]					
MDB22	AN31	DDR1_DQ[22]/DDR0_DQ[54]					
MDB23	AP31	DDR1_DQ[23]/DDR0_DQ[55]					
MDB24	AL29	DDR1_DQ[24]/DDR0_DQ[56]					
MDB25	AM29	DDR1_DQ[25]/DDR0_DQ[57]					
MDB26	AP29	DDR1_DQ[26]/DDR0_DQ[58]					
MDB27	AR29	DDR1_DQ[27]/DDR0_DQ[59]					
MDB28	AM28	DDR1_DQ[28]/DDR0_DQ[60]					
MDB29	AL28	DDR1_DQ[29]/DDR0_DQ[61]					
MDB30	AR28	DDR1_DQ[30]/DDR0_DQ[62]					
MDB31	AP28	DDR1_DQ[31]/DDR0_DQ[63]					
MDB32	AR12	DDR1_DQ[32]/DDR1_DQ[16]					
MDB33	AP12	DDR1_DQ[33]/DDR1_DQ[17]					
MDB34	AM13	DDR1_DQ[34]/DDR1_DQ[18]					
MDB35	AL13	DDR1_DQ[35]/DDR1_DQ[19]					
MDB36	AR13	DDR1_DQ[36]/DDR1_DQ[20]					
MDB37	AP13	DDR1_DQ[37]/DDR1_DQ[21]					
MDB38	AM12	DDR1_DQ[38]/DDR1_DQ[22]					
MDB39	AL12	DDR1_DQ[39]/DDR1_DQ[23]					
MDB40	AP10	DDR1_DQ[40]/DDR1_DQ[24]					
MDB41	AR10	DDR1_DQ[41]/DDR1_DQ[25]					
MDB42	AR7	DDR1_DQ[42]/DDR1_DQ[26]					
MDB43	AP7	DDR1_DQ[43]/DDR1_DQ[27]					
MDB44	AR9	DDR1_DQ[44]/DDR1_DQ[28]					
MDB45	AP9	DDR1_DQ[45]/DDR1_DQ[29]					
MDB46	AR6	DDR1_DQ[46]/DDR1_DQ[30]					
MDB47	AP6	DDR1_DQ[47]/DDR1_DQ[31]					
MDB48	AM10	DDR1_DQ[48]					
MDB49	AL10	DDR1_DQ[49]					
MDB50	AM7	DDR1_DQ[50]					
MDB51	AL7	DDR1_DQ[51]					
MDB52	AM9	DDR1_DQ[52]					
MDB53	AL9	DDR1_DQ[53]					
MDB54	AM6	DDR1_DQ[54]					
MDB55	AL6	DDR1_DQ[55]					
MDB56	AJ6	DDR1_DQ[56]					
MDB57	AJ7	DDR1_DQ[57]					
MDB58	AF6	DDR1_DQ[58]					
MDB59	AF7	DDR1_DQ[59]					
MDB60	AH7	DDR1_DQ[60]					
MDB61	AH6	DDR1_DQ[61]					
MDB62	AF7	DDR1_DQ[62]					
MDB63	AF6	DDR1_DQ[63]					
	AR25						
	AR26	DDR1_ECC[0]					
	AM26	DDR1_ECC[1]					
	AM25	DDR1_ECC[2]					
	AP26	DDR1_ECC[3]					
	AP25	DDR1_ECC[4]					
	AL25	DDR1_ECC[5]					
	AL26	DDR1_ECC[6]					
		DDR1_ECC[7]					

		DDR1_CKP[0]					
		DDR1_CKN[0]					
		DDR1_CKP[1]					
		DDR1_CKN[1]					
		DDR1_CKP[2]					
		DDR1_CKN[2]					
		DDR1_CKP[3]					
		DDR1_CKN[3]					
		DDR1_CKE[0]					
		DDR1_CKE[1]					
		DDR1_CKE[2]					
		DDR1_CKE[3]					
		DDR1_CS#[0]					
		DDR1_CS#[1]					
		DDR1_CS#[2]					
		DDR1_CS#[3]					
		DDR1_ODT[0]					
		DDR1_ODT[1]					
		DDR1_ODT[2]					
		DDR1_ODT[3]					
		DDR1_RAS#/DDR1_CAB[3]/DDR1_MA[16]					
		DDR1_WE#/DDR1_CAB[2]/DDR1_MA[14]					
		DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]					
		DDR1_BA[0]/DDR1_CAB[4]/DDR1_BA[0]					
		DDR1_BA[1]/DDR1_CAB[6]/DDR1_BA[1]					
		DDR1_BA[2]/DDR1_CAA[5]/DDR1_BG[0]					
		DDR1_MA[0]/DDR1_CAB[9]/DDR1_MA[0]					
		DDR1_MA[1]/DDR1_CAB[8]/DDR1_MA[1]					
		DDR1_MA[2]/DDR1_CAB[5]/DDR1_MA[2]					
		DDR1_MA[3]					
		DDR1_MA[4]					
		DDR1_MA[5]/DDR1_CAA[0]/DDR1_MA[5]					
		DDR1_MA[6]/DDR1_CAA[2]/DDR1_MA[6]					
		DDR1_MA[7]/DDR1_CAA[4]/DDR1_MA[7]					
		DDR1_MA[8]/DDR1_CAA[3]/DDR1_MA[8]					
		DDR1_MA[9]/DDR1_CAA[1]/DDR1_MA[9]					
		DDR1_MA[10]/DDR1_CAB[7]/DDR1_MA[10]					
		DDR1_MA[11]/DDR1_CAA[7]/DDR1_MA[11]					
		DDR1_MA[12]/DDR1_CAA[6]/DDR1_MA[12]					
		DDR1_MA[13]/DDR1_CAB[0]/DDR1_MA[13]					
		DDR1_MA[14]/DDR1_CAA[9]/DDR1_BG[1]					
		DDR1_MA[15]/DDR1_CAA[8]/DDR1_ACT#					
		DDR1_PAR					
		DDR1_ALERT#					
		DDR1_DQSN[0]/DDR0_DQSN[2]					
		DDR1_DQSN[1]/DDR0_DQSN[3]					
		DDR1_DQSN[2]/DDR0_DQSN[6]					
		DDR1_DQSN[3]/DDR0_DQSN[7]					
		DDR1_DQSN[4]/DDR1_DQSN[2]					
		DDR1_DQSN[5]/DDR1_DQSN[3]					
		DDR1_DQSN[6]					
		DDR1_DQSN[7]					
		DDR1_DQSP[0]/DDR0_DQSP[2]					
		DDR1_DQSP[1]/DDR0_DQSP[3]					
		DDR1_DQSP[2]/DDR0_DQSP[6]					
		DDR1_DQSP[3]/DDR0_DQSP[7]					
		DDR1_DQSP[4]/DDR1_DQSP[2]					
		DDR1_DQSP[5]/DDR1_DQSP[3]					
		DDR1_DQSP[6]					
		DDR1_DQSP[7]					
		DDR1_DQSP[8]					
		DDR1_DQSN[8]					

AM20	M_DCLKB0	M_DCLKB0	9				
AM21	M_-DCLKB0	M_-DCLKB0	9				
AP22	M_DCLKB1	M_DCLKB1	9				
AP21	M_-DCLKB1	M_-DCLKB1	9				
AN20	M_DCLKB2	M_DCLKB2	9				
AN21	M_-DCLKB2	M_-DCLKB2	9				
AP19	M_DCLKB3	M_DCLKB3	9				
AP20	M_-DCLKB3	M_-DCLKB3	9				
AY29	CKEB0	CKEB0	9				
AV29	CKEB1	CKEB1	9				
AW29	CKEB2	CKEB2	9				
AU29	CKEB3	CKEB3	9				
AP17	M_-CSB0	M_-CSB0	9				
AN15	M_-CSB1	M_-CSB1	9				
AN17	M_-CSB2	M_-CSB2	9				
AM15	M_-CSB3	M_-CSB3	9				
AM16	MODT_B0						
AL16	MODT_B1						
AP15	MODT_B2						
AL15	MODT_B3						
AN18	MAAB16						
AL17	MAAB14						
AP16	MAAB15						
AL18	SBAB0	SBAB0	9				
AM18	SBAB1	SBAB1	9				
AW28	BG_B0	BG_B0	9				
AL19	MAAB0						
AL22	MAAB1						
AM22	MAAB2						
AM23	MAAB3						
AP23	MAAB4						
AL23	MAAB5						
AW26	MAAB6						
AY26	MAAB7						
AU26	MAAB8						
AW27	MAAB9						
AP18	MAAB10						
AU27	MAAB11						
AV27	MAAB12						
AR15	MAAB13						
AY28	BG_B1	BG_B1	9				
AU28		M_-ACT_B	9				
AL20		M_DDR_PARB	9				
AY25		M_-ALERT_B	9				
AF34	M_-DQSB0						
AK33	M_-DQSB1						
AN33	M_-DQSB2						
AN29	M_-DQSB3						
AN13	M_-DQSB4						
AR8	M_-DQSB5						
AM8	M_-DQSB6						
AG6	M_-DQSB7						
AF35	M_DQSB0						
AL33	M_DQSB1						
AP33	M_DQSB2						
AN28	M_DQSB3						
AN12	M_DQSB4						
AP8	M_DQSB5						
AL8	M_DQSB6						
AG7	M_DQSB7						
AN25							
AN26							

DDR CHANNEL B

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

CPU-SK/1151/S/GF

8	MODT_A[0..3]	MODT_A[0..3]	
9	MODT_B[0..3]	MODT_B[0..3]	
8	MDA[0..63]	MDA[0..63]	
9	MDB[0..63]	MDB[0..63]	
8	M_DQSA[0..7]	M_DQSA[0..7]	
8	M_-DQSA[0..7]	M_-DQSA[0..7]	
8	MAAA[0..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

USE Gold Flash for BOM

Gigabyte Technology	
Title	CPU LGA1151-B
Size: Custom	Document Number: GA-Z270-GAMING 3
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* WBC49 移到 RT8120_DDR

* 刪 WBC50 電容

VCCSA

* WBC51 , WBC52 VDDQ 改 VCCSA

WBC56 22u/8/X5R/6.3V/M
WBC57 22u/8/X5R/6.3V/M
WBC51 22u/8/X5R/6.3V/M
WBC52 22u/8/X5R/6.3V/M

* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

CPU POWER

* WR94 , WR85 , WR86 , WR60 , WR61 , WR62 , WR63 改 short pad

VCCST_VCCPLL
VCCSFUSEPRG

VCCSA
VCCST_VCCPLL
remove WR94

VCCIO

WBC69 22u/8/X5R/6.3V/M
WBC70 22u/8/X5R/6.3V/M
WBC71 22u/8/X5R/6.3V/M
WBC72 22u/8/X5R/6.3V/M
WBC73 22u/8/X5R/6.3V/M
WBC74 22u/8/X5R/6.3V/M

* 刪 VCCGT 電容

VCCGT

LGA1151J SKT_H4 LGA1151

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

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

WR59 0/4/X

VCCGT_SENSE F39
VSSGT_SENSE F38
VCCGTX_SENSE F37
VSSGTX_SENSE F36

VCCGT_SENSE_26
VSSGT_SENSE_26

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

VDDQ

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

VCCIO

AK11 AK14 AK24 AJ23 M8 P8 T8 U8 W8 — VCCIO

CPU POWER

VCCST_VCCPLL V5
VCCSFUSEPRG V6
VCCPLL V4

VCCST_V5
VCCST_V6
VCCPLL

VCCPLL_OC AJ9
VCCOPC_AJ30 VCCOPC_AJ27 VCCOPC_AJ28 VCCOPC_AJ29 VCCOPC_AK27 — AJ30 AJ27 AJ28 AJ29 AK27
VCCEOPIO VCCEOPIO — AJ25 AJ26
VCC_OPC_1P8_AB37 VCC_OPC_1P8_AB38 — AB37 AB38

VCCPLL_S
WR86 0/4/X VDDQ
WR95 0/4/SHT/M/X VCCPLL_OC
WR60 0/4/X
WR61 0/4/X
WR62 0/4/SHT/M/X
WR63 0/4/SHT/M/X

WBC50 1u/6/X7R/16V/K

CPU POWER

VCCSA_SENSE AD5
VCCIO_SENSE AF4
VSS_SAIO_SENSE AE4

* 刪 net

VCCOPC_SENSE AK21
VCCEOPIO_SENSE AJ24
VSSOPC_EOPIO_SENSE AK22

10 OF 12

CPU-SK/1151/S/GF

LGA1151L SKT_H4 LGA1151

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

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

13 N_PCH_CPU_N
13 A_CPU_PCH_TO
WR88 33/4 A_CPU_PCH_TO_R
WR89 560/4/1

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CPU-SK/1151/S/GF

Gigabyte Technology		
Title: CPU LGA1151-C		
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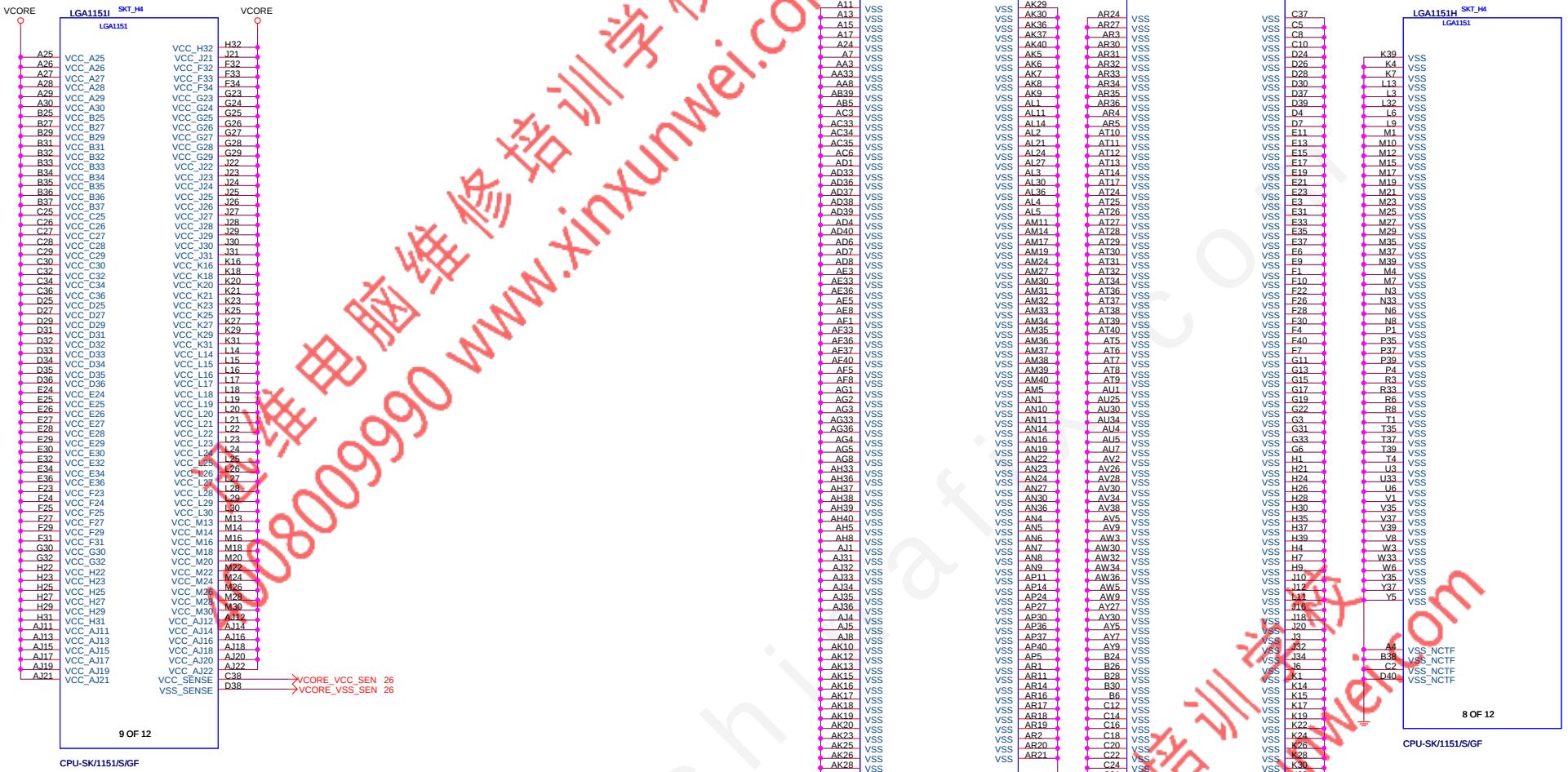

* 刪 Vcore 電容

Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
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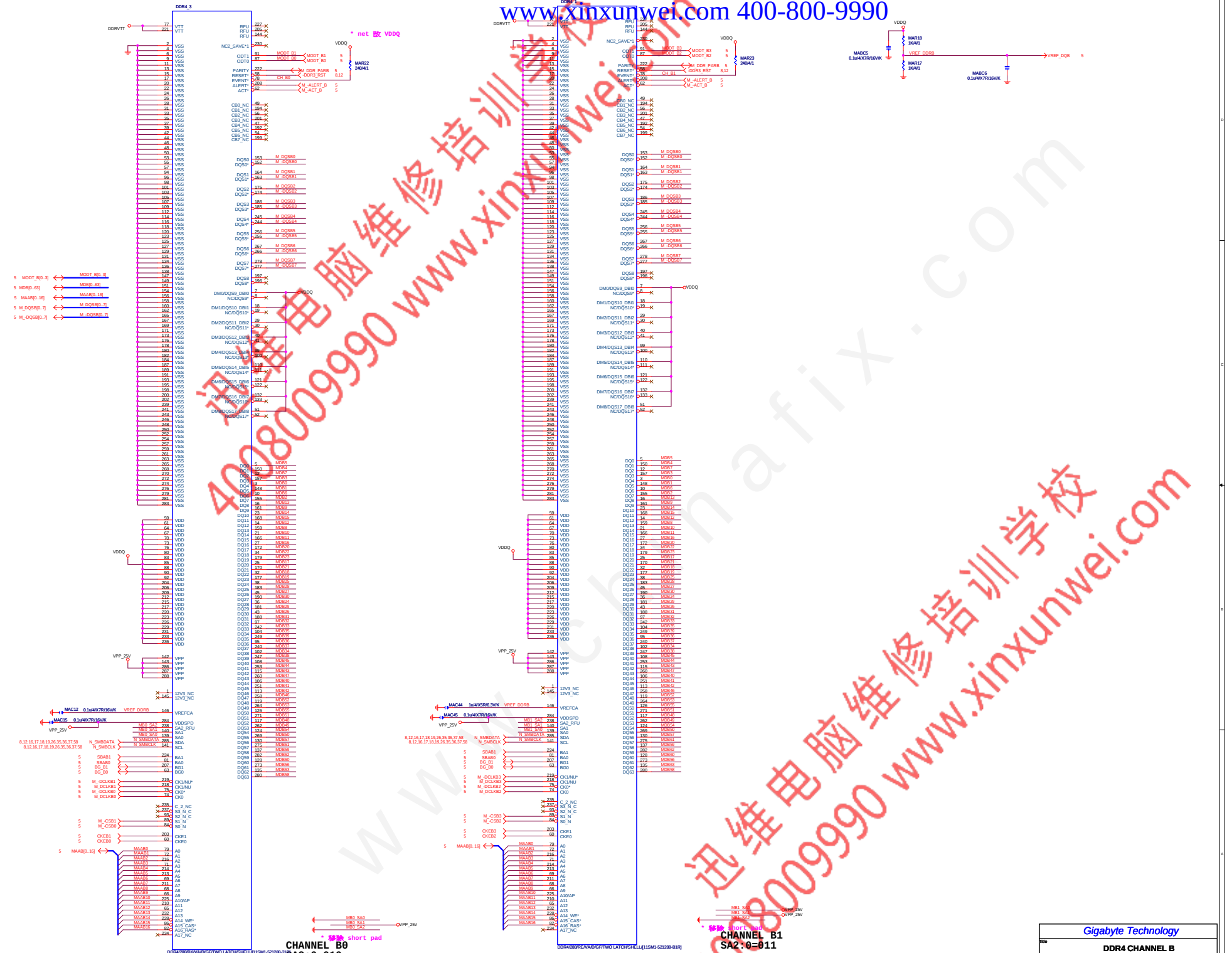
DDR4	Capture Value
SOC series	黑色 藍色	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	SMD 黑色 淺灰色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色 鮮紅	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
G1.Sniper	黑色 綠色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GE/VA/D/G15/ONE LATCH/LONG

Gigabyte Technology

Title: DDR4 CHANNEL A

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

Date: | Sheet 8 of 63

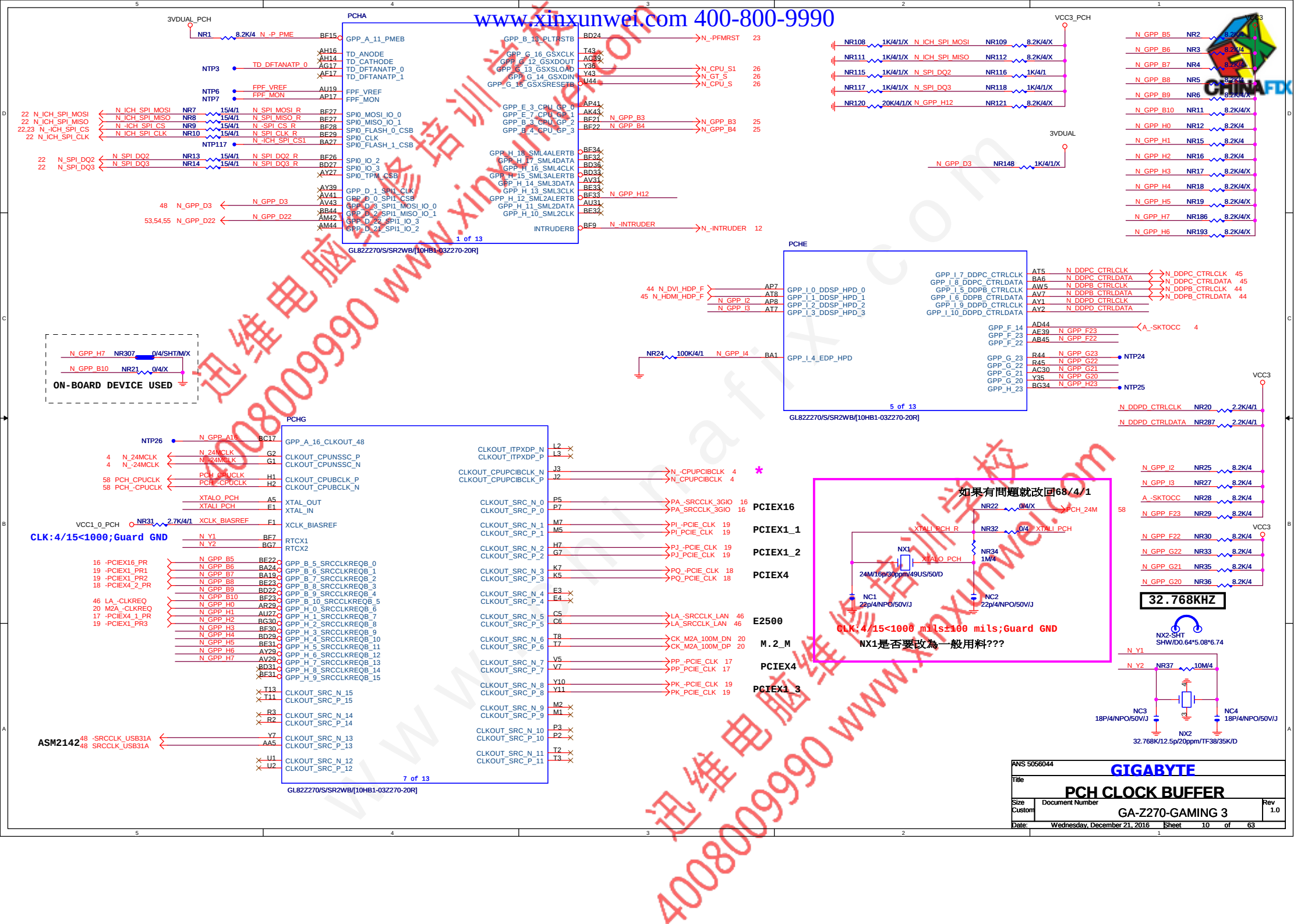


Gigabyte Technology

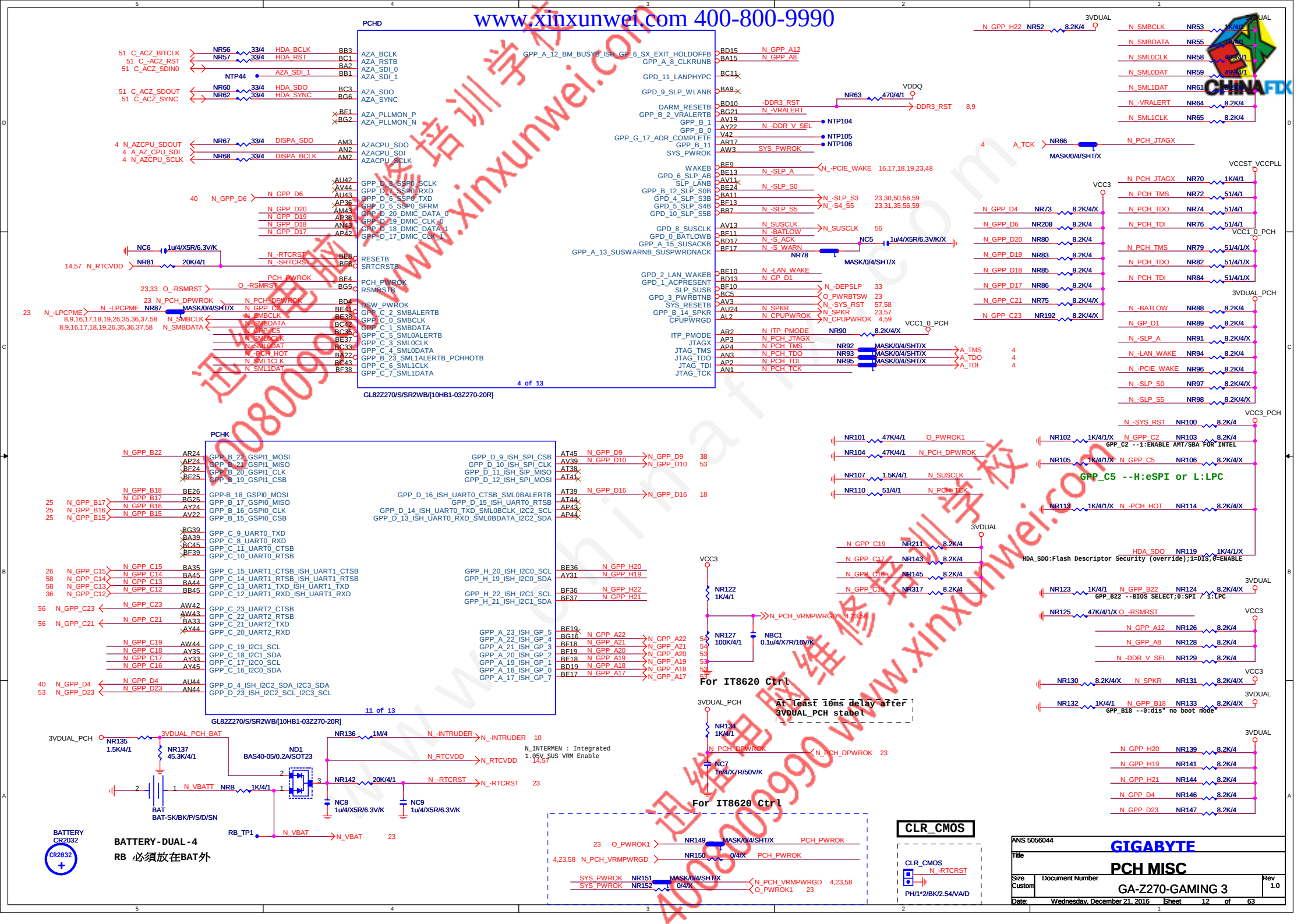
Title: DDR4 CHANNEL B

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

Date: | Sheet 9 of 63



ANS 5056044	GIGABYTE
Title	PCH DMI,USB,PCIE
Size: Custom	Document Number: GA-Z270-GAMING 3
Rev: 1.0	
Date: Wednesday, December 21, 2016	Sheet 11 of 63



ANS	5056644
Title	PCH MISC
Size	Custom
Document Number	GA-Z270-GAMING 3
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Date:	Wednesday, December 21, 2016
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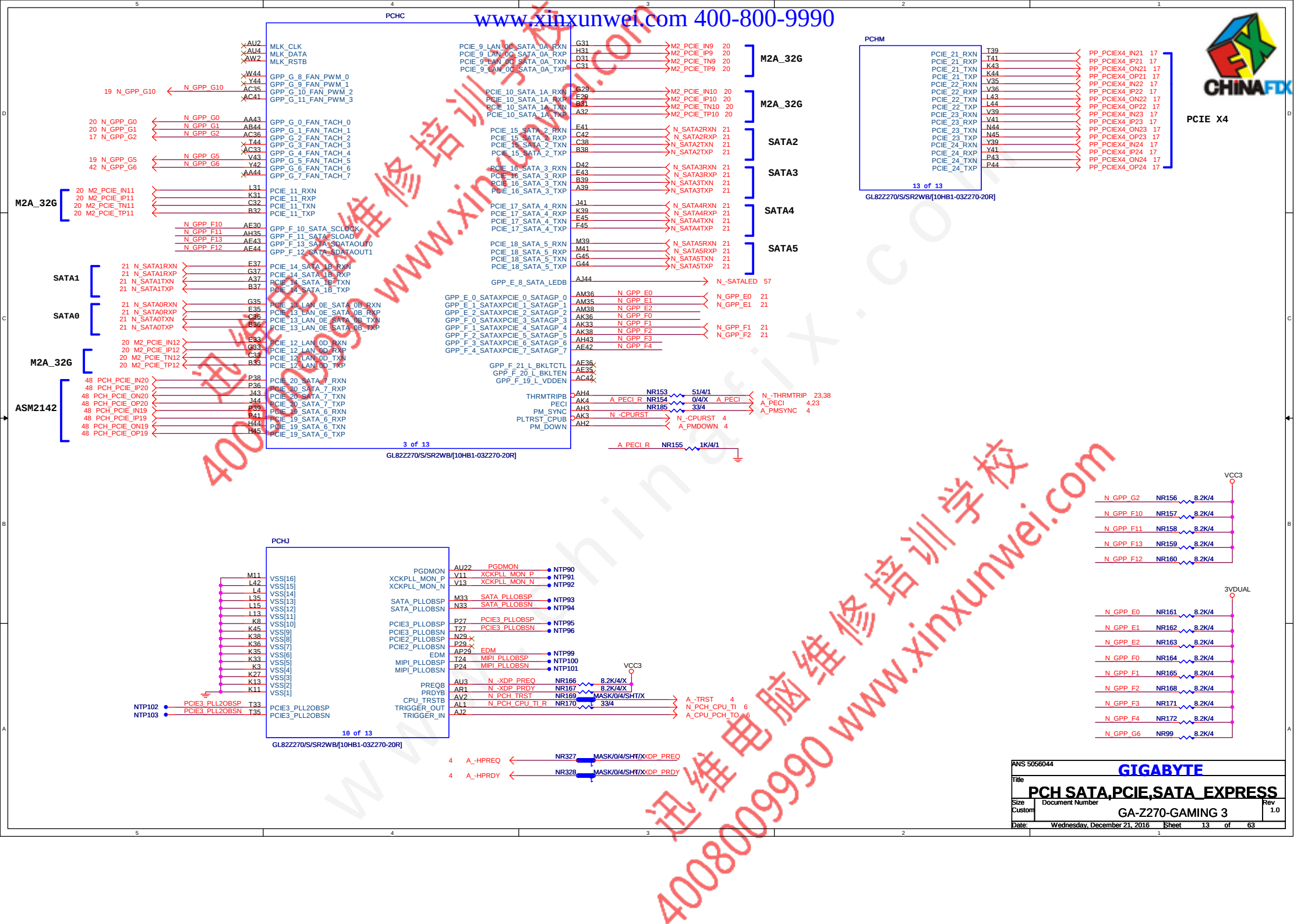

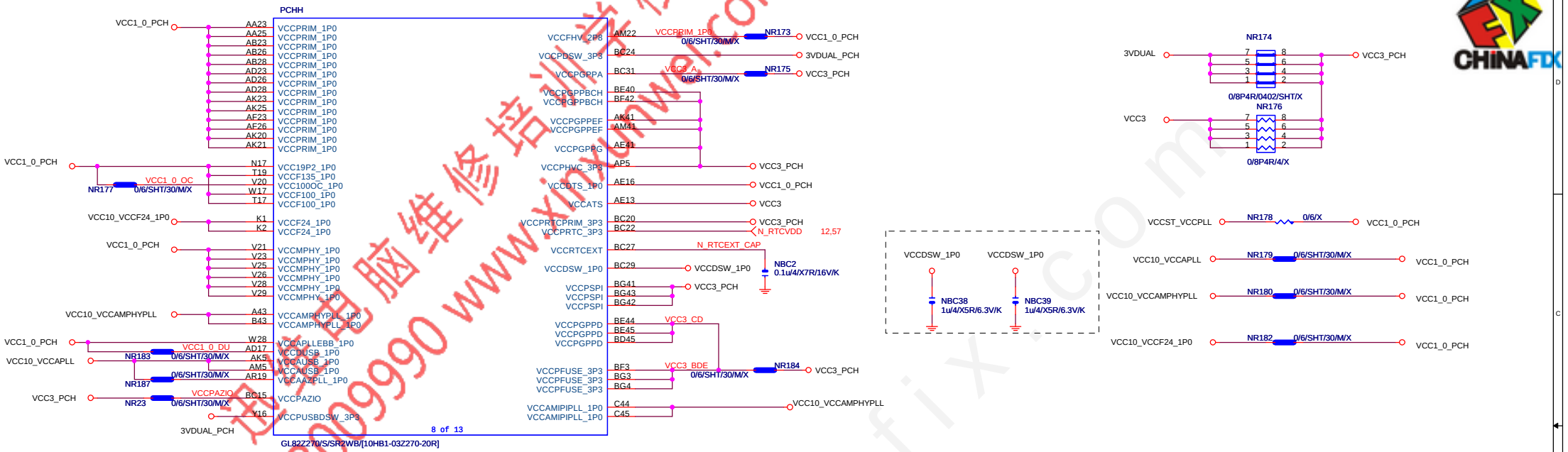

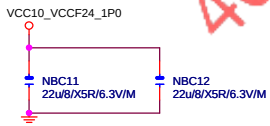

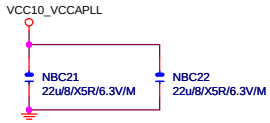

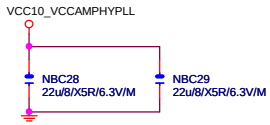

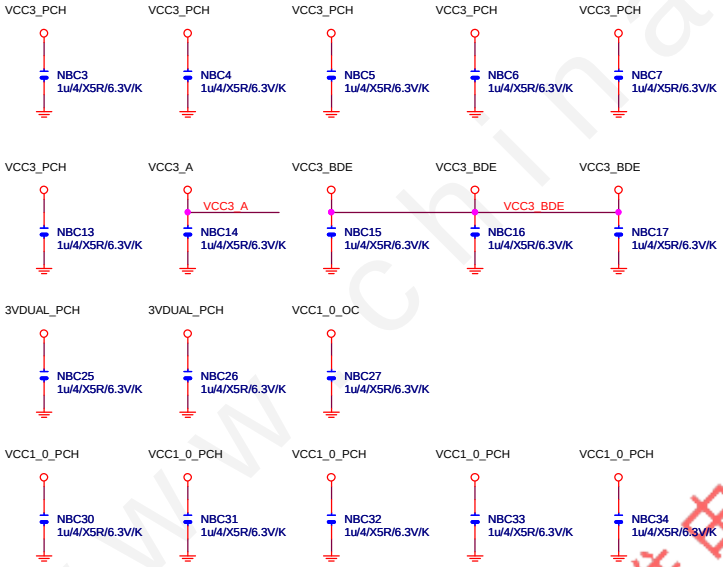

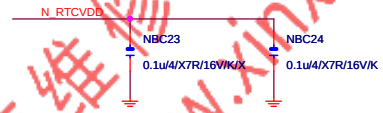

ANS 5056044

GIGABYTE

Title: **PCH PWR**

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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		

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GL82Z270/S/SR2WB/[10HB1-03Z270-20R]

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
D18	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

GL82Z270/S/SR2WB/[10HB1-03Z270-20R]

Heatsink

PCH_HS

Footprint :
BGAHSINK-Z270-GAMING-K3

HEAT SINK/[12SP2-S05511-81R_12SP2-S05511-82R_12SP2-S05511-83R]

REAR_HS

HEAT SINK/[12KRC-0H0008-21R]

RMOS

HEAT SINK/[12SP2-S08025-A1R_12SP2-S08025-A2R_12SP2-S08025-A3R]

TMOS

Footprint :
MOSHSINK-SNIPERB8-R
MOSHSINK-SNIPERB8-T

HEAT SINK/[12SP2-S09425-E1R_12SP2-S09425-E2R_12SP2-S09425-E3R]

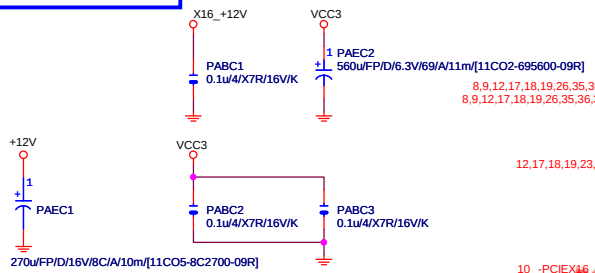
GIGABYTE

CHECK with Mechanical

ANS 5056044	GIGABYTE		
Title	PCH GND		
Size Custom	Document Number GA-Z270-GAMING 3		Rev 1.0
Date: Wednesday, December 21, 2016	Sheet 15 of 63		

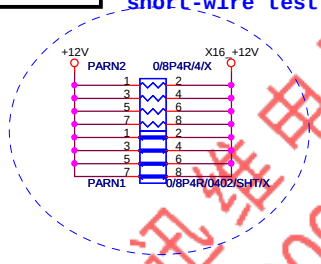
Rev 0.3

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

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

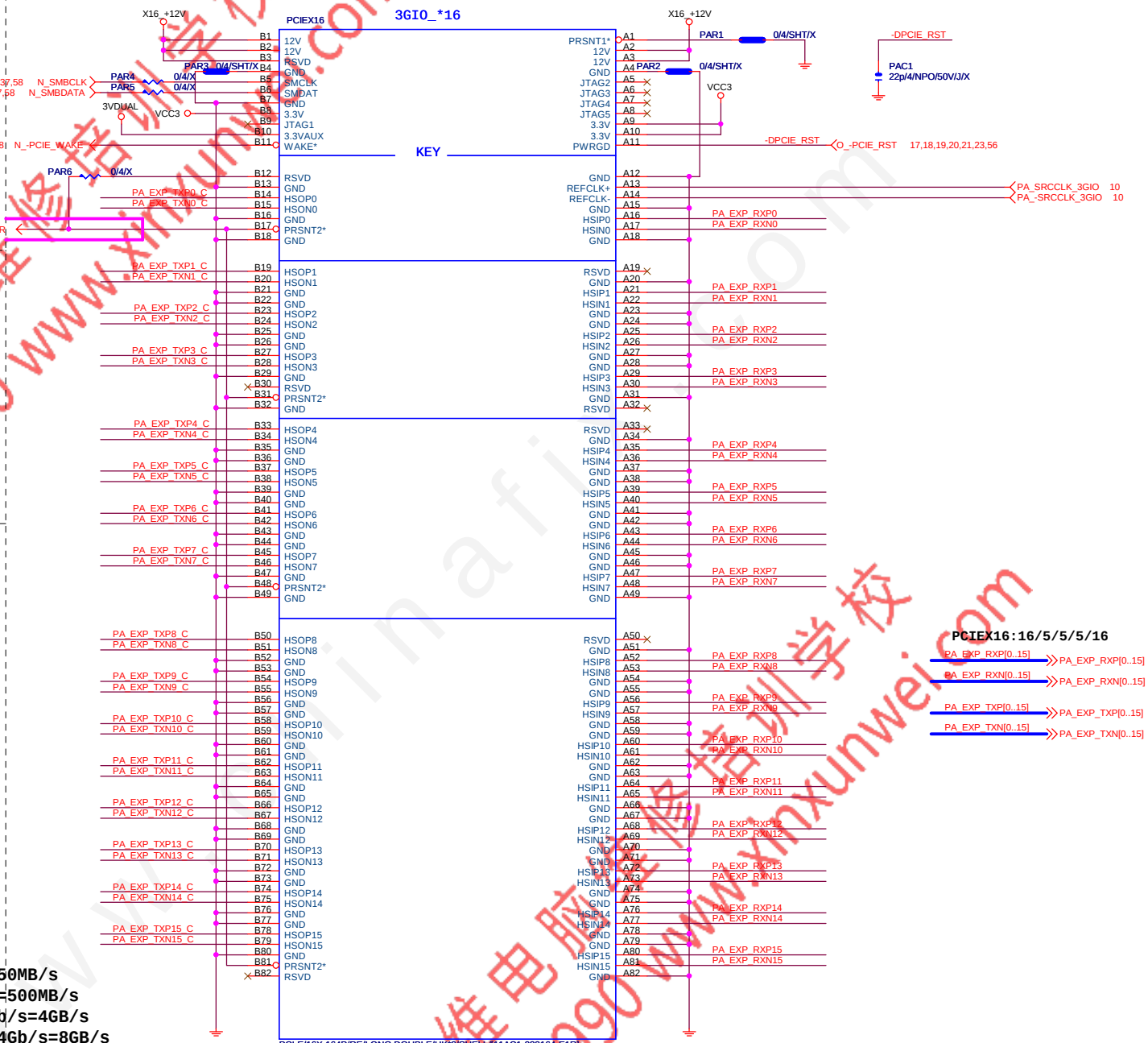
PCI-E REV:1.1--> 2.5GHZ
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ
PCE-E X1(單向) BANDWITH=5GHz*(8b/10b)=4Gb/s=500MB/s

PCI-E REV:3.0--> 8GHZ
PCE-E X1(單向) BANDWITH=8GHz*(128b/130b)=8Gb/s=1GB/s

PCIEX16 SLOT

PCIESLOT-164STH



紅色金屬加強

PCIEX16:16/5/5/5/16

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

Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-Z270-GAMING 3
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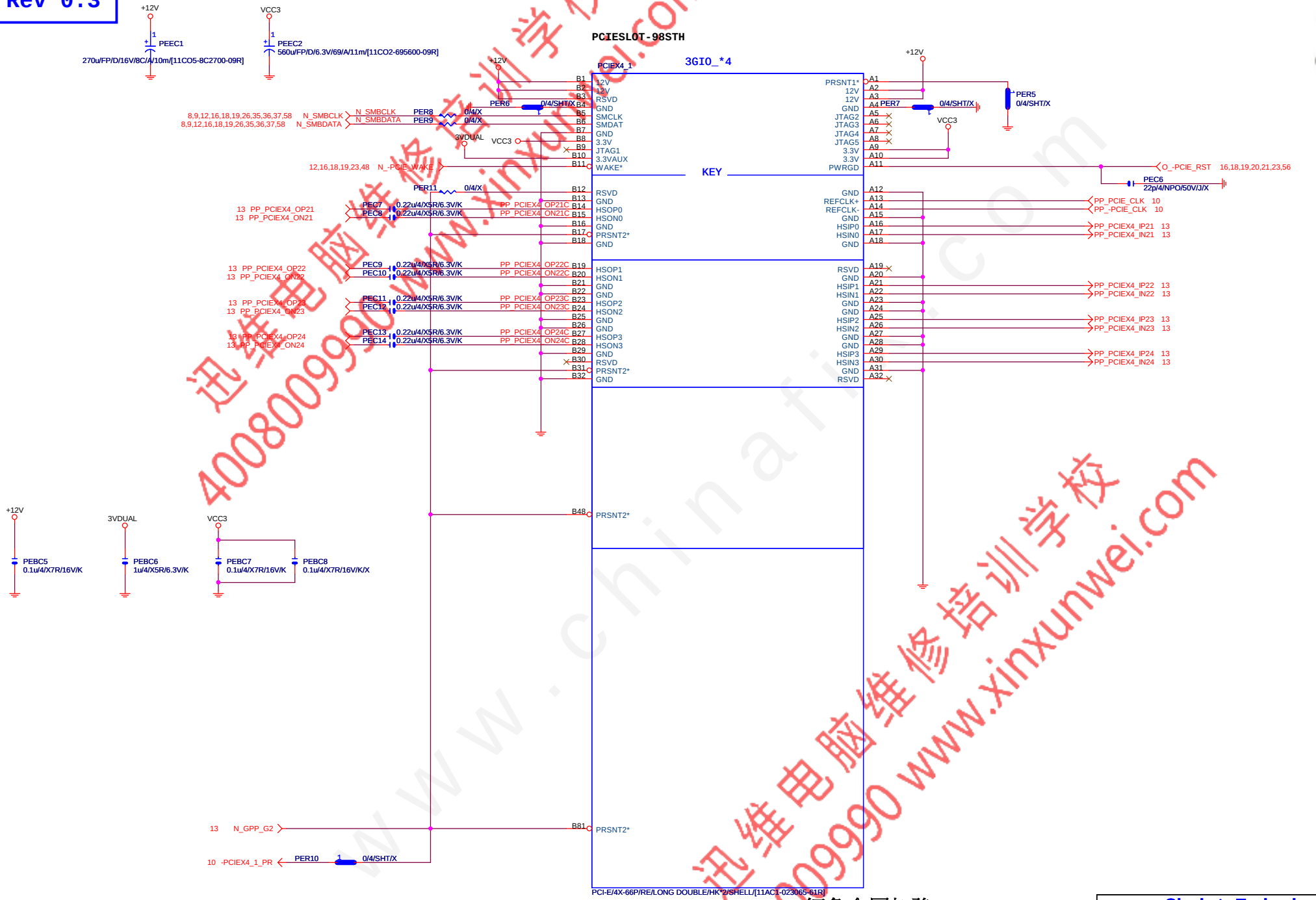
PCIESLOT-98STH



紅色金屬加強

Title	Gigabyte Technology
	PCI EXPRESS X4
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Footprint "PCIESLOT-64STH-1"

PCIE*4

★Update 2016.06.02

PCIEX4_2

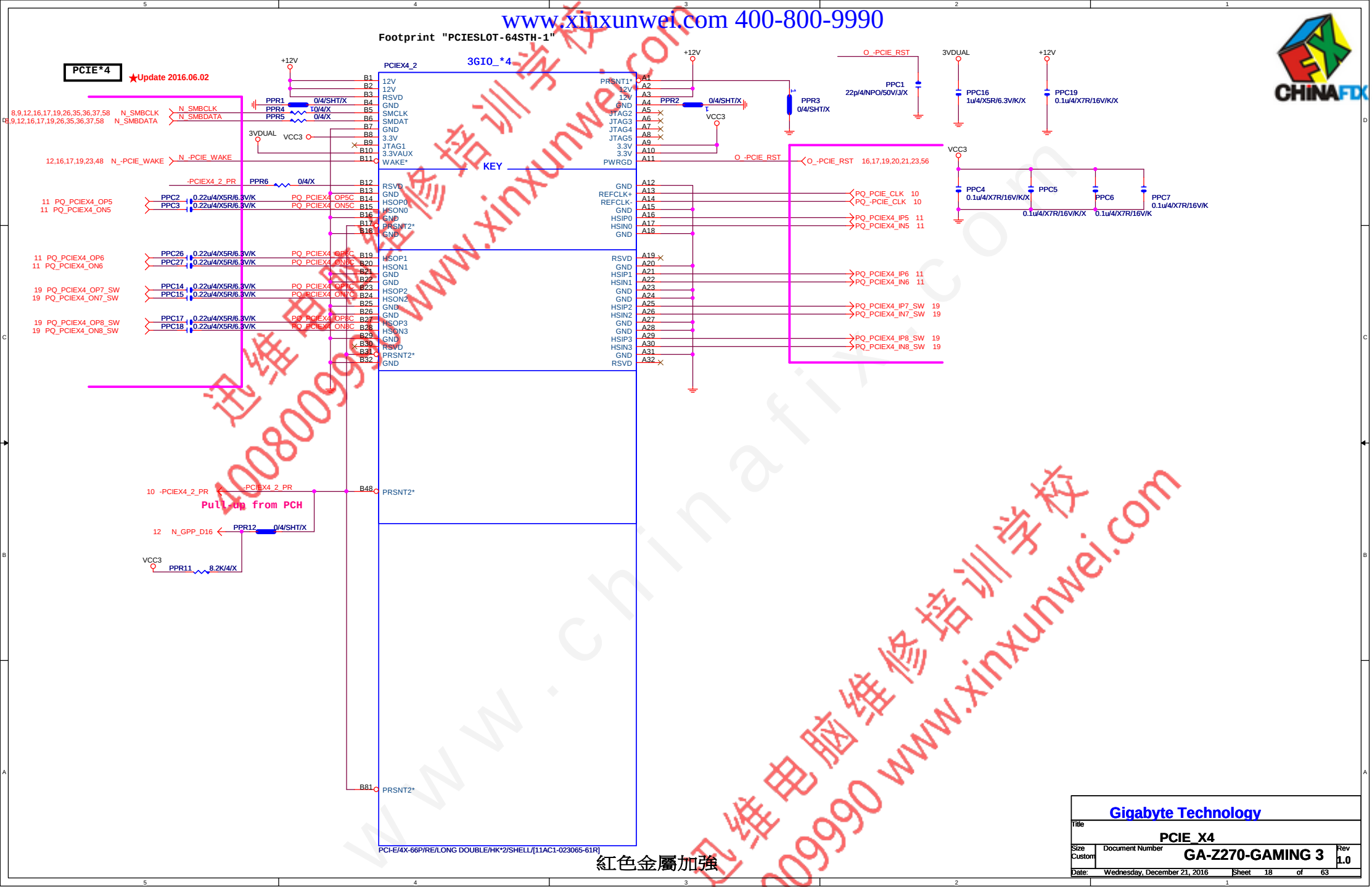
3GIO_*4

KEY

PCI-E/4X-66P/RE/LONG DOUBLE/HK*2/SHELL/[11AC1-023065-61R]

紅色金屬加強

Pull-up from PCH



Gigabyte Technology	
Title	PCIE_X4
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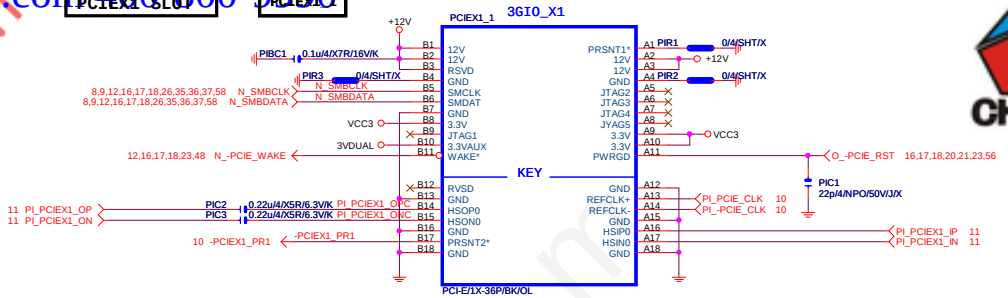
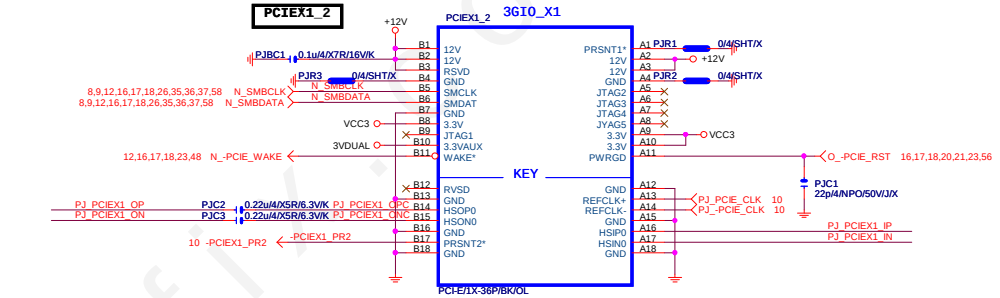
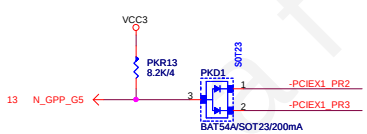
PCIEX1 SLOT

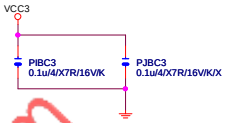
PCIEX1_1

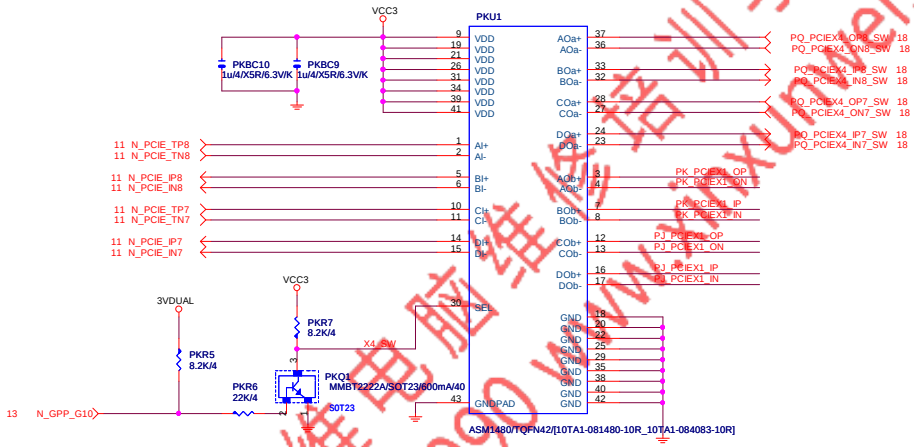


PCIEX1_2



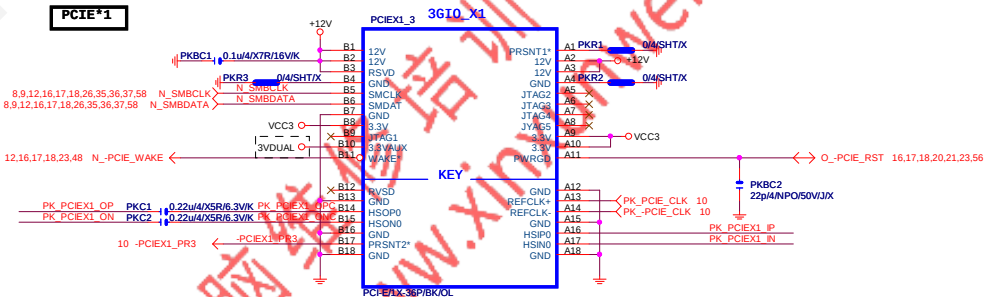


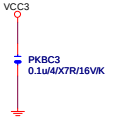




Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

PCIE*1





	N_GPP_G3 (PCH_GPP_G3)	PCIEX4_X1 (SIO_GPIO27)
PCIEX4 -> X4 M2_WIFI -> N/A PCIEX1 --> N/A (Default)	H	H
PCIEX4 -> X1 M2_WIFI -> X1 PCIEX1 --> X1	L	L

Gigabyte Technology

Title	PCIE_X1 1,2,3	
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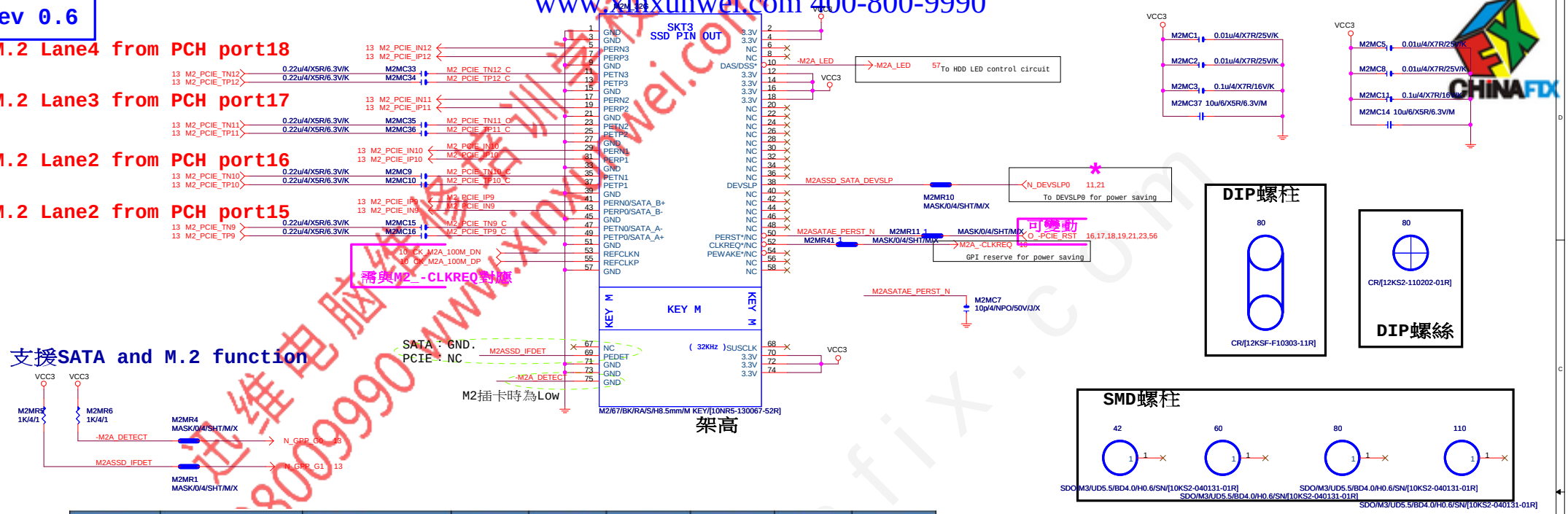
Rev 0.6

M.2 Lane4 from PCH port18

M.2 Lane3 from PCH port17

M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port15



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

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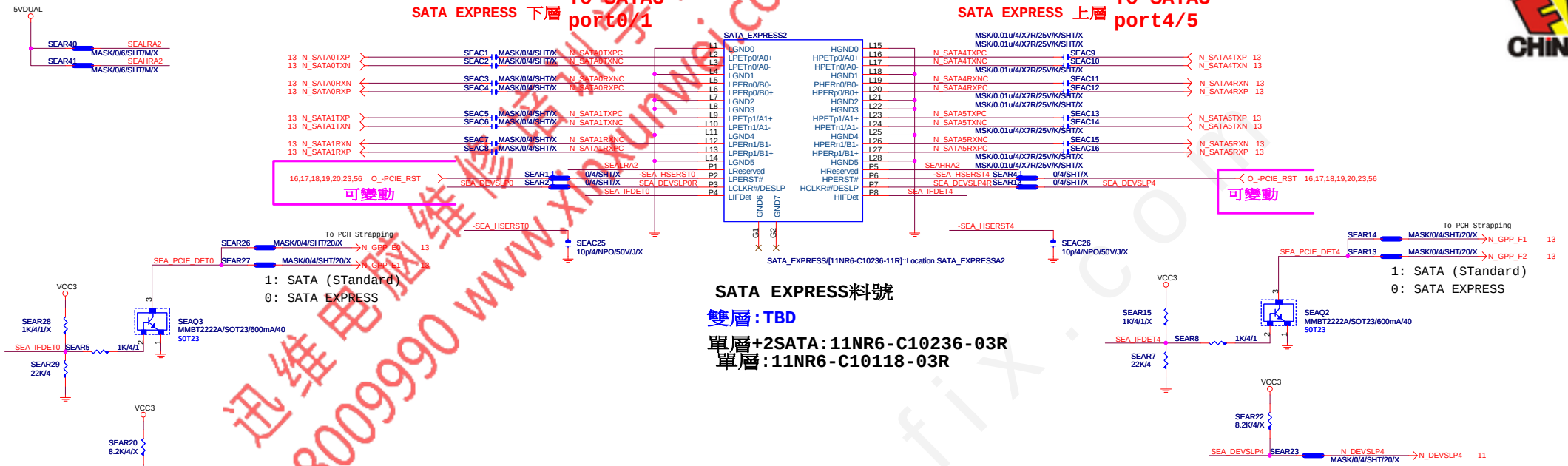
Rev 0.5

SATA EXPRESS 下層 To SATA3 port0/1

SATA EXPRESS 上層 To SATA3 port4/5

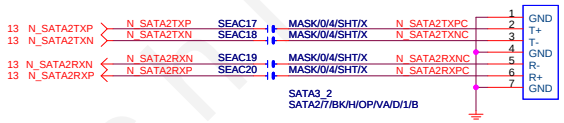


SATA EXPRESS料號

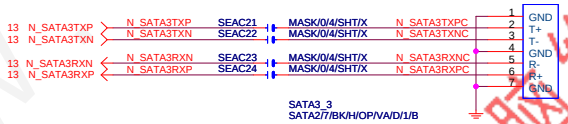
雙層:TBD

單層+2SATA:11NR6-C10236-03R

單層:11NR6-C10118-03R



BLACK CONNECTOR



SATA 5 (文字面寫SATA 1)
SATA 4 (文字面寫SATA 0)
SATA 3
SATA 2
SATA 1 (文字面寫SATA 5)
SATA 0 (文字面寫SATA 4)

Gigabyte Technology

Title: SATA EXPRESS

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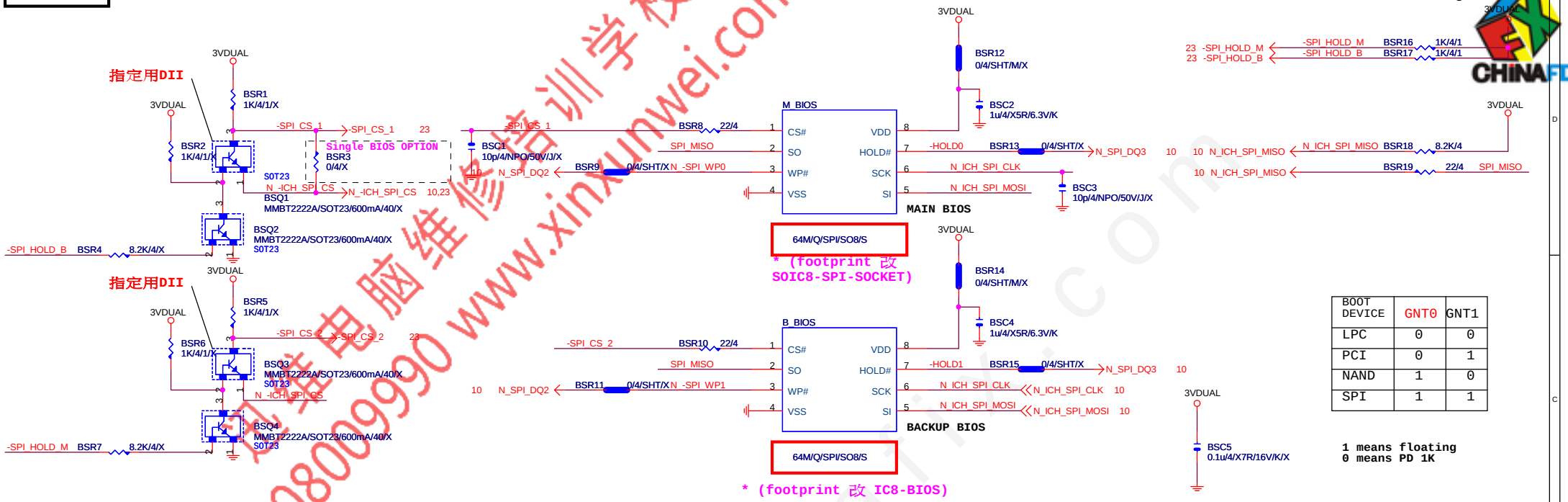
DUAL BIOS

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

* 試產先上 , PVT 移除

Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
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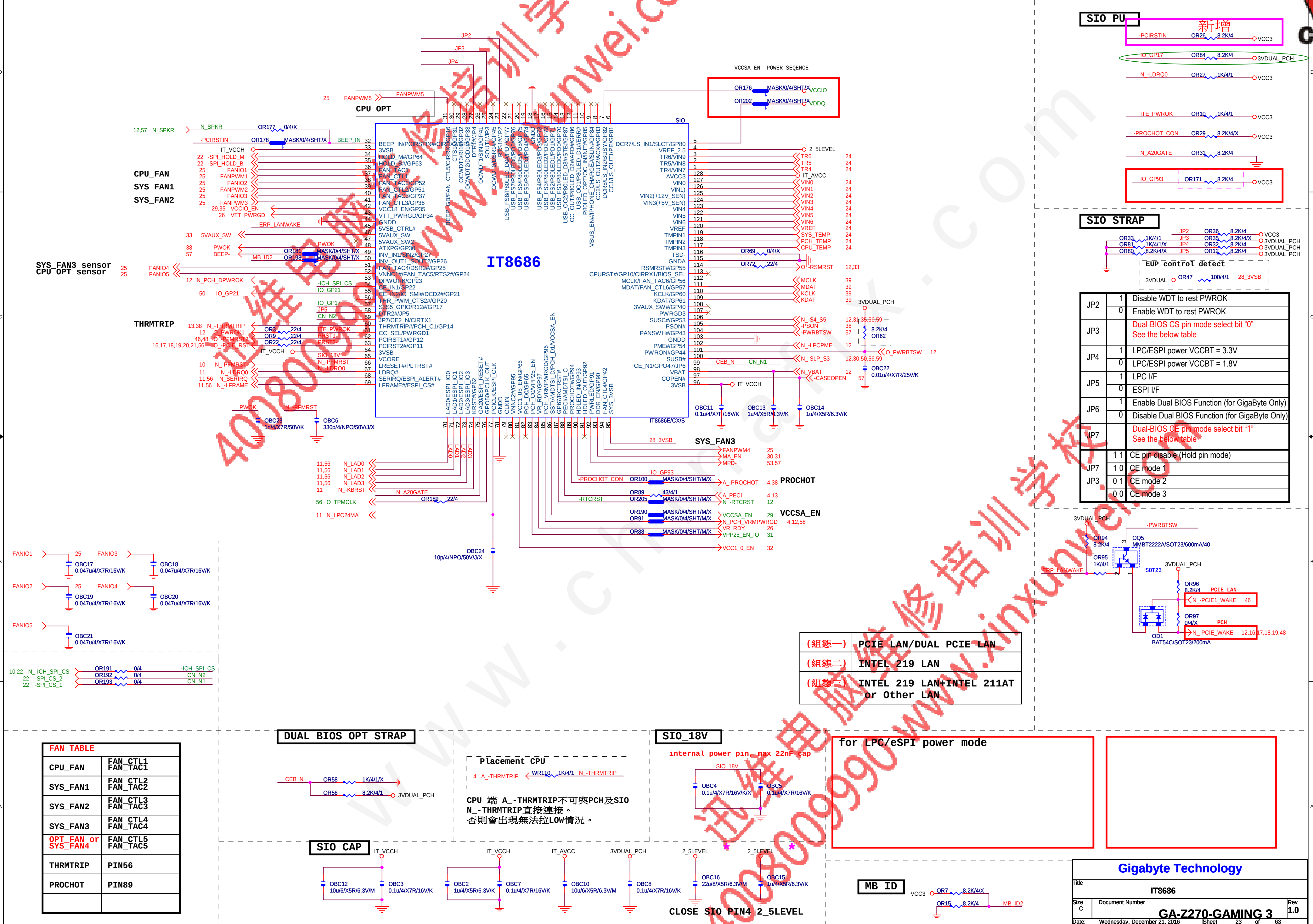
SIO IT8686 REV:0.1



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

(組態一)	PCIE LAN/DUAL PCIE LAN
(組態二)	INTEL 219 LAN
(組態三)	INTEL 219 LAN+INTEL 211AT or Other LAN

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

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。

Gigabyte Technology

Title	IT8686
Size	C
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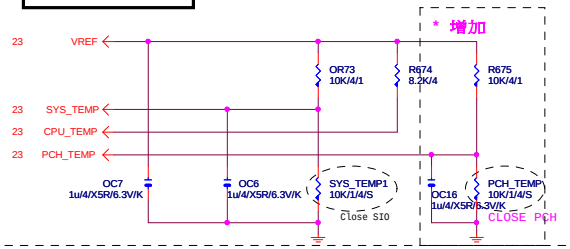
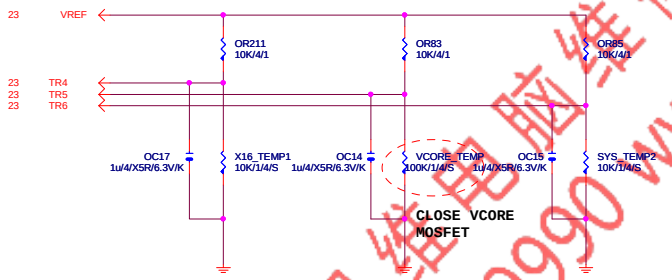
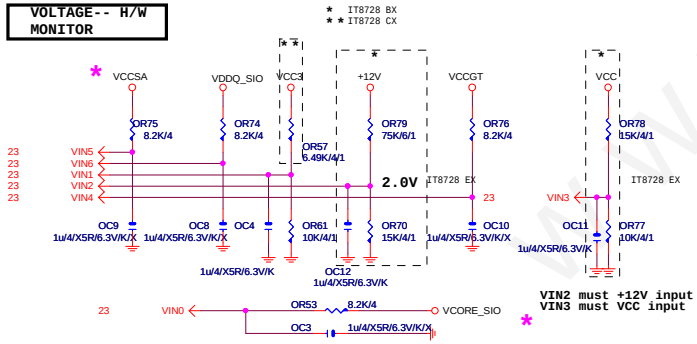
TEMP H/W MONITOR



5個FAN時使用



VOLTAGE-- H/W MONITOR



★Update 2015-04.24

Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
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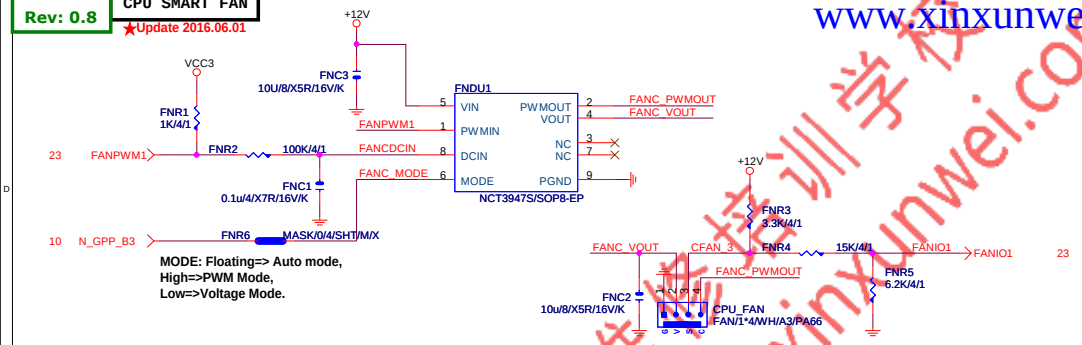
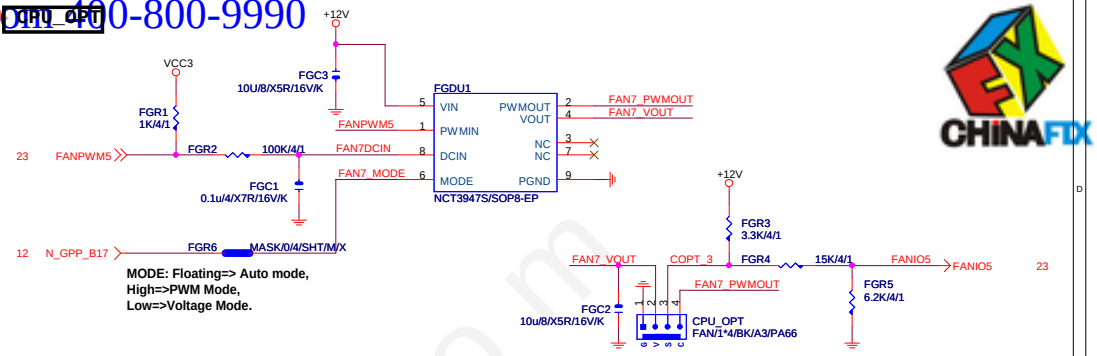
Rev: 0.8

CPU_SMART_FAN

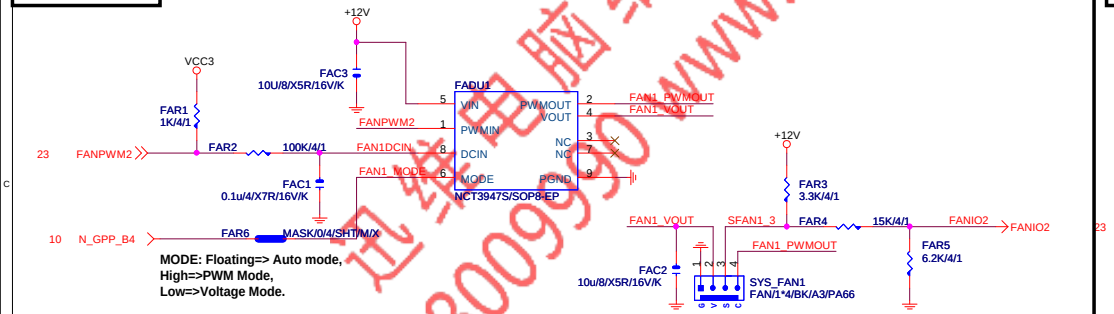
★Update 2016.06.01



CPU_OPT

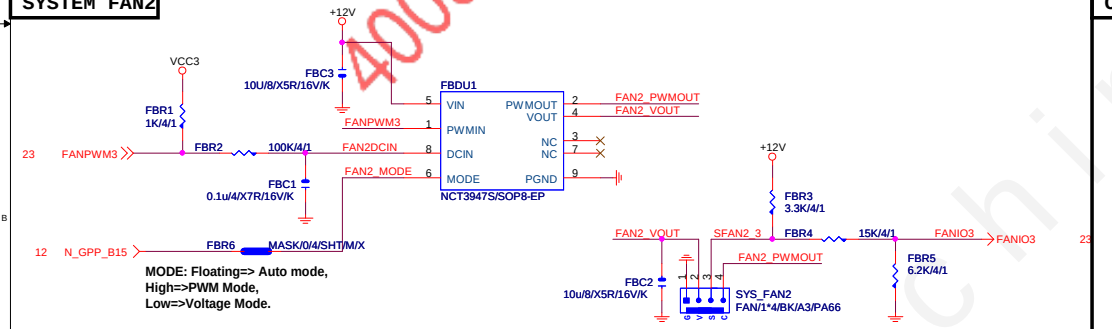


SYSTEM_FAN1



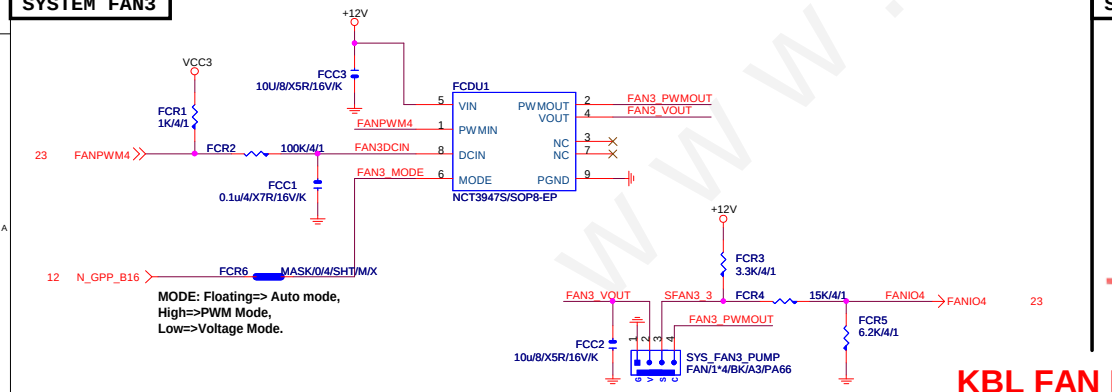
CPU_PUMP1

SYSTEM_FAN2

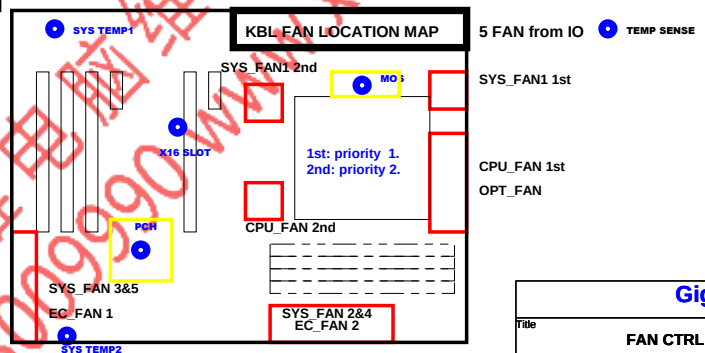


CPU_PUMP2

SYSTEM_FAN3



SYSTEM_FAN4



KBL FAN LOCATION MAP REFER TO PAGE.27

Gigabyte Technology

Title: FAN CTRL

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VCORE_SIO — VCORE_VS MASK/0/4/SHT/M/X — VCORE
請注意擺放位置

H:ISL95856 or ISL95858
L:ISL95866 or ISL95868
3VDUAL — NR400 8.2K/4 — N_GPP_C15 12 — NR401 8.2K/4X
close to PCH

DC-LL --> 2.1mohm
DC-LL --> 3.1mohm
DAR44-->604 ohm
OCP-->160A
DAR71-->442 ohm
OCP-->90A
DAR131 for DC-LL
change to 0.4m ohm

CLOSE DA_ DL1 DC SIDE
CLOSE DE_ DL1 DC SIDE
CLOSE ?
CLOSE ?
CLOSE PWM
CLOSE PWM

VCORE	ISL95856	ISL95866
DAR137	X	V
DAR138	V	X
DAR139	X	V
DAC15	V	X
DAR79	V	X
DAR33	V	X

VCCGT	ISL95856	ISL95866
DAR140	X	V
DAR141	V	X
DAR142	X	V
DAC27	V	X
DAR80	V	X
DAR51	V	X

不上件 — DAR123 1K/4/1/X — DAQ3 MMBT2222A/SOT23/600mA/40 — VCCGT_SENSE — 連接至PCH GPP_GP14

不上件 — DAR120 1K/4/1/X — DAQ1 MMBT2222A/SOT23/600mA/40 — VCORE_VCC_SEN — 連接至PCH GPP_GP15

不上件 — DAR133 1K/4/1/X — DAQ7 MMBT2222A/SOT23/600mA/40 — VCORE_VCC_SEN — Z系列才需要留 — 連接至PCH GPP_G13

ISL95866HRZ-T/QFN52

GIGABYTE

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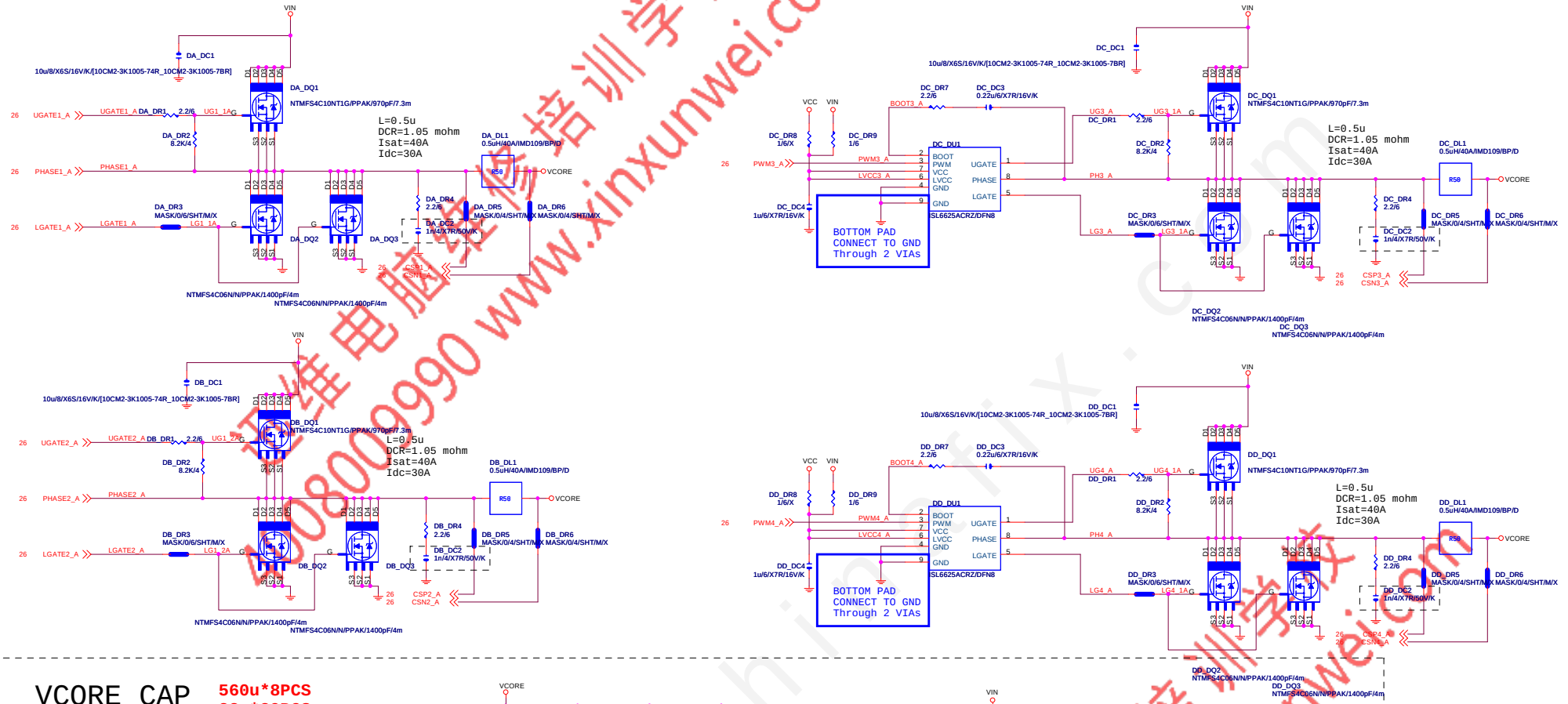
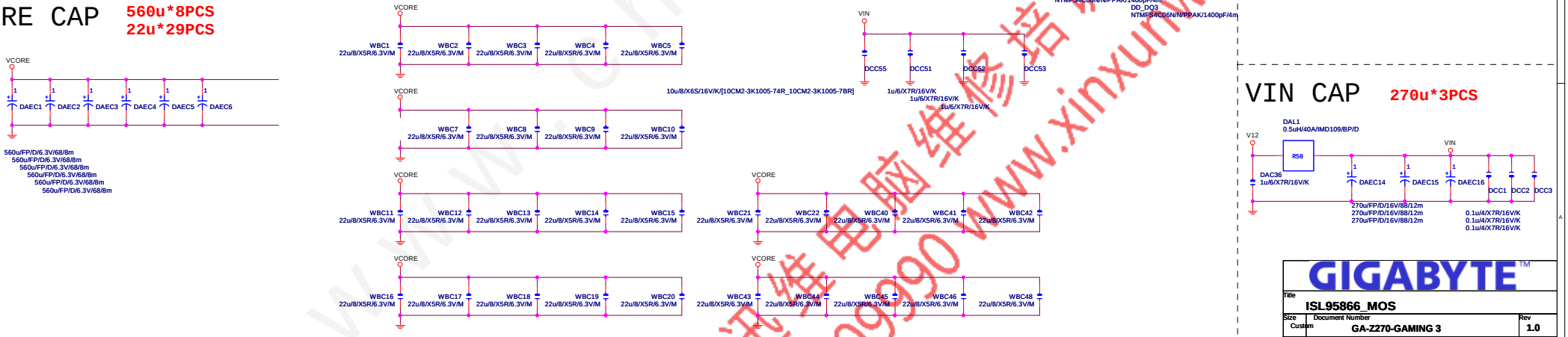
VCORE



VCORE CAP 560u*8PCS 22u*29PCS



VIN CAP 270u*3PCS

Title	ISL95866_MOS	
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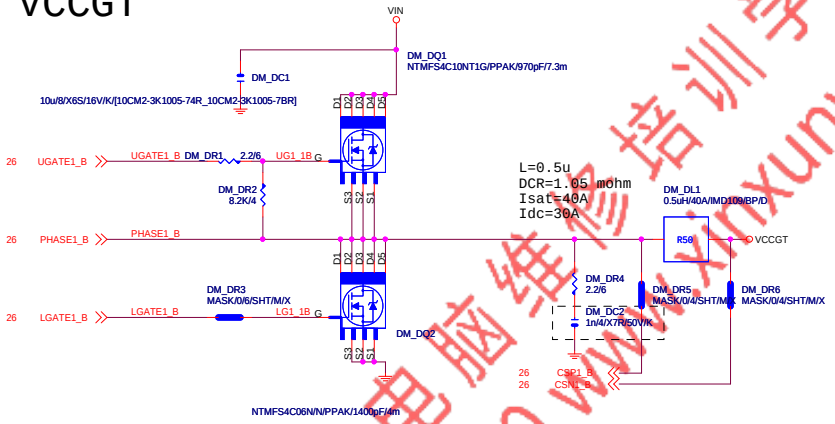
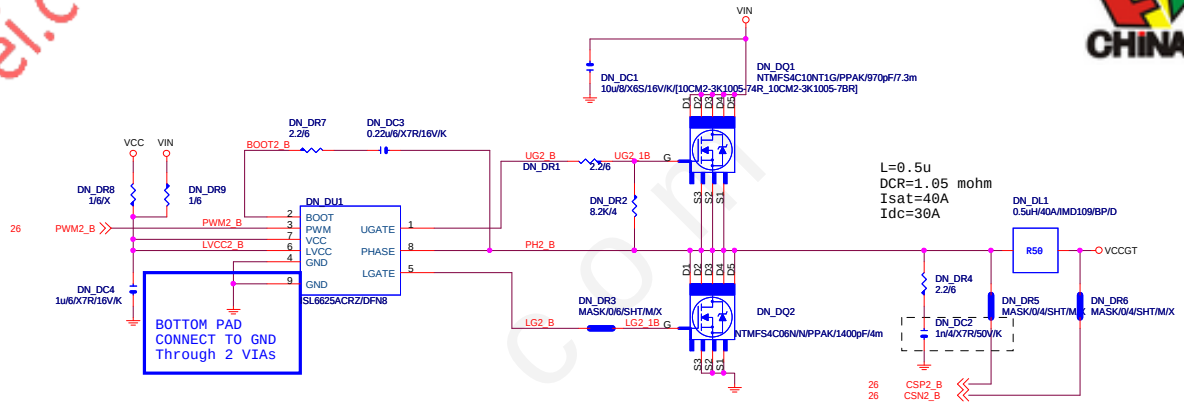
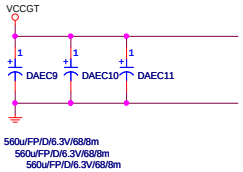
VCCGT

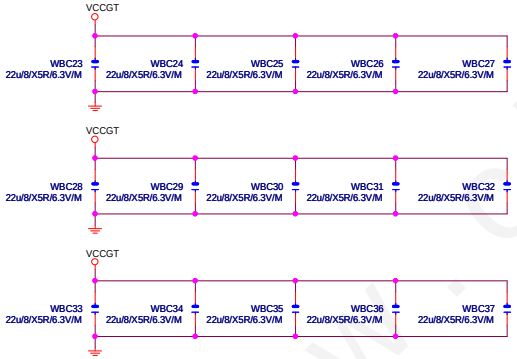


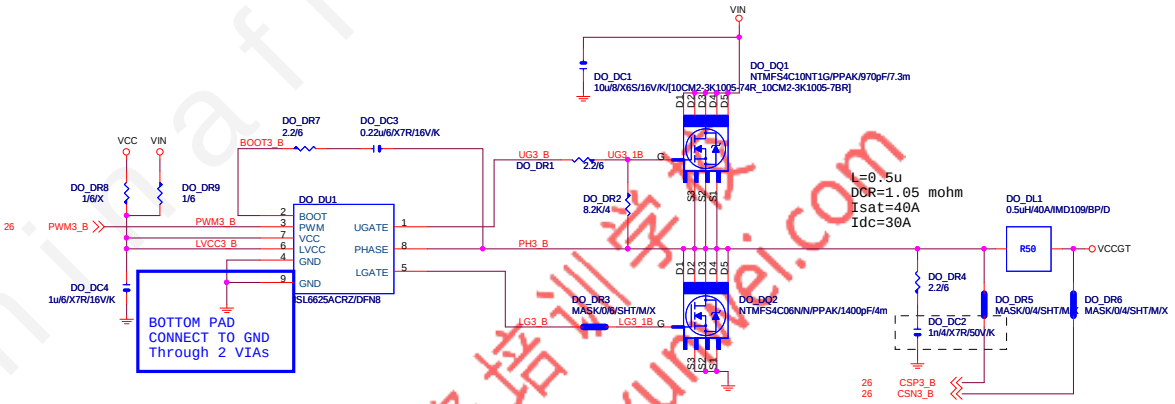


VCCGT CAP

560u*5PCS
22u*15PCS







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VCCIO

REV:0.21

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

CHOKE與CAP料號可變

注意耐壓

6*6

DCL1 1.0uH/15A/S/6.7m

VCC3

VCC

DCR11 2.2/6

DRV_VIO

DCC11 1u/6/X7R/16V/K

DCC10 0.1u/6/X7R/25V/K

DCC36 DCC37 0.1u/4/X7R/16V/K

DCC8 0.1u/4/X7R/16V/K Close Choke

DCC9 1u/6/X7R/16V/K Close MOS

VCCIO_VIN

DCC24 22u/8/X5R/6.3V/M

DCC25 22u/8/X5R/6.3V/M

DCC26 22u/8/X5R/6.3V/M

UGATE_VIO DCR12 2.2/6

DCQ5 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A

RT8120DGS/SOP8
DCU1

COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC

VCCIO_EN_1

DCR14 8.2K/4/1

DCC12 22p/4/NPO/50V/J

DCC13 3.3n/4/X7R/50V/K

DCR19 MASK/0/4/SHT/X

UGATE_VIO

PHASE_VIO

LGATE_VIO

DCR18 34K/4/1

放靠近IC pin4

DCR13 8.2K/4

DCQ6 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

DCL2 1.0uH/15A/S/6.7m

6*6

DCR15 2.2/6

DCC14 1n/4/X7R/50V/K

VCCIO

DCR16 487/4/1

DCR17 1K/4/1

DCC15 3.3n/4/X7R/50V/K

RS

DCEC2 560u/FP/D/6.3V/68/C/8m/[11CO2-C85600-03R]

DCC38 22u/8/X5R/6.3V/M

Remote sense請從最重的負載端點拉回

VCCIO_OV

37 VCCIO_OV

RO

DCR20 5.23K/4/1

0.8*(1+RS/RO) = Vout
0.8*[1+2K/8K)] =
1.0V

VCCIO_EN_1

5VDUAL

DCR21 8.2K/4

DCQ7 2N7002/SOT23/25pF/5

SOT23

DCR22 8.2K/4/X

DCQ8 2N7002/SOT23/25pF/5

SOT23

23,37 VCCIO_EN

DCR35

MASK/0/4/SHT/X

DCR23 100K/4/1

DCC16 1u/6/X7R/16V/K

Connect to IT8686

VCCGT

WBC38 22u/8/X5R/6.3V/M

WBC39 22u/8/X5R/6.3V/M

放CPU端.

VCCSA

DC_SBC1 1u/4/X5R/6.3V/K

DC_SBC2 1u/4/X5R/6.3V/K

DC_SBC3 1u/4/X5R/6.3V/K

DC_SBC4 1u/4/X5R/6.3V/K

DC_SBC5 1u/4/X5R/6.3V/K

DC_SBC6 1u/4/X5R/6.3V/K

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

CHOKE與CAP料號可變

注意耐壓

DCC30 22u/8/X5R/6.3V/M

DCC31 22u/8/X5R/6.3V/M

DCC32 22u/8/X5R/6.3V/M

VCCSA_VIN

DCL3 1.0uH/15A/S/6.7m

VCC3

VCC

DCR24 2.2/6

DRV_VSA

DCC20 1u/6/X7R/16V/K

DCC18 0.1u/6/X7R/25V/K

DCC39 0.1u/4/X7R/16V/K

DCC40 0.1u/4/X7R/16V/K

DCC17 0.1u/4/X7R/16V/K Close Choke

DCC19 1u/6/X7R/16V/K Close MOS

UGATE_VSA DCR25 2.2/6

DCQ9 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A

DCL4 1.0uH/15A/S/6.7m

VCCSA

RT8120DGS/SOP8
DCU2

COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC

VCCSA_EN_1

DCR27 8.2K/4/1

DCC21 22p/4/NPO/50V/J

NPC12 3.3n/4/X7R/50V/K

DCR32 MASK/0/4/SHT/X

UGATE_VSA

PHASE_VSA

LGATE_VSA

DCR31 34K/4/1

放靠近IC pin4

DCR26 8.2K/4

DCQ10 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

DCR28 2.2/6

DCC22 1n/4/X7R/50V/K

DCR29 487/4/1

DCR30 1K/4/1

DCC23 3.3n/4/X7R/50V/K

RS

DCEC4 560u/FP/D/6.3V/68/C/8m/[11CO2-C85600-03R]

DCC41 22u/8/X5R/6.3V/M

Remote sense請從最重的負載端點拉回

VCCSA_OV

37 VCCSA_OV

RO

DCR33 3.16K/4/1

0.8*(1+RS/RO) = Vout
0.8*[1+2K/8K)] =
1.0V

SIO PIN5 . PIN7 用在其他function時使用

SIO PIN5接VDDQ . PIN7接VCCIO .時使用

VCCSA_EN_1

5VDUAL

DCR6 8.2K/4

DCQ2 2N7002/SOT23/25pF/5

SOT23

Connect to IT8793

DCR7 8.2K/4

DCQ3 2N7002/SOT23/25pF/5

SOT23

23 VCCSA_EN

DCR8

MASK/0/4/SHT/X

DCR9 100K/4/1

DCC7 1u/6/X7R/16V/K

Connect to IT8686

GIGABYTE

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DDR4

CHOKE與CAP料號可變

5VDUAL
+12V
MA_DR10 0/6/X
MA_D1 SDM20E40C/0.4A/SOT23
MA_DR8 2.2/6
DRV_DDR
MA_DC10 1u/6/X7R/16V/K
MA_DC9 0.1u/6/X7R/25V/K

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

5VDUAL
MA_L2 0.5uH/20A/IMD0809/BP/D
8*8
MA_VIN
MA_DC6 0.1u/4/X7R/16V/K Close Choke
MA_DC7 1u/6/X7R/16V/K Close MOS
MAEC1 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

DDR VIN CAP
560u*2PCS

MA_DQ1 NTMFS4C06N/N/PPAK/1400pF/4m

RT8120DGS/SOP8
MAU2
COMP BOOT UGATE PHASE VCC PGND GND FB LG/OC

DDR_EN
MA_DR15 27K/4/1
MA_DC15 22p/4/NPO/50V/J
MA_DC16 3.3n/4/X7R/50V/K
MA_DR19 MASK/0/4/SHT/X
MA_DR18 11.8K/4/1
OCP=40A
放靠近IC pin4

MA_UGATE
MA_PHASE
MA_LGATE
MA_DR1 2.2/6
MA_DR2 8.2K/4
MA_DQ2
MA_DQ3
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
MA_DR9 2.2/6
NTMFS4C06N/N/PPAK/1400pF/4m
NTMFS4C06N/N/PPAK/1400pF/4m

MA_L1 1uH/35A/IMD109/BP/D
R50
10*10
VDDQ

SUPPORT DDR4 1.2V
25A MAX

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

MA_DR14 487/4/1
MA_DR13 1K/4/1
MA_DC14 3.3n/4/X7R/50V/K
RS

VDDQ
MAC60 22u/8/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

RO MA_DR12 2K/4/1

VDDQ_SIO VDDQ
DDR_VS MASK/0/4/SHT/M/X
CLOSE TO DDR POWER PLANE

DDR_ADJ
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]
37 DDR_ADJ

PWR SEQ

DDR_EN
5VDUAL
MAR108 22K/4
MAQ6 2N7002/SOT23/25pF/5
SOT23
VPP_25V
MAR9 10K/4/1
MAQ5 MMBT2222A/SOT23/600mA/40
SOT23
MAR107 5.11K/4/1/X
MAC3 0.1u/4/X7R/16V/K

For power sequence require

Connect to IT8793
23,31 MA_EN
Connect to IT8686
MAR113 MASK/0/4/SHT/M/X

5VDUAL
MAR2 8.2K/4
MAR105 100K/4/1
MAQ11 2N7002/SOT23/25pF/5
SOT23
MAC9 1u/6/X7R/16V/K

DDR_EN
5VDUAL
MAR1 8.2K/4
MAQ10 2N7002/SOT23/25pF/5
SOT23

DDRVTT

VDDQ
NCT3103S/SOP8/2A
MAU1
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL
MAC2 1u/4/X5R/6.3V/K
MAR5 1K/4/1
37 MA_VTT_REF
MA_VTT_REF
MAR4 1K/4/1
MAC1 0.01u/4/X7R/25V/K
1.1A MAX
DDRVTT
DDRVTT_EN
DDRVTT_BOOT
5VDUAL
MAC7 10u/6/X5R/6.3V/M

4 DDR_VTT_CTL
12,23,50,56,59 N_SLP_S3
DDR_VTT_CTL MAR110 DDRVTT_EN
N_SLP_S3 MAR111 DDRVTT_BOOT
0/4/SHT/M/X
0/4/SHT/M/X
MAU1上NCT3103S時上件

DDR CAP 560u*4PCS 22u*2PCS

VDDQ
* 大電容 x4
MAEC3 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC4 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC6 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
MAEC7 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
WBC49 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M

DDRVTT CAP

* 大電容 x0
DDRVTT
MAC4 22u/8/X5R/6.3V/M
MAC5 22u/8/X5R/6.3V/M

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VPP_25V

CHOKE與CAP料號可變

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D MAX
30 V	4.2 mΩ @ 10 V	67 A
	6.1 mΩ @ 4.5 V	

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

5VDUAL — MA_L4 1.0uH/15A/S/6.7m (6*6)

MA_DC17 0.1u/4/X7R/16V/K Close Choke

MA_DC18 0.1u/6/X7R/25V/K

MB_VIN — MA_DC19 1u/6/X7R/16V/K Close MOS — MAEC12 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

MA_DQ4 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

MB_UGATE — MA_DR21 2.2/6

MA_DR23 8.2K/4

MB_PHASE — MA_DQ5 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

MB_LGATE — MA_DR22 2.2/6

L=1u
DCR=8.3 mohm
Isat=22A
Idc=11A

MA_L3 1.0uH/15A/S/6.7m (6*6)

MA_DR25 2.2/6

MA_DC23 1n/4/X7R/50V/K

MA_DR26 487/4/1

MA_DC24 3.3n/4/X7R/50V/K RS

MA_DR27 4.02K/4/1

MA_DR31 1.87K/4/1 RO

VPP_25V

SUPPORT DDR4 2.5V

25A MAX

MAC61 22u/8/X5R/6.3V/M/X

+12V 5VDUAL

MA_D2 SDM20E40C/0.4A/SOT23

MA_DR20 2.2/6 DRV_VPP

MA_DC20 1u/6/X7R/16V/K

RT8120DGS/SOP8 MAU3

VPP25_EN

MA_DR24 27K/4/1

MA_DC21 22p/4/NPO/50V/J

MA_DC22 3.3n/4/X7R/50V/K

MA_DR30 MASK/0/4/SHT/X

COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC

MB_UGATE MB_PHASE MB_LGATE

MA_DR29 32.4K/4/1

OCP=30A

放靠近IC pin4

VPP25_ADJ

37 VPP25_ADJ

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

* 備 MA_DR32

PWR SEQ

5VSB

MAR116 8.2K/4

MAR109 8.2K/4

VPP25_EN

MAQ7 2N7002/SOT23/25pF/5 SOT23

MAC8 1u/4/X5R/6.3V/K/X

23 VPP25_EN_IO

Connect to IT8686

MAR114 MASK/0/4/SHT/X

MAQ8 2N7002/SOT23/25pF/5 SOT23

MAR106 8.2K/4/X

12,23,35,56,59 N_-S4_S5

MAR115 MASK/0/4/SHT/X

MAQ9 2N7002/SOT23/25pF/5/X SOT23

MAR14 8.2K/4/X

23,30 MA_EN

MAC10 1u/4/X5R/6.3V/K/X

VPP_25V

MAC49 0.1u/4/X7R/16V/K

MAC50 0.1u/4/X7R/16V/K

MAC51 0.1u/4/X7R/16V/K

MAC52 0.1u/4/X7R/16V/K

VPP CAP 560u*1PCS

* 大電容 x1

MAEC11 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

GIGABYTE™

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REV:0.7

5VDUAL
+12V
NPR22 0/8/X
NPD1 B140/SMA/1A
NPD2 B320B/SMB/3A
L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A
CHOKE與CAP料號可變
NPL1 0.5uH/20A/IMD0809/BP/D
P1V0_VIN_D
P1V0_VIN
NPC1 0.1u/4/X7R/16V/K
Close Choke
NPC3 1u/6/X7R/16V/K
Close MOS
NPEC1 100u/OS/D/16V/69/A/35m
L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A
5VDUAL
NPR1 2.2/6
DRV_PCH
NPC4 1u/6/X7R/16V/K
NPC2 0.1u/6/X7R/25V/K
NPQ1
NTMFS4C10NT1G/PPAK/970pF/7.3m
UGATE_PCH NPR2 2.2/6
NPR4 8.2K/4
NPL2 1uH/18A/IMD0809/BP/D
VCC1_0_PCH
★Update 2015-04.22
RT8120DGS/SOP8
NPU1
COMP
VCC
BOOT
UGATE
PHASE
FB
GND
PGND
LG/OC
P1V0_PCH_EN
NPR5 8.2K/4/1
NPC5 22p/4/NPO/50V/J
NPC6 3.3n/4/X7R/50V/K
NPR12 MASK/0/4/SHT/X
UGATE_PCH
PHASE_PCH
LGATE_PCH
NPR11 34K/4/1
放靠近IC pin4
PHASE_PCH
LGATE_PCH
NPQ2
NTMFS4C10NT1G/PPAK/970pF/7.3m
NPR6 2.2/6
NPC7 1n/4/X7R/50V/K
NPR7 487/4/1
NPC8 3.3n/4/X7R/50V/K
RS
NPR8 2K/4/1
NPEC2 560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]
Remote sense請從最重的負載端點拉回
P1V0_PCH_ADJ
37 P1V0_PCH_ADJ
RO
NPR13 6.2K/4/1
0.8*(1+RS/RO) = Vout
0.8*[1+2K/6.2K)] =
1.05V
PWR SEQ
P1V0_PCH_EN
NPR14 0/4/X
VCC1_0_EN
23
5VSB
NPR15 8.2K/4
NPQ4 2N7002/SOT23/25pF/5
SOT23
3VDUAL
NPR16 8.2K/4
NPQ3 MMBT2222A/SOT23/600mA/40
S0T23
NPR17 8.2K/4
NPC9 0.1u/4/X7R/16V/K/X
VCC1_0_PCH
NPC10 22u/8/X5R/6.3V/M
Defaults先不上件
請放置CHOKE一出來的地方

GIGABYTE™

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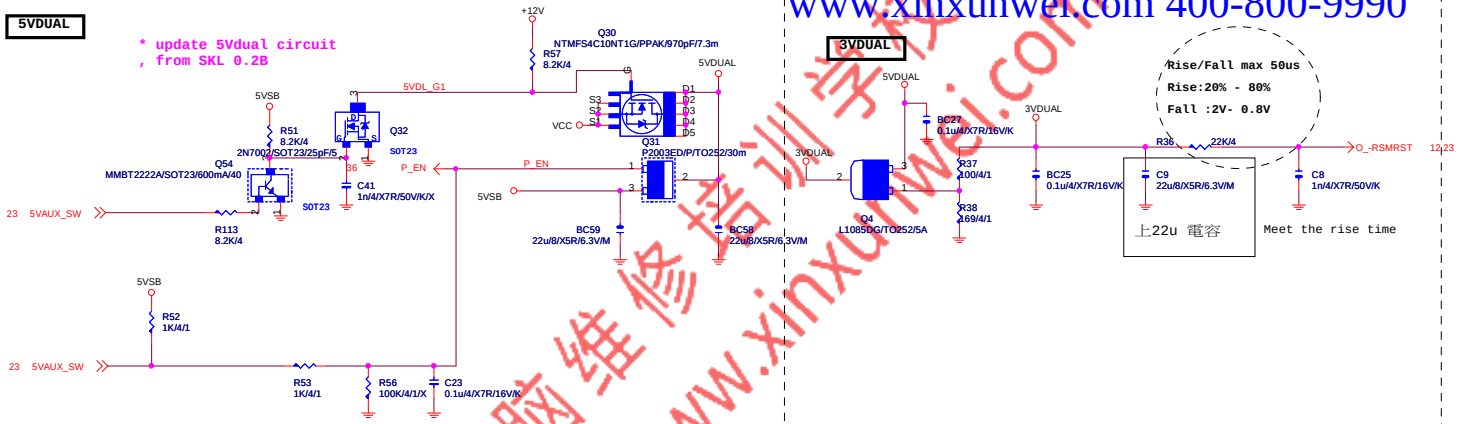
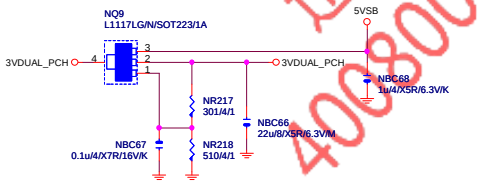
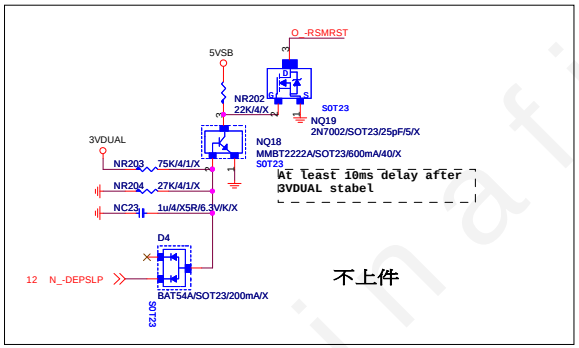
5VDUAL



3VDUAL

3VDUAL_PCH





Gigabyte Technology			
Title: DISCRETE POWER			
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 33 of 63		

GIGABYTE

Title

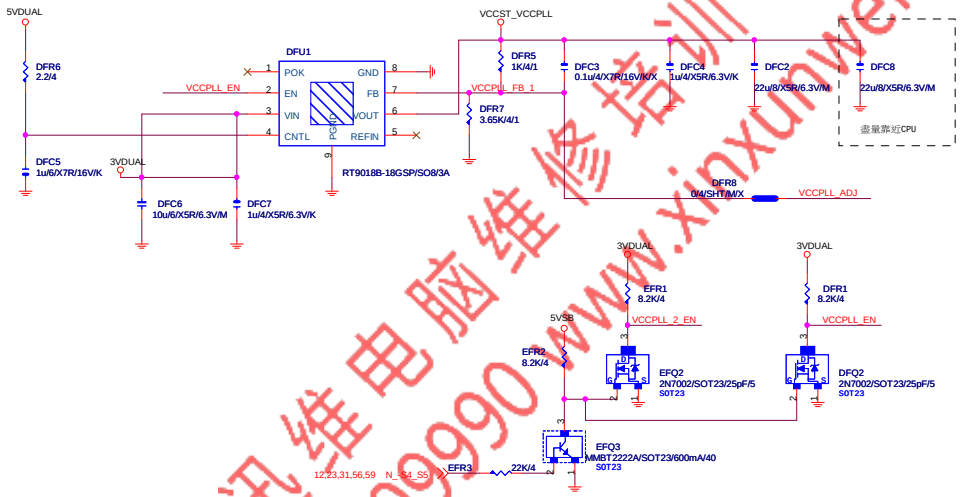
PCH PWR-VCC18_PCH

Size	Document Number	Rev
A	GA-Z270-GAMING 3	1.0

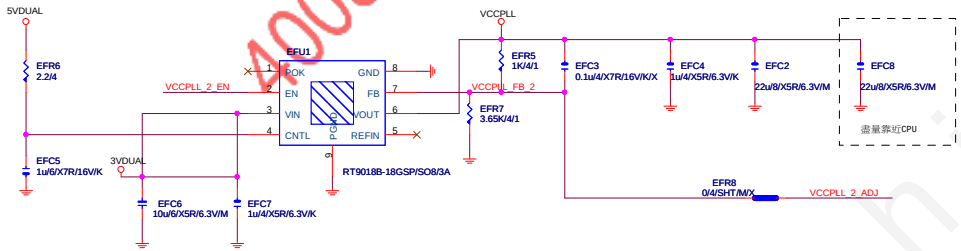
Date: Wednesday, December 21, 2016 Sheet 34 of 63

VCCST_VCCPLL

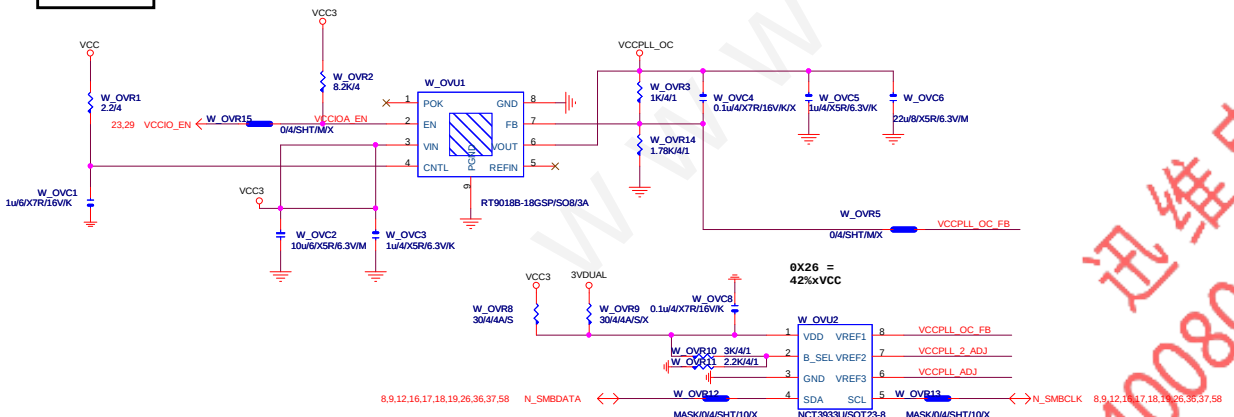
替換原先MOS開關線路



VCCPLL



VCCPLL_OC



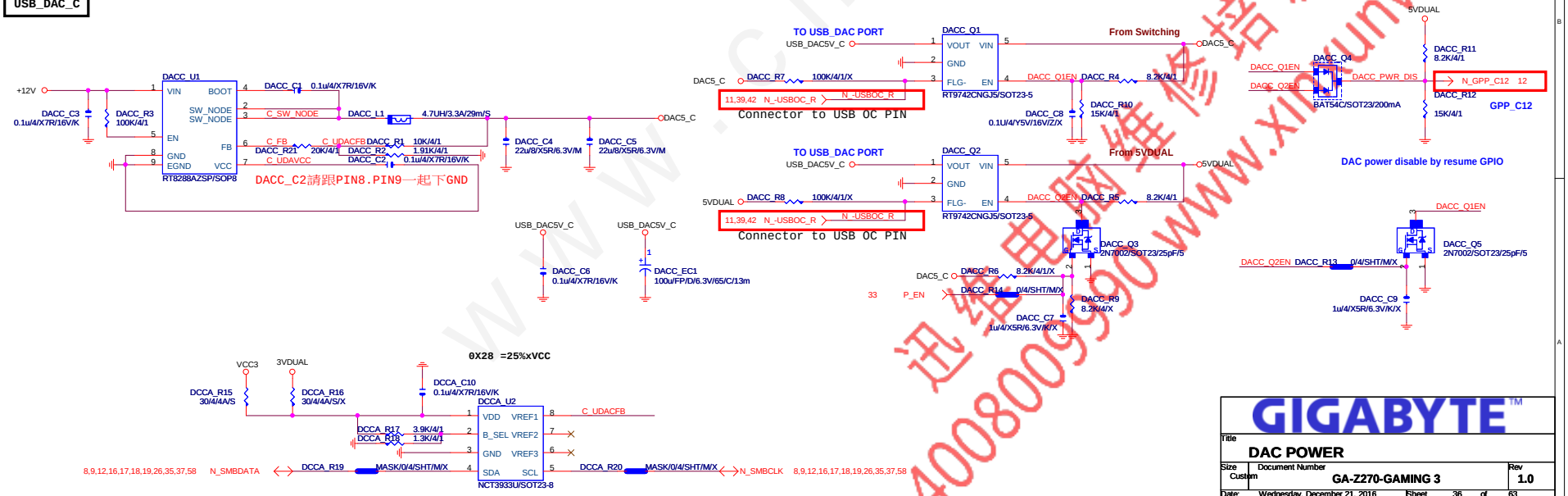
GIGABYTE		
Title	CPU POWER	
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 35 of 63	

USB_DAC_A

REV:0.1

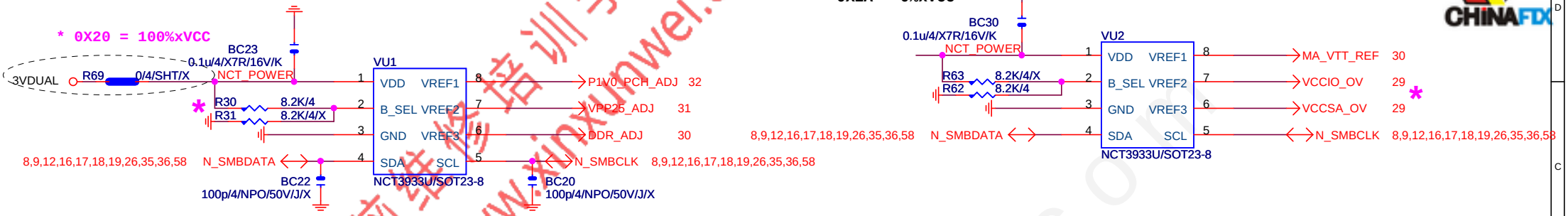
USB_DAC_B

USB_DAC_C



Title	DAC POWER		
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 36 of 63		

OVER VOLTAGE



NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

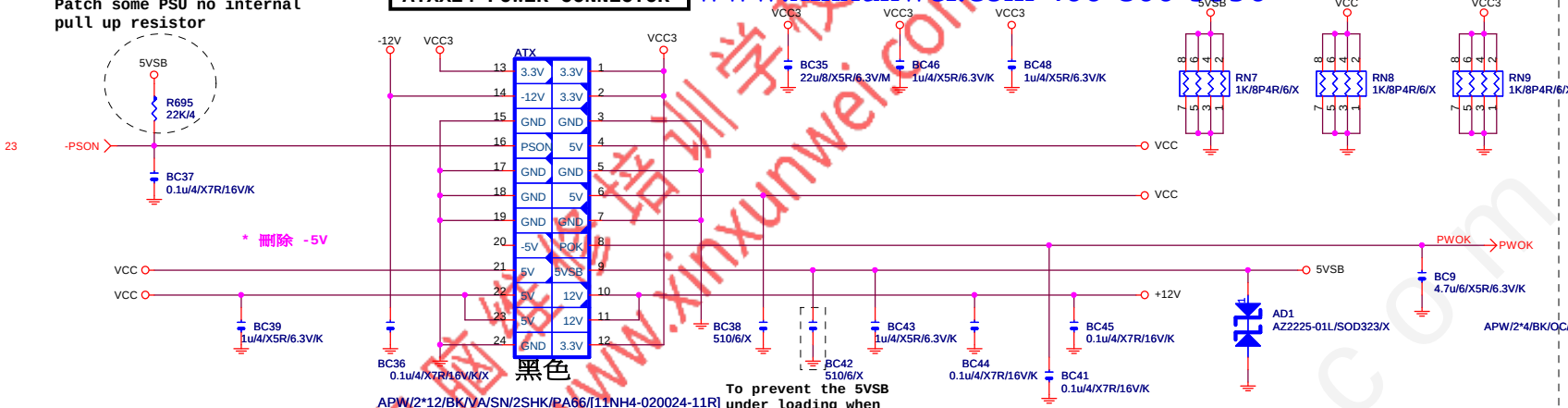
Title: CPU CORE VR

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

Date: Wednesday, December 21, 2016 | Sheet 37 of 63

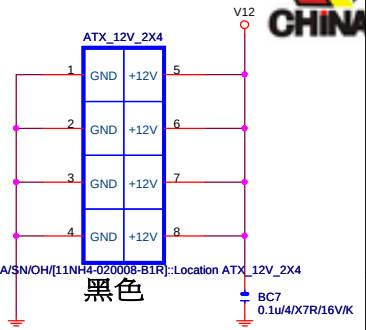
Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

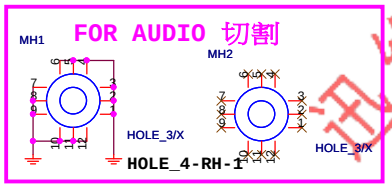


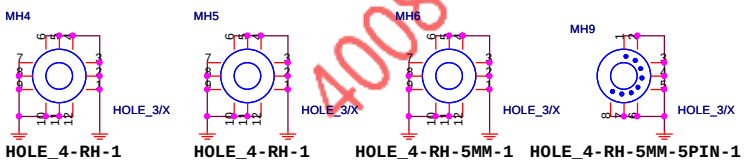
To prevent the 5VSB under loading when boot

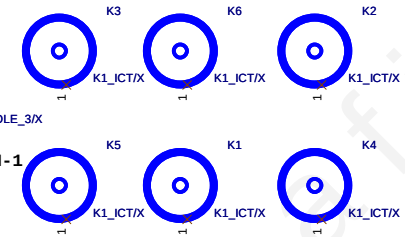
ATXX4 POWER CONNECTOR

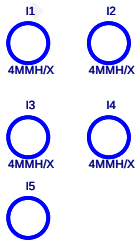


FOR AUDIO 切割



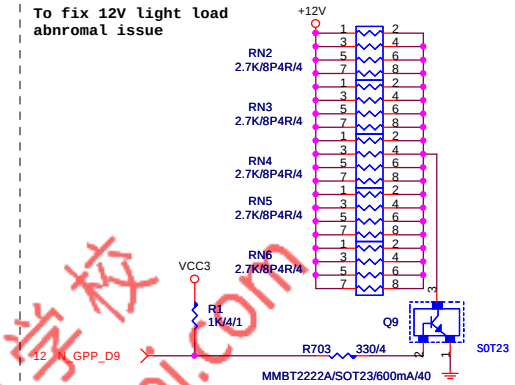






【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

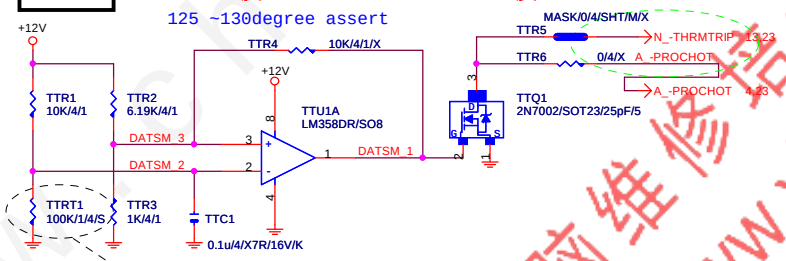


-PROHOT * 保留 ?

-PROHOT

OTP:130度 / PCB THERMAL TRIP:128 度

125 ~130degree assert

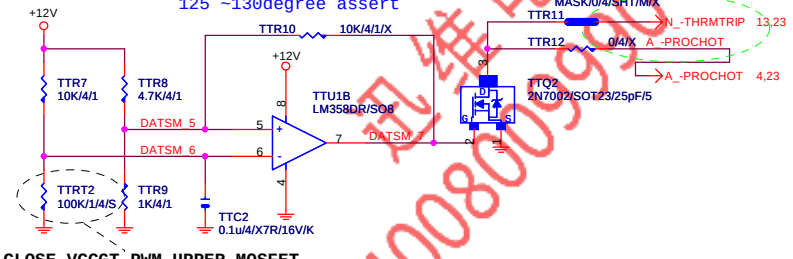


CLOSE VCORE PWM UPPER MOSFET

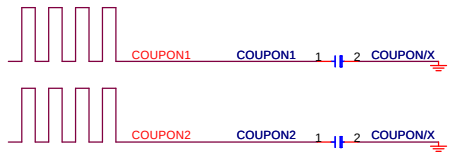
-PROHOT

OTP:130度 / PCB THERMAL TRIP:129 度

125 ~130degree assert



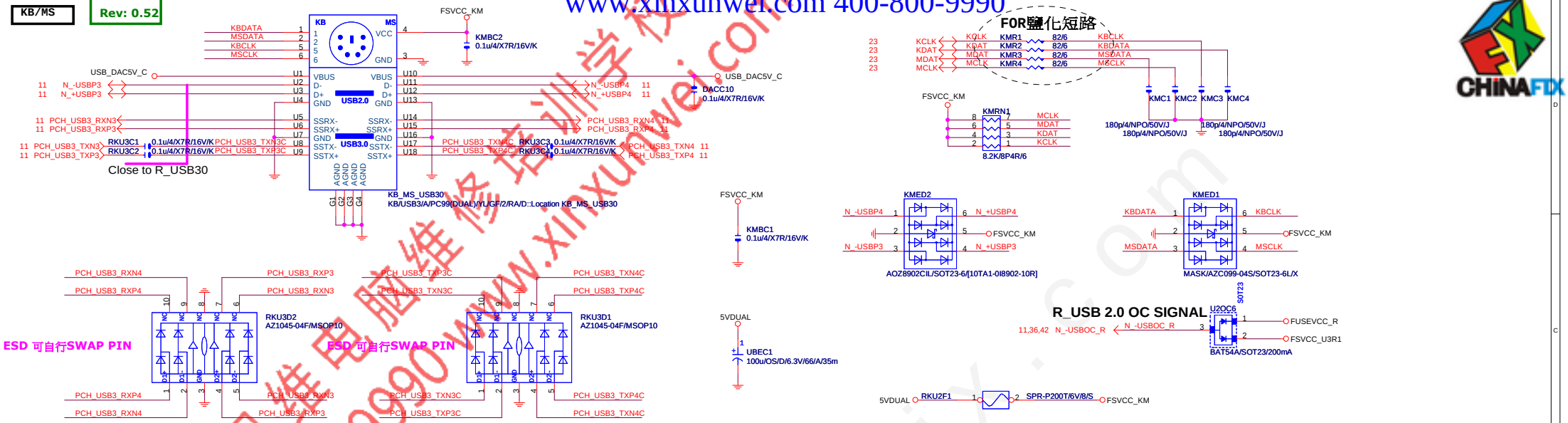
CLOSE VCCGT PWM UPPER MOSFET



Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 38 of 63	

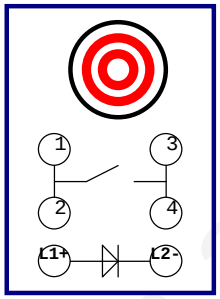
KB/MS

Rev: 0.52



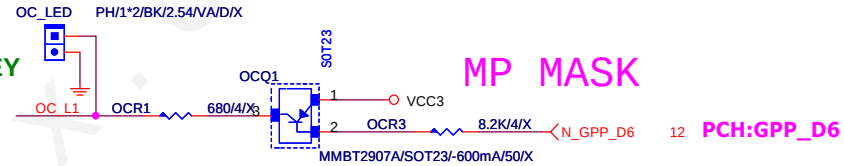
Gigabyte Technology		
Title: KB_MS_USB		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 39 of 63	

Rev: 0.52

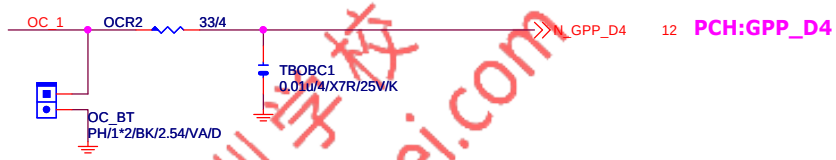


OC KEY

"OC_LED" 1X2pin only for Z270X-GAMING 7



MP MASK



"OC_BT" 1X2pin only for Z270X-GAMING 7

Gigabyte Technology			
Title: OC BUTTOM			
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016		Sheet 40 of 63	

Rev: 0.52

Front USB3.0

F_USB30_1
REV=1

NET 自行調整

FSVCC_U3F1
VBUS, ID, SSRX1-, SSRX1+, SSTX1-, SSTX1+, D1-, D1+, GND, GND
VBUS, SSTX2-, SSTX2+, SSRX2-, SSRX2+, D2-, D2+, GND, GND
FSVCC_U3F1

11 PCH_USB3_RXN1
11 PCH_USB3_RXP1
11 PCH_USB3_TXN1
11 PCH_USB3_TXP1
11 N_-USBP1
11 N_+USBP1

FAU3C1 0.1u/4/X7R/16V/K U3_TXN1_C
FAU3C2 0.1u/4/X7R/16V/K U3_TXP1_C

U3_TXN2_C FAU3C3 0.1u/4/X7R/16V/K PCH_USB3_TXN2 11
U3_TXP2_C FAU3C4 0.1u/4/X7R/16V/K PCH_USB3_TXP2 11
PCH_USB3_RXN2 11
PCH_USB3_RXP2 11
N_-USBP2 11
N_+USBP2 11

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

黑色

NET 自行調整

PCH_USB3_RXP1
PCH_USB3_RXN1
PCH_USB3_RXN2
PCH_USB3_RXP2
FAU3D1
AZ1045-04F/MSOP10
PCH_USB3_RXN1
PCH_USB3_RXP1
PCH_USB3_RXP2
PCH_USB3_RXN2

FAU3D3
N_-USBP1
N_+USBP2
3VDUAL
N_+USBP1
N_-USBP2
AOZ8902CIL/SOT23-6/[10TA1-0I8902-10R]

CLOSE F_USB30

U3_TXP1_C
U3_TXN1_C
U3_TXN2_C
U3_TXP2_C
FAU3D2
AZ1045-04F/MSOP10
U3_TXN1_C
U3_TXP1_C
U3_TXP2_C
U3_TXN2_C

CLOSE F_USB30

5VDUAL FU3F1 SPR-P260T/6V/8/S FSVCC_U3F1
FAU3EC1 100u/OS/D/6.3V/66/A/35m
FAU3C5 0.1u/4/X7R/16V/K

Front USB3.0

F_USB30_2
REV=1

NET 可自行調整

FSVCC_U3F2
VBUS, ID, SSRX1-, SSRX1+, SSTX1-, SSTX1+, D1-, D1+, GND, GND
VBUS, SSTX2-, SSTX2+, SSRX2-, SSRX2+, D2-, D2+, GND, GND
FSVCC_U3F2

11 PCH_USB3_RXN5
11 PCH_USB3_RXP5
11 PCH_USB3_TXN5
11 PCH_USB3_TXP5
11 N_-USBP5
11 N_+USBP5

FBU3C1 0.1u/4/X7R/16V/K U3_TXN5_C
FBU3C2 0.1u/4/X7R/16V/K U3_TXP5_C

U3_TXN6_C FBU3C3 0.1u/4/X7R/16V/K PCH_USB3_TXN6 11
U3_TXP6_C FBU3C4 0.1u/4/X7R/16V/K PCH_USB3_TXP6 11
PCH_USB3_RXN6 11
PCH_USB3_RXP6 11
N_-USBP6 11
N_+USBP6 11

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

黑色

NET 可自行調整

PCH_USB3_RXP5
PCH_USB3_RXN5
PCH_USB3_RXN6
PCH_USB3_RXP6
FBU3D1
AZ1045-04F/MSOP10
PCH_USB3_RXN5
PCH_USB3_RXP5
PCH_USB3_RXP6
PCH_USB3_RXN6

FBU3D3
N_-USBP5
N_-USBP6
3VDUAL
N_+USBP5
N_+USBP6
AOZ8902CIL/SOT23-6/[10TA1-0I8902-10R]

CLOSE F_USB30

5VDUAL FU3F2 SPR-P260T/6V/8/S FSVCC_U3F2
FBU3C5 0.1u/4/X7R/16V/K

U3_TXP5_C
U3_TXN5_C
U3_TXN6_C
U3_TXP6_C
FBU3D2
AZ1045-04F/MSOP10
U3_TXN5_C
U3_TXP5_C
U3_TXP6_C
U3_TXN6_C

F_USB POWER PROTECT

CLOSE F_USB30

-USBOC_F

-USBOC_R

F_USB 2.0 OC SIGNAL

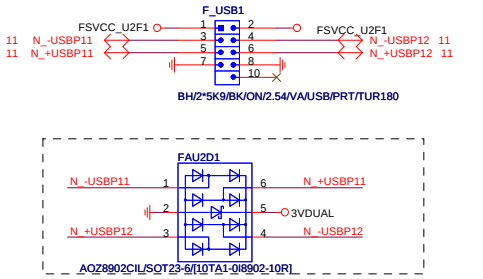
11,42 N_-USBOC_F
U2OC3 SOT23
N_-USBOC_F
FSVCC_U3F1
FSVCC_U3F2
BAT54A/SOT23/200mA

Gigabyte Technology		
Title: F_USB30		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 41 of 63	

Rev: 0.52

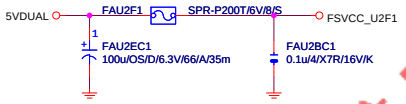
FRONT USB1

NET 可變



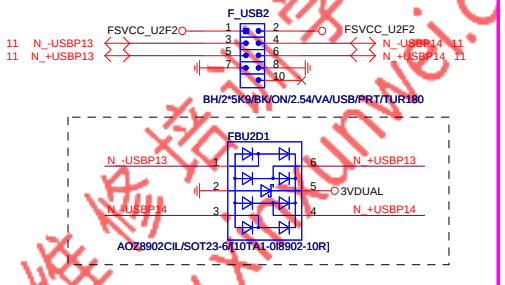
Close to connector

FUSE 2 Port 1 Fuse 2A



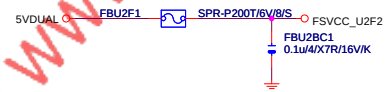
FRONT USB2

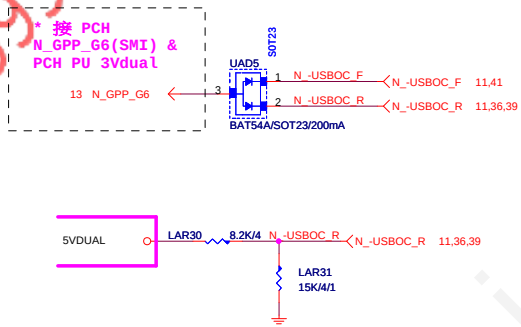
NET 可變



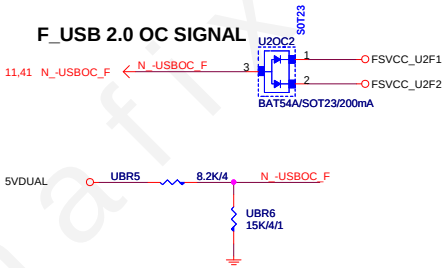
Close to connector

FUSE 2 Port 1 Fuse 2A





F_USB 2.0 OC SIGNAL



Gigabyte Technology		
Title: USB2.0		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 42 of 63	

Rev: 0.52

R_USB30

USB 電容前後NET 可自行調整

R_USB30

USB3.0/2.0

FSVCC_U3R1	U1	VBUS	
11 N_-USBP7	U2	D-	
11 N_+USBP7	U3	D+	
	U4	GND	
11 PCH_USB3_RXN7	U5	SSRX-	
11 PCH_USB3_RXP7	U6	SSRX+	
	U7	GND	
11 PCH_USB3_TXN7	RBU3C1 0.1u/4/X7R/16V/K	SSTX-	PCH_USB3_TXN7_C U8
11 PCH_USB3_TXP7	RBU3C2 0.1u/4/X7R/16V/K	SSTX+	PCH_USB3_TXP7_C U9

VBUS	U10	FSVCC_U3R1	
D-	U11		N_-USBP8 11
D+	U12		N_+USBP8 11
GND	U13		
SSRX-	U14		PCH_USB3_RXN8 11
SSRX+	U15		PCH_USB3_RXP8 11
GND	U16		
SSTX-	U17	PCH_USB3_TXN8_C	RBU3C3 0.1u/4/X7R/16V/K PCH_USB3_TXN8 11
SSTX+	U18	PCH_USB3_TXP8_C	RBU3C4 0.1u/4/X7R/16V/K PCH_USB3_TXP8 11

AGND G1 G2 G3 G4

USB3.0+HDMI/18P+19P/BK/OS/RA

USB 電容前後NET 可自行調整

FUSE 2 Port 1 Fuse 2.6A

5VDUAL — RBU3F1 (1, 2) — SPR-P260T/6V/8/S — FSVCC_U3R1

RBU3EC1 100u/OS/D/6.3V/66/A/35m

RBU3C5 0.1u/4/X7R/16V/K

2 port USB 3.0 架高with TYPE C Capture:
USB/18P/BU/OS/RA/D/2/HR

NET 可自行調整

PCH_USB3_RXP8		PCH_USB3_TXN8_C
PCH_USB3_RXN8		PCH_USB3_TXP8_C
* swap	RBU3D2 AZ1045-04F/MSOP10	* swap
PCH_USB3_RXN8		PCH_USB3_TXP8_C
PCH_USB3_RXP8		PCH_USB3_TXN8_C

NET 可自行調整

PCH_USB3_TXN7_C		PCH_USB3_RXN7
PCH_USB3_TXP7_C		PCH_USB3_RXP7
* swap	RBU3D1 AZ1045-04F/MSOP10	* swap
PCH_USB3_TXP7_C		PCH_USB3_RXP7
PCH_USB3_TXN7_C		PCH_USB3_RXN7

ESD 可自行SWAP PIN

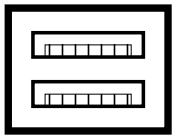
RBU3D3

N_-USBP7	1	6 N_+USBP7
	2	5 FSVCC_U3R1
N_+USBP8	3	4 N_-USBP8

AOZ8902CIL/SOT23-6/[10TA1-0I8902-10R]

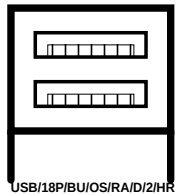
CONNECTOR 自行調整

2 port USB 3.0 Capture:



USB/18P/BU/OS/RA/D/2/1U/SB

2 port USB 3.0 with TYPE C Capture:



USB/18P/BU/OS/RA/D/2/HR

Gigabyte Technology

Title	R_USB30		
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 43 of 63		

Rev: 0.62

DVI CONN

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

NET 可變

DVI_TXC / DVI_TXC- — VBC1 0.1u/4/X7R/16V/K, VBC2 0.1u/4/X7R/16V/K — DVITXC+ / DVITXC- — VR1 / VR2 680/4/1
DVI_TX0 / DVI_TX0- — VBC3 / VBC4 0.1u/4/X7R/16V/K — DVITX0+ / DVITX0- — VR3 / VR4 680/4/1
DVI_TX1 / DVI_TX1- — VBC5 / VBC7 0.1u/4/X7R/16V/K — DVITX1+ / DVITX1- — VR7 / VR8 680/4/1
DVI_TX2 / DVI_TX2- — VBC8 / VBC9 0.1u/4/X7R/16V/K — DVITX2+ / DVITX2- — VR9 / VR10 680/4/1
DVI_G

防漏電
★Update 2015.05.27
VCC
VD1 BAT54A/SOT23/200mA
S0T23
VR14 2.2K/4/1
VR13 2.2K/4/1
DVI_SDA
DVI_SCL

VQ1 2N7002/SOT23/25pF/5
S0T23
VCC VR16 8.2K/4 VQ1_2

10 N_DDPB_CTRLCLK
10 N_DDPB_CTRLDATA
VR5 2.2K/4/1
VR6 2.2K/4/1
VCC3
VBC6 0.1u/4/X7R/16V/K/X

VQ2 2N7002/SOT23/25pF/5
S0T23
VCC VR17 1K/4/1 VQ2_2
N_DDPB_CTRLCLK

VQ3 2N7002/SOT23/25pF/5
S0T23
VCC VR18 1K/4/1 VQ3_2
N_DDPB_CTRLDATA

VQ4 2N7002/SOT23/25pF/5
S0T23
VCC VR19 8.2K/4 VQ4_2
VR20 1M/4
N_DVI_HDP_F
N_DVI_HDP_F 10

NET 可變
FSVCC_KM

DVI
SHIELD1
DVITX0- 17 TX0-
DVITX0+ 18 TX0+
DVITX1- 9 TX1-
DVITX1+ 10 TX1+
DVITX2- 1 TX2-
DVITX2+ 2 TX2+
3 SHLD24
11 SHLD13
19 SHLD05
12 TX3-
13 TX3+
4 TX4-
5 TX4+
20 TX5-
21 TX5+
DVI_SCL 6 DDCC
DVI_SDA 7 DDCD
14 VDDC
15 GND
22 SHLDC
DVITXC- 24 TXC-
DVITXC+ 23 TXC+
8 VSYNC
DVI_HP 16 HPD
VR15 20K/4/1
SHIELD2 M5
SHIELD2 M6
SHIELD2 M7
SHIELD2 M8
SHIELD2 M2
COMMON
DVI-30P-4P-1
DVI-D/24P/SC/RA/D/SH/[11NR6-501024-31R]

Close to connector

VESD2
DVITX1+ DVITX2-
DVITX1- DVITX2+
DVITX1- DVITX2+
DVITX1+ DVITX2-
AZ1045-04F/MSOP10

VESD1
DVITXC+ DVITX0-
DVITXC- DVITX0+
DVITXC- DVITX0+
DVITXC+ DVITX0-
AZ1045-04F/MSOP10

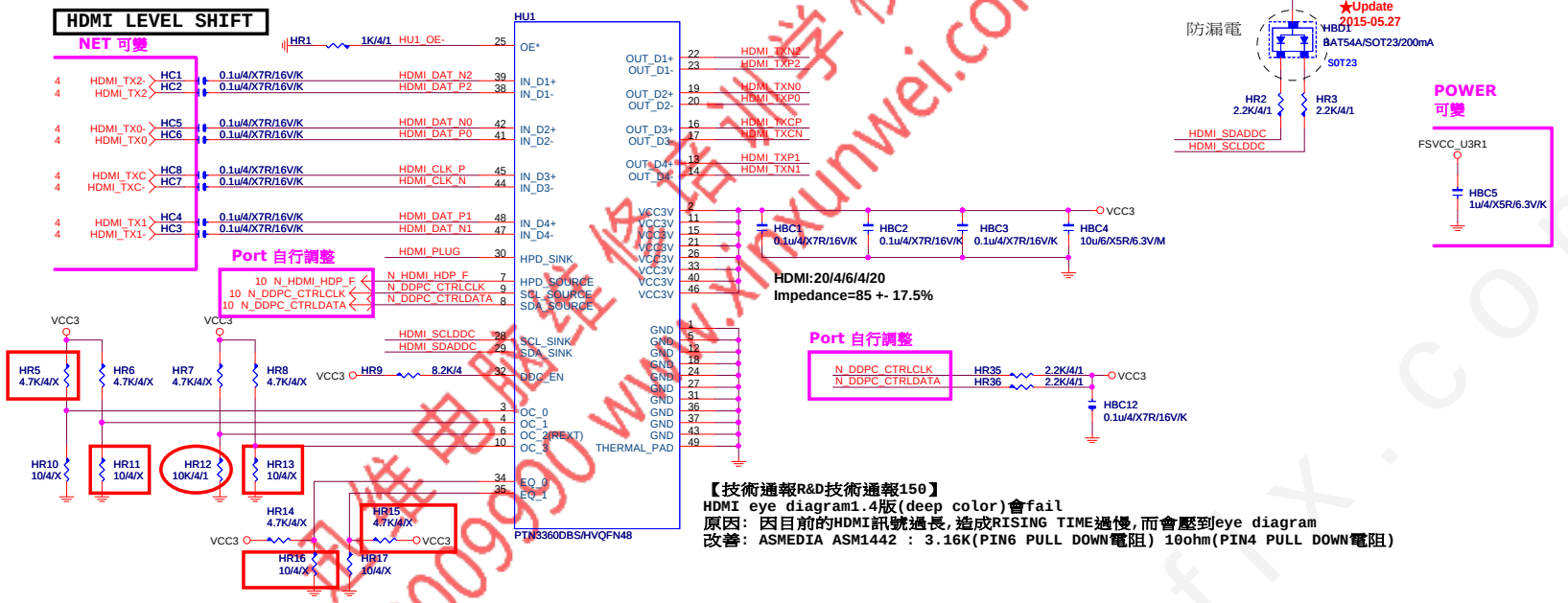
NET 可變
FSVCC_KM
VBC10 0.1u/4/X7R/16V/K

Close to connector

VESD3
DVI_HP 1
2
3
6 DVI_SDA
5 FSVCC_KM
4 DVI_SCL
NET 可變
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

Gigabyte Technology			
Title: DVI			
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 44 of 63		

Rev: 0.62



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

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

直立式

P/N:11NR6-H01019-K1R

Gigabyte Technology			
Title: HDMI			
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016		Sheet 45 of 63	

LAN:E2500(E2400)(E2201) R1.06

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

離IC近越好

10 LA_-SRCCLK_LAN
10 LA_SRCCLK_LAN
11 LA_ML_OP
11 LA_ML_ON
LAC1 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K
LA_ML_OP_C
LA_ML_ON_C

LABC5 0.1u/4/X7R/16V/K
LABC4 1u/4/X5R/6.3V/K
LABC3 0.1u/4/X7R/16V/K
LABC6 0.1u/4/X7R/16V/K/X

47 LA_LED_ACT_TXRX
47 LA_LED_LINK100

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K
LABC8 4.7u/6/X5R/6.3V/K
AR8161-->(O)

3VDUAL_LAN1
LABC9 10u/6/X5R/6.3V/M
1u/4/X5R/6.3V/K
LABC10
LABC11 0.1u/4/X7R/16V/K

LA_LX
LA_LED_LINK100
LA_LED_ACT_TXRX
LA_DVDDL
LA_AVDDVCO
LA_AVDDL

LAU1
EGND
LX
LED1
LED0
DVDDL_REG
RX_N
RX_P
AVDDL
REFCLKP
REFCLKN
AVDDL

3VDUAL_LAN1
LAC33 100p/4/NPO/50V/J/X
LAR6 8.2K/4
FOR ERP WAKEUP
23,48 O_-PFMRST2
28 N_-PCIE1_WAKE
10 LA_-CLKREQ
LAREQ1
MASK/0/4/SHT/X
LABC12 1u/4/X5R/6.3V/K/X
LA_-CLKREQ_F
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH

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

VDD3V
PERST#
WAKE#
CLKREQ#
DEBUGMODE0
AVDDL_REG
XTLO
XTLI
AVDDH_REG
RBIAS

Qualcomm
(Atheros)
Killer
E2500
E2400
E2201

TX_P
TX_N
NC
TESTMODE2
TESTMODE1
TESTMODE0
PPS
LED2
AVDDH
TRXN3

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LA_ML_IP_C LAC12 0.1u/4/X7R/16V/K
LA_ML_IN_C LAC13 0.1u/4/X7R/16V/K
LA_ML_IP 11
LA_ML_IN 11

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-
LAR9 0/4/X
LABC14 0.1u/4/X7R/16V/K/X
LA_DVDDL
LA_LED_LINK1000 47
LA_MDI3- 47
LABC17 0.1u/4/X7R/16V/K

LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LA_RBIAS
LAR10 2.37K/4/1

TRXP0
TRXN0
AVDDL
TRXP1
TRXN1
AVDD33
TRXP2
TRXN2
AVDDL
TRXP3

E2500-RIV1-RL/QFN40/[10HP2-402500-10R]

E2400料號:E2400-RIV1-RL/QFN40/[10HP2-402400-10R]
E2201料號:E2201-BL3A-R/S/[10HP2-402201-20R]

LAX1
25M/16p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC31 20p/4/NPO/50V/J
LAC32 20p/4/NPO/50V/J

LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+

LABC20 0.1u/4/X7R/16V/K/X
LABC21 0.1u/4/X7R/16V/K
LAR19 MASK/0/4/SHT/X
3VDUAL_LAN1
LABC22 1u/4/X5R/6.3V/K

LAN POWER

LAL1 4.7uH/0.8A/3225/S
LA_LX_OUT
LA_LX
CLOSE
LA_LX 200mil
LABC1 10u/6/X5R/6.3V/M
LABC2 0.1u/4/X7R/16V/K

LA_DVDDL
LA_AVDDL
LA_AVDDVCO
LAR5 MASK/0/6/SHT/X
AR8161-->(O)
LAFB1 30/4/4A/S
AR8161-->BEAD
LAFB3 30/4/4A/S
AR8161-->BEAD

LA_AVDDH
LAR7 8.2K/4
LA_LED_ACT_TXRX
LAR8 8.2K/4
LA_LED_LINK100

VCC3
LAR11 8.2K/4
LA_VDDCT

Gigabyte Technology

Title: KILLER E2500(E2400)(E2201)

Size: Custom
Document Number: GA-Z270-GAMING 9
Rev: 1.0

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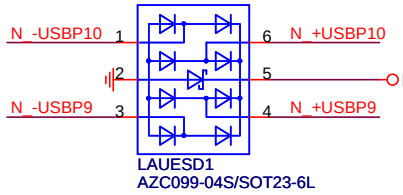
USB_LAN CONNECTOR R1.06

RMA ESD PROTECT

note:可變更USB NAME

可變

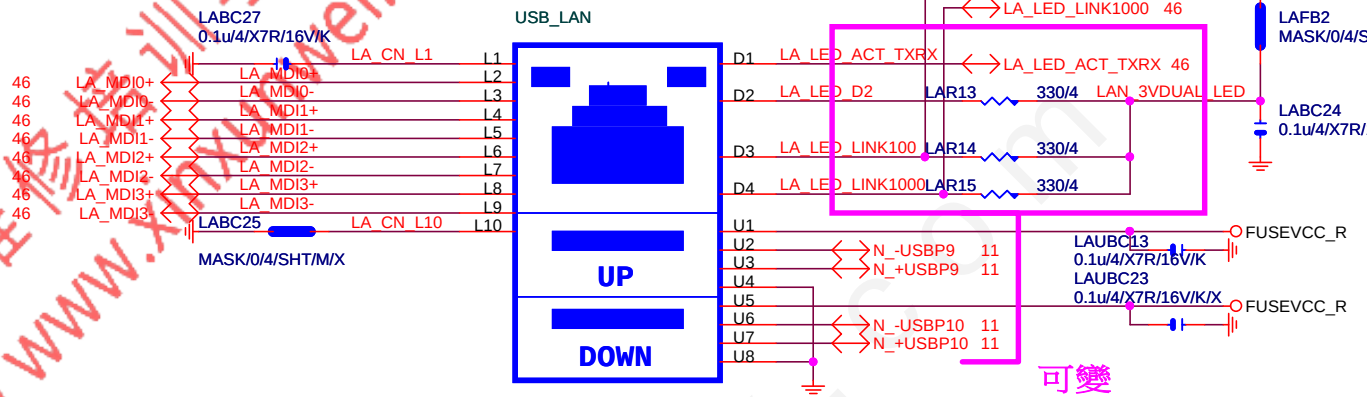


USB_LAN CONNECTOR

note:可變更USB NAME

[E2500]

[E2500]

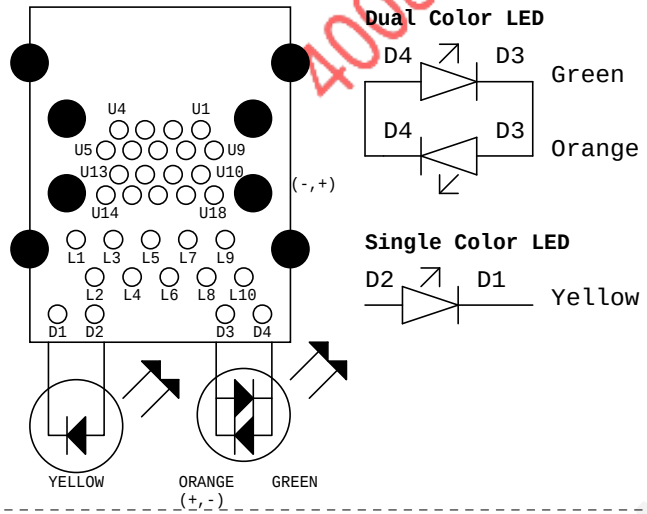


可變

USB+LAN/1G/GO,Y/OS/RA/D/12C/ES/[11NR6-702009-Z1R_11NR6-702009-R2R]

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖



Dual Color LED

Single Color LED

LAN_COVER

FOOT PRINT:LAN_COVER

Cover remove (Ver. 1.0)

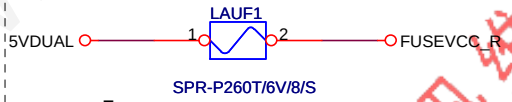
可變

[視SPEC需求]

USB POWER

note:可變更FUSE

可變



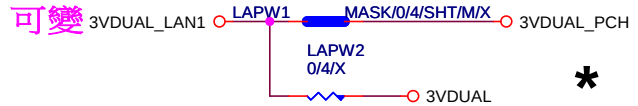
Close to connector

FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAN POWER



Gigabyte Technology		
Title: LAN CONNECTOR-E2500		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 47 of 63	

ASM2142 USB3 Host Rev0.1
PCIE Gen3 X2
ASM1142 USB3 Host
PCIE Gen3 X1 or PCIE Gen2 X2

Color markers can be changed by model

ASM2142 USB3.1

Base on ASM2142 0.1 Reference SCH

CHINAFIX

PCH PCIe* Controller Lane Reversal / base on spec

To PCIE host.

13 PCH_PCIE_IP19 — 0.22U/4/X7R/16V/K — SSAC1 — PCIE_IP1C
13 PCH_PCIE_IN19 — 0.22U/4/X7R/16V/K — SSAC2 — PCIE_IN1C
13 PCH_PCIE_IP20 — 0.22U/4/X7R/16V/K — SSAC4 — PCIE_IP2C
13 PCH_PCIE_IN20 — 0.22U/4/X7R/16V/K — SSAC3 — PCIE_IN2C

13 PCH_PCIE_OP19 — 0.22U/4/X7R/16V/K — SSAC8 — PCIE_OP1C
13 PCH_PCIE_ON19 — 0.22U/4/X7R/16V/K — SSAC14 — PCIE_ON1C
13 PCH_PCIE_OP20 — 0.22U/4/X7R/16V/K — SSAC15 — PCIE_OP2C
13 PCH_PCIE_ON20 — 0.22U/4/X7R/16V/K — SSAC16 — PCIE_ON2C

From PCIE host.

SSAU1 — ASM2142/QFN64

SSAQ20 4.7U/6/X5R/6.3V/K

-SRCCLK_USB31A 10 — From PCIE CLK

Close to ASM1142 IC

SSAD1 1N4148W/SOD123/300mA — SSAR11 100K/4/1

SSAC5 1u/4/X5R/6.3V/K

SPI_DO=>CSEL0

UART_RX=>CSEL1

*1021

SSAC27 4.7U/6/X5R/6.3V/K

SSAR31 MASK/0/4/SHT/X

To USB Conn

BOM ASM1142 or ASM2142

To USB Conn

To OC circuit

ASM 2142 / 1142 Option

VCC25V — SSAR34 0/4
3VDUAL — SSAR33 0/4/X — VCCSUS_VCCLU
VCC25V — SSAR38 0/4
VCC3 — SSAR37 0/4/X — VSSA

ASM1142 SSAR33,SSAR37
ASM2142 SSAR34,SSAR38

12.1K/4/1 SSAR18 SSA_REXT
3VDUAL — SSAR36 8.2K/4 — SSA_SMI-
VCC3 — SSAR27 8.2K/4 SSAR32 8.2K/4/1/X — SSA_SPICK
VCC3 — SSAR4 8.2K/4 SSAR3 2K/4/1/X — SSA_UARTRX

UART_RX=>CSEL1

VCC3 — SSAR8 8.2K/4 SSAR7 2K/4/1/X — SSA_UARTTX
VCC3 — SSAR1 8.2K/4 SSAR2 2K/4/1/X — SSA_SPIDO

SPI_DO=>CSEL0

CSEL1	CSEL0	
1	1	External 20MHz Crystal (Asynchronous)
0	1	48MHz clock input (Synchronous)
X	0	Reseved for Test

3VDUAL → SSAQ1 AP7365-WG-7/SOT23-5/600mA → SSA120V_SUS

SSAC24 2.2u/4/X5R/6.3V/M
R1 SSAR22 316/4/1
R2 SSAR23 1K/4/1
SSAC25 22P/4/NPO/50V/J
SSAC26 10U/6/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2

ASM1142 SSAR22=510,1.2V,100mA
ASM2142 SSAR22=316,1.05V,50mA

ASM2142 Option

VCC3 → SSAQ3 AP7365-WG-7/SOT23-5/600mA → VCC25V

SSAC49 2.2u/4/X5R/6.3V/M
R1 SSAR41 2.15K/4/1
R2 SSAR40 1K/4/1
SSAC47 22P/4/NPO/50V/J
SSAC48 10U/6/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2

ASM1142 ->N/A
ASM2142 2.5V, 300mA

Pin 1/12/33 — SSA120V — SSAC30/31/32 0.1u/4/X7R/16V/K
Pin 21/34 — SSA120_SUS — SSAC33/34 0.1u/4/X7R/16V/K
Pin 4/32 — VCC3 — SSAC35/36 0.1u/4/X7R/16V/K
Pin 24/20 — 3VDUAL — SSAC37 0.1u/4/X7R/16V/K
VCCSUS_VCCLU — SSAC38 0.1u/4/X7R/16V/K

Change to 0402

SSA120V — SSAC40/41/42 2.2u/4/X5R/6.3V/M — Pin 35/47/52
VSSA — SSAC43/44/45/46 2.2u/4/X5R/6.3V/M — Pin 38/44/55/62

SSA_XI — SSAC19 12P/4/NPO/50V/J — SSAX1 — SSA_XO
20M/16p/30ppm/49US/20/D/[11XH5-820000-10R]

ASM1142 SSAR28=51K,1.2V
ASM2142 SSAR28=31.6K,1.05V,800mA

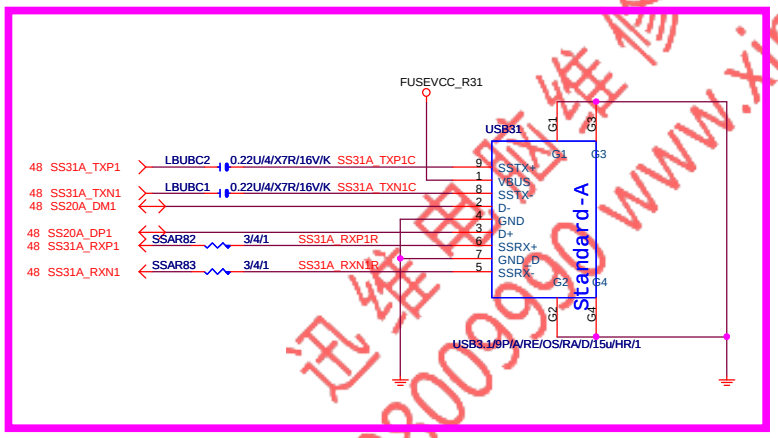
VCC3 — SSAR25 8.2K/4 — SSAU3_EN
SSAR35 8.2K/4/X — SSAC7 1u/4/X5R/6.3V/K
SSAU3: POK, EN, VIN, CNTL, GND, FB, VOUT, REFIN, PGD
SSAR24 2.2/4
SSAC6 1u/4/X5R/6.3V/K
SSAC10 22u/8/X5R/6.3V/M
SSAC9 1u/4/X5R/6.3V/K
SSAR28 31.6K/4/1
SSAC11 0.1u/4/X7R/16V/K/X
SSAC13 22u/8/X5R/6.3V/M
SSAC12 1u/4/X5R/6.3V/K
SSAR29 100K/4/1
RT9018B-18GSP/SO8/3A/[10GL2-309018-31R_10GL2-305103-01R]

【技術通報R&D技術通報156】
RT9018(RICHTEK)與NCT3730(NUVOTON),
EM5103GE(EMC)做共用,針對PIN7(FB)分壓阻值部份
須做修改為100K以上電阻值

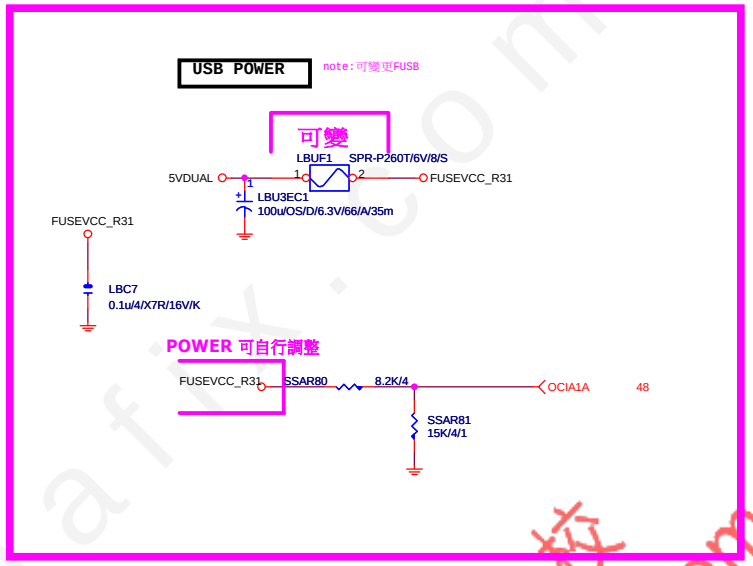
SSAU2
SSA_SPICS- — CS#
SSA_SPIDI — SO
WP# — SSA_SPIWP-
VSS
VDD — HOLD# — SCK — SI
SSAC21 0.1u/4/X7R/16V/K
VCC3 — SSAR6 8.2K/4 — SSA_SPICK — SSA_SPIDO
4M/SPI/SO8/200mil/S[10HP4-112540-30R]

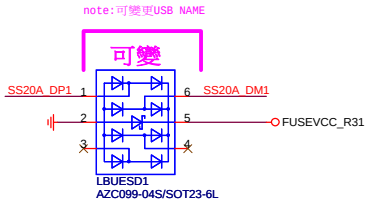
GIGABYTE	
Title	ASM1142 & ASM2142 co-lay
Size: Custom	Document Number: GA-Z270-GAMING 3
Rev	1.0
Date: Wednesday, December 21, 2016	Sheet 48 of 63

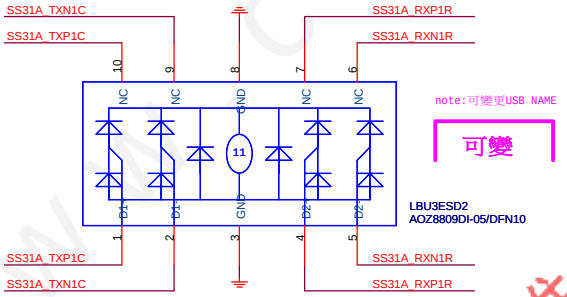
ASM1142 USB31 Host Rev0.8



USB31 TYPE A Connector which chooses for project demand





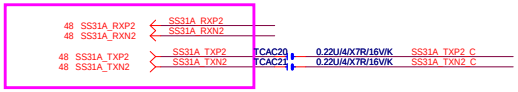


GIGABYTE™

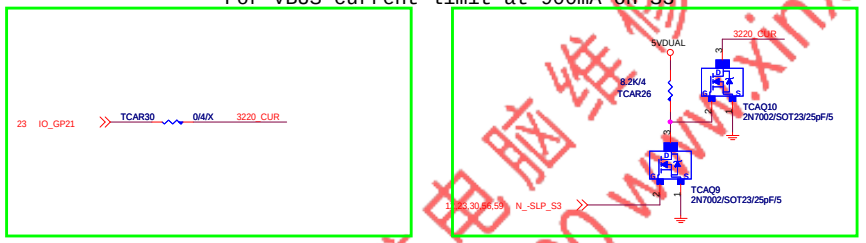
Title: Type C port A		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 49 of 63	

ASM2142 USB31 Host Rev0.2

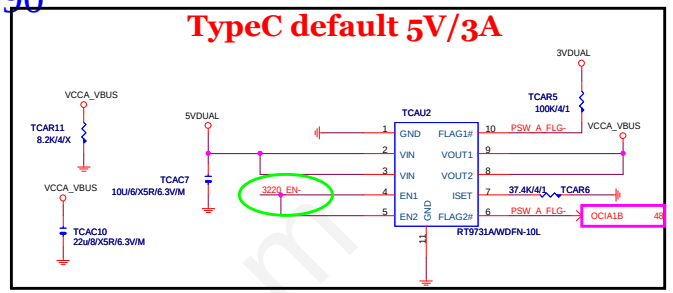
USB 3.x SuperSpeed

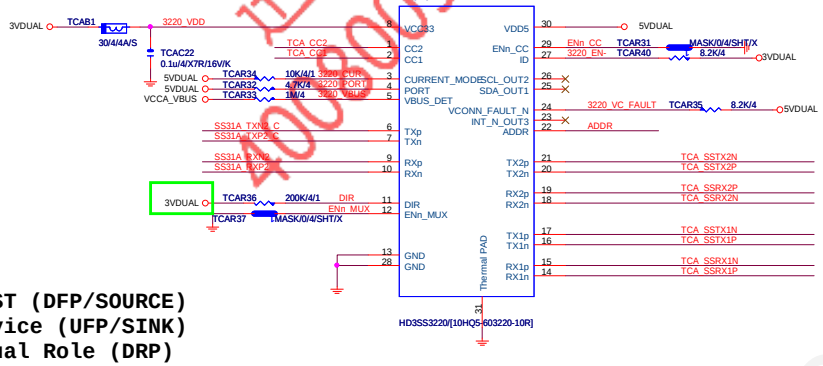


For VBUS current limit at 900mA on S3

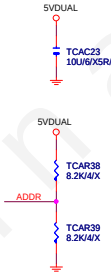


TypeC default 5V/3A





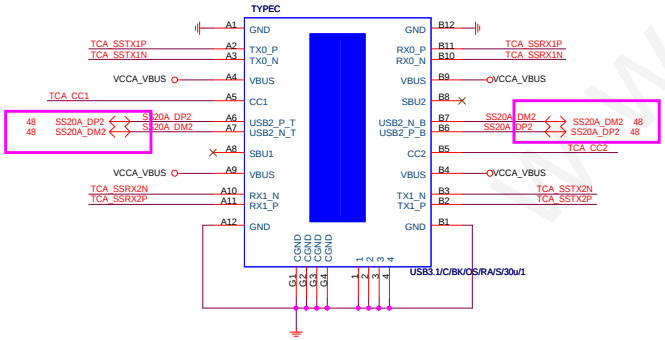
SWAP(check firmware)



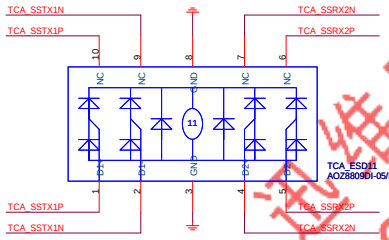
PORT
H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

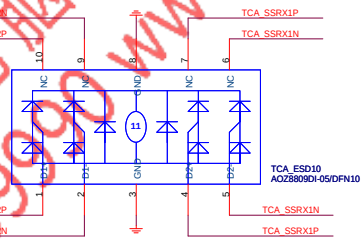
CURRENT MODE
L - Default (900mA) / Pull down to GND or NC
M - Medium (1.5A) / Pull up to VDD 500K
H - High (3.0A) / Pull up to VDD 10K

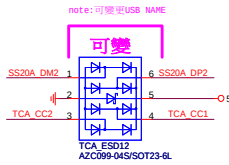
Color markers can be changed by model



USB2.0 can be used the same source







GIGABYTE		
Title	TI HD3SS3212	
Size C	Document Number GA-Z270-GAMING 3	Rev 1.0
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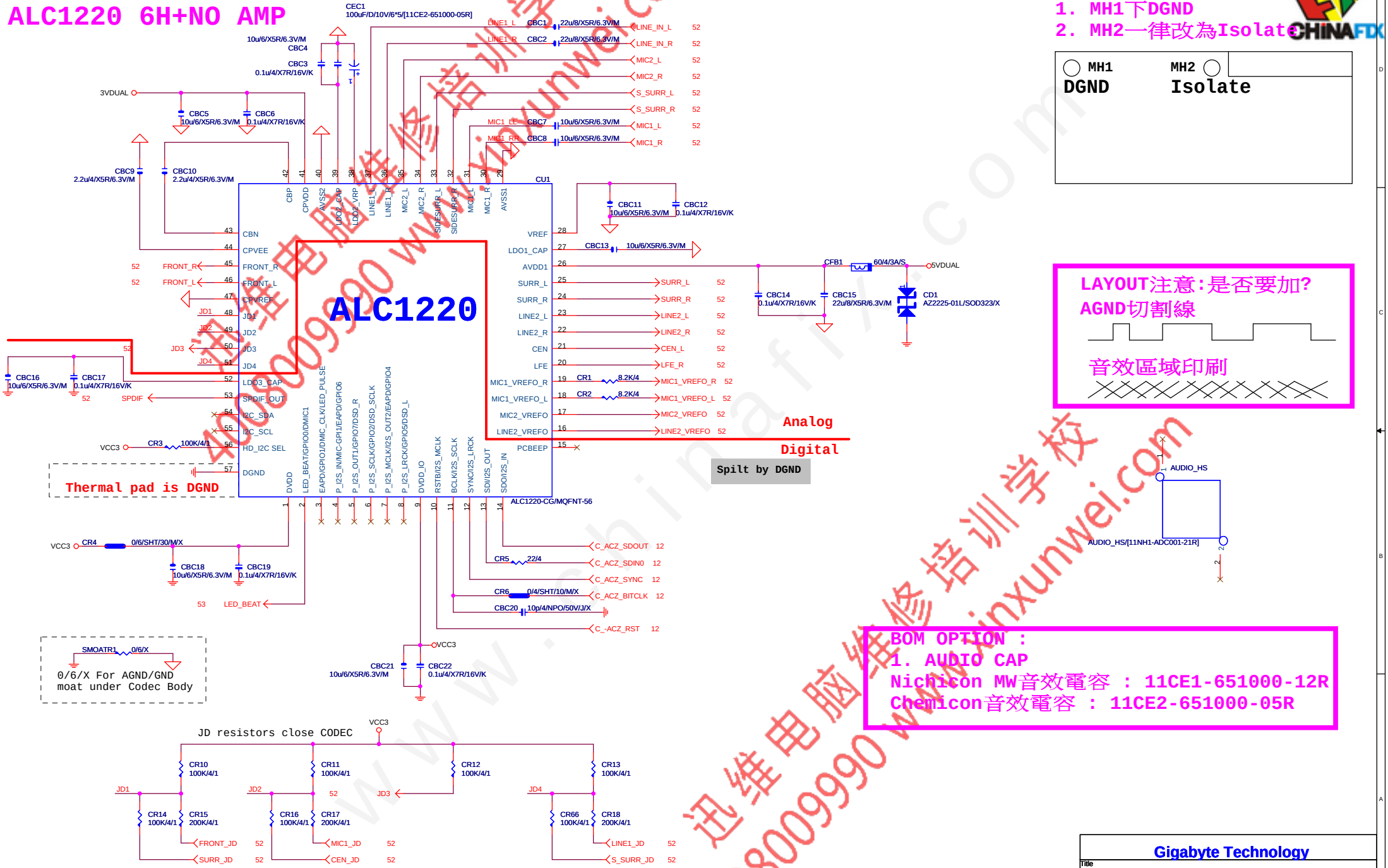
Rev 0.53

ALC1220 6H+NO AMP

LAYOUT注意:螺絲孔下GND方式
1. MH1下DGND
2. MH2一律改為Isolate

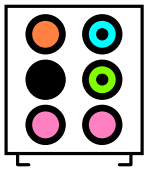
MH1	MH2
DGND	Isolate



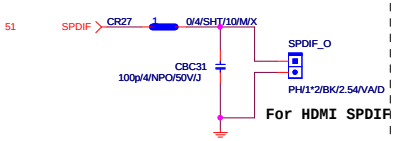
Gigabyte Technology			
Title: ALC1220			
Size: Custom	Document Number: GA-Z270-GAMING 3		Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 51 of 63		

Rev 0.53

AZALIA JACK



SPDIF_OUT



For HDMI SPDIF

CR19 2.2/6/X → Audio jack -> USB(各打2 VIA hole)

CR22 0/6/X → Under Audio jack(各打2 VIA hole)

MOATR1 0/4, MOATC1 0.1u/4/X7R/16V/K → Near F_AUDIO(各打2 VIA hole)

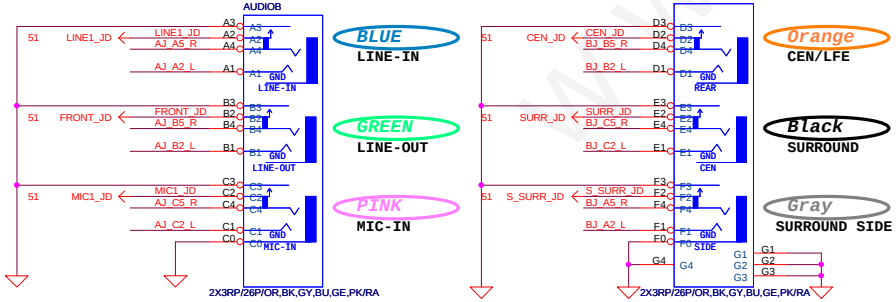
MOATR2 0/4/X, MOATC2 0.1u/4/X7R/16V/K → Near Codec (各打2 VIA hole)

MOATR3 0/4, MOATC3 0.1u/4/X7R/16V/K → Near R_AUDIO(各打2 VIA hole)

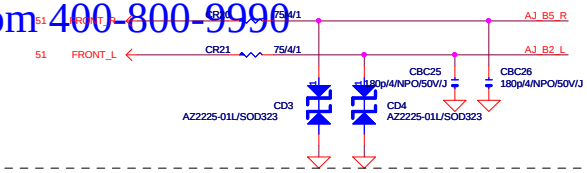
MOATR4 0/4/X, MOATC4 0.1u/4/X7R/16V/K → Near AMP (各打2 VIA hole)

*量產前,0ohm改short pad

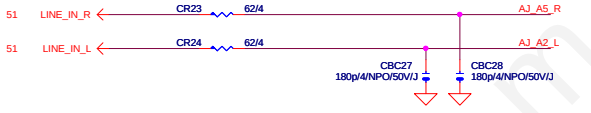
AZALIA JACK



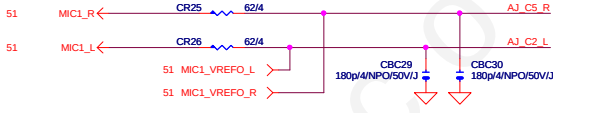
LINE-OUT



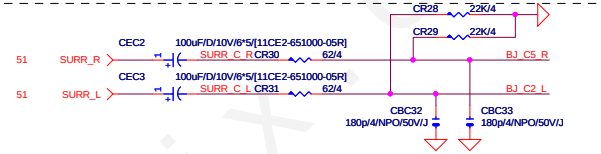
LINE-IN



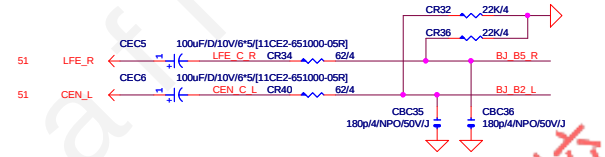
MIC-IN



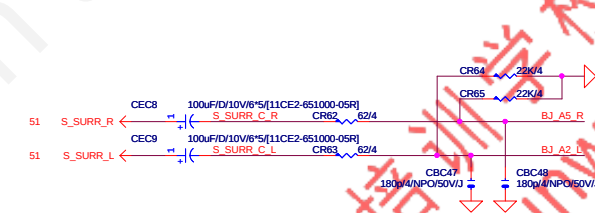
SURROUND



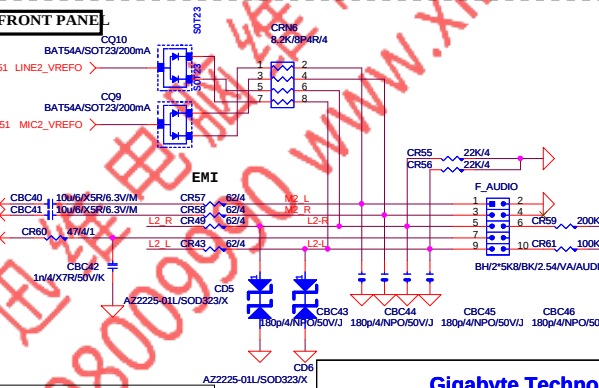
CEN/LFE

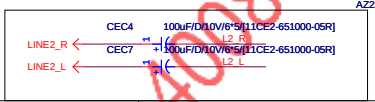


SURR BACK



AZALIA FRONT PANEL





Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

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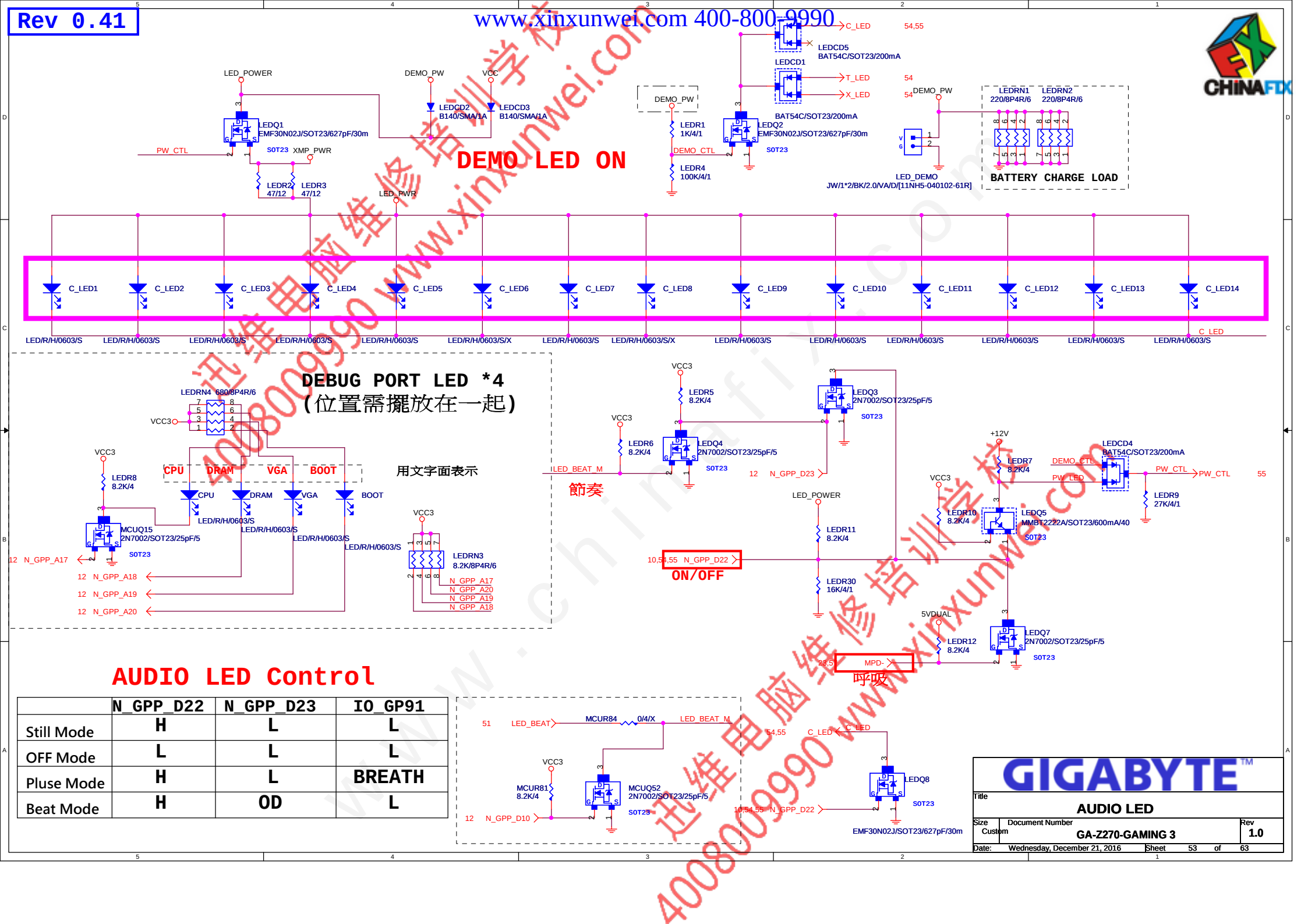

	N_GPP_D22	N_GPP_D23	IO_GP91
Still Mode	H	L	L
OFF Mode	L	L	L
Pluse Mode	H	L	BREATH
Beat Mode	H	OD	L

GIGABYTE™

Title: AUDIO LED

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

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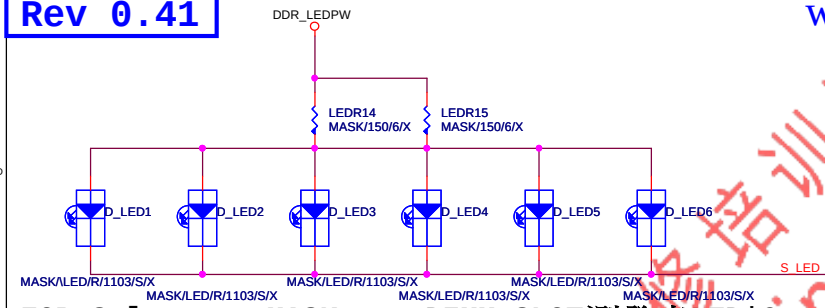
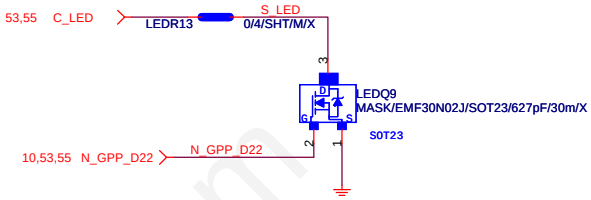
Rev 0.41

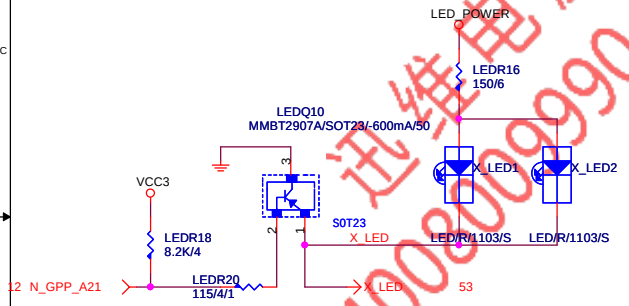
LED BAR remove (Ver. 1.0)



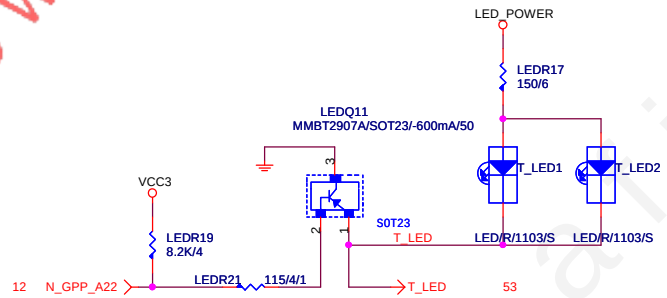
FOR Sales MASK DIMM SLOT測發光LED*6



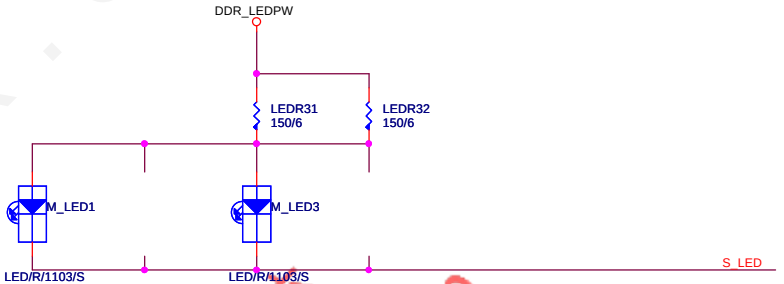
FOR XMP 測發光 LED*2
(靠近DIMM附近放背板鏤空)



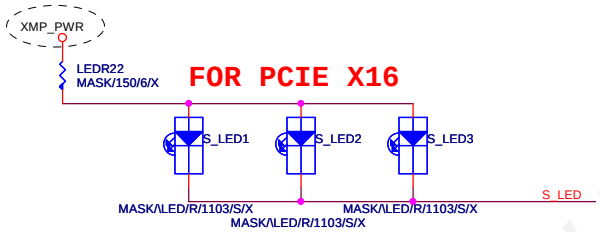
FOR TURBO 測發光 LED*2
(靠近DIMM附近背板鏤空)



FOR MODEL NAME測發光LED*4



FOR Sales Demand PCIEX16 LED MASK



GIGABYTE™

Title: PCIE/DDR LED		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
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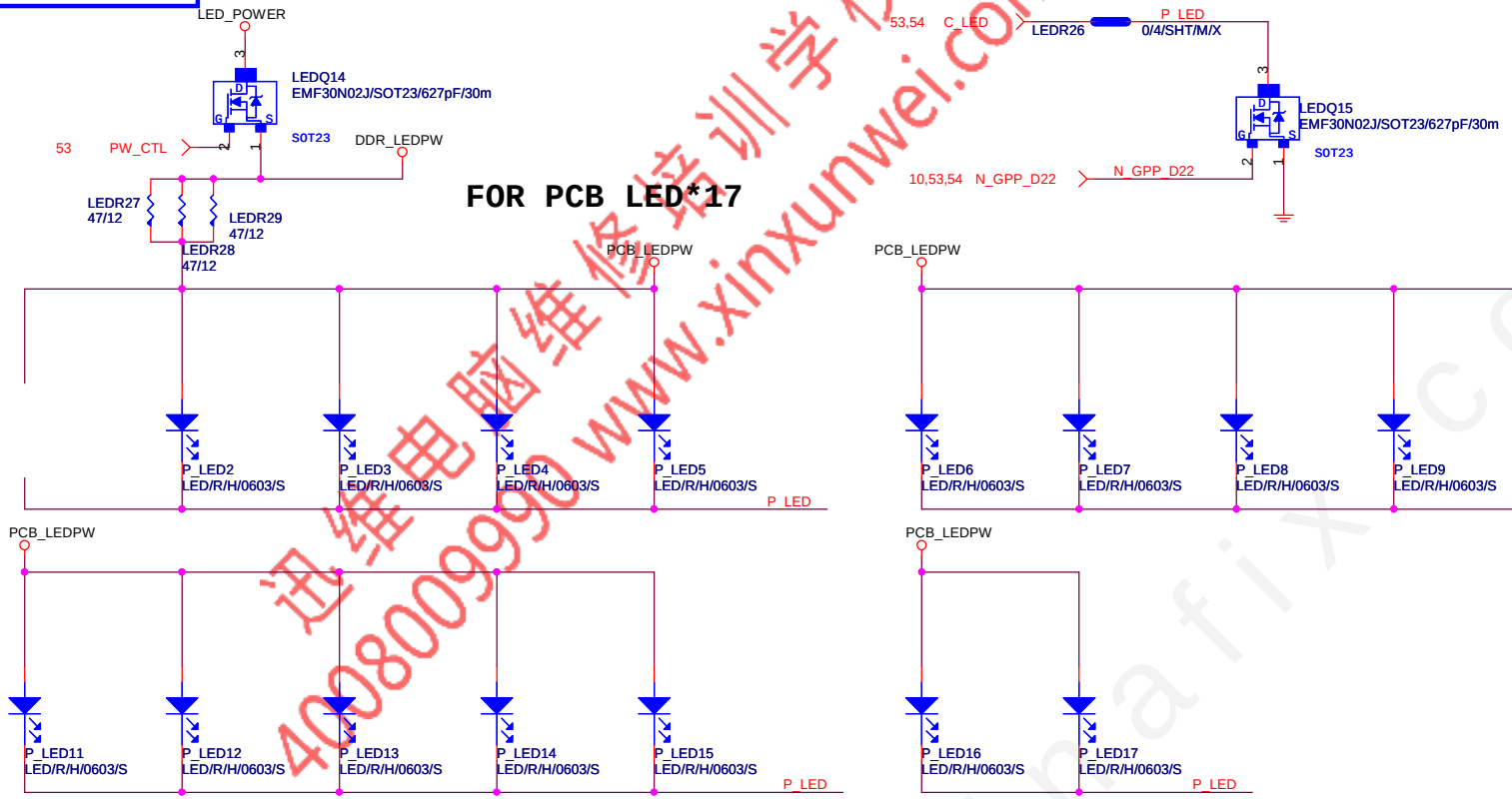
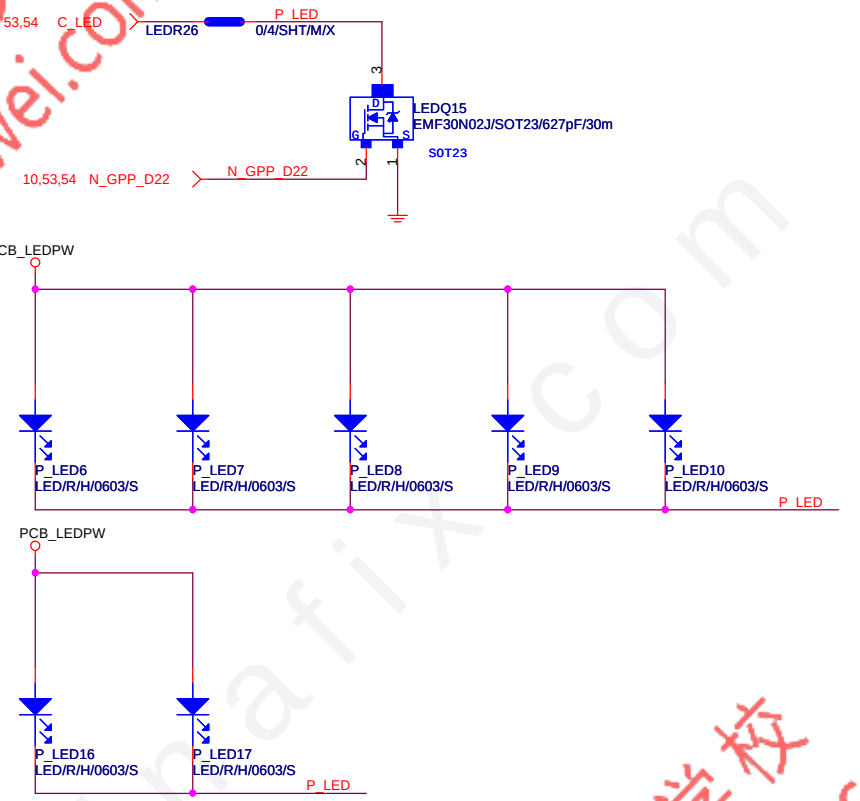
Rev 0.41





GIGABYTE™

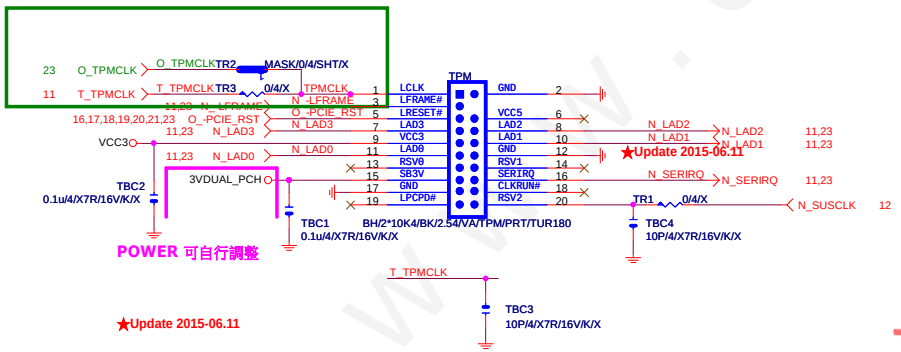
Title	MODEL/PCB LED	
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 55 of 63	

Rev: 0.52

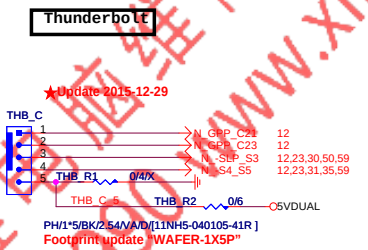
COM PORT

80 PORT

TPM CONNECT



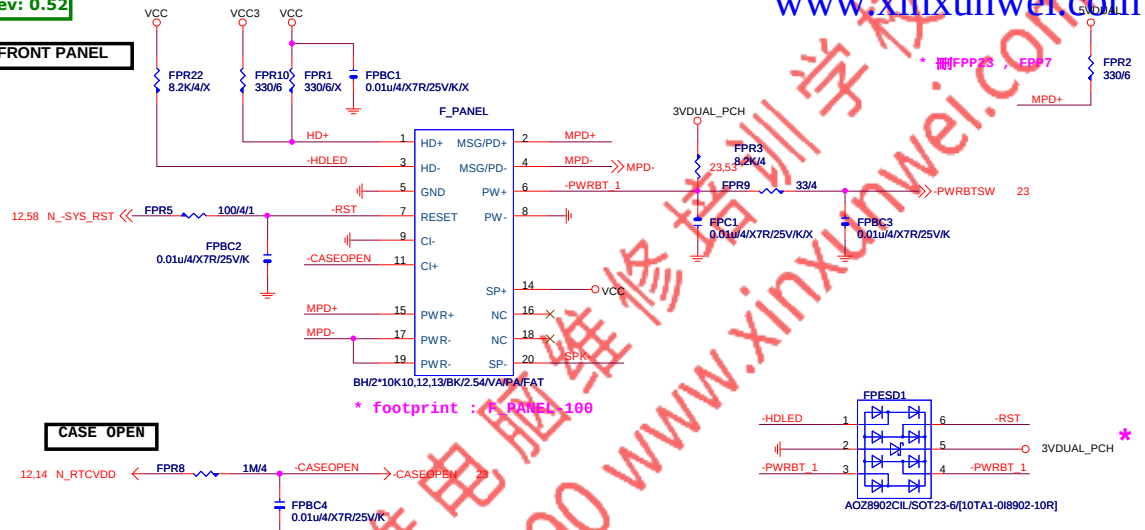
Thunderbolt



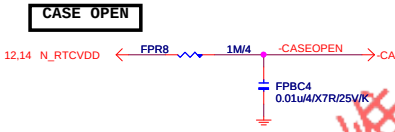
Gigabyte Technology		
Title: TPM, TBT Conn		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
Date: Wednesday, December 21, 2016	Sheet 56 of 63	

Rev: 0.52

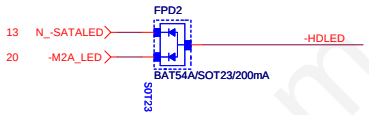
FRONT PANEL



CASE OPEN

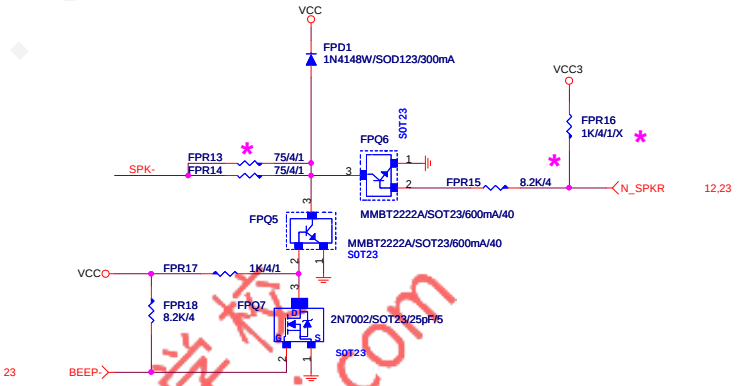


SATA LED: SATALED# signal open-collector,pull-up (8.2 kΩ to 10 kΩ) to Vcc3.3



SPEAKER

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



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

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: GA-Z270-GAMING 3	Rev: 1.0
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REV:0.1

IDT6V41630

MP MASK

Reserve CLK Buffer

(靠近cpu)

(靠近PCH)

INP_SEL	Intput
0	Crystal
1	CLK_INP/N

CPU Frequency Selection and output Divider Table

B53b1(FS1)	B53b0(FS0)	VCO (MHz)	CPU Divider	CPU (MHz)	Typ SS%	Typ SS ON/OFF
0	0	200.00	2.00	100.00	-	OFF
0	1	400.00	4.00	100.00	-	OFF
1	0	1000.00	10.00	100.00	-0.50%	ON
1	1	100.00	1.00	100.00	-	OFF

Real time selection function

Frequency change slew rate control

Cover remove (Ver. 1.0)

Defaults
CKX1.CKBC8.CKBC9.CKR18.CKR19上件
CKR30.CKR31不上件

SMBUS

*可變，依需求上件不上件。

Title	IDT6V41530_CLK BUFFER
Size	Custom
Document Number	GA-Z270-GAMING 3
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EMI/ESD R0.1

CLOSE SIO

EMIC1
100p/4/NPO/50V/J/X

12,23,30,50,56 N_-SLP_S3

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

12,23,31,35,56 N_-S4_S5

CLOSE PCH

EMIC4
100p/4/NPO/50V/J/X

4,12 N_CPUPWROK

GIGABYTE™

Title: EMI/ESD

Size	Document Number	Rev
A	GA-Z270-GAMING 3	1.0

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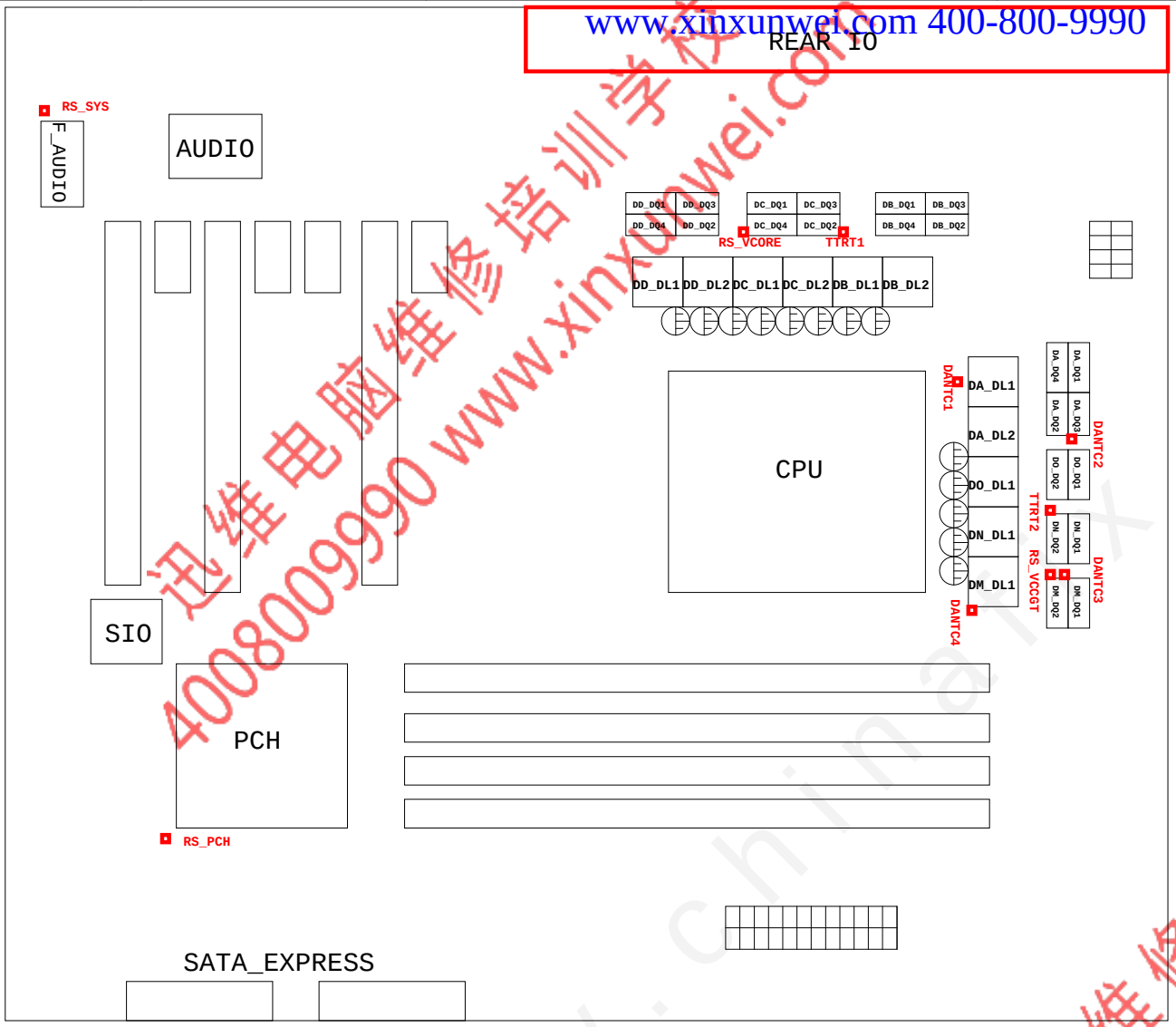

熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

Gigabyte Technology

Title: NTC MAP

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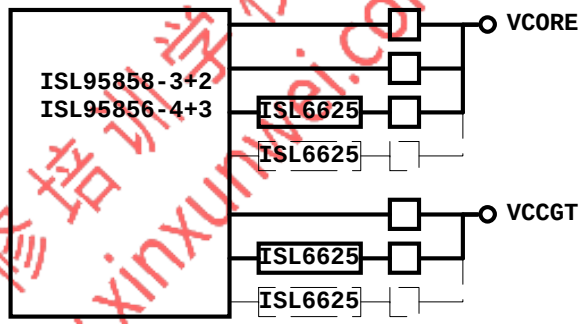
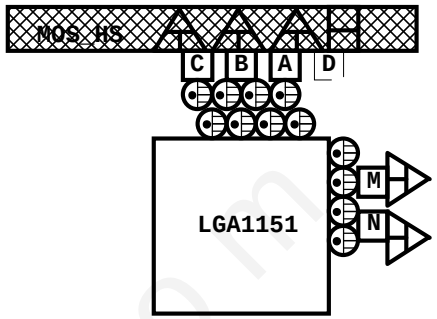
POWER BLOCK MAP

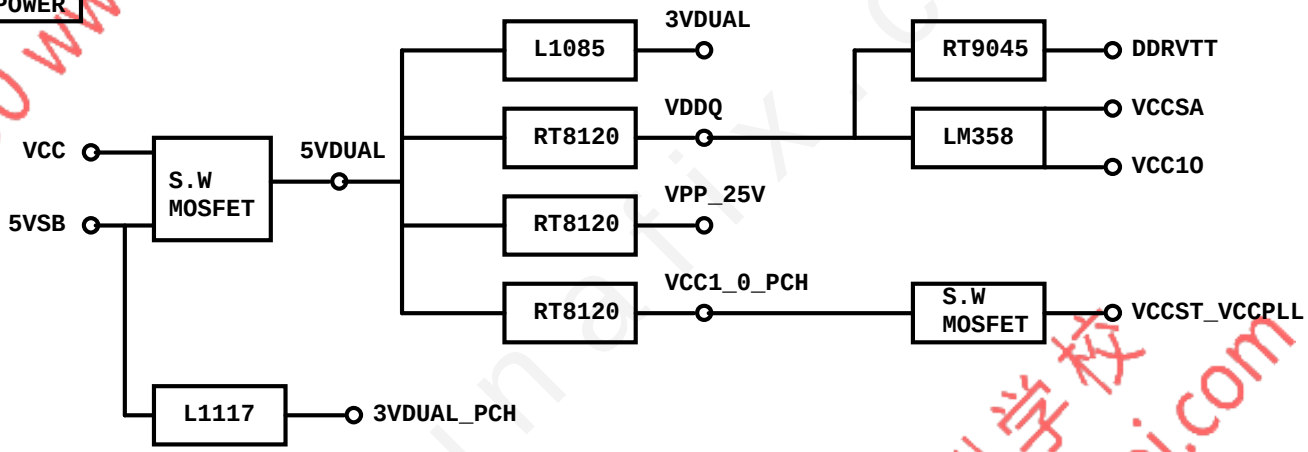
- CPU
  - VCORE
  - VCCGT
  - VCCSA
  - VCCIO
  - VDDQ
  - VCCST_VCCPLL
  - VCCSFUSEPRG
- DDR4
  - VDDQ
  - DDRVTT
  - VPP_25V
  - VDDSPD(VCC3)
- PCH
  - VCC1_0_PCH
  - VCC1_0_PCH_DSW
  - VCC10_VCCF24_1P0
  - VCC10_VCCAMPHYPLL
  - VCC10_VCCAPLL
  - VCC3_PCH
  - 3VDUAL_PCH
  - VCC3
  - N_RTCVDD
- IT8628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

VCORE/VCCGT

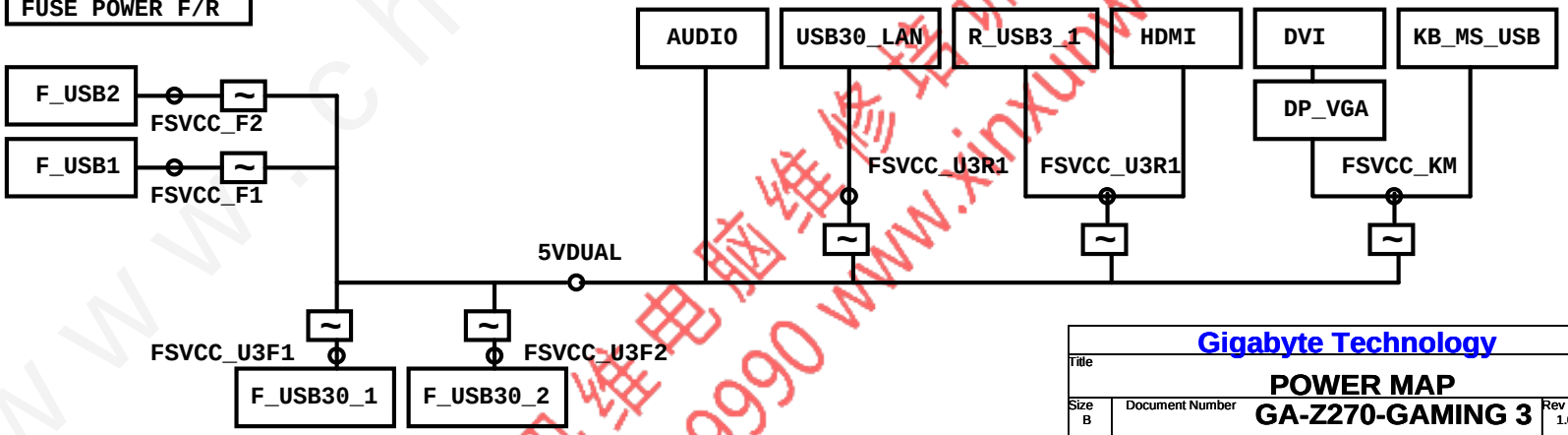




POWER



FUSE POWER F/R



Gigabyte Technology

Title: POWER MAP

Size: B | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

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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	閃電P
DIP	11LC5-M4500C-11R	0.5uH/40A/IMD109/M/NP/D	10*10	CHOKE05U-40A-1PQ-3	無閃電P
DIP	11LC5-M2500C-01R	0.5uH/20A/IMD0809/M/D	8*8	CHOKE1U-R50M-IF	

Skylake Iron Choke閃電P導入機種如下:
[1] Z170/H170 機種全部導入
[2] B150/H110Gaming機種導入, 其餘不導入

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	10LC5-F4300C-01R	0.3uH/40A/SIUC/FR/S	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
PWM	RT8237C/D	10TA1-608237-01R		IC10DFN-NIS5132

REGULATOR

		料號	Capture Value	Footprint
	NCT3103S	10GL2-203103-01R	NCT3103S/SOP8/2A	IC8-EPSOIC

GIGABYTE™

Title: RT8120_DDR4 POWER

Size: Custom | Document Number: GA-Z270-GAMING 3 | Rev: 1.0

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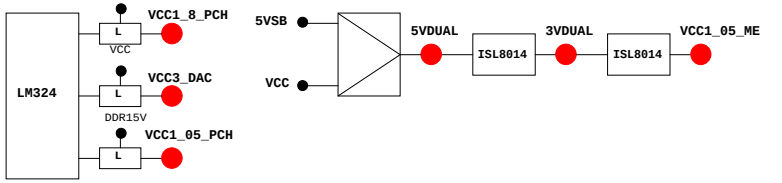
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR_LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

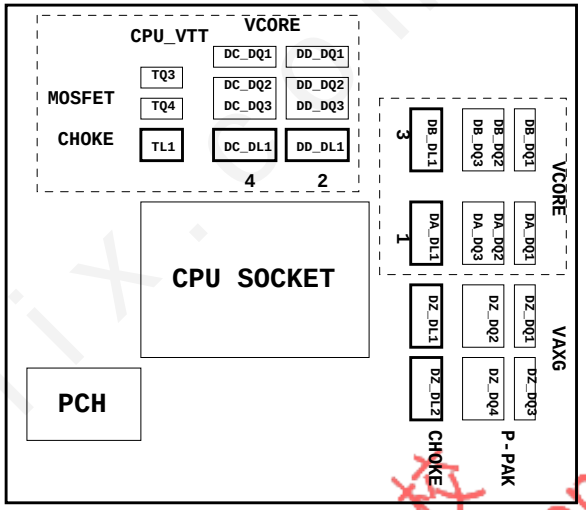
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

Gigabyte Technology
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