Model Name: GA-Z170X-Gaming 3

Rev 1.02

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02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B_DDR4
06	CPU_LGA1150-C
07	CPU_LGA1150-D
08	DDR4 CHANNEL A 1,2
09	DDR4 CHANNEL B 1,2
10	PCH_RGB,CLK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	DUAL BIOS
16	ITE 8628 LPC IO
17	HMW
18	FAN CTRL--SIO
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X4 SLOT(PCH)
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23	SATA EXPRESS
24	ISL95856 PWM
25	ISL95856 MOS_VCORE
26	ISL95856 MOS_VCCGT
27	VCCSA_VCCIO_VCCPLL
28	RT8120_DDR

SHEET	TITLE
29	RT8120_VPP
30	RT8120_PCH
31	DISCRETE POWER1
32	NCT3933
33	ATX POWER , A_-PROCHOT
34	KB_MS_USB
35	DVI CONN
36	PTN3356 - DP to VGA - IC
37	PTN3356 - DP to VGA - Conn
38	HDMI CONN_170
39	R_USB30
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43	REAR AUDIO JACK
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47	COM,TPM,THB
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49	PCI EXPRESS X8 SLOT
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51	IDT6V41530_CLK BUFFER
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Title: Cover Sheet

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Model Name: GA-Z170X-Gaming 3

Rev 1.02

Component value change history

P-Code: U15003-0

Data	Change Item	Reason
2015/03/06	1. BOM first release ,Modify from 9MZ174SLI-00-01B	0.1 New BOM Release PCB:0.1
2015/05/08	1. BOM first release ,Modify from 9MZ17XGM3-00-01	0.1 New BOM Release PCB:0.1
2015/06/18	1.Modify PCH XTAL layout routing , 2.Modify A.R. Type-C CC logic , 3.Modify Codec LED 切割線拉直 , 4.Change HDMI A.R. to PCH LS , 5.Modify DDR ,PCH ,VPP25 output chock .OCP	1.0A E-BOM Release. PCB:1.0
2015/06/29	1.Modify VDDQ ,VCC1_0_PCH ,VDDSPD power	9.0A E-BOM Release. PCB:9.0
2015/07/06	1.Modify MA_DR9 2.2/6 2.Update A.R. module R0.62 3.Remove.PCB killer logo silkscreen 4.Remove M_BIOS socket cover	1.0B P-BOM Release. PCB:1.01
2015/07/07	1.NPR11 改 34K/4/1	1.0C P-BOM Release. PCB:1.01
2015/07/09	1.THR82,83,18,15 2.2K to 100K 2.DFQ1 Change AP9452GG/SOT89/[10IFC-389452-01R]	1.0D P-BOM Release. PCB:1.01
2015/07/27	1.LAN_COVER 舊料庫存已用完,切換至新料 11NH1-LNC001-02R	1.0E P-BOM Release. PCB:1.01
2015/12/29	1.THU1 add second-source 10HB2-G06540-20R	1.0E ECN-BOM Release. PCB:1.01
2016/01/14	1.Modify DAC42 layout 位置 for MOS_HS drop issue	1.0F P-BOM Release. PCB:1.02

Circuit or PCB layout change

DATE	Change Item	Reason
2015/03/05	1.PCB first release ,Modify from GA-Z1704X-SLI Rev0.2	REV 0.1 Gerber-out
2015/05/07	1.Model name change ,Spec modify , 2.Modify from GA-Z1704X-Gaming 3 Rev0.1	REV 0.1 Gerber-out
2015/06/17	1.Modify PCH XTAL layout routing , 2.Modify A.R. Type-C CC logic , 3.Modify Codec LED 切割線拉直 , 4.Change HDMI A.R. to PCH LS	REV 1.0 Gerber-out
2015/06/26	1.Modify VDDQ ,VCC1_0_PCH ,VDDSPD power	REV 9.0 Gerber-out
2015/07/03	1.Modify MA_DR9 2.2/6 2.Update A.R. module R0.62 3.Remove.PCB killer logo silkscreen 4.Remove M_BIOS socket cover	REV 1.01 Gerber-out
2016/01/14	1.Modify DAC42 layout 位置 for MOS_HS drop issue	REV 1.02 Gerber-out

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Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

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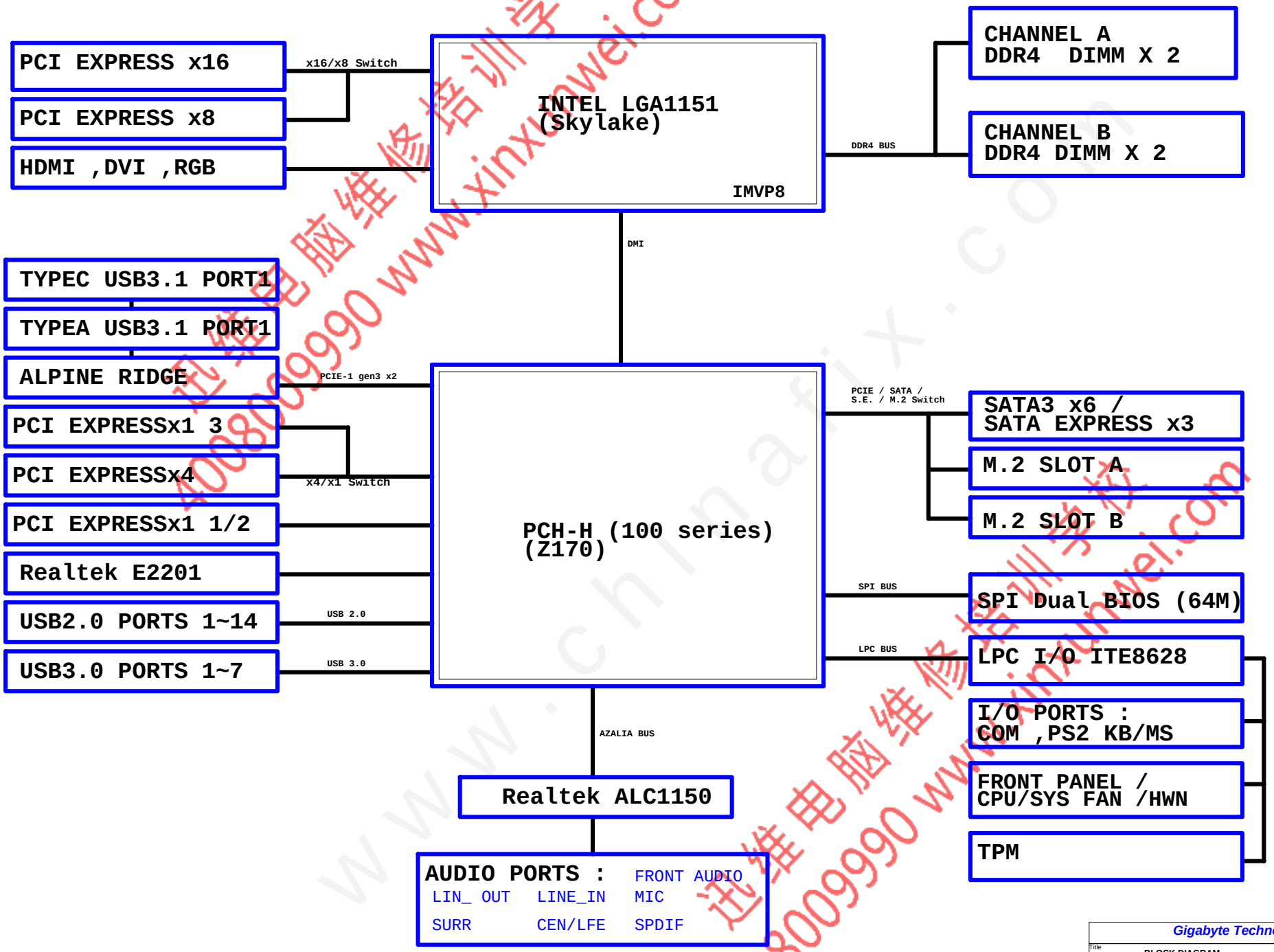
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
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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

Intel CRB

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

DDR0_CKP[0]	AW18	M_DCLKA0	M_DCLKA0 8
DDR0_CKN[0]	AV18	M_-DCLKA0	M_-DCLKA0 8
DDR0_CKP[1]	AW17	M_DCLKA1	M_DCLKA1 8
DDR0_CKN[1]	AV17	M_-DCLKA1	M_-DCLKA1 8
DDR0_CKP[2]	AW16	M_DCLKA2	M_DCLKA2 8
DDR0_CKN[2]	AV16	M_-DCLKA2	M_-DCLKA2 8
DDR0_CKP[3]	AT16	M_DCLKA3	M_DCLKA3 8
DDR0_CKN[3]	AU16	M_-DCLKA3	M_-DCLKA3 8
DDR0_CKE[0]	AY24	CKEA0	CKEA0 8
DDR0_CKE[1]	AW24	CKEA1	CKEA1 8
DDR0_CKE[2]	AV24	CKEA2	CKEA2 8
DDR0_CKE[3]	AV25	CKEA3	CKEA3 8
DDR0_CS#[0]	AW12	M_CSA0	M_-CSA0 8
DDR0_CS#[1]	AU11	M_CSA1	M_-CSA1 8
DDR0_CS#[2]	AV13	M_CSA2	M_-CSA2 8
DDR0_CS#[3]	AV10	M_CSA3	M_-CSA3 8
DDR0_ODT[0]	AW11	MODT_A0	
DDR0_ODT[1]	AU14	MODT_A1	
DDR0_ODT[2]	AU12	MODT_A2	
DDR0_ODT[3]	AY10	MODT_A3	
DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]	AY13	SBAA0	SBAA0 8
DDR0_BA[1]/DDR0_CAB[6]/DDR0_BA[1]	AV15	SBAA1	SBAA1 8
DDR0_BA[2]/DDR0_CAA[5]/DDR0_BG[0]	AW23	BG_A0	BG_A0 8
DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]	AW13	MAAA16	
DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]	AV14	MAAA14	
DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]	AY11	MAAA15	
DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]	AW15	MAAA0	
DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]	AU18	MAAA1	
DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]	AU17	MAAA2	
DDR0_MA[3]	AV19	MAAA3	
DDR0_MA[4]	AT19	MAAA4	
DDR0_MA[5]/DDR0_CAA[0]/DDR0_MA[5]	AU20	MAAA5	
DDR0_MA[6]/DDR0_CAA[2]/DDR0_MA[6]	AV20	MAAA6	
DDR0_MA[7]/DDR0_CAA[4]/DDR0_MA[7]	AU21	MAAA7	
DDR0_MA[8]/DDR0_CAA[3]/DDR0_MA[8]	AT20	MAAA8	
DDR0_MA[9]/DDR0_CAA[1]/DDR0_MA[9]	AT22	MAAA9	
DDR0_MA[10]/DDR0_CAB[7]/DDR0_MA[10]	AY14	MAAA10	
DDR0_MA[11]/DDR0_CAA[7]/DDR0_MA[11]	AU22	MAAA11	
DDR0_MA[12]/DDR0_CAA[6]/DDR0_MA[12]	AV22	MAAA12	
DDR0_MA[13]/DDR0_CAB[0]/DDR0_MA[13]	AV12	MAAA13	
DDR0_MA[14]/DDR0_CAA[9]/DDR0_BG[1]	AV23	BG_A1	BG_A1 8
DDR0_MA[15]/DDR0_CAA[8]/DDR0_ACT#	AU24		M_-ACT_A 8
DDR0_PAR	AY15		M_DDR_PARA 8
DDR0_ALERT#	AT23		M_-ALERT_A 8

DDR0_DQSN[0]	AF39	M_-DQSA0	
DDR0_DQSN[1]	AK39	M_-DQSA1	
DDR0_DQSN[2]/DDR0_DQSN[4]	AP39	M_-DQSA2	
DDR0_DQSN[3]/DDR0_DQSN[5]	AU36	M_-DQSA3	
DDR0_DQSN[4]/DDR1_DQSN[0]	AW7	M_-DQSA4	
DDR0_DQSN[5]/DDR1_DQSN[1]	AU3	M_-DQSA5	
DDR0_DQSN[6]/DDR1_DQSN[4]	AN3	M_-DQSA6	
DDR0_DQSN[7]/DDR1_DQSN[5]	AJ3	M_-DQSA7	
DDR0_DQSP[0]	AF38	M_DQSA0	
DDR0_DQSP[1]	AK38	M_DQSA1	
DDR0_DQSP[2]/DDR0_DQSP[4]	AP38	M_DQSA2	
DDR0_DQSP[3]/DDR0_DQSP[5]	AV36	M_DQSA3	
DDR0_DQSP[4]/DDR1_DQSP[0]	AV7	M_DQSA4	
DDR0_DQSP[5]/DDR1_DQSP[1]	AU2	M_DQSA5	
DDR0_DQSP[6]/DDR1_DQSP[4]	AN2	M_DQSA6	
DDR0_DQSP[7]/DDR1_DQSP[5]	AJ2	M_DQSA7	
DDR0_DQSP[8]	AV32		
DDR0_DQSN[8]	AU32		

DDR CHANNEL A

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CPU-SK/1151/S/15

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	AE6	DDR1_DQ[58]	
MDB59	AE7	DDR1_DQ[59]	
MDB60	AH7	DDR1_DQ[60]	
MDB61	AH6	DDR1_DQ[61]	
MDB62	AE7	DDR1_DQ[62]	
MDB63	AF6	DDR1_DQ[63]	

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

DDR1_CKP[0]	AM20	M_DCLKB0	M_DCLKB0 9
DDR1_CKN[0]	AM21	M_-DCLKB0	M_-DCLKB0 9
DDR1_CKP[1]	AP22	M_DCLKB1	M_DCLKB1 9
DDR1_CKN[1]	AP21	M_-DCLKB1	M_-DCLKB1 9
DDR1_CKP[2]	AN20	M_DCLKB2	M_DCLKB2 9
DDR1_CKN[2]	AN21	M_-DCLKB2	M_-DCLKB2 9
DDR1_CKP[3]	AP19	M_DCLKB3	M_DCLKB3 9
DDR1_CKN[3]	AP20	M_-DCLKB3	M_-DCLKB3 9
DDR1_CKE[0]	AL29	CKEB0	CKEB0 9
DDR1_CKE[1]	AL29	CKEB1	CKEB1 9
DDR1_CKE[2]	AW29	CKEB2	CKEB2 9
DDR1_CKE[3]	AU29	CKEB3	CKEB3 9
DDR1_CS#[0]	AP17	M_-CSB0	M_-CSB0 9
DDR1_CS#[1]	AN15	M_-CSB1	M_-CSB1 9
DDR1_CS#[2]	AN17	M_-CSB2	M_-CSB2 9
DDR1_CS#[3]	AM15	M_-CSB3	M_-CSB3 9
DDR1_ODT[0]	AM16	MODT_B0	
DDR1_ODT[1]	AL16	MODT_B1	
DDR1_ODT[2]	AP15	MODT_B2	
DDR1_ODT[3]	AL15	MODT_B3	
DDR1_RAS#/DDR1_CAB[3]/DDR1_MA[16]	AN18	MAAB16	
DDR1_WE#/DDR1_CAB[2]/DDR1_MA[14]	AL17	MAAB14	
DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]	AP16	MAAB15	
DDR1_BA[0]/DDR1_CAB[4]/DDR1_BA[0]	AL18	SBAB0	SBAB0 9
DDR1_BA[1]/DDR1_CAB[6]/DDR1_BA[1]	AM18	SBAB1	SBAB1 9
DDR1_BA[2]/DDR1_CAA[5]/DDR1_BG[0]	AW28	BG_B0	BG_B0 9
DDR1_MA[0]/DDR1_CAB[9]/DDR1_MA[0]	AL19	MAAB0	
DDR1_MA[1]/DDR1_CAB[8]/DDR1_MA[1]	AL22	MAAB1	
DDR1_MA[2]/DDR1_CAB[5]/DDR1_MA[2]	AM22	MAAB2	
DDR1_MA[3]	AM23	MAAB3	
DDR1_MA[4]	AP23	MAAB4	
DDR1_MA[5]/DDR1_CAA[0]/DDR1_MA[5]	AL23	MAAB5	
DDR1_MA[6]/DDR1_CAA[2]/DDR1_MA[6]	AW26	MAAB6	
DDR1_MA[7]/DDR1_CAA[4]/DDR1_MA[7]	AY26	MAAB7	
DDR1_MA[8]/DDR1_CAA[3]/DDR1_MA[8]	AU26	MAAB8	
DDR1_MA[9]/DDR1_CAA[1]/DDR1_MA[9]	AW27	MAAB9	
DDR1_MA[10]/DDR1_CAB[7]/DDR1_MA[10]	AP18	MAAB10	
DDR1_MA[11]/DDR1_CAA[7]/DDR1_MA[11]	AU27	MAAB11	
DDR1_MA[12]/DDR1_CAA[6]/DDR1_MA[12]	AV27	MAAB12	
DDR1_MA[13]/DDR1_CAB[0]/DDR1_MA[13]	AR15	MAAB13	
DDR1_MA[14]/DDR1_CAA[9]/DDR1_BG[1]	AY28	BG_B1	BG_B1 9
DDR1_MA[15]/DDR1_CAA[8]/DDR1_ACT#	AU28		M_-ACT_B 9
DDR1_PAR	AL20		M_DDR_PARB 9
DDR1_ALERT#	AY25		M_-ALERT_B 9

DDR1_DQSN[0]/DDR0_DQSN[2]	AF34	M_-DQSB0	
DDR1_DQSN[1]/DDR0_DQSN[3]	AK33	M_-DQSB1	
DDR1_DQSN[2]/DDR0_DQSN[6]	AN33	M_-DQSB2	
DDR1_DQSN[3]/DDR0_DQSN[7]	AN29	M_-DQSB3	
DDR1_DQSN[4]/DDR1_DQSN[2]	AN13	M_-DQSB4	
DDR1_DQSN[5]/DDR1_DQSN[3]	AR8	M_-DQSB5	
DDR1_DQSN[6]	AM8	M_-DQSB6	
DDR1_DQSN[7]	AG6	M_-DQSB7	
DDR1_DQSP[0]/DDR0_DQSP[2]	AF35	M_DQSB0	
DDR1_DQSP[1]/DDR0_DQSP[3]	AL33	M_DQSB1	
DDR1_DQSP[2]/DDR0_DQSP[6]	AP33	M_DQSB2	
DDR1_DQSP[3]/DDR0_DQSP[7]	AN28	M_DQSB3	
DDR1_DQSP[4]/DDR1_DQSP[2]	AN12	M_DQSB4	
DDR1_DQSP[5]/DDR1_DQSP[3]	AP8	M_DQSB5	
DDR1_DQSP[6]	AL8	M_DQSB6	
DDR1_DQSP[7]	AG7	M_DQSB7	
DDR1_DQSP[8]	AN25		
DDR1_DQSN[8]	AN26		

DDR CHANNEL B

2 OF 12

CPU-SK/1151/S/15

DDR_VREF_CA	AB40	VREF_CAB 8
DDR0_VREF_DQ	AC40	
DDR1_VREF_DQ	AC39	VREF_DQB 9

8 MODT_A[0..3] ↔ MODT_A[0..3]

9 MODT_B[0..3] ↔ MODT_B[0..3]

8 MDA[0..63] ↔ MDA[0..63]

9 MDB[0..63] ↔ MDB[0..63]

8 M_DQSA[0..7] ↔ M_DQSA[0..7]

8 M_-DQSA[0..7] ↔ M_-DQSA[0..7]

8 MAAA[0..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]

LGA1151

ILM_BP_CR/115X/NORMAL NI

Need check the new CPU ME

Intel CRB

Title: CPU LGA1151-B

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

Date: Monday, January 18, 2016 | Sheet 5 of 58

* 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

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

VCCST_VCCPLL
VCCSFUSEPRG

VCCSA
WR94 0/4/X
VCCST_VCCPLL

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

VCCGT_F35 F35
VCCGTX_G34 G34
VCCGTX_G35 G35
VCCGTX_H33 H33
VCCGTX_H34 H34
VCCGTX_J33 J33
VCCGTX_J35 J35
VCCGTX_K32 K32
VCCGTX_K34 K34
VCCGTX_L31 L31
VCCGTX_L33 L33
VCCGTX_M32 M32

WR59 0/4/SHT/M/X

VCCGT_SENSE F39
VSSGT_SENSE F38
VCCGTX_SENSE F37
VSSGTX_SENSE F36

10 OF 12

CPU-SK/1151/S/15

VCCSA
VCCIO
VDDQ

LGA1151K SKT_H4 LGA1151

VCCSA: AA7 AB6 AB7 AB8 AC7 AC8 N7 P7 R7 T7 U7 Y6 Y7 Y8 W7 V7 AA6
VCCIO: AK11 AK14 AK24 AJ23 M8 P8 T8 U8 W8
VDDQ_AT18 AT18
VDDQ_AT21 AT21
VDDQ_AU13 AU13
VDDQ_AU15 AU15
VDDQ_AU19 AU19
VDDQ_AU23 AU23
VDDQ_AV11 AV11
VDDQ_AV17 AV17
VDDQ_AV21 AV21
VDDQ_AW10 AW10
VDDQ_AW14 AW14
VDDQ_AW25 AW25
VDDQ_AY12 AY12
VDDQ_AY16 AY16
VDDQ_AY18 AY18
VDDQ_AY23 AY23

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

* 刪 VCCPLL_OC

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

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

VCCST_VCCPLL V5
VCCSFUSEPRG V6
VCCST_VCCPLL V4
VCCST_V5
VCCST_V6
VCCPLL

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

VCCSA_SENSE AD5
VCCIO_SENSE AF4
VSS_SAIO_SENSE AE4

* 刪 net

VCCOPC_SENSE AK21
VCCEOPIO_SENSE AJ24
VSSOPC_EOPIO_SENSE AK22

10 OF 12

CPU-SK/1151/S/15

LGA1151L SKT_H4 LGA1151

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

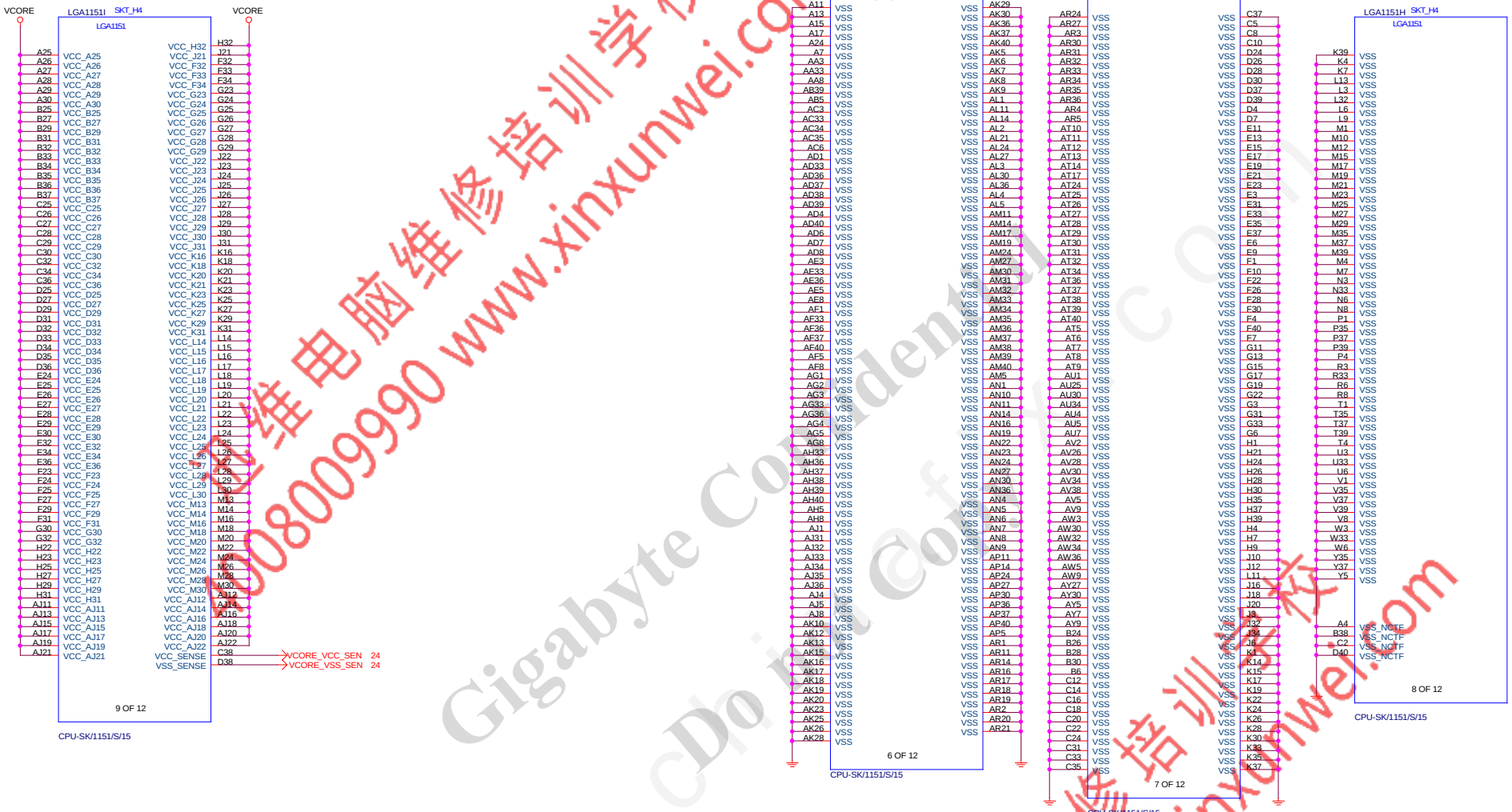
RSVD_TP_H11 H11
RSVD_TP_H12 H12
RSVD_TP_AW38 AW38
RSVD_TP_AV39 AV39
RSVD_AU39 AU39
RSVD_AU40 AU40
VSS_AT15 AT15
VSS_AR23 AR23
VSS_AR22 AR22
RSVD_J15 J15
RSVD_J14 J14
RSVD_AU9 AU9
RSVD_AU10 AU10
RSVD_J13 J13
RSVD_K13 K13
RSVD_J11 J11
RSVD_D15 D15
RSVD_K11 K11

13 N_PCH_CPU_TP
13 A_CPU_PCH_TO_R WR88 33/4 A_CPU_PCH_TO_R
WR89 560/4/1

12 OF 12

CPU-SK/1151/S/15

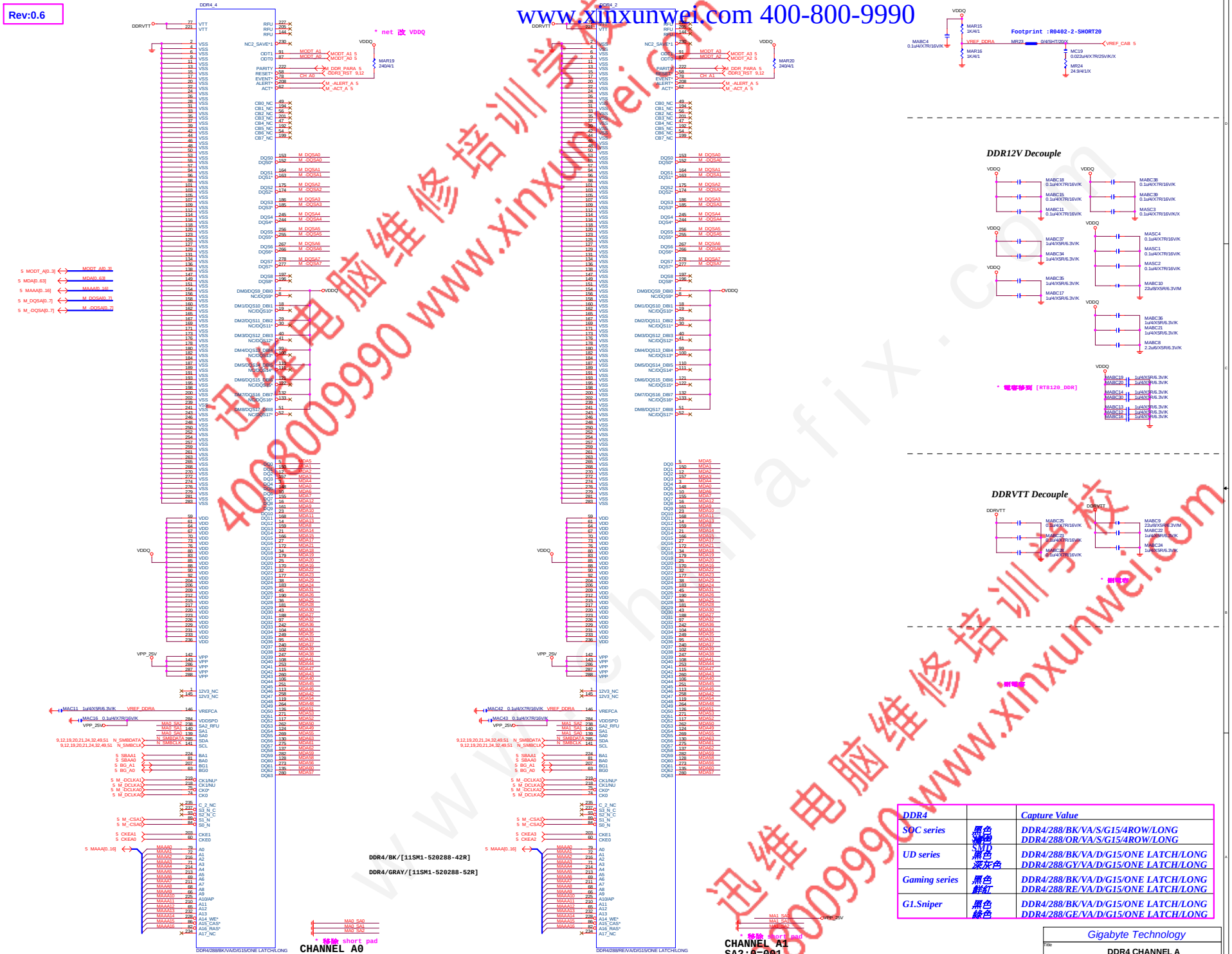
Intel CRB	
Title	CPU LGA1151-C
Size: Custom	Document Number: GA-Z170X-Gaming 3
Rev	1.02
Date: Monday, January 18, 2016	Sheet 6 of 58



* 刪 Vcore 電容

Intel CRB		
Title: CPU LGA1151-D		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
Date: Monday, January 18, 2016	Sheet 7 of 58	

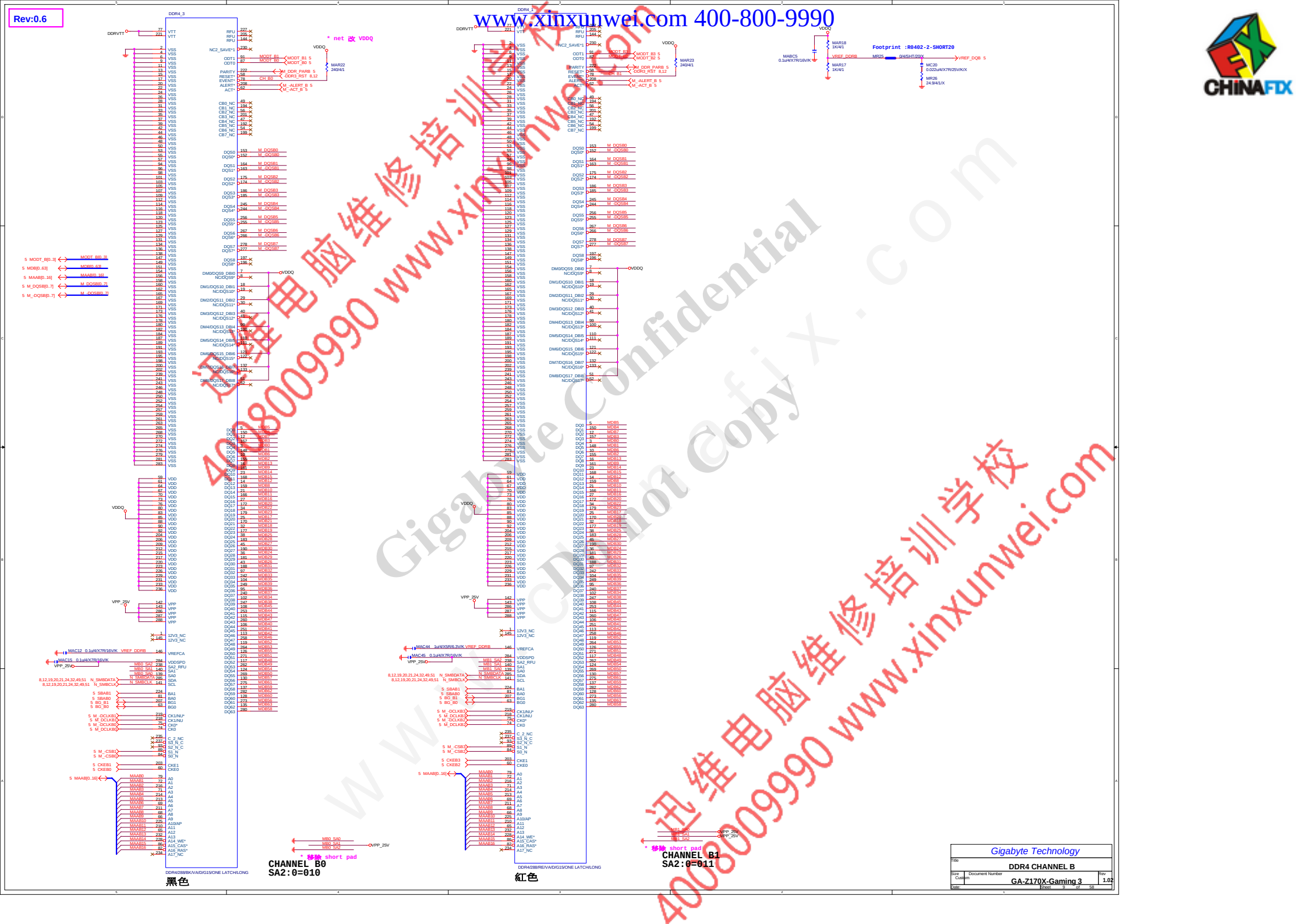
Rev:0.6



DDR4		Capture Value
SOC series	黑色 灰色	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	黑色 深灰色	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-Z170X-Gaming 3		Rev: 1.02
Date:	Sheet 8 of 58		


Rev:0.6
www.xinxunwei.com 400-800-9990
DDR4_3
DDR4_1
* net 改 VDDQ
VDDQ
MAR22
240/4/1
MAR23
240/4/1
MAR18
1K/4/1
MAR17
1K/4/1
Footprint :R0402-2-SHORT20
MR25
0/4/SHT/200X
MC20
0.022u/4/X7R/25V/K/X
MR26
24.9/4/1/X
MABC5
0.1u/4/X7R/16V/K
VREF_DDRB
VREF_DQB_5
MODT_B0_3
MDB0_63
MAAB0_16
M_DQSB0_7
M_DQSB0_7
MODT_B3_5
MODT_B2_5
M_DDR_PARB_5
DDR3_RST_8,12
CH_B0
M_-ALERT_B_5
M_-ACT_B_5
MAC12 1u/4/X7R/16V/K VREF_DDRB
MAC15 0.1u/4/X7R/16V/K
MAC44 1u/4/X5R/6.3V/K VREF_DDRB
MAC45 0.1u/4/X7R/16V/K
VPP_25VO
MB0_SA2
MB0_SA1
MB0_SA0
MB1_SA2
MB1_SA1
MB1_SA0
* 移除 short pad
CHANNEL B0
SA2:0=010
CHANNEL B1
SA2:0=011
黑色
紅色
DDR4288/BK/V/A/D/G15/ONE LATCH/LONG
DDR4288/RE/V/A/D/G15/ONE LATCH/LONG
Gigabyte Technology
DDR4 CHANNEL B
GA-Z170X-Gaming 3
1.02
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400-800-9990 www.xinxunwei.com
CHINAFIX

Rev 0.7

PCHE

SPT-H_PCH

38 N_HDMI_HDP_F
35 N_DVI_HDP_F
36 N_VGA_HDP_F
N_GPP_I3

AW4 GPP_I0/DDPB_HPD0
AY2 GPP_I1/DDPC_HPD1
AV4 GPP_I2/DDPD_HPD2
BA4 GPP_I3/DDPE_HPD3

NR9 100K/4/1 N_GPP_I4
BD7 GPP_I4/EDP_HPD

GPP_I7/DDPC_CTRLCLK
GPP_I8/DDPC_CTRLDATA
GPP_I5/DDPB_CTRLCLK
GPP_I6/DDPB_CTRLDATA
GPP_I9/DDPD_CTRLCLK
GPP_I10/DDPD_CTRLDATA

BB3 N_DDPC_CTRLCLK → N_DDPC_CTRLCLK 35
BD6 N_DDPC_CTRLDATA → N_DDPC_CTRLDATA 35
BA5 N_DDPB_CTRLCLK → N_DDPB_CTRLCLK 38
BC4 N_DDPB_CTRLDATA → N_DDPB_CTRLDATA 38
BE5 N_DDPD_CTRLCLK → N_DDPD_CTRLCLK 36
BE6 N_DDPD_CTRLDATA → N_DDPD_CTRLDATA 36

GPP_F14
GPP_F23
GPP_F22
GPP_G23
GPP_G22
GPP_G21
GPP_G20
GPP_H23

Y44
V44 N_GPP_F23
W39 N_GPP_F22
L43
L44 N_GPP_G22
U35 N_GPP_G21
R35 N_GPP_G20
BD36

A_-SKTOCC_4

5 OF 12
CHIPSET SKYLAKE INTEL/[10HB1-03Z170-20R]

CLK:4/15<1000;Guard GND

VCC1_0_PCH NR5 2.7K/4/1 XCLK_BIASREF

N_Y1 BC9 RTCX1
N_Y2 BD10 RTCX2

32.768KHZ

NX2-SHT
SHW/D0.64*5.08*6.74

N_Y1
N_Y2 NR11 10M/4

NC16 18P/4/NPO/50V/J
NC18 18P/4/NPO/50V/J
NX2
32.768K/12.5p/20ppm/TF38/35K/D

XTALI_PCH_R NR3 68/4/1 XTALI_PCH
NR32 1M/4
NX1 XTALO_PCH
24M/16p/30ppm/49US/50/D
NC8 22p/4/NPO/50V/J
NC7 27p/4/NPO/50V/J

CLK:4/15<1000 mils±100 mils;Guard GND

VCC3

N_GPP_I3 NR7 8.2K/4
N_GPP_F23 NR12 8.2K/4
N_GPP_F22 NR248 8.2K/4

N_GPP_B5 NR6 8.2K/4
N_GPP_B6 NR8 8.2K/4
N_GPP_B7 NR10 8.2K/4
N_GPP_B8 NR13 8.2K/4
N_GPP_B9 NR15 8.2K/4/X

A_-SKTOCC NR16 8.2K/4
N_GPP_G22 NR18 8.2K/4
N_GPP_G21 NR20 8.2K/4
N_GPP_G20 NR22 8.2K/4

N_GPP_H4 NR17 8.2K/4/X
N_GPP_H0 NR19 8.2K/4
N_GPP_H2 NR307 8.2K/4
N_GPP_H5 NR308 8.2K/4

19 -PCIEX16_PR
21 -PCIEX1_PR1
21 -PCIEX1_PR2
20 -PCIEX4_PR
52 TH_CLK_REQ_N
22 M2A_-CLKREQ
49 -PCIEX8_PR
21 -PCIEX1_PR3
40 LA_-CLKREQ
56 M2D_-CLKREQ

N_GPP_B5 BC24 GPP_B5/SRCCLKREQ0#
N_GPP_B6 AW24 GPP_B6/SRCCLKREQ1#
N_GPP_B7 AT24 GPP_B7/SRCCLKREQ2#
N_GPP_B8 BD25 GPP_B8/SRCCLKREQ3#
N_GPP_B9 BB24 GPP_B9/SRCCLKREQ4#
BE25 GPP_B10/SRCCLKREQ5#
N_GPP_H0 AT33 GPP_H0/SRCCLKREQ6#
N_GPP_H1 AR31 GPP_H1/SRCCLKREQ7#
N_GPP_H2 BD32 GPP_H2/SRCCLKREQ8#
BC32 GPP_H3/SRCCLKREQ9#
N_GPP_H4 BB31 GPP_H4/SRCCLKREQ10#
N_GPP_H5 BC33 GPP_H5/SRCCLKREQ11#
BA33 GPP_H6/SRCCLKREQ12#
AW33 GPP_H7/SRCCLKREQ13#
BB33 GPP_H8/SRCCLKREQ14#
BD33 GPP_H9/SRCCLKREQ15#

N_GPP_B9 NR286 0/4/X
N_GPP_H4 NR287 0/4/X
ON-BOARD DEVICE USED

PCHG

SPT-H_PCH

AR17 GPP_A16/CLKOUT_48

4 N_24MCLK → N_24MCLK G1
4 N_-24MCLK → N_-24MCLK F1
CLKOUT_CPUNSSC_P
CLKOUT_CPUNSSC

51 PCH_CPUCLK → PCH_CPUCLK G2
51 PCH_-CPUCLK → PCH_-CPUCLK H2
CLKOUT_CPUBCLK_P
CLKOUT_CPUBCLK

XTALO_PCH A5
XTALI_PCH A6
XTAL24_OUT
XTAL24_IN

XCLK_BIASREF E1

CLKOUT_ITPXDP
CLKOUT_ITPXDP_P
CLKOUT_CPUPCIBCLK
CLKOUT_CPUPCIBCLK_P

J1 N_-CPUPCIBCLK 4
J2 N_CPUPCIBCLK 4

CLKOUT_PCIE_N0 N7 → PA_-SRCCLK_3GIO 19
CLKOUT_PCIE_P0 N8 → PA_SRCCLK_3GIO 19
CLKOUT_PCIE_N1 L7 → PI_-PCIE_CLK 21
CLKOUT_PCIE_P1 L5 → PI_PCIE_CLK 21
CLKOUT_PCIE_N2 D3 → PJ_-PCIE_CLK 21
CLKOUT_PCIE_P2 F2 → PJ_PCIE_CLK 21
CLKOUT_PCIE_N3 E5 → PQ_-PCIE_CLK 20
CLKOUT_PCIE_P3 G4 → PQ_PCIE_CLK 20
CLKOUT_PCIE_N4 D5 → REFCLK_TBT_N 52
CLKOUT_PCIE_P4 E6 → REFCLK_TBT_P 52
CLKOUT_PCIE_N5 D8
CLKOUT_PCIE_P5 D7
CLKOUT_PCIE_N6 R8 → CK_M2A_100M_DN 22
CLKOUT_PCIE_P6 R7 → CK_M2A_100M_DP 22
CLKOUT_PCIE_N7 U5 → PE_-SRCCLK_3GIO1 49
CLKOUT_PCIE_P7 U7 → PE_SRCCLK_3GIO1 49
CLKOUT_PCIE_N8 W10 → PK_-PCIE_CLK 21
CLKOUT_PCIE_P8 W11 → PK_PCIE_CLK 21
CLKOUT_PCIE_N9 N3
CLKOUT_PCIE_P9 N2
CLKOUT_PCIE_N10 P3 → LA_-SRCCLK_LAN 40
CLKOUT_PCIE_P10 P2 → LA_SRCCLK_LAN 40
CLKOUT_PCIE_N11 R3 → CK_M2D_100M_DN 56
CLKOUT_PCIE_P11 R4 → CK_M2D_100M_DP 56
CLKOUT_PCIE_N12 U2
CLKOUT_PCIE_P12 U3
CLKOUT_PCIE_N13 W7
CLKOUT_PCIE_P13 Y6
CLKOUT_PCIE_N14 P1
CLKOUT_PCIE_P14 R2
CLKOUT_PCIE_N15 R13
CLKOUT_PCIE_P15 R11

7 OF 12
CHIPSET SKYLAKE INTEL/[10HB1-03Z170-20R]

PCIEX16
PCIEX1_1
PCIEX1_2
PCIEX4
ALPINE RIDGE
M.2
PCIEX8
PCIEX1_3
E2201
2nd M.2

CLOCK 4/4/4//15

PCH_HS

PCH_HS 與 MOS_HS & MOS_HS2 共用一 P/N
(此 P/N 包含 3個 HS 零件)

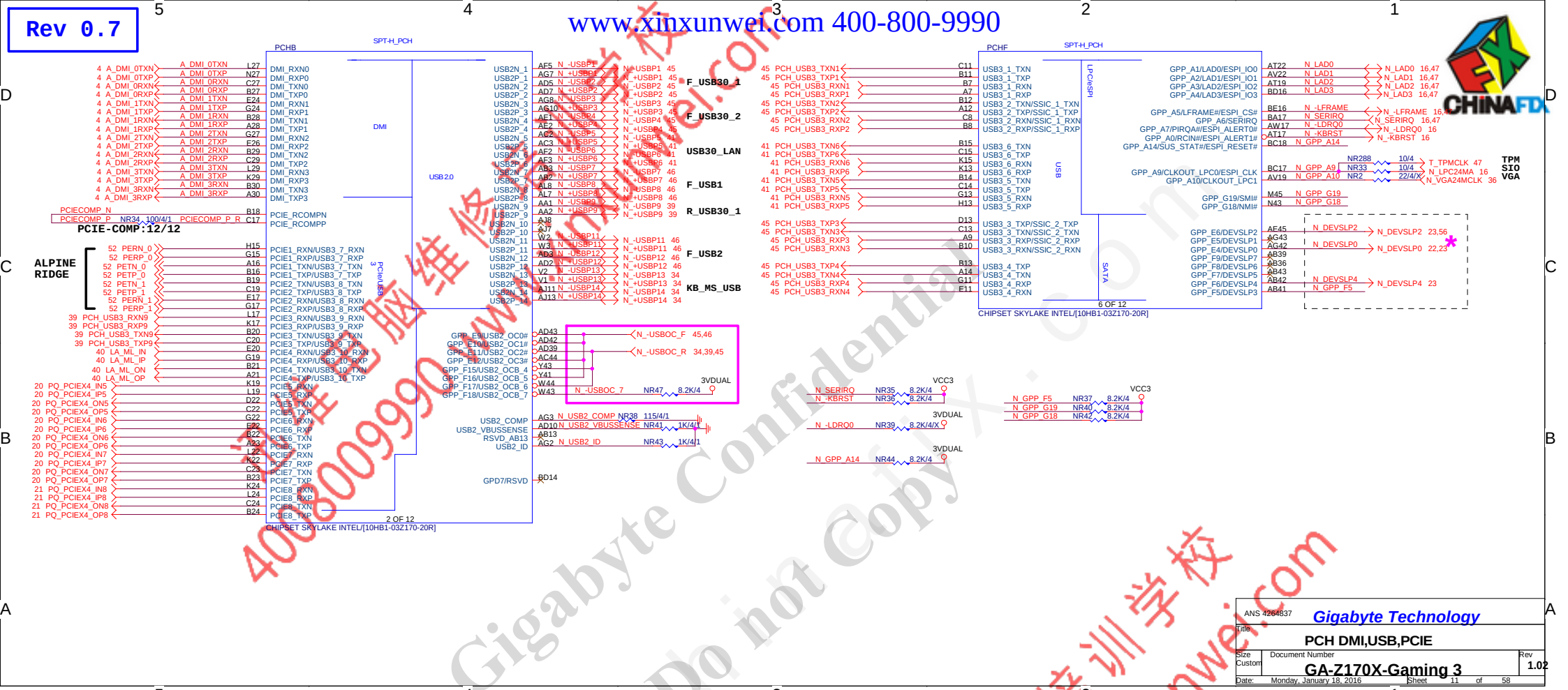
PCH_HS/[12SP2-PT17G3-11R_12SP2-PT17G3-12R_12SP2-PT17G3-13R]

Gigabyte Technology

Title: PCH CLOCK BUFFER

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

Date: Monday, January 18, 2016 | Sheet 10 of 58



ANS 4264837	Gigabyte Technology		
Title	PCH DMI,USB,PCIE		
Size Custom	Document Number GA-Z170X-Gaming 3		Rev 1.02
Date: Monday, January 18, 2016	Sheet 11 of 58		

FIX DUAL BIOS ISSUE

BATTERY-DUAL-4

RB 必須放在BAT外

CLR_CMOS

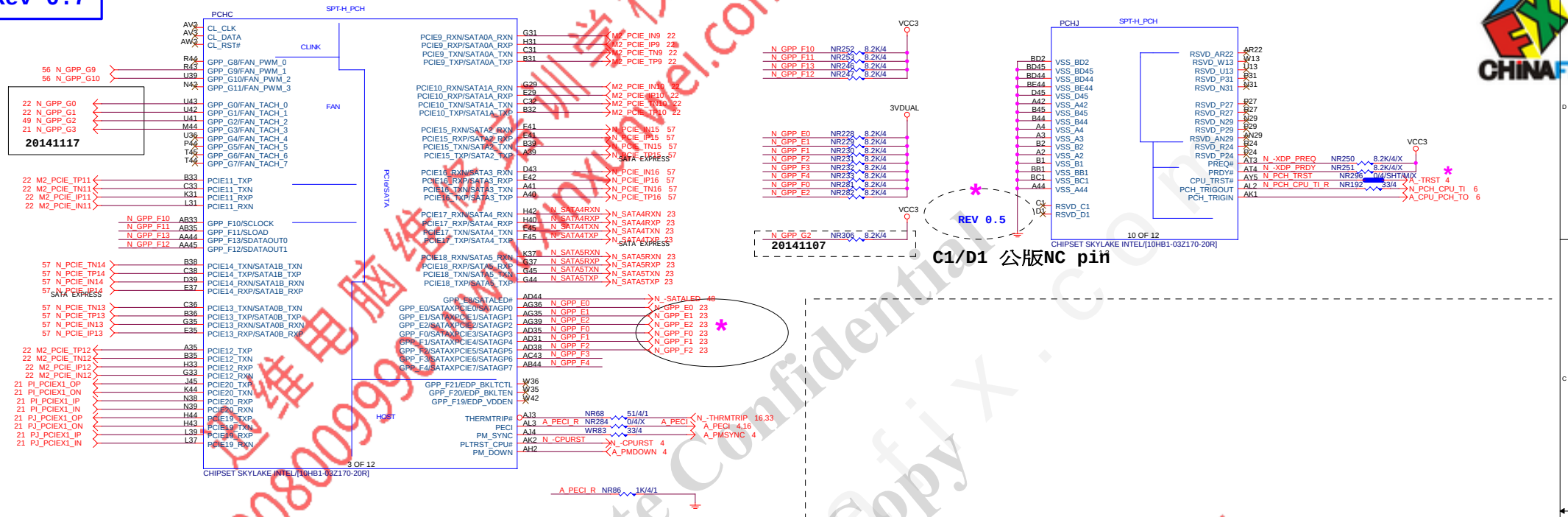
For IT8620 Ctrl

For IT8620 Ctrl

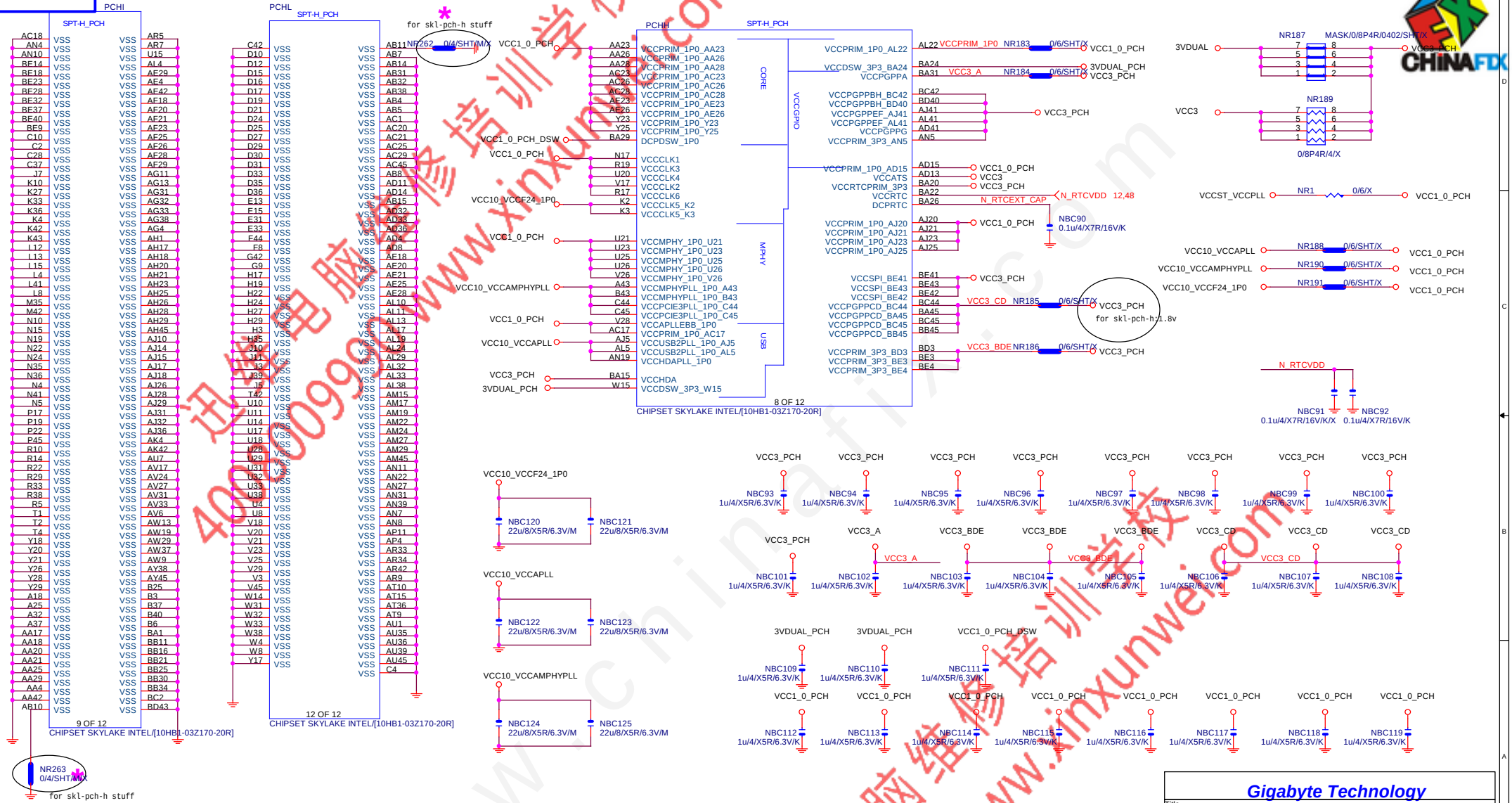
At least 10ms delay after 3VDUAL_PCH stabel

N_INTERMEN : Integrated 1.05V SUS VRM Enable

ANS	4264837
Title	PCH MISC
Size	Custom
Document Number	GA-Z170X-Gaming 3
Rev	1.02
Date	Monday, January 18, 2016
Sheet	12 of 58



Gigabyte Technology			
Title	PCH SATA,PCIE,SATA_EXPRESS		
Size: Custom	Document Number: GA-Z170X-Gaming 3		Rev: 1.02
Date: Monday, January 18, 2016	Sheet 13 of 58		



Company	Gigabyte Technology
Title	PCH PWR, GND
Size	Custom
Document Number	GA-Z170X-Gaming 3
Rev	1.02
Date	Monday, January 18, 2016
Sheet	14 of 58

DUAL BIOS

MOSI For DMI RX Termination Voltage

指定用DII

3VDUAL

NR238 330/4/1

-SPI_CS_1

NR239 1K/4/1

NQ20 MMBT2222A/SOT23/600mA/40 S0T23

N_-ICH_SPI_CS → N_-ICH_SPI_CS 12

NQ21 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_B NR235 8.2K/4

指定用DII

NR237 330/4/1

-SPI_CS_2

NR240 1K/4/1

NQ22 MMBT2222A/SOT23/600mA/40 S0T23

N_-ICH_SPI_CS

NQ23 MMBT2222A/SOT23/600mA/40 S0T23

-SPI_HOLD_M NR234 8.2K/4

M_BIOS

-SPI_CS_1 → NR105 22/4 → CS#

SPI_MISO → SO

12 N_SPI_DQ2 ← NR222 0/4/SHT/X ← N_-SPI_WP0 ← WP#

VSS

VDD ← NR102 0/4/SHT/M/X ← 3VDUAL

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

HOLD# → -HOLD0 → NR221 0/4/SHT/X → N_SPI_DQ3 12

SCK → N_ICH_SPI_CLK

SI → N_ICH_SPI_MOSI

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

MAIN BIOS

64M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

B_BIOS

-SPI_CS_2 → NR87 22/4 → CS#

SPI_MISO → SO

12 N_SPI_DQ2 ← NR236 0/4/SHT/X ← N_-SPI_WP1 ← WP#

VSS

VDD ← NR67 0/4/SHT/M/X ← 3VDUAL

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

HOLD# → -HOLD1 → NR224 0/4/SHT/X → N_SPI_DQ3 12

SCK → N_ICH_SPI_CLK → N_ICH_SPI_CLK 12

SI → N_ICH_SPI_MOSI → N_ICH_SPI_MOSI 12

BACKUP BIOS

64M/Q/SPI/SO8/S

* (footprint 改 IC8-BIOS)

16 -SPI_HOLD_M ← -SPI_HOLD_M NR100 1K/4/1

16 -SPI_HOLD_B ← -SPI_HOLD_B NR89 1K/4/1

12 N_ICH_SPI_MISO ← N_ICH_SPI_MISO NR98 8.2K/4

12 N_ICH_SPI_MISO ← NR97 22/4 SPI_MISO

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

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

1 means floating
0 means PD 1K

Rev: 0.42

M_BIOS

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

* 試產先上 , PVT 移除

BIOS_PH

★Update 2015-01.29

BIOS_PH

N_-ICH_SPI_CS1 → N_-ICH_SPI_CS1 12

N_-ICH_SPI_CS

N_ICH_SPI_MISO

N_SPI_DQ2

-HOLD0

N_ICH_SPI_CLK

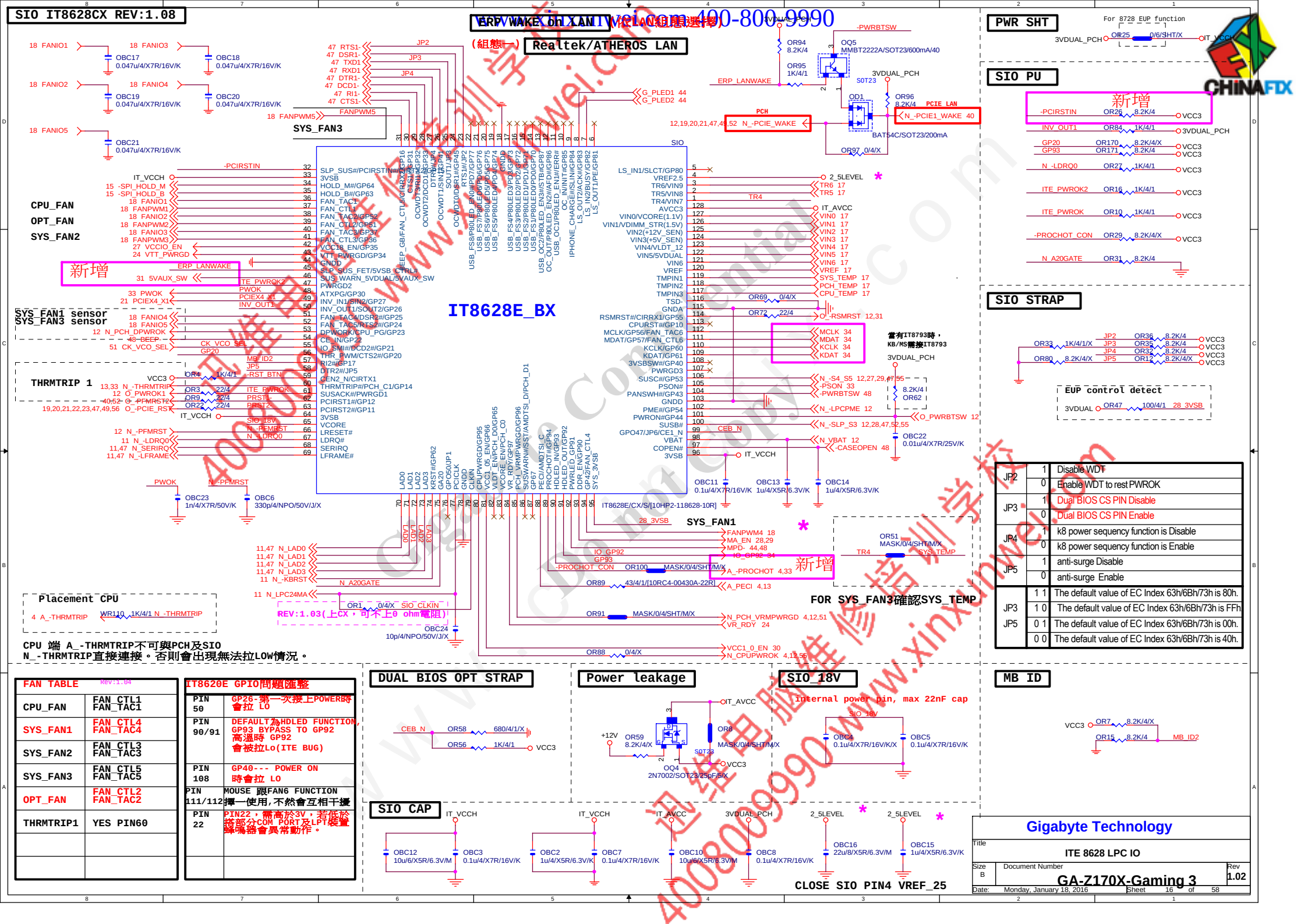
N_ICH_SPI_MOSI

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

Footprint the same, confirmed by Graceing.

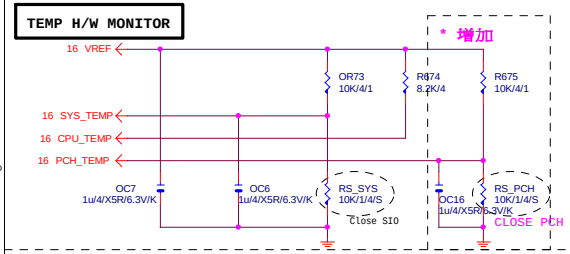
Use COM port pin header part.

Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
Date: Monday, January 18, 2016	Sheet 15 of 58	


SIO IT8628CX REV:1.08
ERP WAKE on LAN
Realtek/ATHEROS LAN
PWR SHT
SIO PU
SIO STRAP
IT8628E_BX
SYS_FAN3
SYS_FAN1
CPU_FAN
OPT_FAN
SYS_FAN2
THRMTRIP 1
SYS_FAN1 sensor
SYS_FAN3 sensor
新增
FOR SYS_FAN3確認SYS_TEMP
REV:1.03(上CX，可不上0 ohm電阻)
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。
FAN TABLE
IT8620E GPIO問題匯整
DUAL BIOS OPT STRAP
Power leakage
SIO_18V
MB ID
SIO CAP
CLOSE SIO PIN4 VREF_25
Gigabyte Technology
ITE 8628 LPC IO
GA-Z170X-Gaming 3

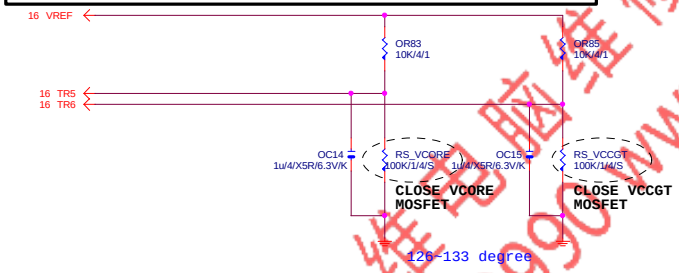
REV:1.08

TEMP H/W MONITOR



RS_VCORE、RS_VCCGT CLOSE CPU VCORE & VCCGT MOSFET

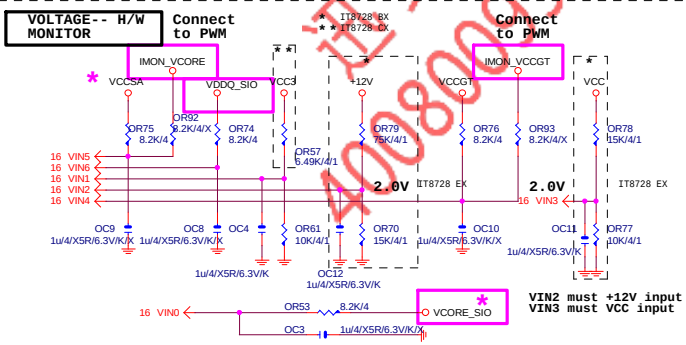
-PROCHOT:有mos heartsink不用prochot function



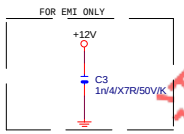
VOLTAGE-- H/W MONITOR

Connect to PWM

Connect to PWM



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



Gigabyte Technology		
Title: HWM		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
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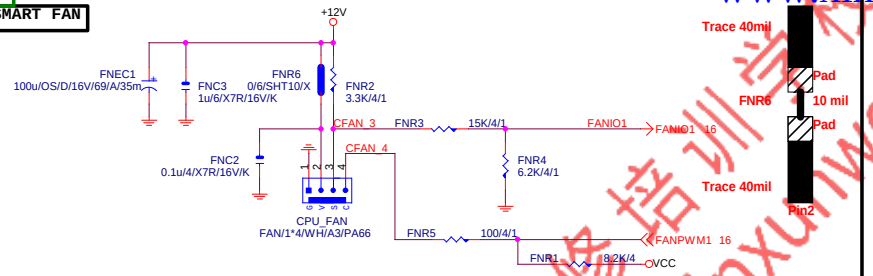
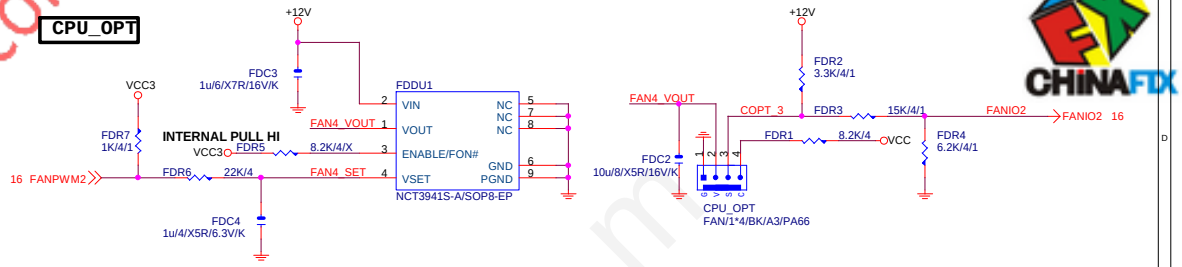
Rev: 0.6

CPU SMART FAN



CPU_OPT

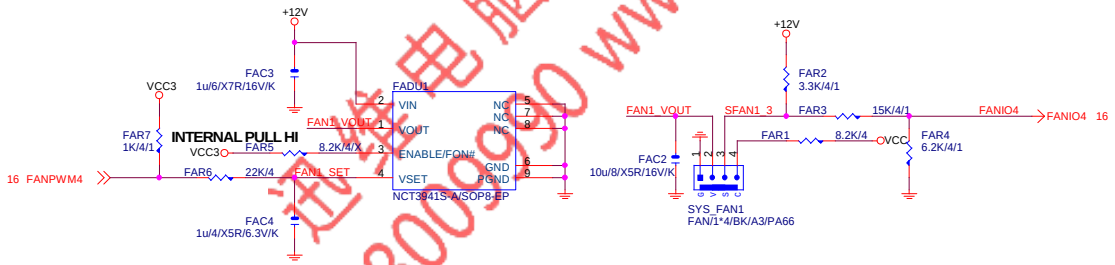


SYSTEM FAN1

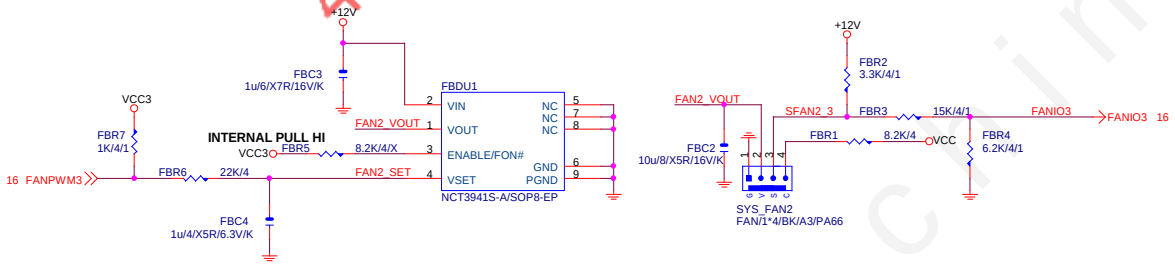
Linear SYS_FAN

Enable Function (NCT3941S)

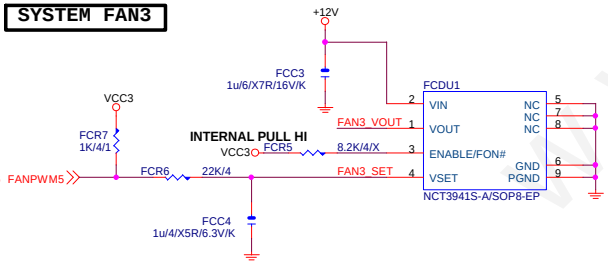
Full Turn On Function (NCT3941S-A)

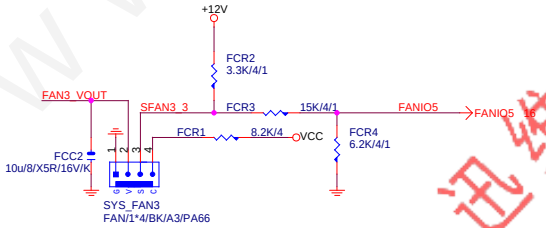


SYSTEM FAN2



SYSTEM FAN3





GIGABYTE		
Title: FAN CTRL		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
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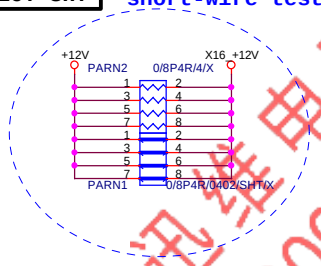
Rev 0.3

PCIEX16 CAP

X16_+12V
PABC1 0.1u/4/X7R/16V/K
VCC3
PAEC2 560u/FP/D/6.3V/69/A/11m
+12V
PAEC1 270u/FP/D/16V/88/C/12m
VCC3
PABC2 0.1u/4/X7R/16V/K
PABC3 0.1u/4/X7R/16V/K

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_SW_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_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

PCIEX16 SLOT

PCIESLOT-164DM-Q

PCIEX16 3GIO_*16

X16_+12V
8,9,12,20,21,24,32,49,51 N_SMBCLK
8,9,12,20,21,24,32,49,51 N_SMBDATA
PAR4 0/4/X
PAR5 0/4/X
3VDUAL
VCC3
12,16,20,21,47,49,52 N_-PCIE_WAKE
10 -PCIEX16_PR

KEY

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

X16_+12V
PAR1 0/4/SHT/X
PAR2 0/4/SHT/X
VCC3
-DPCIE_RST
PAC1 22p/4/NPO/50V/J/X
-DPCIE_RST
O_-PCIE_RST 16,20,21,22,23,47,49,56

PA_SRCCLK_3GIO 10
PA_-SRCCLK_3GIO 10

PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] 4,50
PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] 4,50
PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] 4,50
PA_EXP_TXN[0..15] PA_EXP_TXN[0..15] 4,50

PA_EXP_SW_RXP[8..15] PA_EXP_SW_RXP[8..15] 50
PA_EXP_SW_RXN[8..15] PA_EXP_SW_RXN[8..15] 50
PA_EXP_SW_TXP[8..15] PA_EXP_SW_TXP[8..15] 50
PA_EXP_SW_TXN[8..15] PA_EXP_SW_TXN[8..15] 50

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B1	12V	PA_EXP_TXP0_C	B19	HSOP1	A1	PRSNT1*	
B2	12V	PA_EXP_TXN0_C	B20	HSON1	A2	12V	
B3	RSVD		B21	GND	A3	12V	
B4	GND		B22	GND	A4	GND	
B5	SMCLK	PA_EXP_TXP1_C	B23	HSOP2	A5	JTAG2	
B6	SMDAT	PA_EXP_TXN1_C	B24	HSON2	A6	JTAG3	
B7	GND		B25	GND	A7	JTAG4	
B8	3.3V	PA_EXP_TXP2_C	B26	GND	A8	JTAG5	
B9	JTAG1	PA_EXP_TXN2_C	B27	HSOP3	A9	3.3V	
B10	3.3VAUX		B28	HSON3	A10	3.3V	
B11	WAKE*	PA_EXP_TXP3_C	B29	GND	A11	PWRGD	
B12	RSVD	PA_EXP_TXN3_C	B30	RSVD	A12	GND	
B13	GND		B31	PRSNT2*	A13	REFCLK+	
B14	HSOP0		B32	GND	A14	REFCLK-	
B15	HSON0	PA_EXP_TXP4_C	B33	HSOP4	A15	GND	
B16	GND	PA_EXP_TXN4_C	B34	HSON4	A16	HSIP0	PA_EXP_RXP0
B17	PRSNT2*		B35	GND	A17	HSIN0	PA_EXP_RXN0
B18	GND	PA_EXP_TXP5_C	B36	GND	A18	GND	
B19	HSOP1	PA_EXP_TXN5_C	B37	HSOP5	A19	RSVD	
B20	HSON1		B38	HSON5	A20	GND	
B21	GND	PA_EXP_TXP6_C	B39	GND	A21	HSIP1	PA_EXP_RXP1
B22	GND	PA_EXP_TXN6_C	B40	GND	A22	HSIN1	PA_EXP_RXN1
B23	HSOP2		B41	HSOP6	A23	GND	
B24	HSON2	PA_EXP_TXP7_C	B42	HSON6	A24	GND	
B25	GND	PA_EXP_TXN7_C	B43	GND	A25	HSIP2	PA_EXP_RXP2
B26	GND		B44	GND	A26	HSIN2	PA_EXP_RXN2
B27	HSOP3		B45	HSOP7	A27	GND	
B28	HSON3		B46	HSON7	A28	GND	
B29	GND		B47	GND	A29	HSIP3	PA_EXP_RXP3
B30	RSVD		B48	PRSNT2*	A30	HSIN3	PA_EXP_RXN3
B31	PRSNT2*		B49	GND	A31	GND	
B32	GND	PA_EXP_SW_TXP8_C	B50	HSOP8	A32	RSVD	
B33	HSOP4	PA_EXP_SW_TXN8_C	B51	HSON8	A33	RSVD	
B34	HSON4		B52	GND	A34	GND	
B35	GND	PA_EXP_SW_TXP9_C	B53	GND	A35	HSIP4	PA_EXP_RXP4
B36	GND	PA_EXP_SW_TXN9_C	B54	HSOP9	A36	HSIN4	PA_EXP_RXN4
B37	HSOP5		B55	HSON9	A37	GND	
B38	HSON5	PA_EXP_SW_TXP10_C	B56	GND	A38	GND	
B39	GND	PA_EXP_SW_TXN10_C	B57	GND	A39	HSIP5	PA_EXP_RXP5
B40	GND		B58	HSOP10	A40	HSIN5	PA_EXP_RXN5
B41	HSOP6		B59	HSON10	A41	GND	
B42	HSON6	PA_EXP_SW_TXP11_C	B60	GND	A42	GND	
B43	GND	PA_EXP_SW_TXN11_C	B61	GND	A43	HSIP6	PA_EXP_RXP6
B44	GND		B62	HSOP11	A44	HSIN6	PA_EXP_RXN6
B45	HSOP7		B63	HSON11	A45	GND	
B46	HSON7	PA_EXP_SW_TXP12_C	B64	GND	A46	GND	
B47	GND	PA_EXP_SW_TXN12_C	B65	GND	A47	HSIP7	PA_EXP_RXP7
B48	PRSNT2*		B66	HSOP12	A48	HSIN7	PA_EXP_RXN7
B49	GND	PA_EXP_SW_TXP13_C	B67	HSON12	A49	GND	
B50	HSOP8	PA_EXP_SW_TXN13_C	B68	GND	A50	RSVD	
B51	HSON8		B69	GND	A51	GND	
B52	GND	PA_EXP_SW_TXP14_C	B70	HSOP13	A52	HSIP8	PA_EXP_SW_RXP8
B53	GND	PA_EXP_SW_TXN14_C	B71	HSON13	A53	HSIN8	PA_EXP_SW_RXN8
B54	HSOP9		B72	GND	A54	GND	
B55	HSON9		B73	GND	A55	GND	
B56	GND	PA_EXP_SW_TXP15_C	B74	HSOP14	A56	HSIP9	PA_EXP_SW_RXP9
B57	GND	PA_EXP_SW_TXN15_C	B75	HSON14	A57	HSIN9	PA_EXP_SW_RXN9
B58	HSOP10		B76	GND	A58	GND	
B59	HSON10		B77	GND	A59	GND	
B60	GND		B78	HSOP15	A60	HSIP10	PA_EXP_SW_RXP10
B61	GND		B79	HSON15	A61	HSIN10	PA_EXP_SW_RXN10
B62	HSOP11		B80	GND	A62	GND	
B63	HSON11		B81	PRSNT2*	A63	GND	
B64	GND		B82	RSVD	A64	HSIP11	PA_EXP_SW_RXP11
B65	GND				A65	HSIN11	PA_EXP_SW_RXN11
B66	HSOP12				A66	GND	
B67	HSON12				A67	GND	
B68	GND				A68	HSIP12	PA_EXP_SW_RXP12
B69	GND				A69	HSIN12	PA_EXP_SW_RXN12
B70	HSOP13				A70	GND	
B71	HSON13				A71	GND	
B72	GND				A72	HSIP13	PA_EXP_SW_RXP13
B73	GND				A73	HSIN13	PA_EXP_SW_RXN13
B74	HSOP14				A74	GND	
B75	HSON14				A75	GND	
B76	GND				A76	HSIP14	PA_EXP_SW_RXP14
B77	GND				A77	HSIN14	PA_EXP_SW_RXN14
B78	HSOP15				A78	GND	
B79	HSON15				A79	GND	
B80	GND				A80	HSIP15	PA_EXP_SW_RXP15
B81	PRSNT2*				A81	HSIN15	PA_EXP_SW_RXN15
B82	RSVD				A82	GND	

Gigabyte Technology

Title: PCI EXPRESS * 16

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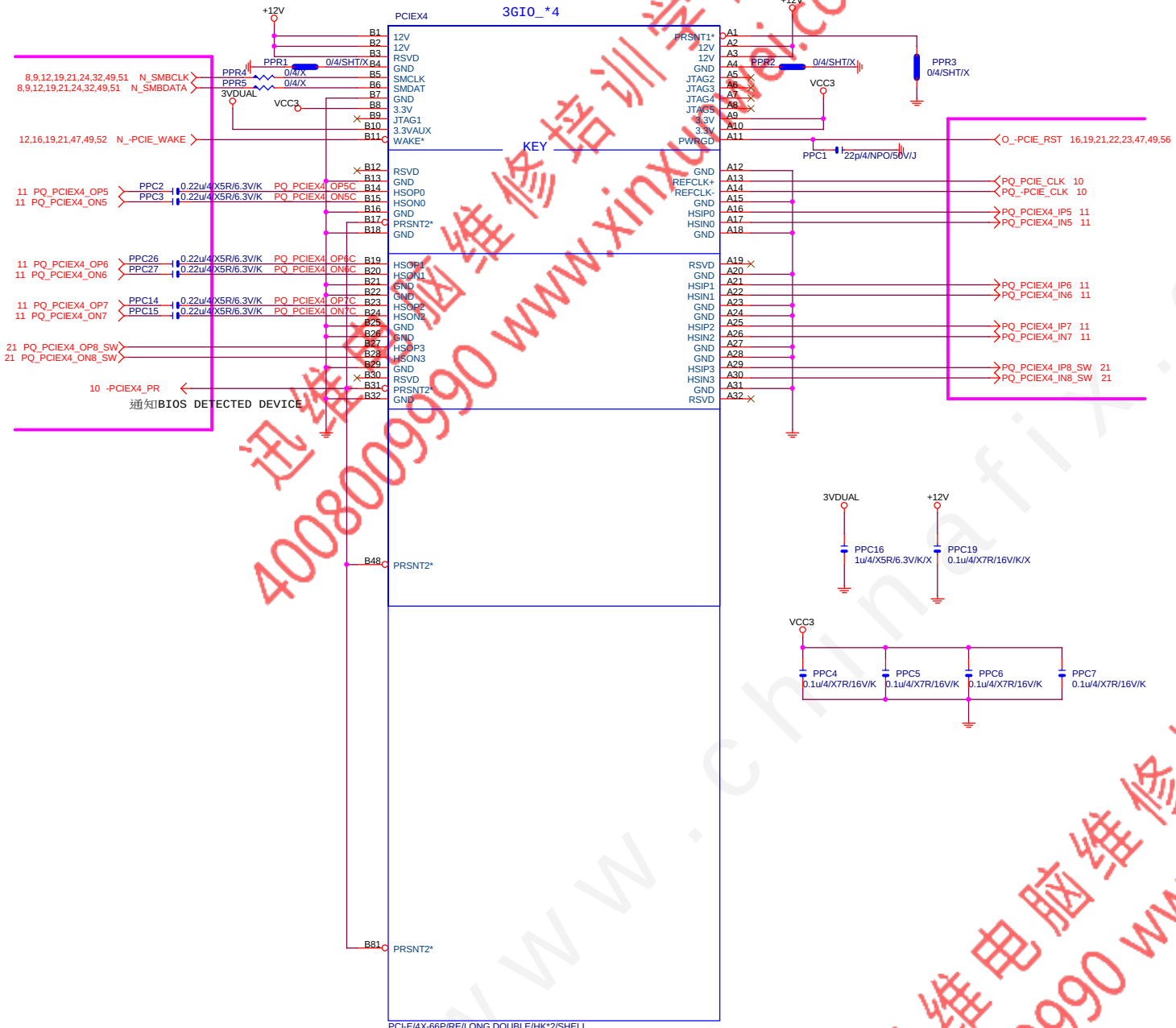
PCIE*4



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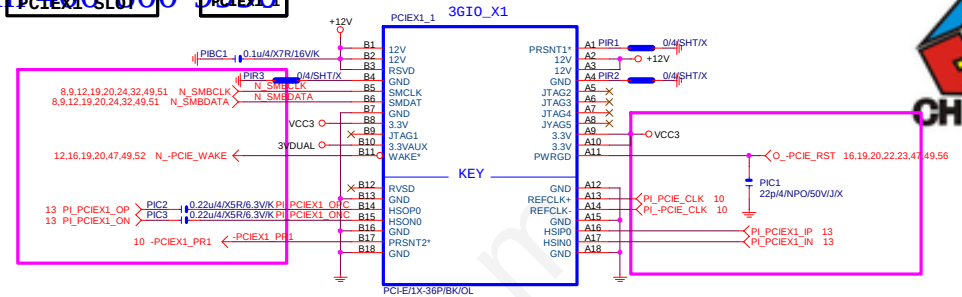
GIGABYTE

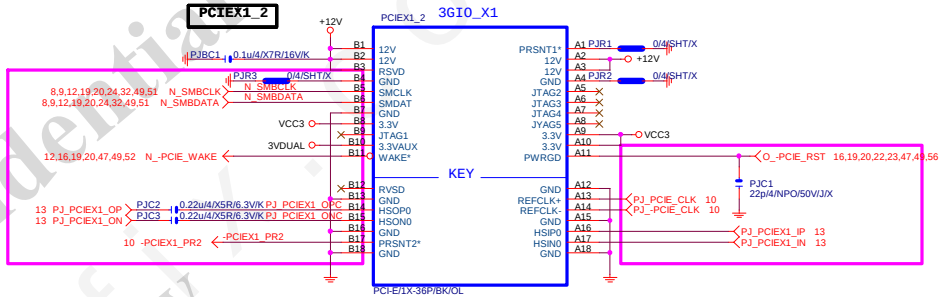
Title	PCIE_X4	
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
Date: Monday, January 18, 2016	Sheet 20 of 58	

Rev 0.51

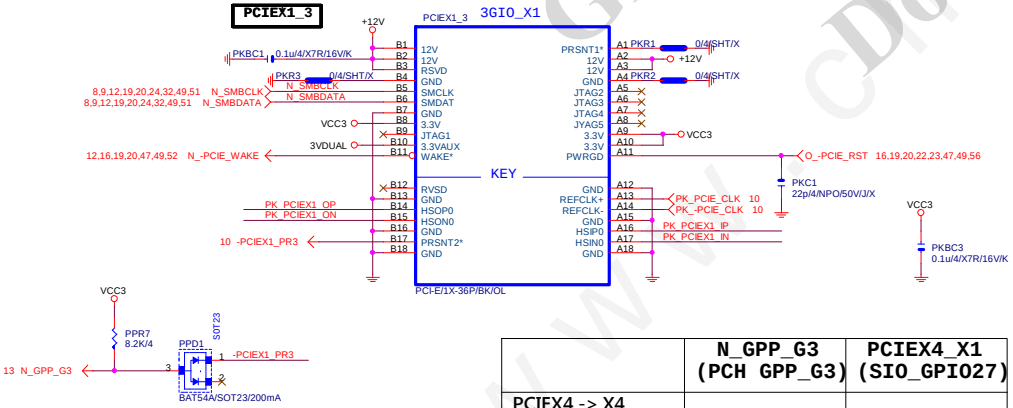
PCIEX1 SLOT



PCIEX1_2

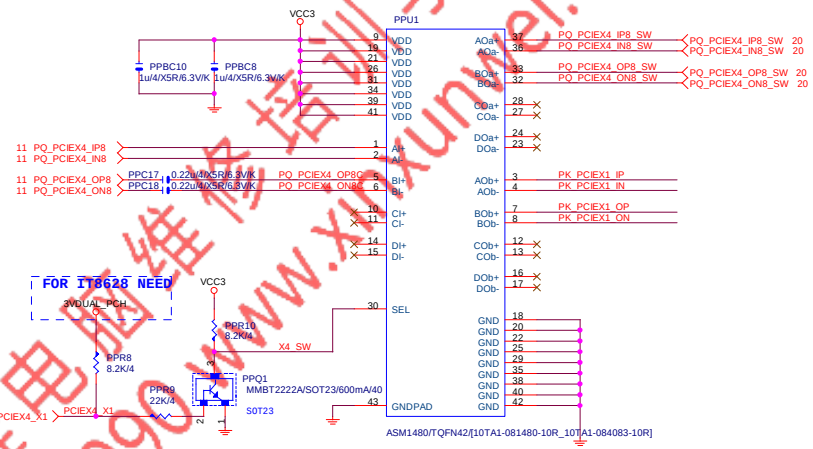


PCIEX1_3



	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

PCIEX4/X1 SWITCH



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

Gigabyte Technology

Title: PCIE_X1 1,2,3

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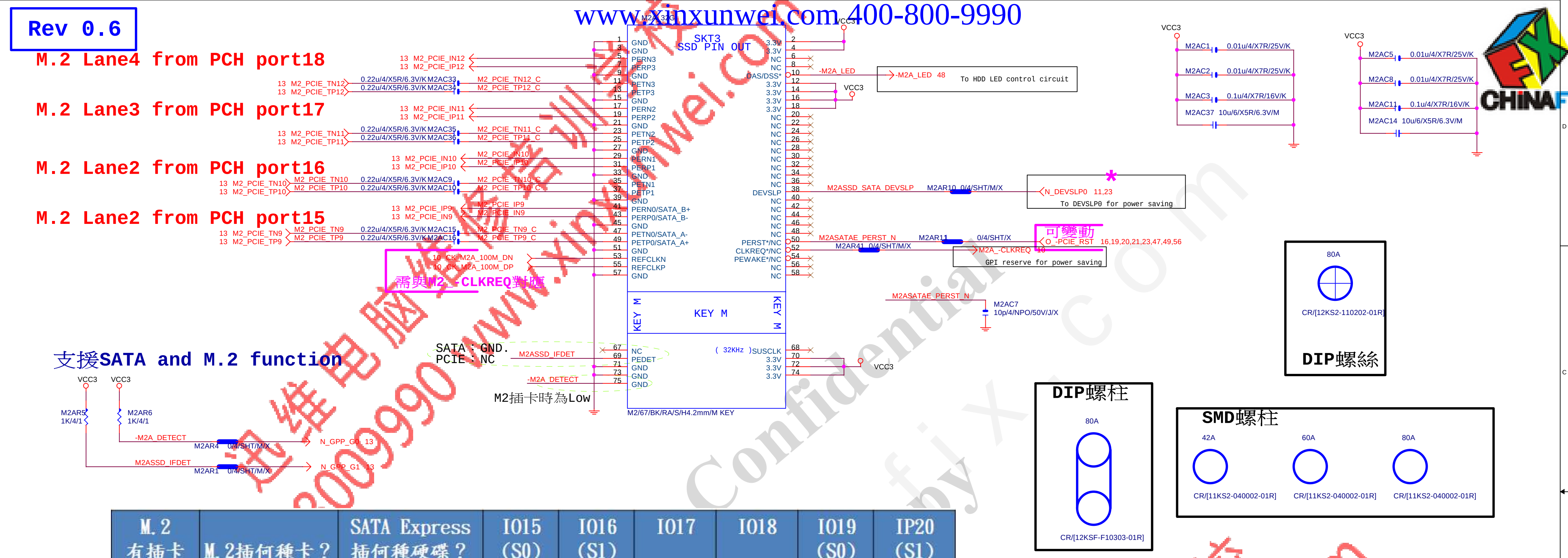

M.2 有插卡/沒插卡 GPP_G0	M.2插何種卡？ GPP_G1	SATA Express 插何種硬碟？ GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE 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	

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Title: M.2 X4

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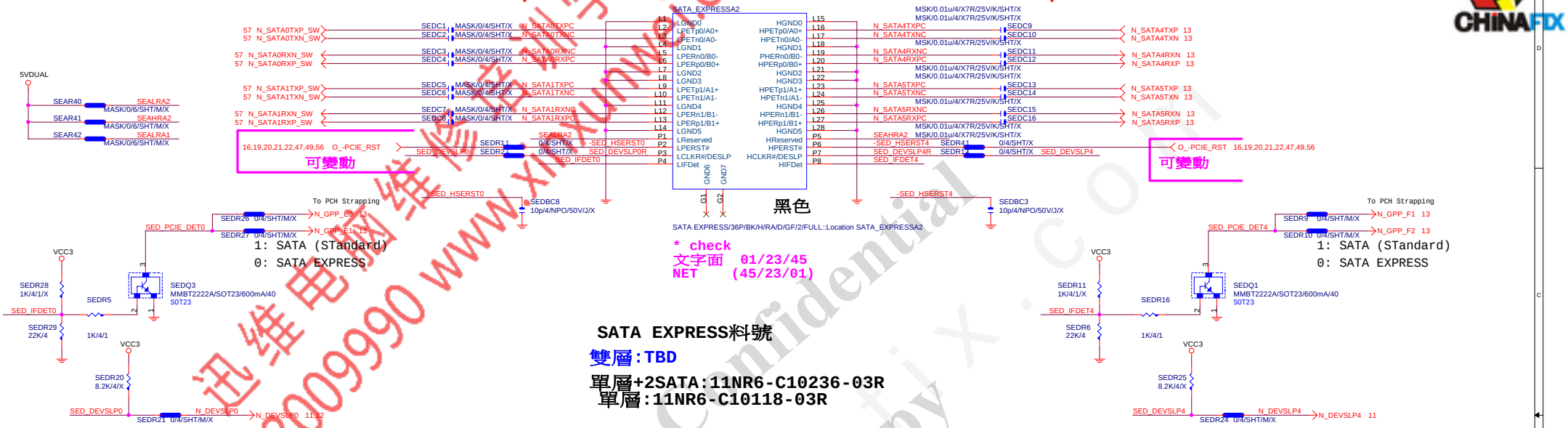
Rev 0.9

SATA EXPRESS 下層 To SATA3 port0/1

SATA EXPRESS 上層 To SATA3 port4/5



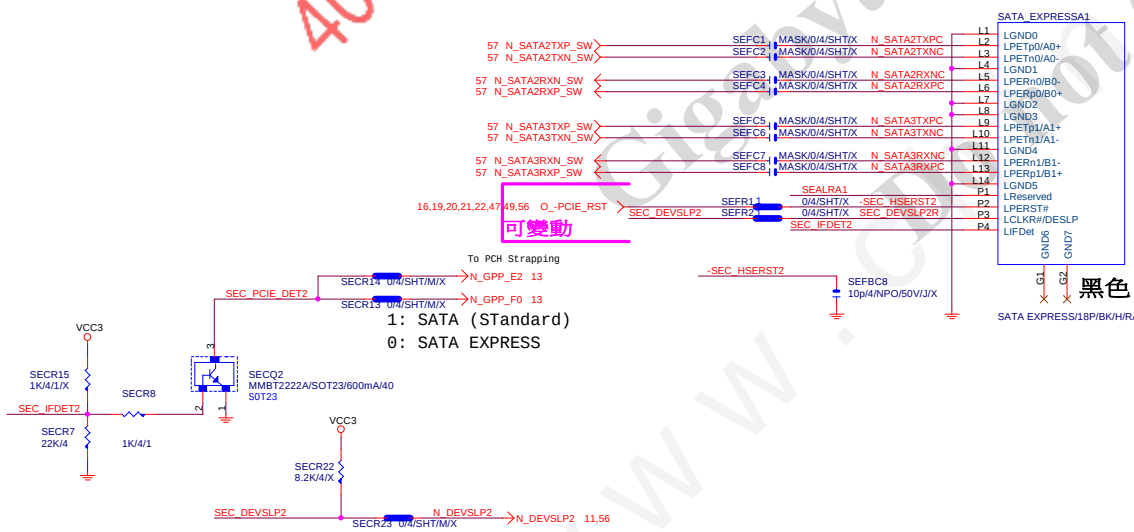
SATA EXPRESS料號

雙層:TBD

單層+2SATA:11NR6-C10236-03R

單層:11NR6-C10118-03R

To SATA3 port2/3



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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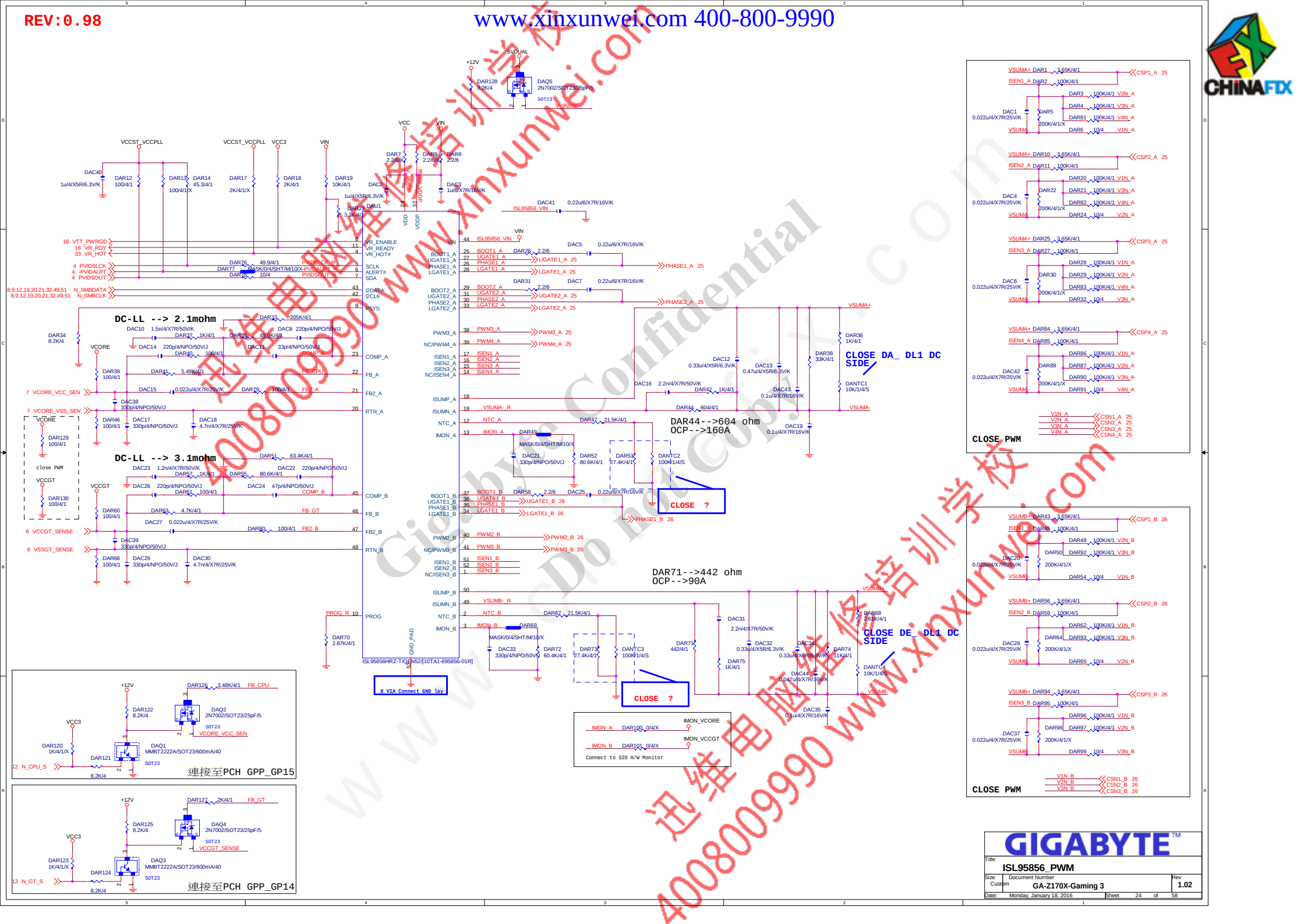

Title	ISL95856_PWM
Size	Custom
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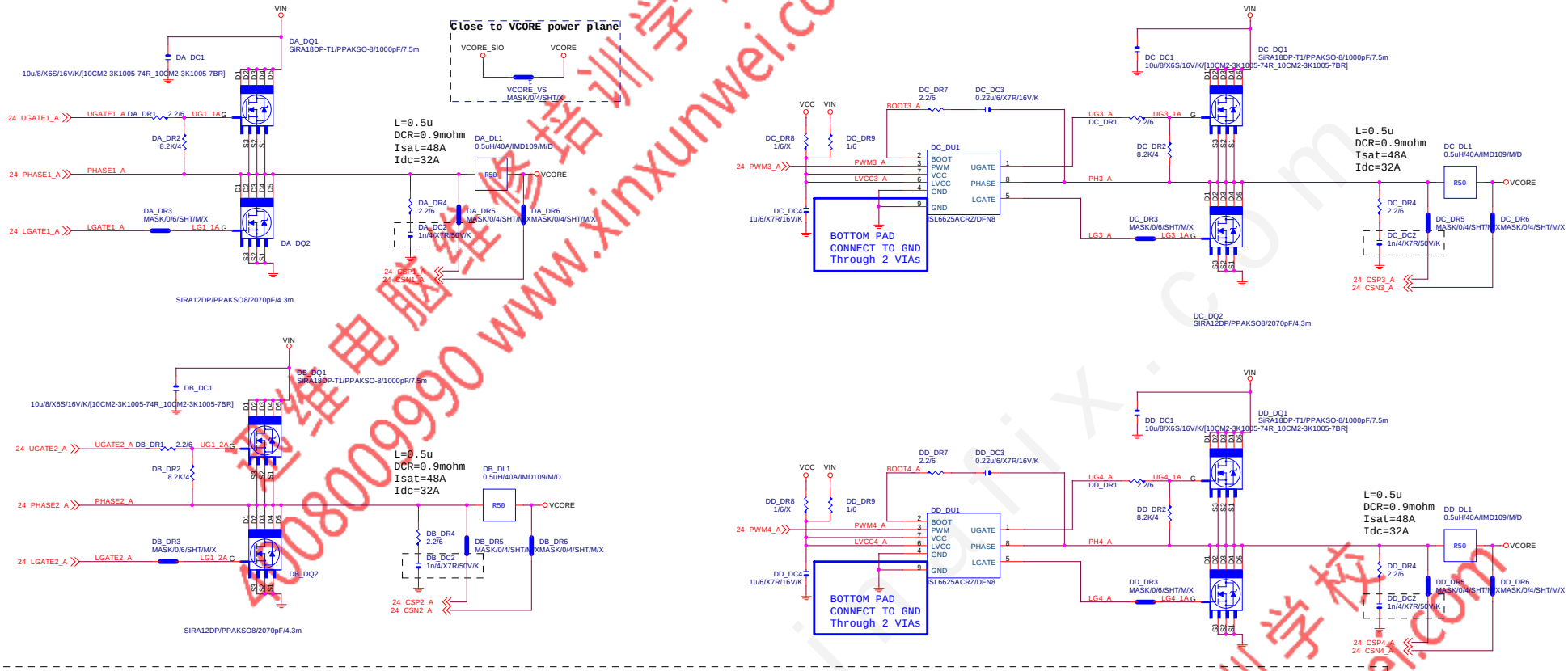
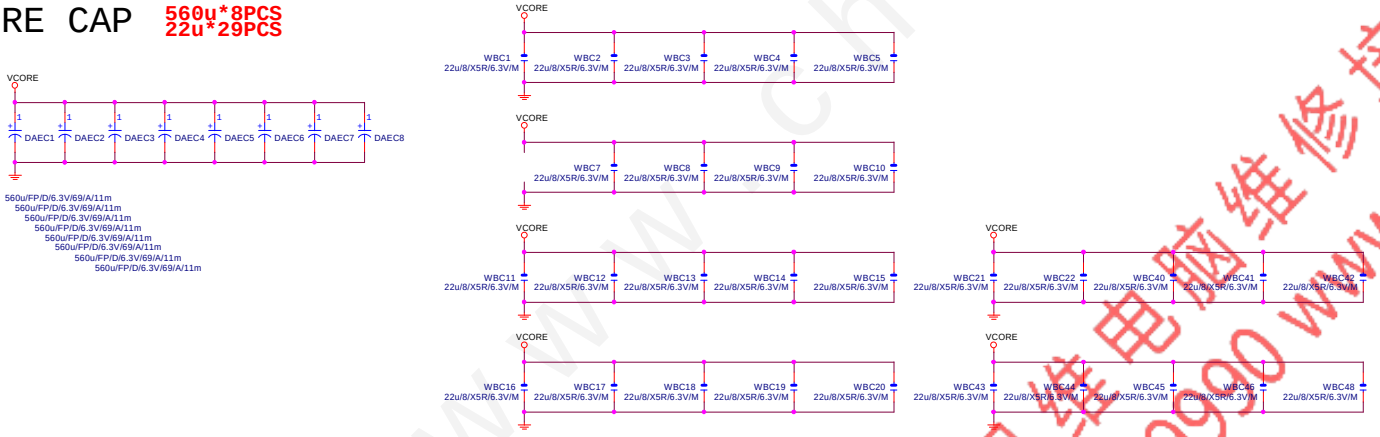
REV:0.98

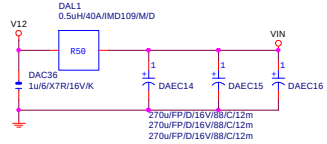
VCORE



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



VIN CAP 270u*3PCS



Title	ISL95856_MOS	
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
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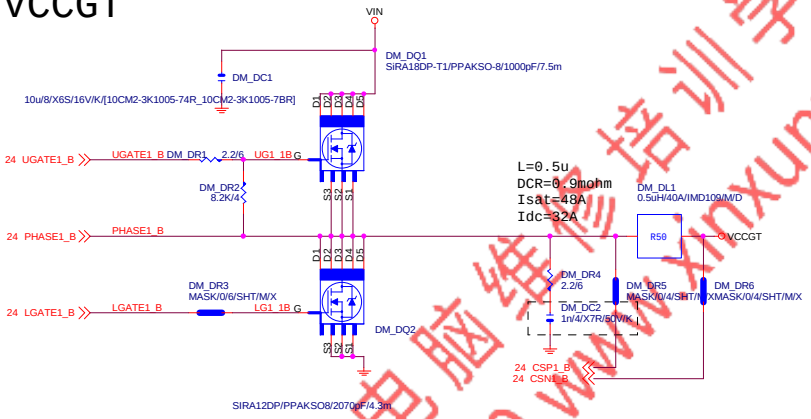
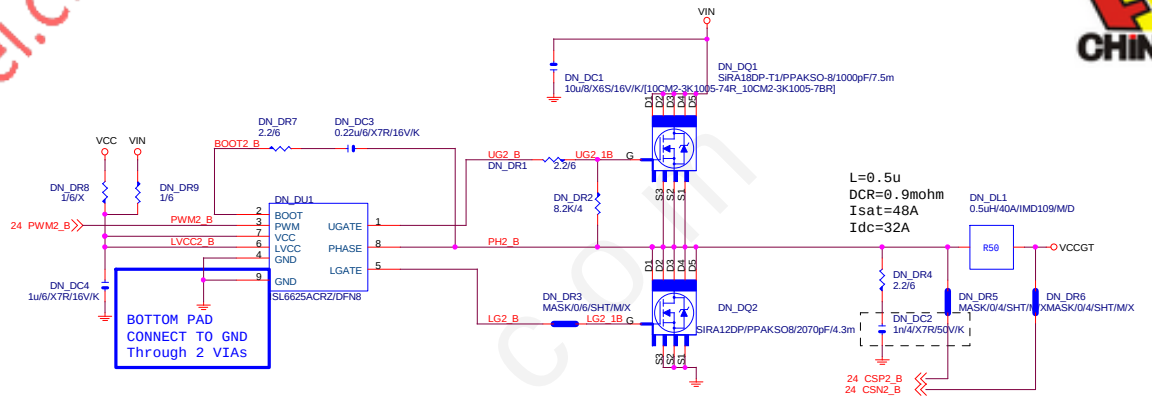
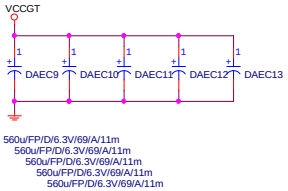
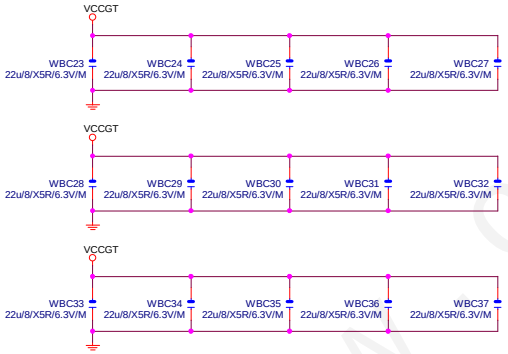
VCCGT

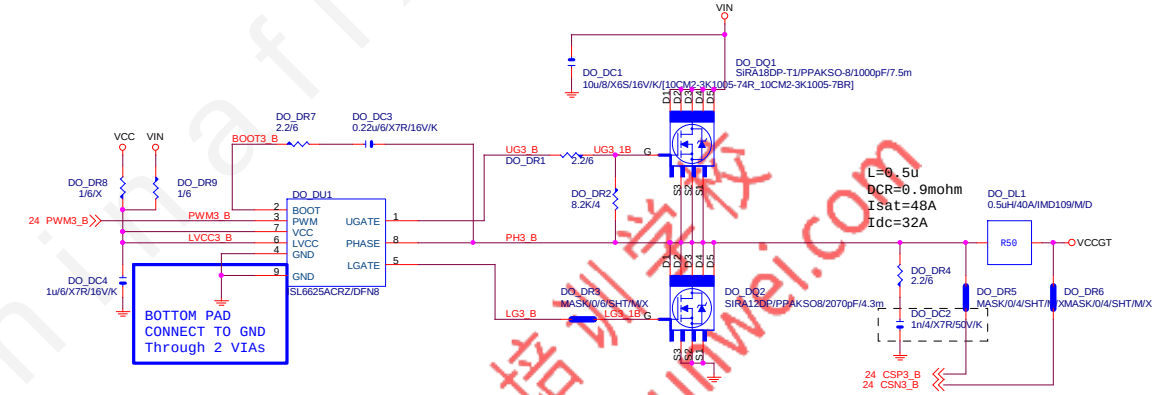


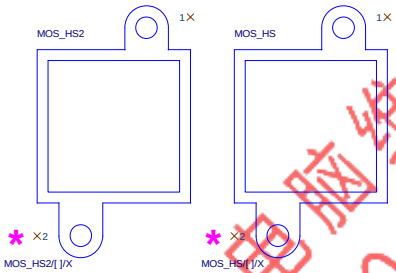


VCCGT CAP 560u*5PCS 22u*15PCS









GIGABYTE		
Title: ISL95856_MOS		
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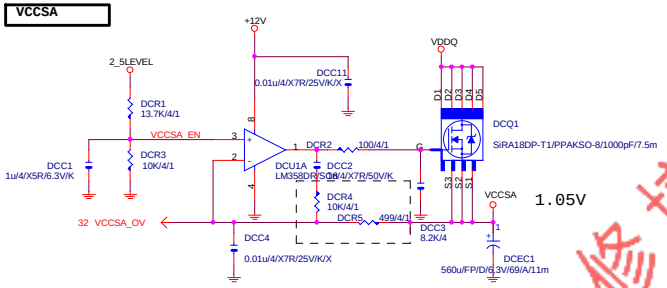
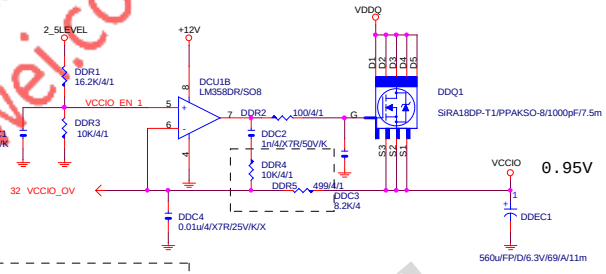
REV:0.4

VCCSA



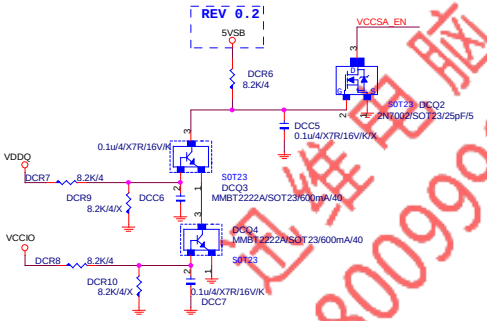
VCCIO

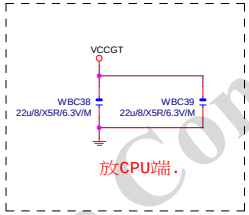


VCCIO_EN_1 DDR10 0/4/SHT/M/X VCCIO_EN 16

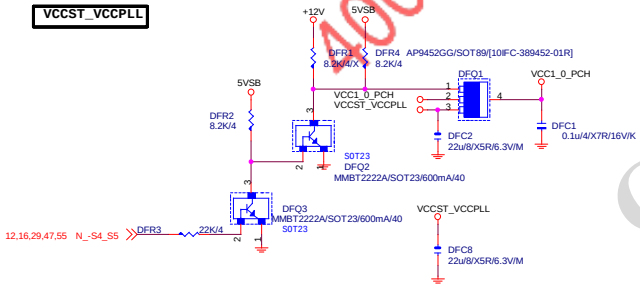
Connect to IT8620

REV 0.2





VCCST_VCCPLL



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Title	VCCSA_VCCIO_no 44E	
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REV:0.88

DDR4

5VDUAL
+12V
MA_DR10 0/6/X
MA_D1
MA_DR8 2.2/6
DRV_DDR
SDM20E40C/0.4A/SOT23
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/M/D
8*8
MA_DC6 0.1u/4/X7R/16V/K
Close Choke

DDR VIN CAP 560u*2PCS

MA_VIN
MA_DC7 1u/6/X7R/16V/K
Close MOS
MAEC1 560u/FP/D/6.3V/69/A/11m
MAEC2 560u/FP/D/6.3V/69/A/11m
MA_DQ1 SIRA12DP/PPAKSO8/2070pF/4.3m

Close to DDR power plane
VDDQ_SIO
VDDQ
DDR_VS
MASK/0/4/SHT/X

RT8120DGS/SOP8
MAU2
COMP
VCC
BOOT
UGATE
PHASE
GND
PGND
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_UGATE
MA_PHASE
MA_LGATE
MA_DR18 11.8K/4/1
OCP=40A
放靠近IC pin4

MA_UGATE MA_DR1 2.2/6
MA_DR2 8.2K/4
MA_PHASE
MA_DQ2
MA_DQ3
MA_LGATE MA_DR9 2.2/6
MA_LG
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
SIRA12DP/PPAKSO8/2070pF/4.3m
SIRA12DP/PPAKSO8/2070pF/4.3m

MA_L1 1uH/35A/IMD109/M/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 2K/4/1
MA_DC14 3.3n/4/X7R/50V/K
RS
Remote sense請從最重的負載端點拉回

DDR_ADJ
32 DDR_ADJ
RO
MA_DR12 4.02K/4/1

PWR SEQ

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

For power sequence require

5VDUAL
DDR_EN
MAQ10 2N7002/SOT23/25pF/5
SOT23
MAR1 8.2K/4
MAQ11 2N7002/SOT23/25pF/5
SOT23
MAR2 8.2K/4
MAR105 100K/4/1
MAC9 1u/6/X7R/16V/K
16,29 MA_EN
Connect to IT8620
REV 0.2

MAU1上RT9045時上件
5VSB
MA_VTT_REF
MAR7 8.2K/4/X
MAQ2 2N7002/SOT23/25pF/5/X
SOT23
MAQ3
SOT23
2N7002/SOT23/25pF/5/X
12,16,47,52,55 N_-SLP_S3
MAR6 8.2K/4/X
MAQ1 2N7002/SOT23/25pF/5/X
SOT23
MAR8 8.2K/4/X
MAQ4 MMBT2222A/SOT23/600mA/40/X
SOT23
4 DDR_VTT_CTL

DDRVTT

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

DDR_VTT_CTL MAR110 0/4 DDRVTT_EN
N_-SLP_S3 MAR111 0/4 DDRVTT_BOOT
MAU1上NCT3103S時上件

DDR CAP 560u*4PCS

* 大電容 x4

VDDQ
MAEC3 560u/FP/D/6.3V/69/A/11m
MAEC4 560u/FP/D/6.3V/69/A/11m
MAEC6 560u/FP/D/6.3V/69/A/11m
MAEC7 560u/FP/D/6.3V/69/A/11m
WBC6 22u/8/X5R/6.3V/M
WBC49 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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REV:0.88

VPP_25V

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

DDR_VPP VIN CAP
560u*1PCS

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

SUPPORT DDR4 **2.5V**

25A MAX

+12V 5VDUAL MA_D2 MA_DR20 2.2/6 DRV_VPP
SDM20E40C/0.4A/SOT23
MA_DC20 1u/6/X7R/16V/K
MA_DC18 0.1u/6/X7R/25V/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

5VDUAL MA_L4 0.5uH/20A/IMD0809/M/D 8*8
MA_DC17 0.1u/4/X7R/16V/K **Close Choke**
MB_VIN
MA_DC19 1u/6/X7R/16V/K **Close MOS**
MAEC12 560u/FP/D/6.3V/69/A/11m
MA_DQ4 SiRA18DP-T1/PPAKSO-8/1000pF/7.5m
MB_UGATE MA_DR21 2.2/6
MA_DR23 8.2K/4
MB_PHASE
MA_DQ5 SiRA18DP-T1/PPAKSO-8/1000pF/7.5m
MB_LGATE
MA_L3 1uH/18A/IMD0809/M/D 8*8
MA_DR25 2.2/6
MA_DC23 1n/4/X7R/50V/K
VPP_25V
MA_DR26 487/4/1
MA_DR27 4.02K/4/1
MA_DQ24 3.3n/4/X7R/50V/K **RS**
Remote sense請從最重的負載端點拉回
32 VPP25_ADJ
RO MA_DR31 1.87K/4/1

PWR SEQ

* 刪 MA_DR32

5VSB VPP25_EN
MAR109 8.2K/4
MAQ7 2N7002/SOT23/25pF/5 SOT23
MAC8 0.1u/4/X7R/16V/K/X
MAR106 8.2K/4
12,16,27,47,55 N_-S4_S5
MAQ8 2N7002/SOT23/25pF/5 SOT23
MAR14 8.2K/4
16,28 MA_EN
MAQ9 2N7002/SOT23/25pF/5 SOT23
MAC10 1u/4/X5R/6.3V/K

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

VPP_25V
MAEC11 560u/FP/D/6.3V/69/A/11m

GIGABYTE™

Title	RT8120_VPP25 POWER	
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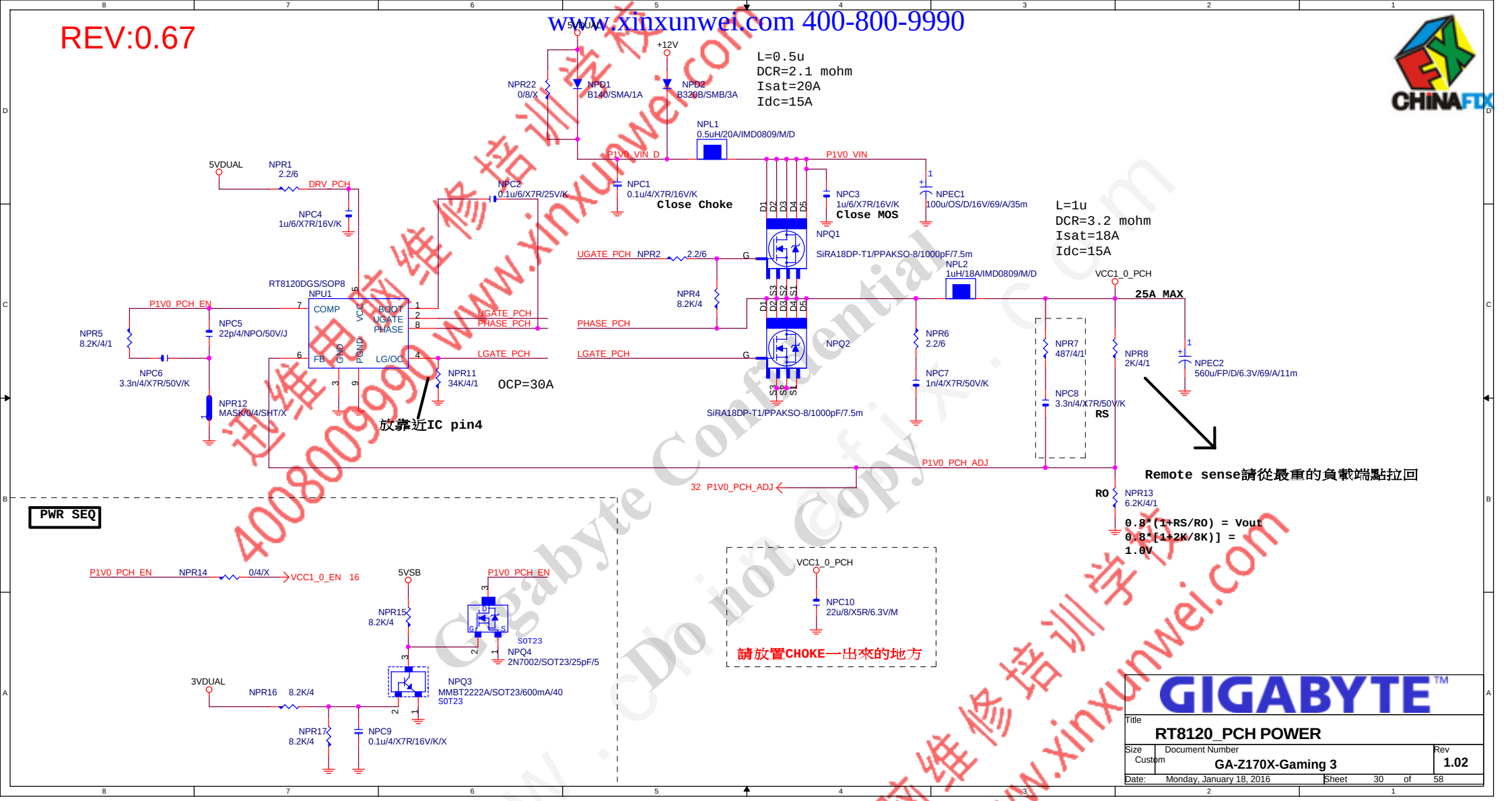
REV:0.67



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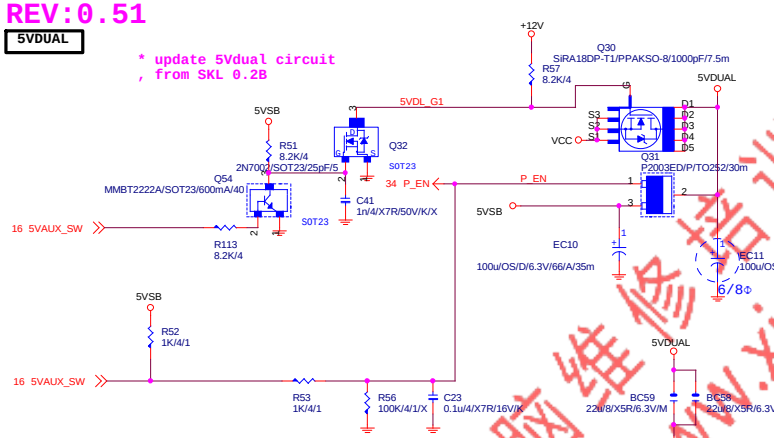
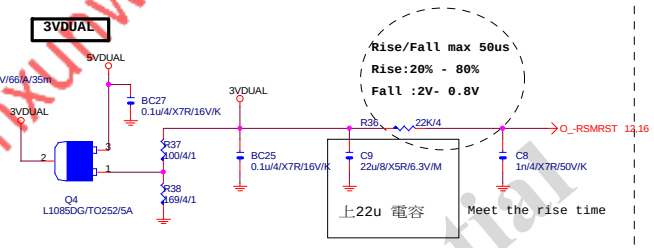
REV:0.51

5VDUAL

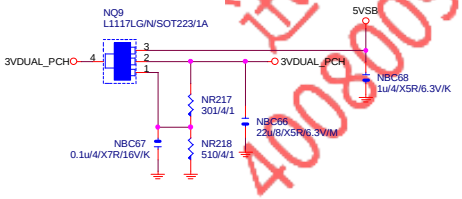
* update 5Vdual circuit
, from SKL 0.2B

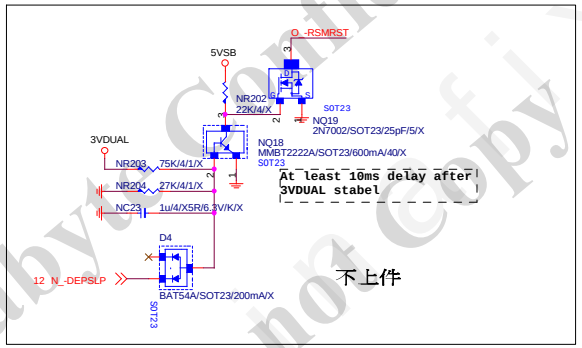


3VDUAL



3VDUAL_PCH





Gigabyte Technology		
Title: DISCRETE POWER		
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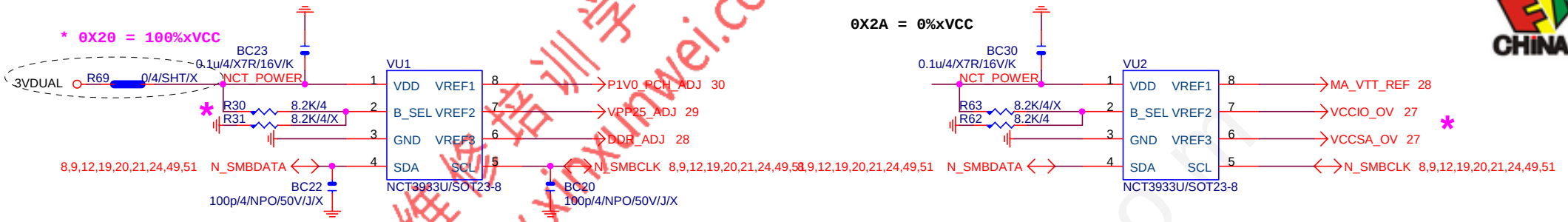
OVER VOLTAGE



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: NCT3933

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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

5VSB R695 22K/4 16 -PSON BC37 0.1u/4/X7R/16V/K

* 删除 -5V

-12V VCC3 VCC3

ATX

13	3.3V	3.3V	1
14	-12V	3.3V	2
15	GND	GND	3
16	PSON	5V	4
17	GND	GND	5
18	GND	5V	6
19	GND	GND	7
20	-5V	POK	8
21	5V	5VSB	9
22	5V	12V	10
23	5V	12V	11
24	GND	3.3V	12

APW/2*12/BK/VA/SN/2SHK/PA66

VCC3 BC35 22u/8/X5R/6.3V/M VCC3 BC46 1u/4/X5R/6.3V/K VCC3 BC48 1u/4/X5R/6.3V/K

5VSB RN7 1K/8P4R/6/X VCC RN8 1K/8P4R/6/X VCC3 RN9 1K/8P4R/6/X

VCC VCC VCC VCC

BC36 0.1u/4/X7R/16V/K/X BC39 1u/4/X5R/6.3V/K BC38 510/6/X BC42 510/6/X BC43 1u/4/X5R/6.3V/K BC44 0.1u/4/X7R/16V/K BC45 0.1u/4/X7R/16V/K BC41 0.1u/4/X7R/16V/K

+12V 5VSB

PWOK PWOK 16 BC9 4.7u/6/X5R/6.3V/K

AD1 AZ2225-01L/SOD323/X

Note27:ATX 5VSB ESD Protect BOM移除

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

V12 ATX_12V_2X4

1	GND	+12V	5
2	GND	+12V	6
3	GND	+12V	7
4	GND	+12V	8

APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4

BC7 0.1u/4/X7R/16V/K

FOR AUDIO 切割

MH1 MH2 MH3 MH4 MH5 MH6 MH7 HOLE_3/X

K3 K6 K2 K5 K1 K4 K1_ICT/X

K1-ICT

I1 I2 I3 I4 I5 4MMH/X

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

+12V RN2 2.7K/8P4R/4 RN3 2.7K/8P4R/4 RN4 2.7K/8P4R/4 RN5 2.7K/8P4R/4 RN6 2.7K/8P4R/4

VCC3 R1 1K/4/1 12_N_GPD_D9 Q9 S0T23 R703 330/4/1 MMBT2222A/SOT23/600mA/40

-PROHOT * 保留 ？

4,16 A_-PROCHOT A_-PROCHOT R2 0/4/SHT/X VR_HOT 24

-PROHOT OTP:132度 / PCB THERMAL TRIP:122 度

125 ~130degree assert

+12V TTR1 10K/4/1 TTR2 4.7K/4/1 TTR4 10K/4/1/X TTU1A LM358DR/SO8 DATSM_3 DATSM_2 DATSM_1 TTR5 0/4/SHT/M/X N_-THRMTRIP 13,16 TTR6 0/4/X A_-PROCHOT A_-PROCHOT 4,16 TTQ1 2N7002/SOT23/25pF/5 TTR1 100K/1/4/S TTR3 1K/4/1 TTC1 0.1u/4/X7R/16V/K

CLOSE VCORE PWM UPPER MOSFET

-PROHOT OTP:132度 / PCB THERMAL TRIP:122 度

125 ~130degree assert

+12V TTR7 10K/4/1 TTR8 3.57K/4/1 TTR10 10K/4/1/X TTU1B LM358DR/SO8 DATSM_5 DATSM_6 DATSM_7 TTR11 0/4/SHT/M/X N_-THRMTRIP 13,16 TTR12 0/4/X A_-PROCHOT A_-PROCHOT 4,16 TTQ2 2N7002/SOT23/25pF/5 TTR2 100K/1/4/S TTR9 1K/4/1 TTC2 0.1u/4/X7R/16V/K

CLOSE VCCGT PWM UPPER MOSFET

COUPON1 COUPON1 COUPON/X COUPON2 COUPON2 COUPON/X

Gigabyte Technology

Title: ATX POWER CONNECTOR

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

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Rev: 0.6

KB/MS

NET 可變

USB_DAC5V
N_-USBP13
N_+USBP13

KB_MS_USB

U5 U6 U7 U8 U1 U2 U3 U4

USB

KBDATA
MSDATA
KBCLK
MSCLK

KB

G1 G2 G3 G4

KB/USB/A/PC99(DUAL)/YELLOW/2/RA/D

FSVCC_KM

KMBC1 0.1u/4/X7R/16V/K

RKU2BC1 0.1u/4/X7R/16V/K

$0.216

FOR鹽化短路

KCLK KDAT MDAT MCLK

KMR1 KMR2 KMR3 KMR4 82/6

KMCN1

180p/8P4C/6/NPO/50V/K

KMRN1

8.2K/8P4R/6

KMED2

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

KMED1

MASK/AZC099-04S/SOT23-6L/X

NET 可變, 與其他USB SHARE

5VDUAL KBF1 SPR-P200T/6V/8/S

UBEC2 100u/OS/D/6.3V/66/A/35m

R_USB 2.0 OC SIGNAL

USB_DAC

DAC_U1

+12V

DACC3 0.1u/4/X7R/16V/K

DACR3 100K/4/1

VIN BOOT SW_NODE SW_NODE EN FB GND EGND VCC

DACC1 0.1u/4/X7R/16V/K

DACL1 4.7UH/3.3A/29m/S

DACR1 40.2K/4/1
DACR2 7.68K/4/1
DACC2 0.1u/4/X7R/16V/K

UDACFB UDAVCC

DACC4 22u/8/X5R/6.3V/M

DACC5 22u/8/X5R/6.3V/M

DAC5

RT8288AZSP/SOP8

TO USB_DAC PORT

DAC_Q1

VOUT VIN GND FLG- EN

From Switching

DACR7 100K/4/1

11,39,45 N_-USBOC_R

DAC_Q1EN DACR4 8.2K/4

DACC8 0.1U/4/Y5V/16V/Z/X

DACR10 8.2K/4/X

RT9715CGB/SOT23-5

TO USB_DAC PORT

DAC_Q2

From 5VDUAL

DACR8 100K/4/1

DAC_Q2EN DACR5 8.2K/4

DAC_Q3

2N7002/SOT23/25pF/5

DACR6 8.2K/4/X

31 P_EN

DACR14 0/4/SHT/M/X

DACR9 8.2K/4/X

DACC7 1u/4/X5R/6.3V/K/X

DAC_Q5

2N7002/SOT23/25pF/5

DACR13 0/4/SHT/M/X

DACC9 1u/4/X5R/6.3V/K/X

5VDUAL

DAC_Q4

DAC_Q1EN DAC_Q2EN DAC_PWR_DIS

BAT54C/SOT23/200mA

DACR11 8.2K/4

DACR12 8.2K/4/X

NET 可變

IO_GP92 16

DAC power disable by resume GPIO

USB_DAC5V

DACEC1 560u/FP/D/6.3V/69/A/11m

Gigabyte Technology

Title: KB_MS_USB

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

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Rev: 0.62

DVI CONN

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

NET 可變

4 DVI_TXC
4 DVI_TXC-
4 DVI_TX0
4 DVI_TX0-
4 DVI_TX1
4 DVI_TX1-
4 DVI_TX2
4 DVI_TX2-

VBC1 VBC2 VBC3 VBC4 VBC5 VBC7 VBC8 VBC9 0.1u/4/X7R/16V/K

DVITXC+ DVITXC- DVITX0+ DVITX0- DVITX1+ DVITX1- DVITX2+ DVITX2-

VR1 VR2 VR3 VR4 VR7 VR8 VR9 VR10 680/4/1

DVI_G

防漏電

★Update 2015.05.27

VD1 BAT54A/SOT23/200mA SOT23

VCC

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

DVI_SDA DVI_SCL

VQ1 2N7002/SOT23/25pF/5 SOT23

VCC VR16 8.2K/4 VQ1_2

10 N_DDPC_CTRLCLK
10 N_DDPC_CTRLDATA

VR5 VR6 2.2K/4/1

VCC3

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

VQ2 2N7002/SOT23/25pF/5 SOT23

VCC VR17 8.2K/4 VQ2_2

N_DDPC_CTRLCLK

VQ3 2N7002/SOT23/25pF/5 SOT23

VCC VR18 8.2K/4 VQ3_2

N_DDPC_CTRLDATA

VQ4 2N7002/SOT23/25pF/5 SOT23

VCC VR19 8.2K/4 VQ4_2

VR20 1M/4

N_DVI_HDP_F 10

* FSVCC_KM

DVI-30P-4P-1

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

SHIELD1 SHIELD2 SHIELD2 SHIELD2 SHIELD2 COMMON

M1 M2 M5 M6 M7 M8

VR15 20K/4/1

DVI-D/24P/SC/RA/D/SH/[11NR6-501024-31R]

Close to connector

VESD2

DVITX1+ DVITX1- DVITX2- DVITX2+

AZ1045-04F/MSOP10

VESD1

DVITXC- DVITXC+ DVITX0- DVITX0+

AZ1045-04F/MSOP10

Close to connector

NET 可變

FSVCC_KM

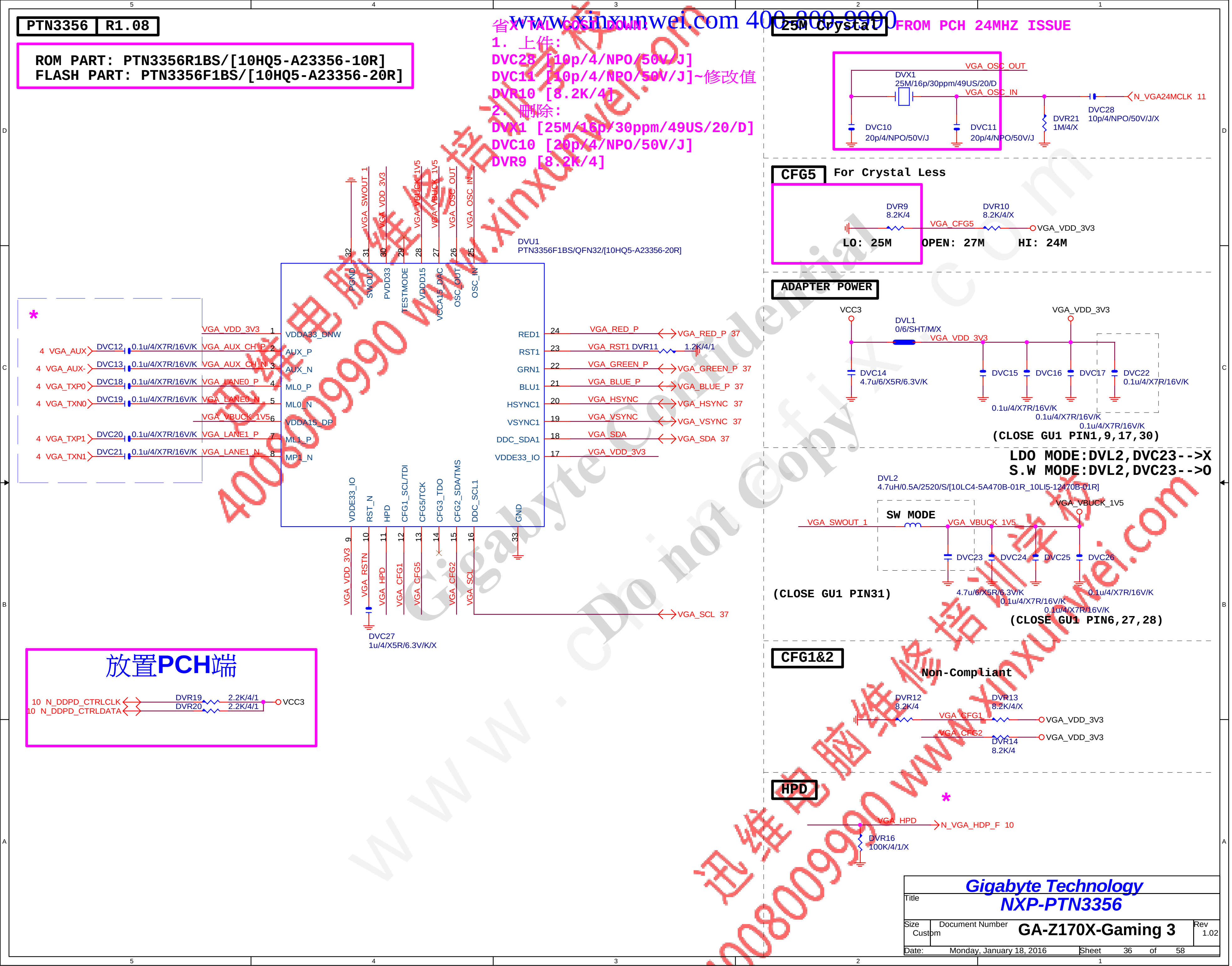
VBC10 0.1u/4/X7R/16V/K

VESD3

DVI_SDA DVI_HP DVI_SCL FSVCC_KM

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

Gigabyte Technology		
Title: DVI CONN		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
Date: Monday, January 18, 2016	Sheet 35 of 58	


PTN3356 R1.08
ROM PART: PTN3356R1BS/[10HQ5-A23356-10R]
FLASH PART: PTN3356F1BS/[10HQ5-A23356-20R]
省XTAL COST DOWN:
1. 上件:
DVC28 [10p/4/NPO/50V/J]
DVC11 [10p/4/NPO/50V/J]~修改值
DVR10 [8.2K/4]
2. 删除:
DVX1 [25M/16p/30ppm/49US/20/D]
DVC10 [20p/4/NPO/50V/J]
DVR9 [8.2K/4]
25M Crystal
FROM PCH 24MHZ ISSUE
VGA_OSC_OUT
DVX1
25M/16p/30ppm/49US/20/D
VGA_OSC_IN
N_VGA24MCLK 11
DVC10
20p/4/NPO/50V/J
DVC11
20p/4/NPO/50V/J
DVR21
1M/4/X
DVC28
10p/4/NPO/50V/J/X
CFG5
For Crystal Less
DVR9
8.2K/4
DVR10
8.2K/4/X
VGA_CFG5
VGA_VDD_3V3
LO: 25M
OPEN: 27M
HI: 24M
ADAPTER POWER
VCC3
DVL1
0/6/SHT/M/X
VGA_VDD_3V3
DVC14
4.7u/6/X5R/6.3V/K
DVC15
DVC16
DVC17
DVC22
0.1u/4/X7R/16V/K
(CLOSE GU1 PIN1,9,17,30)
LDO MODE:DVL2,DVC23-->X
S.W MODE:DVL2,DVC23-->O
DVL2
4.7uH/0.5A/2520/S/[10LC4-5A470B-01R_10LI5-12470B-01R]
VGA_VBUCK_1V5
SW MODE
VGA_SWOUT_1
DVC23
DVC24
DVC25
DVC26
4.7u/6/X5R/6.3V/K
0.1u/4/X7R/16V/K
(CLOSE GU1 PIN31)
(CLOSE GU1 PIN6,27,28)
CFG1&2
Non-Compliant
DVR12
8.2K/4
DVR13
8.2K/4/X
VGA_CFG1
VGA_CFG2
DVR14
8.2K/4
HPD
VGA_HPD
N_VGA_HDP_F 10
DVR16
100K/4/1/X
DVU1
PTN3356F1BS/QFN32/[10HQ5-A23356-20R]
VGA_SWOUT_1
VGA_VDD_3V3
VGA_VBUCK_1V5
VGA_OSC_OUT
VGA_OSC_IN
PGND
SWOUT
PVDD33
TESTMODE
VDDD15
VCCA15_DAC
OSC_OUT
OSC_IN
VDDA33_DNW
AUX_P
AUX_N
ML0_P
ML0_N
VDDA15_DP
ML1_P
MP1_N
RED1
RST1
GRN1
BLU1
HSYNC1
VSYNC1
DDC_SDA1
VDDE33_IO
VDDE33_IO
RST_N
HPD
CFG1_SCL/TDI
CFG5/TCK
CFG3_TDO
CFG2_SDATMS
DDC_SCL1
GND
*
4 VGA_AUX DVC12 0.1u/4/X7R/16V/K VGA_AUX_CH_P
4 VGA_AUX- DVC13 0.1u/4/X7R/16V/K VGA_AUX_CH_N
4 VGA_TXP0 DVC18 0.1u/4/X7R/16V/K VGA_LANE0_P
4 VGA_TXN0 DVC19 0.1u/4/X7R/16V/K VGA_LANE0_N
4 VGA_TXP1 DVC20 0.1u/4/X7R/16V/K VGA_LANE1_P
4 VGA_TXN1 DVC21 0.1u/4/X7R/16V/K VGA_LANE1_N
VGA_RED_P 37
VGA_RST1 DVR11 1.2K/4/1
VGA_GREEN_P 37
VGA_BLUE_P 37
VGA_HSYNC 37
VGA_VSYNC 37
VGA_SDA 37
VGA_SCL 37
VGA_RSTN
VGA_HPD
VGA_CFG1
VGA_CFG5
VGA_CFG2
VGA_SCL
DVC27
1u/4/X5R/6.3V/K/X
放置PCH端
10 N_DDPD_CTRLCLK DVR19 2.2K/4/1
10 N_DDPD_CTRLDATA DVR20 2.2K/4/1
VCC3
Gigabyte Technology
Title
NXP-PTN3356
Size Custom
Document Number
GA-Z170X-Gaming 3
Rev 1.02
Date: Monday, January 18, 2016
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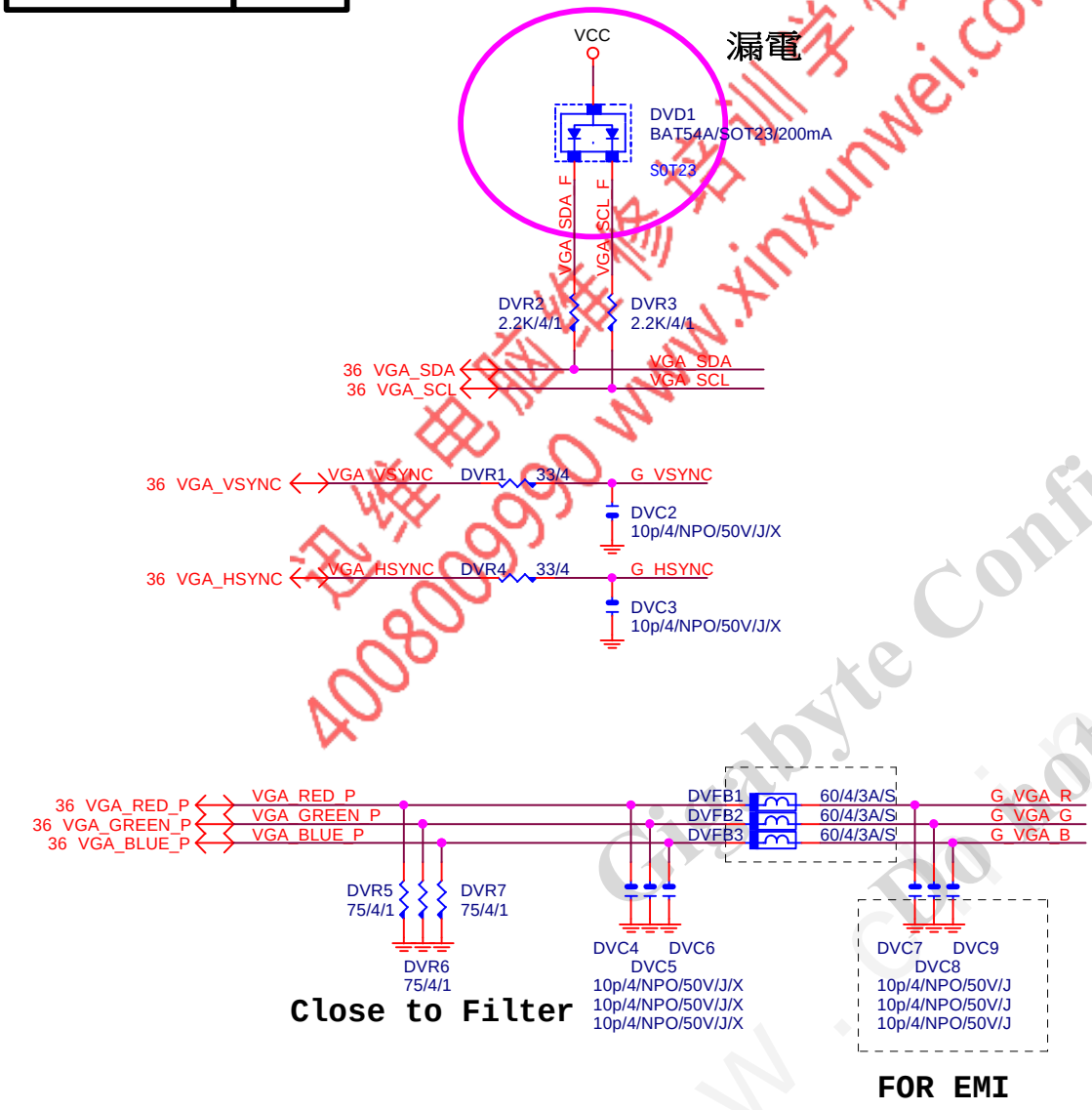
VGA SIGNAL R1.08

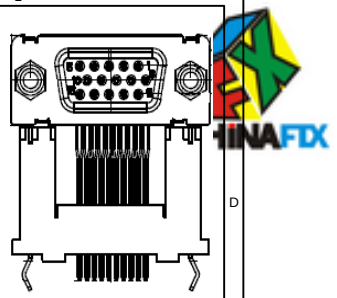
漏電

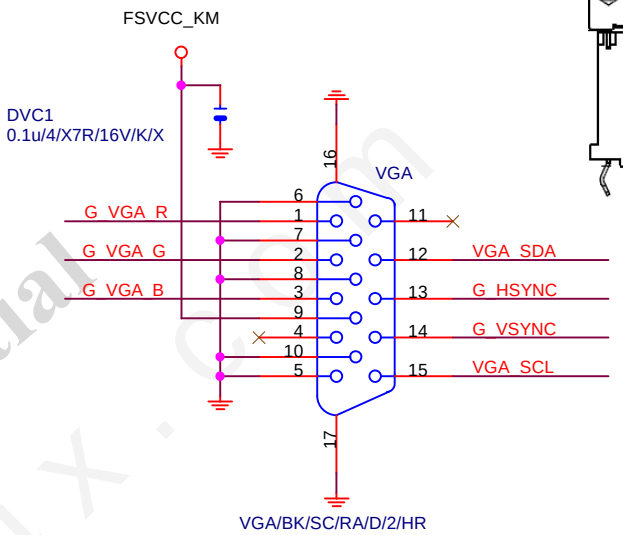


Close to Filter

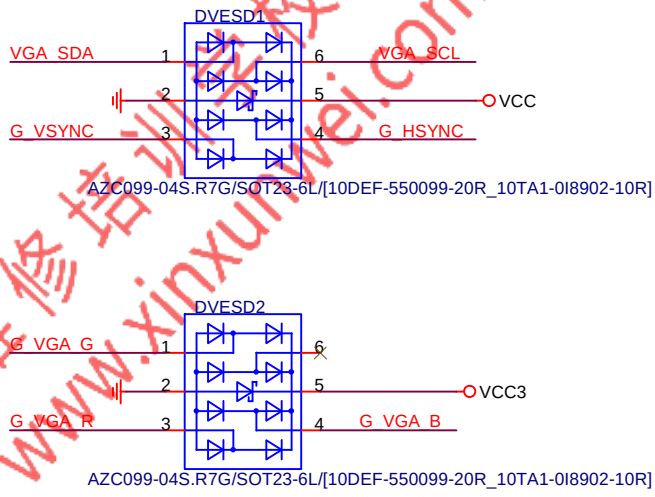
FOR EMI

VGA CONN. 架高型VGA(BLACK)





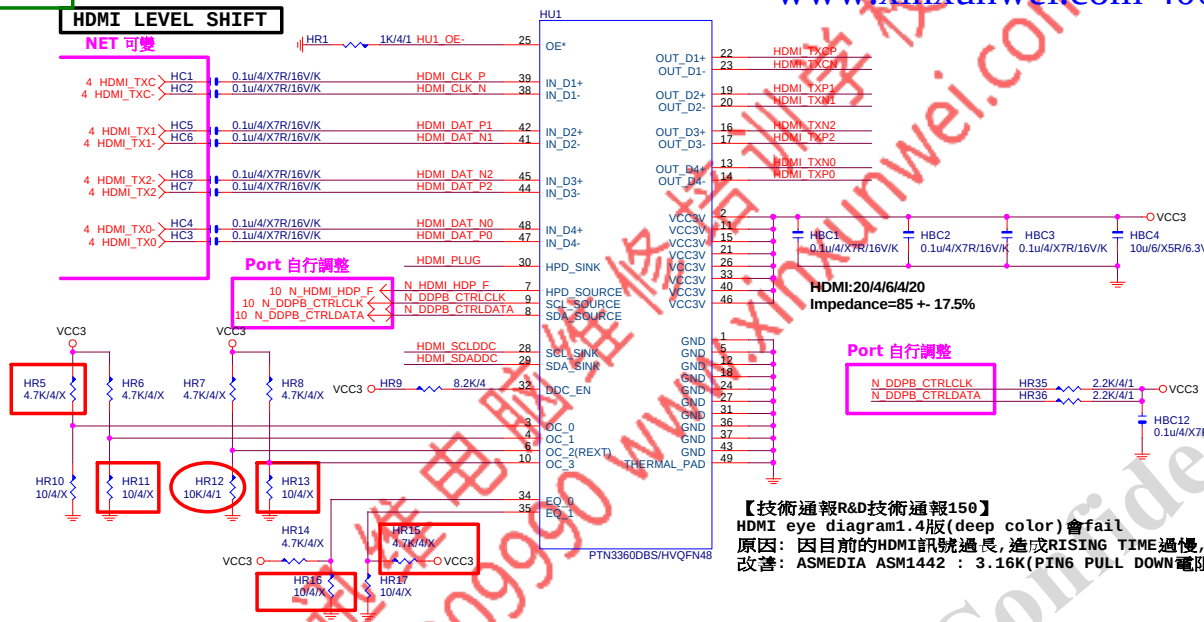
VGA ESD

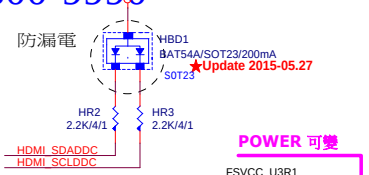


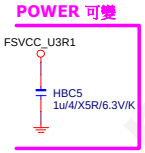
Title	Gigabyte Technology NXP-PTN3356		
Size: Custom	Document Number: GA-Z170X-Gaming 3		Rev: 1.02
Date: Monday, January 18, 2016	Sheet 37 of 58		

Rev: 0.7

HDMI LEVEL SHIFT

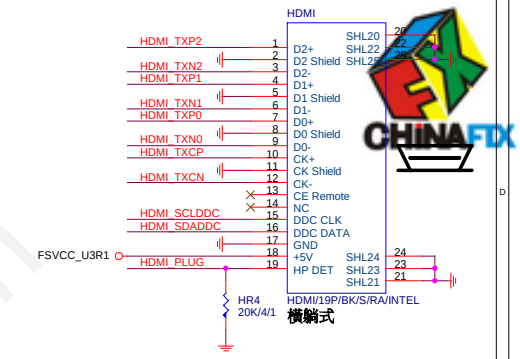






HDMI:20/4/6/4/20
Impedance=85 +- 17.5%

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



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

GIGABYTE

Title	HDMI CONN_170	
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
Date: Monday, January 18, 2016	Sheet 38 of 58	

Rev: 0.31

R_USB30_1

NET 可自行調整

R_USB30_1
USB3.0/2.0
USB3.1/A/BU,RE/OS/RA/D/2/SB

52 TBTB_USB2_D_N
52 TBTB_USB2_D_P
52 TBTB_CA2HD_0_N
52 TBTB_CA2HD_0_P
52 TBTB_HD2CA_0_N
52 TBTB_HD2CA_0_P

FSVCC_U3R1

U1 VBUS
U2 D-
U3 D+
U4 GND
U5 SSRX-
U6 SSRX+
U7 GND
U8 SSTX-
U9 SSTX+
U10 VBUS
U11 D-
U12 D+
U13 GND
U14 SSRX-
U15 SSRX+
U16 GND
U17 SSTX-
U18 SSTX+

AGND AGND AGND AGND
G1 G2 G3 G4

R_U3TXN2 RAU3C3 0.1u/4/X7R/16V/K
R_U3TXP2 RAU3C4 0.1u/4/X7R/16V/K

N_-USBP9 11
N_+USBP9 11
PCH_USB3_RXN9 11
PCH_USB3_RXP9 11
PCH_USB3_TXN9 11
PCH_USB3_TXP9 11

下 port for Type-A USB3.1

for layout request

NET 可自行調整

CONNECTOR 自行調整

2 port USB 3.0 Capture:
USB/18P/BU/OS/RA/D/2/1U/SB
Footprint:USB30_20

2 port USB 3.0 with TYPE C Capture:
USB/18P/BU/OS/RA/D/2/1U/SB
架高
Footprint:USB30_H

FUSE 2 Port 1 Fuse 2.6A

5VDUAL
RAU3F1 SPR-P260T/6V/8/S
FSVCC_U3R1
RAU3EC1 100u/OS/D/6.3V/66/A/35m
RAU3C5 0.1u/4/X7R/16V/K

NET 可自行調整

TBTB_CA2HD_0_P
TBTB_CA2HD_0_N
swap
TBTB_HD2CA_0_N
TBTB_HD2CA_0_P

RAU3D2
AOZ8809DI-05/DFN10/[10DE2-508809-10R]
* swap
Type-A USB3.1 ESD 不可對調

NET 可自行調整

PCH_USB3_RXP9
PCH_USB3_RXN9
* swap
R_U3TXN2
R_U3TXP2

RAU3D1
AZ1045-04F/MSOP10

NET 可自行調整

RAU3D3
TBTB_USB2_D_N
FSVCC_U3R1
TBTB_USB2_D_P
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

RAU3D4
N_-USBP9
FSVCC_U3R1
N_+USBP9
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

11,34,45 N_-USBOC_R
N_-USBOC_R
U3OC1 SOT23
FSVCC_U3R1
FUSEVCC_R
BAT54A/SOT23/200mA

Gigabyte Technology

Title: R_USB30,F_USB30, USB_OC

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

Date: Monday, January 18, 2016 | Sheet 39 of 58

LAN:E2201 | R1.05

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 LA_ML_OP_C
LAC2 0.1u/4/X7R/16V/K 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
41 LA_LED_ACT_TXRX
41 LA_LED_LINK100

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K
LABC8 4.7u/6/X5R/6.3V/K
AR8161-->(0)

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

LAU1
Qualcomm (Atheros) Killer E2201
E2201-BL3A-R/S

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LAC33 100p/4/NPO/50V/J/X
LAR6 8.2K/4
16,52 O_-PFMRST2
16 N_-PCIE1_WAKE
10 LA_-CLKREQ
LA_-CLKREQ_F
LAREQ1 0/4/SHT/M/X
LABC12 1u/4/X5R/6.3V/K/X
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH
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

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

LA_ML_IP_C LAC12 0.1u/4/X7R/16V/K LA_ML_IP 11
LA_ML_IN_C LAC13 0.1u/4/X7R/16V/K LA_ML_IN 11
LAR9 0/4/X
LABC14 0.1u/4/X7R/16V/K/X
LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-
LA_DVDDL
LA_LED_LINK1000 41
LA_MDI3- 41
LABC17 0.1u/4/X7R/16V/K

E2400料號:E2400-RIV1-RL/QFN40/[10HP2-402400-10R]

41 LA_MDI0+
41 LA_MDI0-
41 LA_MDI1+
41 LA_MDI1-
41 LA_MDI2+
41 LA_MDI2-
41 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

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

LAN POWER

LAL1 4.7uH/0.8A/3225/S/[10LC4-5A470B-01R_10LI5-12470B-01R]
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/XLAFB1 AR8161-->(0)
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 E2201
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USB_LAN CONNECTOR R1.04

RMA ESD PROTECT

note:可變更USB NAME

可變

N +USBP5 1 — 6 N -USBP5
2 — 5 FUSEVCC_R
N -USBP6 3 — 4 N +USBP6

LAUESD1
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

USB_LAN CONNECTOR [E2201]

USB30_LAN

LABC27 0.1u/4/X7R/16V/K
LA_CN_L1

40 LA_MDI0+ — LA_MDI0+ — L1
40 LA_MDI0- — LA_MDI0- — L2
40 LA_MDI1+ — LA_MDI1+ — L3
40 LA_MDI1- — LA_MDI1- — L4
40 LA_MDI2+ — LA_MDI2+ — L5
40 LA_MDI2- — LA_MDI2- — L6
40 LA_MDI3+ — LA_MDI3+ — L7
40 LA_MDI3- — LA_MDI3- — L8
LABC25 MASK/0/4/SHT/M/X — LA_CN_L10 — L9 L10

FUSEVCC_R — U1
11 N_-USBP5 — U2
11 N_+USBP5 — U3
U4
11 PCH_USB3_RXN5 — U5
11 PCH_USB3_RXP5 — U6
U7
11 PCH_USB3_TXN5 — LAUC1 — PCH_USB3_TXN5C — U8
11 PCH_USB3_TXP5 — LAUC2 — PCH_USB3_TXP5C — U9

USB3.0

L1 L2 L3 L4 L5 L6 L7 L8 L9 L10
VBUS D- D+ GND SSRX- SSRX+ GND SSTX- SSTX+

D1 D2 D3 D4 DT DT VBUS D- D+ GND SSRX- SSRX+ GND SSTX- SSTX+

P1 P2 U10 U11 U12 U13 U14 U15 U16 U17 U18

D1 LA_LED_ACT_TXRX
D2 LA_LED_D2 — LAR13 330/4/1 — LAN_3VDUAL_LED
D3 LA_LED_LINK100 — LAR14 330/4/1
D4 LA_LED_LINK1000 — LAR15 330/4/1

LA_LED_LINK100 40
LA_LED_LINK1000 40
LA_LED_ACT_TXRX 40

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

LAUBC13 0.1u/4/X7R/16V/K
FUSEVCC_R

N_-USBP6 11
N_+USBP6 11
PCH_USB3_RXN6 11
PCH_USB3_RXP6 11
PCH_USB3_TXN6 11 — LAUC3 — PCH_USB3_TXN6C
PCH_USB3_TXP6 11 — LAUC4 — PCH_USB3_TXP6C

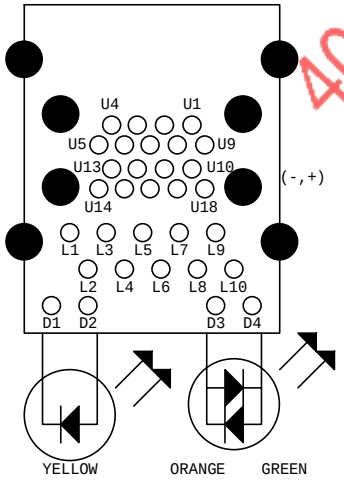
可變 可變 可變 可變

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

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

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN LAYOUT示意圖



Dual Color LED

D4 D3 Green
D4 D3 Orange

Single Color LED

D2 D1 Yellow

PCH_USB3_TXP6C
PCH_USB3_TXN6C
PCH_USB3_TXN5C
PCH_USB3_TXP5C

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

PCH_USB3_TXN6C
PCH_USB3_TXP6C
PCH_USB3_TXP5C
PCH_USB3_TXN5C

LAU3ESD1
AZ1045-04F/MSOP10

note:可變更USB NAME
可變

PCH_USB3_RXN6
PCH_USB3_RXP6
PCH_USB3_RXP5
PCH_USB3_RXN5

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

PCH_USB3_RXP6
PCH_USB3_RXN6
PCH_USB3_RXN5
PCH_USB3_RXP5

LAU3ESD2
AZ1045-04F/MSOP10

LAN_COVER

FOOT PRINT:LAN_COVER

USB_LAN_HS

LAN COVER

LAN_HS/[11NH1-LNC001-02R]

可變
[視SPEC需求]

USB POWER

note:可變更FUSE

可變

5VDUAL — 1 LAUF1 2 — FUSEVCC_R

SPR-P260T/6V/8/S

Close to connector FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAR24 MASK/0/4/SHT/M/X

LAN POWER

可變

3VDUAL_LAN1 — LAPW1 0/4/SHT/20/X — 3VDUAL_PCH *

LAPW2 0/4/X — 3VDUAL *

Gigabyte Technology		
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Rev 0.94

ALC1150 五孔+SPDIF AUDIO JACK

LAYOUT注意：螺絲孔下GND方式
1. MH1空間夠，下DGND
   空間不夠，改為Isolate
2. MH2一律改為Isolate
3. Codec下方，第二層必須參考GND

MH1 DGND　　MH2 Isolate

Thermal pad is DGND

CU1 ALC1150-CG/QFN48

Thermal pad is DGND

Digital Area

Analog Area

0/6/X For AGND/GND moat under Codec Body

JD resistors close CODEC

EAPD: Default L
H : ON
L : OFF

Close to ALC1150

LAYOUT注意：要加GND切割線

音效區域印刷

Gigabyte Technology		
Title: ALC1150		
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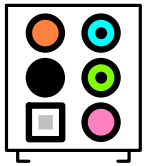
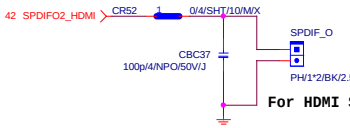
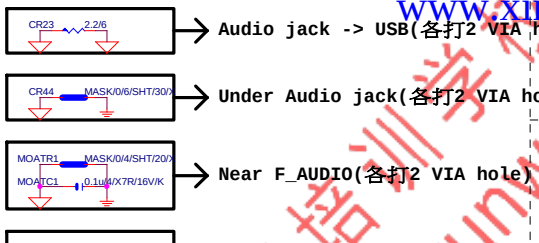
Rev 0.94

AZALIA JACK



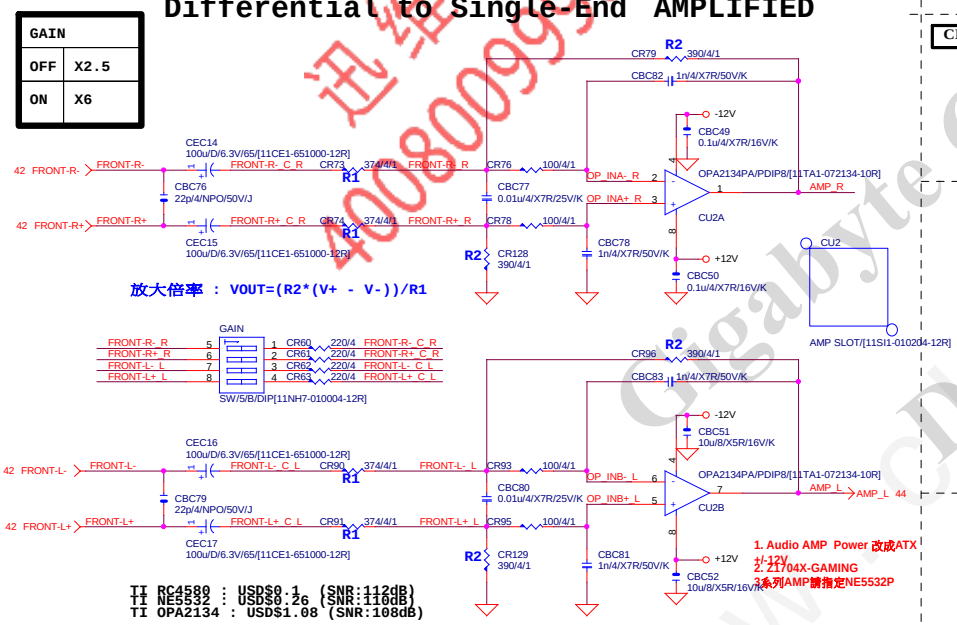
SPDIF_OUT



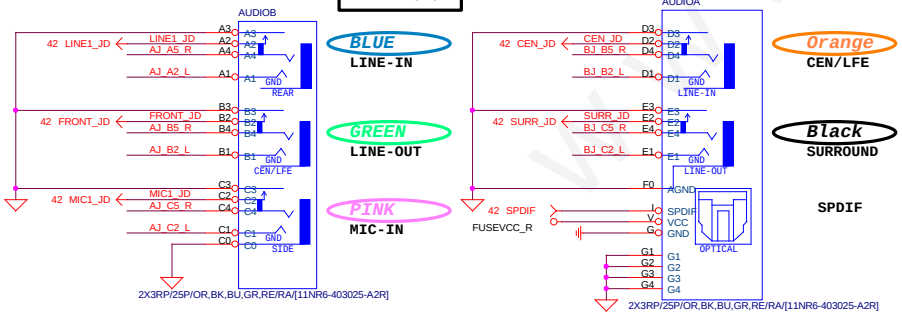


Differential to Single-End AMPLIFIED

GAIN	
OFF	X2.5
ON	X6

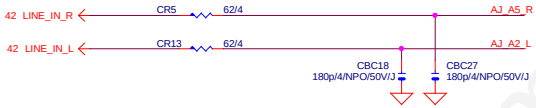


AZALIA JACK

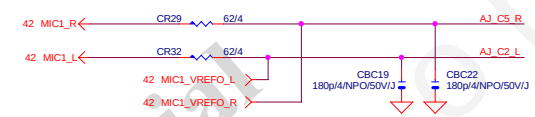


LINE-OUT

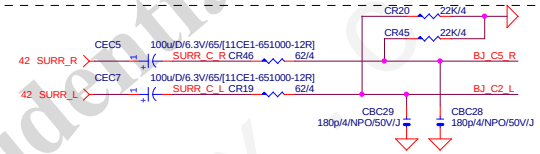
LINE-IN



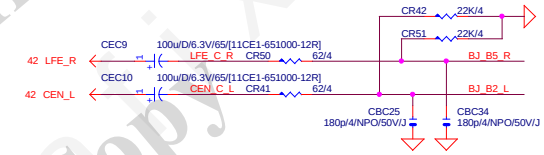
MIC-IN

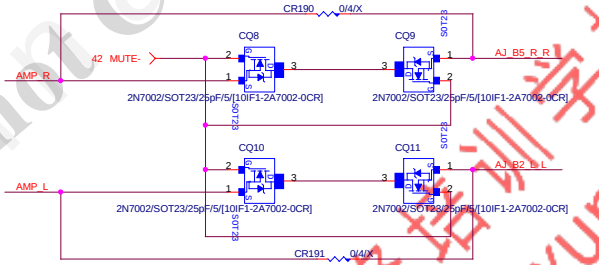


SURROUND

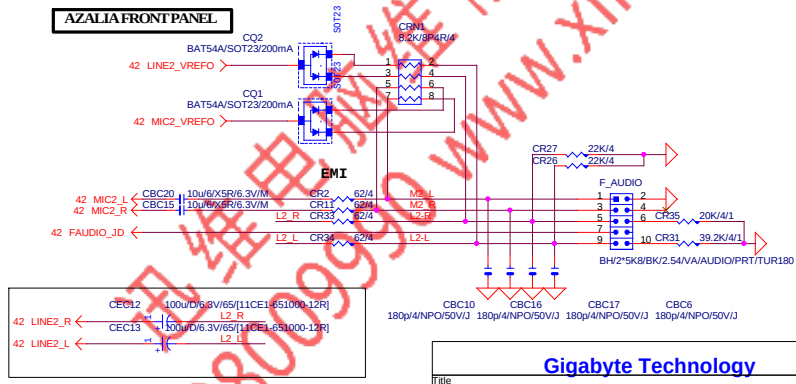


CEN/LFE





AZALIA FRONT PANEL



Gigabyte Technology			
Title: AUDIO JACK			
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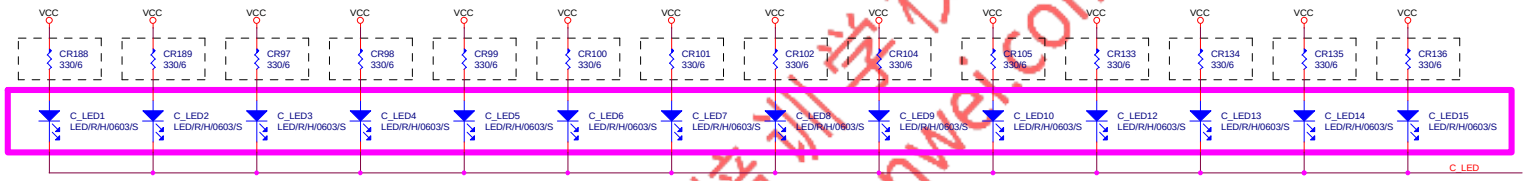
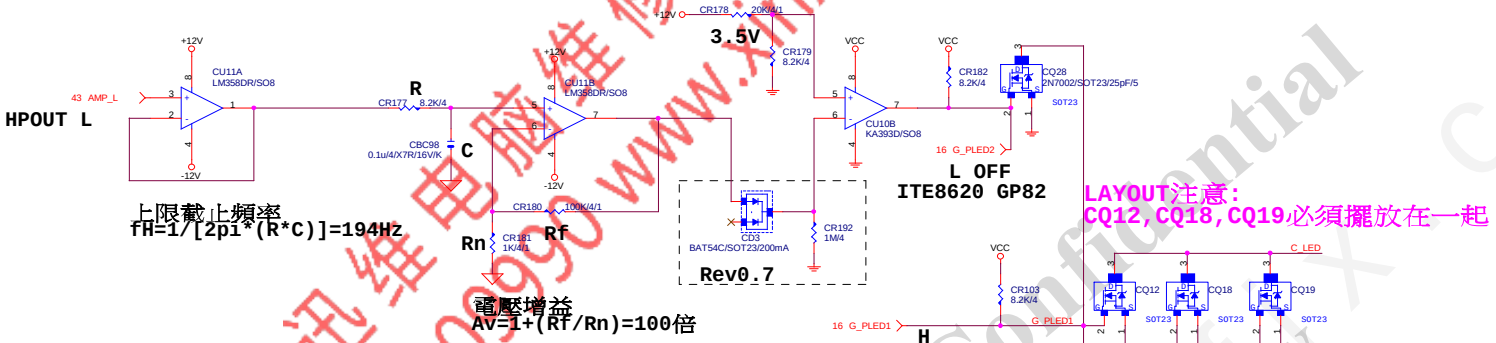


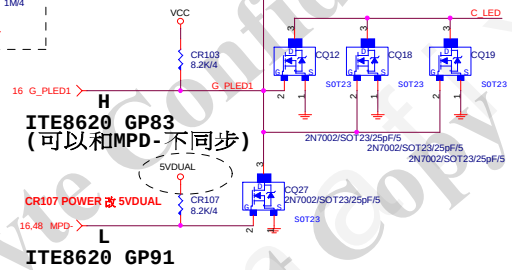
VALUE可變,LED顏色請自行修改
[UD/SOC系列--> 白光LED(黃色):LED/W/6/S]
[GAMING系列--> 紅光LED(紅色):LED/R/H/0603/S]



上限截止頻率
fH=1/[2pi*(R*C)]=194Hz

電壓增益
Av=1+(Rf/Rn)=100倍

LAYOUT注意:
CQ12,CQ18,CQ19必須擺放在一起



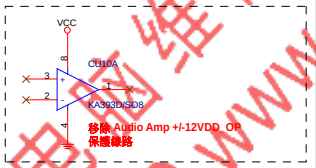
Rear Panel LED ON/OFF

	IO_GP80
FR AR LED ON	H
FR AR LED OFF	L

LAYOUT OPTION : 除了GAMING3系列和Z1704N-GAMING5不要LAYOUT,
其餘GAMING系列機種都要留LAYOUT

AUDIO LED Control (沒有LPT model)

	IO_GP82	IO_GP83	IO_GP91
Still Mode	L	H	L
OFF Mode	L	L	L
Pluse Mode	L	H	BREATH
Beat Mode	OD	H	L



GIGABYTE™

Title	AUDIO LED	
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0.31

Front USB3.0

F_USB30_1 REV=1

NET 自行調整

F_USB30 PWR

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

NET 可自行調整

CLOSE F_USB30

FAU3D1 AZ1045-04F/MSOP10

FAU3D2 AZ1045-04F/MSOP10

FAU3D3

AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

BAT54A/SOT23/200mA

Front USB3.0

F_USB30_2 REV=1

F_USB30 PWR

F_USB_POWER PROTECT

FBU3D1 AZ1045-04F/MSOP10

FBU3D2 AZ1045-04F/MSOP10

FBU3D3

-USBOC_F

-USBOC_R

POWER 可自行調整

REV 0.2

* 接 PCH N_GPP_B20(SMI) & PCH_PU 3Vdual

Gigabyte Technology

Title: R_USB30,F_USB30, USB_OC

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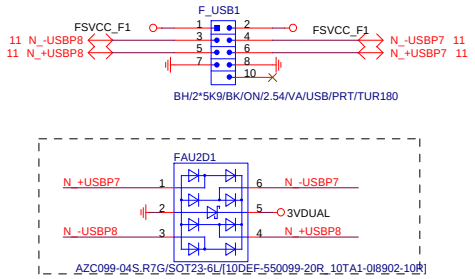
0.31

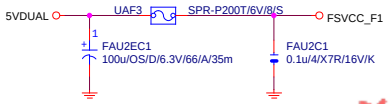
FRONT USB1

NET 可變



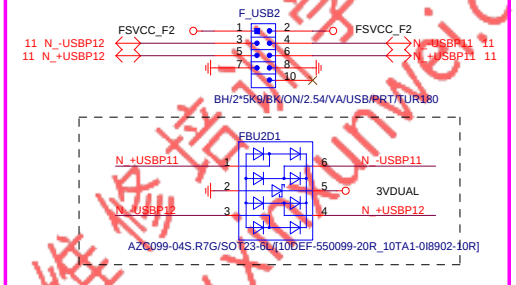
Close to connector

FUSE 2 Port 1 Fuse 2A



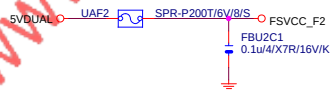
FRONT USB2

NET 可變

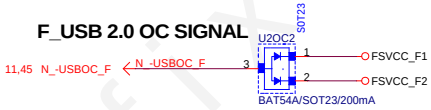


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



Gigabyte Technology

Title: USB2.0

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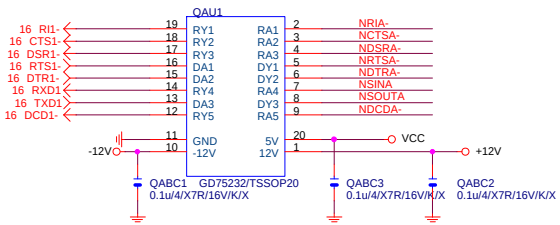
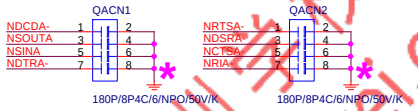
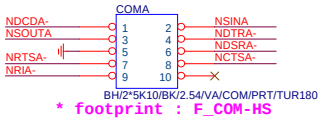
Rev: 0.7

COM PORT





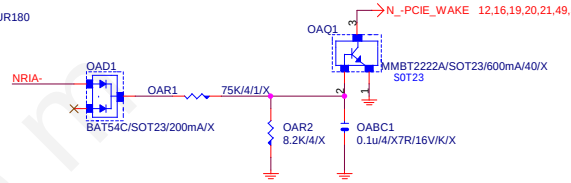
COMA



* footprint : F_COM-HS

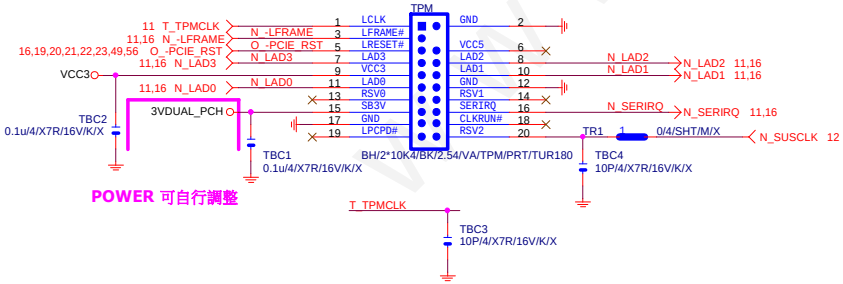
Rev: 0.3

TURBO KEY

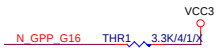


LPT PORT

TPM CONNECT



POWER 可自行調整



Thunderbolt

★Update 12-19

Gigabyte Technology

Title: COM,TPM,THB

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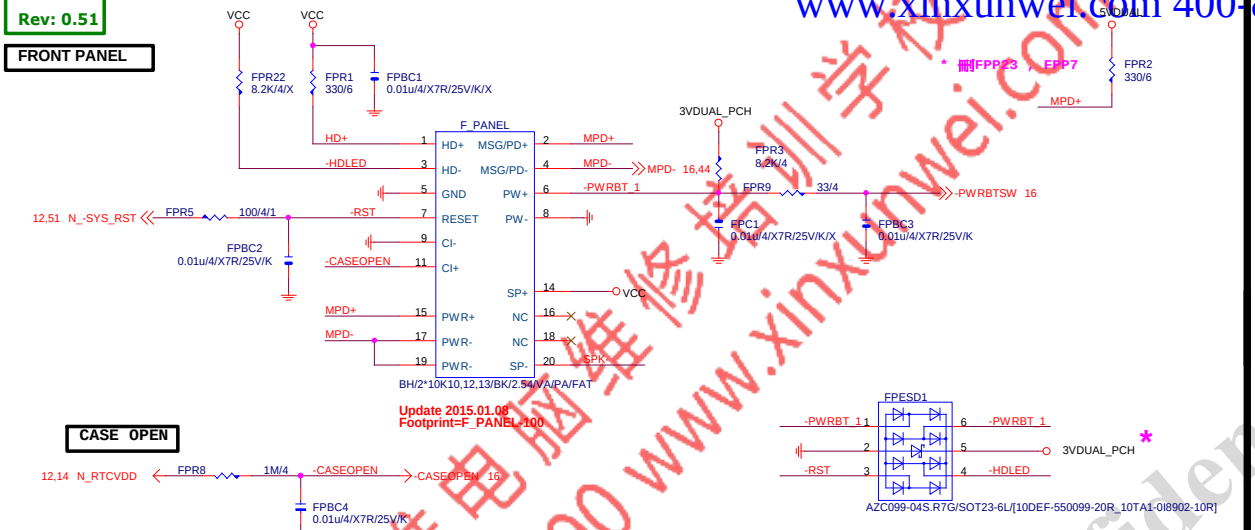
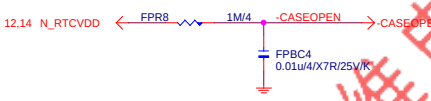
Rev: 0.51

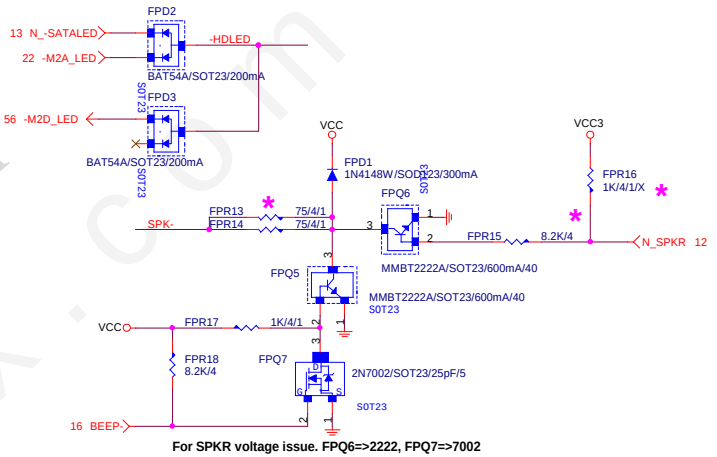
FRONT PANEL



CASE OPEN



SPKR



Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: GA-Z170X-Gaming 3	Rev: 1.02
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Rev 0.3

+12V
PEEC1
270u/FP/D/16V/88/C/12m
VCC3
PEEC2
560u/FP/D/6.3V/69/A/11m

PCIEX8 PROTECT SHT

+12V
PERN1
0/8P4R/4/X
X8_+12V
PERN2
0/8P4R/0402/SHT/X

+12V protect short-wire test

X8_+12V
PCIEX8
3GIO_*8
KEY

8,9,12,19,20,21,24,32,51 N_SMBCLK
8,9,12,19,20,21,24,32,51 N_SMBDATA
N_SMBCLK PER8 0/4/X
N_SMBDATA PER9 0/4/X
PER6 0/4/SHT/X
3VDUAL
VCC3
12,16,19,20,21,47,52 N_-PCIE_WAKE

PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8_C
PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9_C
PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10_C
PE_EXP_SW_TXP11_C
PE_EXP_SW_TXN11_C
PE_EXP_SW_TXP12_C
PE_EXP_SW_TXN12_C
PE_EXP_SW_TXP13_C
PE_EXP_SW_TXN13_C
PE_EXP_SW_TXP14_C
PE_EXP_SW_TXN14_C
PE_EXP_SW_TXP15_C
PE_EXP_SW_TXN15_C

PRSNT2*

PRSNT1* PER7 0/4/SHT/X
PER5 0/4/SHT/X
JTAG2
JTAG3
JTAG4
JTAG5
PWRGD
O_-PCIE_RST 16,19,20,21,22,23,47,56
PEC6 22p/4/NPO/50V/J/X

PE_SRCCLK_3GIO1 10
PE_-SRCCLK_3GIO1 10

PE_EXP_SW_RXP8
PE_EXP_SW_RXN8
PE_EXP_SW_RXP9
PE_EXP_SW_RXN9
PE_EXP_SW_RXP10
PE_EXP_SW_RXN10
PE_EXP_SW_RXP11
PE_EXP_SW_RXN11
PE_EXP_SW_RXP12
PE_EXP_SW_RXN12
PE_EXP_SW_RXP13
PE_EXP_SW_RXN13
PE_EXP_SW_RXP14
PE_EXP_SW_RXN14
PE_EXP_SW_RXP15
PE_EXP_SW_RXN15

PE_EXP_SW_RXP[8..15] PE_EXP_SW_RXP[8..15] 50
PE_EXP_SW_RXN[8..15] PE_EXP_SW_RXN[8..15] 50
PE_EXP_SW_TXP[8..15] PE_EXP_SW_TXP[8..15] 50
PE_EXP_SW_TXN[8..15] PE_EXP_SW_TXN[8..15] 50

+12V
3VDUAL
VCC3
PEBC5 0.1u/4/X7R/16V/K
PEBC6 1u/4/X5R/6.3V/K
PEBC7 0.1u/4/X7R/16V/K
PEBC8 0.1u/4/X7R/16V/K/X

50 PE_16_8_SW
4 -8X_EN
PED1
BAT54C/SOT23/200mA
13 N_GPP_G2
10 -PCIEX8_PR
PER10 1 0/4/SHT/X

PCI-E/8X-99P/RE/LONG DOUBLE/HK*2/SHELL

PE_EXP_SW_TXP8	PEC7	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8	PEC8	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN8_C
PE_EXP_SW_TXP9	PEC9	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9	PEC10	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN9_C
PE_EXP_SW_TXP10	PEC11	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10	PEC12	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN10_C
PE_EXP_SW_TXP11	PEC13	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP11_C
PE_EXP_SW_TXN11	PEC14	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN11_C
PE_EXP_SW_TXP12	PEC15	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP12_C
PE_EXP_SW_TXN12	PEC16	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN12_C
PE_EXP_SW_TXP13	PEC17	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP13_C
PE_EXP_SW_TXN13	PEC18	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN13_C
PE_EXP_SW_TXP14	PEC19	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP14_C
PE_EXP_SW_TXN14	PEC20	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN14_C
PE_EXP_SW_TXP15	PEC21	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP15_C
PE_EXP_SW_TXN15	PEC22	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN15_C

红色

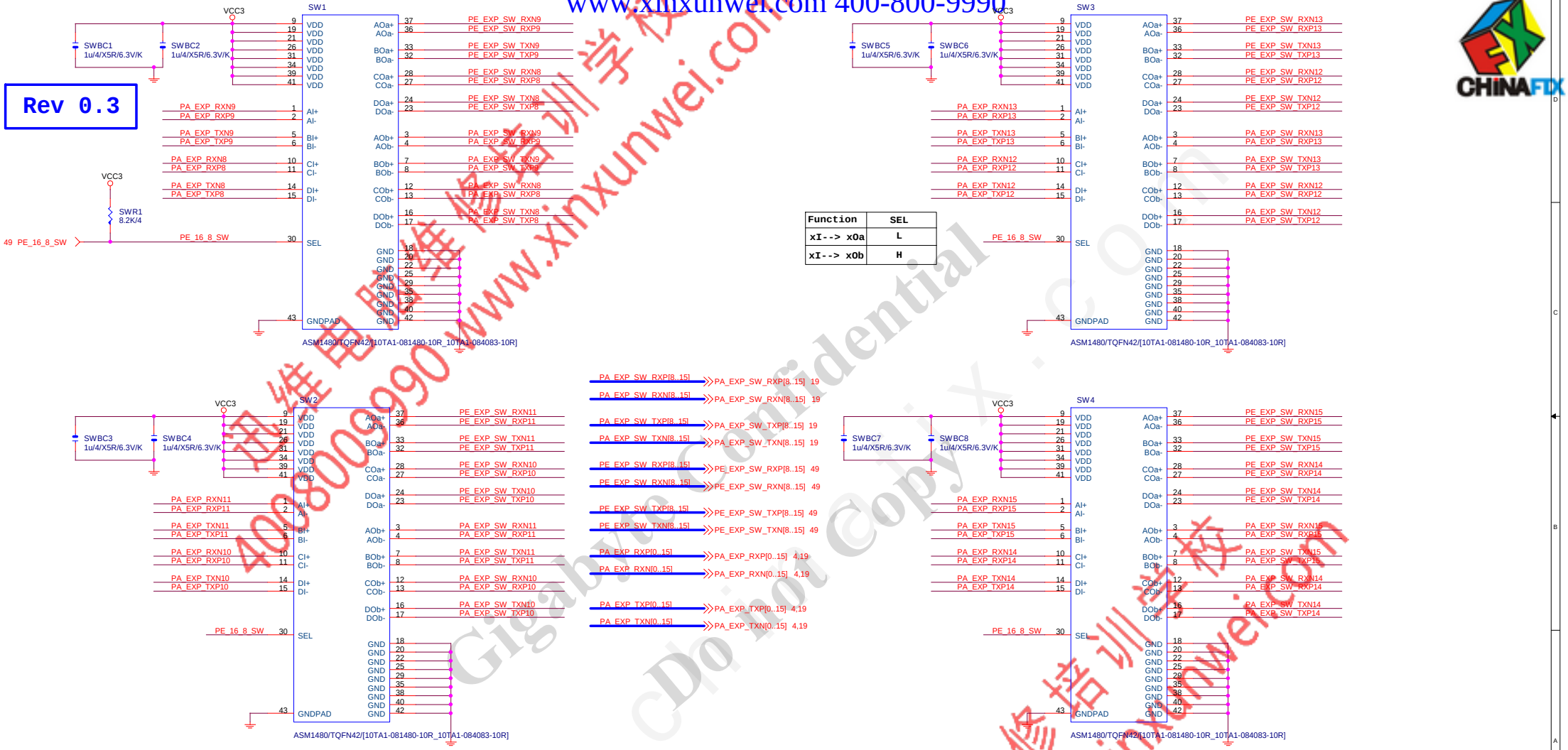
Gigabyte Technology

Title: PCI EXPRESS X8

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

Date: Monday, January 18, 2016 | Sheet 49 of 58

Rev 0.3



Title	PCI EXPRESS X16 SWITCH
Size	Custom
Document Number	GA-Z170X-Gaming 3
Rev	1.02
Date:	Monday, January 18, 2016
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Gigabyte Technology

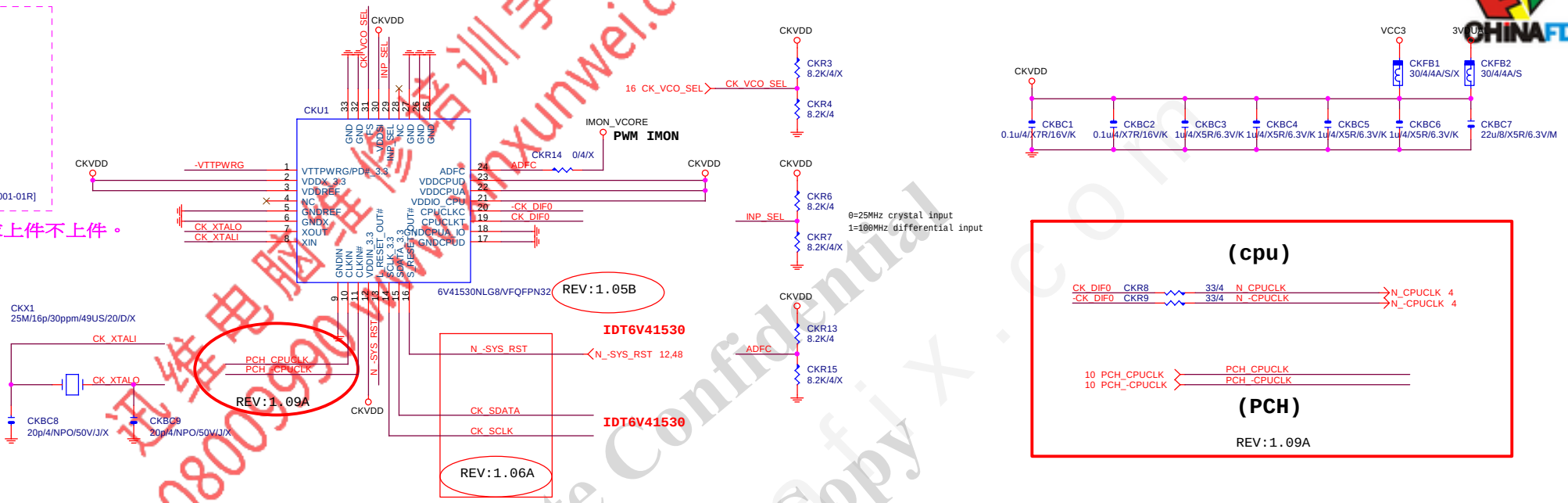
REV:1.10A

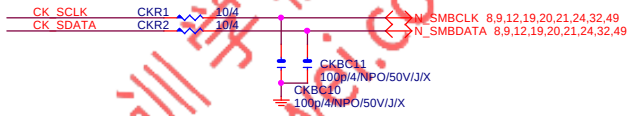
IDT6V41530

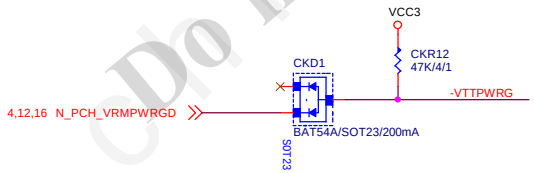
CK_HS

CK_HS/[11NH1-CBC001-01R]

*可變，依需求上件不上件。







INP_SEL	Intput
0	Crystal
1	CLK_INP/N

CK_VCO_SEL	VCO
0	400M
1	1200M

請依使用情況(0 ohm 請修改為short Pad)

Location	CLK BUFFER	PCH CLK
WR100	MOUNT	N/A
WR101	MOUNT	N/A
NR302	MOUNT	N/A
NR303	MOUNT	N/A
WR102	N/A	MOUNT
WR103	N/A	MOUNT
NR300	N/A	MOUNT
NR301	N/A	MOUNT

CLK BUFFER 未上件時，零件FOOTPRINT需修改為IC32QFN-SL-MASK

GIGABYTE

Title: IDT6V41530_CLK BUFFER

Size: Custom | Document Number: GA-Z170X-Gaming 3 | Rev: 1.02

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INTEL AR USB31 module SCH 0.63 (2015/07/08)

PCIE X2 / X4

11 PETP_0
11 PETN_0
THC1 0.22u/4/X5R/6.3V/K
THC2 0.22u/4/X5R/6.3V/K
PETP_0_C
PETN_0_C
Y23
Y22
PCIE_RX0_P
PCIE_RX0_N

11 PETP_1
11 PETN_1
THC3 0.22u/4/X5R/6.3V/K
THC4 0.22u/4/X5R/6.3V/K
PETP_1_C
PETN_1_C
T23
T22
PCIE_RX1_P
PCIE_RX1_N

M23
M22
PCIE_RX2_P
PCIE_RX2_N

H23
H22
PCIE_RX3_P
PCIE_RX3_N

10 REFCLK_TBT_P
10 REFCLK_TBT_N
V19
T19
PCIE_REFCLK_100_IN_P
PCIE_REFCLK_100_IN_N
AC5
PCI_CLKREQ_N

10 TH_CLK_REQ_N
THR19 0/4/X
VCC3
THR17 10K/4/1

CLKREQ should be checked again

* 0702

PCIe GEN3

PCIE_TX0_P
PCIE_TX0_N
V23
V22
PERP_0_C
PERN_0_C
0.22u/4/X5R/6.3V/K THC301
0.22u/4/X5R/6.3V/K THC302
PERP_0 11
PERN_0 11

PCIE_TX1_P
PCIE_TX1_N
P23
P22
PERP_1_C
PERN_1_C
0.22u/4/X5R/6.3V/K THC303
0.22u/4/X5R/6.3V/K THC304
PERP_1 11
PERN_1 11

PCIE_TX2_P
PCIE_TX2_N
K23
K22

PCIE_TX3_P
PCIE_TX3_N
E23
E22

PERST_N
L4
O_-PFMRST2 16,40

PCIE_RBIAS
N16
PCIE_RBIAS
THR20 3.01K/4/1
as close as AR

PCIE_RBIAS THR20 should be placed as close as Alpine Ridge and keep traces as short as possible.

DP differential 100 ohm

PCIE X2 / X4

* 0319

SINK PORT 0

DPSNK0_ML0_P
DPSNK0_ML0_N
AB7
AC7

DPSNK0_ML1_P
DPSNK0_ML1_N
AB9
AC9

DPSNK0_ML2_P
DPSNK0_ML2_N
AB11
AC11

DPSNK0_ML3_P
DPSNK0_ML3_N
AB13
AC13

DPSNK0_AUX_P
DPSNK0_AUX_N
Y13
W13

DPSNK0_HPD
AA2

DPSNK0_DDC_CLK
DPSNK0_DDC_DATA

SOURCE PORT 0

DPSRC_ML0_P
DPSRC_ML0_N
B2
B1

DPSRC_ML1_P
DPSRC_ML1_N
N2
N1

DPSRC_ML2_P
DPSRC_ML2_N
L2
L1

DPSRC_ML3_P
DPSRC_ML3_N
J2
J1

DPSRC_AUX_P
DPSRC_AUX_N
W19
X19

DPSRC_HPD
G1

DPSRC_RBIAS
N6

* 0612

THR30 100K/4/1 THDP_HDP
* 0708
THR18 100K/4/1 TBT_DDC0_CLK Y5
THR15 100K/4/1 TBT_DDC0_DATA R4

DPSRC_HPD THR72 1M/4/1
DPSRC_RBIAS 14K/4/1 THR31
as close as AR

SINK PORT 1

DPSNK1_ML0_P
DPSNK1_ML0_N
AB15
AC15

DPSNK1_ML1_P
DPSNK1_ML1_N
AB17
AC17

DPSNK1_ML2_P
DPSNK1_ML2_N
AB19
AC19

DPSNK1_ML3_P
DPSNK1_ML3_N
AB21
AC21

DPSNK1_AUX_P
DPSNK1_AUX_N
Y12
W12

DPSNK1_HPD

DPSNK1_DDC_CLK
DPSNK1_DDC_DATA

DPSNK_RBIAS
Y18

LC GPIO

GPIO_0
GPIO_1
GPIO_2
GPIO_3
GPIO_4
GPIO_5
GPIO_6
GPIO_7
GPIO_8

U1 TBT_I2C_SDA
U2 TBT_I2C_SCL
V1 TB_EE_WP
V2 TBT_TMU_CLK_OUT
W1 TBT_PCIE_WAKE_N
W2 N_TBT_CIO_PLUG_EVENT_N
Y1 TBT_HDMI_DDC_DATA
Y2 TBT_HDMI_DDC_CLK
AA1 TBT_SRC_CFG1 THR25 1M/4/1

N_-PCIE_WAKE 12,16,19,20,21,47,49
N_GPP_E7 12

TBT_CIO_PLUG_EVENT_N uses PCH GPIO with SMI#

POC GPIO

POC_GPIO_0
POC_GPIO_1
POC_GPIO_2
POC_GPIO_3
POC_GPIO_4
POC_GPIO_5
POC_GPIO_6

J4 TBTA_I2C_INT
E2 TBTB_I2C_INT
D4 RTD3_USB_PWR_EN
H4 N_TBT_FORCE_PWR
F2 BATLOW_N
D2 N_-SLP_S3
F1 RTD3_CIO_PWR_EN

N_GPP_H14 12
N_GPP_H17 12
N_-SLP_S3 12,16,28,47,55

* 0612

GPIO Link for
- Plug Event
- Force Power
Board Link for
- PCIE Wake
- S3

MISC

TEST_EN
E1 TBT_TEST_EN THR41 100/4/1
TEST_PWR_GOOD
AB5 BT_TEST_PWG THR42 100/4/1
RESET_N
F4 TBT_RESET_N

XTAL_25_IN
XTAL_25_OUT
D22 25M_CLK_I
D23 25M_CLK_O

THR40 100K/4/1 THDP2_HDP
* 0708
THR82 100K/4/1 TBT_DDC1_CLK Y8
THR83 100K/4/1 TBT_DDC1_DATA N4

THR23 14K/4/1 DPSNK_RBIAS
as close as AR

TDI
TMS
TCK
TDO
TB_TDI Y4
TB_TMS V4
TB_TCK T4
TB_TDO W4

0.5%
THR44 4.75K/4/0.5 TBT_RBIAS H6
TBT_RSENSE J6
as close as AR

RBIAS
RESENSE

EE_DI
EE_DO
EE_CS_N
EE_CLK
AB3 TB_EE_DI
AC4 TB_EE_DO
AC3 TB_EE_CS
AB4 TB_EE_CLK

USB31 TYPE C Connector

TBT PORTS

PORT A

PA_RX1_P
PA_RX1_N
A15
B15

PA_TX1_P
PA_TX1_N
A17
B17

PA_TX0_P
PA_TX0_N
A19
B19

54 TBTA_HD2CA_0_P
54 TBTA_HD2CA_0_N
THC43 0.22u/2/X5R/6.3V/K
THC45 0.22u/2/X5R/6.3V/K
TBTA_TX0_P
TBTA_TX0_N

PA_RX0_P
PA_RX0_N
B21
A21

54 TBTA_CA2HD_0_P
54 TBTA_CA2HD_0_N

PA_DPSRC_AUX_P
PA_DPSRC_AUX_N
Y15
W15

PA_USB2_D_P
PA_USB2_D_N
E20
D20

54 TBTA_USB2_D_P
54 TBTA_USB2_D_N

PA_LSTX
PA_LSRX
PA_DPSRCC_HPD
A5
A4
M4

TBTA_LSTX
TBTA_LSRX
TBTA_HPD

THR45 499/4/1 PA_USB2_BIAS H19
as close as AR

PORT B

PB_RX1_P
PB_RX1_N
B7
A7

PB_TX1_P
PB_TX1_N
A9
B9

PB_TX0_P
PB_TX0_N
A11
B11

TBTB_TX0_P
TBTB_TX0_N
0.22u/2/X5R/6.3V/K THC49
0.22u/2/X5R/6.3V/K THC50
TBTB_HD2CA_0_P 39
TBTB_HD2CA_0_N 39

PB_RX0_P
PB_RX0_N
A13
B13

TBTB_CA2HD_0_P 39
TBTB_CA2HD_0_N 39

PB_DPSRC_AUX_P
PB_DPSRC_AUX_N
X16
W16

PB_USB2_D_P
PB_USB2_D_N
E19
D19

TBTB_USB2_D_P 39
TBTB_USB2_D_N 39

PB_LSTX
PB_LSRX
PB_DPSRCC_HPD
B4
B5
G2

TBTB_LSTX
TBTB_LSRX
TBTB_HPD

THR46 499/4/1 PB_USB2_BIAS F19
as close as AR

POC

USB31 TYPE A Connector

DEBUG

THERMDA
THERMDA
AC23
AB23

PCIE_ATEST
V18

TEST_EDM
AC1

FUSE_VQPS_64
FUSE_VQPS_128
L15
N15

MONDC_CIO_0
MONDC_CIO_1
C23
C22

MONDC_SVR
D6

ATEST_P
ATEST_N
A23
B23

SB2_ATEST
F18

MONDC_DPSNK_0
W13

MONDC_DPSNK_1
W18

MONDC_DPSRC
AB2

THU1A
DSL6540/S[10HB2-G06540-10R]

* 0612

VCC3_B0
TBT_HDMI_DDC_DATA THR75 2.2K/4/1
TBT_HDMI_DDC_CLK THR76 2.2K/4/1
RTD3_CIO_PWR_EN THR47 10K/4/1
RTD3_USB_PWR_EN THR48 10K/4/1

3VDUAL
TBT_I2C_SDA THR21 2.2K/4/1
TBT_I2C_SCL THR22 2.2K/4/1
TBTA_I2C_INT THR23 10K/4/1
TBTB_I2C_INT THR24 10K/4/1
N_-PCIE_WAKE THR77 10K/4/1/X
N_GPP_E7 THR78 10K/4/1
N_-SLP_S3 THR79 10K/4/X
BATLOW_N THR80 10K/4/1

* 0702

3VDUAL
TBTA_LSTX THR32 10K/4/1/X
TBTB_LSTX THR33 10K/4/1/X

INTEL review feedback 2015/01/07

TBT_TMU_CLK_OUT THR26 100K/4/1
N_GPP_H17 THR27 100K/4/1
RTD3_CIO_PWR_EN THR28 100K/4/1/X
RTD3_USB_PWR_EN THR29 100K/4/1/X

TBTA_LSTX THR34 1M/4
TBTA_LSRX THR36 1M/4
TBTB_LSTX THR37 1M/4
TBTB_LSRX THR39 1M/4
TBTA_HPD THR35 100K/4/1
TBTB_HPD THR38 100K/4/1

3VDUAL
THR101 3.3K/4/1 TB_-EE_CS
THR102 3.3K/4/1 TB_EE_DO
THR104 3.3K/4/1 TB_-EE_HLD
THR105 3.3K/4/1 TB_-EE_WP

VCC3_LC
THRN2 10K/8P4R/4
TB_TDI
TB_TDO
TB_TMS
TB_TCK

3VDUAL
THU3
TB_-EE_CS
TB_EE_DO
TB_-EE_WP
CS#
SO
WP#
GND
VCC
HOLD#
SCK
SI
THC55 0.1u/4/X7R/16V/K
TB_-EE_HLD
TB_EE_CLK
TB_EE_DI
8M/SPI/SO8/208mil/S/[10HP4-112580-40R]

20p/4/NPO/50V/J
THC56
25M_CLK_I
THX1 25M/20p/30ppm/49US/20/D
25M_CLK_O
THC57
20p/4/NPO/50V/J

* 0414

3VDUAL
THC111 0.1u/4/X7R/16V/K
THR112 0/4/X
THR113 0/4/X
THR114 0/4/SHT/X
12 N_-SLP_S5
16,40 O_-PFMRST2
3895_EN
TBT_RESET_N
TU10
VDD
EN
OUT
SENSE
Ct
GND
3895_SENSE
THC110 2.7n/4/X7R/50V/K
TPS3895ADRYR/USON6/[10TA1-203895-10R]
3VDUAL
THR110 100K/4/1
THR111 31.6K/4/1

* 0615

GIGABYTE

Title: ALPINE RIDGE CIO & DP

Size: C
Document Number: GA-Z170X-Gaming 3
Rev: 1.02

Date: Monday, January 18, 2016
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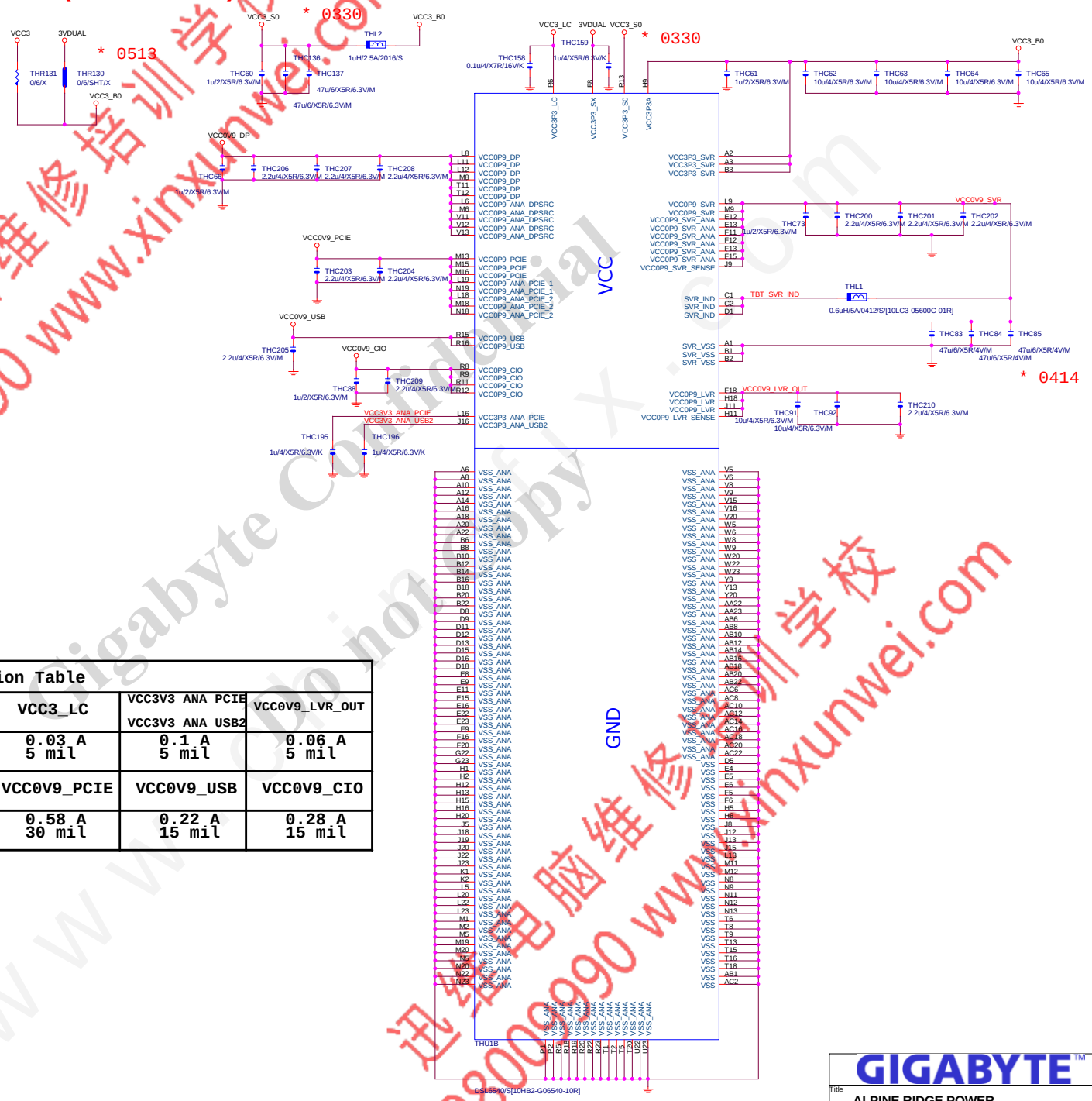


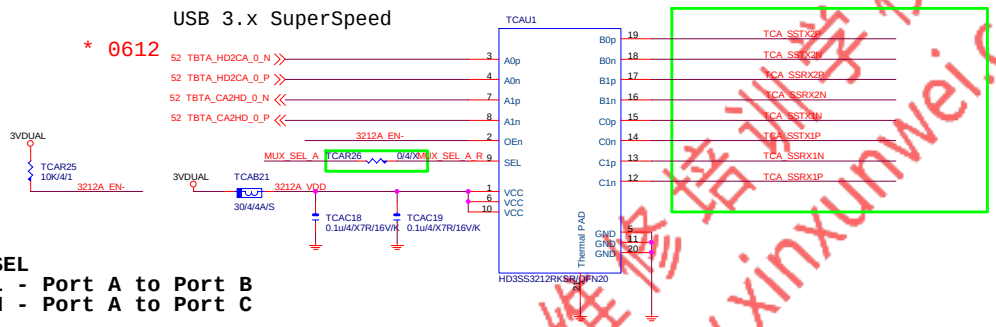
Power Consumption Table					
	VCC3	3VDUAL	VCC3_LC	VCC3V3_ANA_PCIE VCC3V3_ANA_USB2	VCC0V9_LVR_OUT
Max Current(A)	1.05 A 40 mil	0.19 A 10 mil	0.03 A 5 mil	0.1 A 5 mil	0.06 A 5 mil
	VCC0V9_SVR	VCC0V9_DP	VCC0V9_PCIE	VCC0V9_USB	VCC0V9_CIO
Max Current(A)	1.83 A 80 mil	0.7 A 30 mil	0.58 A 30 mil	0.22 A 15 mil	0.28 A 15 mil

GIGABYTE™			
Title	ALPINE RIDGE POWER		
Size C	Document Number GA-Z170X-Gaming 3		Rev 1.02
Date: Monday, January 18, 2016	Sheet 53 of 58		

INTEL AR USB31 module SCH 0.63 (2015/07/08)

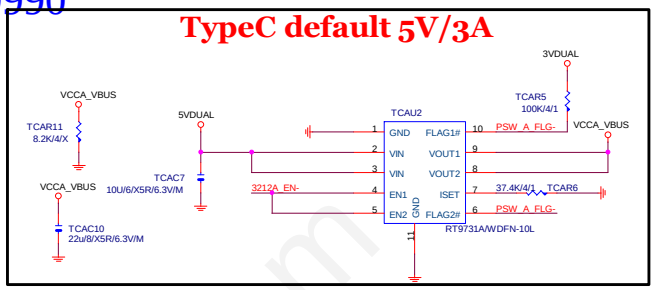
* 0612

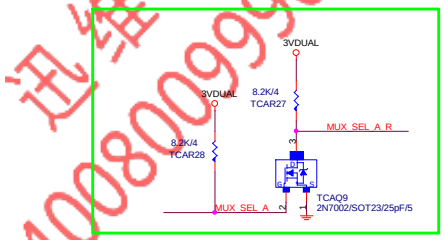
USB 3.x SuperSpeed

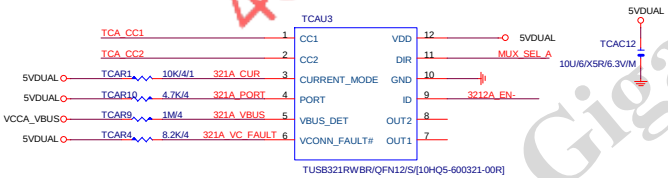


SEL
L - Port A to Port B
H - Port A to Port C

TypeC default 5V/3A



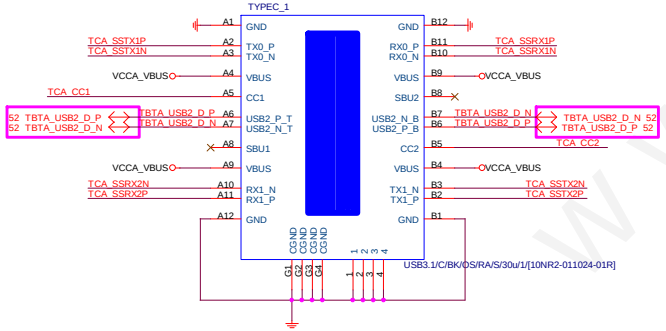




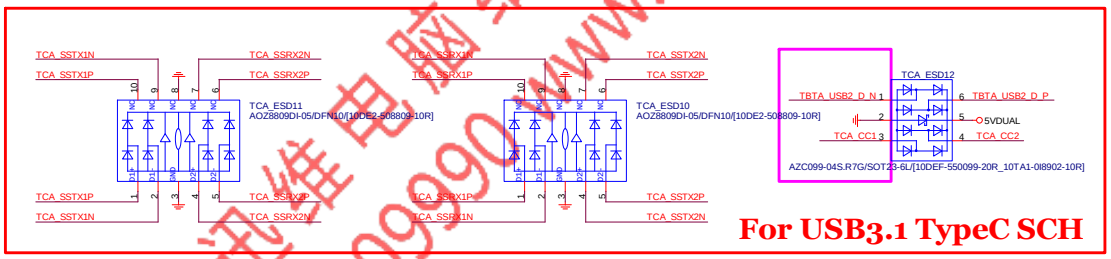
MUX_SEL
H - TypeC plug position 2
L - TypeC plug position 1

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

PORT
H - HOST
L - Device
NC - Dual Role



USB2.0 can be used the same source



Color markers can be changed by model

GIGABYTE			
Title	TI TUSB321		
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EMI/ESD R0.1

CLOSE SIO

12,16,28,47,52 N_-SLP_S3 — EMIC1 100p/4/NPO/50V/J/X

12,16,27,29,47 N_-S4_S5 — EMIC2 100p/4/NPO/50V/J/X

4,12,16 N_CPUPWROK — EMIC3 100p/4/NPO/50V/J/X

CLOSE PCH

4,12,16 N_CPUPWROK — EMIC4 100p/4/NPO/50V/J/X

EMI Alain 2015/03/04 modify

VCC3 — EMIC5 0.01u/4/X7R/25V/K

+12V — EMIC6 0.01u/4/X7R/25V/K

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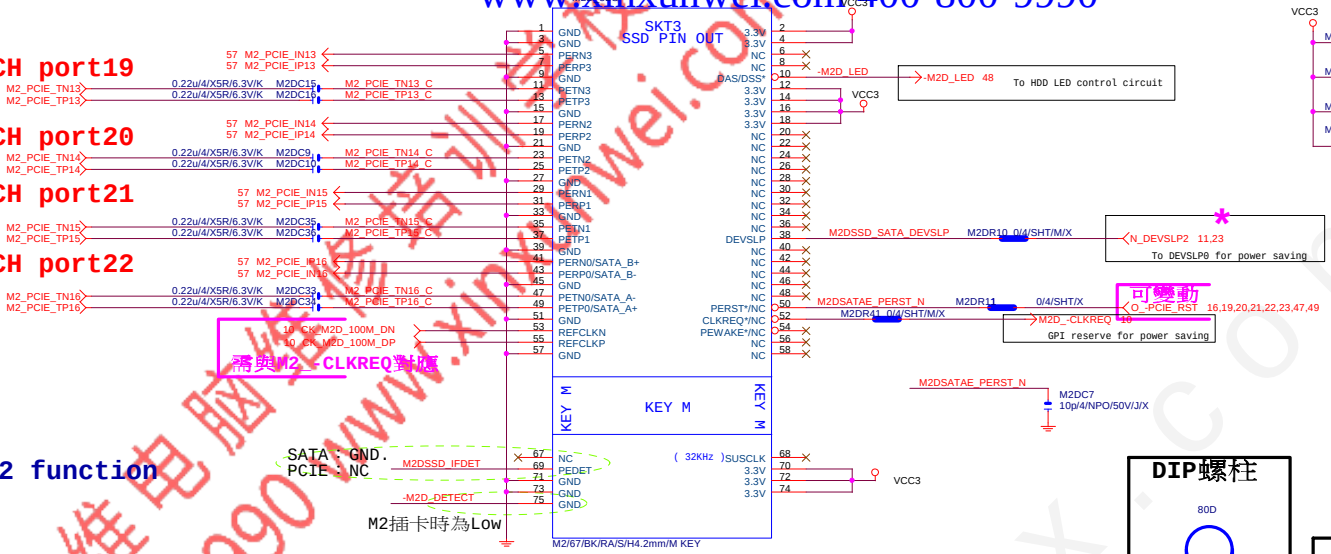
Rev 0.9

M.2 Lane2 from PCH port19

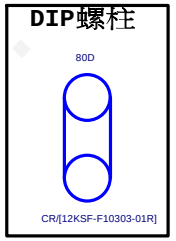
M.2 Lane2 from PCH port20

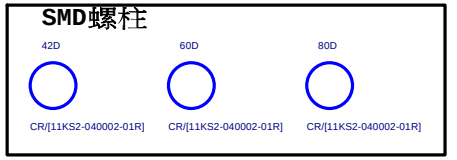
M.2 Lane3 from PCH port21

M.2 Lane4 from PCH port22



支援SATA and M.2 function





M.2 有插卡 / 沒插卡 GPP_G9	M.2插何種卡? GPP_G10	SATA Express 插何種硬碟? GPP_E0/E1/E2/F0	IO19 (S0)	IO20 (S1)	IO21 (S2)	IO22 (S3)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA	SATA	SATA	SATA (For M2)
		SATA Express (Low)	SATA	SATA	SATA	SATA (For M2)
	PCIE Mode (Hi)	SATA (Hi)	PCIEx4 (For M.2)			
		SATA Express (Low)	PCIEx4 (For M.2)			
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	SATA (S0)	SATA (S1)	SATA (S2)	SATA (S3)
		SATA Express (Low)	SATA Express (For S.E.0)		SATA Express (For S.E.1)	

M.2-SATA+SATA S0~2

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	L	GPP_C20	L
GPP_G8	L	GPP_C19	L
GPP_F1/F2	H (SATA)	GPP_C21	H

M.2X4

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	L	GPP_C20	H
GPP_G8	H	GPP_C19	H
GPP_F1/F2	H	GPP_C21	H

M.2沒插卡+SATA S0~3

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	H	GPP_C20	L
GPP_G8	H	GPP_C19	L
GPP_F1/F2	H	GPP_C21	L

M.2-SATA+S.E.D

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	L	GPP_C20	L
GPP_G8	L	GPP_C19	L
GPP_F1/F2	L (S.E.)	GPP_C21	H

M.2X2+S.E.

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	L	GPP_C20	H
GPP_G8	H	GPP_C19	H
GPP_F1/F2	L	GPP_C21	H

M.2沒插卡+S.E.C&S.E.D

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G7	H	GPP_C20	L
GPP_G8	H	GPP_C19	L
GPP_F1/F2	L	GPP_C21	L

GIGABYTE Technology

Title: M.2 X4

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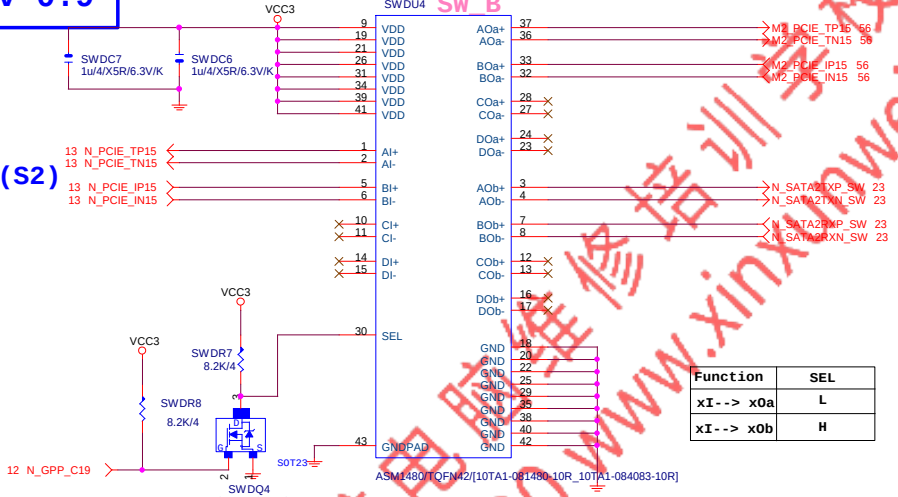
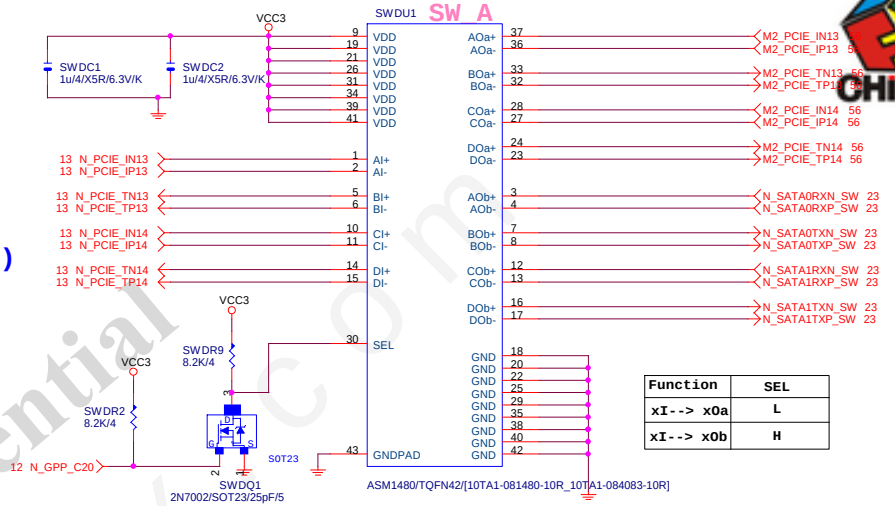
PCH (S2)



Function	SEL
xI--> xOa	L
xI--> xOb	H

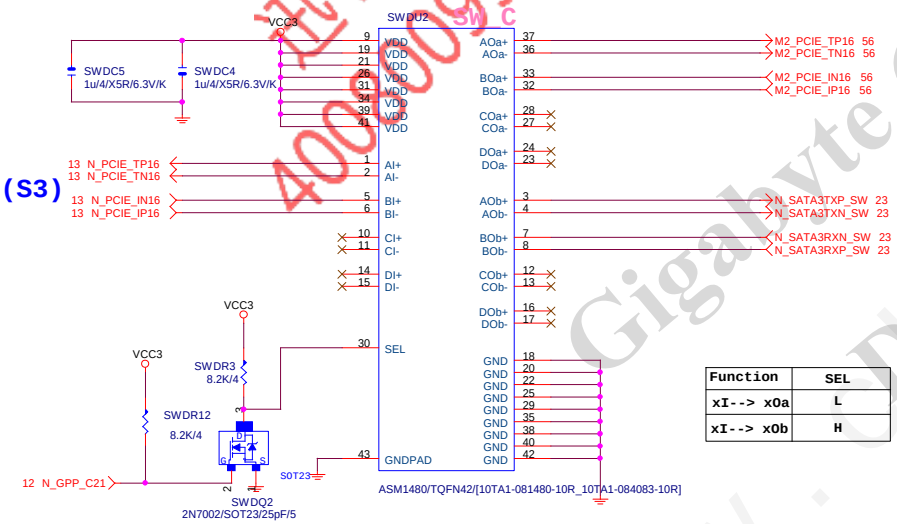
PCH (S0)

PCH (S1)



Function	SEL
xI--> xOa	L
xI--> xOb	H

PCH (S3)



Function	SEL
xI--> xOa	L
xI--> xOb	H

Title	Gigabyte Technology M.2 SWITCH	
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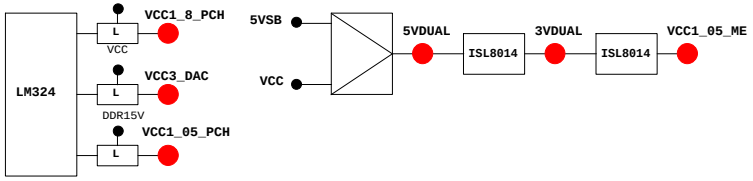
PCH GPIO LIST TABLE

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

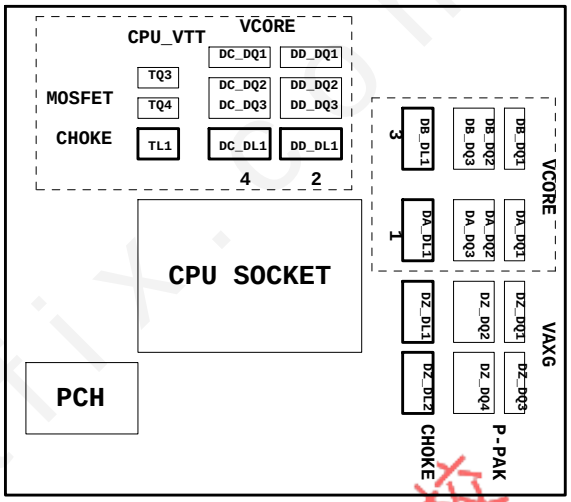
Super I/O ITE8720 GPIO Table

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	
VID03/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	
VID05/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	
VID00/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	
VID01/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	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/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

Title: TABLE LIST

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