Model Name: GA-Z170X-UD5

Rev 1.0

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Model Name: GA-Z170X-UD5

Component value change history

Data	Change Item	Reason
2015/03/12 PCB 0.1	1. UD5 First Release	9MZ17XUD5-00-01
2015/06/02 PCB 0.2	1. Z170X-UD5_R02_0528A.BOM_Compare.xls	9MZ17XUD5-00-02
2015/06/16 PCB 0.3	1. Z170X-UD5_R03_0615E.BOM_Compare.xls	9MZ17XUD5-00-03
2015/06/25 PCB 9.0	1. Z170X-UD5_R90_0625C.BOM_Compare.xls	9MZ17XUD5-00-90A
2015/06/29 PCB 9.0	1. Z170X-UD5_R90_0625C-90B.BOM_Compare.xls	9MZ17XUD5-00-90B
2015/07/03 PCB 1.0	1. Z170X-UD5_R10_0703A.BOM_Compare.xls	9MZ17XUD5-00-10B
2015/07/09 PCB 1.0	1. Z170X-UD5_R10_0703A-10C.BOM_Compare.xls 2. DFQ1 change to 10IFC-389452-01R 3. THR15,THR18,THR83,THR82改為10RC4-001003-26R	9MZ17XUD5-00-10C

Circuit or PCB layout change

DATE	Change Item	Reason
2014/11/28 PCB:0.1	1.PCB first release 2.線路由GA-Z1704-SLI-01-1128B.DSN來修改	
2015/01/26 PCB:0.2	1. Update TYPEC footprint "USB-TYPEC-1" 2、增加IDT6V41510/IDT6V41520 co-lay 線路 、增加co-lay 電阻 table 、原CKR16改接CKU1 PIN 16 3. 測試點位置偏移M2 CLK 4. DDRVTT ADD DAR110,DAR111 5. OC,ECO BUTTON change footprint 6. Add NXP TO VGA CLK COST DOWN	
2015/01/29 PCB:0.1	1. AUDIO CHANGE TO ALC1150 2. LAN CHANGE TO INTEL I211AT 3. ADD USB 3.1 ASM1142 4. DELETE DP-VGA 5. DELETE GL850S 6. ADD SYS_FAN4 7. DELETE USB DAC POWER 8. Modify from Z1704X-GAMING 7-02A.DSN 9. PCIEX4 N_GPP_E3 CHANGE TO N_GPP_E4	GA-Z170X-UD5 Rev 0.1
2015/05/28 PCB:0.2	1.42B&60B&80B文字改為42D&60D&80D 2.VCORE_VS移到CPU下方 3.PCIEX4改為PCIESLOT-64STH-1 4.NX1請導入最新LAYOUT RULE 5.文字改SATA 3 6/7 6. Add VD1 7. Add THD3 8. TCAQ3 改為TCAQ1&TCAQ2 9. 刪除WR100,WR101,NR300,NR301,NR302NR303,WR102,WR103 10.U6 rename to DB_PORT 11. Audio update a. CR44 update footprint "R0603-RH-SHORT30-MASK" b. MOATR1/2/3/4 update footprint "R0402-2-SHORT20-MASK"	GA-Z170X-UD5 Rev 0.2
2015/06/03 PCB:0.3	1.由Z170X-UD5 REV 0.2來修改 2.修改PCIEX4 跟M2A切換線路 3.Net N_GPP_G4改為N_GPP_D16 4. TYPEC 改TI SOLUTION 5. Add HDMI level shift	GA-Z170X-UD5 Rev 0.3
2015/06/26	由Z170X-UD5 Rev 0.3來修改 1.Add SWPR4, SWPD1 可放在NR270旁邊 2.all 0ohm改short pad 3.WR94改為0 ohm 4.Add MA_DR9 close to MA_DQ3 5.DDR Power右移&下移 6.Add NPC10 close to CPU	GA-Z170X-UD5 Rev 9.0
2015/07/03	1. BIOS_PH改Mask 2. SWPU2 Net改PCIEX4_M2S 3. 增加THR19不上件 (以色列LOGO測試反應問題後，INTEL建議) 4. Add DFR4 5. Add MAC10	GA-Z170X-UD5 Rev 9.0

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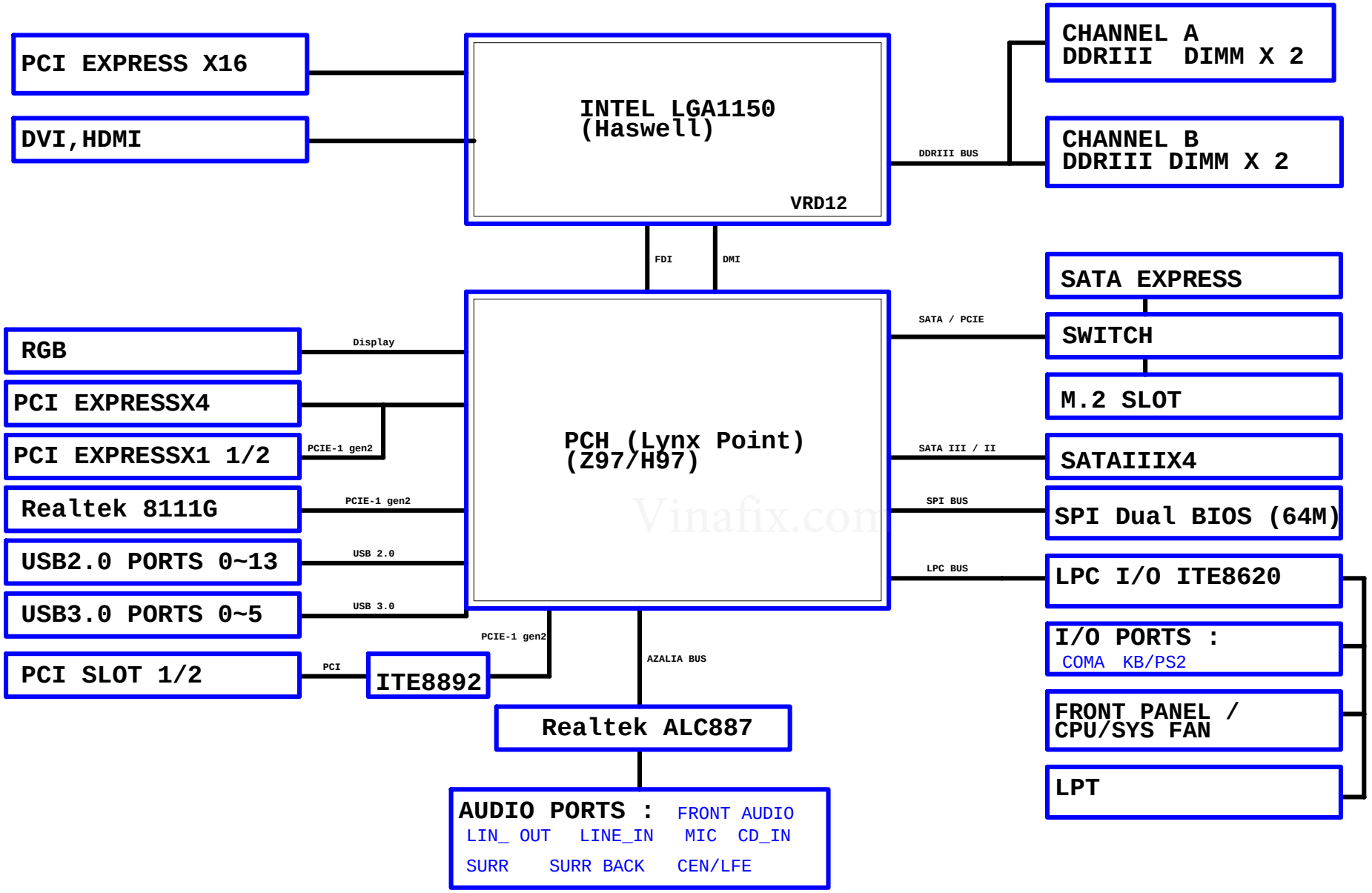
BLOCK DIAGRAM



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From SKL_0.2B

檢查組態調整線路
The CFG signals default value of '1'

* WR7 , WR1 , WR81 改 short pad

* 刪 net

* 刪 net

* 刪 net

* 刪 net

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

* 刪 WR90

* 刪 WR91

* 刪 net N_CPU_VCCST_PWOK

-CPURST

Vinafix.com

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

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

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

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

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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]	AY17	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]	AY15	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

LGA1151

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]	AV29	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]	AP29	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

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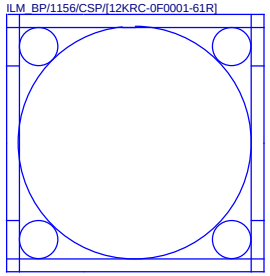
		DDR_VREF_CA	AB40	VREF_CAB	VREF_CAB (8)
		DDR0_VREF_DQ	AC40		
		DDR1_VREF_DQ	AC39	VREF_DQB	VREF_DQB (9)

CPU-SK/1151/S/15

ILM_BP/1156/CSP/[12KRC-0F0001-61R]



Need check the new CPU ME

(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]

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* WBC49 移到 RT8120_DDR

* 刪 WBC50 電容

VCCSA

* WBC51 , WBC52
VDDQ 改 VCCSA

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

* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

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

VCCST_VCCPLL
VCCSFUSEPRG

VCCSA
VCCST_VCCPLL
WR94 0/4/X

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

VCCGTX_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

VCCGT_SENSE (26)
VSSGT_SENSE (26)

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CPU-SK/1151/S/15

VCCSA

LGA1151K SKT_H4
LGA1151

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

VDDQ

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

VCCIO

VCCIO: AK11 AK14 AK24 AJ23 M8 P8 T8 U8 W8

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
VCCSFUSEPRG
VCCST_VCCPLL

VCCST_V5 V5
VCCST_V6 V6
VCCPLL V4

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_TI
(13) A_CPU_PCH_TO
WR88 33/4 A_CPU_PCH_TO_R
WR89 560/4/1

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CPU-SK/1151/S/15

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Title: CPU LGA1151-C		
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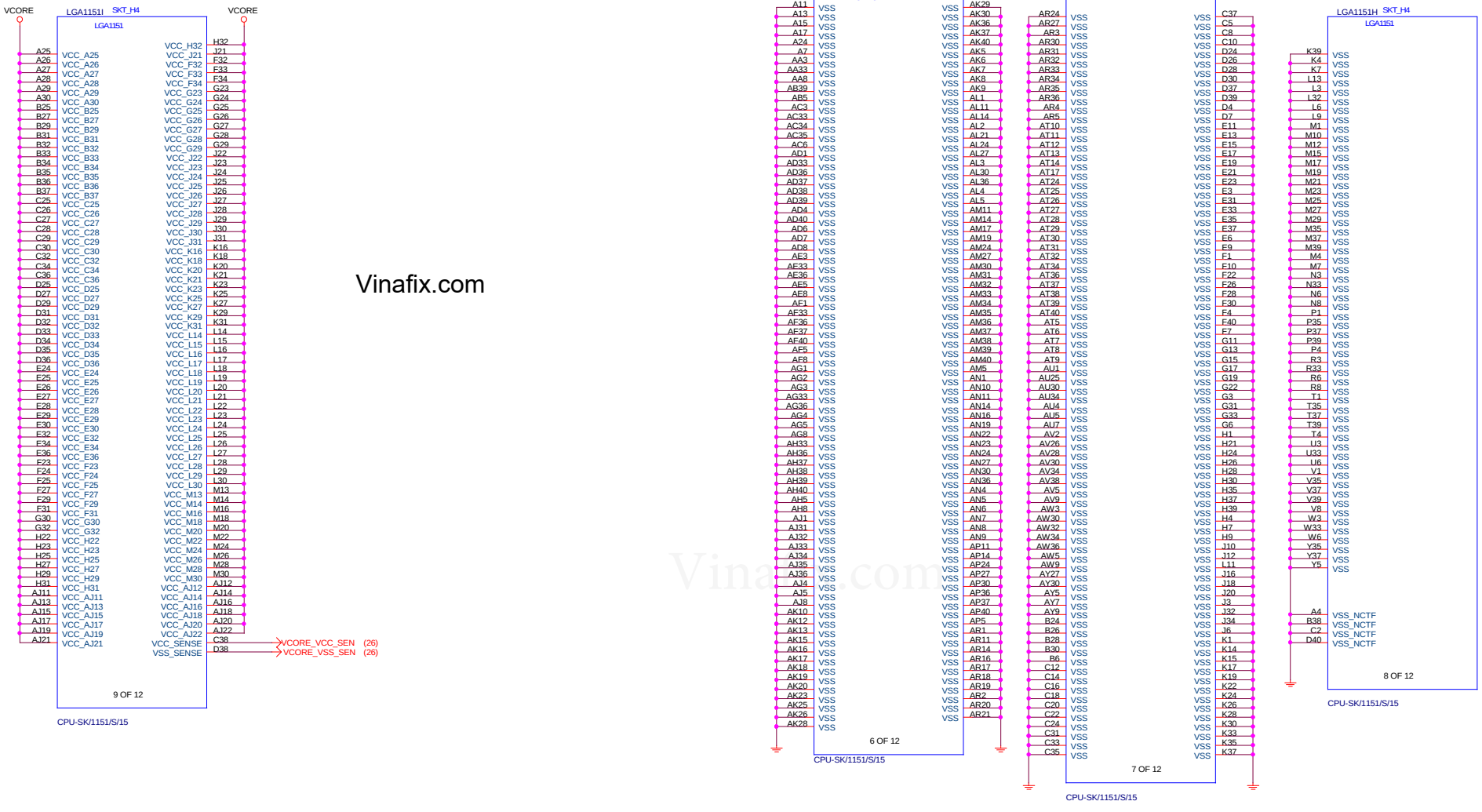
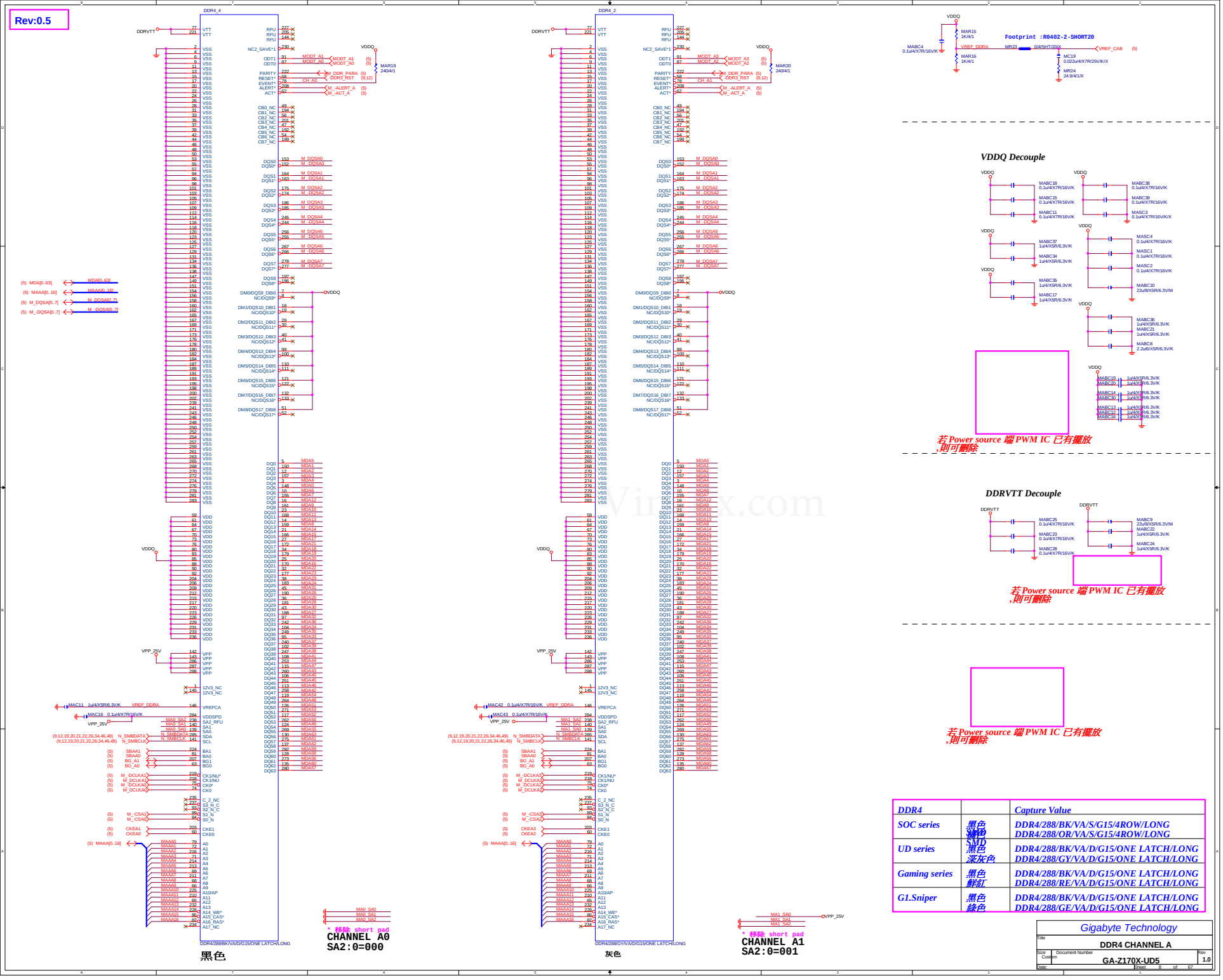


* 刪 Vcore 電容

Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 7 of 67	

Rev:0.5



DDR4		Capture Value
SOC series	黑色	DDR4/288/BK/VA/S/G15/4ROW/LONG
	灰色	DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	白色	DDR4/288/WH/VA/D/G15/ONE LATCH/LONG
	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	深灰色	DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	鮮紅	DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
G1.Sniper	黑色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
	綠色	DDR4/288/GE/VA/D/G15/ONE LATCH/LONG

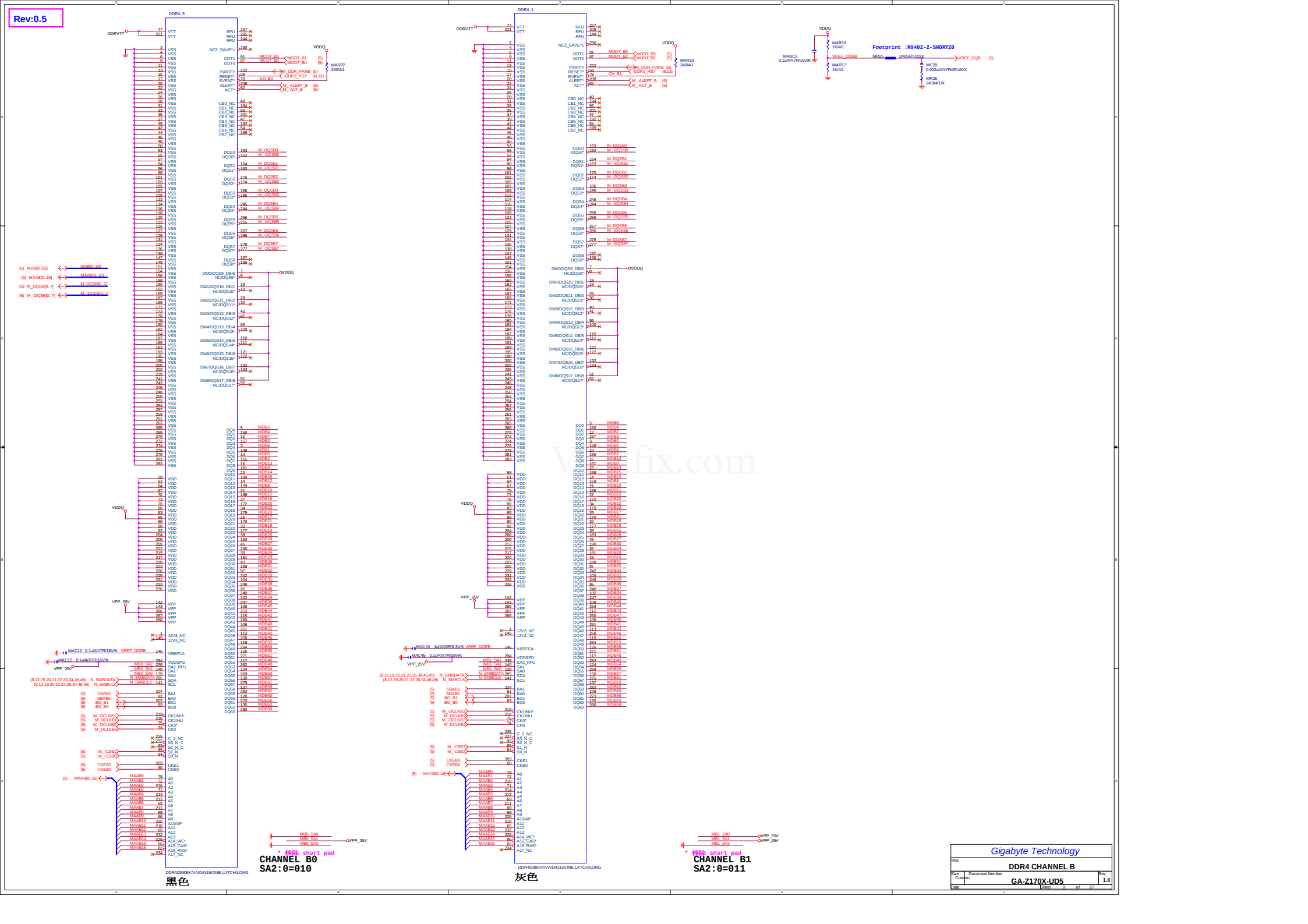
Gigabyte Technology

Title: DDR4 CHANNEL A

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

Date: | Sheet 8 of 67

Rev:0.5



Gigabyte Technology

Title: DDR4 CHANNEL B

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

Date: | Sheet 9 of 67

Rev 0.3

PCHE

SPT-H_PCH

(65) N_HDMI_HDP_F — AW4 — GPP_I0/DDPB_HPD0
(53) N_DVI_HDP_F — AY2 — GPP_I1/DDPC_HPD1
(55) N_DP_HDP — AV4 — GPP_I2/DDPD_HPD2
N_GPP_I3 — BA4 — GPP_I3/DDPE_HPD3

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

GPP_I7/DDPC_CTRLCLK — BB3 — N_DDPC_CTRLCLK — N_DDPC_CTRLCLK (53)
GPP_I8/DDPC_CTRLDATA — BD6 — N_DDPC_CTRLDATA — N_DDPC_CTRLDATA (53)
GPP_I5/DDPB_CTRLCLK — BA5 — N_DDPB_CTRLCLK — N_DDPB_CTRLCLK (65)
GPP_I6/DDPB_CTRLDATA — BC4 — N_DDPB_CTRLDATA — N_DDPB_CTRLDATA (65)
GPP_I9/DDPD_CTRLCLK — BE5 — N_DDPD_CTRLCLK — N_DDPD_CTRLCLK (55)
GPP_I10/DDPD_CTRLDATA — BE6 — N_DDPD_CTRLDATA — N_DDPD_CTRLDATA (55)

GPP_F14 — Y44 — A_-SKTOCC (4)
GPP_F23 — V44 — N_GPP_F23
GPP_F22 — W39 — N_GPP_F22
GPP_G23 — L43
GPP_G22 — L44 — N_GPP_G22
GPP_G21 — U35 — N_GPP_G21
GPP_G20 — R35 — N_GPP_G20
GPP_H23 — BD36

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SPT_PCH_DT/SKT/[10HB1-03Z170-20R]

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

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_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/X
N_GPP_B9 — NR14 — 8.2K/4/X

N_GPP_B10 — NR17 — 8.2K/4/X
N_GPP_H0 — NR19 — 8.2K/4
N_GPP_H1 — NR166 — 8.2K/4/X
N_GPP_H2 — NR167 — 8.2K/4
N_GPP_H3 — NR168 — 8.2K/4
N_GPP_H4 — NR15 — 8.2K/4/X
N_GPP_H5 — NR31 — 8.2K/4

PCHG

SPT-H_PCH

AR17 — GPP_A16/CLKOUT_48

(4) N_24MCLK — N_24MCLK — G1 — CLKOUT_CPUNSSC_P
(4) N_-24MCLK — N_-24MCLK — F1 — CLKOUT_CPUNSSC

(49) PCH_CPUCLK — PCH_CPUCLK — G2 — CLKOUT_CPUBCLK_P
(49) PCH_-CPUCLK — PCH_-CPUCLK — H2 — CLKOUT_CPUBCLK

XTALO_PCH — A5 — XTAL24_OUT
XTALI_PCH — A6 — XTAL24_IN

VCC1_0_PCH — NR5 — 2.7K/4/1 — XCLK_BIASREF — E1 — XCLK_BIASREF

CLK:4/15<1000;Guard GND

N_Y1 — BC9 — RTCX1
N_Y2 — BD10 — RTCX2

(19) -PCIEX16_PR — N_GPP_B5 — BC24 — GPP_B5/SRCCLKREQ0#
(21) -PCIEX1_PR1 — N_GPP_B6 — AW24 — GPP_B6/SRCCLKREQ1#
(21) -PCIEX1_PR2 — N_GPP_B7 — AT24 — GPP_B7/SRCCLKREQ2#
(20) -PCIEX4_PR — N_GPP_B8 — BD25 — GPP_B8/SRCCLKREQ3#
N_GPP_B9 — BB24 — GPP_B9/SRCCLKREQ4#
N_GPP_B10 — BE25 — GPP_B10/SRCCLKREQ5#
(24) M2H_-CLKREQ — N_GPP_H0 — AT33 — GPP_H0/SRCCLKREQ6#
(22) -PCIEX8_PR — N_GPP_H1 — AR31 — GPP_H1/SRCCLKREQ7#
(21) -PCIEX1_PR3 — N_GPP_H2 — BD32 — GPP_H2/SRCCLKREQ8#
(21) -PCIEX1_PR4 — N_GPP_H3 — BC32 — GPP_H3/SRCCLKREQ9#
(45) LB_-CLKREQ — N_GPP_H4 — BB31 — GPP_H4/SRCCLKREQ10#
(56) M2D_-CLKREQ — N_GPP_H5 — BC33 — GPP_H5/SRCCLKREQ11#
(62) TH_CLK_REQ_N — N_GPP_H6 — BA33 — GPP_H6/SRCCLKREQ12#
AW33 — GPP_H7/SRCCLKREQ13#
BB33 — GPP_H8/SRCCLKREQ14#
BD33 — GPP_H9/SRCCLKREQ15#

R13 — CLKOUT_PCIE_N15
R11 — CLKOUT_PCIE_P15
P1 — CLKOUT_PCIE_N14
R2 — CLKOUT_PCIE_P14
W7 — CLKOUT_PCIE_N13
Y6 — CLKOUT_PCIE_P13

(62) REFCLK_TBT_N — U2 — CLKOUT_PCIE_N12
(62) REFCLK_TBT_P — U3 — CLKOUT_PCIE_P12

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SPT_PCH_DT/SKT/[10HB1-03Z170-20R]

N_GPP_B9 — NR169 — MASK/0/4/SHT/2D/X
N_GPP_H4 — NR286 — 0/4/X
N_GPP_B10 — NR287 — MASK/0/4/SHT/2D/X
N_GPP_H6 — NR4 — 0/4

ON-BOARD DEVICE USED

CLKOUT_ITPXDP — L1
CLKOUT_ITPXDP_P — L2
CLKOUT_CPUPCIBCLK — J1 — N_-CPUPCIBCLK (4)
CLKOUT_CPUPCIBCLK_P — J2 — N_CPUPCIBCLK (4)

CLKOUT_PCIE_N0 — N7 — PA_-SRCCLK_3GIO (19)
CLKOUT_PCIE_P0 — N8 — PA_SRCCLK_3GIO (19) — **PCIEX16**
CLKOUT_PCIE_N1 — L7 — PI_-PCIE_CLK (21)
CLKOUT_PCIE_P1 — L5 — PI_PCIE_CLK (21) — **PCIEX1_1**
CLKOUT_PCIE_N2 — D3 — PJ_-PCIE_CLK (21)
CLKOUT_PCIE_P2 — F2 — PJ_PCIE_CLK (21) — **PCIEX1_2**
CLKOUT_PCIE_N3 — E5 — PQ_-PCIE_CLK (20)
CLKOUT_PCIE_P3 — G4 — PQ_PCIE_CLK (20) — **PCIEX4**
CLKOUT_PCIE_N4 — D5 — RH_-SRCCLK (52)
CLKOUT_PCIE_P4 — E6 — RH_SRCCLK (52) — **ASM1061**
CLKOUT_PCIE_N5 — D8 — LC_-SRCCLK_LAN (46)
CLKOUT_PCIE_P5 — D7 — LC_SRCCLK_LAN (46) — **i211AT**
CLKOUT_PCIE_N6 — R8 — CK_M2H_100M_DN (24)
CLKOUT_PCIE_P6 — R7 — CK_M2H_100M_DP (24) — **M2A_32G**
CLKOUT_PCIE_N7 — U5 — PE_-SRCCLK_3GIO1 (22)
CLKOUT_PCIE_P7 — U7 — PE_SRCCLK_3GIO1 (22) — **PCIEX8**
CLKOUT_PCIE_N8 — W10 — PK_-PCIE_CLK (21)
CLKOUT_PCIE_P8 — W11 — PK_PCIE_CLK (21) — **PCIEX1_3**
CLKOUT_PCIE_N9 — N3 — PL_-PCIE_CLK (21)
CLKOUT_PCIE_P9 — N2 — PL_PCIE_CLK (21) — **PCIEX1_4**
CLKOUT_PCIE_N10 — P3 — LB_-SRCCLK_LAN (45)
CLKOUT_PCIE_P10 — P2 — LB_SRCCLK_LAN (45) — **I219**
CLKOUT_PCIE_N11 — R3 — CK_M2D_100M_DN (56)
CLKOUT_PCIE_P11 — R4 — CK_M2D_100M_DP (56) — **M2B_32G**

*

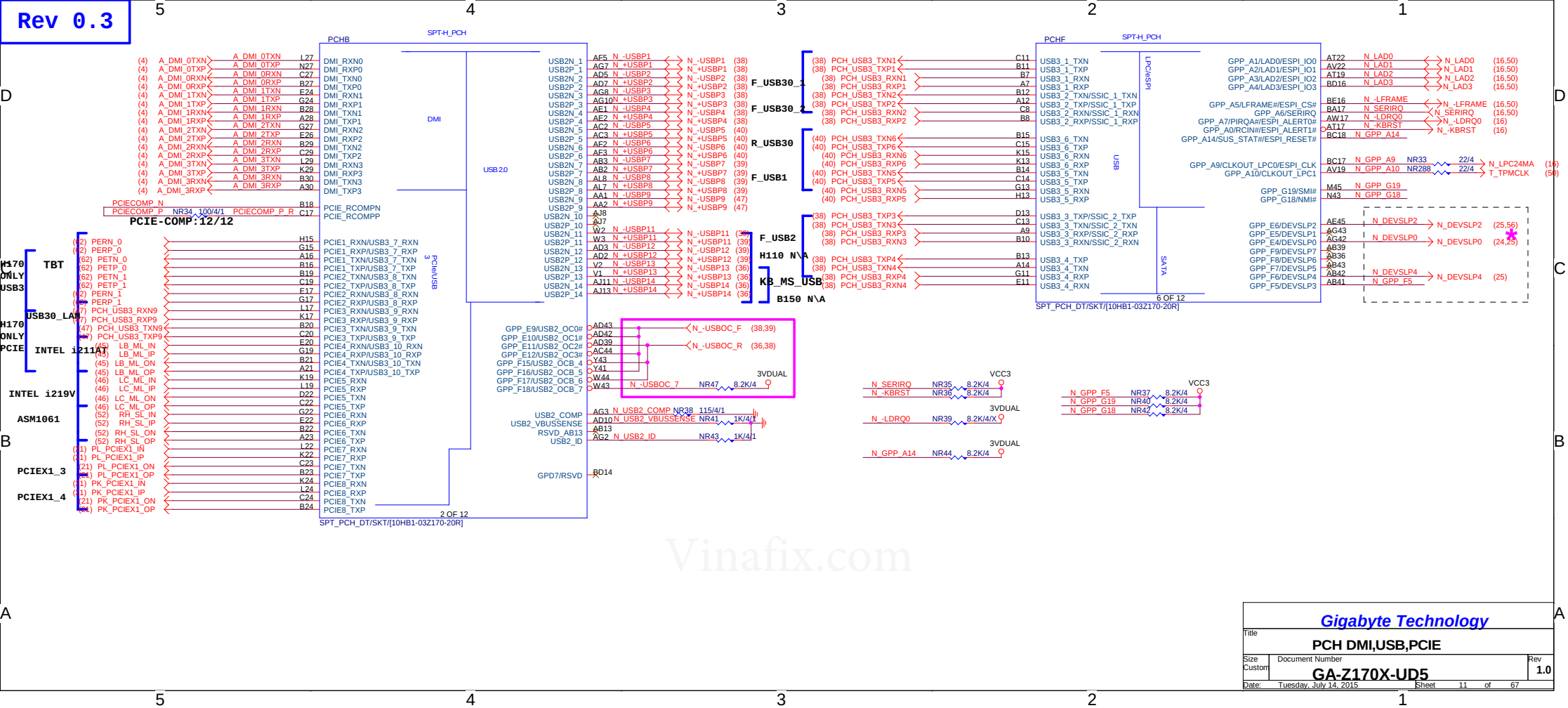
CLOCK 4/4/4//15

Gigabyte Technology

Title: PCH CLOCK BUFFER

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

Date: Tuesday, July 14, 2015 | Sheet 10 of 67



Title	PCH DMI,USB,PCIE
Size	Custom
Document Number	GA-Z170X-UD5
Rev	1.0
Date:	Tuesday, July 14, 2015
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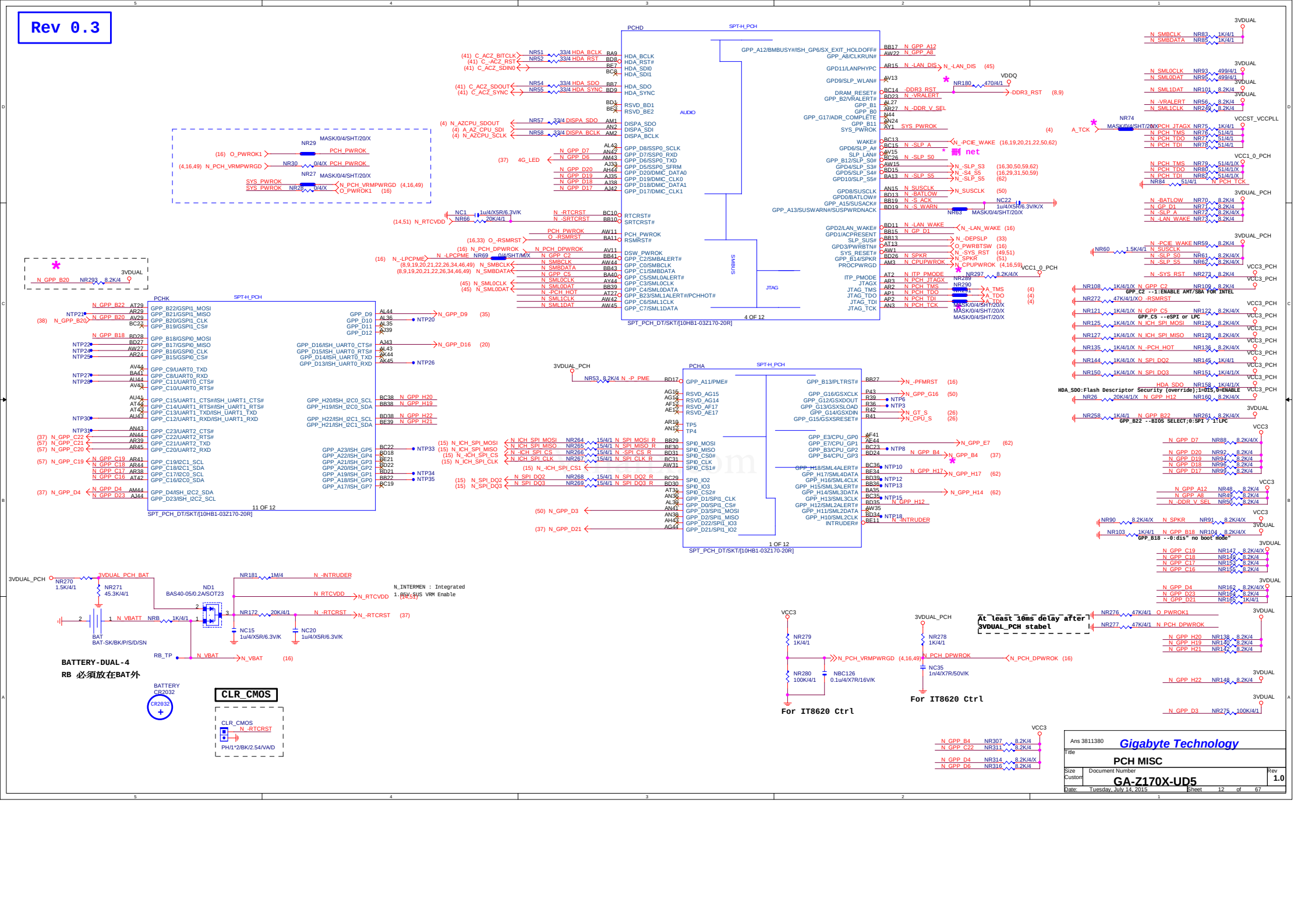
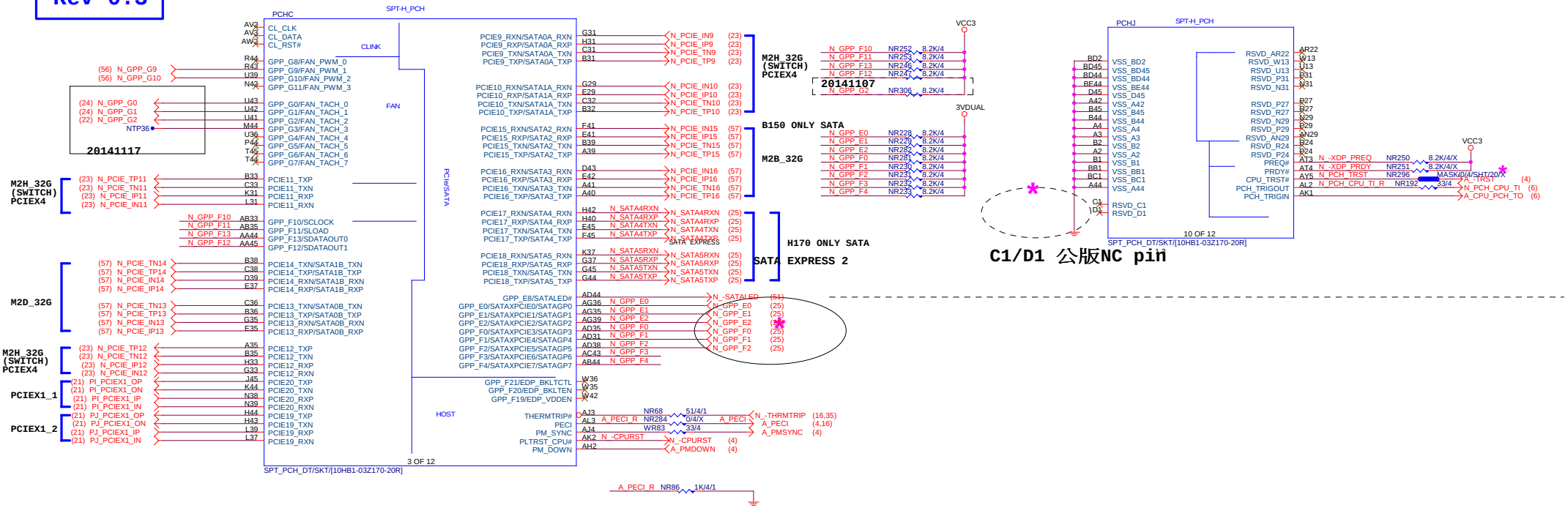
Gigabyte Technology

Rev 0.3

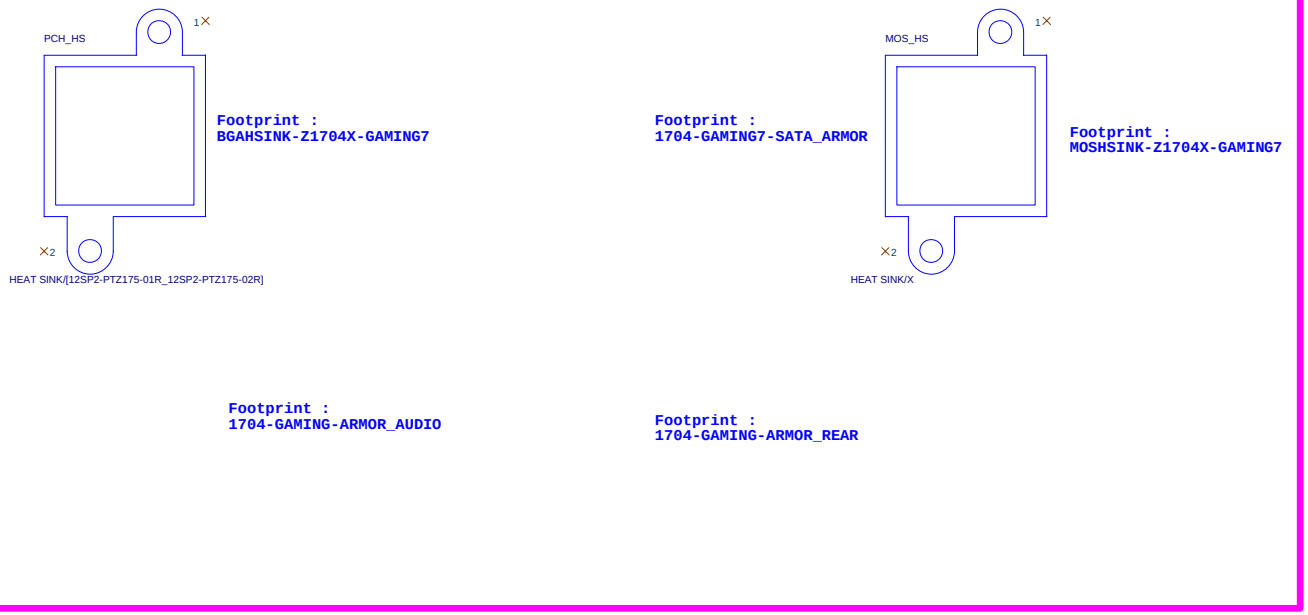


Ans 3811380	Gigabyte Technology
Title	PCH MISC
Size / Custom	Document Number: GA-Z170X-UD5
Rev	1.0
Date: Tuesday, July 14, 2015	Sheet 12 of 67

Rev 0.3

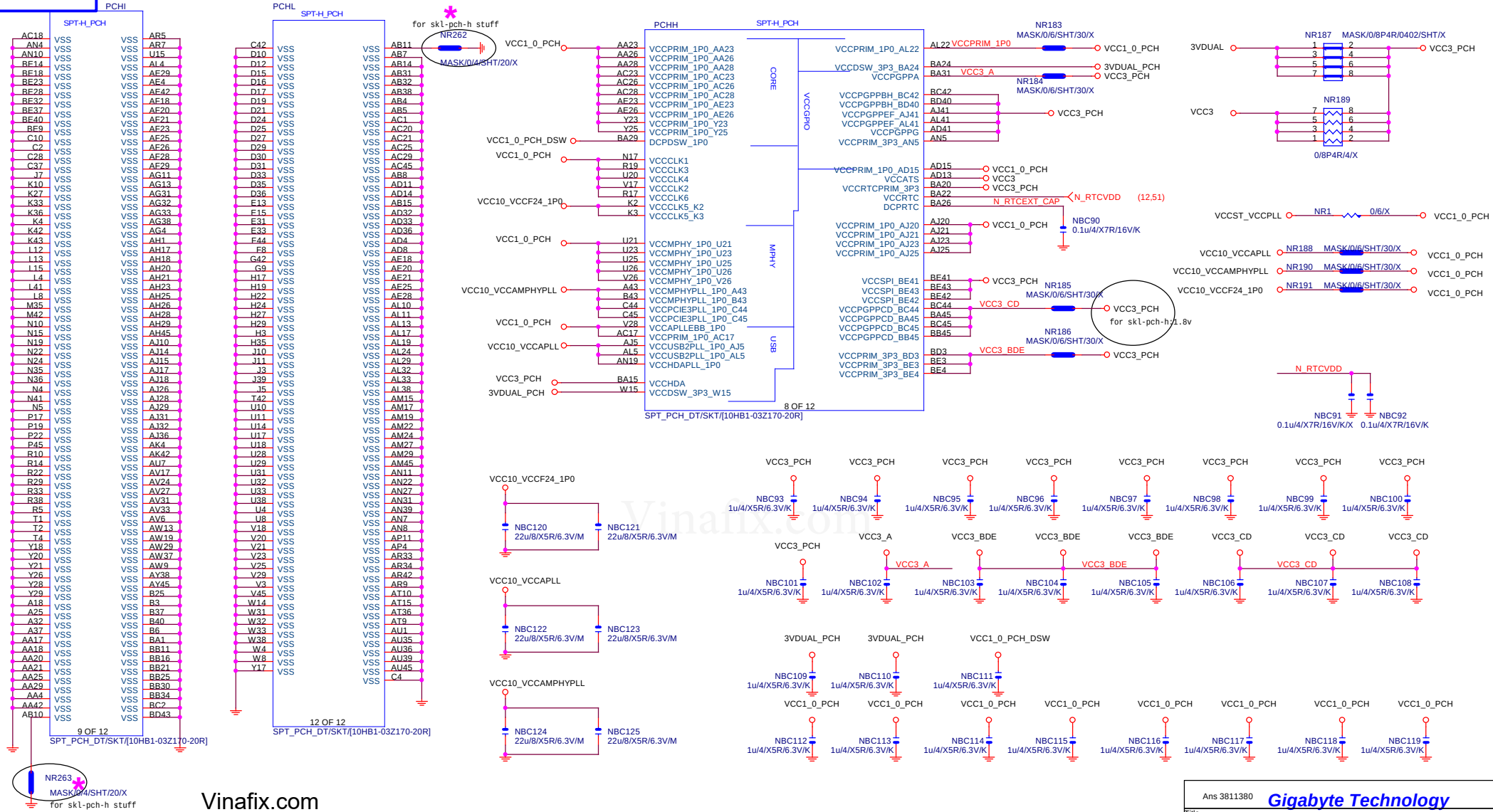


装甲HEATSINK 分成五大部份



Ans 3811380	Gigabyte Technology	
Title	PCH SATA,PCIE,SATA_EXPRESS	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 13 of 67	

Rev 0.3



Ans 3811380	Gigabyte Technology	
Title	PCH PWR, GND	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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Rev 0.42

DUAL BIOS

指定用DII

3VDUAL
NR238 330/4
NR239 1K/4/1
-SPI_CS_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

3VDUAL
NR237 330/4
NR240 1K/4/1
-SPI_CS_2
NQ22 MMBT2222A/SOT23/600mA/40 S0T23
N_-ICH_SPI_CS
NQ23 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_M NR234 8.2K/4

MOSI For DMI RX Termination Voltage

3VDUAL
NR102 0/4/SHT/M/X
NBC2 1u/4/X5R/6.3V/K

M_BIOS
-SPI_CS_1 NR105 22/4
NC4 10p/4/NPO/50V/J/X
SPI_MISO
(12) N_SPI_DQ2 NR222 0/4/SHT/X N_-SPI_WP0
CS# SO WP# VSS VDD HOLD# SCK SI
-HOLD0 NR221 0/4/SHT/X N_SPI_DQ3
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC6 10p/4/NPO/50V/J/X

MAIN BIOS

128M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

(16) -SPI_HOLD_M
(16) -SPI_HOLD_B
-SPI_HOLD_M NR100 1K/4/1
-SPI_HOLD_B NR89 1K/4/1

3VDUAL
(12) (12) N_ICH_SPI_MISO
N_ICH_SPI_MISO NR98 8.2K/4
(12) N_ICH_SPI_MISO
NR97 22/4 SPI_MISO

3VDUAL
NR67 0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K

B_BIOS
-SPI_CS_2 NR87 22/4
SPI_MISO
(12) N_SPI_DQ2 NR236 0/4/SHT/X N_-SPI_WP1
CS# SO WP# VSS VDD HOLD# SCK SI
-HOLD1 NR224 0/4/SHT/X N_SPI_DQ3 (12)
N_ICH_SPI_CLK N_ICH_SPI_CLK (12)
N_ICH_SPI_MOSI N_ICH_SPI_MOSI (12)

BACKUP BIOS

128M/Q/SPI/SO8/S

* (footprint 改 IC8-BIOS)

3VDUAL
NBC4 0.1u/4/X7R/16V/K/X

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

1 means floating
0 means PD 1K

BSR5 100/4/1 -DUAL_BIOSDIS (16)
SB SW/1/B/DIP/[11NH7-110003-21R]
G1 G2 MO

SB:Single BIOS	
	Disable
	Enable

M_BIOS

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

* 試產先上 , PVT 移除

BIOS_PH

BIOS_PH
N_-ICH_SPI_CS
N_ICH_SPI_MISO
N_SPI_DQ2
N_-ICH_SPI_CS1
-HOLD0
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
N_-ICH_SPI_CS1 (12)
3VDUAL

★Update 2015-01.29

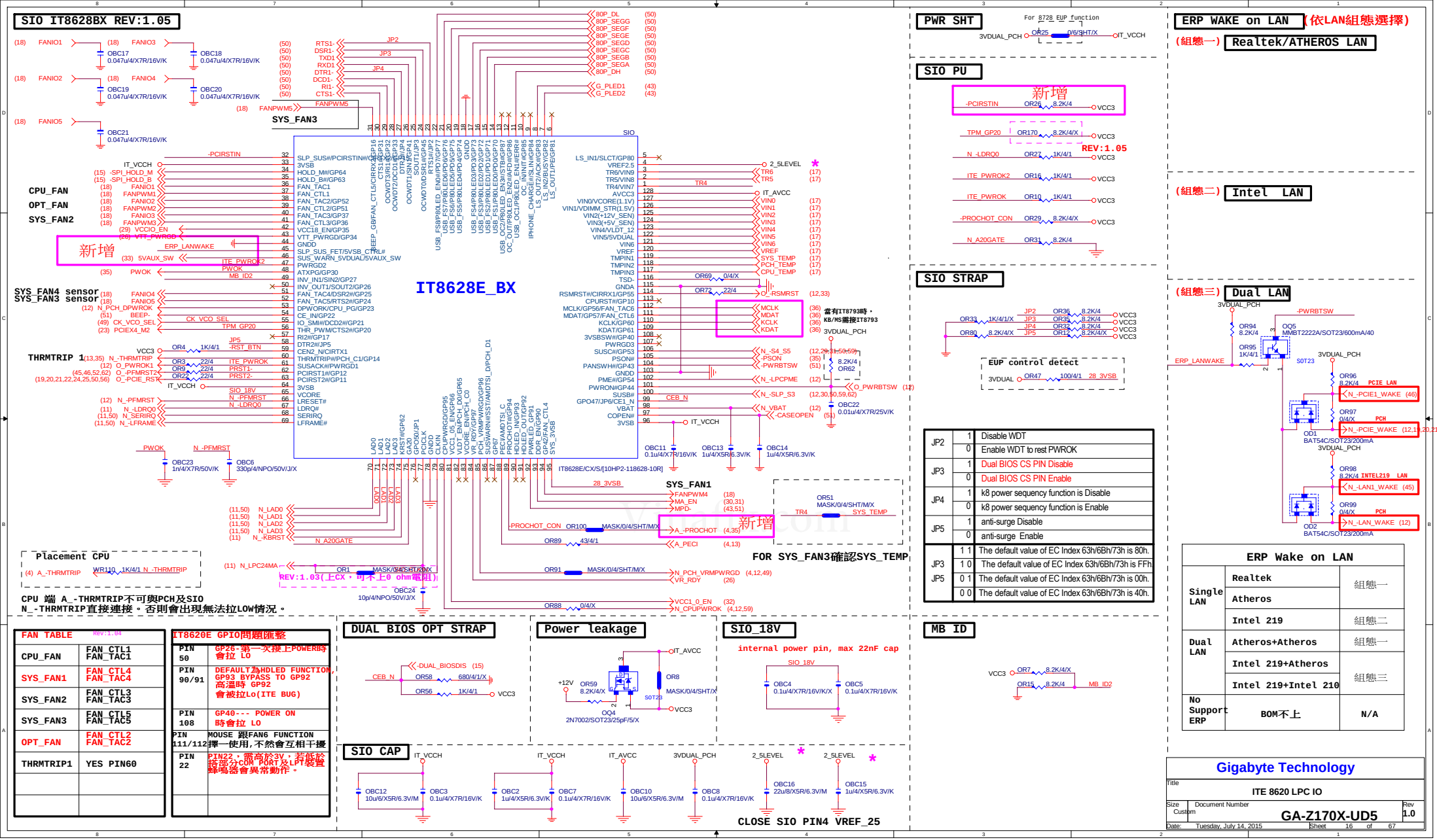
MASK/PH/2*5K10/BK/2.54/VA/D/X

Footprint the same, confirmed by Graceing.

Use COM port pin header part.

Gigabyte Technology

Title: BIOS
Size: Custom
Document Number: GA-Z170X-UD5
Rev: 1.0
Date: Tuesday, July 14, 2015
Sheet 15 of 67



FAN TABLE	REV:1.04
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL4 FAN_TAC4
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN	FAN_CTL2 FAN_TAC2
THRMTRIP1	YES PIN60

IT8620E GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT為HDLED FUNCTION,GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION擇一使用,不然會互相干擾
PIN 22	PIN22，需高於3V，若低於該部分COM PORT及LPT裝置蜂鳴器會異常動作。

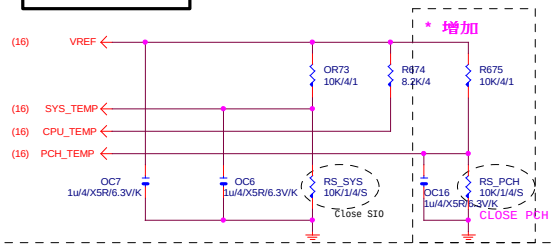
JP2	1	Disable WDT
	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
	0	anti-surge Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

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

Gigabyte Technology

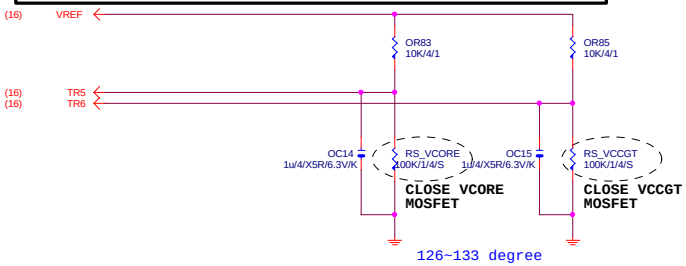
Title	ITE 8620 LPC IO	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 16 of 67	

TEMP H/W MONITOR



RS_VCORE、RS_VCCGT CLOSE CPU VCORE & VCCGT MOSFET

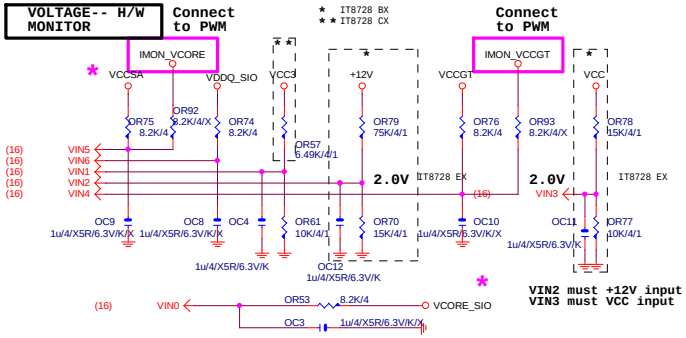
-PROCHOT:有mos heartsink不用prochot function



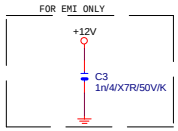
VOLTAGE-- H/W MONITOR

Connect to PWM

Connect to PWM



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



Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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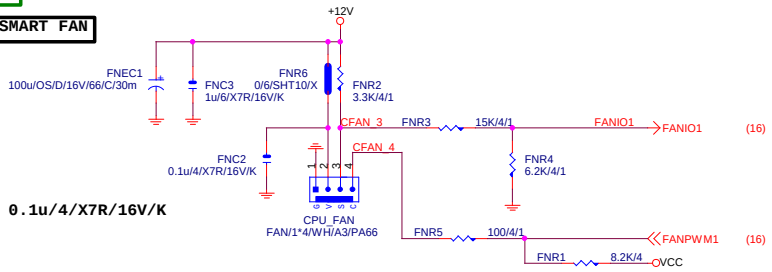
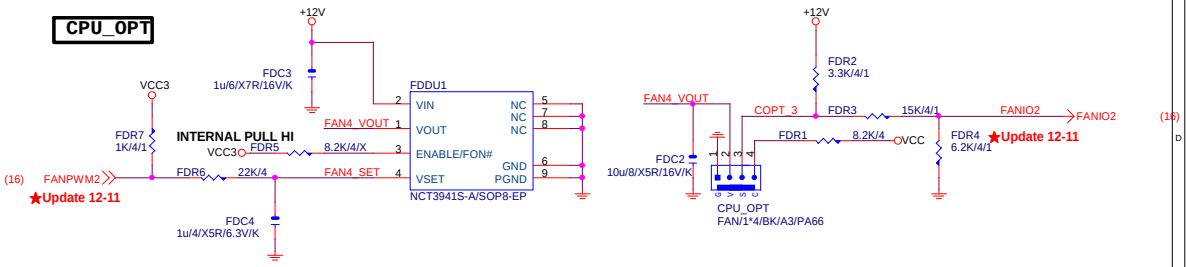
Rev: 0.51

CPU SMART FAN



CPU_OPT

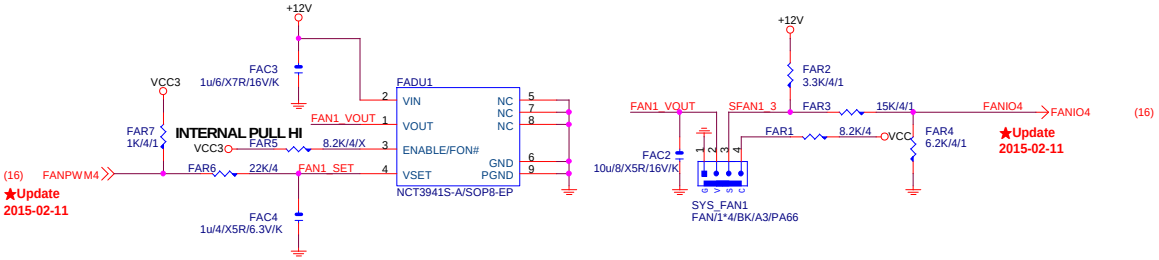


SYSTEM FAN1

Linear SYS_FAN

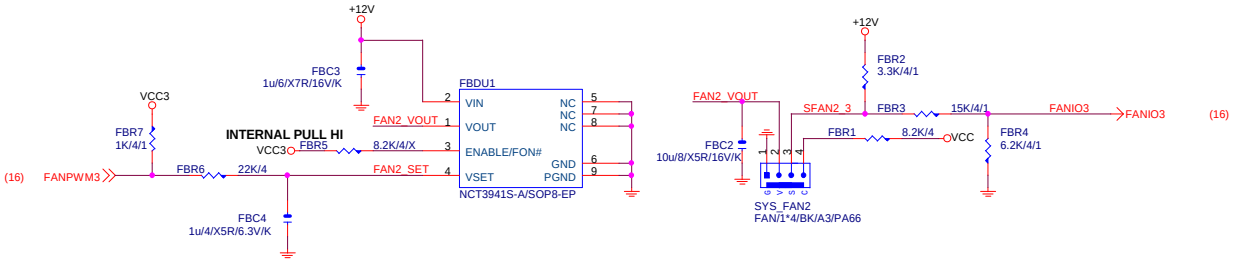
Enable Function (NCT3941S)

Full Turn On Function (NCT3941S-A)

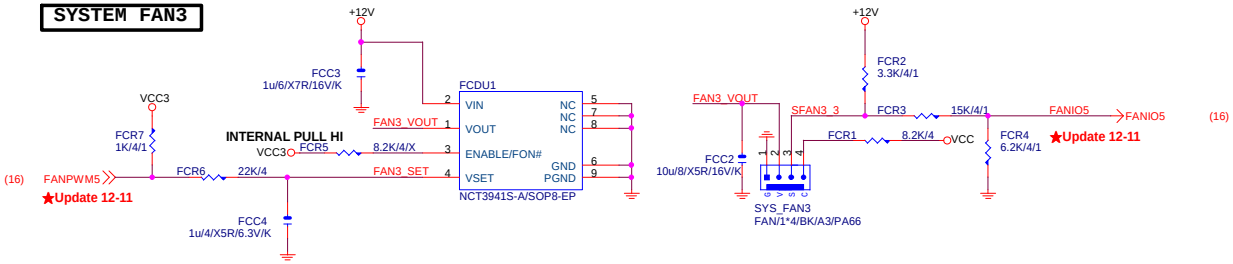


SYSTEM FANX

SYSTEM FAN2



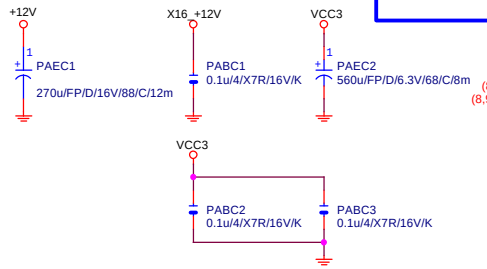
SYSTEM FAN3



Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 18 of 67	

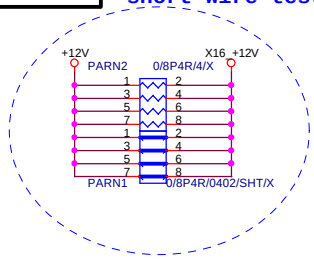
PCIEX16 CAP

Rev 0.3



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

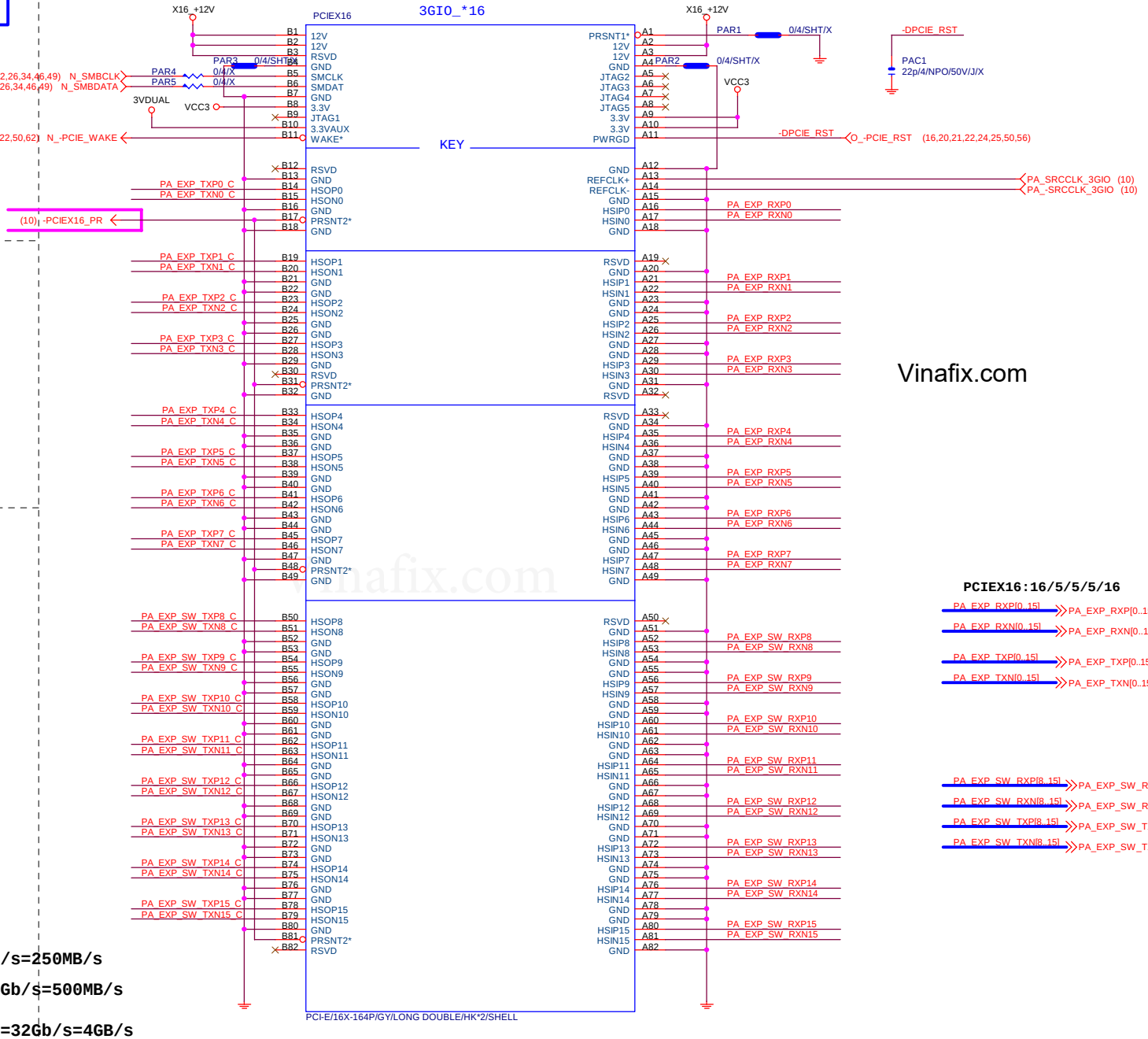
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164STH



Vinafix.com

PCIEX16:16/5/5/5/16

- PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] (4,23)
- PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] (4,23)
- PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] (4,23)
- PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] (4,23)
- PA_EXP_SW_RXP[8..15] → PA_EXP_SW_RXP[8..15] (23)
- PA_EXP_SW_RXN[8..15] → PA_EXP_SW_RXN[8..15] (23)
- PA_EXP_SW_TXP[8..15] → PA_EXP_SW_TXP[8..15] (23)
- PA_EXP_SW_TXN[8..15] → PA_EXP_SW_TXN[8..15] (23)

Gigabyte Technology

Title	PCI EXPRESS * 16	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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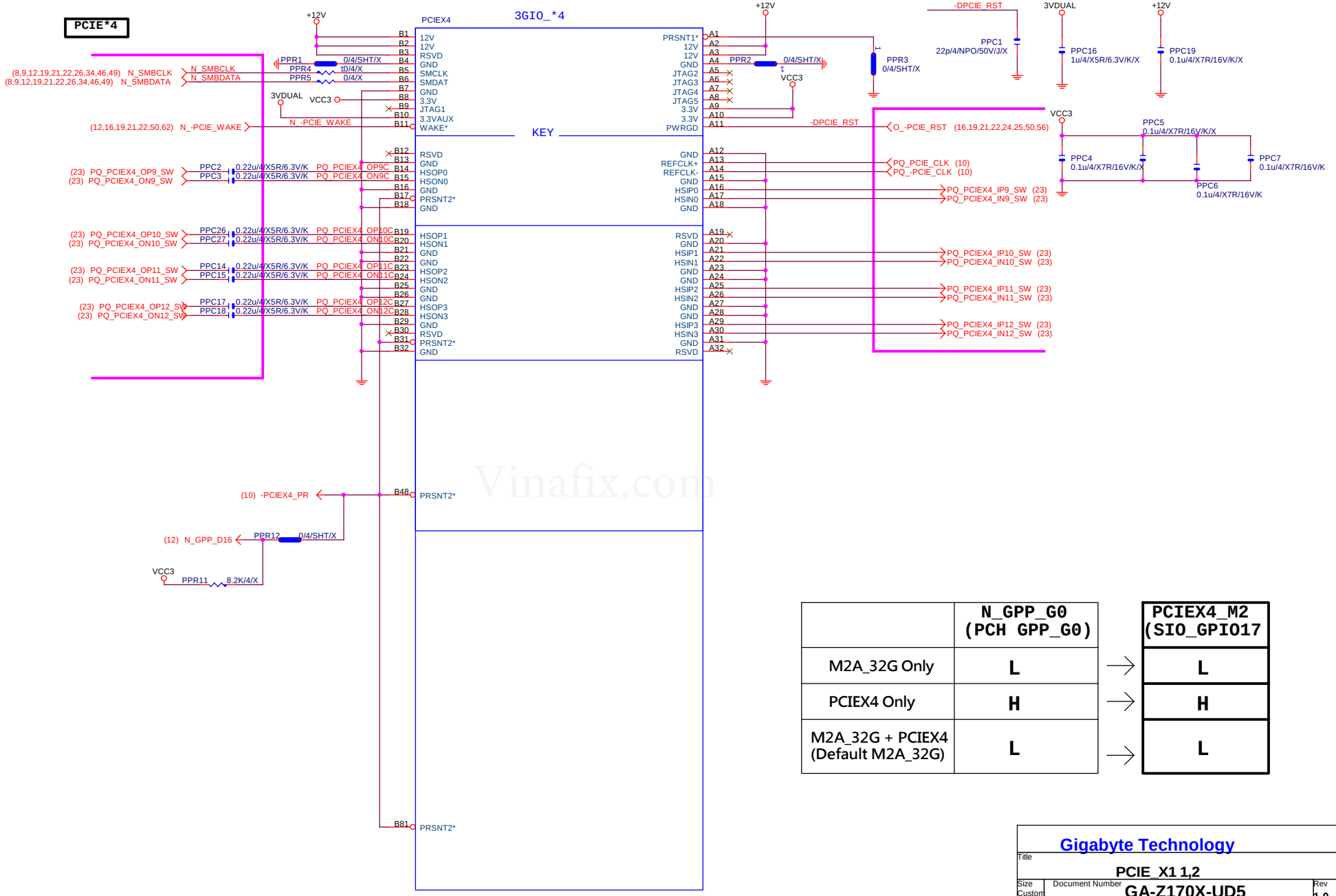
Footprint "PCIESLOT-64STH-1"



	N_GPP_G0 (PCH GPP_G0)		PCIEX4_M2 (SIO_GPIO17
M2A_32G Only	L	→	L
PCIEX4 Only	H	→	H
M2A_32G + PCIEX4 (Default M2A_32G)	L	→	L

Gigabyte Technology

Title: PCIE_X1 1,2

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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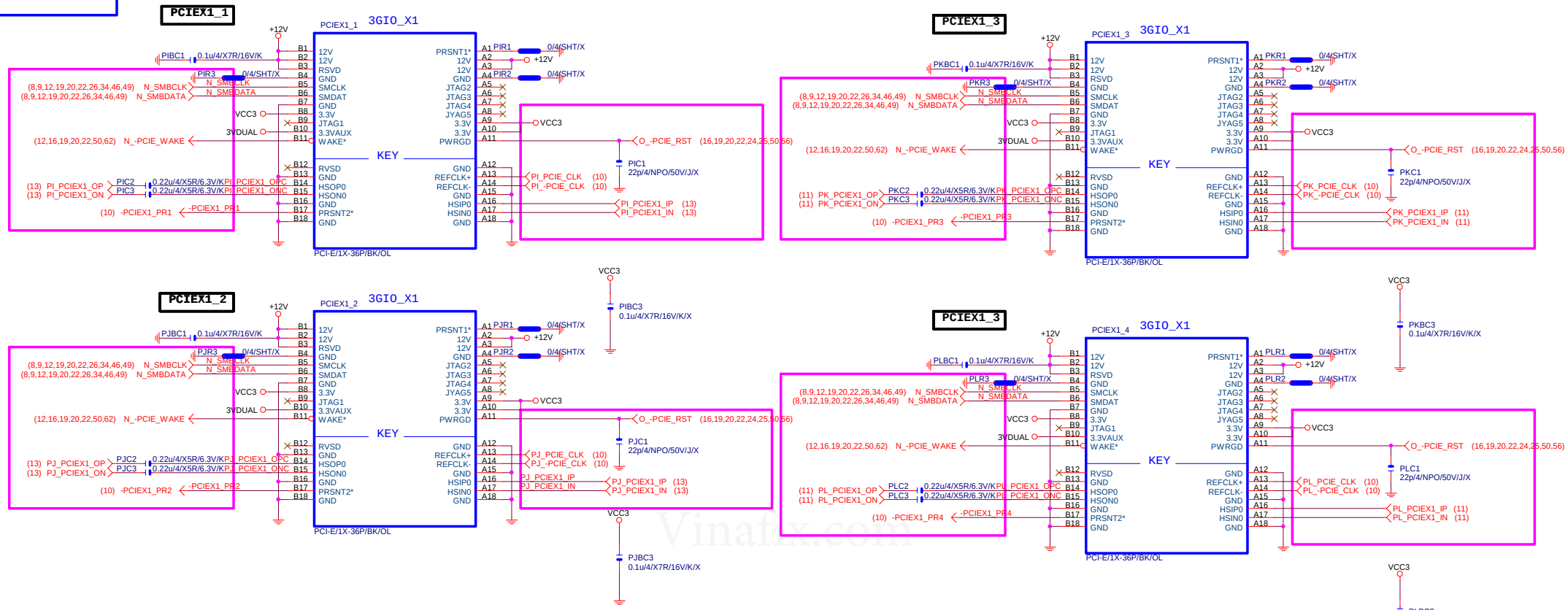
Rev 0.3



Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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Rev 0.3

+12V — PEEC1 270u/FP/D/16V/88/C/12m
VCC3 — PEEC2 560u/FP/D/6.3V/68/C/8m

PCIEX8 PROTECT SHT

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

+12V protect short-wire test

PCIEX8 — 3GIO_*8

X8_+12V → B1 12V, B2 12V, B3 RSVD, B4 GND, B5 SMCLK, B6 SMDAT, B7 GND, B8 3.3V, B9 JTAG1, B10 3.3VAUX, B11 WAKE*

(8,9,12,19,20,21,26,34,46,49) N_SMBCLK — N_SMBCLK PER8 0/4/X → B5 SMCLK
(8,9,12,19,20,21,26,34,46,49) N_SMBDATA — N_SMBDATA PER9 0/4/X → B6 SMDAT

PER6 0/4/SHT/X → B4 GND

3VDUAL, VCC3 → B8 3.3V

(12,16,19,20,21,50,62) N_-PCIE_WAKE → B11 WAKE*

KEY

B12 RSVD	PRSNT1* A1		
B13 GND	12V A2		
PE_EXP_SW_TXP8_C → B14 HSOP0	12V A3		
PE_EXP_SW_TXN8_C → B15 HSON0	RSVD A4	PER7 0/4/SHT/X	PER5 0/4/SHT/X
B16 GND	GND A5		
B17 PRSNT2*	JTAG2 A6		
B18 GND	JTAG3 A7		
	JTAG4 A8		
	JTAG5 A9		
	3.3V A10		
	3.3V A11		O_-PCIE_RST (16,19,20,21,24,25,50,56)
	PWRGD		PEC6 22p/4/NPO/50V/J/X
B19 HSOP1	A12 GND		
PE_EXP_SW_TXP9_C → B20 HSON1	A13 REFCLK+		PE_SRCCLK_3GIO1 (10)
B21 GND	A14 REFCLK-		PE_-SRCCLK_3GIO1 (10)
B22 GND	A15 GND		
PE_EXP_SW_TXP10_C → B23 HSOP2	A16 HSIP0		PE_EXP_SW_RXP8
PE_EXP_SW_TXN10_C → B24 HSON2	A17 HSIN0		PE_EXP_SW_RXN8
B25 GND	A18 GND		
B26 GND	A19 RSVD		
PE_EXP_SW_TXP11_C → B27 HSOP3	A20 GND		
PE_EXP_SW_TXN11_C → B28 HSON3	A21 HSIP1		PE_EXP_SW_RXP9
B29 GND	A22 HSIN1		PE_EXP_SW_RXN9
B30 RSVD	A23 GND		
B31 PRSNT2*	A24 GND		
B32 GND	A25 HSIP2		PE_EXP_SW_RXP10
PE_EXP_SW_TXP12_C → B33 HSOP4	A26 HSIN2		PE_EXP_SW_RXN10
PE_EXP_SW_TXN12_C → B34 HSON4	A27 GND		
B35 GND	A28 GND		
B36 GND	A29 HSIP3		PE_EXP_SW_RXP11
PE_EXP_SW_TXP13_C → B37 HSOP5	A30 HSIN3		PE_EXP_SW_RXN11
PE_EXP_SW_TXN13_C → B38 HSON5	A31 GND		
B39 GND	A32 RSVD		
B40 GND	A33 RSVD		
PE_EXP_SW_TXP14_C → B41 HSOP6	A34 GND		
PE_EXP_SW_TXN14_C → B42 HSON6	A35 HSIP4		PE_EXP_SW_RXP12
B43 GND	A36 HSIN4		PE_EXP_SW_RXN12
B44 GND	A37 GND		
PE_EXP_SW_TXP15_C → B45 HSOP7	A38 GND		
PE_EXP_SW_TXN15_C → B46 HSON7	A39 HSIP5		PE_EXP_SW_RXP13
B47 GND	A40 HSIN5		PE_EXP_SW_RXN13
B48 PRSNT2*	A41 GND		
B49 GND	A42 GND		
	A43 HSIP6		PE_EXP_SW_RXP14
	A44 HSIN6		PE_EXP_SW_RXN14
	A45 GND		
	A46 GND		
	A47 HSIP7		PE_EXP_SW_RXP15
	A48 HSIN7		PE_EXP_SW_RXN15
	A49 GND		

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

PE_EXP_SW_RXP[8..15] → PE_EXP_SW_RXP[8..15] (23)
PE_EXP_SW_RXN[8..15] → PE_EXP_SW_RXN[8..15] (23)
PE_EXP_SW_TXP[8..15] → PE_EXP_SW_TXP[8..15] (23)
PE_EXP_SW_TXN[8..15] → PE_EXP_SW_TXN[8..15] (23)

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

(23) PE_16_8_SW
(4) -8X_EN
PED1 BAT54C/SOT23/200mA
(13) N_GPP_G2 → B81 PRSNT2*
P.U.在PCH page
(10) -PCIEX8_PR — PER10 0/4/SHT/X

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

Gigabyte Technology

Title: PCI EXPRESS X8
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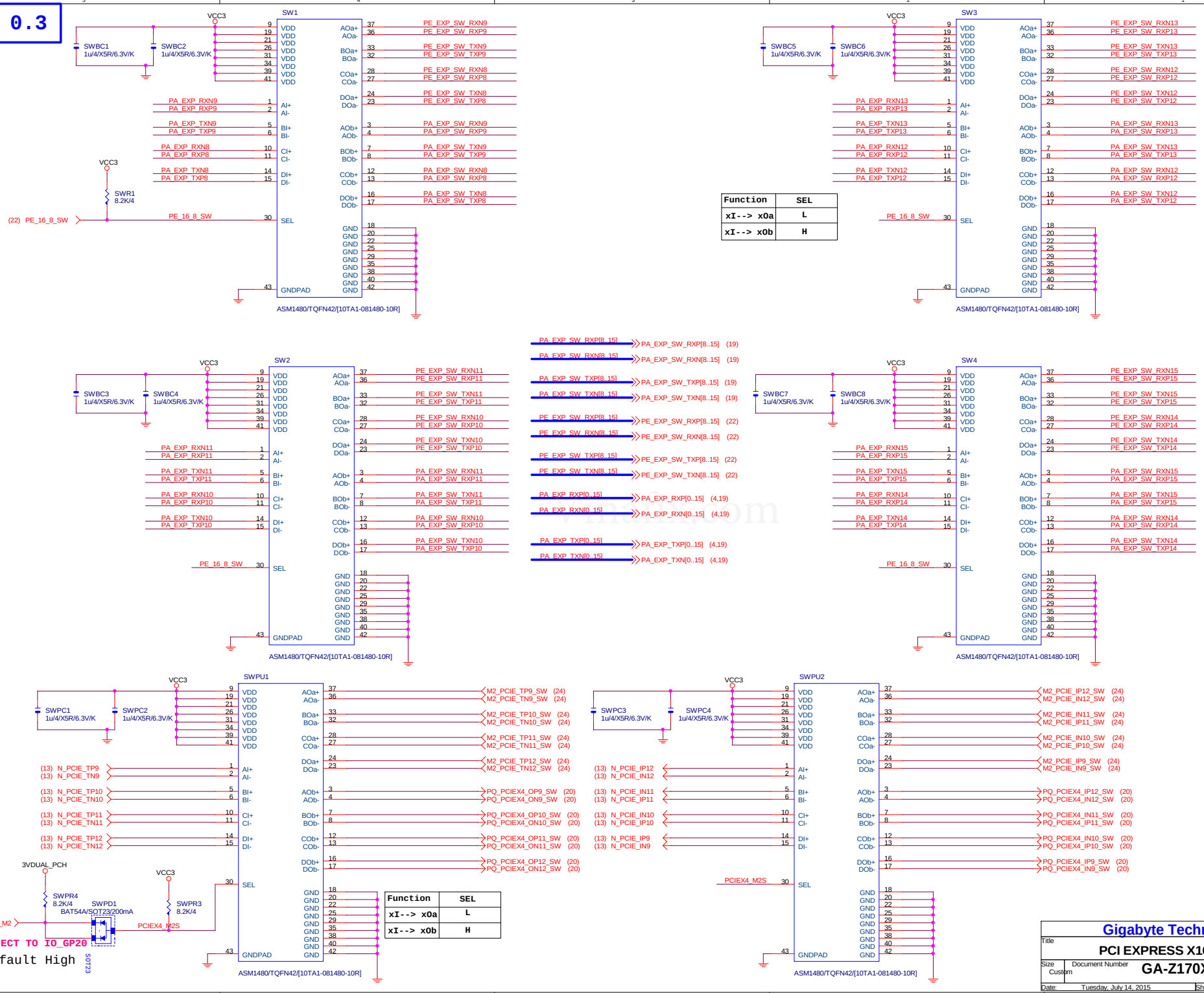
Rev 0.3



Title	PCI EXPRESS X16 SWITCH
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Gigabyte Technology

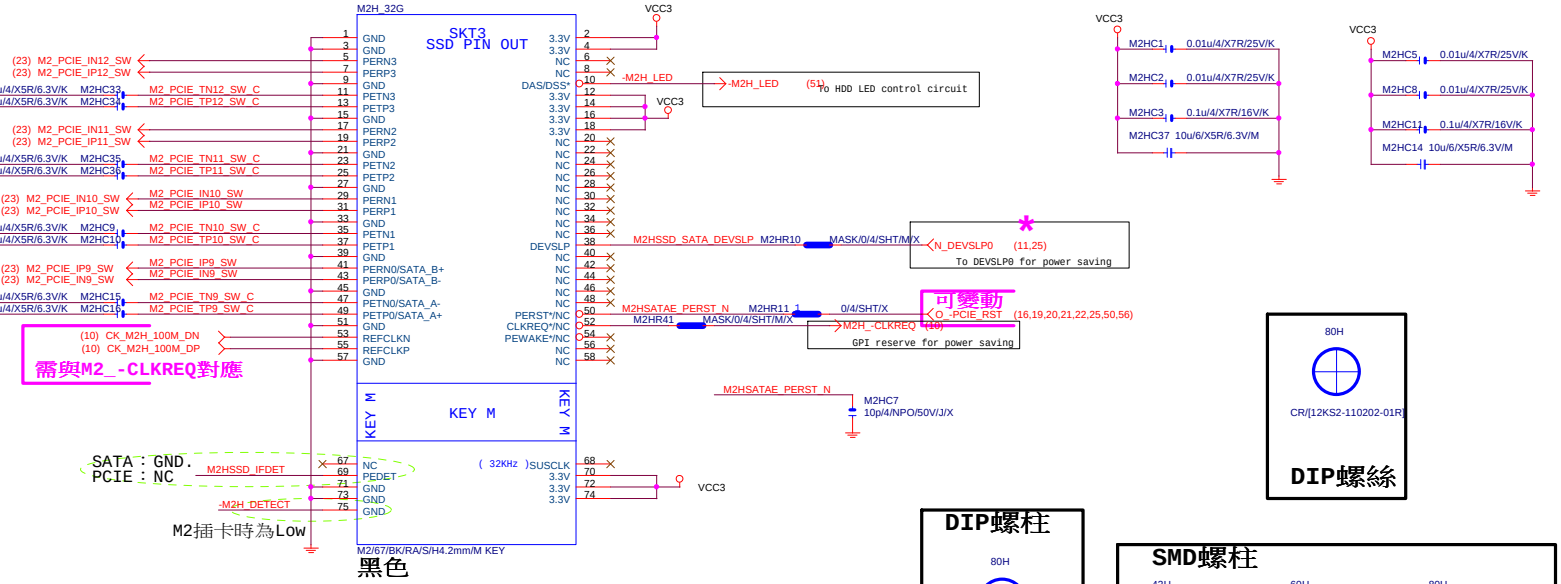
Rev 0.1

M.2 Lane4 from PCH port18

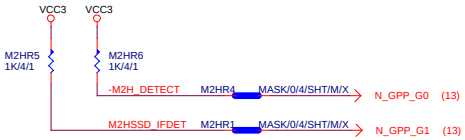
M.2 Lane3 from PCH port17

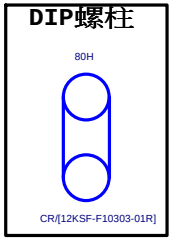
M.2 Lane2 from PCH port16

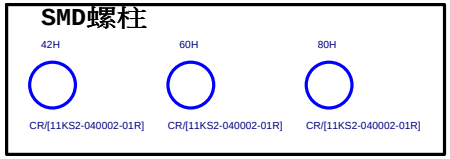
M.2 Lane2 from PCH port15



支援SATA and M.2 function







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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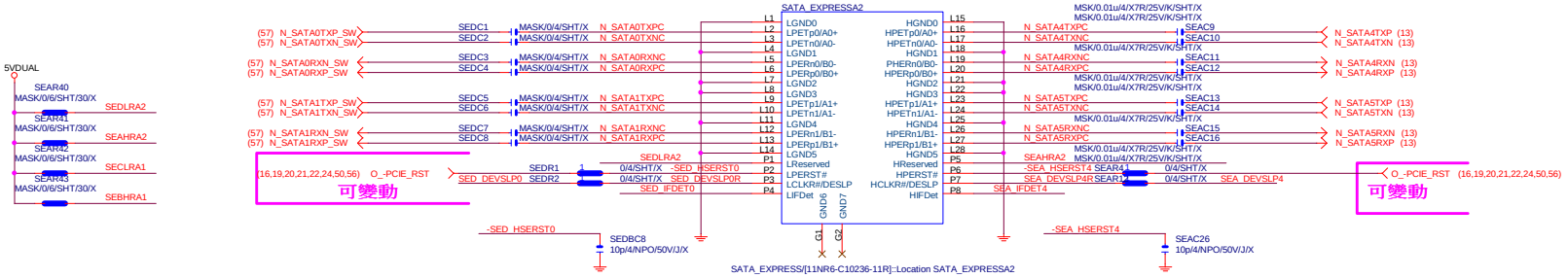
Rev 0.6

SATA EXPRESS 下層 To SATA3 port0/1

SATA EXPRESS 上層 To SATA3 port4/5

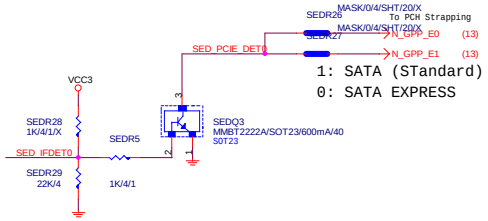


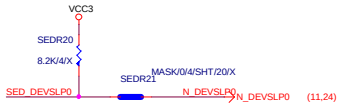
Rev 0.5

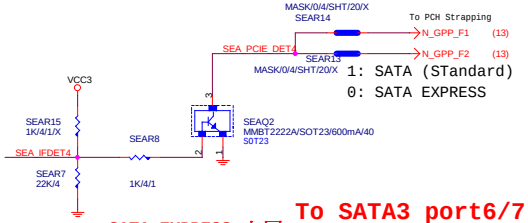
SATA_EXPRESS/[11NR6-C10236-11R]::Location SATA_EXPRESSA2

SATA EXPRESS料號
雙層:SATA_EXPRESS/[11NR6-C10236-11R]

單層+2SATA:11NR6-C10236-03R
單層:11NR6-C10118-03R

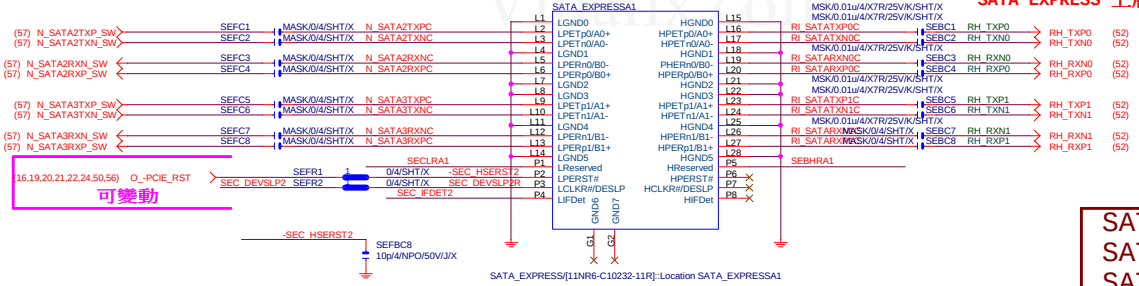


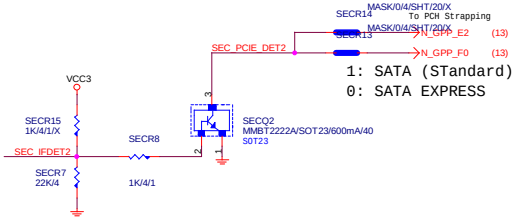




SATA EXPRESS 下層 To SATA3 port2/3

SATA EXPRESS 上層 To SATA3 port6/7 ASM1061





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)

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Vinafix.com

DC-LL --> 2.1mohm

DC-LL --> 3.1mohm

CLOSE DA_ DL1 DC SIDE

DAR44-->232 ohm
OCP-->120A

CLOSE DE_ DL1 DC SIDE

DAR71-->374 ohm
OCP-->90A

CLOSE PWM

CLOSE PWM

CLOSE ?

CLOSE ?

不上件

連接至PCH:GPP_G15

連接至PCH:GPP_G14

請注意擺放位置

8 VIA Connect GND lay

ISL95856HRZ[10TA1-695856-01R]

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Size	Custom
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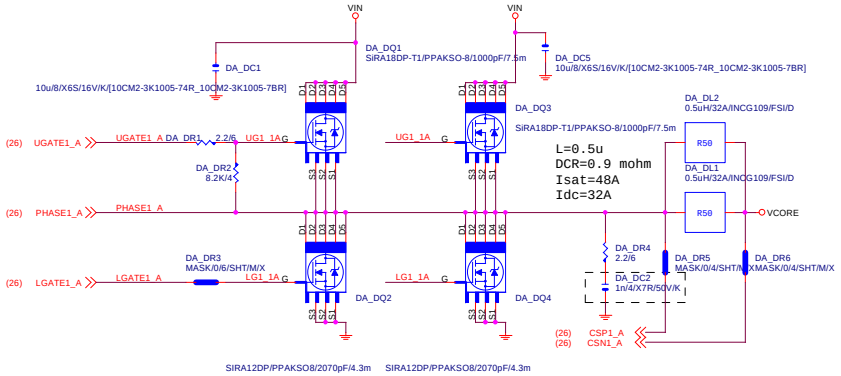
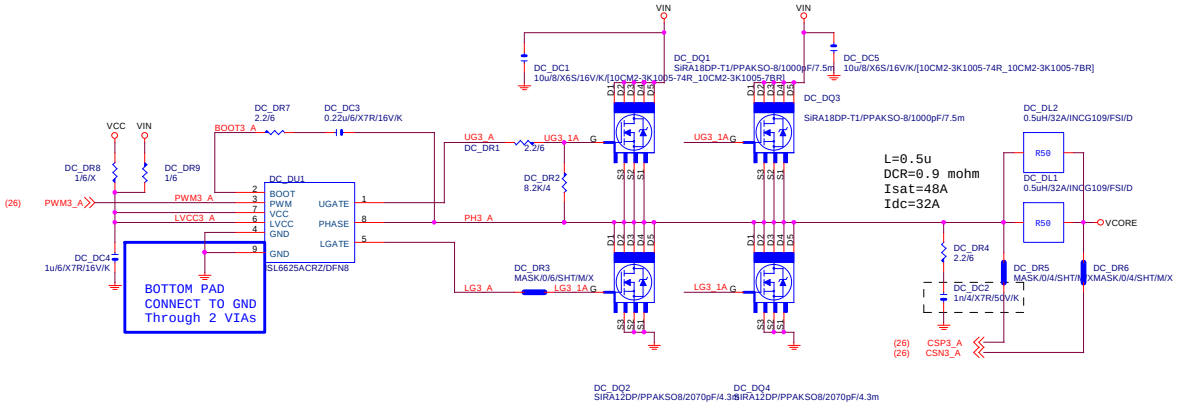
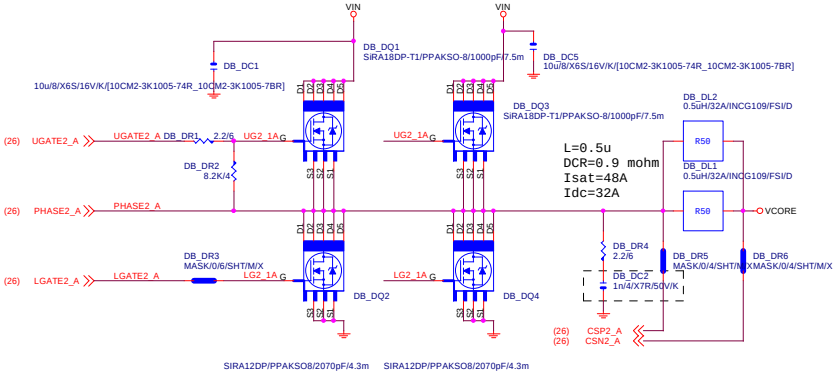
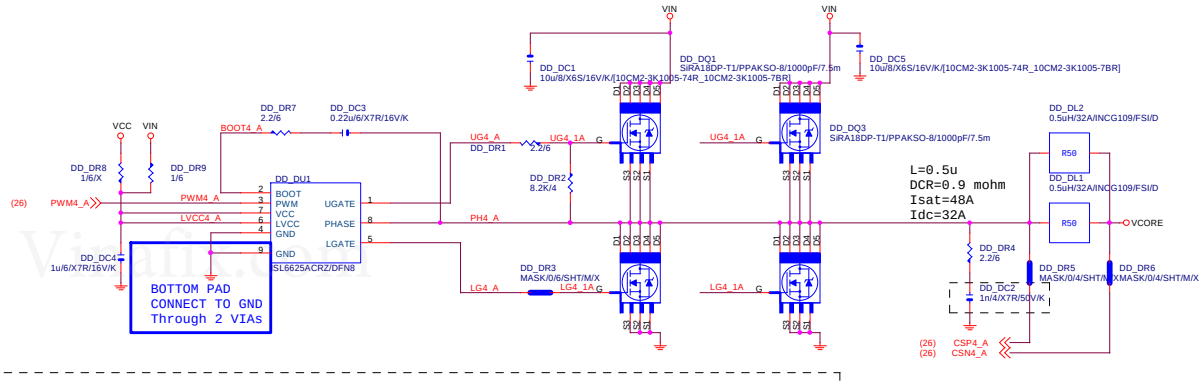
REV:0.52

VCORE

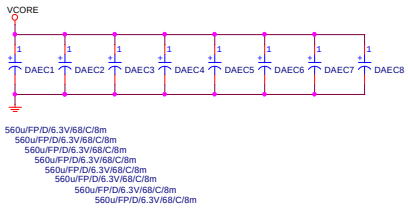


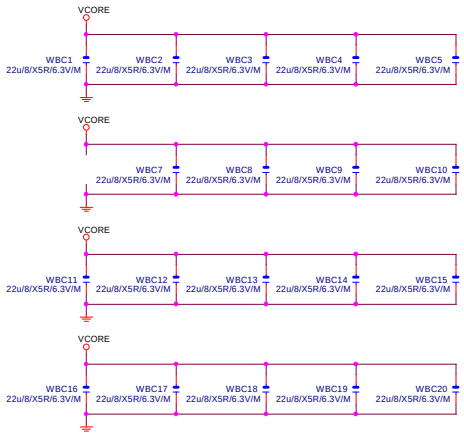


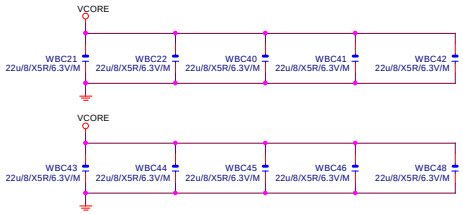




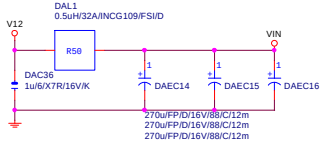
VCORE CAP 560u*8PCS 22u*29PCS







VIN CAP 270u*3PCS



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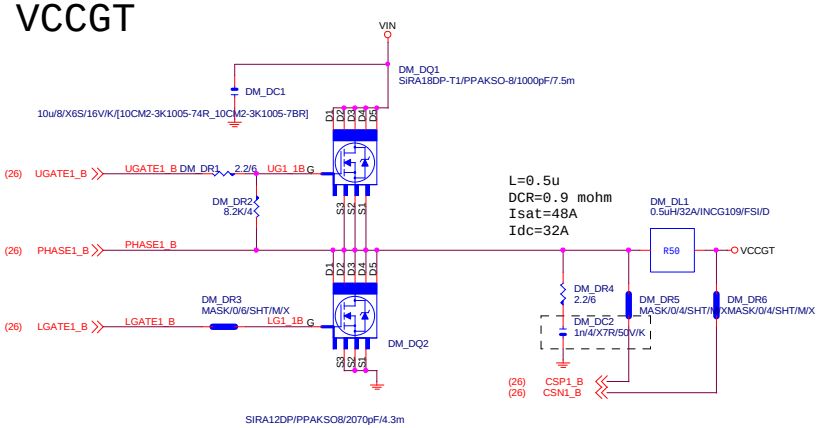
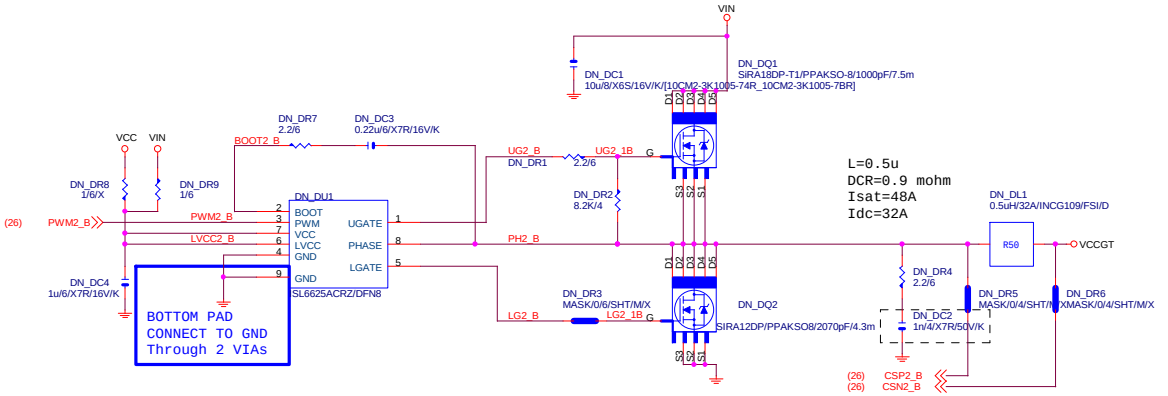
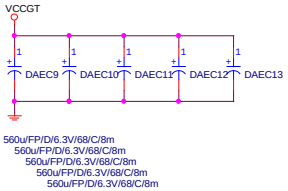
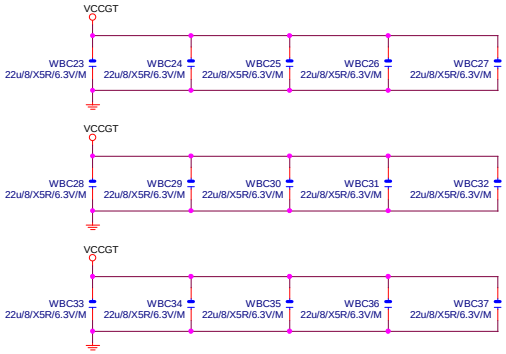
VCCGT

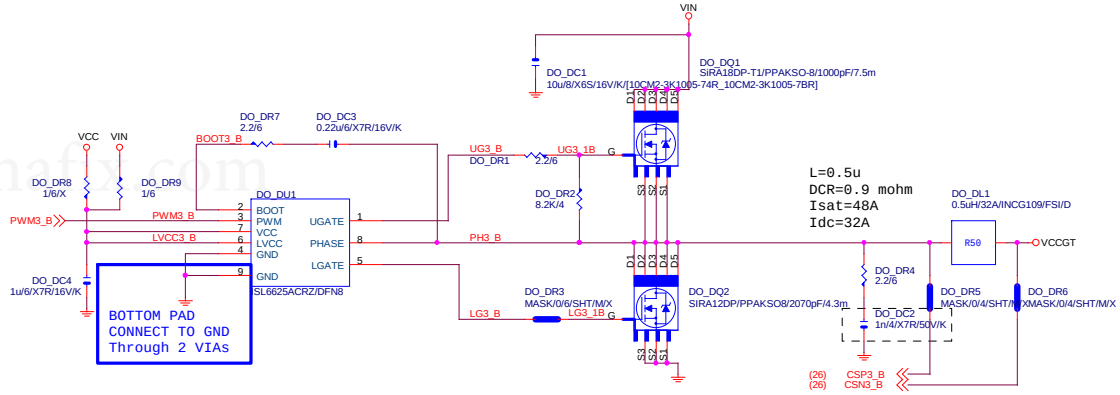




VCCGT CAP 560u*5PCS 22u*15PCS







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GIGABYTE™		
Title: ISL95856_MOS		
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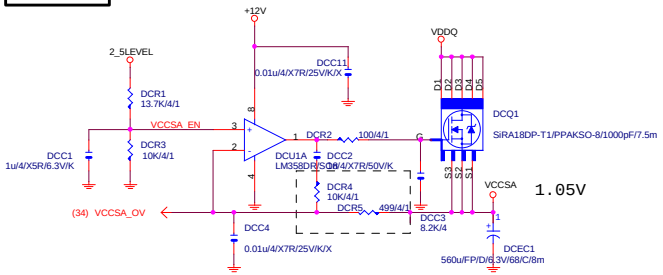
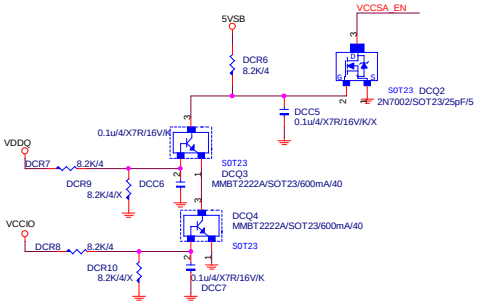
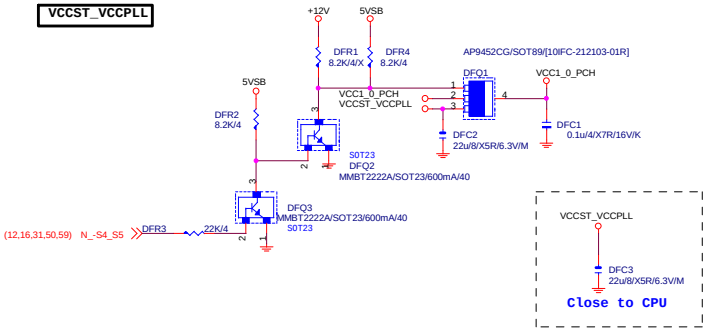
VCCSA

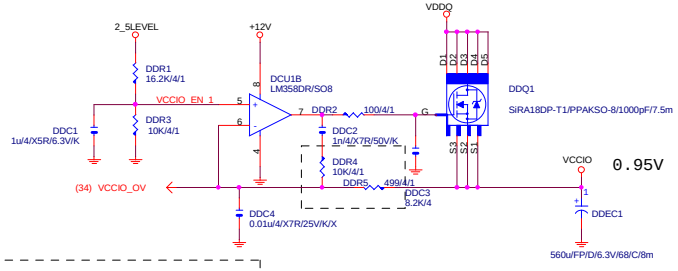


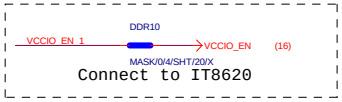


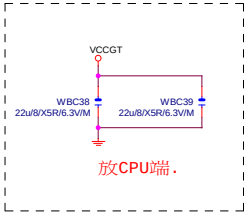
VCCST_VCCPLL



VCCIO







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Title: VCCSA_VCCIO_no 44E		
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REV:0.85

DDR4

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

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

0.8uH/28A/INCG109/FS/D

SUPPORT DDR4 1.2V

25A MAX

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

放靠近IC pin4

Remote sense請從最重的負載端點拉回

CLOSE TO DDR POWER PLANE

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

PWR SEQ

For power sequence require

Connect to IT8620

MAU1上RT9045時上件

DDRVTT

NCT3013S/[10GL2-203103-01R]

1.1A MAX

MAU1上NCT3103S時上件

DDR CAP

560u*4PCS 22u*2PCS

* 大電容 x4

DDRVTT CAP

* 大電容 x0

GIGABYTE

Title	RT8120_DDR4 POWER		
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REV:0.83

VPP_25V

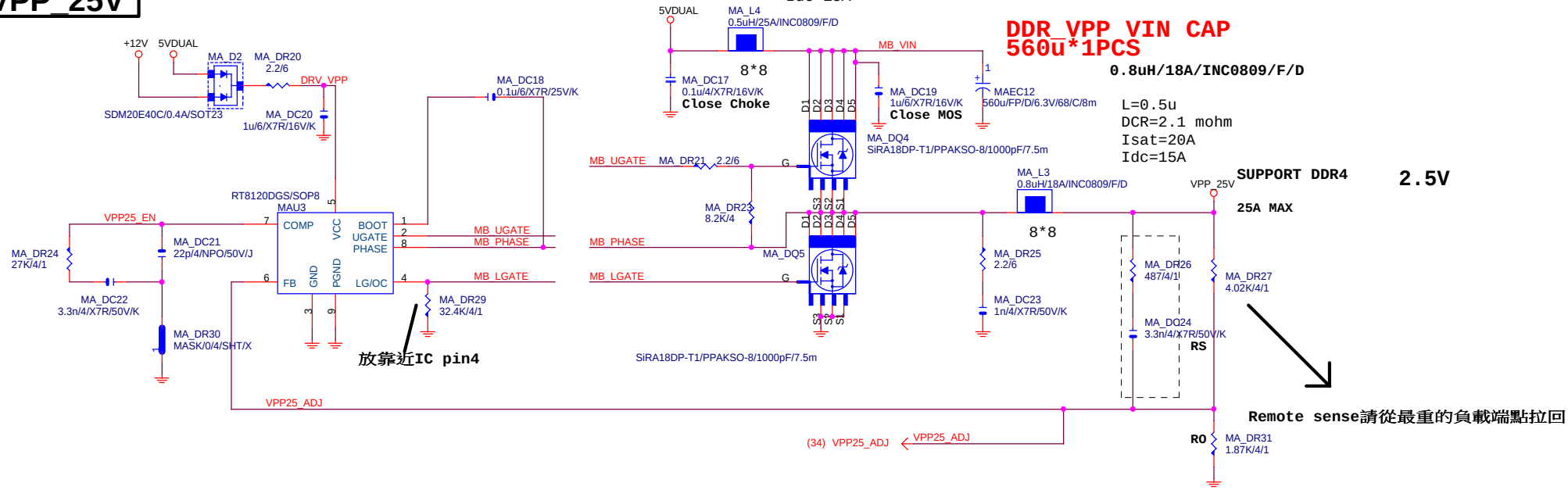
L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A

CHOKE與CAP料號可變

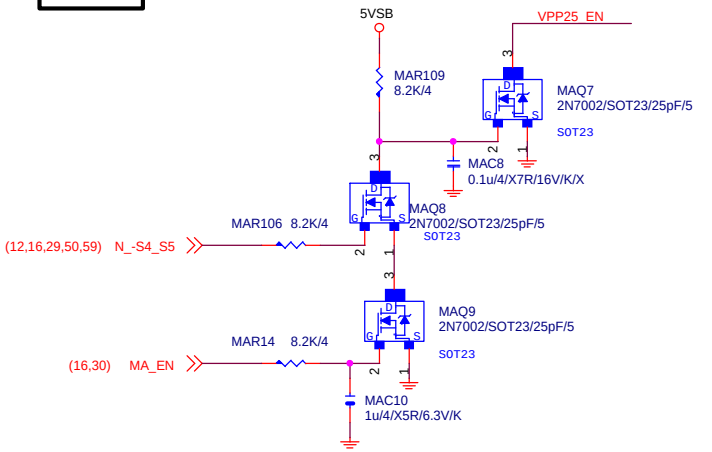
DDR_VPP VIN CAP 560u*1PCS

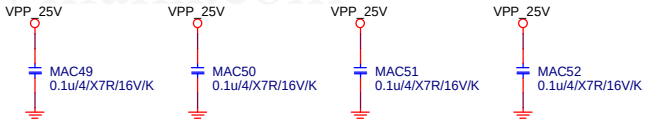
0.8uH/18A/INC0809/F/D

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



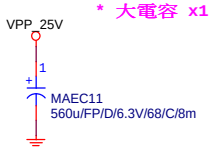
PWR SEQ * 刪 MA_DR32





VPP CAP 560u*1PCS

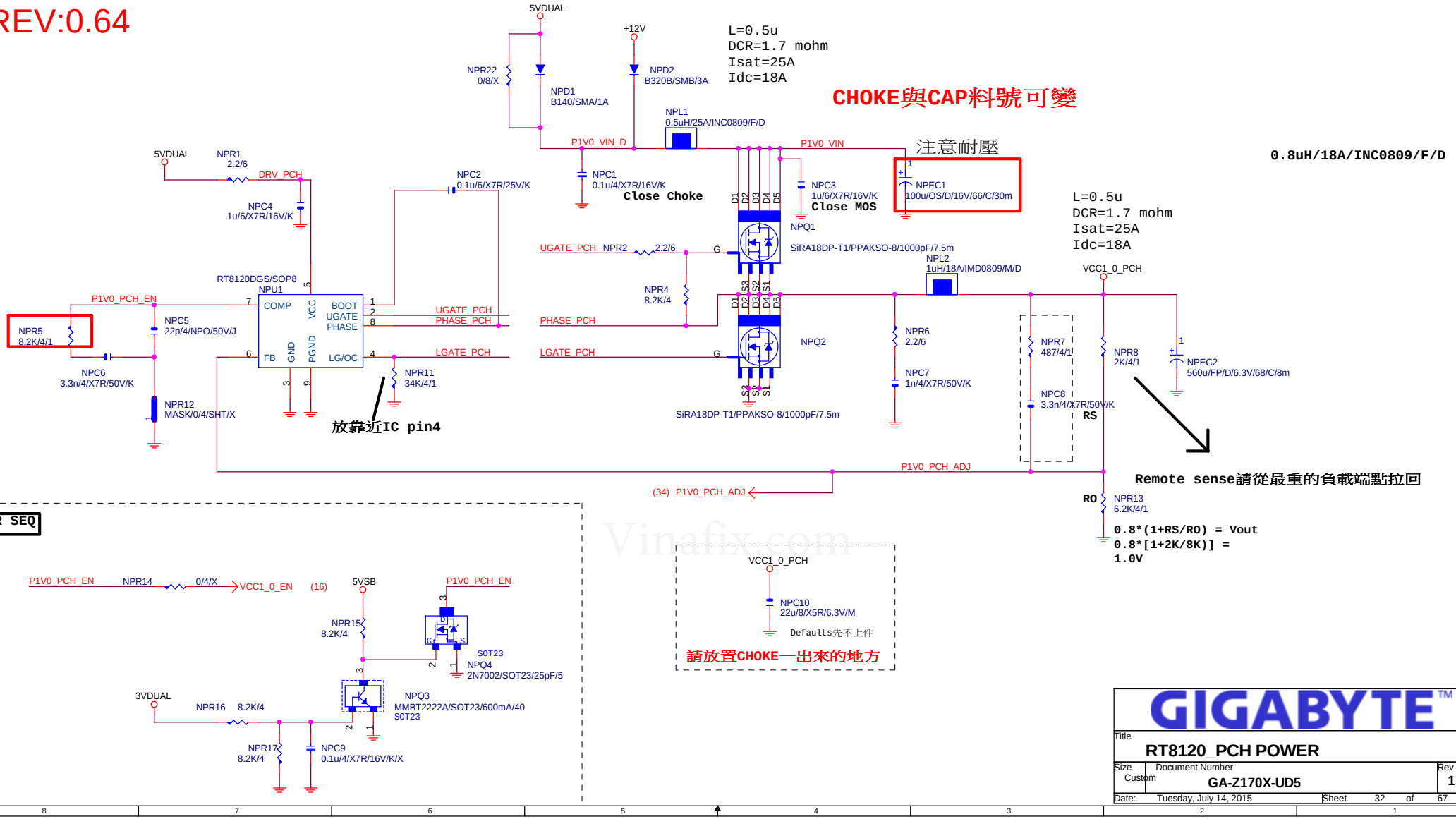
* 大電容 x1



GIGABYTE™

Title: RT8120_VPP25 POWER		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 31 of 67	

REV:0.64



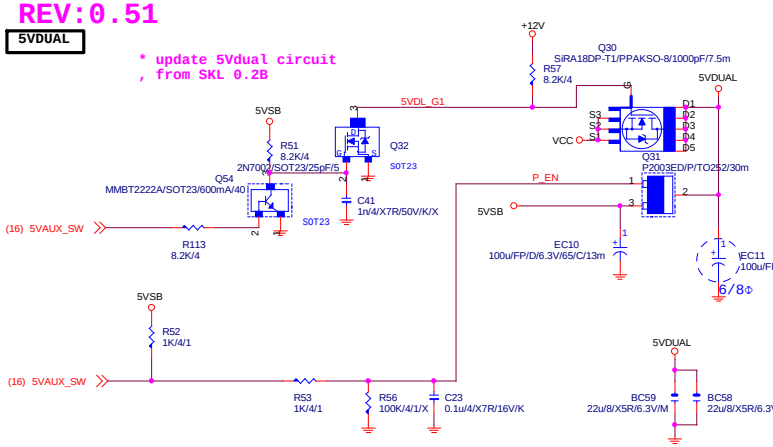
GIGABYTE™

Title	RT8120_PCH POWER	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 32 of 67	

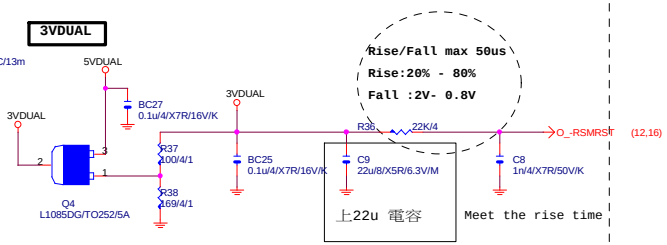
REV:0.51

5VDUAL

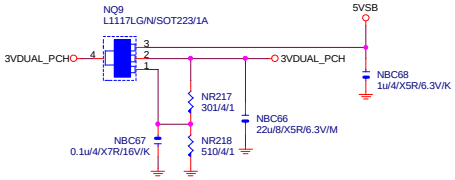
* update 5Vdual circuit
, from SKL 0.2B

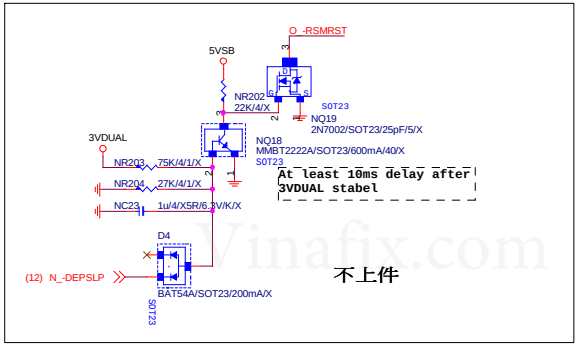


3VDUAL



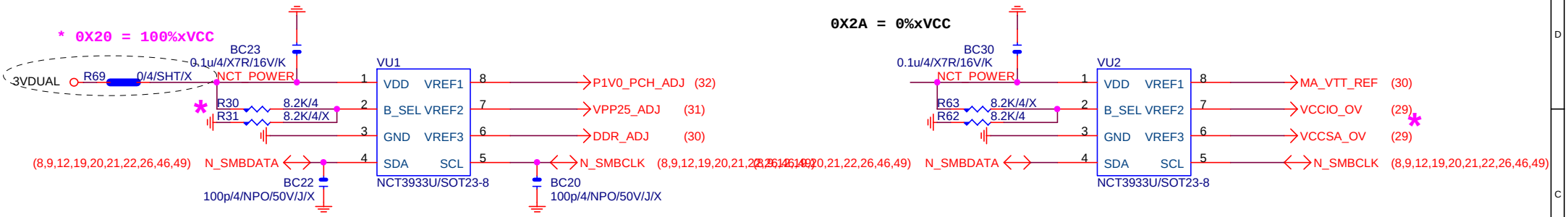
3VDUAL_PCH





Gigabyte Technology		
Title: DISCRETE POWER		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 33 of 67	

OVER VOLTAGE



0X22 = 75%xVCC

* 删除 OVU3

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

Gigabyte Technology

Title: CPU CORE VR-2

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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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

-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

* 刪除 -5V

VCC3 VCC3 VCC3

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

5VSB VCC VCC3

RN7 1K/8P4R/6/X RN8 1K/8P4R/6/X RN9 1K/8P4R/6/X

VCC VCC

VCC VCC

BC39 1u/4/X5R/6.3V/K BC36 0.1u/4/X7R/16V/K/X 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

AD1 AZ2225-01L/SOD323/X

PWOK PWOK

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

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

ATX_12V_2X4

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

(16)

V12

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

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

FOR AUDIO 切割

MH1 MH2 HOLE_3/X HOLE_3/X HOLE_4-RH-1

MH3 HOLE_3/X HOLE_4-RH-5MM-1

MH7 HOLE_3/X HOLE_4-RH-5MM-1

MH8 HOLE_3/X HOLE_4-RH-5MM-1

MH4 HOLE_3/X HOLE_4-RH-1

MH5 HOLE_3/X HOLE_4-RH-1

MH6 HOLE_3/X HOLE_4-RH-5MM-1

MH9 HOLE_3/X HOLE_4-RH-5MM-5PIN-1

K3 K6 K2

K1_ICT/X K1_ICT/X K1_ICT/X

K5 K1 K4

K1_ICT/X K1_ICT/X 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

Q9

(12) N_GPP_D9 R703 330/4

MMBT2222A/SOT23/600mA/40 S0T23

-PROHOT * 保留 ？

(4,16) A_-PROCHOT A_-PROCHOT R2 0/4/SHT/X VR_HOT (26)

-PROHOT

OTP:132度 / PCB THERMAL TRIP:122 度

125 ~130degree assert

+12V

TTR1 10K/4/1 TTR2 3.57K/4/1 TTR4 10K/4/1/X TTR5 MASK/0/4/SHT/20/X TTR6 0/4/X

TTU1A LM358DR/SO8

DATSM_3 DATSM_2 DATSM_1

N_-THRMTRIP (13,16) 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 TTR11 MASK/0/4/SHT/20/X TTR12

TTU1B LM358DR/SO8

DATSM_5 DATSM_6 DATSM_7

N_-THRMTRIP (13,16) 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

ATX4P

+12V VCC

SATA/15/BK/OH/P/RA/D/1

COUPON1 COUPON1 COUPON/X 5VDUAL

COUPON2 COUPON2 COUPON/X

Gigabyte Technology

Title: ATX POWER CONNECTOR

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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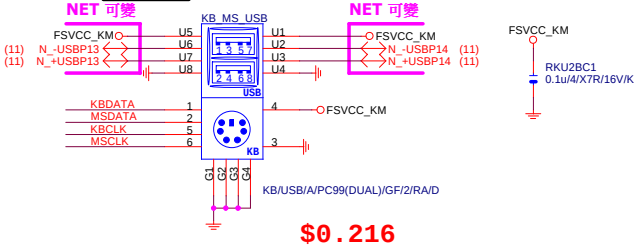
Rev: 0.41

KB/MS

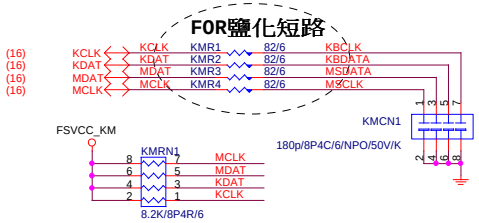
NET 可變



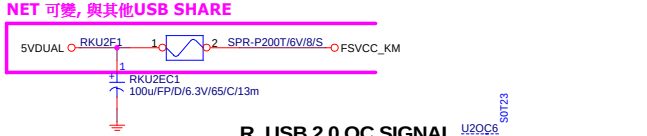
NET 可變

$0.216

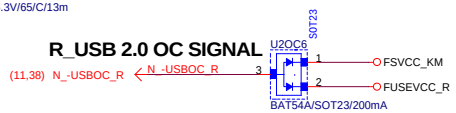
FOR鹽化短路



NET 可變, 與其他USB SHARE



R_USB 2.0 OC SIGNAL



KB/MS/DAC PWR

USB_DAC

Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 36 of 67	

Rev: 0.4

POWER

FPR12 330/6 5VDUAL

PW_SW
V-A PUSH SW 8P/DIP/NON LK HIGH/[11NH7-020008-E1R]

FPR10 33/4 -PWRBT_1 -PWRBT_1 (51)

FPBC6 0.01u/4/X7R/25V/K/X

FPR0 2.2/4/X -N_LED

FPQ1 MMBT2222A/SOT23/600mA/40 S0T23

GPIO 自行調整

(12) N_GPP_D21 FPR27 8.2K/4 FPQ1_2

VCORE VCORE PH/1*2/BK/2.54/VA/D/X

VCCIO VCCIO PH/1*2/BK/2.54/VA/D/X

VSA VCCSA PH/1*2/BK/2.54/VA/D/X

VAXG VCCGT PH/1*2/BK/2.54/VA/D/X

VDIMM VDDQ PH/1*2/BK/2.54/VA/D/X

VPP_25V VPP_25V PH/1*2/BK/2.54/VA/D/X

DDRVTT DDRVTT PH/1*2/BK/2.54/VA/D/X

PCHIO VCC1_0_PCH PH/1*2/BK/2.54/VA/D/X

Reset

RST_SW
TS/BU/4.3/VA/[11NH7-030001-B1R]
白色

FPR28 33/4 RESET RESET (51)

FPBC5 0.01u/4/X7R/25V/K/X

Clear CMOS

CMOS_SW
TS/BK/4.3/VA

FPR11 33/4 N_-RTCRST (12)

FPBC0 0.01u/4/X7R/25V/K/X

R3000 330/6 5VDUAL

R3824 33/4 N_GPP_D4 (12)

BC1197 0.01u/4/X7R/25V/K/X

OC
SW 6 PIN OC/[11NH7-030006-11R]

R3657 2.2/4/X

PCH:GPP_D6

PCH:GPP_D4

Q528 MMBT2222A/SOT23/600mA/40 S0T23

GPIO 自行調整

4G_LED (12) R3699 8.2K/4

R3001 330/6 5VDUAL

R5499 33/4 N_GPP_C22 (12)

BC1202 0.01u/4/X7R/25V/K/X

ECO
SW 6 PIN ECO /[11NH7-030006-01R]

PCH:GPP_B4

PCH:GPP_C22

R5498 2.2/4/X

Q529 MMBT2222A/SOT23/600mA/40 S0T23

GPIO 自行調整

(12) N_GPP_B4 R5500 8.2K/4

Gigabyte Technology		
Title: OC BUTTOM		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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Rev: 0.4

Front USB3.0

F_USB30_1 REV=1

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

NET 自行調整

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

FAU3C1 0.1u/4/X7R/16V/K FU30_TXN1
FAU3C2 0.1u/4/X7R/16V/K FU30_TXP1

FSVCC_U3F1

NET 自行調整

FU30_TXN2 FAU3C3 0.1u/4/X7R/16V/K PCH_USB3_TXN2 (11)
FU30_TXP2 FAU3C4 0.1u/4/X7R/16V/K PCH_USB3_TXP2 (11)
PCH_USB3_RXN2 (11)
PCH_USB3_RXP2 (11)
N_-USBP2 (11)
N_+USBP2 (11)

F_USB30 PWR

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

FAU3EC1 100u/FP/D/6.3V/65/C/13m

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

(11,39) N_-USBOC_F — U3OC3 SOT23 — FSVCC_U3F1 / FSVCC_U3F2

NET 可自行調整

BAT54A/SOT23/200mA

NET 可自行調整

PCH_USB3_RXP1
PCH_USB3_RXN1
PCH_USB3_RXN2
PCH_USB3_RXP2

FAU3D1 AZ1045-04F/MSOP10

FAU3D3

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

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

CLOSE F_USB30

FU30_TXP1
FU30_TXN1
FU30_TXN2
FU30_TXP2

FAU3D2 AZ1045-04F/MSOP10

CLOSE F_USB30

Front USB3.0

F_USB30_2 REV=1

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

NET 可自行調整

(11) PCH_USB3_RXN3
(11) PCH_USB3_RXP3
(11) PCH_USB3_TXN3
(11) PCH_USB3_TXP3
(11) N_-USBP3
(11) N_+USBP3

FBU3C1 0.1u/4/X7R/16V/K FU30_TXN3
FBU3C2 0.1u/4/X7R/16V/K FU30_TXP3

FSVCC_U3F2

NET 可自行調整

FU30_TXN4 FBU3C3 0.1u/4/X7R/16V/K PCH_USB3_TXN4 (11)
FU30_TXP4 FBU3C4 0.1u/4/X7R/16V/K PCH_USB3_TXP4 (11)
PCH_USB3_RXN4 (11)
PCH_USB3_RXP4 (11)
N_-USBP4 (11)
N_+USBP4 (11)

F_USB30 PWR

5VDUAL — FBU3F1 — SPR-P260T/6V/8/S — FSVCC_U3F2

FBU3C5 0.1u/4/X7R/16V/K

F_USB POWER PROTECT

NET 可自行調整

PCH_USB3_RXP3
PCH_USB3_RXN3
PCH_USB3_RXN4
PCH_USB3_RXP4

FBU3D1 AZ1045-04F/MSOP10

FBU3D3

N_+USBP4
N_-USBP3
3VDUAL
N_-USBP4
N_+USBP3

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

CLOSE F_USB30

FU30_TXP3
FU30_TXN3
FU30_TXN4
FU30_TXP4

FBU3D2 AZ1045-04F/MSOP10

CLOSE F_USB30

-USBOC_F

POWER 可自行調整

FSVCC_U3F1 — UAR1 8.2K/4 — N_-USBOC_F — N_-USBOC_F (11,39)

UAR2 15K/4/1

-USBOC_R

POWER 可自行調整

5VDUAL — UBR1 8.2K/4 — N_-USBOC_R — N_-USBOC_R (11,36)

UBR2 15K/4/1

* 接 PCH N_GPP_B20(SMI) & PCH PU 3Vdual

(12) N_GPP_B20

UAD5 SOT23 — N_-USBOC_F — N_-USBOC_F (11,39) — N_-USBOC_R — N_-USBOC_R (11,36)

BAT54A/SOT23/200mA

Gigabyte Technology	
Title	R_USB30,F_USB30, USB_OC
Size: Custom	Document Number: GA-Z170X-UD5
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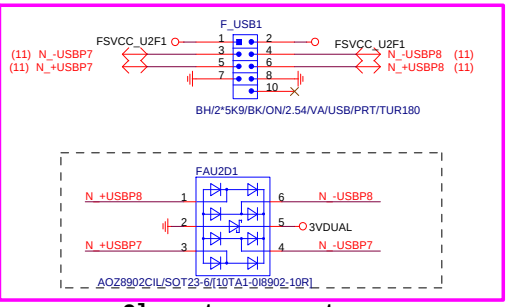
Date: Tuesday, July 14, 2015	Sheet 38 of 67

Rev: 0.4

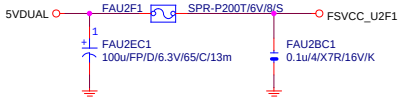
FRONT USB1

NET 可變



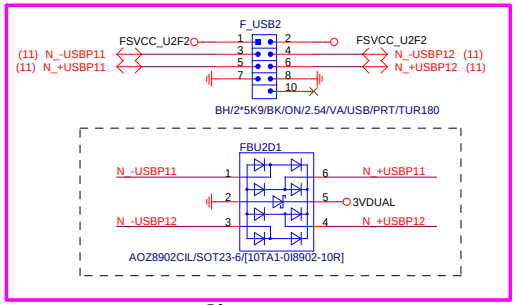
Close to connector

FUSE 2 Port 1 Fuse 2A



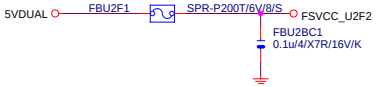
FRONT USB2

NET 可變

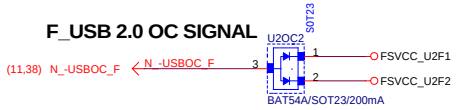


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



Gigabyte Technology		
Title: USB2.0		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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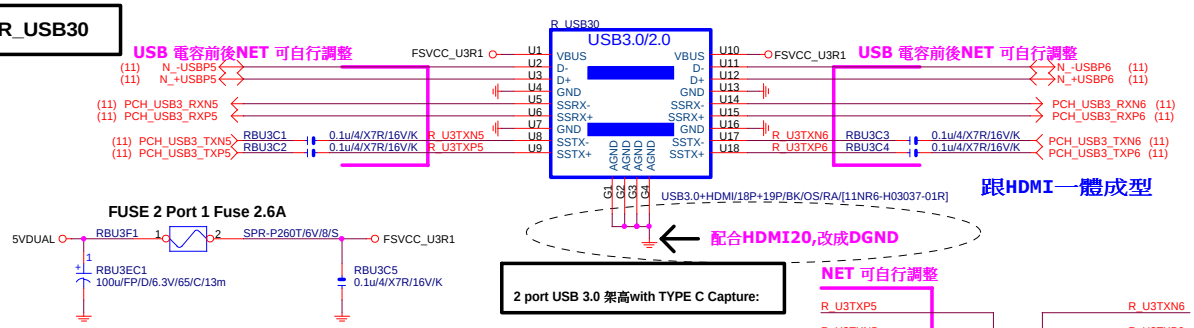
Rev: 0.31

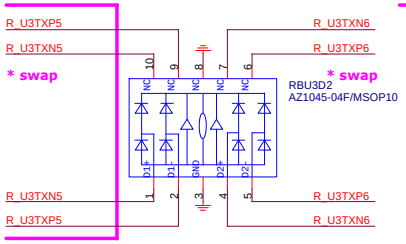
R_USB30



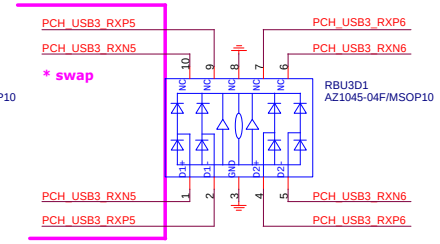
FUSE 2 Port 1 Fuse 2.6A

2 port USB 3.0 架高with TYPE C Capture:

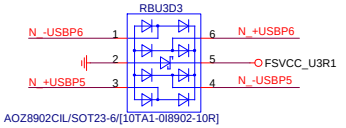
NET 可自行調整



NET 可自行調整

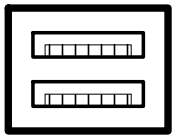


ESD 可自行SWAP PIN



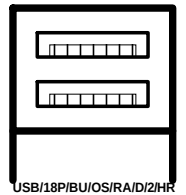
CONNECTOR 自行調整

2 port USB 3.0 Capture:



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

2 port USB 3.0 with TYPE C Capture:



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

Title	Gigabyte Technology		
	KB_MS_USB3, R_USB30		
Size: Custom	Document Number: GA-Z170X-UD5		Rev: 1.0
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Rev 0.93

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,才改為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

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

AUDIO_HS/[11NH1-ADC001-21R]

★Update 2015-03-06
更新AUDIO_HS料號:11NH1-ADC001-21R

Gigabyte Technology

Title	ALC1150		
Size Custom	Document Number GA-Z170X-UD5		Rev 1.0
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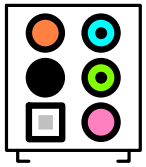
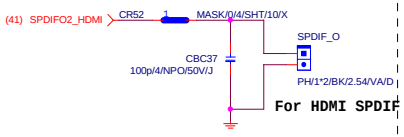
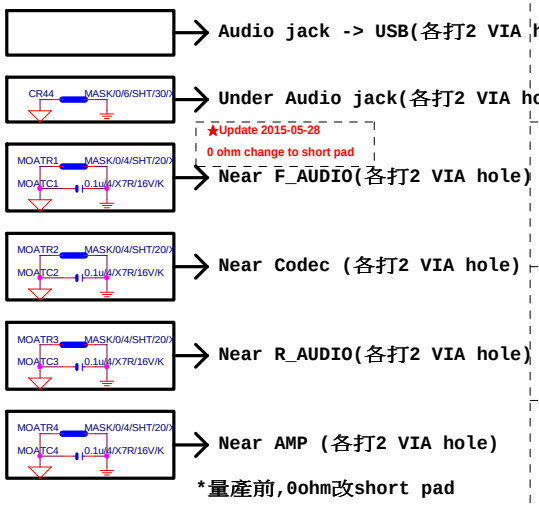
Rev 0.93

AZALIA JACK

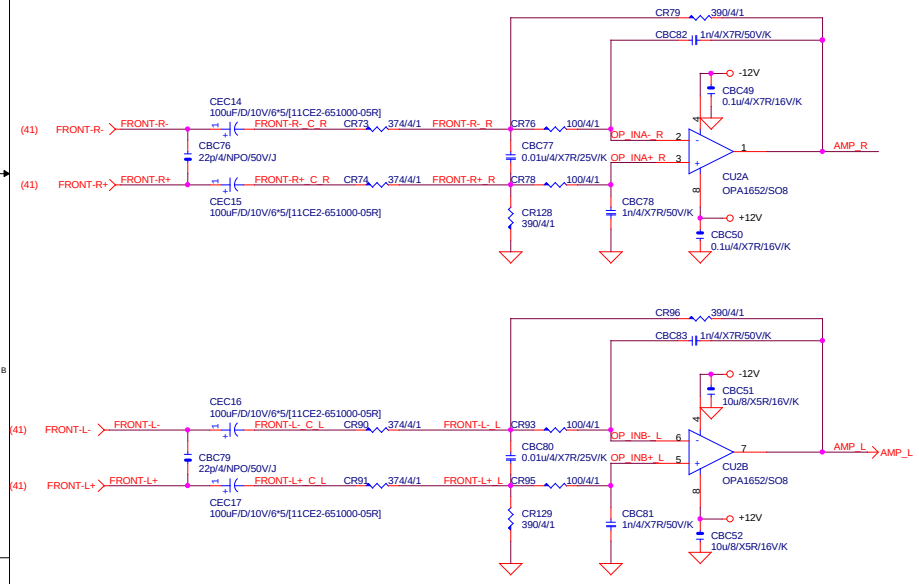


SPDIF_OUT

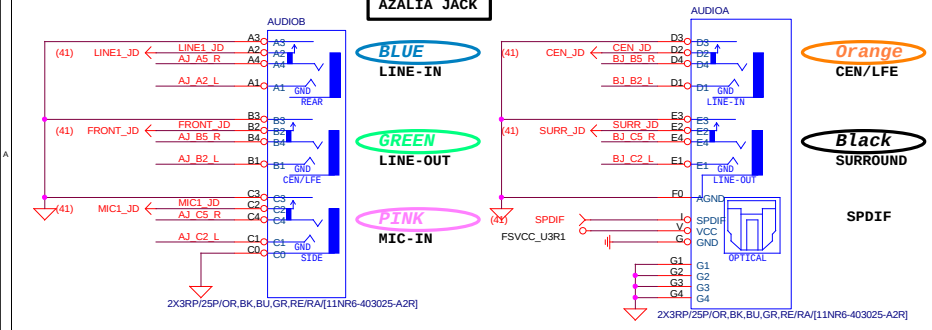




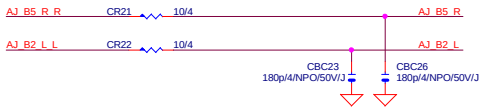
Differential to Single-End AMPLIFIED



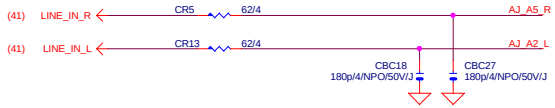
AZALIA JACK



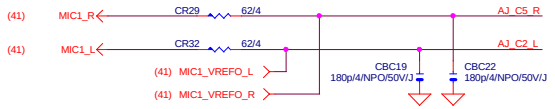
LINE-OUT



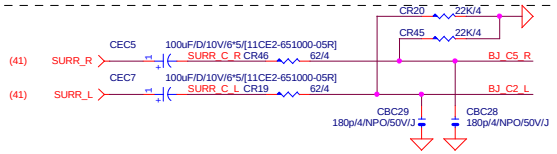
LINE-IN



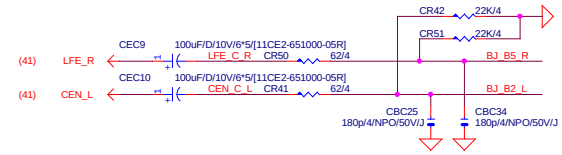
MIC-IN

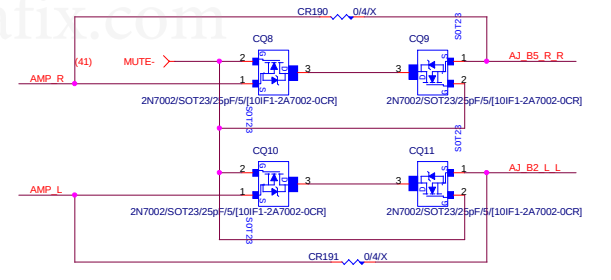


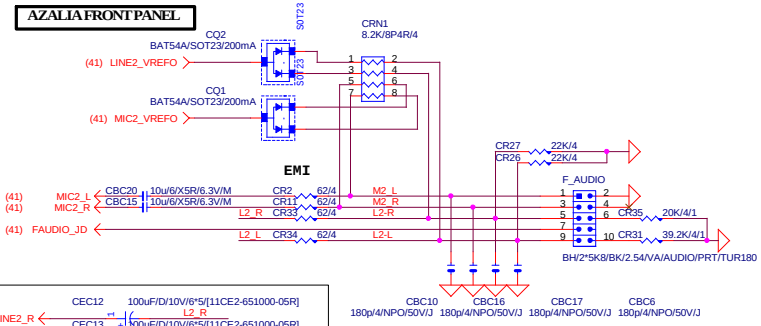
SURROUND



CEN/LFE







Gigabyte Technology

Title	AUDIO JACK		
Size Custom	Document Number	GA-Z170X-UD5	Rev 1.0
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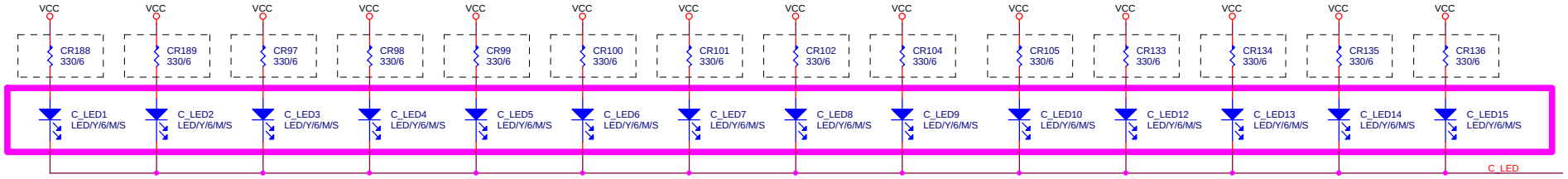

VALUE可變,LED顏色請自行修改
[UD系列--> 中亮黃LED(黃色):LED/Y/6/M/S]
[SOC系列--> 中亮橘LED(橘色):LED/O/M/0603/S]
[GAMING系列--> 中亮紅LED(紅色):LED/R/H/0603/S]

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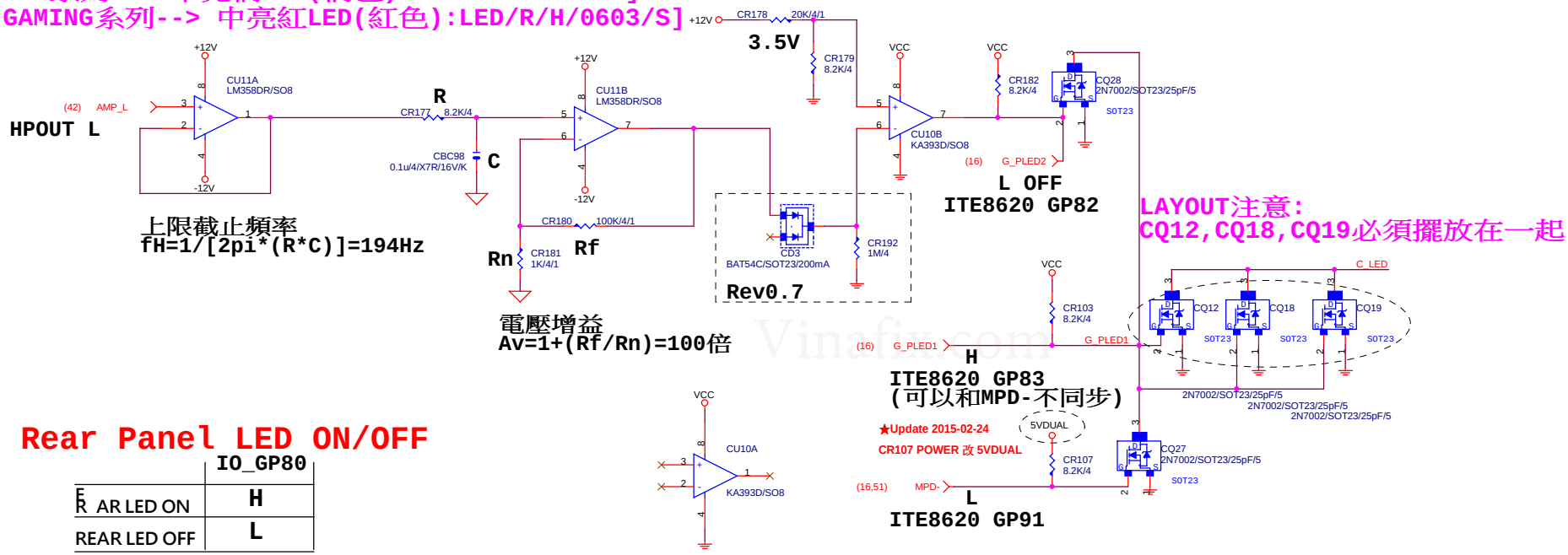

Rear Panel LED ON/OFF

	IO_GP80
REAR LED ON	H
REAR LED OFF	L

CLOSE TO AUDIO JACK

ITE8620 GP80

LAYOUT OPTION : SOC/UD7系列要LAYOUT,
其餘UD系列機種不留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

AUDIO LED Control (有LPT model)

	IO_GP92	IO_GP17	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	
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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GIGABYTE™

Title: ASM1142 USB3.1A

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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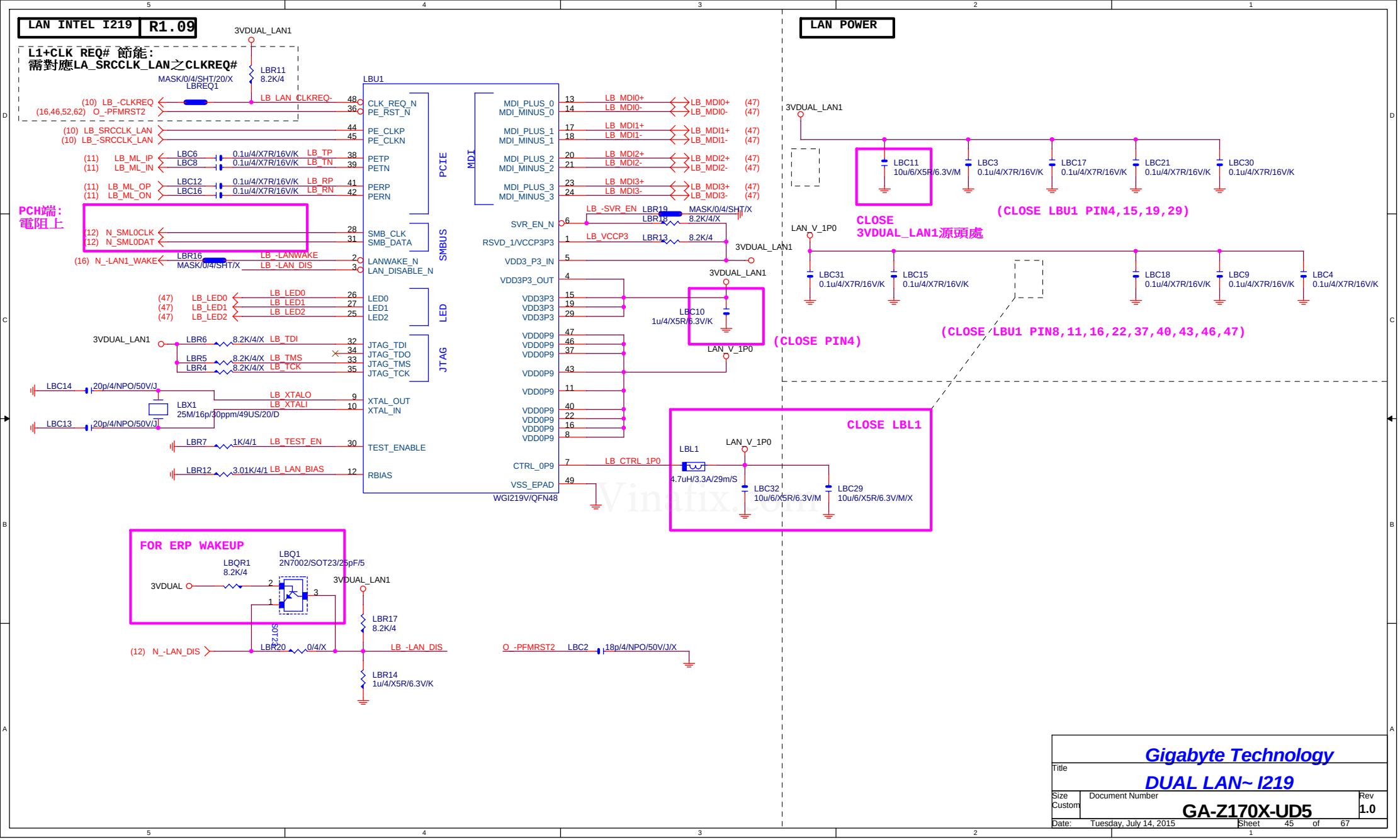
LAN INTEL I219 R1.09
L1+CLK REQ# 節能:
需對應LA_SRCCLK_LAN之CLKREQ#
3VDUAL_LAN1
LBR11 8.2K/4
MASK/0/4/SHT/20/X
LBREQ1
LB_LAN_CLKREQ-
(10) LB_-CLKREQ
(16,46,52,62) O_-PFMRST2
LBU1
CLK_REQ_N
PE_RST_N
PE_CLKP
PE_CLKN
PETP
PETN
PERP
PERN
PCIE
MDI
(10) LB_SRCCLK_LAN
(10) LB_-SRCCLK_LAN
(11) LB_ML_IP
(11) LB_ML_IN
(11) LB_ML_OP
(11) LB_ML_ON
LBC6 0.1u/4/X7R/16V/K
LBC8 0.1u/4/X7R/16V/K
LBC12 0.1u/4/X7R/16V/K
LBC16 0.1u/4/X7R/16V/K
LB_TP
LB_TN
LB_RP
LB_RN
PCH端:
電阻上
(12) N_SML0CLK
(12) N_SML0DAT
SMB_CLK
SMB_DATA
SMBUS
(16) N_-LAN1_WAKE
LBR16
MASK/0/4/SHT/X
LB_-LANWAKE
LB_-LAN_DIS
LANWAKE_N
LAN_DISABLE_N
(47) LB_LED0
(47) LB_LED1
(47) LB_LED2
LED0
LED1
LED2
LED
3VDUAL_LAN1
LBR6 8.2K/4/X LB_TDI
LBR5 8.2K/4/X LB_TMS
LBR4 8.2K/4/X LB_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TCK
JTAG
LBC14 20p/4/NPO/50V/J
LBC13 20p/4/NPO/50V/J
LBX1
25M/16p/30ppm/49US/20/D
LB_XTALO
LB_XTALI
XTAL_OUT
XTAL_IN
LBR7 1K/4/1 LB_TEST_EN
TEST_ENABLE
LBR12 3.01K/4/1 LB_LAN_BIAS
RBIAS
MDI_PLUS_0
MDI_MINUS_0
MDI_PLUS_1
MDI_MINUS_1
MDI_PLUS_2
MDI_MINUS_2
MDI_PLUS_3
MDI_MINUS_3
LB_MDI0+
LB_MDI0-
LB_MDI1+
LB_MDI1-
LB_MDI2+
LB_MDI2-
LB_MDI3+
LB_MDI3-
(47)
SVR_EN_N
LB_-SVR_EN
LBR19
LBR18
MASK/0/4/SHT/X
8.2K/4/X
RSVD_1/VCCP3P3
LB_VCCP3
LBR13 8.2K/4
VDD3_P3_IN
VDD3P3_OUT
VDD3P3
VDD0P9
LBC10 1u/4/X5R/6.3V/K
LAN_V_1P0
(CLOSE PIN4)
CTRL_0P9
LB_CTRL_1P0
VSS_EPAD
WGI219V/QFN48
LAN POWER
LBC11 10u/6/X5R/6.3V/M
LBC3 0.1u/4/X7R/16V/K
LBC17 0.1u/4/X7R/16V/K
LBC21 0.1u/4/X7R/16V/K
LBC30 0.1u/4/X7R/16V/K
(CLOSE LBU1 PIN4,15,19,29)
CLOSE
3VDUAL_LAN1源頭處
LBC31 0.1u/4/X7R/16V/K
LBC15 0.1u/4/X7R/16V/K
LBC18 0.1u/4/X7R/16V/K
LBC9 0.1u/4/X7R/16V/K
LBC4 0.1u/4/X7R/16V/K
(CLOSE LBU1 PIN8,11,16,22,37,40,43,46,47)
CLOSE LBL1
LBL1
4.7uH/3.3A/29m/S
LBC32 10u/6/X5R/6.3V/M
LBC29 10u/6/X5R/6.3V/M/X
FOR ERP WAKEUP
LBQR1 8.2K/4
LBQ1 2N7002/SOT23/25pF/5
3VDUAL
LBR17 8.2K/4
LBR20 0/4/X
SOT23
(12) N_-LAN_DIS
LB_-LAN_DIS
LBR14 1u/4/X5R/6.3V/K
O_-PFMRST2
LBC2 18p/4/NPO/50V/J/X
Gigabyte Technology
Title
DUAL LAN~ I219
Size Custom
Document Number
GA-Z170X-UD5
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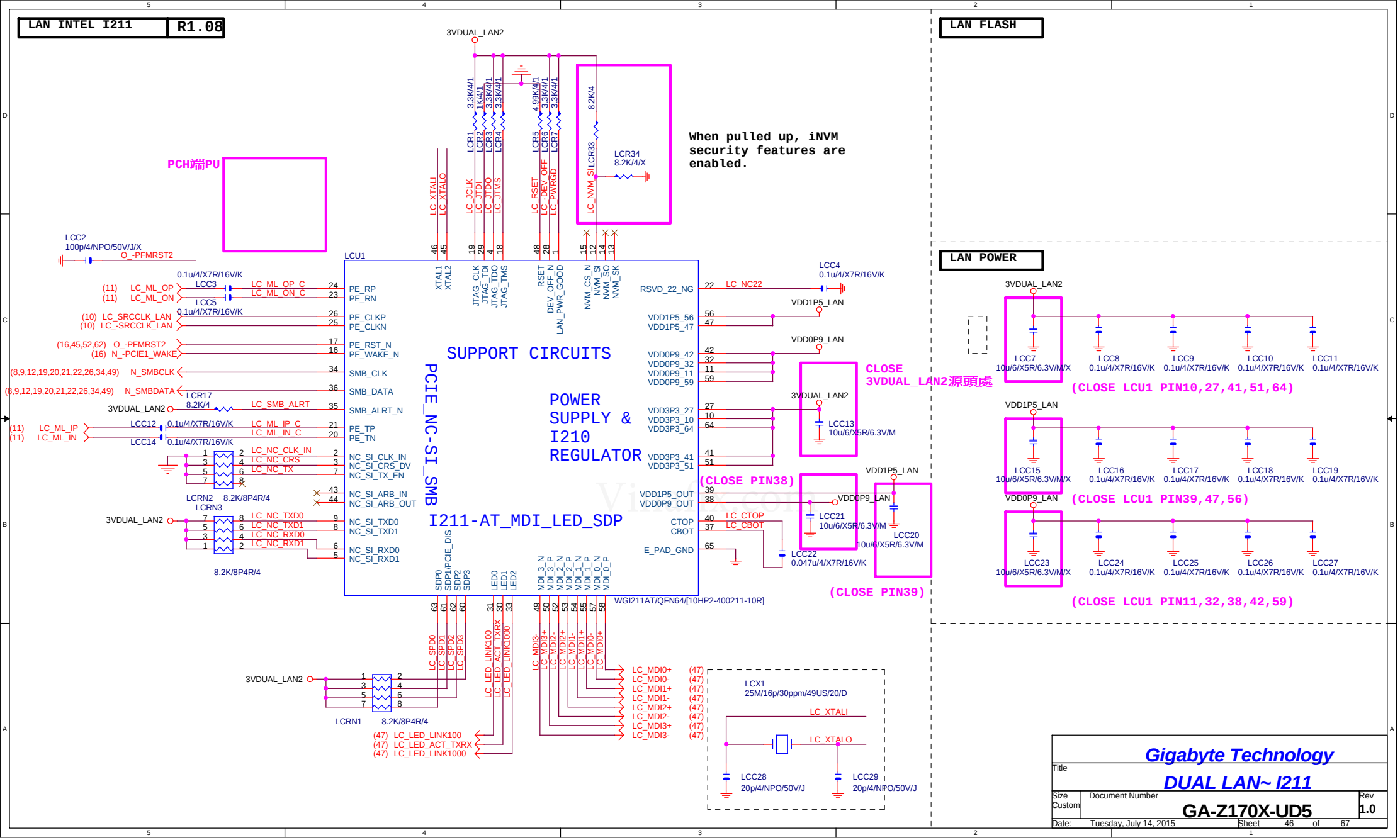
LAN INTEL I211
R1.08
LAN FLASH
LAN POWER
3VDUAL_LAN2
PCH端PU
When pulled up, iNVM security features are enabled.
LCU1
SUPPORT CIRCUITS
POWER SUPPLY & I210 REGULATOR
PCIE_NC-SI_SMB
I211-AT_MDI_LED_SDP
WGI211AT/QFN64/[10HP2-400211-10R]
CLOSE 3VDUAL_LAN2源頭處
(CLOSE LCU1 PIN10,27,41,51,64)
(CLOSE LCU1 PIN39,47,56)
(CLOSE LCU1 PIN11,32,38,42,59)
(CLOSE PIN38)
(CLOSE PIN39)
LCX1
25M/16p/30ppm/49US/20/D
Gigabyte Technology
DUAL LAN~ I211
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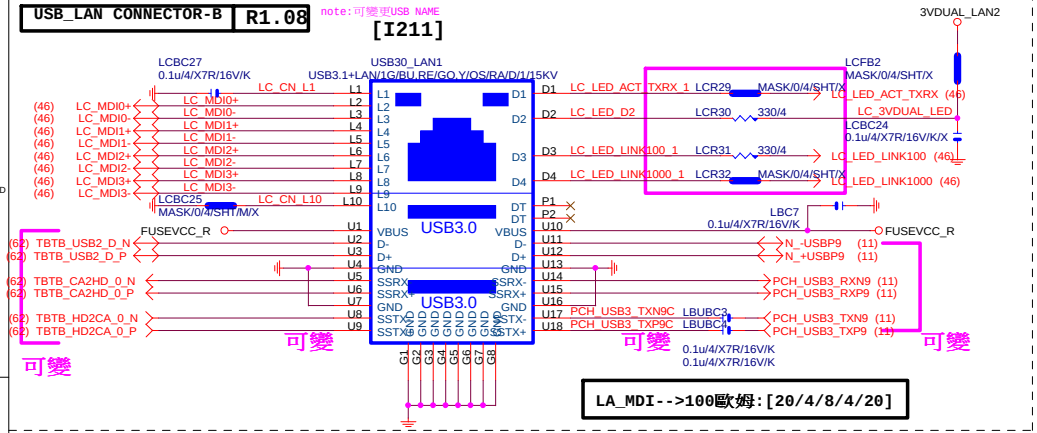
USB_LAN CONNECTOR-B R1.08

note:可變更USB NAME

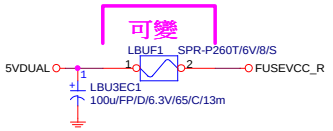
[I211]



LA_MDI-->100歐姆:[20/4/8/4/20]

USB POWER

note:可變更FUSB

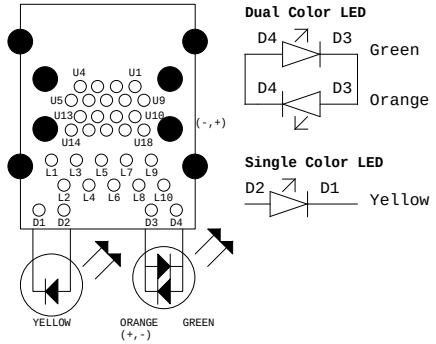


Close to connector
FUSE-0805

EMI SHORT PAD

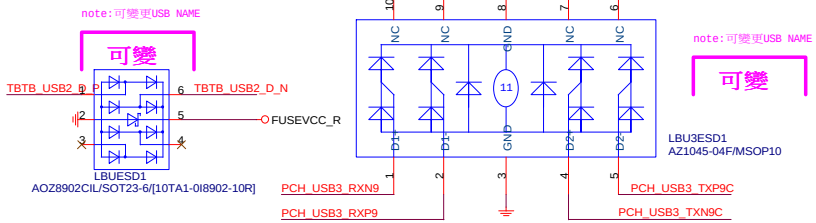
PS:視EMI需求

USB30_LAN LAYOUT示意圖

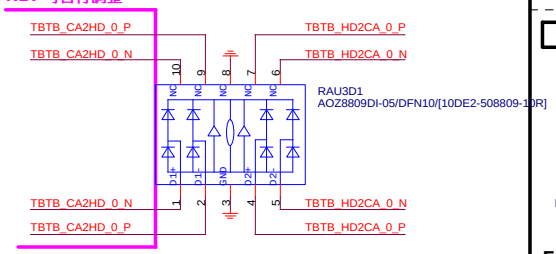


RMA ESD PROTECT

note:可變更USB NAME

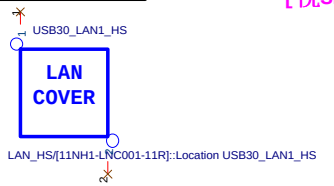


NET 可自行調整



LAN_COVER

可變
[視SPEC需求]

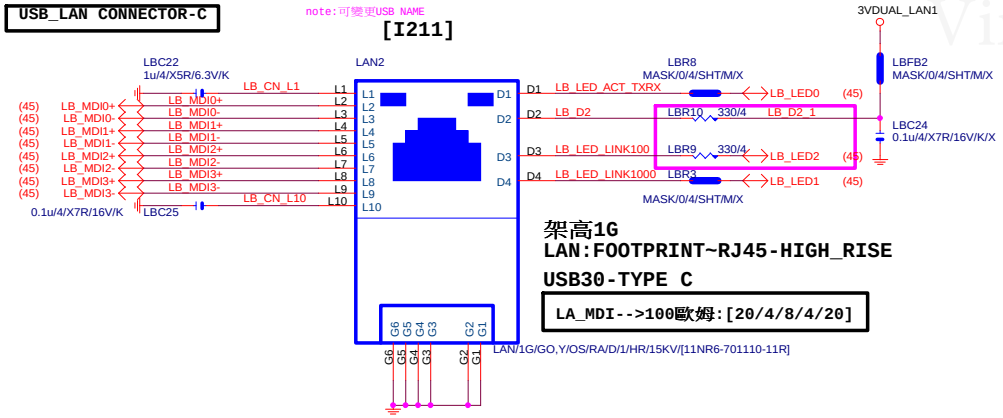


FOOT PRINT:LAN_COVER

USB_LAN CONNECTOR-C

note:可變更USB NAME

[I211]



架高1G
LAN:FOOTPRINT~RJ45-HIGH_RISE
USB30-TYPE C

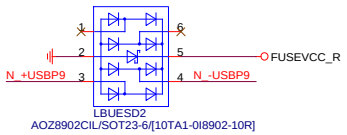
LA_MDI-->100歐姆:[20/4/8/4/20]

USB POWER

EMI SHORT PAD

PS:視EMI需求

RMA ESD PROTECT

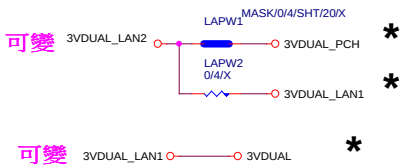


NOTE:

1. 3VDUAL_LAN1,3VDUAL_LAN2
   對接POWER供應電流
   [目前暫接3VDUAL]
2. USB2.0/3.0對應USB PORT
   [目前暫接USB 0,1,2,3 PORT]
3. USB DROOP/DROP E-CAP
4. USB OC線路

LAN POWER

note: lan power連接及電流



~USB30_LAN1設定在ERP可LAN WAKEUP

~USB30_LAN2由獨立LAN POWER L1117供給

Gigabyte Technology		
Title: LAN CONNECTOR-I219+I211		
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GIGABYTE™

Title

Etron EJ179V

Size	Document Number	Rev
Custom	**GA-Z170X-UD5**	**1.0**

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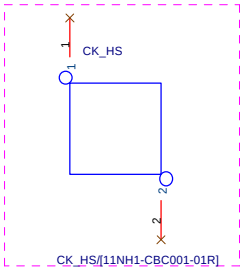
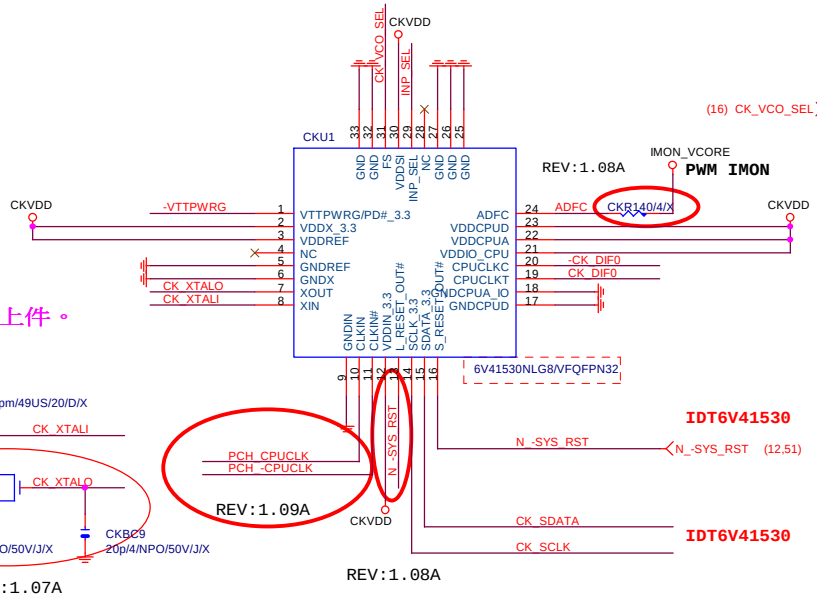
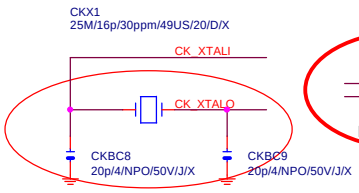
REV:1.09A

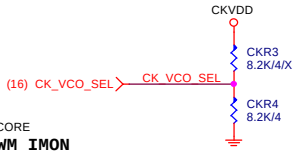
IDT6V41530

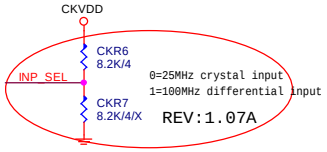


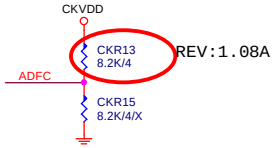
*可變，依需求上件不上件。

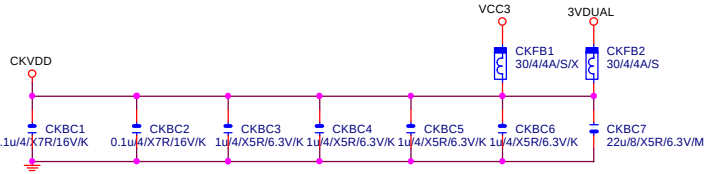


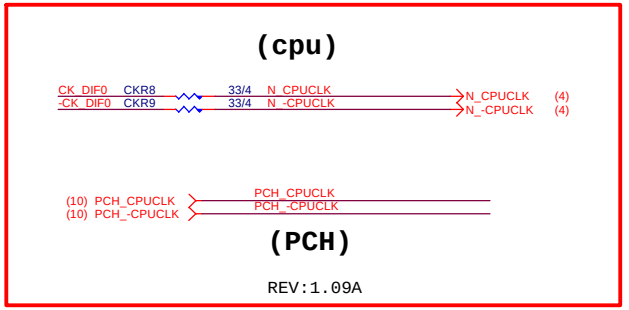


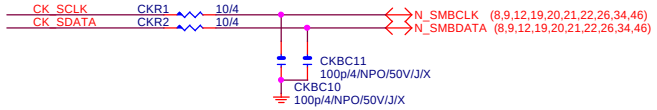


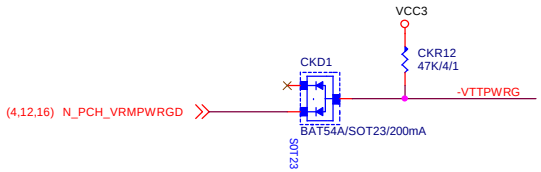












INP_SEL	Intput
0	Crystal
1	CLK_INP/N

CK_VCO_SEL	VCO
0	400M
1	1200M

GIGABYTE™

Title: IDT6V41530_CLK BUFFER

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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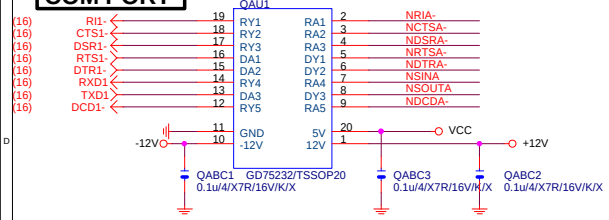
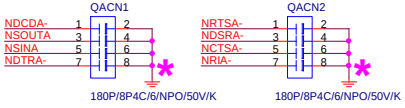
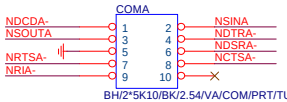
COM PORT



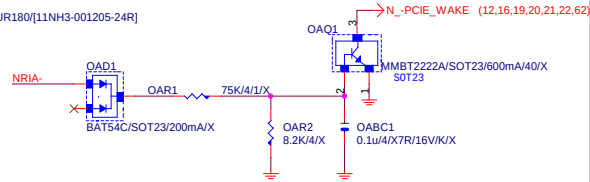


COMA

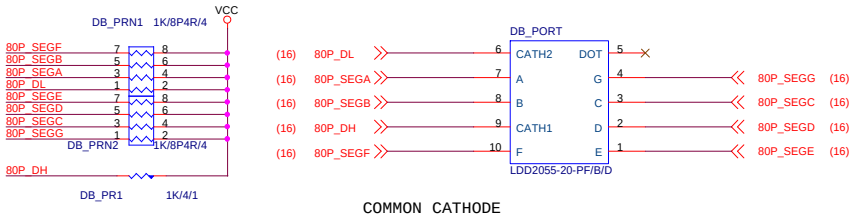


* footprint : F_COM-HS

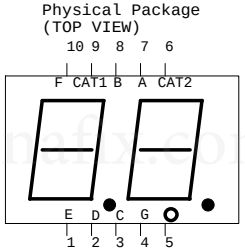
* 接 N_-PCIE_WAKE



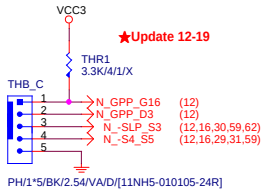
80 PORT



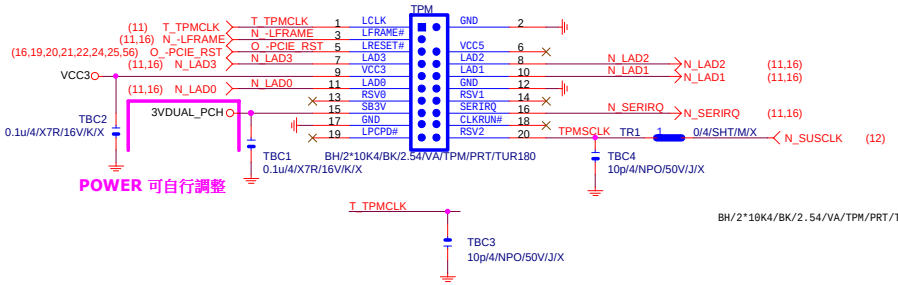
COMMON CATHODE



Thunderbolt



TPM CONNECT



POWER 可自行調整

Gigabyte Technology		
Title: FP,F_USB,USB PWR,BZ		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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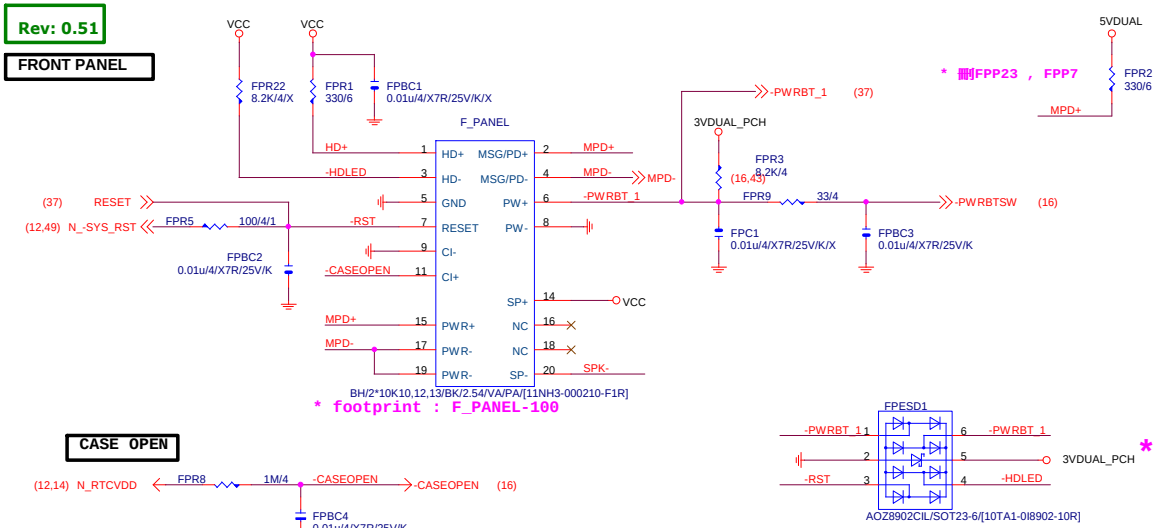
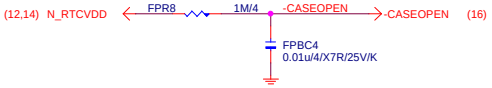
Rev: 0.51

FRONT PANEL



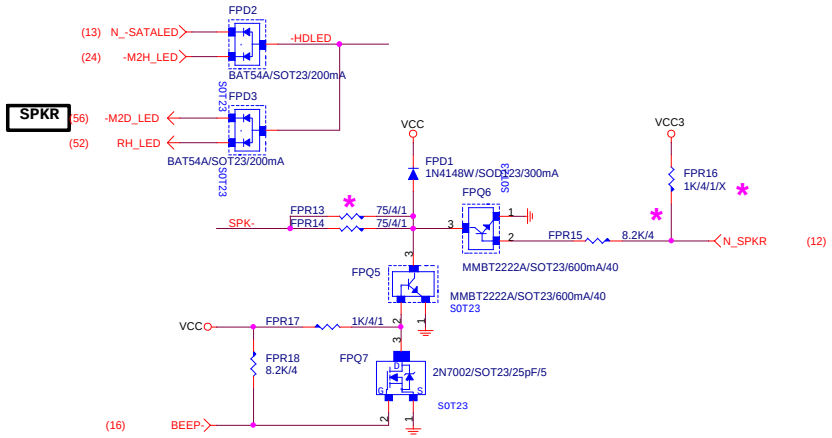
CASE OPEN



SATA LED

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

SPKR



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

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 51 of 67	

Rev: 0.3

Near to PIN

RH_VDD1_2

RH_VDD10

RHBC1 RHBC2 RHBC3 RHBC4 RHBC5 RHBC6 RHBC7

0.1u/4/X7R/16V/K

Near to PIN

VCC3

RHBC11 RHBC12 RHBC13 RHBC14

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

RH_VDD1_2 >40mil RHFB1 4.7uH/3.3A/29m/S RH_EXTL

RHBC15 RHBC16 10u/6/X5R/6.3V/M

0.1u/4/X7R/16V/K

Cout is mandatory.

close to pin

VCC3 RHR3 MASK/0/6/SHT/X RH_VCC3IN

★Update 2015-03-27

RHBC17 10u/6/X5R/6.3V/M/X

可變

(11) RH_SL_OP

(11) RH_SL_ON

(11) RH_SL_IP

(11) RH_SL_IN

RHC1 RHC2 RHC3 RHC4 0.1u/4/X7R/16V/K

RH_VDD1_2

可變

RH_-SRCCLK (10)

RH_SRCCLK (10)

RH_XTALI

RHBC9 15P/4/NPO/50V/J

RIX2 20M/20p/20ppm/49US/40/D

RH_XTALO

RH_SREXT RHR1 12.1K/4/1

RH_PREXT RHR2 12.1K/4/1

★Update 2015-05-12 增加EEPROM

RH_PREXT RH_SPI_CLK RH_SPI_DO RH_SPI_CS RH_SPI_DI

RH_VDD1_2

VCC3

RH_-PERST

(51) RH_LED

RH_TP1

PREXT SPI_CK SPI_DO SPI_CS# SPI_DI GND3 VCC12_3 VCC33_2 PERST# LED TESTMODE VCC12_4 GND4

VCC33P PTXN PTXP PT_XP GNDA3 PRXN PRXP VDD12P XI XO PECLKN PECLKP VDD12S_2

SRXP_A SRXN_A GNDA2 STXN_A STXP_A VCC33S SREXT STXP_B STXN_B GNDA1 SRXN_B SRXP_B

VSSPWM EXTL VCC33IN GPIO0 GPIO1 GPIO2 VCC12_1 GND1 VCC33_1 GND2 VCC12_2 VDD12S_1

RHU1 ASM1061/QFN48/S/[10HP2-6B1061-00R]

RH_RXP0 RH_RXN0 RH_TXN0 RH_TXP0 RH_SREXT RH_TXP1 RH_TXN1 RH_RXN1 RH_RXP1

RH_RXP0 (25) RH_RXN0 (25) RH_TXN0 (25) RH_TXP0 (25)

SATA PORT 0

RH_TXP1 (25) RH_TXN1 (25) RH_RXN1 (25) RH_RXP1 (25)

SATA PORT 1

SWITCH POWER

RH_EXTL

RH_VCC3IN

RH_TP2 RH_TP3 RH_TP4

VCC3

RH_VDD1_2

Power up sequence

+3.3V & +1.2V

90%

PERST

T>0ms

Vinafix.com

(驗証完畢可移除)

RHR4 0/4/X

VCC3

RHR5 100K/4/1

RH_-PERST

RHBC22 0.1u/4/X7R/16V/K

RHR6 1K/4/1

RHQ1 SOT23 2N7002/SOT23/25pF/5

RHBC23 0.1u/4/X7R/16V/K/X

可變動

(16,45,46,62) O_-PFMRST2

RHQ2 2N7002/SOT23/25pF/5 SOT23

★Update 2015-03-27

移除RH_VDD1_2 external power

VCC3

RHR7 1K/4/1

RH_SPI_CS RH_SPI_DI

RHU2

CS# SO WP# VSS

VDD HOLD# SCK SI

RHR8 1K/4/1

RH_SPI_CLK RH_SPI_DO

RHC13 1u/4/X5R/6.3V/K

4M/SPI/SO8/200mil/S[10HP4-112540-30R]

RH_SPI_DI RHR9 1K/4/1/X

RH_SPI_CLK RHR10 1K/4/1/X

HOLD#-
0:Operation Lock
1:Normal Operation

★Update 2015-05-12 增加EEPROM

H/W Strapping

refer to datasheet:

RH_SPI_DO RHR16 1K/4/1/X

SPI_DO
0: Spin up by H/W
1: Spin up by S/W

GIGABYTE™

Title: ASM1061

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

DVI_G

VQ1 2N7002/SOT23/25pF/5 SOT23

(10) N_DDPC_CTRLCLK VR5 2.2K/4/1 VCC3
(10) N_DDPC_CTRLDATA VR6 2.2K/4/1

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

VCC VR16 8.2K/4 VQ1_2

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防漏電

VCC VD1 BAT54A/SOT23/200mA SOT23

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

DVI_SDA
DVI_SCL

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
N_DVI_HDP_F (10)

Close to connector

VESD2 AZ1045-04F/MSOP10
VESD1 AZ1045-04F/MSOP10

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

Close to connector

VESD3 AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

NET 可變
FSVCC_KM

平躺式 DVI-D
11NR6-501024-31

架高式 DVI-D
11NR6-501024-R1R

DVI
SHIELD1
DVITX0- 17 TX0-
DVITX0+ 18 TX0+
DVITX1- 9 TX1-
DVITX1+ 10 TX1+
DVITX2- 1 TX2-
DVITX2+ 2 TX2+
3 SHLD24
11 SHLD13
19 SHLD05
12 TX3-
13 TX3+
4 TX4-
5 TX4+
20 TX5-
21 TX5+
DVI_SCL 6 DDCC
DVI_SDA 7 DDCD
FSVCC_KM 14 VDDC
15 GND
22 SHLDC
DVITXC- 24 TXC-
DVITXC+ 23 TXC+
8 VSYNC
DVI_HP 16 HPD
VR15 20K/4/1
SHIELD2 M3
SHIELD2 M4
SHIELD2 M2
COMMON
DVI-D-HIGH
DVI-D/24P/SC/RA/D/HR/72H/[11NR6-501024-T1R]

架高式 DVI-I
11NR6-501024-R1R

平躺式 DVI-I
11NR6-501029-K1R

Gigabyte Technology

Title: DVI
Size: Custom
Document Number: GA-Z170X-UD5
Rev: 1.0
Date: Tuesday, July 14, 2015
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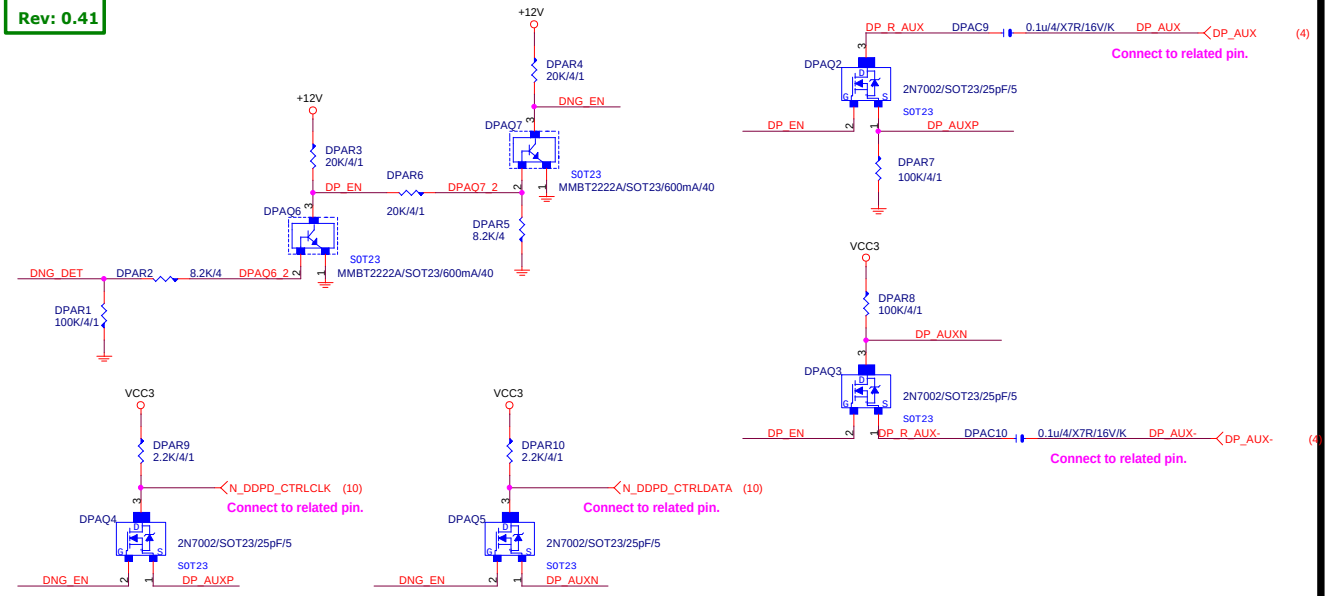
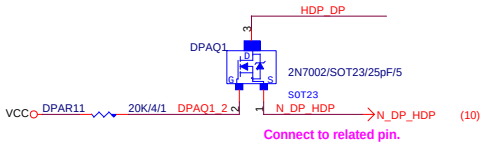
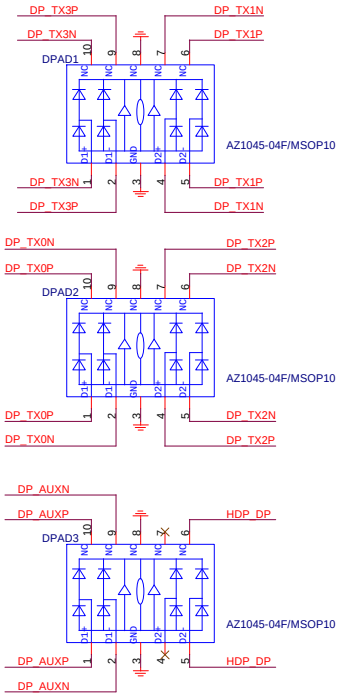
Gigabyte Technology			
Title: HDMI20 MCDP2800-BA			
Size: C	Document Number: GA-Z170X-UD5		Rev: 1.0
Date: Tuesday, July 14, 2015		Sheet 54 of 67	

Rev: 0.41





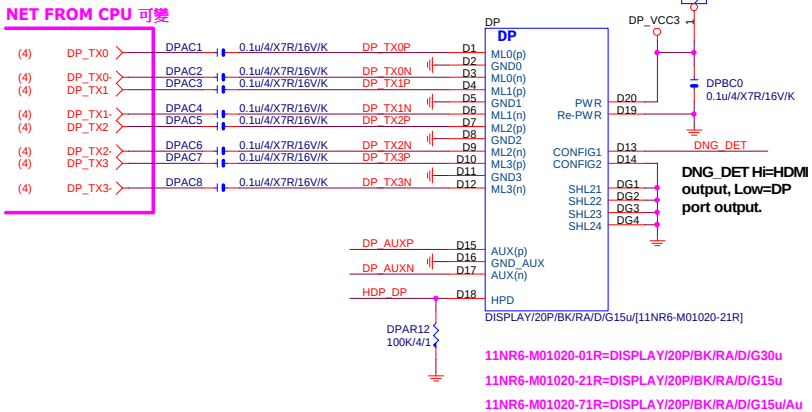
Close to connector



SINGLE Display Port

SINGLE Display Port

NET FROM CPU 可變



DNG_DET Hi=HDMI output, Low=DP port output.

11NR6-M01020-01R=DISPLAY/20P/BK/RA/D/G30u

11NR6-M01020-21R=DISPLAY/20P/BK/RA/D/G15u

11NR6-M01020-71R=DISPLAY/20P/BK/RA/D/G15u/Au

DP

Gigabyte Technology		
Title: DP PORT		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
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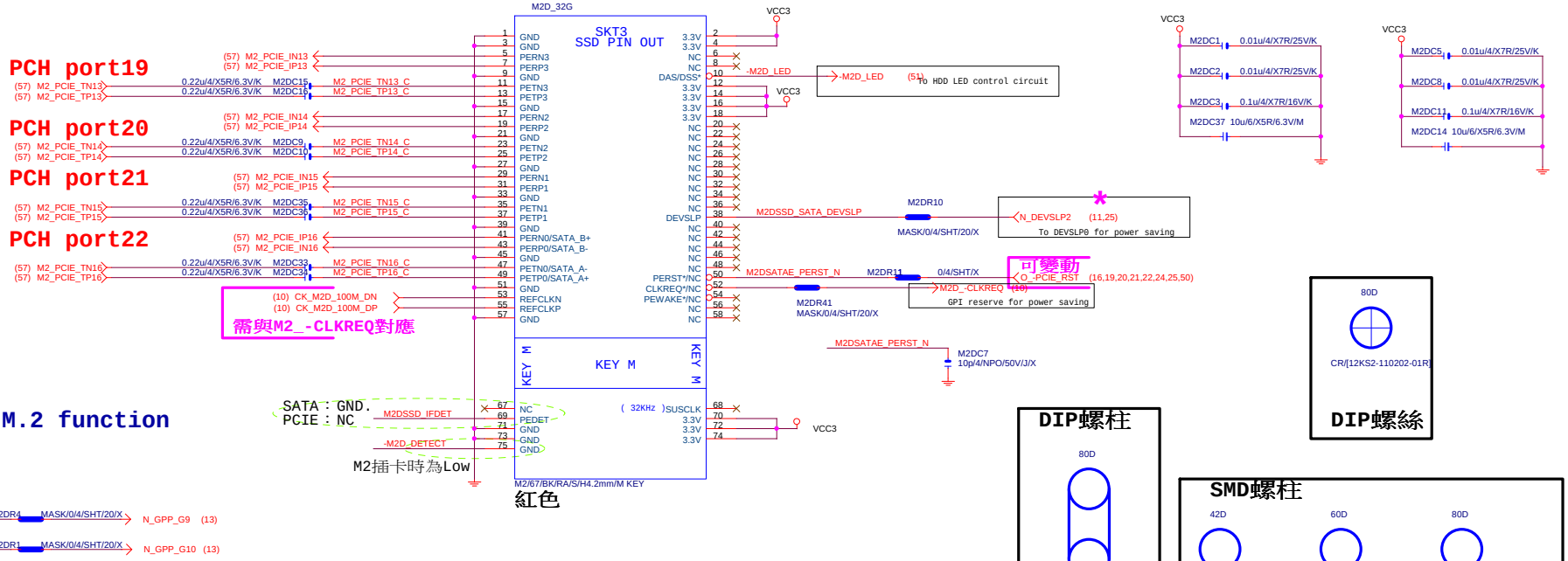
Rev 0.9

M.2 Lane2 from PCH port19

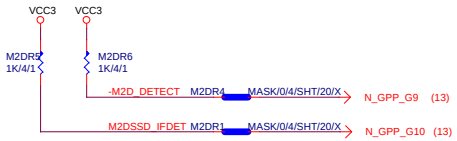
M.2 Lane2 from PCH port20

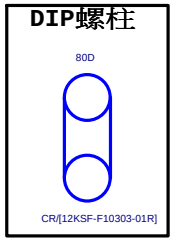
M.2 Lane3 from PCH port21

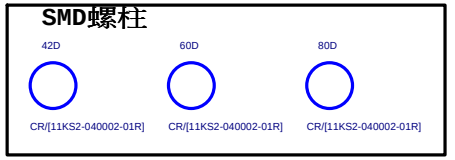
M.2 Lane4 from PCH port22



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(S3)+SATA S0&S1&S2

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	L	GPP_C19	L
GPP_ E0/E1/E2/F0	H (SATA)	GPP_C21	H

M.2X4

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	H
GPP_G10	H	GPP_C19	H
GPP_ E0/E1/E2/F0	N/A	GPP_C21	H

M.2沒插卡+SATA S0~S3

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	H	GPP_C20	L
GPP_G10	H	GPP_C19	L
GPP_ E0/E1/E2/F0	H	GPP_C21	L

M.2-SATA(S3)+S.E.D(S0+S1)

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	L	GPP_C19	L
GPP_ E0/E1/E2/F0	L (S.E.)	GPP_C21	H

M.2X2+S.E.D(S0+S1)

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	H	GPP_C19	H
GPP_ E0/E1/E2/F0	L	GPP_C21	H

M.2沒插卡+S.E.C&S.E.D

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	H	GPP_C20	L
GPP_G10	H	GPP_C19	L
GPP_ E0/E1/E2/F0	L	GPP_C21	L

M.2X2+SATA S0&S1

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	H	GPP_C19	H
GPP_ E0/E1/E2/F0	H	GPP_C21	H

Gigabyte Technology

Title: M.2 X4

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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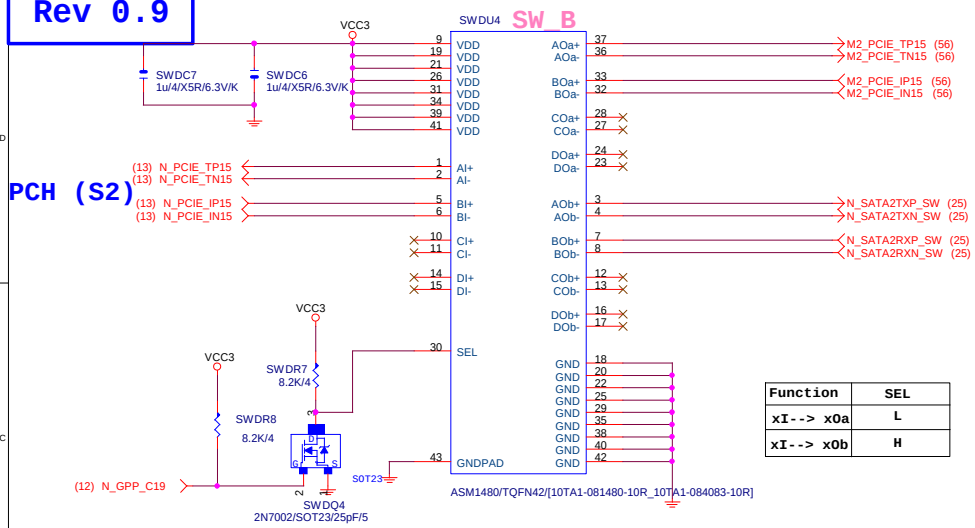
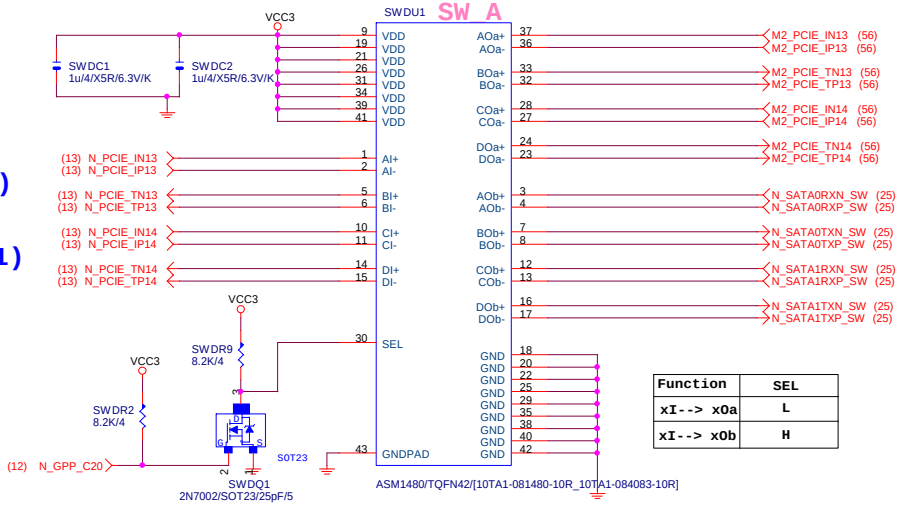
Rev 0.9



PCH (S2)

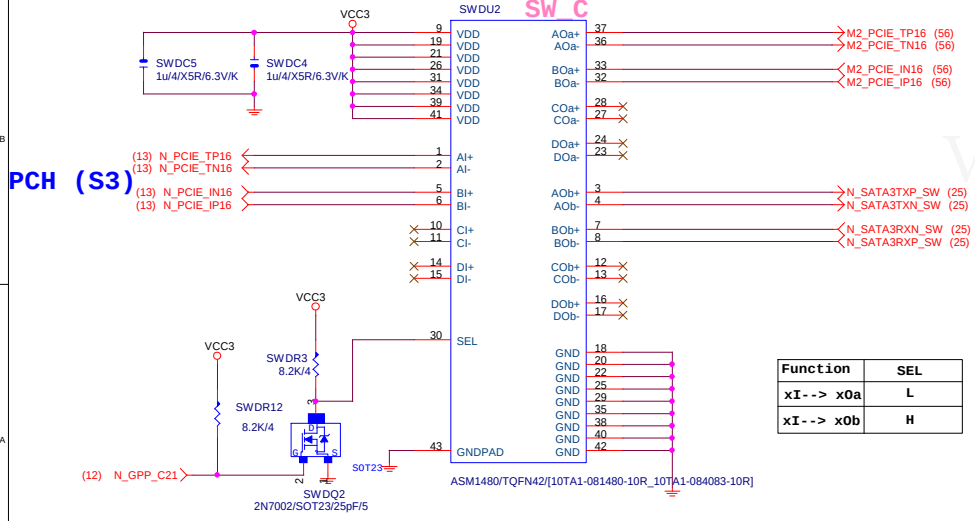
Function	SEL
xI--> xOa	L
xI--> xOb	H



PCH (S0)

PCH (S1)

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



PCH (S3)

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

Gigabyte Technology

Title: NXP-PTN3356

Size: Custom | Document Number: GA-Z170X-UD5 | Rev: 1.0

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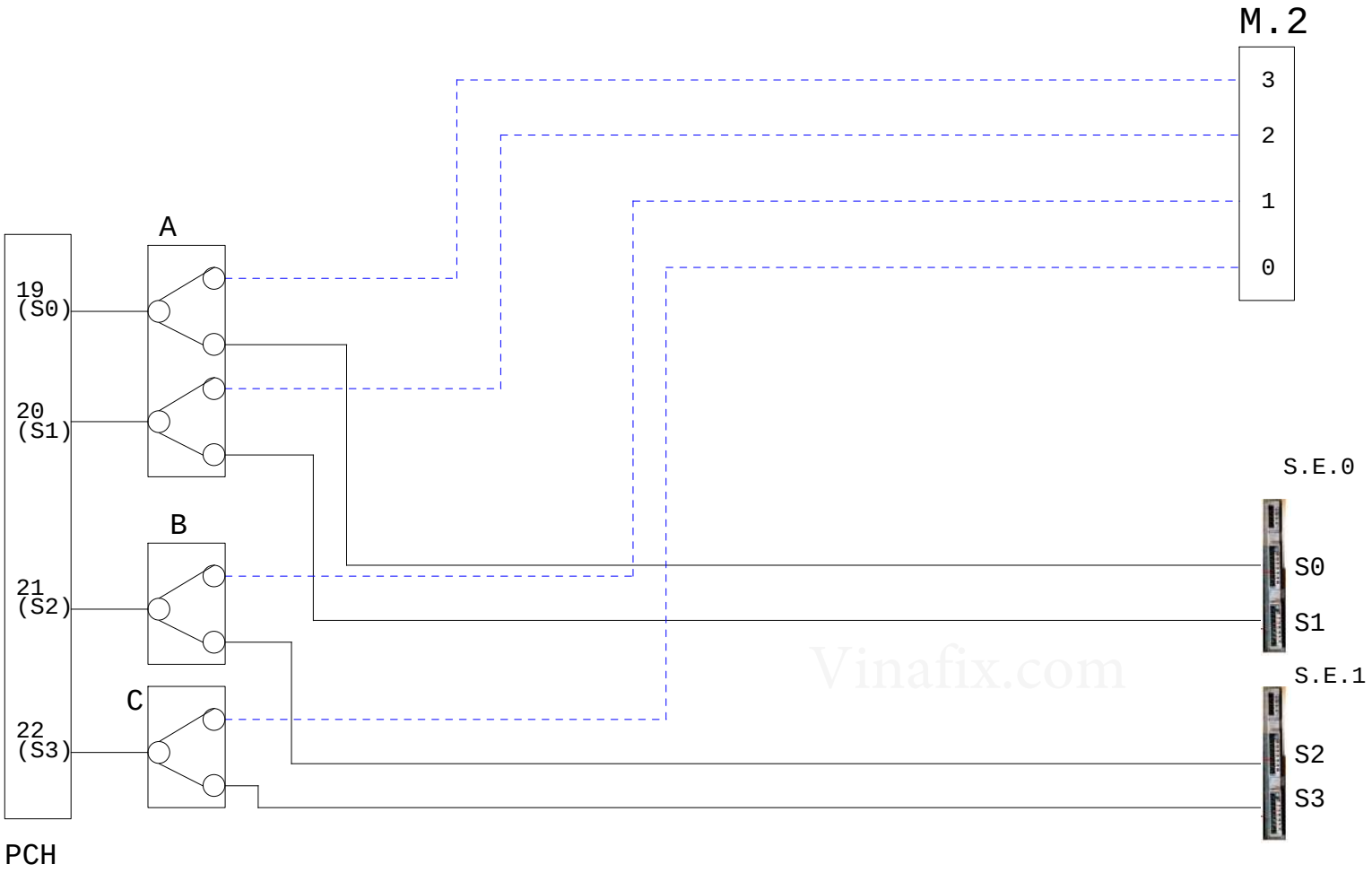


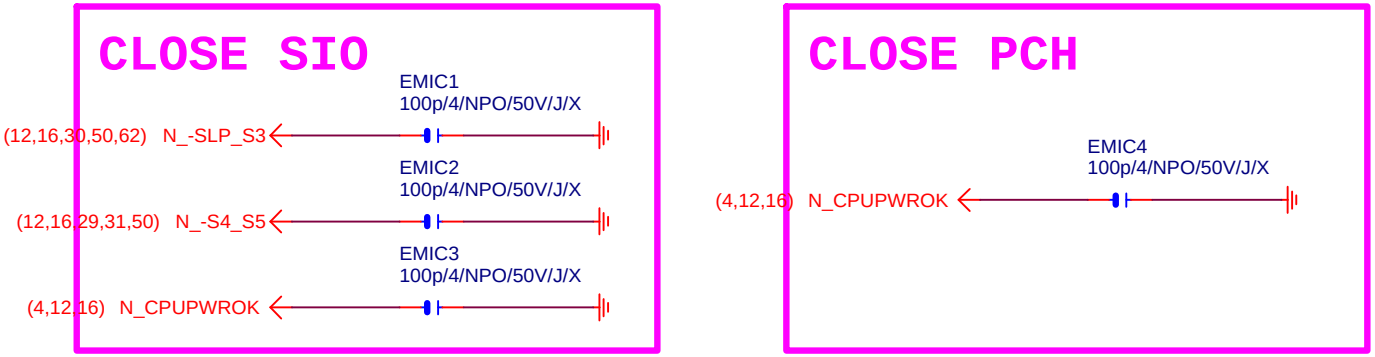
3顆SW IC,

當使用M.2 (X2), SATA EXPRESS只可限定使用 S0&S1

ABC的切換方式:
下下下 : SE1+SE0
上上上 : M.2 X4
下上上 : M.2x2 + SE S0/S1
下下下上 : M.2 X1 + SE S0/S1/S2

Title: BLOCK DIAGRAM		
Size: Custom	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 58 of 67	

EMI/ESD R0.1



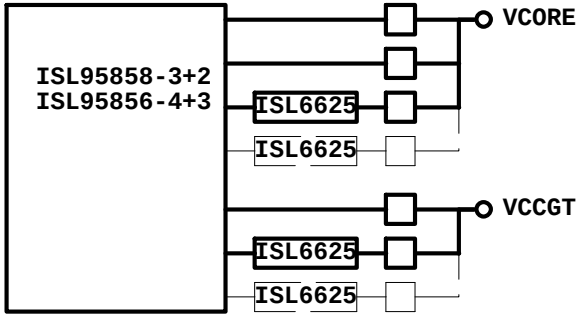
GIGABYTE™

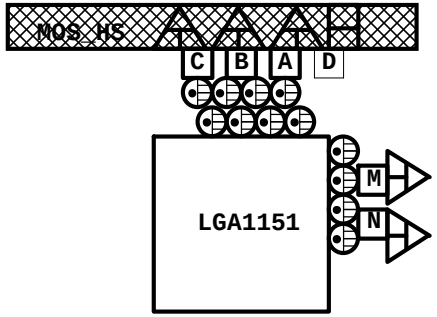
Title: EMI/ESD		
Size: A	Document Number: GA-Z170X-UD5	Rev: 1.0
Date: Tuesday, July 14, 2015	Sheet 59 of 67	

POWER BLOCK MAP

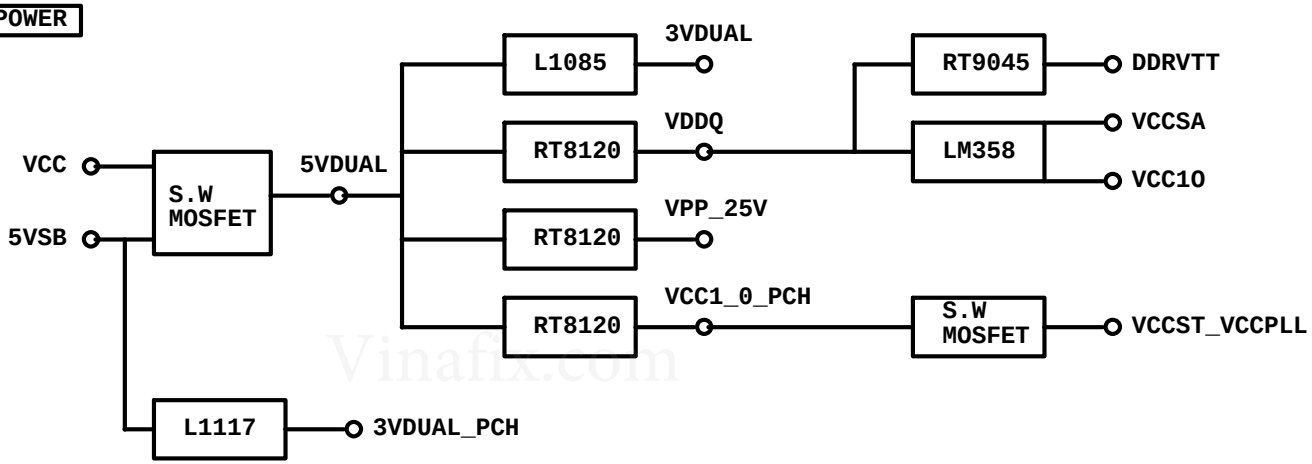
- **CPU**
  - VCORE
  - VCCGT
  - VCCSA
  - VCCIO
  - VDDQ
  - VCCST_VCCPLL
  - VCCSFUSEPRG
- **DDR4**
  - VDDQ
  - DDRVTT
  - VPP_25V
  - VDDSPD(VCC3)
- **PCH**
  - VCC1_0_PCH
  - VCC1_0_PCH_DSW
  - VCC10_VCCF24_1P0
  - VCC10_VCCAMPHYPLL
  - VCC10_VCCAPLL
  - VCC3_PCH
  - 3VDUAL_PCH
  - VCC3
  - N_RTCVDD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

VCORE/VCCGT

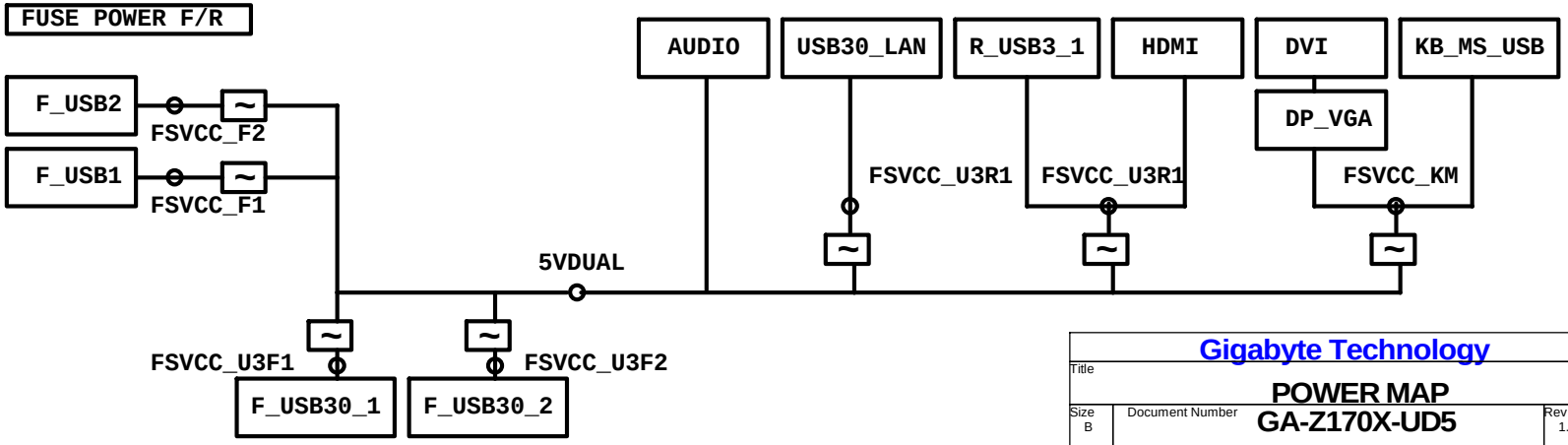




POWER



FUSE POWER F/R



Gigabyte Technology

Title	POWER MAP	
Size B	Document Number GA-Z170X-UD5	Rev 1.0
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固態電容料號.請自行修改

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

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

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

IRON CHOKE

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

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

Ferrite

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-F3500C-11R	0.5uH/32A/INCG109/FSI/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-F2500C-11R	0.5uH/25A/INC0809/F/D	8*8	CHOKE1U-R50M-IF
SMD	10LC5-F4300C-01R	0.3uH/40A/SIUC/FR/S	10*7	CHOKE11X8MM-SMD

BEAD

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

PWM料號

		料號	Capture Value	Footprint
PWM	ISL95856	10TA1-695856-01R		IC52QFN-6x6-G
PWM	ISL95858	10TA1-695858-01R		IC52QFN-6x6-G
PWM	IR35201	10TA1-635201-00R		IC56QFN-9VRS4339
PWM	IR3570	10TA1-603570-00R		IC40MLFP-ISL95835
PWM	RT8237C/D	10TA1-608237-01R		IC10DFN-NIS5132

REGULATOR

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

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Title: RT8120_DDR4 POWER

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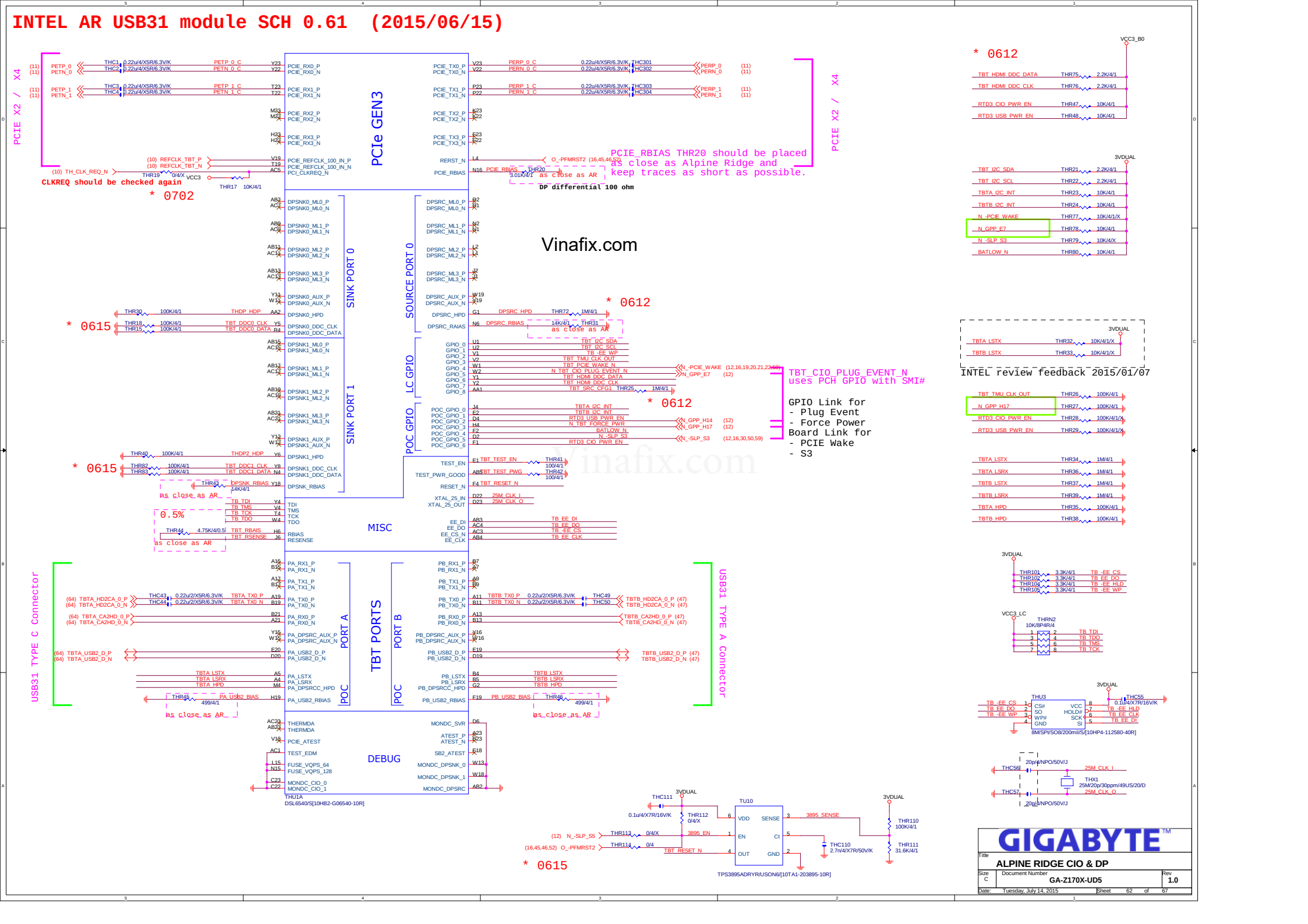
INTEL AR USB31 module SCH 0.61 (2015/06/15)



Title	ALPINE RIDGE CIO & DP	
Size C	Document Number GA-Z170X-UD5	Rev 1.0
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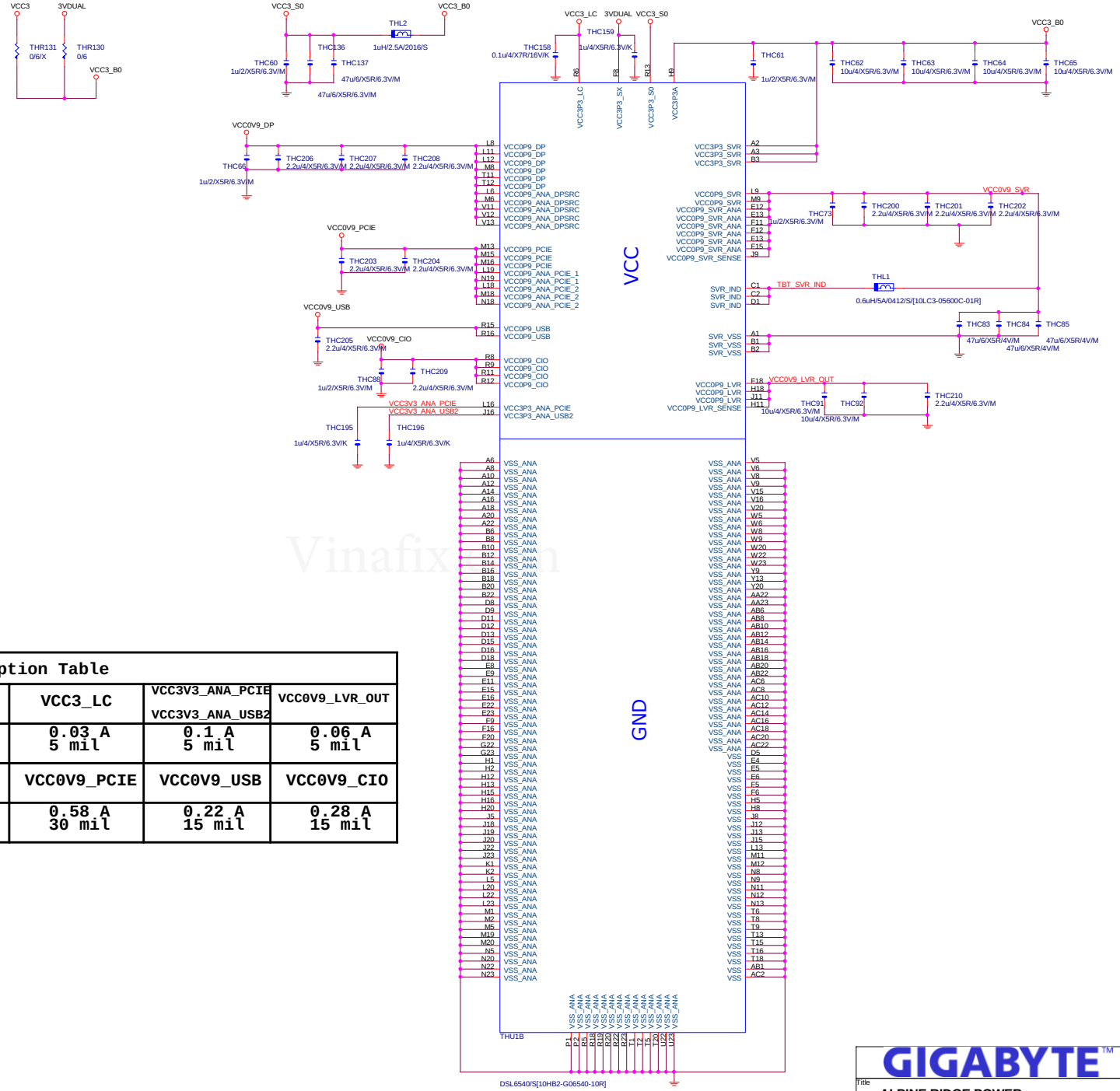
INTEL AR USB31 module SCH 0.61 (2015/06/15)



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

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Title	ALPINE RIDGE POWER	
Size C	Document Number GA-Z170X-UD5	Rev 1.0
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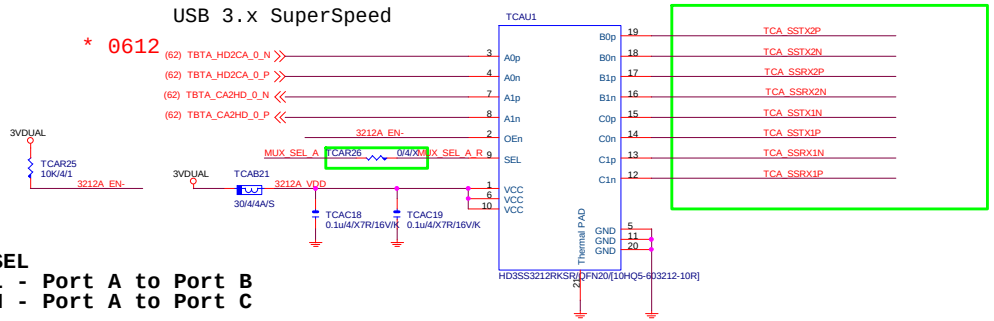
INTEL AR USB31 module SCH 0.61 (2015/06/15)

* 0612

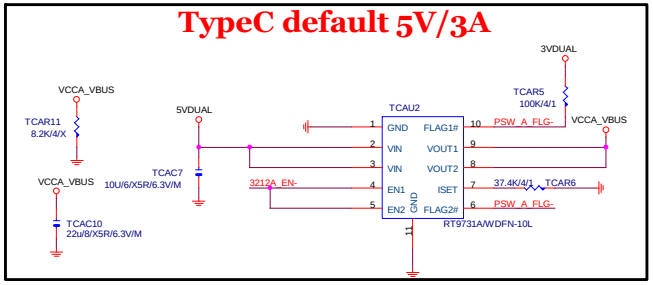
USB 3.x SuperSpeed

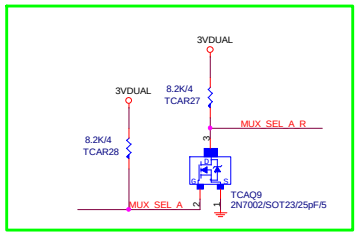
* 0612

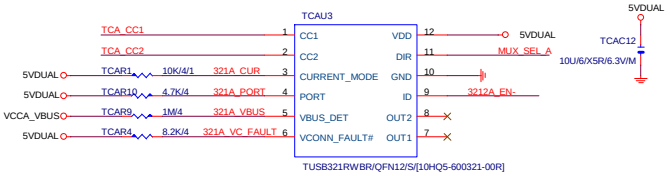


SEL
L - Port A to Port B
H - Port A to Port C

TypeC default 5V/3A



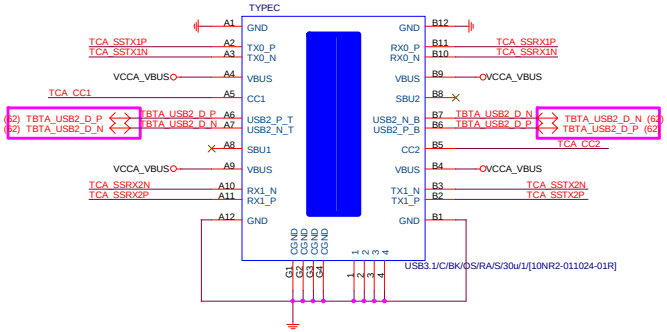




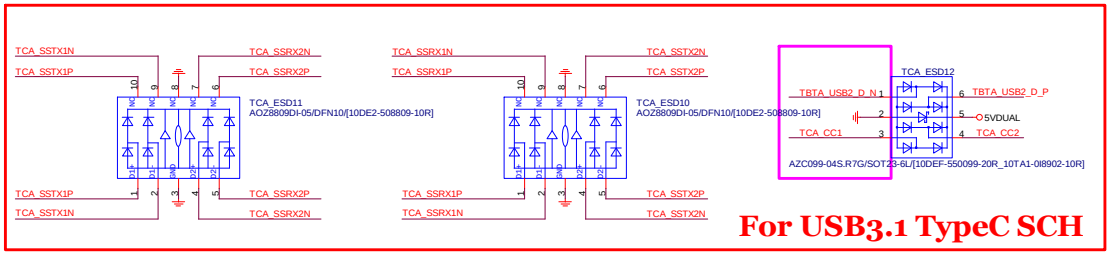
MUX_SEL
H - TypeC plug position 2
L - TypeC plug position 1

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



For USB3.1 TypeC SCH

Color markers can be changed by model

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Title	TI TUSB321	
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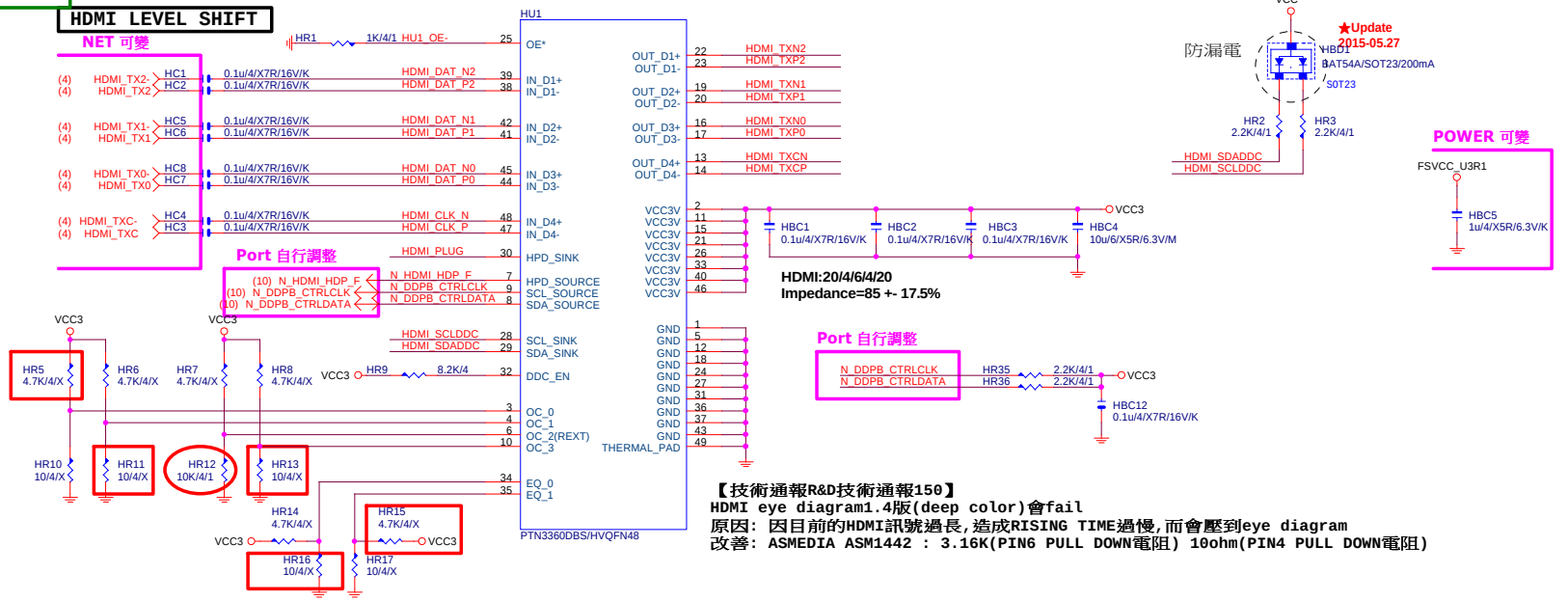
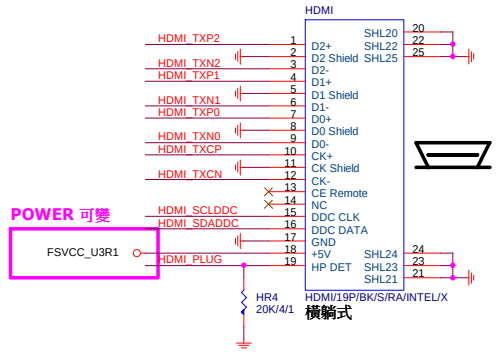
Rev: 0.62





【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

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

ASM1442:紅色框要上,HR12:3.16K

直立式

P/N:11NR6-H01019-K1R

GIGABYTE			
Title: FP,F_USB,USB PWR,BZ			
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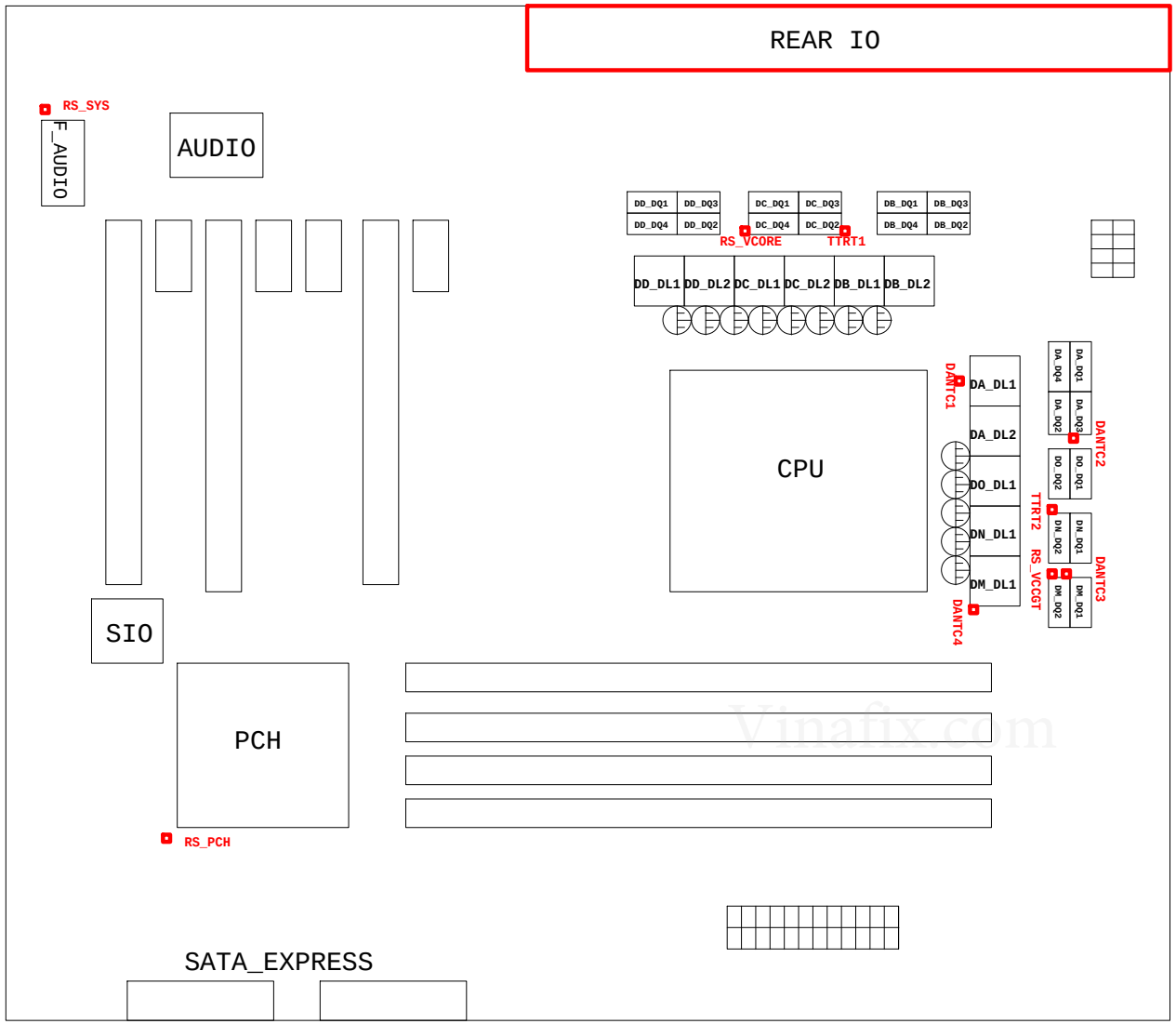

熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

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File: NTC MAP

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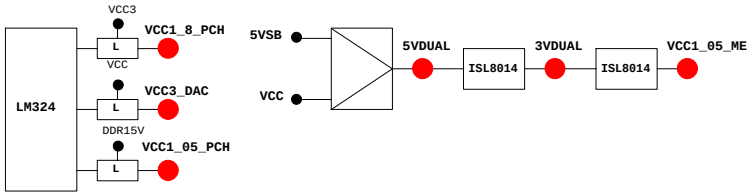
PCH GPIO LIST TABLE

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

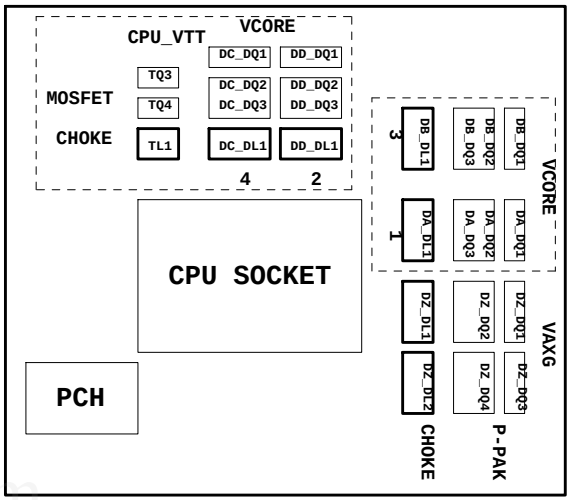
Super I/O ITE8720 GPIO Table

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

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



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

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

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Title: TABLE LIST

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