Model Name: Z370 AORUS Ultra Gaming Rev1.0

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02	BOM & PCB MODIFY HISTORY
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04	CPU_LGA1151-A
05	CPU_LGA1151-B_DDR4
06	CPU_LGA1151-C
07	CPU_LGA1151-D
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09	DDR4 CHANNEL B 1,2
10	PCH_RGB,CLK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	PCH_GND
16	ITE 8686 LPC IO
17	HMW
18	FAN CTRL--SIO
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X8 SLOT
21	PCI EXPRESS X16 SWITCH
22	PCI EXPRESS X4 SLOT(CPU)
23	PCI EXPRESS X1 SLOTs (PCIEX4 SWITCH)
24	SATA PORTS
25	ISL95856 PWM
26	ISL95856 MOS_VCORE
27	ISL95856 MOS_VCCGT
28	VCCSA_VCCIO_VCCPLL
29	RT8120_DDR
30	RT8120_VPP
31	RT8120_PCH
32	DISCRETE POWER1
33	NCT3933
34	ATX POWER , A_-PROCHOT
35	KB_MS_USB

SHEET	TITLE
36	OC , ECO , POWER BUTTON
37	F_USB30
38	F_USB20
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42	LAN~I219
43	USB30_LAN-I219
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54	EMI/ESD
55	NTC MAP
56	POWER MAP
57	POWER零件使用表
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59	DUAL BIOS
60~63	MCU LED
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65	VCCPLL , VCCPLL_OC , VCCST_VCCPLL
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Gigabyte Technology

Title: Cover Sheet

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Model Name: GA-Z370 AORUS Ultra Gaming

Component value change history

Data	Change Item	Reason
2017/06/02 Rev 0.1	1. First Release	9MZ37AULG-00-01A
Rev 0.2 2017/06/05	1. DCL2、DCL1、DCL4、DCL3 1.0uH/22A/S/10m to 1.0uH/15A/S/6.7m 2. DLED_V_SW JP/1*2/BK/H/2.54/O/GF::[1-2]CLOSE to JP/1*2/BK/H/2.54/C/GF/[11NH1-000102-U0R]::[1-2] CLOSE 3. F_U31_C WTB/2*10/BK/0.8/VA/S/3u/M/U3.1 to WTB/2*10/BK/0.8/VA/S/GF/M/U3.1	9MZ37AULG-00-02
Rev 0.2 2017/06/12	1. remove DACC_R11、DACC_Q4、DACC_R12、DACC_Q5、 DACC_R13、DACC_C9、DACC_Q3、DACC_R6、DACC_R14、 DACC_R9、DACC_C7 2. add DACC_Q7、DACC_C9、DACC_R13、NR200 for DAC Power 3. OR3不上件、OR35上件 for 相容CPU 4. OR236 8.2K/4 → OR1 47K/4、OR238 → OR4、 OR237 → OR2、ORQ2 → OQ9、OR235 → OR5、 OR234 → OR17、ORQ1 → OQ10、OR239 → OR、 ORQ3 → OQ11、OR240 → OR13、ORQ4 → OQ12 5. add OR18、OR16、OQ13、OR14、OQ14、OR19、OQ15、 OR21、OR20 for 相容CPU 6. BSQ2上件	
Rev0.3 2017/07/17 2017/07/20 2017/07/21	1. VCCGT、VCORE、VIN CHOKE 修改Footprint 2. CR28/29/32/36改不上件 22K/4/X 3. MOATR3 改不上件0/4/X，MOATR4 改 2.2/6 1.DAC34→0.047uF DAC44→0.1uF DAC23→1.2nF DAC43→0.1uF 1.MCU_PH1改不上件	9MZ37AULG-00-03
Rev1.0 2017/07/27 2017/08/01 2017/08/03 2017/08/03 2017/08/03	1.NR83、NR33改不上件 2.新增料號(PCH、RMOS、TOMS) 1.WR113,OR1,OR4,OQ9,OR2,OR5,OR6,OR13,OQ10,OQ11,OQ12, OR16,OQ13,OR18 不上件 for Dual BIOS funciton 調整阻值(OCP 70A-->90A) 1. DAR71-->316/4/1 2. DAR72-->56K/4/1 3. DAR63-->4.42K/4/1 4. DAR55-->3.9K/4/1 PCH 料號修改10HB1-03Z370-20R 1.WR113,OR1,OR4,OQ9,OR2,OR5,OR6,OR13,OQ10,OQ11,OQ12, OR16,OQ13,OR18 不上件 for Dual BIOS funciton 1.Q9-->EMF30N02J/SOT23/627pF/30m 1.WR113 不上件 2. M_BIOS腳座不上件	9MZ37AULG-00-10A
Rev1.0 2017/08/07	1. MCU1 料號改10HQ2-M08295-20R 2. DDR4 料號改11SM1-521288-G1R 3. PCB_BAR料號改11WC1-020146-11R	9MZ37AULG-00-10B

Circuit or PCB layout change

DATE	Change Item	Reason
2016/07/05 Rev 0.1	1. First Release	
Rev 0.2 2017/06/12	1. DACC_R4改接5VDUAL 2.DAR18改接VCC3、DAR19改接VIN、DAR9改接VIN 3. M2A_32G改foot print及改料 4. OR205 Short改為0 ohm	
Rev 0.3 2017/07/17	1. Add IO_GP15 2. Del IO_GP95、OR233 3. OR26 Change to 3VDUAL	
2017/07/20	1. REAR_HS的footprint 2. 新增A_-THRMTRIP circuit (修正Coffee無ME問題開不了機問題) 3. 新增RN10	
2017/07/21	1.修改M.2Q footprint	
Rev 1.0 2017/07/27	1.新增DAR143.DAR144.DAR145.DAR146.DAQ9.DAQ8(調整IMON)	
2017/08/01	1. Add DAC45 for Vcore IMON 2. Modified U2OC3 , delete VCC_VBUS net fixed FUSB30C issue 3.Add RN11,12,13,14,15 for Power loading	

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Title: BOM & PCB MODIFY HISTORY

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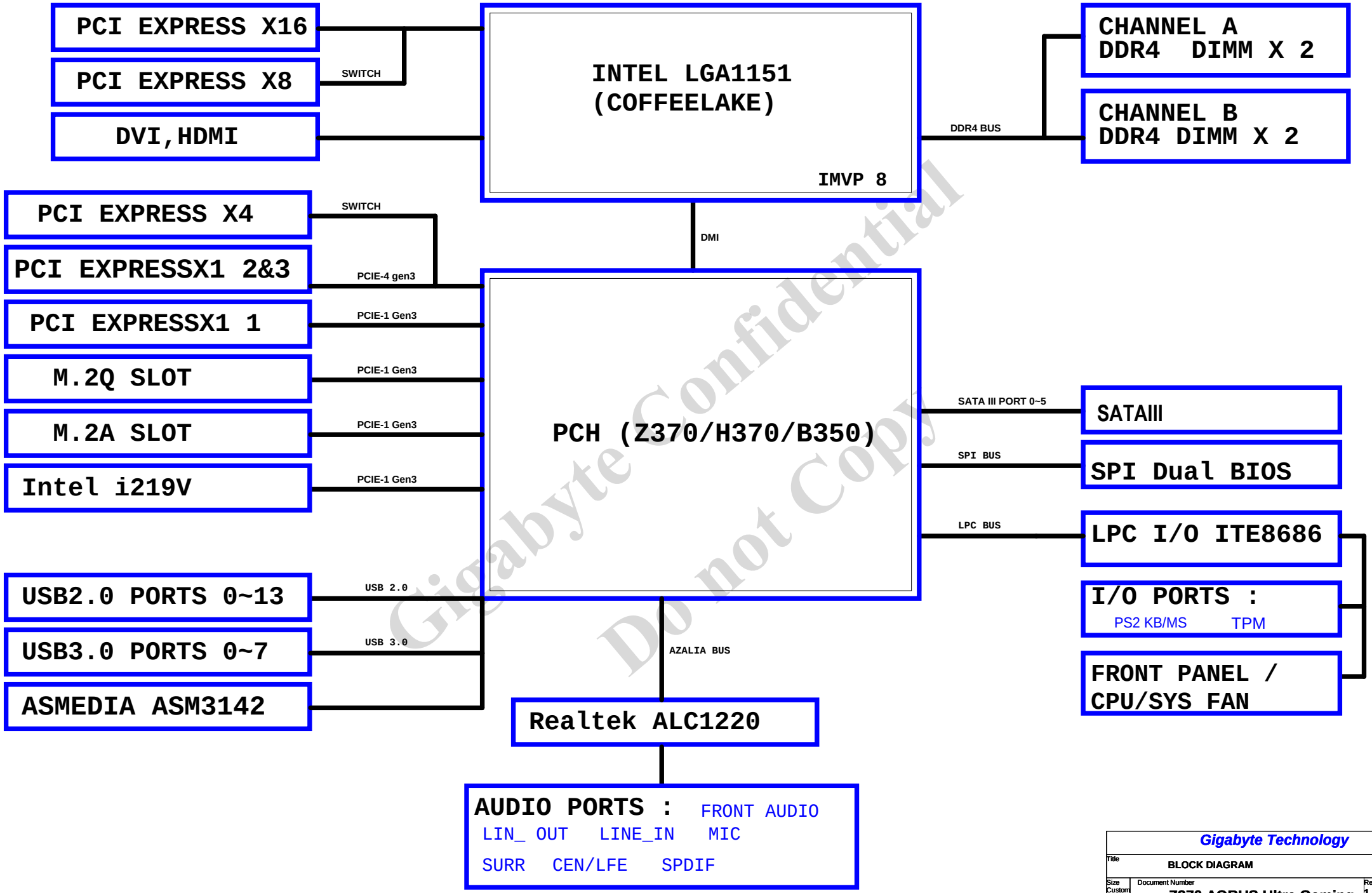
BLOCK DIAGRAM



Gigabyte Technology		
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CFL_R0.3

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

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

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

非X8/X4/X4設計的可移除

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

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

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Title: CPU LGA1151-A
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CFL_R0.3

LGA1151A

SKT_H4

LGA1151

MDA0	AE38	DDR0_DQ[0]	DDR0_CKP[0]	AW18	M_DCLKA0
MDA1	AE37	DDR0_DQ[1]	DDR0_CKN[0]	AV18	M_-DCLKA0
MDA2	AG38	DDR0_DQ[2]	DDR0_CKP[1]	AW17	M_DCLKA1
MDA3	AG37	DDR0_DQ[3]	DDR0_CKN[1]	AY17	M_-DCLKA1
MDA4	AE39	DDR0_DQ[4]	DDR0_CKP[2]	AW16	M_DCLKA2
MDA5	AE40	DDR0_DQ[5]	DDR0_CKN[2]	AV16	M_-DCLKA2
MDA6	AG39	DDR0_DQ[6]	DDR0_CKP[3]	AT16	M_DCLKA3
MDA7	AG40	DDR0_DQ[7]	DDR0_CKN[3]	AU16	M_-DCLKA3
MDA8	AJ38	DDR0_DQ[8]			
MDA9	AJ37	DDR0_DQ[9]	DDR0_CKE[0]	AY24	CKEA0
MDA10	AL38	DDR0_DQ[10]	DDR0_CKE[1]	AW24	CKEA1
MDA11	AL37	DDR0_DQ[11]	DDR0_CKE[2]	AV24	CKEA2
MDA12	AJ40	DDR0_DQ[12]	DDR0_CKE[3]	AV25	CKEA3
MDA13	AJ39	DDR0_DQ[13]			
MDA14	AL39	DDR0_DQ[14]	DDR0_CS#[0]	AW12	M_-CSA0
MDA15	AL40	DDR0_DQ[15]	DDR0_CS#[1]	AU11	M_-CSA1
MDA16	AN38	DDR0_DQ[16]/DDR0_DQ[32]	DDR0_CS#[2]	AV13	M_-CSA2
MDA17	AN40	DDR0_DQ[17]/DDR0_DQ[33]	DDR0_CS#[3]	AV10	M_-CSA3
MDA18	AR38	DDR0_DQ[18]/DDR0_DQ[34]			
MDA19	AR37	DDR0_DQ[19]/DDR0_DQ[35]	DDR0_ODT[0]	AW11	MODT_A0
MDA20	AN39	DDR0_DQ[20]/DDR0_DQ[36]	DDR0_ODT[1]	AU14	MODT_A1
MDA21	AN37	DDR0_DQ[21]/DDR0_DQ[37]	DDR0_ODT[2]	AU12	MODT_A2
MDA22	AR39	DDR0_DQ[22]/DDR0_DQ[38]	DDR0_ODT[3]	AY10	MODT_A3
MDA23	AR40	DDR0_DQ[23]/DDR0_DQ[39]			
MDA24	AW37	DDR0_DQ[24]/DDR0_DQ[40]	DDR0_BA[0]/DDR0_CAB[4]/DDR0_BA[0]	AY13	SBAA0
MDA25	AU38	DDR0_DQ[25]/DDR0_DQ[41]	DDR0_BA[1]/DDR0_CAB[6]/DDR0_BA[1]	AY15	SBAA1
MDA26	AV35	DDR0_DQ[26]/DDR0_DQ[42]	DDR0_BA[2]/DDR0_CAA[5]/DDR0_BG[0]	AW23	BG_A0
MDA27	AW35	DDR0_DQ[27]/DDR0_DQ[43]			
MDA28	AU37	DDR0_DQ[28]/DDR0_DQ[44]	DDR0_RAS#/DDR0_CAB[3]/DDR0_MA[16]	AW13	MAAA16
MDA29	AV37	DDR0_DQ[29]/DDR0_DQ[45]	DDR0_WE#/DDR0_CAB[2]/DDR0_MA[14]	AV14	MAAA14
MDA30	AT35	DDR0_DQ[30]/DDR0_DQ[46]	DDR0_CAS#/DDR0_CAB[1]/DDR0_MA[15]	AY11	MAAA15
MDA31	AU35	DDR0_DQ[31]/DDR0_DQ[47]			
MDA32	AY8	DDR0_DQ[32]/DDR1_DQ[0]	DDR0_MA[0]/DDR0_CAB[9]/DDR0_MA[0]	AW15	MAAA0
MDA33	AW8	DDR0_DQ[33]/DDR1_DQ[1]	DDR0_MA[1]/DDR0_CAB[8]/DDR0_MA[1]	AU18	MAAA1
MDA34	AV6	DDR0_DQ[34]/DDR1_DQ[2]	DDR0_MA[2]/DDR0_CAB[5]/DDR0_MA[2]	AU17	MAAA2
MDA35	AU6	DDR0_DQ[35]/DDR1_DQ[3]	DDR0_MA[3]	AV19	MAAA3
MDA36	AU8	DDR0_DQ[36]/DDR1_DQ[4]	DDR0_MA[4]	AT19	MAAA4
MDA37	AV8	DDR0_DQ[37]/DDR1_DQ[5]	DDR0_MA[5]/DDR0_CAA[0]/DDR0_MA[5]	AU20	MAAA5
MDA38	AW6	DDR0_DQ[38]/DDR1_DQ[6]	DDR0_MA[6]/DDR0_CAA[2]/DDR0_MA[6]	AV20	MAAA6
MDA39	AY6	DDR0_DQ[39]/DDR1_DQ[7]	DDR0_MA[7]/DDR0_CAA[4]/DDR0_MA[7]	AU21	MAAA7
MDA40	AY4	DDR0_DQ[40]/DDR1_DQ[8]	DDR0_MA[8]/DDR0_CAA[3]/DDR0_MA[8]	AT20	MAAA8
MDA41	AV4	DDR0_DQ[41]/DDR1_DQ[9]	DDR0_MA[9]/DDR0_CAA[1]/DDR0_MA[9]	AT22	MAAA9
MDA42	AT1	DDR0_DQ[42]/DDR1_DQ[10]	DDR0_MA[10]/DDR0_CAB[7]/DDR0_MA[10]	AY14	MAAA10
MDA43	AT2	DDR0_DQ[43]/DDR1_DQ[11]	DDR0_MA[11]/DDR0_CAA[7]/DDR0_MA[11]	AU22	MAAA11
MDA44	AV3	DDR0_DQ[44]/DDR1_DQ[12]	DDR0_MA[12]/DDR0_CAA[6]/DDR0_MA[12]	AV22	MAAA12
MDA45	AW4	DDR0_DQ[45]/DDR1_DQ[13]	DDR0_MA[13]/DDR0_CAB[0]/DDR0_MA[13]	AV12	MAAA13
MDA46	AT4	DDR0_DQ[46]/DDR1_DQ[14]	DDR0_MA[14]/DDR0_CAA[9]/DDR0_BG[1]	AV23	BG_A1
MDA47	AT3	DDR0_DQ[47]/DDR1_DQ[15]	DDR0_MA[15]/DDR0_CAA[8]/DDR0_ACT#	AU24	M_-ACT_A
MDA48	AP2	DDR0_DQ[48]/DDR1_DQ[32]			
MDA49	AM4	DDR0_DQ[49]/DDR1_DQ[33]	DDR0_PAR	AY15	M_DDR_PARA
MDA50	AP3	DDR0_DQ[50]/DDR1_DQ[34]	DDR0_ALERT#	AT23	M_-ALERT_A
MDA51	AM3	DDR0_DQ[51]/DDR1_DQ[35]			
MDA52	AP4	DDR0_DQ[52]/DDR1_DQ[36]			
MDA53	AM2	DDR0_DQ[53]/DDR1_DQ[37]	DDR0_DQSN[0]	AF39	M_-DQSA0
MDA54	AP1	DDR0_DQ[54]/DDR1_DQ[38]	DDR0_DQSN[1]	AK39	M_-DQSA1
MDA55	AM1	DDR0_DQ[55]/DDR1_DQ[39]	DDR0_DQSN[2]/DDR0_DQSN[4]	AP39	M_-DQSA2
MDA56	AK3	DDR0_DQ[56]/DDR1_DQ[40]	DDR0_DQSN[3]/DDR0_DQSN[5]	AU36	M_-DQSA3
MDA57	AH1	DDR0_DQ[57]/DDR1_DQ[41]	DDR0_DQSN[4]/DDR1_DQSN[0]	AW7	M_-DQSA4
MDA58	AK4	DDR0_DQ[58]/DDR1_DQ[42]	DDR0_DQSN[5]/DDR1_DQSN[1]	AU3	M_-DQSA5
MDA59	AH2	DDR0_DQ[59]/DDR1_DQ[43]	DDR0_DQSN[6]/DDR1_DQSN[4]	AN3	M_-DQSA6
MDA60	AH4	DDR0_DQ[60]/DDR1_DQ[44]	DDR0_DQSN[7]/DDR1_DQSN[5]	AJ3	M_-DQSA7
MDA61	AK2	DDR0_DQ[61]/DDR1_DQ[45]			
MDA62	AH3	DDR0_DQ[62]/DDR1_DQ[46]	DDR0_DQSP[0]	AF38	M_DQSA0
MDA63	AK1	DDR0_DQ[63]/DDR1_DQ[47]	DDR0_DQSP[1]	AK38	M_DQSA1
			DDR0_DQSP[2]/DDR0_DQSP[4]	AP38	M_DQSA2
AU33		DDR0_ECC[0]	DDR0_DQSP[3]/DDR0_DQSP[5]	AV36	M_DQSA3
AT33		DDR0_ECC[1]	DDR0_DQSP[4]/DDR1_DQSP[0]	AV7	M_DQSA4
AW33		DDR0_ECC[2]	DDR0_DQSP[5]/DDR1_DQSP[1]	AU2	M_DQSA5
AV31		DDR0_ECC[3]	DDR0_DQSP[6]/DDR1_DQSP[4]	AN2	M_DQSA6
AU31		DDR0_ECC[4]	DDR0_DQSP[7]/DDR1_DQSP[5]	AJ2	M_DQSA7
AV33		DDR0_ECC[5]			
AW31		DDR0_ECC[6]	DDR0_DQSP[8]	AV32	
AY31		DDR0_ECC[7]	DDR0_DQSN[8]	AU32	

DDR CHANNEL A

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LGA1151

CPU-SK/1151/S/GF

LGA1151B

SKT_H4

LGA1151

MDB0	AD34	DDR1_DQ[0]/DDR0_DQ[16]	DDR1_CKP[0]	AM20	M_DCLKB0
MDB1	AD35	DDR1_DQ[1]/DDR0_DQ[17]	DDR1_CKN[0]	AM21	M_-DCLKB0
MDB2	AG35	DDR1_DQ[2]/DDR0_DQ[18]	DDR1_CKP[1]	AP22	M_DCLKB1
MDB3	AH35	DDR1_DQ[3]/DDR0_DQ[19]	DDR1_CKN[1]	AP21	M_-DCLKB1
MDB4	AE35	DDR1_DQ[4]/DDR0_DQ[20]	DDR1_CKP[2]	AN20	M_DCLKB2
MDB5	AE34	DDR1_DQ[5]/DDR0_DQ[21]	DDR1_CKN[2]	AN21	M_-DCLKB2
MDB6	AG34	DDR1_DQ[6]/DDR0_DQ[22]	DDR1_CKP[3]	AP19	M_DCLKB3
MDB7	AH34	DDR1_DQ[7]/DDR0_DQ[23]	DDR1_CKN[3]	AP20	M_-DCLKB3
MDB8	AK35	DDR1_DQ[8]/DDR0_DQ[24]			
MDB9	AL35	DDR1_DQ[9]/DDR0_DQ[25]	DDR1_CKE[0]	AY29	CKEB0
MDB10	AK32	DDR1_DQ[10]/DDR0_DQ[26]	DDR1_CKE[1]	AV29	CKEB1
MDB11	AL32	DDR1_DQ[11]/DDR0_DQ[27]	DDR1_CKE[2]	AW29	CKEB2
MDB12	AK34	DDR1_DQ[12]/DDR0_DQ[28]	DDR1_CKE[3]	AU29	CKEB3
MDB13	AL34	DDR1_DQ[13]/DDR0_DQ[29]			
MDB14	AK31	DDR1_DQ[14]/DDR0_DQ[30]	DDR1_CS#[0]	AP17	M_-CSB0
MDB15	AL31	DDR1_DQ[15]/DDR0_DQ[31]	DDR1_CS#[1]	AN15	M_-CSB1
MDB16	AP35	DDR1_DQ[16]/DDR0_DQ[48]	DDR1_CS#[2]	AN17	M_-CSB2
MDB17	AN35	DDR1_DQ[17]/DDR0_DQ[49]	DDR1_CS#[3]	AM15	M_-CSB3
MDB18	AN32	DDR1_DQ[18]/DDR0_DQ[50]			
MDB19	AP32	DDR1_DQ[19]/DDR0_DQ[51]	DDR1_ODT[0]	AM16	MODT_B0
MDB20	AN34	DDR1_DQ[20]/DDR0_DQ[52]	DDR1_ODT[1]	AL16	MODT_B1
MDB21	AP34	DDR1_DQ[21]/DDR0_DQ[53]	DDR1_ODT[2]	AP15	MODT_B2
MDB22	AN31	DDR1_DQ[22]/DDR0_DQ[54]	DDR1_ODT[3]	AL15	MODT_B3
MDB23	AP31	DDR1_DQ[23]/DDR0_DQ[55]			
MDB24	AL29	DDR1_DQ[24]/DDR0_DQ[56]	DDR1_RAS#/DDR1_CAB[3]/DDR1_MA[16]	AN18	MAAB16
MDB25	AM29	DDR1_DQ[25]/DDR0_DQ[57]	DDR1_WE#/DDR1_CAB[2]/DDR1_MA[14]	AL17	MAAB14
MDB26	AP29	DDR1_DQ[26]/DDR0_DQ[58]	DDR1_CAS#/DDR1_CAB[1]/DDR1_MA[15]	AP16	MAAB15
MDB27	AR29	DDR1_DQ[27]/DDR0_DQ[59]			
MDB28	AM28	DDR1_DQ[28]/DDR0_DQ[60]	DDR1_BA[0]/DDR1_CAB[4]/DDR1_BA[0]	AL18	SBAB0
MDB29	AL28	DDR1_DQ[29]/DDR0_DQ[61]	DDR1_BA[1]/DDR1_CAB[6]/DDR1_BA[1]	AM18	SBAB1
MDB30	AR28	DDR1_DQ[30]/DDR0_DQ[62]	DDR1_BA[2]/DDR1_CAA[5]/DDR1_BG[0]	AW28	BG_B0
MDB31	AP28	DDR1_DQ[31]/DDR0_DQ[63]			
MDB32	AR12	DDR1_DQ[32]/DDR1_DQ[16]	DDR1_MA[0]/DDR1_CAB[9]/DDR1_MA[0]	AL19	MAAB0
MDB33	AP12	DDR1_DQ[33]/DDR1_DQ[17]	DDR1_MA[1]/DDR1_CAB[8]/DDR1_MA[1]	AL22	MAAB1
MDB34	AM13	DDR1_DQ[34]/DDR1_DQ[18]	DDR1_MA[2]/DDR1_CAB[5]/DDR1_MA[2]	AM22	MAAB2
MDB35	AL13	DDR1_DQ[35]/DDR1_DQ[19]	DDR1_MA[3]	AM23	MAAB3
MDB36	AR13	DDR1_DQ[36]/DDR1_DQ[20]	DDR1_MA[4]	AP23	MAAB4
MDB37	AP13	DDR1_DQ[37]/DDR1_DQ[21]	DDR1_MA[5]/DDR1_CAA[0]/DDR1_MA[5]	AL23	MAAB5
MDB38	AM12	DDR1_DQ[38]/DDR1_DQ[22]	DDR1_MA[6]/DDR1_CAA[2]/DDR1_MA[6]	AW26	MAAB6
MDB39	AL12	DDR1_DQ[39]/DDR1_DQ[23]	DDR1_MA[7]/DDR1_CAA[4]/DDR1_MA[7]	AY26	MAAB7
MDB40	AP10	DDR1_DQ[40]/DDR1_DQ[24]	DDR1_MA[8]/DDR1_CAA[3]/DDR1_MA[8]	AU26	MAAB8
MDB41	AR10	DDR1_DQ[41]/DDR1_DQ[25]	DDR1_MA[9]/DDR1_CAA[1]/DDR1_MA[9]	AW27	MAAB9
MDB42	AR7	DDR1_DQ[42]/DDR1_DQ[26]	DDR1_MA[10]/DDR1_CAB[7]/DDR1_MA[10]	AP18	MAAB10
MDB43	AP7	DDR1_DQ[43]/DDR1_DQ[27]	DDR1_MA[11]/DDR1_CAA[7]/DDR1_MA[11]	AU27	MAAB11
MDB44	AR9	DDR1_DQ[44]/DDR1_DQ[28]	DDR1_MA[12]/DDR1_CAA[6]/DDR1_MA[12]	AV27	MAAB12
MDB45	AP9	DDR1_DQ[45]/DDR1_DQ[29]	DDR1_MA[13]/DDR1_CAB[0]/DDR1_MA[13]	AR15	MAAB13
MDB46	AR6	DDR1_DQ[46]/DDR1_DQ[30]	DDR1_MA[14]/DDR1_CAA[9]/DDR1_BG[1]	AY28	BG_B1
MDB47	AP6	DDR1_DQ[47]/DDR1_DQ[31]	DDR1_MA[15]/DDR1_CAA[8]/DDR1_ACT#	AU28	M_-ACT_B
MDB48	AM10	DDR1_DQ[48]			
MDB49	AL10	DDR1_DQ[49]	DDR1_PAR	AL20	M_DDR_PARB
MDB50	AM7	DDR1_DQ[50]	DDR1_ALERT#	AY25	M_-ALERT_B
MDB51	AL7	DDR1_DQ[51]			
MDB52	AM9	DDR1_DQ[52]			
MDB53	AL9	DDR1_DQ[53]	DDR1_DQSN[0]/DDR0_DQSN[2]	AF34	M_-DQSB0
MDB54	AM6	DDR1_DQ[54]	DDR1_DQSN[1]/DDR0_DQSN[3]	AK33	M_-DQSB1
MDB55	AL6	DDR1_DQ[55]	DDR1_DQSN[2]/DDR0_DQSN[6]	AN33	M_-DQSB2
MDB56	AJ6	DDR1_DQ[56]	DDR1_DQSN[3]/DDR0_DQSN[7]	AN29	M_-DQSB3
MDB57	AJ7	DDR1_DQ[57]	DDR1_DQSN[4]/DDR1_DQSN[2]	AN13	M_-DQSB4
MDB58	AE6	DDR1_DQ[58]	DDR1_DQSN[5]/DDR1_DQSN[3]	AR8	M_-DQSB5
MDB59	AF7	DDR1_DQ[59]	DDR1_DQSN[6]	AM8	M_-DQSB6
MDB60	AH7	DDR1_DQ[60]	DDR1_DQSN[7]	AG6	M_-DQSB7
MDB61	AH6	DDR1_DQ[61]			
MDB62	AE7	DDR1_DQ[62]	DDR1_DQSP[0]/DDR0_DQSP[2]	AF35	M_DQSB0
MDB63	AF6	DDR1_DQ[63]	DDR1_DQSP[1]/DDR0_DQSP[3]	AL33	M_DQSB1
			DDR1_DQSP[2]/DDR0_DQSP[6]	AP33	M_DQSB2
AR25		DDR1_ECC[0]	DDR1_DQSP[3]/DDR0_DQSP[7]	AN28	M_DQSB3
AR26		DDR1_ECC[1]	DDR1_DQSP[4]/DDR1_DQSP[2]	AN12	M_DQSB4
AM26		DDR1_ECC[2]	DDR1_DQSP[5]/DDR1_DQSP[3]	AP8	M_DQSB5
AM25		DDR1_ECC[3]	DDR1_DQSP[6]	AL8	M_DQSB6
AP26		DDR1_ECC[4]	DDR1_DQSP[7]	AG7	M_DQSB7
AP25		DDR1_ECC[5]			
AL25		DDR1_ECC[6]	DDR1_DQSP[8]	AN25	
AL26		DDR1_ECC[7]	DDR1_DQSN[8]	AN26	

DDR CHANNEL B

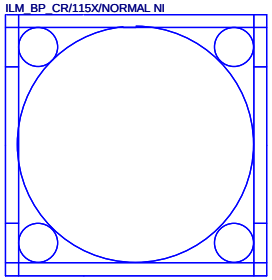
2 OF 12

DDR_VREF_CA	AB40	VREF_CAB
DDR0_VREF_DQ	AC40	
DDR1_VREF_DQ	AC39	VREF_DQB

LGA1151

CPU-SK/1151/S/GF

ILM_BP_CR/115X/NORMAL NI



Need check the new CPU ME

CPU-SK/1151/S/GF

(8) MODT_A[0..3] ⟷ MODT_A[0..3]

(9) MODT_B[0..3] ⟷ MODT_B[0..3]

(8) MDA[0..63] ⟷ MDA[0..63]

(9) MDB[0..63] ⟷ MDB[0..63]

(8) M_DQSA[0..7] ⟷ M_DQSA[0..7]

(8) M_-DQSA[0..7] ⟷ M_-DQSA[0..7]

(8) MAAA[0..16] ⟷ MAAA[0..16]

(9) MAAB[0..16] ⟷ MAAB[0..16]

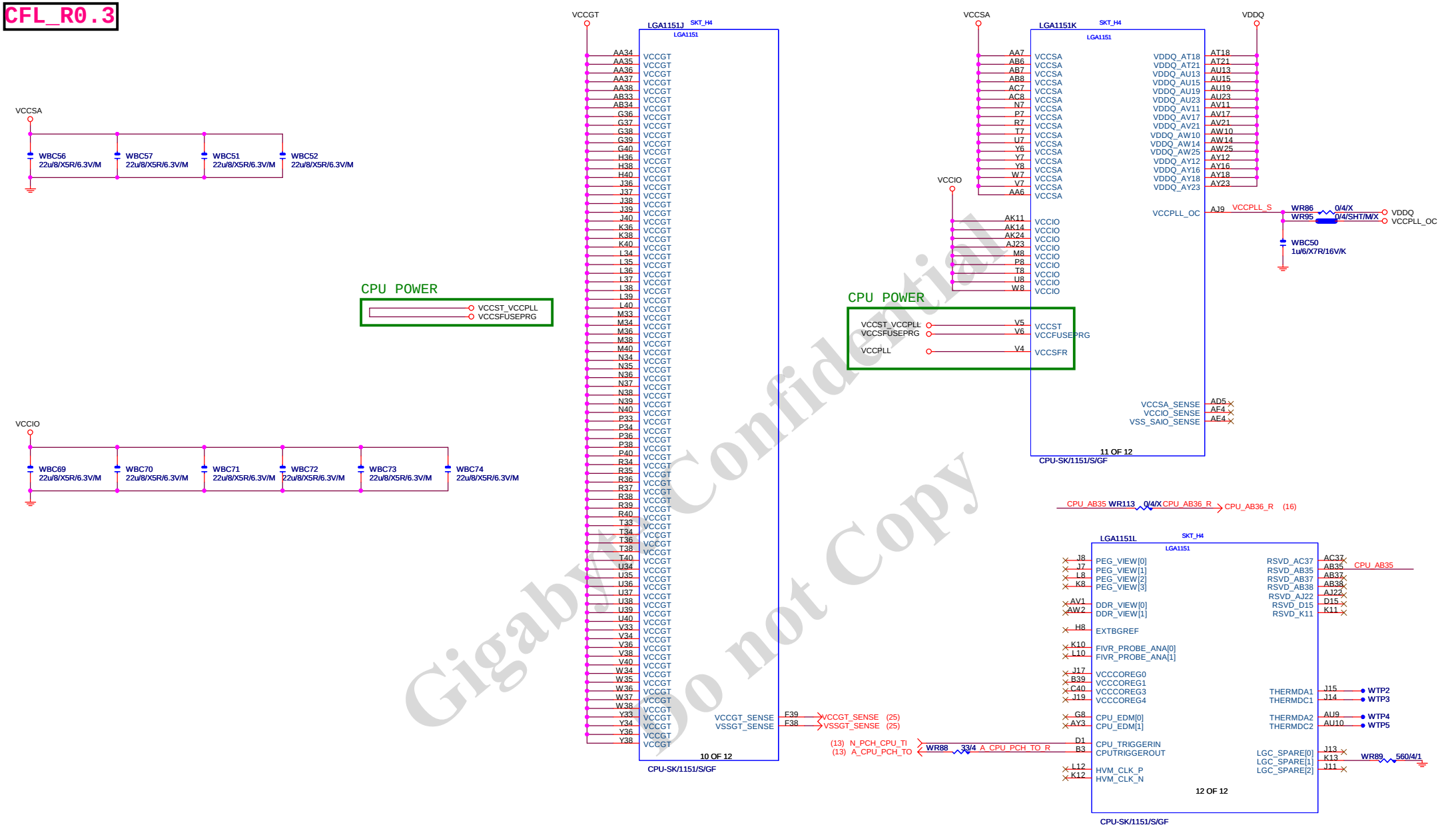
(9) M_DQSB[0..7] ⟷ M_DQSB[0..7]

(9) M_-DQSB[0..7] ⟷ M_-DQSB[0..7]

Gigabyte Technology

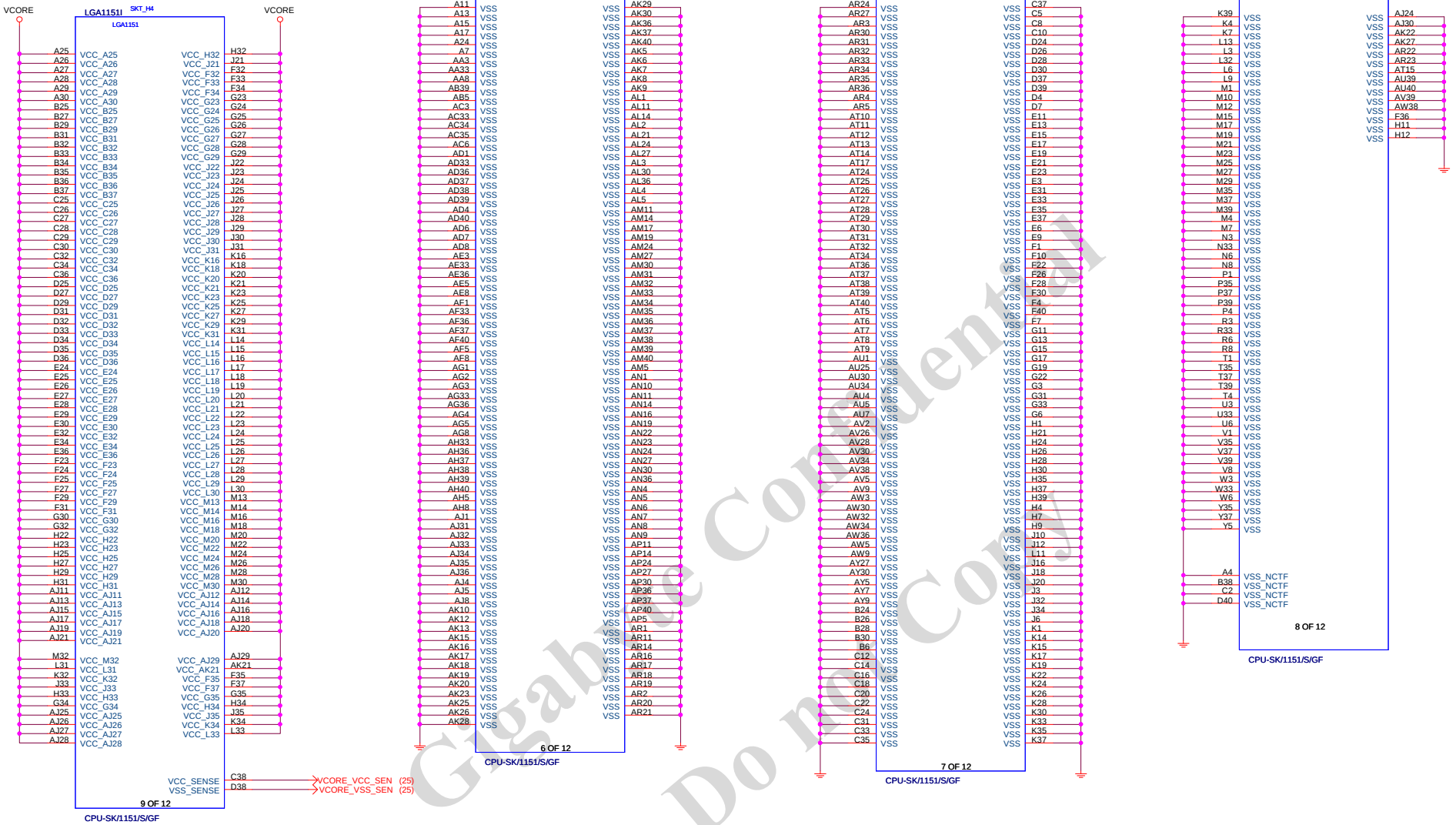
Title	CPU LGA1151-B		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 5 of 66		

CFL_R0.3



Gigabyte Technology		
Title: CPU LGA1151-C		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 6 of 66	

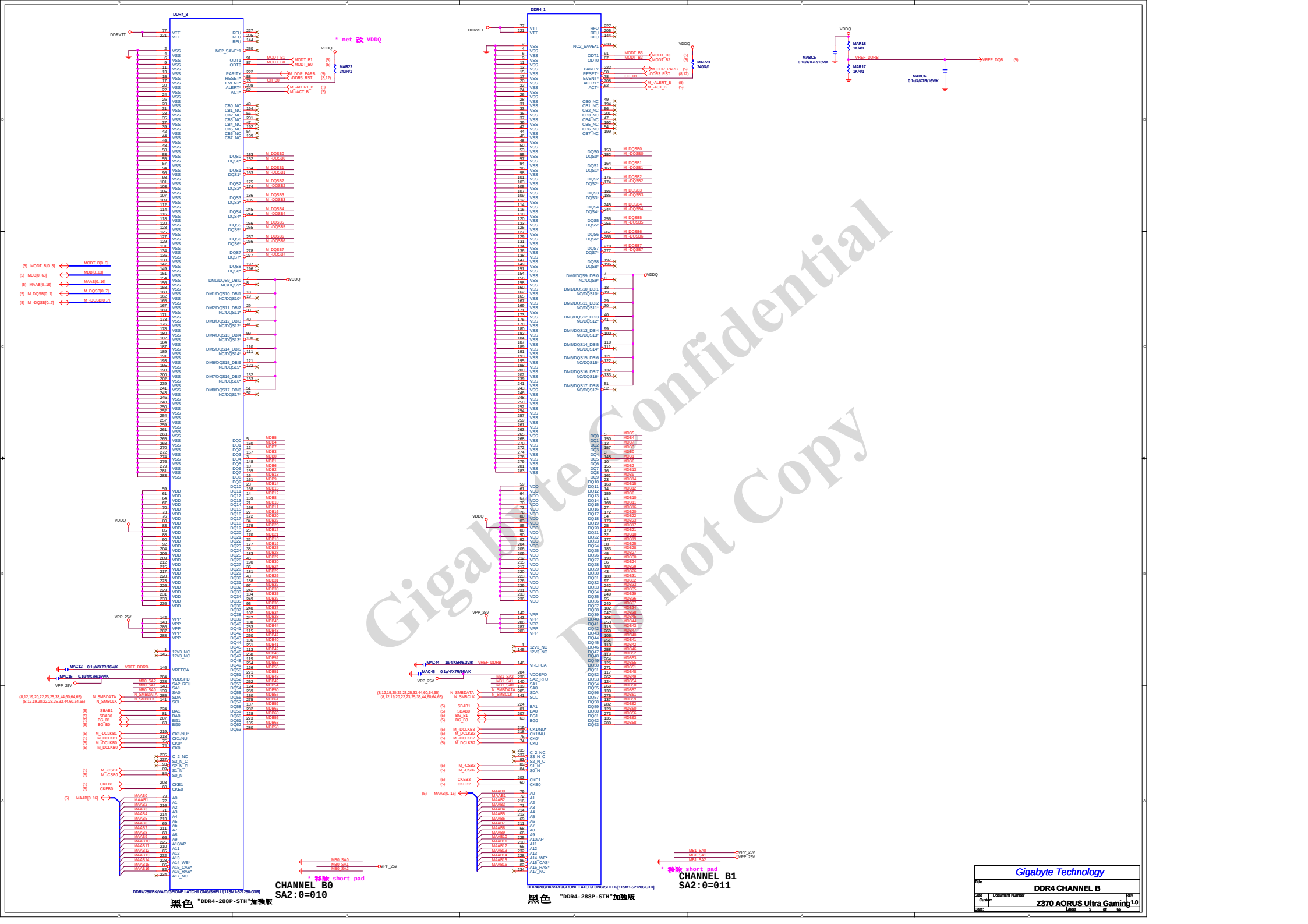
CFL_R0.3



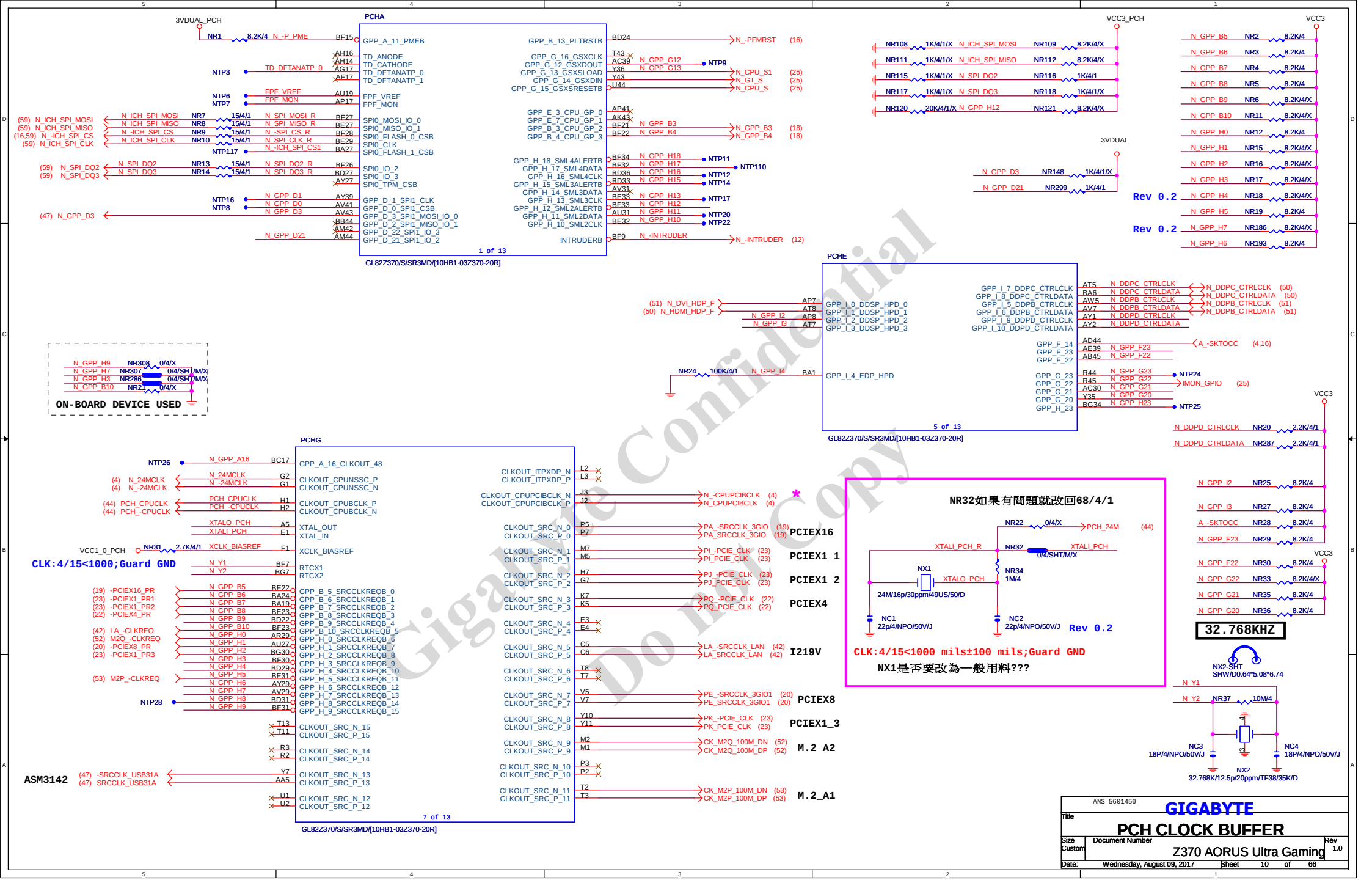
Gigabyte Technology		
Title: CPU LGA1151-D		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 7 of 66	

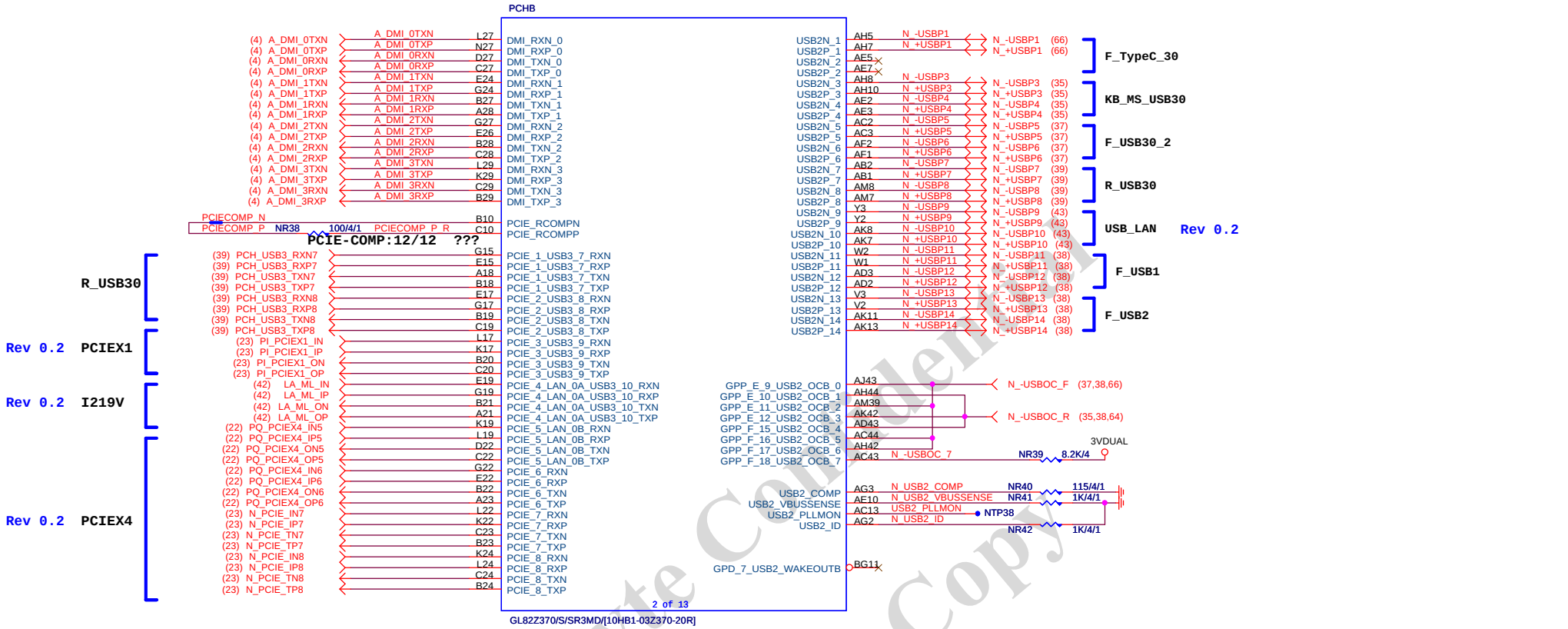
DDR4		Capture Value
SOC series	黑色 綠色	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	SMD 黑色 淺灰色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色 鮮紅	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
G1.Sniper	黑色 綠色	DDR4/288/BK/VA/D/G15/ONE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

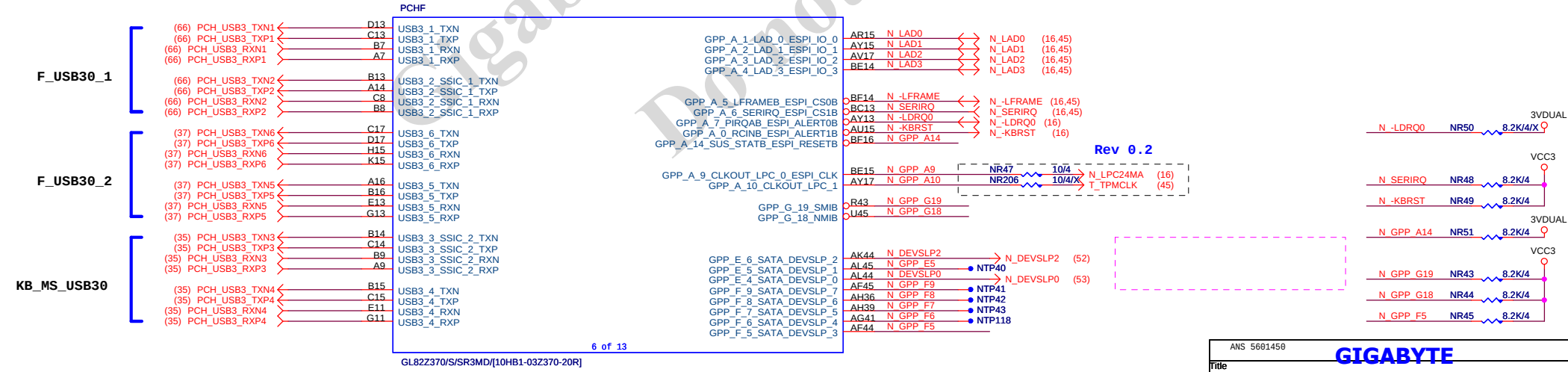
Gigabyte Technology	
Title	DDR4 CHANNEL A
Size: Custom	Document Number: Z370 AORUS Ultra Gaming
Rev: 1.0	
Date:	Sheet 8 of 66



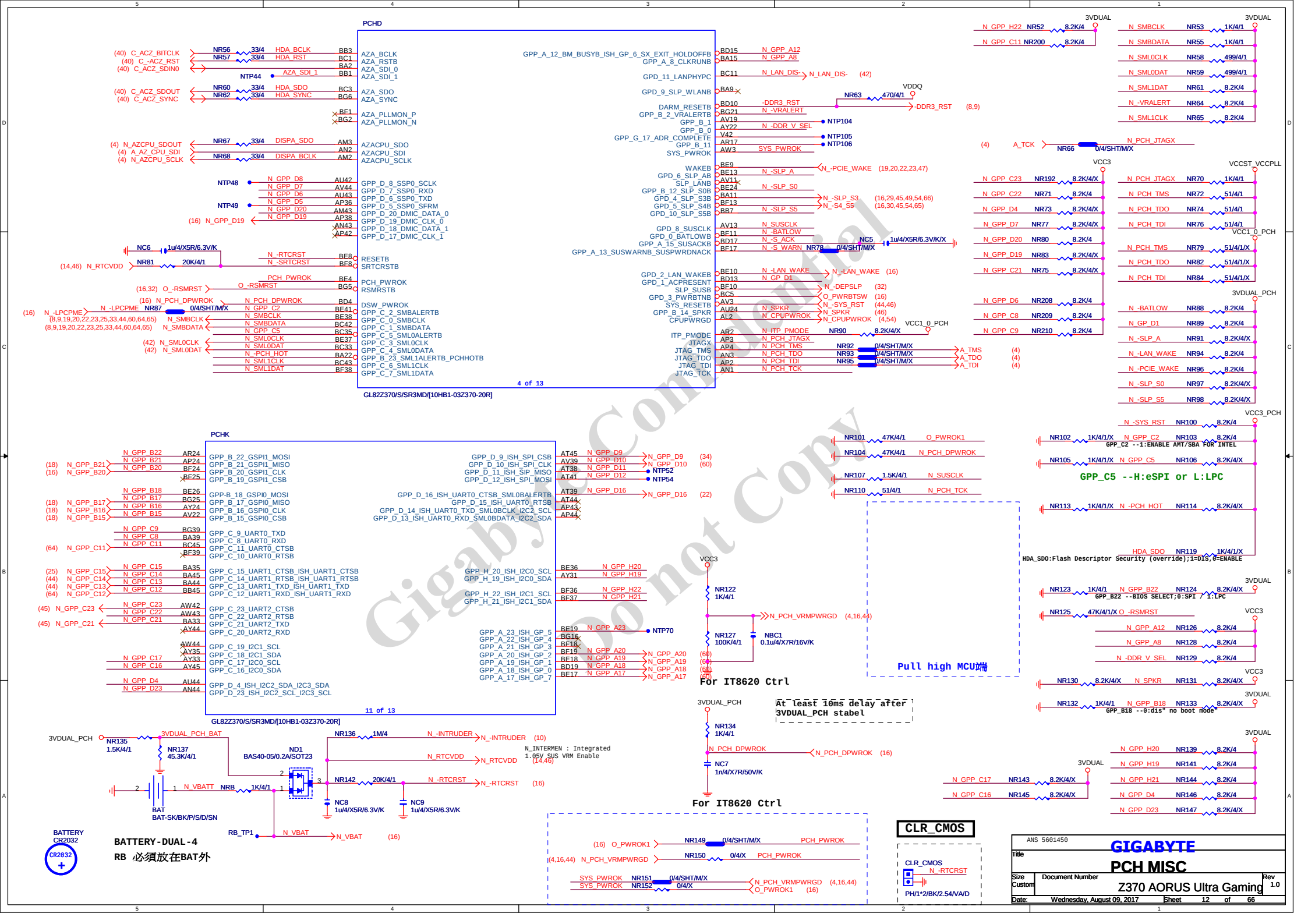
Gigabyte Technology	
Title	DDR4 CHANNEL B
Size: Custom	Document Number: Z370 AORUS Ultra Gaming
Rev: 1.0	
Date:	Sheet 9 of 66

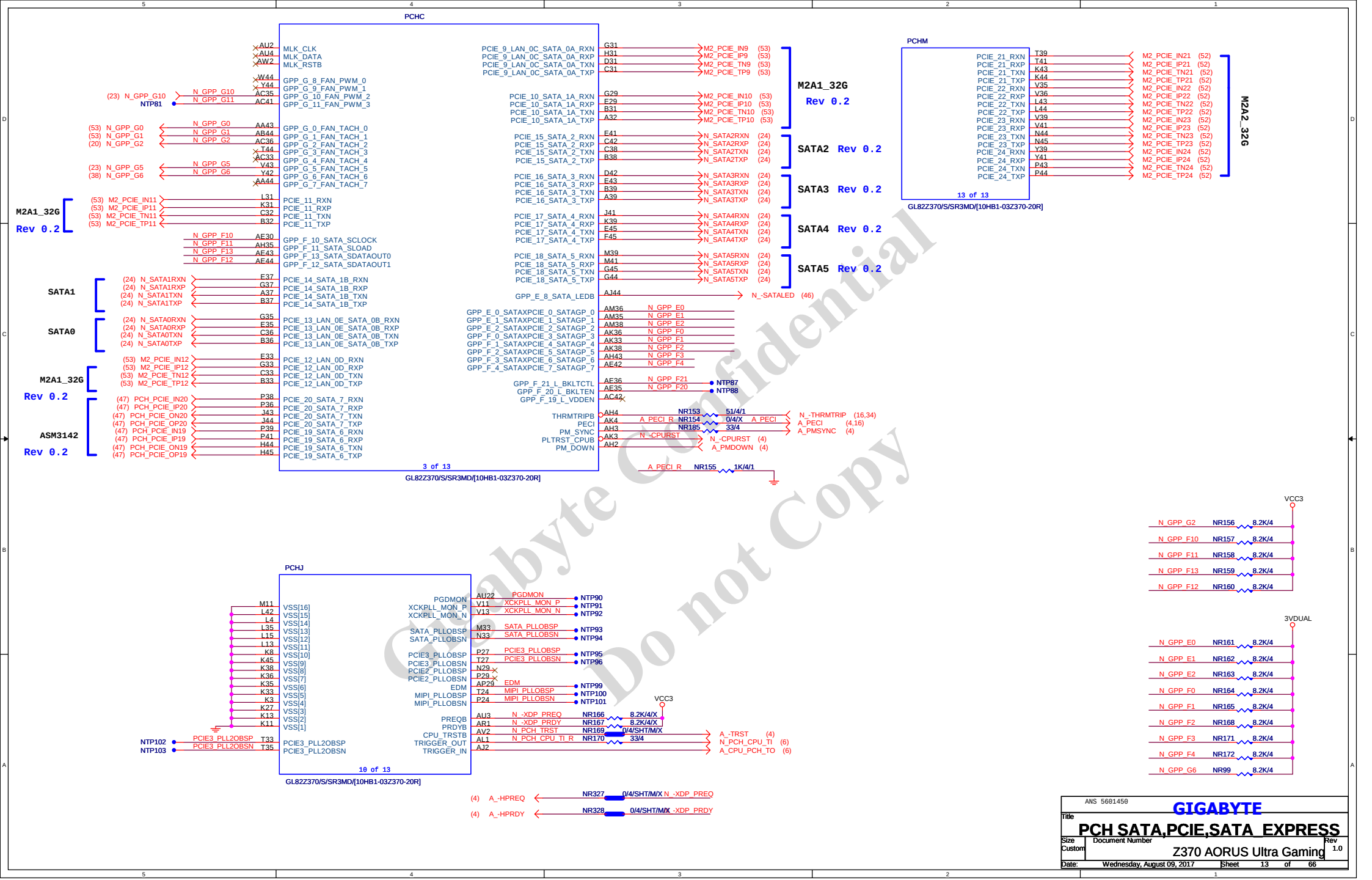

3VDUAL_PCH
PCHA
GPP_A_11_PMEB
TD_ANODE
TD_CATHODE
TD_DFTANATP_0
TD_DFTANATP_1
FPF_VREF
FPF_MON
SPI0_MOSI_IO_0
SPI0_MISO_IO_1
SPI0_FLASH_0_CSB
SPI0_CLK
SPI0_FLASH_1_CSB
SPI0_IO_2
SPI0_IO_3
SPI0_TPM_CSB
GPP_D_1_SPI1_CLK
GPP_D_0_SPI1_CSB
GPP_D_3_SPI1_MOSI_IO_0
GPP_D_2_SPI1_MISO_IO_1
GPP_D_22_SPI1_IO_3
GPP_D_21_SPI1_IO_2
GPP_B_13_PLTRSTB
GPP_G_16_GSXCLK
GPP_G_12_GSXDOUT
GPP_G_13_GSXSLOAD
GPP_G_14_GSXDIN
GPP_G_15_GSXSRESETB
GPP_E_3_CPU_GP_0
GPP_E_7_CPU_GP_1
GPP_B_3_CPU_GP_2
GPP_B_4_CPU_GP_3
GPP_H_18_SML4ALERTB
GPP_H_17_SML4DATA
GPP_H_16_SML4CLK
GPP_H_15_SML3ALERTB
GPP_H_14_SML3DATA
GPP_H_13_SML3CLK
GPP_H_12_SML2ALERTB
GPP_H_11_SML2DATA
GPP_H_10_SML2CLK
INTRUDERB
1 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
VCC3_PCH
VCC3
3VDUAL
Rev 0.2
Rev 0.2
PCHE
GPP_I_0_DDSP_HPD_0
GPP_I_1_DDSP_HPD_1
GPP_I_2_DDSP_HPD_2
GPP_I_3_DDSP_HPD_3
GPP_I_4_EDP_HPD
GPP_I_7_DDPC_CTRLCLK
GPP_I_8_DDPC_CTRLDATA
GPP_I_5_DDPB_CTRLCLK
GPP_I_6_DDPB_CTRLDATA
GPP_I_9_DDPD_CTRLCLK
GPP_I_10_DDPD_CTRLDATA
GPP_F_14
GPP_F_23
GPP_F_22
GPP_G_23
GPP_G_22
GPP_G_21
GPP_G_20
GPP_H_23
5 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
ON-BOARD DEVICE USED
PCHG
GPP_A_16_CLKOUT_48
CLKOUT_CPUNSSC_P
CLKOUT_CPUNSSC_N
CLKOUT_CPUBCLK_P
CLKOUT_CPUBCLK_N
XTAL_OUT
XTAL_IN
XCLK_BIASREF
RTCX1
RTCX2
GPP_B_5_SRCCLKREQB_0
GPP_B_6_SRCCLKREQB_1
GPP_B_7_SRCCLKREQB_2
GPP_B_8_SRCCLKREQB_3
GPP_B_9_SRCCLKREQB_4
GPP_B_10_SRCCLKREQB_5
GPP_H_0_SRCCLKREQB_6
GPP_H_1_SRCCLKREQB_7
GPP_H_2_SRCCLKREQB_8
GPP_H_3_SRCCLKREQB_9
GPP_H_4_SRCCLKREQB_10
GPP_H_5_SRCCLKREQB_11
GPP_H_6_SRCCLKREQB_12
GPP_H_7_SRCCLKREQB_13
GPP_H_8_SRCCLKREQB_14
GPP_H_9_SRCCLKREQB_15
CLKOUT_SRC_N_15
CLKOUT_SRC_P_15
CLKOUT_SRC_N_14
CLKOUT_SRC_P_14
CLKOUT_SRC_N_13
CLKOUT_SRC_P_13
CLKOUT_SRC_N_12
CLKOUT_SRC_P_12
CLKOUT_ITPXDP_N
CLKOUT_ITPXDP_P
CLKOUT_CPUPCIBCLK_N
CLKOUT_CPUPCIBCLK_P
CLKOUT_SRC_N_0
CLKOUT_SRC_P_0
CLKOUT_SRC_N_1
CLKOUT_SRC_P_1
CLKOUT_SRC_N_2
CLKOUT_SRC_P_2
CLKOUT_SRC_N_3
CLKOUT_SRC_P_3
CLKOUT_SRC_N_4
CLKOUT_SRC_P_4
CLKOUT_SRC_N_5
CLKOUT_SRC_P_5
CLKOUT_SRC_N_6
CLKOUT_SRC_P_6
CLKOUT_SRC_N_7
CLKOUT_SRC_P_7
CLKOUT_SRC_N_8
CLKOUT_SRC_P_8
CLKOUT_SRC_N_9
CLKOUT_SRC_P_9
CLKOUT_SRC_N_10
CLKOUT_SRC_P_10
CLKOUT_SRC_N_11
CLKOUT_SRC_P_11
PCIEX16
PCIEX1_1
PCIEX1_2
PCIEX4
I219V
PCIEX8
PCIEX1_3
M.2_A2
M.2_A1
7 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
CLK:4/15<1000;Guard GND
ASM3142
NR32如果有問題就改回68/4/1
CLK:4/15<1000 mils±100 mils;Guard GND
NX1是否要改為一般用料???
24M/16p/30ppm/49US/50/D
NC1 22p/4/NPO/50V/J
NC2 22p/4/NPO/50V/J
Rev 0.2
32.768KHZ
NX2-SHT SHW/D0.64*5.08*6.74
NC3 18P/4/NPO/50V/J
NC4 18P/4/NPO/50V/J
NX2 32.768K/12.5p/20ppm/TF38/35K/D
ANS 5601450
GIGABYTE
PCH CLOCK BUFFER
Z370 AORUS Ultra Gaming
Rev 1.0
Wednesday, August 09, 2017
Sheet 10 of 66
Gigabyte Confidential
Do not Copy





ANS 5601450	GIGABYTE		
Title	PCH DMI,USB,PCIE		
Size Custom	Document Number Z370 AORUS Ultra Gaming		Rev 1.0
Date: Wednesday, August 09, 2017	Sheet 11 of 66		


PCHD
4 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
PCHK
11 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
BATTERY-DUAL-4
RB 必须放在BAT外
For IT8620 Ctrl
For IT8620 Ctrl
Pull high MCU端
At least 10ms delay after 3VDUAL_PCH stabel
GPP_C5 --H:eSPI or L:LPC
CLR_CMOS
GIGABYTE
PCH MISC
Z370 AORUS Ultra Gaming
Wednesday, August 09, 2017
Gigabyte Confidential
Do not Copy



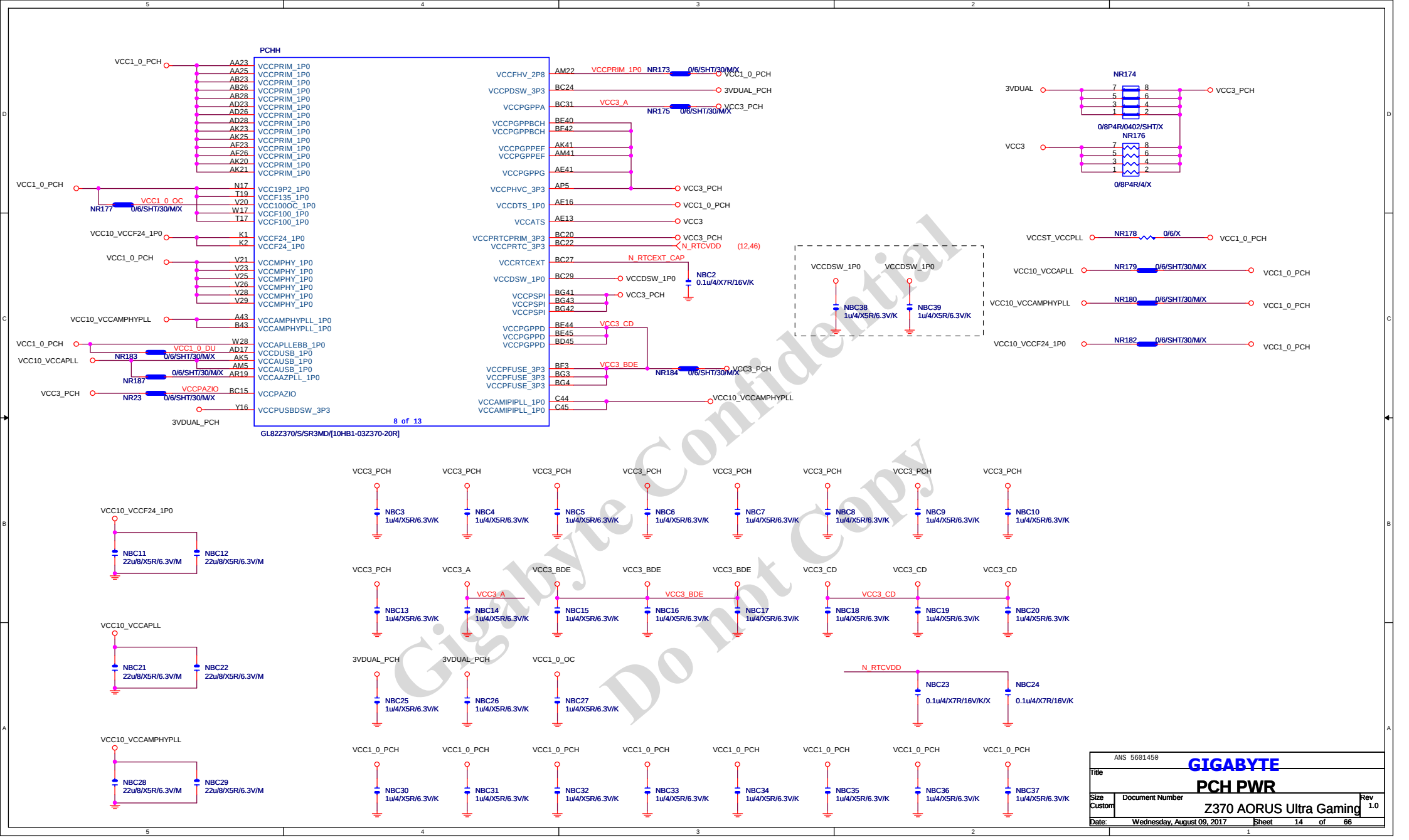
ANS 5601450

GIGABYTE

Title: PCH SATA,PCIE,SATA EXPRESS

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 13 of 66



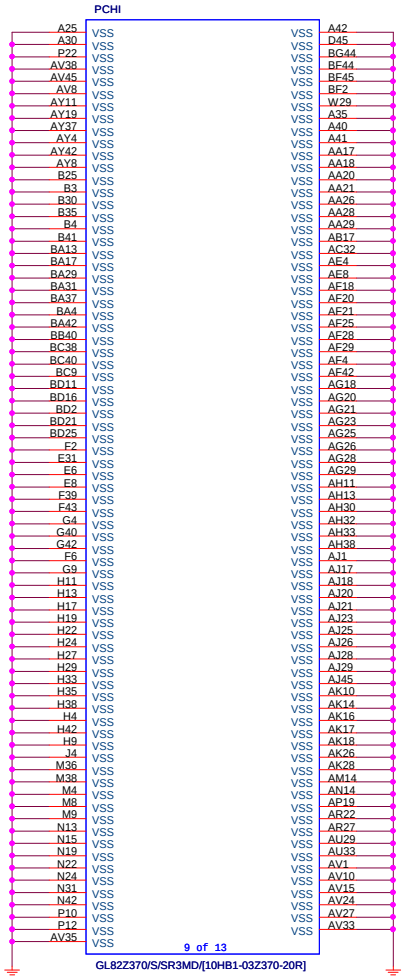
ANS 5601450

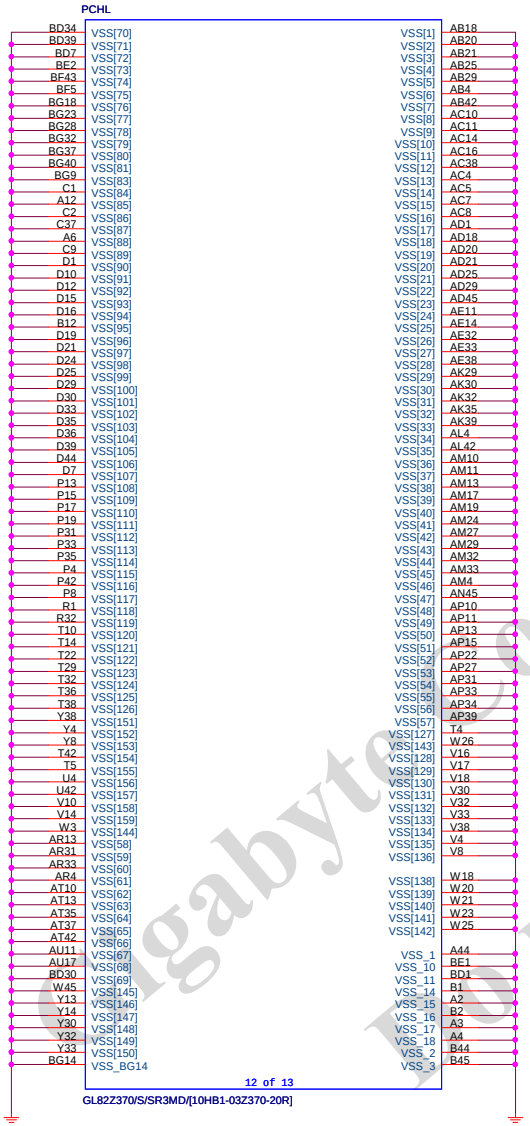
GIGABYTE

Title: PCH PWR

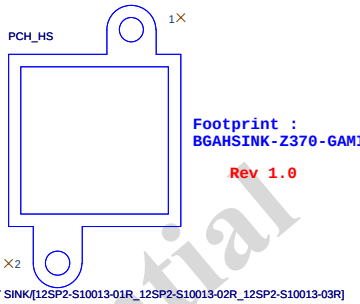
Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 14 of 66





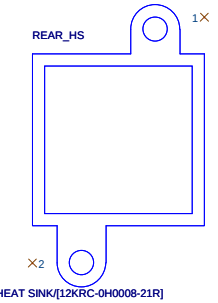
装甲HEATSINK 分成五大部份



Footprint :
BGAHSINK-Z370-GAMING3

Rev 1.0

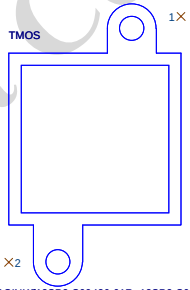
HEAT SINK/[12SP2-S10013-01R_12SP2-S10013-02R_12SP2-S10013-03R]



Footprint :
Z270_UD_BASE_COVER

Rev 1.0

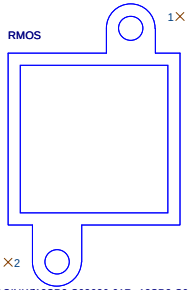
HEAT SINK/[12KRC-0H0008-21R]



Footprint :
moshsink-z350x-ultragaming-t

Rev 1.0

HEAT SINK/[12SP2-S09426-01R_12SP2-S09426-02R_12SP2-S09426-03R]



Footprint :
MOSHSINK-SNIPERB8-R

Rev 1.0

HEAT SINK/[12SP2-S08026-01R_12SP2-S08026-02R_12SP2-S08026-03R]

ANS 5601450

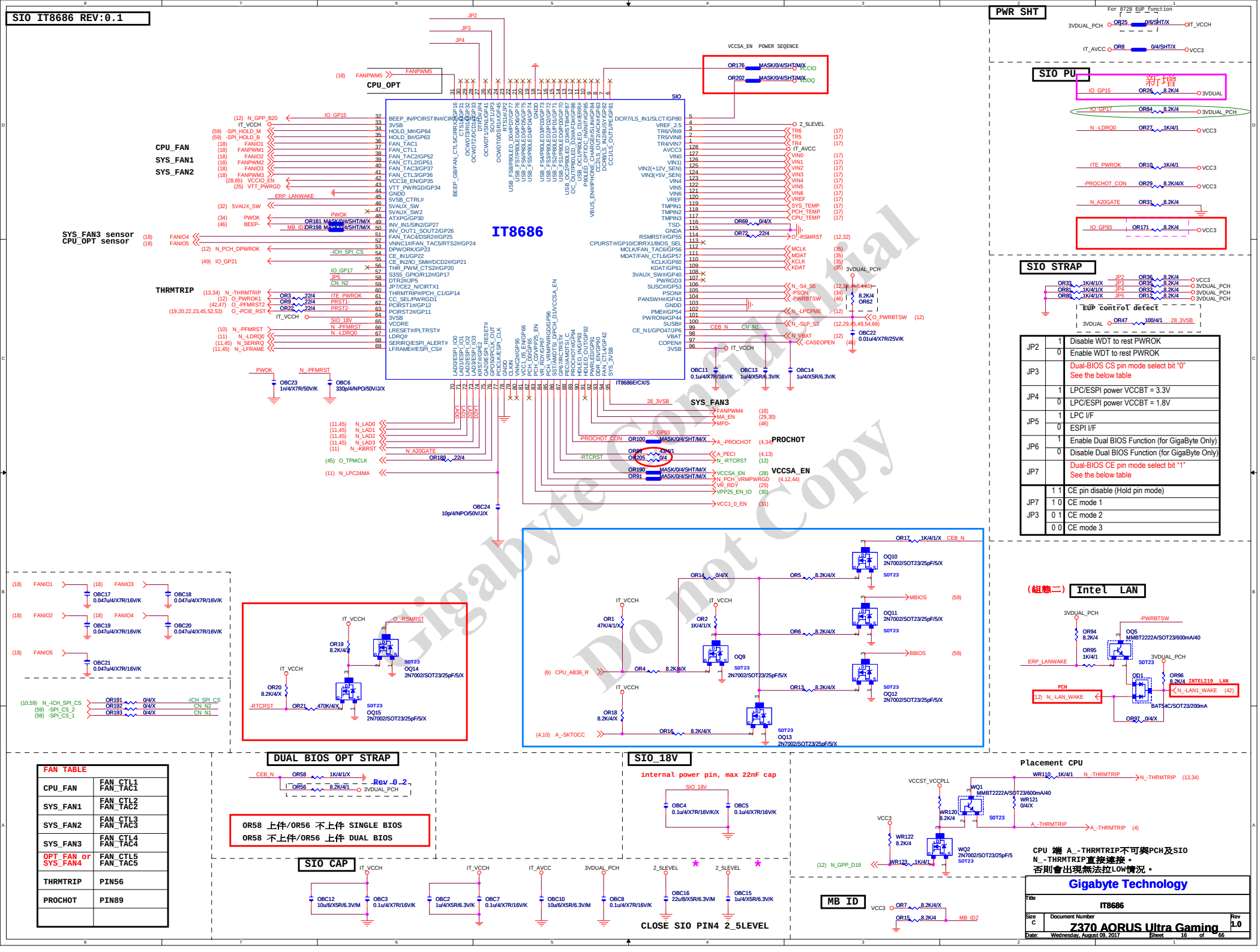
GIGABYTE

Title: PCH GND

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 15 of 66

SIO IT8686 REV:0.1



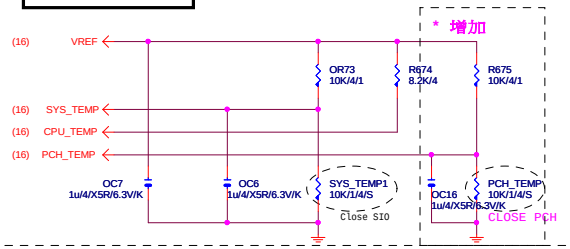
FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT_FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5
THRMTRIP	PIN56
PROCHOT	PIN89

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

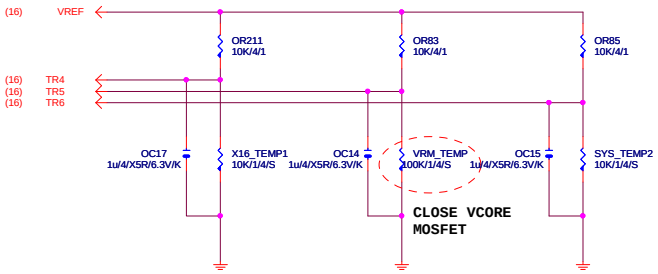
Title	IT8686
Size	C
Document Number	Z370 AORUS Ultra Gaming
Rev	1.0
Date:	Wednesday, August 09, 2017
Sheet	16 of 66

Gigabyte Technology

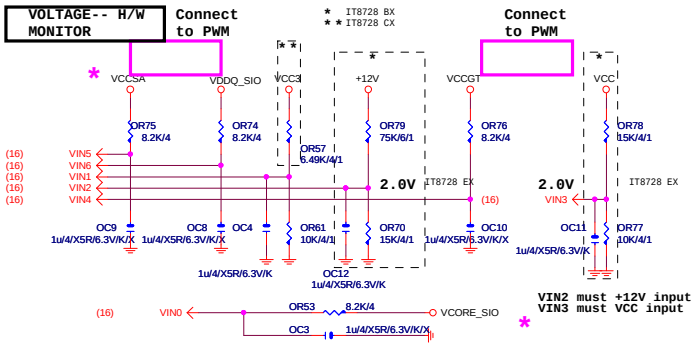
TEMP H/W MONITOR

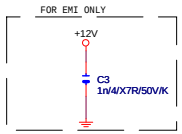


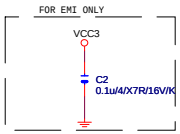
5個FAN時使用



8個FAN時使用





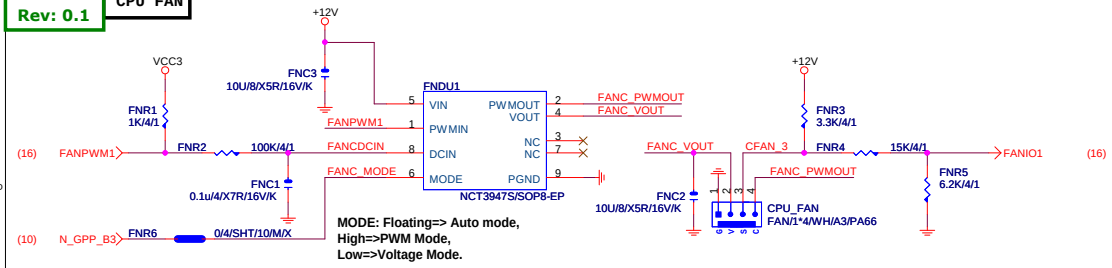


★Update 2015-04.24

Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 17 of 66	

Rev: 0.1

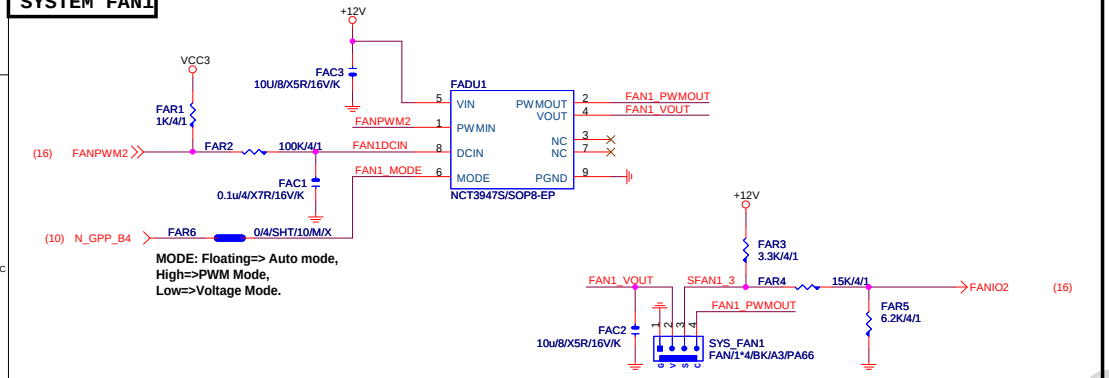
CPU_FAN



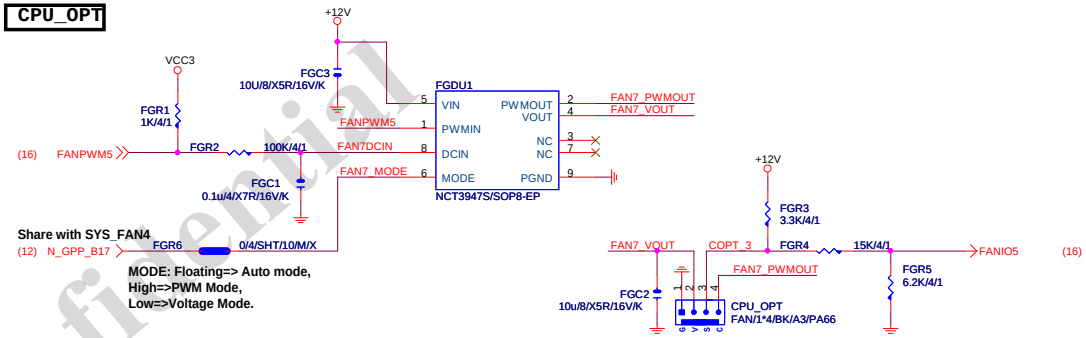
IO 6 FAN

CPU_FAN
CPU_OPT
SYS_FAN1
SYS_FAN2A
SYS_FAN2B
SYS_FAN3

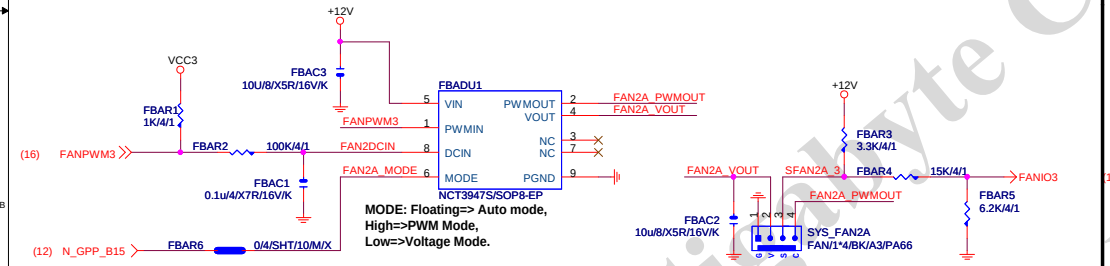
SYSTEM_FAN1



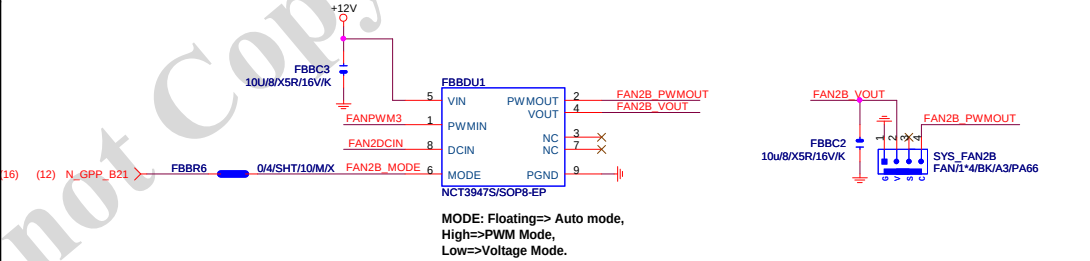
CPU_OPT



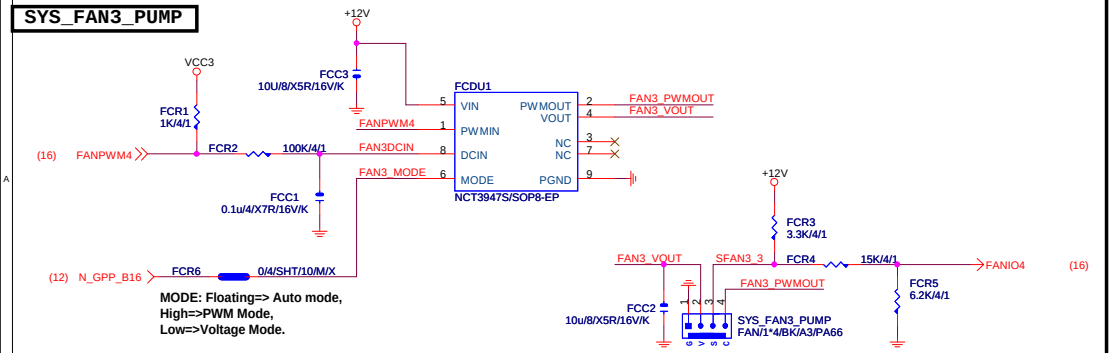
SYSTEM_FAN2A

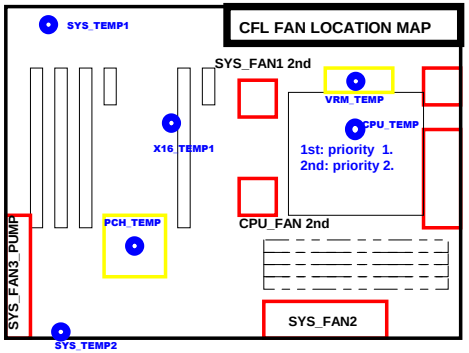


SYSTEM_FAN2B



SYS_FAN3_PUMP





GIGABYTE

Title: HWM,KB/MS, FAN CTRL

Size: Custom | Document Number | Rev: 1.0

Z370 AORUS Ultra Gaming

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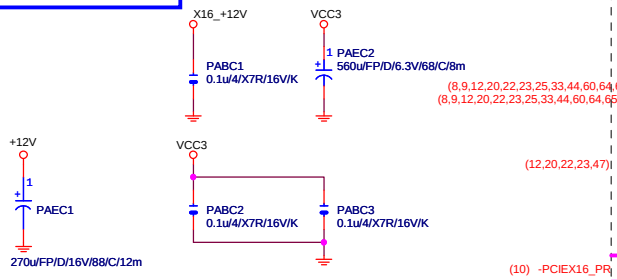
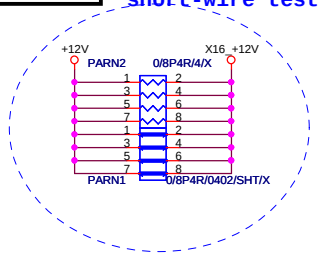
Rev 0.3

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test

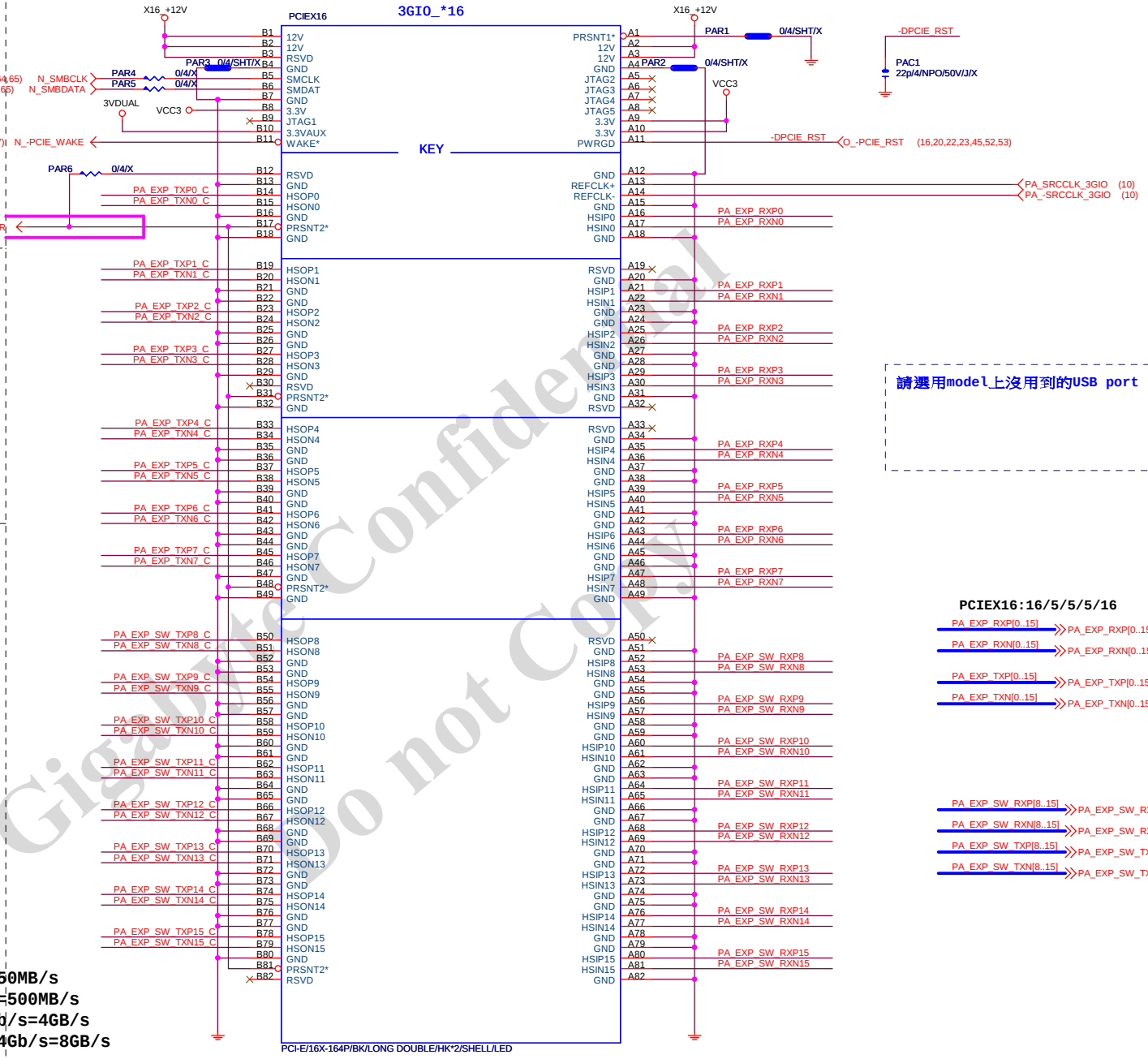


PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_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

PCIEX16 SLOT

PCIESLOT-164STH



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

請選用model上沒用到的USB port

PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] (4,21)
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] (4,21)
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] (4,21)
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] (4,21)

PA_EXP_SW_RXP[8..15] → PA_EXP_SW_RXP[8..15] (21)
PA_EXP_SW_RXN[8..15] → PA_EXP_SW_RXN[8..15] (21)
PA_EXP_SW_TXP[8..15] → PA_EXP_SW_TXP[8..15] (21)
PA_EXP_SW_TXN[8..15] → PA_EXP_SW_TXN[8..15] (21)

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

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

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

加強版金屬build-in RGB LED slot

Gigabyte Technology			
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PCIESLOT-98STH

3GIO_*8

PCIEX8

+12V PEEC1 270u/FP/D/16V/88/C/12m

VCC3 PEEC2 560u/FP/D/6.3V/68/C/8m

PCIEX8 PROTECT SHT

+12V protect short-wire test

PERN1 0/8P4R/4/X

PERN2 0/8P4R/0402/SHT/X

KEY

請選用model上沒用到的USB port

PEBC5 0.1u/4/X7R/16V/K

PEBC6 1u/4/X5R/6.3V/K

PEBC7 0.1u/4/X7R/16V/K

PEBC8 0.1u/4/X7R/16V/K/X

PED1 BAT54C/SOT23/200mA

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

加強版金屬build-in RGB LED slot

Gigabyte Technology		
Title	PCI EXPRESS X8	
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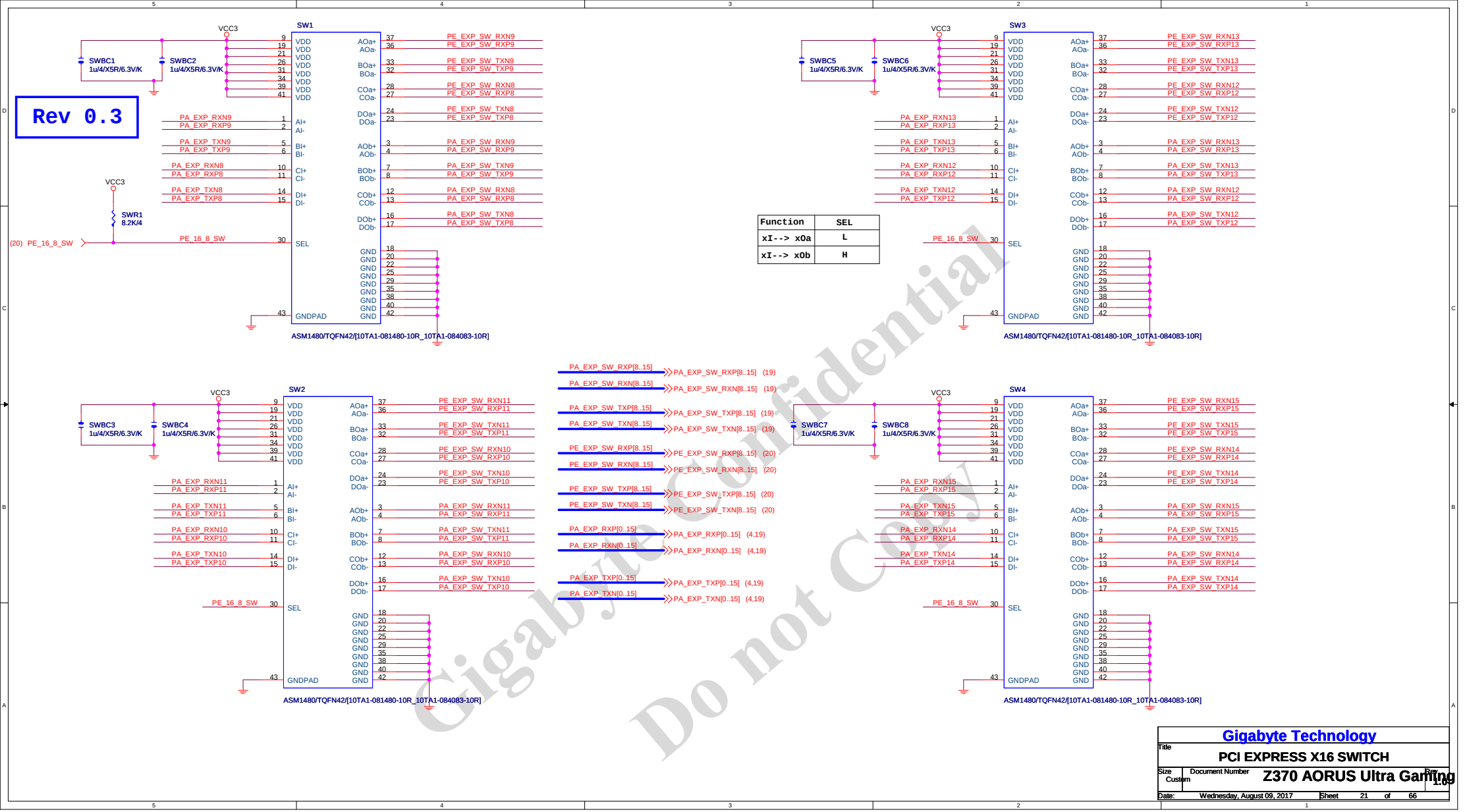

Title	PCI EXPRESS X16 SWITCH
Size	Custom
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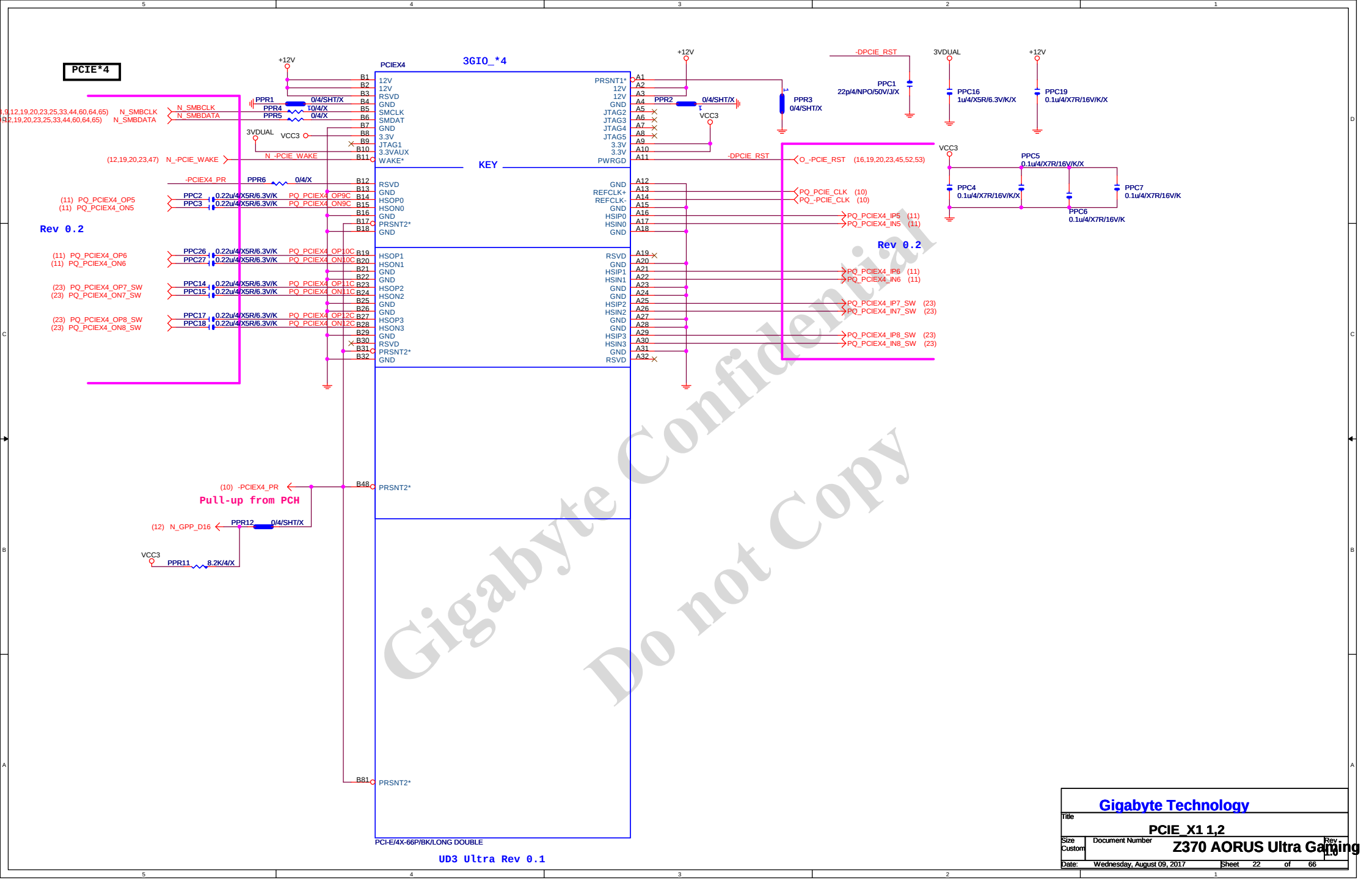
Gigabyte Technology


PCIE*4
PCIEX4
3GIO_*4
KEY
Rev 0.2
Rev 0.2
Pull-up from PCH
PCI-E/4X-66P/BK/LONG DOUBLE
UD3 Ultra Rev 0.1
Gigabyte Confidential
Do not Copy
Gigabyte Technology
PCIE_X1 1,2
Z370 AORUS Ultra Gaming
Wednesday, August 09, 2017
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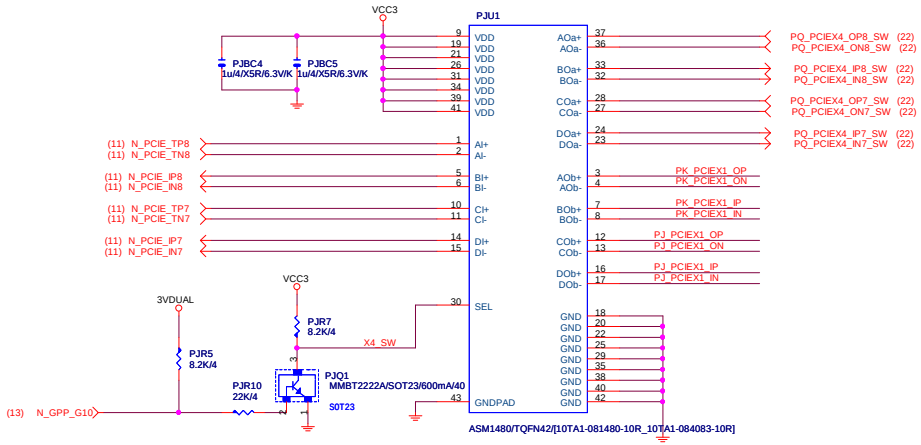
Rev 0.3

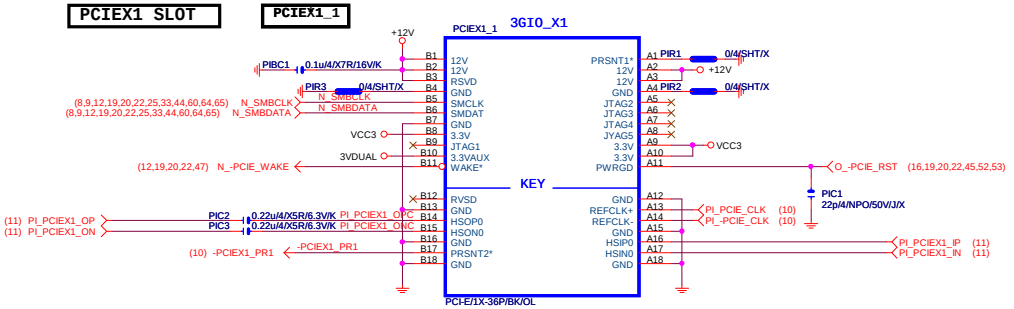
Rev 0.2



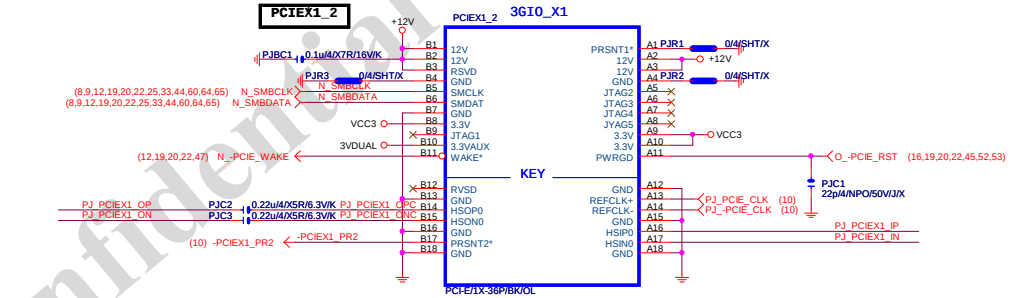
Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

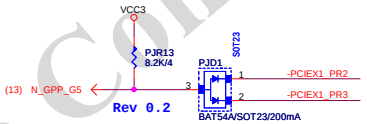
PCIEX1 SLOT

PCIEX1_1

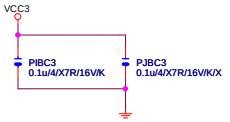


PCIEX1_2

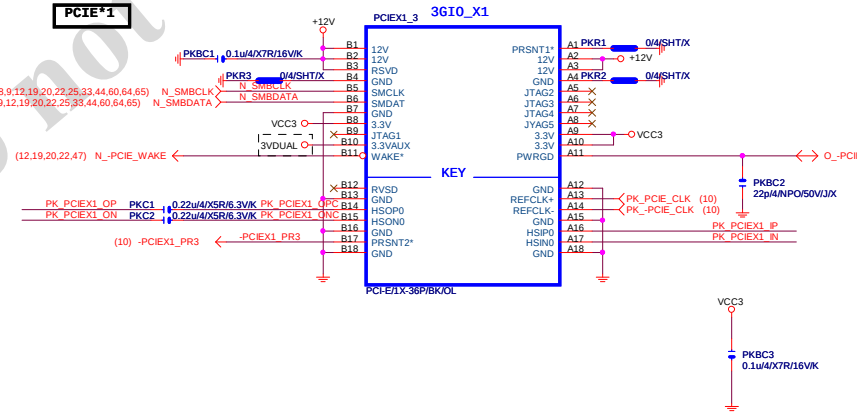




Rev 0.2



PCIE*1



Gigabyte Technology

Title: PCIE_X1 1,2,3

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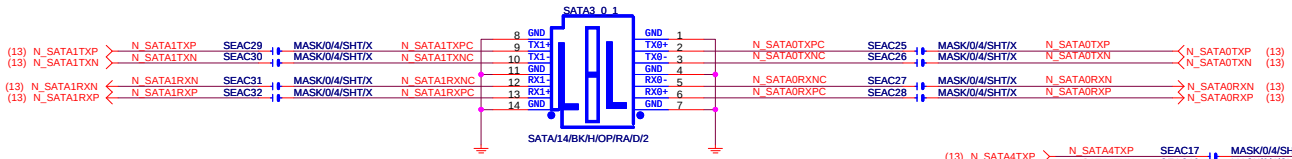
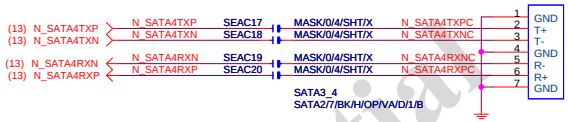
Rev 0.5

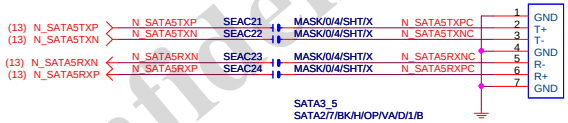
SATA3 port0/1



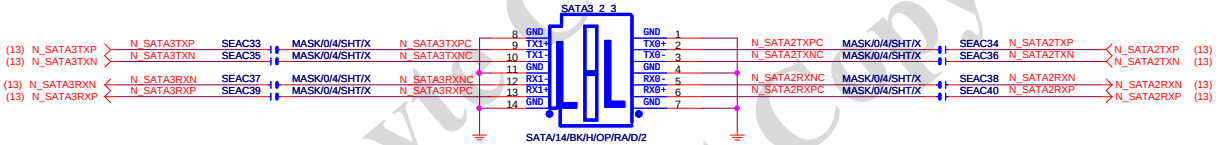
BLACK CONNECTOR



BLACK CONNECTOR



SATA3 port2/3



BLACK CONNECTOR

Gigabyte Technology		
Title: SATA 0/1/2/3/4/5		
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REV:0.2

VCORE_SIO — VCORE_VS MASK/0/4/SHT/M/X — VCORE

請注意擺放位置

H:ISL95856 or ISL95858

L:ISL95866 or ISL95868

3VDUAL — NR400 8.2K/4 — N_GPP_C15 (12) — NR401 8.2K/4/X

close to PCH

+12V — DAR128 8.2K/4 — DAQ5 2N7002/SOT23/25pF/5 — SOT23 — V_95856

VCC — VIN — DAR7 2.2/6/X — DAR8 2.2/6/X — DAR9 2.2/6 — DAC2 1u/4/X5R/6.3V/K — DAC3 1u/6/X7R/16V/K — DAR23 3.3K/4/1 — DAU1 ISL95856 VDD VDDP

VCCST_VCCPLL — DAC40 1u/4/X5R/6.3V/K — DAR12 100/4/1 — DAR13 100/4/1/X — DAR14 45.3/4/1 — DAR17 2K/4/1/X 不上件 — VCC3 — DAR18 2K/4/1 — VIN — DAR19 10K/4/1

(16) VTT_PWRGD — DAR136 0/4

(16) VR_RDY — (34) VR_HOT

(4) PVIDSLCK — (4) -PVIDALRT — (4) PVIDSOUT — DAR76 49.9/4/1 PVIDSLCK_R — DAR77 MASK/0/4/SHT/M/10/X -PVIDALRT_R — DAR78 10/4 PVIDSOUT_R

9,20,22,23,33,44,60,64,65) N_SMBDATA — 19,20,22,23,33,44,60,64,65) N_SMBCLK

VR_ENABLE, VR_READY, VR_HOT#, SCLK, ALERT#, SDA, I2DATA, I2CLK, PSYS

DC-LL --> 2.1mohm

DAR34 8.2K/4 — DAC10 1n/4/X7R/50V/K — DAR137 0/4 — DAR33 205K/4/1/X — DAR37 2K/4/1 — DAR35 6.2K/4/1 — DAC8 4.7n/4/X7R/50V/K — VCORE — DAC14 100p/4/NPO/50V/J — DAR40 1K/4/1 — DAR138 0/4/X — DAC11 47p/4/NPO/50V/J — COMP_A — DAR39 100/4/1 — DAR41 6.98K/4/1/10RC4-006981-26R] — FB_CPU — (7) VCORE_VCC_SEN — DAC15 0.022u/4/X7R/25V/K/X — DAR79 100/4/1/X — FB2_A — DAC38 330p/4/NPO/50V/J — (7) VCORE_VSS_SEN — VCORE — DAR46 100/4/1 — DAC17 330p/4/NPO/50V/J — DAC18 4.7n/4/X7R/50V/K — DAR139 205K/4/1

close PWM — VCCGT — DAR129 100/4/1 — DAR130 100/4/1

DC-LL --> 3.1mohm

DAR140 0/4 — DAR51 63.4K/4/1/X — DAC23 1.2n/4/X7R/50V/K — DAR57 1.74K/4/1 — DAR55 3.9K/4/1 — DAC22 8.2n/4/X7R/16V/K/[10CM0-168201-24R] — VCCGT — DAC26 220p/4/NPO/50V/J — DAR61 1K/4/1 — DAR141 0/4/X — DAC24 47p/4/NPO/50V/J — COMP_B — DAR60 100/4/1 — DAR63 4.42K/4/1 — FB_GT — DAC27 0.022u/4/X7R/25V/K/X — (6) VCCGT_SENSE — DAR80 100/4/1/X — FB2_B — DAC39 330p/4/NPO/50V/J — (6) VSSGT_SENSE — DAR66 100/4/1 — DAC29 330p/4/NPO/50V/J — DAC30 4.7n/4/X7R/50V/K — DAR142 63.4K/4/1

PROG_R — DAR70 2.87K/4/1 — PROG — GND_PAD — 53 — 8 VIA Connect GND lay

ISL95866HRZ-T/QFN52

連接至PCH GPP_G22 — VCC3 — DAR145 8.2K/4 — DAQ8 2N7002/SOT23/25pF/5 — SOT23 — DAR146 100K/4/1 IMON_A_1 — DAR143 1K/4/1 — DAQ9 2N7002/SOT23/25pF/5 — SOT23 — (10) IMON_GPIO — DAR144 8.2K/4 — DAC45 0.022u/4/X7R/25V/K

PCH端如有留PU HI . DAR143可以移除

ISL95856_VIN — DAC41 0.22u/6/X7R/16V/K — DAC5 0.22u/6/X7R/16V/K — DAR26 2.2/6 — BOOT1_A, UGATE1_A, PHASE1_A, LGATE1_A — PHASE1_A (26)

DAR31 2.2/6 — DAC7 0.22u/6/X7R/16V/K — BOOT2_A, UGATE2_A, PHASE2_A, LGATE2_A — PHASE2_A (26)

PWM3_A — PWM4_A — NC/PWM4_A — ISEN1_A, ISEN2_A, ISEN3_A, NC/ISEN4_A

ISUMP_A — ISUMN_A — VSUMA- R — NTC_A — IMON_A — DAR49 — IMON_A_1 — MASK/0/4/SHT/M/10/X — DAC21 330p/4/NPO/50V/J — DAR52 100K/4/1 — DAR53 18K/4/1 — DANTC2 470K/1/4/S

DAR44-->576 ohm
OCP-->200A

DAR47 13.7K/4/1 — DAC16 2.2n/4/X7R/50V/K — DAR42 1K/4/1 — DAC12 0.33u/4/X5R/6.3V/K/X — DAC13 0.47u/4/X5R/6.3V/K — DAR38 33K/4/1 — DAR36 1K/4/1 — DANTC1 10K/1/4/S — DAC43 0.1u/4/X7R/16V/K — DAR44 576/4/1 — DAC19 0.1u/4/X7R/16V/K — VSUMA+ — VSUMA-

CLOSE DA_ DL1 DC SIDE

CLOSE ?

BOOT1_B, UGATE1_B, PHASE1_B, LGATE1_B — DAR58 2.2/6 — DAC25 0.22u/6/X7R/16V/K — PHASE1_B (27)

PWM2_B — PWM3_B

DAR71-->442 ohm
OCP-->90A

ISUMP_B — ISUMN_B — VSUMB- R — NTC_B — IMON_B — DAR67 13.3K/4/1 — DAR69 — MASK/0/4/SHT/M/10/X — DAC33 330p/4/NPO/50V/J — DAR72 56K/4/1 — DAR73 18K/4/1 — DANTC3 470K/1/4/S — DAR71 316/4/1 — DAR75 1K/4/1 — DAC31 2.2n/4/X7R/50V/K — DAC32 0.33u/4/X5R/6.3V/K — DAC34 0.047u/4/X7R/16V/K — DAR74 11K/4/1 — DAC44 0.1u/4/X7R/16V/K — DAR68 2.61K/4/1 — DANTC4 10K/1/4/S — DAC35 0.1u/4/X7R/16V/K — VSUMB+ — VSUMB-

CLOSE DE_ DL1 DC SIDE

CLOSE ?

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

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

VSUMA+ — ISEN1_A — DAR1 3.65K/4/1 — DAR2 100K/4/1 — DAC1 0.022u/4/X7R/25V/K — DAR5 200K/4/1/X — DAR3 100K/4/1 V2N_A — DAR4 100K/4/1 V3N_A — DAR81 100K/4/1 V4N_A — DAR6 10/4 V1N_A — CSP1_A (26)

VSUMA+ — ISEN2_A — DAR10 3.65K/4/1 — DAR11 100K/4/1 — DAC4 0.022u/4/X7R/25V/K — DAR20 100K/4/1 V1N_A — DAR22 200K/4/1/X — DAR21 100K/4/1 V3N_A — DAR82 100K/4/1 V4N_A — DAR24 10/4 V2N_A — CSP2_A (26)

VSUMA+ — ISEN3_A — DAR25 3.65K/4/1 — DAR27 100K/4/1 — DAC6 0.022u/4/X7R/25V/K — DAR28 100K/4/1 V1N_A — DAR30 200K/4/1/X — DAR29 100K/4/1 V2N_A — DAR83 100K/4/1 V4N_A — DAR32 10/4 V3N_A — CSP3_A (26)

VSUMA+ — ISEN4_A — DAR84 3.65K/4/1 — DAR85 100K/4/1 — DAC42 0.022u/4/X7R/25V/K — DAR86 100K/4/1 V1N_A — DAR89 200K/4/1/X — DAR87 100K/4/1 V2N_A — DAR90 100K/4/1 V3N_A — DAR91 10/4 V4N_A — CSP4_A (26)

V1N_A — V2N_A — V3N_A — V4N_A — CSN1_A (26) — CSN2_A (26) — CSN3_A (26) — CSN4_A (26)

CLOSE PWM

VSUMB+ — ISEN1_B — DAR43 3.65K/4/1 — DAR45 100K/4/1 — DAC20 0.022u/4/X7R/25V/K — DAR48 100K/4/1 V2N_B — DAR50 200K/4/1/X — DAR92 100K/4/1 V3N_B — DAR54 10/4 V1N_B — CSP1_B (27)

VSUMB+ — ISEN2_B — DAR56 3.65K/4/1 — DAR59 100K/4/1 — DAC28 0.022u/4/X7R/25V/K — DAR62 100K/4/1 V1N_B — DAR64 200K/4/1/X — DAR93 100K/4/1 V3N_B — DAR65 10/4 V2N_B — CSP2_B (27)

VSUMB+ — ISEN3_B — DAR94 3.65K/4/1 — DAR95 100K/4/1 — DAC37 0.022u/4/X7R/25V/K — DAR96 100K/4/1 V1N_B — DAR98 200K/4/1/X — DAR97 100K/4/1 V2N_B — DAR99 10/4 V3N_B — CSP3_B (27)

V1N_B — V2N_B — V3N_B — CSN1_B (27) — CSN2_B (27) — CSN3_B (27)

CLOSE PWM

不上件 — VCC3 — DAR123 1K/4/1/X — (10) N_GT_S — DAR124 8.2K/4 — +12V — DAR125 8.2K/4/1 — DAQ4 2N7002/SOT23/25pF/5 — SOT23 — DAR127 2K/4/1 FB_GT — DAQ3 MMBT2222A/SOT23/600mA/40 — SOT23 — VCCGT_SENSE

連接至PCH GPP_GP14

不上件 — VCC3 — DAR120 1K/4/1/X — (10) N_CPU_S — DAR121 8.2K/4 — +12V — DAR122 8.2K/4/1 — DAQ2 2N7002/SOT23/25pF/5 — SOT23 — DAR126 3.48K/4/1 FB_CPU — DAQ1 MMBT2222A/SOT23/600mA/40 — SOT23 — VCORE_VCC_SEN

連接至PCH GPP_GP15

DAR131 for DC-LL change to 0.4m ohm

不上件 — VCC3 — DAR133 1K/4/1/X — (10) N_CPU_S1 — DAR134 8.2K/4 — +12V — DAR132 8.2K/4 — DAQ7 MMBT2222A/SOT23/600mA/40 — SOT23 — DAR131 1.74K/4/1 FB_CPU — DAQ6 2N7002/SOT23/25pF/5 — SOT23 — VCORE_VCC_SEN

Z系列才需要留

連接至PCH GPP_G13

ISL95866_PWM

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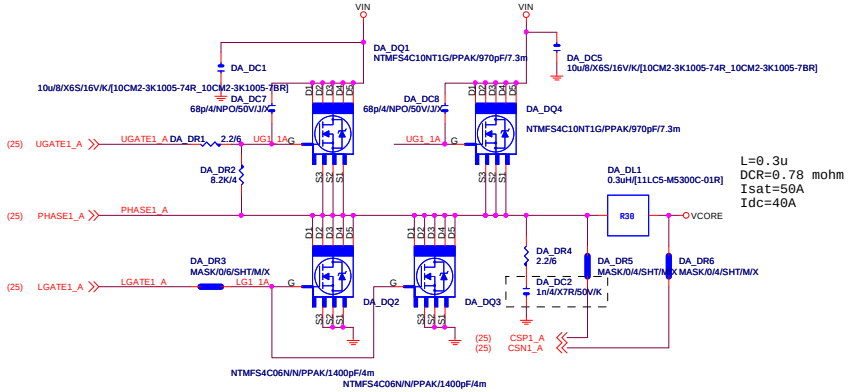
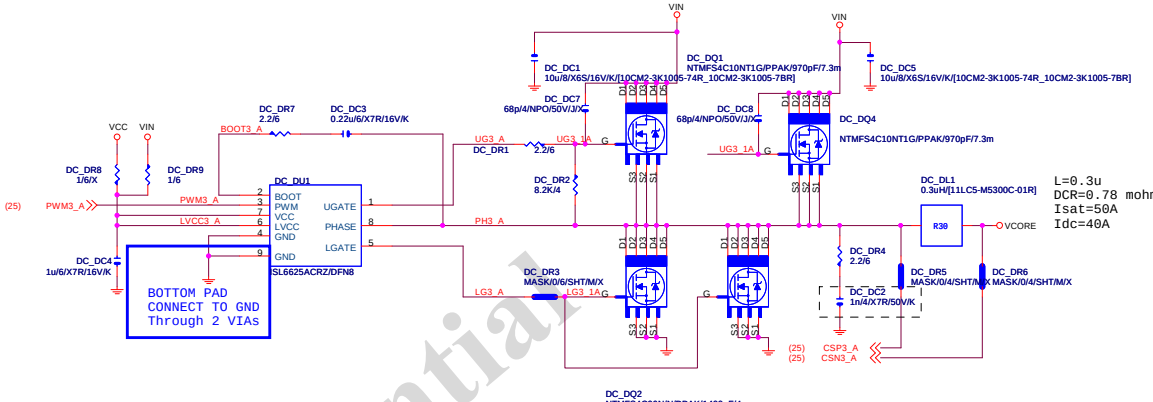
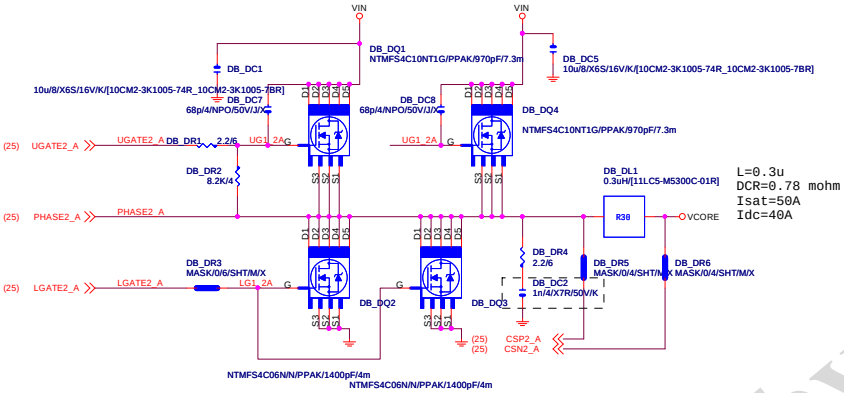
VCORE



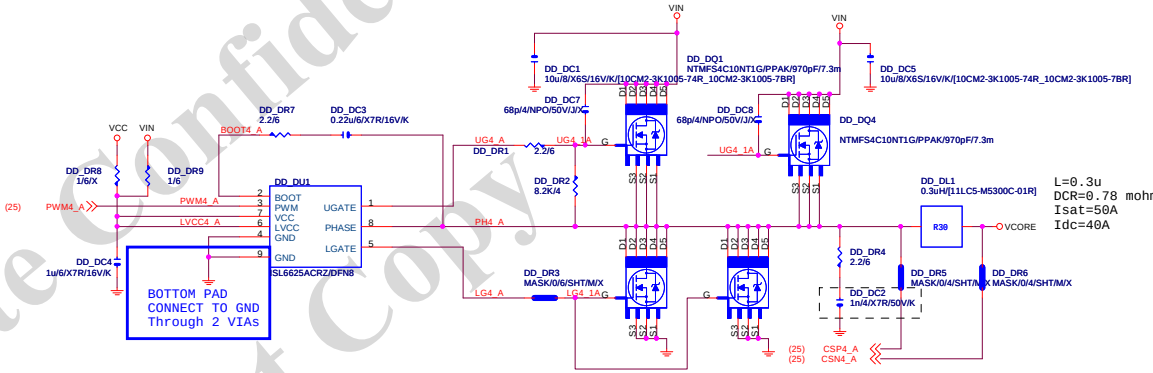
L=0.3u
DCR=0.78 mohm
Isat=50A
Idc=40A



L=0.3u
DCR=0.78 mohm
Isat=50A
Idc=40A



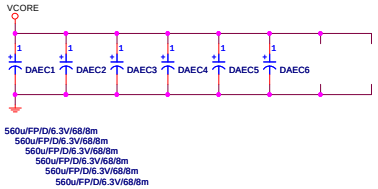
L=0.3u
DCR=0.78 mohm
Isat=50A
Idc=40A

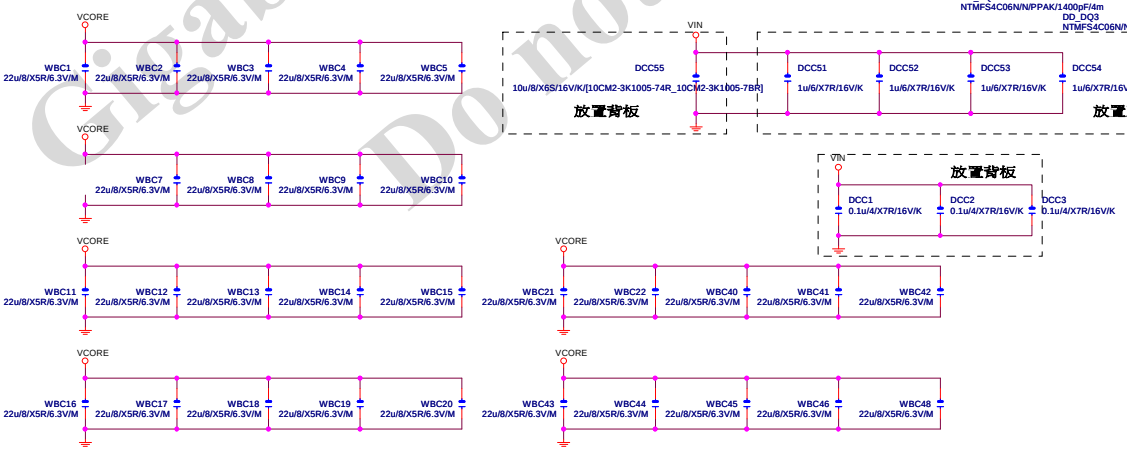


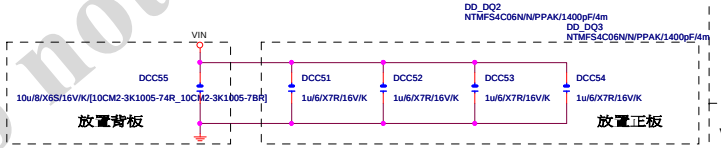
L=0.3u
DCR=0.78 mohm
Isat=50A
Idc=40A

VCORE CAP

560u*6PCS
22u*29PCS

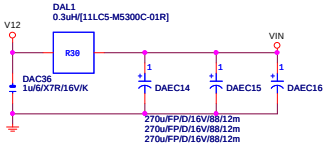






VIN CAP

270u*3PCS



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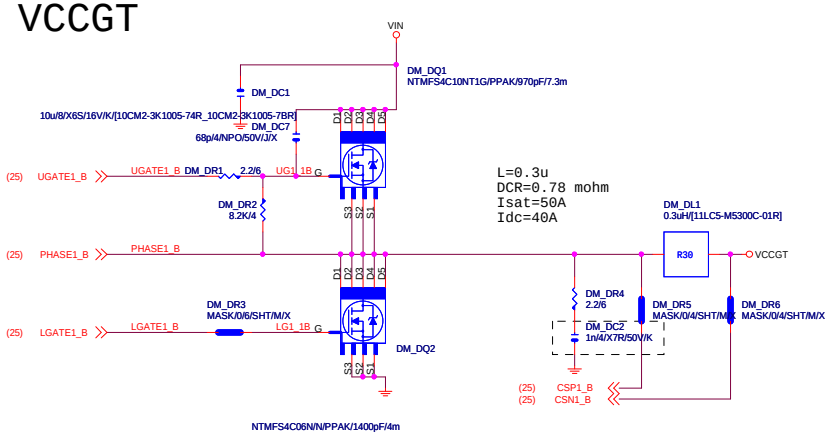
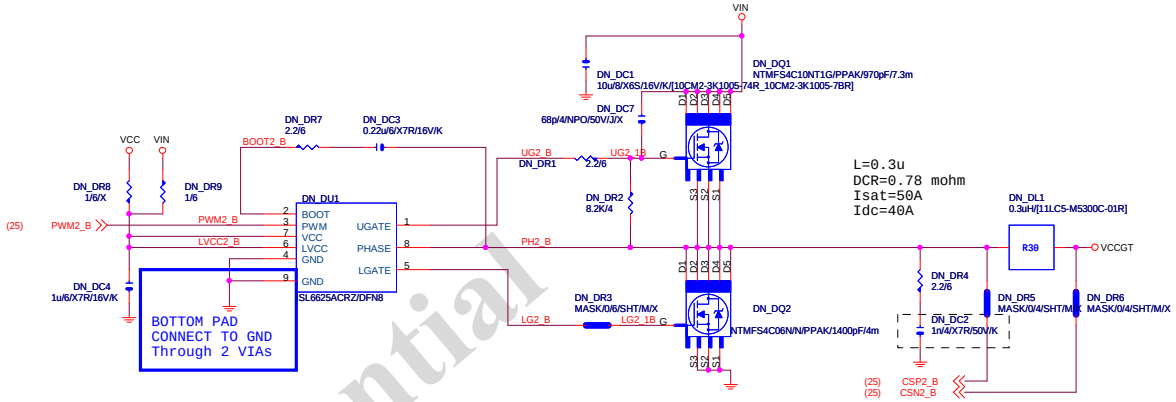
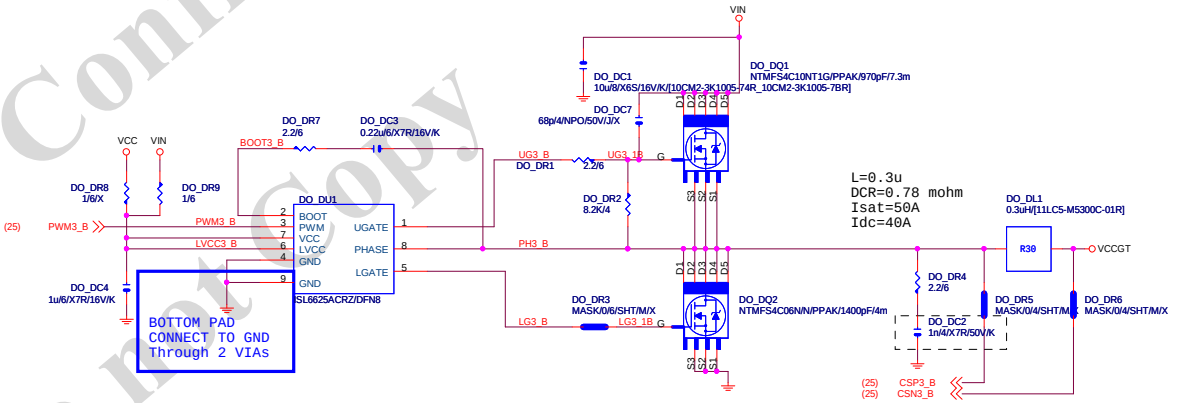
VCCGT

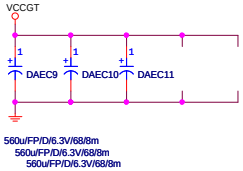


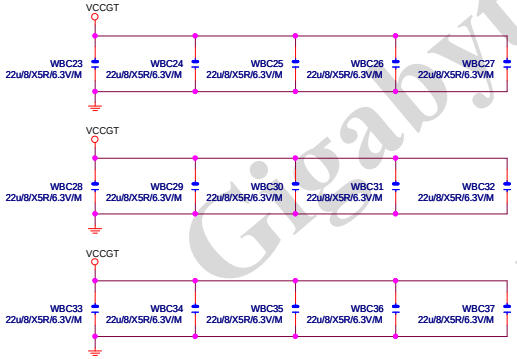




VCCGT CAP

560u*3PCS
22u*15PCS





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VCCIO

REV:0.22

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

CHOKE與CAP料號可變

注意耐壓

VCC3 DCL1 1.0uH/15A/S/6.7m 6*6 Close Choke

VCC DCR11 2.2/6 DRV_VIO DCC11 1u/6/X7R/16V/K DCC10 0.1u/6/X7R/25V/K

DCC36 DCC37 DCC8 0.1u/4/X7R/16V/K DCC27 0.1u/4/X7R/16V/K 68p/4/NPO/50V/J/X 0.1u/4/X7R/16V/K

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

DCC24 22u/8/X5R/6.3V/M DCC25 22u/8/X5R/6.3V/M DCC26 22u/8/X5R/6.3V/M

DCQ5 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

UGATE_VIO DCR12 2.2/6 UG_VIO

RT8120DGS/SOP8 DCU1 COMP FB GND PGND VCC BOOT UGATE PHASE LG/OC

VCCIO_EN_1 DCR14 8.2K/4/1 DCC12 22p/4/NPO/50V/J DCC13 3.3n/4/X7R/50V/K DCR19 MASK/0/4/SHT/X

UGATE_VIO PHASE_VIO LGATE_VIO DCR18 26.1K/4/1

放靠近IC pin4

DCR13 8.2K/4

DCQ6 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

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

DCL2 1.0uH/15A/S/6.7m 6*6

DCR15 2.2/6 DCC14 1n/4/X7R/50V/K

VCCIO

DCR16 487/4/1 DCR17 1K/4/1 DCEC2 560u/FP/D/6.3V/68/C/8m DCC38 22u/8/X5R/6.3V/M

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

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

Remote sense請從最重的負載端點拉回

VCCIO_OV (33) VCCIO_OV

RO DCR20 5.23K/4/1

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

有使用CPU POWER時DCR22不上件

VCCIO_EN_1 5VDUAL DCR21 8.2K/4 DCQ7 2N7002/SOT23/25pF/5 SOT23

Connect to IT8793

5VDUAL DCR22 8.2K/4/X DCQ8 2N7002/SOT23/25pF/5 SOT23

(16,65) VCCIO_EN DCR35 MASK/0/4/SHT/X DCR23 100K/4/1 DCC16 1u/6/X7R/16V/K

Connect to IT8686

VCCGT WBC38 22u/8/X5R/6.3V/M WBC39 22u/8/X5R/6.3V/M

放CPU端.

VCCSA DC_SBC1 1u/4/X5R/6.3V/K DC_SBC2 1u/4/X5R/6.3V/K DC_SBC3 1u/4/X5R/6.3V/K DC_SBC4 1u/4/X5R/6.3V/K DC_SBC5 1u/4/X5R/6.3V/K DC_SBC6 1u/4/X5R/6.3V/K

DCC30 22u/8/X5R/6.3V/M DCC31 22u/8/X5R/6.3V/M DCC32 22u/8/X5R/6.3V/M

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

CHOKE與CAP料號可變

注意耐壓

VCC3 DCL3 1.0uH/15A/S/6.7m Close Choke

VCC DCR24 2.2/6 DRV_VSA DCC20 1u/6/X7R/16V/K DCC18 0.1u/6/X7R/25V/K

DCC39 0.1u/4/X7R/16V/K DCC40 0.1u/4/X7R/16V/K DCC17 0.1u/4/X7R/16V/K DCC28 68p/4/NPO/50V/J/X

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

DCQ9 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

UGATE_VSA DCR25 2.2/6 UG_VSA

RT8120DGS/SOP8 DCU2 COMP FB GND PGND VCC BOOT UGATE PHASE LG/OC

VCCSA_EN_1 DCR27 8.2K/4/1 DCC21 22p/4/NPO/50V/J NPC12 3.3n/4/X7R/50V/K DCR32 MASK/0/4/SHT/X

UGATE_VSA PHASE_VSA LGATE_VSA DCR31 26.1K/4/1

放靠近IC pin4

DCR26 8.2K/4

DCQ10 NTTFS4C06NTAG/WDFN8/3366pF/4.2m

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

DCL4 1.0uH/15A/S/6.7m

DCR28 2.2/6 DCC22 1n/4/X7R/50V/K

VCCSA

DCR29 487/4/1 DCR30 1K/4/1 DCEC4 560u/FP/D/6.3V/68/C/8m DCC41 22u/8/X5R/6.3V/M DCC23 3.3n/4/X7R/50V/K RS

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

Remote sense請從最重的負載端點拉回

VCCSA_OV (33) VCCSA_OV

RO DCR33 3.16K/4/1

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

SIO PIN5 . PIN7 用在其他function時使用

SIO PIN5接VDDQ . PIN7接VCCIO .時使用

VCCSA_EN_1 5VDUAL DCR6 8.2K/4 DCQ2 2N7002/SOT23/25pF/5 SOT23

Connect to IT8793

5VDUAL DCR7 8.2K/4 DCQ3 2N7002/SOT23/25pF/5 SOT23

(16) VCCSA_EN DCR8 MASK/0/4/SHT/X DCR9 100K/4/1 DCC7 1u/6/X7R/16V/K

Connect to IT8686

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DDR4

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

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

SUPPORT DDR4 **1.2V**
25A MAX

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

OCP=40A

放靠近IC pin4

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]

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

Remote sense請從最重的負載端點拉回

PWR SEQ

For power sequence require

Connect to IT8793
Connect to IT8686

DDRVTT

NCT3103S/SOP8/2A

1.1A MAX

* 大電容 x4

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

* 大電容 x0

DDRVTT CAP

0/4/SHT/M/X
MAU1上NCT3103S時上件

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REV:0.1

VPP_25V

CHOKE與CAP料號可變

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

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

DDR_VPP VIN CAP
560u*1PCS

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

SUPPORT DDR4 2.5V
25A MAX

OCP=30A

放靠近IC pin4

NTTFS4C06NTAG/WDFN8/3366pF/4.2m

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

Remote sense請從最重的負載端點拉回

PWR SEQ

* 刪 MA_DR32

Connect to IT8686

VPP CAP 560u*1PCS

* 大電容 x1

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REV:0.7 (SMD) 0522

5VDUAL
+12V
NPR22 0/8/X
NPD1 B140/SMA/1A
NPD2 B140/SMA/1A
NPL1 1.0uH/15A/S/6.7m
L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A
CHOKE與CAP料號可變
P1V0_VIN_D
P1V0_VIN
NPC1 0.1u/4/X7R/16V/K
Close Choke
NPC11 68p/4/NPO/50V/J/X
NPC3 1u/6/X7R/16V/K
Close MOS
NPQ1
NTTFS4C06NTAG/WDFN8/3366pF/4.2m
NPEC1 22u/8/X5R/16V/M
NPEC3 22u/8/X5R/16V/M
NPEC4 22u/8/X5R/16V/M
NPEC5 22u/8/X5R/16V/M
VCC1_0_PCH
NPEC2 100u/12/X5R/6.3V/M
NPEC6 100u/12/X5R/6.3V/M
NPEC7 100u/12/X5R/6.3V/M
NPEC8 100u/12/X5R/6.3V/M
5VDUAL
NPR1 2.2/6
DRV_PCH
NPC4 1u/6/X7R/16V/K
NPC2 0.1u/6/X7R/25V/K
UGATE_PCH
NPR2 2.2/6
NPR4 8.2K/4
PHASE_PCH
LGATE_PCH
NPQ2
NTTFS4C06NTAG/WDFN8/3366pF/4.2m
NPR6 2.2/6
NPC7 1n/4/X7R/50V/K
NPL2 1.0uH/15A/S/6.7m
VCC1_0_PCH
L=0.5u
DCR=1.7 mohm
Isat=25A
Idc=18A
★Update 2015-04.22
RT8120DGS/SOP8
NPU1
COMP
VCC
BOOT
UGATE
PHASE
FB
GND
PGND
LG/OC
P1V0_PCH_EN
NPR5 8.2K/4/1
NPC5 22p/4/NPO/50V/J
NPC6 3.3n/4/X7R/50V/K
NPR12 MASK/0/4/SHT/X
NPR11 34K/4/1
放靠近IC pin4
NPR7 487/4/1
NPC8 3.3n/4/X7R/50V/K
RS
NPR8 2K/4/1
Remote sense請從最重的負載端點拉回
P1V0_PCH_ADJ
(33) P1V0_PCH_ADJ
RO
NPR13 6.2K/4/1
0.8*(1+RS/RO) = Vout
0.8*[1+2K/6.2K)] =
1.05V
PWR SEQ
P1V0_PCH_EN
NPR14 0/4/X
VCC1_0_EN
(16)
5VSB
NPR15 8.2K/4
NPQ4 2N7002/SOT23/25pF/5
SOT23
3VDUAL
NPR16 8.2K/4
NPQ3 MMBT2222A/SOT23/600mA/40
S0T23
NPR17 8.2K/4
NPC9 0.1u/4/X7R/16V/K/X
VCC1_0_PCH
NPC10 22u/8/X5R/6.3V/M
Defaults先不上件
請放置CHOKE一出來的地方
Gigabyte Confidential
Do not Copy
GIGABYTE
Title
RT8120_PCH POWER
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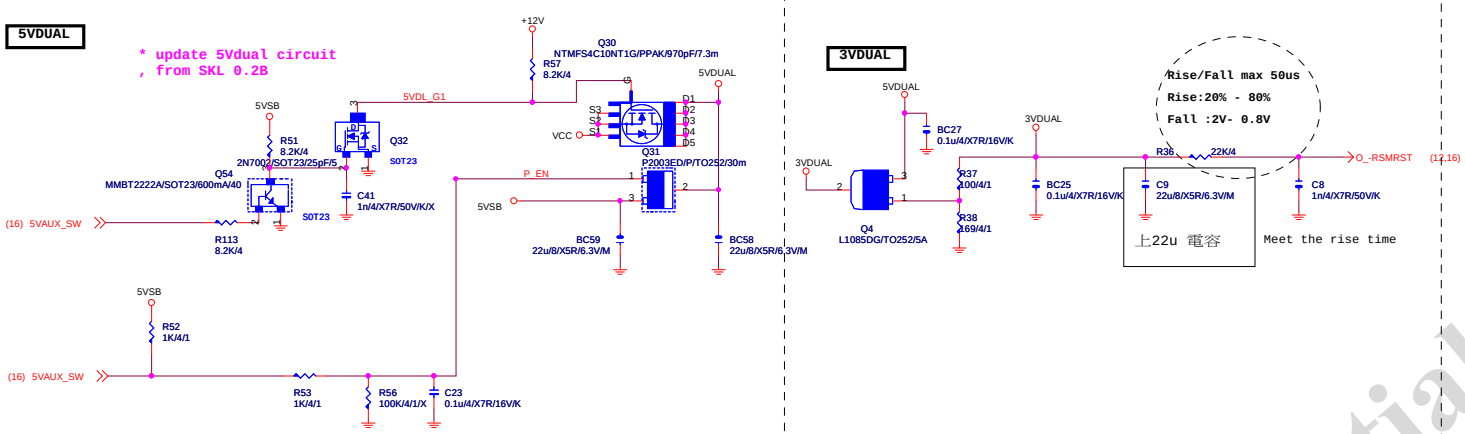
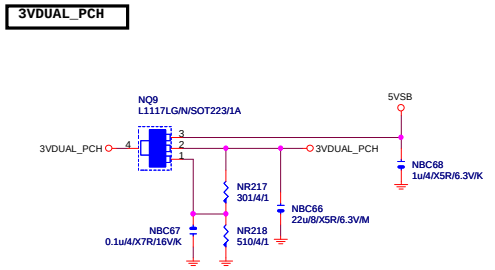
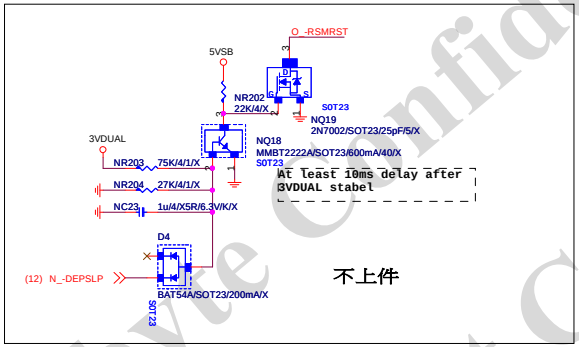
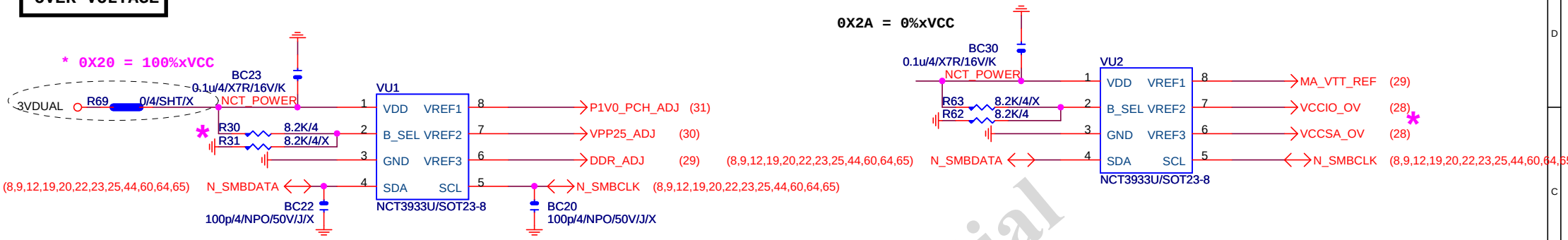






Gigabyte Technology			
Title: DISCRETE POWER			
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 32 of 66		

OVER VOLTAGE



* 刪除 0VU3

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: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 33 of 66

Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

5VSB R695 22K/4

(16) -PSON

BC37 0.1u/4/X7R/16V/K

* 刪除 -5V

VCC VCC

BC39 1u/4/X5R/6.3V/K

BC36 0.1u/4/X7R/16V/K/X

-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

黑色

APW/2*12/BK/VA/SN/2SHK/PA66/[11NH4-020024-11R]

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 +12V

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

To prevent the 5VSB under loading when boot

5VSB AD1 AZ2225-01L/SOD323/X

PWOK PWOK

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

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/OC/P/4.2/VA/SN/OH/[11NH4-020008-B1R]::Location ATX_12V_2X4

黑色

Rev 0.3

FOR AUDIO 切割

Rev 0.2

MH1 MH2 HOLE_3/X HOLE_4-RH-1

MH3 MH7 MH8 HOLE_4-RH-5MM-1

MH4 MH5 HOLE_4-RH-1

MH6 MH9 HOLE_4-RH-5MM-5PIN-1

K3 K6 K2 K5 K1 K4 K1_ICT/X

K1-ICT

I1 I2 I3 I4 I5 4MMH/X

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

+12V

RN2 2.7K/8P4R/4

RN3 2.7K/8P4R/4

RN4 2.7K/8P4R/4

RN5 2.7K/8P4R/4

RN6 2.7K/8P4R/4

RN10 2.7K/8P4R/4

RN11 2.7K/8P4R/4

RN12 2.7K/8P4R/4

RN13 2.7K/8P4R/4

RN14 2.7K/8P4R/4

RN15 2.7K/8P4R/4

VCC3 R1 1K/4/1

(12) N_GPP_D9 R703 330/4

Q9 EMF30N02J/SOT23/627pF/30m

-PROHOT * 保留 ?

(4,16) A_-PROHOT A_-PROHOT R2 0/4/SHT/X VR_HOT (25)

-PROHOT OTP:130度 / PCB THERMAL TRIP:128 度

125 ~130degree assert

+12V Rev 0.2

TTR1 10K/4/1 TTR2 5.6K/4/1 TTR3 1K/4/1 TTRT1 100K/1/4/S TTC1 0.1u/4/X7R/16V/K

TTR4 10K/4/1/X

TTU1A LM358DR/SO8

DATSM_3 DATSM_2 DATSM_1

TTR5 TTR6 MASK/0/4/SHT/M/X N_-THRMTRIP (13,16) 0/4/X A_-PROHOT A_-PROHOT (4,16)

TTQ1 2N7002/SOT23/25pF/5

CLOSE VCORE PWM UPPER MOSFET

-PROHOT OTP:130度 / PCB THERMAL TRIP:129 度

125 ~130degree assert

+12V Rev 0.2

TTR7 10K/4/1 TTR8 5.1K/4/1 TTR9 1K/4/1 TTRT2 100K/1/4/S TTC2 0.1u/4/X7R/16V/K

TTR10 10K/4/1/X

TTU1B LM358DR/SO8

DATSM_5 DATSM_6 DATSM_7

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

TTQ2 2N7002/SOT23/25pF/5

CLOSE VCCGT PWM UPPER MOSFET

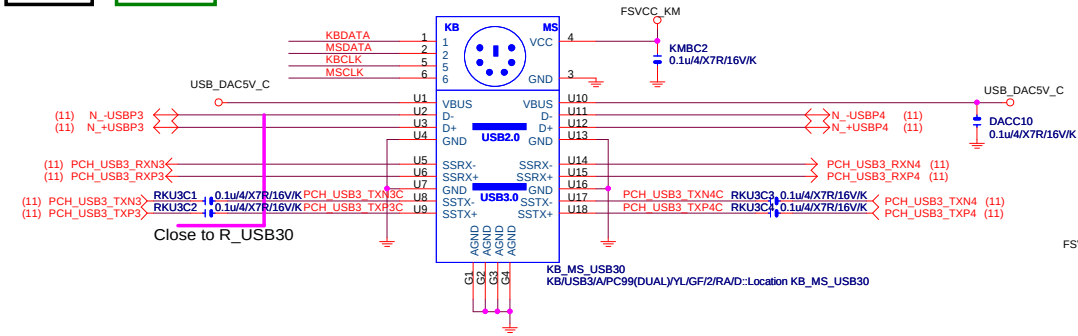
COUPON1 COUPON1 COUPON/X

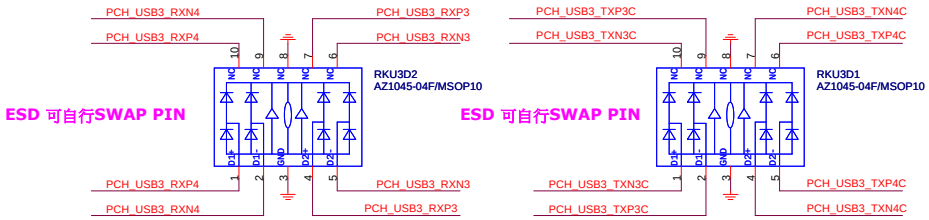
COUPON2 COUPON2 COUPON/X

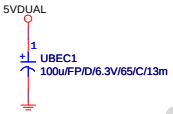
Gigabyte Technology			
Title: ATX POWER CONNECTOR			
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 34 of 66		

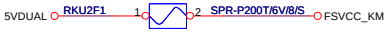
KB/MS

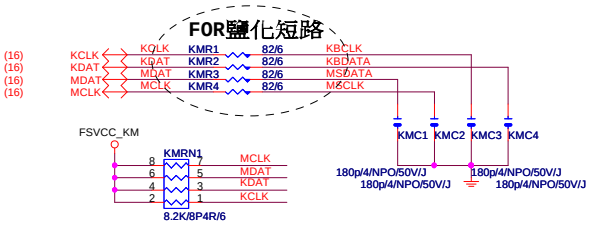
Rev: 0.52

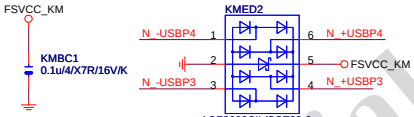


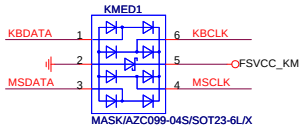


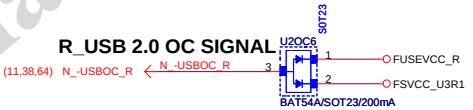












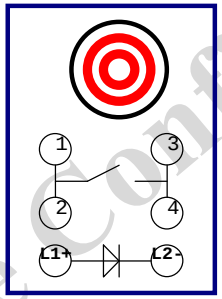
Gigabyte Technology			
Title: AUDIO JACK			
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 35 of 66		

Rev: 0.52

POWER

Reset

Clear CMOS



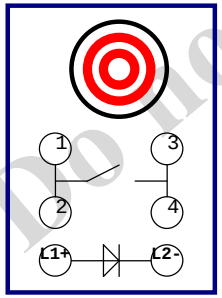
OC KEY

Rev 0.2

Rev 0.3

PCH:GPP_D6

PCH:GPP_D4



ECO KEY

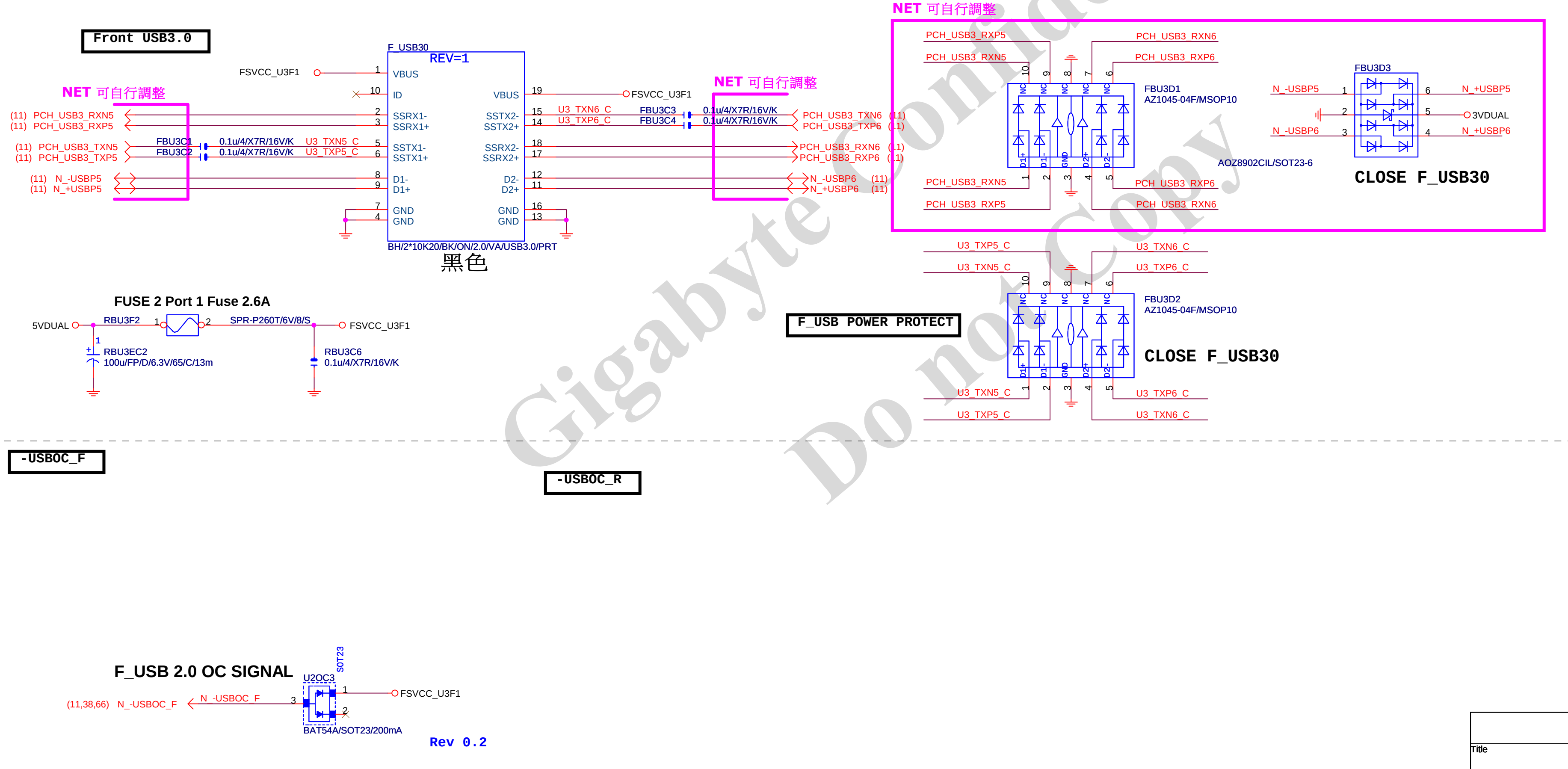
PCH:GPP_C9

PCH:GPP_B20

Gigabyte Technology			
Title: OC BUTTOM			
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017		Sheet 36 of 66	

Rev: 0.52

Front USB3.0



Front USB3.0
NET 可自行調整
(11) PCH_USB3_RXN5
(11) PCH_USB3_RXP5
(11) PCH_USB3_TXN5
(11) PCH_USB3_TXP5
(11) N_-USBP5
(11) N_+USBP5
FBU3C1
FBU3C2
0.1u/4/X7R/16V/K
U3_TXN5_C
U3_TXP5_C
FSVCC_U3F1
F_USB30
REV=1
VBUS
ID
SSRX1-
SSRX1+
SSTX1-
SSTX1+
D1-
D1+
GND
VBUS
SSTX2-
SSTX2+
SSRX2-
SSRX2+
D2-
D2+
BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
黑色
U3_TXN6_C
U3_TXP6_C
FBU3C3
FBU3C4
PCH_USB3_TXN6 (11)
PCH_USB3_TXP6 (11)
PCH_USB3_RXN6 (11)
PCH_USB3_RXP6 (11)
N_-USBP6 (11)
N_+USBP6 (11)
FBU3D1
AZ1045-04F/MSOP10
D1+
D1-
GND
D2+
D2-
NC
FBU3D3
AOZ8902CIL/SOT23-6
N_-USBP5
N_+USBP5
N_-USBP6
N_+USBP6
3VDUAL
CLOSE F_USB30
U3_TXP5_C
U3_TXN5_C
U3_TXN6_C
U3_TXP6_C
FBU3D2
AZ1045-04F/MSOP10
CLOSE F_USB30
F_USB POWER PROTECT
FUSE 2 Port 1 Fuse 2.6A
5VDUAL
RBU3F2
SPR-P260T/6V/8/S
RBU3EC2
100u/FP/D/6.3V/65/C/13m
RBU3C6
0.1u/4/X7R/16V/K
-USBOC_F
-USBOC_R
F_USB 2.0 OC SIGNAL
U2OC3
SOT23
(11,38,66) N_-USBOC_F
BAT54A/SOT23/200mA
Rev 0.2

Gigabyte Technology

Title: F_USB30

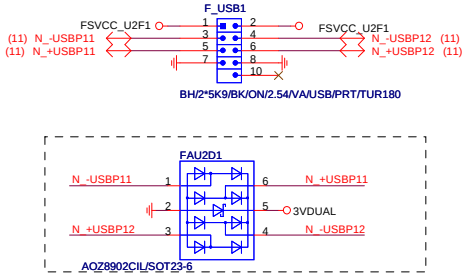
Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.00

Date: Wednesday, August 09, 2017 | Sheet 37 of 66

Rev: 0.52

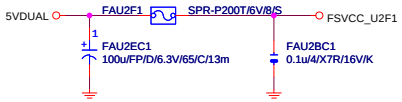
FRONT USB1

NET 可變



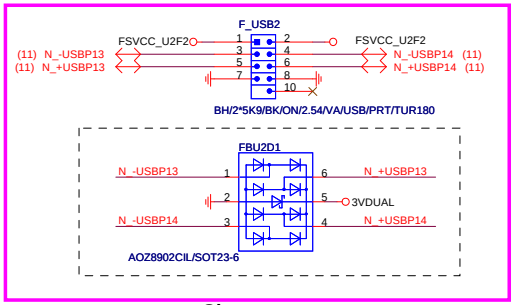
Close to connector

FUSE 2 Port 1 Fuse 2A



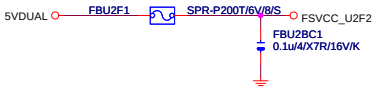
FRONT USB2

NET 可變

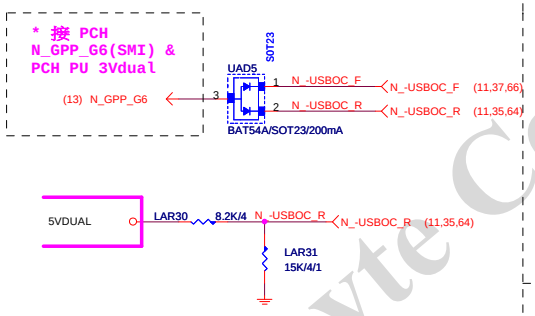


Close to connector

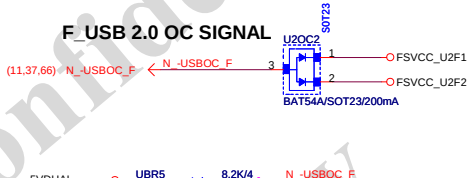
FUSE 2 Port 1 Fuse 2A



* 接 PCH N_GPP_G6(SMI) & PCH PU 3Vdual



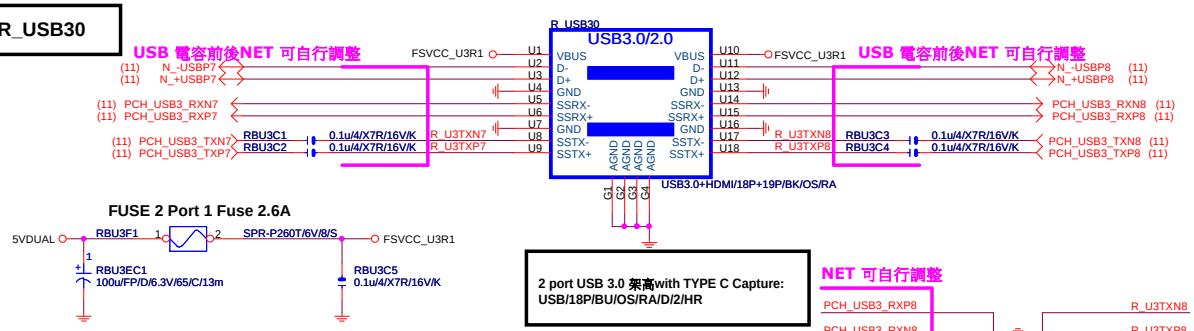
F_USB 2.0 OC SIGNAL



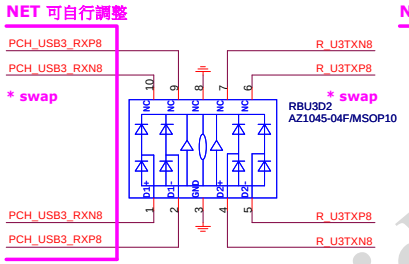
Gigabyte Technology		
Title: USB2.0		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 38 of 66	

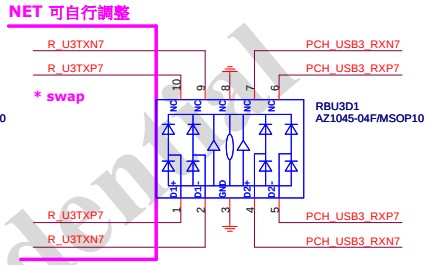
Rev: 0.52

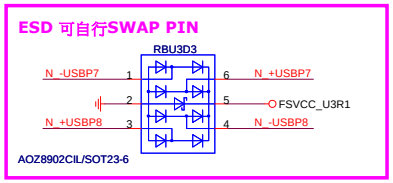
R_USB30

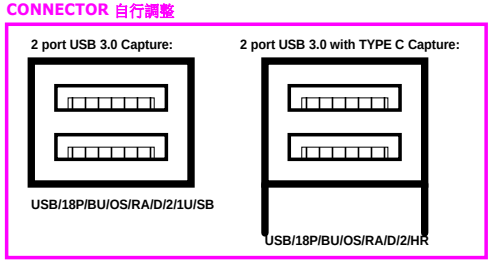


2 port USB 3.0 架高with TYPE C Capture:
USB/18P/BU/OS/RA/D/2/HR









Gigabyte Technology		
Title: R_USB30		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
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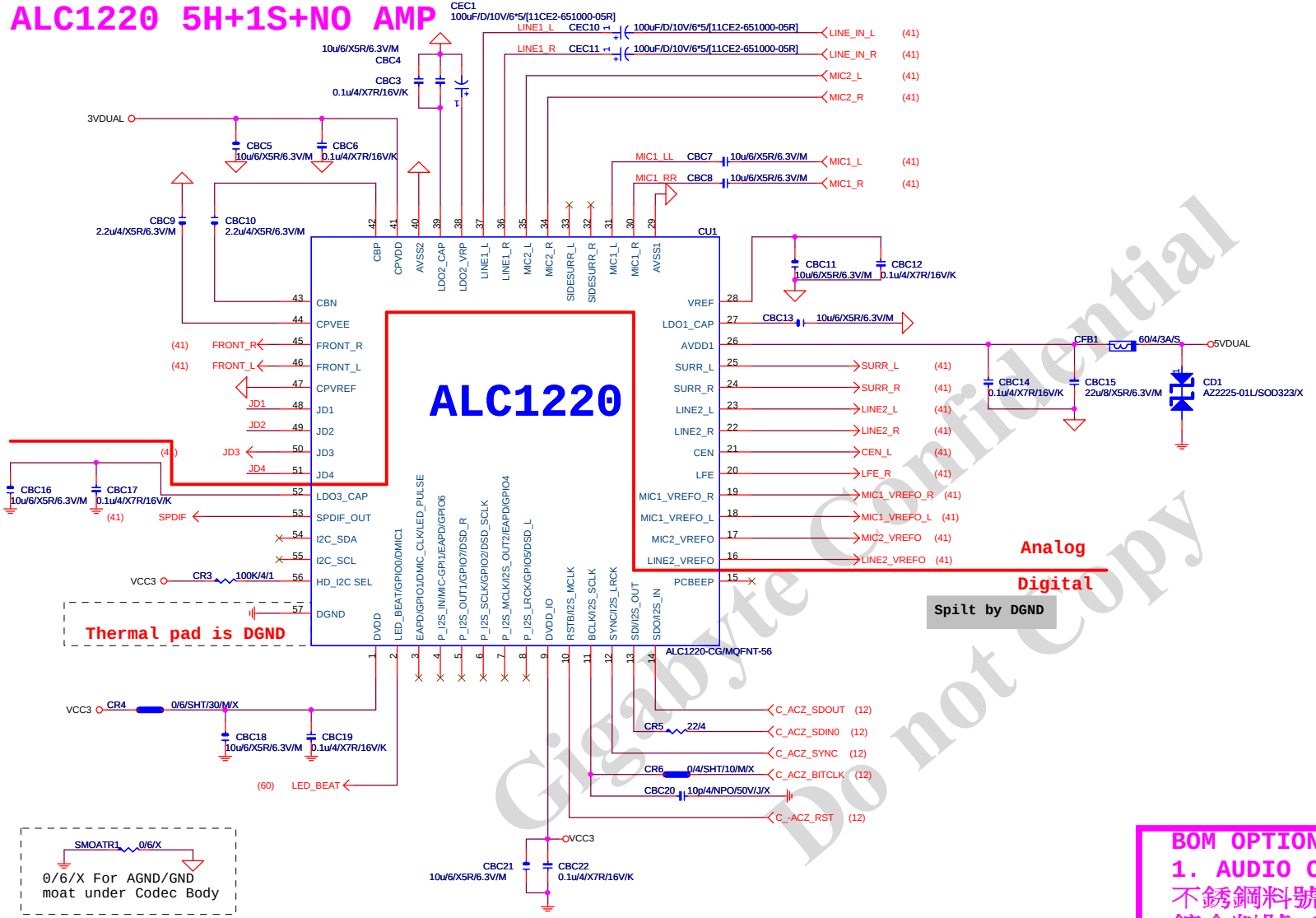
Rev 2.02

ALC1220 5H+1S+NO AMP

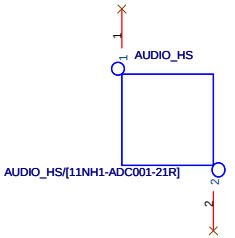
LAYOUT注意:螺絲孔下GND方式
1. MH1下DGND
2. MH2一律改為Isolate

MH1 DGND　　MH2 Isolate



LAYOUT注意:是否要加?
AGND切割線

音效區域印刷

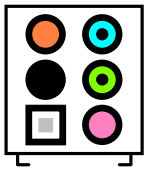


BOM OPTION :
1. AUDIO CONNECT
不銹鋼料號:11NR6-403025-A3R
鍍金料號:11NR6-403025-92R
2. AUDIO CAP
Nichicon MW音效電容 : 11CE1-651000-12R
Chemicon音效電容 : 11CE2-651000-05R

Gigabyte Technology		
Title: ALC1220		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 40 of 66	

Rev 2.02

AZALIA JACK

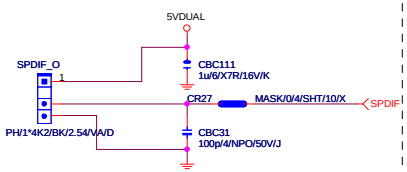


MOATR1 0/4
MOATC1 0.1u/4/X7R/16V/K → Near F_AUDIO

MOATR2 0/4/X
MOATC2 0.1u/4/X7R/16V/K → Near Codec

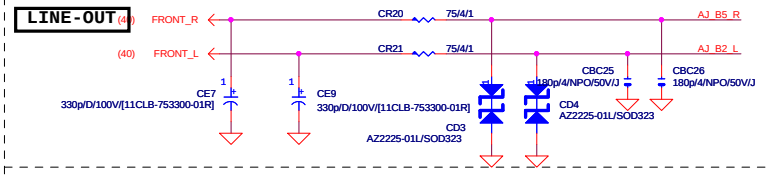
MOATR3 0/4/X
MOATC3 0.1u/4/X7R/16V/K → Under Audio Jack

MOATR4 2.2/6 → Audio Jack - LAN

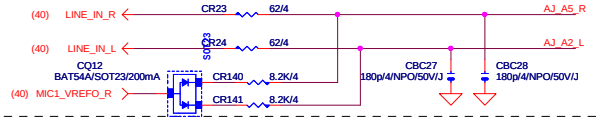


For HDMI SPDIF（依SPEC保留或移除）

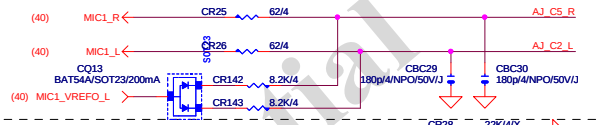
LINE-OUT



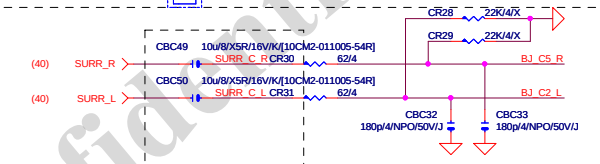
LINE-IN



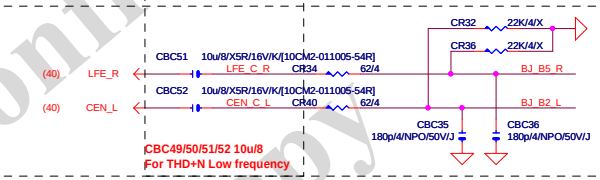
MIC-IN



SURROUND

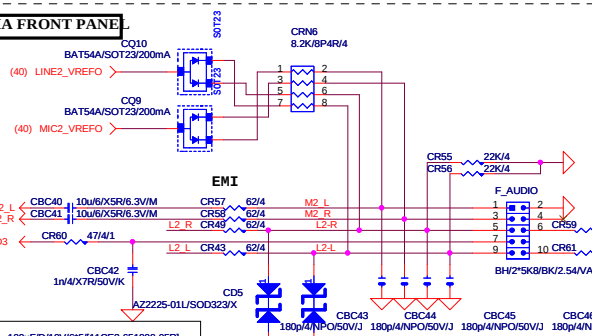


CEN/LFE

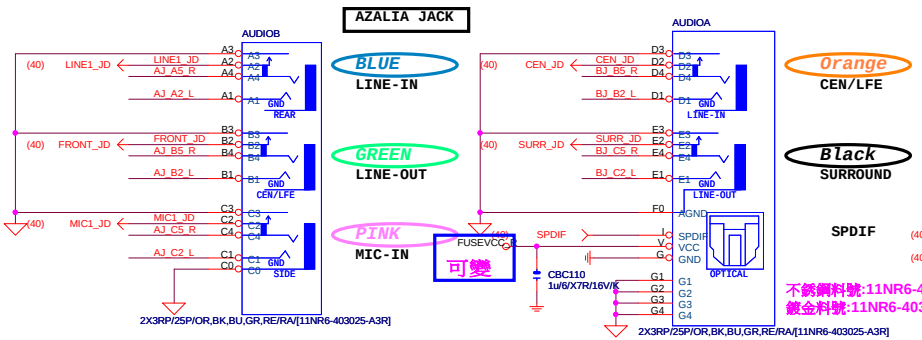


CBC49/50/51/52 10u/8
For THD+N Low frequency

AZALIA FRONT PANEL



AZALIA JACK



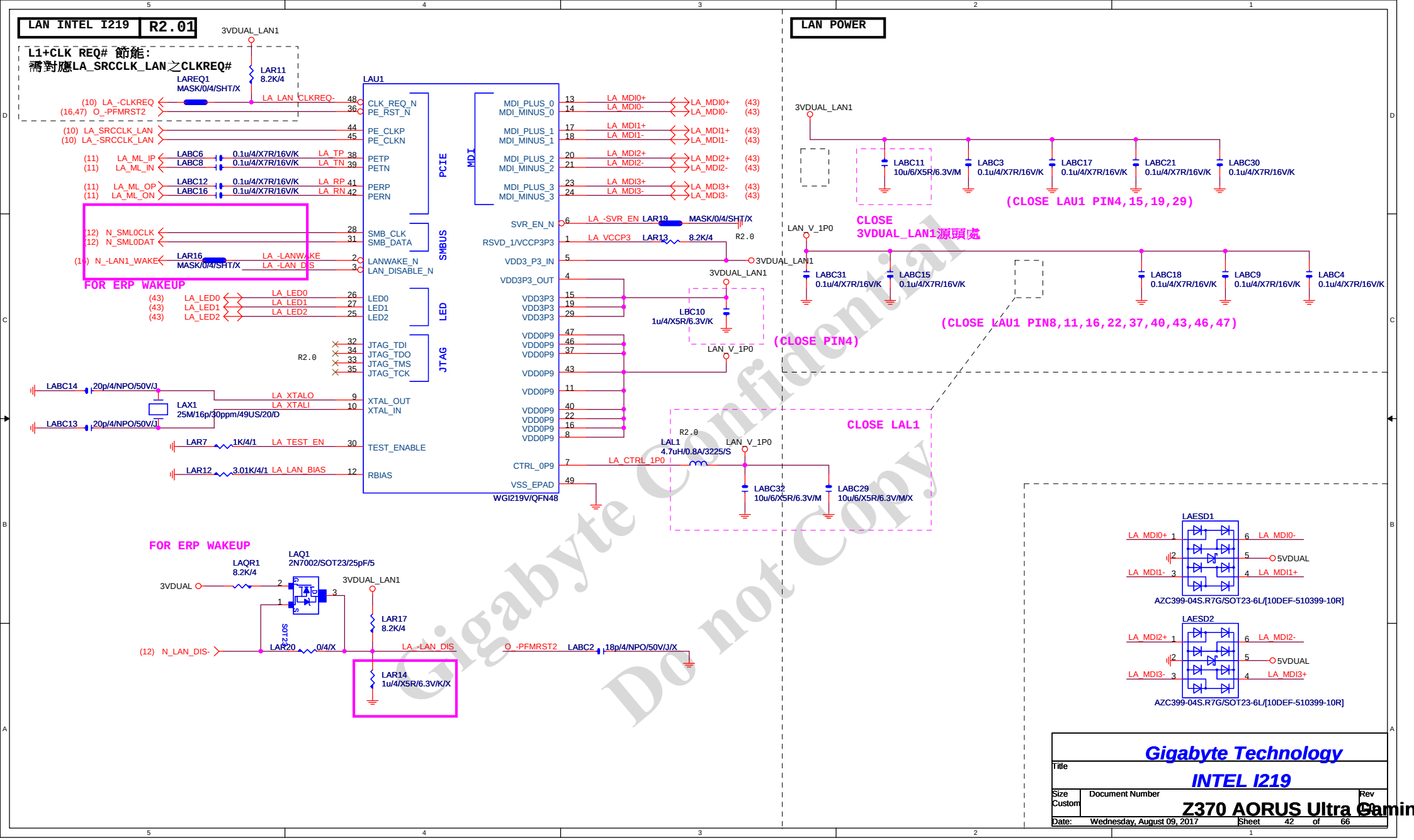
不銹鋼料號:11NR6-403025-A3R
鍍金料號:11NR6-403025-92R

Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 41 of 66

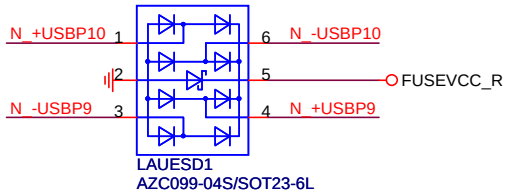


USB_LAN CONNECTOR R2.01

RMA ESD PROTECT

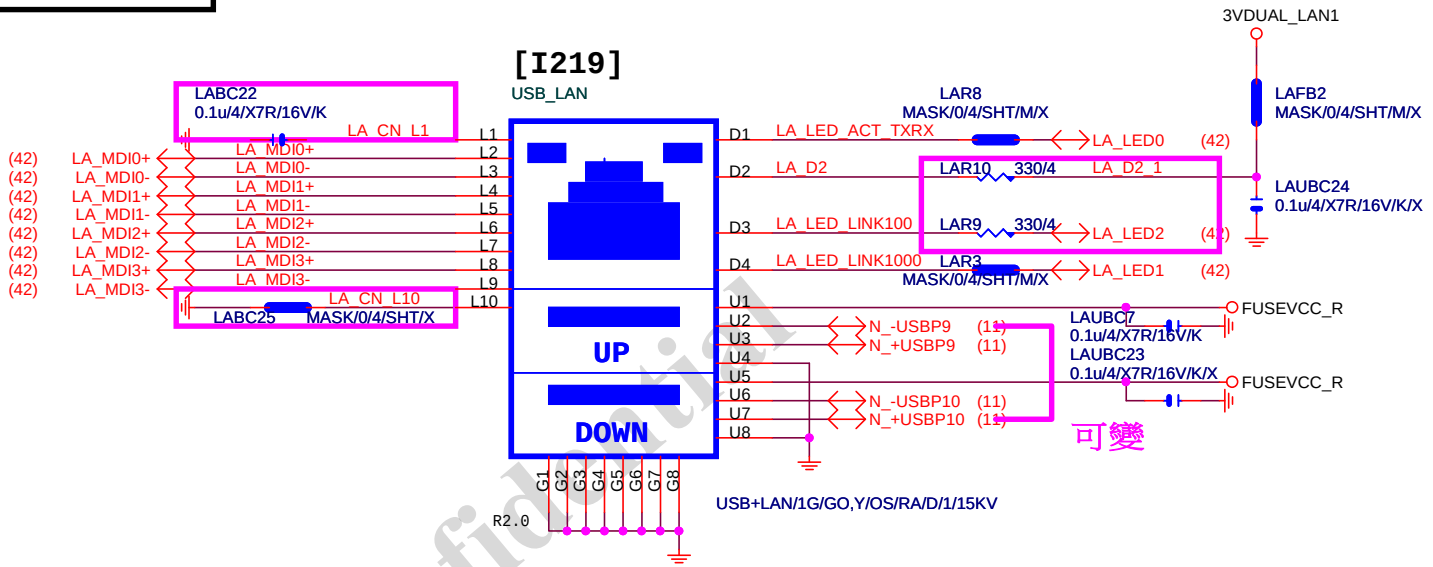
note:可變更USB NAME

可變



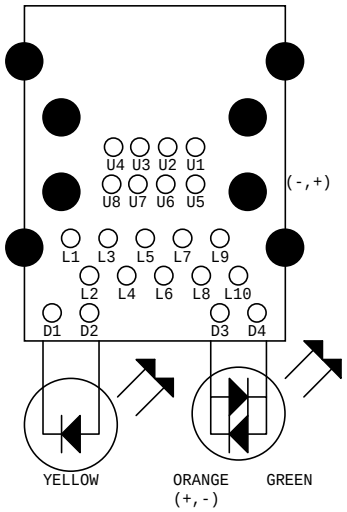
USB_LAN CONNECTOR

note:可變更USB NAME

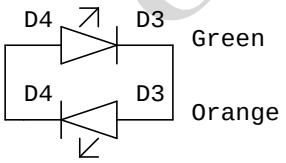


LA_MDI-->100歐姆:[20/4/8/4/20]

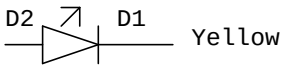
USB_LAN LAYOUT示意圖



Dual Color LED



Single Color LED



USB POWER

note:可變更FUSE

可變

Close to connector

USB_LAN 2-Port 2.0A

FUSE-0805

LAN_COVER

FOOT PRINT:LAN_COVER

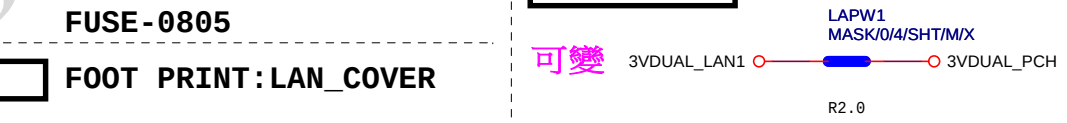
可變
[視SPEC需求]

EMI SHORT PAD

LAN POWER

note: lan power連接及電流

可變

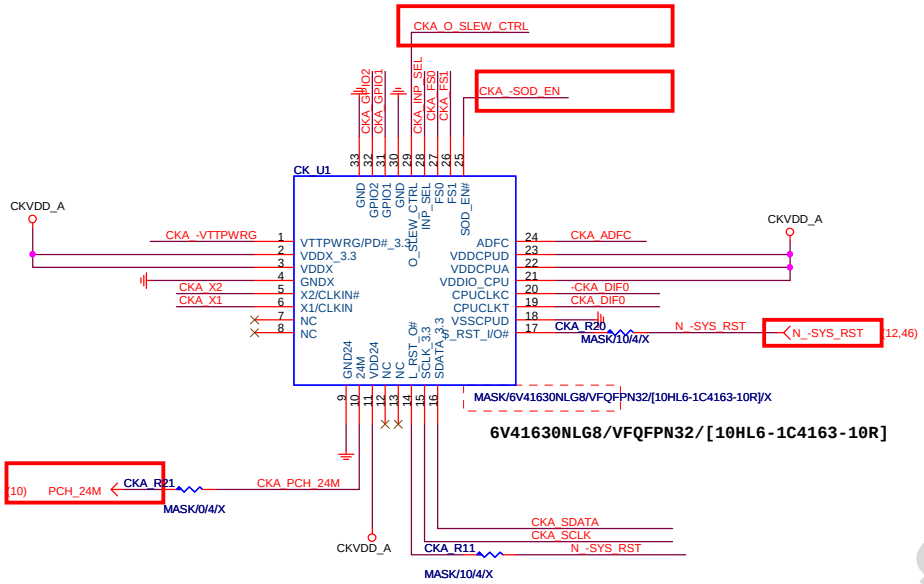


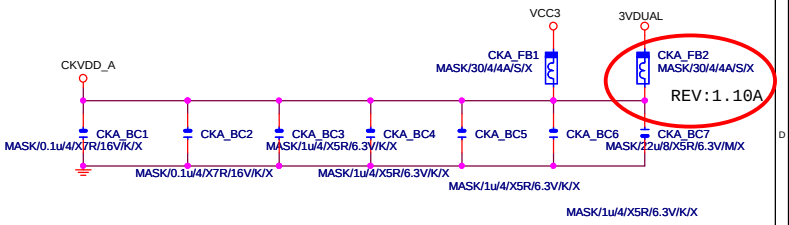
*

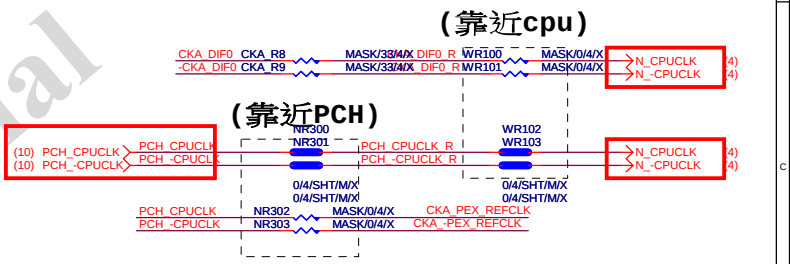
Gigabyte Technology		
Title: LAN CONNECTOR-I219		
Size: Custom	Document Number: Z370 AORUS Ultra Gamin	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 43 of 66	

REV:0.1

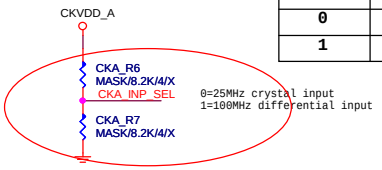
IDT6V41630

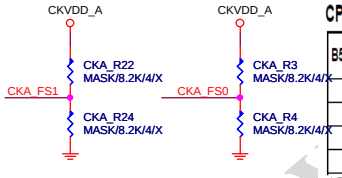






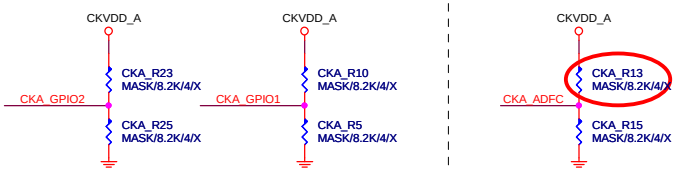
INP_SEL	Intput
0	Crystal
1	CLK_INP/N

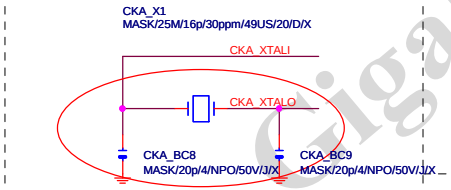




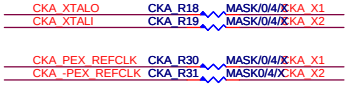
CPU Frequency Selection and output Divider Table

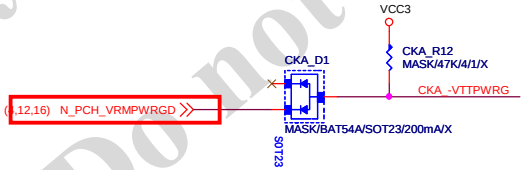
B53b1(FS1)	B53b0(FS0)	VCO (MHz)	CPU Divider	CPU (MHz)	Typ SS%	Typ SS ON/OFF
0	0	200.00	2.00	100.00	-	OFF
0	1	400.00	4.00	100.00	-	OFF
1	0	1000.00	10.00	100.00	-0.50%	ON
1	1	100.00	1.00	100.00	-	OFF



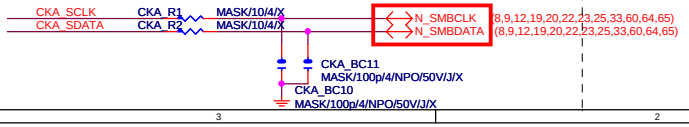


Defaults
CKX1.CKBC8.CKBC9.CKR18.CKR19上件
CKR30.CKR31不上件

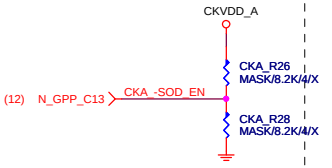




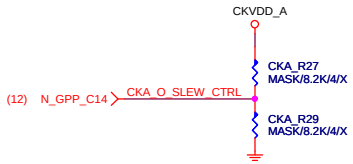
SMBUS



Real time selection fucntion



Frequency change slew rate control



*可變，依需求上件不上件。

GIGABYTE™

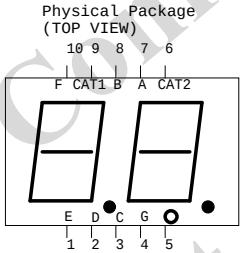
Title	IDT6V41530_CLK BUFFER	
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 44 of 66	

Rev: 0.52

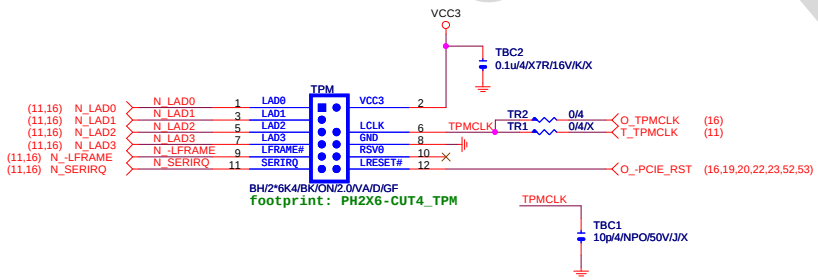
COM PORT

COMA

80 PORT

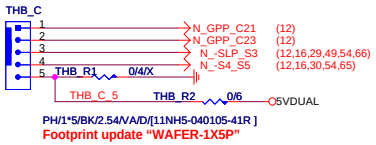


TPM CONNECT



Thunderbolt

★Update 2015-12-29



Gigabyte Technology

Title: FP,F_USB,USB PWR,BZ

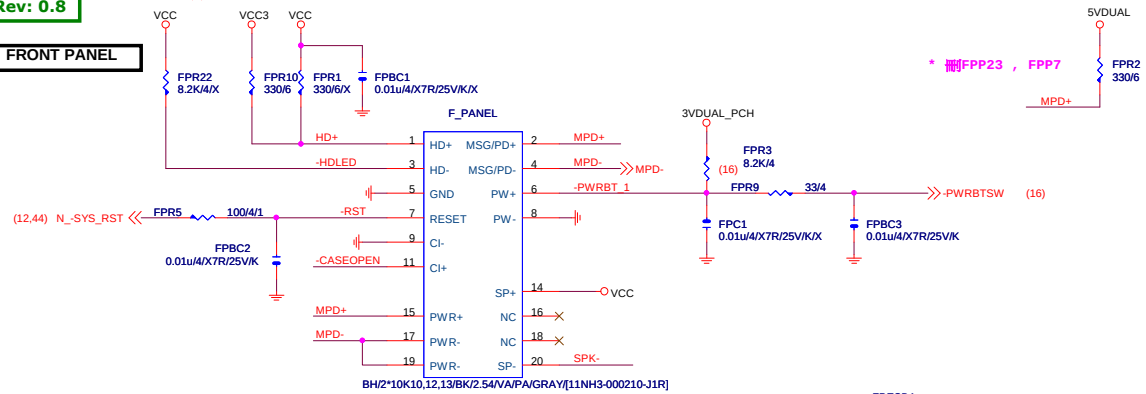
Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 45 of 66

Rev: 0.8

★Update 2016.06.15

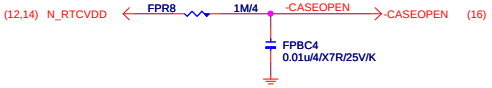
FRONT PANEL

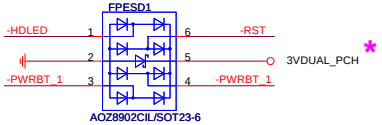


* footprint : F_PANEL-100

CASE OPEN

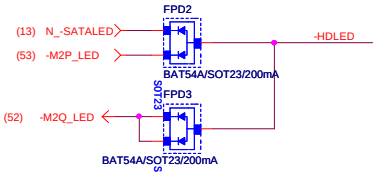
BH/2*10K10,12,13/BK/2.54/VA/PA/GRAY/[11NH3-000210-J1R]





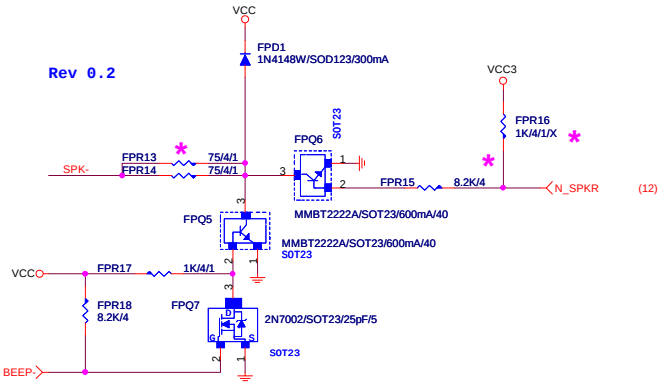
SATA LED

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



SPEAKER

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



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

Gigabyte Technology			
Title: FRONT PANEL			
Size: Custom	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
Date: Wednesday, August 09, 2017		Sheet 46 of 66	

ASM3142 USB31 Host Rev0.1
REAR USB3.1 PORT A x2
PCIE Gen3 X2

Color markers can be changed by model

ASM3142 USB3.1

Base on ASM2142 0.1 Reference SCH

PCH PCIe* Controller Lane Reversal / base on spec

To PCIE host.

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

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

From PCIE host.

SSAR30 — SSA120V — MASK/0/4/SHT/20/X
SSAC20 4.7U/6/X5R/6.3V/K

SSAU1 (ASM3142/S)

-SRCCLK_USB31A (10) — From PCIE CLK

SSAR31 — SSA120V — MASK/0/4/SHT/20/X
SSAC27 4.7U/6/X5R/6.3V/K

To USB Conn

Close to ASM1142 IC

VCC3 — SSAD1 1N4148W/SOD123/300mA — SSAR11 100K/4/1 — SSAC5 1u/4/X5R/6.3V/K

SSA120V — (10) N_GPP_D3 — SSA_SMI-

VCC3 — SPI_DO=>CSEL0 — SSA_SPICK, SSA_SPIDO, SSA_SPICS-, SSA_SPIDI

UART_RX=>CSEL1 — SSA_PORST-, SSA_UARTRX, SSA_UARTTX

SSA120V

To USB Conn

(49) SS20A_DM2 — SS20A_DM2
(49) SS20A_DP2 — SS20A_DP2
VCCSUS_VCCLU
SSA120_SUS
(48) SS20A_DM1 — SS20A_DM1
(48) SS20A_DP1 — SS20A_DP1
3VDUAL

SSATST_EN — SSAR5 4.7K/4/1 — VCC3
PCIE_RST- — O_-PFMRST2 (16,42)
OCIA1B — OCIA1B (49)
OCIA1A — OCIA1A (48)
SSA_PPCB — SSAR15 8.2K/4/1/X — VCC3
SSA_PPCA — SSAR16 8.2K/4/1/X — VCC3
N_-PCIE_WAKE — N_-PCIE_WAKE (12,19,20,22,23)

To OC circuit

Change to 0402

SSA120V
Pin 1/12/33 — SSAC30, SSAC31, SSAC32 — 0.1u/4/X7R/16V/K
SSA120_SUS
Pin 21/34 — SSAC33, SSAC34 — 0.1u/4/X7R/16V/K
VCC3
Pin 4/32 — SSAC35, SSAC36 — 0.1u/4/X7R/16V/K
3VDUAL
Pin 24/20 — SSAC37 — 0.1u/4/X7R/16V/K
VCCSUS_VCCLU — SSAC38 — 0.1u/4/X7R/16V/K

SSA120V
SSAC40, SSAC41, SSAC42 — 2.2u/4/X5R/6.3V/M — Pin 35/47/52
VSSA
SSAC43, SSAC44, SSAC45, SSAC46 — 2.2u/4/X5R/6.3V/M — Pin 38/44/55/62

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

ASM 2142 Option

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

ASM2142 SSAR34,SSAR38

12.1K/4/1 — SSAR18 — SSA_REXT
3VDUAL — SSAR36 8.2K/4 — SSA_SMI-
VCC3 — SSAR27 8.2K/4, SSAR32 8.2K/4/1/X — SSA_SPICK
VCC3 — SSAR4 8.2K/4, SSAR3 2K/4/1/X — SSA_UARTRX
UART_RX=>CSEL1
VCC3 — SSAR8 8.2K/4, SSAR7 2K/4/1/X — SSA_UARTTX
VCC3 — SSAR1 8.2K/4, SSAR2 2K/4/1/X — SSA_SPIDO
SPI_DO=>CSEL0

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

ASM3142 SSAR22=374,1.1V,50mA

3VDUAL — SSAQ1 VIN VOUT GND EN FB — SSA120_SUS
R1 SSAR22 374/4/1 — SSAQ1_FB — SSAC25 22P/4/NPO/50V/J — SSAC26 10U/6/X5R/6.3V/M
SSAC24 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2
AP7365-WG-7/SOT23-5/600mA
R2 SSAR23 1K/4/1

ASM2142 Option

VCC3 — SSAQ3 VIN VOUT GND EN FB — VCC25V
R1 SSAR41 2.15K/4/1 — SSAQ3_FB — SSAC47 22P/4/NPO/50V/J — SSAC48 10U/6/X5R/6.3V/M
SSAC49 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2
AP7365-WG-7/SOT23-5/600mA
R2 SSAR40 1K/4/1

ASM3142 2.5V, 300mA

ASM3142 SSAR28=37.4K,1.1V,800mA

VCC3 — SSAR25 8.2K/4 — SSAU3_EN
SSAR35 8.2K/4/X — SSAC7 1u/4/X5R/6.3V/K

SSAU3 POK GND EN FB VIN VOUT CNTL REFIN PGND
VCC
SSAU3_EN
VCC3
SSAR24 2.2/4
SSAC6 1u/4/X5R/6.3V/K
SSAC10 22u/8/X5R/6.3V/M
SSAC9 1u/4/X5R/6.3V/K

SSA120V
SSAR28 37.4K/4/1%
SSAC11 0.1u/4/X7R/16V/K/X
SSAR29 100K/4/1
SSAC13 22u/8/X5R/6.3V/M
SSAC12 1u/4/X5R/6.3V/K

RT9018B-18GSP/SO8/3A/[10GL2-309018-31R_10GL2-305103-01R]

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

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

GIGABYTE™

Title: ASM3142 USB31A_R

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 47 of 66

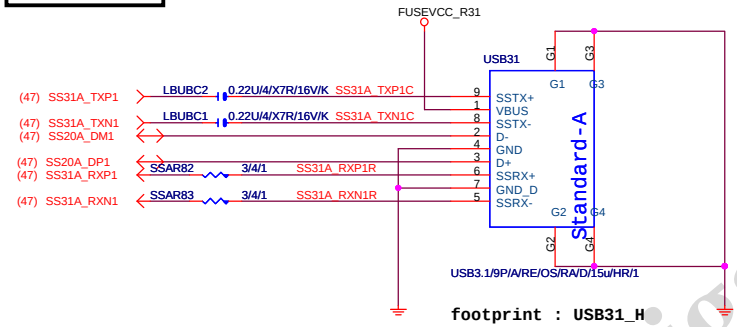
ASM2142 USB31 Host Rev0.2

平躺式type A

USB 3.1 Red
平躺

USB31 TYPE A Connector which chooses for project demand

架高式type A



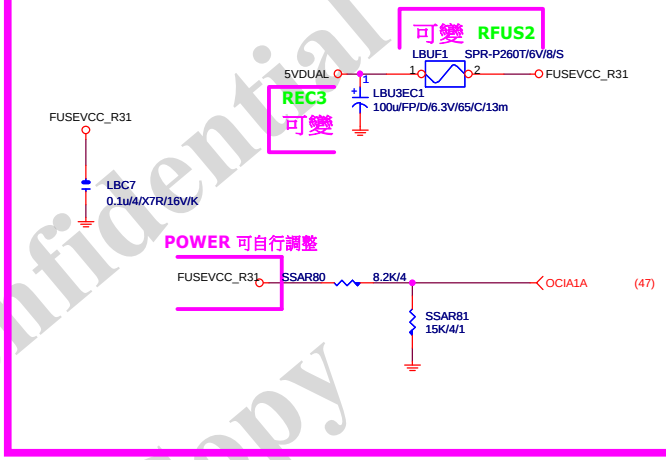
USB 3.1 Red
架高

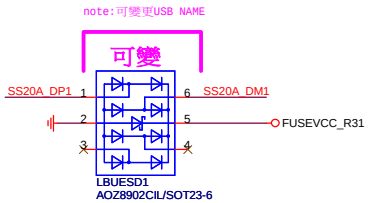
footprint : USB31_H

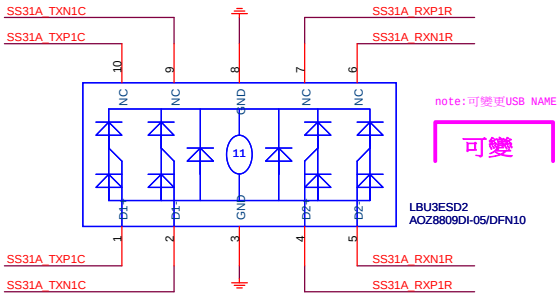
後窗Rule : (後窗由左至右)
DIP電容 : REC1, REC3, REC2
FUSE : RFUS1, RFUS2, RFUS3,RFUS4...

USB POWER

note:可變更FUSB





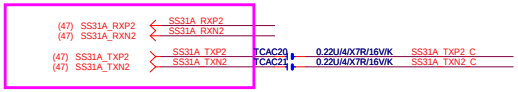


GIGABYTE™

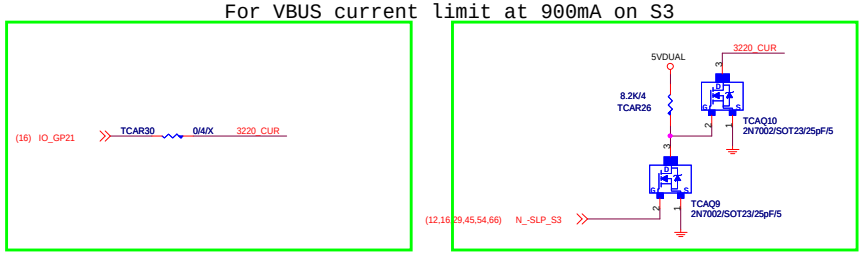
Title	TI Type C port A	
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 48 of 66	

ASM2142 USB31 Host Rev0.2

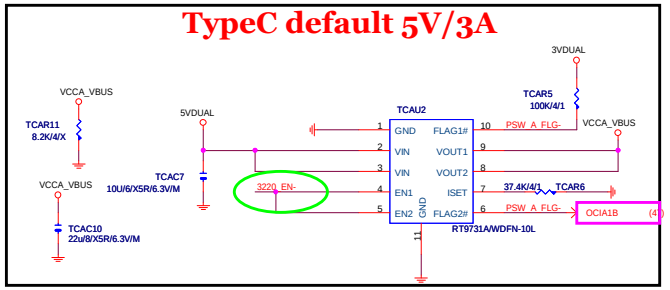
USB 3.x SuperSpeed

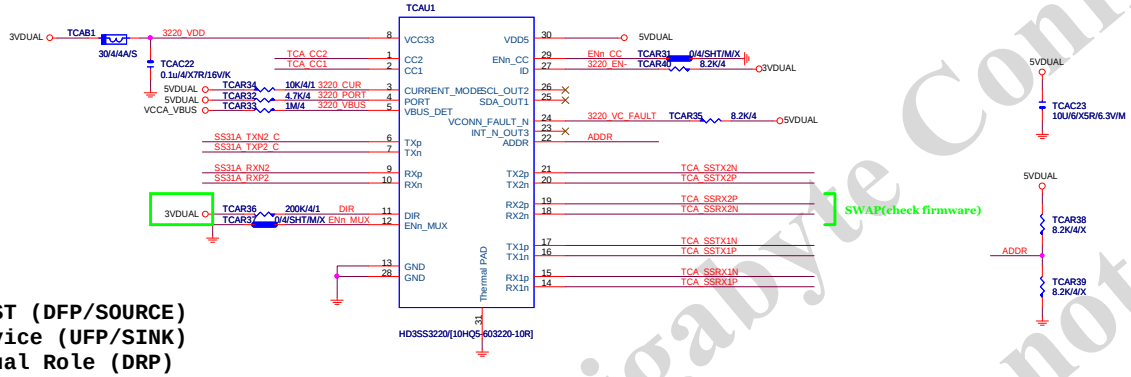


For VBUS current limit at 900mA on S3



TypeC default 5V/3A



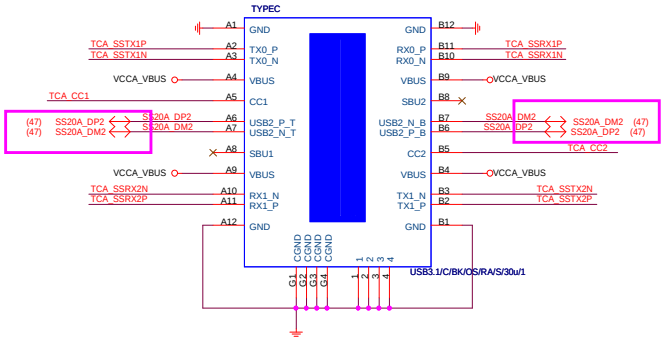


SWAP(check firmware)

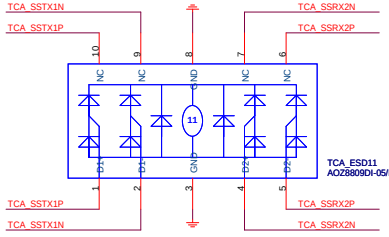
PORT
H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

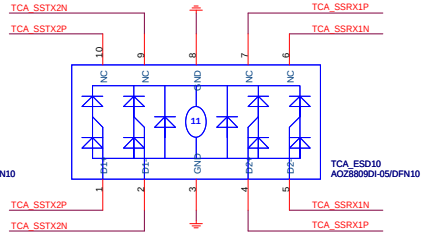
CURRENT MODE
L - Default (900mA) / Pull down to GND or NC
M - Medium (1.5A) / Pull up to VDD 500K
H - High (3.0A) / Pull up to VDD 10K

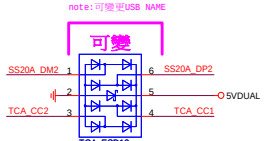
Color markers can be changed by model



USB2.0 can be used the same source







GIGABYTE		
Title	TI HD3SS3212	
Size C	Document Number Z370 AORUS Ultra Gaming	Rev 1.0
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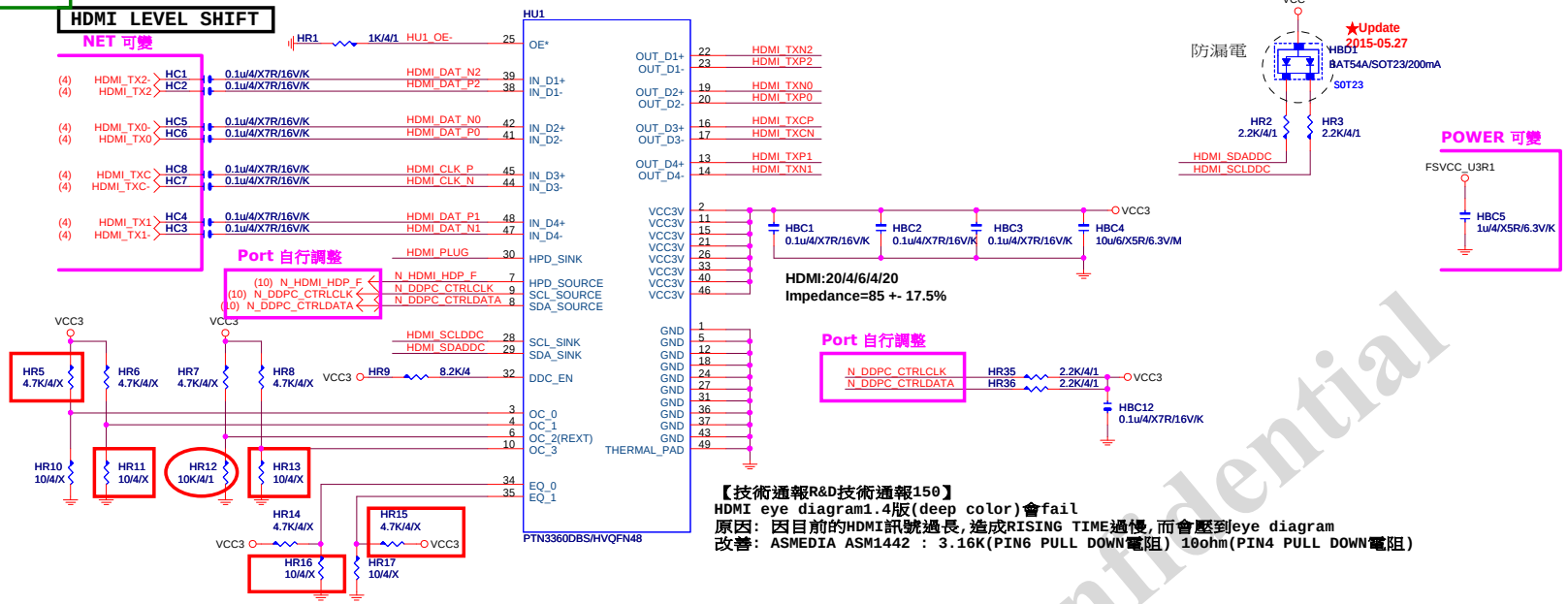
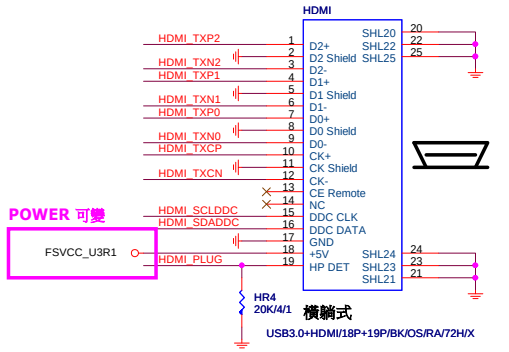
Rev: 0.62



【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 Technology		
Title	FP,F_USB,USB PWR,BZ	
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Rev: 0.73

DVI CONN

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

NET 可變

(4) DVI_TXC
(4) DVI_TXC-
VBC1 0.1u/4/X7R/16V/K
VBC2 0.1u/4/X7R/16V/K
DVITXC+ VR1 680/4/1
DVITXC- VR2 680/4/1

(4) DVI_TX0
(4) DVI_TX0-
VBC3 0.1u/4/X7R/16V/K
VBC4 0.1u/4/X7R/16V/K
DVITX0+ VR3 680/4/1
DVITX0- VR4 680/4/1

(4) DVI_TX1
(4) DVI_TX1-
VBC5 0.1u/4/X7R/16V/K
VBC7 0.1u/4/X7R/16V/K
DVITX1+ VR7 680/4/1
DVITX1- VR8 680/4/1

(4) DVI_TX2
(4) DVI_TX2-
VBC8 0.1u/4/X7R/16V/K
VBC9 0.1u/4/X7R/16V/K
DVITX2+ VR9 680/4/1
DVITX2- VR10 680/4/1

DVI_G

VCC
防漏電
★Update 2015.05.27
VD1 BAT54A/SOT23/200mA
SOT23

VR14 2.2K/4/1
VR13 2.2K/4/1
DVI_SDA
DVI_SCL

VQ1 2N7002/SOT23/25pF/5
SOT23

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

VCC VR16 8.2K/4 VQ1_2

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

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

DVI_HP
VQ4 2N7002/SOT23/25pF/5
SOT23
VCC3
VR20 1M/4
VCC VR19 8.2K/4 VQ4_2
N_DVI_HDP_F
N_DVI_HDP_F (10)

Close to connector

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

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

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

Close to connector

VESD3
DVI_HP
DVI_SDA
FSVCC_KM
DVI_SCL
AOZ8902CIL/SOT23-6

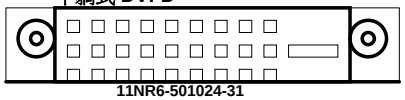
NET 可變

NET 可變
FSVCC_KM

M1 SHIELD1
DVI
DVITX0- 17 TX0-
DVITX0+ 18 TX0+
DVITX1- 9 TX1-
DVITX1+ 10 TX1+
DVITX2- 1 TX2-
DVITX2+ 2 TX2+
3 SHLD24
11 SHLD13
19 SHLD05
12 TX3-
13 TX3+
4 TX4-
5 TX4+
20 TX5-
21 TX5+
DVI_SCL 6 DDCC
DVI_SDA 7 DDCD
14 VDDC
15 GND
22 SHLDC
DVITXC- 24 TXC-
DVITXC+ 23 TXC+
8 VSYNC
DVI_HP 16 HPD
VR15 20K/4/1
SHIELD2 M5
SHIELD2 M6
SHIELD2 M7
SHIELD2 M8
SHIELD2 M2
COMMON
DVI-30P-4P-1

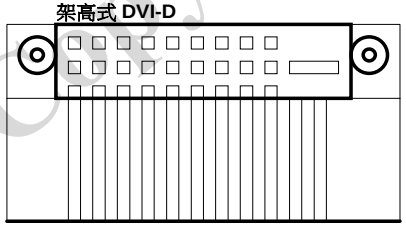
DVI-D/24P/SC/RA/D/SH/[11NR6-501024-31R]

平躺式 DVI-D



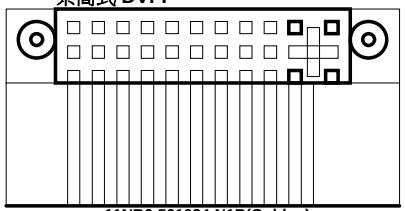
11NR6-501024-31

架高式 DVI-D

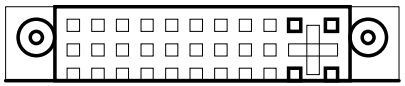


★Update 2015-03.24
11NR6-501024-R1R(Golden),
11NR6-501024-T1R(Normal)

架高式 DVI-I



★Update 2015-03.24
11NR6-501024-N1R(Golden),
11NR6-501024-L2R(Normal)



平躺式 DVI-I
11NR6-501029-K1R

Gigabyte Technology

Title: FP,F_USB,USB PWR,BZ

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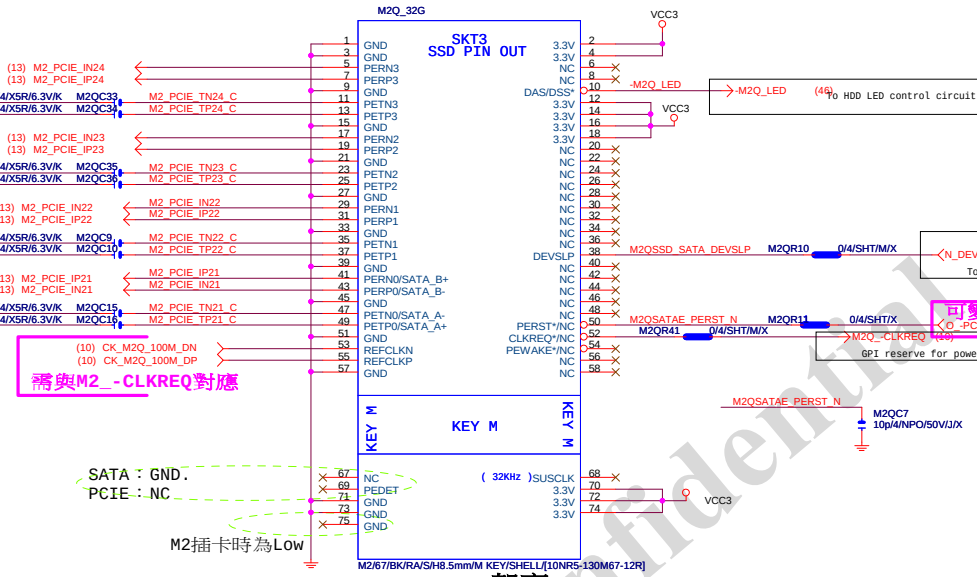
Rev 0.1

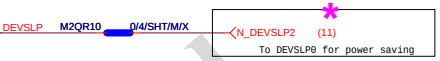
M.2 Lane4 from PCH port24

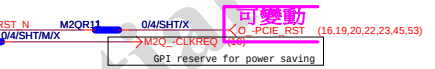
M.2 Lane3 from PCH port23

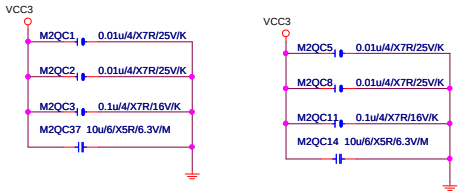
M.2 Lane2 from PCH port22

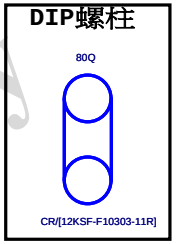
M.2 Lane2 from PCH port21

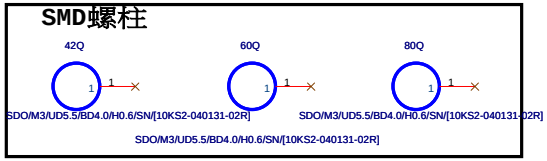


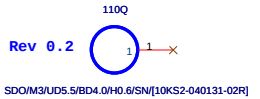












Gigabyte Technology		
Title: M.2 X4		
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
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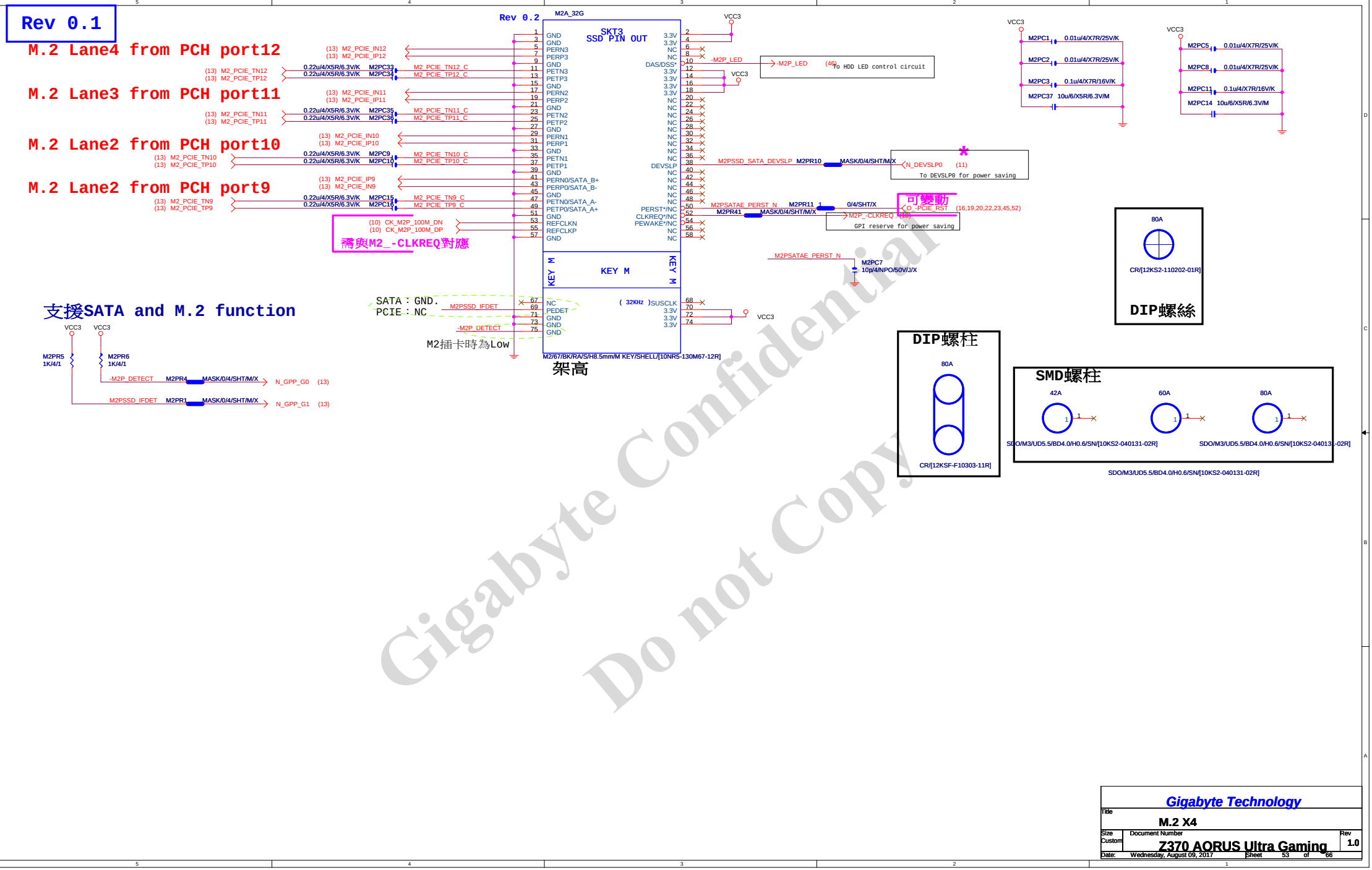


EMI/ESD R0.1

CLOSE SIO

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

(12,16,29,45,49,66) N_-SLP_S3

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

(12,16,30,45,65) N_-S4_S5

CLOSE PCH

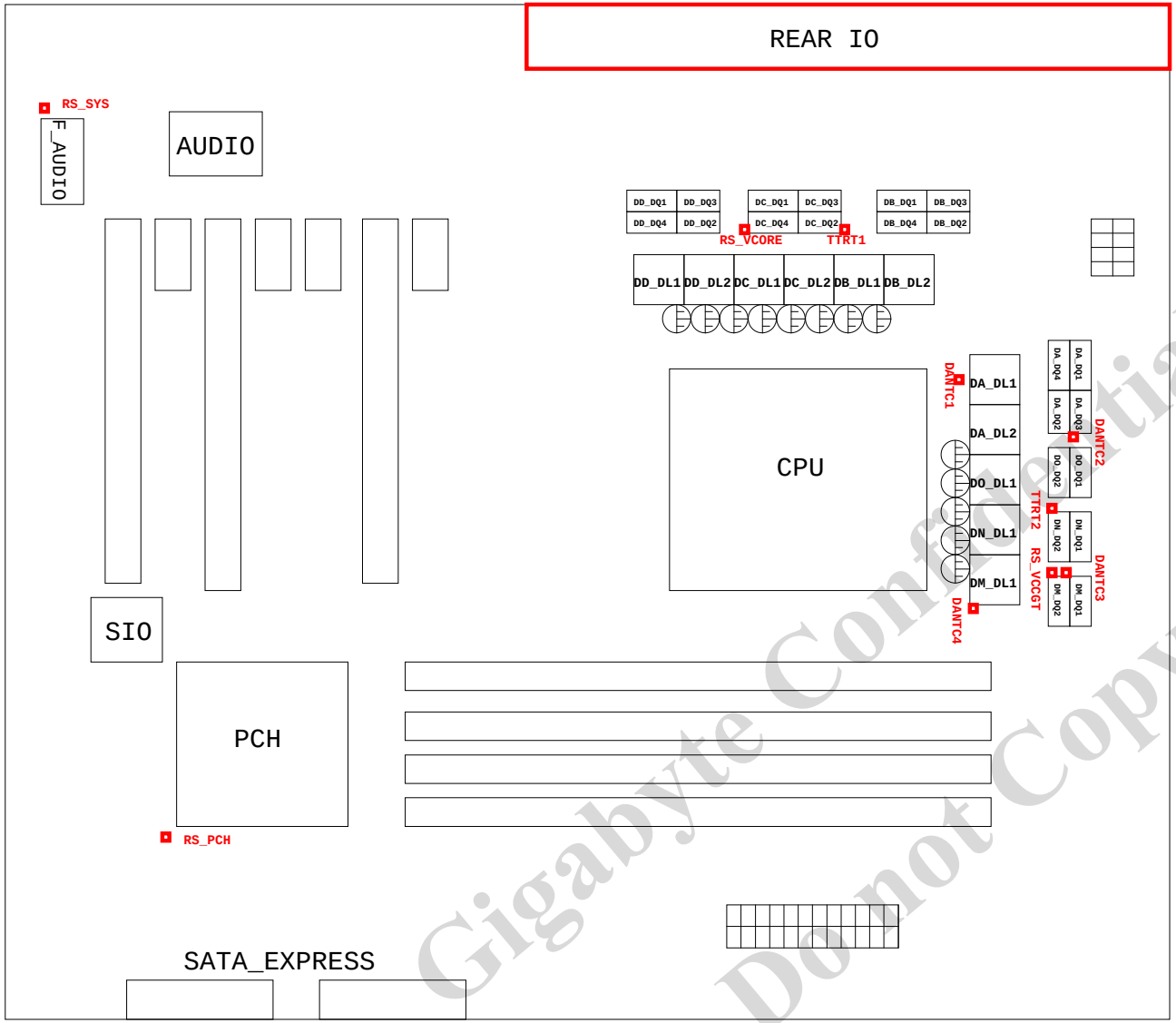
EMIC4
100p/4/NPO/50V/J/X

(4,12) N_CPUPWROK

+12V — EMIC3 0.01u/4/X7R/25V/K/X — VCC3

GIGABYTE™

Title: EMI/ESD		
Size: A	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
Date: Wednesday, August 09, 2017	Sheet 54 of 66	



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

Gigabyte Technology

Title: NTC MAP

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

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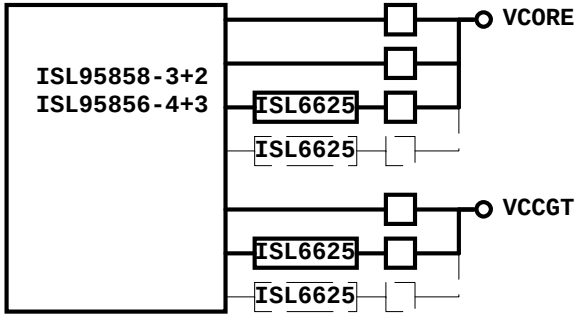
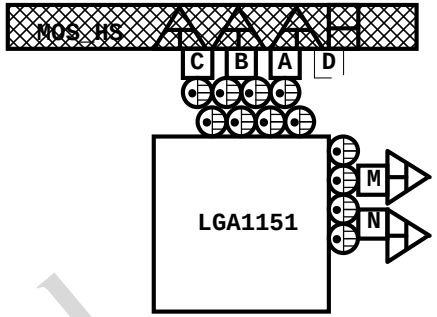
POWER BLOCK MAP

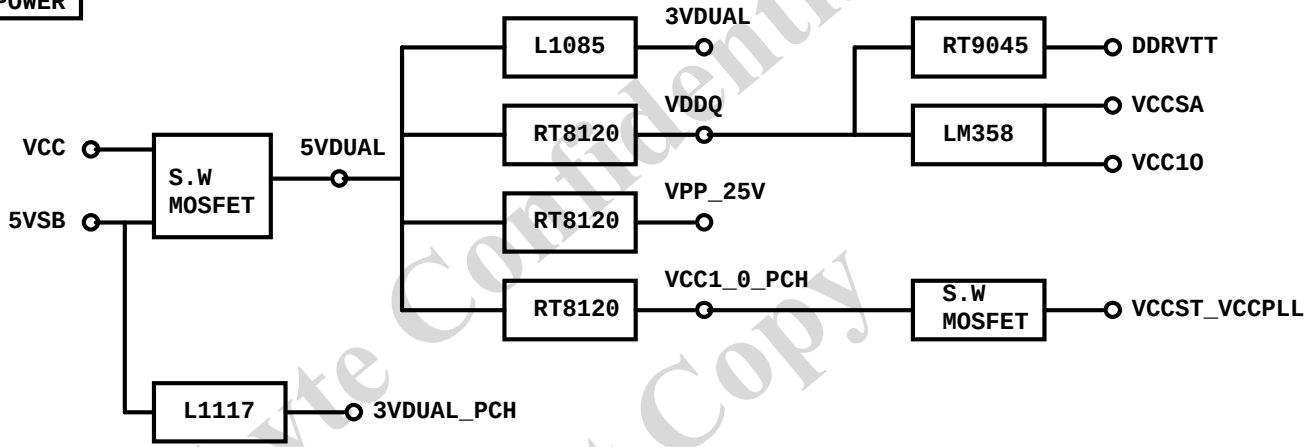
- CPU: VCORE, VCCGT, VCCSA, VCCIO, VDDQ, VCCST_VCCPLL, VCCSFUSEPRG
- DDR4: VDDQ, DDRVTT, VPP_25V, VDDSPD(VCC3)
- PCH: VCC1_0_PCH, VCC1_0_PCH_DSW, VCC10_VCCF24_1P0, VCC10_VCCAMPHYPLL, VCC10_VCCAPLL, VCC3_PCH, 3VDUAL_PCH, VCC3, N_RTCVDD
- IT8628: IT_VCCH, IT_AVCC, 2_5LEVEL
- HM: +12V, VCC, VCC3, VCORE,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

VCORE/VCCGT

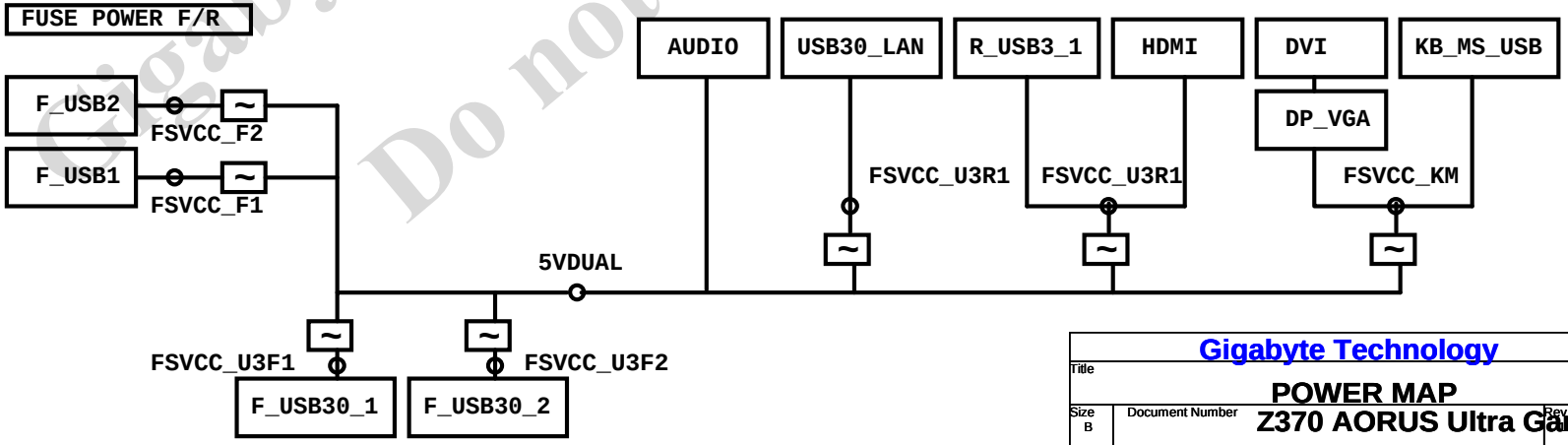




POWER



FUSE POWER F/R



Gigabyte Technology			
Title: POWER MAP			
Size: B	Document Number: Z370 AORUS Ultra Gaming		Rev: 1.0
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固態電容料號.請自行修改

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

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

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

IRON CHOKE

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

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

Ferrite

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

BEAD

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

PWM料號

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

REGULATOR

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

GIGABYTE™

Title: RT8120_DDR4 POWER

Size: Custom | Document Number: Z370 AORUS Ultra Gaming | Rev: 1.0

Date: Wednesday, August 09, 2017 | Sheet 57 of 66

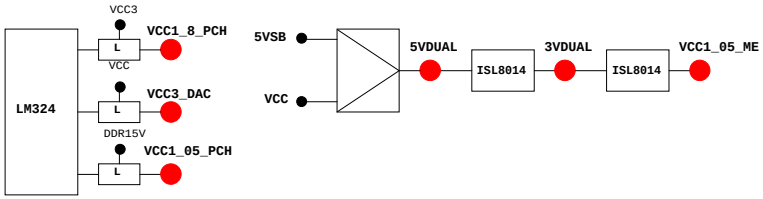
PCH GPIO LIST TABLE

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

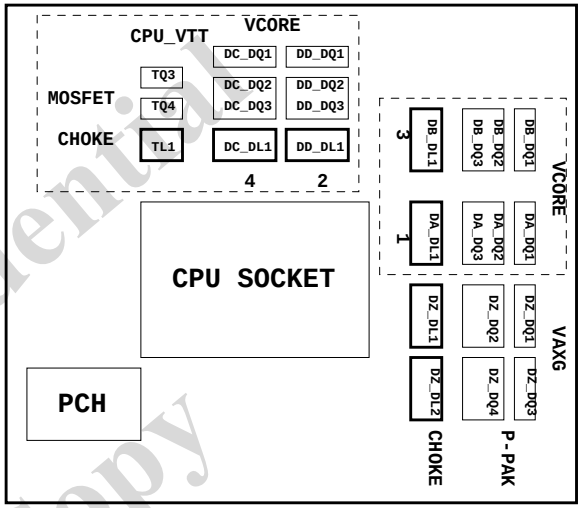
Super I/O ITE8720 GPIO Table

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

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



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

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

Gigabyte Technology
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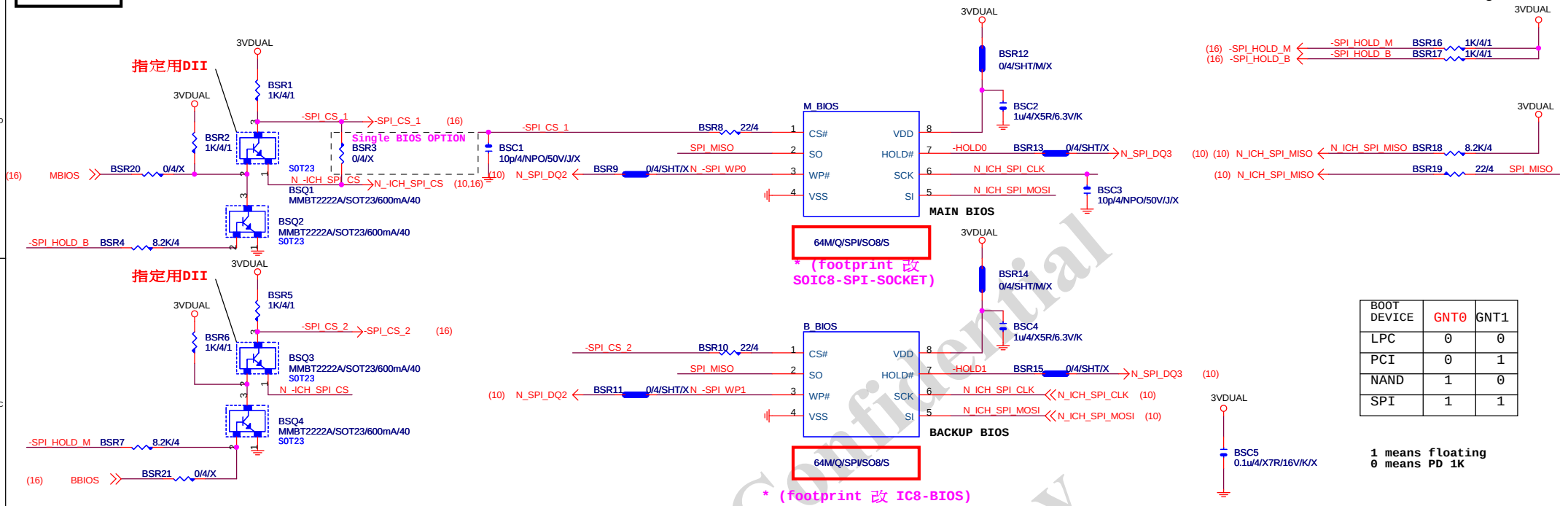
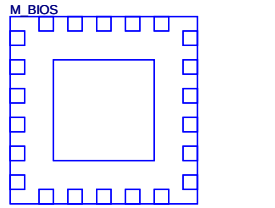
DUAL BIOS

MOSI For DMI RX Termination Voltage



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

1 means floating
0 means PD 1K



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

* 試產先上 ， PVT 移除

Gigabyte Technology		
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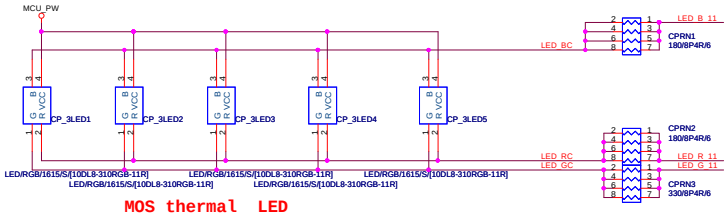
Rev 2.0

第一區 LED

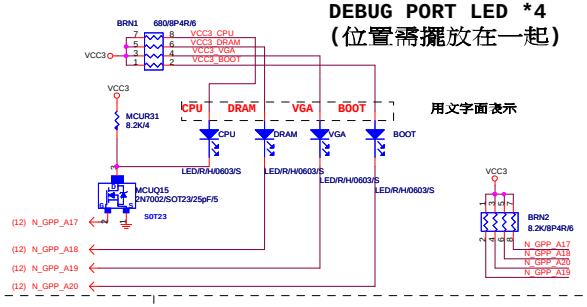
FOR CPU 正發光 LED*4
(在CPU CHOKE之間,MOS_HS下方,不外露)



MOS thermal LED

DEBUG PORT LED *4

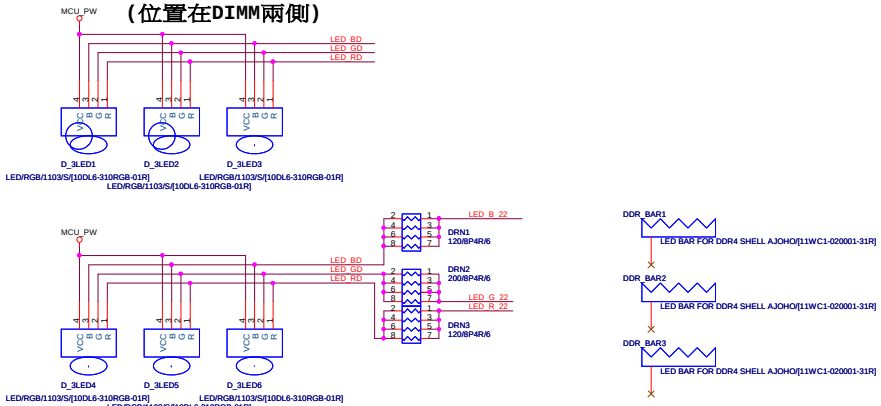
(位置需擺放在一起)



N_GPP_A17	CPU DEBUG
N_GPP_A18	DDR DEBUG
N_GPP_A19	VGA DEBUG
N_GPP_A20	BOOT DEVICE DEBUG
N_GPP_A21	XMP LED SWITCH
N_GPP_A22	TURBO LED SWITCH
N_GPP_D12	LED_IO LED SWITCH

第二區 LED

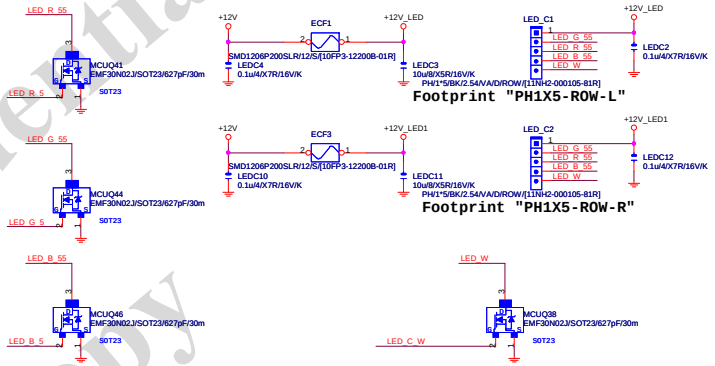
FOR DIMM 側發光 LED*12
(位置在DIMM兩側)



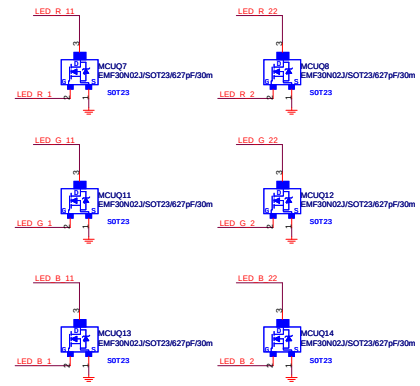
第五區 LED

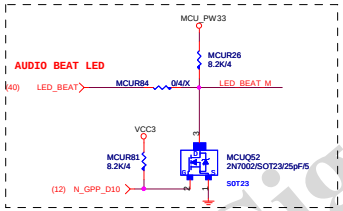
燈條 LED (LED_C1放在PCB左邊板邊位置)
燈條 LED (LED_C2放在PCB右邊板邊位置)

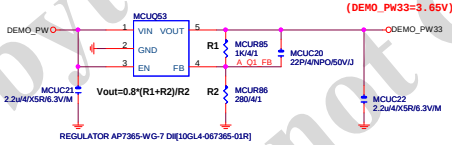
第五區 LED CONTROL

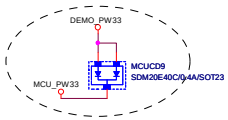


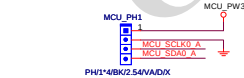
第一區 LED CONTROL　第二區 LED CONTROL

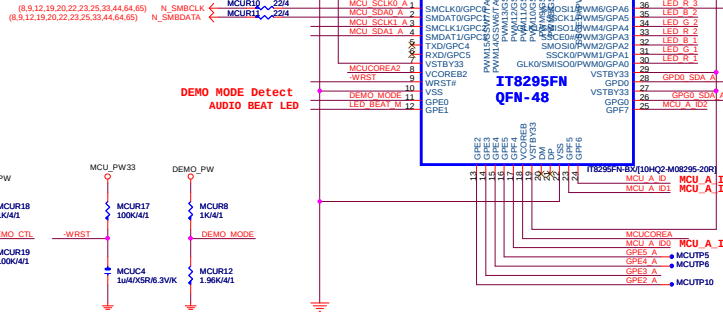


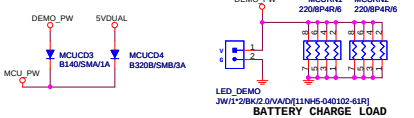


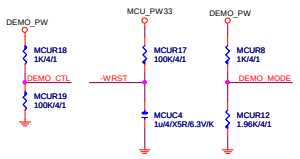












GIGABYTE™

Title	CPU / DDR / MCU LED	
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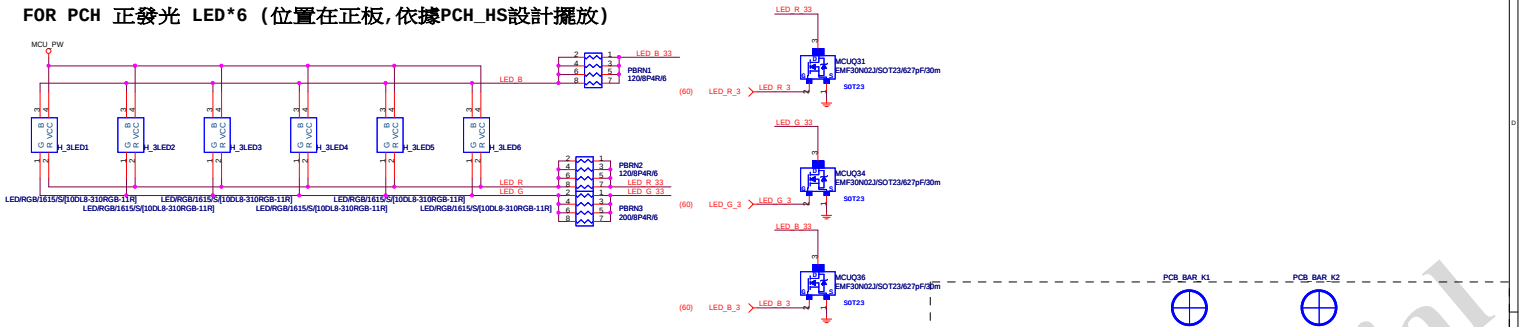
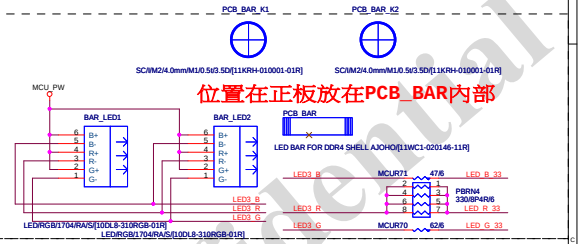
Rev 2.0

第三區 LED

第三區 LED CONTROL

FOR PCH 正發光 LED*6 (位置在正板,依據PCH_HS設計擺放)

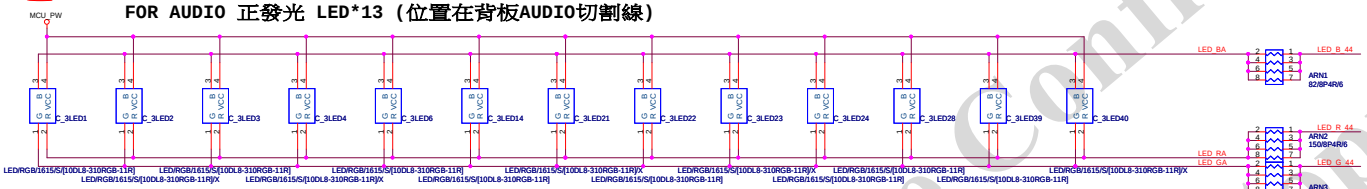


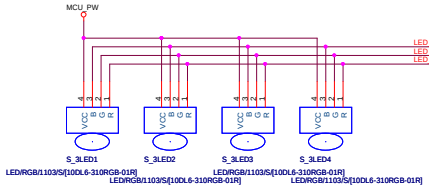


位置在正板放在PCB_BAR內部

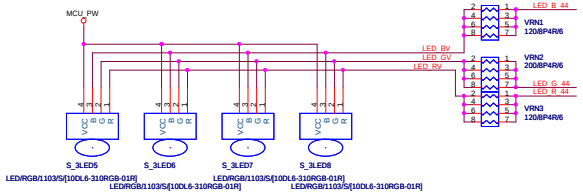
第四區 LED

FOR AUDIO 正發光 LED*13 (位置在背板AUDIO切割線)



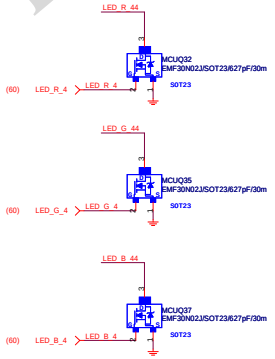


FOR PCIEX16 側發光 LED*4
(位置在PCIEX16 SLOT兩側各4顆)



FOR PCIEX8 側發光 LED*4
(位置在PCIEX8 SLOT兩側各4顆)

第四區 LED CONTROL



GIGABYTE™

Title	MODEL / PCB /AUDIO/PCIE LED	
Size: Custom	Document Number: Z370 AORUS Ultra Gaming	Rev: 1.0
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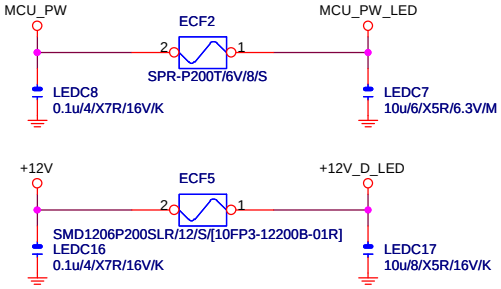
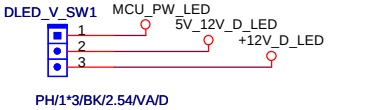
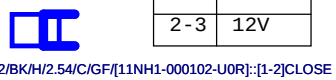
Rev 2.02

第六區 LED（靠近左上板邊位置）

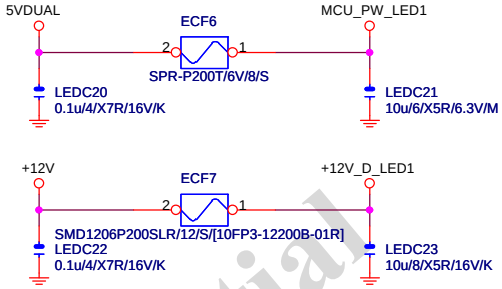


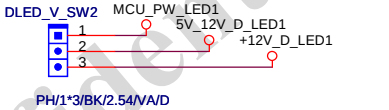


DLED_V_SW1	
1-2	5V
2-3	12V

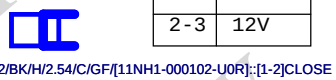


第七區 LED（靠近右下DDR板邊位置）

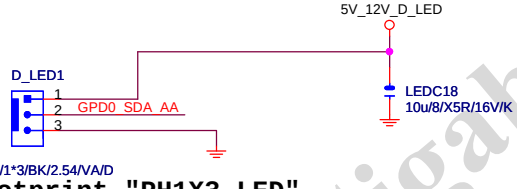




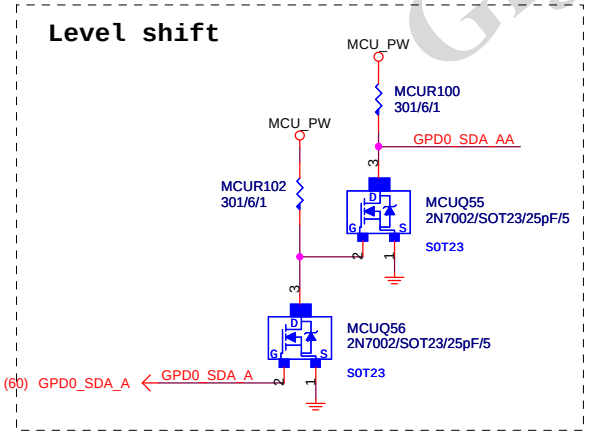
DLED_V_SW2	
1-2	5V
2-3	12V



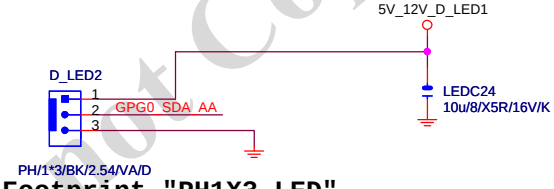
Digital LED Strip1



Footprint "PH1X3-LED"



Digital LED Strip2



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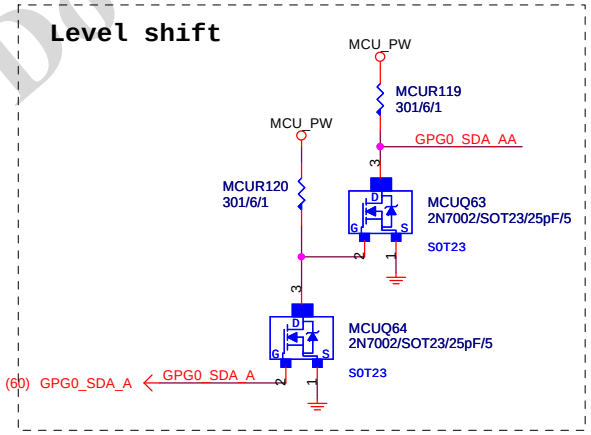

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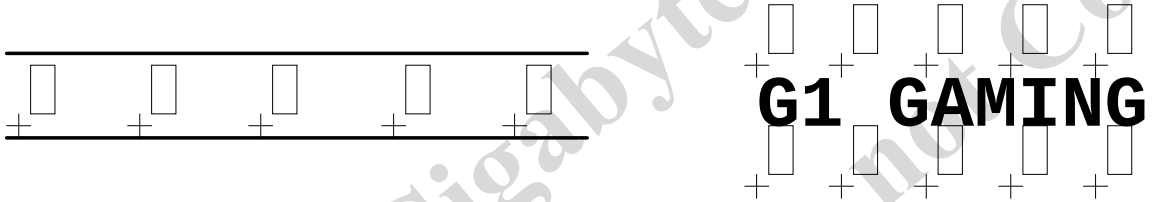
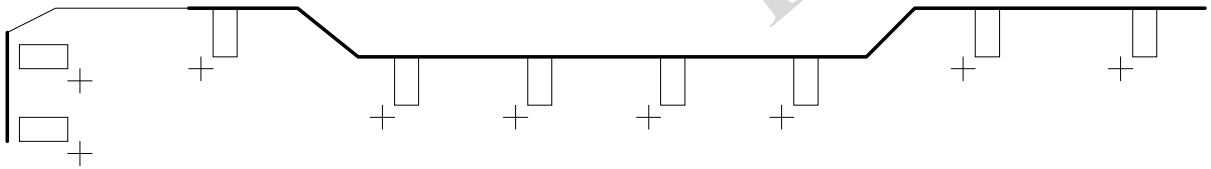
RGB LED LAYOUT 注意事項 :

1. **Debug LED (各LED依CPU/DRAM/VGA/BOOT個別位置擺放)**
2. 背板 **RGB LED** 方向整板請統一如下
   (整板正極可統一朝下或朝上)
3. 正板 **RGB LED** 統一方向即可
4. **MCU_PW & MCU_PW33電源一律走20mils**
5. **ECF1,ECF2,ECF3,ECF5** 兩端電源走**80mils**或用鋪銅方式加粗
6. **MCU LED** 出**pin**的走線**4mils,**如**:LED_R_1,LED_G_1,LED_B_1 .....**
7. **LED RGBW rule :W/S=10/5 mils** 如**:LED_R_11,LED_G_11,LED_B_11..**
   (包含從晶體到排阻到LED的net)
8. **Digital LED NET rule W/S=4/8 mils**
   GPD0_SDA_B,GPD0_SDA_BB,GPD0_SDA_C,GPD0_SDA_CC

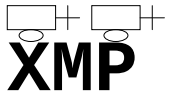
PCB板邊透光model name鏤空+背面 RGB LED



Audio Ground切割線+背面 RGB LED



"XMP"字樣鏤空+背面 RGB測發光 LED



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USB_DAC_A

F_USB30_1

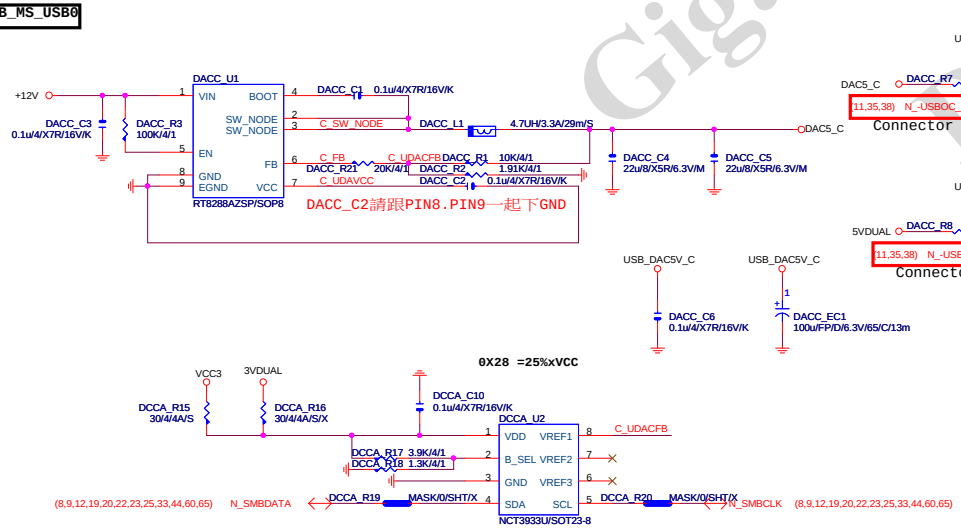
Rev 0.2

USB_DAC_B

F_USB30_2

USB_DAC_C

KB_MS_USB0



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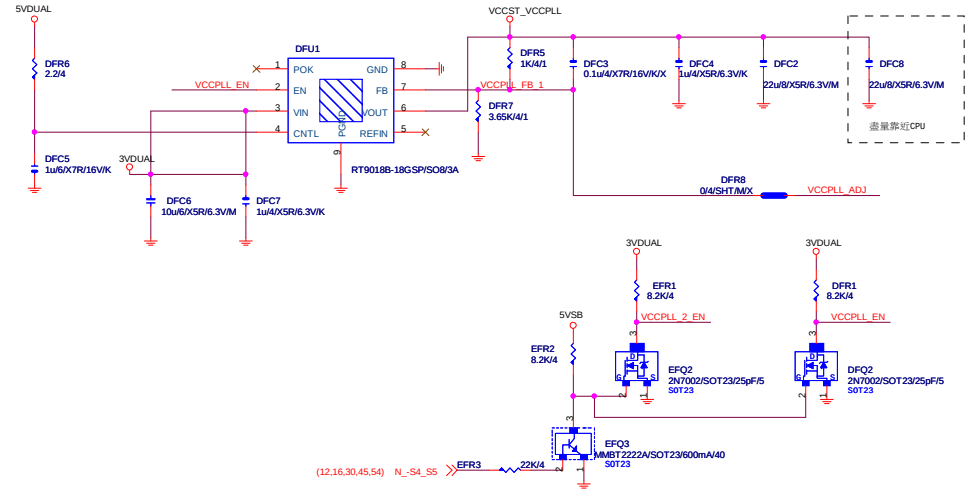
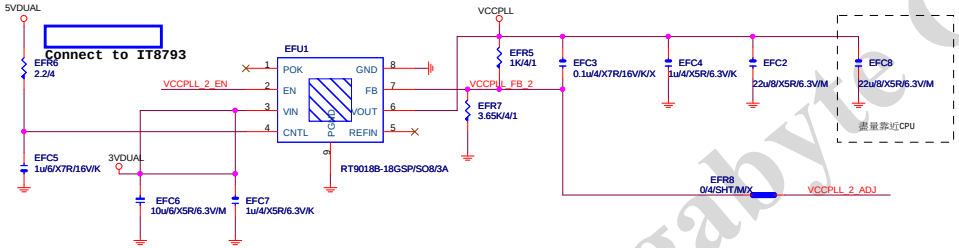
REV:0.12

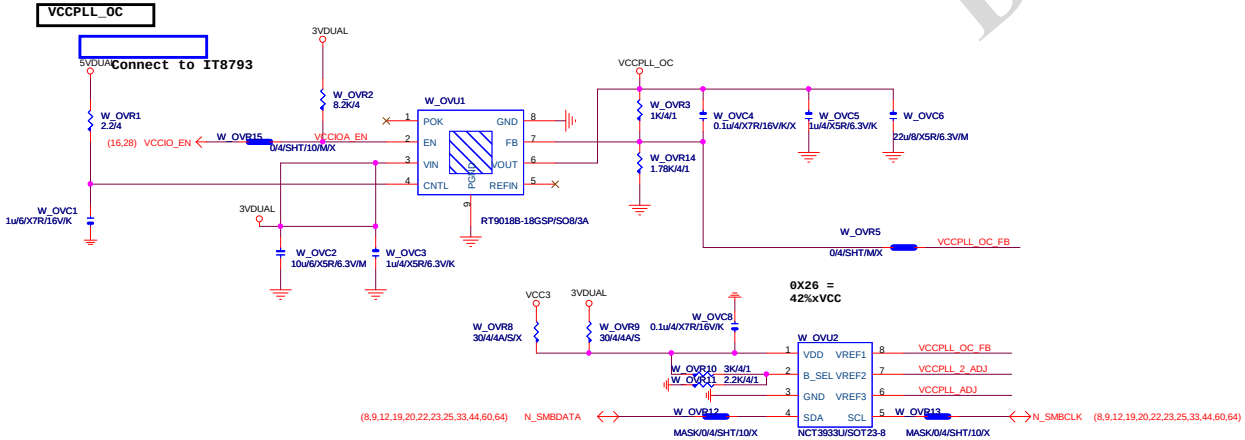
VCCST_VCCPLL 替換原先MOS開關線路



VCCPLL



VCCPLL_OC



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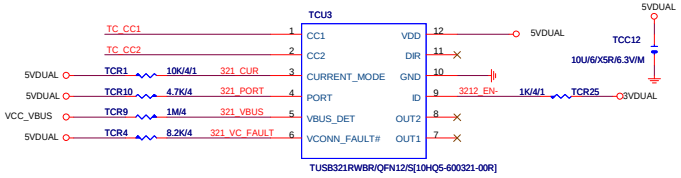
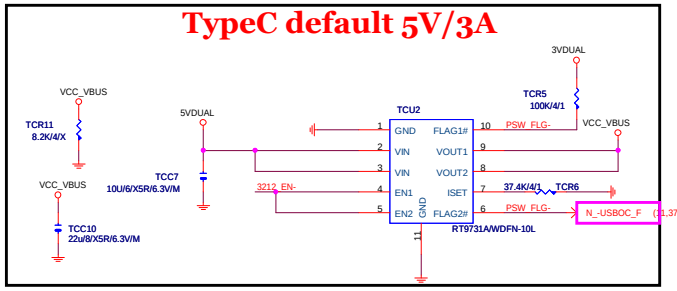
Type C U30 SW Rev. 1.02

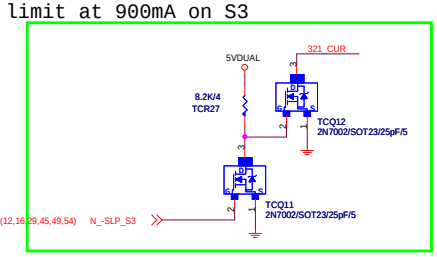


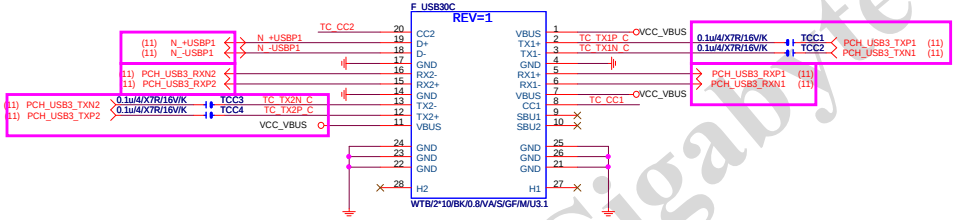


CURRENT MODE
L - Default current / Pull down to GND or NC
M - Medium (1.5A) current / Pull up to VDD 500K
H - High (3.0A) current / Pull up to VDD 10K

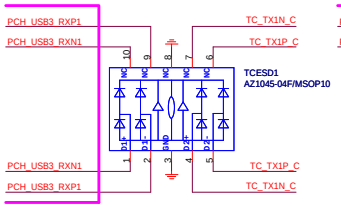
PORT
H - HOST
L - Device
NC - Dual Role

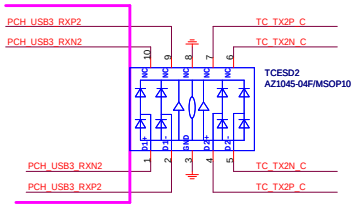
For VBUS current limit at 900mA on S3

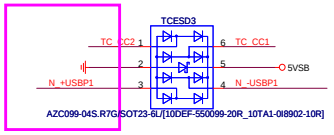




USB2.0 can be used the same source







Color markers can be changed by model

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