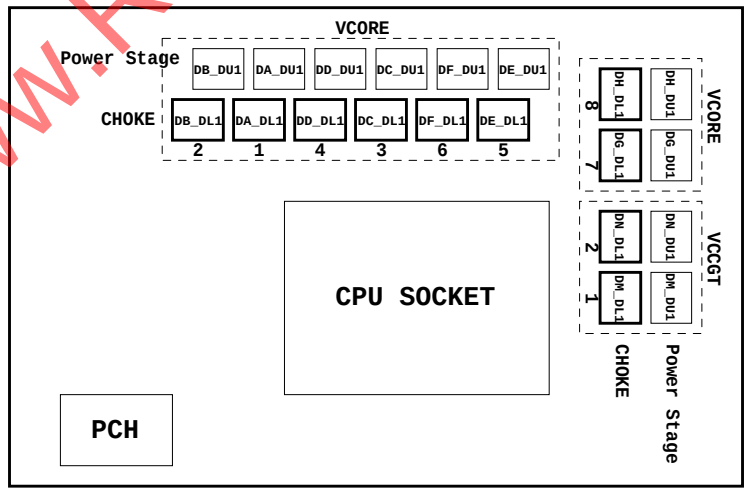
Model Name: Z370 AORUS Gaming 7-OP *Rev 1.01*

SHEET	TITLE	
01	COVER SHEET	
02	BOM & PCB MODIFY HISTORY	
03	BLOCK DIAGRAM	
04	CPU_LGA1151-A	(CFL_R0.4)
05	CPU_LGA1151-B_DDR4	(CFL_R0.4)
06	CPU_LGA1151-C-Z系列	(CFL_R0.41)
07	CPU_LGA1151-D	(CFL_R0.4)
08	DDR4 CHANNEL A 1,2	(CFL_R0.1)
09	DDR4 CHANNEL B 1,2	(CFL_R0.1)
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	(CFL_R0.5)
17	HMW	(CFL_R0.5)
18	FAN CTRL-CFL_SIO_879X 3A	(CFL_R0.2)
19	PCI EXPRESS X16 SLOT	(CFL_R0.4)
20	PCI EXPRESS X8 SLOT	(CFL_R0.4)
21	PCI EXPRESS X16 SWITCH	(CFL_R0.4)
22	PCI EXPRESS X4 SLOT(CPU)	
23	PCIEX4_S0~S1 SWITCH	
24	PCI EXPRESS X1 SLOTs	(REV0.3)
25	SATA	
26	ISL69138 PWM	(CFL_R0.1)
27	VCORE_ISL99227B-1	(CFL_R0.1)
28	VCORE_ISL99227B-2	(CFL_R0.1)
29	VCCGT_ISL99227	(CFL_R0.1)
30	VCCSA_VCCIO-Ferrite-Z系列	(CFL_R0.41)
31	RT8120_DDR_CHOKE-Ferrite-2L	(CFL_R0.4)
32	RT8120_VPP_CHOKE-合金	(CFL_R0.4)
33	RT8120_PCH-CHOKE-Ferrite	(CFL_R0.3)
34	DISCRETE POWER	
35	NCT3933	
36	ATX POWER , A_-PROCHOT	
37	KB_MS_USB	(REV0.9)
38	F_USB30	(REV0.9)
39	F_USB20	(REV0.9)
40	R_USB30	(REV0.9)
41	Realtek ALC1220	(CFL_R2.03)
42	REAR AUDIO JACK	(CFL_R2.03)
43	ESS9018Q2C_DAC	(CFL_R2.03)
44	DUAL LAN~A~KILLER E2500	(CFL_R2.01)
45	DUAL LAN~B~I219V	(CFL_R2.01)
46	DUAL USB30_LAN~I219_E2500	(CFL_R2.01)
47	IDT6V41630_CLK BUFFER	(CFL_R0.1)

SHEET	TITLE	
48	COM,TPM,THB	(REV0.9)
49	F_PANEL	(REV0.9)
50	ASM3142 USB31A_R	(CFL_R0.2)
51	TI HD3SS3220_B	(CFL_R0.2)
52	ASM3142 USB31B_R	(CFL_R0.2)
53	FRONT USB31	(CFL_R0.2)
54	HDMI	(REV0.9)
55	DP PORT	(REV0.9)
56	M.2 X4(M)	(REV0.1)
57	M.2 X4_S4~S5 SWITCH	(REV0.1)
58	M.2 X4(P)	(REV0.1)
59	M.2 X4(A)	
60	Dual BIOS	(CFL_R0.5)
61	RTS5411 4PORT HUB	
62	IT8795	(CFL_R0.1)
63	OC/ECP/POWER/RST/CMOS BUTTON	(REV0.9)
64	LAYOUT RULE	(CFL_R2.03)
65	CPU/IO/DDR LED/C_LED	(CFL_R2.03)
66	PCB/PCH/AUDIO/PCIE LED	(CFL_R2.03)
67	D_LED	(CFL_R2.03)
68	USB_DAC	(CFL_R0.51)
69	CPU POWER-Z系列	(CFL_R0.42)
70	EMI-ESD	(CFL_R0.1)
71	POWER MAP	
72	NTC MAP	
73	POWER零件使用表	
74	TABLE LIST	



Gigabyte Technology		
Title: Cover Sheet		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.0
Date: Wednesday, April 11, 2018	Sheet 1 of 74	

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Model Name:Z370 AORUS Gaming 7-OP

Rev 1.01

Component value change history

Data	Change Item	Reason
	first release	
2017/05/19	Z37ARG7-00-01 BOM	
	Z37ARG7-00-02 BOM	
2017/06/14	1.DAC8,DAC18,DAC22,DAC30->4.7n/4/X7R/50V/K 2.DLED_V_SW->	
	JP/1*2/BK/H/2.54/O/GF::[1-2]CLOSE 3.Add WR8 Net AB35,BSR20,BSR21	
	4.Add OR1,OR2,OR5,OR6,OR13,OR11,ORQ1,ORQ2,ORQ3,ORQ4,Net CPU_AB36_R,MBIOS,BBIOS	
	5.Add LAESD1,LAESD2,LBESD1,LBESD2 6.Page64 MCU1->10HQ2-M08295-10R	
	7.PCH->10HB1-03Z370-10R 8.DLED_V_SW JP->JP/1*2/BK/H/2.54/C/GF	
	9.ECU->IT8795 10.M2A_32G,M2P_32G,M2M_32G->10NR5-130M67-12R(金屬)	
	11.Add Net N_GPP_E7, ECR123->上件,ND2,NR81(For 0rpm fan stop control)	
	12.SPDIF_O footprint ->SPDIF_O-1X4-CUT2 13.New Dual BIOS	
	14.修改DAC POWER 15.CPU_FAN->FAN/1*4/GY/A3/2.54/VA/D/SN	
	16.OR1->47K/4/1,OR2->1K/4/1	
	Z37ARG7-00-03 BOM	
2017/07/20	1.LED_REAR->WF/1*4/BK/1.25/VA/D/SN/H4.7 2.Add BSR38,BSR39	
	3.Add M2M_32G_HS,80M螺柱不上,110M SMD螺柱->10KS2-040150-01R	
	,DIP螺絲改放在110M 4.DAR41->6.49K,DAC23->1.5n/4/X7R/50V/K,	
	DAR63->9.53K,DAC44->0.1u/4/X7R/16V/K,DAR52->91K,DAR44->340	
	5.DAR71->301,DAR72->47K,DAR43->0.1u,HS MOS GD 間電容不上件	
	6.Dual BIOS Switch上件,BSR38,BSR39/X, BSR36,BSR37上件	
	7.DDR4_4,DDR4_2,DDR4_3,DDR4_4->11SM1-521288-G1R 8.MOATR4->2.2/6	
	9.OR17,OR5,OQ10->X 10.SBR21,BSR22/X 11.ESCD1->BAT721C/SOT23/0.2A/S	
	Z37ARG7-00-04 BOM	
2017/07/28	1.TTQ1,TTQ2/X 2.MCU_PH1->X,MCU1->10HQ2-M08295-20R 3.PCH->10HB1-03Z370-20R	
	4.MOS_HS->12SP2-PT37G7-01R/02R , PCH_HS->12SP2-S09711-01R/02R	
	M2M_32G HK->[12SP1-S10205-11R/12R	
	Z37ARG7-00-10A BOM	
2017/08/14	1.OR1,OR18,OR4,OR16,OR2,OQ9,OQ13,OR6,OR13,OQ11,OQ12->X , WR8->X	
	2.RN14,RN15,RN16,RN17,RN18,RN19->上件 3.M_BIOS->10SL2-006008-31R/X	
	4.Del Net Name BOOT_VCCSA 5.Q9->EMF30N02J/SOT23/627pF/30m	
	6.M2M_32G 刪除12SP1-S10205-12R, MOS_HS刪除12SP2-PT37G7-01R	
	PCH_HS刪除12SP2-S09711-01R	
	Z37ARG7-00-10B BOM	
2017/09/13	1. WR124->1K/4/1,OR205,MOATR3->0/4	
	Z37ARG7-00-10K BOM	
2018/01/17	1. ESX1->10OC3-210000-30R/10OC9-P10000-00R	
	9MZ37AG7O-00-10A BOM	
2018/04/09	1. M2M_32G->12SP1-S10205-41R/42R 2.Add M2M_32G 20SD7-001032-00R	
	3.DLED_V_SW1,DLED_V_SW2->11NH1-000102-V1R 4.F_USB31C->10NH5-040210-91R/92R	
	5.M2M_32G,M2P_32G,M2A_32G->10NR5-130M67-13R 6.Add 80M->12KS2-110202-51R	

Circuit or PCB layout change

DATE	Change Item	Reason
2017/05/17 PCB:0.1	1.PCB first release 2.線路由Z270X-GAMING 7-10G-BOM.DSN修改	
2017/06/14 PCB:0.2	1.ADUIO_HS Rename to AUDIO_HS 2.LED_REAR Footprint->LED-1X4-1P25MM	
	3.SPDIF_O footprint ->SPDIF_O-1X4-CUT2 4.Swap LAESD1,LAESD2,LBESD2,LBUESD1	
	5.AUDIO_HS Footprint->X399_EXTEND_COVER 6.NX1 Footprint->XTALD-PCH	
2017/07/18 PCB:0.3	1.PUMP_FAN2 Rename to HPWR_FAN_PUMP , PUMP_FAN1 Rename to SYS_FAN5_PUMP	
	2.Add DLED_V_SW2,D_LED2, Add Net GPG0_SDA_A 3.D_LED2 Footprint->PH1X3-LED-R	
	4.Change LED_REAR Library 5.F_USB30_1 Rename to F_USB30	
	6.Del KMBC1 , KMBC2 Rename to KMBC1 7.Add IO_GP15, Del IO_GP95,	
	OR233,OR177,OR178,OR26 Change to 3VDUAL 8.ESCD1 footprint and capture value	
	9.REAR_HS Footprint->Z370_IO_COVER , AUDIO_HS Fottprint->Z370_AUDIO_COVER	
	10.Page15 PCH_HS Fottprint->BGAHSINK-Z370_AORUS_GAMING7	
	11.Add WR122,WR123,WQ2,WQ1,WR121,Net N_GPP_D19對外 12.Del 量測點	
	13.Del SB,BIOS_SW , -SPI_HOLD_MSW , Net EC_B_SW	
2017/07/27 PCB:0.4	1.VCORE VCCGT用ISL69138+ISL99227 Digital Power 2.Add RN14,RN15,RN16,RN17,RN18,RN19	
	3.Del Net N_GPP_C15 4.W_OVR2改接VCC3, W_OVC2改接VCC3 , W_OVR1改接VCC	
2017/08/09 PCB:1.0	1.W_OVR2改接3VDUAL, W_OVC2改接3VDUAL , W_OVR1改接5VDUAL	
	2.OR205,OR176,OR202,MAR113,MAR114,MAR115,MOATR3,TR2,FUS3ER4,ESR60	
	SSAR34,SSAR38, SSBR34,SSBR38->Short Pad 3.刪除VCORE , VCCGT OPA+MOS PROHOT	
2017/09/12 PCB:1.01	1.Add WR124,OR205,MOATR3->0 Ω	

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Title: BOM & PCB MODIFY HISTORY

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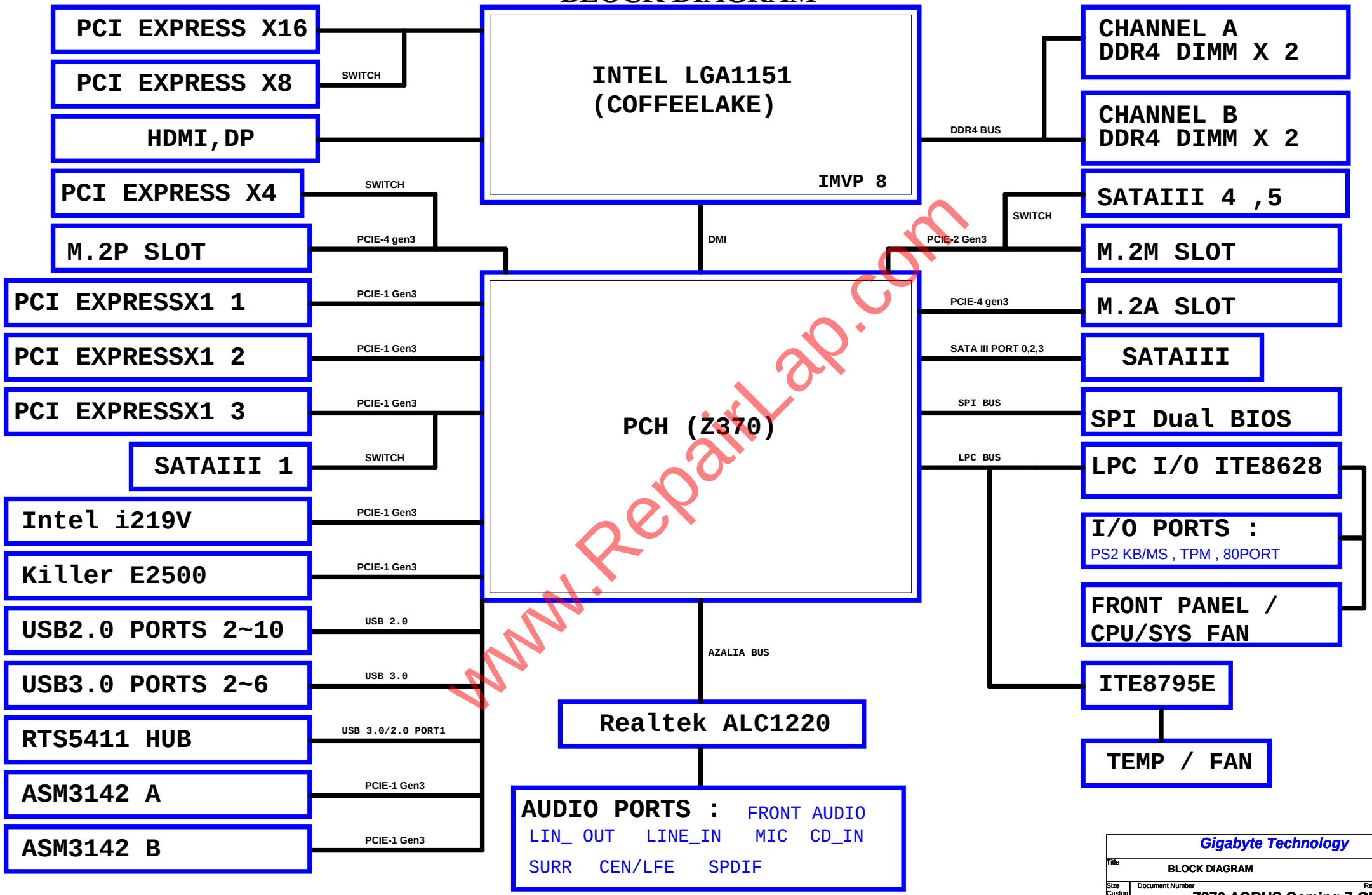
Model Name:Z370 AORUS Gaming 7-OP

BLOCK DIAGRAM



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Title: BLOCK DIAGRAM

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.1

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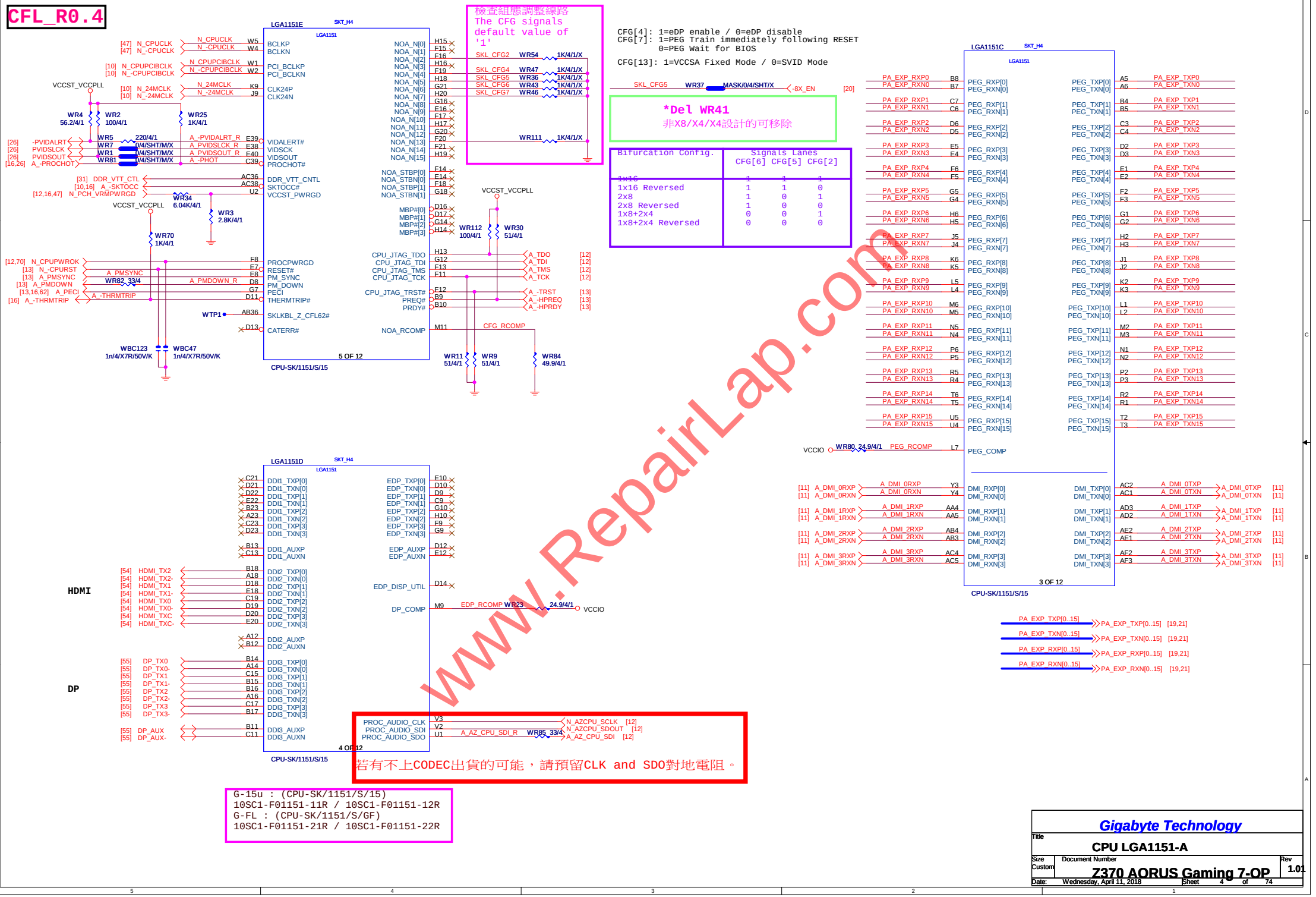
CFL_R0.4



Title	CPU LGA1151-A
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LGA1151A

SKT_H4

LGA1151

MDA0	AE38	DDR0_DQ[0]	DDR0_CKP[0]	AW18	M_DCLKA0
MDA1	AE37	DDR0_DQ[1]	DDR0_CKN[0]	AW18	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
MDA_ECC0	AU33	DDR0_ECC[0]	DDR0_DQSP[3]/DDR0_DQSP[5]	AV36	M_DQSA3
MDA_ECC1	AT33	DDR0_ECC[1]	DDR0_DQSP[4]/DDR1_DQSP[0]	AV7	M_DQSA4
MDA_ECC2	AW33	DDR0_ECC[2]	DDR0_DQSP[5]/DDR1_DQSP[1]	AU2	M_DQSA5
MDA_ECC3	AV31	DDR0_ECC[3]	DDR0_DQSP[6]/DDR1_DQSP[4]	AN2	M_DQSA6
MDA_ECC4	AU31	DDR0_ECC[4]	DDR0_DQSP[7]/DDR1_DQSP[5]	AJ2	M_DQSA7
MDA_ECC5	AV33	DDR0_ECC[5]			
MDA_ECC6	AW31	DDR0_ECC[6]	DDR0_DQSP[8]	AV32	M_DQSA8
MDA_ECC7	AY31	DDR0_ECC[7]	DDR0_DQSN[8]	AU32	M_-DQSA8

[8] MDA_ECC[0..7] <> MDA_ECC[0..7]

DDR CHANNEL A

1 OF12

LGA1151

CPU-SK/1151/S/15

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	AE7	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
MDB_ECC0	AR25	DDR1_ECC[0]	DDR1_DQSP[3]/DDR0_DQSP[7]	AN28	M_DQSB3
MDB_ECC1	AR26	DDR1_ECC[1]	DDR1_DQSP[4]/DDR1_DQSP[2]	AN12	M_DQSB4
MDB_ECC2	AM26	DDR1_ECC[2]	DDR1_DQSP[5]/DDR1_DQSP[3]	AP8	M_DQSB5
MDB_ECC3	AM25	DDR1_ECC[3]	DDR1_DQSP[6]	AL8	M_DQSB6
MDB_ECC4	AP26	DDR1_ECC[4]	DDR1_DQSP[7]	AG7	M_DQSB7
MDB_ECC5	AP25	DDR1_ECC[5]			
MDB_ECC6	AL25	DDR1_ECC[6]	DDR1_DQSP[8]	AN25	M_DQSB8
MDB_ECC7	AL26	DDR1_ECC[7]	DDR1_DQSN[8]	AN26	M_-DQSB8

[9] MDB_ECC[0..7] <> MDB_ECC[0..7]

DDR CHANNEL B

2 OF 12

DDR_VREF_CA	AB40	VREF_CAB
DDR0_VREF_DQ	AC40	
DDR1_VREF_DQ	AC39	VREF_DQB

CPU-SK/1151/S/15

[8] MODT_A[0..3] <> MODT_A[0..3]

[9] MODT_B[0..3] <> MODT_B[0..3]

[8] MDA[0..63] <> MDA[0..63]

[9] MDB[0..63] <> MDB[0..63]

[8] M_DQSA[0..7] <> M_DQSA[0..7]

[8] M_-DQSA[0..7] <> M_-DQSA[0..7]

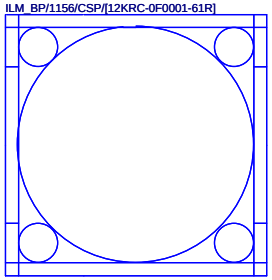
[8] MAAA[0..16] <> MAAA[0..16]

[9] MAAB[0..16] <> MAAB[0..16]

[9] M_DQSB[0..7] <> M_DQSB[0..7]

[9] M_-DQSB[0..7] <> M_-DQSB[0..7]

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

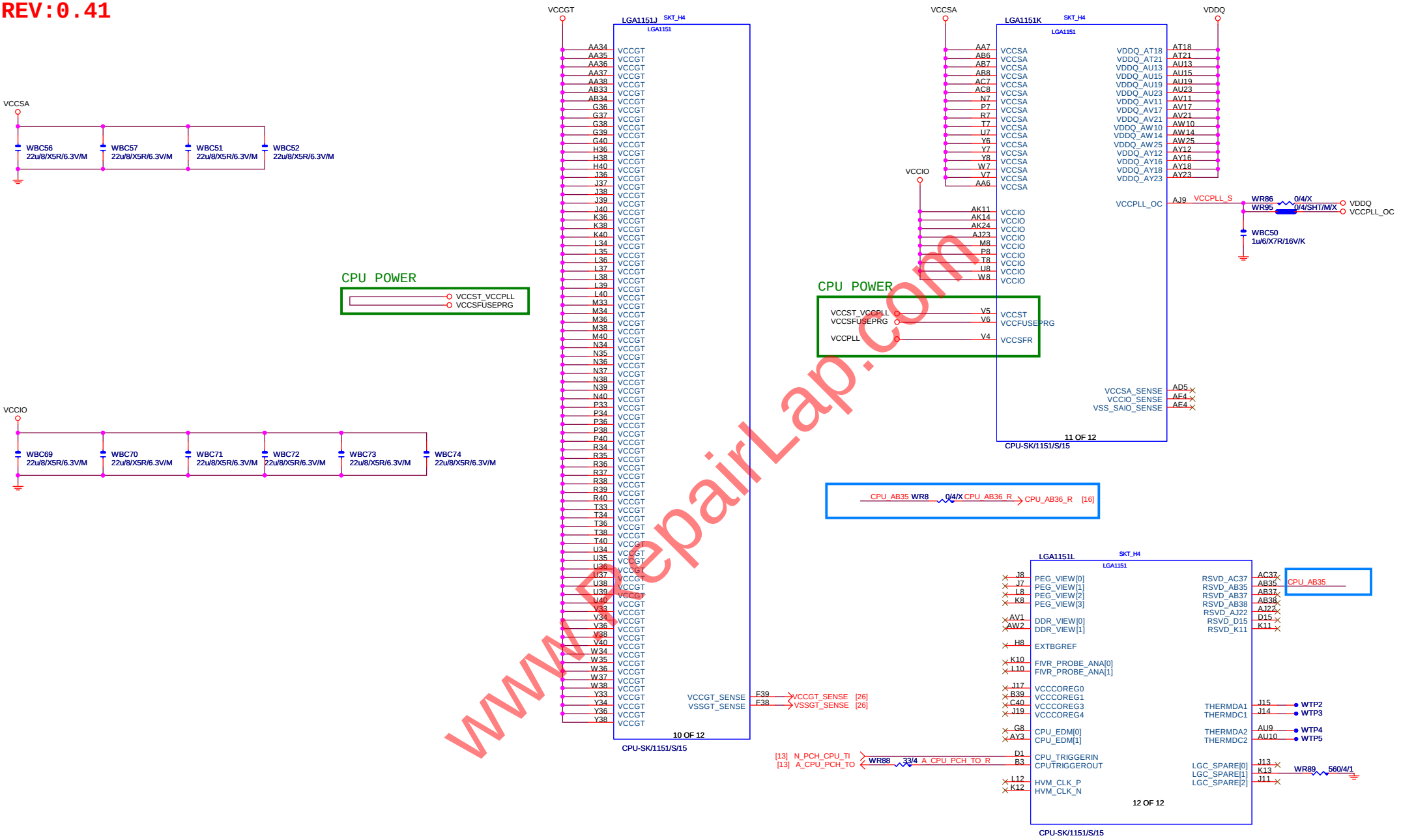


Need check the new CPU ME

CPU-SK/1151/S/15

Gigabyte Technology			
Title: CPU LGA1151-B			
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP		Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 5 of 74		

REV:0.41



Gigabyte Technology

Title: CPU LGA1151-C

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

Date: Wednesday, April 11, 2018 | Sheet 6 of 74

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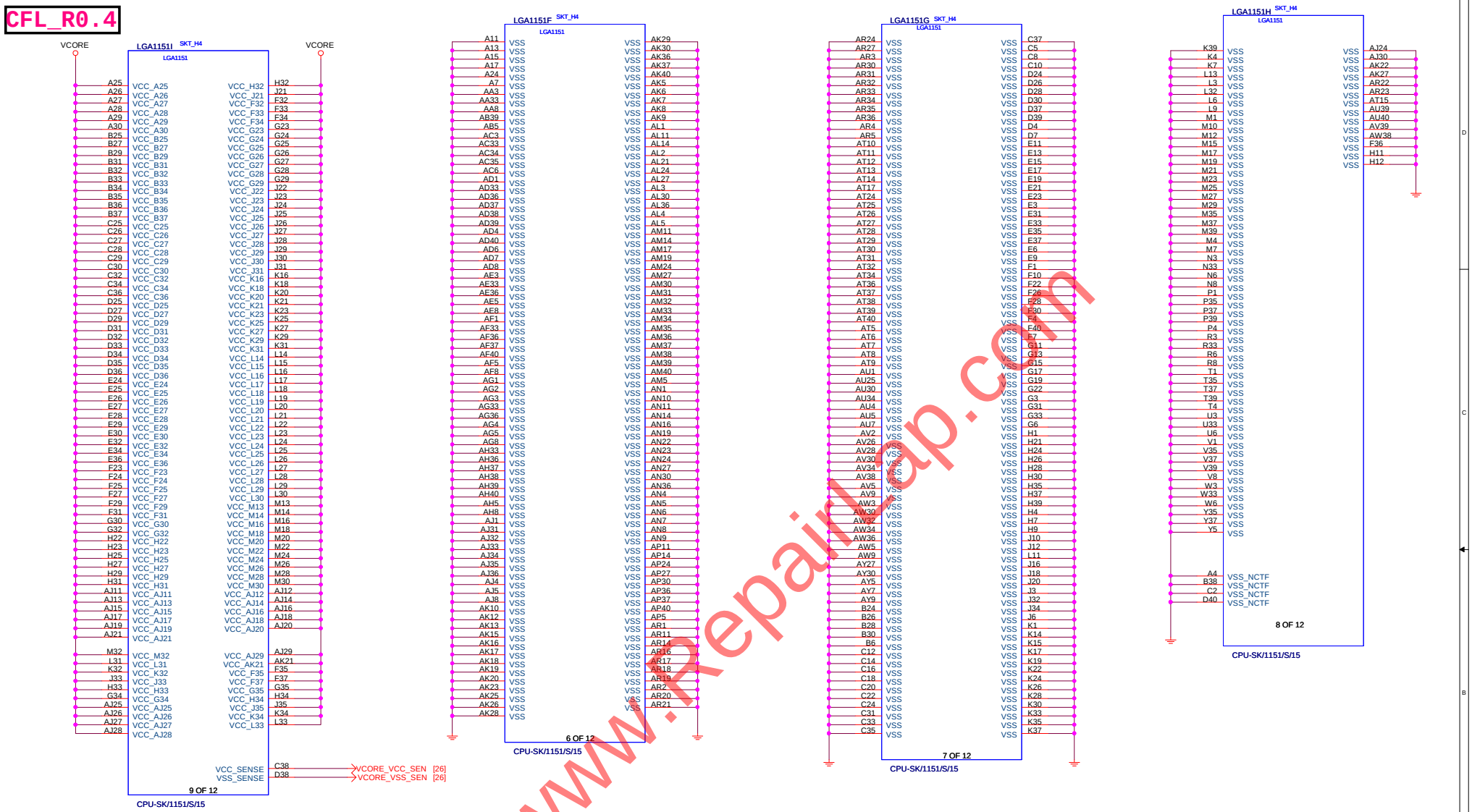
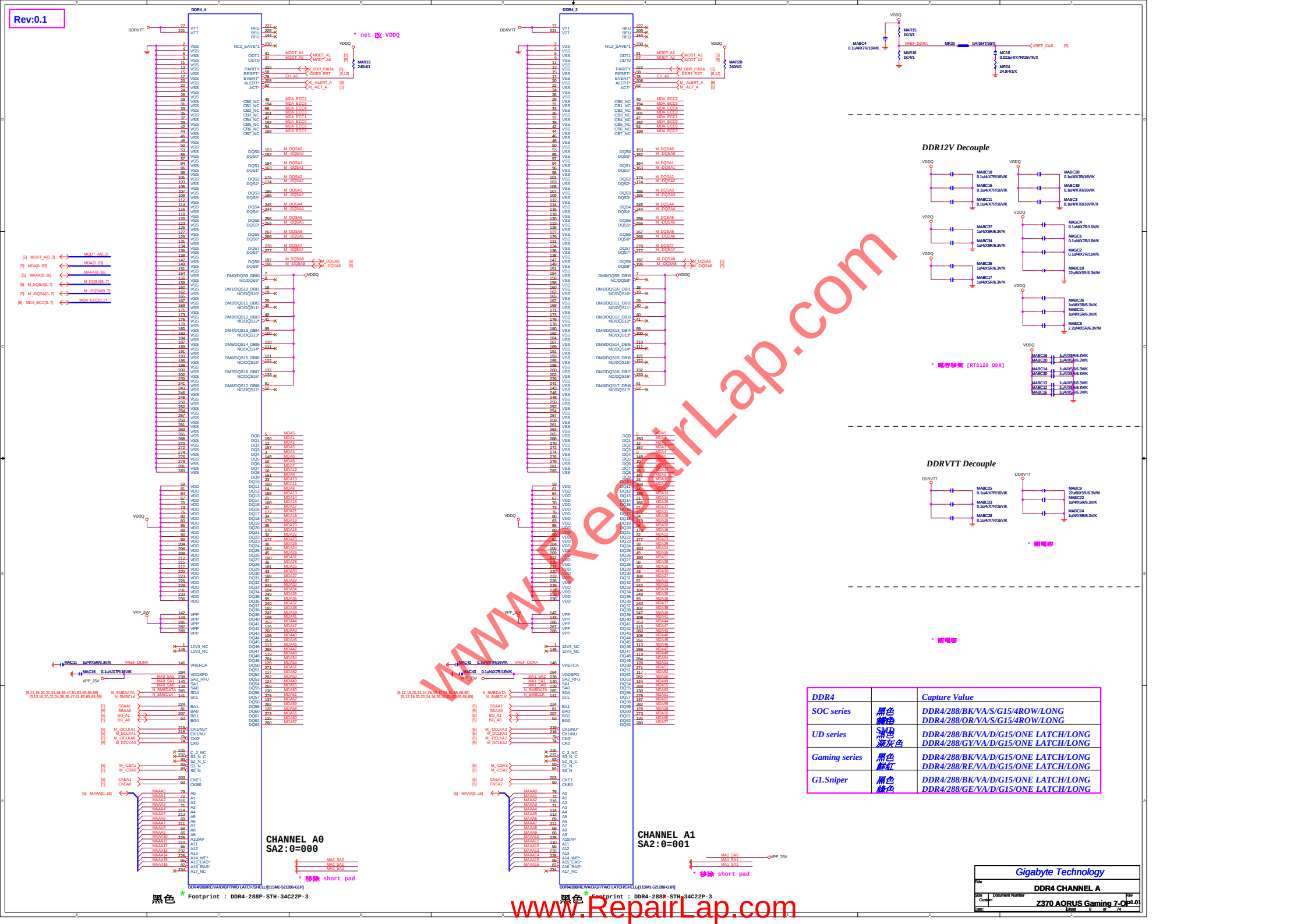


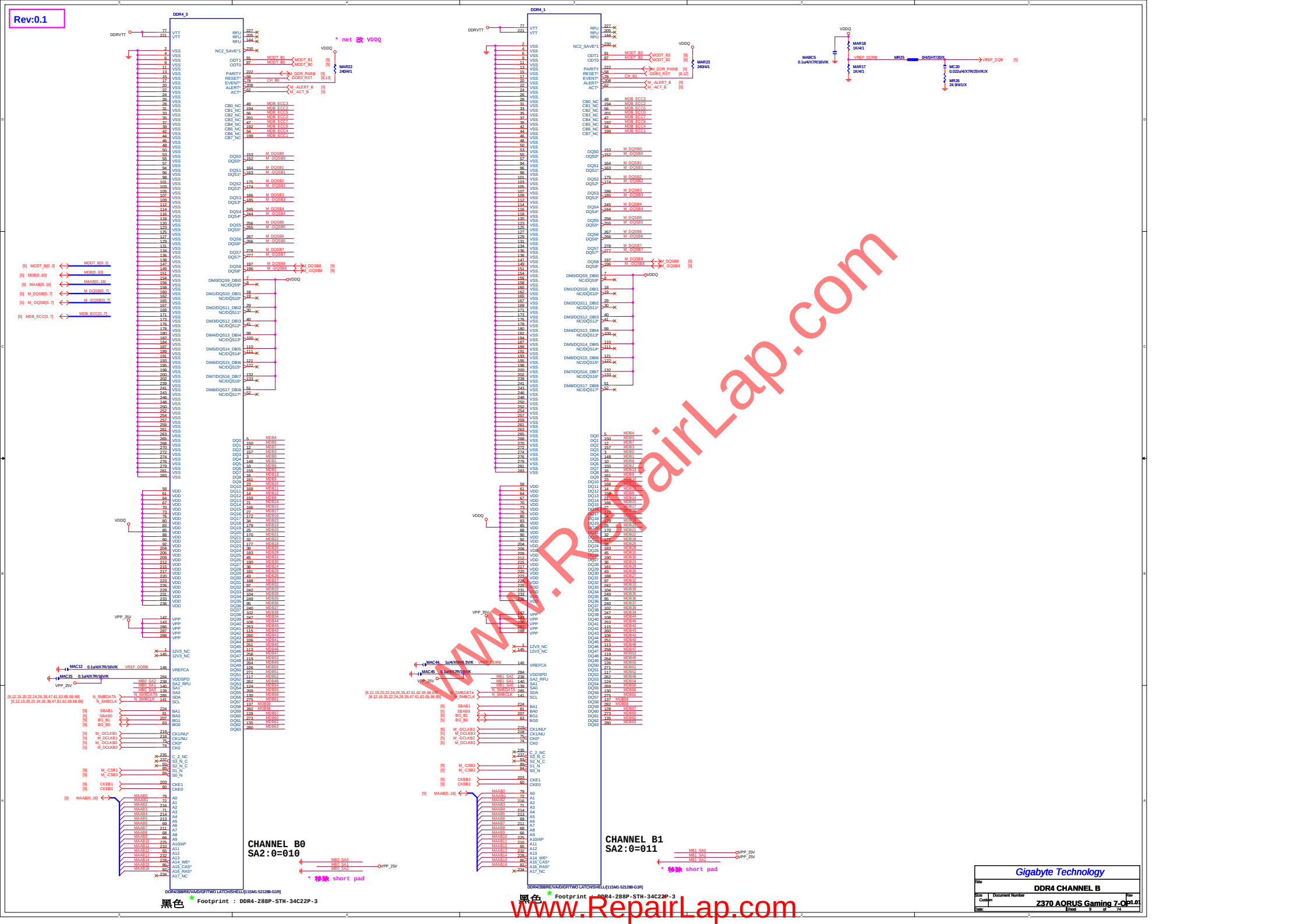
Gigabyte Technology		
Title: CPU LGA1151-D		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 7 of 74	

Rev:0.1



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

Gigabyte Technology			
Title: DDR4 CHANNEL A			
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP		Rev: 1.01
Date:	Sheet 8 of 74		


Rev:0.1
DDR4_3
DDR4_1
* net 改 VDDQ
CHANNEL B0
SA2:0=010
CHANNEL B1
SA2:0=011
* 移除 short pad
* 移除 short pad
黑色 * Footprint : DDR4-288P-STH-34C22P-3
黑色 * Footprint : DDR4-288P-STH-34C22P-3
DDR4/288PRE/VA/D/GF/TWO LATCH/SHELL/[11SM1-52128B-G1R]
DDR4/288PRE/VA/D/GF/TWO LATCH/SHELL/[11SM1-52128B-G1R]
Gigabyte Technology
DDR4 CHANNEL B
Z370 AORUS Gaming 7-OP
Rev1.01
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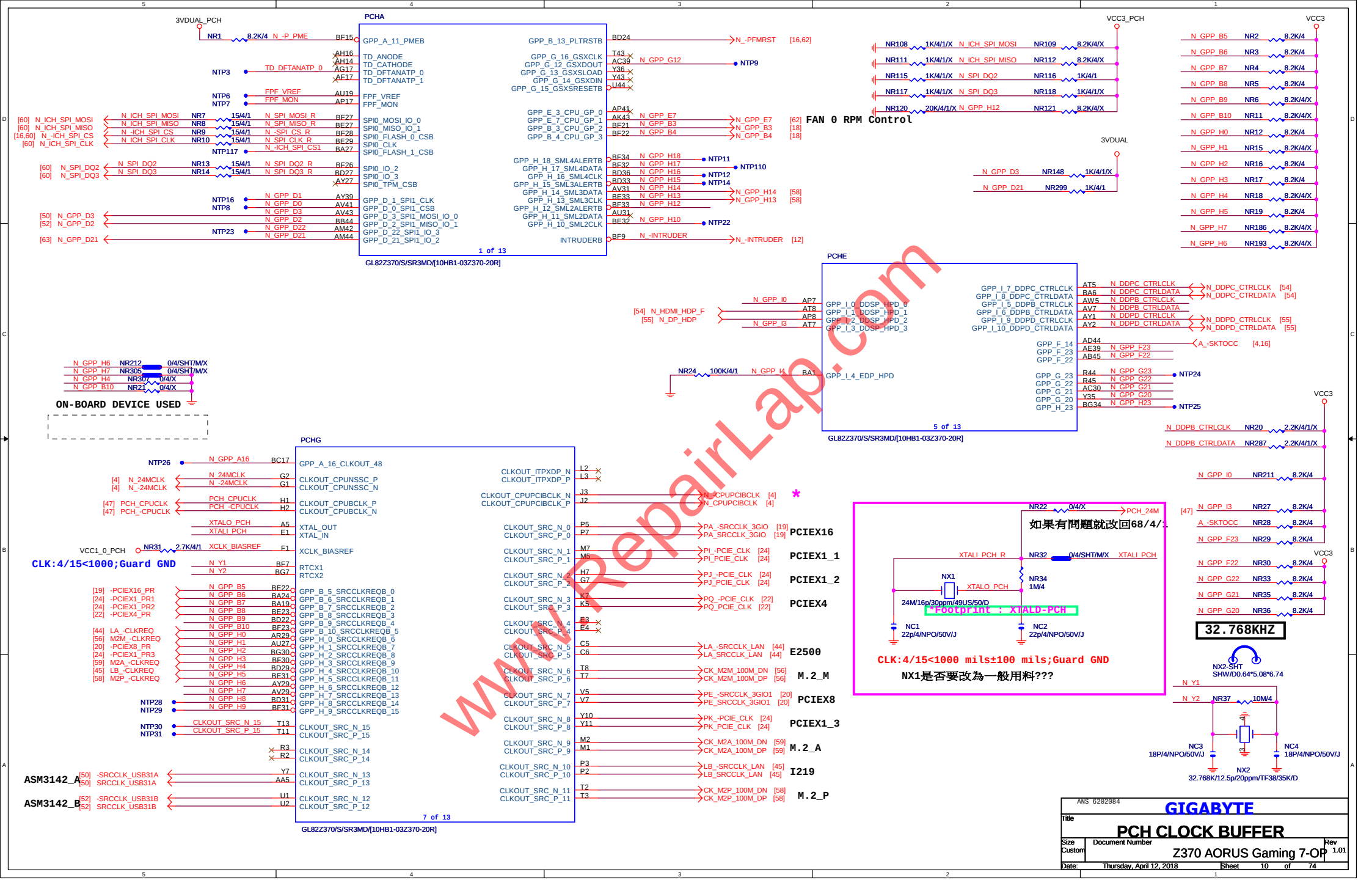
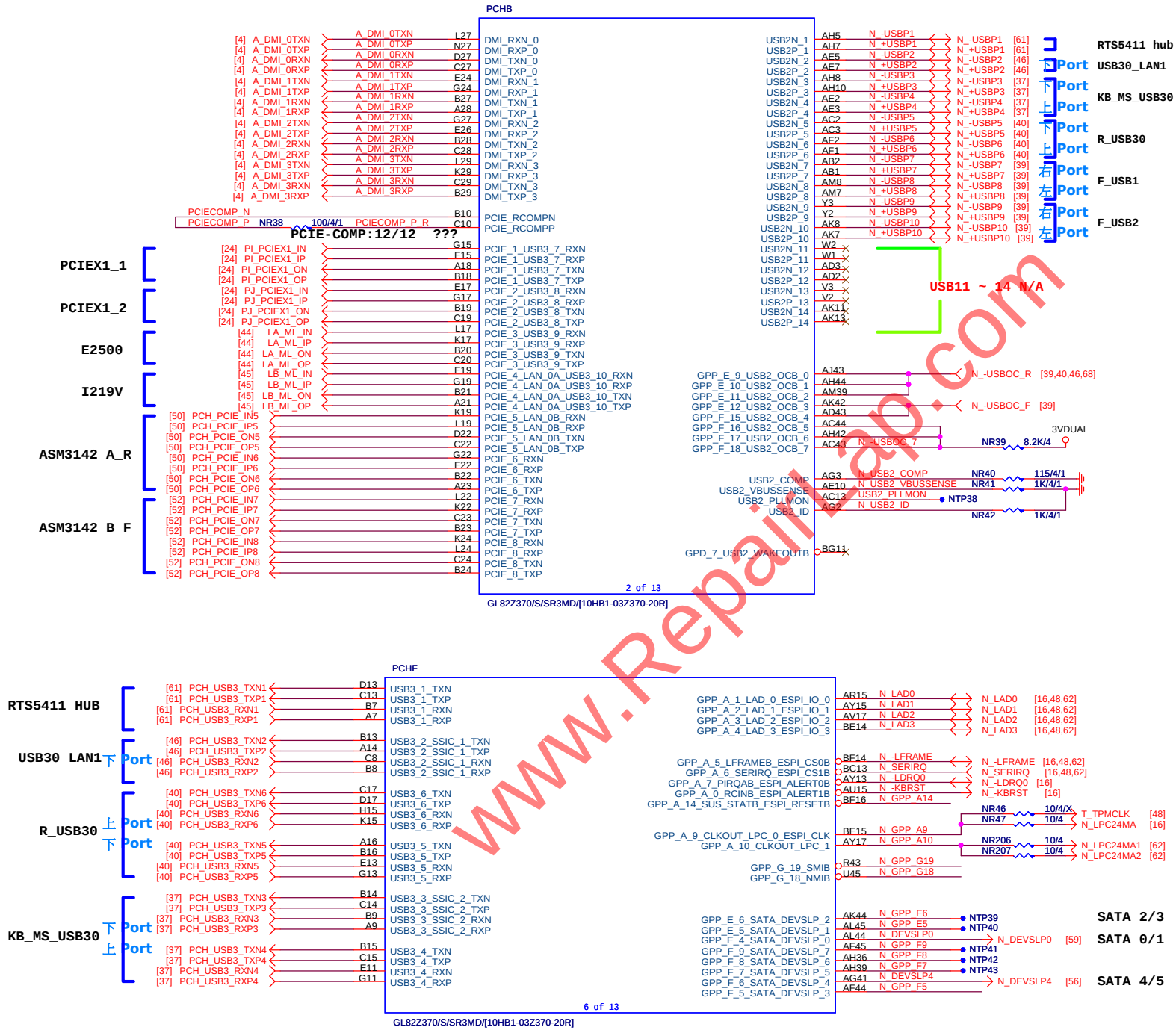




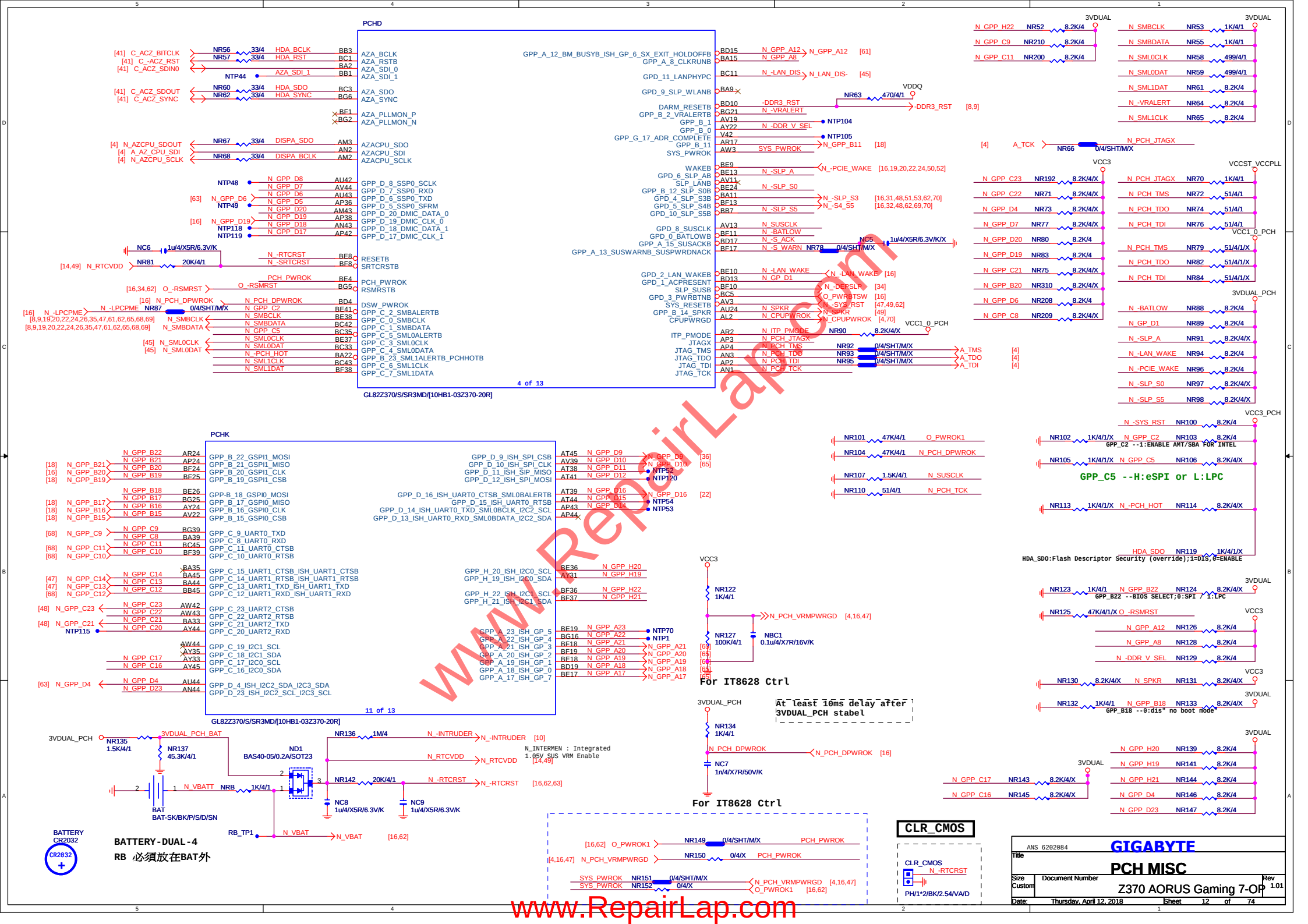
ANS 6202084

GIGABYTE

Title: PCH DMI,USB,PCIE

Size	Document Number	Rev
Custom	Z370 AORUS Gaming 7-OP	1.01

Date: Thursday, April 12, 2018 Sheet 11 of 74


PCHD
4 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
PCHK
11 of 13
GL82Z370/S/SR3MD/[10HB1-03Z370-20R]
For IT8628 Ctrl
For IT8628 Ctrl
At least 10ms delay after 3VDUAL_PCH stabel
GPP_C5 --H:eSPI or L:LPC
HDA_SDO:Flash Descriptor Security (override);1=DIS,0=ENABLE
GPP_C2 --1:ENABLE AMT/SBA FUR INTEL
GPP_B22 --BIOS SELECT;0:SPI / 1:LPC
GPP_B18 --0:dis" no boot mode"
BATTERY-DUAL-4
RB 必须放在BAT外
CLR_CMOS
GIGABYTE
PCH MISC
Z370 AORUS Gaming 7-OP
Rev 1.01
Thursday, April 12, 2018
Sheet 12 of 74
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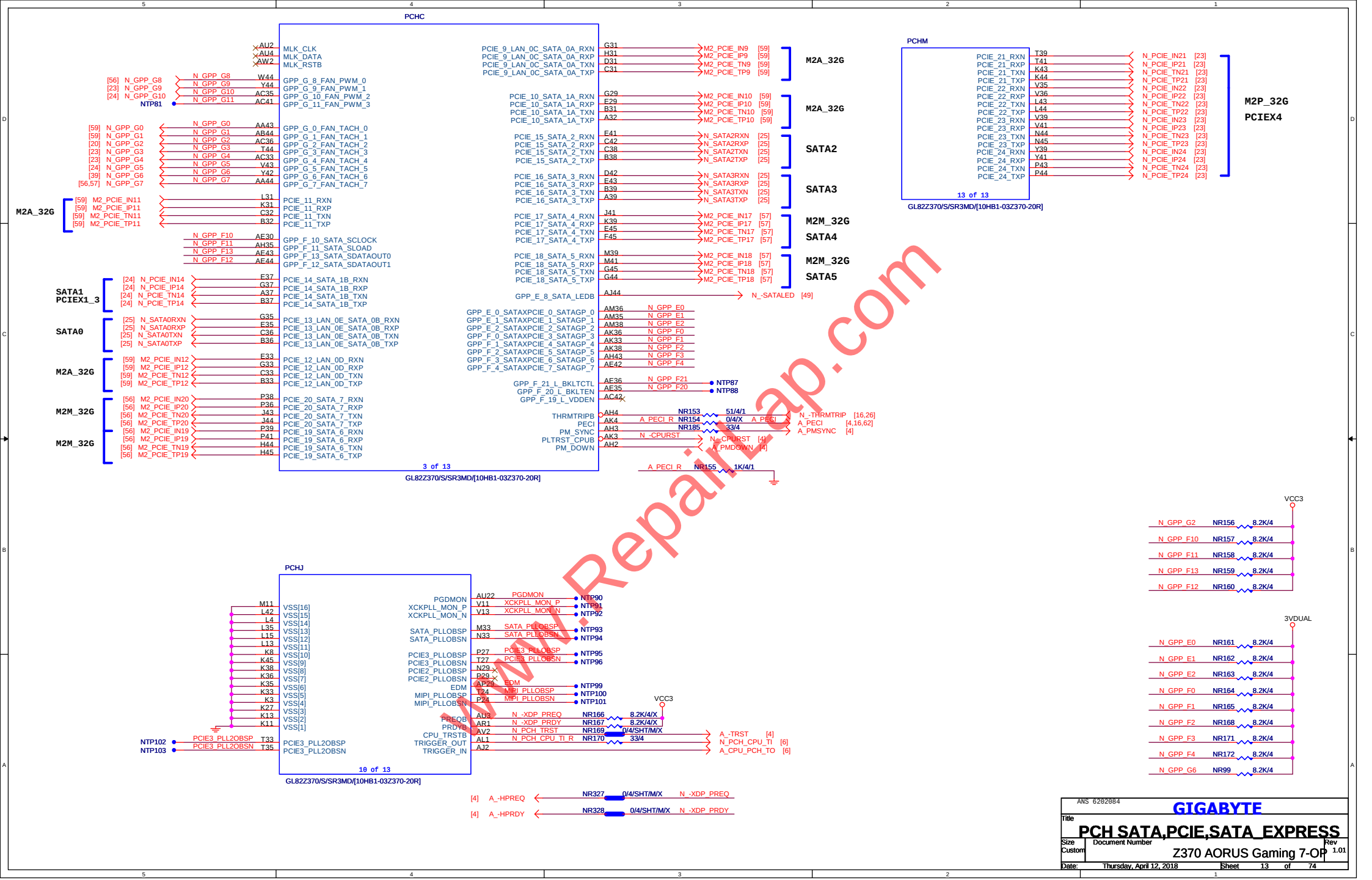

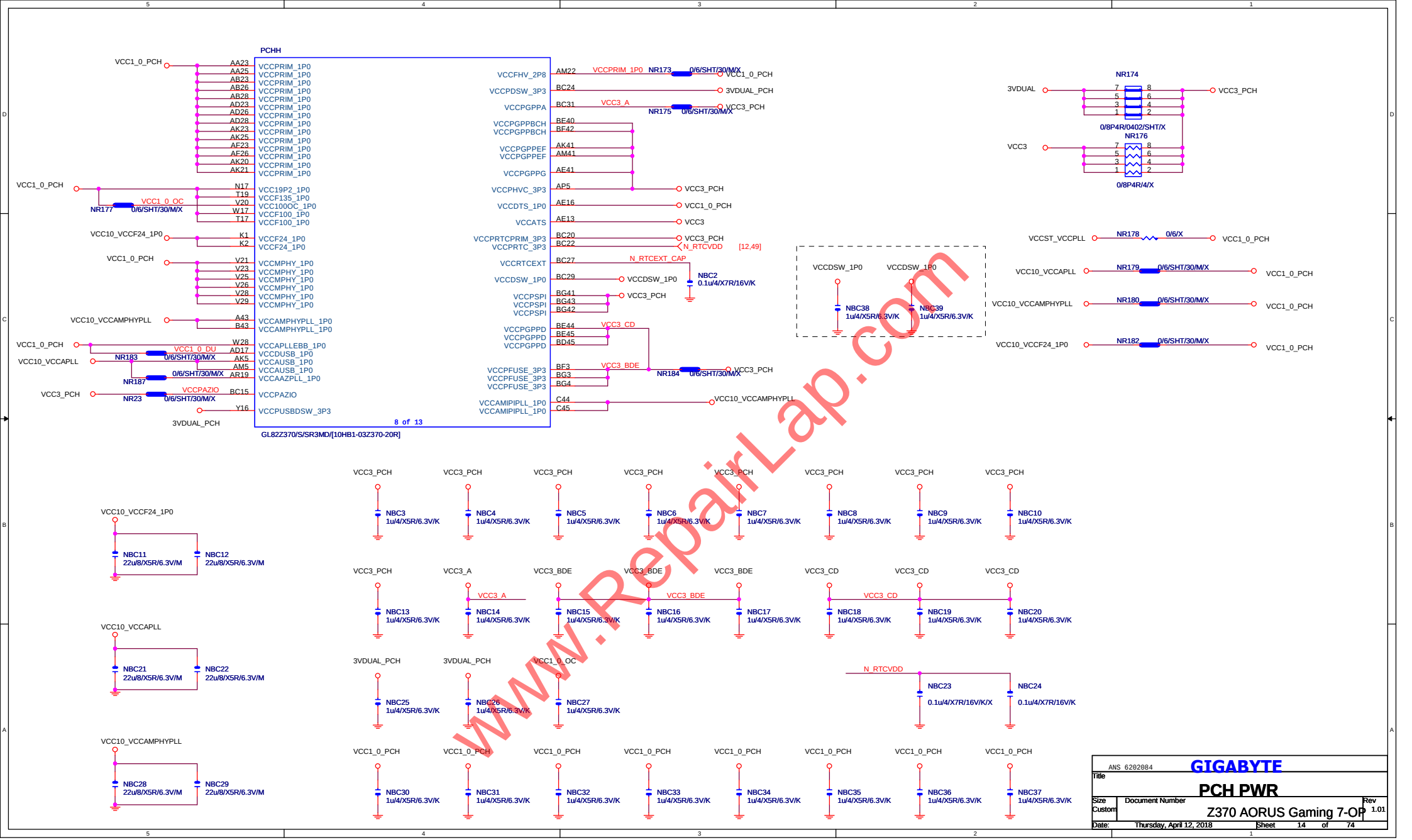

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裝甲HEATSINK 分成四大部份

PCHI

A25	VSS	VSS	A42
A30	VSS	VSS	D45
P22	VSS	VSS	BG44
AV38	VSS	VSS	BF44
AV45	VSS	VSS	BF45
AY8	VSS	VSS	BF2
AY11	VSS	VSS	W29
AY19	VSS	VSS	A35
AY37	VSS	VSS	A40
AY4	VSS	VSS	A41
AY42	VSS	VSS	AA17
AY8	VSS	VSS	AA18
B25	VSS	VSS	AA20
B3	VSS	VSS	AA21
B30	VSS	VSS	AA26
B35	VSS	VSS	AA28
B4	VSS	VSS	AA29
B41	VSS	VSS	AB17
BA13	VSS	VSS	AC32
BA17	VSS	VSS	AE4
BA29	VSS	VSS	AE8
BA31	VSS	VSS	AF18
BA37	VSS	VSS	AF20
BA4	VSS	VSS	AF21
BA42	VSS	VSS	AF25
BB40	VSS	VSS	AF28
BC38	VSS	VSS	AF29
BC40	VSS	VSS	AF4
BC9	VSS	VSS	AF42
BD11	VSS	VSS	AG18
BD16	VSS	VSS	AG20
BD2	VSS	VSS	AG21
BD21	VSS	VSS	AG23
BD25	VSS	VSS	AG25
F2	VSS	VSS	AG26
E31	VSS	VSS	AG28
E6	VSS	VSS	AG29
E8	VSS	VSS	AH11
F39	VSS	VSS	AH13
F43	VSS	VSS	AH30
G4	VSS	VSS	AH32
G40	VSS	VSS	AH33
G42	VSS	VSS	AH38
F6	VSS	VSS	AJ1
G9	VSS	VSS	AJ17
H11	VSS	VSS	AJ18
H13	VSS	VSS	AJ20
H17	VSS	VSS	AJ21
H19	VSS	VSS	AJ23
H22	VSS	VSS	AJ25
H24	VSS	VSS	AJ26
H27	VSS	VSS	AJ28
H29	VSS	VSS	AJ29
H33	VSS	VSS	AJ45
H35	VSS	VSS	AK10
H38	VSS	VSS	AK14
H4	VSS	VSS	AK16
H42	VSS	VSS	AK17
H9	VSS	VSS	AK18
J4	VSS	VSS	AK26
M36	VSS	VSS	AK28
M38	VSS	VSS	AM14
M4	VSS	VSS	AN14
M8	VSS	VSS	AP19
M9	VSS	VSS	AP2
N13	VSS	VSS	AR27
N15	VSS	VSS	AU29
N19	VSS	VSS	AU33
N22	VSS	VSS	AV1
N24	VSS	VSS	AV10
N31	VSS	VSS	AV15
N42	VSS	VSS	AV24
P10	VSS	VSS	AV27
P12	VSS	VSS	AV33
AV35	VSS		

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GL82Z370/S/SR3MD/[10HB1-03Z370-20R]

PCHL

BD34	VSS[70]	VSS[1]	AB18
BD39	VSS[71]	VSS[2]	AB20
BD7	VSS[72]	VSS[3]	AB21
BE2	VSS[73]	VSS[4]	AB25
BF43	VSS[74]	VSS[5]	AB29
BF5	VSS[75]	VSS[6]	AB4
BG18	VSS[76]	VSS[7]	AB42
BG23	VSS[77]	VSS[8]	AC10
BG28	VSS[78]	VSS[9]	AC11
BG32	VSS[79]	VSS[10]	AC14
BG37	VSS[80]	VSS[11]	AC16
BG40	VSS[81]	VSS[12]	AC38
BG9	VSS[83]	VSS[13]	AC4
C1	VSS[84]	VSS[14]	AC5
A12	VSS[85]	VSS[15]	AC7
C2	VSS[86]	VSS[16]	AC8
C37	VSS[87]	VSS[17]	AD1
A6	VSS[88]	VSS[18]	AD18
C9	VSS[89]	VSS[19]	AD20
D1	VSS[90]	VSS[20]	AD21
D10	VSS[91]	VSS[21]	AD25
D12	VSS[92]	VSS[22]	AD29
D15	VSS[93]	VSS[23]	AD45
D16	VSS[94]	VSS[24]	AE11
B12	VSS[95]	VSS[25]	AE14
D19	VSS[96]	VSS[26]	AE32
D21	VSS[97]	VSS[27]	AE33
D24	VSS[98]	VSS[28]	AE38
D25	VSS[99]	VSS[29]	AK29
D29	VSS[100]	VSS[30]	AK30
D30	VSS[101]	VSS[31]	AK32
D33	VSS[102]	VSS[32]	AK35
D35	VSS[103]	VSS[33]	AK39
D36	VSS[104]	VSS[34]	AL4
D39	VSS[105]	VSS[35]	AL42
D44	VSS[106]	VSS[36]	AM10
D7	VSS[107]	VSS[37]	AM11
P13	VSS[108]	VSS[38]	AM13
P15	VSS[109]	VSS[39]	AM17
P17	VSS[110]	VSS[40]	AM19
P19	VSS[111]	VSS[41]	AM24
P31	VSS[112]	VSS[42]	AM27
P33	VSS[113]	VSS[43]	AM29
P35	VSS[114]	VSS[44]	AM32
P4	VSS[115]	VSS[45]	AM33
P42	VSS[116]	VSS[46]	AM4
P8	VSS[117]	VSS[47]	AN45
R1	VSS[118]	VSS[48]	AP10
R32	VSS[119]	VSS[49]	AP11
T10	VSS[120]	VSS[50]	AP13
T14	VSS[121]	VSS[51]	AP15
T22	VSS[122]	VSS[52]	AP22
T29	VSS[123]	VSS[53]	AP27
T32	VSS[124]	VSS[54]	AP31
T36	VSS[125]	VSS[55]	AP33
T38	VSS[126]	VSS[56]	AP34
Y38	VSS[151]	VSS[57]	AP39
Y4	VSS[152]	VSS[127]	AP3
Y8	VSS[153]	VSS[143]	T4
T42	VSS[154]	VSS[128]	W26
T5	VSS[155]	VSS[129]	V16
U4	VSS[156]	VSS[130]	V17
U42	VSS[157]	VSS[131]	V18
V10	VSS[158]	VSS[132]	V30
V14	VSS[159]	VSS[133]	V32
W3	VSS[144]	VSS[134]	V33
AR13	VSS[58]	VSS[135]	V38
AR31	VSS[59]	VSS[136]	V4
AR33	VSS[60]		V8
AR4	VSS[61]	VSS[138]	W18
AT10	VSS[62]	VSS[139]	W20
AT13	VSS[63]	VSS[140]	W21
AT35	VSS[64]	VSS[141]	W23
AT37	VSS[65]	VSS[142]	W25
AT42	VSS[66]		
AU11	VSS[67]	VSS_1	A44
AU17	VSS[68]	VSS_10	BE1
BD30	VSS[69]	VSS_11	BD1
W45	VSS[145]	VSS_14	B1
Y13	VSS[146]	VSS_15	A2
Y14	VSS[147]	VSS_16	B2
Y30	VSS[148]	VSS_17	A3
Y32	VSS[149]	VSS_18	A4
Y33	VSS[150]	VSS_2	B44
BG14	VSS_BG14	VSS_3	B45

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GL82Z370/S/SR3MD/[10HB1-03Z370-20R]

Location: REAR_HS 12KRC-0H0010-01R
Location: AUDIO_HS
REAR_HS + AUDIO_HS 一整組料號

Location: T+R MOS 12SP2-PT37G7-01R
Location: PCH_HS 12SP2-S09711-01R

裝甲

REAR_HS 1X

Footprint : Z370_IO_COVER

X2 HEAT SINK/[12KRC-0H0010-01R]

AUDIO_HS 1X

Footprint : Z370_AUDIO_COVER

X2 HEAT SINK/[12KRC-0A0001-21R]/X

MOS_HS

MOS_HS 1X

T+R
Footprint : MOSHSINK-Z370_AORUS_GAMING7

X2 HEAT SINK/[12SP2-PT37G7-01R]

PCH_HS

PCH_HS 1X

Footprint : BGAHSINK-Z370_AORUS_GAMING7

X2 HEAT SINK/[12SP2-S09711-01R]

H1 3MMH/X
H2 3MMH/X
H3 3MMH/X
H4 3MMH/X
H5 3MMH/X

3MMH

* PCB顏色 ： 消光黑(霧黑色)
* 文字面 ： 灰色
* 圖騰 ： 灰色斜線
縮小版AORUS Logo

ANS 6202084

GIGABYTE

Title: PCH GND

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

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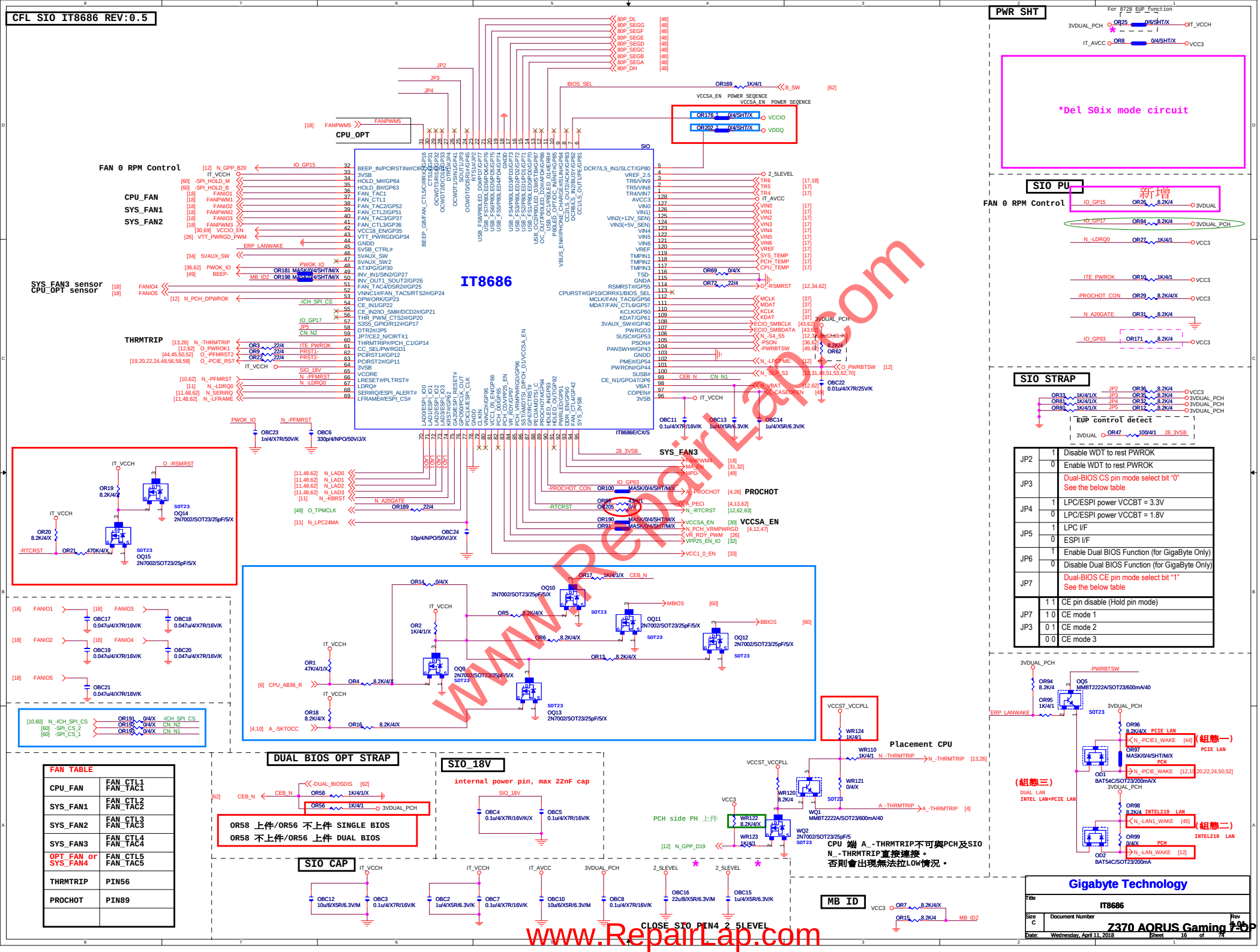
CFL SIO IT8686 REV:0.5



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

Gigabyte Technology

Title: IT8686

Size C | Document Number | Rev 4.0

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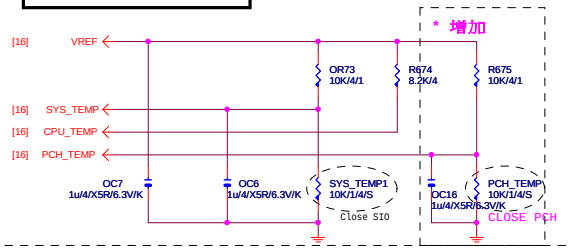
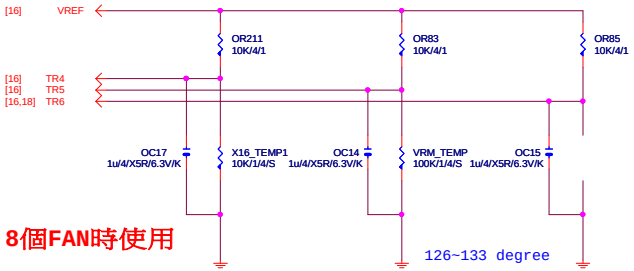
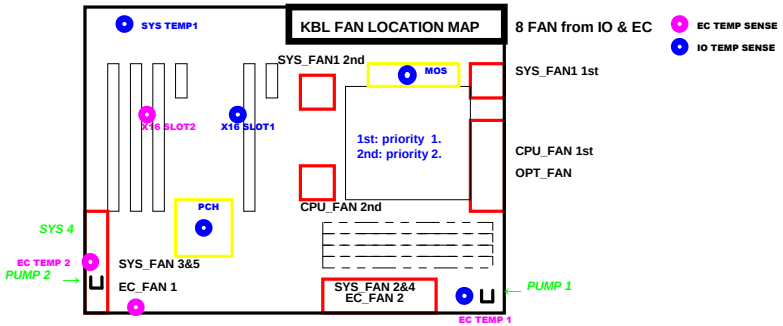
Z370 AORUS Gaming 7-CF

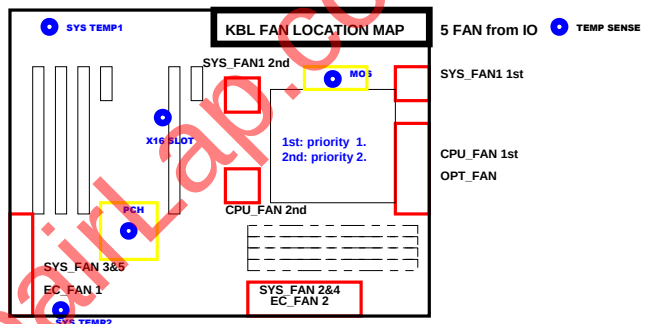
TEMP H/W MONITOR Rev0.5

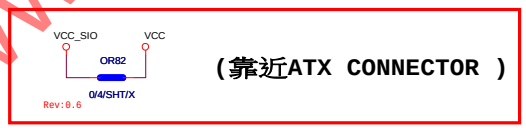




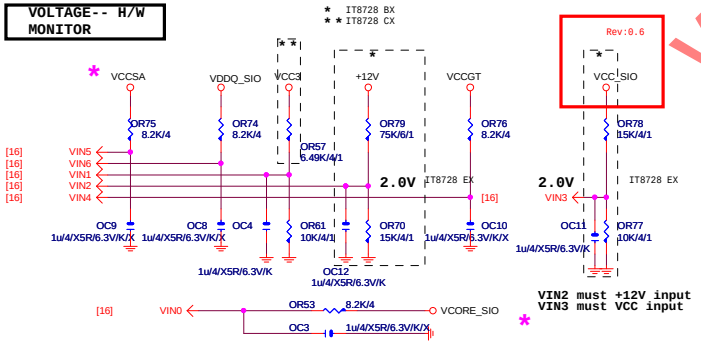
8個FAN時使用

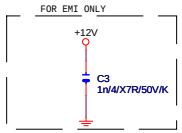


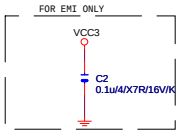




VOLTAGE-- H/W MONITOR







★Update 2015-04.24

Gigabyte Technology			
Title: HWM			
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP		Rev: 1.01
Date: Wednesday, April 11, 2018		Sheet 17 of 74	

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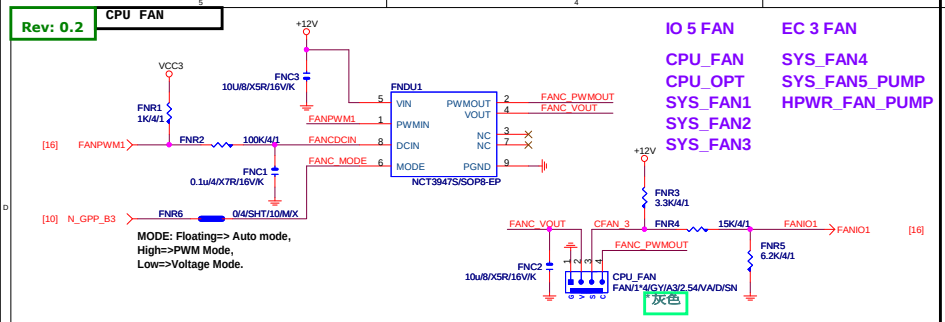
Rev: 0.2

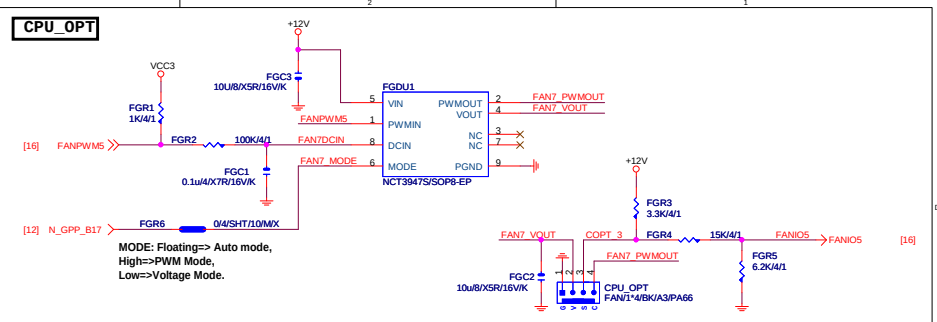
CPU_FAN

IO 5 FAN
CPU_FAN
CPU_OPT
SYS_FAN1
SYS_FAN2
SYS_FAN3

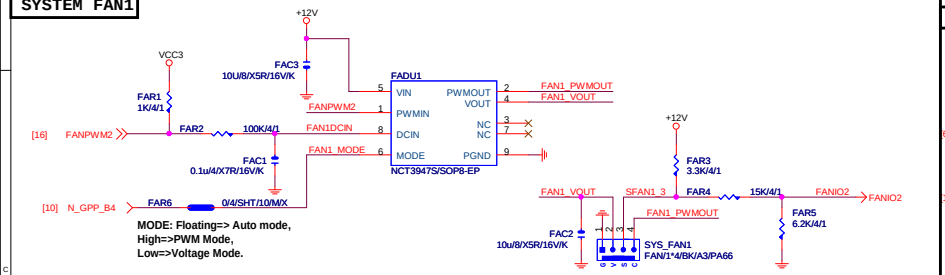
EC 3 FAN
SYS_FAN4
SYS_FAN5_PUMP
HPWR_FAN_PUMP



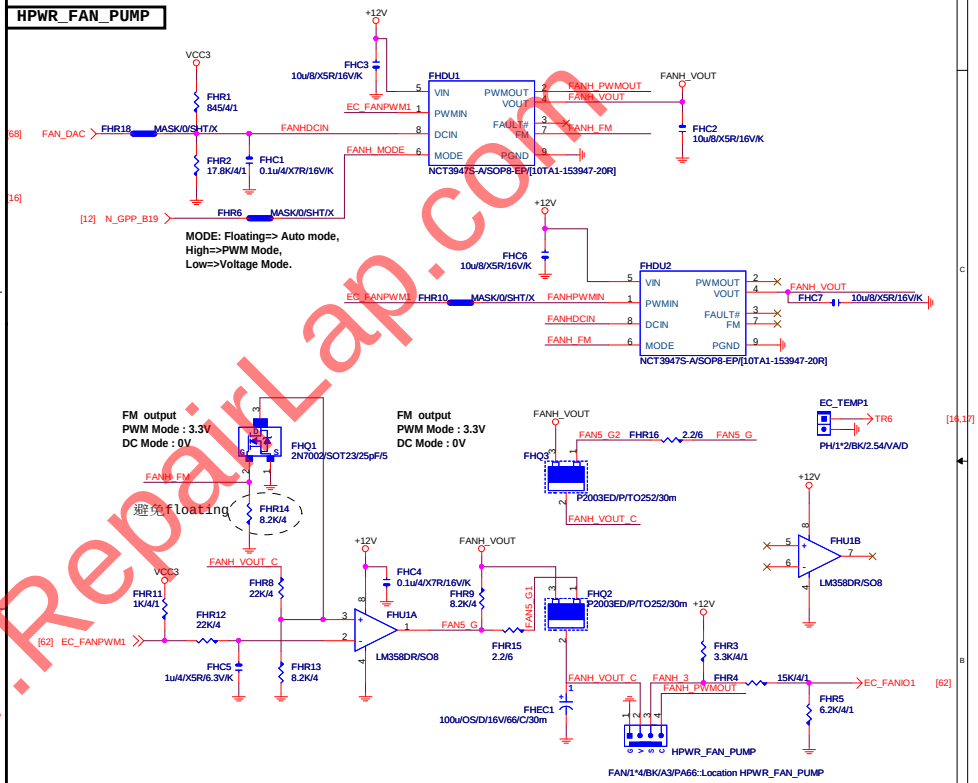
CPU_OPT



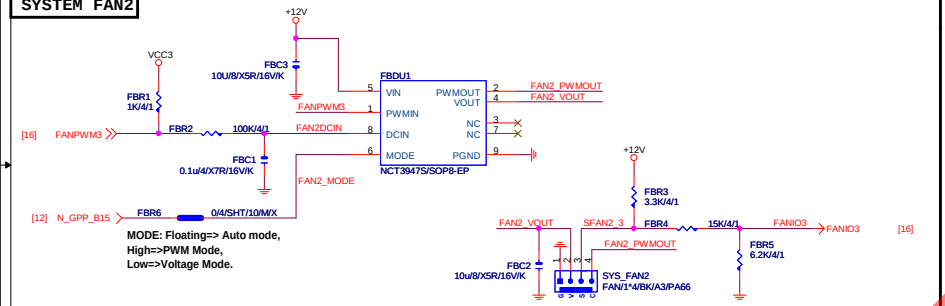
SYSTEM_FAN1



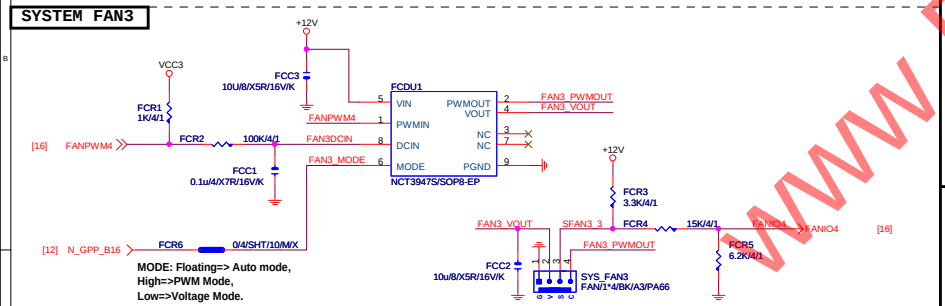
HPWR_FAN_PUMP



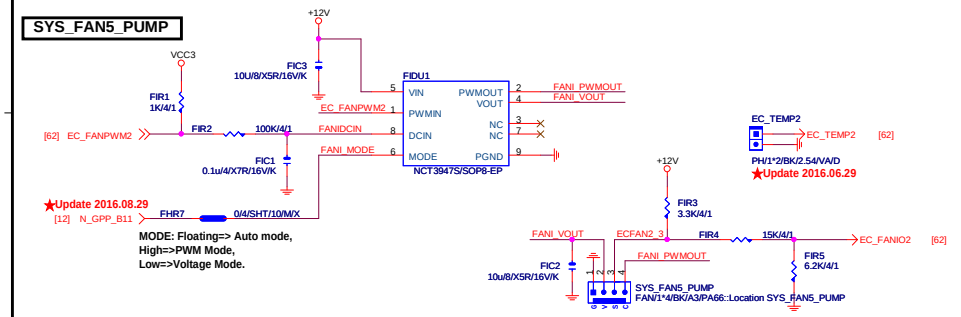
SYSTEM_FAN2



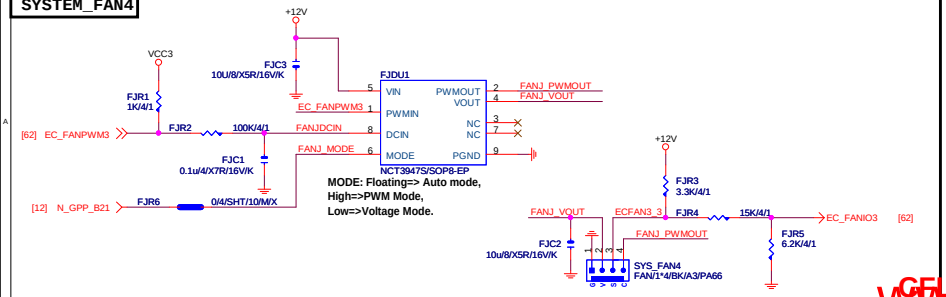
SYSTEM_FAN3



SYS_FAN5_PUMP



SYSTEM_FAN4



GIGABYTE	
Title	FAN CTRL
Size	Custom
Document Number	Z370 AORUS Gaming 7-CF
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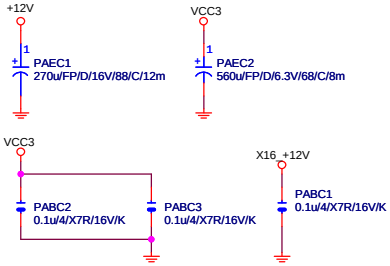
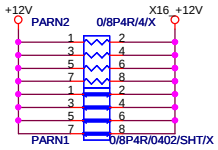
FAN LOCATION MAP REFER TO PAGE.27

R0.4

PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 Coupling CAP

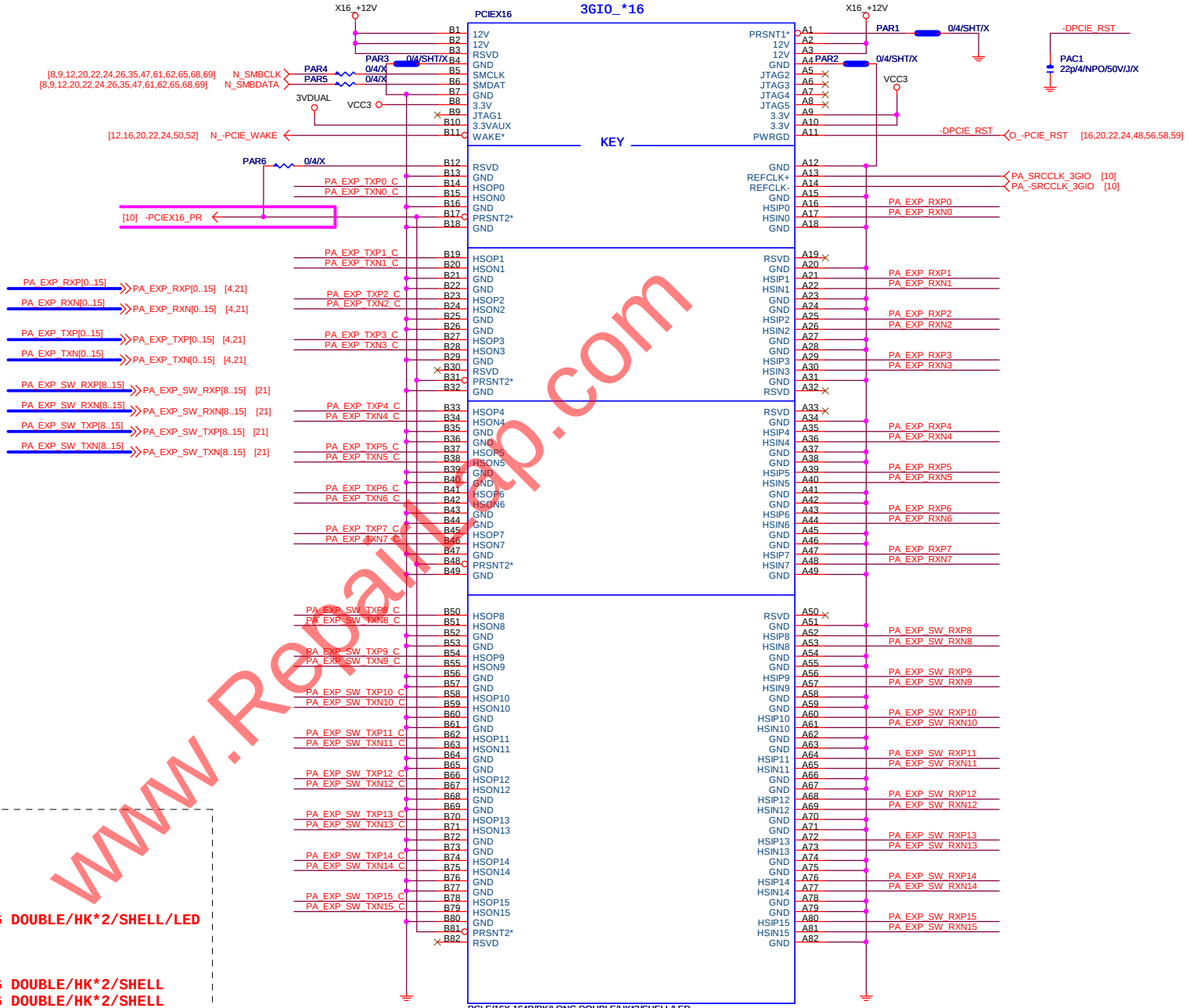
PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	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

BOM Option

加強版金屬build-in RGB LED slot
Footprint: PCIESLOT-164STH-X299
Value: 黑 PCI-E/16X-164P/BK/LONG DOUBLE/HK*2/SHELL/LED

加強版金屬slot (無LED透光)
Footprint: PCIESLOT-164STH
Value: 深灰 PCI-E/16X-164P/GY/LONG DOUBLE/HK*2/SHELL
橘 PCI-E/16X-164P/OR/LONG DOUBLE/HK*2/SHELL
鮮紅 PCI-E/16X-164P/RE/LONG DOUBLE/HK*2/SHELL
迷彩 PCI-E/16X-164P/LB/LONG DOUBLE/HK*2/SHELL
黑 PCI-E/16X-164P/BK/LONG DOUBLE/HK*2/SHELL
綠 PCI-E/16X-164P/BU/LONG DOUBLE/HK*2
鏡黑 PCI-E/16X-164P/BK/LONG DOUBLE/HK*2/BK NI SH

PCIEX16 SLOT



PCI-E REV:1.1--> BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s
PCI-E REV:2.0--> BANDWITH=5GHz*(8b/10b)=4Gb/s=500MB/s
PCI-E REV:3.0--> BANDWITH=8GHz*(128b/130b)=8Gb/s=1GB/s

Gigabyte Technology	
Title	PEG X16 SLOT
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP
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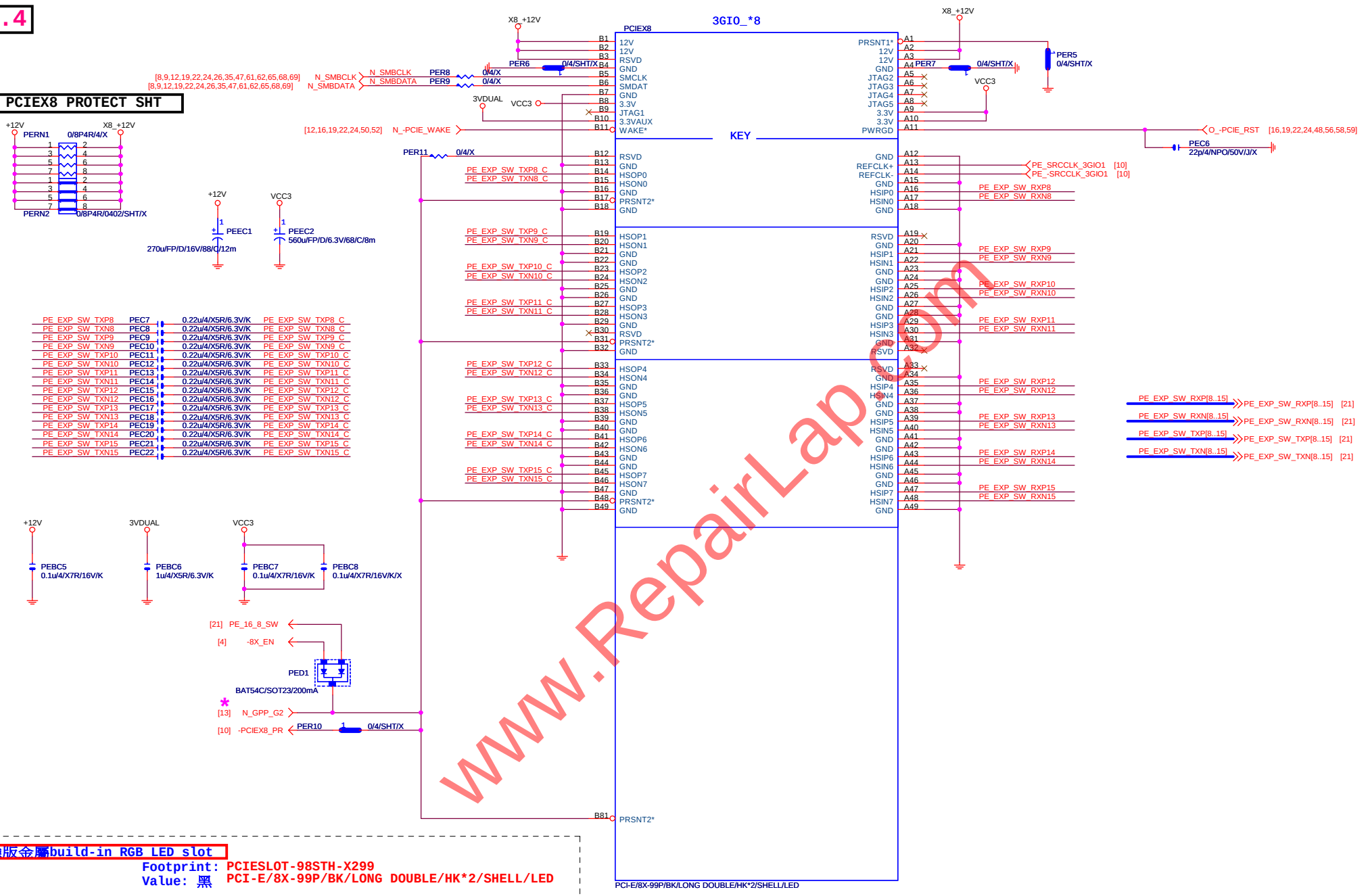
PCIEX8 PROTECT SHT



加強版金屬build-in RGB LED slot

Footprint: PCIESLOT-98STH-X299
Value: 黑 PCI-E/8X-99P/BK/LONG DOUBLE/HK*2/SHELL/LED

加強版金屬slot（無LED透光）

Footprint: PCIESLOT-98STH
Value: 深灰 PCI-E/8X-99P/GY/LONG DOUBLE/HK*2/SHELL
橘 PCI-E/8X-99P/OR/LONG DOUBLE/HK*2/SHELL
鮮紅 PCI-E/8X-99P/RE/LONG DOUBLE/HK*2/SHELL
迷彩 PCI-E/8X-99P/LB/LONG DOUBLE/HK*2/SHELL
黑 PCI-E/8X-99P/BK/LONG DOUBLE/HK*2/SHELL
綠 缺
鏡黑 PCI-E/8X-99P/BK/LONG DOUBLE/HK*2/BK NI SH

BOM Option

Gigabyte Technology	
Title	PEG X8 SLOT
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP
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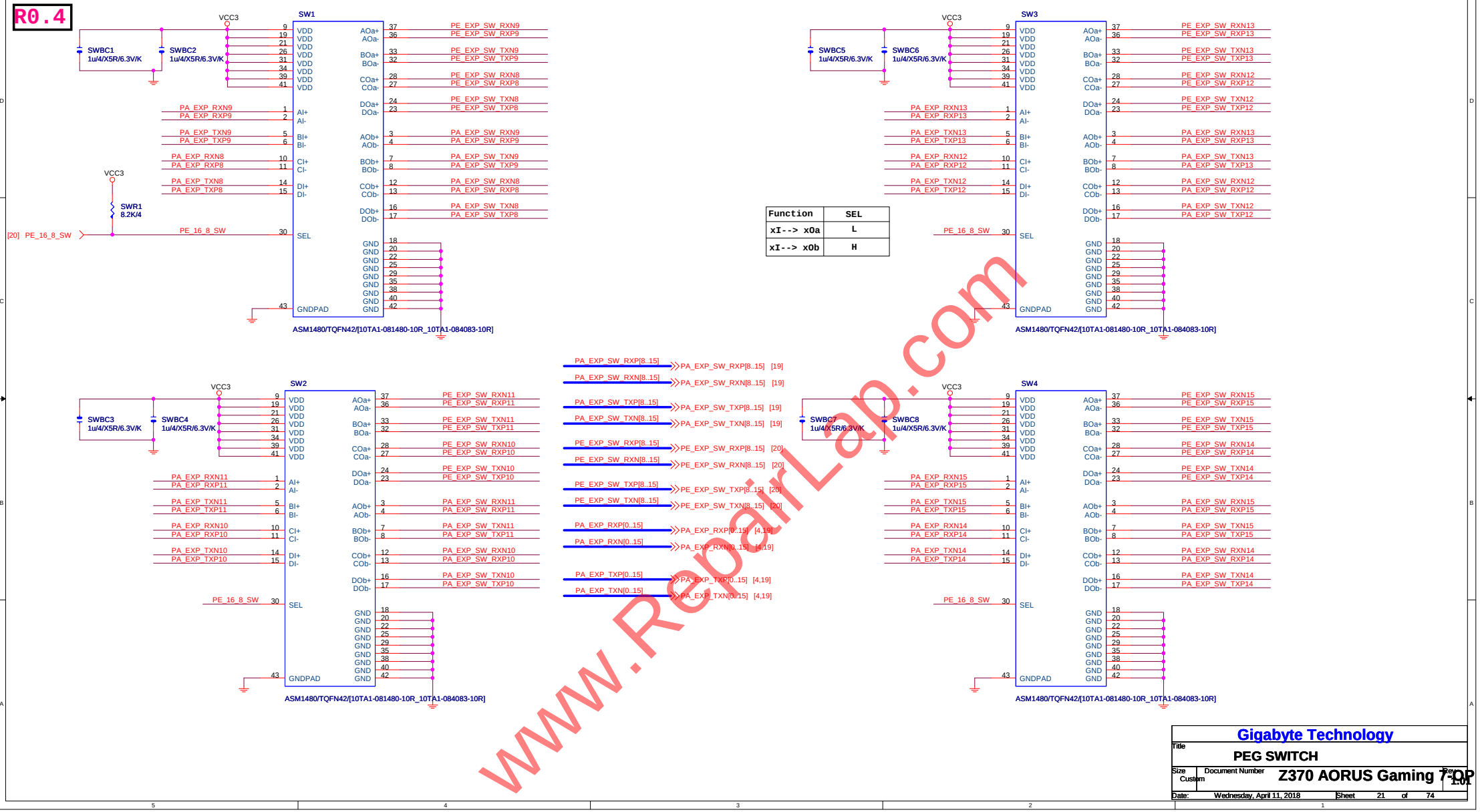
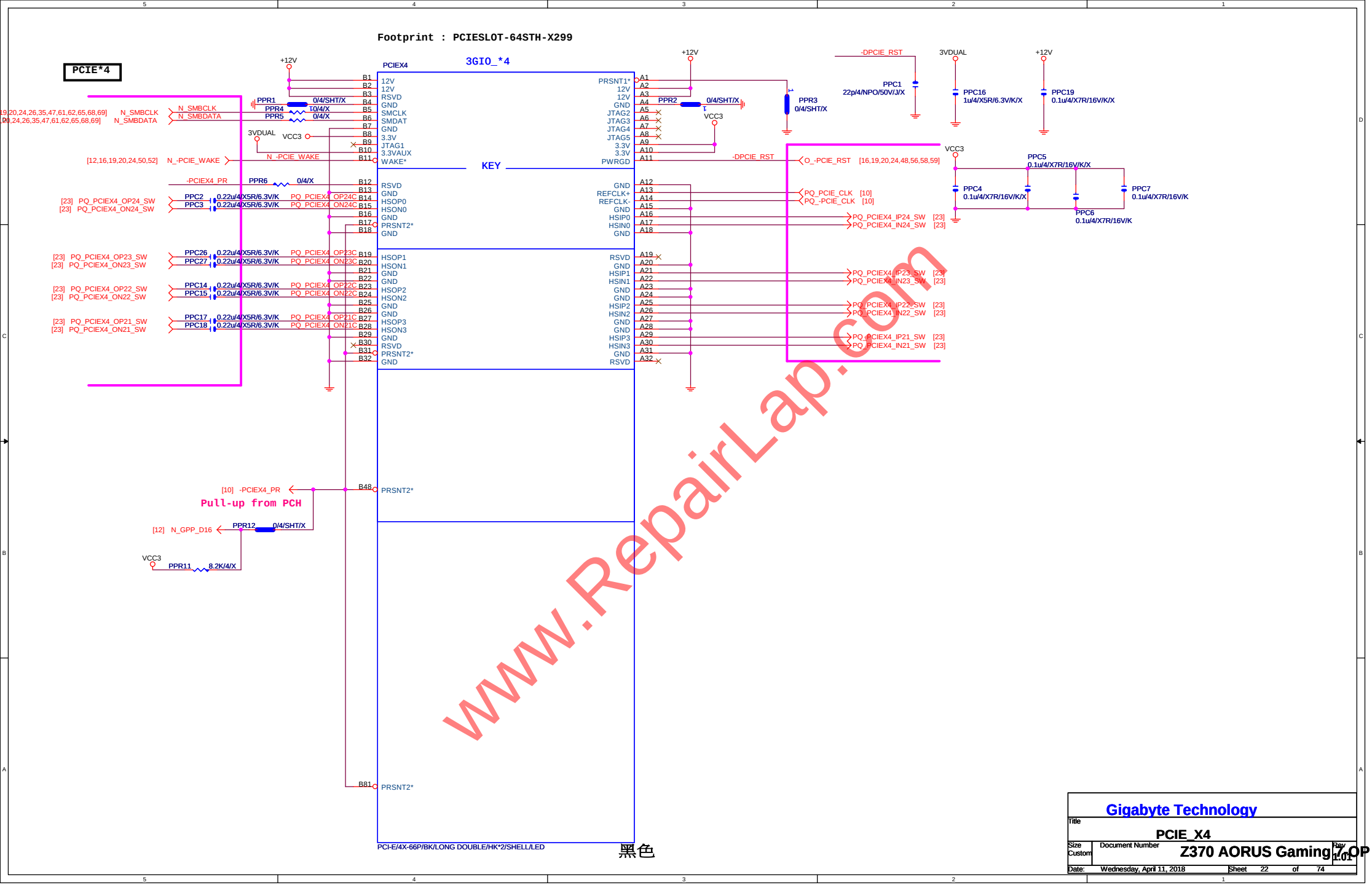
R0.4

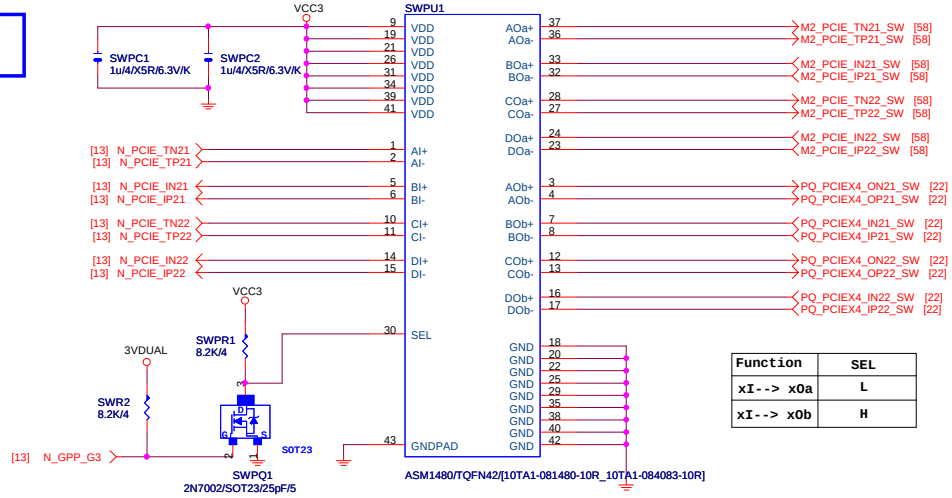


Function	SEL
xI--> xOa	L
xI--> xOb	H

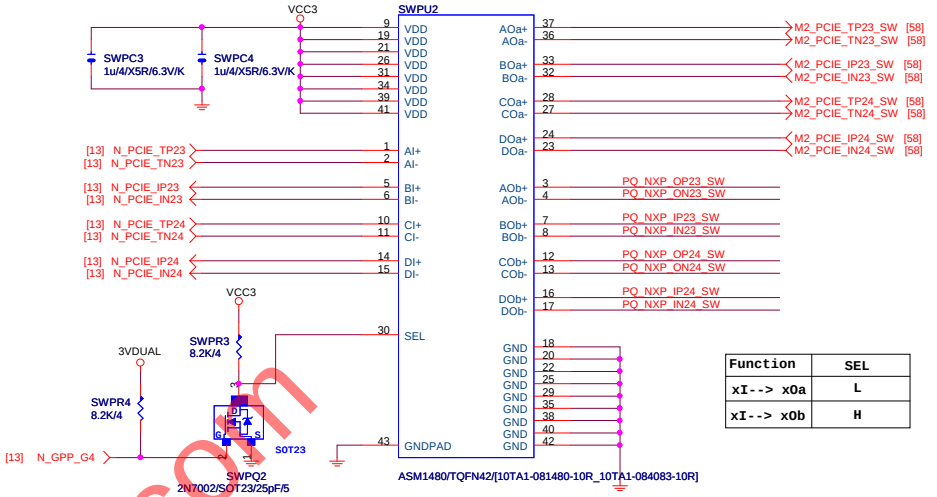
Gigabyte Technology	
Title	PEG SWITCH
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP
Rev: 1.01	
Date: Wednesday, April 11, 2018	Sheet 21 of 74



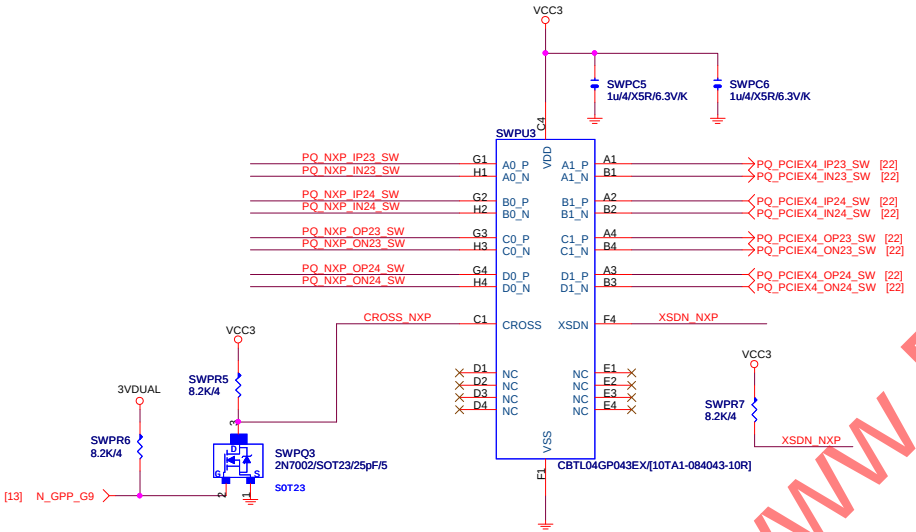
Rev 0.1



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



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



When CROSS = HIGH, selects cross function
When CROSS = LOW, selects pass-through function.

*預留N_GPP_H13 , For M2 SATA mode

Flex IO priority	N_GPP_H14 (PCH GPP_H14)	N_GPP_H13 (PCH GPP_H13)	N_GPP_D16 (PCH GPP_D16)	N_GPP_G3 (PCH GPP_G3)	N_GPP_G4 (PCH GPP_G4)	N_GPP_G9 (PCH GPP_G9)
M2P_32G Only	L	H	H	H	H	H
PCIEX4 Only (PCIE Reverse)	H	H	L	L	L	H
PCIEX4 Only (M.2 SATA Mode)	L	L	L	L	L	H
M2P_32G + PCIEX4 (M2P_32Gx2+PCIEX4_x2)	L	H	L	H	L	L

Gigabyte Technology

Title: PCIEX4_S0~S1 SWITCH

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.0

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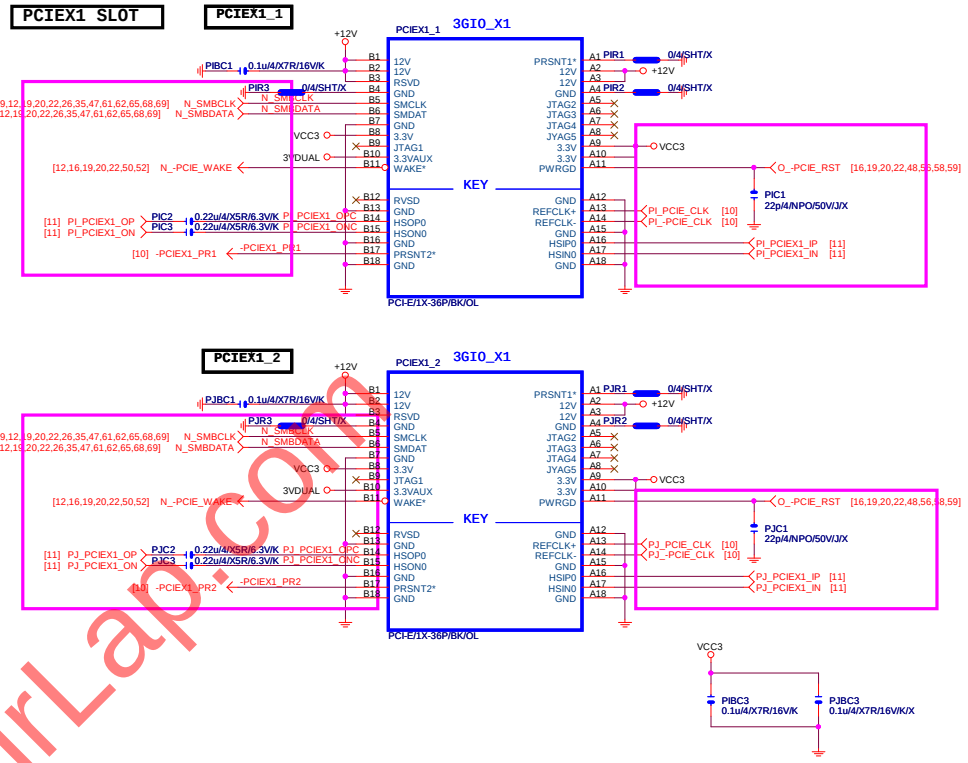
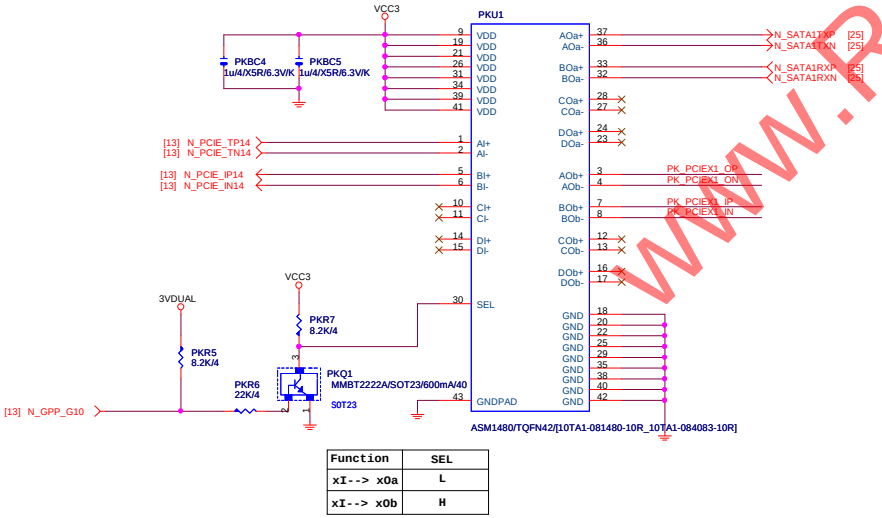
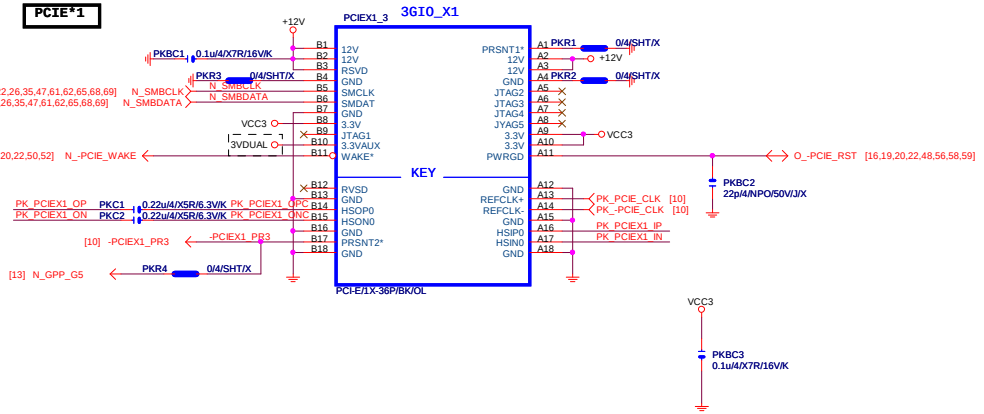
Rev 0.3





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



Title	PCIE_X1 1,2,3
Size	Custom
Document Number	Rev 1.0
	Z370 AORUS Gaming 7-OP
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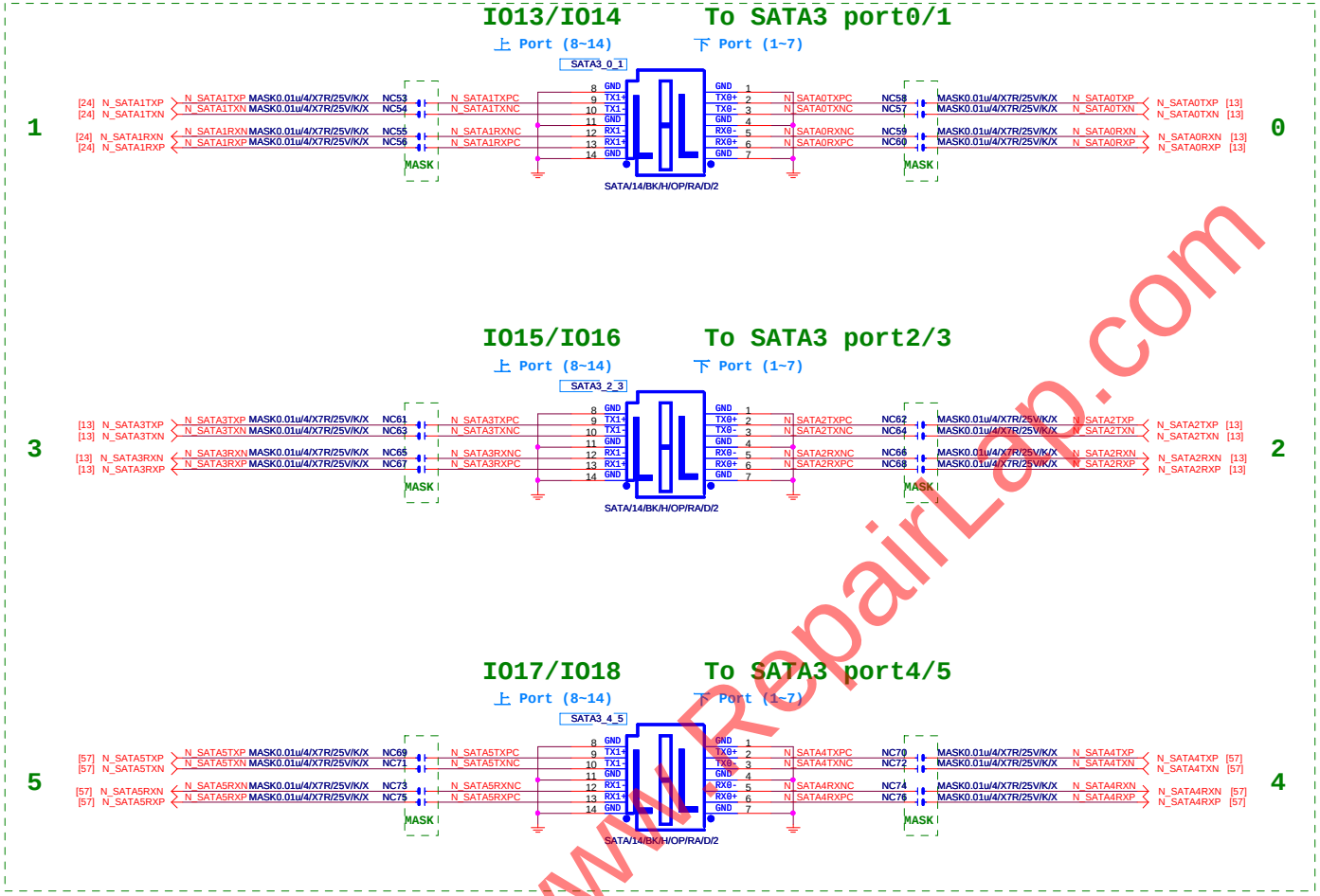
Gigabyte Technology

Footprint : H2X7-SATA2-D90



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

Gigabyte Technology

Title: SATA		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 25 of 74	

*PVT時,DAJP1不上件

Debug Only

Remove PinHeader in modify PBOM

DAJP1 PH/1*3/BK/2.54/VA/D/X

I2C Addr: 18h

DAU1 ISL69138IRAZ-T-C14/[10TA1-669138-02R]

Address:82

PWM Firmware檔

* ISL69138_Z370G7_VCORE_VSA_20170814_BLUE.hex

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

灰色SMD

放置背板電感與電感之間

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

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

GIGABYTE

Title: ISL69138_PWM

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

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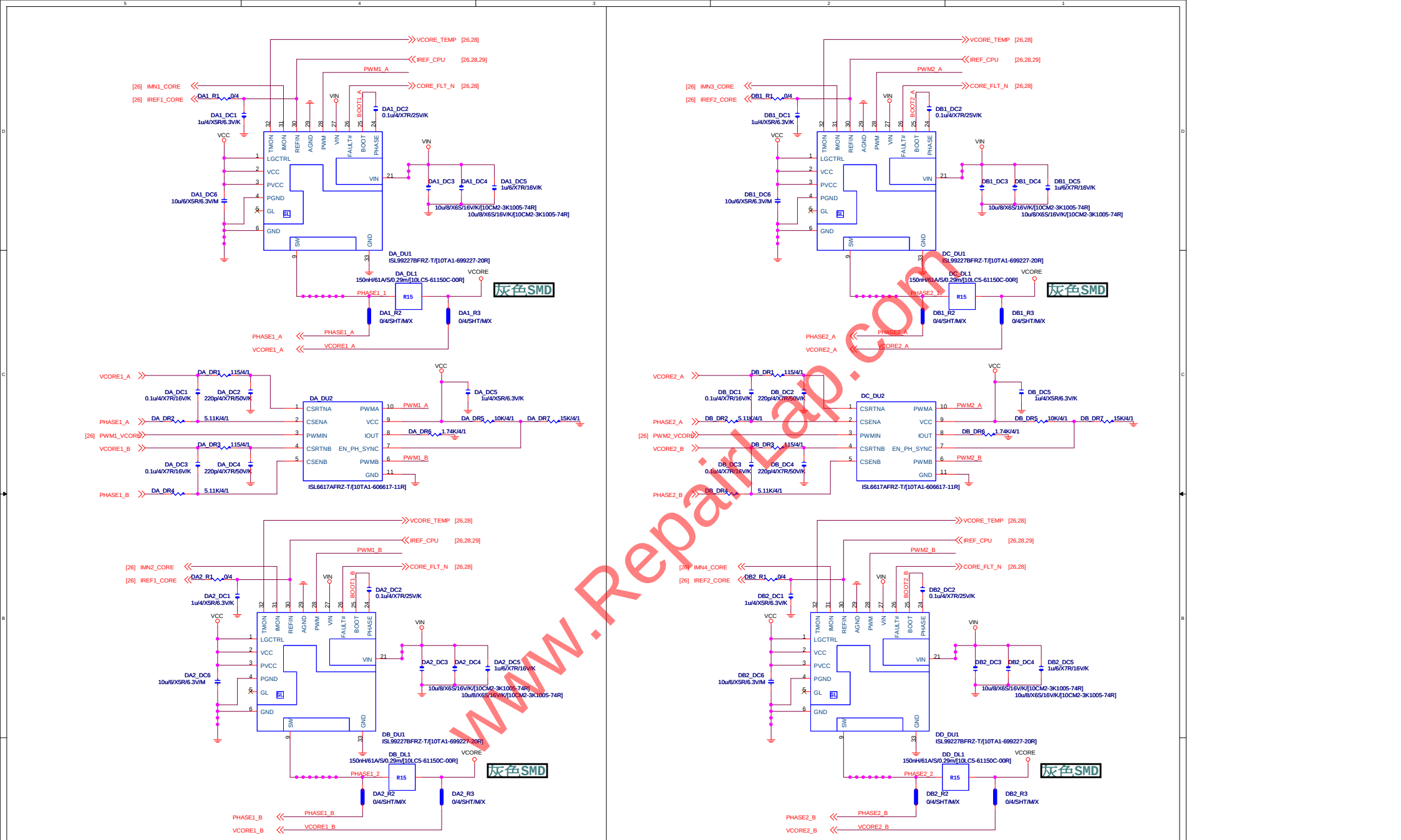

GIGABYTE™

Title	VCORE_ISL99227B-1	
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 27 of 74	

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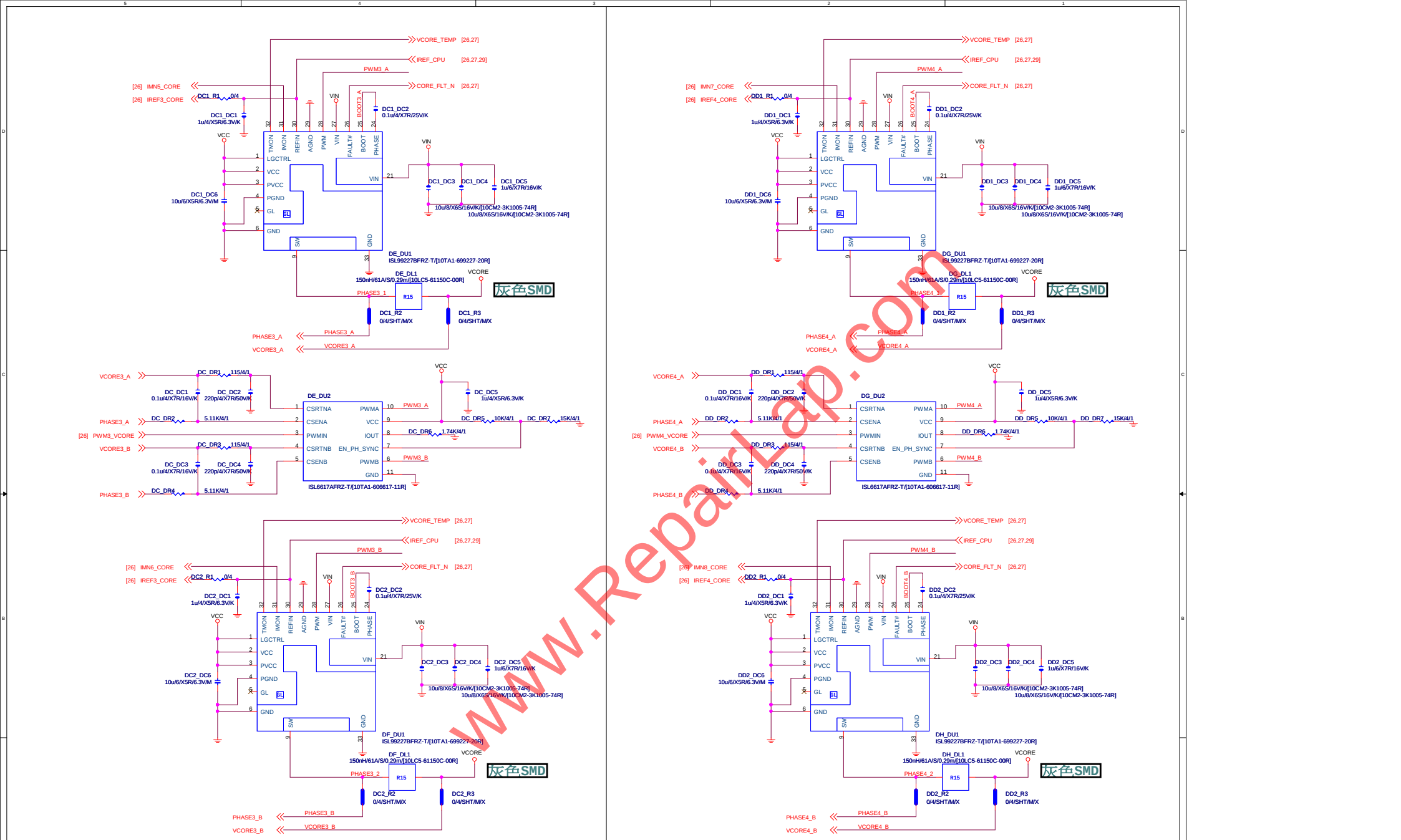

GIGABYTE™

Title: VCORE_ISL99227B-2

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

Date: Wednesday, April 11, 2018 | Sheet 28 of 74

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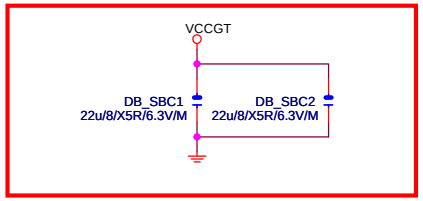
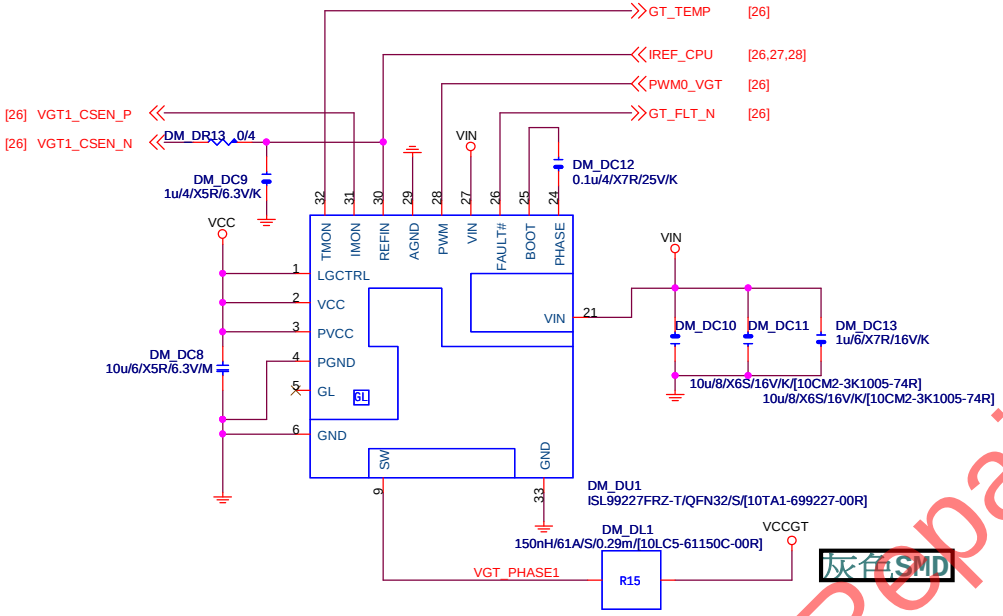
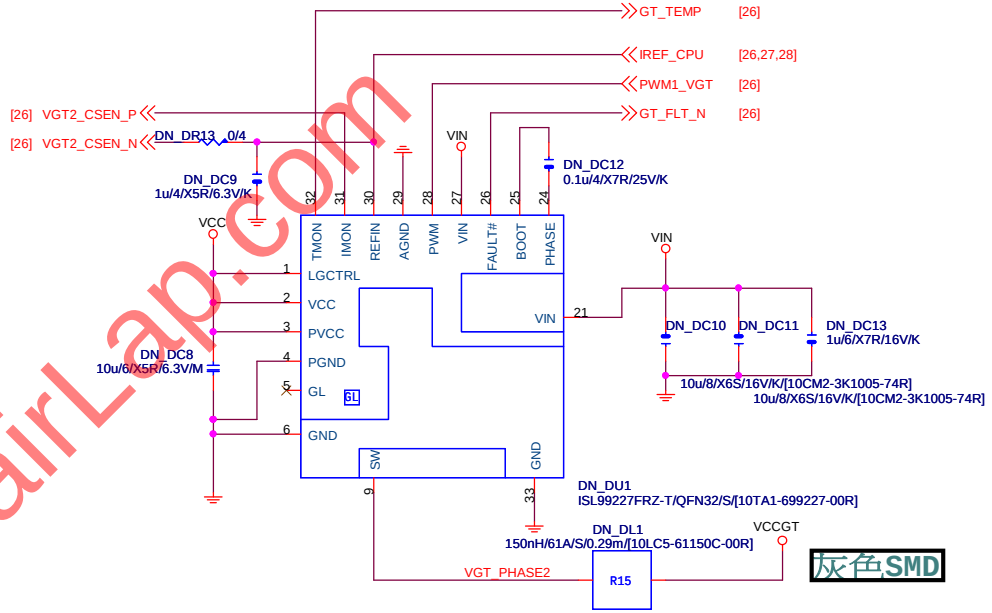
VCCGT REV:0.1

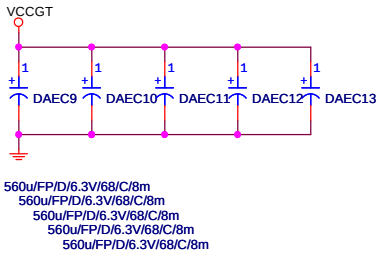
放置背板電感與電感之間

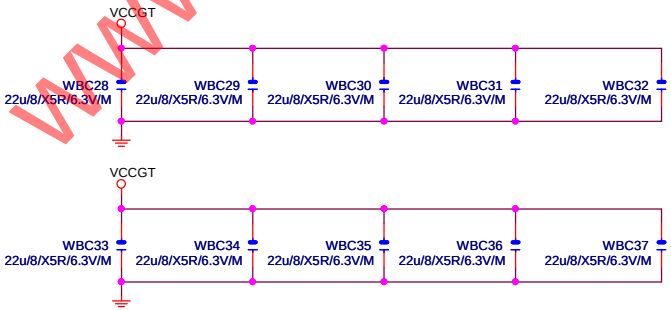


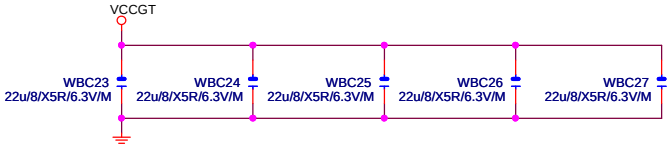




VCCGT CAP 560u*5PCS 22u*15PCS







Gigabyte Technology		
Title: VCCGT_ISL99227		
Size: B	Document Number: Z370 AORUS Gaming 7-CP	Rev: 1.01
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VCCIO

REV:0.41

L=1u
DCR=6.7 mohm
Isat=15A
Idc=12A

CHOKE與CAP料號可變

合令CHOKE

注意耐壓

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

Close Choke

Close MOS

RT8120DGS/SOP8

Connect to IT8793

Connect to IT8686

*Del DCR36

Connect to PCH

放靠近IC pin4

Remote sense請從最重的負載端點拉回

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

放CPU端.

SIO PIN5 . PIN7 用在其他function時使用

SIO PIN5接VDDQ . PIN7接VCCIO .時使用

GIGABYTE

Title: VCCIO_VCCSA

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

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REV:0.4

DDR4

5VDUAL
+12V
MA_DR10 0/6/X
MA_D1
MA_DR8 2.2/6
DRV_DDR
SDM20E40C/0.4A/SOT23
MA_DC10 1u/6/X7R/16V/K
MA_DC9 0.1u/6/X7R/25V/K
RT8120DGS/SOP8
MAU2
COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC
DDR_EN
MA_DR15 27K/4/1
MA_DC15 22p/4/NPO/50V/J
MA_DC16 3.3n/4/X7R/50V/K
MA_DR19
MASK/0/4/SHT/X
MA_UGATE
MA_PHASE
MA_LGATE
MA_DR18 11.8K/4/1
OCP=40A
放靠近IC pin4

L=0.5u
DCR=2.35 mohm
Isat=25A
Idc=15A

* 黑色閃雷P

5VDUAL
MA_L2 0.5uH/20A/IMD0809/BP/D
8*8
MA_VIN
MA_DC6 0.1u/4/X7R/16V/K Close Choke
MA_DC25 68p/4/NPO/50V/J/X
MA_DC7 1u/6/X7R/16V/K Close MOS
MAEC1 560u/FP/D/6.3V/68/C/8m
MAEC2 560u/FP/D/6.3V/68/C/8m
MA_DQ1 NTMFS4C06N/N/PPAK/1400pF/4m
MA_UGATE MA_DR1 2.2/6 MA_UG
MA_DR2 8.2K/4
MA_PHASE
MA_DQ2 MA_DQ3
MA_DR5 2.2/6
MA_DC5 1n/4/X7R/50V/K
MA_LGATE MA_DR9 2.2/6 MA_LG
NTMFS4C06N/N/PPAK/1400pF/4m
NTMFS4C06N/N/PPAK/1400pF/4m

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

* 黑色閃雷P

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

SUPPORT DDR4 1.2V
25A MAX

L=0.8u
DCR=1.4 mohm
Isat=?A
Idc=28A

MA_DR14 487/4/1
MA_DR13 1K/4/1
MA_DQ14 3.3n/4/X7R/50V/K
RS
RO
MA_DR12 2K/4/1
DDR_ADJ
[35] DDR_ADJ

VDDQ
MAC60 22u/8/X5R/6.3V/M/X

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

Remote sense請從最重的負載端點拉回

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

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

PWR SEQ

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

Connect to IT8793
[62] DDR_EC_EN
MAR112 0/4/X
[16,32] MA_EN
MAR118 0/4/SHT/X
Connect to IT8686

MAR1 8.2K/4
MAQ10 2N7002/SOT23/25pF/5
MAQ11 2N7002/SOT23/25pF/5
MAR2 8.2K/4
MAR105 100K/4/1
MAC9 1u/6/X7R/16V/K

DDRVTT

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

[4] DDR_VTT_CTL
N_-SLP_S3
DDR_VTT_CTL MAR110 DDRVTT_EN
N_-SLP_S3 MAR111 DDRVTT_BOOT
0/4/SHT/M/X
MAU1上NCT3103S時上件

DDR CAP

560u*4PCS

VDDQ
MAEC3 560u/FP/D/6.3V/68/C/8m
MAEC4 560u/FP/D/6.3V/68/C/8m
* 大電容 x4
MAEC6 560u/FP/D/6.3V/68/C/8m
MAEC7 560u/FP/D/6.3V/68/C/8m
Footprint : EC6D8MM-RH-2

WBC49 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M
22u*2PCS

DDRVTT CAP

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

GIGABYTE

Title: RT8120_DDR4 POWER
Size: Custom
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REV:0.4

VPP_25V

合金CHOKE

L=1u
DCR=6.7 mohm
Isat=15A
Idc=12A

CHOKE與CAP料號可變

DDR_VPP VIN CAP
560u*1PCS

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

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

RT8120DGS/SOP8 MAU3
COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC

VPP25_EN MA_DR24 27K/4/1 MA_DC21 22p/4/NPO/50V/J MA_DC22 3.3n/4/X7R/50V/K MA_DR30 MASK/0/4/SHT/X

MB_UGATE MB_PHASE MB_LGATE MA_DR29 11.8K/4/1

OCP=30A

放靠近IC pin4

VPP25_ADJ

5VDUAL MA_L4 1.0uH/15A/S/6.7m 6*6
MA_DC17 0.1u/4/X7R/16V/K Close Choke
MA_DC26 68p/4/NPO/50V/J/X
MB_VIN MA_DC19 1u/6/X7R/16V/K Close MOS MAEC12 560u/FP/D/6.3V/68/C/8m
MA_DQ4 NTTFS4C06NTAG/WDFN8/3366pF/4.2m
MB_UGATE MA_DR21 2.2/6 MB_UG
MA_DR23 8.2K/4
MB_PHASE MA_DQ5
MB_LGATE MA_DR22 2.2/6 MB_LG
NTTFS4C06NTAG/WDFN8/3366pF/4.2m

L=1u
DCR=6.7 mohm
Isat=15A
Idc=12A
合金CHOKE

MA_L3 1.0uH/15A/S/6.7m 6*6
MA_DR25 2.2/6
MA_DC23 1n/4/X7R/50V/K
MA_DR26 487/4/1
MA_DC24 3.3n/4/X7R/50V/K RS
MA_DR27 4.02K/4/1
MA_DR31 1.87K/4/1 RO

VPP_25V
SUPPORT DDR4
2.5V
25A MAX

VPP_25V MAC61 22u/8/X5R/6.3V/M/X

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

Remote sense請從最重的負載端點拉回

[35] VPP25_ADJ

PWR SEQ

* 刪 MA_DR32

5VSB MAR116 8.2K/4 MAR114 0/4/SHT/X
[16] VPP25_EN_IO
Connect to IT8686
MAR106 8.2K/4/X
[12,16,48,62,69,70] N_-S4_S5
[16,31] MA_EN MAR14 8.2K/4/X

5VSB MAR109 8.2K/4 VPP25_EN
MAQ7 2N7002/SOT23/25pF/5 SOT23
MAC8 1u/4/X5R/6.3V/K/X
MAQ8 2N7002/SOT23/25pF/5 SOT23
MAR115 0/4/SHT/X
MAQ9 2N7002/SOT23/25pF/5/X SOT23
MAC10 1u/4/X5R/6.3V/K/X

VPP_25V MAC49 0.1u/4/X7R/16V/K
VPP_25V MAC50 0.1u/4/X7R/16V/K
VPP_25V MAC51 0.1u/4/X7R/16V/K
VPP_25V MAC52 0.1u/4/X7R/16V/K

VPP CAP 560u*1PCS

* 大電容 x1

VPP_25V MAEC11 560u/FP/D/6.3V/68/C/8m

GIGABYTE™

Title	RT8120_VPP25 POWER	
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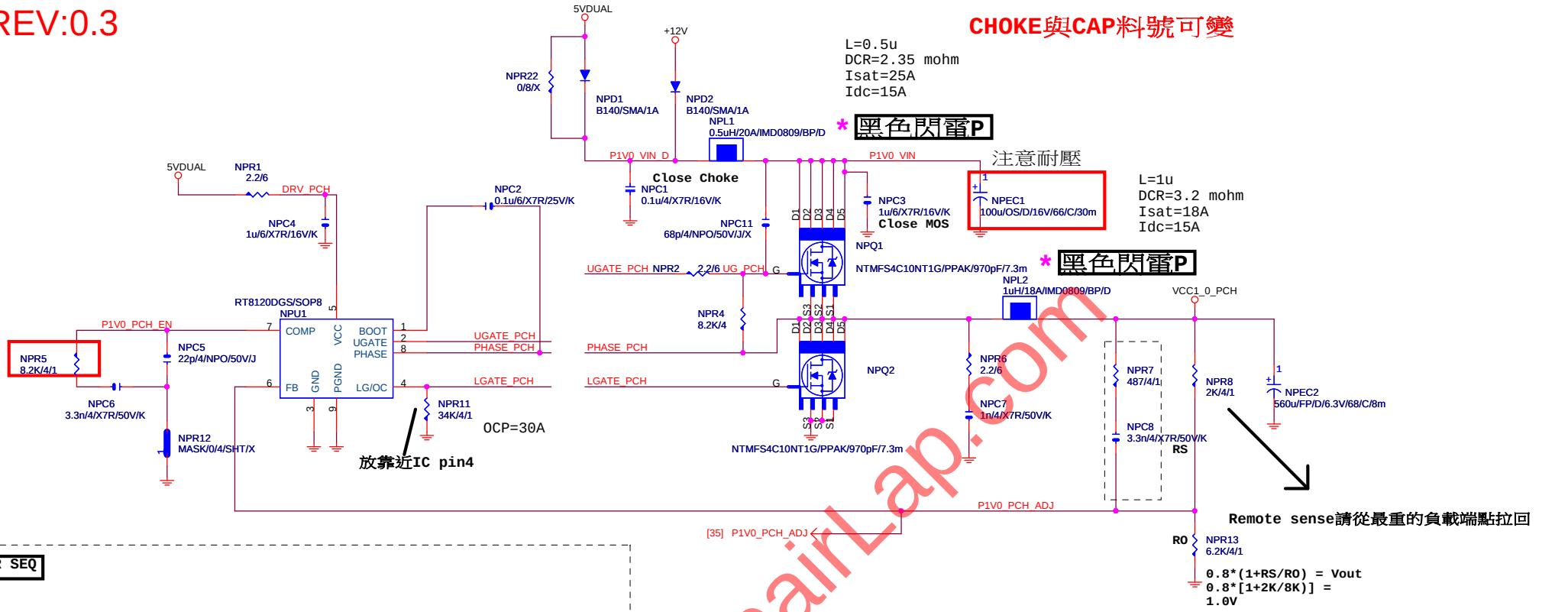
REV:0.3

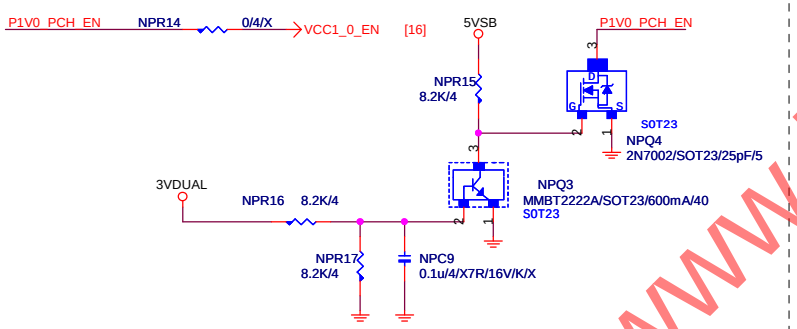
CHOKE與CAP料號可變

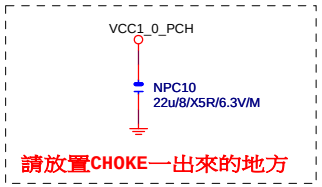
L=0.5u
DCR=2.35 mohm
Isat=25A
Idc=15A

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



PWR SEQ





GIGABYTE™		
Title: RT8120_PCH POWER		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
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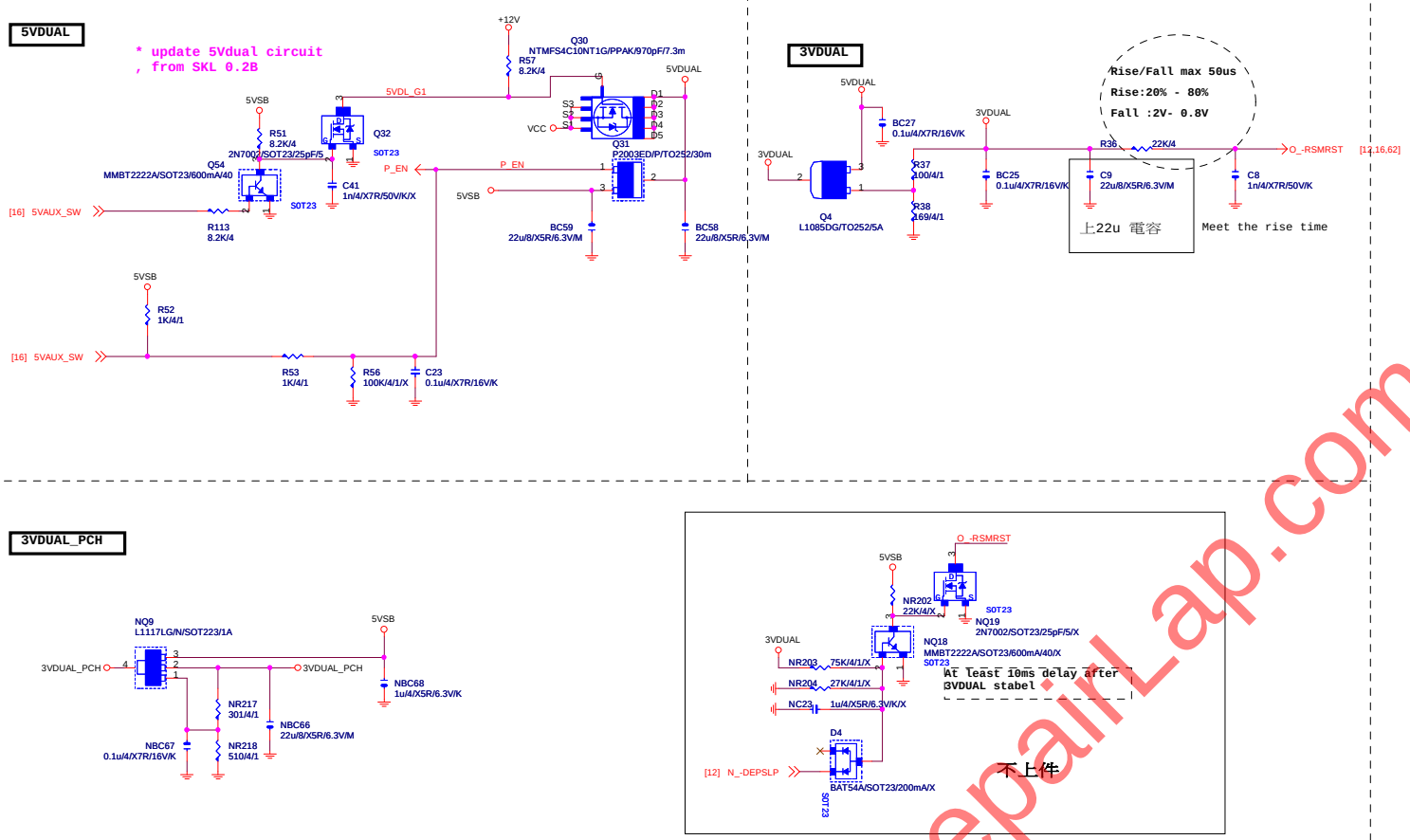
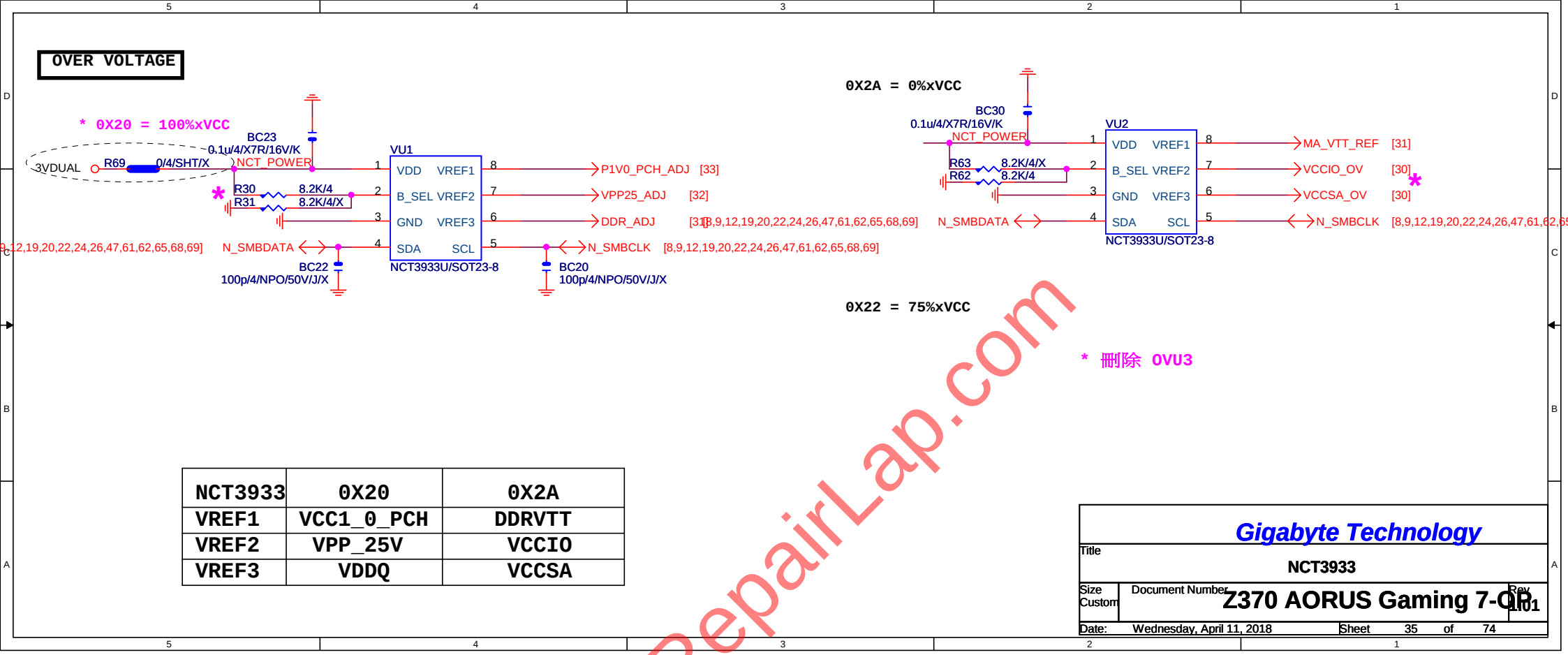


Gigabyte Technology			
Title: DISCRETE POWER			
Size: Custom	Document Number: Z370 AORUS Gaming 7 DP		Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 34 of 74		



NCT3933	0X20	0X2A
VREF1	VCC1_0_PCH	DDRVTT
VREF2	VPP_25V	VCCIO
VREF3	VDDQ	VCCSA

Gigabyte Technology		
Title: NCT3933		
Size: Custom	Document Number: Z370 AORUS Gaming 7-QP	Rev: 1.01
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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

5VSB R695 22K/4

[16,62] -PSON

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

* 刪除 -5V

-12V VCC3 VCC3

ATX

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

VCC VCC

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

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

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 +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

AD1 AZ2225-01L/SOD323/X

PWOK_IO PWOK_IO

5VSB

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

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

ATX_12V_2X4

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

[16,62]

V12

APW/2*4/BK/OC/P/4.2/VA/SN/OH/[11NH4-020008-B1R]::Location ATX_12V_2X4

黑色

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

FOR AUDIO 切割

MH1 MH2 MH3 MH7 MH8

HOLE_4-RH-1 HOLE_4-RH-5MM-2 HOLE_4-RH-5MM-2 HOLE_4-RH-5MM-2

MH4 MH5 MH6 MH9

HOLE_4-RH-1 HOLE_4-RH-1 HOLE_4-RH-5MM-2 HOLE_4-RH-5MM-5PIN-2

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
RN14 2.7K/8P4R/4
RN15 2.7K/8P4R/4
RN16 2.7K/8P4R/4
RN17 2.7K/8P4R/4
RN18 2.7K/8P4R/4
RN19 2.7K/8P4R/4

* For China POWER

VCC3

R1 1K/4/1

[12] N_GPP_D9

R703 330/4

Q9 SOT23

EMF30N02J/SOT23/627pF/30m

-PROHOT

OTP:130度 / PCB THERMAL TRIP:128 度

-PROHOT * 保留 ?

[4,16,26] A_-PROCHOT A_-PROCHOT

*Del VCORE OPA+MOS PROHOT

COUPON1 COUPON1 COUPON/X VCC3

COUPON2 COUPON2 COUPON/X VCC3

CLOSE VCORE PWM UPPER MOSFET

-PROHOT

OTP:130度 / PCB THERMAL TRIP:129 度

*Del VCCGT OPA+MOS PROHOT

COUPON3 COUPON3 COUPON/X

COUPON4 COUPON4 COUPON/X

CLOSE VCCGT PWM UPPER MOSFET

Gigabyte Technology			
Title: ATX POWER CONNECTOR			
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP		Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 36 of 74		

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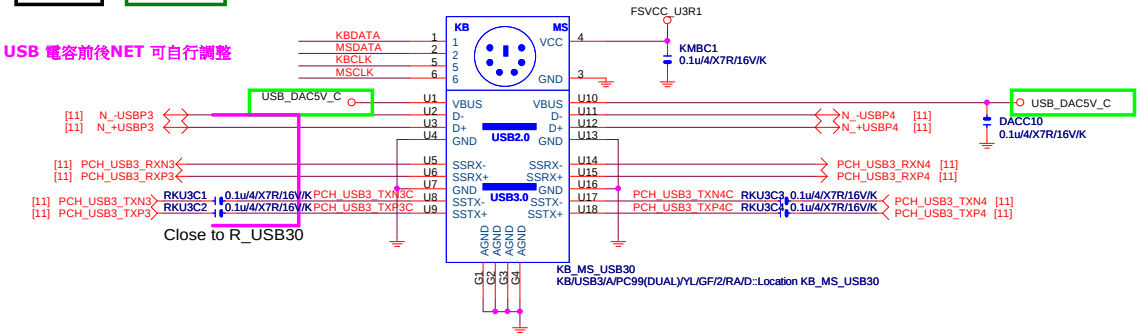
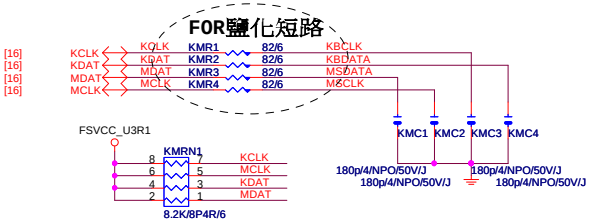
KB/MS

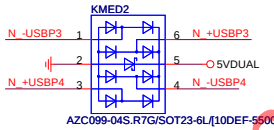
Rev: 0.9

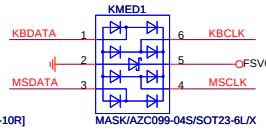
USB 電容前後NET 可自行調整



FOR鹽化短路



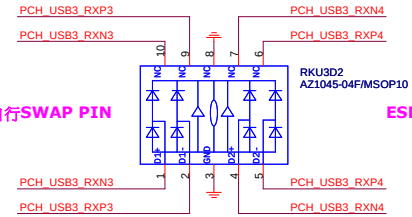




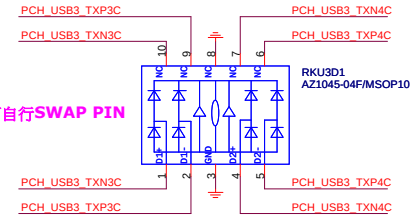
R_USB 2.0 OC SIGNAL

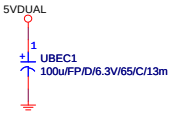
*Del U20C6

ESD 可自行SWAP PIN



ESD 可自行SWAP PIN





Gigabyte Technology			
Title: KB_MS_USB			
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP		Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 37 of 74		

Rev: 0.9

Front USB3.0

NET 可自行調整

F_USB30
REV=1

USB_DAC5V_A

VBUS, ID, SSRX1-, SSRX1+, SSTX1-, SSTX1+, D1-, D1+, GND, GND

[61] U3RXDN1
[61] U3RXDP1
[61] U3TXDN1
[61] U3TXDP1
[61] U2DM1
[61] U2DP1

FBU3C1 0.1u/4/X7R/16V/K U3TXDN1_C
FBU3C2 0.1u/4/X7R/16V/K U3TXDP1_C

VBUS, SSTX2-, SSTX2+, SSRX2-, SSRX2+, D2-, D2+, GND, GND

USB_DAC5V_A

NET 可自行調整

FBU3C3 0.1u/4/X7R/16V/K U3TXDN2_C
FBU3C4 0.1u/4/X7R/16V/K U3TXDP2_C

[61] U3TXDN2
[61] U3TXDP2
[61] U3RXDN2
[61] U3RXDP2
[61] U2DM2
[61] U2DP2

BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
黑色

NET 可自行調整

U3RXDP1, U3RXDN1, U3RXDN2, U3RXDP2

FBU3D1
AZ1045-04F/MSOP10

FBU3D3
U2DM1, U2DP1, 3VDUAL, U2DP2, U2DM2

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

CLOSE F_USB30

F_USB POWER PROTECT

U3TXDP1_C, U3TXDN1_C, U3TXDN2_C, U3TXDP2_C

FBU3D2
AZ1045-04F/MSOP10

CLOSE F_USB30

Gigabyte Technology

Title: F_USB30

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

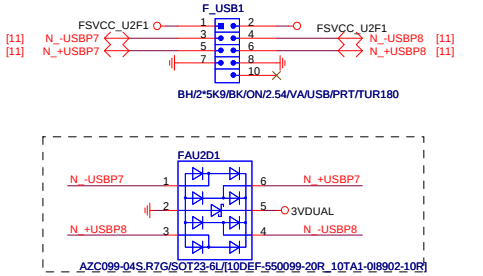
Date: Wednesday, April 11, 2018 | Sheet 38 of 74

Rev: 0.9

FRONT USB1

NET 可變

FUSB2X5-HS

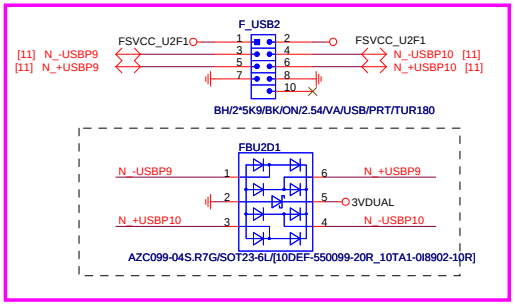


*Del FAU2EC1

FRONT USB2

NET 可變

FUSB2X5-HS

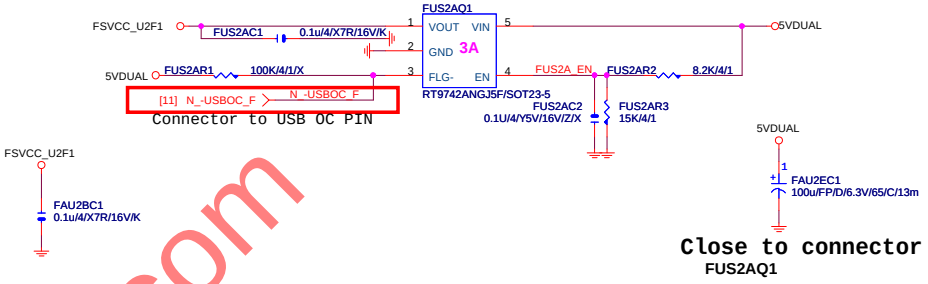


*Del FSVCC_U2F2

USB POWER

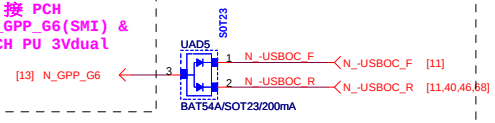
Close to connector

USB 2.0 FRONT PORT. 2 port/ 1 fuse or 4 port/1 fuse.



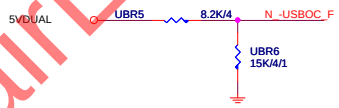
Close to connector
FUS2AQ1

* 接 PCH N_GPP_G6(SMI) & PCH PU 3Vdual



F_USB 2.0 OC SIGNAL

*Del U2OC2



Gigabyte Technology	
Title	F_USB20
Size: Custom	Document Number: Z370 AORUS Gaming 7-CF Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 39 of 74

Rev: 0.9

R_USB30

USB 電容前後NET 可自行調整

R_USB30
USB3.0/2.0

[11] N_-USBP5
[11] N_+USBP5
[11] PCH_USB3_RXN5
[11] PCH_USB3_RXP5
[11] PCH_USB3_TXN5
[11] PCH_USB3_TXP5
RBU3C1 0.1u/4/X7R/16V/K
RBU3C2 0.1u/4/X7R/16V/K
R_U3TXN5
R_U3TXP5
FSVCC_U3R1
VBUS D- D+ GND SSRX- SSRX+ GND SSTX- SSTX+
AGND AGND AGND AGND
G1 G2 G3 G4
USB/18P/BU/OS/RA/D/2/1U/SB

USB 電容前後NET 可自行調整

N_-USBP6 [11]
N_+USBP6 [11]
PCH_USB3_RXN6 [11]
PCH_USB3_RXP6 [11]
PCH_USB3_TXN6 [11]
PCH_USB3_TXP6 [11]
RBU3C3 0.1u/4/X7R/16V/K
RBU3C4 0.1u/4/X7R/16V/K
R_U3TXN6
R_U3TXP6

ESD 可自行SWAP PIN

RBU3D3
N_-USBP5 1
N_+USBP6 3
2
6 N_+USBP5
5 FSVCC_U3R1
4 N_-USBP6
AZC099-04S.R7G/SOT23-6L/[10DEF-550099-20R_10TA1-0I8902-10R]

CONNECTOR 自行調整

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

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

後窗改不銹鋼(耐鹽霧72hrs)

USB POWER

Close to connector

USB 3.0 REAR PORT. 2 port/ 1 fuse

FSVCC_U3R1
FUS3FC1 0.1u/4/X7R/16V/K
5VDUAL
FUS3FR1 100K/4/1/X
[11,39,46,68] N_-USBOC_R
N_-USBOC_R
Connector to USB OC PIN
FUS3FQ1
VOUT VIN
GND 3A
FLG- EN
RT9742ANGJ5F/SOT23-5
FUS3F_EN
FUS3FR2 8.2K/4/1
FUS3FC2 0.1U/4/Y5V/16V/Z/X
FUS3FR3 15K/4/1
5VDUAL
RBU3EC1 100u/FP/D/6.3V/65/C/13m
5VDUAL
FSVCC_U3R1
RBU3C5 0.1u/4/X7R/16V/K

Close to connector
FUS3FQ1

NET 可自行調整

R_U3TXP5
R_U3TXN5
* swap
R_U3TXN5
R_U3TXP5
R_U3TXN6
R_U3TXP6
* swap
R_U3TXP6
R_U3TXN6
RBU3D2
AZ1045-04F/MSOP10

NET 可自行調整

PCH_USB3_RXP6
PCH_USB3_RXN6
* swap
PCH_USB3_RXN6
PCH_USB3_RXP6
PCH_USB3_RXN5
PCH_USB3_RXP5
* swap
PCH_USB3_RXP5
PCH_USB3_RXN5
RBU3D1
AZ1045-04F/MSOP10

Gigabyte Technology

Title: R_USB30
Size: Custom
Document Number: Z370 AORUS Gaming 7-OP
Rev: 1.01
Date: Wednesday, April 11, 2018
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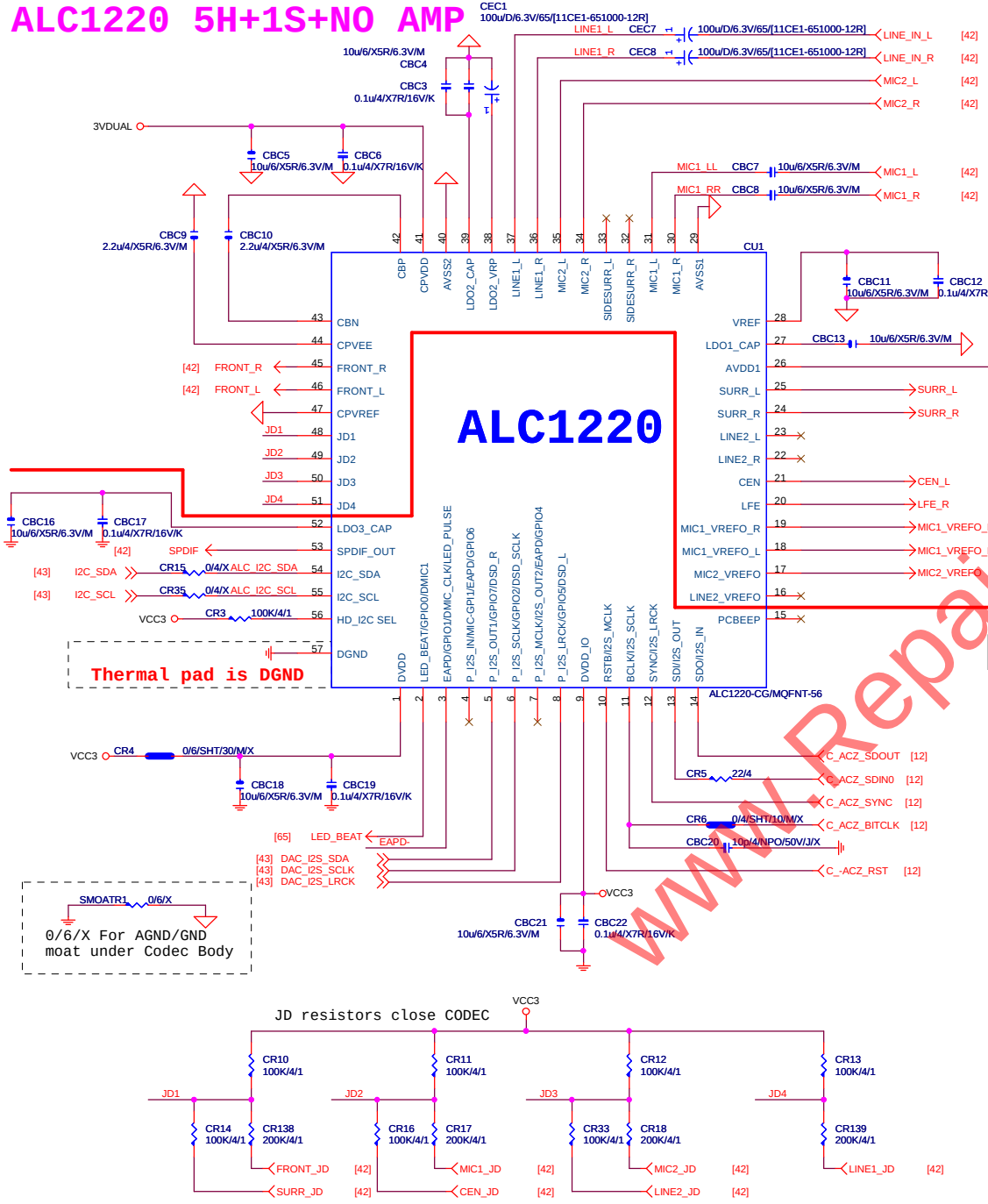
Rev 2.03

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	MH2
DGND	Isolate

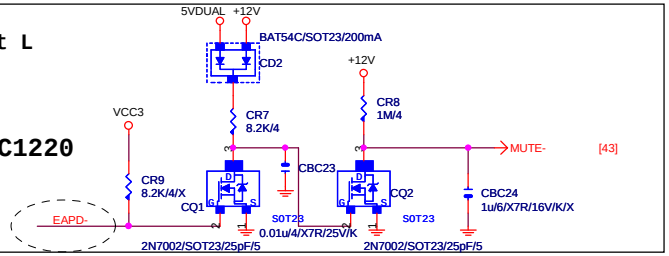
LAYOUT注意:是否要加?
AGND切割線

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

EAPD: Default L
H : ON
L : OFF

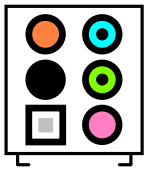
Close to ALC1220



Gigabyte Technology			
Title: ALC1220			
Size: Custom	Document Number: Z370 AORUS Gaming 7-CF		Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 41 of 74		

Rev 2.03

AZALIA JACK



MOATR4 2.2/6 → Audio jack -> USB(各打2 VIA hole)
已修改GND (搭配LAN GND修改)

*MOATR4->2.2 Ω , SNR122dB

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

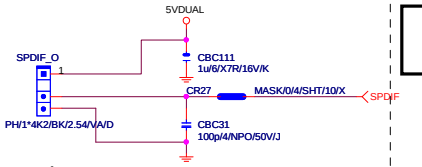
MOATR2 0/4/X, MOATC2 0.1u/4/X7R/16V/K → Near Codec (各打2 VIA hole)

*MOATR3先不改成Short Pad

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

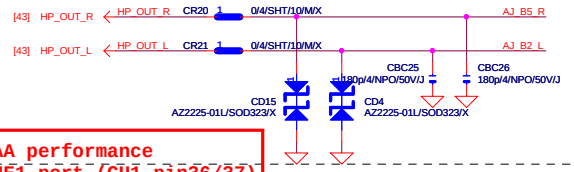
*量產前,0ohm改short pad

SPDIF_OUT



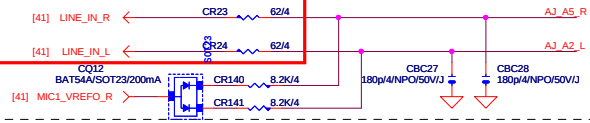
Footprint:SPDIF_O-1X4-CUT2
For HDMI SPDIF

LINE-OUT

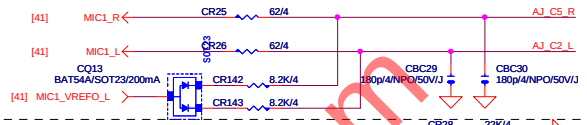


For RMAA performance
Fix LINE1 port (CUI pin36/37)

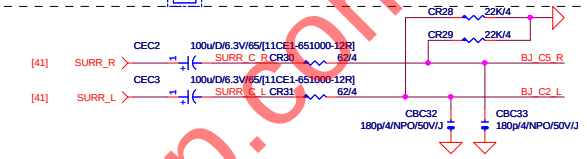
LINE-IN



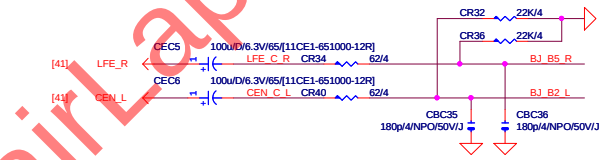
MIC-IN



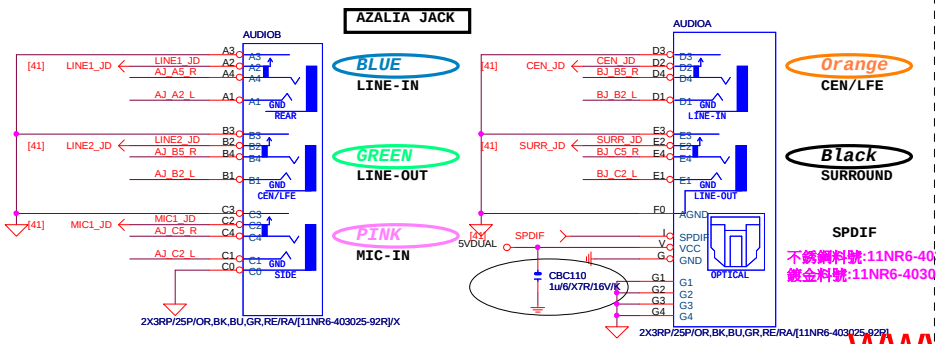
SURROUND



CEN/LFE

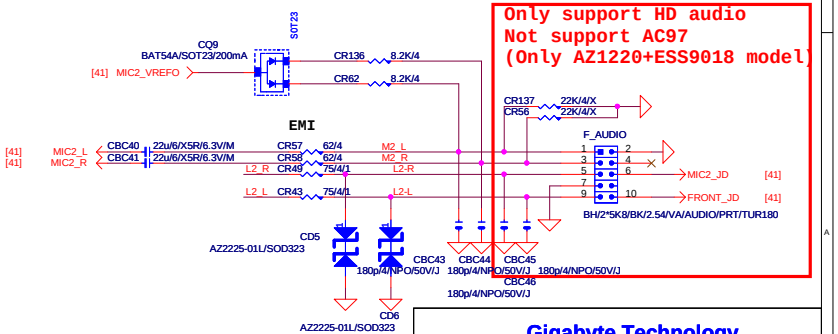


AZALIA JACK



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

AZALIA FRONT PANEL



Only support HD audio
Not support AC97
(Only AZ1220+ESS9018 model)

Gigabyte Technology

Title	AUDIO JACK	
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 42 of 74	

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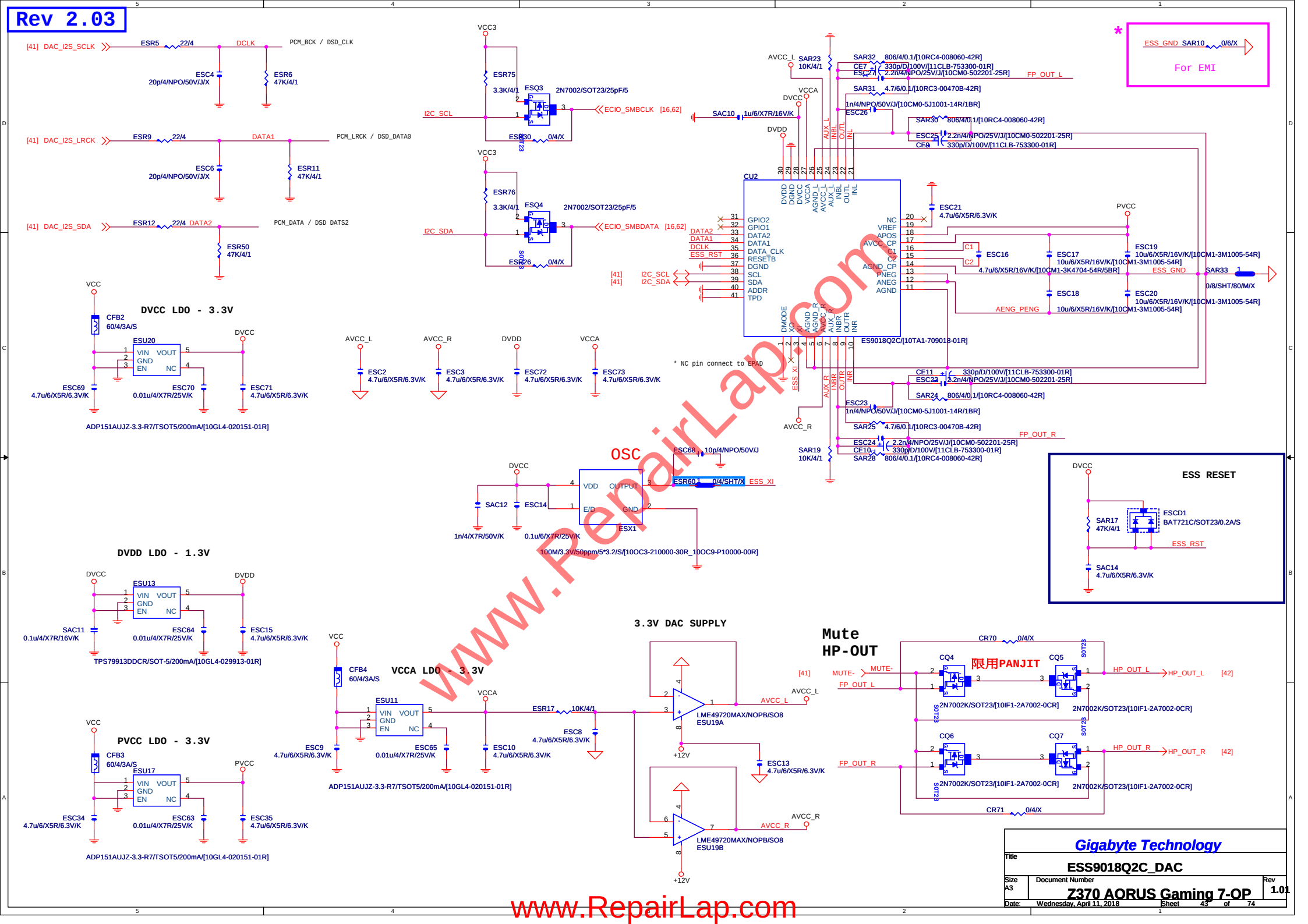
Rev 2.03



Gigabyte Technology		
Title: ESS9018Q2C_DAC		
Size: A3	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 43 of 74	

LAN:E2500 R2.01

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

離IC近越好

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

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

[46] LA_LED_ACT_TXRX
[46] LA_LED_LINK100

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

3VDUAL_LAN2
LABC9 10u/6/X5R/6.3V/M
1u/4/X5R/6.3V/K
LABC10
LABC11 0.1u/4/X7R/16V/K

LAU1
Qualcomm (Atheros) Killer E2500 E2400 E2201

EGND LX LED1 LED0 DVDDL_REG RX_N RX_P AVDDL REFCLKP REFCLKN AVDDL
VDD3V PERST# WAKE# CLKREQ# DEBUGMODE0 AVDDL_REG XTLO XTLI AVDDH_REG RBIAS
TX_P TX_N NC TESTMODE2 TESTMODE1 TESTMODE0 PPS LED2 AVDDH TRXN3
TRXP0 TRXN0 AVDDL TRXP1 TRXN1 AVDD33 TRXP2 TRXN2 AVDDL TRXP3

E2500-RIV1-RL/QFN40/[10HP2-402500-10R]
E2400料號:E2400-RIV1-RL/QFN40/[10HP2-402400-10R]
E2201料號:E2201-BL3A-R/S/[10HP2-402201-20R]

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

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

LAR9 0/4/X LABC14 0.1u/4/X7R/16V/K/X
LA_PPS LA_DVDDL
LA_LED_LINK1000 LA_LED_LINK1000 [46]
LA_AVDDH
LA_MDI3- LA_MDI3- [46]
LABC17 0.1u/4/X7R/16V/K

FOR ERP WAKEUP
LAR6 8.2K/4
[16,45,50,52] O_-PFMRST2
[16] N_-PCIE1_WAKE
[10] LA_-CLKREQ
LAREQ1 MASK/0/4/SHT/X
LA_-CLKREQ_F
LABC12 1u/4/X5R/6.3V/K/X
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH

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

LAC33 100p/4/NPO/50V/J/X
LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LA_RBIAS
LAR10 2.37K/4/1

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

[46] LA_MDI0+
[46] LA_MDI0-
[46] LA_MDI1+
[46] LA_MDI1-
[46] LA_MDI2+
[46] LA_MDI2-
[46] LA_MDI3+

LABC20 0.1u/4/X7R/16V/K/X
LABC21 0.1u/4/X7R/16V/K
LAR19 MASK/0/4/SHT/X 3VDUAL_LAN2
LABC22 1u/4/X5R/6.3V/K

LAN POWER

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

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

LA_AVDDH
LAR7 8.2K/4 LA_LED_ACT_TXRX
LAR8 8.2K/4 LA_LED_LINK100
VCC3
LAR11 8.2K/4 LA_VDDCT

*Add 25KV ESD

LAESD1
LA_MDI1- 1
LA_MDI0- 3
6 LA_MDI1+
2
5 5VDUAL
4 LA_MDI0+
AZC399-04S.R7G/SOT23-6L/[10DEF-510399-10R]

LAESD2
LA_MDI3- 1
LA_MDI2+ 3
6 LA_MDI3+
2
5 5VDUAL
4 LA_MDI2-
AZC399-04S.R7G/SOT23-6L/[10DEF-510399-10R]

Gigabyte Technology
Title: DUAL LAN~ E2500+I219
Size: Custom
Document Number: Z370 AORUS Gaming 7-
Rev: 1.01
Date: Wednesday, April 11, 2018
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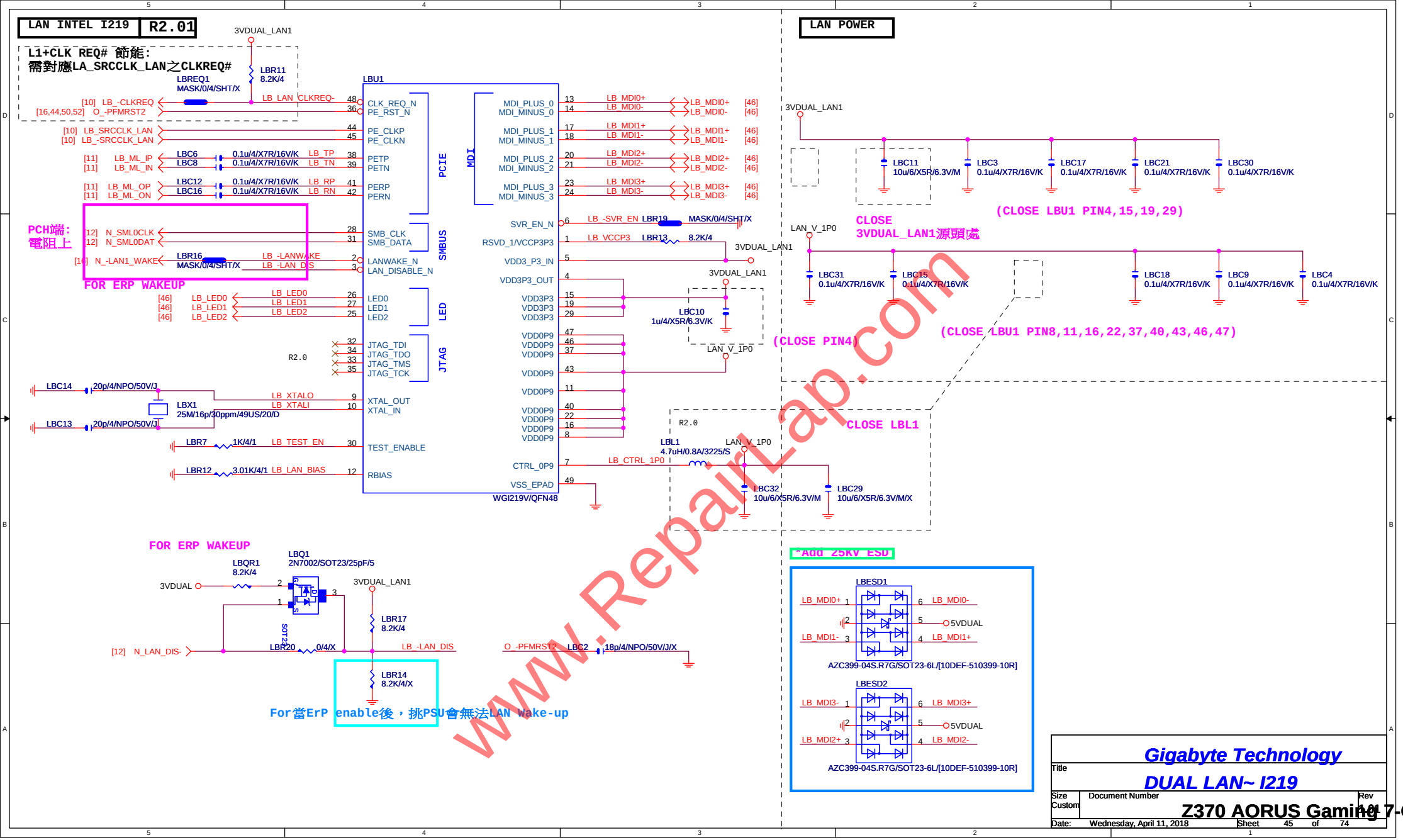
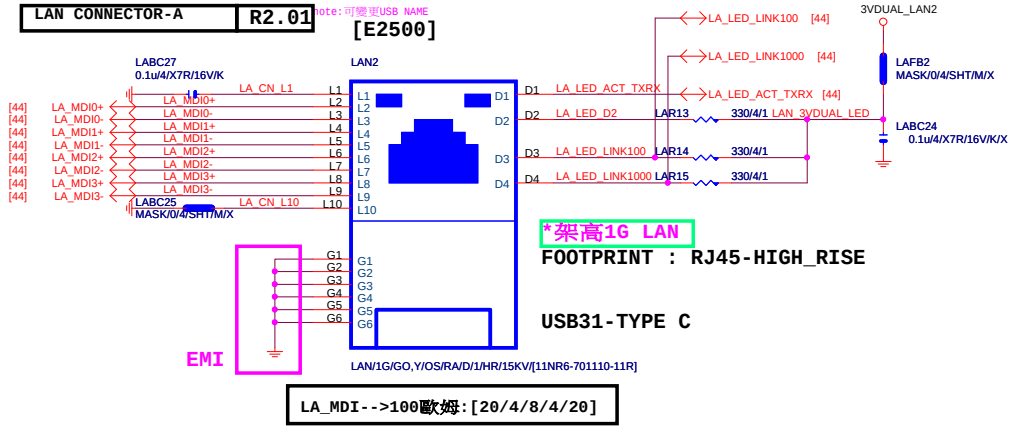


LAN CONNECTOR-A R2.01

note:可變更USB NAME

[E2500]



*架高1G LAN

FOOTPRINT : RJ45-HIGH_RISE

USB31-TYPE C

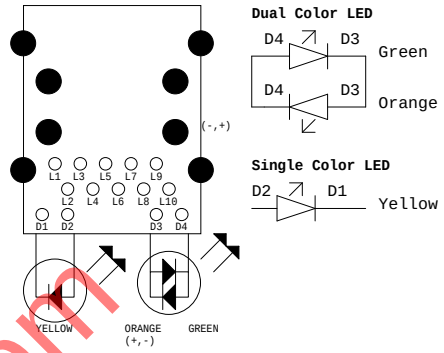
LA_MDI-->100歐姆:[20/4/8/4/20]

EMI SHORT PAD

PS:視EMI需求

*Del LAR24

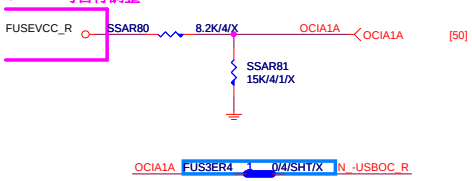
架高LAN LAYOUT示意圖



TYPE A OC

*預留

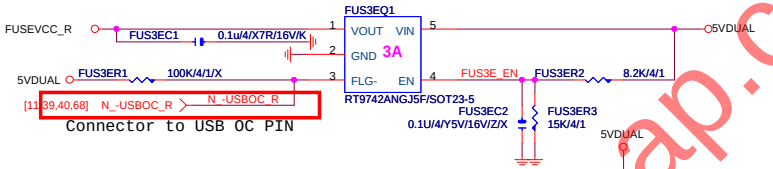
POWER 可自行調整



USB POWER

Close to connector

USB 3.0 REAR PORT. 2 port/ 1 fuse



Close to connector

FUS3EQ1

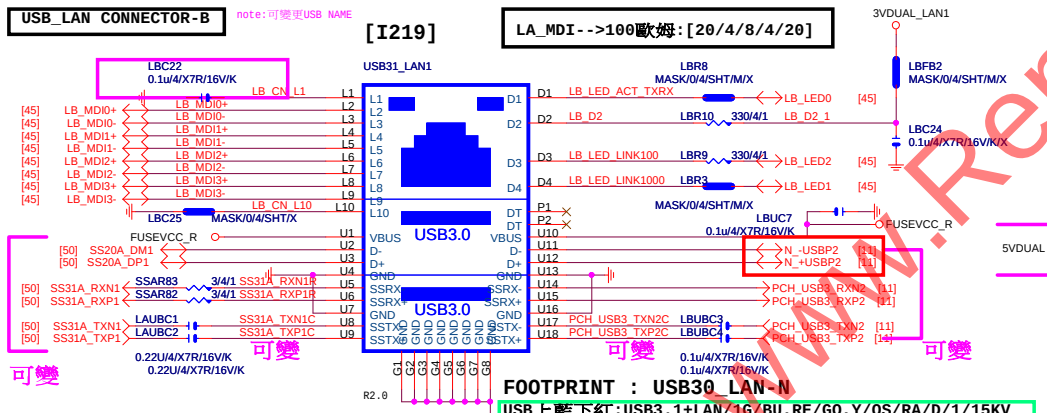
*Del LAN COVER

USB_LAN CONNECTOR-B

note:可變更USB NAME

[I219]

LA_MDI-->100歐姆:[20/4/8/4/20]



可變

可變

可變

可變

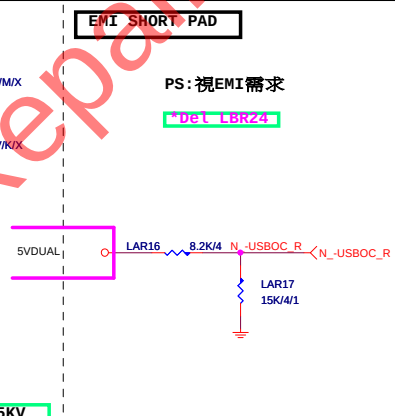
可變

可變

FOOTPRINT : USB30_LAN-N

USB上藍下紅:USB3.1+LAN/1G/BU,RE/GO,Y/OS/RA/D/1/15KV

USB上白下紅:USB3.1+LAN/1G/WH,RE/GO,Y/OS/RA/D/1/15KV



EMI SHORT PAD

PS:視EMI需求

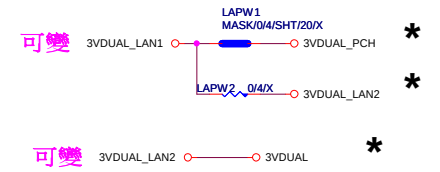
*Del LBR24

NOTE:

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

LAN POWER

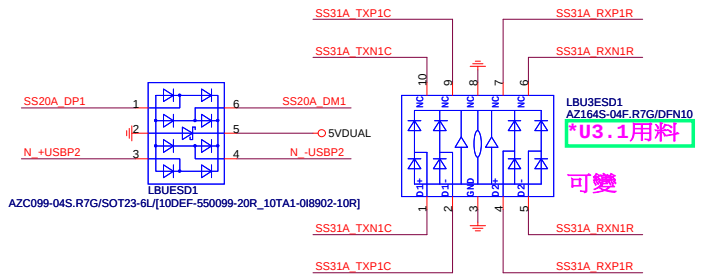
note: lan power連接及電流



~USB30_LAN1設定在ERP可LAN WAKEUP

~USB30_LAN2由獨立LAN POWER L1117供給

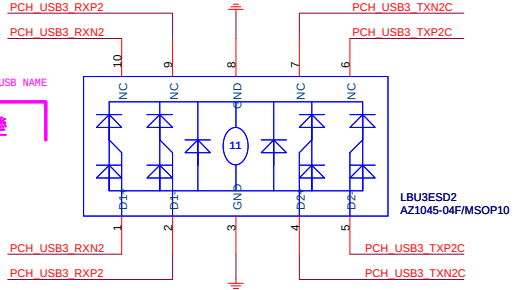
RMA ESD PROTECT



請勿跟USB3.0的ESD做SWAP

note:可變更USB NAME

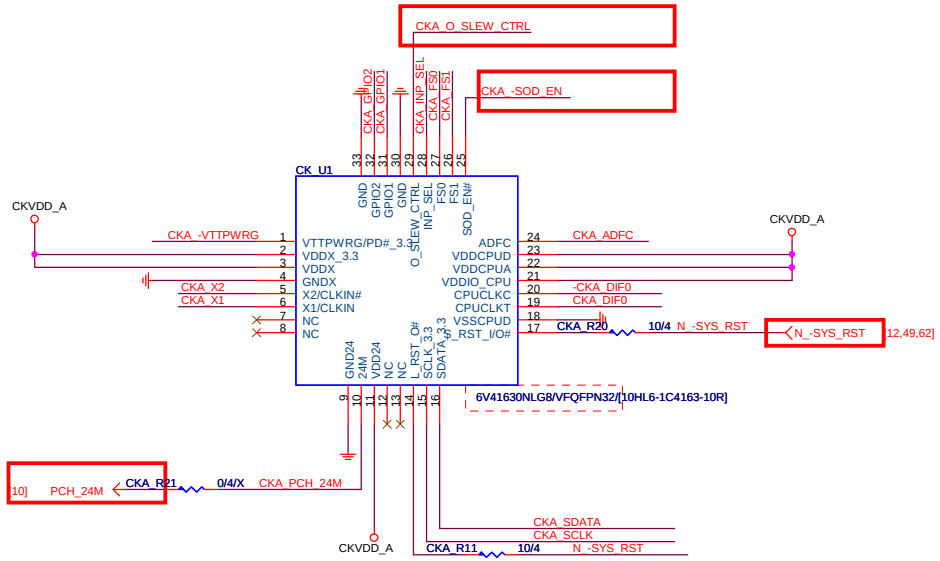
可變

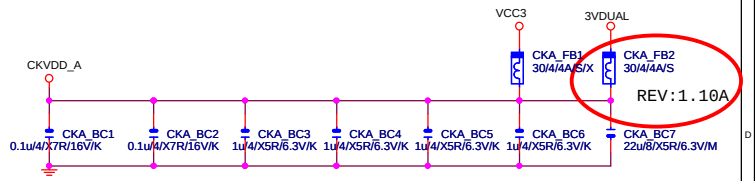


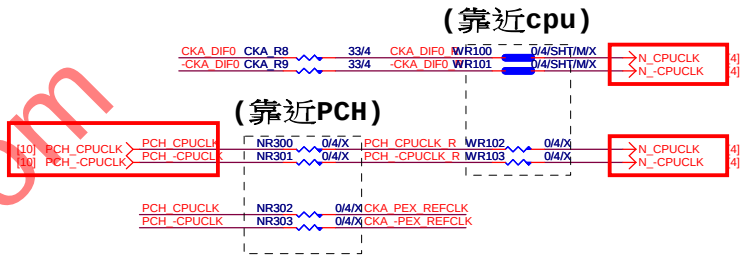
Gigabyte Technology		
Title: LAN CONNECTOR-E2500+I219		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 46 of 74	

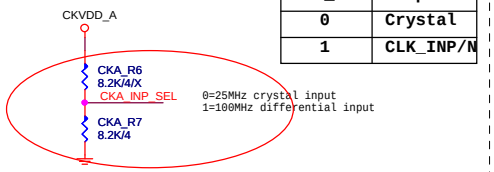
REV:0.1

IDT6V41630

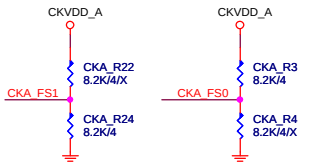






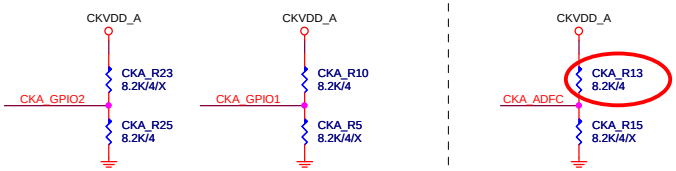


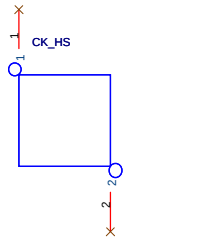
INP_SEL	Intput
0	Crystal
1	CLK_INP/N



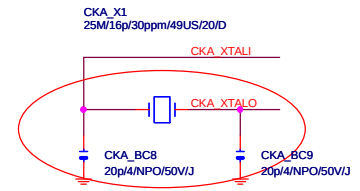
CPU Frequency Selection and output Divider Table

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

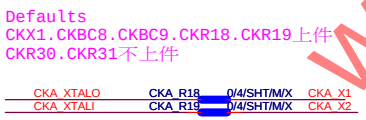


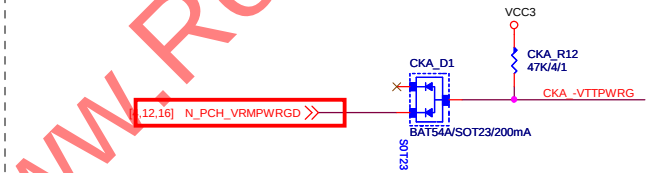


*可變，依需求上件不上件。

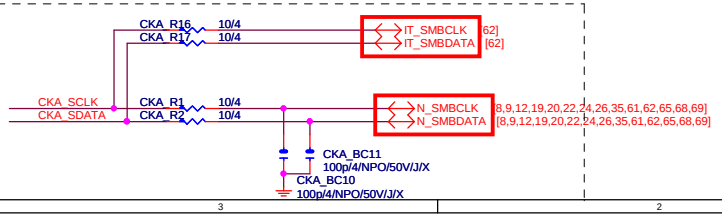


Defaults
CKX1.CKBC8.CKBC9.CKR18.CKR19上件
CKR30.CKR31不上件

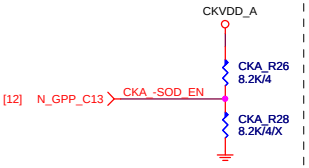




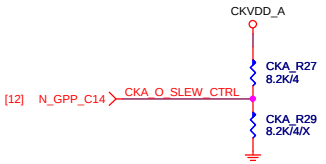
SMBUS



Real time selection fucntion



Frequency change slew rate control

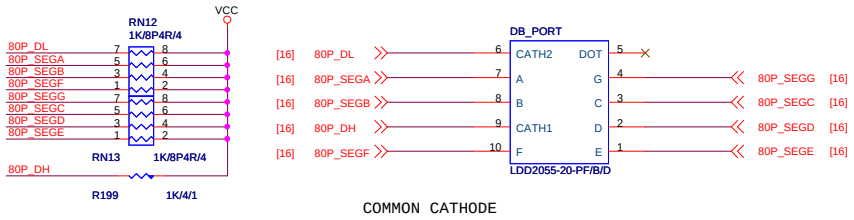


GIGABYTE™

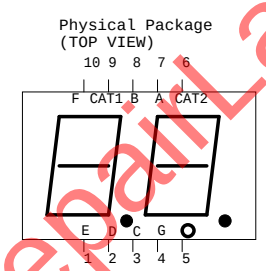
Title	IDT6V41530_CLK BUFFER	
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 47 of 74	

Rev: 0.9

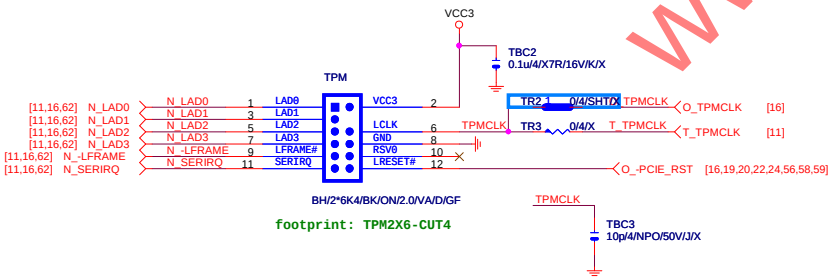
80 PORT



COMMON CATHODE



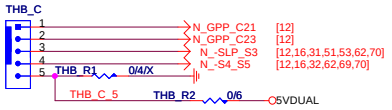
TPM CONNECT



footprint: TPM2X6-CUT4

Thunderbolt

★Update 2015-12-29



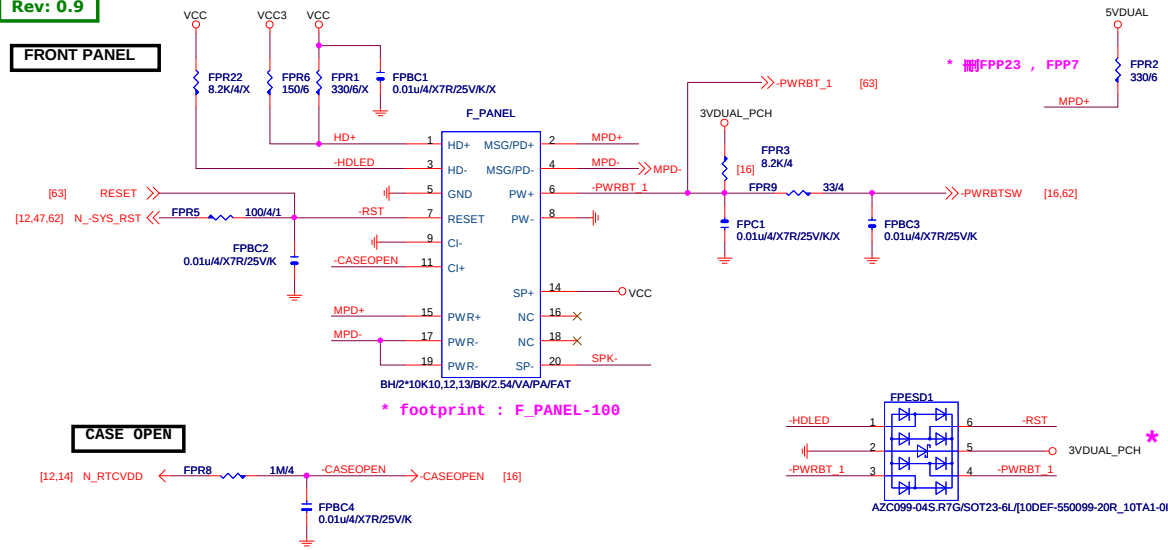
PH/1*5/BK/2.54/VA/D/[11NH5-040105-41R]

Footprint update "WAFER-1X5P"

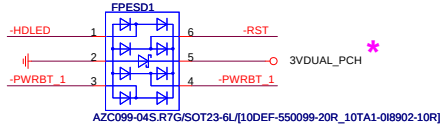
Gigabyte Technology		
Title: COM,TPM,THB		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 48 of 74	

Rev: 0.9

FRONT PANEL

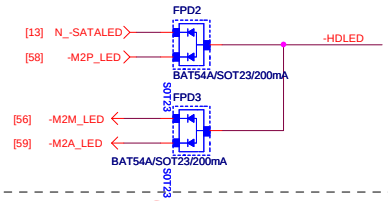


CASE OPEN

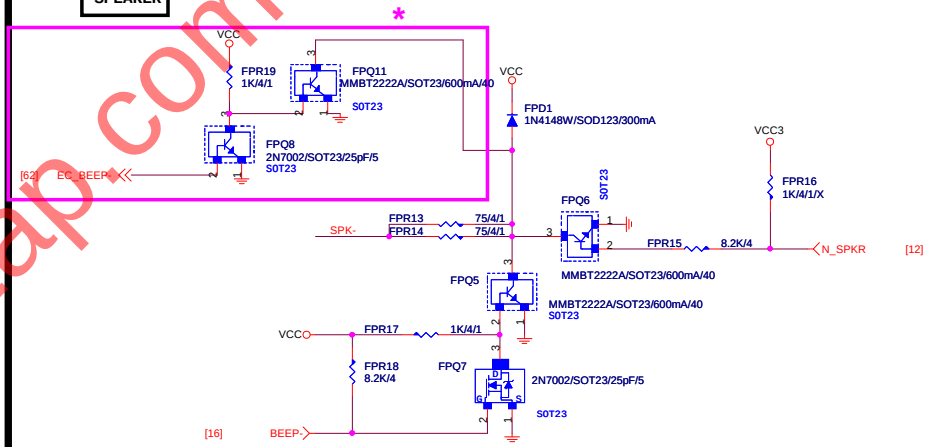


SATA LED

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



SPEAKER



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

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: Z370 AORUS Gaming 7_OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 49 of 74	

ASM3142 USB3 Host Rev0.2
TI HD3SS3220 + FRONT USB3.1
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.

[11] PCH_PCIE_IP5 — 0.22U/4/X7R/16V/K — SSAC1 — PCIE_IP1C
[11] PCH_PCIE_IN5 — 0.22U/4/X7R/16V/K — SSAC2 — PCIE_IN1C
[11] PCH_PCIE_IP6 — 0.22U/4/X7R/16V/K — SSAC4 — PCIE_IP2C
[11] PCH_PCIE_IN6 — 0.22U/4/X7R/16V/K — SSAC3 — PCIE_IN2C

[11] PCH_PCIE_OP5 — 0.22U/4/X7R/16V/K — SSAC8 — PCIE_OP1C
[11] PCH_PCIE_ON5 — 0.22U/4/X7R/16V/K — SSAC14 — PCIE_ON1C
[11] PCH_PCIE_OP6 — 0.22U/4/X7R/16V/K — SSAC15 — PCIE_OP2C
[11] PCH_PCIE_ON6 — 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

From PCIE CLK

-SRCCLK_USB31A [10]

To USB Conn

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

Close to ASM1142 IC

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

SSA_SMI- [10] N_GPP_D3
SPI_DO=>CSEL0
SSA_SPICK
SSA_SPIDO
SSA_SPICS-
SSA_SPIDI
SSA_PORST-
UART_RX=>CSEL1
SSA_UARTRX
SSA_UARTTX

To USB Conn

SS20A_DM2 [51]
SS20A_DP2 [51]
VCCSUS_VCCLU
SS20A_DM1 [46]
SS20A_DP1 [46]
3VDUAL

SSATST_EN SSAR5 4.7K/4/1
PCIE_RST- — O_-PFMRST2 [16,44,45,52]
OCIA1B — OCIA1B [51]
OCIA1A — OCIA1A [46]
SSA_PPCB SSAR15 8.2K/4/1/X
SSA_PPCA SSAR16 8.2K/4/1/X
N_-PCIE_WAKE — N_PCIE_WAKE [12,16,19,20,22,24,52]

To OC circuit

ASM 2142 Option

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

ASM2142 SSAR34,SSAR38

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

ASM3142 SSAR22=374,1.1V,50mA

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

ASM2142 Option

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

ASM3142 2.5V, 300mA

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 / SSAC38 — 0.1u/4/X7R/16V/K
VCCSUS_VCCLU

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 — 20M/16p/30ppm/49US/20/D/[11XH5-820000-10R]
SSA_XO

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
SSA120V
VCC
SSAU3 — RT9018B-18GSP/SO8/3A/[10GL2-309018-31R]
SSAU3_EN
SSAR24 2.2/4
VCC3
SSAC6 1u/4/X5R/6.3V/K
SSAC10 22u/8/X5R/6.3V/M
SSAC9 1u/4/X5R/6.3V/K
SSAR28 37.4K/4/1
SSAC11 0.1u/4/X7R/16V/K/X
SSAC13 22u/8/X5R/6.3V/M
SSAC12 1u/4/X5R/6.3V/K
SSAR29 100K/4/1

【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 — 4M/SPI/SO8/200mil/S[10HP4-112540-30R]
SSA_SPICS-
SSA_SPIDI
SSA_SPIWP-
SSA_SPICK
SSA_SPIDO
VCC3 — SSAR6 8.2K/4
SSAC21 0.1u/4/X7R/16V/K

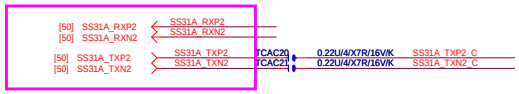
GIGABYTE™

Title: ASM3142 USB31A_R
Size: Custom — Document Number: Z370 AORUS Gaming 7-OP — Rev: 1.01
Date: Wednesday, April 11, 2018 — Sheet 50 of 74

www.RepairLap.com

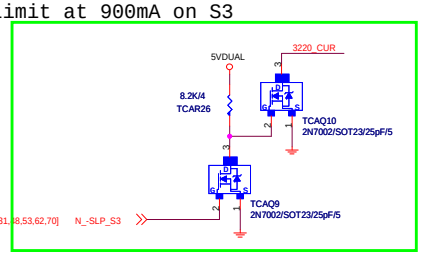
ASM3142 USB3 Host Rev0.2
TI HD3SS3220 + FRONT USB3.1

USB 3.x SuperSpeed

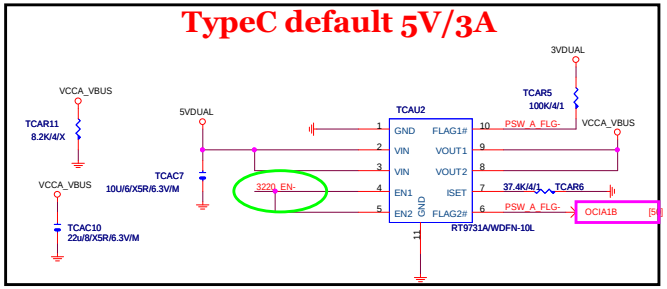


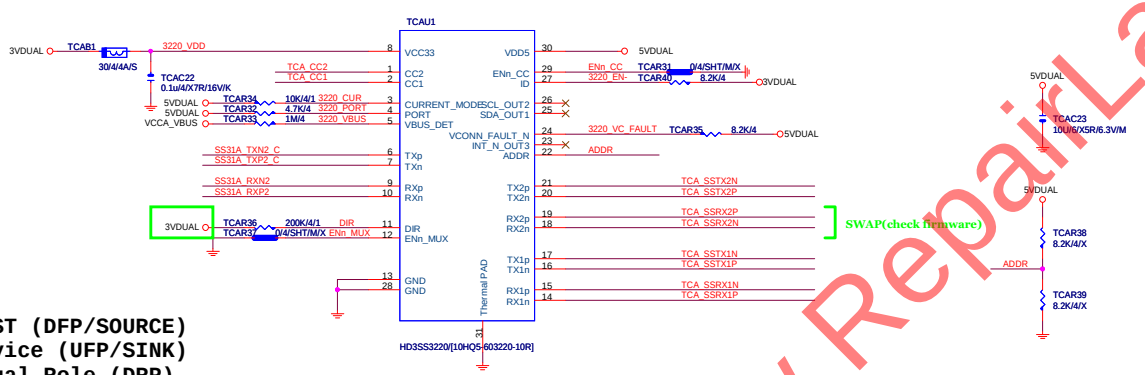
For VBUS current limit at 900mA on S3

*Del IO_GP21



TypeC default 5V/3A

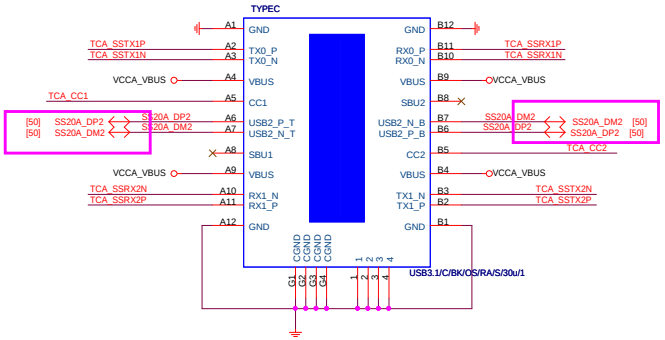




SWAP(check firmware)

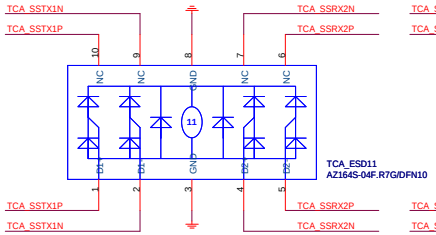
PORT
H - HOST (DFP/SOURCE)
L - Device (UFP/SINK)
NC - Dual Role (DRP)

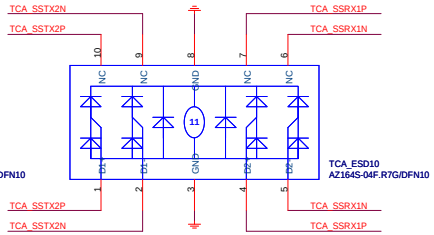
CURRENT MODE
L - Default (900mA) / Pull down to GND or NC
M - Medium (1.5A) / Pull up to VDD 500K
H - High (3.0A) / Pull up to VDD 10K

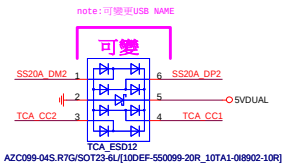


USB2.0 can be used the same source

Color markers can be changed by model







GIGABYTE™

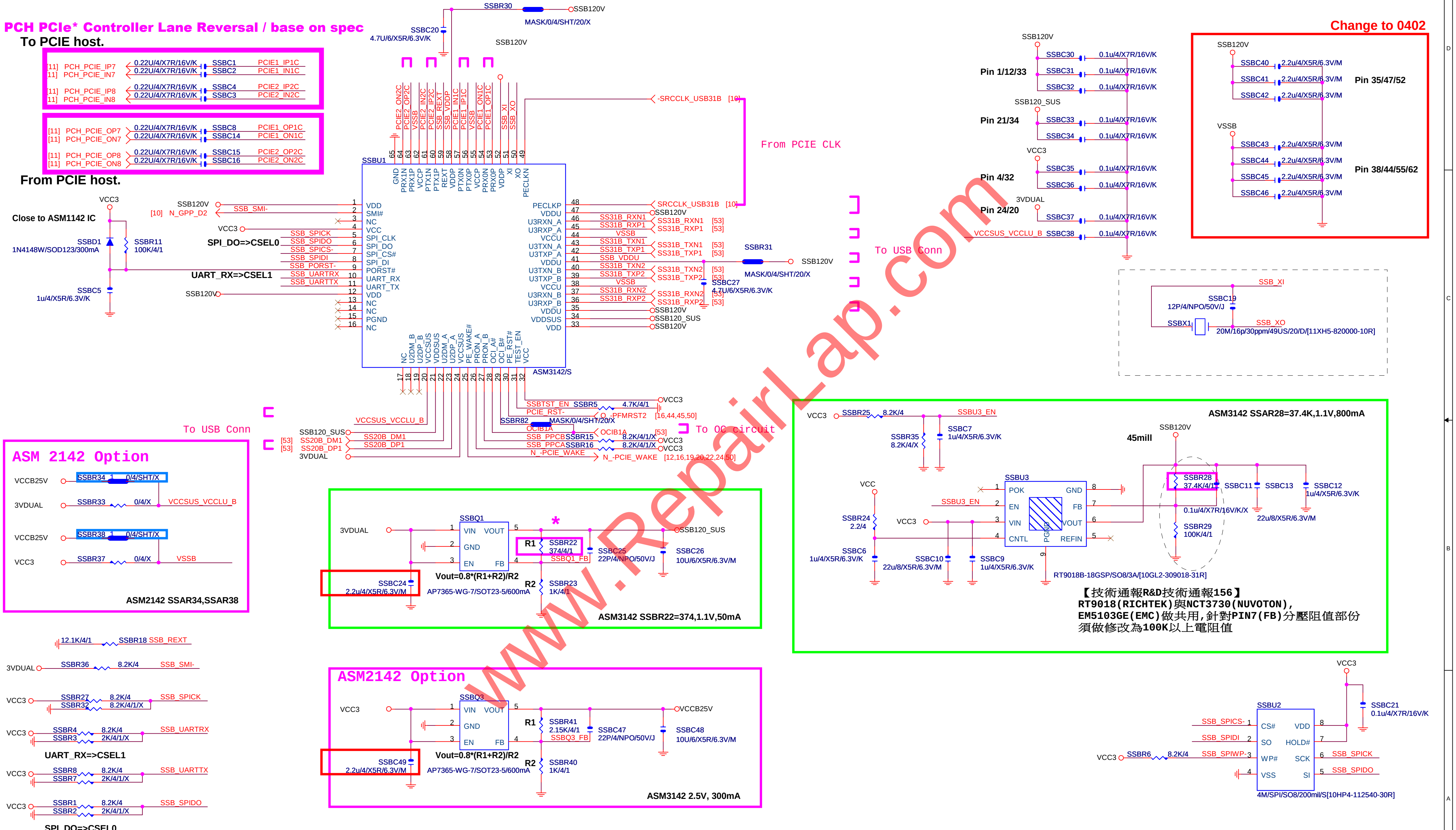
Title	TI HD3SS3220_B	
Size C	Document Number Z370 AORUS Gaming 7-OP	Rev 1.01
Date: Wednesday, April 11, 2018	Sheet 51 of 74	

ASM3142 USB3 Host Rev0.2
TI HD3SS3220 + FRONT USB3.1
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.
From PCIE host.
[11] PCH_PCIE_IP7
[11] PCH_PCIE_IN7
[11] PCH_PCIE_IP8
[11] PCH_PCIE_IN8
[11] PCH_PCIE_OP7
[11] PCH_PCIE_ON7
[11] PCH_PCIE_OP8
[11] PCH_PCIE_ON8
0.22U/4/X7R/16V/K
SSBC1 SSBC2 SSBC4 SSBC3 SSBC8 SSBC14 SSBC15 SSBC16
PCIE1_IP1C PCIE1_IN1C PCIE2_IP2C PCIE2_IN2C PCIE1_OP1C PCIE1_ON1C PCIE2_OP2C PCIE2_ON2C
SSBR30 MASK/0/4/SHT/20/X SSB120V
SSBC20 4.7U/6/X5R/6.3V/K
SSBU1 ASM3142/S
-SRCCLK_USB31B [10]
From PCIE CLK
SRCCLK_USB31B [10]
SS31B_RXN1 SS31B_RXP1 SS31B_TXN1 SS31B_TXP1 SS31B_TXN2 SS31B_TXP2 SS31B_RXN2 SS31B_RXP2 [53]
SSBR31 MASK/0/4/SHT/20/X
SSBC27 4.7U/6/X5R/6.3V/K
To USB Conn
Close to ASM1142 IC
SSBD1 1N4148W/SOD123/300mA
SSBR11 100K/4/1
SSBC5 1u/4/X5R/6.3V/K
[10] N_GPP_D2 SSB_SMI-
SPI_DO=>CSEL0
UART_RX=>CSEL1
SSB_SPICK SSB_SPIDO SSB_SPICS- SSB_SPIDI SSB_PORST- SSB_UARTRX SSB_UARTTX
Change to 0402
Pin 1/12/33 Pin 21/34 Pin 4/32 Pin 24/20
SSBC30 SSBC31 SSBC32 SSBC33 SSBC34 SSBC35 SSBC36 SSBC37 SSBC38 0.1u/4/X7R/16V/K
SSB120V SSB120_SUS VCC3 3VDUAL VCCSUS_VCCLU_B
SSBC40 SSBC41 SSBC42 SSBC43 SSBC44 SSBC45 SSBC46 2.2u/4/X5R/6.3V/M
Pin 35/47/52
Pin 38/44/55/62
SSB_XI SSB_XO
SSBC19 12P/4/NPO/50V/J
SSBX1 20M/16p/30ppm/49US/20/D/[11XH5-820000-10R]
SSBTST_EN SSBR5 4.7K/4/1
PCIE_RST- -PFMRST2 [16,44,45,50]
SSBR82 MASK/0/4/SHT/20/X
OCIB1A [53]
SSB_PPCB SSBR15 8.2K/4/1/X
SSB_PPCA SSBR16 8.2K/4/1/X
N_-PCIE_WAKE [12,16,19,20,22,24,50]
To OC circuit
VCCSUS_VCCLU_B
SS20B_DM1 SS20B_DP1 [53]
To USB Conn
ASM 2142 Option
VCCB25V SSBR34 0/4/SHT/X
3VDUAL SSBR33 0/4/X VCCSUS_VCCLU_B
VCCB25V SSBR38 0/4/SHT/X
VCC3 SSBR37 0/4/X VSSB
ASM2142 SSAR34,SSAR38
SSBQ1
VIN VOUT GND EN FB
SSBR22 374/4/1
SSBQ1_FB
SSBC25 22P/4/NPO/50V/J
SSBC26 10U/6/X5R/6.3V/M
SSBC24 2.2u/4/X5R/6.3V/M
Vout=0.8*(R1+R2)/R2
AP7365-WG-7/SOT23-5/600mA
SSBR23 1K/4/1
ASM3142 SSBR22=374,1.1V,50mA
ASM3142 SSAR28=37.4K,1.1V,800mA
SSBR25 8.2K/4 SSBU3_EN
SSBR35 8.2K/4/X
SSBC7 1u/4/X5R/6.3V/K
45mill
SSBU3
POK GND EN FB VIN VOUT CNTL REFIN PGND
SSBR28 37.4K/4/1
SSBC11 SSBC13 SSBC12 1u/4/X5R/6.3V/K
0.1u/4/X7R/16V/K/X
22u/8/X5R/6.3V/M
SSBR29 100K/4/1
SSBR24 2.2/4
SSBC6 1u/4/X5R/6.3V/K
SSBC10 22u/8/X5R/6.3V/M
SSBC9 1u/4/X5R/6.3V/K
RT9018B-18GSP/SO8/3A/[10GL2-309018-31R]
【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
12.1K/4/1 SSBR18 SSB_REXT
3VDUAL SSBR36 8.2K/4 SSB_SMI-
VCC3 SSBR27 8.2K/4 SSBR32 8.2K/4/1/X SSB_SPICK
VCC3 SSBR4 8.2K/4 SSBR3 2K/4/1/X SSB_UARTRX
UART_RX=>CSEL1
VCC3 SSBR8 8.2K/4 SSBR7 2K/4/1/X SSB_UARTTX
VCC3 SSBR1 8.2K/4 SSBR2 2K/4/1/X SSB_SPIDO
SPI_DO=>CSEL0
ASM2142 Option
SSBQ3
SSBR41 2.15K/4/1
SSBQ3_FB
SSBC47 22P/4/NPO/50V/J
SSBC48 10U/6/X5R/6.3V/M
SSBC49 2.2u/4/X5R/6.3V/M
SSBR40 1K/4/1
ASM3142 2.5V, 300mA
SSBU2
CS# VDD SO HOLD# WP# SCK VSS SI
SSB_SPICS- SSB_SPIDI SSB_SPIWP- SSB_SPICK SSB_SPIDO
SSBR6 8.2K/4
SSBC21 0.1u/4/X7R/16V/K
4M/SPI/SO8/200mil/S[10HP4-112540-30R]

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

GIGABYTE

Title	ASM3142 USB31B_F
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP
Rev	1.01
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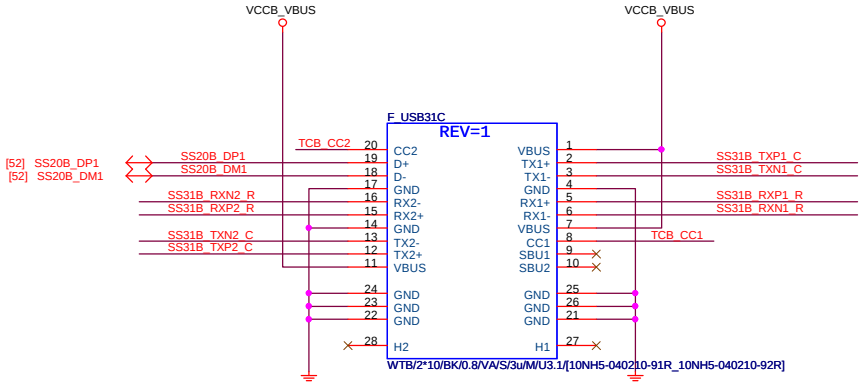
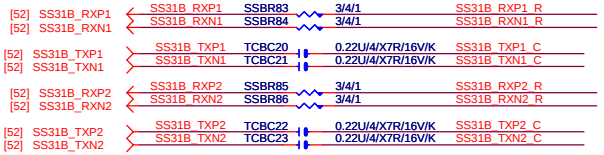
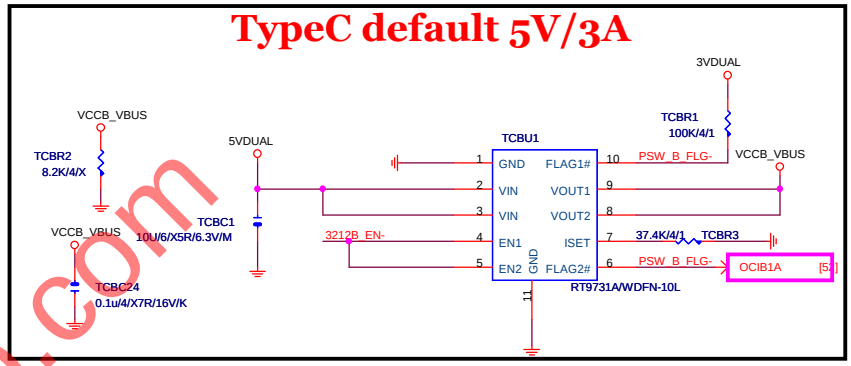
ASM3142 USB3 Host Rev0.2
TI HD3SS3220 + FRONT USB3.1

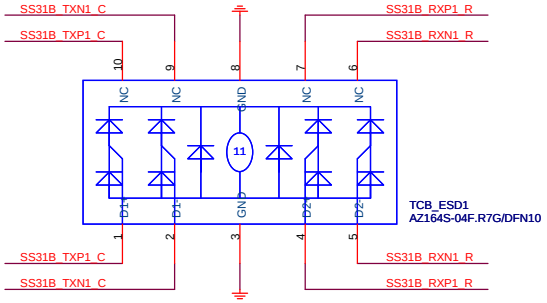


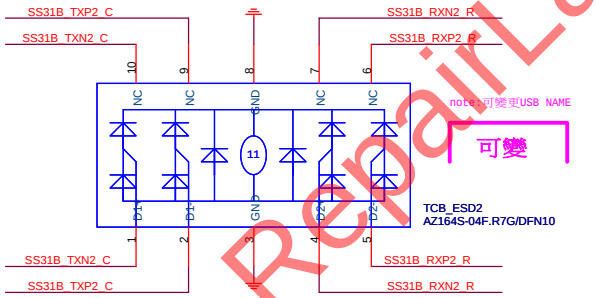


TypeC default 5V/3A



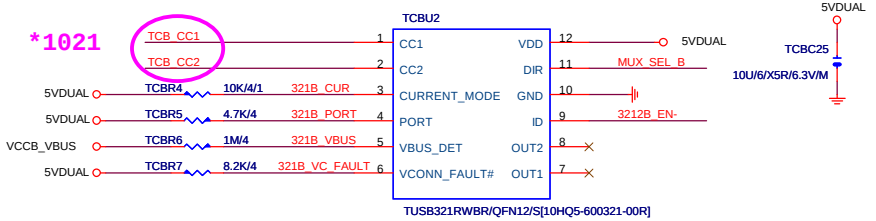
請勿跟USB3.0的ESD做SWAP

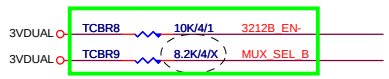


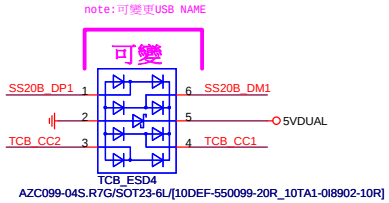


PORT
H - HOST
L - Device
NC - Dual Role

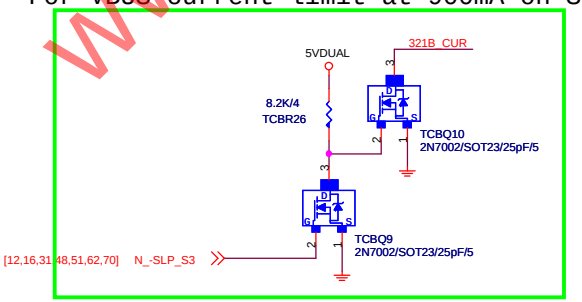
MUX_SEL
H - TypeC plug position 2
L - TypeC plug position 1







For VBUS current limit at 900mA on S3



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

GIGABYTE™

Title	FRONT_USB31	
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 53 of 74	

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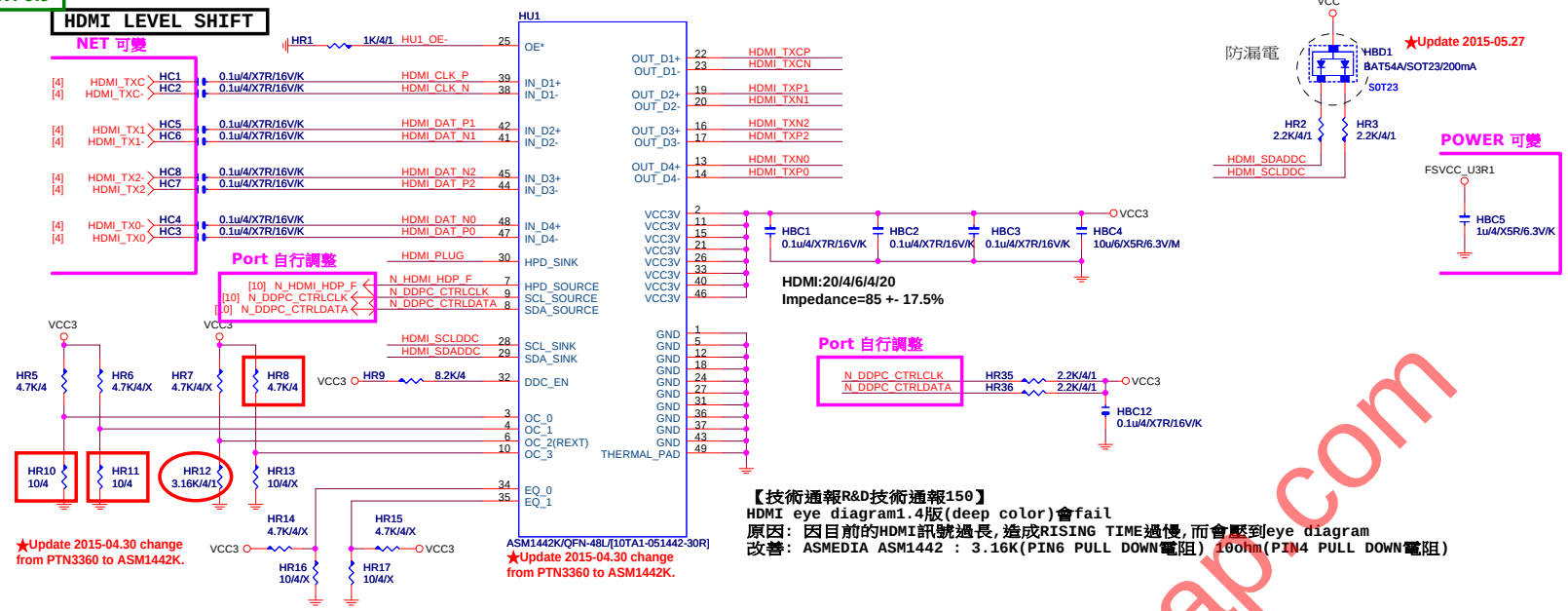
Rev: 0.9



【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) 100hm(PIN4 PULL DOWN電阻)

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

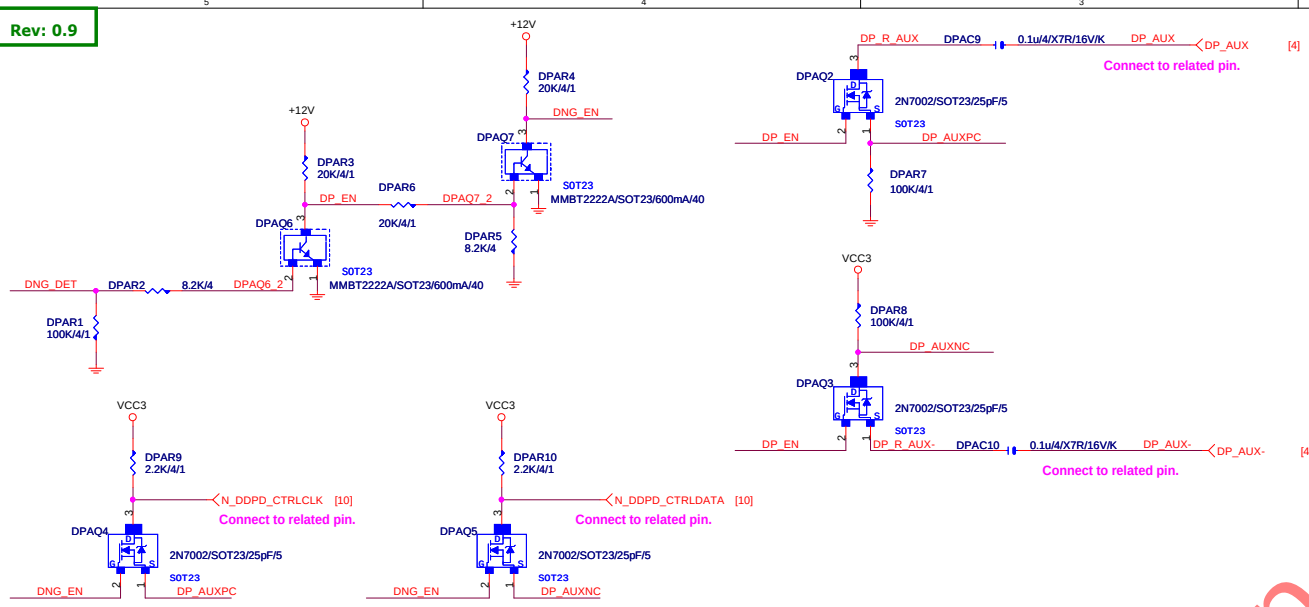
GIGABYTE

Title: HDMI

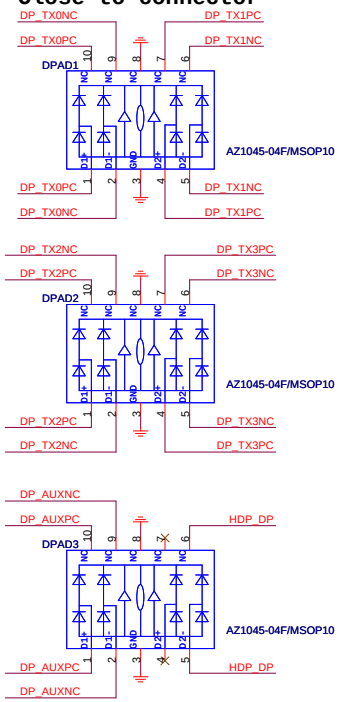
Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.0

Date: Wednesday, April 11, 2018 | Sheet 54 of 74

Rev: 0.9

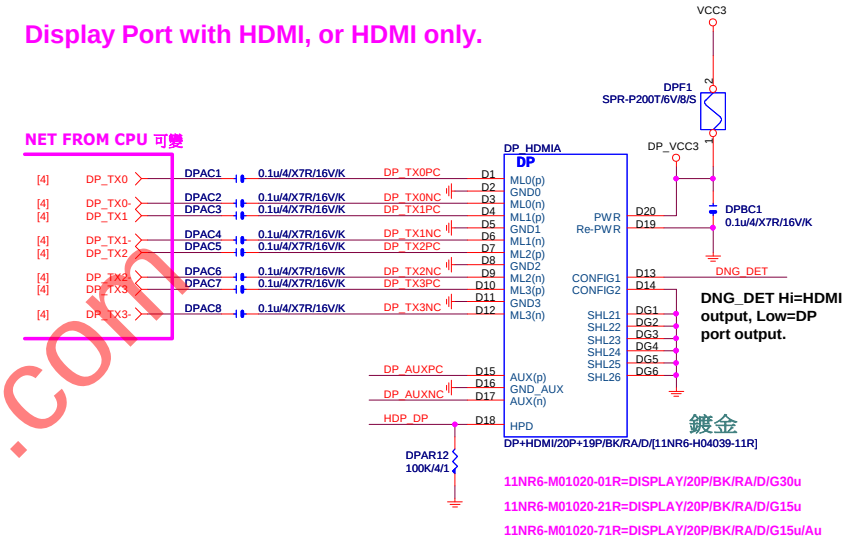


Close to connector



SINGLE Display Port

Display Port with HDMI, or HDMI only.



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

鍍金

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

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

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

DP

Gigabyte Technology		
Title: DP PORT		
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
Date: Wednesday, April 11, 2018	Sheet 55 of 74	

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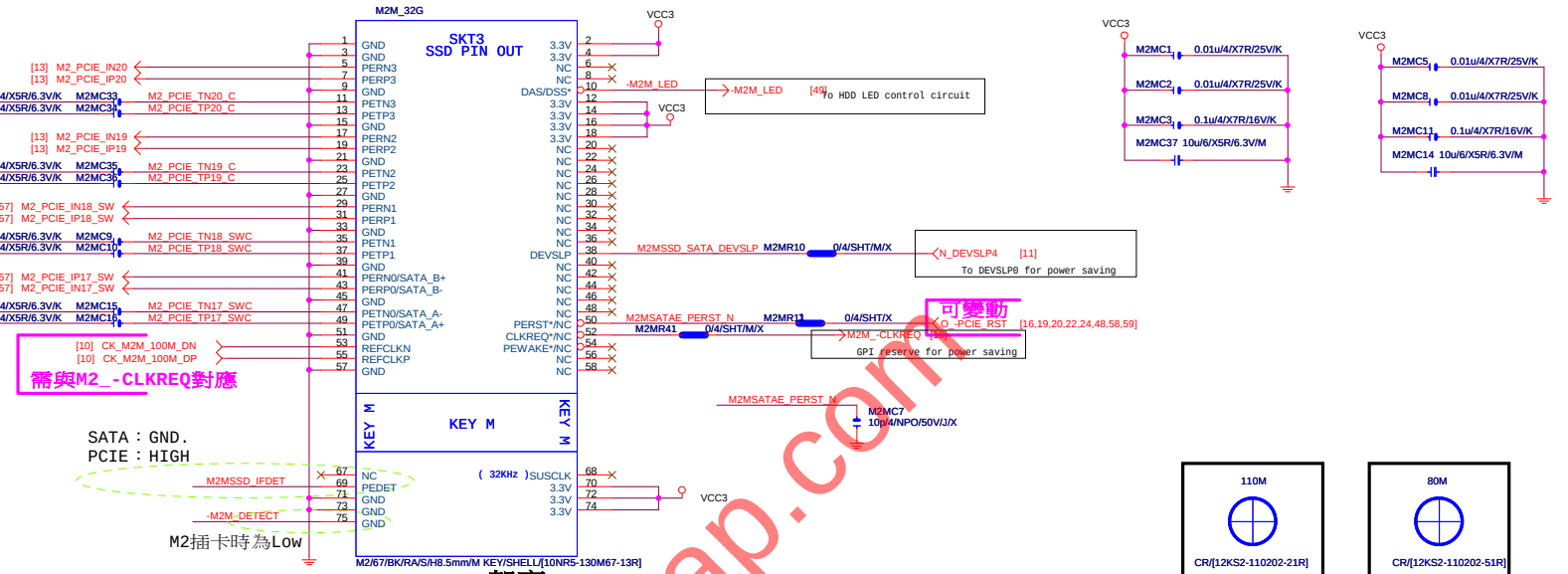
Rev 0.1

M.2 Lane3 from PCH port20

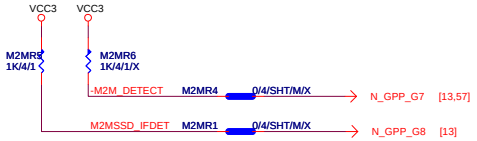
M.2 Lane2 from PCH port19

M.2 Lane1 from PCH port18

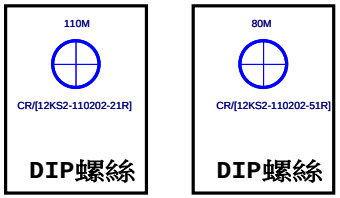
M.2 Lane0 from PCH port17



支援SATA and M.2 function

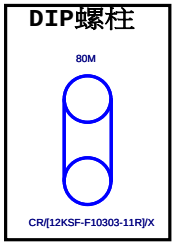


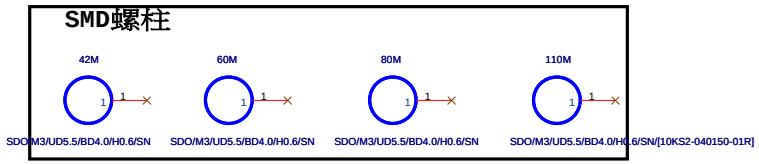
Footprint : NGFF-M-75P-11CM-3-SMD-Z370



***Optane銘板型式**

M2M_32G
M2 HEATSINK
M2M_32G_HS/[12SP1-S10205-41R_12SP1-S10205-42R]
*M.2 HeatSink料號 : 12SP1-S10205-41R / 42R





Footprint : HOLE_C236D165-A

***Intel Optane Memory 32G**

M2M_32G
Intel Optane 32G
OPTANE MEMORY MODULE INTEL/[20SD7-001032-00R]

鎖在42M,60M,80M SMD螺柱的包材

包材料號	包材內容
12KS1-110305-21R	(1)螺柱12KSF-F10303-11R*1
	(2)螺絲12KS2-110202-01R*1

Gigabyte Technology		
Title: M.2 X4 (M)		
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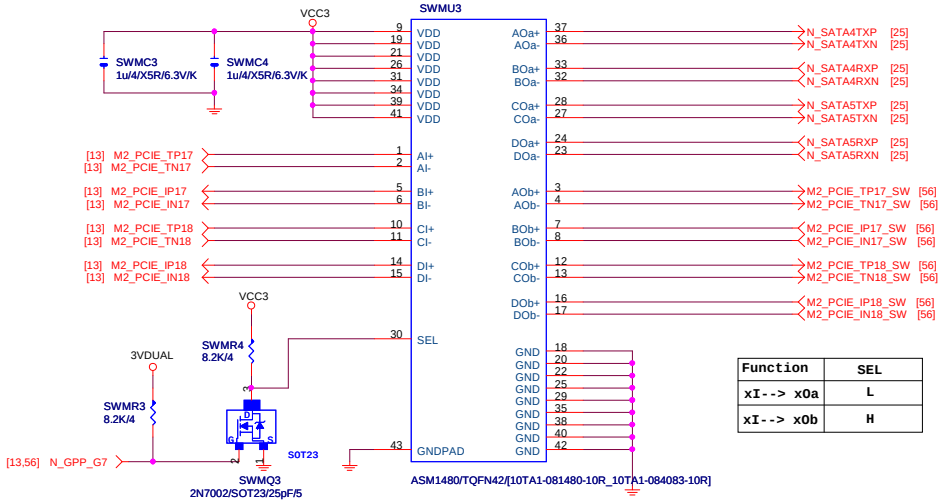
Rev 0.1 (M)TYPE



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

M.2 Detect N_GPP_G7	M.2 MODE N_GPP_G8	PCIE17	PCIE18	PCIE19	PCIE20
HIGH	X	切回 SATA4	切回 SATA5	N\A	N\A
LOW	HIGH(PCIE)	PCIEX4 FOR M.2(最優先)			
LOW	LOW(SATA)	SATA FOR M.2	N\A	N\A	N\A

Gigabyte Technology
Title: M.2X4_S4~S5 SWITCH
Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.0
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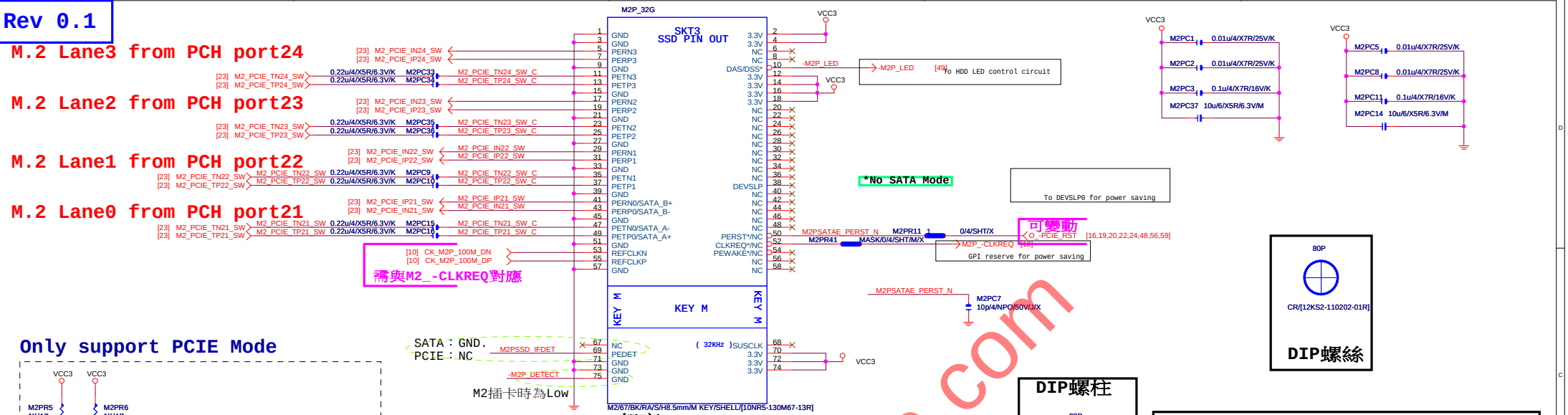
Rev 0.1

M.2 Lane3 from PCH port24

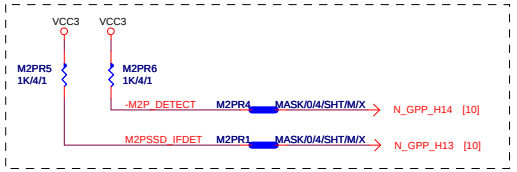
M.2 Lane2 from PCH port23

M.2 Lane1 from PCH port22

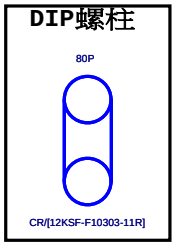
M.2 Lane0 from PCH port21

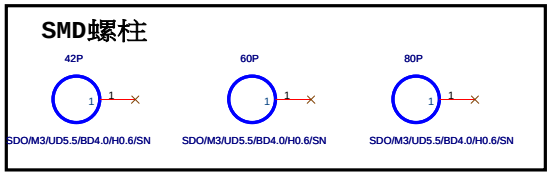


Only support PCIE Mode



*預留 N_GPP_H13 , For M2 SATA mode & PCIEx4 同時 -> PCIex4 set X4





Gigabyte Technology

Title: M.2 X4 (P)

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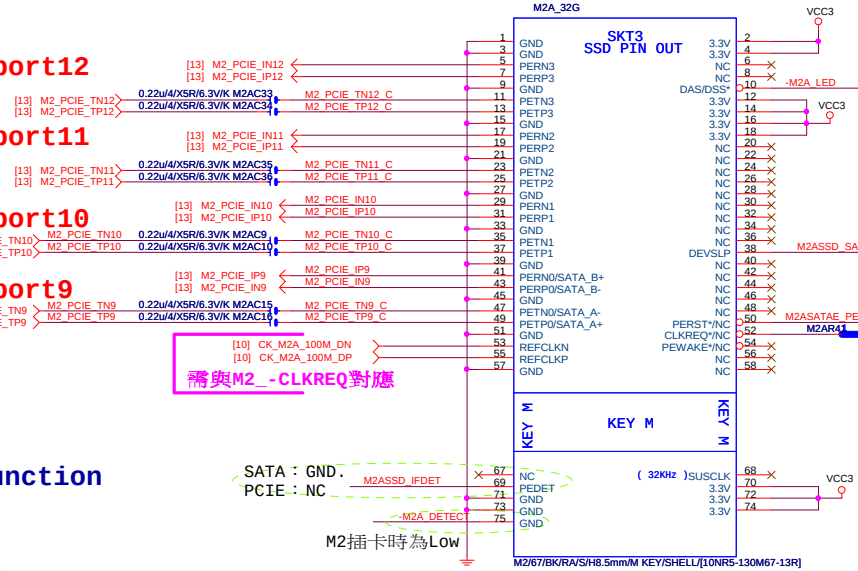
Rev 0.6

M.2 Lane3 from PCH port12

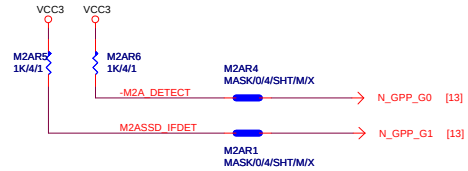
M.2 Lane2 from PCH port11

M.2 Lane1 from PCH port10

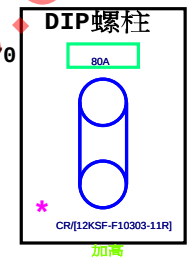
M.2 Lane0 from PCH port9

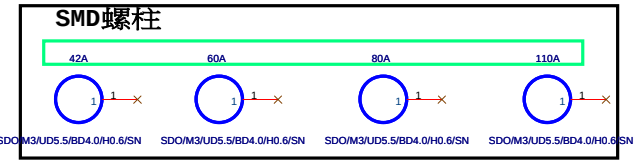


支援SATA and M.2 function

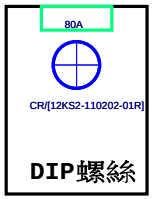


* Footprint : NGFF-M-75P-11CM-3-SMD-Z370





* Footprint : HOLE_C236D165-A



M.2 有插卡/沒插卡 GPP_G0	M.2插何種卡？ GPP_G1	SATA Express 插何種硬碟？ GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

GIGABYTE™

Title	M.2 X4 (A)	
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DUAL BIOS REV0.4

MOSI For DMI RX Termination Voltage

*PVT時,M_BIOS顆粒,放在SMD階

指定用DII

Single BIOS OPTION

M_BIOS

B_BIOS

MAIN BIOS

BACKUP BIOS

* 128M

128M/Q/SPI/SO8/S

* (footprint 改 SOIC8-SPI-SOCKET)

* (footprint 改 IC8-BIOS)

*Del -SPI_HOLD_MSW

*Del SD1

*Del SB_BIOS_SW

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

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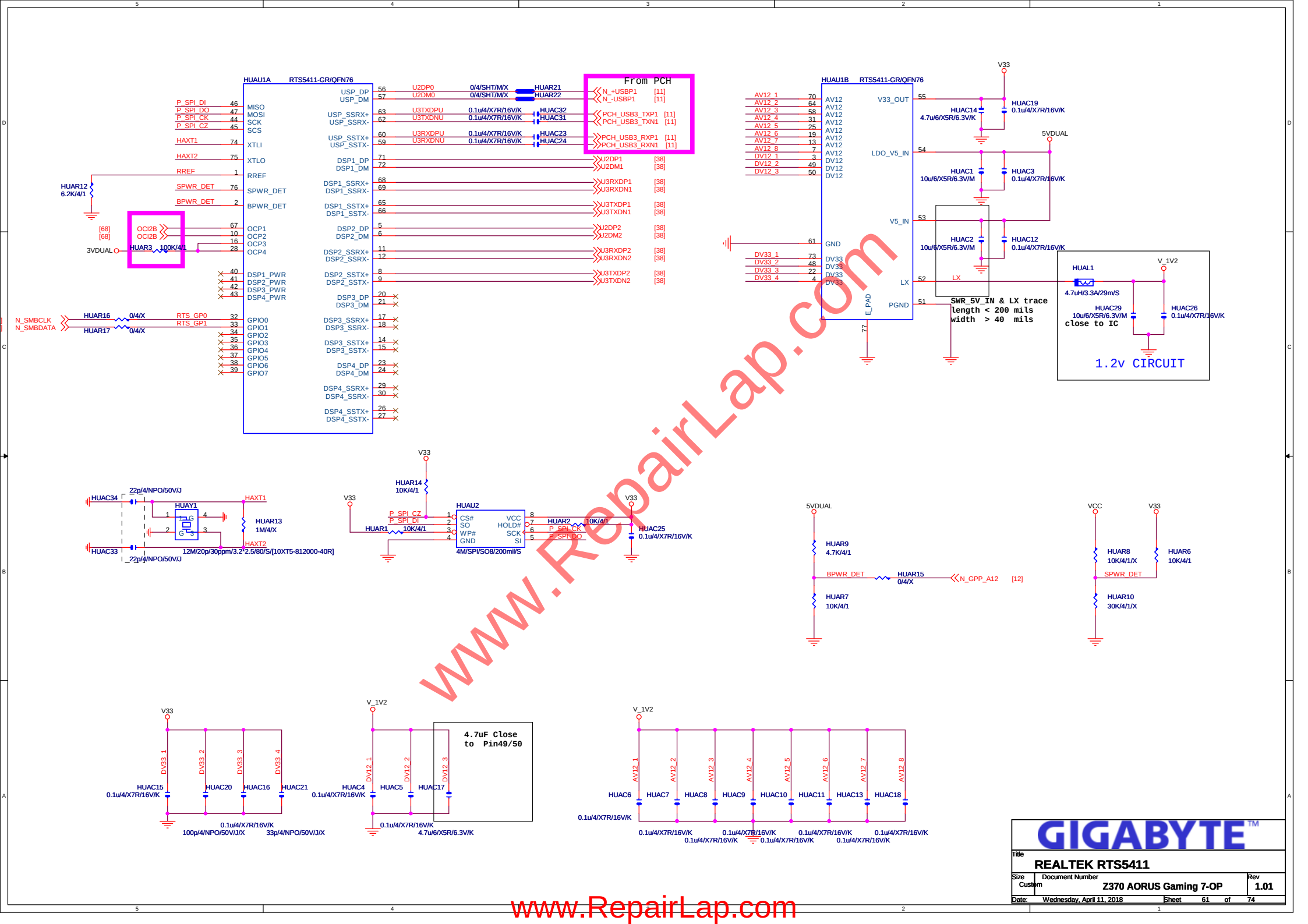
Gigabyte Technology

Title: Dual BIOS

Size: Custom | Document Number: Z370 AORUS Gaming 7-OP | Rev: 1.01

Date: Wednesday, April 11, 2018 | Sheet 60 of 74



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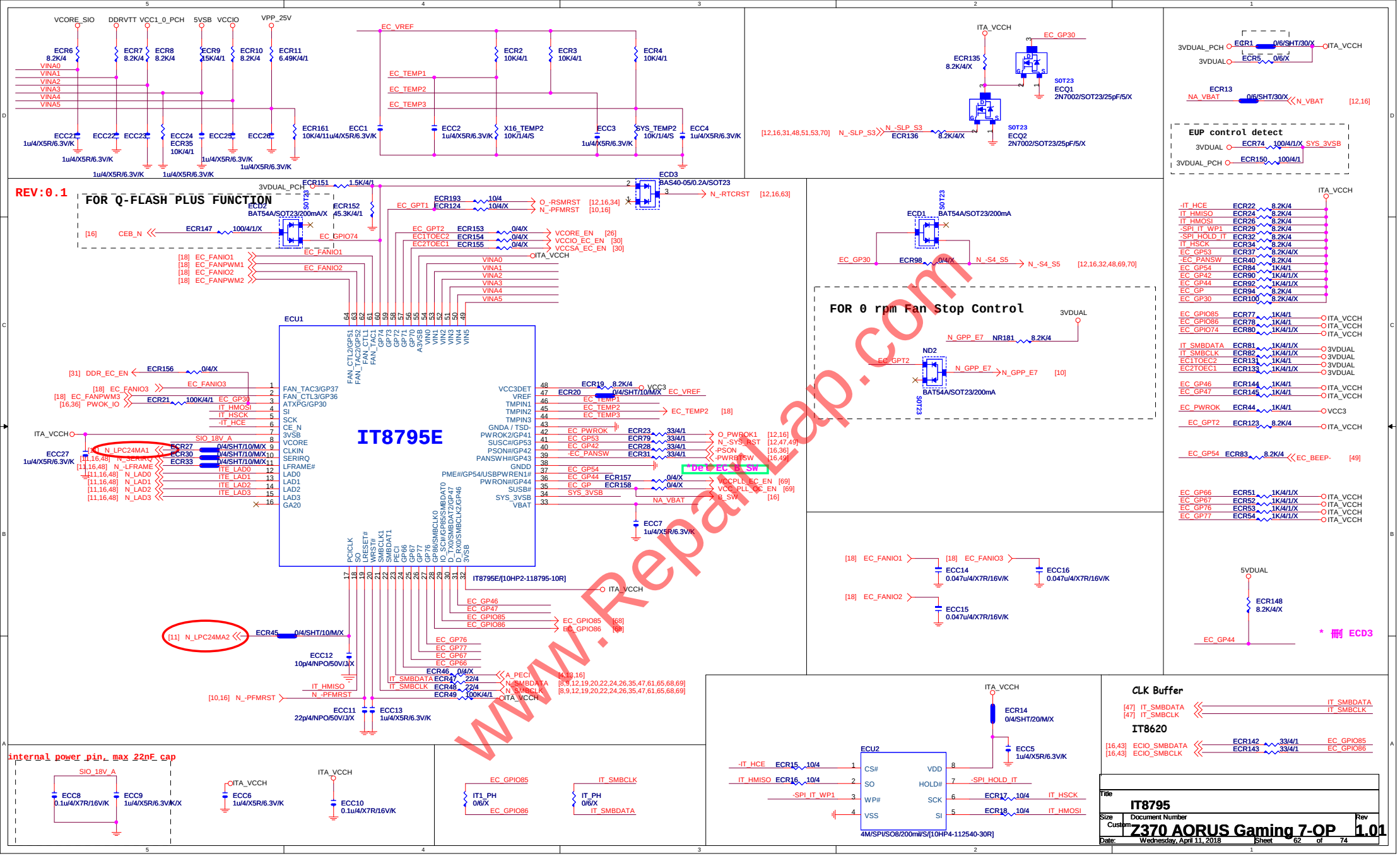

Rev: 0.9

POWER

[49] -PWRBT_1 — PSWR1 33/4 — PSWC1 0.01u/4/X7R/25V/K/X

PSWR2 330/6 5VDUAL

★Update 2016.06.06

PW_SW

TACTILE SW 6 PIN POWER HIGHLY/[11NH7-030006-21R]

PSWR3 2.2/4/X — -N_LED

★Update 2016.06.20

PSWQ1 MMBT2222A/SOT23/600mA/40 S0T23

GPIO 自行調整

[10] N_GPP_D21 — PSWR4 8.2K/4/1 — FPQ1_2

*Del 量測點

"OC_LED" 1X2pin by model

*Del OC_LED

OC KEY

OCQ1 S0T23

OC_L1 — OCR1 680/4 — OCR3 8.2K/4 — VCC3

MMBT2907A/SOT23/-600mA/50

N_GPP_D6 [12] PCH:GPP_D6

OC_1 — OCR2 33/4 — N_GPP_D4 [12] PCH:GPP_D4 (限用SMI gpio)

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

TBOBC1 0.01u/4/X7R/25V/K

*Del OC_BT

"OC_BT" 1X2pin by model

Reset

RST_SW — RSWR1 33/4 — RESET — RESET [49]

RSWC1 0.01u/4/X7R/25V/K/X

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

White

★Update 2016.06.20

Clear CMOS

CMOS_SW — CSWR1 33/4 — N_-RTCRST [12,16,62]

CSWC1 0.01u/4/X7R/25V/K/X

TS/BK/4.3/VA

★Update 2016.06.20

* Del ECO Buttom

* FOR 客戶Button

OCD1 S0T23 BAT54A/SOT23/200mA

OC_1 — OC_BUTTON — OCR4 0/6 — 5VDUAL

PH/2*2K4/BK/2.54/VA/D

Footprint : PIN2X2-CUT4

Gigabyte Technology			
Title: OC BUTTOM			
Size: Custom	Document Number: Z370 AORUS Gaming 7 OP		Rev: 1.01
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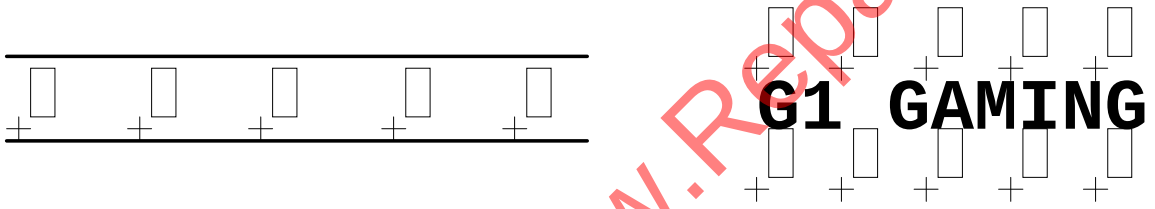
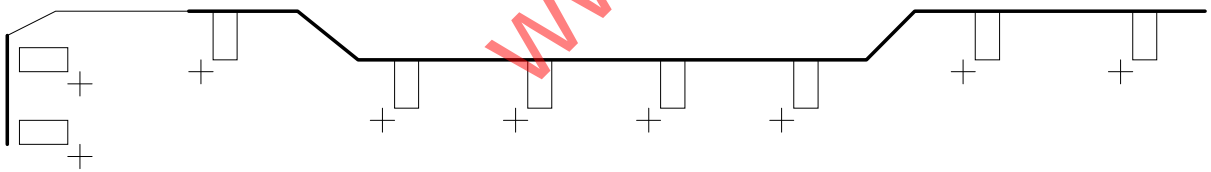
RGB LED LAYOUT 注意事項 :

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

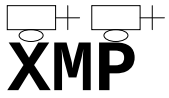
PCB板邊透光model name鏤空+背面 RGB LED



Audio Ground切割線+背面 RGB LED



"XMP"字樣鏤空+背面 RGB測發光 LED



GIGABYTE™		
Title: LAYOUT GUIDE		
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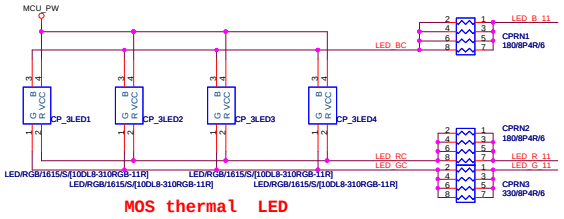
Rev 2.03

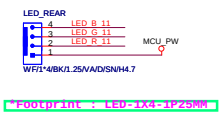
第一區 LED

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



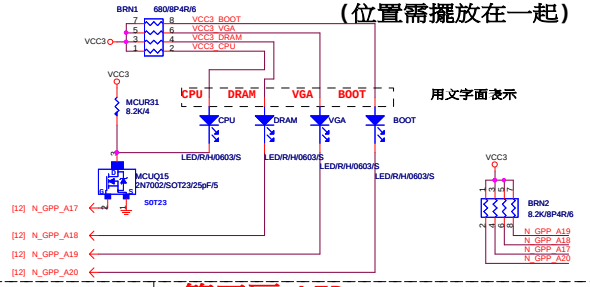
MOS thermal LED

REAR 裝甲LED
(位置在後窗裝甲內)



*Footprint : LED-1X4-IP25MM

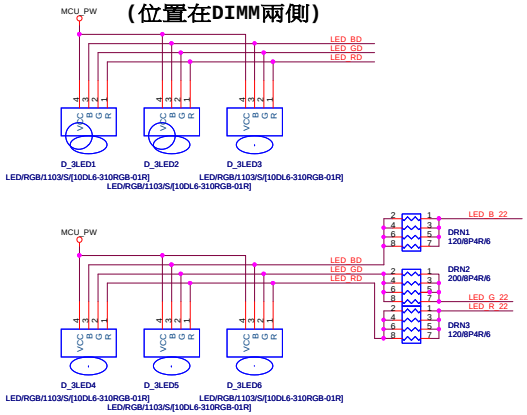
DEBUG PORT LED *4
(位置需擺放在一起)



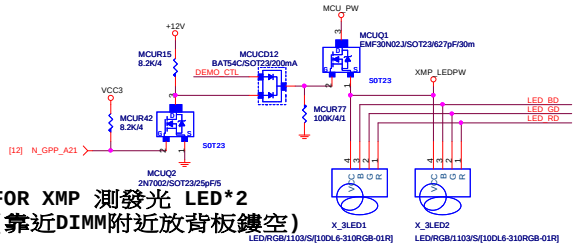
N_GPP_A17	CPU DEBUG
N_GPP_A18	DDR DEBUG
N_GPP_A19	VGA DEBUG
N_GPP_A20	BOOT DEVICE DEBUG
N_GPP_A21	XMP LED SWITCH
N_GPP_A22	TURBO LED SWITCH
N_GPP_D12	LED_IO LED SWITCH

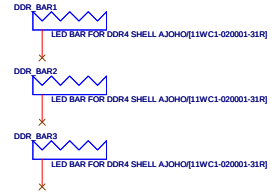
第二區 LED

FOR DIMM 側發光 LED*12
(位置在DIMM兩側)



FOR XMP 測發光 LED*2
(靠近DIMM附近放背板鏤空)

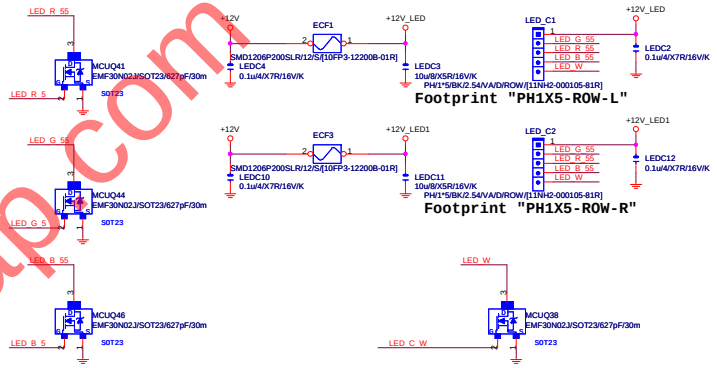




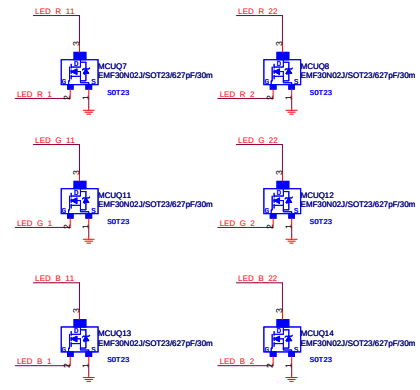
第五區 LED

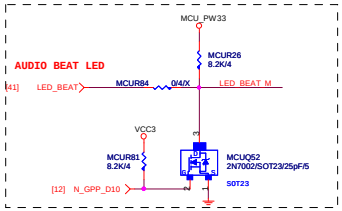
燈條 LED (LED_C1放在PCB左邊板邊位置)
燈條 LED (LED_C2放在PCB右邊板邊位置)

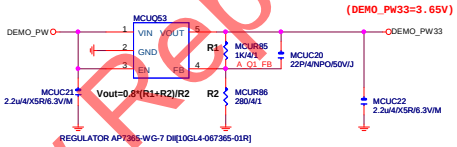
第五區 LED CONTROL

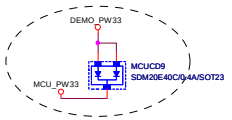


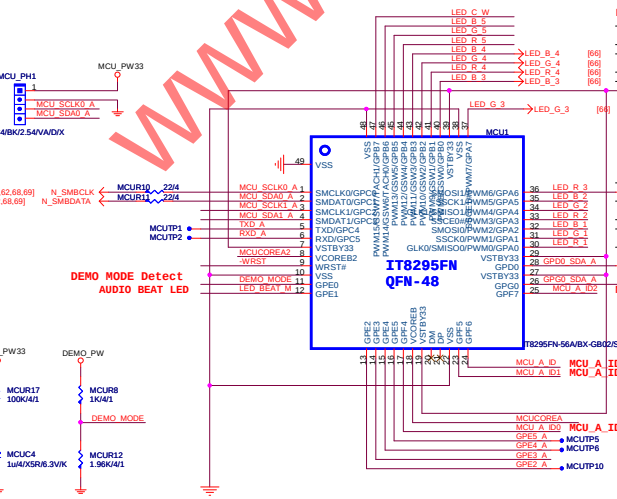
第一區 LED CONTROL 第二區 LED CONTROL

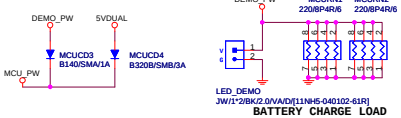


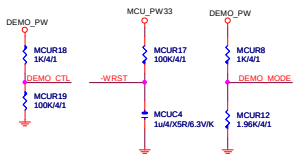


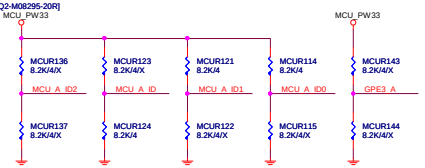












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Title	CPU / DDR / MCU LED	
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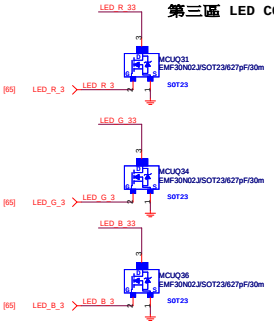
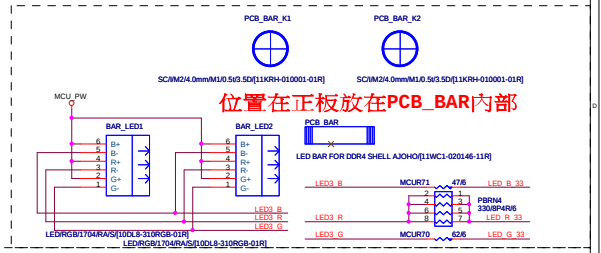
第三區 LED

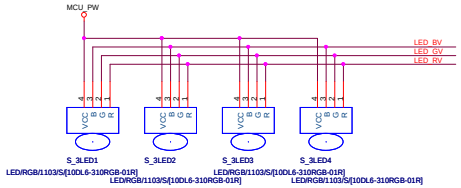
FOR PCH_HS led connect (放在PCH_HS附近)



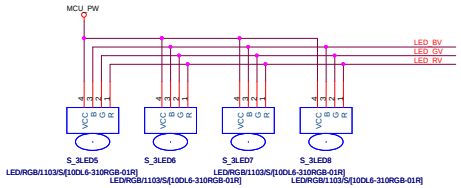


第四區 LED

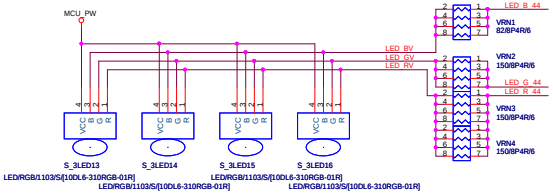
300 series 板邊燈條料號11WC1-020146-11R



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

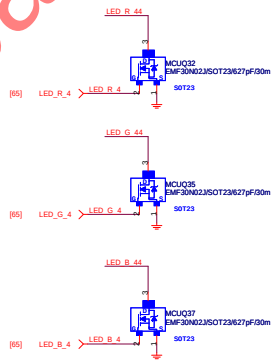


FOR PCIEX8 側發光 LED*4
(位置在PCIEX8 SLOT兩側各4顆)



FOR PCIEX4(PCH) 側發光 LED*4
(位置在PCIEX4 SLOT兩側各4顆)

第四區 LED CONTROL



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Title	MODEL / PCB /AUDIO/PCIE LED	
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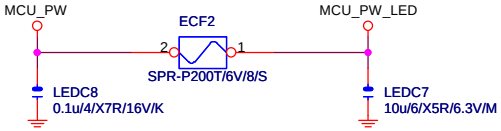
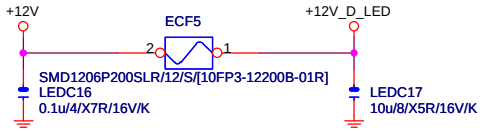
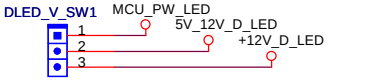
Rev 2.03

第六區 LED (靠近左上板邊位置)

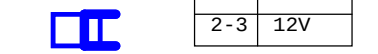




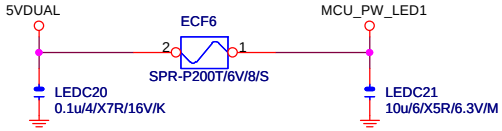


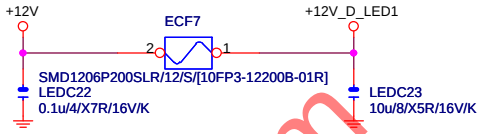
DLED_V_SW1

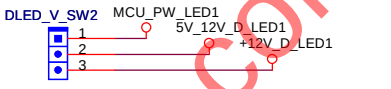
DLED_V_SW1	
1-2	5V
2-3	12V



第七區 LED (靠近右下CPU板邊位置)

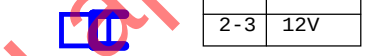




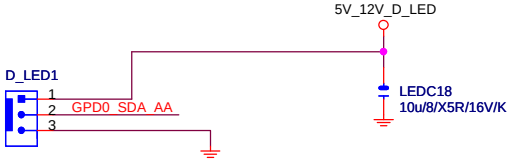


DLED_V_SW2

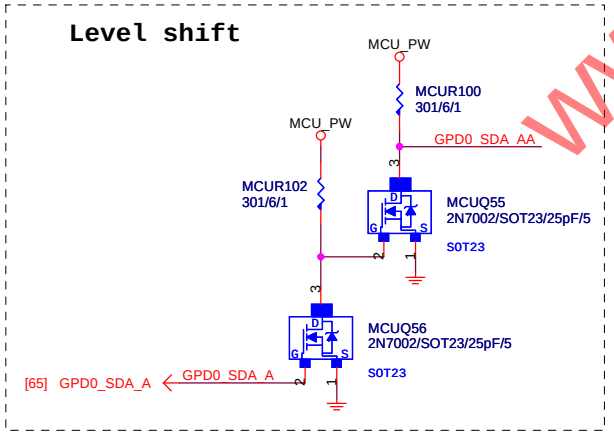
DLED_V_SW2	
1-2	5V
2-3	12V



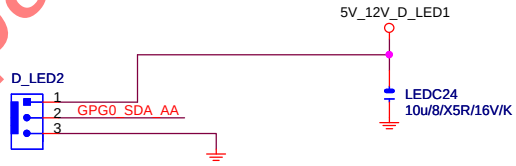
Digital LED Strip1



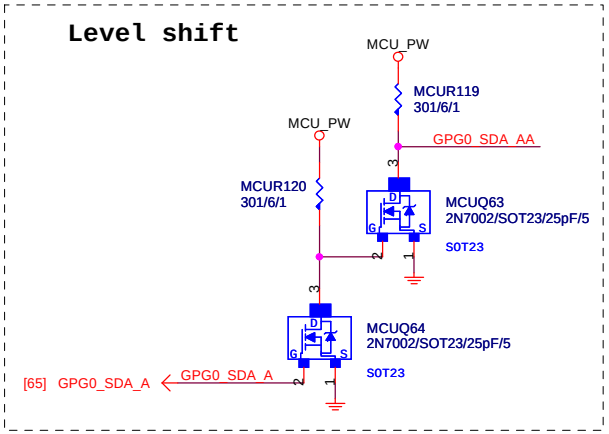
Footprint "PH1X3-LED"



Digital LED Strip2



Footprint "PH1X3-LED-R"



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Title	PCH / IO / HS / LED_C LED	
Size: Custom	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
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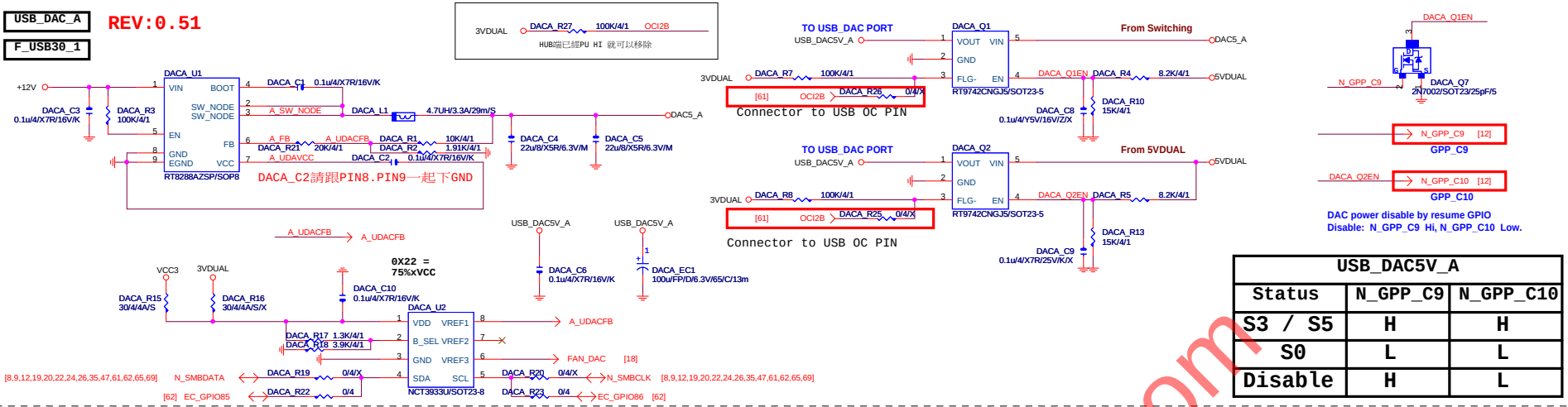
USB_DAC_A

F_USB30_1

REV:0.51



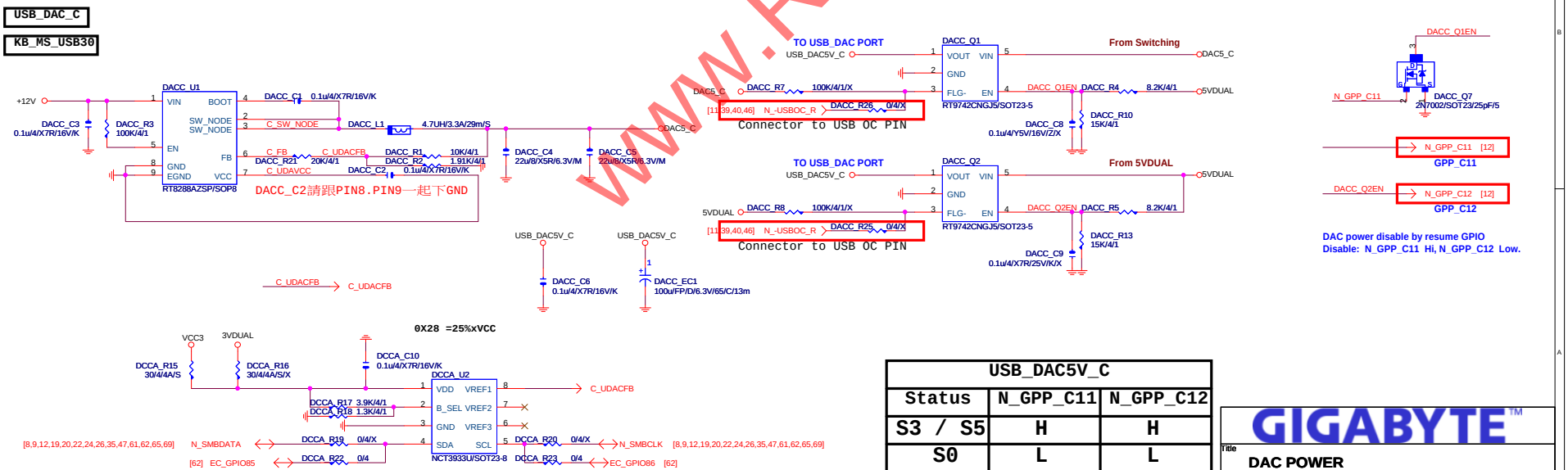
DAC power disable by resume GPIO
Disable: N_GPP_C9 Hi, N_GPP_C10 Low.

USB_DAC5V_A		
Status	N_GPP_C9	N_GPP_C10
S3 / S5	H	H
S0	L	L
Disable	H	L

GPP_C_7		DACB_Q1EN	GPI		SCI	POWER ON 為 L(C7 先為 L，再 C8 為 L)，POWER OFF 為 H(先 C8 為 H 再 C7 為 H)，DISABLE(C7 為 H，C8 為 L)
GPP_C_8		DACB_Q2EN	GPI		SCI	
GPP_C_9		DACA_Q1EN	GPI		SCI	POWER ON 為 L(C9 先為 L，再 C10 為 L)，POWER OFF 為 H(先 C10 為 H 再 C9 為 H)，DISABLE(C9 為 H，C10 為 L)
GPP_C_10		DACA_Q2EN	GPI		SCI	
GPP_C_11		DACC_Q1EN	GPI		SCI	POWER ON 為 L(C11 先為 L，再 C12 為 L)，POWER OFF 為 H(先 C12 為 H 再 C11 為 H) DISABLE(C9 為 H，C10 為 L), DISABLE(C11 為 H，C12 為 L)
GPP_C_12		DACC_Q2EN	GPI		SCI	

USB_DAC_C

KB_MS_USB30



DAC power disable by resume GPIO
Disable: N_GPP_C11 Hi, N_GPP_C12 Low.

USB_DAC5V_C		
Status	N_GPP_C11	N_GPP_C12
S3 / S5	H	H
S0	L	L
Disable	H	L

GIGABYTE

Title: DAC POWER

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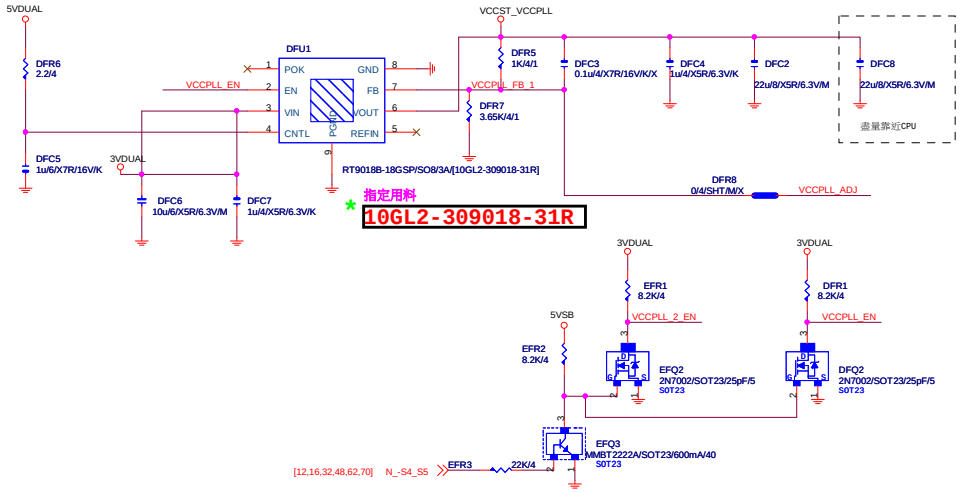
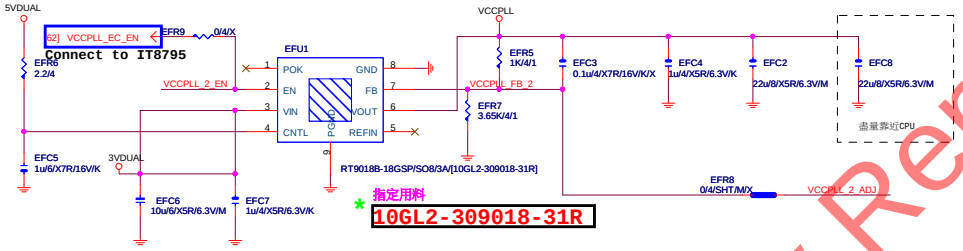
REV:0.42

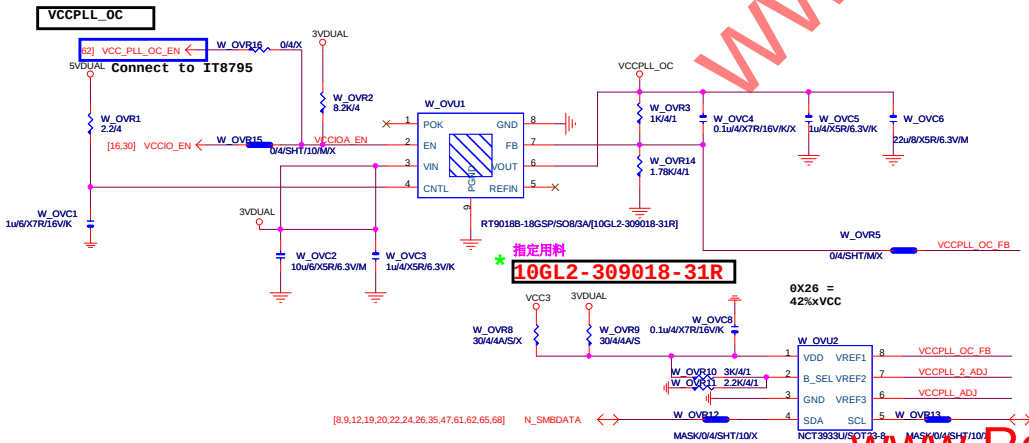
VCCST_VCCPLL 替換原先MOS開關線路



VCCPLL



VCCPLL_OC



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Title: CPU POWER-Z系列

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EMI/ESD R0.1

CLOSE SIO

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

[12,16,31,48,5[illegible],53,62] N_-SLP_S3

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

[12,16,32,[illegible]8,62,69] N_-S4_S5

CLOSE PCH

EMIC3
100p/4/NPO/50V/J/X

[4,12] N_CPUPWROK

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Title: EMI/ESD		
Size: A	Document Number: Z370 AORUS Gaming 7-OP	Rev: 1.01
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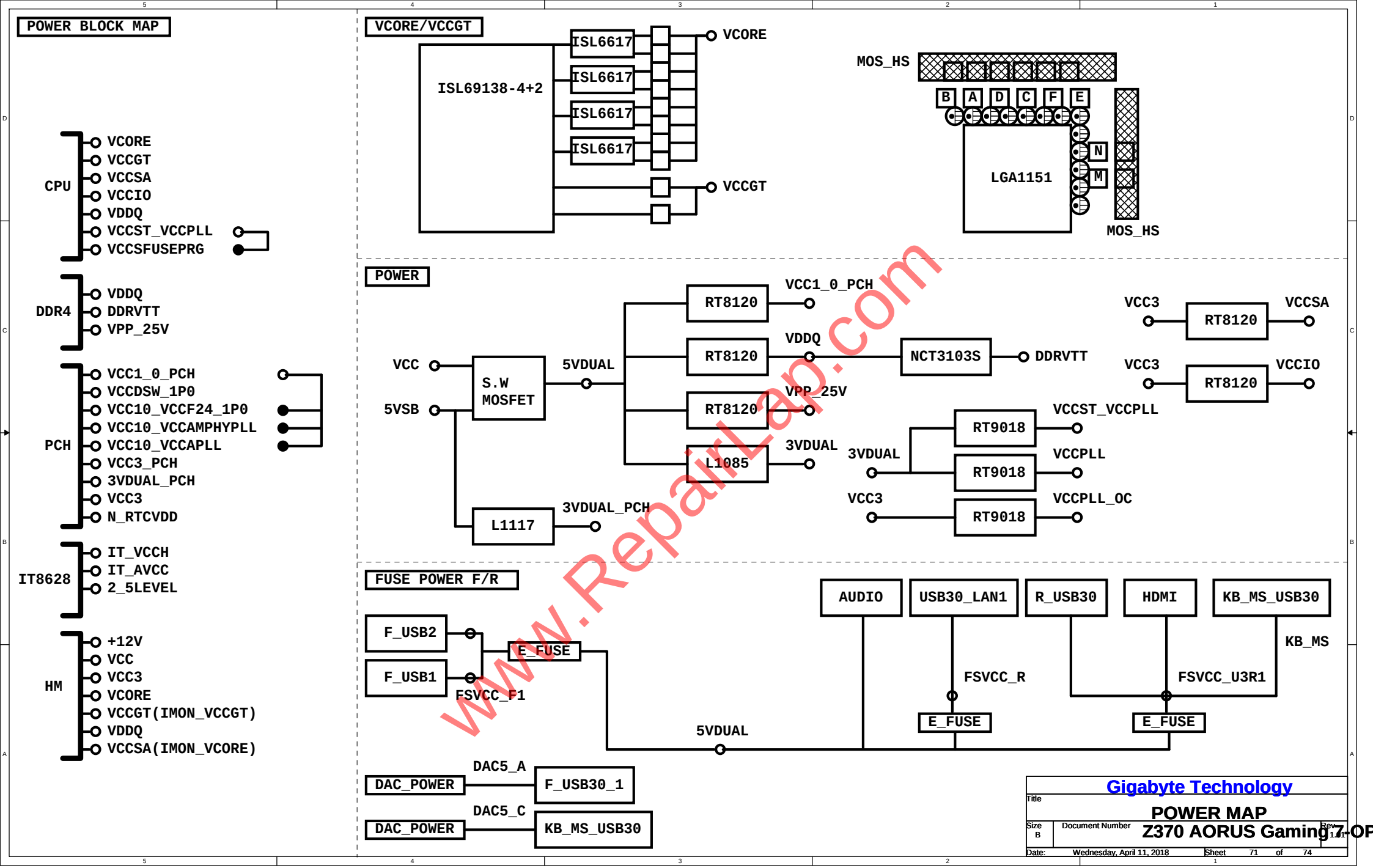
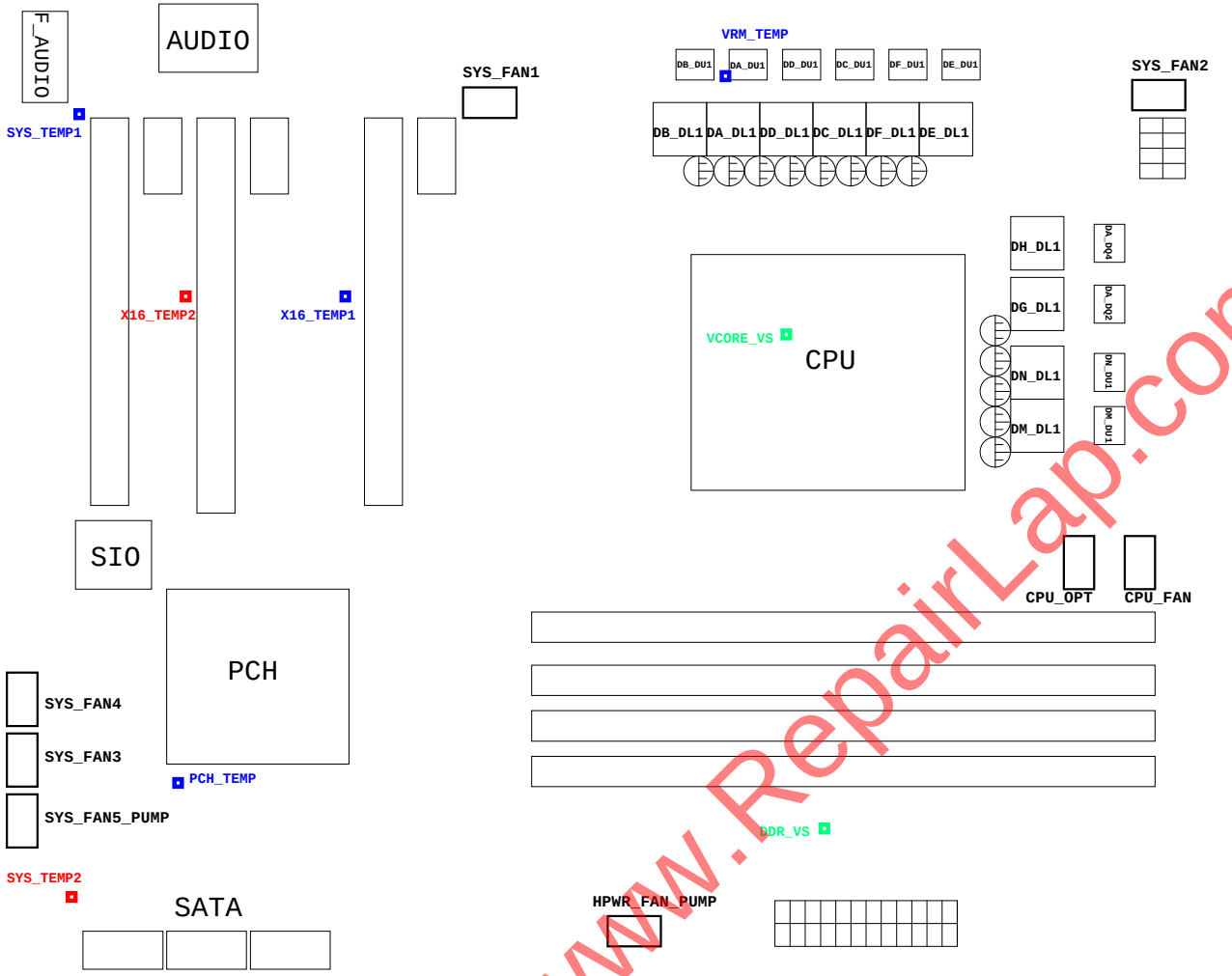


REAR IO



熱敏電阻	擺放靠近位置	走線方式
VRM_TEMP	DA_DU1	N/A
X16_TEMP1	PCIEX16	N/A
X16_TEMP2	PCIEX8	N/A
PCH_TEMP	PCH	N/A
SYS_TEMP1	F_AUDIO	N/A
SYS_TEMP2	SATA3_4_5	N/A

SIO RS
EC RS SIO VIN
FAN

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固態電容料號.請自行修改

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

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

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

IRON CHOKE

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

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

Ferrite

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

BEAD

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

PWM料號

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

REGULATOR

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

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Title: POWER零件使用表

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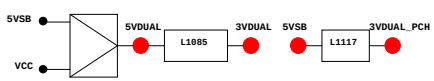
PCH GPIO LIST TABLE

PIN NAME	PWR	RTD3/PLTRST	Default	USAGE	NOTE
GPP_A0	MAIN	H-Z	RCIN#	N_-KBRST	P/U 8.2K VCC3
GPP_A1	MAIN	H-Z	LAD0	N_LAD0	N/A
GPP_A2	MAIN	H-Z	LAD1	N_LAD1	N/A
GPP_A3	MAIN	H-Z	LAD2	N_LAD2	N/A
GPP_A4	MAIN	H-Z	LAD3	N_LAD3	N/A
GPP_A5	MAIN	H-Z	LFRAME#	N_-LFRAME	N/A
GPP_A6	MAIN	H-Z	SERIRQ	N_SERIRQ	P/U 8.2K VCC3
GPP_A7	MAIN	H-Z	PIRQA#	N_-LDRQ0	P/U 8.2K VCC3
GPP_A8	MAIN	H-Z	CLKRUN#	N_GPP_A8	P/U 8.2K VCC3
GPP_A9	MAIN	H-Z	CLKOUT	N_LPC24MA	N/A
GPP_A11	MAIN	H-Z	PME#	N_-P_PME	P/U 8.2K 3VDUAL_PCH
GPP_A12	MAIN	H-Z	GPI	N_GPP_A12	P/U 8.2K VCC3
GPP_A13	MAIN	H-Z	WANRN#	N_-S_WARN	N/A
GPP_A14	MAIN	H-Z	STAT#	N_GPP_A14	P/U 8.2K 3VDUAL
GPP_A15	MAIN	H-Z	ACK#	N_-S_ACK	N/A
GPP_B0	MAIN	H-Z	GPO	N_-DDR_V_SEL	P/U 8.2K VCC3
GPP_B2	MAIN	H-Z	GPI	N_-VRALERT	P/U 8.2K 3VDUAL
GPP_B3	MAIN	H-Z	GPI	CPU_FAN	N/A
GPP_B4	MAIN	H-Z	GPI	SYS_FAN1	N/A
GPP_B5	MAIN	H-Z	GPI	-PCIEX16_PR	P/U 8.2K VCC3
GPP_B6	MAIN	H-Z	GPI	-PCIEX1_PR1	P/U 8.2K VCC3
GPP_B7	MAIN	H-Z	GPI	-PCIEX1_PR2	P/U 8.2K VCC3
GPP_B8	MAIN	H-Z	GPI	-PCIEX4_PR	P/U 8.2K VCC3
GPP_B9	MAIN	H-Z	GPI	N_GPP_B9	N/A
GPP_B10	MAIN	H-Z	GPI	LA_-CLKREQ	P/U 8.2K VCC3
GPP_B12	MAIN	H-Z	SLP_S0	N_-SLP_S0	N/A
GPP_B13	MAIN	H-Z	PLTRST	N_-PFMRST	N/A
GPP_B14	MAIN		GPO	N_SPKR	N/A
GPP_B15	MAIN	H-Z	GPI	SYS_FAN2	N/A
GPP_B16	MAIN	H-Z	GPI	SYS_FAN3	N/A
GPP_B22	MAIN		GPO	N_GPP_B22	P/D 1K GND
GPP_B23	MAIN	H-Z	GPO	N_-PCH_HOT	N/A
GPP_C0	MAIN	H-Z	SMBCLK	N_SMBCLK	P/U 1K 3VDUAL
GPP_C1	MAIN	H-Z	SMBDATA	N_SMBDATA	P/U 1K 3VDUAL
GPP_C2	MAIN		GPO	N_-LPCPME	N/A
GPP_C3	MAIN	H-Z	SML0CLK	N_SML0CLK	P/U 499 3VDUAL
GPP_C4	MAIN	H-Z	SML0DAT	N_SML0DAT	P/U 499 3VDUAL
GPP_C6	MAIN	H-Z	GPI	N_SML1CLK	P/U 8.2K 3VDUAL
GPP_C7	MAIN	H-Z	GPI	N_SML1DAT	P/U 8.2K 3VDUAL
GPP_C21	MAIN	H-Z	GPI	N_GPP_C21	N/A
GPP_C23	MAIN	H-Z	GPI	N_GPP_C23	N/A
GPP_D4	MAIN	H-Z	GPI	OC_Bottom Detect	P/U 8.2K 3VDUAL
GPP_D7	MAIN	H-Z	GPI	N/A	N/A
GPP_D8	MAIN	H-Z	GPI	N/A	N/A
GPP_D9	MAIN	H-Z	GPI	N_GPP_D9	P/U 1K VCC3
GPP_D10	MAIN	H-Z	GPI	N_GPP_D10	N/A
GPP_D13	MAIN	H-Z	GPI	N/A	N/A
GPP_D23	MAIN	H-Z	GPI	N_GPP_D23	P/U 8.2K 3VDUAL
GPP_E0	MAIN	H-Z	GPI	N_GPP_E0	P/U 8.2K 3VDUAL
GPP_E1	MAIN	H-Z	GPI	N_GPP_E1	P/U 8.2K 3VDUAL
GPP_E2	MAIN	H-Z	GPI	N_GPP_E2	P/U 8.2K 3VDUAL
GPP_E3	MAIN	H-Z	GPI	N/A	N/A
GPP_E4	MAIN	H-Z	GPI	N_DEVSLP0	N/A
GPP_E6	MAIN	H-Z	GPI	N_DEVSLP2	N/A
GPP_E8	MAIN	H-Z	GPI	N_-SATALED	N/A
GPP_E9	MAIN	H-Z	GPI	N_-USBOC_R	N/A
GPP_E10	MAIN	H-Z	GPI	N_-USBOC_R	N/A
GPP_E11	MAIN	H-Z	GPI	N_-USBOC_R	N/A
GPP_E12	MAIN	H-Z	GPI	N_-USBOC_F	N/A
GPP_F0	MAIN	H-Z	GPI	N_GPP_F0	P/U 8.2K 3VDUAL
GPP_F1	MAIN	H-Z	GPI	N_GPP_F1	P/U 8.2K 3VDUAL
GPP_F2	MAIN	H-Z	GPI	N_GPP_F2	P/U 8.2K 3VDUAL
GPP_F3	MAIN	H-Z	GPI	N_GPP_F3	P/U 8.2K 3VDUAL
GPP_F4	MAIN	H-Z	GPI	N_GPP_F4	P/U 8.2K 3VDUAL
GPP_F5	MAIN	H-Z	GPI	N_GPP_F5	P/U 8.2K VCC3
GPP_F6	MAIN	H-Z	GPI	N_DEVSLP4	N/A
GPP_F10	MAIN	H-Z	GPI	N_GPP_F10	P/U 8.2K VCC3
GPP_F11	MAIN	H-Z	GPI	N_GPP_F11	P/U 8.2K VCC3
GPP_F12	MAIN	H-Z	GPI	N_GPP_F12	P/U 8.2K VCC3
GPP_F13	MAIN	H-Z	GPI	N_GPP_F13	P/U 8.2K VCC3
GPP_F14	MAIN	H-Z	GPI	A_-SKTOCC	P/U 8.2K VCC3
GPP_F15	MAIN	H-Z	GPI	N_-USBOC_F	N/A
GPP_F16	MAIN	H-Z	GPI	N_-USBOC_7	P/U 8.2K 3VDUAL
GPP_F17	MAIN	H-Z	GPI	N_-USBOC_7	P/U 8.2K 3VDUAL
GPP_F18	MAIN	H-Z	GPI	N_-USBOC_7	P/U 8.2K 3VDUAL
GPP_F22	MAIN	H-Z	GPI	N_GPP_F22	P/U 8.2K VCC3
GPP_F23	MAIN	H-Z	GPI	N_GPP_F23	P/U 8.2K VCC3
GPP_G11	MAIN	H-Z	FANPWM2	N/A	N/A
GPP_G12	MAIN	H-Z	GPI	N/A	N/A
GPP_G13	MAIN	H-Z	GPI	N/A	N/A
GPP_G14	MAIN	H-Z	GPI	N/A	N/A
GPP_G15	MAIN	H-Z	GPI	N/A	N/A
GPP_G18	MAIN	H-Z	GPI	N_GPP_G18	P/U 8.2K VCC3
GPP_G19	MAIN	H-Z	GPI	N_GPP_G19	P/U 8.2K VCC3
GPP_G20	MAIN	H-Z	GPI	N_GPP_G20	P/U 8.2K VCC3
GPP_G21	MAIN	H-Z	GPI	N_GPP_G21	P/U 8.2K VCC3
GPP_G22	MAIN	H-Z	GPI	N_GPP_G22	P/U 8.2K VCC3
GPP_H0	MAIN	H-Z	GPI	N_GPP_H0	P/U 8.2K VCC3
GPP_H12	MAIN		GPO	N_GPP_H12	N/A
GPP_H19	MAIN	H-Z	GPI	N_GPP_H19	P/U 8.2K 3VDUAL
GPP_H20	MAIN	H-Z	GPI	N_GPP_H20	P/U 8.2K 3VDUAL
GPP_H21	MAIN	H-Z	GPI	N_GPP_H21	P/U 8.2K 3VDUAL
GPP_H22	MAIN	H-Z	GPI	N_GPP_H22	P/U 8.2K 3VDUAL
GPP_I0	MAIN	H-Z	GPI	N_HDMI_HDP_F	N/A
GPP_I1	MAIN	H-Z	GPI	N_DVI_HDP	P/U 1M VCC3
GPP_I2	MAIN	H-Z	GPI	N_VGA_HDP_F	N/A

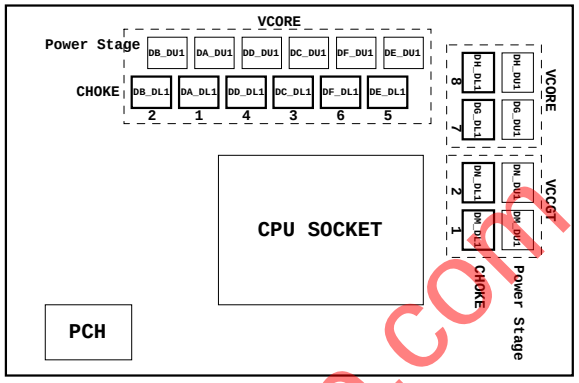
PIN NAME	PWR	RTD3/PLTRST	Default	USAGE	NOTE
GPP_I3	MAIN	H-Z	GPI	N_GPP_I3	P/U 8.2K VCC3
GPP_I4	MAIN	H-Z	GPI	N_GPP_I4	P/D 100K GND
GPP_I5	MAIN	H-Z	GPI	N_DDPB_CTRLCLK	P/U 2.2K VCC3
GPP_I6	MAIN		GPO	N_DDPB_CTRLDATA	P/U 2.2K VCC3
GPP_I7	MAIN	H-Z	GPI	N_DDPC_CTRLCLK	P/U 2.2K VCC3
GPP_I8	MAIN		GPO	N_DDPC_CTRLDATA	P/U 2.2K VCC3
GPP_I9	MAIN	H-Z	GPI	N_DDPD_CTRLCLK	P/U 2.2K VCC3
GPP_I10	MAIN		GPO	N_DDPD_CTRLDATA	P/U 2.2K VCC3
GPD0	STBY		BATLOW	N_-BATLOW	P/U 8.2K 3VDUAL_PCH
GPD1	STBY		ACPRESENT	N_GP_D1	P/U 8.2K 3VDUAL_PCH
GPD2	STBY		LAN_WAKE	N_-LAN_WAKE	P/U 8.2K 3VDUAL_PCH
GPD3	STBY		PWRBTN	O_PWRBTSW	P/U 8.2K 3VDUAL_PCH
GPD4	STBY		SLP_S3	N_-SLP_S3	P/U 8.2K 3VDUAL_PCH
GPD5	STBY		SLP_S4	N_-S4_S5	P/U 8.2K 3VDUAL_PCH
GPD6	STBY		SLP_A	N_-SLP_A	N/A
GPD8	STBY		SUSCLK	N_SUSCLK	P/D 1.5K GND
GPD10	STBY		SLP_S5	N_-SLP_S5	N/A
GPD11	STBY		LANPHYPC	N_-LAN_DIS	N/A

Super I/O ITE8686 GPIO Table

PIN NAME	USAGE	NOTE
PCIRST3#/GP10/VDIMM_STR_EN	N/A	
PCIRST2#/GP11	O_-PCIE_RST	
PCIRST1#/GP12	O_-PFMRST2	
SVC/PECI_RQT/GP14	N_-THRMTRIP	
SLP_SUS#/PCIRSTIN#/CIRTX2/GP15	-PCIRSTIN	
PSI_L/FAN_CLT5/CIRRX2/GP16	FANPWM5	
RI2#/GP17	IO_GP17	
THR_PWM_CTS2#/GP20	空 PIN	
IO_SMI#DCD2#/GP21	空 PIN	
SPI_SI/GP22	-ICH_SPI_CS	
DPWROK/CPU_PG/GP23	N_PCH_DPWROK	
FAN_TAC5/RTS2#/GP24	FANIO5	
FAN_TAC4/DSR2#/GP25	FANIO4	
INV_OUT1_SOUT2/GP26	MB_ID2	
INV_IN1/SIN2/GP27	BEEP-	
ATXPG/GP30	PWOK	
CTS1/GP31	空 PIN	
OCWDT3/RI1#/GP32	空 PIN	
OCWDT2/DCD1#/GP33	空 PIN	
VTT_PWRGD/GP34	VTT_PWRGD_PWM	
VCC18_EN/GP35	VCCIO_EN	
FAN_CTL3/GP36	FANPWM3	
FAN_TAC3/GP37	FANIO3	
3VSBSW#/GP40	ECIO_SMBCLK	
OCWDT1/SIN1/GP41	空 PIN	
GP42/SCK/FAN_CTL4	FANPWM4	
PANSWH#/GP43	-PWRBTSW	
PWRON#/GP44	O_PWRBTSW	
OCWDT0/DSR1#/GP45	空 PIN	
CE2_N/GP47/JP6	CEB_N	
GP50/JP1	O_TPMCLK	
FAN_CTL2/GP51	FANPWM2	
FAN_TAC2/GP52	FANIO2	
SUSC#/GP53	N_-S4_S5	
PME#/GP54	N_-LPCPME	
RSMRST#/CIRRX1/GP55	O_-RSMRST	
MCLK/FAN_TAC6/GP56	MCLK	
MDAT/FAN_CTL6/GP57	MDAT	
KCLK/GP60	KCLK	
KDAT/GP61	KDAT	
KRST#/GP62	N_-KBRST	
HOLD_B#/GP63	-SPI_HOLD_B	
HOLD_B#/GP64	-SPI_HOLD_M	
VLDT_EN/PCH_D0/GP65	空 PIN	
VCC1_05_EN/GP66	VCC1_0_EN	
GP67	N_-RTCRST	
USB_FS1/PD0/GP70	80P_SEGA	
USB_FS2/PD1/GP71	80P_SEGB	
USB_FS3/PD2/GP72	80P_SEGC	
USB_FS3/PD3/GP73	80P_SEGD	
USB_FS5/PD4/GP74	80P_SEGE	
USB_FS6/PD5/GP75	80P_SEGF	
USB_FS7/PD7/GP76	80P_SEGG	
USB_FS8/PD8/GP77	80P_DL	
LS-IN1/SLCT/GP80	VDDQ	
LS_OUT1/PE/GP81	空 PIN	
LS_IN2/BUSY/GP82	VCCIO	
LS_OUT2/ACK#/GP83	空 PIN	
IPHONE_CHARGE#/SLIN#/GP84	BIOS_SEL	
OC_IN/INIT#/GP85	空 PIN	
OC_OUT/AFD#/GP86	空 PIN	
USB_OC2/STB#/GP87	空 PIN	
DDR_EN/GP90	MA_EN	
PWRLED/GP91	MPD-	
HOLD_OUT/GP92	空 PIN	
HDLED_IN/GP93	IO_GP93	
PROCHOT#/GP94	-PROCHOT_CON	
CPUPWRGD/GP95	IO_GP95	
PCH_VRMPWRGD/GP96	N_PCH_VRMPWRGD	
VR_RDY/GP97	VR_RDY_PWM	



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
VCCGT	CPU Graphic Voltage
VCCIO	CPU VCCIO
VCCSA	CPU System Agent Voltage
VCCST_VCCPLL	VCC Substained
VCCPLL	VCCPLL
VCCPLL_OC	VCCPLL_OC
VCC1_0_PCH	PCH core
VDDQ	DRAM voltage
VPP_25V	DRAM VPP voltage
DDRVTT	DRAM Termination

散熱模組料號:

Z370 AORUS Gaming 7 :
T+R MOS
12SP2-PT37G7-01R
PCH_HS
12SP2-S09711-01R
AUDIO_HS + REAR_HS整套
12KRC-0H0010-01R
M2M_32G
12SP1-S10205-11R

12SP2-PT*表示組合料號(2合一或3合一料件)

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	VCC	FANIO1	IT8686
	FANC_VOUT	N/A	N/A	NCT3947
CPU_OPT	FANPWM5	VCC	FANIO5	IT8686
	FAN7_VOUT	N/A	N/A	NCT3947
SYS FAN1	FANPWM2	VCC	FANIO2	IT8686
	FAN1_VOUT	N/A	N/A	NCT3947
SYS FAN2	FANPWM3	VCC	FANIO3	IT8686
	FAN2_VOUT	N/A	N/A	NCT3947
SYS_FAN3	FANPWM4	VCC	FANIO4	IT8686
	FAN3_VOUT	N/A	N/A	NCT3947
SYS_FAN4	EC_FANPWM3	VCC	EC_FANIO3	IT8792
	FANJ_VOUT	N/A	N/A	NCT3947
SYS_FAN5_PUMP	EC_FANPWM2	VCC	EC_FANIO2	IT8792
	FANI_VOUT	N/A	N/A	NCT3947
HPWR_FAN_PUMP	EC_FANPWM1	VCC	EC_FANIO1	IT8792
	FANH_VOUT	N/A	N/A	NCT3947

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Title: TABLE LIST

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