

Model Name: Z390 GAMING SLI

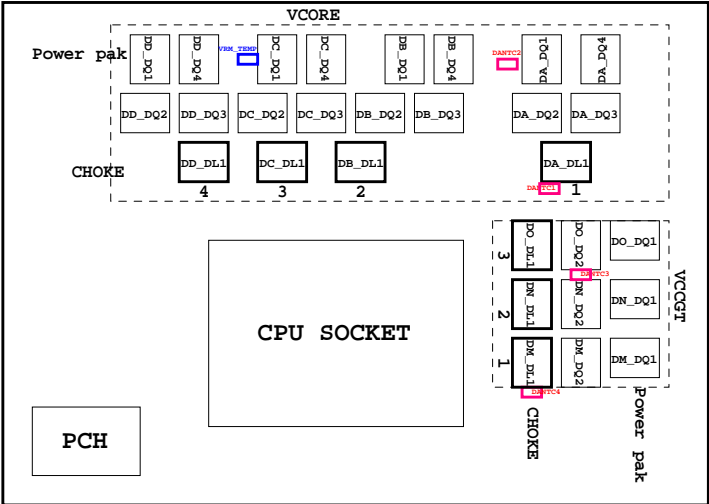
SHEET

TITLE

rev 1.0

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A (CFL_R0.5)
05	CPU_LGA1151-B-DDR4 (CFL_R0.5)
06	CPU_LGA1151-C (CFL_R0.5)
07	CPU_LGA1151-D (CFL_R0.5)
08	DDR 4 CHANNEL A (REV0.12)
09	DDR 4 CHANNEL B (REV0.12)
10	PCH CLOCK/DDC/BIOS (CNP_R1.03)
11	PCH DMI,USB,PCIE (CNP_R1.03)
12	PCH MISC (CNP_R1.03)
13	PCH SATA,PCIE,CNVI (CNP_R1.03)
14	PCH PWR (CNP_R1.03)
15	PCH GND,Heatsink (CNP_R1.03)
16	ITE ITE8628 (CFL_R1.02)
17	HWM (CFL_R1.02)
18	FAN CTRL-CFL-SIO_5 FAN (CFL_R0.6)
19	Dual BIOS for CS mode (CFL_R1.02)
20	CEC Logic (CFL_R1.02)
21	PCI EXPRESS X16 SLOT (REV0.2)
22	PCI EXPRESS X16 SWITCH (REV0.51)
23	PCI EXPRESS X8 SLOT (REV0.51)
24	PCI EXPRESS X4 SLOT(PCH)
25	PCI EXPRESS X1 *3 (REV0.1)
26	SATA (REV0.1)
27	M.2 x4 (A) (CFL_R0.4)
28	M.2 x2 (P) (CFL_R0.64)
29	COM,LPT,TPM, THB (CFL_R0.64)
30	ISL69138 (CFL_R0.64)
31	VCORE_PPAK-1 (CFL_R0.6)
32	VCORE_PPAK-2 (REV0.1)
33	VCCGT_PPAK (REV0.1)
34	CPU POWER-Z系列 (REV0.11)
35	VCCSA_VCCIO-IRON-Z系列 (REV0.1)
36	RT8120_DDR_CHOKE-IRON-2L
37	RT8120_VPP_CHOKE-IRON-合金

SHEET	TITLE
38	RT8120_PCH-CHOKE-IRON (CFL_R0.6)
39	DISCRETE POWER (CFL_R0.6)
40	ATX POWER , A_-PROCHOT (CFL_R0.6)
41	NCT3933 (CFL_R0.6)
42	KB_MS_USB3 (CFL_R0.1)
43	HDMI_NO_LS /R_USB30
44	CNVi_M2_WIFI (CFL_R2.02)
45	Type- A/B USB3.1 (CFL_R2.02)
46	Redriver-Type- A/B (CFL_R2.06)
47	INTEL I219 (CFL_R2.06)
48	USB_LAN CONNECTOR-I219 (CFL_R0.6)
49	Realtek ALC1220 (CFL_R0.6)
50	EAR AUDIO JACK (CFL_R0.6)
51	F_USB30 (CFL_R2.01)
52	F_USB (CFL_R2.0)
53	F_PANEL (CFL_R2.0)
54	IO / XMP/ AUDIOLED / C_LED (REV0.1)
55	EMI-ESD
56	POWER MAP
57	NTC MAP (REV0.3)
58	LED LAYOUT RULE (REV0.3)



rev1.0

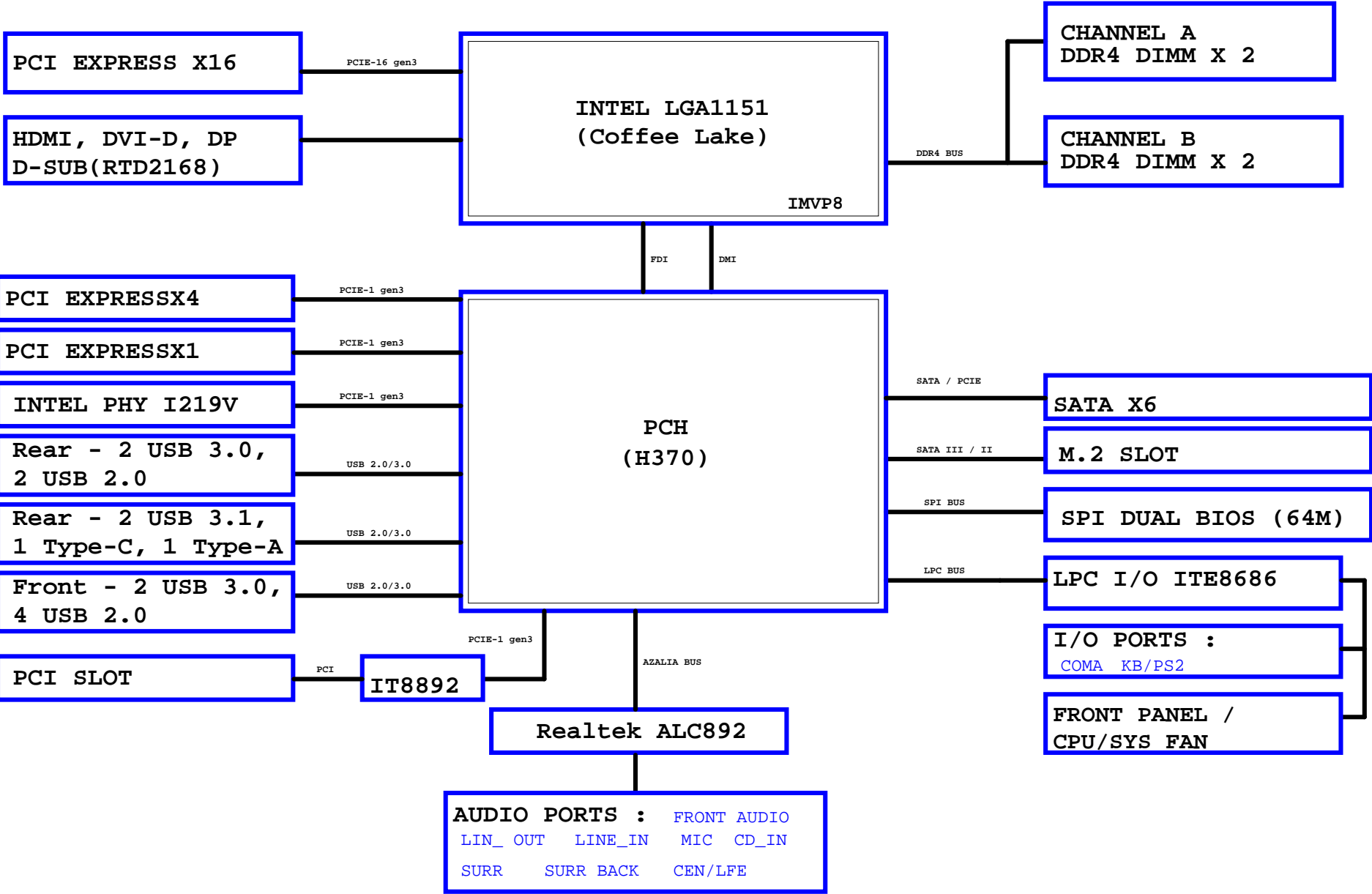
Circuit or PCB layout change

Component value change history

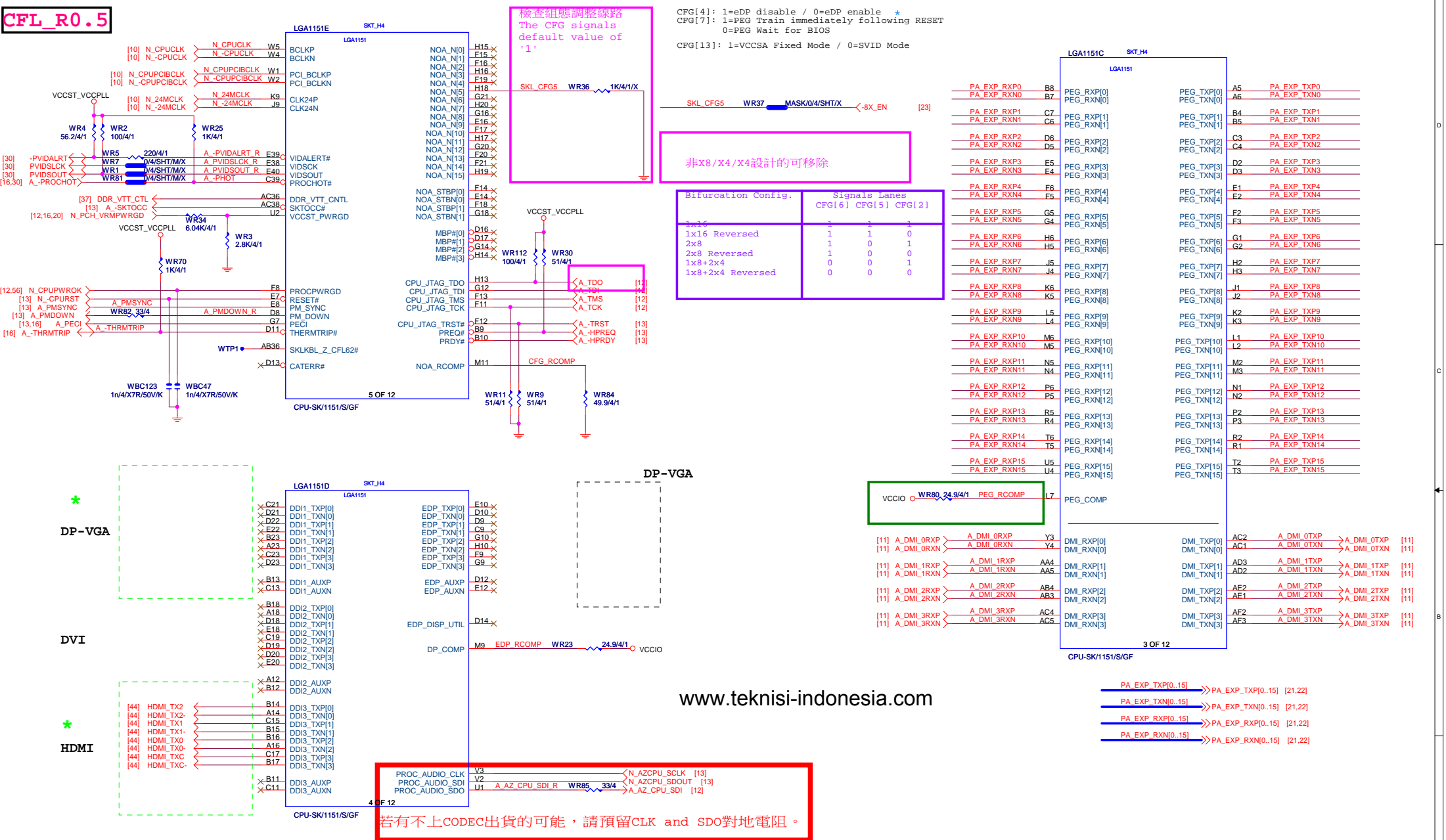
2017/07/19

[illegible][illegible]

BLOCK DIAGRAM

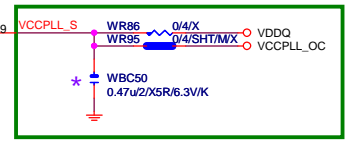
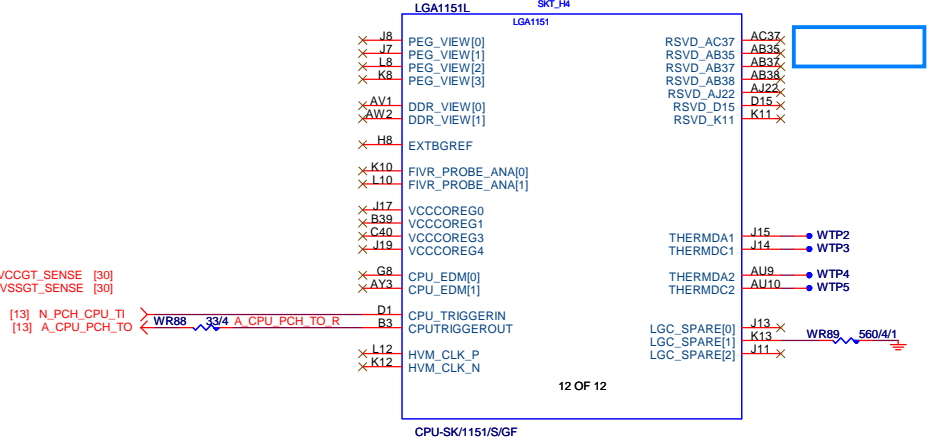
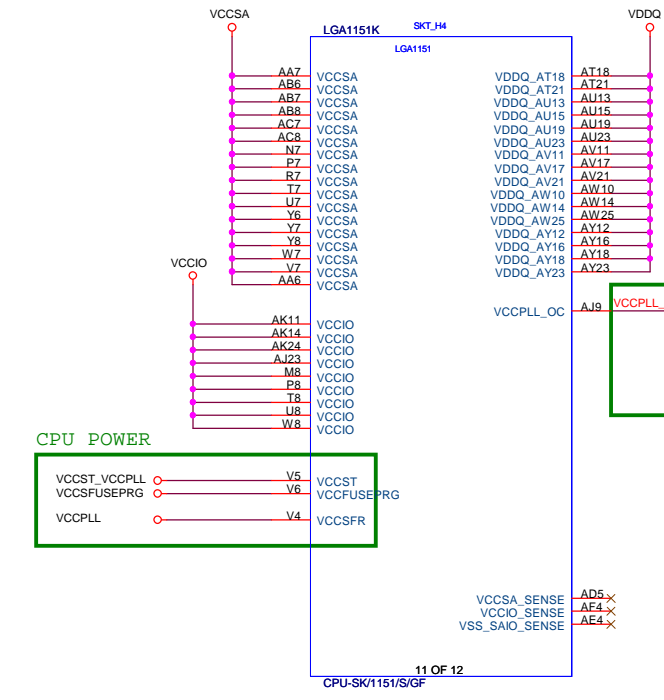
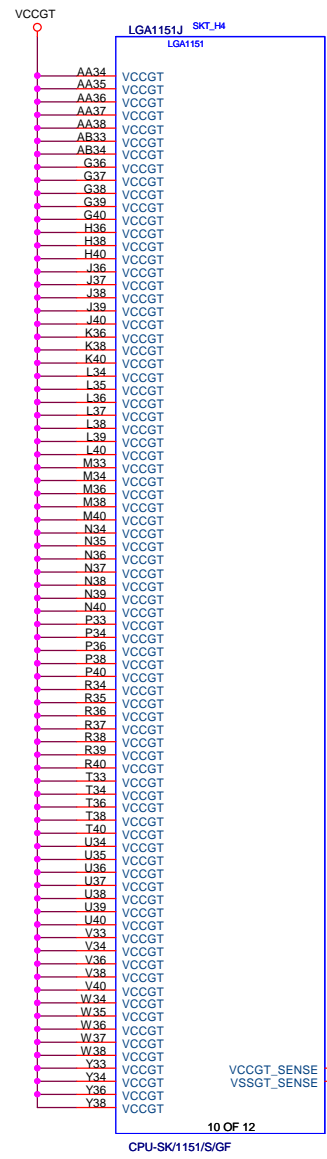
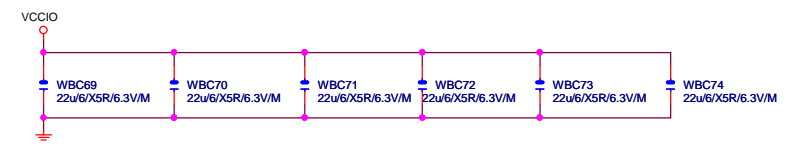
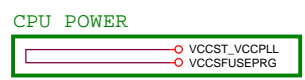
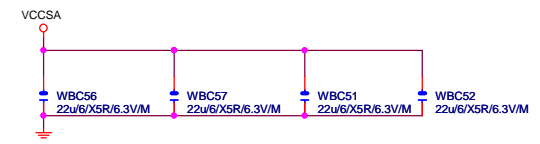


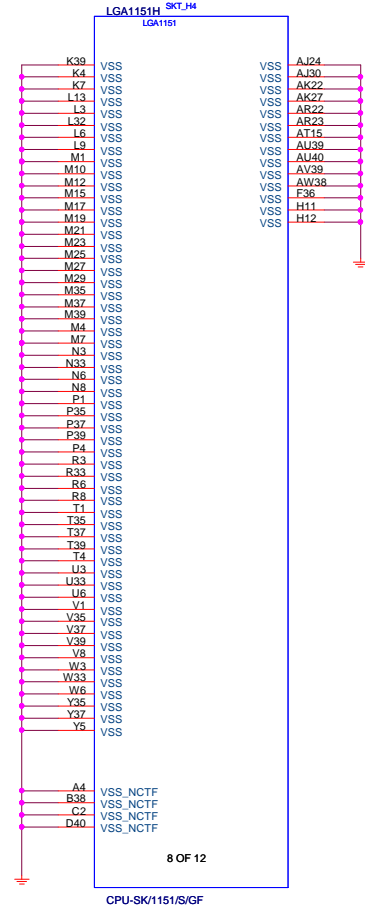
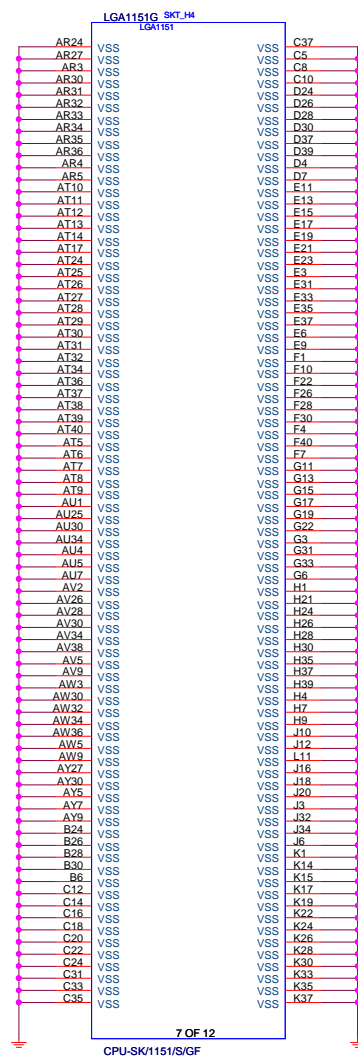
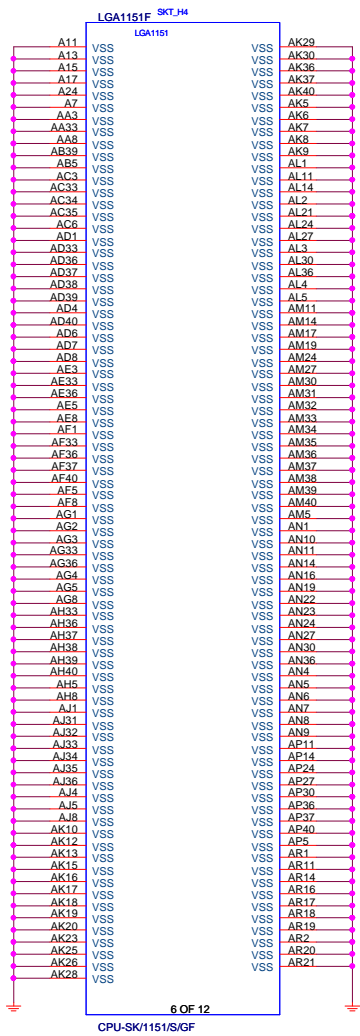
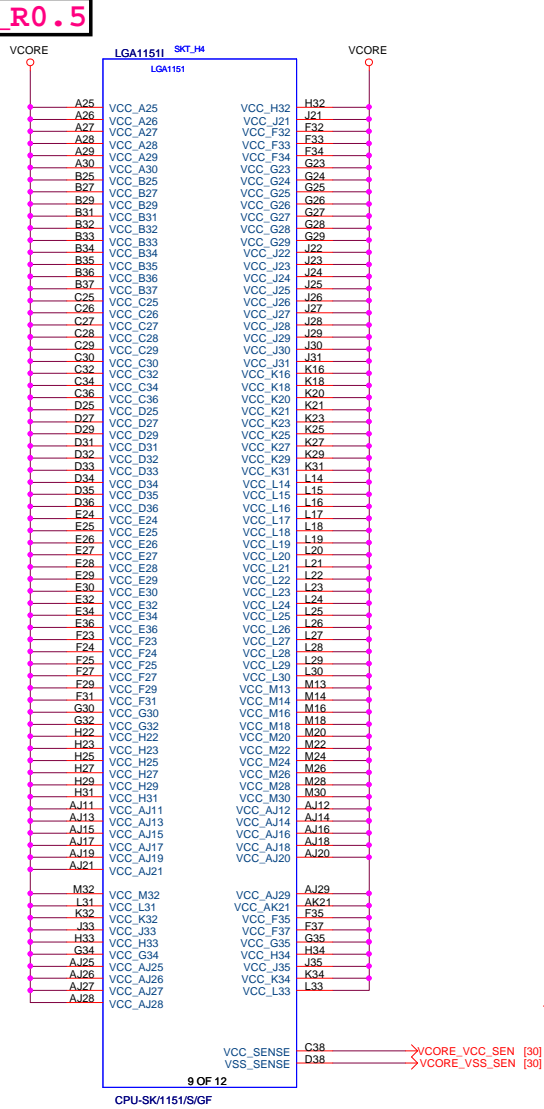
CFL_R0.5



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

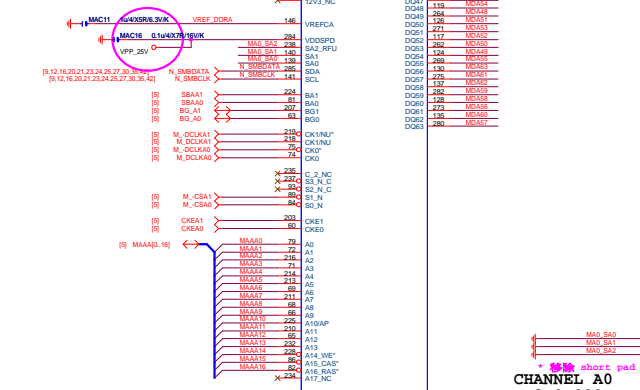
CFL_R0.4 check 模組



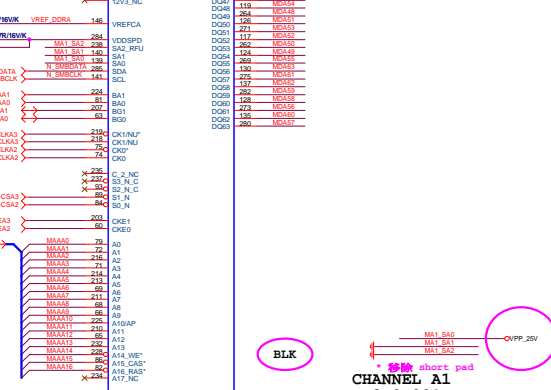
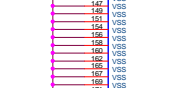


Gigabyte Technology

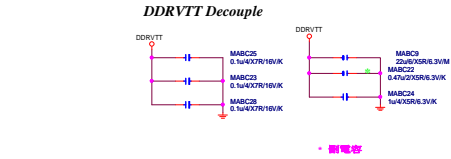
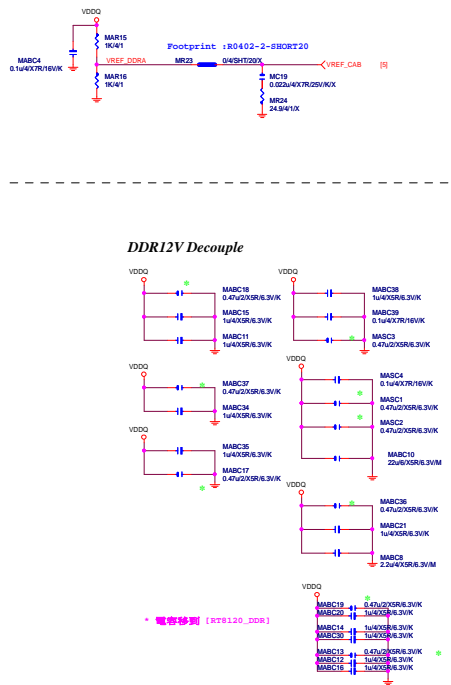
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CPU LGA1151-C			
Size	Document Number	Rev	
Custom	Z390 GMAING SLI	1.0	
Date:	Friday, August 03, 2018	Sheet	7 of 59

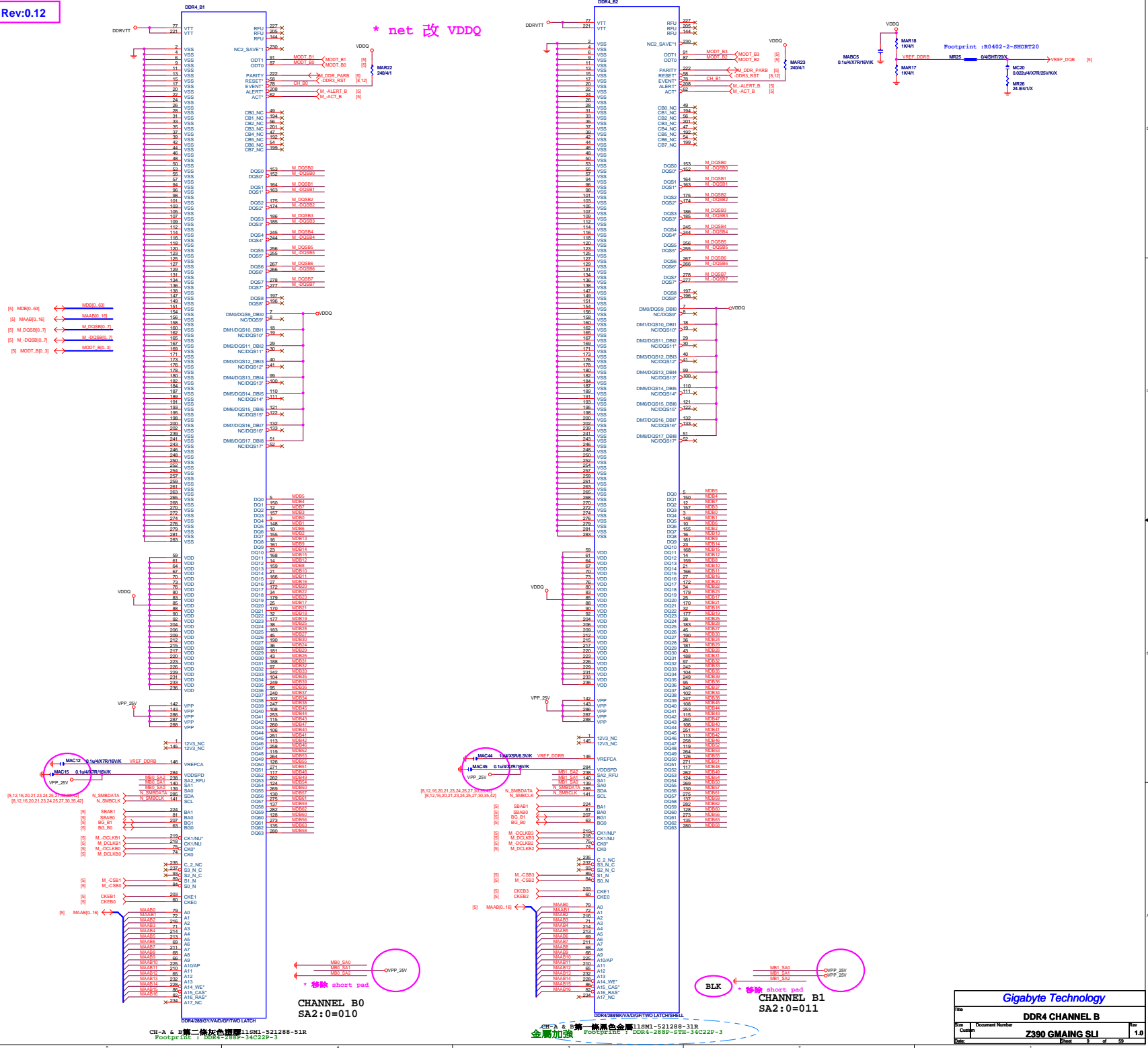


CHANNEL A0
SA2:0=000

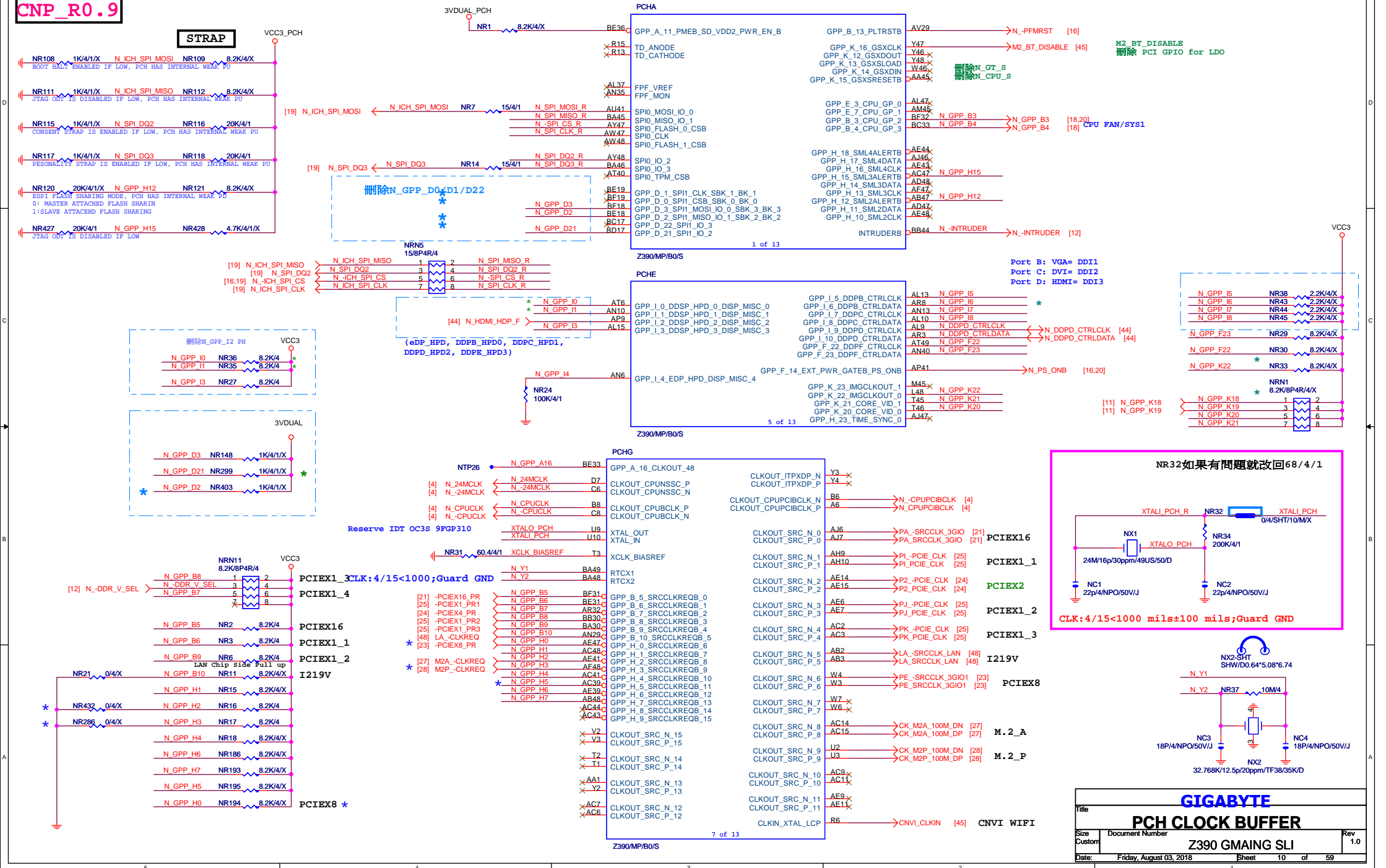


CHANNEL A1
SA2:0=001





CNP_R0.9



CNP_R0.9

注意左側Table及下方訊號名稱改USB31

Item	USB P1	USB P2	USB P3	USB P4	USB P5	USB P6	USB P7 PCIE P1	USB P8 PCIE P2	USB P9 PCIE P3	USB P10 PCIE P4
H310	USB3.0	USB3.0	USB3.0	USB3.0	NA	NA	NA	NA	NA	NA
B350	USB3.1	USB3.1	USB3.1	USB3.1	USB3.0	USB3.0	NA	NA	NA	NA
Q350	USB3.1	USB3.1	USB3.1	USB3.1	USB3.0	USB3.0	USB3.0	USB3.0	NA	NA
H370	USB3.1	USB3.1	USB3.1	USB3.1	USB3.0	USB3.0	USB3.0	USB3.0	PCIE	PCIE
Z370	USB3.1	USB3.1	USB3.1	USB3.1	USB3.1	USB3.1	USB3.0	USB3.0	PCIE	PCIE
Q370	USB3.1	USB3.1	USB3.1	USB3.1	USB3.1	USB3.1	USB3.0	USB3.0	PCIE	PCIE

USB pin out map

USB31_1
USB31_2
USB31_3
USB31_4
USB31_5
USB31_6
USB30_7
USB30_8
USB30_9
USB30_10

PCH

DMI need to reverse

		PCHB
[4] A_DMI_3TXN	A_DMI_3TXN	K34
[4] A_DMI_3TXP	A_DMI_3TXP	J35
[4] A_DMI_3RXN	A_DMI_3RXN	C33
[4] A_DMI_3RXP	A_DMI_3RXP	B33
[4] A_DMI_2TXN	A_DMI_2TXN	G33
[4] A_DMI_2TXP	A_DMI_2TXP	F34
[4] A_DMI_2RXN	A_DMI_2RXN	C32
[4] A_DMI_2RXP	A_DMI_2RXP	B32
[4] A_DMI_1TXN	A_DMI_1TXN	K32
[4] A_DMI_1TXP	A_DMI_1TXP	J32
[4] A_DMI_1RXN	A_DMI_1RXN	C31
[4] A_DMI_1RXP	A_DMI_1RXP	B31
[4] A_DMI_0TXN	A_DMI_0TXN	G30
[4] A_DMI_0TXP	A_DMI_0TXP	F30
[4] A_DMI_0RXN	A_DMI_0RXN	C29
[4] A_DMI_0RXP	A_DMI_0RXP	B29
X_K29	DMI_4_RXN	
X_E28	DMI_4_RXP	
X_D29	DMI_4_TXN	
X_M26	DMI_5_RXN	
X_L26	DMI_5_RXP	
X_C27	DMI_5_TXN	
X_B27	DMI_5_TXP	
X_G26	DMI_6_RXN	
X_F26	DMI_6_RXP	
X_B26	DMI_6_TXN	
X_C26	DMI_6_TXP	
X_R24	DMI_7_RXN	
X_P24	DMI_7_RXP	
X_B25	DMI_7_TXN	
X_A25	DMI_7_TXP	

H370 USB
onlyH370 PCIE
only

F_USB30

KB_MS_USB

I219V

PCIEX1_1

PCIEX1_2

PCIEX1_3

TYPE-A
GEN2TYPE-A
GEN2

LAN_USB30

R_USB30
GEN2

[47] PCH_USB31_RXN1	D11	USB31_1_RXN	GPP_A_1_LAD_0_ESPI_IO_0	BB39 N_LAD0	N_LAD0	[16,29]
[47] PCH_USB31_RXP1	C11	USB31_1_RXP	GPP_A_2_LAD_1_ESPI_IO_1	AV37 N_LAD1	N_LAD1	[16,29]
[47] PCH_USB31_TXN1	F9	USB31_1_TXN	GPP_A_3_LAD_2_ESPI_IO_2	AV37 N_LAD2	N_LAD2	[16,29]
[47] PCH_USB31_TXP1	F7	USB31_1_TXP	GPP_A_4_LAD_3_ESPI_IO_3	BA38 N_LAD3	N_LAD3	[16,29]
[47] PCH_USB31_RXN2	B9	USB31_2_RXN	GPP_A_5_LFRAMEB_ESPI_CS0B	BE38 N_LFRAME	N_LFRAME	[16,29]
[47] PCH_USB31_RXP2	C9	USB31_2_RXP	GPP_A_6_SERIRQ_ESPI_CS1B	AW35 N_SERIRQ	N_SERIRQ	[16,29]
[47] PCH_USB31_TXN2	C3	USB31_2_TXN	GPP_A_7_PIRQAB_ESPI_ALERT0B	BA36 N_LDRQ0	N_LDRQ0	[16]
[47] PCH_USB31_TXP2	D4	USB31_2_TXP	GPP_A_8_RCINB_ESPI_ALERT1B	BE39 N_KBRST	N_KBRST	[16]
[49] PCH_USB30_RXN3	B10	USB31_3_RXN	GPP_A_14_SUS_STATB_ESPI_RESETB	BF38 N_GPP_A14	ESPI_RESET	[16]
[49] PCH_USB30_RXP3	C10	USB31_3_RXP				
[49] PCH_USB30_TXN3	F11	USB31_3_TXN				
[49] PCH_USB30_TXP3	G12	USB31_3_TXP				
[49] PCH_USB30_RXN4	K16	USB31_4_RXN	GPP_A_9_CLKOUT_LPC_0_ESPI_CLK	BB36 N_GPP_A9	NR47	10/4
[49] PCH_USB30_RXP4	J16	USB31_4_RXP	GPP_A_10_CLKOUT_LPC_1	BB34 N_GPP_A10	NR206	10/4
[49] PCH_USB30_TXN4	K15	USB31_4_TXN				
[49] PCH_USB30_TXP4	C14	USB31_4_TXP				
[44] PCH_USB30_RXN5	J13	USB31_5_RXN	GPP_E_6_SATA_DEVSLP_2	AH40		
[44] PCH_USB30_RXP5	K13	USB31_5_RXP	GPP_E_5_SATA_DEVSLP_1	AH35		
[44] PCH_USB30_TXN5	C15	USB31_5_TXN	GPP_E_4_SATA_DEVSLP_0	AL48	N_DEVSLP0	[27]
[44] PCH_USB30_TXP5	B15	USB31_5_TXP	GPP_F_9_SATA_DEVSLP_7	AP47		
[44] PCH_USB30_RXN6	G14	USB31_6_RXN	GPP_F_8_SATA_DEVSLP_6	AN37		
[44] PCH_USB30_RXP6	F14	USB31_6_RXP	GPP_F_7_SATA_DEVSLP_5	AN46		
[44] PCH_USB30_TXN6	C17	USB31_6_TXN	GPP_F_6_SATA_DEVSLP_4	AR47	N_GPP_F5	N_DEVSLP4 [28]
[44] PCH_USB30_TXP6	C16	USB31_6_TXP	GPP_F_5_SATA_DEVSLP_3	AP48	N_GPP_F5	N_GPP_F5 [13]

PCHF

Z390/MP/B0/S

USB2N_1	J3	N_USB2P1	[46]	TYPE-A
USB2P_1	J2	N_USB2P1	[46]	TYPE-A
USB2N_2	N13	N_USB2P2	[46]	TYPE-A
USB2P_2	N15	N_USB2P2	[46]	TYPE-A
USB2N_3	K4	N_USB2P3	[49]	USB30_LAN
USB2P_3	K3	N_USB2P3	[49]	USB30_LAN
USB2N_4	M10	N_USB2P4	[49]	USB30_LAN
USB2P_4	L9	N_USB2P4	[49]	USB30_LAN
USB2N_5	M1	N_USB2P5	[44]	R_USB30
USB2P_5	L2	N_USB2P5	[44]	R_USB30
USB2N_6	K7	N_USB2P6	[44]	R_USB30
USB2P_6	K6	N_USB2P6	[44]	R_USB30
USB2N_7	L4	N_USB2P7	[52]	F_USB30
USB2P_7	L3	N_USB2P7	[52]	F_USB30
USB2N_8	G4	N_USB2P8	[52]	F_USB30
USB2P_8	G5	N_USB2P8	[52]	F_USB30
USB2N_9	M6	N_USB2P9	[43]	KB_MS_USB
USB2P_9	N8	N_USB2P9	[43]	KB_MS_USB
USB2N_10	H2	N_USB2P10	[43]	KB_MS_USB
USB2P_10	H1	N_USB2P10	[43]	KB_MS_USB
USB2N_11	P9	N_USB2P11	[53]	F_USB1
USB2P_11	P9	N_USB2P11	[53]	F_USB1
USB2N_12	G1	N_USB2P12	[53]	F_USB1
USB2P_12	G2	N_USB2P12	[53]	F_USB1
USB2N_13	N3	N_USB2P13	[53]	F_USB1
USB2P_13	N2	N_USB2P13	[53]	F_USB1
USB2N_14	E5	N_USB2P14	[53]	F_USB1
USB2P_14	F6	N_USB2P14	[53]	F_USB1

GPP_E_9_USB2_OCB_0	AH36	N_USBOC_R	[52]	3VDUAL
GPP_E_10_USB2_OCB_1	AL40			
GPP_E_11_USB2_OCB_2	AJ44			
GPP_E_12_USB2_OCB_3	AL41			
GPP_F_15_USB2_OCB_4	AV47			
GPP_F_16_USB2_OCB_5	AR35	N_USBOC_F	[52]	3VDUAL
GPP_F_17_USB2_OCB_6	AV43	N_USBOC_7	NR39	8.2K/4
GPP_F_18_USB2_OCB_7	AV43	N_USBOC_7	NR39	8.2K/4

USB2_COMP	F4	N_USB2_COMP	NR40	115/4/1
USB2_VBUSSENSE	F3	N_USB2_VBUSSENSE	NR41	10K/4/1
USB2_PLLMON	U13	N_USB2_PLLMON	NTP38	
USB2_ID	G3	N_USB2_ID	NR42	10K/4/1X
GPD_7	BE41	N_GPD_7		
PCIE_21_RXN	T43	M2_PCIE_IN21	[28]	M.2 2280
PCIE_21_RXP	R44	M2_PCIE_IP21	[28]	M.2 2280
PCIE_21_TXN	G47	M2_PCIE_TN21	[28]	M.2 2280
PCIE_21_TXP	F46	M2_PCIE_TP21	[28]	M.2 2280
PCIE_22_RXN	U40	M2_PCIE_IN22	[28]	M.2 2280
PCIE_22_RXP	U41	M2_PCIE_IP22	[28]	M.2 2280
PCIE_22_TXN	H47	M2_PCIE_TN22	[28]	M.2 2280
PCIE_22_TXP	H48	M2_PCIE_TP22	[28]	M.2 2280
PCIE_23_RXN	W43	M2_PCIE_IN23	[28]	M.2 2280
PCIE_23_RXP	W44	M2_PCIE_IP23	[28]	M.2 2280
PCIE_23_TXN	G49	M2_PCIE_TN23	[28]	M.2 2280
PCIE_23_TXP	G48	M2_PCIE_TP23	[28]	M.2 2280
PCIE_24_RXN	Y40	M2_PCIE_IN24	[28]	M.2 2280
PCIE_24_RXP	Y41	M2_PCIE_IP24	[28]	M.2 2280
PCIE_24_TXN	G46	M2_PCIE_TN24	[28]	M.2 2280
PCIE_24_TXP	G45	M2_PCIE_TP24	[28]	M.2 2280

CNVI的BT功能enable時
PCH的USB2.0 port14會被disable

STRAP

NR411 1K/4/1X N_GPD_7 NR412 1K/4/1 3VDUAL

XTAL INPUT MODE, PCH HAS INTERNAL 20K PD

HIGH:XTAL INPUT IS DIFFERENTIAL

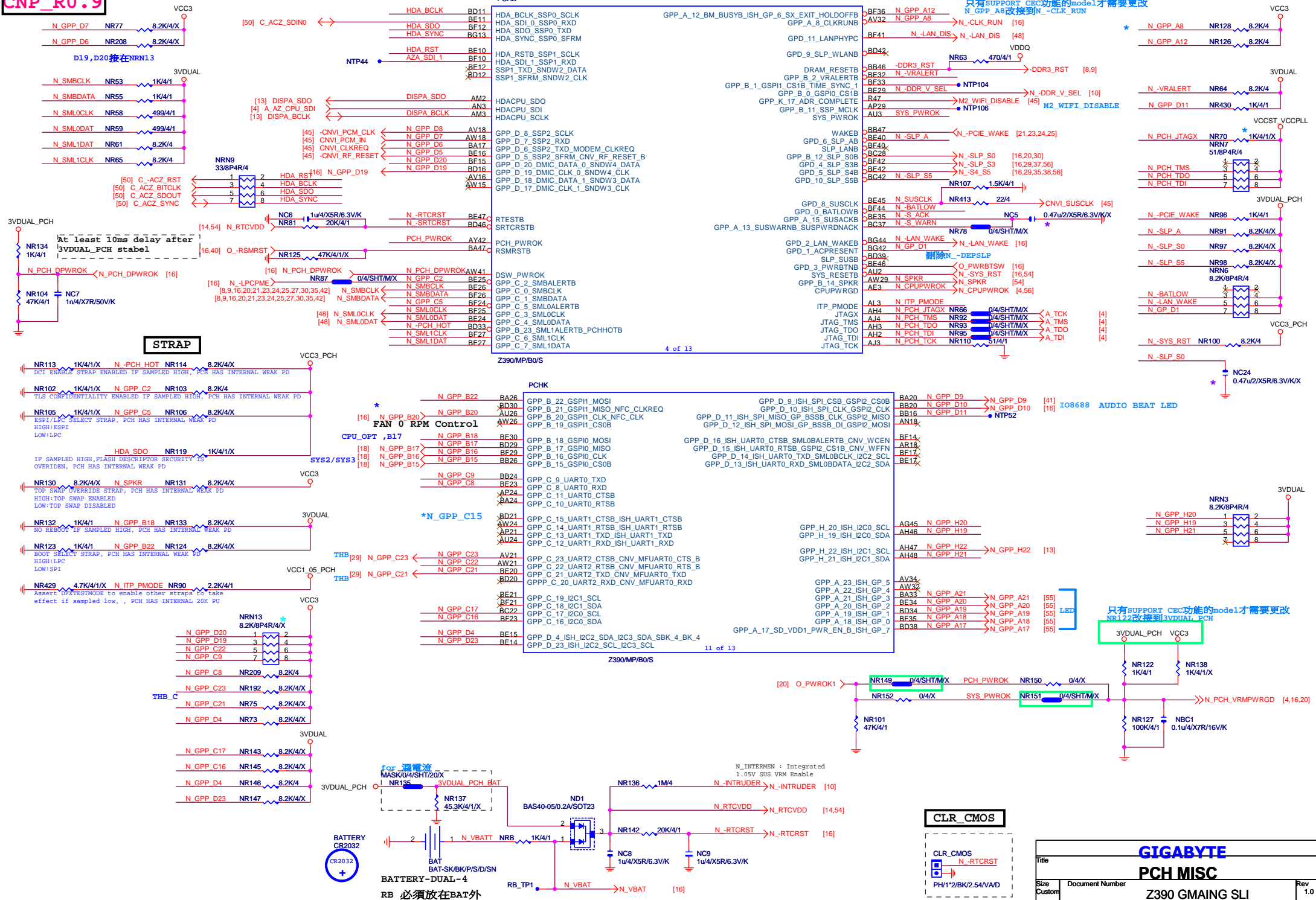
LOW:XTAL INPUT IS SINGLE-ENDED

GIGABYTE

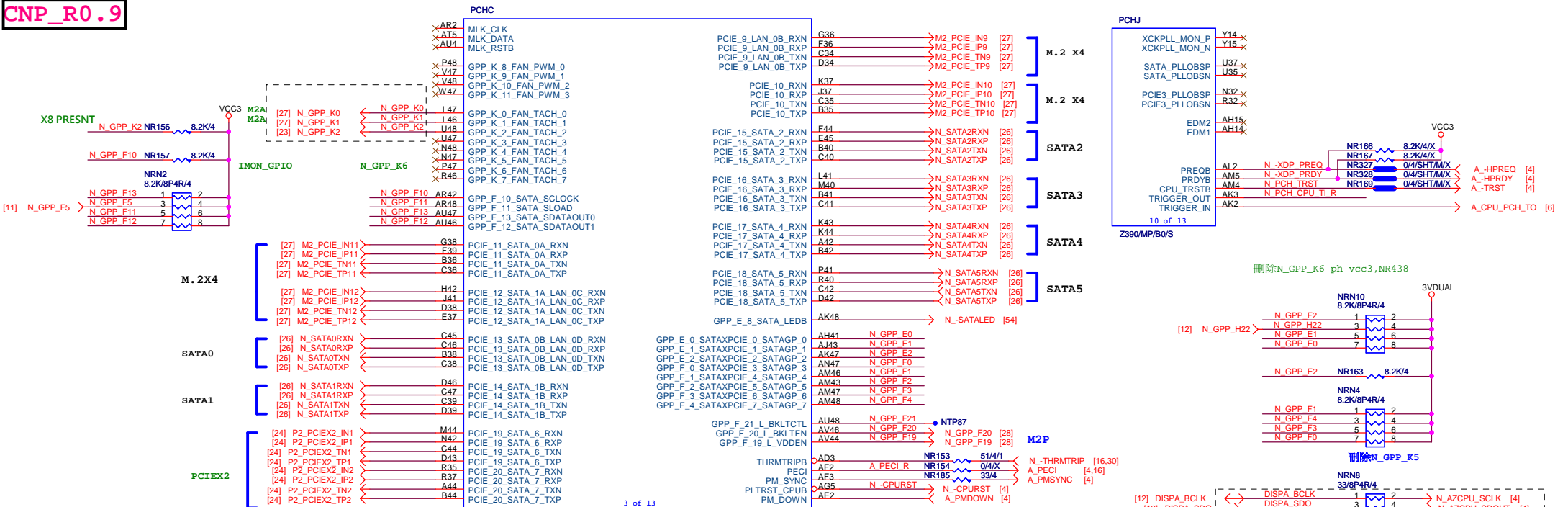
PCH DMI,USB,PCIE

Title	Document Number	Rev
	Z390 GMAING SLI	1.0
Date:	Friday, August 03, 2018	Sheet 11 of 59

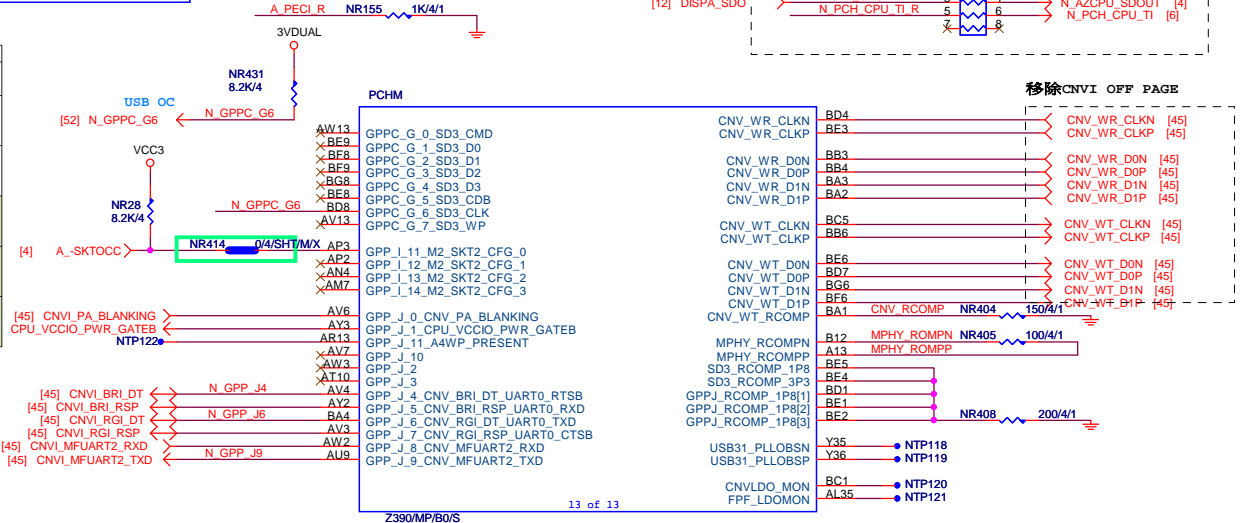
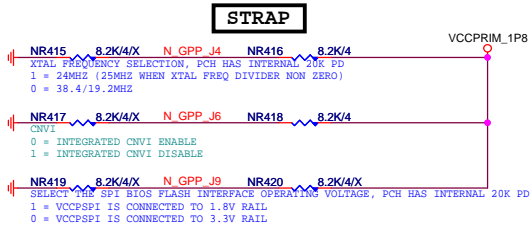
CNP_R0.9



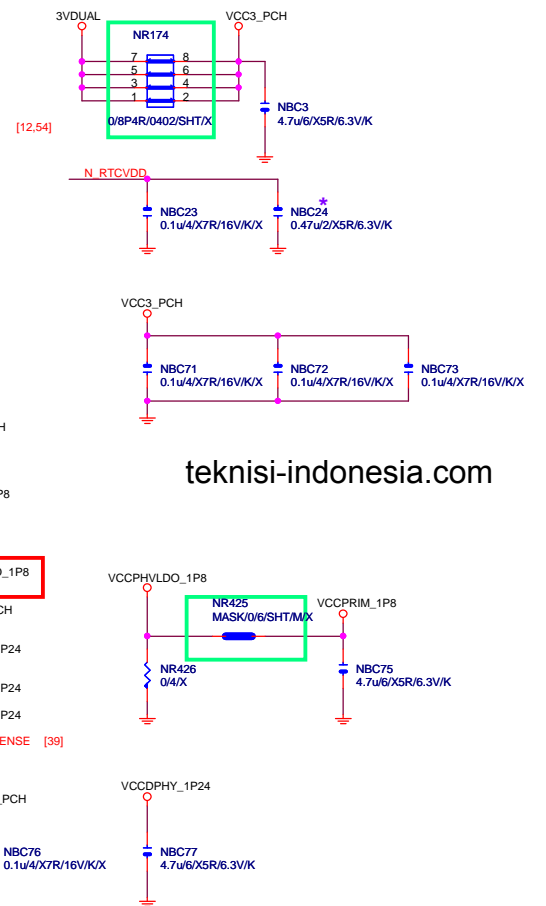
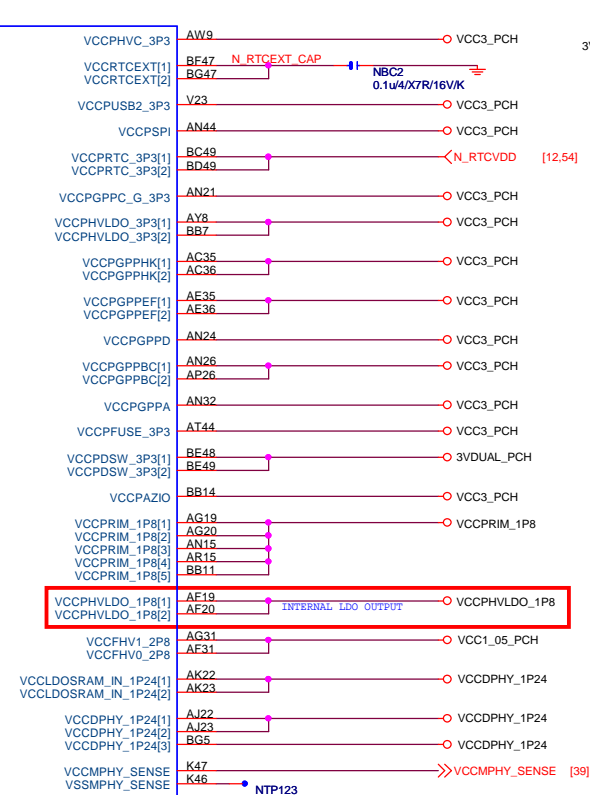
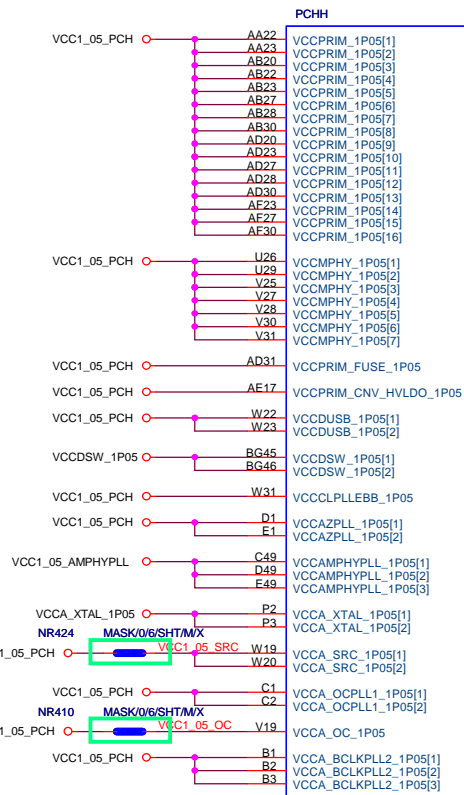
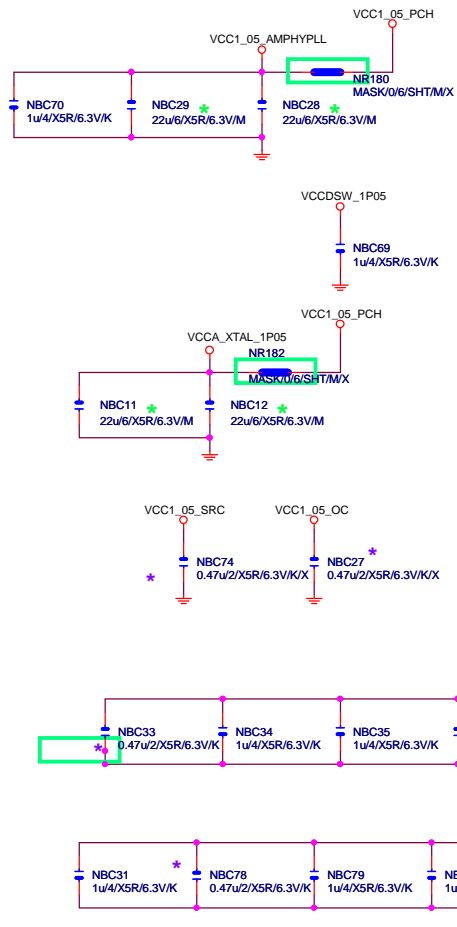
CNP_R0.9



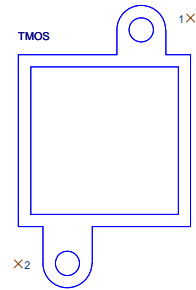
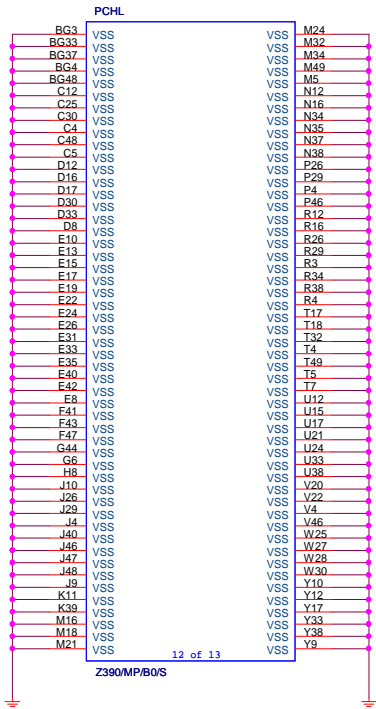
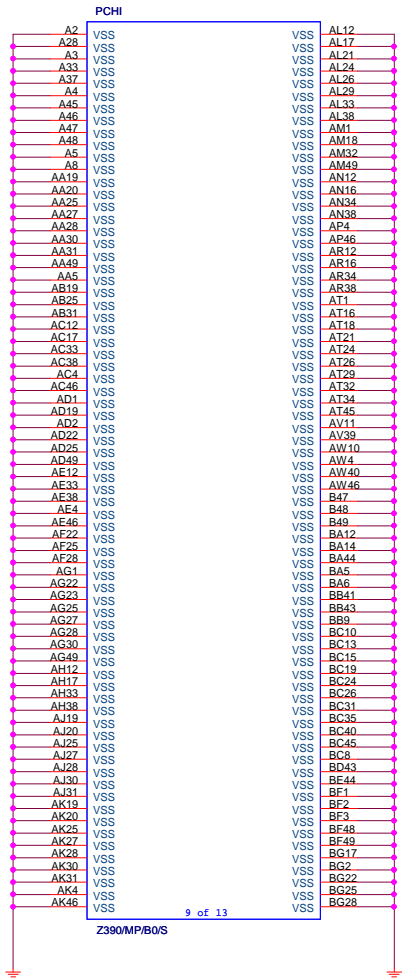
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H310	GbE	N/A	PCIE	PCIE GbE	GbE SATA 0	SATA 1	SATA2	SATA 3	N/A	N/A	N/A	N/A
B360	PCIE GbE	PCIE	PCIE SATA 0A	PCIE GbE SATA 1A	GbE SATA 0B	SATA 1B	SATA2	SATA 3	SATA4	SATA5	N/A	N/A
Q360	PCIE GbE	PCIE	PCIE SATA 0A	PCIE GbE SATA 1A	GbE SATA 0B	PCIE SATA 1B	SATA2	SATA 3	SATA4	SATA5	N/A	N/A
H370	PCIE GbE	PCIE	PCIE SATA 0A	PCIE GbE SATA 1A	PCIE GbE SATA 0B	PCIE SATA 1B	PCIE SATA 2	PCIE SATA 3	SATA4	SATA5	PCIE	PCIE
Z390	PCIE GbE	PCIE	PCIE SATA 0A	PCIE GbE SATA 1A	PCIE GbE SATA 0B	PCIE SATA 1B	PCIE SATA 2	PCIE SATA 3	PCIE SATA 4	PCIE SATA 5	PCIE	PCIE
Q370	PCIE GbE	PCIE	PCIE SATA 0A	PCIE GbE SATA 1A	PCIE GbE SATA 0B	PCIE SATA 1B	PCIE SATA 2	PCIE SATA 3	PCIE SATA 4	PCIE SATA 5	PCIE	PCIE



GIGABYTE			
Title PCH SATA, PCIE, SATA EXPRESS			
Size Custom	Document Number	Rev 1.0	
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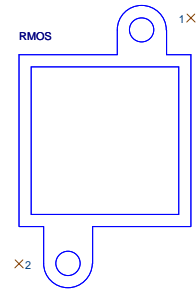
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TMOS HS/BLACK/Z390_G7/KG[12SP2-S09426-B1R_12SP2-S09426-B3R_12SP2-S09426-B4R]

Footprint :SINK_Z390_G7-T

PN: 12SP2-S09426-B1R/B3R/B4R



RMOS HS/BLACK/Z390_G7/KG[12SP2-S08026-B1R_12SP2-S08026-B3R_12SP2-S08026-B4R]

Footprint :SINK_Z390_G7-R

PN: 12SP2-S08026-B1R/B3R/B4R

一體式IO料號

Z390 GAMING SLI?11AIO-0C0014-02R

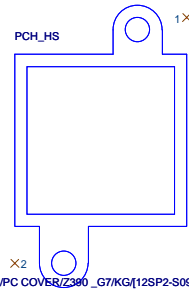
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Z370 GAMING X?11AIO-0C0015-04R

IO_SH

IO

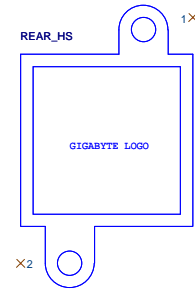
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PCH HS/BK/PC COVER/Z390_G7/KG[12SP2-S09010-01R_12SP2-S09010-03R_12SP2-S09010-04R]

Footprint :SINK_Z390_G7_PCH

PN:12SP2-S09010-01R/03R/04R



IO CR/LINE 032U CS[12KRC-0H0022-01R]

Footprint :

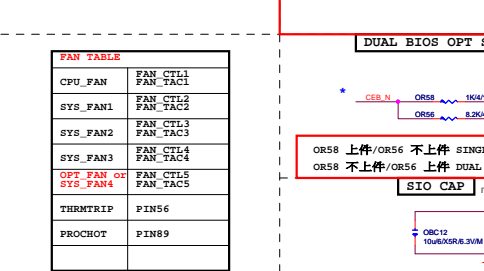
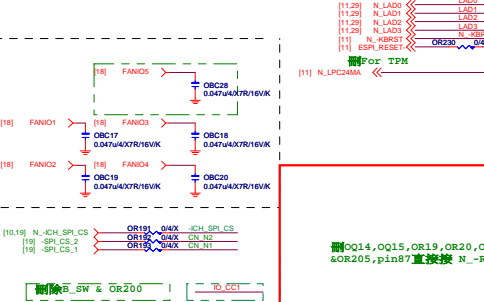
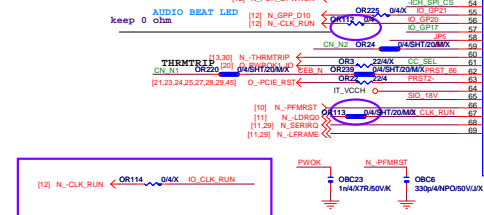
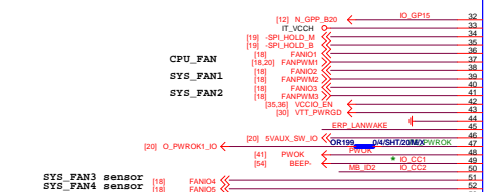
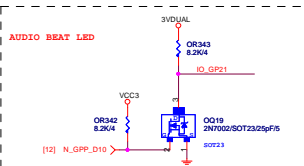
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PN: 12KRC-0H0022-01R

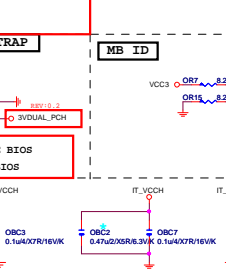
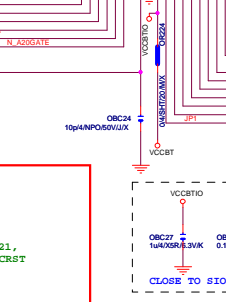
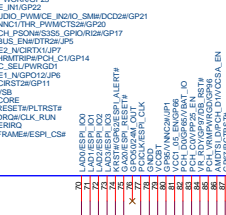
GIGABYTE

PCH GND

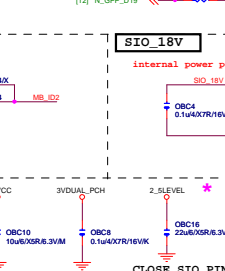
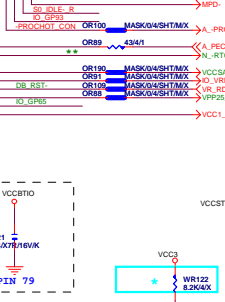
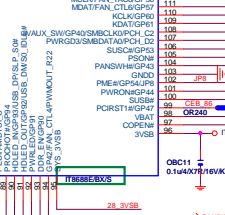
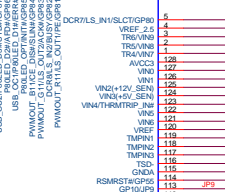
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Size	Document Number	Rev
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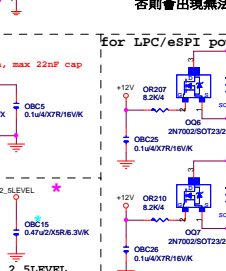
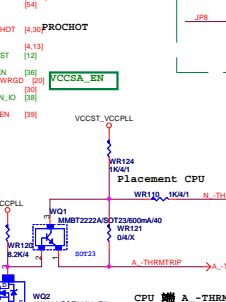
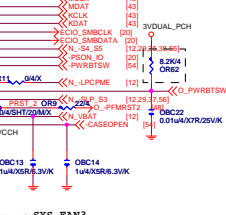
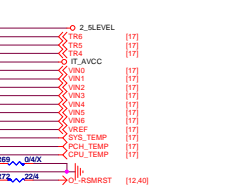
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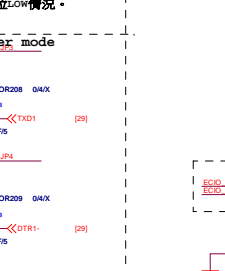
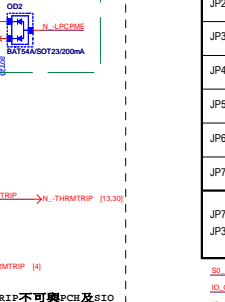
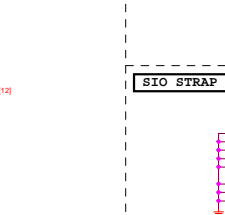
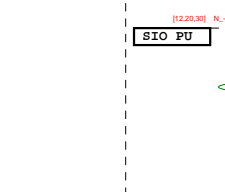
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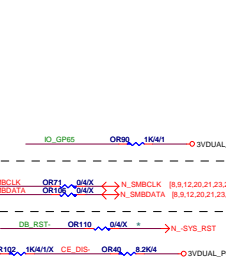
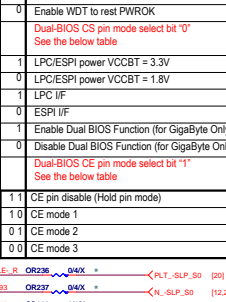
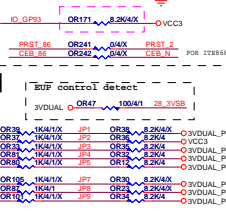
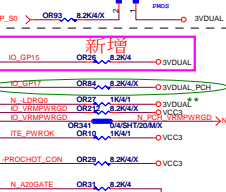
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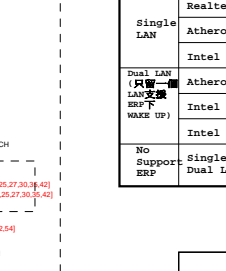
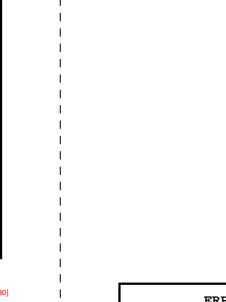
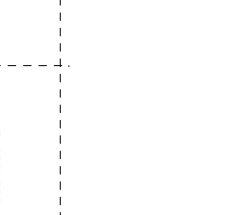
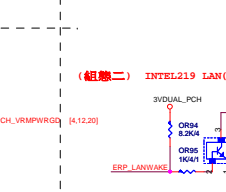
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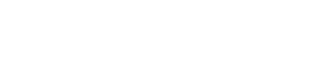
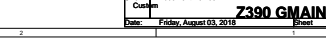
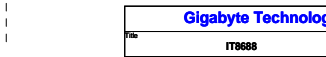
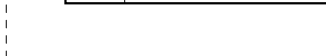
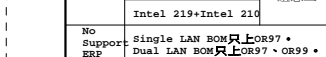
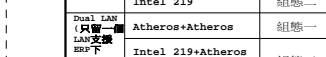
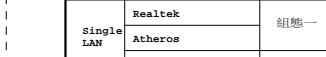
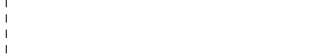
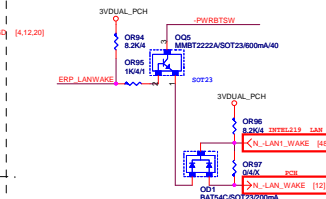
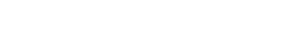
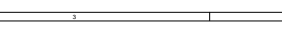
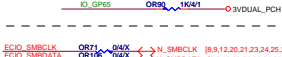
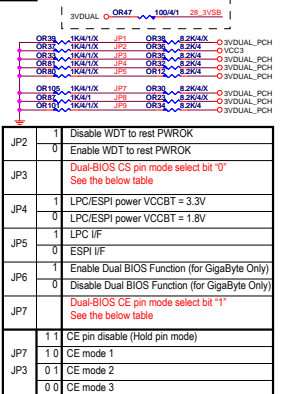
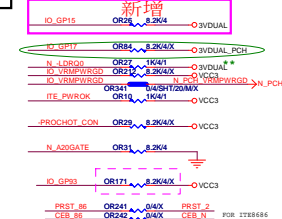
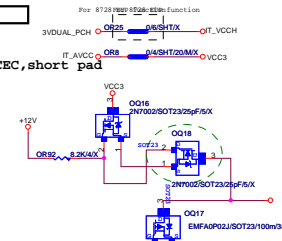
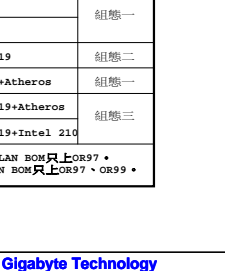
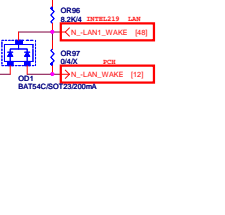
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SYS_FAN4/OPT_FAN

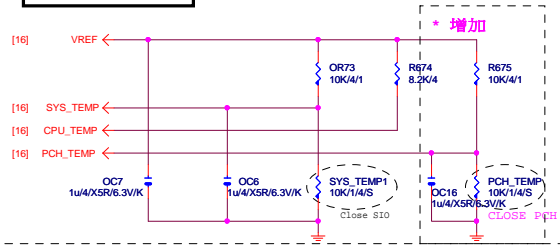


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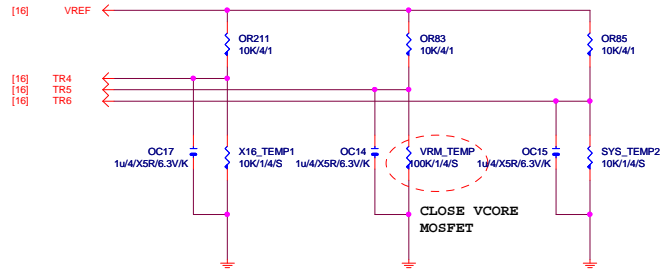


ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	
Dual LAN	Intel 219	組態二
(只留一LAN交換器)	Atheros+Realtek	組態一
LAN WAKE UP	Intel 219+Realtek	組態三
	Intel 219+Intel 210	
No Support ERP	Single LAN BOM只上OR97	
	Dual LAN BOM只上OR97 + OR99	

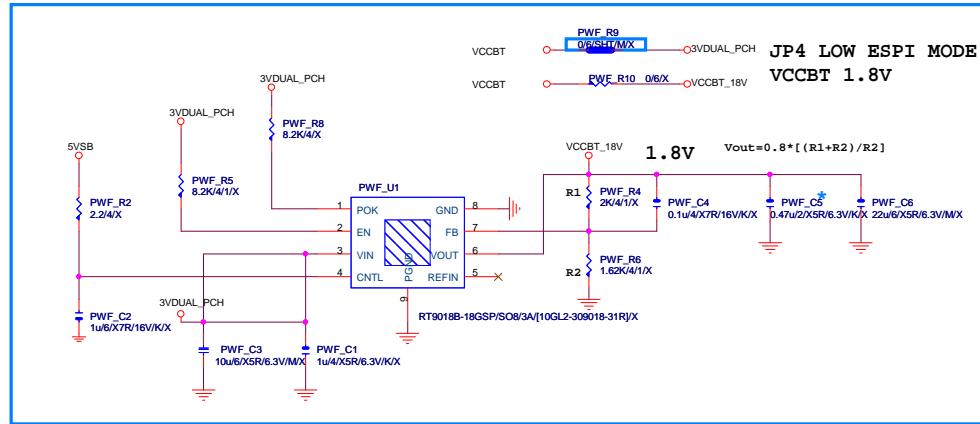
TEMP H/W MONITOR



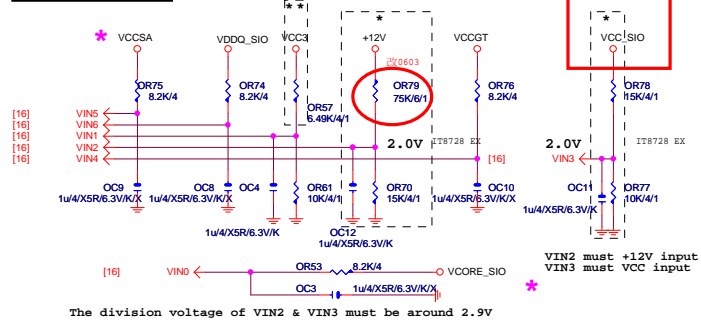
5個FAN時使用



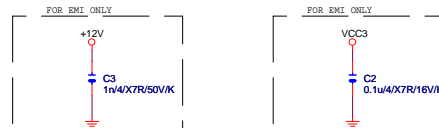
VCCBT_18V



VOLTAGE-- H/W MONITOR



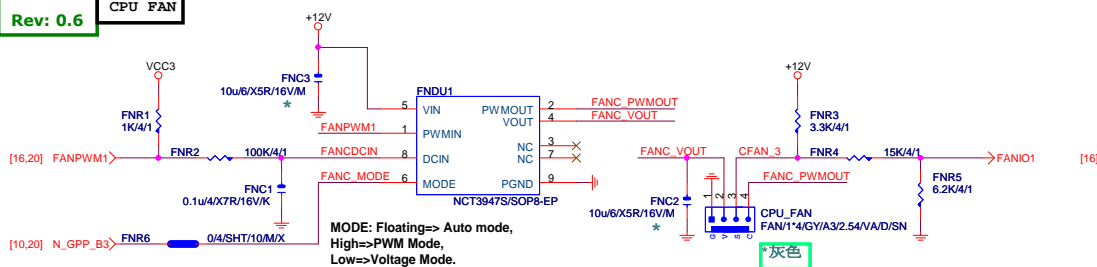
(靠近ATX CONNECTOR)



Gigabyte Technology

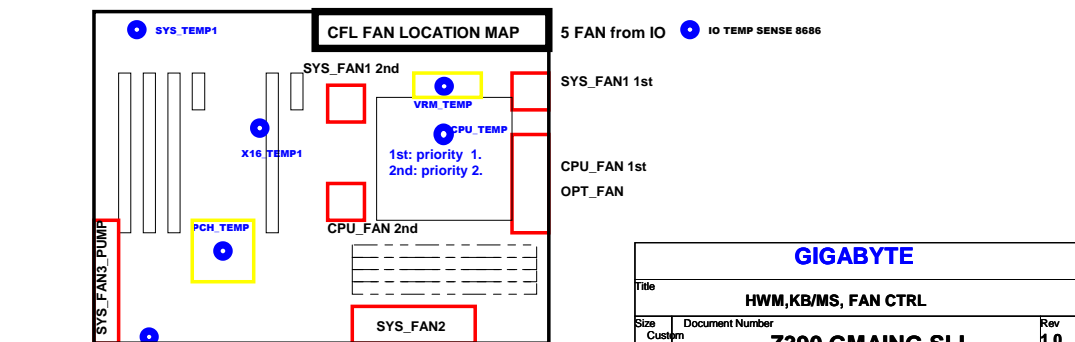
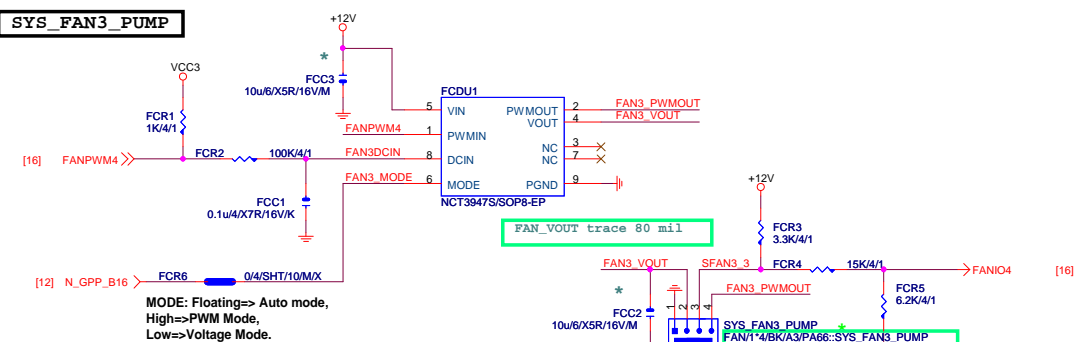
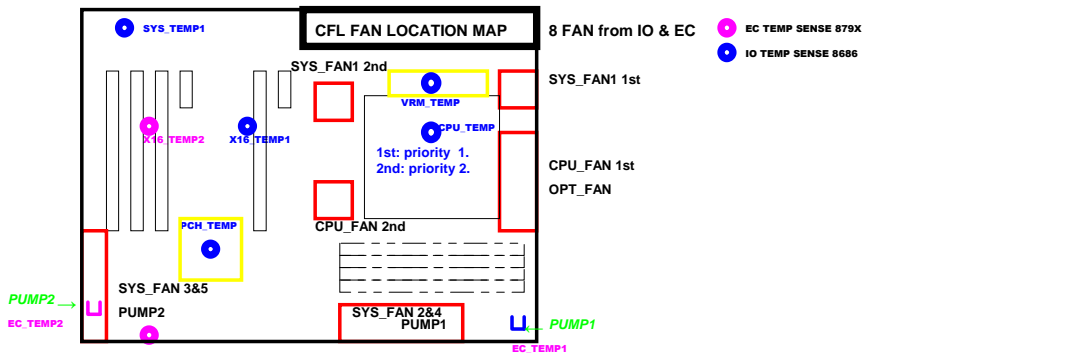
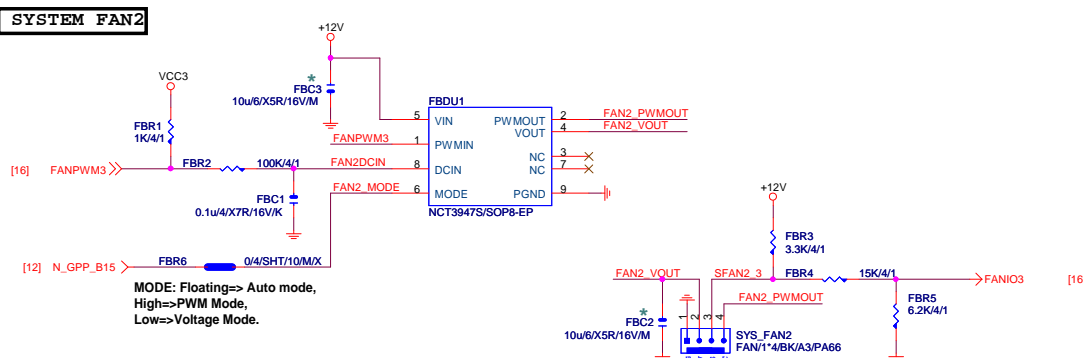
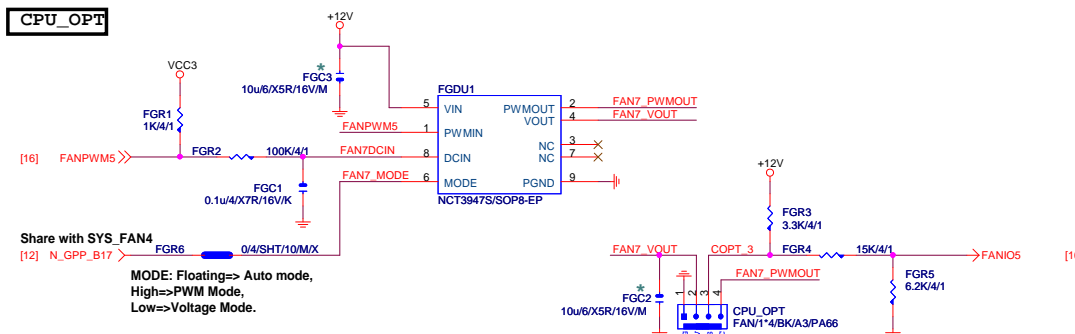
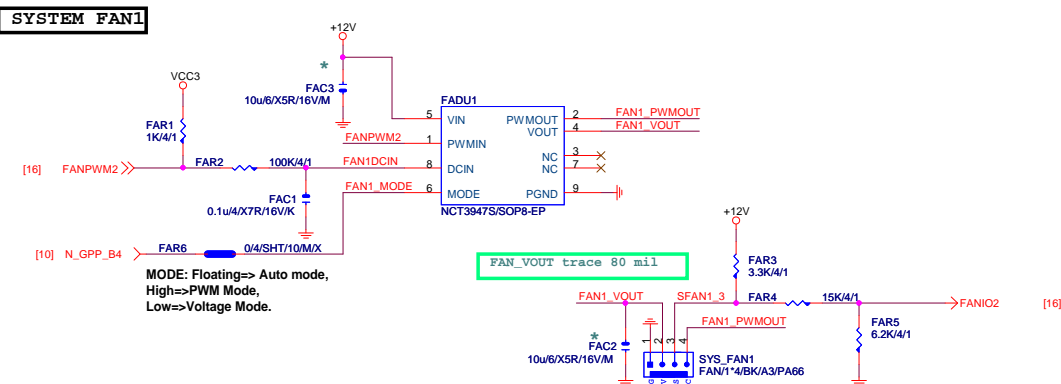
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Size	Document Number	Rev	
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IO 4 FAN

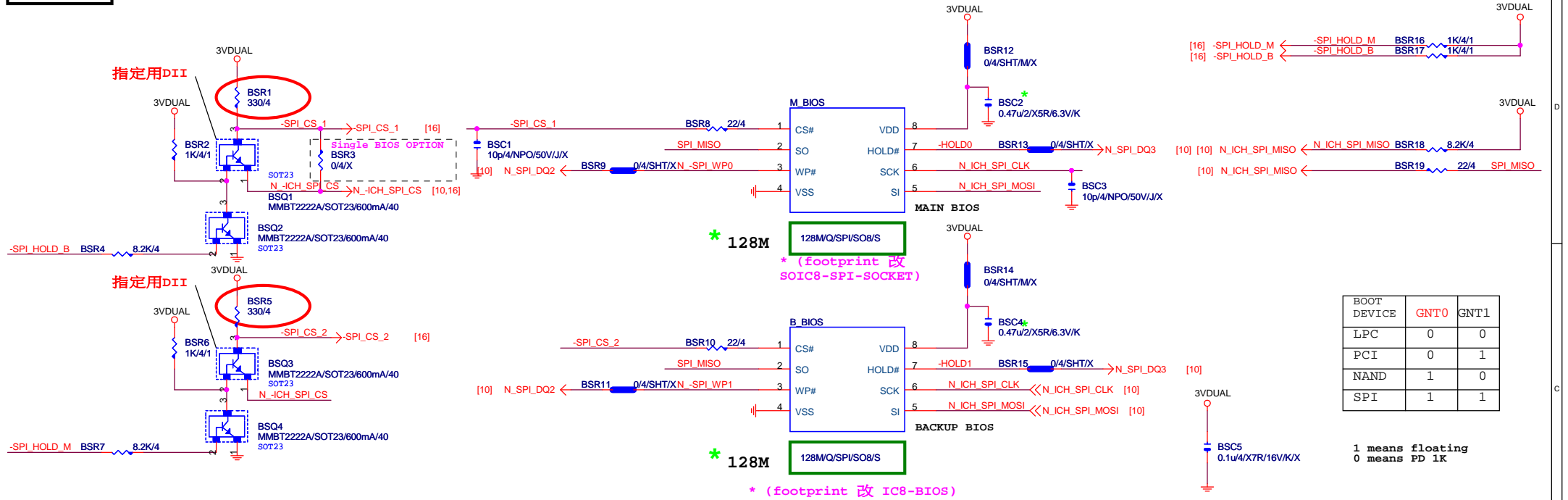
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CPU_FAN
SYS_FAN1
SYS_FAN2
SYS_FAN3
```



GIGABYTE

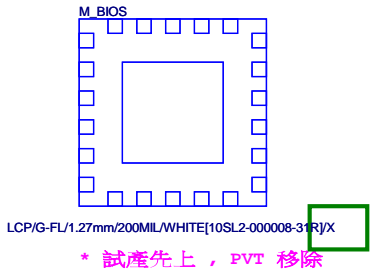
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HWM,KB/MS, FAN CTRL			
Size	Document Number		Rev
Custom		Z390 GMAING SLI	1.0
Date:	Friday, August 03, 2018	Sheet	18 of 59

DUAL BIOS



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

1 means floating
0 means PD 1K

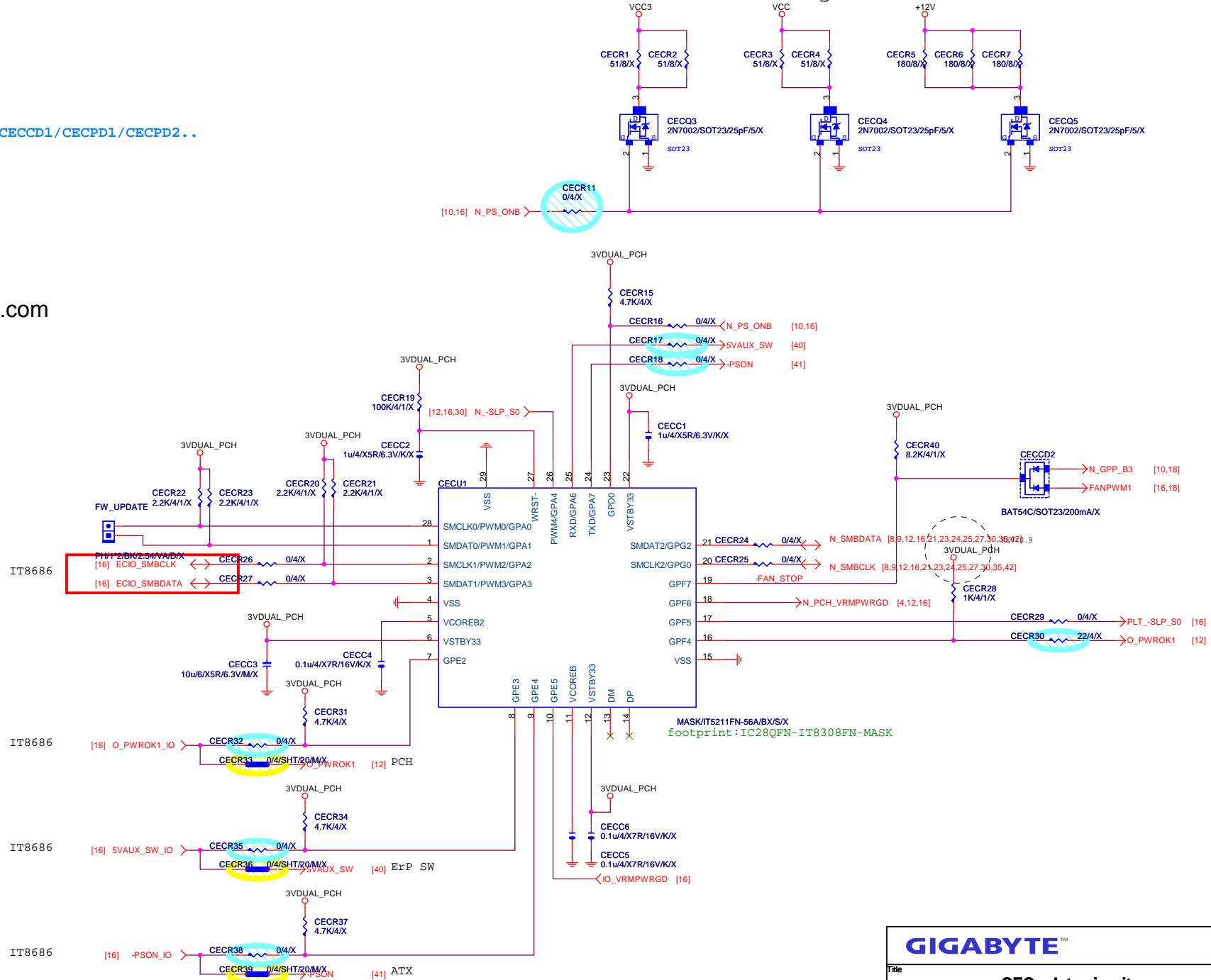


删除POWER

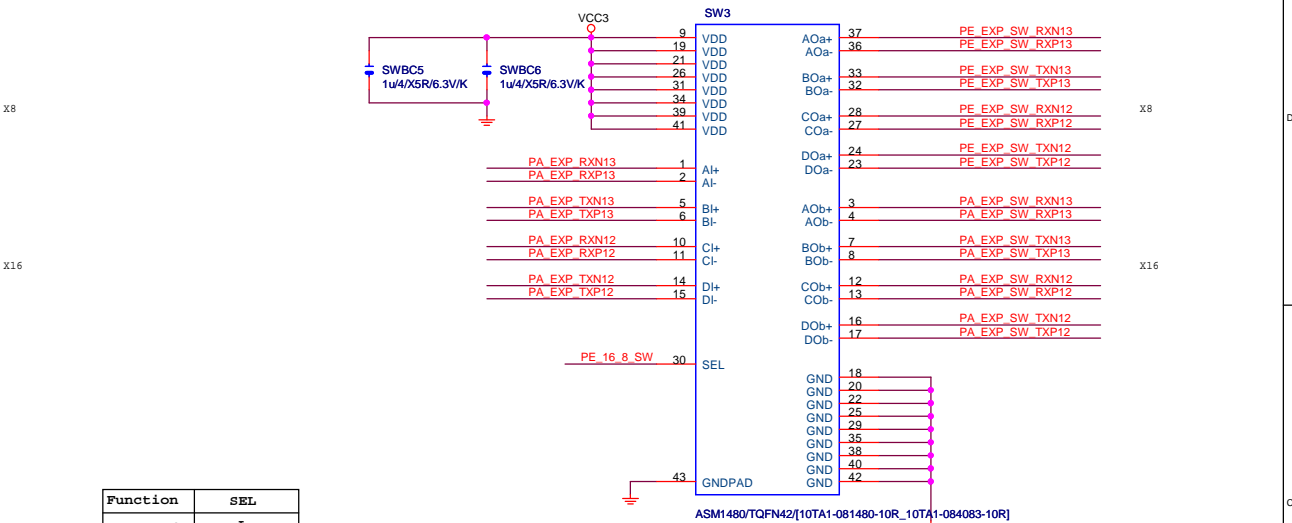
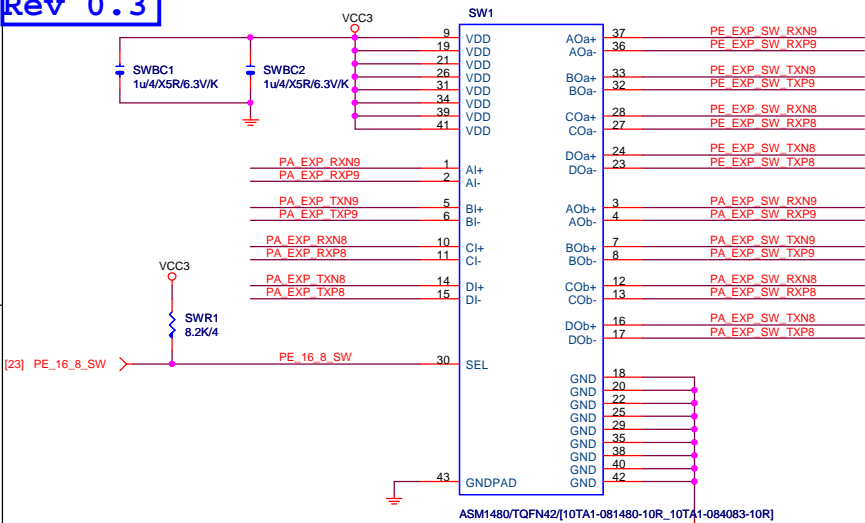
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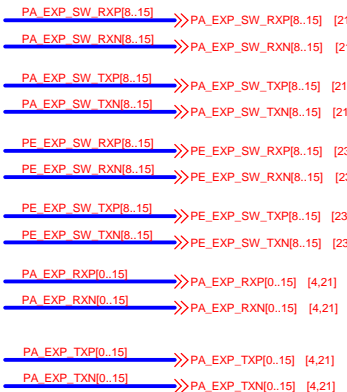
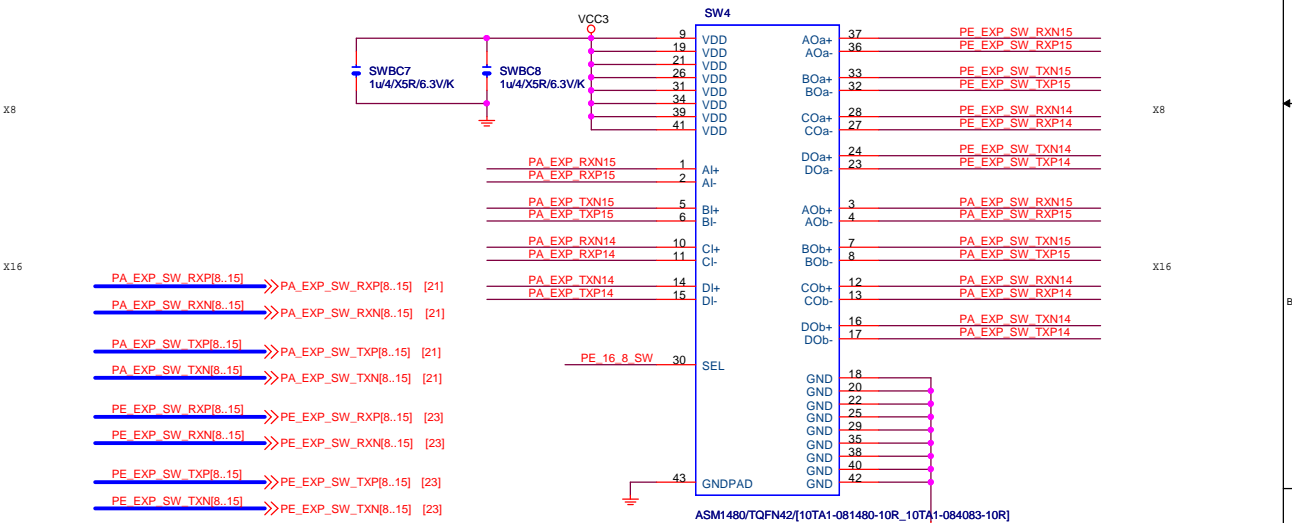
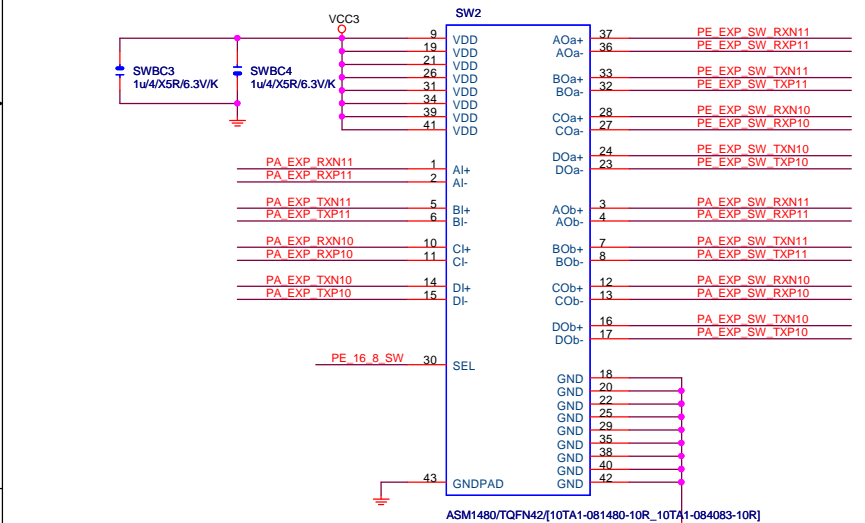
ATX Power Discharge



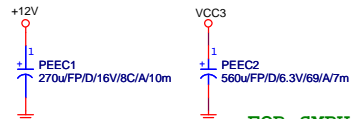
Rev 0.3



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



Rev 0.3

FOR SMBUS
PCIEX8不能short pad ,不上件[8,9,12,16,20,21,24,25,27,30,35,42]
[8,9,12,16,20,21,24,25,27,30,35,42]N_SMBCLK PER6 0/4/SHT/X
N_SMBCLK PER8 0/4/X
N_SMBDATA PER9 0/4/X3VDUAL VCC3
JTAG1 3.3V
JTAG2 3.3V
JTAG3 3.3V
JTAG4 3.3V
JTAG5 3.3V
WAKE* B10

[12,21,24,25] N_-PCIE_WAKE

PER11 0/4/X

PE EXP SW TXP8 C
PE EXP SW TXN8 CPE EXP SW TXP9 C
PE EXP SW TXN9 CPE EXP SW TXP10 C
PE EXP SW TXN10 CPE EXP SW TXP11 C
PE EXP SW TXN11 CPE EXP SW TXP12 C
PE EXP SW TXN12 CPE EXP SW TXP13 C
PE EXP SW TXN13 CPE EXP SW TXP14 C
PE EXP SW TXN14 CPE EXP SW TXP15 C
PE EXP SW TXN15 CPE EXP SW TXP16 C
PE EXP SW TXN16 CPE EXP SW TXP17 C
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X8_+12V

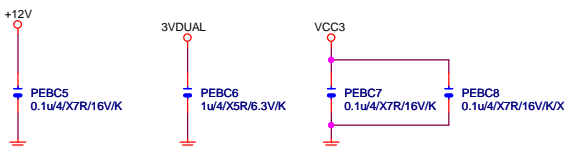
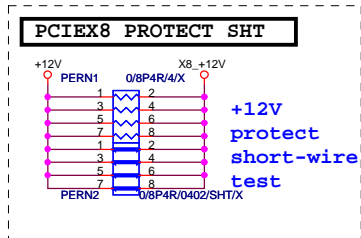
PCIESLOT-985TH

3GIO_*8

KEY

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

黑色金屬加強版

[22] PE_16_8_SW
[4] -8X_EN

PED1

BAT54C/SOT23/200mA

PULL UP @PCH Side

[13]* N_GPP_K2

[10] -PCIE8_PR

PER10 0/4/SHT/X

PE EXP SW TXP8	PEC7	0.22u4/X5R/6.3V/K	PE EXP SW TXP8 C
PE EXP SW TXN8	PEC8	0.22u4/X5R/6.3V/K	PE EXP SW TXN8 C
PE EXP SW TXP9	PEC9	0.22u4/X5R/6.3V/K	PE EXP SW TXP9 C
PE EXP SW TXN9	PEC10	0.22u4/X5R/6.3V/K	PE EXP SW TXN9 C
PE EXP SW TXP10	PEC11	0.22u4/X5R/6.3V/K	PE EXP SW TXP10 C
PE EXP SW TXN10	PEC12	0.22u4/X5R/6.3V/K	PE EXP SW TXN10 C
PE EXP SW TXP11	PEC13	0.22u4/X5R/6.3V/K	PE EXP SW TXP11 C
PE EXP SW TXN11	PEC14	0.22u4/X5R/6.3V/K	PE EXP SW TXN11 C
PE EXP SW TXP12	PEC15	0.22u4/X5R/6.3V/K	PE EXP SW TXP12 C
PE EXP SW TXN12	PEC16	0.22u4/X5R/6.3V/K	PE EXP SW TXN12 C
PE EXP SW TXP13	PEC17	0.22u4/X5R/6.3V/K	PE EXP SW TXP13 C
PE EXP SW TXN13	PEC18	0.22u4/X5R/6.3V/K	PE EXP SW TXN13 C
PE EXP SW TXP14	PEC19	0.22u4/X5R/6.3V/K	PE EXP SW TXP14 C
PE EXP SW TXN14	PEC20	0.22u4/X5R/6.3V/K	PE EXP SW TXN14 C
PE EXP SW TXP15	PEC21	0.22u4/X5R/6.3V/K	PE EXP SW TXP15 C
PE EXP SW TXN15	PEC22	0.22u4/X5R/6.3V/K	PE EXP SW TXN15 C

P/N: 6483362

Gigabyte Technology

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Size			Document Number
Custom			Z390 GMAING SLI
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Sheet			23 of 59
Rev			1.0

用PCIE*4 SLOT, 只接X2 CHECK footprint?
Footprint "PCIESLOT-64P-1"

FOR SMBUS

PCIE*4 SM Bus電阻layout 改0 ohm
上件

[8,9,12,16,20,21,23,25,27,30,35,42]

N_SMBCLK

[8,9,12,16,20,21,23,25,27,30,35,42]

N_SMBDATA

[12,21,23,25] N_-PCIE_WAKE

net name 要check 模組-

[13] P2_PCIE2_TP1

[13] P2_PCIE2_TN1

[13] P2_PCIE2_TP2

[13] P2_PCIE2_TN2

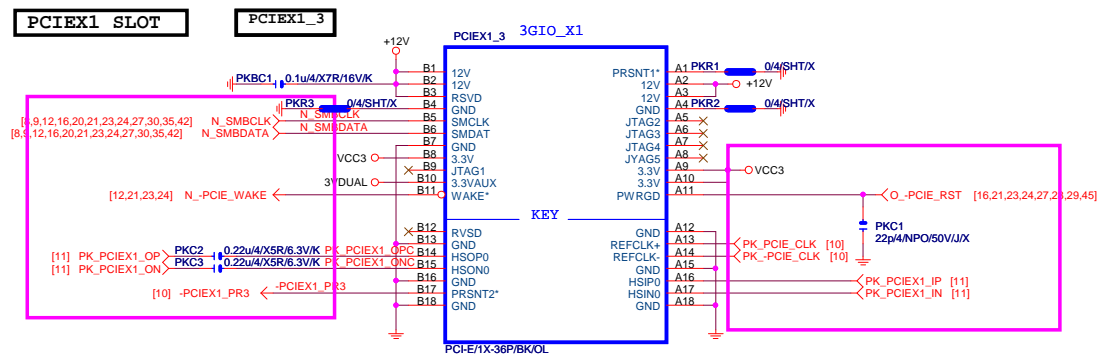
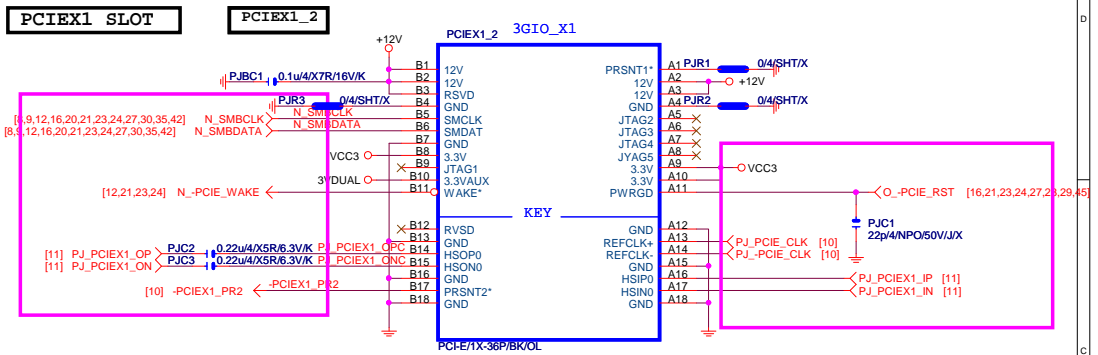
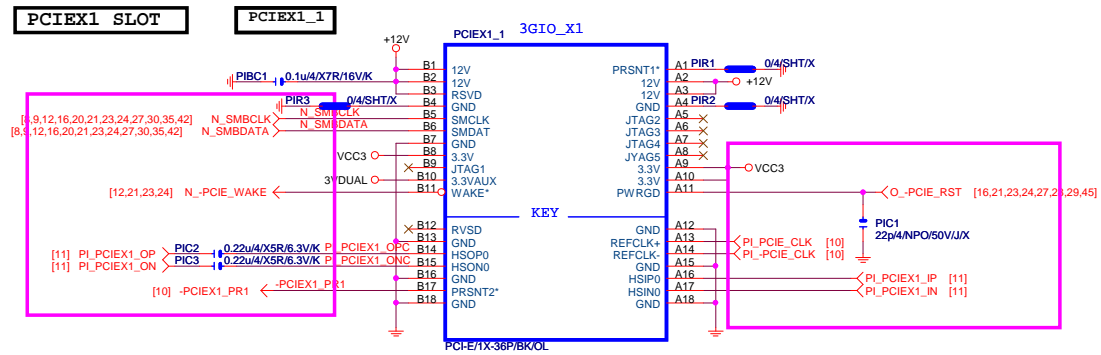
[10] -PCIE4_PR

通知BIOS DETECTED DEVICE

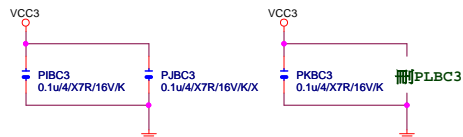
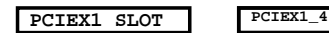
PCI-E/4X-66P/BK/LONG DOUBLE

11A11-023065-17R: 黑色

Rev 0.51



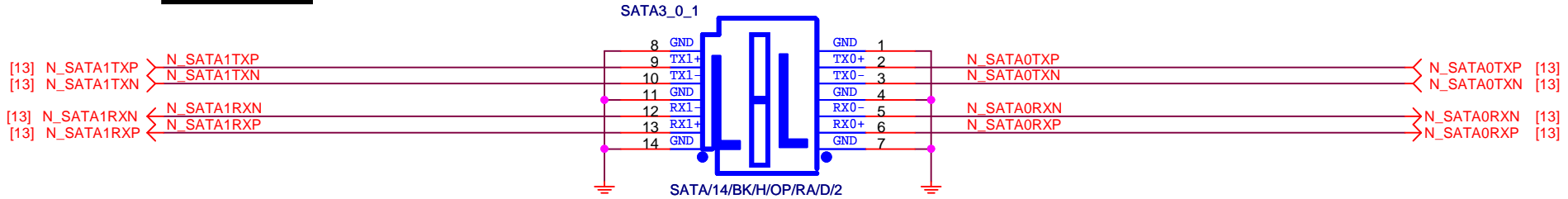
删除PCIEX1_4



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IO18/IO19 To SATA3 port0/1 (90度R-A, 180度V-A)
上 Port (8~14) 下 Port (1~7) 6 SATA3 from Z390 (90度R-A)

SATA3 0/1

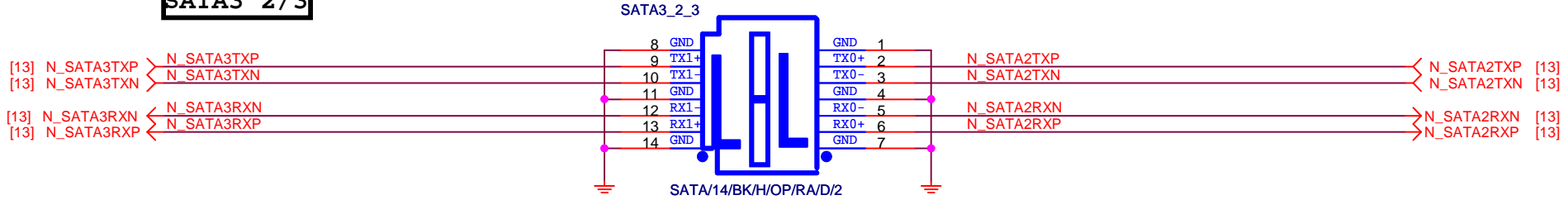


Footprint : H2X7-SATA2-D90

IO20/IO21 To SATA3 port2/3

上 Port (8~14) 下 Port (1~7)

SATA3 2/3

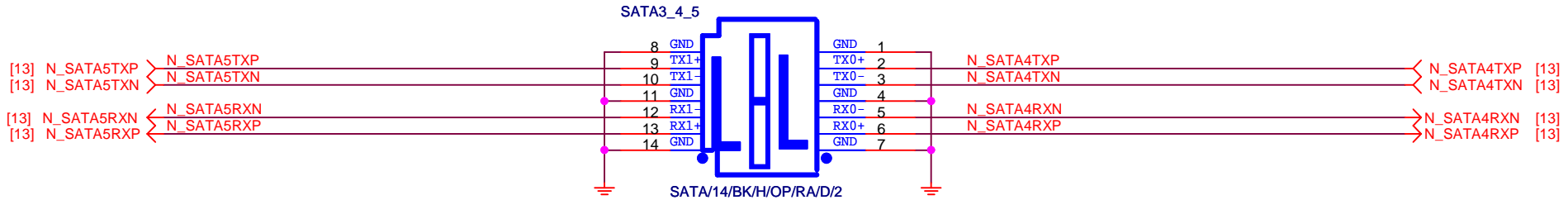


Footprint : H2X7-SATA2-D90

IO22/IO23 To SATA3 port4/5

上 Port (8~14) 下 Port (1~7)

SATA3 4/5



Footprint : H2X7-SATA2-D90

Gigabyte Technology

Title		
SATA		
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M.2 Lane4 from PCH port24

M.2 Lane3 from PCH port23

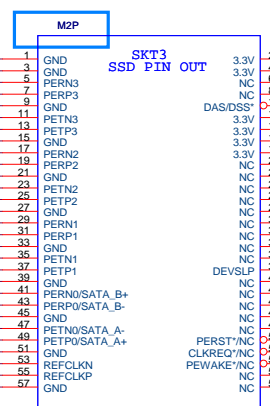
M.2 Lane2 from PCH port22

M.2 Lane2 from PCH port21

x4 2280 M.2 slot (no SATA mode)

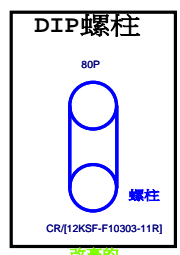
支援SATA and M.2 function

需與M2_-CLKREQ對應

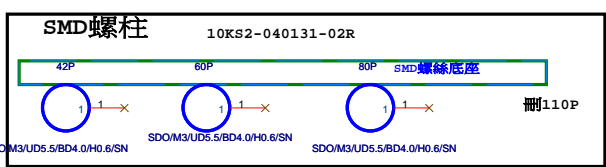


架高 *

金屬加強 Footprint : M2 80
預留金屬加強不上件:M2/67/BK/RA/S/H8.5mm/M
KEY/[10NR5-130067-52R]
金屬加強 (10NR5-130M67-31R) (M.2鐵殼DIP款)



刪除SMD螺柱文字面 "P" ,不要show 出在PCB文字面上



Rev 0.1

Z390

REVERSED

M.2 Lane4 from PCH port14

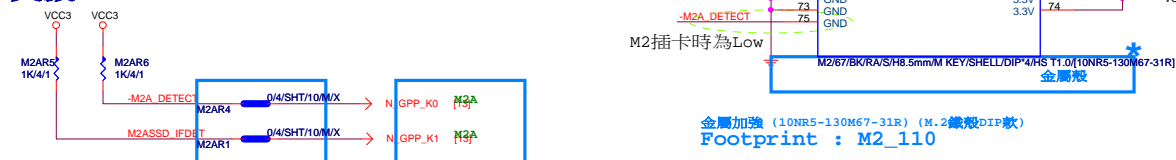
M.2 Lane3 from PCH port15

M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port17

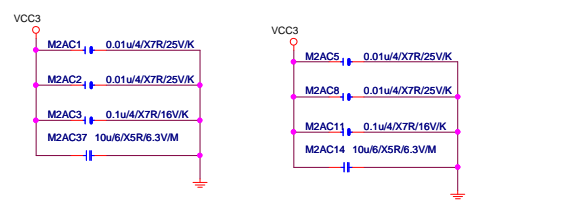
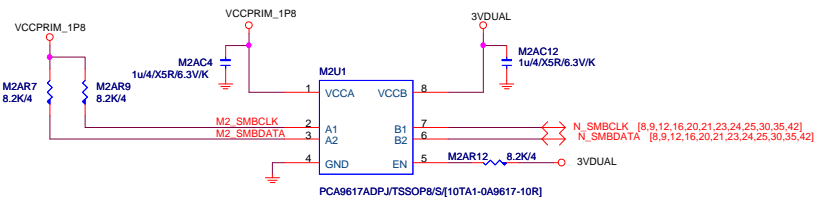
x4 22110 M.2 slot
(SATA mode from IO17/S1, PCIe lane
reverse) =>Pin41=>P ,Pin43=>N

支援SATA and M.2 function



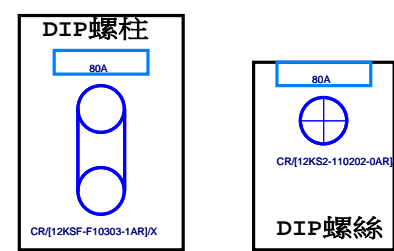
Flex IO priority	N_GPP_K1	IO14 PCIe#9	IO15 PCIe#10	IO16 PCIe#11	IO17 PCIe#12
M2A SATA	L	PCIE	PCIE	SATA 0	SATA 1
M2A PCIE (PCIE Reverse)	H	PCIE	PCIE	PCIE	PCIE

M.2 加入SMBUS
pin 40 =>M2_SMBCLK
pin 42 =>M2_SMBDATA

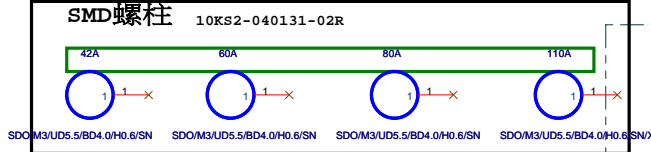


放在包材裡

若M2A 32G有架高
原本的DIP螺柱太矮了,更新為
CR/[12KSP-F10303-11R]

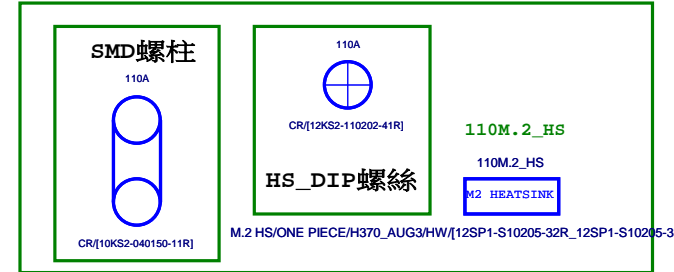


刪除SMD螺柱文字面 "A", 不要show 出在PCB文字面上



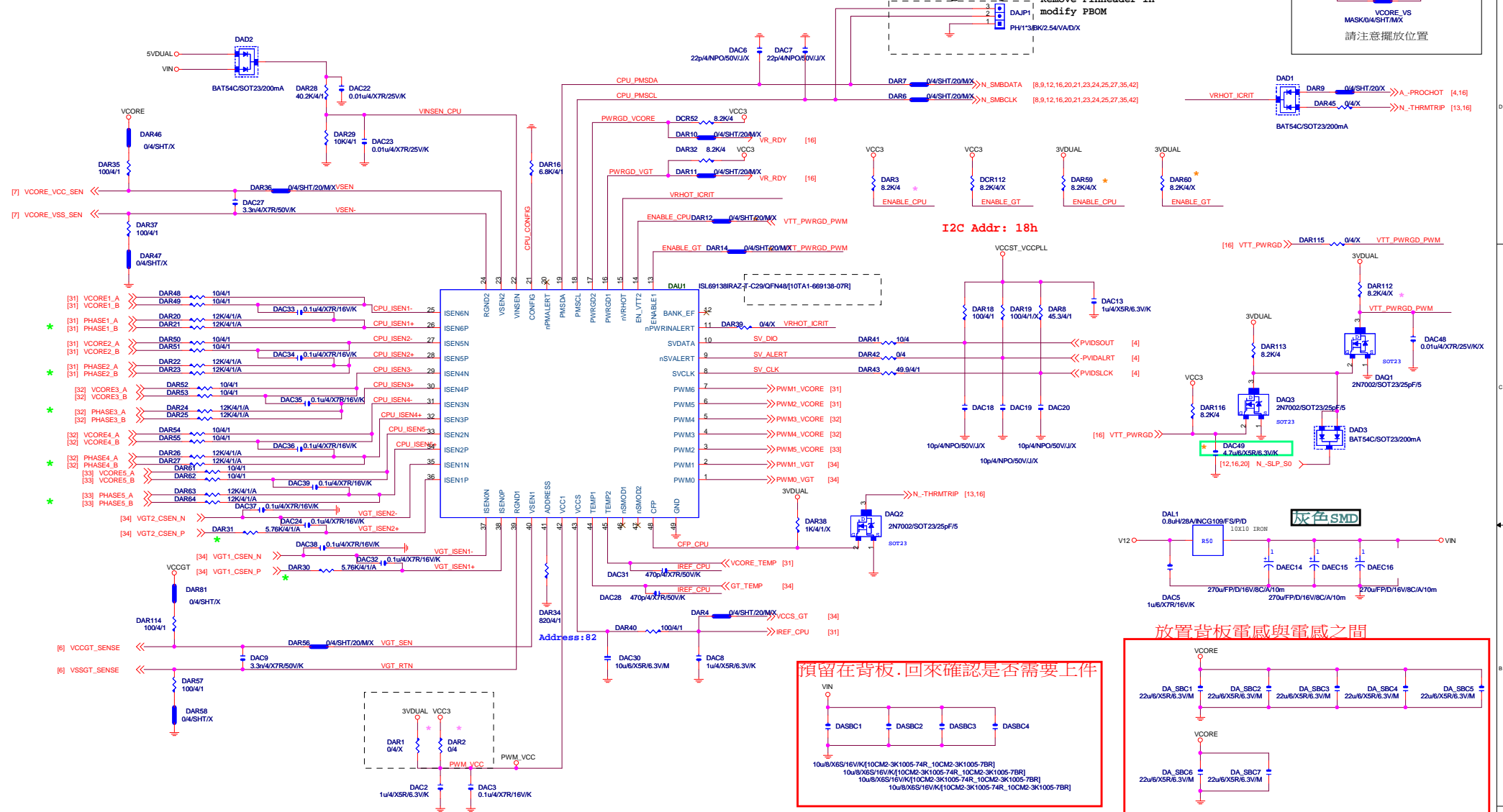
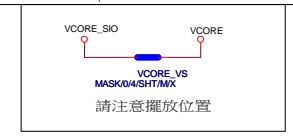
* Footprint : HOLE_C236D165-A
10KS2-040131-02R:SDO/M3/UD5.5/BD4.0/H0.6/SN

M.2 slot heatsink ,靠近CPU, 22110, low cost)



Debug Only

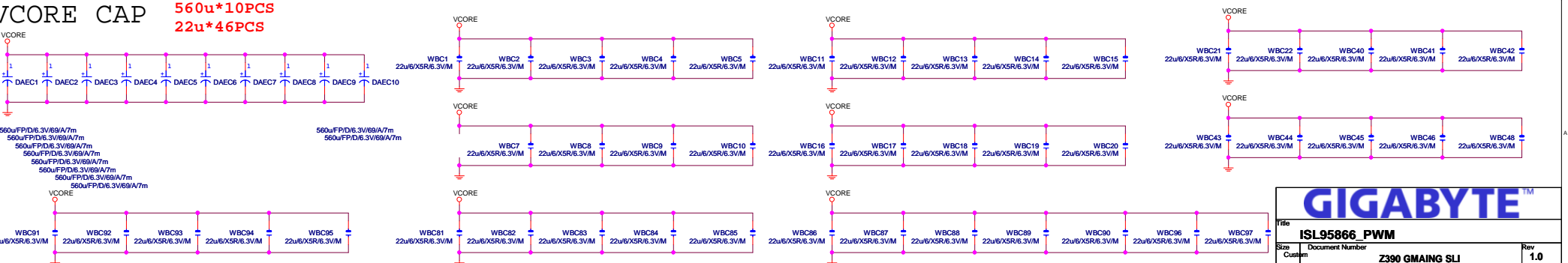
Remove PinHeader in
modify PBOM

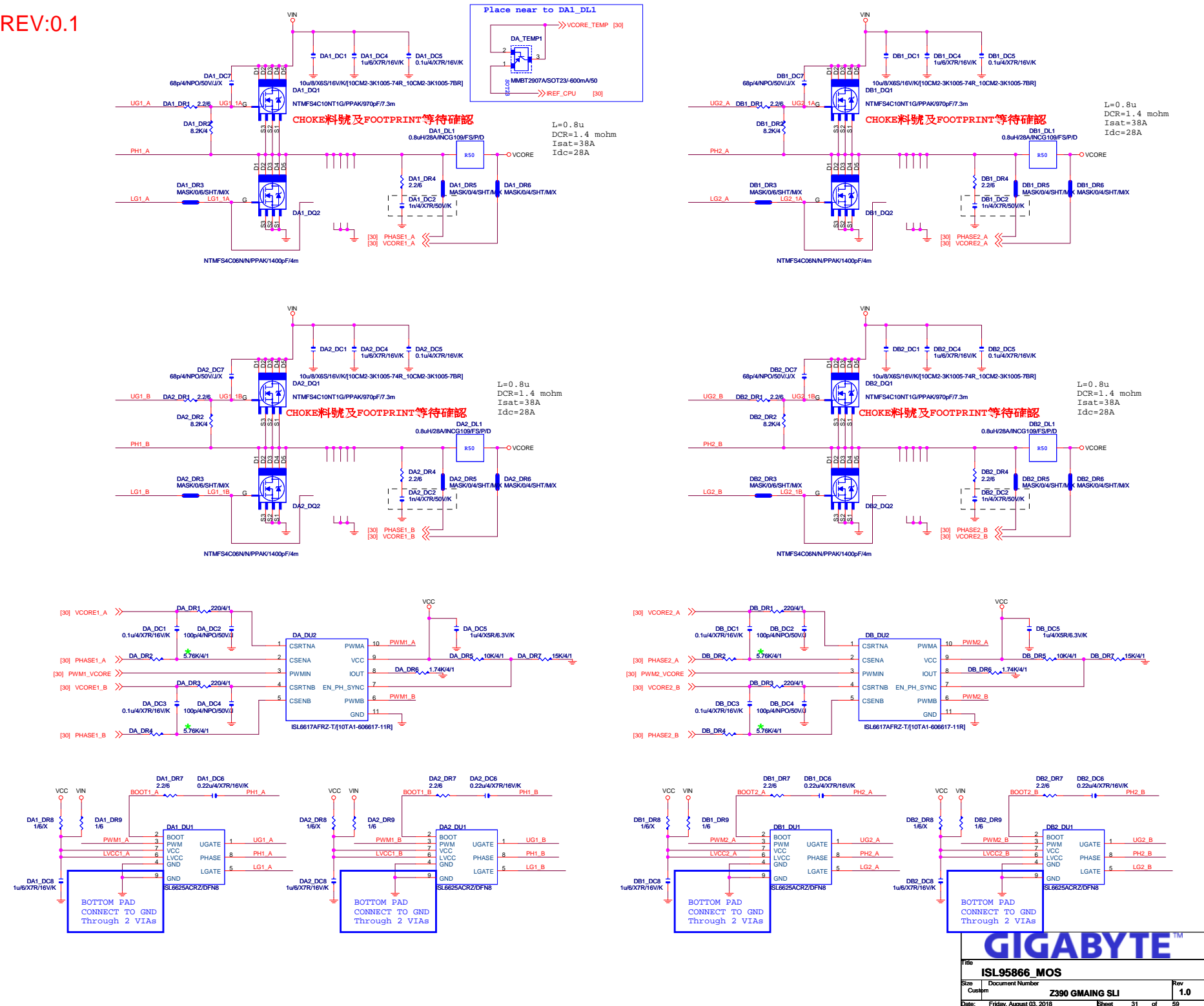


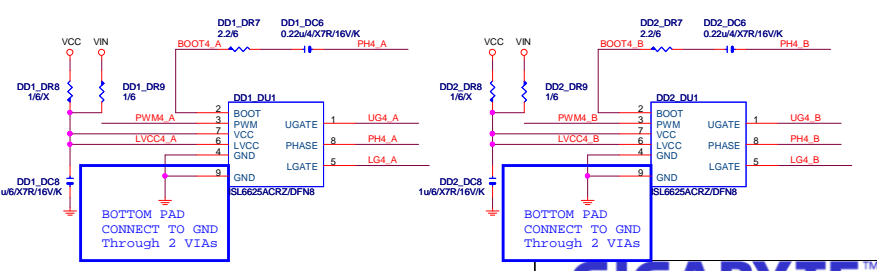
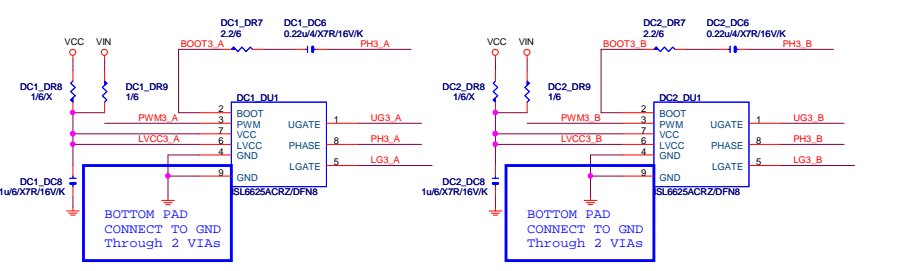
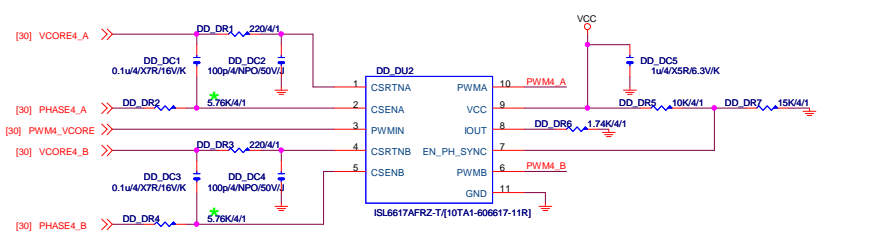
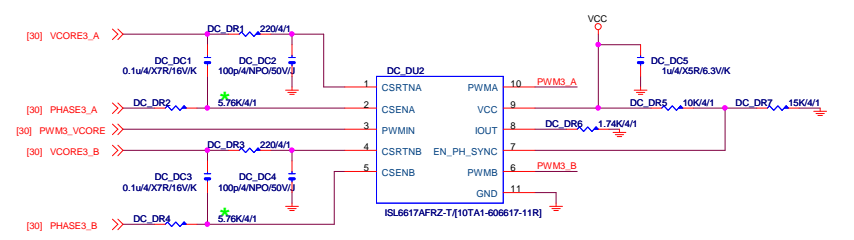
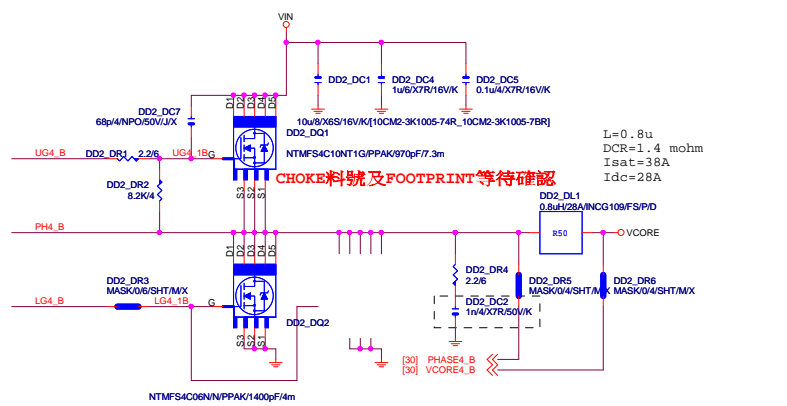
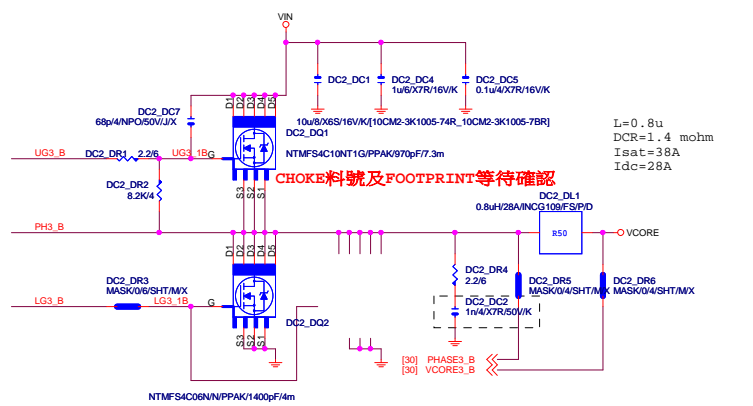
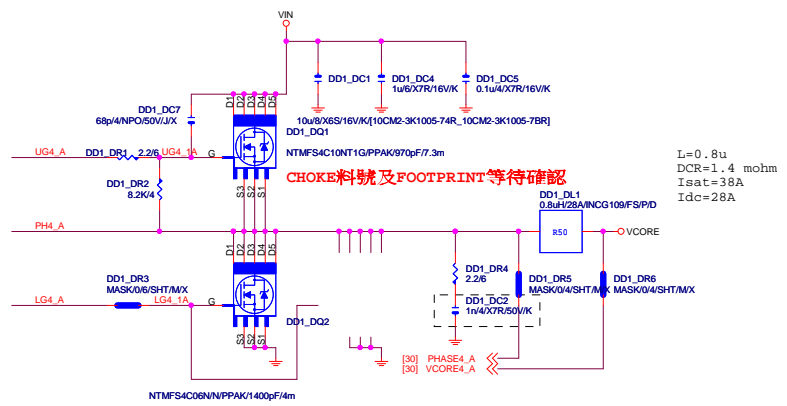
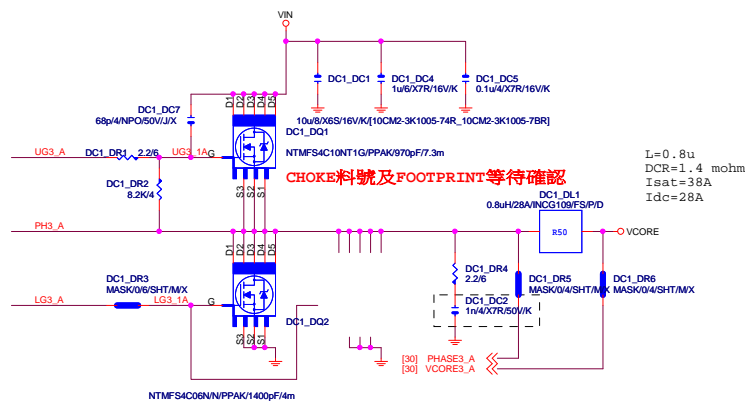
預留在背板. 回來確認是否需要上件

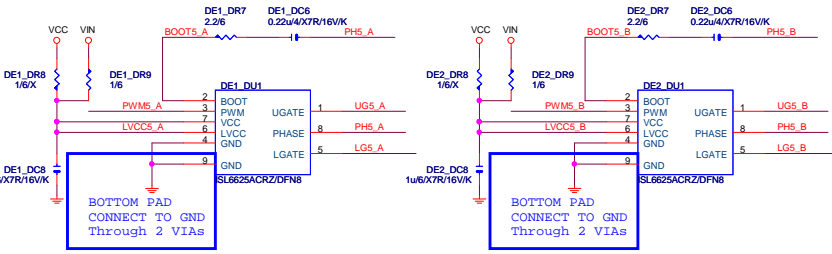
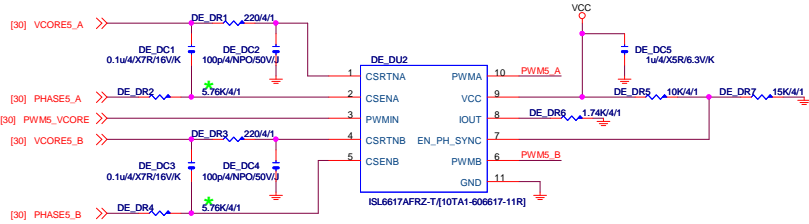
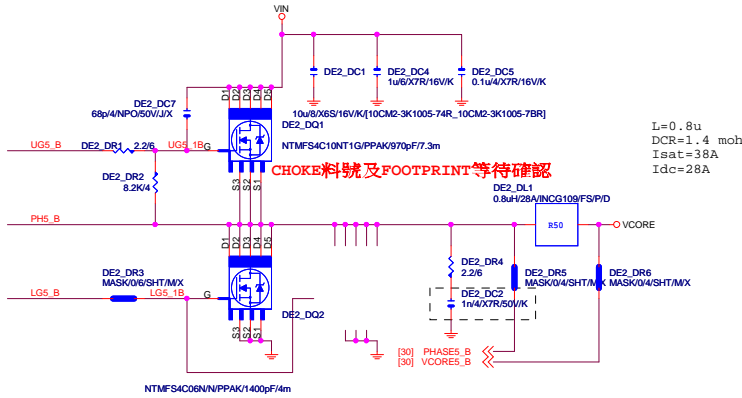
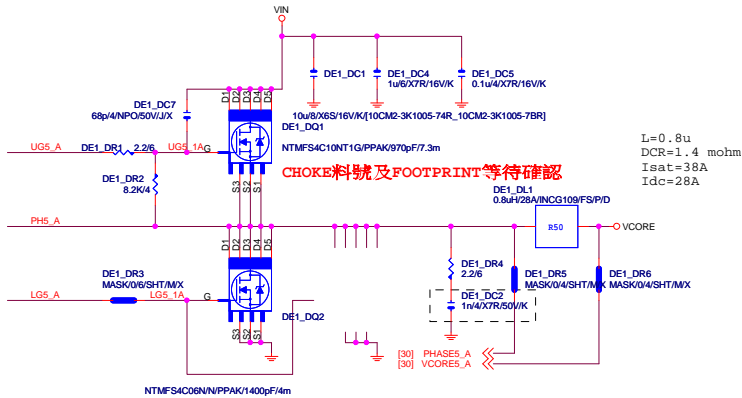
放置背板電感與電感之間

VCORE CAP 560u*10PCS
22u*46PCS



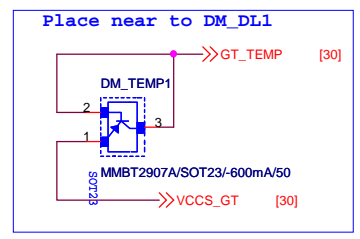
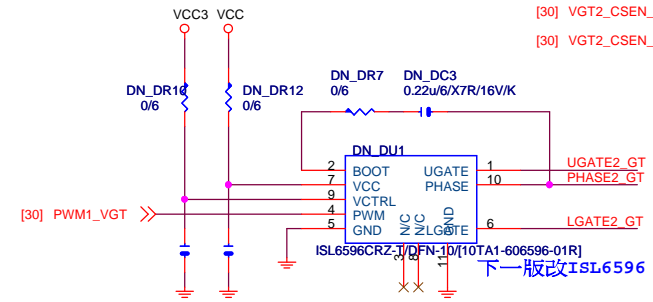
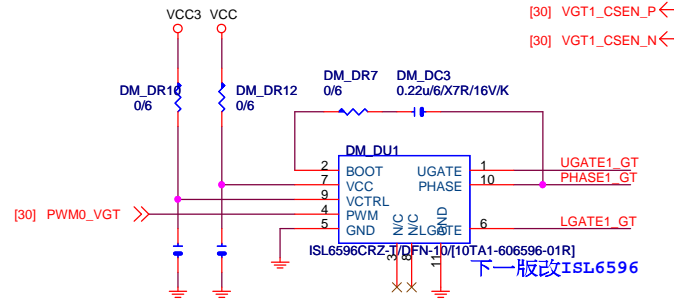
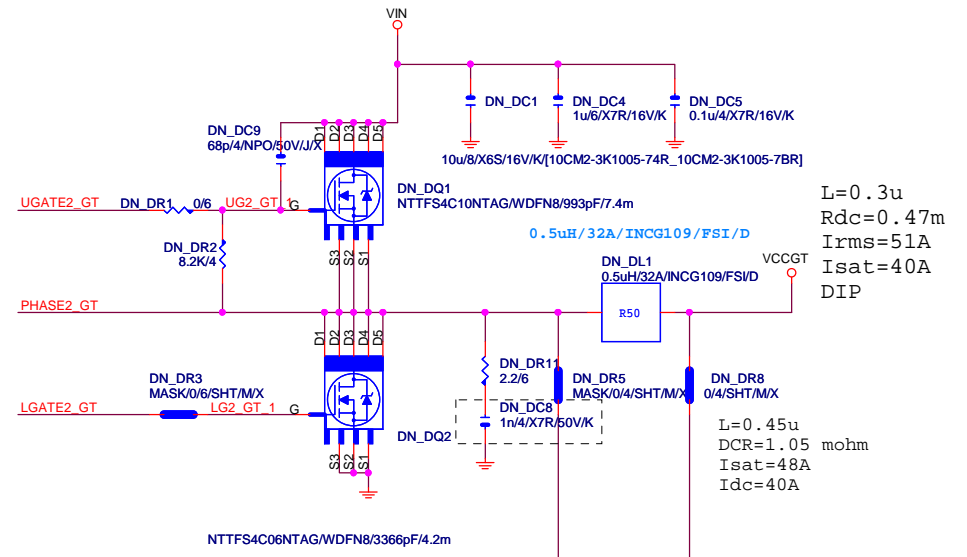
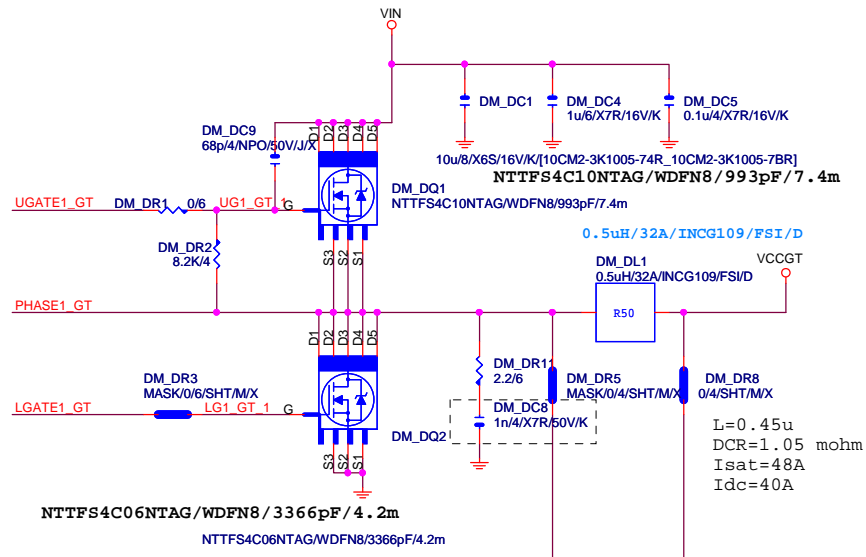






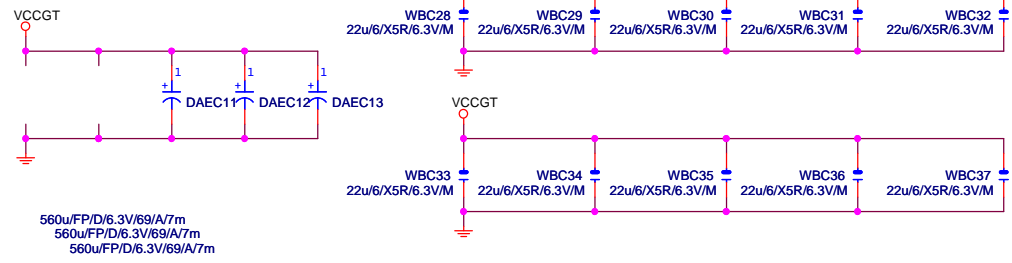
REV:0.1

VCCGT

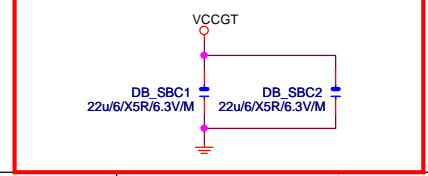


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VCCGT CAP 560u*3PCS 22u*15PCS

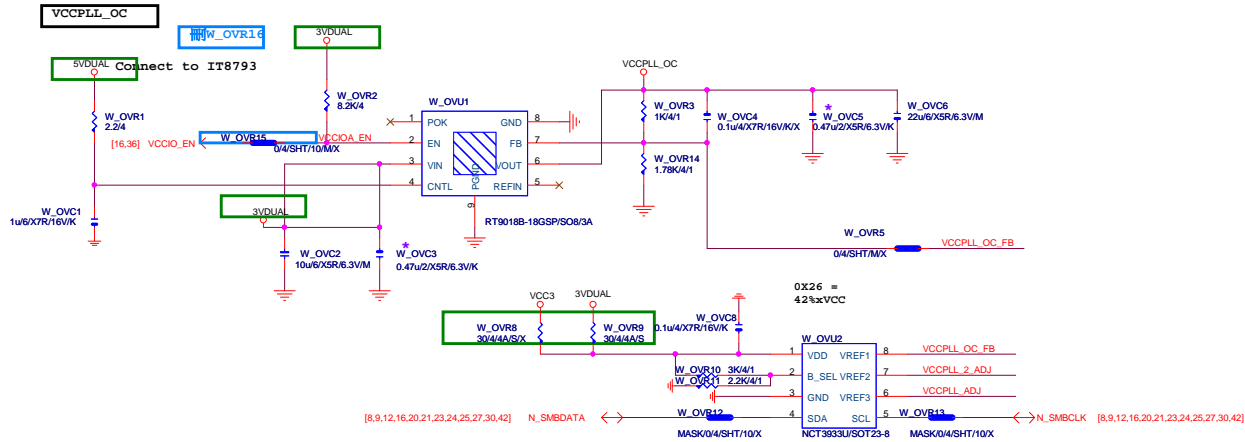
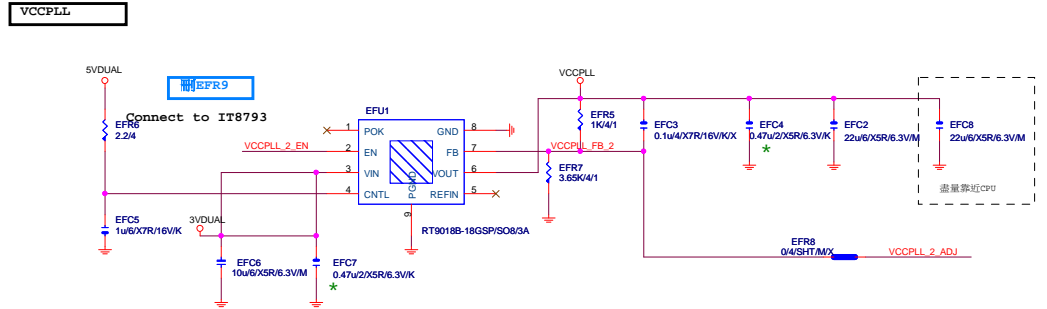
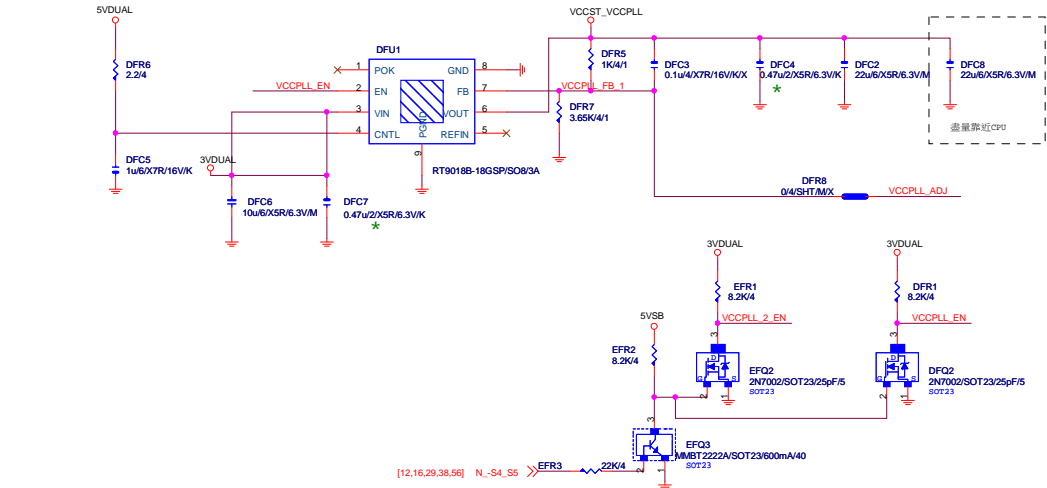


放置背板電感與電感之間



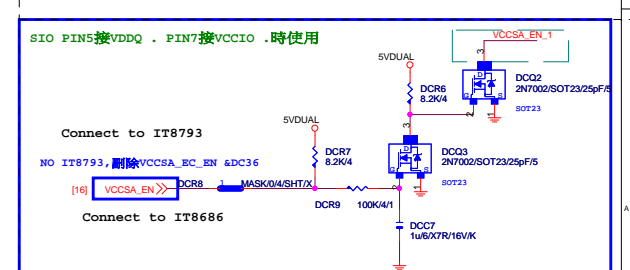
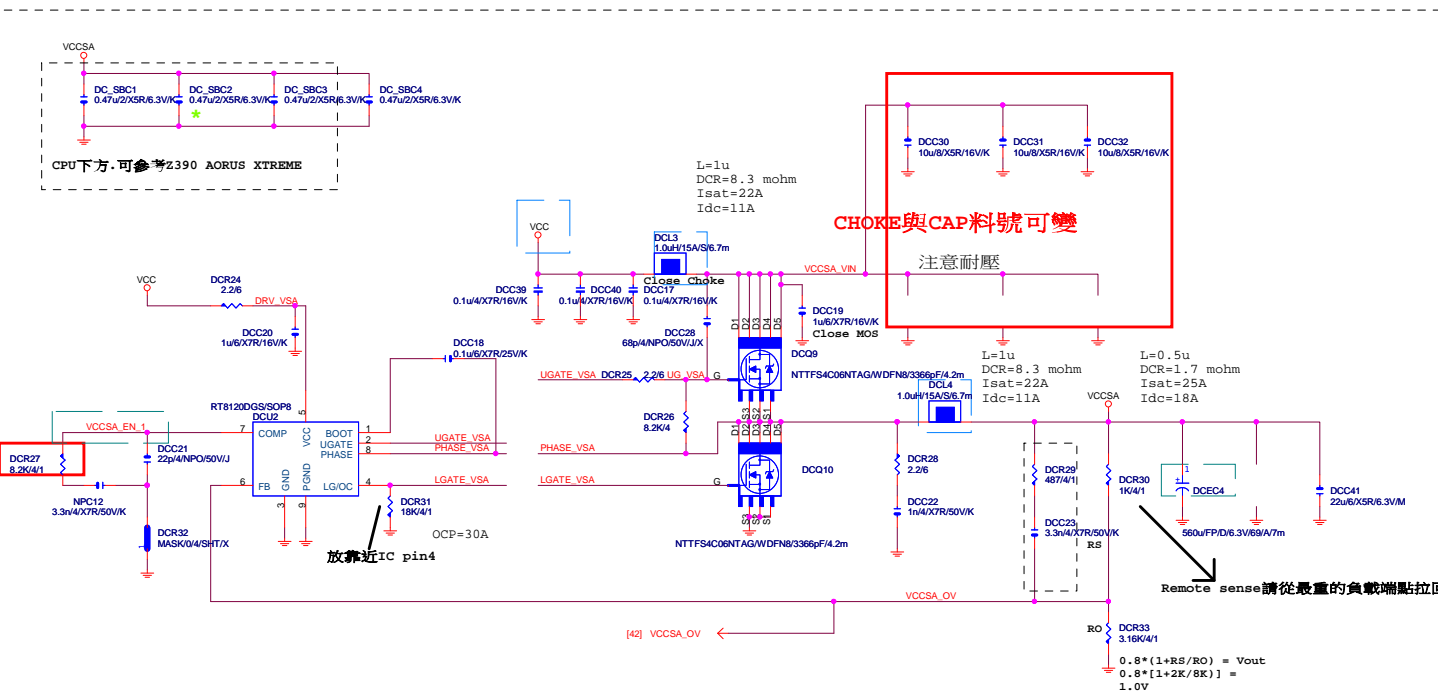
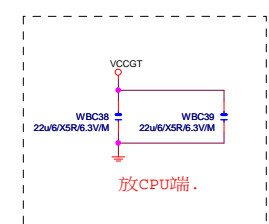
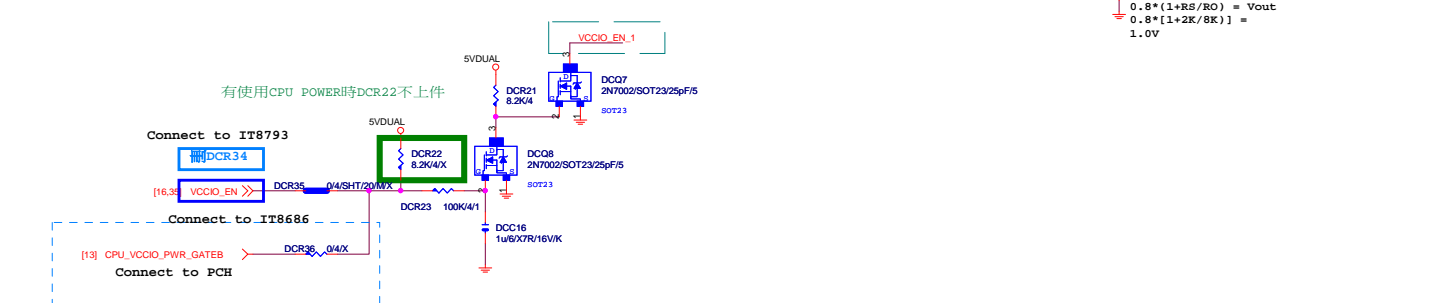
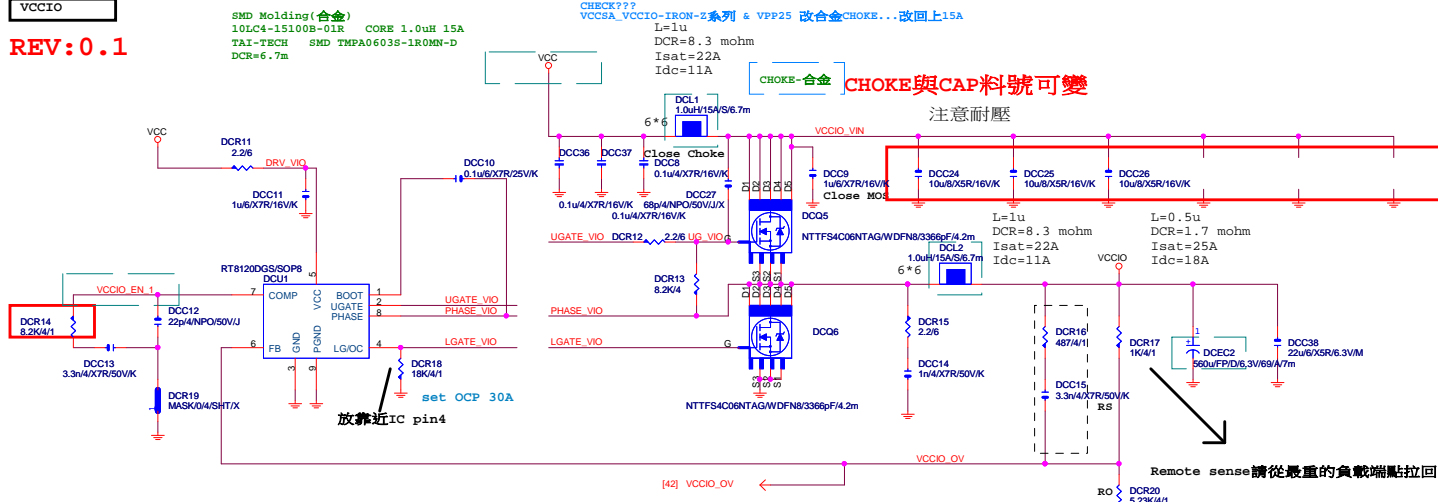
GIGABYTE™			
Title ISL95866_MOS			
Size B	Document Number Z390 GMAING SLI		Rev 1.0
Date: Friday, August 03, 2018	Sheet 34	of 59	

VCCST_VCCPLL 替換原先MOS開關線路



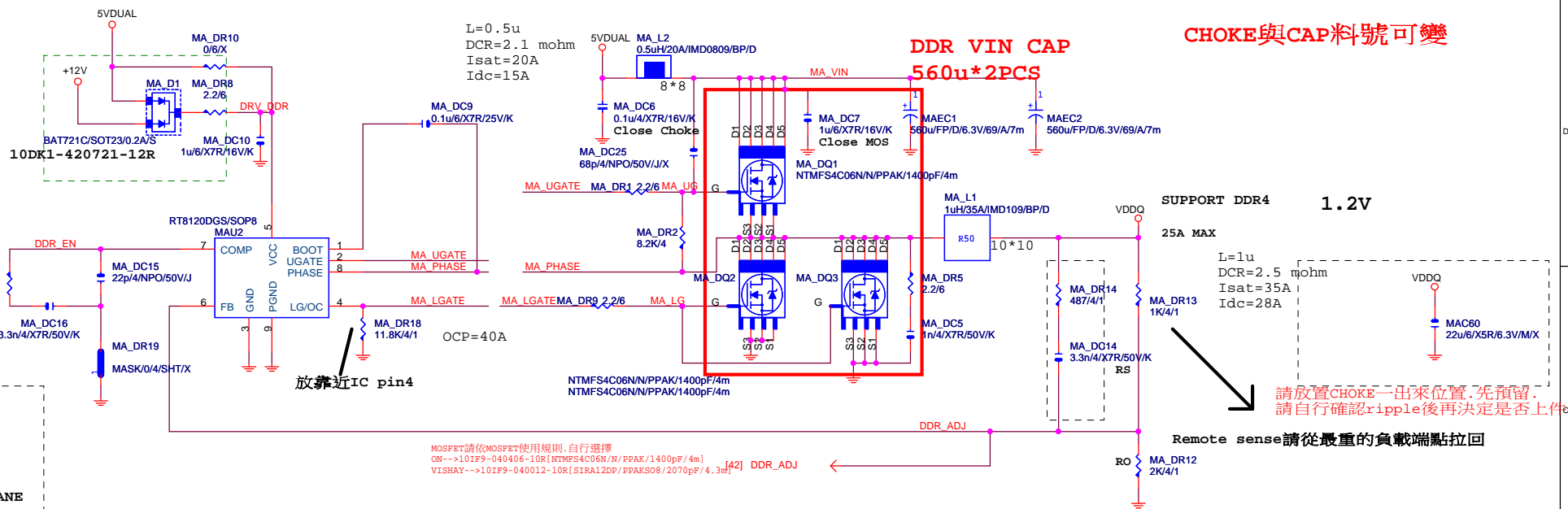
REV:0.1

VCCIO



REV:0.1

DDR4



REV:0.1

VPP_25V

SMD Molding(合金)
10LC4-15100B-01R CORE 1.0uH 15A
TAI-TECH SMD TMPA0603S-1R0MN-D
DCR=6.7m

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

CHOKE-合金

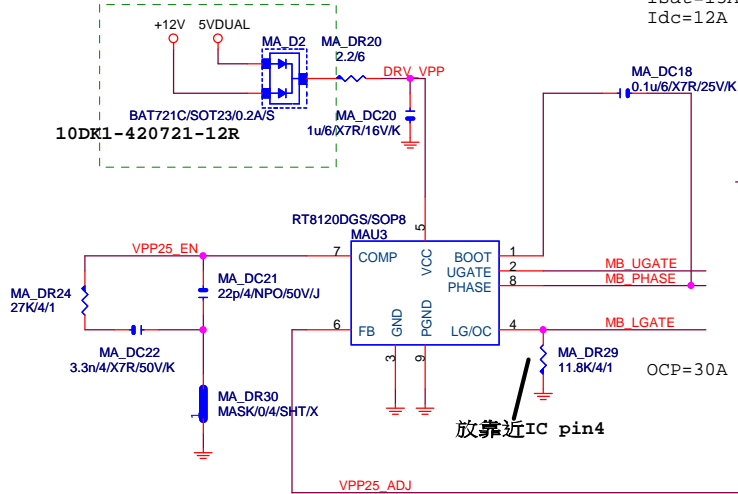
4. VPP_25V CHOKE footprint 改CHOKE6X6mm_SMD-1

CHOKE與CAP料號可變

DDR_VPP VIN CAP
560u*1PCS

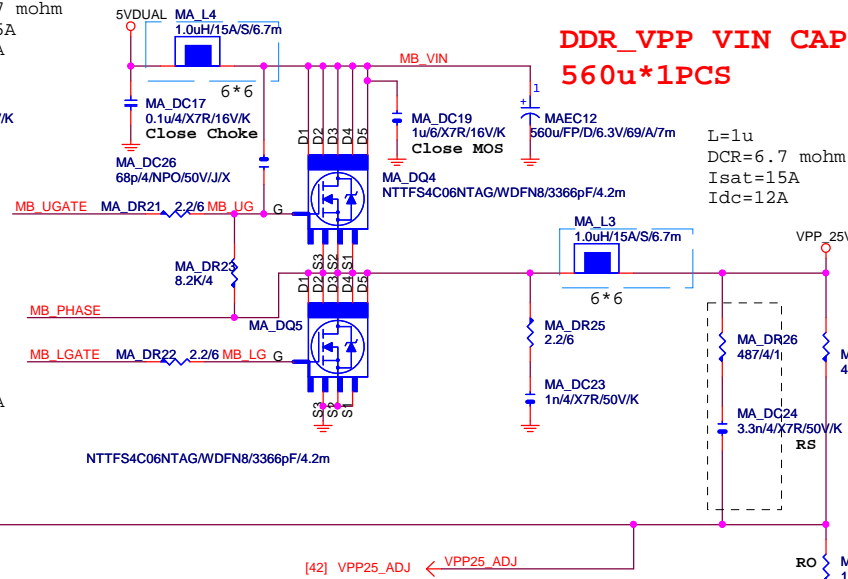
L=1u
DCR=6.7 mohm
Isat=15A
Idc=12A

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



放靠近IC pin4

OCP=30A



SUPPORT DDR4 2.5V

25A MAX

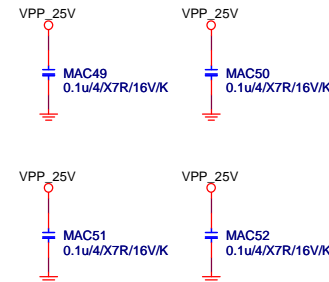
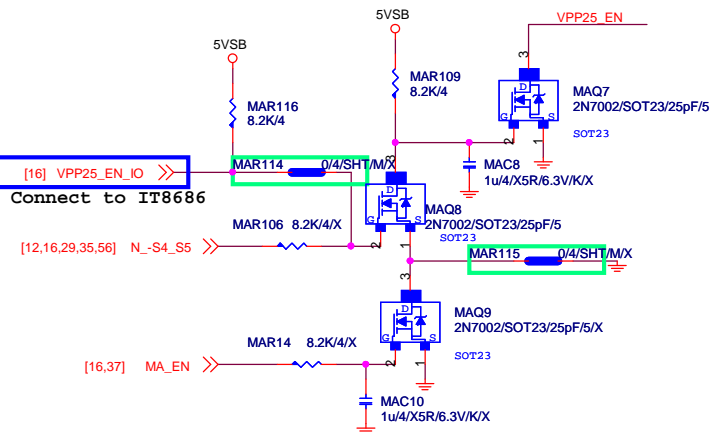
請放置CHOKE一出來位置. 先預留.
請自行確認ripple後再決定是否上件

Remote sense請從最重的負載端點拉回

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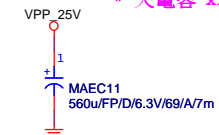
PWR_SEQ

* 刪 MA_DR32



VPP CAP 560u*1PCS

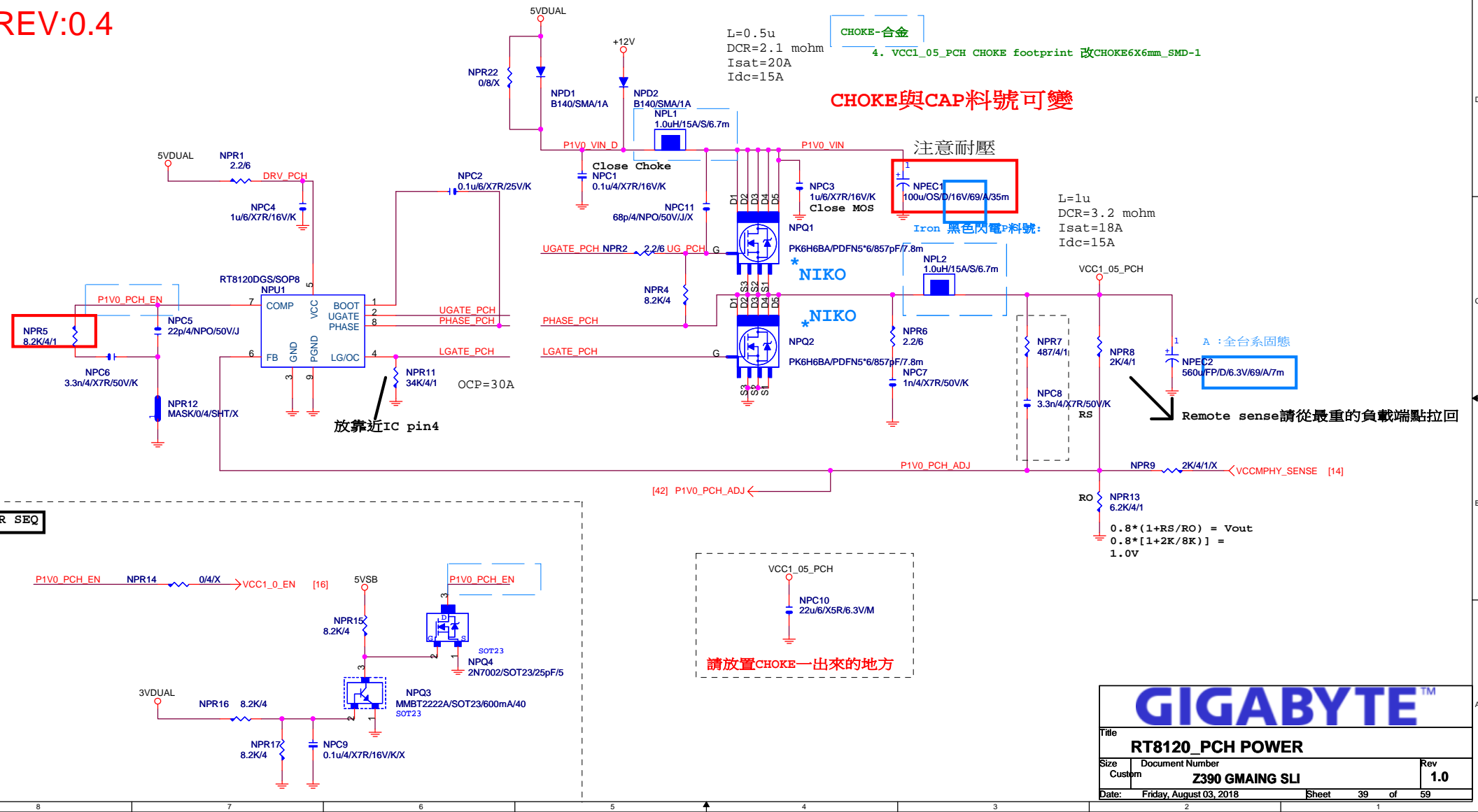
* 大電容 x1



GIGABYTE™

Title		
RT8120_VPP25 POWER		
Size	Document Number	Rev
Custom	Z390 GMAING SLI	1.0
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REV:0.4



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Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	Z390 GMAING SLI	1.0	
Date:	Friday, August 03, 2018	Sheet	39 of 59

REV:0.1

[20] 5VAUX SW



下列零件,請使用尼克森
101F9-070606-01R為替料
5VDUAL'Q30
VCCIO'DCQ5,DCQ6
VCCSA'DCQ9,DCQ10
VCC1_05_PCH'NPQ1.NPQ2



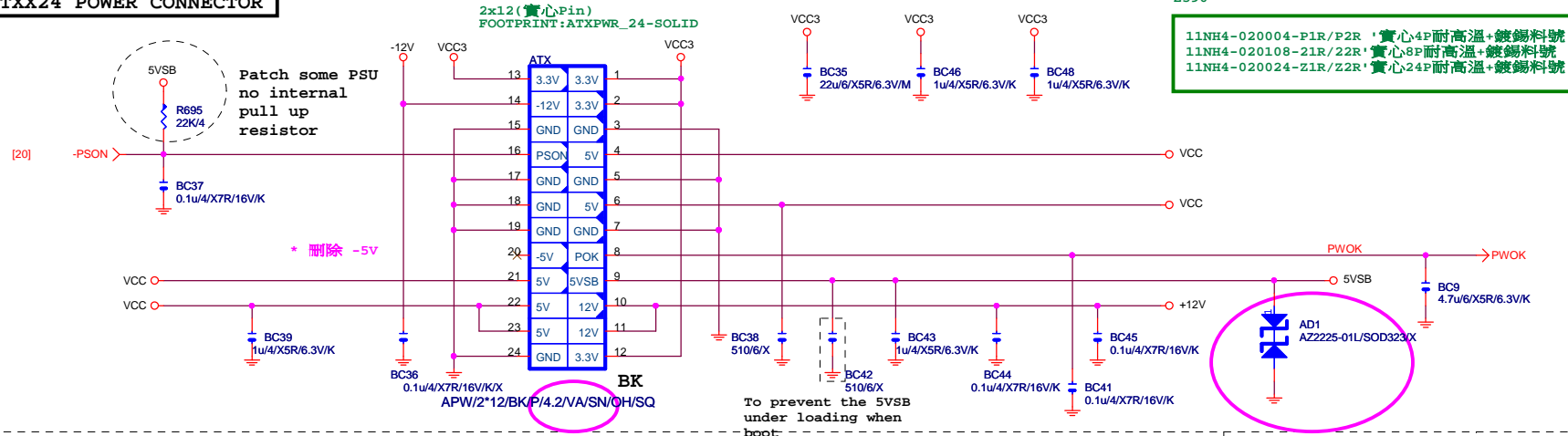
NQ9
L1117LG/N/SOT223/1A



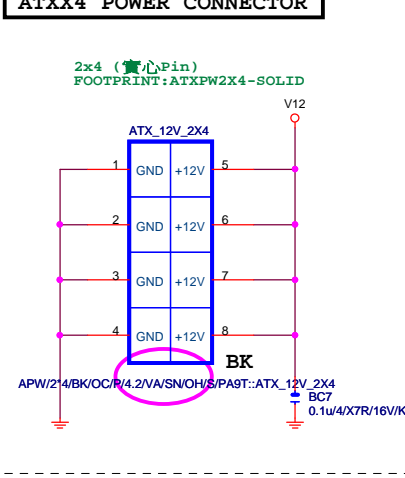
(REMOVE NR203.NR204.NC23.D4.NR202.NQ18.NQ19)

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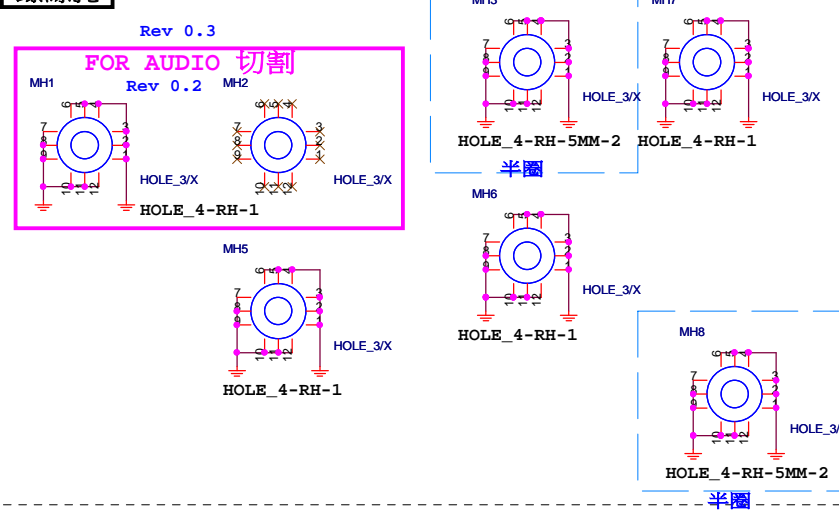
ATXX24 POWER CONNECTOR



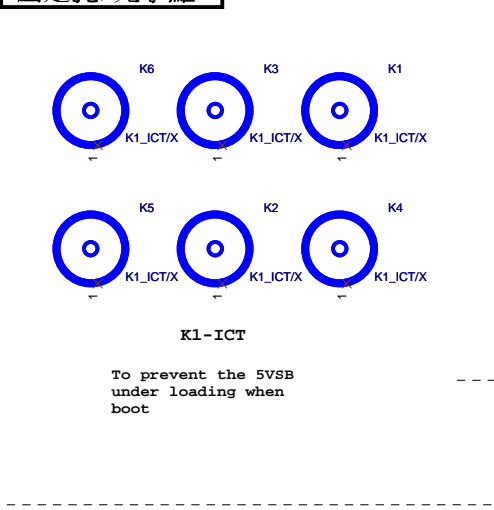
ATXX4 POWER CONNECTOR



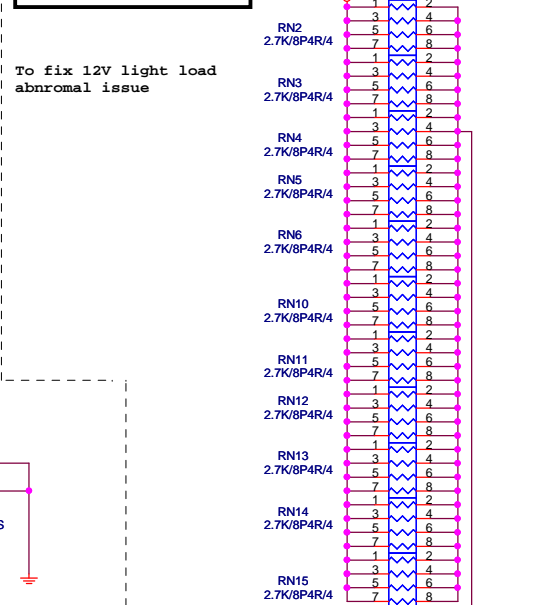
螺絲孔



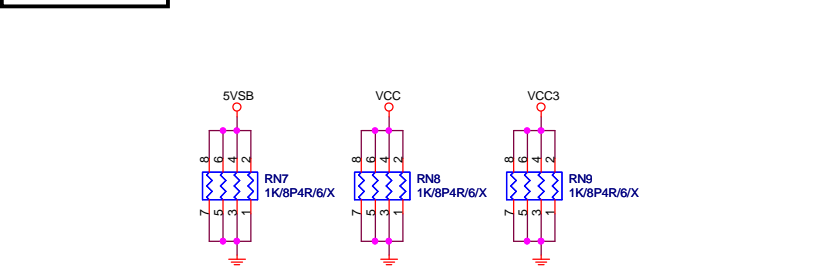
固定孔/光學點



+12V DUMMY LOAD



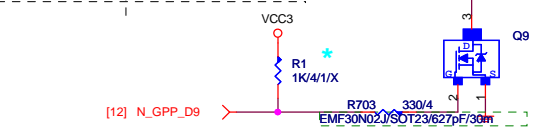
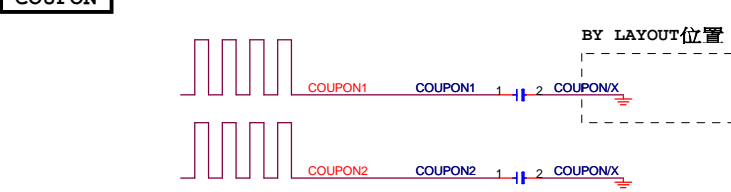
DUMMY LOAD



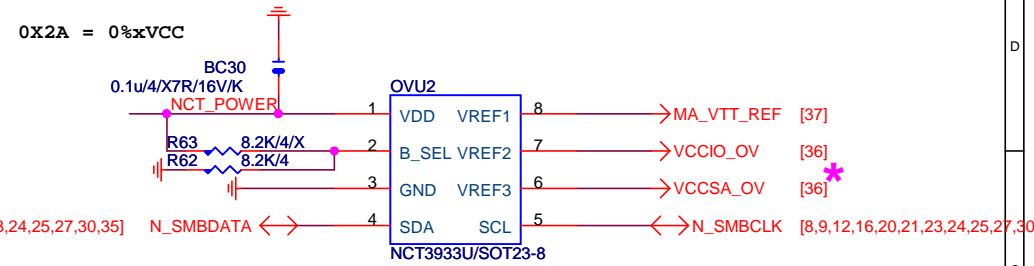
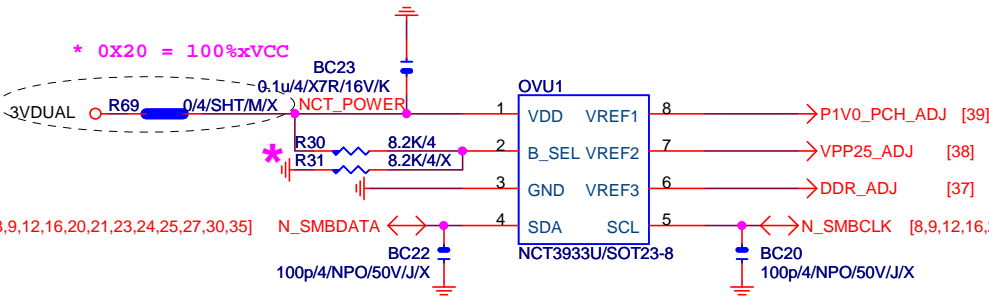
-PROHOT



COUPON



OVER VOLTAGE



0X22 = 75%xVCC

* 删除 ovu3

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

Gigabyte Technology

TitleCPU CORE VR-2

Size Custom

Document Number

Rev1.0

Date: Friday, August 03, 2018

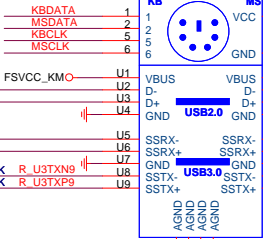
Sheet 42 of 59

Rev: 0.6

KB_MS_USB3

USB 電容前後NET 可自行調整

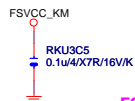
[11] N_USBP9
[11] N_USBP9
[11] PCH_USB30_RXN9
[11] PCH_USB30_RXP9
[11] PCH_USB30_TXN9
[11] PCH_USB30_TXP9



FSVCC_KM 請確認是否要用 USB_DAC(Page.12) power.

USB 電容前後NET 可自行調整

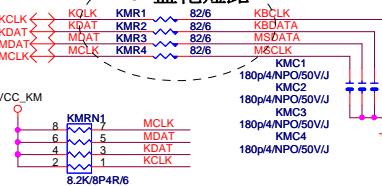
[11] N_USBP10
[11] N_USBP10
[11] PCH_USB30_RXN10
[11] PCH_USB30_RXP10
[11] PCH_USB30_TXN10
[11] PCH_USB30_TXP10



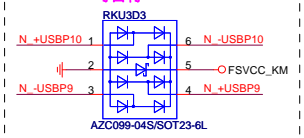
ESD 可自行SWAP PIN

ESD 可自行SWAP PIN

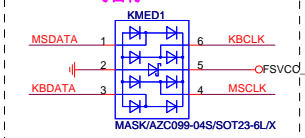
FOR 鹽化短路



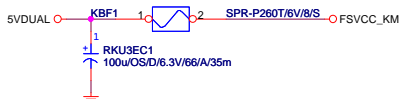
ESD 可自行SWAP PIN



ESD 可自行SWAP PIN



FUSE 2 Port 1 Fuse 2.6A

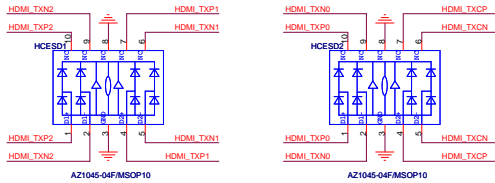
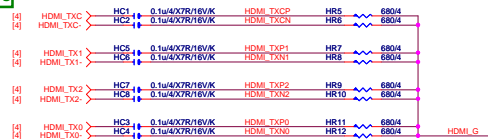


Gigabyte Technology

KB_MS_USB

Title			
KB_MS_USB			
Size	Document Number		Rev
Custom	Z390 GMAING SLI		1.0
Date:	Friday, August 03, 2018	Sheet 43 of 59	

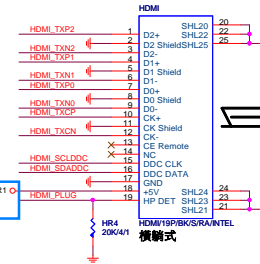
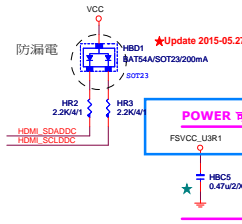
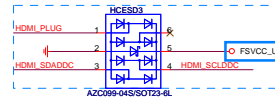
Rev: 0.73



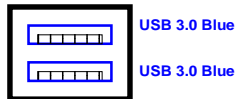
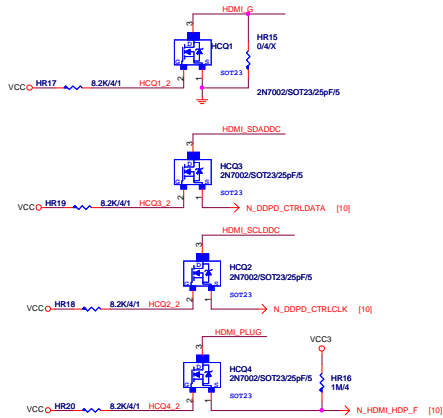
Close to connector

Close to connector

Port 自行調整

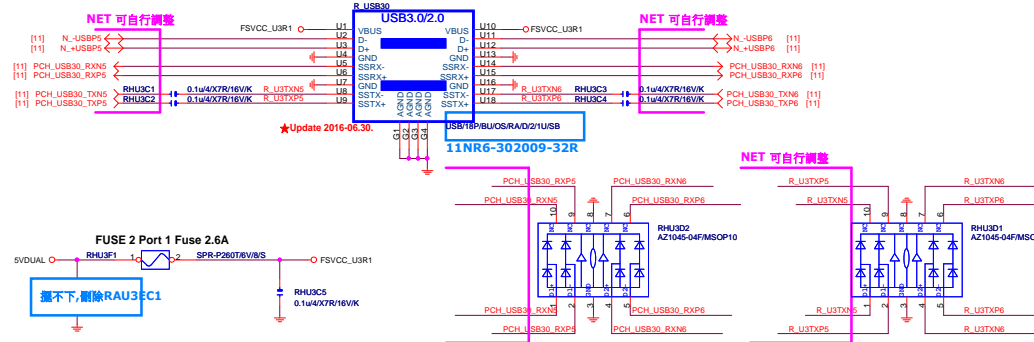


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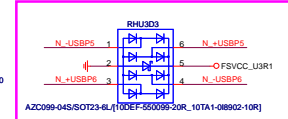


ESD 可自行SWAP PIN ,CONN端 NET 名稱不可

Footprint:USB30_20



NET 可自行調整



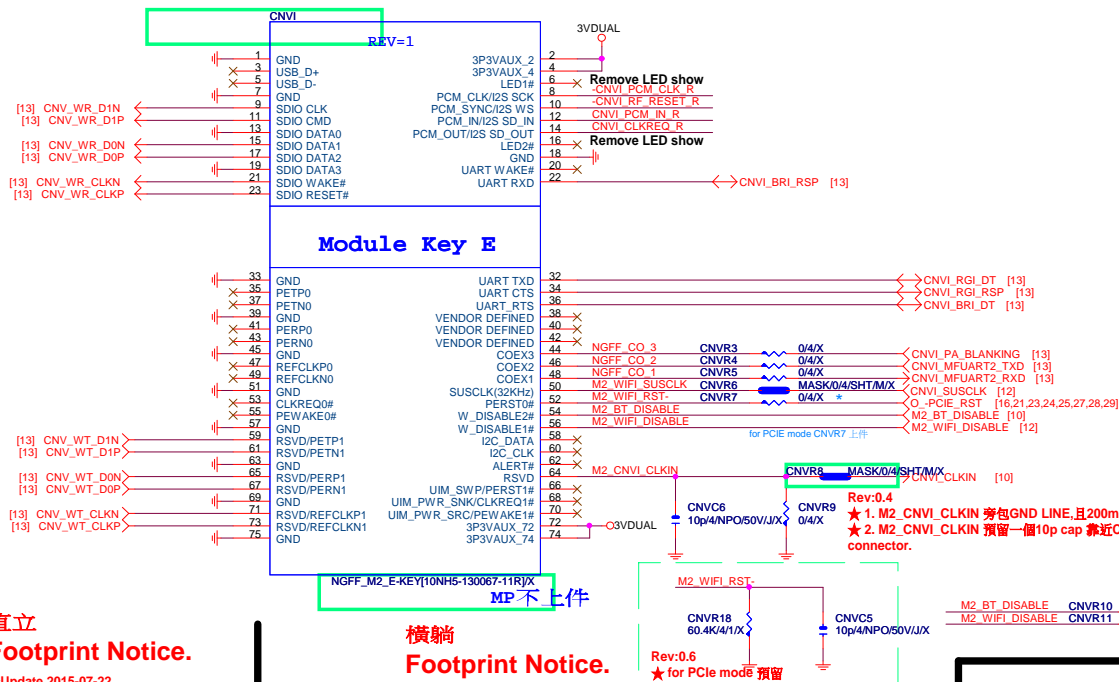
GIGABYTE			
File	HDMI		
Size	Document Number	Rev	
Custom	Z390 GMAING SLI	1.0	
Date:	Friday, August 03, 2018	Sheet	14 of 69

Rev: 0.4

不支援PCIE介面WIFI及USB介面BT

CNVi_M2_WIFI

MP不上件,不Mask



直立
Footprint Notice.

★Update 2015-07-22

★Footprint for 直立式 SMD:
WIFI-EKEY

★SMD P/N: 直立式
10NH5-130067-11R.

橫躺
Footprint Notice.

★Update 2015-07-22

★Footprint for 橫躺式高:
NGFF-E-75P-3

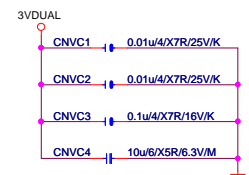
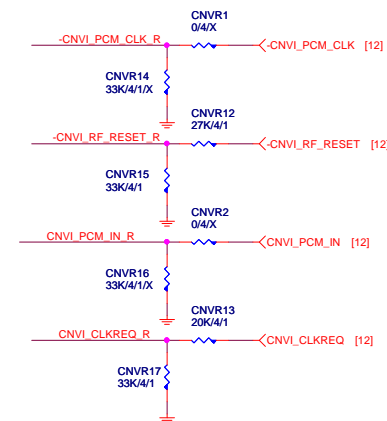
★Footprint for 橫躺式矮:
CNVi

★橫躺式高SMD
P/N:10NR5-130067-61R

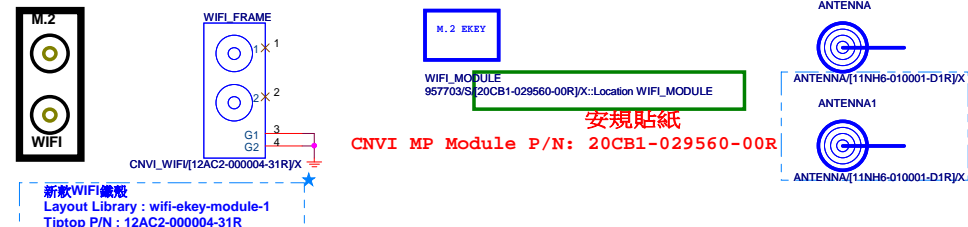
★橫躺式矮SMD
P/N:10NR5-130067-22R

Rev:0.6

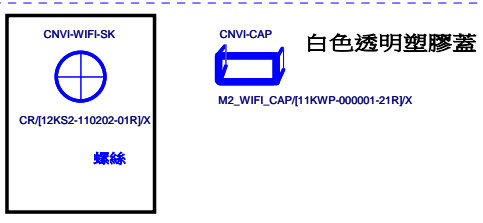
★1. 將PCH吐出的3.3V 經分壓為1.8V 才達到CNVi



一套WIFI MODULE包含外框+WIFI CARD+天線



Footprint WIFI-EKEY+ WIFI-EKEY-MODULE should be a package.



GIGABYTE™			
Title			
CNVi_M2_WIFI			
Size	Document Number	Rev	
Custom	Z390 GMAING SLI	1.0	
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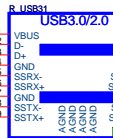
Rev: 0.6 接Pericom redriver 不用接電阻電容

R_USB31_1

下PORT

Footprint :USB30_20

上PORT



USB 3.1 Red

USB 3.1 Red

USB 電容前後NET 可自行調整

USB 電容前後NET 可自行調整

★Update 2015-03.05

FUSE 2 Port 1 Fuse 2.6A

號牌紅色USB 11NR6-302009-91R/92R

★Update 2015-04.14

★Update 2015-04.14

ESD 可自行SWAP PIN

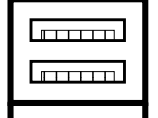
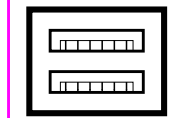
ESD 可自行SWAP PIN

ESD 可自行SWAP PIN

CONNECTOR 自行調整

2 port USB 3.0 Capture:

2 port USB 3.0 with TYPE C Capture:



Footprint:USB30_20

Footprint:USB30_H-1

Gigabyte Technology

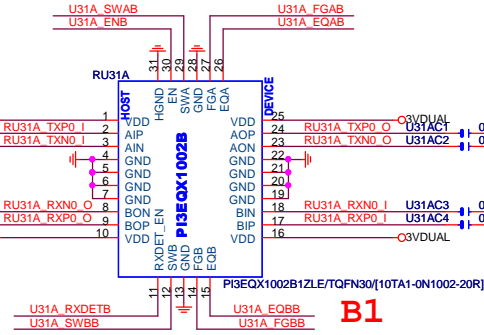
Title		R_USB30,USB_OC	
Size		Document Number	
C		Z390 GMAING SLI	
Date		Rev	
Friday, August 03, 2018		1.0	
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PCH Site

[11] PCH_USB31_TXP1
[11] PCH_USB31_TXN1

[11] PCH_USB31_RXN1
[11] PCH_USB31_RXP1

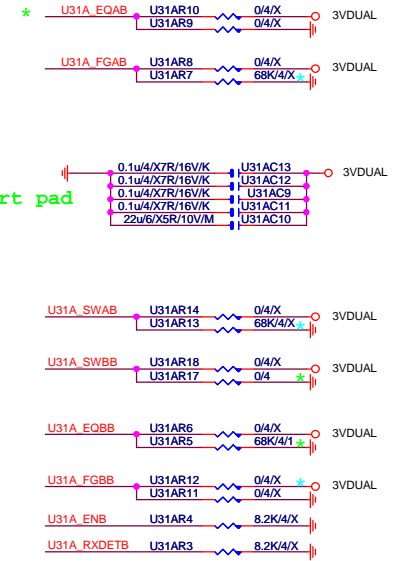
改回 不TX P/N SWAP



USB TypeA Connector Site

for 調值,不改short pad

H370 HD3 REV:0.2 TYPE A RX 量測 PASS 組態



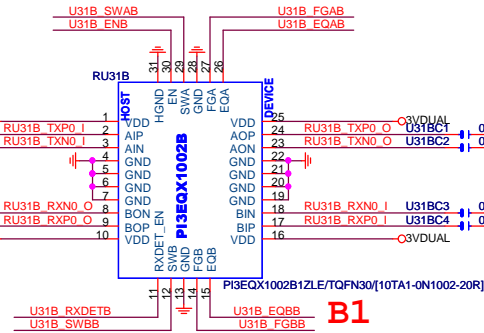
Layout Rule:

1. Differential Pair can't be swapped
2. Redriver to Connector Length min. 500mil

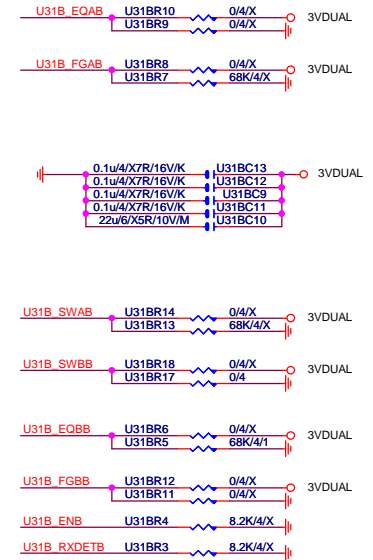
PCH Site

[11] PCH_USB31_TXP2
[11] PCH_USB31_TXN2

[11] PCH_USB31_RXN2
[11] PCH_USB31_RXP2



USB TypeA Connector Site

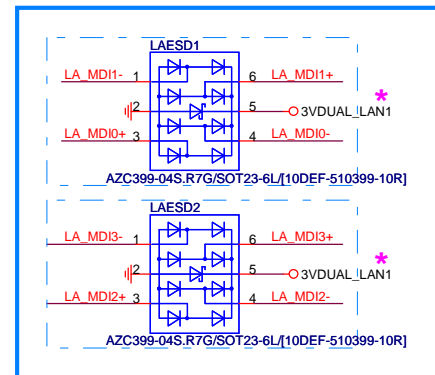


GIGABYTE™

Title PI3EQX1002B Redriver/DC-J		
Size Document Number	Rev 1.0	
Customer	Z390 GMAING SLI	
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3VDUAL_LAN1

LAREQ1



Gigabyte Technology

INTEL I219

Size

Document Number

Custom

Date: Friday, August 03, 2018

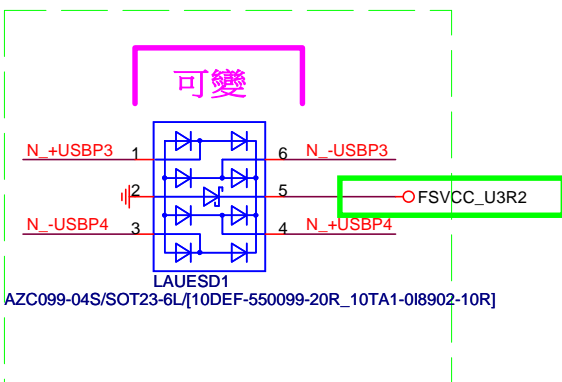
Sheet 48 of 59

Z390 GMAING SLI

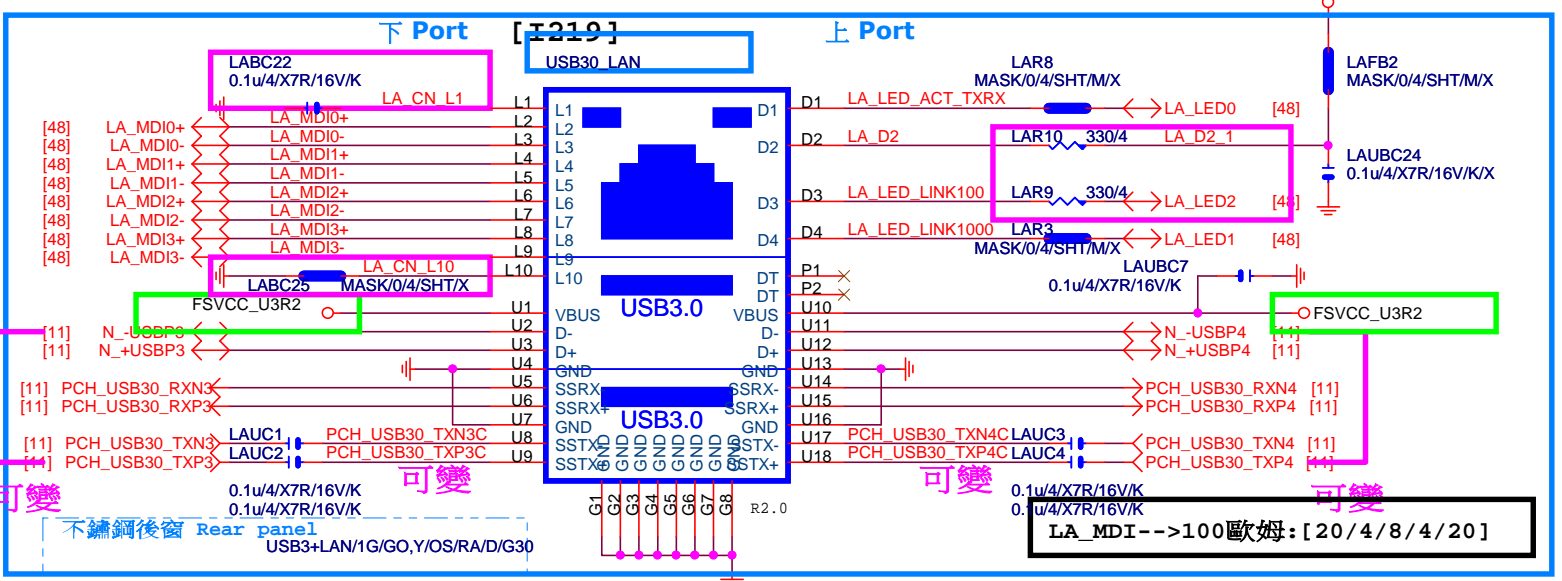
Rev	
1.0	

USB30_LAN CONNECTOR R2.02

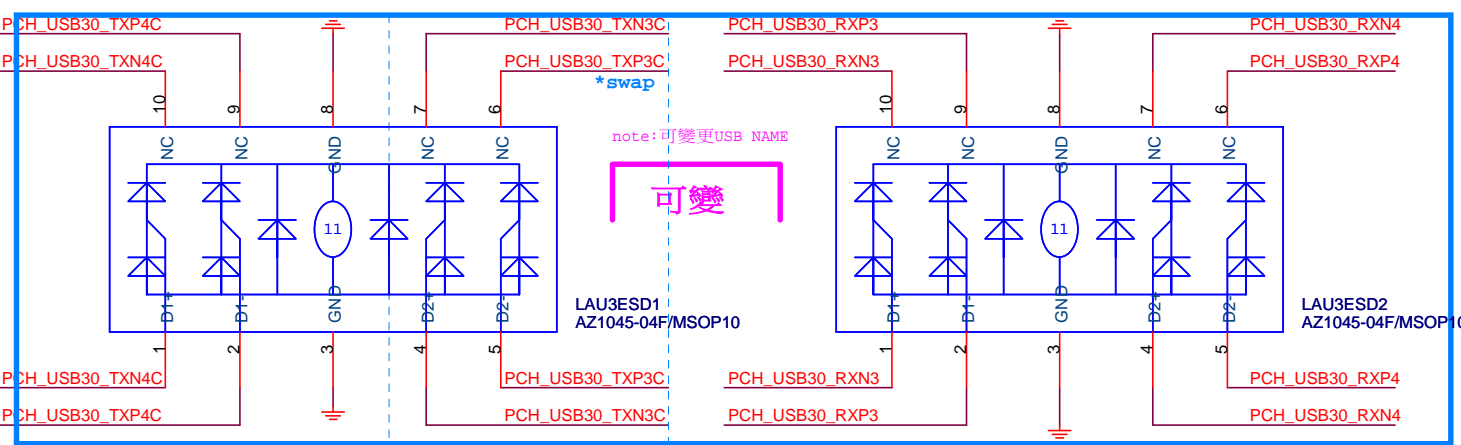
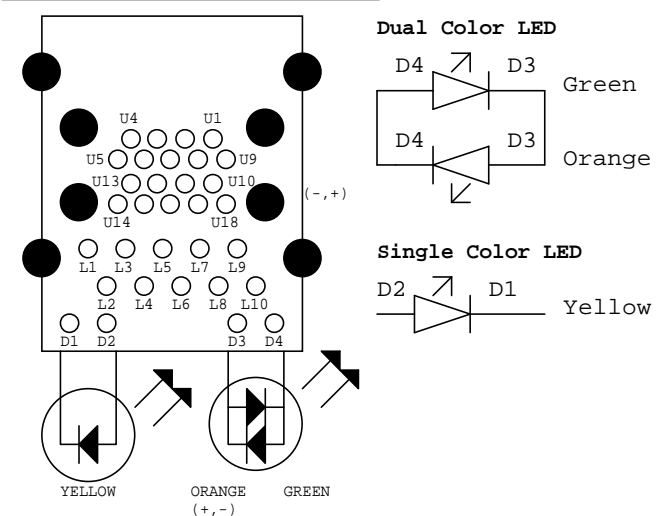
RMA ESD PROTECT note:可變更USB NAME



USB_LAN CONNECTOR note:可變更USB NAME from usb3_9/10 for Flex IO 不可改



USB30_LAN LAYOUT示意圖

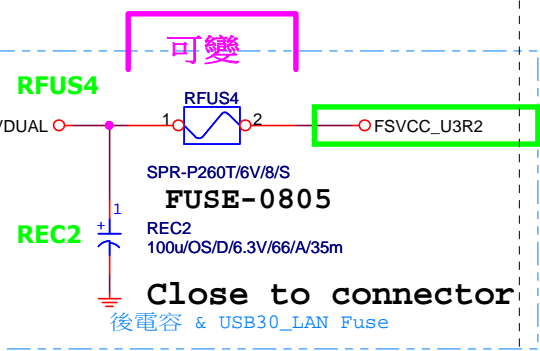


LAN_COVER FOOT PRINT:LAN_COVER

可變
[視SPEC需求]

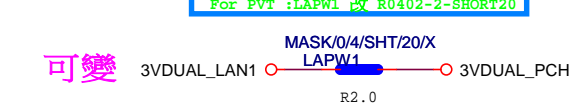
*Del USB_LAN_HS

USB POWER note:可變更FUSE



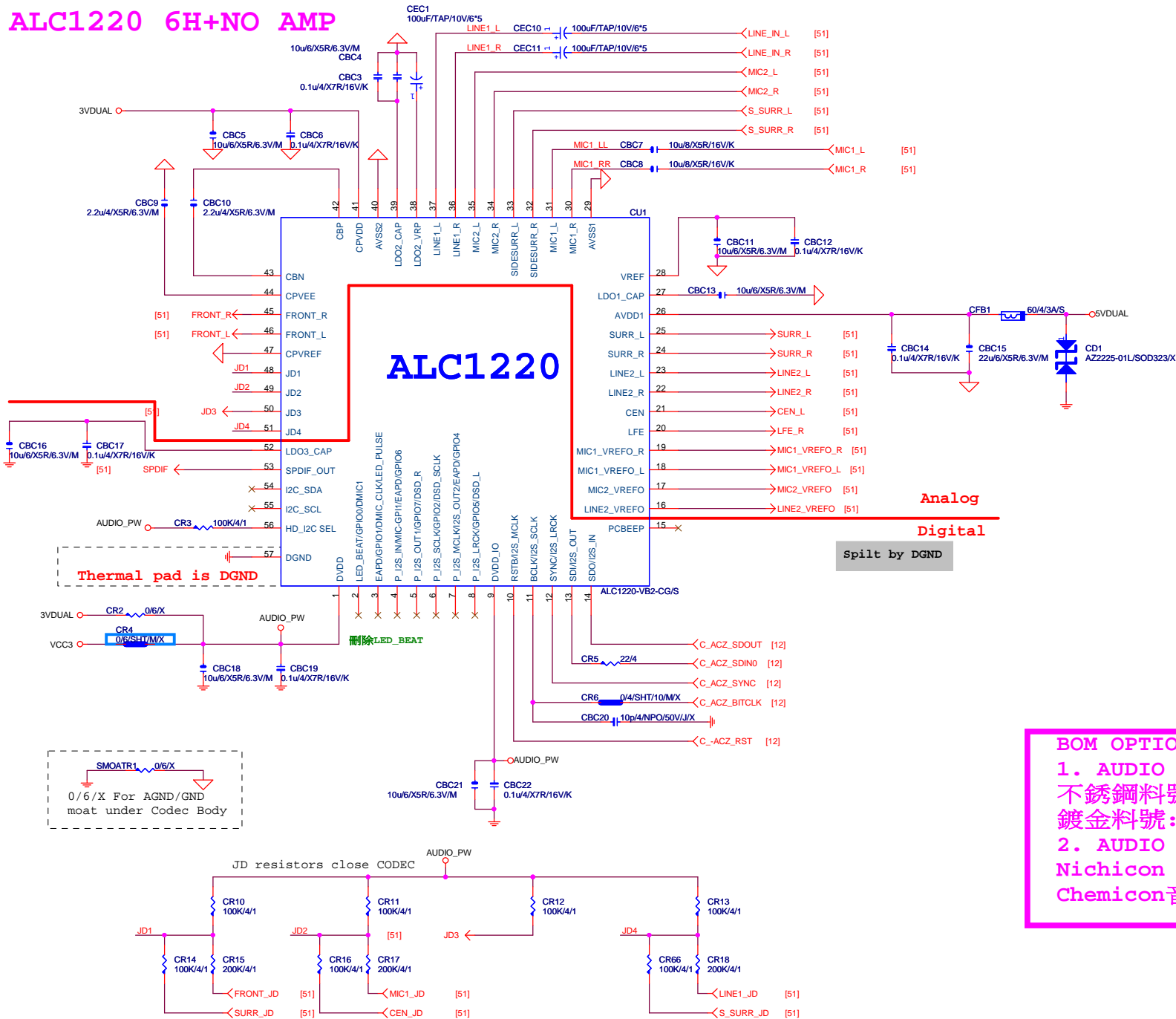
EMI SHORT PAD PS:視EMI需求

LAN POWER note: lan power連接及電流



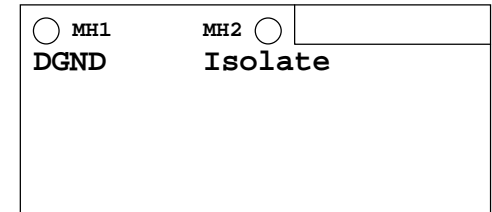
Rev 3.0

ALC1220 6H+NO AMP



LAYOUT注意:螺絲孔下GND方式

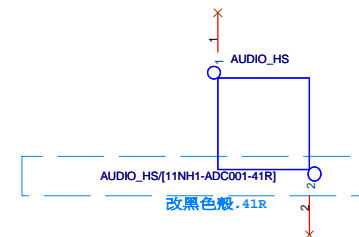
1. MH1下DGND
2. MH2一律改為Isolate



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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

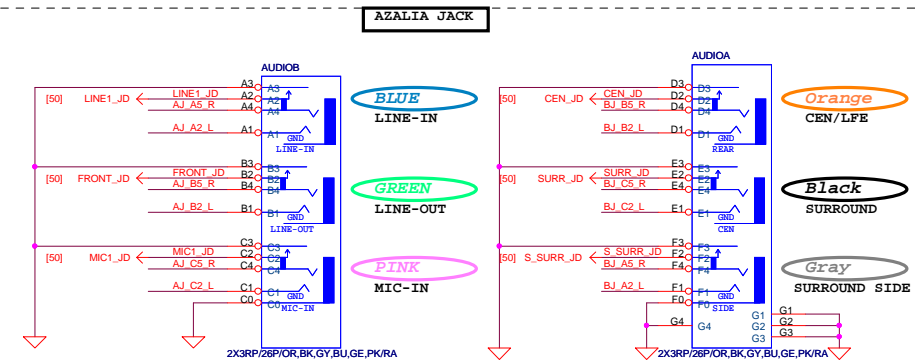
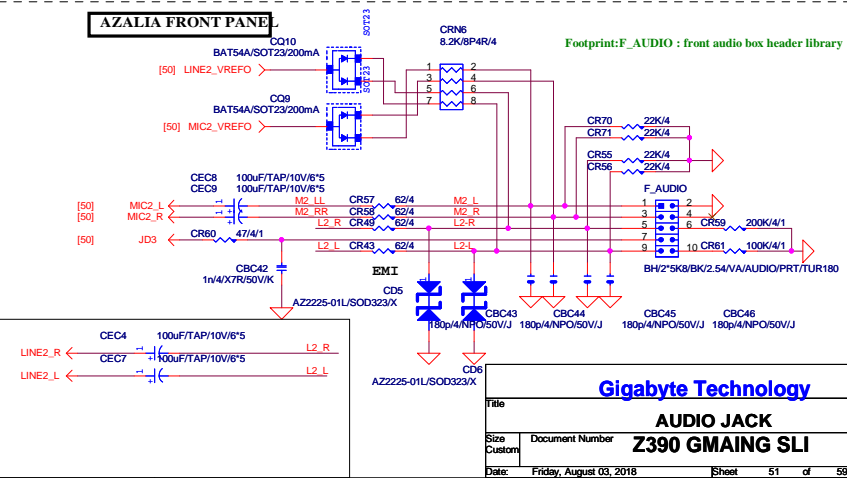
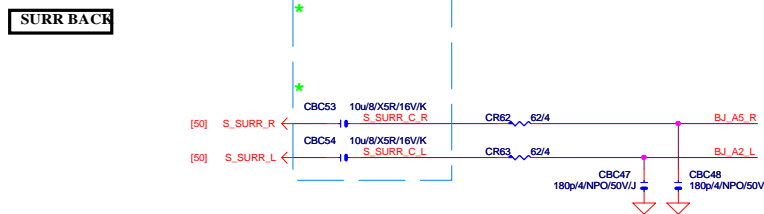
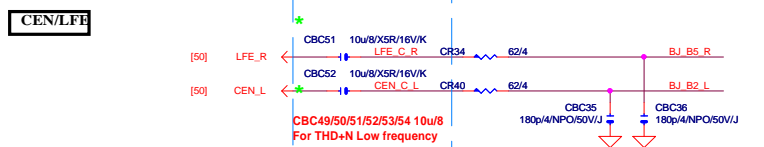
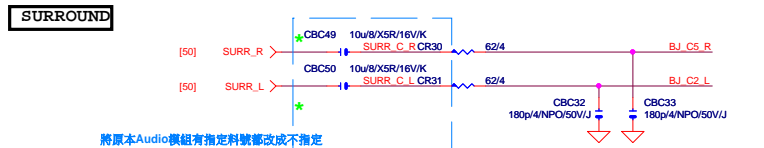
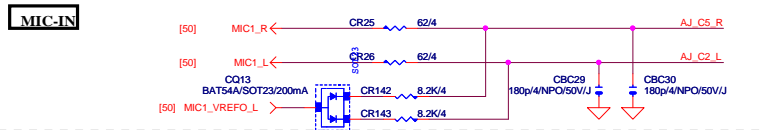
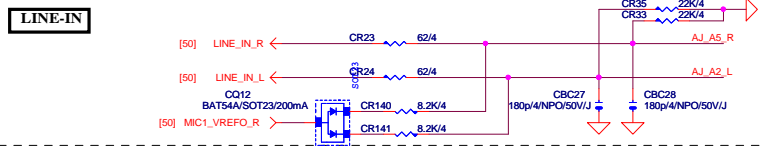
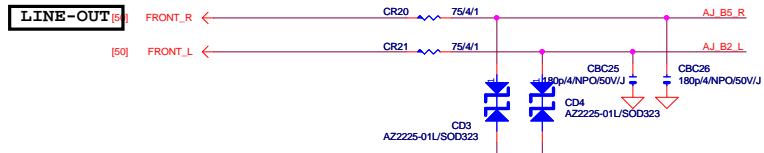
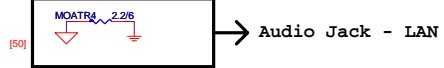
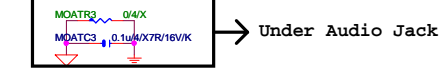
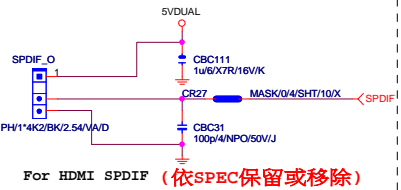
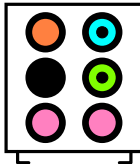
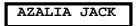
Nichicon MW音效電容 : 100u/TAP/6.3V/65

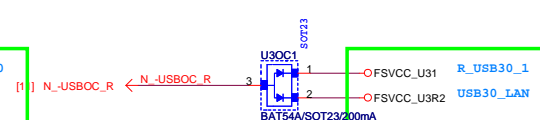
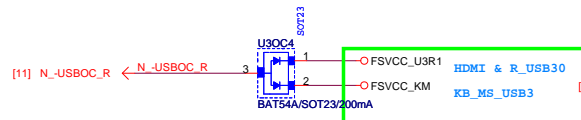
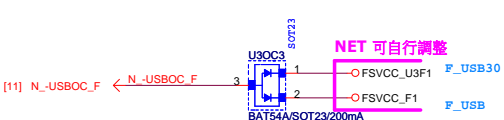
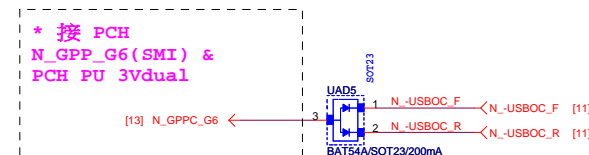
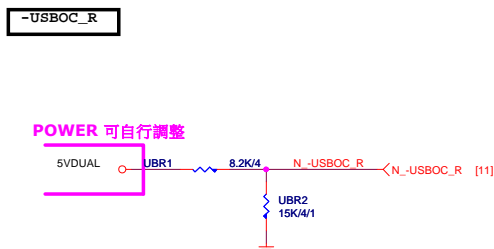
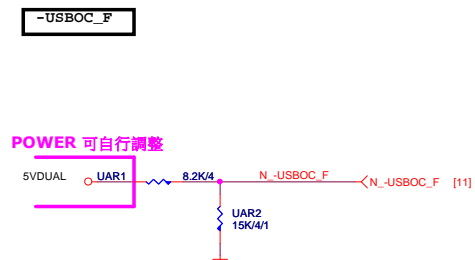
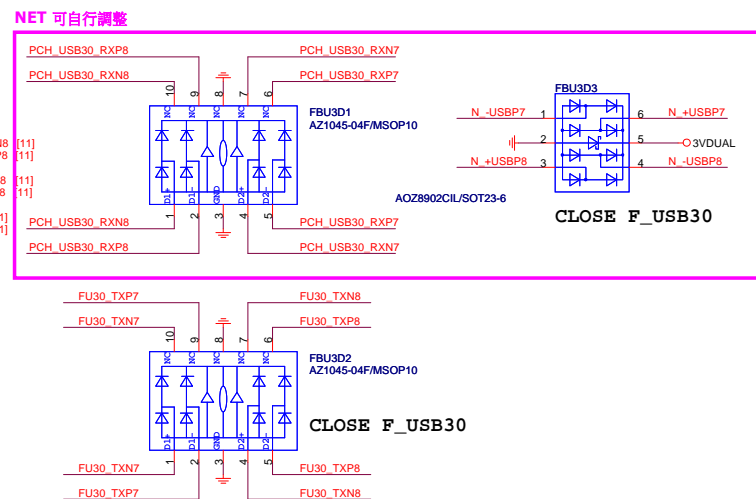
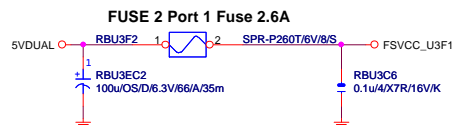
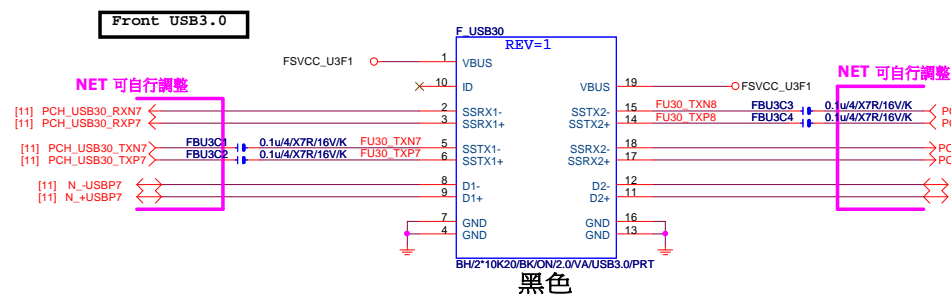
Chemicon音效電容 : 100uF/TAP/10V/6*5

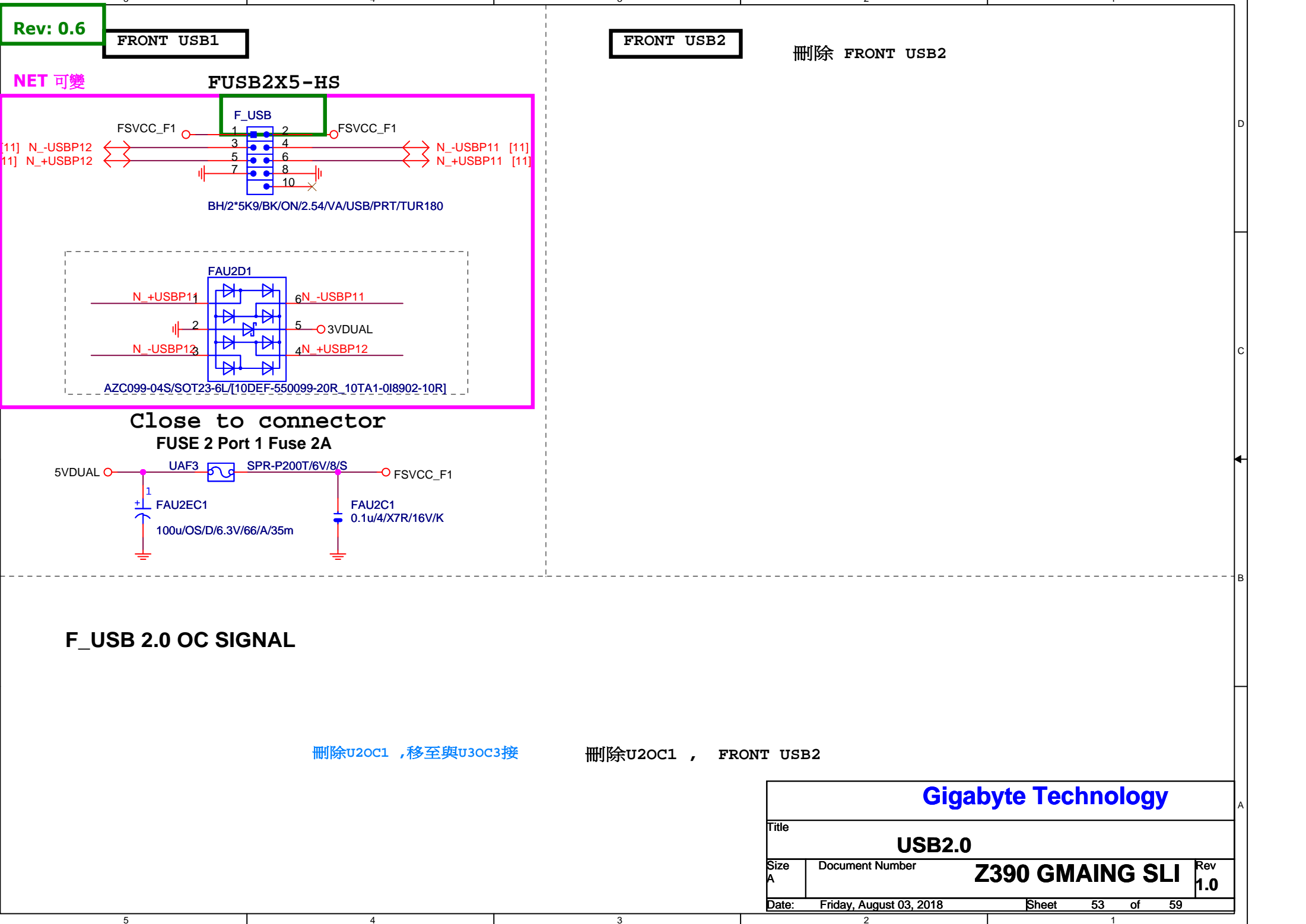
Gigabyte Technology

Title			HD AUDIO ALC887
Size	Document Number	Z390 GMAING SLI	
Custom			Rev 1.0
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Rev 3.0





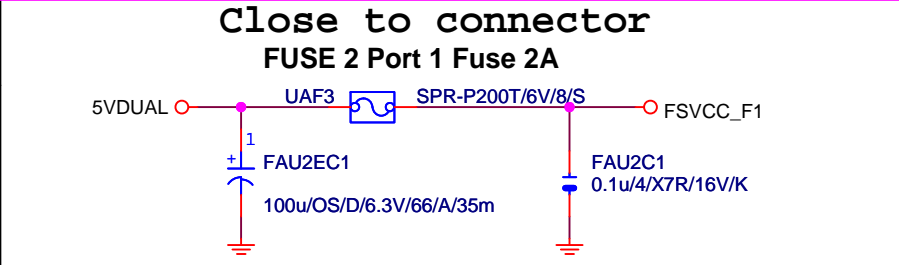
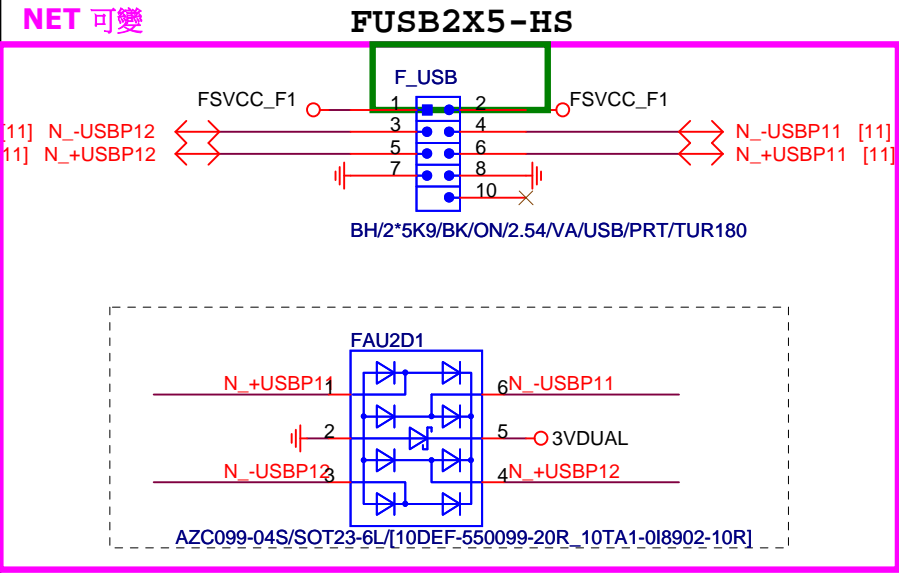


Rev: 0.6

FRONT USB1

FRONT USB2

刪除 FRONT USB2



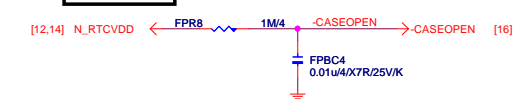
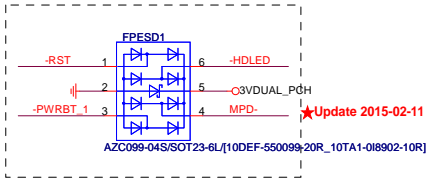
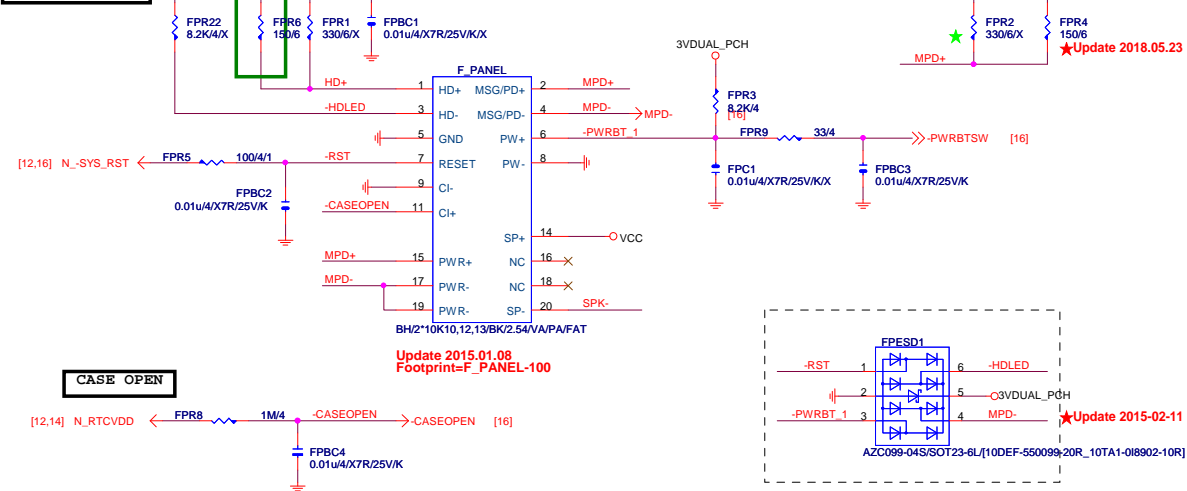
F_USB 2.0 OC SIGNAL

刪除U2OC1 ,移至與U3OC3接

刪除U2OC1 , FRONT USB2

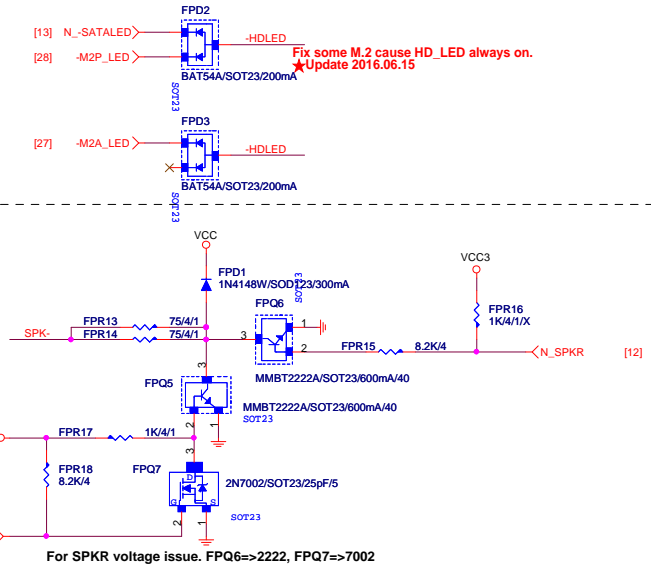
Gigabyte Technology			
Title			
USB2.0			
Size A	Document Number	Z390 GMAING SLI	Rev 1.0
Date:	Friday, August 03, 2018	Sheet 53 of 59	

Rev: 0.6

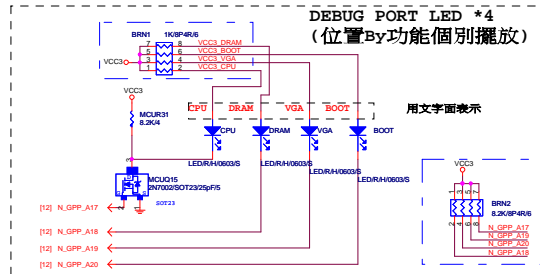
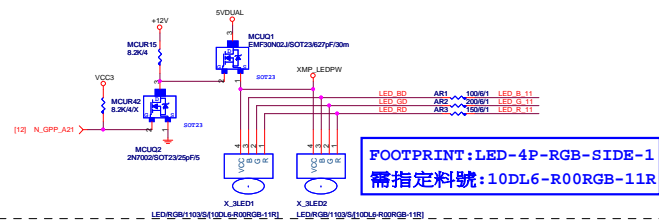


FRONT PANEL SHORT

SATA/M.2 LED

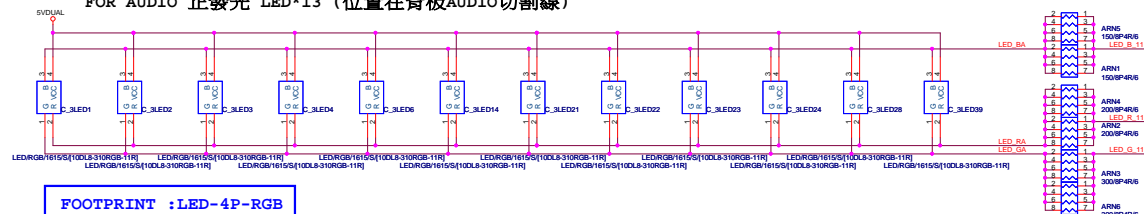


N_GPP_A17	CPU DEBUG
N_GPP_A18	DDR DEBUG
N_GPP_A19	VGA DEBUG
N_GPP_A20	BOOT DEVICE DEBUG
N_GPP_A21	XMP LED SWITCH
N_GPP_A22	TURBO LED SWITCH
N_GPP_D12	LED_IO LED SWITCH

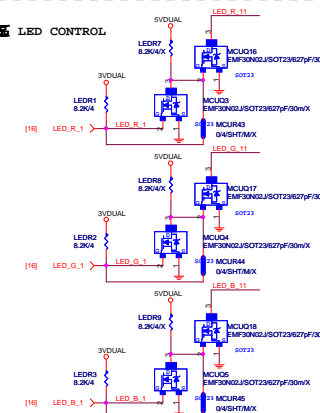


第一區 LED

FOR AUDIO 正發光 LED*13 (位置在背板AUDIO切割線)

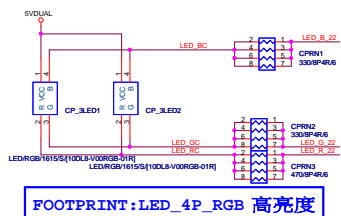


第一區 LED CONTROL



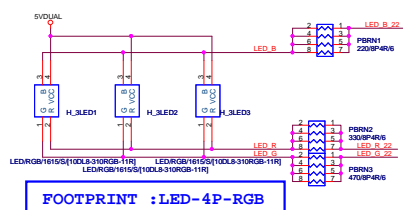
第二區 LED

FOR 裝甲高亮度 正發光 LED*2 (位置在正板,依據裝甲設計擺放)



G7改剩3顆

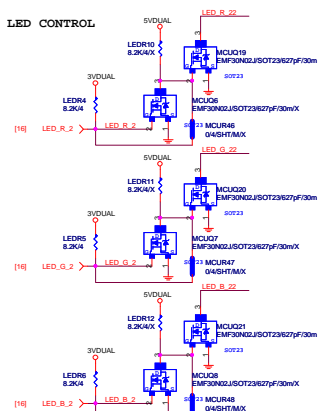
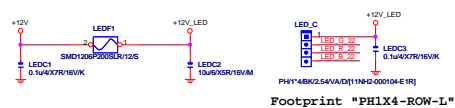
FOR PCH 正發光 LED*3 (位置在正板,依據PCH_HS設計擺放)

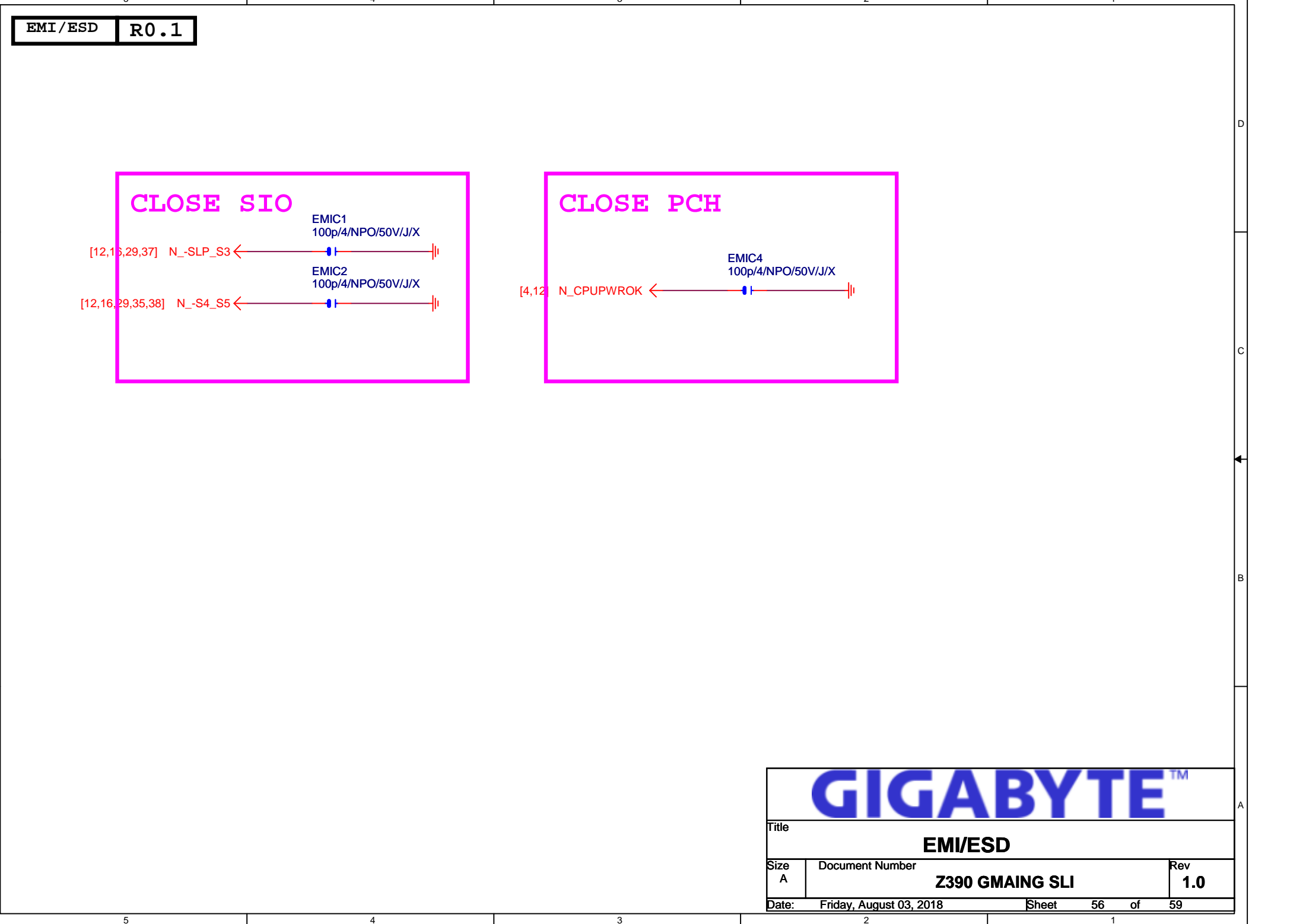


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第二區 LED CONTROL

燈條 LED (LED_C放在PCB左邊板邊位置)





EMI / ESD

R0.1

CLOSE SIO

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

[12,13,29,37] N_-SLP_S3 <—

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

[12,16,29,35,38] N_-S4_S5 <—

CLOSE PCH

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

[4,12] N_CPUPWROK <—

GIGABYTE™

Title

EMI/ESD

Size
A

Document Number

Z390 GMAING SLI

Rev

1.0

Date:

Friday, August 03, 2018

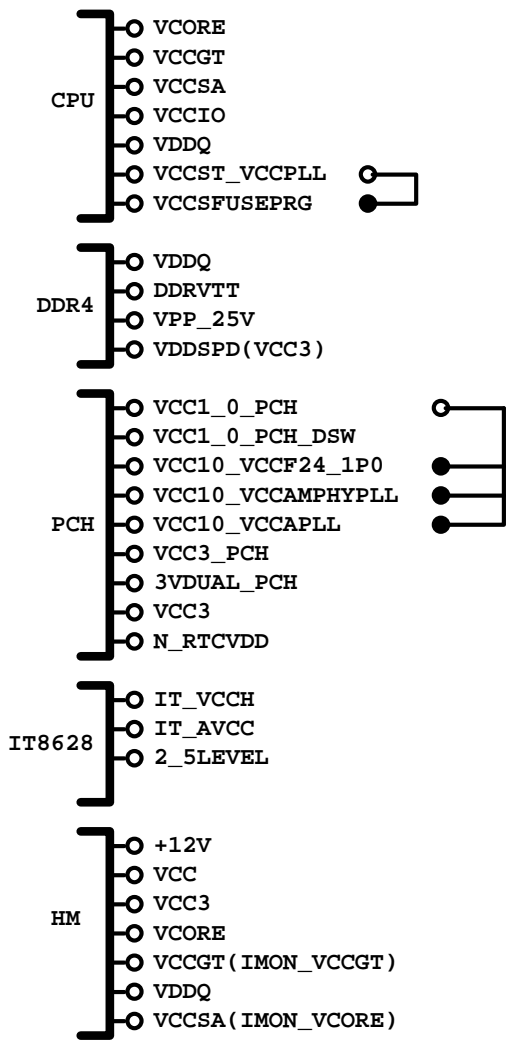
Sheet

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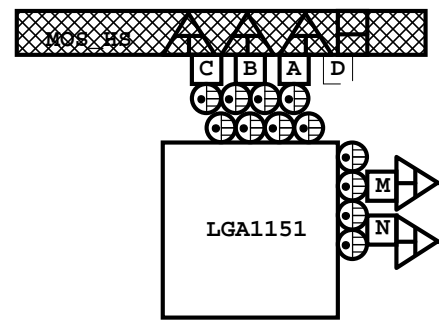
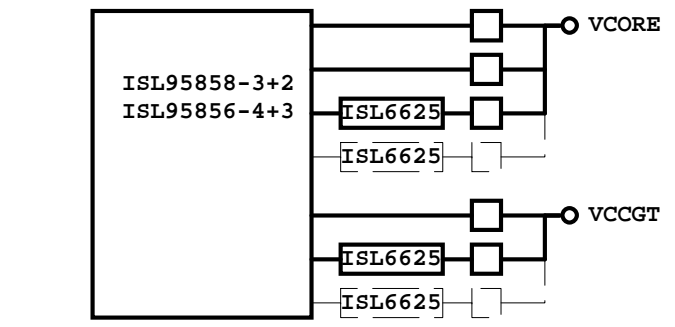
of

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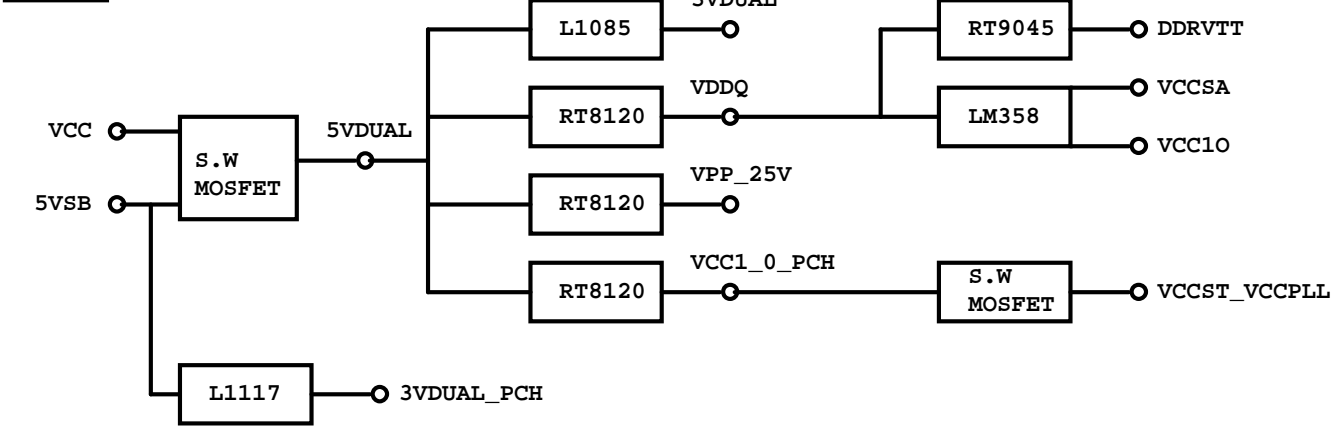
POWER BLOCK MAP



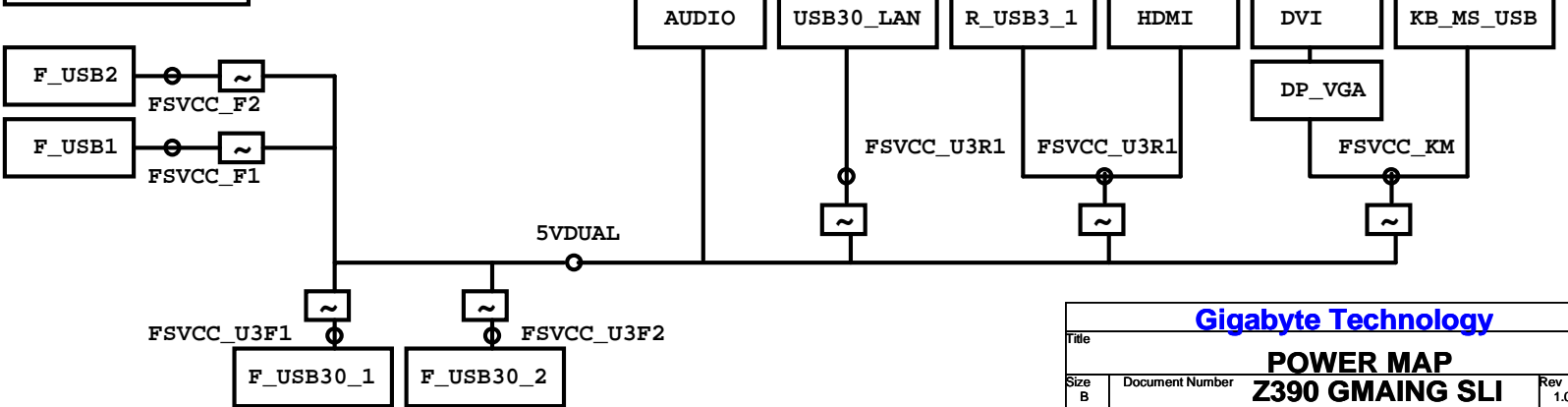
VCORE/VCCGT

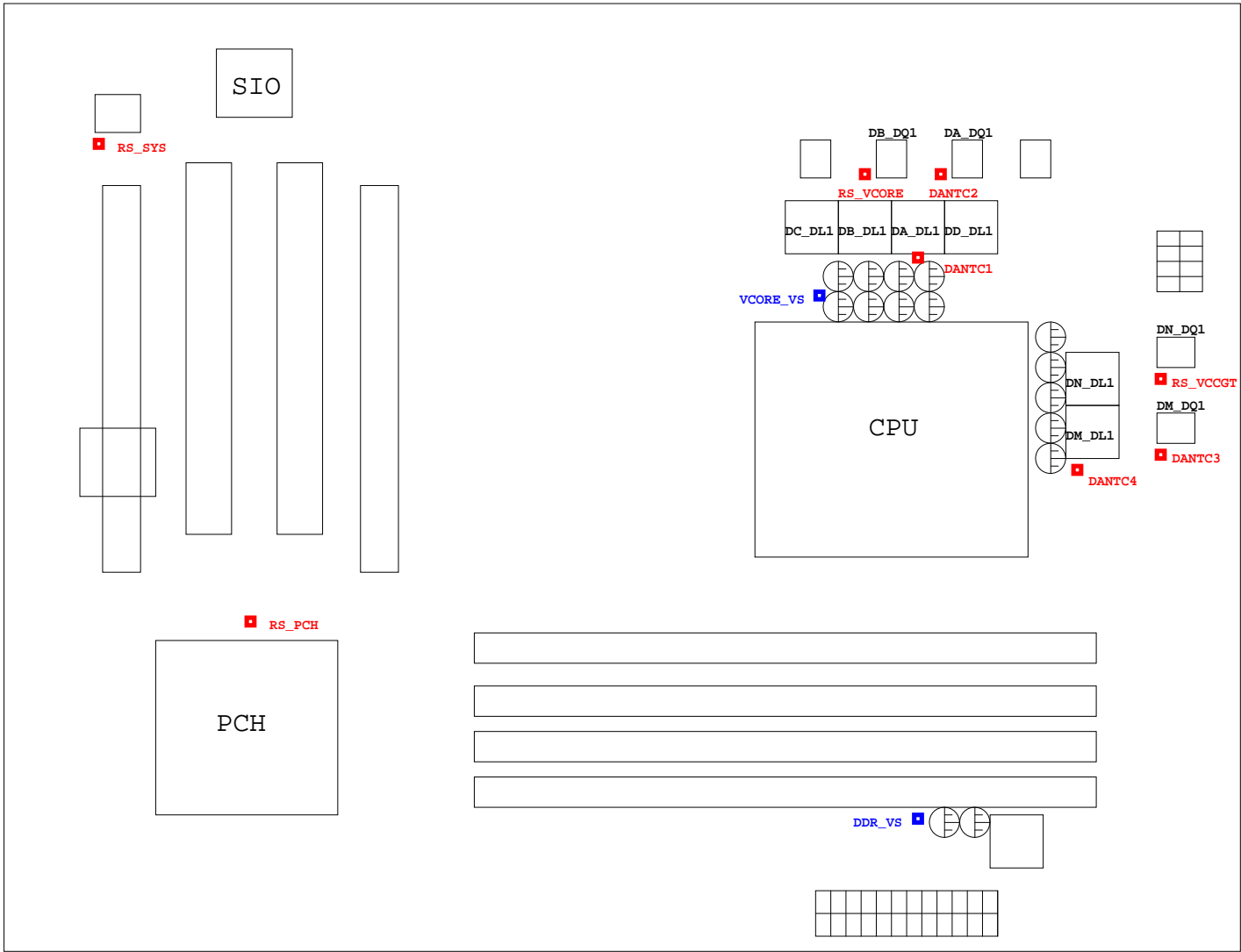


POWER



FUSE POWER F/R



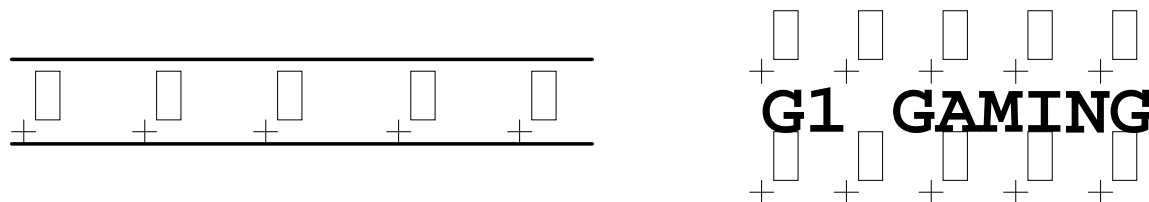


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A

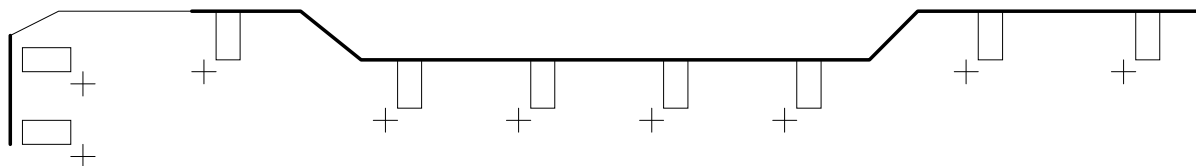
RGB LED LAYOUT 注意事項：

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

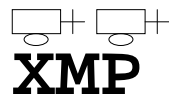
PCB板邊透光model name鏤空+背面 RGB LED



Audio Ground切割線+背面 RGB LED



"XMP"字樣鏤空+背面 RGB測發光 LED



Gigabyte Technology		
Title		
NTC MAP		
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