



SHEET

TITLE

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Circuit or PCB layout change

CHINA FDX

DATE	Change Item	Reason
2015/03/05 PCB:0.1	1.PCB first release 2.線路由GA-Z1704-GAMING 7-01B.DSN來修改	
2015/01/26 PCB:0.2	1. 移除 BOM:SEAR22,SECR22,SEDR20 2. MR22兩端走線50mils以上 (參考G7修改)	
2015/03/11 PCB:0.1	1.線路由Z1704X-GAMING 5-02.DSN來修改(0311) Z1704MX-Gaming 5 Rev 0.1 Layout request 1.由Z1704X-Gaming 5 Rev 0.1 來修改 2.CPU power由4+4 Hybrid digital+ 3 Hybrid digital 改為4 Hybrid digital (倆倆分開擺90度)+ 3 Hybrid digital 3.PCIE由x4(CPU)+x8+x16改為1x16 / 2x8 4.PCIEx1由3個slot改為一個 5.Remove M.2B 6.Remove Intel i219V PHY 7.PCB改為mATX 244x244 or smaller 8.Remove 80 port 9.OC Turbo button改為onboard 4 pin header 10.Remove ECO button (power saving) 11.Add NXP DP-VGA	GA-Z170MX-Gaming 5 Rev 0.1
2015/05/20 PCB:0.2	1.A.R. PCH PCIE訊號統一改為PCIE1&PCIE2 2.F_USB30_2改接USB30_9&USB30_10 3.PCH_HS改為BGAHSINK-170M-D3H 4.MOS_HS改為MOSHESINK-Z170X-D3H 5.Add OR100 close to SIO 6.FNR5改為FUSE-0603-SHORT10 7.PCIE4改為PCIESLOT-64STH-1 8.M.2 螺絲孔文字改加"A" 9.Add VPP_25V 4顆電容 10.PCH power改+12V&5VDUAL INPUT 11.Q21改0 OHM SHORT PAD 12.ADD DVR21 CLOSE TO DVC11 13.TYPEC_1改為TYPEC 14.Update A.R. 最新線路 15.NX1 24MHz CRYSTAL請參考最新Layout方式 16.TCA_ESD11的pin 1請標▲極性標示 17.VCORE_VS放在CPU下方 18.刪除WR100,WR101,NR300,NR301,NR302NR303,WR102,WR103 19.Remove LED_CON1 線路 20.Audio update a. CR44 update footprint "R0603-RH-SHORT30-MASK" b. MOATR1/2/3/4 update footprint "R0402-2-SHORT20-MASK" 21.PCH Crystal 線路新增NR3 22.TYPEC 改為Ti solution(參考Z170XP-SLI Rev 0.2) 23.Remove RAU3EC1, LAEC1放在原來RAU3EC1的位置 24.TPM remove PIN 13&14 GPIO 25.Add OR171 26.HDMI改為CPU訓號+level shift 27.Add MA_DR9 close to MA_DQ2 or MA_DQ3 28.Add MA_DR10 close to MA_DC10 or MA_DR8 29.Add NPC10 close to NPL2 30.Add DEC3 close to CPU 31.Delete MR22,VDDSPD change to VPP_25V 32.WR94改為0 ohm	GA-Z170MX-Gaming 5 Rev 0.2
2015/07/29	1. BIOS PH change to MASK	GA-Z170MX-Gaming 5 Rev 1.0
2016/05/25	1. 文字面改Rev 1.1	GA-Z170MX-Gaming 5 Rev 1.1

BLOCK DIAGRAM



PCI EXPRESS X16

PCI EXPRESS X8

SWITCH

INTEL LGA1151
(SKYLAKE)

IMVP 8

DDR4 BUS

CHANNEL A
DDR4 DIMM X 2CHANNEL B
DDR4 DIMM X 2

HDMI , DVI , VGA

DMI

PCI EXPRESS X4

PCIE-4 Gen3

PCI EXPRESS X1

PCIE-1 Gen3

Killer E2201

PCIE-1 Gen3

USB2.0 PORTS 1~14

USB 2.0

USB3.0 PORTS 1~8

USB 3.0

PCH (Z170)

PCIE-4 gen3

M.2A SLOT

SATA III PORT 1~5

SATAIII/SATA EXPRESS

SPI BUS

SPI Dual BIOS

LPC BUS

LPC I/O ITE8628

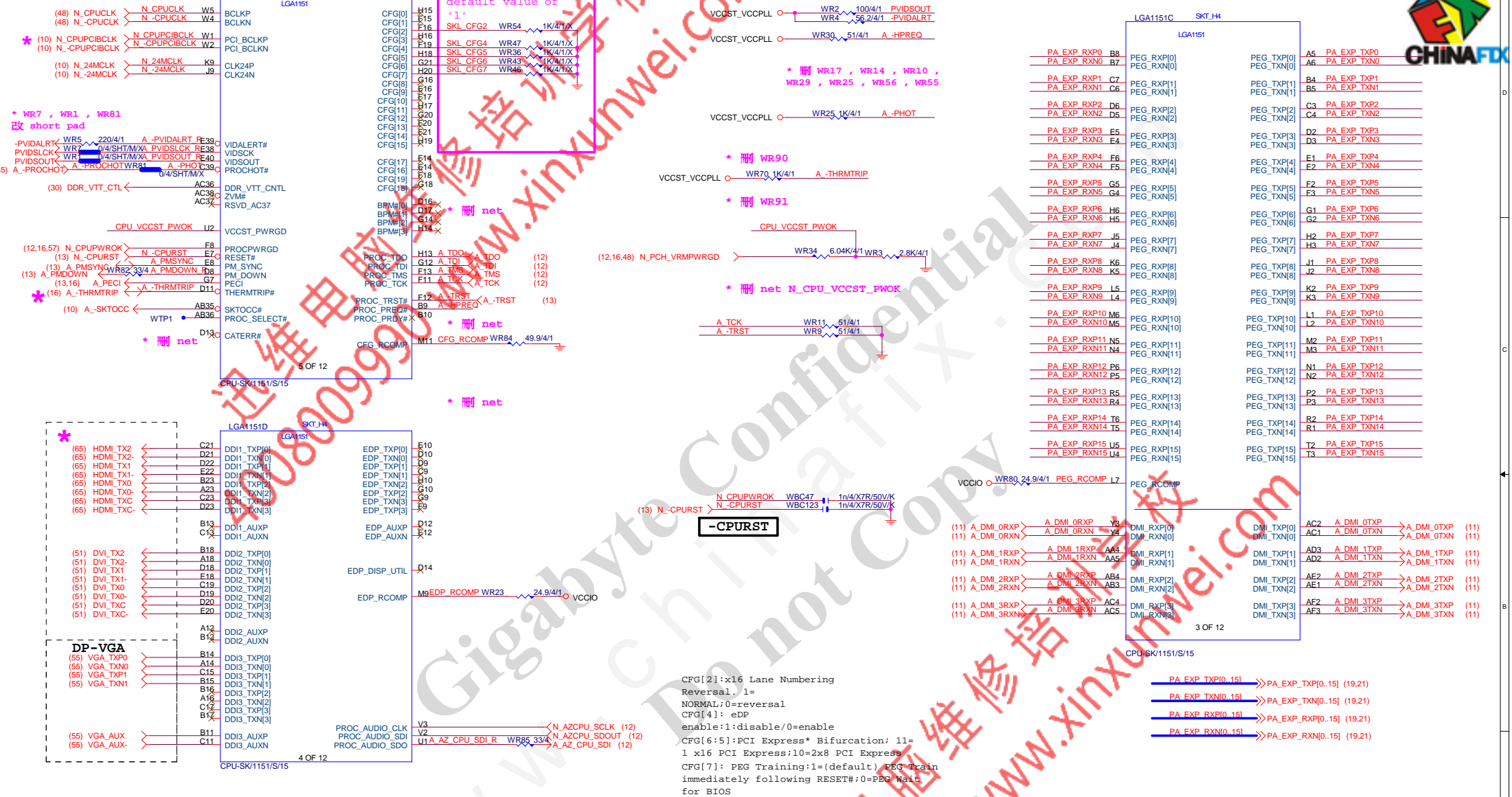
AZALIA BUS

Realtel ALC1150

I/O PORTS :
COMA PS2 KB/MS LPT, TPMFRONT PANEL /
CPU/SYS FANAUDIO PORTS :
LINE_IN LIN_OUT FRONT AUDIO
CEN/LFE SURR MIC-IN
SPDIF

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BLOCK DIAGRAM			
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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

Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[4]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

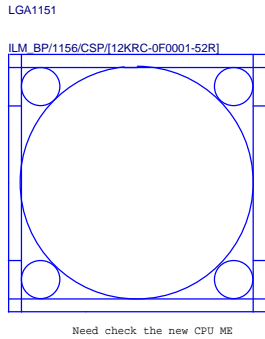
- PA EXP TXP0.15 >>> PA_EXP_TXP0.15 (19,21)
- PA EXP TXN0.15 >>> PA_EXP_TXN0.15 (19,21)
- PA EXP RXP0.15 >>> PA_EXP_RXP0.15 (19,21)
- PA EXP RXN0.15 >>> PA_EXP_RXN0.15 (19,21)

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

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CPU LGA1151-A		
Size Custom	Document Number	Rev 1.1
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* 改DDR4 net

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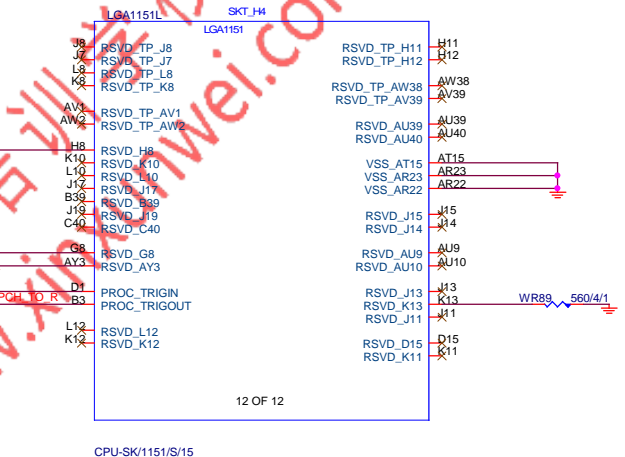
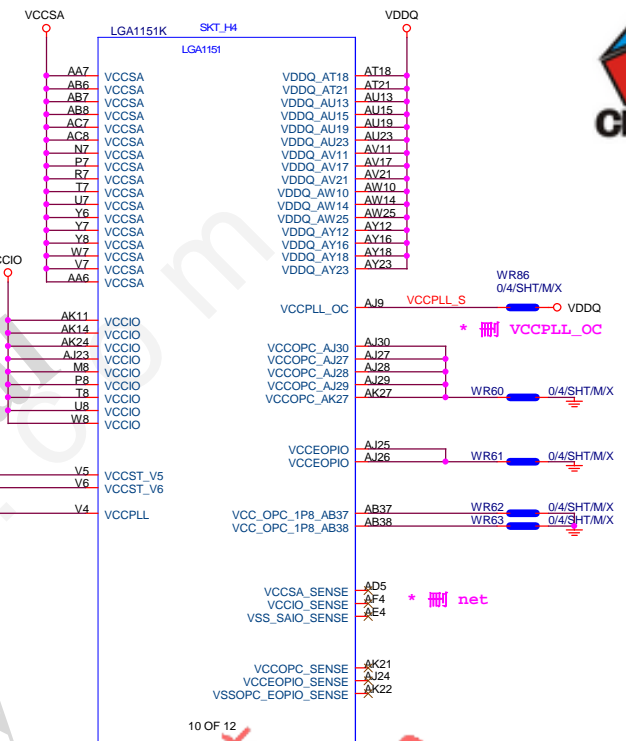
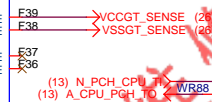
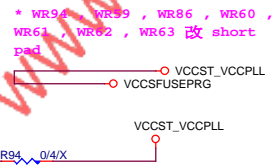
- (8) MODT_A[0..3] <=> MODT_A0..31
- (9) MODT_B[0..3] <=> MODT_B0..31
- (8) MDA[0..63] <=> MDA0..631
- (9) MDB[0..63] <=> MDB0..631
- (8) M_DQSA[0..7] <=> M_DQSA0..71
- (8) M_DQSA[0..7] <=> M_DQSA0..71
- (8) MAA[0..16] <=> MAA0..161
- (9) MAA[0..16] <=> MAA0..161
- (9) M_DQSB[0..7] <=> M_DQSB0..71
- (9) M_DQSB[0..7] <=> M_DQSB0..71

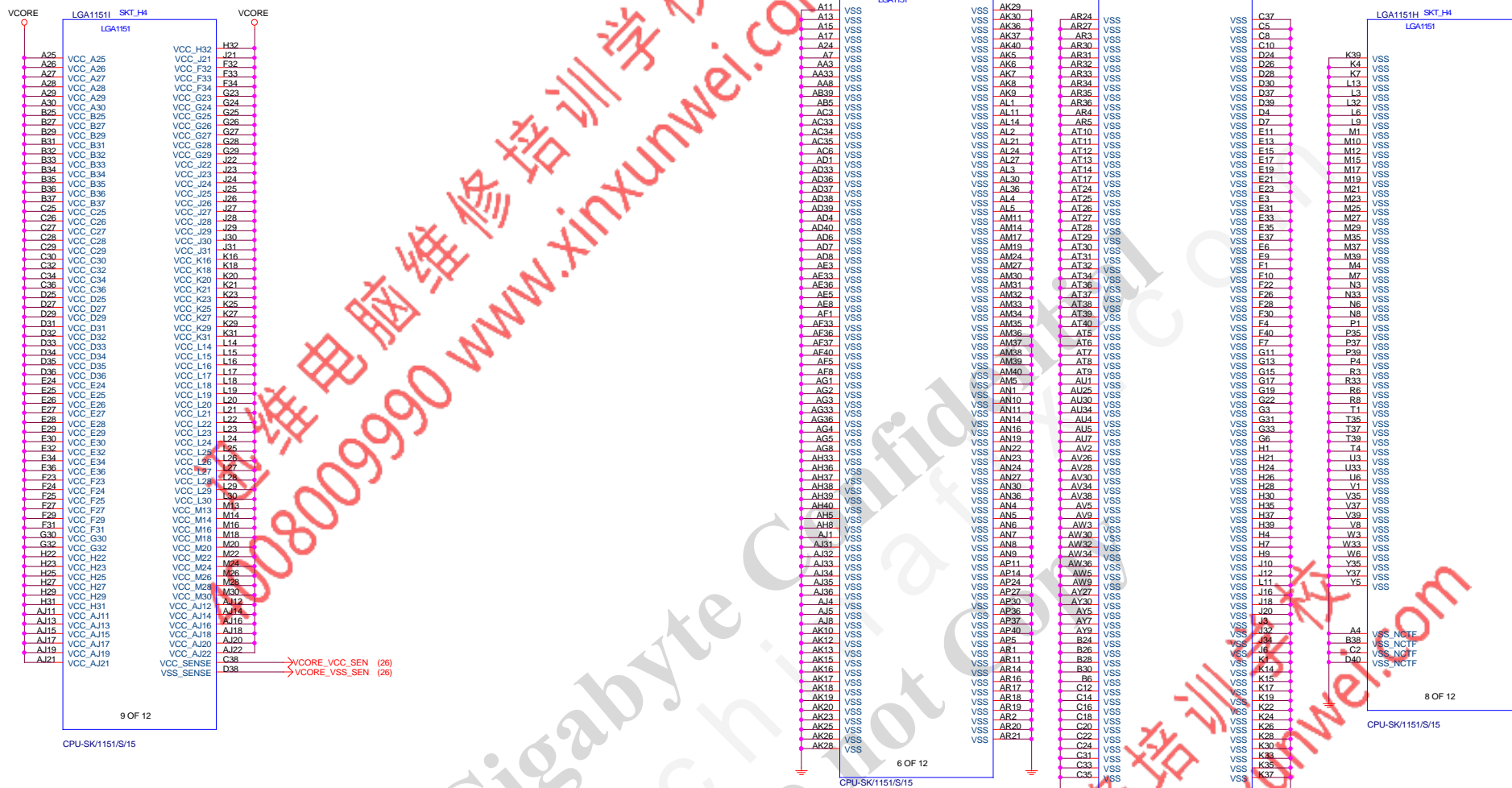
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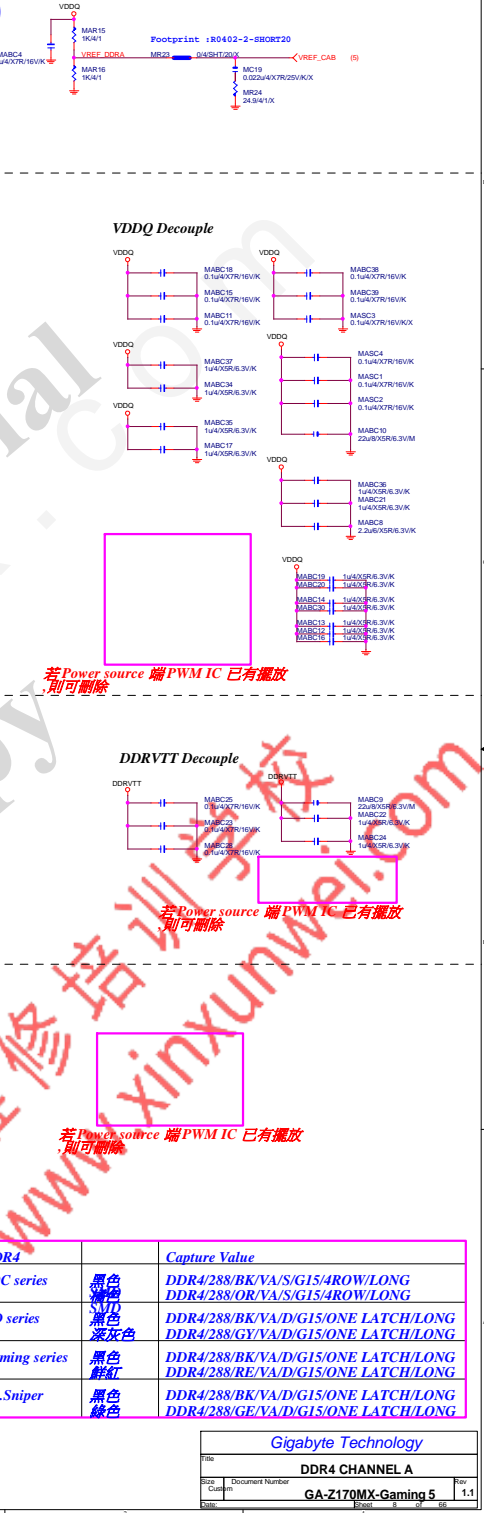
Title: **CPU LGA1151-B**

Size: Custom Document Number: **GA-Z170MX-Gaming 5** Rev: 1.1

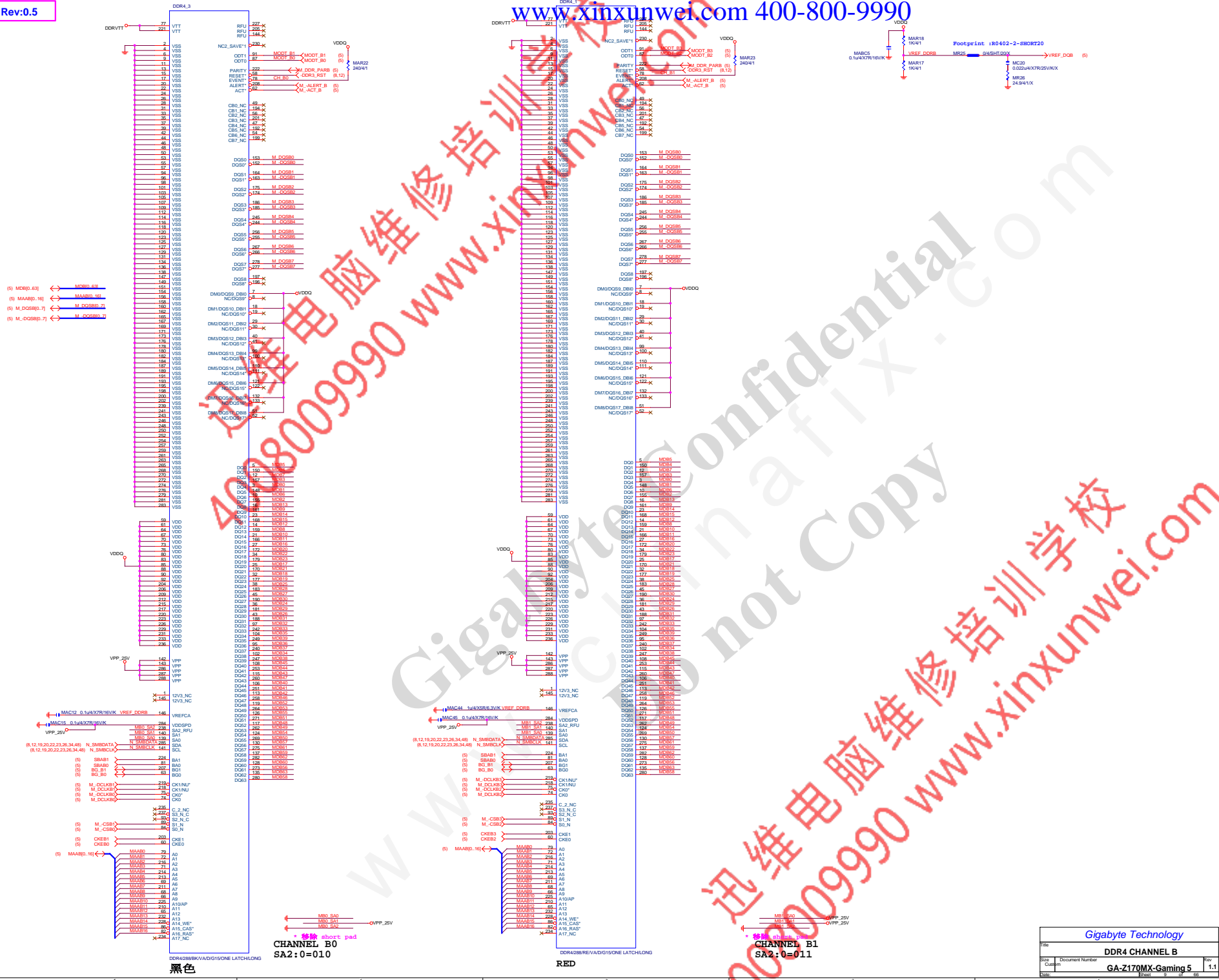
Date: Tuesday, June 07, 2016 Sheet: 5 of 66



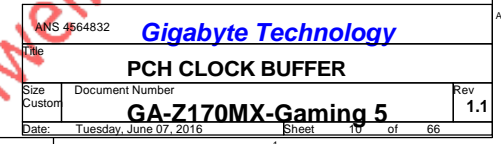


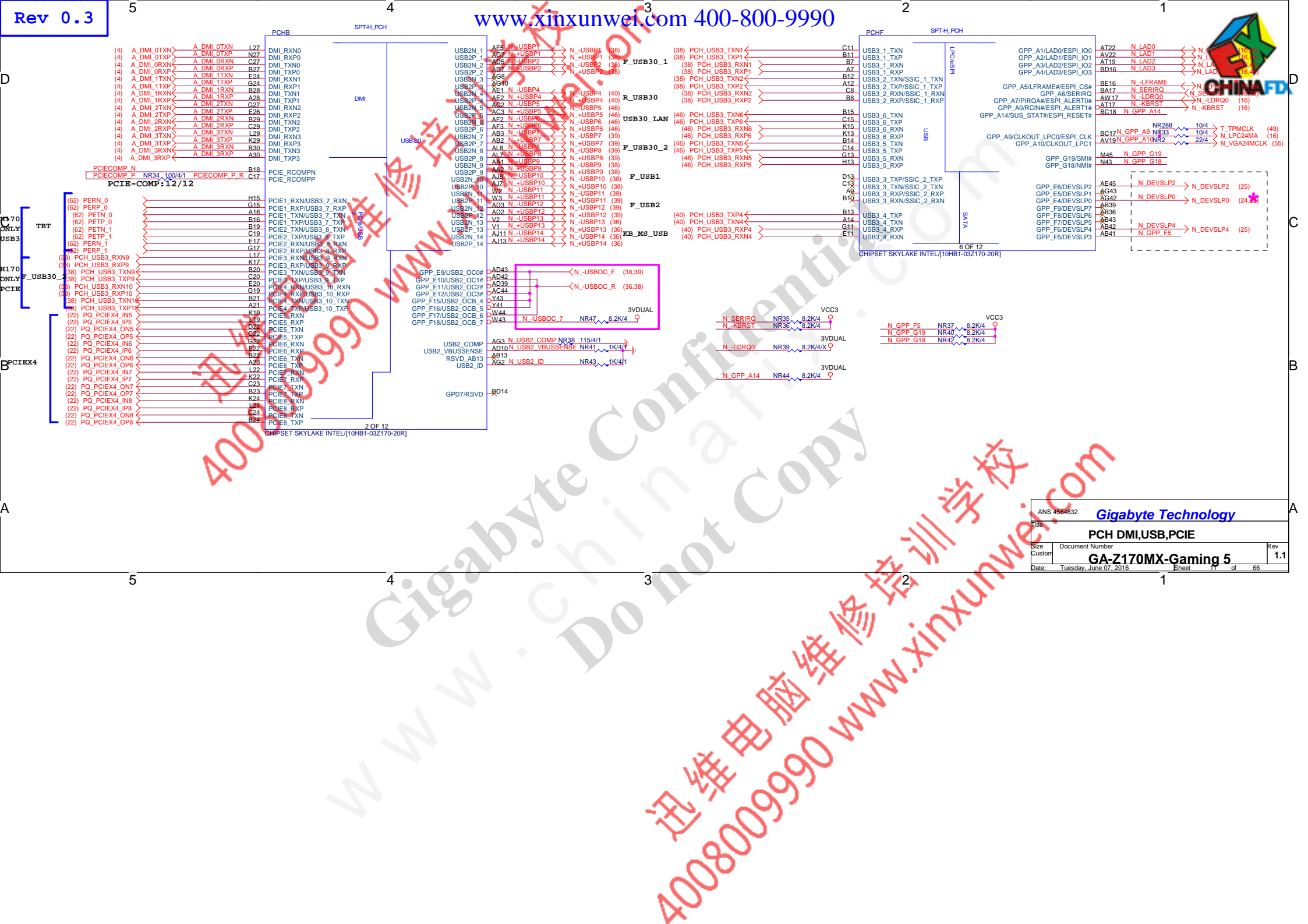


DDR4		Capture Value
SOC series	黑色 深灰色	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	黑色 深灰色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色 鮮紅	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
GL Sniper	黑色 綠色	DDR4/288/BK/VA/D/G15/ONE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

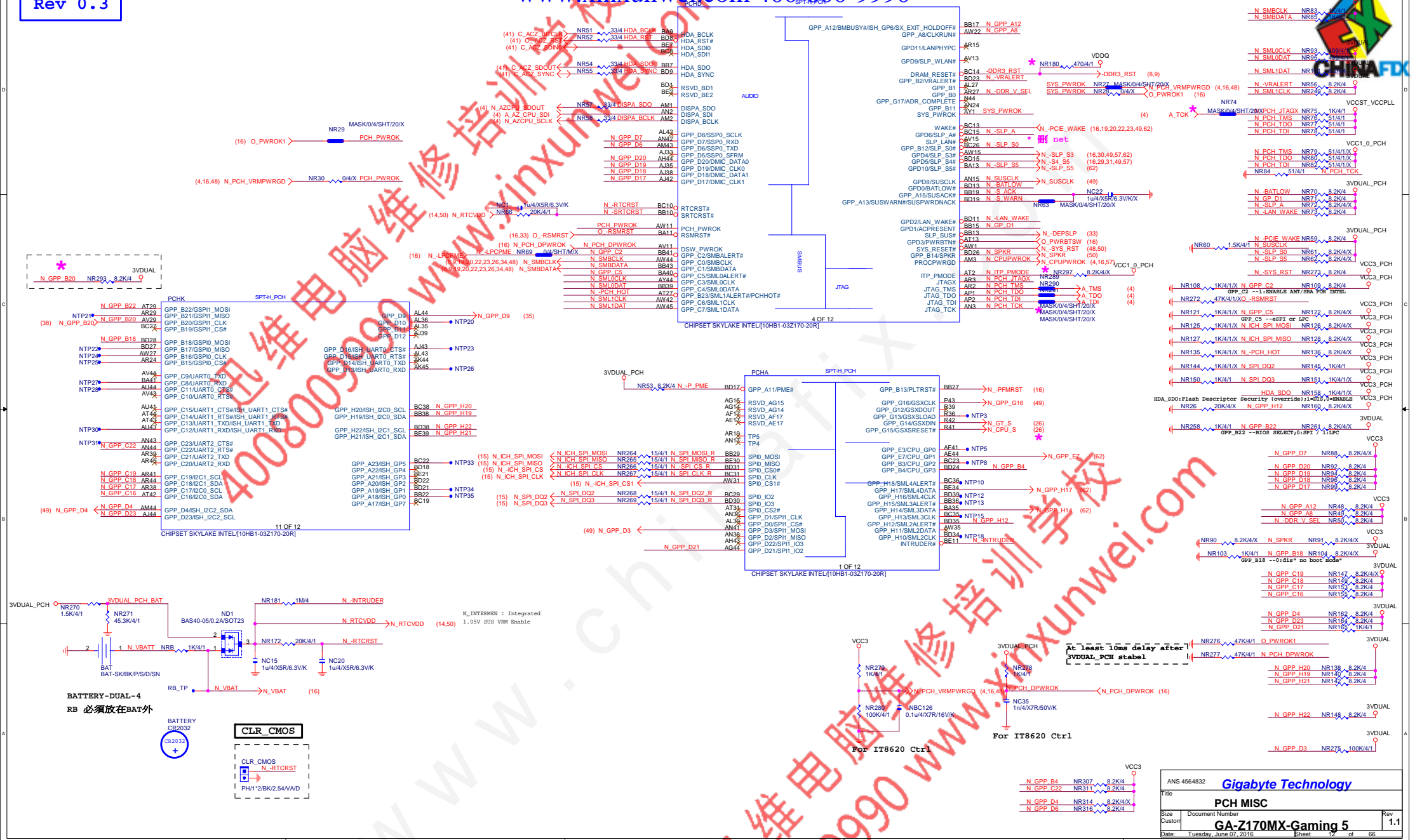


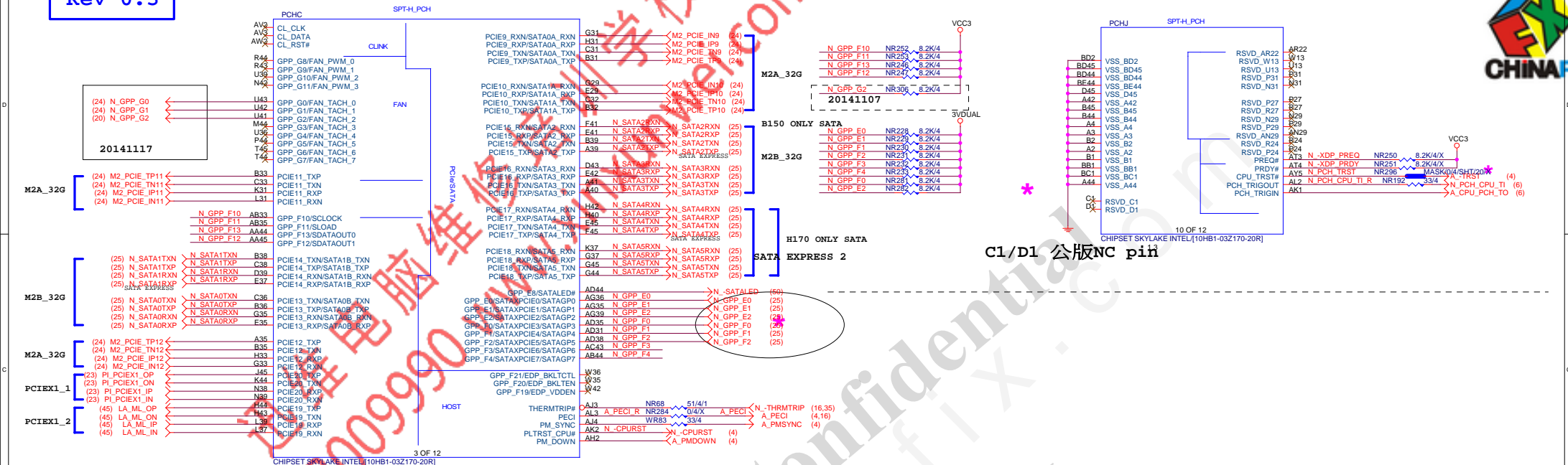
Gigabyte Technology			
File: DDR4 CHANNEL B			
Size	Document Number	Rev	
1.1	GA-Z170M-Gaming 5	1.1	



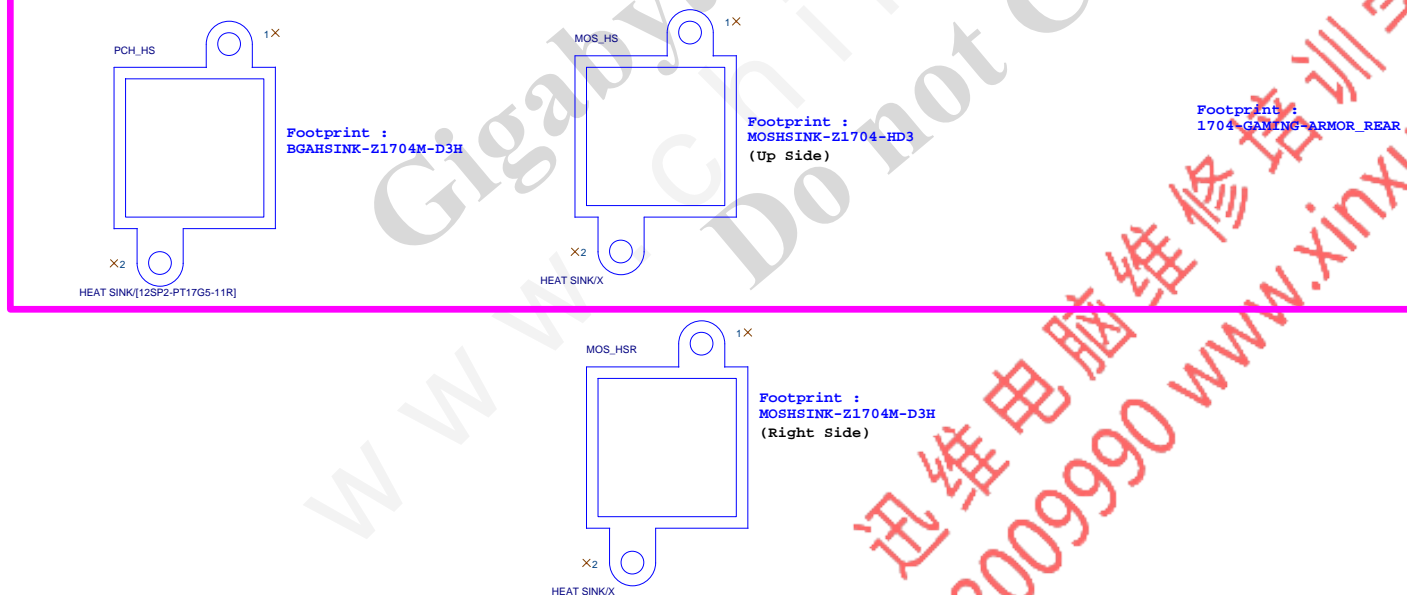


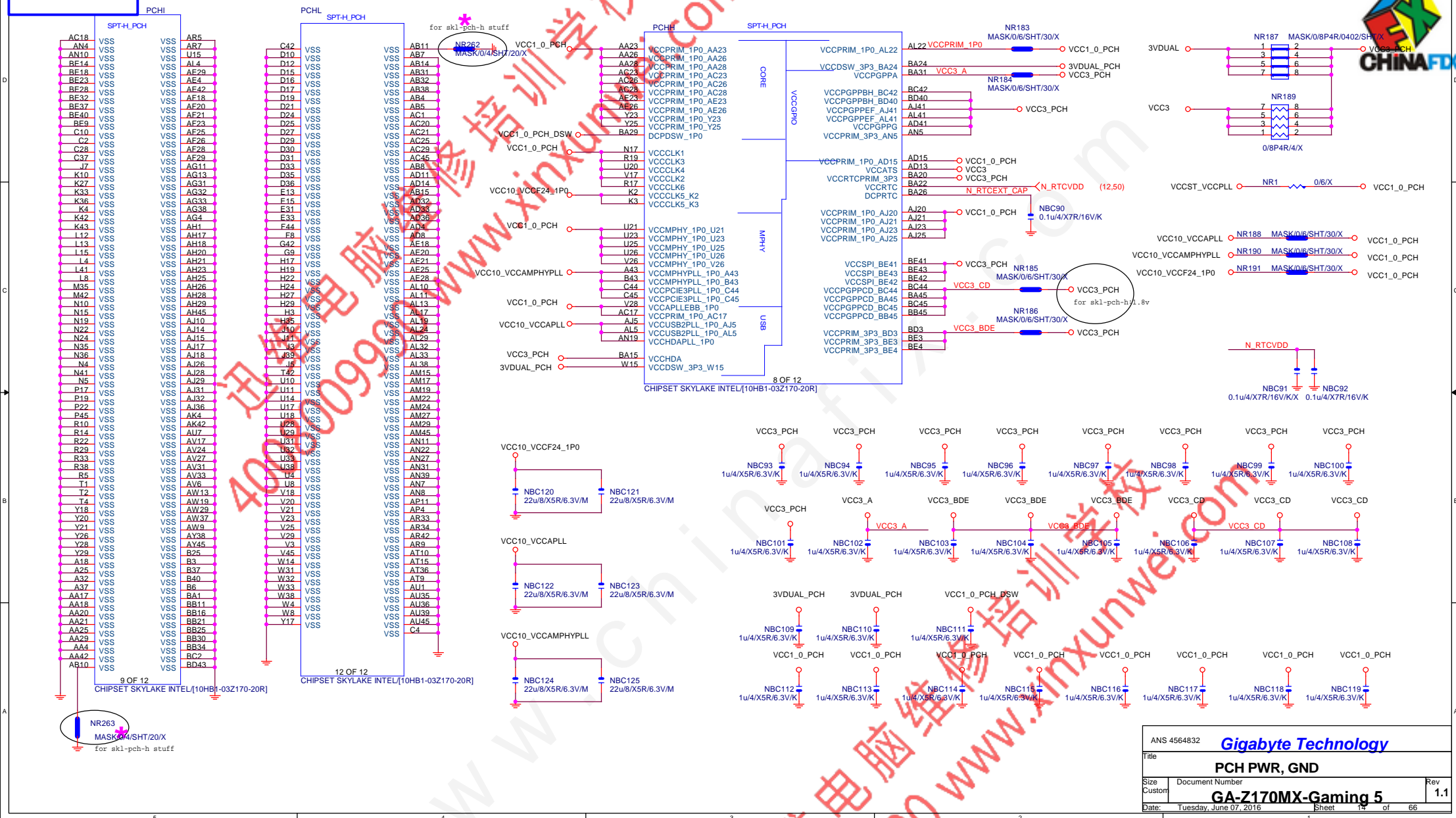
ANS 4564832		Gigabyte Technology	
Title		PCH DMI,USB,PCIE	
Size	Document Number	Rev	1.1
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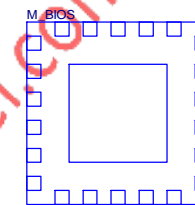
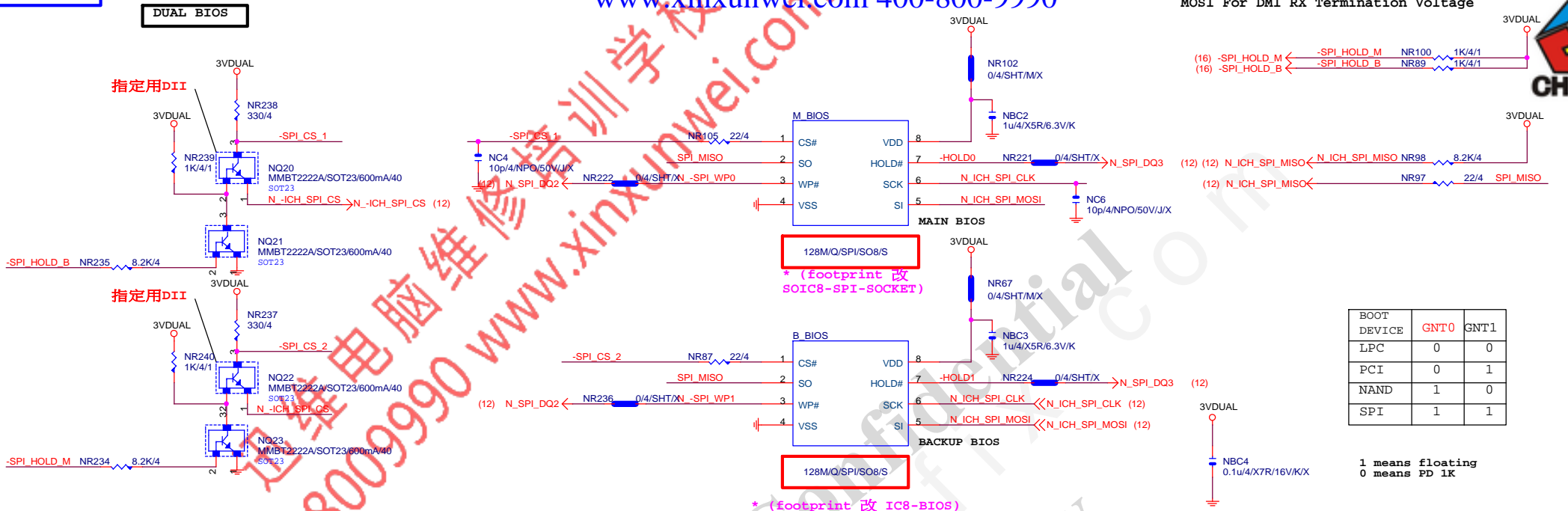
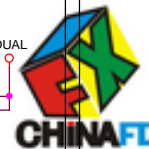




装甲HEATSINK 分成三大部份





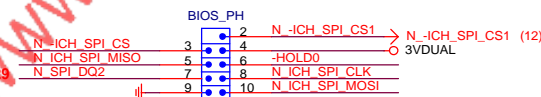


LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

* 試産先上, PVT 移除

BIOS_PH

★Update 2015-01-29



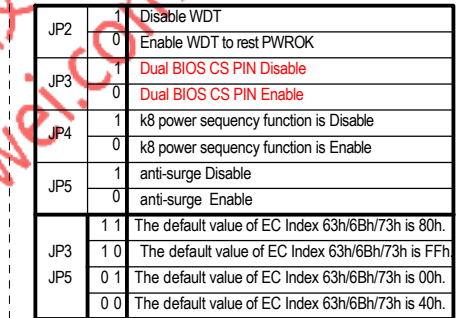
MASK/PH/2*5K10/BK/2.54/VA/D/X

Footprint the same, confirmed by Graceing.

Use COM port pin header part.

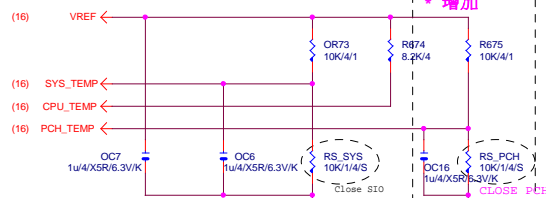
Gigabyte Technology

Title	BIOS		
Size Custom	Document Number	GA-Z170MX-Gaming 5	
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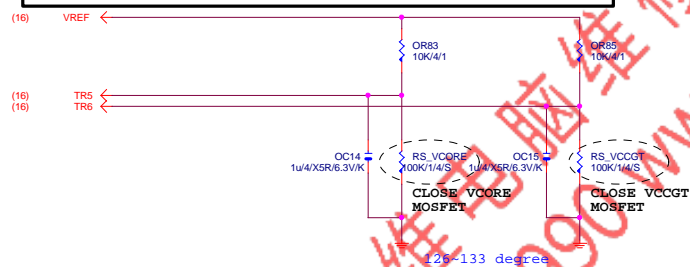
<h1>Gigabyte Technology</h1>			
Title			
ITE 8620 LPC IO			
Size	Document Number		Rev
Custom	GA-Z170MX-Gaming 5		1.1
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TEMP H/W MONITOR

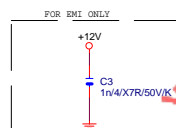
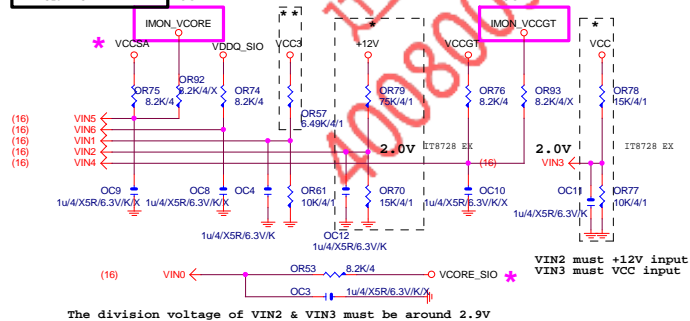


RS_VCORE、RS_VCCGT、CLOSE CPU_VCORE & VCCGT MOSFET

-PROCHOT: 有mos meartsink不用prochot function



VOLTAGE-- H/W MONITOR

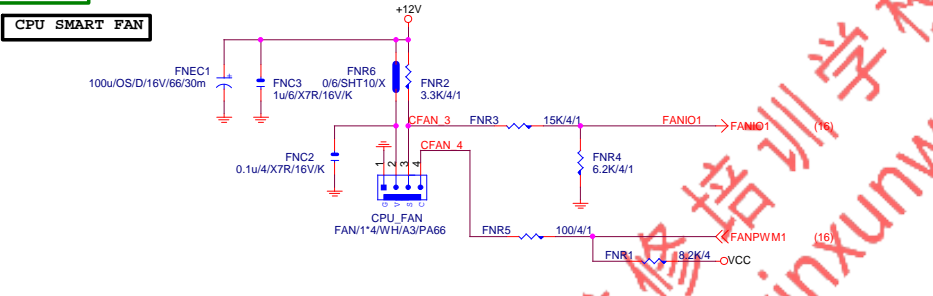


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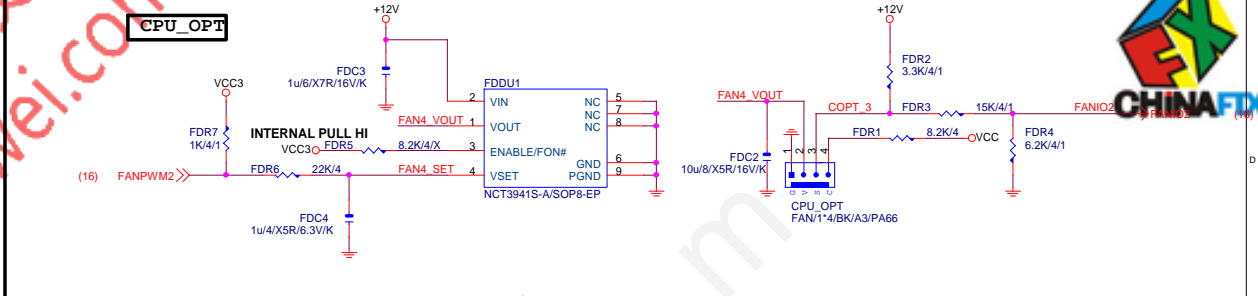
Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
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CPU SMART FAN

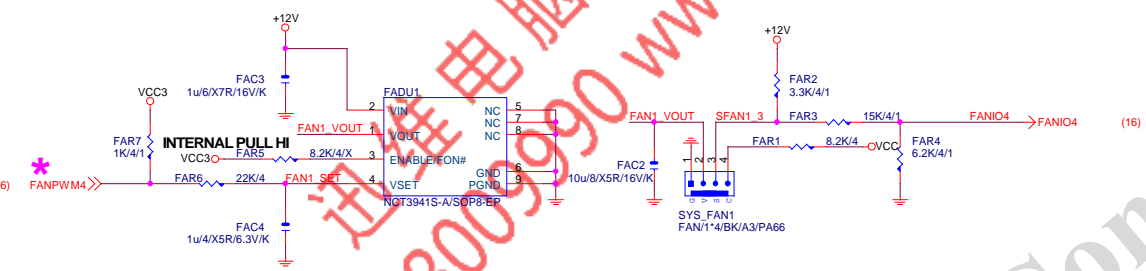


CPU_OPT

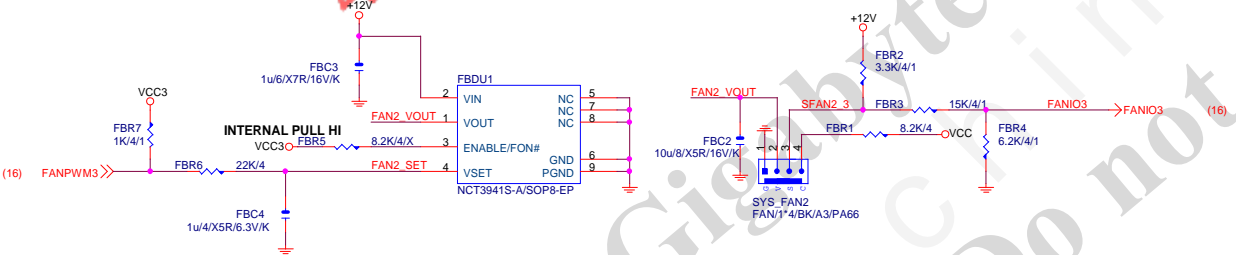


SYSTEM FAN1

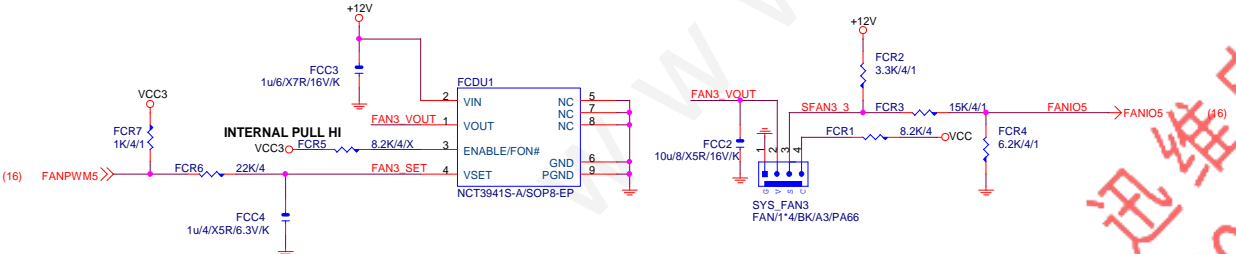
Linear SYS_FAN
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2



SYSTEM FAN2

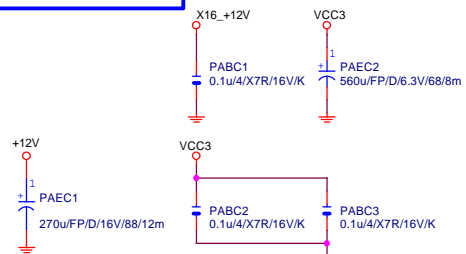


Rev 0.3

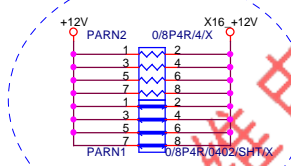
PCIEX16 CAP

PCIEX16 SLOT

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PCIEX16 PROTECT SHT

+12 protect
short-wire test

PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP SW TXN15 C

PCI-E REV:1.1--> 2.5GHZ

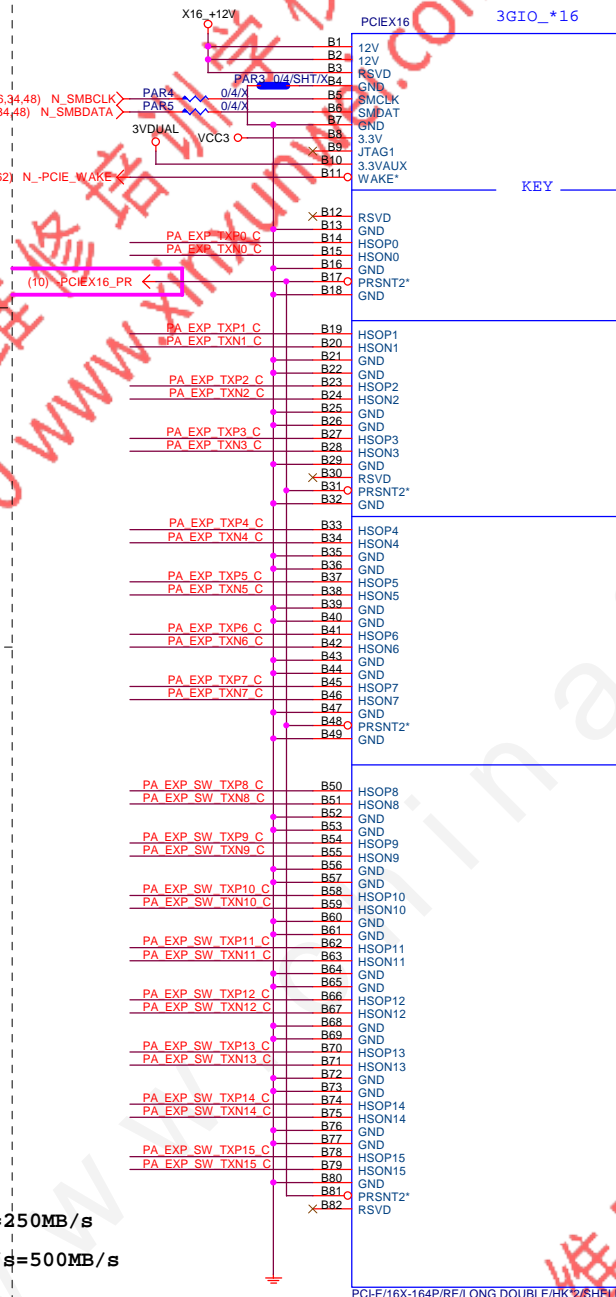
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

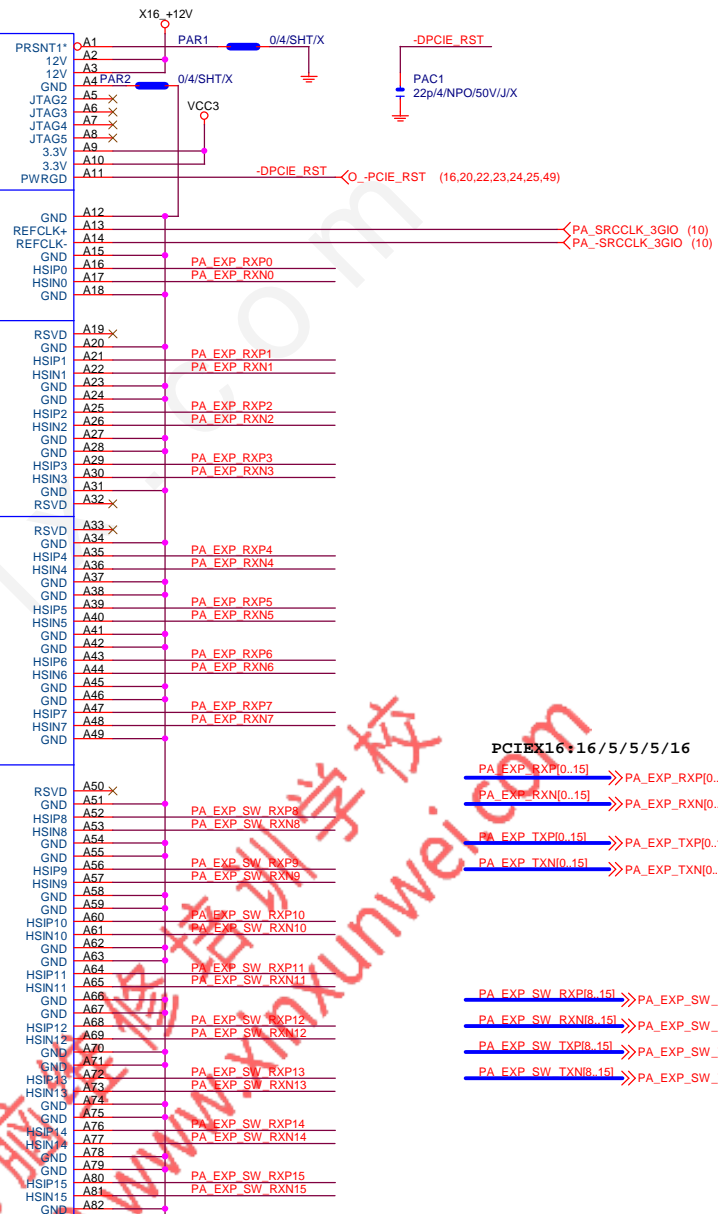
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ



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



PCIEX16*16/5/5/5/16

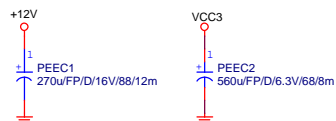
PA EXP RXP[0..15]	>>>PA_EXP_RXP[0..15] (4,21)
PA EXP RXN[0..15]	>>>PA_EXP_RXN[0..15] (4,21)
PA EXP TXP[0..15]	>>>PA_EXP_TXP[0..15] (4,21)
PA EXP TXN[0..15]	>>>PA_EXP_TXN[0..15] (4,21)
PA EXP SW RXP[8..15]	>>>PA_EXP_SW_RXP[8..15] (21)
PA EXP SW RXN[8..15]	>>>PA_EXP_SW_RXN[8..15] (21)
PA EXP SW TXP[8..15]	>>>PA_EXP_SW_TXP[8..15] (21)
PA EXP SW TXN[8..15]	>>>PA_EXP_SW_TXN[8..15] (21)

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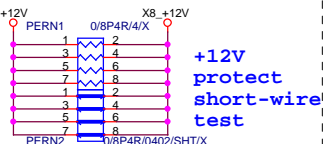
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Size	Document Number	GA-Z170MX-Gaming 5	Rev
Custom			1.1
Date:	Tuesday, June 07, 2016	Sheet	19 of 66

Rev 0.3

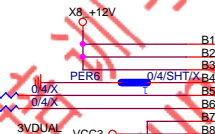
www.xinxunwei.com 400-800-9990



PCIEX8 PROTECT SHT

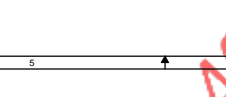
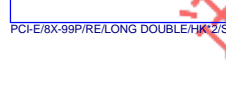
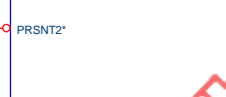
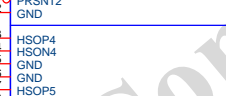
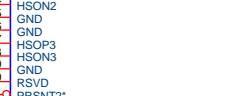
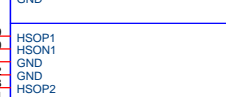
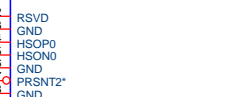


(12,16,19,22,23,49,62) N.-PCIEX WAKE



3GIO_*8

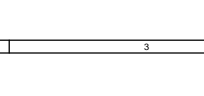
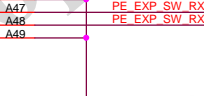
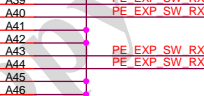
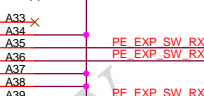
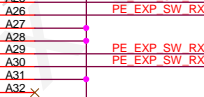
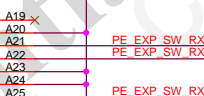
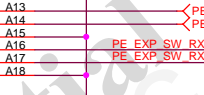
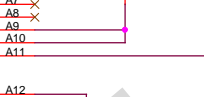
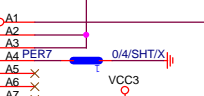
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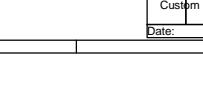
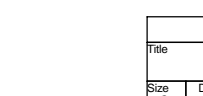
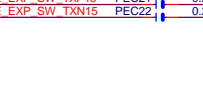
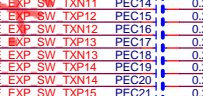
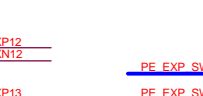
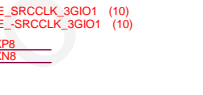
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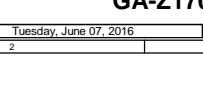
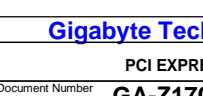
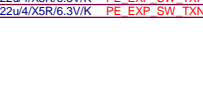
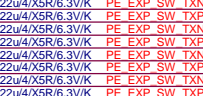
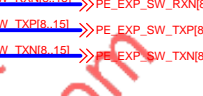
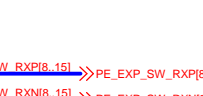
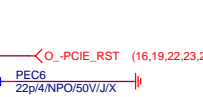
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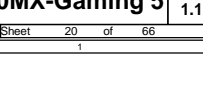
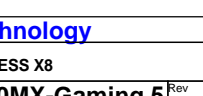
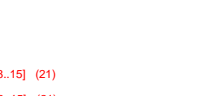
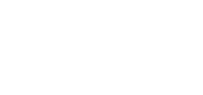
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3GIO_*8



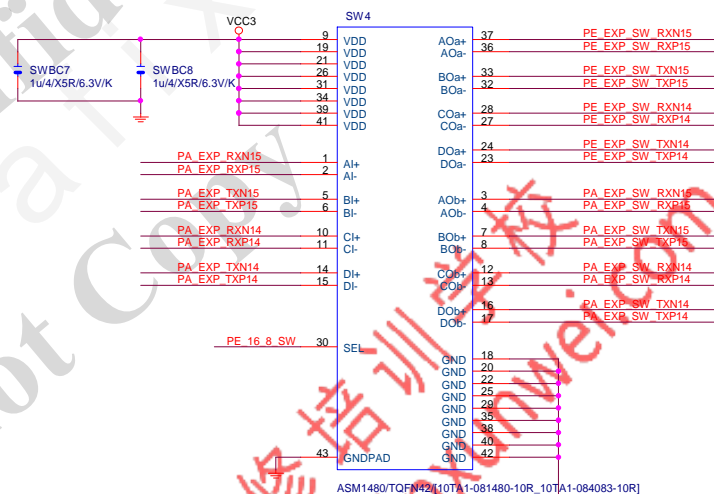
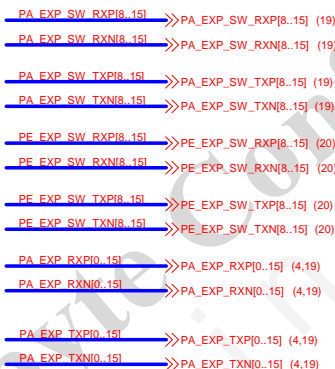
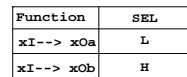
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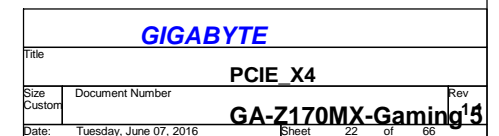
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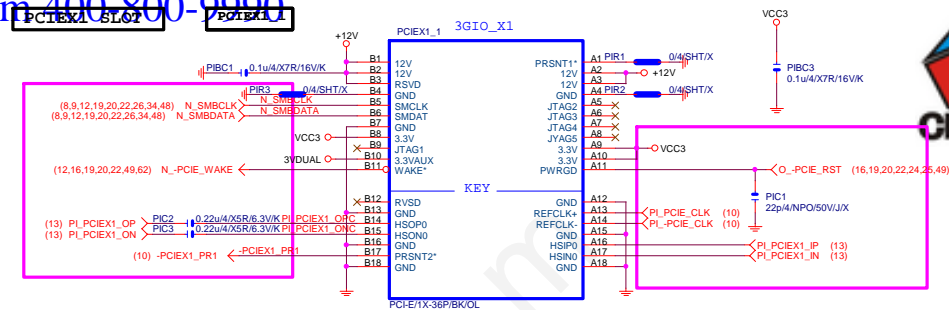
Gigabyte Technology			
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PCI EXPRESS X8			
Size	Document Number	Rev	
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VCC3



Size Custom	Document Number GA-Z170MX-Gaming 5	Rev 1.1
Date: Tuesday, June 07, 2016	Sheet 21 of 66	



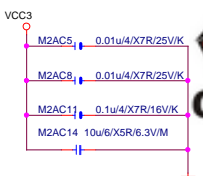


PCIEX4/X1 SWITCH

Gigabyte Technology

Title			PCIE X1 1,2
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M.2 Lane2 from PCH port15



KEY M	KEY M
(32KHz)SUSCLK	68
PEDET	70
GND	72
GND	74
GND	

2/67/BK/RA/S/H4.2mm/M KEY|10NR5-130067-31R




80A



CR[12KS2-110202-01R]

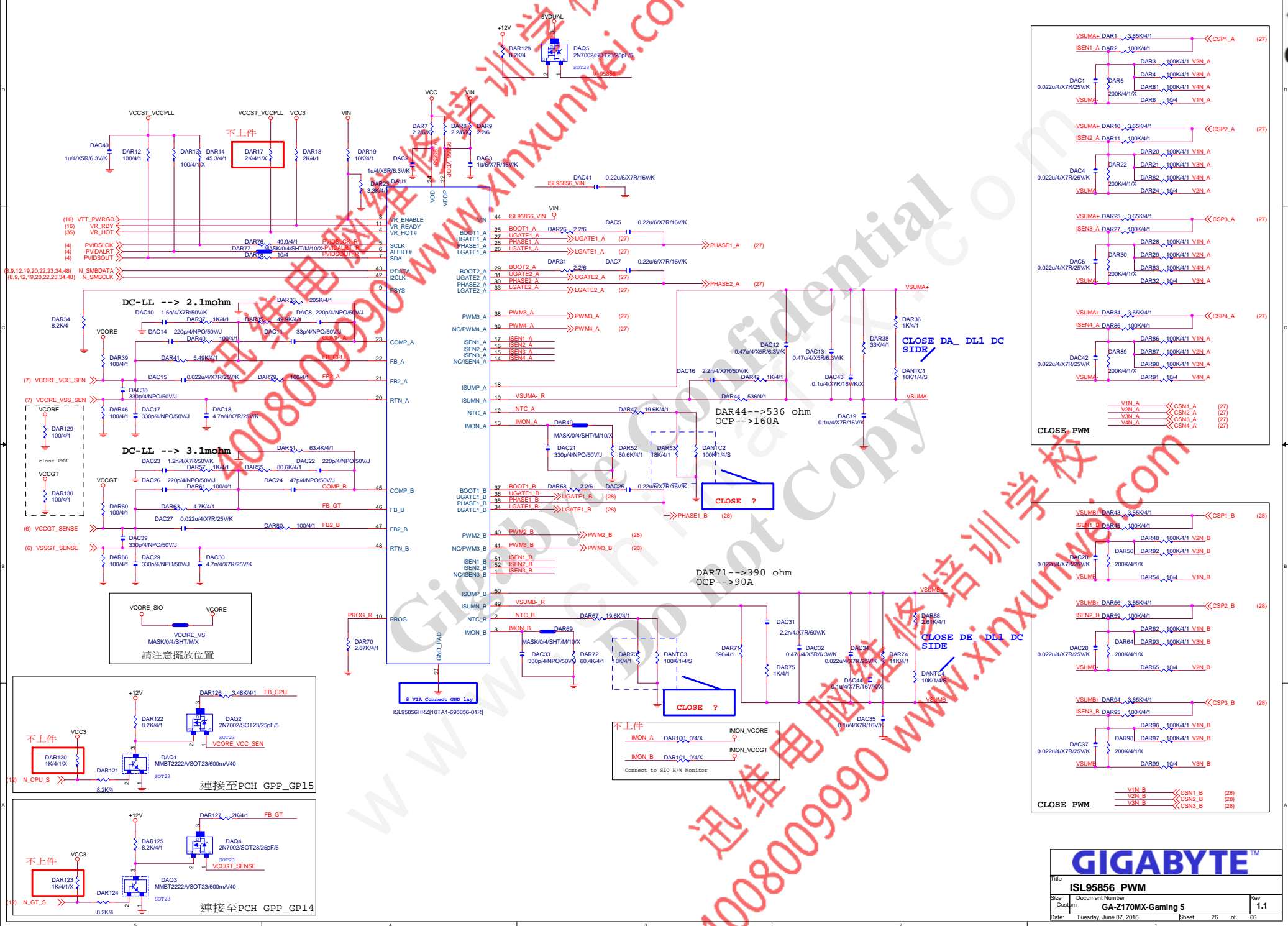
DIP螺絲

SMD 螺柱

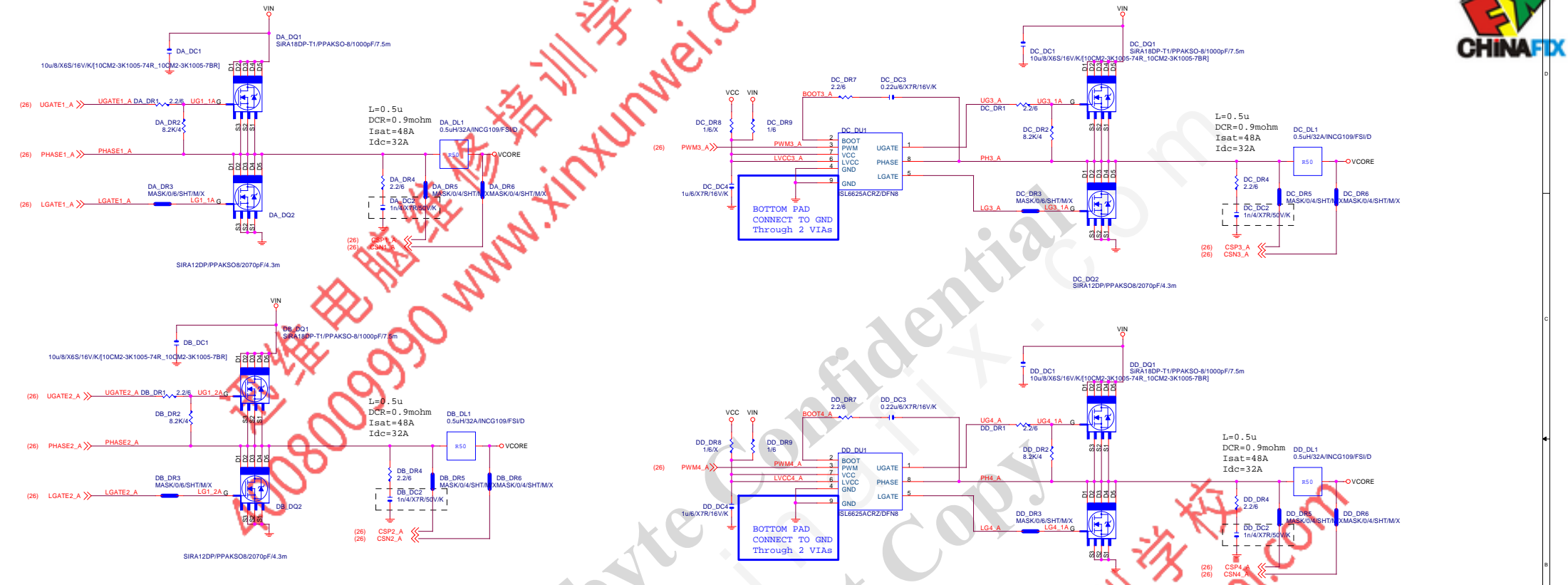
42A	60A	80A
		
CR[11KS2-040002-01R]	CR[11KS2-040002-01R]	CR[11KS2-040002-01R]

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	I015 (S0)	I016 (S1)	I017	I018	I019 (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	

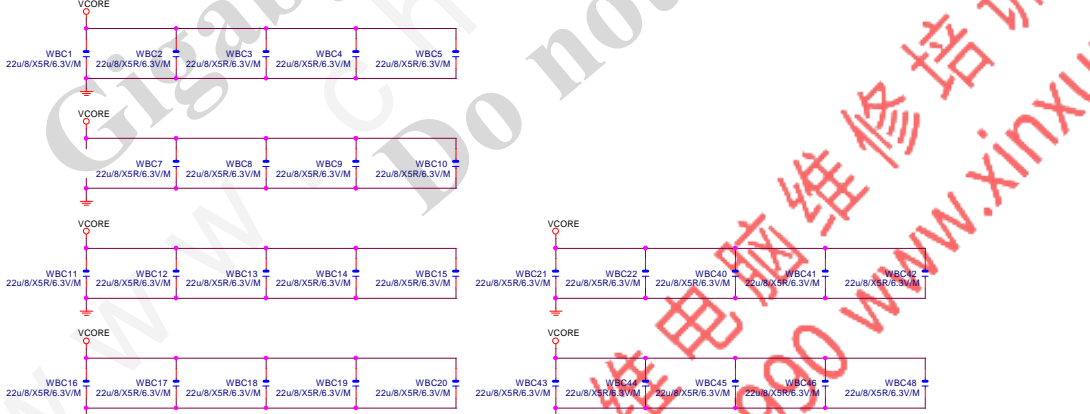
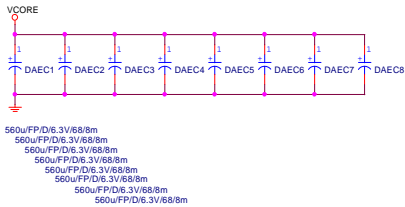




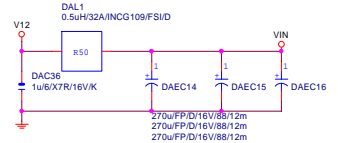
VCORE



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



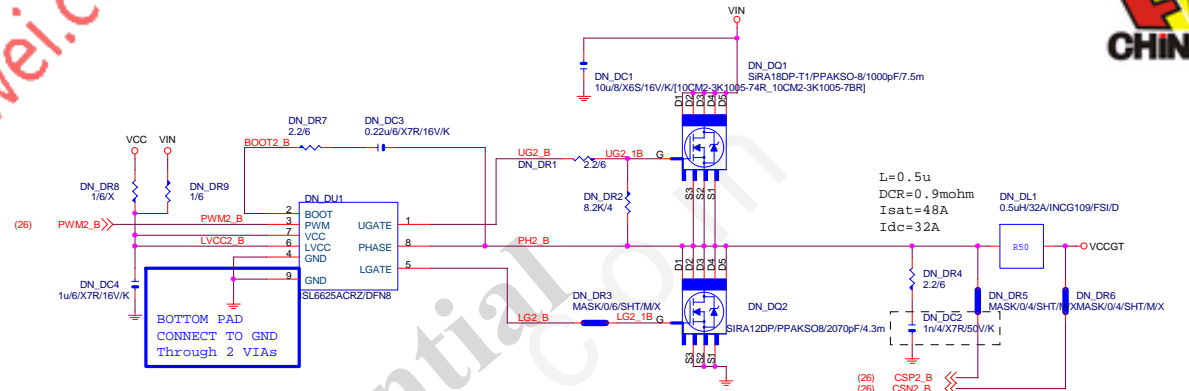
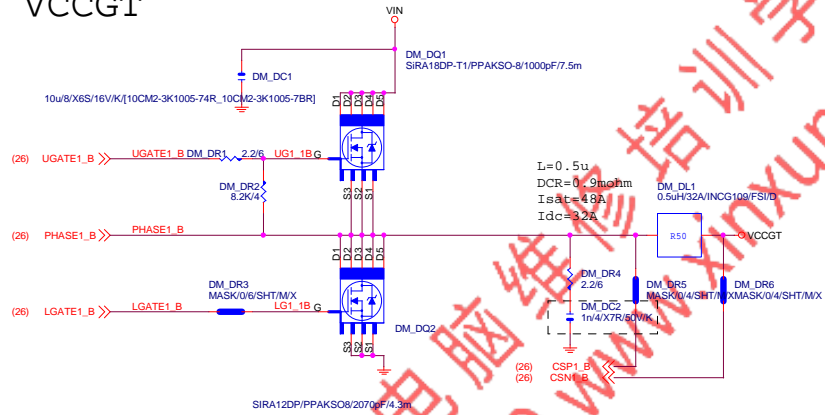
VIN CAP 270u*3PCS



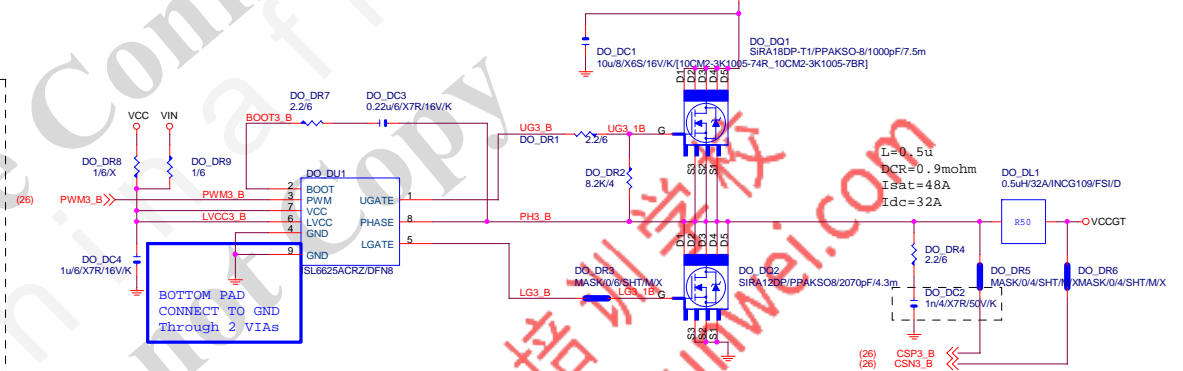
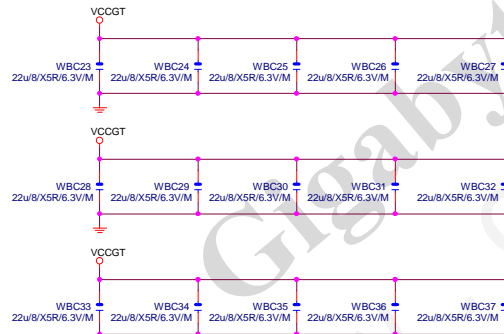
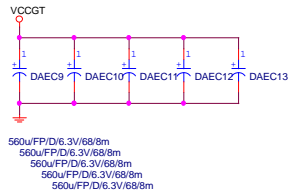
GIGABYTE™		
ISL9585E_MOS		
Title	Document Number	Rev
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Date: Tuesday, June 07, 2015	Sheet 27 of 66	



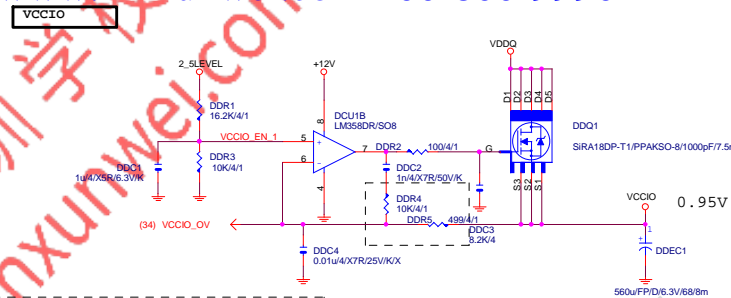
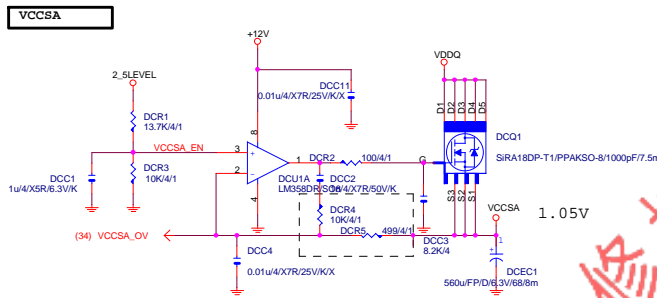
VCCGT



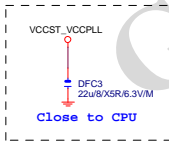
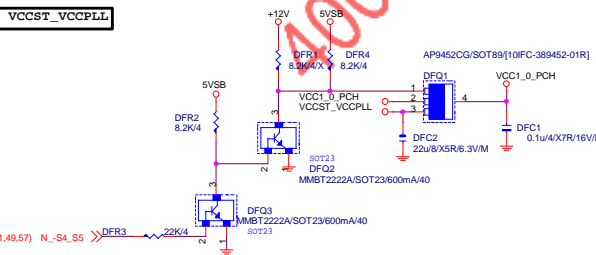
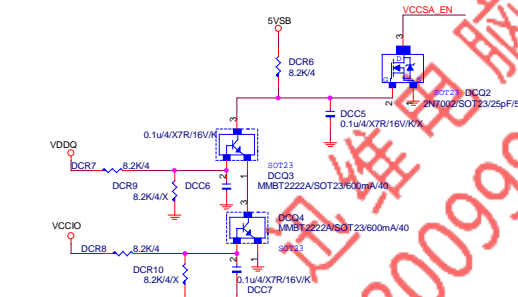
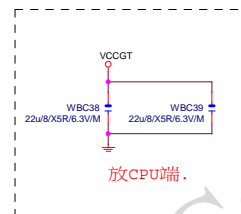
VCCGT CAP

560u*5PCS
22u*15PCS

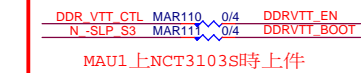
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ISL95856 MOS			
Size	Document Number	Rev	
Custom	GA-Z170MX-Gaming 5	1.1	
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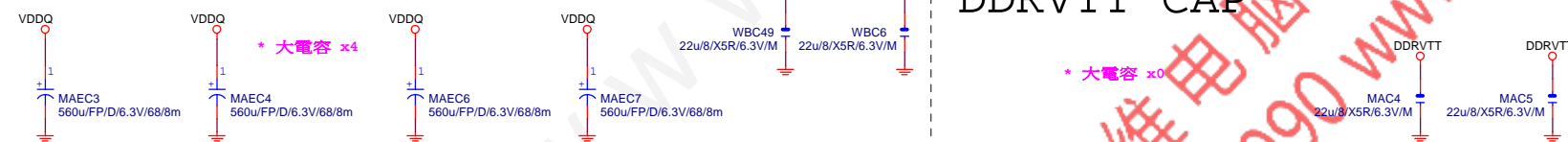
VCCIO_EN 1 → VCCIO_EN (16)
MASK004/SHT720X
Connect to IT8620



DDR VIN CAP
560--*2PCS

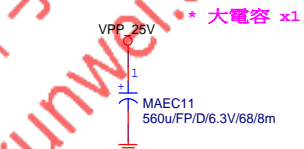
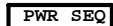



DDRVTT CAP

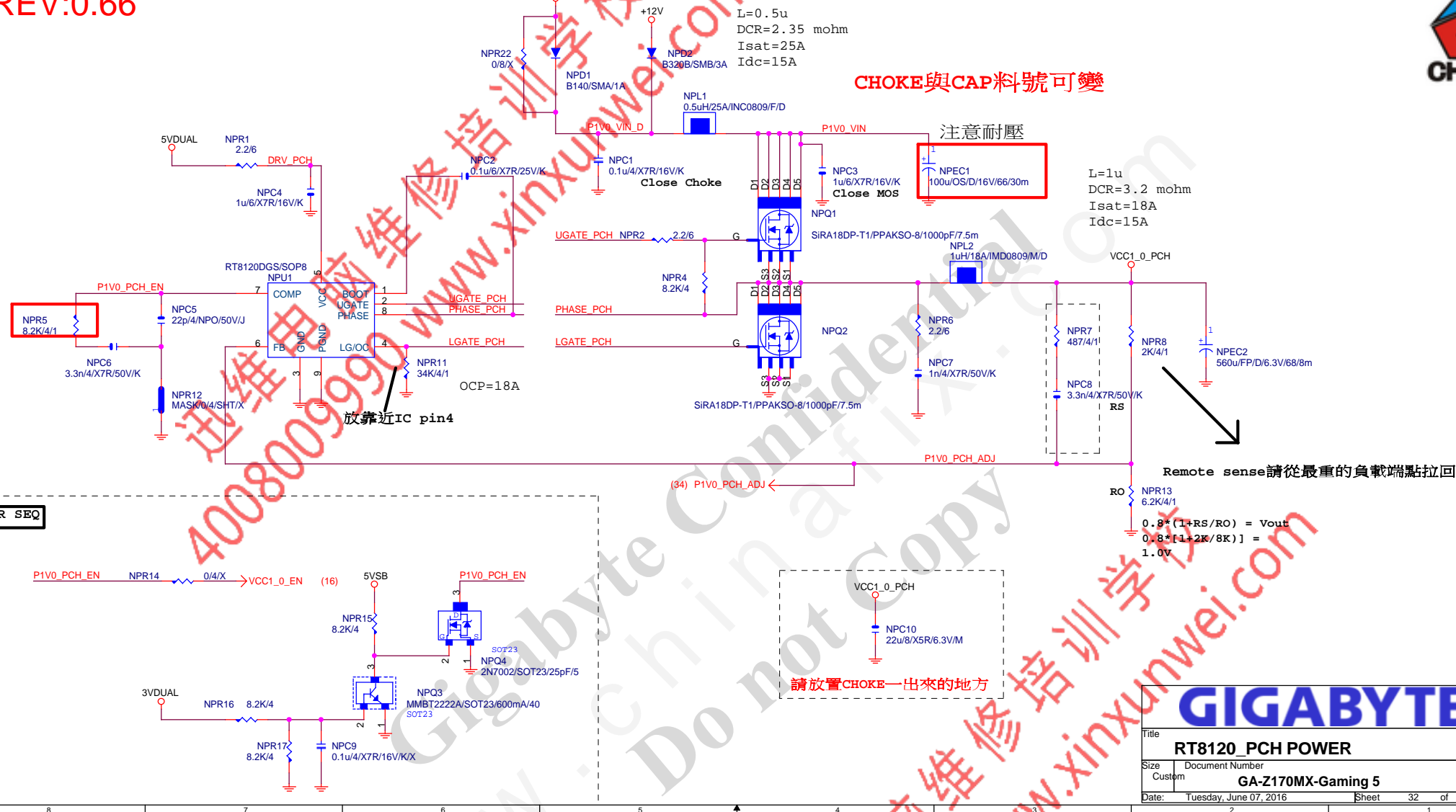


			
Title			
RT8120_DDR4 POWER			
Size	Document Number		Rev
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CHOKES與CAP料號可變



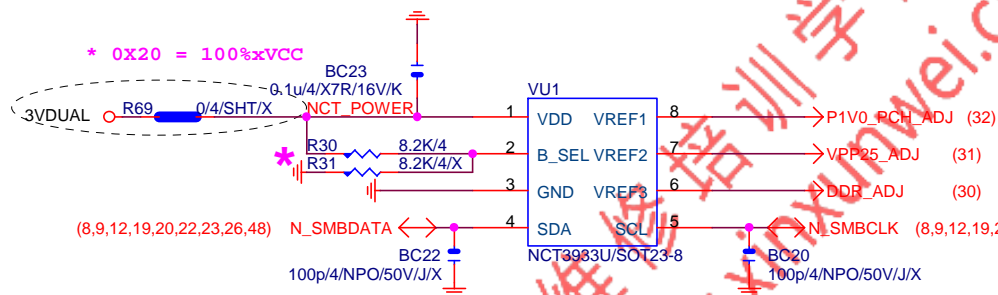
			
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Size Custom	Document Number GA-Z170MX-Gaming 5		Rev 1.1
Date: Tuesday, June 07, 2016	Sheet 31	of 66	



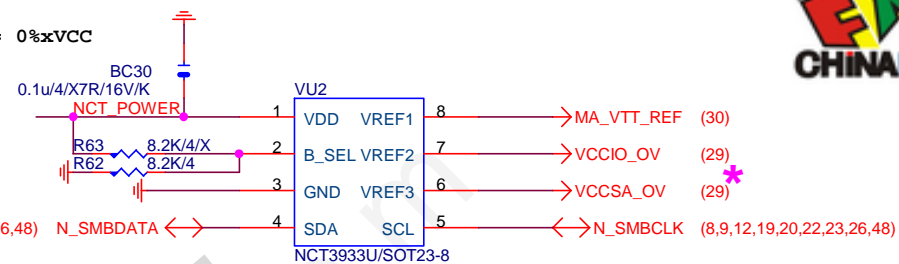
請放置CHOKE一出來的地方



OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

* 删除 OVU3

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

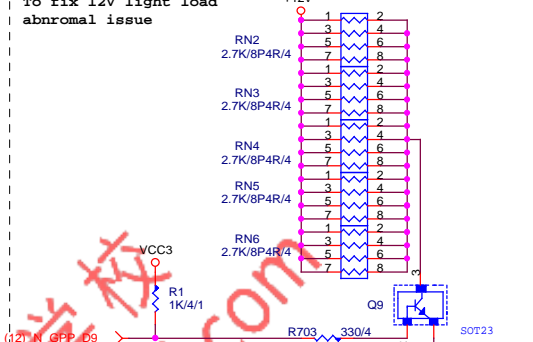
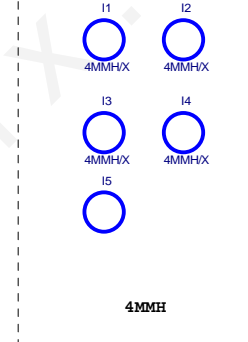
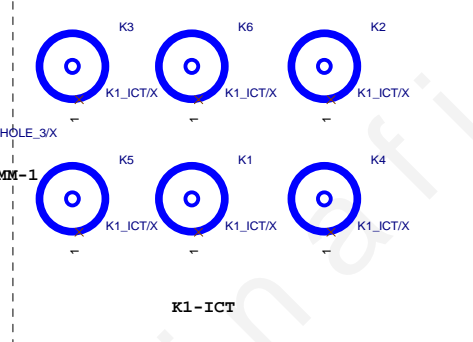
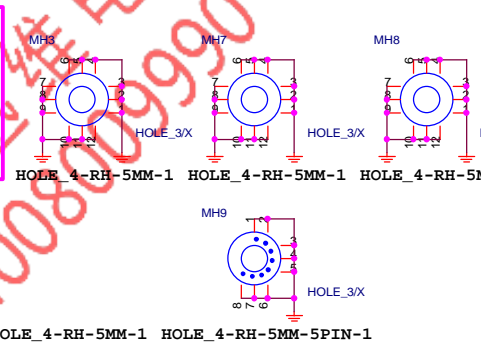
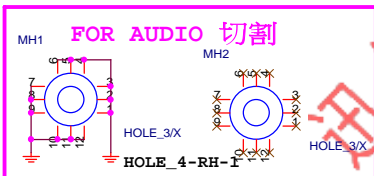
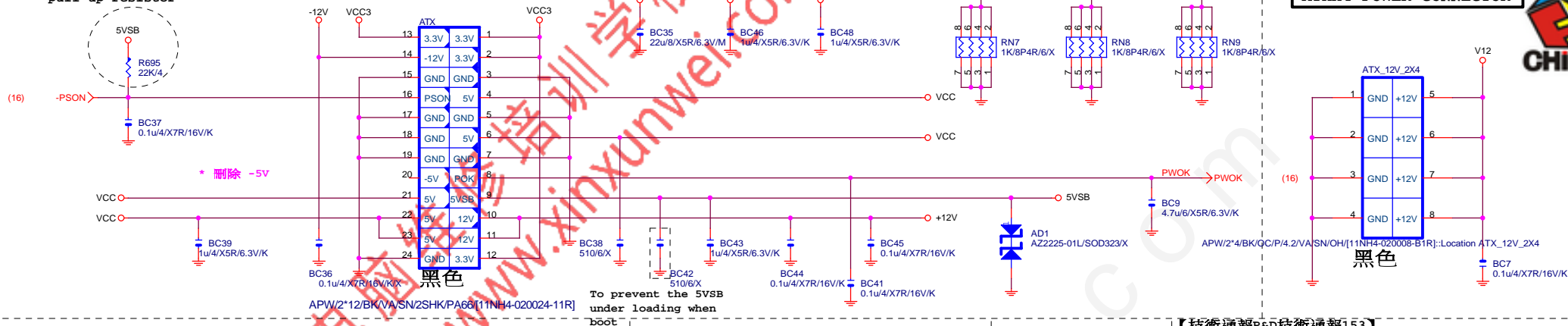
Gigabyte Technology		
Title		
CPU CORE VR-2		
Size	Document Number	Rev
Custom		5
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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

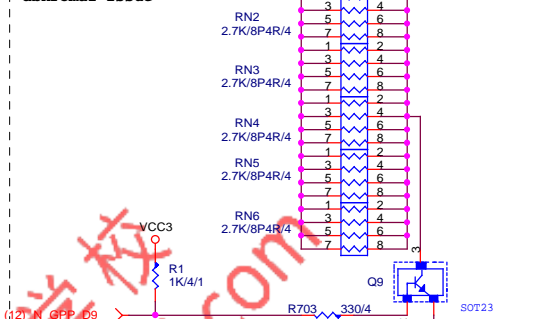
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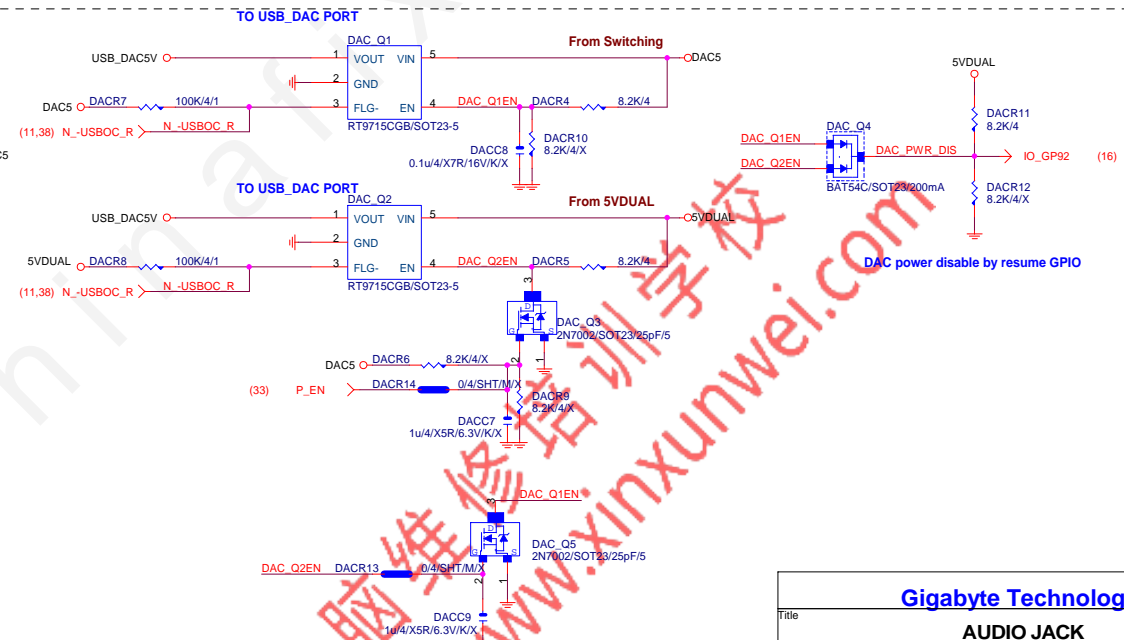
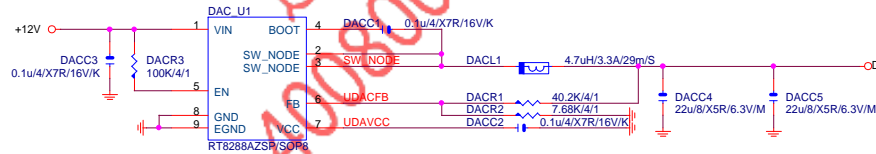
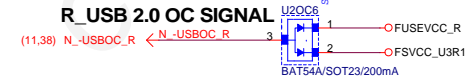
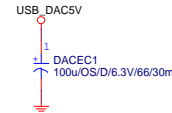
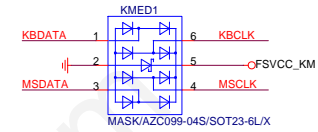
ATXX4 POWER CONNECTOR



【技術通報R&D技術通報153】

To fix 12V light load abnormal issue





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<h2 style="text-align: center;">AUDIO JACK</h2>			
Size Custom	Document Number	<h1 style="text-align: center;">GA-Z170MX-Gaming</h1>	
Date: Tuesday, June 07, 2016		Sheet 36 of 66	Rev 9.1



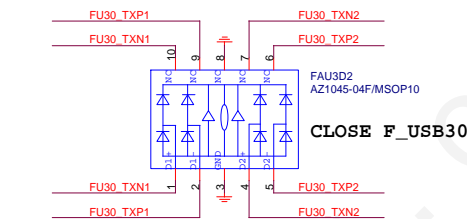
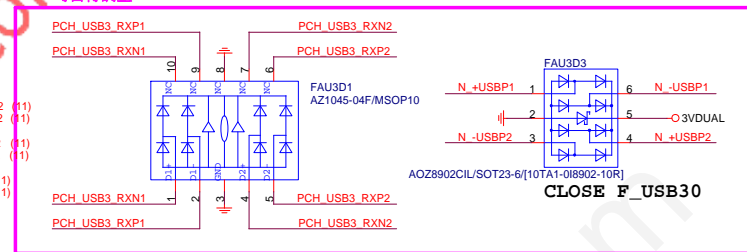
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Do not Copy

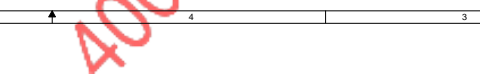
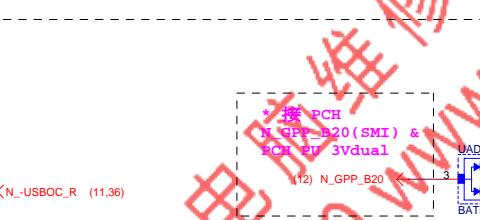
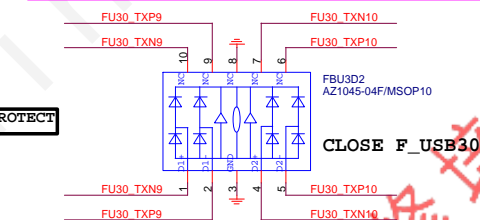
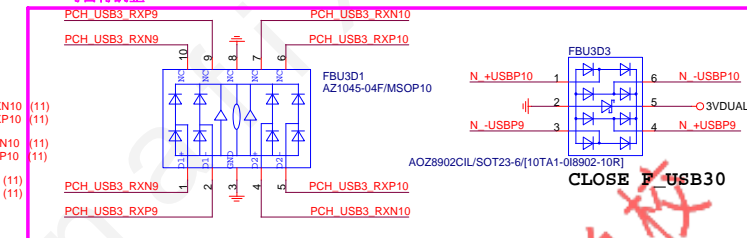
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Gigabyte Technology			
Title			
OC BUTTOM			
Size	Document Number		Rev
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		1	

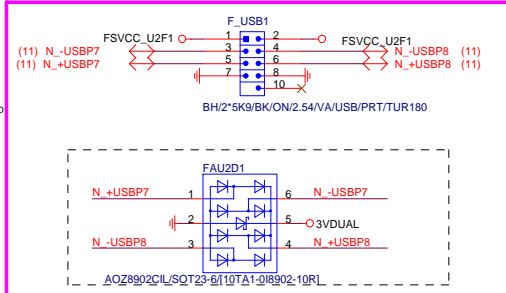
NET 可自行調整



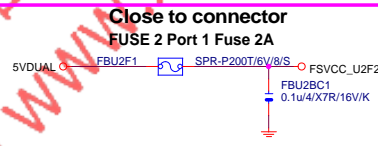
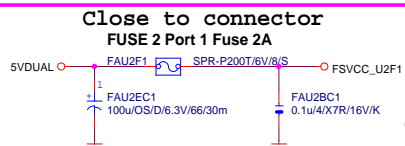
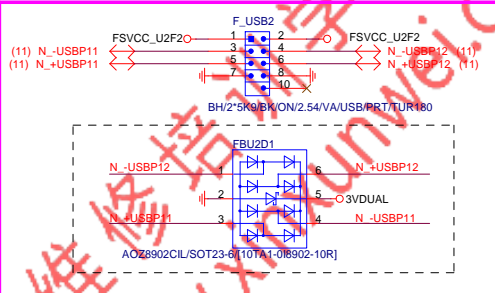
NET 可自行調整



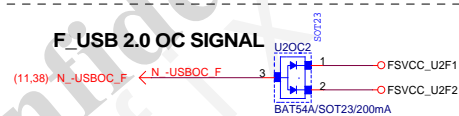
NET 可變



NET 可變



F_USB 2.0 OC SIGNAL

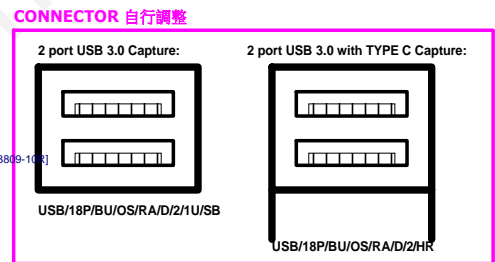
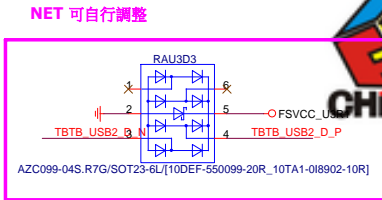
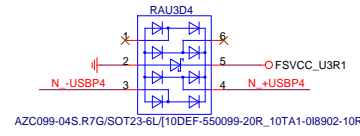
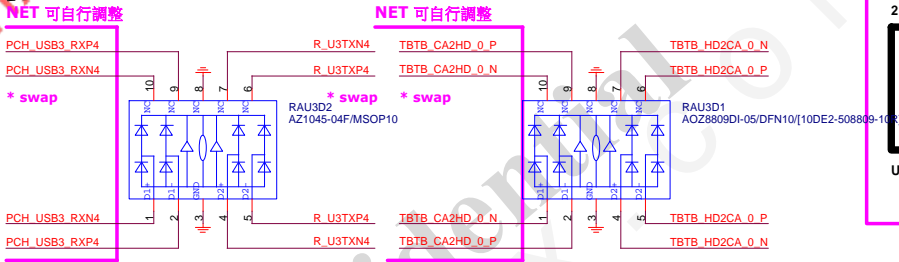
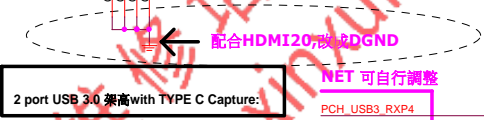
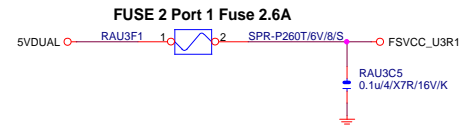
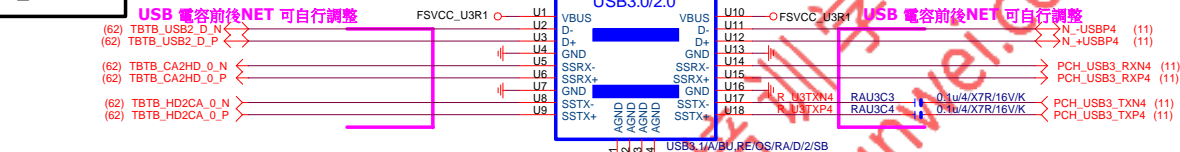


Gigabyte Technology

Title		USB2.0	
Size		Document Number	
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R_USB30

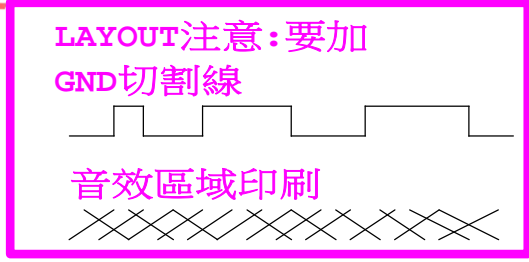
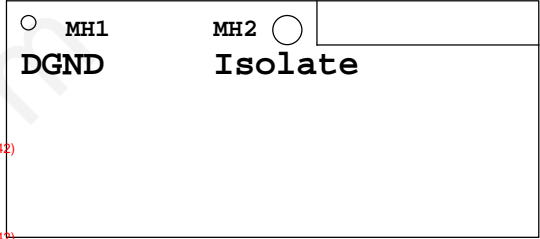
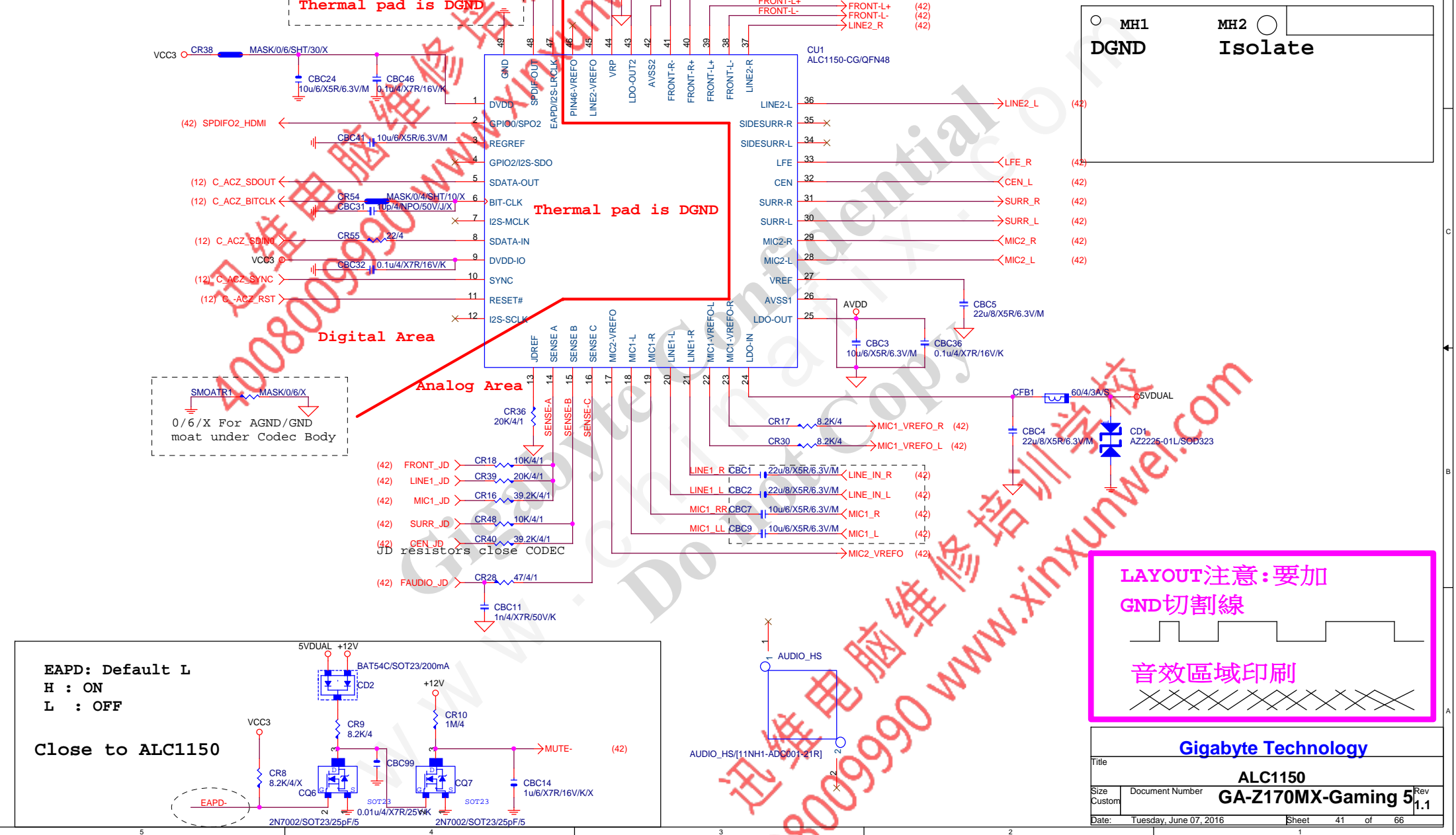


Gigabyte Technology			
Title			
KB_MS_USB3, R_USB30			
Size Custom	Document Number		Rev
GA-Z170MX-Gaming 5			1.1
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2		1	



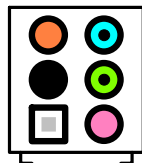
ALC1150 五孔+SPDIF
AUDIO JACK

- 1. MH1空間夠,下DGND
空間不夠,才改為Isolate
- 2. MH2一律改為Isolate
- 3. Codec下方,第二層必須參考GND

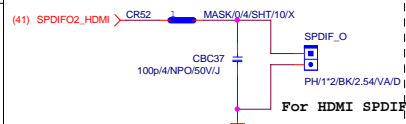


Gigabyte Technology			
Title			
ALC1150			
Size			
Document Number			
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AZALIA JACK

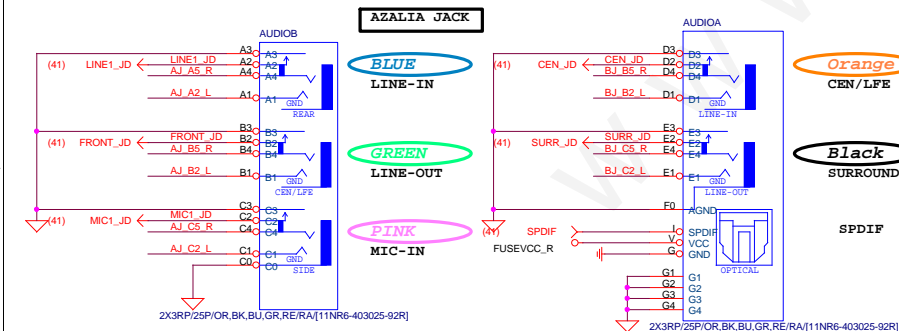
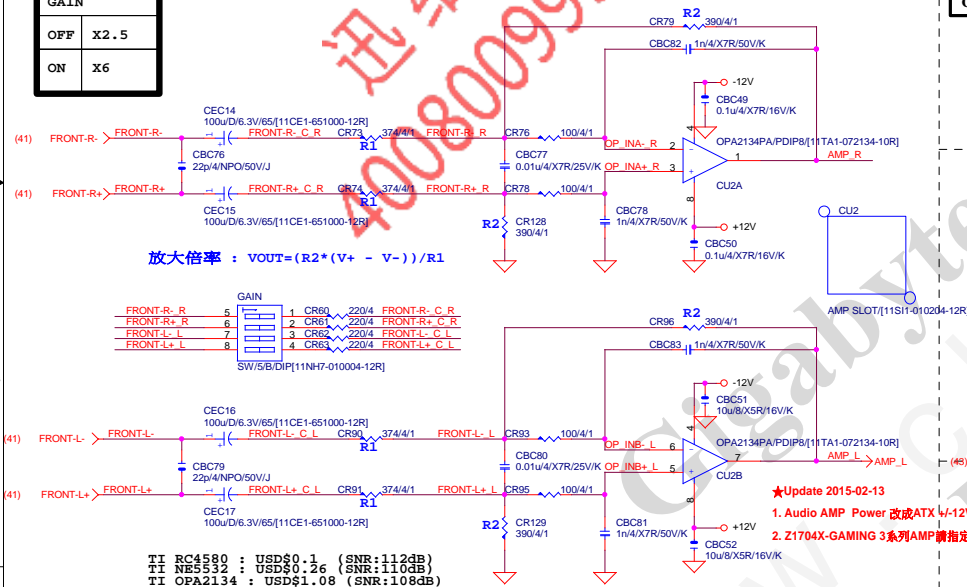


SPDIF_OUT



GAIN	
OFF	X2.5
ON	X6

Differential to Single-End AMPLIFIED



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➔ Audio jack -> USB(各打2 VIA hole)

➔ Under Audio jack(各打2 VIA hole)

★Update 2015-05-28

0 ohm change to short pad

→ Near F AUDIO(各打2 VIA hole)

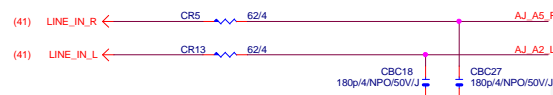
➔ Near Codec (各打2 VIA hole)

➔ Near R AUDIO(各打2 VIA hole)

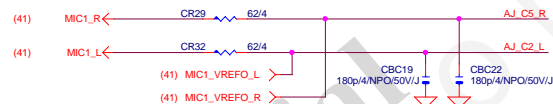
➔ Near AMP (各打2 VIA hole)

*量產前, 0ohm改short pad

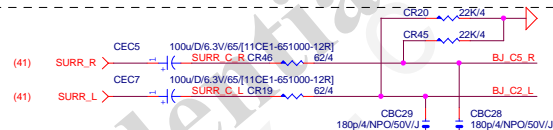
LINE-IN



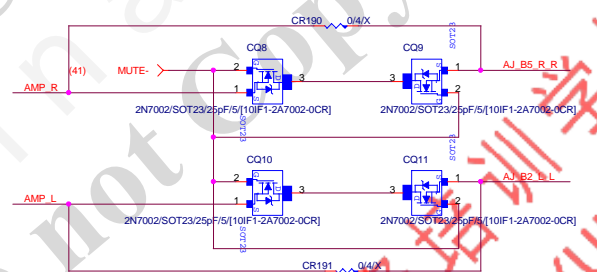
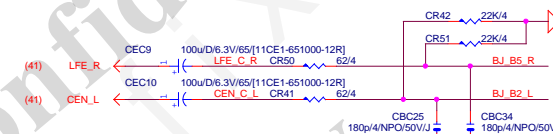
MIC-IN



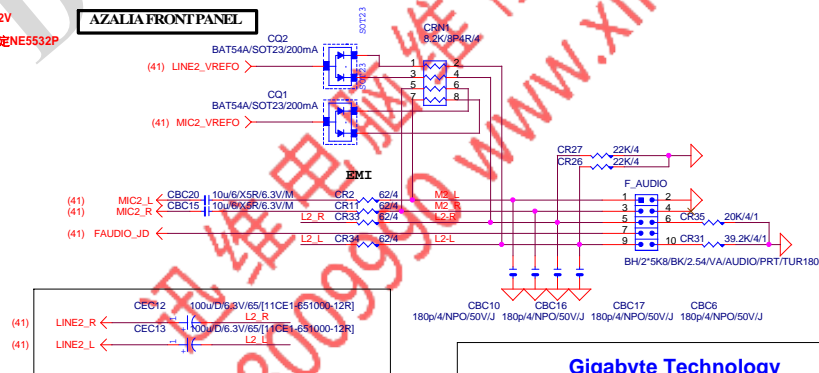
SURROUND



CEN/LFE



AZALIA FRONT PANEL



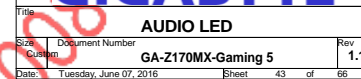
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AUDIO JACK

GA-Z170MX-Gaming 5

5 Re

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* Rev0.11

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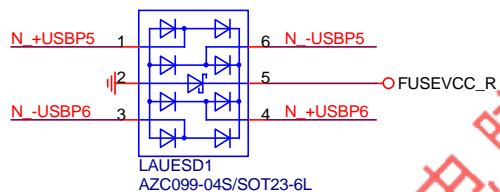
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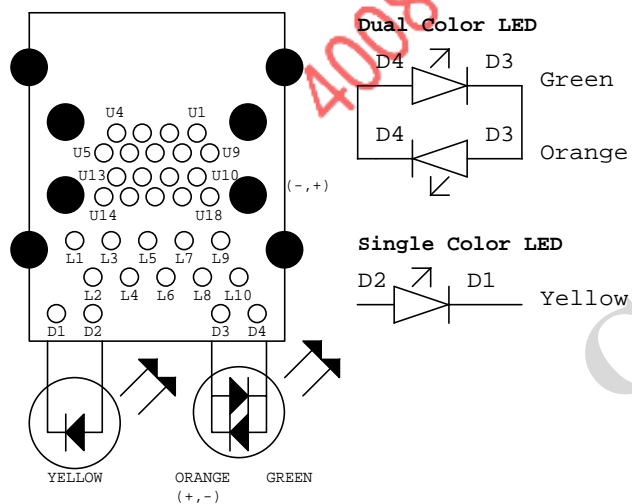
GIGABYTE™		
Title		
EMI/ESD		
Size	Document Number	Rev
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note:可變更USB NAME

可變



USB30_LAN LAYOUT示意圖



LAN COVER

FOOT PRINT:LAN COVER

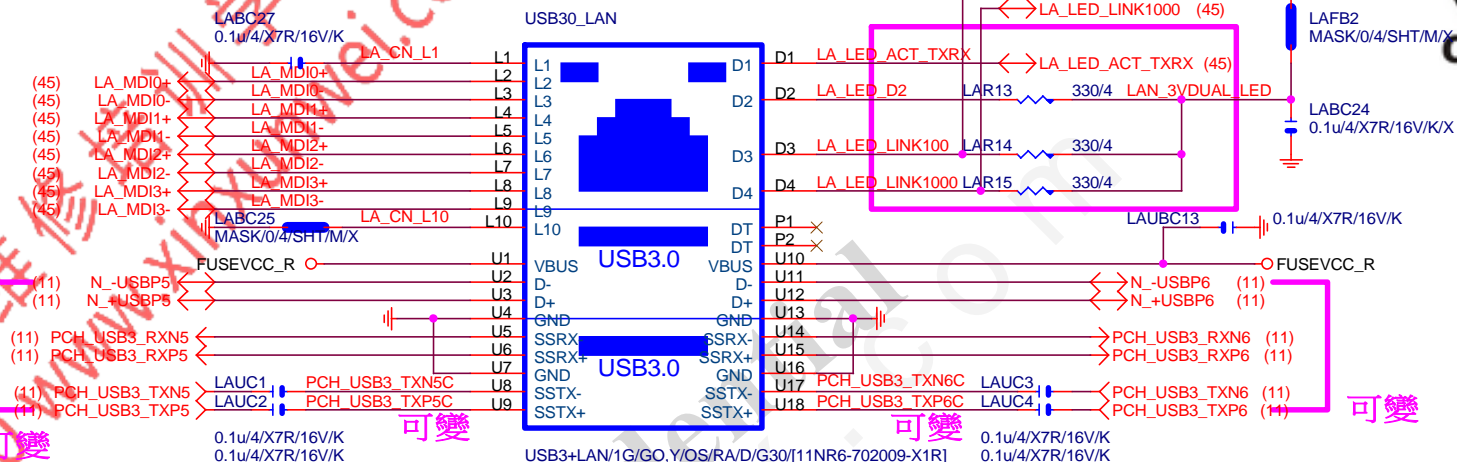
可變 [視SPEC需求]

LAN
COVER

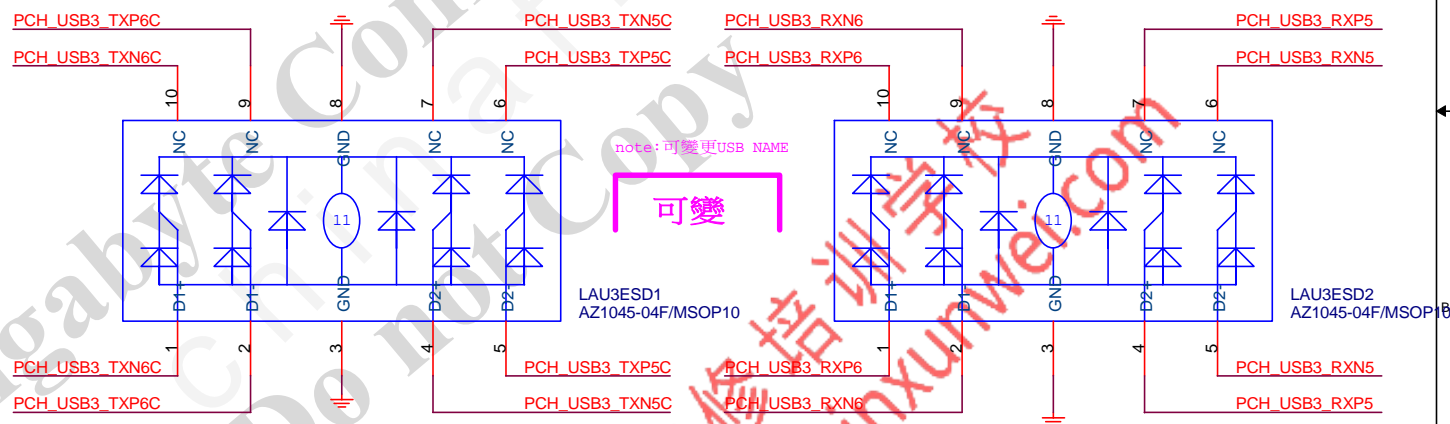
LAN_HS/[11NH1-LNC001-21R]

USB_LAN CONNECTOR

[E2201]



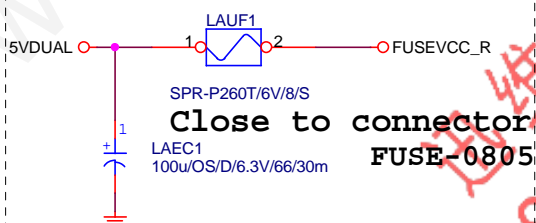
LA MDI-->100歐姆:[20/4/8/4/20]



USB POWER

note:可變更FUSE

可變



EMI SHORT PAD

PS:視EMI需求



LAN POWER

可變



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LAN CONNECTOR-E2201

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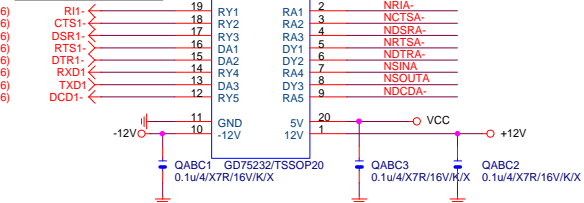
GIGABYTE™			
Title			
Etron EJ179V			
Size	Document Number		Rev
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IDT6V41530

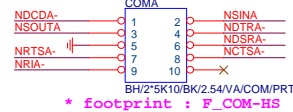




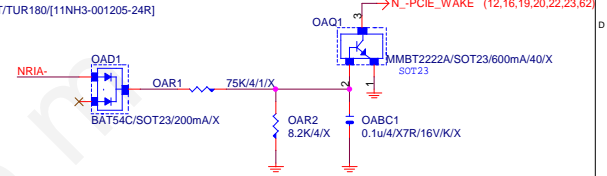
COM PORT



COMA

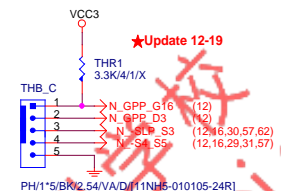


* 接 N_-PCIE_WAKE (12,16,19,20,22,23,62)

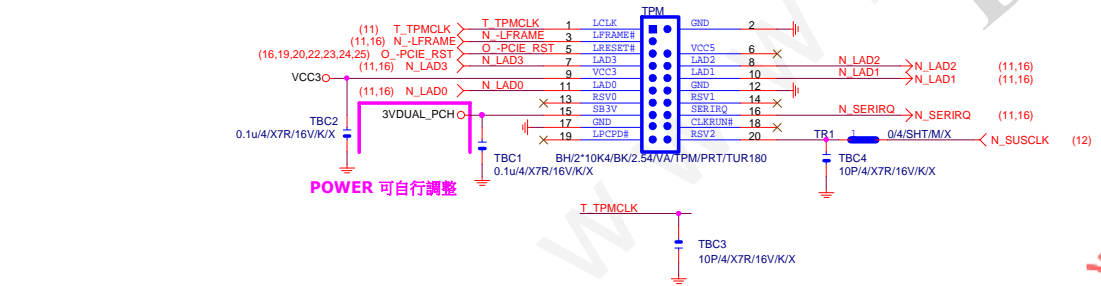


80 PORT

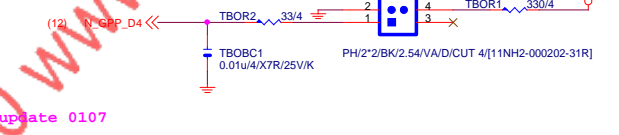
Thunderbolt



TPM CONNECT



PCH:GPP_D4



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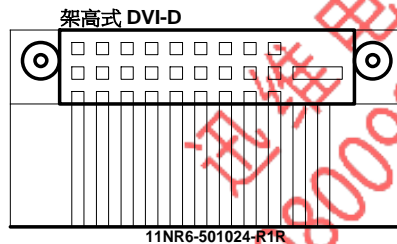
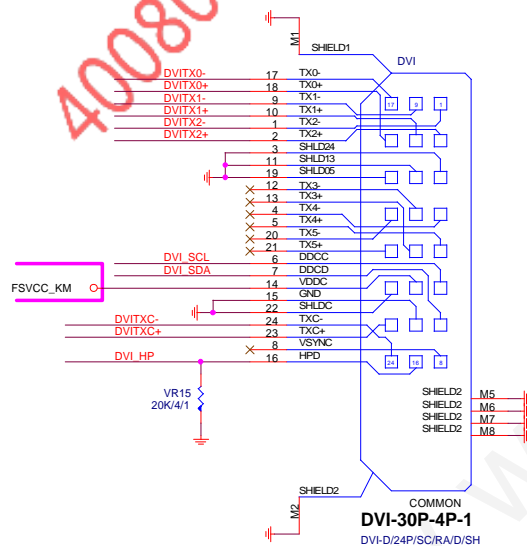
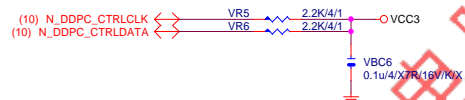
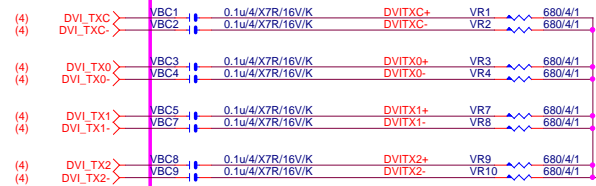
Title		FP,F_USB,USB PWR,BZ	
Size		Document Number	
Date		GA-Z170MX-Gaming 5	
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Rev: 0.62

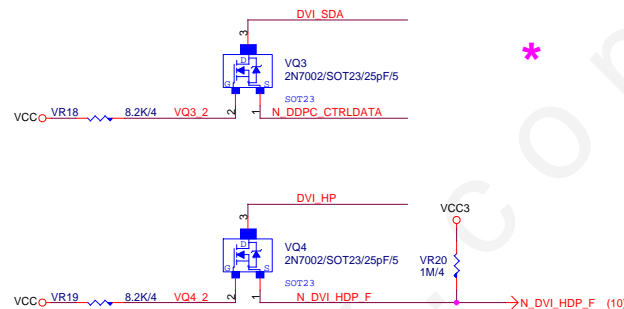
DVI CONN

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

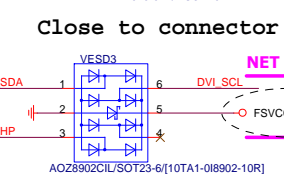
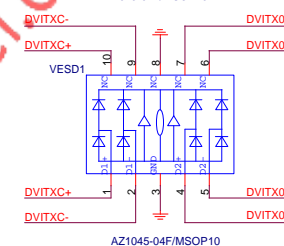
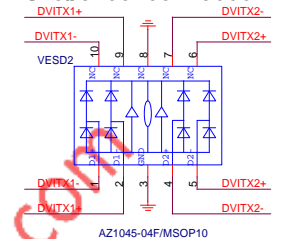
NET 可變



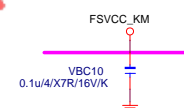
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Close to connector



NET 可變



Close to connector

NET 可變

Gigabyte Technology

Title		FP,F_USB,USB PWR,BZ	
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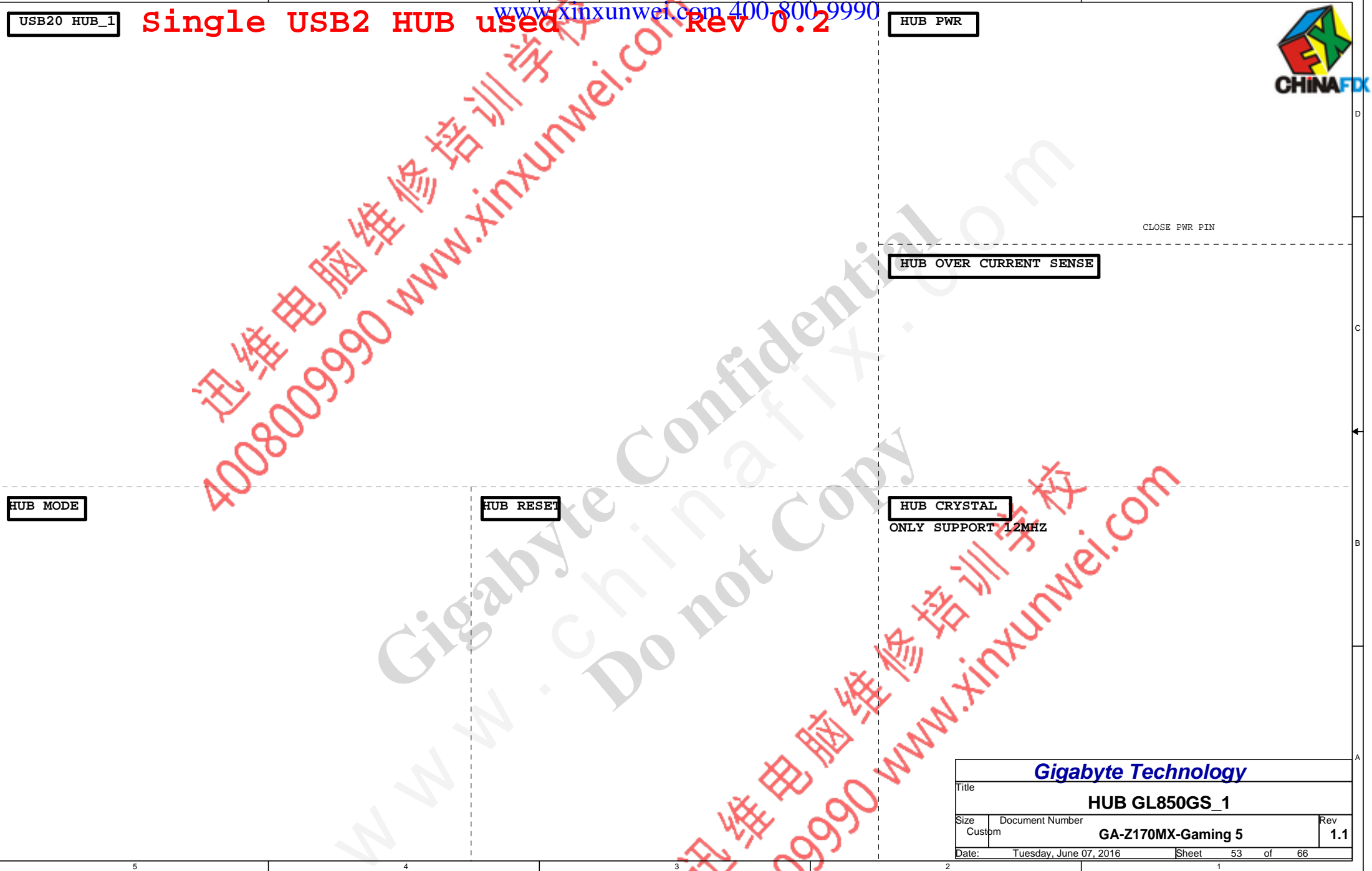


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HDMI20 MCDP2800-BA		
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HUB GL850GS_1		
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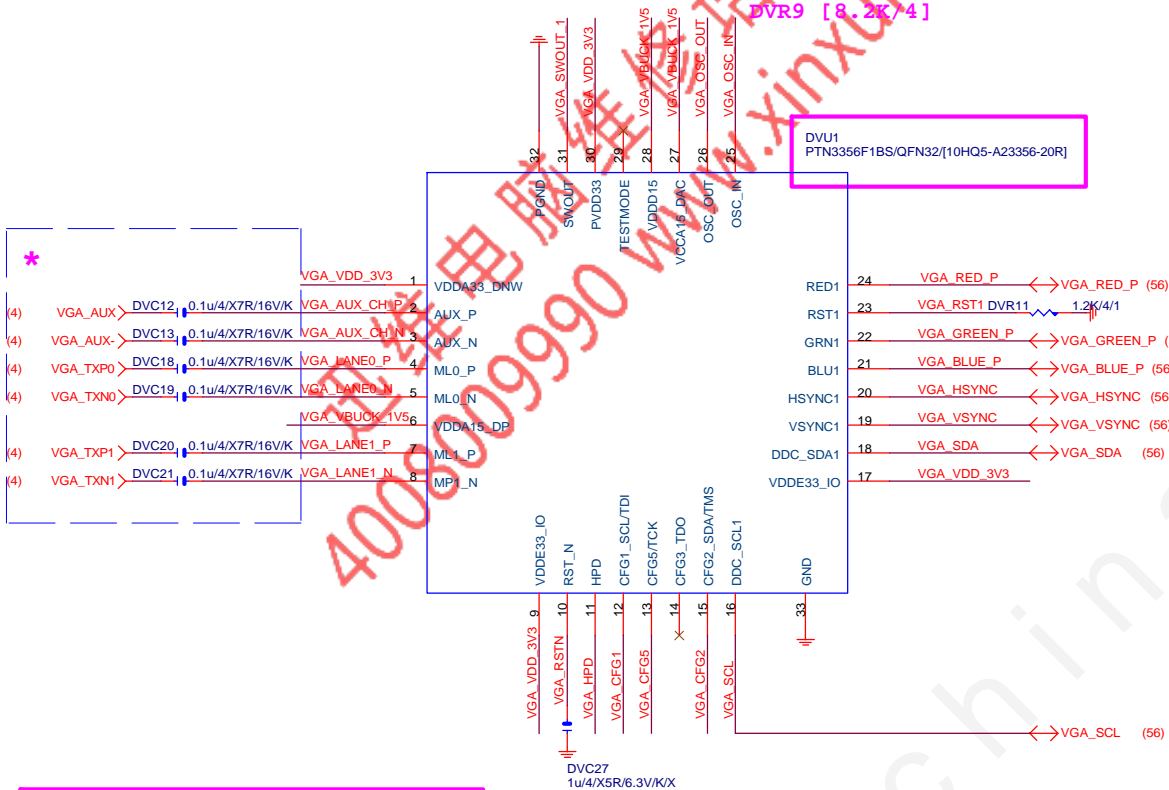
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GIGABYTE				
Title				
DP PORT				
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ROM PART: PTN3356R1BS/[10HQ5-A23356-10R]
FLASH PART: PTN3356F1BS/[10HQ5-A23356-20R]

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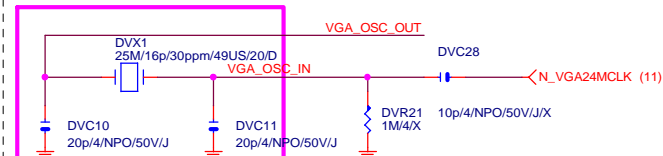
1. 上传:
DVC28 [10p/4/NPO/50V/J]
DVC11 [10p/4/NPO/50V/J]~修改值
DVR10 [8.2K/4]
2. 删除:
DVX1 [25M/16p/30ppm/49US/20/D]
DVC10 [20p/4/NPO/50V/J]
DVR9 [8.2K/4]

DVU1
PTN3356F1BS/QFN32/[10HQ5-A23356-20R]

放置PCH端

(10) N_DDPD_CTRLCLK <--> DVR19 2.2K/4/1 <--> VCC3
(10) N_DDPD_CTRLDATA <--> DVR20 2.2K/4/1 <--> VCC3

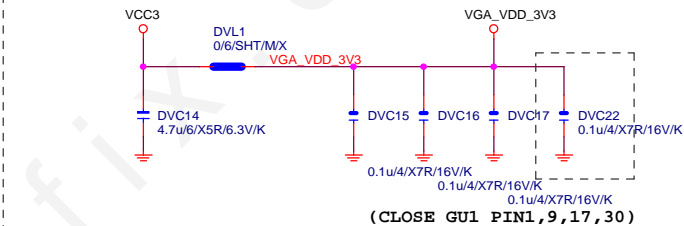
25M Crystal FROM PCH 24MHZ ISSUE



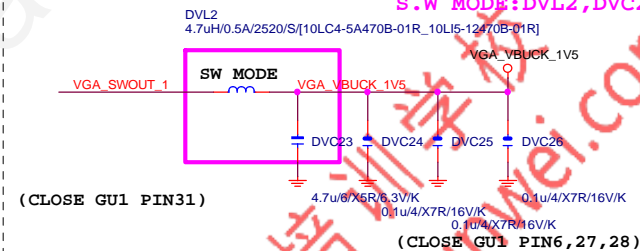
CFG5 For Crystal Less



ADAPTER POWER

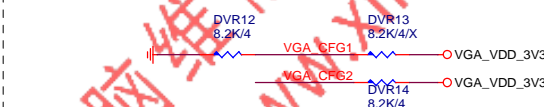


LDO MODE: DVL2, DVC23-->X
S.W MODE: DVL2, DVC23-->O

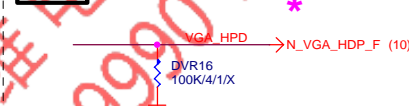


CFG1&2

Non-Compliant



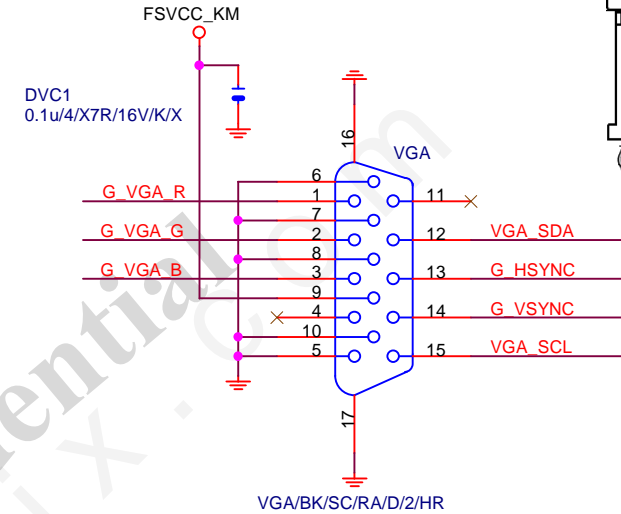
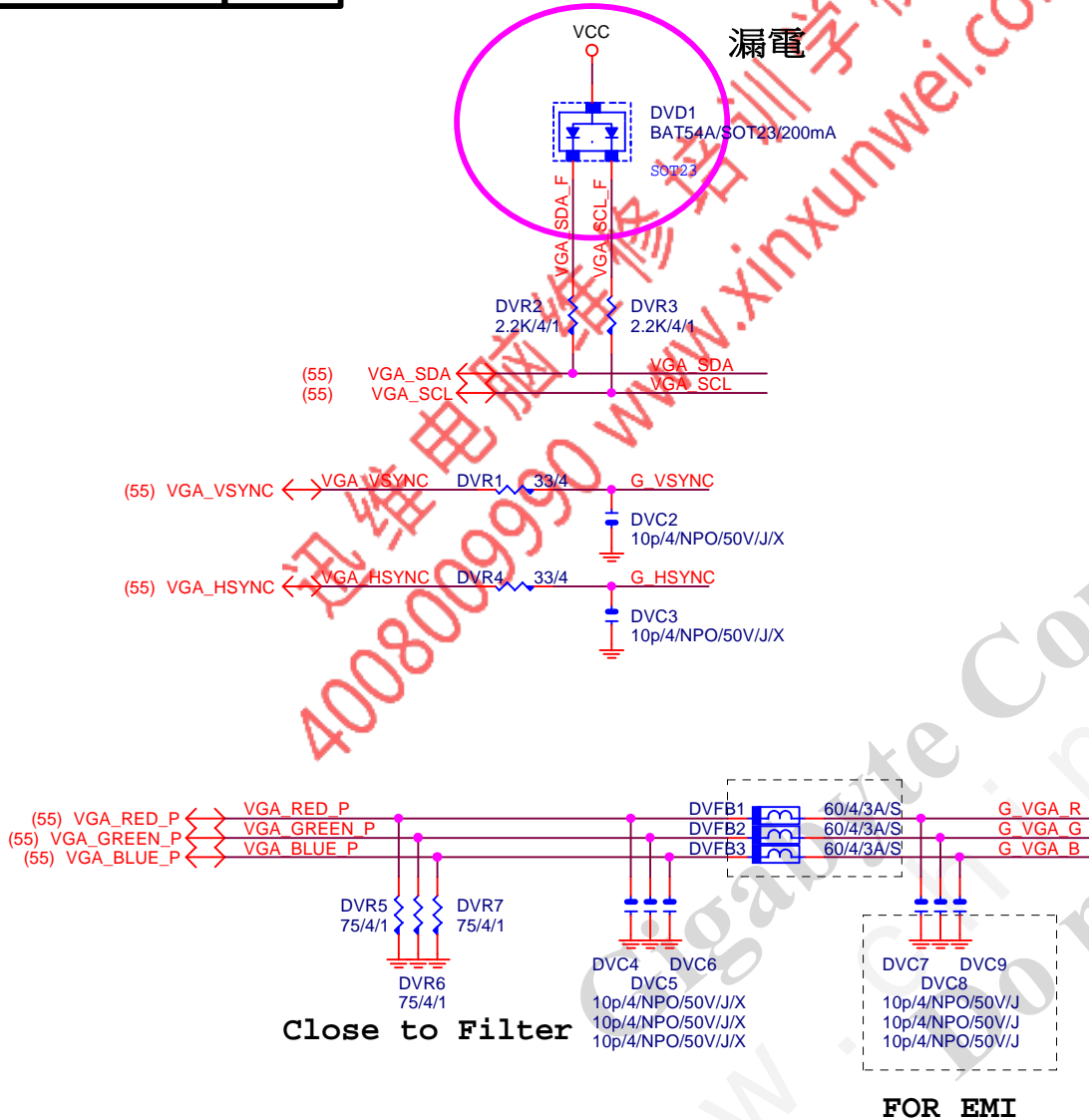
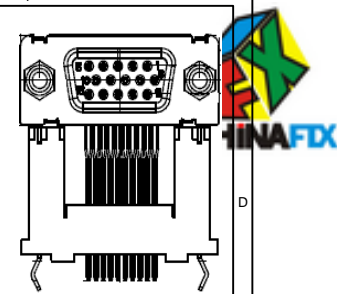
HPD



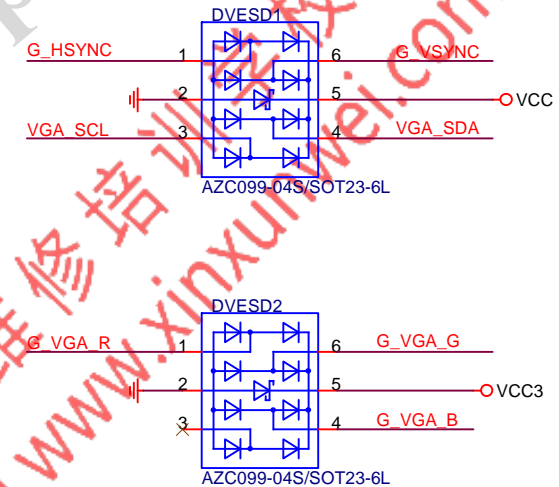
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NXP-PTN3356

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VGA ESD



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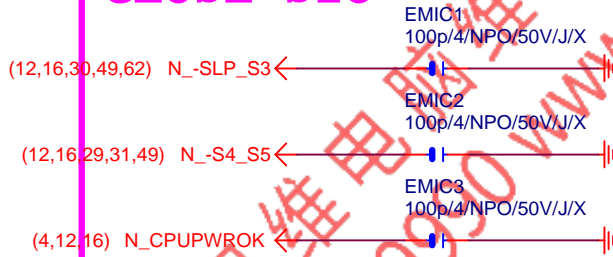
Title
NXP-PTN3356

Size Custom Document Number GA-Z170MX-Gaming 5 Rev 1.1

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CLOSE SIO



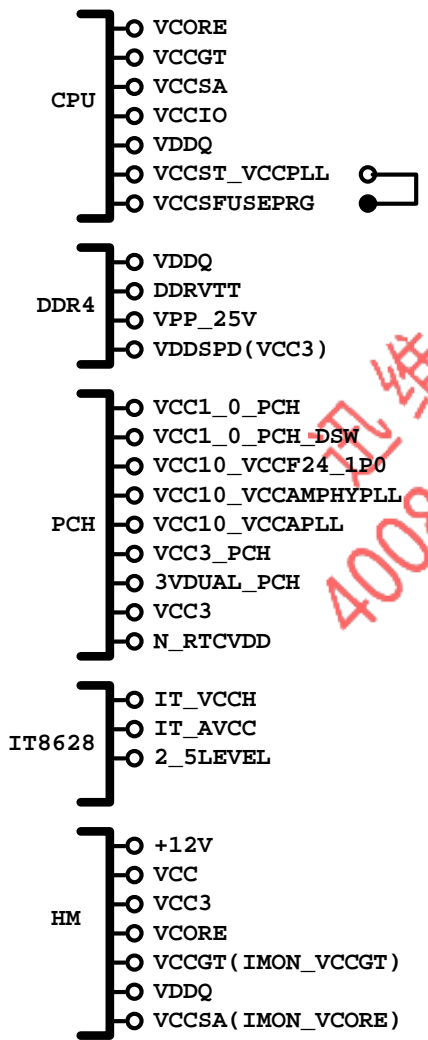
CLOSE PCH



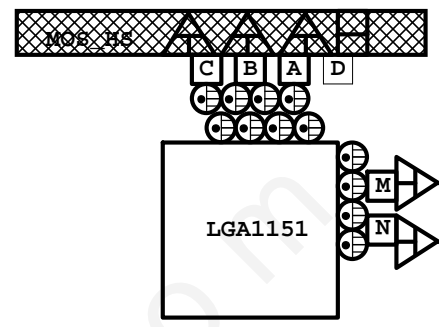
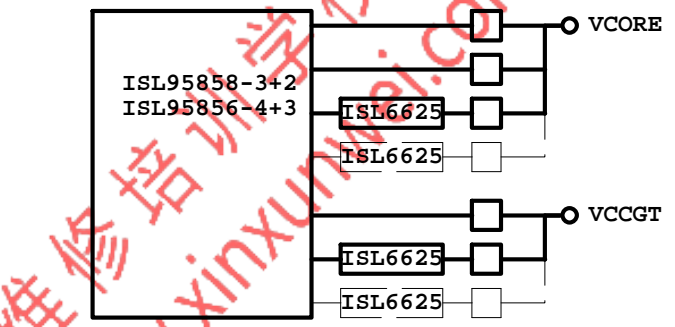
GIGABYTE™

Title		
EMI/ESD		
Size A	Document Number GA-Z170MX-Gaming 5	Rev 1.1
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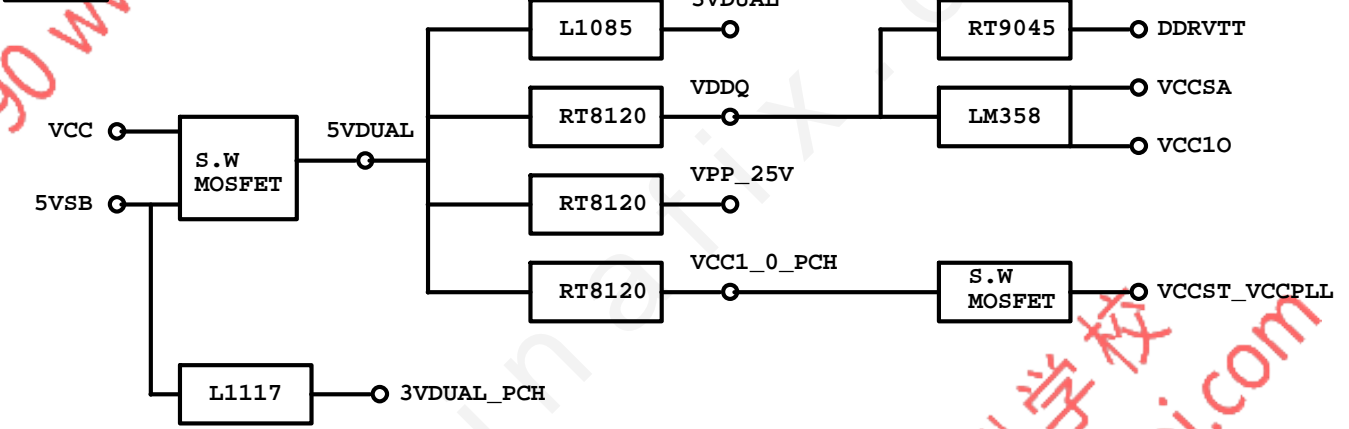
POWER BLOCK MAP



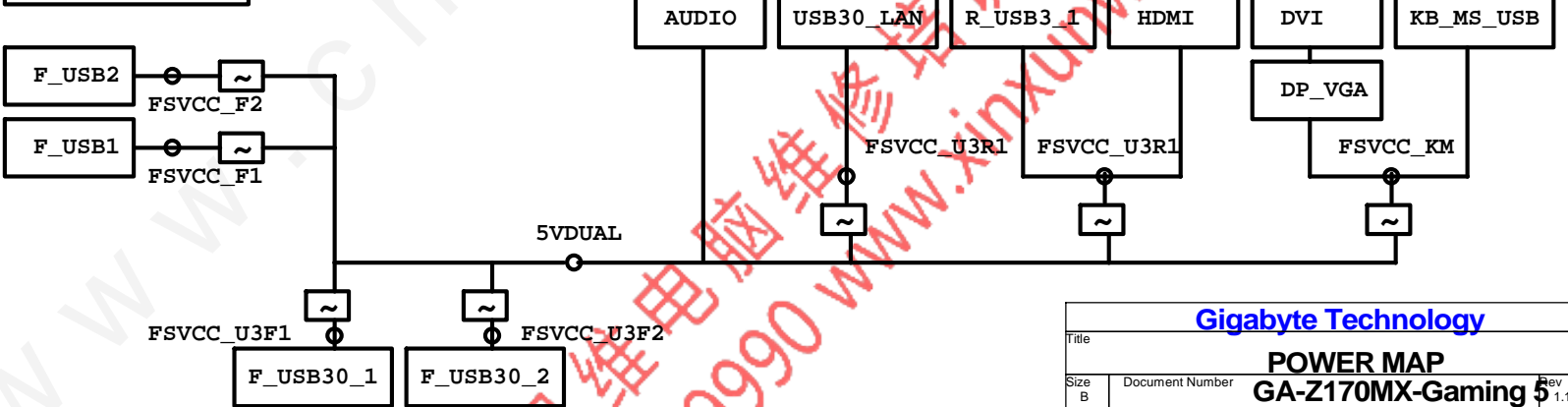
VCORE/VCCGT



POWER



FUSE POWER F/R



Gigabyte Technology			
Title			
POWER MAP			
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GIGABYTE™			
Title RT8120_DDR4 POWER			
Size Custom	Document Number GA-Z170MX-Gaming 5		Rev 1.1
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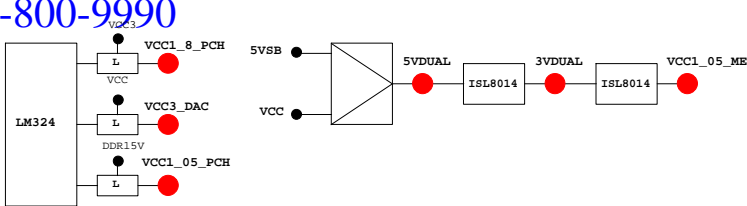


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI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

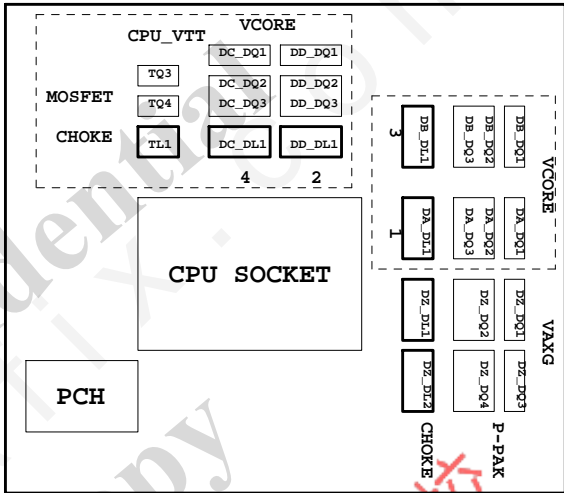
Super I/O ITE8720 GPIO Pin List

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#/CIRR1X/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBC_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

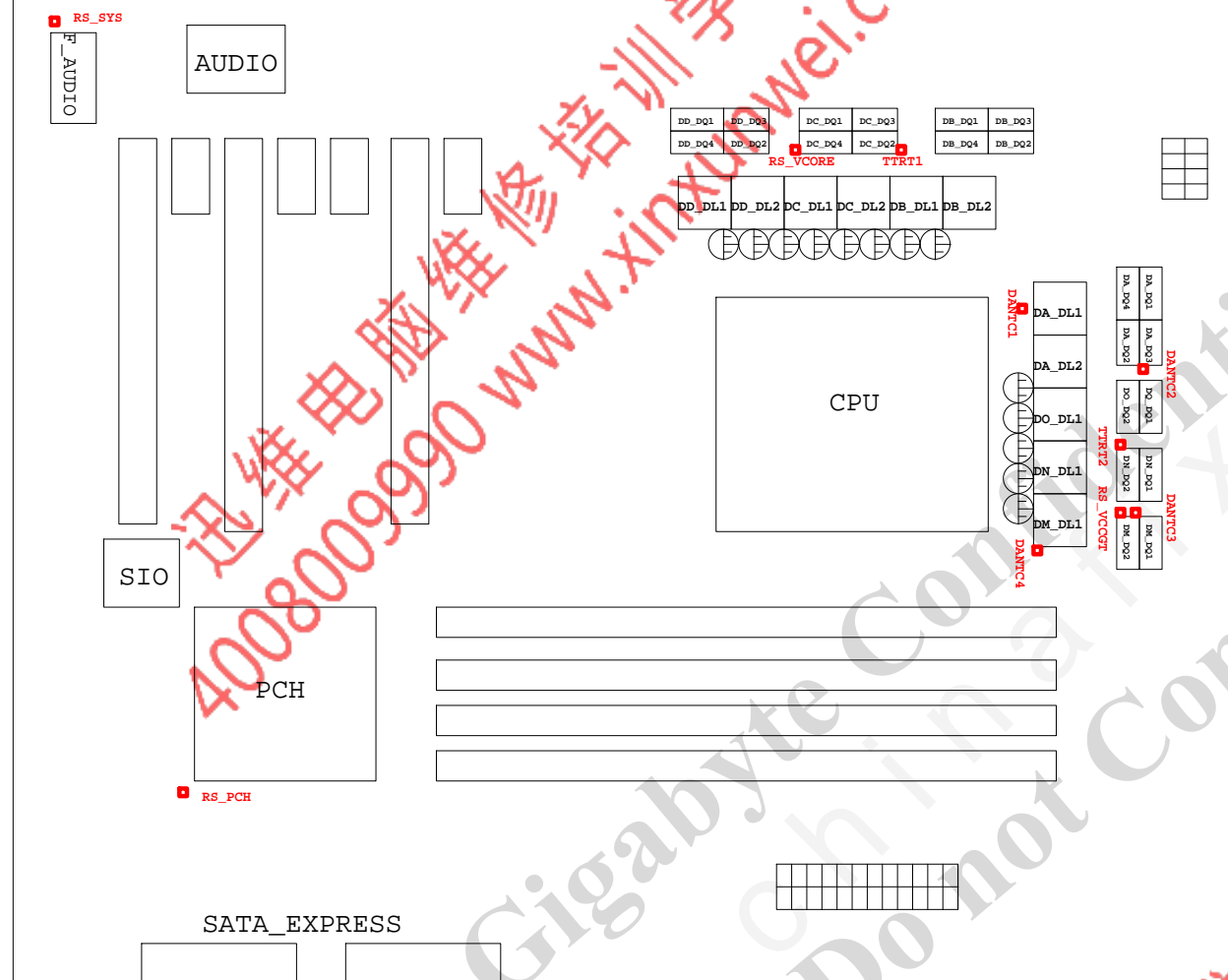
散熱模組料號：

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

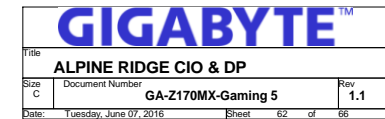
Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

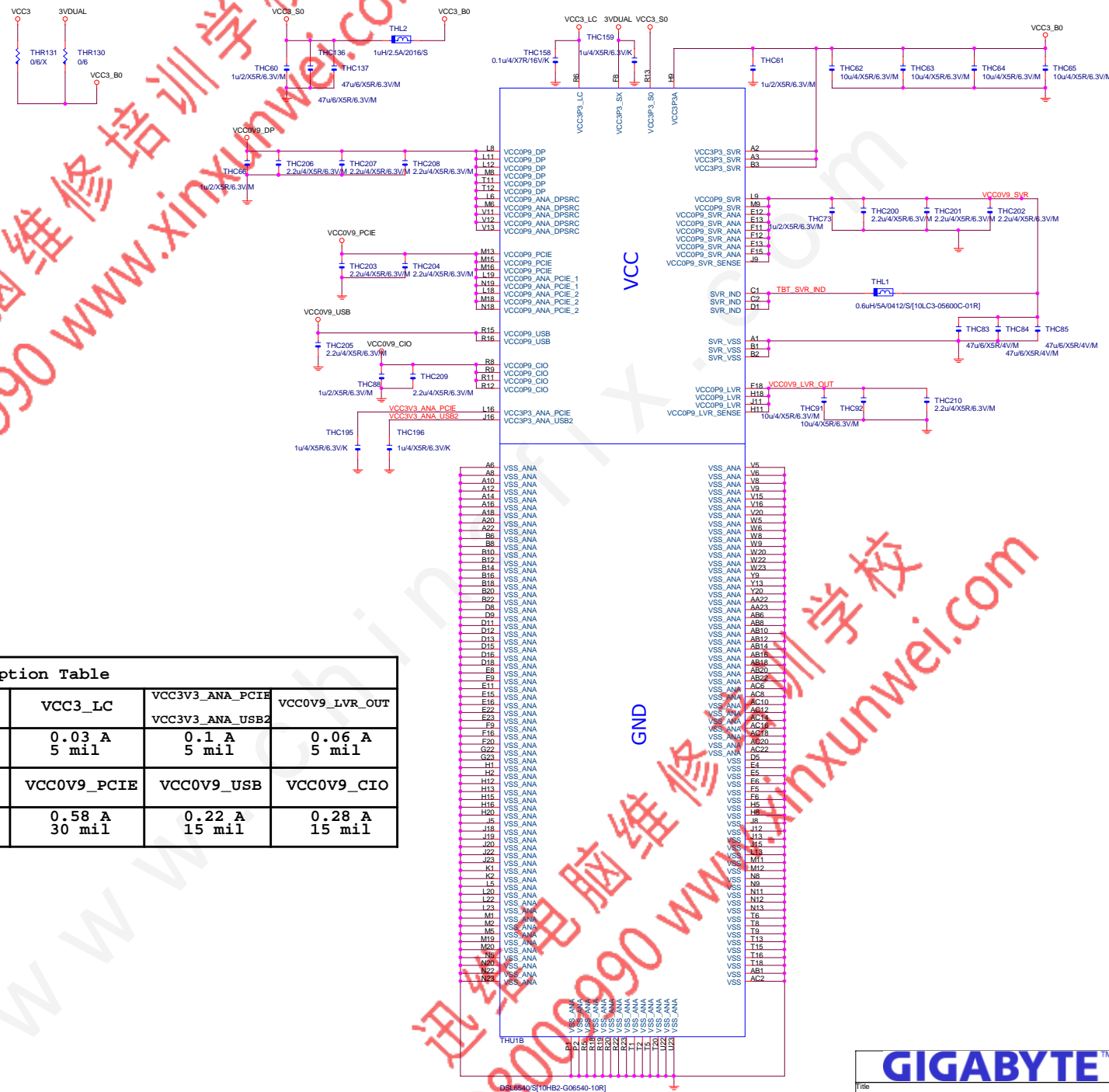
	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

Gigabyte Technology			
Title	TABLE LIST		
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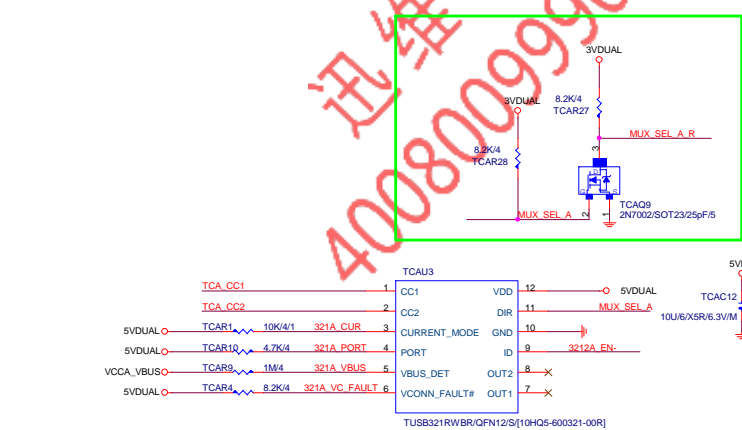
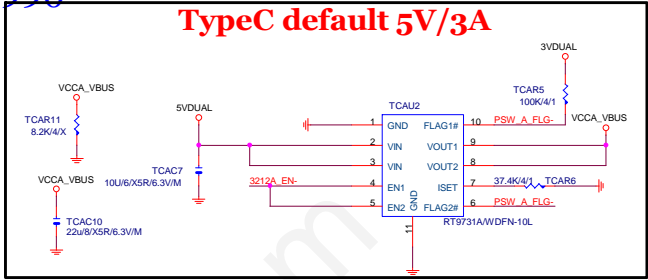
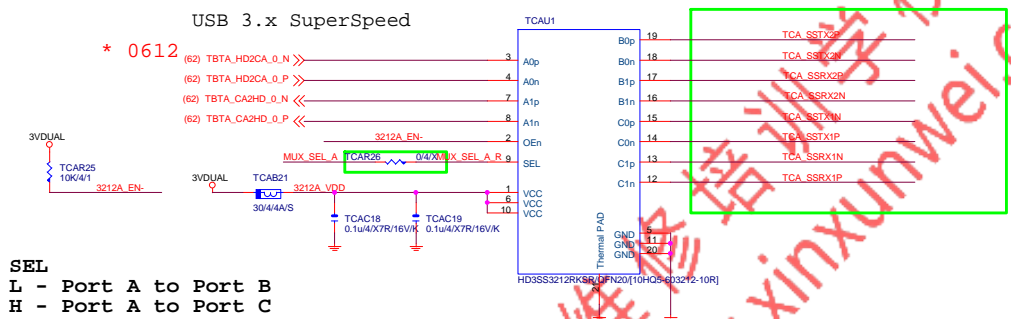


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCCGT	DC_DQ4	N/A
RS_VCORE	DC_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A





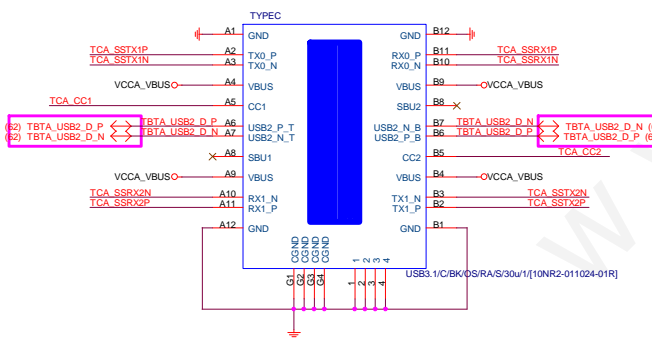
Power Consumption Table					
	VCC3	3VDUAL	VCC3_LC	VCC3V3_ANA_PCIE VCC3V3_ANA_USB2	VCC0V9_LVR_OUT
Max Current(A)	1.05 A 40 mil	0.19 A 10 mil	0.03 A 5 mil	0.1 A 5 mil	0.06 A 5 mil
	VCC0V9_SVR	VCC0V9_DP	VCC0V9_PCIE	VCC0V9_USB	VCC0V9_CIO
Max Current(A)	1.83 A 80 mil	0.7 A 30 mil	0.58 A 30 mil	0.22 A 15 mil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



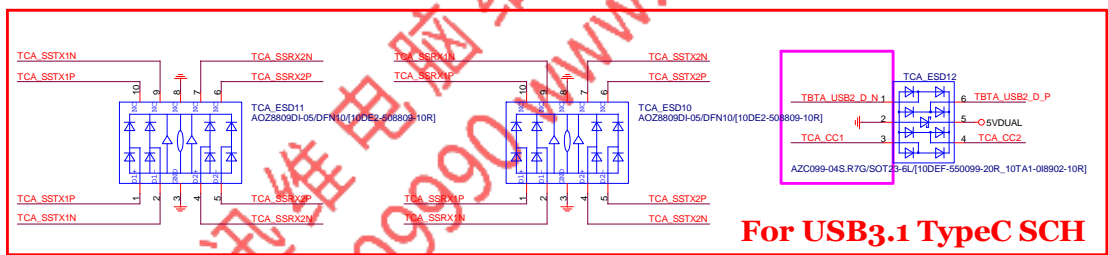
MUX_SEL
H - TypeC plug position 2
L - TypeC plug position 1

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

PORT
H - HOST
L - Device
NC - Dual Role



USB2.0 can be used the same source



For USB3.1 TypeC SCH

Color markers can be changed by model

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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
11C05-C82700-01R	270u/FP/D/16V/88/C/12m
11C05-C61000-01R	100u/OS/D/16V/66/C/30m
11C02-C51000-01R	100u/FP/D/6.3V/65/C/13m

日系一般固態	Capture Value
11C02-685600-01R	560u/FP/D/6.3V/68/8m
11C05-882700-01R	270u/FP/D/16V/88/12m
11C05-661000-03R	100u/OS/D/16V/66/30m
11C02-651000-02R	100u/OS/D/6.3V/66/30m

台系固態	Capture Value
11C02-661000-09R	100u/OS/D/6.3V/66/A/35m
11C05-691000-09R	100u/OS/D/16V/69/A/35m
11C05-8C2700-09R	270u/FP/D/16V/8C/A/10m
11C02-695600-09R	560u/FP/D/6.3V/69/A/11m

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

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

GIGABYTE™

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