Model Name: GA-Z170X-GAMING 7 *Rev 1.1*

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SHEET	TITLE
32	RT8120_PCH
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34	NCT3933
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39	F_USB20
40	R_USB30, KB_MS_USB3
41	Creative Sound3Di
42	Audio Amp
43	Audio Power
44	AUDIO Connect
45	DUAL LAN-A~KILLER E2201
46	DUAL LAN-B~I219
47	DUAL USB30_LAN-I219_E2201
48	IDT6V41510_CLK BUFFER
49	COM , TPM , 80 port
50	F_PANEL
51	ASM1061 SATAIII 6/7
52~54	ALPINE RIDGE
55	TH_HDMI20 (Alpine Ridge)
56	HDMI 20 MCDP2800-BA
57	DP
58~60	M2B_32G
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62	D720210 4port Hub (Power)
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Model Name: GA-Z170X-GAMING 7

Component value change history

Data	Change Item	Reason
2014/11/28 PCB:0.1	1.PCB first release	
	2. AUDIO_COVER 料號UPDATE	
2015/01/26 PCB:0.2	1. F_USB30_1 , F_USB30_2 & M2A_32G , M2B_32G改為紅色料號?	
	2. 注意三色LED上件方向	
	3. SATA_EXPRESS的顏色確認,SATA_EXPRESS1要做塞孔	
	4. CLK BUFFER IDT6V41510 (含蓋子) 不上件	
	5. M_BIOS , B_BIOS 改成128M	
	6. ASM1061 eeprom 改成不上件 (確認BIOS OK後移除)	
	7. PCB製程修改 : B2 --> B	
2015/01/26 PCB:1.0	1. 高速訊號測點移除	
	2. 0 OHM SHORT PAD	
	3. M_BIOS SOCKET移除	
	4. CR197/CR198是否修改FOR THD+N -> 200/4/1	
	5. 注意裝甲(X3)&AUDIO_HS螺絲數量(X2)	
	6. BIOS_PH 改 MASK (3VDUAL再加強)	
	7. Update KILLER E2400 logo	
	8. SWPU2 pin30 net update PCIEX4_M2 --> PCIEX4_M2S	
	9. Add MAC10	
PCB:1.01	1. M_BIOS SOCKET移除	
	2. 注意裝甲(X3)&AUDIO_HS螺絲數量(X2)	
	3. Add THR124,THR125,THR126	
	4. Remove JTAG	
1.0C	1. Remove LBR14=1u/4	
1.0C-ECN-0720	1. REAR_HS加替料:12KRC-0H0001-02R	
1.0D-0731	1. 移除螺絲料件:REAR_HS*3,AUDIO_HS*2 -->12KS2-110206-11	
1.0E-0811	1. Add NR15,NR17 : 2.2K/4/1 (MB_ID : Remove OR15 , Add OR7)	
1.0F-1026	1. Update AR Thunderbolr Firmware	

1.0G-0112 1. THU1 update to "10HB2-G06540-20R" & Update AR Thunderbolr Firmware

1.0H-0318 1. 3_LED改料號:10DL8-320RGB-03R

2. CRN3 470/8P4R/6-->150,CRN4 150/8P4R/6-->180,CRN3 680/8P4R/6-->62

10I-0812 1. CKU1改10HL6-1C4153-11R， CKR6 --> CKR7 8.2K/4 , ADD CKX1,CKBC8,CKBC9

2016/08/18 1. LAN E2400 --> E2500

2. PCB Rev1.01 --> 1.1

9.0 1.Add OC1,OC_LED 1X2 pin
2.Add NPR22,NPC10靠近NPL2
3.Add MA_DR9,MA_DR10
4. PCIEX4 switch change "IO_GP20"
5. WR94 CHANGE NET to VCCSA ? VCCST_VCCPLL
6. Add DFC3 靠近CPU

1.0 1. BIOS_PH footprint update "BIOS2X5-RH-1-MASK"
2. SWPU2 pin30 net update PCIEX4_M2 --> PCIEX4_M2S
3. Add "MAC10"

1.01 1. Add THR124,THR125,THR126
2. OC_LED & OC_BT swap

下版修改
1. OC,ECO Default 改不亮 , 改7002 --> 2907線路
2. "SEBC1~SEBC8" footprint update "C0402-2" (Fix ASM1061 [illegible]
3. Add "CR226" For always enable f_audio cable detect
4. MOATR2/MOATR3 footprint update to "R0402-2"

1.1 1. LAN E2400 --> E2500

Circuit or PCB layout change

DATE	Change Item	Reason
2014/11/28 PCB:0.1	1.PCB first release 2.線路由GA-Z1704-SLI-01-1128B.DSN來修改	
2015/01/26 PCB:0.2	1. Update TYPEC footprint "USB-TYPEC-1"	
	1、增加IDT6V41510/IDT6V41520 co-lay 線路。 2、增加co-lay 電阻 table。 3、原CKR16改接CKU1 PIN 16。	
	3. 測試點位置偏移M2 CLK (CK_M2D_100M_DN/DP)	
	4. DDRVTT ADD MAR110,MAR111	
	5. OC,ECO BUTTON change footprint	
	7. Remove VGA : DVI-I --> DVI-D (加強5VDUAL鋪銅)	
	8. Update BIOS_PH footprint & Add BIOS_PH pin7	
	9. LED到南橋的走線可縮減,加強+12V走線 , N_GPPD0_R加粗	
	10. VIN COMP SIDE需補強在DAL1下方的部分(DAL1要打VIA 4顆),DAEC14移至DAL1左邊 (DAR9兩邊走線加至20mils), 注意PWM附近走線遠離40mils以上	
	11. DAC POWER DACC11,DACC12 --> DACEC1	
	12. PCIEX4 "N_GPP_G3" --> N_GPP_G4"	
	13. DHL1 & LAL1 和 MOS_HS太近,要移開	
	14. ASM1061 O_-PCIE_RST" --> "O_-PEMRST2"	
	15. N_GPP_E0~E2 F0_F4 --> PULL UP "3VDUAL"	
	16. M2A_32G & M2B_32G 的螺絲孔請加A/B辨識 (42A/42B , 60A/60B , 80A/80B)	
	17. CLR_CMOS & RST BUTTON 位置交換	
	18. CPU_OPT change to PWM2, SYS_FAN1 change to PWM4.	
	19. HD_LED cost down, DEL:FPC2, FPR24, FPR25, FPR26, FPQ9, FPQ10. Connect net -HDLED to FPESD1 pin4.	
	20. RHU2 pin5,6 遠離NET "RH_EXTL"	
	21. Add R1, CR143 Power Change to 5VDUAL	
	22. Add TCAR13,TCAR15 For TypeC 1.1 Spec	
	23. Audio切割線延伸至Codec	
	24. HDMI2.0 移除 DHESD1,DHESD2 ,DHESD3,DHR16 ; DHR5改Short-pad	
	25. SWAP TTRT2 & RS_VCCGT , TTRT1 & RS_VCORE	
	26. Add DDR_VS & VCORE_VS 須擺放至靠近OUTPUT電容	
	27. 注意三色LED方向性是否正確	
	28. SWAP IO_GP17 & IO_GP27	
	29. CBC106,109,110,111 DGND --> AGND	
	30. PCB文字放大 (參考Z1704X-GAMING5)	
	31. CHANGE 3VDUAL & 3VDUAL_PCH & LAN POWER	
	32. DDR4 VDDSPD需加粗,MR22兩端至少也要50mils	
	33. AUDIO走線要1:2 , OUTPUT load電阻放在connect端 PORTG_R有跨切割,請移開,MH1 & CU1第二層改GND	
	34. USB3.0 ESD IC GND VIA要打2個	
	35. CPU_FAN short pad兩端和走線同粗	
	36. Add OR95	
	37. Remove ASM1061 EEPROM & RH_VDD1_2 POWER	
	38. Remove BIOS_SW	
	39. Add Alpine Ridge	
	40. Add SEAR40/41/42 for USB3.1 小卡power	
	41. Add DDR4 ECC Function	
0.2	1. MR23/MR25 0ohm short	
	2. INTEL i219V FOR ERP WAKE patch (Add LBQ1 & LBQR1)	
	3. 修改線路，只保留IDT6V41530線路。	
	4. VDDQ int2的GND plane移除	
	5. VPPSPD int2可補強	
	6. VCORE_VS 零件請放在CPU下方(黃色框框位置)	
	7. USB_DAC power phase內層要挖	
	8. TYPEC的ESD IC的GND參考層不用挖空	
	9. HDMI2.0 ADD Daming電阻	
	10. U6 --> DB_PORT (文字面加大)	
	11.VCORE_VS 零件請放在CPU下方(黃色框框位置)	
	12. 3VDUAL_LAN --> 3VDUAL (注意走線寬度)	
	13. CE5,6,13,14,15,16 change to "2.2uF/D/50V/5*5/[11CE6-5220B-01R]"	

14. ADD ASM1061 EEPROM
15. RN12,RN13 --> R8P4R-0402
16. Add THR122 and THR130/131 (AR B0 issue)
17. Add THR123 and THR47/48 to VCC3_B0
18. X'TAL 24MHz layout rule 修正
19. Update IDT41530 clk-buffer 模組線路 (Remove 0ohm)
20. NR294,NR295刪除, NR5走線至中
21. [illegible] for HDMI diode

1. Add NR3 FOR X'TAL 24MHz
2. ATX_12V_2X4在GND層切割層往上移

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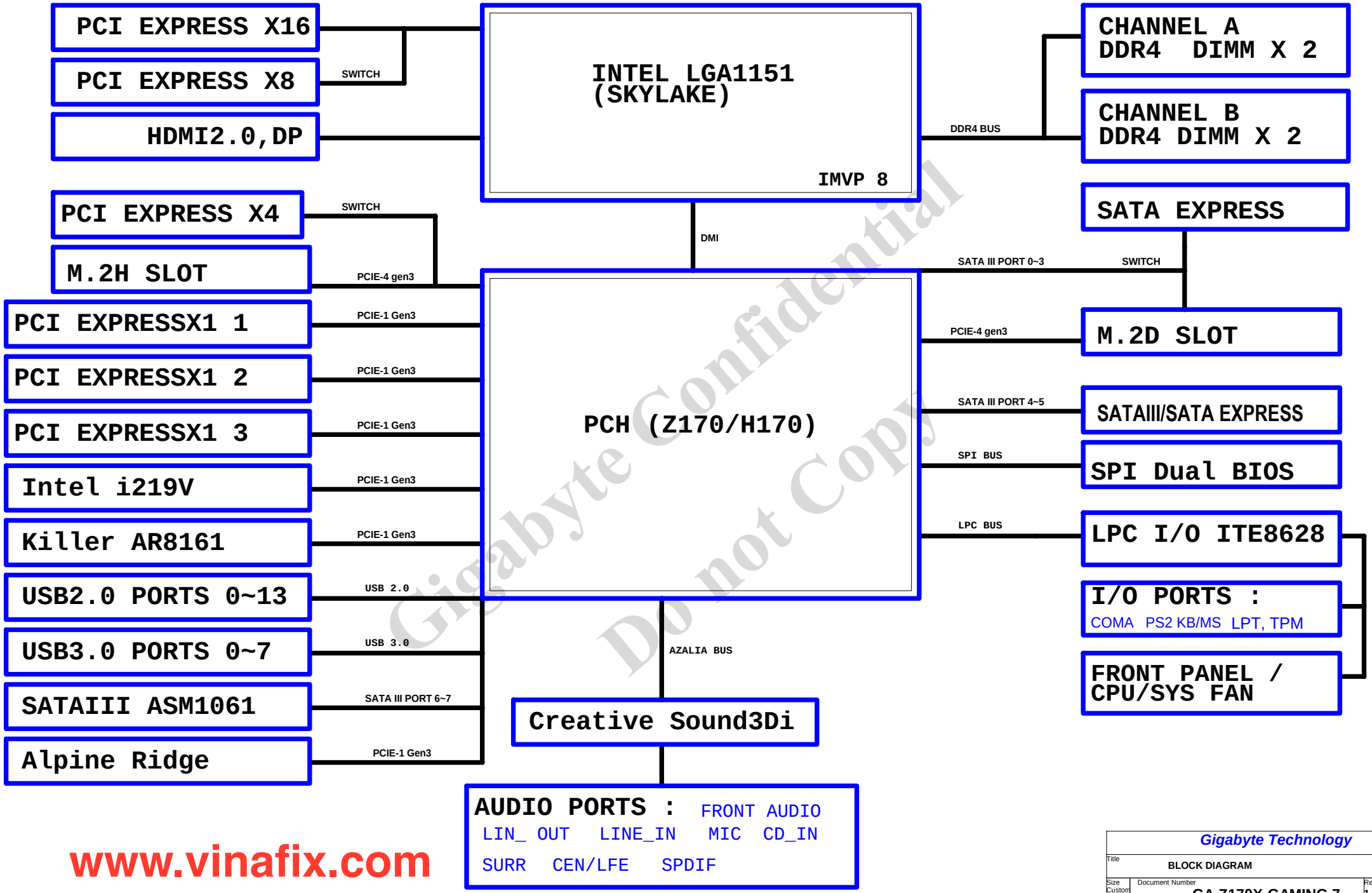
BLOCK DIAGRAM



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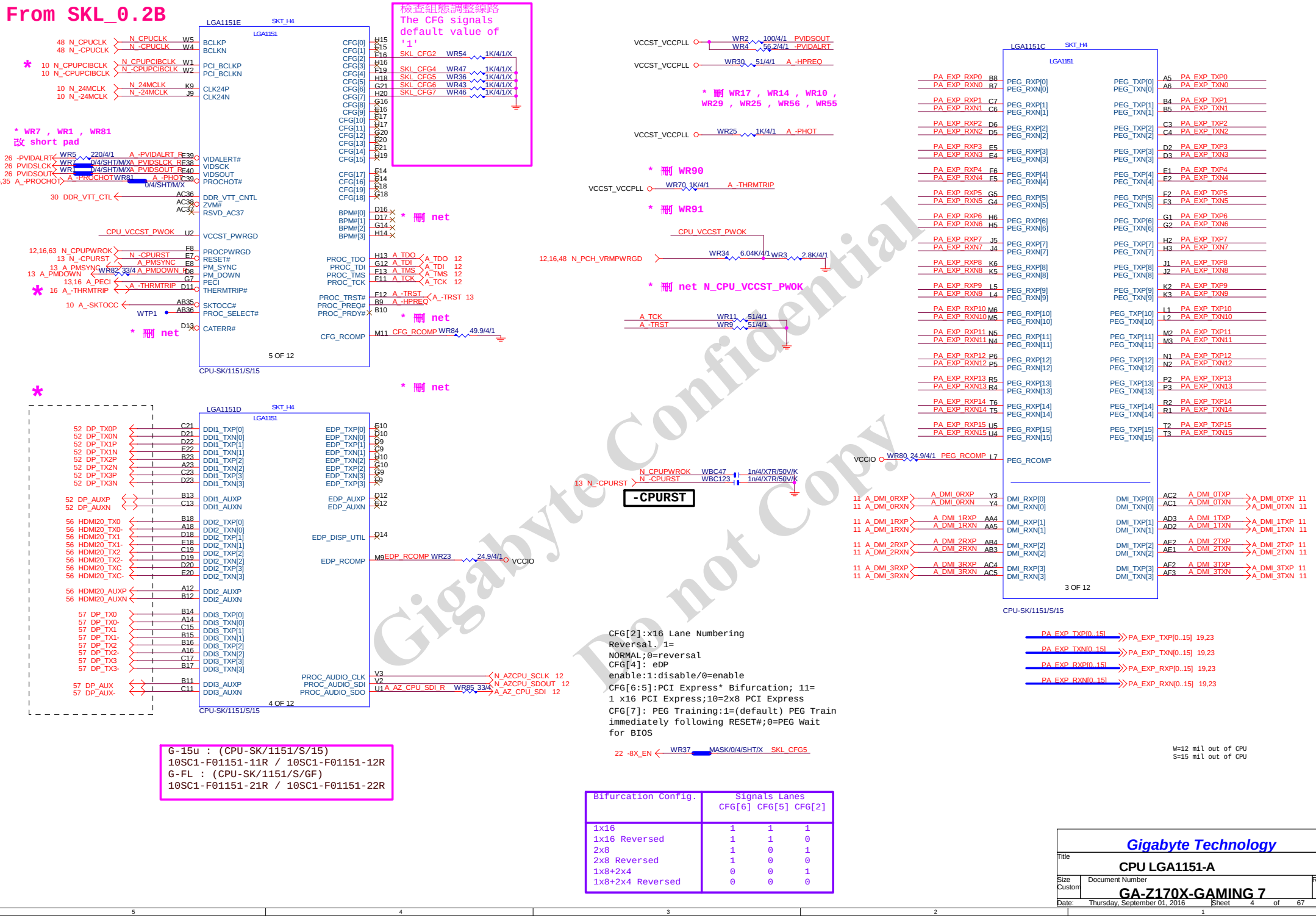
From SKL_0.2B



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

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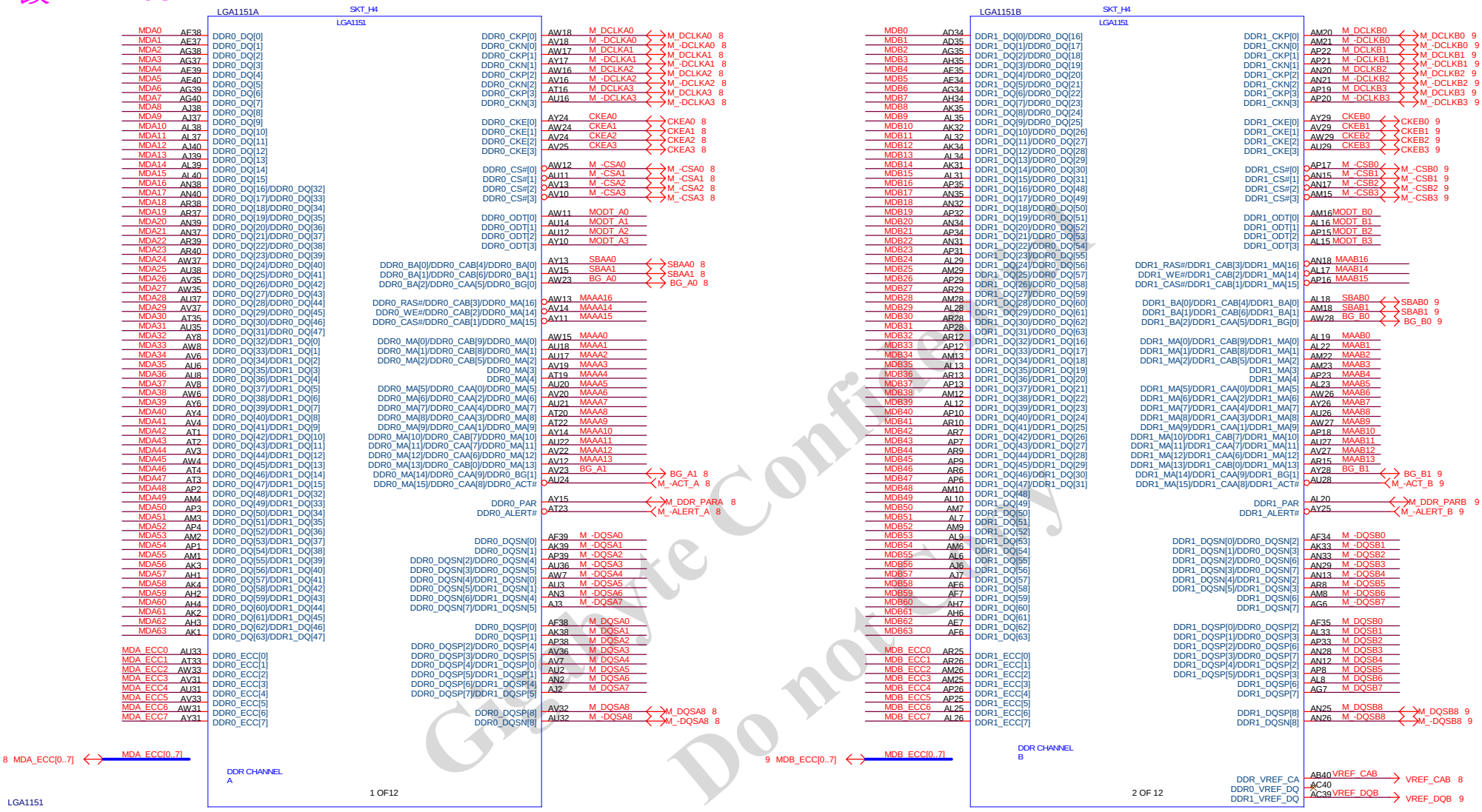
* 改DDR4 net



LGA1151

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

Need check the new CPU ME

Gigabyte Technology		
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* WBC49 移到 RT8120_DDR

* 刪 WBC50 電容

VCCSA

* WBC51 , WBC52
VDDQ 改 VCCSA

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

* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容

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

VCCST_VCCPLL
VCCSFUSEPRG

VCCSA — WR94 0/4/X — VCCST_VCCPLL

VCCIO

WBC69 22u/8/X5R/6.3V/M
WBC70 22u/8/X5R/6.3V/M
WBC71 22u/8/X5R/6.3V/M
WBC72 22u/8/X5R/6.3V/M
WBC73 22u/8/X5R/6.3V/M
WBC74 22u/8/X5R/6.3V/M

* 刪 VCCGT 電容

VCCGT

LGA1151J SKT_H4
LGA1151

VCCGT_F35 F35
VCCGTX_G34 G34
VCCGTX_G35 G35
VCCGTX_H33 H33
VCCGTX_H34 H34
VCCGTX_J33 J33
VCCGTX_J35 J35
VCCGTX_K32 K32
VCCGTX_K34 K34
VCCGTX_L31 L31
VCCGTX_L33 L33
VCCGTX_M32 M32

WR59 0/4/SHT/M/X

VCCGT_SENSE F39 → VCCGT_SENSE 26
VSSGT_SENSE F38 → VSSGT_SENSE 26
VCCGTX_SENSE F37
VSSGTX_SENSE F36

10 OF 12

CPU-SK/1151/S/15

VCCSA

LGA1151K SKT_H4
LGA1151

VDDQ

VDDQ_AT18 AT18
VDDQ_AT21 AT21
VDDQ_AU13 AU13
VDDQ_AU15 AU15
VDDQ_AU19 AU19
VDDQ_AU23 AU23
VDDQ_AV11 AV11
VDDQ_AV17 AV17
VDDQ_AV21 AV21
VDDQ_AW10 AW10
VDDQ_AW14 AW14
VDDQ_AW25 AW25
VDDQ_AY12 AY12
VDDQ_AY16 AY16
VDDQ_AY18 AY18
VDDQ_AY23 AY23

WR86 0/4/SHT/M/X
VCCPLL_OC AJ9 VCCPLL_S → VDDQ

* 刪 VCCPLL_OC

VCCIO

VCCOPC_AJ30 AJ30
VCCOPC_AJ27 AJ27
VCCOPC_AJ28 AJ28
VCCOPC_AJ29 AJ29
VCCOPC_AK27 AK27 — WR60 0/4/SHT/M/X

VCCEOPIO AJ25
VCCEOPIO AJ26 — WR61 0/4/SHT/M/X

VCCST_VCCPLL V5 → VCCST_V5
VCCSFUSEPRG V6 → VCCST_V6
VCCST_VCCPLL V4 → VCCPLL

VCC_OPC_1P8_AB37 AB37 — WR62 0/4/SHT/M/X
VCC_OPC_1P8_AB38 AB38 — WR63 0/4/SHT/M/X

VCCSA_SENSE AD5
VCCIO_SENSE AF4
VSS_SAIO_SENSE AE4

* 刪 net

VCCOPC_SENSE AK21
VCCEOPIO_SENSE AJ24
VSSOPC_EOPIO_SENSE AK22

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CPU-SK/1151/S/15

LGA1151L SKT_H4
LGA1151

RSVD_TP_J8 J8
RSVD_TP_J7 J7
RSVD_TP_L8 L8
RSVD_TP_K8 K8
RSVD_TP_AV1 AV1
RSVD_TP_AW2 AW2
RSVD_H8 H8
RSVD_K10 K10
RSVD_L10 L10
RSVD_J17 J17
RSVD_B39 B39
RSVD_J19 J19
RSVD_C40 C40
RSVD_G8 G8
RSVD_AY3 AY3
PROC_TRIGIN D1
PROC_TRIGOUT B3
RSVD_L12 L12
RSVD_K12 K12

13 N_PCH_CPU_TI
13 A_CPU_PCH_TO — WR88 33/4 A_CPU_PCH_TO_R

RSVD_TP_H11 H11
RSVD_TP_H12 H12
RSVD_TP_AW38 AW38
RSVD_TP_AV39 AV39
RSVD_AU39 AU39
RSVD_AU40 AU40
VSS_AT15 AT15
VSS_AR23 AR23
VSS_AR22 AR22
RSVD_J15 J15
RSVD_J14 J14
RSVD_AU9 AU9
RSVD_AU10 AU10
RSVD_J13 J13
RSVD_K13 K13 — WR89 560/4/1
RSVD_J11 J11
RSVD_D15 D15
RSVD_K11 K11

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CPU-SK/1151/S/15

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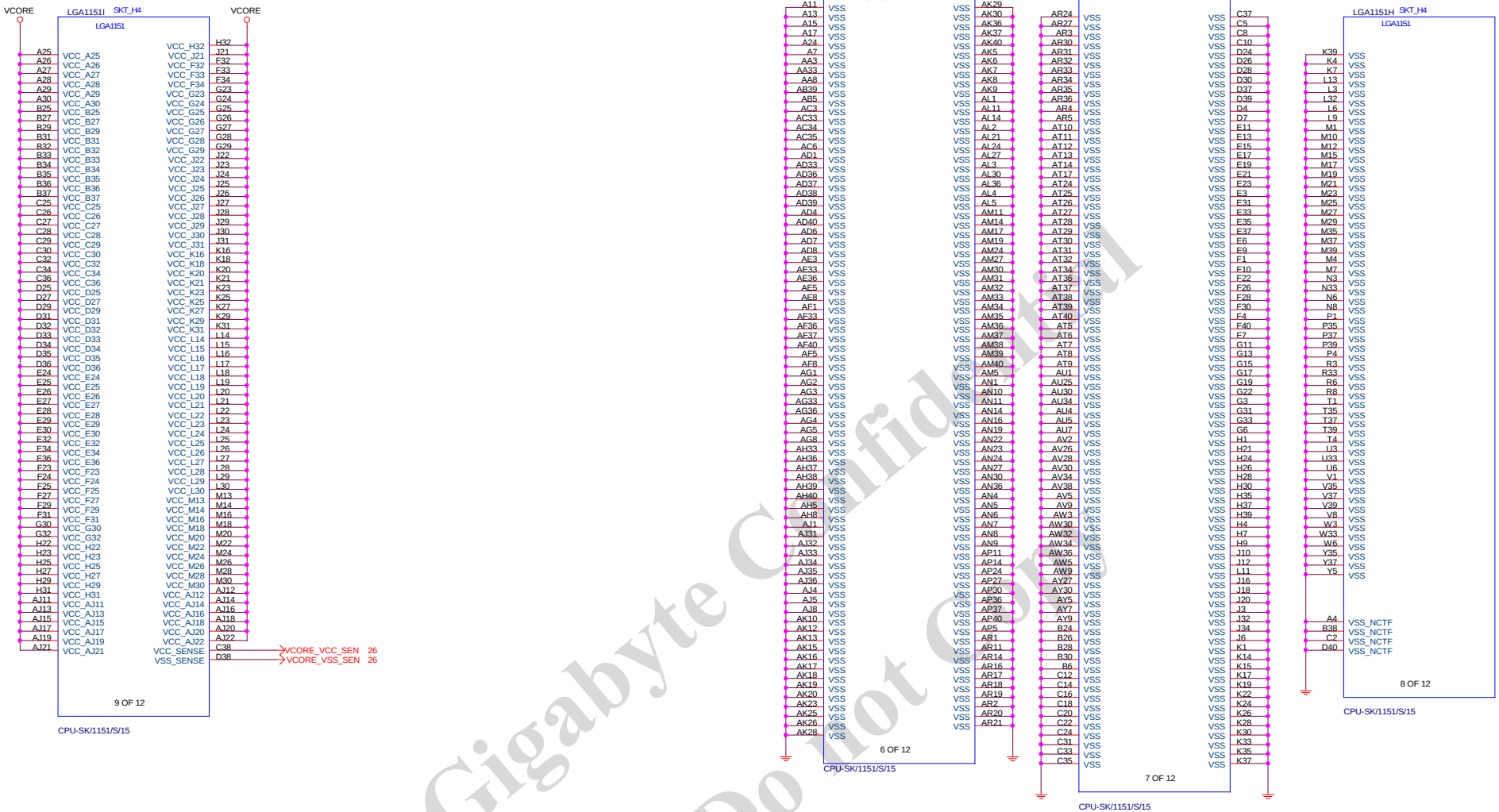

* 刪 Vcore 電容

Gigabyte Technology		
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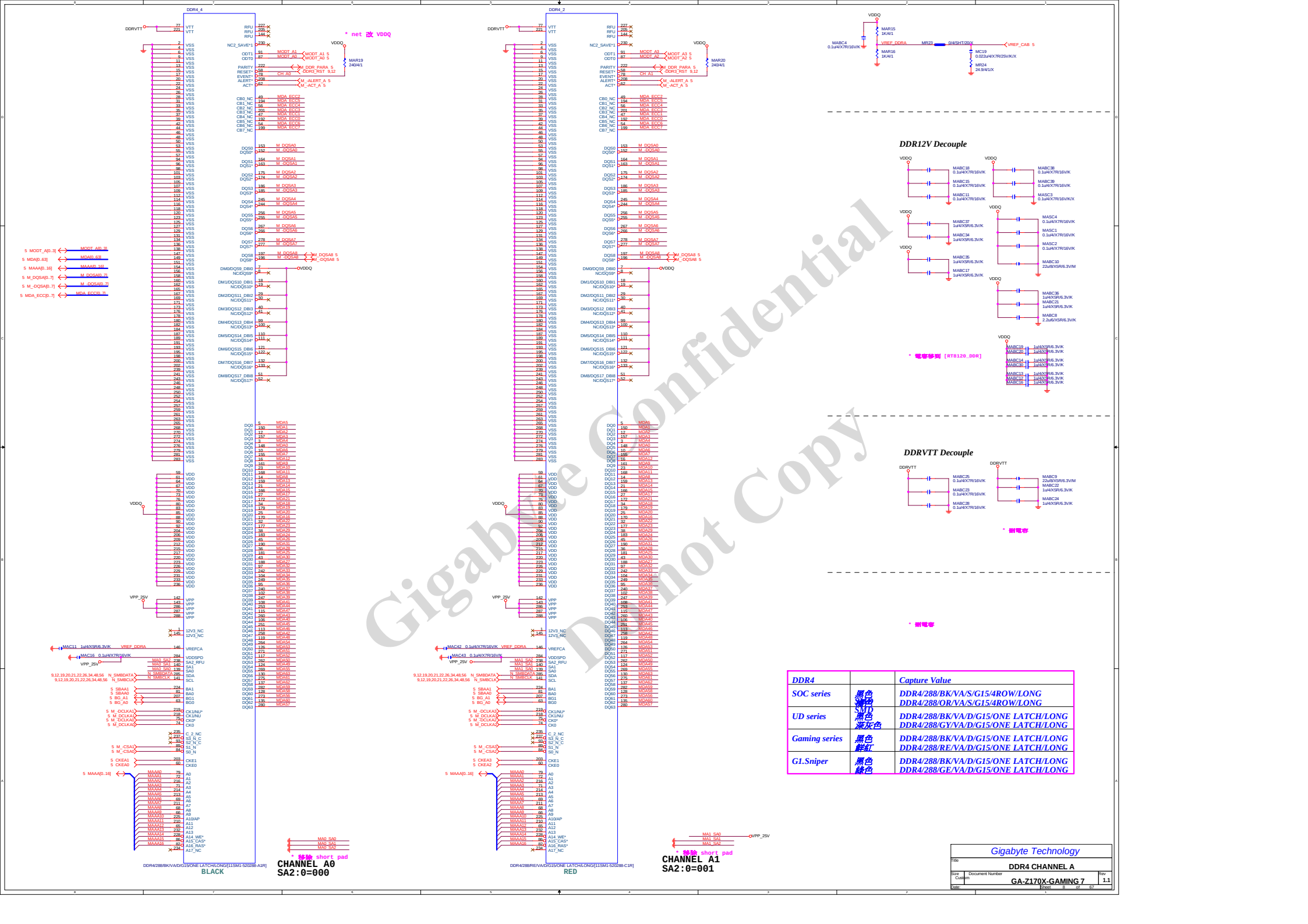

DDR4		Capture Value
SOC series	黑色 灰色	DDR4/288/BK/VA/S/G15/4ROW/LONG DDR4/288/OR/VA/S/G15/4ROW/LONG
UD series	SMD 黑色 深灰色	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/GY/VA/D/G15/ONE LATCH/LONG
Gaming series	黑色 鮮紅	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG DDR4/288/RE/VA/D/G15/ONE LATCH/LONG
G1.Sniper	黑色 綠色	DDR4/288/BK/VA/D/G15/ONE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

Gigabyte Technology		
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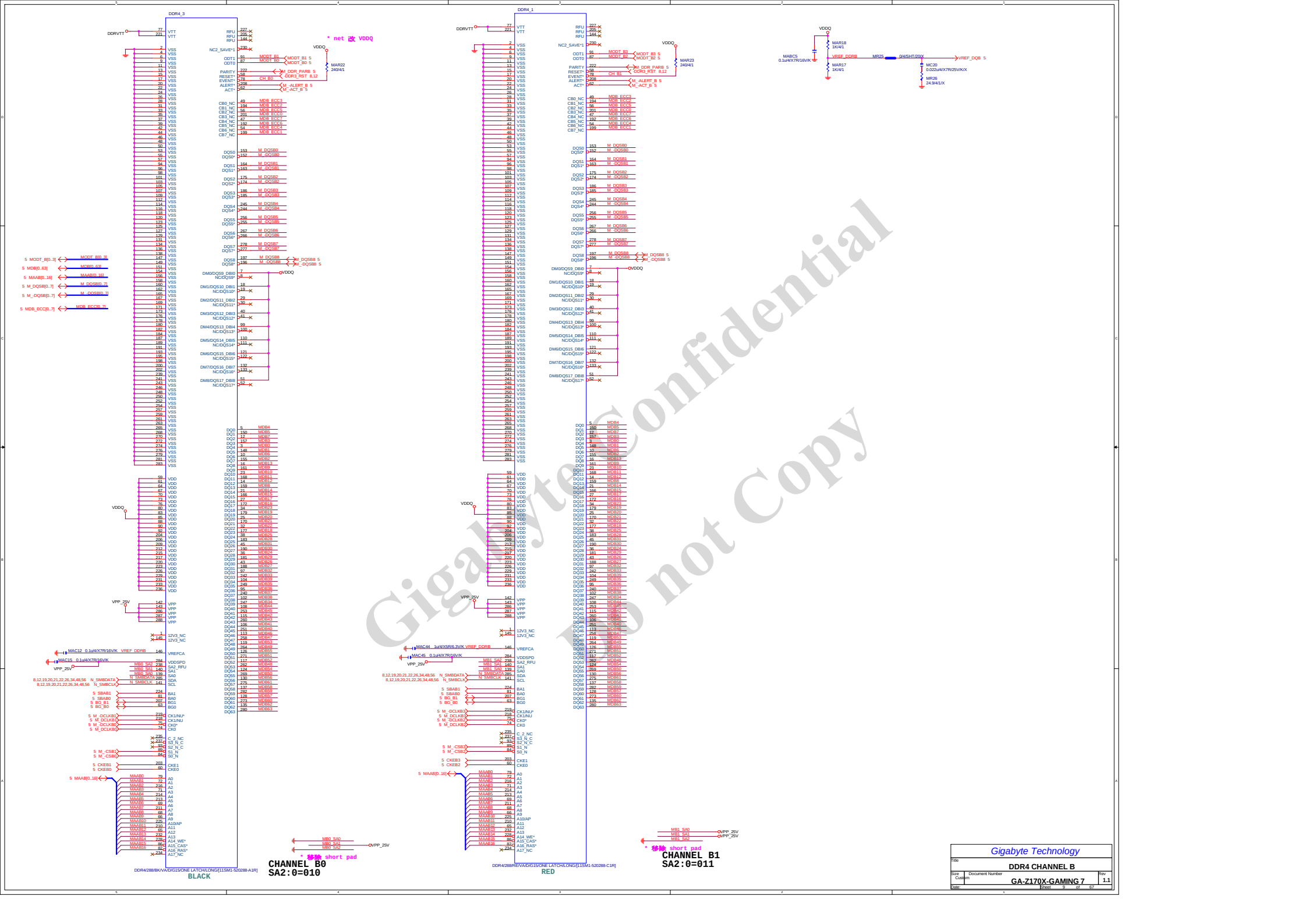

Gigabyte Technology			
Title	DDR4 CHANNEL B		
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Rev 0.3

For DP Enable

VCC3
N_DDPB_CTRLCLK NR15 2.2K/4/1
N_DDPB_CTRLDATA NR17 2.2K/4/1

PCHE
SPT-H_PCH
52 DP_HDP
56 N_HDMI20_HDP_F
57 N_DP_HDP
N_GPP_I3
AW4 GPP_I0/DDPB_HPD0
AY2 GPP_I1/DDPC_HPD1
AV4 GPP_I2/DDPD_HPD2
BA4 GPP_I3/DDPE_HPD3
NR9 100K/4/1 N_GPP_I4
BD7 GPP_I4/EDP_HPD
GPP_I7/DDPC_CTRLCLK BB3 N_DDPC_CTRLCLK → N_DDPC_CTRLCLK 56
GPP_I8/DDPC_CTRLDATA BD6 N_DDPC_CTRLDATA → N_DDPC_CTRLDATA 56
GPP_I5/DDPB_CTRLCLK BA5 N_DDPB_CTRLCLK
GPP_I6/DDPB_CTRLDATA BC4 N_DDPB_CTRLDATA
GPP_I9/DDPD_CTRLCLK BE5 N_DDPD_CTRLCLK → N_DDPD_CTRLCLK 57
GPP_I10/DDPD_CTRLDATA BE6 N_DDPD_CTRLDATA → N_DDPD_CTRLDATA 57
GPP_F14 Y44 A_-SKTOCC → A_-SKTOCC 4
GPP_F23 V44 N_GPP_F23
GPP_F22 W39 N_GPP_F22
GPP_G23 L43
GPP_G22 L44 N_GPP_G22
GPP_G21 U35 N_GPP_G21
GPP_G20 R35 N_GPP_G20
GPP_H23 BD36
5 OF 12
CHIPSET SKYLAKE INTEL/[10HB1-03Z170-20R]

CLK:4/15<1000;Guard GND

32.768KHZ
NX2-SHT
SHW/D0.64*5.08*6.74
N_Y1
N_Y2 NR11 10M/4
NC16 18P/4/NPO/50V/J
NC18 18P/4/NPO/50V/J
NX2
32.768K/12.5p/20ppm/TF38/35K/D

VCC3
N_GPP_I3 NR7 8.2K/4
N_GPP_F23 NR12 8.2K/4
N_GPP_F22 NR248 8.2K/4
A_-SKTOCC NR16 8.2K/4
N_GPP_G22 NR18 8.2K/4
N_GPP_G21 NR20 8.2K/4
N_GPP_G20 NR22 8.2K/4

VCC3
N_GPP_B5 NR6 8.2K/4
N_GPP_B6 NR8 8.2K/4
N_GPP_B7 NR10 8.2K/4
N_GPP_B8 NR13 8.2K/4
N_GPP_B9 NR14 8.2K/4/X
VCC3
N_GPP_H0 NR19 8.2K/4
N_GPP_H1 NR166 8.2K/4/X
N_GPP_H2 NR167 8.2K/4
N_GPP_H3 NR168 8.2K/4
N_GPP_H5 NR31 8.2K/4

XTALI_PCH_R NR3 68/4/1 XTALI_PCH
NR32 1M/4
NX1
XTALO_PCH
24M/16p/30ppm/49US/50/D
NC8 22p/4/NPO/50V/J
NC7 27p/4/NPO/50V/J

CLK:4/15<1000 mils±100 mils;Guard GND

PCHG
SPT-H_PCH
4 N_24MCLK → N_24MCLK G1
4 N_-24MCLK → N_-24MCLK F1
48 PCH_CPUCLK → PCH_CPUCLK G2
48 PCH_-CPUCLK → PCH_-CPUCLK H2
XTALO_PCH A5
XTALI_PCH A6
VCC1_0_PCH NR5 2.7K/4/1 XCLK_BIASREF E1
N_Y1 BC9
N_Y2 BD10
19 -PCIEX16_PR → N_GPP_B5 BC24
21 -PCIEX1_PR1 → N_GPP_B6 AW24
21 -PCIEX1_PR2 → N_GPP_B7 AT24
20 -PCIEX4_PR → N_GPP_B8 BD25
N_GPP_B9 BB24
45 LA_-CLKREQ → N_GPP_B10 BE25
24 M2H_-CLKREQ → N_GPP_H0 AT33
22 -PCIEX8_PR → N_GPP_H1 AR31
21 -PCIEX1_PR3 → N_GPP_H2 BD32
N_GPP_H3 BC32
46 LB_-CLKREQ → N_GPP_H4 BB31
58 M2D_-CLKREQ → N_GPP_H5 BC33
BA33
52 TH_CLK_REQ_N → N_GPP_H7 AW33
BB33
BD33
R13
R11
P1
R2
TBT 52 REFCLK_TBT_N → REFCLK_TBT_N W7
52 REFCLK_TBT_P → REFCLK_TBT_P Y5
U2
U3
7 OF 12
CHIPSET SKYLAKE INTEL/[10HB1-03Z170-20R]

N_GPP_H7 NR283 0/4/X
N_GPP_B9 NR169 MASK/0/4/SHT/M/X
N_GPP_H4 NR286 0/4/X
N_GPP_B10 NR287 0/4/X
ON-BOARD DEVICE USED

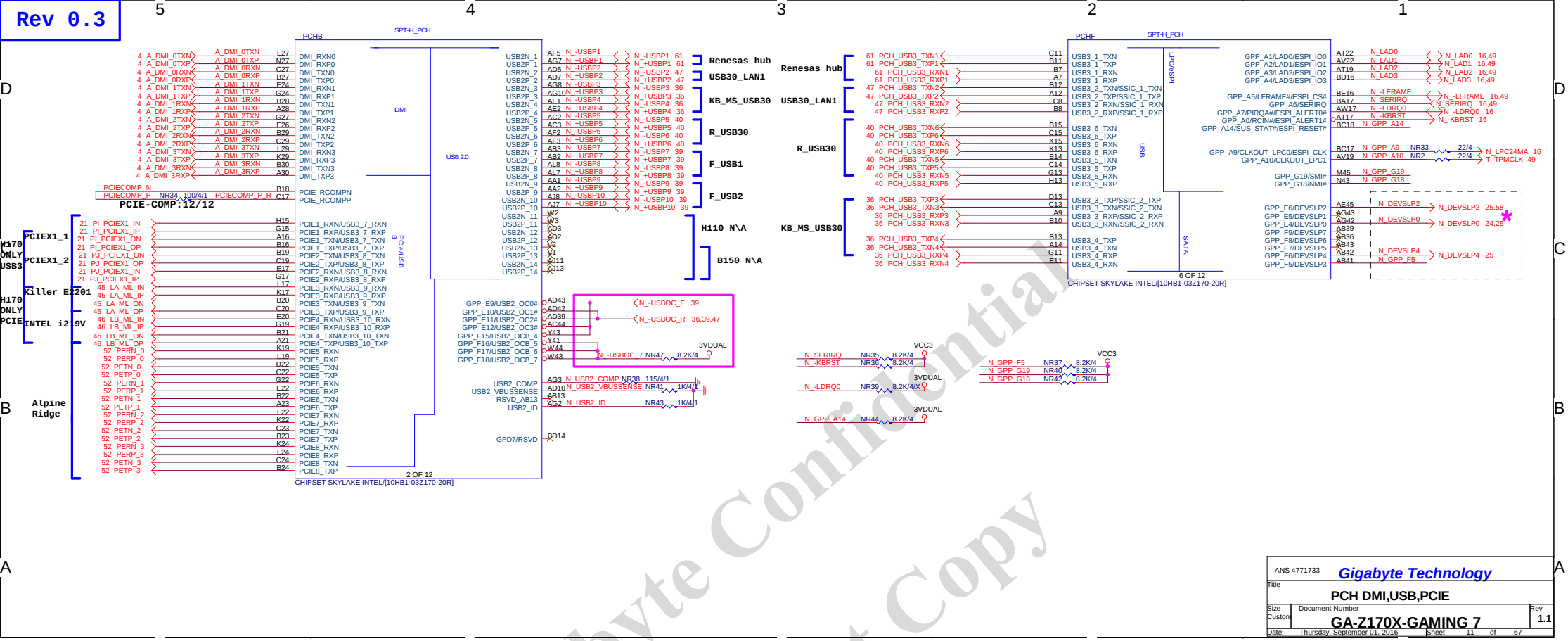
GPP_A16/CLKOUT_48 AR17
CLKOUT_CPUNSSC_P
CLKOUT_CPUNSSC
CLKOUT_CPUBCLK_P
CLKOUT_CPUBCLK
XTAL24_OUT
XTAL24_IN
XCLK_BIASREF
RTCX1
RTCX2
GPP_B5/SRCCLKREQ0#
GPP_B6/SRCCLKREQ1#
GPP_B7/SRCCLKREQ2#
GPP_B8/SRCCLKREQ3#
GPP_B9/SRCCLKREQ4#
GPP_B10/SRCCLKREQ5#
GPP_H0/SRCCLKREQ6#
GPP_H1/SRCCLKREQ7#
GPP_H2/SRCCLKREQ8#
GPP_H3/SRCCLKREQ9#
GPP_H4/SRCCLKREQ10#
GPP_H5/SRCCLKREQ11#
GPP_H6/SRCCLKREQ12#
GPP_H7/SRCCLKREQ13#
GPP_H8/SRCCLKREQ14#
GPP_H9/SRCCLKREQ15#
CLKOUT_PCIE_N15
CLKOUT_PCIE_P15
CLKOUT_PCIE_N14
CLKOUT_PCIE_P14
CLKOUT_PCIE_N13
CLKOUT_PCIE_P13
CLKOUT_PCIE_N12
CLKOUT_PCIE_P12
CLKOUT_ITPXDP
CLKOUT_ITPXDP_P
CLKOUT_CPUPCIBCLK
CLKOUT_CPUPCIBCLK_P
CLKOUT_PCIE_N0
CLKOUT_PCIE_P0
CLKOUT_PCIE_N1
CLKOUT_PCIE_P1
CLKOUT_PCIE_N2
CLKOUT_PCIE_P2
CLKOUT_PCIE_N3
CLKOUT_PCIE_P3
CLKOUT_PCIE_N4
CLKOUT_PCIE_P4
CLKOUT_PCIE_N5
CLKOUT_PCIE_P5
CLKOUT_PCIE_N6
CLKOUT_PCIE_P6
CLKOUT_PCIE_N7
CLKOUT_PCIE_P7
CLKOUT_PCIE_N8
CLKOUT_PCIE_P8
CLKOUT_PCIE_N9
CLKOUT_PCIE_P9
CLKOUT_PCIE_N10
CLKOUT_PCIE_P10
CLKOUT_PCIE_N11
CLKOUT_PCIE_P11

J1 N_-CPUPCIBCLK 4
J2 N_CPUPCIBCLK 4 *
N7 PA_-SRCCLK_3GIO 19
N8 PA_SRCCLK_3GIO 19 PCIEX16
L7 PI_-PCIE_CLK 21
L5 PI_PCIE_CLK 21 PCIEX1_1
D3 PJ_-PCIE_CLK 21
F2 PJ_PCIE_CLK 21 PCIEX1_2
E5 PQ_-PCIE_CLK 20
G4 PQ_PCIE_CLK 20 PCIEX4
D5 RH_-SRCCLK 51
E6 RH_SRCCLK 51 ASM1061
D8 LA_-SRCCLK_LAN 45
D7 LA_SRCCLK_LAN 45 E2400
R8 CK_M2H_100M_DN 24
R7 CK_M2H_100M_DP 24 M2H_32G
U5 PE_-SRCCLK_3GIO1 22
U7 PE_SRCCLK_3GIO1 22 PCIEX8
W10 PK_-PCIE_CLK 21
W11 PK_PCIE_CLK 21 PCIEX1_3
P3 LB_-SRCCLK_LAN 46
P2 LB_SRCCLK_LAN 46 I219
R3 CK_M2D_100M_DN 58
R4 CK_M2D_100M_DP 58 M2D_32G

CLOCK 4/4/4//15

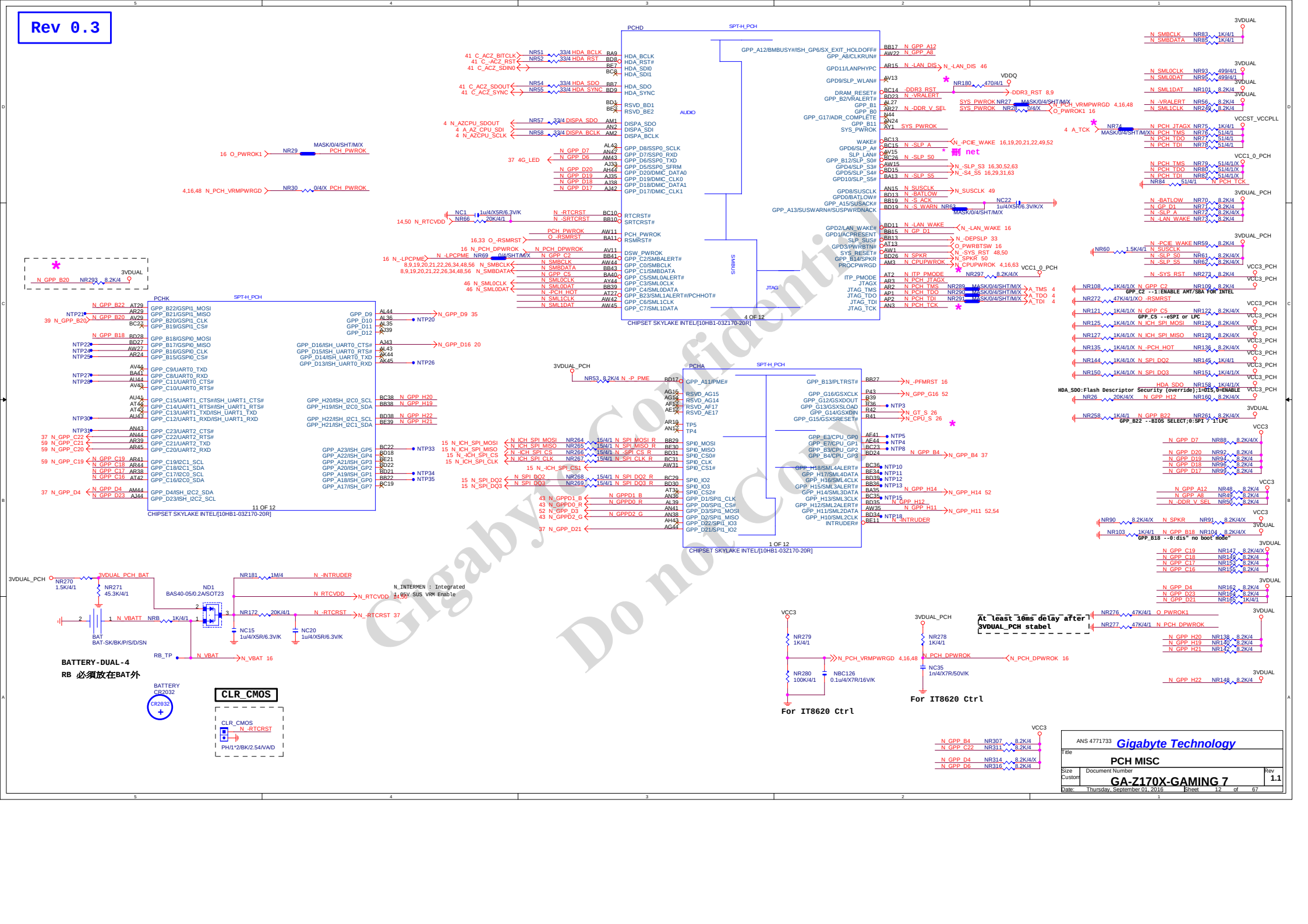
ANS 4771733 Gigabyte Technology
Title: PCH CLOCK BUFFER
Size: Custom
Document Number: GA-Z170X-GAMING 7
Rev: 1.1
Date: Thursday, September 01, 2016 Sheet 10 of 67

Rev 0.3



ANS	4771733
	Gigabyte Technology
Title	PCH DMI,USB,PCIE
Size	Custom
Document Number	GA-Z170X-GAMING 7
Rev	1.1
Date:	Thursday, September 01, 2016
Sheet	11 of 67

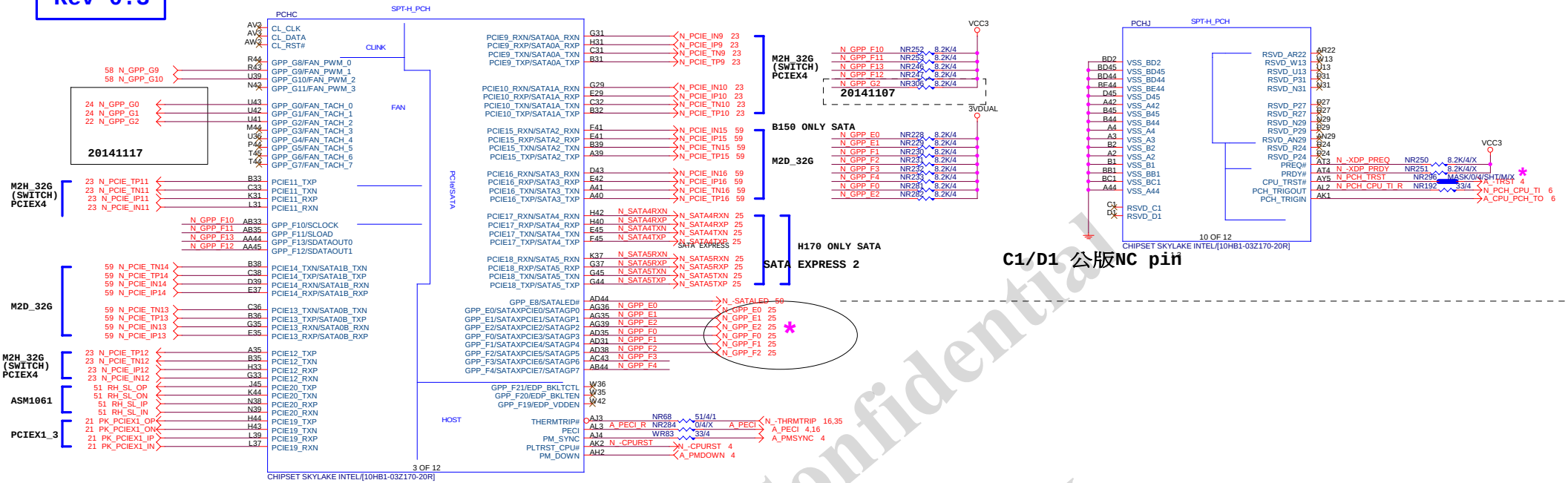
Rev 0.3



ANS	4771733
Title	PCH MISC
Size	Custom
Document Number	GA-Z170X-GAMING 7
Rev	1.1
Date:	Thursday, September 01, 2016
Sheet	12 of 67

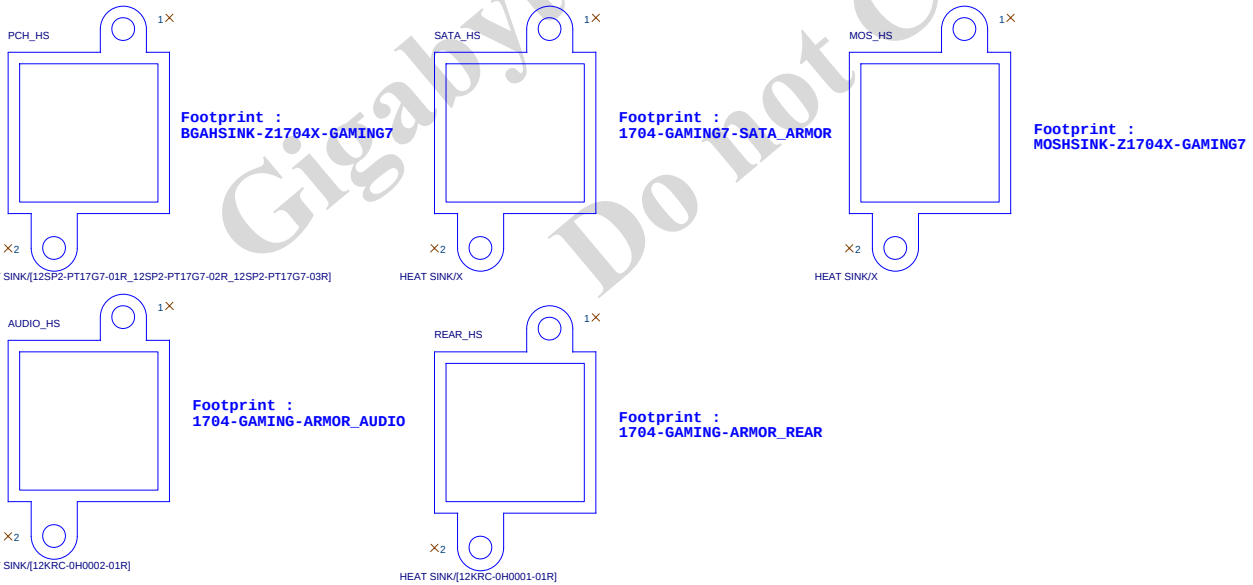
Gigabyte Technology

Rev 0.3



C1/D1 公版NC pin

装甲HEATSINK 分成五大部份

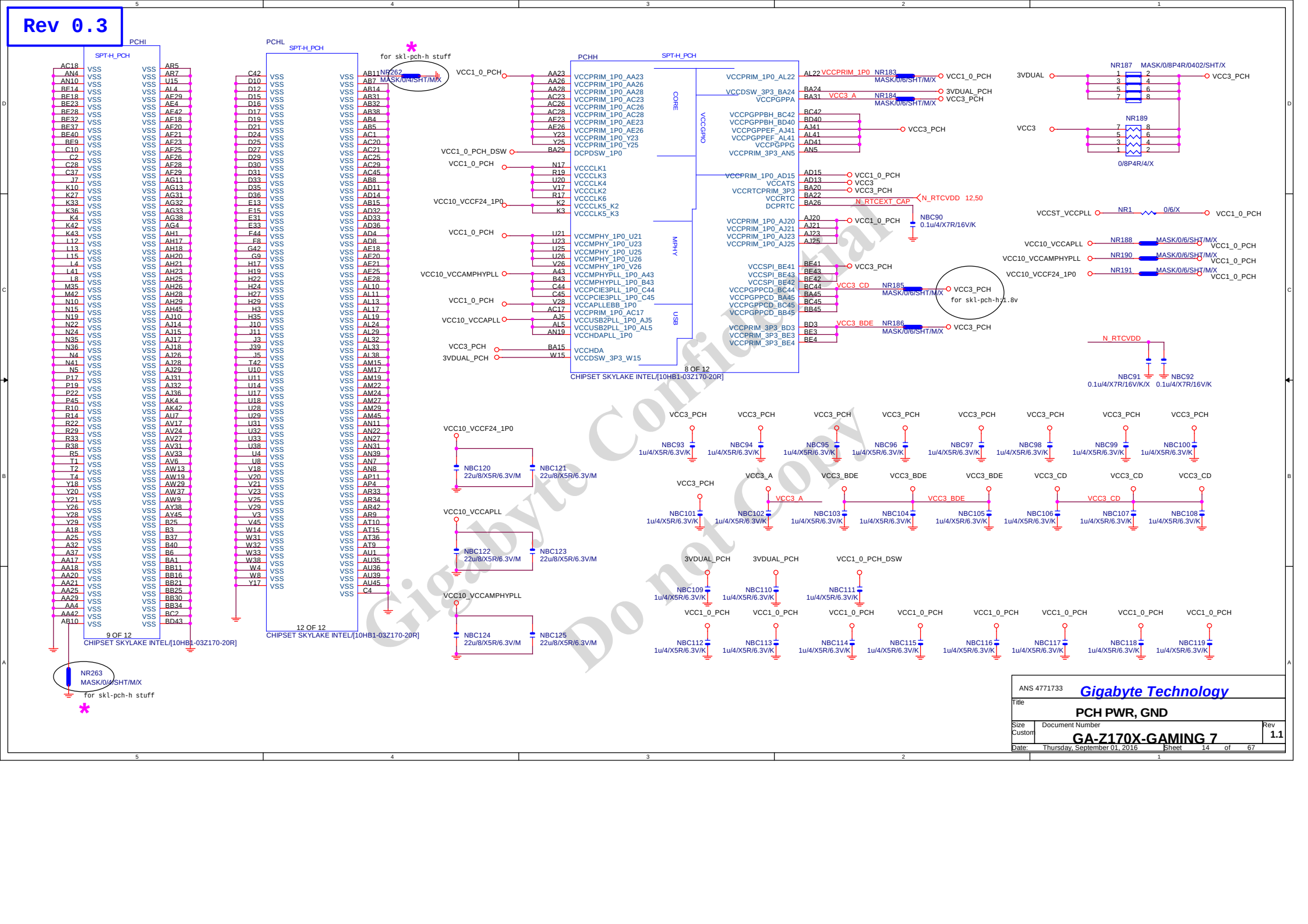


ANS 4771733 **Gigabyte Technology**

Title: PCH SATA,PCIE,SATA_EXPRESS

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

Date: Thursday, September 01, 2016 | Sheet 13 of 67



ANS 4771733	Gigabyte Technology		
Title	PCH PWR, GND		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1	
Date: Thursday, September 01, 2016	Sheet 14 of 67		

Rev 0.42

DUAL BIOS

3VDUAL
指定用DII
NR238 330/4
NR239 1K/4/1
-SPI_CS_1
NQ20 MMBT2222A/SOT23/600mA/40 S0T23
N_-ICH_SPI_CS
N_-ICH_SPI_CS 12
NQ21 MMBT2222A/SOT23/600mA/40 S0T23
-SPI_HOLD_B NR235 8.2K/4

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

MOSI For DMI RX Termination Voltage

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

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

MAIN BIOS
128M/Q/SPI/SO8/S
* (footprint 改 SOIC8-SPI-SOCKET)

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

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

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

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

BACKUP BIOS
128M/Q/SPI/SO8/S
* (footprint 改 IC8-BIOS)

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

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

1 means floating
0 means PD 1K

BSR5 100/4/1 -DUAL_BIOSDIS 16
SB SW/1/B/DIP/[11NH7-110003-21R]

SB:Single BIOS	
	Disable
	Enable

M_BIOS
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X
* 試產先上 , PVT 移除

BIOS_PH

BIOS_PH
N_-ICH_SPI_CS
N_ICH_SPI_MISO
N_SPI_DQ2
N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 12
3VDUAL
-HOLD0
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
MASK/PH/2*5K10/BK/2.54/VA/D/X

★Update 2015-01.29

Footprint the same, confirmed by Graceing.

Use COM port pin header part.

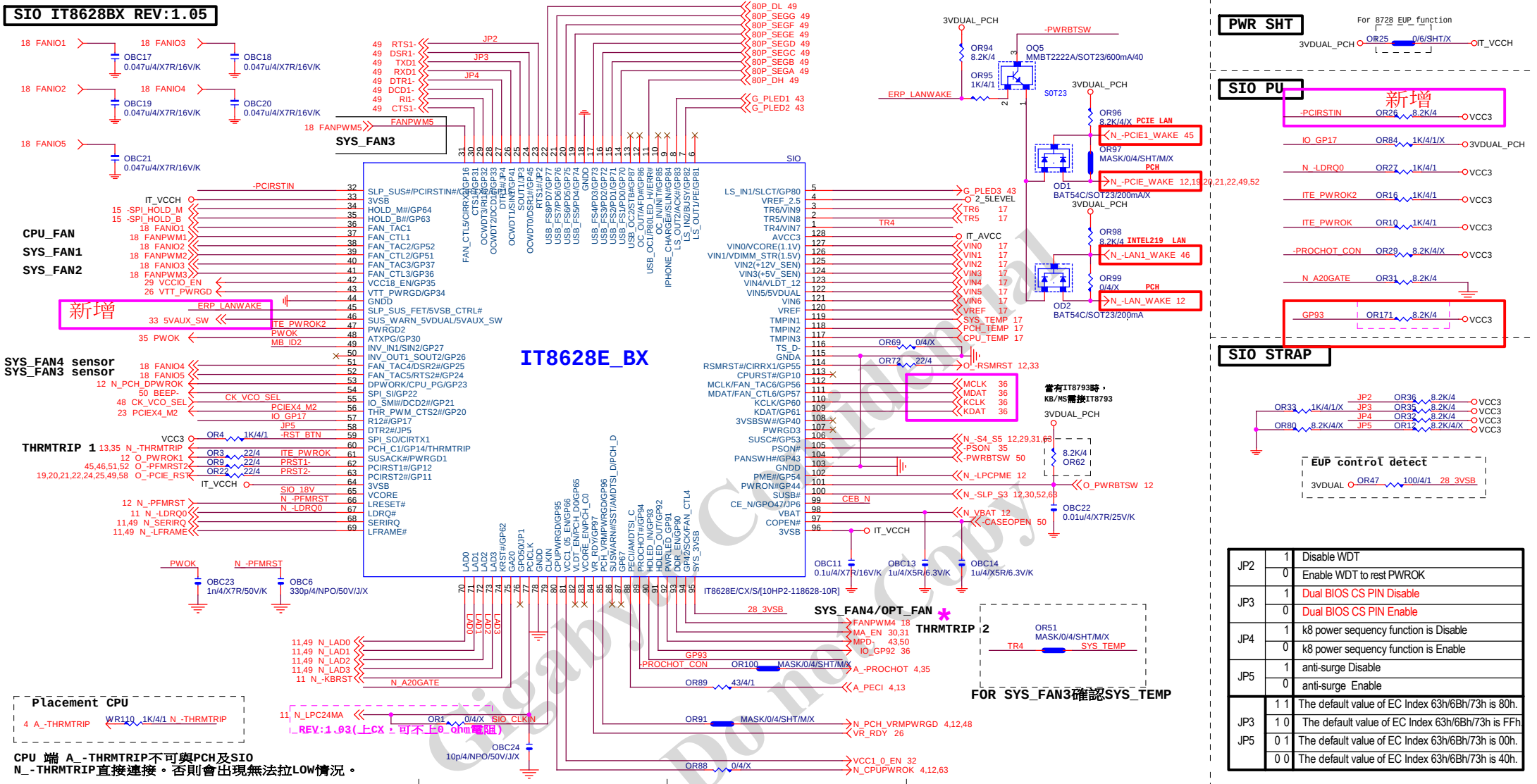
Gigabyte Technology

Title: BIOS

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

Date: Thursday, September 01, 2016 | Sheet 15 of 67

SIO IT8628BX REV:1.05



FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT_FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5
THRMTRIP1	YES PIN56

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

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

PWR SHT

SIO PU

SIO STRAP

EUP control detect

DUAL BIOS OPT STRAP

Power leakage

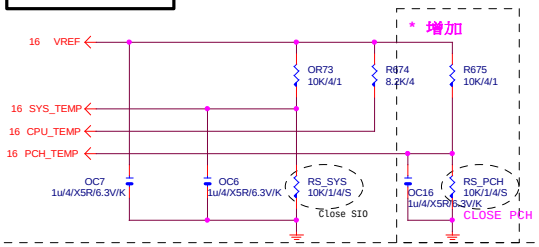
SIO_18V

SIO CAP

MB ID

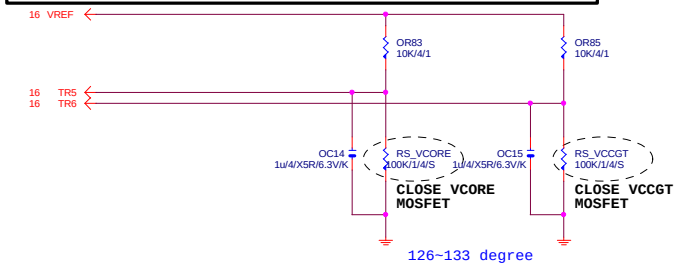
Gigabyte Technology	
Title	ITE 8620 LPC IO
Size: Custom	Document Number: GA-Z170X-GAMING 7
Rev: 1.1	
Date: Thursday, September 01, 2016	Sheet 16 of 67

TEMP H/W MONITOR



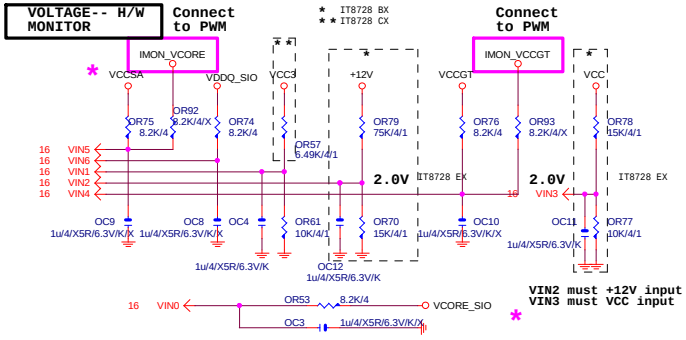
RS_VCORE、RS_VCCGT CLOSE CPU VCORE & VCCGT MOSFET

-PROCHOT:有mos heartsink不用prochot function

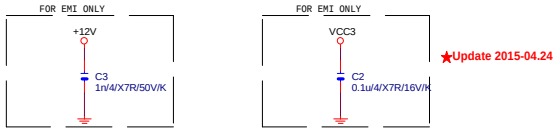


126~133 degree

VOLTAGE-- H/W MONITOR



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

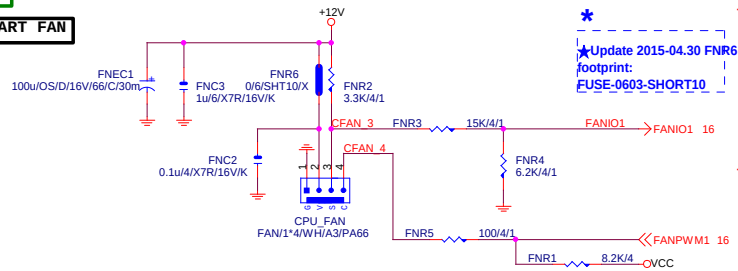


★Update 2015-04.24

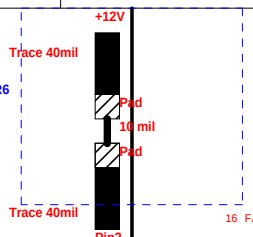
Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 17 of 67	

Rev: 0.52

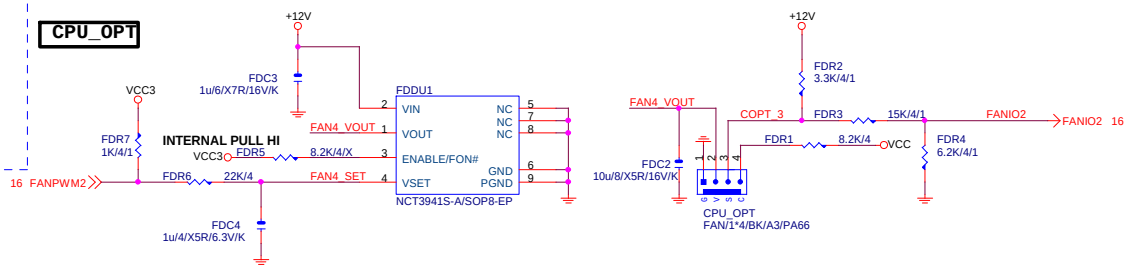
CPU SMART FAN



★Update 2015-04.30 FNR6 footprint: FUSE-0603-SHORT10



CPU_OPT

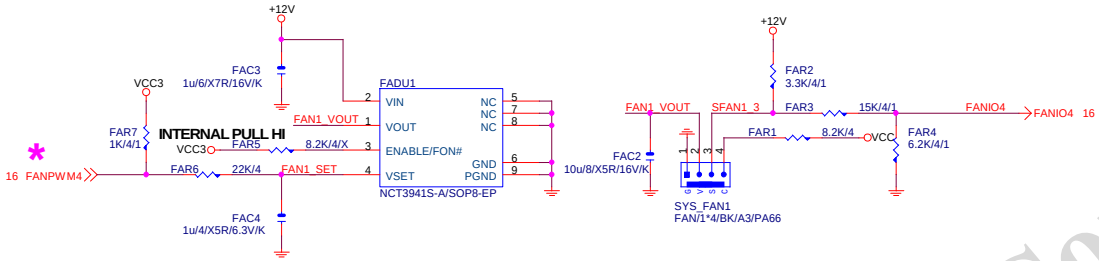


SYSTEM FAN1

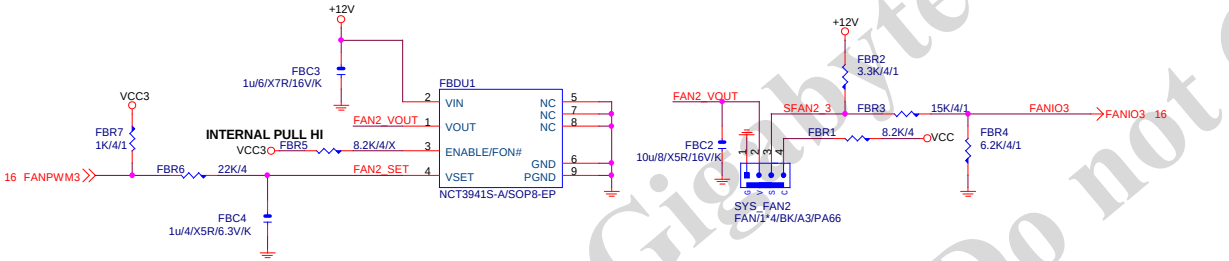
Linear SYS_FAN

Enable Function (NCT3941S)

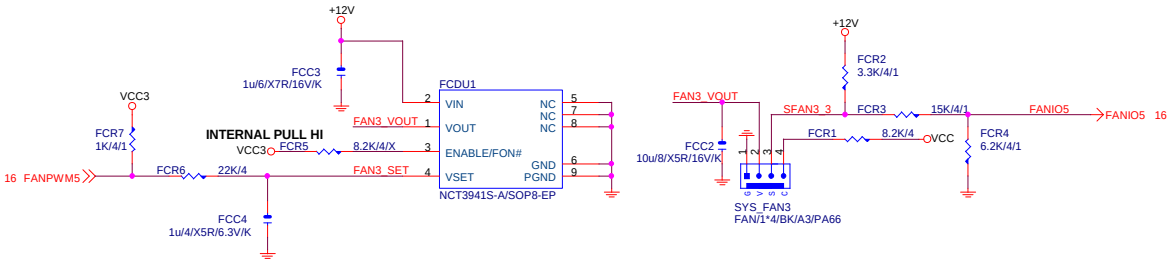
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2

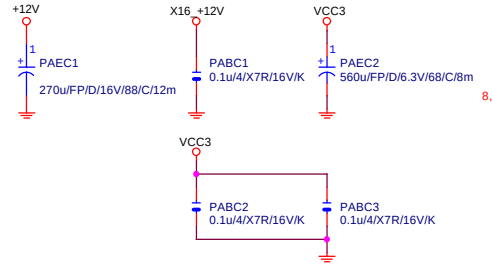


SYSTEM FAN3



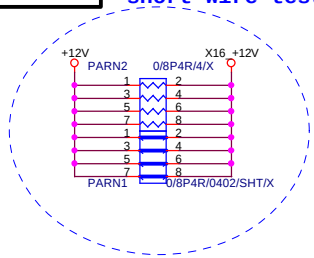
Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 18 of 67	

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_SW_TXP8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN15_C

PCI-E REV:1.1--> 2.5GHZ

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

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

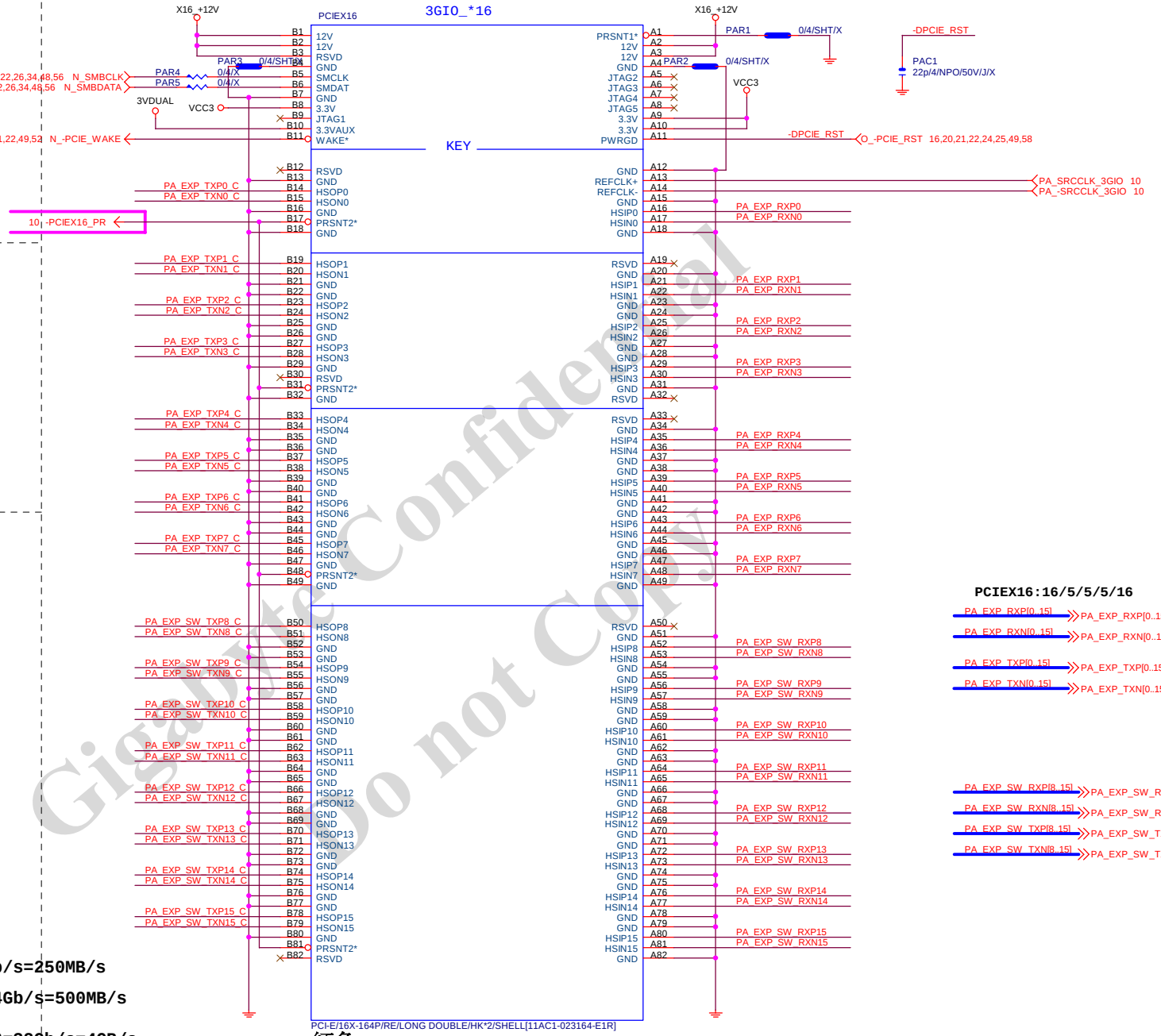
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164STH



紅色

PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] → PA_EXP_RXP[0..15] 4,23
PA_EXP_RXN[0..15] → PA_EXP_RXN[0..15] 4,23
PA_EXP_TXP[0..15] → PA_EXP_TXP[0..15] 4,23
PA_EXP_TXN[0..15] → PA_EXP_TXN[0..15] 4,23

PA_EXP_SW_RXP[8..15] → PA_EXP_SW_RXP[8..15] 23
PA_EXP_SW_RXN[8..15] → PA_EXP_SW_RXN[8..15] 23
PA_EXP_SW_TXP[8..15] → PA_EXP_SW_TXP[8..15] 23
PA_EXP_SW_TXN[8..15] → PA_EXP_SW_TXN[8..15] 23

Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-Z170X-GAMING 7		Rev: 1.1
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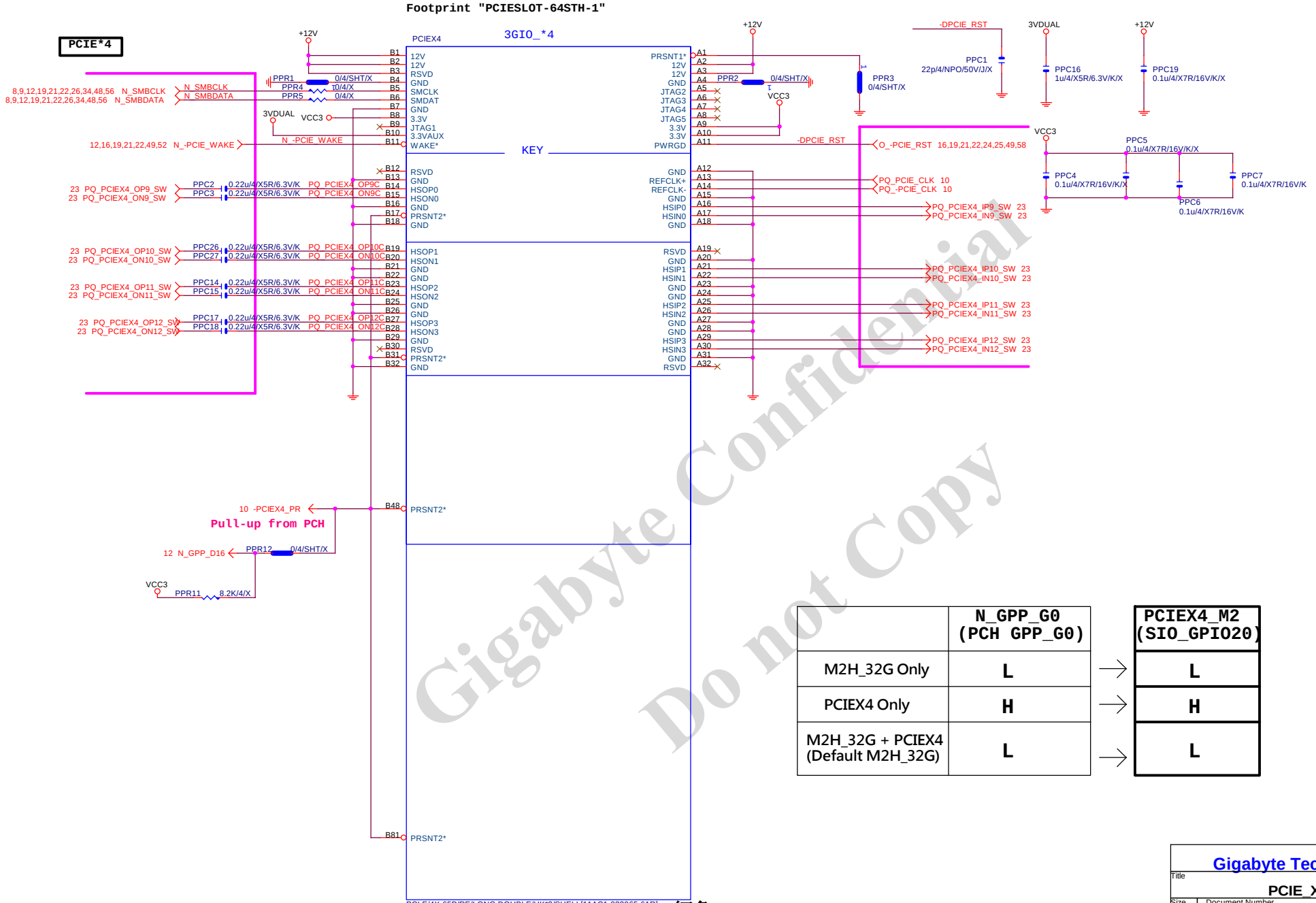

	N_GPP_G0 (PCH GPP_G0)	PCIEX4_M2 (SIO_GPIO20)
M2H_32G Only	L	L
PCIEX4 Only	H	H
M2H_32G + PCIEX4 (Default M2H_32G)	L	L

Gigabyte Technology

Title: PCIE_X1 1,2

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

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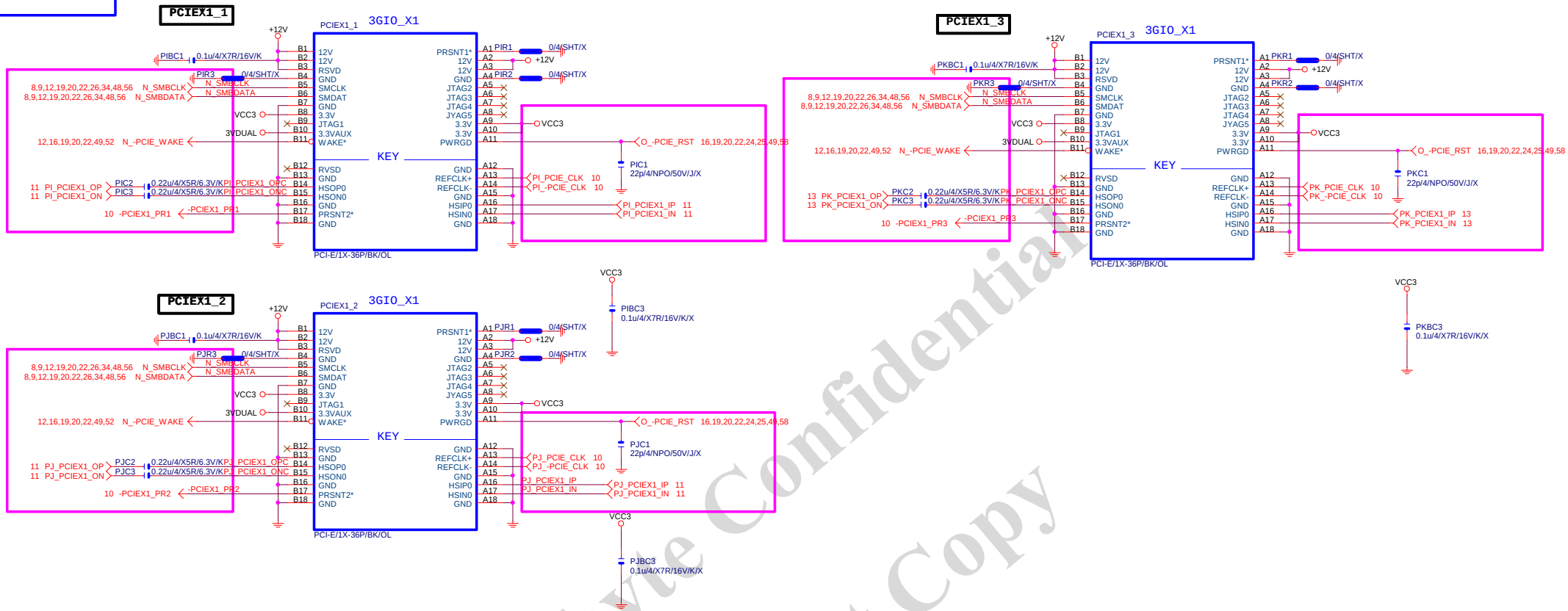
Rev 0.2



Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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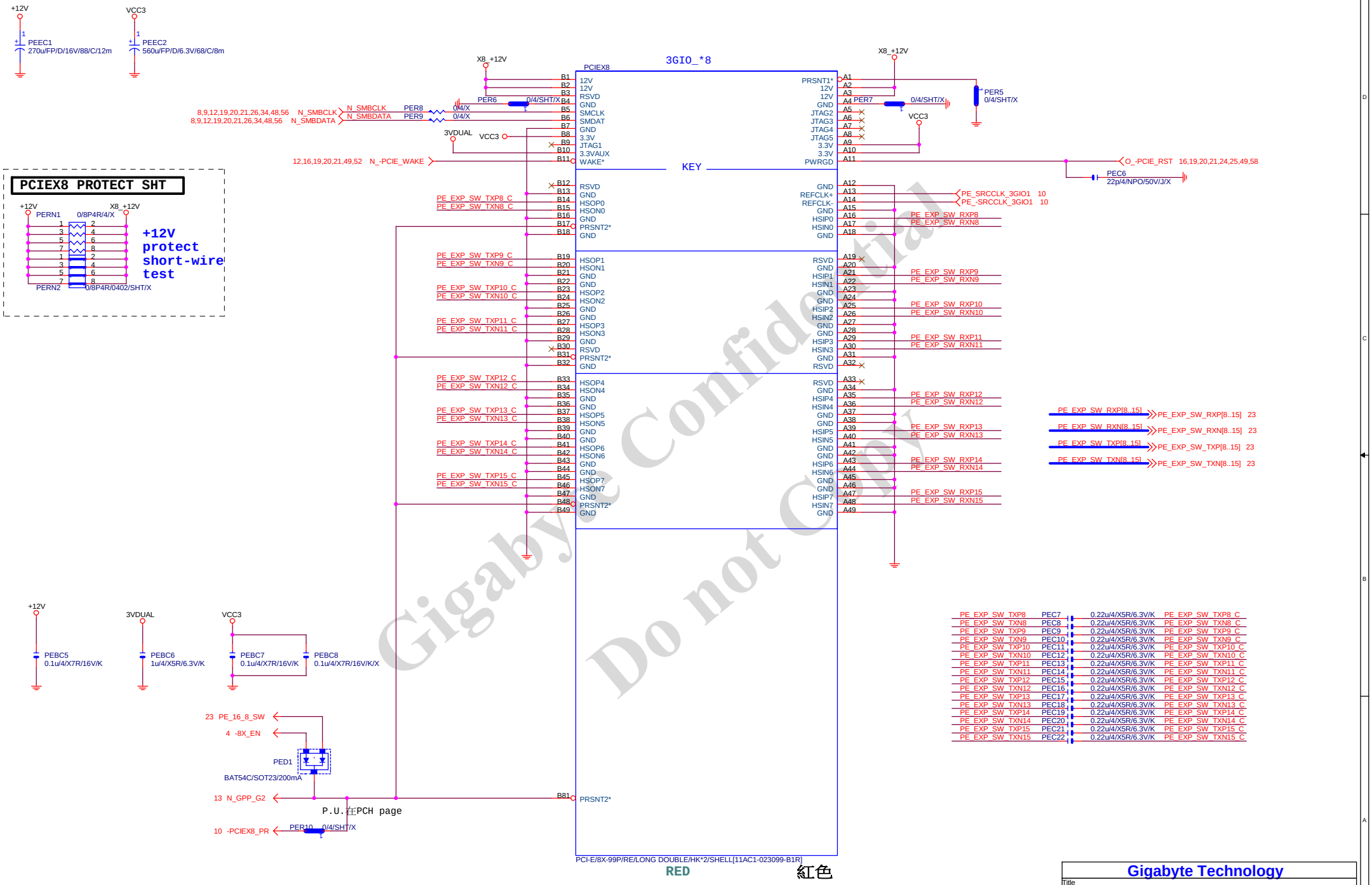
PCIEX8 PROTECT SHT
+12V protect short-wire test
PCIEX8
3GIO_*8
KEY
PCI-E/8X-99P/RE/LONG DOUBLE/HK*2/SHELL[11AC1-023099-B1R]
RED
紅色
P.U.在PCH page
Gigabyte Technology
PCI EXPRESS X8
GA-Z170X-GAMING 7
Rev 1.1
Thursday, September 01, 2016
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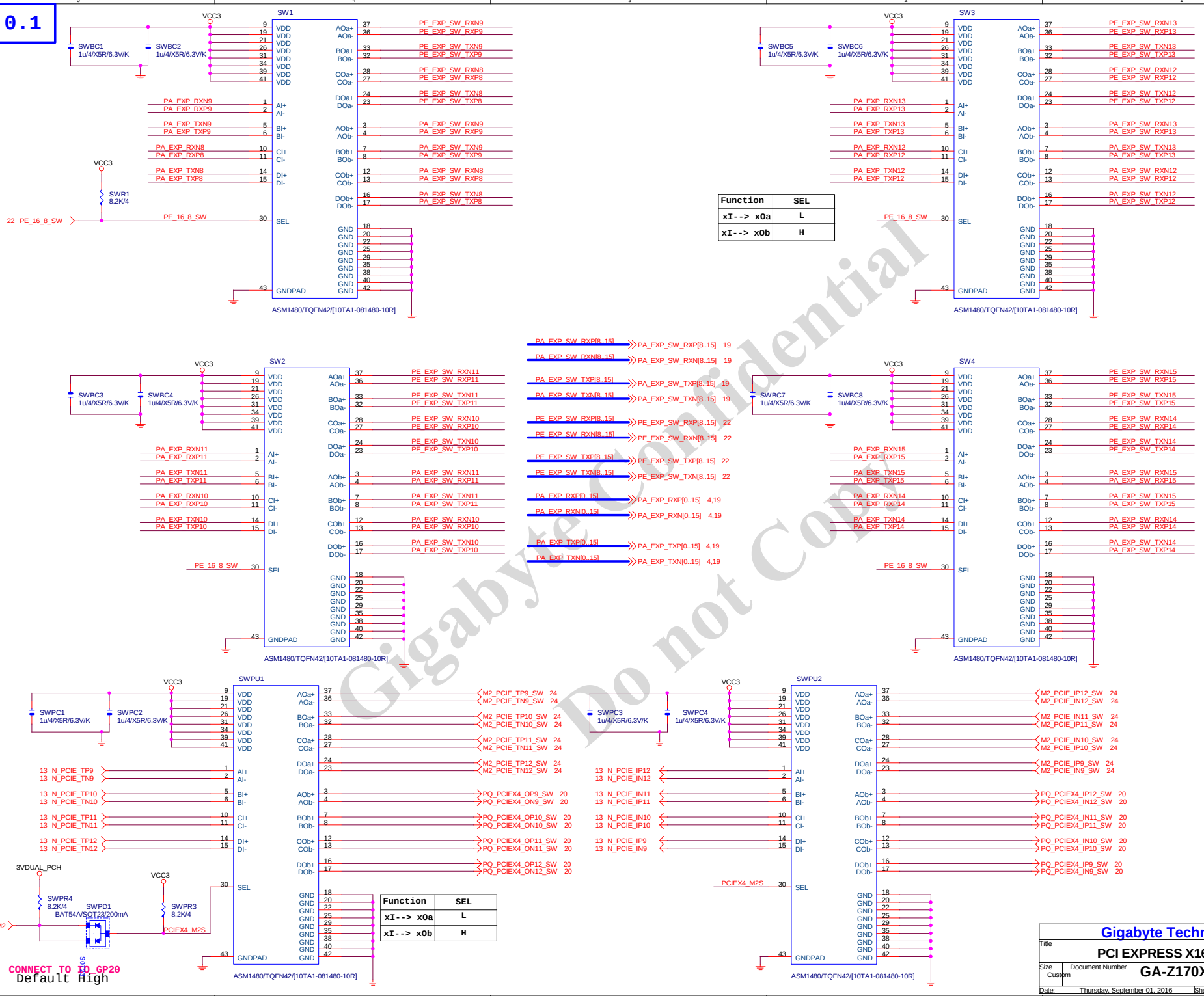
Do not Copy

Rev 0.1



Title	PCI EXPRESS X16 SWITCH
Size	Custom
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Gigabyte Technology

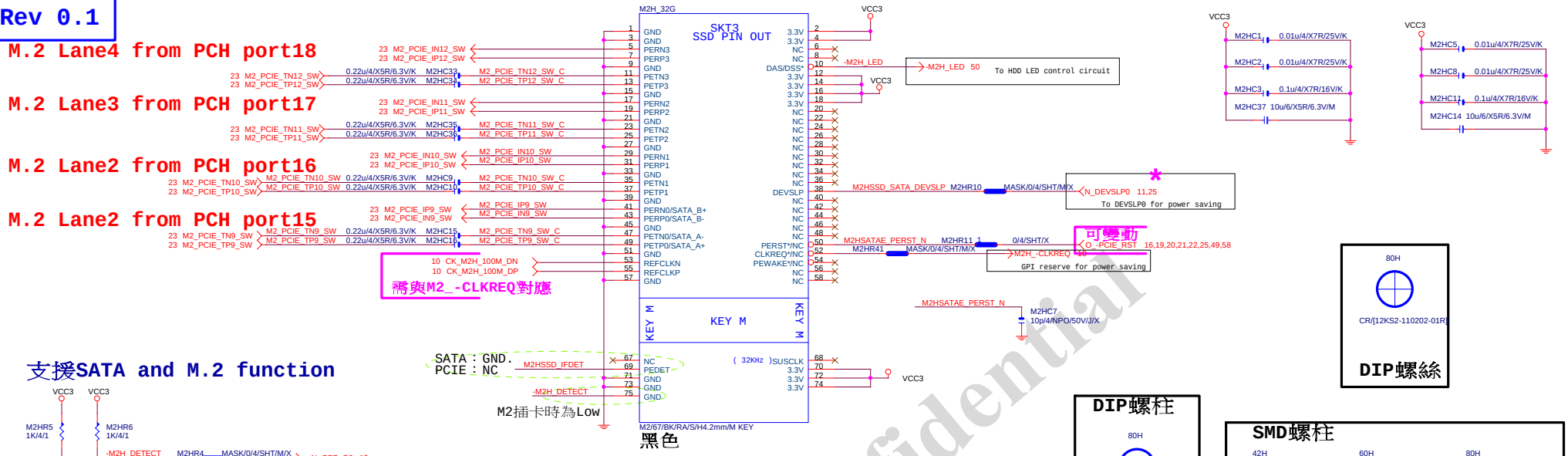
Rev 0.1

M.2 Lane4 from PCH port18

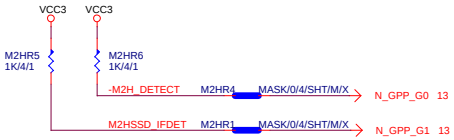
M.2 Lane3 from PCH port17

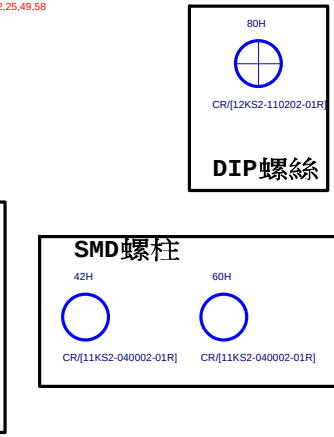
M.2 Lane2 from PCH port16

M.2 Lane2 from PCH port15



支援SATA and M.2 function





M.2 有插卡/沒插卡 GPP_G0	M.2插何種卡？ GPP_G1	SATA Express 插何種硬碟？ GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE x4 (For M.2)				SATA	SATA
		SATA Express (Low)	PCIE x4 (For M.2)				SATA Express	
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	PCIE x4				SATA	SATA
		SATA Express (Low)	PCIE x4				SATA Express	

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Title: M.2 X4		
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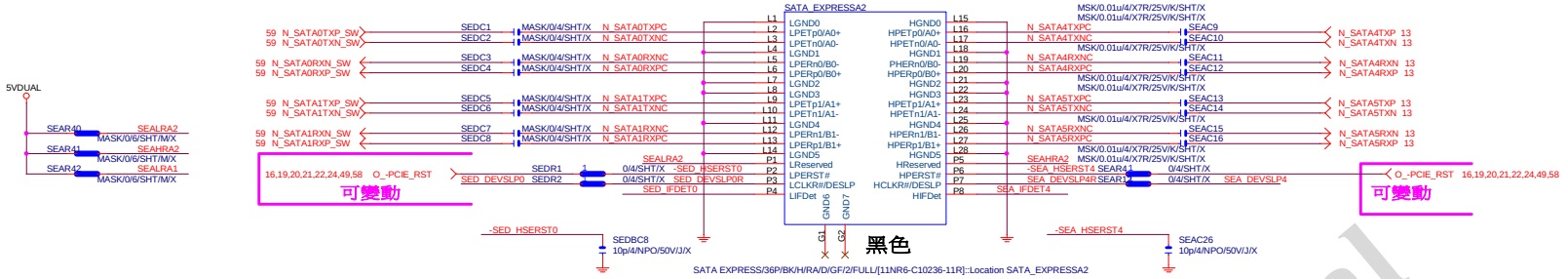
Rev 0.5

SATA EXPRESS 下層 To SATA3 port0/1

SATA EXPRESS 上層 To SATA3 port4/5



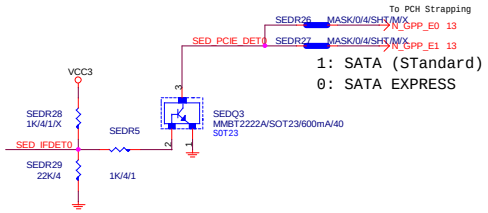
SATA EXPRESS/36P/BK/H/RA/D/GF/2/FULL/[11NR6-C10236-11R]::Location SATA_EXPRESSA2

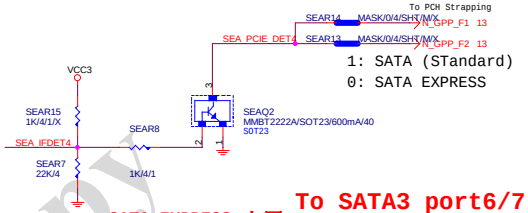
Rev 0.5

* check
文字面 01/23/45
NET
(45/23/01)

SATA EXPRESS料號
雙層:TBD

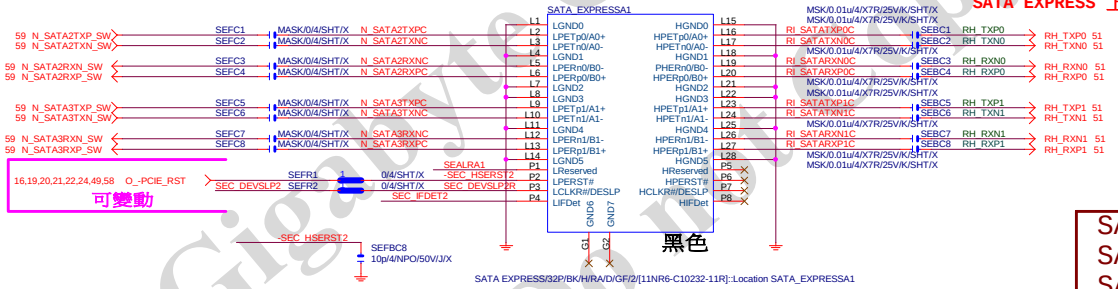
單層+2SATA:11NR6-C10236-03R
單層:11NR6-C10118-03R



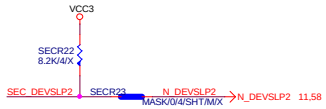


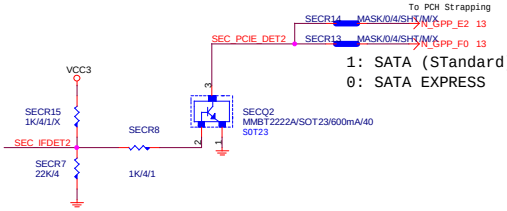
SATA EXPRESS 下層 To SATA3 port2/3

SATA EXPRESS 上層 To SATA3 port6/7 ASM1061



SATA EXPRESS/32P/BK/H/RA/D/GF/2/[11NR6-C10232-11R]::Location SATA_EXPRESSA1





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

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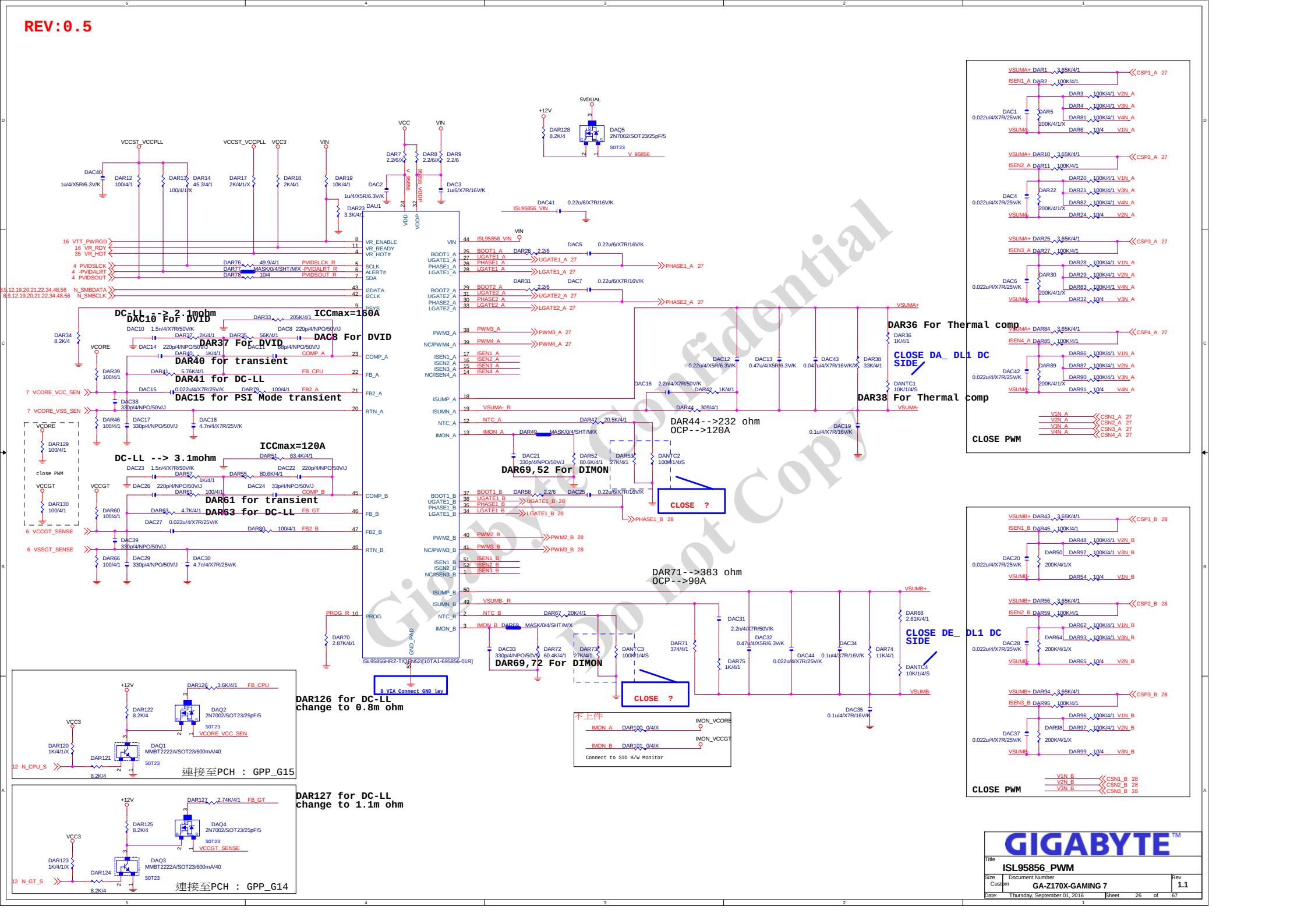
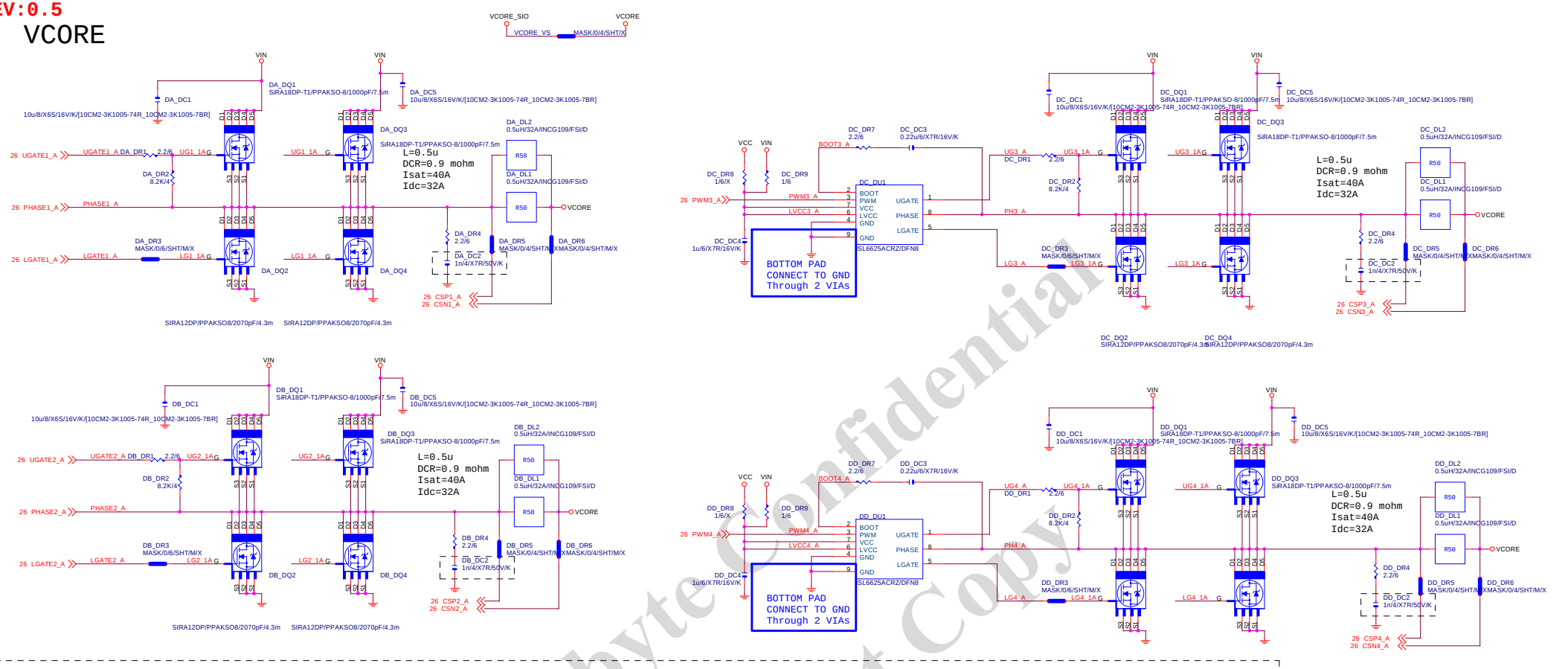
REV:0.5

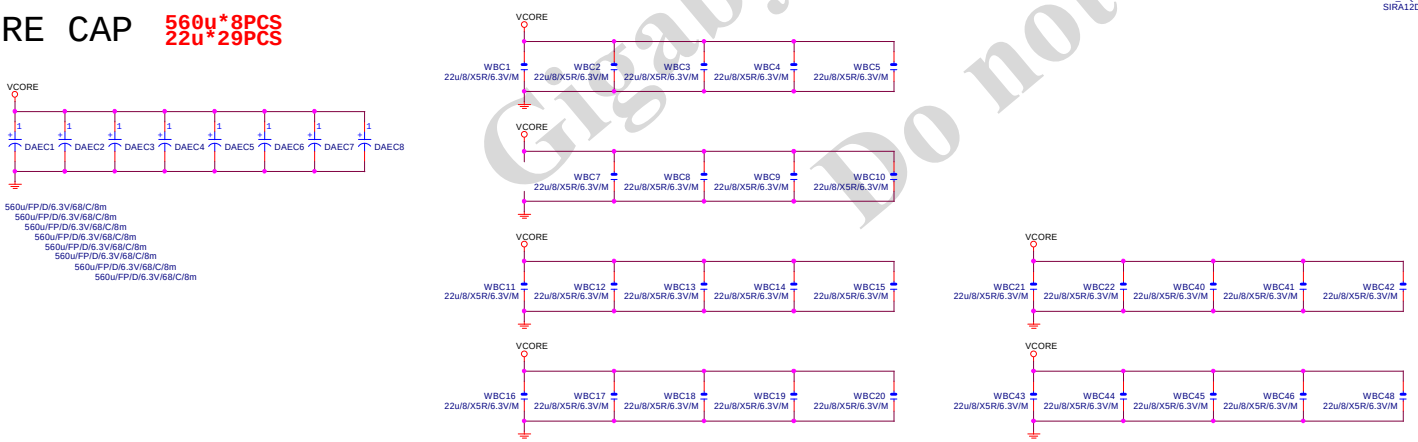


REV:0.5

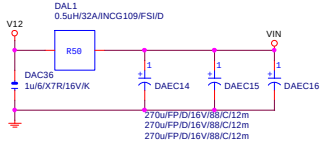
VCORE



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



VIN CAP 270u*3PCS



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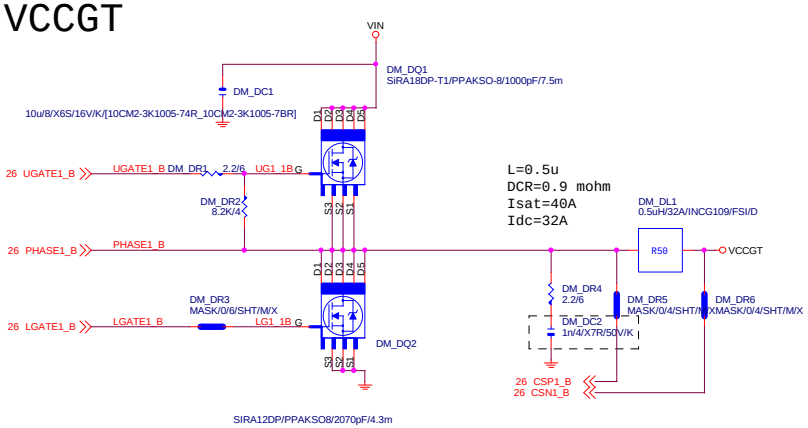
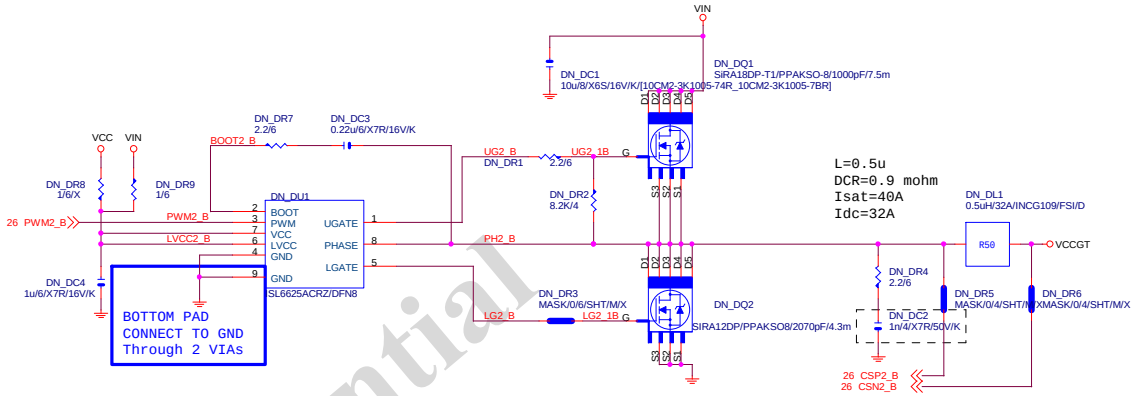
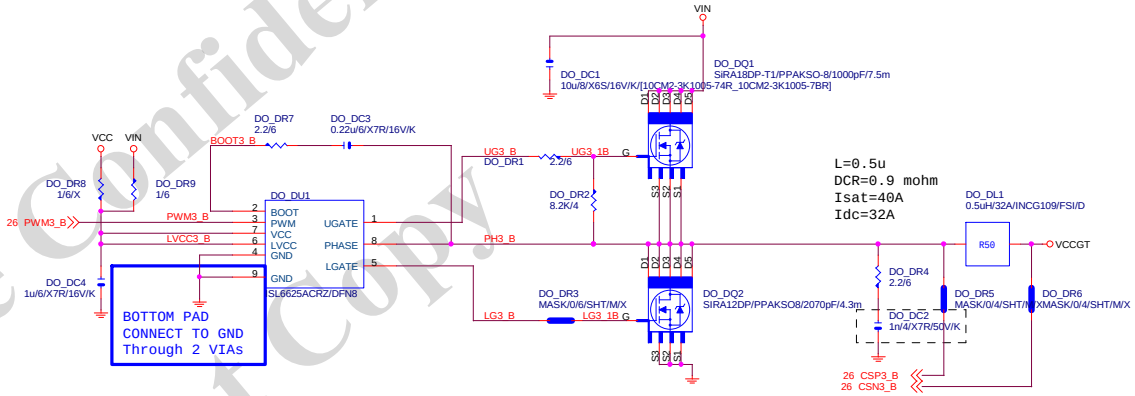
REV:0.5

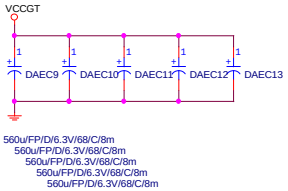
VCCGT

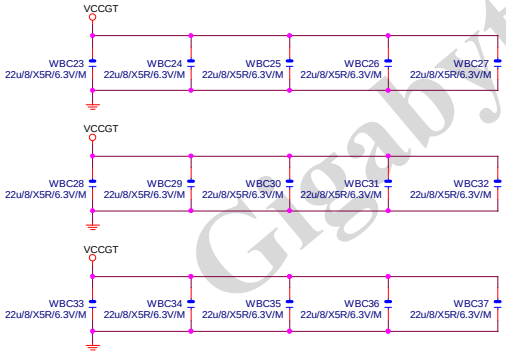






VCCGT CAP 560u*5PCS 22u*15PCS





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Title	ISL95856_MOS	
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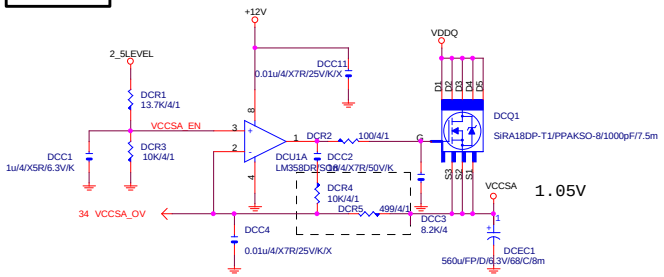
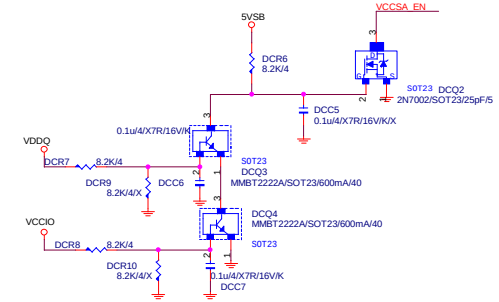
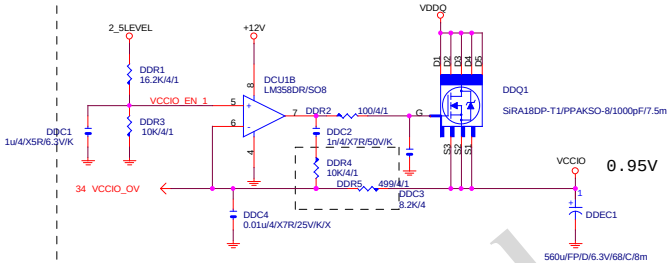
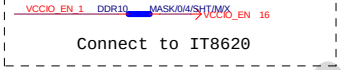
VCCSA

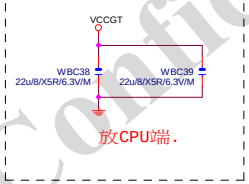




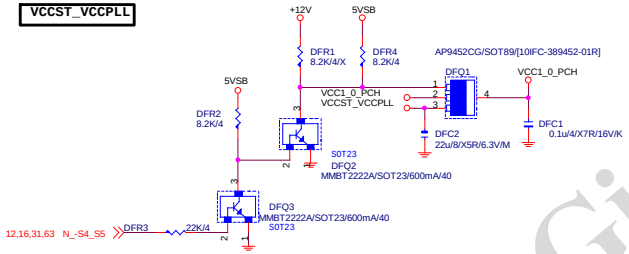
VCCIO

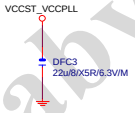






VCCST_VCCPLL





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Title: VCCSA_VCCIO_no 44E		
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REV:0.7

DDR4

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

DDR VIN CAP
560u*2PCS

CHOKE與CAP料號可變

+12V 5VDUAL MA_DR10 0/6/X MA_D1 SDM20E40C/0.4A/SOT23 MA_DR8 2.2/6 DRV_DDR MA_DC10 1u/6/X7R/16V/K MA_DC9 0.1u/6/X7R/25V/K

VDDQ_SIO DDR_VS MASK/0/4/SHT/X VDDQ

RT8120DGS/SOP8 MAU2
COMP VCC BOOT UGATE PHASE FB GND PGND LG/OC
DDR_EN MA_DC15 22p/4/NPO/50V/J MA_DR15 27K/4/1 MA_DC16 3.3n/4/X7R/50V/K MA_DR19 MASK/0/4/SHT/X
MA_UGATE MA_PHASE MA_LGATE MA_DR18 11.8K/4/1

放靠近IC pin4

5VDUAL MA_L2 0.5uH/25A/INC0809/F/D 8*8
MA_DC6 0.1u/4/X7R/16V/K Close Choke
MA_VIN MA_DC7 1u/6/X7R/16V/K Close MOS MAEC1 560u/FP/D/6.3V/68/C/8m MAEC2 560u/FP/D/6.3V/68/C/8m
MA_DQ1 SIRA12DP/PPAKSO8/2070pF/4.3m

MA_UGATE MA_DR1 2.2/6 MA_DR2 8.2K/4 MA_PHASE MA_DQ2 MA_DQ3 MA_LGATE MA_DR9 2.2/6
MA_DR5 2.2/6 MA_DC5 1n/4/X7R/50V/K
SIRA12DP/PPAKSO8/2070pF/4.3m
SIRA12DP/PPAKSO8/2070pF/4.3m

MA_L1 0.8uH/28A/INCG109/FS/D R50 10*10
VDDQ MA_DR14 487/4/1 MA_DR13 2K/4/1 MA_DC14 3.3n/4/X7R/50V/K RS
DDR_ADJ
RO MA_DR12 4.02K/4/1
34 DDR_ADJ

SUPPORT DDR4 1.2V
25A MAX
L=0.5u
DCR=1.05 mohm
Isat=40A
Idc=30A

Remote sense請從最重的負載端點拉回

PWR SEQ

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

For power sequence require

5VDUAL DDR_EN MAR1 8.2K/4 MAQ10 2N7002/SOT23/25pF/5 SOT23
5VDUAL MAR2 8.2K/4 MAQ11 2N7002/SOT23/25pF/5 SOT23
16,31 MA_EN MAR105 100K/4/1 MAC9 1u/6/X7R/16V/K

Connect to IT8620

MAU1上RT9045時上件

5VSB MAR7 8.2K/4/X MAQ2 2N7002/SOT23/25pF/5/X SOT23 MA_VTT_REF
MAQ3 2N7002/SOT23/25pF/5/X SOT23
12,16,52,63 N_-SLP_S3
5VSB MAR6 8.2K/4/X MAQ1 2N7002/SOT23/25pF/5/X SOT23 MA_VTT_REF
MAQ4 MMBT2222A/SOT23/600mA/40/X SOT23
4 DDR_VTT_CTL MAR8 8.2K/4/X

DDRVTT

VDDQ MAC2 1u/4/X5R/6.3V/K MAR5 1K/4/1 MA_VTT_REF
34 MA_VTT_REF MA_VTT_REF MAC1 0.01u/4/X7R/25V/K MAR4 1K/4/1

MAU1 NCT3103S/SOP8/2A
VIN GND VREF1 VOUT VREF2 ENABLE VCNTL BOOT_SEL GND
DDRVTT_EN DDRVTT_BOOT
5VDUAL MAC7 10u/6/X5R/6.3V/M
DDRVTT 1.1A MAX

DDR_VTT_CTL MAR110 0/4 DDRVTT_EN
N_-SLP_S3 MAR111 0/4 DDRVTT_BOOT
MAU1上NCT3103S時上件

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

VDDQ MAEC3 560u/FP/D/6.3V/68/C/8m
VDDQ MAEC4 560u/FP/D/6.3V/68/C/8m
VDDQ MAEC6 560u/FP/D/6.3V/68/C/8m
VDDQ MAEC7 560u/FP/D/6.3V/68/C/8m
* 大電容 x4

VDDQ WBC49 22u/8/X5R/6.3V/M
VDDQ WBC6 22u/8/X5R/6.3V/M

DDRVTT CAP

* 大電容 x0

DDRVTT MAC4 22u/8/X5R/6.3V/M
DDRVTT MAC5 22u/8/X5R/6.3V/M

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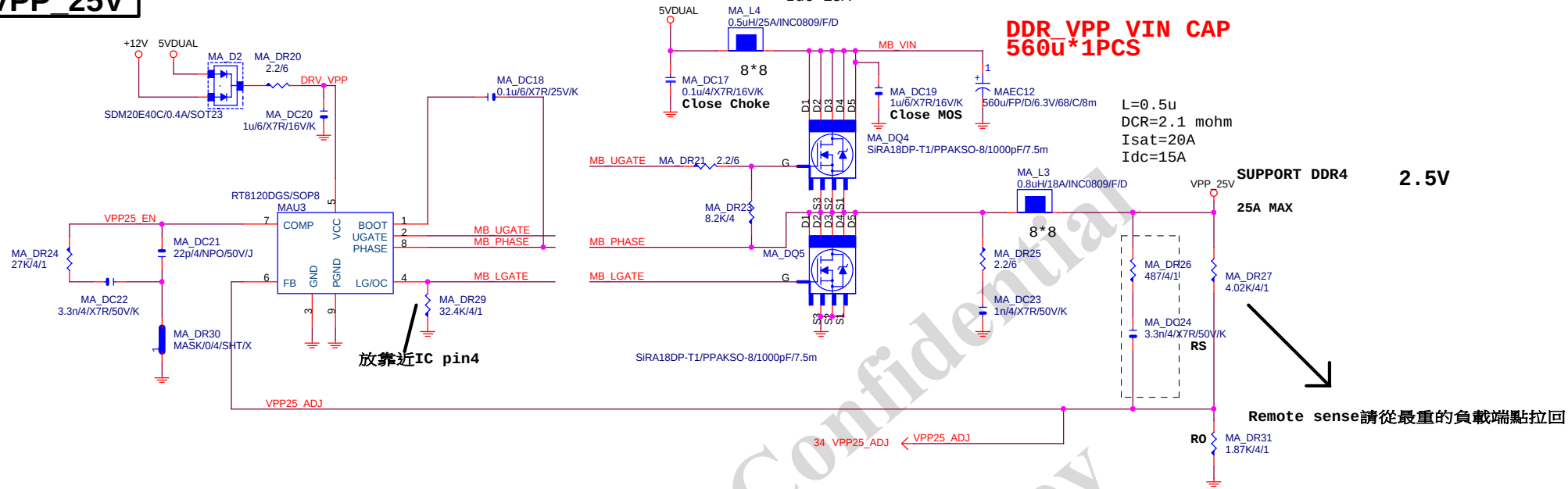
REV:0.7

VPP_25V

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

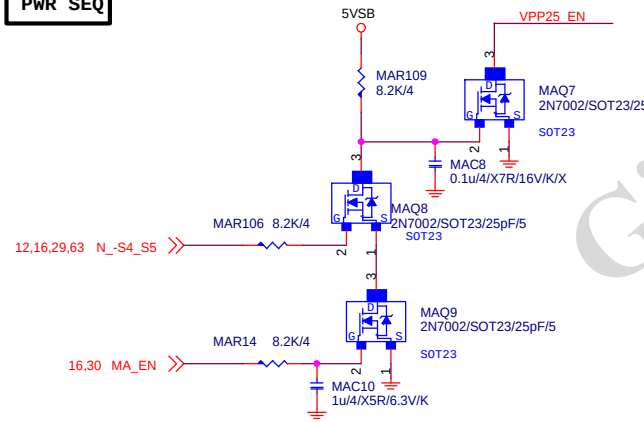
CHOKE與CAP料號可變

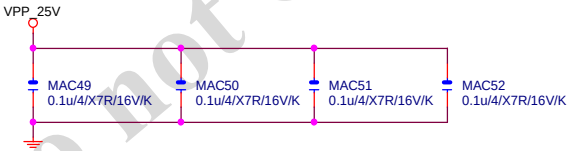
DDR_VPP VIN CAP
560u*1PCS



PWR SEQ

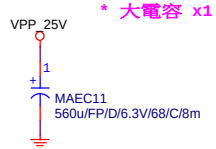
* 刪 MA_DR32





VPP CAP 560u*1PCS

* 大電容 x1



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Title	RT8120_VPP25 POWER	
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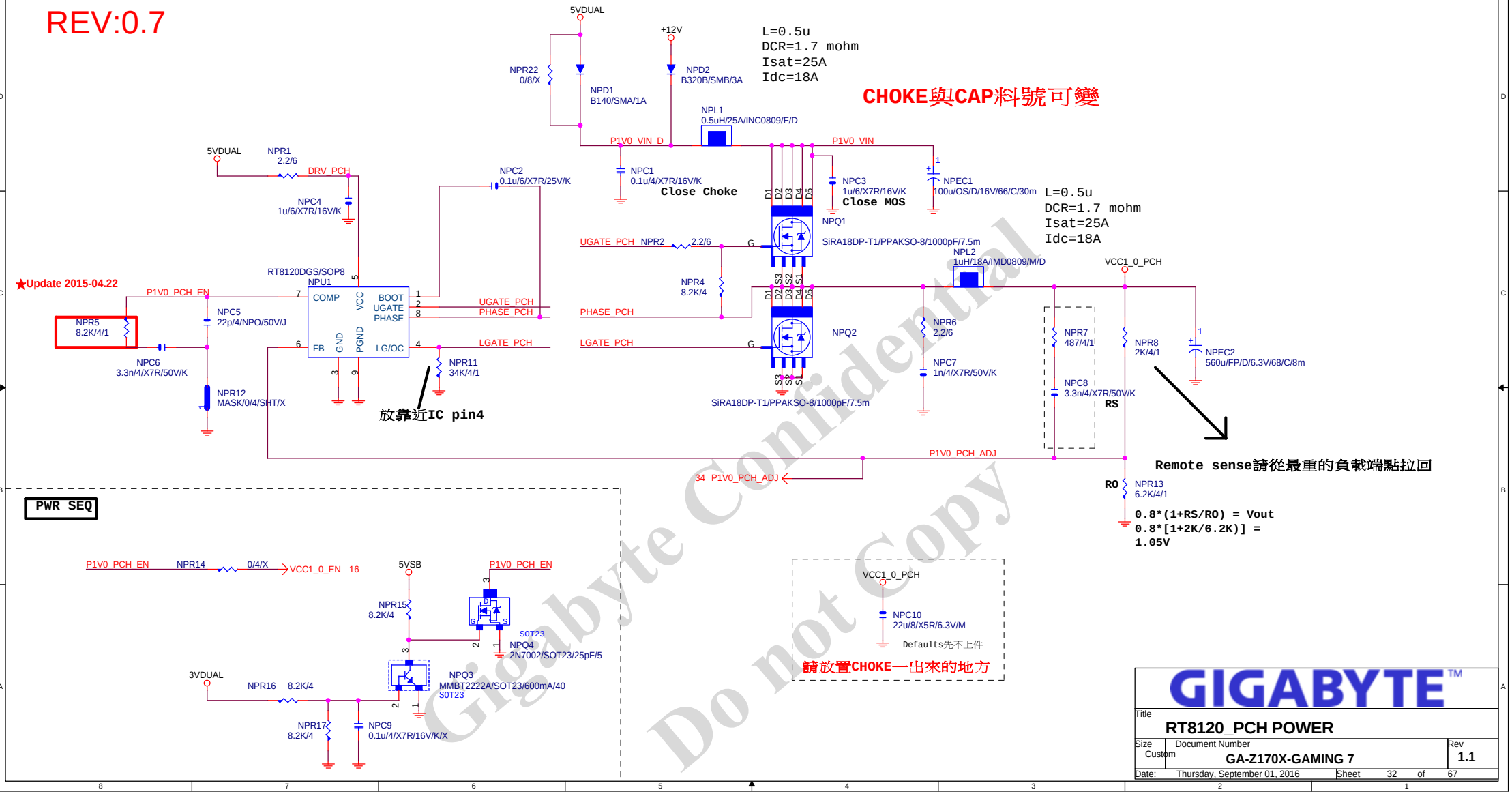
REV:0.7



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Title	RT8120_PCH POWER	
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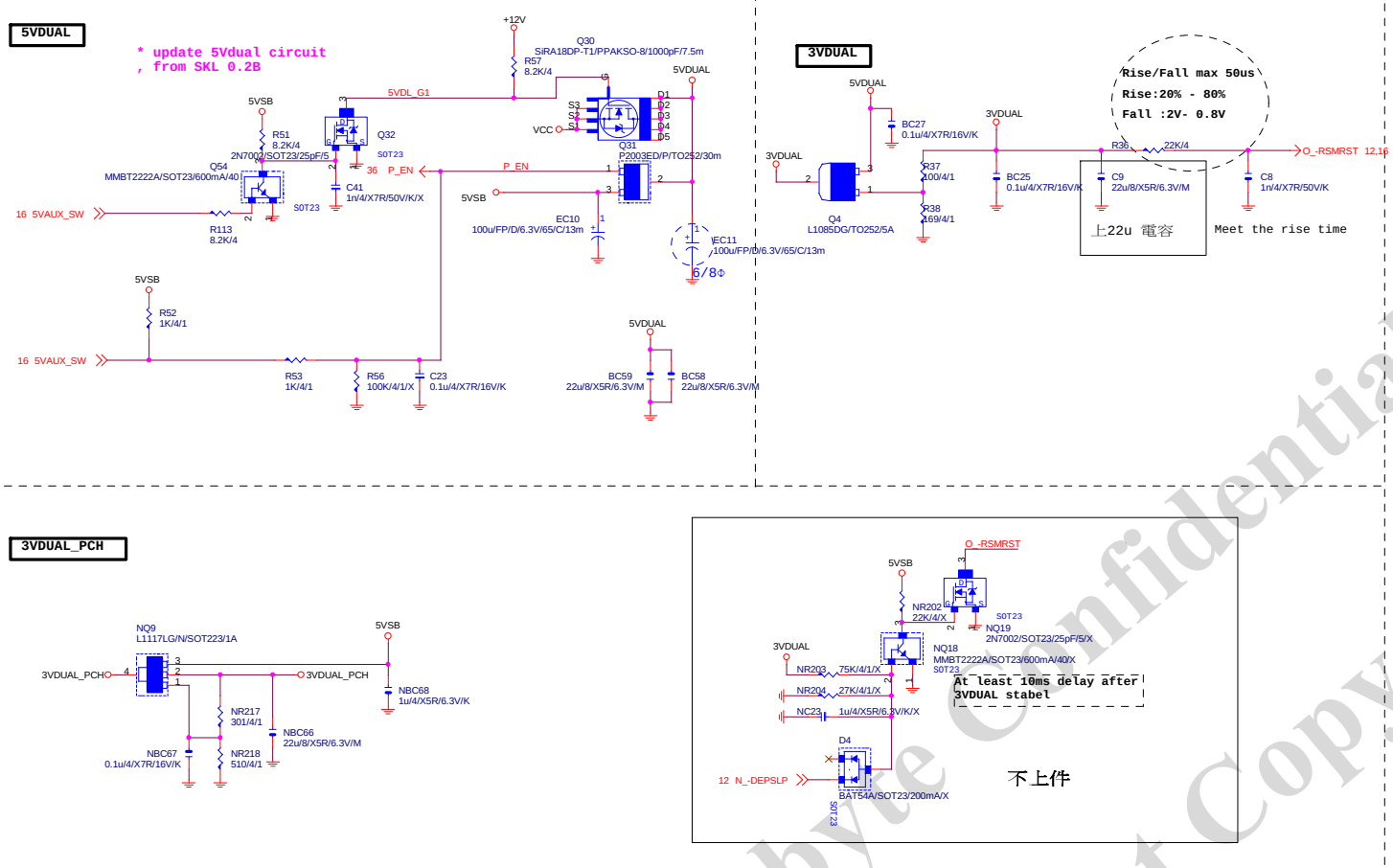

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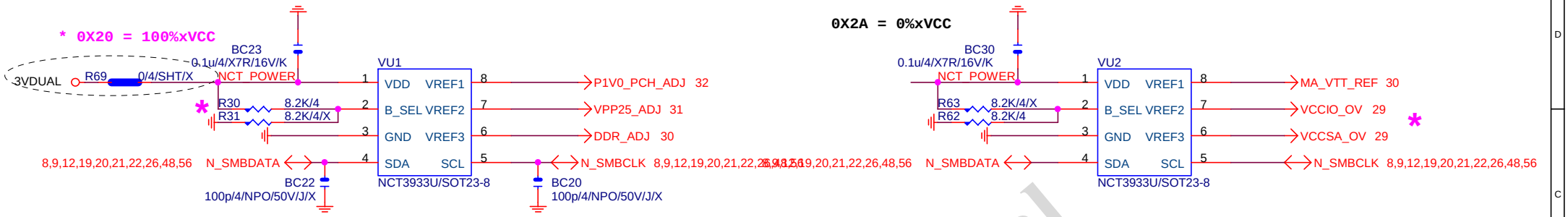
OVER VOLTAGE



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

Gigabyte Technology

Title: CPU CORE VR-2

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

5VSB R695 22K/4 16 -PSON BC37 0.1u/4/X7R/16V/K

-12V VCC3 VCC3

ATX

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

黑色

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

* 刪除 -5V

VCC3 BC35 22u/8/X5R/6.3V/M VCC3 BC46 1u/4/X5R/6.3V/K VCC3 BC48 1u/4/X5R/6.3V/K

5VSB RN7 1K/8P4R/6/X VCC RN8 1K/8P4R/6/X VCC3 RN9 1K/8P4R/6/X

VCC VCC VCC VCC

BC39 1u/4/X5R/6.3V/K BC36 0.1u/4/X7R/16V/K/X BC38 510/6/X BC42 510/6/X BC43 1u/4/X5R/6.3V/K BC44 0.1u/4/X7R/16V/K BC45 0.1u/4/X7R/16V/K BC41 0.1u/4/X7R/16V/K

+12V 5VSB AD1 AZ2225-01L/SOD323/X

PWOK PWOK 16 BC9 4.7u/6/X5R/6.3V/K

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

ATX_12V_2X4

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

V12

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

黑色 BC7 0.1u/4/X7R/16V/K

FOR AUDIO 切割

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

MH3 MH7 MH8 HOLE_3/X HOLE_4-RH-5MM-1 HOLE_4-RH-5MM-1 HOLE_4-RH-5MM-1

MH4 MH5 MH6 MH9 HOLE_3/X HOLE_4-RH-1 HOLE_4-RH-1 HOLE_4-RH-5MM-1 HOLE_4-RH-5MM-5PIN-1

K3 K6 K2 K5 K1 K4 K1_ICT/X

K1-ICT

I1 I2 I3 I4 I5 4MMH/X

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

+12V RN2 2.7K/8P4R/4 RN3 2.7K/8P4R/4 RN4 2.7K/8P4R/4 RN5 2.7K/8P4R/4 RN6 2.7K/8P4R/4

VCC3 R1 1K/4/1 Q9 S0T23

12 N_GPP_D9 R703 330/4

MMBT2222A/SOT23/600mA/40

-PROHOT * 保留 ?

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

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

125 ~130degree assert

+12V TTR4 10K/4/1/X MASK/0/4/SHT/M/X TTR5 N_-THRMTRIP 13,16 TTR6 0/4/X A_-PROCHOT A_-PROCHOT 4,16

TTR1 10K/4/1 TTR2 5.49K/4/1 DATSM_3 DATSM_2 TTU1A LM358DR/SO8 DATSM_1 TTQ1 2N7002/SOT23/25pF/5

TTRT1 100K/1/4/S TTR3 1K/4/1 TTC1 0.1u/4/X7R/16V/K

CLOSE VCORE PWM UPPER MOSFET

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

125 ~130degree assert

+12V TTR10 10K/4/1/X MASK/0/4/SHT/M/X TTR11 N_-THRMTRIP 13,16 TTR12 0/4/X A_-PROCHOT A_-PROCHOT 4,16

TTR7 10K/4/1 TTR8 4.02K/4/1 DATSM_5 DATSM_6 TTU1B LM358DR/SO8 DATSM_7 TTQ2 2N7002/SOT23/25pF/5

TTRT2 100K/1/4/S TTR9 1K/4/1 TTC2 0.1u/4/X7R/16V/K

CLOSE VCCGT PWM UPPER MOSFET

COUPON3 COUPON3 1 2 COUPON/X 5VDUAL

COUPON4 COUPON4 1 2 COUPON/X

COUPON1 COUPON1 1 2 COUPON/X 5VDUAL

COUPON2 COUPON2 1 2 COUPON/X

Gigabyte Technology

Title: ATX POWER CONNECTOR

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

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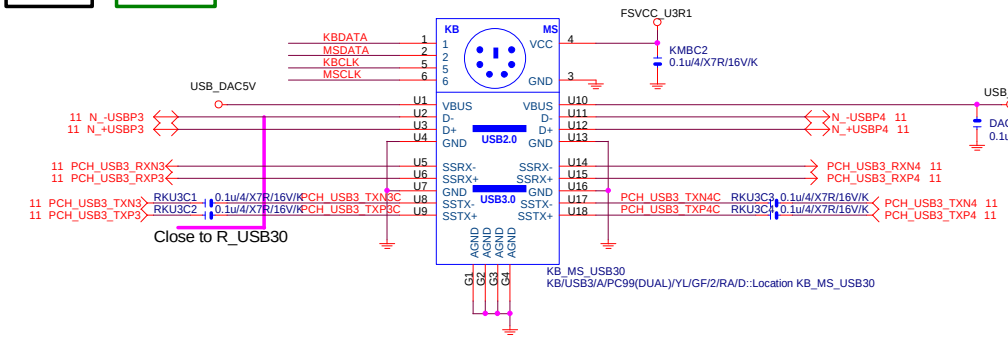
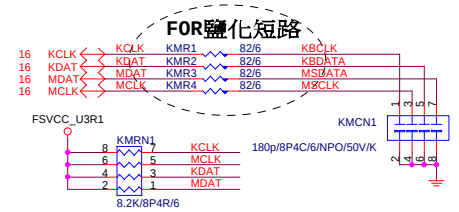
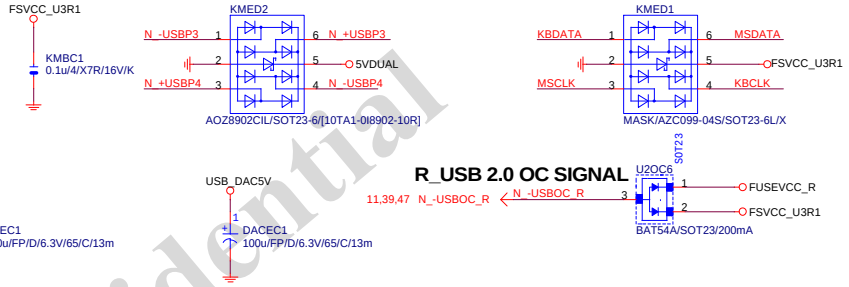
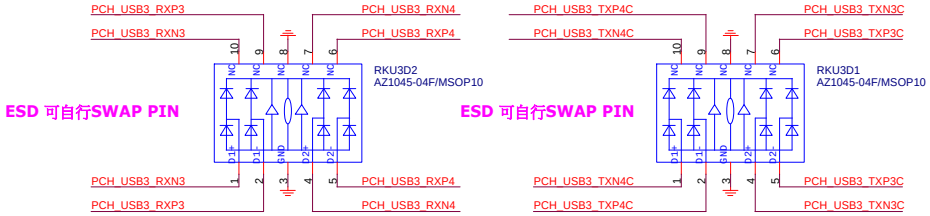
KB/MS

Rev: 0.52

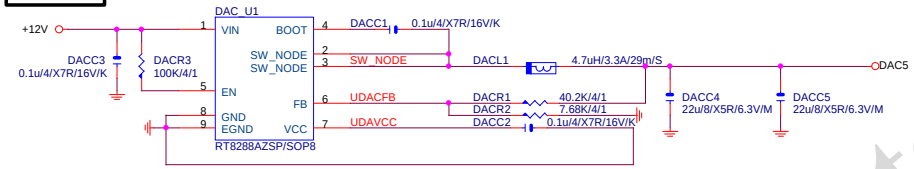


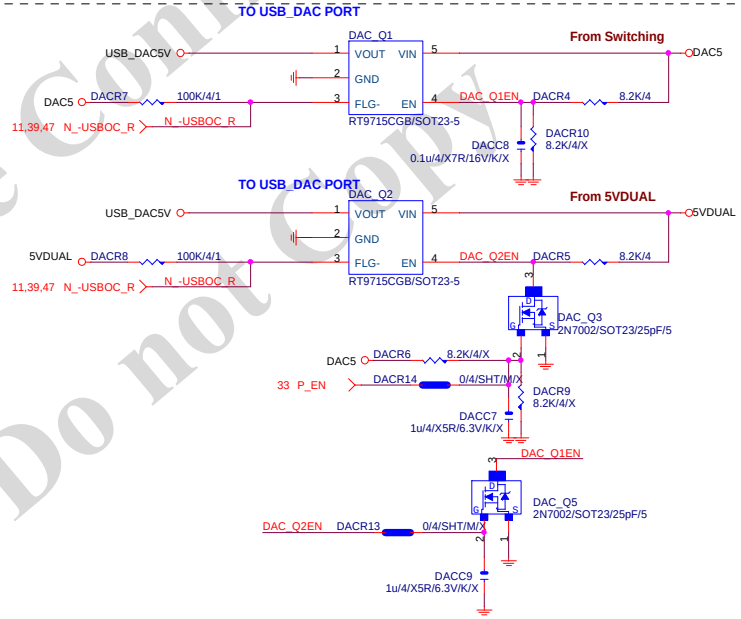


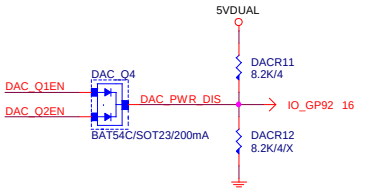




USB_DAC







Gigabyte Technology			
Title: AUDIO JACK			
Size: Custom	Document Number: GA-Z170X-GAMING 7		Rev: 1.1
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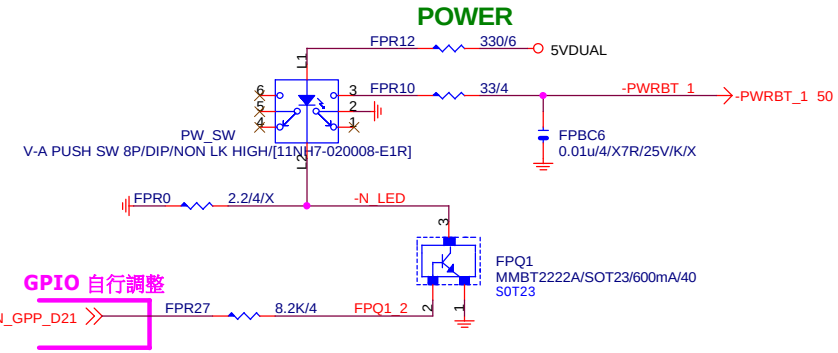
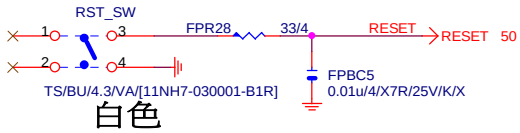
Rev: 0.52

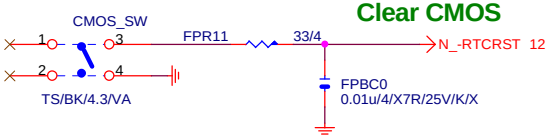
POWER

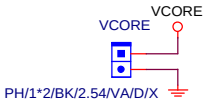


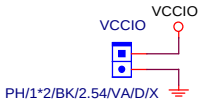
Reset

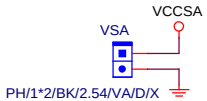


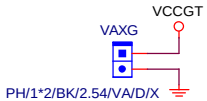
Clear CMOS

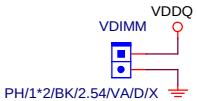


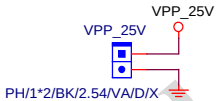


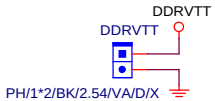


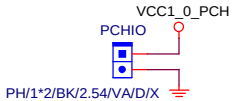


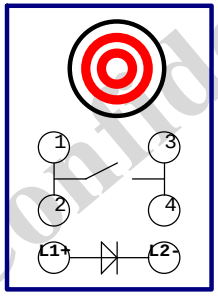


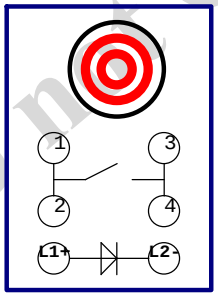


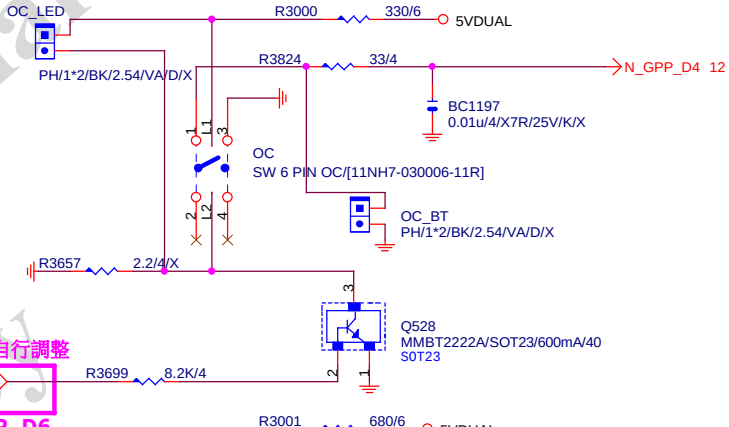


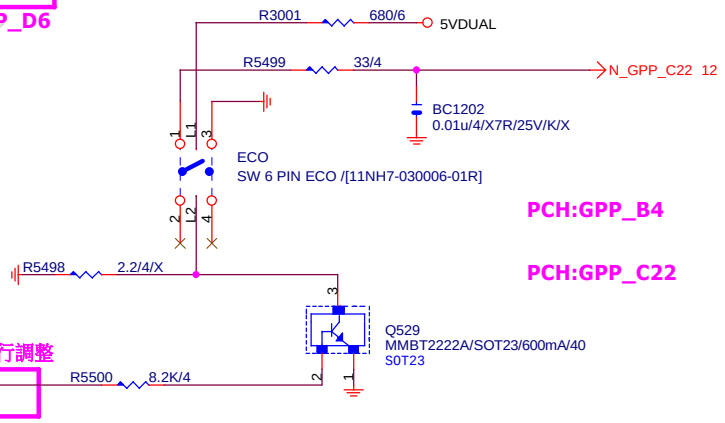












Gigabyte Technology		
Title: OC BUTTOM		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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Front USB3.0

NET 自行調整

F_USB30_1
REV=1
BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
黑色

F_USB30 PWR

5VDUAL FAU3F1 SPR-P260T/6V/8/S FSVCC_U3F1
FAU3EC1 100u/FP/D/6.3V/65/C/13m
FAU3C5 0.1u/4/X7R/16V/K

NET 可自行調整

FAU3D1 AZ1045-04F/MSOP10
FAU3D3
AOZ8902CIL/SOT23-6/[10TA1-0I8902-10R]
CLOSE F_USB30

FAU3D2 AZ1045-04F/MSOP10
CLOSE F_USB30

Front USB3.0

NET 可自行調整

F_USB30_2
REV=1
BH/2*10K20/BK/ON/2.0/VA/USB3.0/PRT
黑色

F_USB30 PWR

5VDUAL FBU3F1 SPR-P260T/6V/8/S FSVCC_U3F2
FBU3C5 0.1u/4/X7R/16V/K

NET 可自行調整

FBU3D1 AZ1045-04F/MSOP10
FBU3D3
AOZ8902CIL/SOT23-6/[10TA1-0I8902-10R]
CLOSE F_USB30

F_USB_POWER_PROTECT

FBU3D2 AZ1045-04F/MSOP10
CLOSE F_USB30

-USBOC_F

POWER 可自行調整

UBR9 8.2K/4 OCI3B
UBR10 15K/4/1
UBR11 8.2K/4 OCI4B
UBR12 15K/4/1

-USBOC_R

POWER 可自行調整

UBR1 8.2K/4 OCI1B
UBR2 15K/4/1
UBR3 8.2K/4 OCI2B
UBR4 15K/4/1

Gigabyte Technology	
Title	R_USB30,F_USB30, USB_OC
Size: Custom	Document Number: GA-Z170X-GAMING 7
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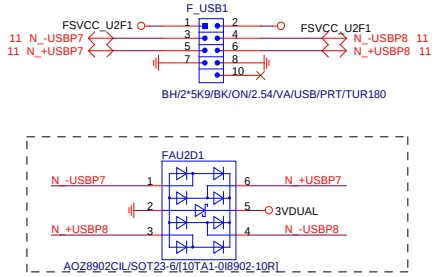
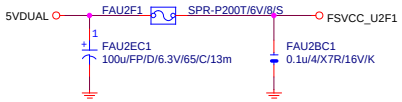
FRONT USB1

NET 可變



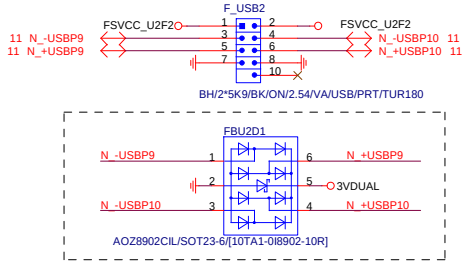
Close to connector

FUSE 2 Port 1 Fuse 2A



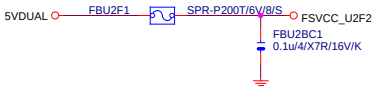
FRONT USB2

NET 可變

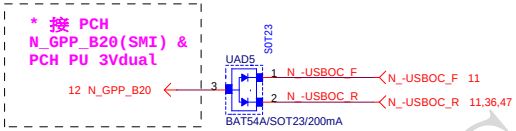


Close to connector

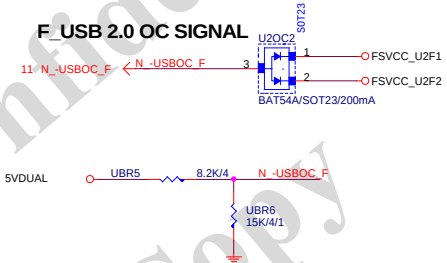
FUSE 2 Port 1 Fuse 2A



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



F_USB 2.0 OC SIGNAL



Gigabyte Technology		
Title: USB2.0		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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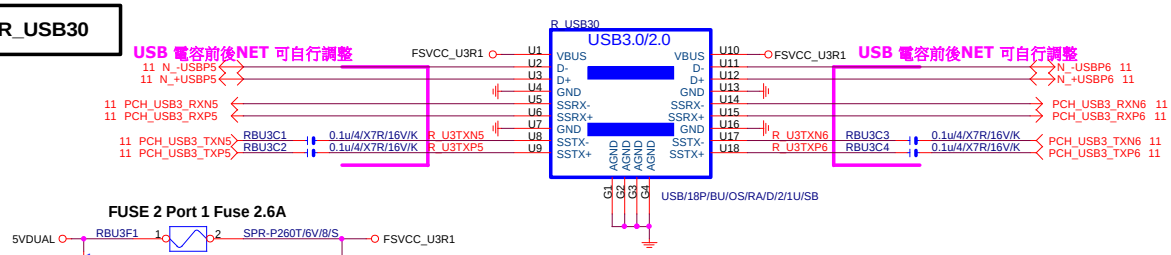
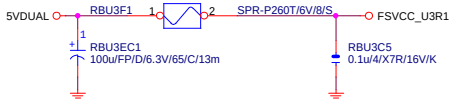
R_USB30

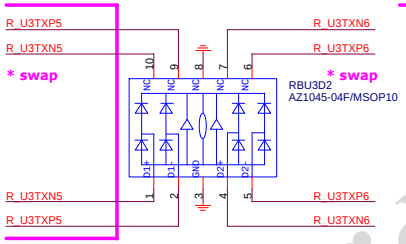


FUSE 2 Port 1 Fuse 2.6A

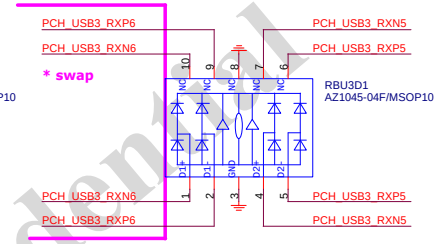


2 port USB 3.0 架高with TYPE C Capture:

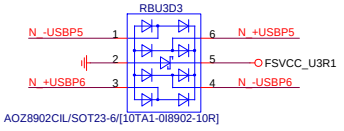
NET 可自行調整



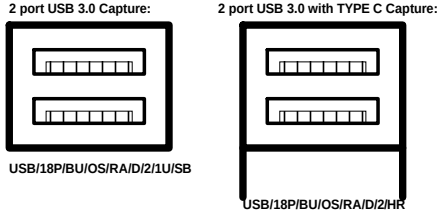
NET 可自行調整



ESD 可自行SWAP PIN



CONNECTOR 自行調整



Gigabyte Technology		
Title: KB_MS_USB3, R_USB30		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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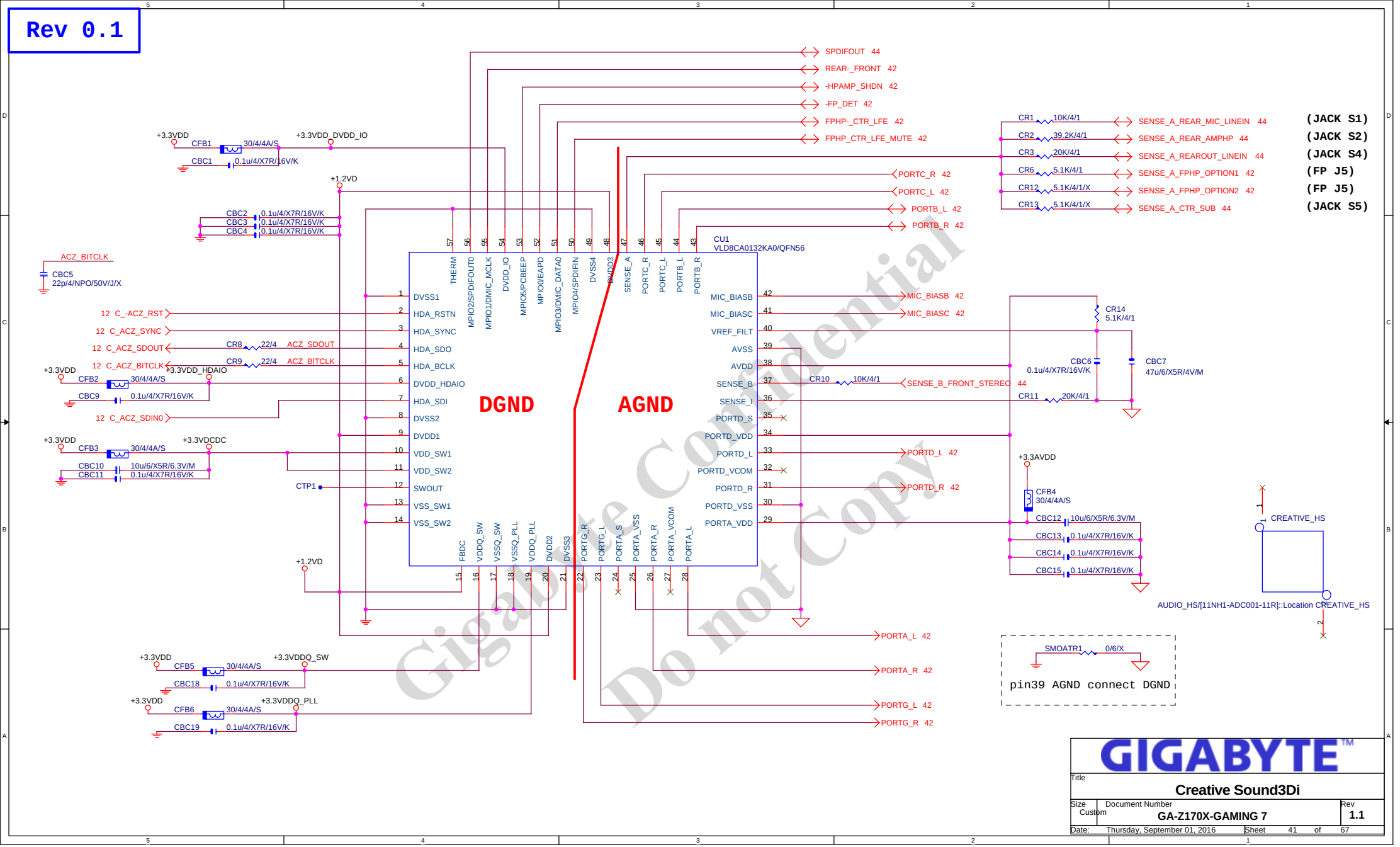
Rev 0.1



GIGABYTE™

Title	Creative Sound3Di	
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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Rev 0.1

Rear MIC & FP MIC

41 MIC_BIASB
41 MIC_BIASC
CQ8 EMFA0P02J/SOT23/100m/382p
CQ9 EMFA0P02J/SOT23/100m/382p
CBC50 0.1u/4/X7R/16V/K
CBC105 0.1u/4/X7R/16V/K
CBC23 0.1u/4/X7R/16V/K
CBC24 0.1u/4/X7R/16V/K
+5VDD
CR151 MASK/0/SHT/X
CR152 MASK/0/SHT/X
CU3 ISL54405IRUZ/TQFN16
CR72 3.3K/4/1
CR73 3.3K/4/1
41 PORTC_L
41 PORTC_R
CC12 2.2u/6/X5R/6.3V/K
CC13 2.2u/6/X5R/6.3V/K
PORTC_C_L
PORTC_C_R
CR74 7.5K/4/1
CR75 7.5K/4/1
PORTC_R_L
PORTC_R_R
41 REAR-_FRONT
CR183 MASK/0/SHT/X
CR153 MASK/0/SHT/X
CR80 10K/4/1
CR81 10K/4/1
CR184 10K/4/1
MUTE
AC-DC
5V_SUPPLY
VDD
CAP_SS
DIR_SEL
GND1
GND2
GND3
SEL
L
R
L1
L2
R1
R2
AJ_A2_L 44
FP_MICIN_L
AJ_A5_R 44
FP_MICIN_R

MUTE	SEL	OUTPUT
0	0	L1&R1
0	1	LR&R2
1	0	OFF
1	1	OFF

Line-Out

41 PORTG_R
41 PORTG_L
CE5 2.2uF/D/50V/5*5[11CE6-55220B-01R]
CE6 2.2uF/D/50V/5*5[11CE6-55220B-01R]
AJ_B5_R 44
AJ_B2_L 43,44
限用2.2uF For pop noise
CR159 34.9K/4/1
CR161 24.9K/4/1

Rear

41 PORTB_R
41 PORTB_L
CE14 2.2uF/D/50V/5*5[11CE6-55220B-01R]
CE15 2.2uF/D/50V/5*5[11CE6-55220B-01R]
BJ_C5_R 44
BJ_C2_L 44
限用2.2uF For pop noise
CR201 24.9K/4/1
CR210 24.9K/4/1

HD_Audio FRONT PANEL

+3.3VDD
F_AUDIO
FP_MICIN_L
FP_MICIN_R
FP_HPOUT_R
FP_HPOUT_L
CR187 10K/4/1
CR194 10K/4/1/X
FP_DET 41
BH/2*5KB/BK/2.54/VA/AUDIO/PRT/TR1.80
41 SENSE_A_FPHP_OPTION2
CBC25 180p/4/NPO/50V/J/X
please close F_Audio connector
CR87 10K/4/1
CR46 MASK/0/SHT/X
CQ14 EMFA0P02J/SOT23/100m/382p
CQ15 2N7002/SOT23/25pF/5
SENSE_A_FPHP_OPTION1 41
CR94 10K/4/1

Rear CTR/SUB & FP HP-Out

+5VDD
+3.3VDD
CBC121 0.1u/4/X7R/16V/K
CBC125 0.1u/4/X7R/16V/K
CR192 MASK/0/SHT/X
CR186 10K/4/1/X
CR191 10K/4/1
CU17 ISL54405IRUZ/TQFN16
(Boot H-L)-(OS L)
41 FPHP_CTR_LFE_MUTE
CR154 MASK/0/SHT/X
41 PORTD_L
41 PORTD_R
CE1 220uF/D/6.3V/8*5
CE2 220uF/D/6.3V/8*5
PORTD_C_L
PORTD_C_R
41 FPHP-_CTR_LFE
CR155 MASK/0/SHT/X
FB_SEL
CR197 100/4/1
CR198 100/4/1
CR195 10K/4/1
CR196 MASK/0/SHT/X
MUTE
AC-DC
5V_SUPPLY
VDD
CAP_SS
DIR_SEL
GND1
GND2
GND3
SEL
L
R
L1
L2
R1
R2
FPFP_L
BJ_B2_L 44
FPGP_R
BJ_B5_R 44

MUTE	SEL	OUTPUT
0	0	L1&R1
0	1	LR&R2
1	0	OFF
1	1	OFF

FPGP_R
CR205 15K/4/1
CBC57 270p/4/NPO/50V/J
CR209 MASK/0/SHT/X
CU14 DRV632PW/TSSOP14
CR204 30K/4/1
CR205 8.2K/4
CBC58 47p/4/NPO/50V/J
FP_HPOUT_R
+3.3VDD
CR207 1K/4/1/X
CR206 MASK/0/SHT/X
41 -HPAMP_SHDN
CQ1_MUTE
CBC128 1u/4/X5R/6.3V/K
CBC129 1u/4/X5R/6.3V/K
+INR
-INR
OUTR
GND
MUTE#
VSS
CN
+INL
-INL
OUTL
UVP
GND
VDD
CP
CR211 MASK/0/SHT/X
CBC56 270p/4/NPO/50V/J
CR212 15K/4/1
CR215 8.2K/4
CR217 30K/4/1
CBC123 47p/4/NPO/50V/J
FP_HPOUT_L
CR214 10K/4/1
CR216 1K/4/1/X
+3.3AVDD
CBC131 10u/6/X5R/6.3V/M
CBC130 1u/4/X5R/6.3V/K
FPFP_L

OP反相防燒

VCC
CR95 22K/4
CR89 8.2K/4
CR100 22K/4
CBC62 0.1u/4/X7R/16V/K/X
CU11A KA393D/SO8
CR96 8.2K/4
CR98 1K/4/1
AMP_EN
AMP_A
CQ16
EMFA0P02J/SOT23/100m/382p
CR105 22K/4
CBC67 1u/4/X5R/6.3V/K
CBC68 8.2K/4
CQ17 MMBT2222A/SOT23/600mA/40
CQ18 MMBT2222A/SOT23/600mA/40
CR109 22K/4
CD4 BAS40-05/0.2A/SOT23
+12VDD_OP
CR110 12K/4/1
CR111 3.9K/4/1

AMPLIFIED

OP AMP. Rate = (CR118/CR117)+1
限用2.2uF For pop noise
41 PORTA_R
CE13 2.2uF/D/50V/5*5[11CE6-55220B-01R]
PORTA_C_R
CR158 33/4
CR117 750/4/1
CR169 22K/4
CR165 316/4/1
CR164 1.1K/4/1
CU15A OPA2134PA/PDIP8[117A1-072134-10R]
+12VDD_OP
CBC106 0.1u/4/X7R/16V/K
-12VDD_OP
CBC109 0.1u/4/X7R/16V/K
V+_R
V-_R
BJ_A5_OP_R
DB_SW
CR166 200/4/1
CQ36 MMBT2222A/SOT23/600mA/40
CU15
IC SK 2*4P/DIP/BLACK E-TEC/[11S1-010204-21R]
鍍金
限用2.2uF For pop noise
41 PORTA_L
CE15 2.2uF/D/50V/5*5[11CE6-55220B-01R]
43 PORTA_C_L
CR177 750/4/1
CR168 22K/4
CR179 316/4/1
CR178 1.1K/4/1
CU15B OPA2134PA/PDIP8[117A1-072134-10R]
CBC110 0.1u/4/X7R/16V/K
CBC111 0.1u/4/X7R/16V/K
V+_L
V-_L
BJ_A2_OP_L
DB_SW
CR180 200/4/1
CQ37 MMBT2222A/SOT23/600mA/40
Analog Area
-12V
CR174 8.2K/4
VCC3
CAP_SW
SLIDE SW/1 P/BK/[11NH7-110003-21R]
Default open

AMP_EN
4.7uH/0.8A/3225/S/[10LC4-5A470B-01R]
CL2
CBC63 10u/6/X5R/6.3V/M
AMP_A
CR103 0/4/X
CR108 300/4/1
CBC70 0.1u/4/X7R/16V/K
CBC69 10u/6/X5R/6.3V/M
CU12 TPS65130RGER/VQFN24
INP
INP
bSW
INN
INN
VIN
ENP
PSP
ENN
PSN
AGND
GND
VPOS
FBP
VREF
FBN
VNEG
OUTN
OUTN
CP
CN
PGND
PGND
NC
NC
CD2 B140/SMA/1A
CR97 887K/4/1
CBC61 10p/4/NPO/50V/J
CR101 10K/4/1
CR102 100K/4/1
CBC65 0.22u/4/X5R/6.3V/K
CR104 60.4K/4/1
CR106 604K/4/1
CBC66 10p/4/NPO/50V/J
CR107 10K/4/1
CD3 B140/SMA/1A
Rev 0.3
CBC71 0.01u/4/X7R/25V/K
CBC72 4.7n/4/X7R/25V/K
CL3 4.7uH/0.8A/3225/S/[10LC4-5A470B-01R]
CBC74 1n/4/X7R/50V/K
please close AMP connector
CBC73 10u/8/X5R/16V/K
CR193 2.2/6/X
CBC100 0.01u/4/X7R/25V/K/X
+12VDD_OP
CBC64 10u/8/X5R/16V/K
-12VDD_OP

MUTE-
BJ_A5_OP_R
BJ_A2_OP_L
限用PANJIT
CQ1 2N7002K/SOT23/[10IF1-2A7002-0CR]
CQ2 2N7002K/SOT23/[10IF1-2A7002-0CR]
CQ3 2N7002K/SOT23/[10IF1-2A7002-0CR]
CQ4 2N7002K/SOT23/[10IF1-2A7002-0CR]
BJ_A5_R_R
CR54 10/4
BJ_A5_R 44
CBC116 180p/4/NPO/50V/J/X
BJ_A2_L_L
CR55 10/4
BJ_A2_L 44
CBC117 180p/4/NPO/50V/J/X

H : ON
L : OFF
(Boot L) - (OS L-H)
(shut down H-L)
41 -HPAMP_SHDN
+12V
CR57 8.2K/4
CR60 1M/4
CR62 10K/4/1
CBC48 1u/4/X5R/6.3V/K
CQ6 2N7002/SOT23/25pF/5
-12V
CR58 20K/4/1
CR61 75K/4/1
CQ7 PMBT2907A/SOT23/-600mA/50
H : ON
L : OFF
Close to Audio

GIGABYTE

Title	Creative Sound3Di
Size	Custom
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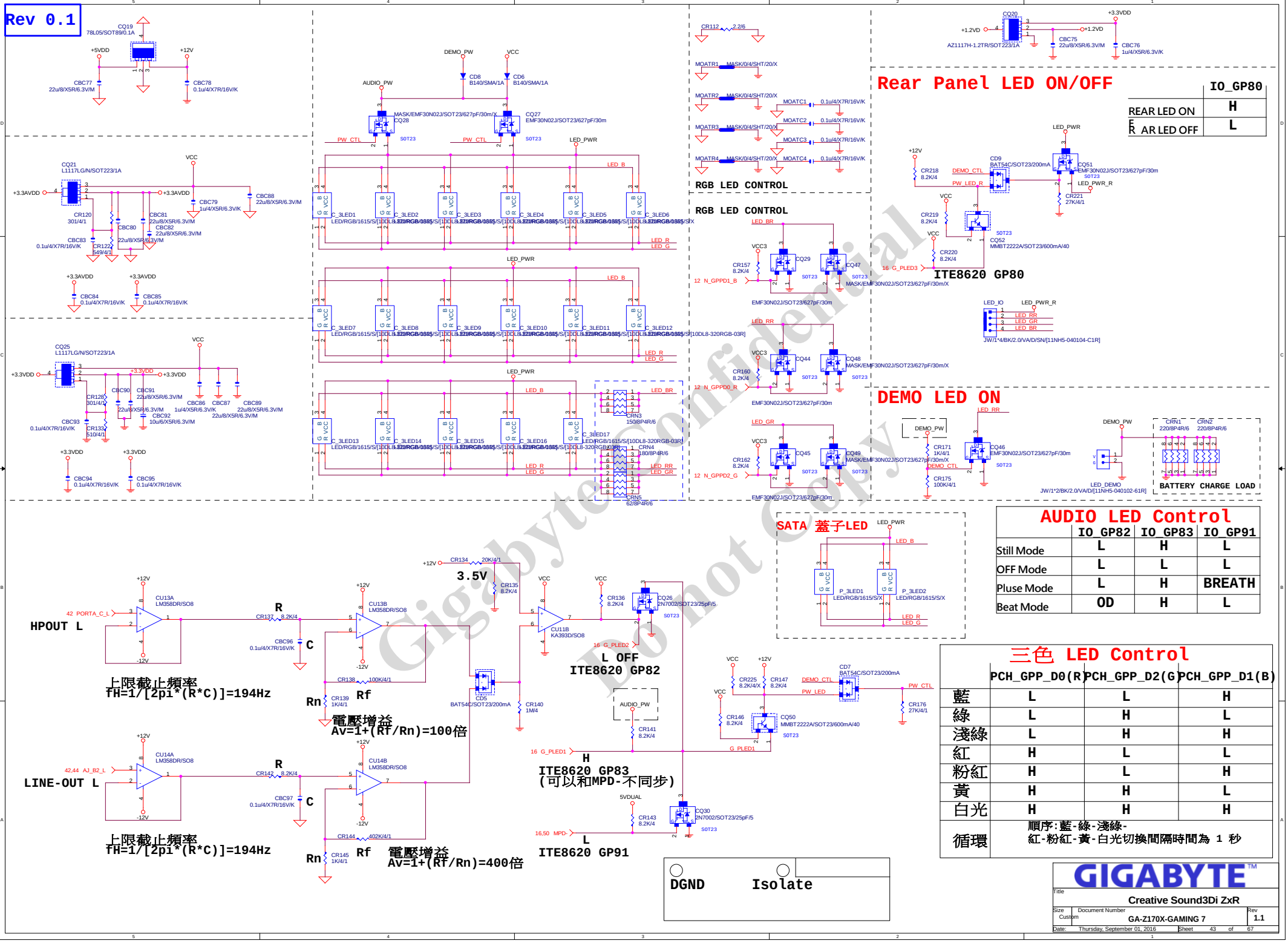
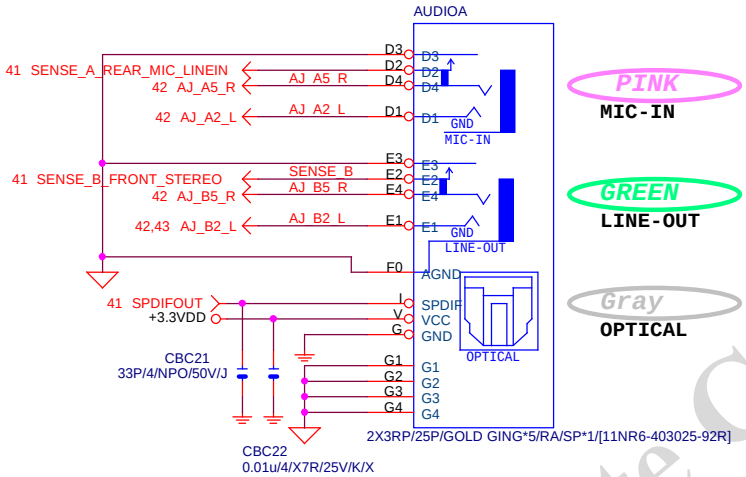
Rev 0.1

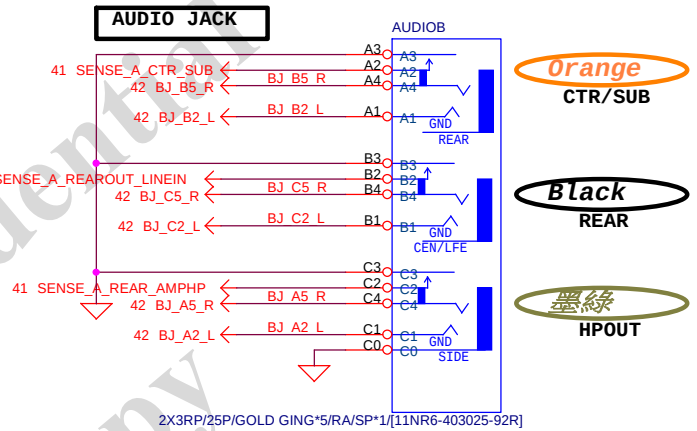


GIGABYTE™

Title	Creative Sound3Di ZxR	
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 43 of 67	

Rev 0.1





Gigabyte Technology

Title: Creative Sound3Di ZxR

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

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LAN:E2201(E2400) R1.06

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

離IC近越好

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

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

47 LA_LED_ACT_TXRX
47 LA_LED_LINK100

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K
LABC8 4.7u/6/X5R/6.3V/K
AR8161-->(0)

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

LA_LX
LA_LED_LINK100
LA_LED_ACT_TXRX
LA_DVDDL
LA_AVDDVCO
LA_AVDDL

LAU1

Qualcomm (Atheros) Killer E2201

41	EGND		
40	LX	TX_P	30
39	LED1	TX_N	29
38	LED0	NC	28
37	DVDDL_REG	TESTMODE2	27
36	RX_N	TESTMODE1	26
35	RX_P	TESTMODE0	25
34	AVDDL	PPS	24
33	REFCLKP	LED2	23
32	REFCLKN	AVDDH	22
31	AVDDL	TRXN3	21
1	VDD3V		
2	PERST#		
3	WAKE#		
4	CLKREQ#		
5	DEBUGMODE0		
6	AVDDL_REG		
7	XTLO		
8	XTLI		
9	AVDDH_REG		
10	RBIAS		
11	TRXP0		
12	TRXN0		
13	AVDDL		
14	TRXP1		
15	TRXN1		
16	AVDD33		
17	TRXP2		
18	TRXN2		
19	AVDDL		
20	TRXP3		

E2500-RIV1-RL/QFN40/[10HP2-402500-10R]

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

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

LAR9 0/4/X
LABC14 0.1u/4/X7R/16V/K/X
LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-
LA_DVDDL
LA_LED_LINK1000 47
LA_MDI3- 47
LABC17 0.1u/4/X7R/16V/K

3VDUAL_LAN2
LAC33 100p/4/NPO/50V/J/X
LAR6 8.2K/4
16,46,51,52 O_-PERST2
16 N_-PCIE_WAKE
10 LA_-CLKREQ
LAREQ1 MASK/0/4/SHT/M/X
LA_-CLKREQ_F
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH
LABC12 1u/4/X5R/6.3V/K/X
LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LA_RBIAS
LAR10 2.37K/4/1

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

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

LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
47 LA_MDI0+
47 LA_MDI0-
47 LA_MDI1+
47 LA_MDI1-
47 LA_MDI2+
47 LA_MDI2-
47 LA_MDI3+

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

LAN POWER

LAL1 4.7uH/0.8A/3225/S/[10LC4-5A470B-01R]
LA_LX_OUT
LA_LX
CLOSE
LA_LX 200mil
LABC1 10u/6/X5R/6.3V/M
LABC2 0.1u/4/X7R/16V/K

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

LA_AVDDH
LAR7 8.2K/4
LA_LED_ACT_TXRX
LAR8 8.2K/4
LA_LED_LINK100

VCC3
LAR11 8.2K/4
LA_VDDCT

Title	Gigabyte Technology DUAL LAN~ E2201+I219	
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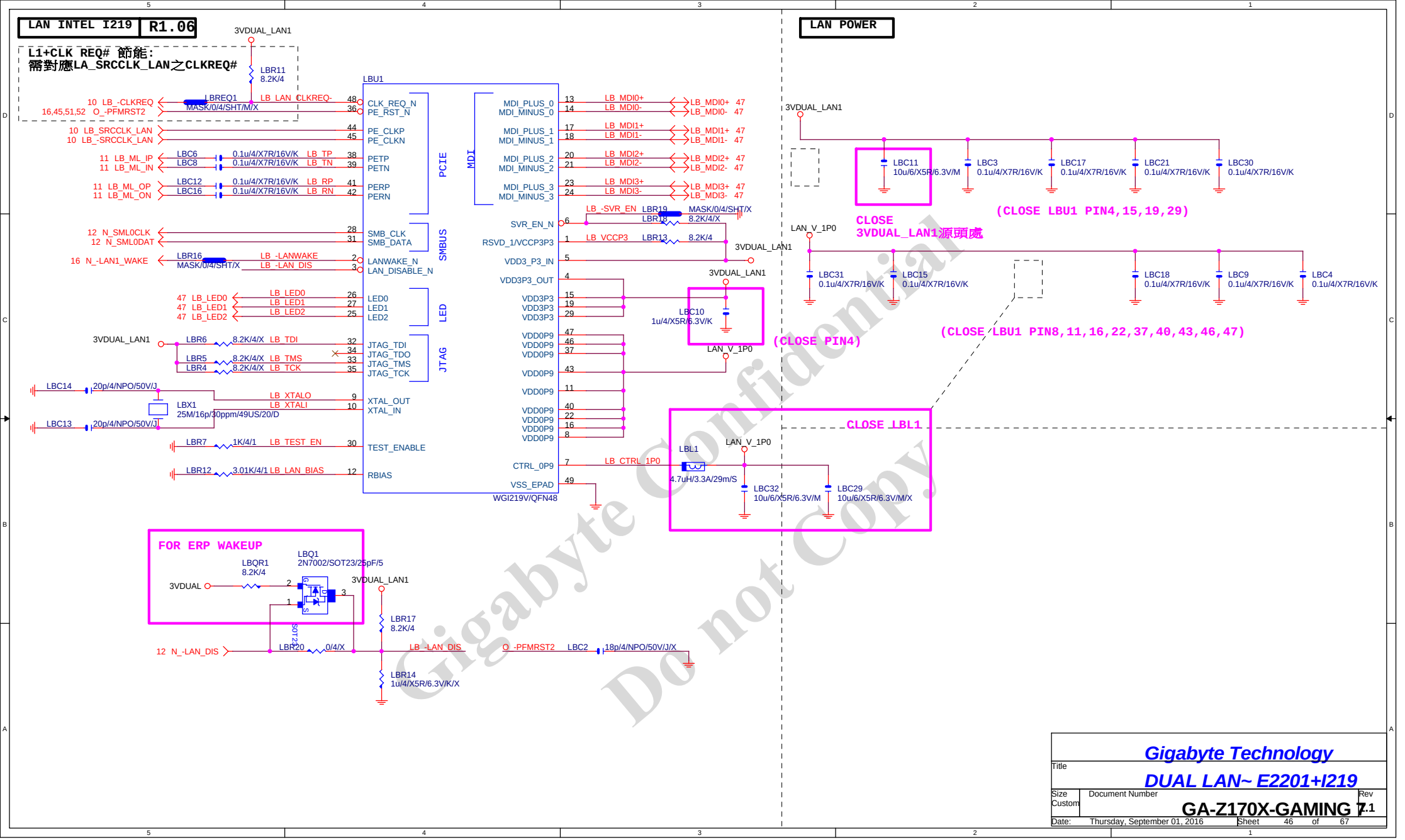
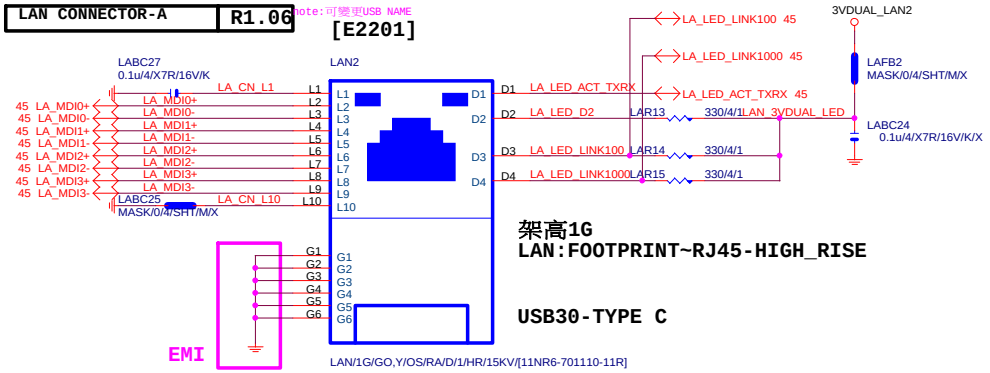


LAN CONNECTOR-A R1.06

note:可變更USB NAME

[E2201]



架高1G
LAN:FOOTPRINT~RJ45-HIGH_RISE

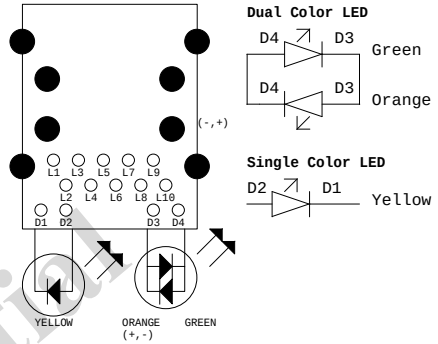
USB30-TYPE C

LA_MDI-->100歐姆:[20/4/8/4/20]

EMI SHORT PAD

PS:視EMI需求

架高LAN LAYOUT示意圖

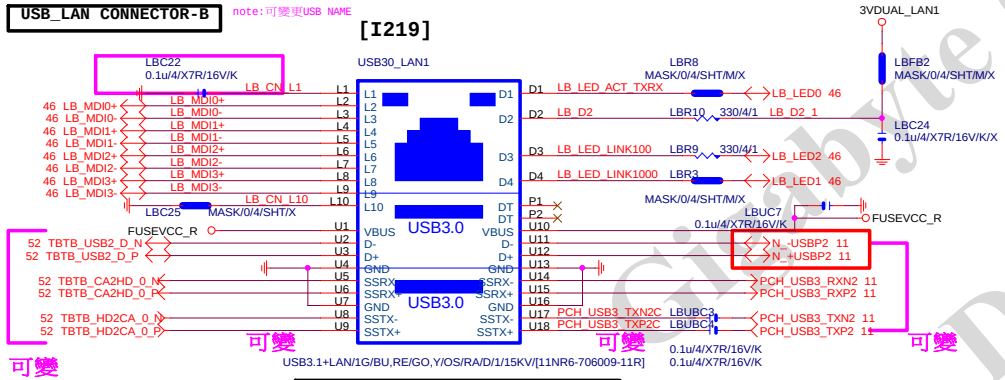


RMA ESD PROTECT

USB_LAN CONNECTOR-B

note:可變更USB NAME

[I219]



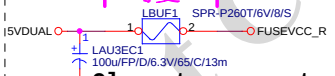
可變 可變 可變 可變

LA_MDI-->100歐姆:[20/4/8/4/20]

USB POWER

note:可變更FUSE

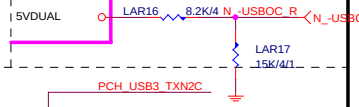
可變



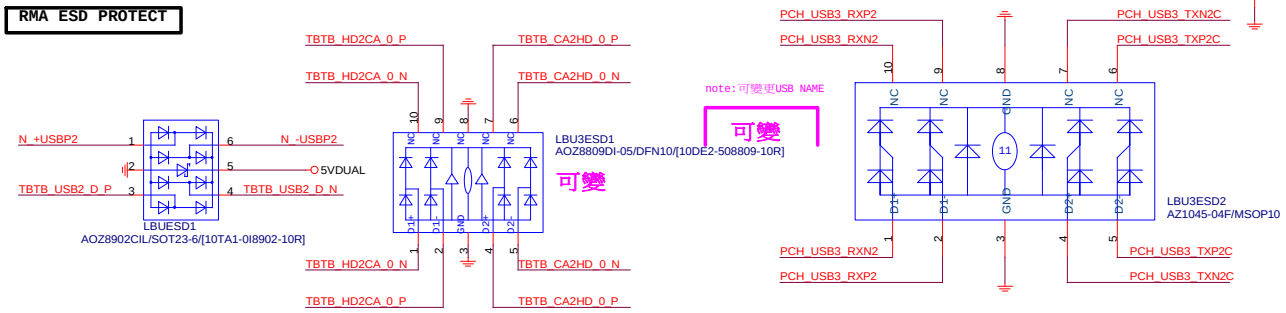
Close to connector
FUSE-0805

EMI SHORT PAD

PS:視EMI需求



RMA ESD PROTECT

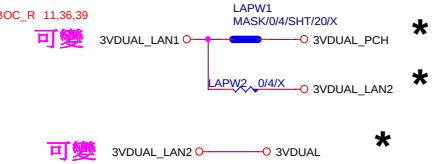


NOTE:

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

LAN POWER

note: lan power連接及電流



~USB30_LAN1設定在ERP可LAN WAKEUP

~USB30_LAN2由獨立LAN POWER L1117供給

Gigabyte Technology		
Title: LAN CONNECTOR-E2201+I219		
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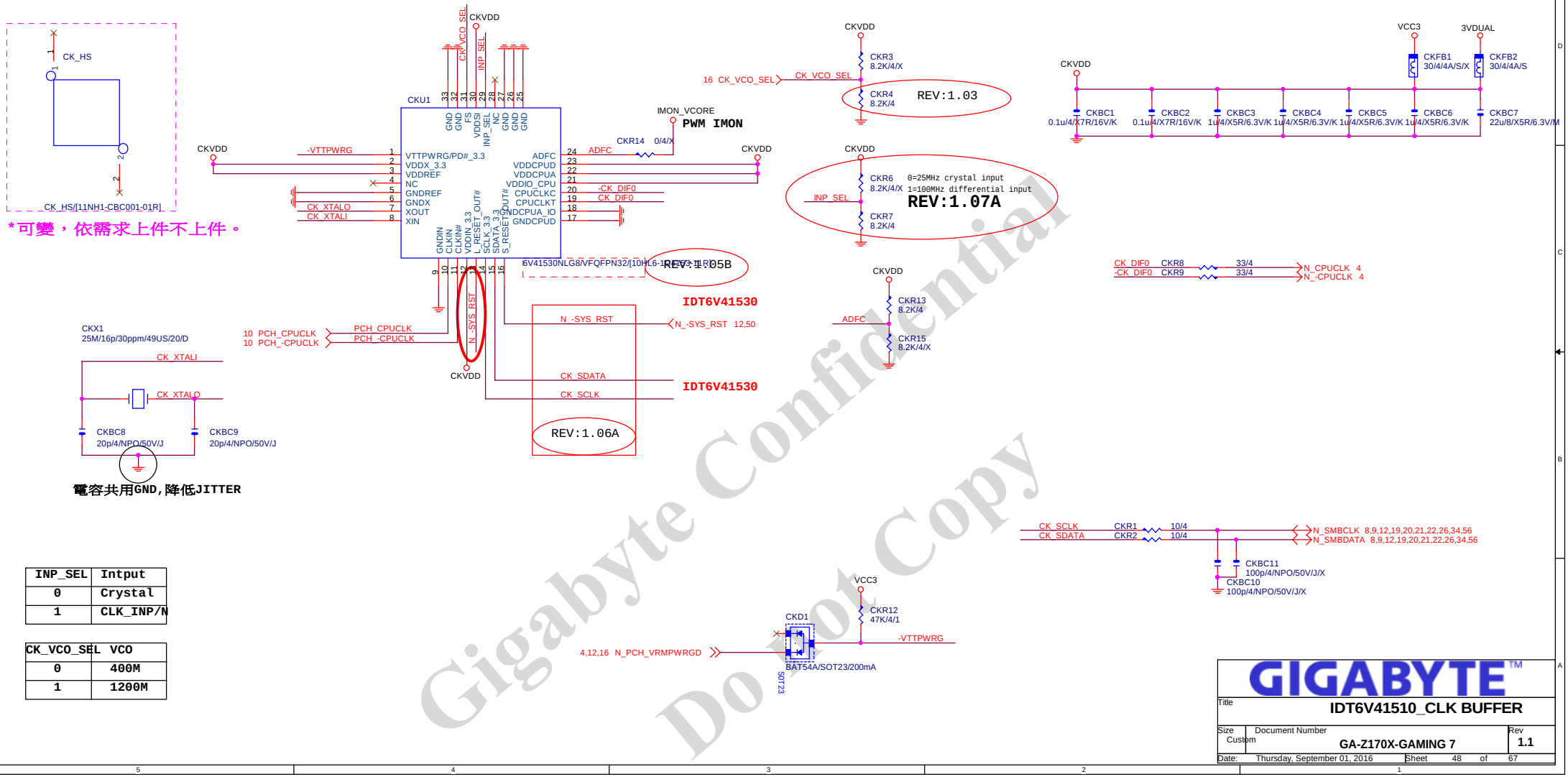
REV:1.07A



INP_SEL	Intput
0	Crystal
1	CLK_INP/N

CK_VCO_SEL	VCO
0	400M
1	1200M

GIGABYTE™

Title: IDT6V41510_CLK BUFFER

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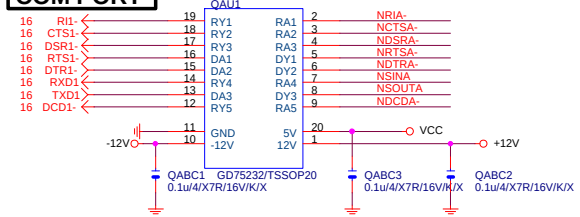
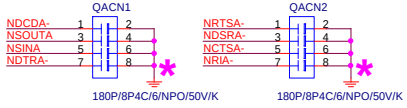
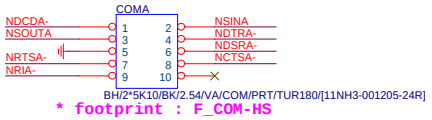
Rev: 0.52

COM PORT



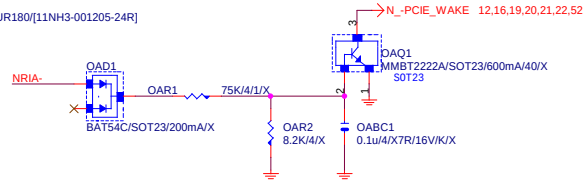


COMA

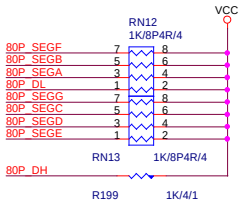


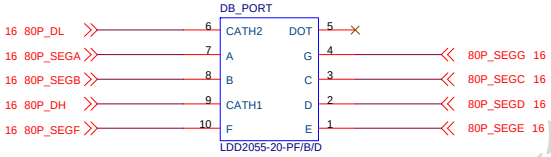
* footprint : F_COM-HS

* 接 N_-PCIE_WAKE

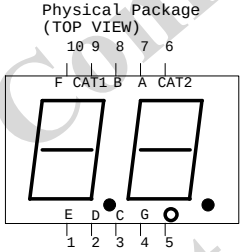


80 PORT

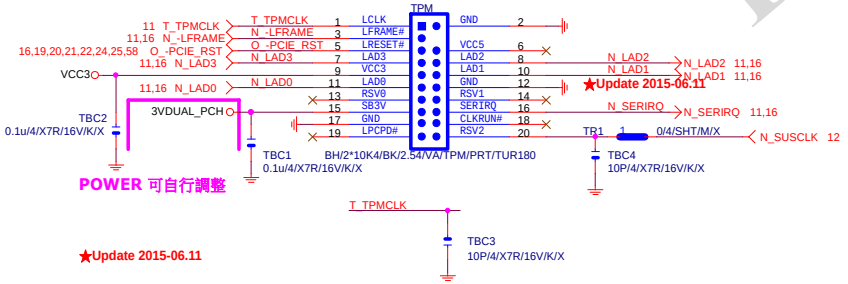




COMMON CATHODE



TPM CONNECT



POWER 可自行調整

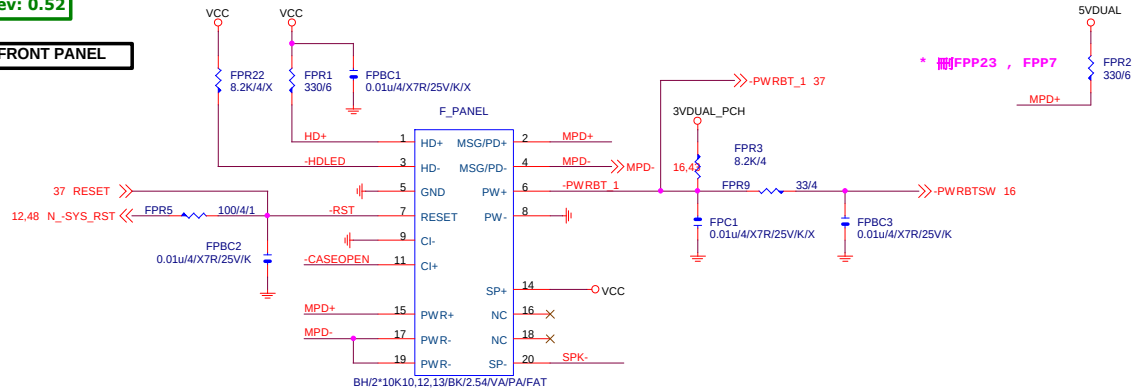
★Update 2015-06.11

★Update 2015-06.11

Gigabyte Technology	
Title	FP,F_USB,USB PWR,BZ
Size: Custom	Document Number: GA-Z170X-GAMING 7
Rev: 1.1	
Date: Thursday, September 01, 2016	Sheet 49 of 67

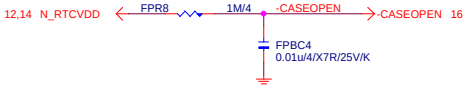
Rev: 0.52

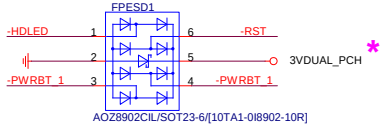
FRONT PANEL



* footprint : F_PANEL-100

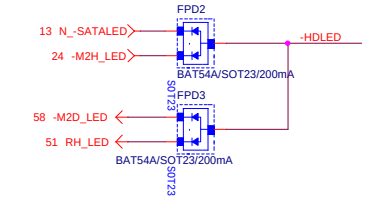
CASE OPEN



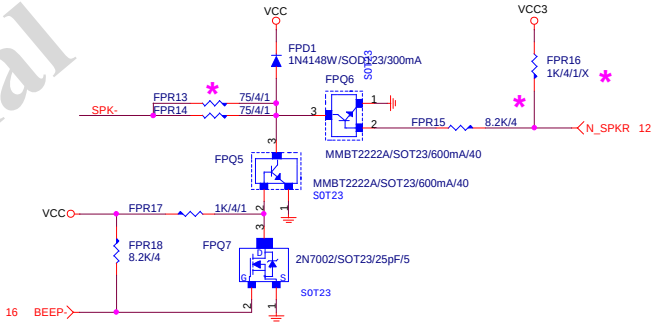


SATA LED

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



SPKR



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

Gigabyte Technology		
Title: FRONT PANEL		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 50 of 67	

Rev: 0.1

Near to PIN

RH_VDD1_2
RH_VDD10
RHBC1 RHBC2 RHBC3 RHBC4 RHBC5 RHBC6 RHBC7
0.1u/4/X7R/16V/K

Near to PIN

VCC3
RHBC11 RHBC12 RHBC13 RHBC14
0.1u/4/X7R/16V/K/X
0.1u/4/X7R/16V/K

RH_VDD1_2 >40mil RHFB1 4.7uH/3.3A/29m/S RH_EXTL
RHBC15 RHBC16 10u/6/X5R/6.3V/M
0.1u/4/X7R/16V/K

Cout is mandatory.
close to pin

VCC3 RHR3 RH_VCC3IN
MASK/0/6/SHT/X
RHBC17 10u/6/X5R/6.3V/M/X

可變

13 RH_SL_OP
13 RH_SL_ON
13 RH_SL_IP
13 RH_SL_IN
RHC1 RHC2 RHC3 RHC4
0.1u/4/X7R/16V/K

RH_VDD1_2
VCC3
PTXN PTXP PRXN PRXP RH_XTALI RH_XTALO

可變

RH_-SRCCLK 10
RH_SRCCLK 10

RH_XTALI
RHBC9 15P/4/NPO/50V/J
RIX2 20M/20p/20ppm/49US/40/D
RH_XTALO

★Update 2015-05-12
增加EEPROM

RH_PREXT RH_SPI_CLK RH_SPI_DO RH_SPI_CS RH_SPI_DI
RH_-PERST
50 RH_LED
RH_TP1

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

SATA PORT 0
SATA PORT 1

RH_RXP0 RH_RXN0 RH_TXN0 RH_TXP0 RH_SREXT RH_TXP1 RH_TXN1 RH_RXN1 RH_RXP1

RH_SREXT RHR1 12.1K/4/1
RH_PREXT RHR2 12.1K/4/1

SWITCH POWER

RH_EXTL
RH_VCC3IN
RH_TP2 RH_TP3 RH_TP4

Power up sequence

+3.3V & +1.2V
90%
PERST
T>0ms

(驗証完畢可移除)

RHR4 0/4/X
VCC3
RHR5 100K/4/1
RH_-PERST
RHR6 1K/4/1
RHQ1
SOT23
2N7002/SOT23/25pF/5
RHBC22 0.1u/4/X7R/16V/K
RHBC23 0.1u/4/X7R/16V/K/X
RHQ2
2N7002/SOT23/25pF/5
SOT23

可變動
16,45,46,52 O_-PFMRST2

RHU2
RHR7 1K/4/1
RH_SPI_CS
RH_SPI_DI
CS# SO WP# VSS
VDD HOLD# SCK SI
RHR8 1K/4/1
RHC13 1u/4/X5R/6.3V/K
RH_SPI_CLK
RH_SPI_DO
4M/SPI/SO8/200mil/S[10HP4-112540-30R]

RH_SPI_DI RHR9 1K/4/1/X
RH_SPI_CLK RHR10 1K/4/1/X

HOLD#-
0:Operation Lock
1:Normal Operation

★Update 2015-05-12
增加EEPROM

RH_SPI_DO RHR16 1K/4/1/X

H/W Strapping

refer to datasheet:

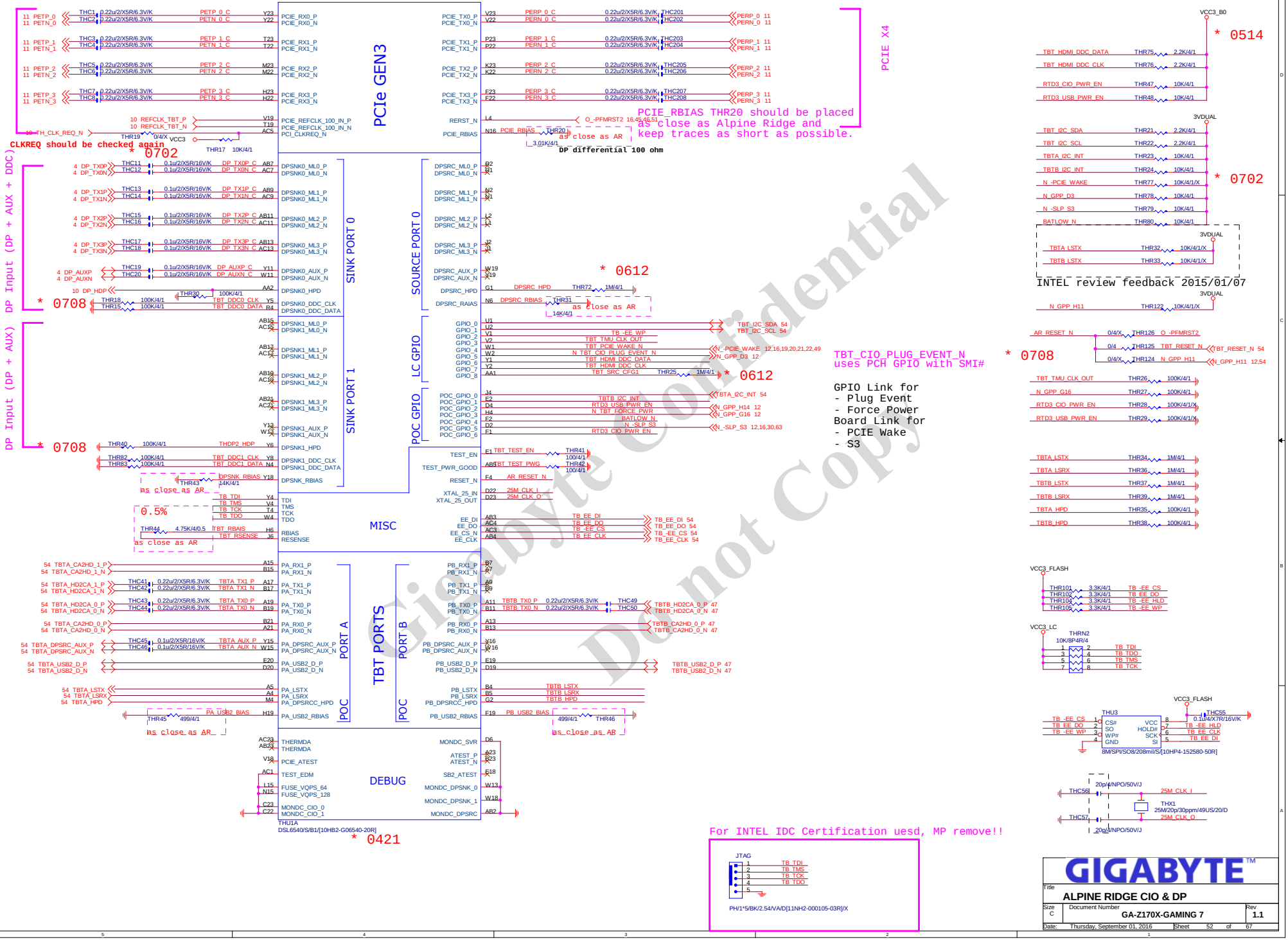
SPI_DO
0: Spin up by H/W
1: Spin up by S/W

GIGABYTE™

Title: ASM1061
Size: Custom
Document Number: GA-Z170X-GAMING 7
Rev: 1.1
Date: Thursday, September 01, 2016
Sheet 51 of 67

INTEL AR USB31 module SCH 0.62 (2015/07/02)

Base on INTEL AR reference SCH 1.0 (2015/05/11)

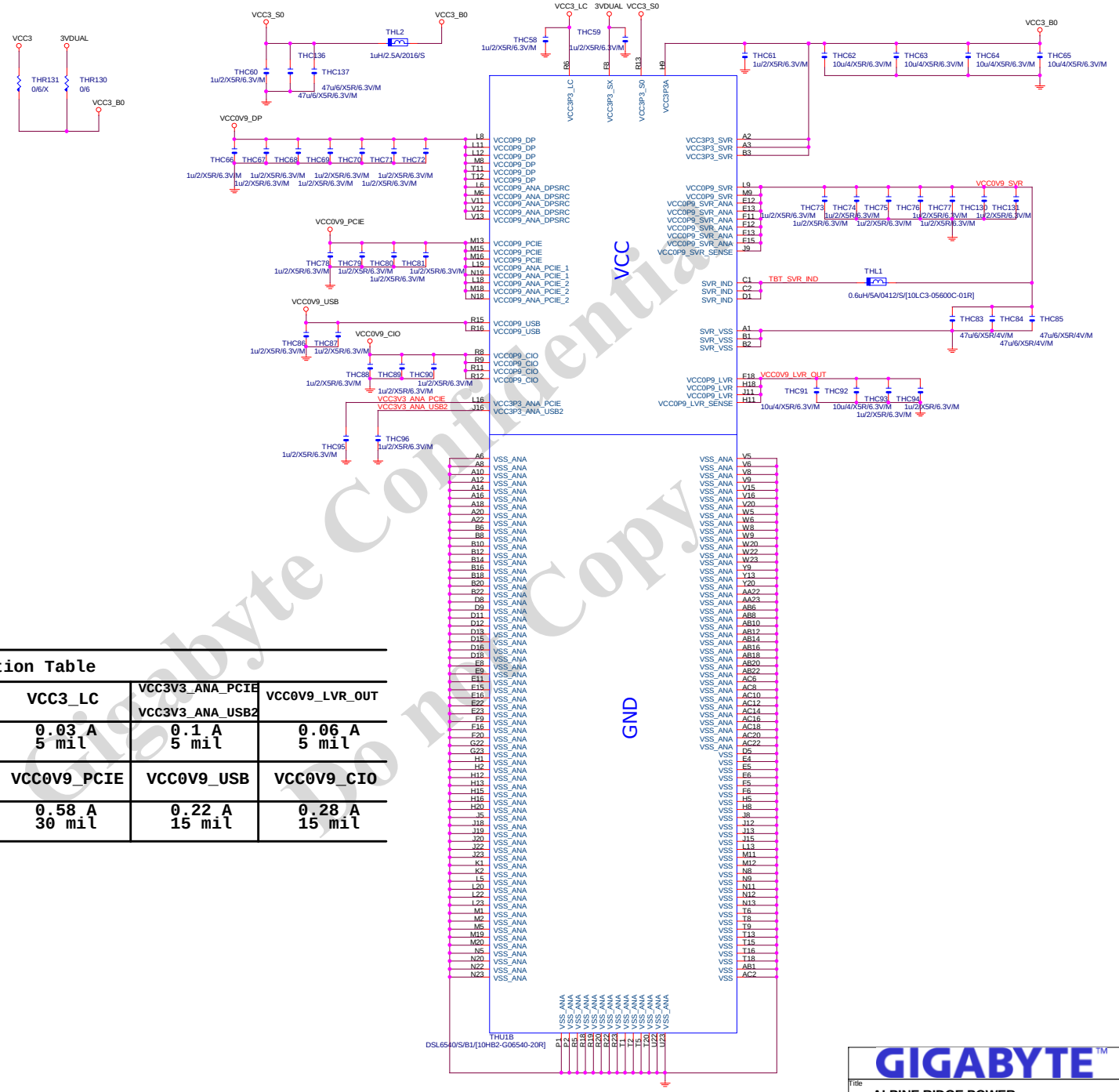


GIGABYTE™

Title	ALPINE RIDGE CIO & DP	
Size C	Document Number GA-Z170X-GAMING 7	Rev 1.1
Date: Thursday, September 01, 2016	Sheet 52 of 67	

INTEL AR module (TBT + U31A) SCH 0.4 (2015/06/12)

Base on INTEL AR reference SCH 1.0 (2015/05/11)



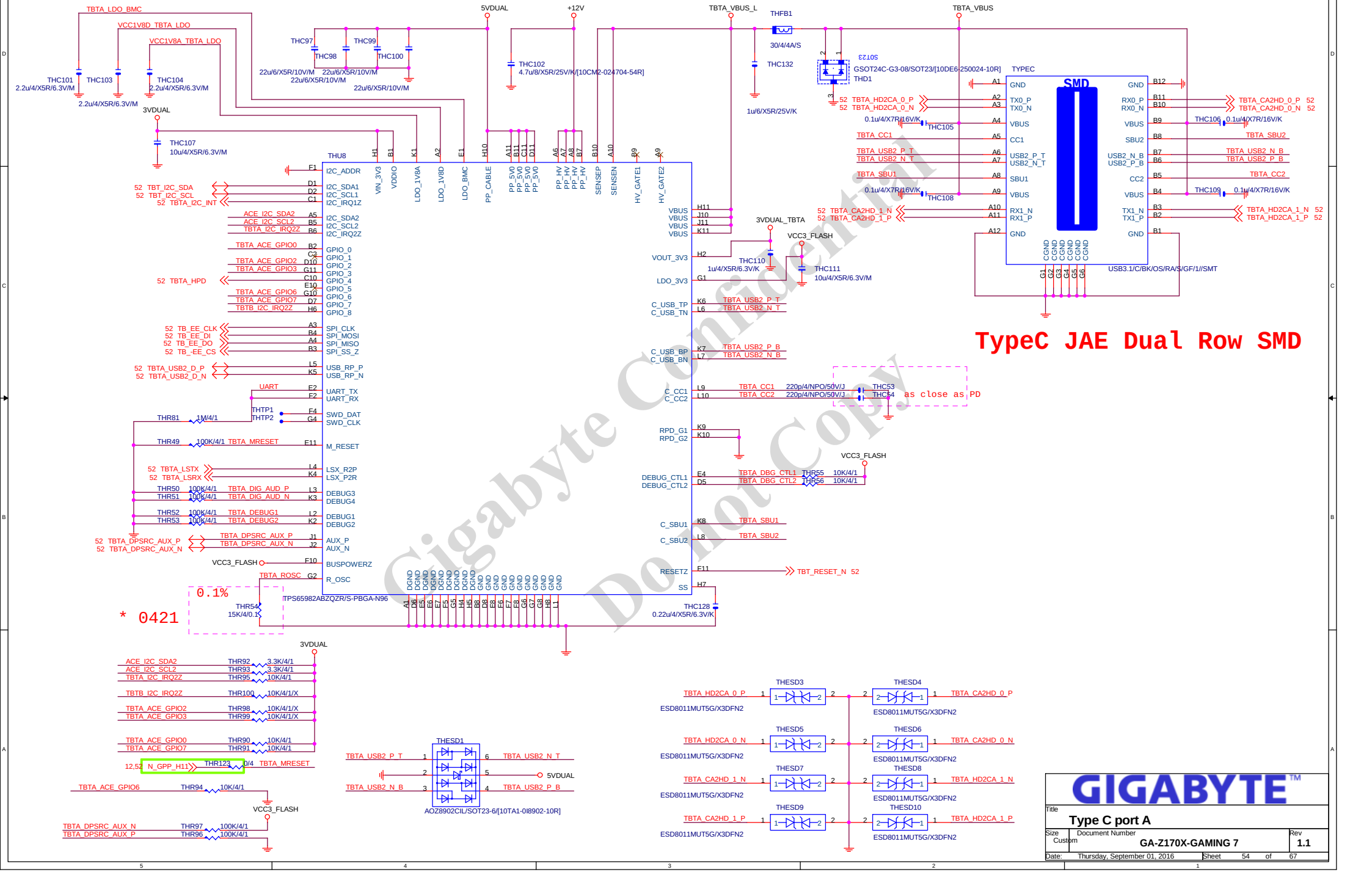
Power Consumption Table

	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

Title	ALPINE RIDGE POWER		
Size: C	Document Number: GA-Z170X-GAMING 7		Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 53 of 67		

INTEL AR module (TBT + U31A) SCH 0.4 (2015/06/12)

Base on INTEL AR reference SCH 1.01 (2015/05/13)



Title	Type C port A
Size	Custom
Document Number	GA-Z170X-GAMING 7
Rev	1.1
Date:	Thursday, September 01, 2016
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GIGABYTE™

Title: TBT _ HDMI 2.0

Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7	1.1

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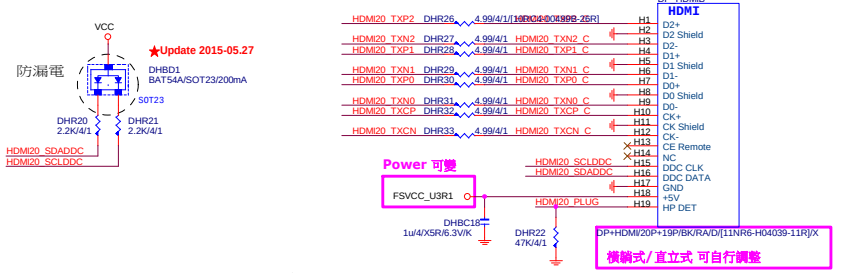
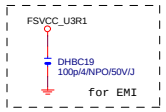
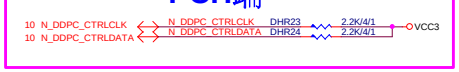
Rev:1.05

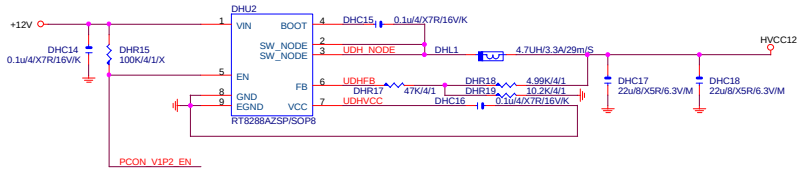
Display Port with HDMI, or HDMI only.



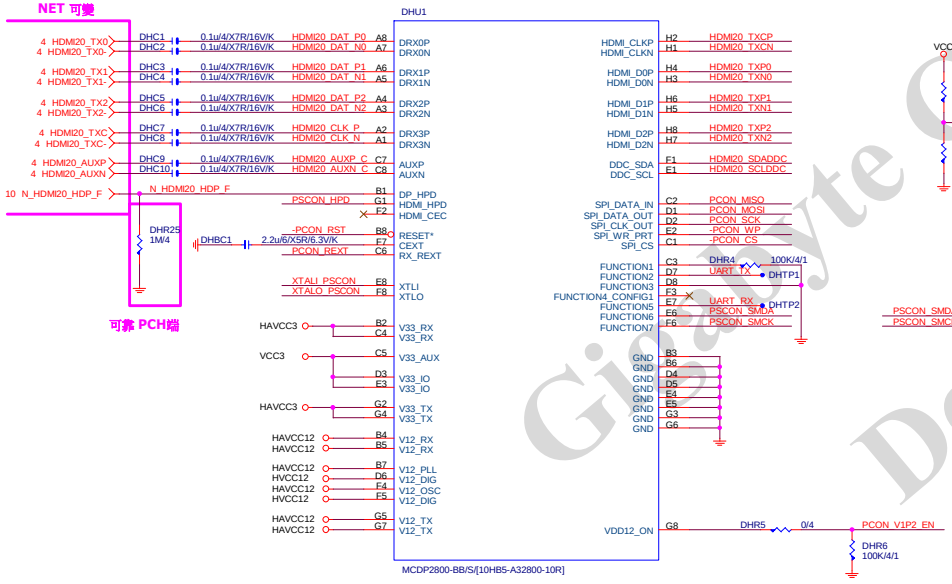


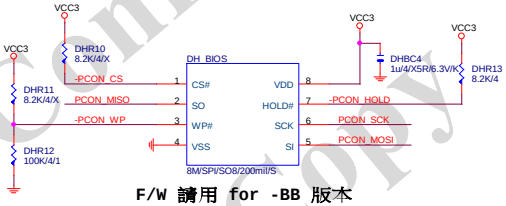
PCH端



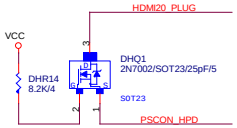


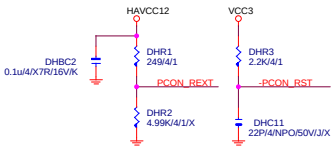
需設定為DP Port
NET 可變

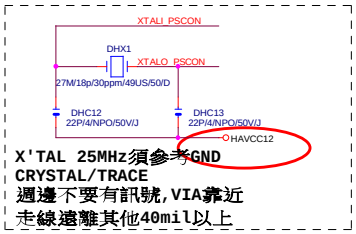


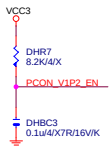


F/W 請用 for -BB 版本



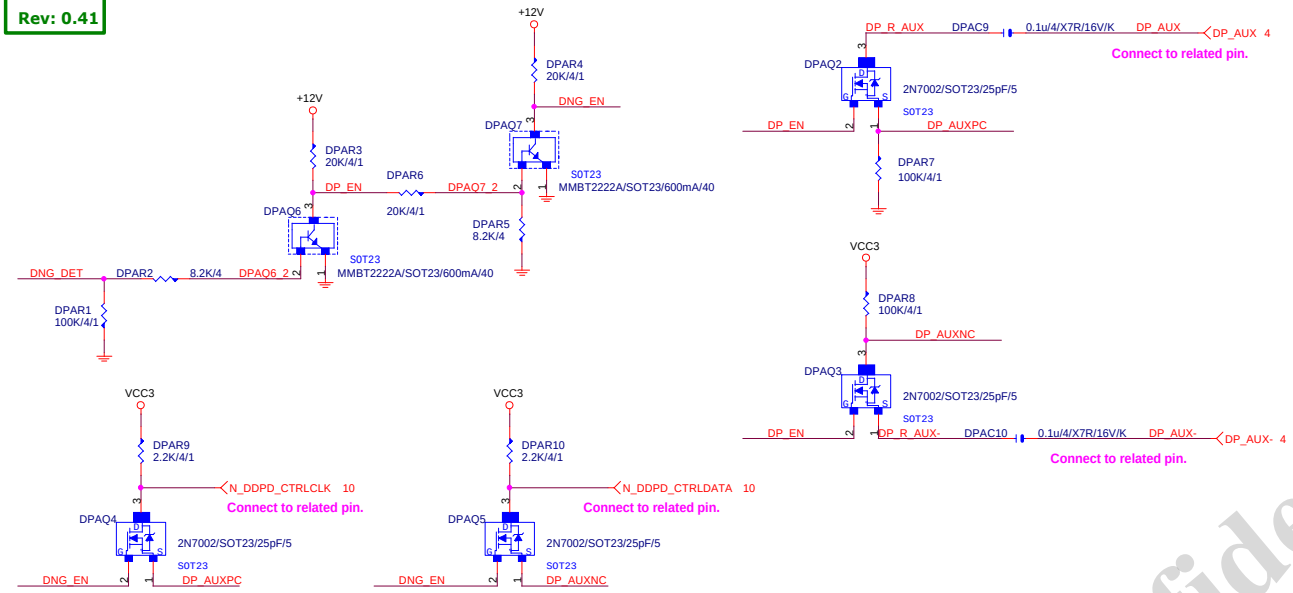






Gigabyte Technology		
Title: HDMI20 MCDP2800-BA		
Size: C	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 56 of 67	

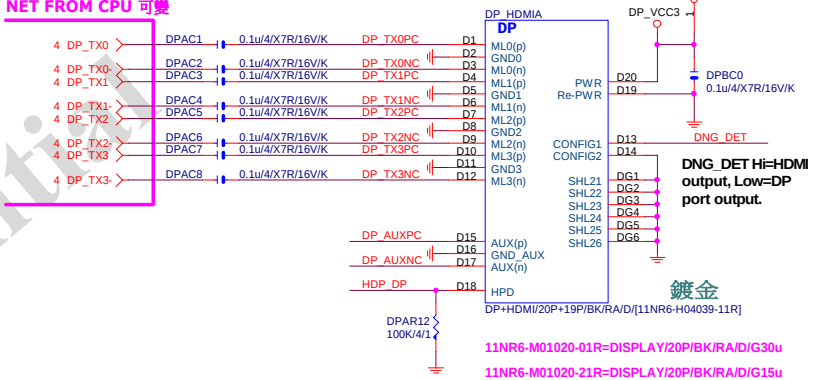
Rev: 0.41



SINGLE Display Port

Display Port with HDMI, or HDMI only.

NET FROM CPU 可變



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

鍍金

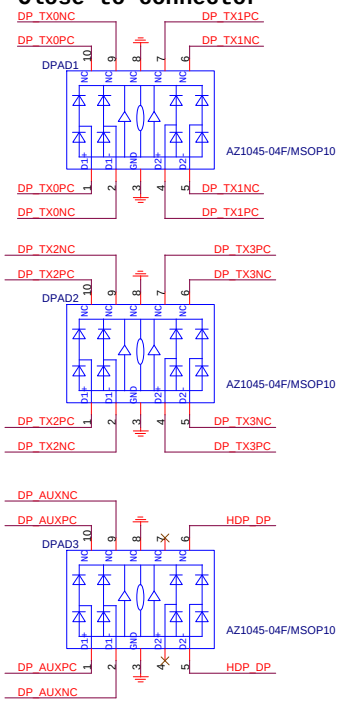
11NR6-M01020-01R=DISPLAY/20P/BK/RA/D/G30u

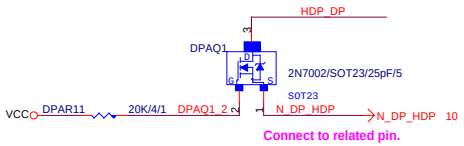
11NR6-M01020-21R=DISPLAY/20P/BK/RA/D/G15u

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

DP

Close to connector





GIGABYTE		
Title: DP PORT		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 57 of 67	

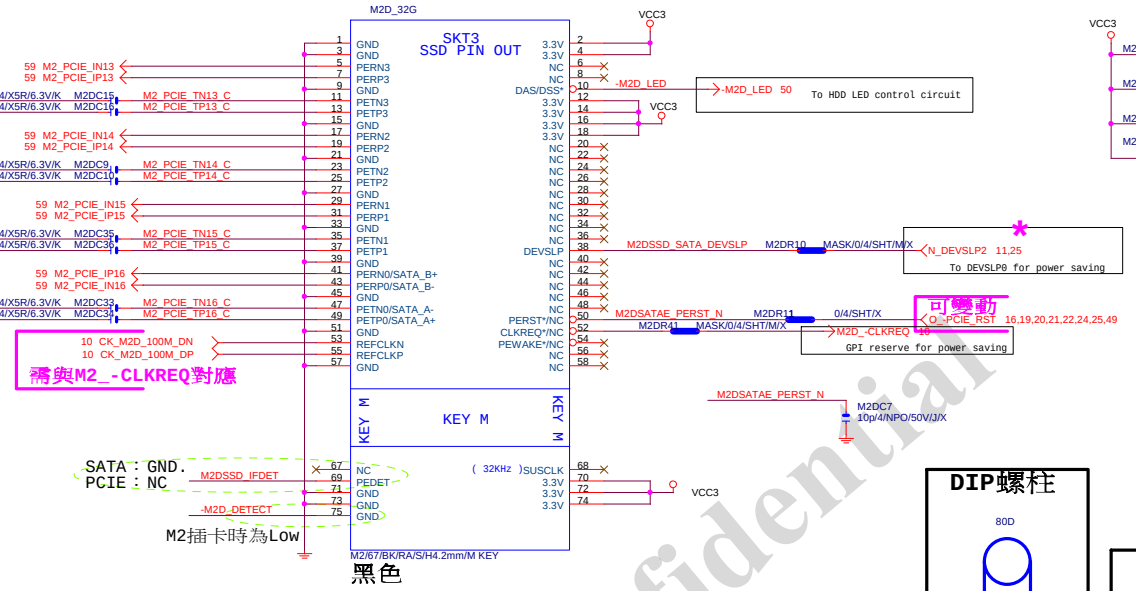
Rev 0.9

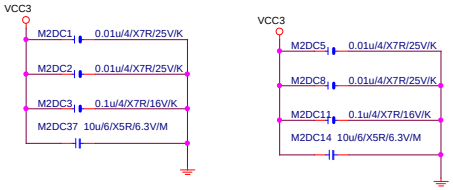
M.2 Lane2 from PCH port19

M.2 Lane2 from PCH port20

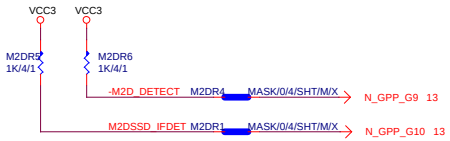
M.2 Lane3 from PCH port21

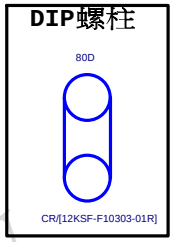
M.2 Lane4 from PCH port22

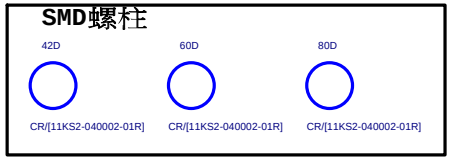




支援SATA and M.2 function







M.2 有插卡 / 沒插卡 GPP_G9	M.2插何種卡? GPP_G10	SATA Express 插何種碟碟? GPP_E0/E1/E2/F0	IO19 (S0)	IO20 (S1)	IO21 (S2)	IO22 (S3)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA	SATA	SATA	SATA (For M2)
		SATA Express (Low)	SATA Express (For S.E.0)		SATA	SATA (For M2)
	PCIE Mode (Hi)	SATA (Hi)	PCIEx4 (For M.2)			
		SATA Express (Low)	PCIEx4 (For M.2)			
沒插卡 (Hi)	Don't Care (Hi)	SATA (Hi)	SATA (S0)	SATA (S1)	SATA (S2)	SATA (S3)
		SATA Express (Low)	SATA Express (For S.E.0)		SATA Express (For S.E.1)	

M.2-SATA(S3)+SATA S0&S1&S2

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	L	GPP_C19	L
GPP_E0/E1/E2/F0	H (SATA)	GPP_C21	H

M.2X4

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	H
GPP_G10	H	GPP_C19	H
GPP_E0/E1/E2/F0	N/A	GPP_C21	H

M.2沒插卡+SATA S0~S3

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	H	GPP_C20	L
GPP_G10	H	GPP_C19	L
GPP_E0/E1/E2/F0	H	GPP_C21	L

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

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	L	GPP_C19	L
GPP_E0/E1/E2/F0	L (S.E.)	GPP_C21	H

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

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	H	GPP_C19	H
GPP_E0/E1/E2/F0	L	GPP_C21	H

M.2沒插卡+S.E.C&S.E.D

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	H	GPP_C20	L
GPP_G10	H	GPP_C19	L
GPP_E0/E1/E2/F0	L	GPP_C21	L

M.2X2+SATA S0&S1

WHEN	PCH GPIO	SETUP	SWITCH
GPP_G9	L	GPP_C20	L
GPP_G10	H	GPP_C19	H
GPP_E0/E1/E2/F0	H	GPP_C21	H

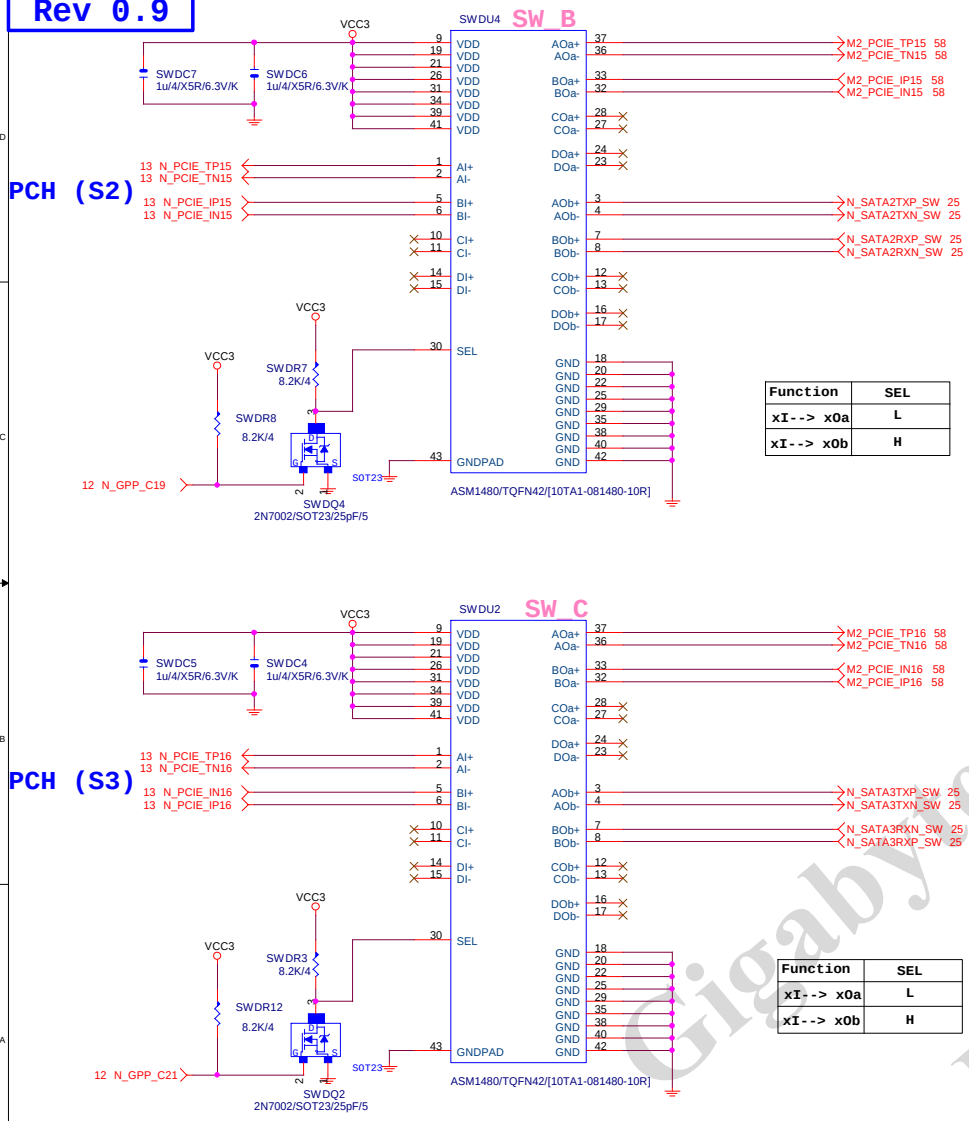
GIGABYTE Technology

Title: M.2 X4

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

Date: Thursday, September 01, 2016 | Sheet 58 of 67

Rev 0.9

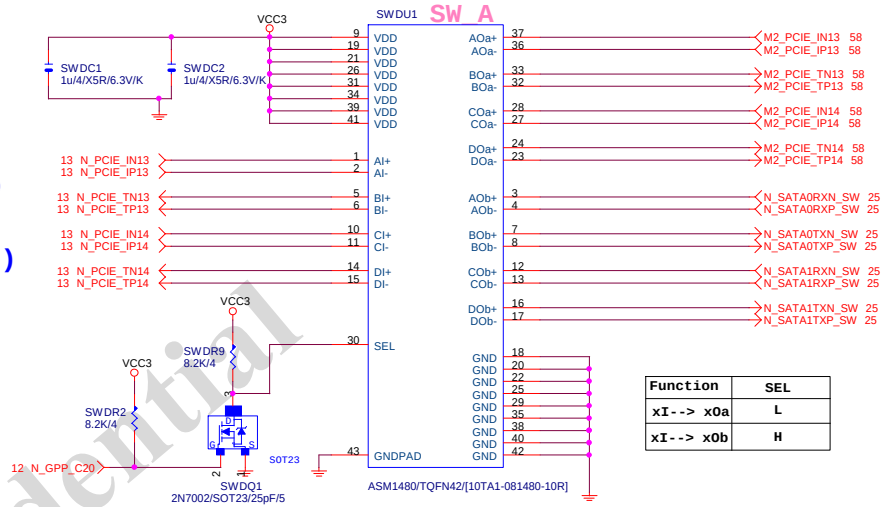


Function	SEL
xI--> xOa	L
xI--> xOb	H

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

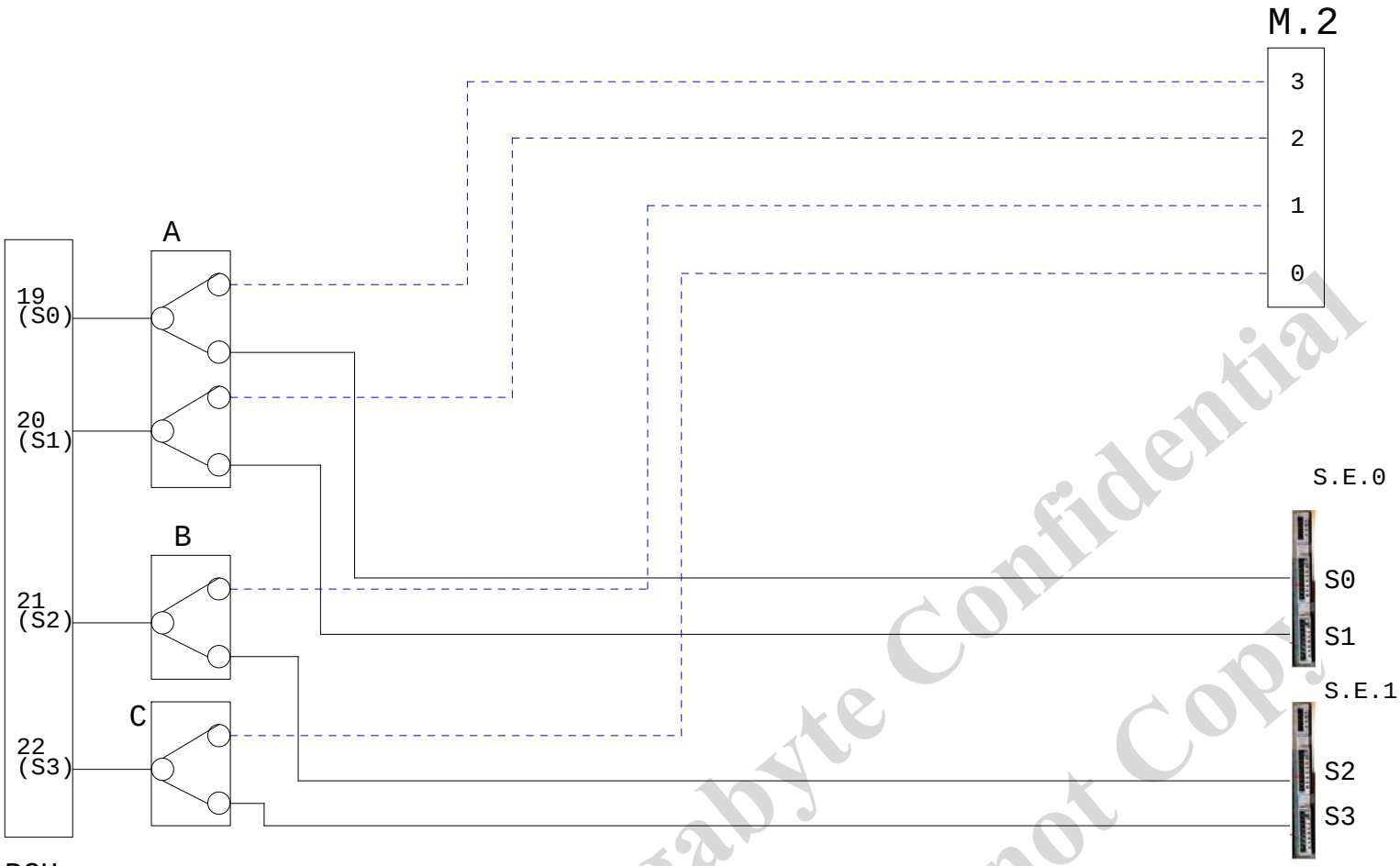
PCH (S0)

PCH (S1)



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

Title	Gigabyte Technology NXP-PTN3356	
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
Date: Thursday, September 01, 2016	Sheet 59 of 67	



3顆SW IC,

當使用M.2 (X2),
SATA EXPRESS只可限定使用 S0&S1

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

Title	BLOCK DIAGRAM	
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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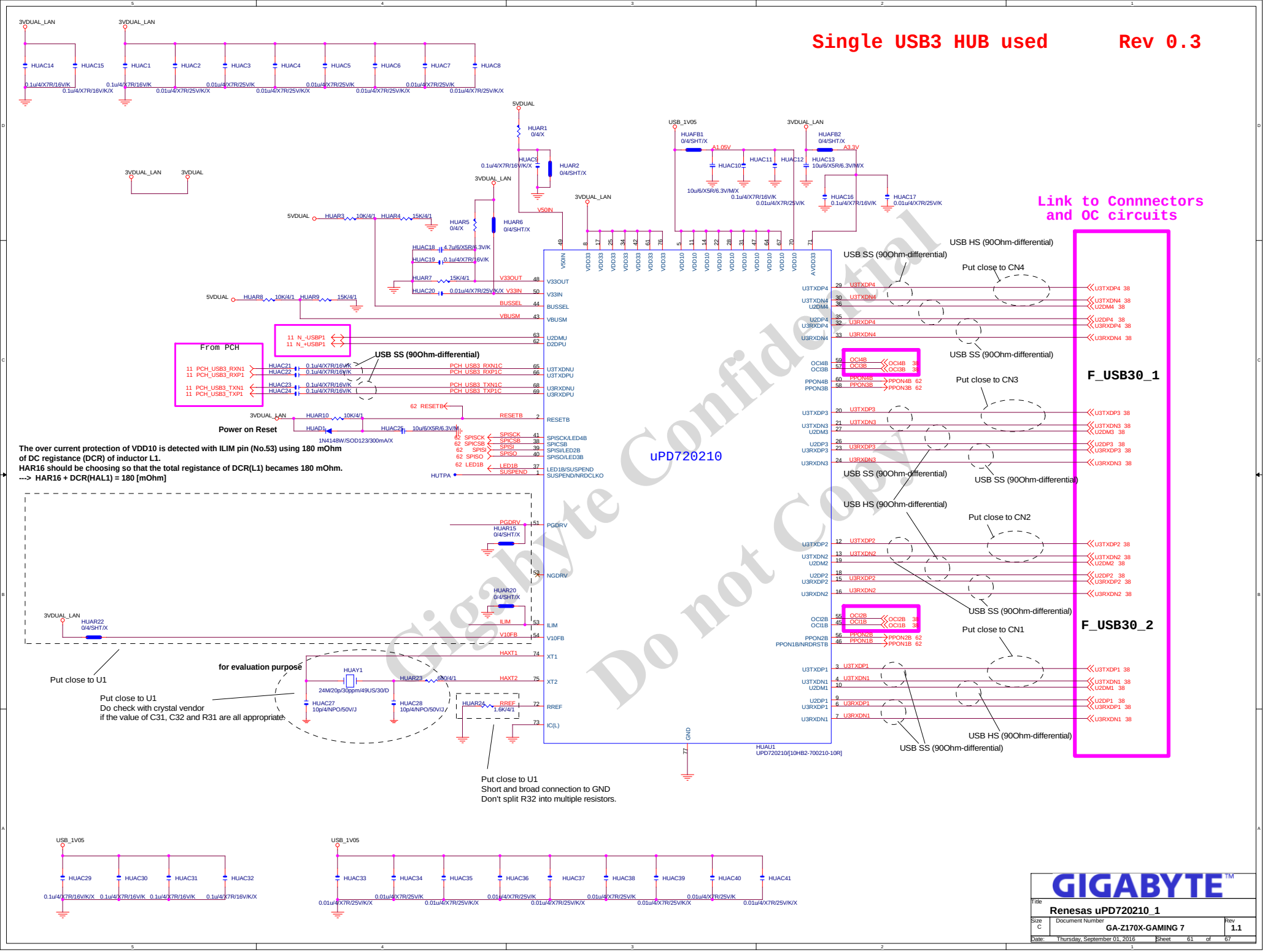
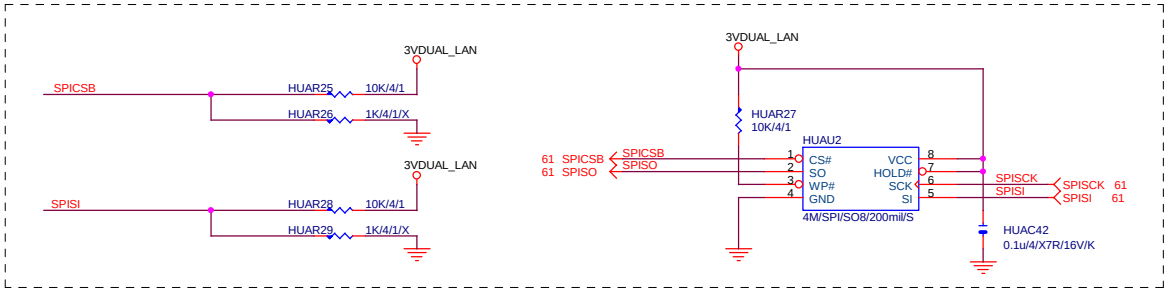
Single USB3 HUB used Rev 0.3



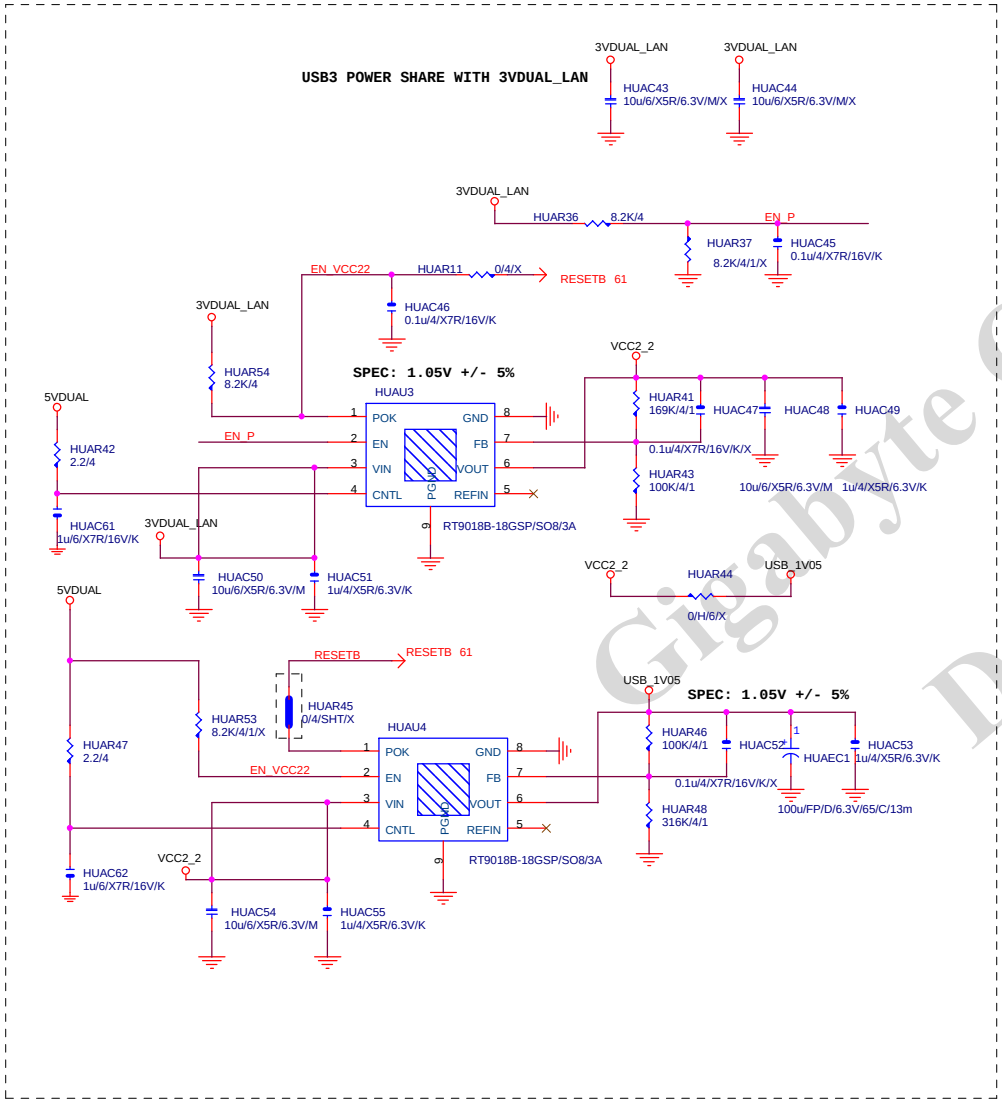
Title	Renesas uPD720210_1		
Size C	Document Number GA-Z170X-GAMING 7		Rev 1.1
Date: Thursday, September 01, 2016	Sheet 61 of 67		

Single USB3 HUB used

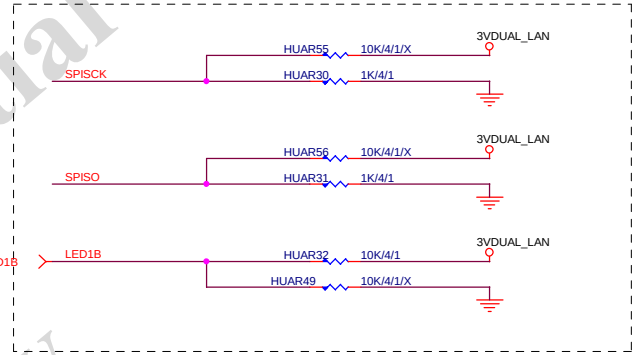
 # External SPI ROM ; SPI ROM attached mode



USB3 POWER SHARE WITH 3VDUAL_LAN

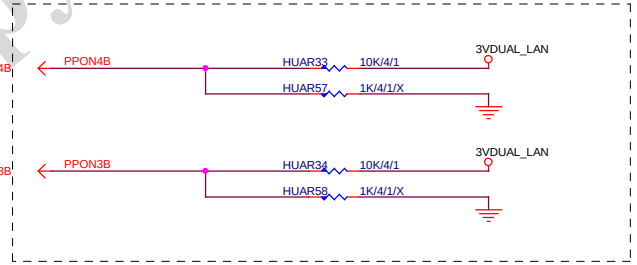


 # Battery Charging

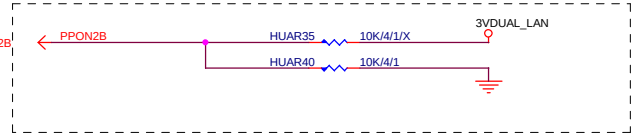


 # Number of Ports ; 4Ports mode

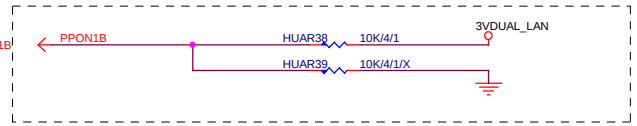
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



#5 VBUS Power Control ; Individual mode



 # PPON1B Pin Function ; Port1 PPONB mode



GIGABYTE™

Title: Renesas uPD720210_1		
Size: Custom	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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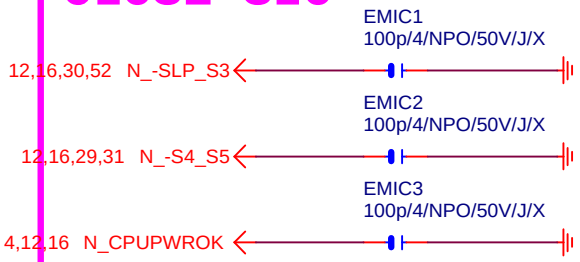
EMI/ESD R0.1

CLOSE SIO



CLOSE PCH

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Title: EMI/ESD		
Size: A	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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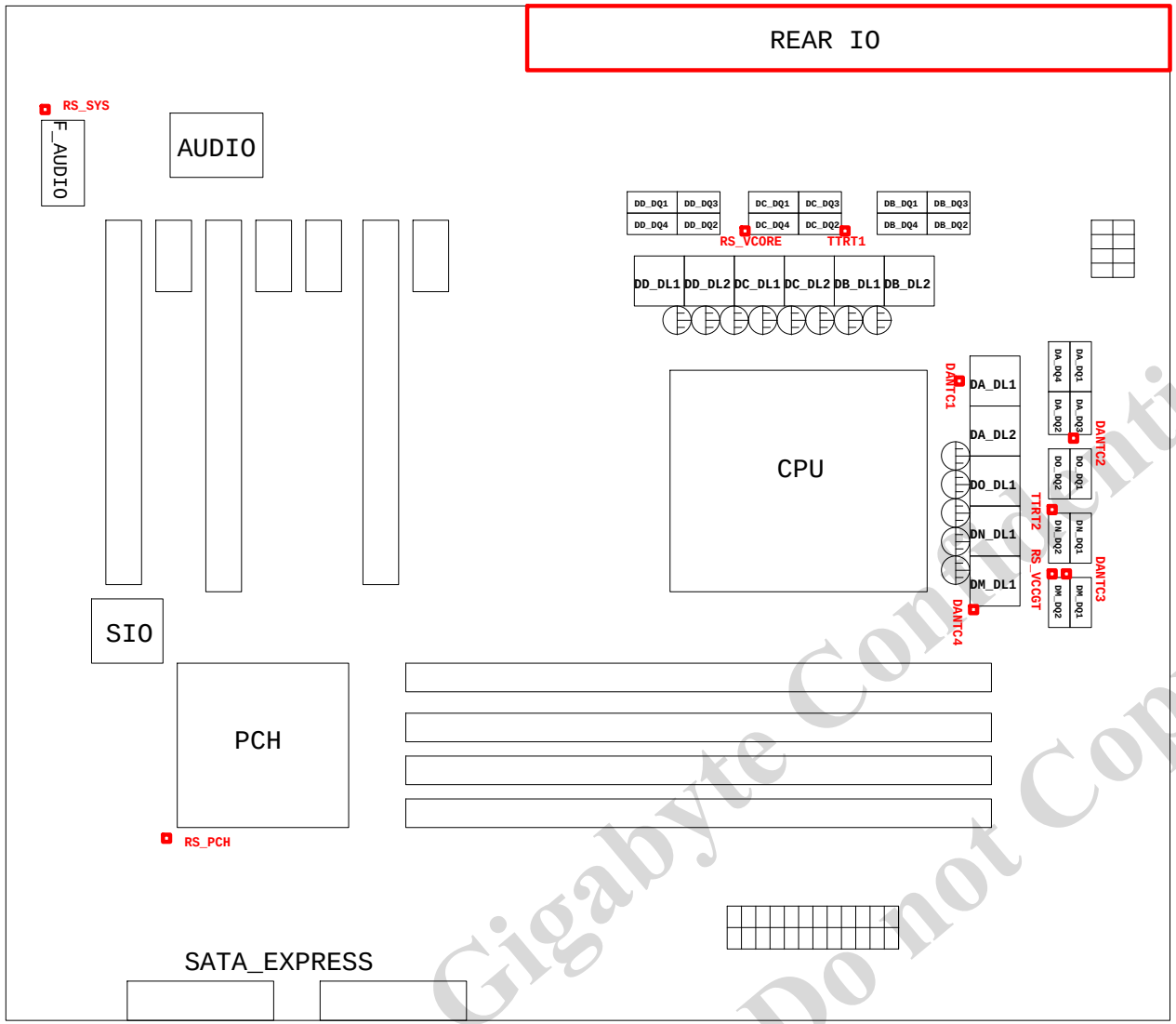

熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

Gigabyte Technology
Title: NTC MAP
Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1
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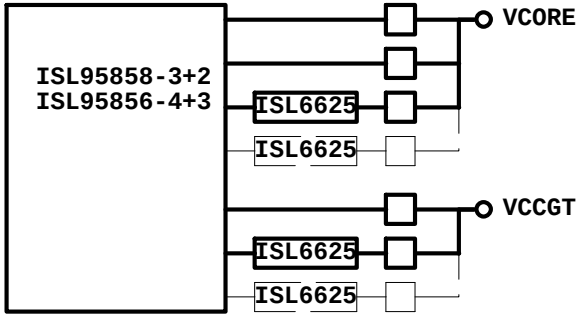
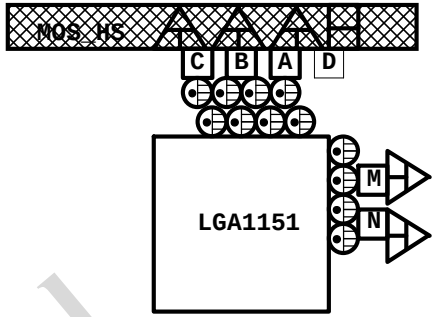
POWER BLOCK MAP

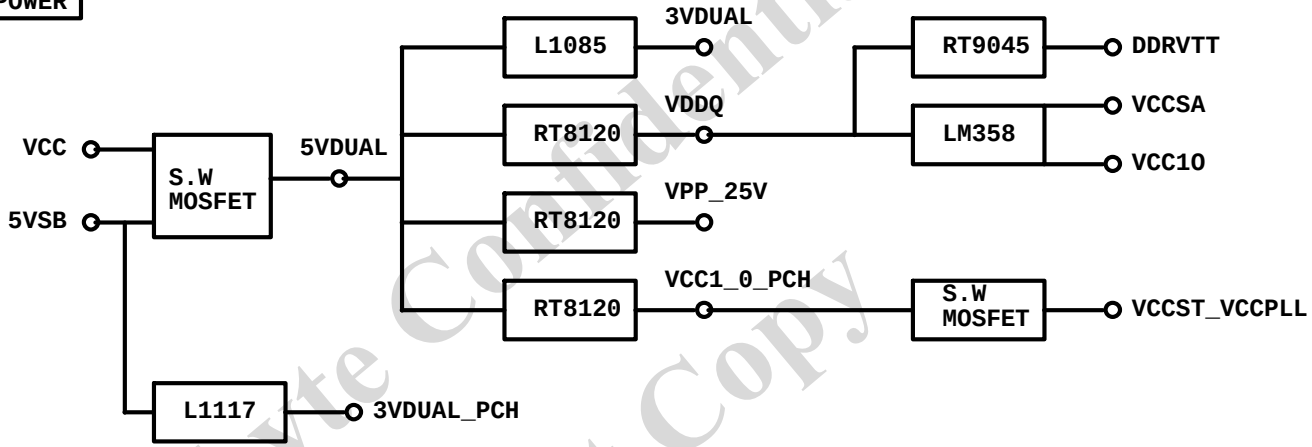
- **CPU**: VCORE, VCCGT, VCCSA, VCCIO, VDDQ, VCCST_VCCPLL, VCCSFUSEPRG
- **DDR4**: VDDQ, DDRVTT, VPP_25V, VDDSPD(VCC3)
- **PCH**: VCC1_0_PCH, VCC1_0_PCH_DSW, VCC10_VCCF24_1P0, VCC10_VCCAMPHYPLL, VCC10_VCCAPLL, VCC3_PCH, 3VDUAL_PCH, VCC3, N_RTCVDD
- **IT8628**: IT_VCCH, IT_AVCC, 2_5LEVEL
- **HM**: +12V,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

VCORE/VCCGT

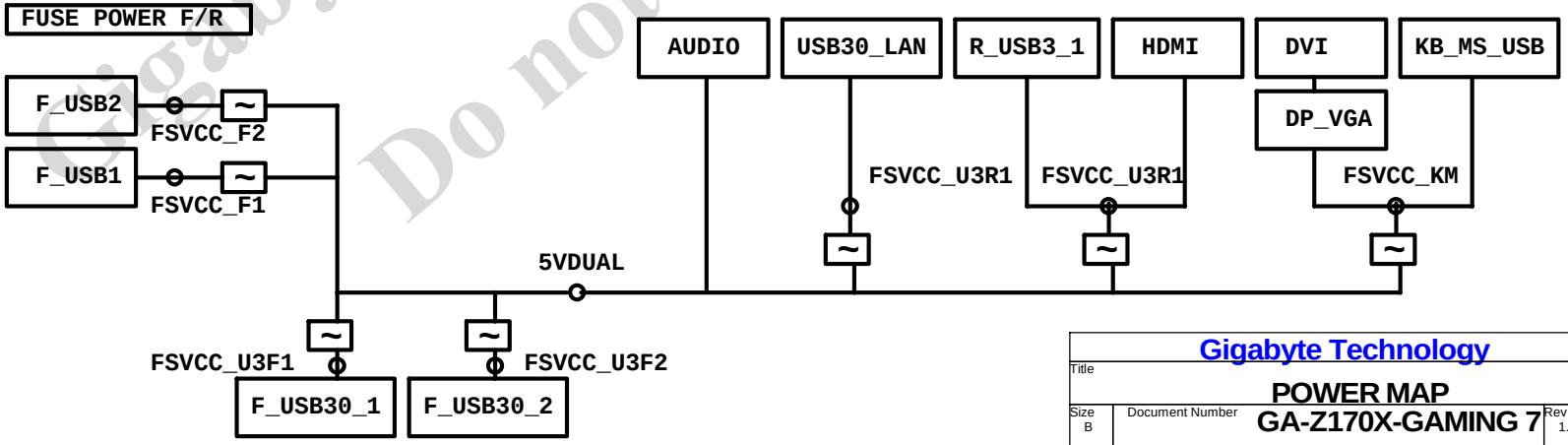




POWER



FUSE POWER F/R



Gigabyte Technology		
Title: POWER MAP		
Size: B	Document Number: GA-Z170X-GAMING 7	Rev: 1.1
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固態電容料號.請自行修改

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

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

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

IRON CHOKE

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

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

Ferrite

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

BEAD

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

PWM料號

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

REGULATOR

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

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Title: RT8120_DDR4 POWER

Size: Custom | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1

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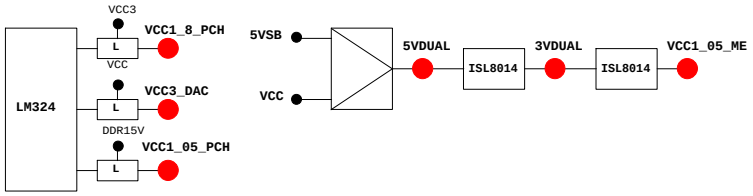
PCH GPIO LIST TABLE

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

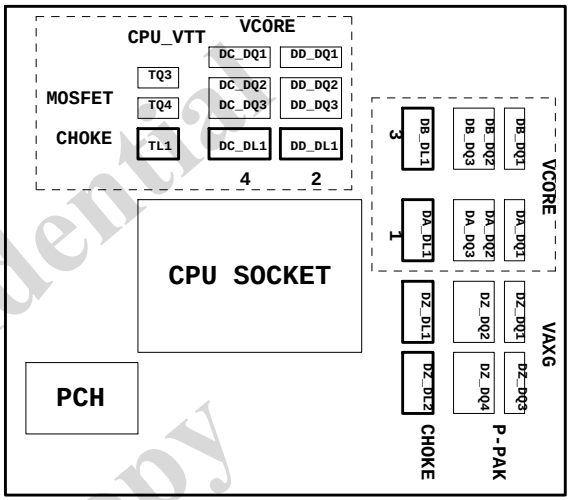
Super I/O ITE8720 GPIO Table

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

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



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

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

Gigabyte Technology
Title: TABLE LIST
Size: C | Document Number: GA-Z170X-GAMING 7 | Rev: 1.1
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