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11	PCH DMI,USB,PCIE
12	PCH MISC
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14	PCH_PWR,GND
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16	ITE 8620 LPC IO
17	HMW
18	FAN CTRL--SIO
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X4 SLOT(CPU)
21	PCI EXPRESS X1 SLOTS
22	PCI EXPRESS X8 SLOT
23	PCI EXPRESS X16 SWITCH
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25	SATA EXPRESS
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27	ISL95856 MOS_VCORE
28	ISL95856 MOS_VCCGT
29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR
31	RT8120_VPP

32	RT8120_PCH
33	DISCRETE POWER1
34	NCT3933
35	ATX POWER , A_-PROCHOT
36	KB_MS_USB
37	OC , ECO , POWER BUTTON
38	F_USB30
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
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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. ASMI061 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. 高速訊號測試點移除	
	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 PCIE4_M2 --> PCIE4_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 THRI24,THRI25,THRI26	
	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	9.0 1. Add OC1,OC LED 1x2 pin 2. Add NPR22,NPC10,NTNPL2 3. Add MA DR9,MA DR10 4. PCIE4 switch change "IO_GP20 5. WR94 CHANGE NET to VCCSA ? VCC_T_VCCPLL 6. Add DFC3 靠近CPU
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	1.0 1. BIOS_PH footprint update "BIOS2X5-RH-1-MASK" 2. SWPU2 pin30 net update PCIE4_M2 --> PCIE4_M2S 3. Add "MAC10" 4. Add THRI24,THRI25,THRI26 5. OC_LED & OC_BT swap
10I-0812	1. CKU1改10HL6-1C4153-11R , CKR6 --> CKR7 8.2K/4 , ADD CKX1,CKBC8,CKBC9	1.01 1. Update IDT41530 clk-bus to 24MHz 2. ATX 12V 2x4 in GND層切割層往上移
2016/08/18	1. LAN E2400 --> E2500 2. PCB Rev1.01 --> 1.1	下版修改 1. OC,ECO Default 改不亮 , 改7002 --> 2907線路 2. "SEBC1-SEBC8" footprint update "C0402-2" (Fix ASME061 D50421333 for HDMI diode 3. Add "CR226" For always enable f.audio cable detect. Add NR3 FOR X*TAL 24MHz 4. MOATR2/MOATR3 footprint update to "R0402-2"

Circuit or PCB layout change

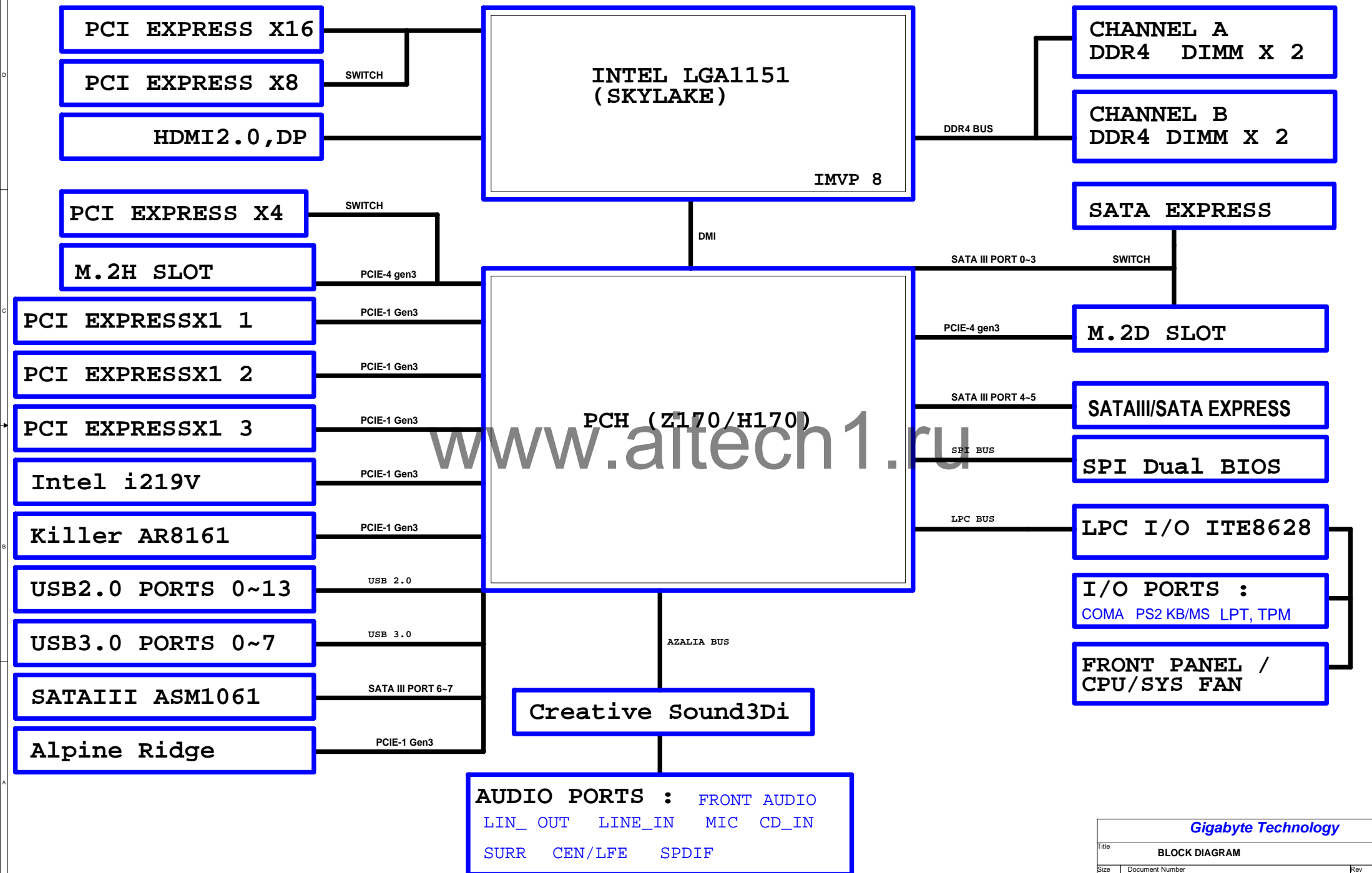
DATE	Change Item	Reason
2014/11/28 PCB:0.1	1.PCB first release 2.線路由GA-Z1704-SLI-01-1128B.DSN來修改	
2015/01/26 PCB:0.2	1. Update TYPEC footprint "USB-TYPEC-1"	
	1、增加IDT6V41510/IDT6V41520 co-lay 線路。 2、增加co-lay 電阻 table。 3、原CKR16改接CKU1 PIN 16。	
	3. 測試點位置偏移M2 CLK (CK_M2D_100M_DN/DP) 4. DDRVTT ADD MAR110,MAR111 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. PCIE4 "N_GPP_G3" --> N_GPP_G4" 13. DHL1 & LAL1 和 MOS_HS太近,要移開 14. ASMI061 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:FP24, 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 TCARI3,TCARI5 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 DEND --> 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 & CUI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 ASMI061 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]"	
T_VCCPLL		



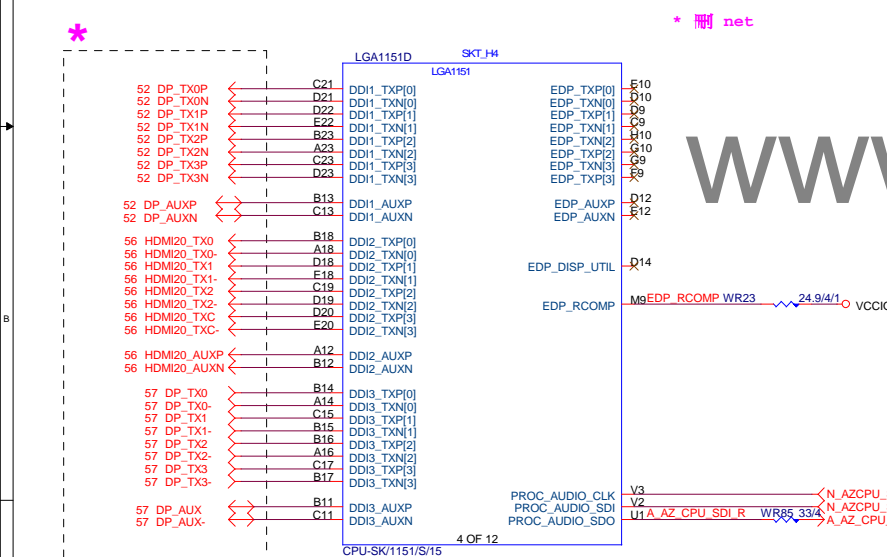
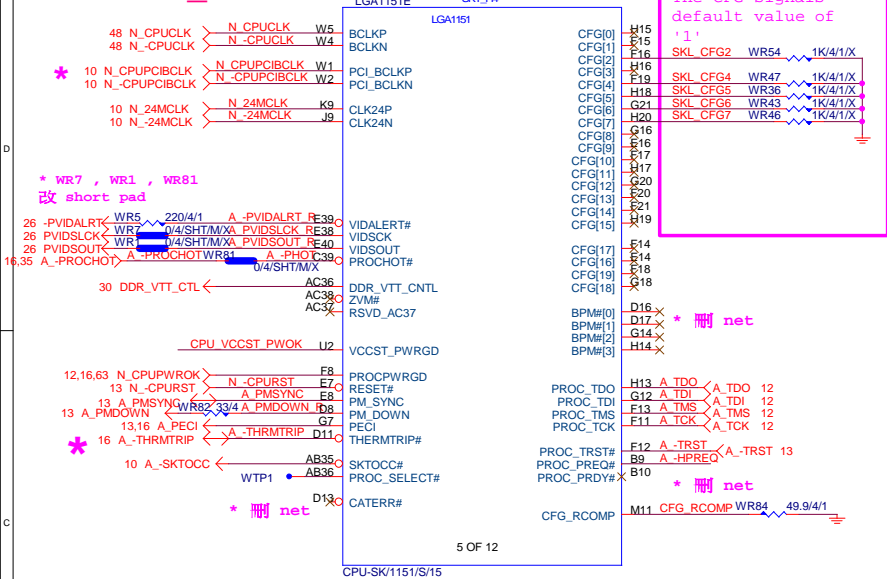
**BOM & PCB MODIFY HISTORY**

Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7	1.1
Date: Thursday, September 01, 2016		Sheet 2 of 67

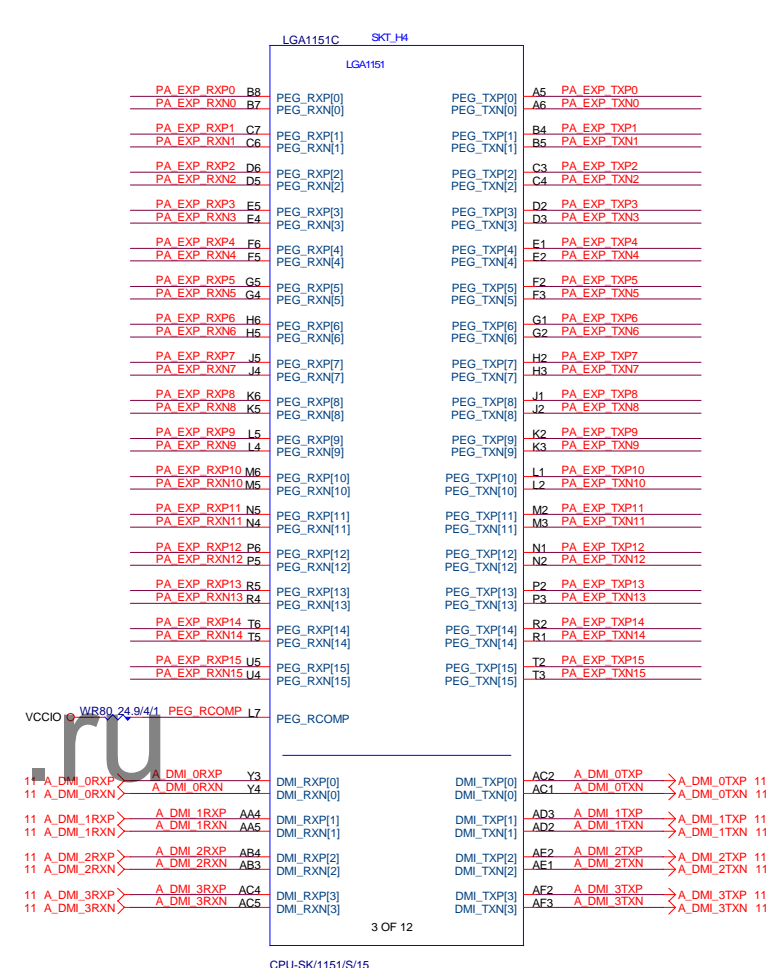
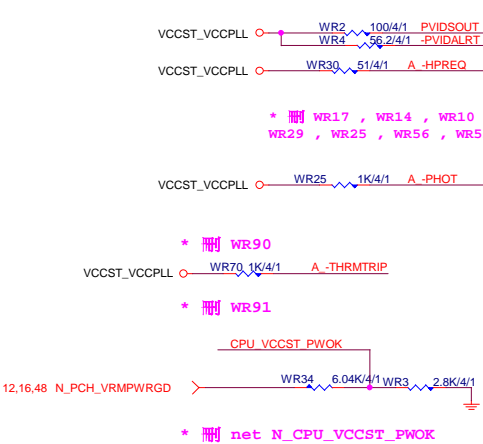
## BLOCK DIAGRAM



## From SKL\_0.2B



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



```
CFG[2]:x16 Lane Numbering
Reversal. 1=
NORMAL;0=reversal
CFG[4]: edp
enable::1:disable/0=enable
CFG[6:5]:PCI Express* Bifurcation; 11=
1 x16 PCI Express;10=2x8 PCI Express
CFG[7]: PEG Training;1=(default) PEG Train
immediately following RESET#;0=PEG Wait
for BIOS
```

22 -8X\_EN ← WR37 MASK/0/4/SHT/X SKL\_CFG5

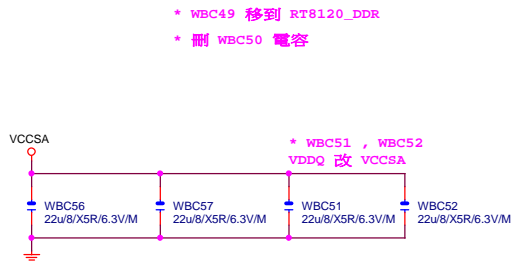
Bifurcation Config.	Signals Lanes		
	CFG[6]	CFG[5]	CFG[2]
1x16	1	1	1
1x16 Reversed	1	1	0
2x8	1	0	1
2x8 Reversed	1	0	0
1x8+2x4	0	0	1
1x8+2x4 Reversed	0	0	0

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

<p align="center"><b><i>Gigabyte Technology</i></b></p>			
<p>Title</p>			
<p align="center"><b>CPU LGA1151-A</b></p>			
Size Custom	Document Number		Rev
	<b>GA-Z170X-GAMING 7</b>		<b>1.1</b>
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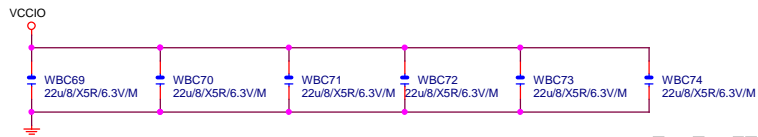
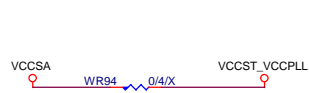




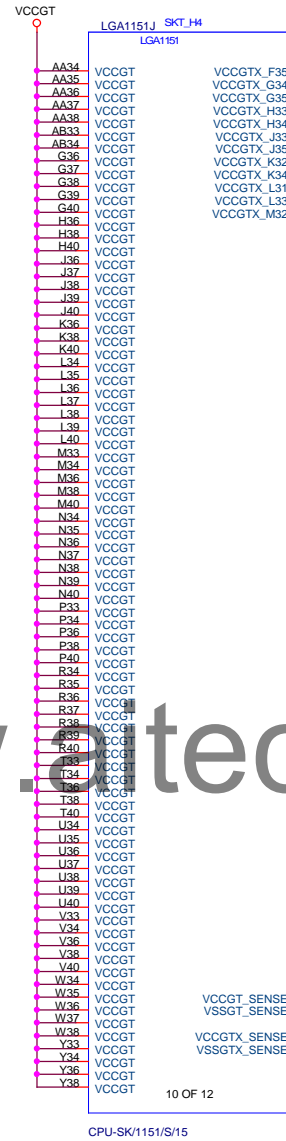


\* 刪 WBC124, WBC125, WBC126, WBC127 電容

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

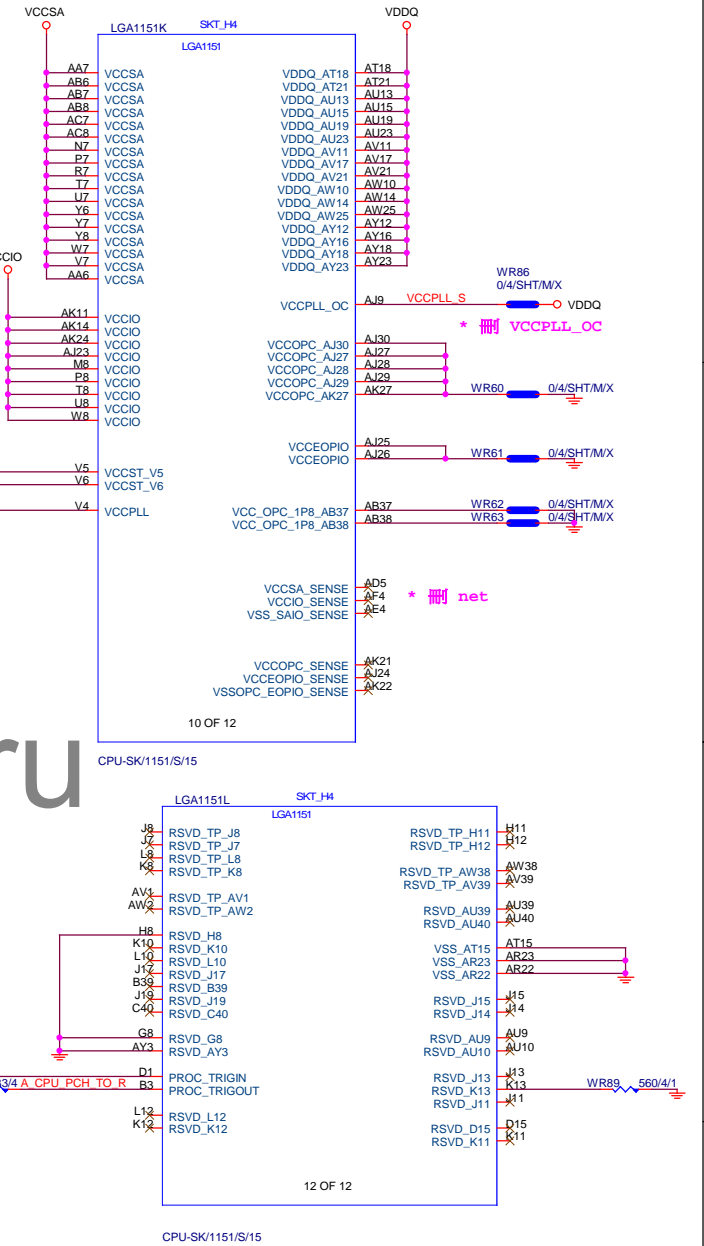


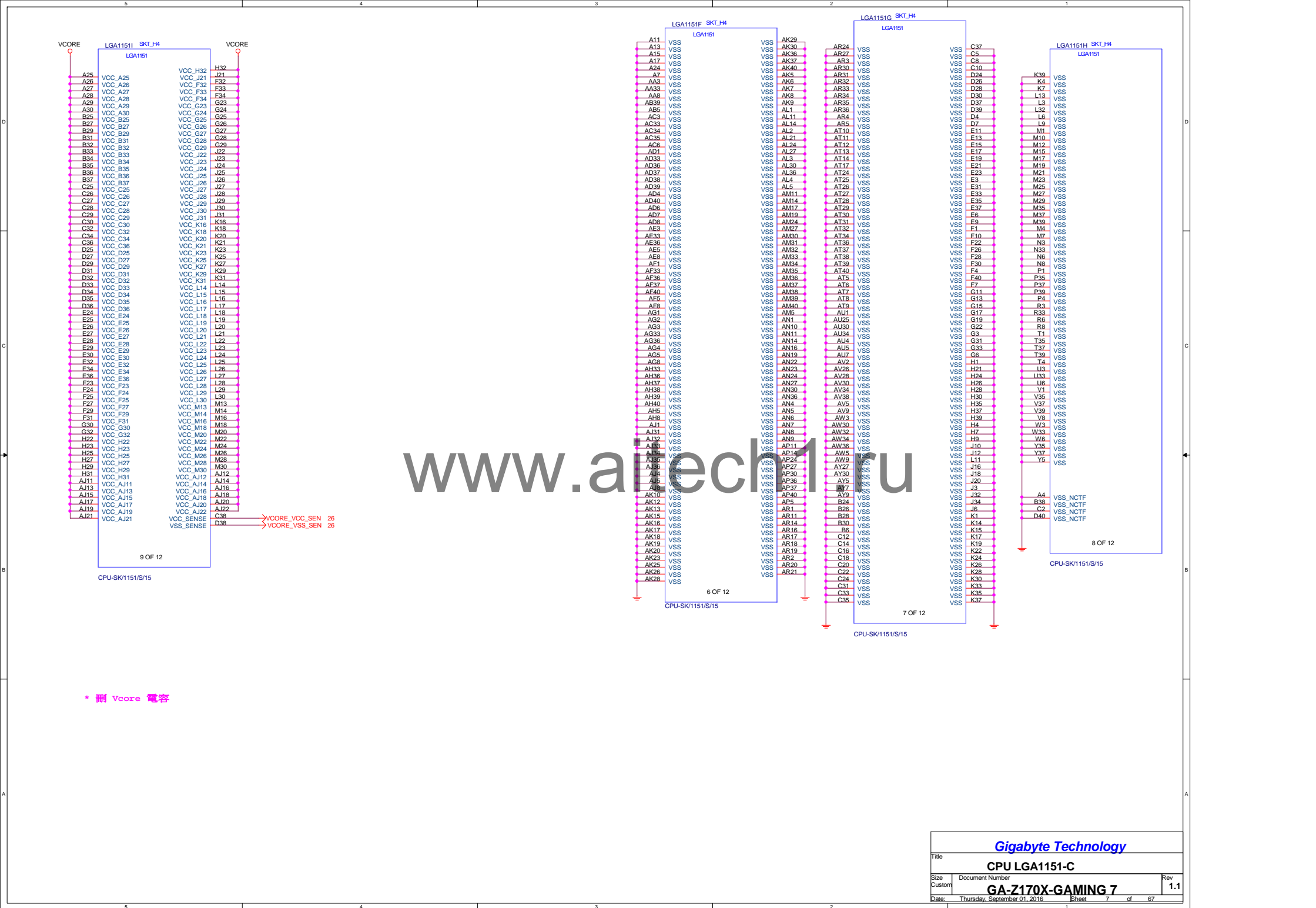
\* 刪 VCCGT 電容



F39 → VCCGT\_SENSE 26  
F38 → VSSGT\_SENSE 26

13 N\_PCH\_CPU\_T1 → WR88  
13 A\_CPU\_PCH\_TO → WR88









Rev 0.3

For DP Enable →

VCC3

N\_DDPB\_CTRLCLK NR15 2.2K/4/1  
N\_DDPB\_CTRLDATA NR17 2.2K/4/1

PCHE

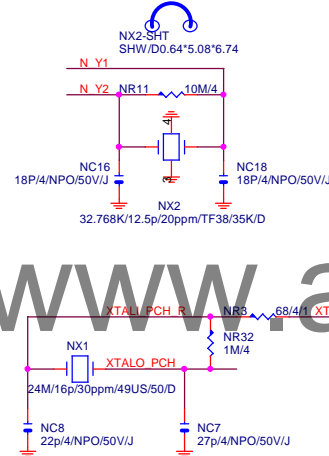
SPT-H\_PCH

52 DP\_HDP → AW4  
56 N\_HDMI20\_HDP\_F → AY2  
57 N\_DP\_HDP → AV4  
N\_GPP\_B3 BA4GPP\_I7/DDPB\_CTRLCLK  
GPP\_I8/DDPB\_CTRLDATA  
GPP\_I5/DDPB\_CTRLCLK  
GPP\_I6/DDPB\_CTRLDATA  
GPP\_I9/DDPB\_CTRLCLK  
GPP\_I10/DDPB\_CTRLDATABB3 N\_DDPB\_CTRLCLK → N\_DDPB\_CTRLCLK 56  
BD3 N\_DDPB\_CTRLDATA → N\_DDPB\_CTRLDATA 56  
BA5 N\_DDPB\_CTRLCLK → N\_DDPB\_CTRLCLK 56  
BC4 N\_DDPB\_CTRLDATA → N\_DDPB\_CTRLDATA 56  
BE5 N\_DDPB\_CTRLCLK → N\_DDPB\_CTRLCLK 57  
BE6 N\_DDPB\_CTRLDATA → N\_DDPB\_CTRLDATA 57Y44 A\_SKT0CC → A\_SKT0CC 4  
V44 N\_GPP\_F23  
W39 N\_GPP\_F22  
L43  
L44 N\_GPP\_G22  
U35 N\_GPP\_G21  
R35 N\_GPP\_G20  
BD36

GPP\_I4/EDP\_HPD

5 OF 12  
CHIPSET SKYLAKE INTEL(10HB1-03Z170-20R)VCC3  
N\_GPP\_B3 NR7 8.2K/4  
N\_GPP\_F23 NR12 8.2K/4  
N\_GPP\_F22 NR248 8.2K/4  
VCC3  
A\_SKT0CC NR16 8.2K/4  
N\_GPP\_G22 NR18 8.2K/4  
N\_GPP\_G21 NR20 8.2K/4  
N\_GPP\_G20 NR22 8.2K/4VCC3  
N\_GPP\_B5 NR6 8.2K/4  
N\_GPP\_B6 NR8 8.2K/4  
N\_GPP\_B7 NR10 8.2K/4  
N\_GPP\_B9 NR14 8.2K/4  
VCC3  
N\_GPP\_H0 NR19 8.2K/4  
N\_GPP\_H1 NR16 8.2K/4  
N\_GPP\_H2 NR16 8.2K/4  
N\_GPP\_H3 NR16 8.2K/4  
N\_GPP\_H5 NR31 8.2K/4

32.768KHZ



CLK:4/15&lt;1000 mils±100 mils;Guard GND

ON-BOARD DEVICE USED  
N\_GPP\_H7 NR283 0/4/X  
N\_GPP\_B9 NR169 MASK/0/4 SHTM/X  
N\_GPP\_H4 NR286 0/4/X  
N\_GPP\_B10 NR287 0/4/X

PCHG

SPT-H\_PCH

4 N\_24MCLK → N\_24MCLK  
4 N\_24MCLK → N\_24MCLK  
48 PCH\_CPUCLK → PCH\_CPUCLK  
48 PCH\_CPUCLK → PCH\_CPUCLK  
XTALO\_PCH → XTALO\_PCH  
XTALI\_PCH → XTALI\_PCH  
VCC1\_0\_PCH → NR5 2.7K/4/1 XCLK\_BIASREF E1  
N\_Y1 → BC9  
N\_Y2 → BD10

CLK:4/15&lt;1000;Guard GND

19 -PCIEX16\_PR → N\_GPP\_B5  
21 -PCIEX1\_PR1 → N\_GPP\_B6  
21 -PCIEX1\_PR2 → N\_GPP\_B7  
20 -PCIEX4\_PR → N\_GPP\_B8  
45 LA\_-CLKREQ → N\_GPP\_B10  
24 M2H\_-CLKREQ → N\_GPP\_H0  
22 -PCIEX8\_PR → N\_GPP\_H1  
21 -PCIEX1\_PR3 → N\_GPP\_H2  
46 LB\_-CLKREQ → N\_GPP\_H3  
58 M2D\_-CLKREQ → N\_GPP\_H4  
52 TH\_CLK\_REQ\_N → N\_GPP\_H5  
N\_GPP\_H7GPP\_A16/CLKOUT\_48  
CLKOUT\_CPUNSSC P  
CLKOUT\_CPUNSSC  
CLKOUT\_CPUBCLK P  
CLKOUT\_CPUBCLKXTAL24\_OUT  
XTAL24\_IN  
XCLK\_BIASREF  
RTCX1  
RTCX2GPP\_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\_P14CLKOUT\_PCIE\_N13  
CLKOUT\_PCIE\_P13  
CLKOUT\_PCIE\_N12  
CLKOUT\_PCIE\_P127 OF 12  
CHIPSET SKYLAKE INTEL(10HB1-03Z170-20R)CLKOUT\_ITPXD P  
CLKOUT\_ITPXD P  
CLKOUT\_CPUPCIBCLK  
CLKOUT\_CPUPCIBCLK\_PCLKOUT\_PCIE\_N0  
CLKOUT\_PCIE\_P0  
CLKOUT\_PCIE\_N1  
CLKOUT\_PCIE\_P1CLKOUT\_PCIE\_N2  
CLKOUT\_PCIE\_P2  
CLKOUT\_PCIE\_N3  
CLKOUT\_PCIE\_P3CLKOUT\_PCIE\_N4  
CLKOUT\_PCIE\_P4  
CLKOUT\_PCIE\_N5  
CLKOUT\_PCIE\_P5CLKOUT\_PCIE\_N6  
CLKOUT\_PCIE\_P6  
CLKOUT\_PCIE\_N7  
CLKOUT\_PCIE\_P7CLKOUT\_PCIE\_N8  
CLKOUT\_PCIE\_P8  
CLKOUT\_PCIE\_N9  
CLKOUT\_PCIE\_P9CLKOUT\_PCIE\_N10  
CLKOUT\_PCIE\_P10  
CLKOUT\_PCIE\_N11  
CLKOUT\_PCIE\_P11CLKOUT\_PCIE\_N12  
CLKOUT\_PCIE\_P12N\_CPUPCIBCLK 4  
N\_CPUPCIBCLK 4  
PA\_SRCCLK\_3GIO 19  
PA\_SRCCLK\_3GIO 19PI\_PCIE\_CLK 21  
PI\_PCIE\_CLK 21  
PJ\_PCIE\_CLK 21  
PJ\_PCIE\_CLK 21PQ\_PCIE\_CLK 20  
PQ\_PCIE\_CLK 20  
RH\_SRCCLK 51  
RH\_SRCCLK 51LA\_SRCCLK\_LAN 45  
LA\_SRCCLK\_LAN 45  
CK\_M2H\_100M\_DN 24  
CK\_M2H\_100M\_DP 24PE\_SRCCLK\_3GIO1 22  
PE\_SRCCLK\_3GIO1 22  
PK\_PCIE\_CLK 21  
PK\_PCIE\_CLK 21LB\_SRCCLK\_LAN 46  
LB\_SRCCLK\_LAN 46  
CK\_M2D\_100M\_DN 58  
CK\_M2D\_100M\_DP 58

PCIEX16

PCIEX1\_1

PCIEX1\_2

PCIEX4

ASM1061

E2400

M2H\_32G

PCIEX8

PCIEX1\_3

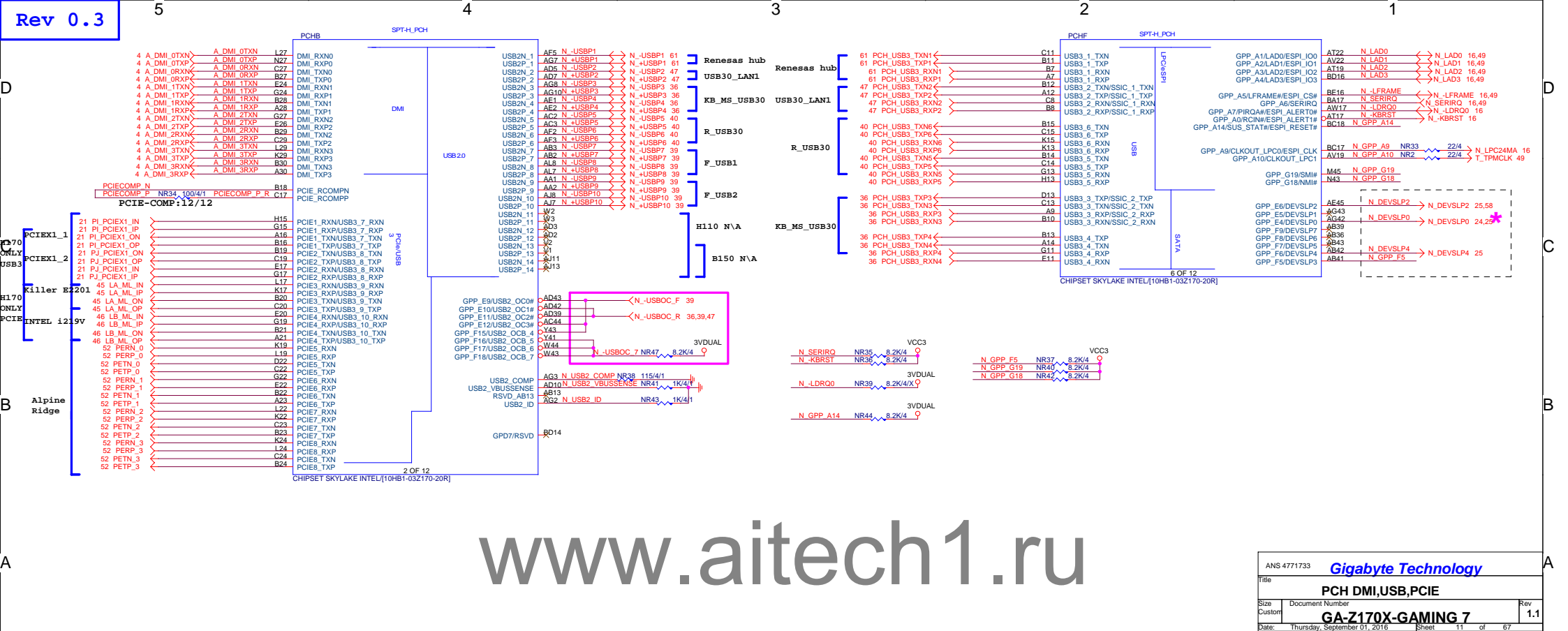
I219

M2D\_32G

CLOCK 4/4/4/15

ANS 4771733		Gigabyte Technology	
Title		PCH CLOCK BUFFER	
Size	Document Number	Rev	
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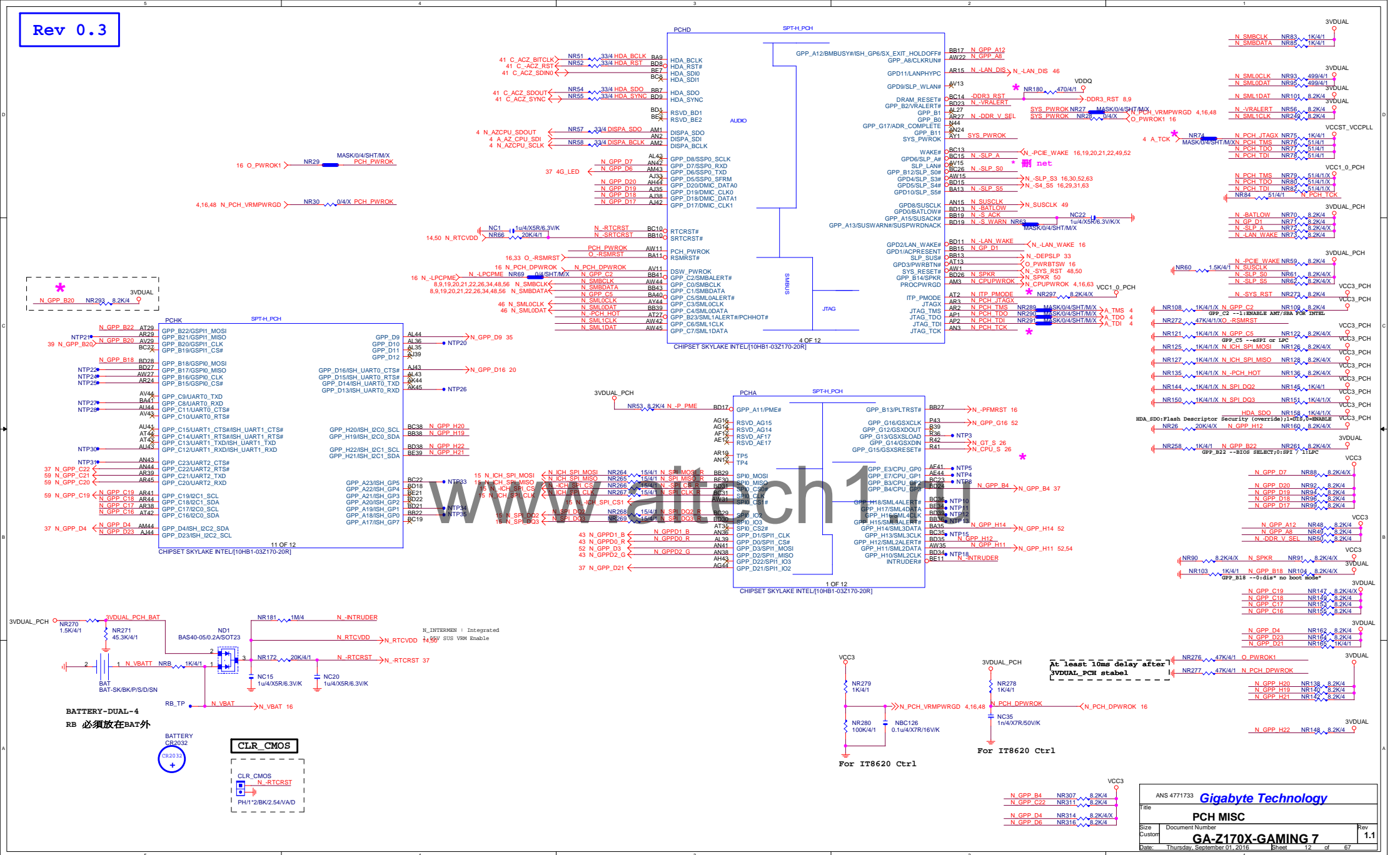




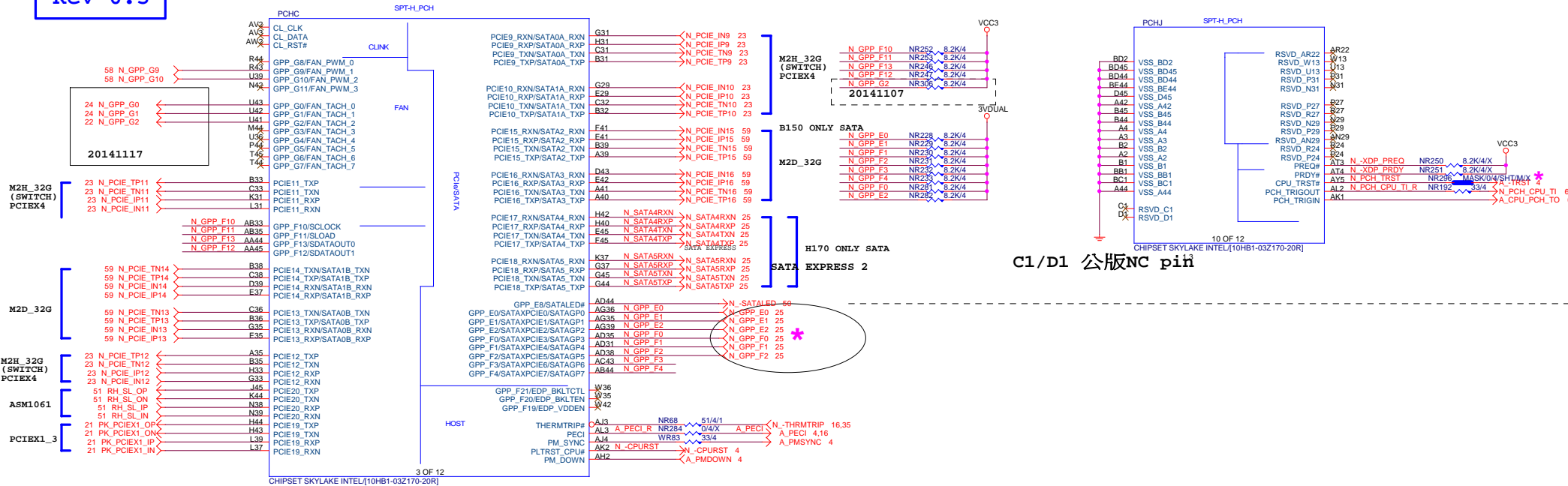
www.aitech1.ru

ANS 4771733		Gigabyte Technology	
Title		PCH DMI,USB,PCIE	
Size	Document Number	Rev	1.1
Custom	GA-Z170X-GAMING 7		
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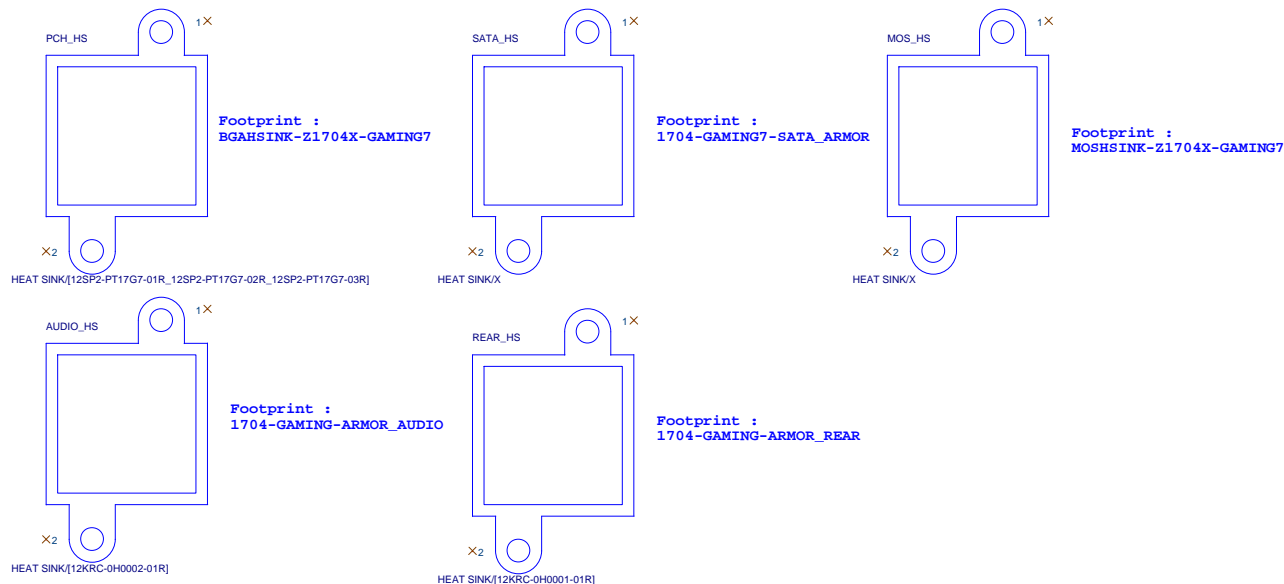


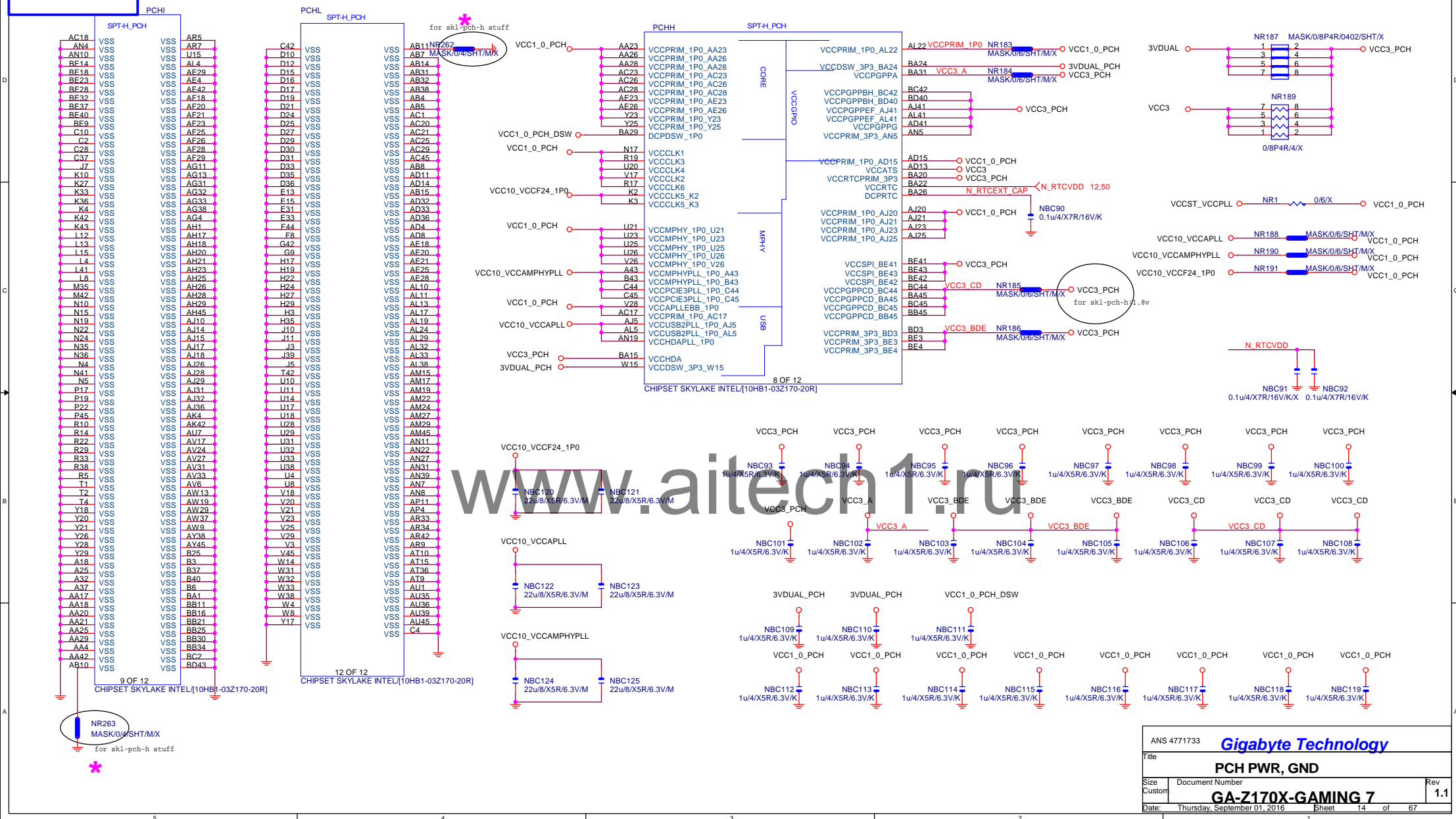


Rev 0.3



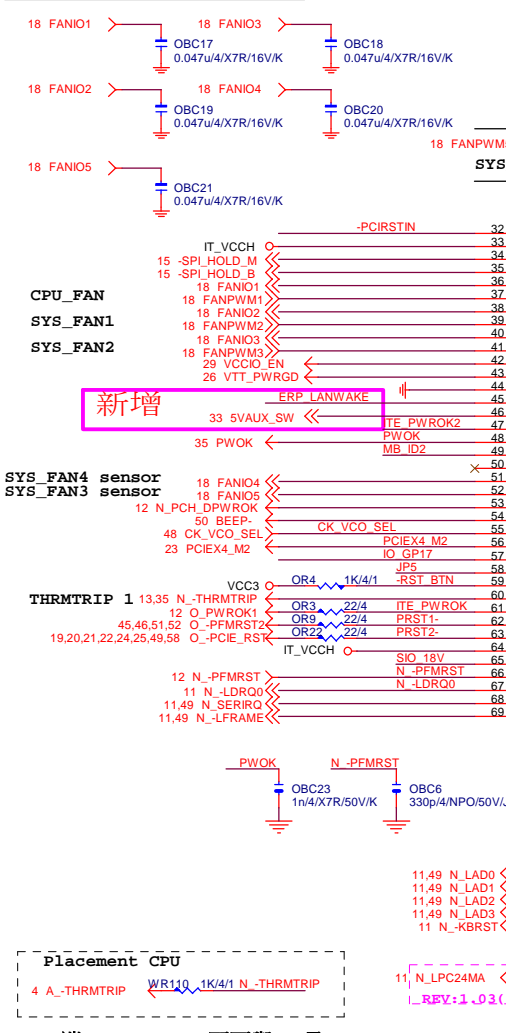
装甲HEATSINK 分成五大部份







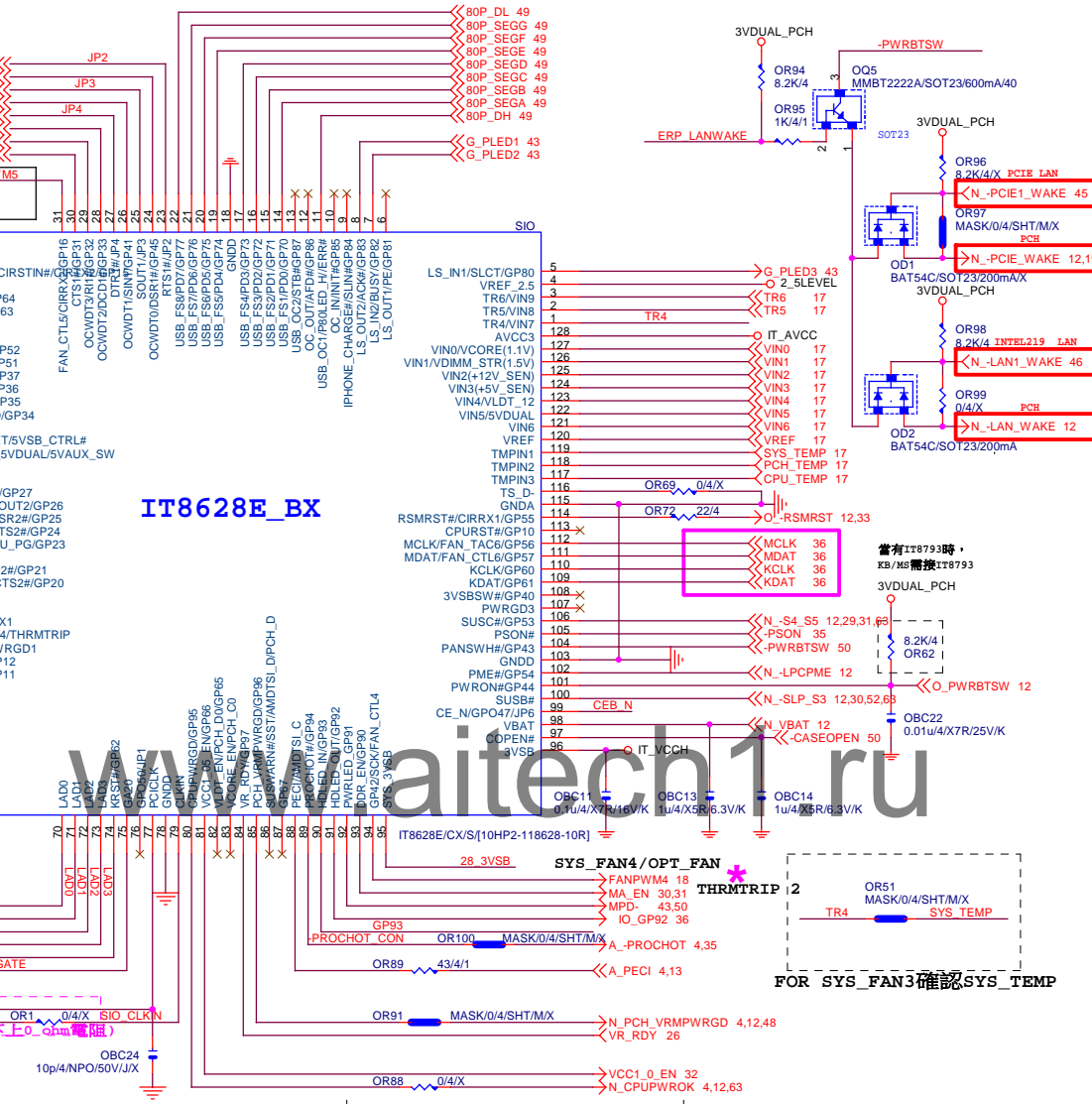
SIO IT8628BX REV:1.05



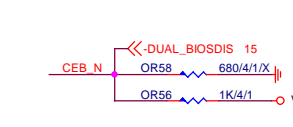
CPU 端 A\_-THRMTRIP不可與PCH及SIO N\_-THRMTRIP直接連接。否則會出現無法拉LOW情況。

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

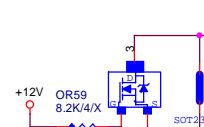
IT8620E GPIO問題調整	
PIN 50	GP26-第一次接上POWER時 會拉 LO
PIN 90/91	DEFAULT為HIDLED FUNCTION, GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN22, 需高於3V, 若低於 按部分COM PORT及LPT裝置 線端路會異常動作。



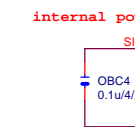
DUAL BIOS OPT STRAP



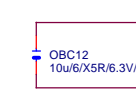
Power leakage



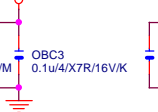
SIO\_18V



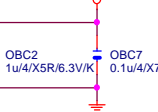
SIO CAP



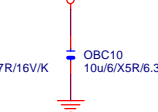
IT\_VCC



IT\_AVCC



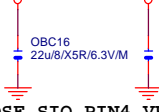
3VDUAL\_PCH



2\_5LEVEL

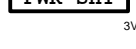


2\_5LEVEL



CLOSE SIO PIN4 VREF\_25

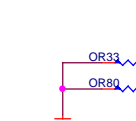
PWR SHT



SIO PU



SIO STRAP

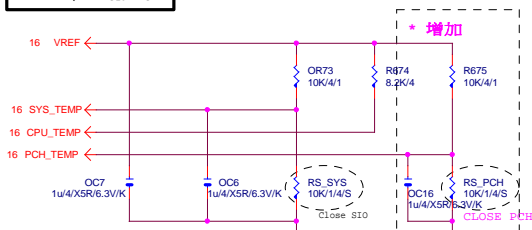


JP2	1	Disable WDT
JP2	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
JP3	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency function is Disable
JP4	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
JP5	0	anti-surge Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.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

MB ID

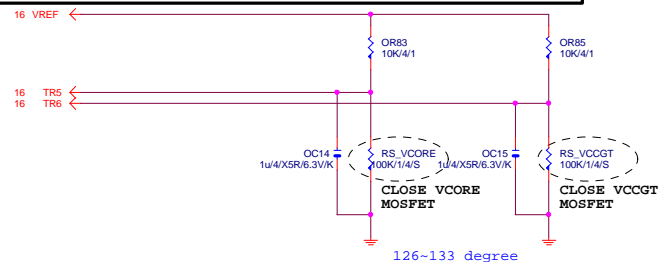


# TEMP H/W MONITOR



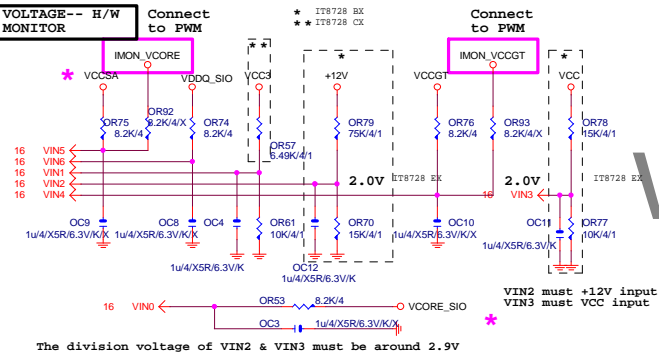
# RS\_VCORE、RS\_VCCGT、CLOSE CPU\_VCORE & VCCGT MOSFET

-PROCHOT: 有mos meartsink 不用prochot function

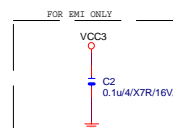
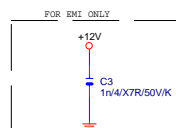


126-133 degree

# VOLTAGE-- H/W MONITOR



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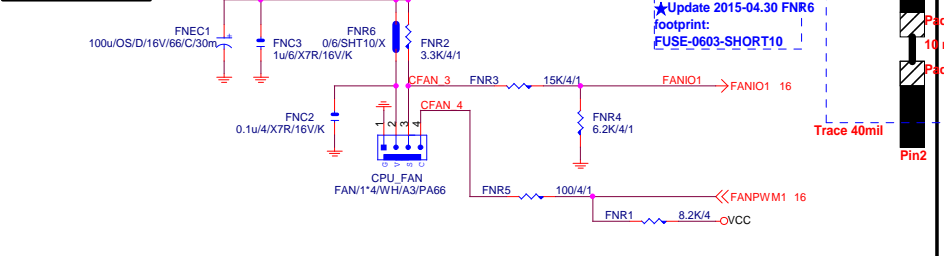
★Update 2015-04.24

Gigabyte Technology

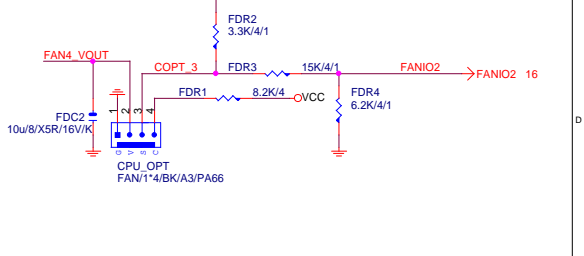
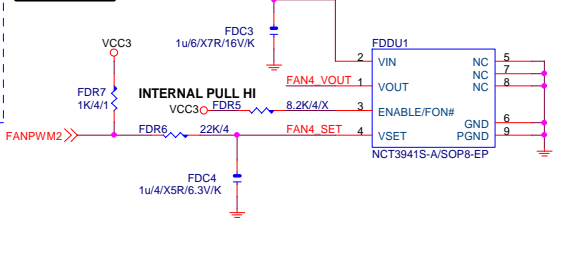
Title	HWM,KB/MS, FAN CTRL	
Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7	1.1
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CPU SMART FAN

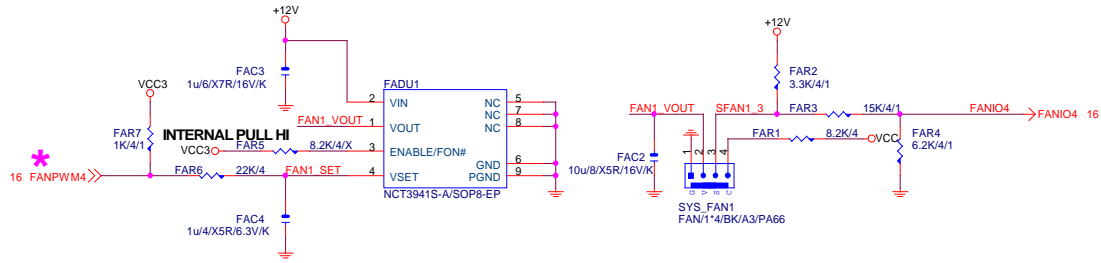


CPU\_OPT

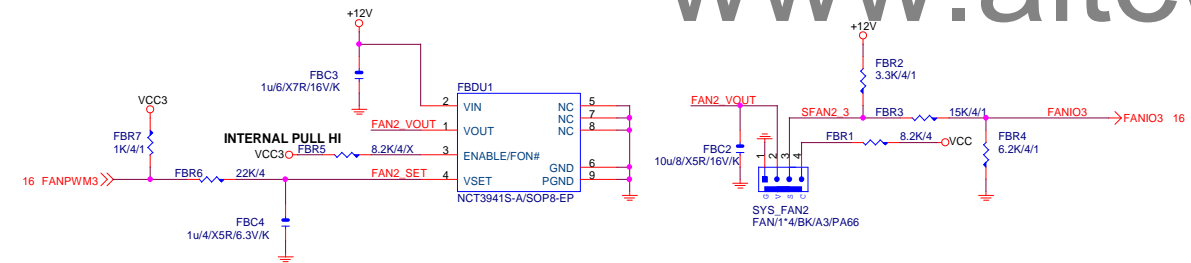


SYSTEM FAN1

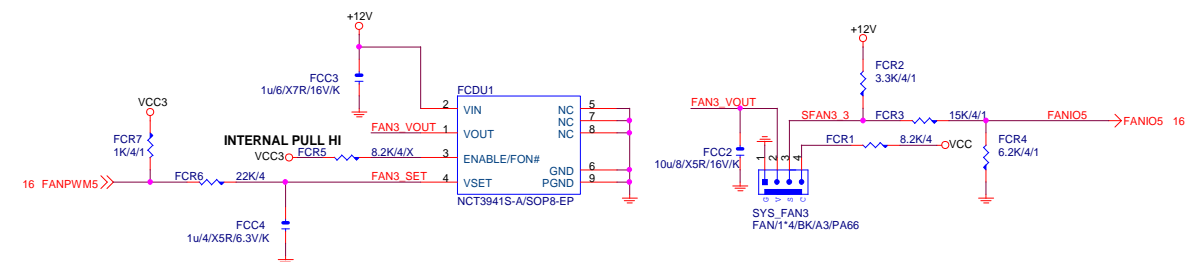
Linear SYS\_FAN  
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2



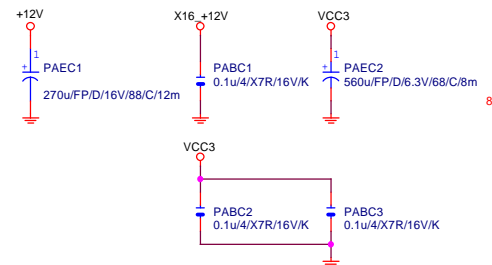
SYSTEM FAN3



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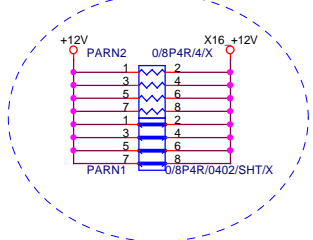


## PCIEX16 CAP



## 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	PAC20	0.22u/4/X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP SW TXN15 C

PCI-E REV:1.1--> 2.5GHZ

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

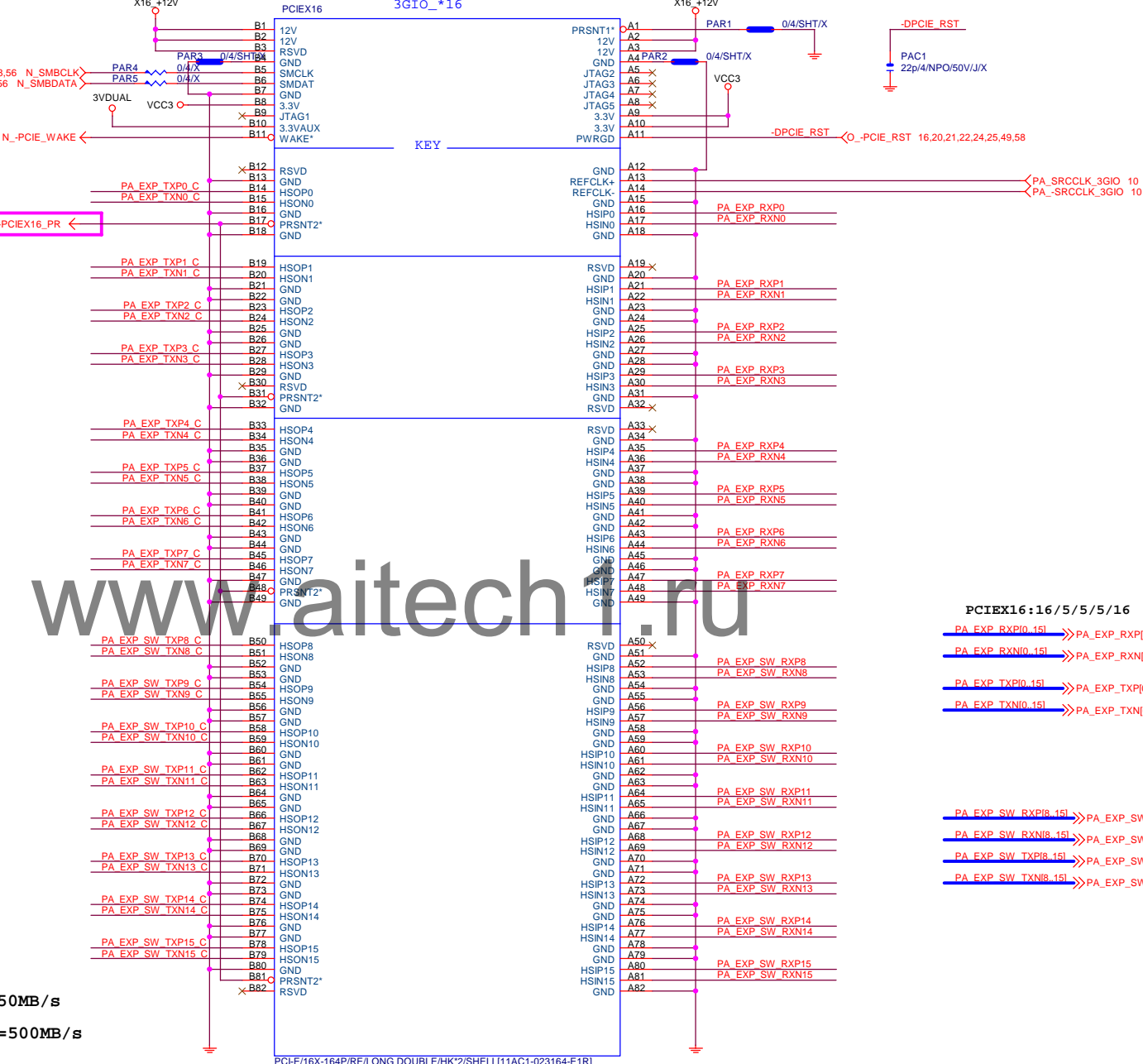
PCE-E X1(雙向) BANDWITH=2.5GHZ\*(8b/10b)X2=4Gb/s=500MB/s

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

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

PCI-E REV:2.0--> 5GHZ

## PCIEX16 SLOT



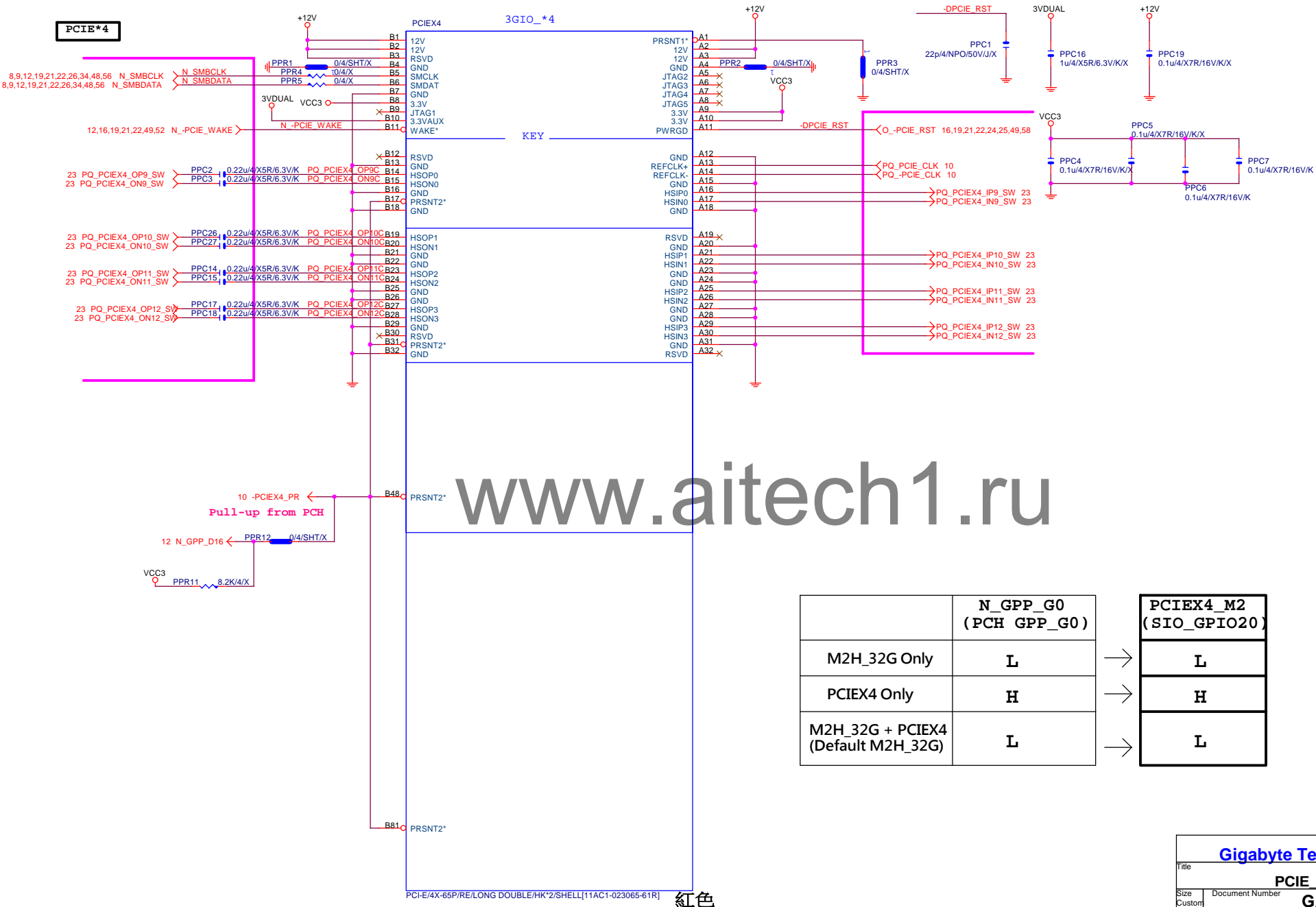
## PCIEX16:16/5/5/5/16

PA EXP RXP0.15]	>>>PA_EXP_RXP0[0..15]	4,23
PA EXP RXN0.15]	>>>PA_EXP_RXN0[0..15]	4,23
PA EXP TXP0.15]	>>>PA_EXP_TXP0[0..15]	4,23
PA EXP TXN0.15]	>>>PA_EXP_TXN0[0..15]	4,23
PA EXP SW RXP8.15]	>>>PA_EXP_SW_RXP8[8..15]	23
PA EXP SW RXN8.15]	>>>PA_EXP_SW_RXN8[8..15]	23
PA EXP SW TXP8.15]	>>>PA_EXP_SW_TXP8[8..15]	23
PA EXP SW TXN8.15]	>>>PA_EXP_SW_TXN8[8..15]	23

Gigabyte Technology			
PCI EXPRESS * 16			
Size	Document Number	GA-Z170X-GAMING 7	
Custom		Rev	1.1
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# Footprint "PCIESLOT-64STH-1"

PCIE\*4



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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

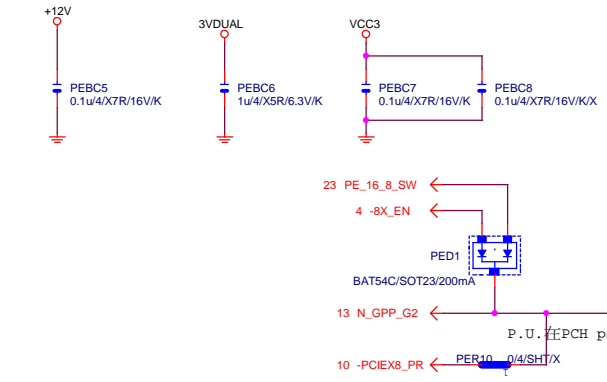
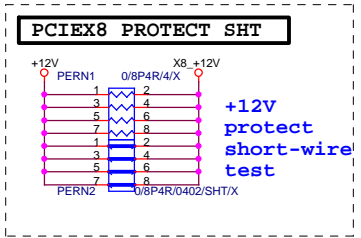
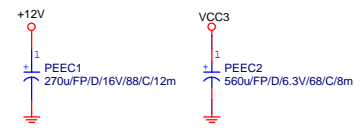
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PCIE_X1 1,2			
Size	Document Number		Rev
Custom	GA-Z170X-GAMING 7		1.1
Date:	Thursday, September 01, 2016	Sheet 21 of 67	

Size	Document Number	Rev
Custom	CA-145X CANING	1.1

GA-Z170X-GAMING 7		1.1
Date:	Thursday, September 01, 2016	Sheet 21 of 67

Date: Thursday, September 01, 2016 Sheet 21 of 67

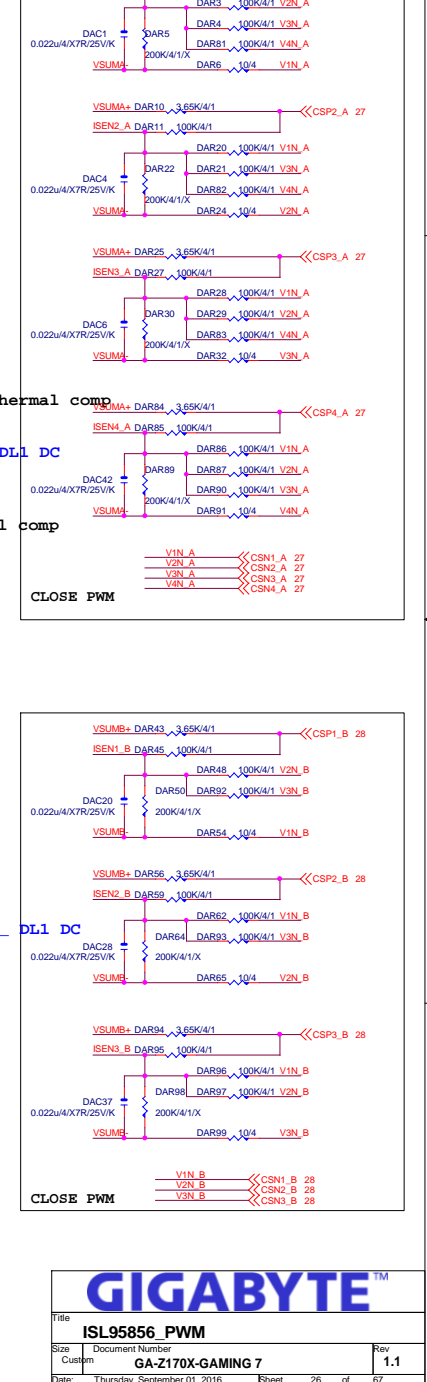
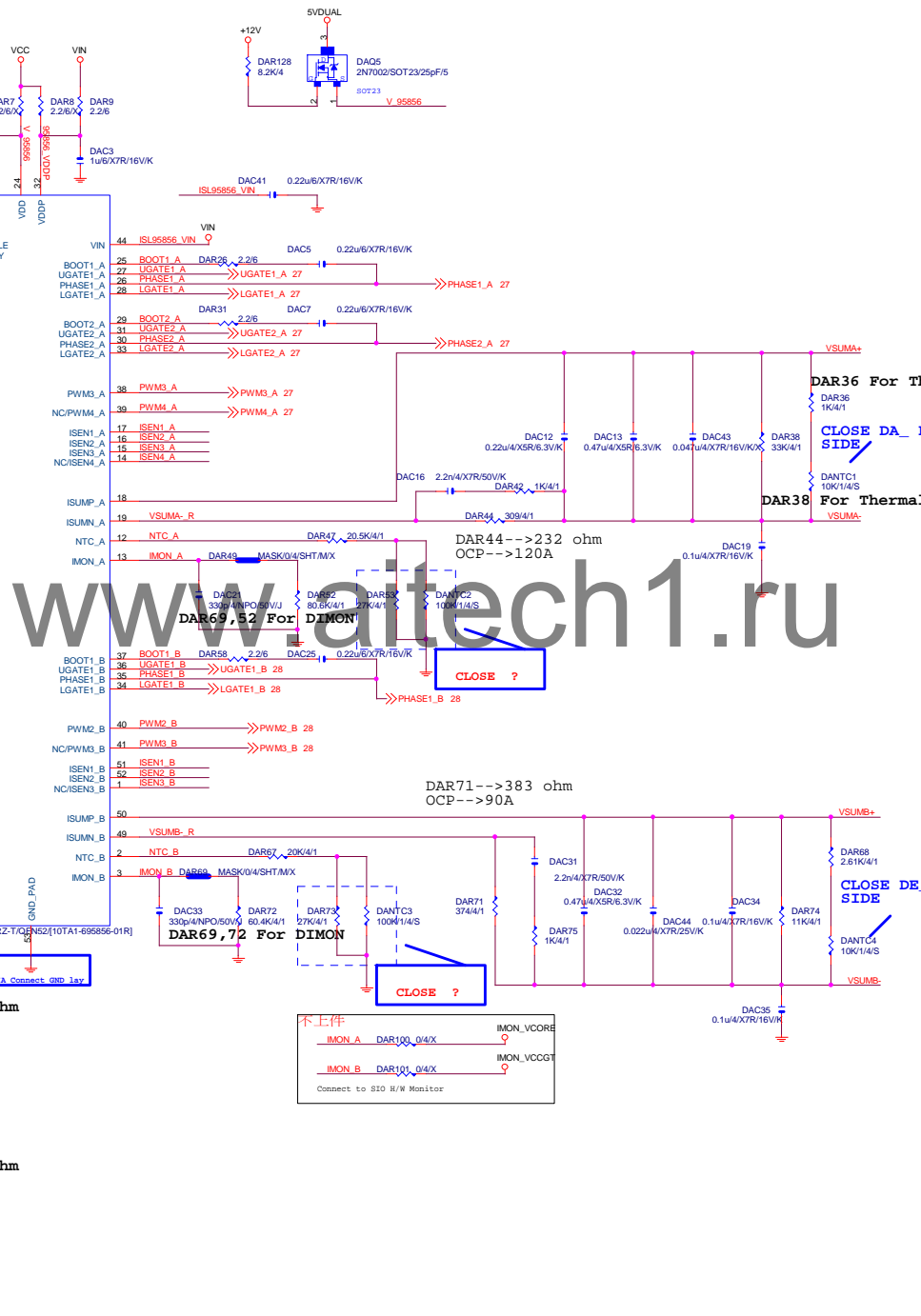


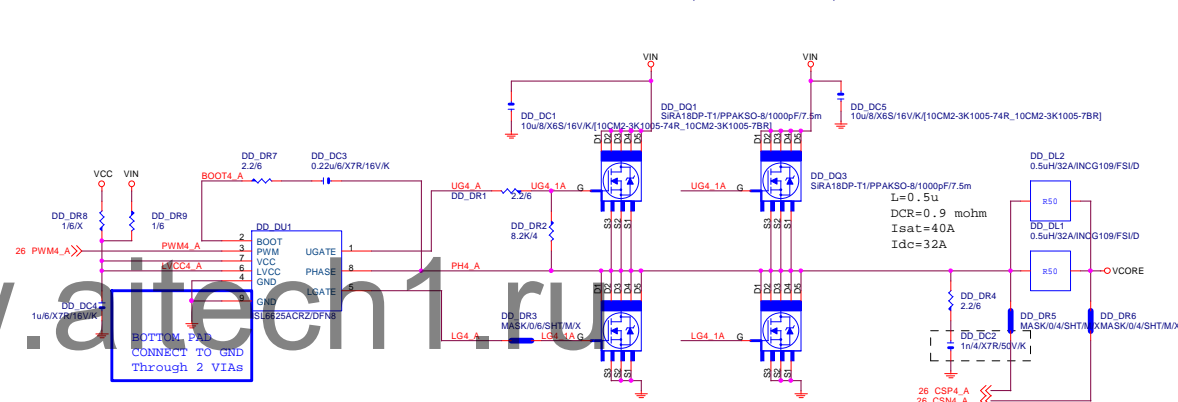
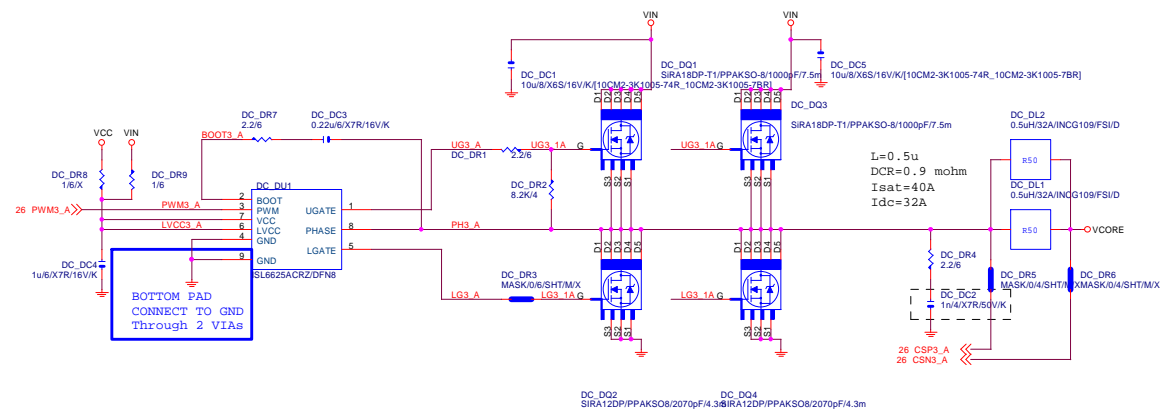
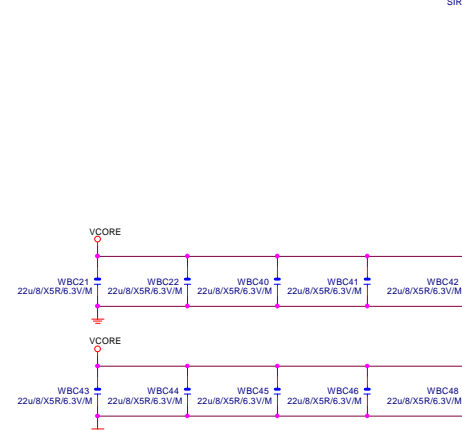
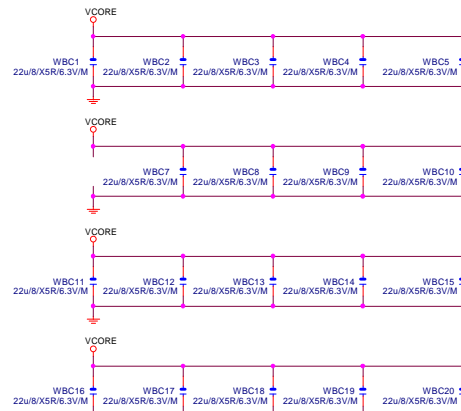
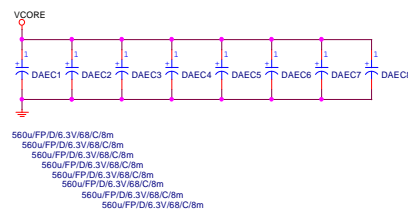




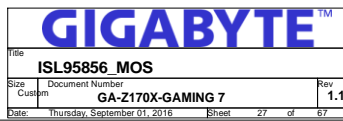
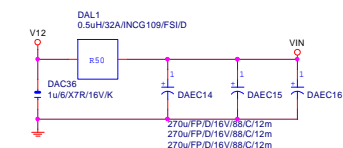




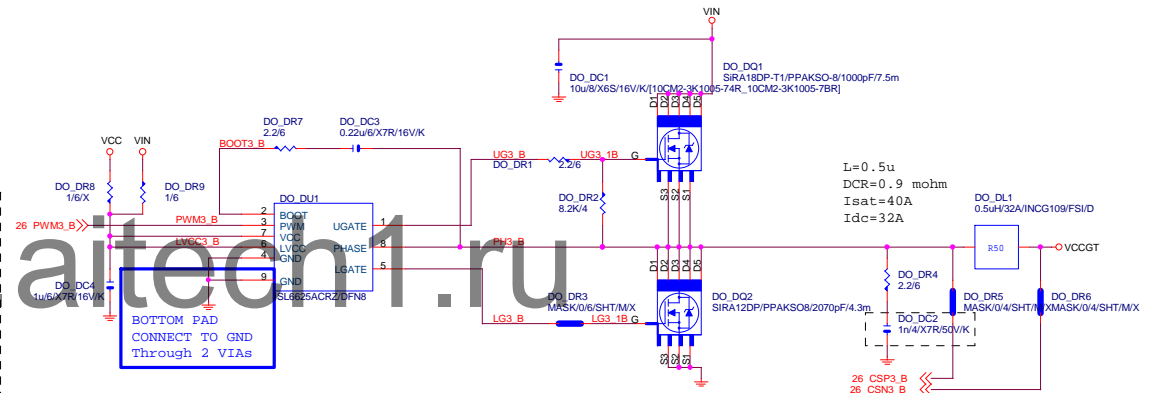
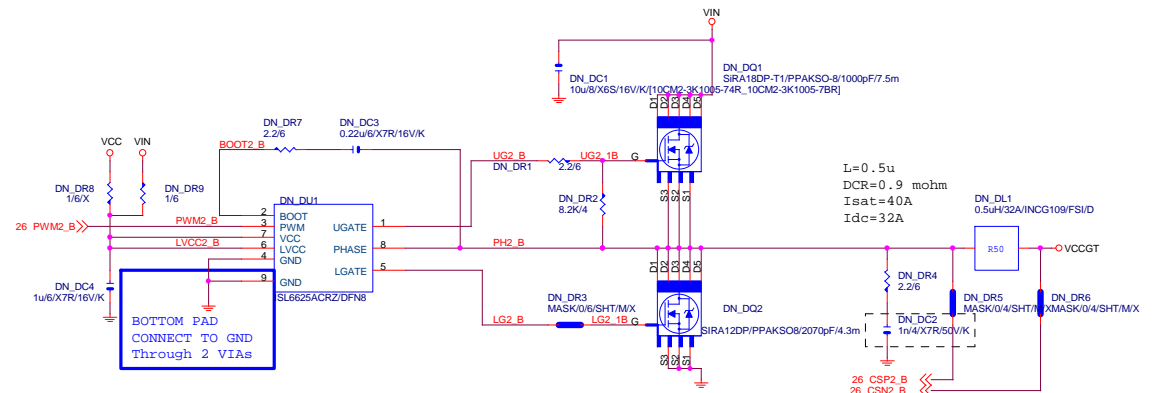
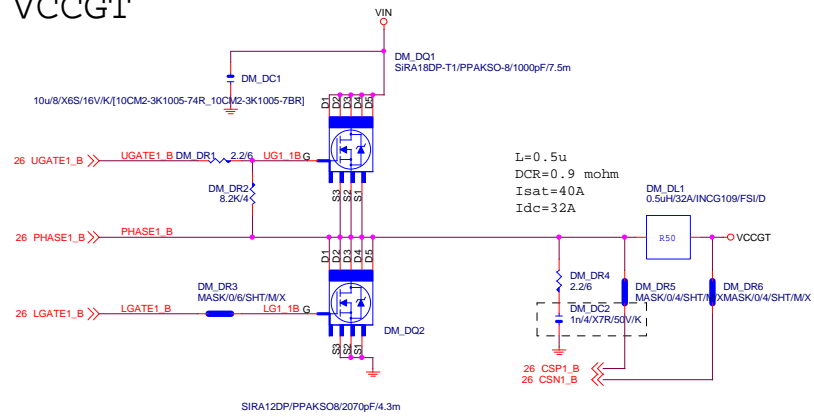
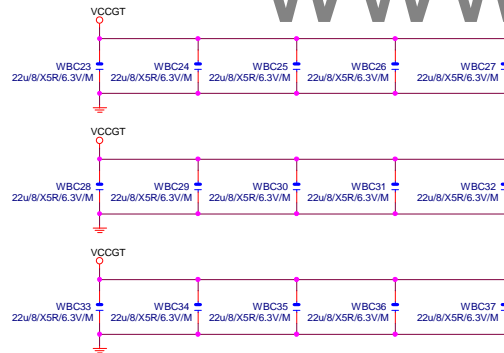
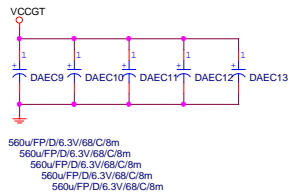


VCORE CAP 560u\*8PCS  
22u\*29PCS

## VIN CAP 270u\*3PCS

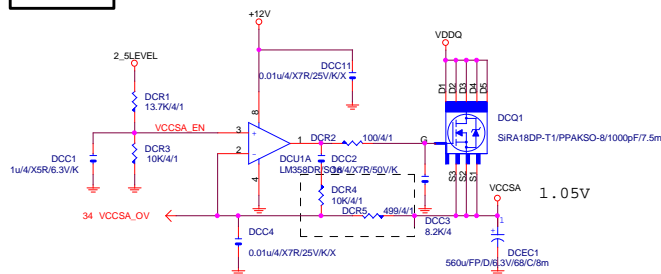


## VCCGT

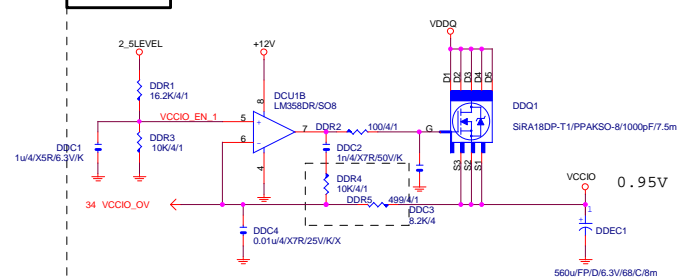
VCCGT CAP 560u\*5PCS  
22u\*15PCS

GIGABYTE™			
Title			
ISL95856 MOS			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.1	
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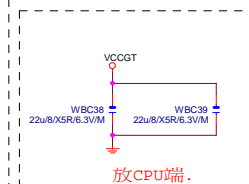
# VCCSA



# VCCIO

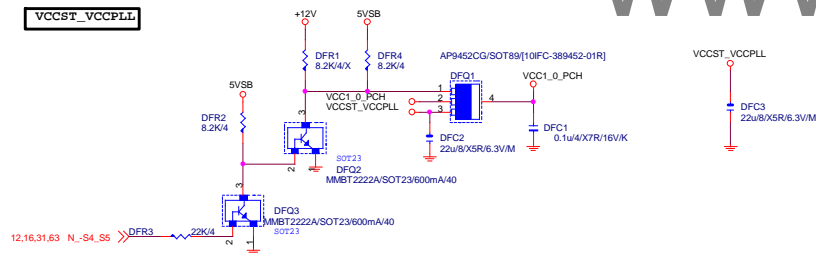


Connect to IT8620



放CPU端.

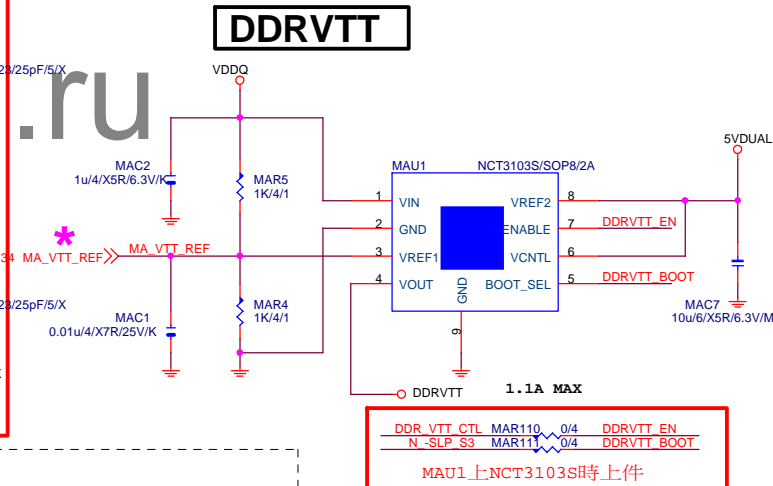
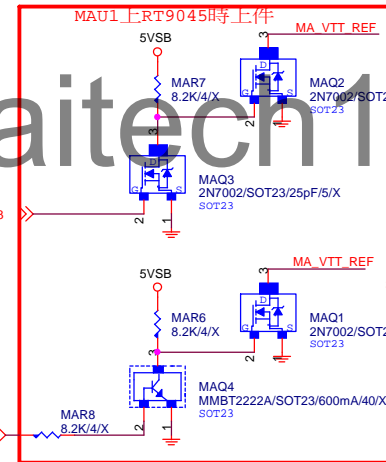
# VCCST\_VCCPLL



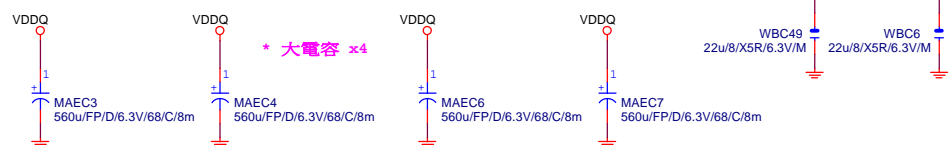
**GIGABYTE**

Title		VCCSA_VCCIO_no 44E
Size	Document Number	GA-Z170X-GAMING 7
Custom	Rev	1.1
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## DDR4



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



DDRVTT CAP

**GIGABYTE™**

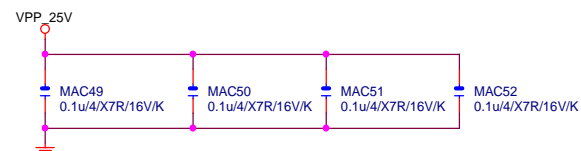
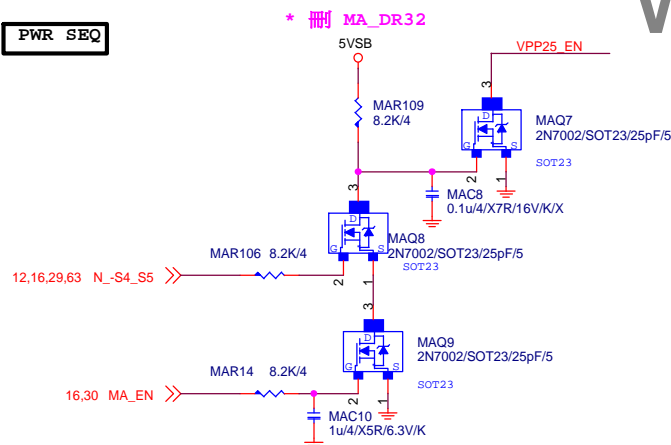
Title			
<b>RT8120_DDR4 POWER</b>			
Size	Document Number	Rev	
Custom	<b>GA-Z170X-GAMING 7</b>	<b>1.1</b>	
Date:	Thursday, September 01, 2016	Sheet	30 of 67

**VPP 25V**

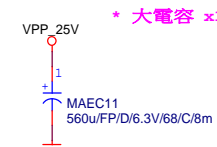
## CHOKES與CAP料號可變



PWR SEQ

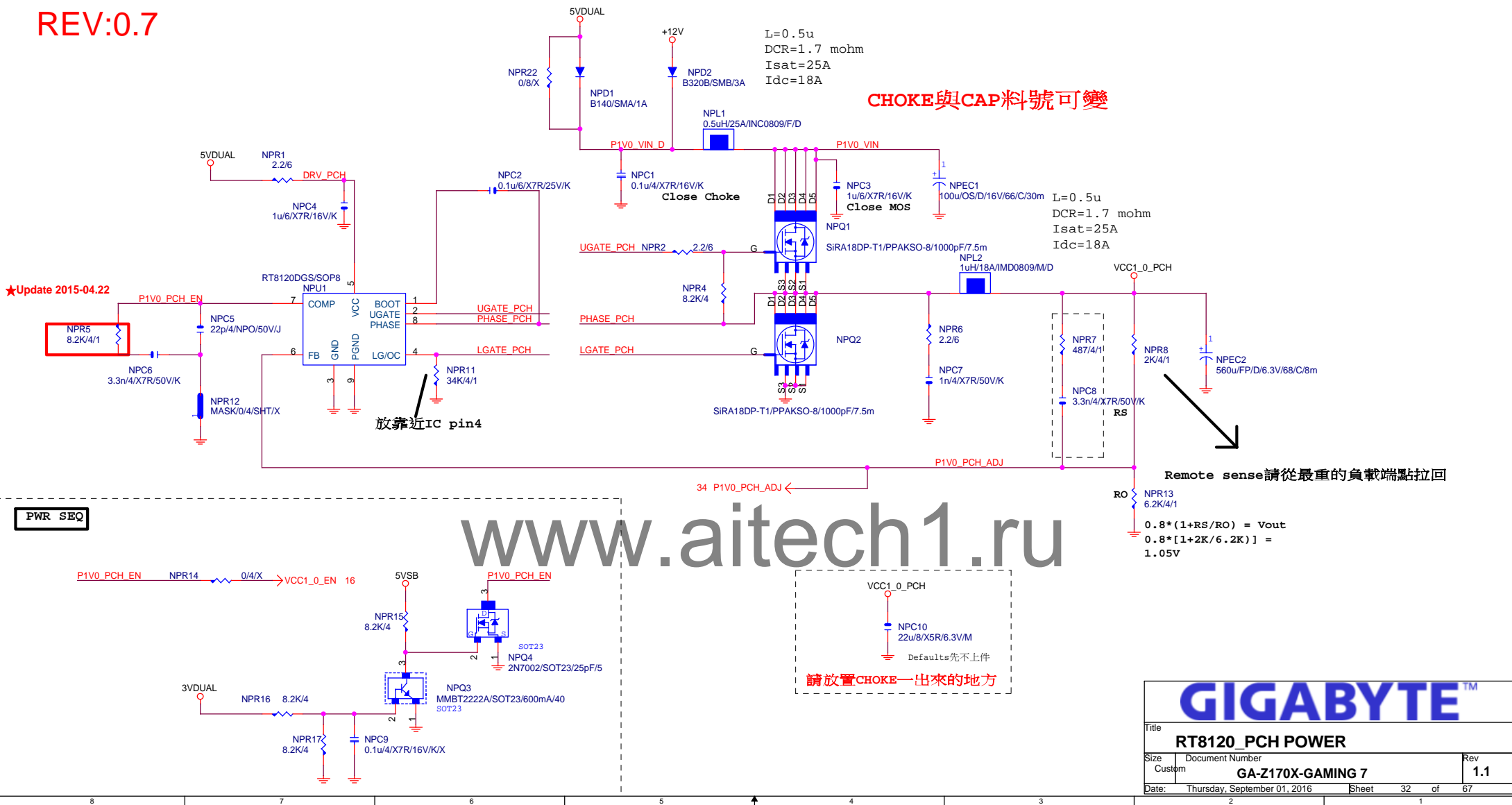


VPP CAP 560u\*1PCS

**GIGABYTE™**

Title			
RT8120_VPP25 POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.1	
Date:	Thursday, September 01, 2016	Sheet	31 of 67

REV:0.7

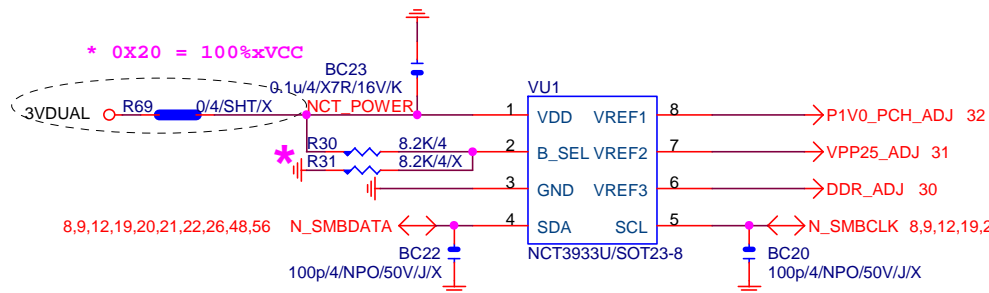


GIGABYTE™			
Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.1	
Date:	Thursday, September 01, 2016	Sheet	32 of 67

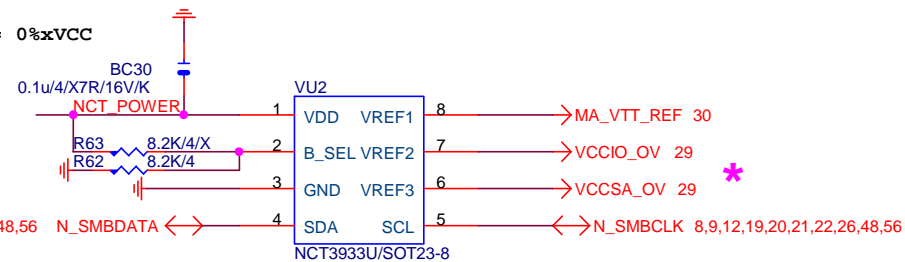




# OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

\* 删除 OVU3

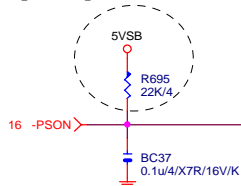
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCCL_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

**Gigabyte Technology**

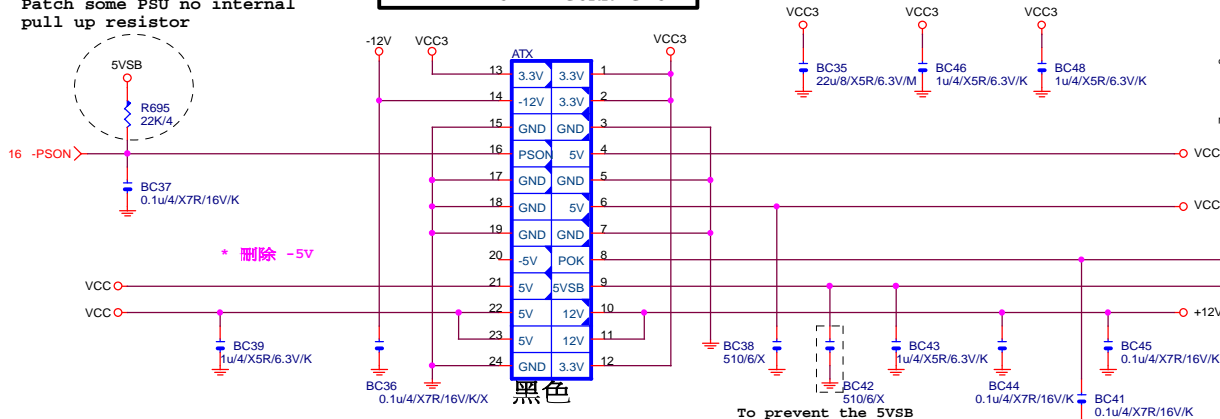
CPU CORE VR-2

Title	GA-Z170X-GAMING 7	
Size Custom	Document Number	Rev 1.1
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Patch some PSU no internal pull up resistor



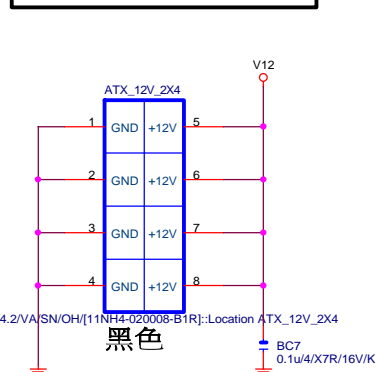
## ATXX24 POWER CONNECTOR



APW/2\*12/BK/VA/SN2SHK/PA66/[11NH4-020024-11R]

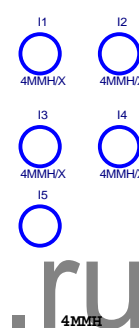
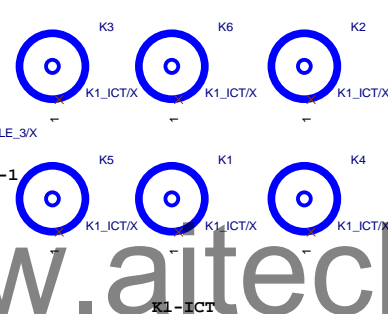
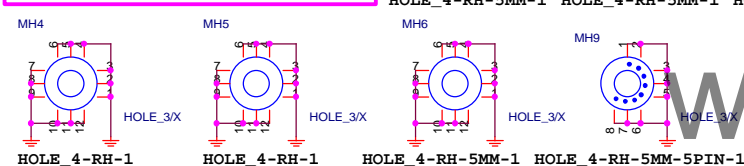
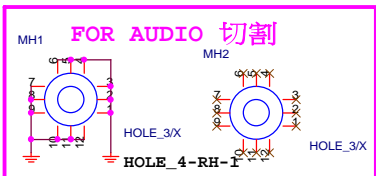
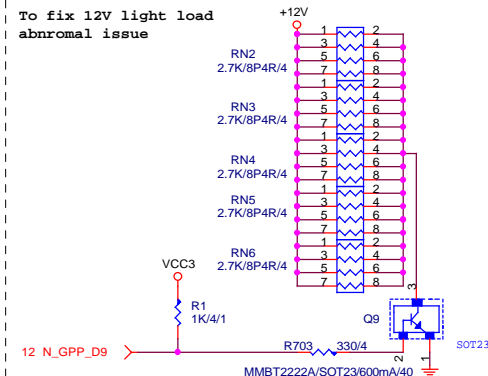
To prevent the 5VSB under loading when boot

## ATXX4 POWER CONNECTOR



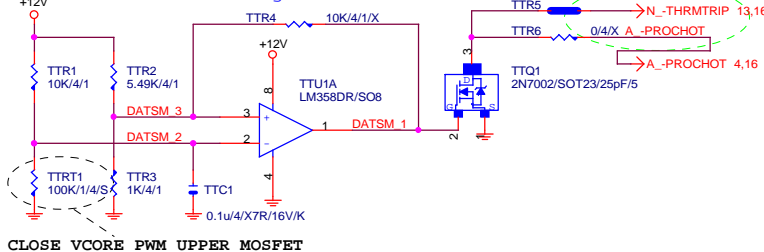
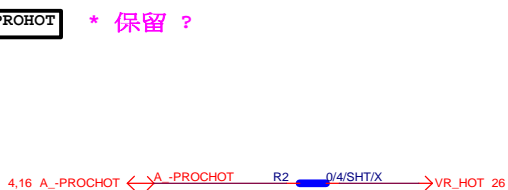
【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



-PROHOT

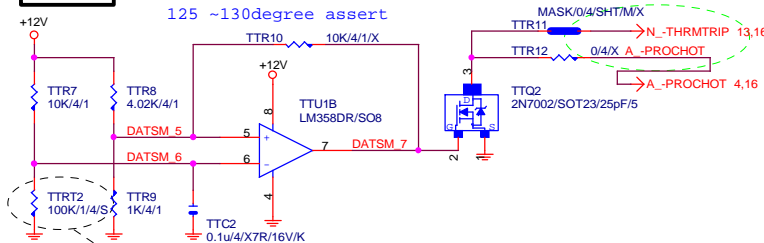
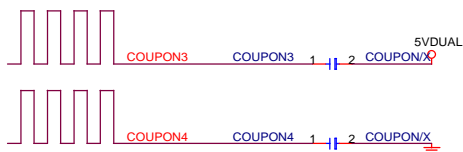
OTP:130度 / PCB THERMAL TRIP:128 度  
125 ~130degree assert



CLOSE VCORE PWM UPPER MOSFET

-PROHOT

OTP:130度 / PCB THERMAL TRIP:129 度  
125 ~130degree assert

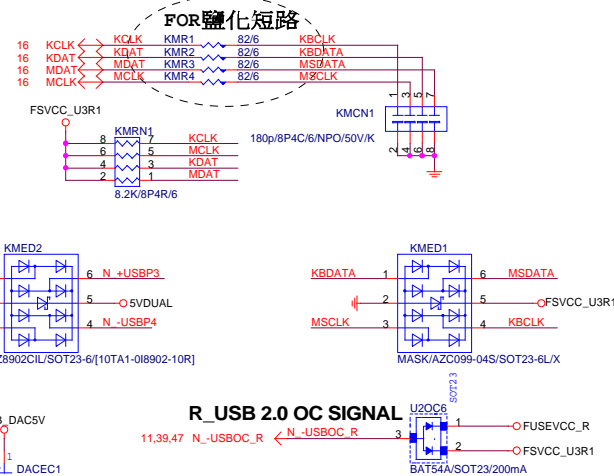
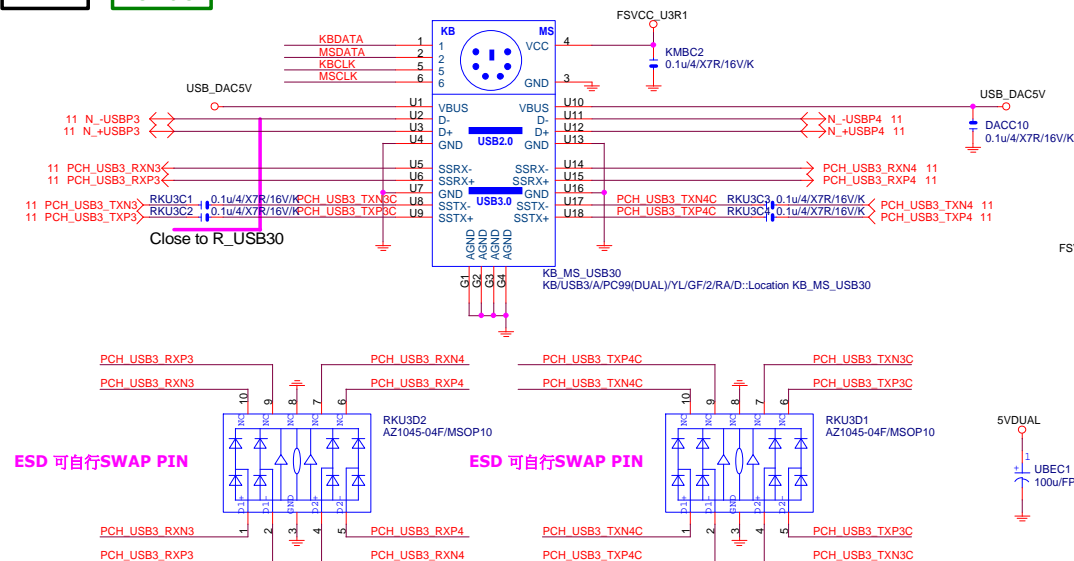


CLOSE VCCGT PWM UPPER MOSFET

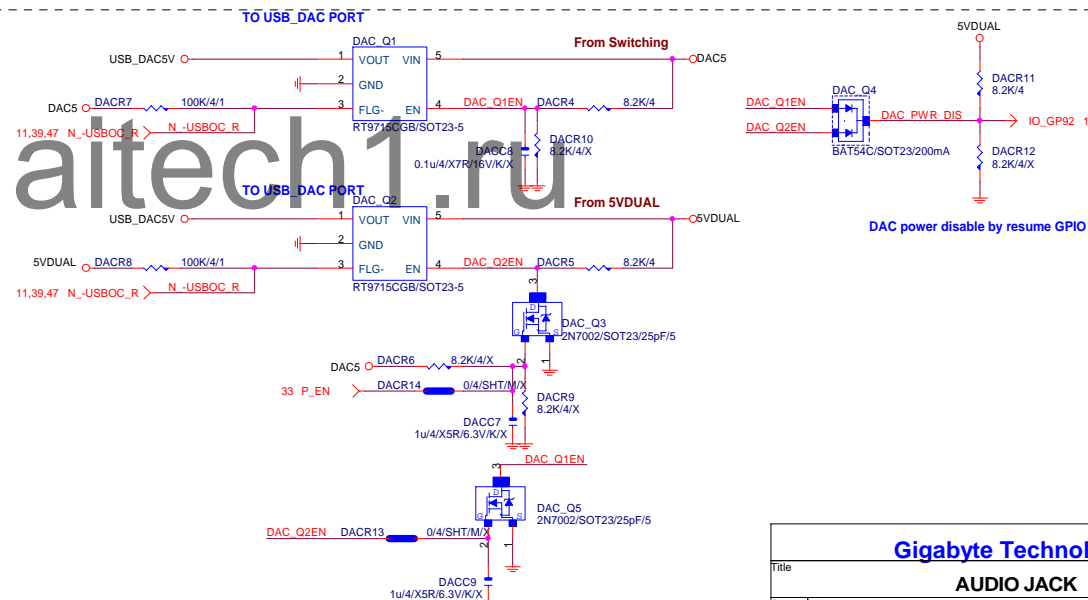
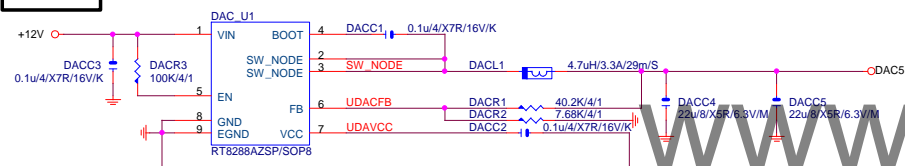


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Title		ATX POWER CONNECTOR	
Size	Document Number	GA-Z170X-GAMING 7	
Custom		Rev 1.1	
Date:	Thursday, September 01, 2016	Sheet	35 of 67



## USB\_DAC



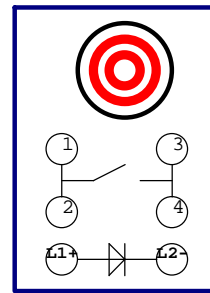
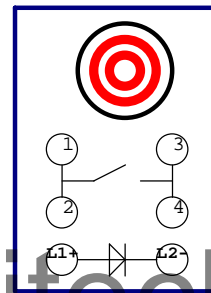
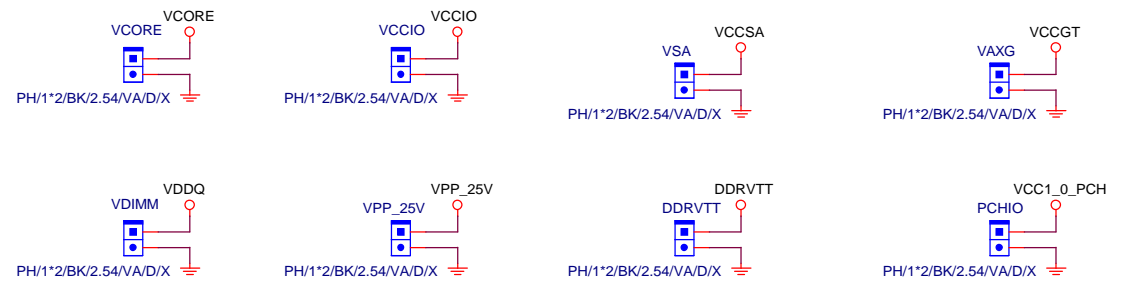
Gigabyte Technology

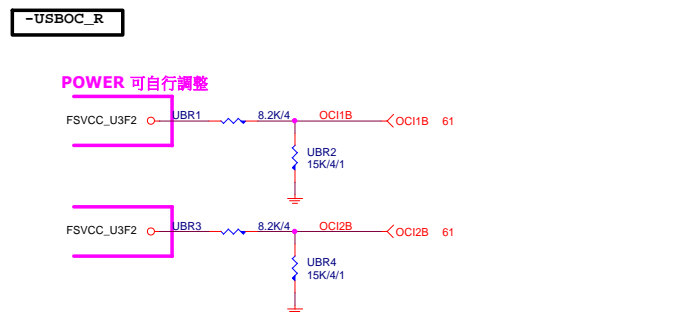
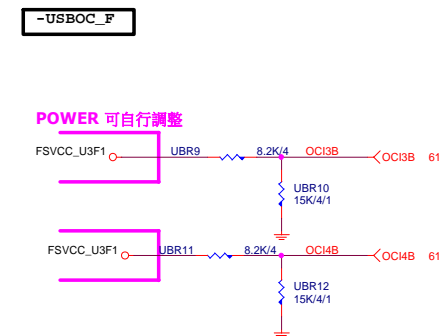
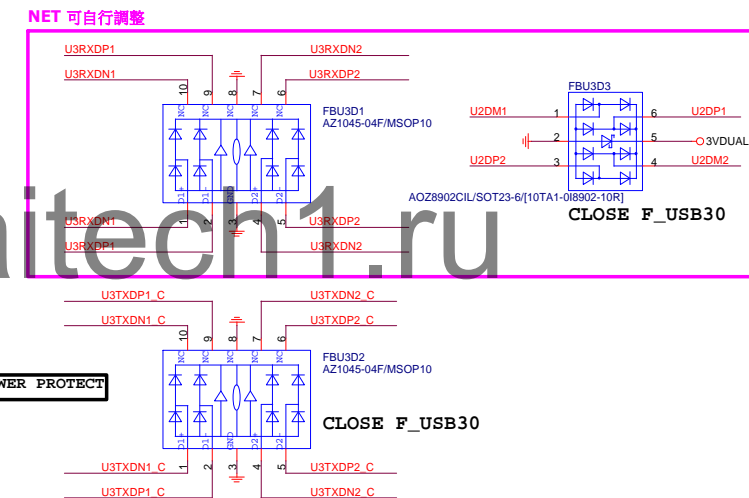
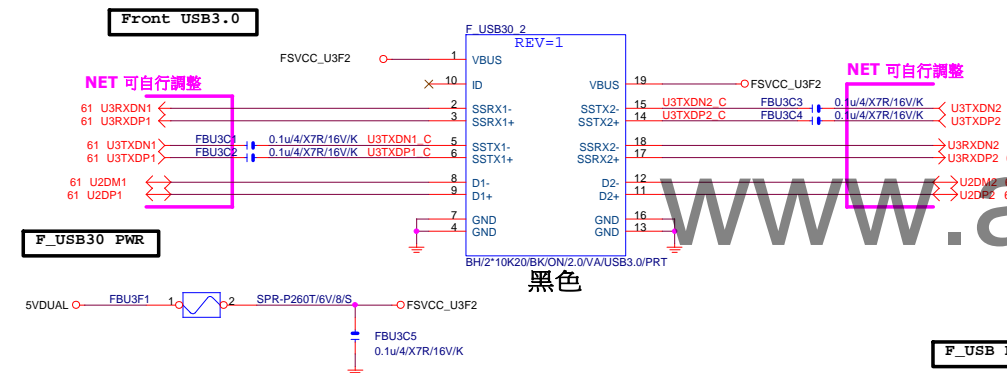
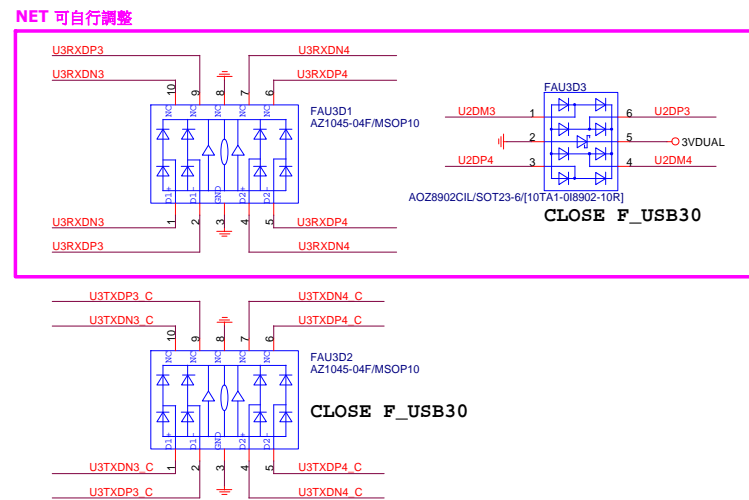
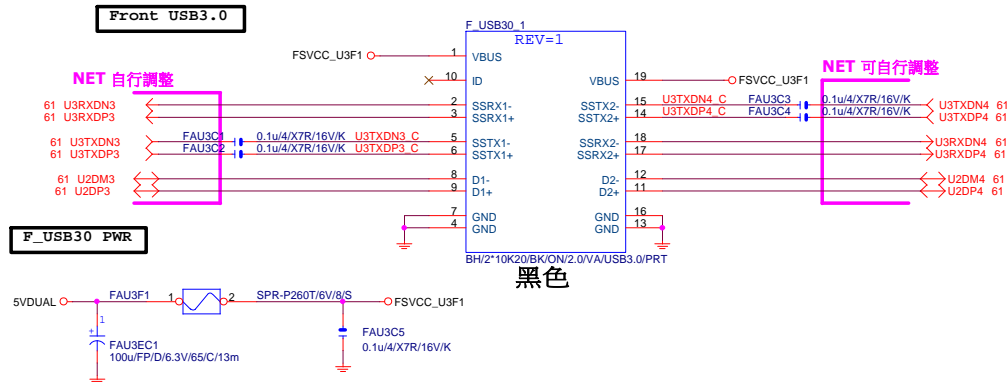
AUDIO JACK

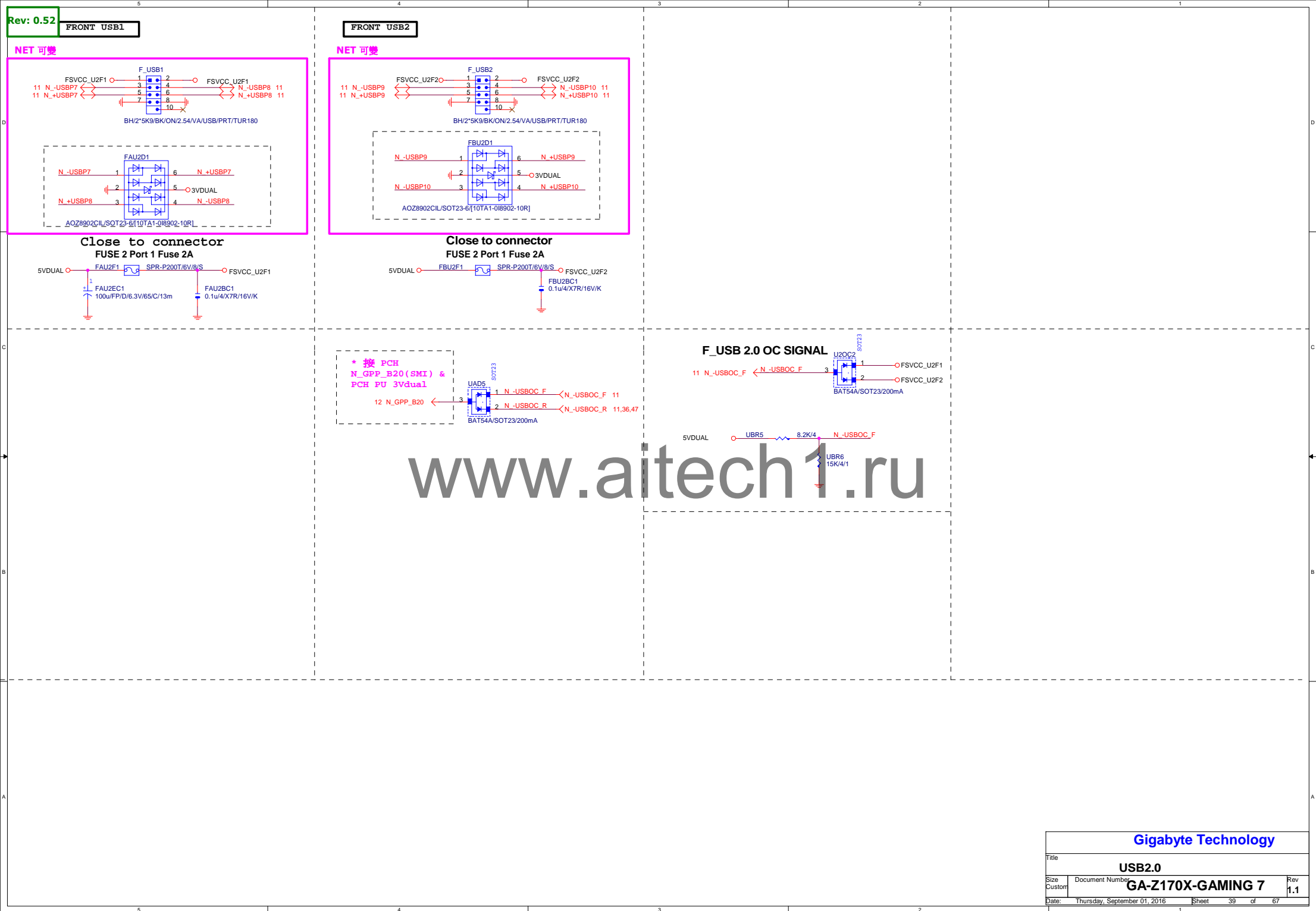
GA-Z170X-GAMING 7

Rev 1.1

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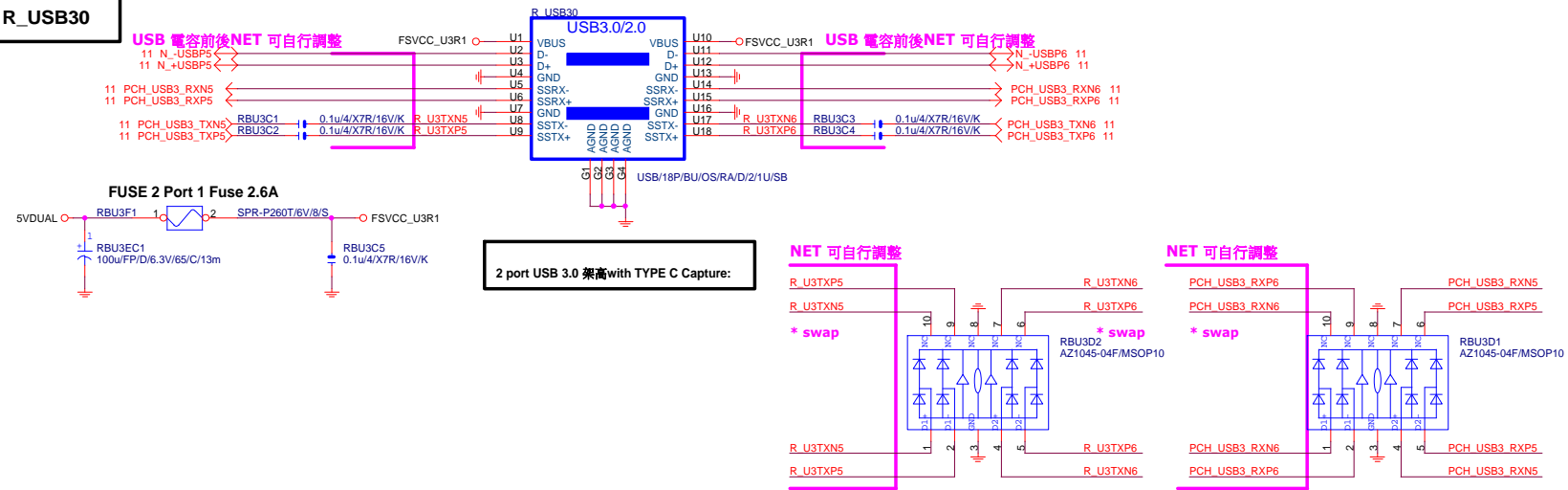


Gigabyte Technology

Title			USB2.0
Size	Document Number	GA-Z170X-GAMING 7	
Custom			Rev 1.1
Date:	Thursday, September 01, 2016	Sheet	39 of 67

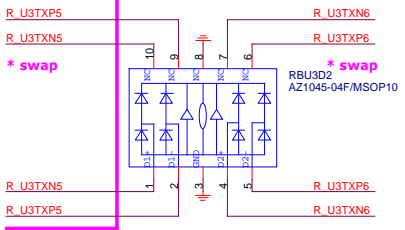


R\_USB30

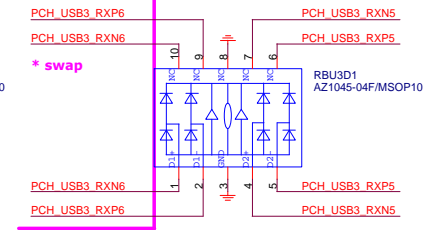


2 port USB 3.0 架構with TYPE C Capture:

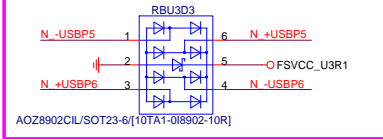
NET 可自行調整



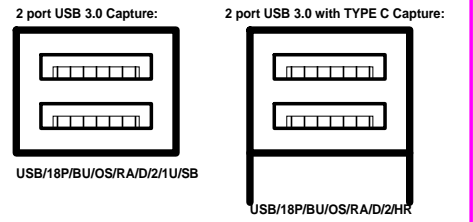
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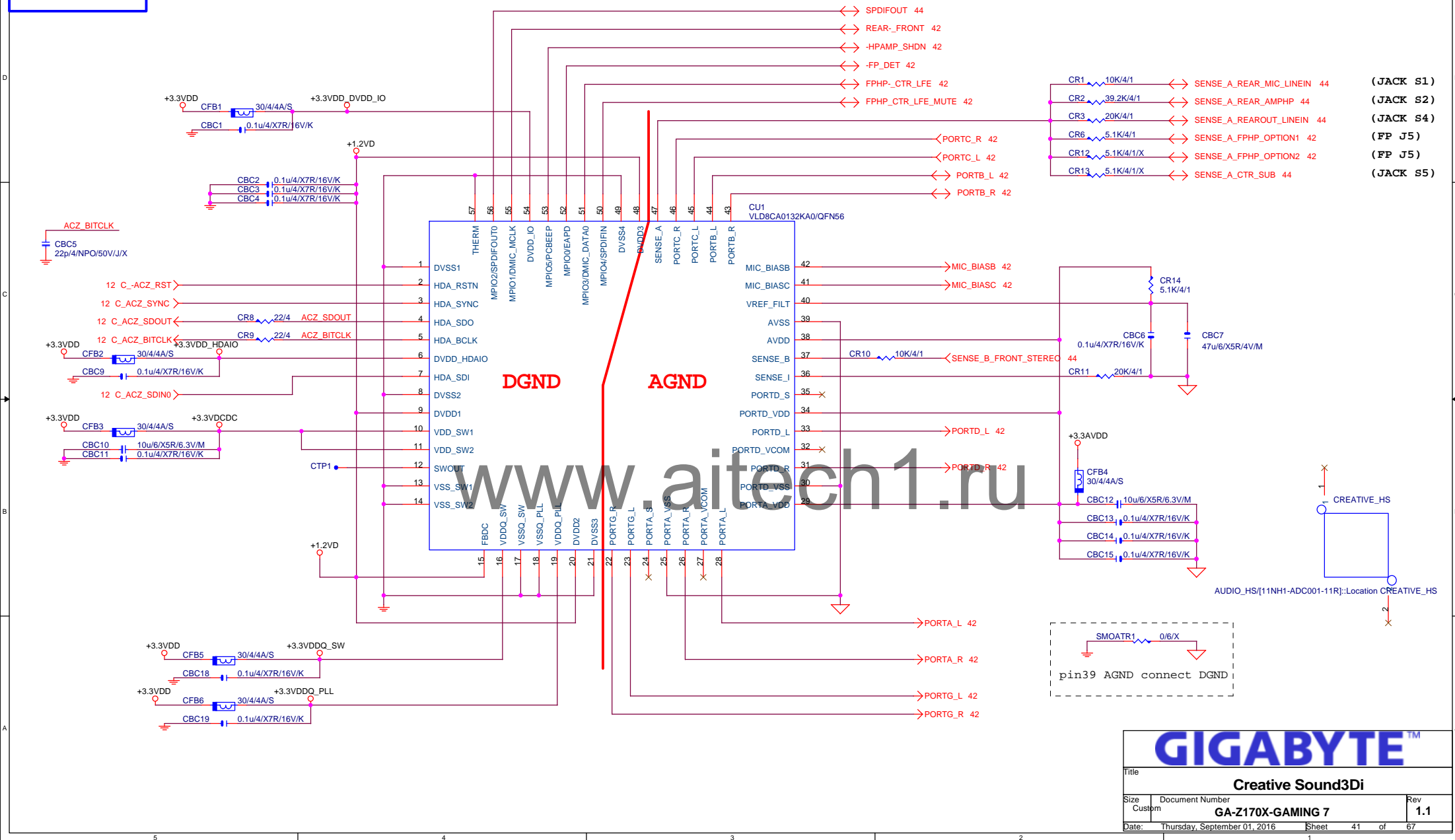
ESD 可自行SWAP PIN



CONNECTOR 自行調整

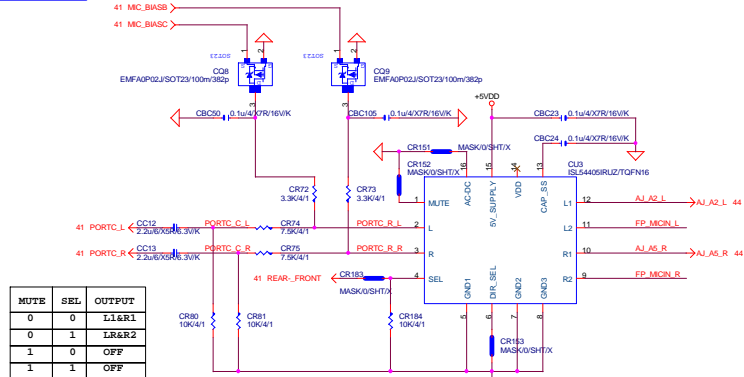


Gigabyte Technology			
Title			
KB_MS_USB3, R_USB30			
Size			
Custom			
Date: Thursday, September 01, 2016			
Sheet 40 of 67			
Rev 1.1			

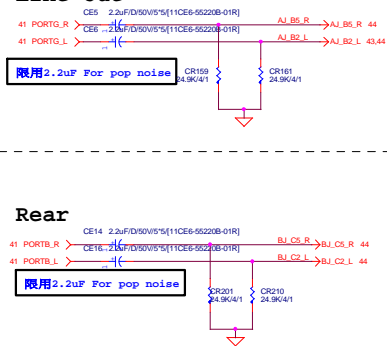
**GIGABYTE™**

Title		
Creative Sound3Di		
Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7	1.1
Date:	Thursday, September 01, 2016	Sheet 41 of 67

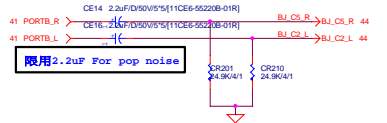
## Rear MIC &amp; FP MIC



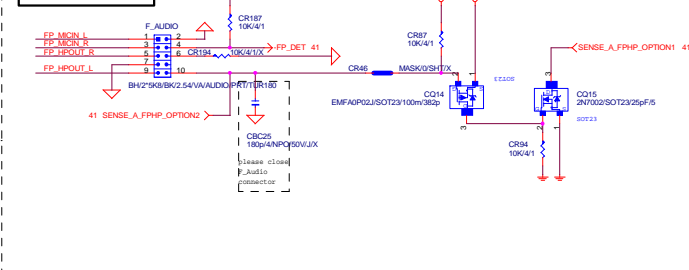
## Line-Out



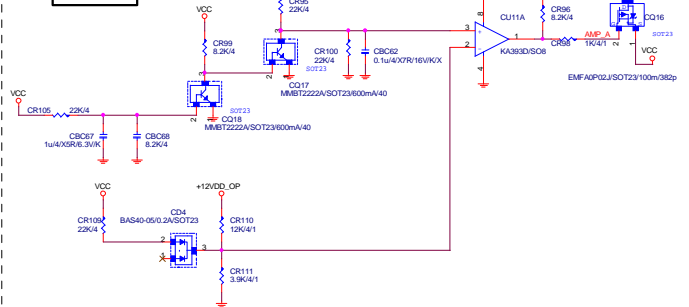
## Rear



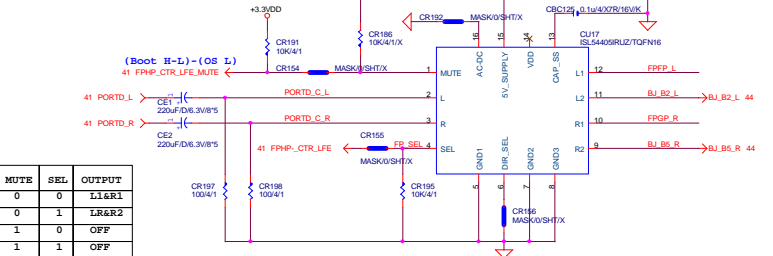
## HD\_Audio FRONT PANEL



OP反插防燒



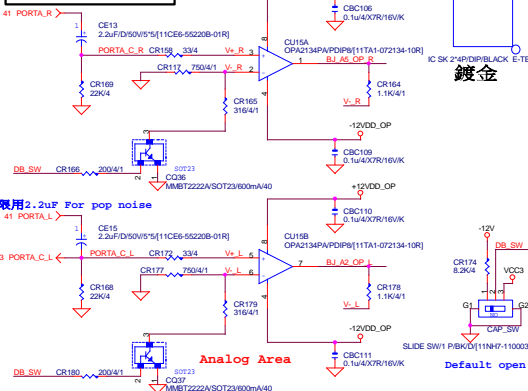
## Rear CTR/SUB &amp; FP HP-Out



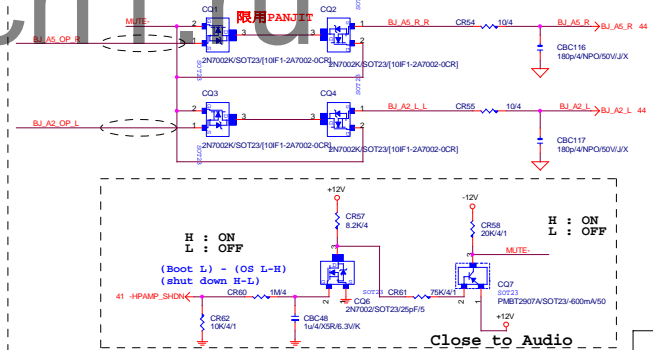
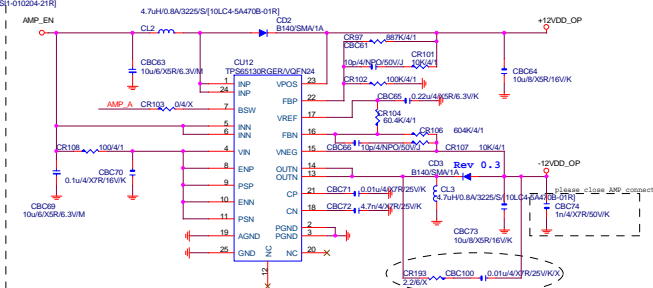
AMPLIFIED

$$\text{OP AMP. Rate} = (\text{CR118}/\text{CR117}) + 1$$

限用2.2uF For pop noise

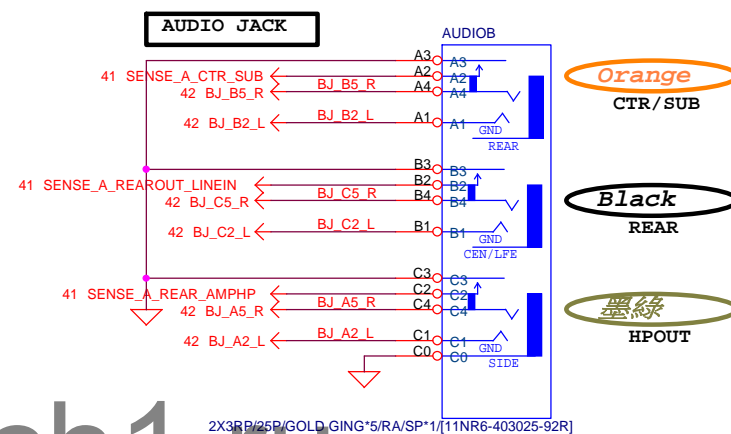
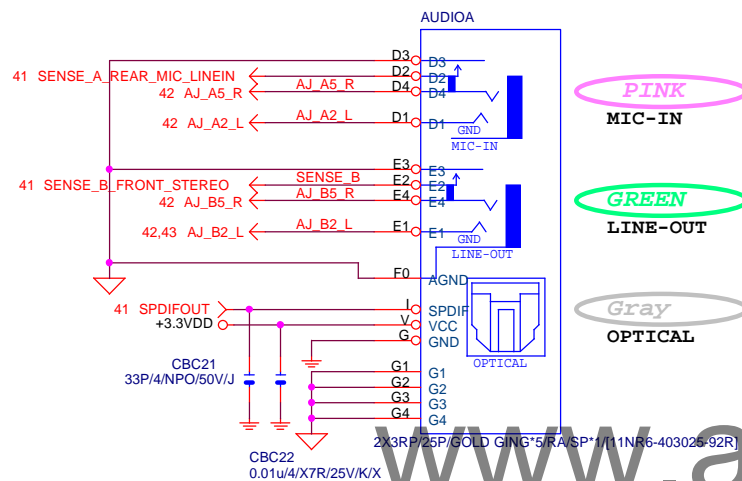


鍍金



Close to Audi



**Gigabyte Technology**

Title

**Creative Sound3Di ZxR**Size  
Custom

Document Number

**GA-Z170X-GAMING 7**

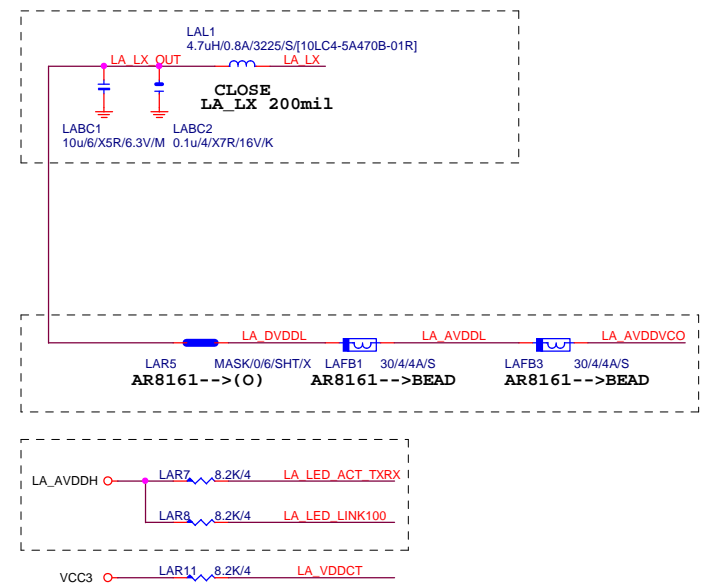
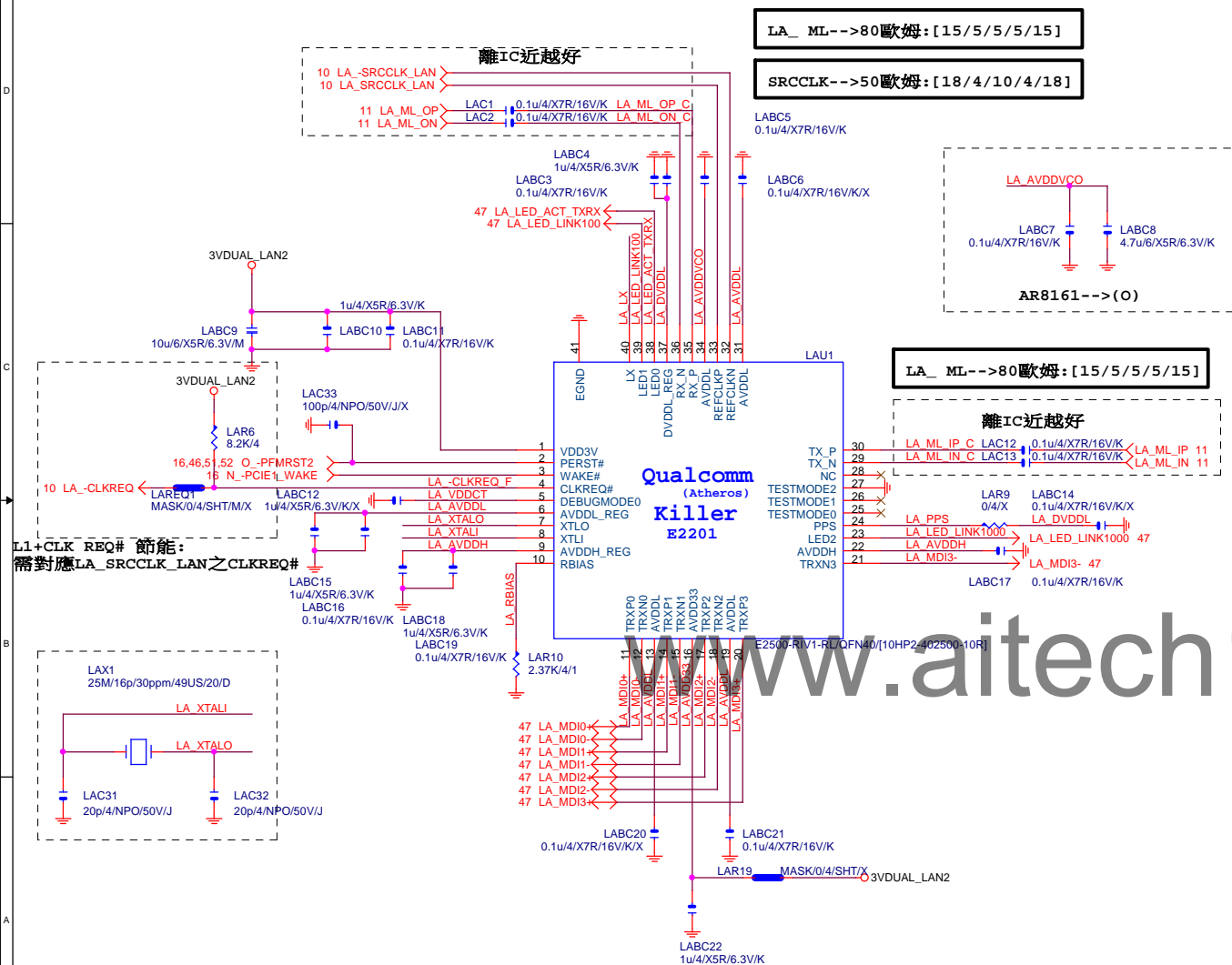
Rev

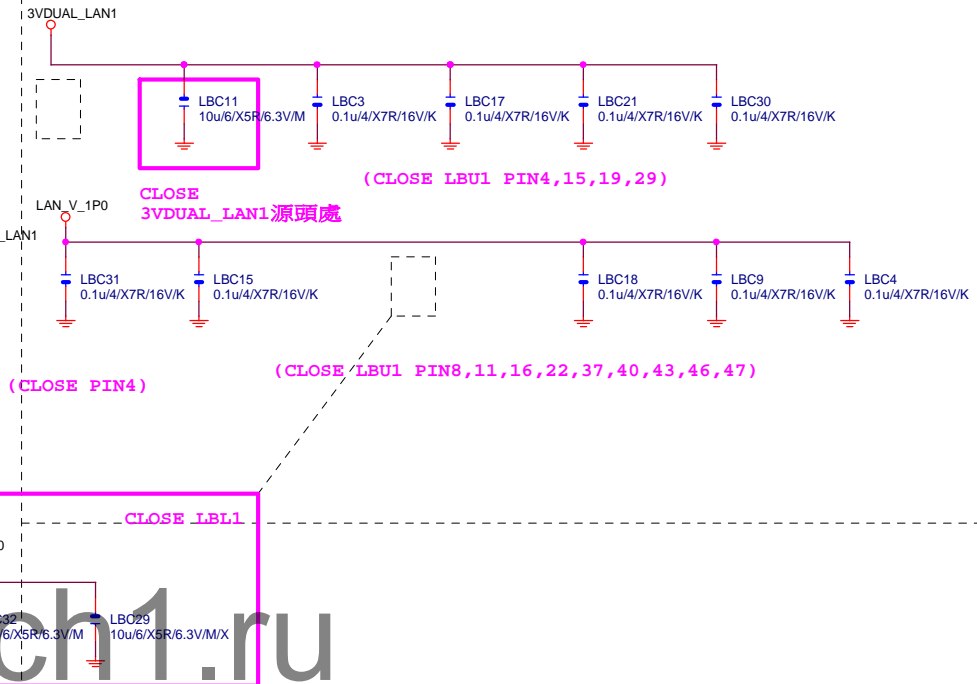
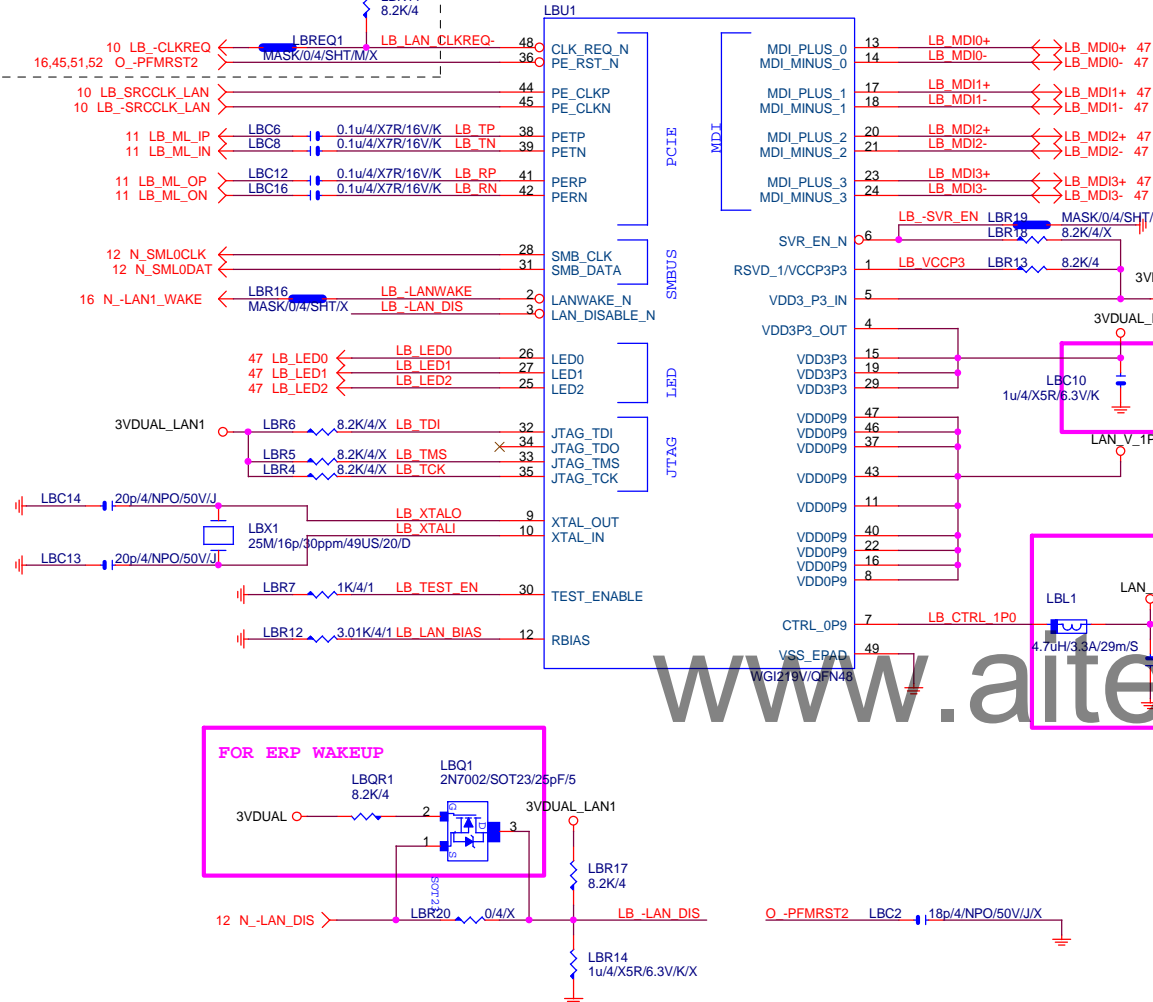
**1.1**

Date: Thursday, September 01, 2016

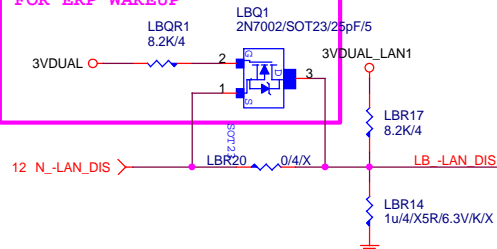
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1



L1+CLK REQ# 節能:  
需對應LA\_SRCCLK\_LAN之CLKREQ#

FOR ERP WAKEUP

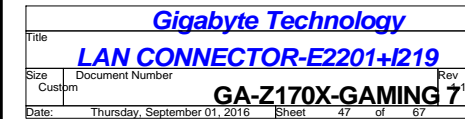
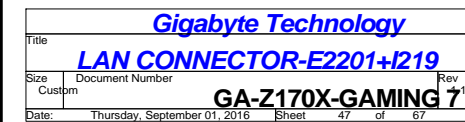


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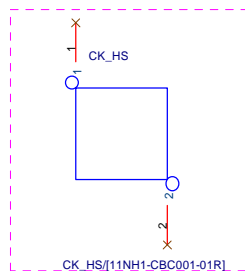
Gigabyte Technology

Title		DUAL LAN~ E2201+I219	
Size	Document Number	GA-Z170X-GAMING 7.1	
Date:	Thursday, September 01, 2016	Sheet	46 of 67

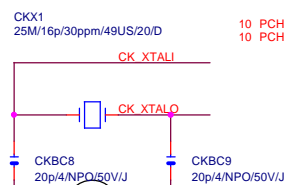




REV:1.07A



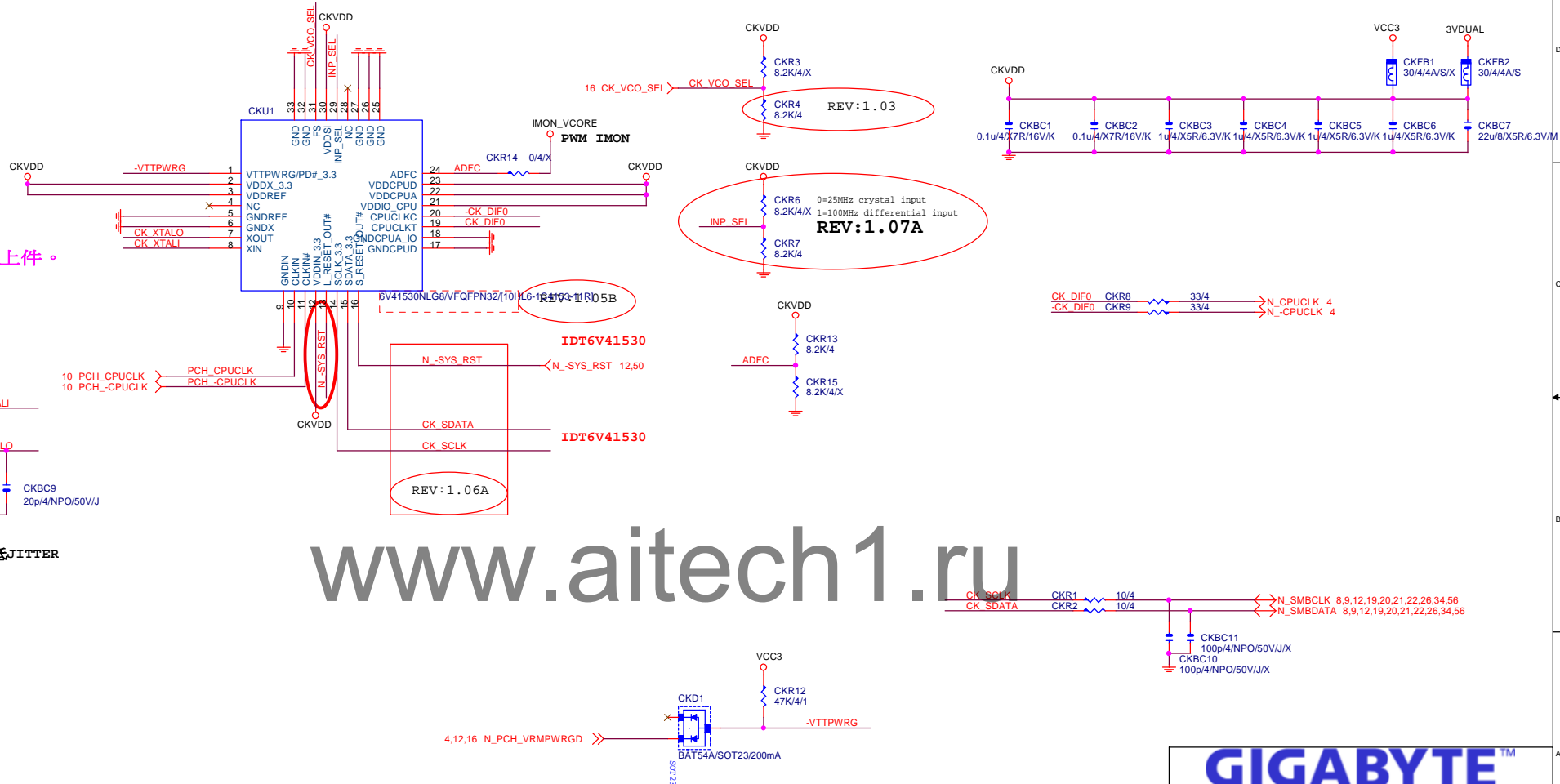
\*可變，依需求上件不上件。



電容共用GND,降低JITTER

INP_SEL	Input
0	Crystal
1	CLK_INP/N

CK_VCO_SEL	VCO
0	400M
1	1200M

**GIGABYTE™**

IDT6V41510\_CLK BUFFER

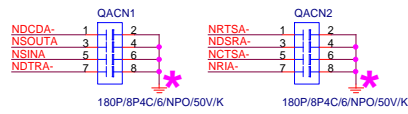
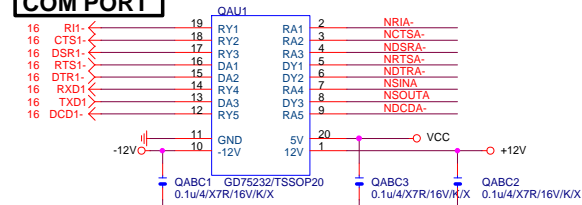
Size	Document Number	Rev
Custom		1.1

GA-Z170X-GAMING 7

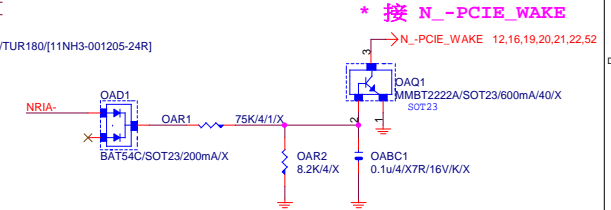
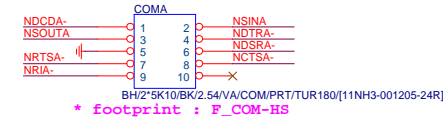
Rev  
1

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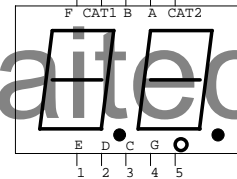
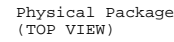
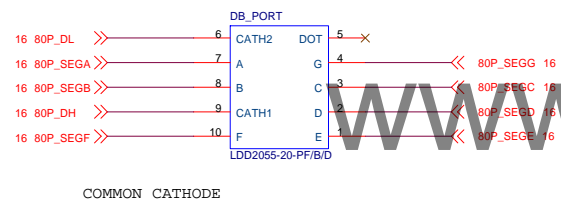
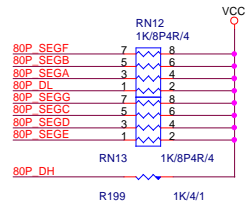
**COM PORT**



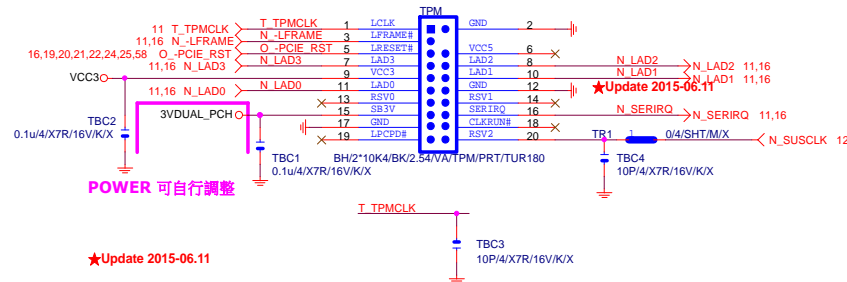
## COMA



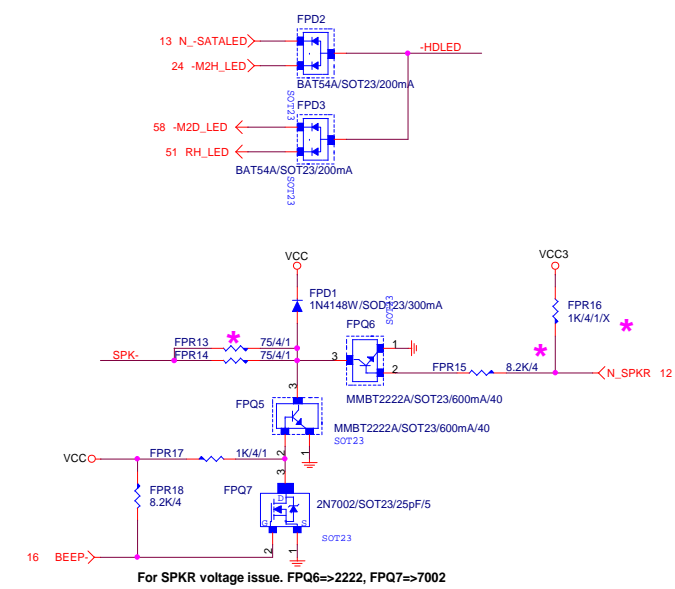
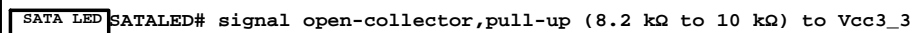
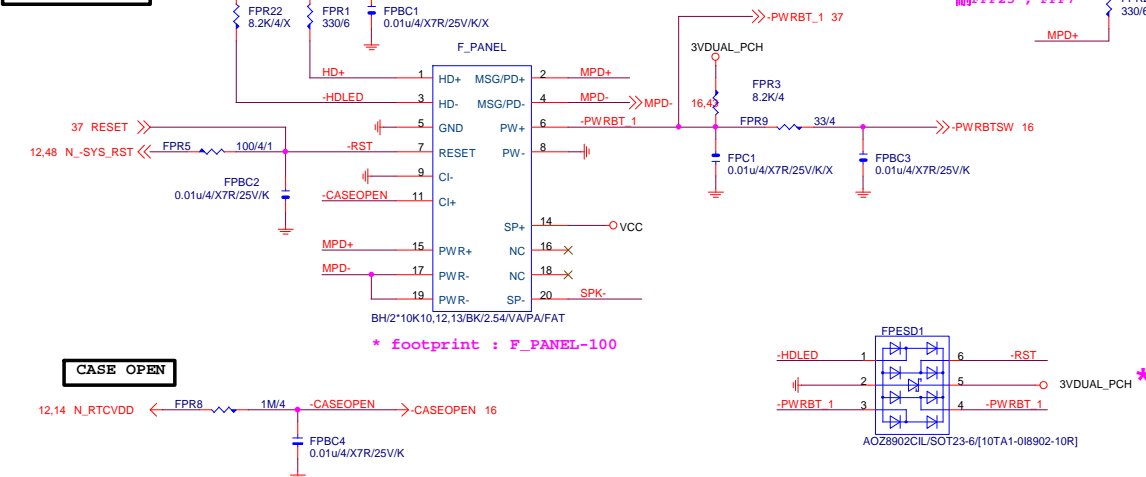
## 80 PORT



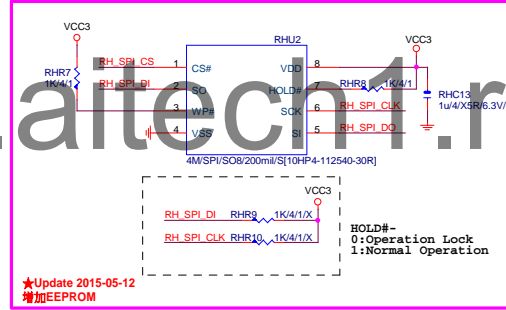
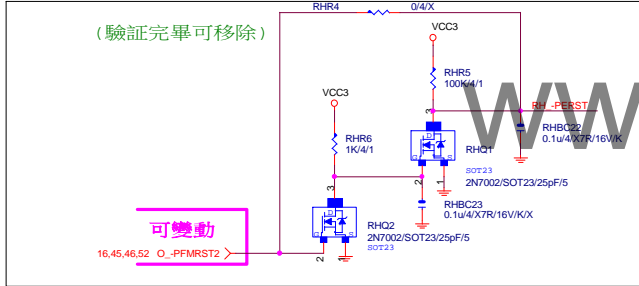
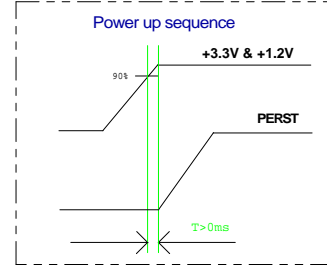
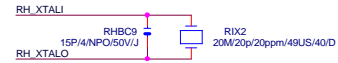
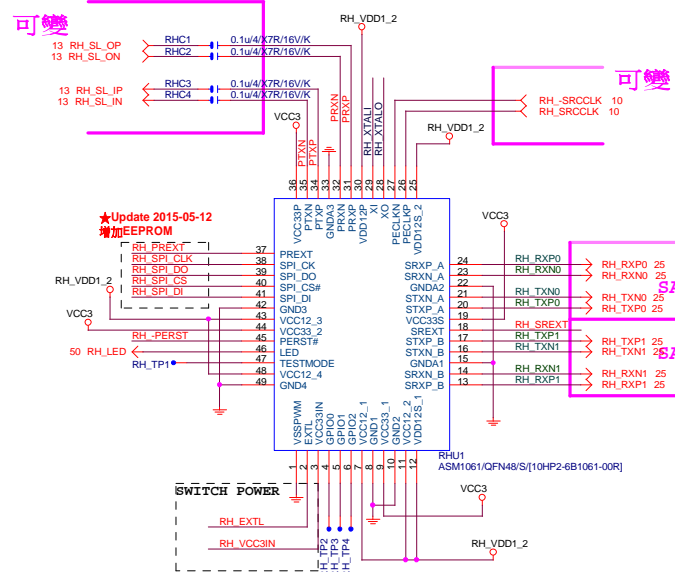
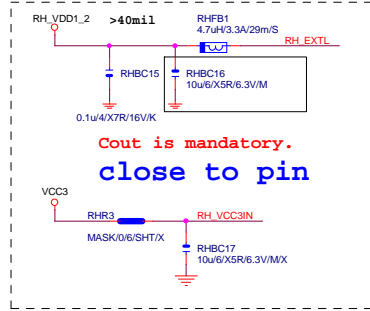
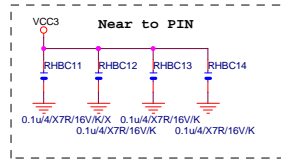
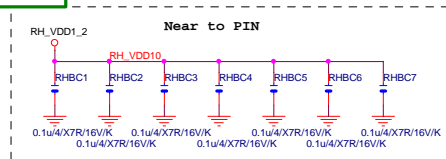
## TPM CONNECT



Rev: 0.52



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H/W Strapping

refer to datasheet:

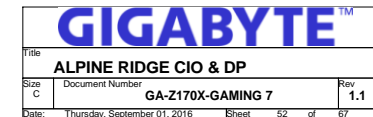
RH\_SPI\_DO RHR16 1K/4/1/X

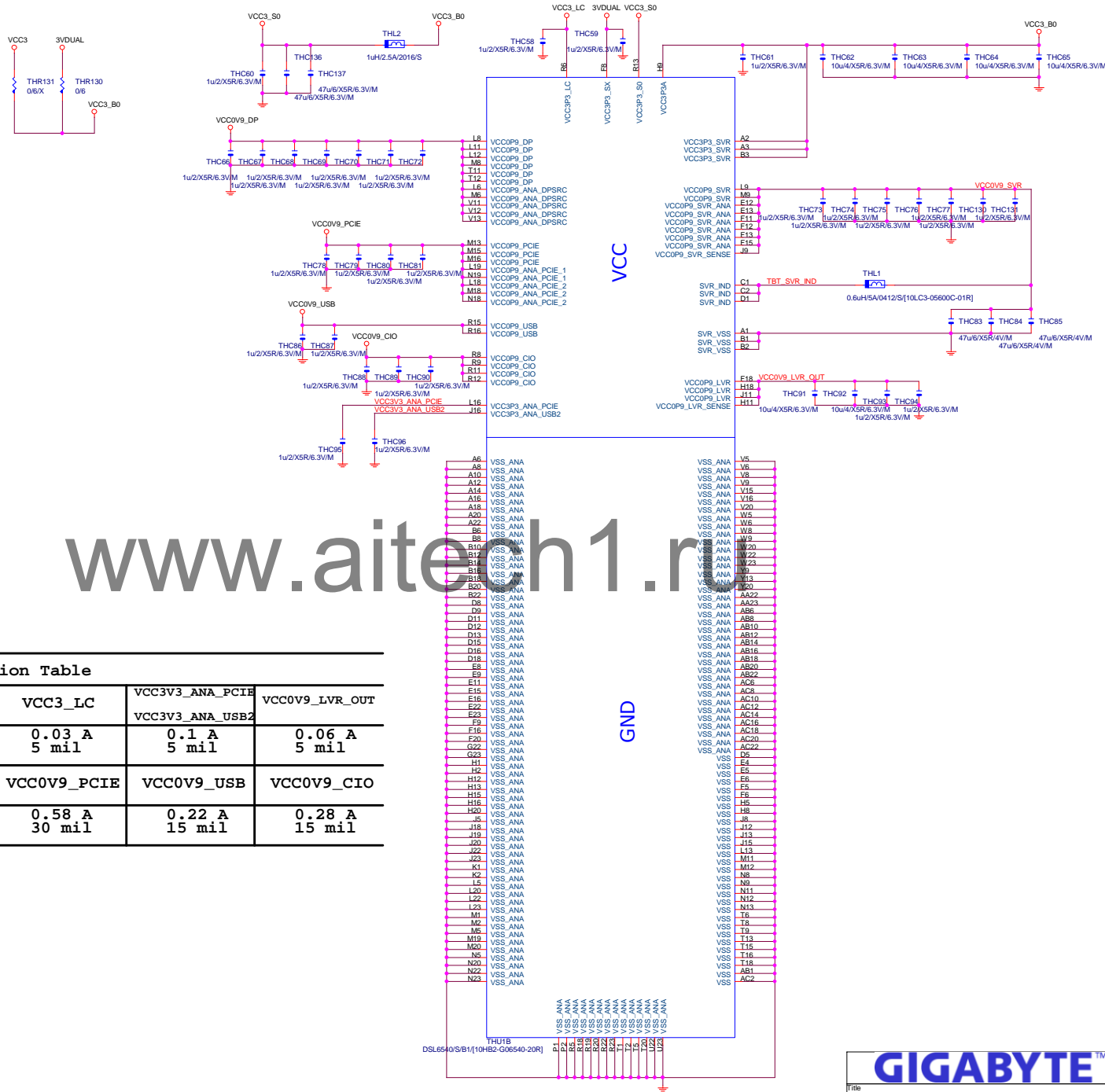
SPI\_DO

0: Spin up by H/W

1: Spin up by S/W

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

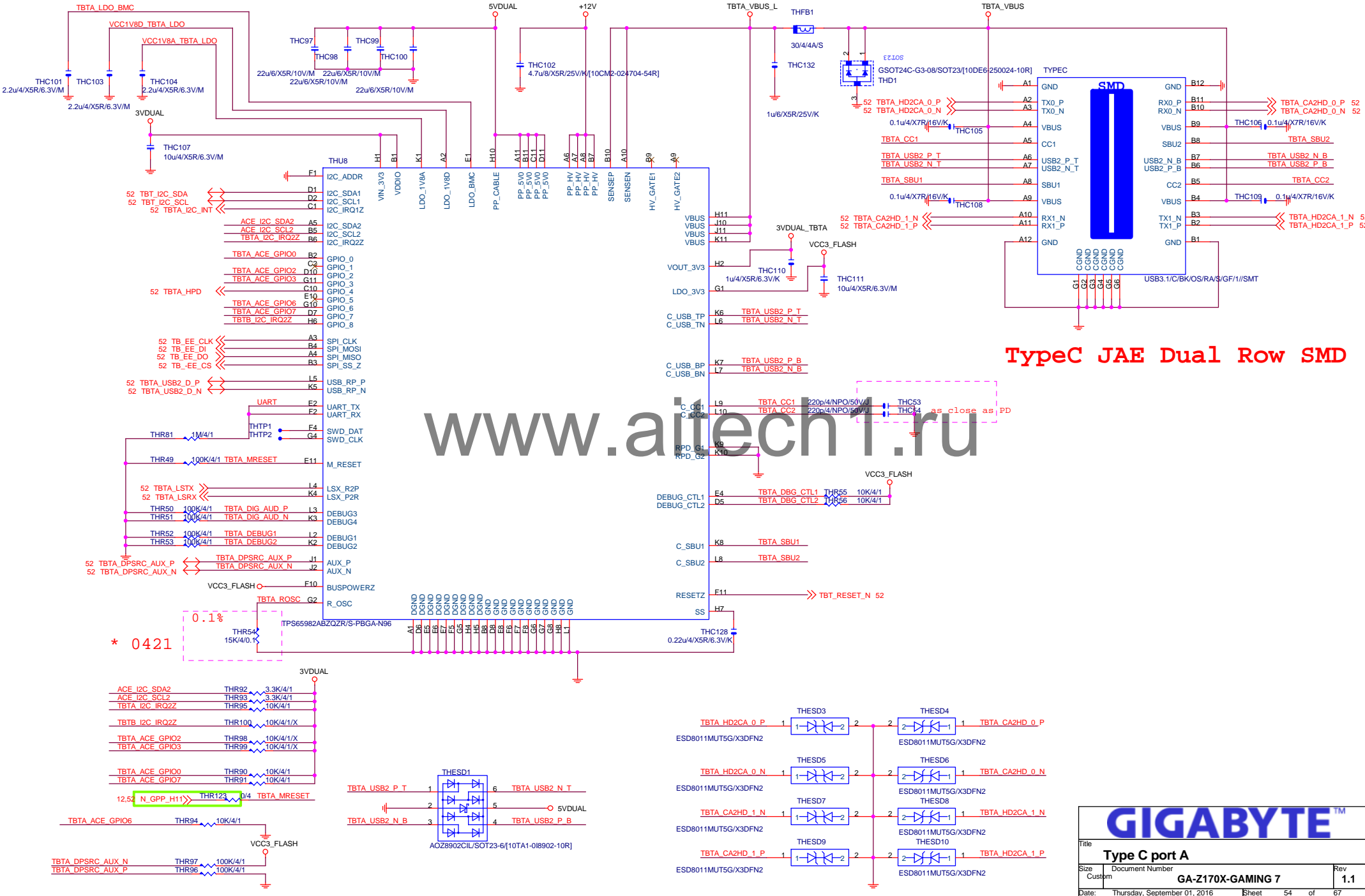




Power Consumption Table

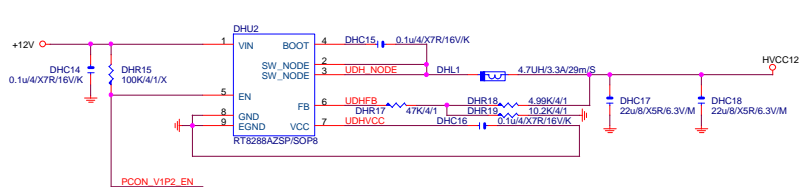
	VCC3	3VDUAL	VCC3_LC	VCC3V3_ANA_PCIE	VCC0V9_LVR_OUT
Max Current(A)	1.05 A 40 mil	0.19 A 10 mil	0.03 A 5 mil	0.1 A 5 mil	0.06 A 5 mil
	VCC0V9_SVR	VCC0V9_DP	VCC0V9_PCIE	VCC0V9_USB	VCC0V9_CIO
Max Current(A)	1.83 A 80 mil	0.7 A 30 mil	0.58 A 30 mil	0.22 A 15 mil	0.28 A 15 mil





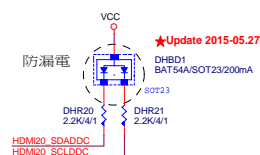
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<b>GIGABYTE™</b>			
Title <b>TBT _ HDMI 2.0</b>			
Size Custom	Document Number <b>GA-Z170X-GAMING 7</b>		Rev <b>1.1</b>
Date:	Thursday, September 01, 2016	Sheet 55 of 67	

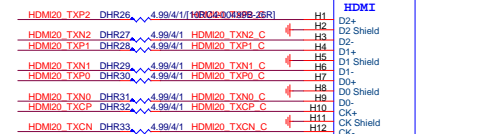


## PCH端

10 N\_DOPC\_CTRLCLK <-> N\_DOPC\_CTRLCLK DHR23 2.2K/4/1 -> VCC3  
 10 N\_DOPC\_CTRLDATA <-> N\_DOPC\_CTRLDATA DHR24 2.2K/4/1 -> VCC3



## Display Port with HDMI, or HDMI only.



## Power 可變

FSVCC\_U3R1

1u/4/XSR/6.3V/K

DHR22 47K/4/1

HDM20\_PLUG

HDM20\_SCLDDC

HDM20\_SDAODDC

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

HDM20\_TXN0

HDM20\_TXN1

HDM20\_TXN2

HDM20\_TXP0

HDM20\_TXP1

HDM20\_TXP2

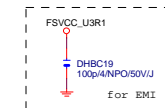
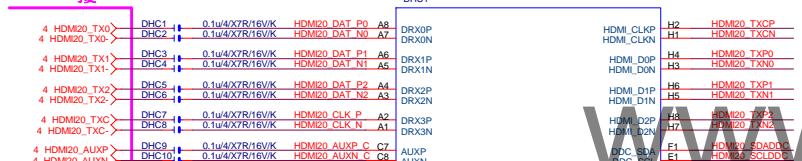
HDM20\_TXN0

HDM20\_TXN1

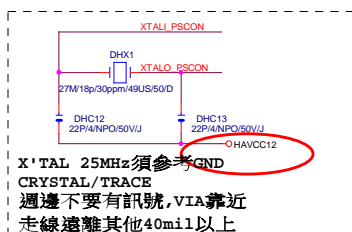
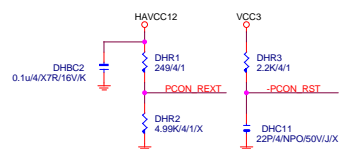
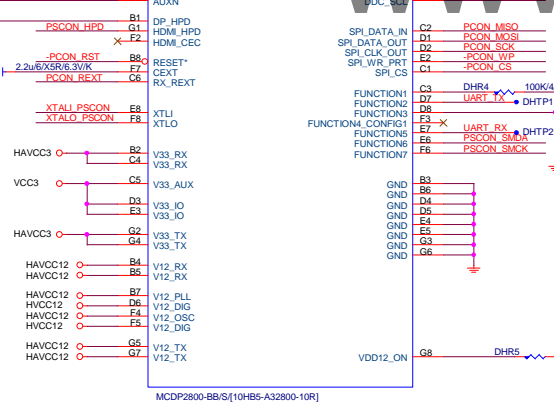
HDM20\_TXN2

DP+HDMI20P+19P/BK/R/D[11N/R6-H04038-11R]/X

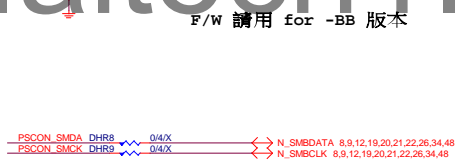
橫躺式/直立式 可自行調整

需設定為DP Port  
NET 可變

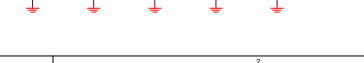
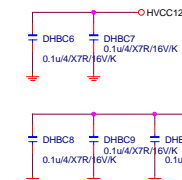
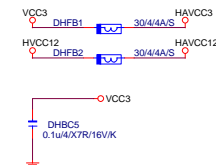
## 可靠 PCH端



X'TAL 25MHz 須參考 GND  
 CRYSTAL/TRACE  
 週邊不要有訊號,VIA靠近  
 走線遠離其他40mil以上



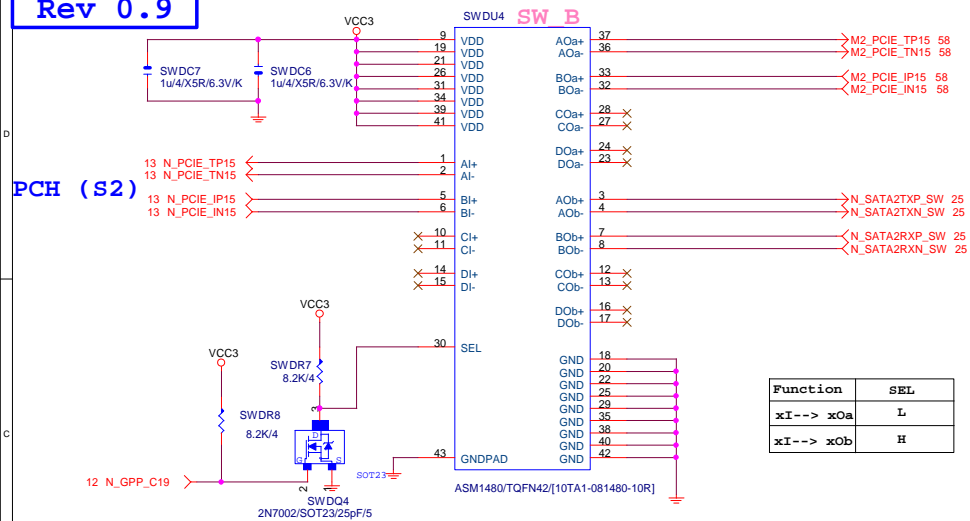
F/W 請用 for -BB 版本



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

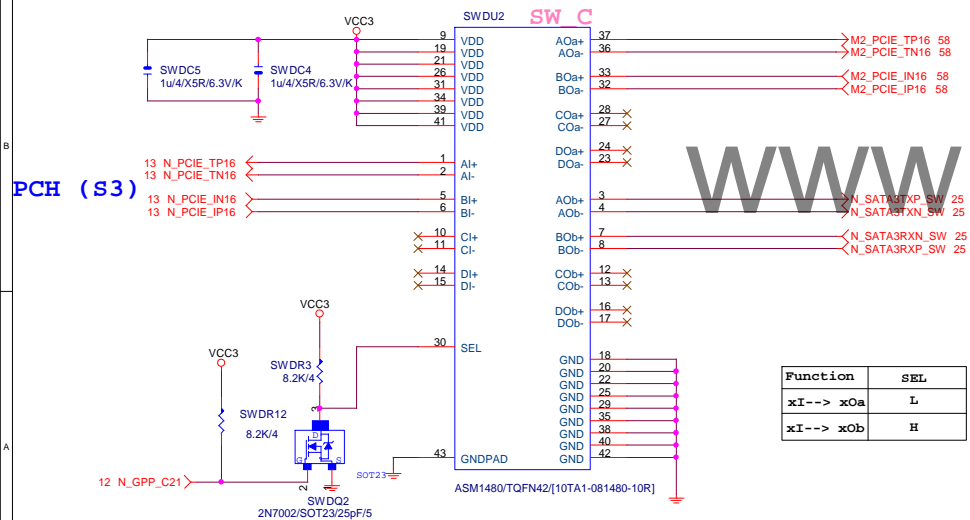
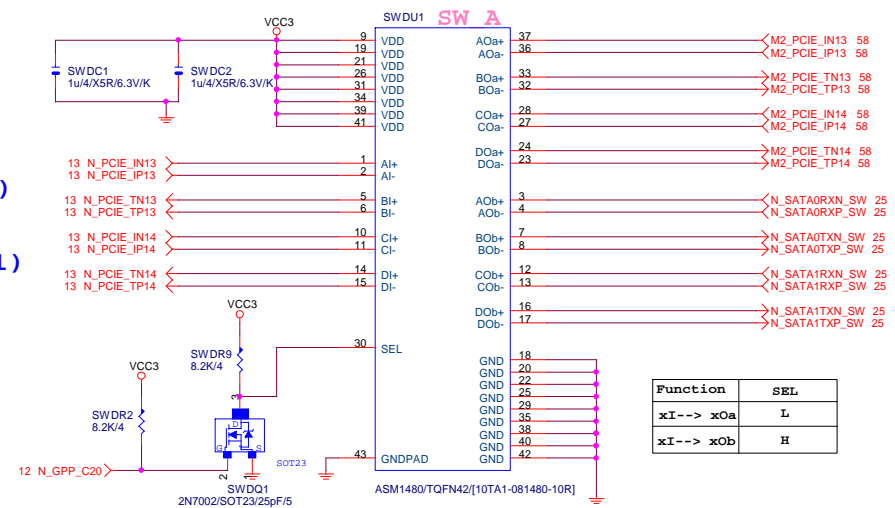






PCH (S0)

PCH (S1)



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**Gigabyte Technology**  
**NXP-PTN3356**

Title		Document Number		Rev	
Size		Custom		1.1	
Date:		Thursday, September 01, 2016		Sheet 59 of 67	



3顆SW IC,

當使用M.2 (X2),  
EXPRESS只可限定使用 S0&S1

ABC的切換方式:

下下下 : SE1+SE0

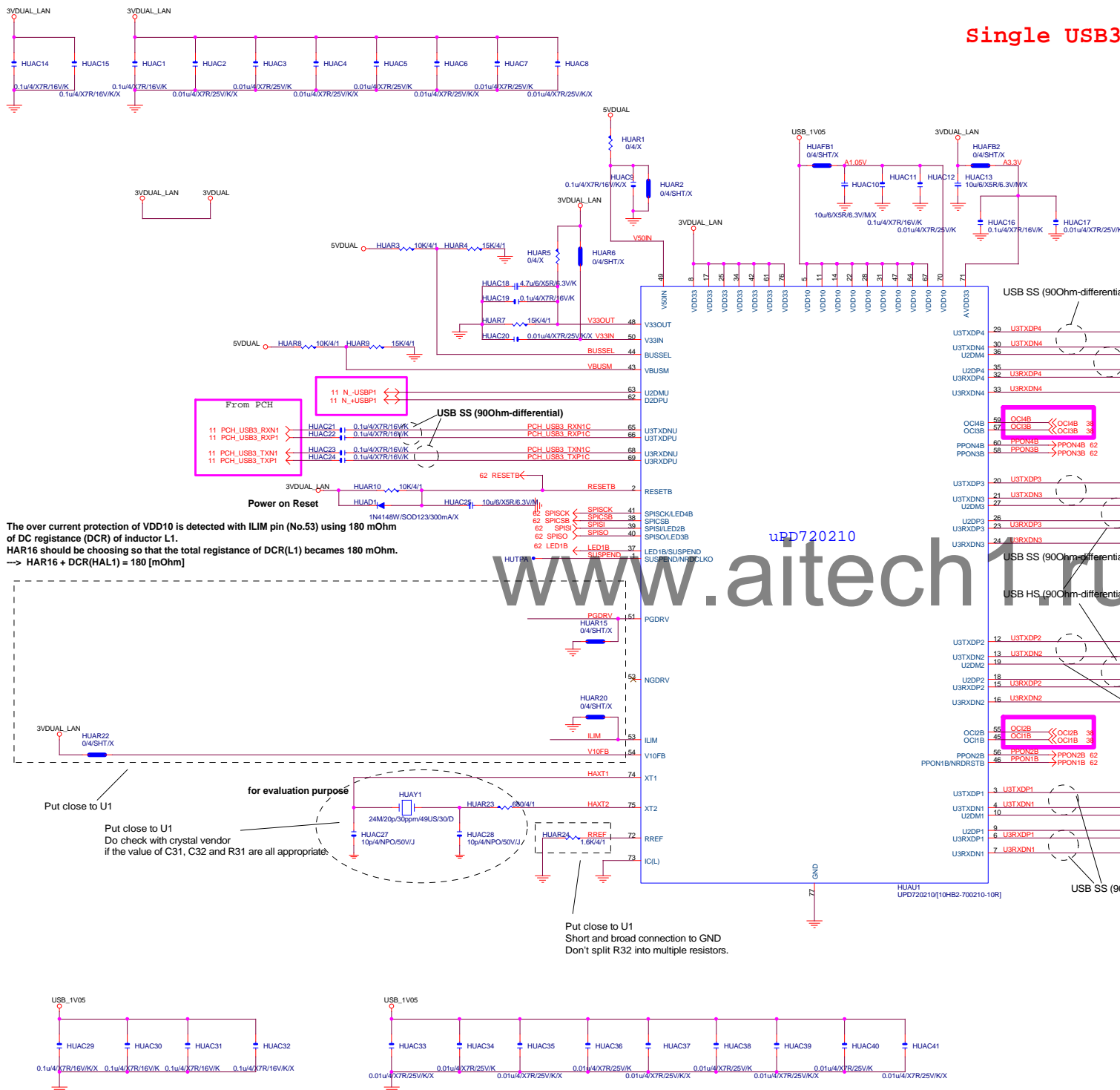
上上上 : M.2 X4

下上上 : M.2x2 + SE S0/S1

下下下上 : M.2 X1 + SE  
S0/S1/S2

Title			
BLOCK DIAGRAM			
Size	Document Number		Rev
Custom	GA-Z170X-GAMING 7		1.1
Date:	Thursday, September 01, 2016	Sheet	60 of 67
	3	2	1





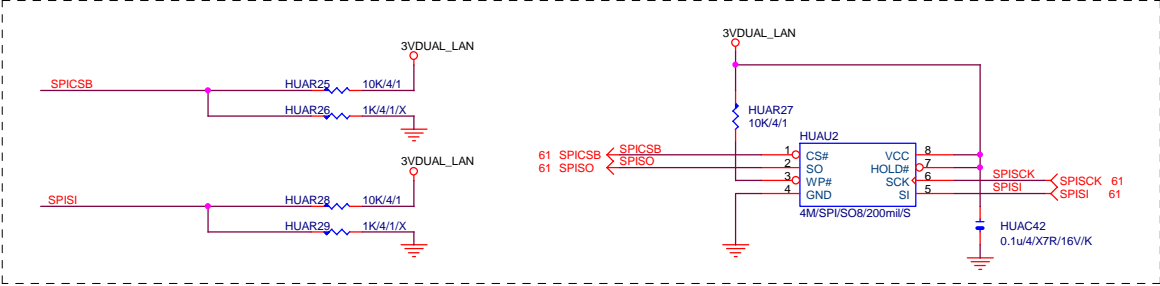
Link to Connectors  
and OC circuits

F\_USB30\_1

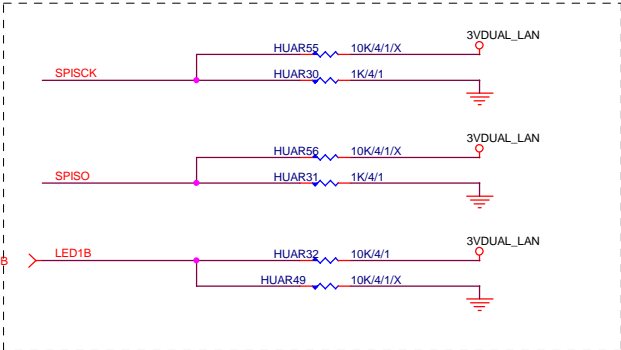
F\_USB30\_2

Single USB3 HUB used

# External SPI ROM ; SPI ROM attached mode

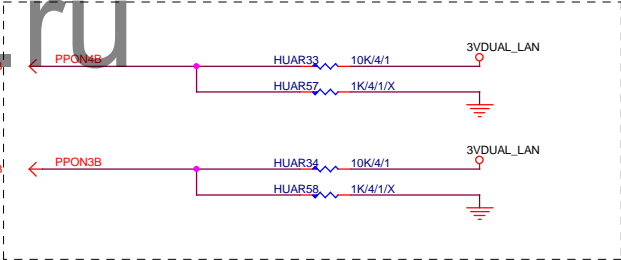


# Battery Charging

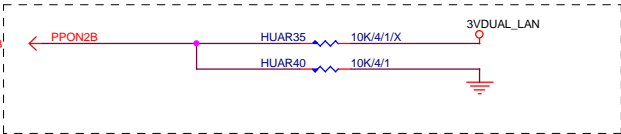


# Number of Ports ; 4Ports mode

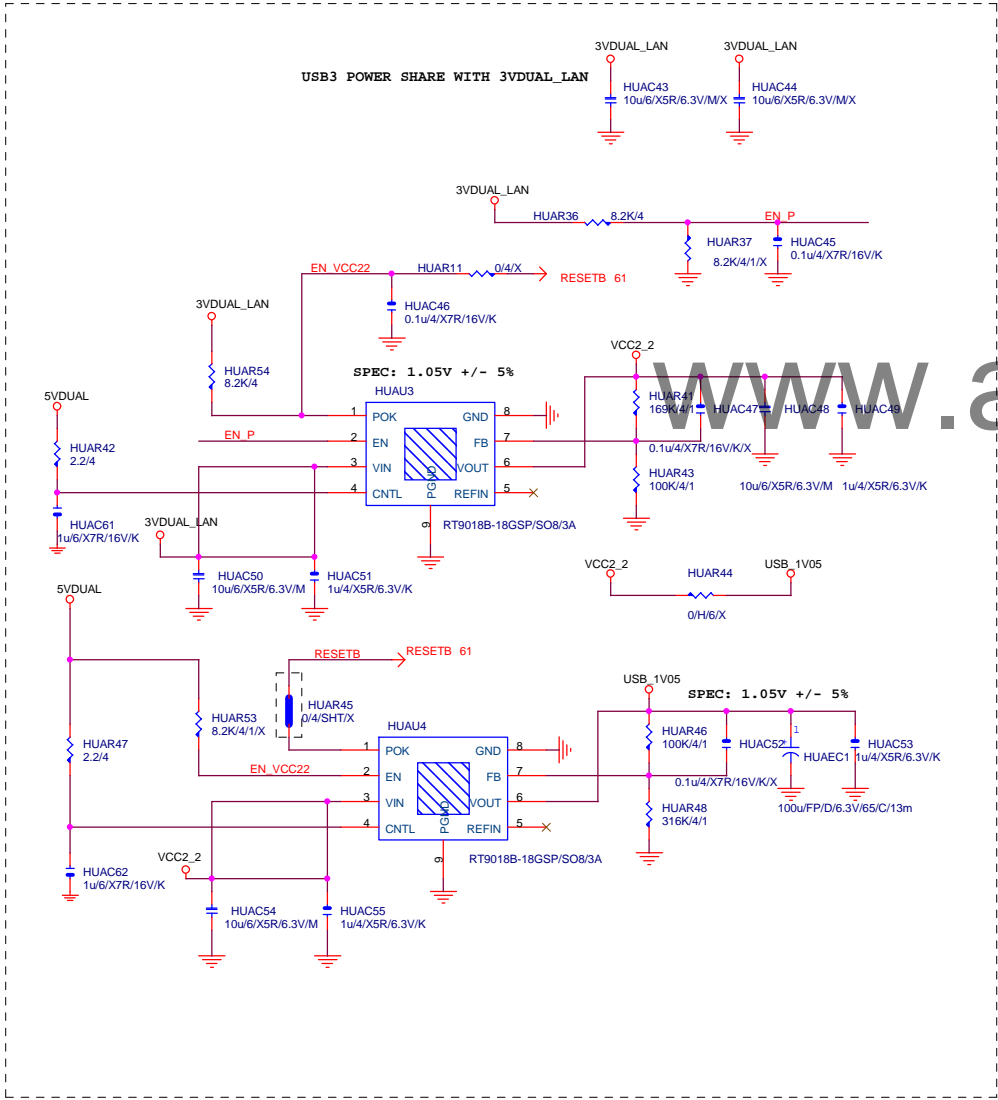
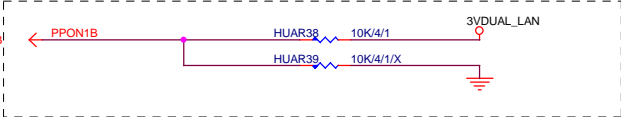
PPON3B / PPON4B : H / H ( 4 port )  
PPON3B / PPON4B : L / L ( 2 port )



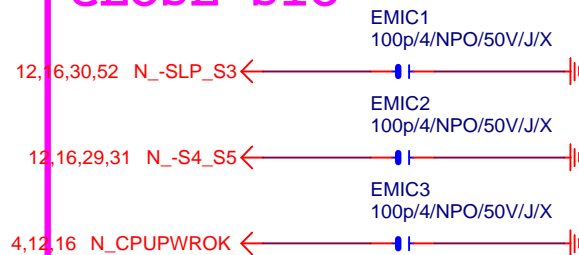
#5 VBUS Power Control ; Individual mode



# PPON1B Pin Function ; Port1 PPONB mode



## CLOSE SIO



## CLOSE PCH



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**GIGABYTE™**

Title

**EMI/ESD**

Size  
A

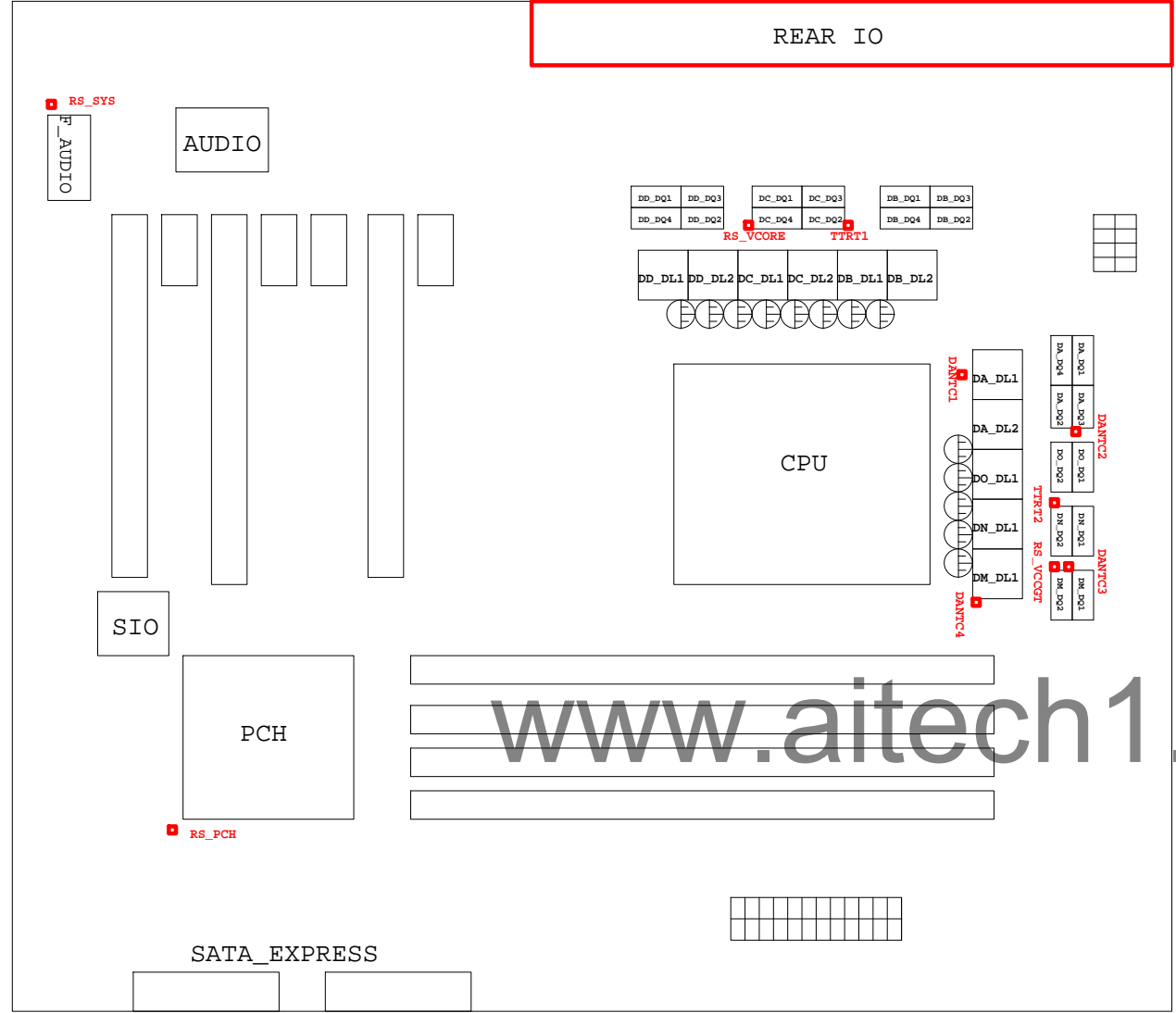
Document Number

**GA-Z170X-GAMING 7**

Rev  
**1.1**

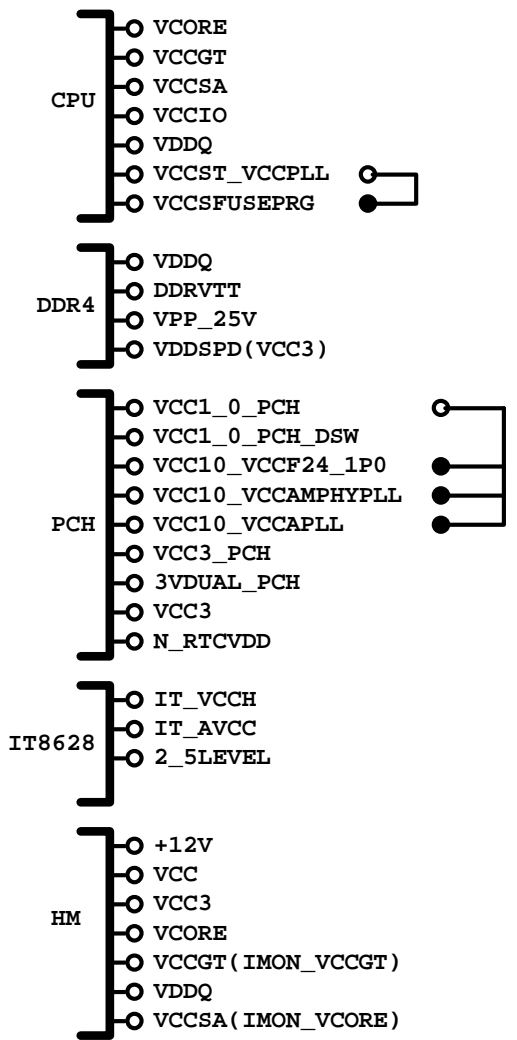
Date: Thursday, September 01, 2016

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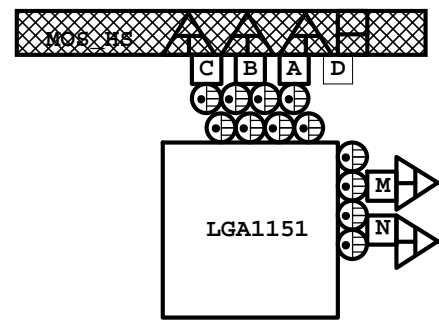
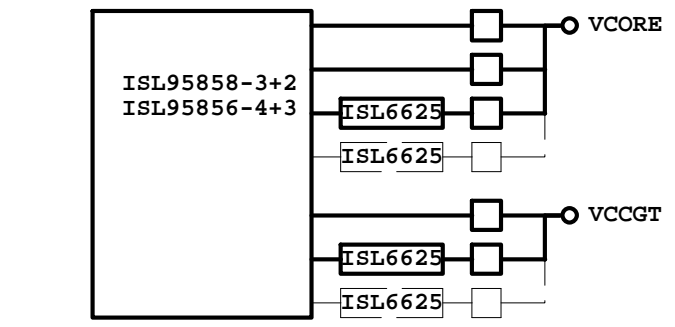


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

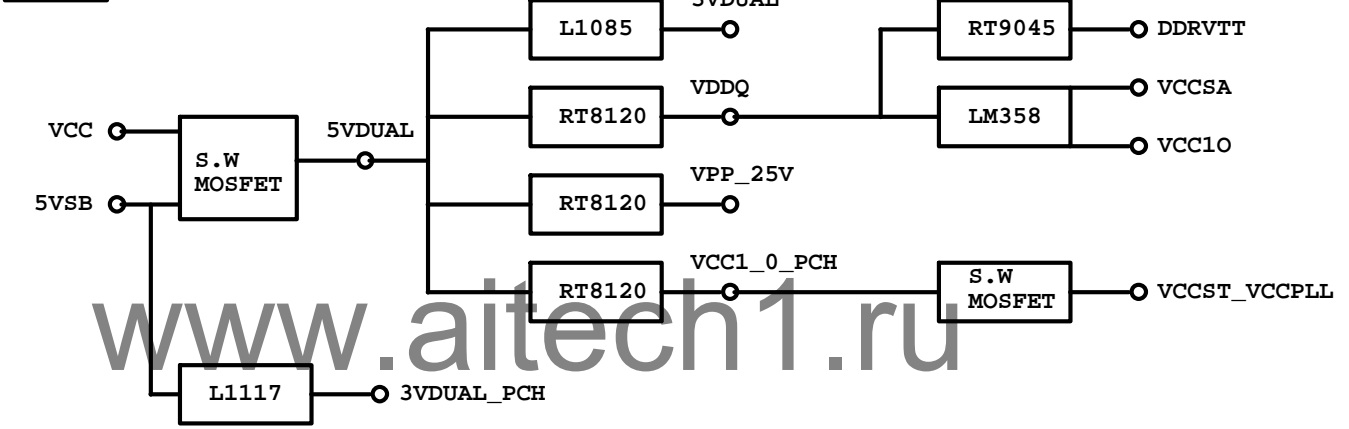
POWER BLOCK MAP



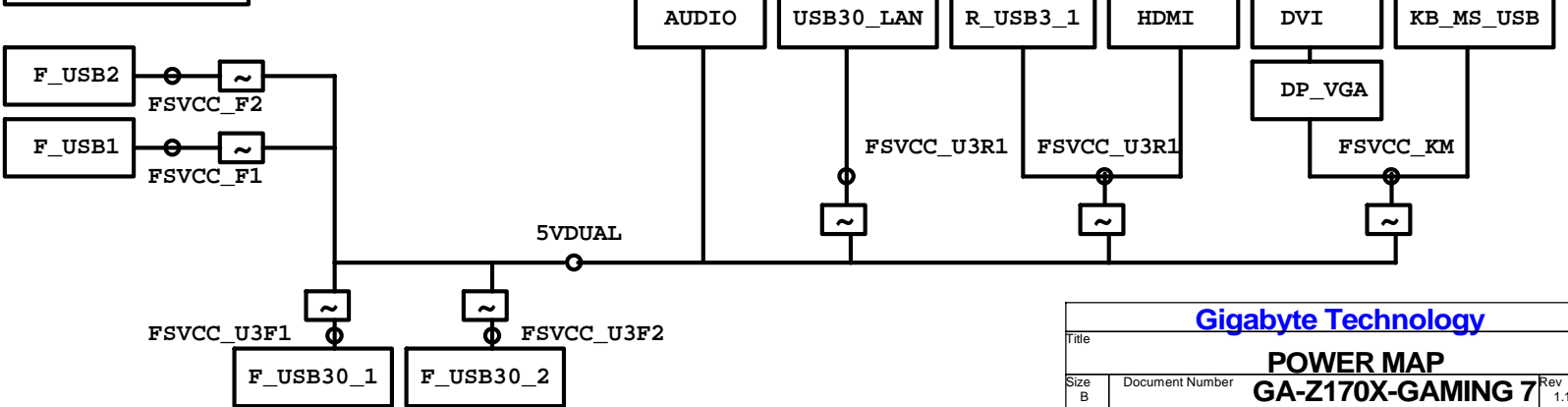
VCORE/VCCGT



POWER



FUSE POWER F/R



## 固態電容料號.請自行修改

日系黑色固態	Capture Value
11C02-C85600-01R	560u/FP/D/6.3V/68/C/8m
11C05-C82700-01R	270u/FP/D/16V/88/C/12m
11C05-C61000-01R	100u/OS/D/16V/66/C/30m
11C02-C51000-01R	100u/FP/D/6.3V/65/C/13m

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

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

## 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-EP50IC

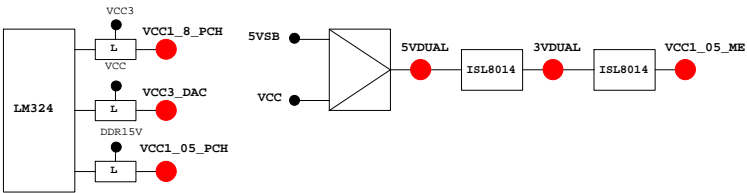
<b>GIGABYTE™</b>			
Title <b>RT8120_DDR4 POWER</b>			
Size Custom	Document Number <b>GA-Z170X-GAMING 7</b>		Rev <b>1.1</b>
Date:	Thursday, September 01, 2016	Sheet 66 of 67	

PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	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

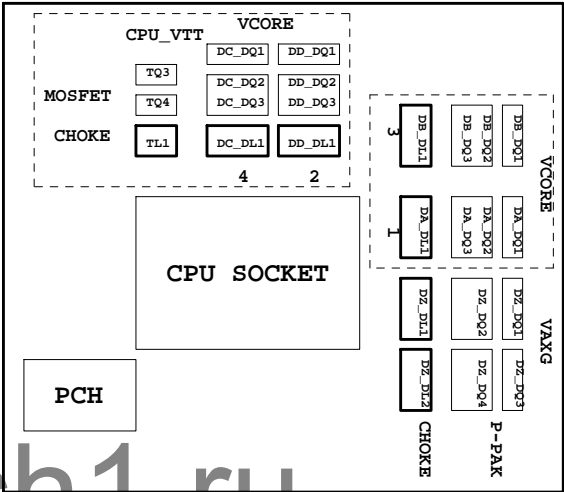
Super I/O ITE8720 GPIO Table

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	-PCI_E_RST	
RSMRST#CIRRXL/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

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