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Gigabyte Technology

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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 PCIE_X4_M2 --> PCIE_X4_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	

- 9.0
1. Add OC1,OC LED 1x2 pin  
2. Add NPR22,NPC10 靠近CPU  
3. Add MA\_DR9,MA\_DR10  
4. PCIE\_X4 switch change "IO\_GP20  
5. WR94 CHANGE NET to VCCSA ? VCC\_T\_VCCPLL  
6. Add DFC3 靠近CPU
- 1.0
1. BIOS\_PH footprint update "BIOS2X5-RH-1-MASK"  
2. SWPU2 pin30 net update PCIE\_X4\_M2 --> PCIE\_X4\_M2S  
3. Add "MAC10"
- 1.01
1. Add THR124,THR125,THR126  
2. OC\_LED & OC\_BT swap

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),DABC14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. PCIE_X4 "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: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 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,MHL & 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 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]"	
0.2	14. ADD ASMI061 EEPROM 15. RN12,RN13 --> R8P4R-0402 16. Add 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 禁組線路 (Remove 20. NR294,NR295 刪除, NR555 禁組 21. DBHD3,THD3 For HDMI diode 1. Add NR3 FOR X'TAL 24MHz 2. ATX_12V_2X4在GND層切割層往上移	
0.3		



BOM & PCB MODIFY HISTORY

Size

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1.01

Date

Friday, July 10, 2015

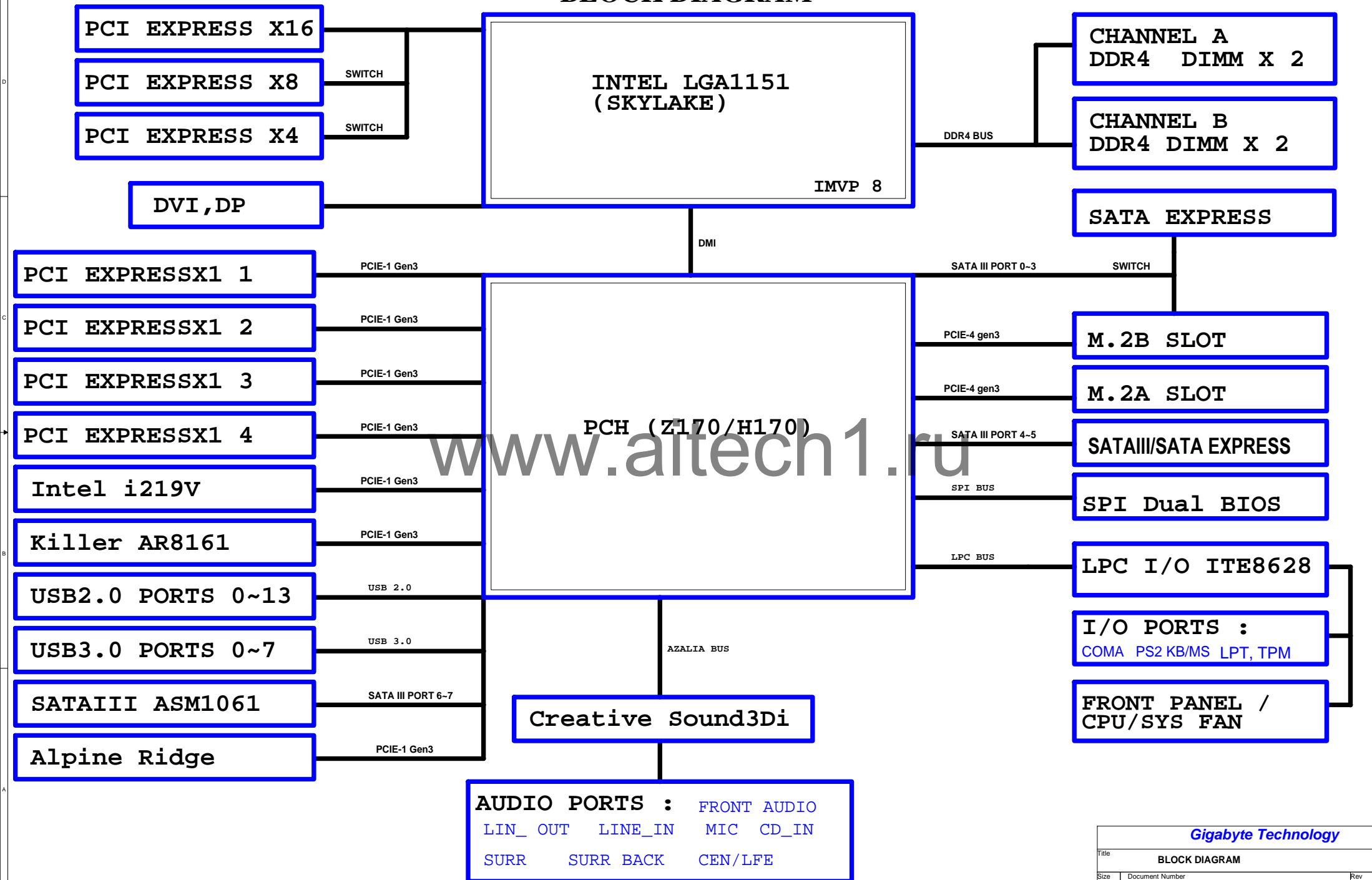
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2

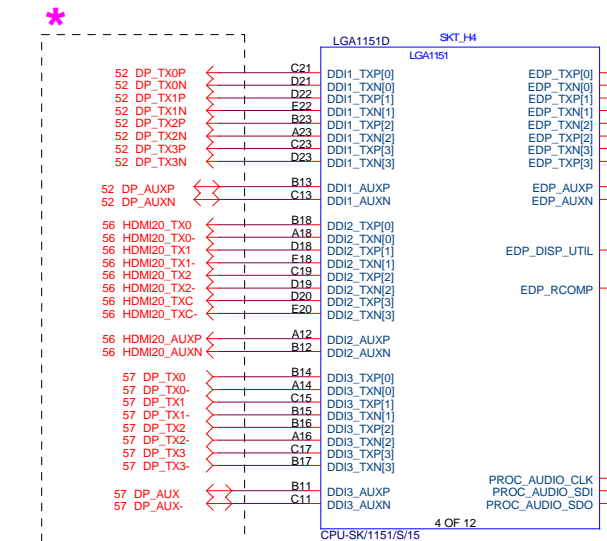
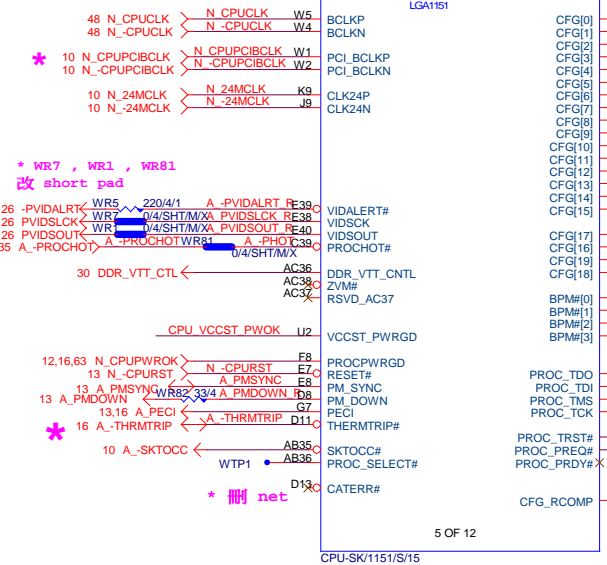
of

67

# BLOCK DIAGRAM



From SKL\_0.2B

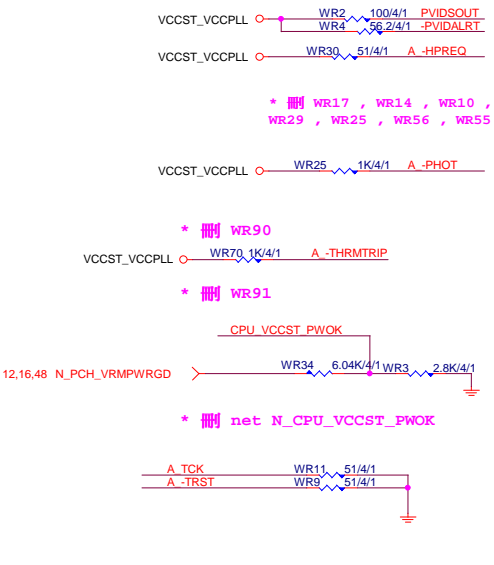


G-15u : (CPU-SK/1151/S/15)  
10SC1-F01151-11R / 10SC1-F01151-12R  
G-FL : (CPU-SK/1151/S/GF)  
10SC1-F01151-21R / 10SC1-F01151-22R

檢查組態調整線路  
The CFG signals  
default value of  
'1'

\* 刪 net

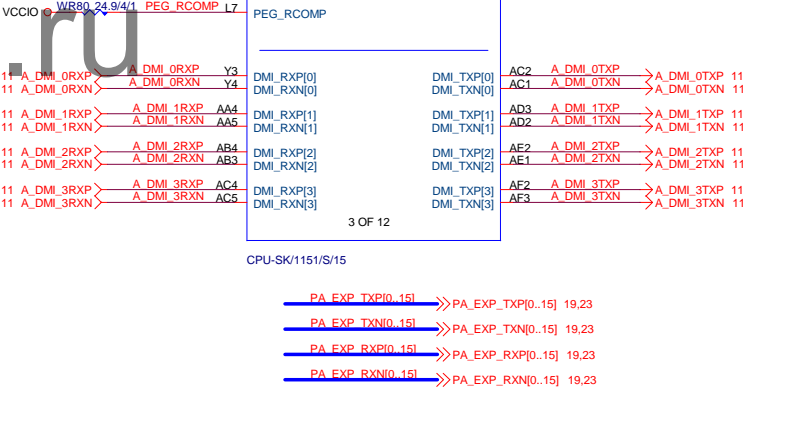
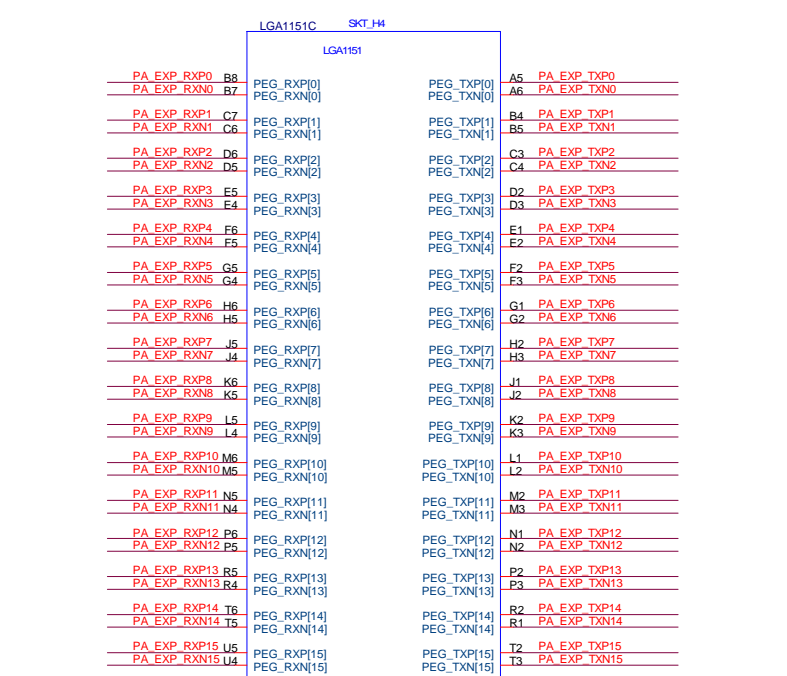
\* 刪 net



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



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  
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immediately following RESET#;0=PEG Wait  
for BIOS

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

Gigabyte Technology		
CPU LGA1151-A		
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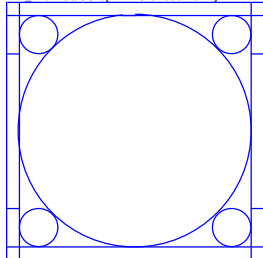
\* 改DDR4 net

DDR CHANNEL  
A

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LGA1151

ILM\_BP/1156/CSP/[12KRC-0F0001-61R]

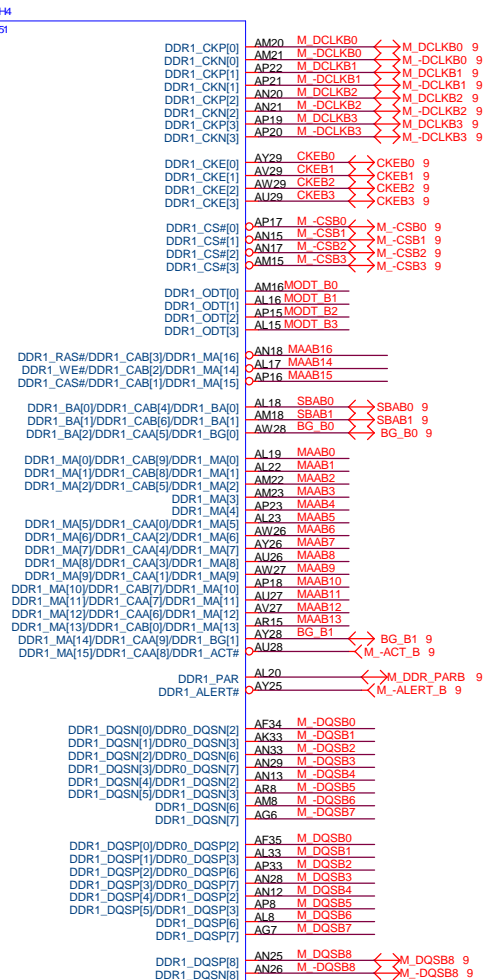
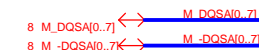
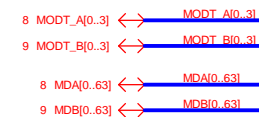


Need check the new CPU ME

DDR CHANNEL  
B

2 OF 12

CPU-SK/1151/S/15



**Gigabyte Technology**

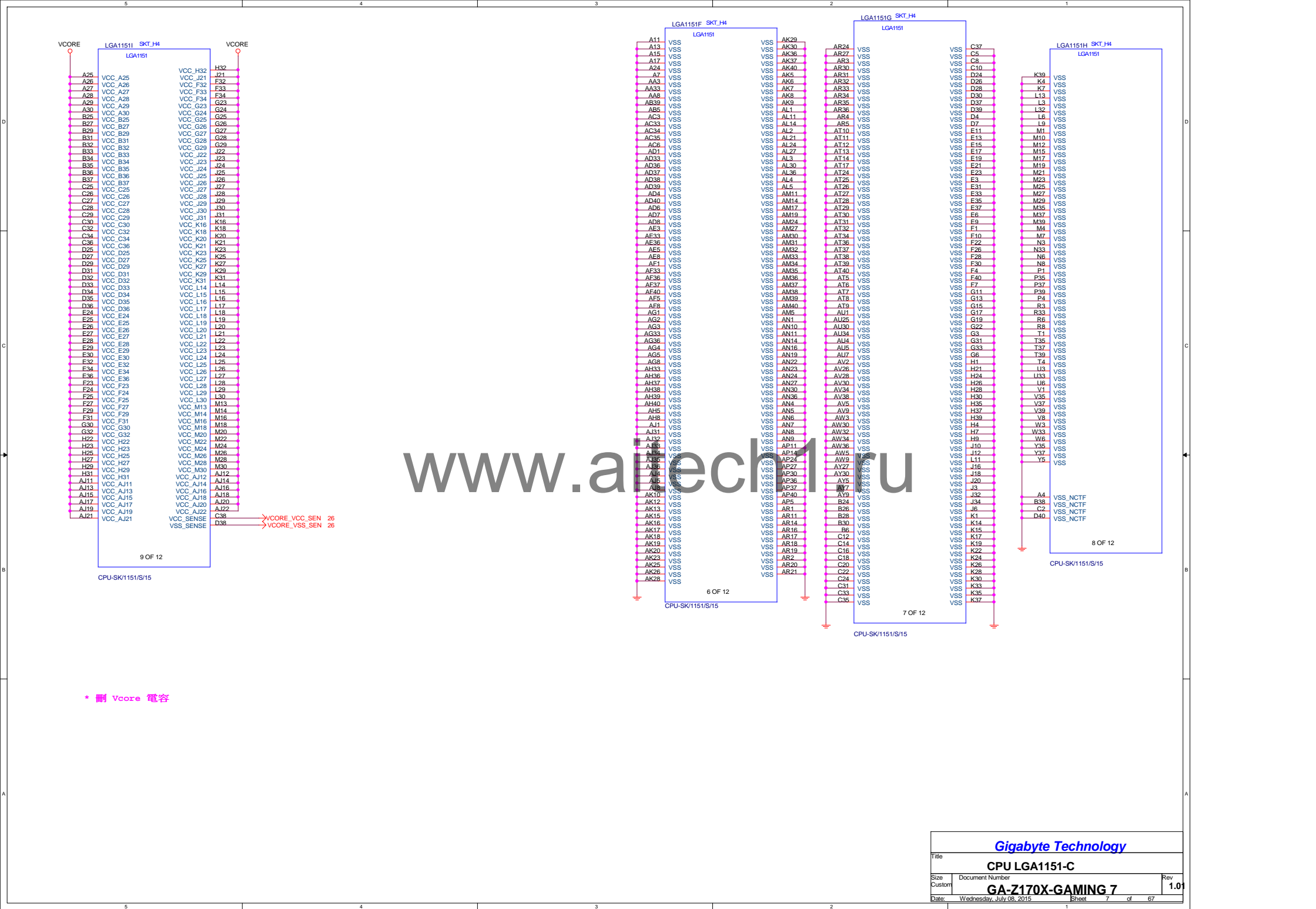
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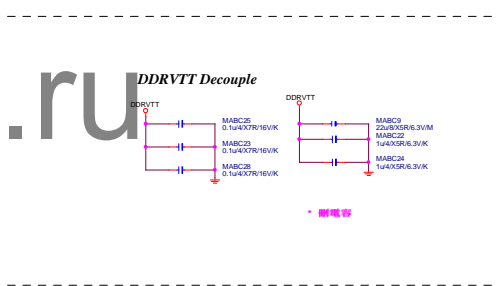
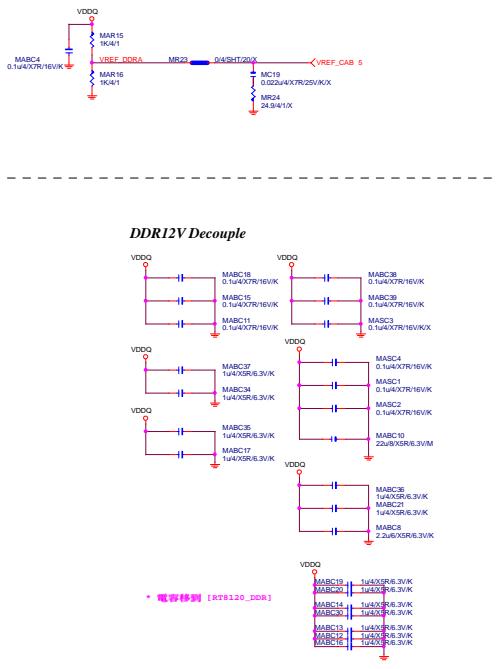
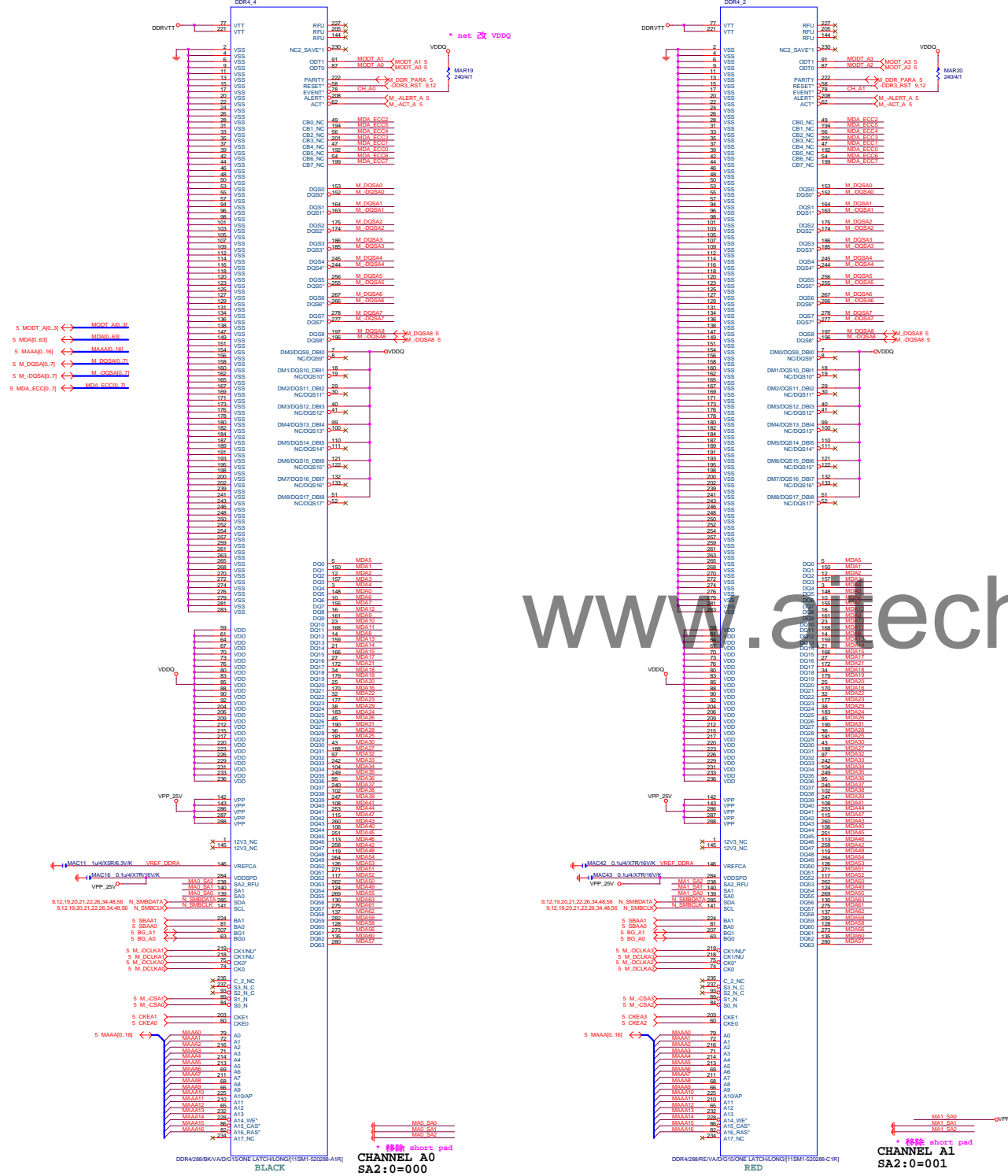
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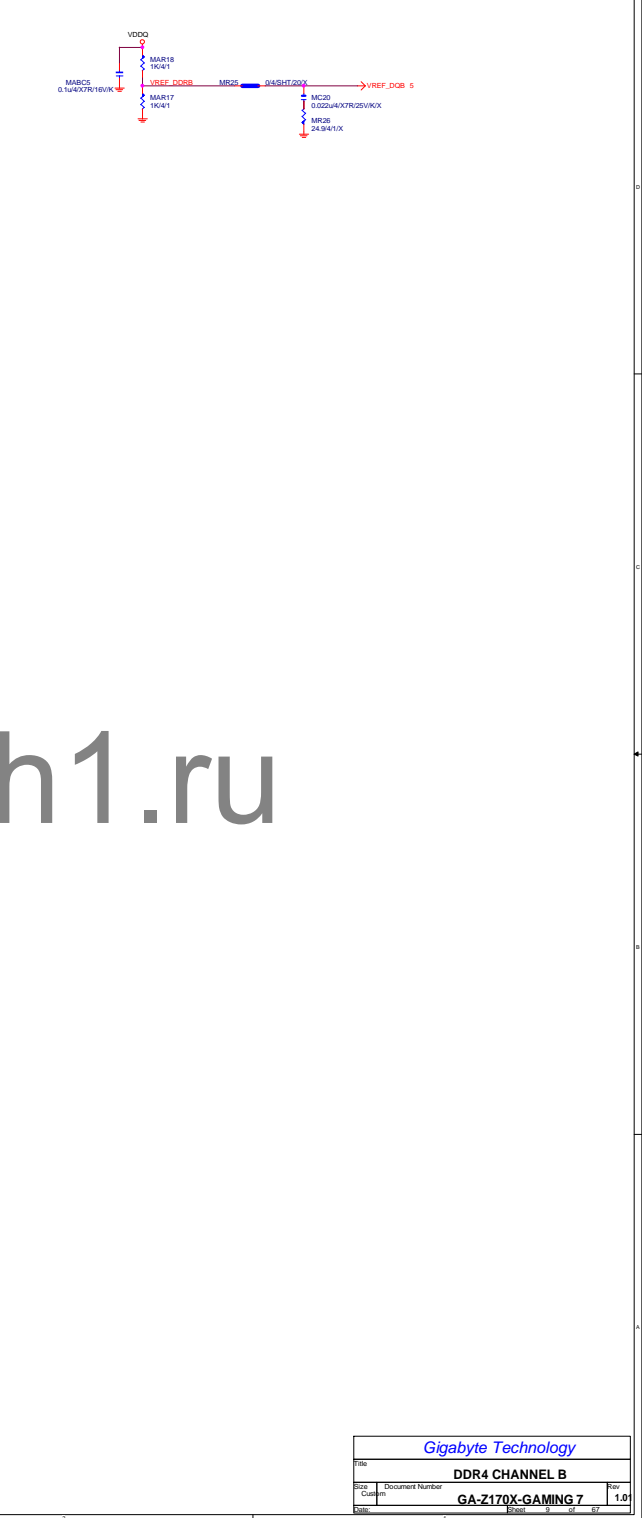
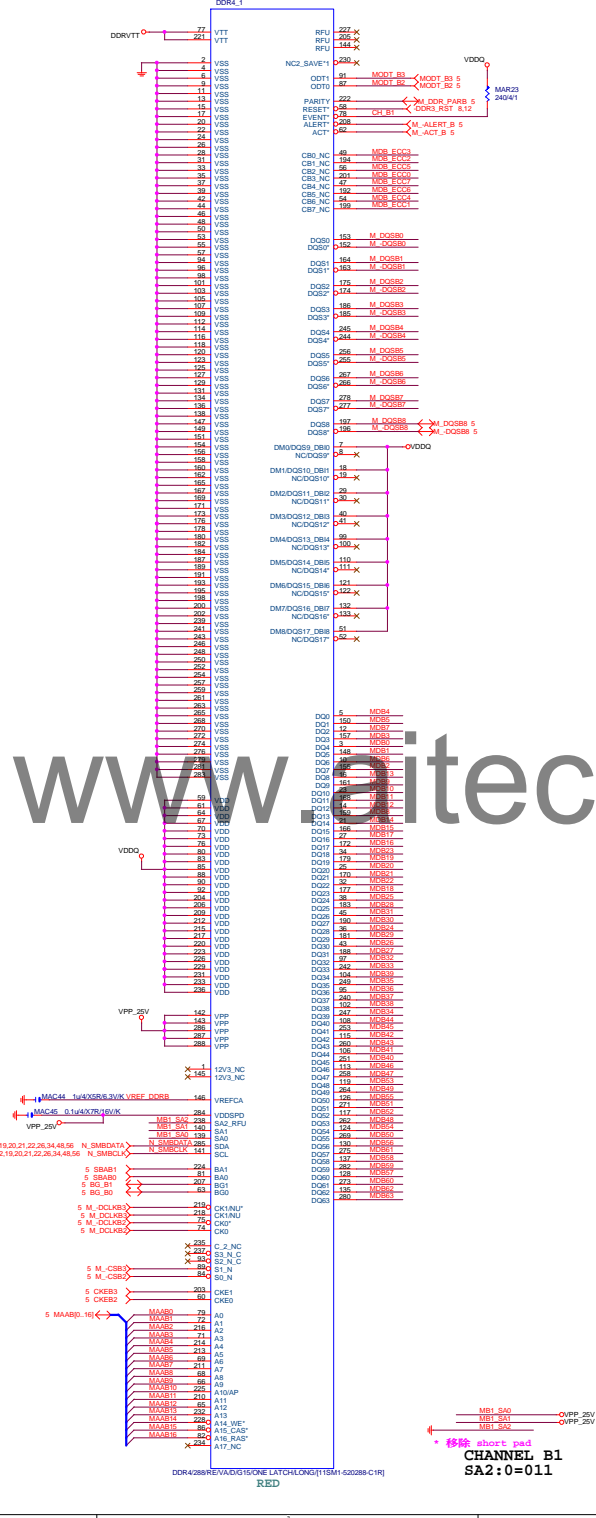
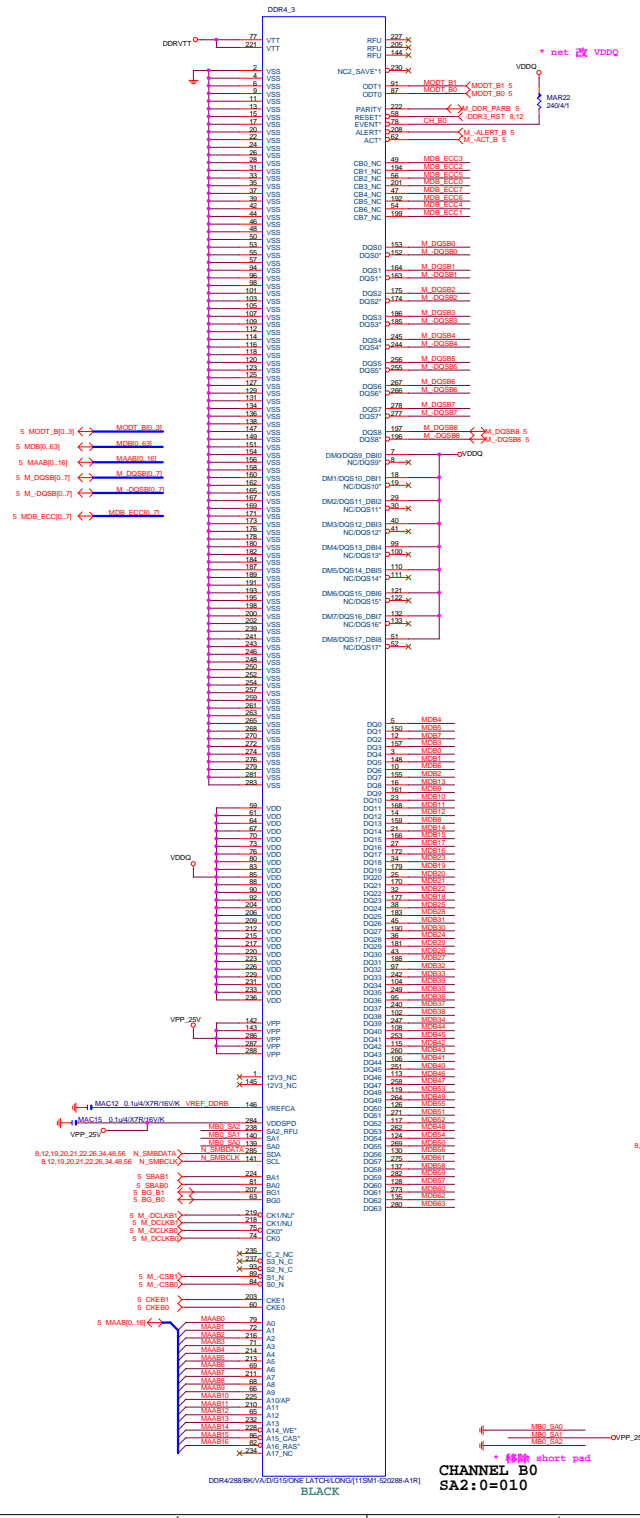
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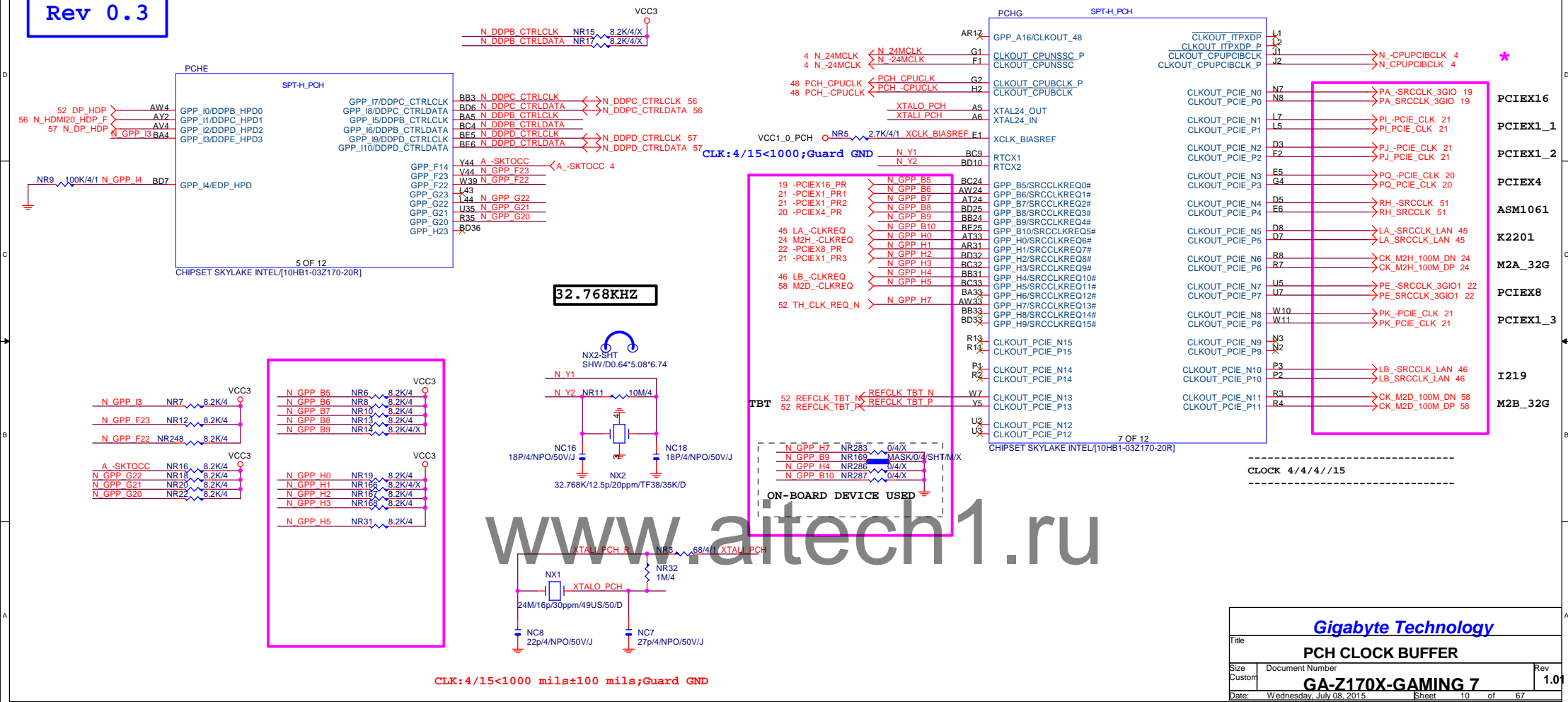




DDR4	Capture Value
SOC series	DDR4/288/BK/VA/S/G15/4ROW/LONG
UD series	DDR4/288/OR/VA/S/G15/4ROW/LONG
Gaming series	DDR4/288/BK/VA/D/G15/ONE LATCH/LONG
GL Sniper	DDR4/288/KE/VA/D/G15/ONE LATCH/LONG



Rev 0.3



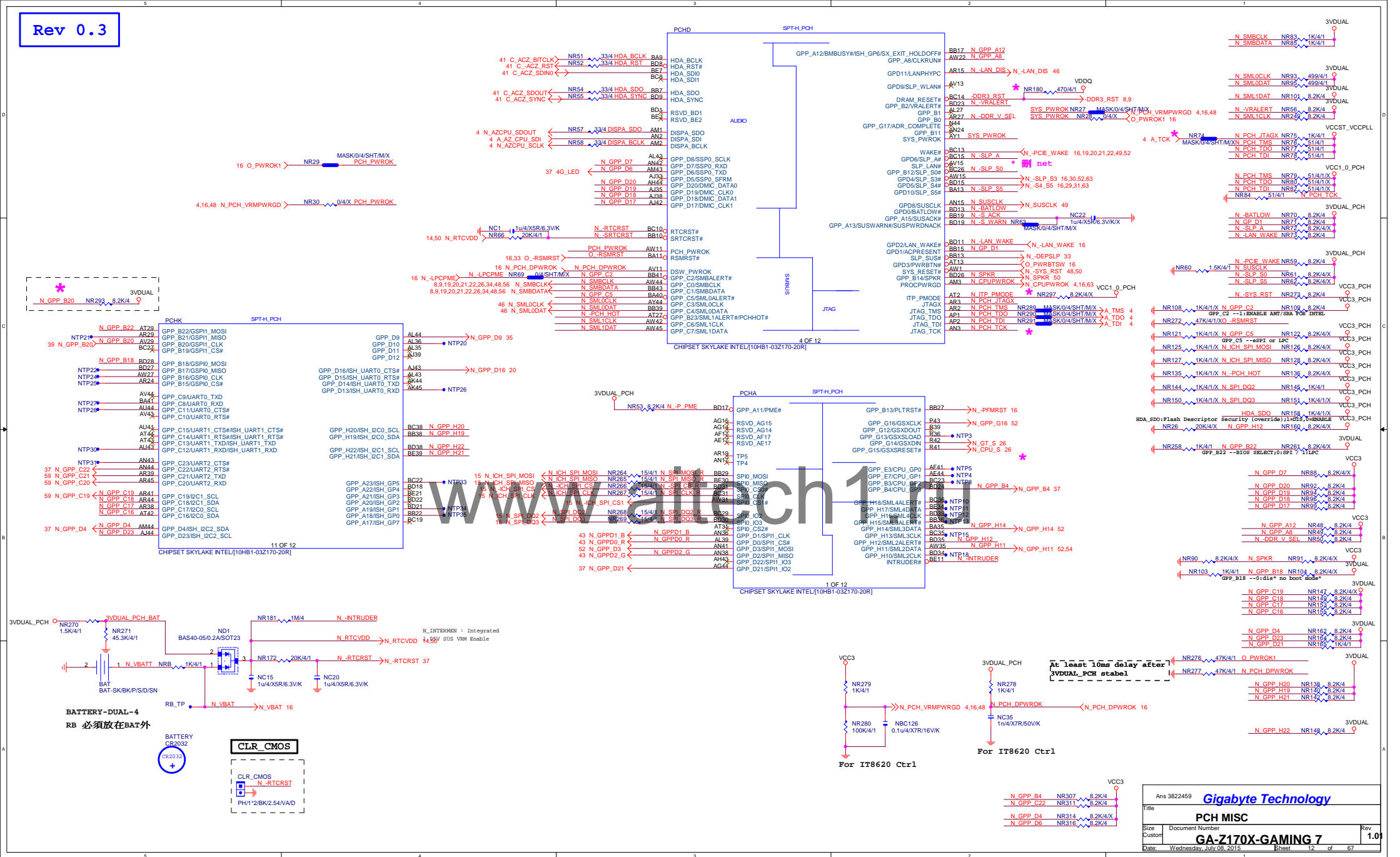




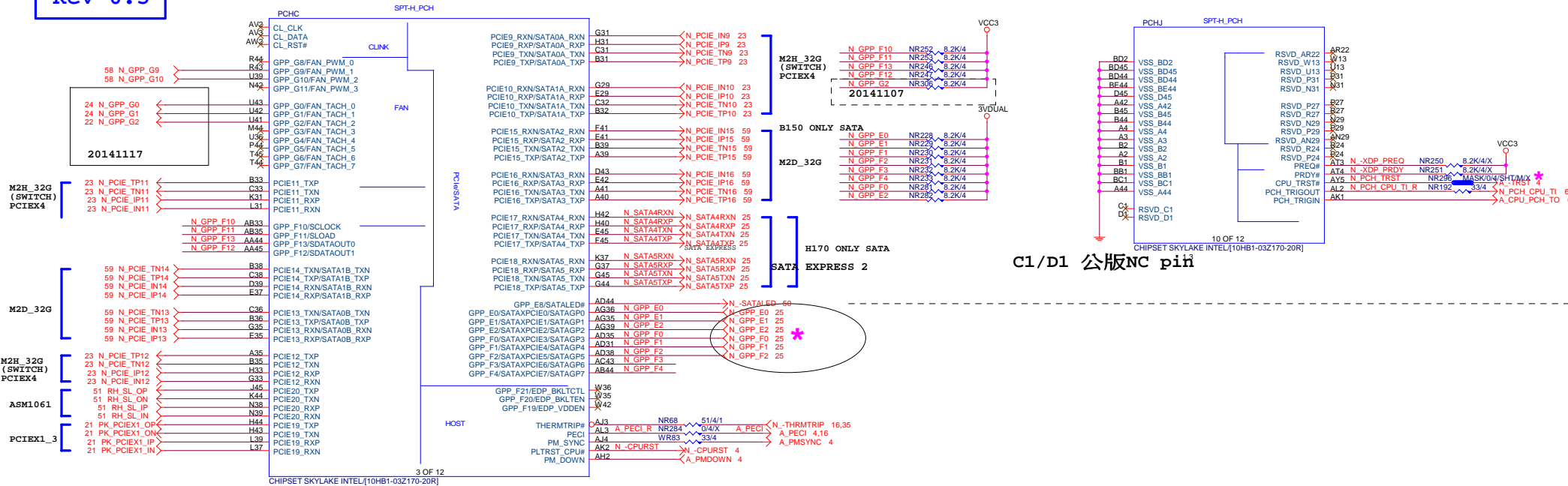
[www.aitech1.ru](http://www.aitech1.ru)

<p align="center"><b>Gigabyte Technology</b></p>			
<p>Title: <b>PCH DMI,USB,PCIE</b></p>			
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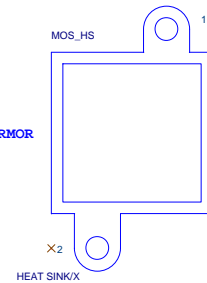
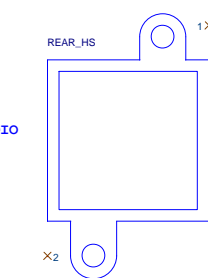
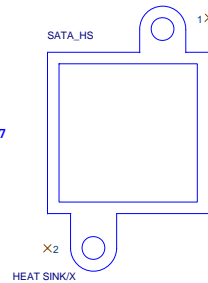
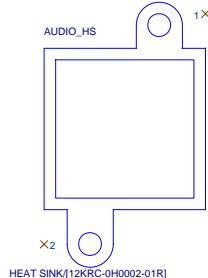
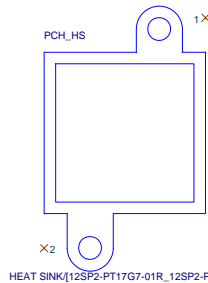


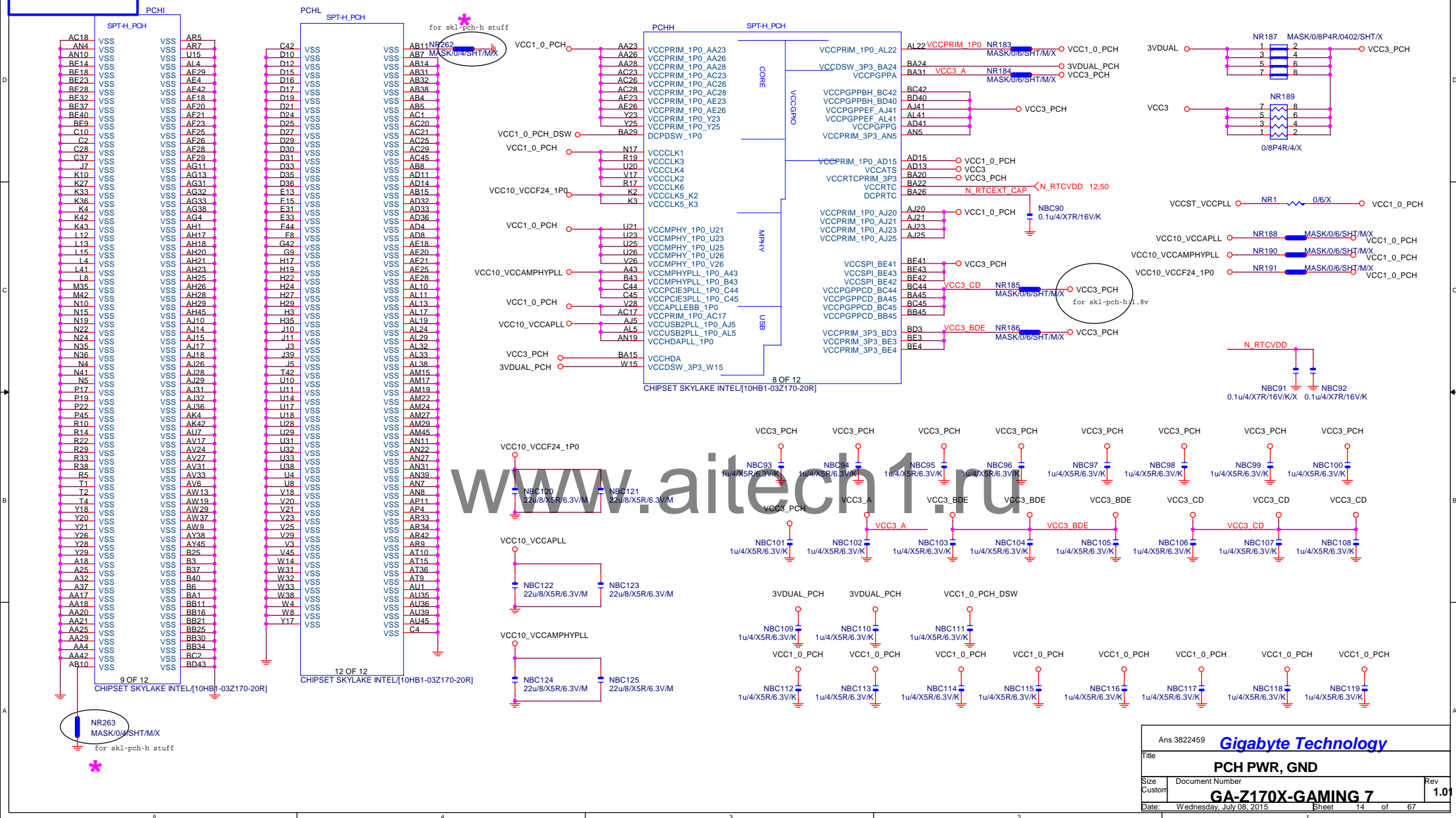
Rev 0.3



裝甲HEATSINK 分成五大部份

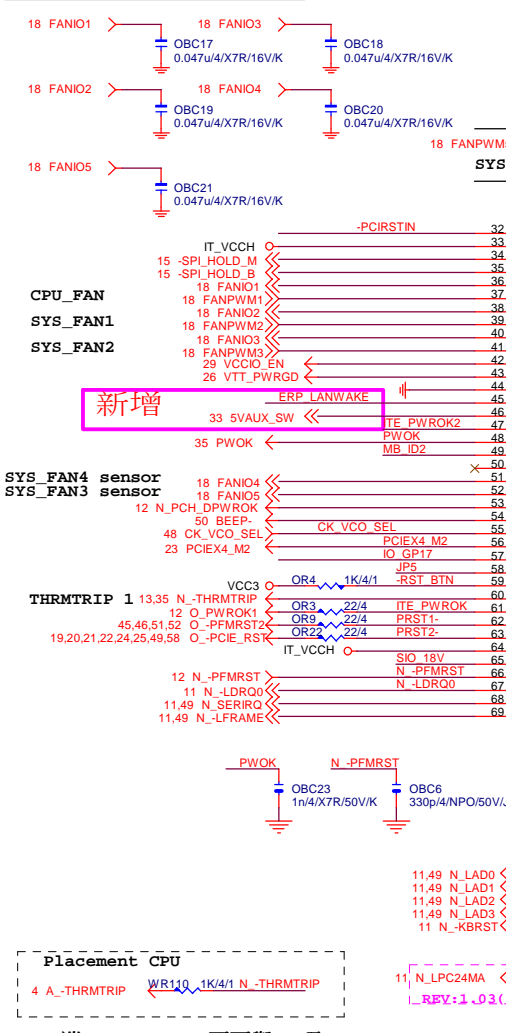
www.aitech1.ru







SIO IT8628BX REV:1.05

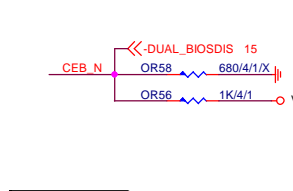


CPU 端 A -THRMTRIP1不可與PCH及SIO N-THRMTRIP直接連接。否則會出現無法拉Low情況。

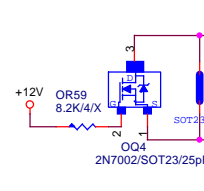
FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL4 FAN_TAC4
OPT FAN or SYS_FAN4	FAN_CTL5 FAN_TAC5
THRMTRIP1	YES PIN56

IT8620E GPIO問題匯整	
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 格部分COM PORT及LPT裝置 蜂鳴器會異常動作。

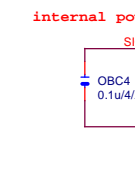
DUAL BIOS OPT STRAP



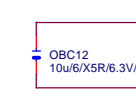
Power leakage



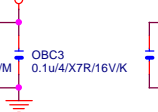
SIO\_18V



SIO CAP



IT8628E\_BX



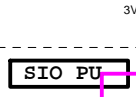
Power leakage



SIO\_18V



PWR SHT



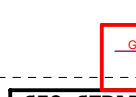
SIO PU



SIO STRAP



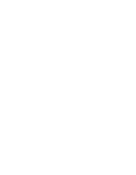
EUP control detect



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

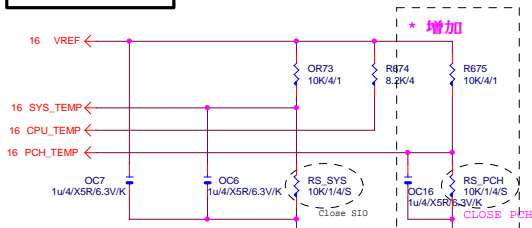
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JP3	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
JP5	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

MB ID



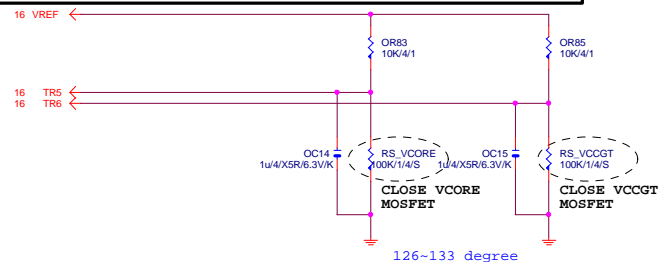
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ITE 8620 LPC IO			
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# TEMP H/W MONITOR

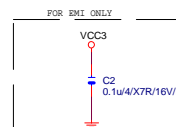
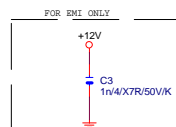
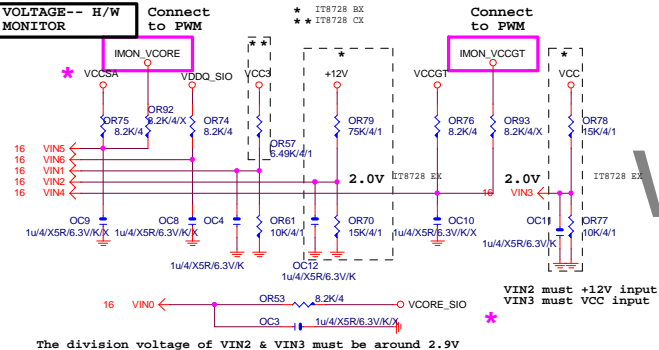


# RS\_VCORE、RS\_VCCGT、CLOSE CPU\_VCORE & VCCGT MOSFET

-PROCHOT:有mos meartsink不用prochot function



# VOLTAGE-- H/W MONITOR



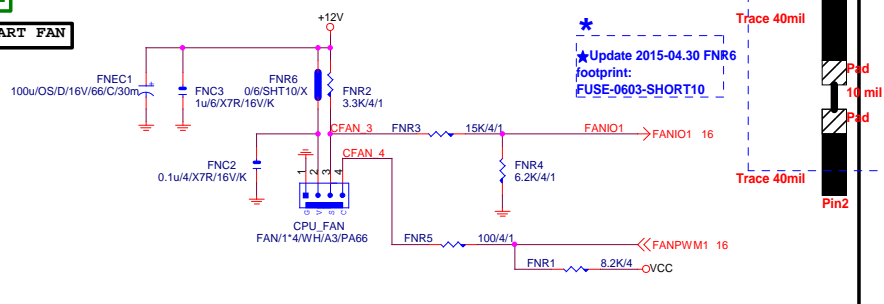
★Update 2015-04.24

Gigabyte Technology

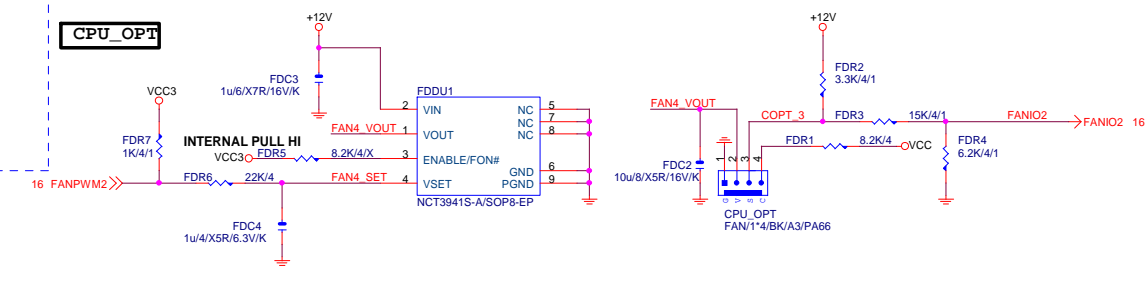
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Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.01	
Date:	Wednesday, July 08, 2015	Sheet	17 of 67



CPU SMART FAN

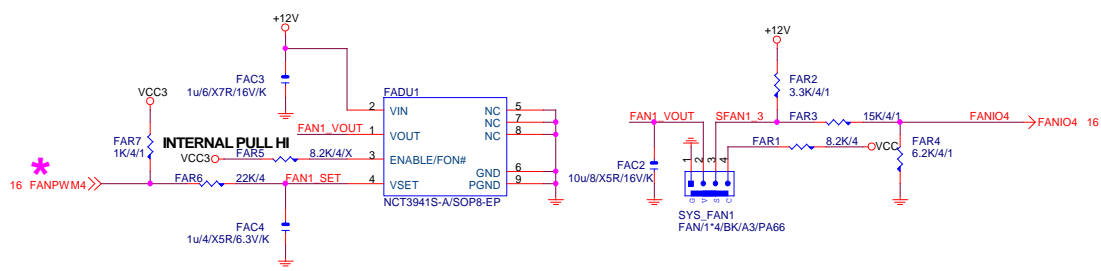


CPU\_OPT

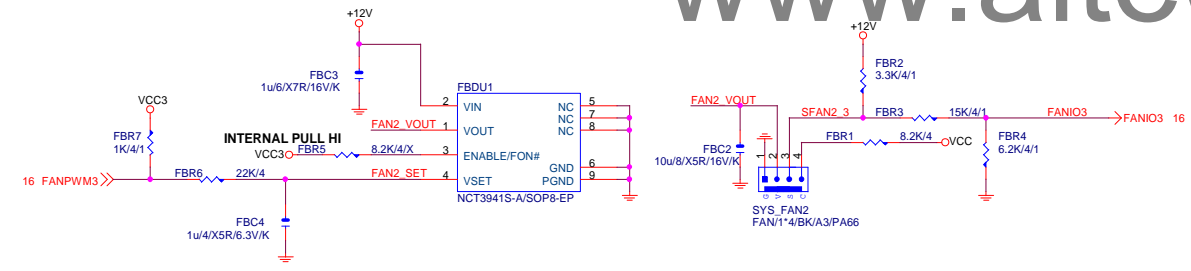


SYSTEM FAN1

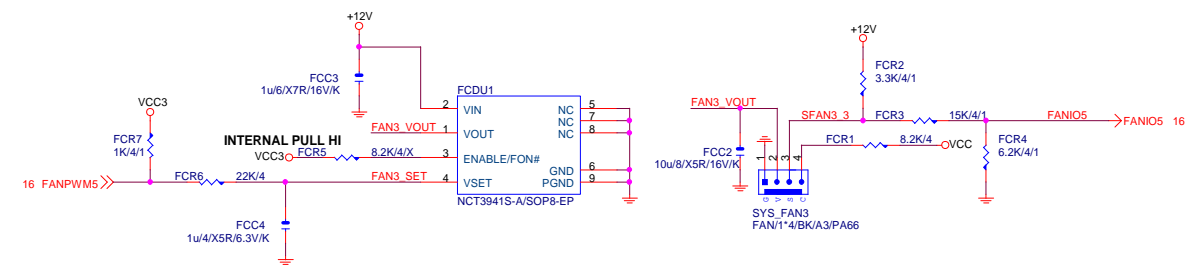
Linear SYS\_FAN  
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2



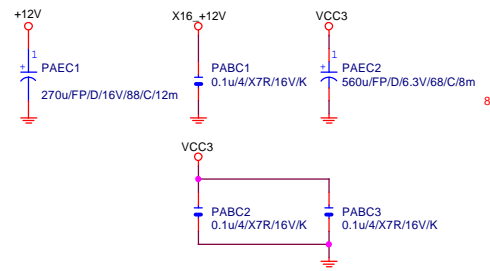
SYSTEM FAN3



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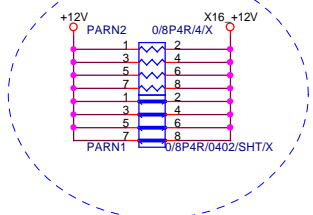


## PCIEX16 CAP



## PCIEX16 PROTECT SHT

```
+12 protect
short-wire test
```



## PCIEX16 AC CAP

PA EXP TXP0	PA05	0.22u4x5R5.6/3V/K	PA EXP TXP0 C
PA EXP TXP1	PA06	0.22u4x5R5.6/3V/K	PA EXP TXP0 C
PA EXP TXP1	PA06	0.22u4x5R5.6/3V/K	PA EXP TXP1 C
PA EXP TXP1	PA07	0.22u4x5R5.6/3V/K	PA EXP TXP1 C
PA EXP TXP2	PA08	0.22u4x5R5.6/3V/K	PA EXP TXP2 C
PA EXP TXP2	PA09	0.22u4x5R5.6/3V/K	PA EXP TXP2 C
PA EXP TXP3	PA10	0.22u4x5R5.6/3V/K	PA EXP TXP3 C
PA EXP TXP3	PA11	0.22u4x5R5.6/3V/K	PA EXP TXP3 C
PA EXP TXP4	PA12	0.22u4x5R5.6/3V/K	PA EXP TXP4 C
PA EXP TXP4	PA13	0.22u4x5R5.6/3V/K	PA EXP TXP4 C
PA EXP TXP5	PA14	0.22u4x5R5.6/3V/K	PA EXP TXP5 C
PA EXP TXP5	PA15	0.22u4x5R5.6/3V/K	PA EXP TXP5 C
PA EXP TXP6	PA16	0.22u4x5R5.6/3V/K	PA EXP TXP6 C
PA EXP TXP6	PA17	0.22u4x5R5.6/3V/K	PA EXP TXP6 C
PA EXP TXP7	PA18	0.22u4x5R5.6/3V/K	PA EXP TXP7 C
PA EXP TXP7	PA19	0.22u4x5R5.6/3V/K	PA EXP TXP7 C
PA EXP SW TXP8	PA21	0.22u4x5R5.6/3V/K	PA EXP SW TXP8 C
PA EXP SW TXP8	PA20	0.22u4x5R5.6/3V/K	PA EXP SW TXP8 C
PA EXP SW TXP9	PA22	0.22u4x5R5.6/3V/K	PA EXP SW TXP9 C
PA EXP SW TXP9	PA23	0.22u4x5R5.6/3V/K	PA EXP SW TXP9 C
PA EXP SW TXP10	PA24	0.22u4x5R5.6/3V/K	PA EXP SW TXP10 C
PA EXP SW TXP10	PA25	0.22u4x5R5.6/3V/K	PA EXP SW TXP10 C
PA EXP SW TXP11	PA26	0.22u4x5R5.6/3V/K	PA EXP SW TXP11 C
PA EXP SW TXP12	PA27	0.22u4x5R5.6/3V/K	PA EXP SW TXP11 C
PA EXP SW TXP12	PA28	0.22u4x5R5.6/3V/K	PA EXP SW TXP12 C
PA EXP SW TXP13	PA30	0.22u4x5R5.6/3V/K	PA EXP SW TXP13 C
PA EXP SW TXP13	PA31	0.22u4x5R5.6/3V/K	PA EXP SW TXP13 C
PA EXP SW TXP14	PA32	0.22u4x5R5.6/3V/K	PA EXP SW TXP14 C
PA EXP SW TXP14	PA33	0.22u4x5R5.6/3V/K	PA EXP SW TXP14 C
PA EXP SW TXP15	PA34	0.22u4x5R5.6/3V/K	PA EXP SW TXP15 C
PA EXP SW TXP15	PA35	0.22u4x5R5.6/3V/K	PA EXP SW TXP15 C

PCI-E REV:1.1--&gt; 2.5GHZ

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

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

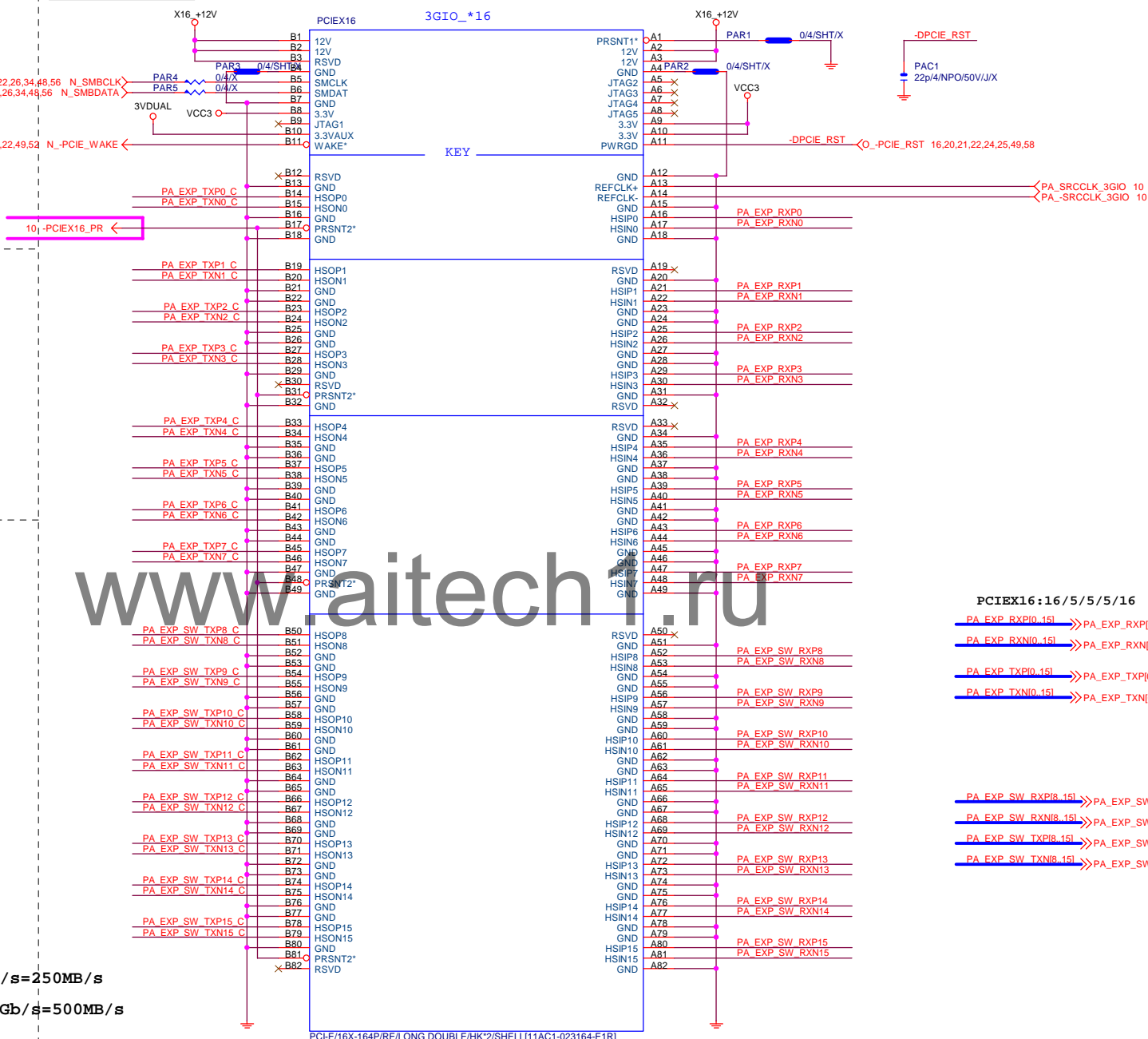
PCE-E X16(單向) BANDWIDTH=2.5GHz\*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--&gt; 5GHZ

PCIEX16 SLOT

## PCIESLOT-164STH



PCI-E/16X-164P/RE/LONG DOUBLE/HK\*2/SHELL[11AC1-023164-E1R]

紅色

PCIEX16:16/5/5/5/16

PA EXP RXP[0..15]  $\gg$  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

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## Gigabyte Technology

DCI EXPRESS \* 16

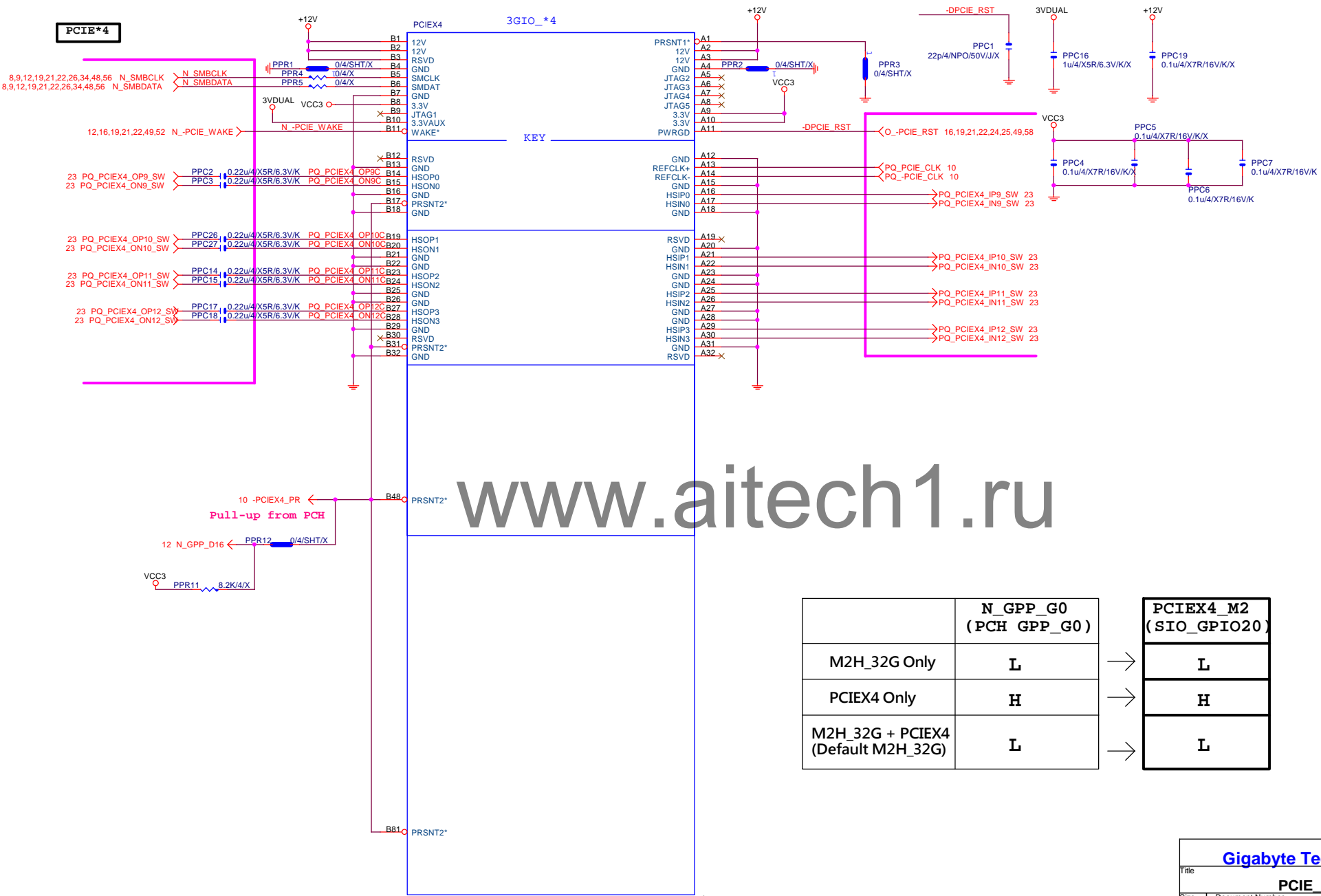
Document Number **CA 7170X CAMINA**

GA-Z170X-GAMING

Wednesday, July 08, 2015

# 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

Rev 0.2

The diagram illustrates the internal wiring and termination for three PCI Express 1.1 ports (PCIEX1\_1, PCIEX1\_2, PCIEX1\_3) connected to a 3GIO\_X1 header. Each port is shown with its respective signal pins, power pins, and internal components like resistors and capacitors.

**PCIEX1\_1:** Shows connections for PIR1, PIR2, PIR3, and PIR4. It includes a KEY pin and a VCC3 pin. The diagram shows the internal routing and termination for each port.

**PCIEX1\_2:** Shows connections for PJR1, PJR2, PJR3, and PJR4. It includes a KEY pin and a VCC3 pin. The diagram shows the internal routing and termination for each port.

**PCIEX1\_3:** Shows connections for PKR1, PKR2, PKR3, and PKR4. It includes a KEY pin and a VCC3 pin. The diagram shows the internal routing and termination for each port.

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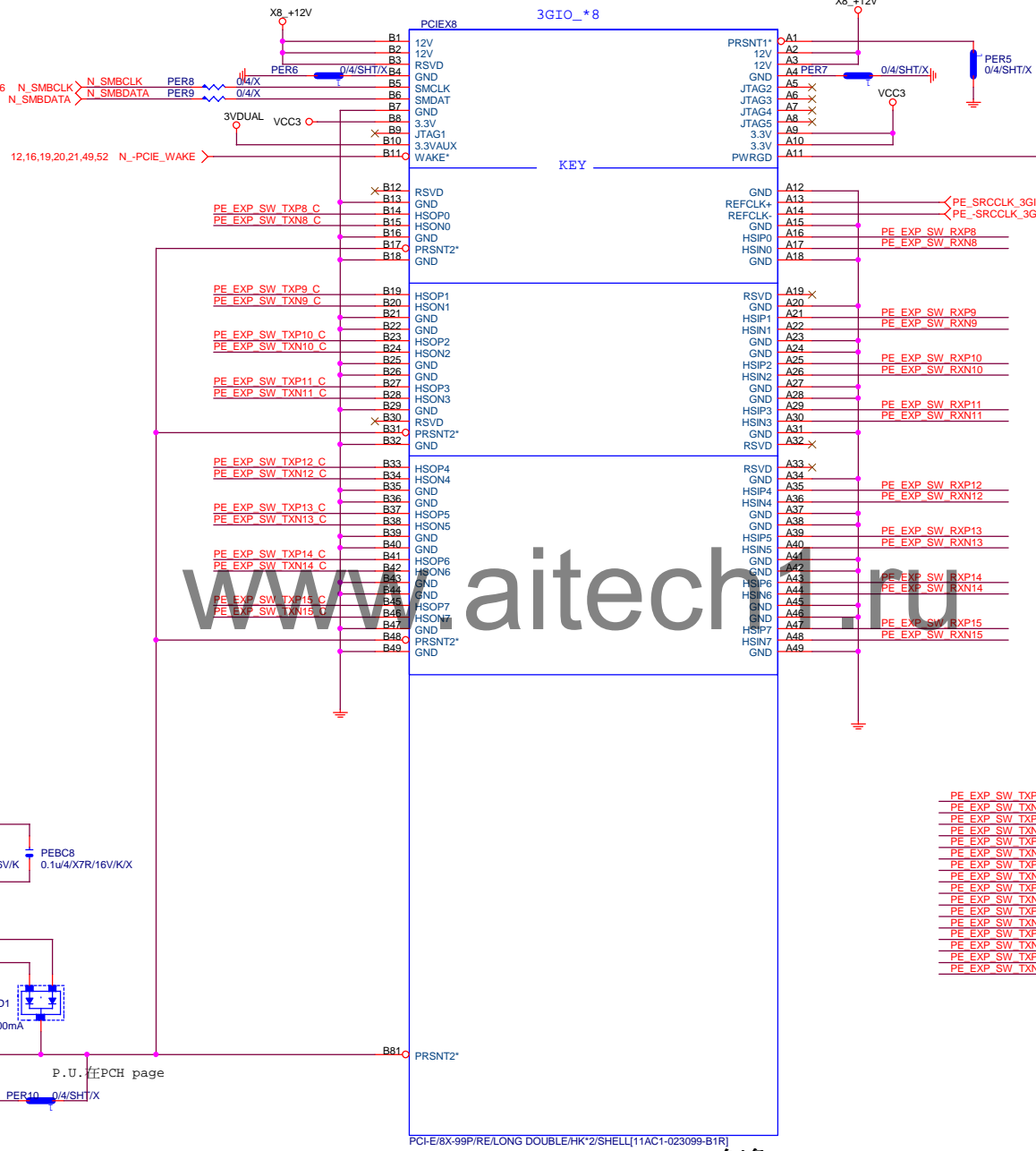
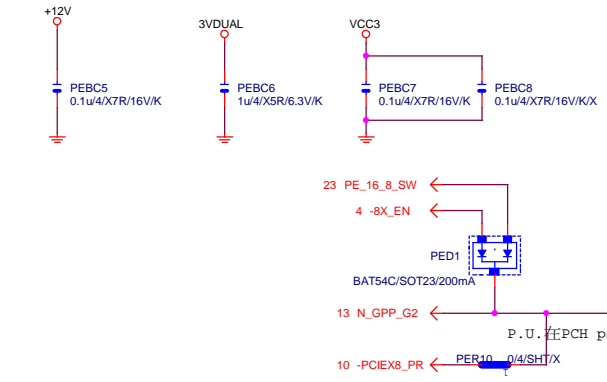
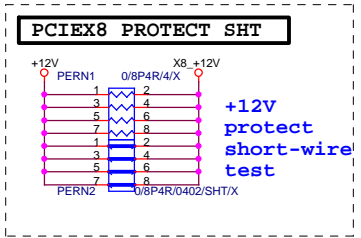
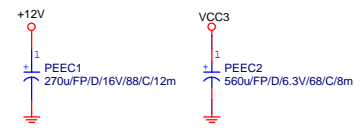
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PCIE_X1 1,2			
Size	Document Number	Rev	
Custom		1.01	
Date:	Wednesday, July 08, 2015	Sheet	21 of 67

Title			
PCIE_X1 1,2			
Size	Document Number		Rev
Custom	GA-Z170X-GAMING 7		1.01
Date:	Wednesday, July 08, 2015	Sheet 21 of 67	

Size	Document Number	Rev
Custom	CA 3472X GAINING	1.01

	<b>GA-Z170X-GAMING 7</b>			1.01
Date:	Wednesday, July 08, 2015	Sheet	21	of 67

Date: Wednesday, July 08, 2015 Sheet 21 of 67



PE EXP SW RXP8.15] >>> PE\_EXP\_SW\_RXP[8..15] 23  
PE EXP SW RXN8.15] >>> PE\_EXP\_SW\_RXN[8..15] 23  
PE EXP SW TXP8.15] >>> PE\_EXP\_SW\_TXP[8..15] 23  
PE EXP SW TXN8.15] >>> PE\_EXP\_SW\_TXN[8..15] 23

PE EXP SW TXP8	PEC7	0.22u/4/X5R/6.3V/K	PE EXP SW TXP8_C
PE EXP SW TXN8	PEC8	0.22u/4/X5R/6.3V/K	PE EXP SW TXN8_C
PE EXP SW TXP9	PEC9	0.22u/4/X5R/6.3V/K	PE EXP SW TXP9_C
PE EXP SW TXN9	PEC10	0.22u/4/X5R/6.3V/K	PE EXP SW TXN9_C
PE EXP SW TXP10	PEC11	0.22u/4/X5R/6.3V/K	PE EXP SW TXP10_C
PE EXP SW TXN10	PEC12	0.22u/4/X5R/6.3V/K	PE EXP SW TXN10_C
PE EXP SW TXP11	PEC13	0.22u/4/X5R/6.3V/K	PE EXP SW TXP11_C
PE EXP SW TXN11	PEC14	0.22u/4/X5R/6.3V/K	PE EXP SW TXN11_C
PE EXP SW TXP12	PEC15	0.22u/4/X5R/6.3V/K	PE EXP SW TXP12_C
PE EXP SW TXN12	PEC16	0.22u/4/X5R/6.3V/K	PE EXP SW TXN12_C
PE EXP SW TXP13	PEC17	0.22u/4/X5R/6.3V/K	PE EXP SW TXP13_C
PE EXP SW TXN13	PEC18	0.22u/4/X5R/6.3V/K	PE EXP SW TXN13_C
PE EXP SW TXP14	PEC19	0.22u/4/X5R/6.3V/K	PE EXP SW TXP14_C
PE EXP SW TXN14	PEC20	0.22u/4/X5R/6.3V/K	PE EXP SW TXN14_C
PE EXP SW TXP15	PEC21	0.22u/4/X5R/6.3V/K	PE EXP SW TXP15_C
PE EXP SW TXN15	PEC22	0.22u/4/X5R/6.3V/K	PE EXP SW TXN15_C

PCI-E/8X-99P/RE/LONG DOUBLE/HK\*2/SHELL[11AC1-023099-B1R]  
RED 紅色

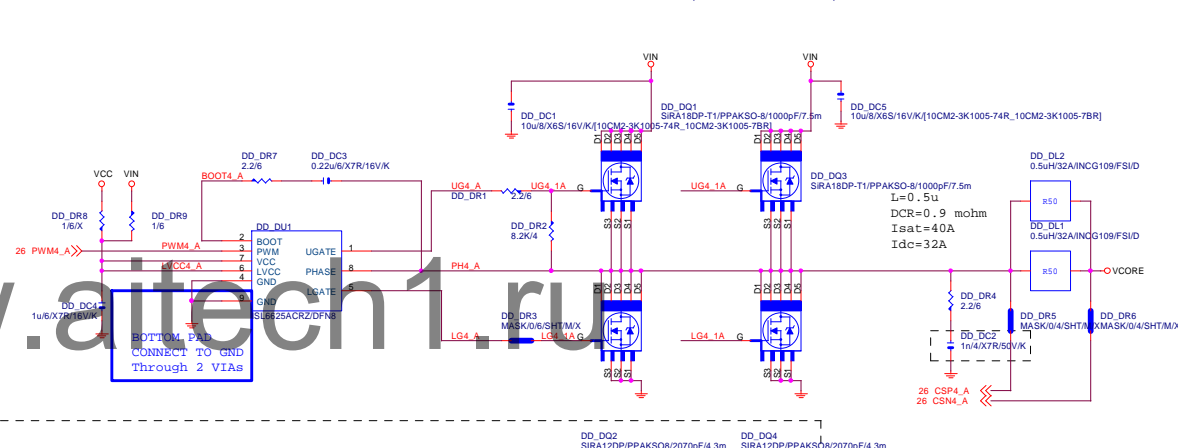
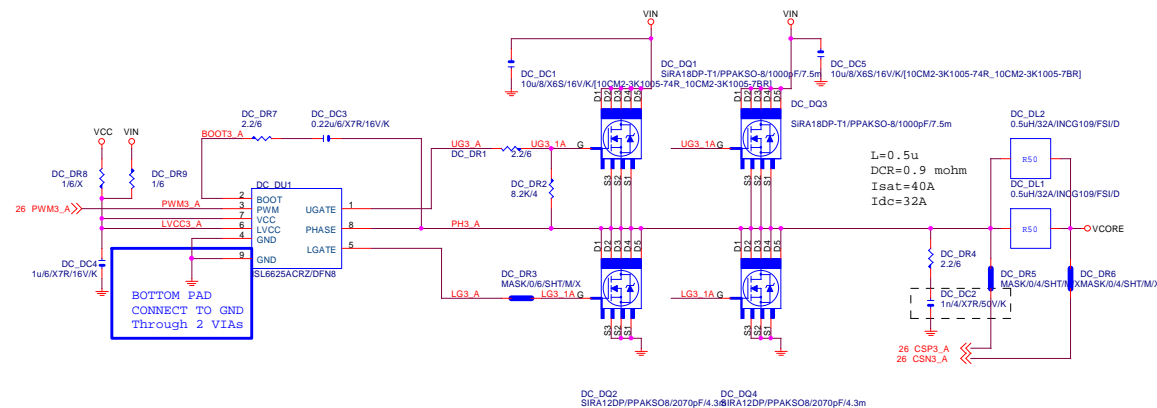
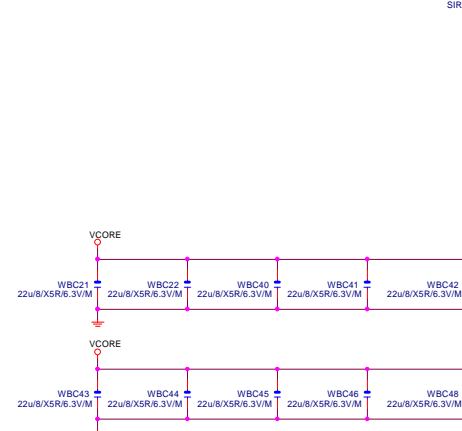
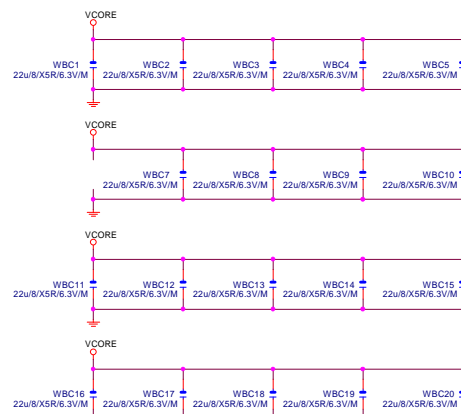









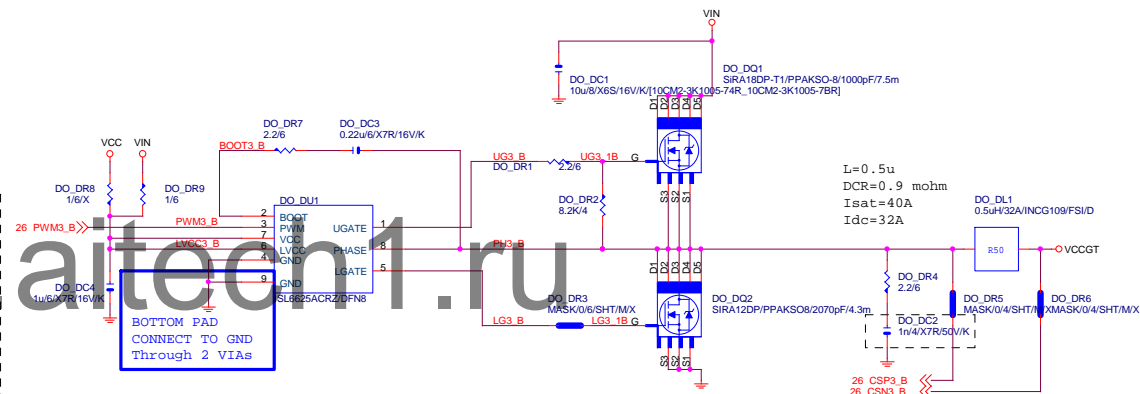
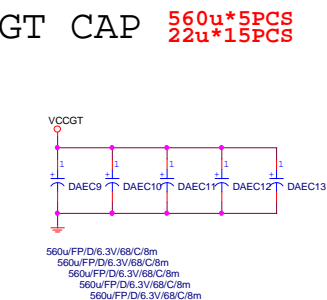



[illegible]

Detailed description: The schematic shows a power supply circuit. It starts with an input terminal V12 connected to a blue rectangular component labeled 'DALI 0.5uH/32A/INCG109/FSI/D'. This is in series with a resistor labeled 'R50'. After the resistor, the circuit splits into three parallel branches. Each branch contains a diode (DAE14, DAE15, and DAE16 respectively) in series with a capacitor (all labeled '270uF/16V/88C/12m'). The output of these branches is connected to a terminal labeled VIN.

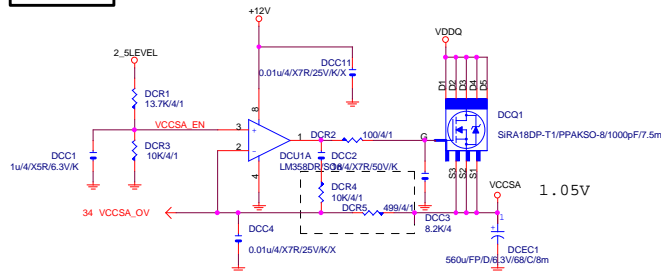
			
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Date:	Wednesday, July 08, 2015	Sheet	27 of 67

## GT CAP

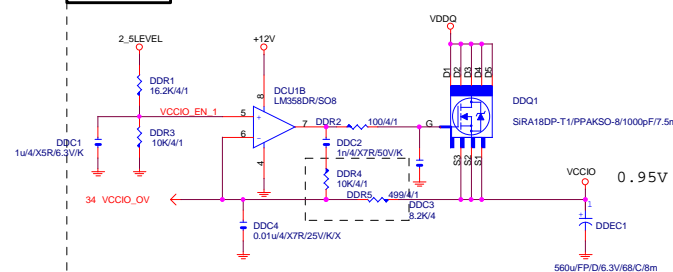


			
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Custom	GA-Z170X-GAMING 7	1.01	
Date:	Wednesday, July 08, 2015	Sheet	28 of 67

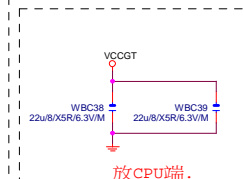
# VCCSA



# VCCIO

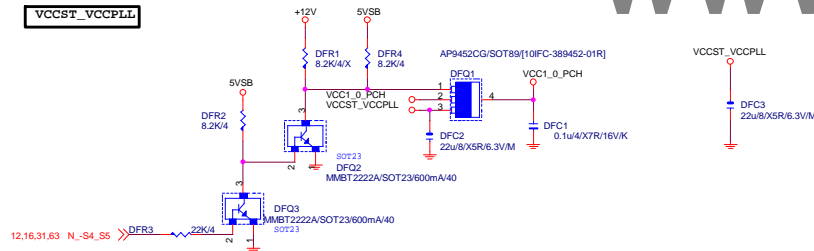


Connect to IT8620



放CPU端.

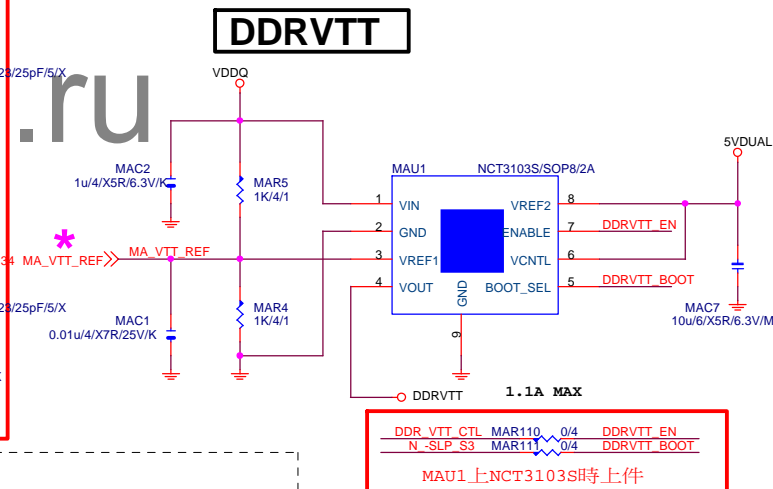
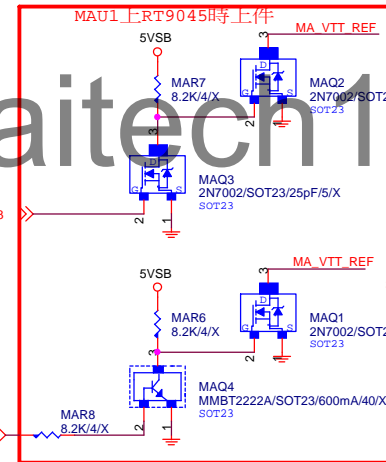
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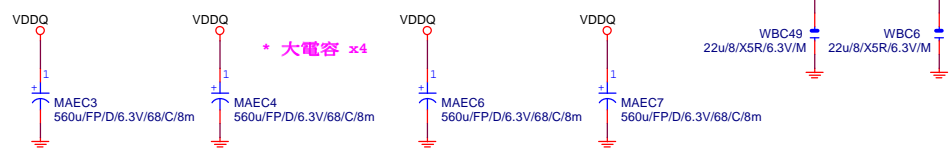
**GIGABYTE**

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Size	Document Number	GA-Z170X-GAMING 7
Custom	Rev	1.01
Date	Wednesday, July 08, 2015	Sheet 29 of 67

## DDR4



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



DDRVTT CAP

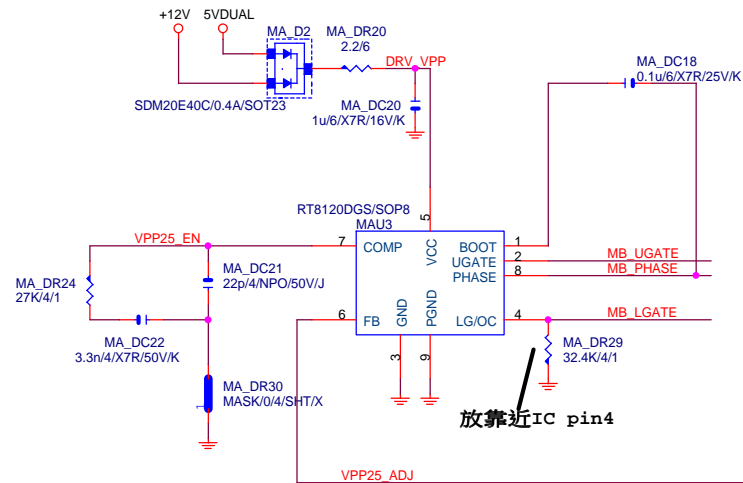


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Size	Document Number	Rev	
Custom	<b>GA-Z170X-GAMING 7</b>	<b>1.01</b>	
Date:	Wednesday, July 08, 2015	Sheet	30 of 67

REV:0.7

VPP\_25V

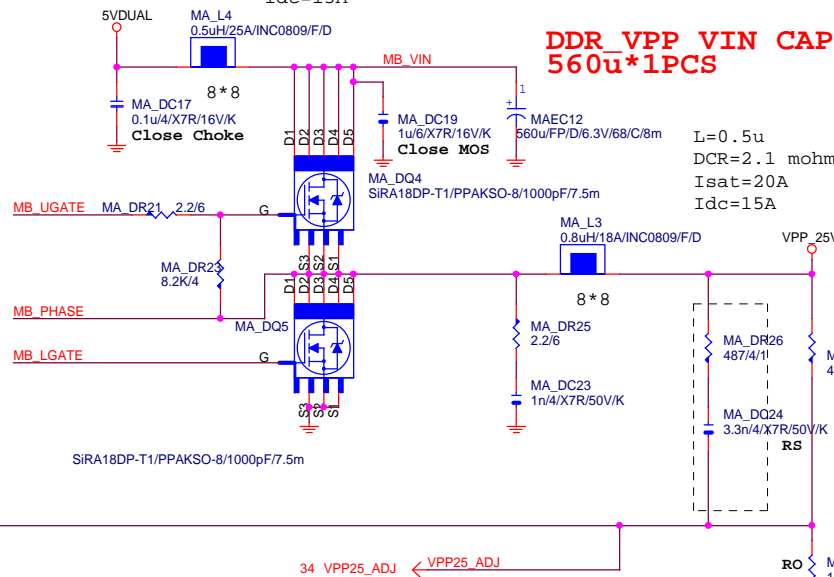


放靠近IC pin4

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

CHOKE與CAP料號可變

DDR\_VPP VIN CAP  
560u\*1PCS



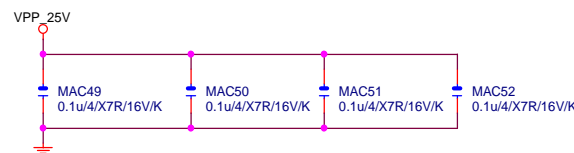
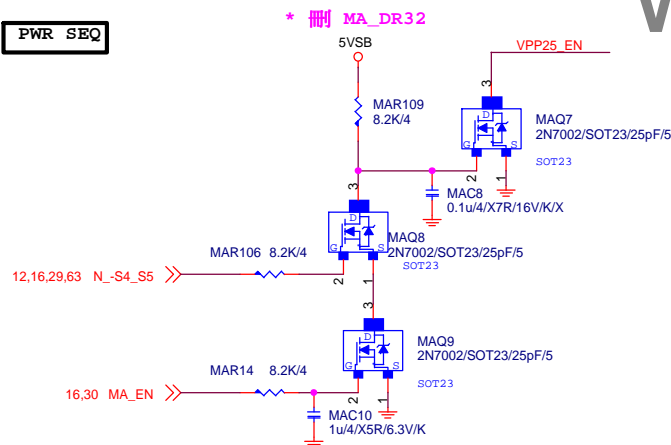
SUPPORT DDR4 2.5V

25A MAX

Remote sense請從最重的負載端點拉回

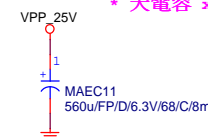
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PWR\_SEQ



VPP CAP 560u\*1PCS

\* 大電容 x1

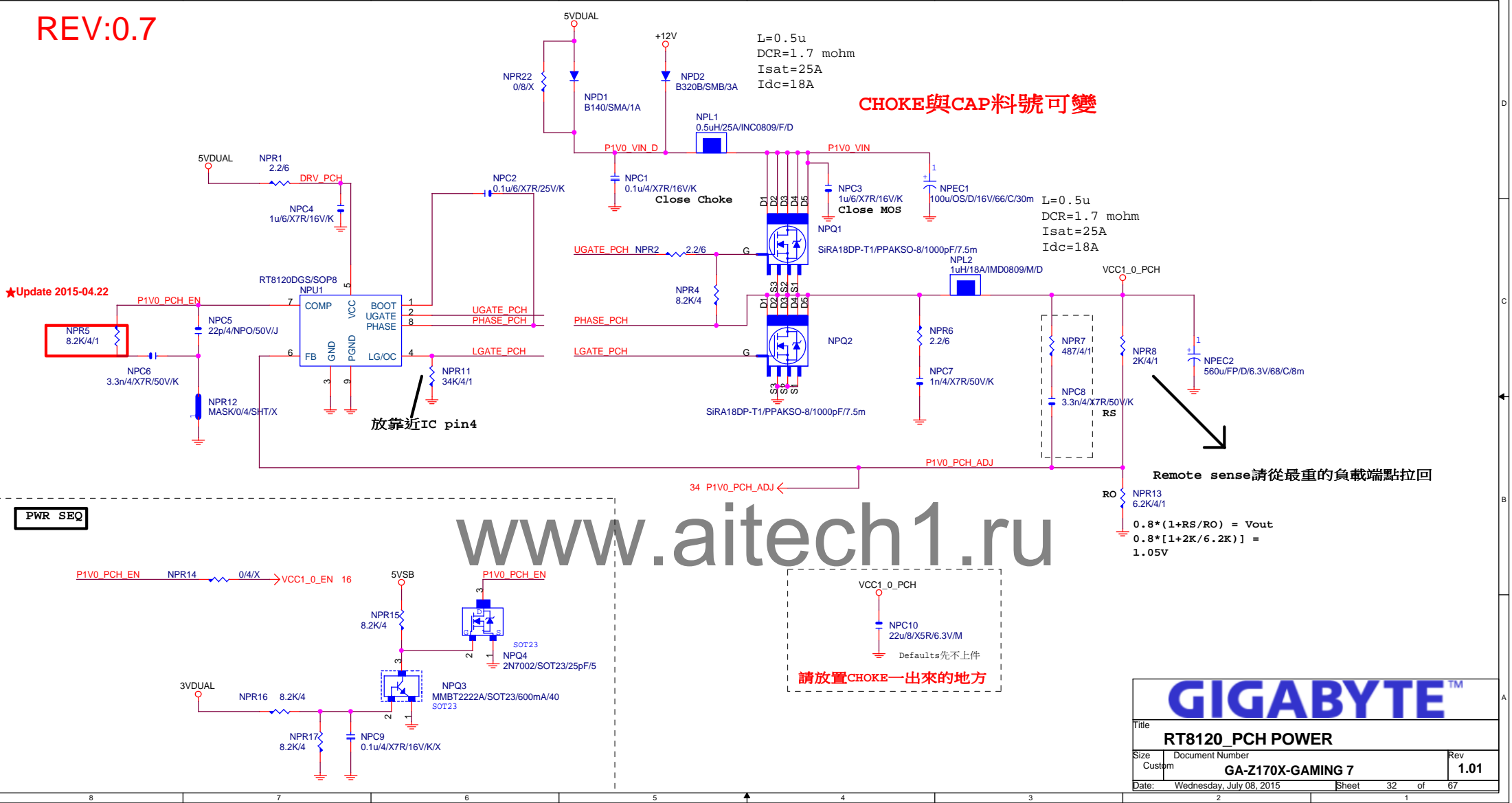


GIGABYTE™

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RT8120_VPP25 POWER		
Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7	1.01
Date:	Wednesday, July 08, 2015	Sheet 31 of 67



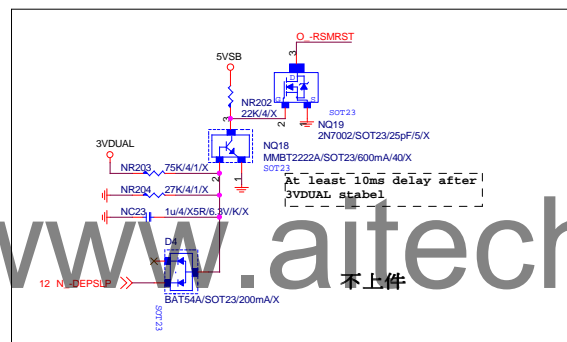
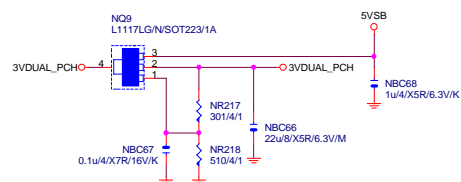
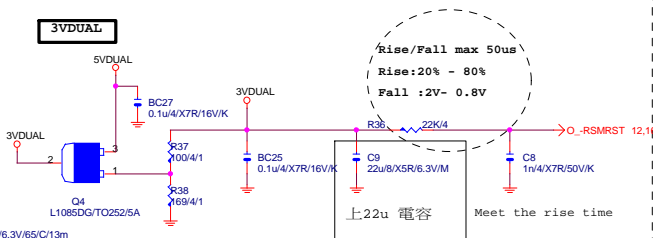
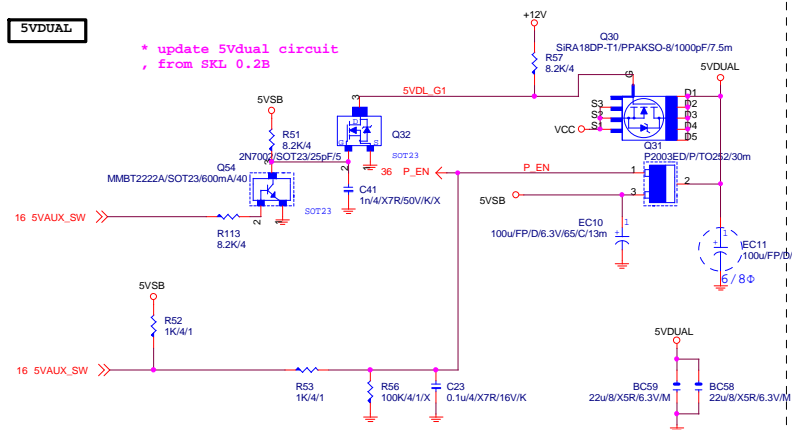
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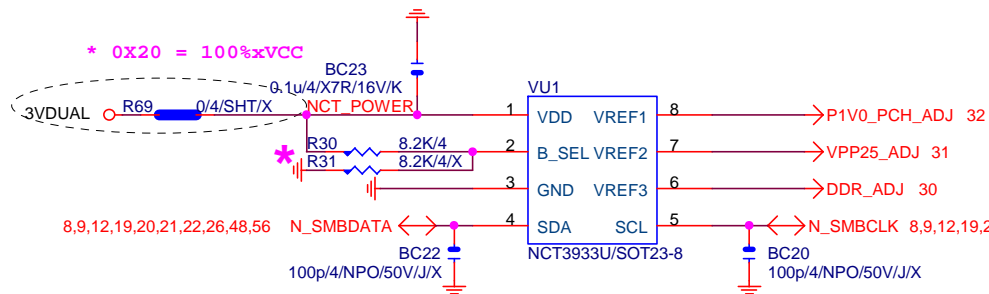
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RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.01	
Date:	Wednesday, July 08, 2015	Sheet	32 of 67



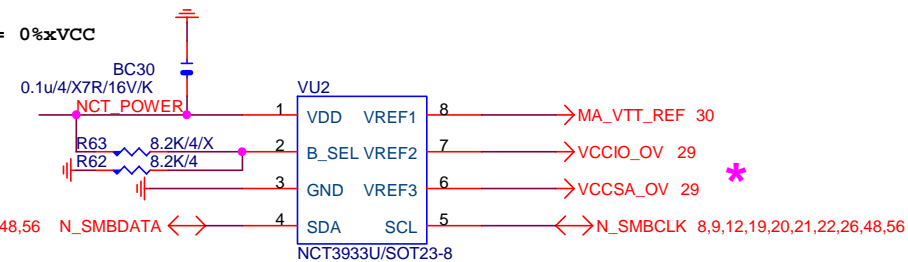
```
* update 5Vdual circuit
, from SKL 0.2B
```



# OVER VOLTAGE



0X2A = 0%xVCC



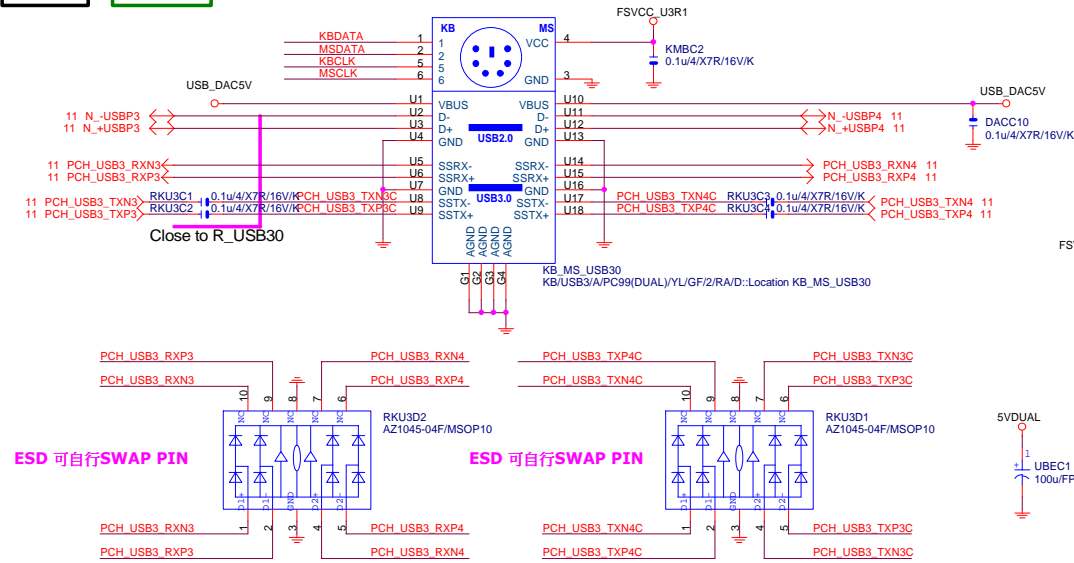
0X22 = 75%xVCC

\* 删除 OVU3

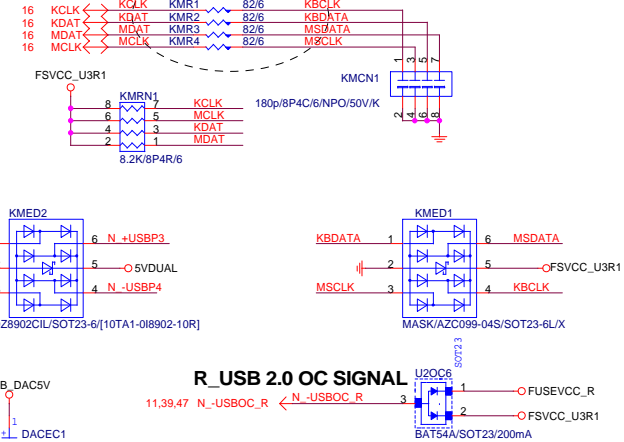
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCCL_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology		
CPU CORE VR-2		
Size Custom	Document Number	Rev
GA-Z170X-GAMING 7		1.01
Date:	Wednesday, July 08, 2015	Sheet 34 of 67

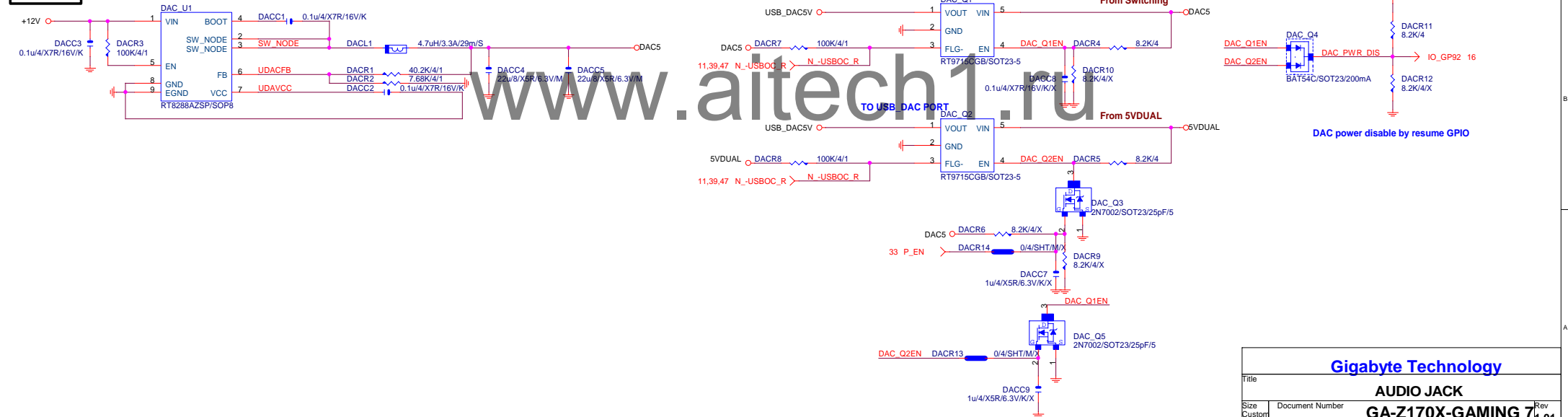




## FOR 鹽化短路



## USB\_DAC



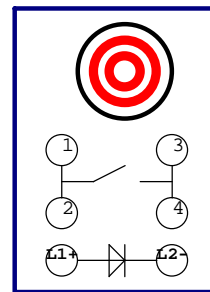
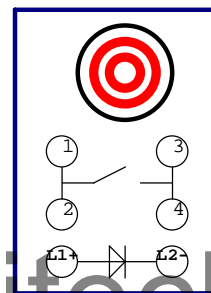
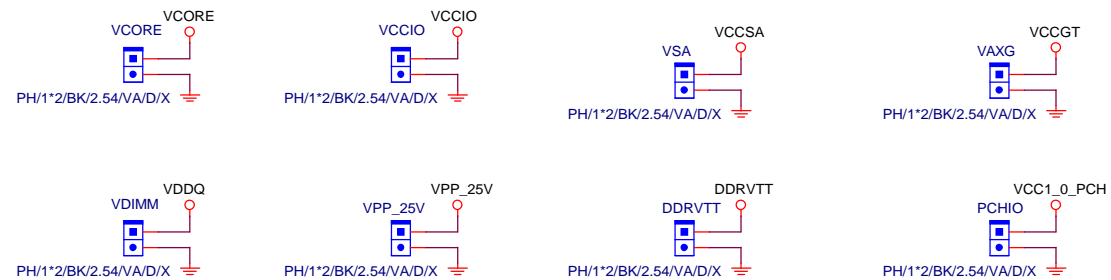
Gigabyte Technology

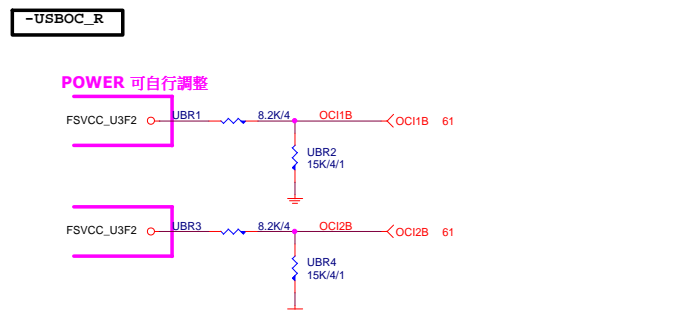
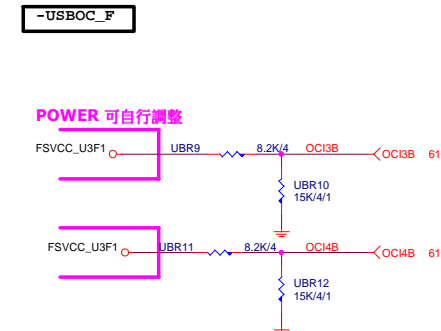
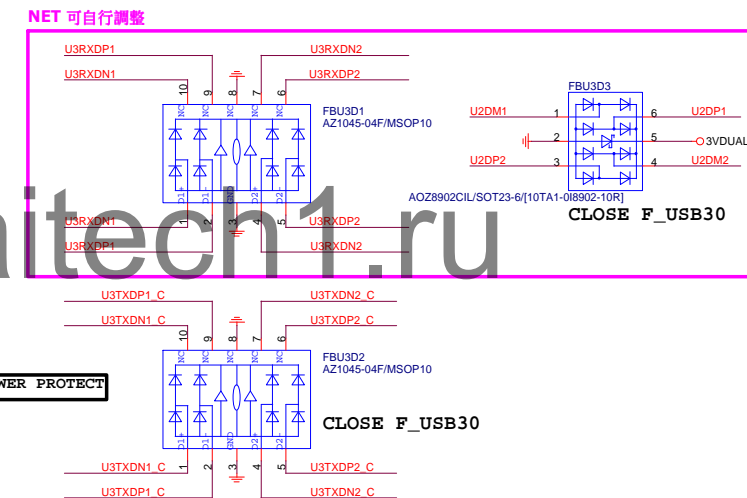
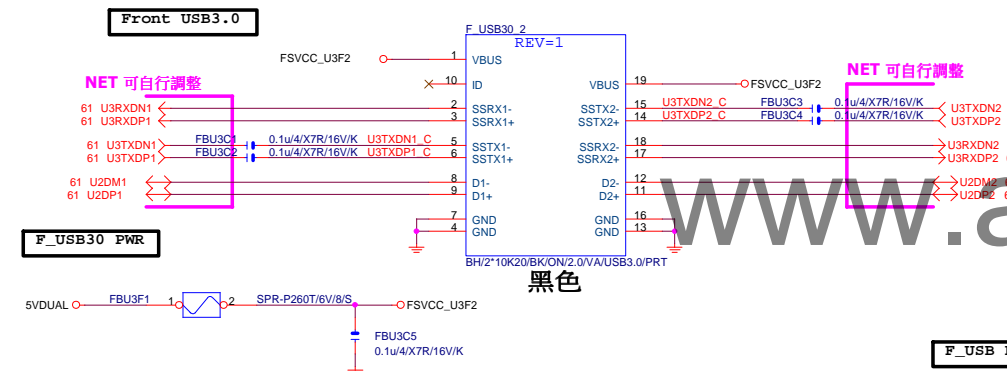
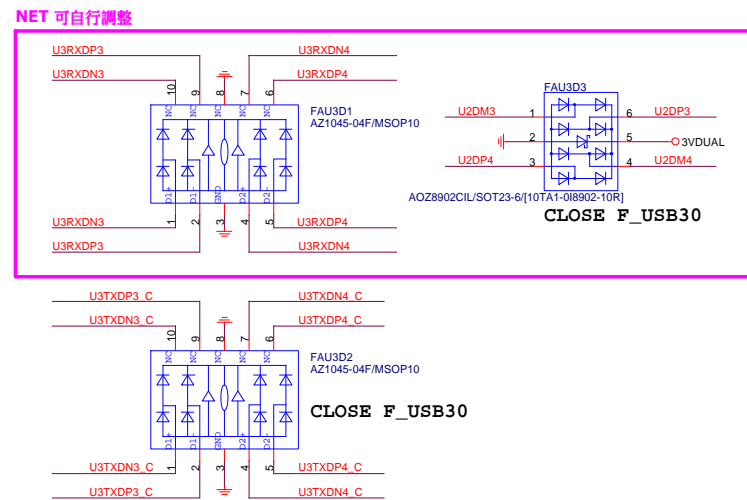
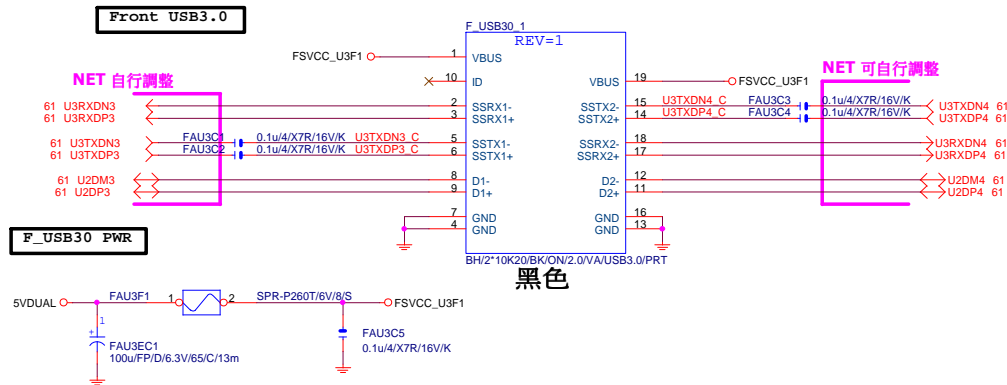
AUDIO JACK

GA-Z170X-GAMING 7

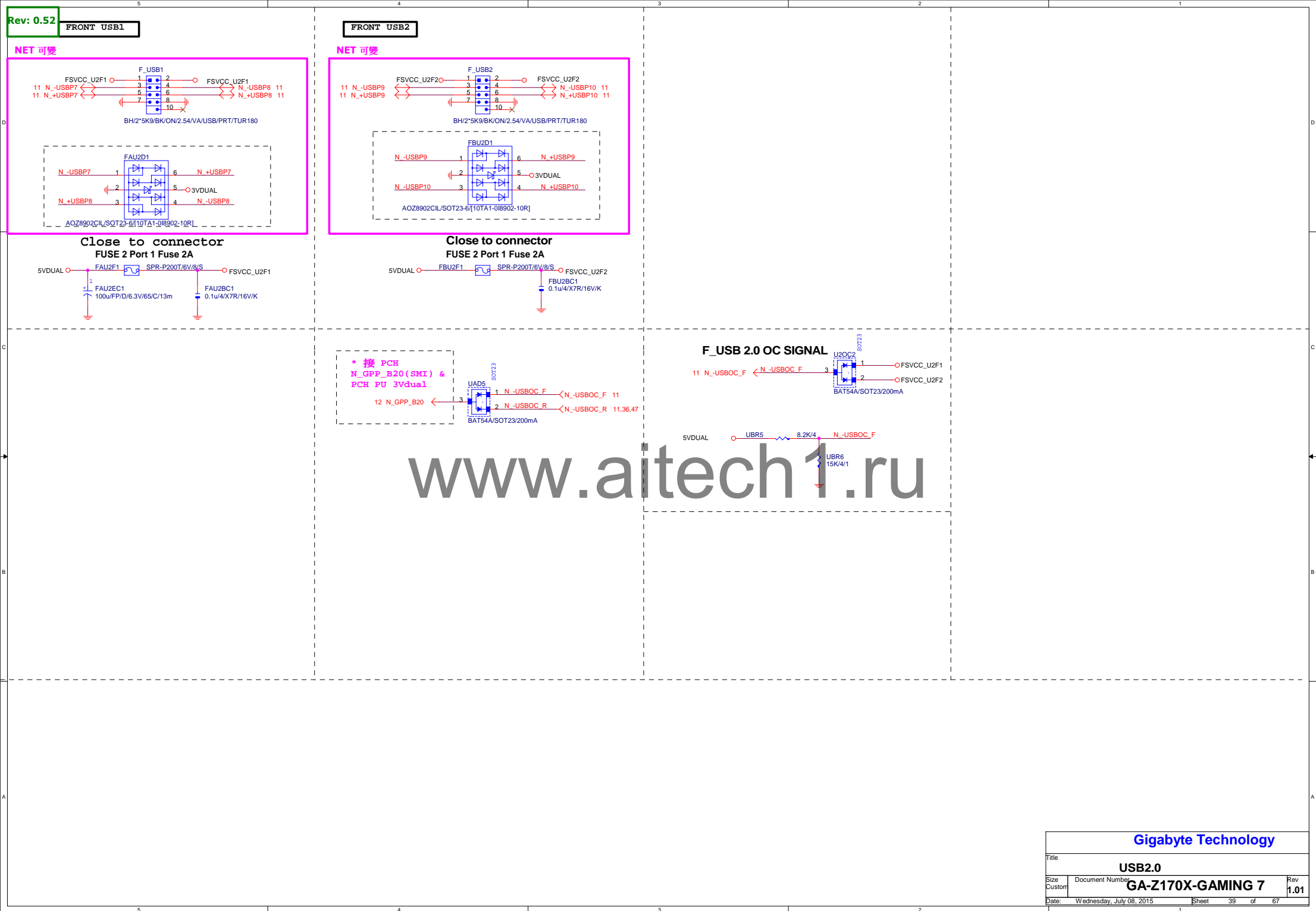
Rev 1.01

Date: Wednesday, July 08, 2015 Sheet 36 of 67





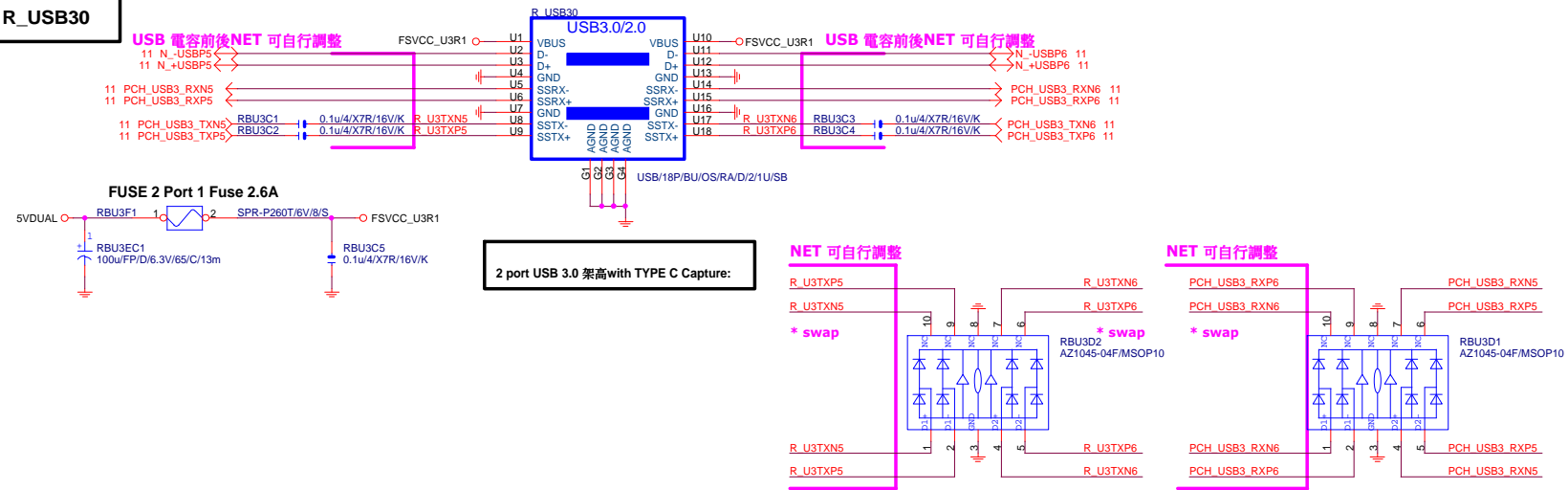




Gigabyte Technology

Title			USB2.0
Size	Document Number	GA-Z170X-GAMING 7	
Custom			Rev 1.01
Date:	Wednesday, July 08, 2015	Sheet	39 of 67

R\_USB30

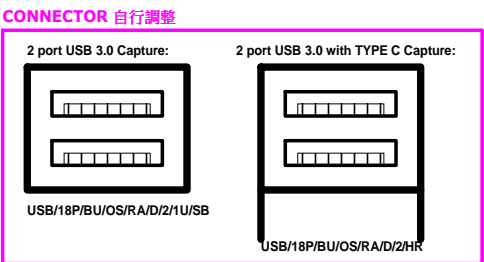
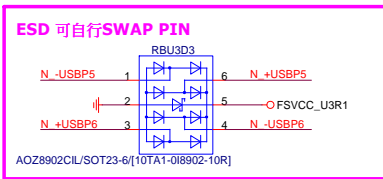
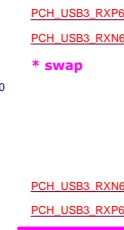


2 port USB 3.0 架高with TYPE C Capture:

NET 可自行調整



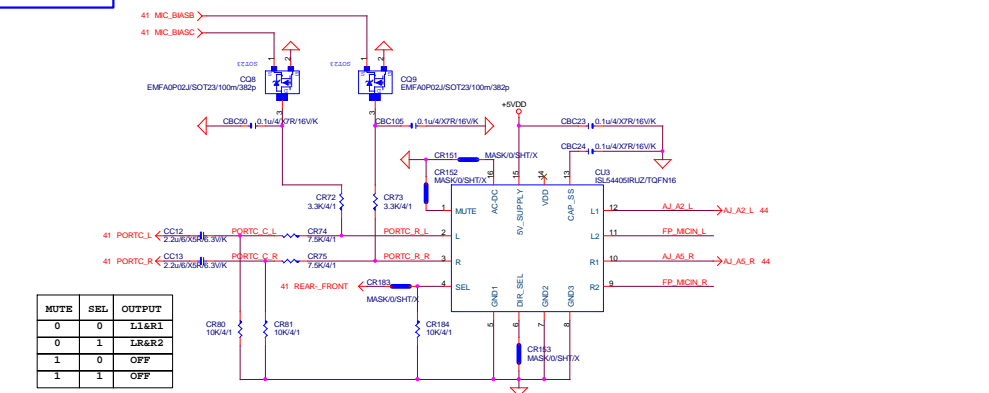
NET 可自行調整



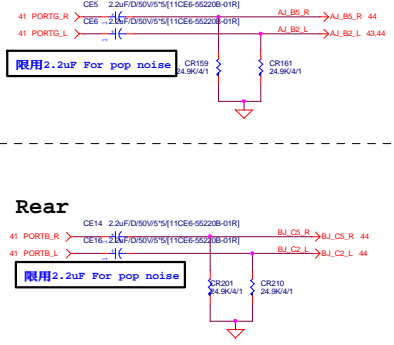
Gigabyte Technology			
Title KB_MS_USB3, R_USB30			
Size Custom	Document Number	Rev	
GA-Z170X-GAMING 7		1.01	
Date: Wednesday, July 08, 2015	Sheet	40	of 67



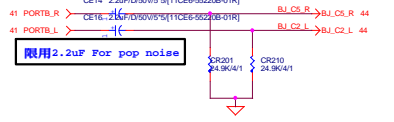
Rear MIC & FP MIC



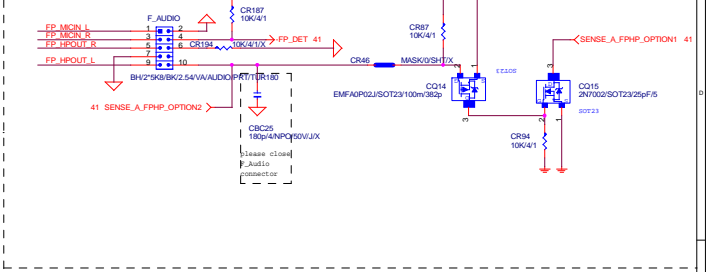
Line-Out



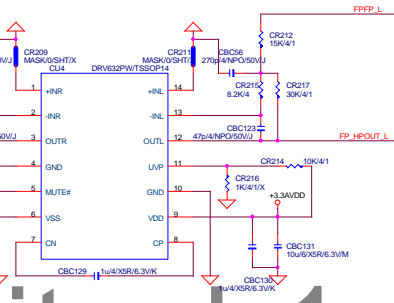
Rear



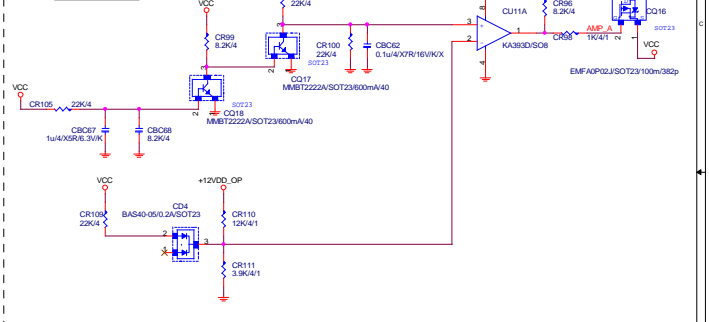
HD Audio FRONT PANEL



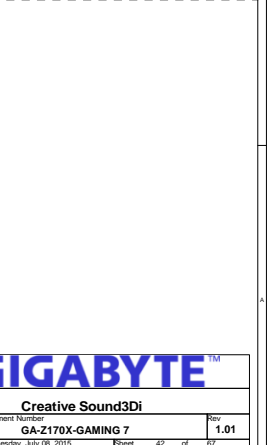
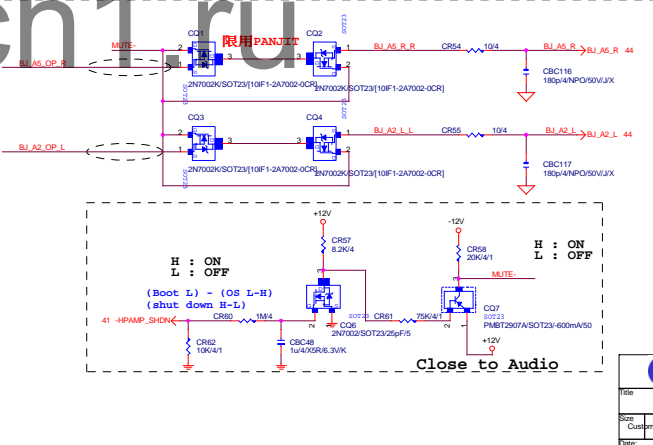
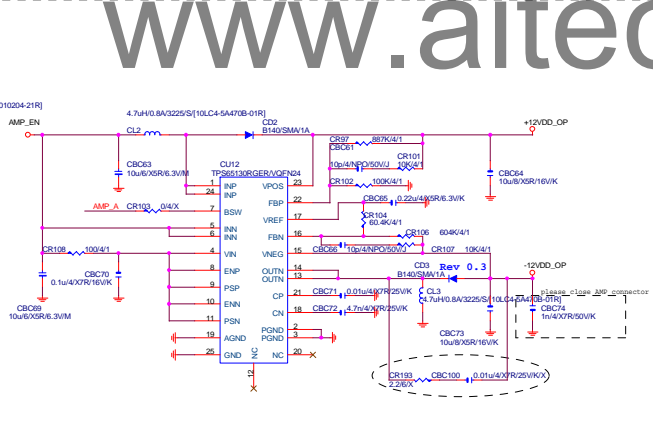
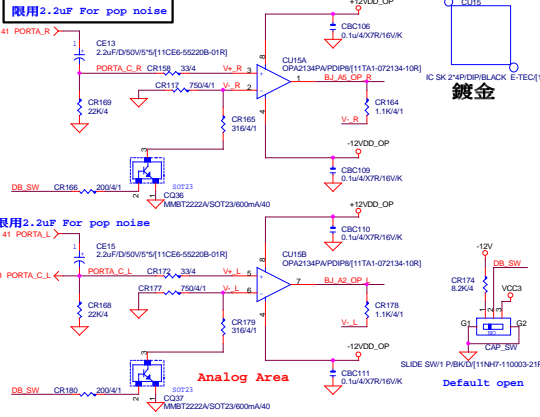
Rear CTR/SUB & FP HP-Out



OP反補防燥

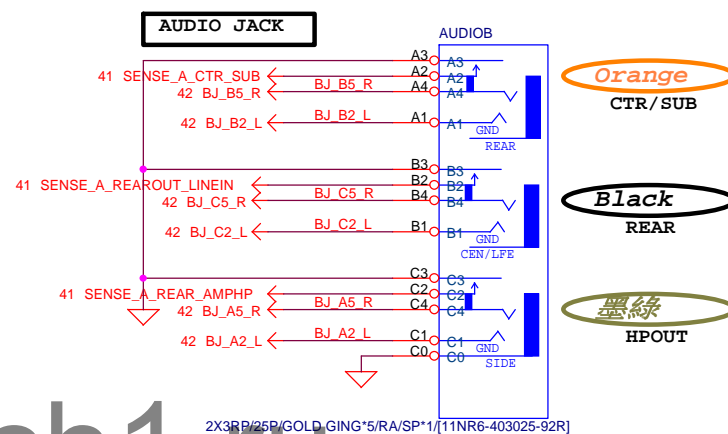
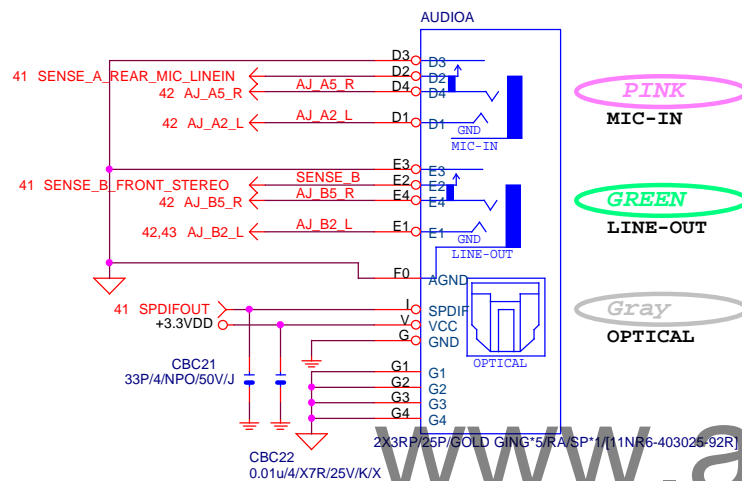


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**Gigabyte Technology**

Title

**Creative Sound3Di ZxR**Size  
Custom

Document Number

**GA-Z170X-GAMING 7**

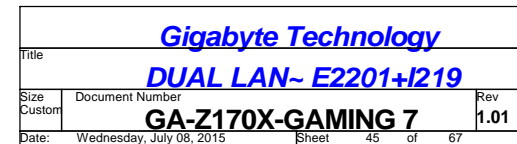
Rev

**1.01**

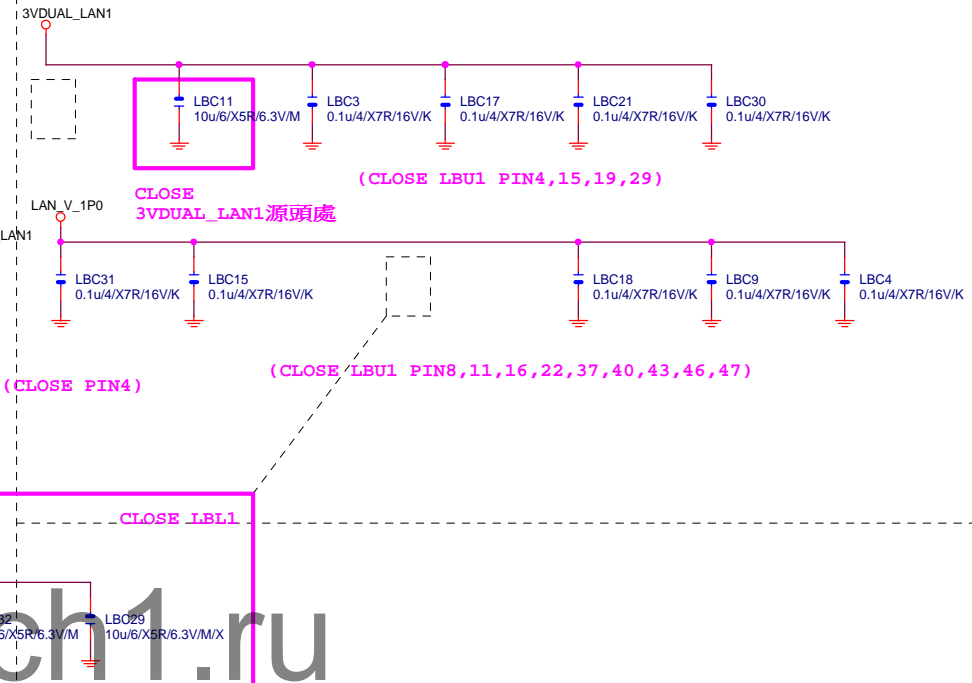
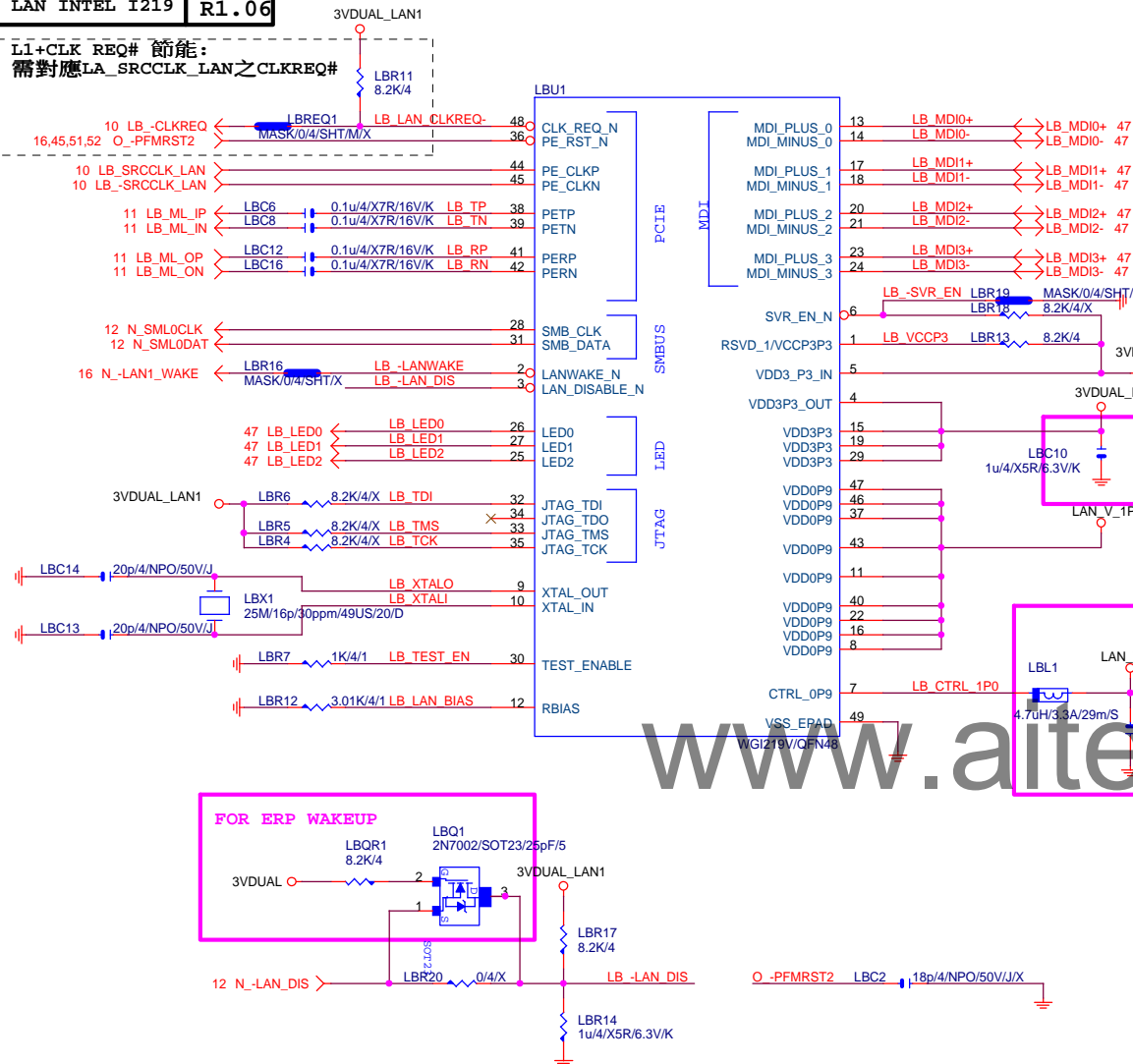
Date: Wednesday, July 08, 2015

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1





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

Gigabyte Technology

Title

DUAL LAN~ E2201+I219

Size

Document Number

GA-Z170X-GAMING 7.01

Date:

Wednesday, July 08, 2015

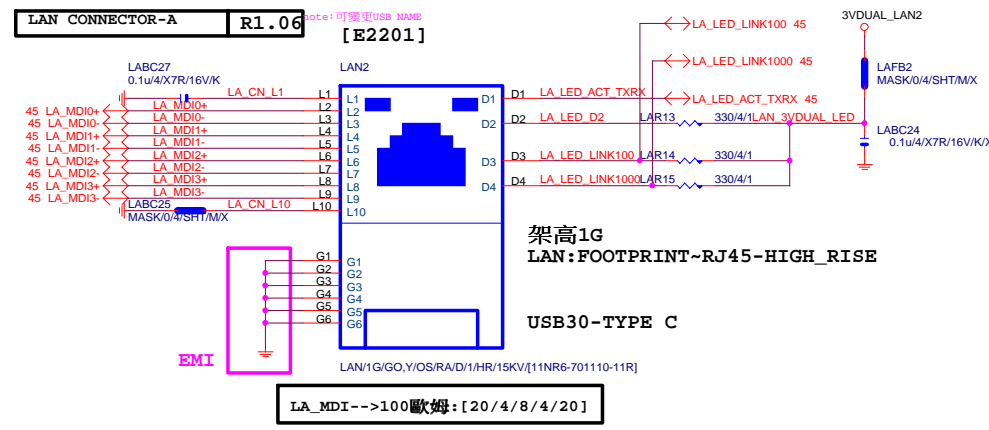
Sheet

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of

67

Rev

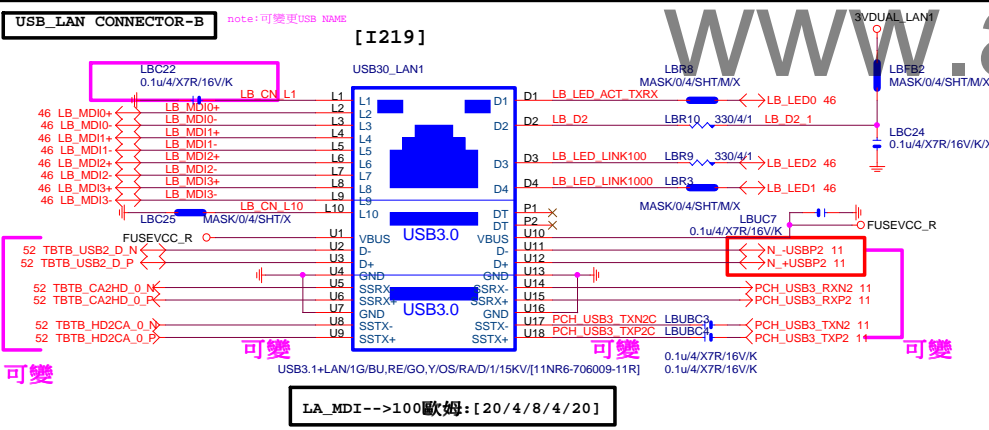
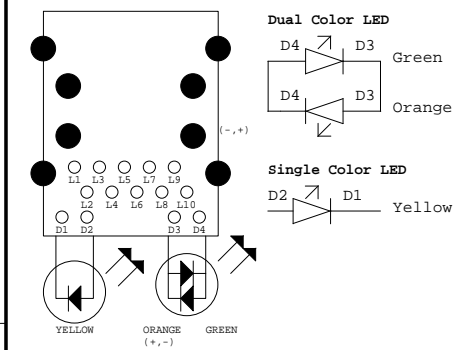


RMA ESD PROTECT

EMI SHORT PAD

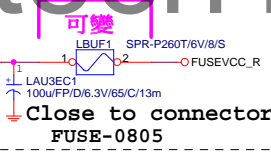
PS:視EMI需求

架高LAN LAYOUT示意圖



RMA ESD PROTECT

USB POWER

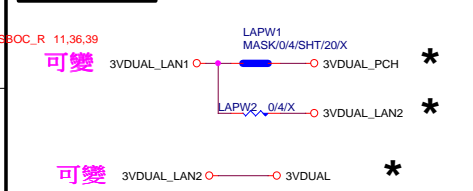


PS:視EMI需求

NOTE:

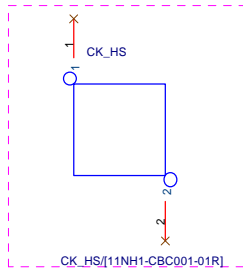
1. 3VDUAL\_LAN1, 3VDUAL\_LAN2 對接POWER供應電流 [目前暫接3VDUAL]
2. USB2.0/3.0對應USB PORT [目前暫接USB 0,1,2,3 PORT]
3. USB DROOP/DROP E-CAP
4. USB OC線路

LAN POWER

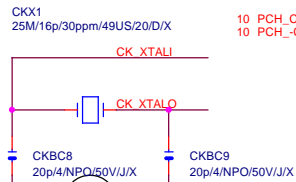


~USB30\_LAN1設定在ERP可LAN WAKEUP  
~USB30\_LAN2由獨立LAN POWER L1117供給

REV:1.07A



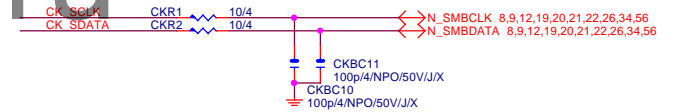
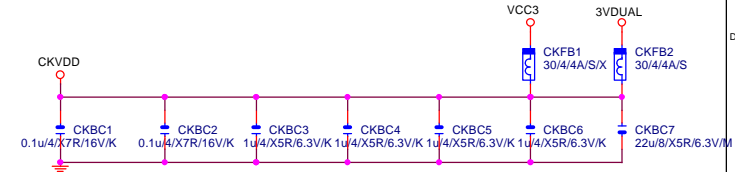
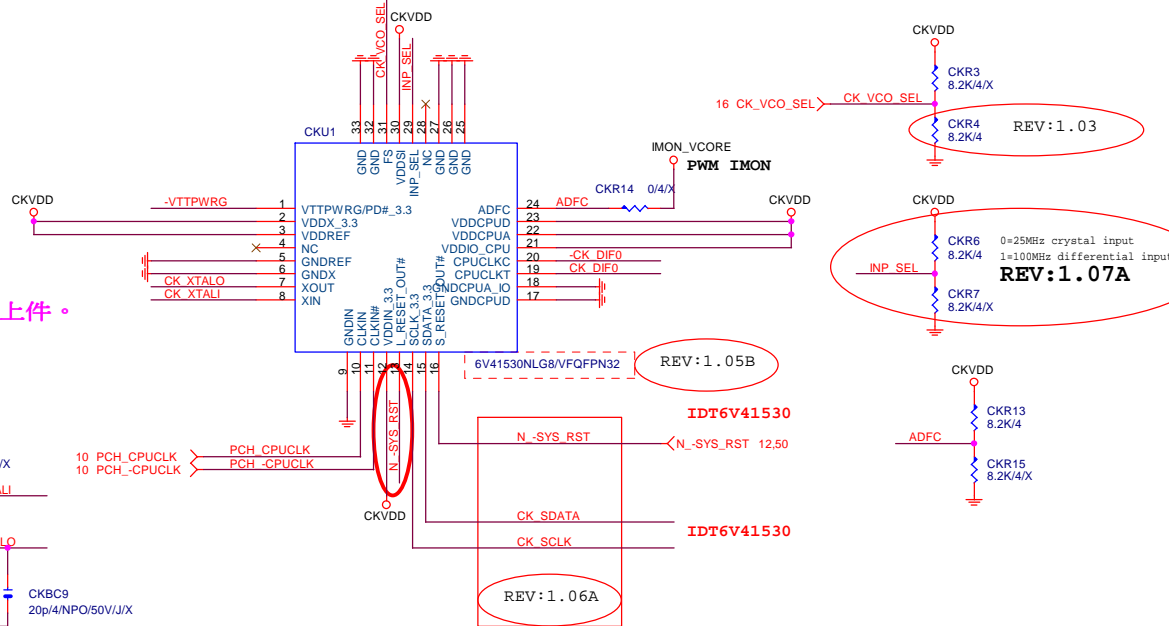
\*可變，依需求上件不上件。



電容共用GND,降低JITTER

INP_SEL	Input
0	Crystal
1	CLK_INP/N

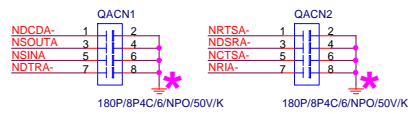
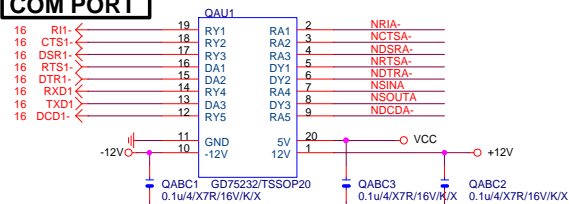
CK_VCO_SEL	VCO
0	400M
1	1200M



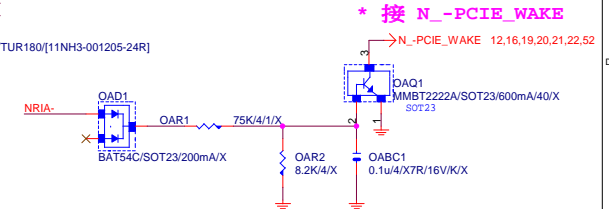
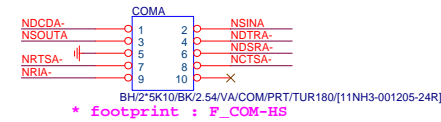
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GIGABYTE™			
Title			
IDT6V41510_CLK BUFFER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7	1.01	
Date:	Wednesday, July 08, 2015	Sheet	48 of 67

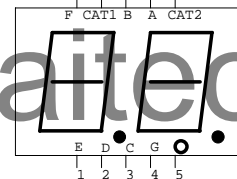
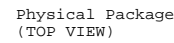
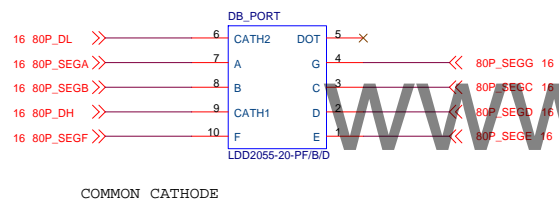
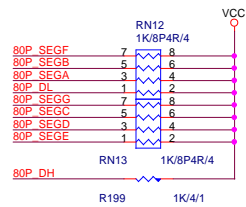
**COM PORT**



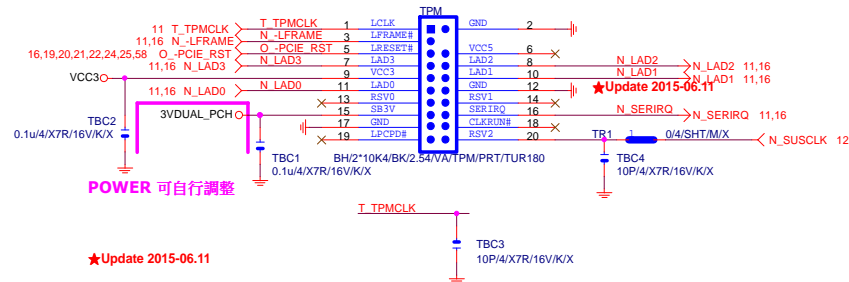
## COMA



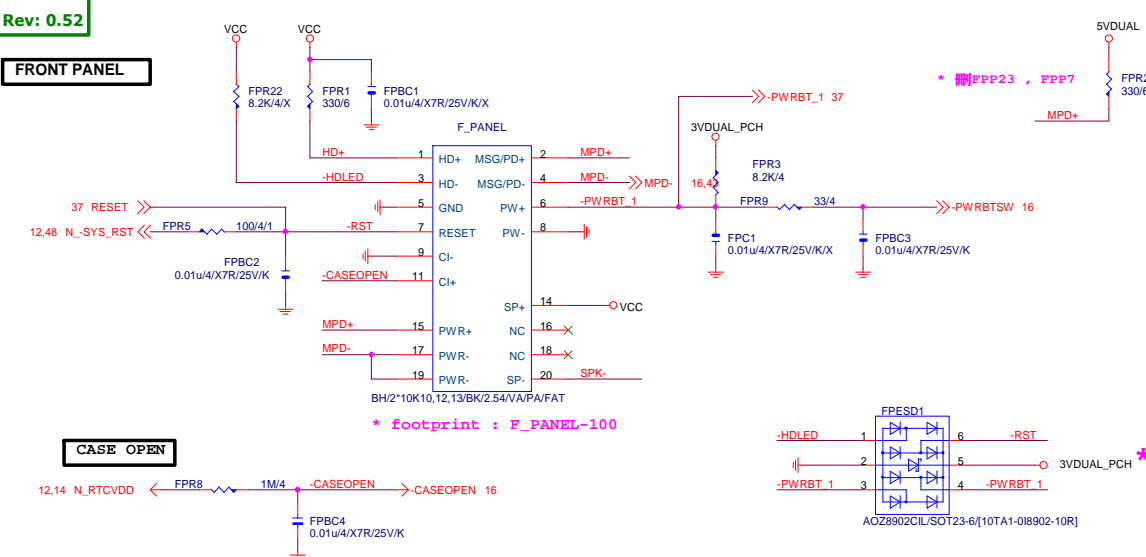
## 80 PORT



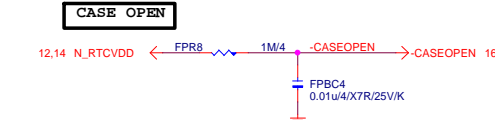
## TPM CONNECT



FRONT PANEL

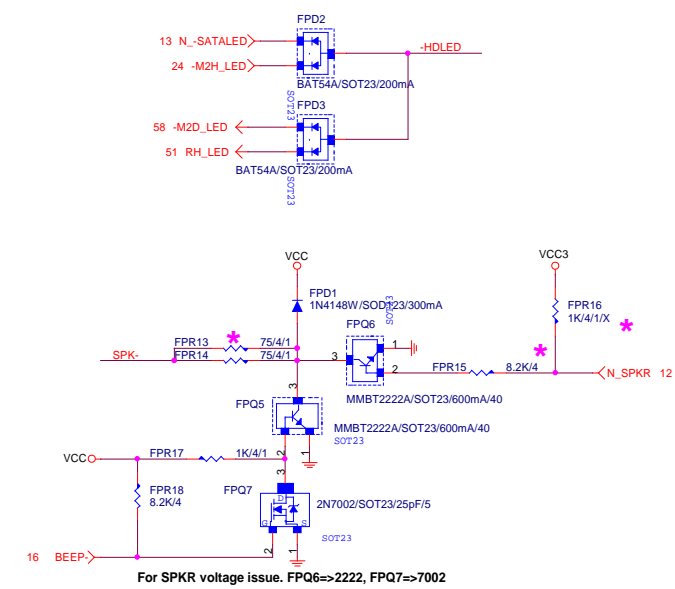


CASE OPEN



SATA LED SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3\_3

SPKR

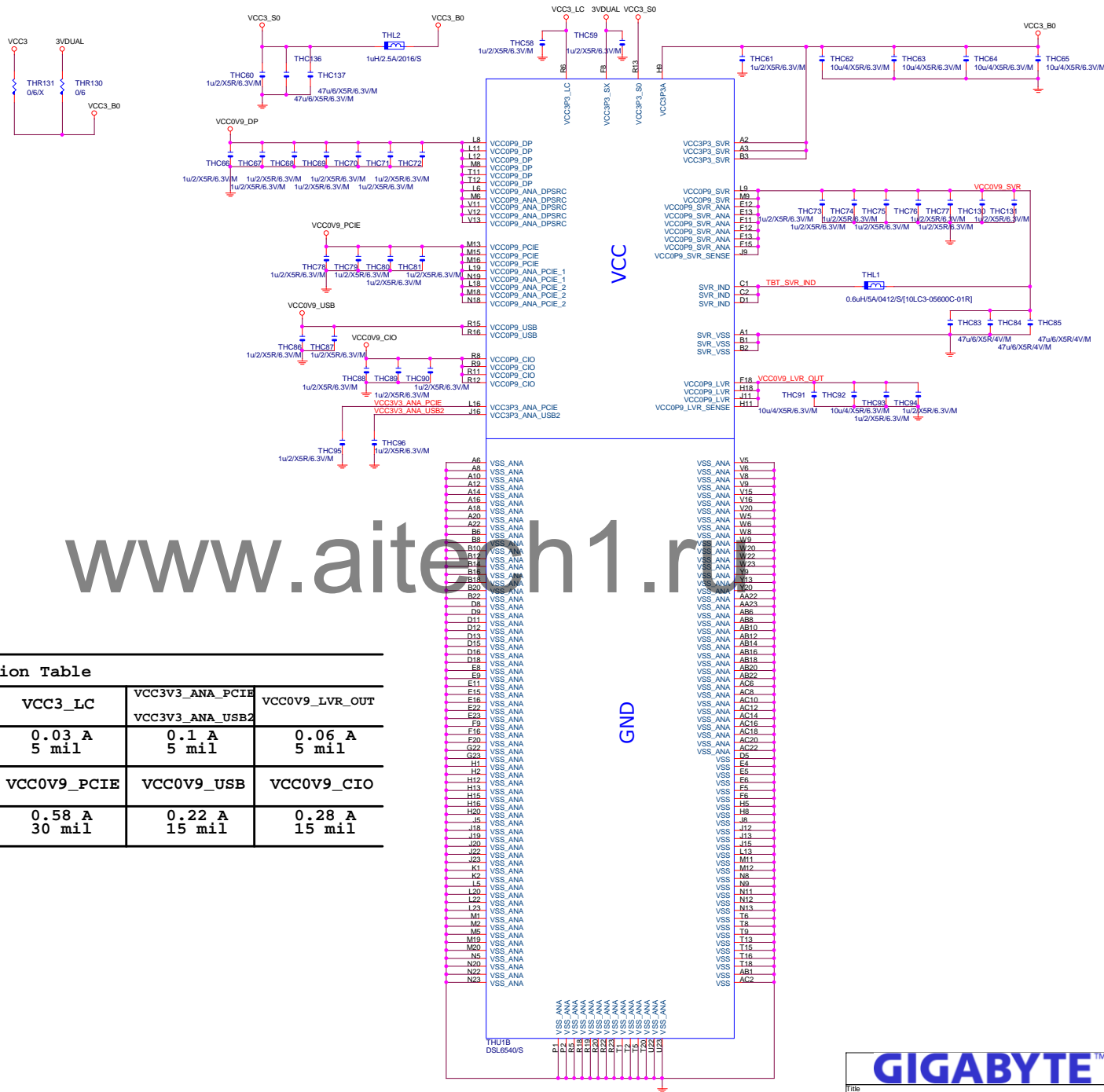


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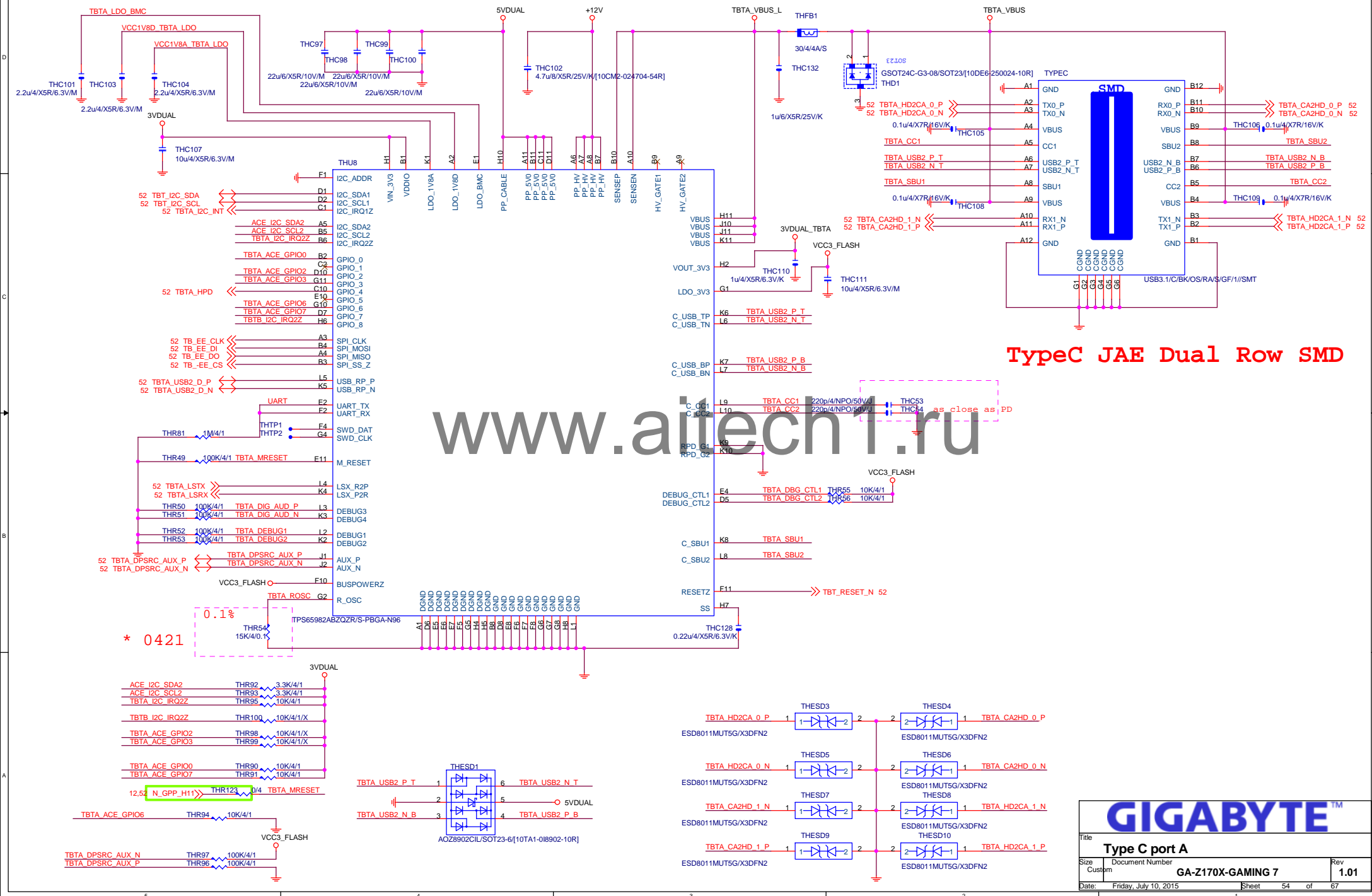




Power Consumption Table

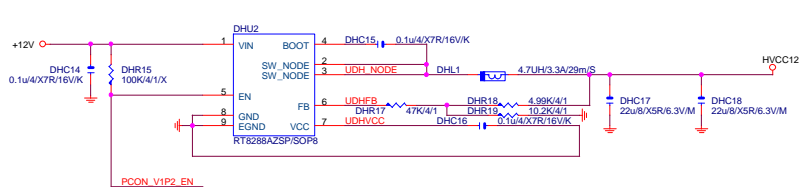
	VCC3	3VDUAL	VCC3_LC	VCC3V3_ANA_PCIE	VCC0V9_LVR_OUT
Max Current(A)	1.05 A 40 mil	0.19 A 10 mil	0.03 A 5 mil	0.1 A 5 mil	0.06 A 5 mil
	VCC0V9_SVR	VCC0V9_DP	VCC0V9_PCIE	VCC0V9_USB	VCC0V9_CIO
Max Current(A)	1.83 A 80 mil	0.7 A 30 mil	0.58 A 30 mil	0.22 A 15 mil	0.28 A 15 mil

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



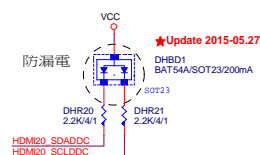
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<b>GIGABYTE™</b>			
Title <b>TBT _ HDMI 2.0</b>			
Size Custom	Document Number <b>GA-Z170X-GAMING 7</b>		Rev <b>1.01</b>
Date: Wednesday, July 08, 2015	Sheet 55	of 67	

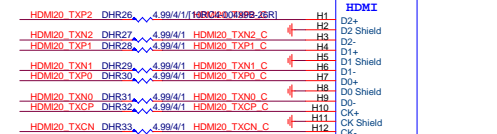


## PCH端

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



## Display Port with HDMI, or HDMI only.



Power 可變

FSVCC\_U3R1

1u/4/XSR/6.3V/M

DHR22 47K/4/1

DHR23 2.2K/4/1

DHR24 2.2K/4/1

DHR25 1M/4

DHR26 100K/4/1/X

DHR27 4.99K/4/1

DHR28 4.99K/4/1

DHR29 4.99K/4/1

DHR30 4.99K/4/1

DHR31 4.99K/4/1

DHR32 4.99K/4/1

DHR33 4.99K/4/1

DHR34 4.99K/4/1

DHR35 4.99K/4/1

DHR36 4.99K/4/1

DHR37 4.99K/4/1

DHR38 4.99K/4/1

DHR39 4.99K/4/1

DHR40 4.99K/4/1

DHR41 4.99K/4/1

DHR42 4.99K/4/1

DHR43 4.99K/4/1

DHR44 4.99K/4/1

DHR45 4.99K/4/1

DHR46 4.99K/4/1

DHR47 4.99K/4/1

DHR48 4.99K/4/1

DHR49 4.99K/4/1

DHR50 4.99K/4/1

DHR51 4.99K/4/1

DHR52 4.99K/4/1

DHR53 4.99K/4/1

DHR54 4.99K/4/1

DHR55 4.99K/4/1

DHR56 4.99K/4/1

DHR57 4.99K/4/1

DHR58 4.99K/4/1

DHR59 4.99K/4/1

DHR60 4.99K/4/1

DHR61 4.99K/4/1

DHR62 4.99K/4/1

DHR63 4.99K/4/1

DHR64 4.99K/4/1

DHR65 4.99K/4/1

DHR66 4.99K/4/1

DHR67 4.99K/4/1

DHR68 4.99K/4/1

DHR69 4.99K/4/1

DHR70 4.99K/4/1

DHR71 4.99K/4/1

DHR72 4.99K/4/1

DHR73 4.99K/4/1

DHR74 4.99K/4/1

DHR75 4.99K/4/1

DHR76 4.99K/4/1

DHR77 4.99K/4/1

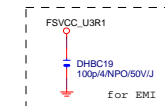
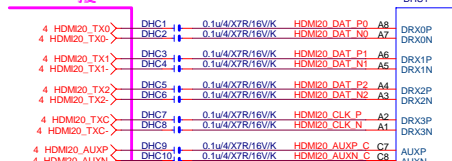
DHR78 4.99K/4/1

DHR79 4.99K/4/1

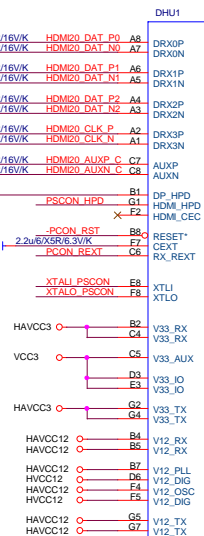
DHR80 4.99K/4/1

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

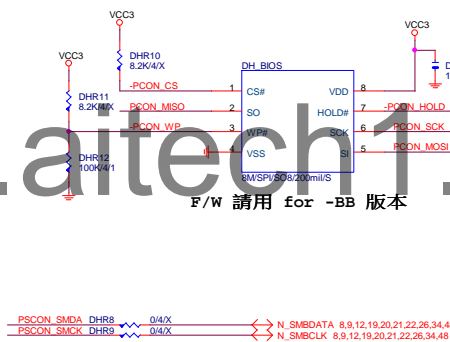


MCPD2800-BB/S[10H-B5-A3280-10R]

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

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F/W 請用 for -BB 版本



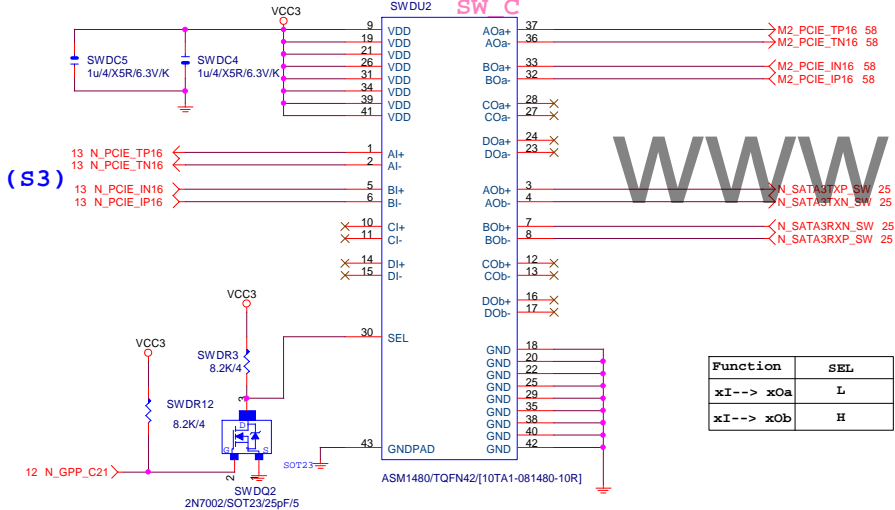
VCC3

DHR10 8.2K/4/X

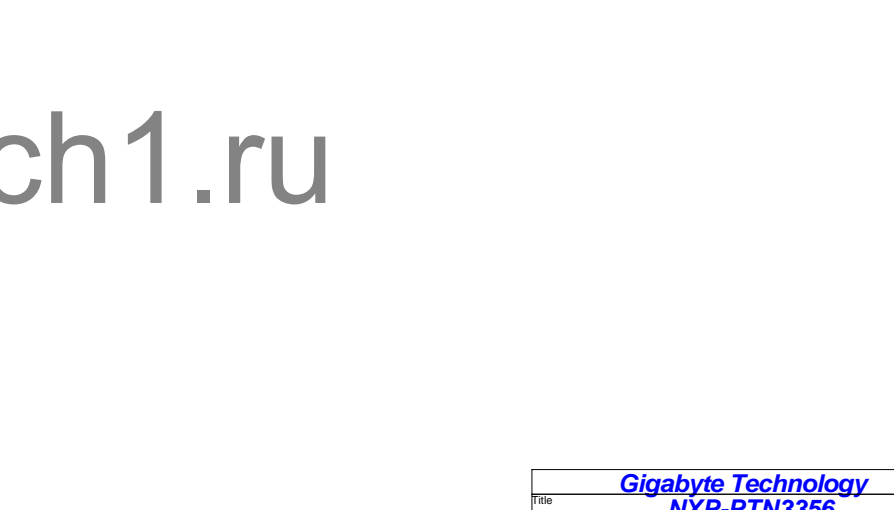
DHR11 8.2K/4/X







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



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

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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

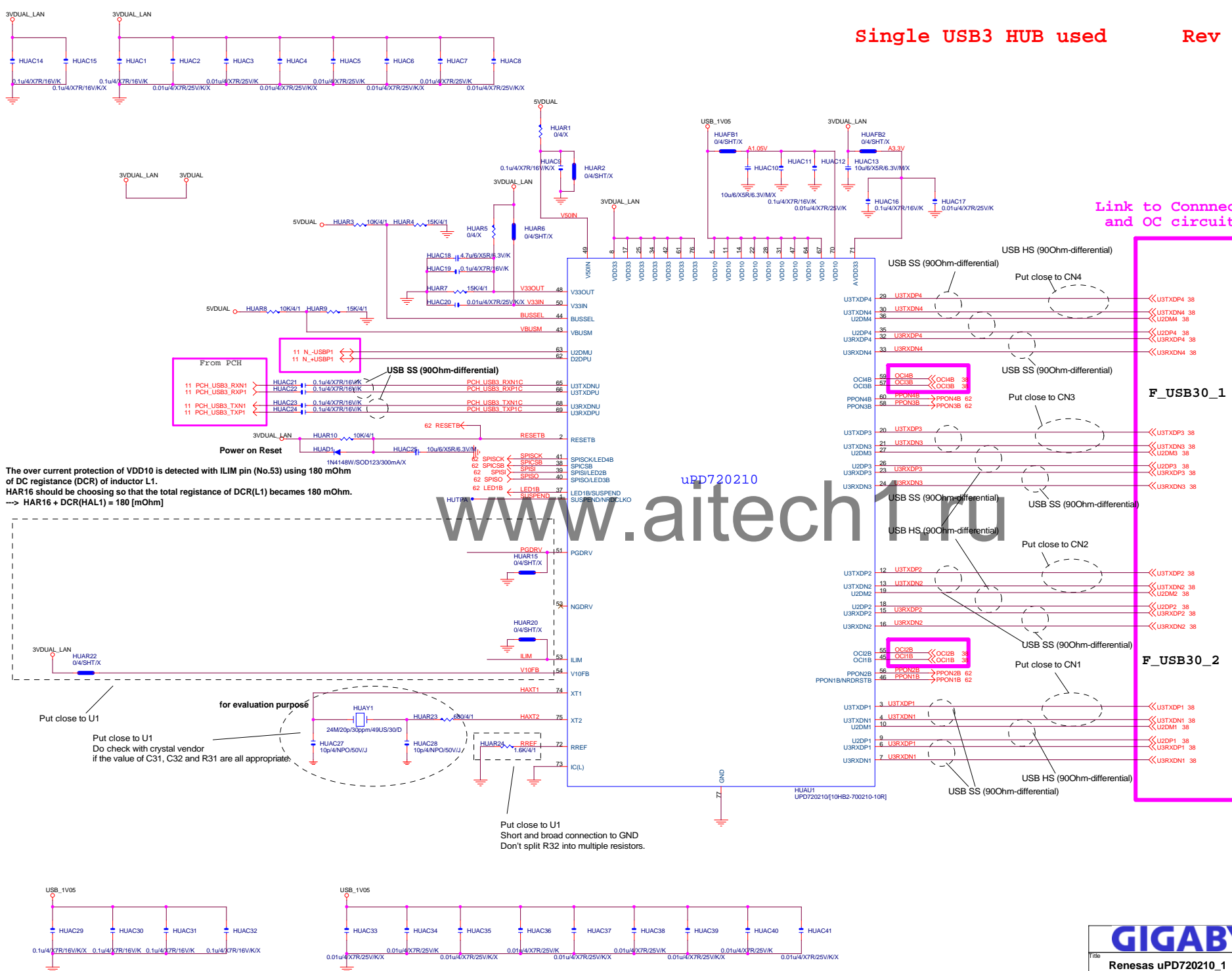
下下下上 : M.2 X1 + SE  
S0/S1/S2

Title			
BLOCK DIAGRAM			
Size	Document Number		Rev
Custom	GA-Z170X-GAMING 7		1.01
Date:	Wednesday, July 08, 2015	Sheet	60 of 67
	3	2	1

Single USB3 HUB used

Rev 0.3

Link to Connectors and OC circuits

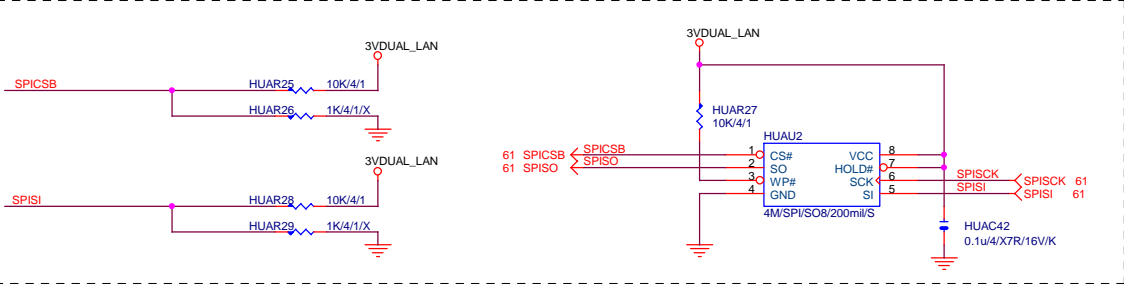


The over current protection of VDD10 is detected with ILIM pin (No.53) using 180 mOhm of DC resistance (DCR) of inductor L1.  
HAR16 should be choosing so that the total resistance of DCR(L1) becomes 180 mOhm.  
→ HAR16 + DCR(HAL1) = 180 [mOhm]

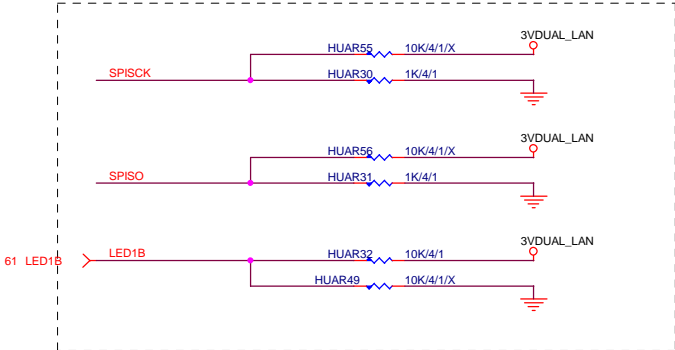
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Single USB3 HUB used

# External SPI ROM ; SPI ROM attached mode

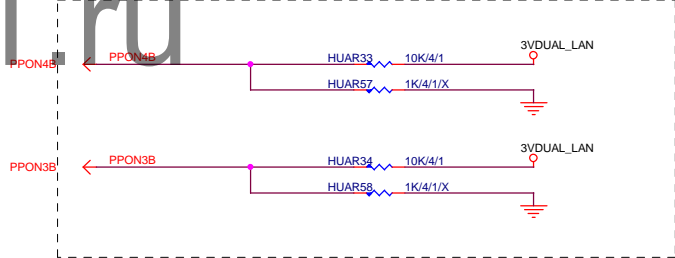


# Battery Charging

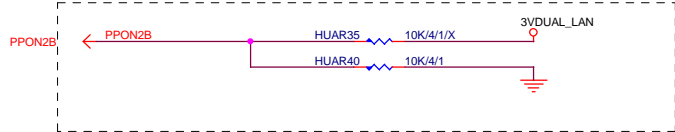


# Number of Ports ; 4Ports mode

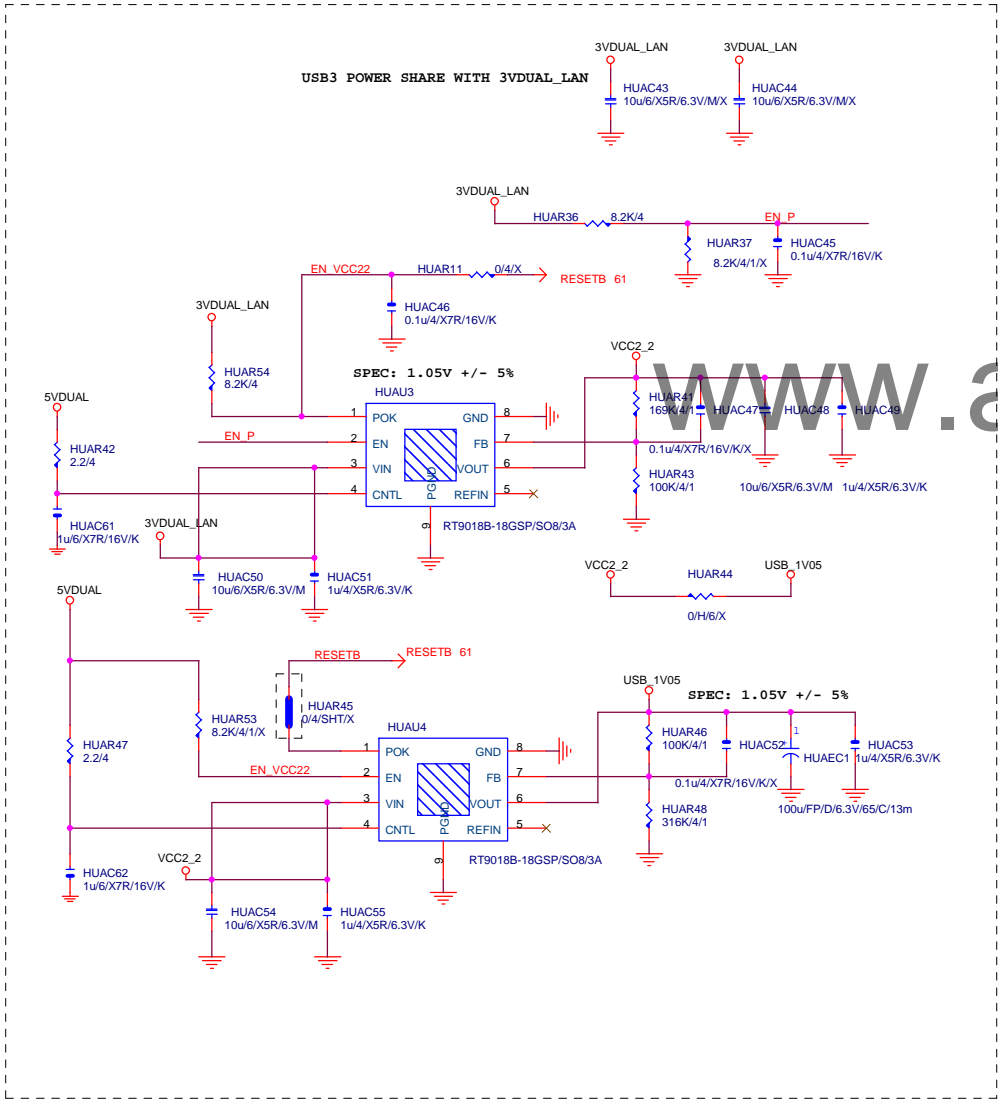
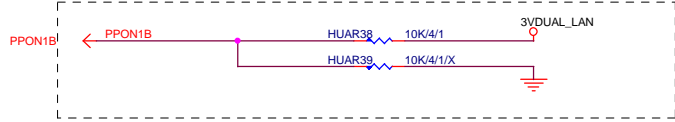
PPON3B / PPN4B : H / H ( 4 port )  
PPON3B / PPN4B : L / L ( 2 port )



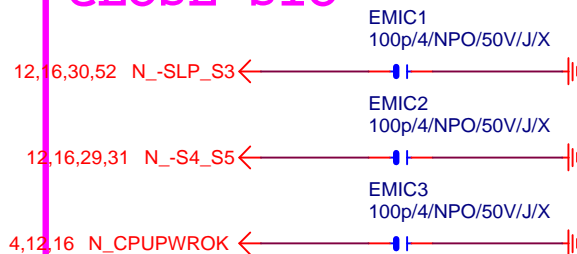
#5 VBUS Power Control ; Individual mode



# PPON1B Pin Function ; Port1 PPONB mode



CLOSE SIO



CLOSE PCH



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**GIGABYTE™**

Title

**EMI/ESD**

Size  
A

Document Number

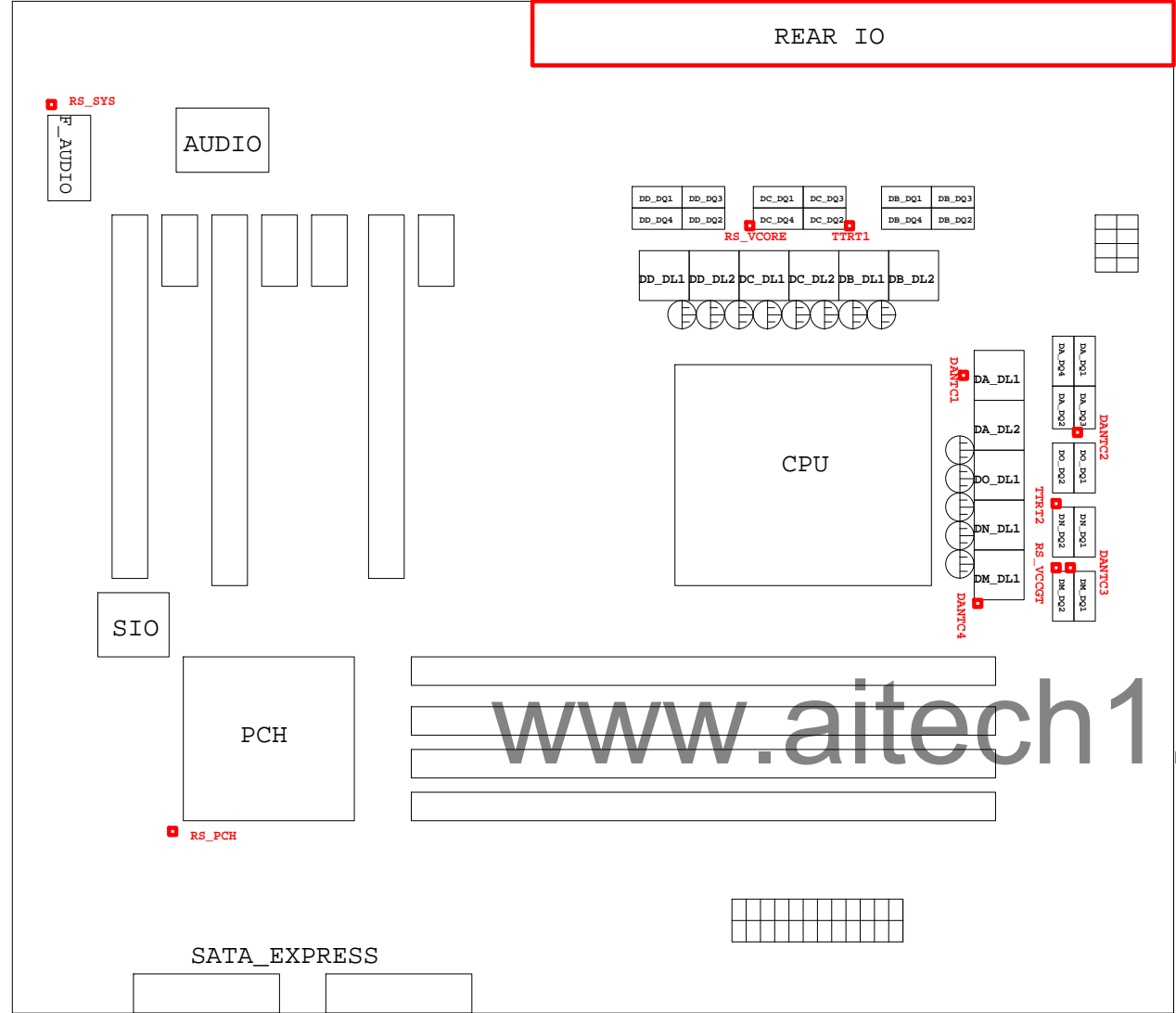
**GA-Z170X-GAMING 7**

Rev

**1.01**

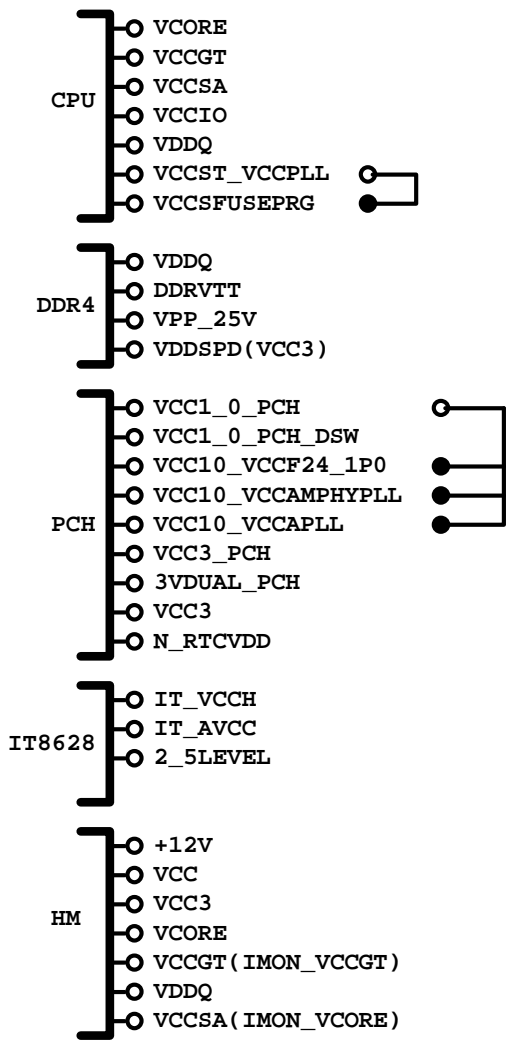
Date: Wednesday, July 08, 2015

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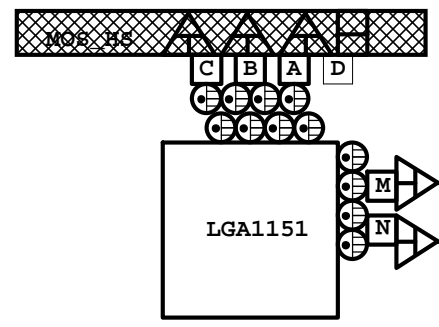
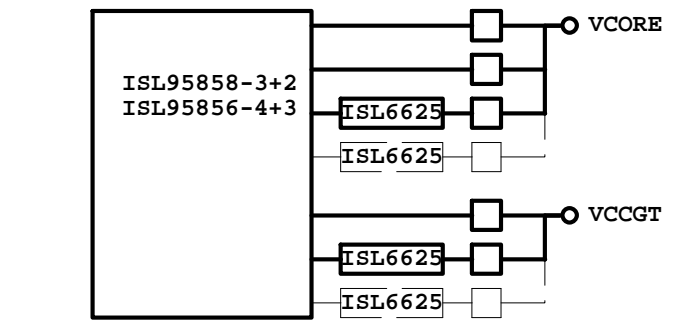


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

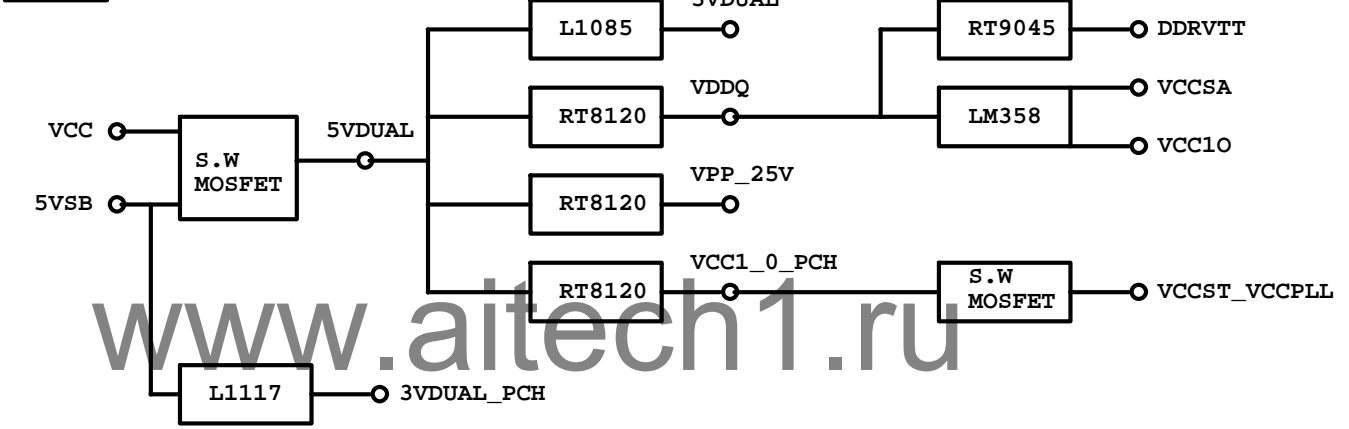
POWER BLOCK MAP



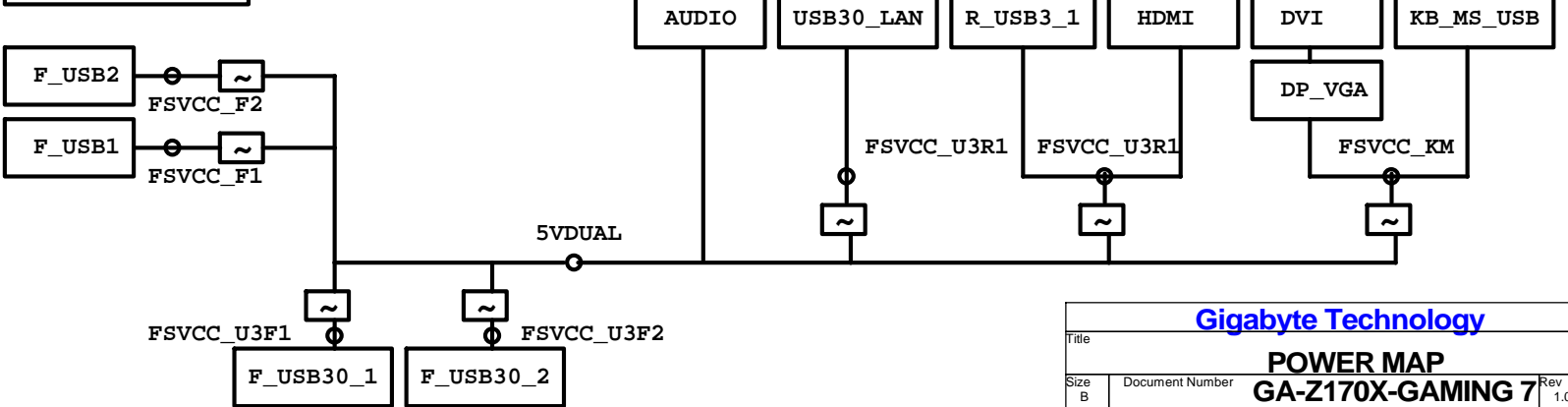
VCORE/VCCGT



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

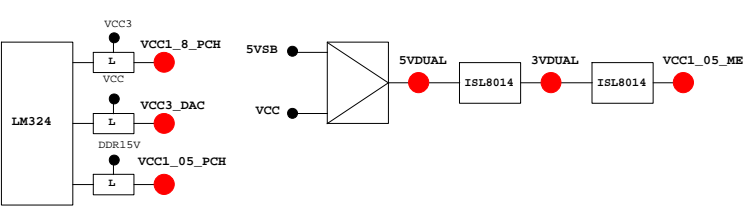
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Title <b>RT8120_DDR4 POWER</b>			
Size Custom	Document Number <b>GA-Z170X-GAMING 7</b>		Rev <b>1.01</b>
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

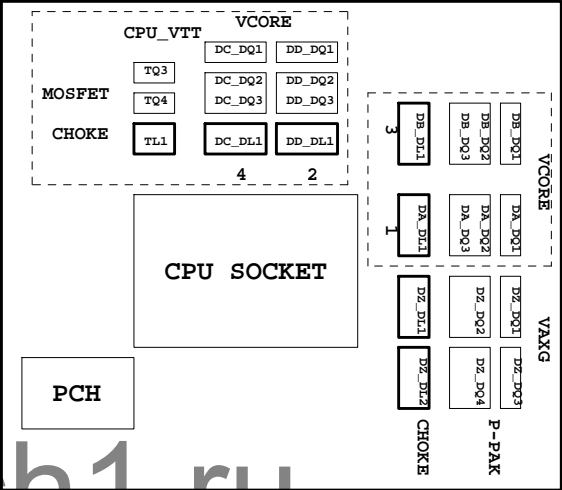
Super I/O ITE8720 GPIO Table

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