

Model Name: GA-Z170X-GAMING 7-OC-MG
SHEET TITLE

Rev 1.01
SHEET

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06	CPU_LGA1150-C
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12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	DUAL BIOS
16	ITE 8620 LPC IO
17	HMW
18	FAN CTRL--SIO
19	PCI EXPRESS X16 SLOT
20	PCI EXPRESS X4 SLOT(CPU)
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24	M2A_32G
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26	ISL95856 PWM
27	ISL95856 MOS_VCORE
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29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR
31	RT8120_VPP

TITLE

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
58~60	M2B_32G
61	D720210 4port Hub-FRONT
62	D720210 4port Hub (Power)
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Gigabyte Technology

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Model Name: GA-Z170X-GAMING 7-OC-MG

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 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	
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)	

- Z170X-Gaming 7-OC
10A
- 10B-0125
1. P-BOM
1. Remove ECO Button
2. THU1change to "10HB2-G06540-20R"

- 9.0
1. Add OC1,OC LED 1x2 pin
2. Add NPR22,NPC102,NTNPL2
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),DABCL4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,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/[11CE6-5220B-01R]"	



BOM & PCB MODIFY HISTORY

Size

Document Number

Rev

Custom

GA-Z170X-GAMING 7-OC-MG

1.01

Date

Friday, March 04, 2016

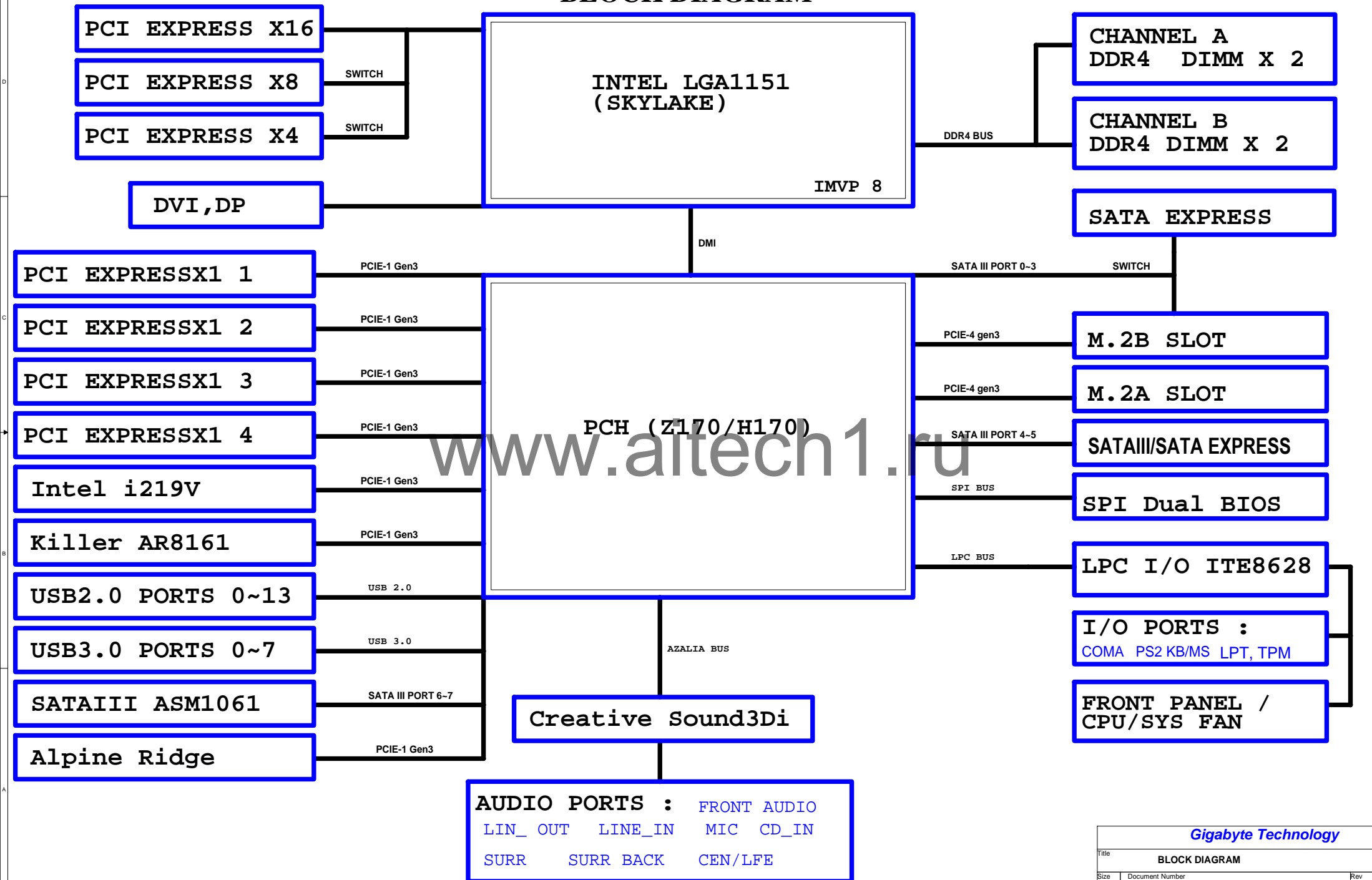
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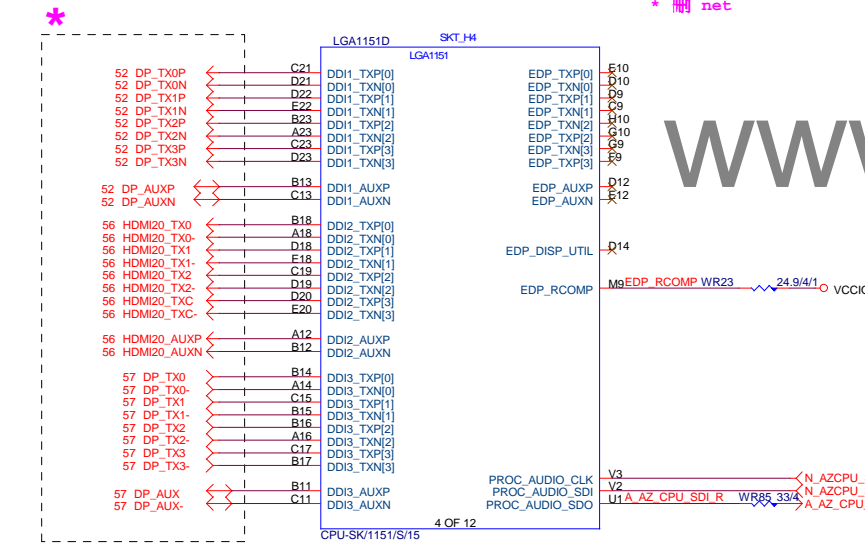
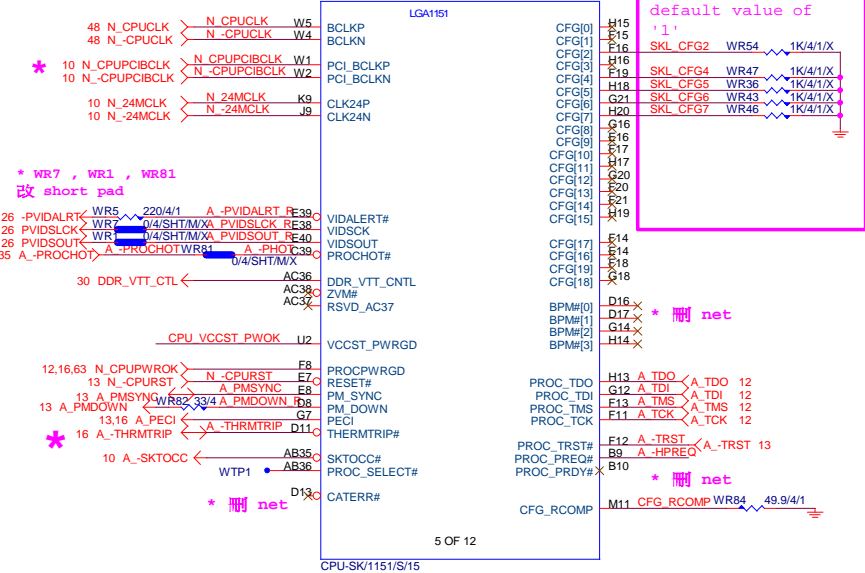
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BLOCK DIAGRAM

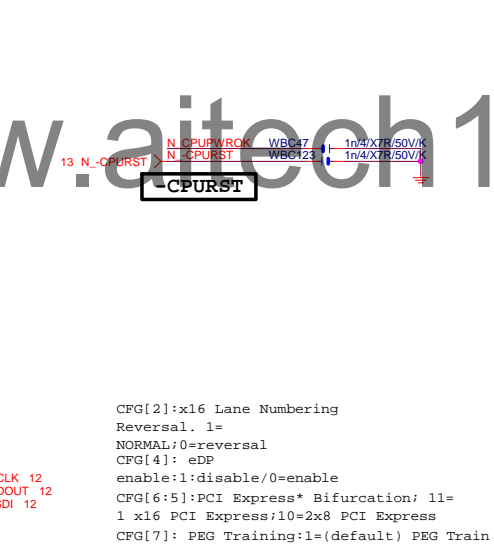
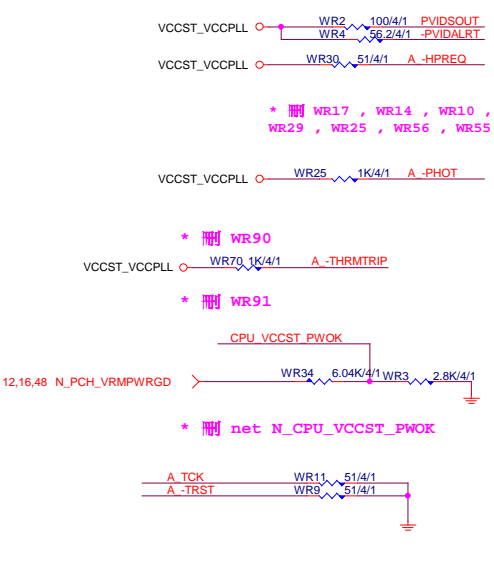


From SKL_0.2B



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

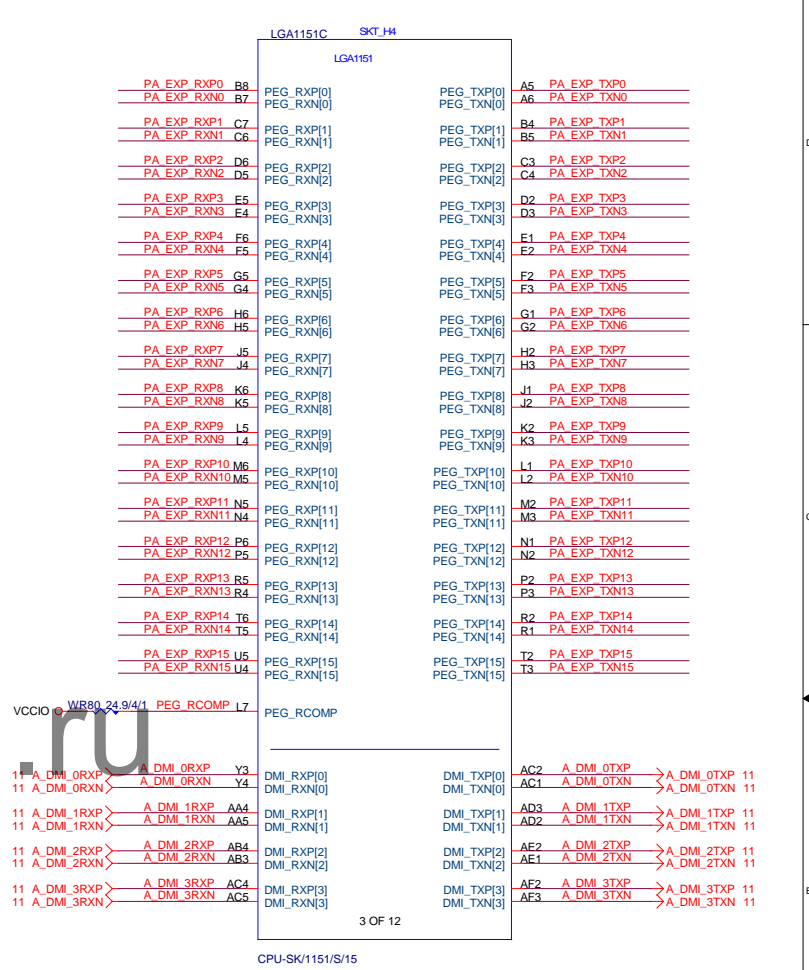
檢查組態調整線路
The CFG signals
default value of
'1'
SKL_CFG2 WR54 1K/4/1/X
SKL_CFG4 WR47 1K/4/1/X
SKL_CFG5 WR36 1K/4/1/X
SKL_CFG6 WR43 1K/4/1/X
SKL_CFG7 WR46 1K/4/1/X



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

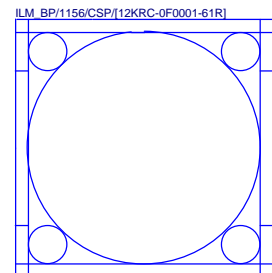


PA_EXP_TXP[0..15] >>> PA_EXP_TXP[0..15] 19,23
PA_EXP_TXN[0..15] >>> PA_EXP_TXN[0..15] 19,23
PA_EXP_RXP[0..15] >>> PA_EXP_RXP[0..15] 19,23
PA_EXP_RXN[0..15] >>> PA_EXP_RXN[0..15] 19,23

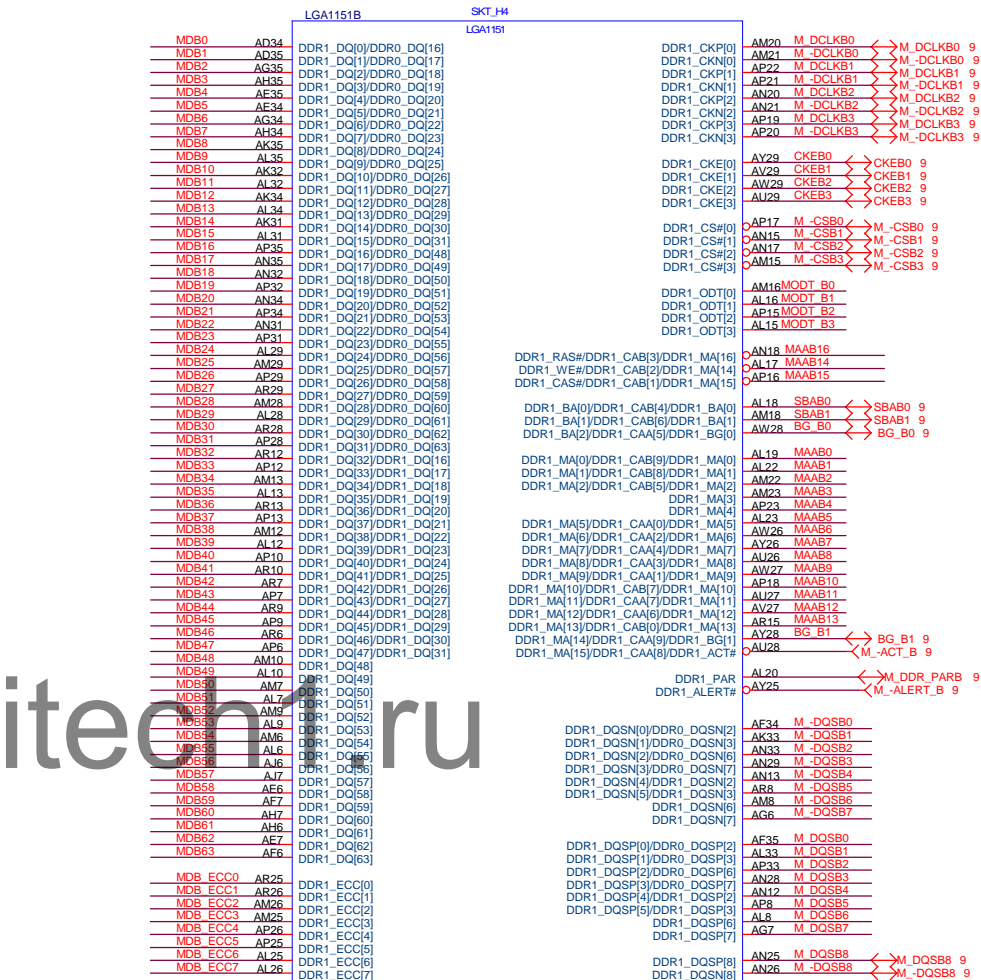
W=12 mil out of CPU
S=15 mil out of CPU

Gigabyte Technology		
CPU LGA1151-A		
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* 改DDR4 net



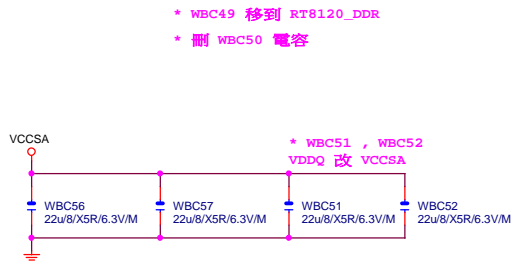
Need check the new CPU ME

DDR CHANNEL
B

DDR_VREF_CA	AB40	VREF_CAB	→	VREF_CAB	8
DDR0_VREF_DQ	AC40				
DDR1_VREF_DQ	AC39	VREF_DQB	→	VREF_DQB	9

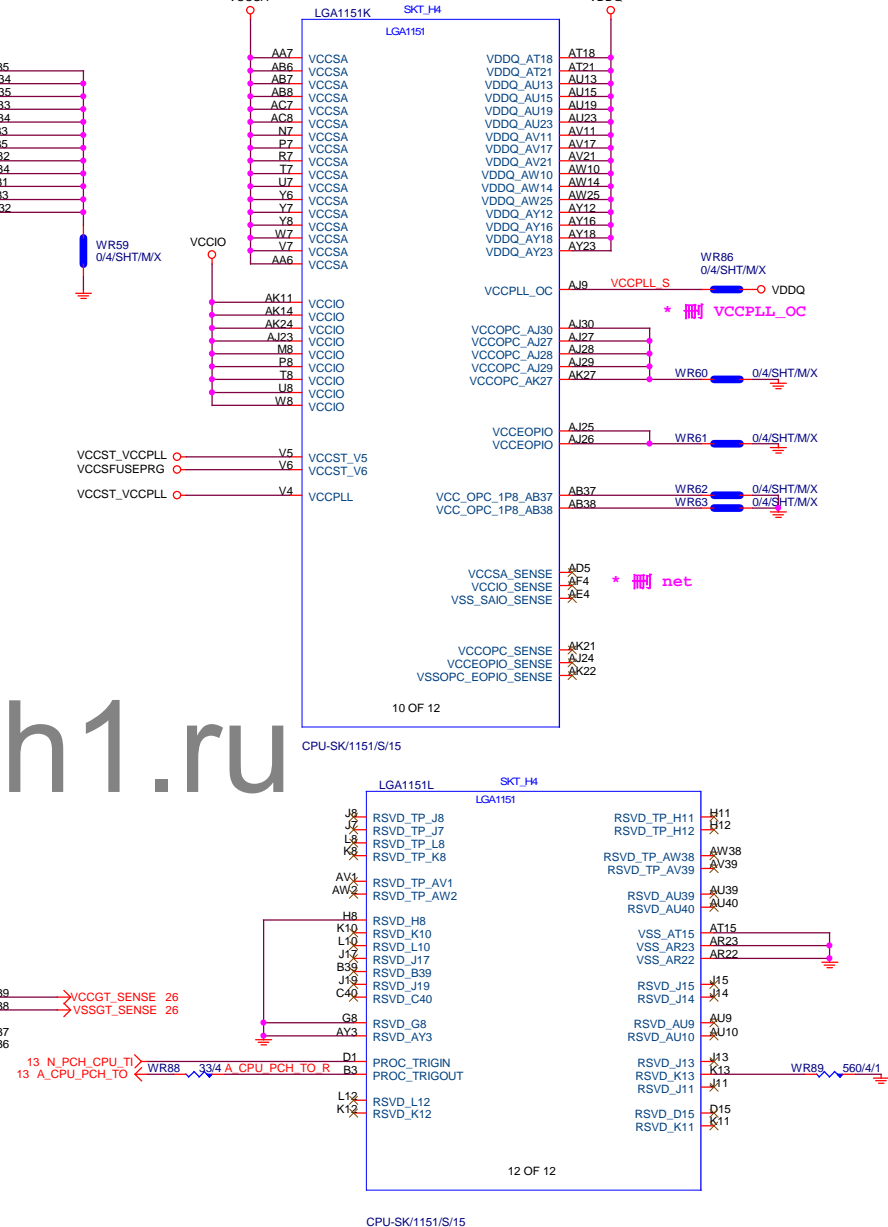
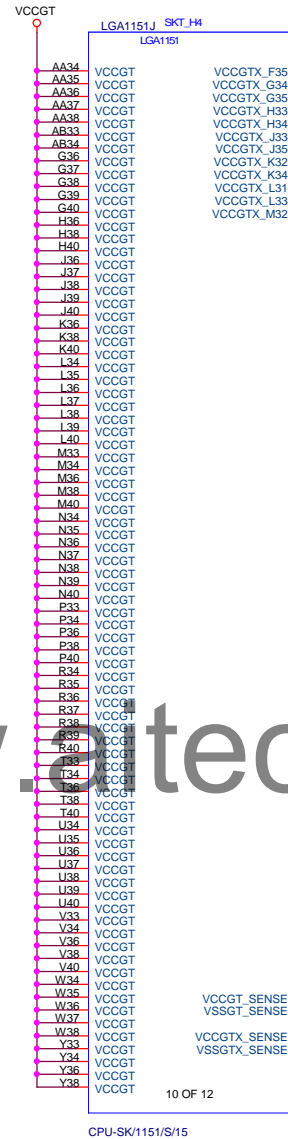
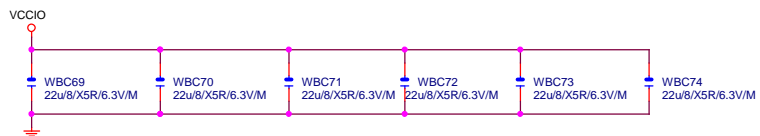
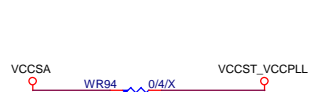
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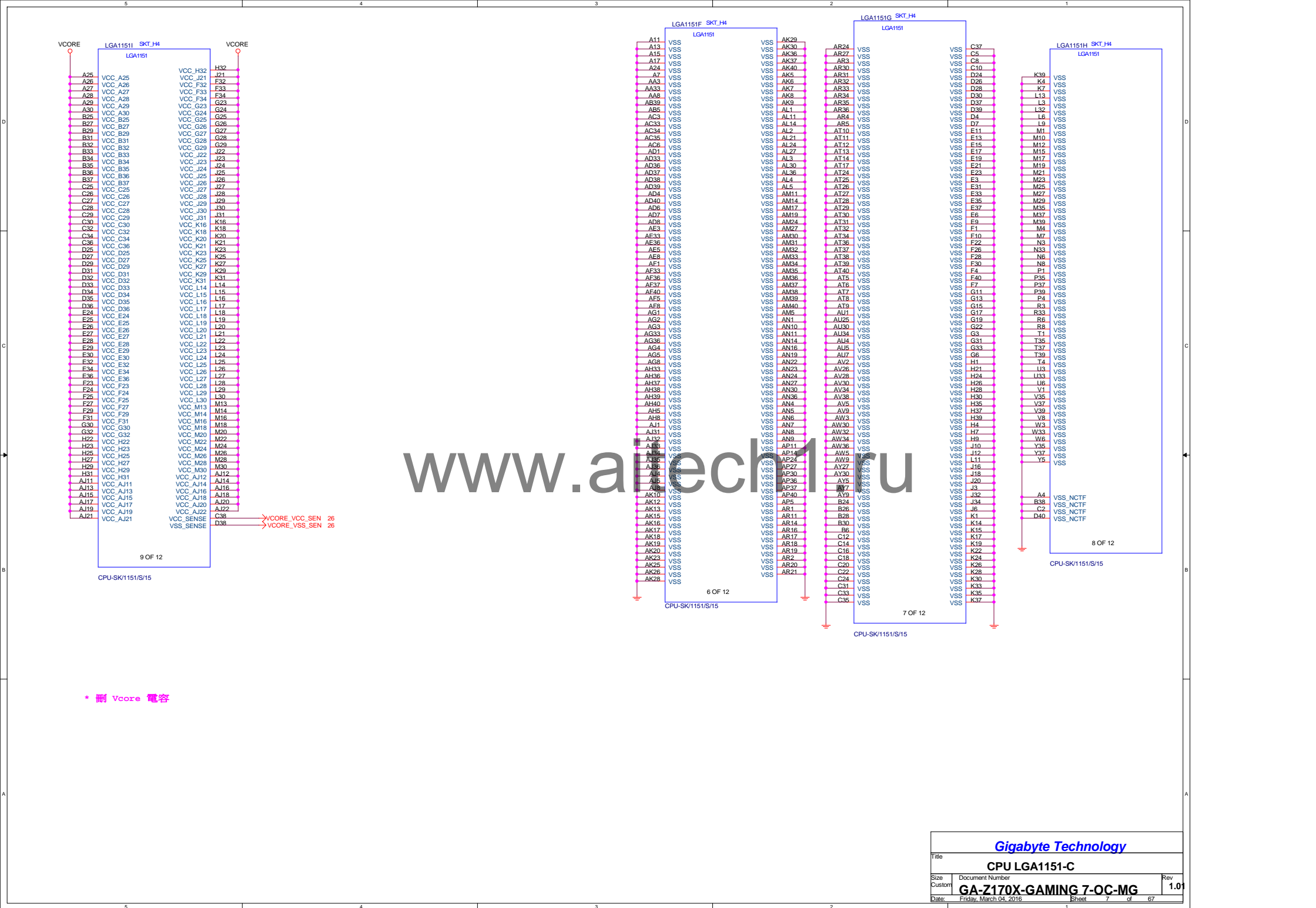
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CPU LGA1151-B			
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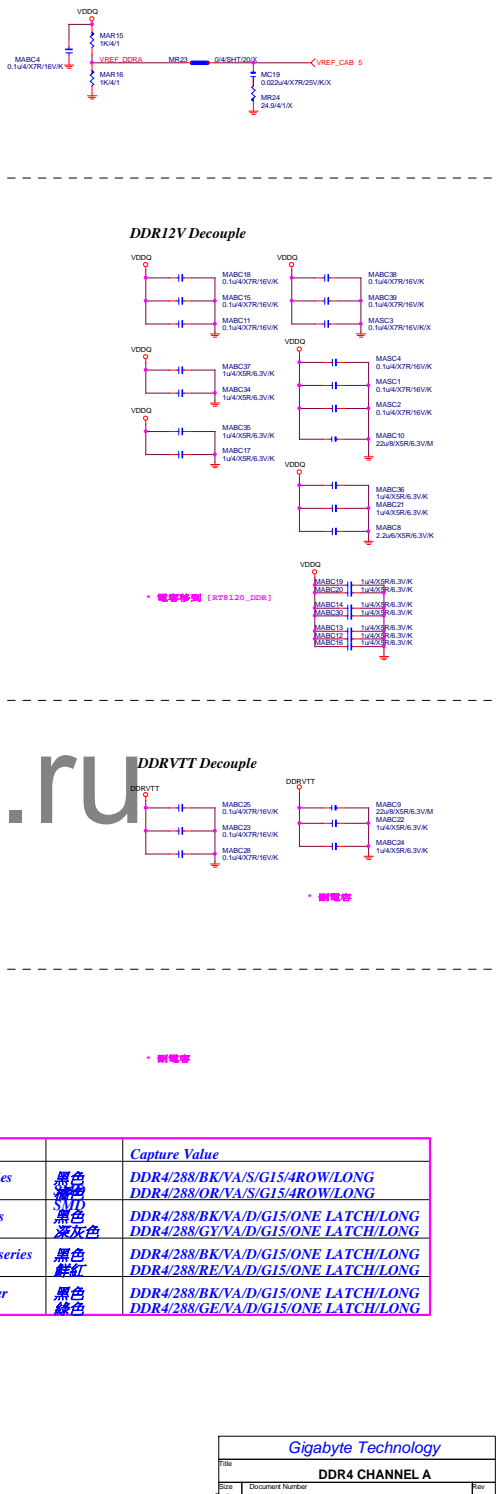
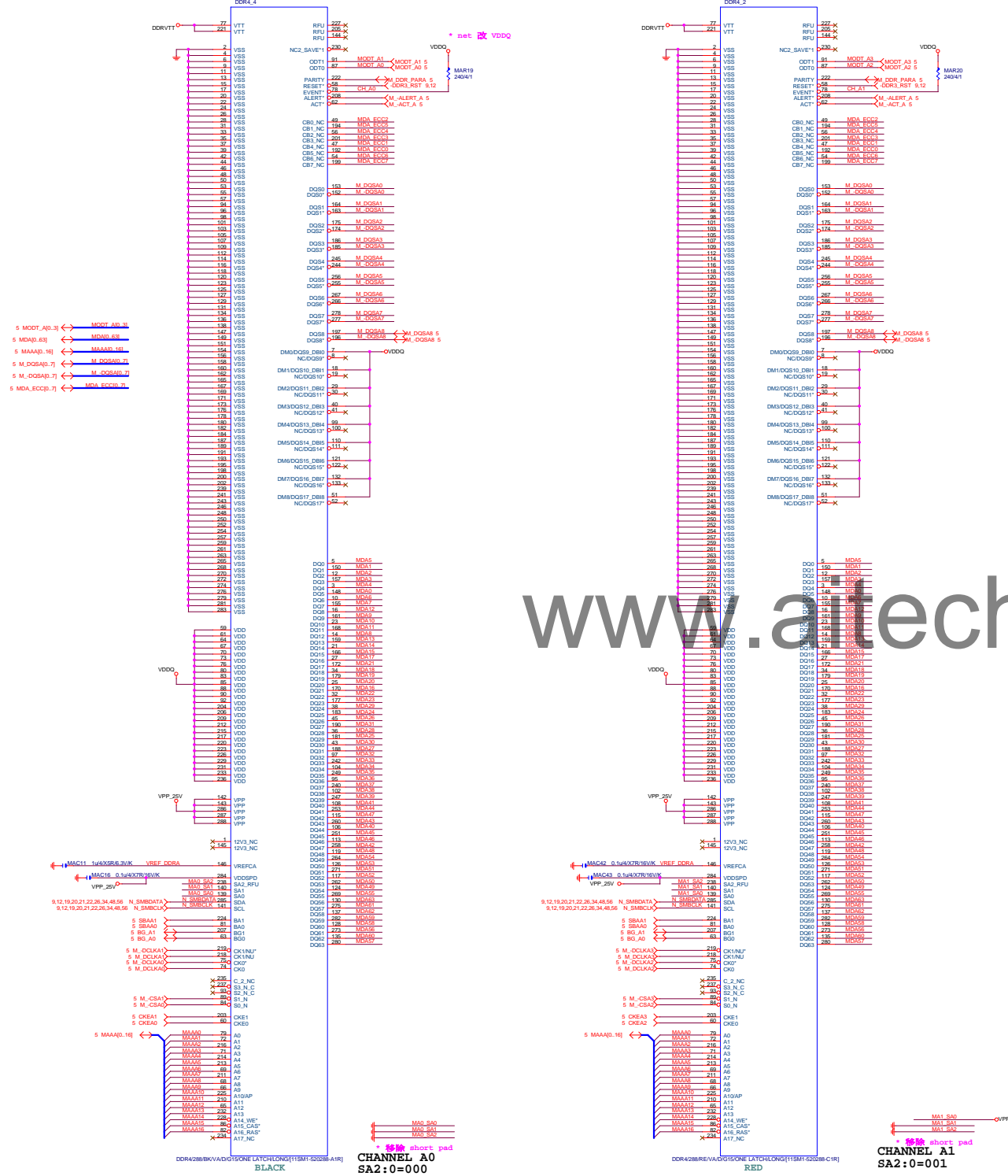


* 刪 WBC124, WBC125, WBC126, WBC127 電容

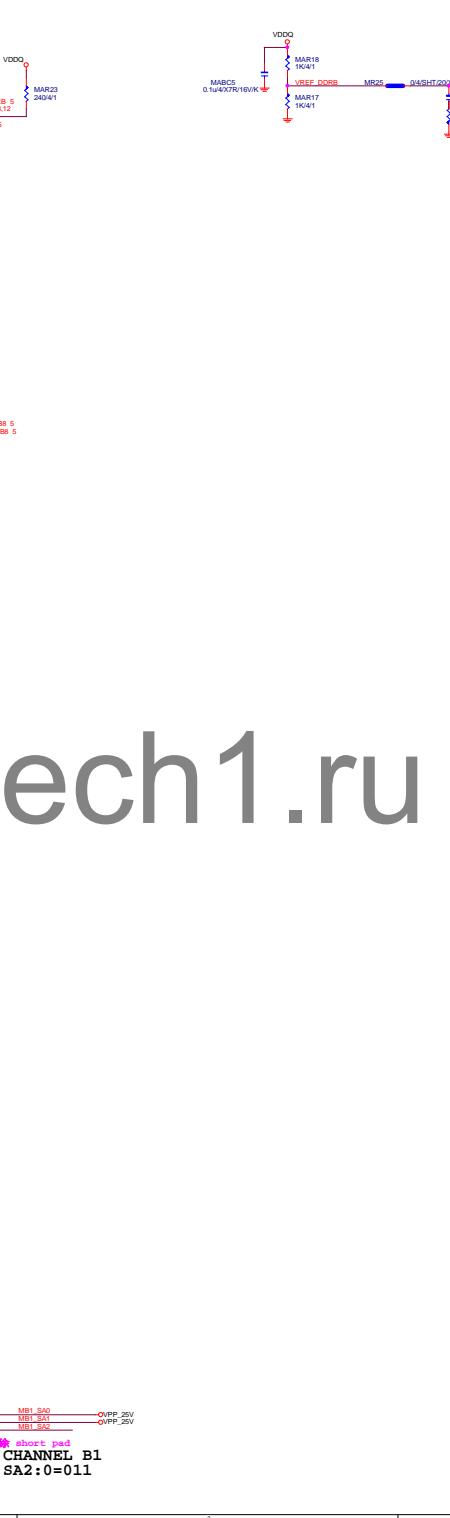
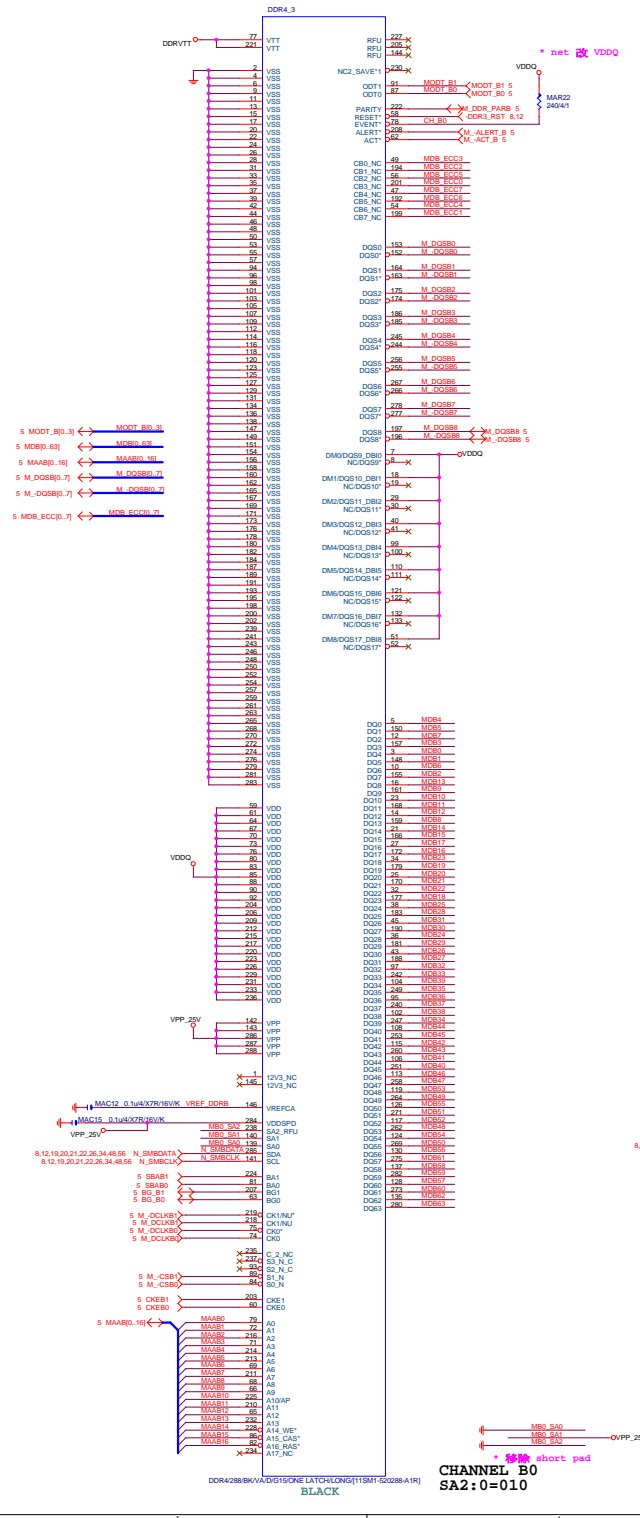
* WR94, WR59, WR86, WR60, WR61, WR62, WR63 改 short pad







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



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File: **DDR4 CHANNEL B**

Size: **GA-Z170X-GAMING 7-OC-MG**

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Rev 0.3

For DP Enable →

VCC3

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

PCHE

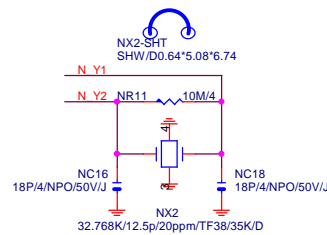
SPT-H_PCH

52 DP_HDP → AW4
56 N_HDMI20_HDP_F → AY2
57 N_DP_HDP → AV4
N_GPP_B3 BA4GPP_I7/DDPC_CTRLCLK
GPP_I8/DDPC_CTRLDATA
GPP_I5/DDPB_CTRLCLK
GPP_I6/DDPB_CTRLDATA
GPP_I9/DDPD_CTRLCLK
GPP_I10/DDPD_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

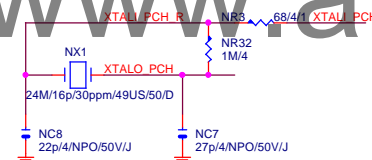
GPP_I4/EDP_HPD

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CHIPSET SKYLAKE INTEL(10HB1-03Z170-20R)N_GPP_B3 NR7 8.2K/4
N_GPP_F23 NR12 8.2K/4
N_GPP_F22 NR248 8.2K/4
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/4N_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
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

VCC1_0_PCH NR5 2.7K/4/1 XCLK_BIASREF E1
CLK: 4/15<1000;Guard GND19 -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_H752 REFCLK_TBT_N → REFCLK_TBT_N
52 REFCLK_TBT_P → REFCLK_TBT_P
N_GPP_H7 NR283 0/4/X
N_GPP_B9 NR169 MASK0/4 SHTM/X
N_GPP_H4 NR286 0/4/X
N_GPP_B10 NR287 0/4/X

ON-BOARD DEVICE USED



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

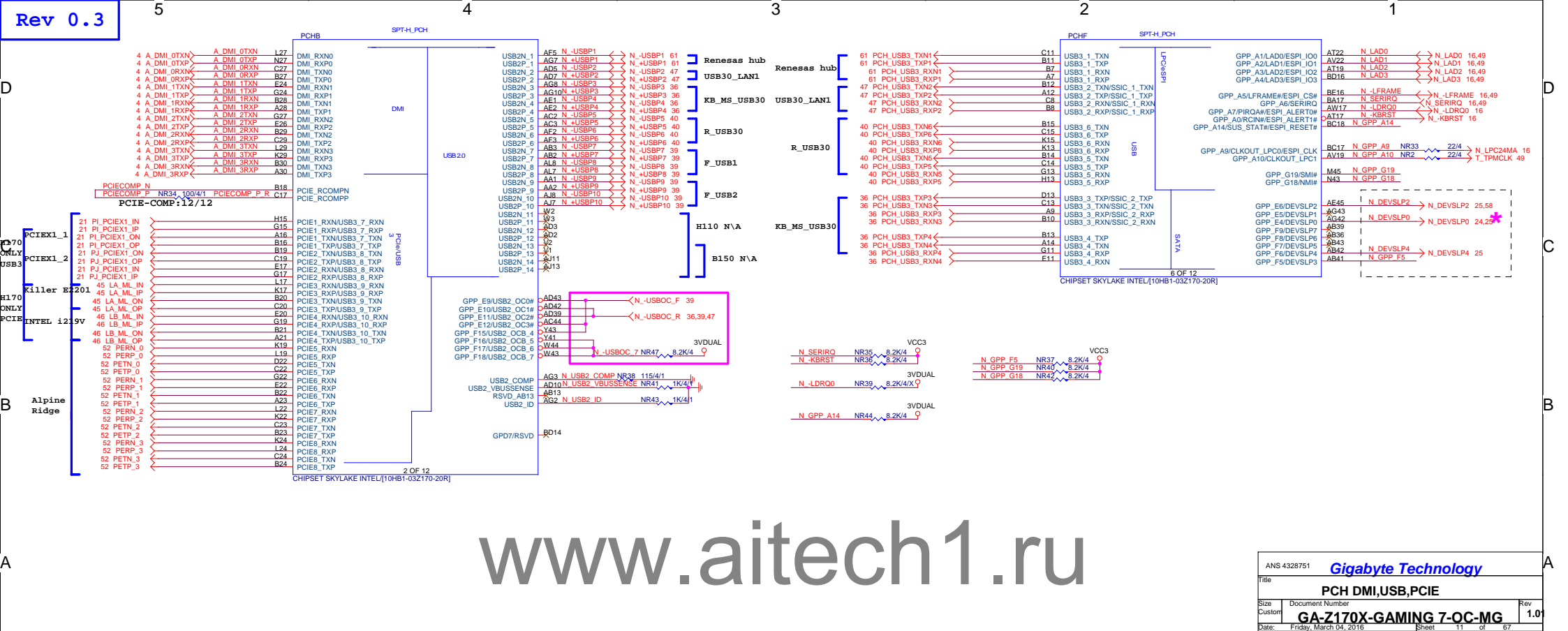
PCHG

SPT-H_PCH

GPP_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_P12CLKOUT_ITPXD P
CLKOUT_ITPXD P
CLKOUT_CPUPCIBCLK
CLKOUT_CPUPCIBCLK_PPA_SRCCLK_3GIO 19
PA_SRCCLK_3GIO 19PI_PCIE_CLK 21
PI_PCIE_CLK 21PJ_PCIE_CLK 21
PJ_PCIE_CLK 21PQ_PCIE_CLK 20
PQ_PCIE_CLK 20RH_SRCCLK 51
RH_SRCCLK 51LA_SRCCLK_LAN 45
LA_SRCCLK_LAN 45CK_M2H_100M_DN 24
CK_M2H_100M_DP 24PE_SRCCLK_3GIO1 22
PE_SRCCLK_3GIO1 22PK_PCIE_CLK 21
PK_PCIE_CLK 21LB_SRCCLK_LAN 46
LB_SRCCLK_LAN 46CK_M2D_100M_DN 58
CK_M2D_100M_DP 58

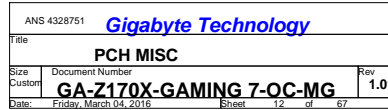
CLOCK 4/4/4/15

ANS 4328751		Gigabyte Technology	
Title			
PCH CLOCK BUFFER			
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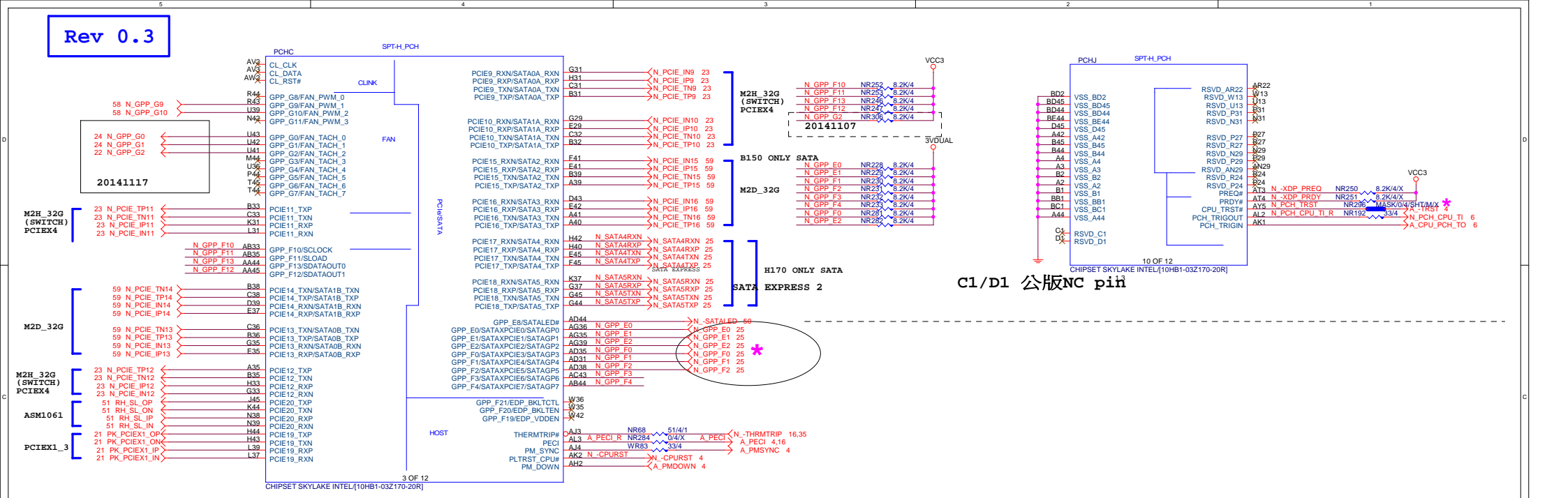


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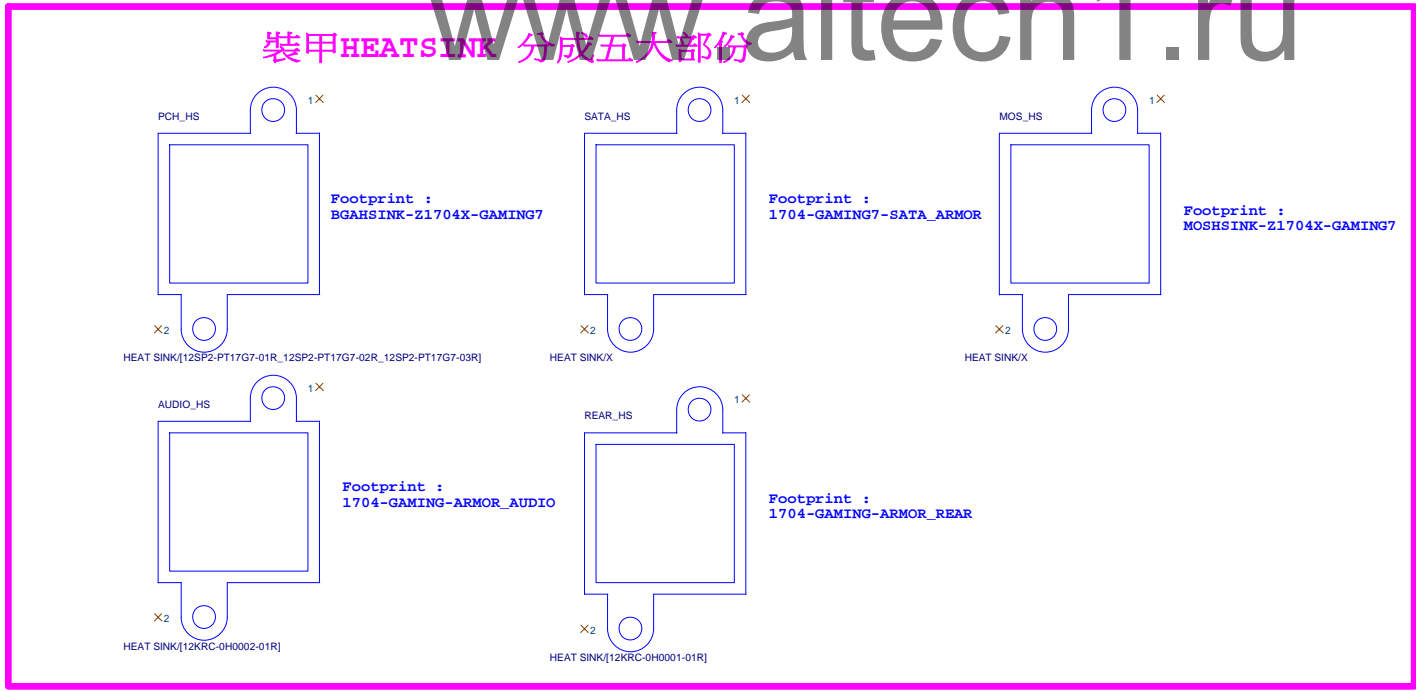
ANS 4328751		Gigabyte Technology	
Title		PCH DMI,USB,PCIE	
Size	Document Number	Rev	1.0
Custom	GA-Z170X-GAMING 7-OC-MG		
Date:	Friday, March 04, 2016	Sheet	11 of 67

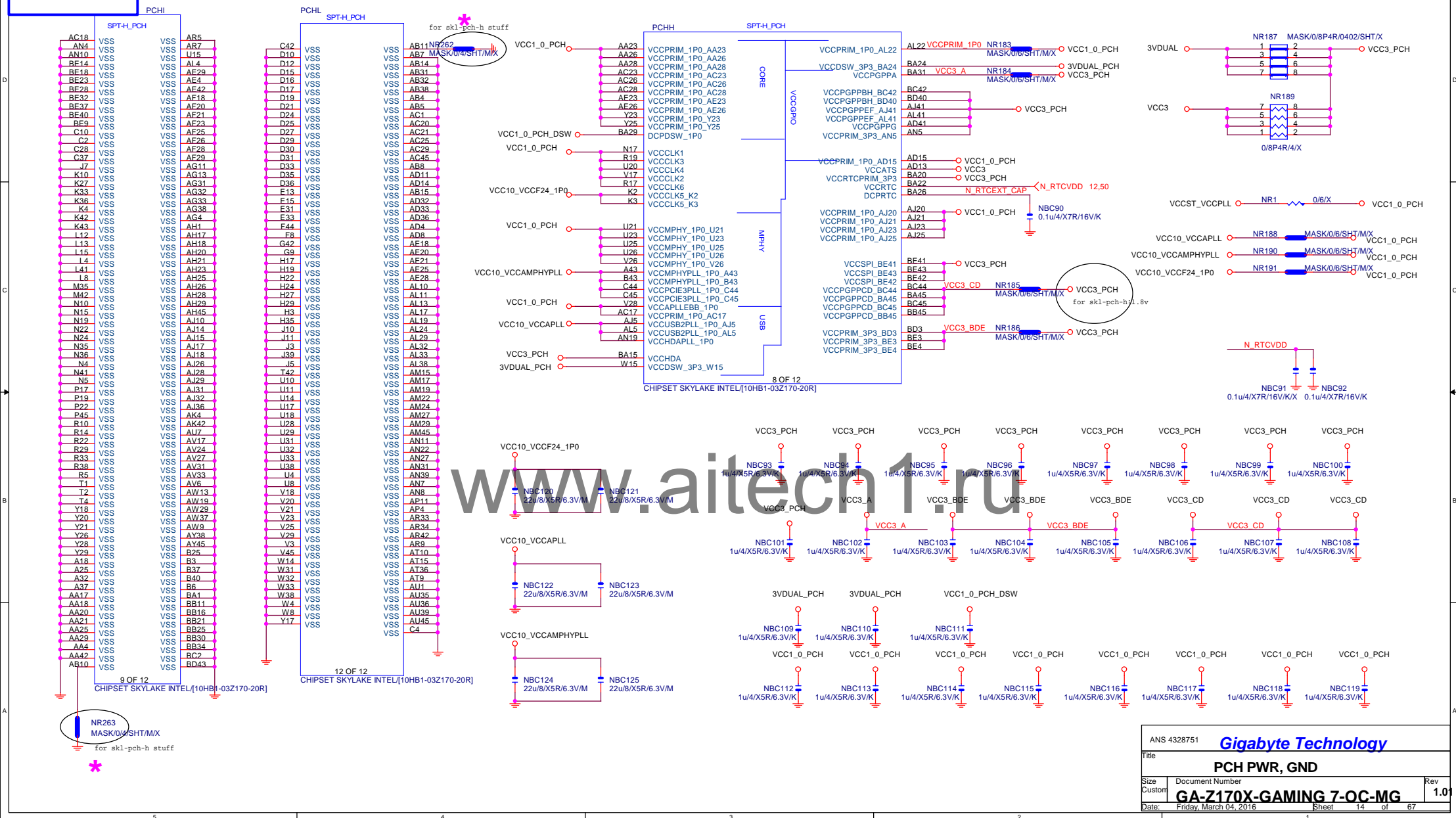


Rev 0.3



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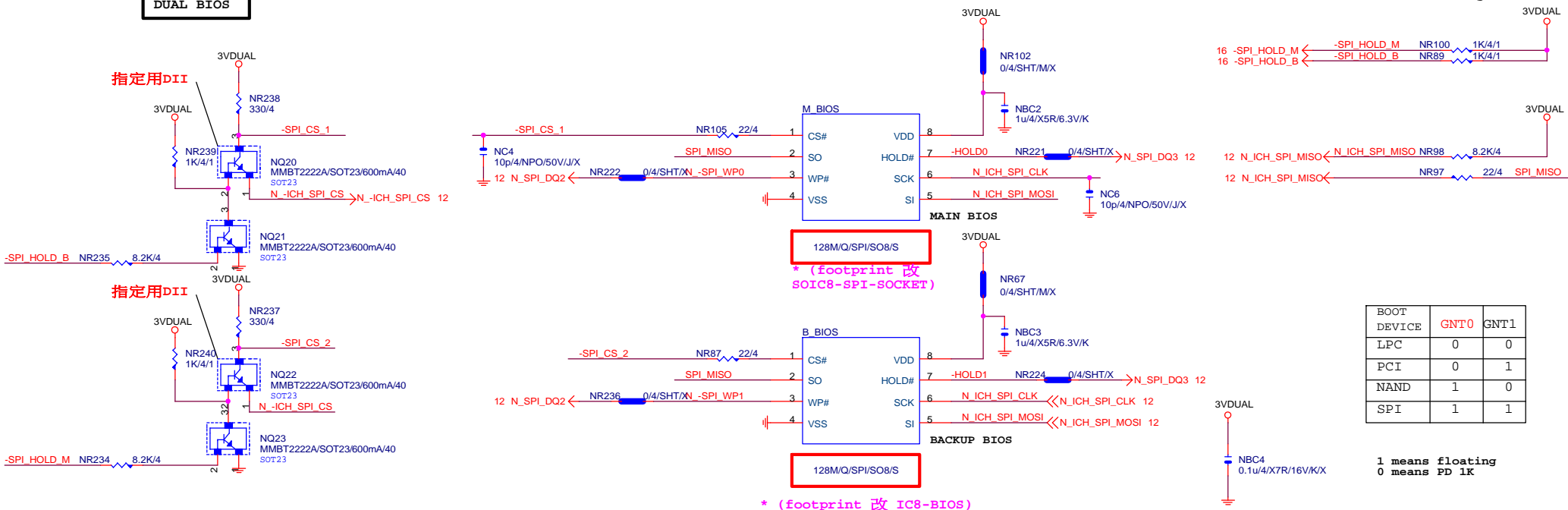


DUAL BIOS

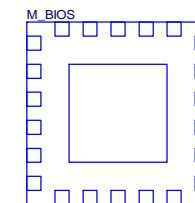
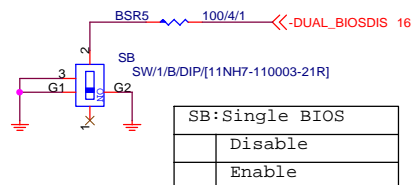
MOSI For DMI RX Termination Voltage

指定用DII

指定用DII



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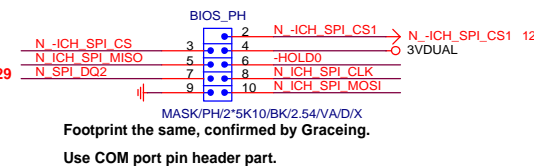


LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

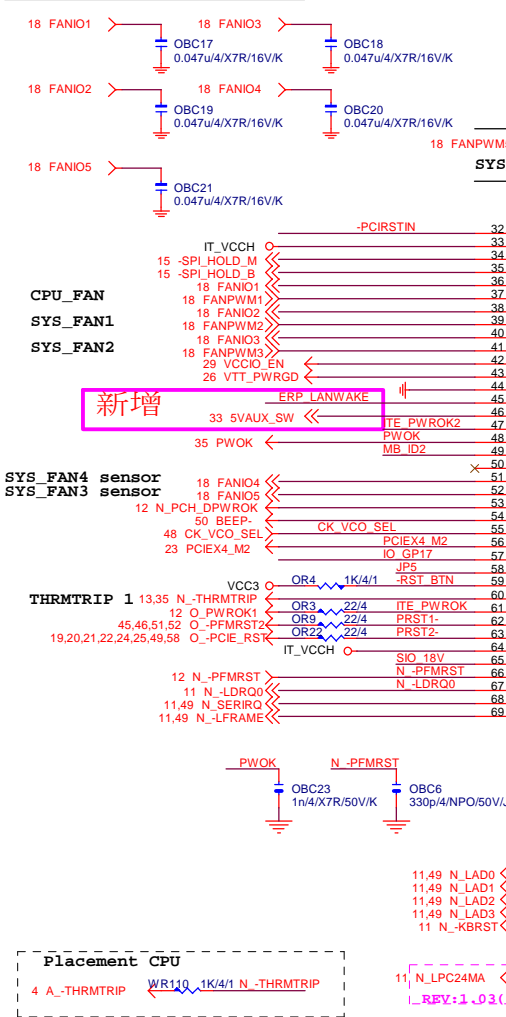
* 試産先上, PVT 移除

BIOS_PH

★Update 2015-01.29



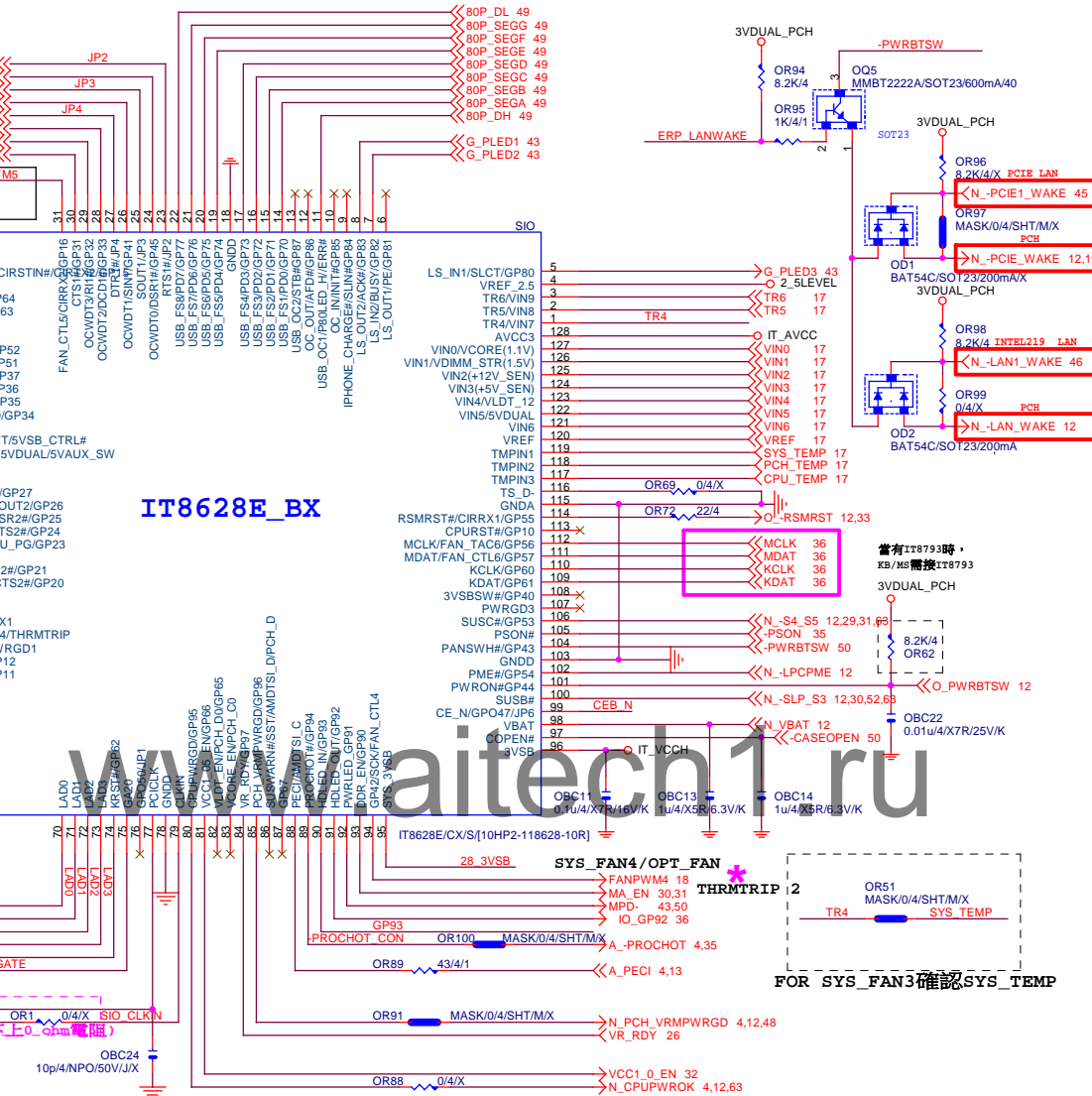
SIO IT8628BX REV:1.05



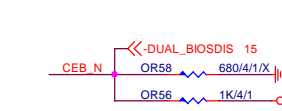
CPU 端 A_-THRMTRIP不可與PCH及SIO N_-THRMTRIP直接連接。否則會出現無法拉LOW情況。

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

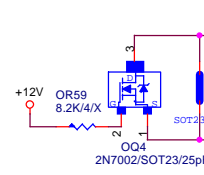
IT8628E GPIO問題調整	
PIN 50	GP26-第一次接上POWER時會拉 LO
PIN 90/91	DEFAULT為HIDLED FUNCTION, GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟FAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN22, 需高於3V, 若低於此部分COM PORT及LPT裝置線路會異常動作。



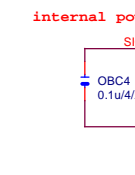
DUAL BIOS OPT STRAP



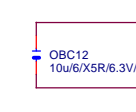
Power leakage



SIO_18V



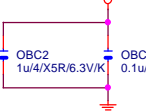
SIO CAP



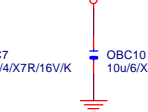
IT_VCC



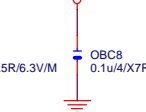
IT_AVCC



3VDUAL_PCH



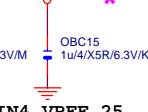
2_5LEVEL



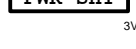
2_5LEVEL



CLOSE SIO PIN4 VREF_25



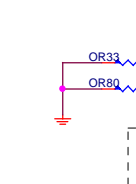
PWR SHT



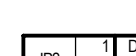
SIO PU



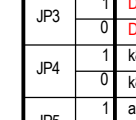
SIO STRAP



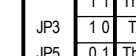
EUP control detect



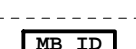
MB ID



THRMTRIP



FOR SYS_FAN3確認SYS_TEMP



THRMTRIP



THRMTRIP



THRMTRIP



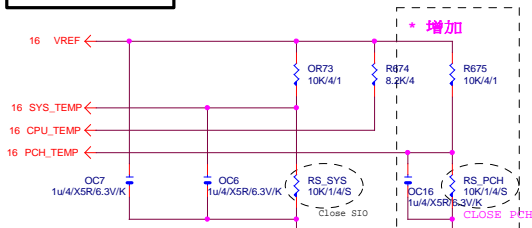
THRMTRIP



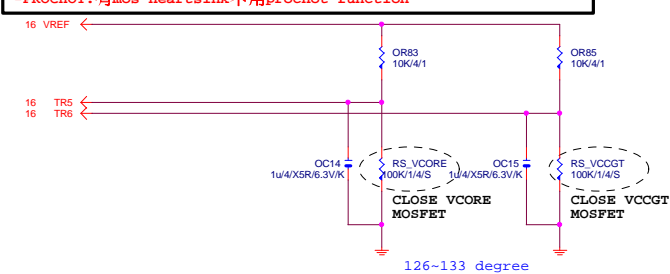
Gigabyte Technology	
ITE 8620 LPC IO	
Size	Document Number
Custom	GA-Z170X-GAMING 7-OC-MG
Date:	Friday, March 04, 2016
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JP2	1	Disable WDT
JP2	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
JP3	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency 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.

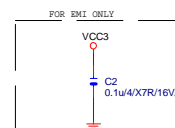
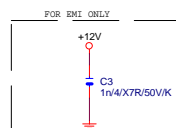
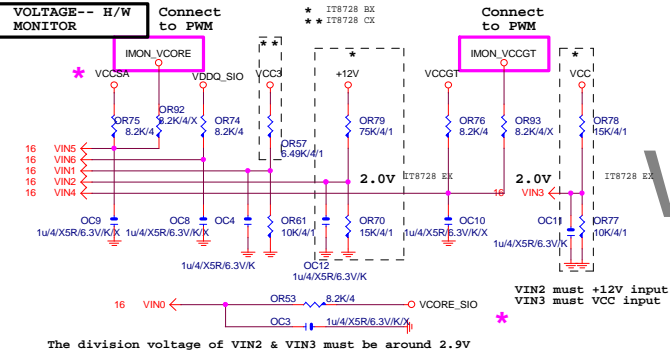
TEMP H/W MONITOR



RS_VCORE、RS_VCCGT、CLOSE CPU_VCORE & VCCGT MOSFET



VOLTAGE-- H/W MONITOR

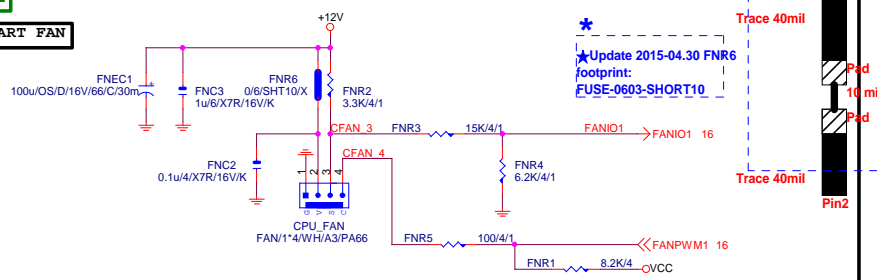


★Update 2015-04.24

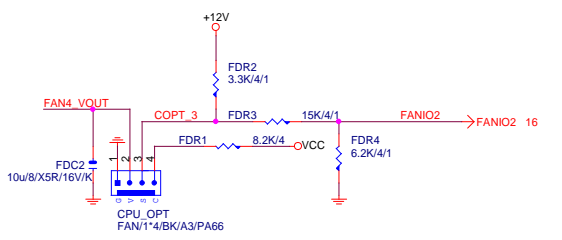
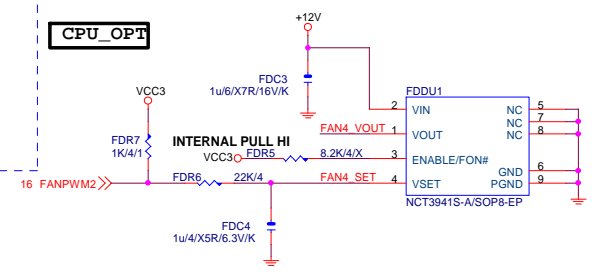
Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
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CPU SMART FAN

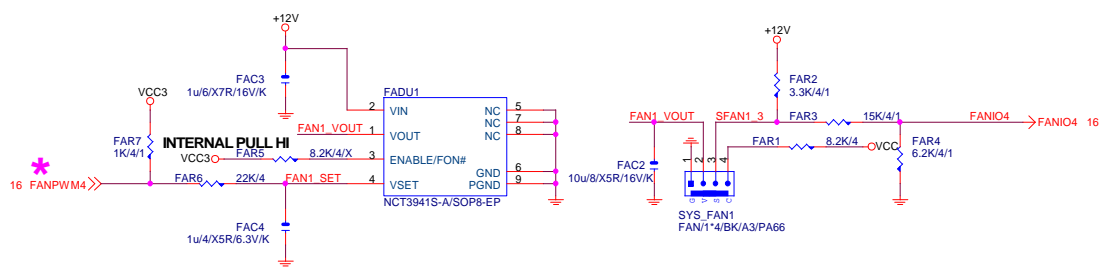


CPU_OPT

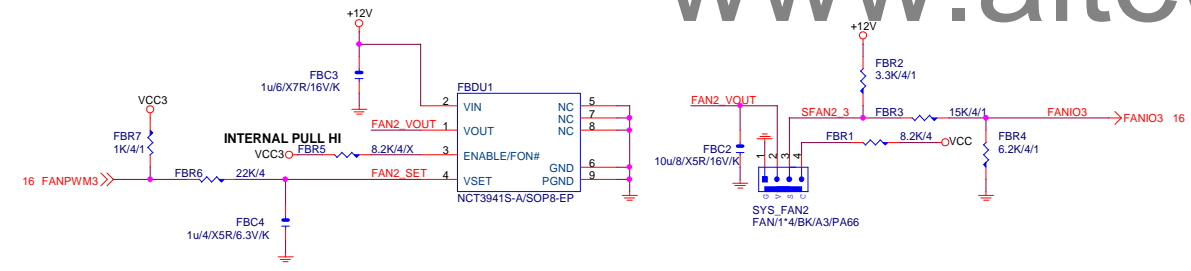


SYSTEM FAN1

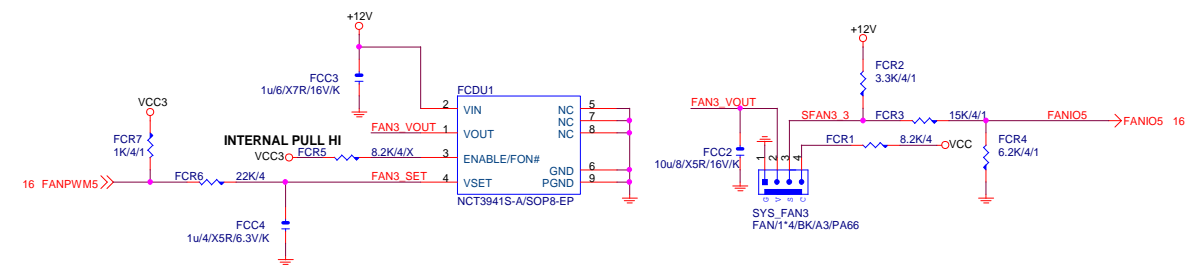
Linear SYS_FAN
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FAN2

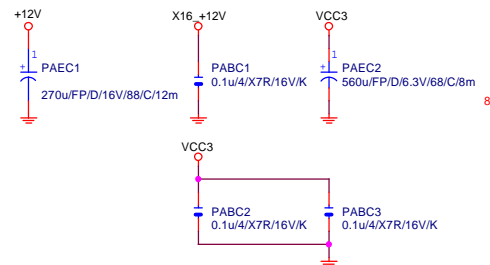


SYSTEM FAN3



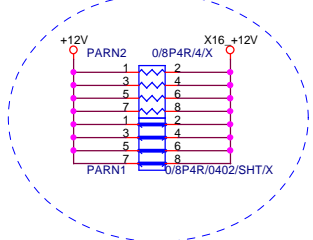
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PCIEX16 CAP



PCIEX16	PROTECT	SHT
---------	---------	-----

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



PCIEX16	AC	CAP
---------	----	-----

PA EXP TXP0	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--> 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

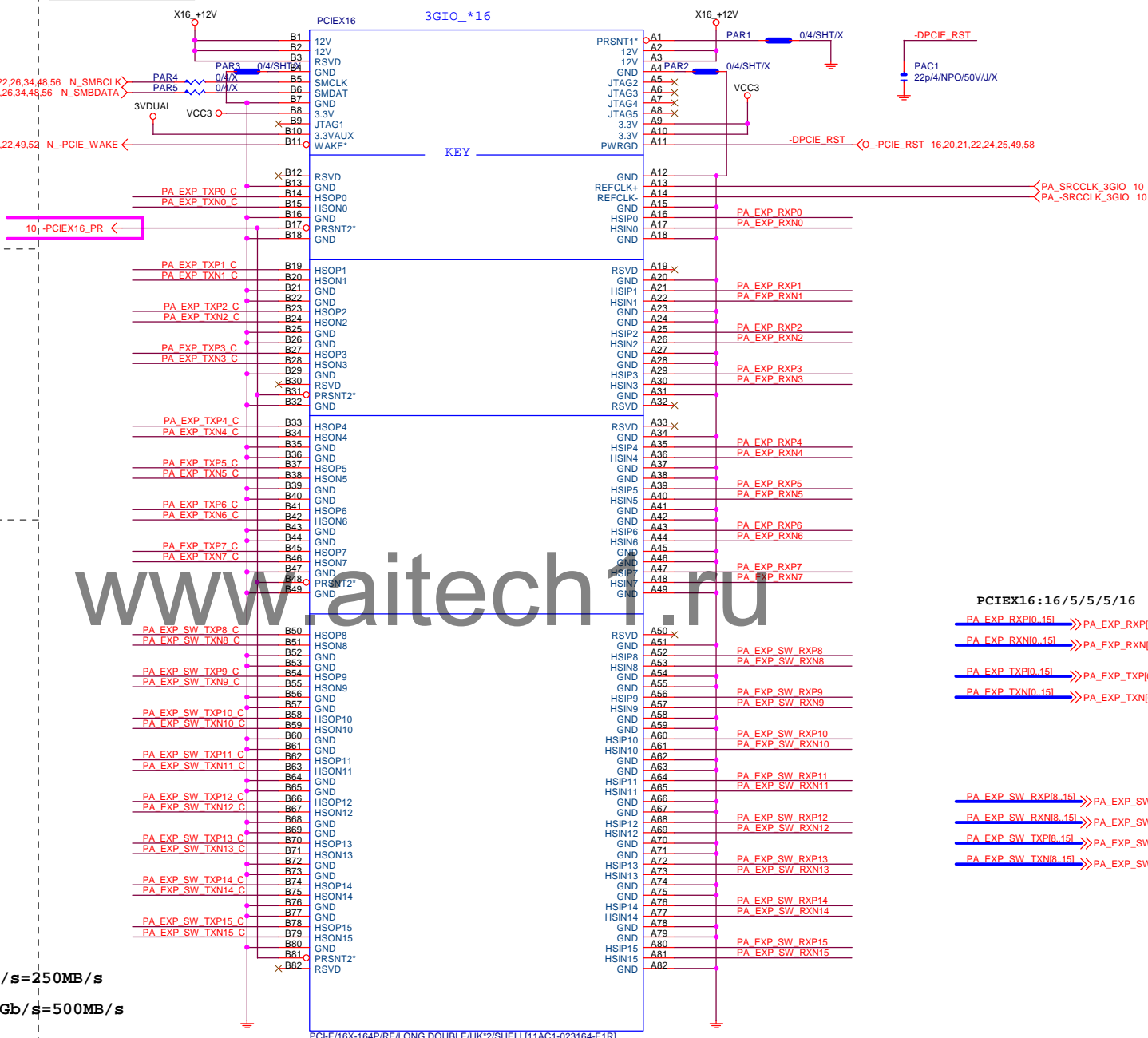
PCE-E X16(單向) BANDWIDTH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 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] \gg PA_EXP_TXP[0..15] 4,23

PA_EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 4,23

PA_EXP_SW_RXP[8..15] >> PA_EXP_SW_RXP[8..15] 23

PA_EXP_SW_RXN[8..15] >> PA_EXP_SW_RXN[8..15] 23

PA_EXP_SW_TXP[8..15] >> PA_EXP_SW_TXP[8..15] 23

PA_EXP_SW_TXN[8..15] >> PA_EXP_SW_TXN[8..15] 23

Gigabyte Technology:

PCI EXPRESS * 16

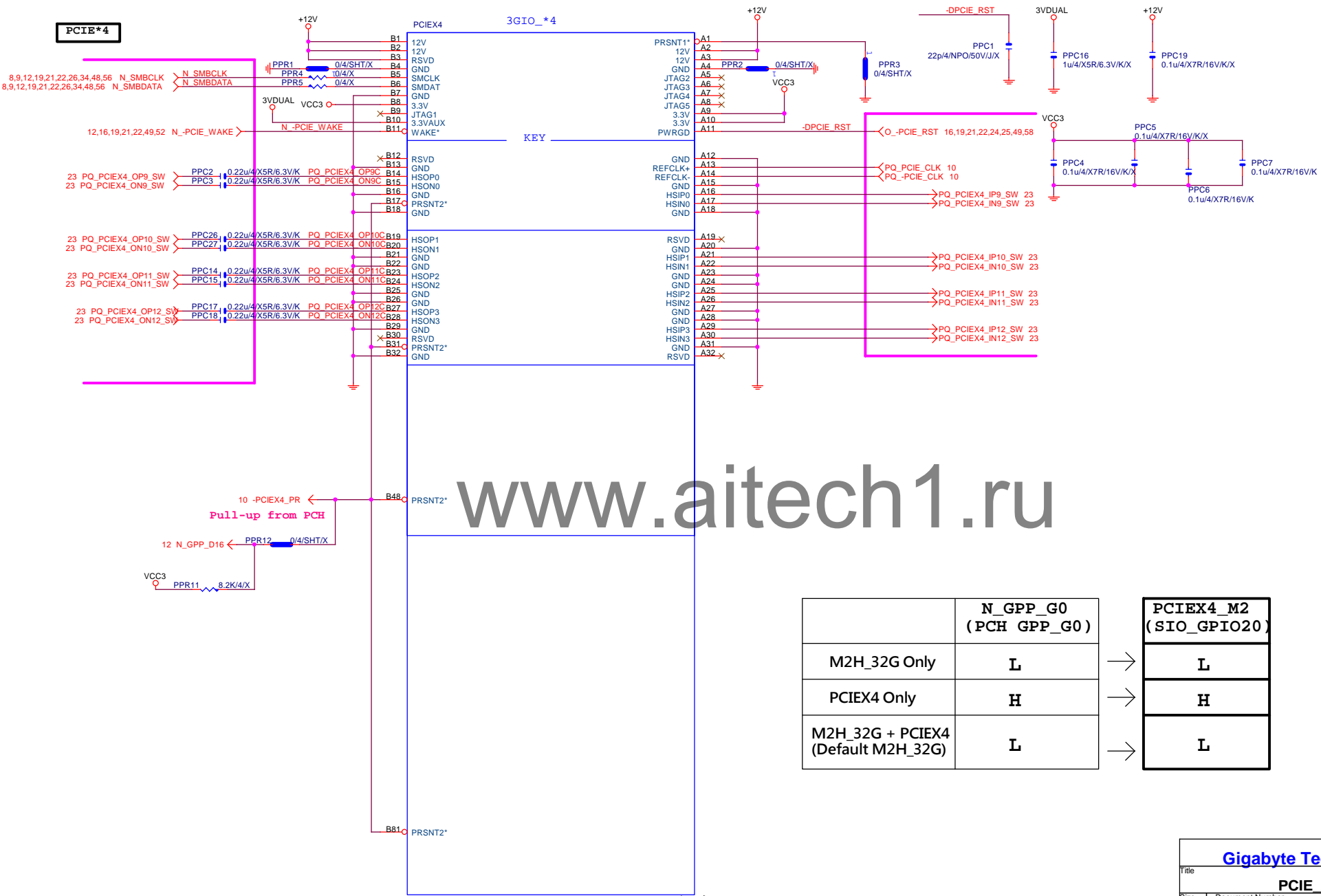
Document Number

GA-Z170X-GAMING 7-OC-MO

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2		1	

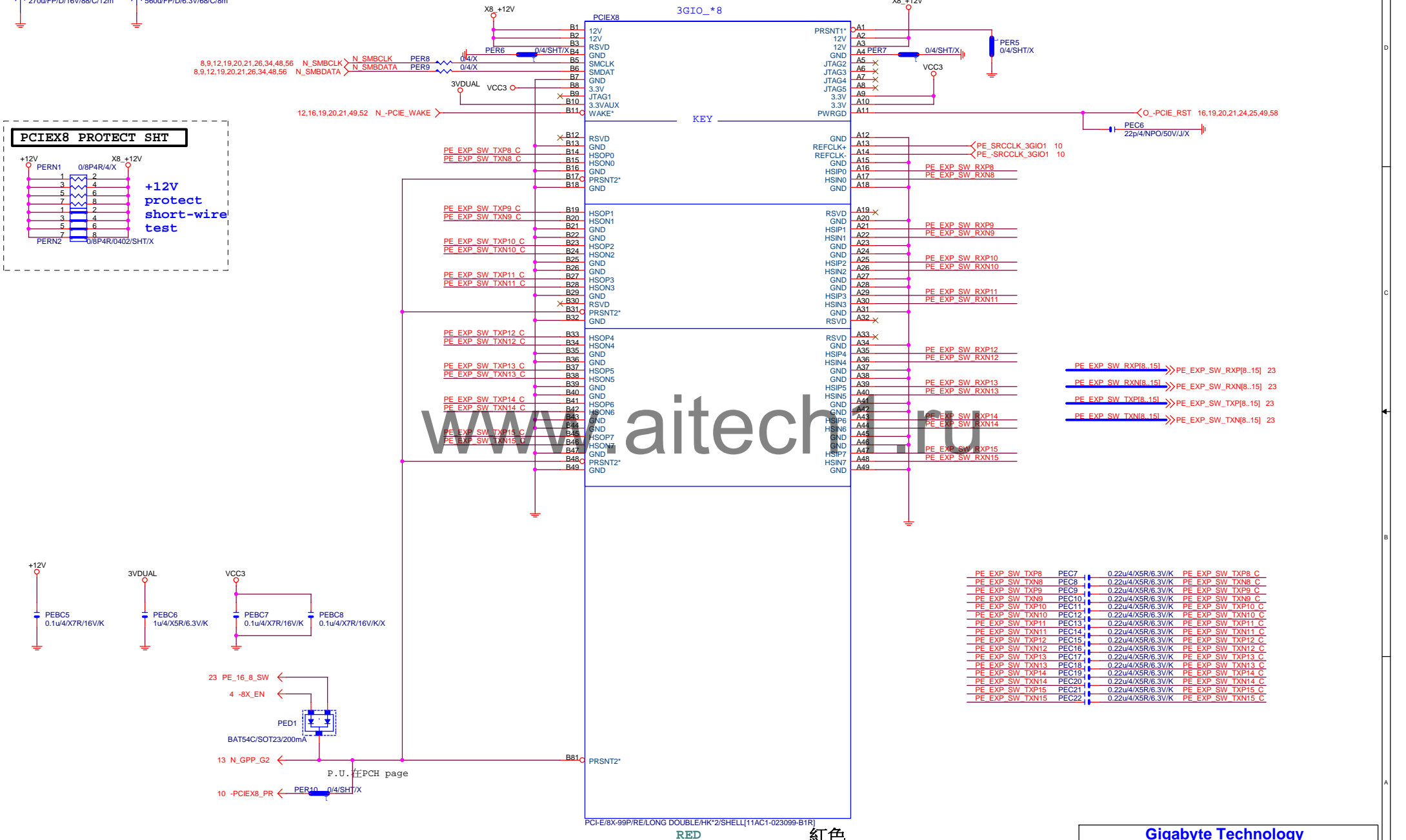
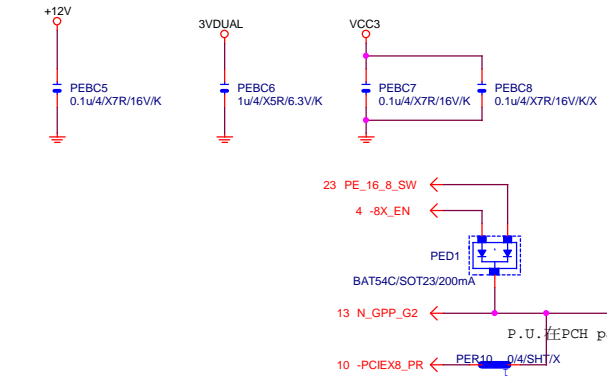
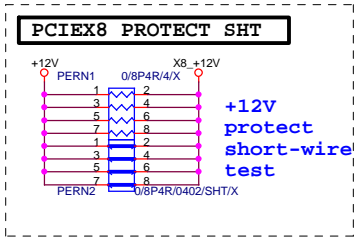
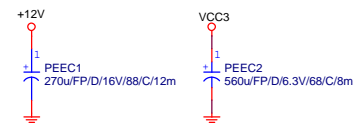
Footprint "PCIESLOT-64STH-1"

PCIE*4

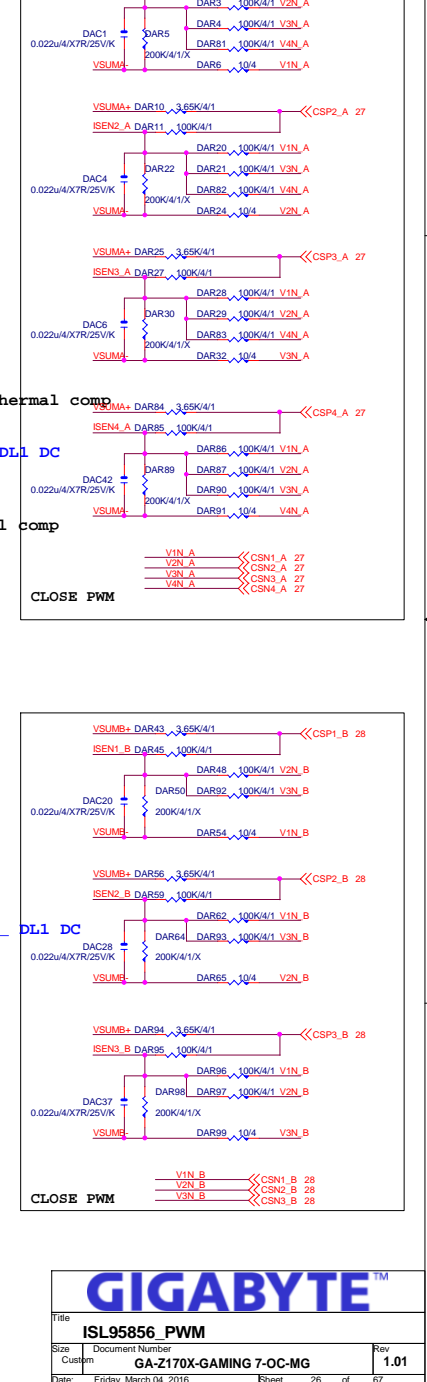
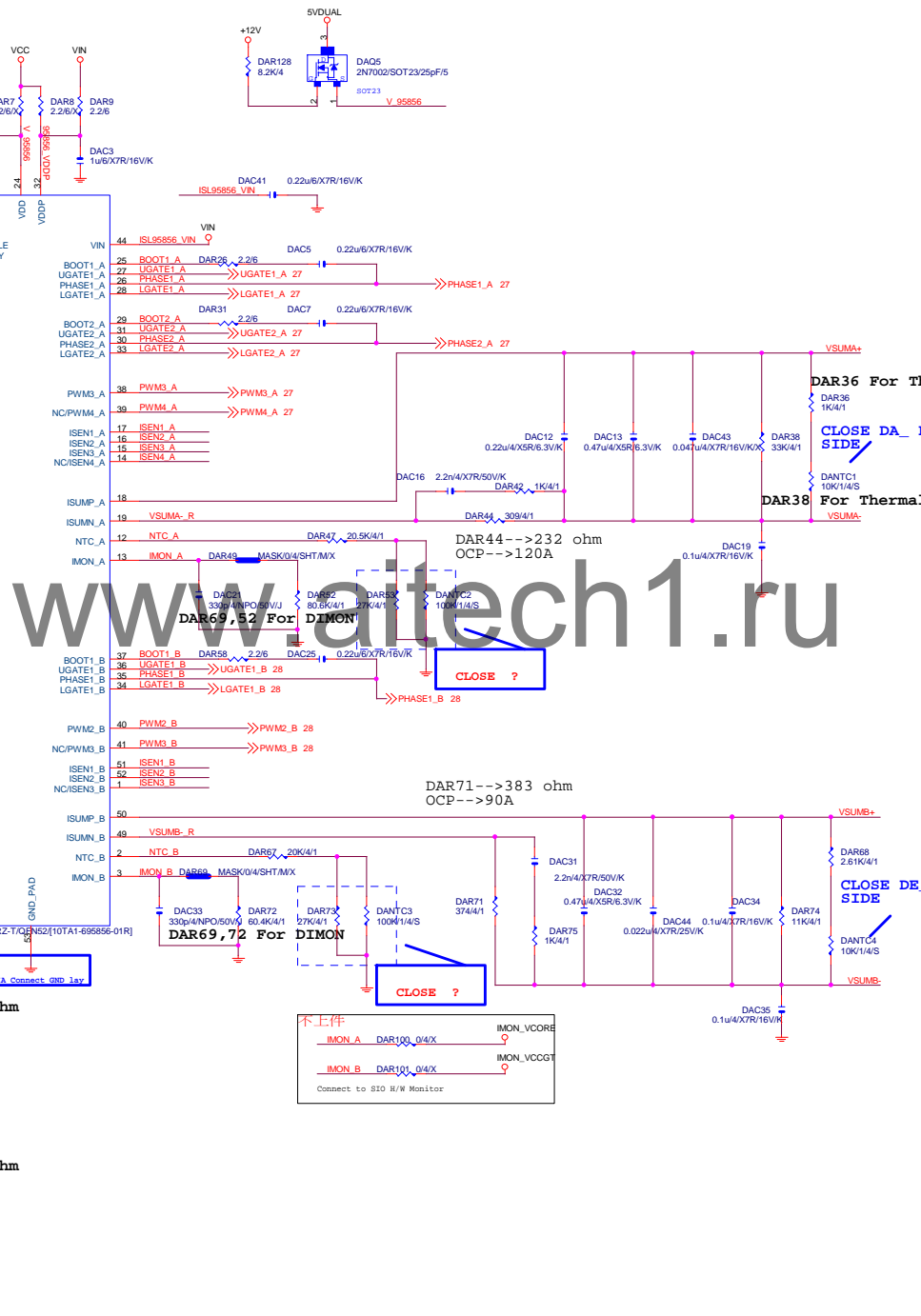


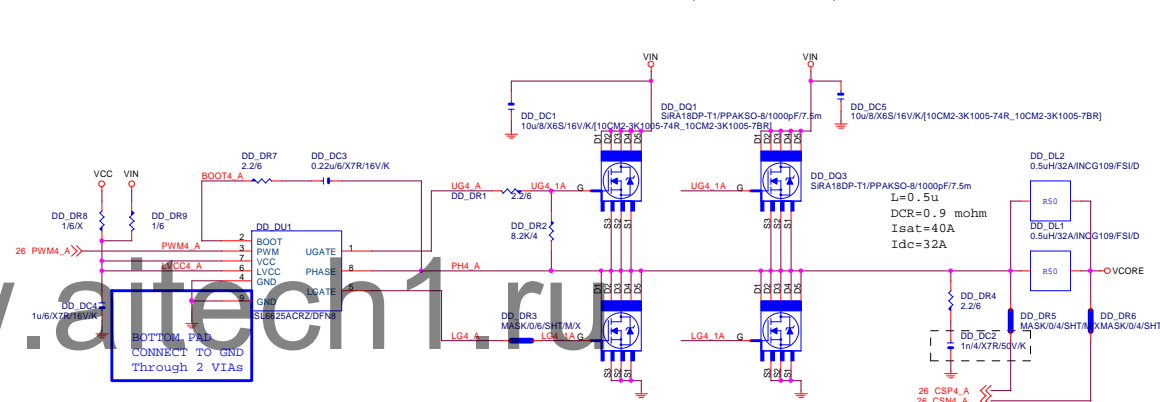
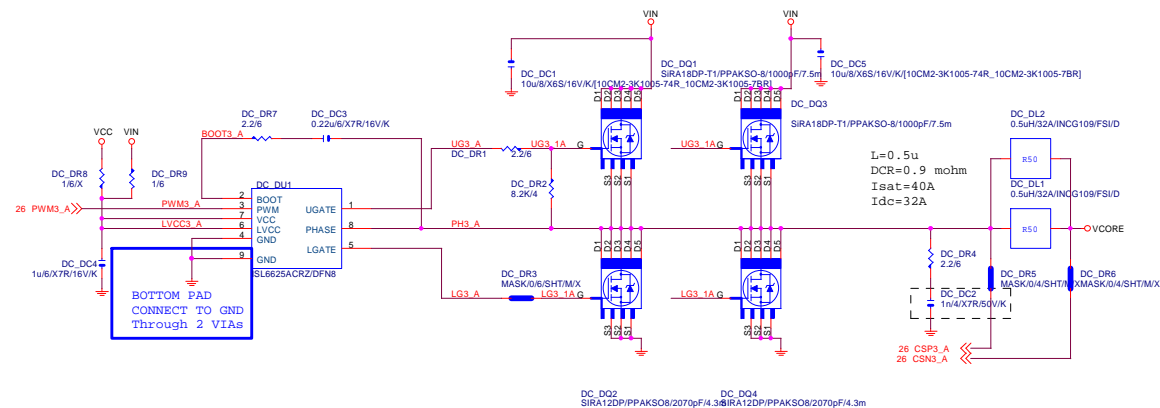
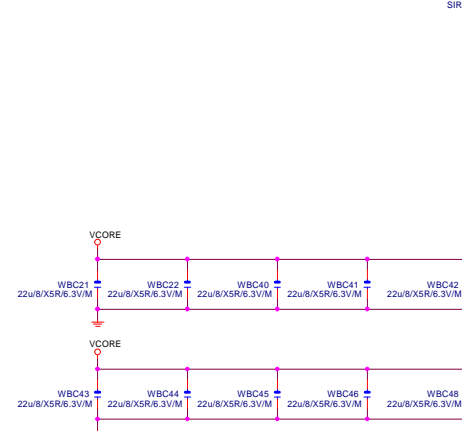
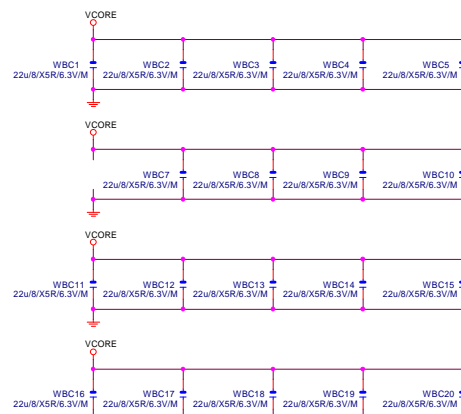
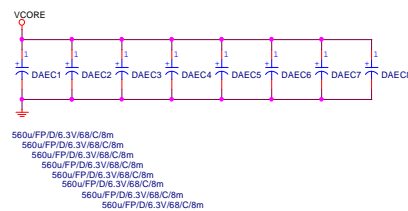
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	N_GPP_G0 (PCH GPP_G0)	PCIEX4_M2 (SIO_GPIO20)
M2H_32G Only	L	L
PCIEX4 Only	H	H
M2H_32G + PCIEX4 (Default M2H_32G)	L	L

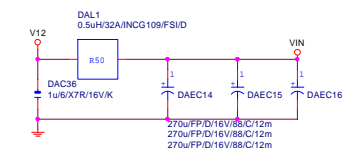



Gigabyte Technology			
Title			
PCI EXPRESS X8			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
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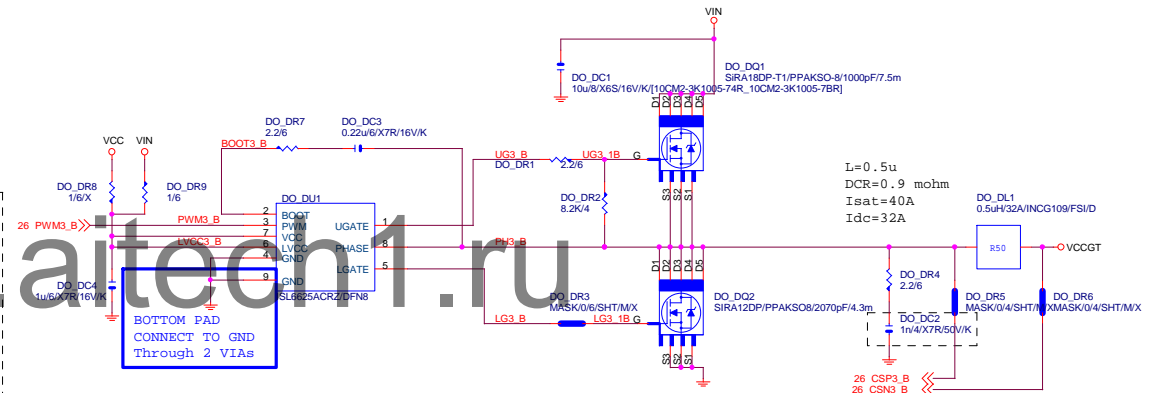
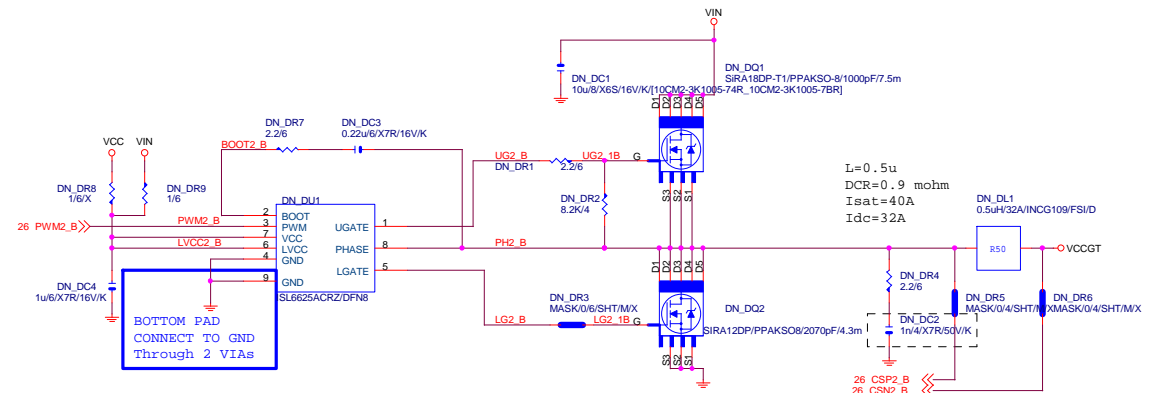
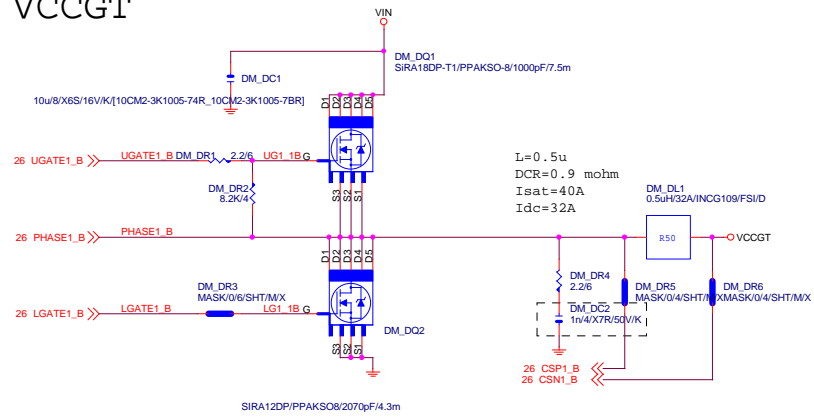
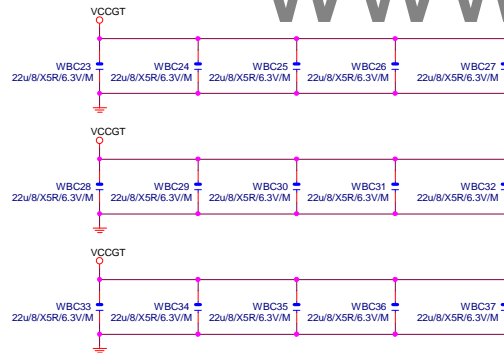
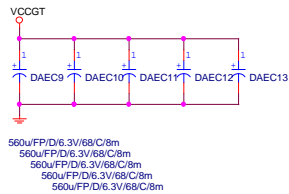
VCORE CAP 560u*8PCS
22u*29PCS

VIN CAP 270u*3PCS



			
Title			
ISL95856_MOS			
Size	Document Number	Rev	
Custom	GA-2170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	27 of 67

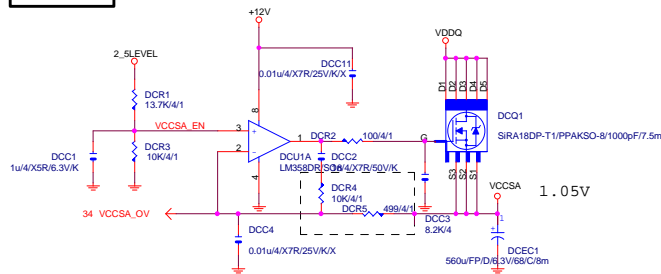
VCCGT

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

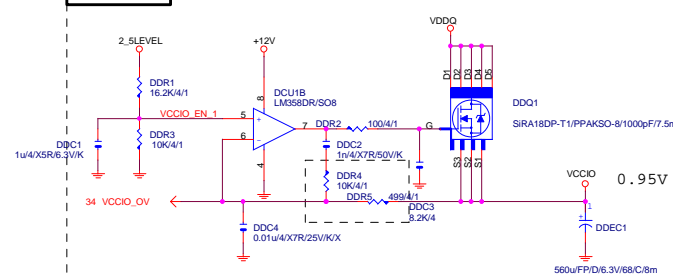
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GIGABYTE™			
Title			
ISL95856 MOS			
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Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	28 of 67

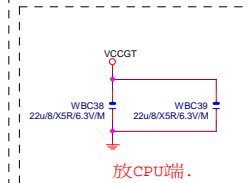
VCCSA



VCCIO

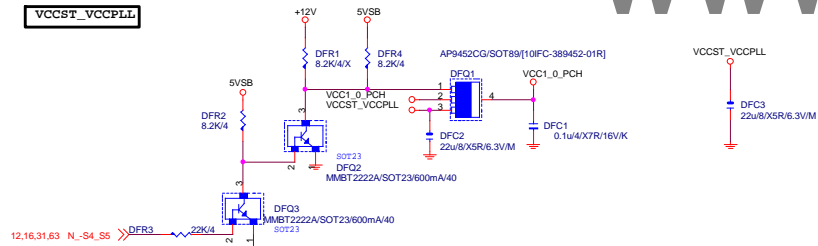


Connect to IT8620

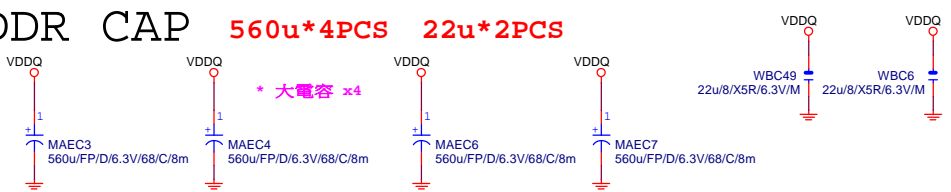
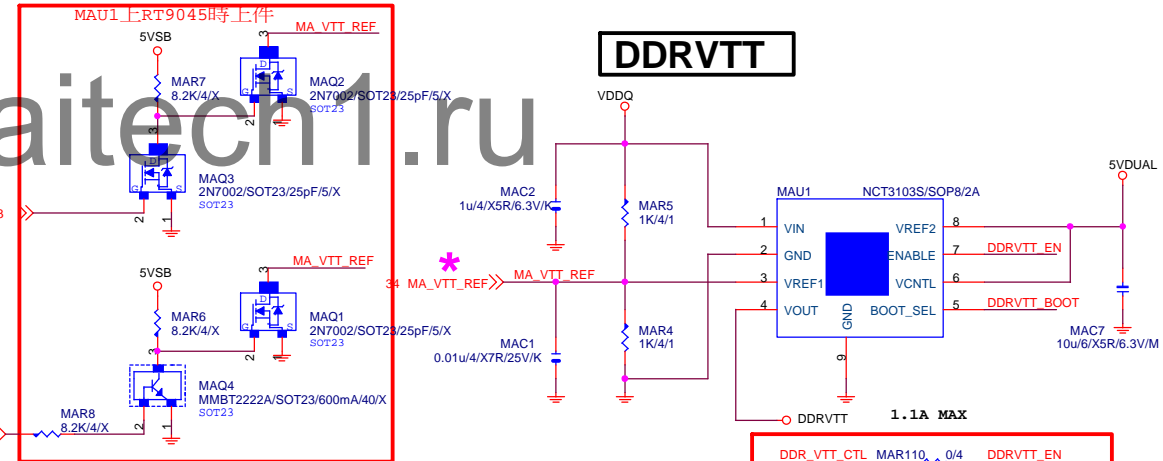
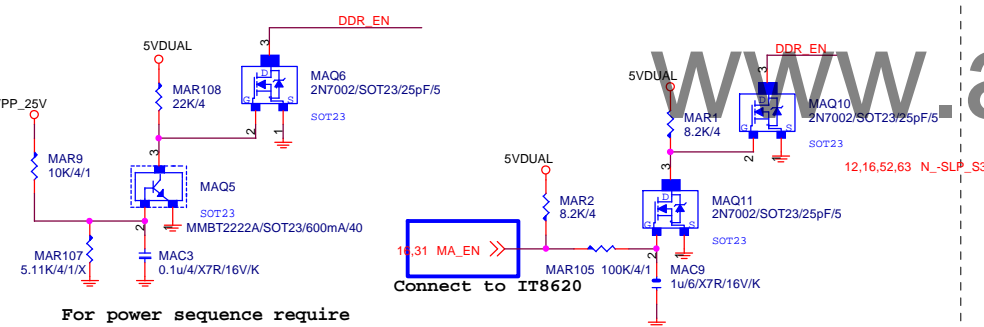


放CPU端.

VCCST_VCCPLL



DDR4



GIGABYTE™

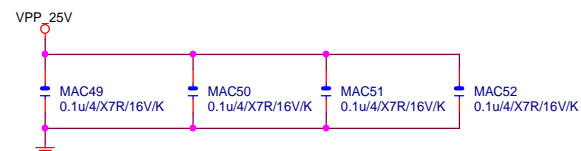
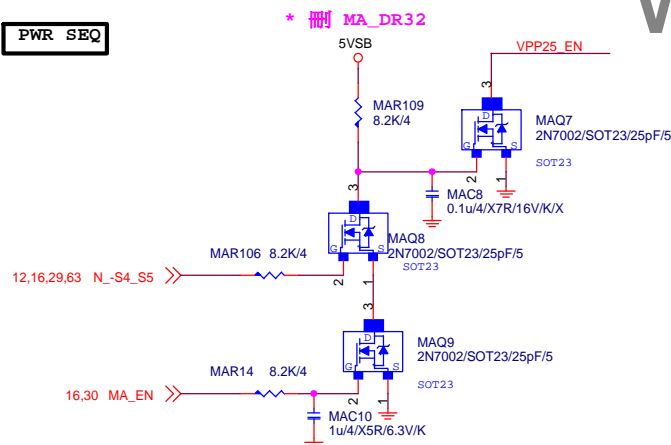
Title			
RT8120 DDR4 POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	30 of 67

VPP 25V

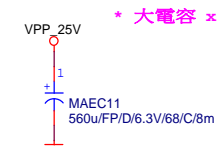
CHOKES與CAP料號可變



PWR SEQ

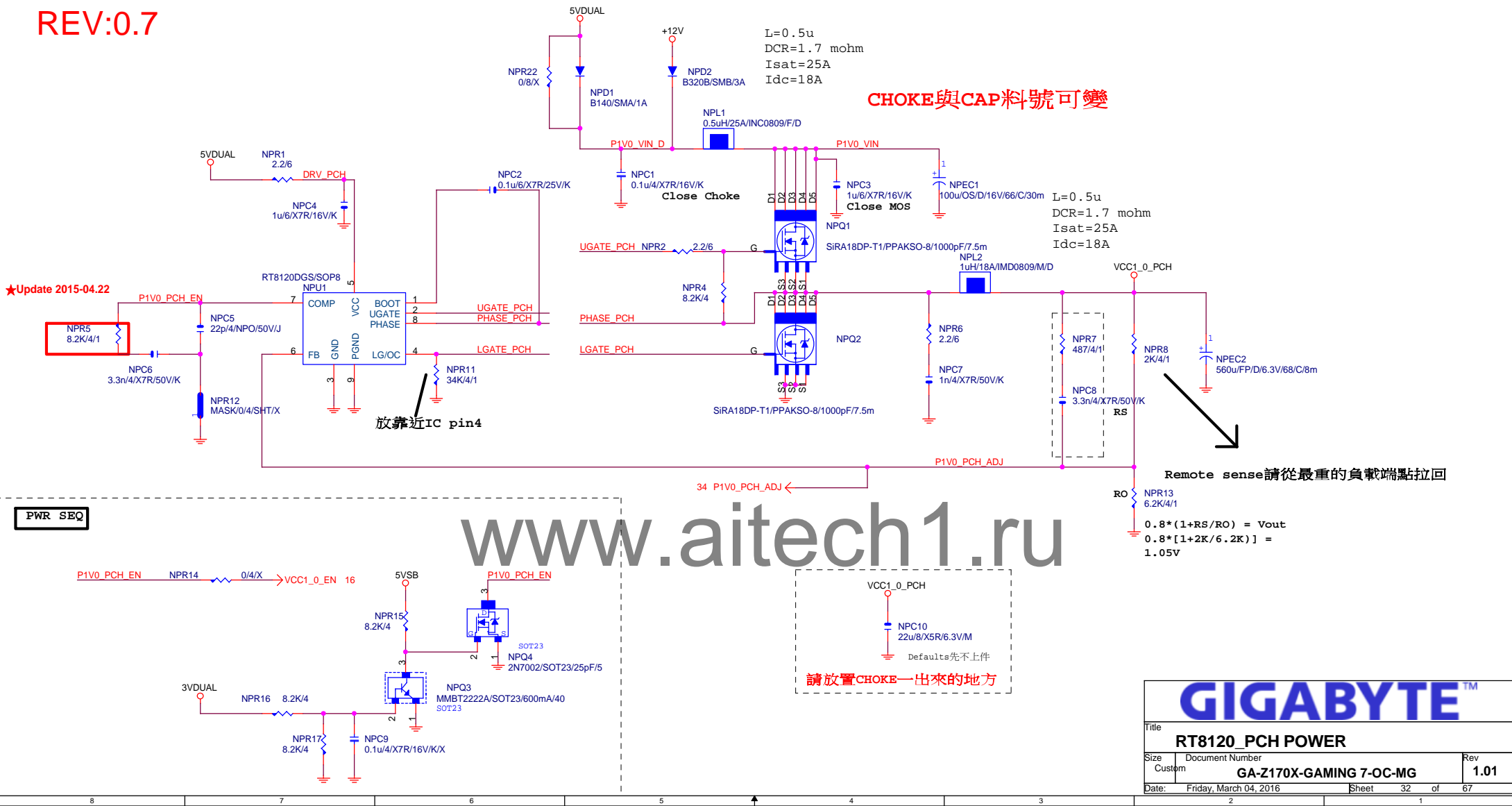


VPP CAP 560u*1PCS

**GIGABYTE™**

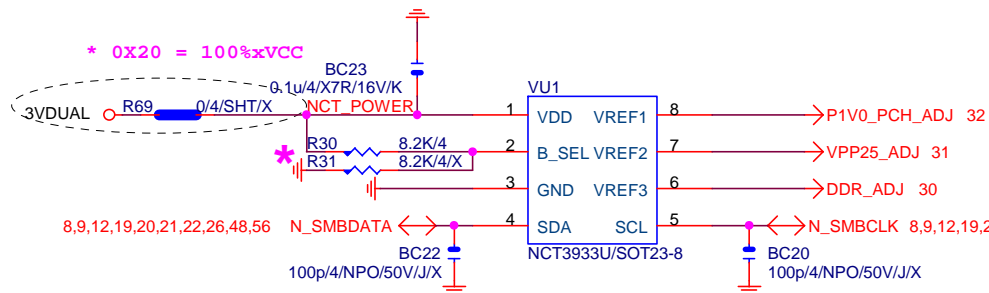
Title			
RT8120_VPP25 POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	31 of 67

REV:0.7

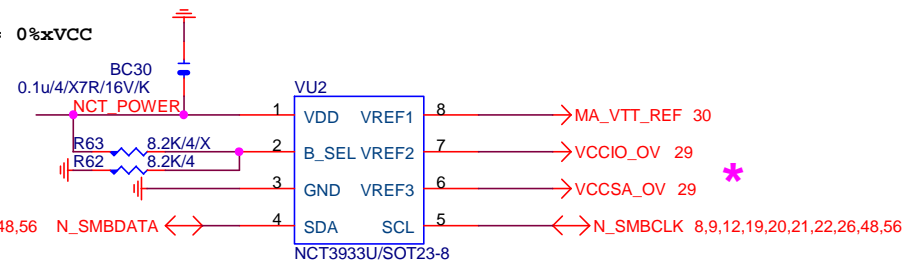


GIGABYTE™			
Title			
RT8120_PCH POWER			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	32 of 67

OVER VOLTAGE



0X2A = 0%xVCC



0X22 = 75%xVCC

* 删除 OVU3

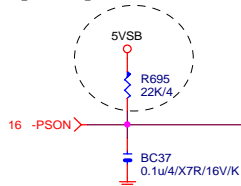
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCCL_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

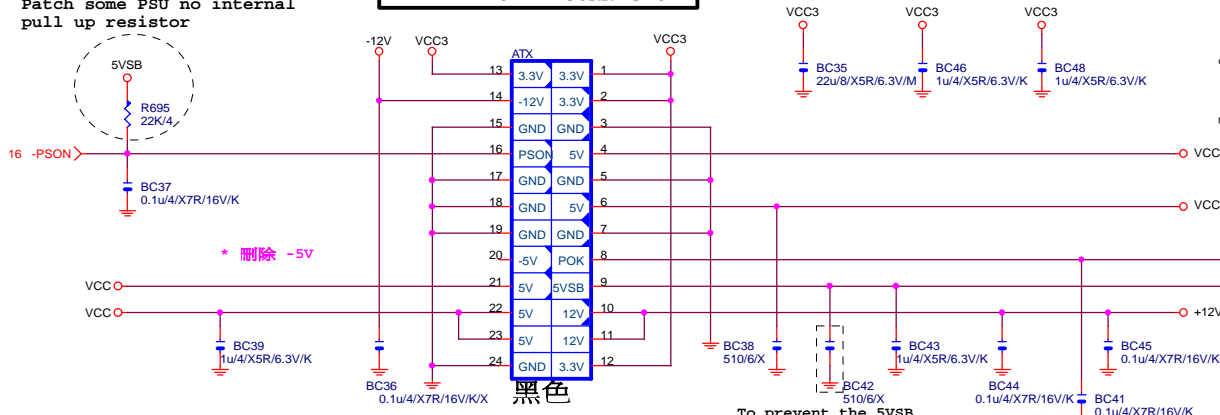
CPU CORE VR-2

Title		Rev
Document Number		1.01
GA-Z170X-GAMING 7-OC-MG		
Date:	Friday, March 04, 2016	Sheet 34 of 67

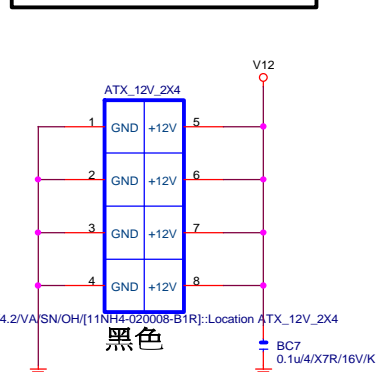
Patch some PSU no internal pull up resistor



ATXX24 POWER CONNECTOR



ATXX4 POWER CONNECTOR

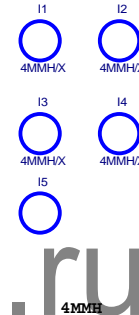
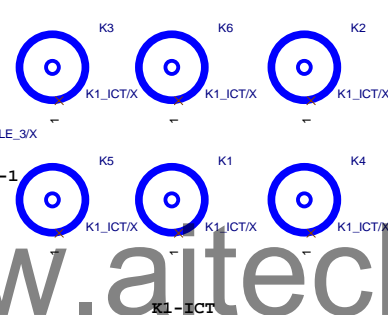
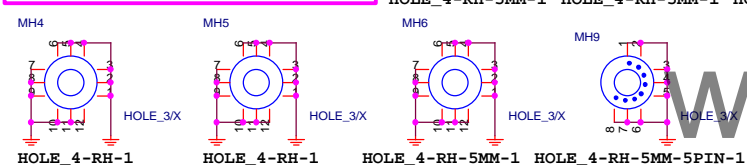
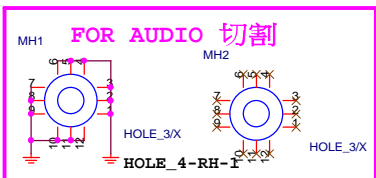
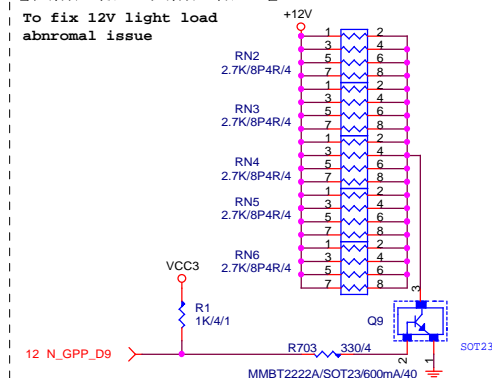


APW/2*12/BK/VA/SN2SHK/PA66/[11NH4-020024-11R]

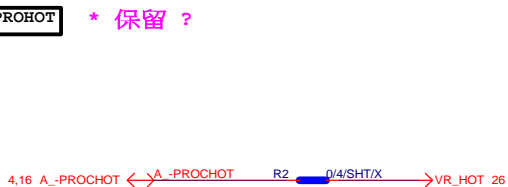
To prevent the 5VSB under loading when boot

【技術通報R&D技術通報153】

To fix 12V light load abnormal issue

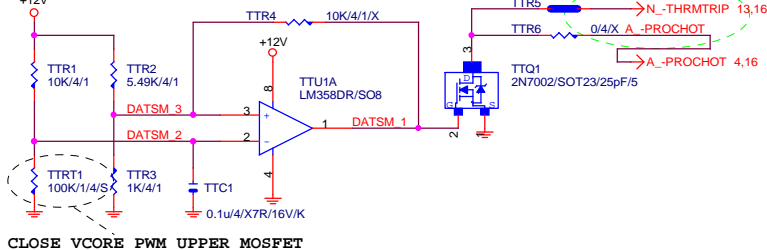


-PROHOT * 保留 ?



-PROHOT

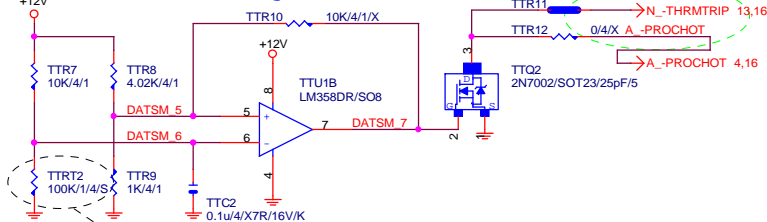
OTP:130度 / PCB THERMAL TRIP:128 度
125 ~130degree assert



CLOSE VCORE PWM UPPER MOSFET

-PROHOT

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

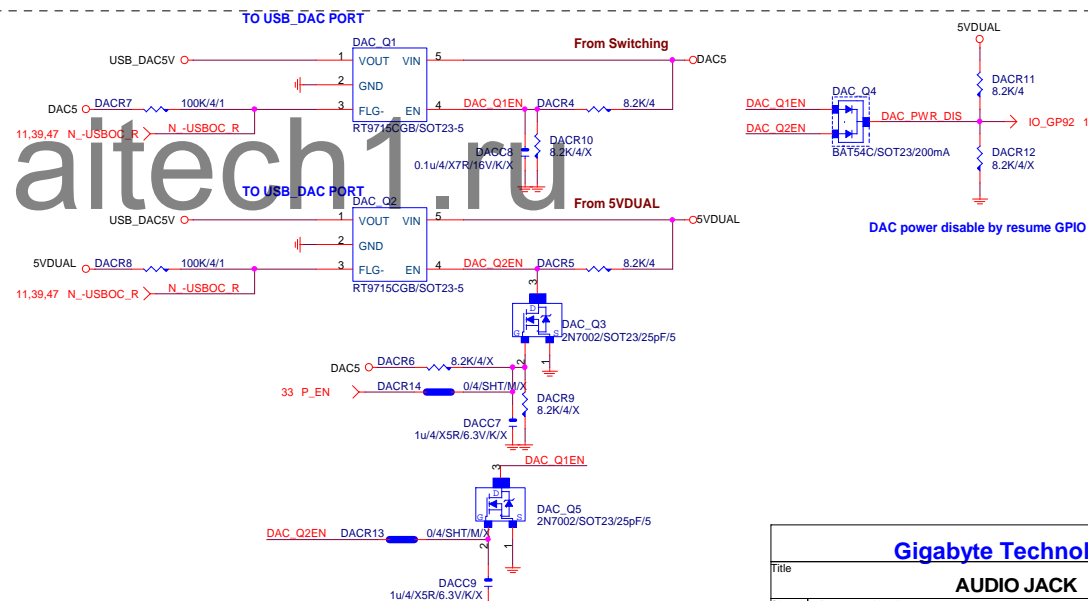
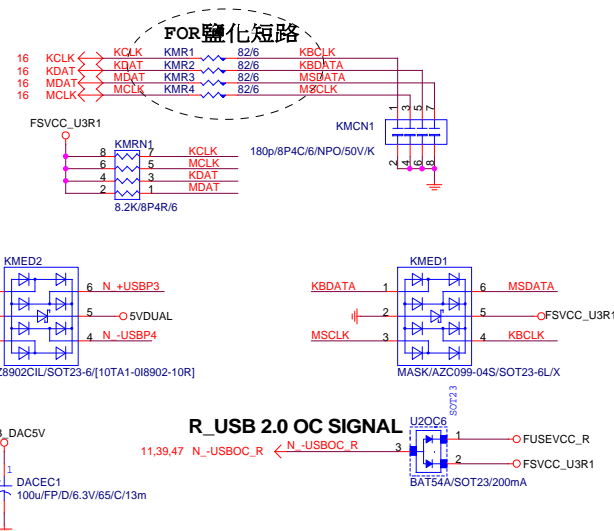


CLOSE VCCGT PWM UPPER MOSFET

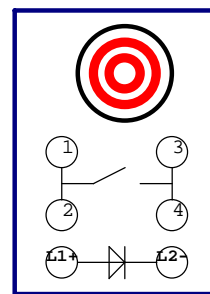
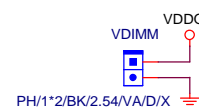


Gigabyte Technology

Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7-OC-MG	1.01
Date:	Friday, March 04, 2016	Sheet 35 of 67

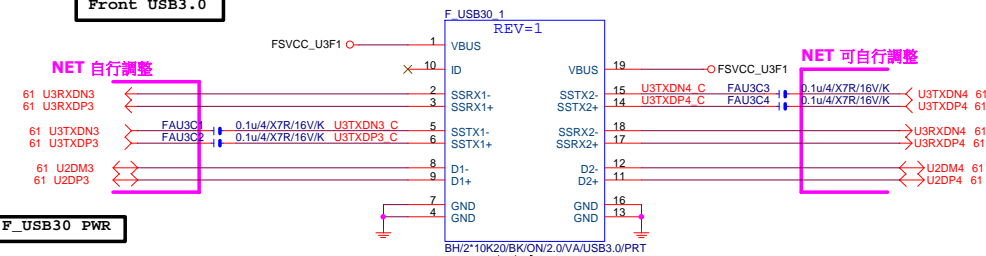


Gigabyte Technology			
Title			
AUDIO JACK			
Size Custom	Document Number		Rev
	GA-Z170X-GAMING 7-OC-MG		1.01
Date:	Friday, March 04, 2016	Sheet 36 of 67	

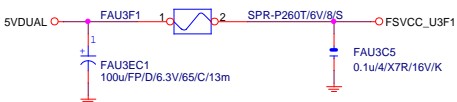


Gigabyte Technology

Front USB3.0

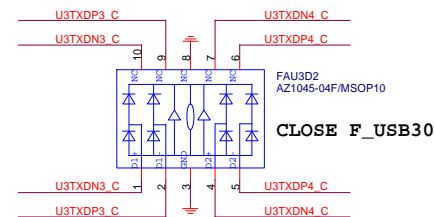
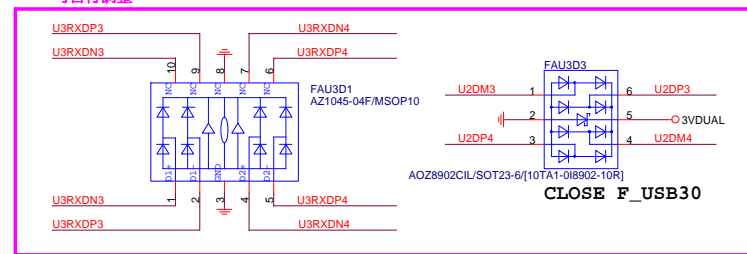


F_USB30 PWR

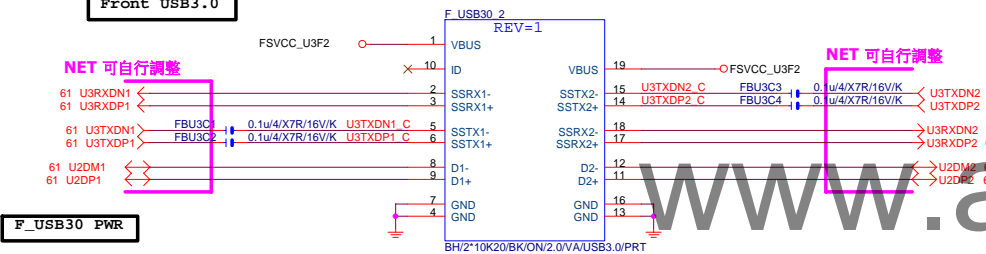


黑色

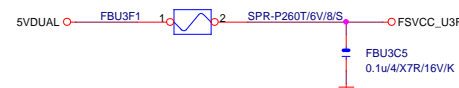
NET 可自行調整



Front USB3.0

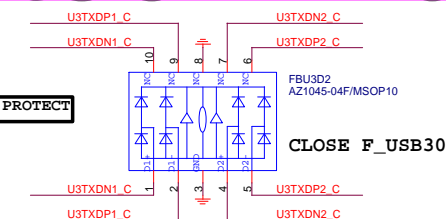
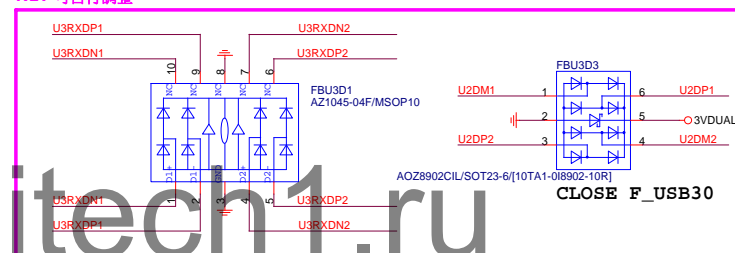


F_USB30 PWR



黑色

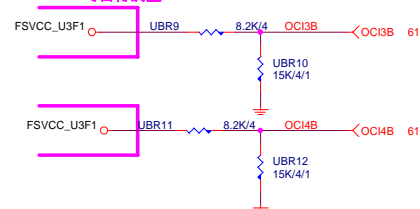
NET 可自行調整



F_USB POWER PROTECT

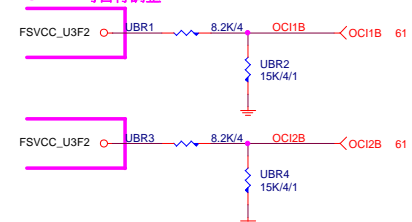
-USBOC_F

POWER 可自行調整



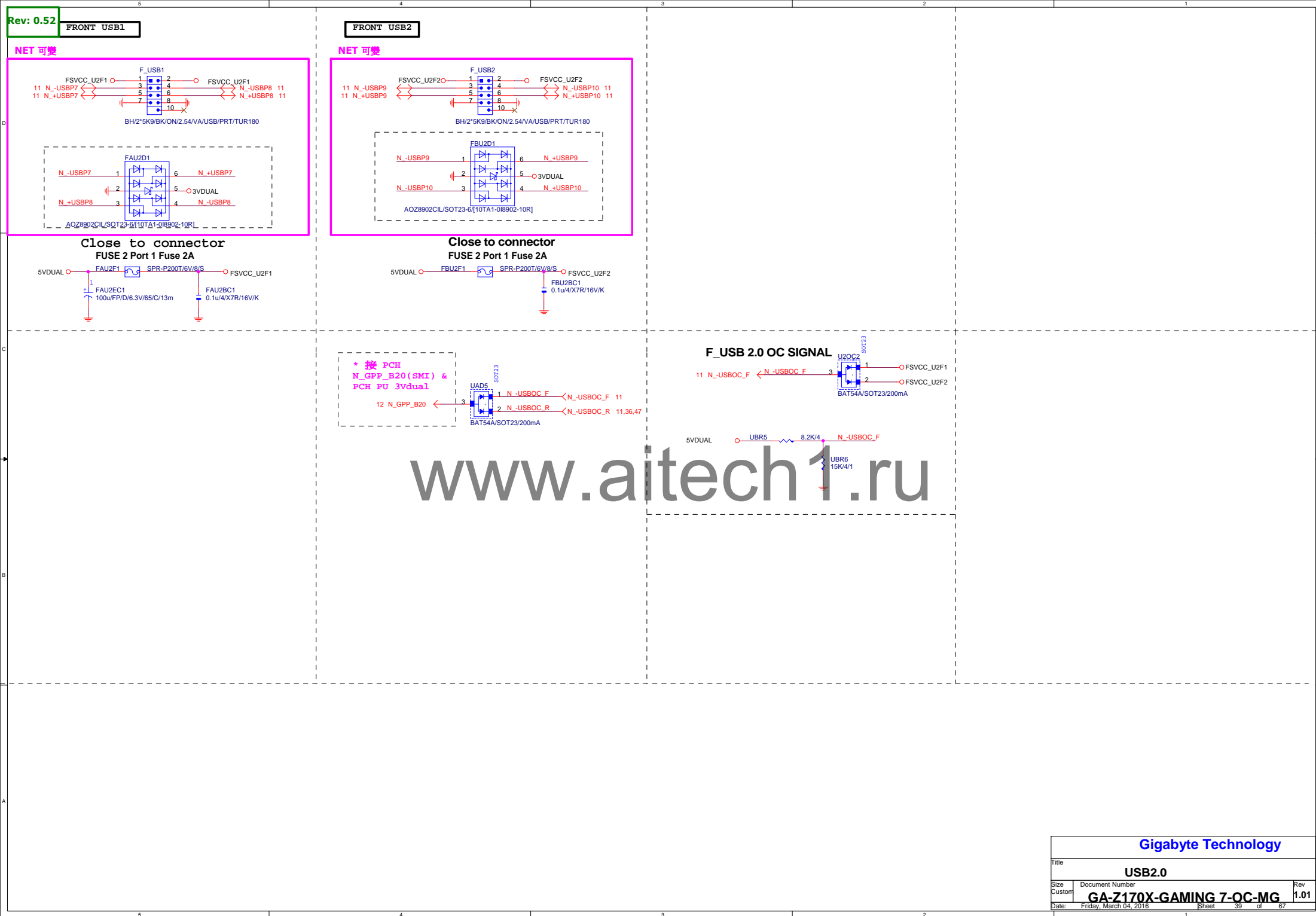
-USBOC_R

POWER 可自行調整



Gigabyte Technology

Title			R_USB30,F_USB30, USB_OC	
Size	Document Number	GA-Z170X-GAMING 7-OC-MG		Rev 1.01
Custom	Date: Friday, March 04, 2016	Sheet 38	of 67	

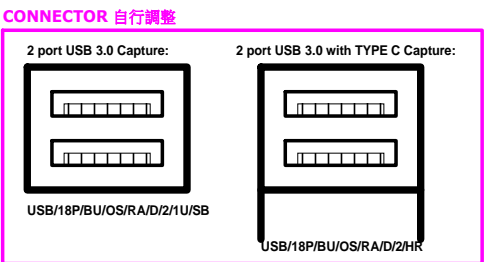
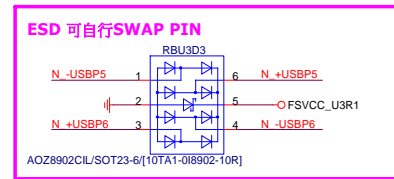
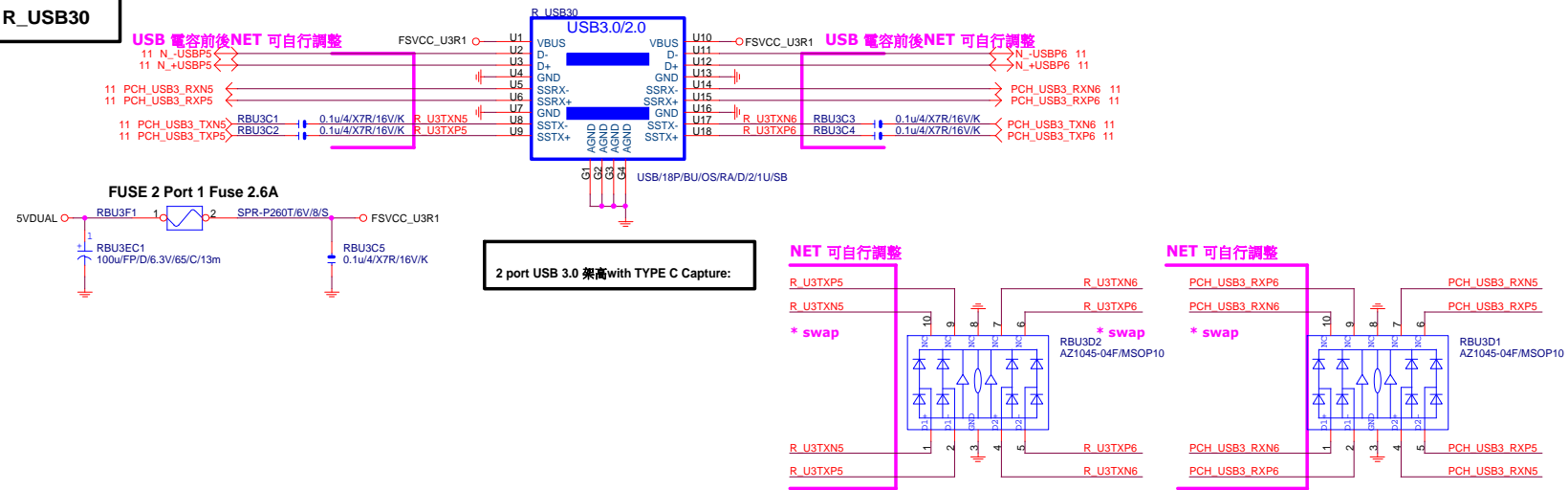


Gigabyte Technology

USB2.0

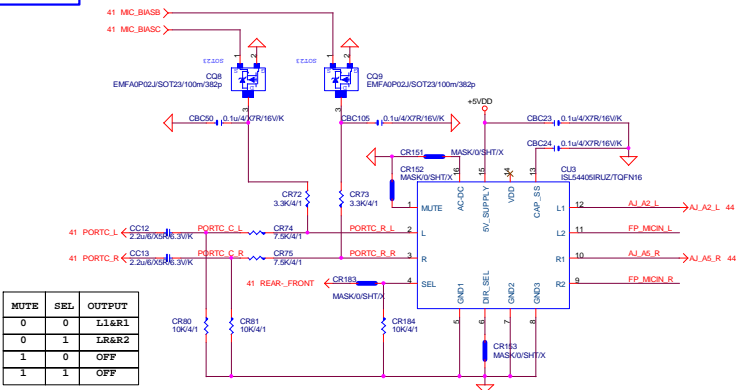
Size	Document Number	Rev
Custom	GA-Z170X-GAMING 7-OC-MG	1.01
Date:	Friday, March 04, 2016	Sheet 39 of 67

R_USB30

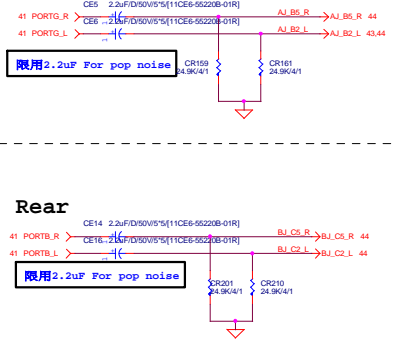


Gigabyte Technology			
Title KB_MS_USB3, R_USB30			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	40 of 67

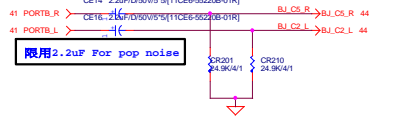
Rear MIC & FP MIC



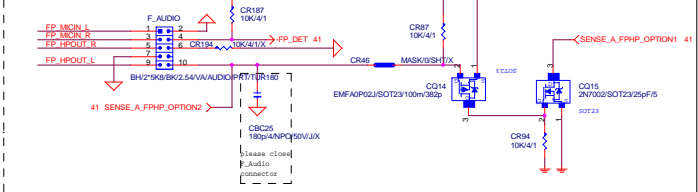
Line-Out



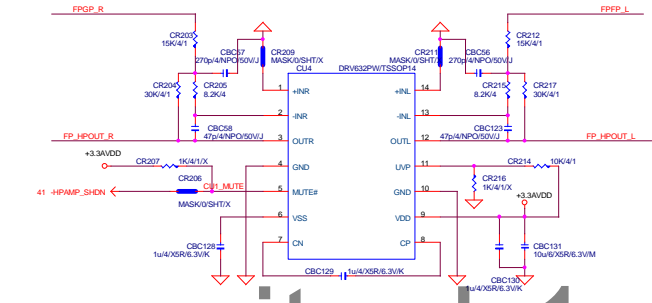
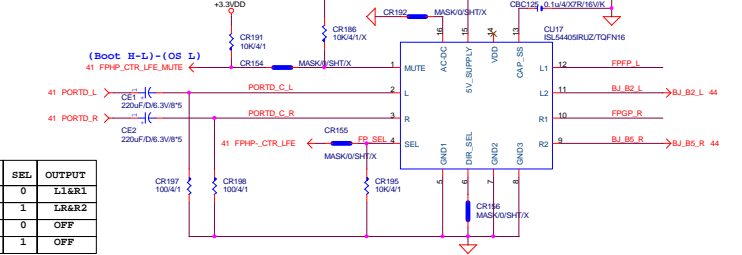
Rear



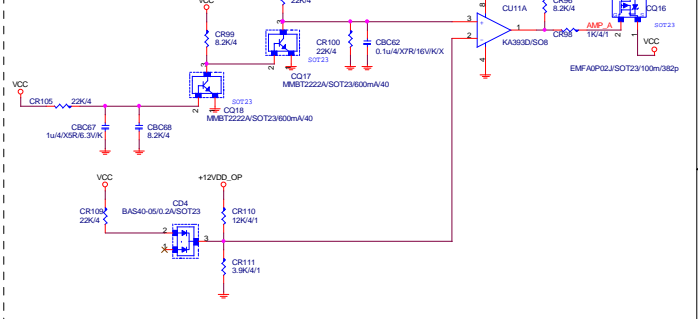
HD Audio FRONT PANEL



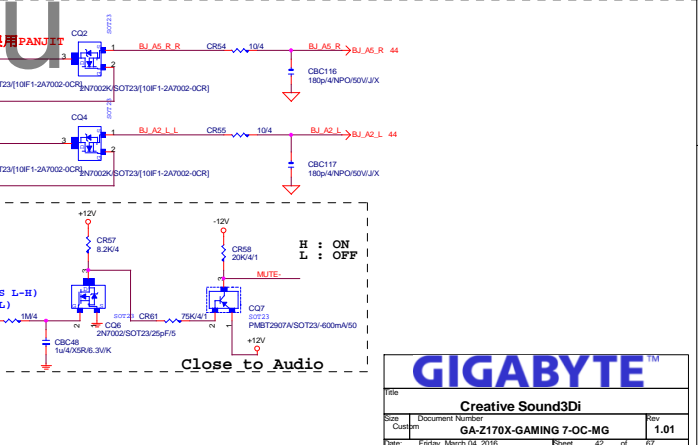
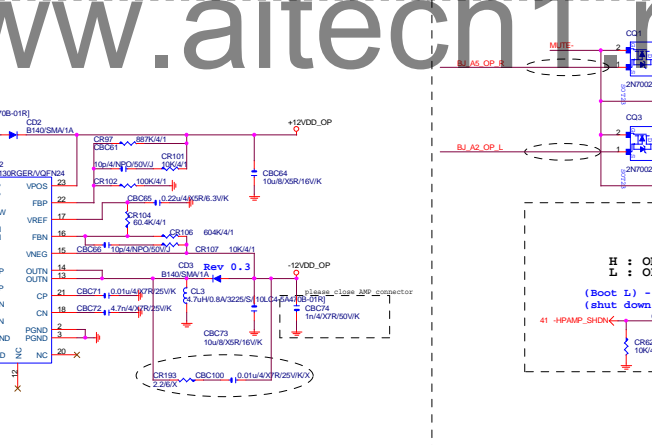
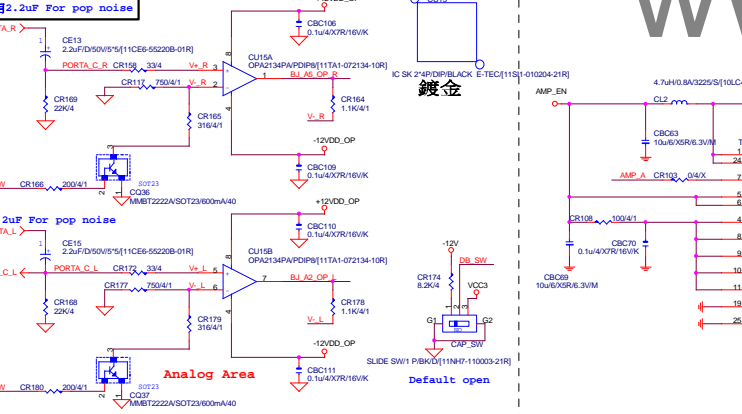
Rear CTR/SUB & FP HP-Out

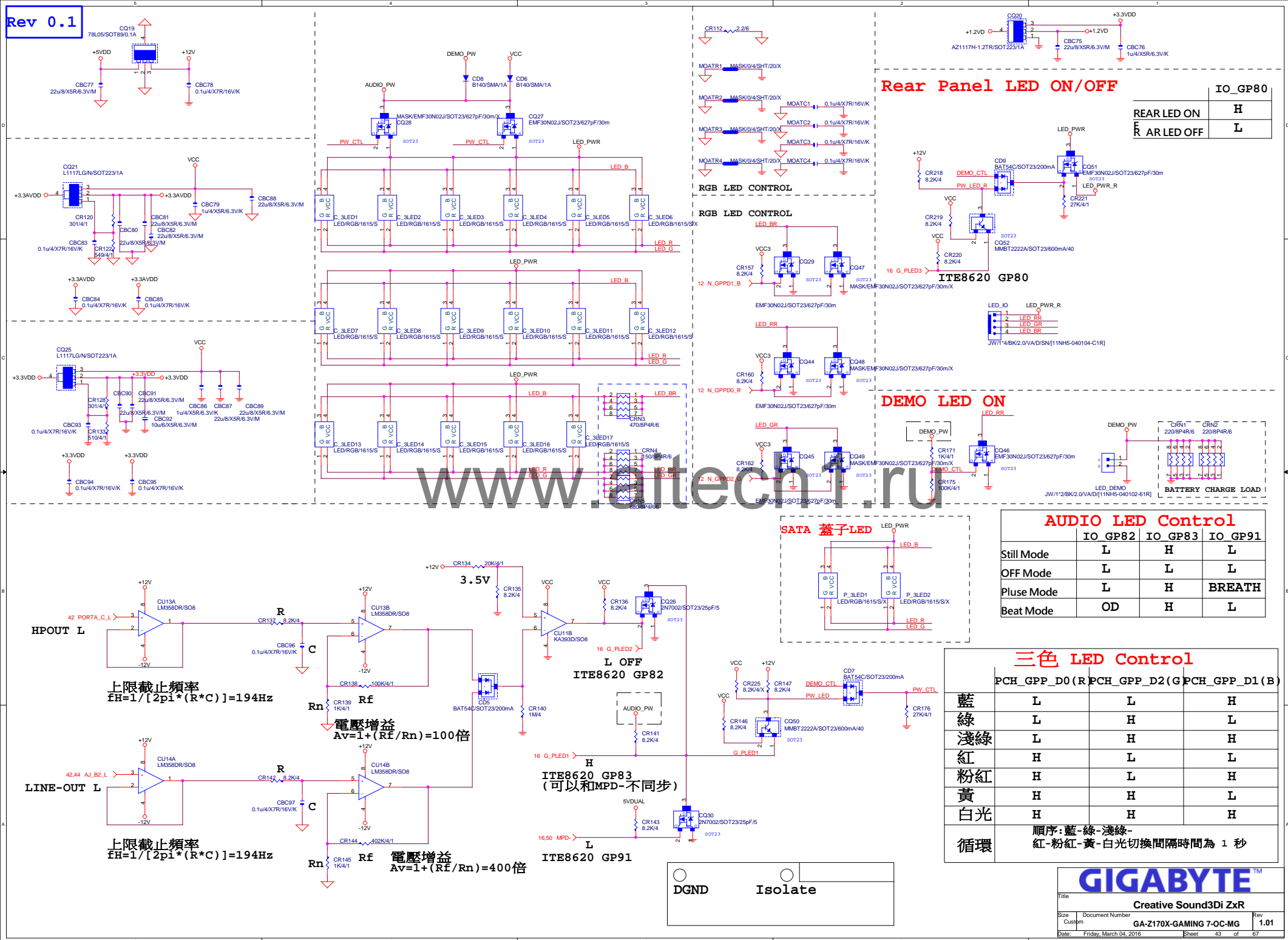


OP 反相防漏



AMPLIFIED





Rev 0.1

Rear Panel LED ON/OFF

	IO_GP80
REAR LED ON	H
REAR LED OFF	L

DEMO LED ON

AUDIO LED Control

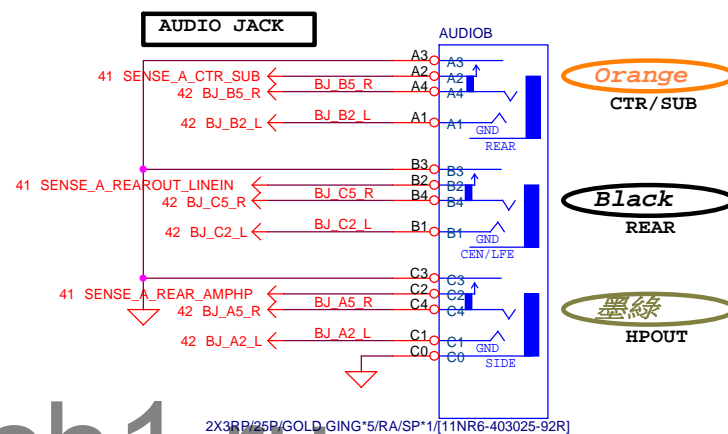
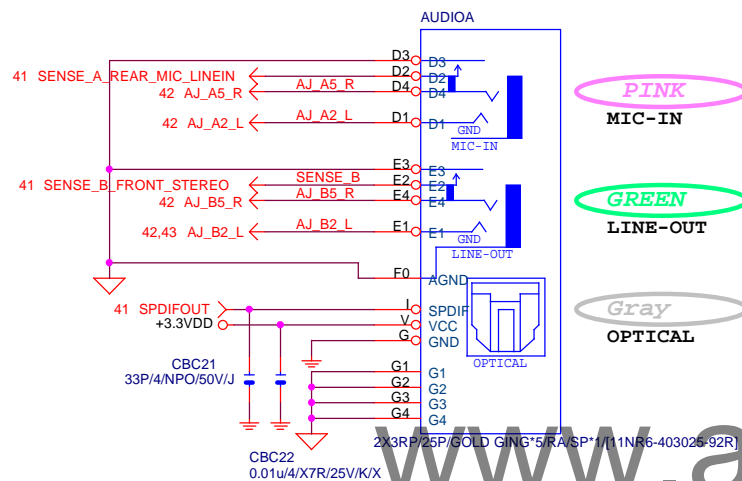
	IO_GP82	IO_GP83	IO_GP91
Still Mode	L	H	L
OFF Mode	L	L	L
Pluse Mode	L	H	BREATH
Beat Mode	OD	H	L

三色 LED Control

	PCH_GPP_D0(R)	PCH_GPP_D2(G)	PCH_GPP_D1(B)
藍	L	L	H
綠	L	H	L
淺綠	L	H	H
紅	H	L	L
粉紅	H	L	H
黃	H	H	L
白光	H	H	H
循環	順序: 藍-綠-淺綠-紅-粉紅-黃-白光切換間隔時間為 1 秒		

GIGABYTE™

Title		Creative Sound3Di ZxR	
Size	Document Number	GA-Z170X-GAMING 7-OC-MG	Rev 1.01
Date	Friday, March 04, 2016	Sheet	43 of 67



Gigabyte Technology

Title

Creative Sound3Di ZxR

Size
Custom

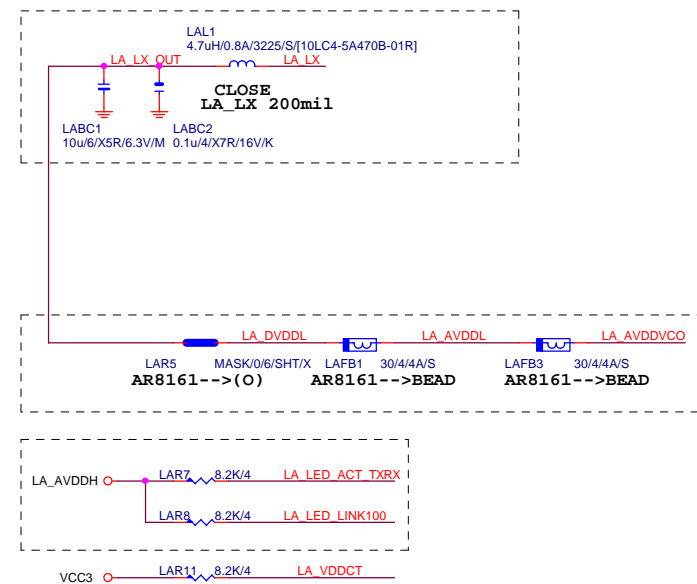
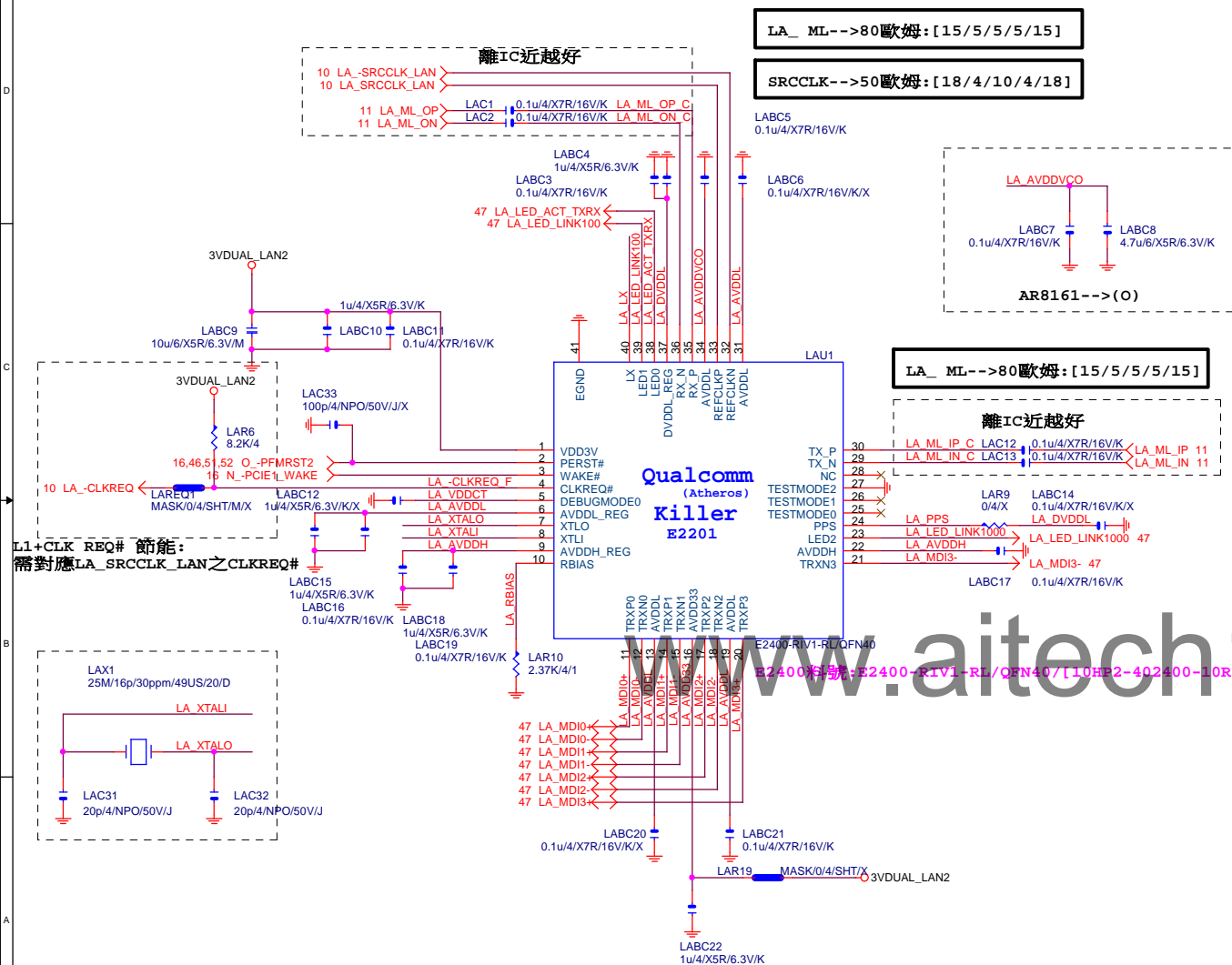
Document Number

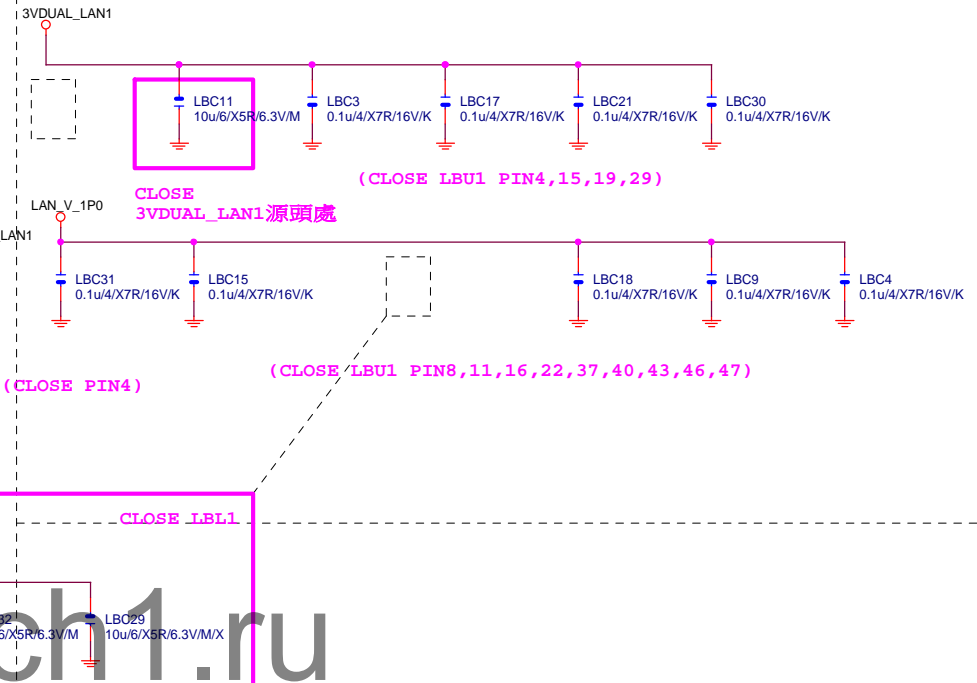
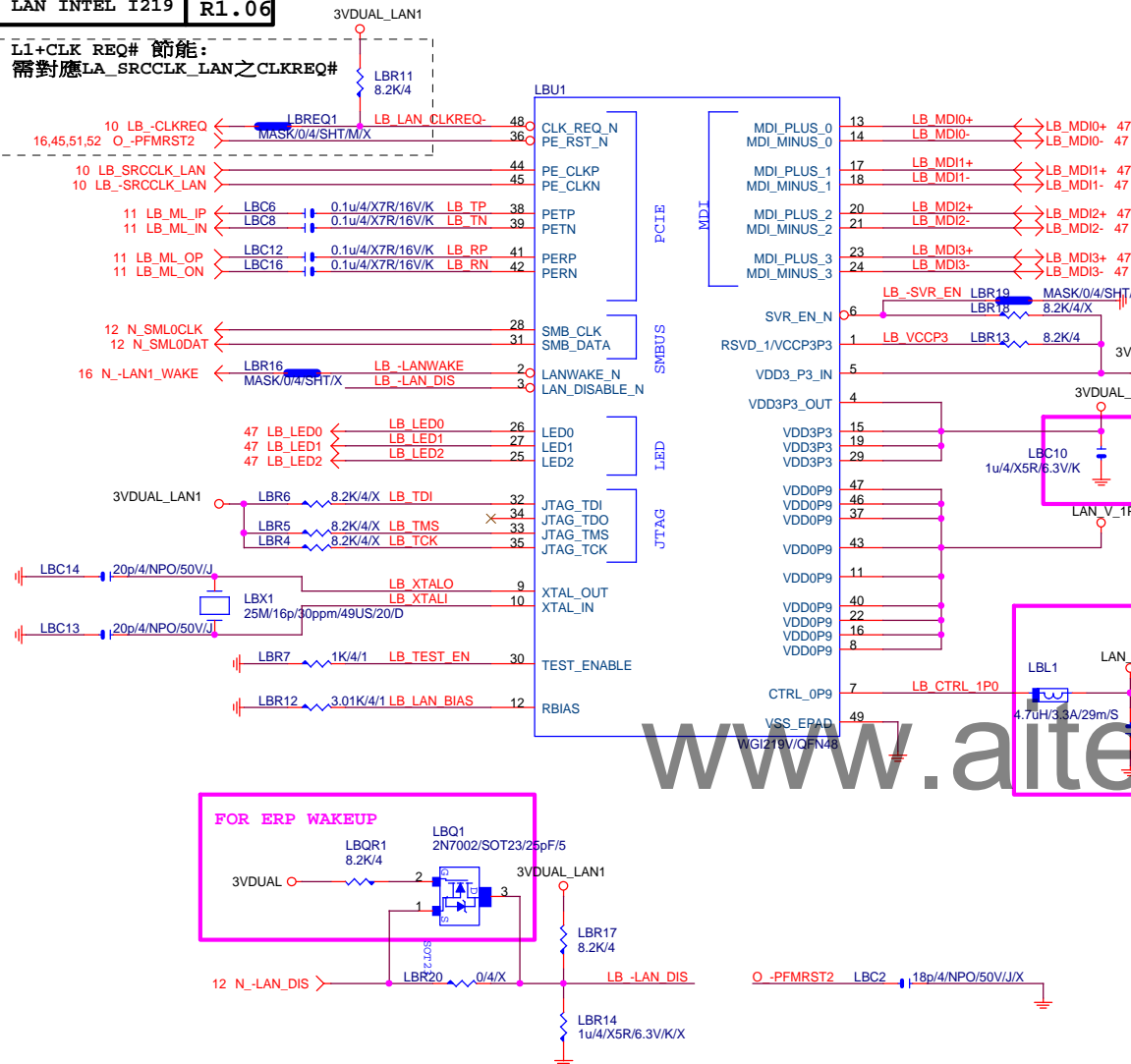
GA-Z170X-GAMING 7-OC-MG

Rev
1.01

Date: Friday, March 04, 2016

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

Gigabyte Technology

Title

DUAL LAN~ E2201+I219

Size
Custom

Document Number

GA-Z170X-GAMING 7-OC-MG

Rev
1.01

Date:

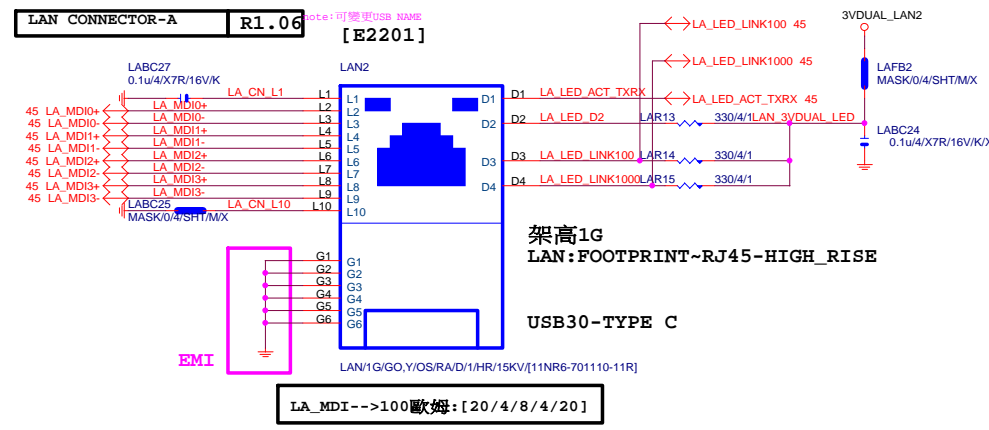
Friday, March 04, 2016

Sheet

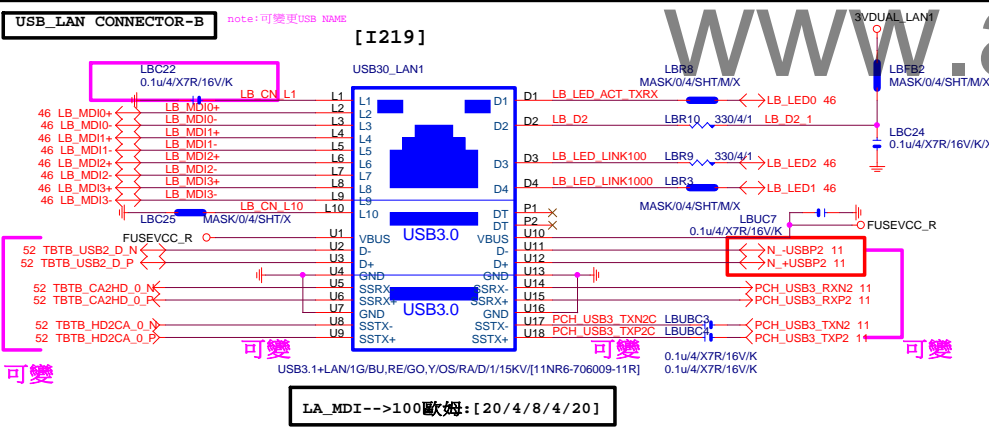
46

of

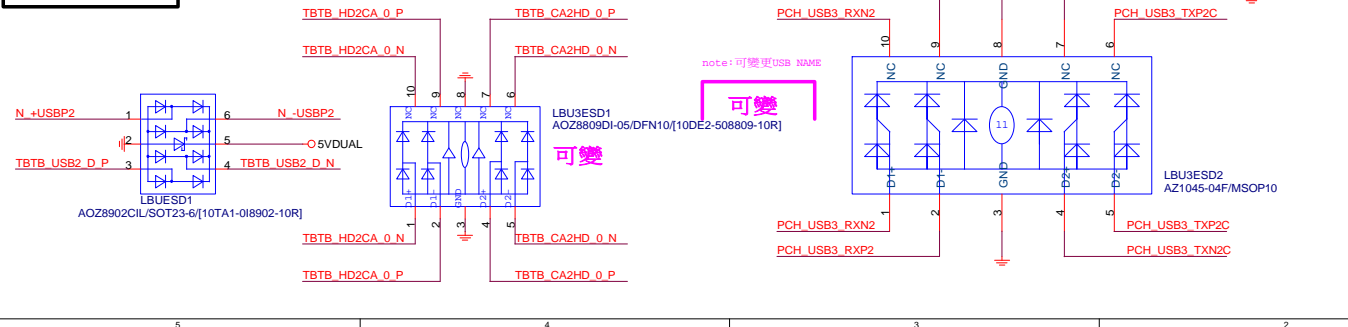
67



RMA ESD PROTECT



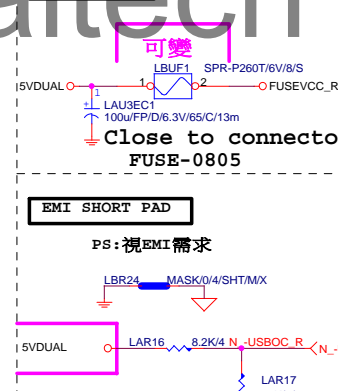
RMA ESD PROTECT



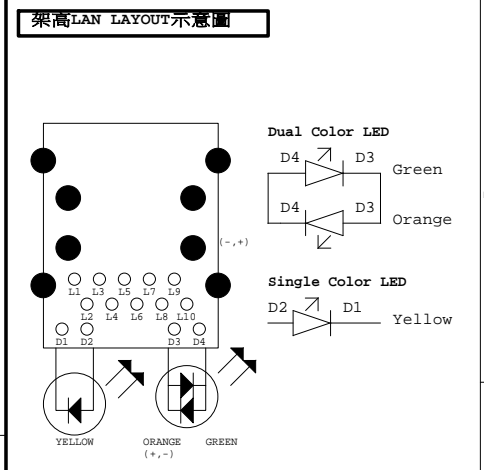
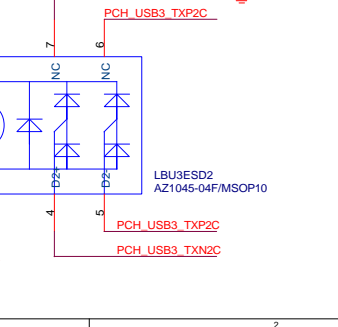
RMA ESD PROTECT



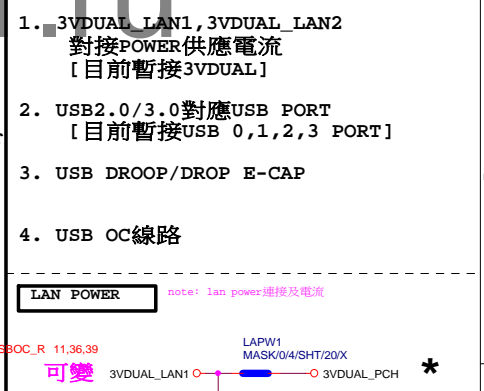
RMA ESD PROTECT



RMA ESD PROTECT



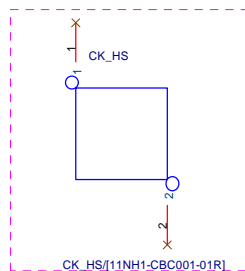
RMA ESD PROTECT



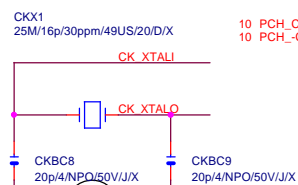
RMA ESD PROTECT



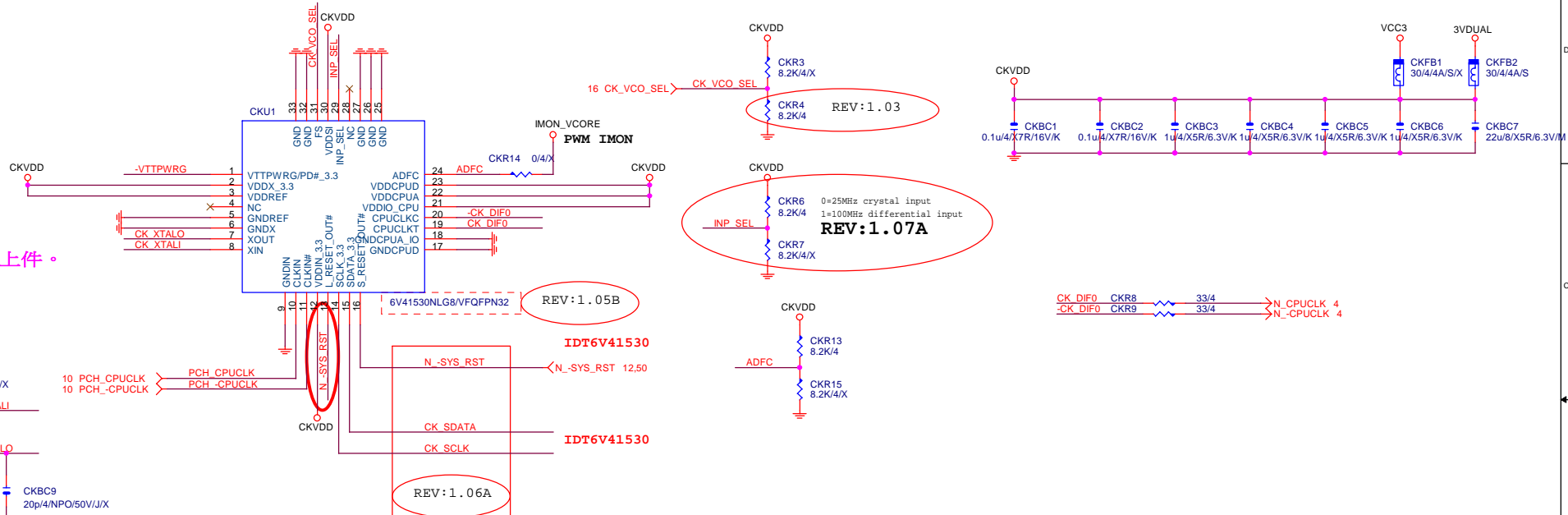
REV:1.07A



*可變，依需求上件不上件。

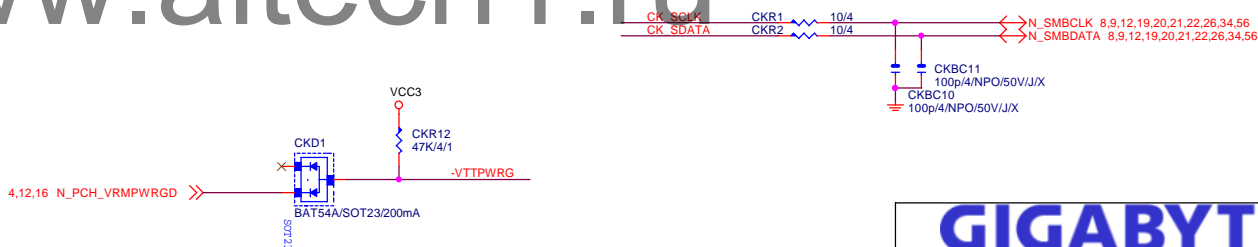


電容共用GND,降低JITTER



INP_SEL	Input
0	Crystal
1	CLK_INP/N

CK_VCO_SEL	VCO
0	400M
1	1200M

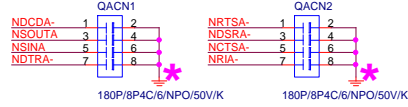
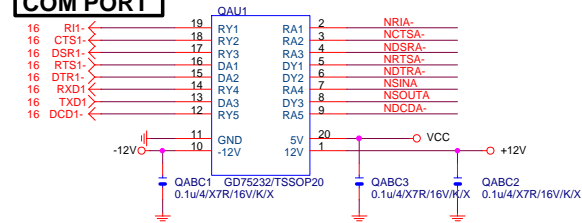


GIGABYTE™

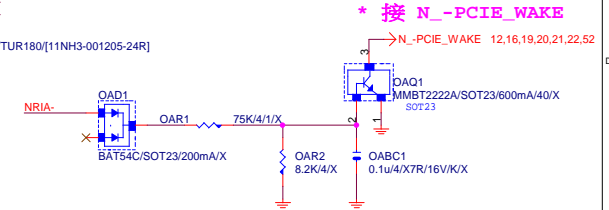
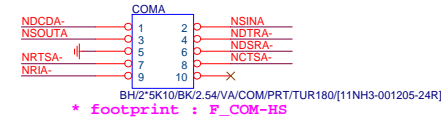
IDT6V41510_CLK BUFFER

Size Custom	Document Number GA-Z170X-GAMING 7-OC-MG	Rev 1.01
Date:	Friday, March 04, 2016	Sheet 48 of 67

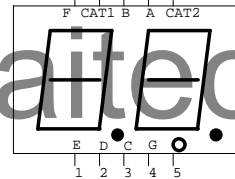
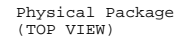
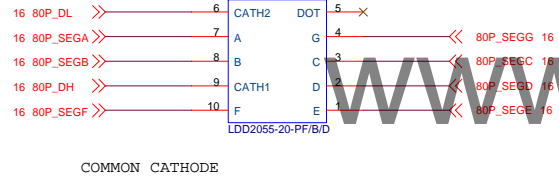
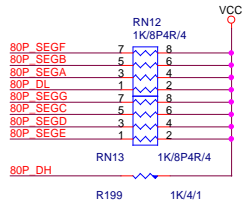
COM PORT



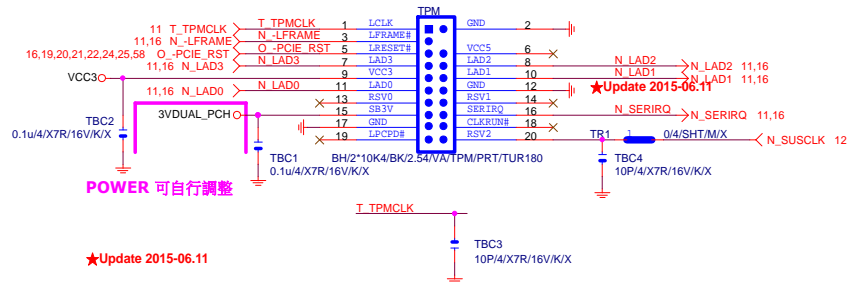
COMA



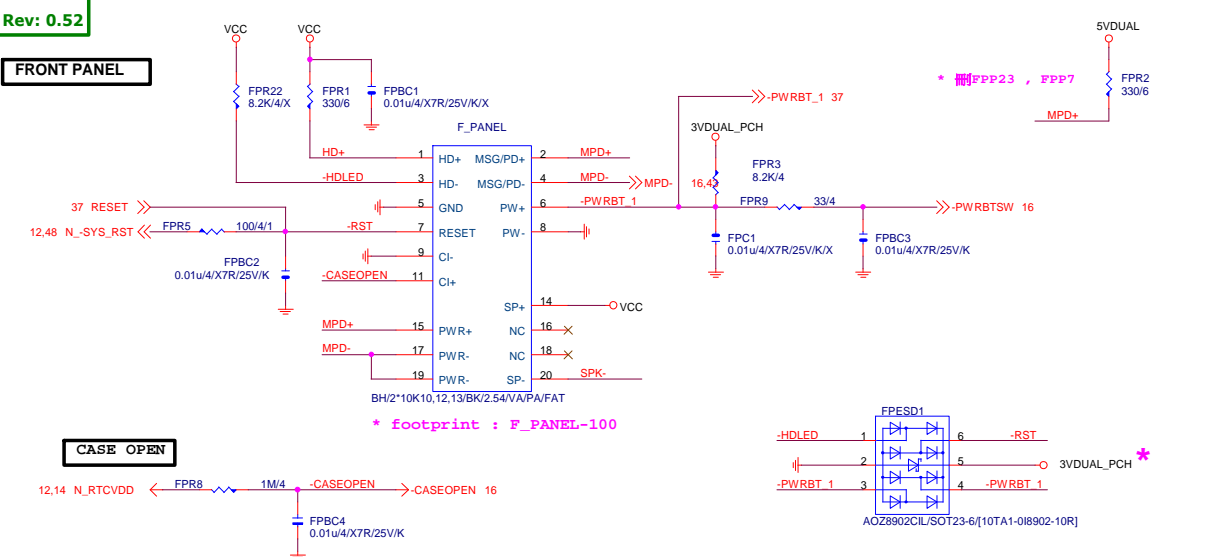
80 PORT



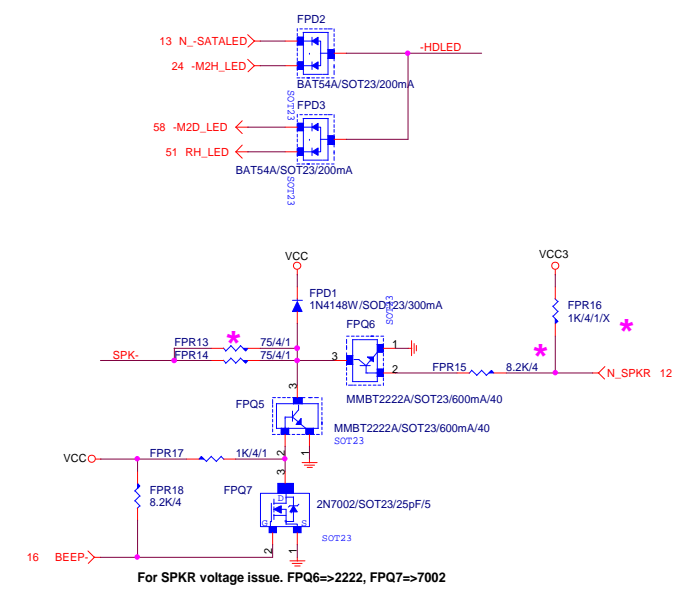
TPM CONNECT



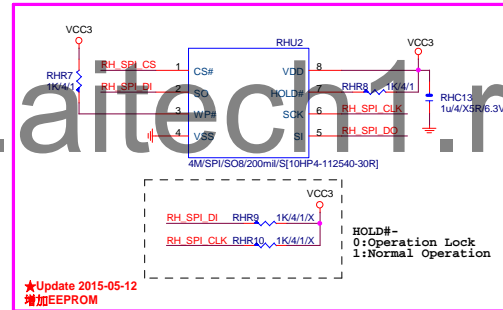
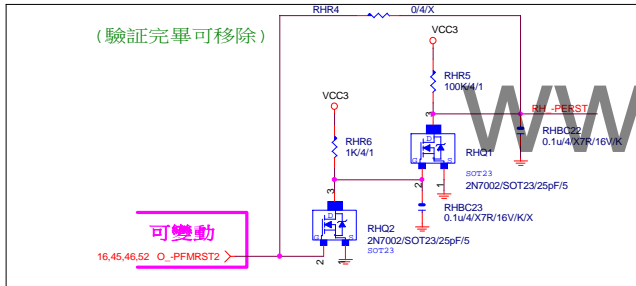
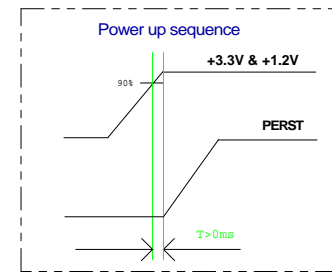
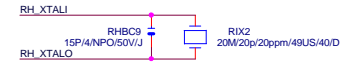
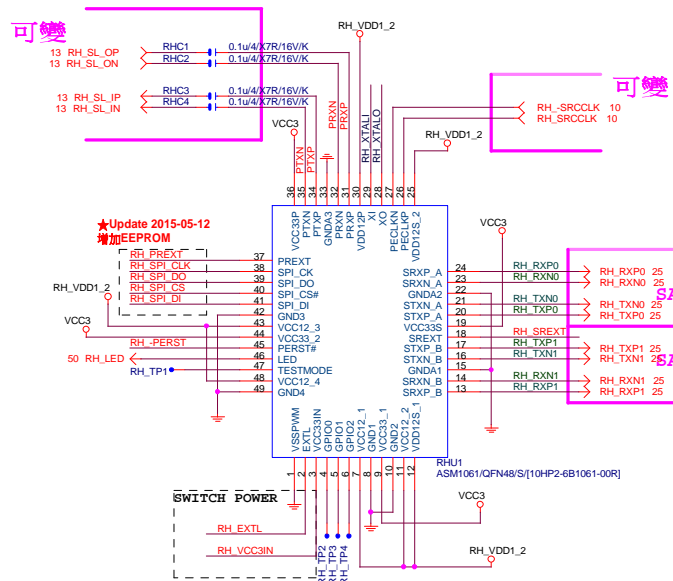
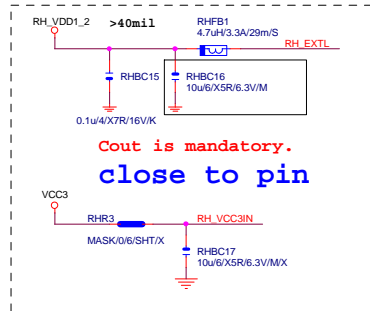
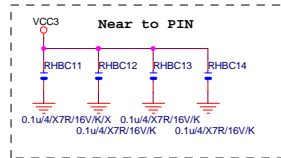
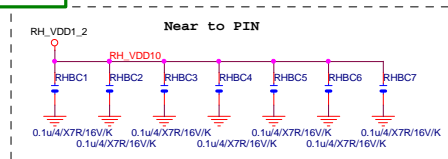
Rev: 0.52



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



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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

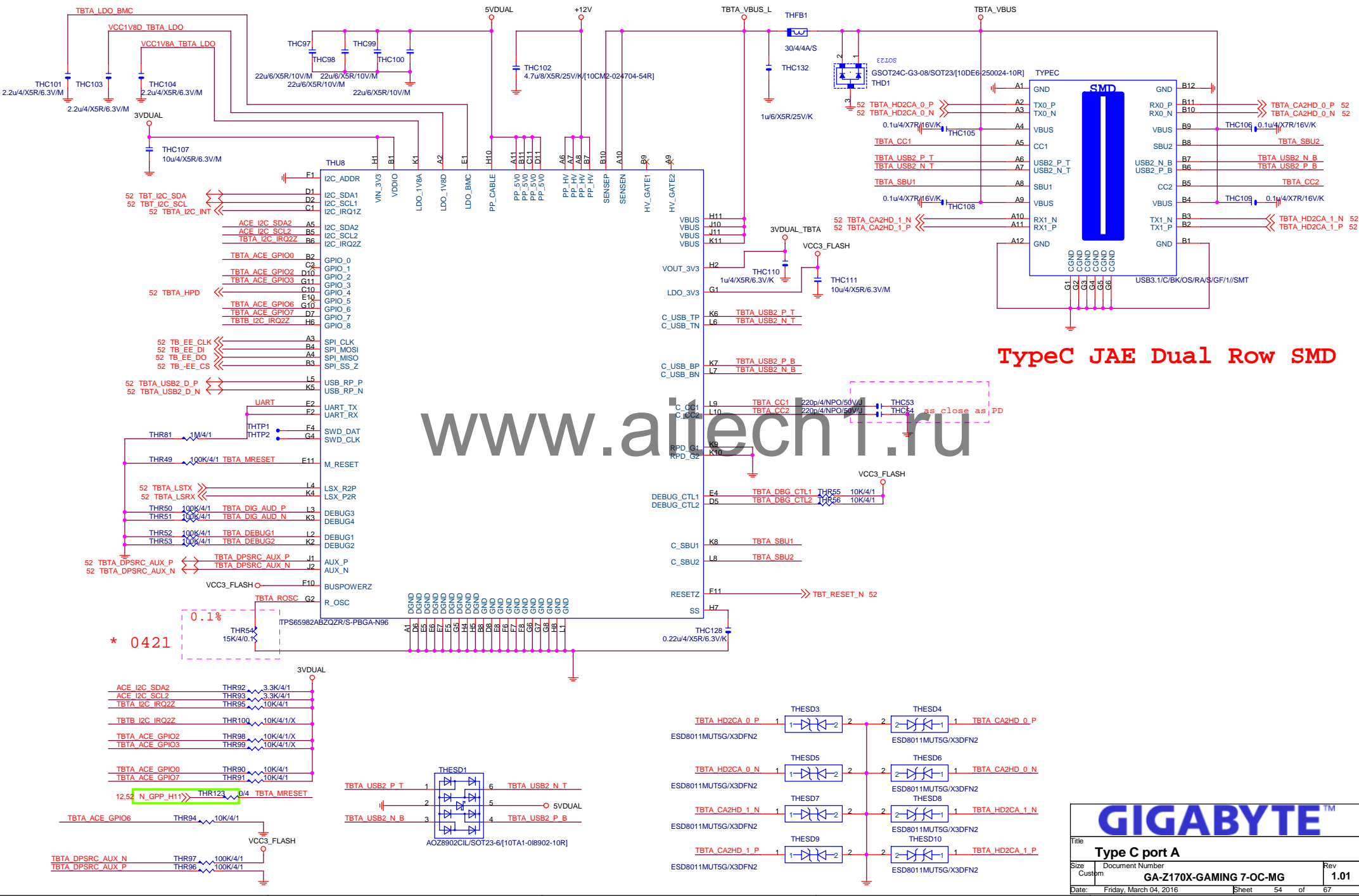
GIGABYTE™			
Title			
ASM1061			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	51 of 67



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



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



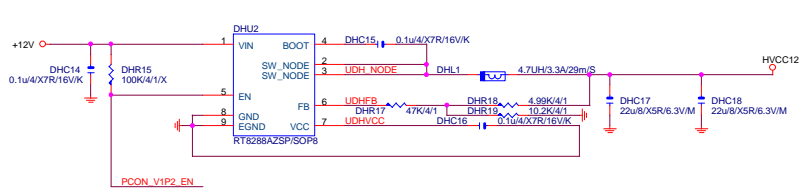
TypeC JAE Dual Row SMD

GIGABYTE™

Title Type C port A		
Size Custom	Document Number GA-Z170X-GAMING 7-OC-MG	Rev 1.01
Date: Friday, March 04, 2016	Sheet 54	of 67

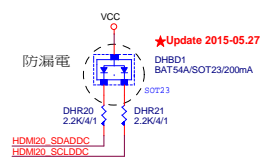
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GIGABYTE™			
Title TBT _ HDMI 2.0			
Size Custom	Document Number GA-Z170X-GAMING 7-OC-MG		Rev 1.01
Date: Friday, March 04, 2016	Sheet 55	of 67	

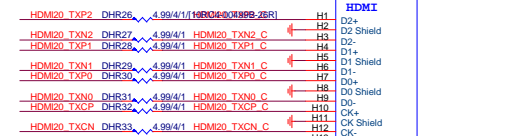


PCH端

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



Display Port with HDMI, or HDMI only.



Power 可變

FSVCC_U3R1

1u/4/XSR/6.3V/K

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

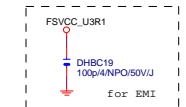
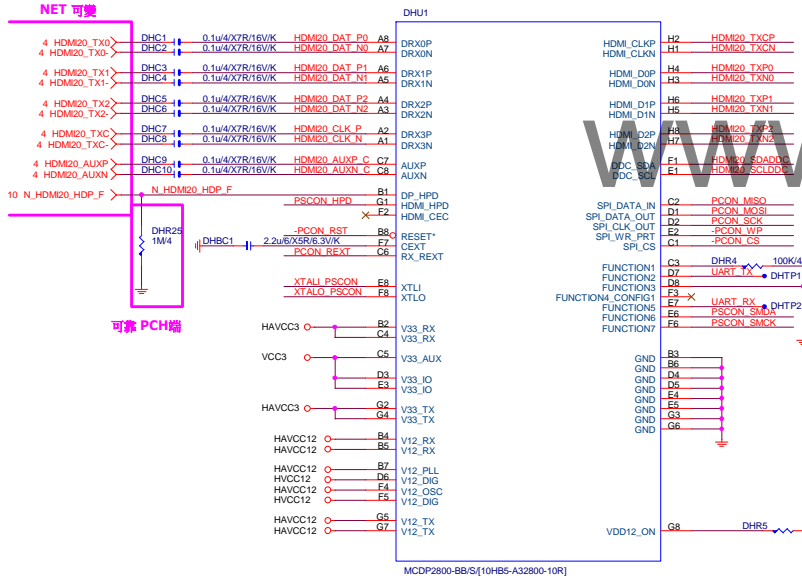
DHR78 4.99K/4/1

DHR79 4.99K/4/1

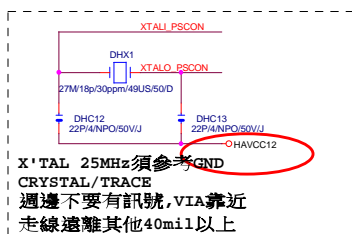
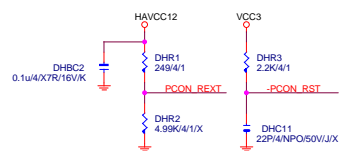
DHR80 4.99K/4/1

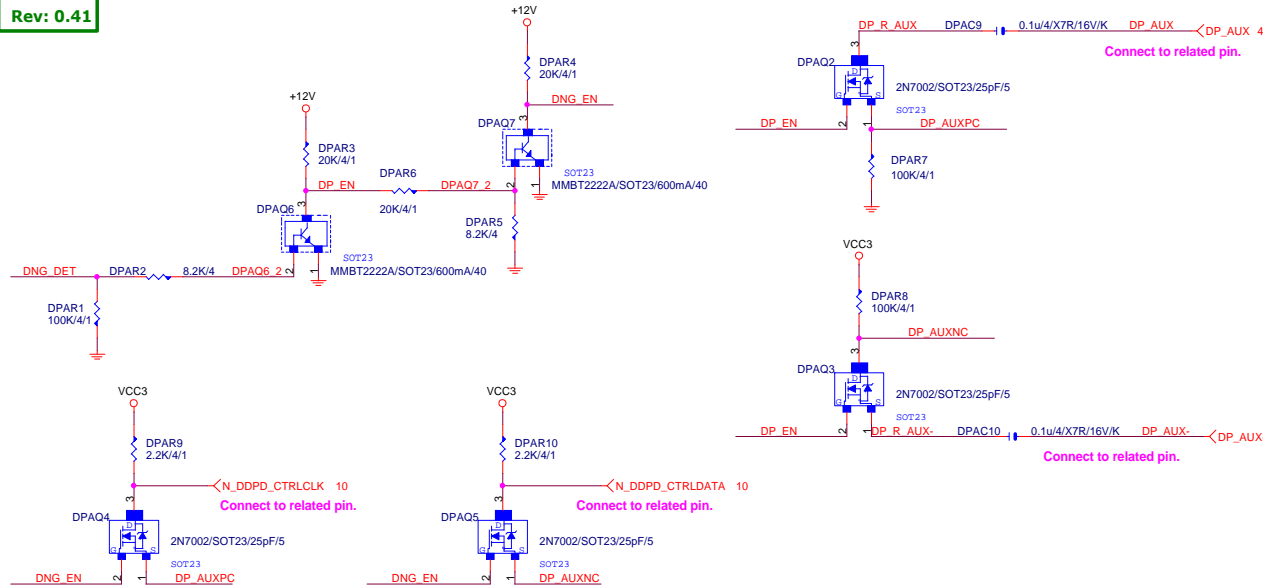
DP+HDMI20P+19P/BK/R/D[11N/R6-H04038-11R]/X

橫躺式/直立式 可自行調整

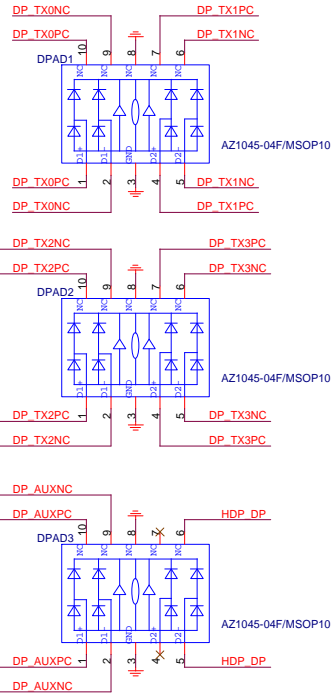
需設定為DP Port
NET 可變

可靠 PCH 端





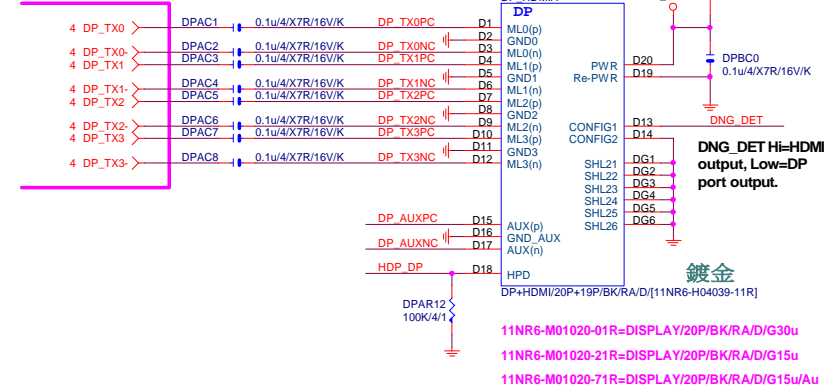
Close to connector



SINGLE Display Port

Display Port with HDMI, or HDMI only.

NET FROM CPU 可變



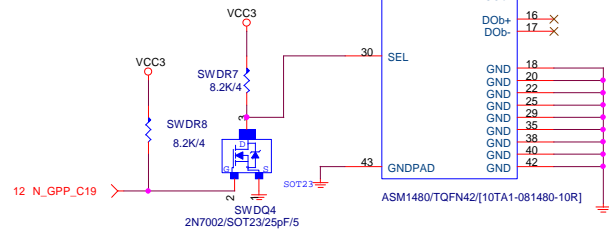
DP

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Title			
DP PORT			
Size	Document Number	Rev	
Custom	GA-Z170X-GAMING 7-OC-MG	1.01	
Date:	Friday, March 04, 2016	Sheet	57 of 67

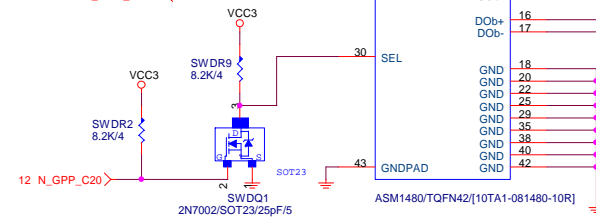
PCH (S2)



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

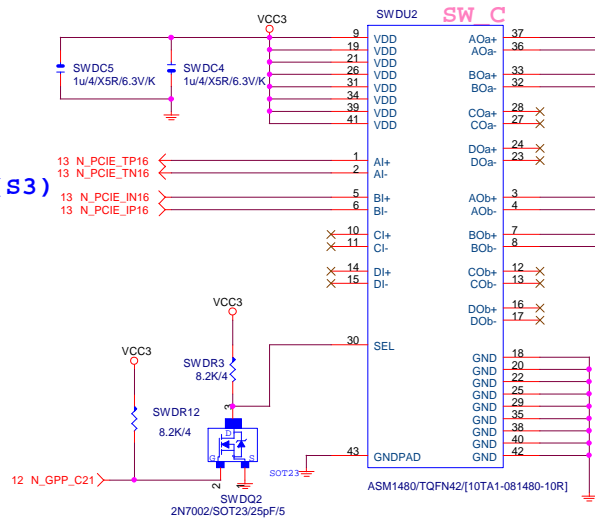
PCH (S0)

PCH (S1)



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

PCH (S3)



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

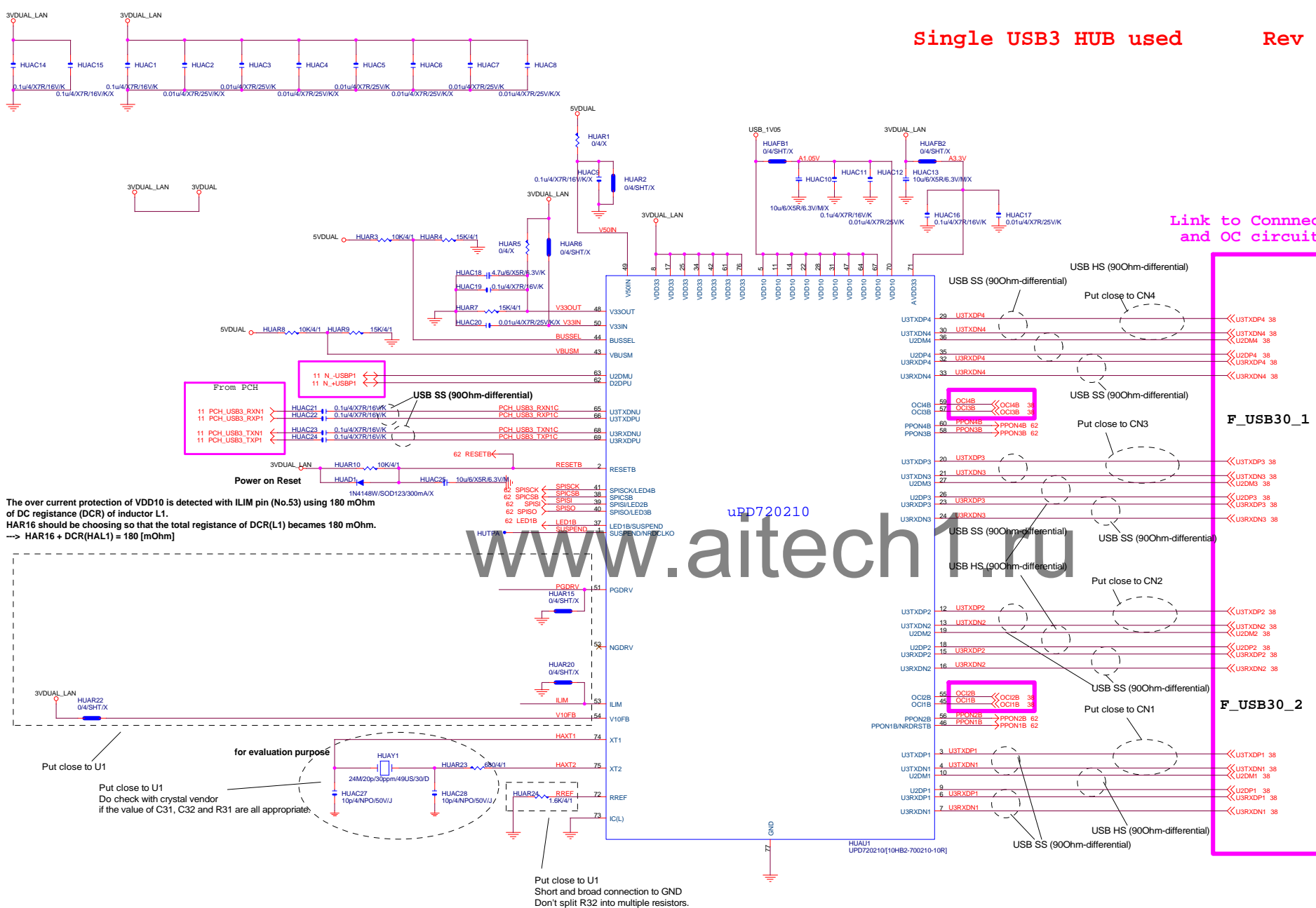
ABC的切換方式:
下下下 : SE1+SE0
上上上 : M.2 X4
下上上 : M.2x2 + SE S0/S1
下下下上 : M.2 X1 + SE
S0/S1/S2

Title			BLOCK DIAGRAM		
Size	Document Number		Rev		
Custom	GA-Z170X-GAMING 7-OC-MG		1.01		
Date:	Friday, March 04, 2016		Sheet	60	of 67
	3		2	1	

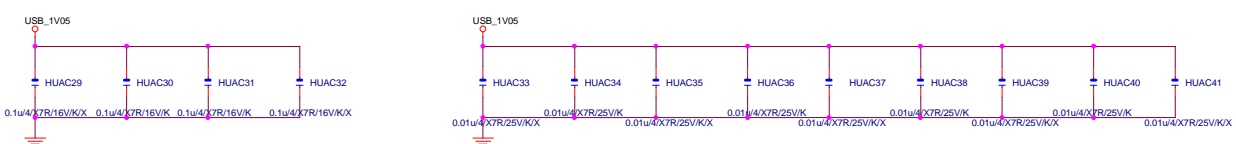
Single USB3 HUB used

Rev 0.3

Link to Connectors and OC circuits

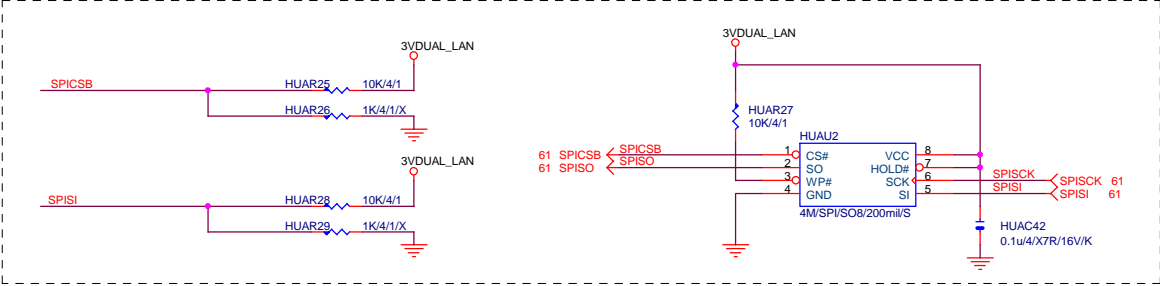


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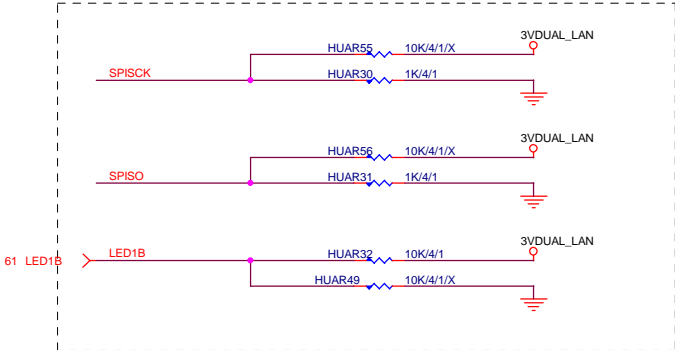


Single USB3 HUB used

External SPI ROM ; SPI ROM attached mode

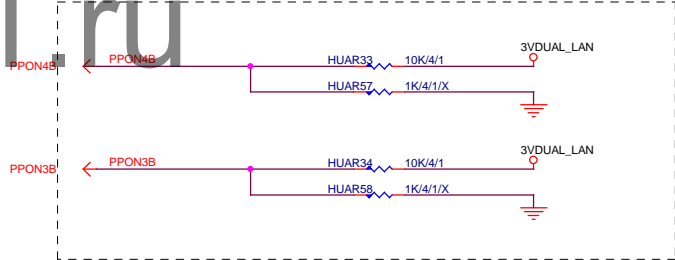


Battery Charging

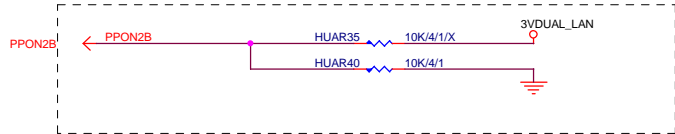


Number of Ports ; 4Ports mode

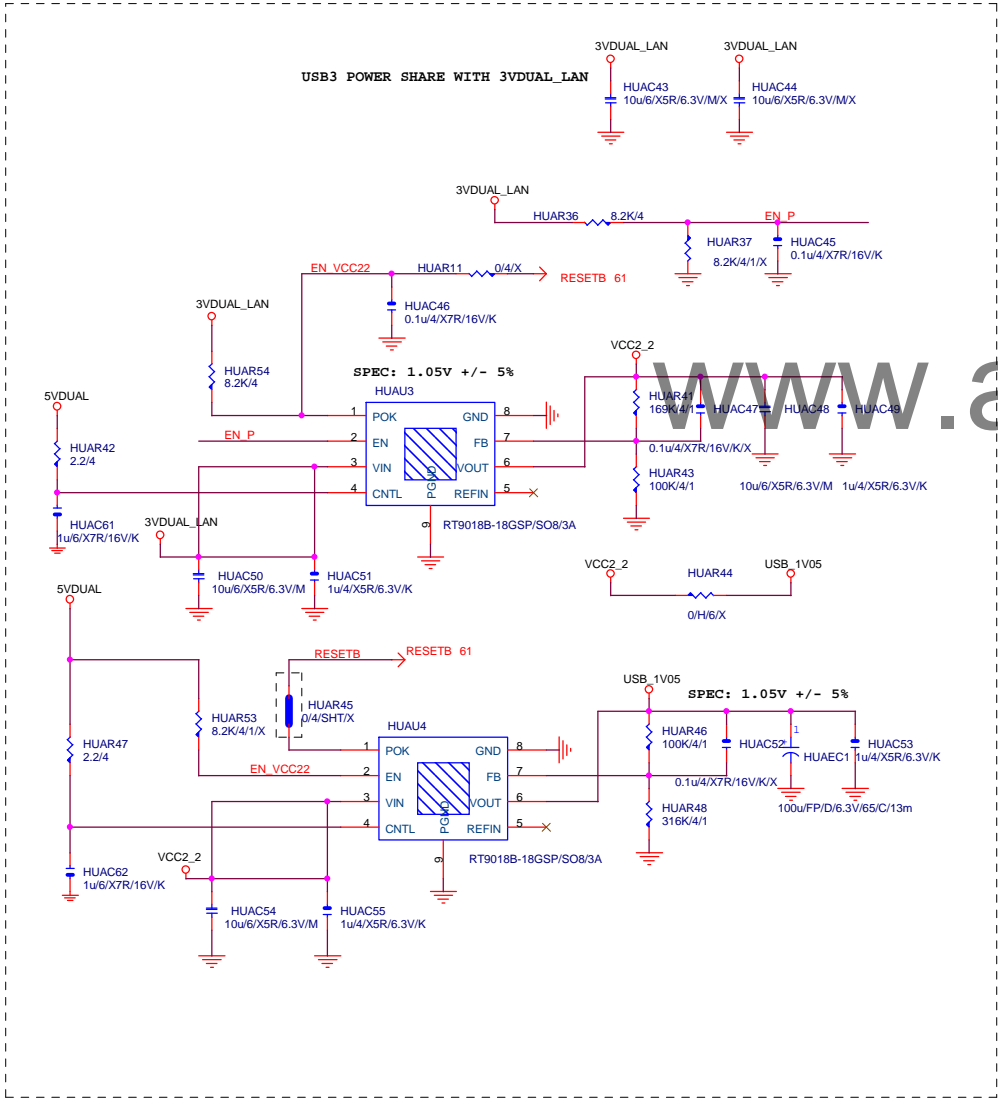
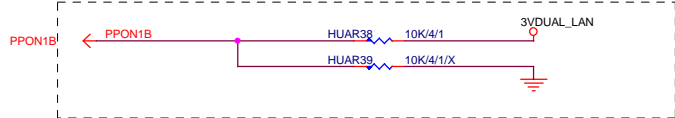
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



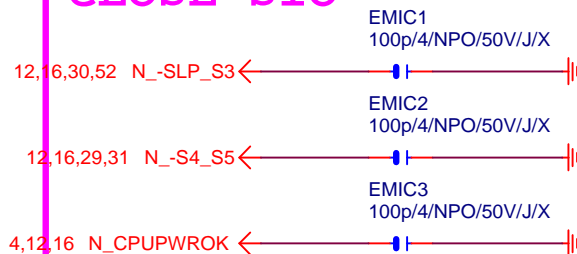
#5 VBUS Power Control ; Individual mode



PPON1B Pin Function ; Port1 PPONB mode



CLOSE SIO



CLOSE PCH



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GIGABYTE™

Title

EMI/ESD

Size
A

Document Number

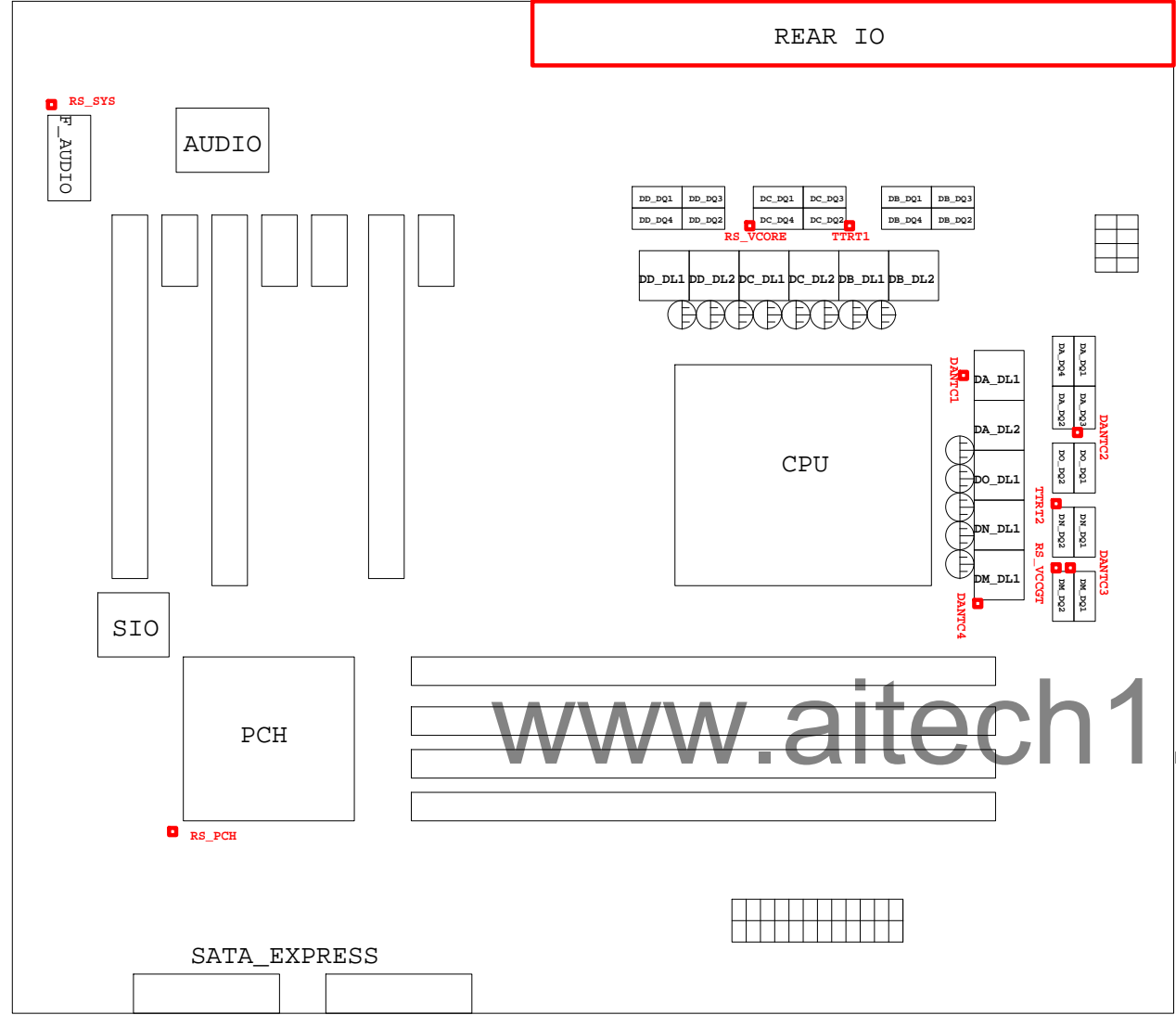
GA-Z170X-GAMING 7-OC-MG

Rev

1.01

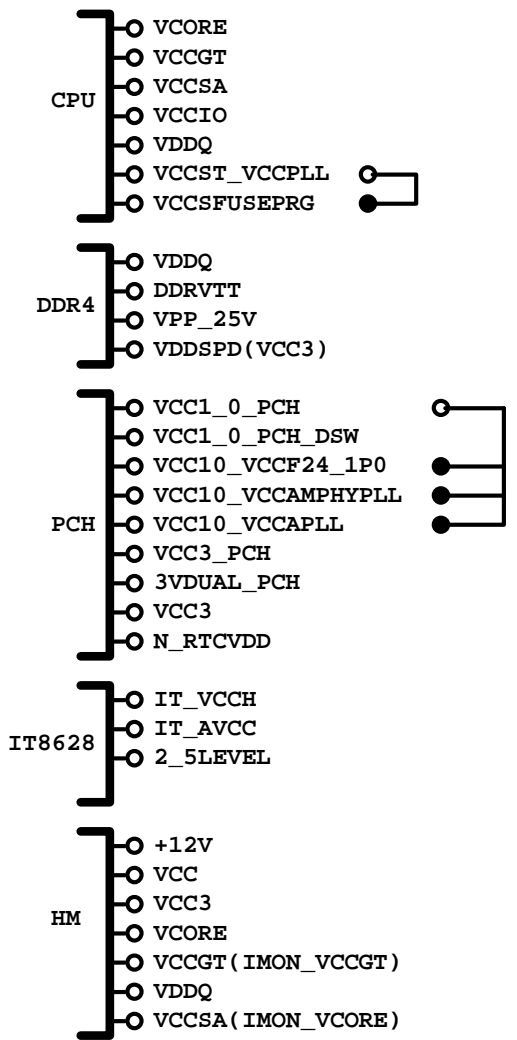
Date: Friday, March 04, 2016

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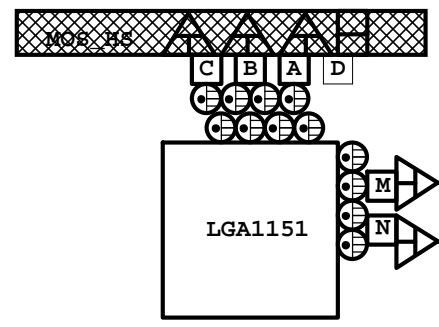
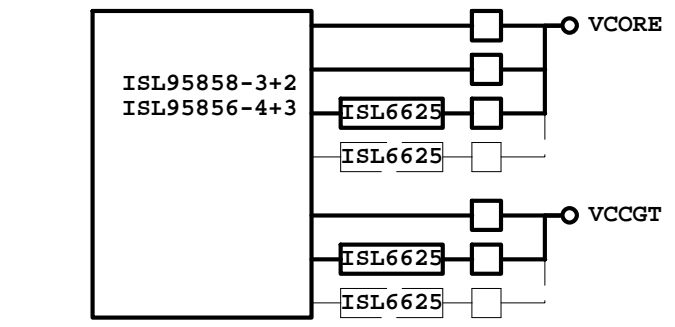


熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL2	Differential
DANTC2	DA_DQ3	Differential
DANTC3	DM_DQ2	Differential
DANTC4	DM_DL1	Differential
RS_VCORE	DC_DQ4	N/A
RS_VCCGT	DM_DQ2	N/A
TTRT1	DC_DQ2	N/A
TTRT2	DN_DQ2	N/A
RS_PCH	PCH	N/A
RS_SYS	F_AUDIO	N/A

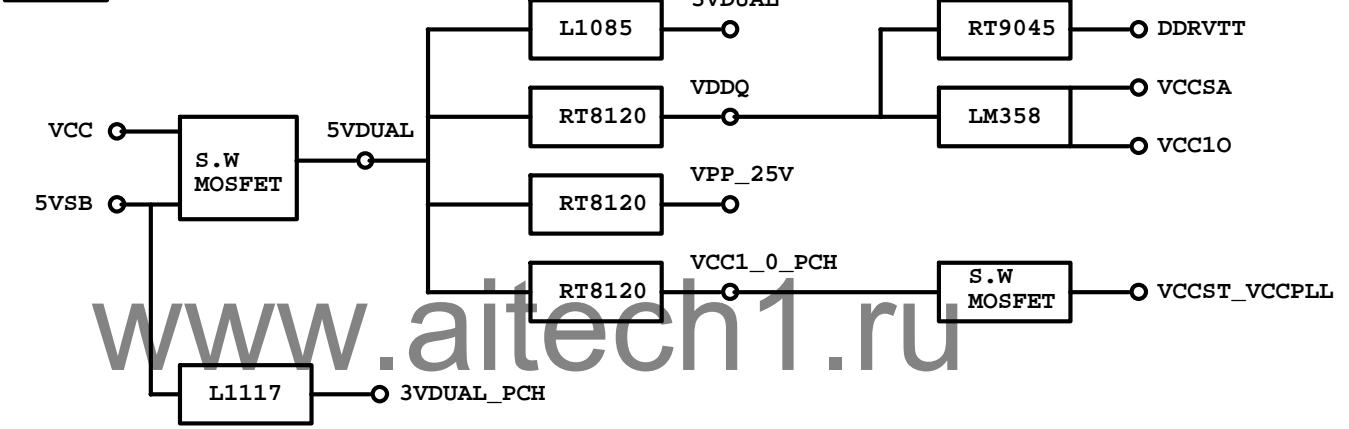
POWER BLOCK MAP



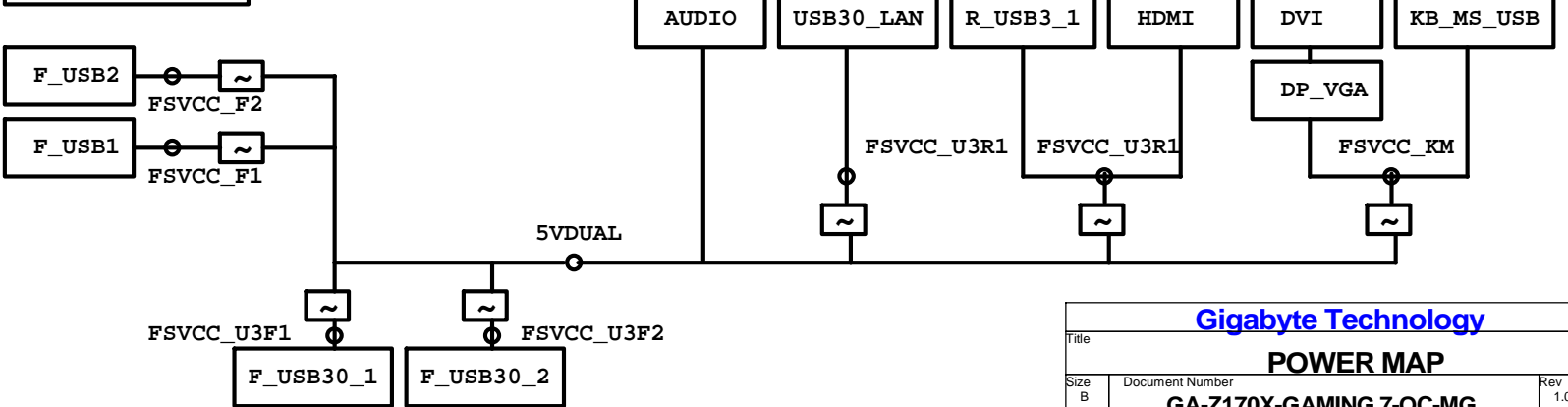
VCORE/VCCGT



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

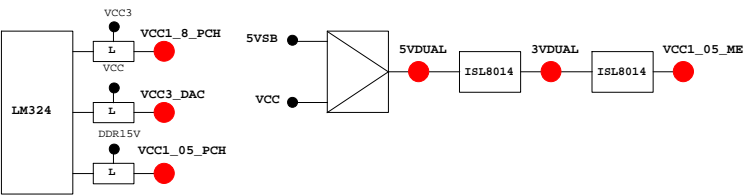
GIGABYTE™			
Title RT8120_DDR4 POWER			
Size Custom	Document Number GA-Z170X-GAMING 7-OC-MG		Rev 1.01
Date:	Friday, March 04, 2016	Sheet 66 of 67	

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

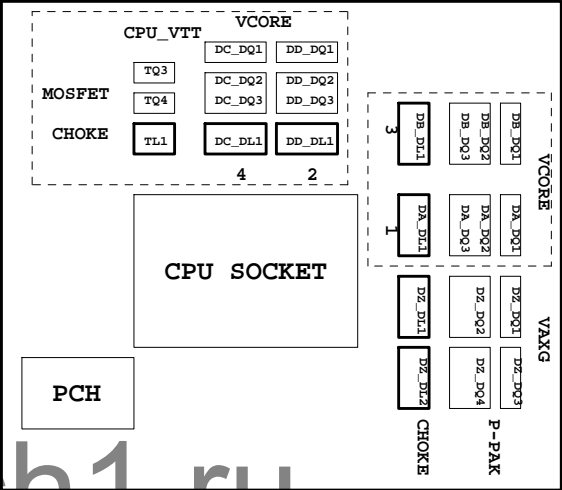
Super I/O ITE8720 GPIO Table

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：

散熱模組料號：

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

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

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