

## Model Name: GA-B150M-Gaming3 DDR3-DB

SHEET

TITLE

rev 1.0

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU LGA1151-A
05	CPU LGA1151-B-DDR4
06	CPU LGA1151-C
07	CPU LGA1150-D
08	DDR3 CHANNEL A
09	DDR3 CHANNEL B
10	PCH CLK BUFFER
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE, SATA EXPRESS
14	PCH PWR,GND
15	Dual BIOS
16	ITE 8628 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*4 SLOT
21	M.2X4
22	SATA EXPRESS
23	SWITCH
24	ASM1083 PCI BRIDGE
25	ASM1083 POWER
26	PCI SLOT 1&2
27	ISL95858 856 PWM

28	ISL95858 856 MOS VCORE
29	ISL95858 856 MOS VCCGT
30	VCCSA VCCIO VCCPLL
31	RT8120 DDR VDDQ
32	RT8120 PCH VCC1 0 PCH
33	DISCRETE POWER
34	NCT3933
35	ATX POWER , A -PROCHOT
36	KB MS USB
37	DVI CONN
38	PTN3356 - DP to VGA - IC
39	PTN3356 - DP to VGA - Conn
40	HDMI CONN
41	R USB30
42	INTEL I219
43	USB30 LAN CONNECTOR-I219
44	Realtek ALC892
45	REAR AUDIO JACK
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Gigabyte Technology

Title			Cover Sheet
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Custom	GA-B150M-Gaming3 DDR3-DB	1.0	
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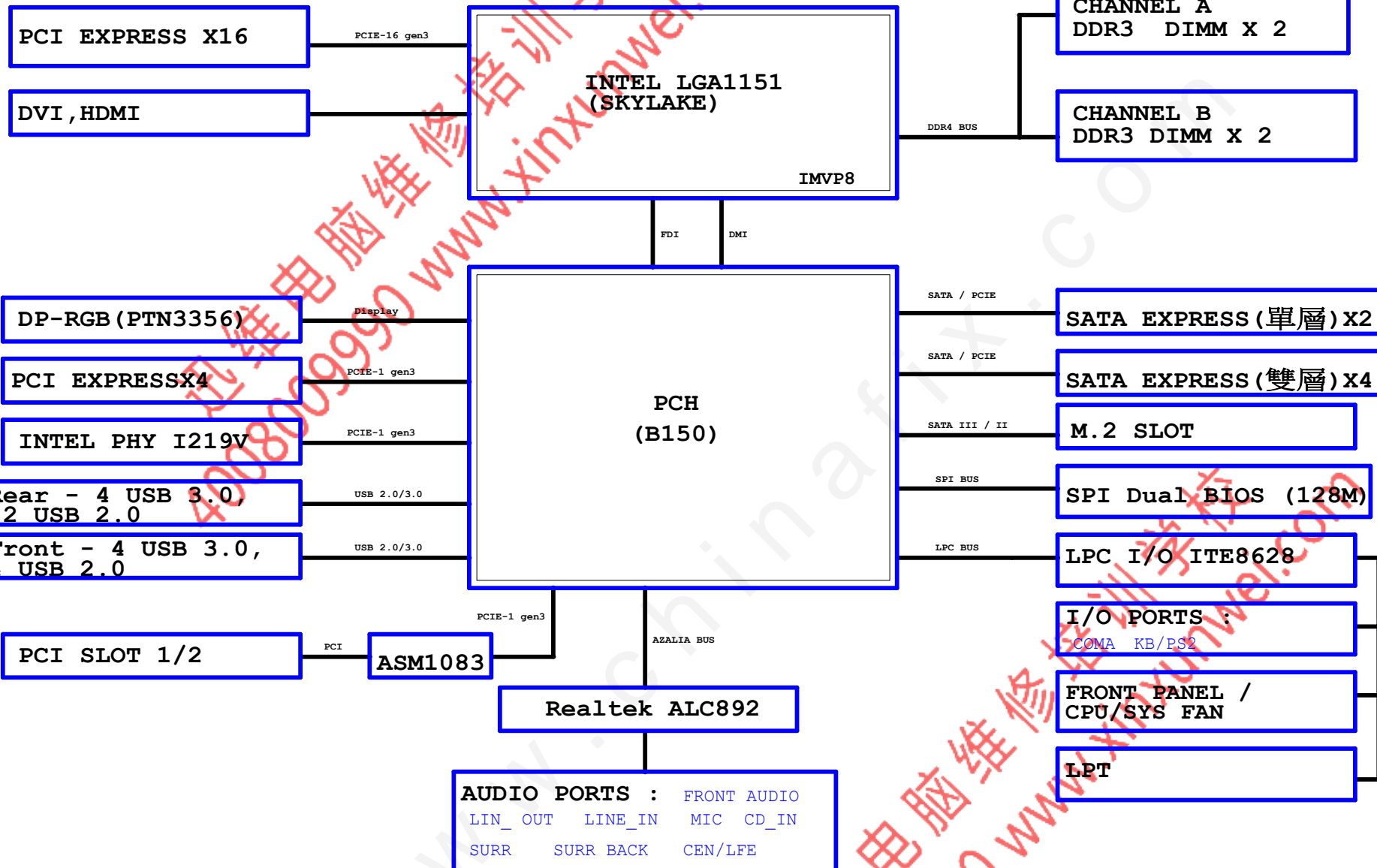
## Circuit or PCB layout change

2016/01/06

[illegible]

# BLOCK DIAGRAM

www.xinxunwei.com 400-800-9990



## LGA1151E SKT\_H4



Bifurcation Config.		Signals Lines		
		CFG[8]	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

Title: **CPU LGA1151-A**  
 Size: Custom | Document Number: **GA-B150M-Gaming3 DDR3-DB** | Rev: **1.0**  
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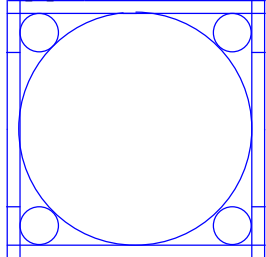
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LGA1151		LGA1151	
MDA0 AE38	DDR0_DQ[0]	DDR0_CK[0]	AW18 M_DCLKA0
MDA1 AE37	DDR0_DQ[1]	DDR0_CK[1]	AW18 M_DCLKA0
MDA2 AG38	DDR0_DQ[2]	DDR0_CK[1]	AW17 M_DCLKA1
MDA3 AG37	DDR0_DQ[3]	DDR0_CK[1]	AW17 M_DCLKA1
MDA4 AE39	DDR0_DQ[4]	DDR0_CK[2]	AW16 M_DCLKA2
MDA5 AE40	DDR0_DQ[5]	DDR0_CK[2]	AW16 M_DCLKA2
MDA6 AG39	DDR0_DQ[6]	DDR0_CK[3]	AW16 M_DCLKA3
MDA7 AG40	DDR0_DQ[7]	DDR0_CK[3]	AW16 M_DCLKA3
MDA8 AJ38	DDR0_DQ[8]		
MDA9 AJ37	DDR0_DQ[9]		
MDA10 AL39	DDR0_DQ[10]	DDR0_CKE[0]	AY24 CKEA0
MDA11 AL37	DDR0_DQ[11]	DDR0_CKE[1]	AY24 CKEA1
MDA12 AL40	DDR0_DQ[12]	DDR0_CKE[2]	AY25 CKEA2
MDA13 AJ39	DDR0_DQ[13]	DDR0_CKE[3]	AY25 CKEA3
MDA14 AL39	DDR0_DQ[14]		
MDA15 AL40	DDR0_DQ[15]	DDR0_CS[0]	AW12 M-CSA0
MDA16 AJ38	DDR0_DQ[16]	DDR0_CS[1]	AW12 M-CSA1
MDA17 AN40	DDR0_DQ[17]	DDR0_CS[2]	AW10 M-CSA2
MDA18 AR38	DDR0_DQ[18]	DDR0_CS[3]	AW10 M-CSA3
MDA19 AR37	DDR0_DQ[19]		
MDA20 AN39	DDR0_DQ[20]	DDR0_ODT[0]	AW11 MODT_A0
MDA21 AN37	DDR0_DQ[21]	DDR0_ODT[1]	AW14 MODT_A1
MDA22 AR39	DDR0_DQ[22]	DDR0_ODT[2]	AW12 MODT_A2
MDA23 AR40	DDR0_DQ[23]	DDR0_ODT[3]	AW10 MODT_A3
MDA24 AW37	DDR0_DQ[24]		
MDA25 AJ38	DDR0_DQ[25]	DDR0_BA[0]DDR0_CAB[4]DDR0_BA[0]	AY13 SBAA0
MDA26 AV35	DDR0_DQ[26]	DDR0_BA[1]DDR0_CAB[6]DDR0_BA[1]	AY15 SBAA1
MDA27 AV35	DDR0_DQ[27]	DDR0_BA[2]DDR0_CAB[5]DDR0_BG[0]	AW23 SBAA2
MDA28 AJ37	DDR0_DQ[28]		
MDA29 AV37	DDR0_DQ[29]	DDR0_RAS#DDR0_CAB[3]DDR0_MA[16]	AW13 M-SRASA
MDA30 AT35	DDR0_DQ[30]	DDR0_WE#DDR0_CAB[6]DDR0_MA[14]	AV14 M-SWEA
MDA31 AJ35	DDR0_DQ[31]	DDR0_CAS#DDR0_CAB[1]DDR0_MA[15]	AV11 M-SCASA
MDA32 AY38	DDR0_DQ[32]		
MDA33 AW8	DDR0_DQ[33]	DDR0_MA[0]DDR0_CAB[9]DDR0_MA[0]	AW15 MAAA0
MDA34 AV6	DDR0_DQ[34]	DDR0_MA[1]DDR0_CAB[8]DDR0_MA[1]	AU18 MAAA1
MDA35 AV6	DDR0_DQ[35]	DDR0_MA[2]DDR0_CAB[5]DDR0_MA[2]	AU17 MAAA2
MDA36 AV8	DDR0_DQ[36]	DDR0_MA[3]DDR0_MA[4]	AU19 MAAA3
MDA37 AV8	DDR0_DQ[37]	DDR0_MA[5]DDR0_CAA[0]DDR0_MA[5]	AT18 MAAA4
MDA38 AV6	DDR0_DQ[38]	DDR0_MA[6]DDR0_CAA[2]DDR0_MA[6]	AU20 MAAA5
MDA39 AV6	DDR0_DQ[39]	DDR0_MA[7]DDR0_CAA[4]DDR0_MA[7]	MD37 AP13
MDA40 AY4	DDR0_DQ[40]	DDR0_MA[8]DDR0_CAA[3]DDR0_MA[8]	MD38 AM12
MDA41 AV4	DDR0_DQ[41]	DDR0_MA[9]DDR0_CAA[1]DDR0_MA[9]	MD39 AL12
MDA42 AT1	DDR0_DQ[42]	DDR0_MA[10]DDR0_CAB[7]DDR0_MA[10]	MD40 AP10
MDA43 AT2	DDR0_DQ[43]	DDR0_MA[11]DDR0_CAA[7]DDR0_MA[11]	MD41 AR10
MDA44 AV3	DDR0_DQ[44]	DDR0_MA[12]DDR0_CAA[6]DDR0_MA[12]	MD42 AF7
MDA45 AW4	DDR0_DQ[45]	DDR0_MA[13]DDR0_CAB[0]DDR0_MA[13]	MD43 AR9
MDA46 AT4	DDR0_DQ[46]	DDR0_MA[14]DDR0_CAA[9]DDR0_BG[1]	MD44 AP9
MDA47 AT3	DDR0_DQ[47]	DDR0_MA[15]DDR0_CAA[8]DDR0_ACT#	MD45 AR6
MDA48 AP2	DDR0_DQ[48]		MD46 AF6
MDA49 AM4	DDR0_DQ[49]		MD48 AM10
MDA50 AP3	DDR0_DQ[50]	DDR0_PAR	MD49 AL10
MDA51 AM3	DDR0_DQ[51]	DDR0_ALERT#	MD50 AM7
MDA52 AP4	DDR0_DQ[52]		MD51 AL7
MDA53 AM2	DDR0_DQ[53]		MD52 AM9
MDA54 AP1	DDR0_DQ[54]	DDR0_DQSN[0]	MD53 AL9
MDA55 AM1	DDR0_DQ[55]	DDR0_DQSN[1]	MD54 AM6
MDA56 AK3	DDR0_DQ[56]	DDR0_DQSN[2]	MD55 AL6
MDA57 AH1	DDR0_DQ[57]	DDR0_DQSN[3]	MD56 AL6
MDA58 AK4	DDR0_DQ[58]	DDR0_DQSN[4]	MD57 AJ7
MDA59 AH2	DDR0_DQ[59]	DDR0_DQSN[5]	MD58 AL6
MDA60 AH4	DDR0_DQ[60]	DDR0_DQSN[6]	MD59 AF7
MDA61 AK2	DDR0_DQ[61]	DDR0_DQSN[7]	MD60 AH7
MDA62 AH3	DDR0_DQ[62]		MD61 AH6
MDA63 AK1	DDR0_DQ[63]		MD62 AE7
			MD63 AF6

DDR CHANNEL  
A

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CPU-SK1151/S15

ILM\_BP\_CR/115X/NORMAL NI



Need check the new CPU MB

LGA1151B		SKT_J4	
LGA1151		LGA1151	
MD80 AD34	DDR1_DQ[0]DDR0_DQ[16]	DDR1_CK[0]	AM20 M_DCLKB0
MD81 AD35	DDR1_DQ[1]DDR0_DQ[17]	DDR1_CK[1]	AM21 M_DCLKB0
MD82 AG35	DDR1_DQ[2]DDR0_DQ[18]	DDR1_CK[1]	AP22 M_DCLKB1
MD83 AH35	DDR1_DQ[3]DDR0_DQ[19]	DDR1_CK[1]	AP21 M_DCLKB1
MD84 AE35	DDR1_DQ[4]DDR0_DQ[20]	DDR1_CK[2]	AN20 M_DCLKB2
MD85 AE34	DDR1_DQ[5]DDR0_DQ[21]	DDR1_CK[2]	AN21 M_DCLKB2
MD86 AG34	DDR1_DQ[6]DDR0_DQ[22]	DDR1_CK[3]	AP19 M_DCLKB3
MD87 AH34	DDR1_DQ[7]DDR0_DQ[23]	DDR1_CK[3]	AP20 M_DCLKB3
MD88 AK35	DDR1_DQ[8]DDR0_DQ[24]		
MD89 AL35	DDR1_DQ[9]DDR0_DQ[25]	DDR1_CKE[0]	AY29 CKEB0
MD90 AL32	DDR1_DQ[10]DDR0_DQ[26]	DDR1_CKE[1]	AY29 CKEB1
MD91 AL34	DDR1_DQ[11]DDR0_DQ[27]	DDR1_CKE[2]	AY29 CKEB2
MD92 AL34	DDR1_DQ[12]DDR0_DQ[28]	DDR1_CKE[3]	AY29 CKEB3
MD93 AL34	DDR1_DQ[13]DDR0_DQ[29]		
MD94 AK31	DDR1_DQ[14]DDR0_DQ[30]	DDR1_CS[0]	AP17 M-CSB0
MD95 AL31	DDR1_DQ[15]DDR0_DQ[31]	DDR1_CS[1]	AN15 M-CSB1
MD96 AP35	DDR1_DQ[16]DDR0_DQ[32]	DDR1_CS[2]	AN15 M-CSB2
MD97 AN35	DDR1_DQ[17]DDR0_DQ[33]	DDR1_CS[3]	AM15 M-CSB3
MD98 AN32	DDR1_DQ[18]DDR0_DQ[34]		
MD99 AP32	DDR1_DQ[19]DDR0_DQ[35]	DDR1_ODT[0]	AM16 MODT_B0
MD100 AN34	DDR1_DQ[20]DDR0_DQ[36]	DDR1_ODT[1]	AL16 MODT_B1
MD101 AP34	DDR1_DQ[21]DDR0_DQ[37]	DDR1_ODT[2]	AP15 MODT_B2
MD102 AN31	DDR1_DQ[22]DDR0_DQ[38]	DDR1_ODT[3]	AL15 MODT_B3
MD103 AP31	DDR1_DQ[23]DDR0_DQ[39]		
MD104 AL29	DDR1_DQ[24]DDR0_DQ[40]	DDR1_RAS#DDR1_CAB[3]DDR1_MA[16]	AN18 M-SRASB
MD105 AM29	DDR1_DQ[25]DDR0_DQ[41]	DDR1_WE#DDR1_CAB[6]DDR1_MA[14]	AL17 M-SWEB
MD106 AP29	DDR1_DQ[26]DDR0_DQ[42]	DDR1_CAS#DDR1_CAB[1]DDR1_MA[15]	AP16 M-SCASB
MD107 AR29	DDR1_DQ[27]DDR0_DQ[43]		
MD108 AM28	DDR1_DQ[28]DDR0_DQ[44]	DDR1_BA[0]DDR1_CAB[4]DDR1_BA[0]	AL18 SBAB0
MD109 AL28	DDR1_DQ[29]DDR0_DQ[45]	DDR1_BA[1]DDR1_CAB[5]DDR1_BA[1]	AM18 SBAB1
MD110 AR28	DDR1_DQ[30]DDR0_DQ[46]	DDR1_BA[2]DDR1_CAB[5]DDR1_BG[0]	AW28 SBAB2
MD111 AE28	DDR1_DQ[31]DDR0_DQ[47]		
MD112 AR12	DDR1_DQ[32]DDR1_DQ[16]	DDR1_MA[0]DDR1_CAB[9]DDR1_MA[0]	AL19 MAAB0
MD113 AP12	DDR1_DQ[33]DDR1_DQ[17]	DDR1_MA[1]DDR1_CAB[8]DDR1_MA[1]	AL22 MAAB1
MD114 AM13	DDR1_DQ[34]DDR1_DQ[18]	DDR1_MA[2]DDR1_CAB[5]DDR1_MA[2]	AM22 MAAB2
MD115 AL13	DDR1_DQ[35]DDR1_DQ[19]	DDR1_MA[3]DDR1_MA[4]	AM23 MAAB3
MD116 AR13	DDR1_DQ[36]DDR1_DQ[20]	DDR1_MA[5]DDR1_CAA[0]DDR1_MA[5]	AL23 MAAB4
MD117 AP13	DDR1_DQ[37]DDR1_DQ[21]	DDR1_MA[6]DDR1_CAA[2]DDR1_MA[6]	AW26 MAAB5
MD118 AM12	DDR1_DQ[38]DDR1_DQ[22]	DDR1_MA[7]DDR1_CAA[4]DDR1_MA[7]	AY26 MAAB7
MD119 AP10	DDR1_DQ[39]DDR1_DQ[23]	DDR1_MA[8]DDR1_CAA[3]DDR1_MA[8]	AW26 MAAB8
MD120 AR10	DDR1_DQ[40]DDR1_DQ[24]	DDR1_MA[9]DDR1_CAA[1]DDR1_MA[9]	AW27 MAAB9
MD121 AF7	DDR1_DQ[41]DDR1_DQ[25]	DDR1_MA[10]DDR1_CAB[7]DDR1_MA[10]	AE18 MAAB10
MD122 AR9	DDR1_DQ[42]DDR1_DQ[26]	DDR1_MA[11]DDR1_CAA[7]DDR1_MA[11]	AE17 MAAB11
MD123 AP9	DDR1_DQ[43]DDR1_DQ[27]	DDR1_MA[12]DDR1_CAA[6]DDR1_MA[12]	AY27 MAAB12
MD124 AR6	DDR1_DQ[44]DDR1_DQ[28]	DDR1_MA[13]DDR1_CAB[0]DDR1_MA[13]	AR15 MAAB13
MD125 AF6	DDR1_DQ[45]DDR1_DQ[29]	DDR1_MA[14]DDR1_CAA[9]DDR1_BG[1]	AY28 MAAB14
MD126 AM10	DDR1_DQ[46]DDR1_DQ[30]	DDR1_MA[15]DDR1_CAA[8]DDR1_ACT#	AU28 MAAB15
MD127 AL10	DDR1_DQ[47]DDR1_DQ[31]		
MD128 AM7	DDR1_DQ[48]		
MD129 AL7	DDR1_DQ[49]	DDR1_PAR	AL20
MD130 AM9	DDR1_DQ[50]	DDR1_ALERT#	AY25
MD131 AL9	DDR1_DQ[51]		
MD132 AM6	DDR1_DQ[52]		
MD133 AL6	DDR1_DQ[53]	DDR1_DQSN[0]DDR0_DQSN[2]	AF34 M-DQSB0
MD134 AJ7	DDR1_DQ[54]	DDR1_DQSN[1]DDR0_DQSN[3]	AK33 M-DQSB1
MD135 AL6	DDR1_DQ[55]	DDR1_DQSN[2]DDR0_DQSN[6]	AK33 M-DQSB2
MD136 AL6	DDR1_DQ[56]	DDR1_DQSN[3]DDR0_DQSN[5]	AN29 M-DQSB3
MD137 AJ7	DDR1_DQ[57]	DDR1_DQSN[4]DDR1_DQSN[2]	AN13 M-DQSB4
MD138 AL6	DDR1_DQ[58]	DDR1_DQSN[5]DDR1_DQSN[3]	AR6 M-DQSB5
MD139 AF7	DDR1_DQ[59]	DDR1_DQSN[6]DDR1_DQSN[6]	AK6 M-DQSB6
MD140 AH7	DDR1_DQ[60]	DDR1_DQSN[7]	AK6 M-DQSB7
MD141 AH6	DDR1_DQ[61]		
MD142 AE7	DDR1_DQ[62]	DDR1_DQSP[0]DDR0_DQSP[2]	AF35 M-DQSB8
MD143 AF6	DDR1_DQ[63]	DDR1_DQSP[1]DDR0_DQSP[3]	AK33 M-DQSB1
		DDR1_DQSP[2]DDR0_DQSP[6]	AN28 M-DQSB3
		DDR1_DQSP[3]DDR0_DQSP[7]	AN12M DQSB4
		DDR1_DQSP[4]DDR1_DQSP[2]	AP8 M-DQSB5
		DDR1_DQSP[5]DDR1_DQSP[3]	AL8 M-DQSB6
		DDR1_DQSP[6]	AG7 M-DQSB7
		DDR1_DQSP[7]	
		DDR1_DQSP[8]	AN25
		DDR1_DQSN[8]	AN26

DDR CHANNEL  
B

CPU-SK1151/S15

- [8] MODT\_A[0..3] <=> MODT\_A[0..3]
- [9] MODT\_B[0..3] <=> MODT\_B[0..3]
- [8] MDA[0..63] <=> MDA[0..63]
- [9] MDB[0..63] <=> MDB[0..63]
- [8] M\_DQSA[0..7] <=> M\_DQSA[0..7]
- [8] M\_DQSB[0..7] <=> M\_DQSB[0..7]
- [9] MAA[0..15] <=> MAA[0..15]
- [9] MAAB[0..15] <=> MAAB[0..15]
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- [9] M\_DQSB[0..7] <=> M\_DQSB[0..7]

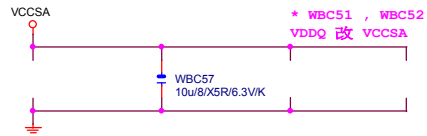
Gigabyte Technology		
CPU LGA1151-B		
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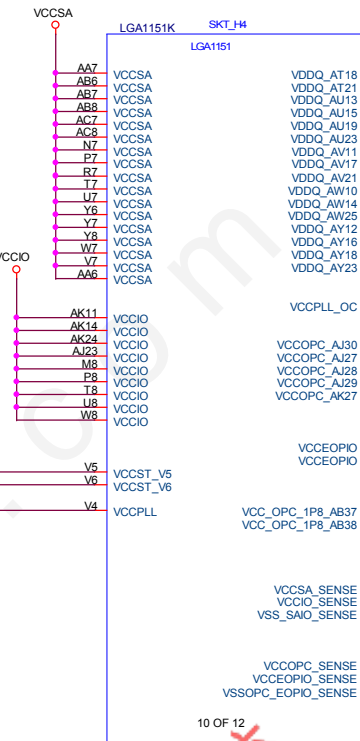
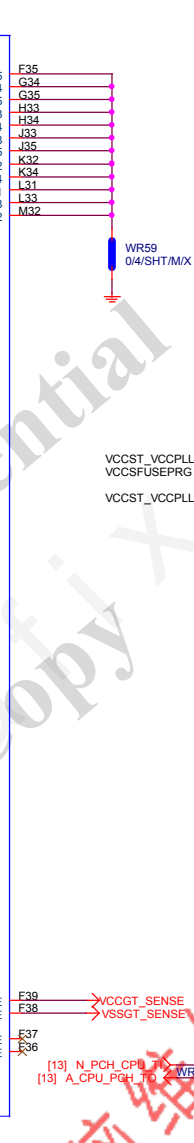
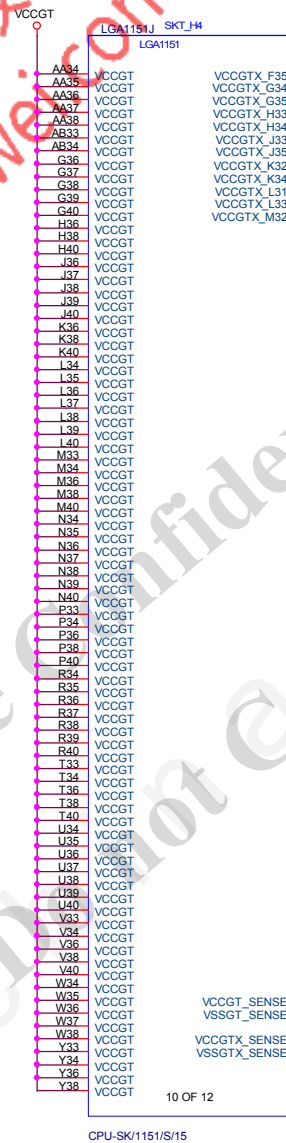
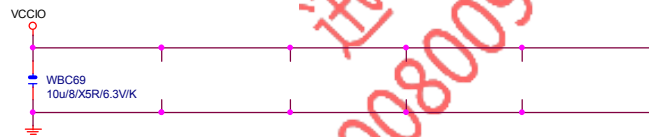
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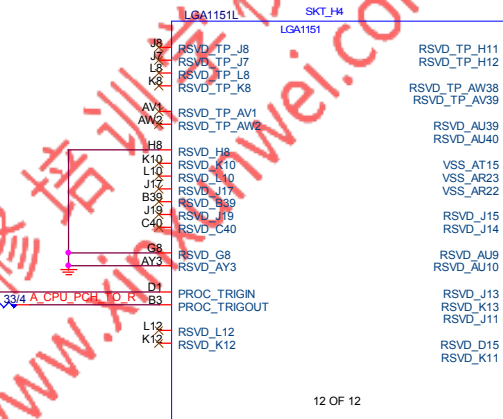
\* 删 WBC124, WBC125, WBC126, WBC127 电容



\* 删 VCCGT 电容



CPU-SK/1151/S/15



CPU-SK/1151/S/15



\* 刪 Vcore 電容

Gigabyte Technology

CPU LGA1151-C

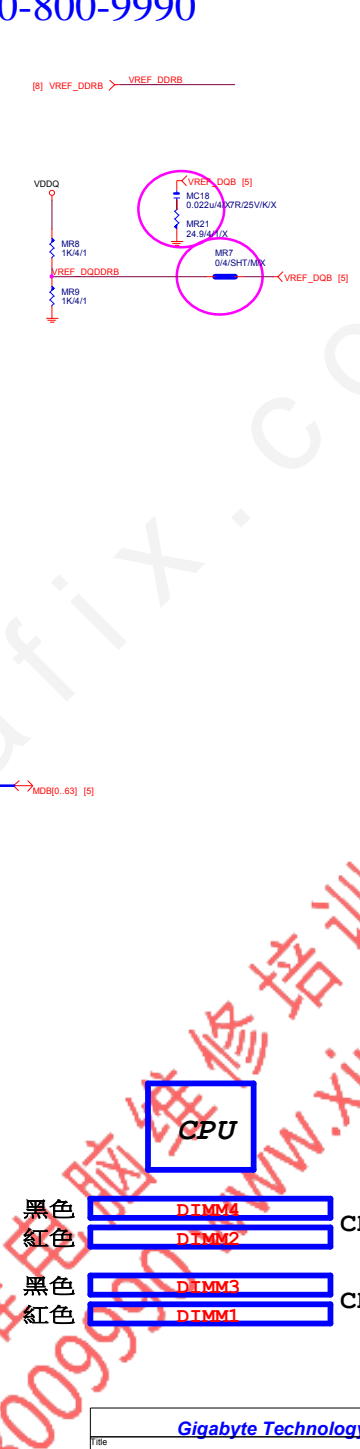
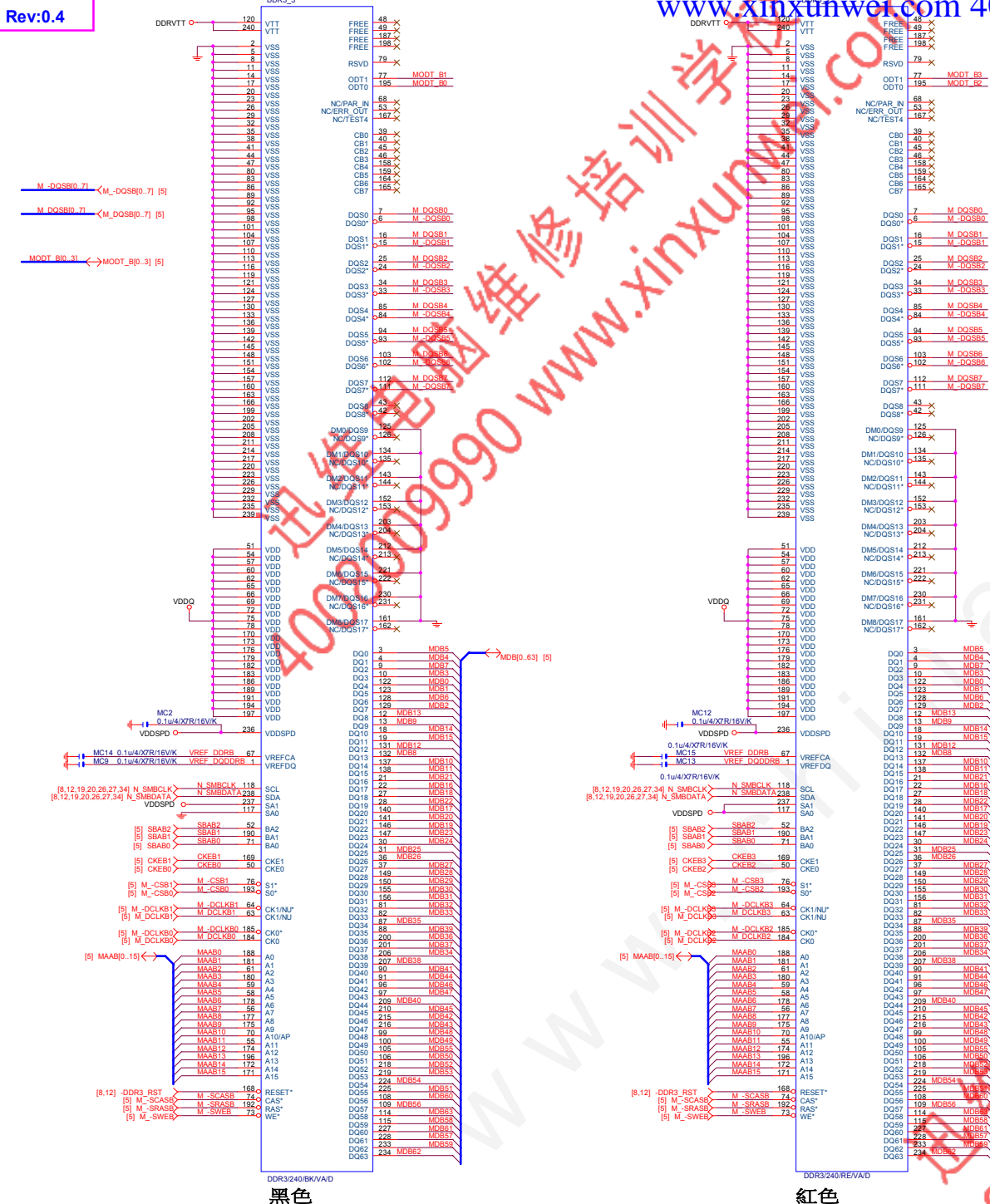
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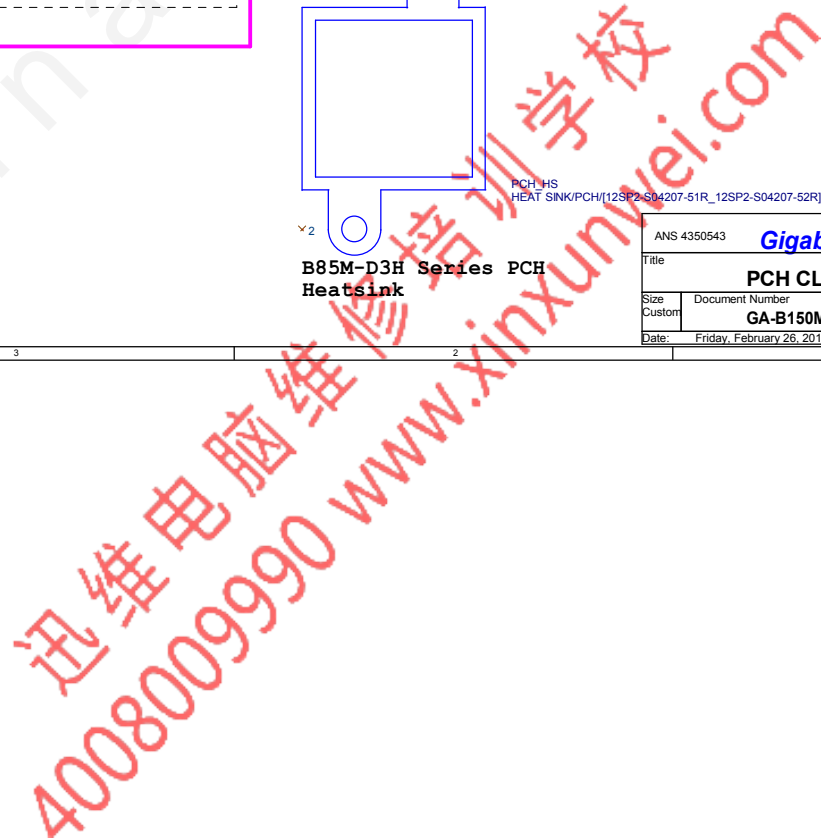


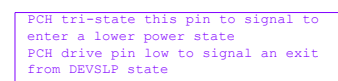


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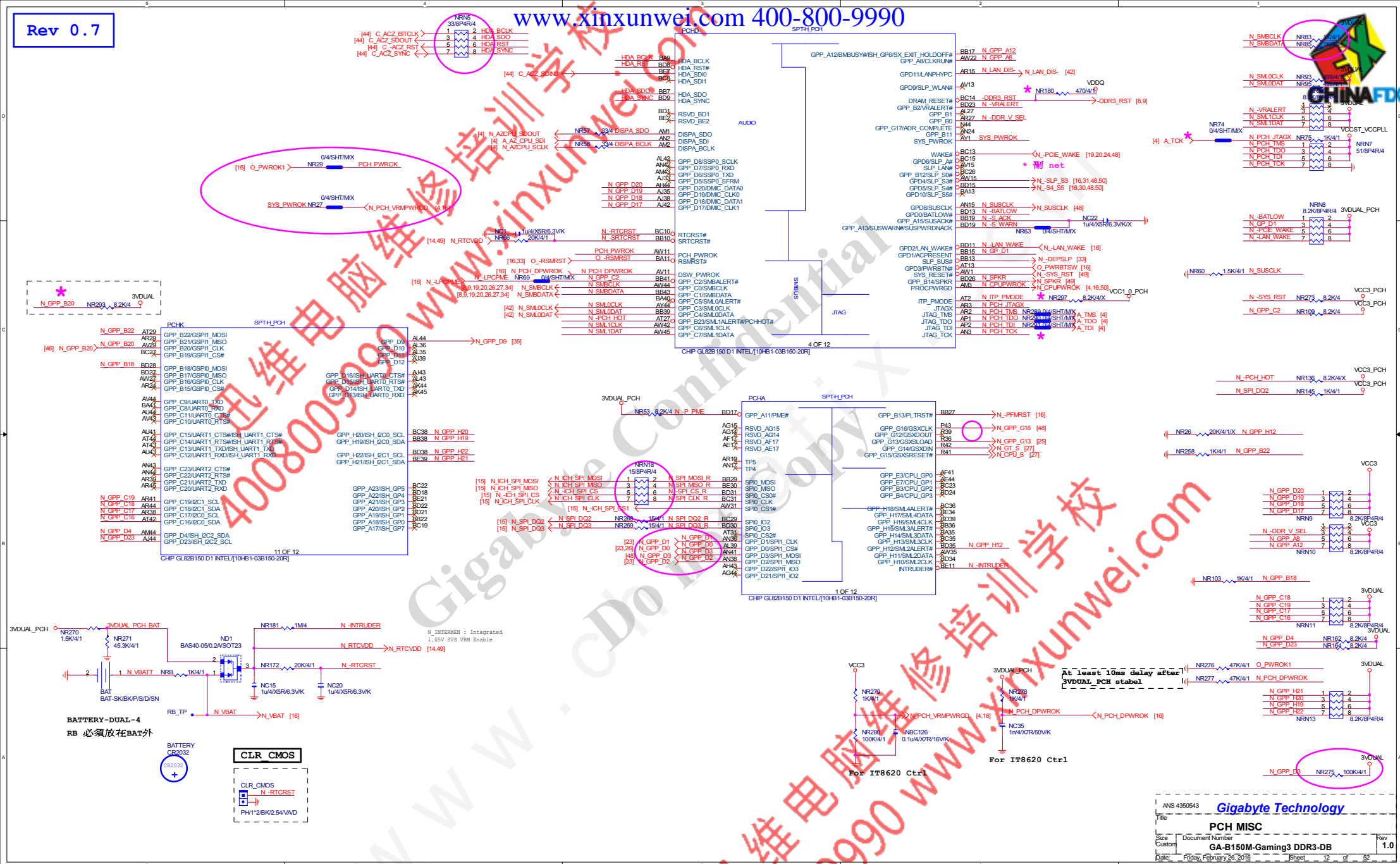
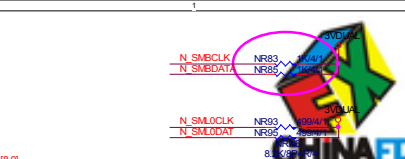




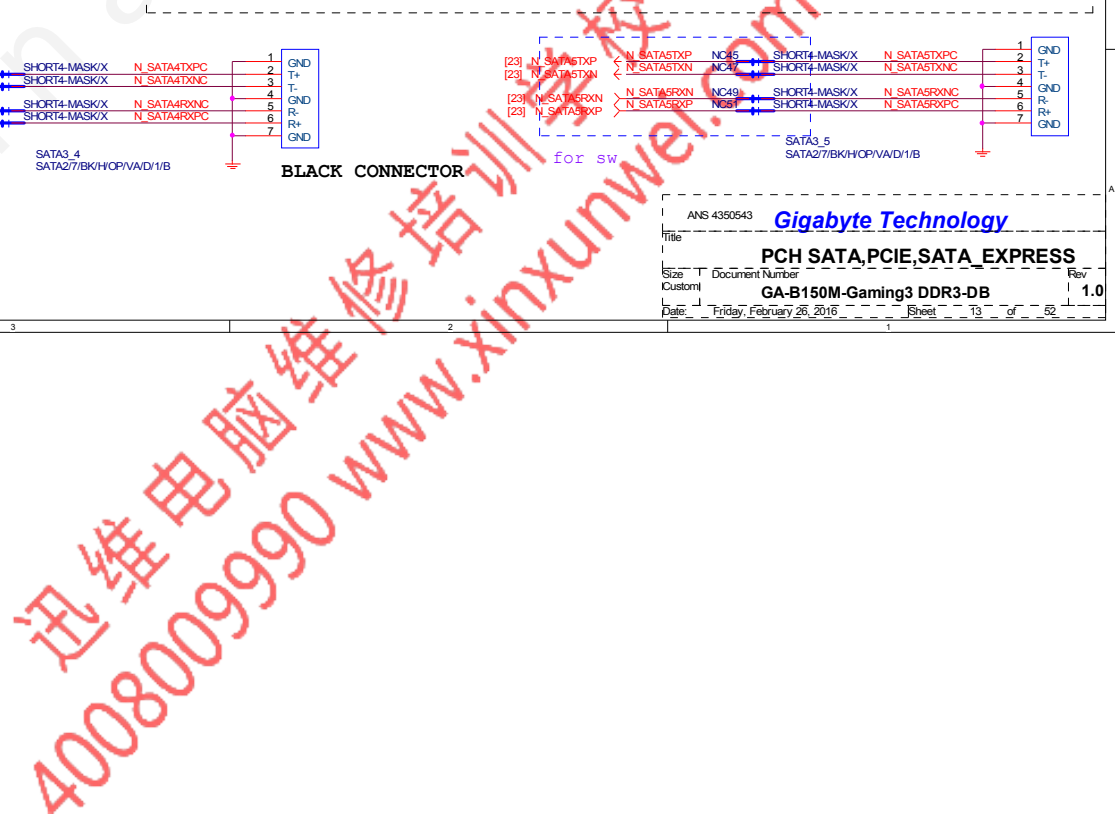


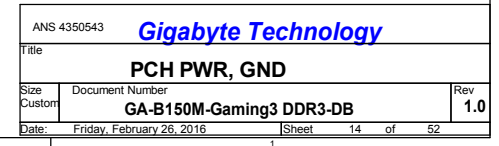
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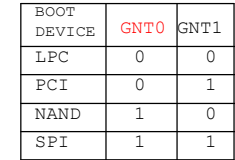




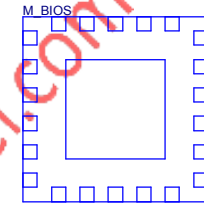






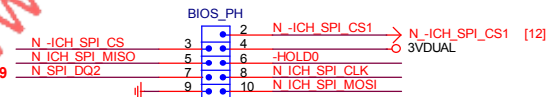


N/A



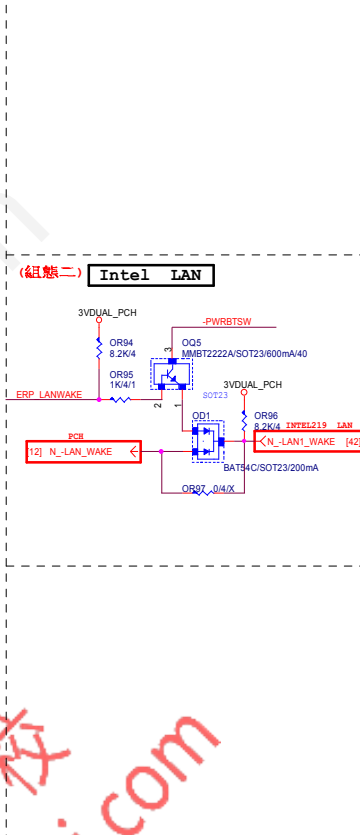
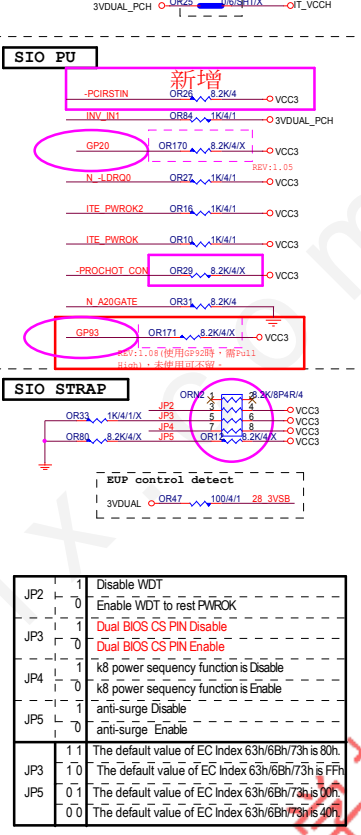
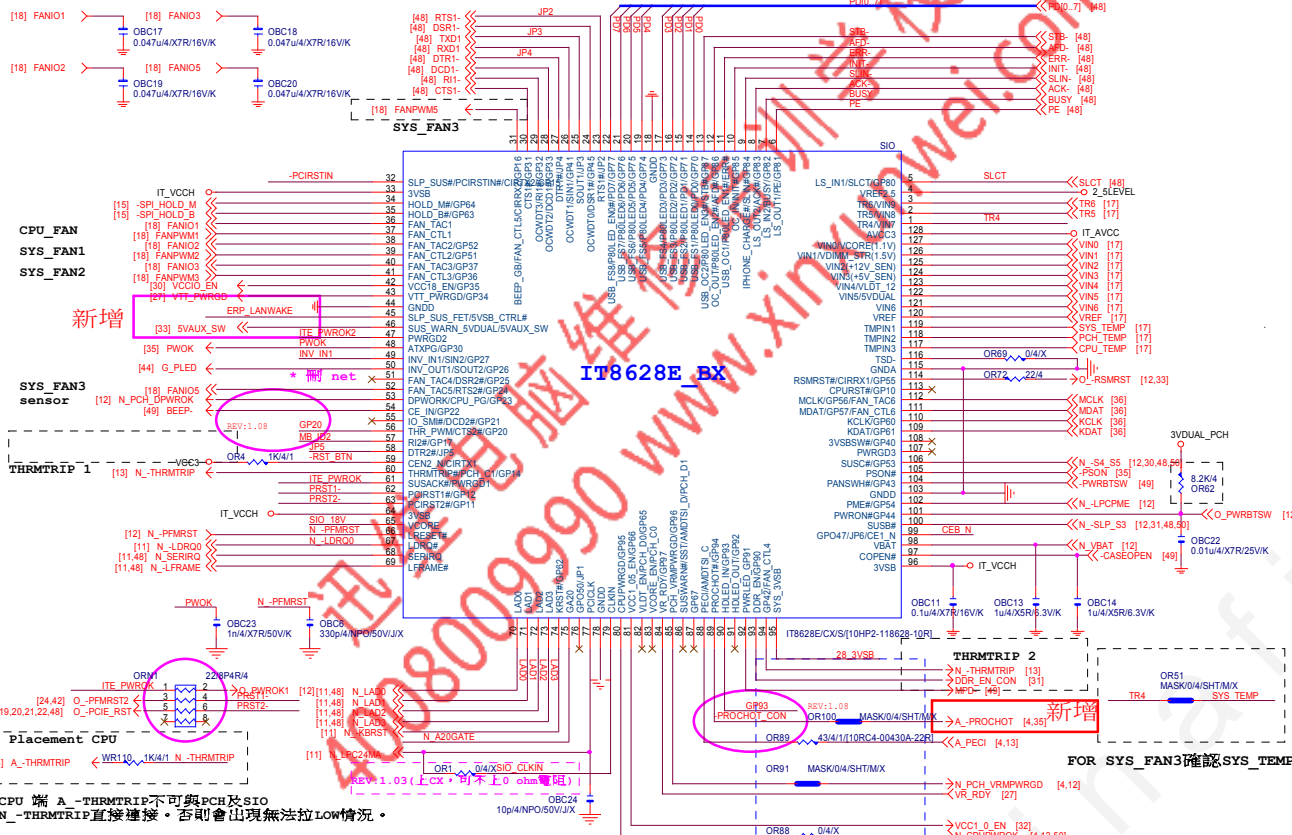
\* 試產先上，PVT 移除

BIOS PH MASK



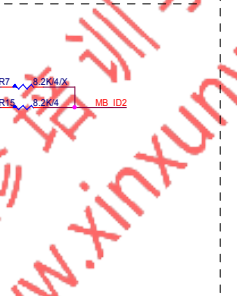
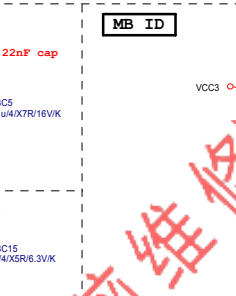
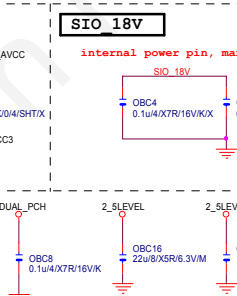
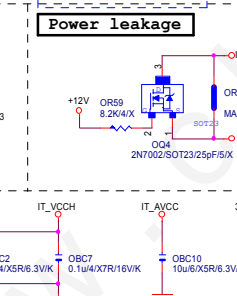
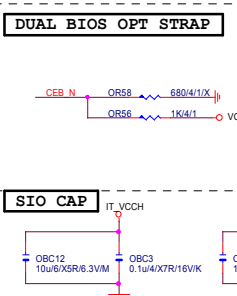
Footprint the same, confirmed by Graceing.  
Use COM port pin header part.





FAN TABLE	
CPU_FAN	FAN_CTL1
SYS_FAN1	FAN_CTL2
SYS_FAN2	FAN_CTL3
SYS_FAN3	FAN_CTL5
OPT FAN or SYS_FAN4	N/A
THRMTrip1	YES PIN60
THRMTrip2	YES PIN94

IT8628E GPIO問題調整	
PIN 50	GP26第一次上POWER時會拉Lo
PIN 90/91	DEFAULT為HOLDEN FUNCTION GP92 高濕時 GP92 會被拉Lo (ITE BUG)
PIN 108	GP40-- POWER ON 時會拉Lo
PIN 111/112	MOUSE BAFANG FUNCTION 轉一使用, 不然會互相干擾
PIN 22	Pin22, 需高於3V, 若低於此部分COM, PORT及LPT裝置將會異常動作。

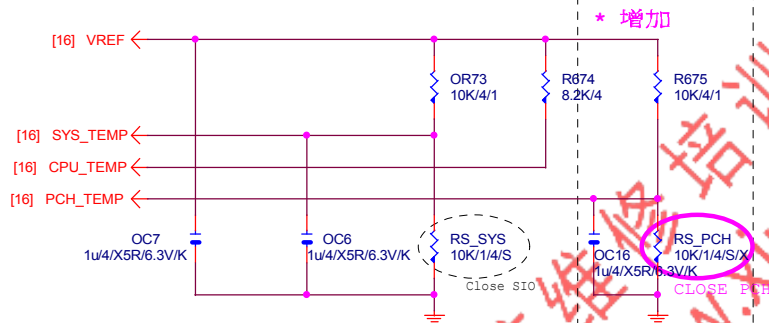


ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	組態一
	Intel 219	組態二
Dual LAN	Atheros+Atheros	組態一
	Intel 219+Atheros	組態一
	Intel 219+Intel 210	組態三
No Support ERP	BOM不上	N/A



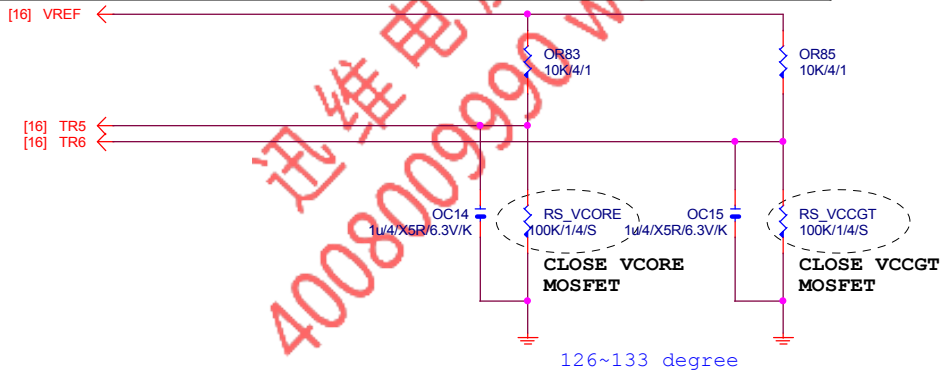
## TEMP H/W MONITOR

REV 1.08



## RS\_VCORE, RS\_VCCGT, CLOSE CPU\_VCORE &amp; VCCGT MOSFET

- PROCHOT: 有mos heartsink不用prochot function

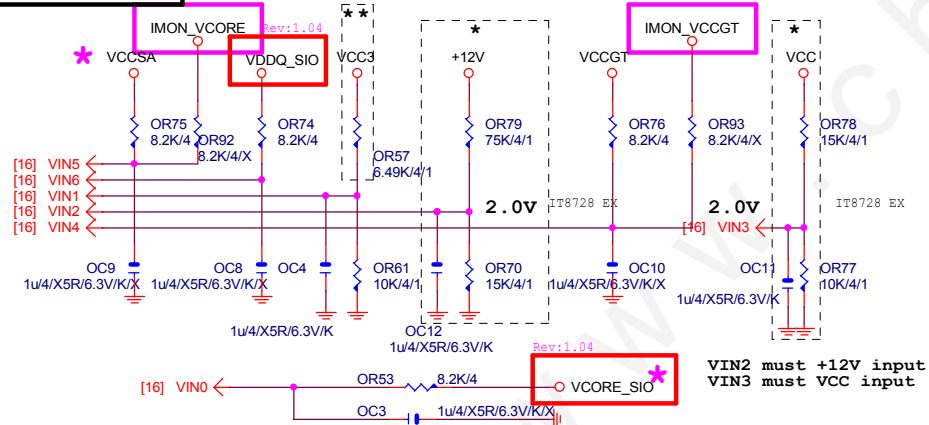


## VOLTAGE-- H/W MONITOR

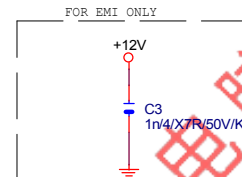
Connect to PWM

★ IT8728 BX  
★★ IT8728 CX

Connect to PWM



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

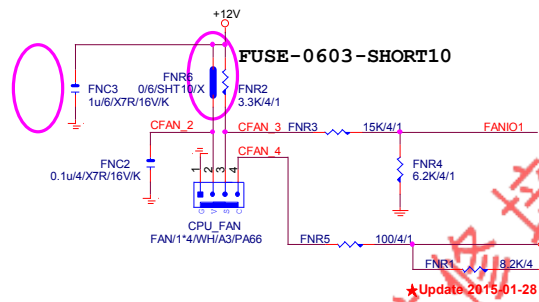


Gigabyte Technology

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

Rev: 0.7



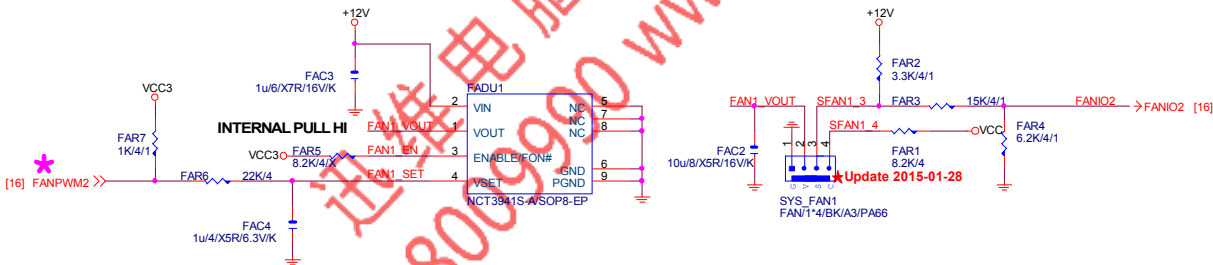
## SYSTEM FAN1

## Linear SYS\_FAN

Enable Function (NCT3941S)

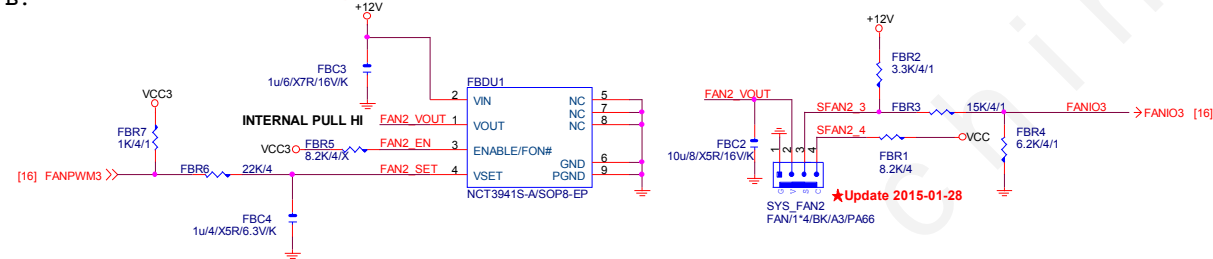
Full Turn On Function (NCT3941S-A)

A.



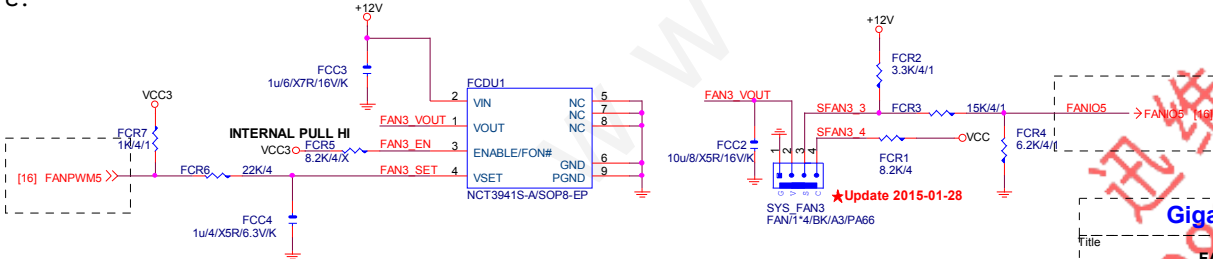
## SYSTEM FAN2

B.



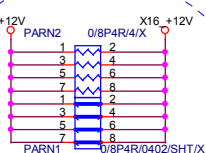
## SYSTEM FAN3

C.



Gigabyte Technology

Title		FAN CTRL	
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**+12V\_protect  
short-wire test**

PA\_EXP\_RXP0\_15] >> PA\_EXP\_RXP0[.15] [4]  
PA\_EXP\_RXN0\_15] >> PA\_EXP\_RXN0[.15] [4]  
PA\_EXP\_TXP0\_15] >> PA\_EXP\_TXP0[.15] [4]  
PA\_EXP\_TXN0\_15] >> PA\_EXP\_TXN0[.15] [4]

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_TXN15_C

PCIE16:16/5/5/16

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

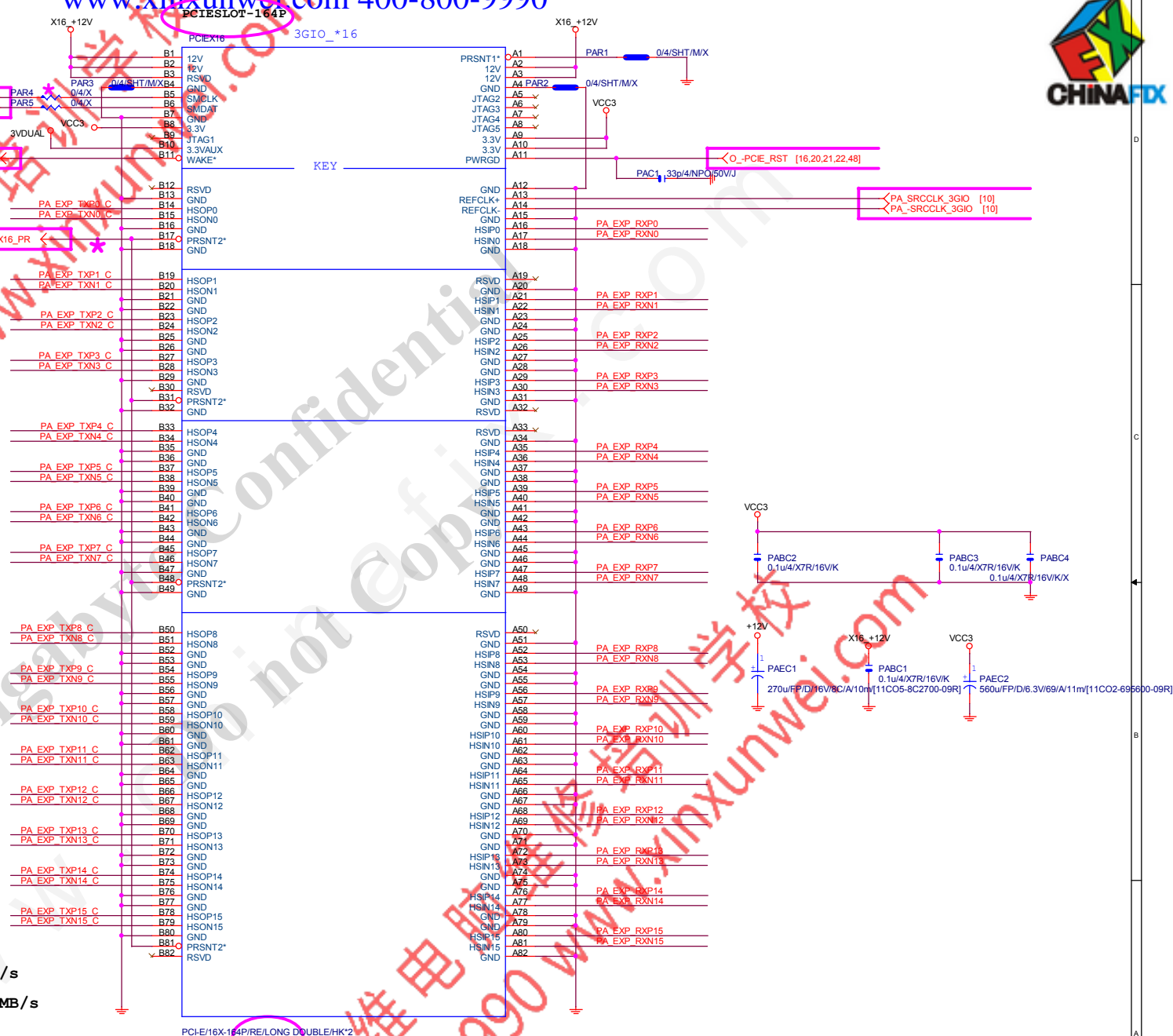
PCE-E X1(單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

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

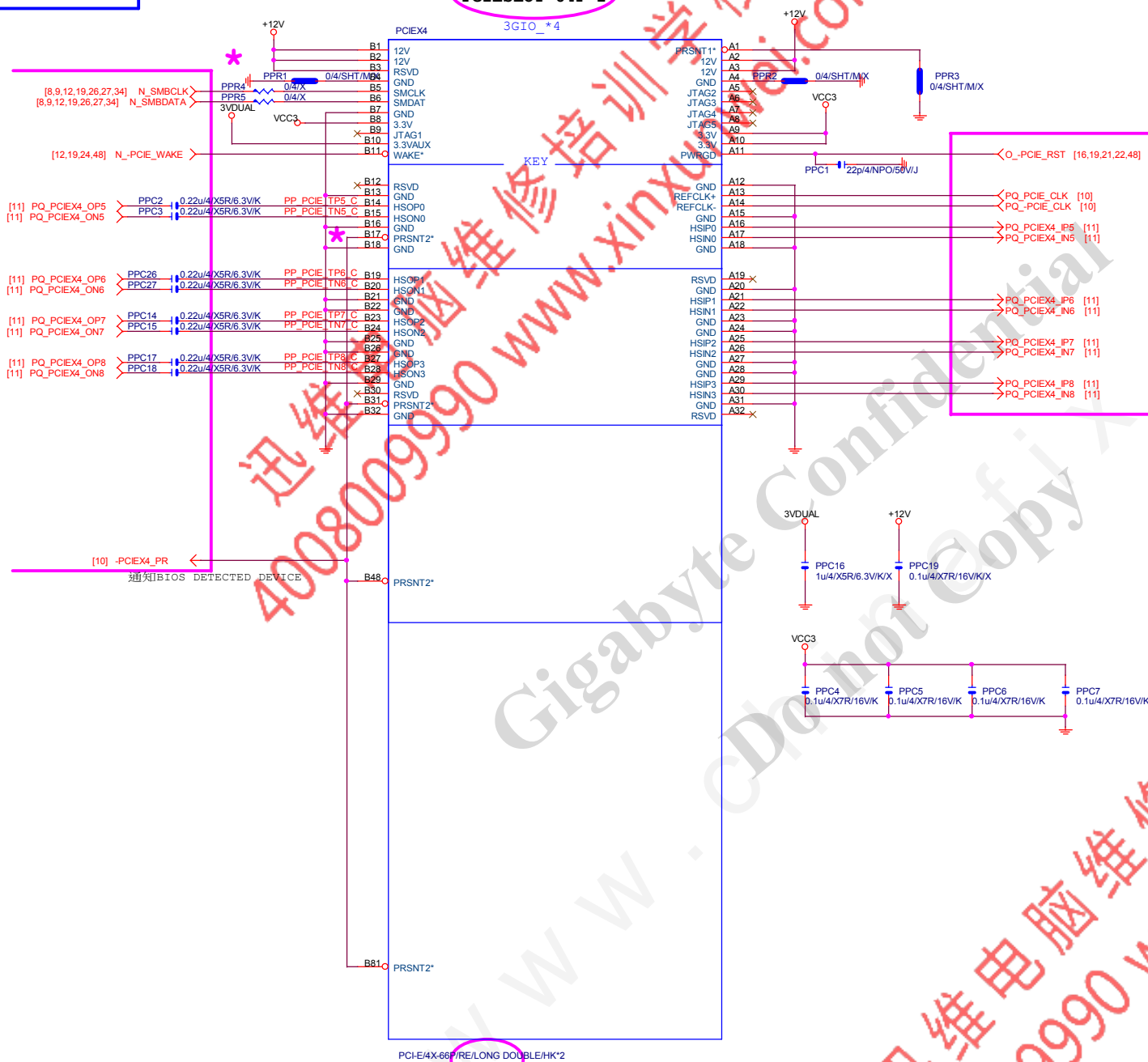
PCE-E X16(單向) BANDWIDTH=2.5GHz\*(8b/10b) X16=32Gb/s=4GB/s

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

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



紅色



紅色

Gigabyte Technology

Title			PCIE X4
Size	Document Number	Rev	1.0
Custom	GA-B150M-Gaming3 DDR3-DB		
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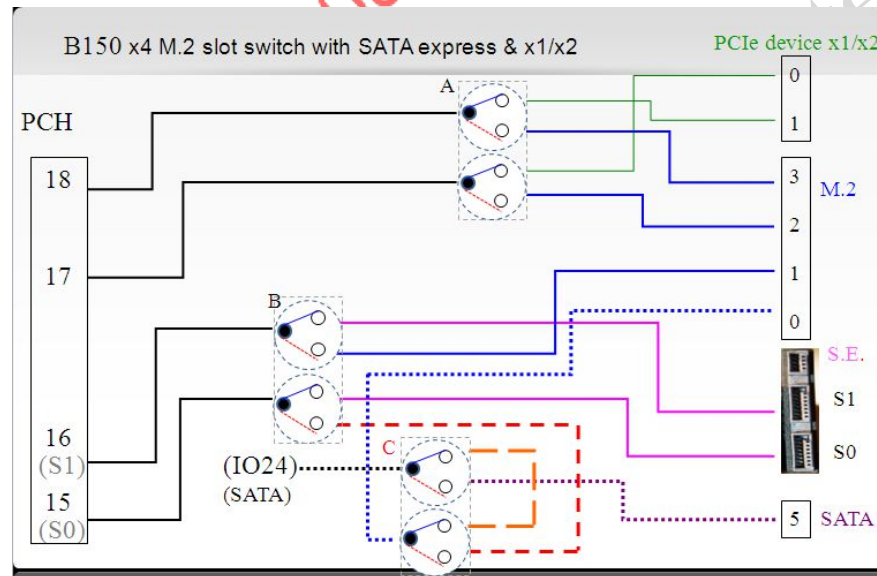
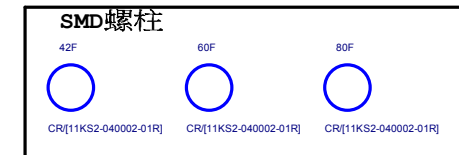
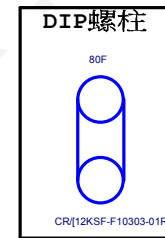
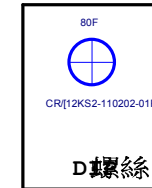
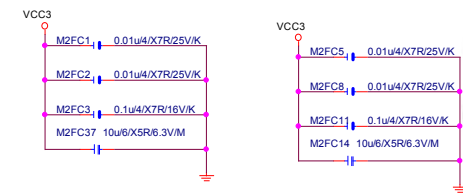
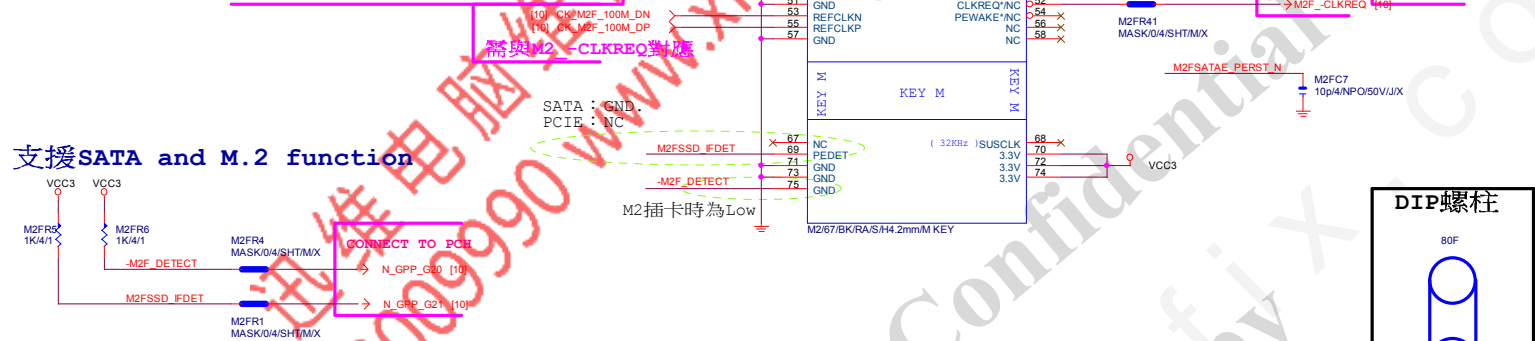


**M.2 Lane4 from PCH port18**

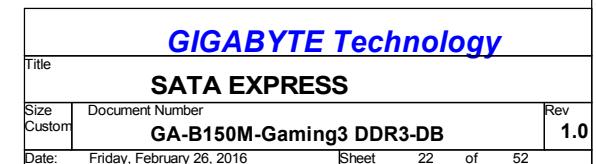
M.2 Lane3 from PCH port17

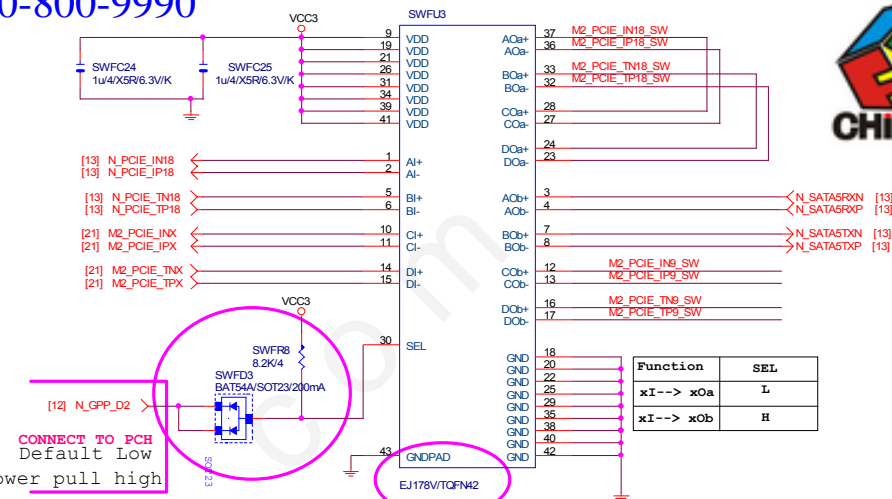
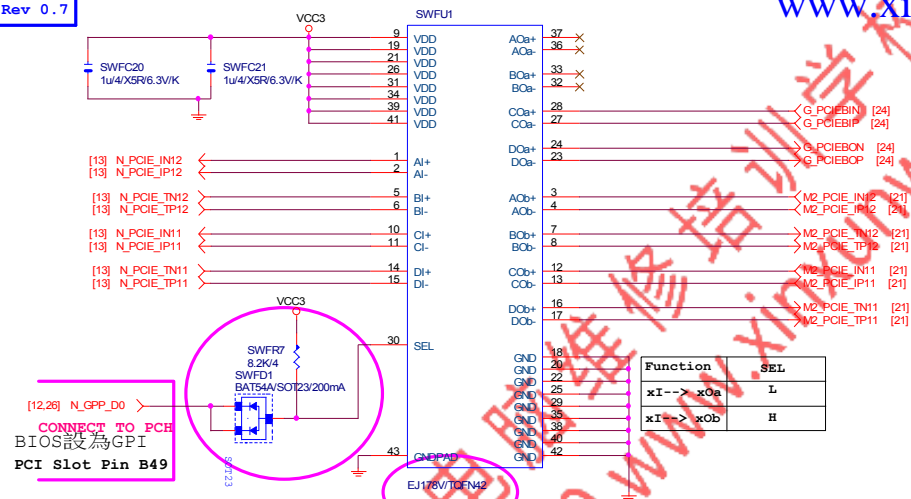
## M.2 Lane2 from PCH port16

**M.2 Lane2 from PCH port15 or port 24**



SATA\_EXPRESSF





BIOS設為main power pull high

當偵測到此組態

	PCI S.E. M.2 (SATA)	PCI S.E. SATA S5	PCI M.2 (PCIEX2) SATA S5	M.2 (PCIEX4) SATA S5	S.E. M.2 (SATA)	M.2 (SATA)	PCI
N_GPP_D0	L	NA	L	H	H	H	L
N_GPP_G20	L	H	L	L	L	L	H
N_GPP_G21	L	H	H	H	L	L	H
N_GPP_E0	NA	L	NA	NA	L	H	H

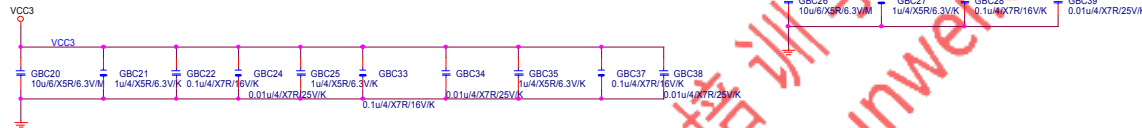
設定為此組態

	PCI S.E. M.2 (SATA)	PCI S.E. SATA S5	PCI M.2 (PCIEX2) SATA S5	M.2 (PCIEX4) SATA S5	S.E. M.2 (SATA)	M.2 (SATA)	PCI
N_GPP_D1	L	L	H	H	L	H	NA
N_GPP_D2	L	H	H	H	L	H	NA

Gigabyte Technology

PCI EXPRESS X16 SWITCH

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BA\_D10\_311 → BA\_D[0..31] [26]

BC\_BE0 [26]

BC\_BE1 [26]

BC\_BE2 [26]

BC\_BE3 [26]

BPERR [26]

BSERR [26]

BPAR [26]

BPLOCK [26]

BDEVEL [26]

BSTOP [26]

BTRDY [26]

BIRDY [26]

BFRAME [26]

O\_PFMRS2 [16,42]

BPCIRST [26]

BREQ0 [26]

BREQ1 [26]

BQNT0 [26]

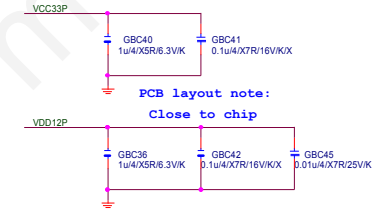
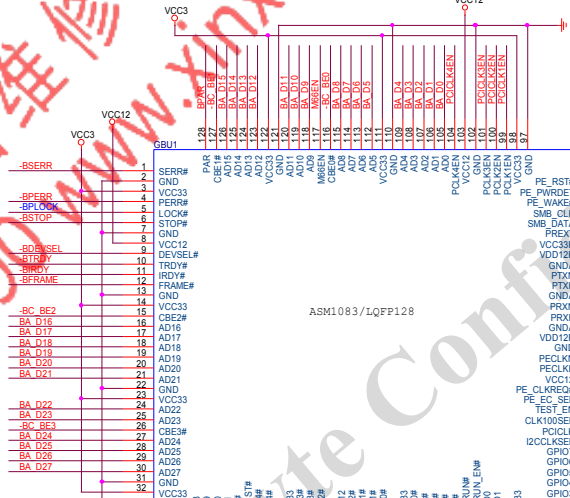
BQNT1 [26]

BPIROA [26]

BPIROB [26]

BPIROC [26]

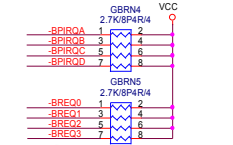
BPIROD [26]



PCB layout note:  
Close to chip

CLKOUT0 GBR11 224 → BPCLK0 [26]

CLKOUT1 GBR12 224 → BPCLK1 [26]



### CLK100SEL Strapping Set

CLK100SEL	H	L
PCIe CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLK_O	33M +/-N%	33M

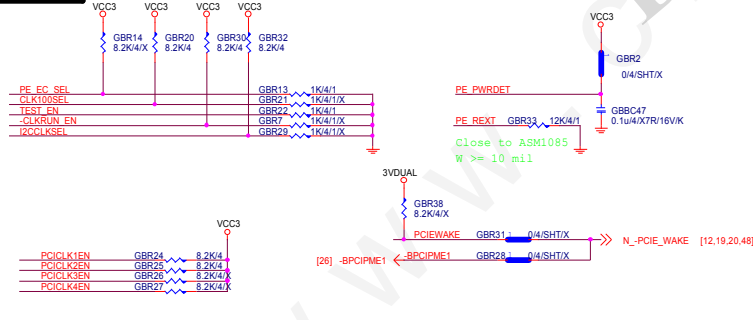
PE\_EC\_SEL-  
"H" for Express Card mode  
"L" for PCIe Riser Card mode

CLK100SEL-  
"H" for PECLK input only  
"L" for PECLK & PCICLK input

TEST\_EN-  
"H" for Test Mode Enable  
"L" for Test Mode Disable

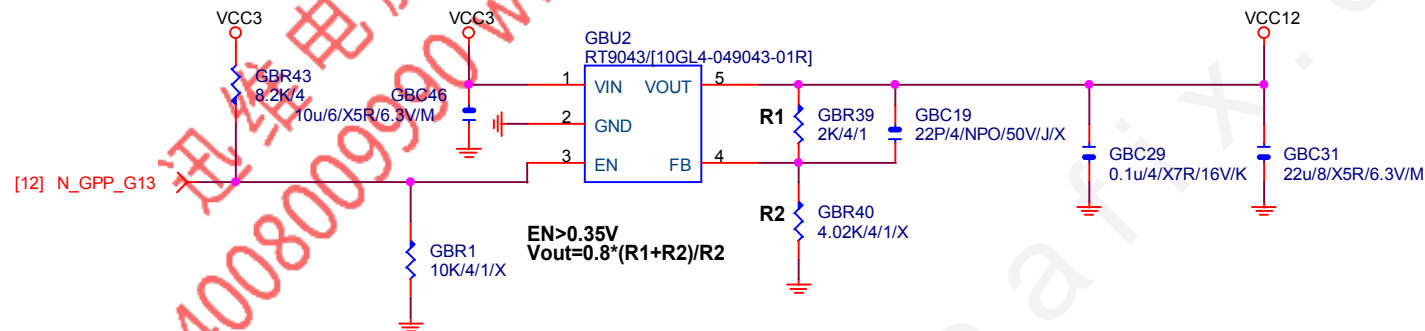
-CLKRUN\_EN-  
"H" for CLKRUN Mode Disable  
"L" for CLKRUN Mode Enable

I2CCLKSEL-  
"H" is 135KHz I2CCLK  
"L" is 67.5KHz I2CCLK





Rev 0.9



Gigabyte Technology

Title

ASM1085 POWER

Size  
Custom

Document Number

GA-B150M-Gaming3 DDR3-DB

Rev  
1.0

Date:

Friday, February 26, 2016

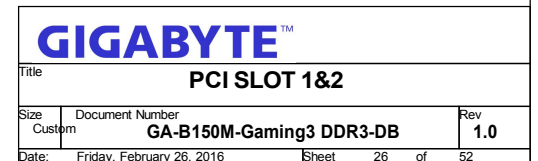
Sheet

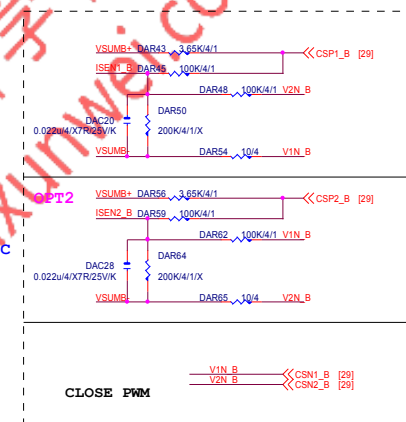
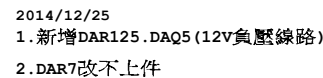
25

of

52

PCI SLOT 1
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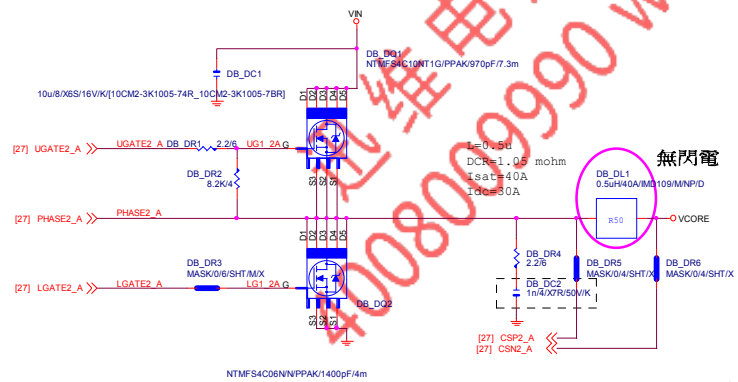
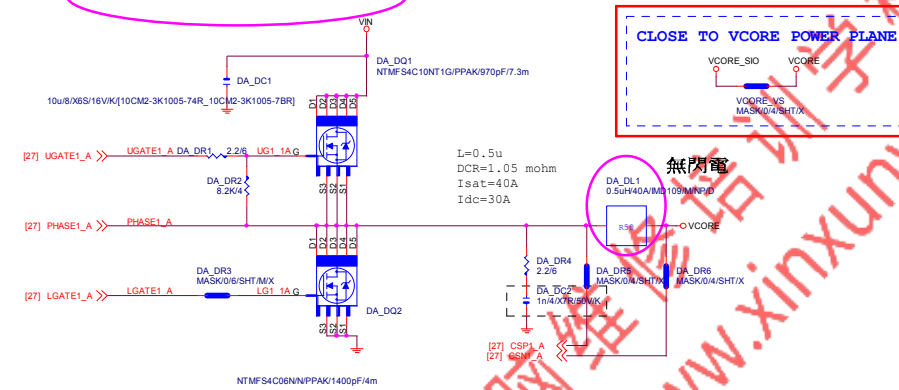


2014/12/19 REV:0.7

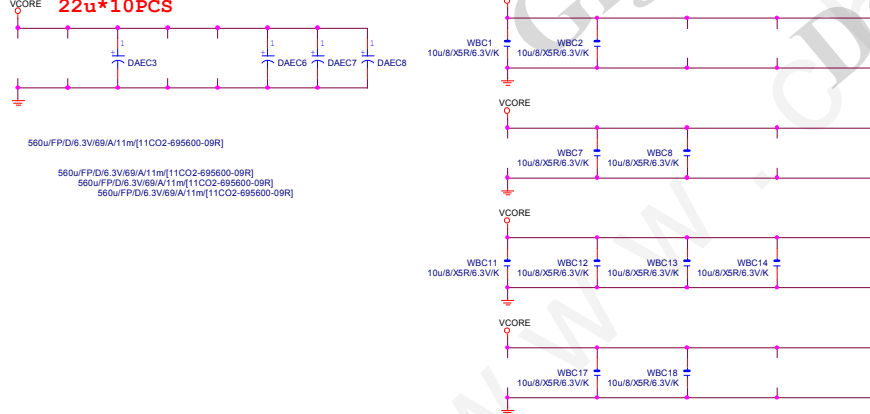
1. N\_CPU\_S 連接至 PCH:GPP\_G15
2. N\_GT\_S 連接至 PCH:GPP\_G14

VCORE

REV:0.15-IRON CHOKE

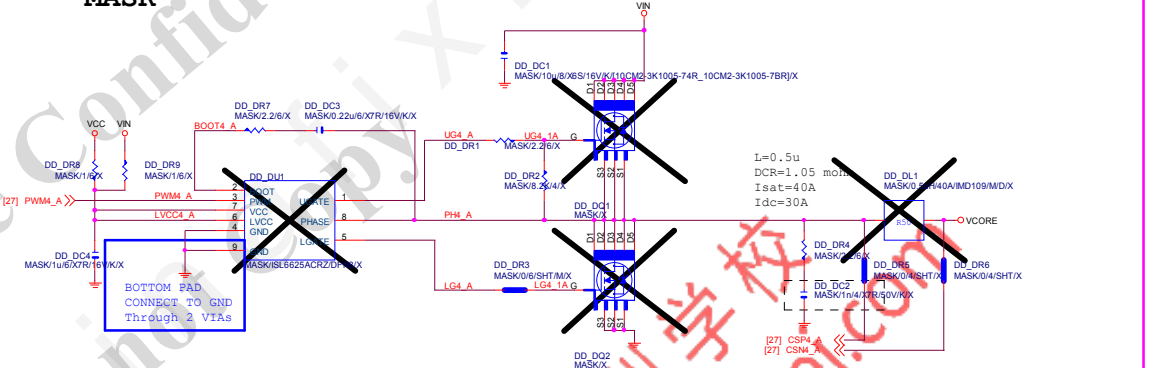


VCORE CAP

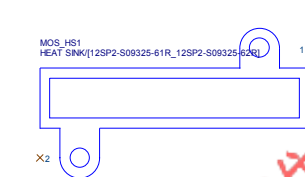
560u\*4PCS  
22u\*10PCS

OPT4 (N/A)

MASK



MOSHSINK



VIN CAP

270u\*3PCS



GIGABYTE™

ISL95858\_856 MOS

Document Number

GA-B150M-Gaming3 DDR3-DB

Rev 1.0

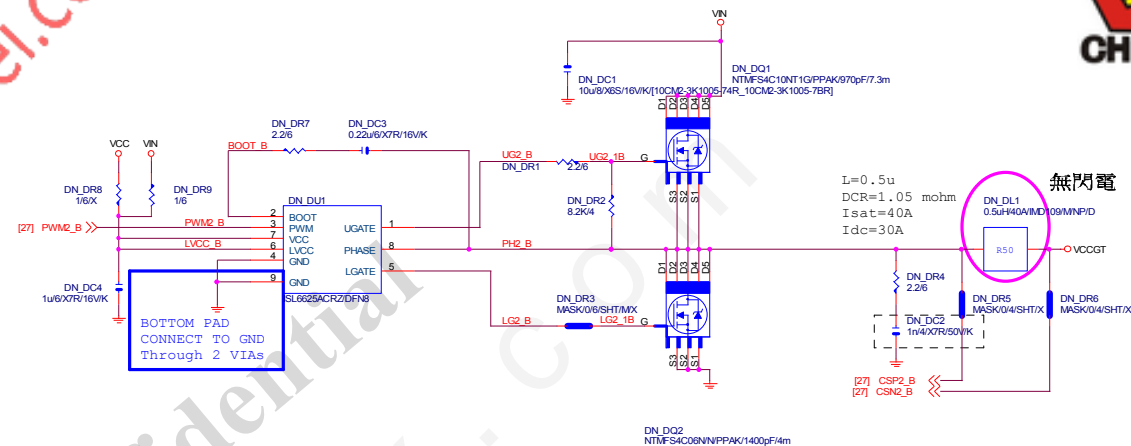
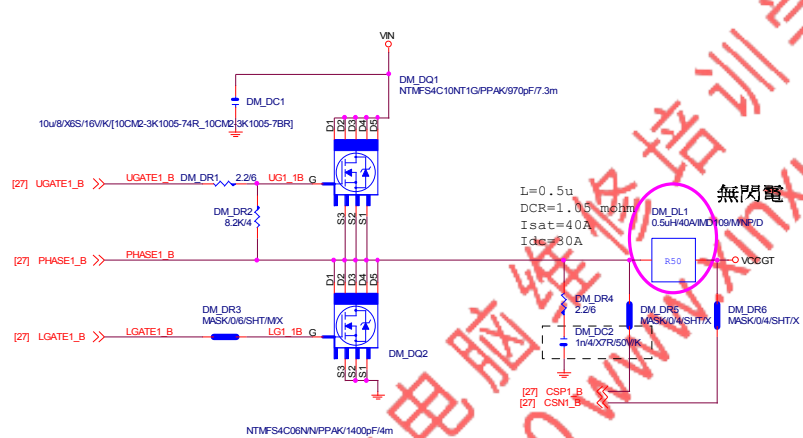
Date: Friday, February 26, 2016



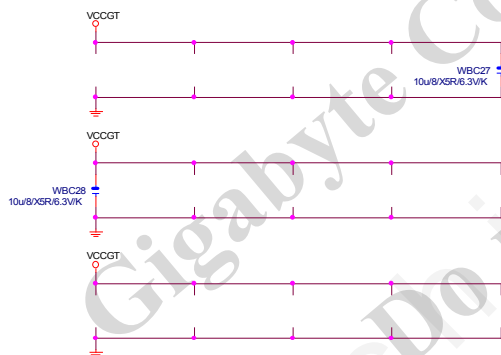
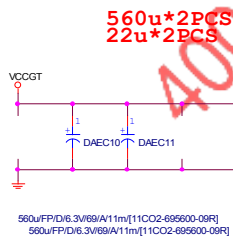
VCCGT

REV:0.15-IRON CHOKE

www.xinxunwei.com 400-800-9990



VCCGT CAP



**GIGABYTE™**

Title: ISL95858 MOS

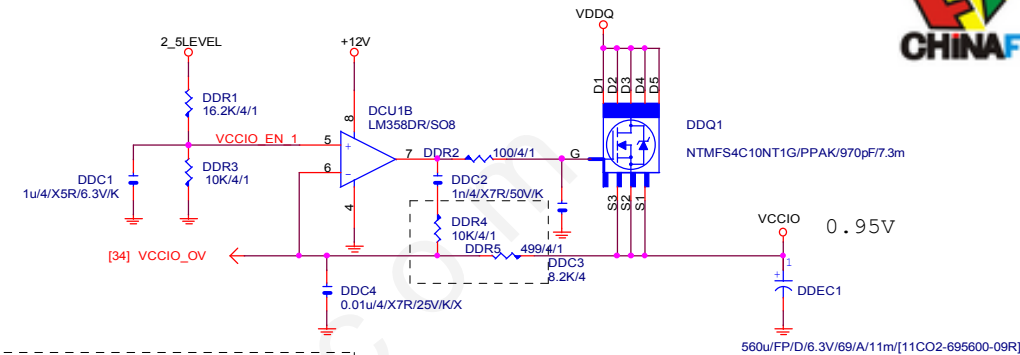
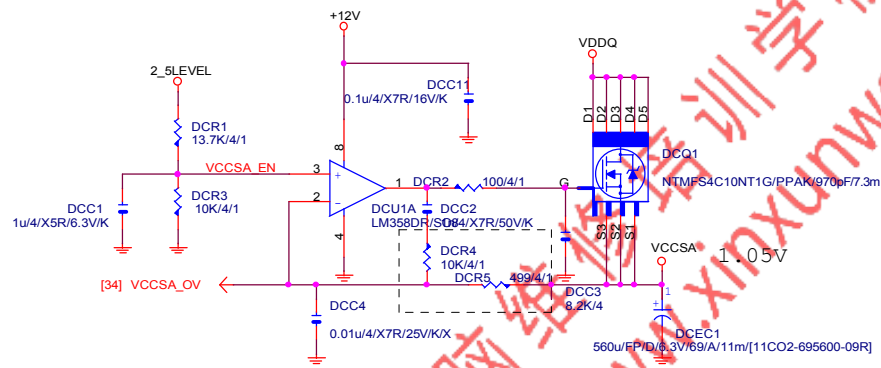
Size: Custom

Document Number: GA-B150M-Gaming3 DDR3-DB

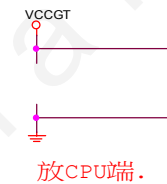
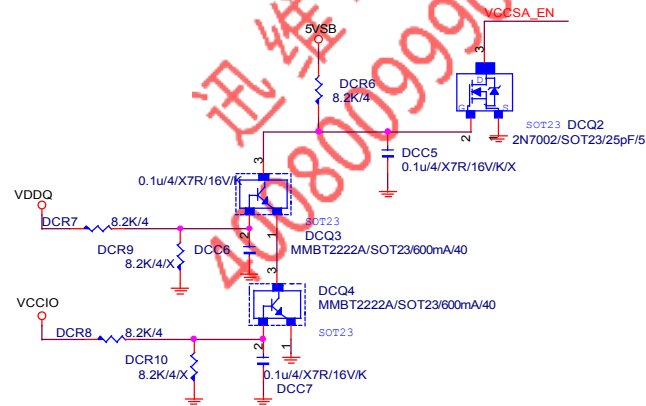
Date: Friday, February 26, 2016

Rev: 1.0

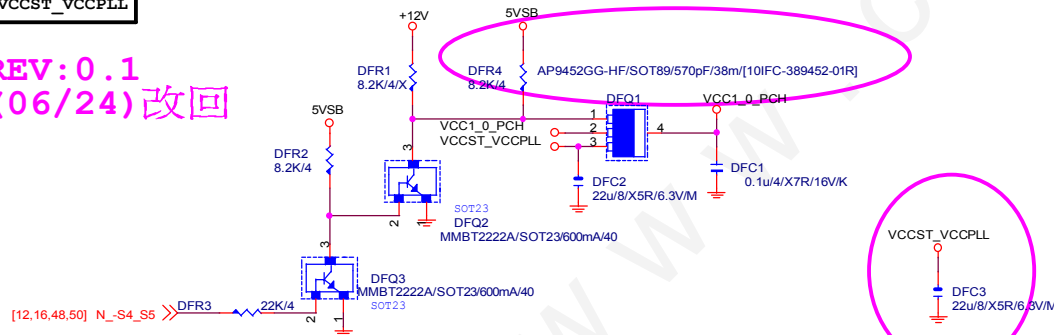
Sheet: 20 of 62



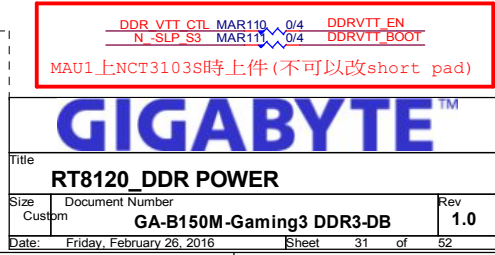
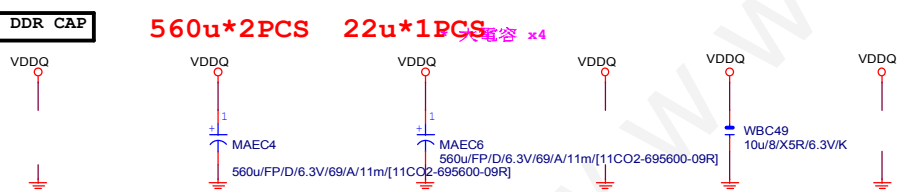
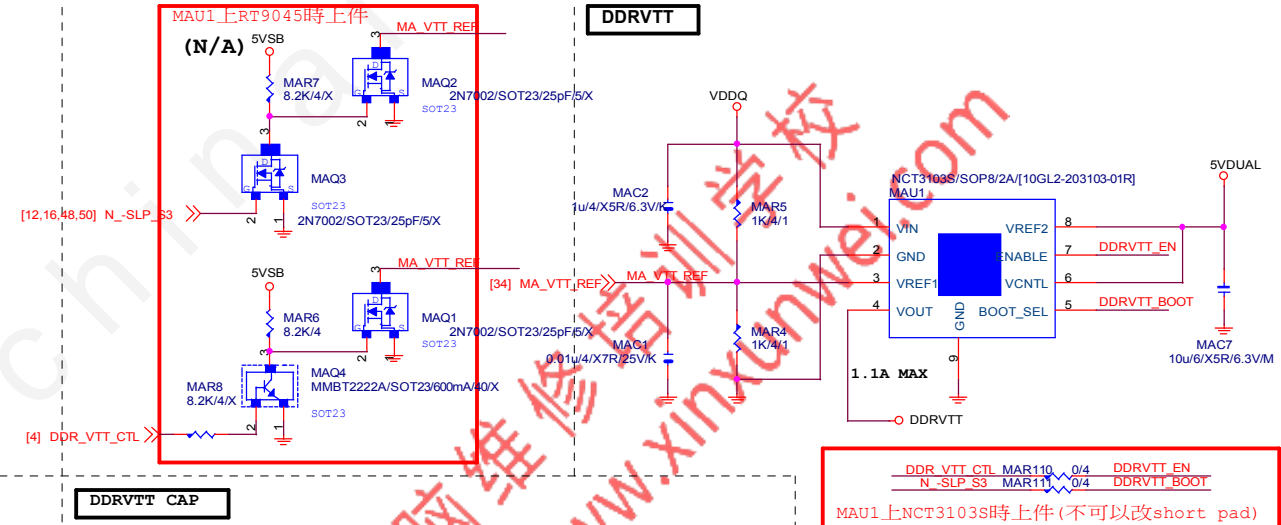
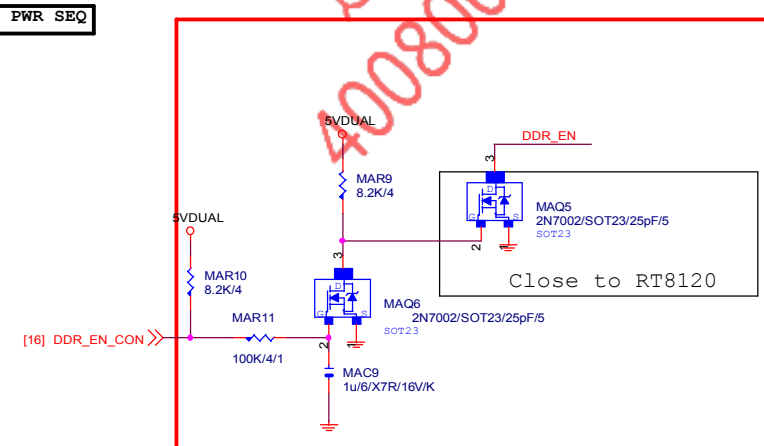
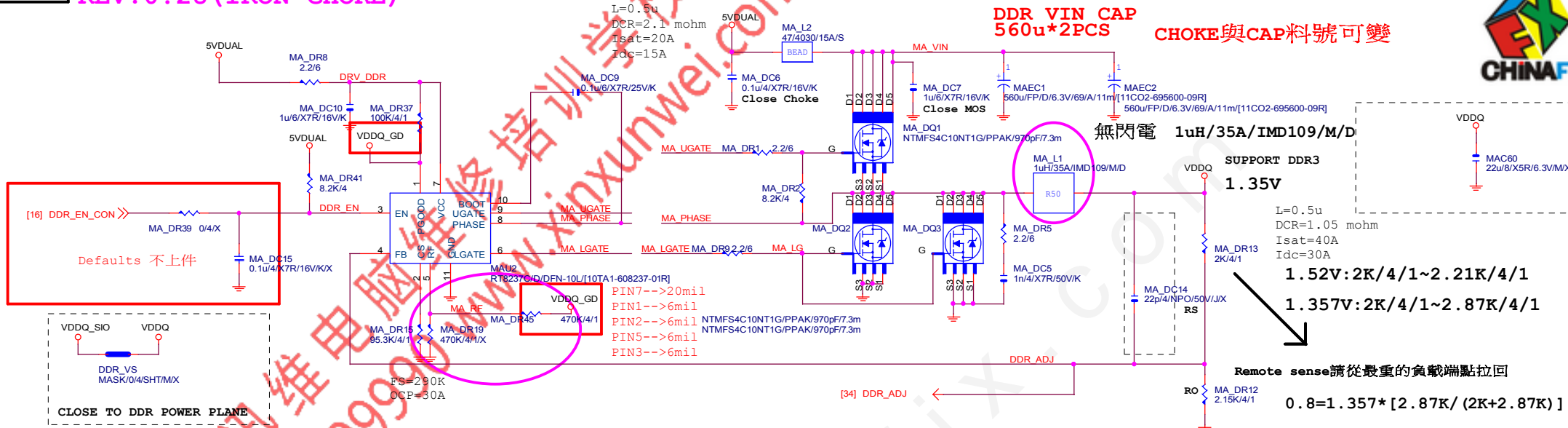
Connect to IT8620



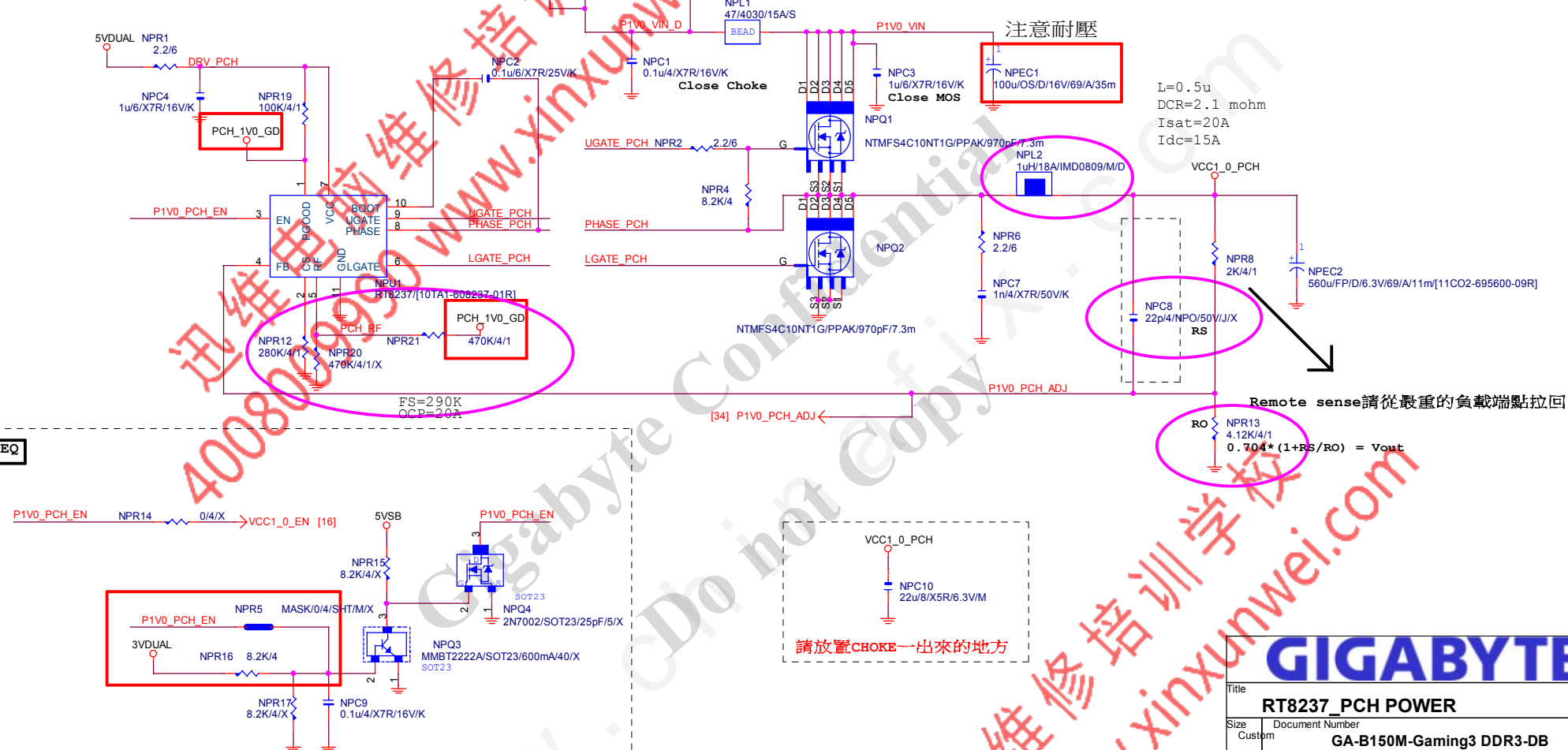
REV:0.1  
(06/24)改回



Title			
<b>VCCSA_VCCIO</b>			
Size	Document Number	Rev	
Custom	<b>GA-B150M-Gaming3 DDR3-DB</b>	<b>1.0</b>	
Date:	Friday, February 26, 2016	Sheet	30 of 52



CHOKE與CAP料號可變

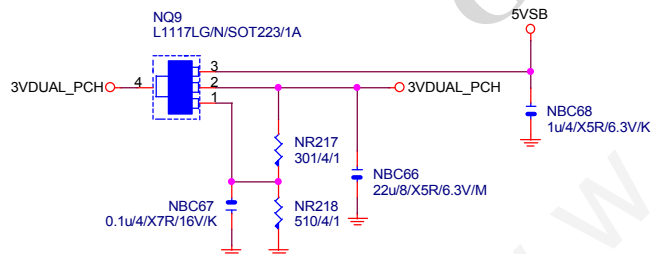




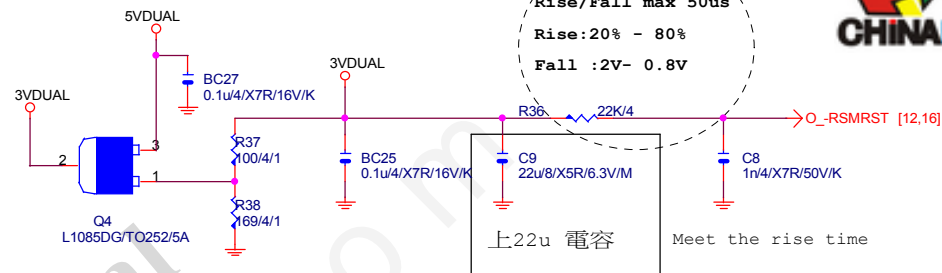
```
* 5Vdual , update
from SKL 0.2B
```



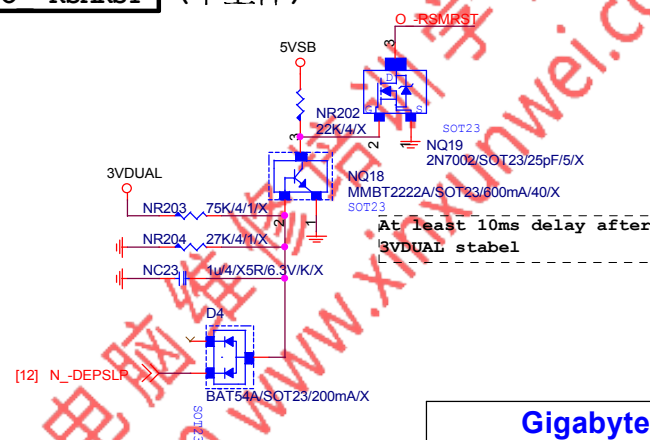
## 3VDUAL PCH



## 3VDUAL



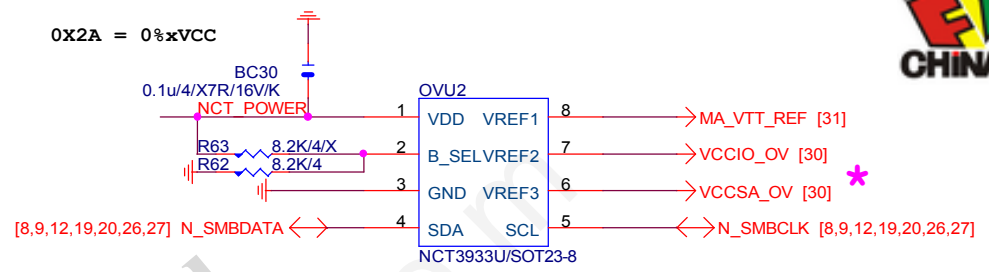
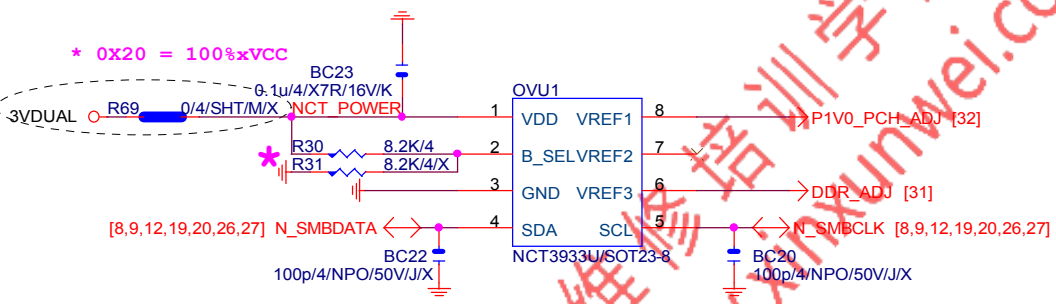
0 -RSMRST (不上件)



## Gigabyte Technology

Title			
<b>DISCRETE POWER</b>			
Size	Document Number	GA-B150M-Gaming3 DDR3-DB	Rev
Custom			<b>1.0</b>
Date:	Friday, February 26, 2016	Sheet	33 of 52

OVER VOLTAGE



0X22 = 75%xVCC

\* 删除 OVU3

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

**Gigabyte Technology**

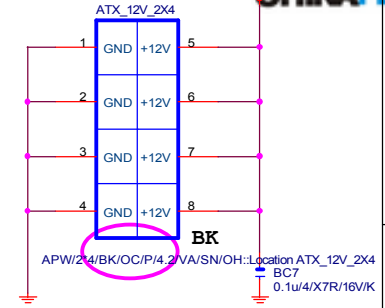
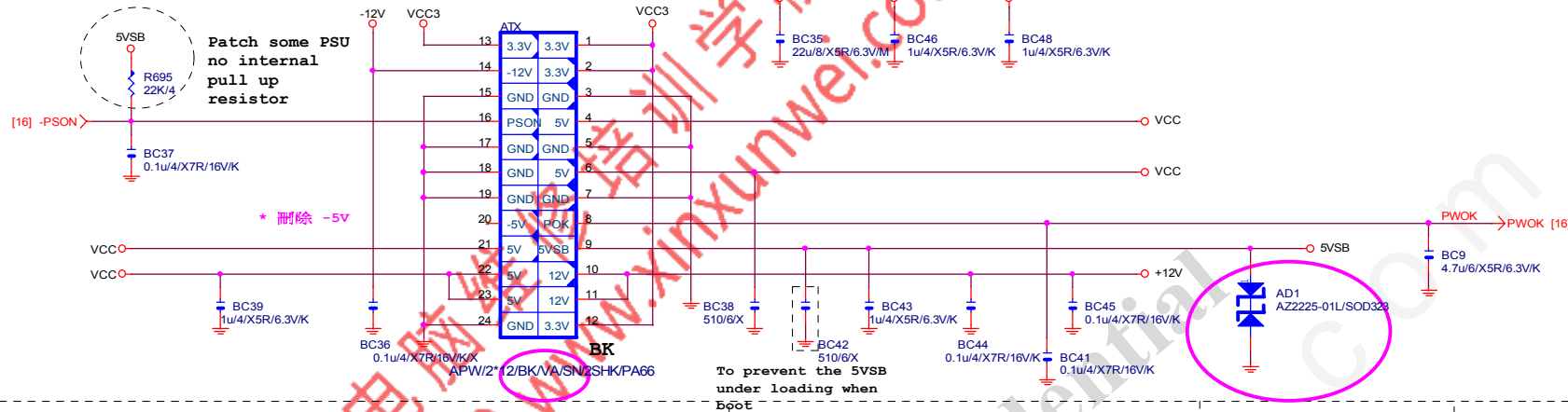
Title: CPU CORE VR-2

Size Custom	Document Number: GA-B150M-Gaming3 DDR3-DB	Rev 1.0
Date: Friday, February 26, 2016	Sheet 34 of 52	

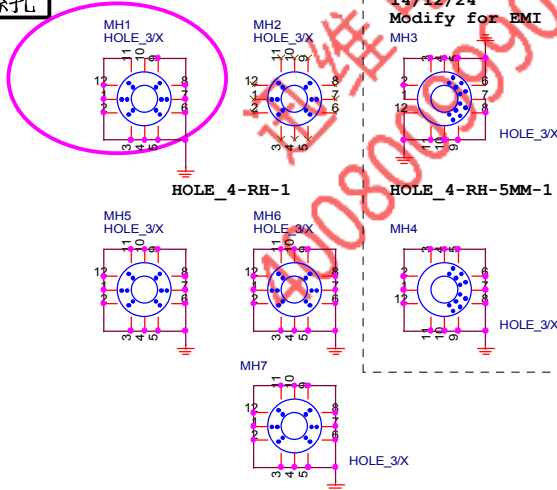
# ATXX24 POWER CONNECTOR

www.xinxunwei.com 400-800-9990

# ATXX4 POWER CONNECTOR

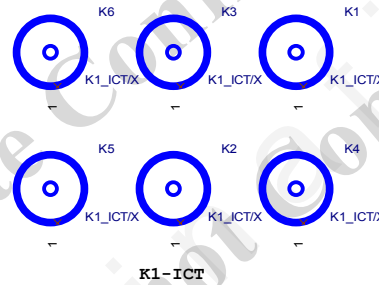


## 螺絲孔



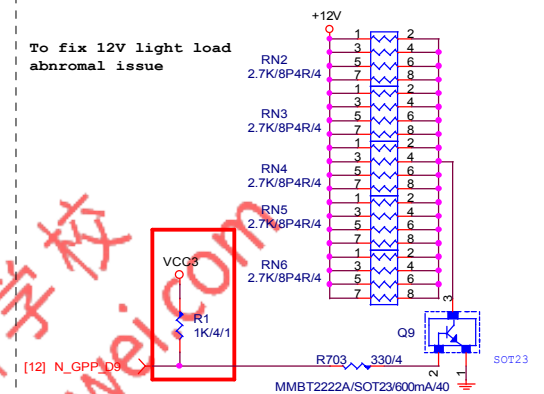
14/12/24  
Modify for EMI

## 固定孔/光學點



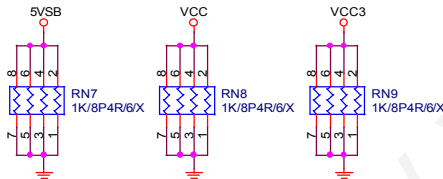
## +12V DUMMY LOAD

To fix 12V light load abnormal issue



【技術通報R&D技術通報153】

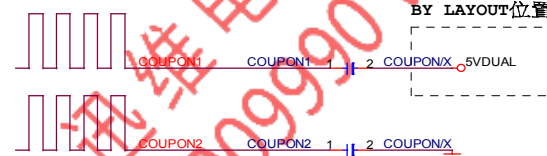
## DUMMY LOAD



## -PROHOT

[4,16] A\_-PROHOT ← -PROCHOTR2 MASK/0/4/SHT/M/X → VR\_HOT [27]

## COUPON



Gigabyte Technology

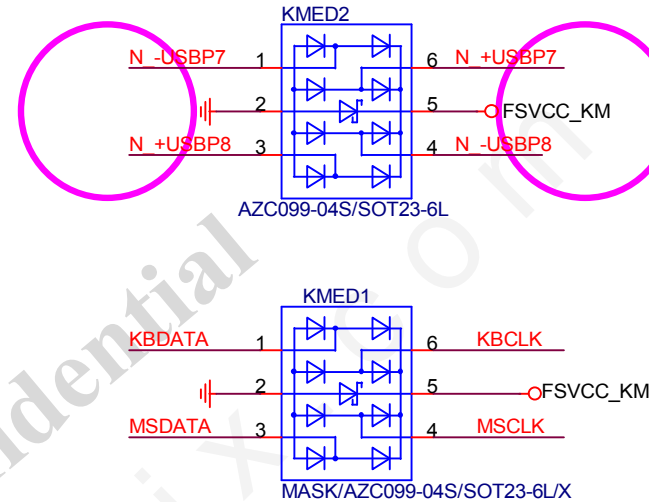
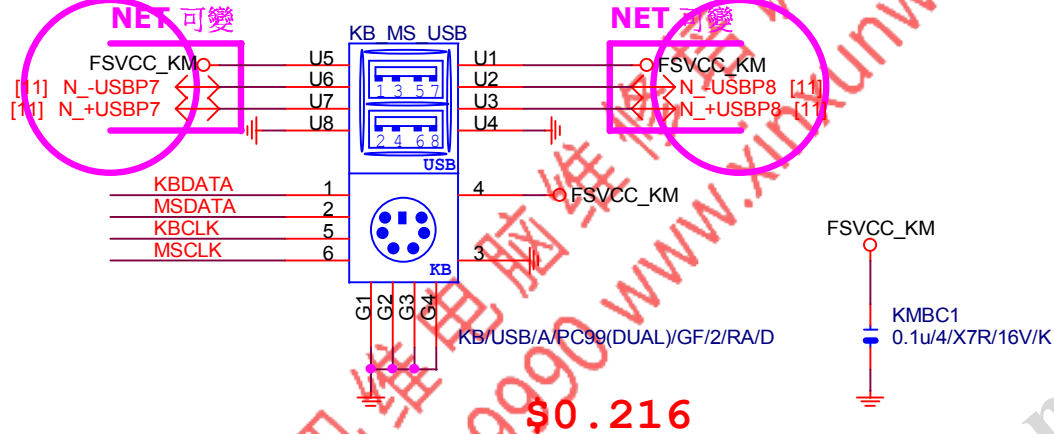
ATX POWER CONNECTOR

Title	Document Number	Rev
Size	GA-B150M-Gaming3 DDR3-DB	1.0
Custom		
Date:	Friday, February 26, 2016	Sheet 35 of 52

KB\_MS\_USB

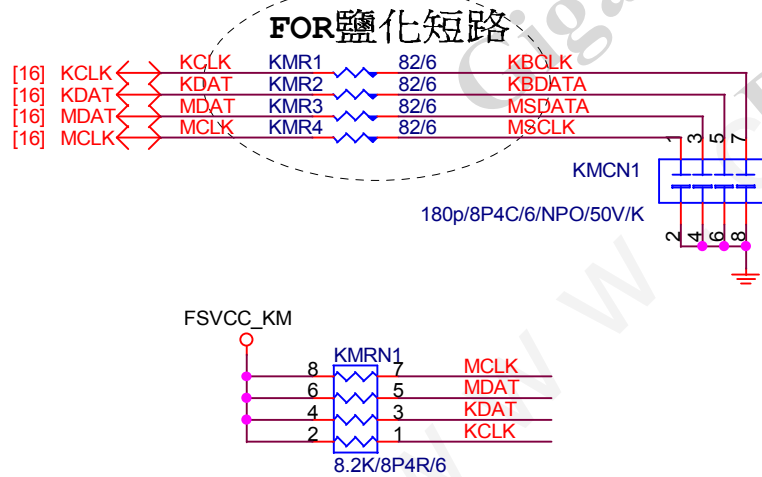
Rev: 0.7

ESD

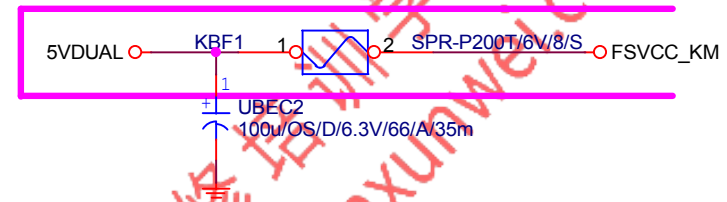


KB\_MS\_USB DAMPING/PU

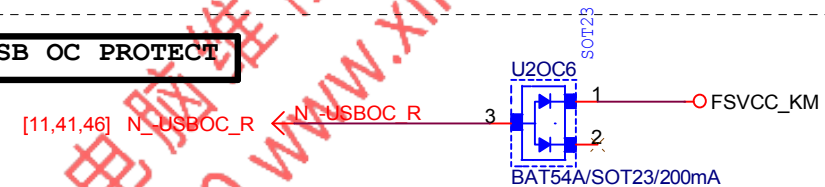
KB\_MS\_USB PWR



NET 可變, 與其他 USB SHARE



USB OC PROTECT



Gigabyte Technology

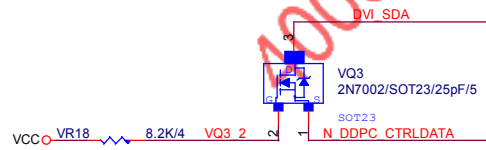
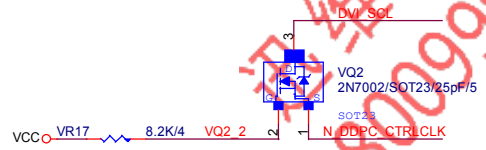
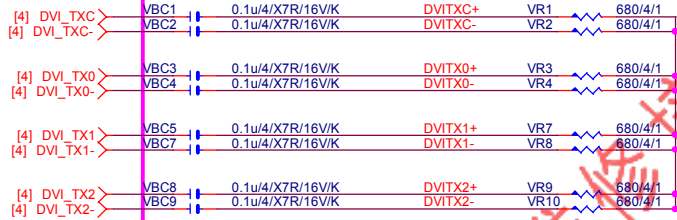
KB_MS_USB		
Title	Document Number	Rev
Size A	GA-B150M-Gaming3 DDR3-DB	1.0
Date:	Friday, February 26, 2016	Sheet 36 of 52



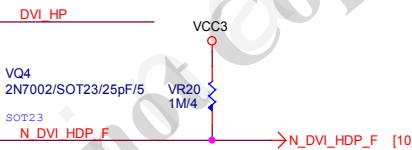
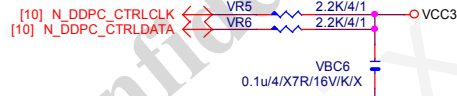
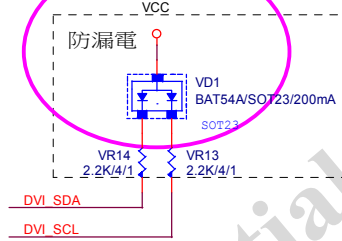
DVI Rev: 0.7

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

NET 可變

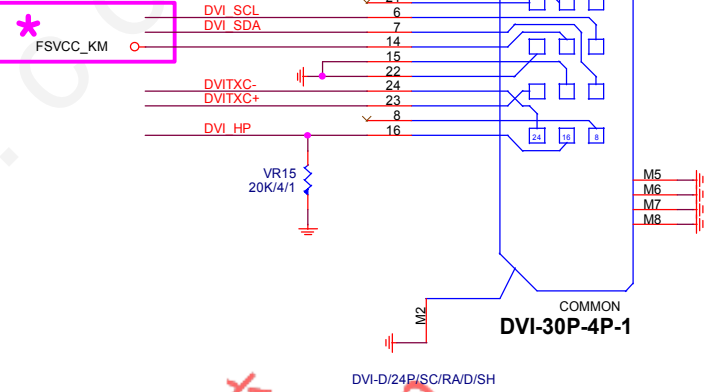


R&D技術通報 162



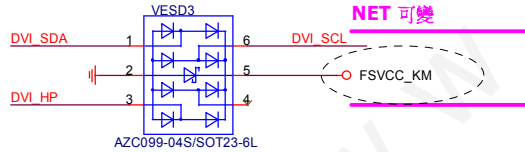
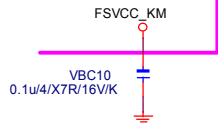
DVI CONN

NET 可變



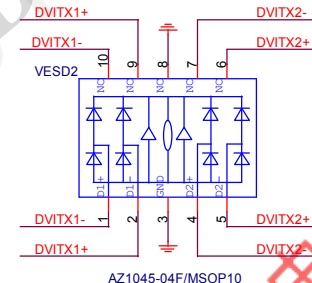
ESD

NET 可變



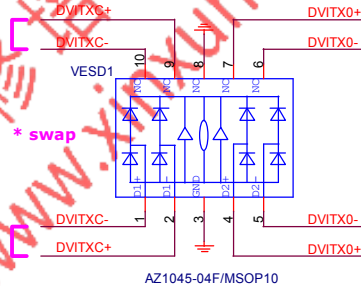
Close to connector

NET 可變



Close to connector

\* swap



Close to connector

Gigabyte Technology

Title			
DVI			
Size Custom	Document Number	Rev	
	GA-B150M-Gaming3 DDR3-DB	1.0	
Date:	Friday, February 26, 2016	Sheet	37 of 52

PTN3356 R1.08

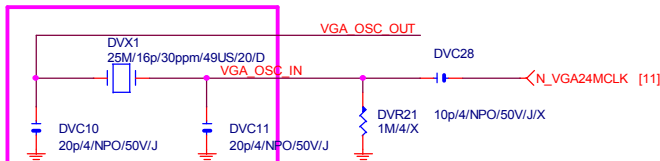
ROM PART: PTN3356R1BS/[10HQ5-A23356-10R]  
FLASH PART: PTN3356F1BS/[10HQ5-A23356-20R]

www.xinxiwei.com 400 800 9990

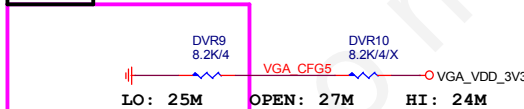
省X-TAL, CAPS DOWN.  
1. 上件:  
DVC28 [10p/4/NPO/50V/J]  
DVC11 [10p/4/NPO/50V/J]~修改值  
DVR10 [8.2K/4]  
2. 删除:  
DVK1 [25M/16p/30ppm/49US/20/D]  
DVC10 [10p/4/NPO/50V/J]  
DVR9 [8.2K/4]

25M Crystal

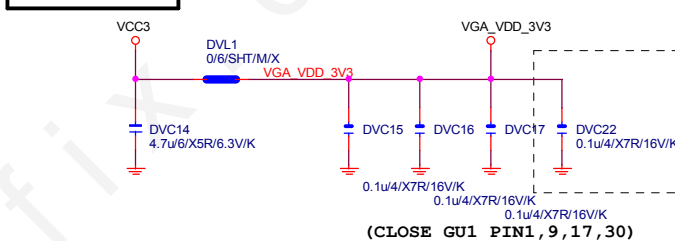
FROM PCH 24MHZ ISSUE



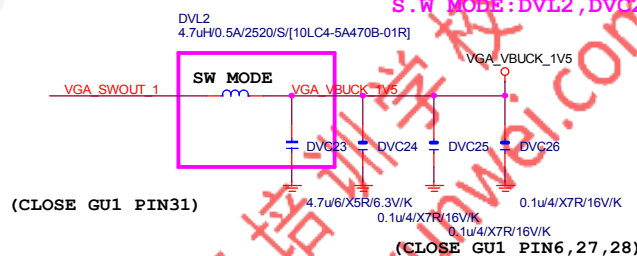
CFG5 For Crystal Less



ADAPTER POWER

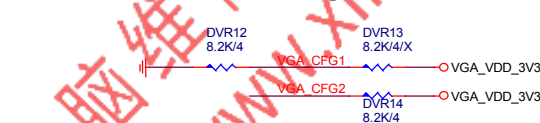


LDO MODE:DVL2,DVC23-->X  
S.W MODE:DVL2,DVC23-->O



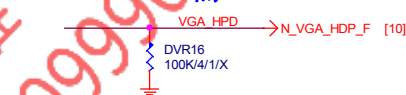
CFG1&2

Non-Compliant



HPD

PCH端



Gigabyte Technology			
NXP-PTN3356			
Title	Document Number	GA-B150M-Gaming3 DDR3-DB	Rev 1.0
Size	Custom		
Date:	Friday, February 26, 2016	Sheet	38 of 52

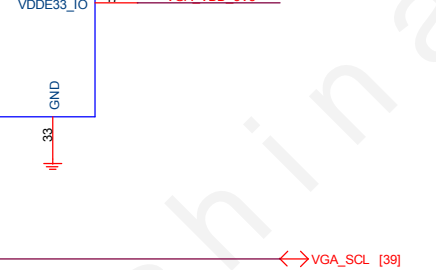
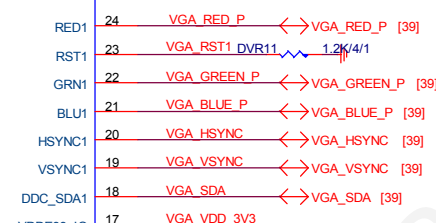
\* CPU DP端



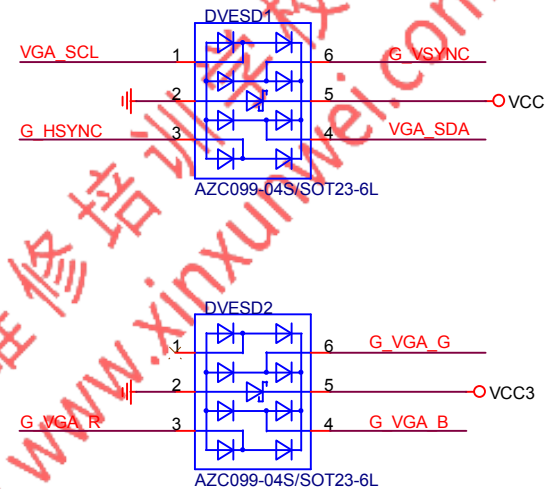
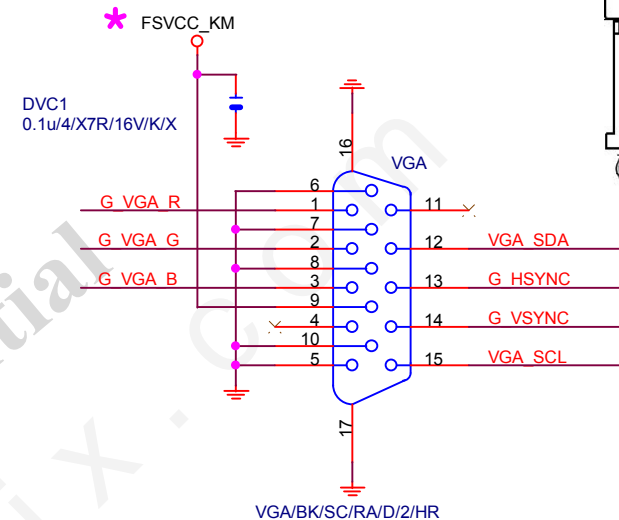
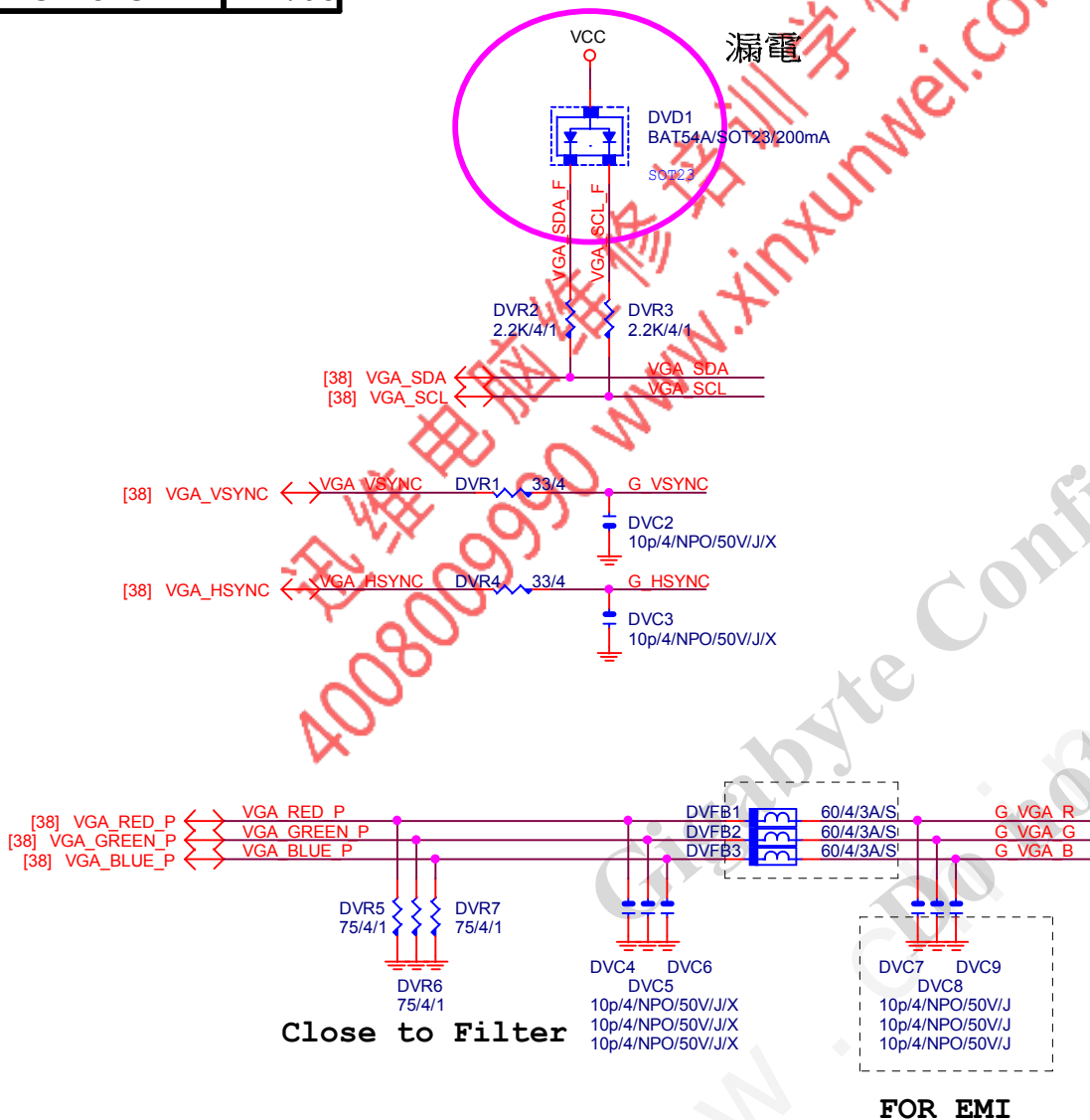
放置PCH端



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



漏電



Gigabyte Technology  
NXP-PTN3356

Title

Size  
Custom

Document Number

GA-B150M-Gaming3 DDR3-DB

Rev  
1.0

Date:

Friday, February 26, 2016

Sheet

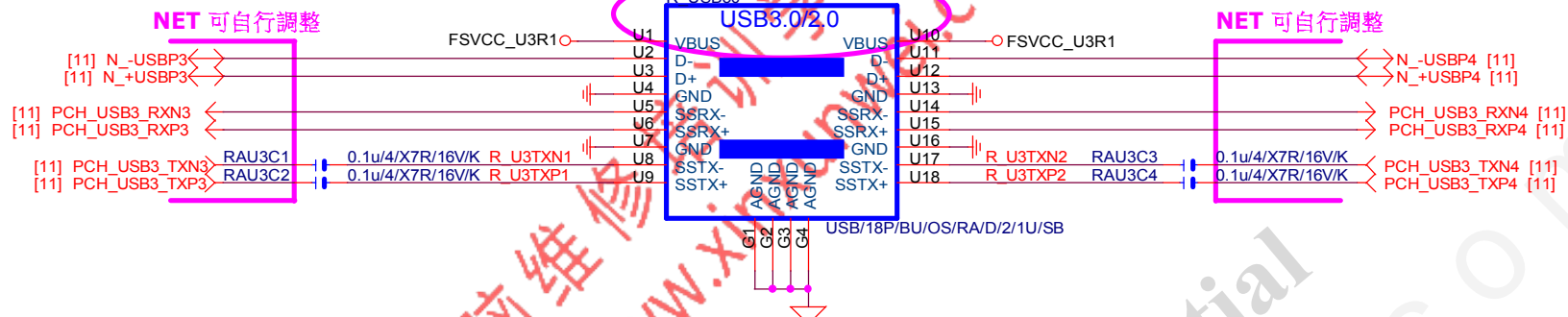
39

of

52







## ESD

NET 可自行調整

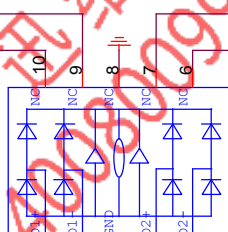
PCH\_USB3\_RXN4

PCH\_USB3\_RXP4

\* swap

PCH\_USB3\_RXP4

PCH\_USB3\_RXN4

RAU3D2  
AZ1045-04F/MSOP10PCH\_USB3\_RXN3  
PCH\_USB3\_RXP3

NET 可自行調整

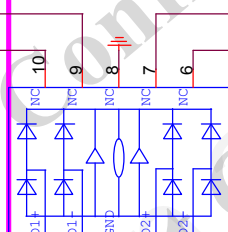
R U3TXP1

R U3TXN1

\* swap

R U3TXN1

R U3TXP1

RAU3D1  
AZ1045-04F/MSOP10R U3TXP2  
R U3TXN2

NET 可自行調整

N\_-USBP4

2

N\_+USBP3

3

AZC099-04S/SOT23-6L

6

N\_+USBP4

5

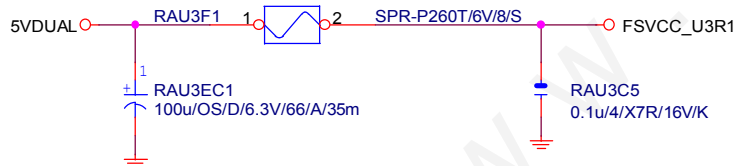
FSVCC\_U3R1

4

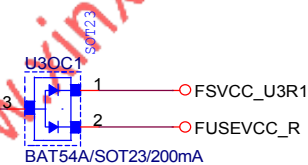
N\_-USBP3

## FUSE

FUSE 2 Port 1 Fuse 2.6A



[11,36,46] N\_-USBOC\_R &lt;-&gt; N\_-USBOC\_R



Gigabyte Technology

Title

R\_USB30,USB\_OC

Size  
Custom

Document Number

GA-B150M-Gaming3 DDR3-DB

Rev  
1.0

Date: Friday, February 26, 2016

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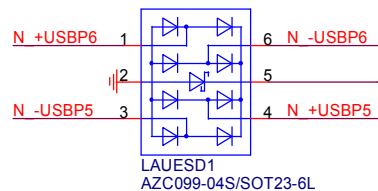
USB\_LAN CONNECTOR

R1.1

RMA ESD PROTECT

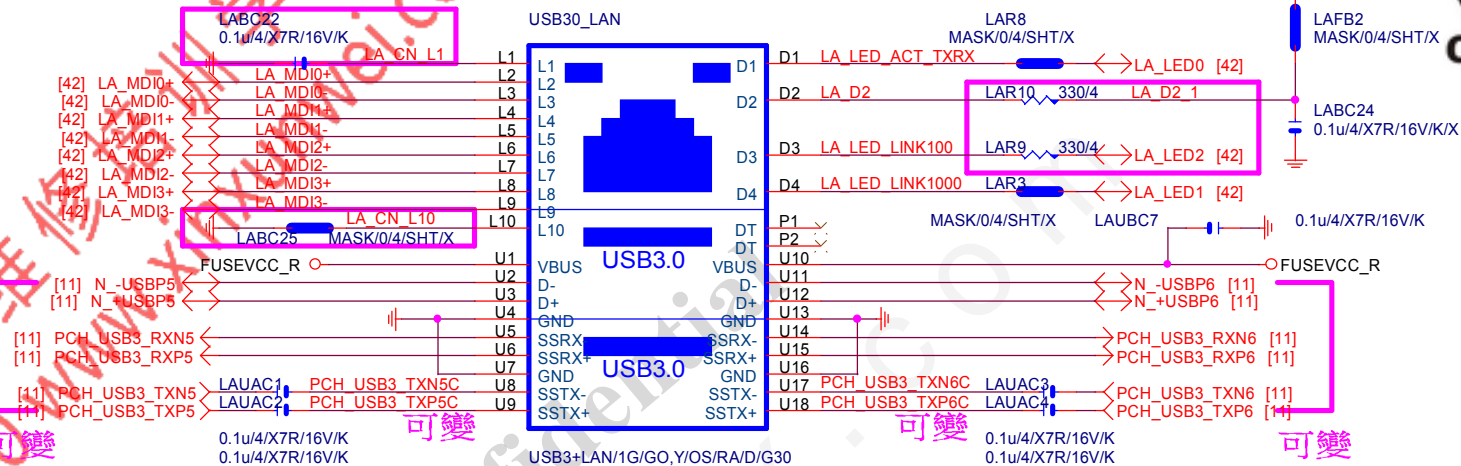
note:可變更USB NAME

可變



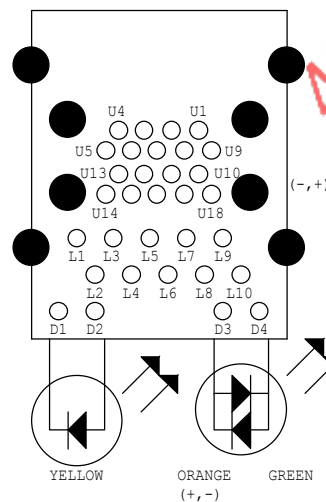
USB\_LAN CONNECTOR

[I219]

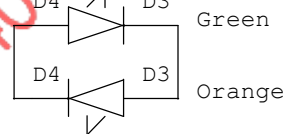


LA\_MDI--&gt;100歐姆:[20/4/8/4/20]

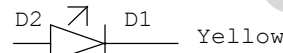
USB30\_LAN LAYOUT示意圖



Dual Color LED



Single Color LED



LAN\_COVER

FOOT PRINT: LAN\_COVER

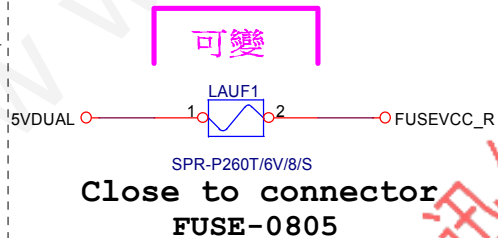
可變

[視SPEC需求]

[-D3H不加蓋]

USB POWER

note:可變更FUSE

Close to connector  
FUSE-0805

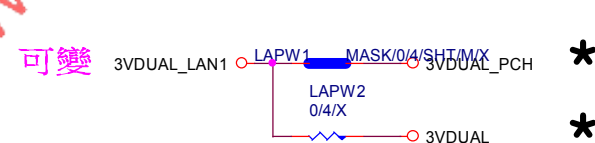
EMI SHORT PAD

PS:視EMI需求



LAN POWER

note: lan power連接及電流



Gigabyte Technology

LAN CONNECTOR-I219

Size	Document Number	Rev
Custom	GA-B150M-Gaming3 DDR3-DB	1.0

Date:	Friday, February 26, 2016	Sheet	43	of	52
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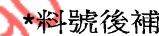
## C



A

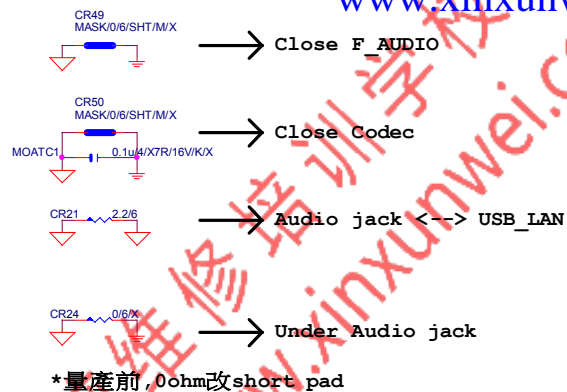


A

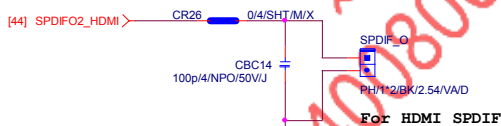


<h1 style="text-align: center; color: blue;">Gigabyte Technology</h1>				
<h2 style="text-align: center;">HD AUDIO ALC892</h2>				
Size Custom	Document Number	GA-B150M-Gaming3 DDR3-DB		Rev 1.0
Date:	Friday, February 26, 2016	Sheet	44 of 52	



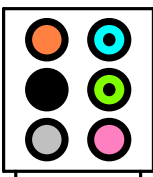


## SPDIF\_OUT



## SPDIF\_IN

## AZALIA JACK



## AZALIA JACK

BLUE

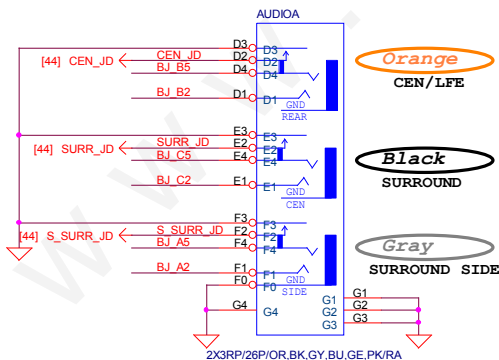
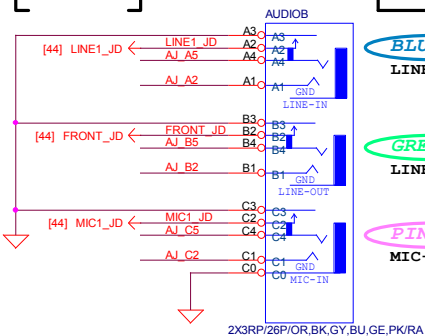
LINE-IN

GREEN

LINE-OUT

PINK

MIC-IN



## LINE-OUT

## LINE-IN

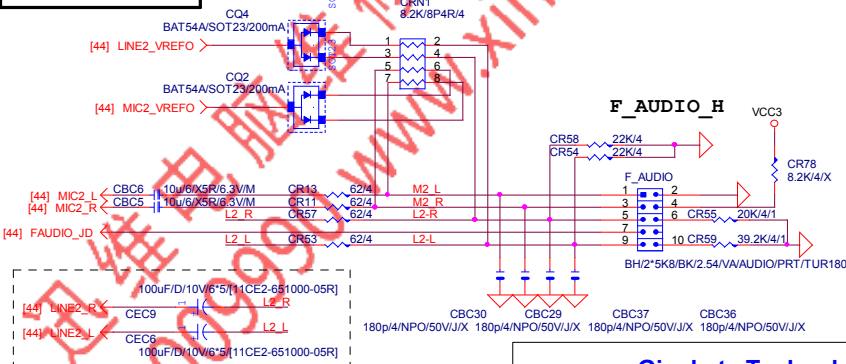
## MIC-IN

## SURROUND

## CEN/LFE

## SURRBACK

## AZALIA FRONT PANEL

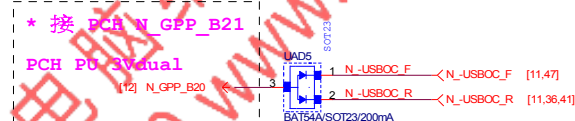
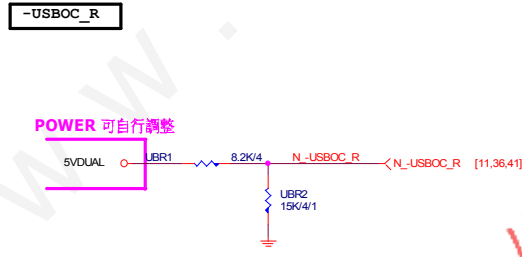
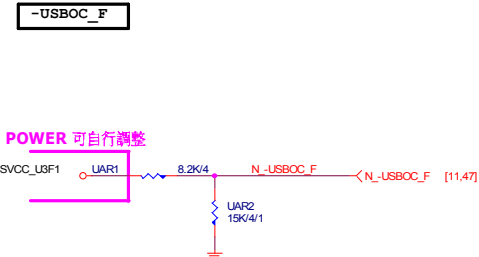
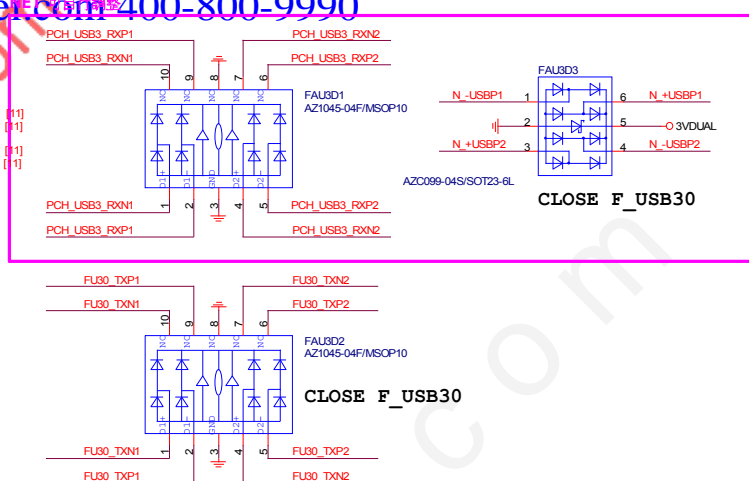
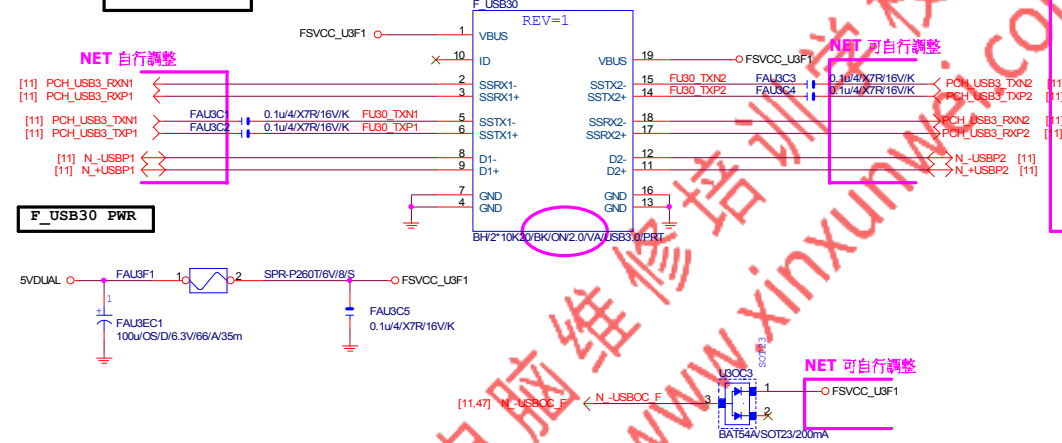


Gigabyte Technology

AUDIO JACK

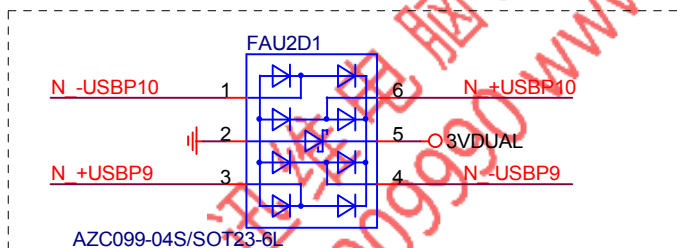
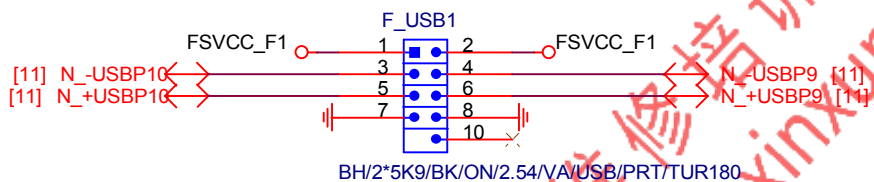
Title	Document Number	GA-B150M-Gaming3 DDR3-DB	Rev	1.0
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Front USB3.0

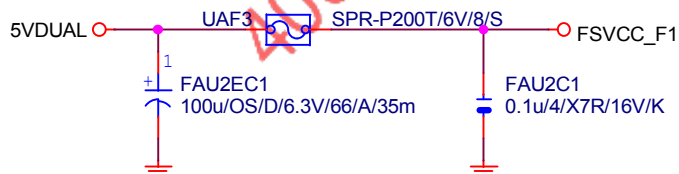


NET 可變

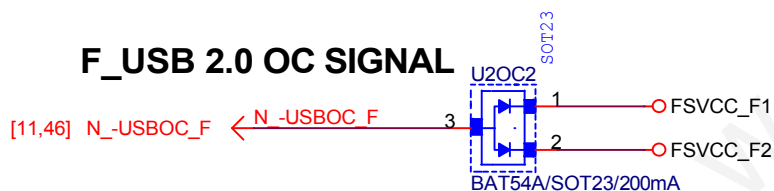
## FUSB2X5-HS



Close to connector  
FUSE 2 Port 1 Fuse 2A

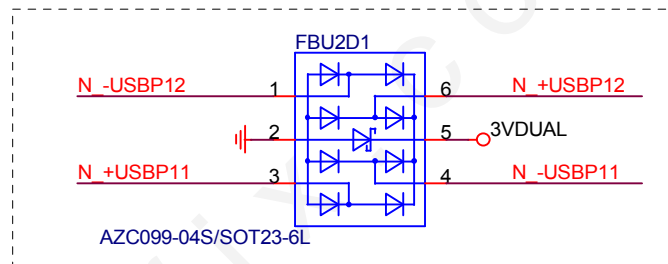
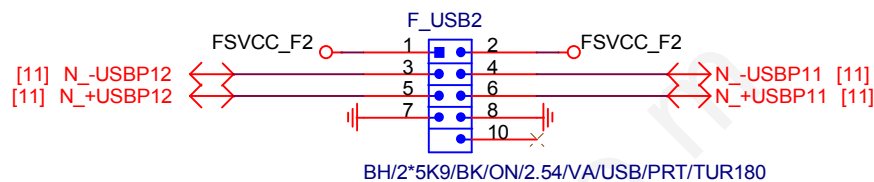


## F\_USB 2.0 OC SIGNAL

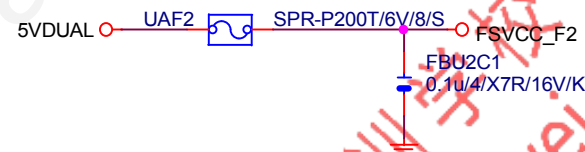


NET 可變

## FUSB2X5-HS



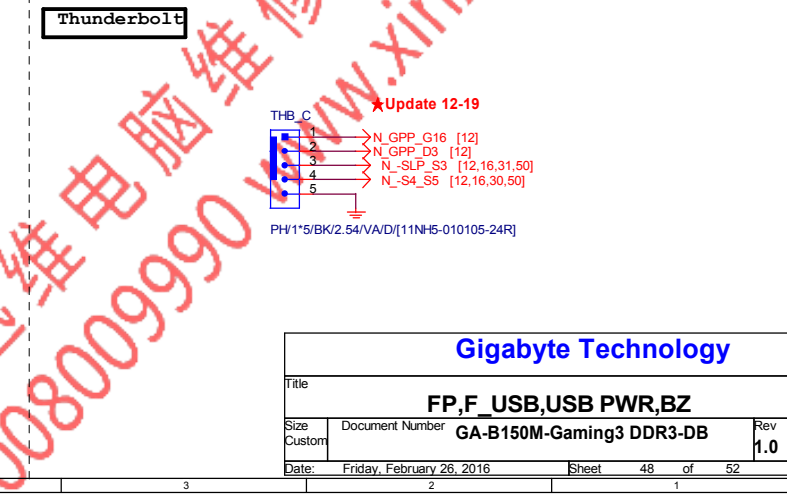
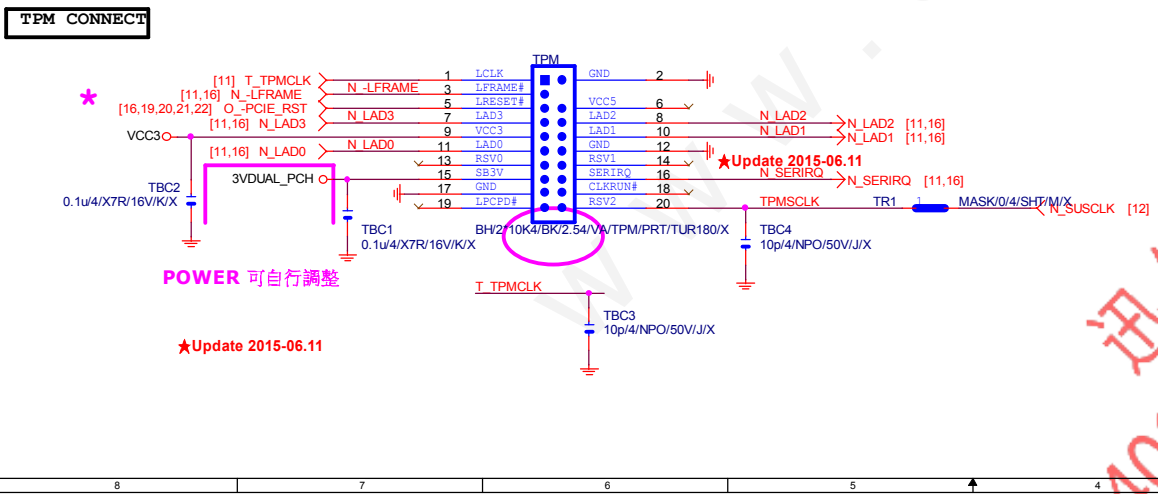
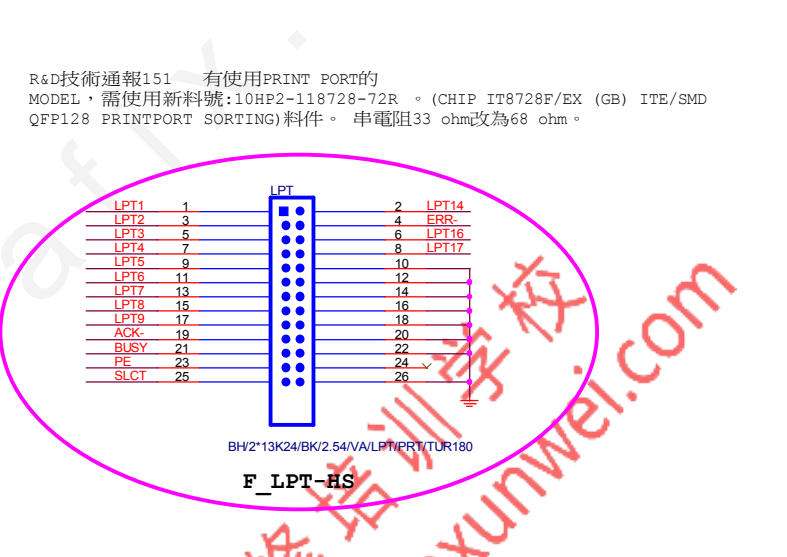
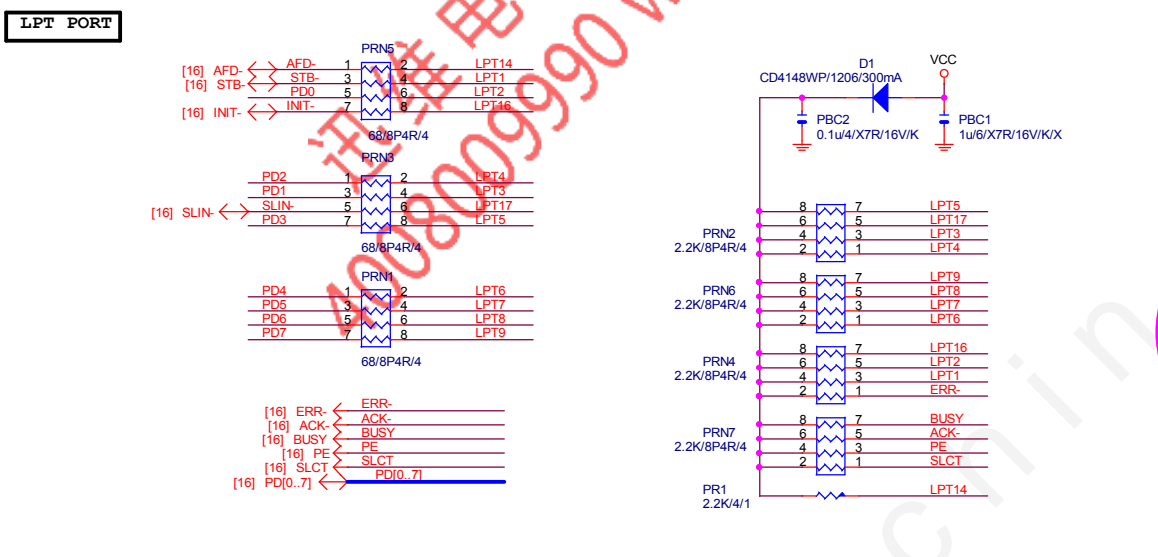
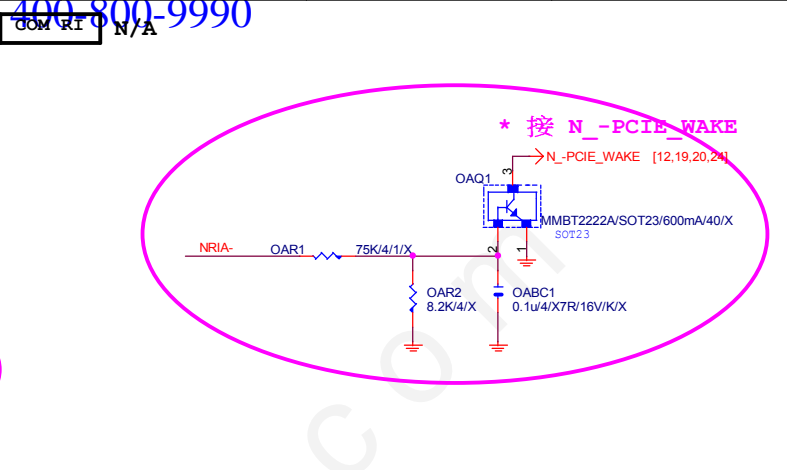
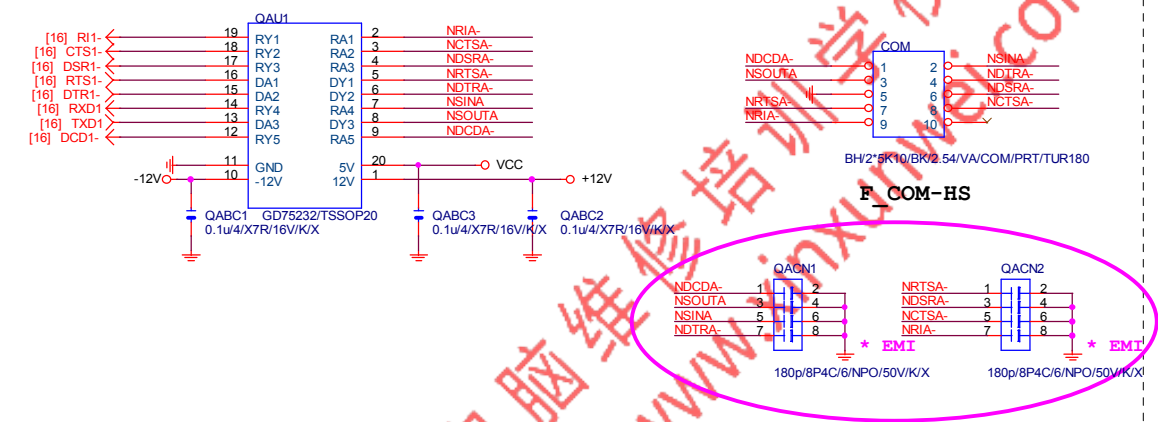
Close to connector  
FUSE 2 Port 1 Fuse 2A



Gigabyte Technology

## USB2.0

Title		
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GA-B150M-Gaming3 DDR3-DB		1.0
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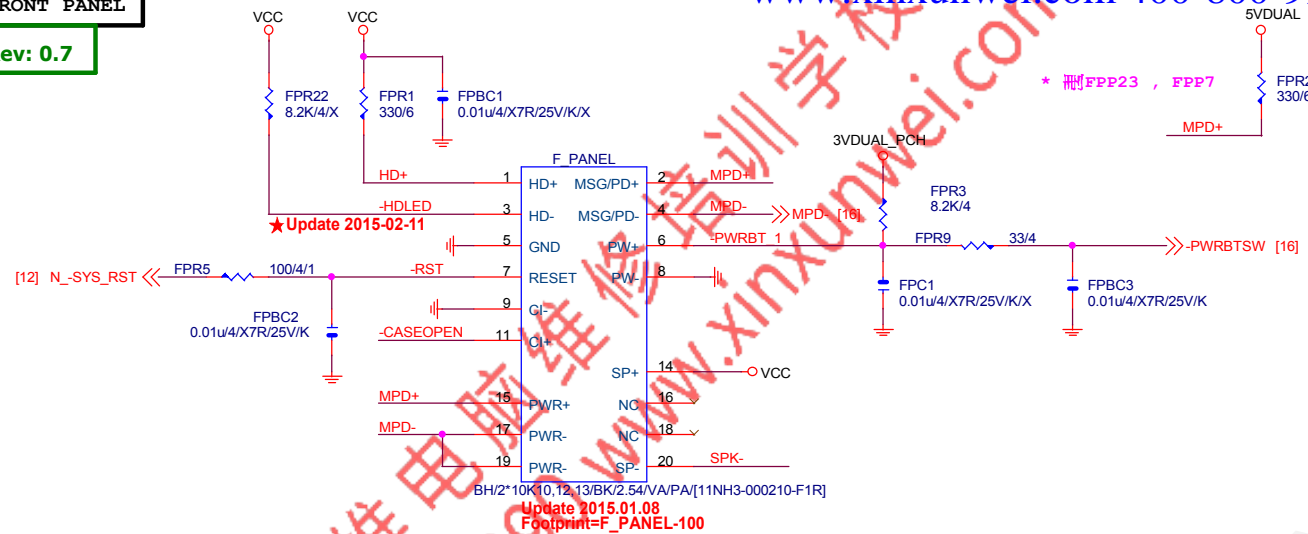


Gigabyte Technology			
Title			
FP,F_USB,USB PWR,BZ			
Size	Document Number	Rev	
Custom	GA-B150M-Gaming3 DDR3-DB	1.0	
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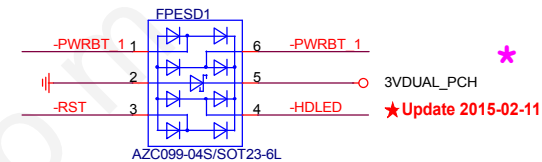


## FRONT PANEL

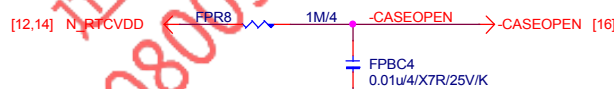
Rev: 0.7



## ESD

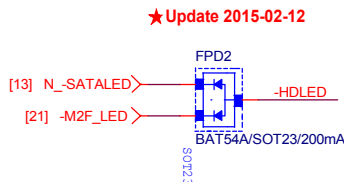


## CASE OPEN

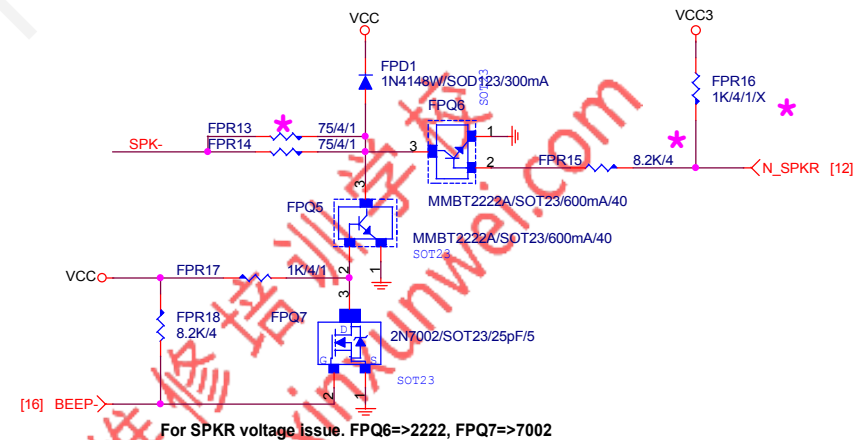


## SATA LED

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



## SPKR



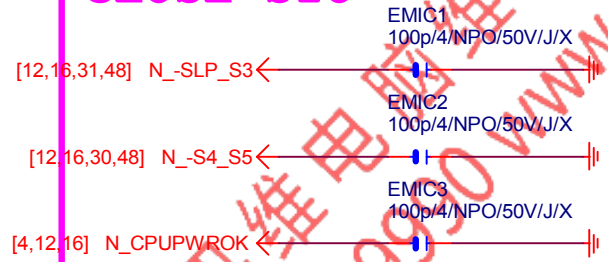
Gigabyte Technology

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FRONT PANEL			
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EMI/ESD R0.1

CLOSE SIO



CLOSE PCH

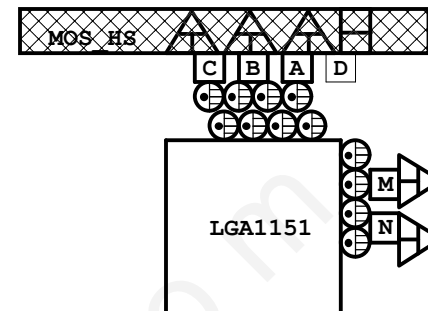
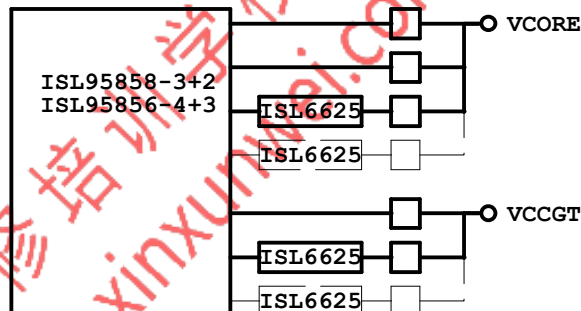
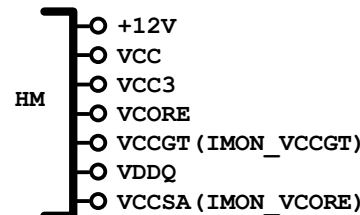
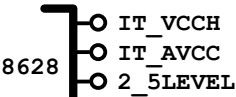
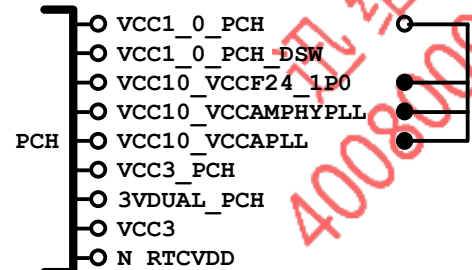
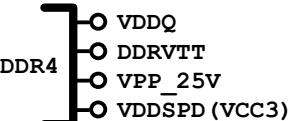
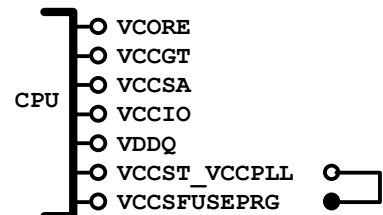


Title		
EMI/ESD		
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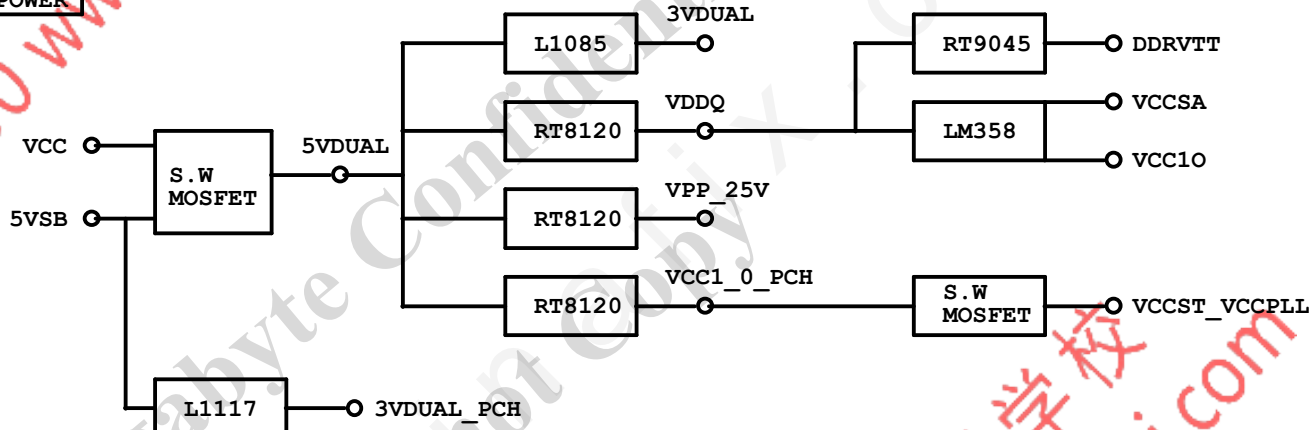
## POWER BLOCK MAP

## VCORE/VCCGT

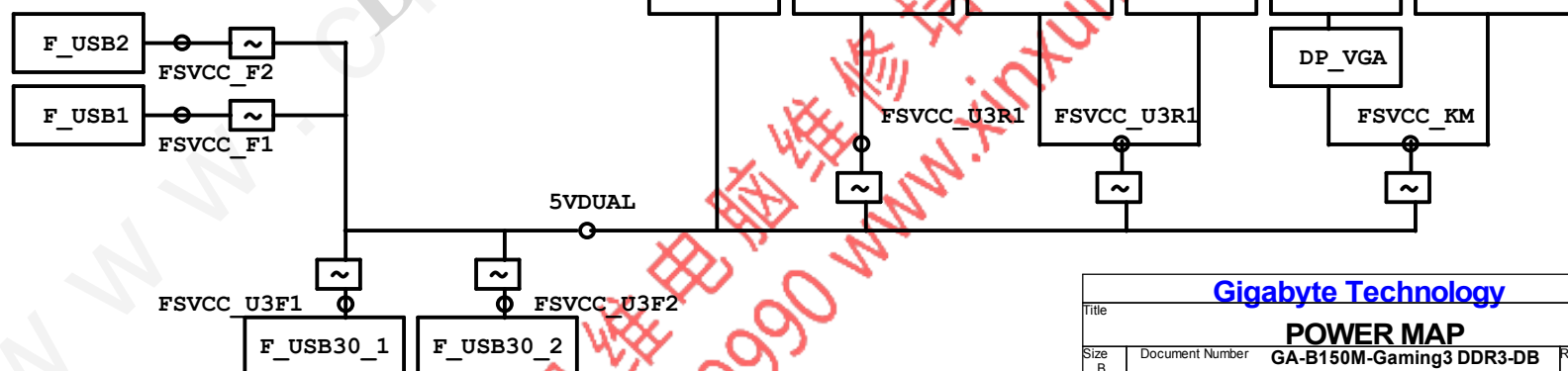
www.xinxunwei.com 400-800-9990



## POWER

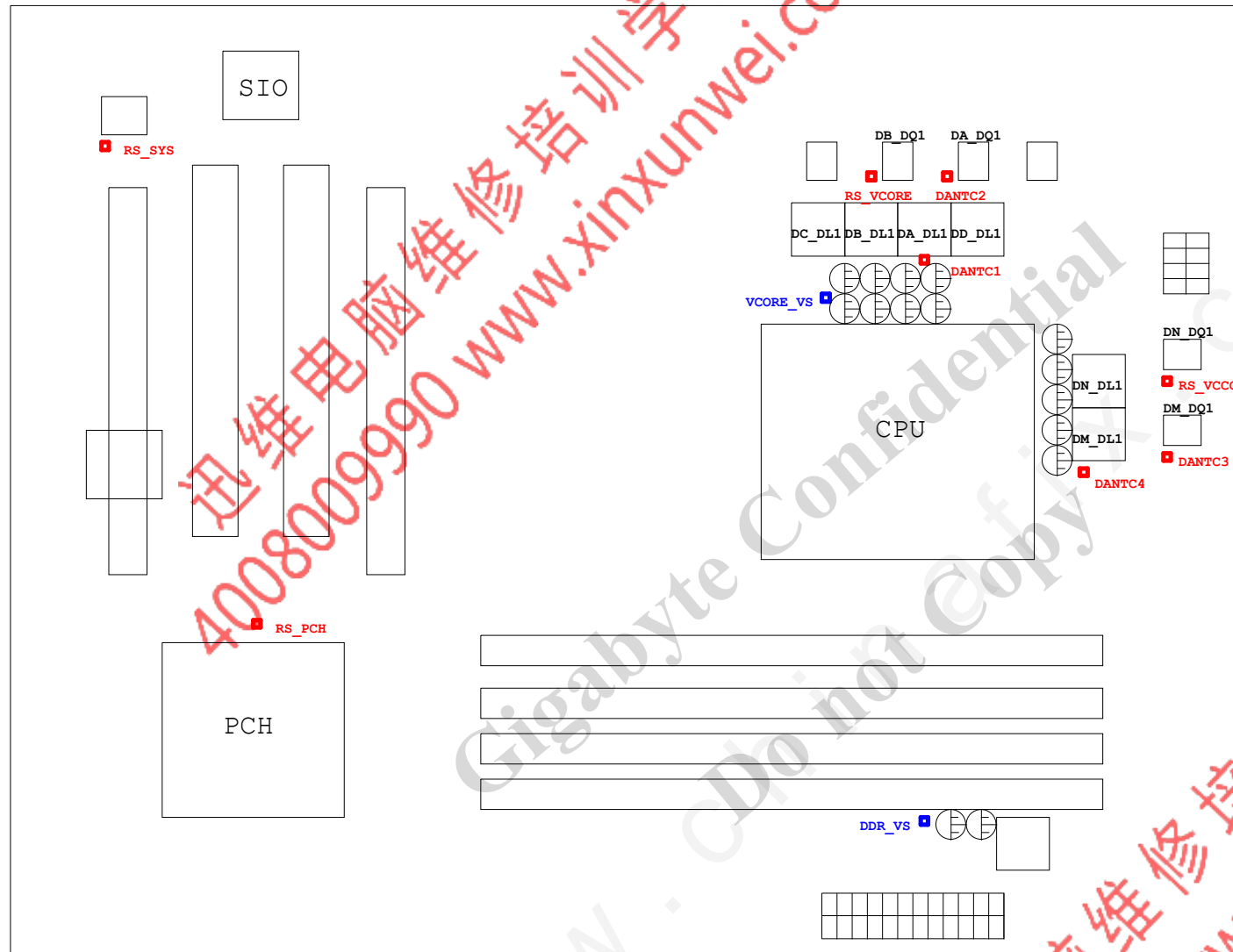


## FUSE POWER F/R



Gigabyte Technology

Title			
POWER MAP			
Size B	Document Number	GA-B150M-Gaming3 DDR3-DB	Rev 1.0
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熱敏電阻	擺放靠近位置	走線方式
DANTC1	DA_DL1	N/A
DANTC2	DA_DQ1	Differential
DANTC3	DM_DQ1	N/A
DANTC4	DM_DL1	Differential
RS_VCORE	DB_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A