

Model Name: GA-B250M-Power

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	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH PWR
15	PCH GND
16	ITE 8686 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*4 & *1 SLOT
21	
22	DUAL BIOS
23	
24	
25	
26	
27	ISL95858 PWM-IRON
28	ISL95858 VCORE-IRON

SHEET

TITLE

29	ISL95858 VCCGT-IRON
30	VCCSA_VCCIO_VCCPLL
31	RT8237_DDR_BEAD
32	RT8068A_VPP
33	RT8237_PCH-BEAD
34	DISCRETE POWER
35	NCT3933
36	ATX POWER , A_-PROCHOT
37	KB_MS_USB
38	DVI CONN
39	RTD2168 - DP to VGA - IC
40	RTD2168 - DP to VGA - Conn
41	HDMI
42	REALTEK 8111G
43	USB30_LAN CONNECTOR-8111G
44	Realtek ALC887
45	REAR AUDIO JACK
46	ADUIO LED
47	F_USB30
48	F_USB
49	R_USB30
50	F_PANEL
51	M.2 X4 (Q)
52	M.2X4_S5 SWITCH
53	COM, LPT, TPM
54	EMI-ESD
55	POWER MAP
56	NTC MAP

Gigabyte Technology

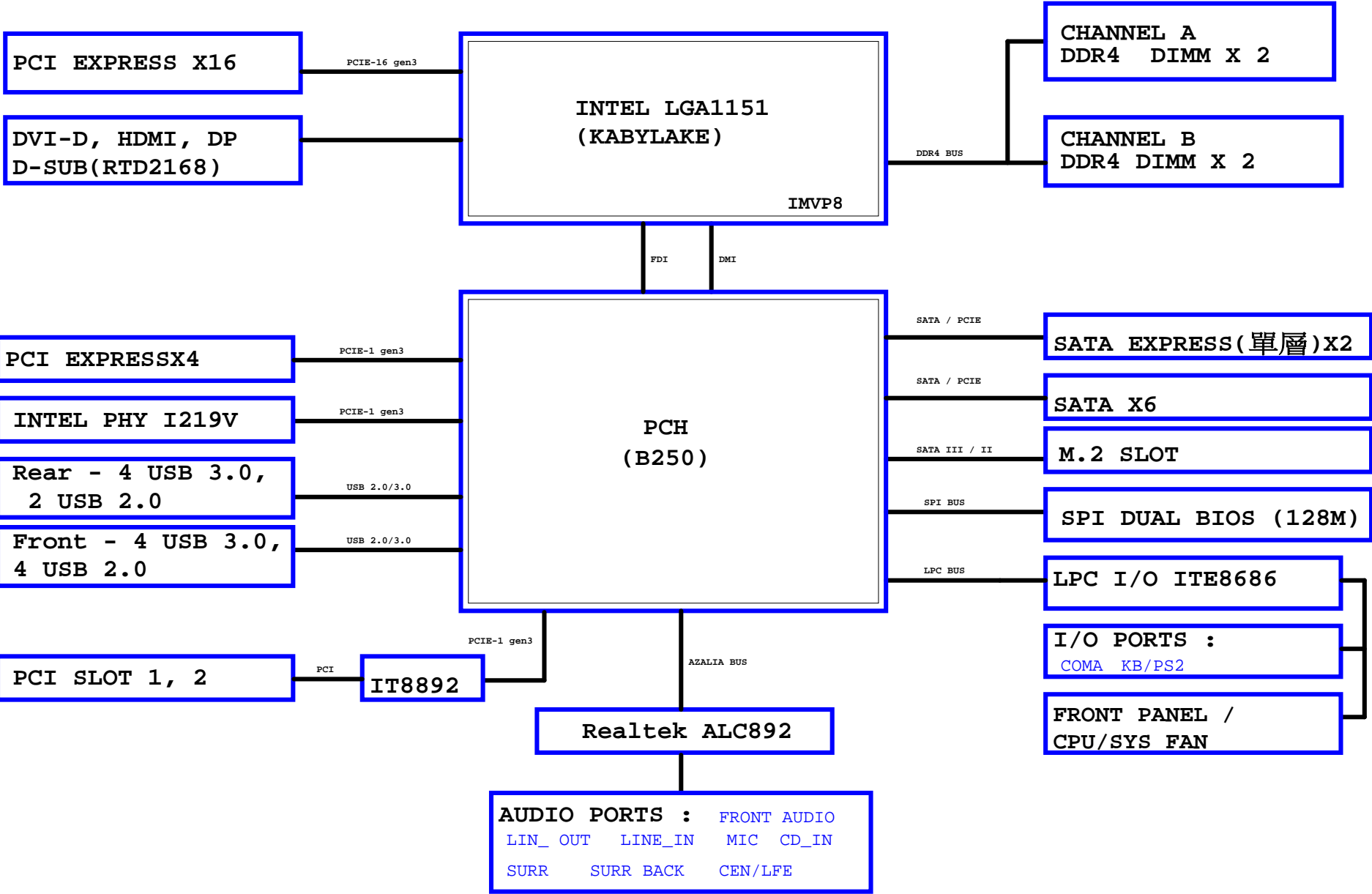
Title			Cover Sheet
Size	Document Number	GA-B250M-Power	Rev
Custom			1.0
Date:	Tuesday, November 15, 2016	Sheet	1 of 56

## Circuit or PCB layout change

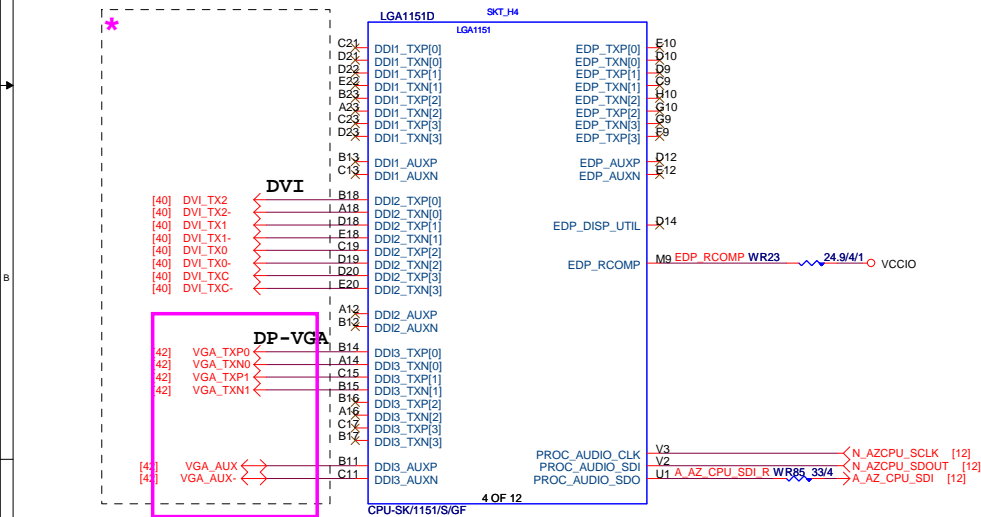
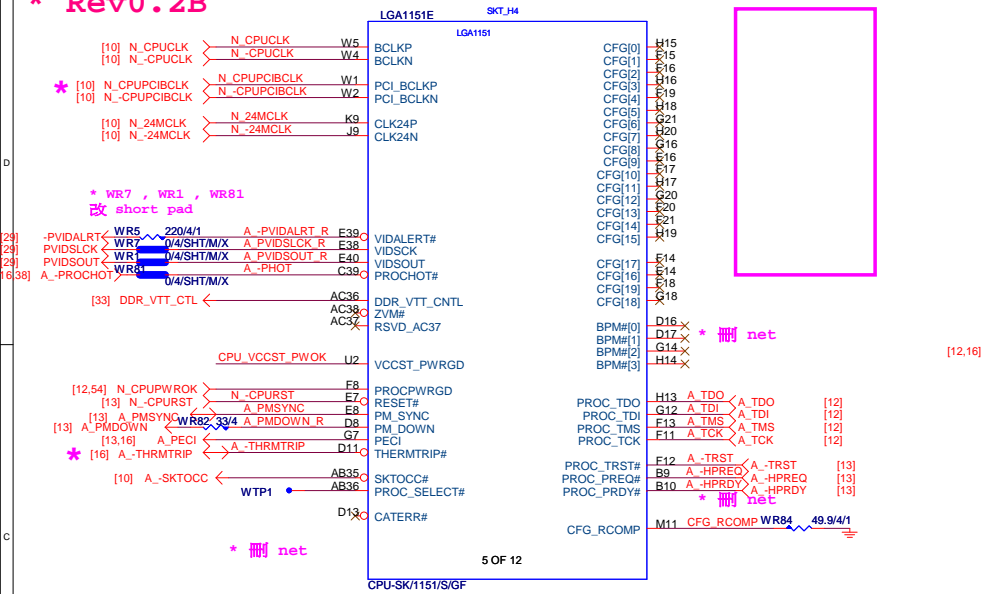
## 2016/11/03

[illegible][illegible]

BLOCK DIAGRAM



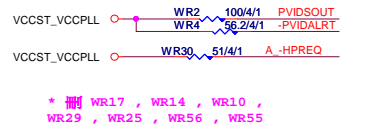
**\* Rev0.2B**



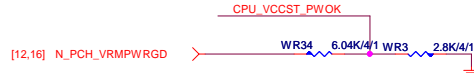
G-15u : (CPU-SK/1151/S/15)  
10SC1-F01151-11R / 10SC1-F01151-12R  
G-FL : (CPU-SK/1151/S/GF)  
10SC1-F01151-21R / 10SC1-F01151-22R

```
4 layer HDMI/DP/eDP/=====4/4/4//15
6 layer HDMI/DP/eDP/=====4/5.5/4//15
```

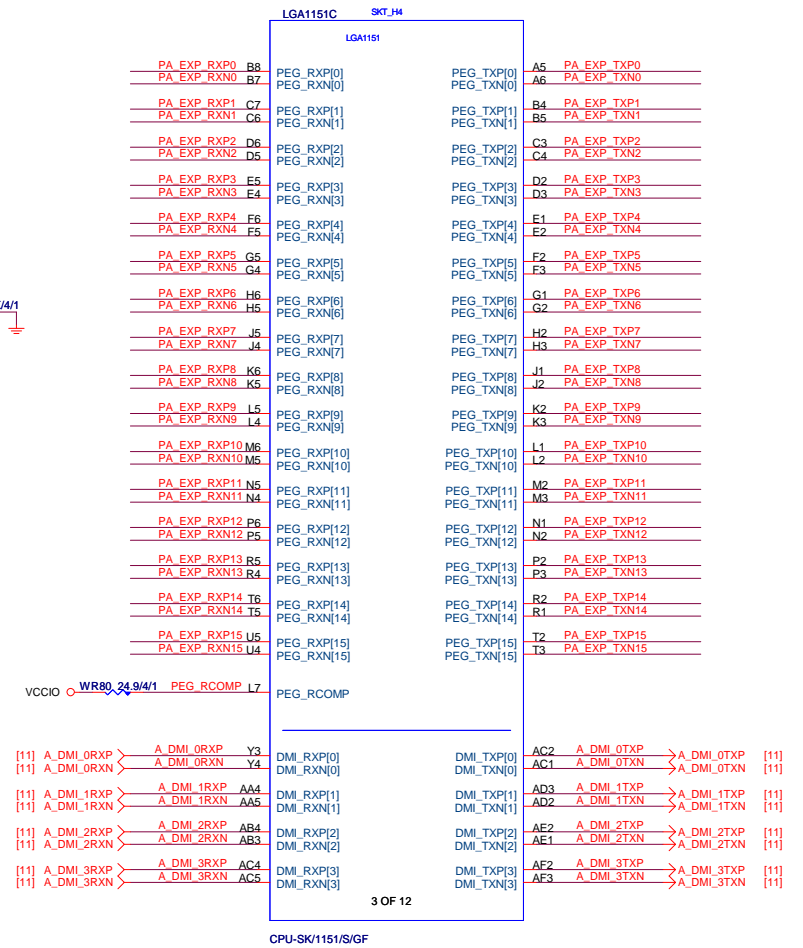
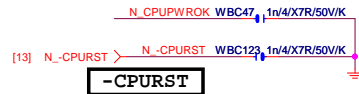
Impedance=85 +- 15%



\* 删除 WR91



```
* 删除 net N_CPU_VCCST_PWOK
```



```

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

```

```
4 layer PEG/DMI=====4/4/4//15
6 layer PEG/DMI=====4/5.5/4//15
```

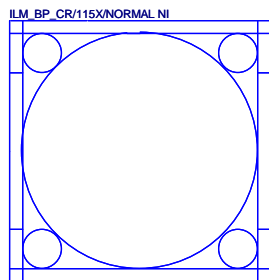
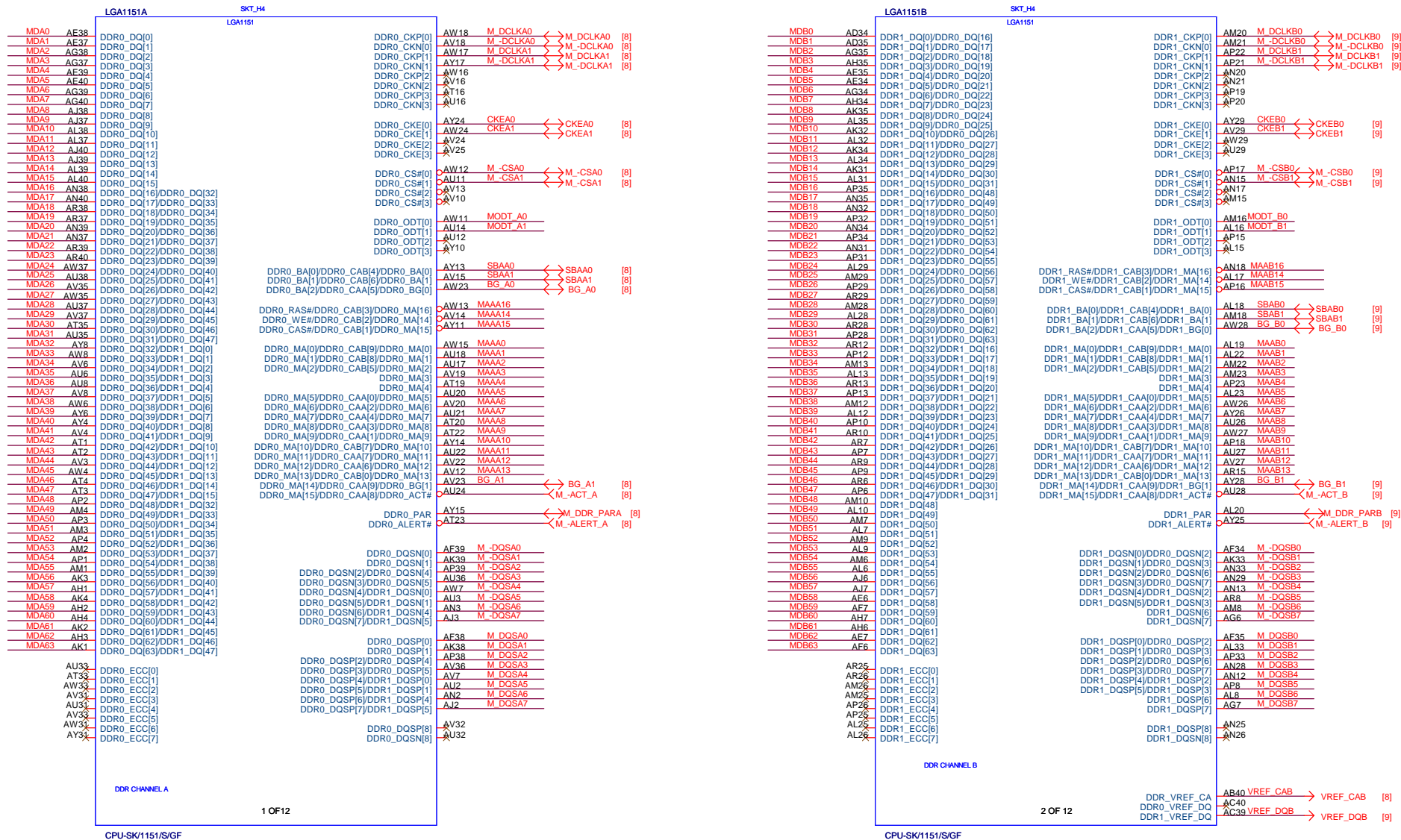
Impedance=85 +- 15%

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

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	1	0

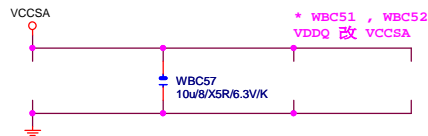
<b>Gigabyte Technology</b>			
Title			
<b>CPU LGA1151-A</b>			
Size Custom	Document Number		Rev
	<b>GA-B250M-Power</b>		<b>1.0</b>
Date:	Tuesday, November 15, 2016	Sheet	4 of 56

\* 改DDR4 net

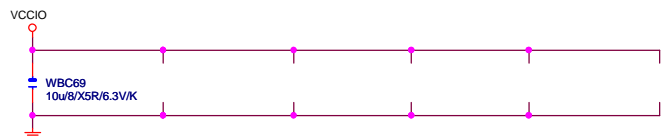


Need check the new CPU ME

\* 刪 WBC50 電容

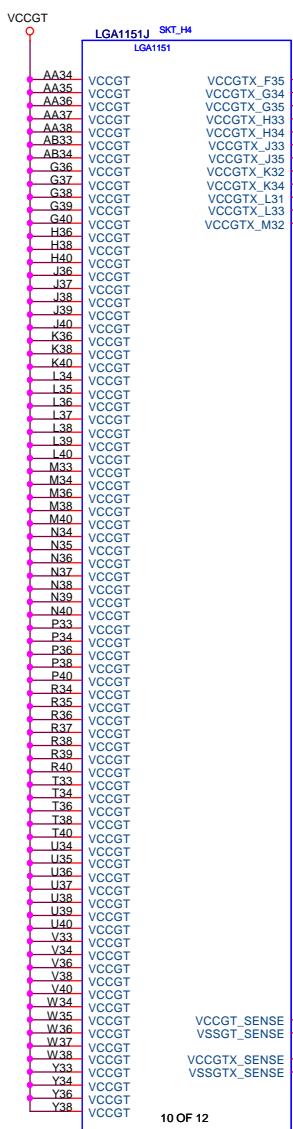
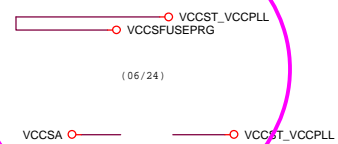


\* 刪 WBC124, WBC125, WBC126, WBC127 電容

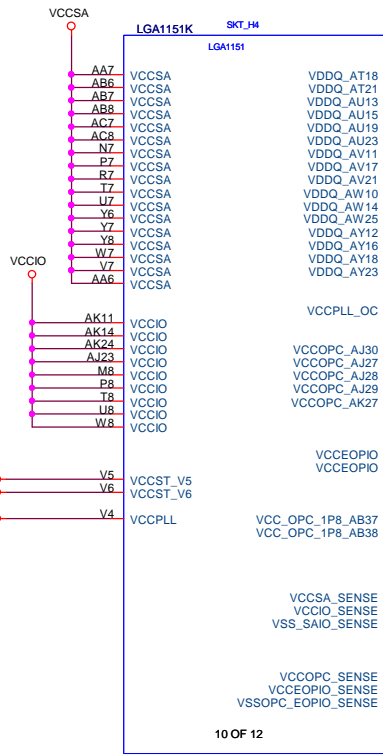
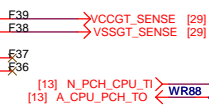


\* 刪 VCCGT 電容

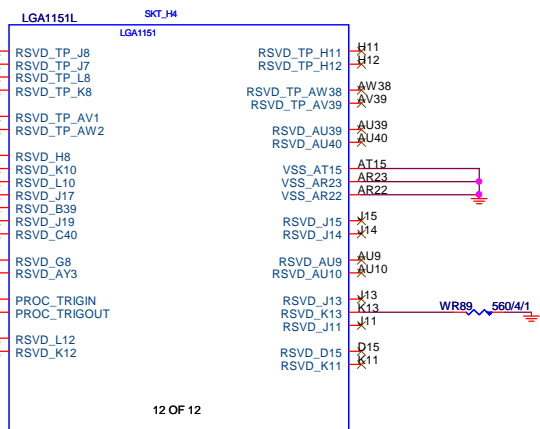
\* 刪 WR94, WR59, WR86, WR60, WR61, WR62, WR63 改 short pad



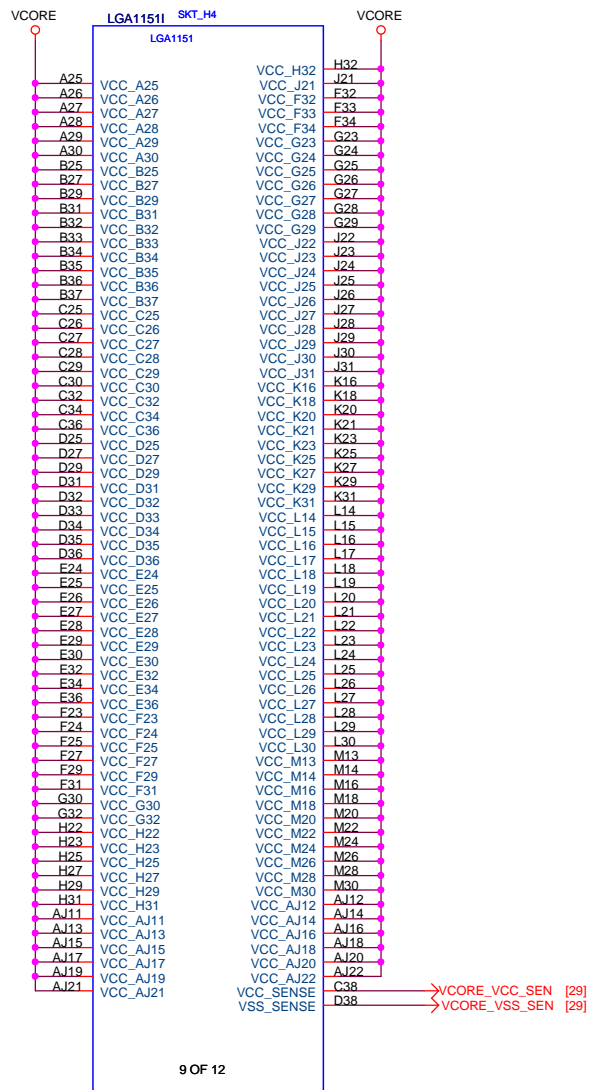
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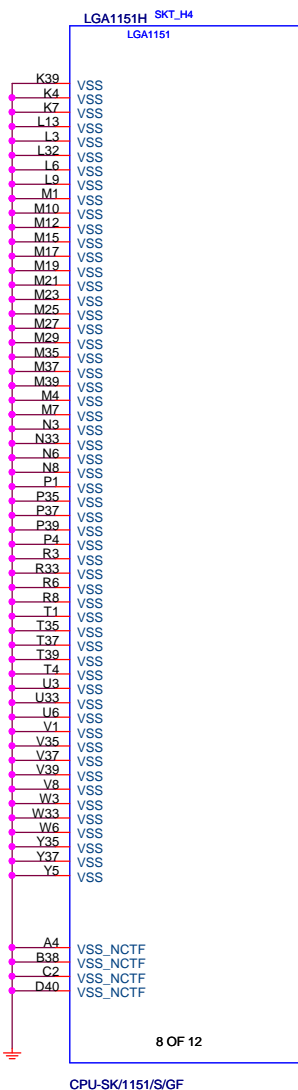
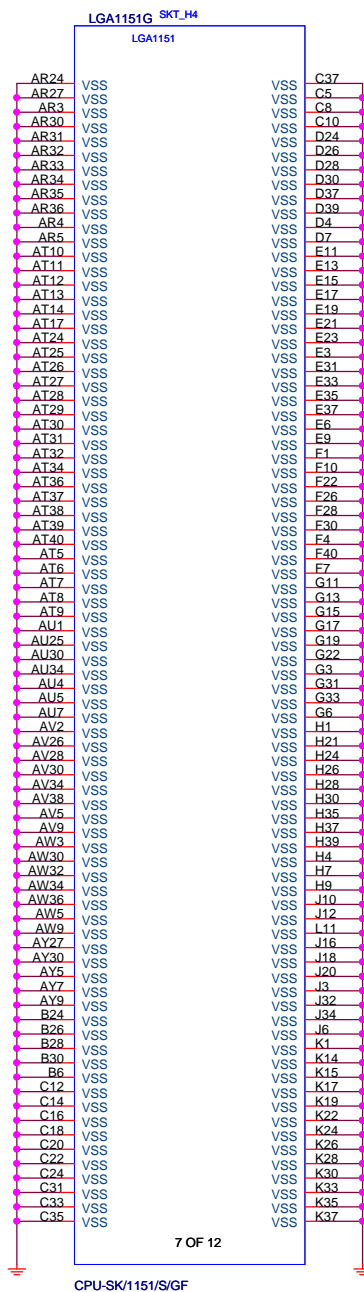
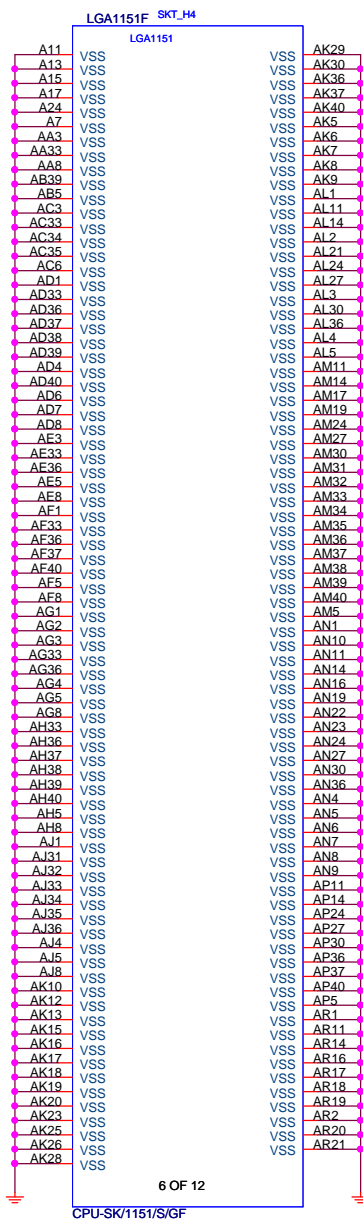
CPU-SK/1151/S/GF



CPU-SK/1151/S/GF

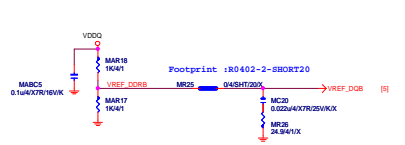


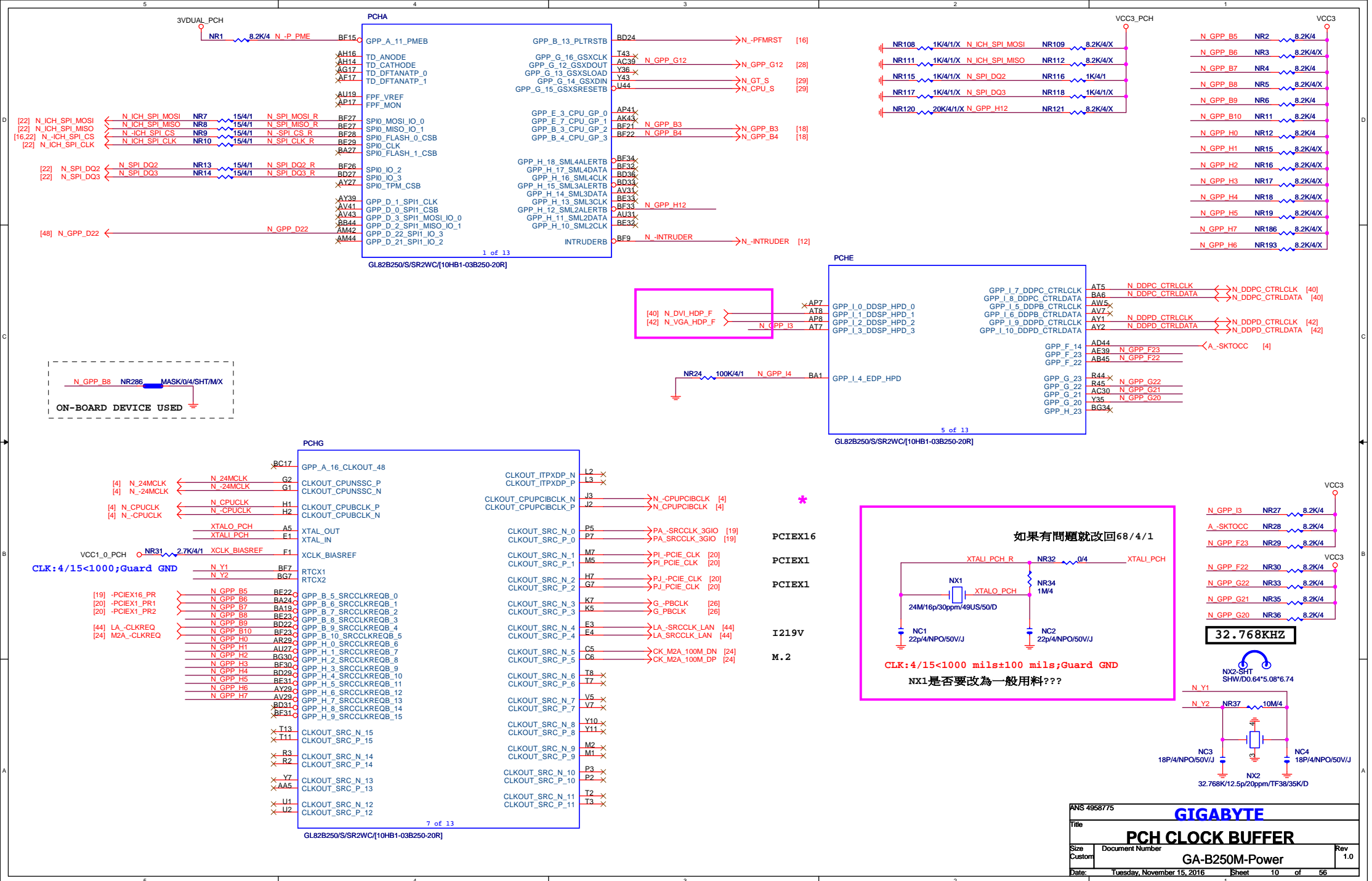
\* 刪 Vcore 電容

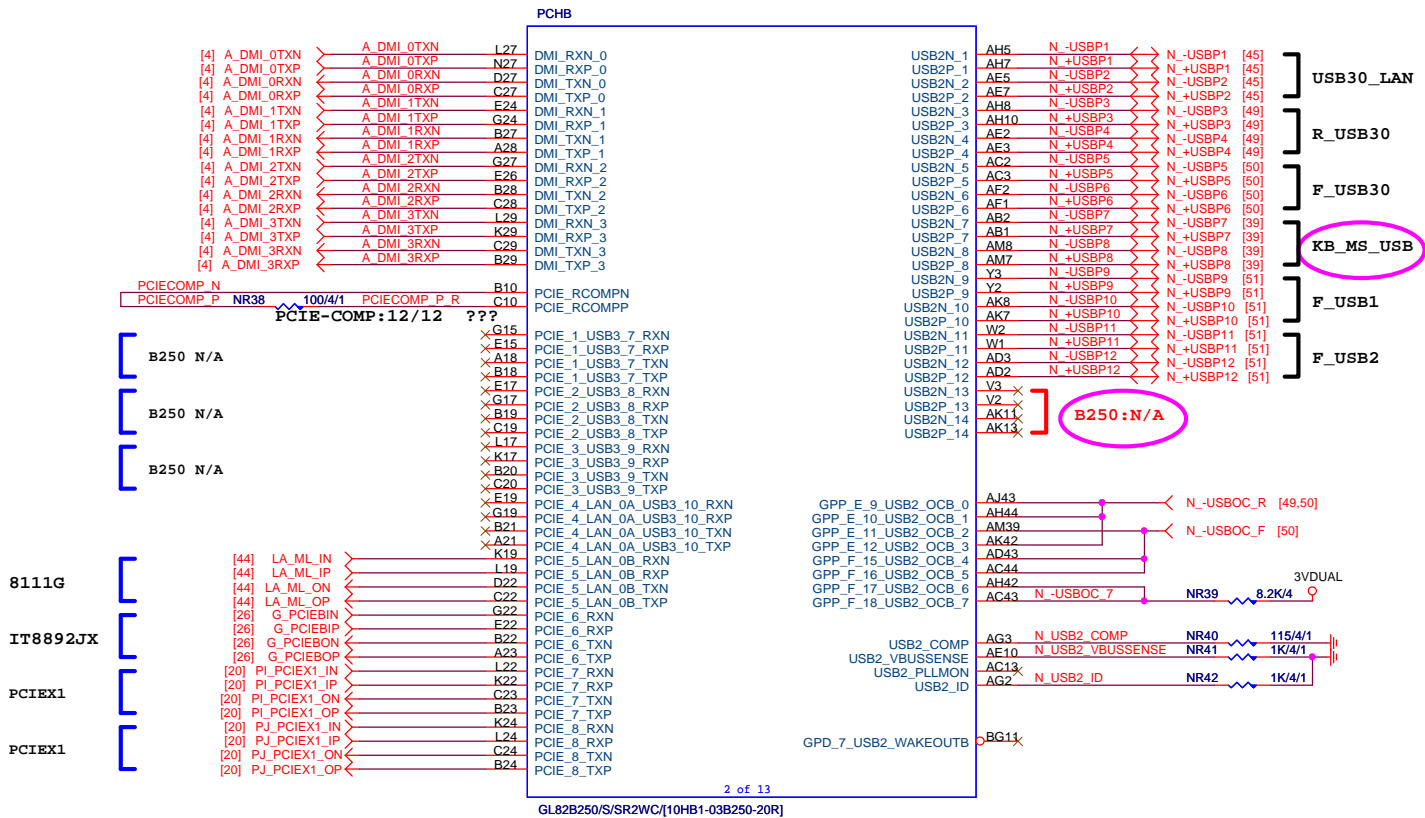




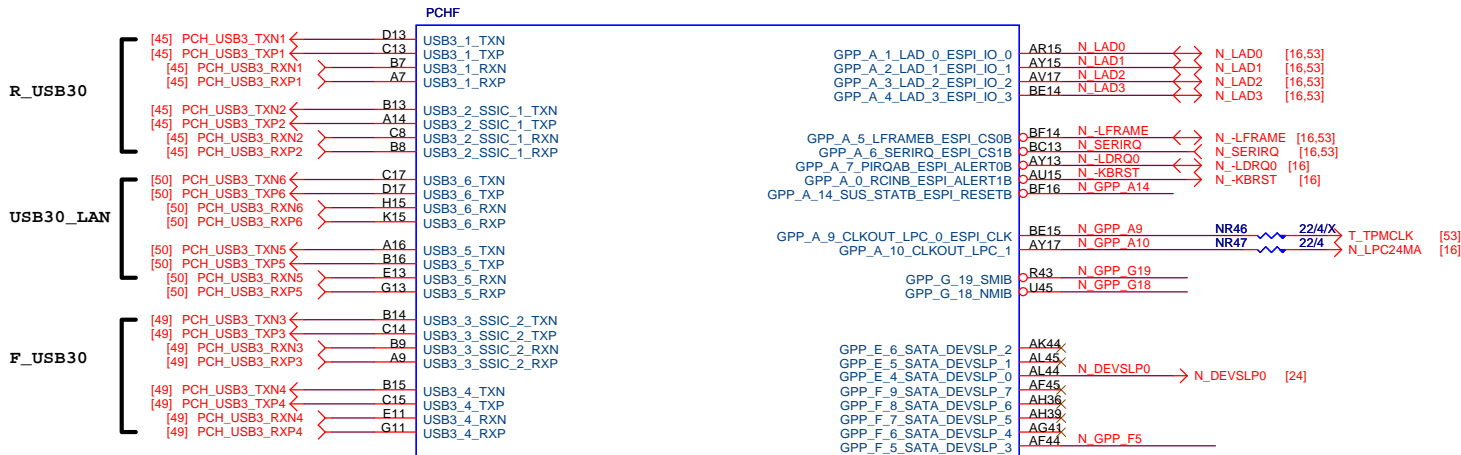




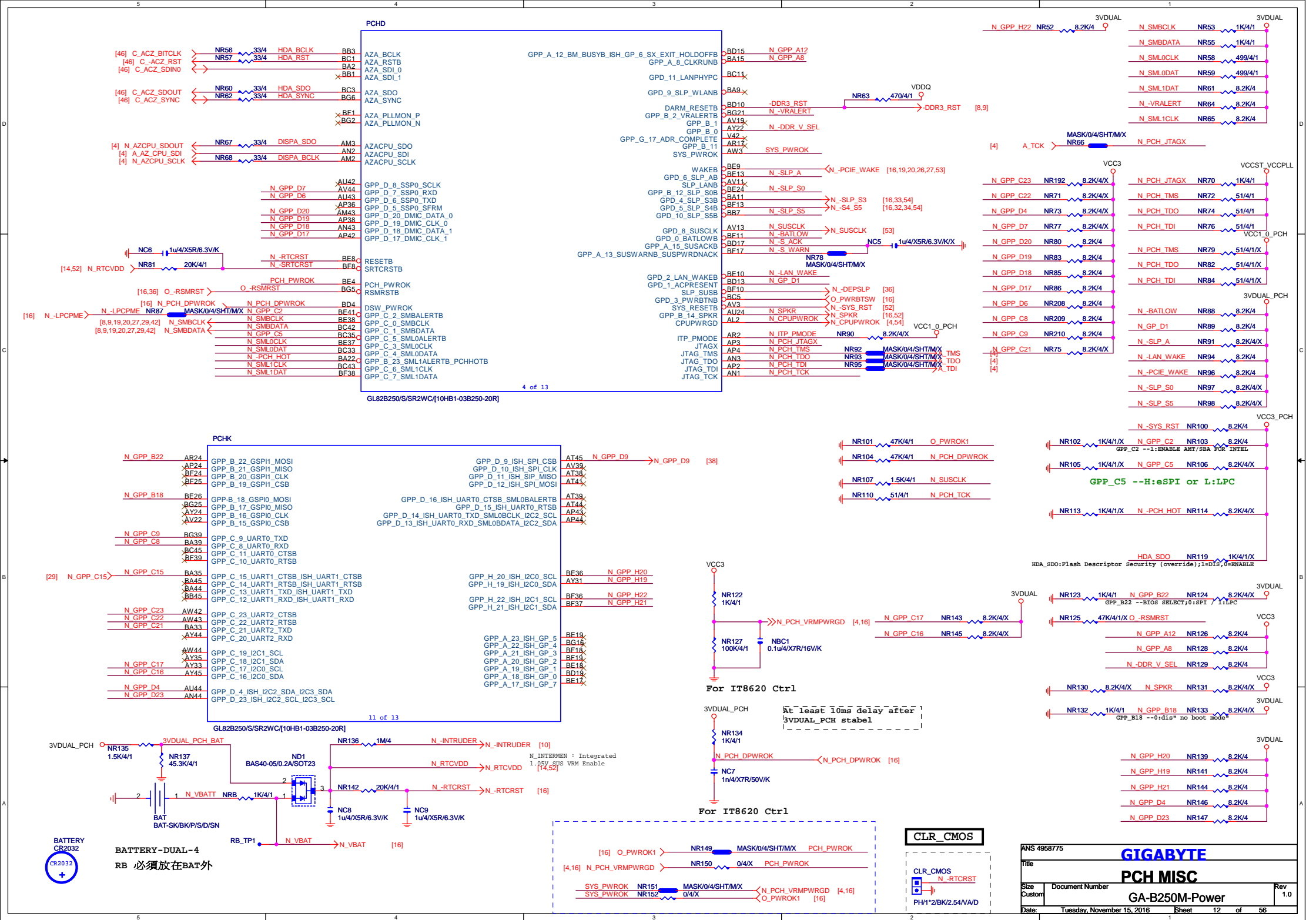


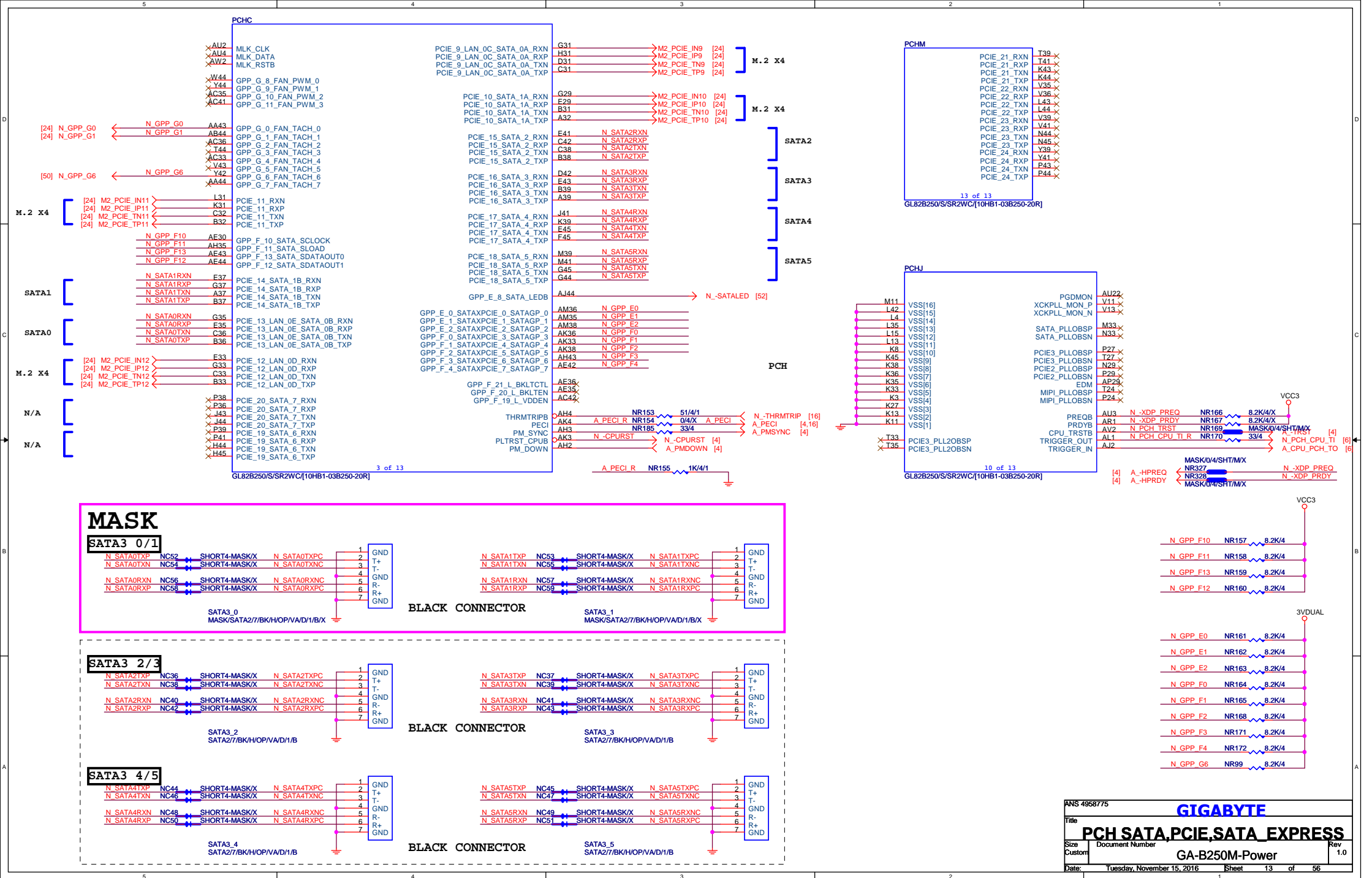


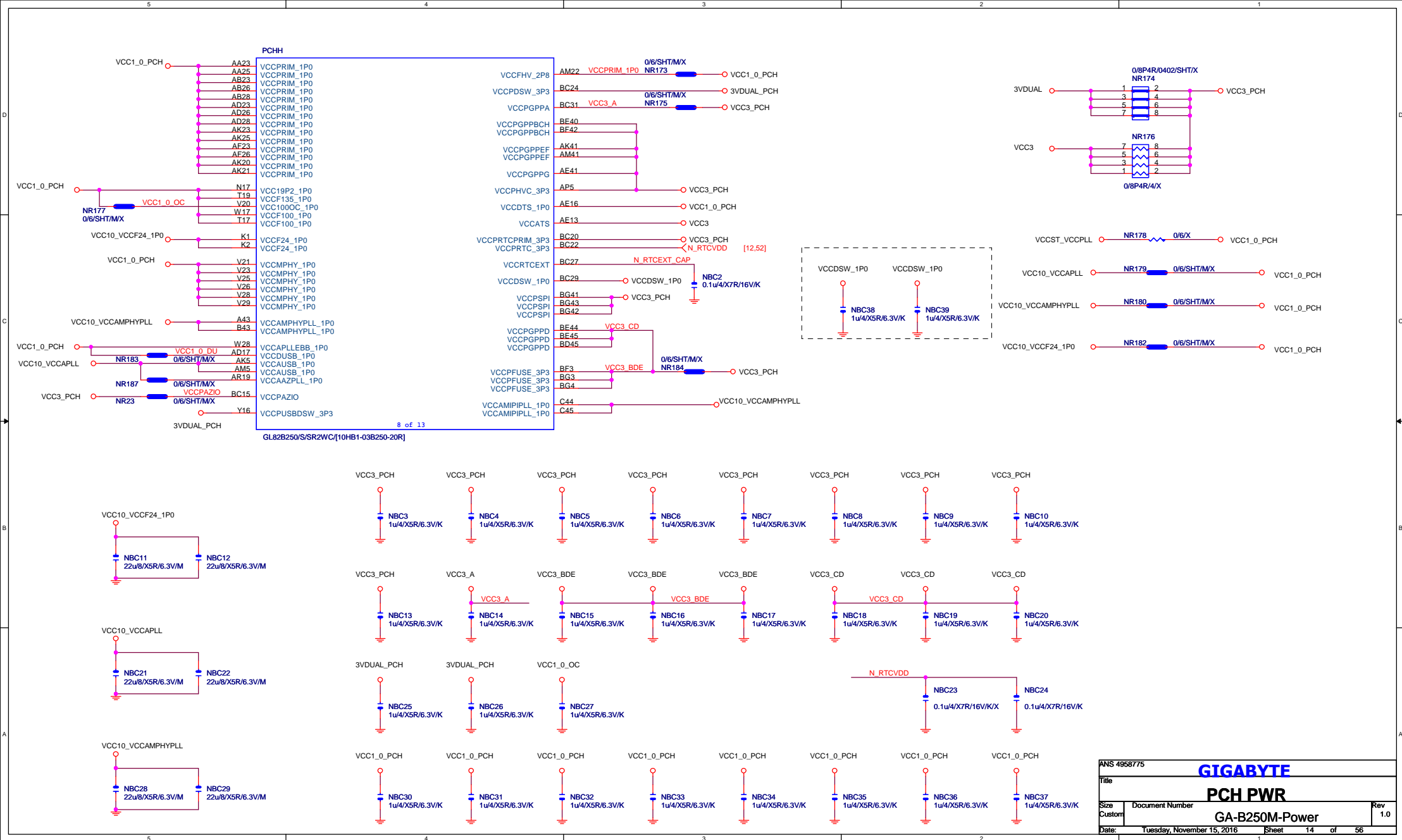
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GL82B250/S/SR2WC/[10HB1-03B250-20R]



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GL82B250/S/SR2WC/[10HB1-03B250-20R]









PCH1		
A25	VSS	VSS
A30	VSS	VSS
P22	VSS	VSS
AV38	VSS	VSS
AV45	VSS	VSS
AV8	VSS	VSS
AY11	VSS	VSS
AY19	VSS	VSS
AY37	VSS	VSS
AY4	VSS	VSS
AY42	VSS	VSS
AY8	VSS	VSS
B25	VSS	VSS
B3	VSS	VSS
B30	VSS	VSS
B35	VSS	VSS
B4	VSS	VSS
B41	VSS	VSS
BA13	VSS	VSS
BA17	VSS	VSS
BA37	VSS	VSS
BA29	VSS	VSS
BA31	VSS	VSS
BA37	VSS	VSS
BA4	VSS	VSS
BA42	VSS	VSS
BB40	VSS	VSS
BC38	VSS	VSS
BC40	VSS	VSS
BC9	VSS	VSS
BD11	VSS	VSS
BD16	VSS	VSS
BD2	VSS	VSS
BD21	VSS	VSS
BD25	VSS	VSS
F2	VSS	VSS
F31	VSS	VSS
E6	VSS	VSS
E8	VSS	VSS
F39	VSS	VSS
F43	VSS	VSS
G4	VSS	VSS
G40	VSS	VSS
G42	VSS	VSS
F6	VSS	VSS
G9	VSS	VSS
H11	VSS	VSS
H19	VSS	VSS
H22	VSS	VSS
H24	VSS	VSS
H27	VSS	VSS
H29	VSS	VSS
H33	VSS	VSS
H35	VSS	VSS
H38	VSS	VSS
H4	VSS	VSS
H42	VSS	VSS
H9	VSS	VSS
J4	VSS	VSS
M36	VSS	VSS
M38	VSS	VSS
M4	VSS	VSS
M8	VSS	VSS
M9	VSS	VSS
N13	VSS	VSS
N15	VSS	VSS
N19	VSS	VSS
N22	VSS	VSS
N24	VSS	VSS
N31	VSS	VSS
N42	VSS	VSS
P10	VSS	VSS
P12	VSS	VSS
AV35	VSS	VSS

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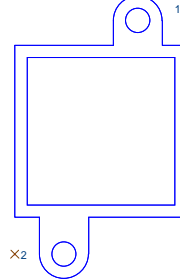
GL82B250/S/SR2WC[10HB1-03B250-20R]

PCHL		
BD34	VSS[70]	AB18
BD39	VSS[71]	AB20
BD7	VSS[72]	AB21
BE2	VSS[73]	AB25
BF43	VSS[4]	AB29
BF2	VSS[5]	AB4
BG18	VSS[6]	AB42
AG23	VSS[7]	AC10
AG28	VSS[78]	AC14
AG32	VSS[79]	AC16
AG37	VSS[80]	AC38
AG40	VSS[81]	AC4
AG9	VSS[83]	AC5
AA21	VSS[84]	AC7
AA26	VSS[85]	AC8
AA28	VSS[86]	AD1
AA29	VSS[87]	AD18
AB7	VSS[88]	AD20
AC32	VSS[89]	AD21
AE4	VSS[90]	AD25
AE8	VSS[91]	AD29
AF18	VSS[92]	AD45
AF20	VSS[93]	AE11
AF21	VSS[94]	AE14
AF25	VSS[95]	AE32
AF28	VSS[96]	AE33
AF29	VSS[97]	AK29
AF4	VSS[98]	AK30
AF42	VSS[99]	AK32
AG18	VSS[100]	AK35
AG20	VSS[101]	AK39
AG21	VSS[102]	AL4
AG23	VSS[103]	AL42
AG25	VSS[104]	AM10
AG26	VSS[105]	AM11
AG28	VSS[106]	AM13
AG29	VSS[107]	AM17
AH11	VSS[108]	AM19
AH13	VSS[109]	AM24
AH30	VSS[110]	AM27
AH32	VSS[111]	AM29
AH33	VSS[112]	AM32
AH38	VSS[113]	AM33
AJ1	VSS[114]	AM4
AJ17	VSS[115]	AN45
AJ18	VSS[116]	AP10
AJ20	VSS[117]	AP11
AJ21	VSS[118]	AP15
AJ23	VSS[119]	AP22
AJ26	VSS[120]	AP27
AJ28	VSS[121]	AP31
AJ29	VSS[122]	AP33
AJ45	VSS[123]	AP34
AK10	VSS[124]	AP39
AK14	VSS[125]	T4
AK16	VSS[126]	W26
AK17	VSS[151]	V16
AK18	VSS[152]	V17
AK26	VSS[153]	V18
AK28	VSS[154]	V30
AM14	VSS[155]	V32
AN14	VSS[156]	V33
AP19	VSS[157]	V38
AR22	VSS[158]	V4
AR27	VSS[159]	V8
AU29	VSS[144]	W18
AU33	VSS[58]	W20
AV1	VSS[59]	W21
AV10	VSS[60]	W23
AV15	VSS[61]	W25
AV24	VSS[62]	A44
AV27	VSS[63]	BE1
AV33	VSS[64]	BD1
AT37	VSS[65]	B1
AT42	VSS[66]	A2
AU11	VSS[67]	VSS_14
AU17	VSS[68]	VSS_15
BD30	VSS[69]	VSS_16
W45	VSS[145]	VSS_17
Y13	VSS[146]	VSS_18
Y14	VSS[147]	VSS_2
Y30	VSS[148]	VSS_3
Y32	VSS[149]	
Y33	VSS[150]	
BG14	VSS_BG14	

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GL82B250/S/SR2WC[10HB1-03B250-20R]

SB\_HEATSIN



Only for B250M-Power

BGAHSINK\_SB-N

PCH\_HS

PCH\_HS[12SP2-S03509-01R\_12SP2-S03509-02R\_12SP2-S03509-03R]

ANS 4958775

GIGABYTE

Title

PCH GND

Size

Document Number

GA-B250M-Power

Rev

1.0

Date:

Tuesday, November 15, 2016

Sheet

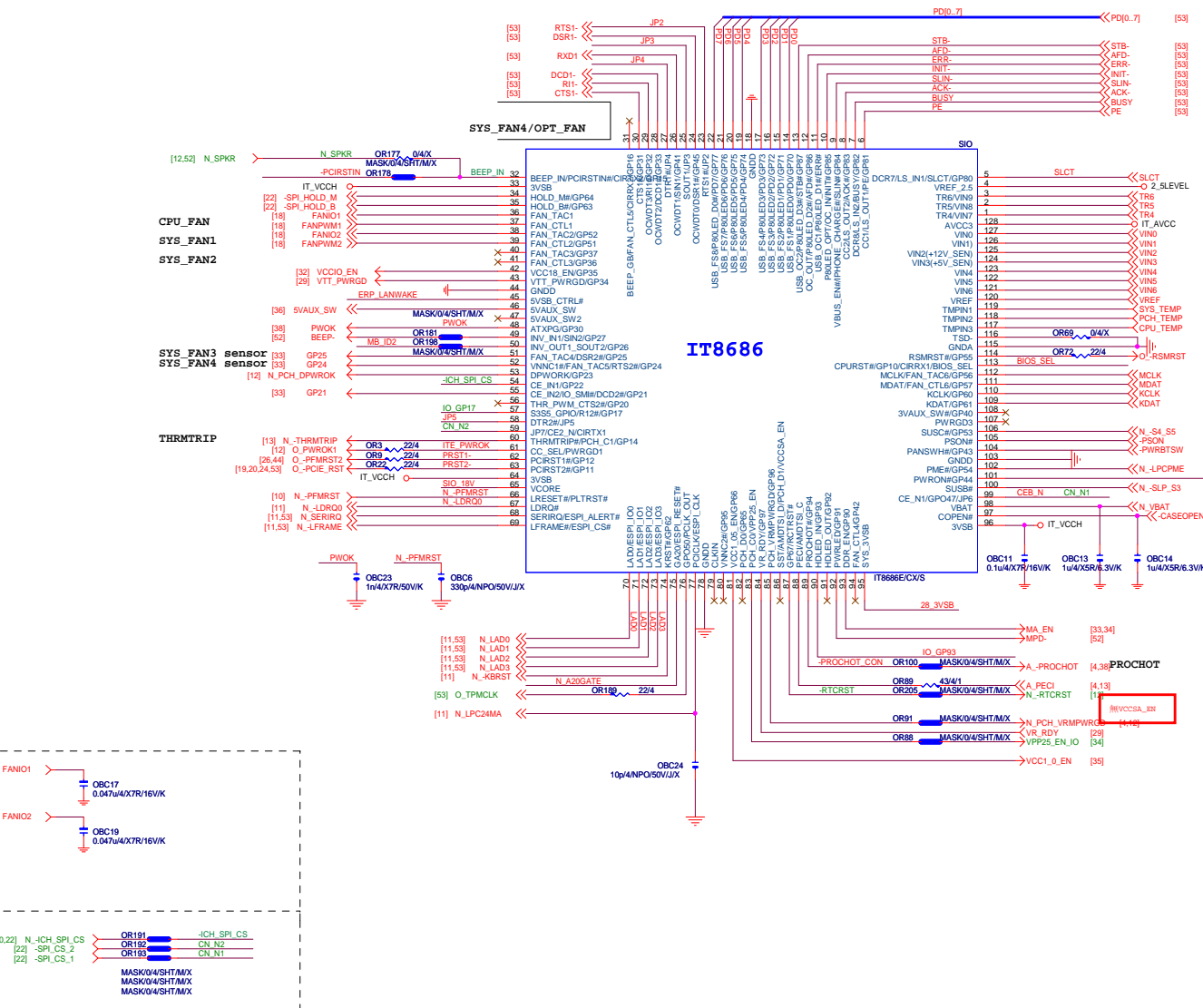
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of

56

SIO IT8686 REV:0.1

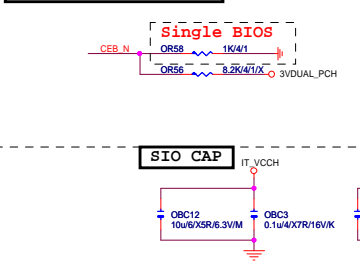
IT8686 LPT+COMA



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

THRMTRIP	PIN56
PROCHOT	PIN89

DUAL BIOS OPT STRAP

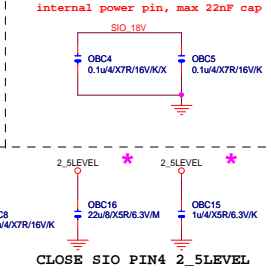


Placement CPU

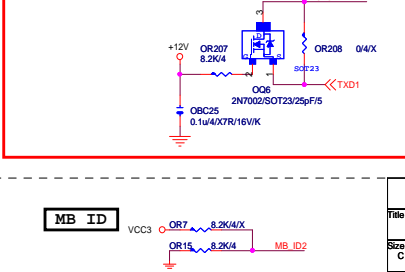
[4] A-THRMTRIP <WR10\_1K/4/1 N-THRMTRIP

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。

SIO\_18V



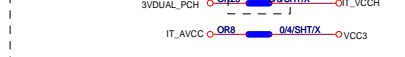
for LPC/eSPI power mode



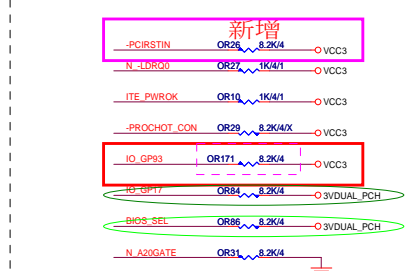
Gigabyte Technology

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Size C	Document Number
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PWR\_SHT

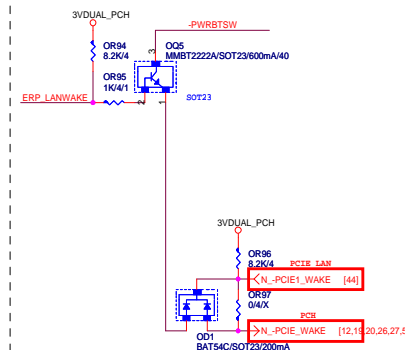


SIO\_PU



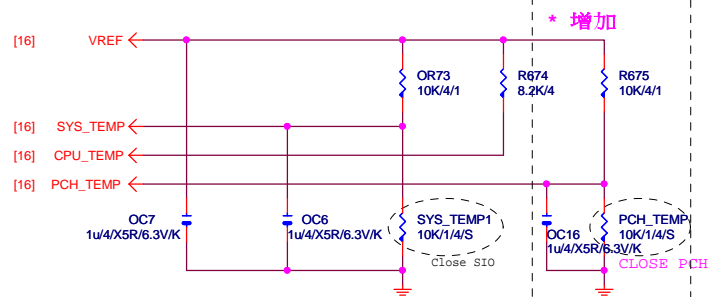
SIO\_STRAP

BIOS control detect	
JP2	1 Disable WDT to rest PWROK
JP2	0 Enable WDT to rest PWROK
JP3	Dual-BIOS CS pin mode select bit "0" See the below table
JP4	1 LPC/ESPI power VCCBT = 3.3V
JP4	0 LPC/ESPI power VCCBT = 1.8V
JP5	0 ESPI I/F
JP6	1 Enable Dual BIOS Function (for GigaByte Only)
JP6	0 Disable Dual BIOS Function (for GigaByte Only)
JP7	Dual-BIOS CE pin mode select bit "1" See the below table
JP7	1 1 CE pin disable (Hold pin mode)
JP7	1 0 CE mode 1
JP3	0 1 CE mode 2
JP3	0 0 CE mode 3

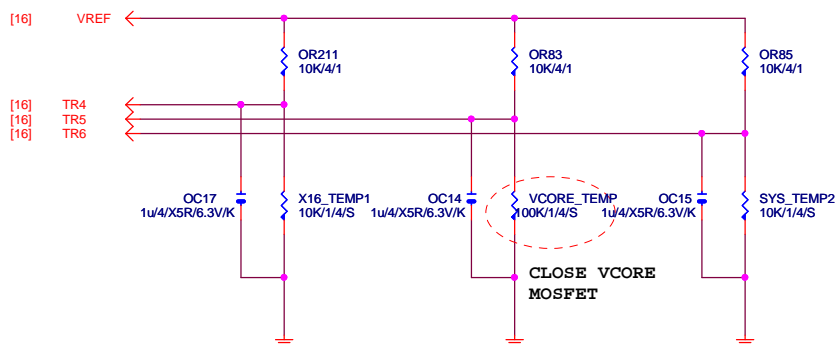




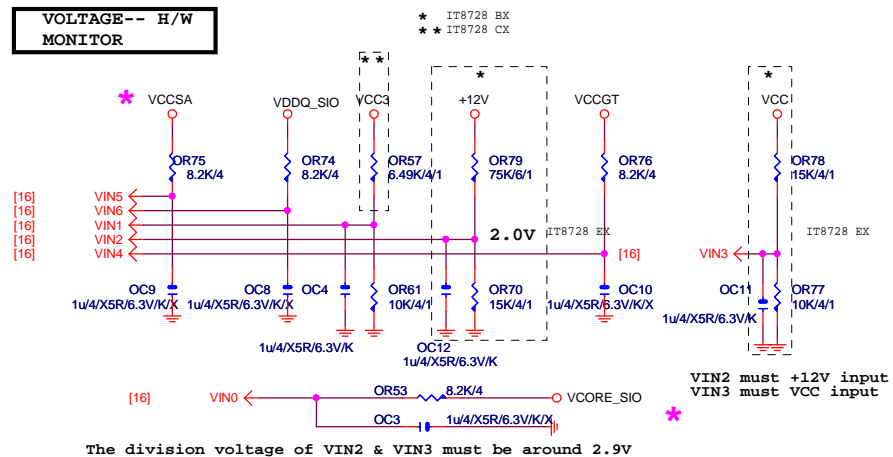
# TEMP H/W MONITOR



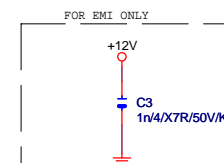
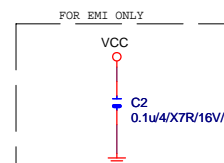
## 5個FAN時使用



# VOLTAGE-- H/W MONITOR



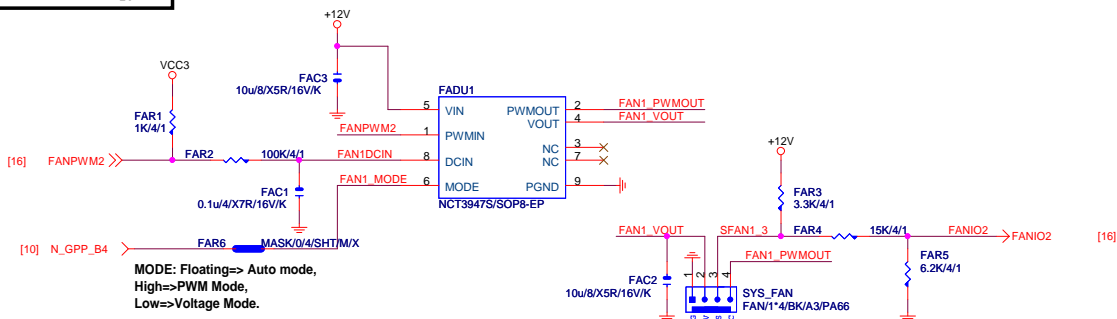
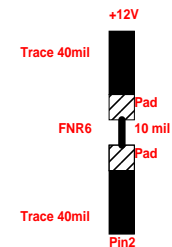
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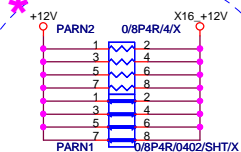


Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL		
Size	Document Number	Rev			
Custom	GA-B250M-Power	1.0			
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## Rev: 0.8



**+12 - protect  
short-wire test**

PA\_EXP\_RXP[0..15] >> PA\_EXP\_RXP[0..15] [4]  
PA\_EXP\_RXN[0..15] >> PA\_EXP\_RXN[0..15] [4]  
PA\_EXP\_TXP[0..15] >> PA\_EXP\_TXP[0..15] [4]  
PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXN[0..15] [4]

PA_EXP_TXP0	PAC5	0.22u4/X5R6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u4/X5R6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u4/X5R6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u4/X5R6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u4/X5R6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u4/X5R6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u4/X5R6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u4/X5R6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u4/X5R6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u4/X5R6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u4/X5R6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u4/X5R6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u4/X5R6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u4/X5R6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC18	0.22u4/X5R6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC19	0.22u4/X5R6.3V/K	PA_EXP_TXN7_C
PA_EXP_TXP8	PAC21	0.22u4/X5R6.3V/K	PA_EXP_TXP8_C
PA_EXP_TXN8	PAC20	0.22u4/X5R6.3V/K	PA_EXP_TXN8_C
PA_EXP_TXP9	PAC22	0.22u4/X5R6.3V/K	PA_EXP_TXP9_C
PA_EXP_TXN9	PAC23	0.22u4/X5R6.3V/K	PA_EXP_TXN9_C
PA_EXP_TXP10	PAC24	0.22u4/X5R6.3V/K	PA_EXP_TXP10_C
PA_EXP_TXN10	PAC25	0.22u4/X5R6.3V/K	PA_EXP_TXN10_C
PA_EXP_TXP11	PAC26	0.22u4/X5R6.3V/K	PA_EXP_TXP11_C
PA_EXP_TXN11	PAC27	0.22u4/X5R6.3V/K	PA_EXP_TXN11_C
PA_EXP_TXP12	PAC28	0.22u4/X5R6.3V/K	PA_EXP_TXP12_C
PA_EXP_TXN12	PAC29	0.22u4/X5R6.3V/K	PA_EXP_TXN12_C
PA_EXP_TXP13	PAC30	0.22u4/X5R6.3V/K	PA_EXP_TXP13_C
PA_EXP_TXN13	PAC31	0.22u4/X5R6.3V/K	PA_EXP_TXN13_C
PA_EXP_TXP14	PAC32	0.22u4/X5R6.3V/K	PA_EXP_TXP14_C
PA_EXP_TXN14	PAC33	0.22u4/X5R6.3V/K	PA_EXP_TXN14_C
PA_EXP_TXP15	PAC34	0.22u4/X5R6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u4/X5R6.3V/K	PA_EXP_TXN15_C

PCIEX16:16/5/5/5/16

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

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

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

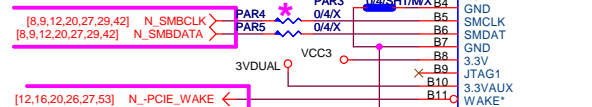
PCE-E X16(單向) BANDWITH=2.5GHz\*(8b/10b)X16=32Gb/s=4GB/s

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

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

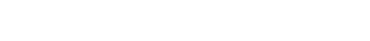
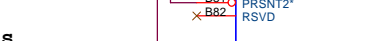
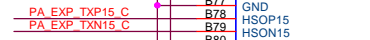
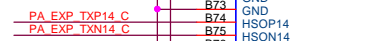
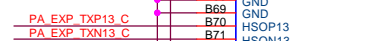
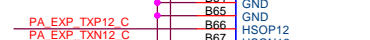
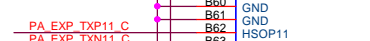
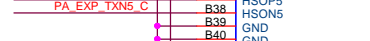
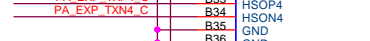
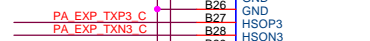
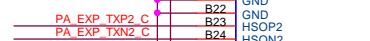
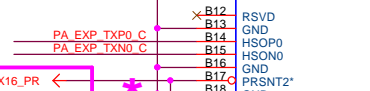
PCIESLOT-164P

PCIEX16 3GIO\_\*16



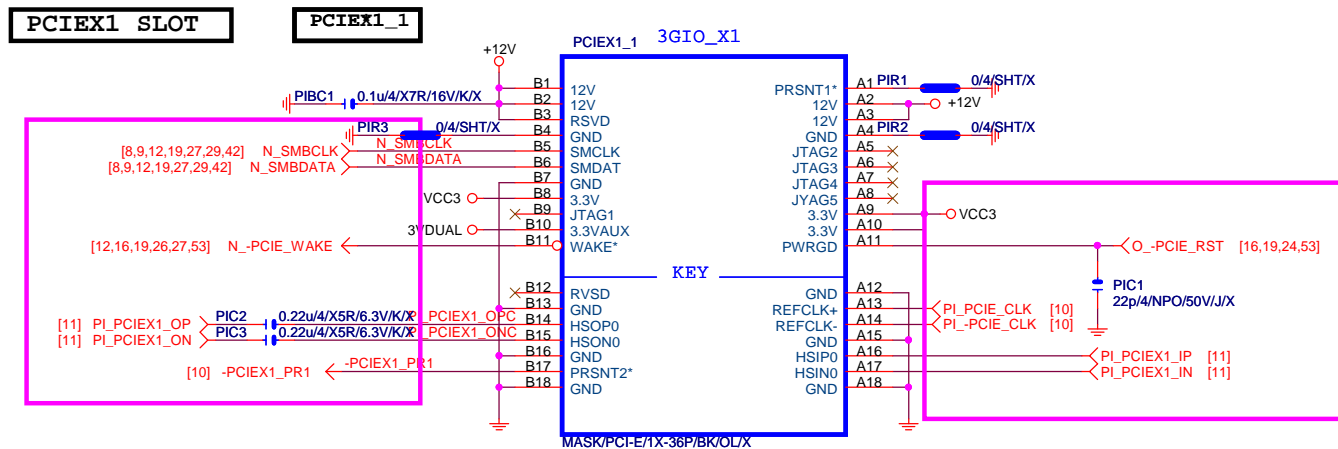
[12,16,20,26,27,53] N\_-PCIE\_WAKE

[10] -PCIEX16\_PR

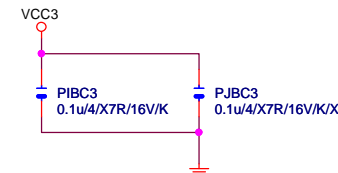
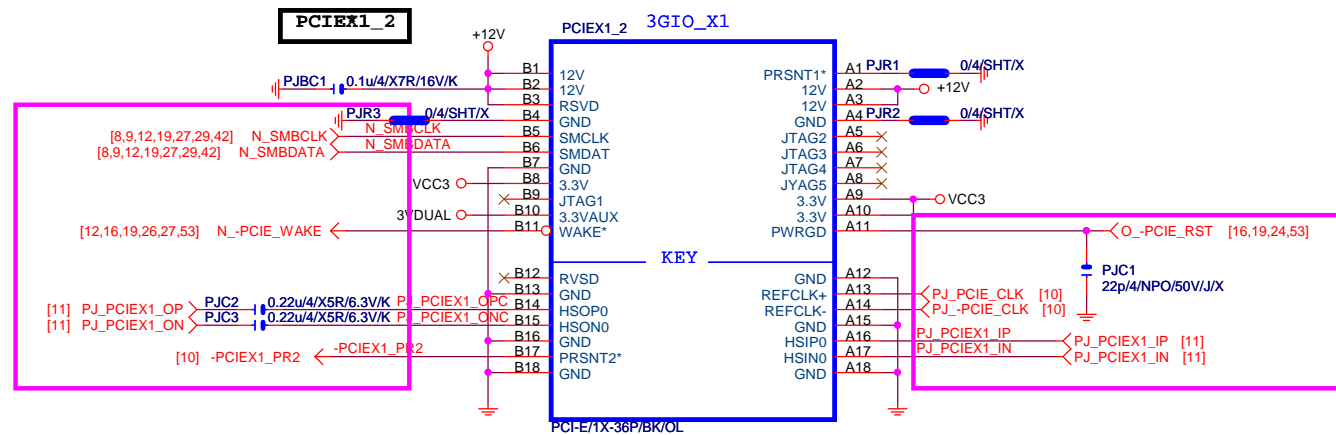


PCI-E/16X-164P/GE/LONG DOUBLE/HK\*2

綠色SLOT



MASK



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PCIE\_X4

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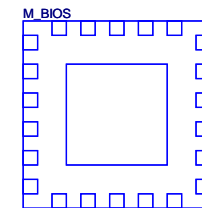
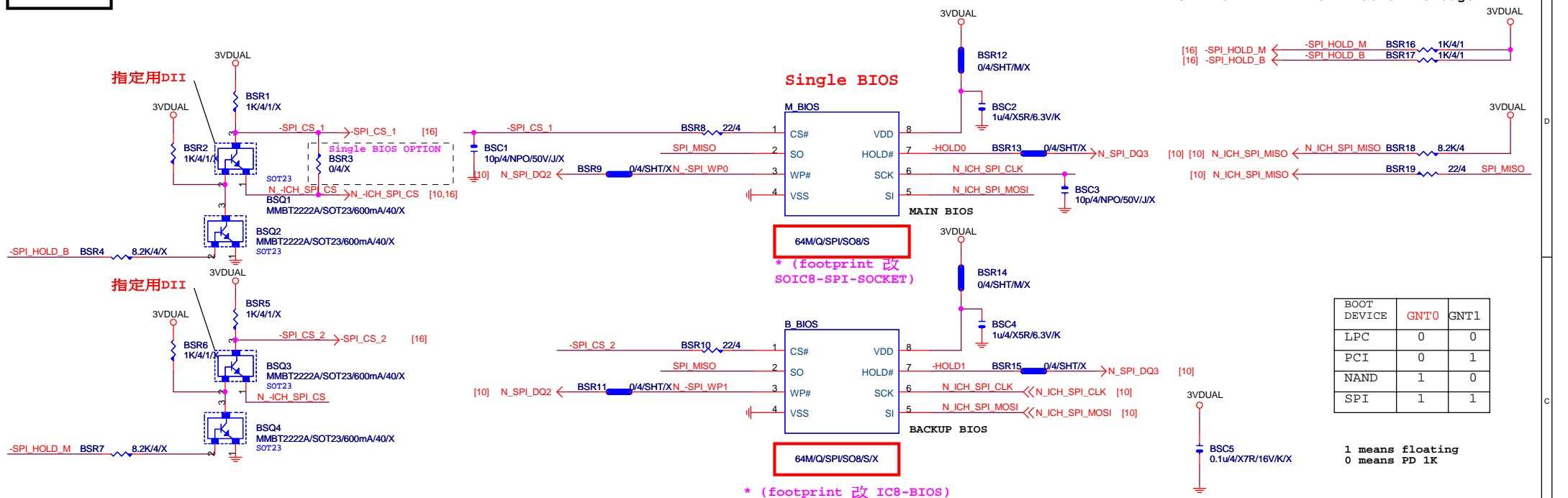
1.0

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# DUAL BIOS

# MOSI For DMI RX Termination Voltage



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

\* 試産先上 , PVT 移除

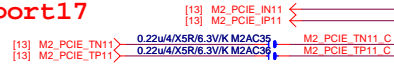
Gigabyte Technology

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BIOS		
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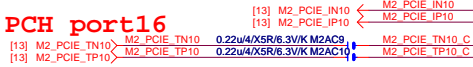
## M.2 Lane4 from PCH port18



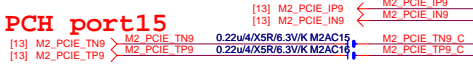
## M.2 Lane3 from PCH port17



## M.2 Lane2 from PCH port16

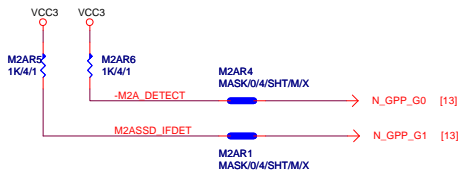


## M.2 Lane1 from PCH port15



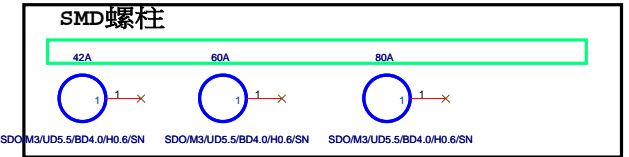
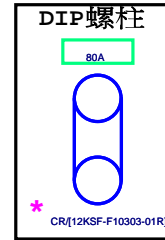
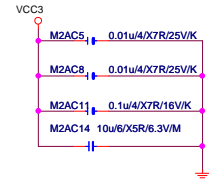
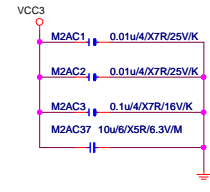
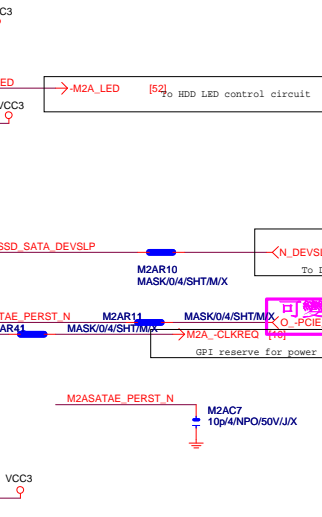
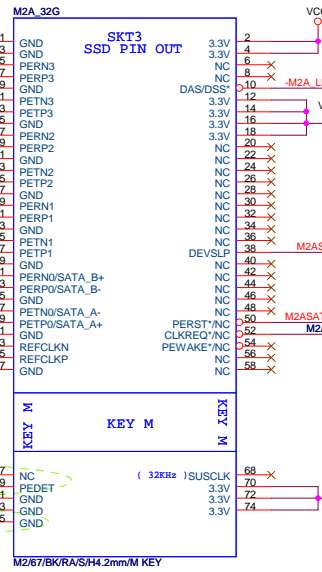
需與M2\_-CLKREQ對應

## 支援SATA and M.2 function

SATA : GND.  
PCIE : NC

M2插卡時為Low

\* Footprint : NGFF-M-75P-8CM-09MM-SMD

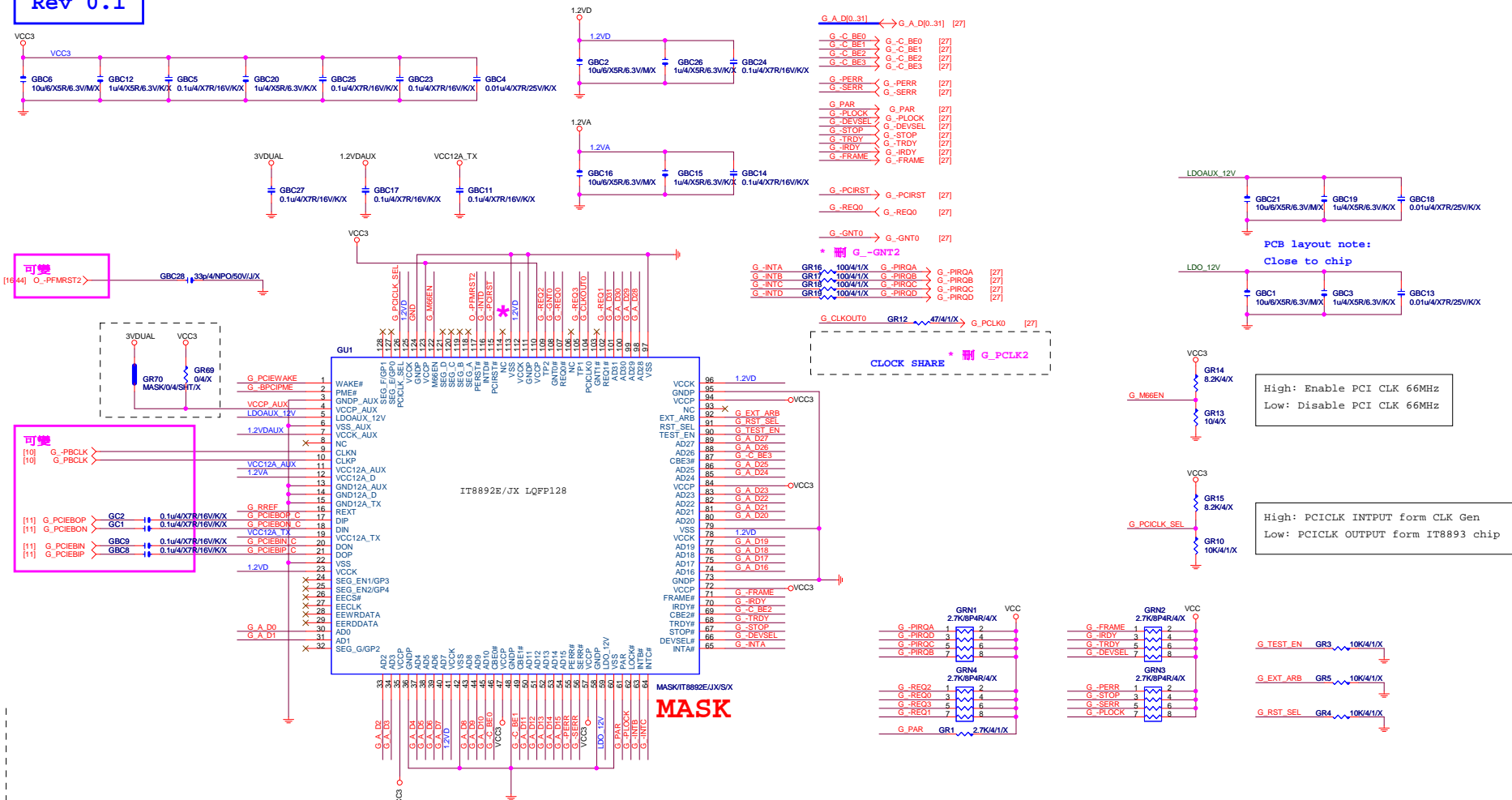


\* Footprint : HOLE\_C236D165-A

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

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**External regulator only :**  
GR77: 0 ohm ; GR78 : NC

**Chip Internal LDO power only :**  
GR78: 0 ohm ; GR77: NC

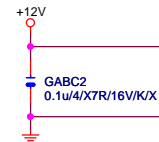
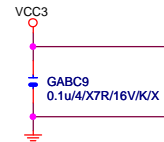
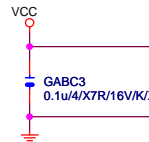
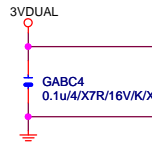
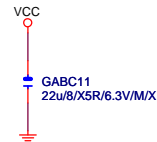
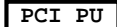
GL14&GL10&GL16&GL17 : ON use chip LDO fuction

**IT8892FX setting**  
GR74&GR76: 0 ohm ; GR73&GR75: NC  
**IT8892JX setting**  
GR74&GR76: NC ; GR73&GR75: 0 ohm

**1.2V ELD0**  
GL19 : 06/X  
GL21 : 06/X  
GL23 : 06/X  
GL25 : 06/X

Component change note	
IT8892FX	GR70, GR74, GR76, GR78, GR66 : ON GR69, GR73, GR75, GR77, GR67 : NC GR44 resistor is 12k ohm GL14, GL10, GL16, GL17 : ON GL19, GL21, GL23, GL25 : NC
IT8892JX	GR70, GR73, GR75, GR78, GR66 : ON GR69, GR74, GR76, GR77, GR67 : NC GR44 resistor is 18k ohm GL14, GL10, GL16, GL17 : ON GL19, GL21, GL23, GL25 : NC
External LDO Power (IT8892JX)	GR69, GR73, GR75, GR77, GR67 : ON GR70, GR78, GR66 : NC GR44 resistor is 18k ohm GL19, GL21, GL23, GL25 : ON GL14, GL10, GL16, GL17 : ON

# MASK

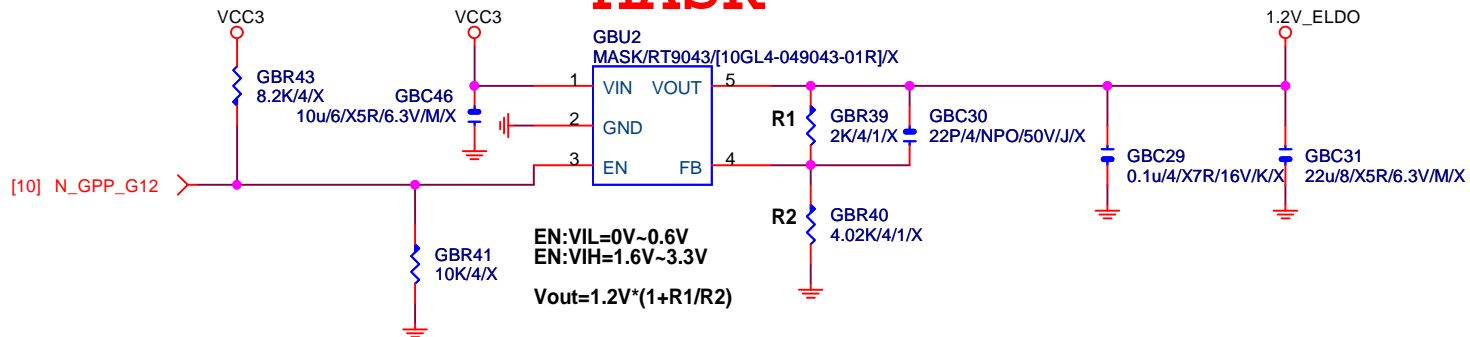


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PCI SLOT 1&2			
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Rev 0.1

**MASK**



**Gigabyte Technology**

Title

**ASM1085 POWER**

Size  
Custom

Document Number

**GA-B250M-Power**

Rev  
**1.0**

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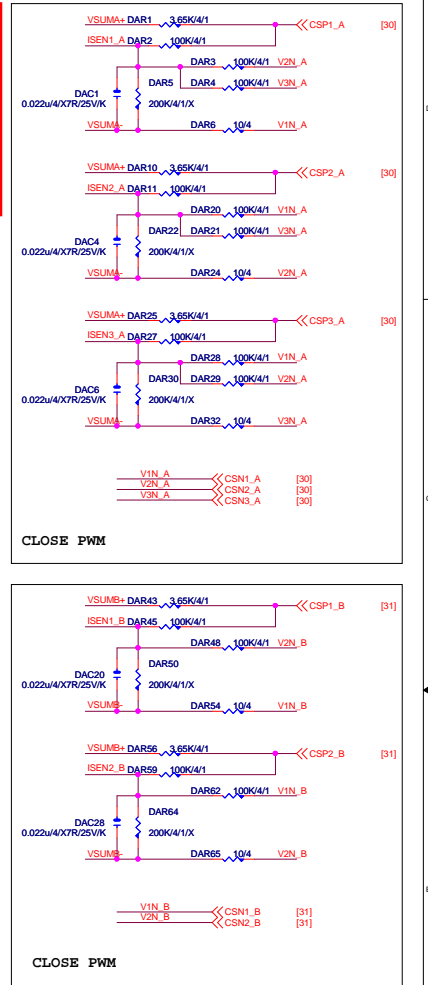
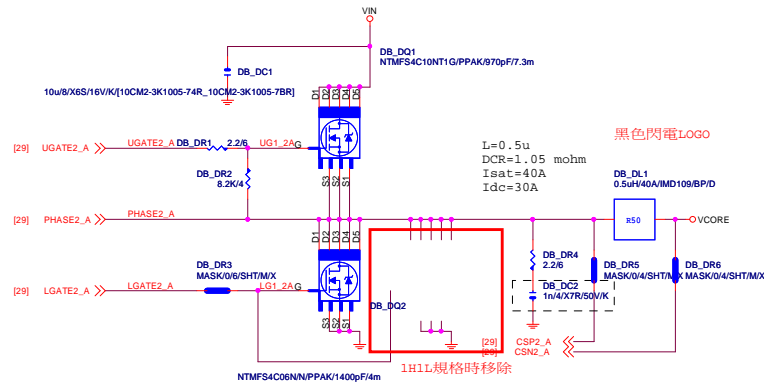
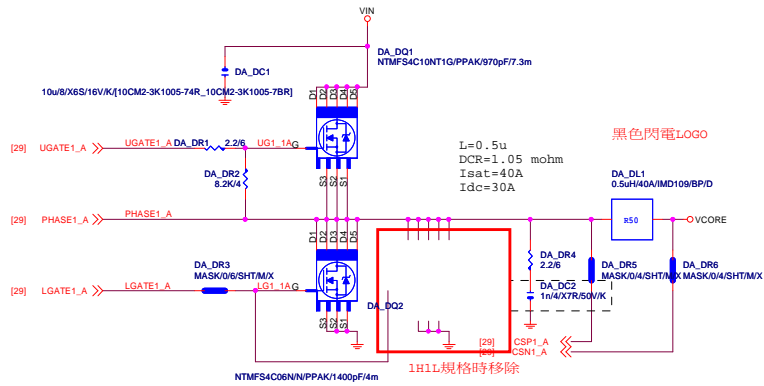


Figure 10 shows two circuit diagrams for connecting the VCCGT sense resistor (DAR123) to the PCH. Both diagrams include a 12V supply, a sense resistor (DAR123), a diode (DAR124), and a MOSFET (DAR125). The sense resistor is connected to the VCCGT sense line, and the MOSFET is connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line.

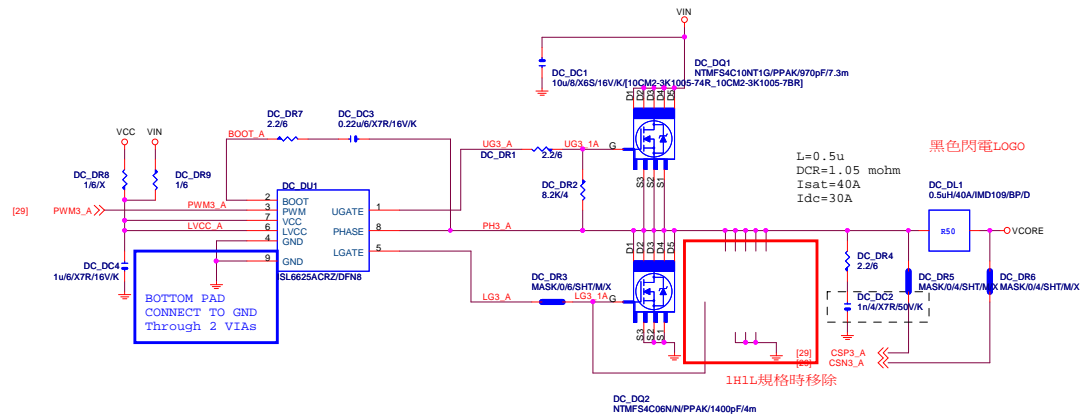
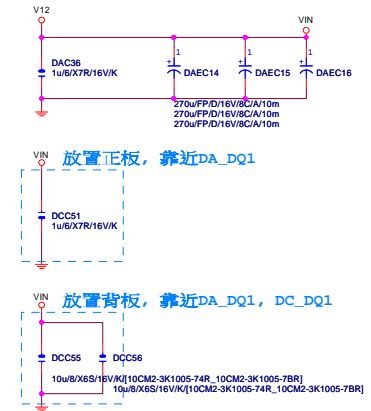
**Left Diagram (GPP\_G14):** The sense resistor (DAR123) is connected to the VCCGT sense line. The MOSFET (DAR125) is connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line.

**Right Diagram (GPP\_G15):** The sense resistor (DAR123) is connected to the VCCGT sense line. The MOSFET (DAR125) is connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line. The MOSFET is also connected to the VCCGT sense line.

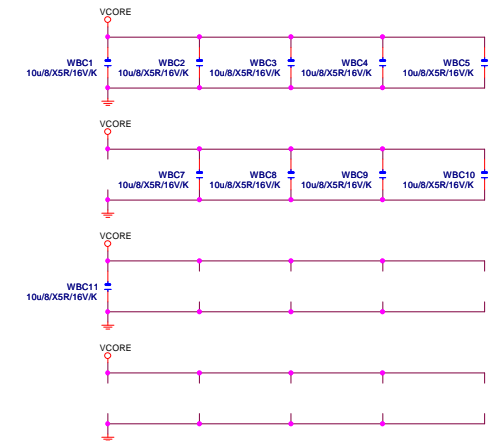
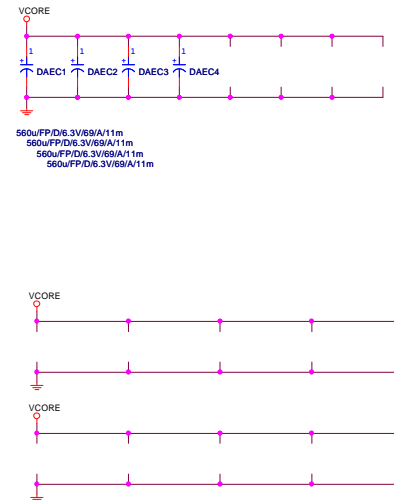
## VCORE



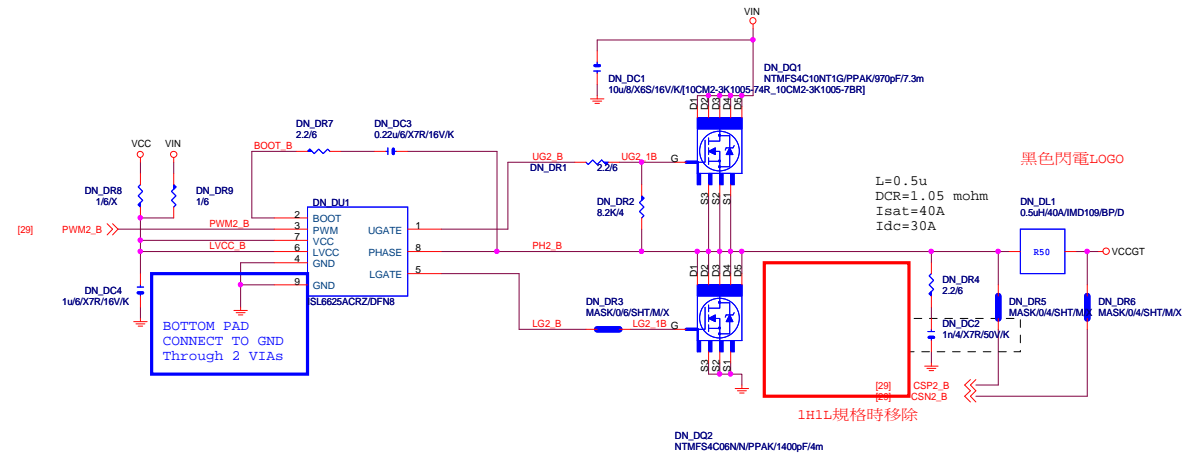
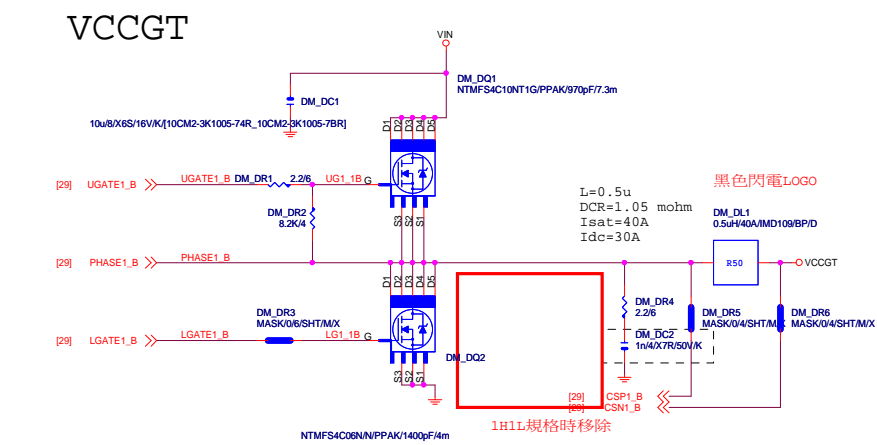
## VIN CAP 270u\*3PCS



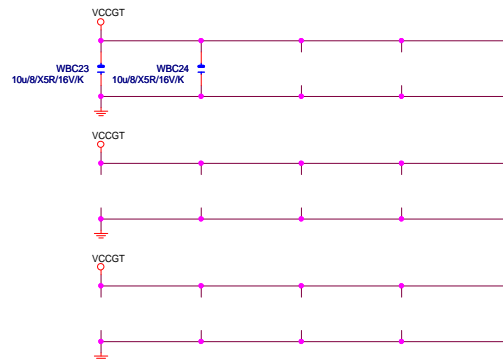
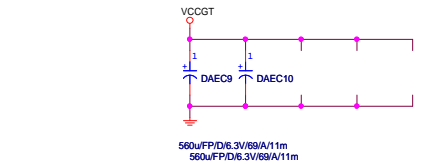
VCORE	CAP	560u*4PCS
		10u*10PCS



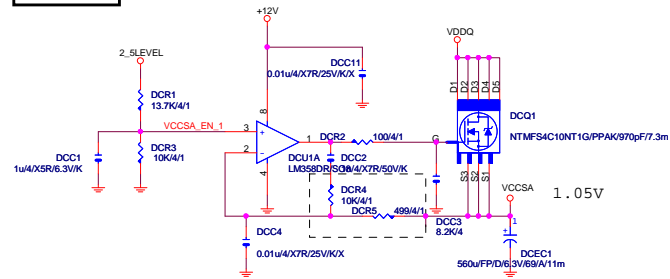
## VCCGT



VCCGT CAP 560u\*2PCS  
10u\*2PCS

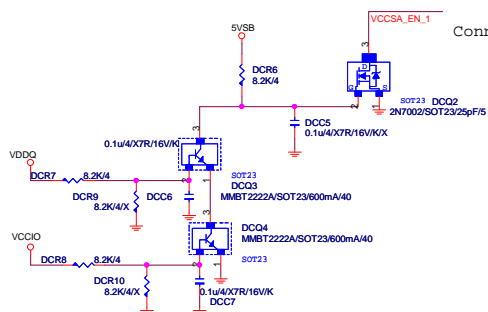


# VCCSA

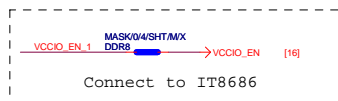
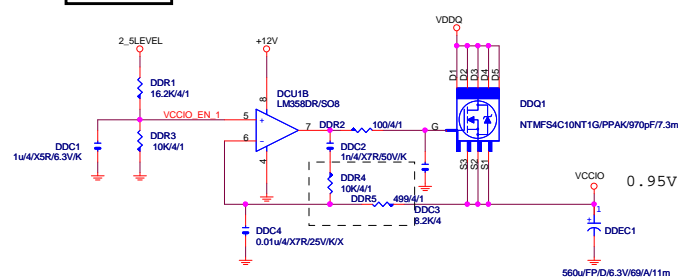


Connect to IT8793

Connect to IT8686

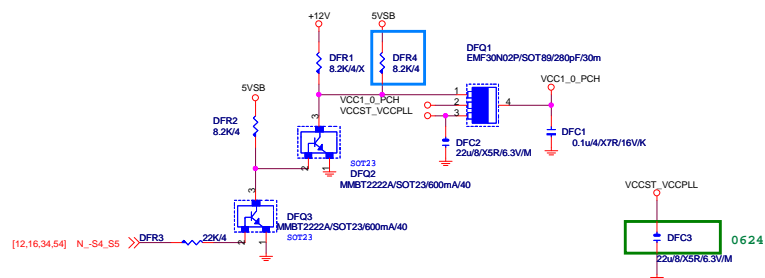


# VCCIO



VCCGT  
放CPU端。

# VCCST\_VCCPLL



REV:0.2

DDR4

CHOKE與CAP料號可變

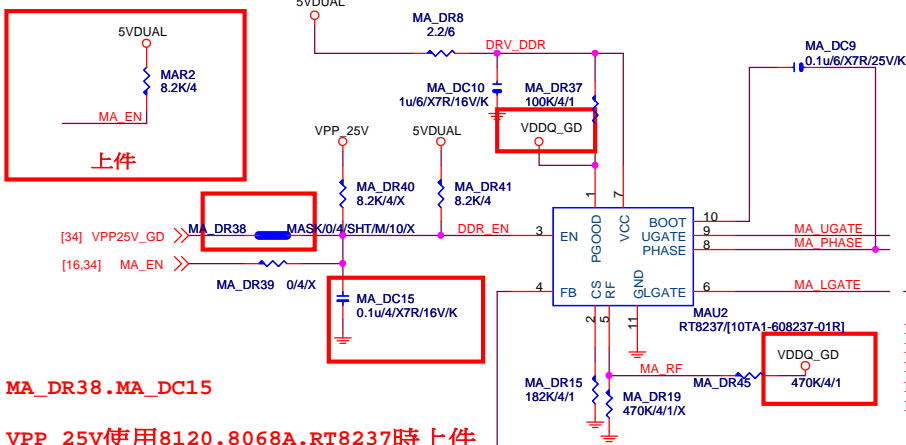
DDR VIN CAP  
560u\*2PCS

SUPPORT DDR4 1.2V

 $L=1\mu$   
 $DCR=2.5\text{ m}\Omega$   
 $I_{sat}=35A$   
 $I_{dc}=28A$ 

 請放置CHOKE一出來位置.先預留.  
 請自行確認ripple後再決定是否上件

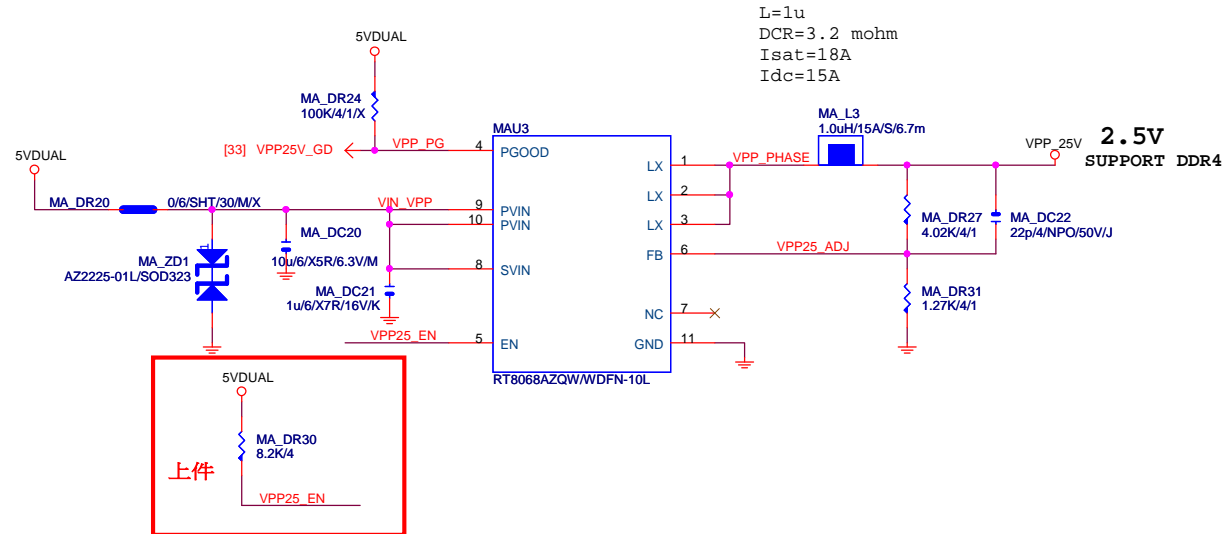
Remote sense請從最重的負載端點拉回



REV:0.1

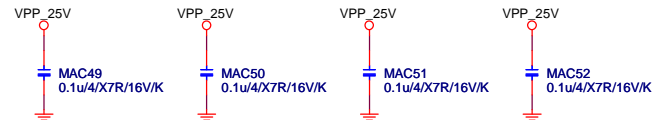
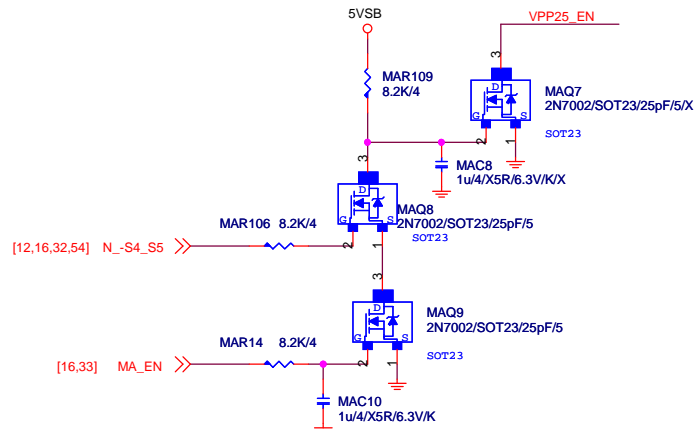
VPP\_25V

CHOKE與CAP料號可變



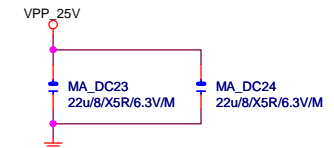
PWR\_SEQ

\* 刪 MA\_DR32



VPP CAP 22u\*1PCS

\* 大電容 x0

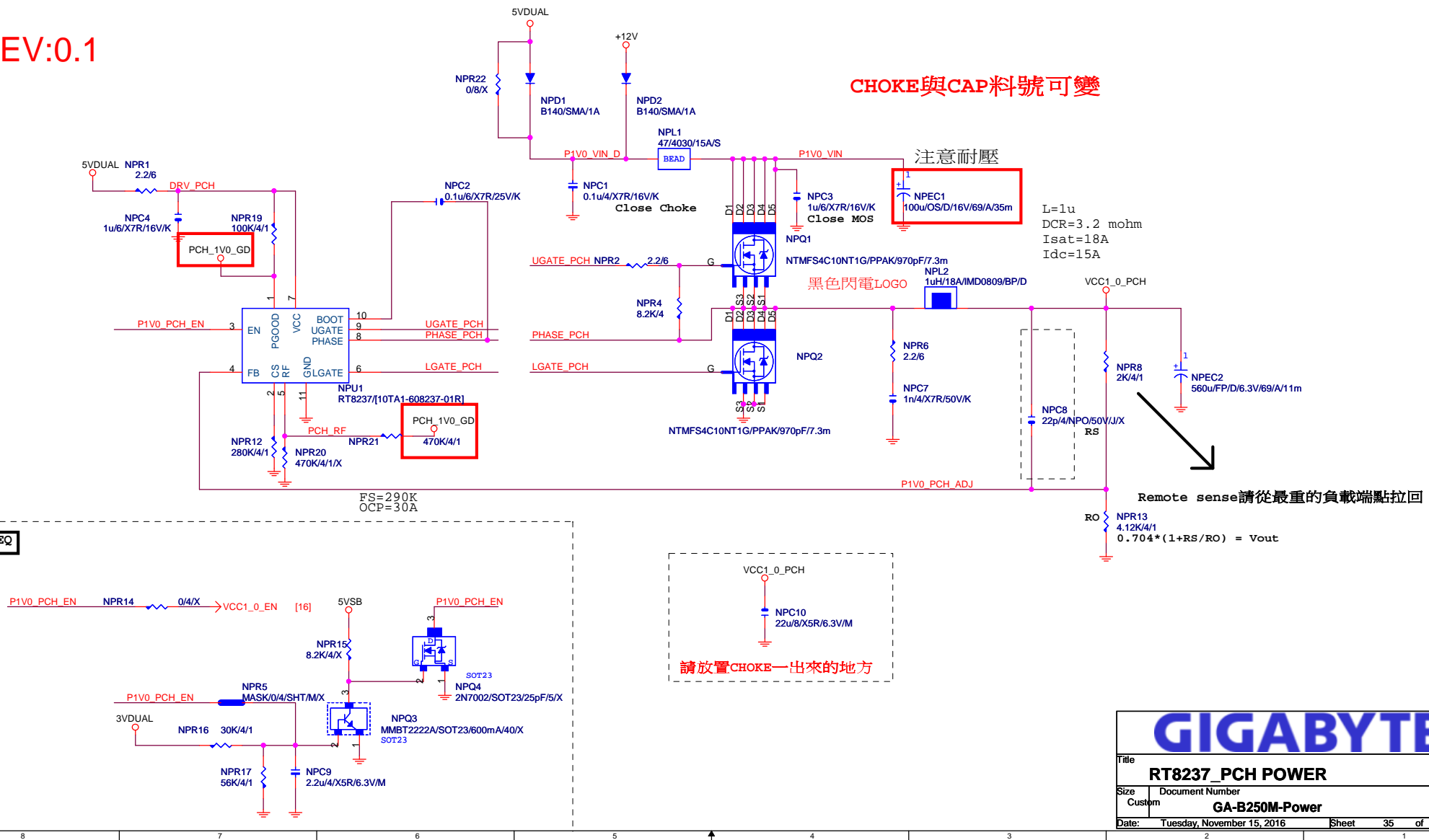


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RT8068A_VPP25 POWER		
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CHOKE與CAP料號可變



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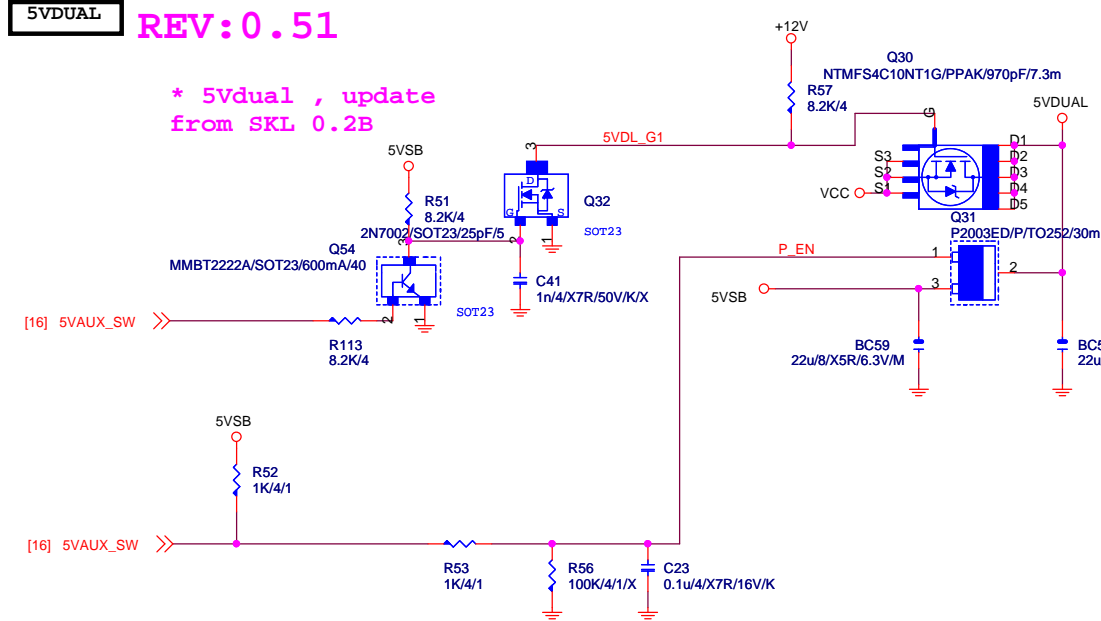
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RT8237_PCH POWER			
Size	Document Number		Rev
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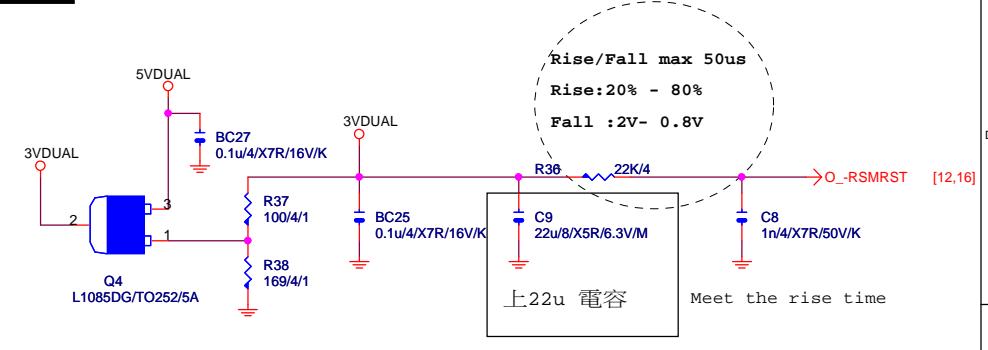
5VDUAL

REV:0.51

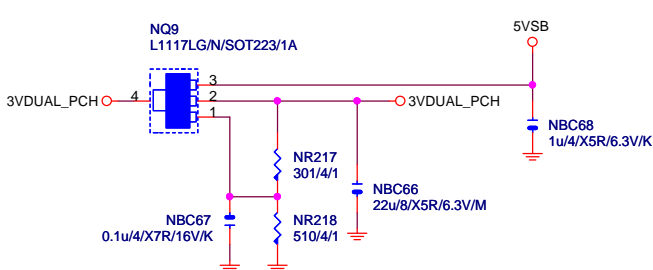
\* 5Vdual , update  
from SKL 0.2B



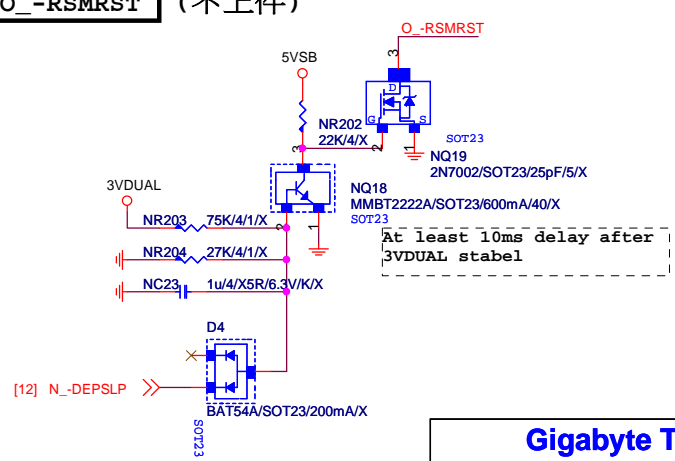
3VDUAL



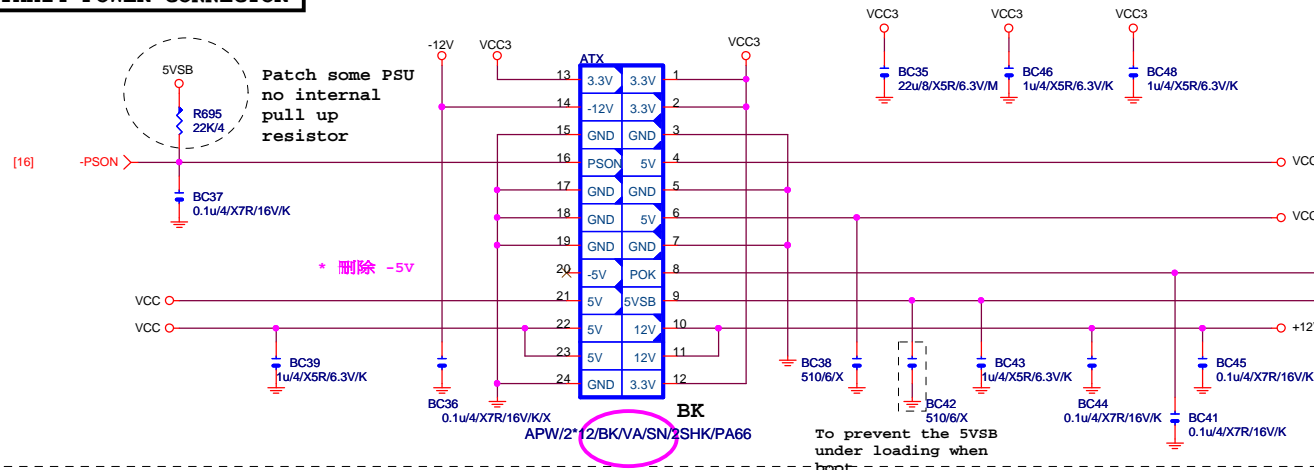
3VDUAL\_PCH



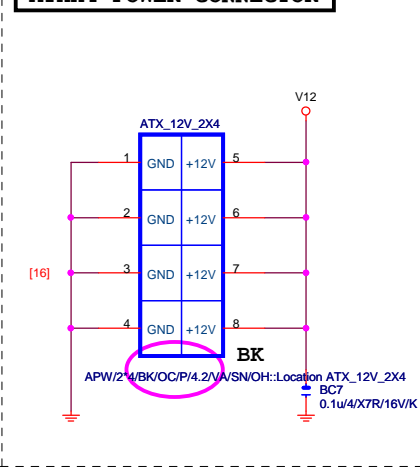
O\_-RSMRST (不上件)



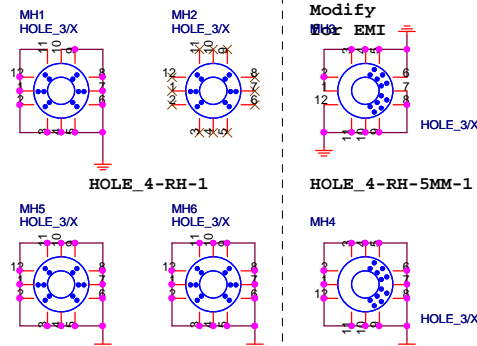
## ATXX24 POWER CONNECTOR



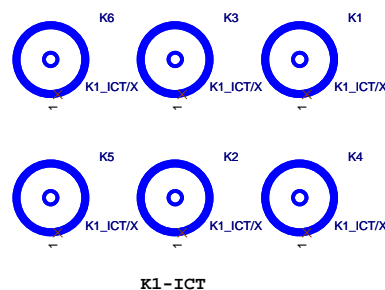
## ATXX4 POWER CONNECTOR



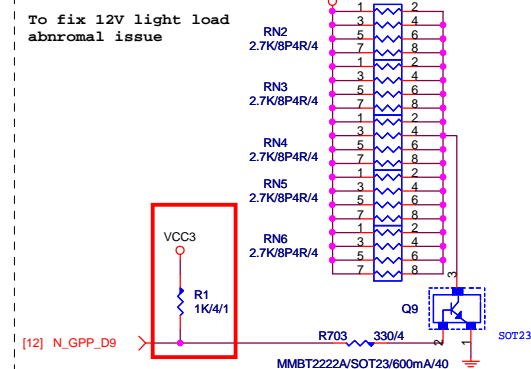
## 螺絲孔



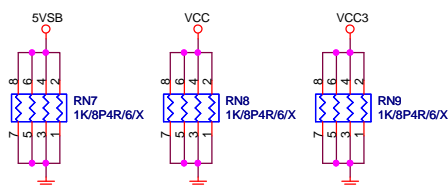
## 固定孔/光學點



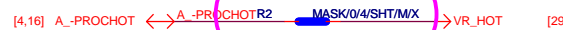
## +12V DUMMY LOAD



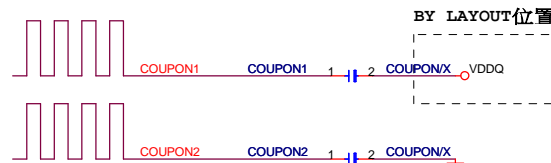
## DUMMY LOAD



## -PROHOT



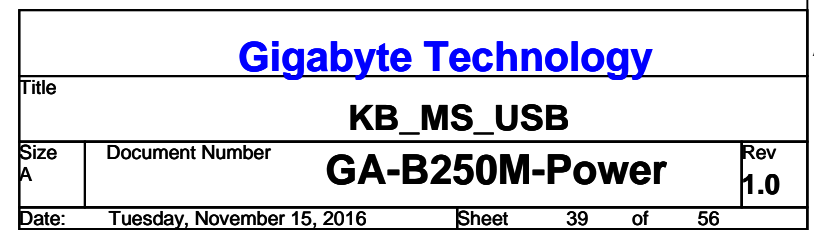
## COUPON

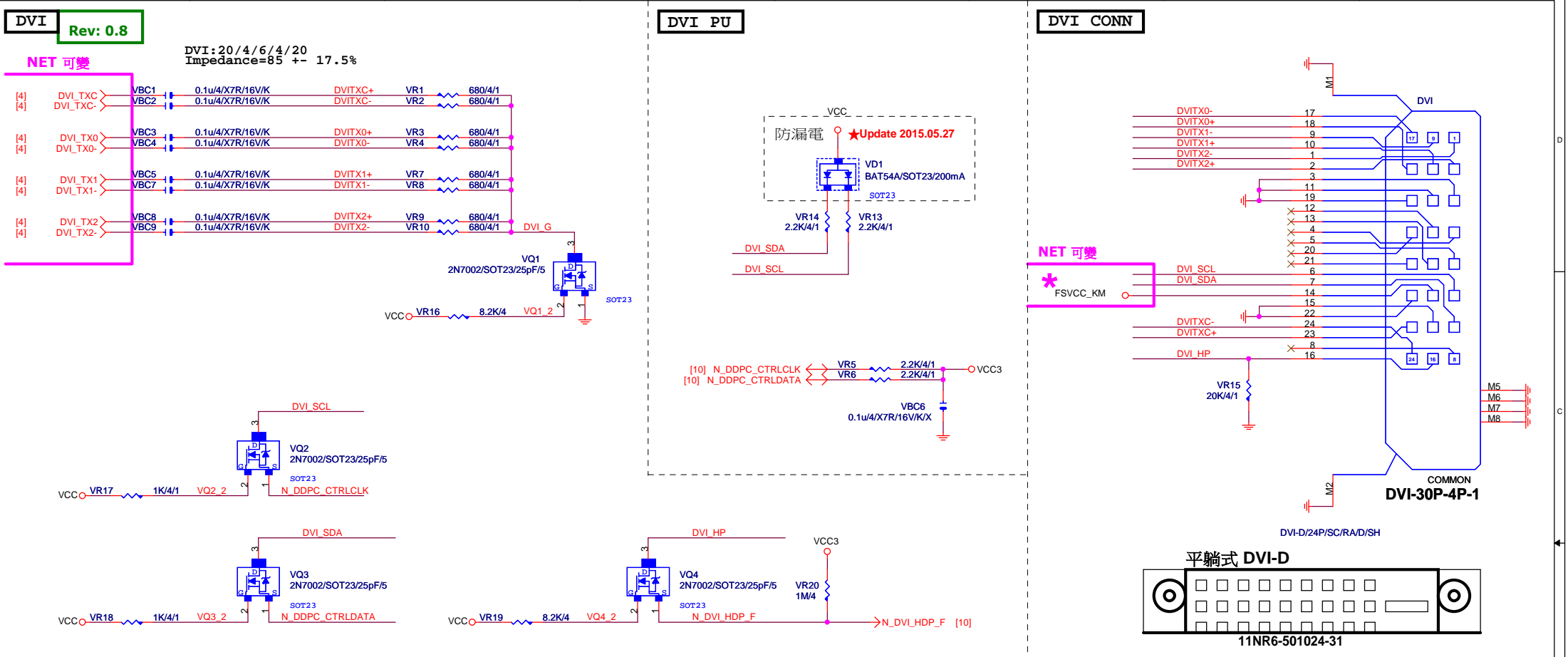


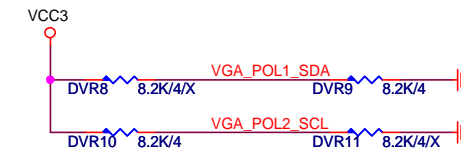
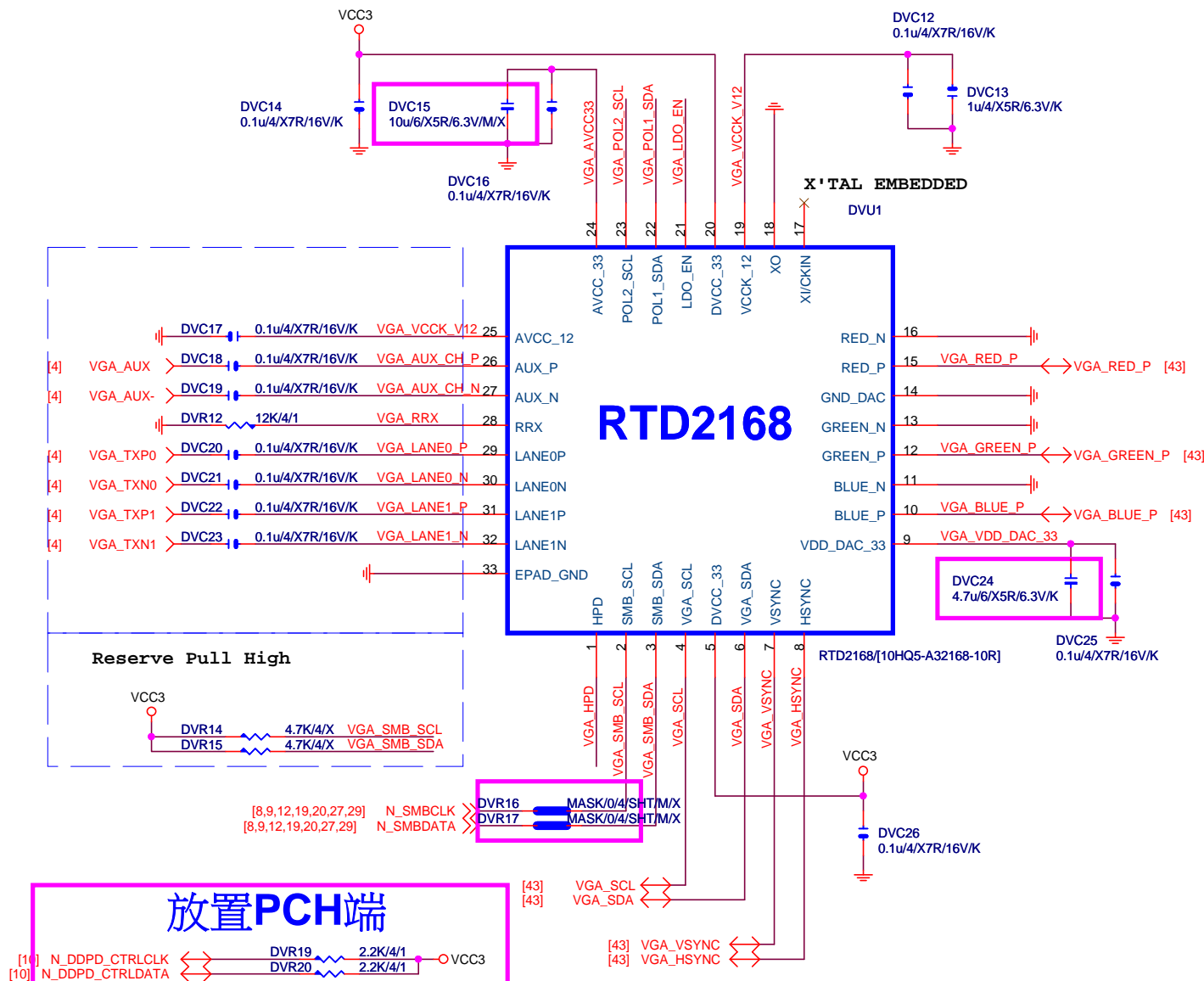
【技術通報R&D技術通報153】

Gigabyte Technology

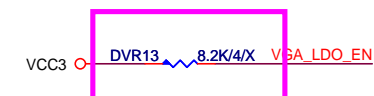
Title			ATX POWER CONNECTOR
Size	Document Number	GA-B250M-Power	
Custom			Rev 1.0
Date:	Tuesday, November 15, 2016	Sheet	38 of 56

**Rev: 0.7**

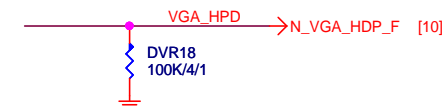




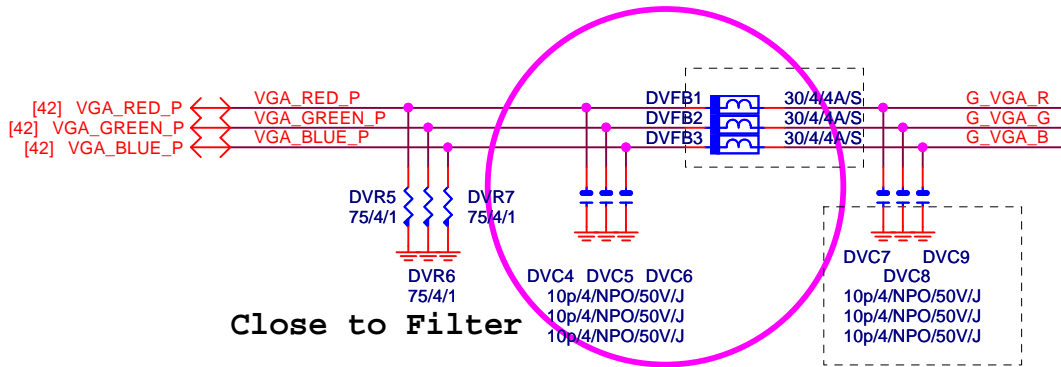
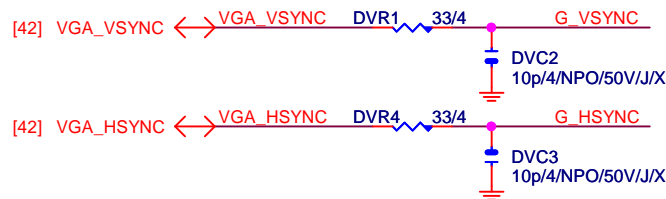
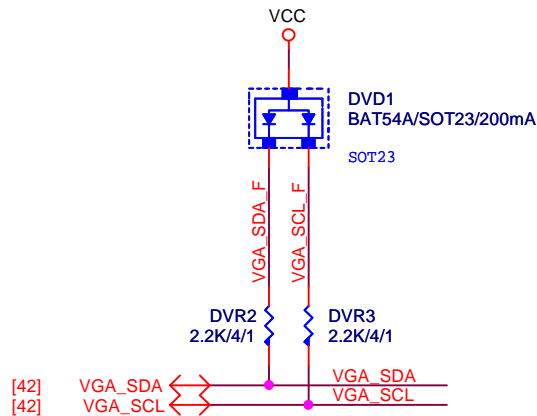
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE



LDO_EN(PIN21)	
0	1
VCKK_V12 from External 1.2V	VCKK_V12 from Embedded LDO



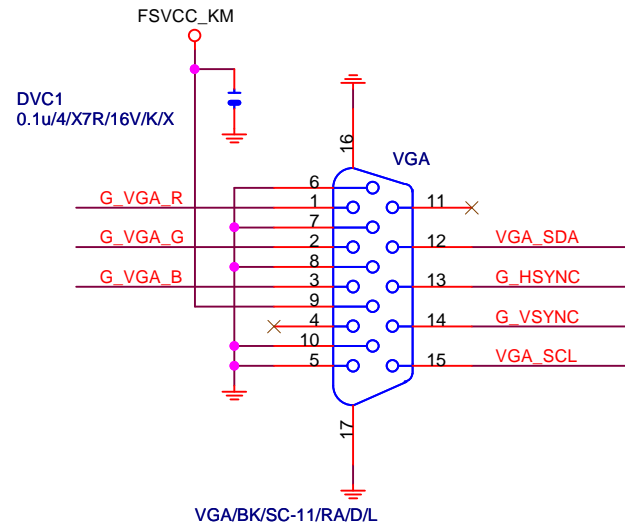
# VGA SIGNAL R1.03



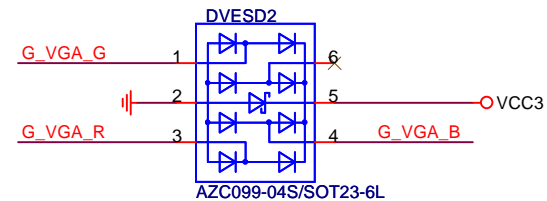
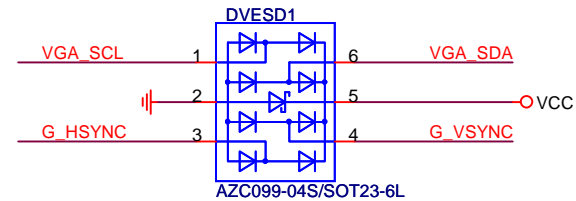
Close to Filter

FOR EMI

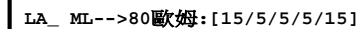
# VGA CONN.



# VGA ESD



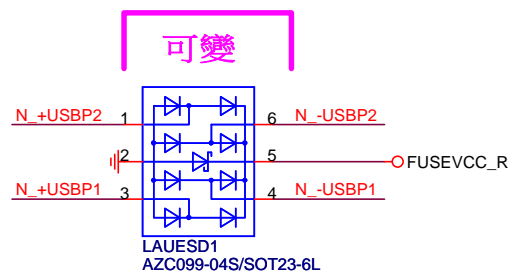
Gigabyte Technology			
Title DP-VGA RTD2168			
Size	Document Number	GA-B250M-Power	
Custom			Rev 1.0
Date:	Tuesday, November 15, 2016	Sheet	43 of 56



Rev	
1.0	

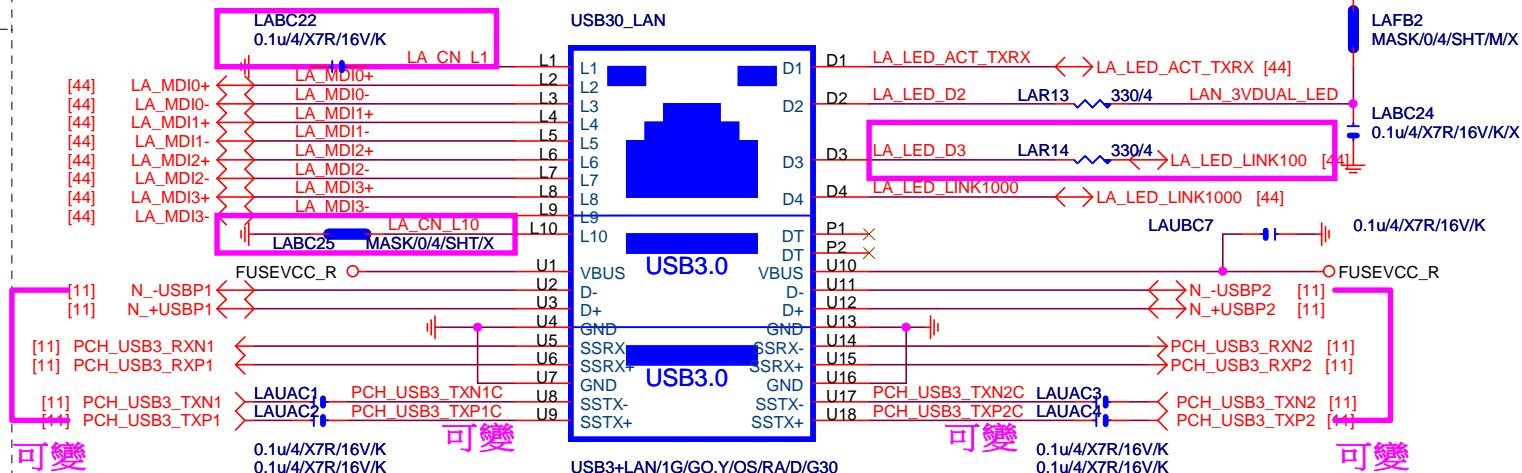
## R1.1

note:可變更USB NAME



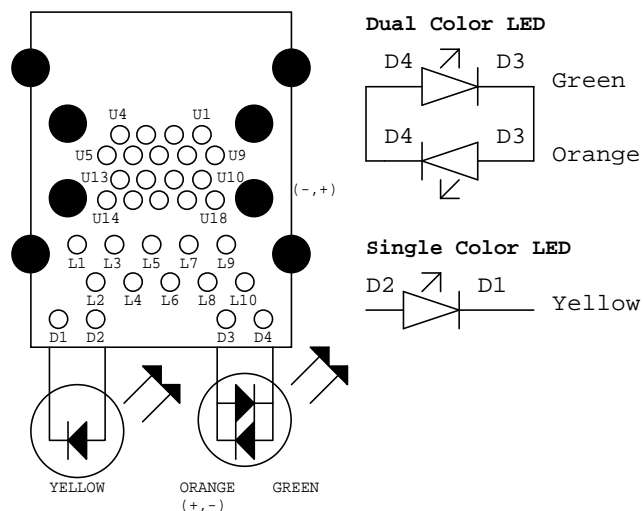
note:可變更USB NAME

## USB30\_LAN



LA MDI-->100歐姆:[20/4/8/4/20]

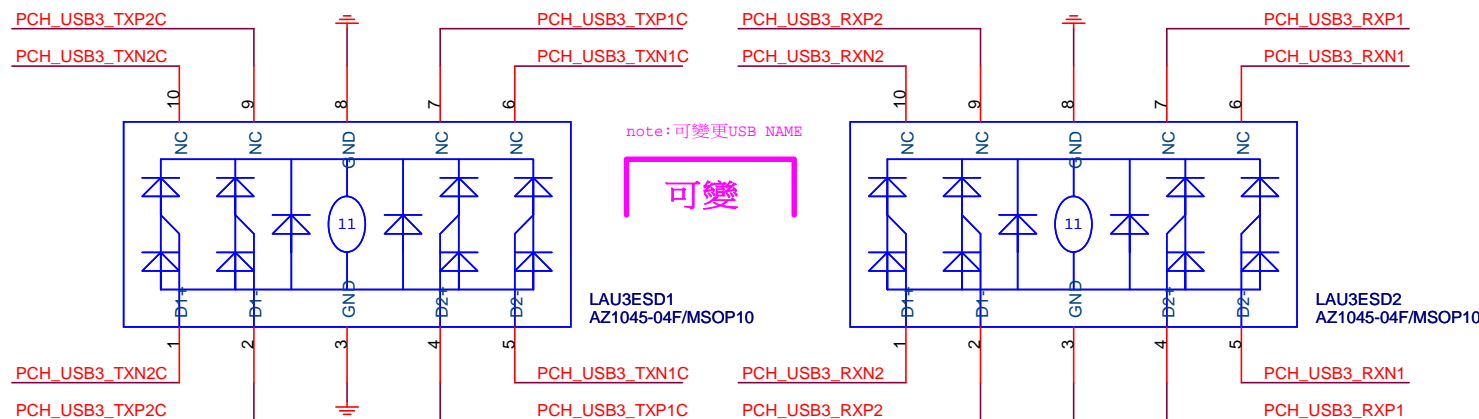
## Dual Color LED



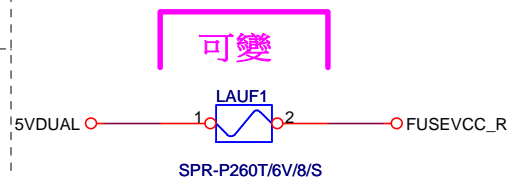
FOOT PRINT:LAN COVER

## 可變 [視SPEC需求]

[-D3H不加蓋]



note:可變更FUSE

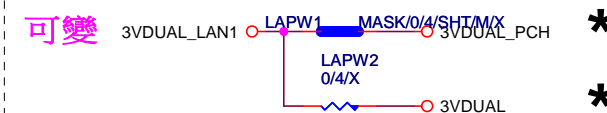


Close to connector  
FUSE-0805

PS:視EMI需求



note: lan power連接及電流



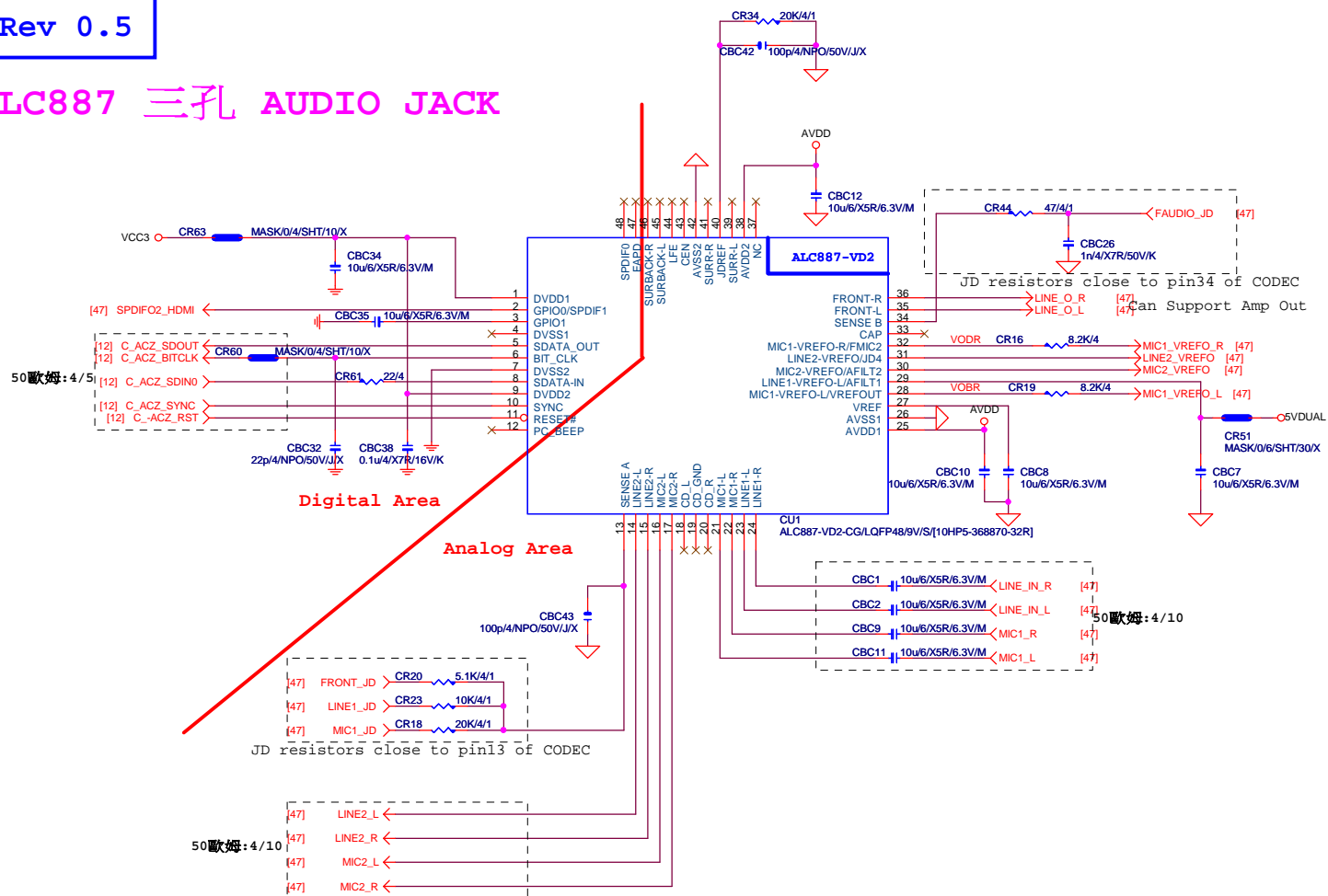
***Gigabyte Technology***  
**LAN CONNECTOR-I219**

## GA-B250M-Power

Title			
LAN CONNECTOR-I219			
Size	Document Number		
Custom	GA-B250M-Power		
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## ALC887 三孔 AUDIO JACK



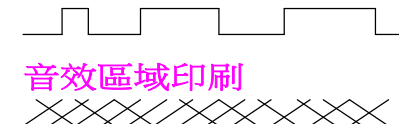
**LAYOUT注意: 螺絲孔下GND方式**

- MH1空間夠, 下DGND
- 空間不夠, 改為Isolate

<input type="radio"/> MH1	<input type="radio"/> MH2
DGND	Isolate

**LAYOUT注意: 要加**

**GND切割線**



Rev 0.5

CR49 MASK/0/6/SHT/20/X → Close F\_AUDIO

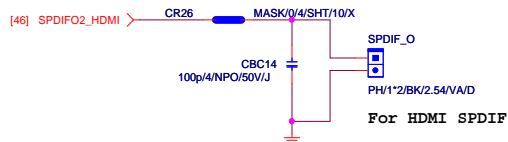
CR50 MASK/0/6/SHT/20/X → Close Codec  
MOA/TC1 0.1uF/X7R/16V/K/X

CR21 2.2/6 → Audio jack <--> USB\_LAN

CR24 0/6/X → Under Audio jack

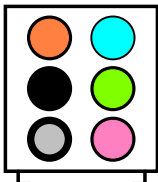
\*量産前,0ohm改short pad

### SPDIF\_OUT

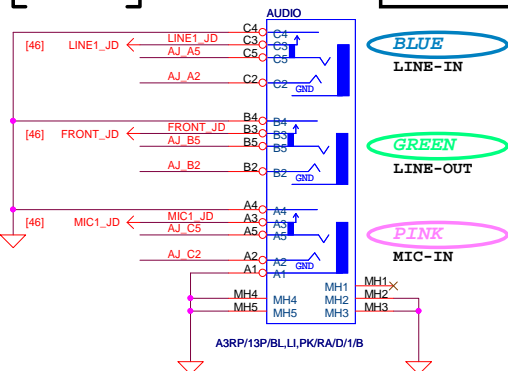


### SPDIF\_IN

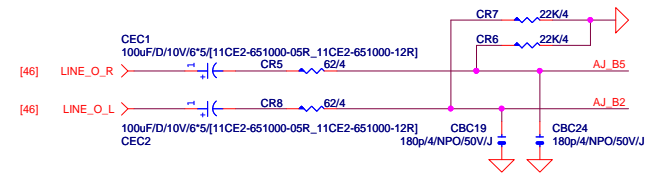
### AZALIA JACK



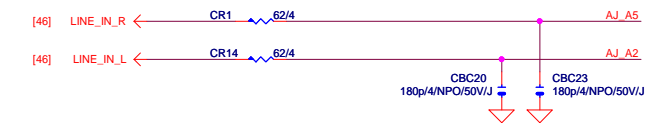
### AZALIA JACK



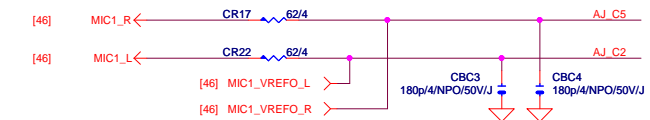
### LINE-OUT



### LINE-IN



### MIC-IN

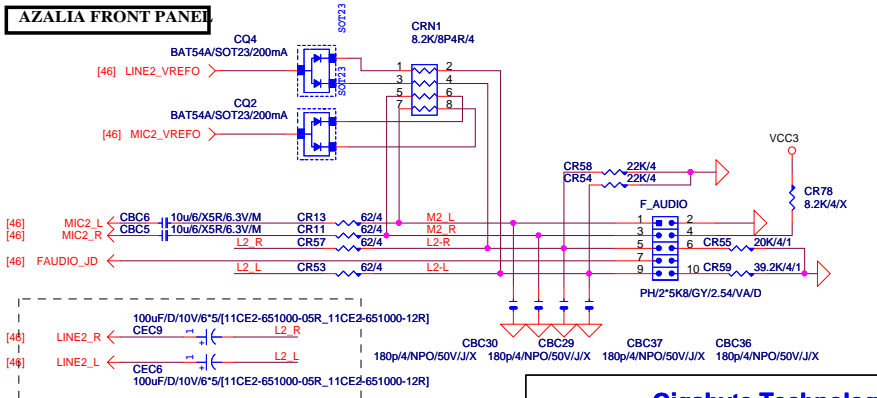


### SURROUND

### CEN/LFE

### SURR BACK

### AZALIA FRONT PANEL



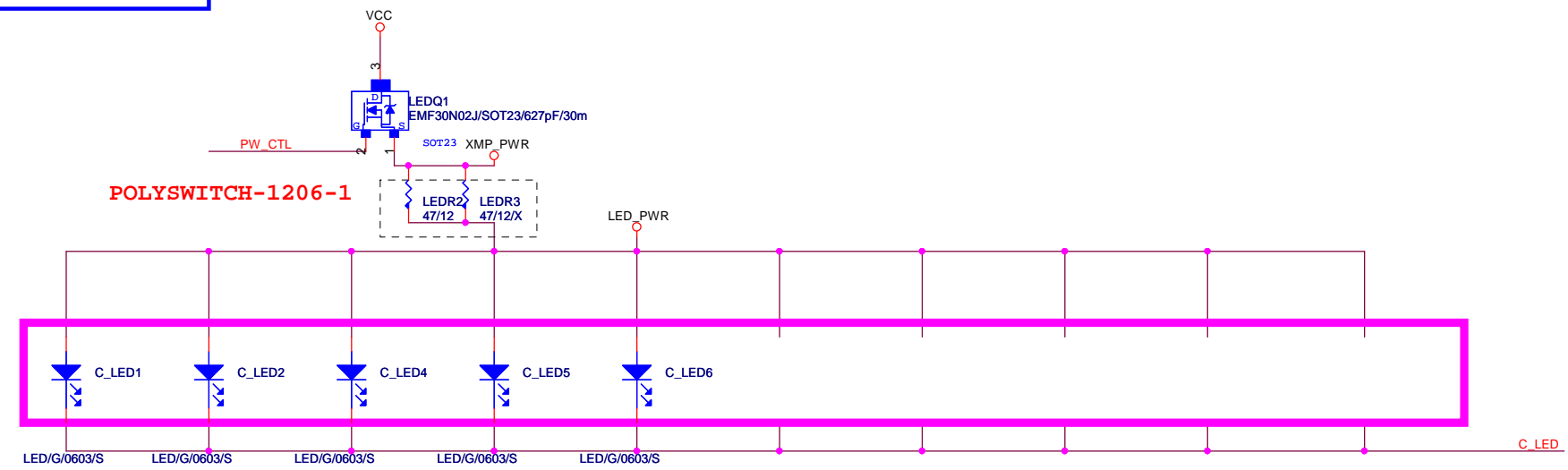
Gigabyte Technology

AUDIO JACK

GA-B250M-Power

Rev 1.0

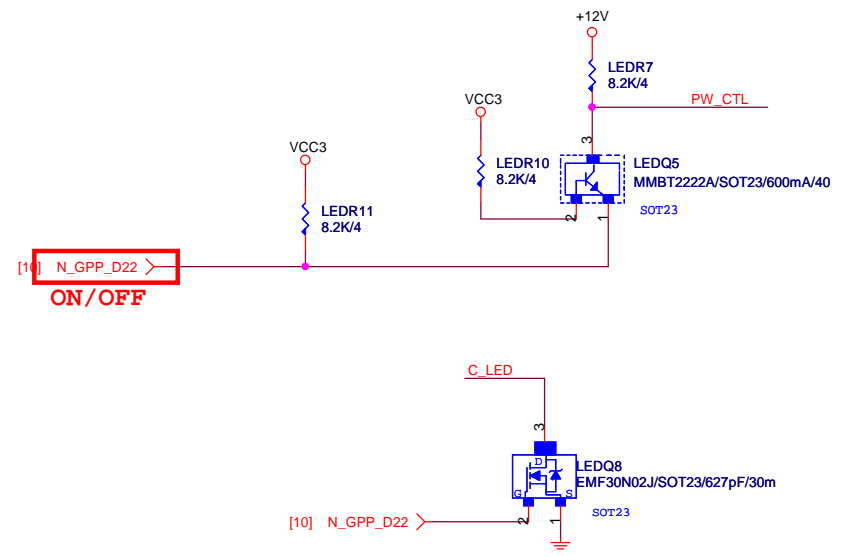
Date: Tuesday, November 15, 2016 Sheet 47 of 56



GREEN (綠色)

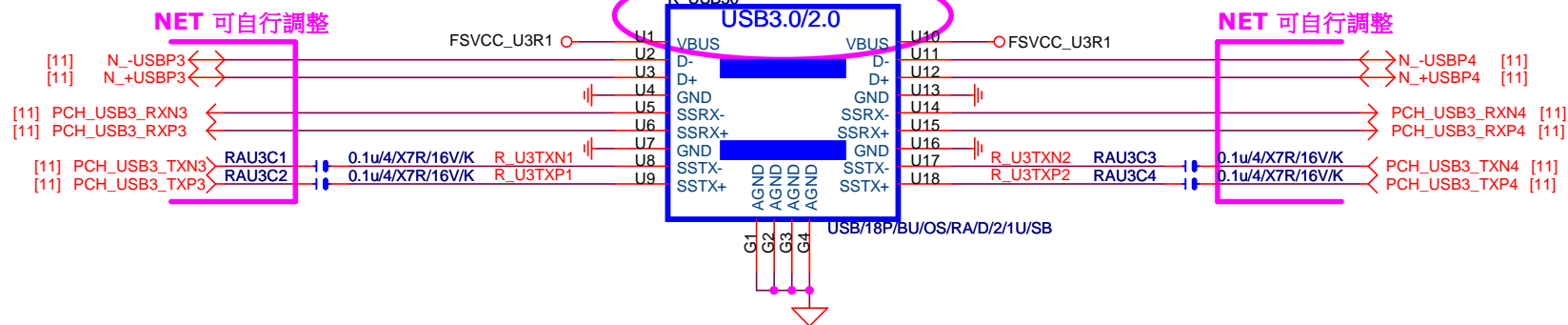
### Ambient LED Control

	N_GPP_D22
Full Mode	H
OFF Mode	L



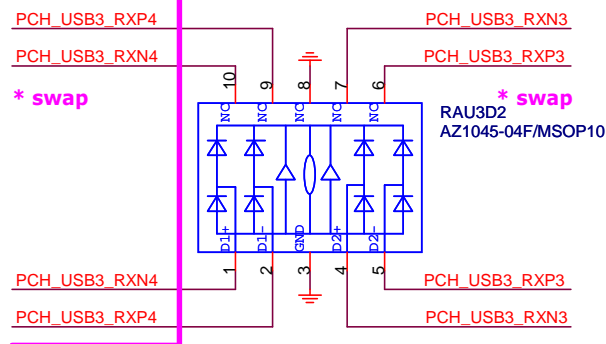
Rev: 0.7

ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可

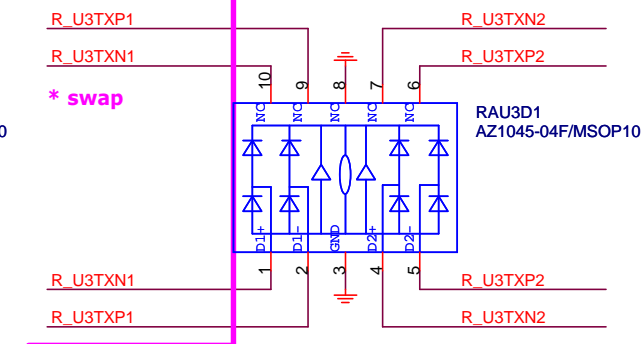


ESD

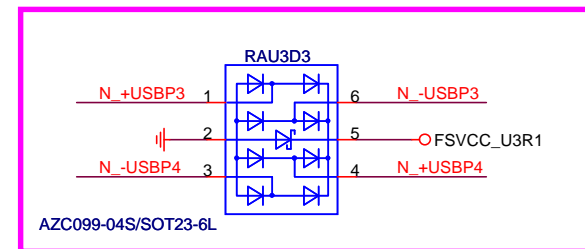
**NET 可自行調整**



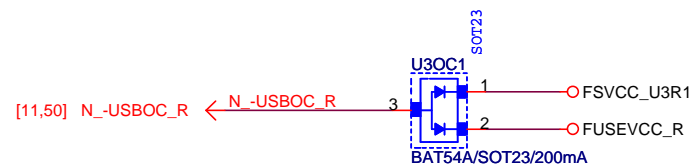
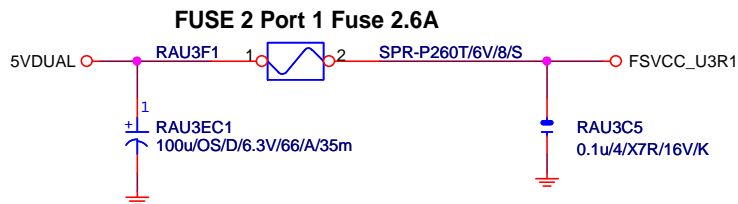
**NET 可自行調整**



**NET 可自行調整**



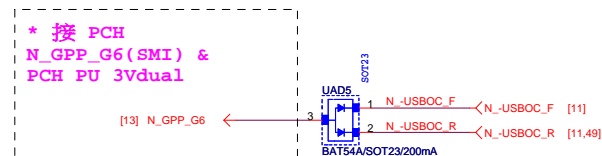
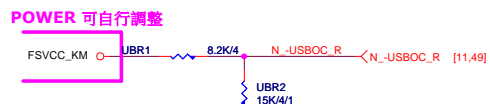
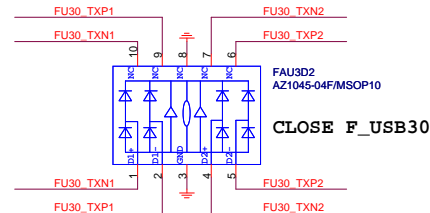
FUSE



Gigabyte Technology

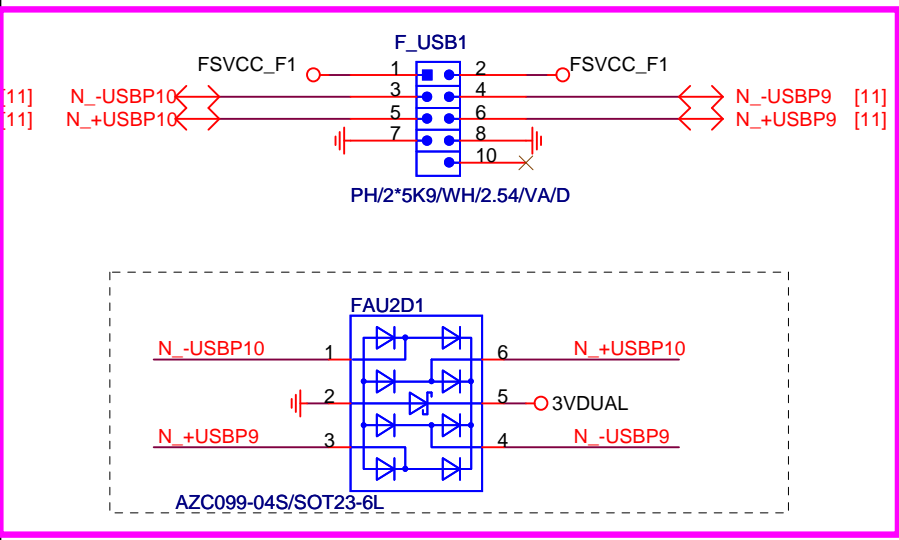
Title			
R_USB30,USB_OC			
Size Custom	Document Number		Rev
	GA-B250M-Power		1.0
Date:	Tuesday, November 15, 2016	Sheet 49 of 56	

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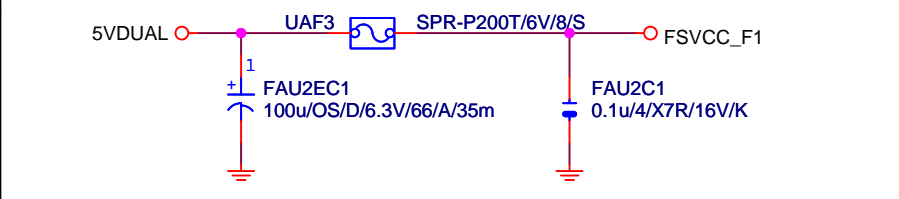
NET 可變

FUSB2X5-HS



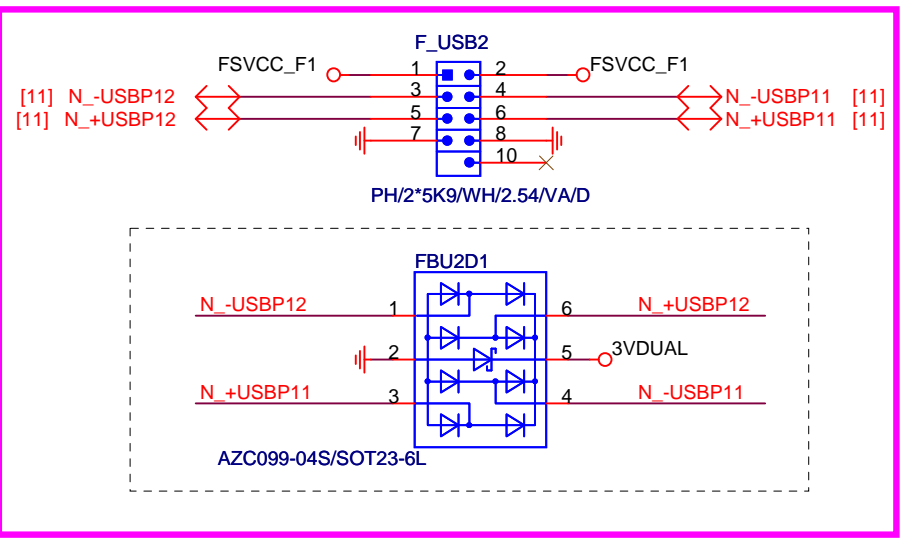
Close to connector

FUSE 2 Port 1 Fuse 2A



NET 可變

FUSB2X5-HS

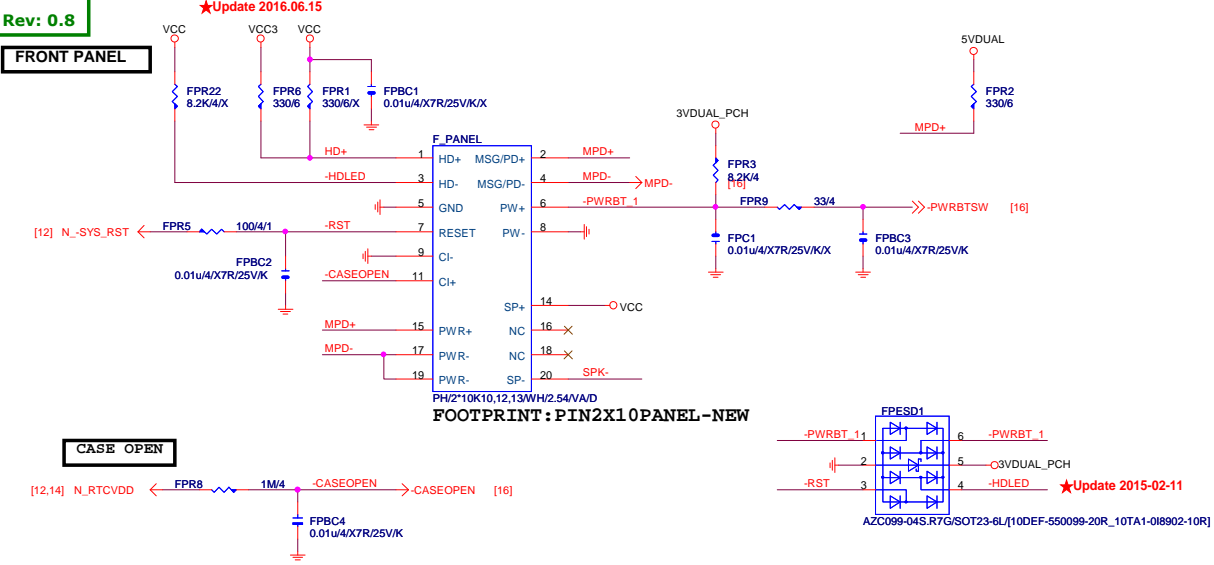


Close to connector

FUSE 2 Port 1 Fuse 2A

F\_USB 2.0 OC SIGNAL

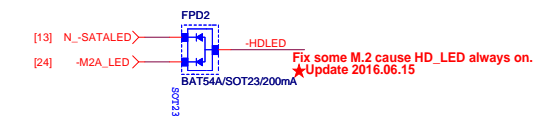
FRONT PANEL



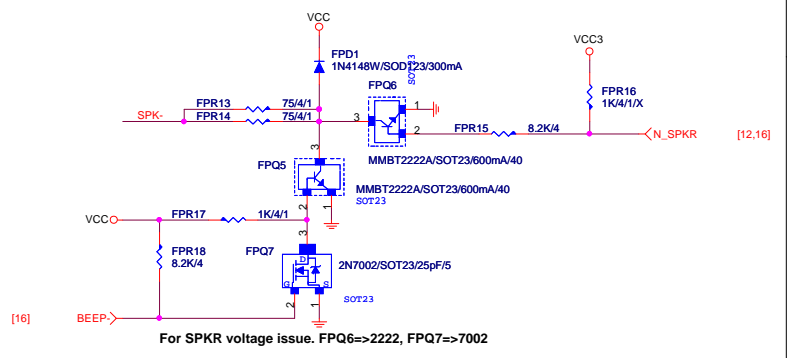
CASE OPEN

FRONT PANEL SHORT

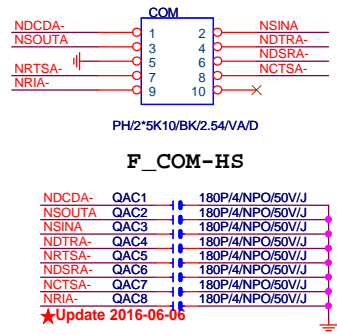
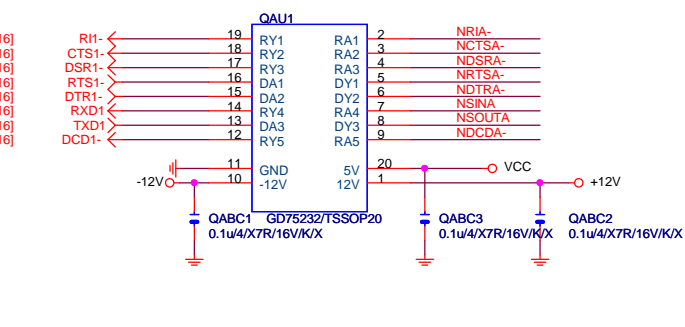
SATA/M.2 LED



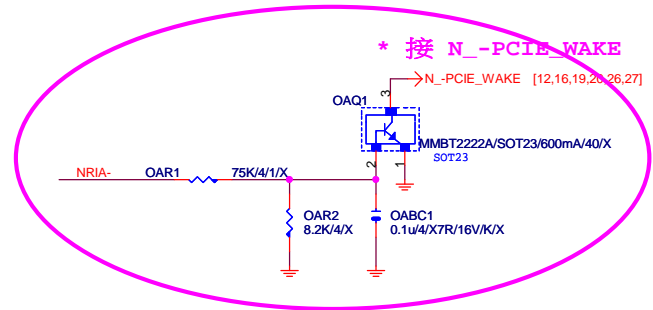
SPKR



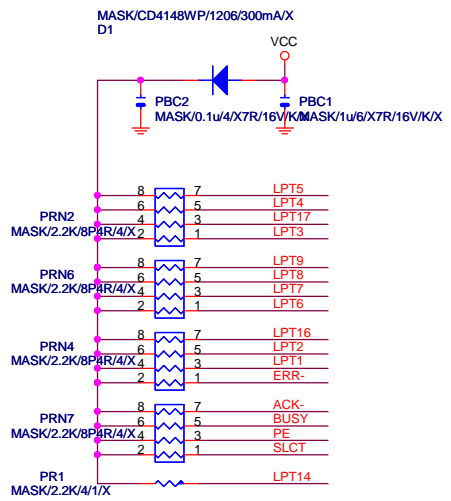
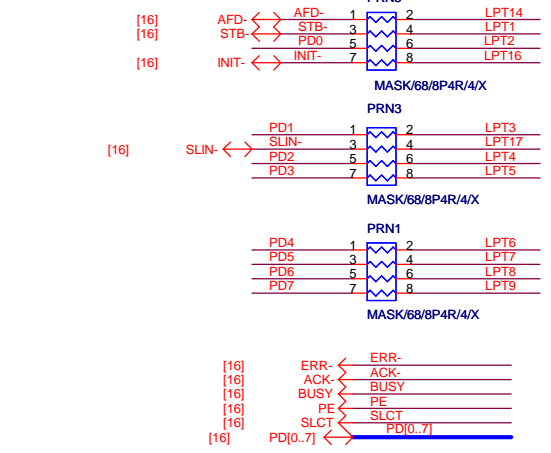
COM PORT Rev: 0.7



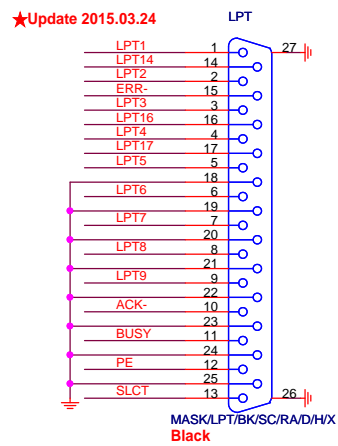
COM RI N/A



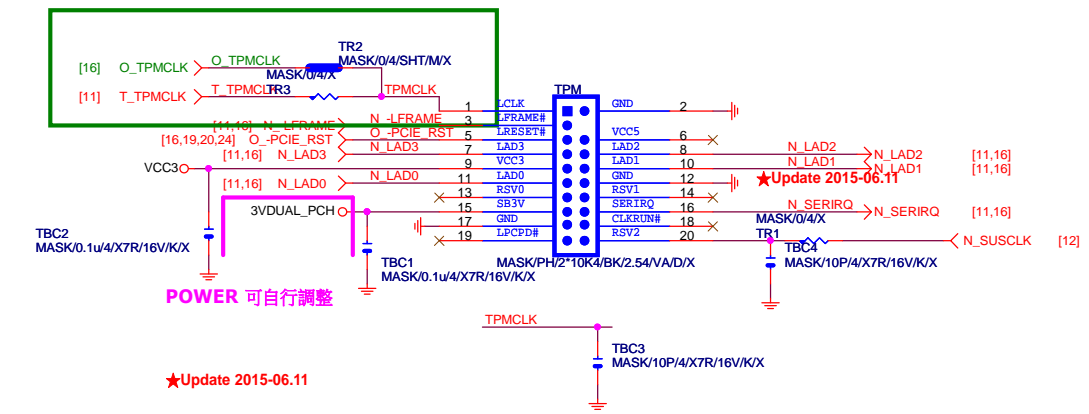
LPT PORT MASK



R&D技術通報151 有使用PRINT PORT的MODEL，需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



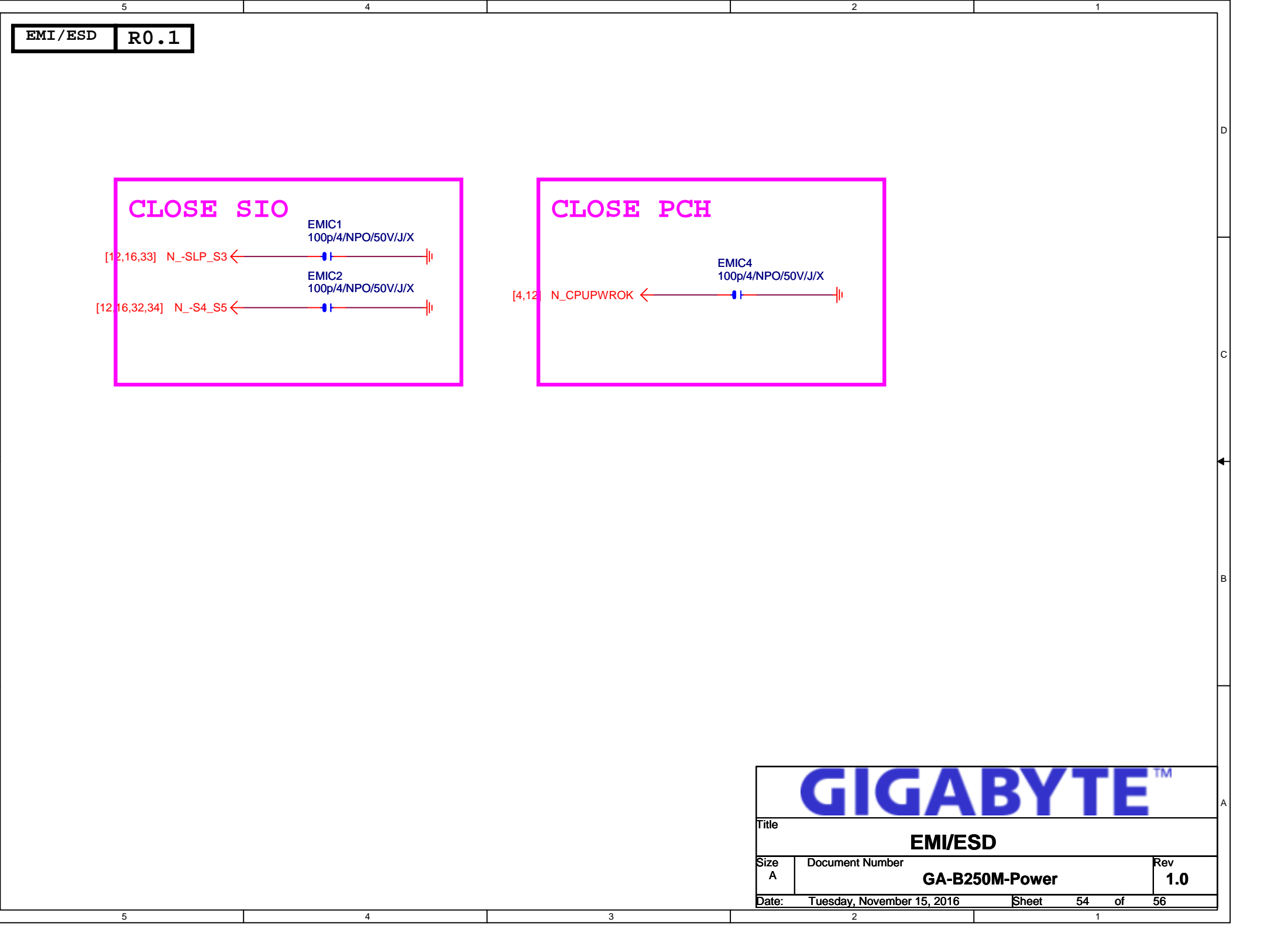
TPM CONNECT MASK



Thunderbolt

★Update 2015-12-29





## CLOSE SIO

EMIC1  
100p/4/NPO/50V/J/X

[12,16,33] N\_-SLP\_S3 ←

EMIC2  
100p/4/NPO/50V/J/X

[12,16,32,34] N\_-S4\_S5 ←

## CLOSE PCH

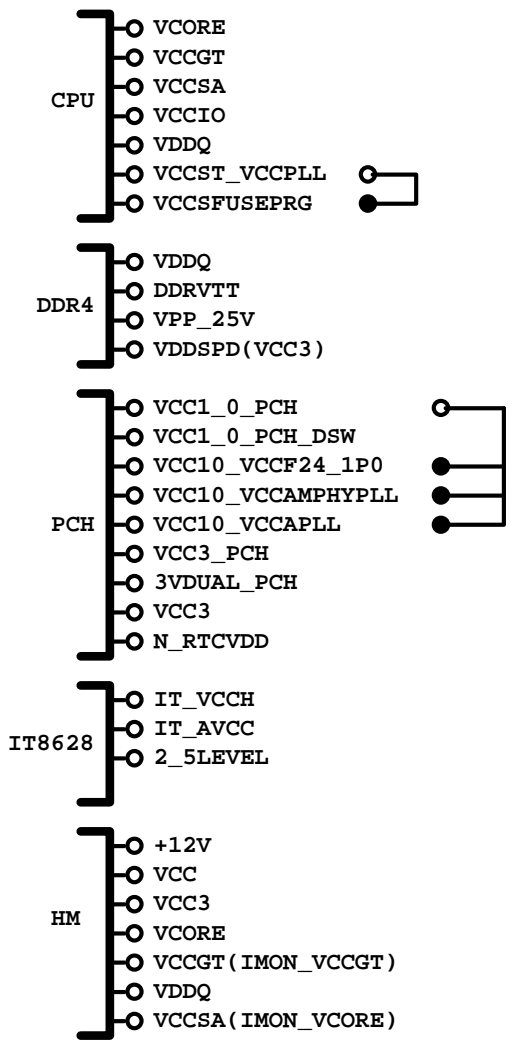
EMIC4  
100p/4/NPO/50V/J/X

[4,12] N\_CPUPWROK ←

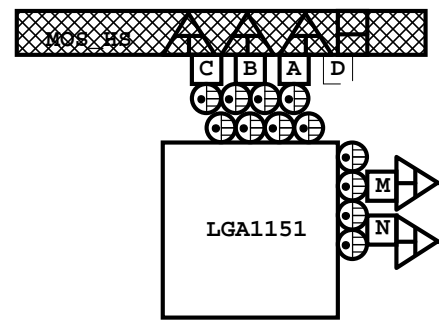
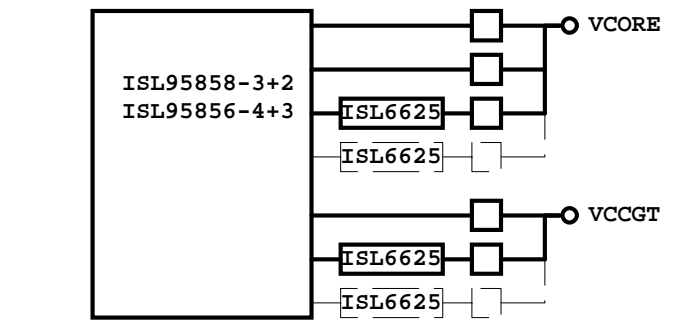
GIGABYTE™

Title			
EMI/ESD			
Size A	Document Number GA-B250M-Power		Rev 1.0
Date:	Tuesday, November 15, 2016	Sheet 54 of	56

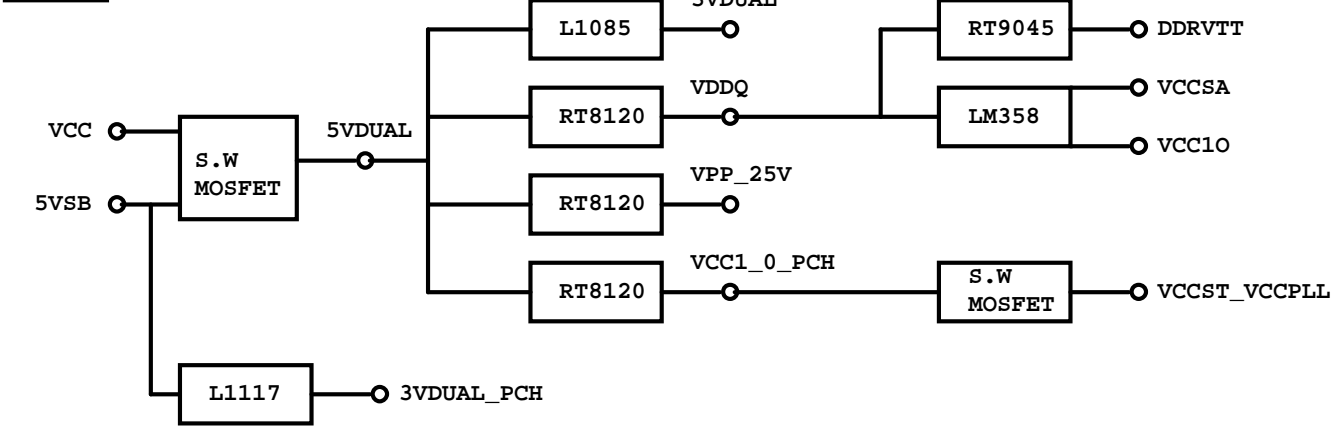
POWER BLOCK MAP



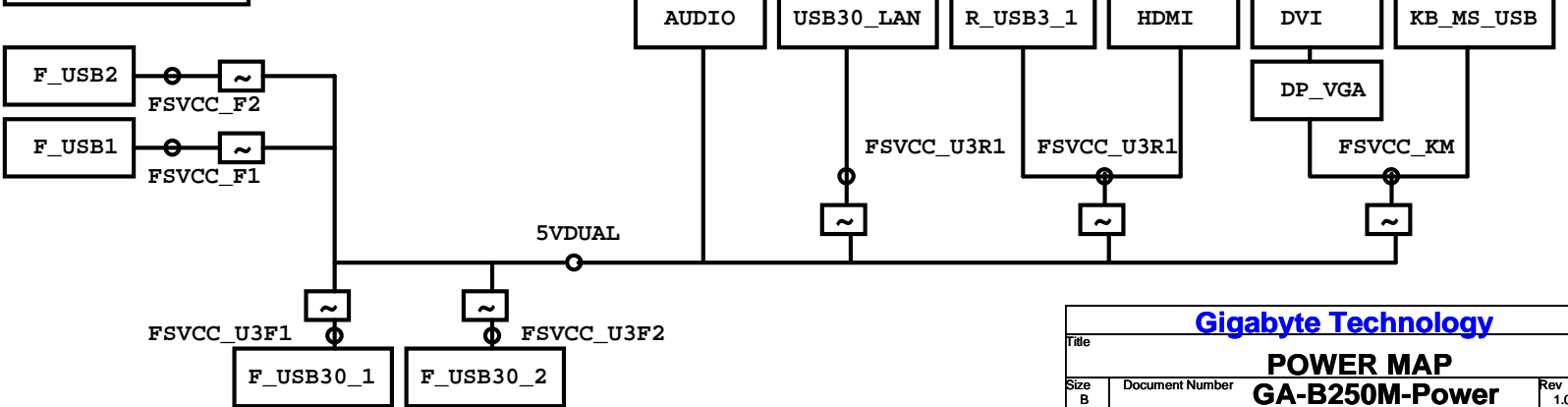
VCORE/VCCGT



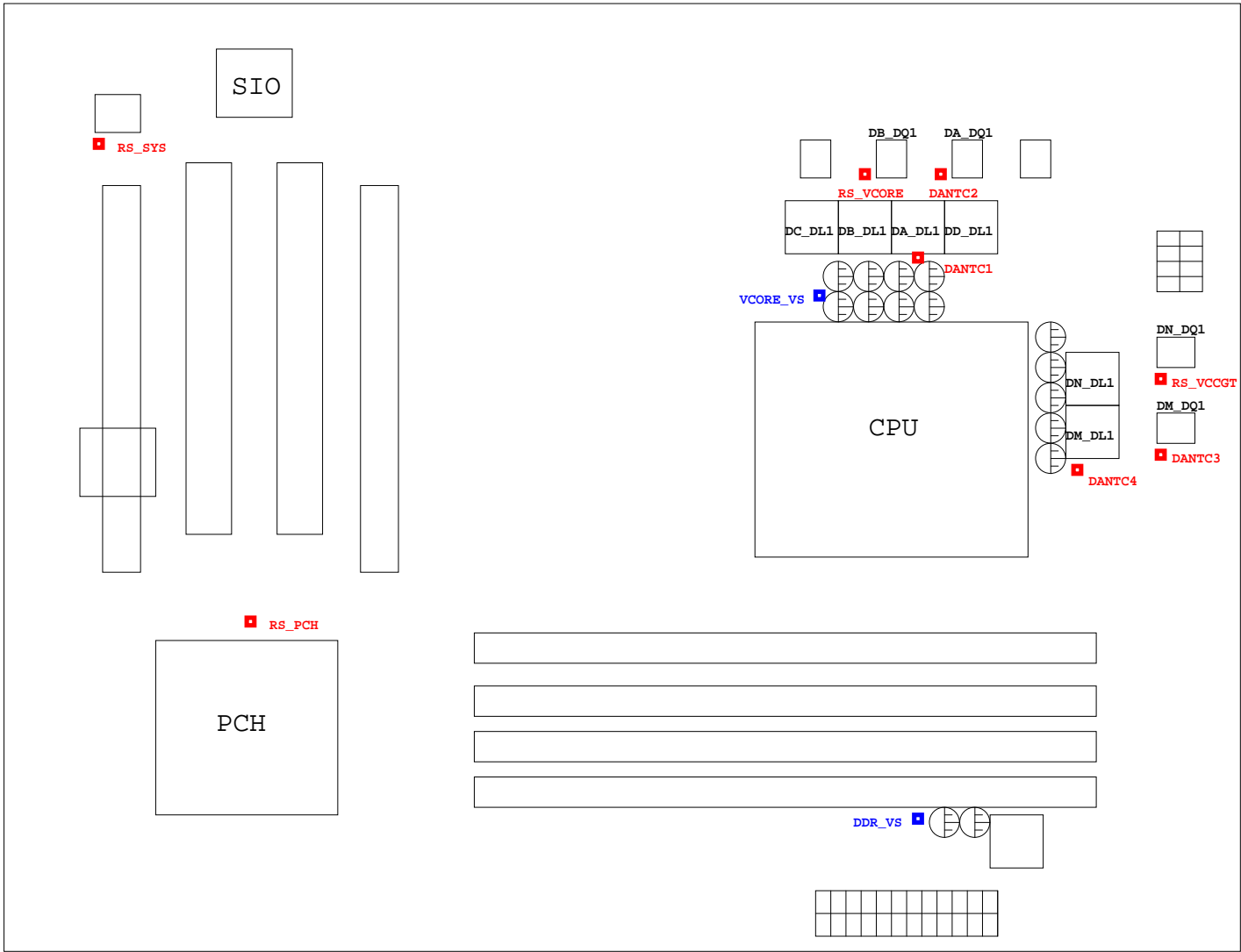
POWER



FUSE POWER F/R



Gigabyte Technology			
Title			
POWER MAP			
Size	Document Number	GA-B250M-Power	
B		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