

Model Name: GA-B250M-Wind

rev 1.0

SHEET

TITLE

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03	BLOCK DIAGRAM
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SHEET

TITLE

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Gigabyte Technology

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rev1.0

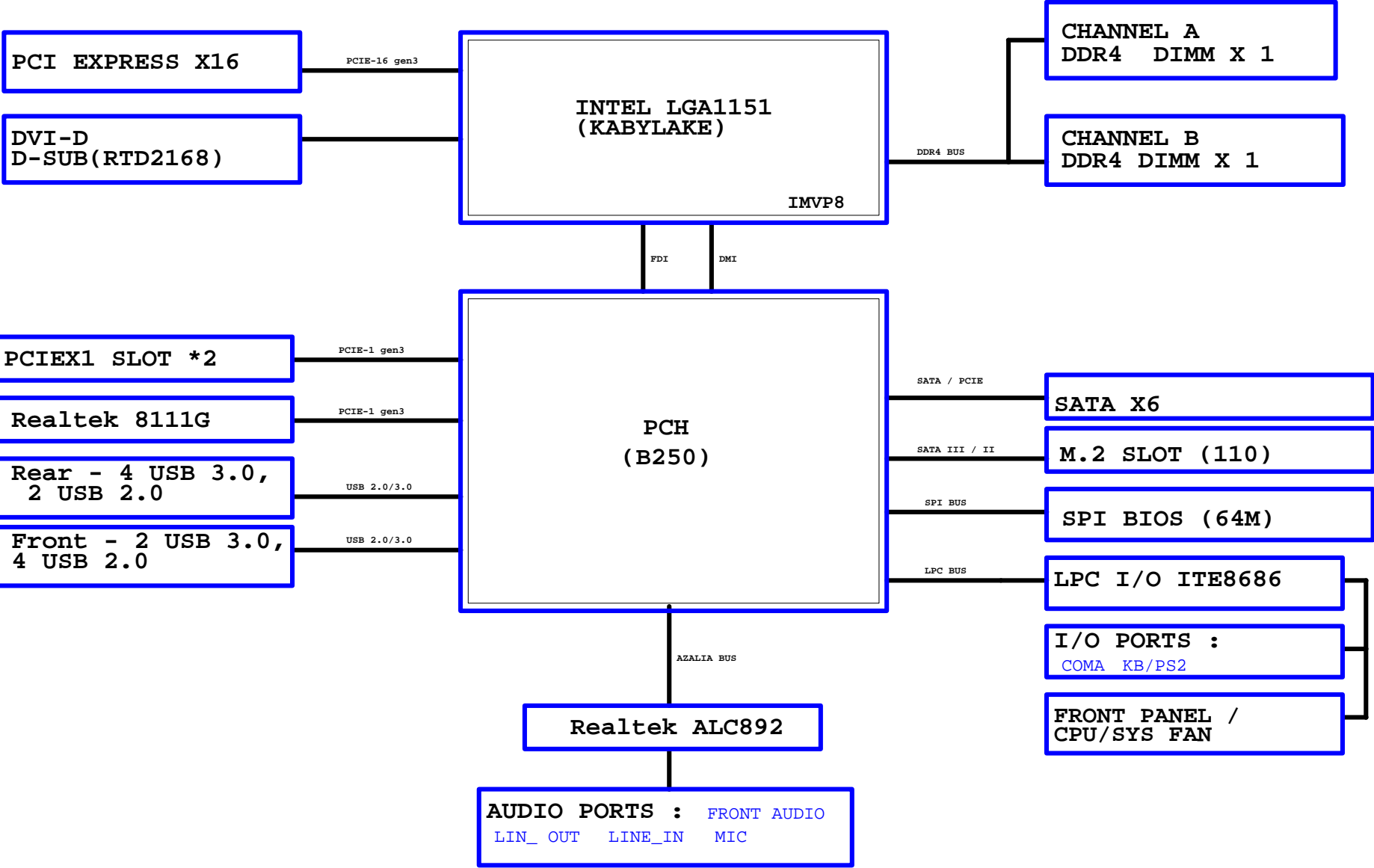
Circuit or PCB layout change

Component value change history

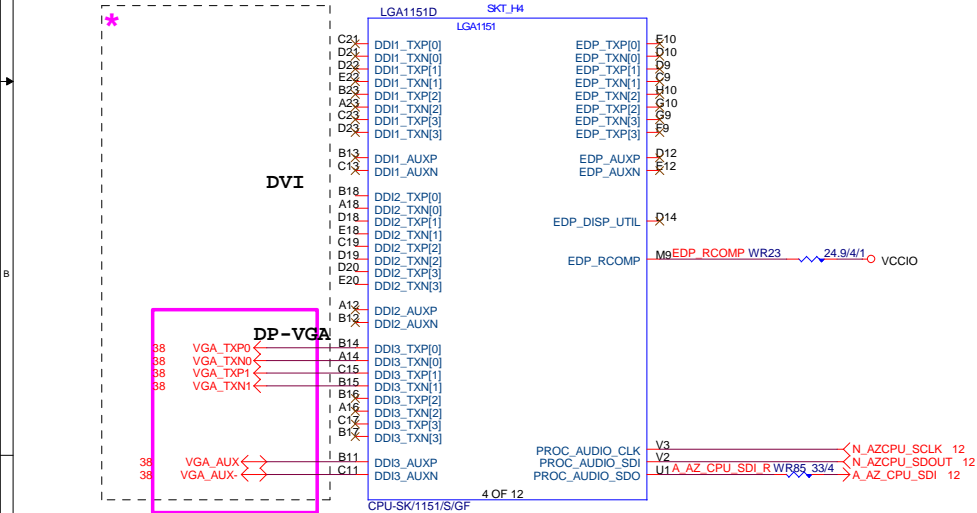
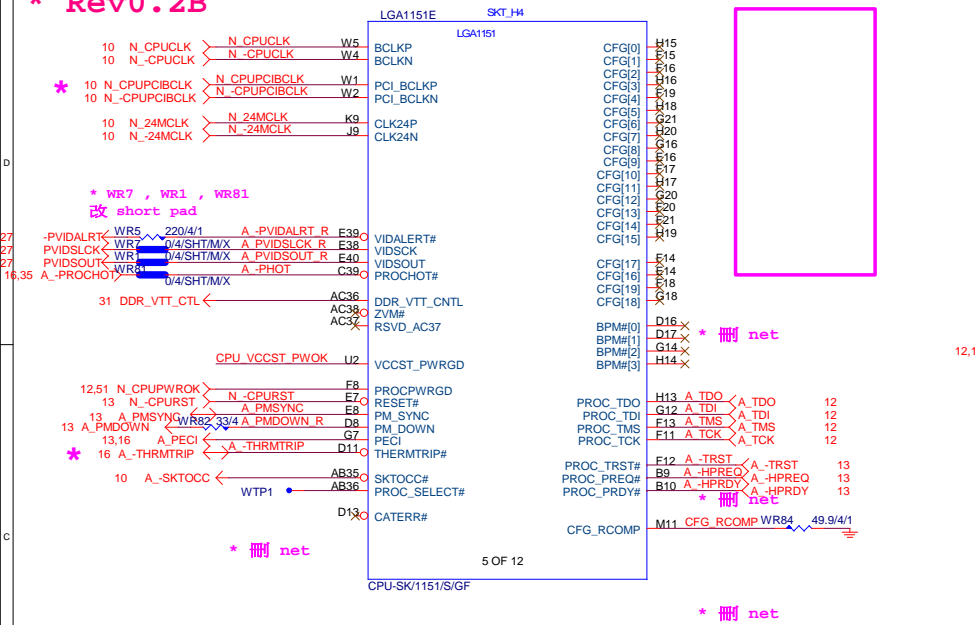
[illegible][illegible]**GIGABYTE™**

Title			
BOM & PCB MODIFY HISTORY			
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BLOCK DIAGRAM



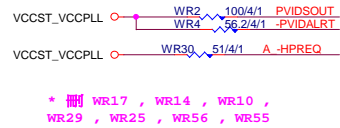
*** Rev0.2B**



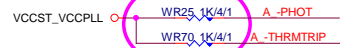
```
G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R
```

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

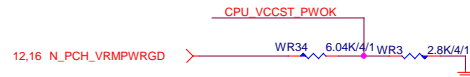
Impedance=85 +- 15%



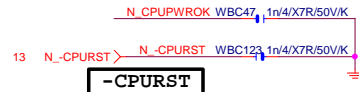
* 刪 WR17 , WR14 , WR10 ,
WR29 , WR25 , WR56 , WR55



* 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
```

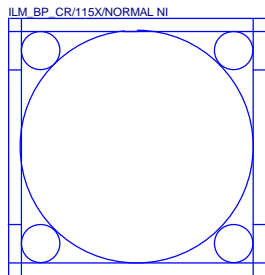
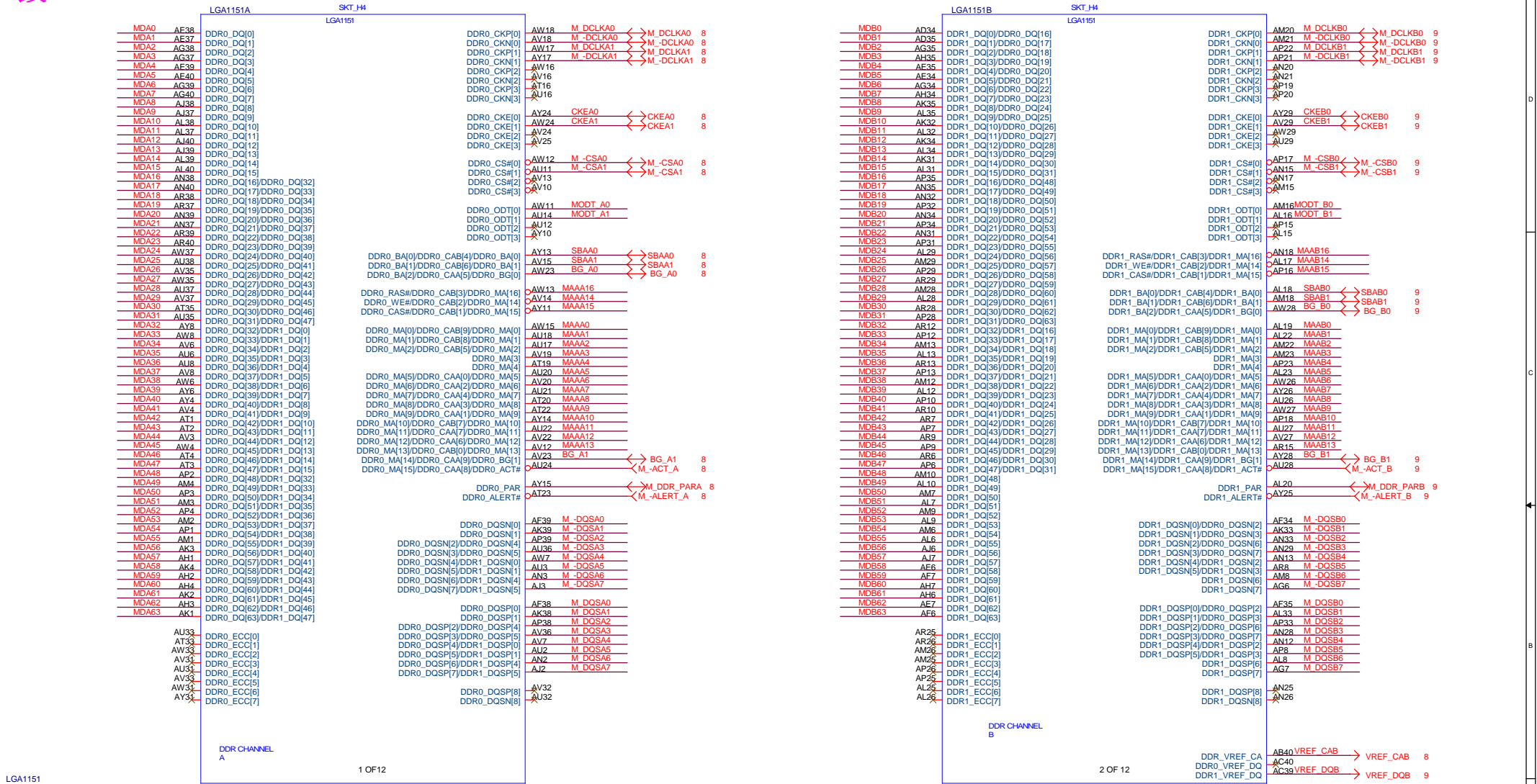
Impedance=85 +- 15%

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

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

<i>Gigabyte Technology</i>			
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CPU LGA1151-A			
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GA-B250M-Wind			
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* 改DDR4 net



Gigabyte Technology

Title

Size

Custom

Date:

CPU LGA1151-B

Document Number

Tuesday, November 08, 2016

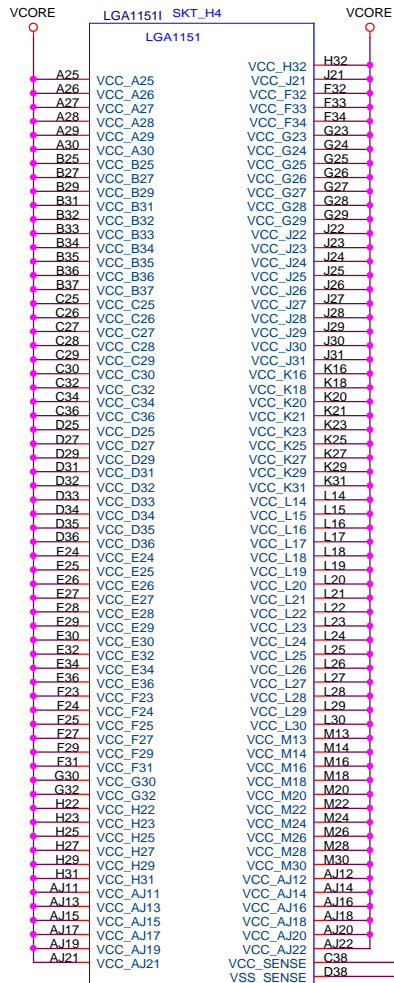
Rev

1.0

5

of

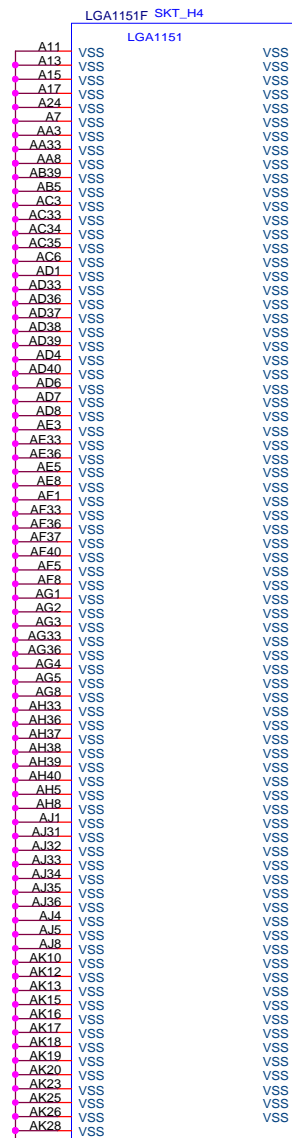
53



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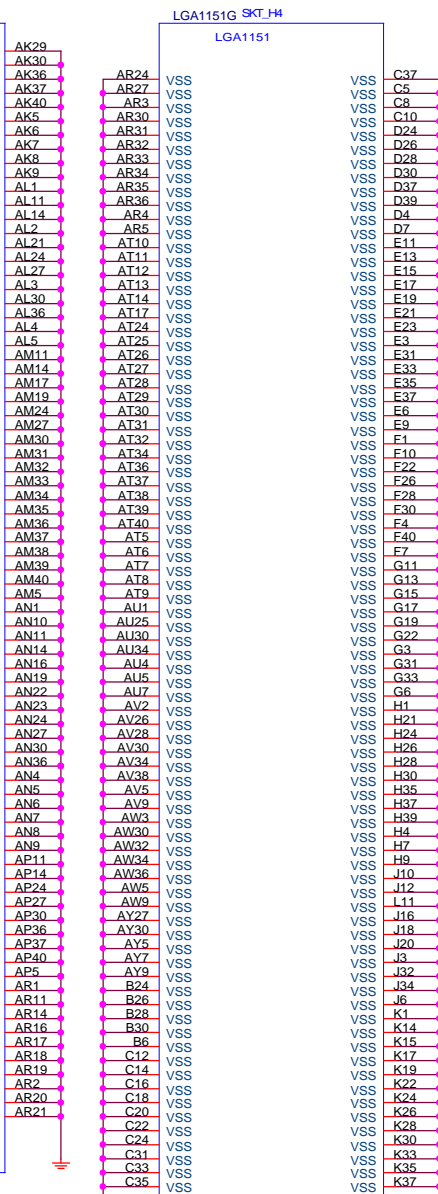
CPU-SK/1151/S/GF

* 刪 Vcore 電容



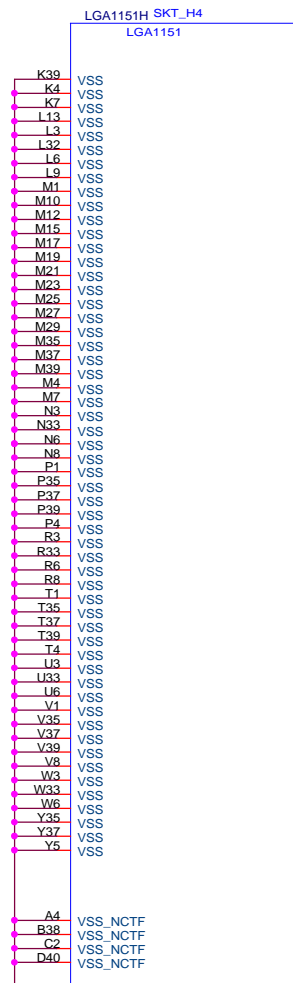
6 OF 12

CPU-SK/1151/S/GF



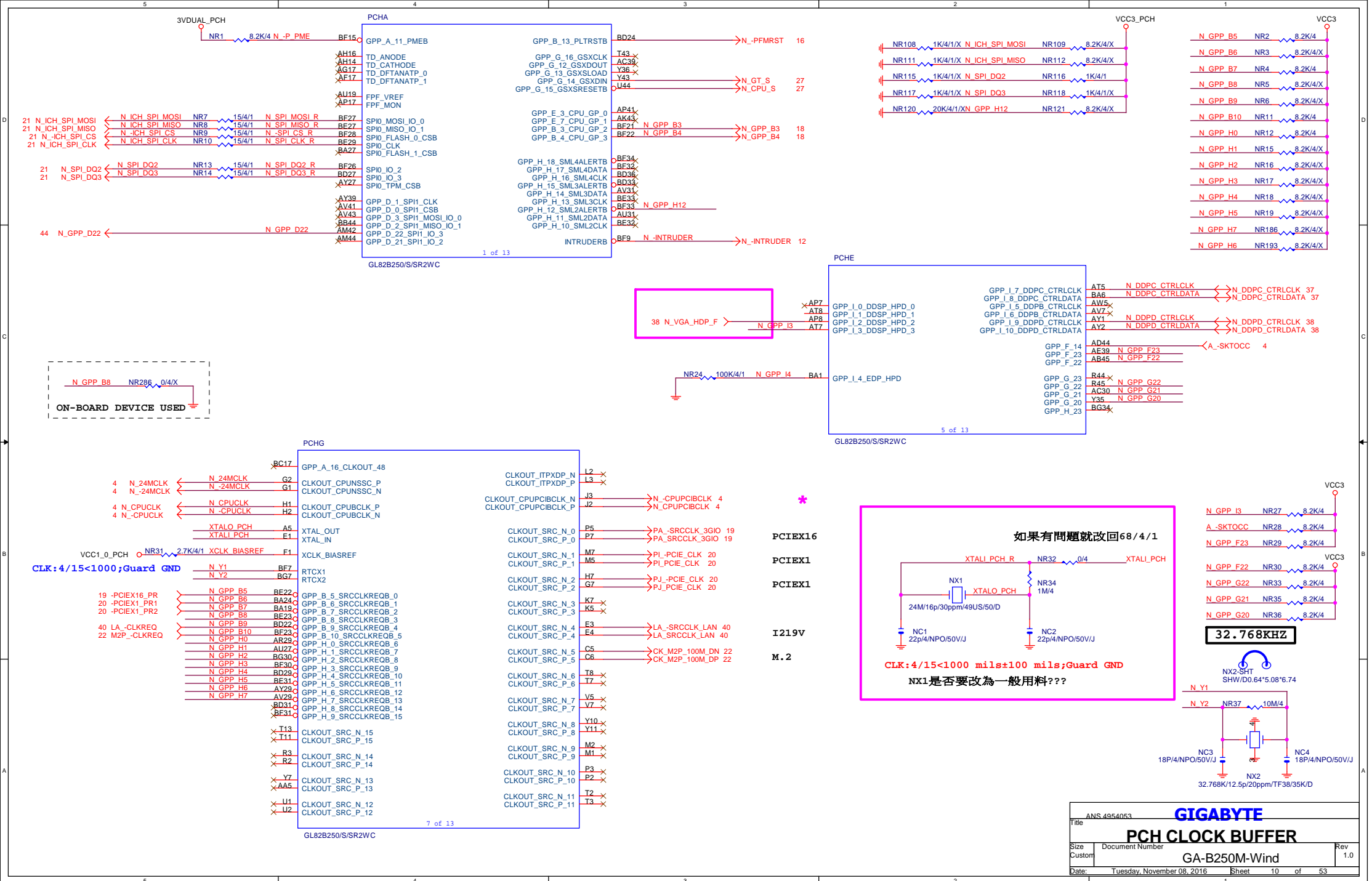
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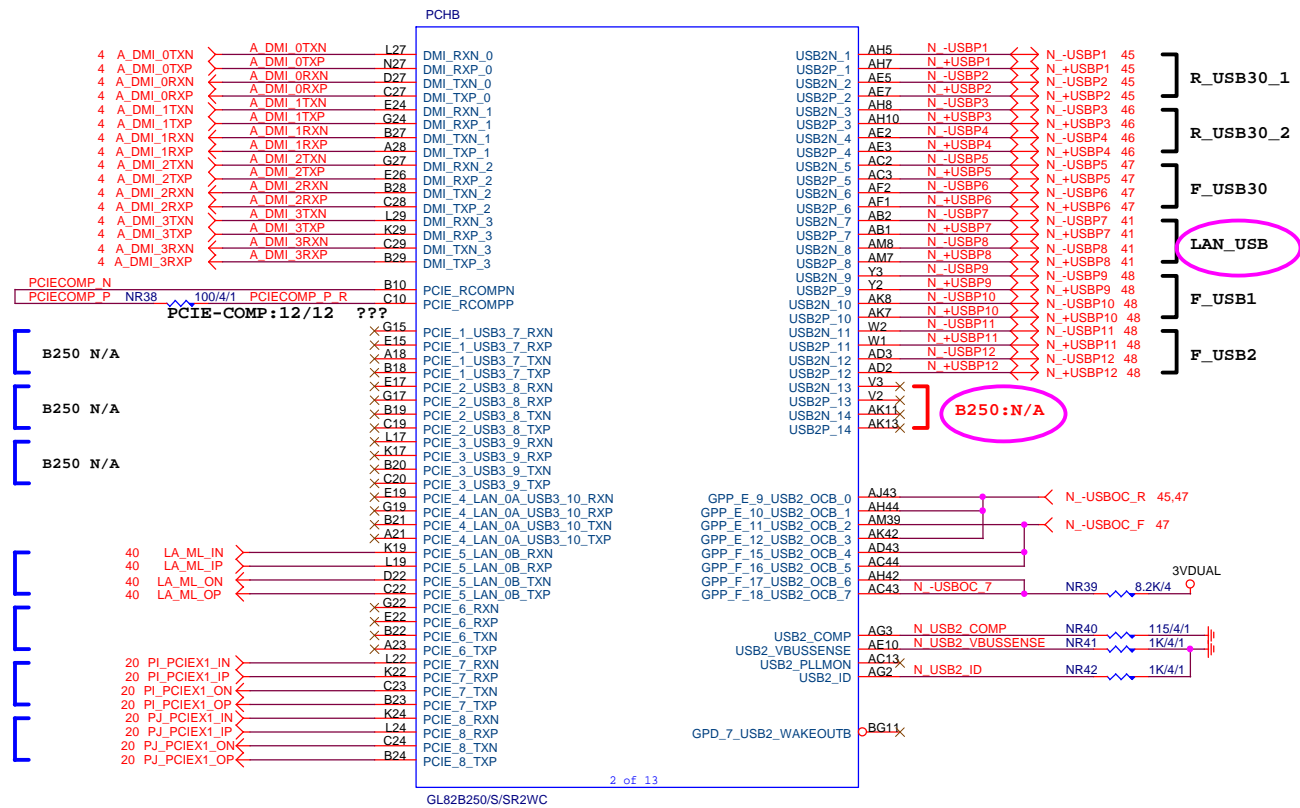
CPU-SK/1151/S/GF

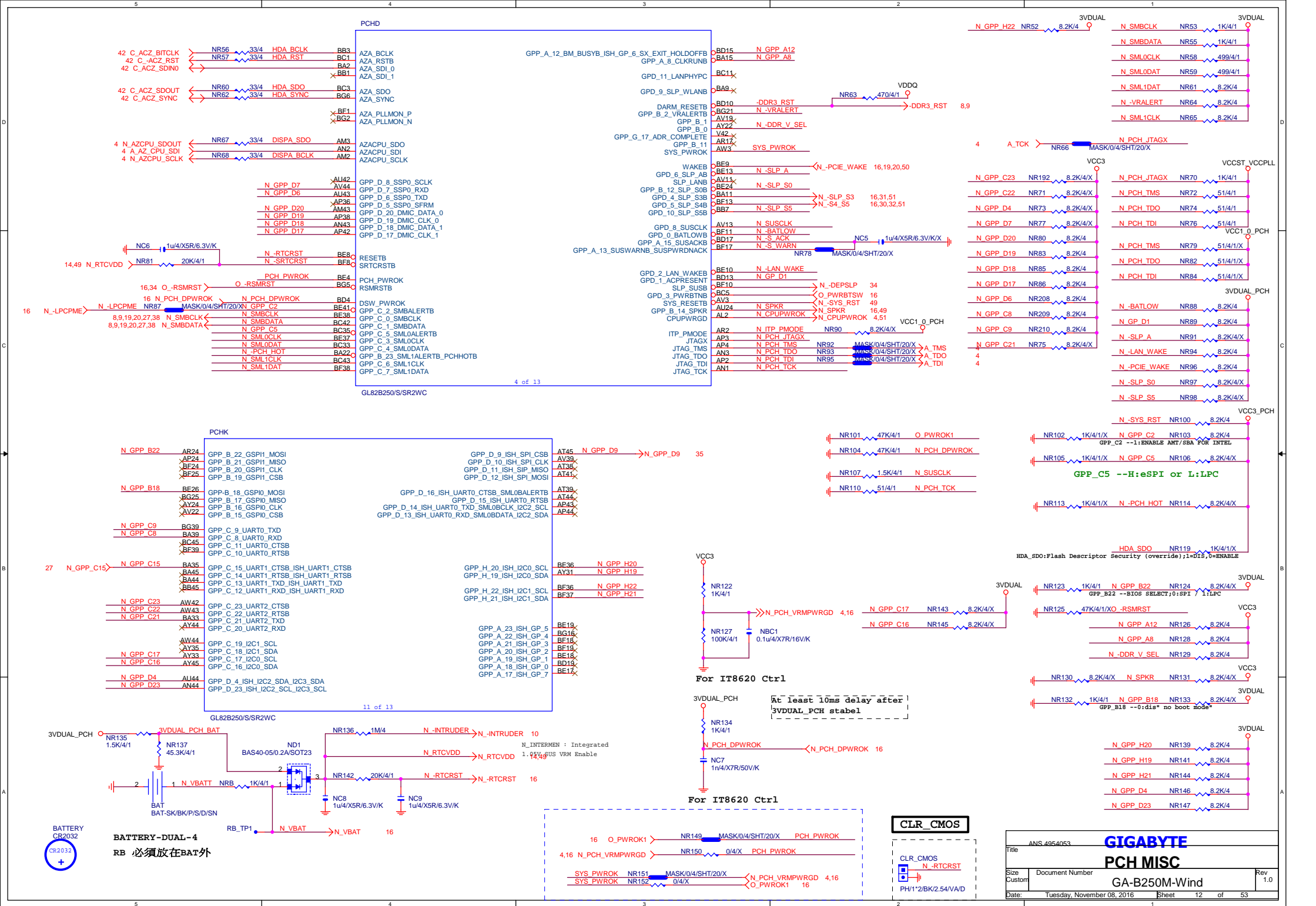


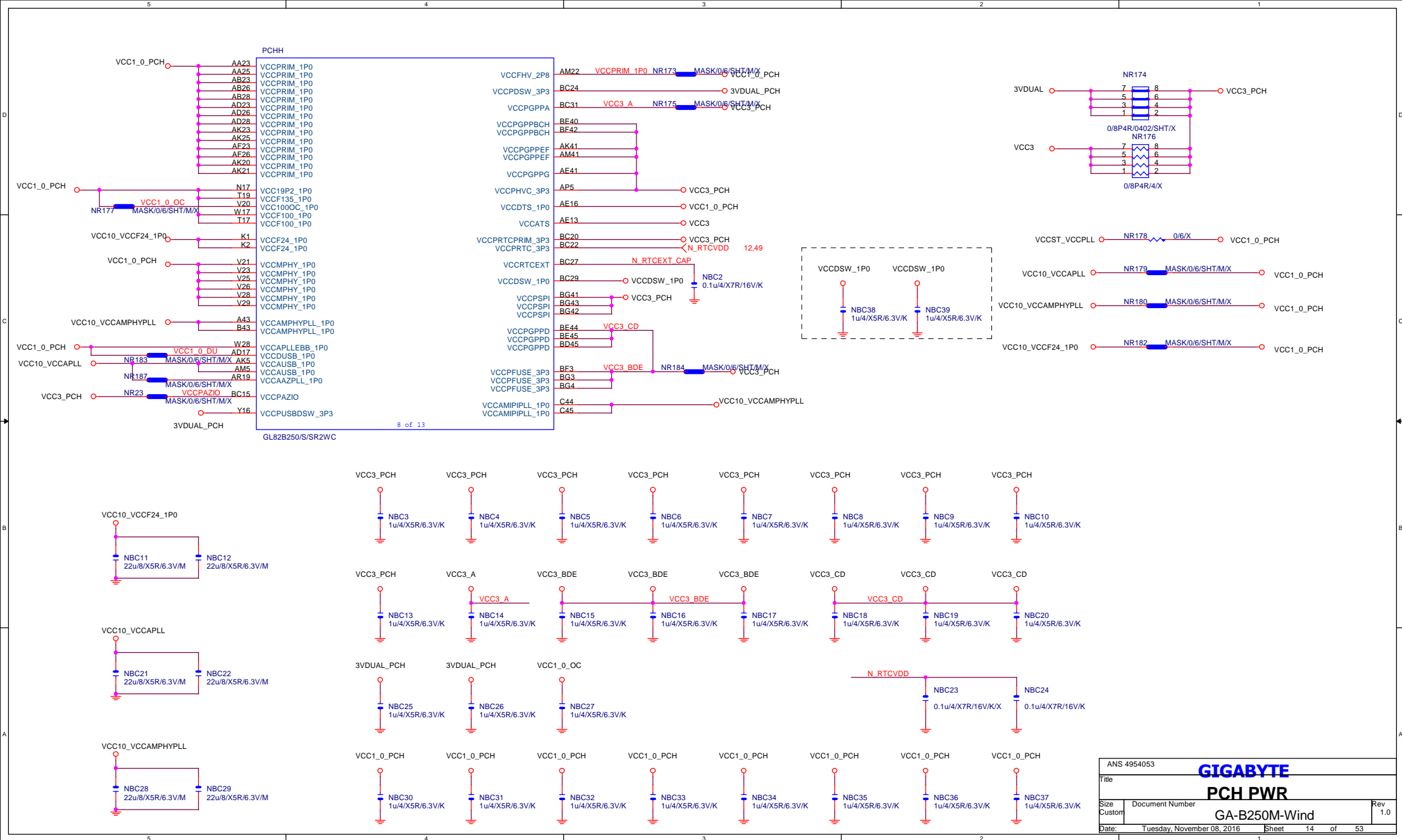
8 OF 12

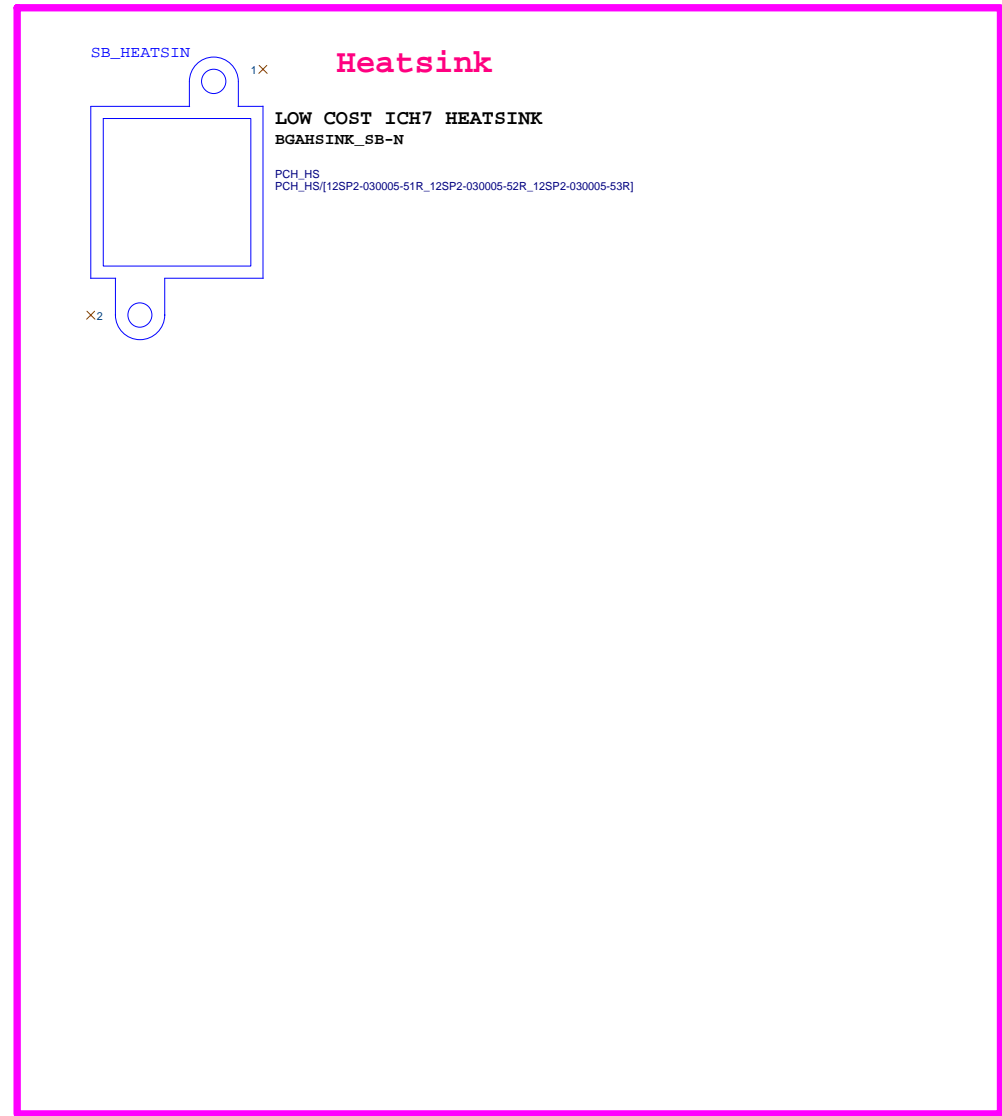
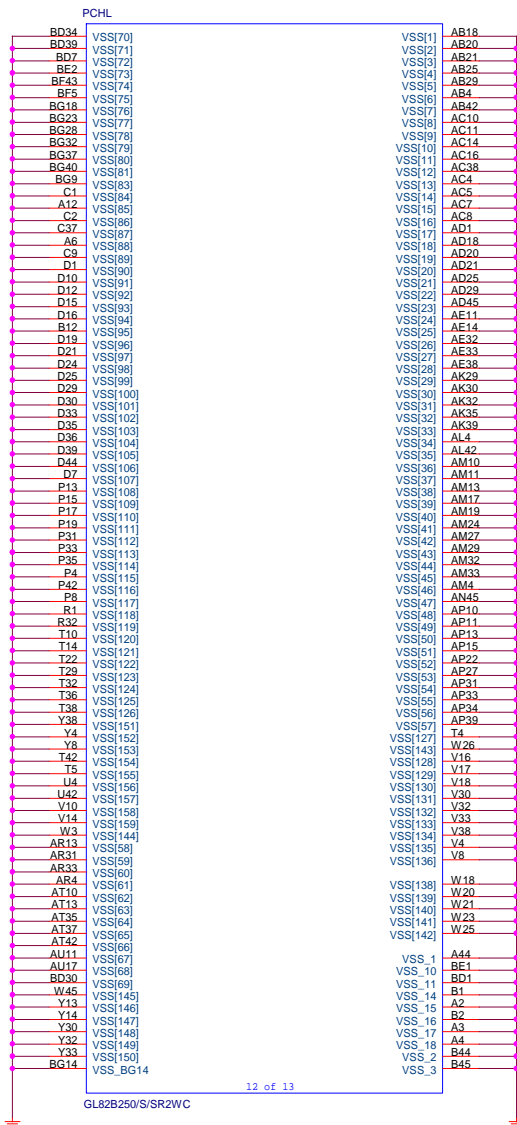
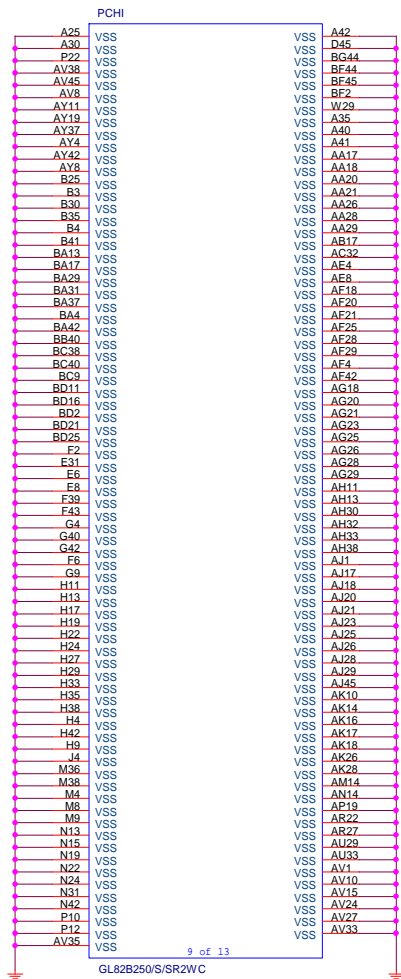
CPU-SK/1151/S/GF

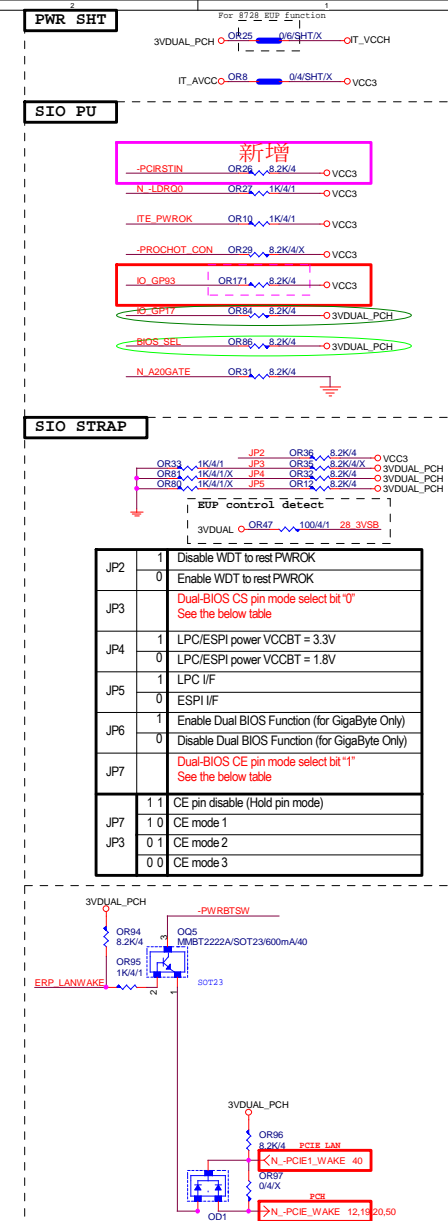




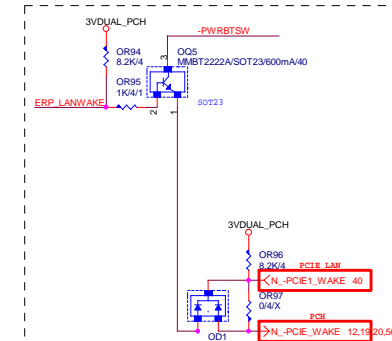








JP2	1	Disable WDT to reset PWROK
	0	Enable WDT to reset PWROK
JP3	1	Dual-BIOS CS pin mode select bit "0" See the below table
	0	
JP4	1	LPC/ESPI power VCCBT = 3.3V
	0	LPC/ESPI power VCCBT = 1.8V
JP5	1	LPC I/F
	0	ESPI I/F
JP6	1	Enable Dual BIOS Function (for GigaByte Only)
	0	Disable Dual BIOS Function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



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

```

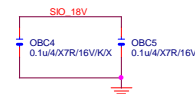
- - - - -
Placement CPU

```

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。

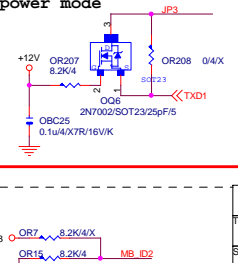
SIO_18V

internal power pin, max 22nF cap



CLOSE SIO PIN4 2 5LEVEL

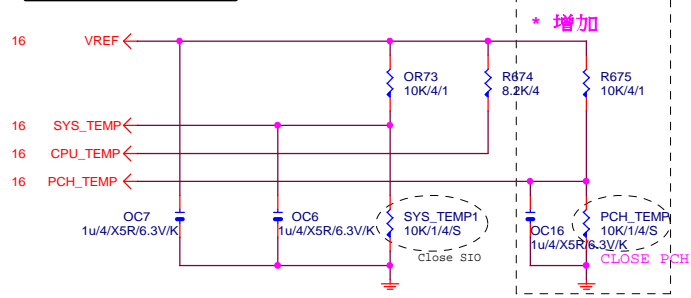
MB ID



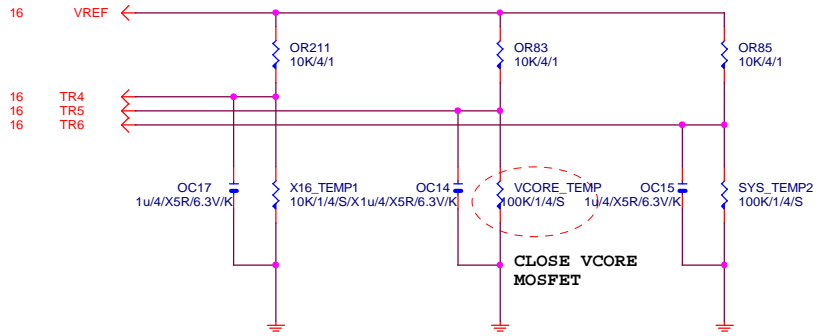
Gigabyte Technology

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C				1.	
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TEMP H/W MONITOR

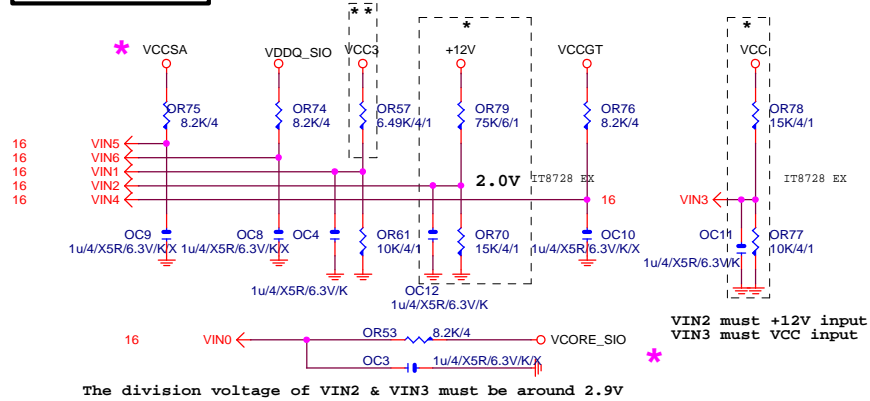


5個FAN時使用

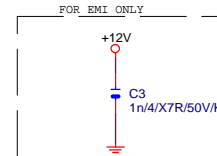
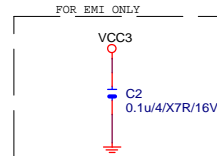


VOLTAGE-- H/W MONITOR

* IT8728 BX
** IT8728 CX



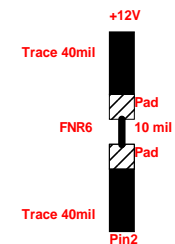
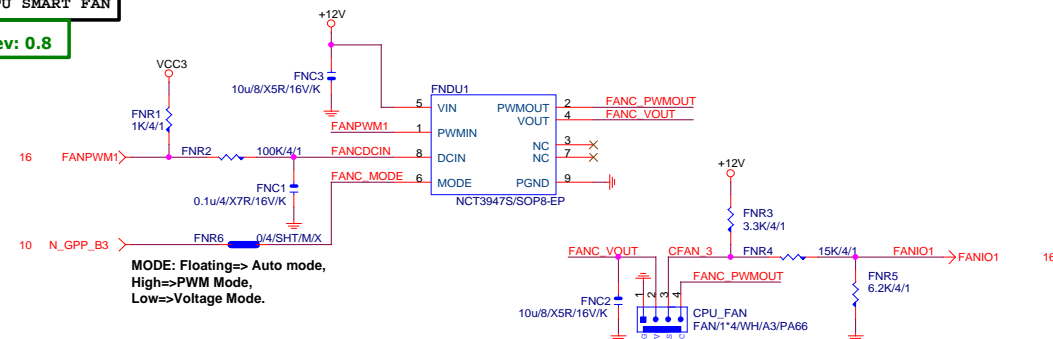
★Update 2015-04.24



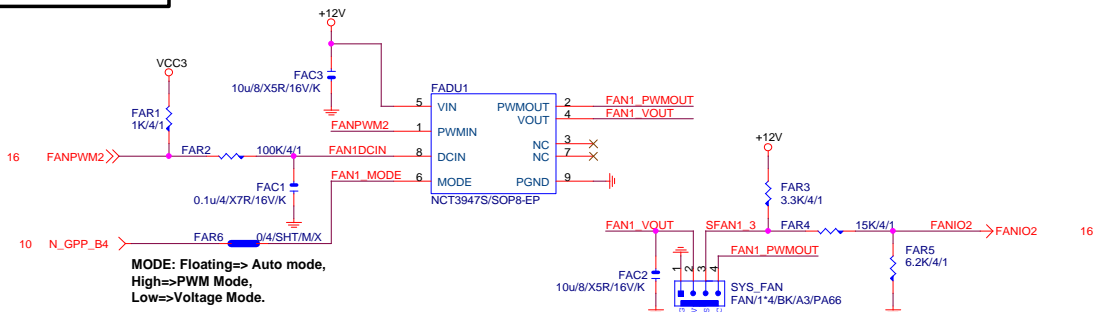
Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL
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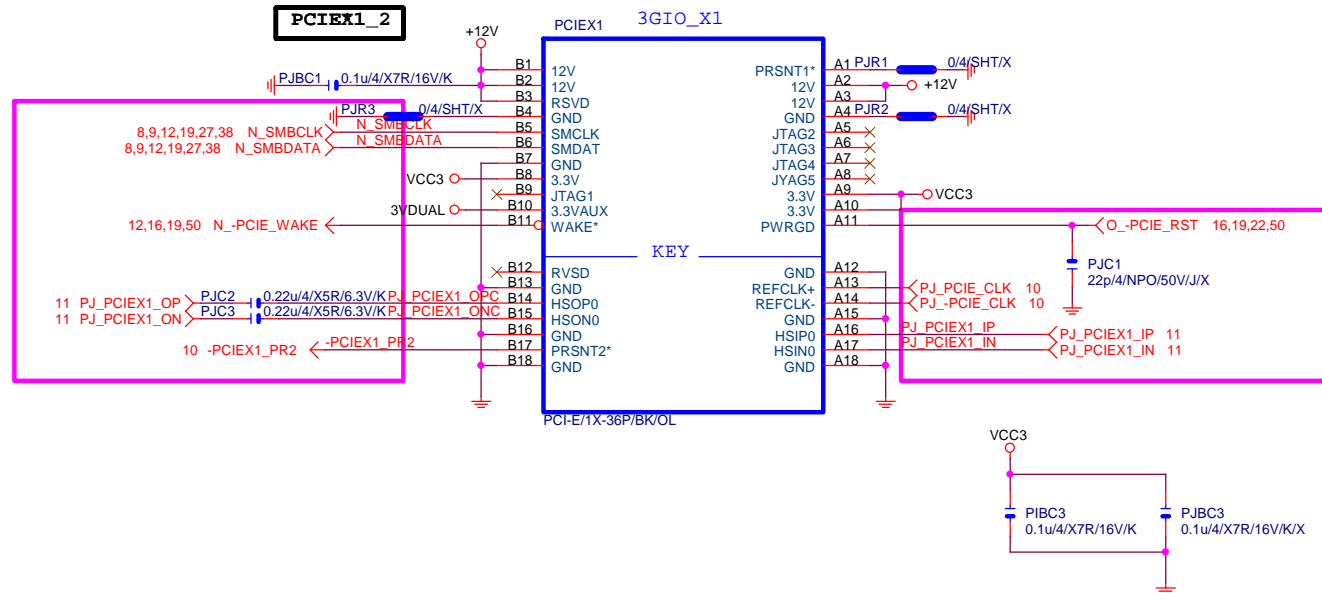
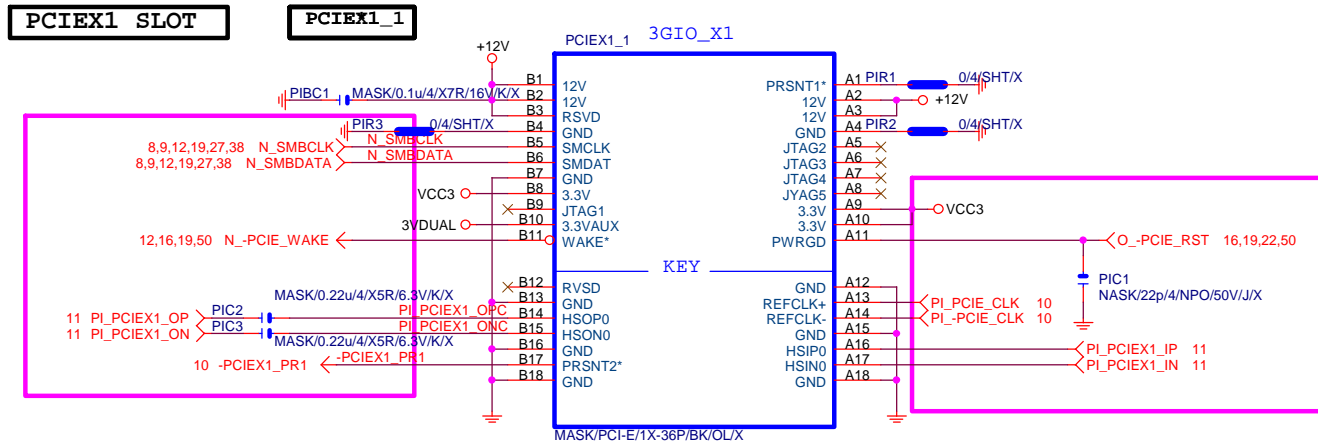
Rev: 0.8



A. SYSTEM FAN1

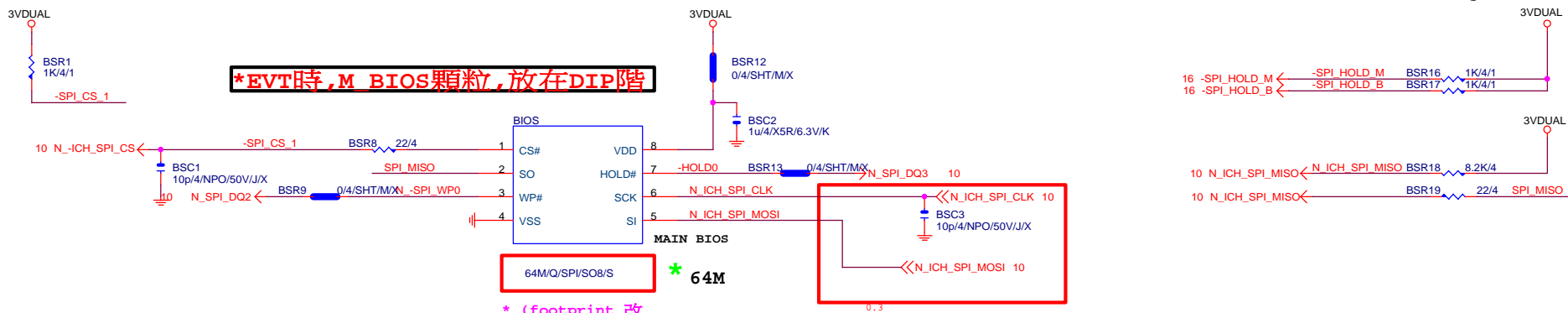


Title				
FAN CTRL				
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Title		
PCIE_X4		
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*EVT時,M BIOS顆粒,放在DIP階

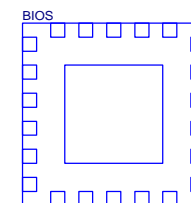
64M/Q/SPI/S08/S * 64M

* (footprint 改
SOIC8-SPI-SOCKET)

* (MP footprint 改 IC8-BIOS)

BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K



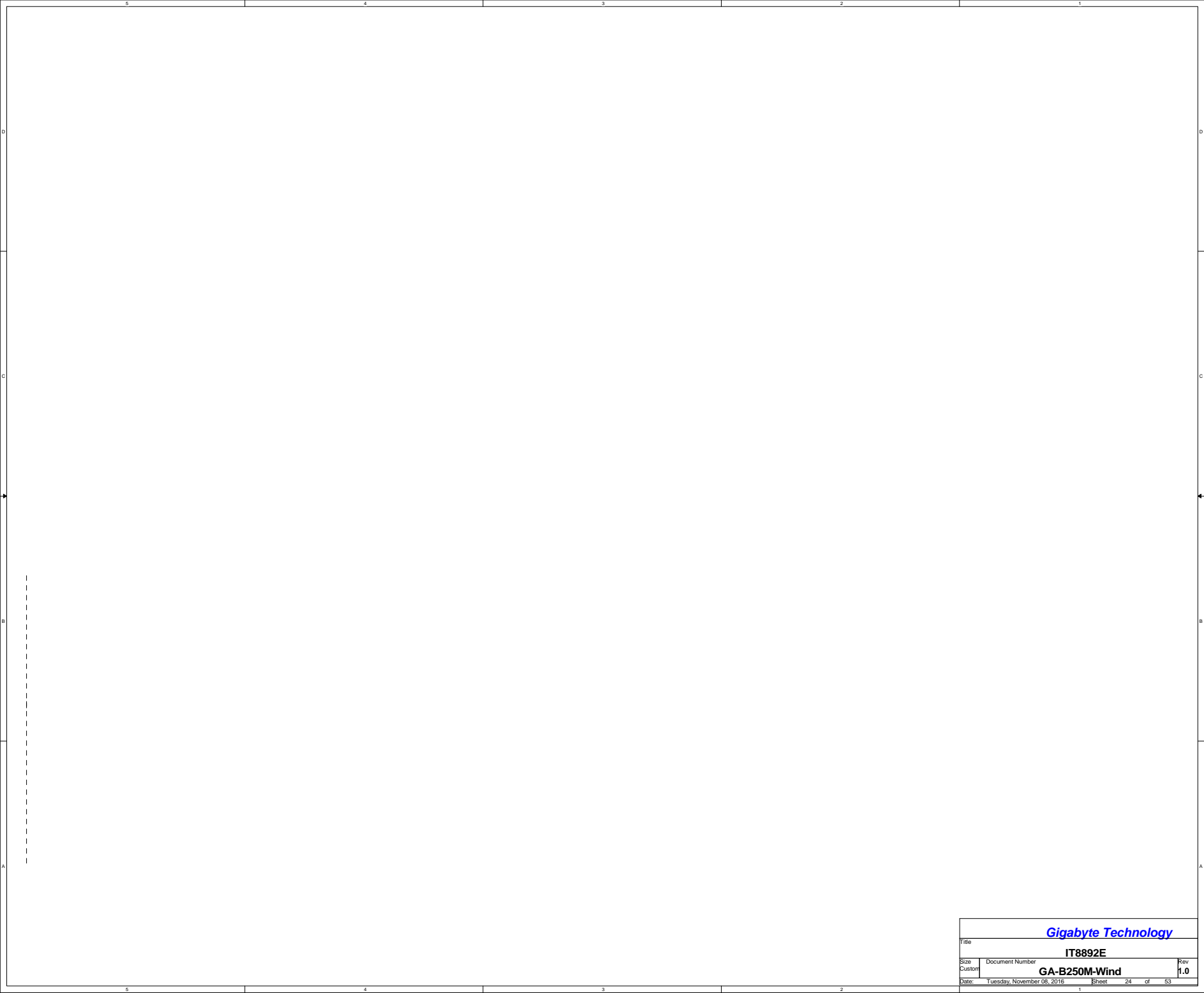
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X

* 試產先上, PVT 移除

Gigabyte Technology

Title		BIOS	
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5					4					3					2					1				
D																								
C																								
B																								
A																								
5					4					3					2					1				
Title										Gigabyte Technology M.2X4_ S4~S5 SWITCH														
Size Custom					Document Number GA-B250M-Wind										Rev 1.0									
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Title		
IT8892E		
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Title

PCI SLOT 1&2

Size

Size	L
Custom	

Document Number

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Rev

1.0

Date:

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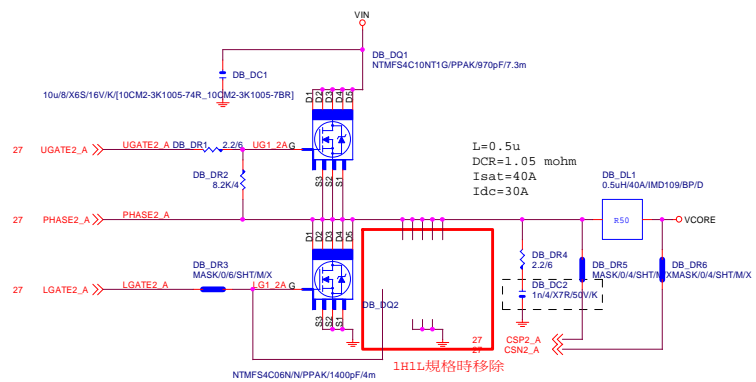
53

Rev 0.1

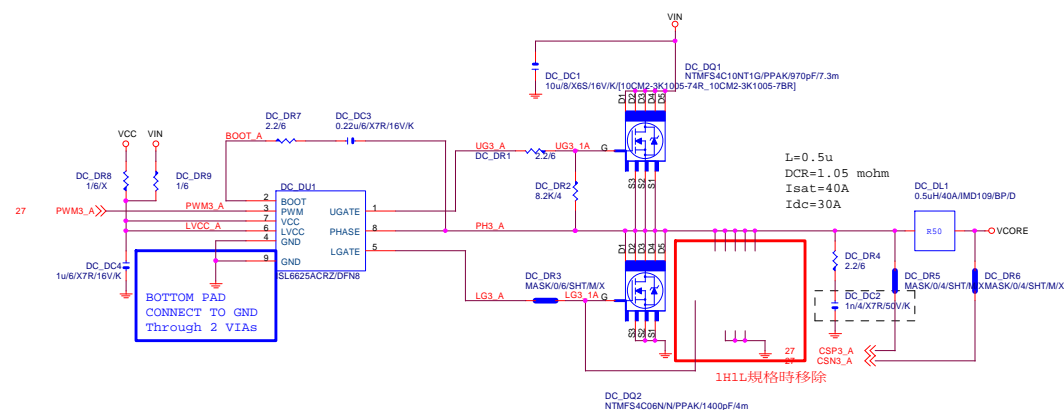
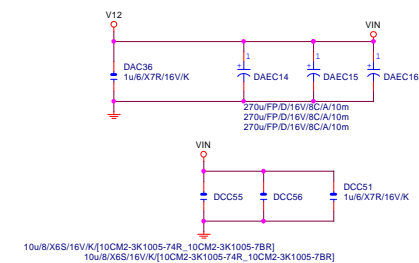
Gigabyte Technology			
Title			
ASM1085 POWER			
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10 N_CPU_S \gg 8.2K/4 2 1 SOT23 連接至PCH:GPP_G15

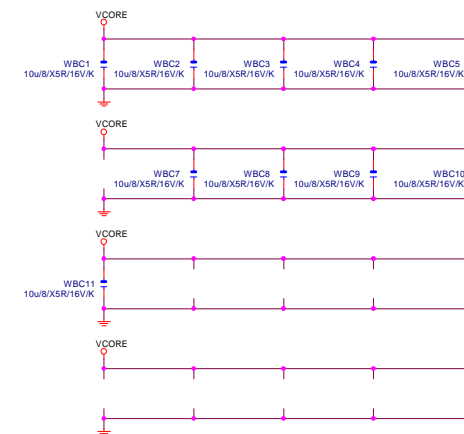
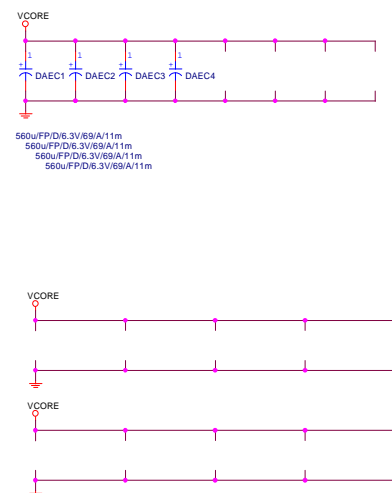
VCORE



VIN CAP 270u*3PCS



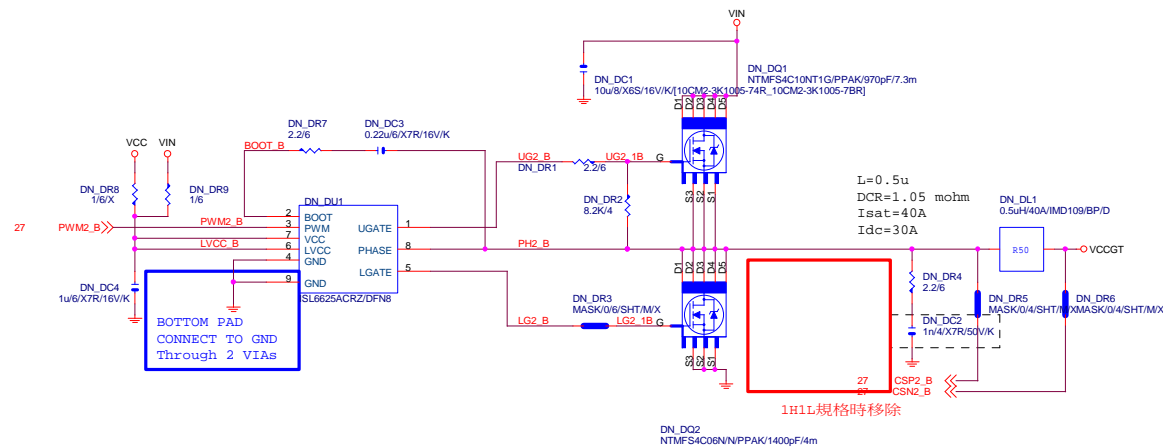
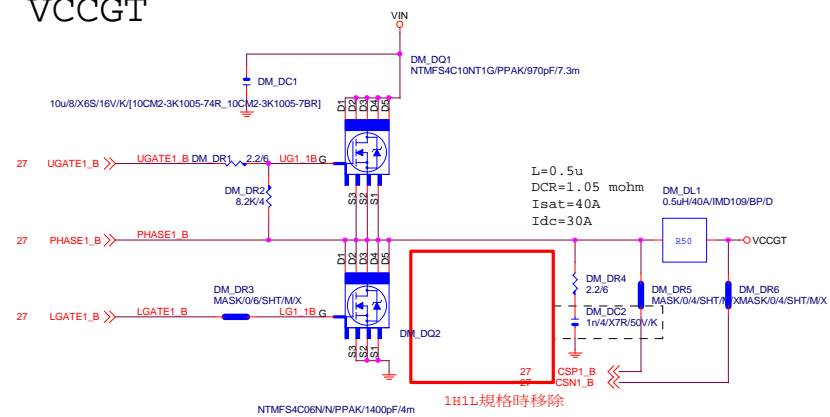
VCORE CAP 560u*4PCS
10u*10PCS



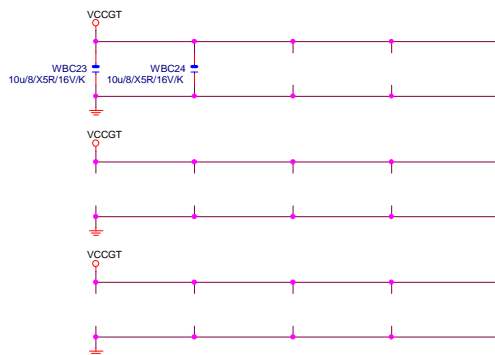
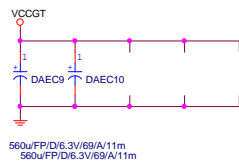
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Title			
ISL95868_MOS			
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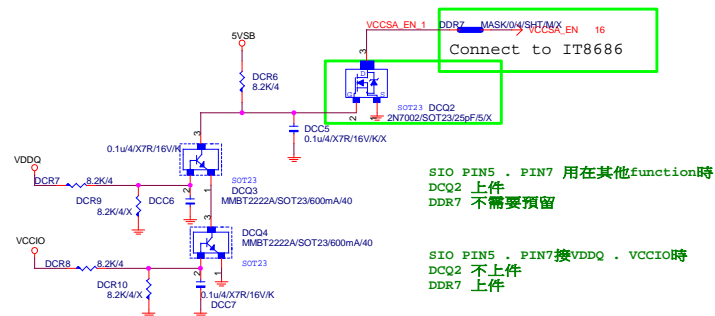
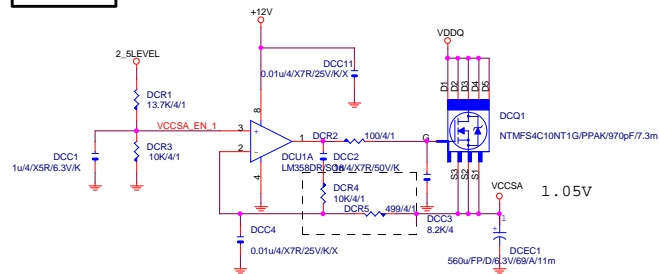
VCCGT



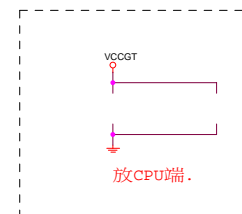
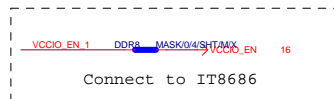
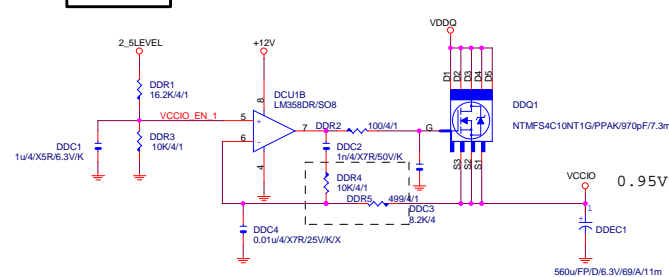
VCCGT CAP

560u*2PCS
10u*2PCS

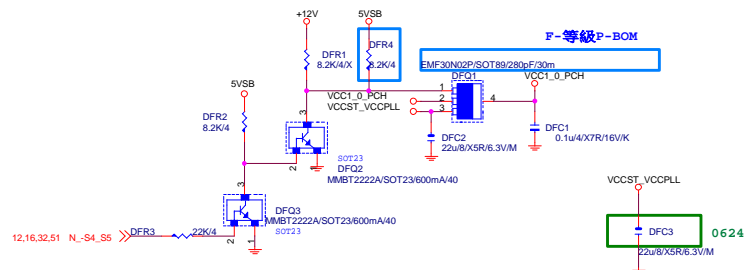
VCCSA



VCCIO



VCCST_VCCPLL



REV:0.2

DDR4

CHOKE與CAP料號可變

DDR VIN CAP
560u*2PCS

SUPPORT DDR4 1.2V

25A MAX

L=1u
DCR=2.5 mohm
Isat=35A
Idc=28A

請放置CHOKE--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

上件

MA_DR38.MA_DC15

VPP_25V使用8120.8068A.RT8237時上件

PWR SEQ

CLOSE TO DDR POWER PLANE

For power sequence require

VPP_25V使用8120時上件

MAU1上RT9045時上件(不可MASK)

DDRVTT

DDRVTT CAP

4 DDR_VTT_CTL MAR110 MASK/0/4/SHT/M/10/X_DDRVTT_EN
2,16,51 N_SLP_S3 MAR111 MASK/0/4/SHT/M/10/X_DDRVTT_BOOT

GIGABYTE™

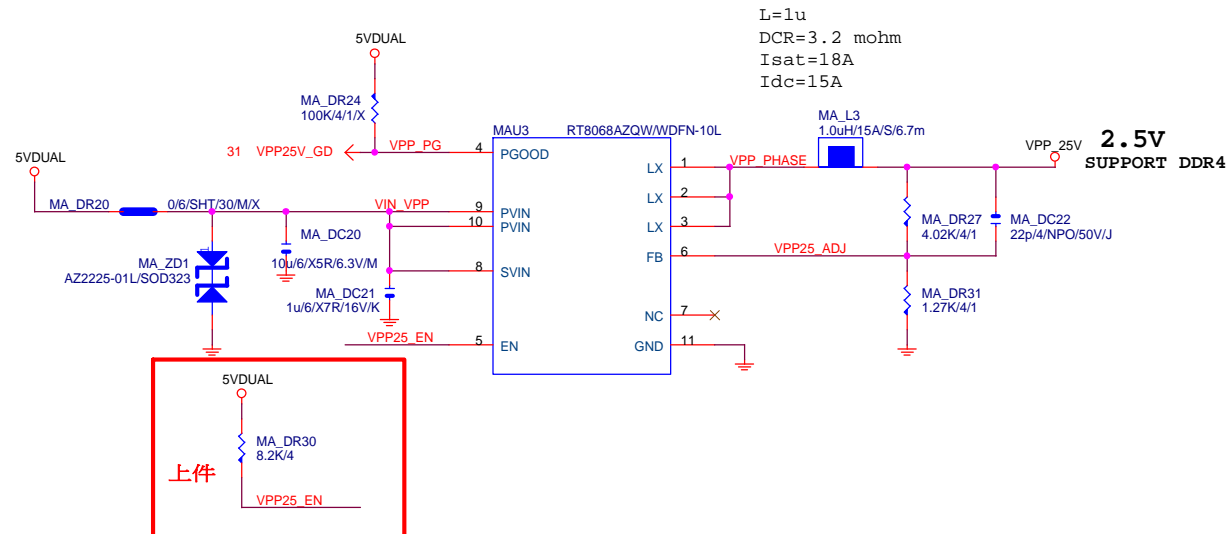
RT8237_DDR4 POWER

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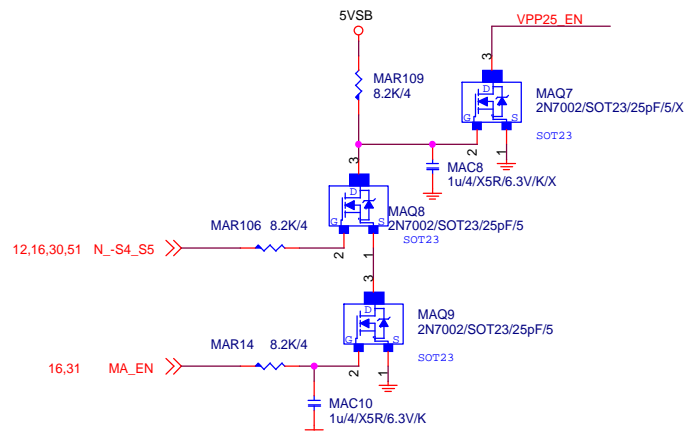
VPP_25V

CHOKE與CAP料號可變

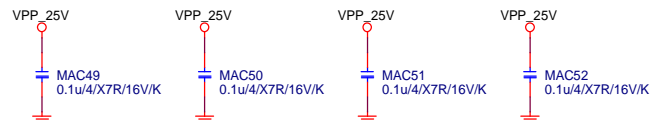


PWR_SEQ

* 刪 MA_DR32

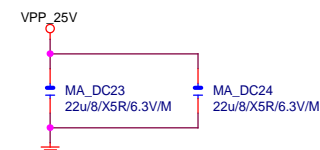


16 VPP25_EN_IO >> MAR114 MASK/0/4/SHT/M/X VPP25_EN



VPP CAP 22u*1PCS

* 大電容 x0

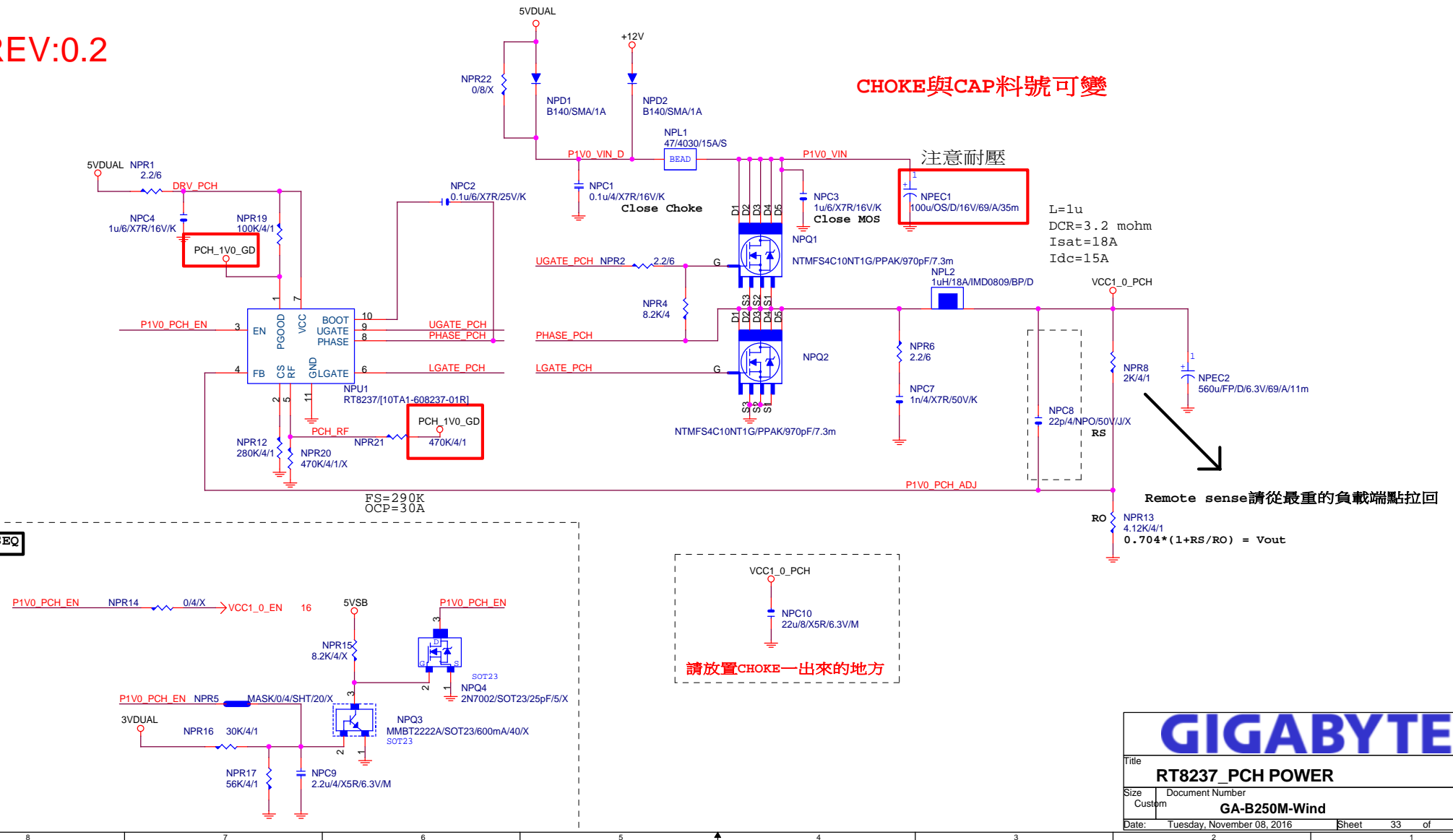


GIGABYTE™

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RT8068A_VPP25 POWER				
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CHOKE與CAP料號可變



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Title		
RT8237_PCH POWER		
Size	Document Number	Rev
Custom	GA-B250M-Wind	1.0
Date:	Tuesday, November 08, 2016	Sheet 33 of 53

REV: 0.51

[illegible]

5VDUAL

3VDUAL

BC27
0.1u/4/X7R/16V/K

3VDUAL

R37
100/4/1

R38
169/4/1

BC25
0.1u/4/X7R/16V/K

R36
22K/4

C9
22u/8/X5R/6.3V/M

C8
1n/4/X7R/50V/K

Q4
L1085DG/TO252/5A

O_-RSMRST 12,16

上22u 电容

Meet the rise time

Rise/Fall max 500us
Rise: 20% - 80%
Fall :2V- 0.8V

[illegible]

5VSB

NR202 22K/4/X

NR203 75K/4/1/X

NR204 27K/4/1/X

NC23 1u4/X5R/6.3V/K/X

3VDUAL

NQ18 MMBT2222A/SOT23/600mA/40/X SOT23

NQ19 2N7002/SOT23/25pF/5/X

O-RSMRST

D4 BAT54A/SOT23/200mA/X SOT23

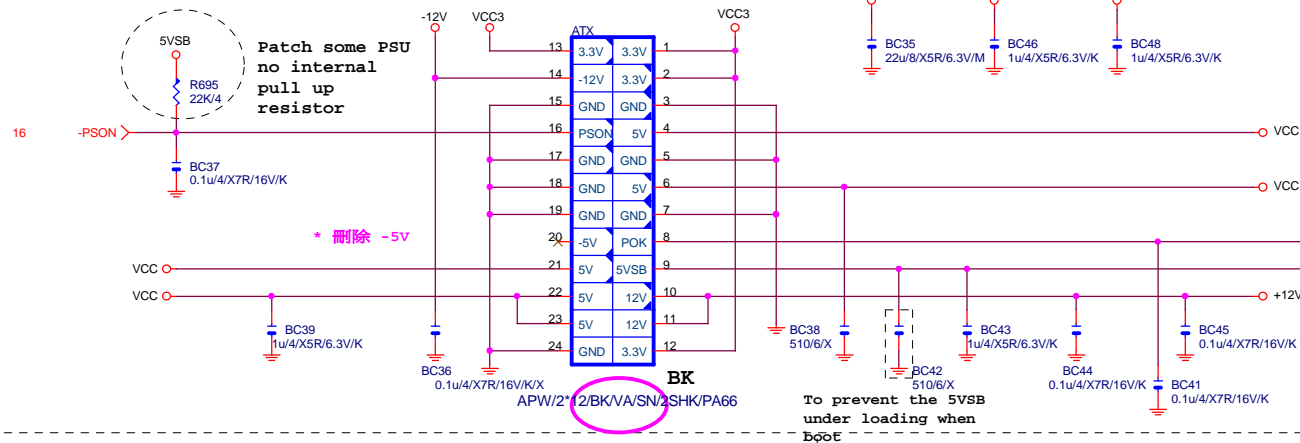
12 N_DEPSLP

At least 10ms delay after 3VDUAL stable

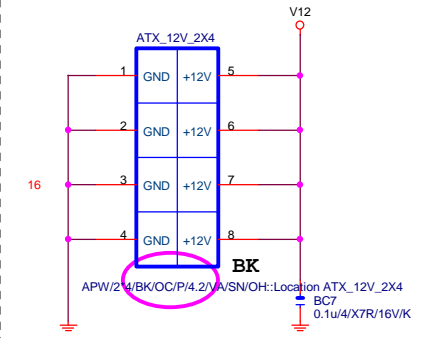
Gigabyte

Title			
DISCRETE POWER			
Size	Document Number		Rev
Custom	GA-B250M-Wind		1.0
Date:	Tuesday, November 08, 2016	Sheet	34 of 53

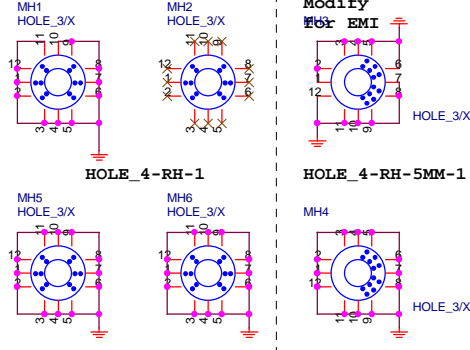
ATXX24 POWER CONNECTOR



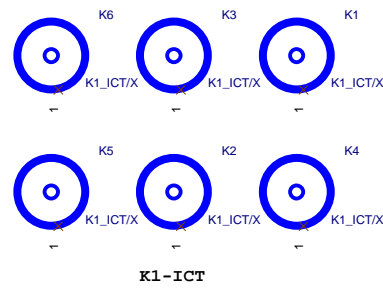
ATXX4 POWER CONNECTOR



螺絲孔

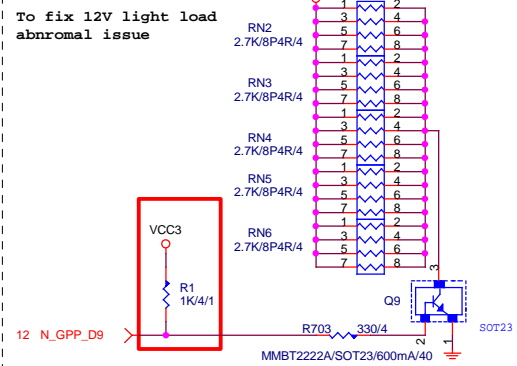


固定孔/光學點



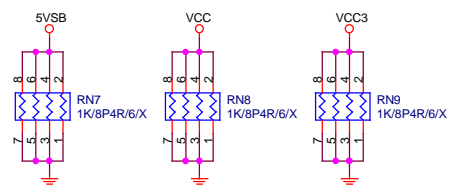
To prevent the 5VSB under loading when boot

+12V DUMMY LOAD

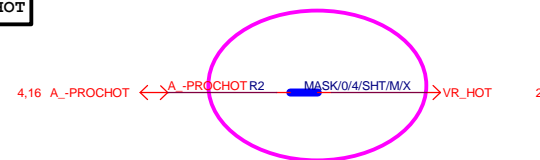


【技術通報R&D技術通報153】

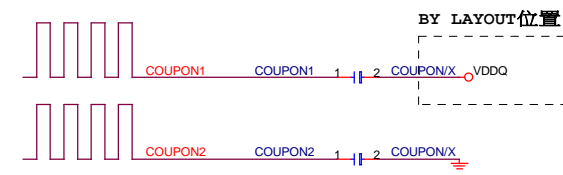
DUMMY LOAD



-PROHOT



COUPON

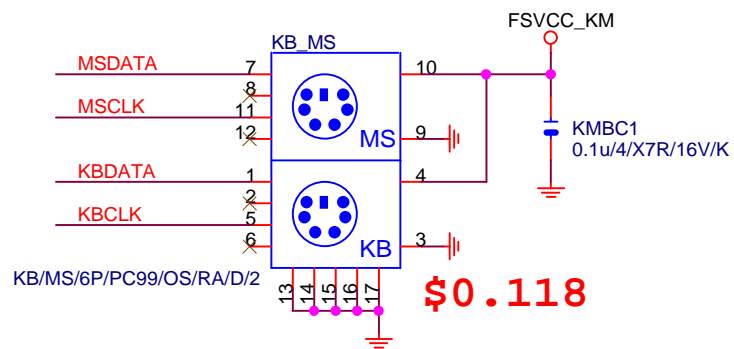


Gigabyte Technology

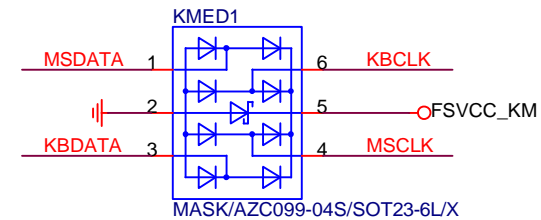
Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-B250M-Wind	1.0
Date:	Tuesday, November 08, 2016	Sheet 35 of 53

KB_MS_USB

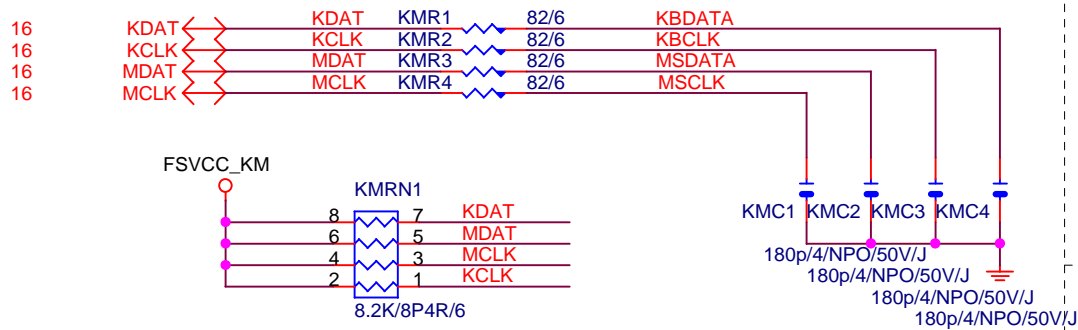
Rev: 81



ESD



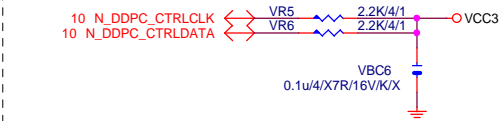
KB_MS_USB DAMPING/PU

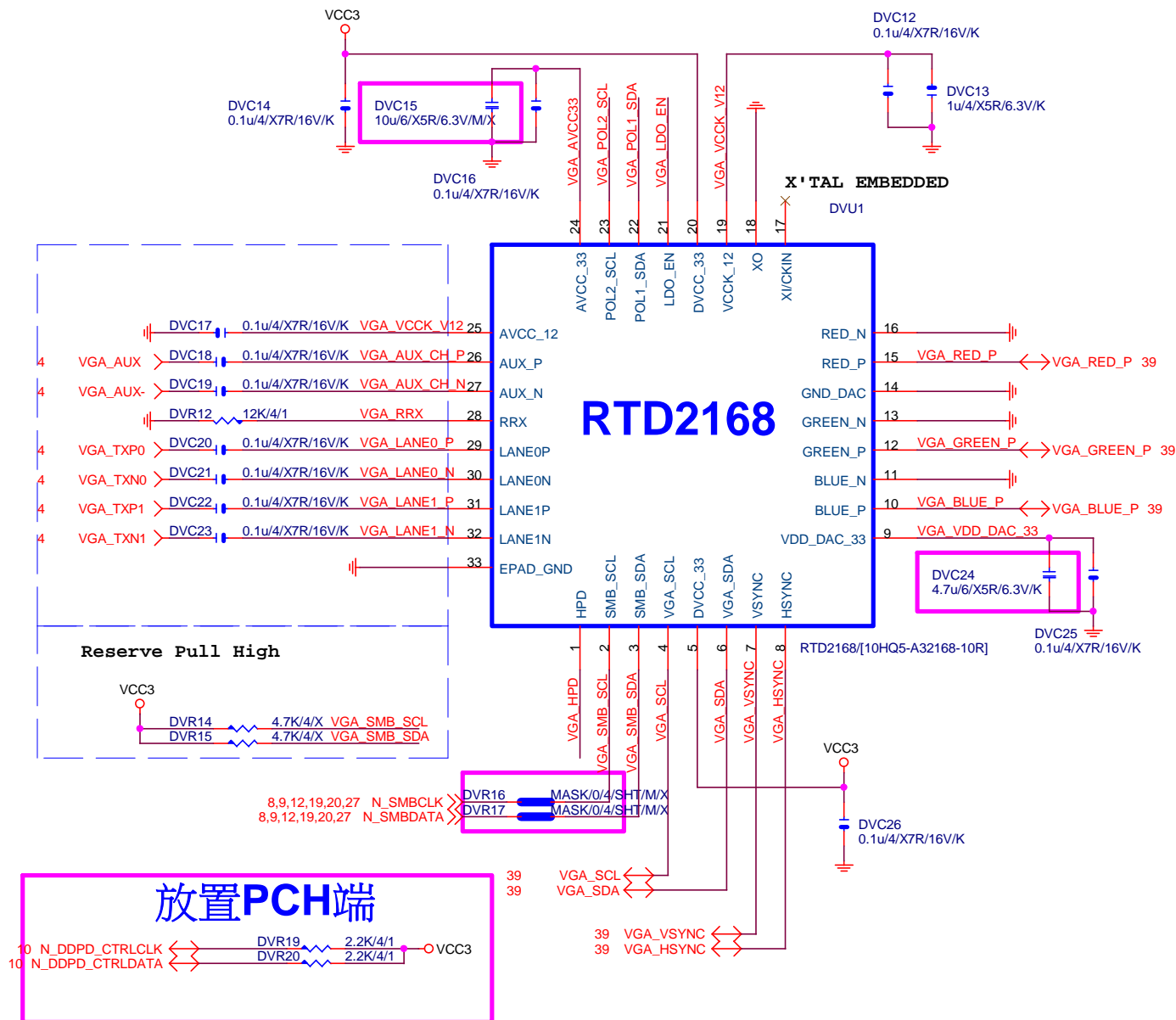


KB_MS_USB PWR

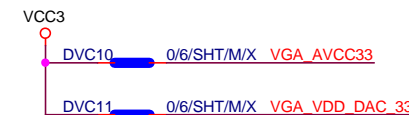
USB OC PROTECT

Gigabyte Technology			
Title			
KB_MS_USB			
Size	Document Number		Rev
A	GA-B250M-Wind		1.0
Date:	Tuesday, November 08, 2016	Sheet	36 of 53

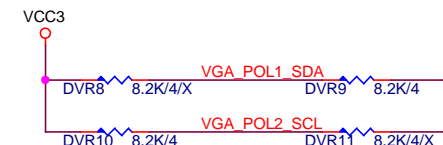




POWER

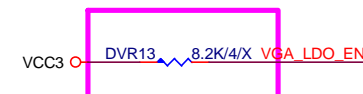


Power on latch



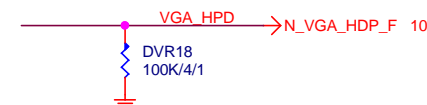
		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE

Embedded LDO

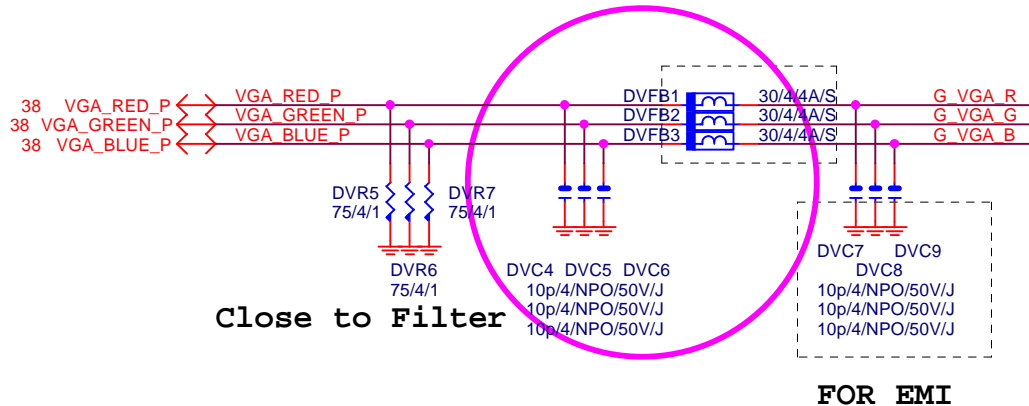
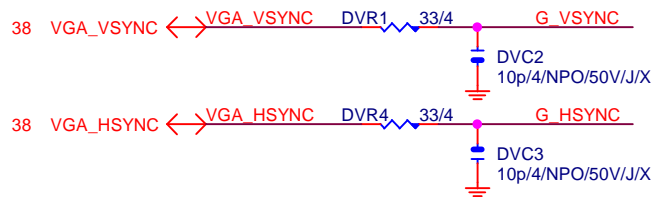
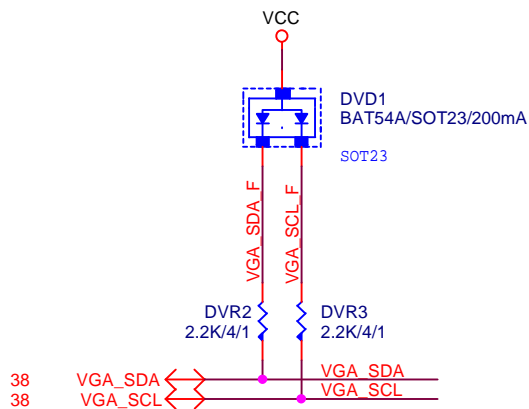


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

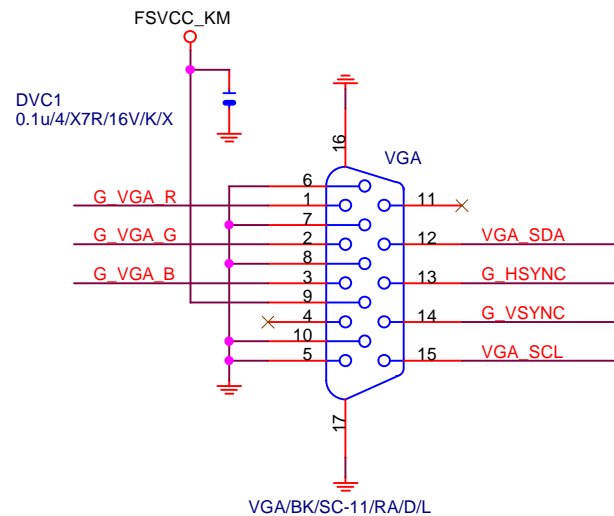
DP	HPD
----	-----



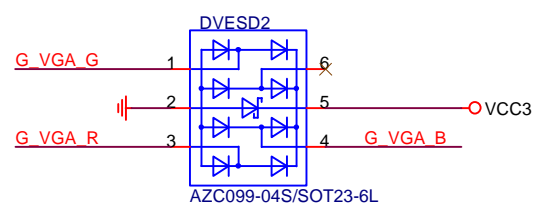
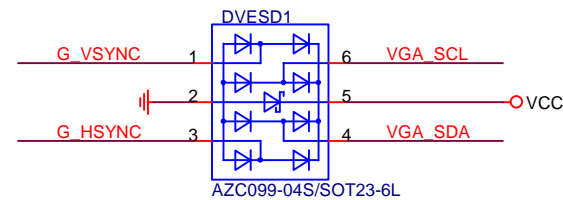
VGA SIGNAL R1.03



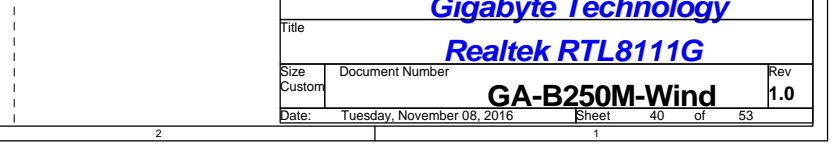
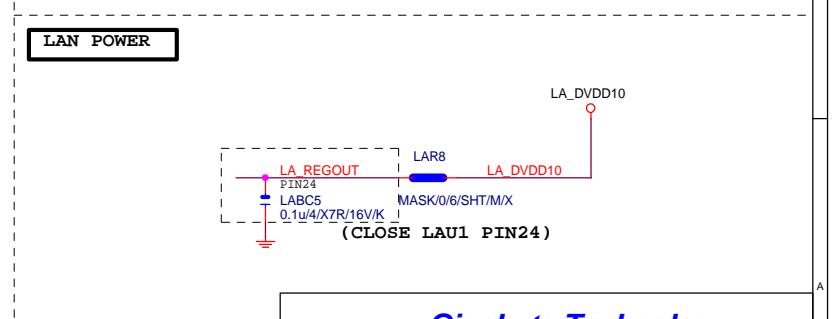
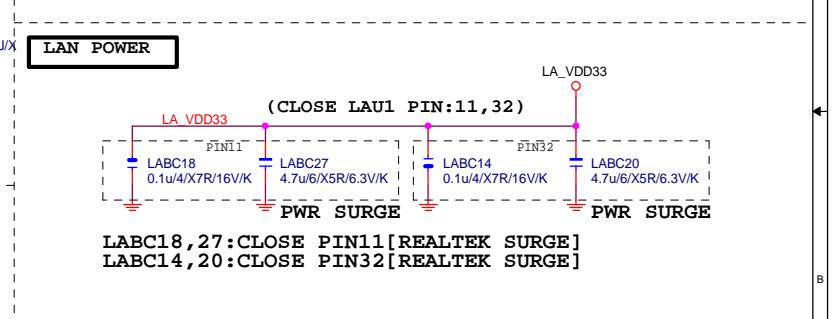
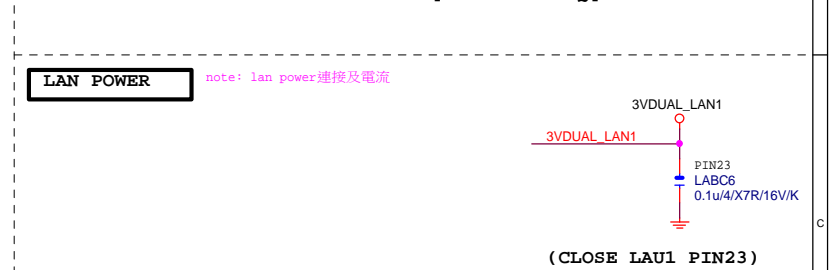
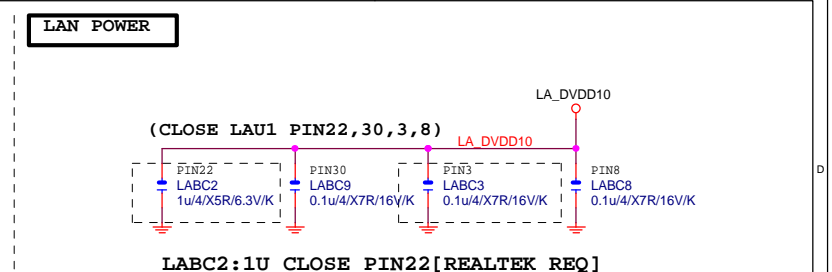
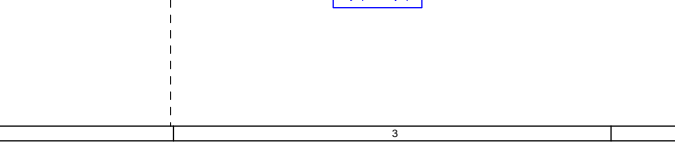
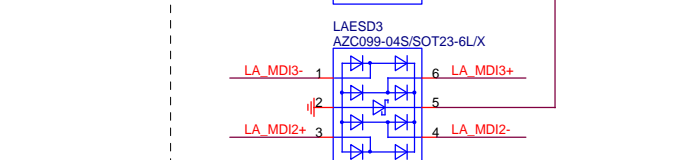
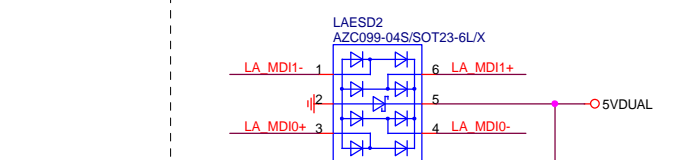
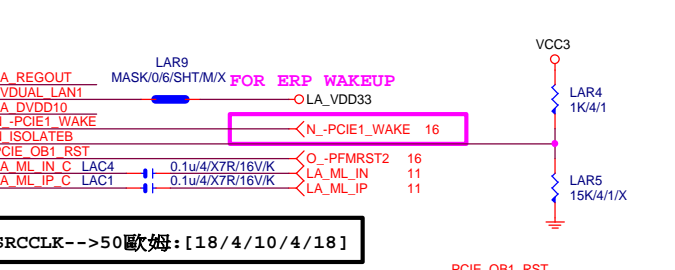
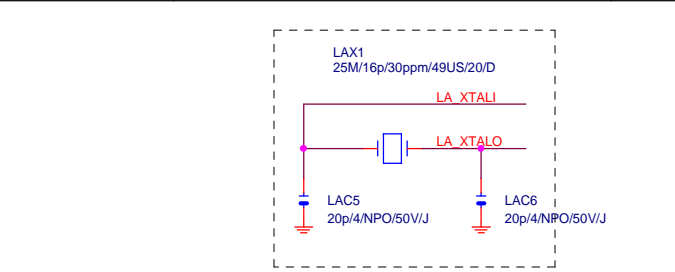
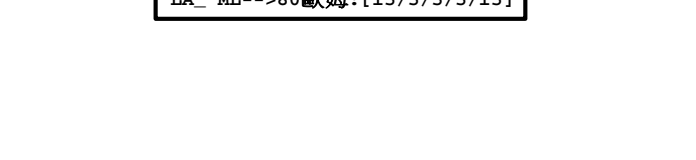
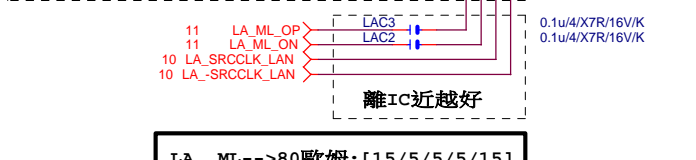
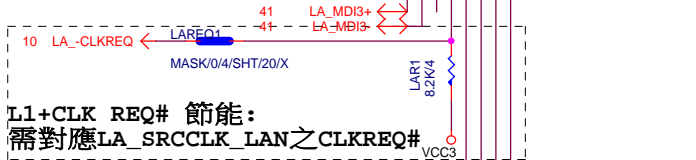
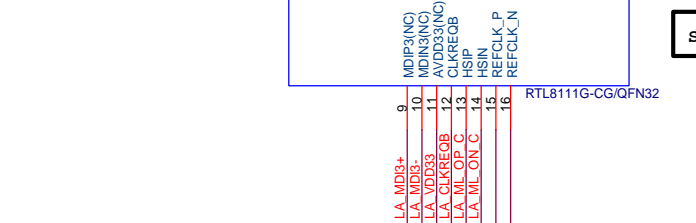
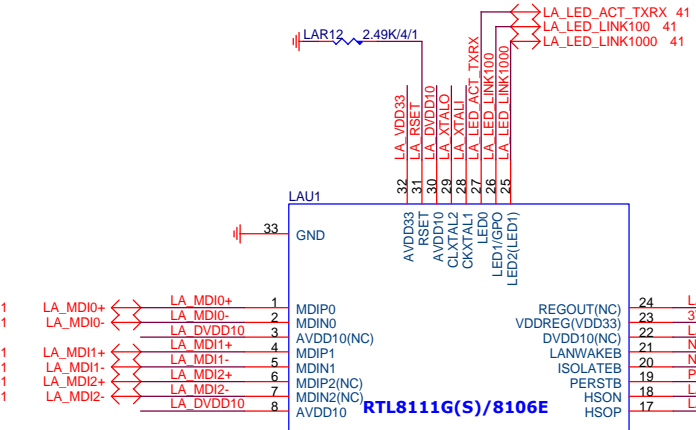
VGA CONN. 非架高型VGA (BLACK)



VGA ESD



Gigabyte Technology			
DP-VGA RTD2168			
Title			
Size	Document Number	GA-B250M-Wind	Rev 1.0
Custom			
Date:	Tuesday, November 08, 2016	Sheet 39	of 53

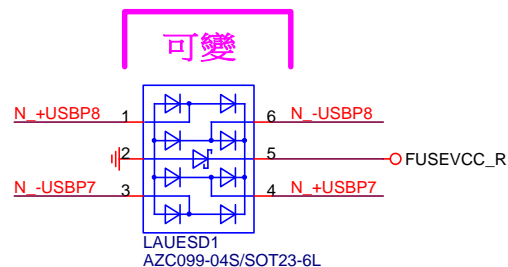


USB_LAN CONNECTOR

R1.06

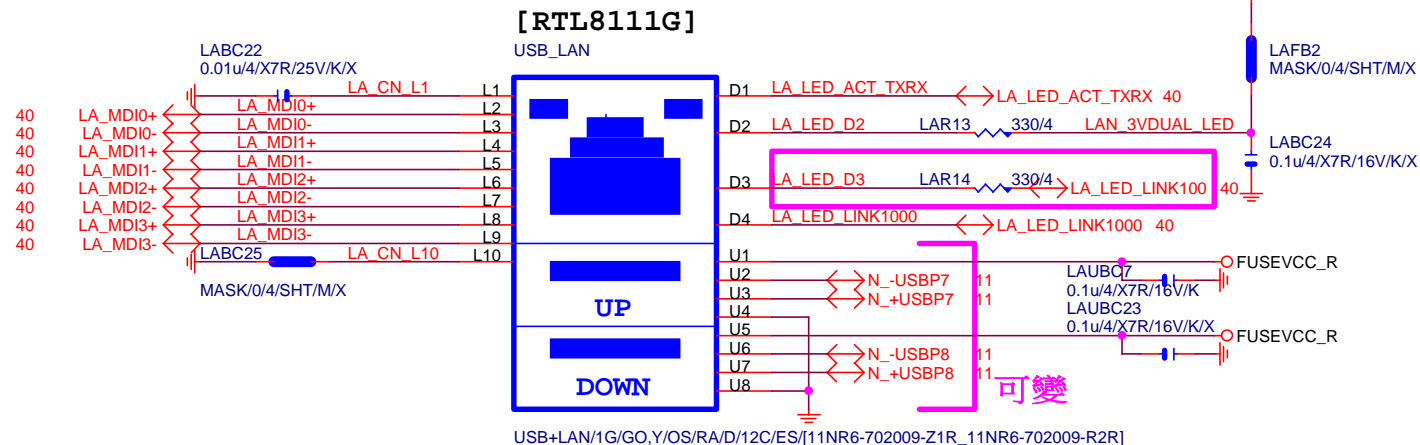
RMA ESD PROTECT

note:可變更USB NAME



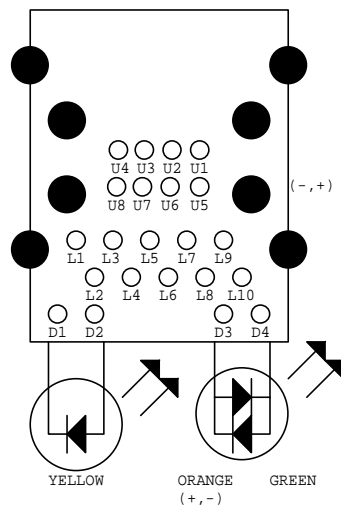
USB_LAN CONNECTOR

note:可變更USB NAME



LA_MDI-->100歐姆:[20/4/8/4/20]

USB_LAN LAYOUT示意圖



Dual Color LED

Green

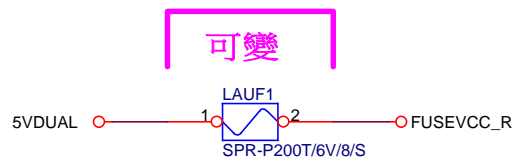
Orange

Single Color LED

Yellow

USB POWER

note:可變更FUSE



Close to connector

USB LAN 2-Port 2.0A

FUSE-0805

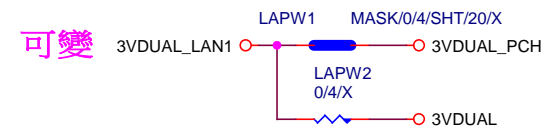
EMI SHORT PAD

PS:視EMI需求



LAN POWER

note: lan power連接及電流



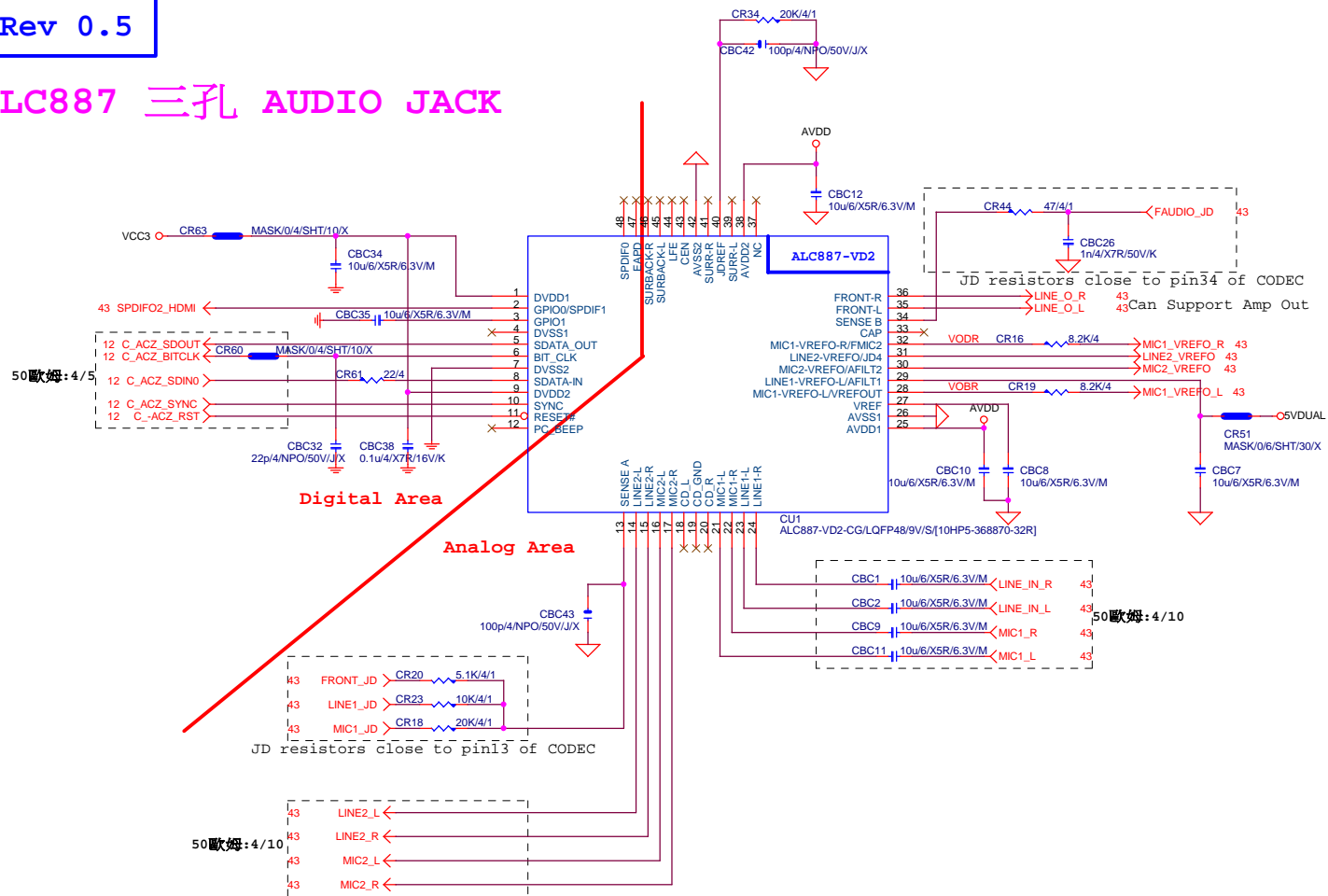
Gigabyte Technology

LAN CONNECTOR-RTL8111HS

GA-B250M-Wind

1.0

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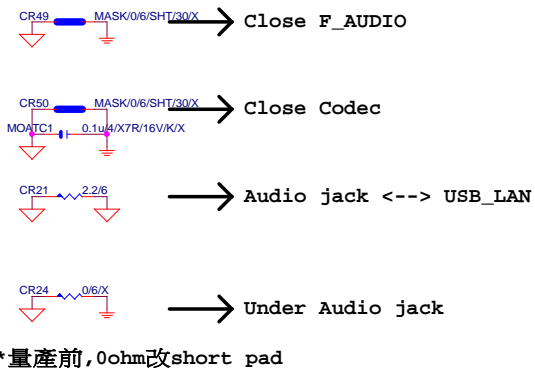
1. MH1空間夠,下DGND
空間不夠,改為Isolate
2. MH2一律改為Isolate

☐ MH1 MH2 ☐
DGND **Isolate**

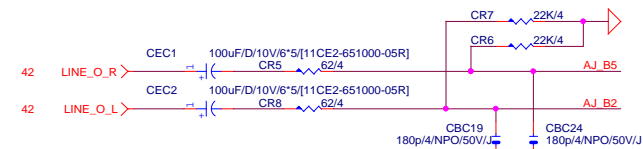
LAYOUT注意:要加
GND切割線



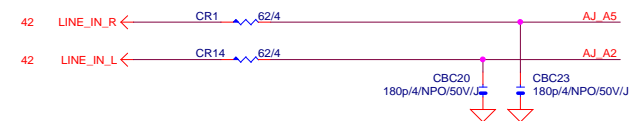
Rev 0.5



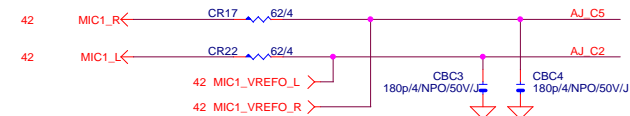
LINE-OUT



LINE-IN



MIC-IN

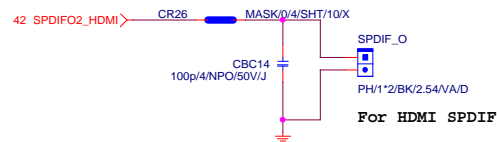


SURROUND

CEN/LFE

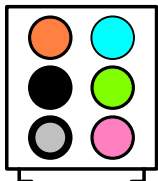
SURRBACK

SPDIF_OUT



SPDIF_IN

AZALIA JACK

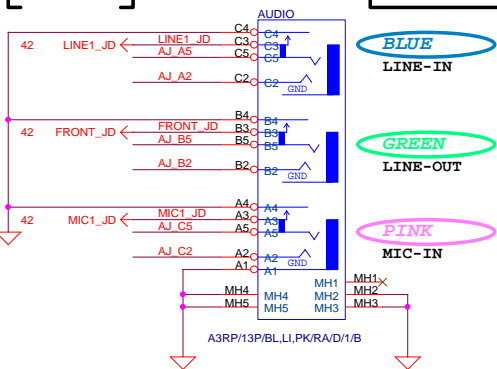


AZALIA JACK

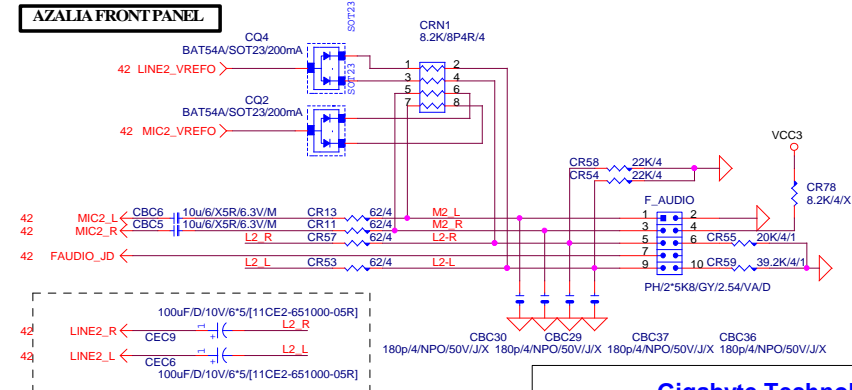
BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN

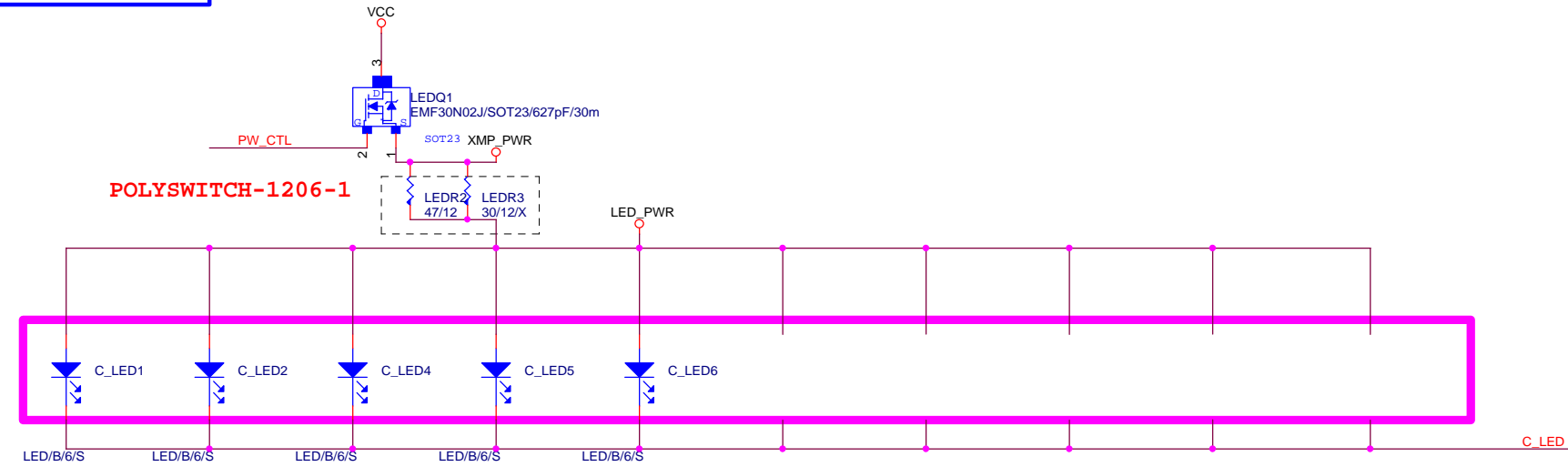


AZALIA FRONT PANEL



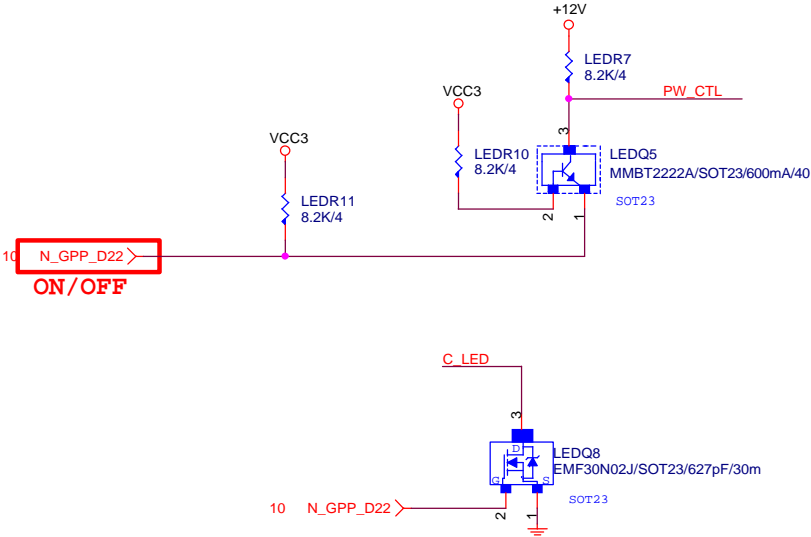
Gigabyte Technology

Title			AUDIO JACK
Size			GA-B250M-Wind
Date			Tuesday, November 08, 2016
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Rev			1.0



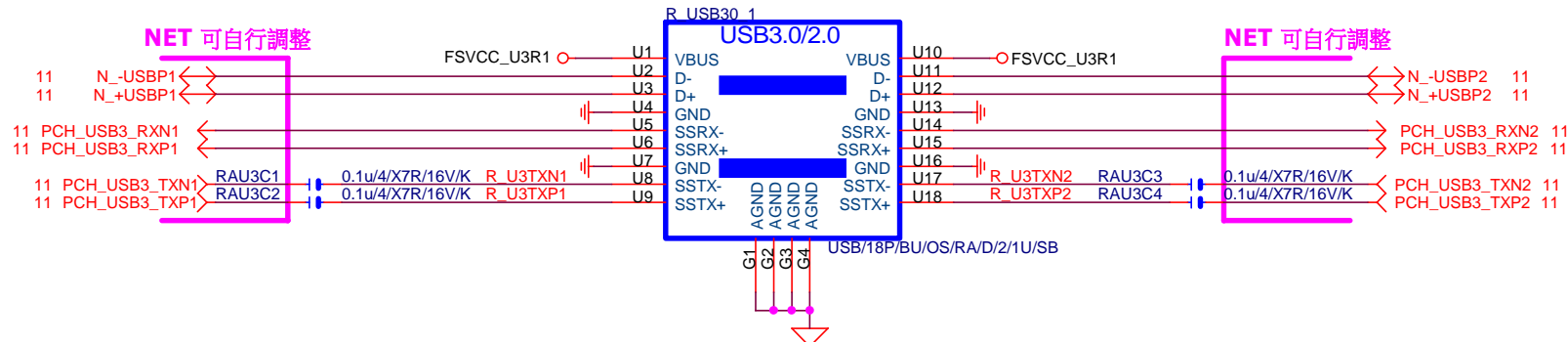
Ambient LED Control

	N_GPP_D22
Still Mode	H
OFF Mode	L



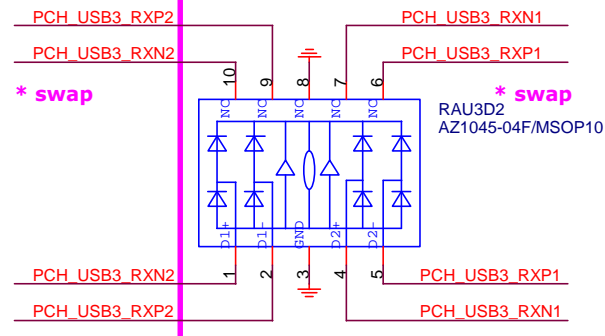
Rev: 0.53

ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可

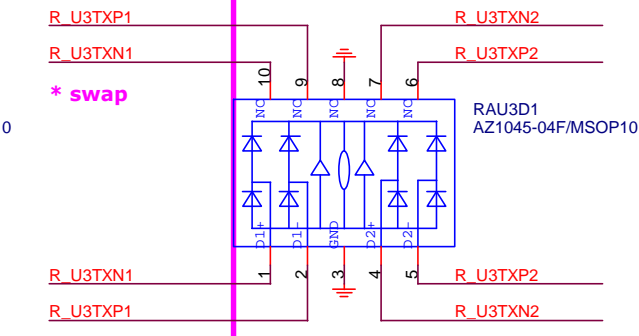


ESD

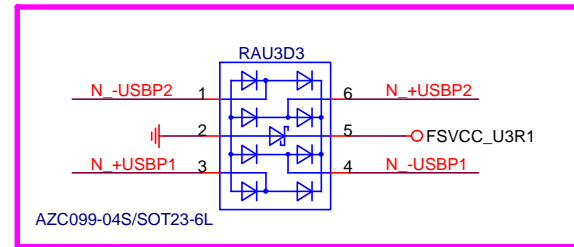
NET 可自行調整



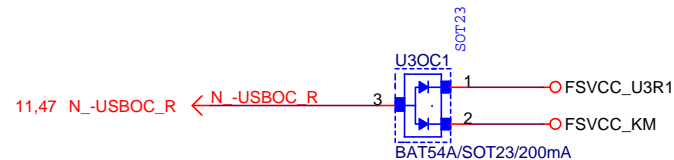
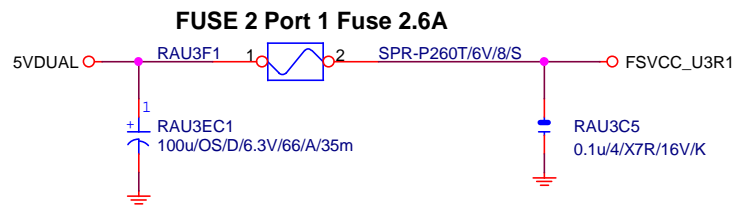
NET 可自行調整



NET 可自行調整

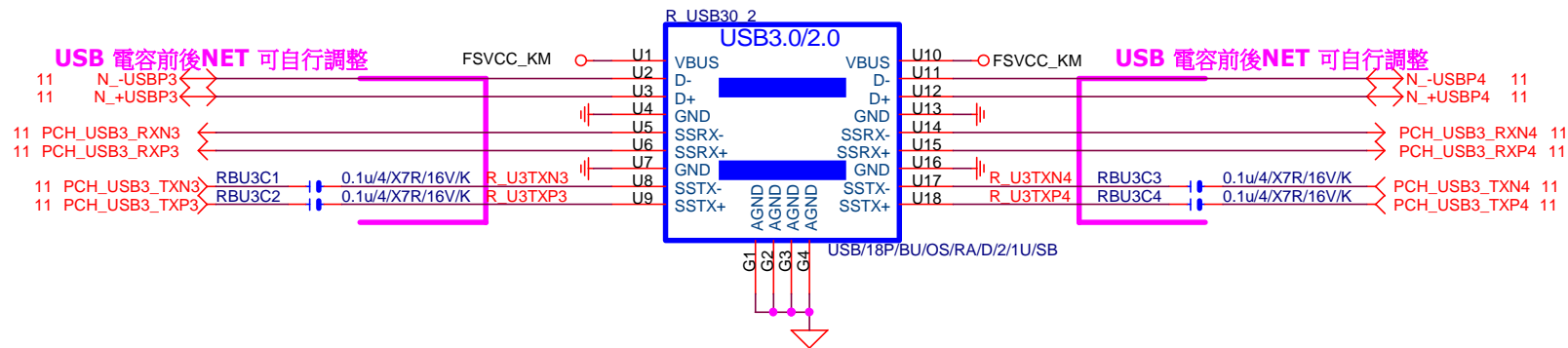


FUSE

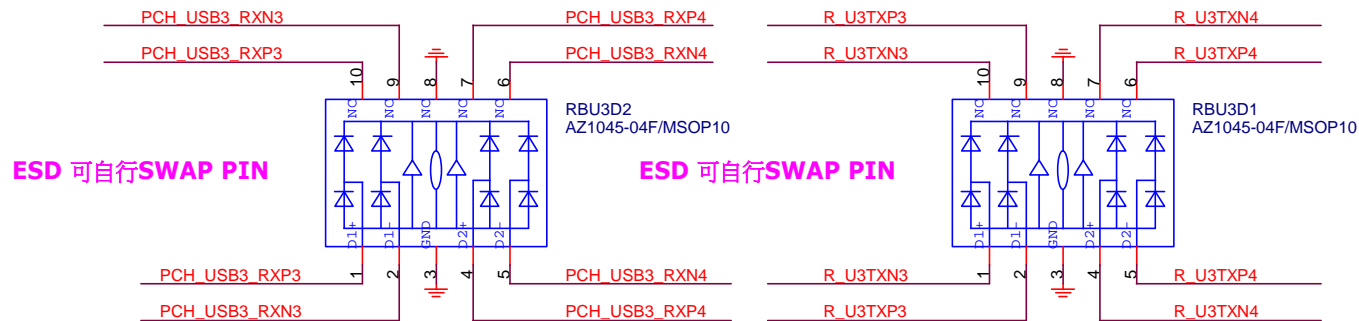


Gigabyte Technology

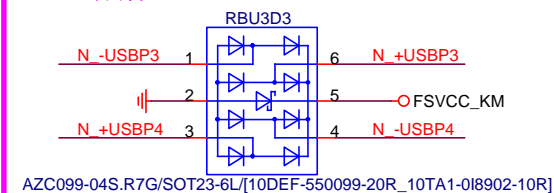
Title			
R_USB30,USB_OC			
Size	Document Number	GA-B250M-Wind	
Custom			Rev 1.0
Date:	Tuesday, November 08, 2016	Sheet	45 of 53



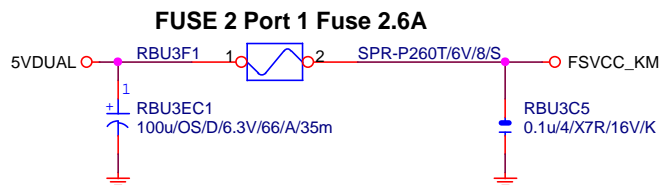
ESD



ESD 可自行SWAP PIN

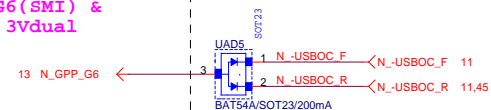
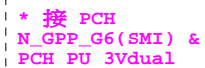
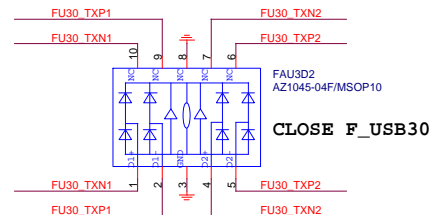
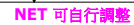


FUSE



Gigabyte Technology

Title			
R_USB30,USB_OC			
Size	Document Number	GA-B250M-Wind	
Custom			Rev 1.0
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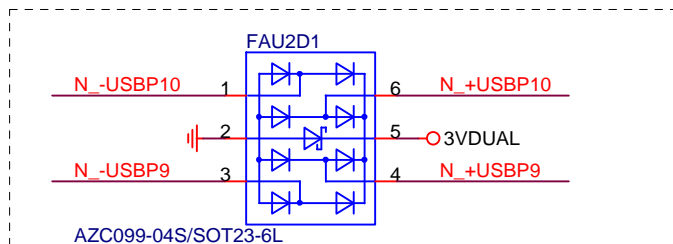
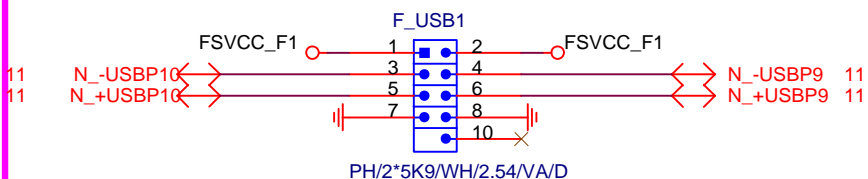


Rev: 0.7

FRONT USB1

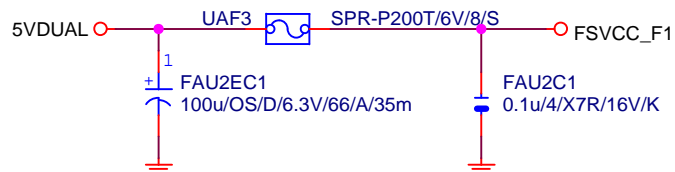
NET 可變

FUSB2X5-HS



Close to connector

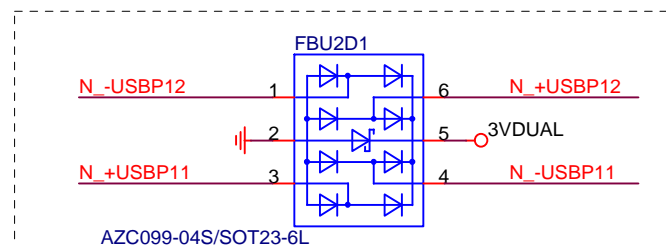
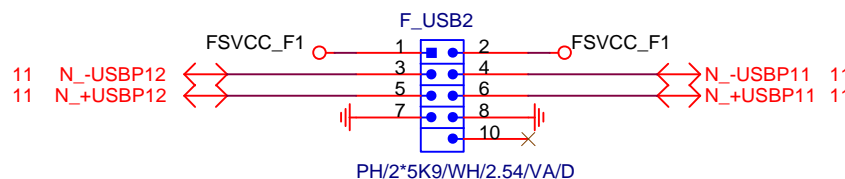
FUSE 2 Port 1 Fuse 2A



FRONT USB2

NET 可變

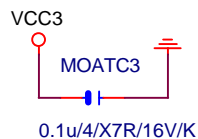
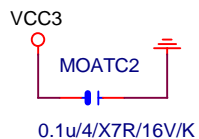
FUSB2X5-HS



Close to connector

FUSE 2 Port 1 Fuse 2A

F_USB 2.0 OC SIGNAL



Gigabyte Technology

Title

USB2.0

Size
A

Document Number

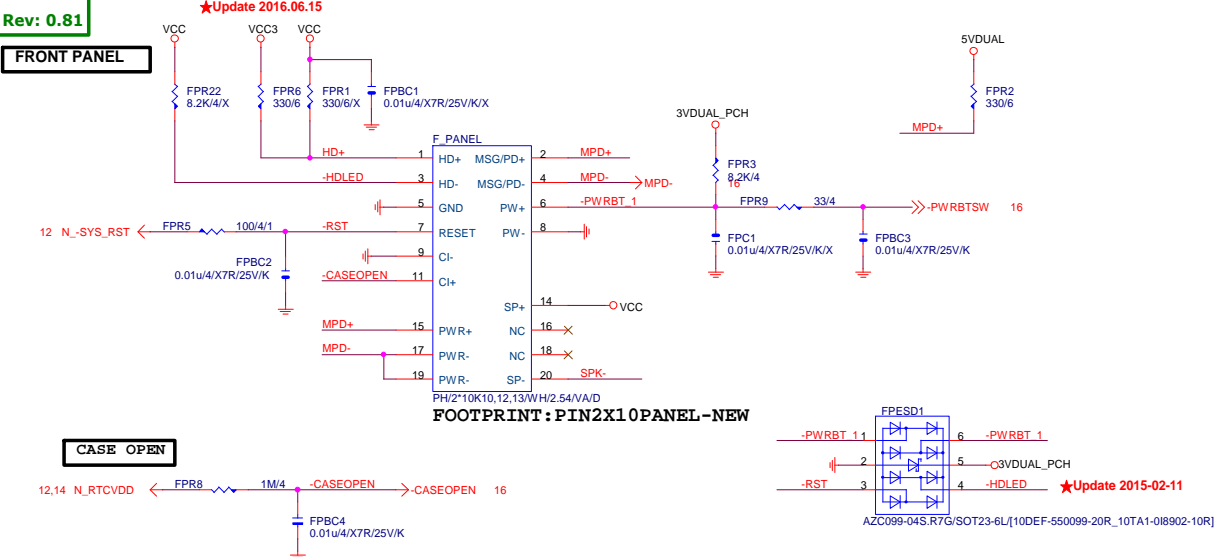
GA-B250M-Wind

Rev
1.0

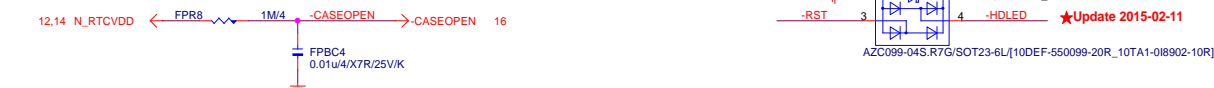
Date: Tuesday, November 08, 2016

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FRONT PANEL

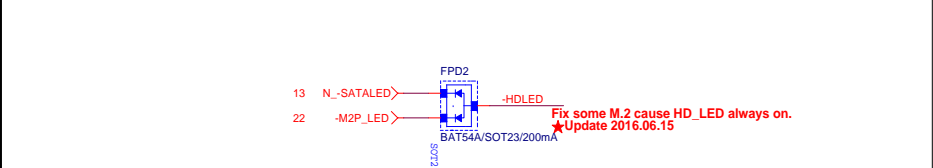


CASE OPEN

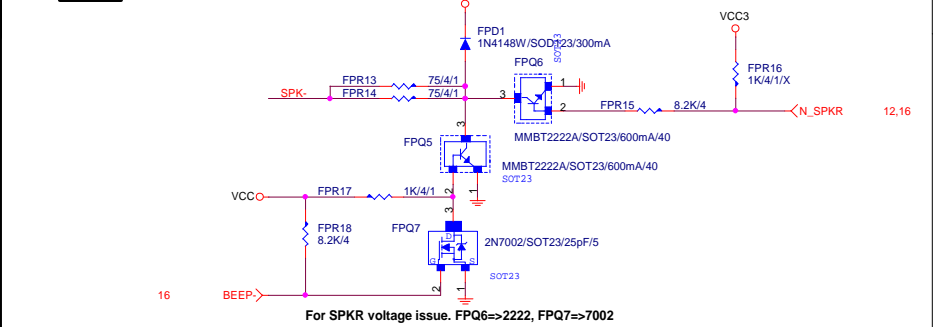


FRONT PANEL SHORT

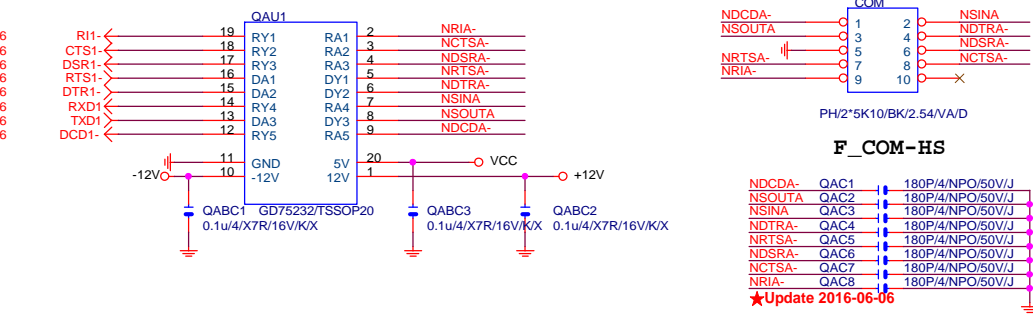
SATA/M.2 LED



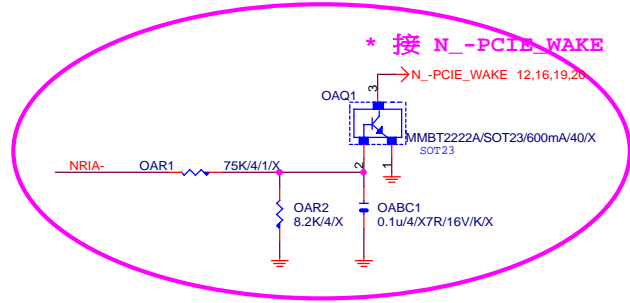
SPKR



COM PORT Rev: 0.7

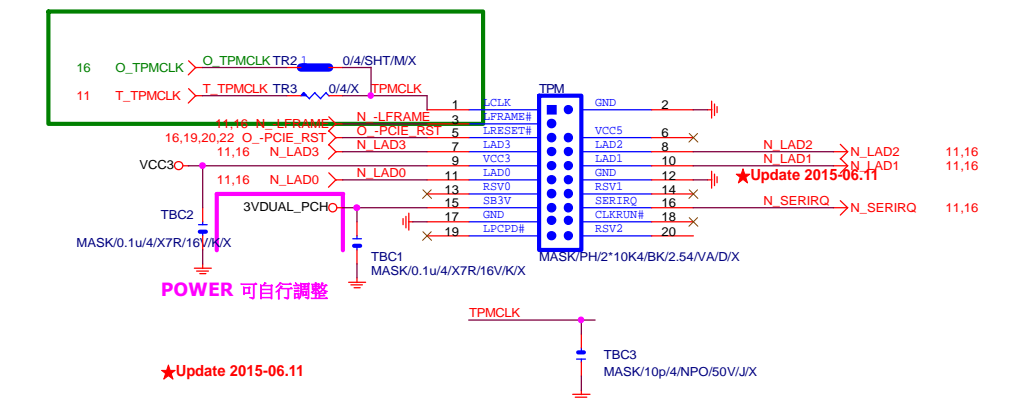


COM RI N/A



LPT PORT

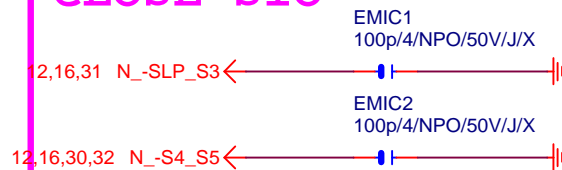
TPM CONNECT



Thunderbolt

★Update 2015-12-29

CLOSE SIO

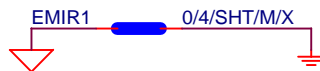


CLOSE PCH



close to PCH (NR17)

R_USB30_2 & DVI 之間

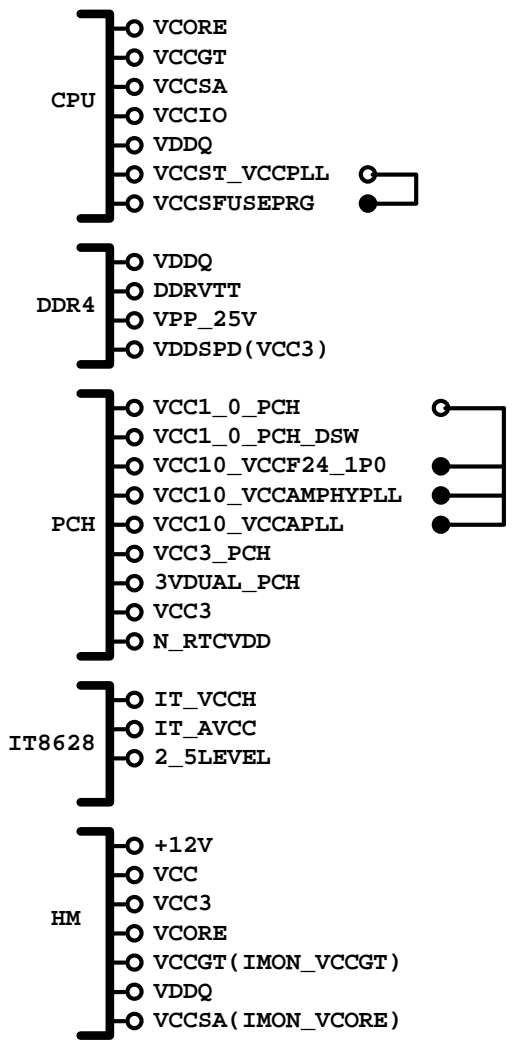


close to FRONT PANEL

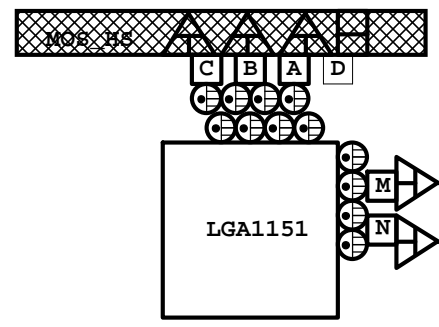
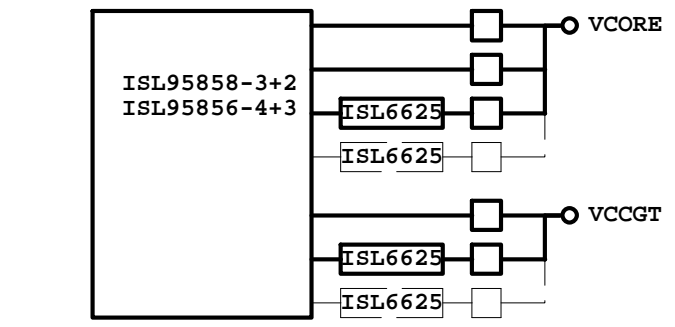
GIGABYTE™

Title		
EMI/ESD		
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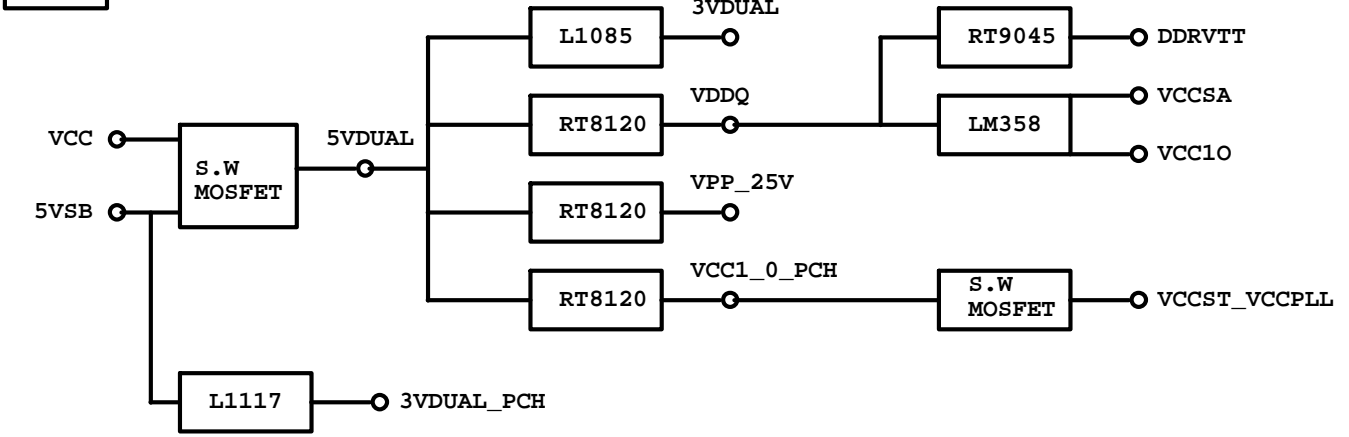
POWER BLOCK MAP



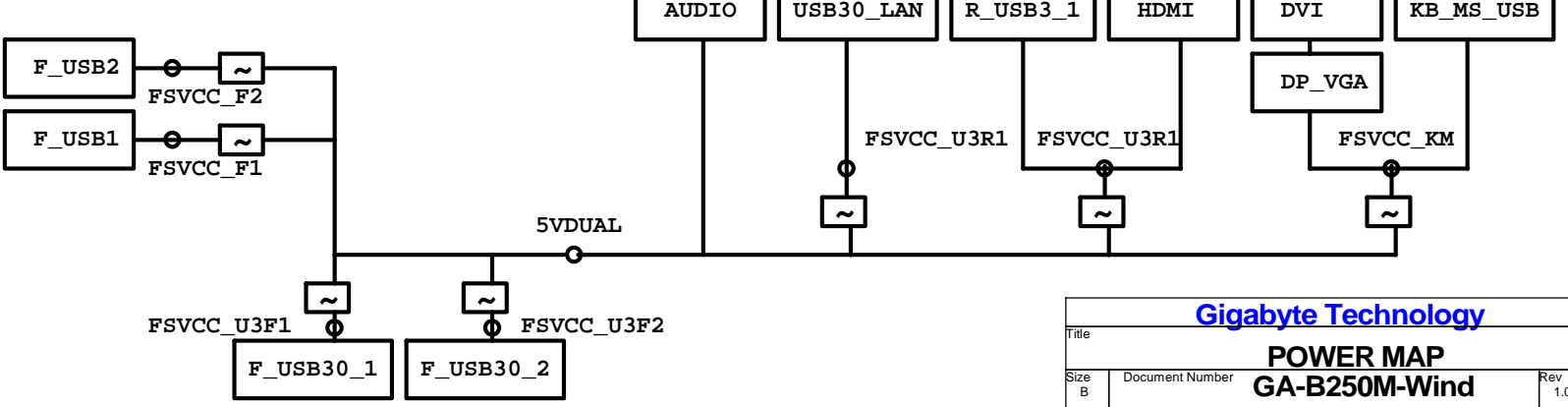
VCORE/VCCGT

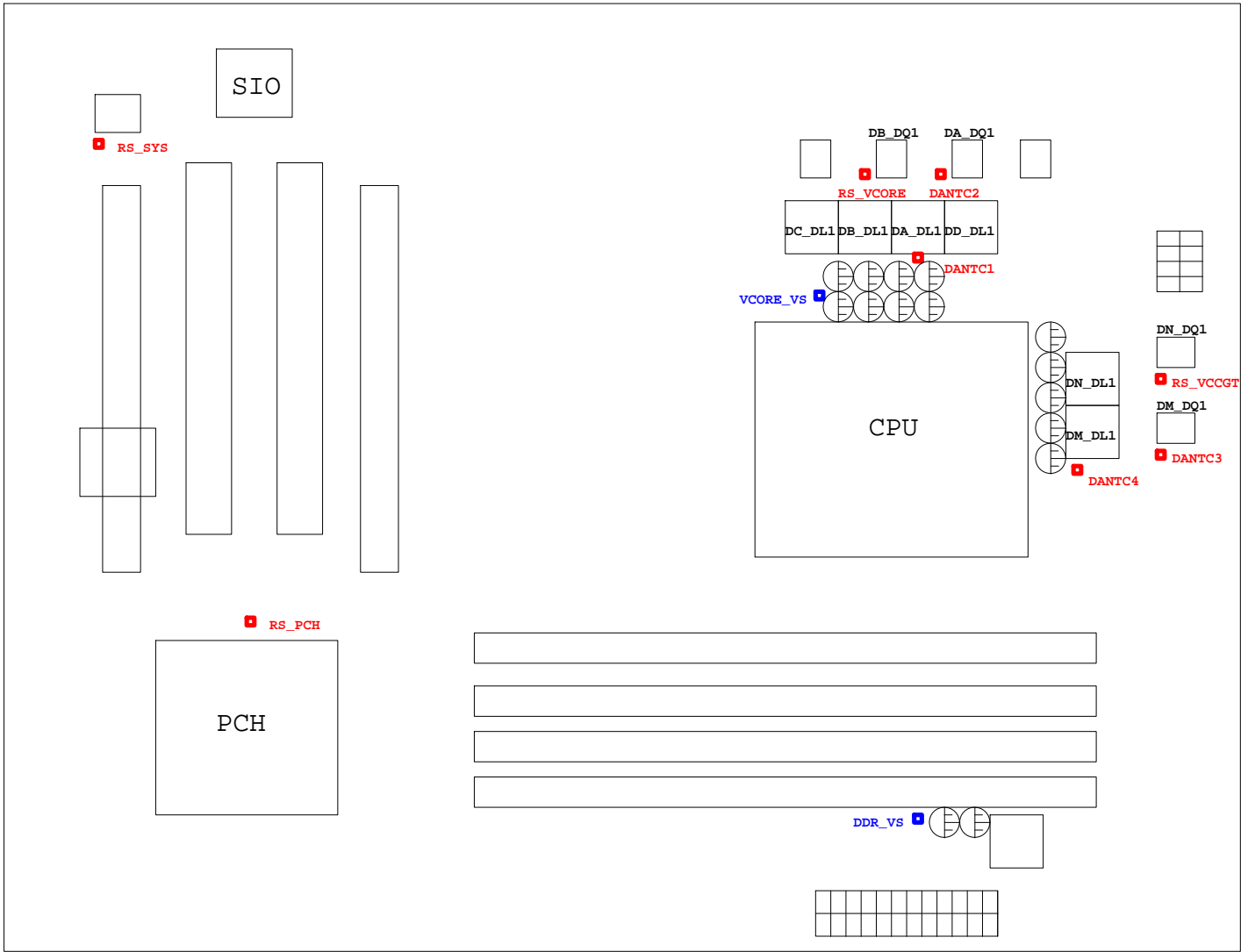


POWER



FUSE POWER F/R





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