

Model Name: GA-H170M-D3H 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,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	ASM1083 PCI BRIDGE
24	ASM1083 POWER
25	PCI SLOT 1&2
26	ISL95858_856 PWM
27	ISL95858_856 MOS_VCORE

SHEET TITLE

28	ISL95858_856 MOS_VCCGT
29	VCCSA_VCCIO_VCCPLL
30	RT8120_DDR_VDDQ
31	RT8068A_VPP_25V
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
46	F_USB30
47	F_USB
48	COM , LPT , TPM , THB
49	F_PANEL
50	TABLE LIST
51	POWER MAP

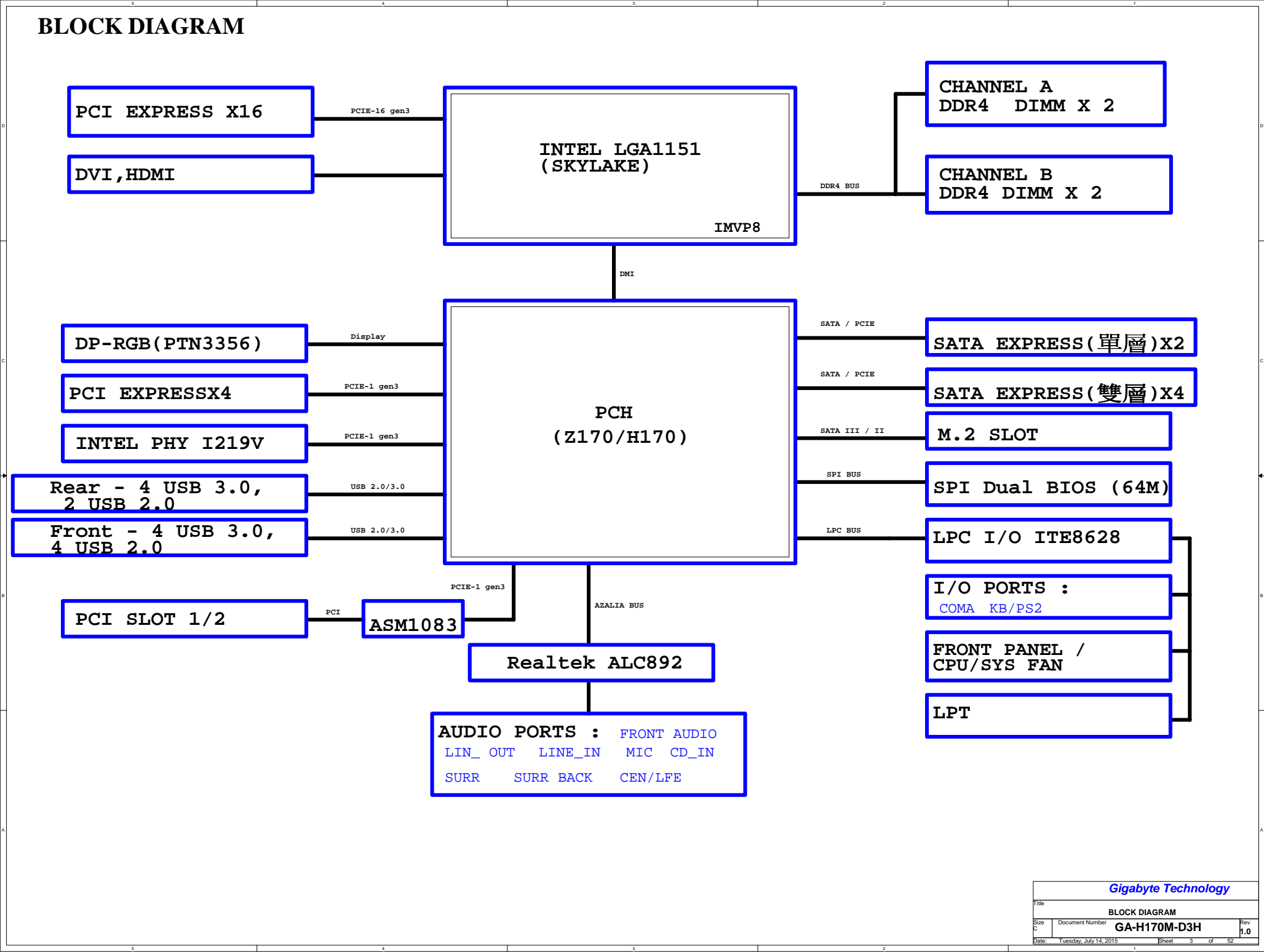
Gigabyte Technology			
Title			
Cover Sheet			
Size	Document Number	Rev	
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rev 1.0    Circuit or PCB layout change

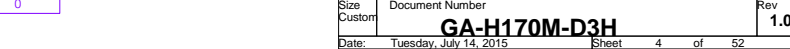
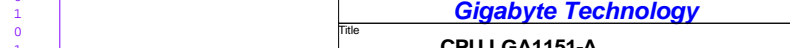
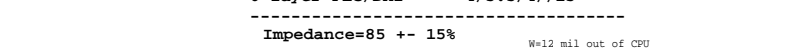
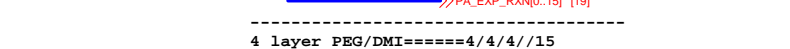
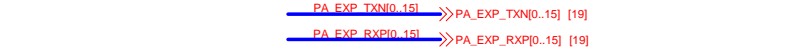
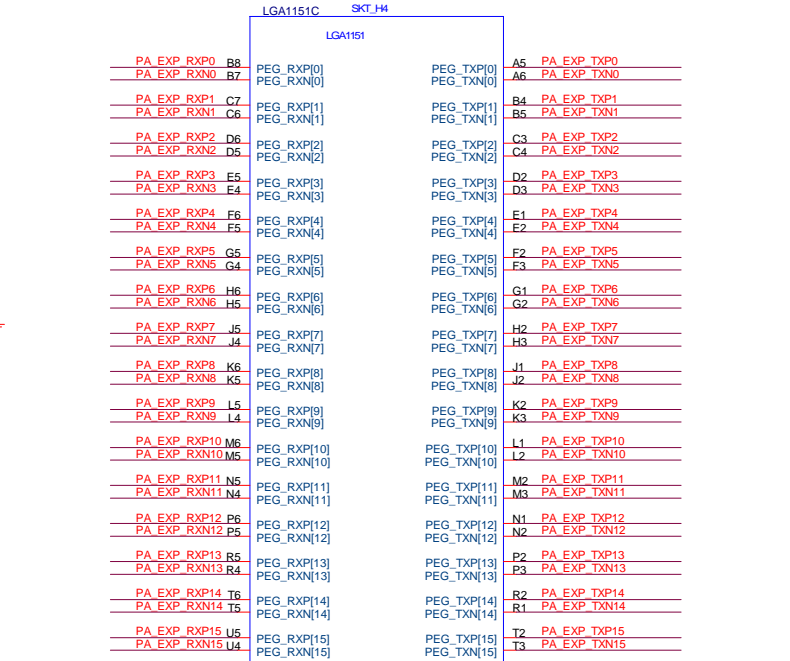
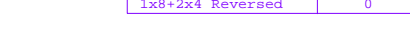
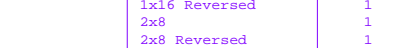
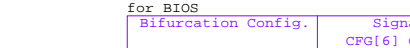
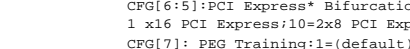
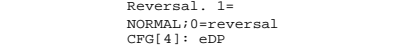
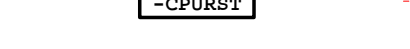
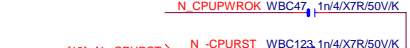
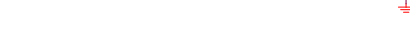
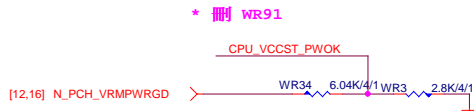
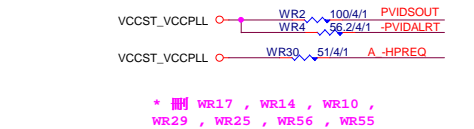
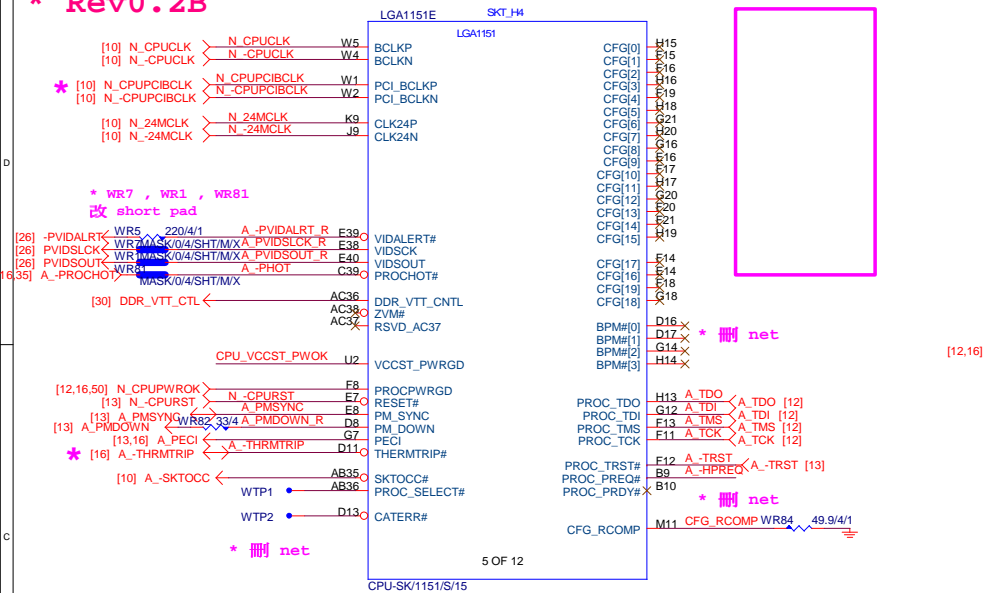
## 2015/07/09

[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%

CFG[2]:x16 Lane Numbering  
Reversal. 1= NORMAL;0=reversal  
CFG[4]: eDP  
enable:1:disable/0=enable  
CFG[6:5]:PCI Express\* Bifurcation; 1l= 1 x16 PCI Express;10=2x8 PCI Express  
CFG[7]: PEG Training;1=(default) PEG Train immediately following RESET#;0=PEG Wait 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

PA\_EXP\_TXP0..15] >>>PA\_EXP\_TXP0..15] [19]  
PA\_EXP\_TXN0..15] >>>PA\_EXP\_TXN0..15] [19]  
PA\_EXP\_RXP0..15] >>>PA\_EXP\_RXP0..15] [19]  
PA\_EXP\_RXN0..15] >>>PA\_EXP\_RXN0..15] [19]

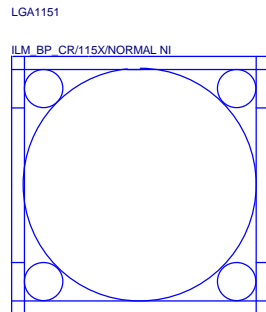
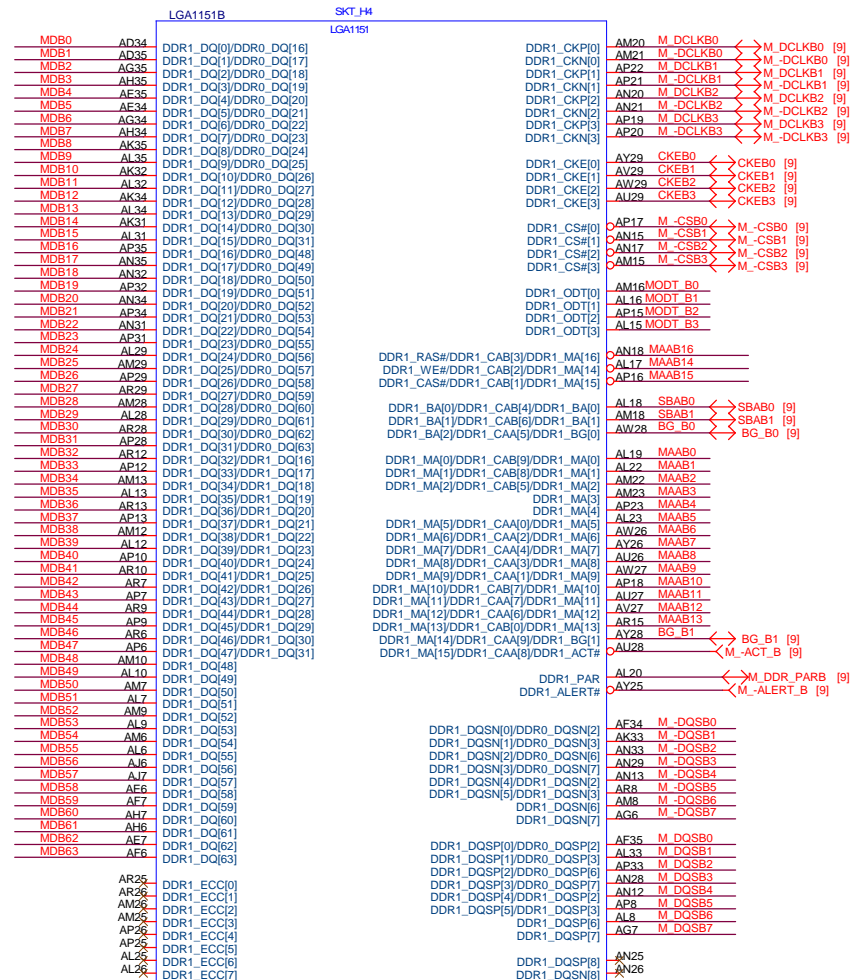
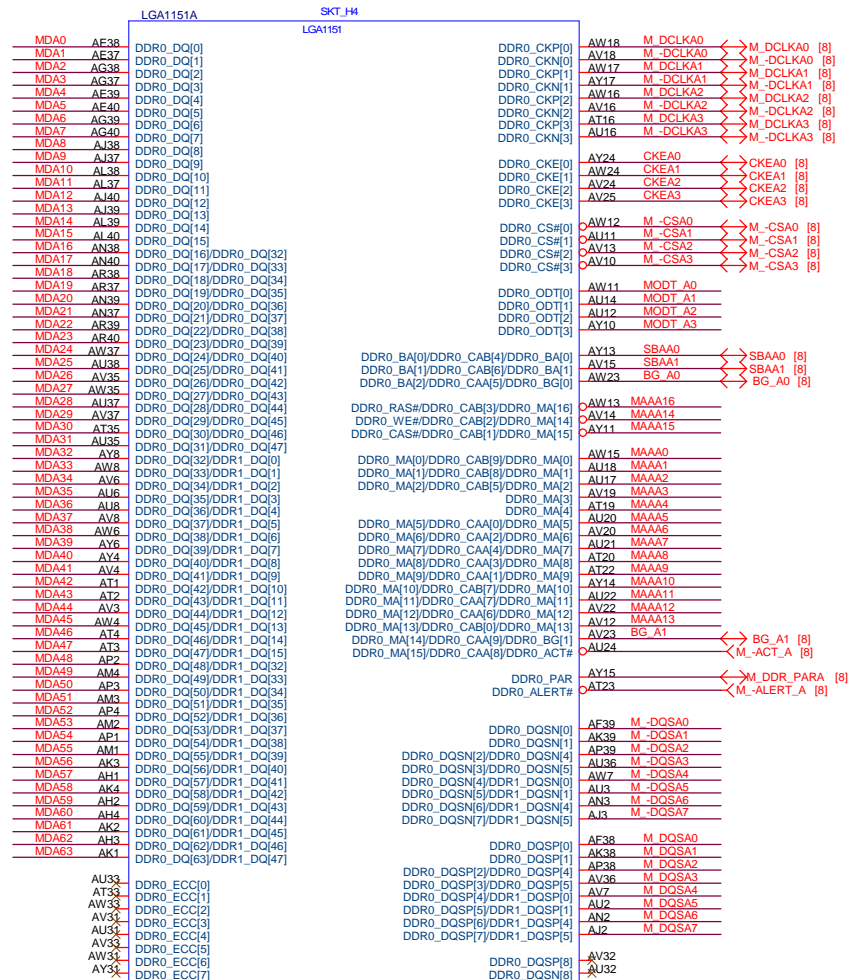
4 layer PEG/DMI=====4/4/4//15  
6 layer PEG/DMI=====4/5.5/4//15

Impedance=85 +- 15%

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

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CPU LGA1151-A		
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\* 改DDR4 net



Need check the new CPU ME

[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]

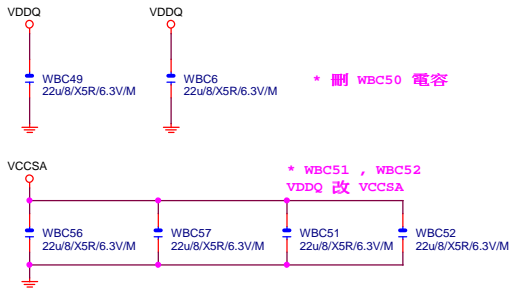
[8] M\_DQSA[0..7]  $\longleftrightarrow$  M\_DQSA[0..7]  
[8] M\_-DQSA[0..7]  $\longleftrightarrow$  M\_-DQSA[0..7]

[8] MAAA[0..16]  $\longleftrightarrow$  MAAA[0..16]  
[9] MAAB[0..16]  $\longleftrightarrow$  MAAB[0..16]

[9] M\_DQSB[0..7]  $\longleftrightarrow$  M DQSB[0..7]  
 [9] M\_-DQSB[0..7]  $\longleftrightarrow$  M -DQSB[0..7]

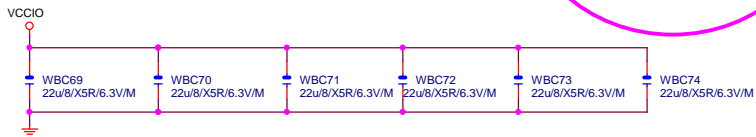
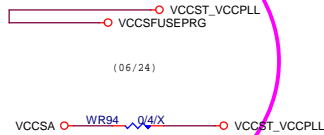
**Gigabyte Technology**

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CPU LGA1151-B			
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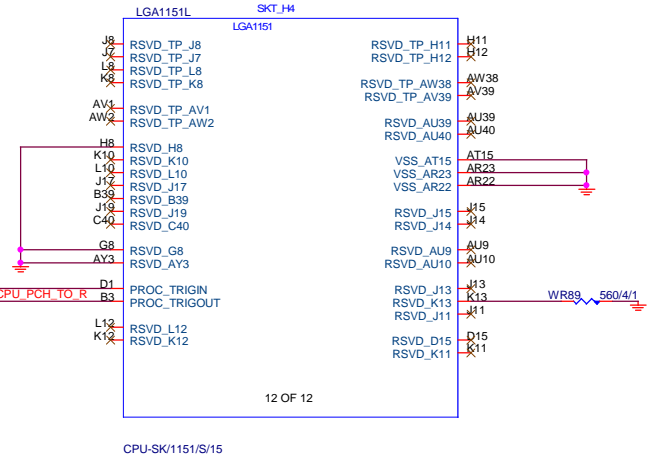
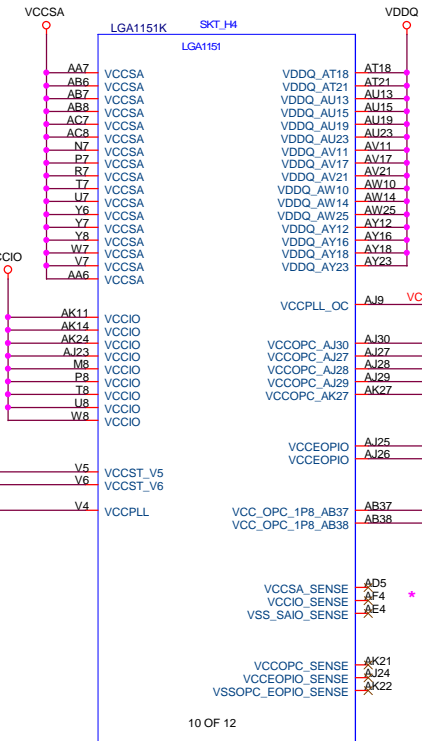
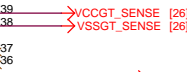
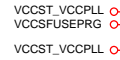
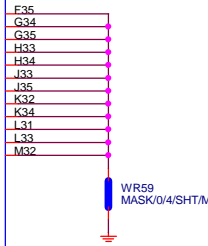
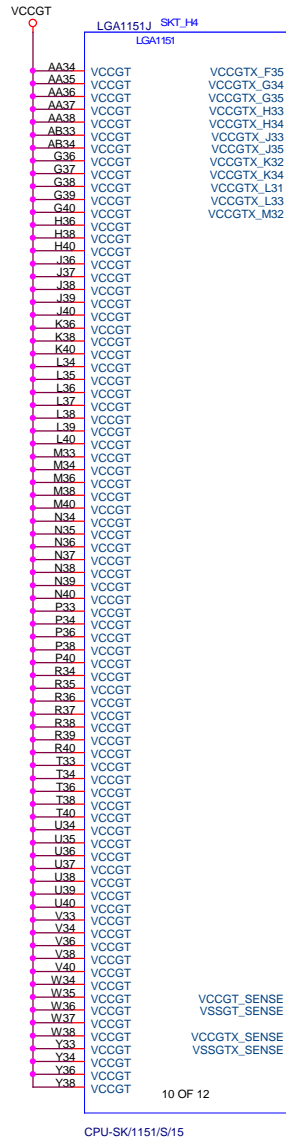


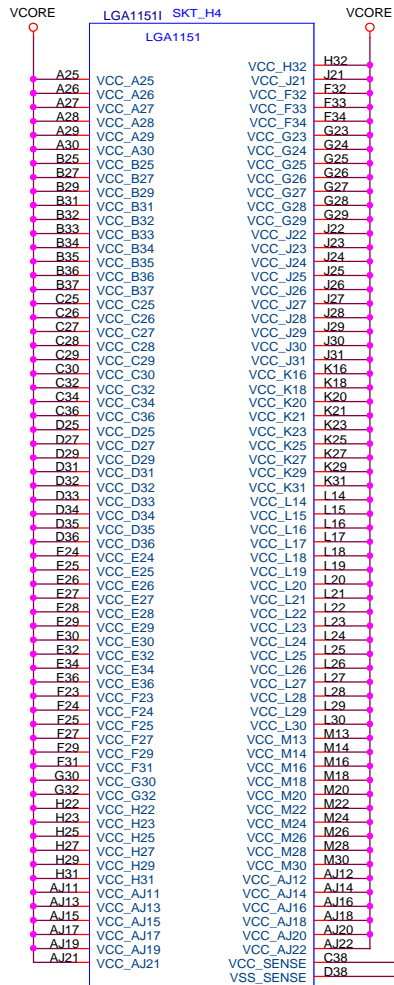
\* 刪 WBC124, WBC125, WBC126, WBC127 電容

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



\* 刪 VCCGT 電容

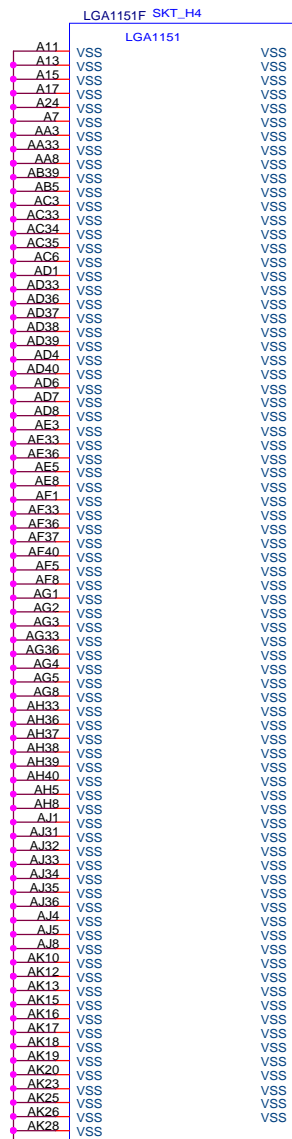




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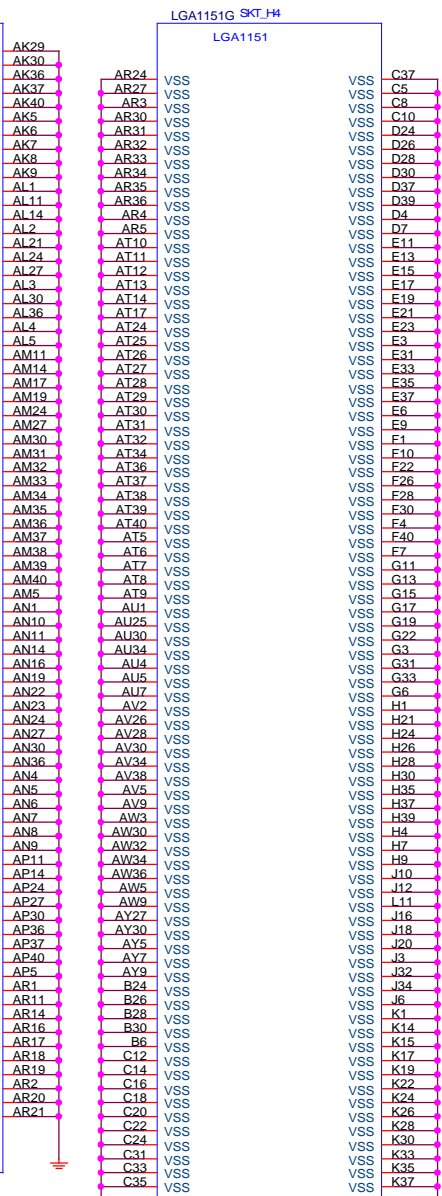
CPU-SK/1151/S/15

\* 刪 Vcore 電容



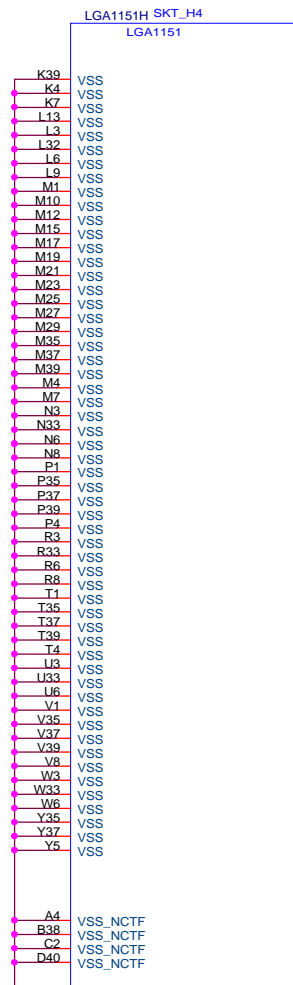
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CPU-SK/1151/S/15



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CPU-SK/1151/S/15



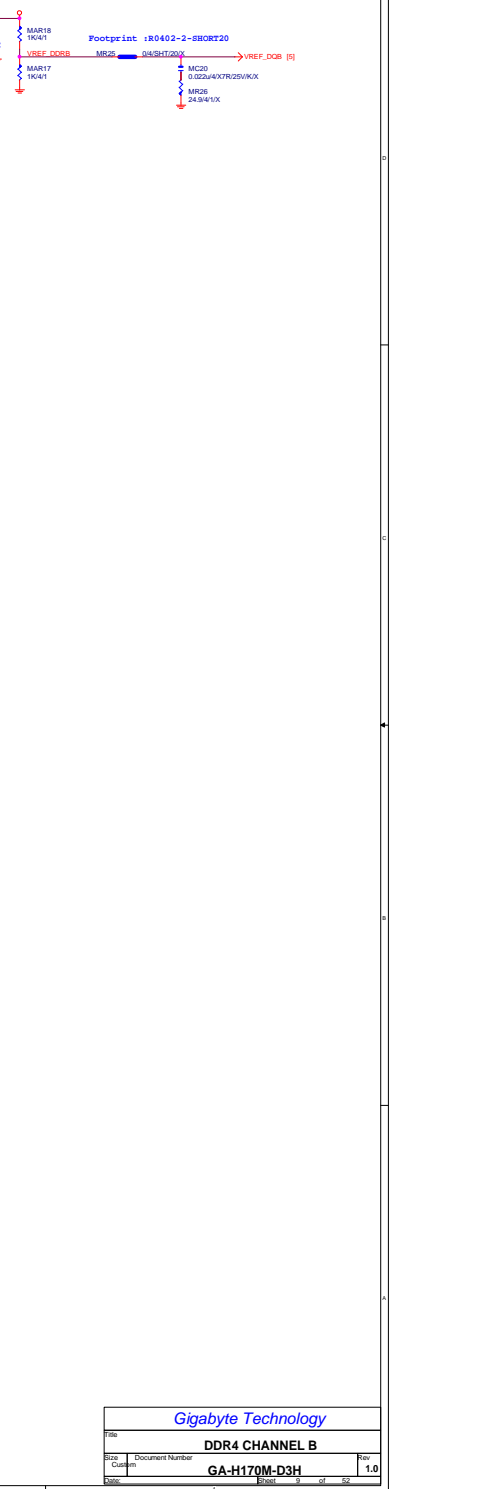
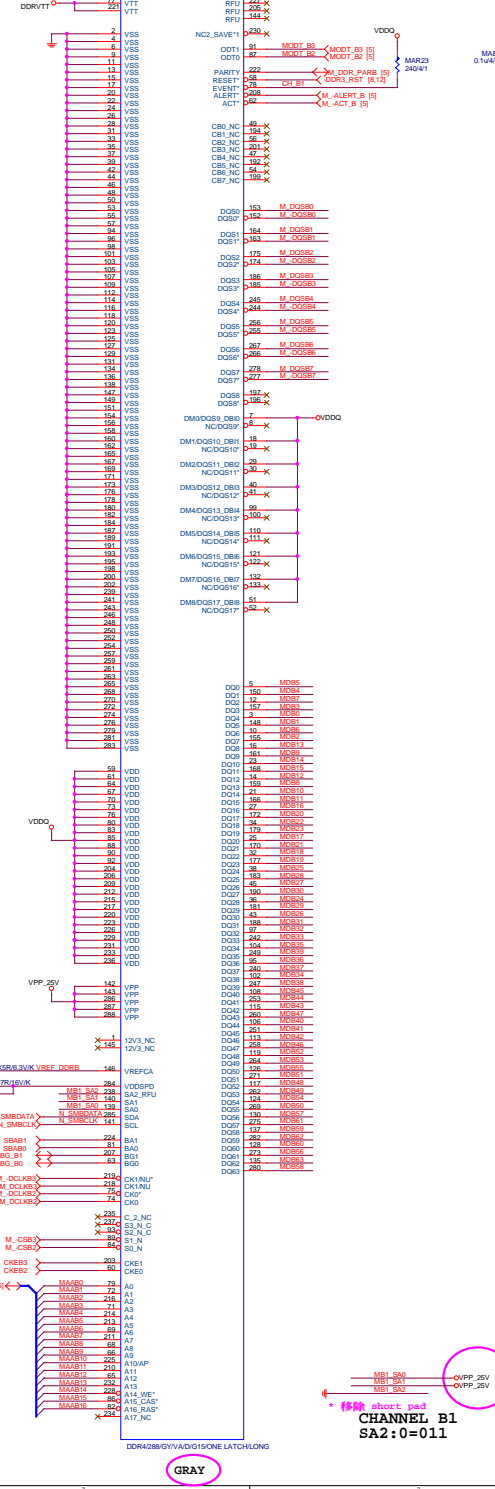
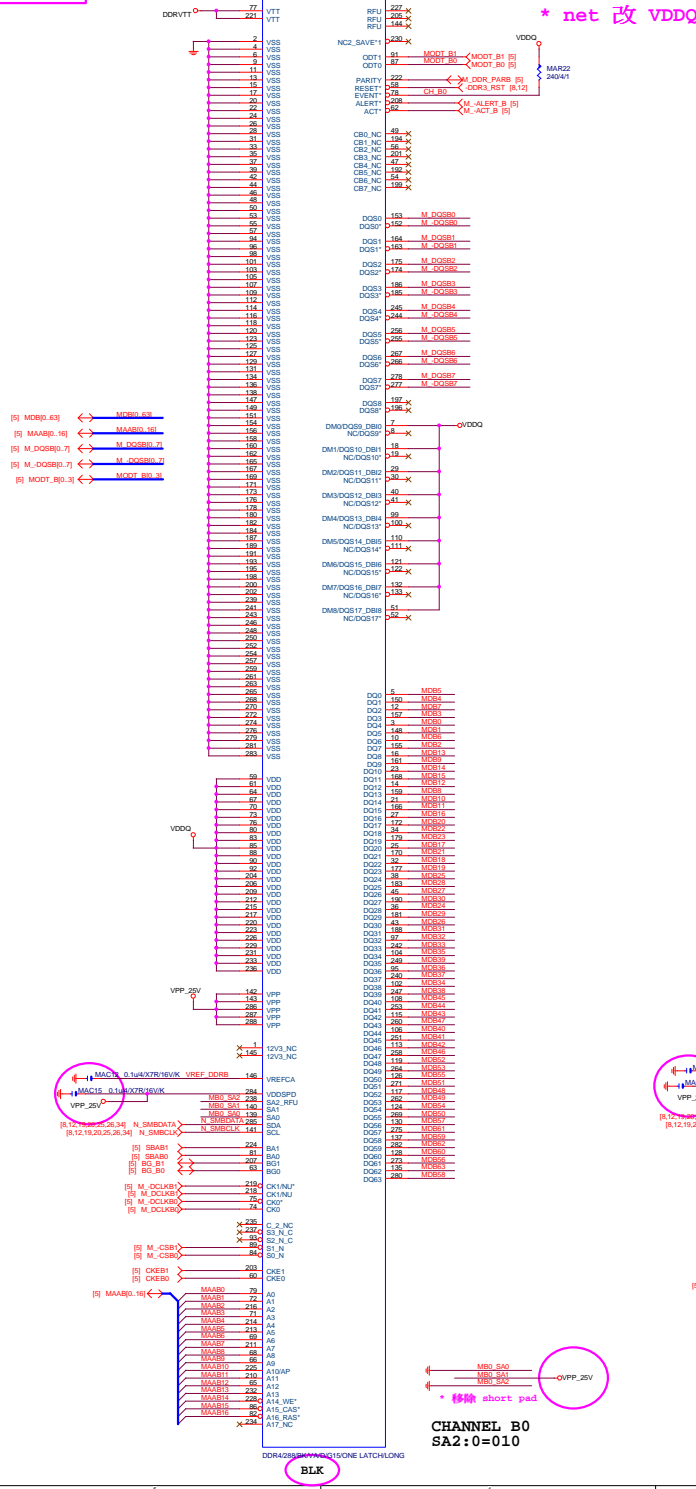
8 OF 12

CPU-SK/1151/S/15

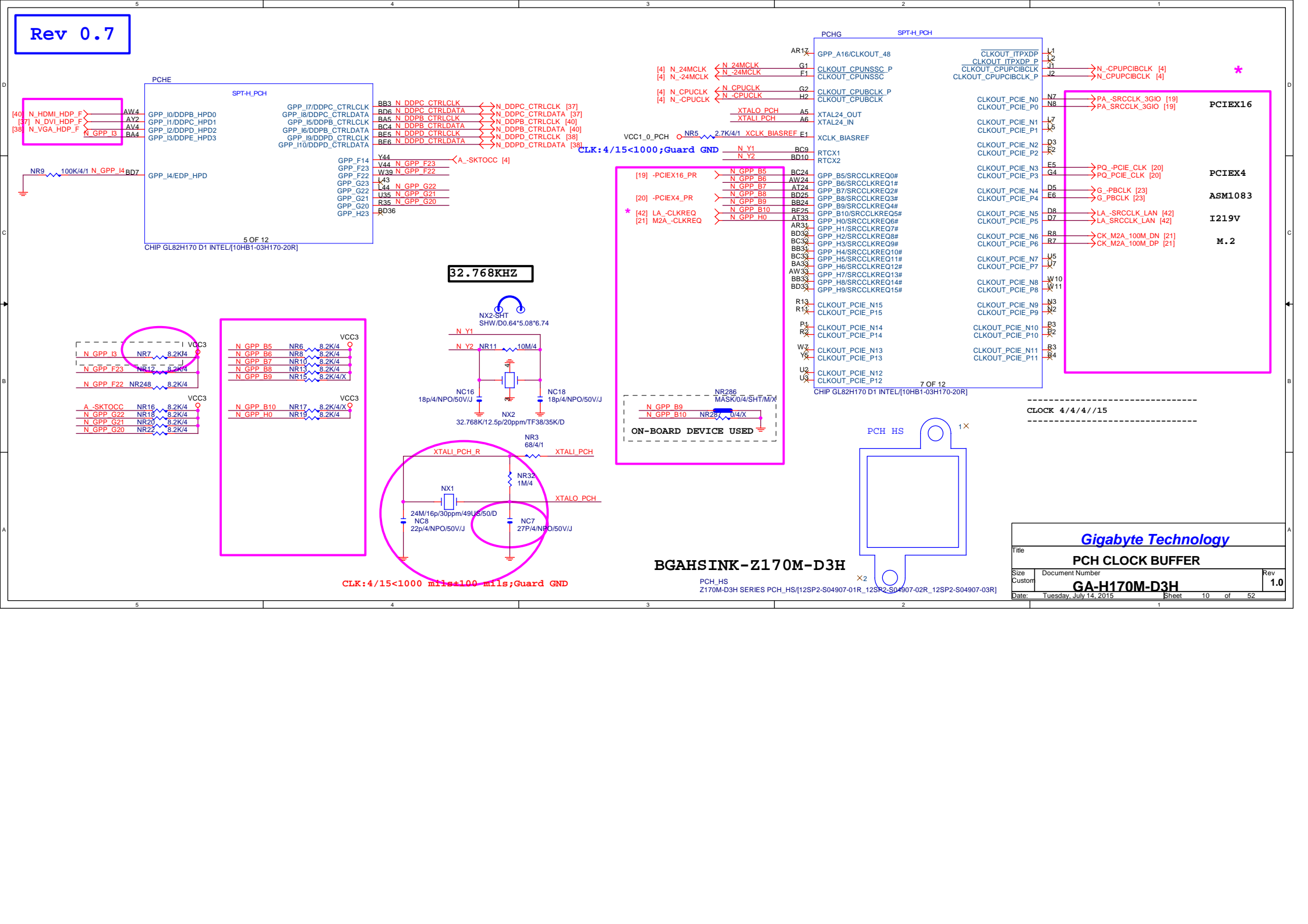






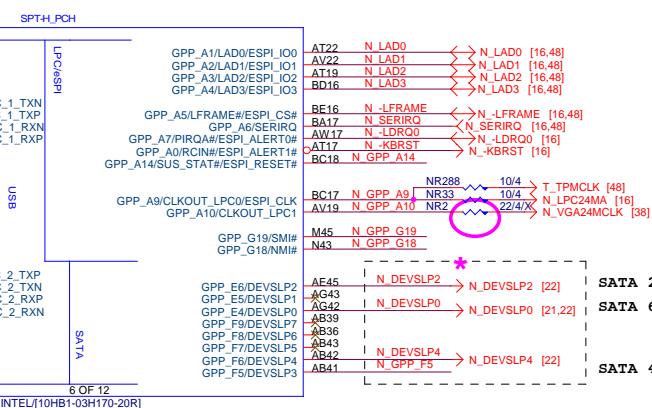


Rev 0.7

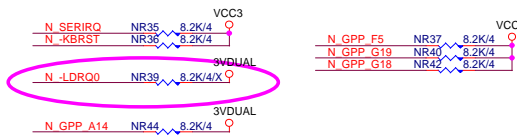


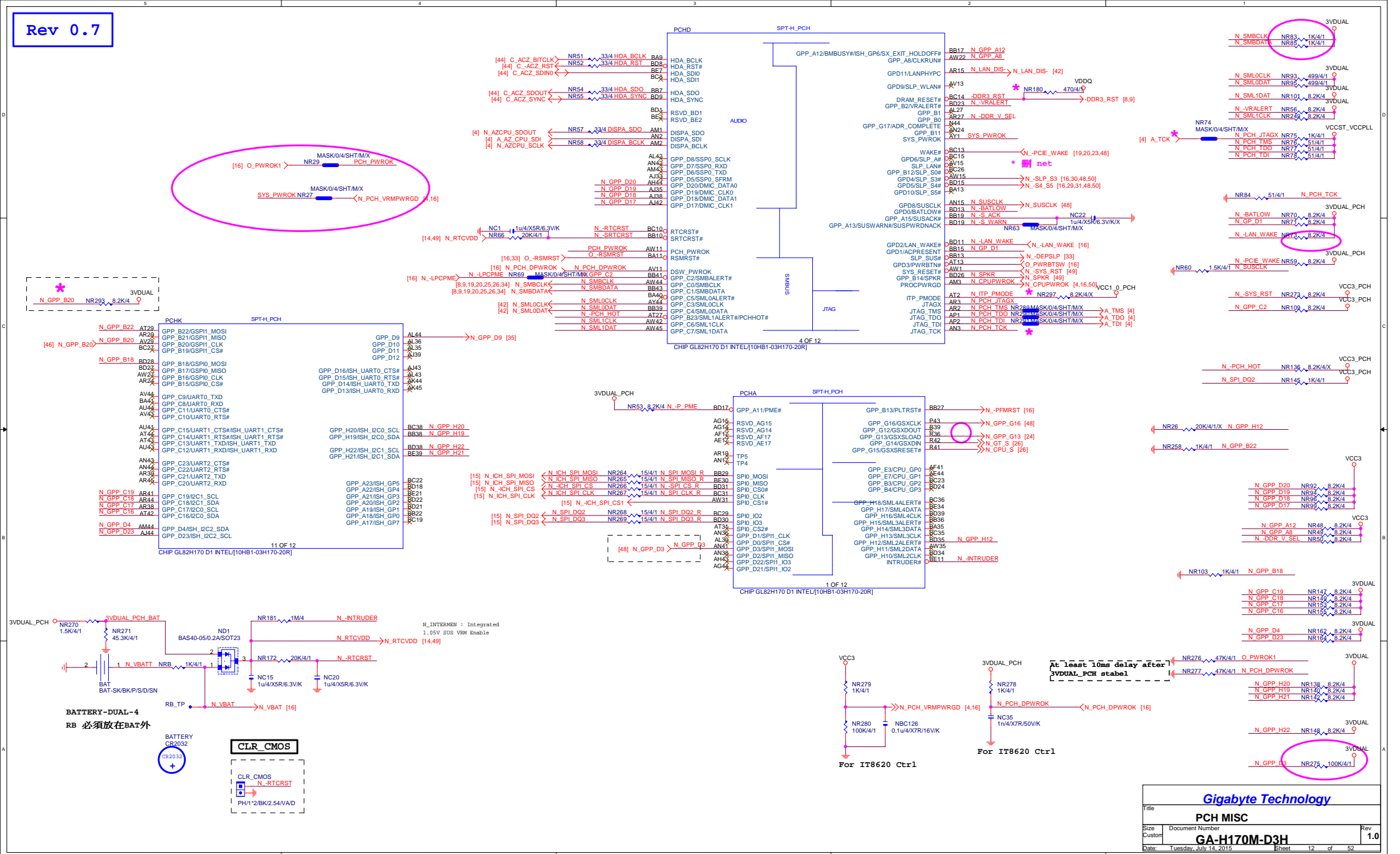
CHIP GL82H170 D1 INTEL/[10HB1-03H170-20R]

```
4 layer USB3/USB2/SATA/PCH PCIe=====4/4/4//15
6 layer USB3/USB2/SATA/PCH PCIe=====4/5.5/4//15
```

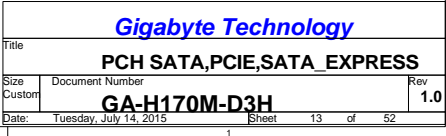


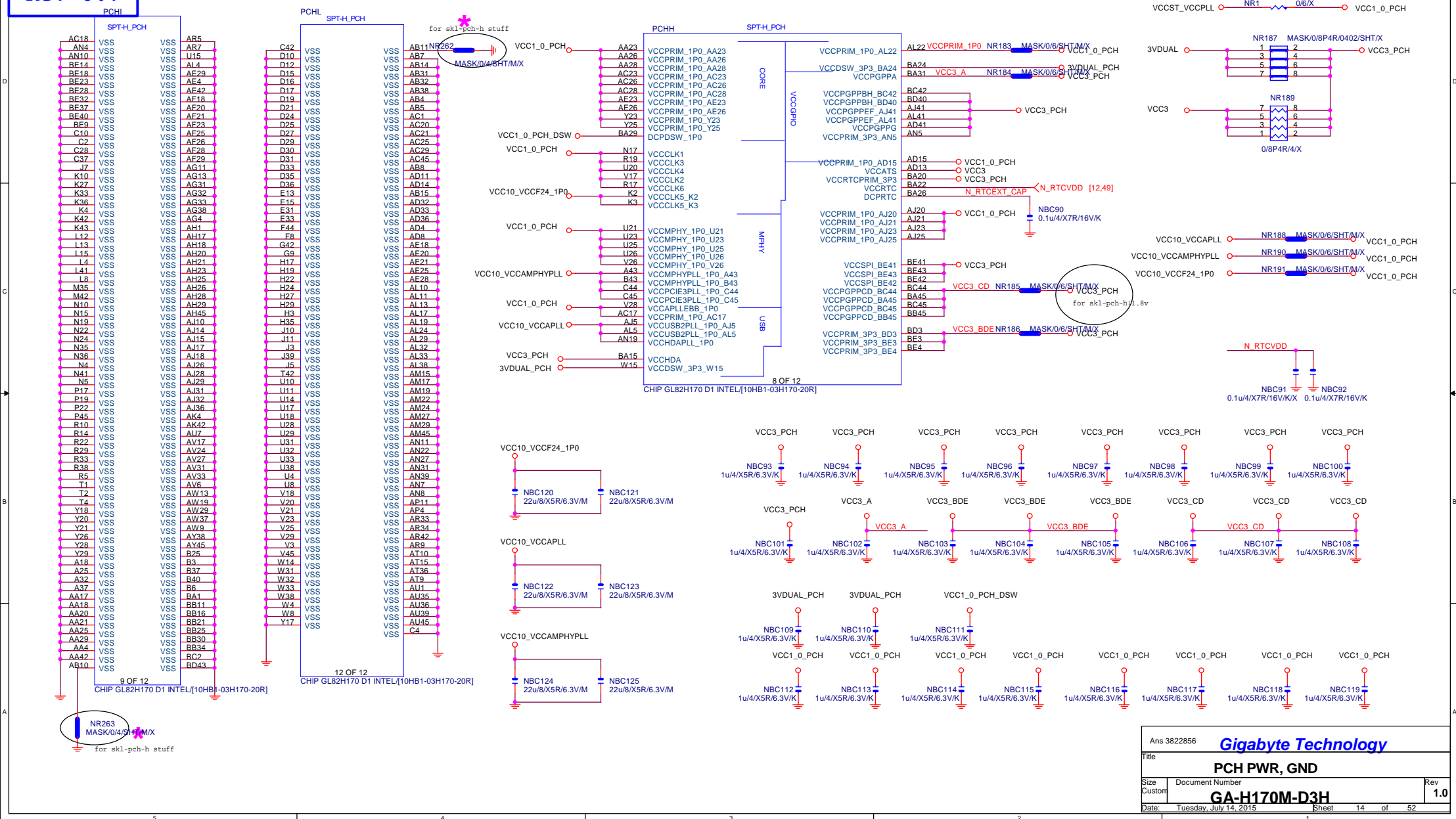
PCH tri-state this pin to signal to enter a lower power state
PCH drive pin low to signal an exit from DEVSLEEP state



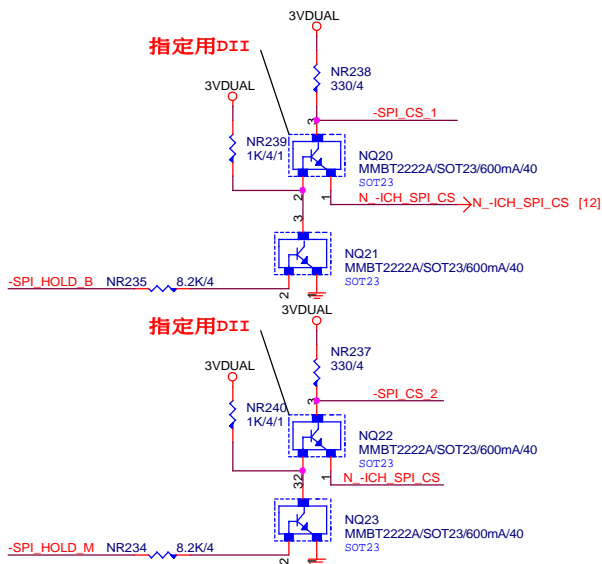


Rev 0.7

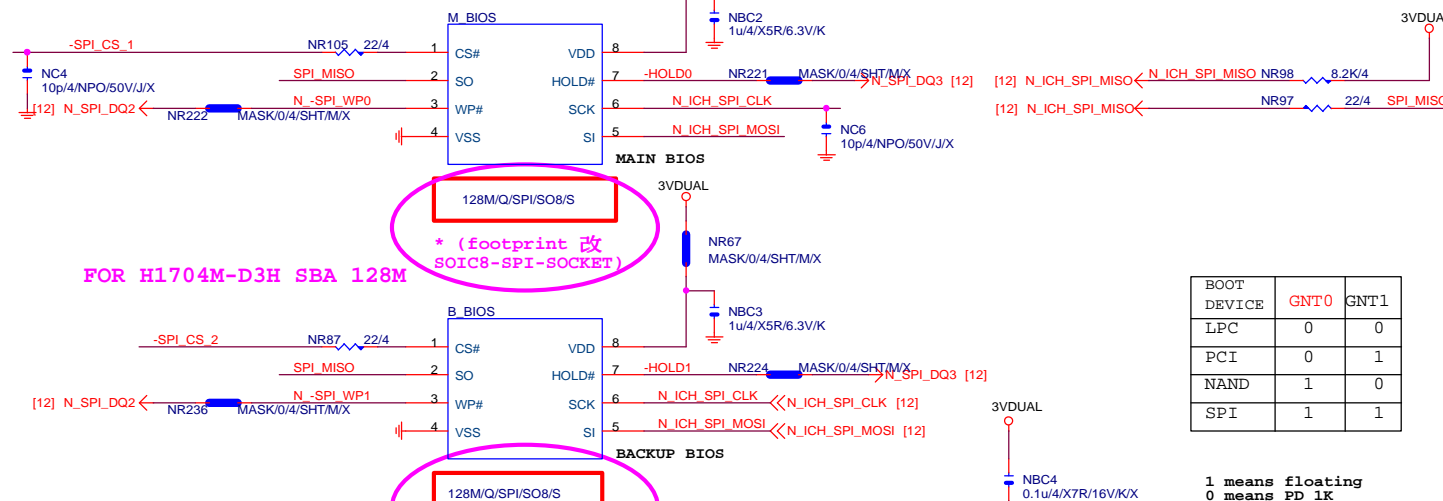




指定用DII



指定用DII



FOR H1704M-D3H SBA 128M

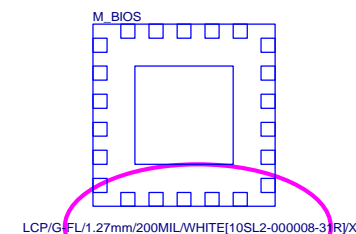
128M/Q/SPI/SO8/S  
\* (footprint 改 SOIC8-SPI-SOCKET)

FOR H1704M-D3H SBA 128M \* (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

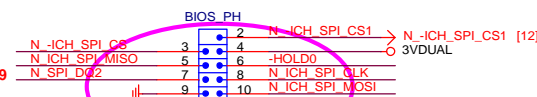
N/A



\* 試産先上, PVT 移除

BIOS\_PH MASK

★Update 2015-01.29

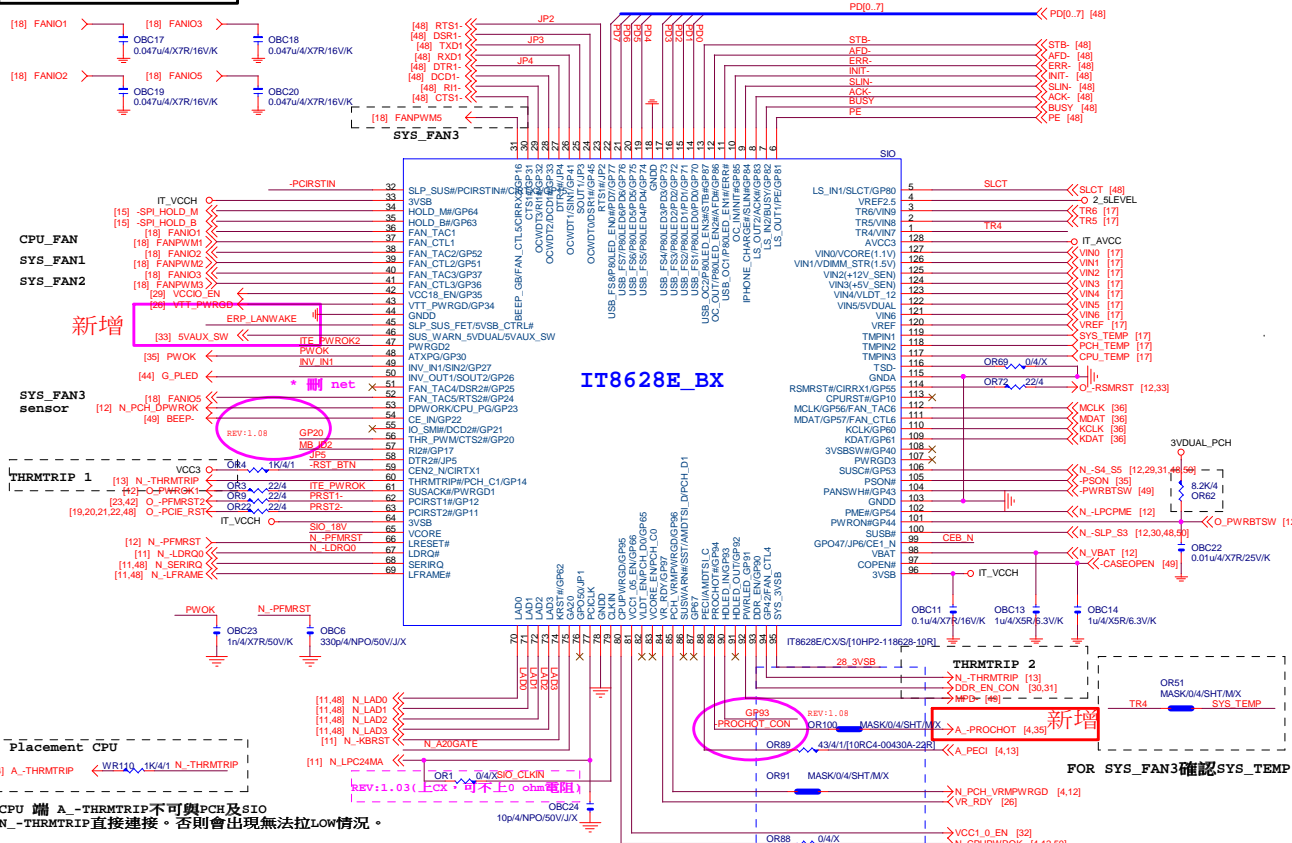
Footprint the same, confirmed by Graceing.  
Use COM port pin header part.

Gigabyte Technology

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Custom			1.0
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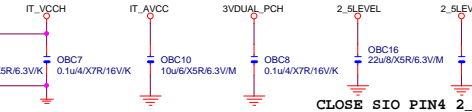
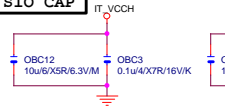
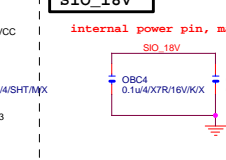
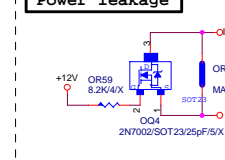
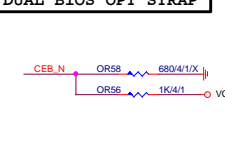


SIO IT8628CX REV:1.08



FAN TABLE	
CPU_FAN	FAN_CTL1 FAN_TAC1
SYS_FAN1	FAN_CTL2 FAN_TAC2
SYS_FAN2	FAN_CTL3 FAN_TAC3
SYS_FAN3	FAN_CTL5 FAN_TAC5
OPT_FAN or SYS_FAN4	N/A
THRMTRIP1	YES PIN60
THRMTRIP2	YES PIN94

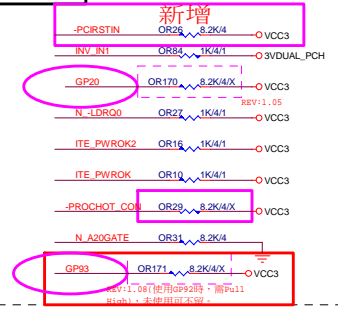
IT8628E GPIO問題匯整	
PIN 50	GP25-第一次接上POWER時 會拉 LO
PIN 90/91	DEFAULT為HDLLED FUNCTION GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 鼠標FAN6 FUNCTION 擇一使用,不然會互相干擾
PIN 22	PIN22, 需高於3V, 若低於 該部分COM_PORT及LPT裝置 蜂鳴器會異常動作。



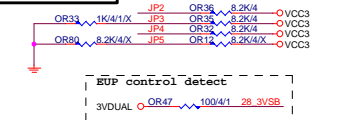
PWR SHT



SIO PU

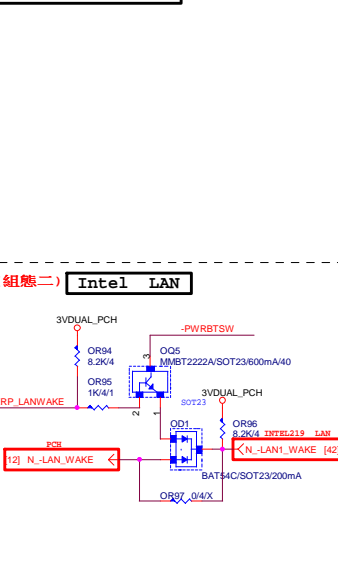


SIO STRAP



JP2	1	Disable WDT
JP2	0	Enable WDT to rest PWROK
JP3	1	Dual BIOS CS PIN Disable
JP3	0	Dual BIOS CS PIN Enable
JP4	1	k8 power sequency function is Disable
JP4	0	k8 power sequency function is Enable
JP5	1	anti-surge Disable
JP5	0	anti-surge Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
JP3	1 0	The default value of EC Index 63h/6Bh/73h is FFh
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
JP5	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

ERP WAKE on LAN (依LAN組態選擇)



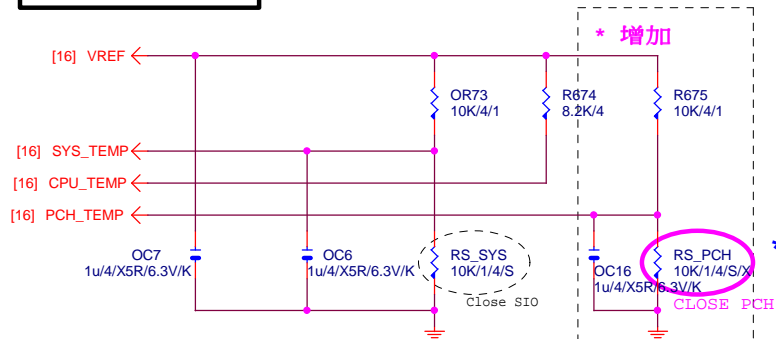
ERP Wake on LAN		
Single LAN	Realtek	組態一
	Atheros	組態一
	Intel 219	組態二
Dual LAN	Atheros+Athertos	組態一
	Intel 219+Athertos	組態二
	Intel 219+Intel 210	組態三
No Support ERP	BOM不上	N/A

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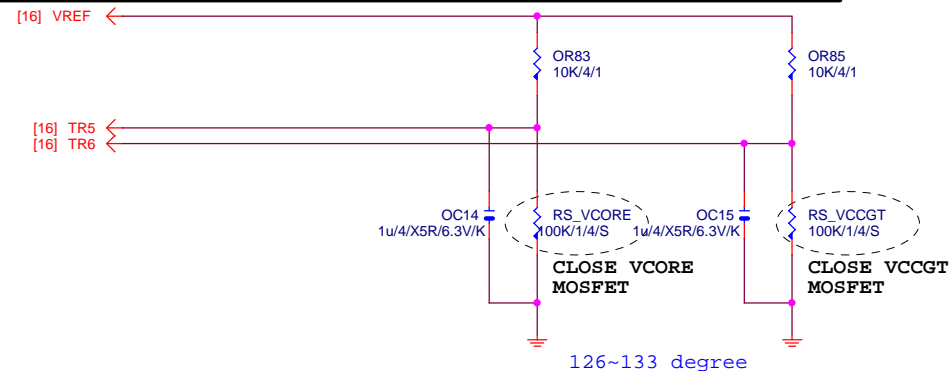
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Size	Document Number	GA-H170M-D3H	
Custom			
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## TEMP H/W MONITOR

REV 1.08



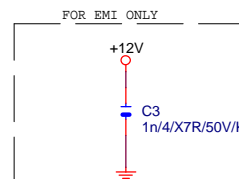
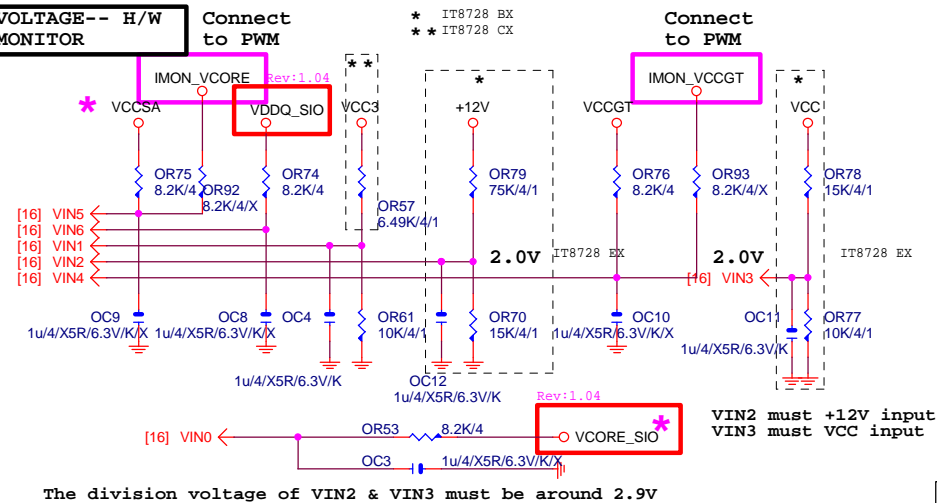
## RS\_VCORE ~ RS\_VCCGT CLOSE CPU\_VCORE &amp; VCCGT MOSFET

~~PROCHOT: 有mos heartsink不用prochot function~~

## VOLTAGE-- H/W MONITOR

Connect to PWM

Connect to PWM

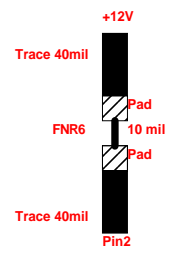
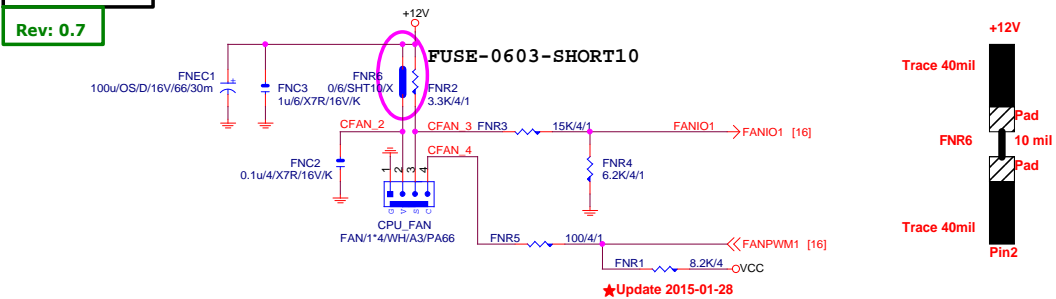


Gigabyte Technology

Title			HWM,KB/MS, FAN CTRL		
Size	Document Number				Rev
Custom	GA-H170M-D3H				1.0
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CPU SMART FAN

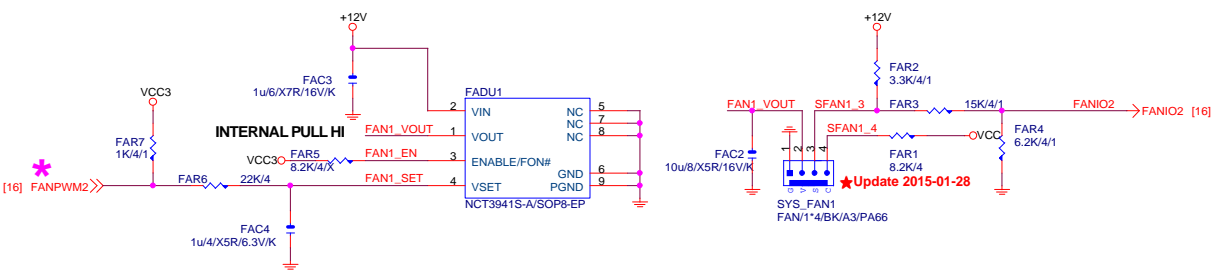
Rev: 0.7



SYSTEM FAN1

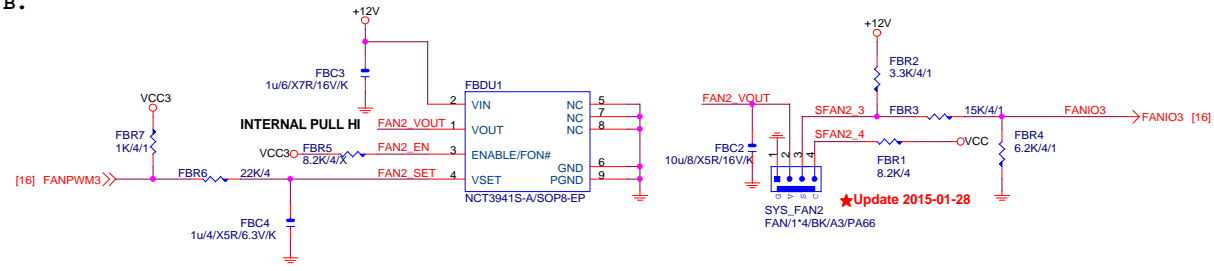
Linear SYS\_FAN  
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)

A.



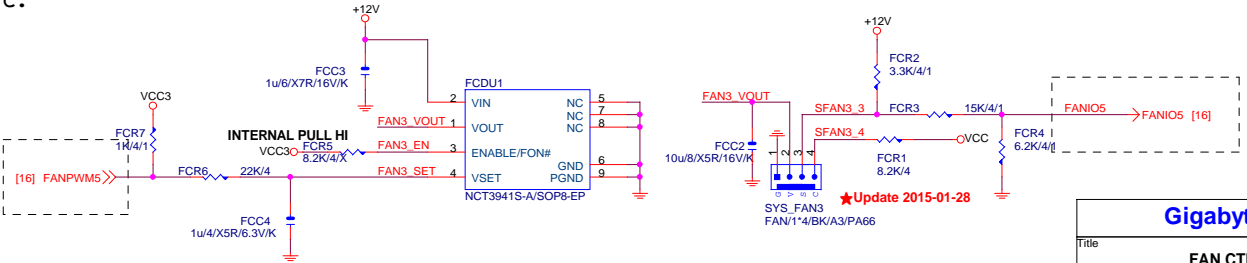
SYSTEM FAN2

B.



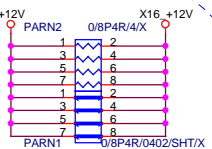
SYSTEM FAN3

C.



Gigabyte Technology		
Title FAN CTRL		
Size Custom	Document Number GA-H170M-D3H	Rev 1.0
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Rev 0.2

+12V\_protect  
short-wire test[8,9,12,20,25,26,34] N\_SMBCLK  
[8,9,12,20,25,26,34] N\_SMBDATA

[12,20,23,48] N\_-PCIE\_WAKE

[10] -PCIE16\_PR

PA\_EXP\_RXP0[0..15] >> PA\_EXP\_RXP[0..15] [4]  
 PA\_EXP\_RXN0[0..15] >> PA\_EXP\_RXN[0..15] [4]  
 PA\_EXP\_TXP0[0..15] >> PA\_EXP\_TXP[0..15] [4]  
 PA\_EXP\_TXN0[0..15] >> PA\_EXP\_TXN[0..15] [4]

PA_EXP_TXP0	PAC5	0.22u4/X5R/6.3V/K	PA_EXP_TXP0 C
PA_EXP_TXN0	PAC4	0.22u4/X5R/6.3V/K	PA_EXP_TXN0 C
PA_EXP_TXP1	PAC6	0.22u4/X5R/6.3V/K	PA_EXP_TXP1 C
PA_EXP_TXN1	PAC7	0.22u4/X5R/6.3V/K	PA_EXP_TXN1 C
PA_EXP_TXP2	PAC8	0.22u4/X5R/6.3V/K	PA_EXP_TXP2 C
PA_EXP_TXN2	PAC9	0.22u4/X5R/6.3V/K	PA_EXP_TXN2 C
PA_EXP_TXP3	PAC10	0.22u4/X5R/6.3V/K	PA_EXP_TXP3 C
PA_EXP_TXN3	PAC11	0.22u4/X5R/6.3V/K	PA_EXP_TXN3 C
PA_EXP_TXP4	PAC12	0.22u4/X5R/6.3V/K	PA_EXP_TXP4 C
PA_EXP_TXN4	PAC13	0.22u4/X5R/6.3V/K	PA_EXP_TXN4 C
PA_EXP_TXP5	PAC14	0.22u4/X5R/6.3V/K	PA_EXP_TXP5 C
PA_EXP_TXN5	PAC15	0.22u4/X5R/6.3V/K	PA_EXP_TXN5 C
PA_EXP_TXP6	PAC16	0.22u4/X5R/6.3V/K	PA_EXP_TXP6 C
PA_EXP_TXN6	PAC17	0.22u4/X5R/6.3V/K	PA_EXP_TXN6 C
PA_EXP_TXP7	PAC18	0.22u4/X5R/6.3V/K	PA_EXP_TXP7 C
PA_EXP_TXN7	PAC19	0.22u4/X5R/6.3V/K	PA_EXP_TXN7 C
PA_EXP_TXP8	PAC21	0.22u4/X5R/6.3V/K	PA_EXP_TXP8 C
PA_EXP_TXN8	PAC20	0.22u4/X5R/6.3V/K	PA_EXP_TXN8 C
PA_EXP_TXP9	PAC22	0.22u4/X5R/6.3V/K	PA_EXP_TXP9 C
PA_EXP_TXN9	PAC23	0.22u4/X5R/6.3V/K	PA_EXP_TXN9 C
PA_EXP_TXP10	PAC24	0.22u4/X5R/6.3V/K	PA_EXP_TXP10 C
PA_EXP_TXN10	PAC25	0.22u4/X5R/6.3V/K	PA_EXP_TXN10 C
PA_EXP_TXP11	PAC26	0.22u4/X5R/6.3V/K	PA_EXP_TXP11 C
PA_EXP_TXN11	PAC27	0.22u4/X5R/6.3V/K	PA_EXP_TXN11 C
PA_EXP_TXP12	PAC28	0.22u4/X5R/6.3V/K	PA_EXP_TXP12 C
PA_EXP_TXN12	PAC29	0.22u4/X5R/6.3V/K	PA_EXP_TXN12 C
PA_EXP_TXP13	PAC30	0.22u4/X5R/6.3V/K	PA_EXP_TXP13 C
PA_EXP_TXN13	PAC31	0.22u4/X5R/6.3V/K	PA_EXP_TXN13 C
PA_EXP_TXP14	PAC32	0.22u4/X5R/6.3V/K	PA_EXP_TXP14 C
PA_EXP_TXN14	PAC33	0.22u4/X5R/6.3V/K	PA_EXP_TXN14 C
PA_EXP_TXP15	PAC34	0.22u4/X5R/6.3V/K	PA_EXP_TXP15 C
PA_EXP_TXN15	PAC35	0.22u4/X5R/6.3V/K	PA_EXP_TXN15 C

PCIE16:16/5/5/5/16

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

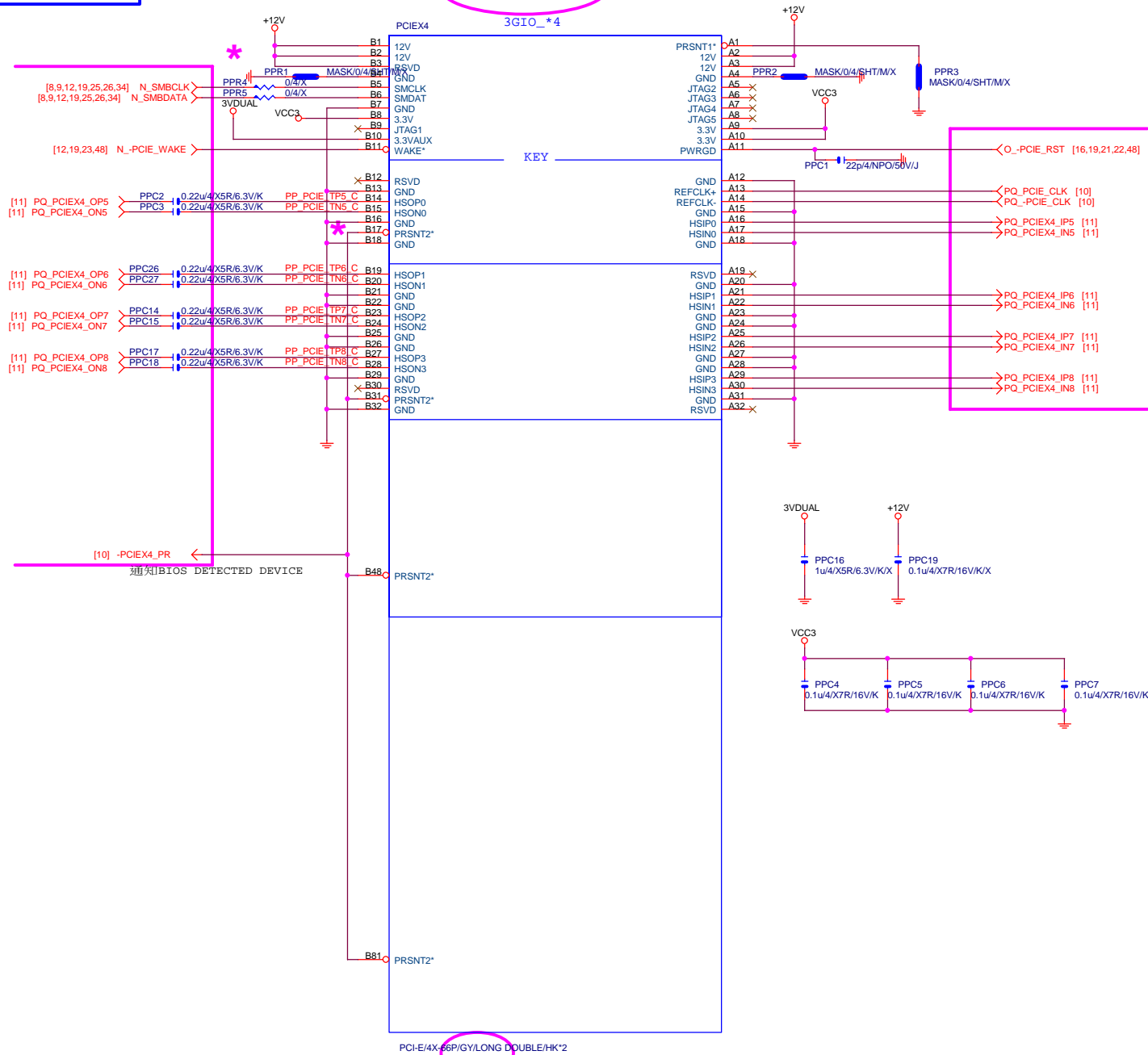
PCI-E REV:2.0--&gt; 5GHZ

PCIESLOT-164P

3GIO\_\*16

PCI-E/16X164P/GY/LONG/DOUBLE/HK\*2

Gigabyte Technology		
Title PCI EXPRESS * 16		
Size Custom	Document Number GA-H170M-D3H	Rev 1.0
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Gigabyte Technology

Title			PCIE_X4
Size	Document Number	Rev	1.0
Custom	GA-H170M-D3H		
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## M.2 Lane4 from PCH port18

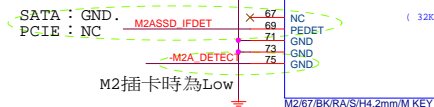
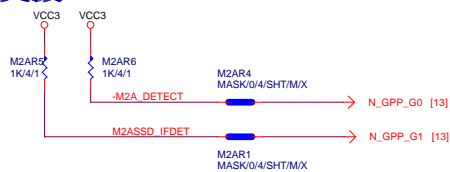
## M.2 Lane3 from PCH port17

## M.2 Lane2 from PCH port16

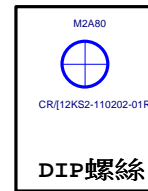
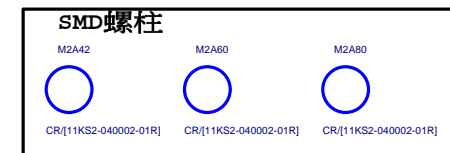
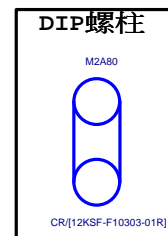
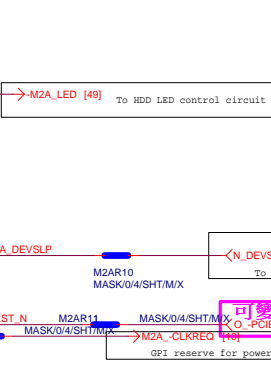
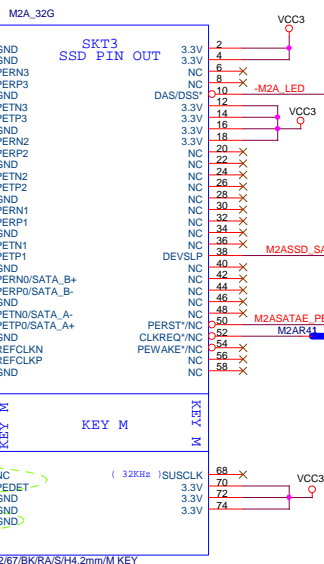
## M.2 Lane2 from PCH port15

需與M2\_-CLKREQ對應

## 支援SATA and M.2 function



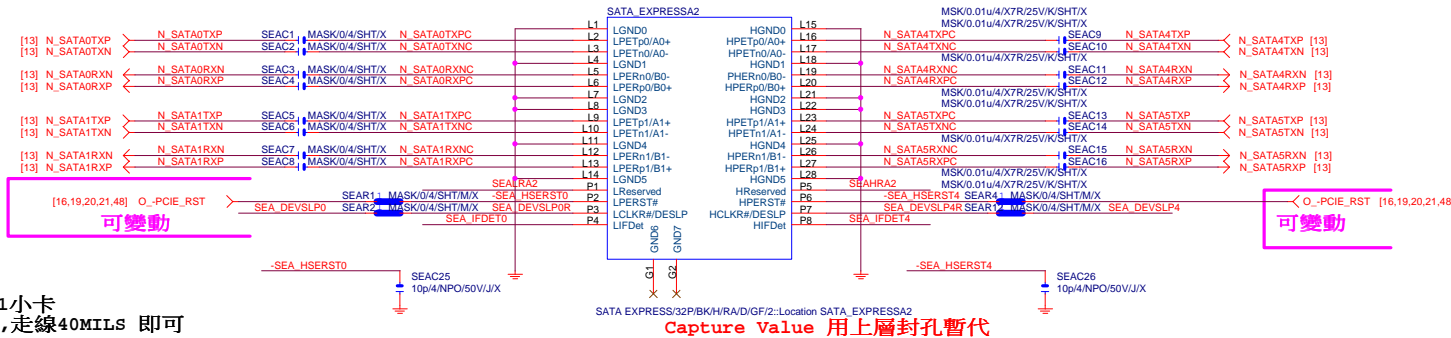
M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡? GPP_G1	SATA Express 插何種硬碟? GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE X1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE 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	



DUAL LAYOUT(Z170/H170~ONLY SATA4,5)

SATA EXPRESS 下層 To SATA3  
port0/1

SATA EXPRESS 上層 To SATA3  
port4/5

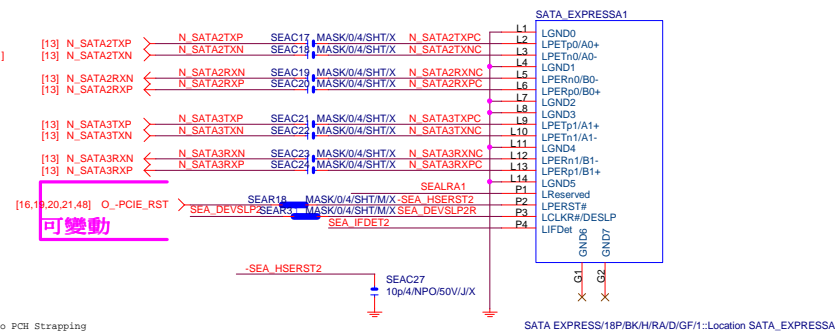
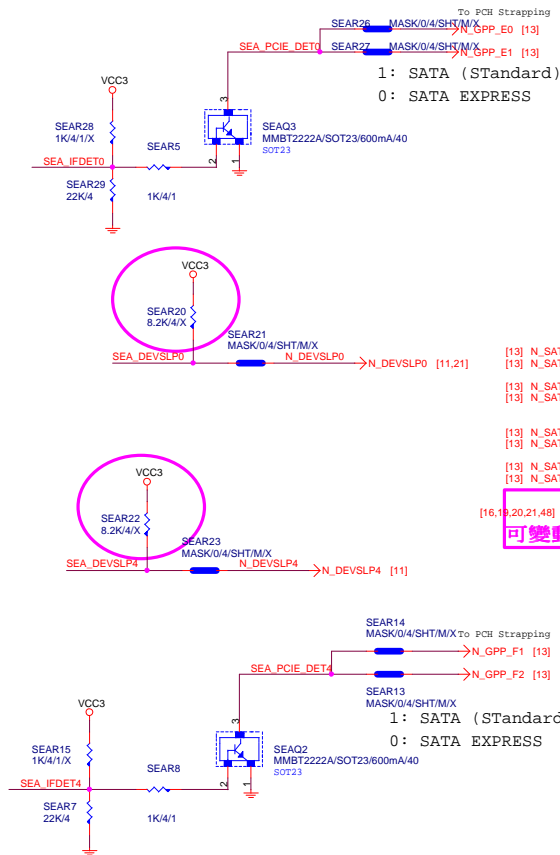


Capture Value 用上層封孔暫代

```
* check
文字面 01/23/45
NET (45/23/01)
```

SATA EXPRESS料號  
Z170M-D3H雙層~36PIN  
SATA EXPRESS/36P/BK/H/RA/D/GF/2/FULL  
H170M-D3H雙層,上層無PCIe訊號(封口)~32PIN  
H170單層+2SATA:  
SATA EXPRESS/32P/BK/H/RA/D/GF/2

To SATA3  
port2/3



DUAL LAYOUT(Z170/H170~ONLY SATA4,5)

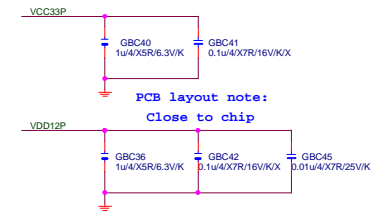
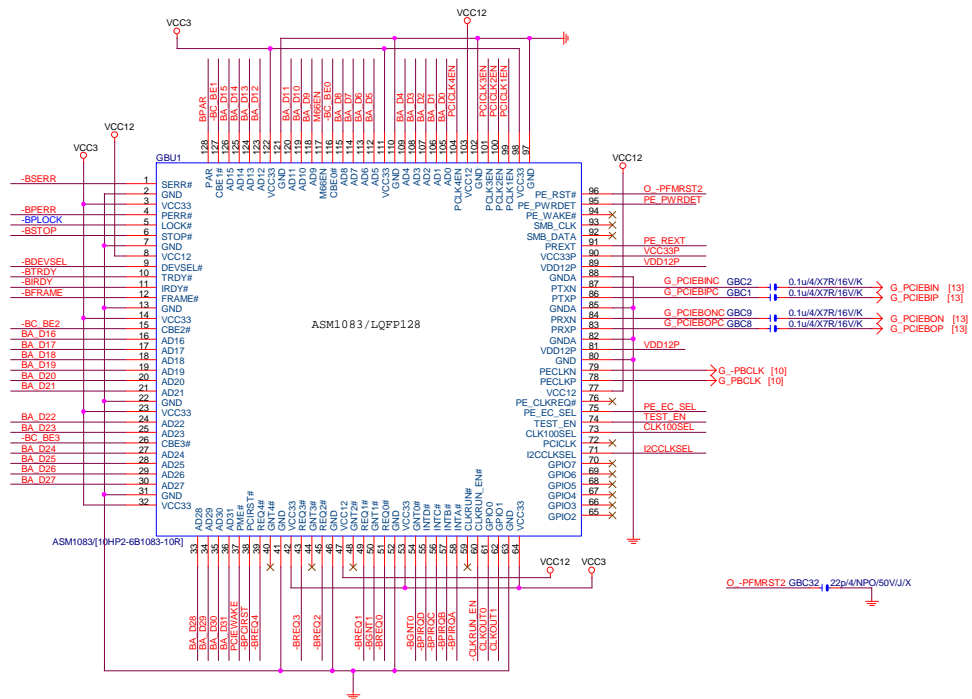
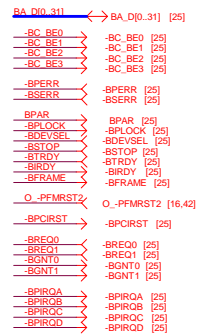
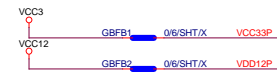
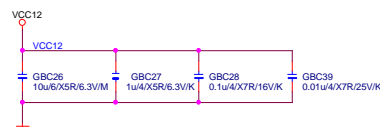
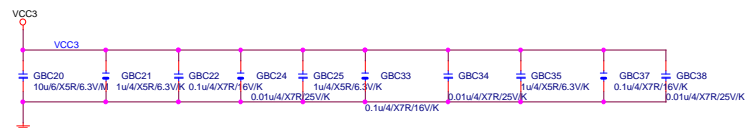
SATA EXPRESS 訊號    SATA EXPRESS 文字面

	SATA 5	SATA 4			
	SATA 1	SATA 0		SATA 3	SATA 2

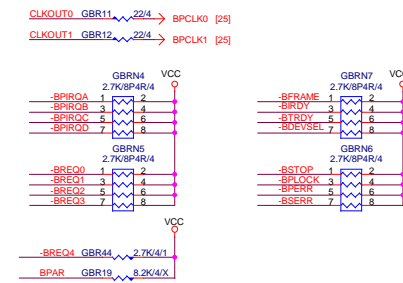
SATA 5	(文字面寫SATA 1)
SATA 4	(文字面寫SATA 0)
SATA 3	
SATA 2	
SATA 1	(文字面寫SATA 5)
SATA 0	(文字面寫SATA 4)

<p align="center"><b>Gigabyte Technology</b></p> <p align="center"><b>SATA EXPRESS</b></p>									
<p>Title</p>									
Size	Document Number								Rev
Customr	<p align="center"><b>GA-H170M-D3H</b></p>								<b>1.0</b>
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PCB layout note:  
Close to chip



### CLK100SEL Strapping Set

CLK100SEL	H	L
PCIE CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLKO	33M +/-N%	33M

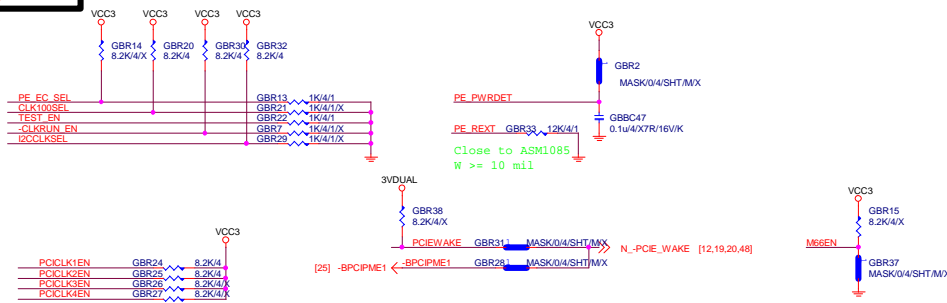
```
PE_EC_SEL-
"H" for Express Card mode
"L" for PCIe Riser Card
mode
```

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

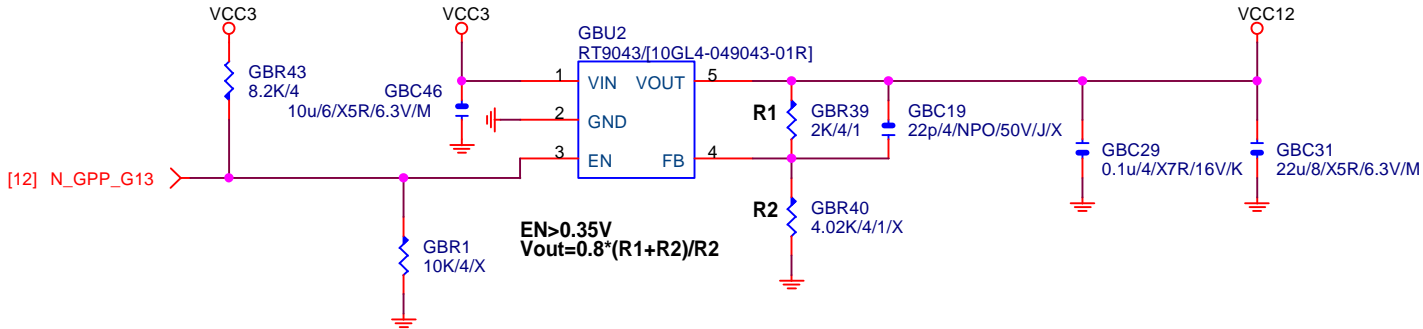
```
TEST_EN-
"H" for Test Mode Enable
"L" for Test Mode
Disable
```

```
-CLKRUN_EN-
"H" for CLKRUN Mode Disable
"L" for CLKRUN Mode Enable
I2CCLKSEL-
```

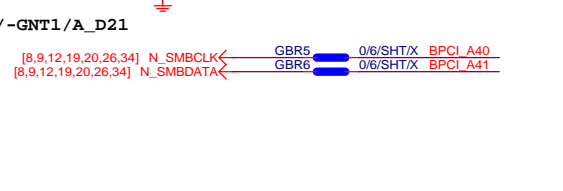
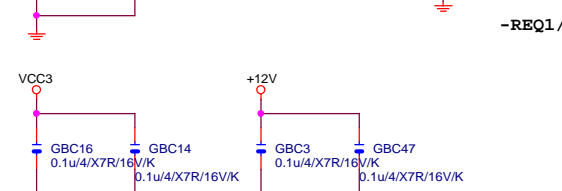
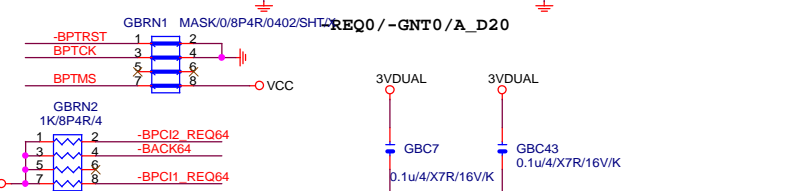
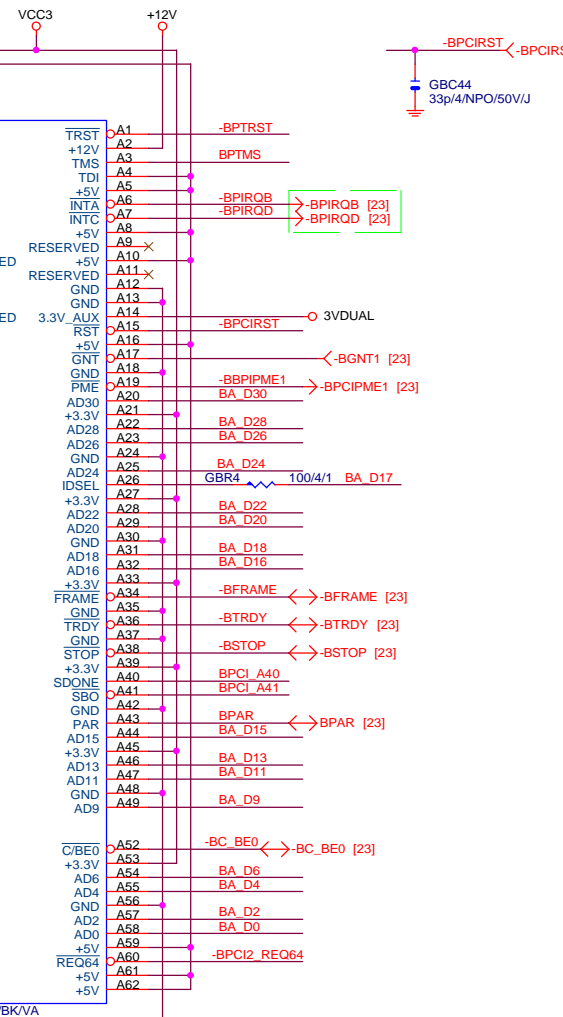
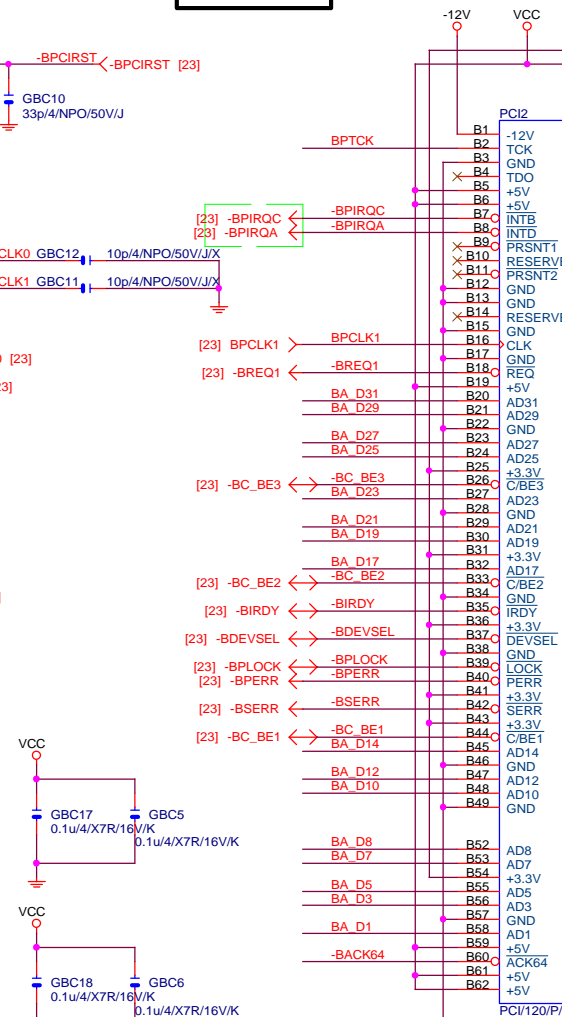
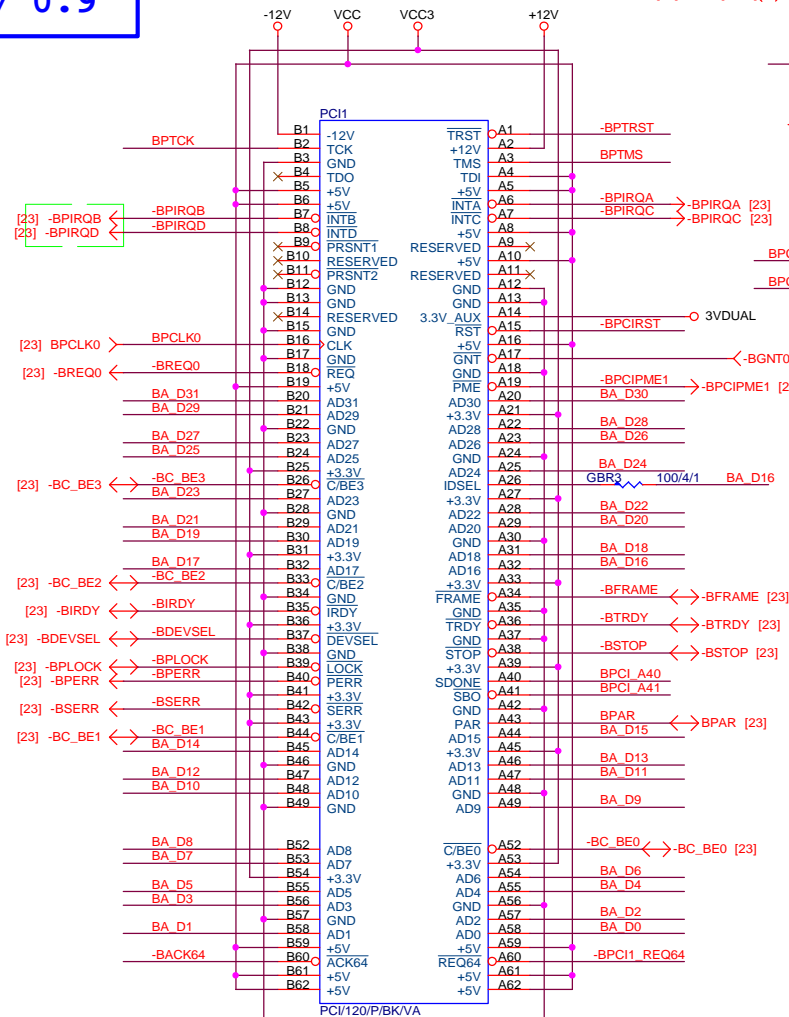
```
I2CLKSEL-
"H" is 135KHz I2CLK
"L" is 67.5KHz I2CLK
```

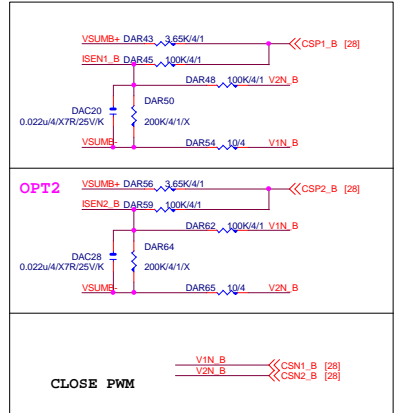
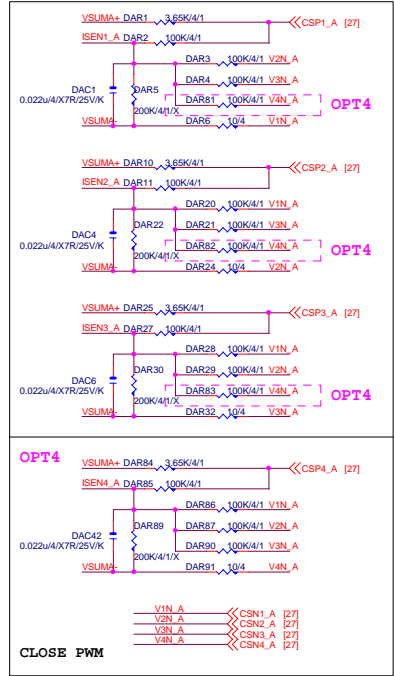
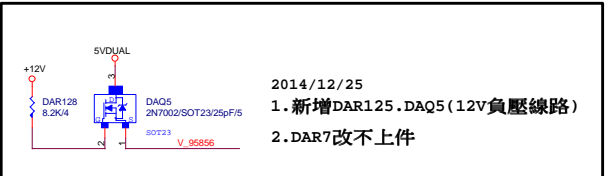
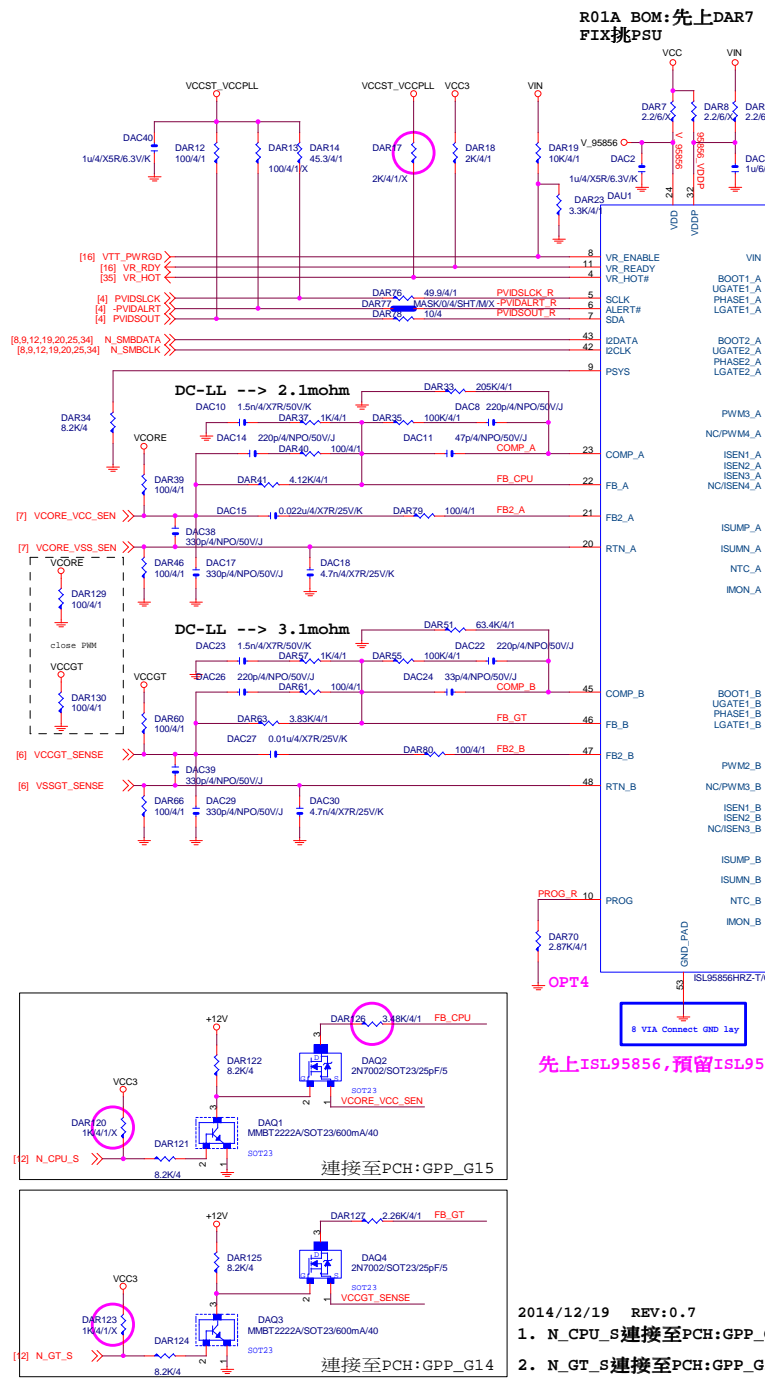


Rev 0.9

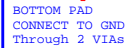


Gigabyte Technology			
Title			
ASM1085 POWER			
Size	Document Number	Rev	
Custom	GA-H170M-D3H	1.0	
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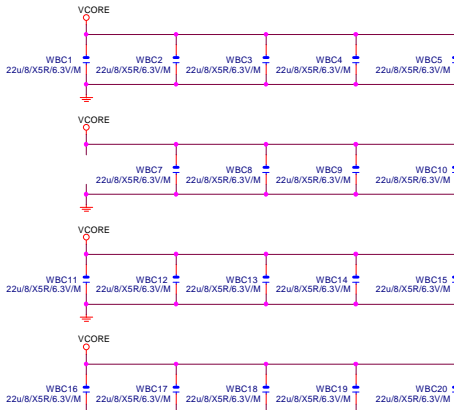


REV:1.0 (IRON CHOKE)



## VCORE CAP

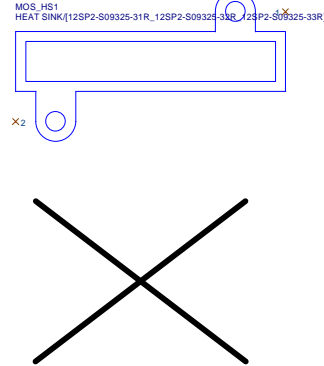
560u\*8PCS  
22u\*29PCS



## MOSHSINK

MOSHSINK-Z1704-HD3

MOS\_HS1  
HEAT SINK/12SP2-S09325-31R\_12SP2-S09325-33R\_12SP2-S09325-33R



## VIN CAP

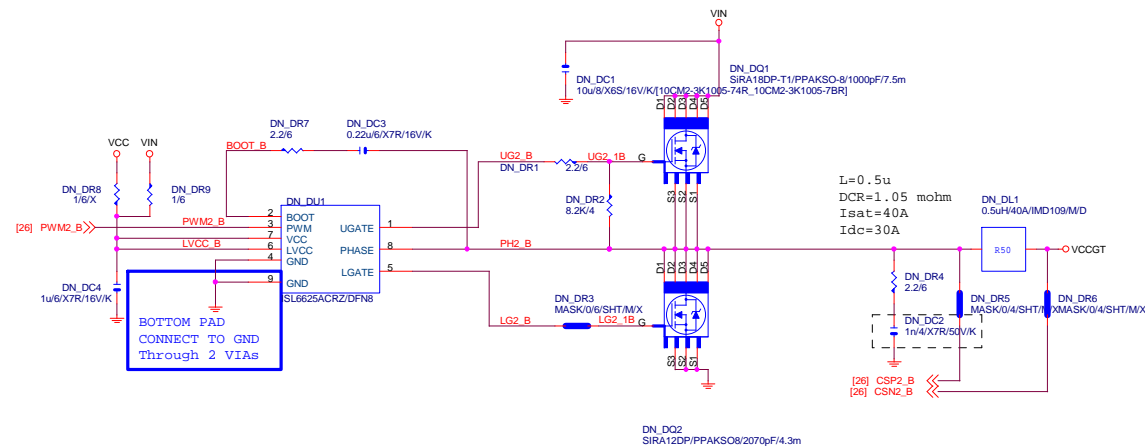
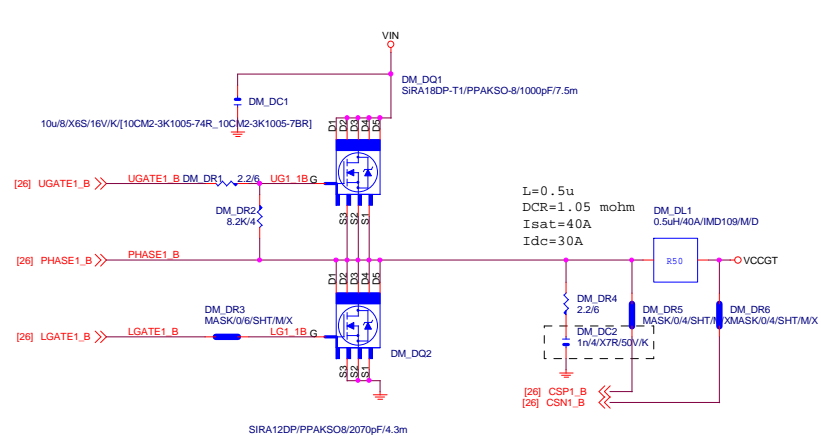
270u\*3PCS



# GIGABYTE

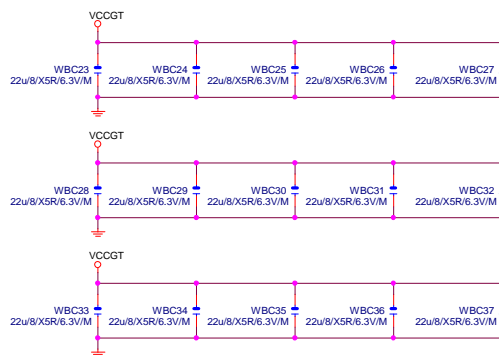
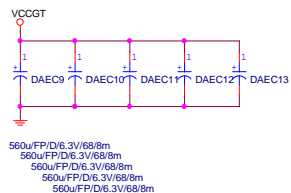
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ISL95858_856_MOS			
Size	Document Number	Rev	
Custom	GA-H170M-D3H	1.0	
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REV:1.0 (IRON CHOKE)



VCCGT CAP

560u\*5PCS  
22u\*15PCS



# GIGABYTE™

Title  
**ISL95858\_MOS**

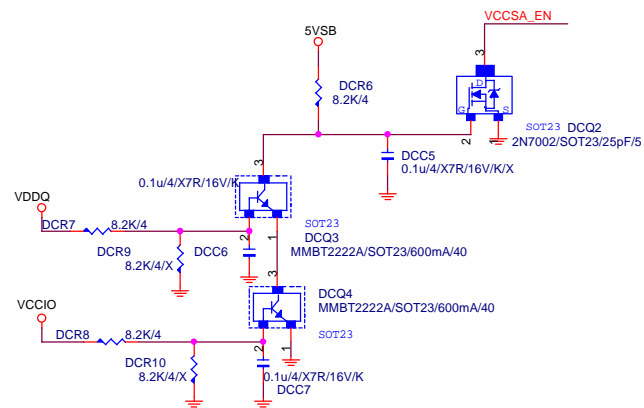
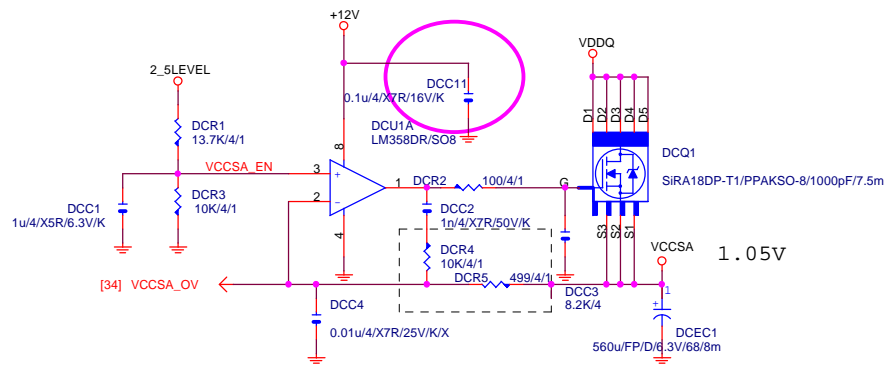
Size	Document Number
Custom	<b>GA-H170M-D3H</b>

Date: Tuesday, July 14, 2015 Sheet 28 of 52

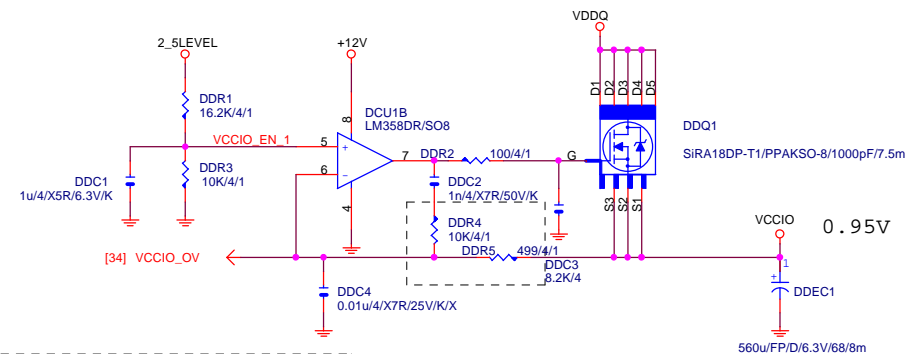
Rev	1.0
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VCCSA

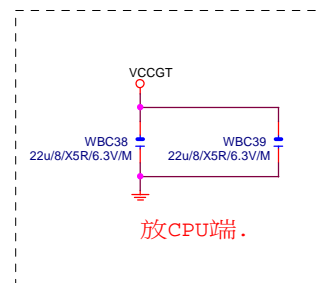
REV:0.4



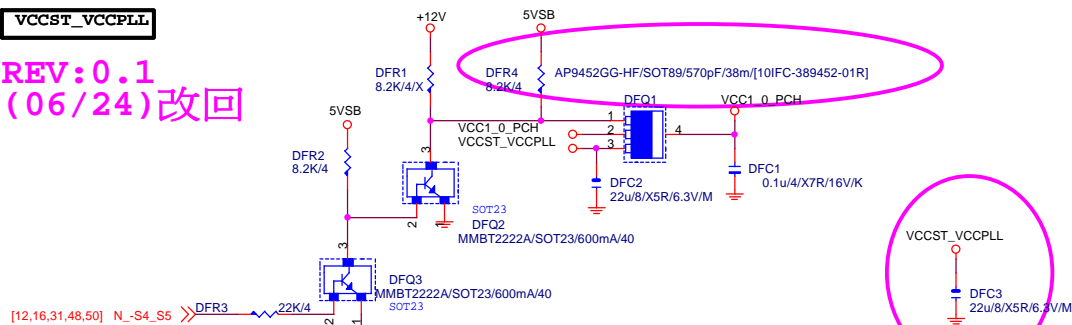
VCCIO



VCCIO\_EN 1 → VCCIO\_EN [16]  
DDR10 MASK/0/4/SHT/M/X  
Connect to IT8620



VCCST\_VCCPLL

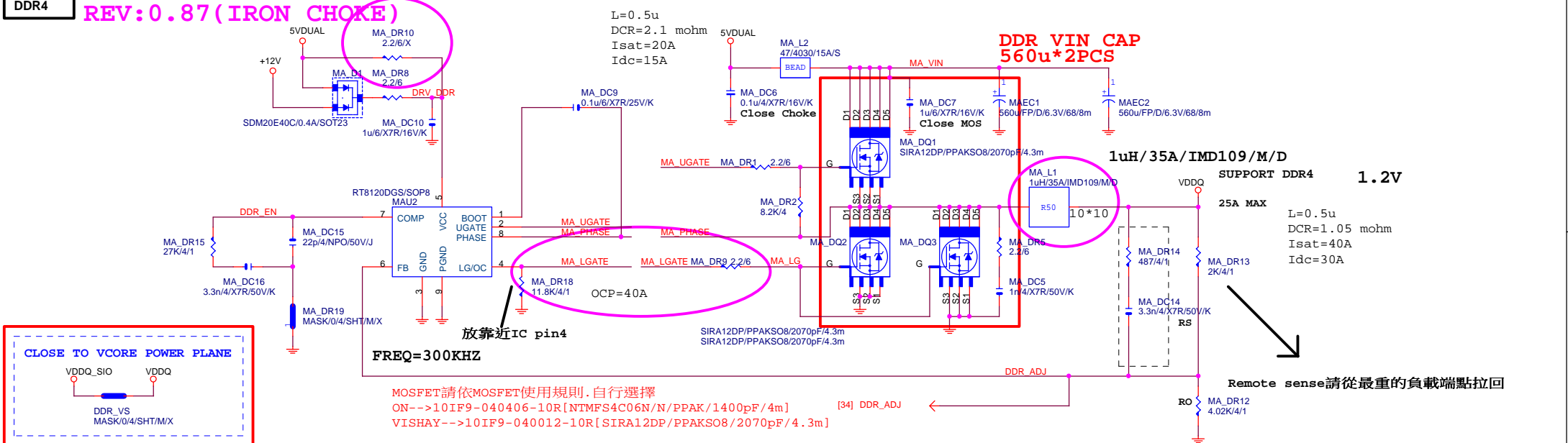
REV:0.1  
(06/24)改回

GIGABYTE™			
Title	VCCSA_VCCIO		
Size	Document Number	Rev	
Custom	GA-H170M-D3H	1.0	
Date:	Tuesday, July 14, 2015	Sheet	29 of 52

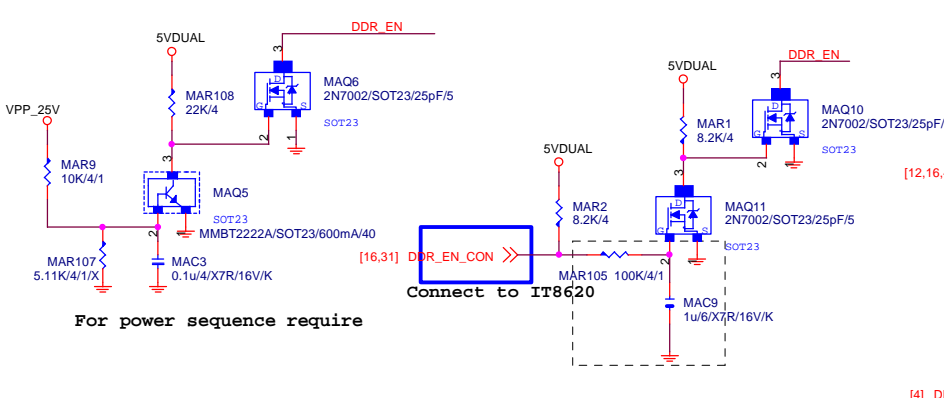


DDR4

REV:0.87(IRON CHOKE)



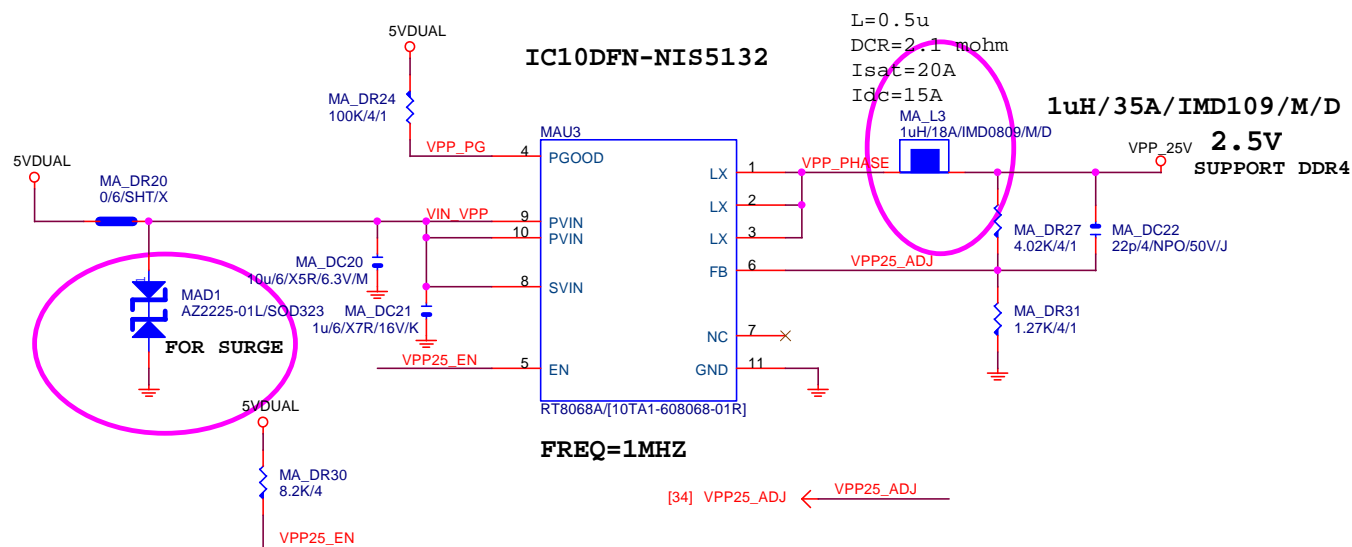
PWR SEQ



REV:0.85 (IRON CHOKE)

## 1. RT8068A Footprint modify

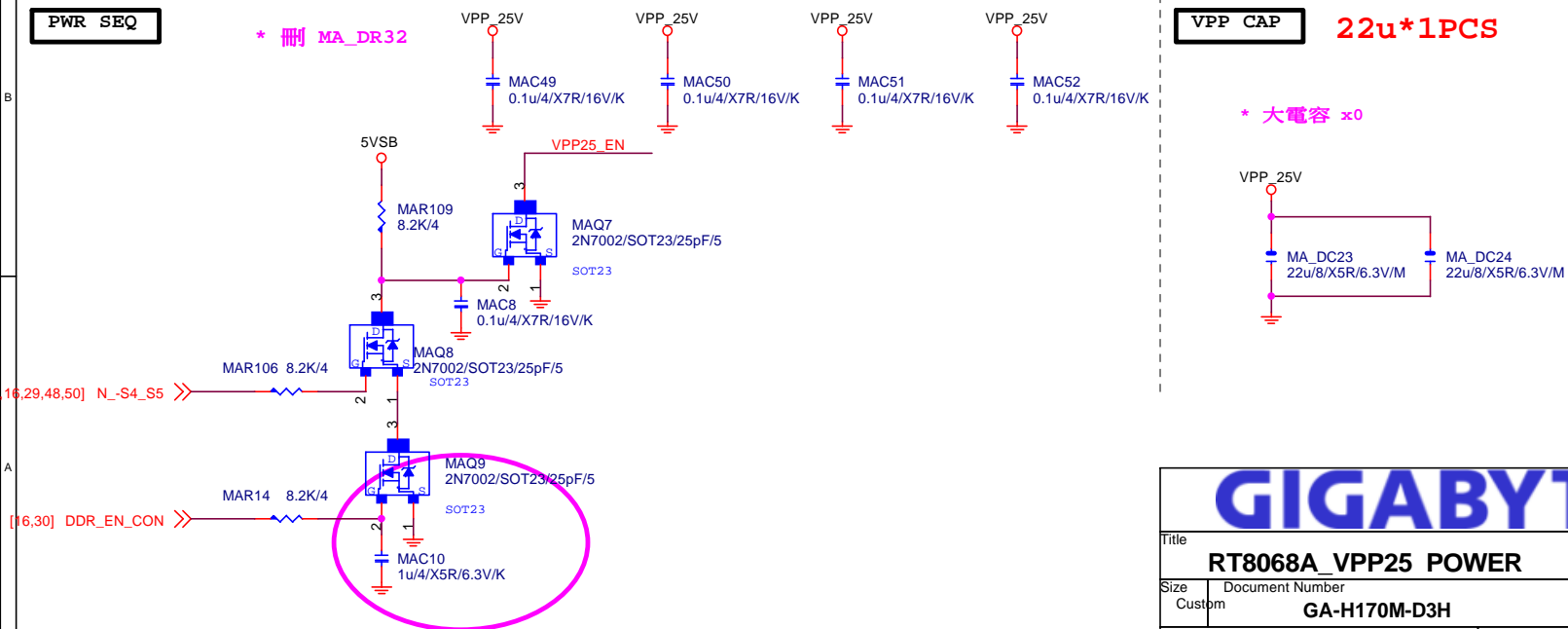
## CHOKES與CAP料號可變



\* 删除 MA\_DR32

22u\*1PCS

\* 大電容 x0

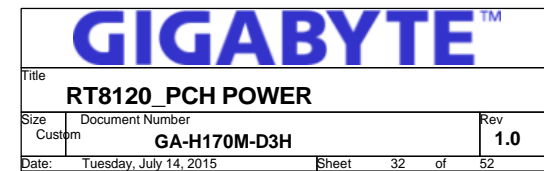
**GIGABYTE™**

Title  
**RT8068A\_VPP25 POWER**

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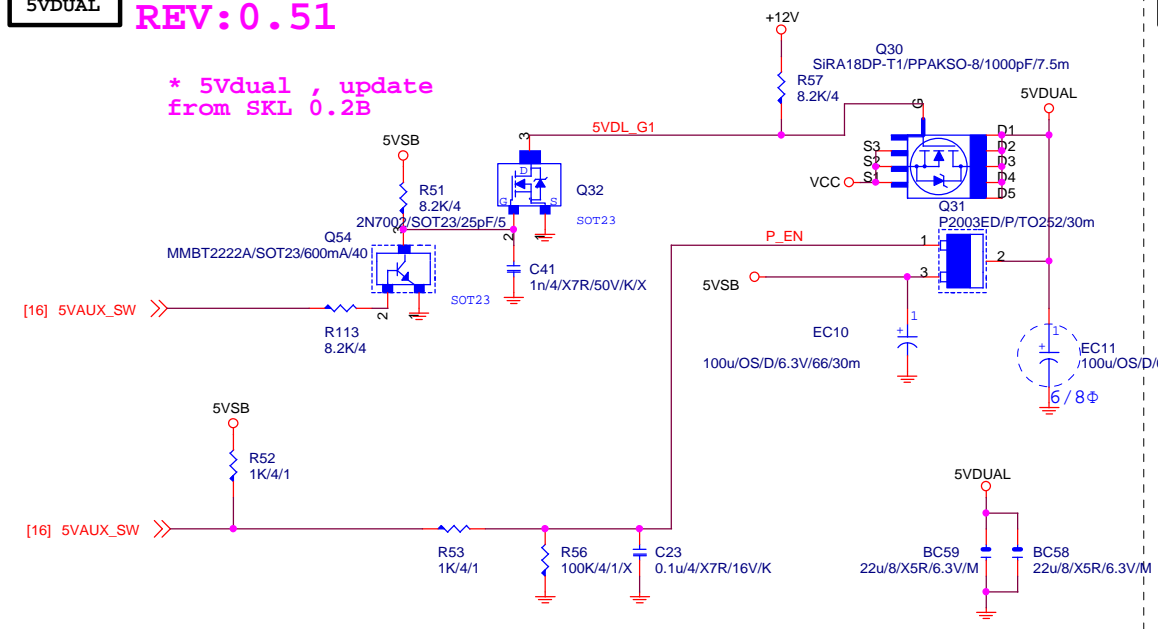
Rev	1.0
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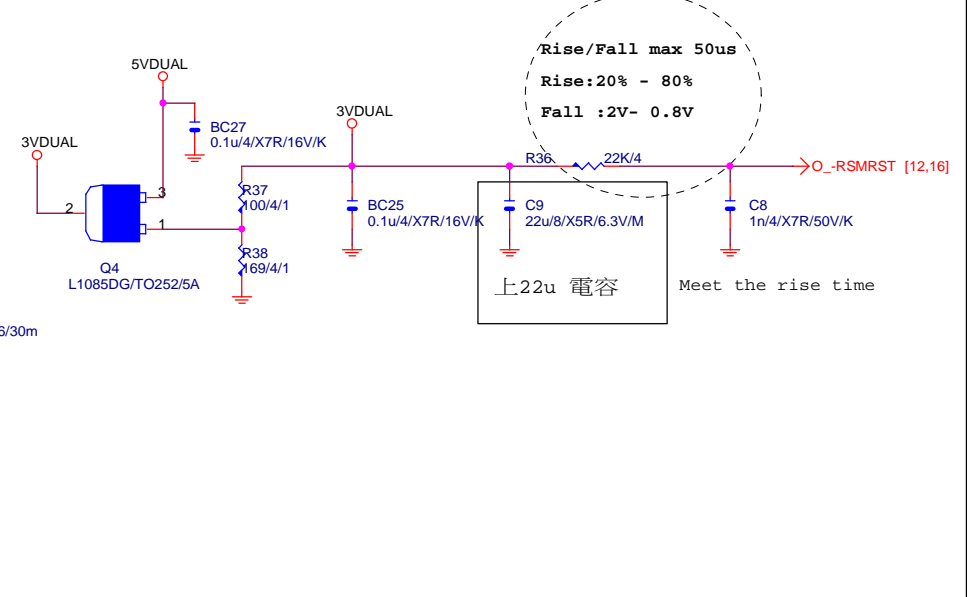


5VDUAL REV:0.51

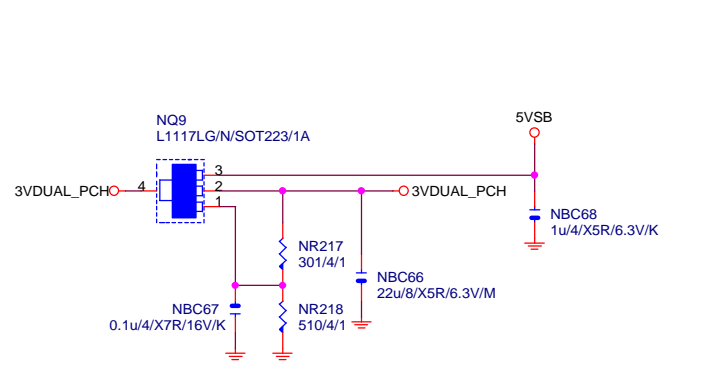
\* 5Vdual , update  
from SKL 0.2B



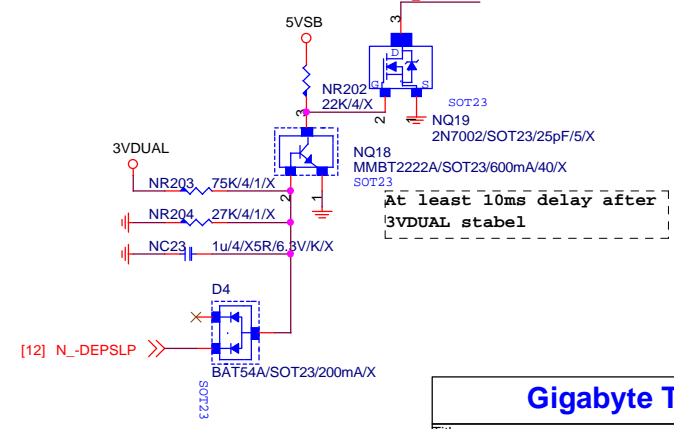
3VDUAL



3VDUAL\_PCH

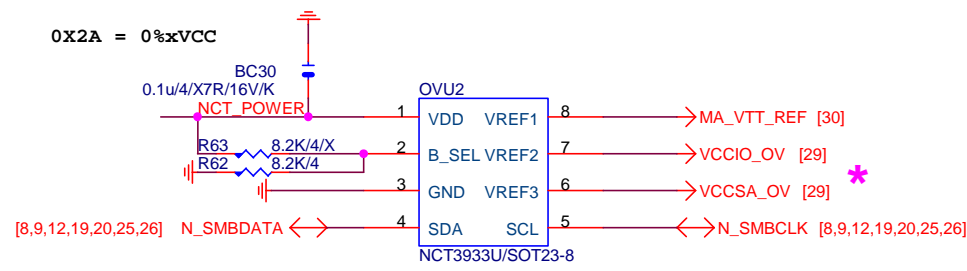
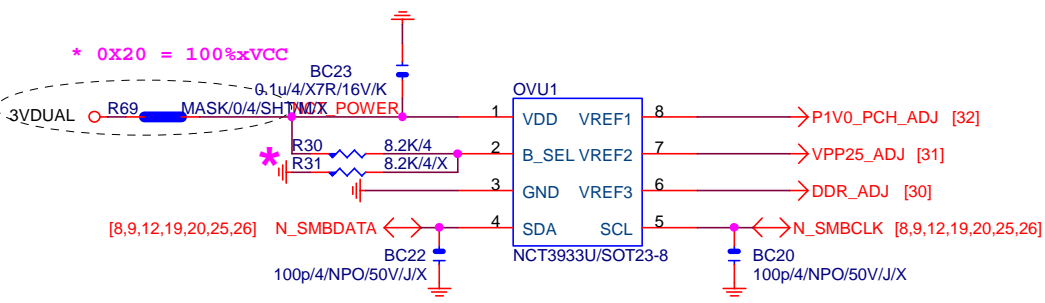


O\_-RSMRST (不上件)



Gigabyte Technology			
Title			
DISCRETE POWER			
Size	Document Number	GA-H170M-D3H	
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OVER VOLTAGE



0X22 = 75%xVCC

\* 删除 OVU3

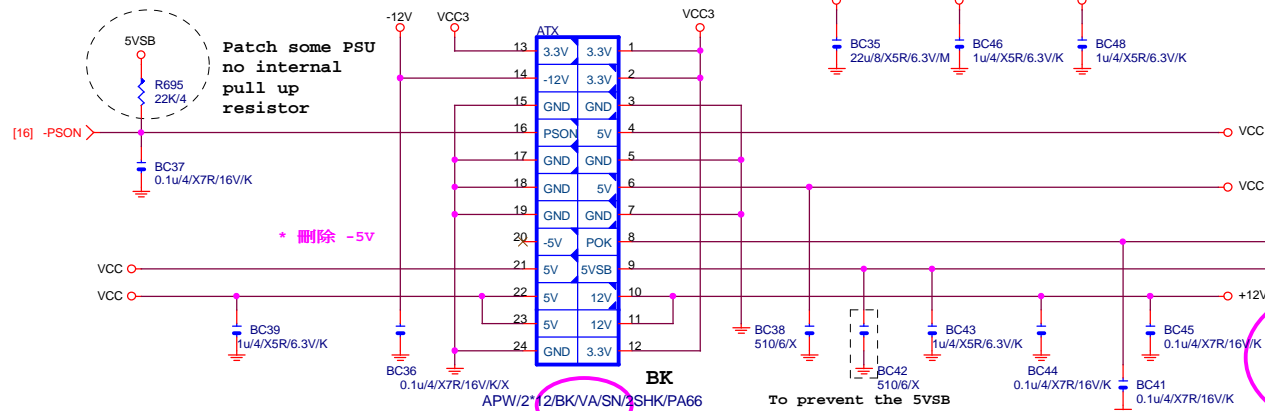
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

**Gigabyte Technology**

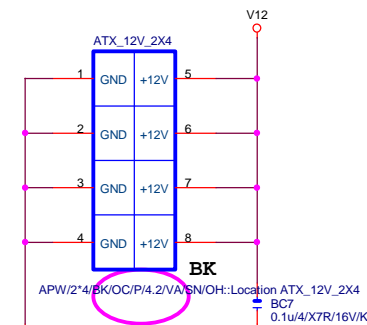
Title CPU CORE VR-2

Size Custom	Document Number	GA-H170M-D3H	Rev 1.0
Date: Tuesday, July 14, 2015	Sheet 34 of 52		

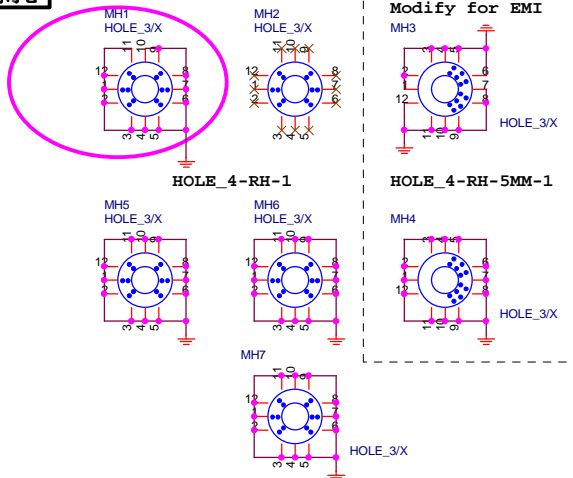
## ATXX24 POWER CONNECTOR



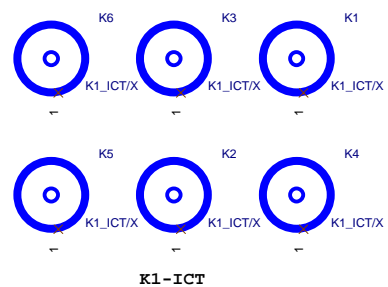
## ATXX4 POWER CONNECTOR



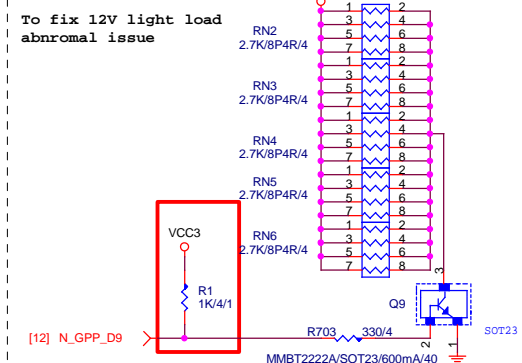
## 螺絲孔



## 固定孔/光學點

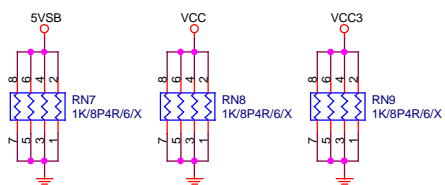


## +12V DUMMY LOAD



【技術通報R&D技術通報153】

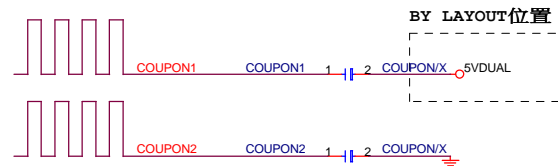
## DUMMY LOAD



## -PROHOT

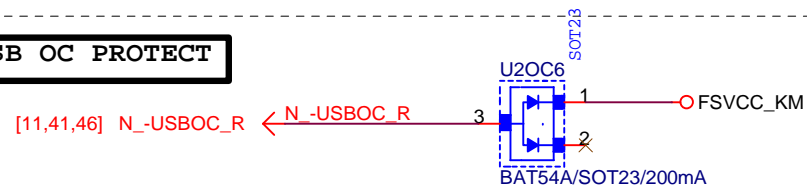
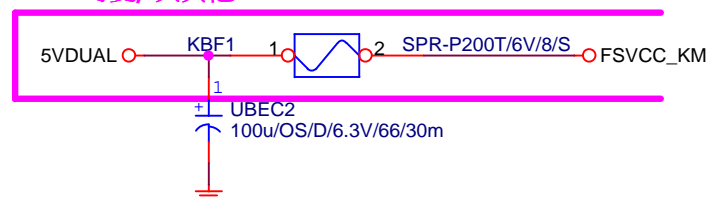
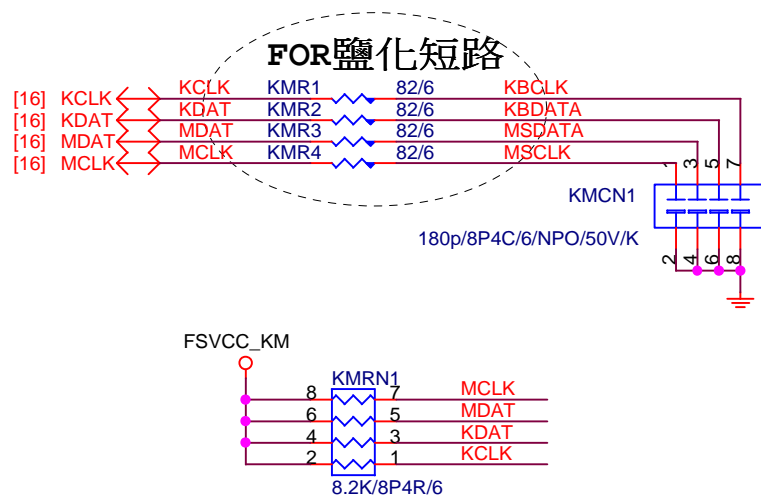
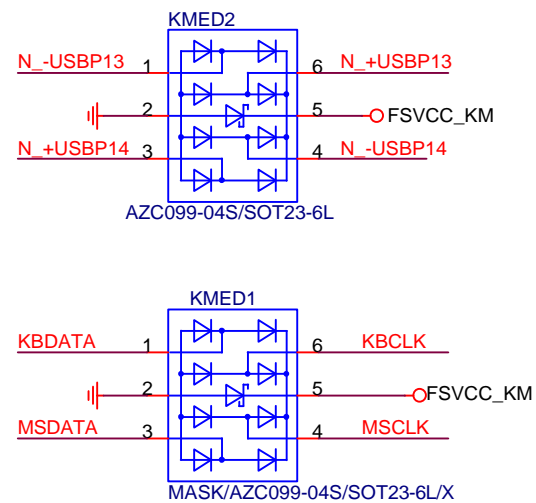
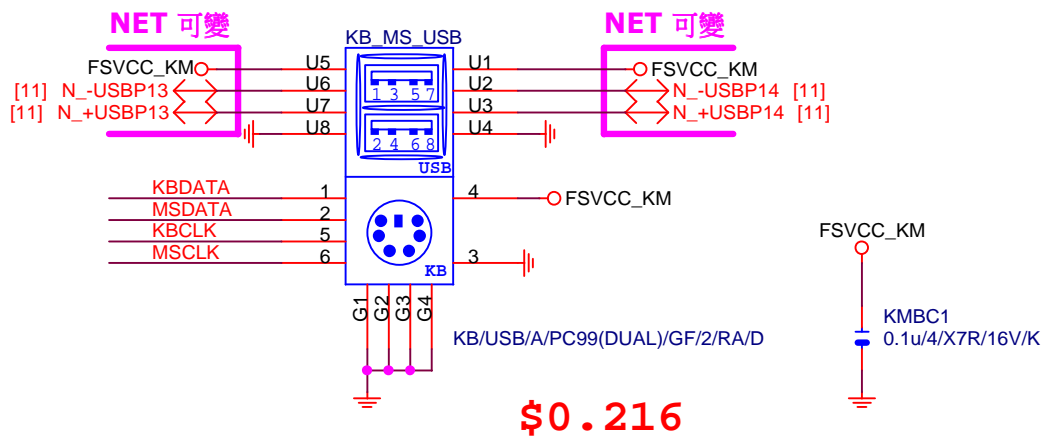


## COUPON



## Gigabyte Technology

Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-H170M-D3H	1.0
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Gigabyte Technology

Title

KB\_MS\_USB

Size  
A

Document Number

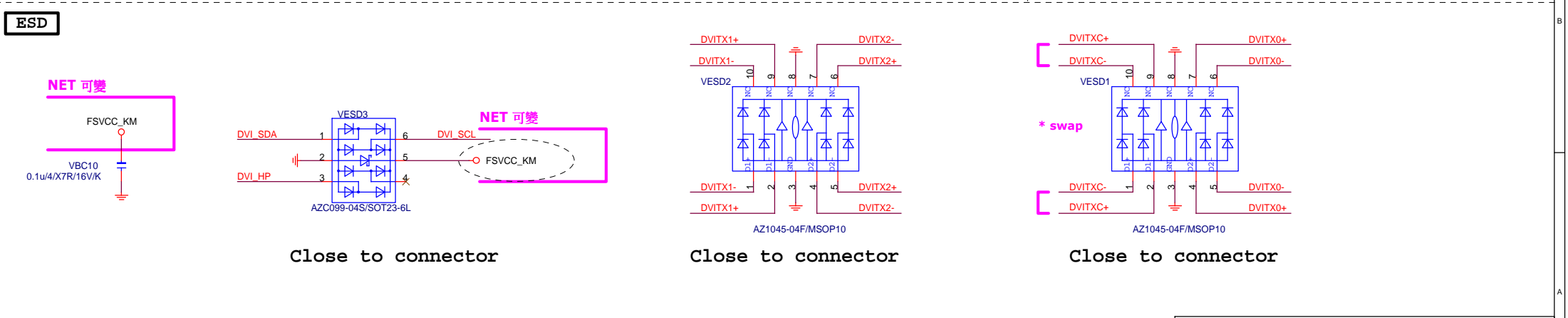
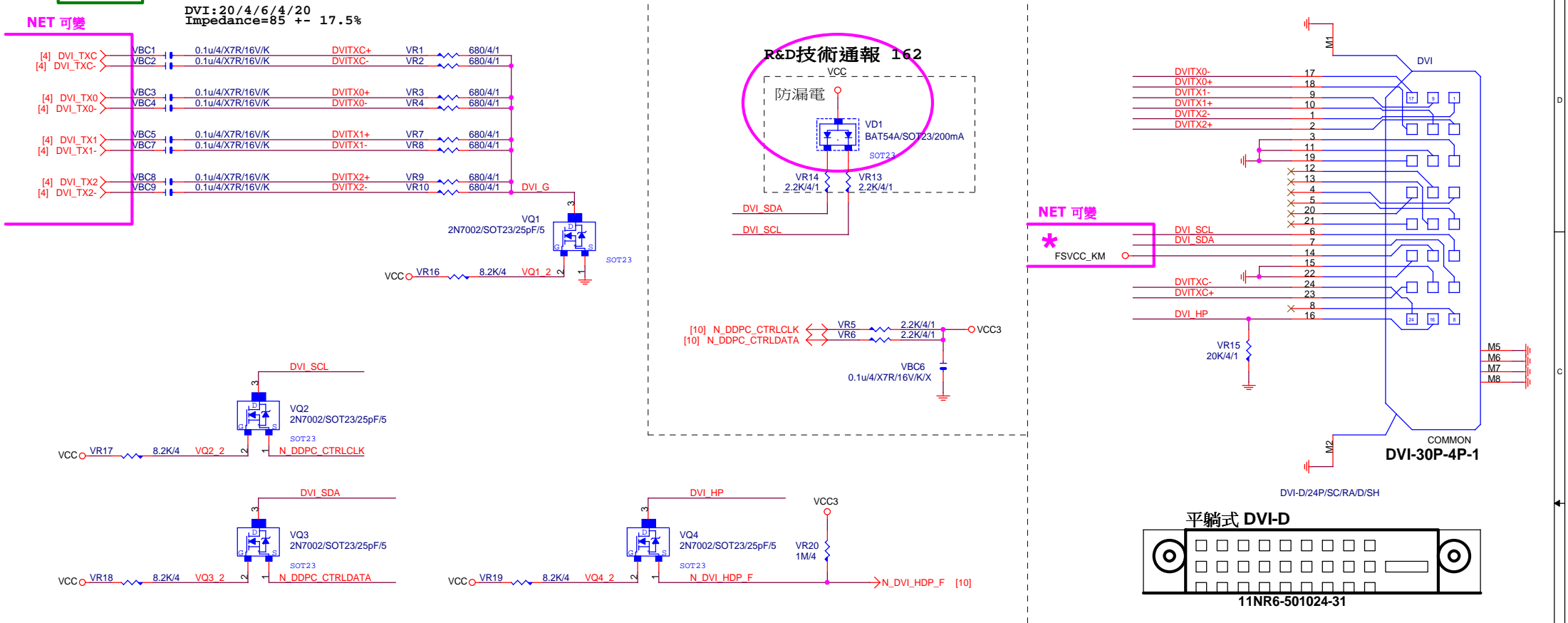
GA-H170M-D3H

Rev  
1.0

Date: Tuesday, July 14, 2015

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

省X'TAL COST DOWN:

1. 上件:

DVC28 [10p/4/NPO/50V/J]

DVC11 [10p/4/NPO/50V/J]~修改值  
DVR10 [8.2K/4]

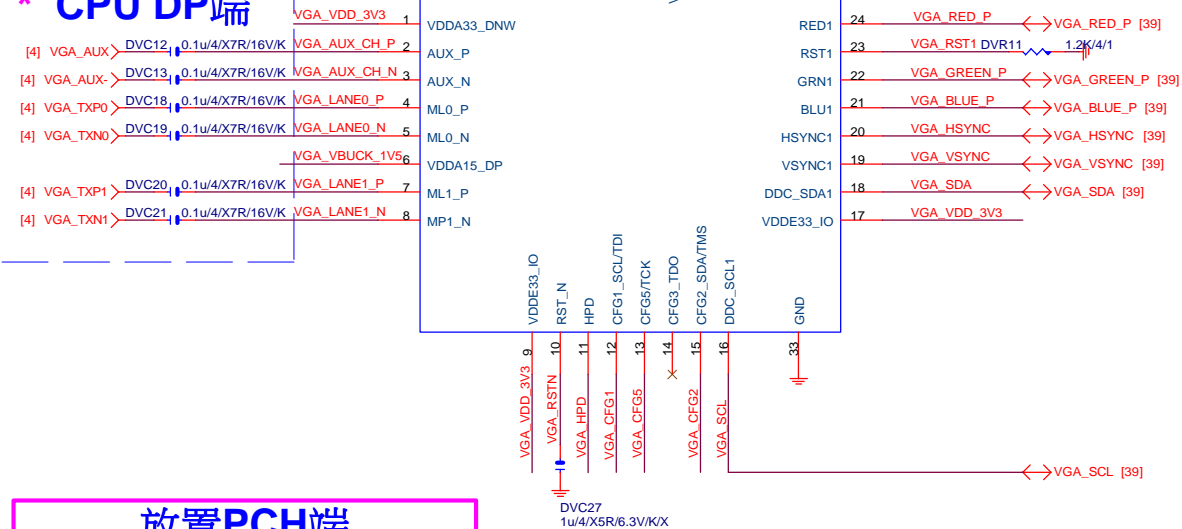
2. 删除:

DVX1 [25M/16p/30ppm/49US/20/D]

DVC10 [20p/4/NPO/50V/J]

DVR9 [8.2K/4]

## \* CPU DP端

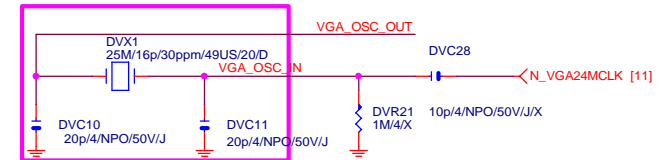


## 放置PCH端



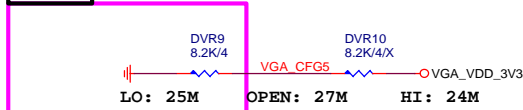
## 25M Crystal

FROM PCH 24MHZ ISSUE

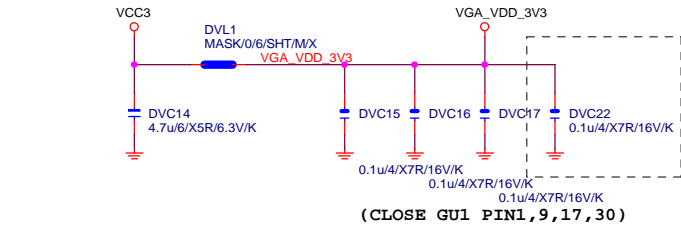
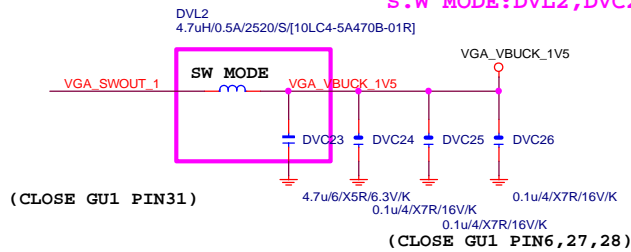


## CFG5

For Crystal Less

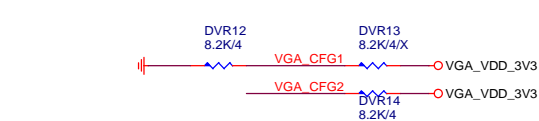


## ADAPTER POWER

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

## CFG1&amp;2

Non-Compliant



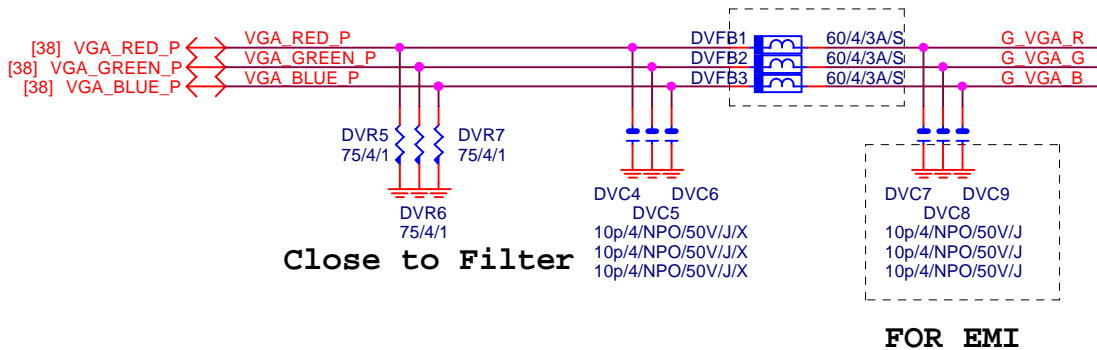
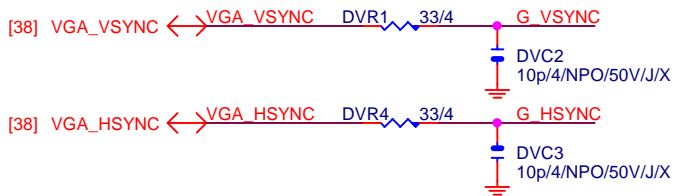
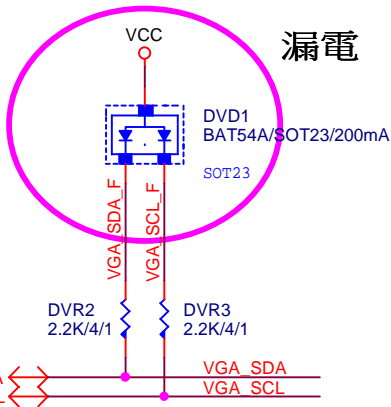
## HPD

## PCH端

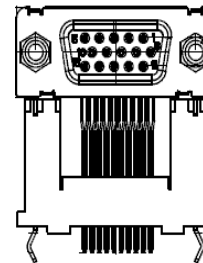
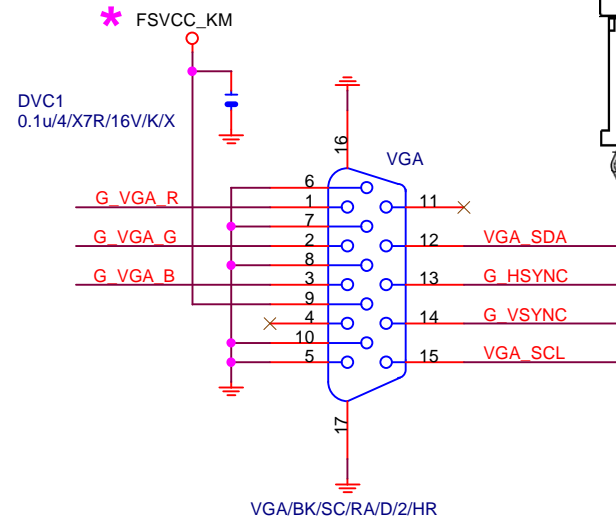
Gigabyte Technology  
NXP-PTN3356

Title			
Size	Document Number	GA-H170M-D3H	Rev 1.0
Date:	Tuesday, July 14, 2015	Sheet 38 of 52	

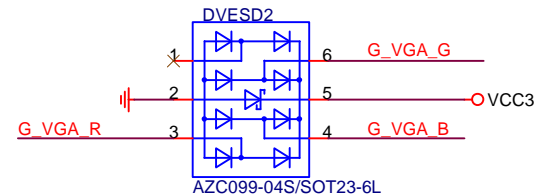
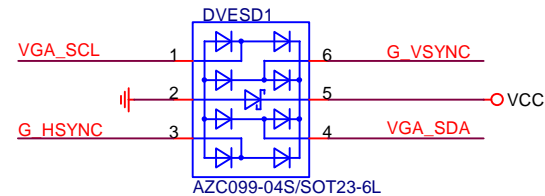
# VGA SIGNAL R1.08



# VGA CONN. 架高型VGA (BLACK)



# VGA ESD



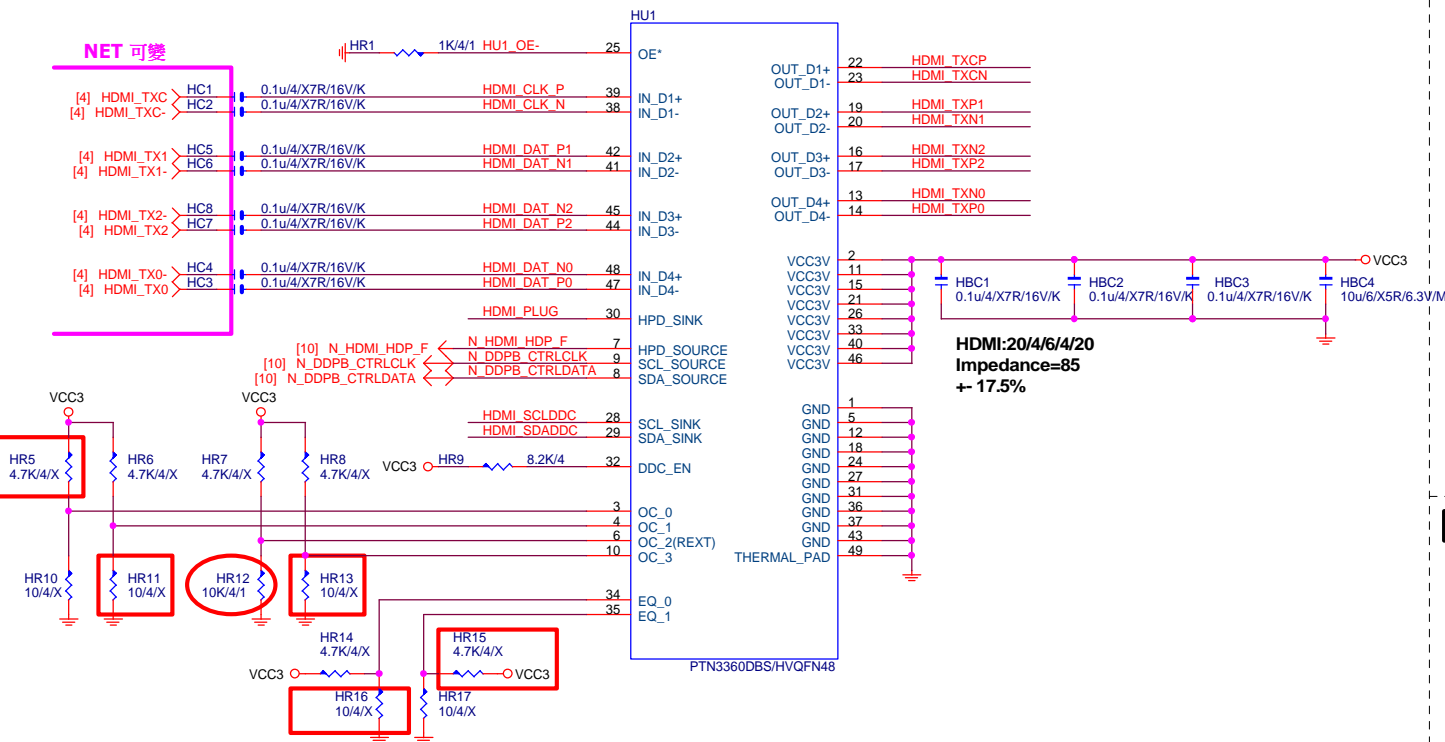
Gigabyte Technology  
NXP-PTN3356

Size		Document Number	GA-H170M-D3H	Rev	1.0
Custom					

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# HDMI LEVEL SHIFT

Rev: 0.7



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K

ASM1442:紅色框要上,HR12:3.16K

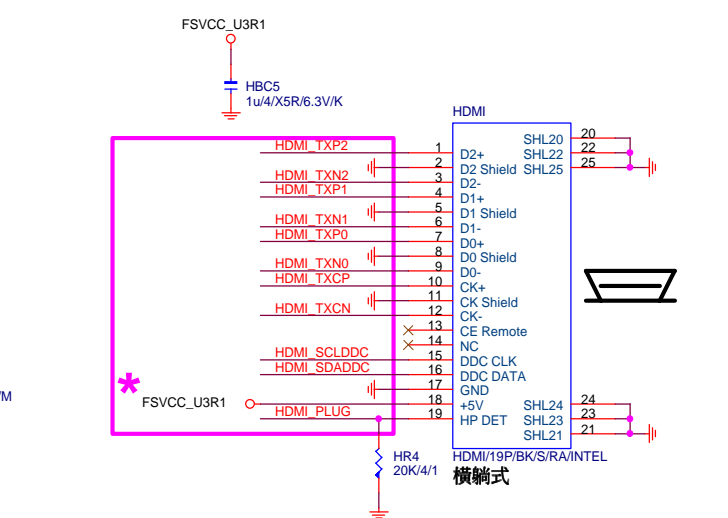
## 【技術通報R&D技術通報150】

HDMI eye diagram1.4版(deep color)會fail

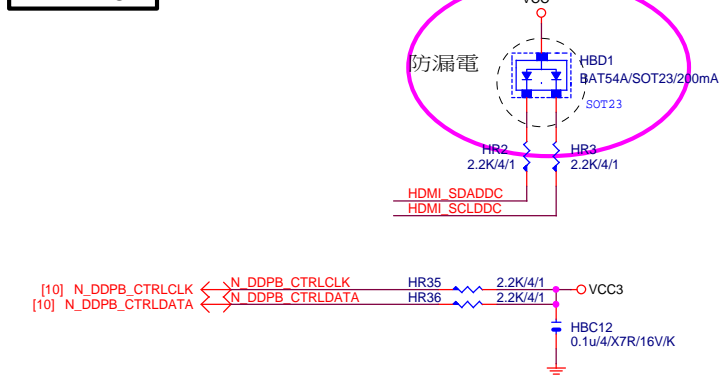
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram

改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

# HDMI CONN



# HDMI PU

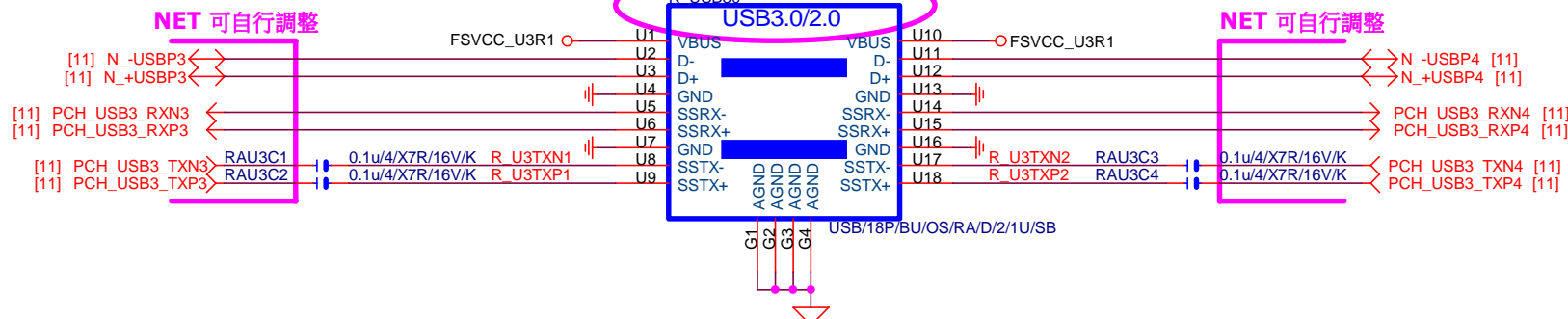


Gigabyte Technology

Title		HDMI	
Size	Document Number	GA-H170M-D3H	Rev
Custom			1.0
Date:	Tuesday, July 14, 2015	Sheet	40 of 52

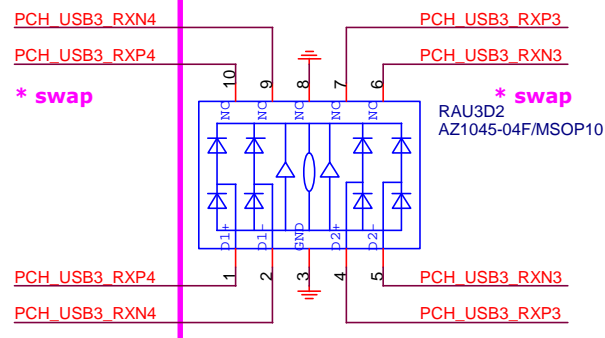
Rev: 0.7

ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可

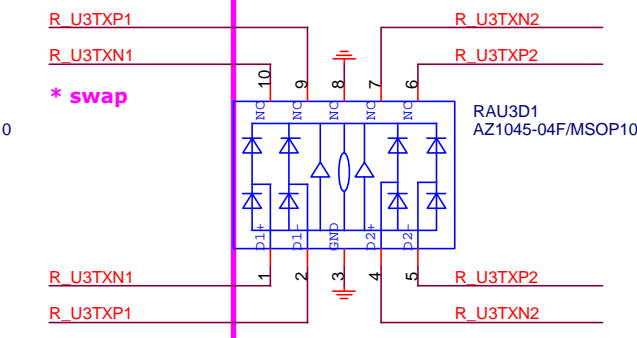


ESD

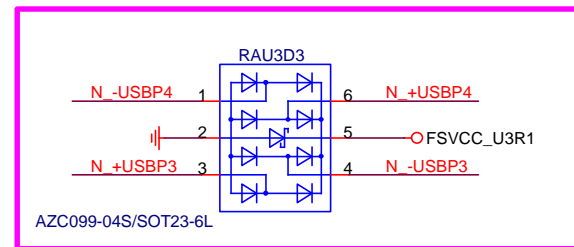
**NET 可自行調整**



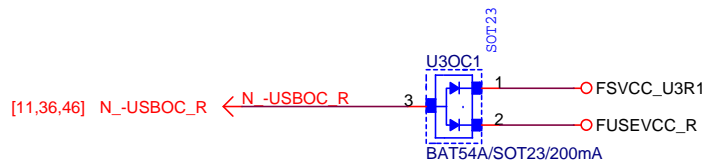
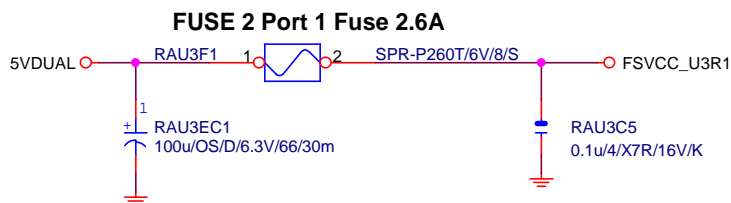
**NET 可自行調整**



**NET 可自行調整**



FUSE

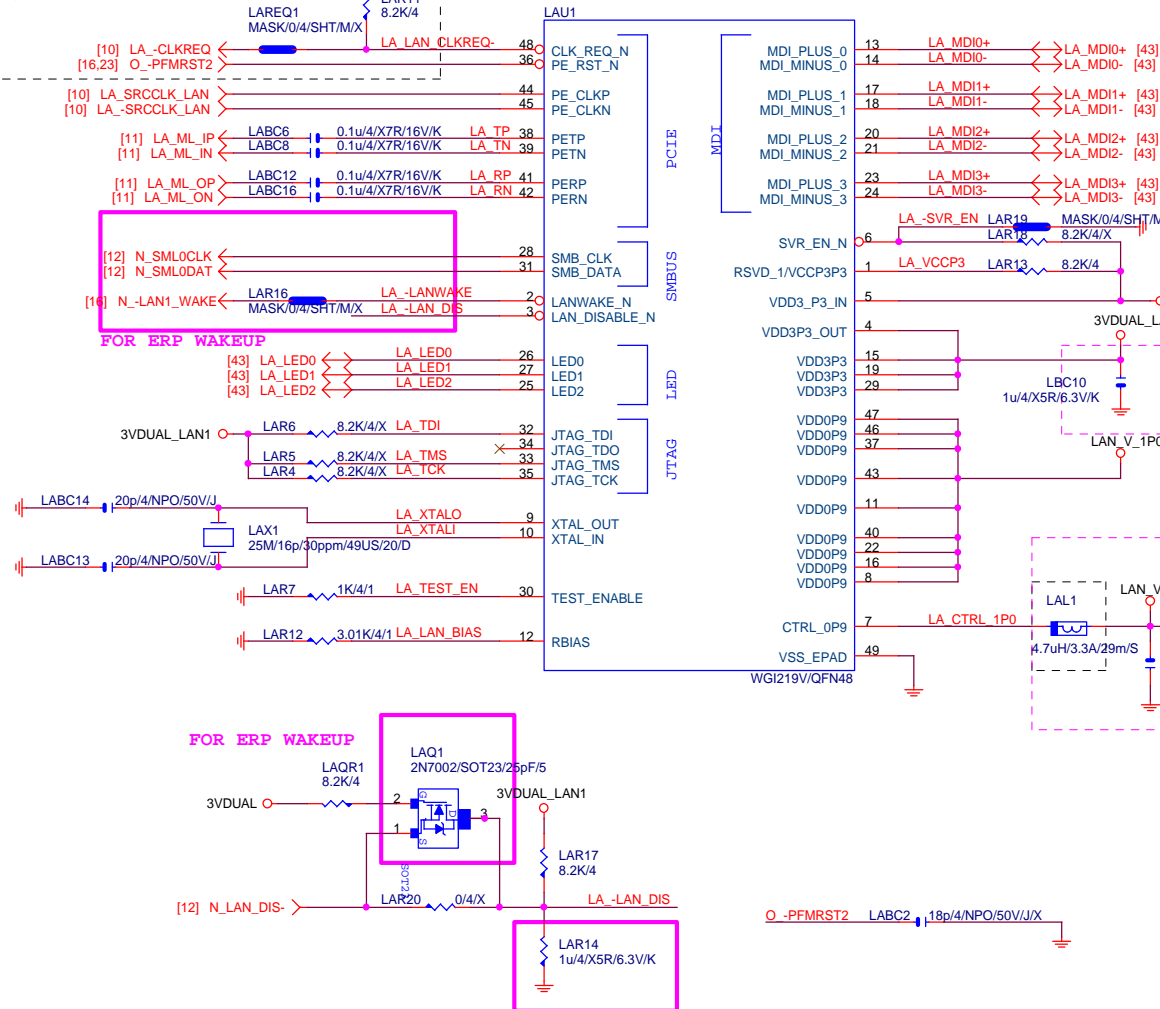


Gigabyte Technology

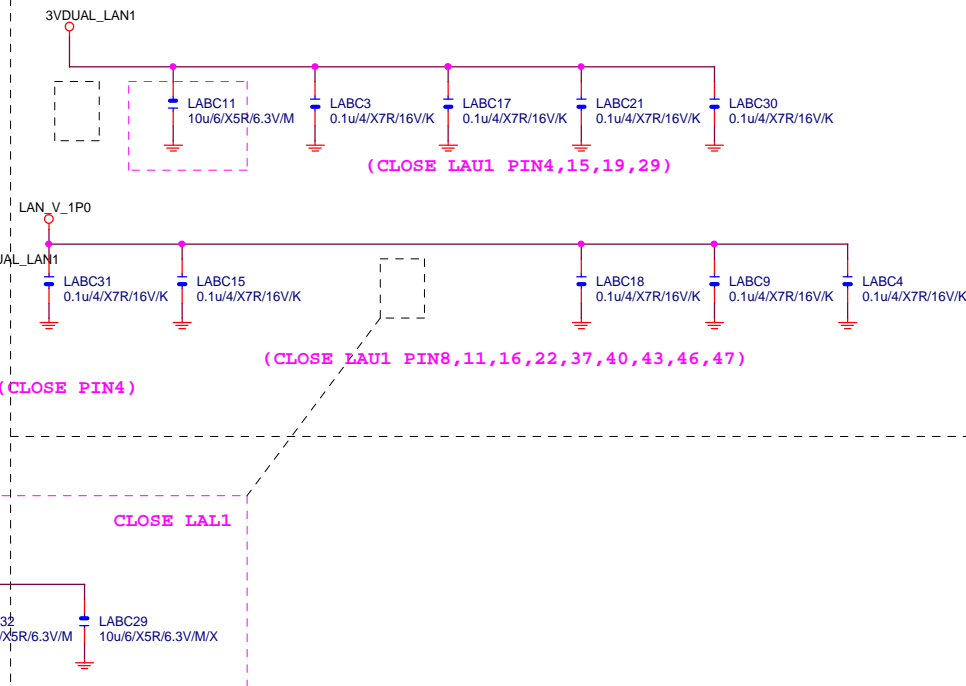
Title			R_USB30,USB_OC
Size	Document Number	GA-H170M-D3H	
Custom			Rev 1.0
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## R1.1

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



## LAN POWER



## Gigabyte Technology

**INTEL I219**

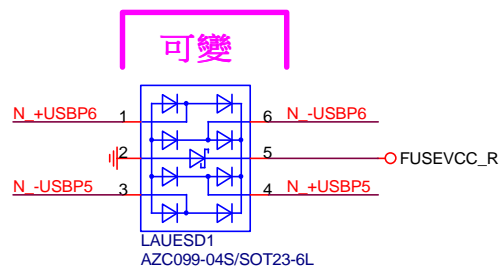
Size Custom	Document Number <b>GA-H170M-D3H</b>	Rev <b>1.0</b>
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Date: Tuesday, July 14, 2015 Sheet 42 of 52

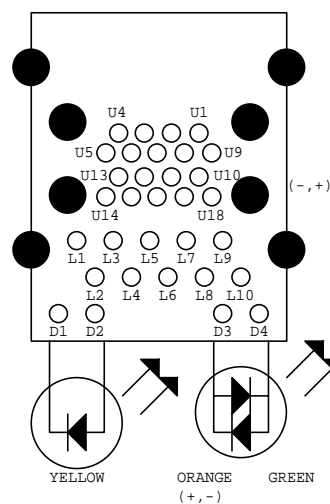
R1.1

RMA ESD PROTECT

note:可變更USB NAME



### USB30\_LAN LAYOUT示意圖



Dual Color LED

Single Color LED

D2 / D1 Yellow

## LAN COVER

FOOT PRINT:LAN COVER

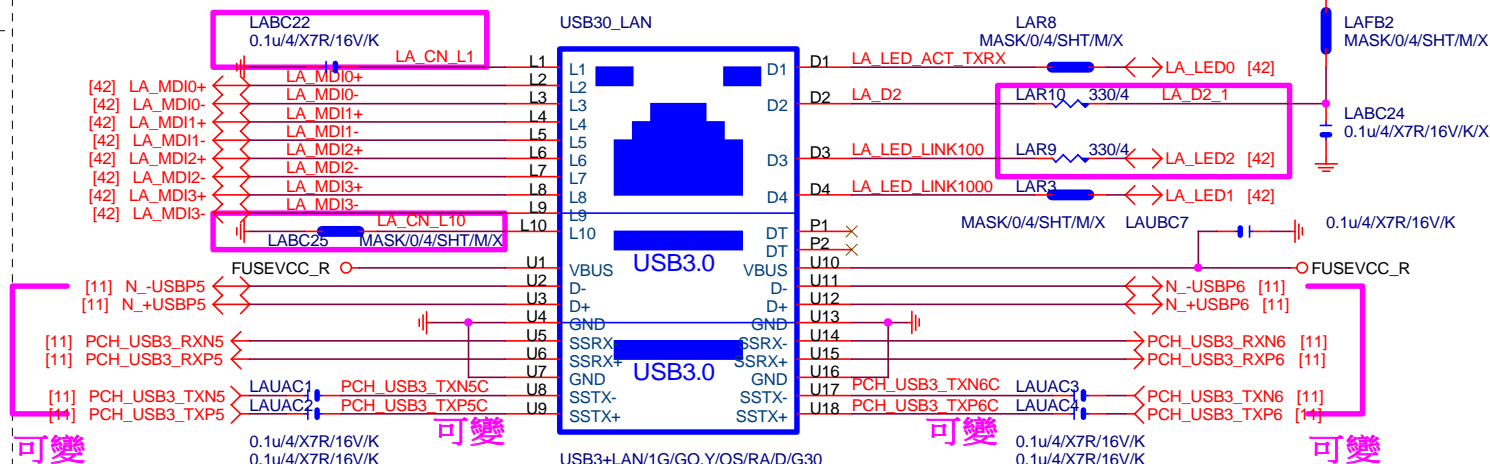
可變  
[視SPEC需求]

[-D3H不加蓋]

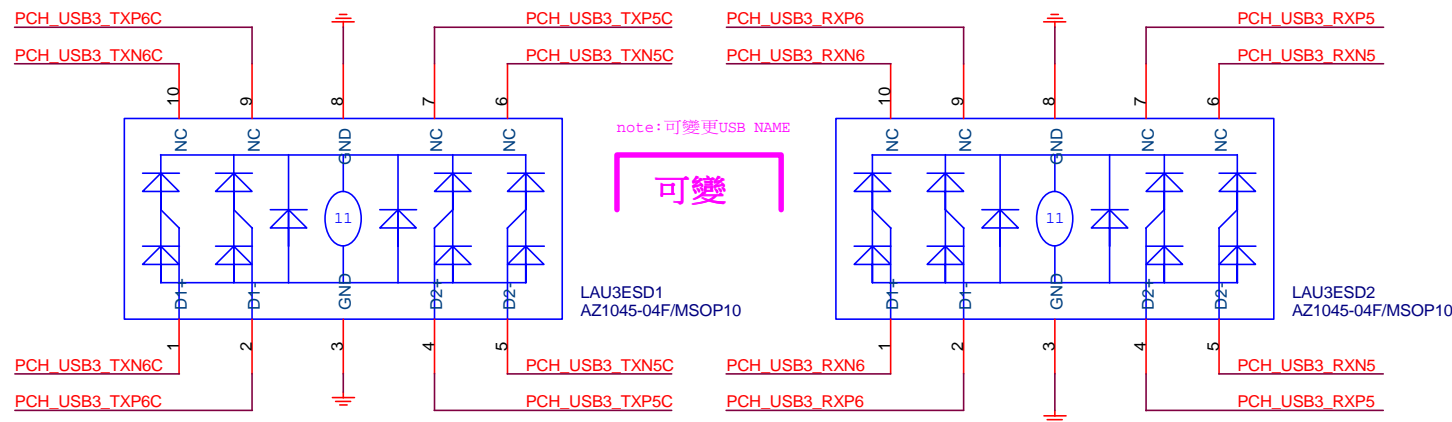
## USB\_LAN CONNECTOR

note:可變更USB NAME

[I219]



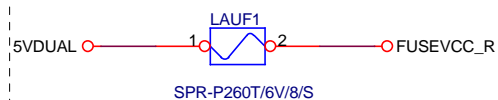
LA\_MDI-->100歐姆:[20/4/8/4/20]



## USB POWER

note:可變更FUSE

## 可變



Close to connector  
FUSE-0805

## EMI SHORT PAD

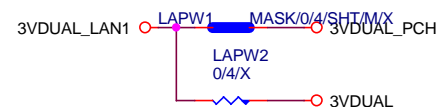
PS:視EMI需求



## LAN POWER

note: lan power連接及電流

可變



## Gigabyte Technology

## LAN CONNECTOR-I219

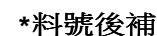
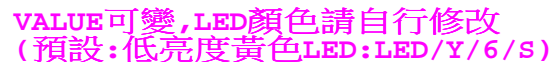
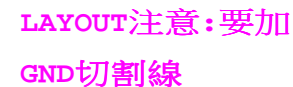
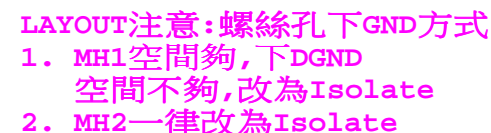
Size	Document Number
Custom	

**GA-H170M-D3H**

Rev  
1.0

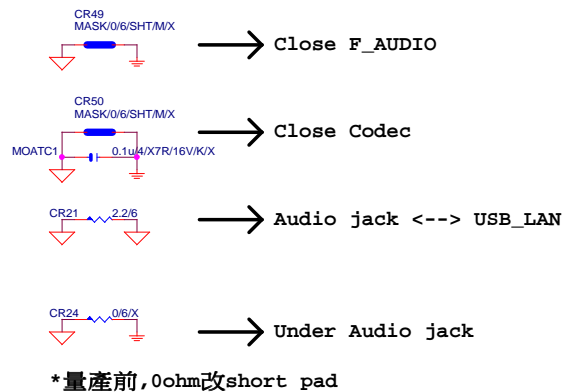
Date: Tuesday, July 14, 2015 Sheet 43 of 52



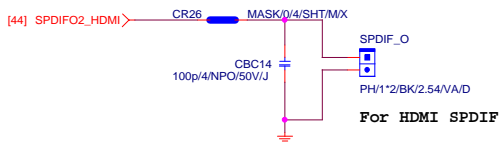


**BOM OPTION :**

1. Chemicon 音效電容
2. 金屬外罩 Reserve (上件與否, 依照各Model spec)
3. LED Reserve (上件與否和LED顏色, 依照各Model spec)

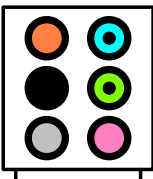


## SPDIF\_OUT

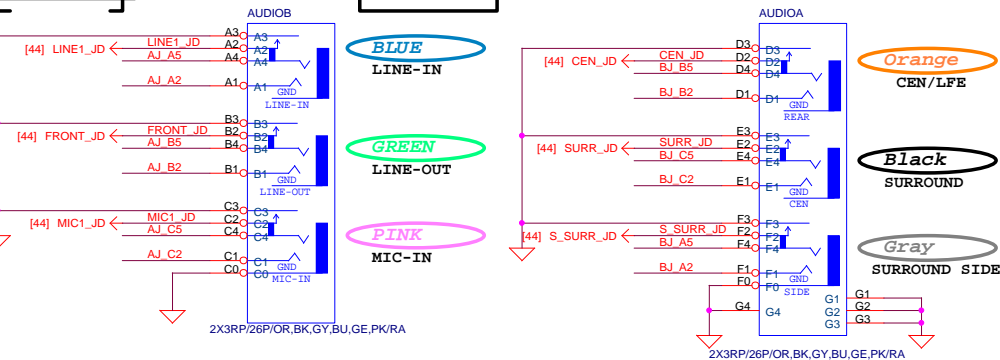


## SPDIF\_IN

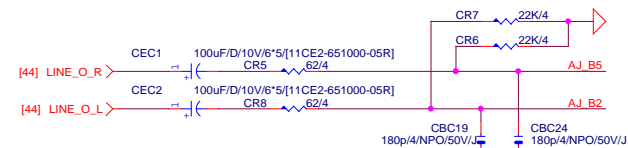
## AZALIA JACK



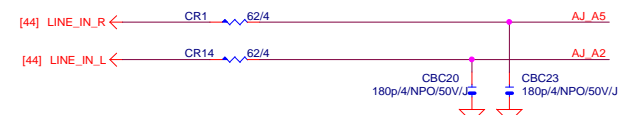
## AZALIA JACK



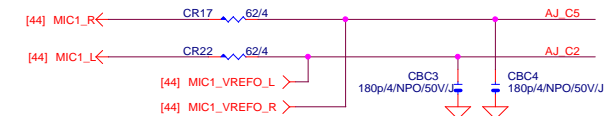
## LINE-OUT



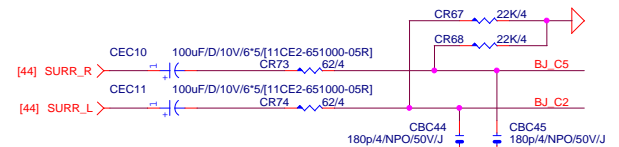
## LINE-IN



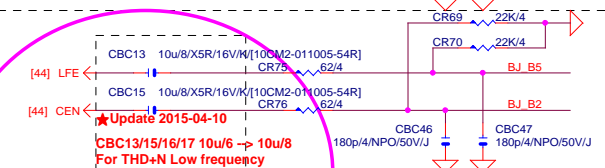
## MIC-IN



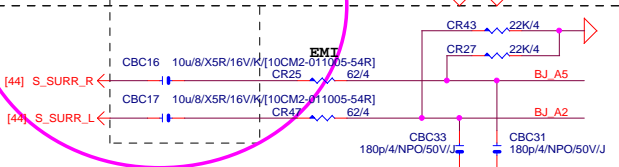
## SURROUND



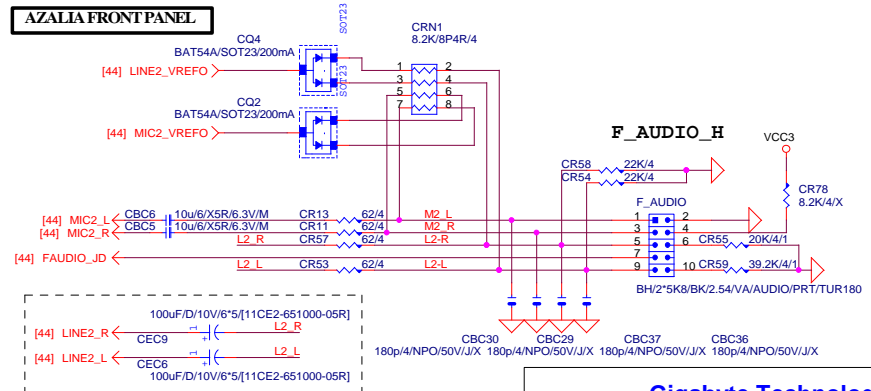
## CEN/LFE



## SURRBACK

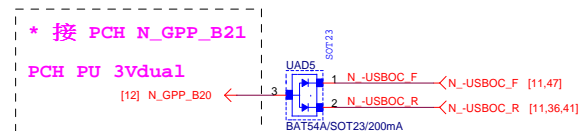
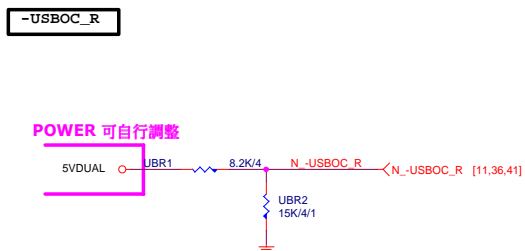
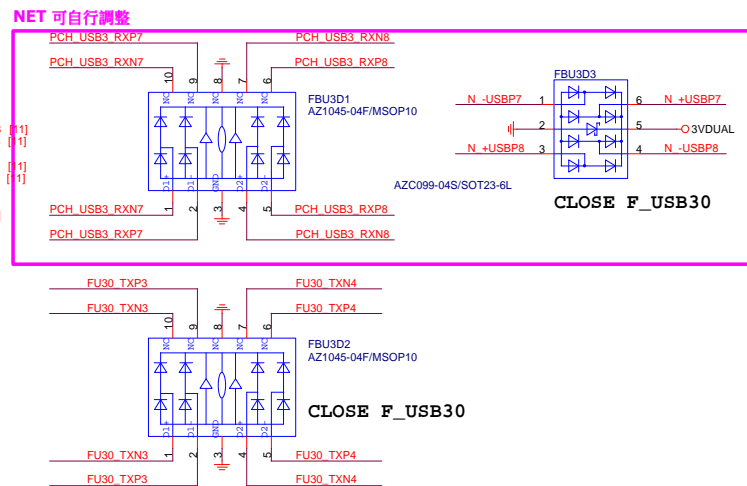
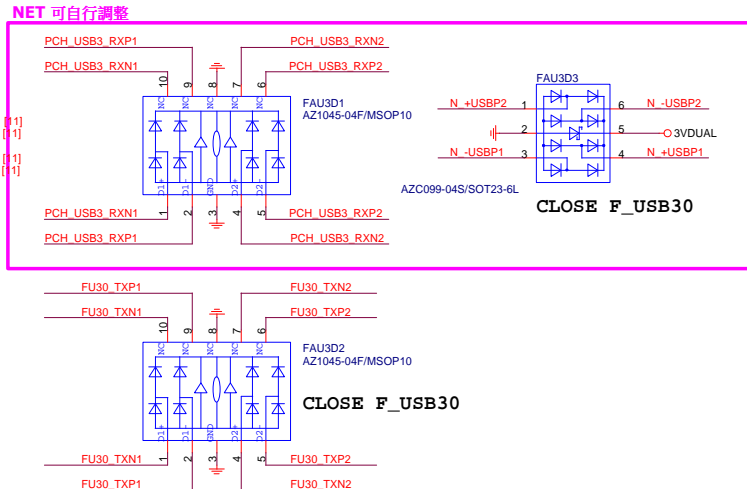


## AZALIA FRONT PANEL



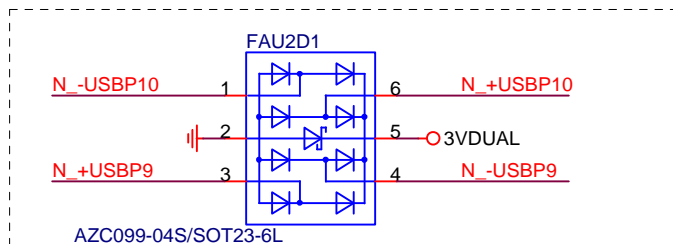
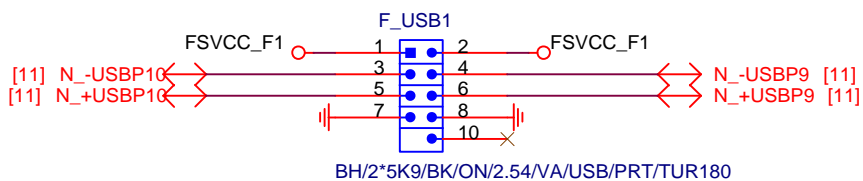
Gigabyte Technology

Title			
AUDIO JACK			
Size Custom	Document Number		Rev
	GA-H170M-D3H		1.0
Date:	Tuesday, July 14, 2015	Sheet	45 of 52



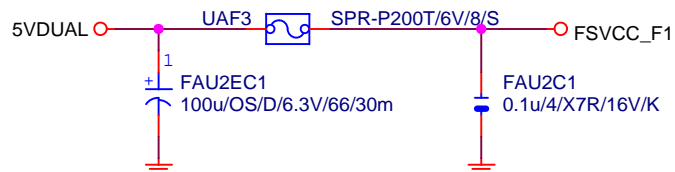
NET 可變

## FUSB2X5-HS



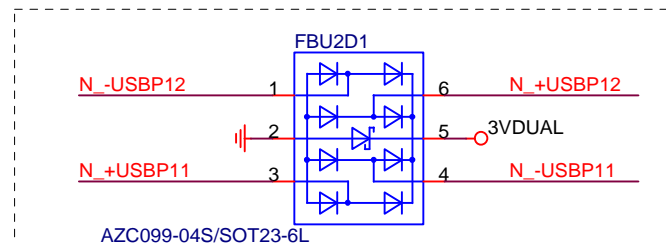
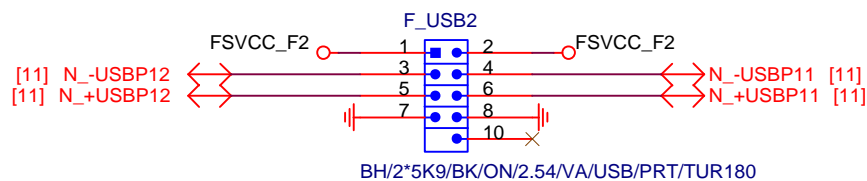
Close to connector

FUSE 2 Port 1 Fuse 2A



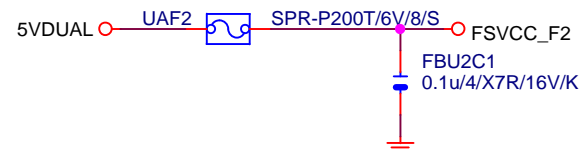
NET 可變

## FUSB2X5-HS

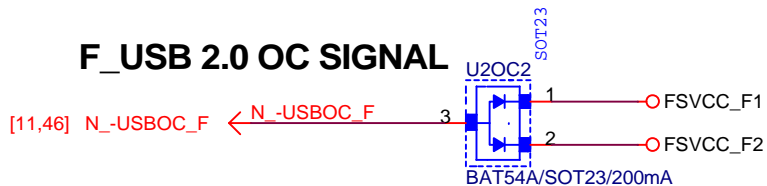


Close to connector

FUSE 2 Port 1 Fuse 2A



## F\_USB 2.0 OC SIGNAL



Gigabyte Technology

Title

USB2.0

Size  
A

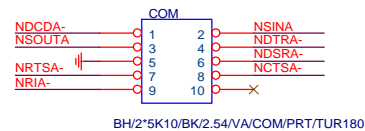
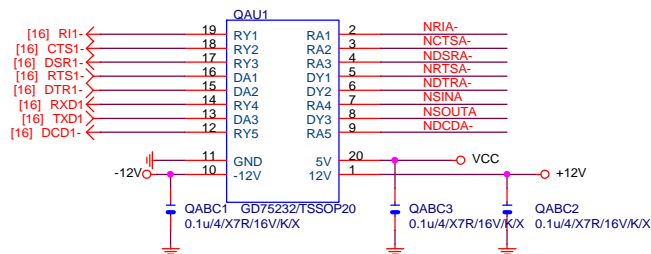
Document Number

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1.0

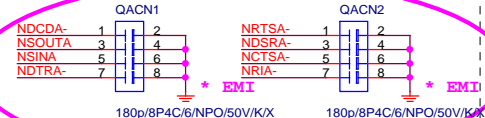
Date: Tuesday, July 14, 2015

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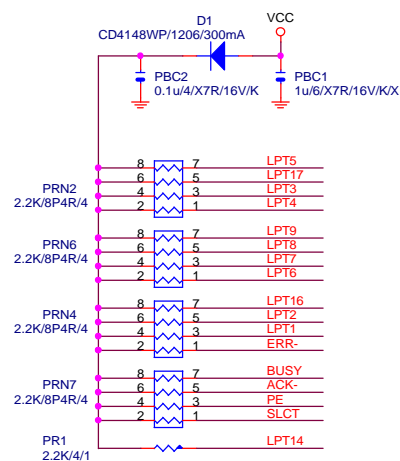
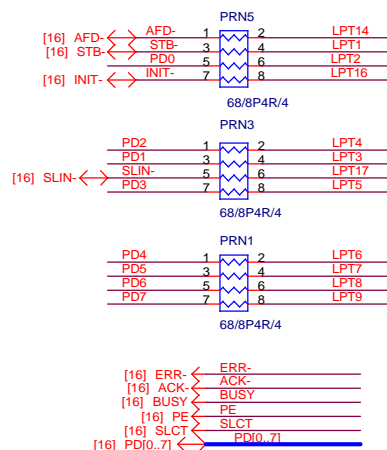
**Rev: 0.7**

BH/2\*5K10/BK/2.54/VA/COM/PRT/TUR180

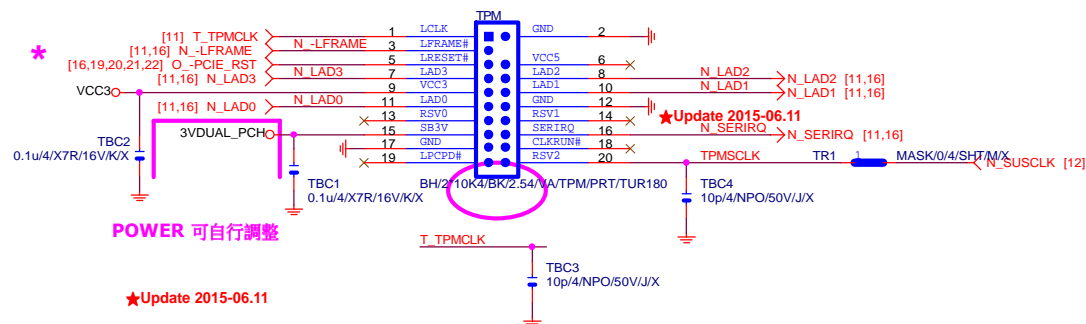
F\_COM-HS



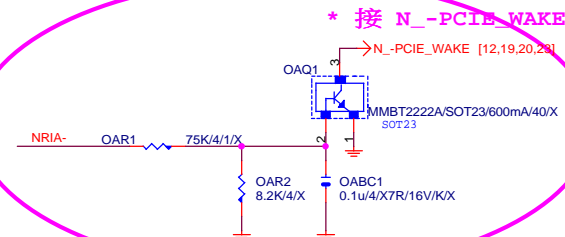
## LPT PORT



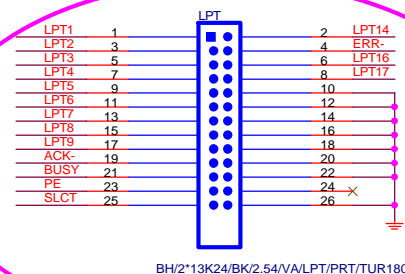
## TPM CONNECT



COM RI N/A

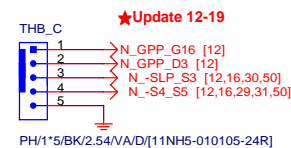


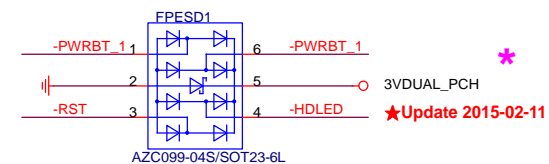
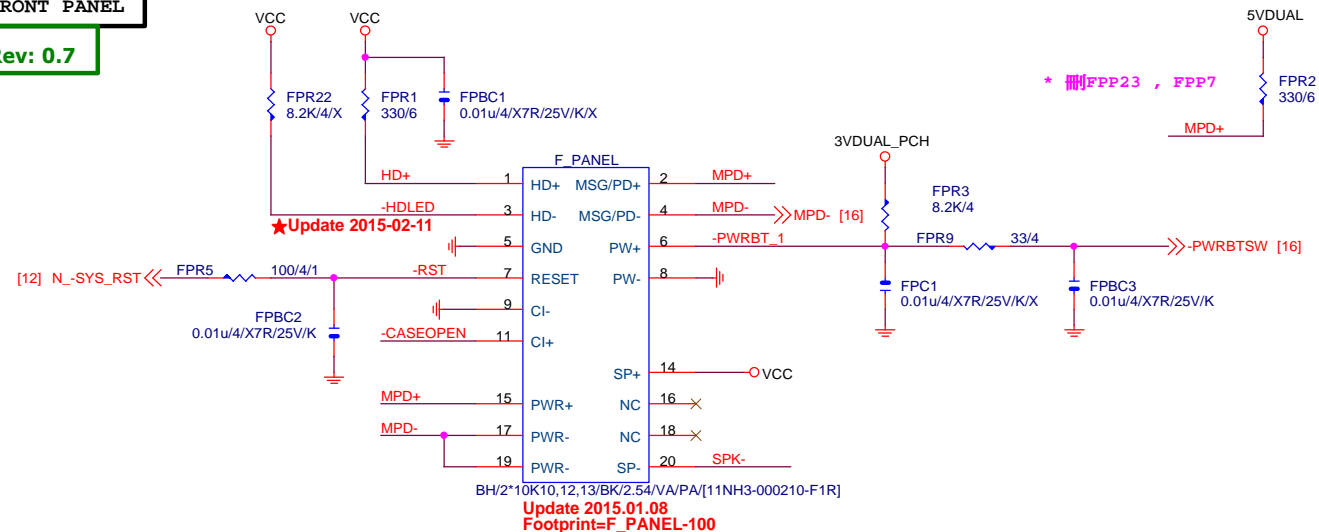
R&D技術通報151 有使用PRINT PORT的  
MODEL, 需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD  
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



F LPT-HS

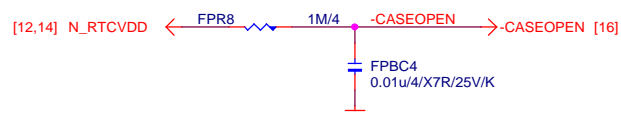
## Thunderbolt



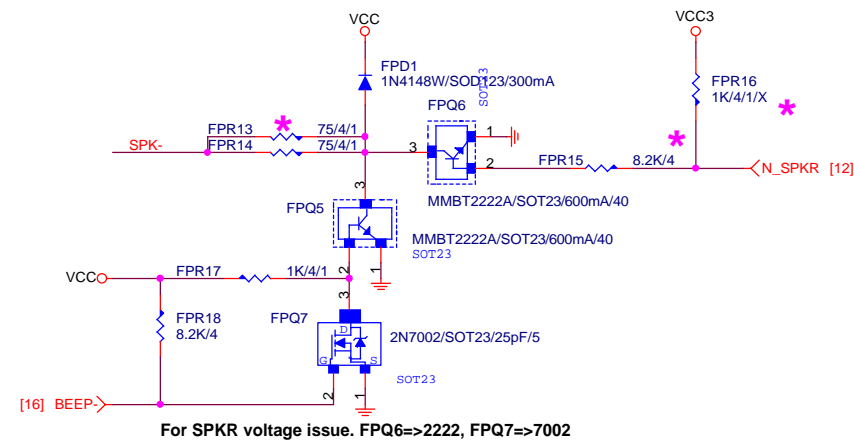
**Rev: 0.7**

## SATA LED

SATALED# signal open-collector,pull-up (8.2 k $\Omega$  to 10 k $\Omega$ ) to Vcc3 3



## SPKR



## Gigabyte Technology

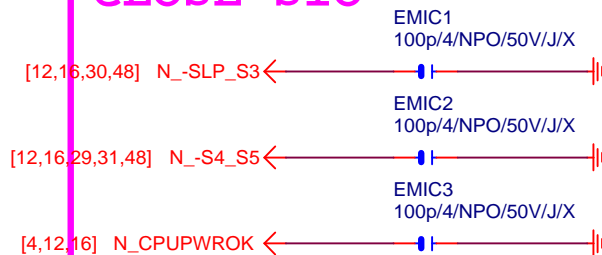
## FRONT PANEL

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## CLOSE SIO



## CLOSE PCH



# GIGABYTE™

Title

**EMI/ESD**

Size  
A

Document Number

**GA-H170M-D3H**

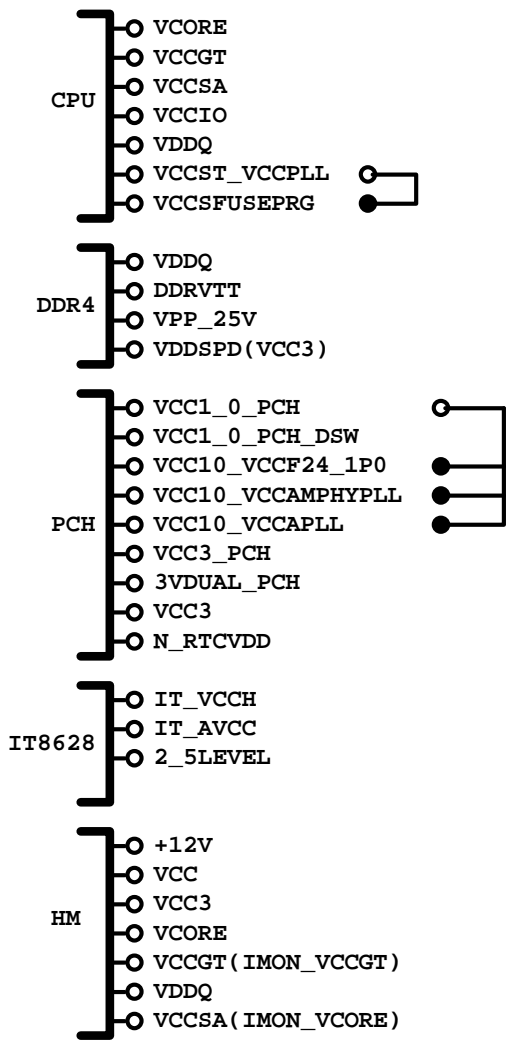
Rev

**1.0**

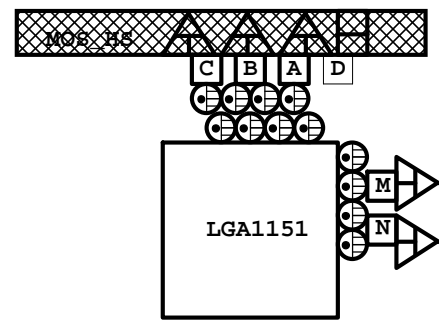
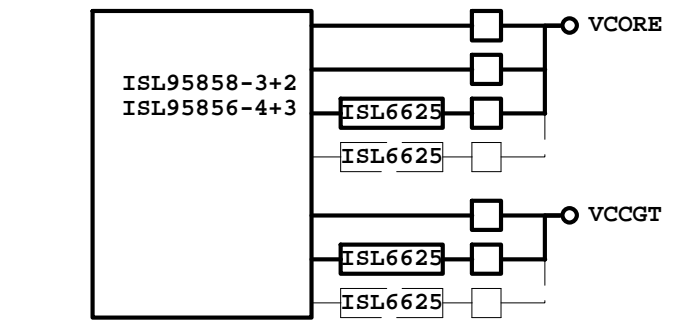
Date: Tuesday, July 14, 2015

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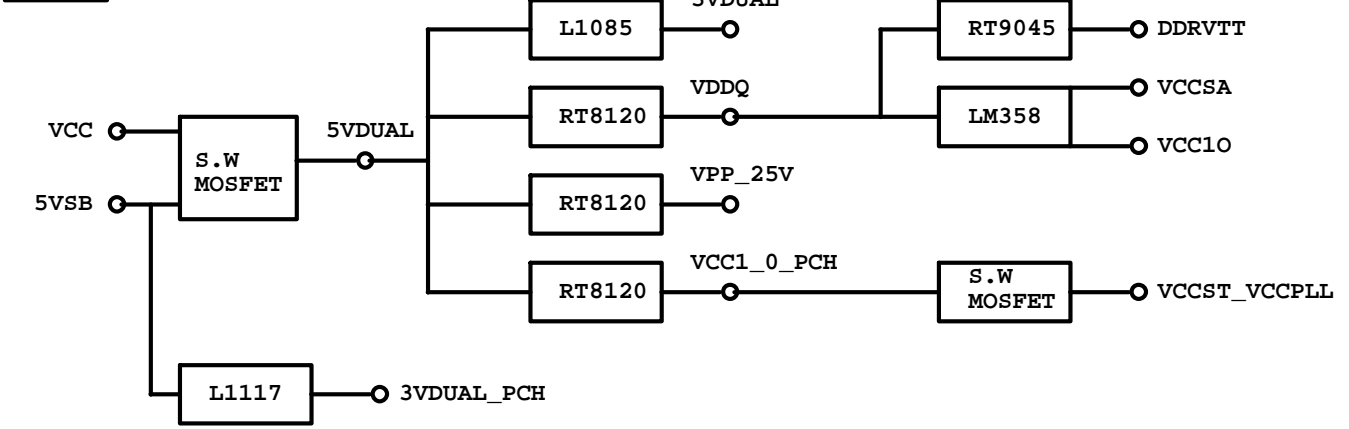
POWER BLOCK MAP



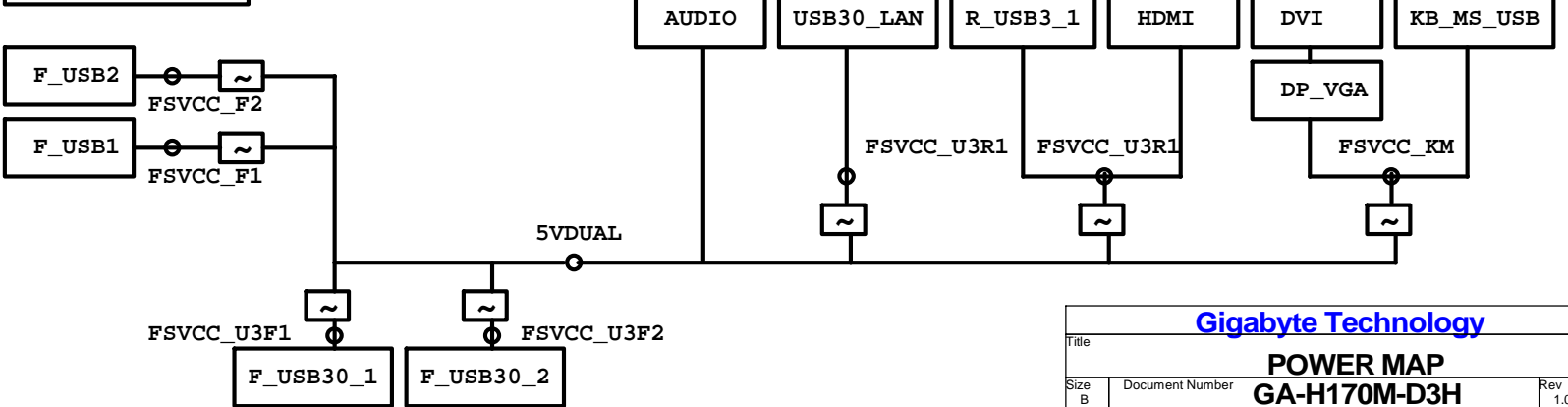
VCORE/VCCGT



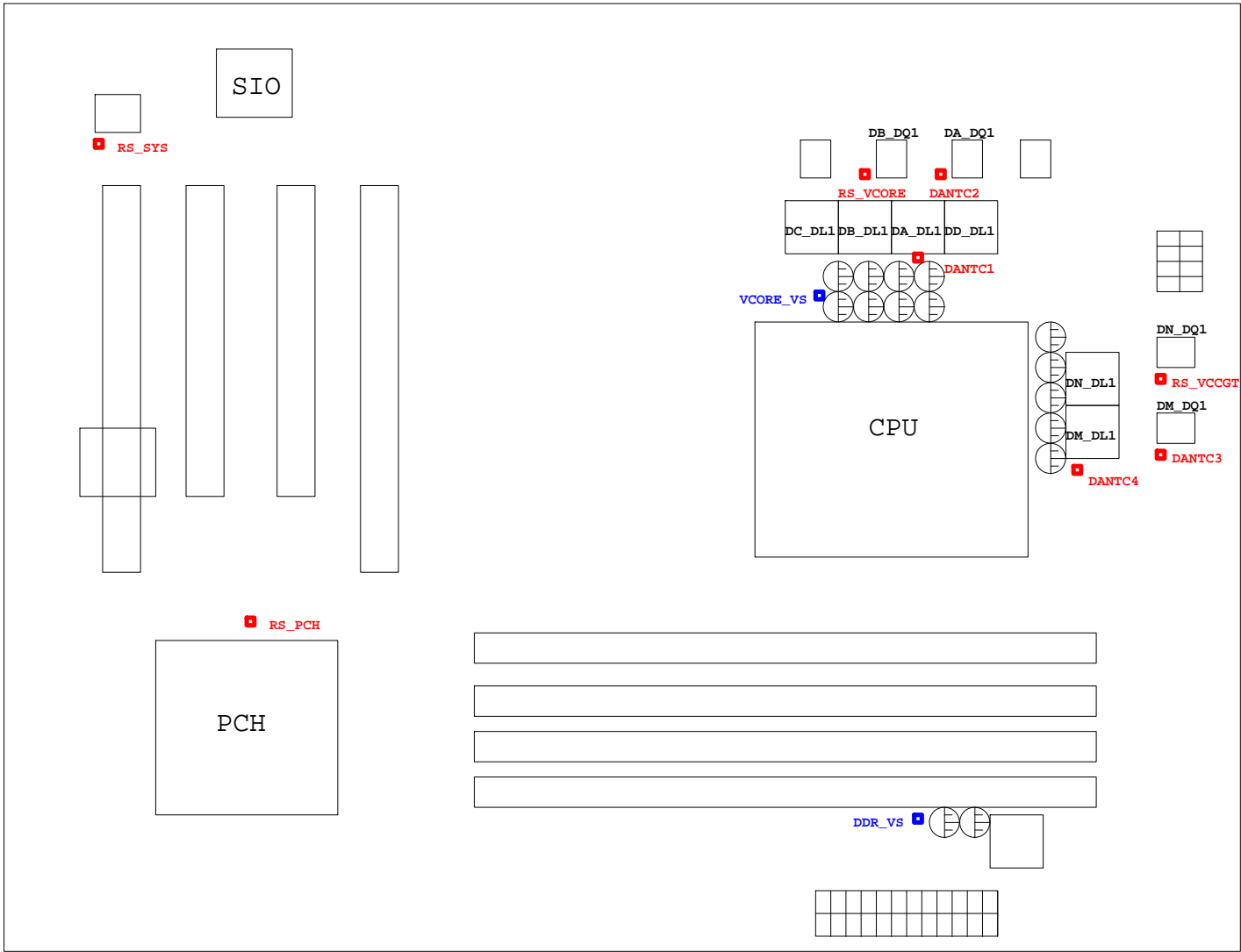
POWER



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