

Model Name: H410M H V2

Rev:1.01

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1200-A
05	CPU_LGA1200-B-DDR4
06	CPU_LGA1200-C
07	CPU_LGA1200-D
08	DDR4 CHANNEL A
09	DDR4 CHANNEL B
10	PCH_CLK BUFFER
11	PCH_DMI,USB,PCIE
12	PCH_MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR
15	PCH_GND_Heatsink
16	ITE 8688 LPC IO_RGB_LED
17	Single BIOS
18	FAN CTRL--SIO
19	HWM
20	CEC Logic
21	PCI EXPRESS*16 SLOT
22	PCI EXPRESS*1 SLOT
23	SATA
24	ISL95866C PWM
25	ISL95866C MOS_VCORE
26	ISL95866C MOS_VCCGT
27	VCCSA_VCCIO_VCCPLL

SHEET

TITLE

28	RT8237_DDR_VDDQ
29	RT8068_VPP
30	RT8237_PCH_VCC1_05_PCH
31	DISCRETE POWER
32	ATX POWER , A_-PROCHOT
33	KB_MS
34	DVI CONN
35	RTD2168 - DP to VGA - IC
36	RTD2168 - DP to VGA - Conn
37	R_USB30
38	R_USB
39	REALTEK - RTL8125BS (I219V)
40	USB_LAN CONNECTOR
41	Realtek ALC897
42	MONO SPKR
43	REAR AUDIO JACK
44	F_USB30
45	HDMI CONN
46	M.2 X2 (A)
47	F_USB
48	COM, SPI TPM
49	F_PANEL
50	Audio LED
51	EMI/ESD
52	POWER MAP
53	NTC MAP

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Title			Cover Sheet
Size	Document Number	H410M H V2	
Custom			Rev 1.01
Date:	Friday, January 15, 2021	Sheet 1	of 53

**Rev:1.01**

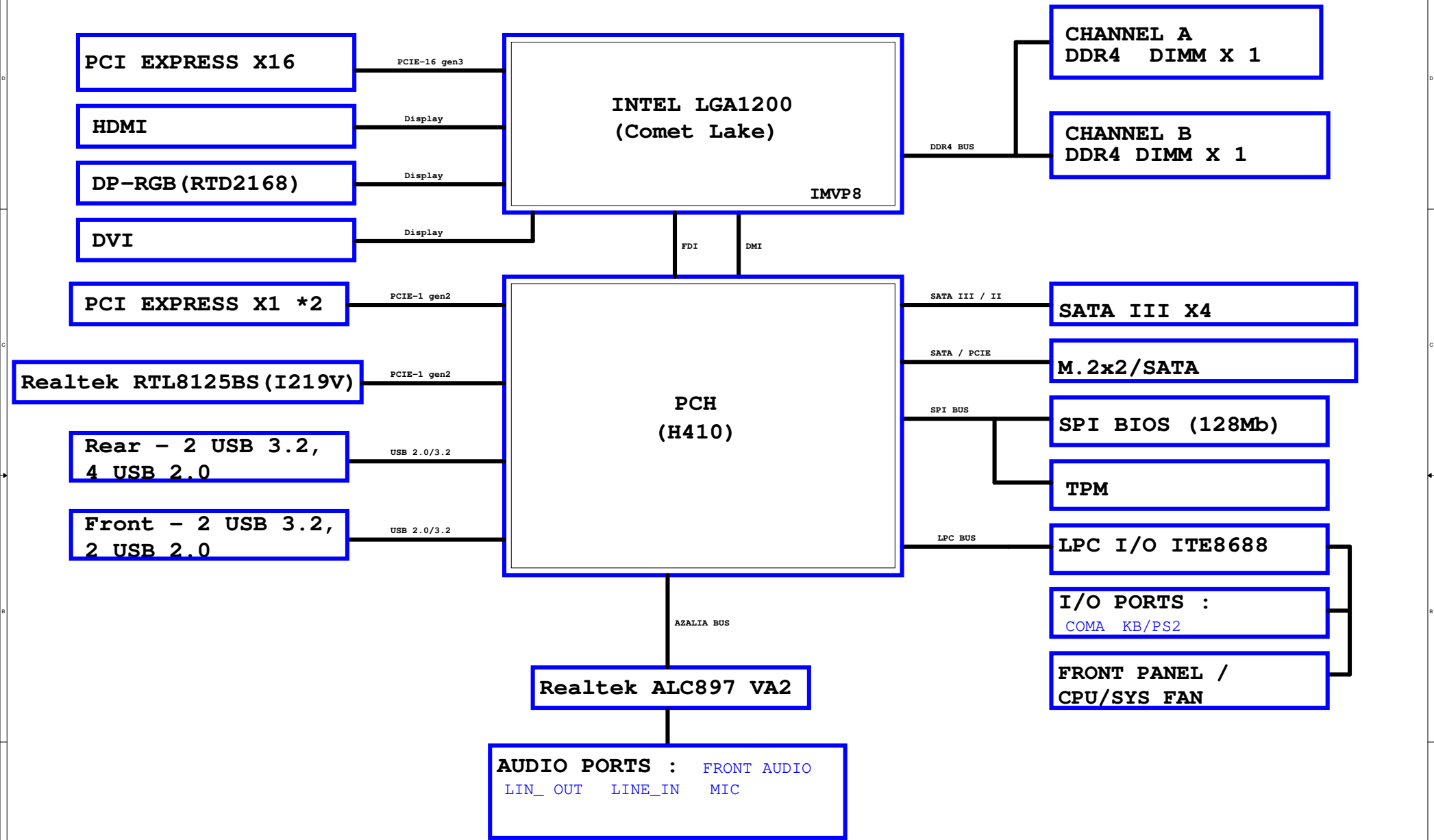
## Component value change history

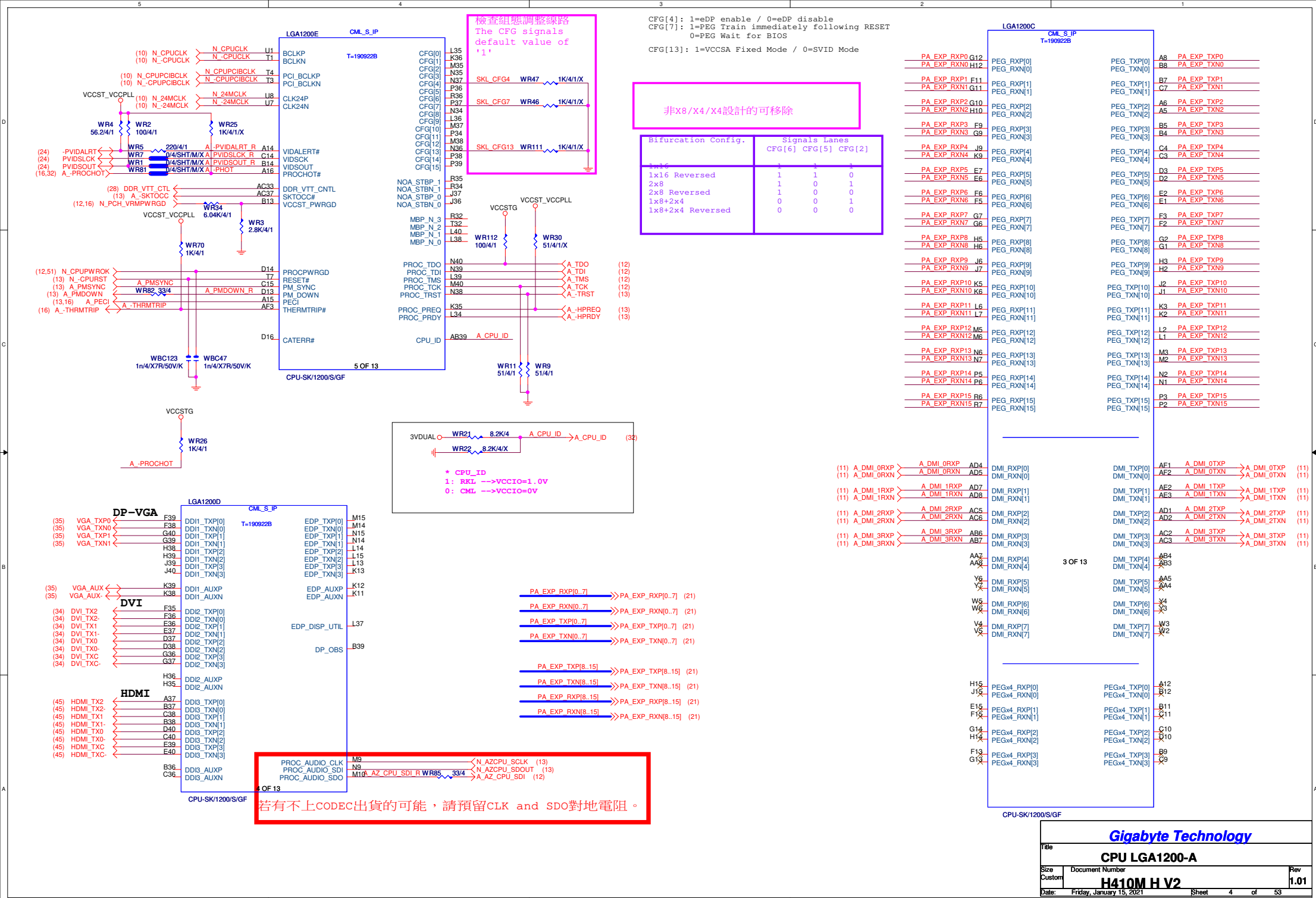
**P-Code: U19148-0**

**Tip-Top: 9MH41MS2H-00-11B**

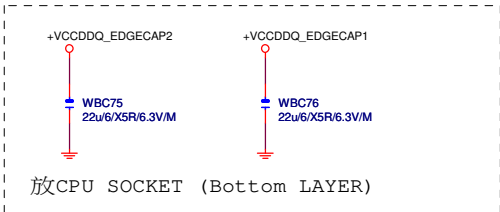
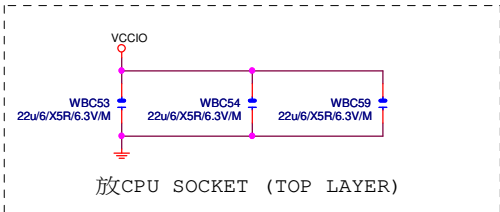
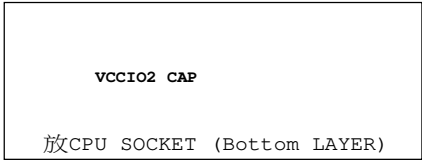
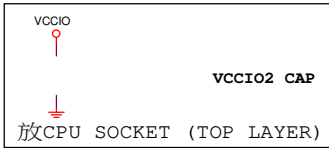
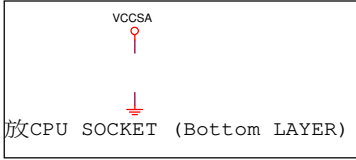
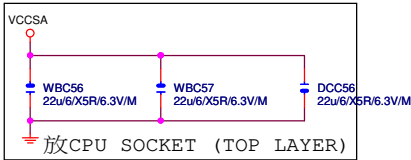
## Circuit or PCB layout change

BLOCK DIAGRAM



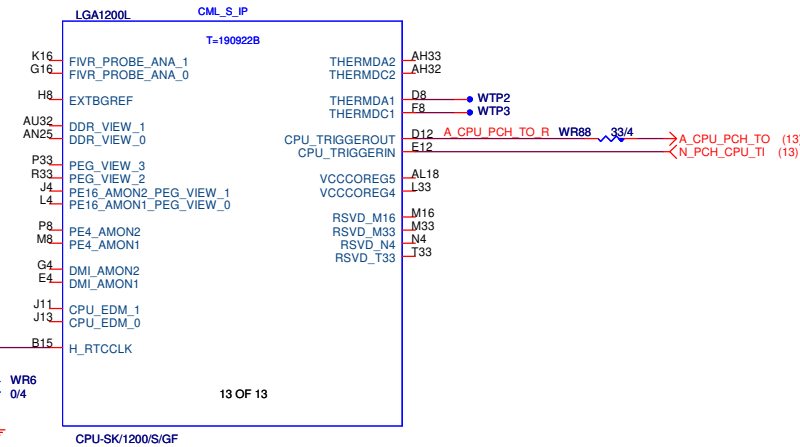
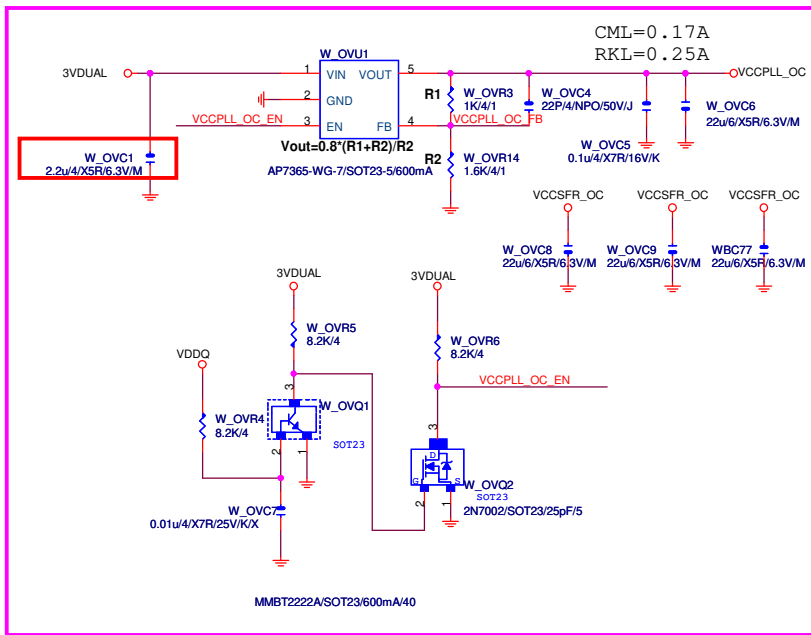
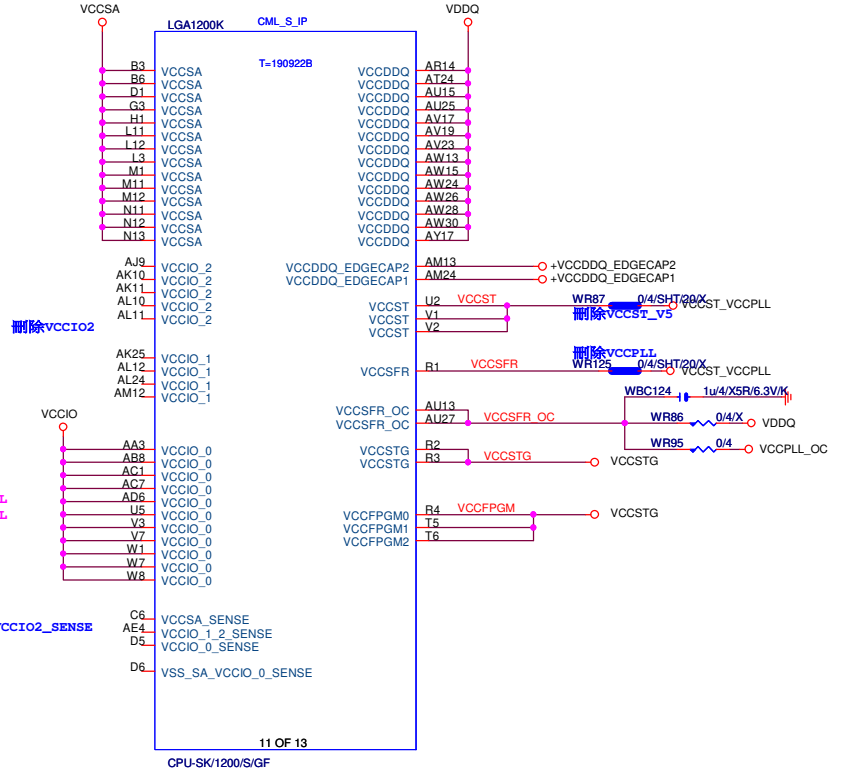
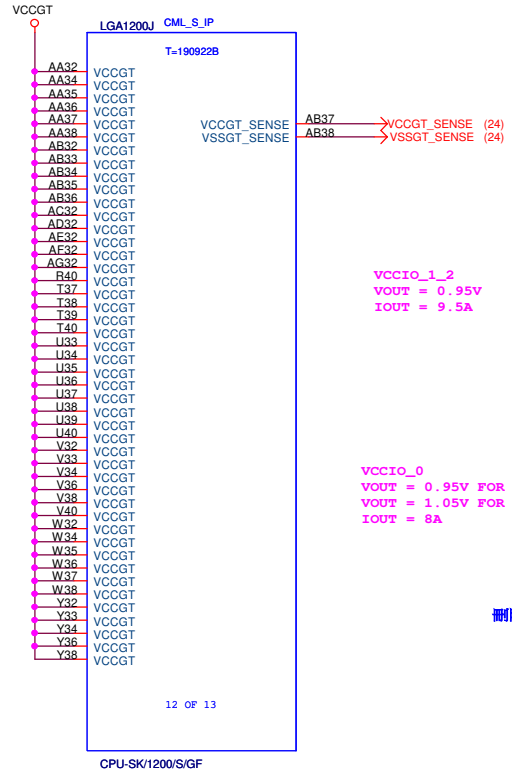


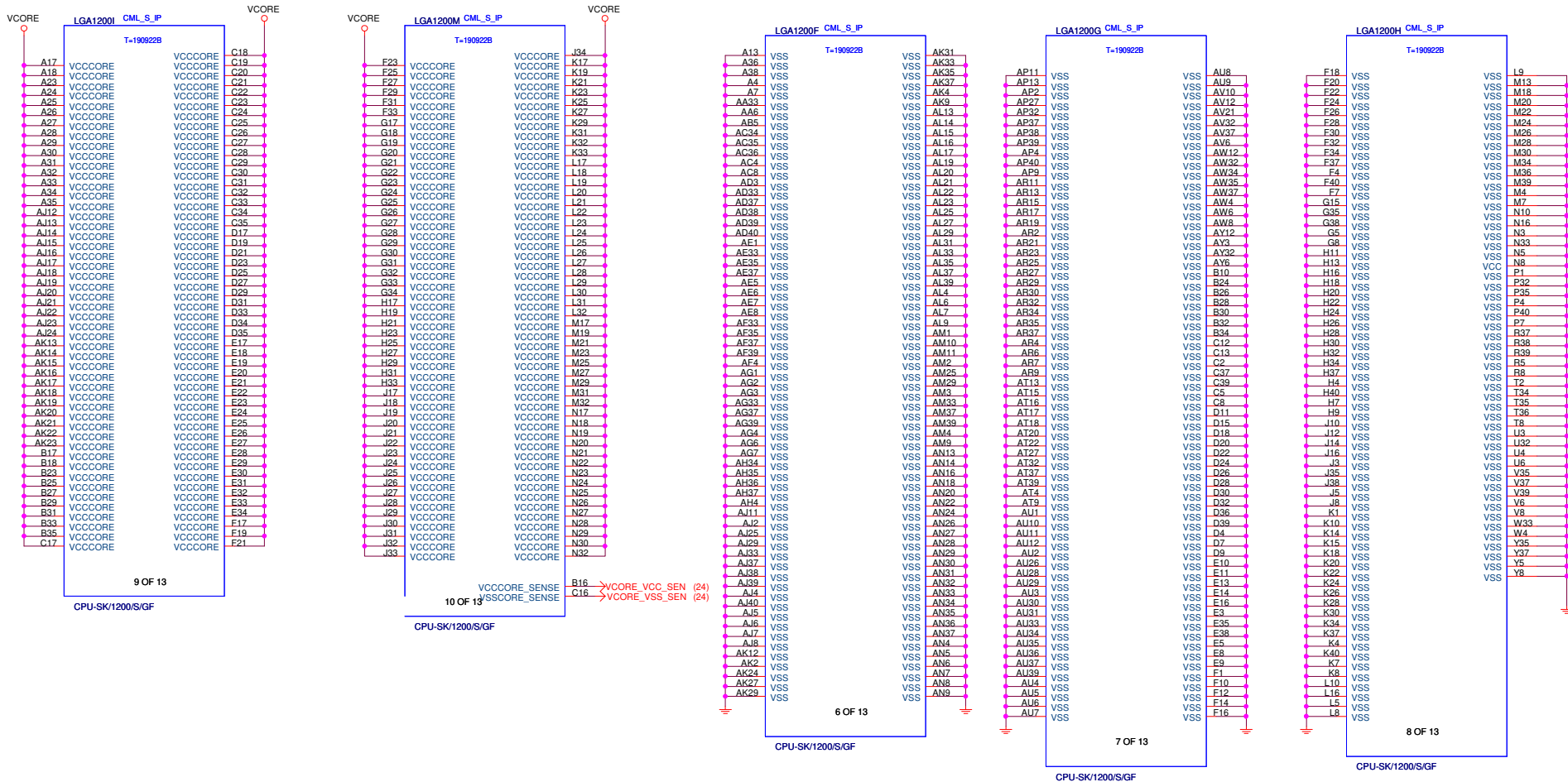




删除A\_SUSCLK

\*CML增加,RKL才會用到





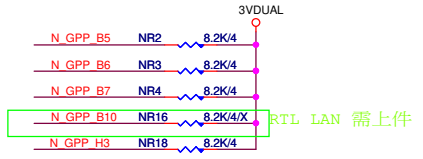
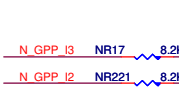
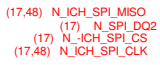
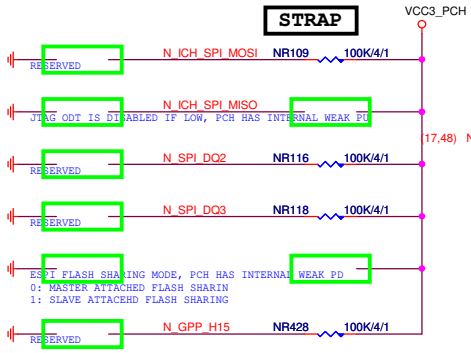
\* 刪 Vcore 電容



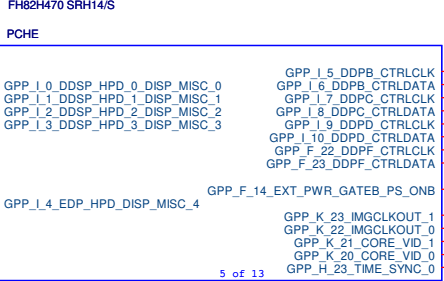
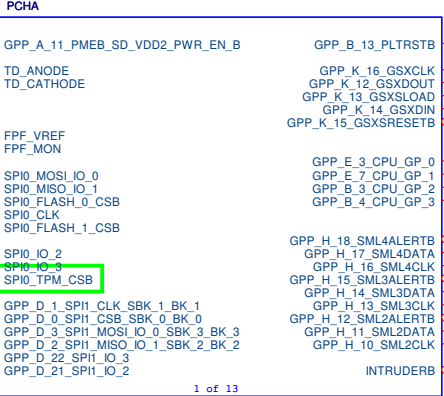
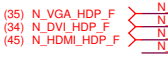
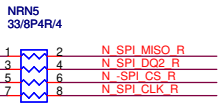
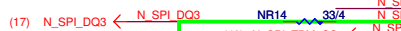
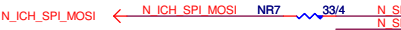
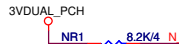


CML\_CNP\_PCH-H\_R0.6

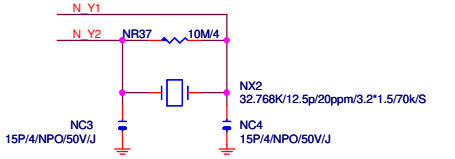
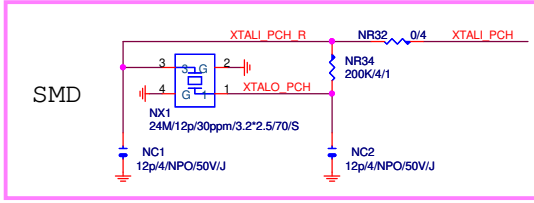
STRAP



RTL LAN 需上件

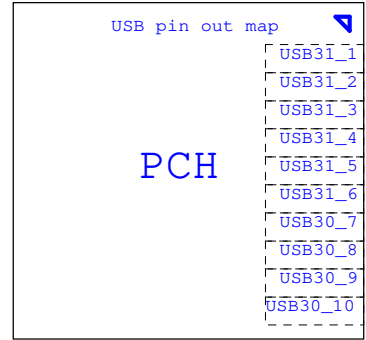


Port B: VGA= DDI1  
Port C: DVI= DDI2  
Port D: HDMI= DDI3



CML\_CNP\_PCH-H\_R0.6

ITEM	USB P1	USB P2	USB P3	USB P4	USB P5	USB P6
H410	請換PCH-V 線路					
B460						
H470	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen1	U3.2 Gen1
Z490	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1
Q470	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1
W480	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1	U3.2 Gen2x1



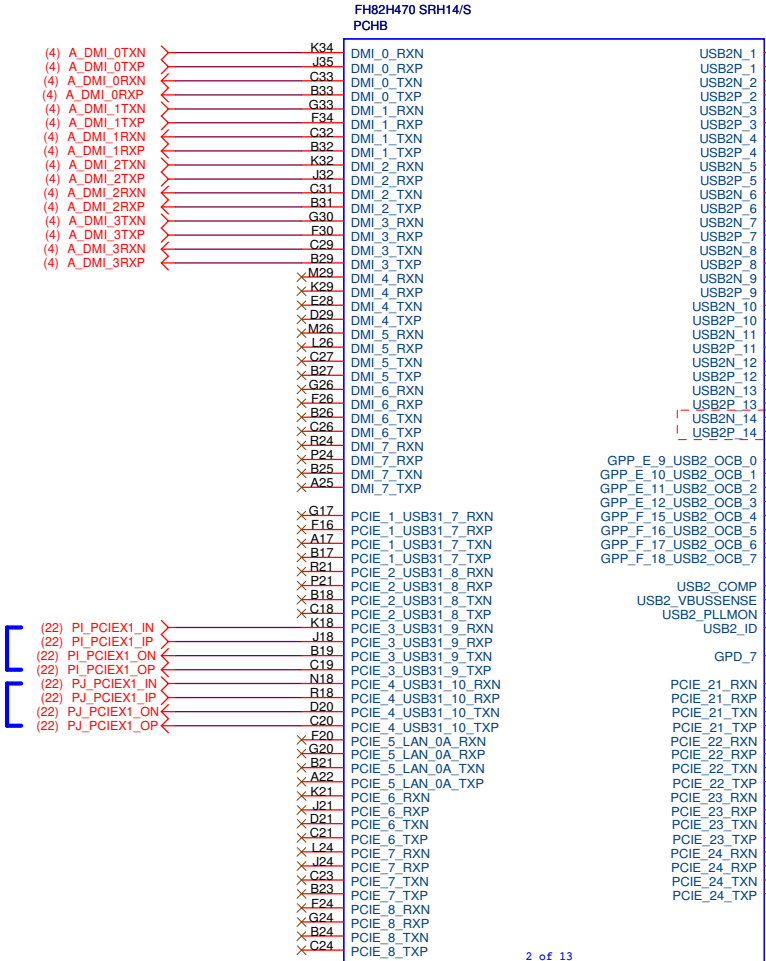
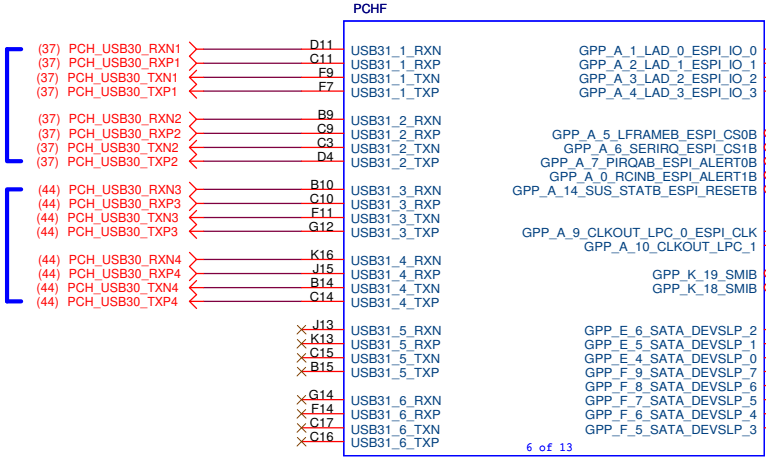
ITEM	USB P10	USB P11	USB P12	USB P13	USB P14
H410	請換PCH-V 線路				
B460					
H470	USB2	USB2	USB2	USB2	USB2
Z490	USB2	USB2	USB2	USB2	USB2
Q470	USB2	USB2	USB2	USB2	USB2
W480	USB2	USB2	USB2	USB2	USB2

ITEM	USB P7 PCIE P1	USB P8 PCIE P2	USB P9 PCIE P3	USB P10 PCIE P4	PCIE P5	PCIE P6	PCIE P7	PCIE P8
H410	請換PCH-V 線路							
B460								
H470	U3.2 Gen1	U3.2 Gen1	N/A	N/A	PCIE GbE	PCIE	PCIE	PCIE
Z490	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	PCIE GbE	PCIE	PCIE	PCIE
Q470	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	PCIE GbE	PCIE	PCIE	PCIE
W480	U3.2 Gen2x1 PCIE	U3.2 Gen2x1 PCIE	U3.2 Gen1 PCIE	U3.2 Gen1 PCIE	PCIE GbE	PCIE	PCIE	PCIE

ITEM	PCIE P21	PCIE P22	PCIE P23	PCIE P24
H410	請換PCH-V 線路			
B460				
H470	PCIE	PCIE	PCIE	PCIE
Z490	PCIE	PCIE	PCIE	PCIE
Q470	PCIE	PCIE	PCIE	PCIE
W480	PCIE	PCIE	PCIE	PCIE

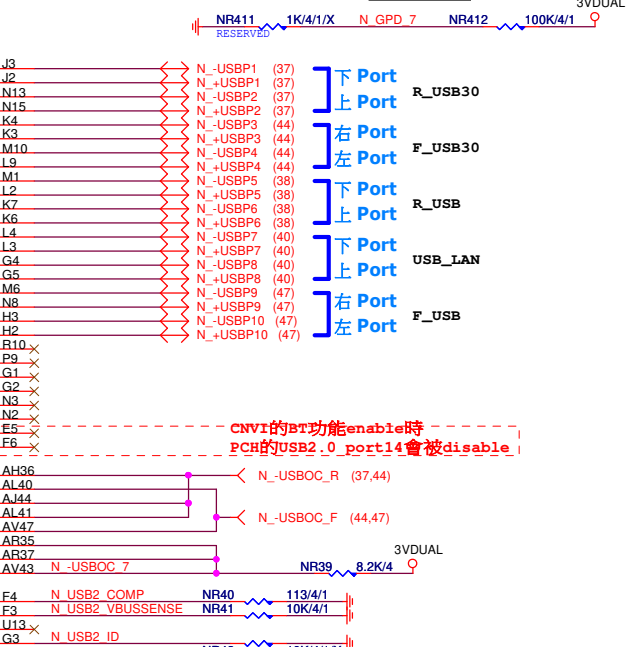
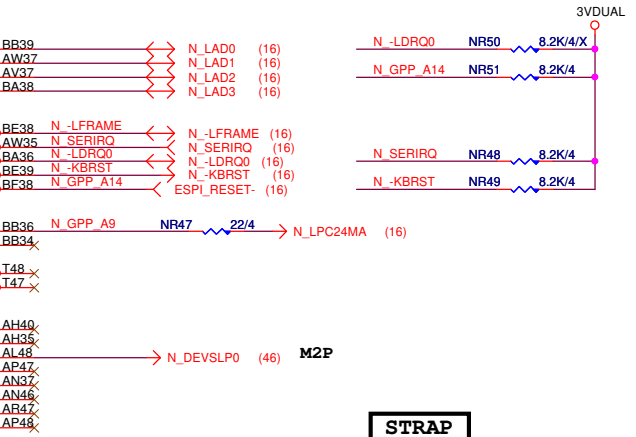
R\_USB30  
下 Port  
上 Port

F\_USB2  
下 Port  
上 Port

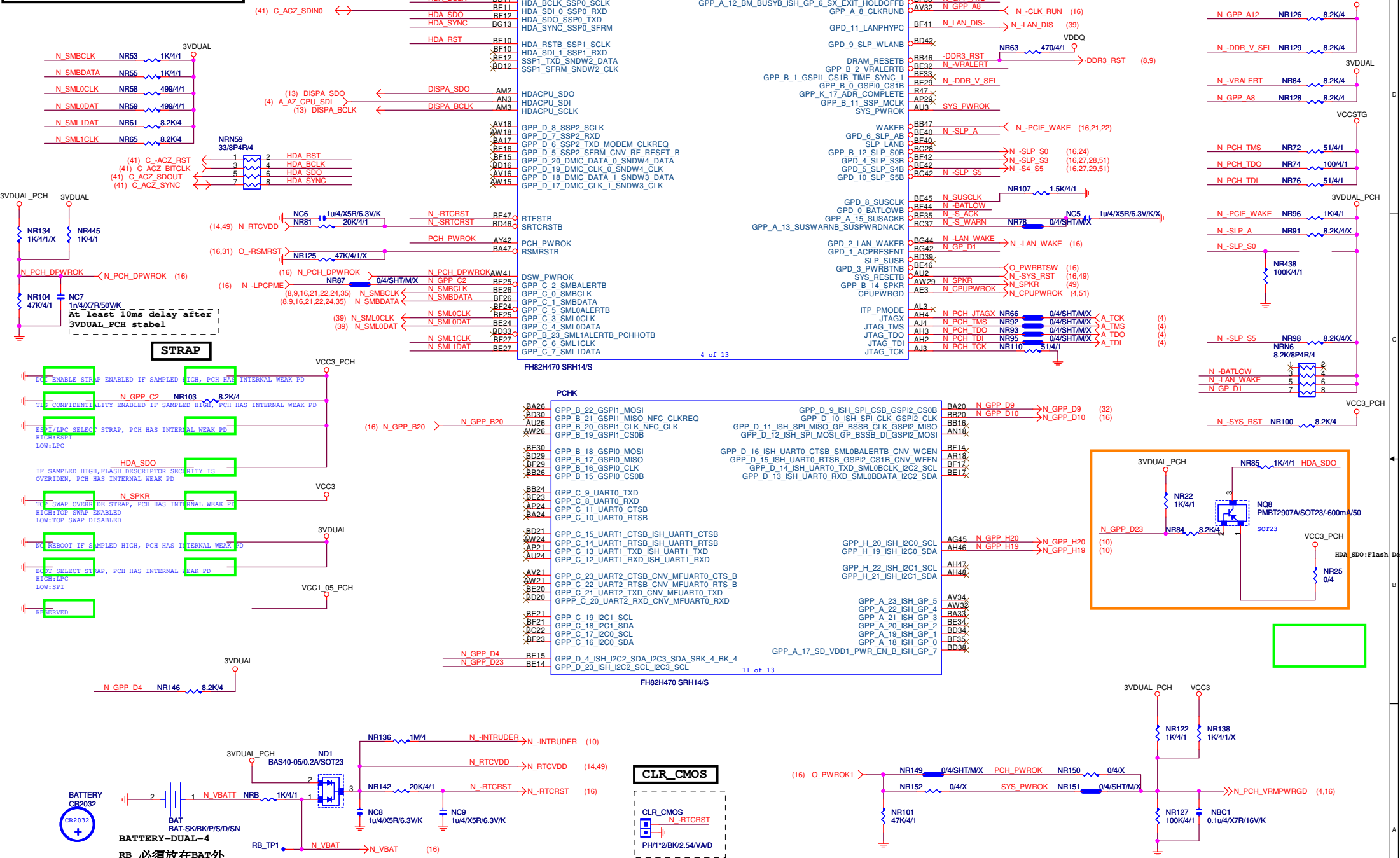


PCIE1\_1

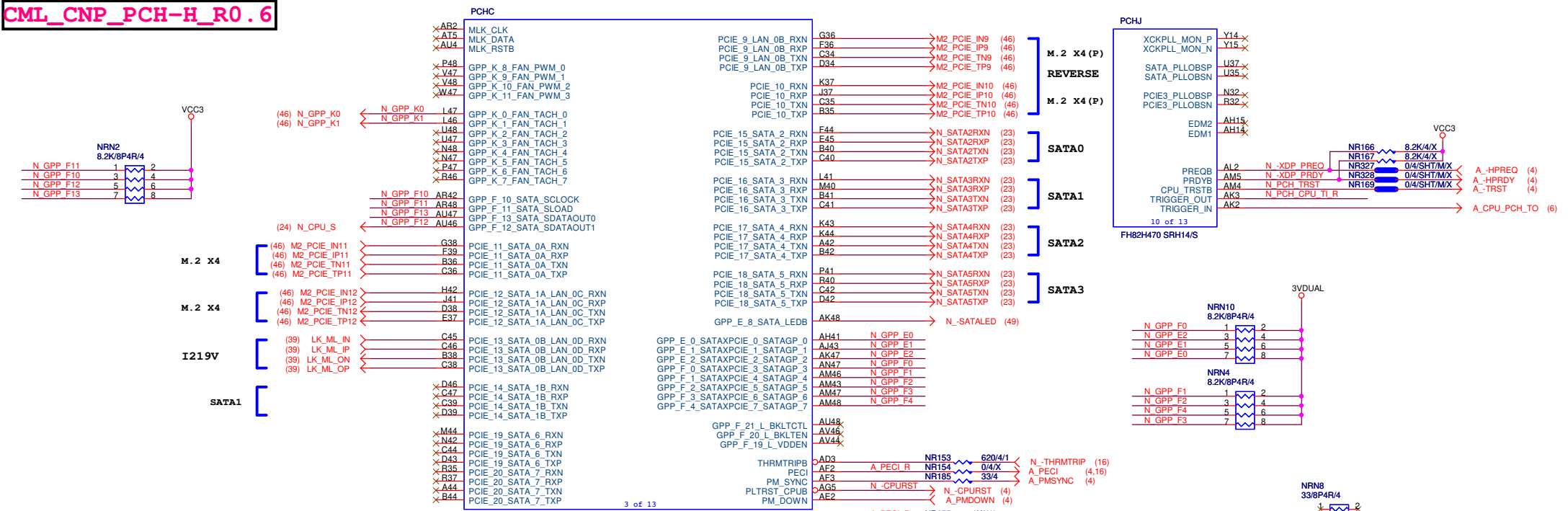
PCIE1\_2



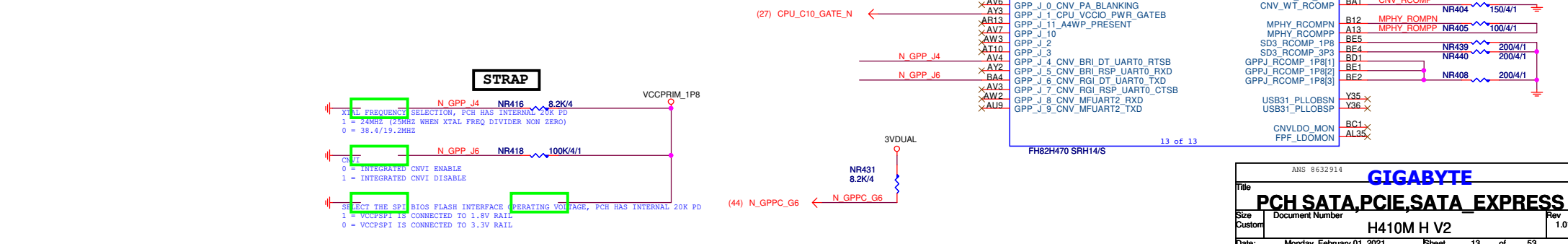
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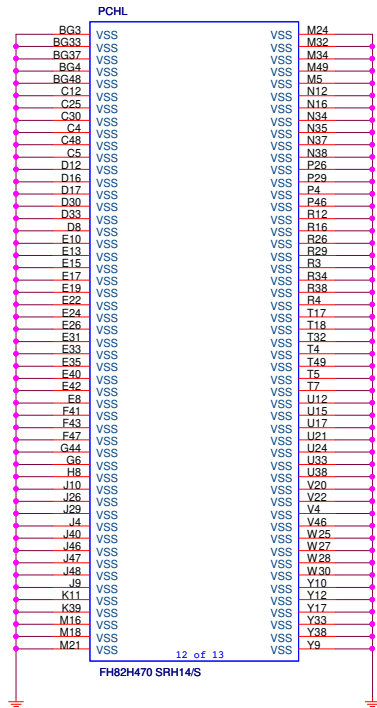
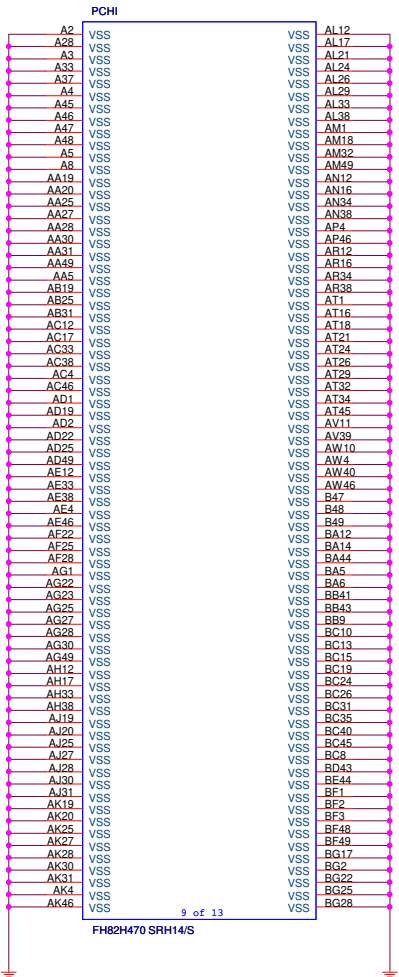


ITEM	PCIE P9	PCIE P10	PCIE P11	PCIE P12	PCIE P13	PCIE P14	PCIE P15	PCIE P16	PCIE P17	PCIE P18	PCIE P19	PCIE P20
H410	請換PCH-V線路											
B460												
H470	PCIE GbE	PCIE	PCIE SATA 0B	PCIE GbE SATA 1B	PCIE GbE SATA 0	PCIE SATA 1	PCIE SATA 2	PCIE SATA 3	SATA4	SATA5	PCIE	PCIE
Z490	PCIE GbE	PCIE	PCIE SATA 0B	PCIE GbE SATA 1B	PCIE GbE SATA 0	PCIE SATA 1	PCIE SATA 2	PCIE SATA 3	PCIE SATA 4	PCIE SATA 5	PCIE	PCIE
Q470	PCIE GbE	PCIE	PCIE SATA 0B	PCIE GbE SATA 1B	PCIE GbE SATA 0	PCIE SATA 1	PCIE SATA 2	PCIE SATA 3	PCIE SATA 4	PCIE SATA 5	PCIE	PCIE
W480	PCIE GbE	PCIE	PCIE SATA 0B	PCIE GbE SATA 1B	PCIE GbE SATA 0	PCIE SATA 1	PCIE SATA 2	PCIE SATA 3	PCIE SATA 4	PCIE SATA 5	PCIE SATA 6	PCIE SATA 7





CML\_CNP\_PCH-H\_R0.6



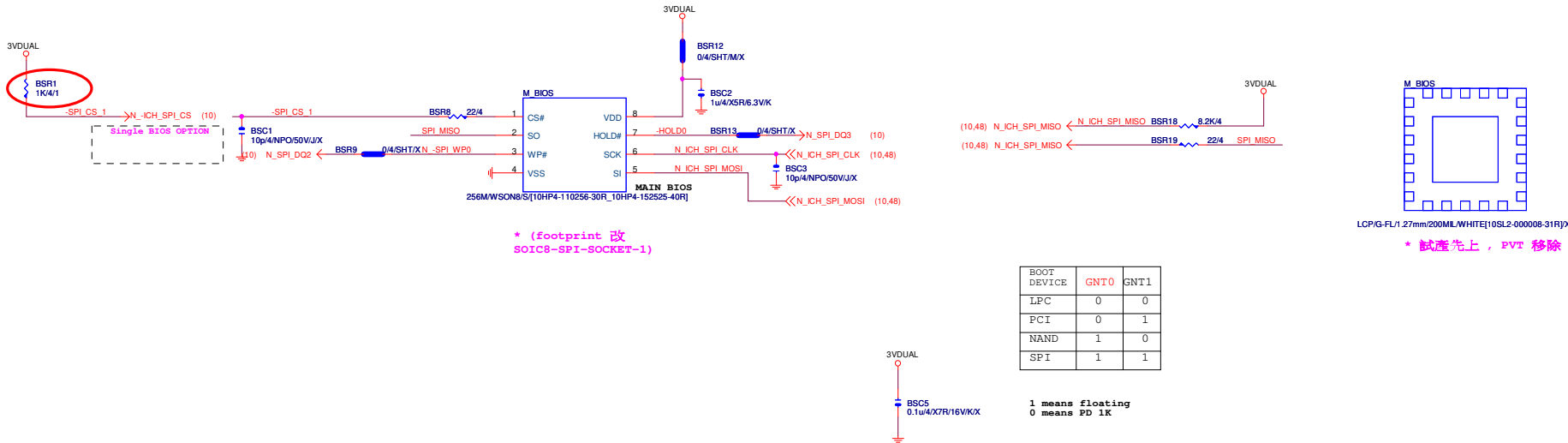
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\* 文字面：灰色

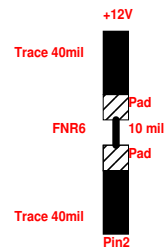
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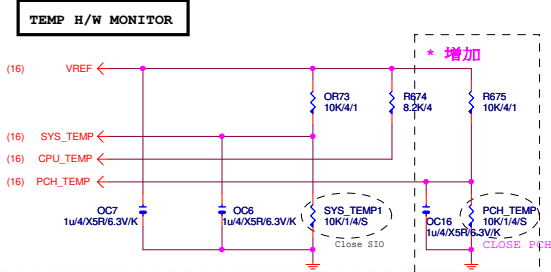




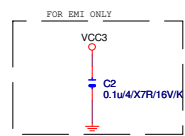
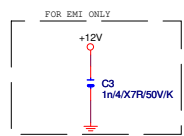
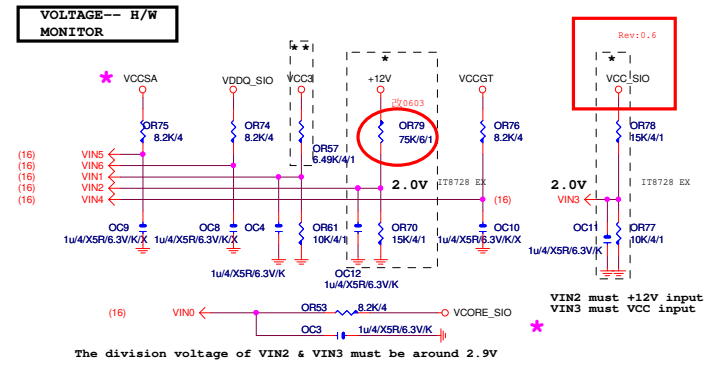
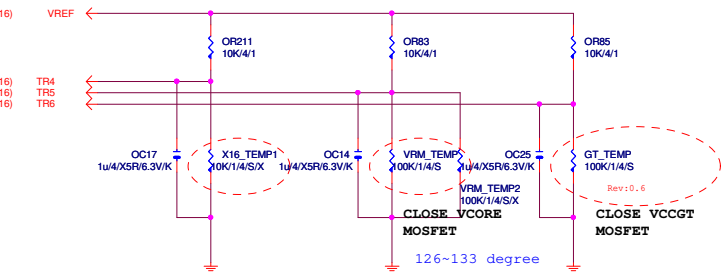


**Rev: 0.8**





低階機種: 3個FAN時使用

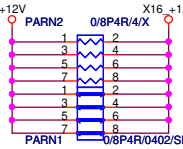


★Update 2015-04.24

Status	S0	S3	S5	S0ix
N_SLP_S0	H	H	H	L
N_SLP_S3	H	L	L	H
N_S4_S5	H	H	L	H
N_PS_ONB	L	L	L	H

PWM Controller Power

搭配95866C才需要此線路

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

PA\_EXP\_RXP0[0..15] >> PA\_EXP\_RXP0[0..15] (4)  
PA\_EXP\_RXN0[0..15] >> PA\_EXP\_RXN0[0..15] (4)  
PA\_EXP\_TXP0[0..15] >> PA\_EXP\_TXP0[0..15] (4)  
PA\_EXP\_TXN0[0..15] >> PA\_EXP\_TXN0[0..15] (4)

PA_EXP_TXP0	PAC5	0.22u/4/XSR6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/XSR6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/XSR6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/XSR6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/XSR6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/XSR6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/XSR6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/XSR6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/XSR6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/XSR6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/XSR6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/XSR6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/XSR6.3V/K	PA_EXP_TXP6_C
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PA_EXP_TXN9	PAC23	0.22u/4/XSR6.3V/K	PA_EXP_TXN9_C
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PA_EXP_TXN10	PAC25	0.22u/4/XSR6.3V/K	PA_EXP_TXN10_C
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PA_EXP_TXP13	PAC30	0.22u/4/XSR6.3V/K	PA_EXP_TXP13_C
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PA_EXP_TXP15	PAC34	0.22u/4/XSR6.3V/K	PA_EXP_TXP15_C
PA_EXP_TXN15	PAC35	0.22u/4/XSR6.3V/K	PA_EXP_TXN15_C

PCIEX16:16/5/5/5/16

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

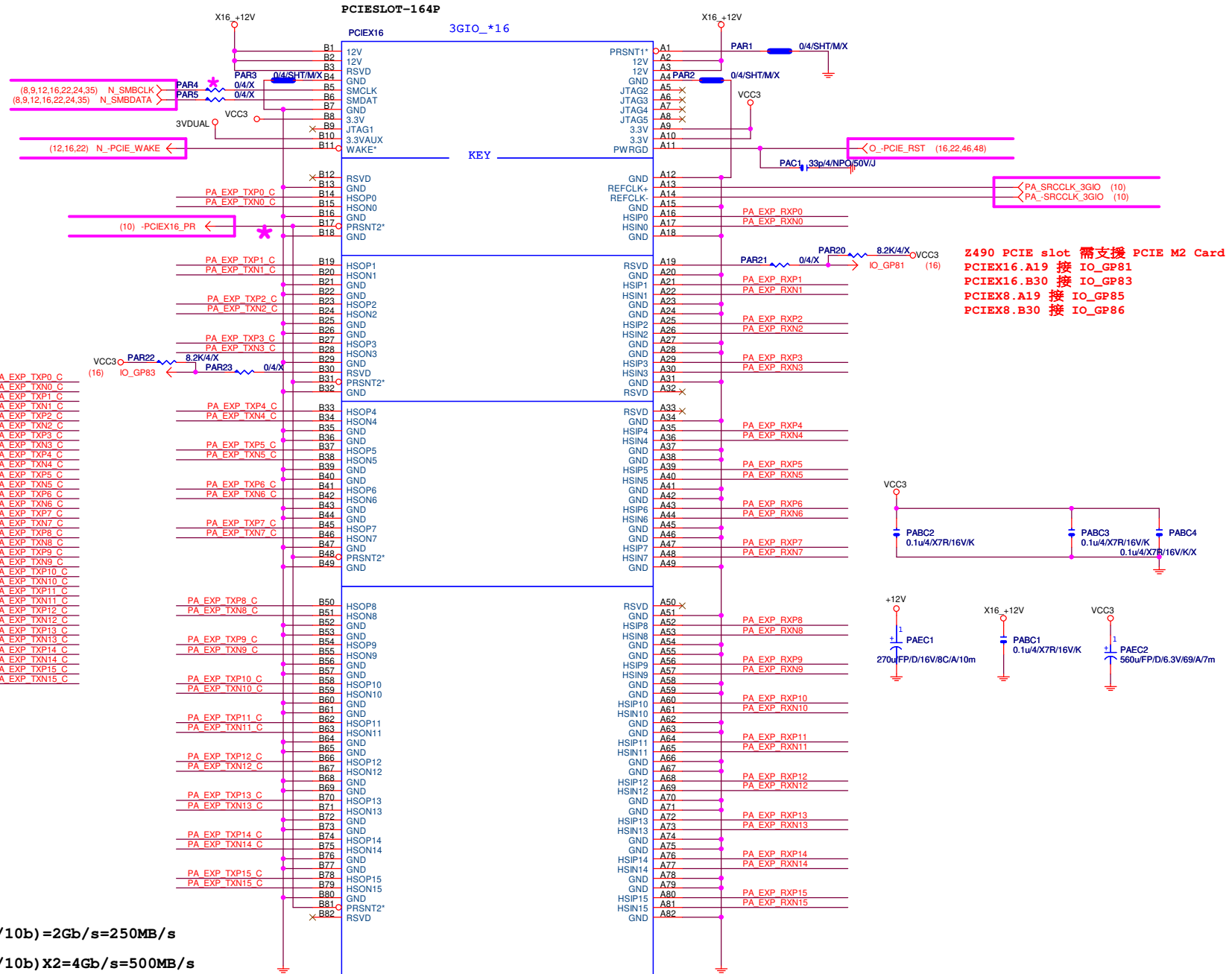
PCE-E X1(單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

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

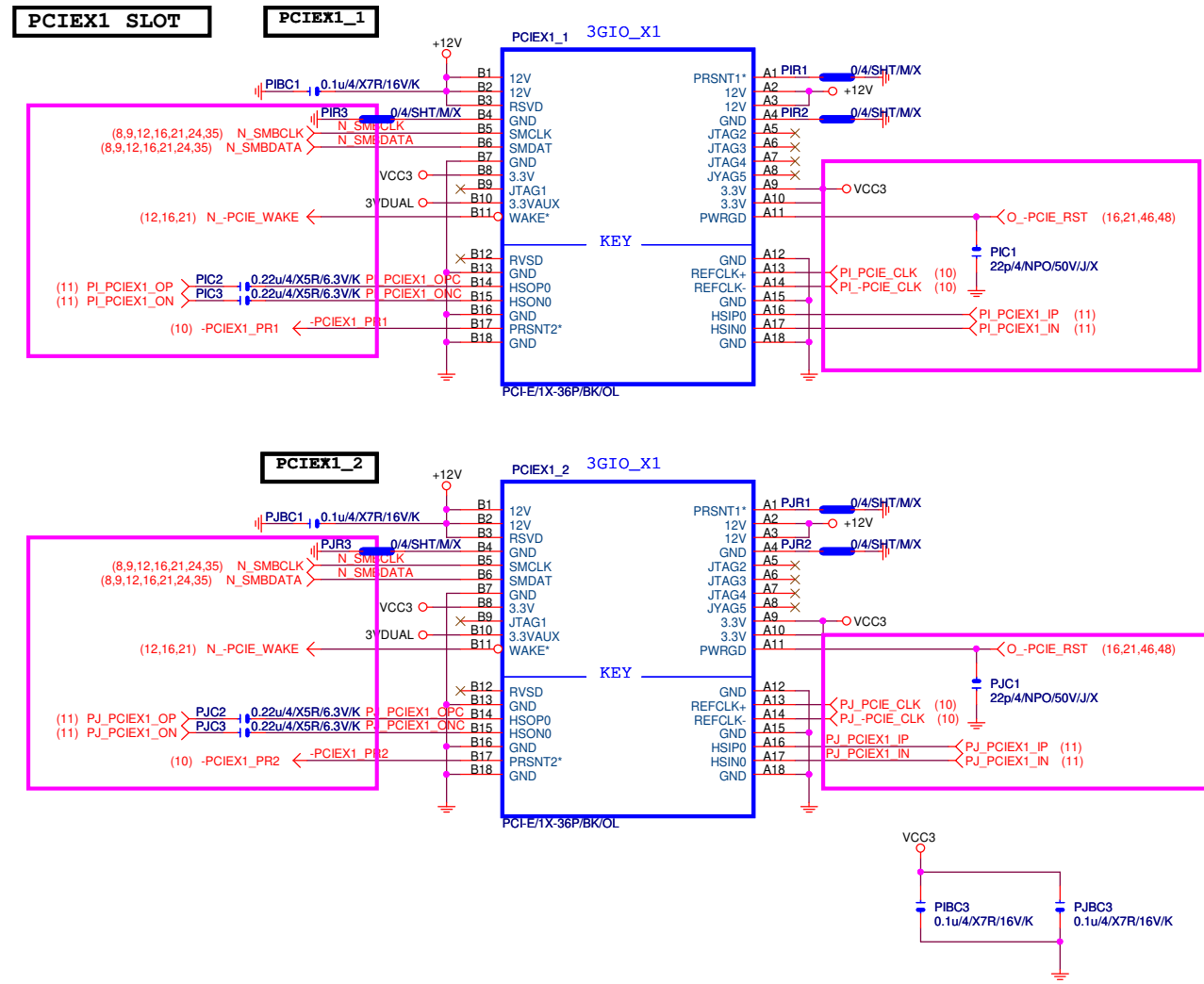


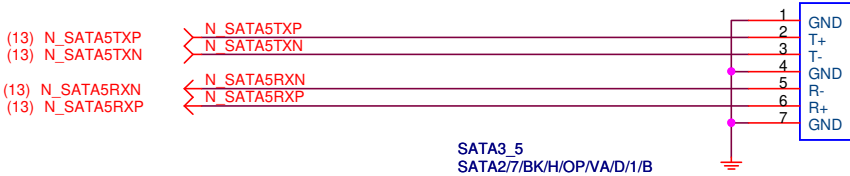
PCI-E/16X-164P/GY/LONG DOUBLE/HK\*2

灰色

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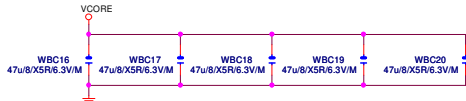
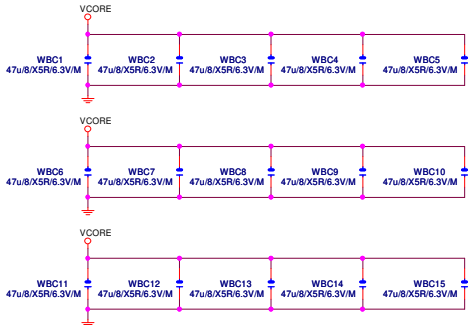
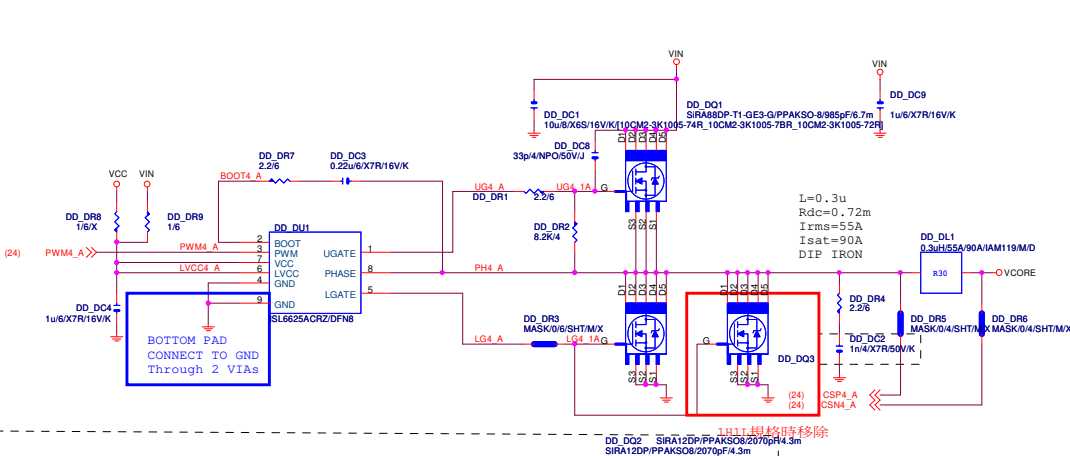
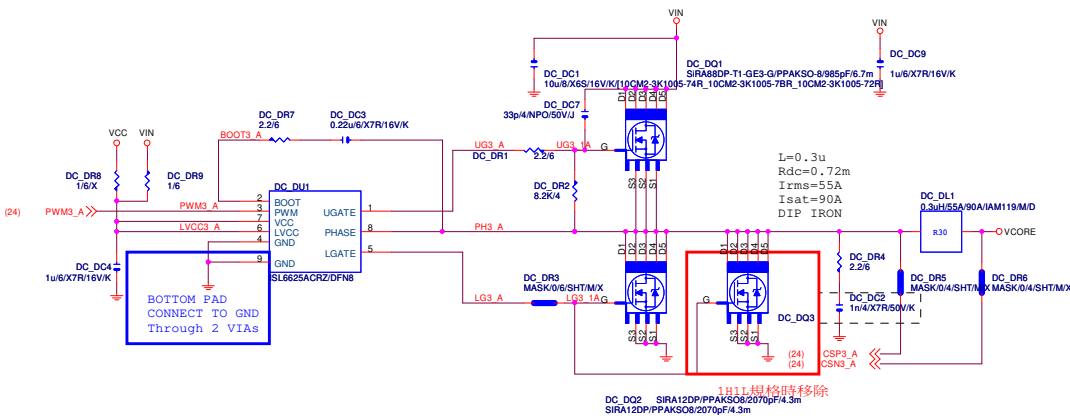
PCI EXPRESS \* 16



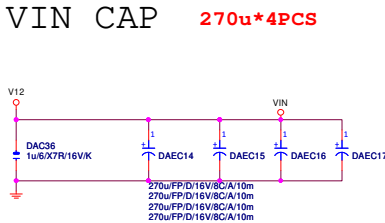




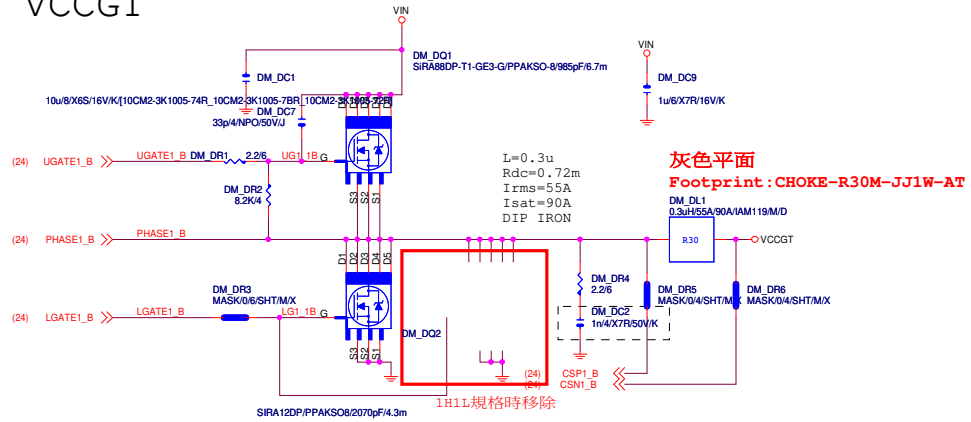
VCORE



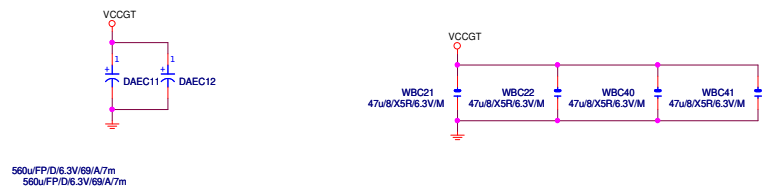
放CPU SOCKET (TOP LAYER)



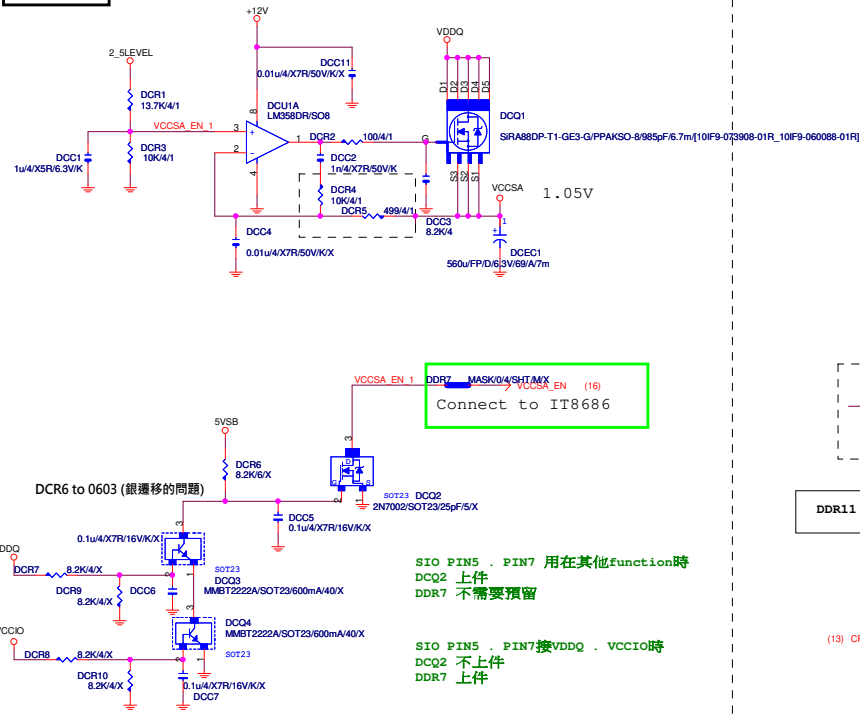
VCCGT



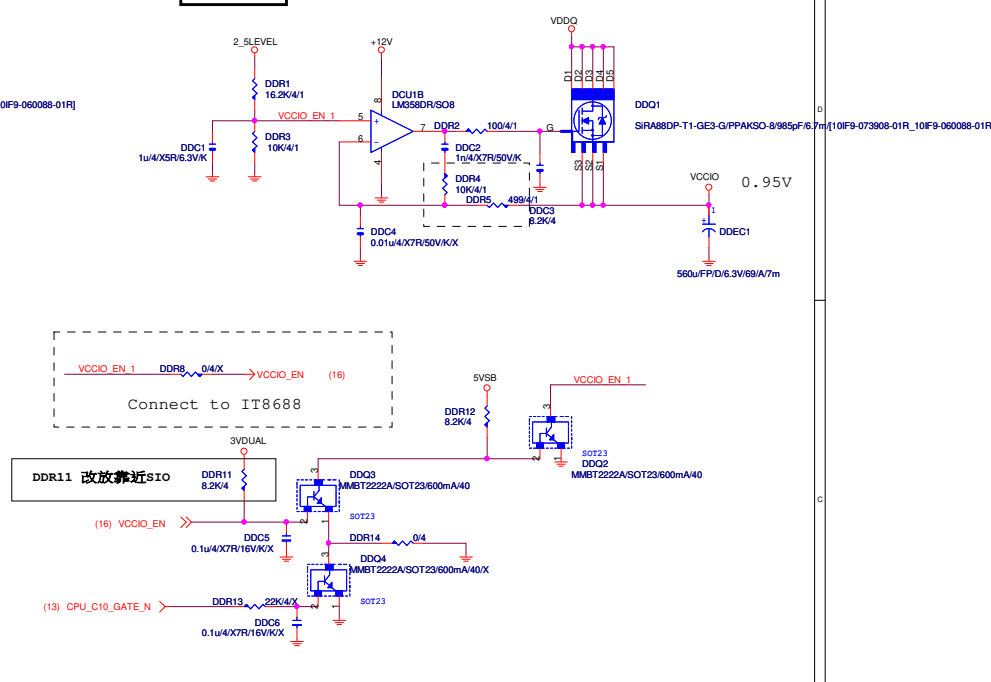
VCCGT CAP 560u\*2PCS 22u\*4PCS



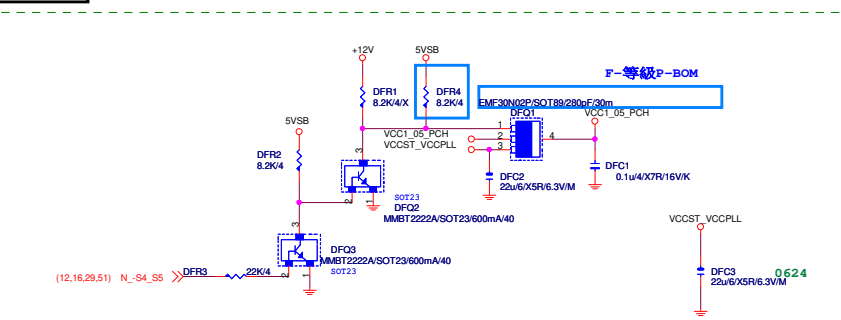
VCCSA



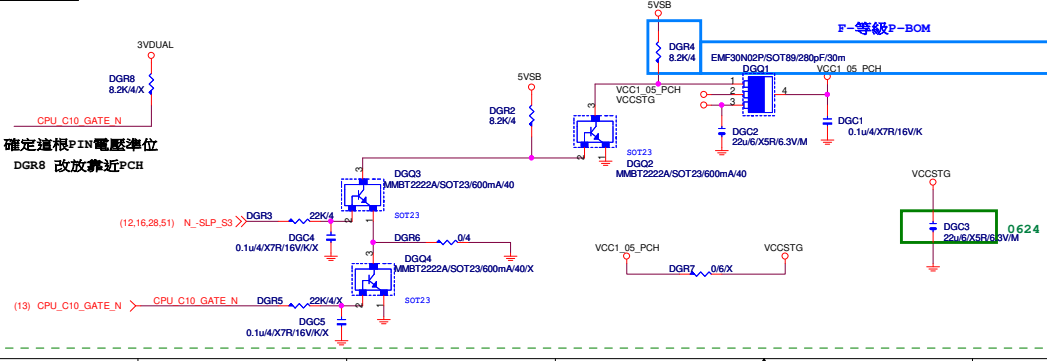
VCCIO



VCCST\_VCCPLL



VCCSTG



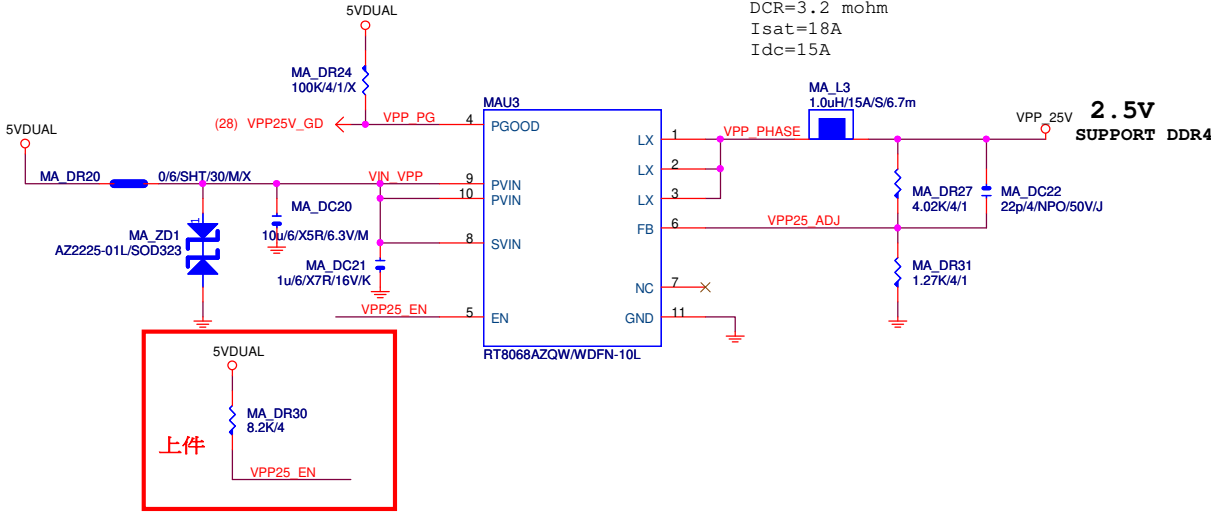


REV:0.4

VPP 25V

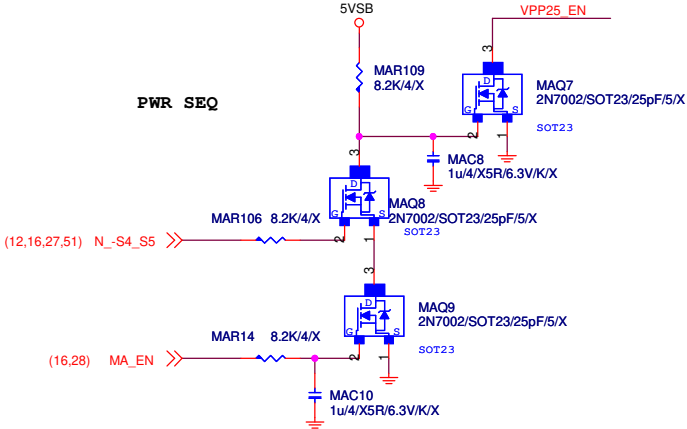
CHOKE與CAP料號可變

L=1u  
DCR=3.2 mohm  
Isat=18A  
Idc=15A



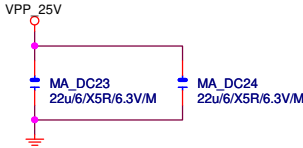
PWR SEQ

\* 刪 MA\_DR32



VPP CAP 22u\*1PCS

\* 大電容 x0

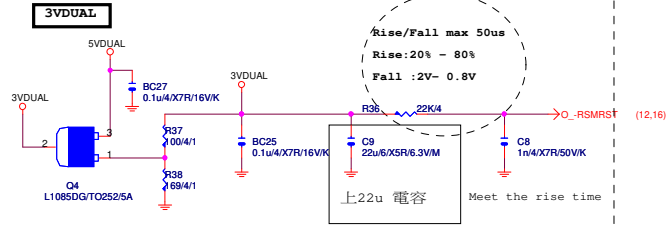
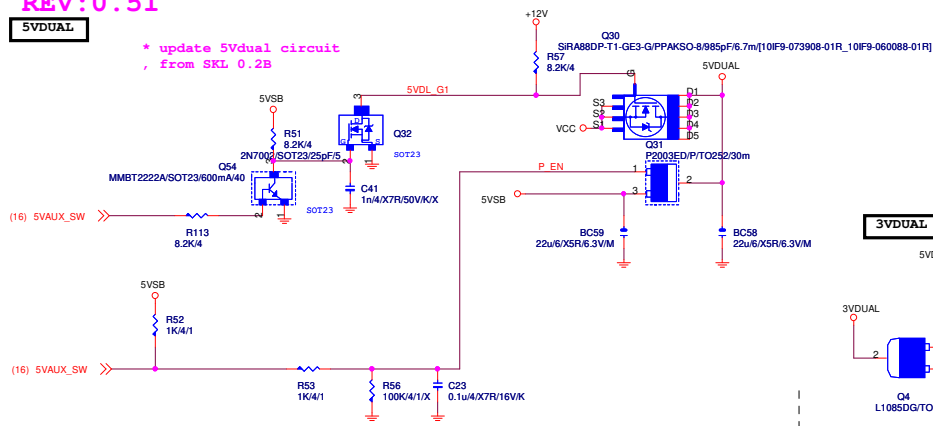


GIGABYTE™

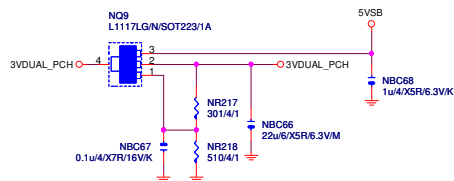
Title			RT8068A_VPP25_POWER
Size	Document Number	Rev	
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```
* update 5Vdual circuit
, from SKL 0.2B
```



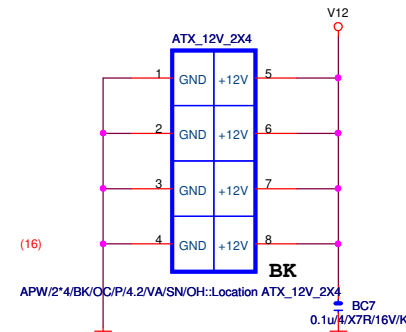
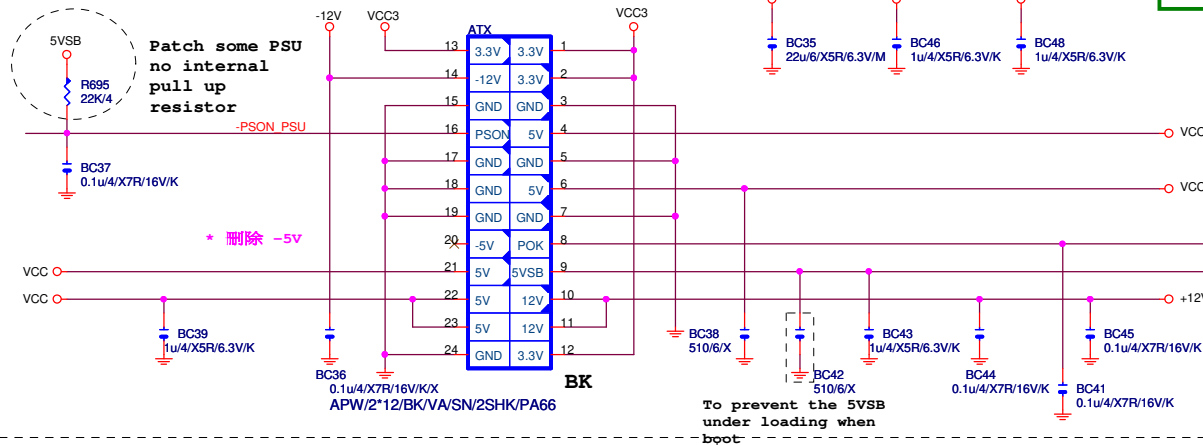
3VDUAL\_PCH



**O\_RSMRST** (不上件)

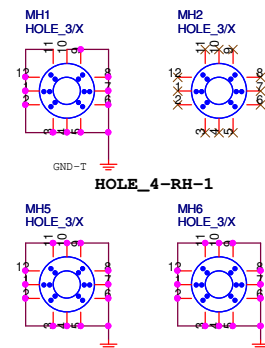
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# ATXX24 POWER CONNECTOR

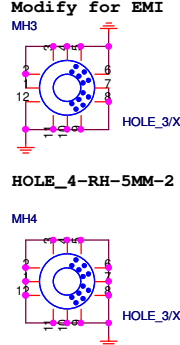


## 螺絲孔

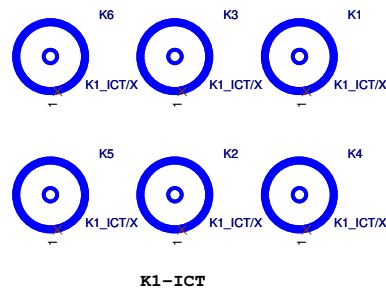
MH1: GND-T  
FOR EMI  
TEST驗證



## 14/12/24 Modify for EMI

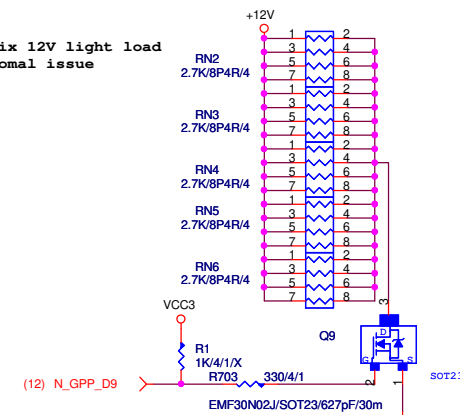


## 固定孔/光學點



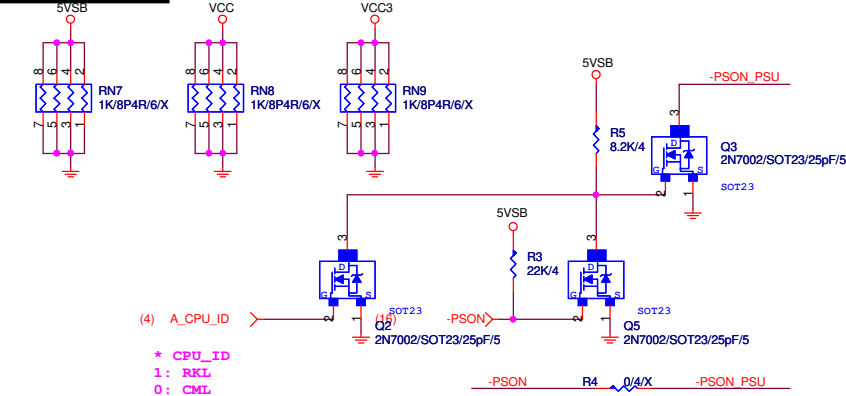
## +12V DUMMY LOAD

To fix 12V light load  
abnormal issue



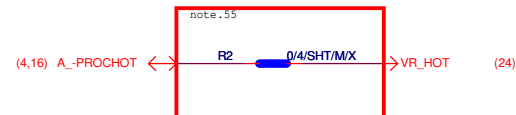
【技術通報R&D技術通報153】

## DUMMY LOAD

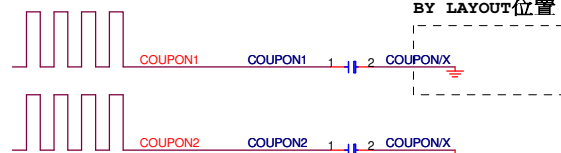


## -PROHOT

\* 保留 ?

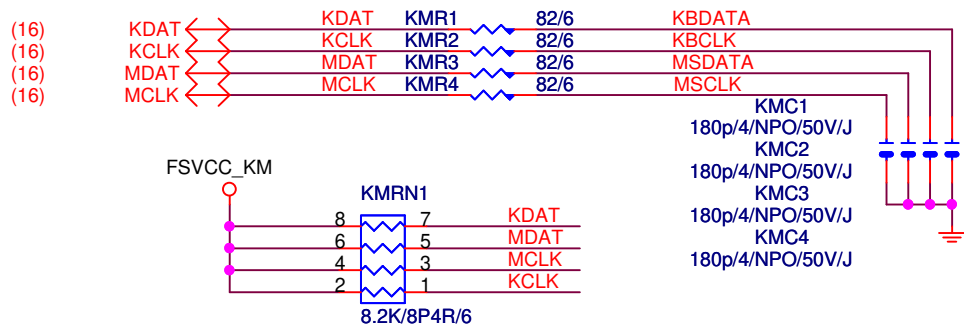
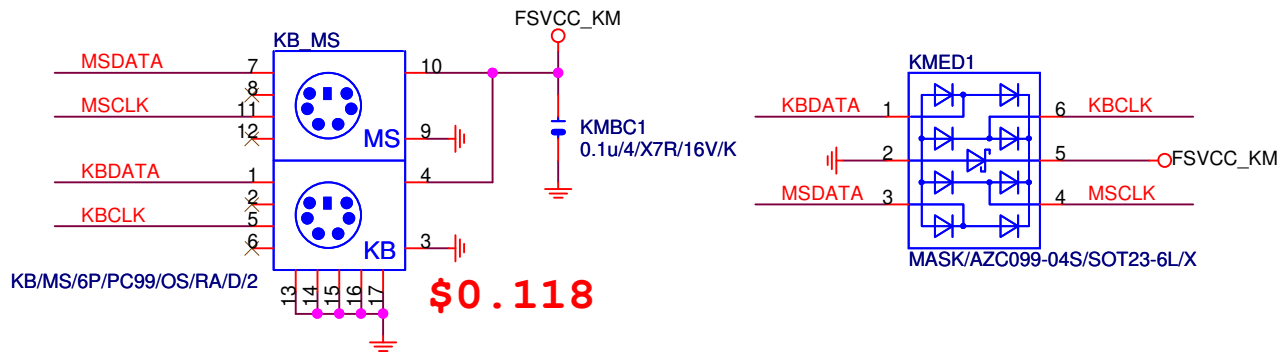


## COUPON

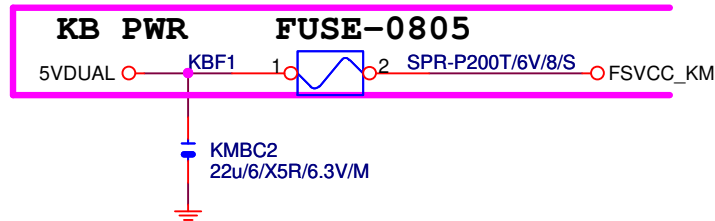


## Gigabyte Technology

Title			ATX POWER CONNECTOR
Size	Document Number	H410M H V2	
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NET 可變, 與其他USB SHARE



Gigabyte Technology

Title

KB\_MS

Size  
A

Document Number

H410M H V2

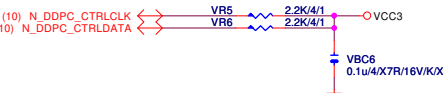
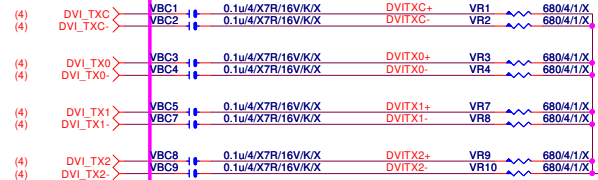
Rev  
1.01

Date: Friday, January 15, 2021

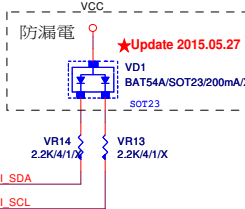
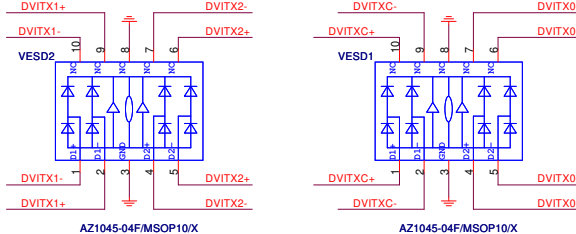
Sheet 33 of 53

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

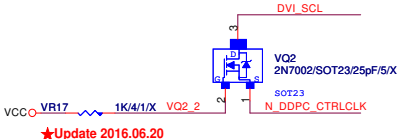
NET 可變



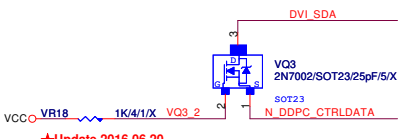
Close to connector



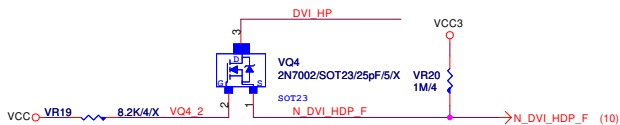
★Update 2015.05.27



★Update 2016.06.20

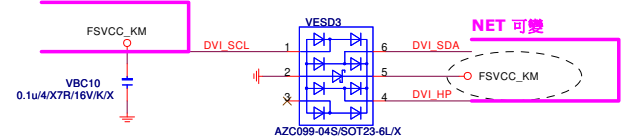


★Update 2016.06.20



NET 可變

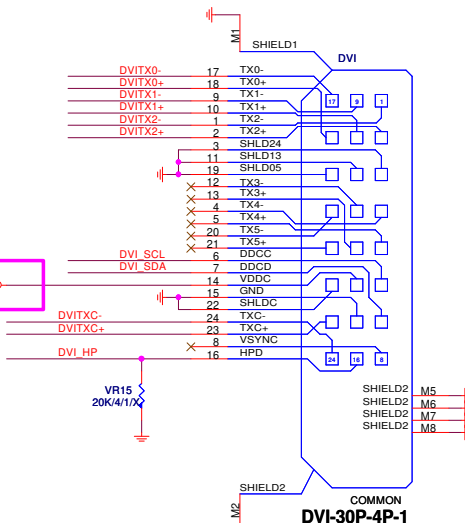
Close to connector



NET 可變

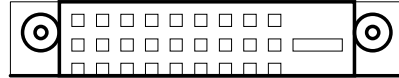
NET 可變

FVCC\_KM

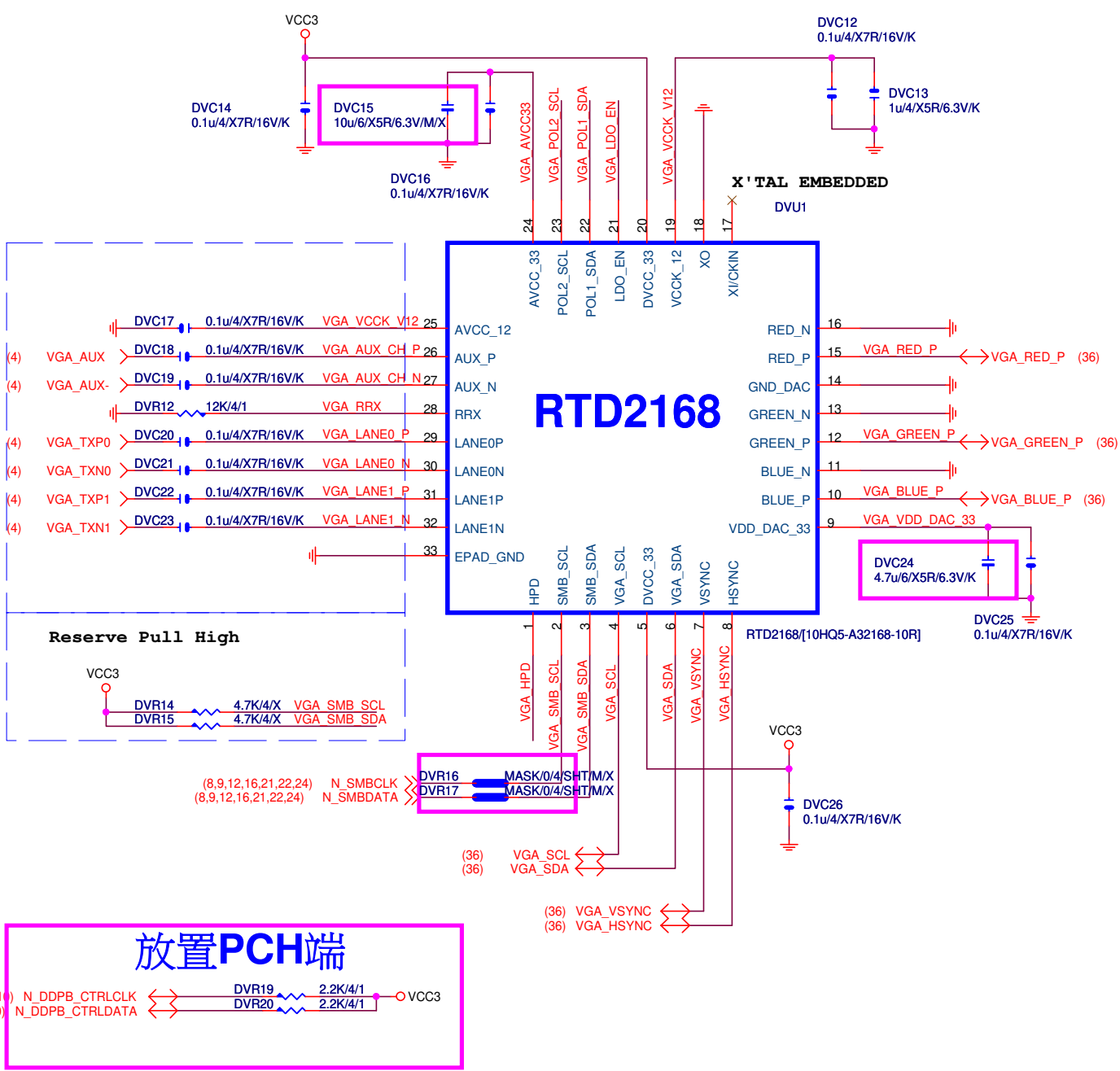


DVI-D/24P/SC/RA/D/SH[11NR6-501024-31R\_11NR6-501024-33R\_11NR6-501024-34R]/X

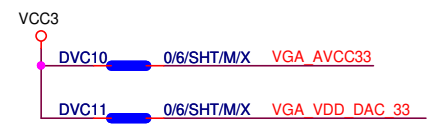
平躺式 DVI-D



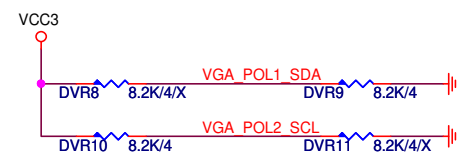
GIGABYTE



POWER

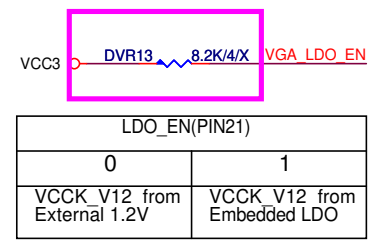


Power on latch

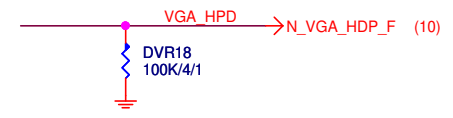


		POL1_SDA(PIN22)	
		0	1
POL2_SCL (PIN23)	0	X	EP MODE
	1	<b>ROM ONLY MODE</b>	EEPROM MODE

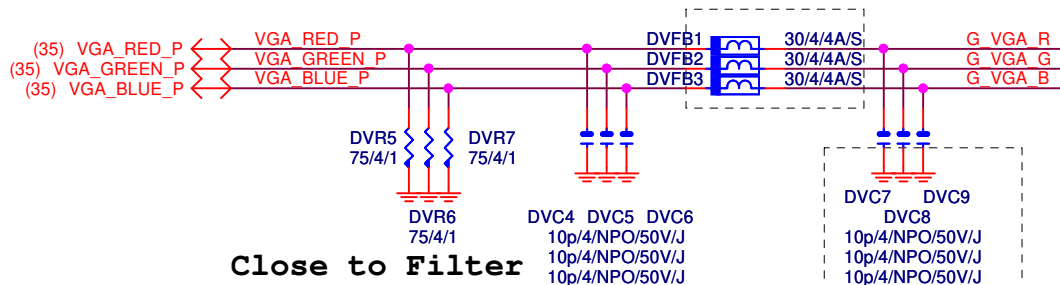
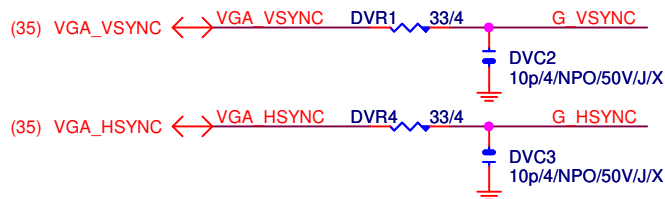
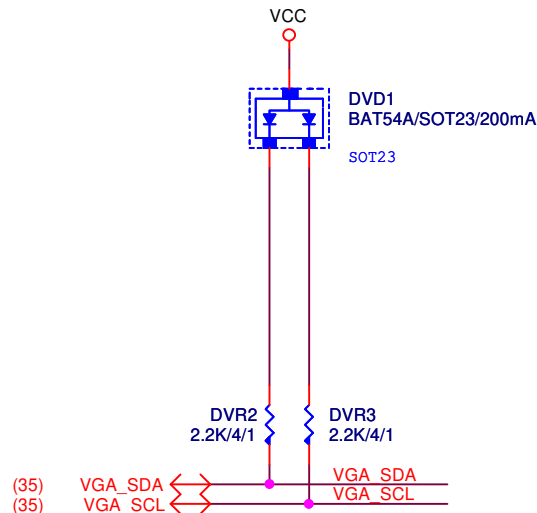
Embedded LDO



DP HPD



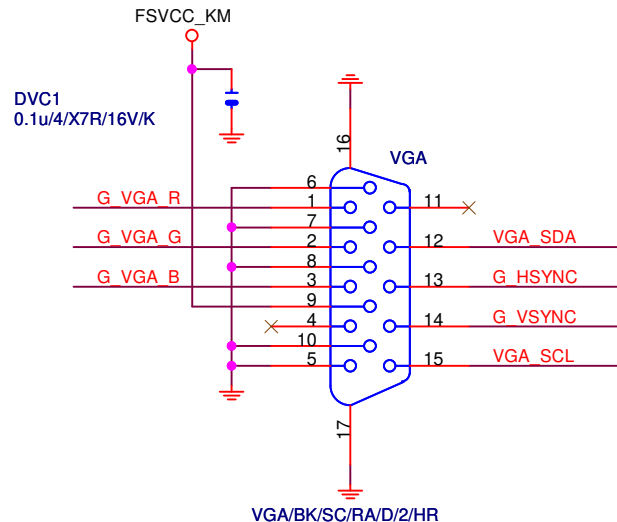
# VGA SIGNAL R2.0



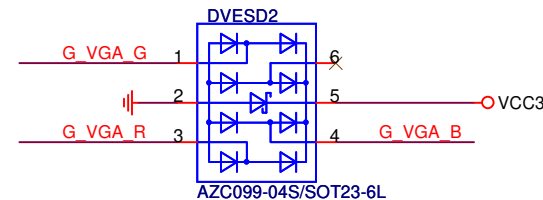
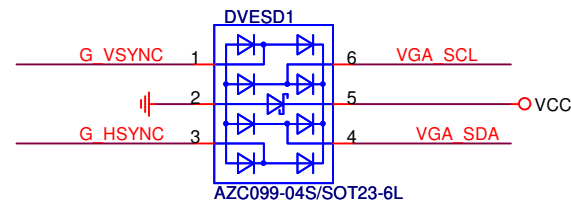
Close to Filter

FOR EMI

# VGA CONN.

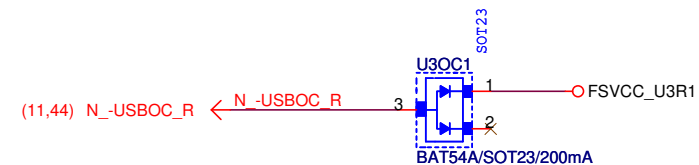


# VGA ESD



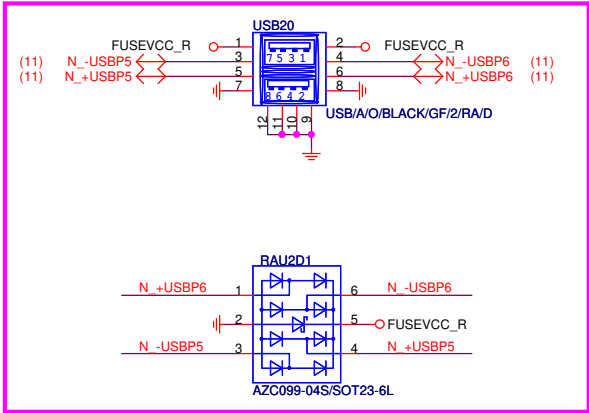
Gigabyte Technology			
VGA Connector			
Title			
Size	Document Number	H410M H V2	
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**ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可**

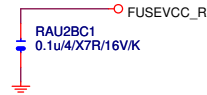


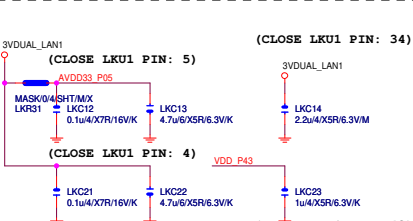
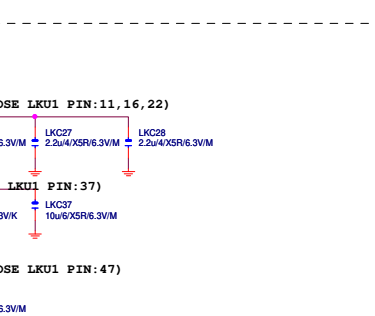
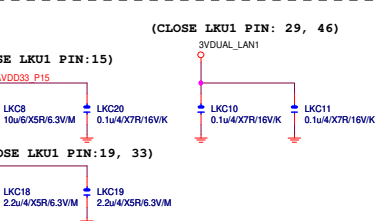
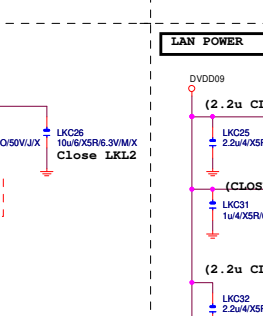
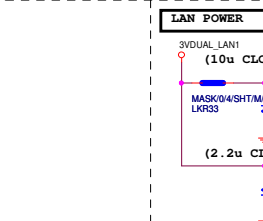
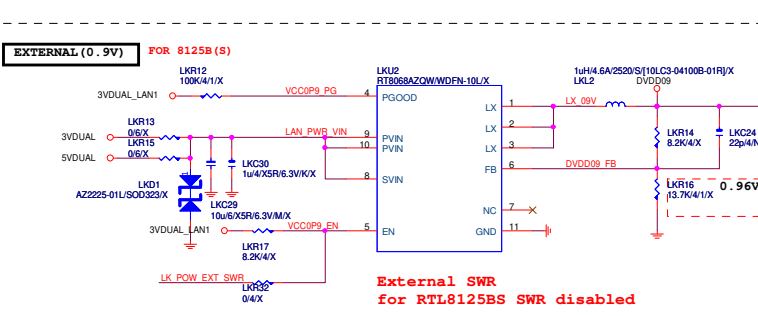
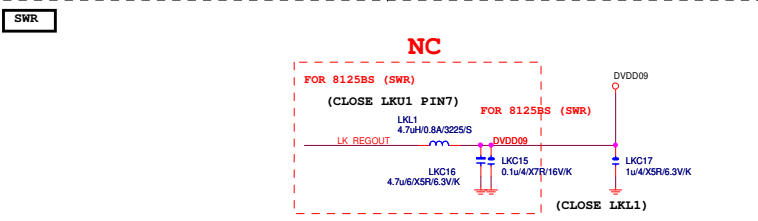
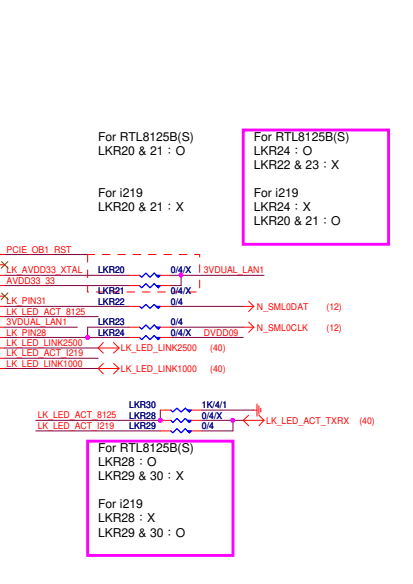
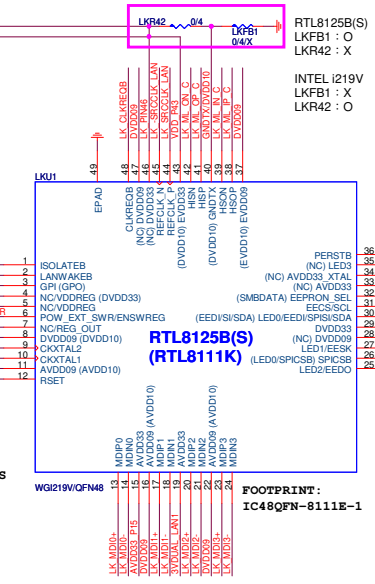
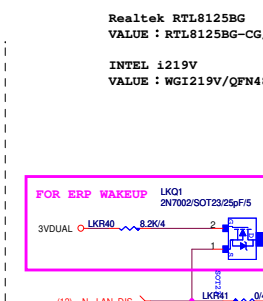
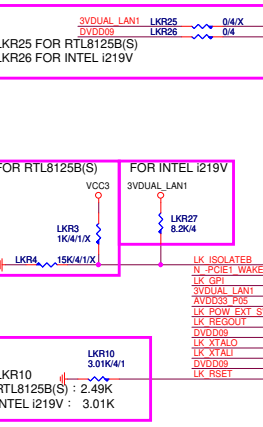
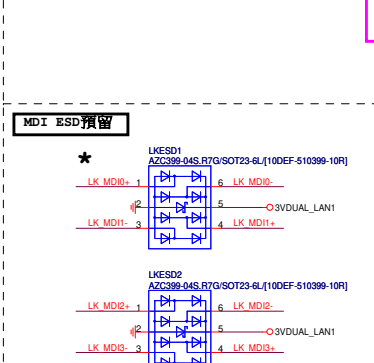
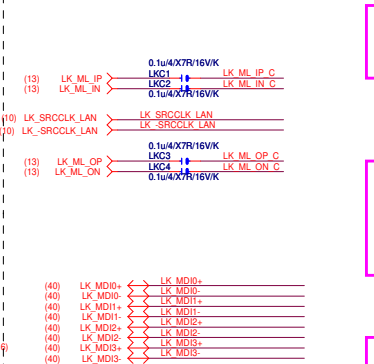
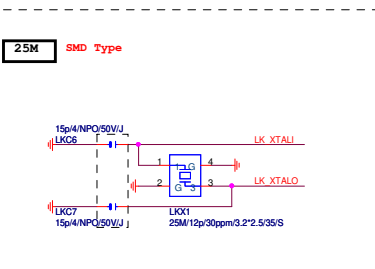
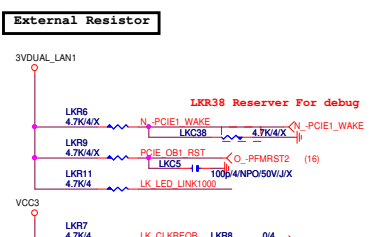
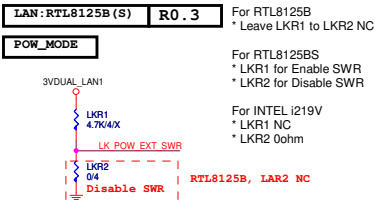
REAR USB1

NET 可變



FUSE 2 Port 1 Fuse 2A

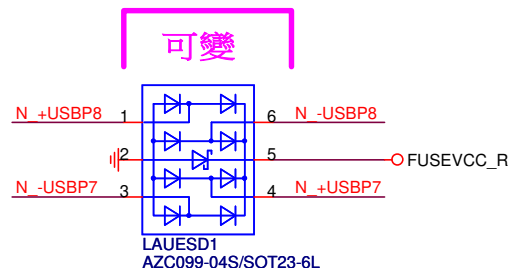




USB\_LAN CONNECTOR R1.06

RMA ESD PROTECT

note:可變更USB NAME



USB\_LAN CONNECTOR

note:可變更USB NAME

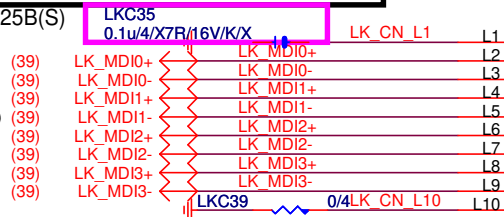
LA\_MDI-->100歐姆:[20/4/8/4/20]

For RTL8125B(S)

LKC35 : X

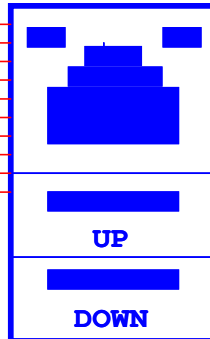
For i219

LKC35 : O



[RTL8125BS]

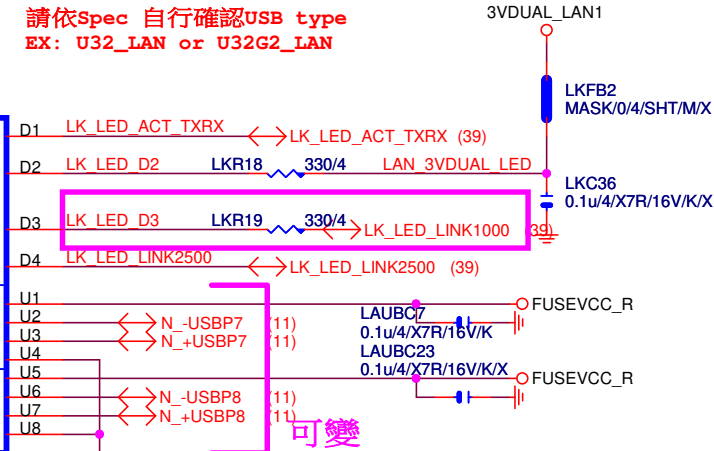
USB\_LAN



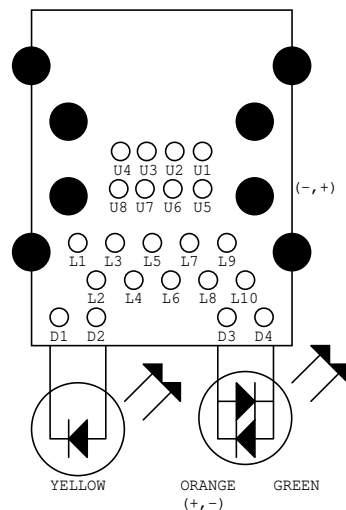
USB+LAN/1G/GO,Y/OS/RA/D/1/15KV

LA\_MDI-->100歐姆:[20/4/8/4/20]

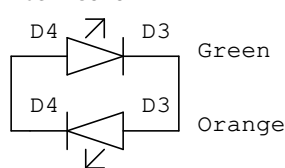
請依Spec 自行確認USB type  
EX: U32\_LAN or U32G2\_LAN



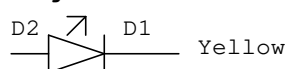
USB\_LAN LAYOUT示意圖



Dual Color LED

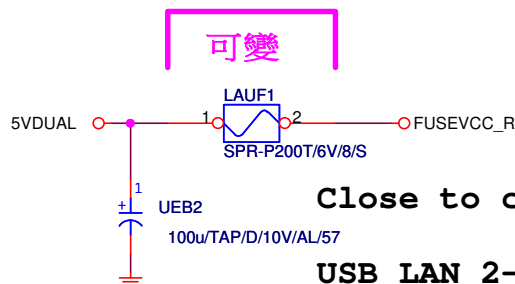


Single Color LED



USB POWER

note:可變更FUSE



USB\_LAN 2-Port 2.0A

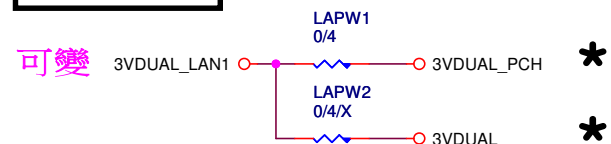
FUSE-0805

EMI SHORT PAD

PS:視EMI需求

LAN POWER

note: lan power連接及電流



Gigabyte Technology

LAN CONNECTOR-RTL8118

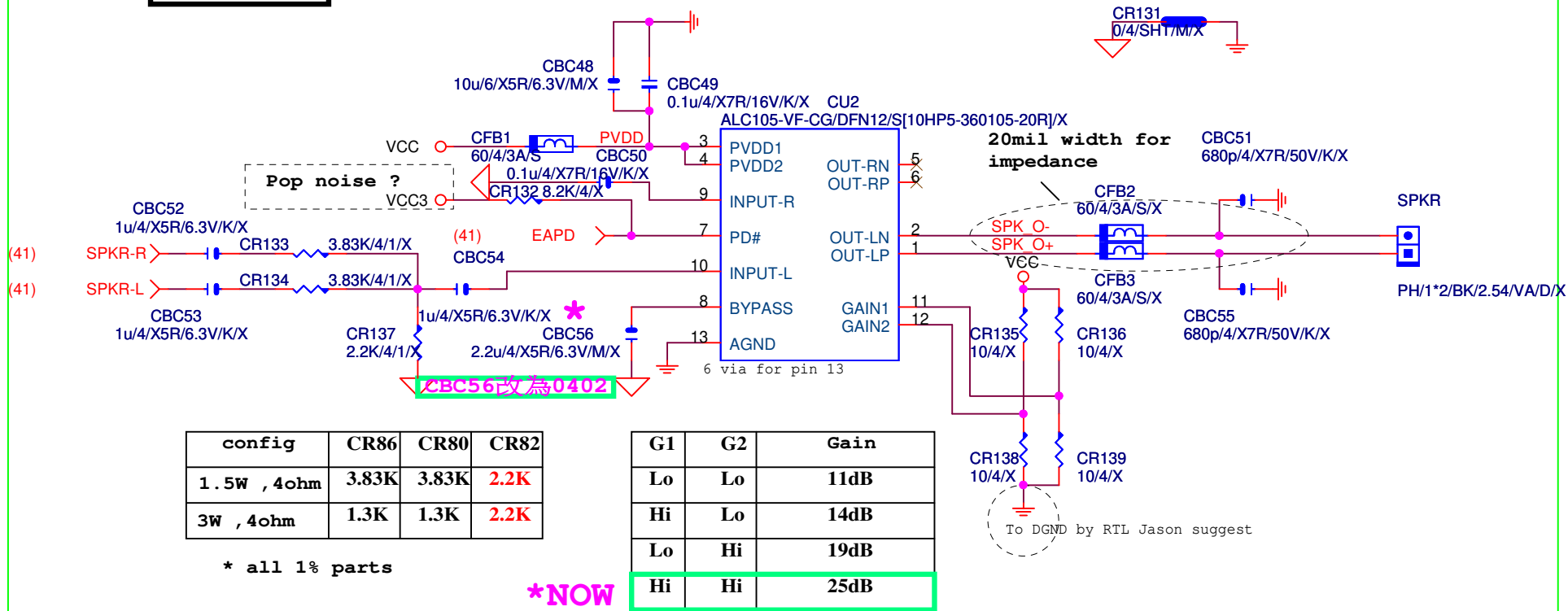
Title		Document Number		Rev
Size		Custom		1.01
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全部不上件

# MONO SPKR

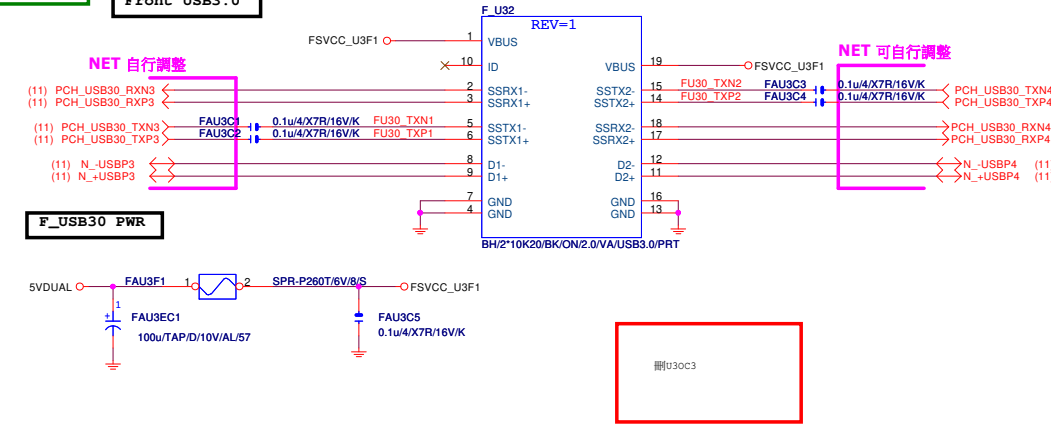


Gigabyte Technology

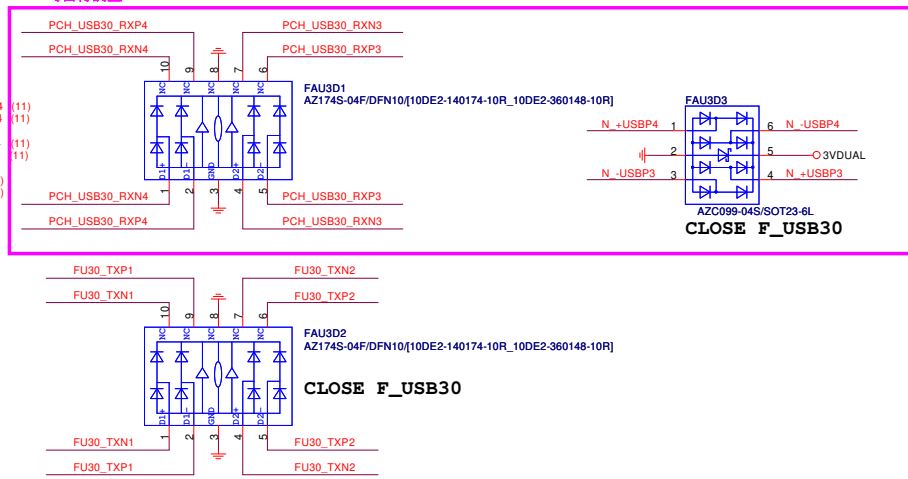
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MONO SPKR		
Size A	Document Number	Rev
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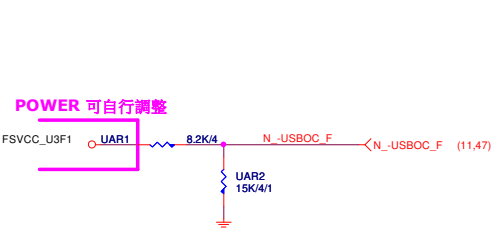
Front USB3.0



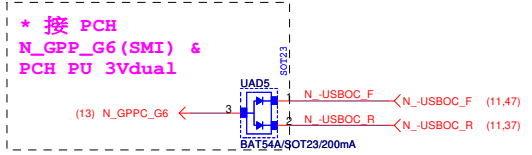
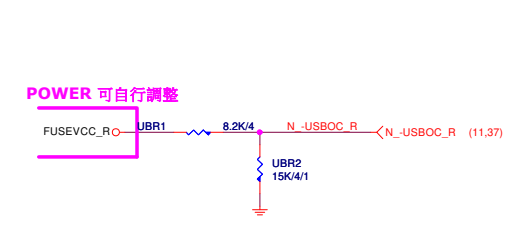
NET 可自行調整



-USBOC\_F



-USBOC\_R





Rev 0.4

### M.2 Lane2 from PCH port9

(13) M2\_PCIE\_TN9  
(13) M2\_PCIE\_TP9

0.22u/4/X5R/6.3V/K M2PC33  
0.22u/4/X5R/6.3V/K M2PC34

### M.2 Lane2 from PCH port10

(13) M2\_PCIE\_TN10  
(13) M2\_PCIE\_TP10

0.22u/4/X5R/6.3V/K M2PC35  
0.22u/4/X5R/6.3V/K M2PC36

### M.2 Lane4 from PCH port12

(13) M2\_PCIE\_TN11  
(13) M2\_PCIE\_TP11

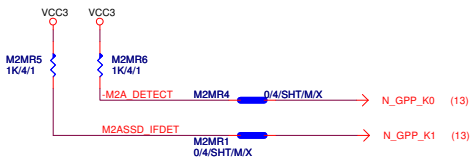
0.22u/4/X5R/6.3V/K M2PC9  
0.22u/4/X5R/6.3V/K M2PC10

(13) M2\_PCIE\_TN12  
(13) M2\_PCIE\_TP12

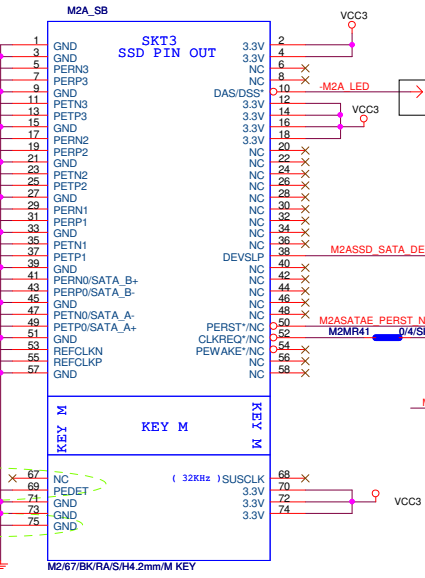
0.22u/4/X5R/6.3V/K M2PC15  
0.22u/4/X5R/6.3V/K M2PC16

需與M2\_-CLKREQ對應

### 支援SATA and M.2 function

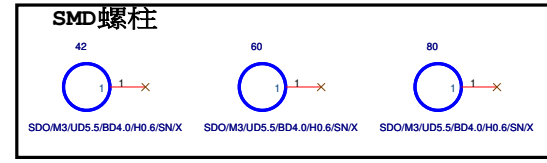
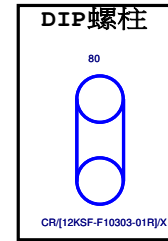
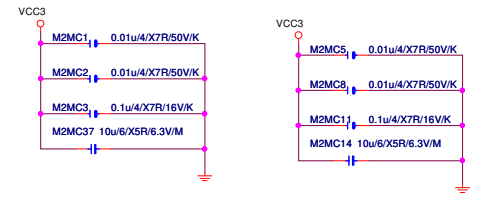


舊的Switch, 價格低

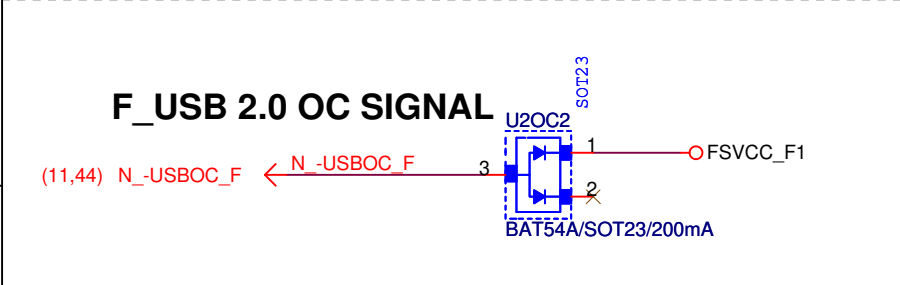
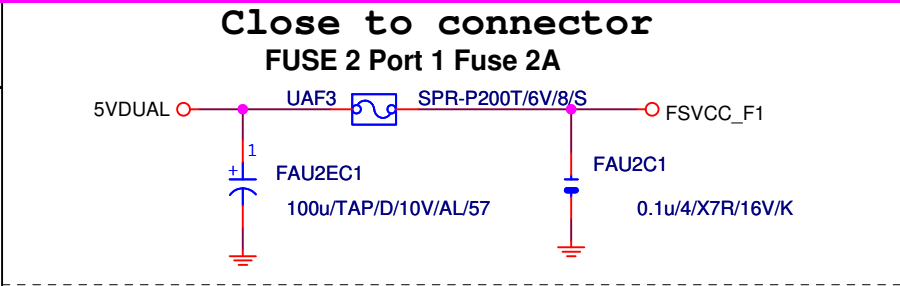
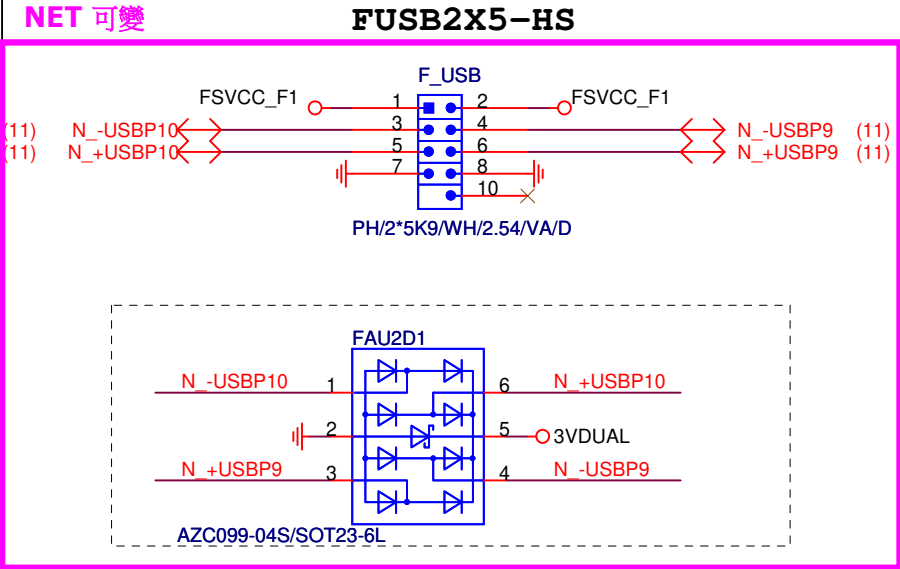


★ Footprint : NGFF-M-75P-8CM-09MM-SMD

- M.2上在背板須修改:
1. DIP螺絲背板上件
  2. DIP螺絲背板上件, 須修改料號
  3. SMD螺柱正面上件, 須修改料號及FOOTPRINT正反共用.

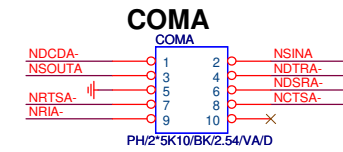
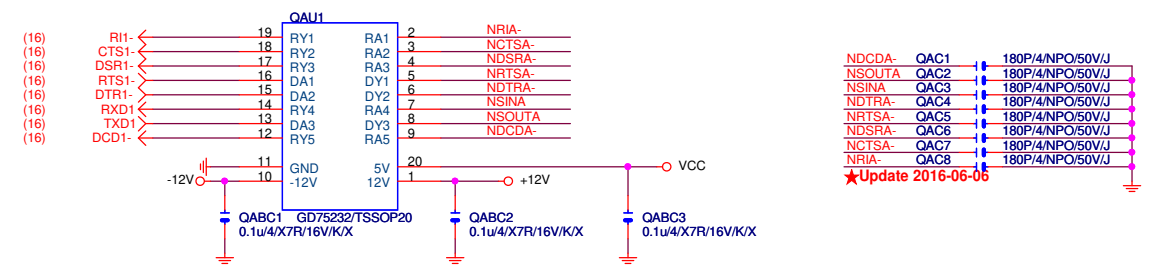


★ Footprint : HOLE\_165NP for 塑膠扣具

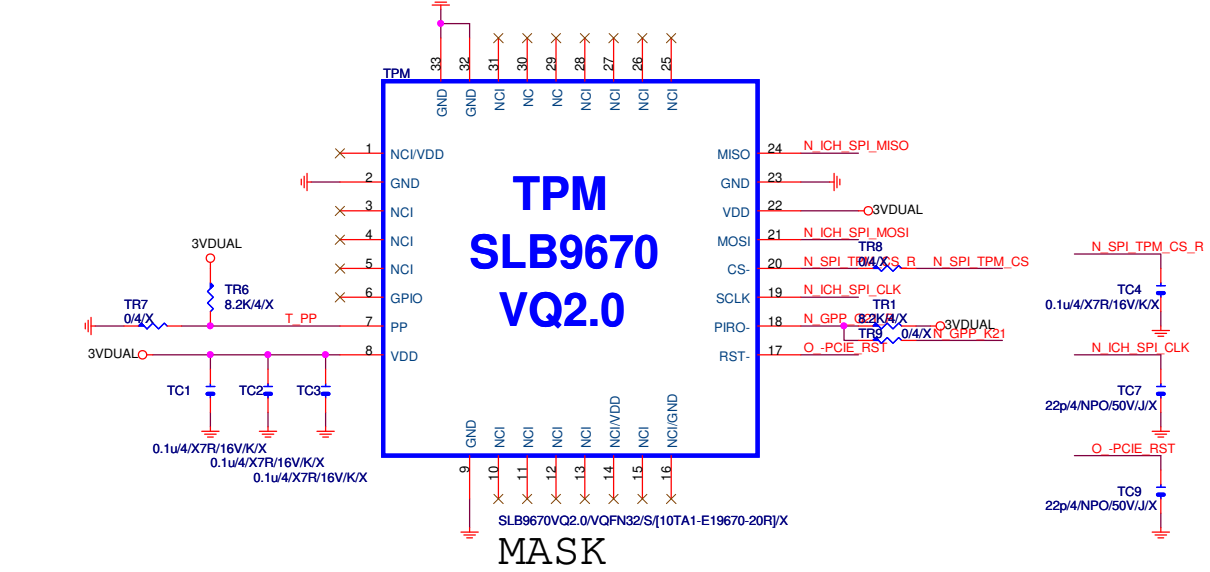


COM PORT

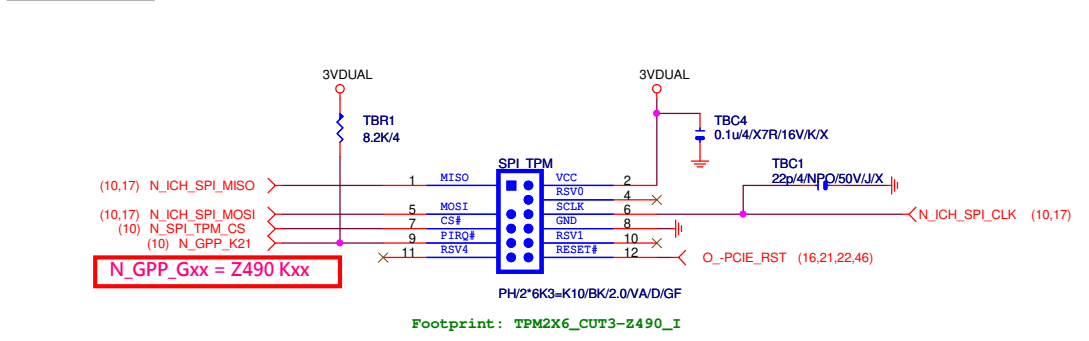
Rev: 0.93



TPM

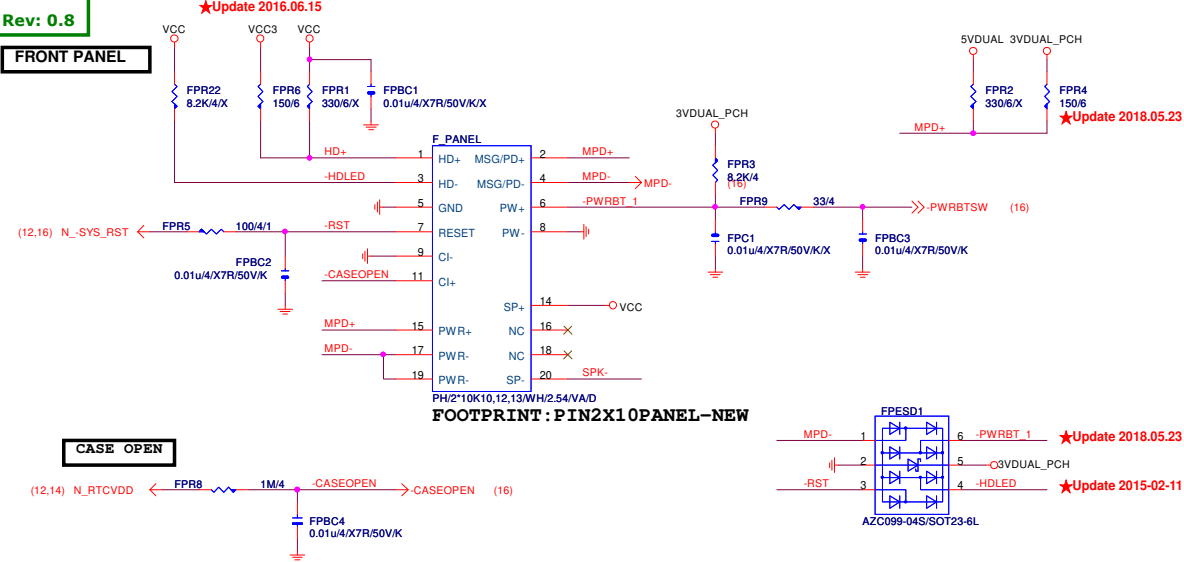


TPM CONNECT

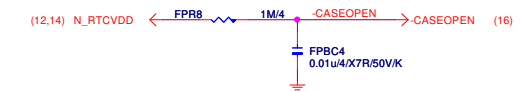


Thunderbolt (N/A)

FRONT PANEL

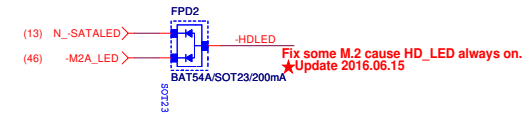


CASE OPEN

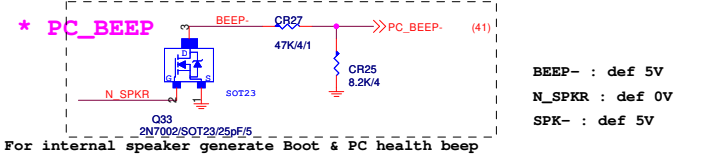
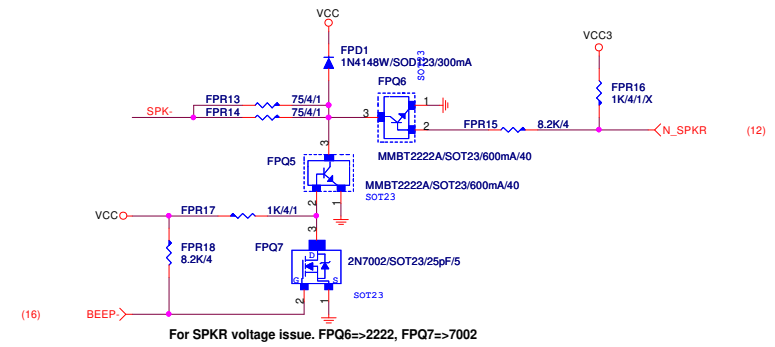


FRONT PANEL SHORT

SATA/M.2 LED

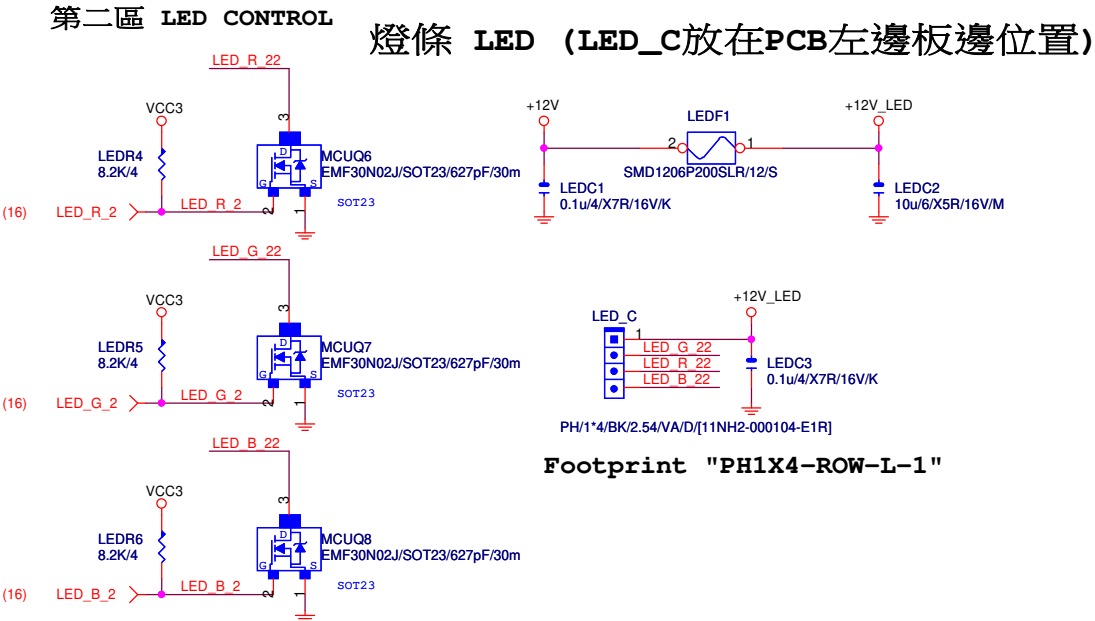


SPKR

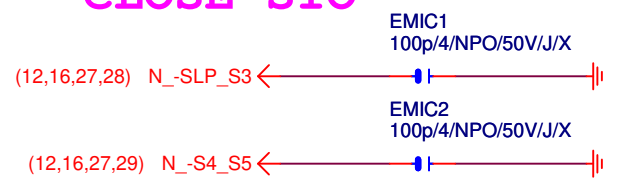


	N_GPP_D22
Still Mode	H
OFF Mode	L

RGB LED CONTROL



# CLOSE SIO



# CLOSE PCH



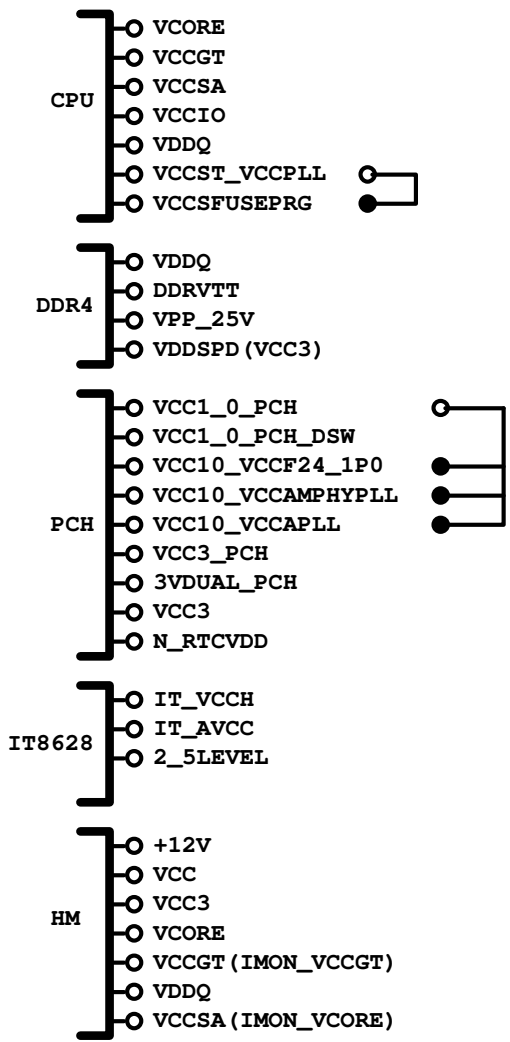
close to PCH (NR17)

R\_USB30\_2 & DVI 之間

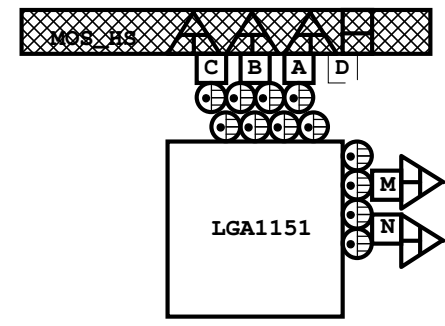
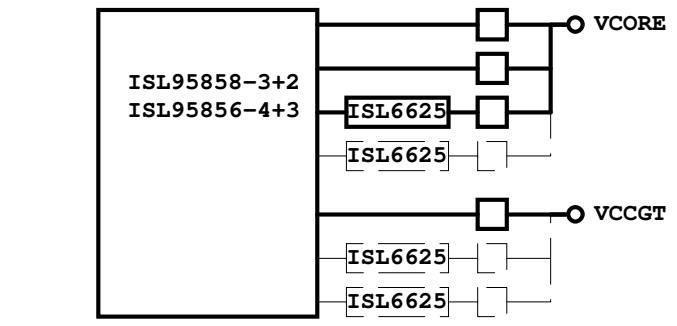
close to SIO (PIN92)MPD-



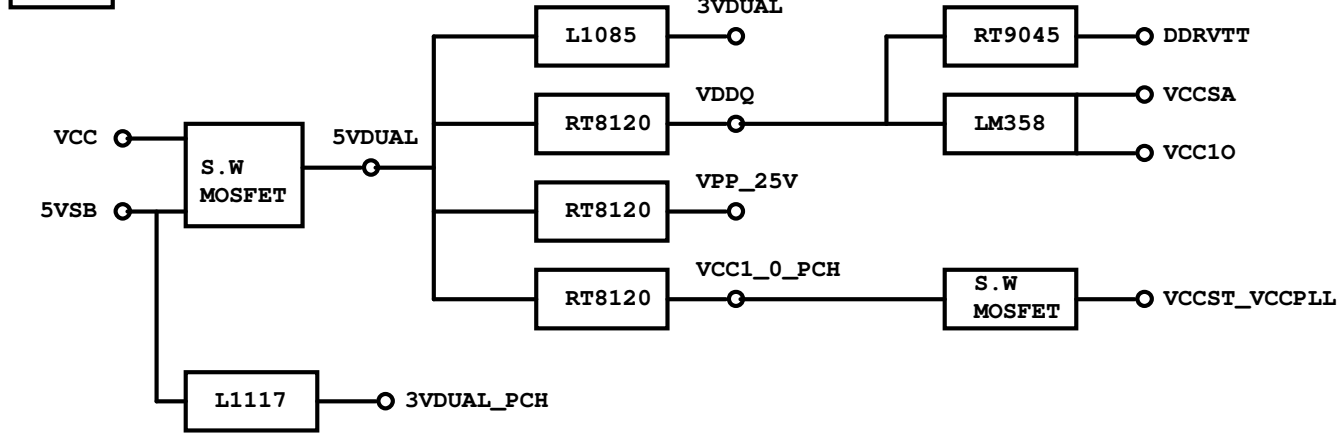
POWER BLOCK MAP



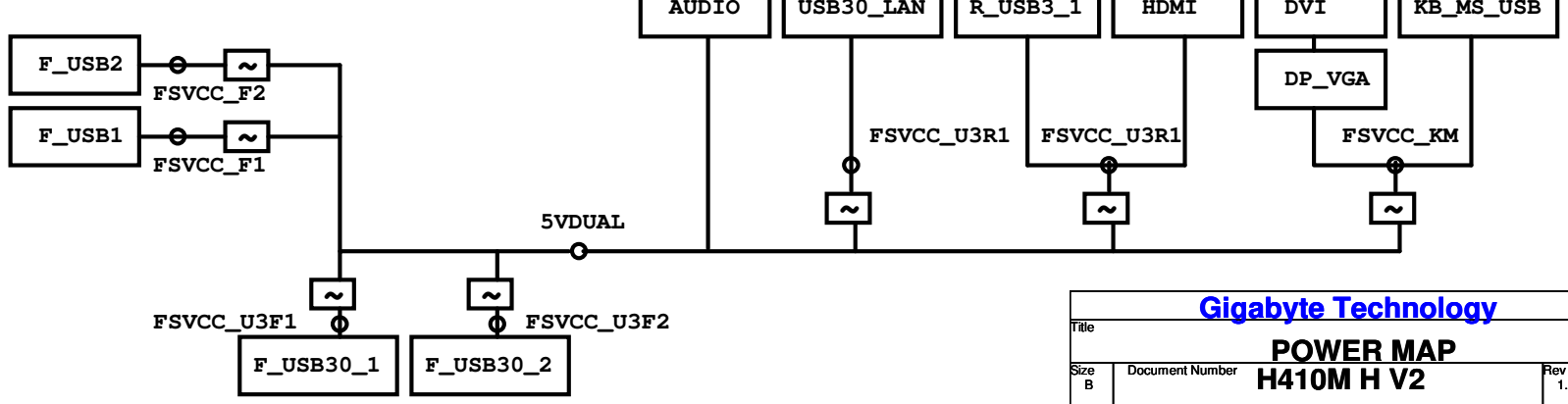
VCORE/VCCGT

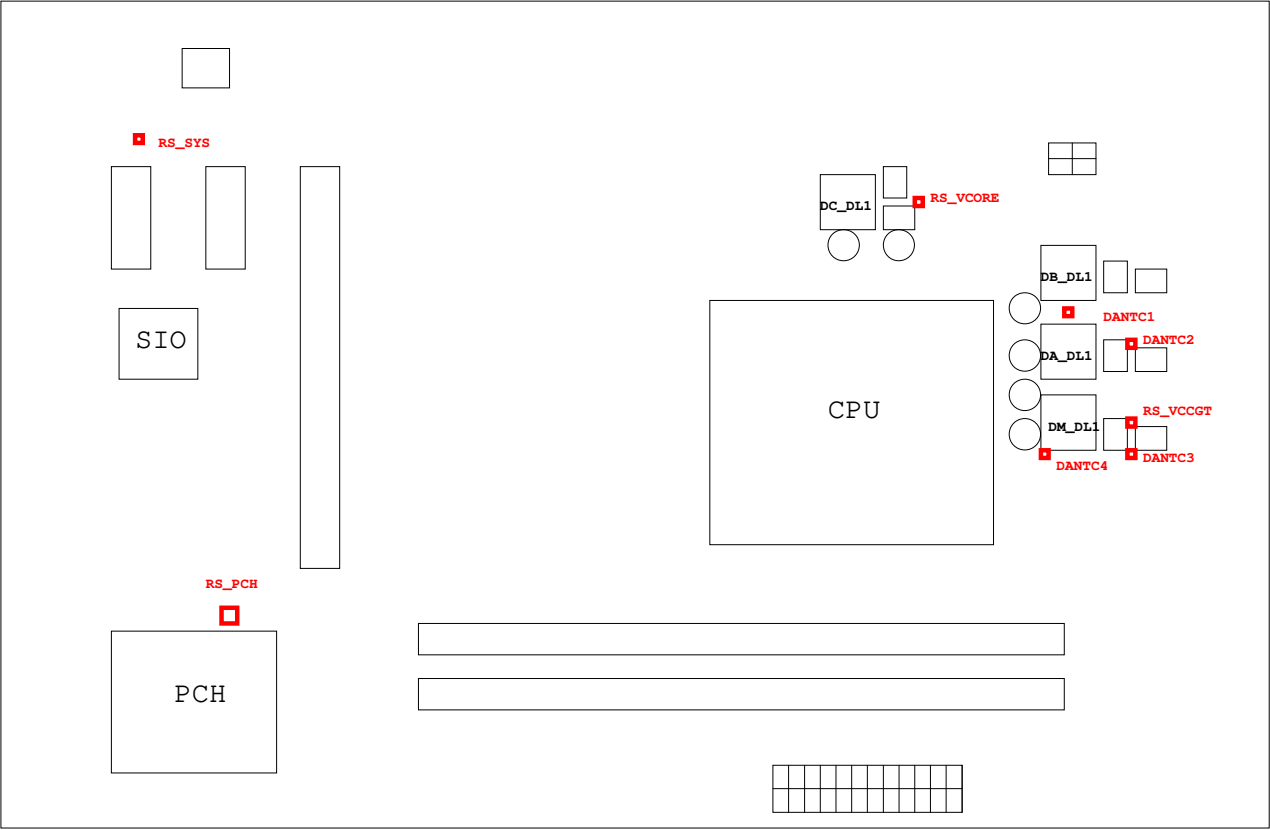


POWER



FUSE POWER F/R





熱敏電阻	擺放靠近位置	走線方式
DANTC4	DM_DL1	Differential
DANTC1	DA_DL1	Differential
DANTC3	DM_DQ1	Differential
DANTC2	DA_DQ1	Differential
RS_VCORE	DA_DQ1	N/A
RS_VCCGT	DM_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A