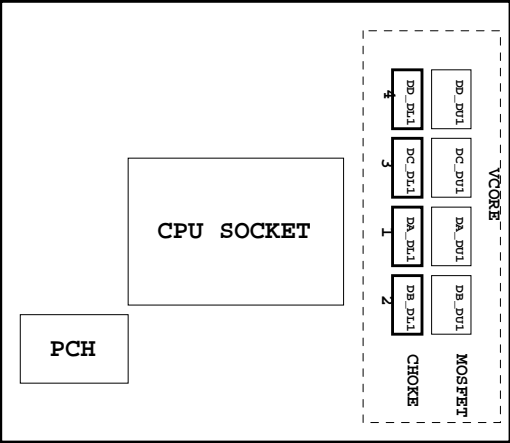


01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1151-A-DP/DMI/PCIE
05	CPU_LGA1151-B-DDR4
06	CPU_LGA1151-C
07	CPU_LGA1151-D
08	DDR 4 CHANNEL A (Rev 0.3)
09	DDR 4 CHANNEL B
10	PCH CLOCK BUFFER (Rev 0.70)
11	PCH DMI,USB,PCIE
12	PCH MISC
13	PCH SATA,PCIE,SATA_EXPRESS
14	PCH_PWR,GND
15	Dual BIOS (Rev 0.1)
16	I/O ITE8628 (Rev 1.06)
17	HWM
18	FAN CTRL-SIO (Rev 0.53)
19	PCIEX16 SLOT (Rev 0.2)
20	PCIEX1 SLOT
21	M.2 x4 (Rev 0.10)
22	M.2 SWITCH_D
23	SATA (Rev 0.5)
24	VCORE_ ISL95858(PWM) (Rev 0.15)
25	VCORE_ ISL95858(Vcore)
26	VCORE_ ISL95858(VccGT)
27	VCCSA_VCCIO_VCCPLL (Rev 0.40)
28	RT8237_DDR (Bead) (Rev 0.30)
28	NTC3103_VTT (Bead) (Rev 0.23)
29	RT8237_PCH (Bead) (Rev 0.50)
30	DISCRETE POWER (Rev 0.51)
31	ATX POWER , -PROCHOT

32	KB_MS_USB (Rev 0.53)
33	F_PANEL
34	R_USB30
35	USB_LAN CONNECTOR-8111G
36	Realtek 8111GUS (Rev 1.06)
37	ALC887-VD2 CODEC (Rev 0.5)
38	REAR AUDIO JACK
39	F_USB30 (Rev 0.53)
40	R_USB20 /F_USB20 (Rev 0.53)
41	COM , LPT , TPM , THB (Rev 0.53)
42	IT8892E/JX (Rev 0.1)
43	LDO POWER
44	PCI SLOT 1&2&3
45	RTD2168 - DP to VGA - IC (Rev 1.03)
46	RTD2168 - DP to VGA - Conn
47	Thermesister Location
48	Heatsink
49	EMI-ESD



8	7	6	5	4	3	2	1
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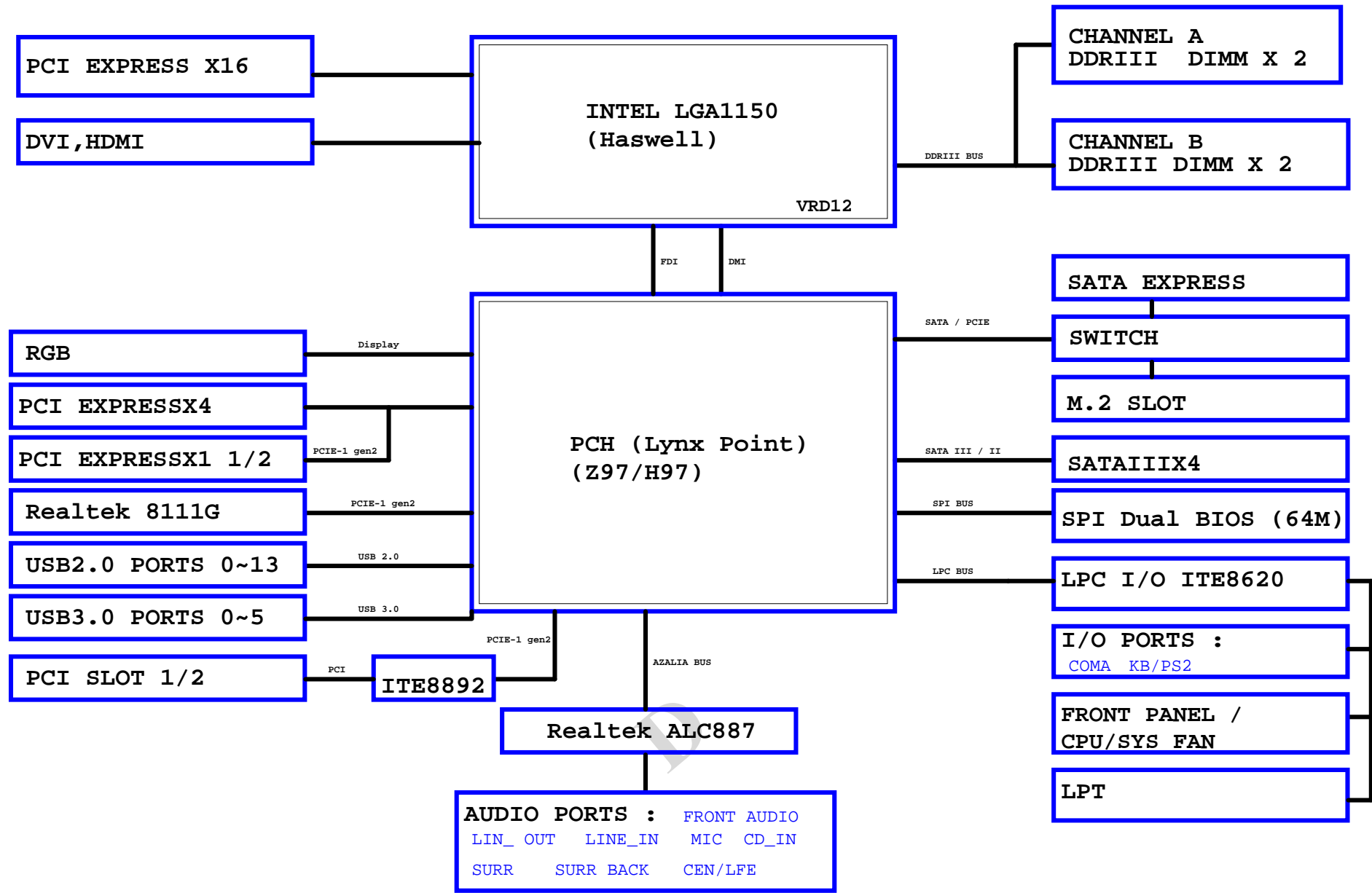
D

C

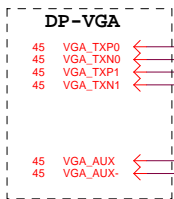
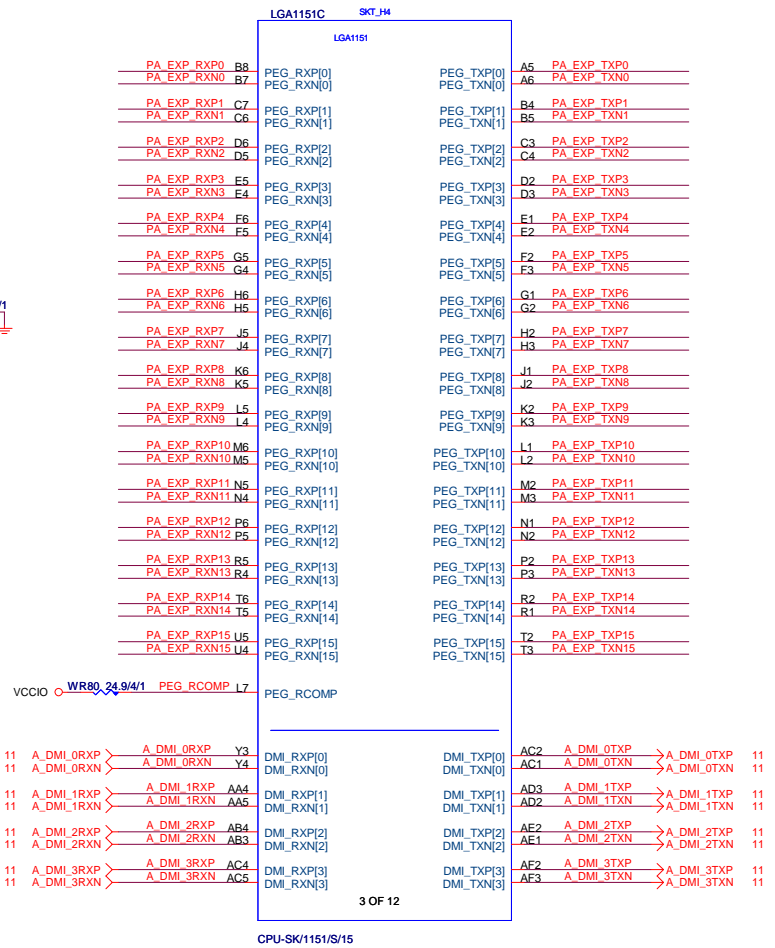
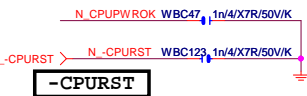
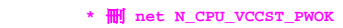
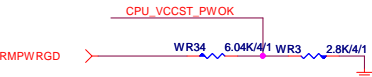
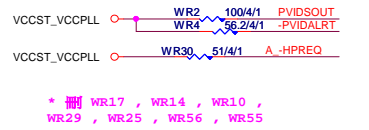
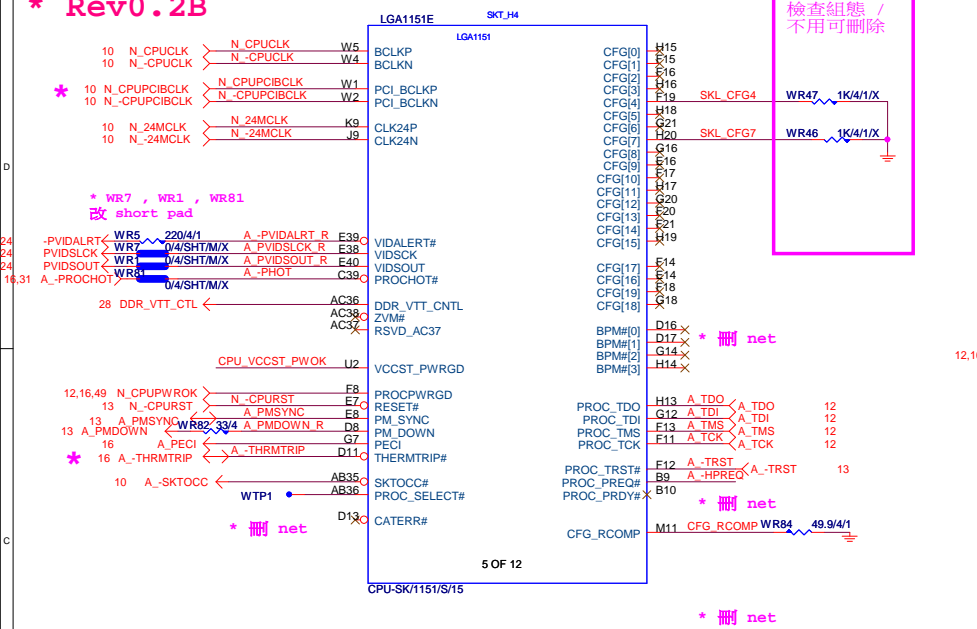
Q

D

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; 11=
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_TXP[0..15]  >> PA_EXP_TXP[0..15]  19
PA_EXP_TXN[0..15]  >> PA_EXP_TXN[0..15]  19
PA_EXP_RXP[0..15]  >> PA_EXP_RXP[0..15]  19
PA_EXP_RXN[0..15]  >> PA_EXP_RXN[0..15]  19

```

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

Impedance=85 +- 15%

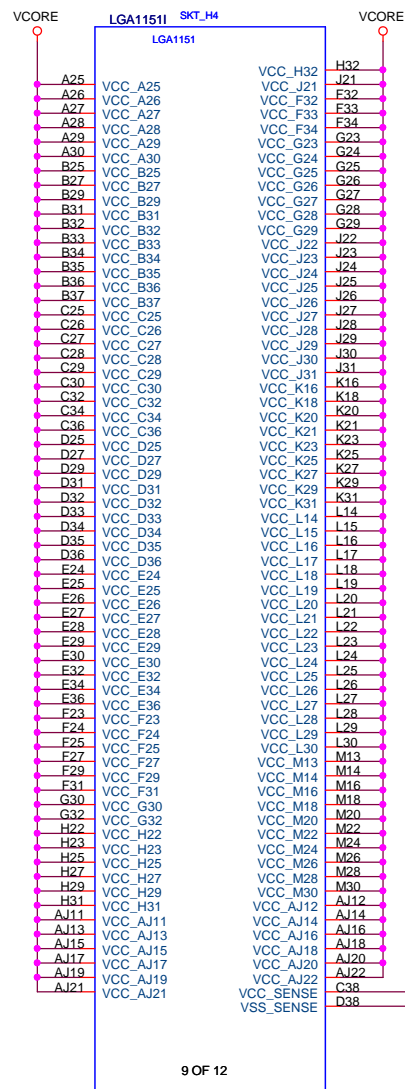
```
W=12 mil out of CPU
S=15 mil out of CPU
```

Gigabyte Technology

CPU LGA1151-A

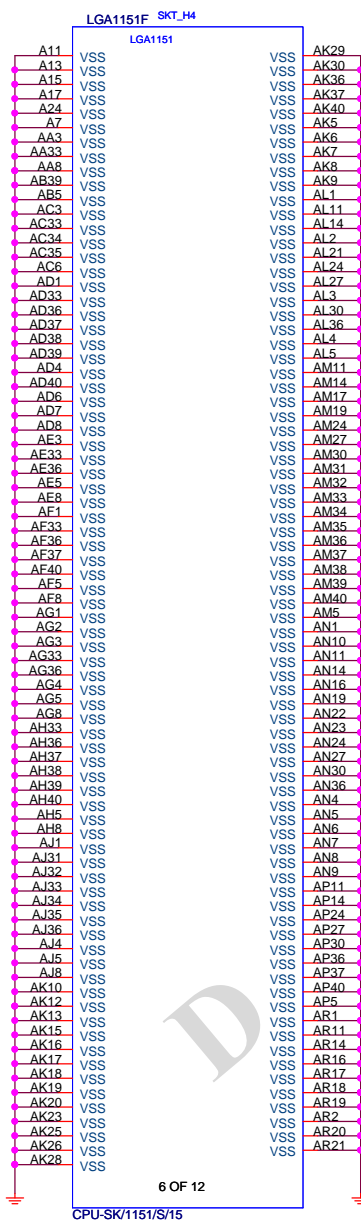
GA-H110-D3A

Rev
1.0

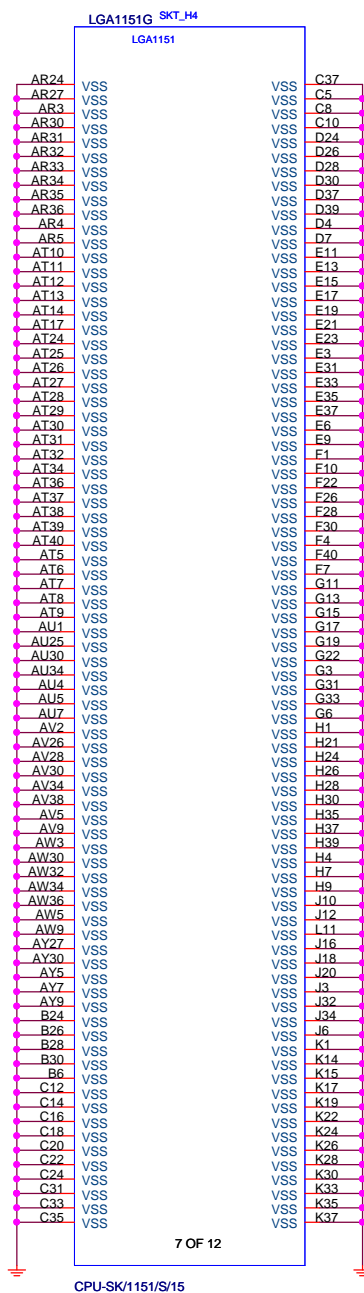


CPU-SK/1151/S/15

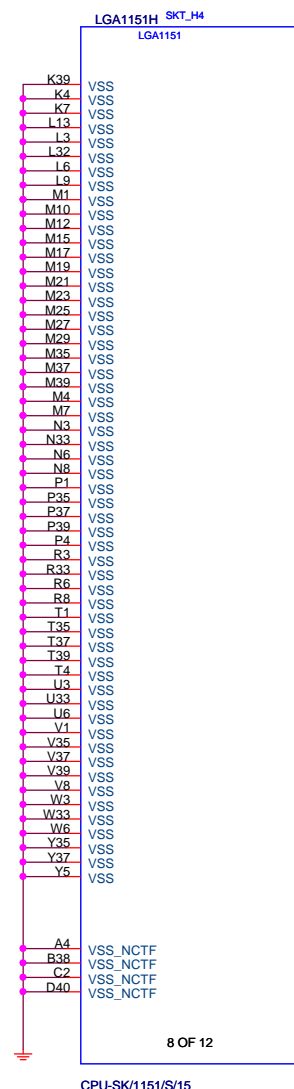
* 删除 Vcore 电容



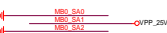
CPU-SK/1151/S/15



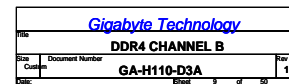
CPU-SK/1151/S/15



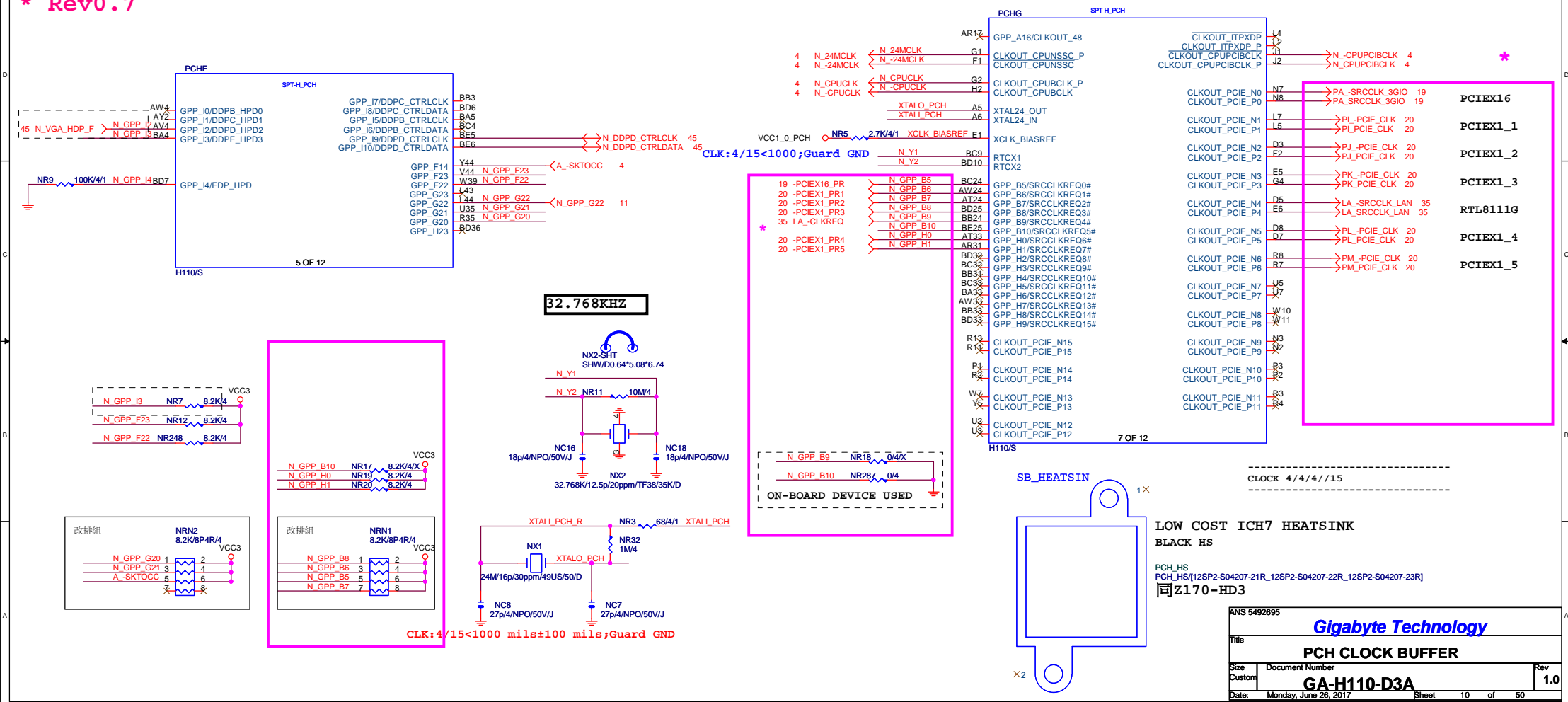
CPU-SK/1151/S/15

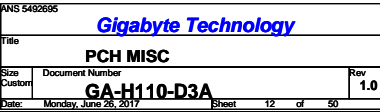


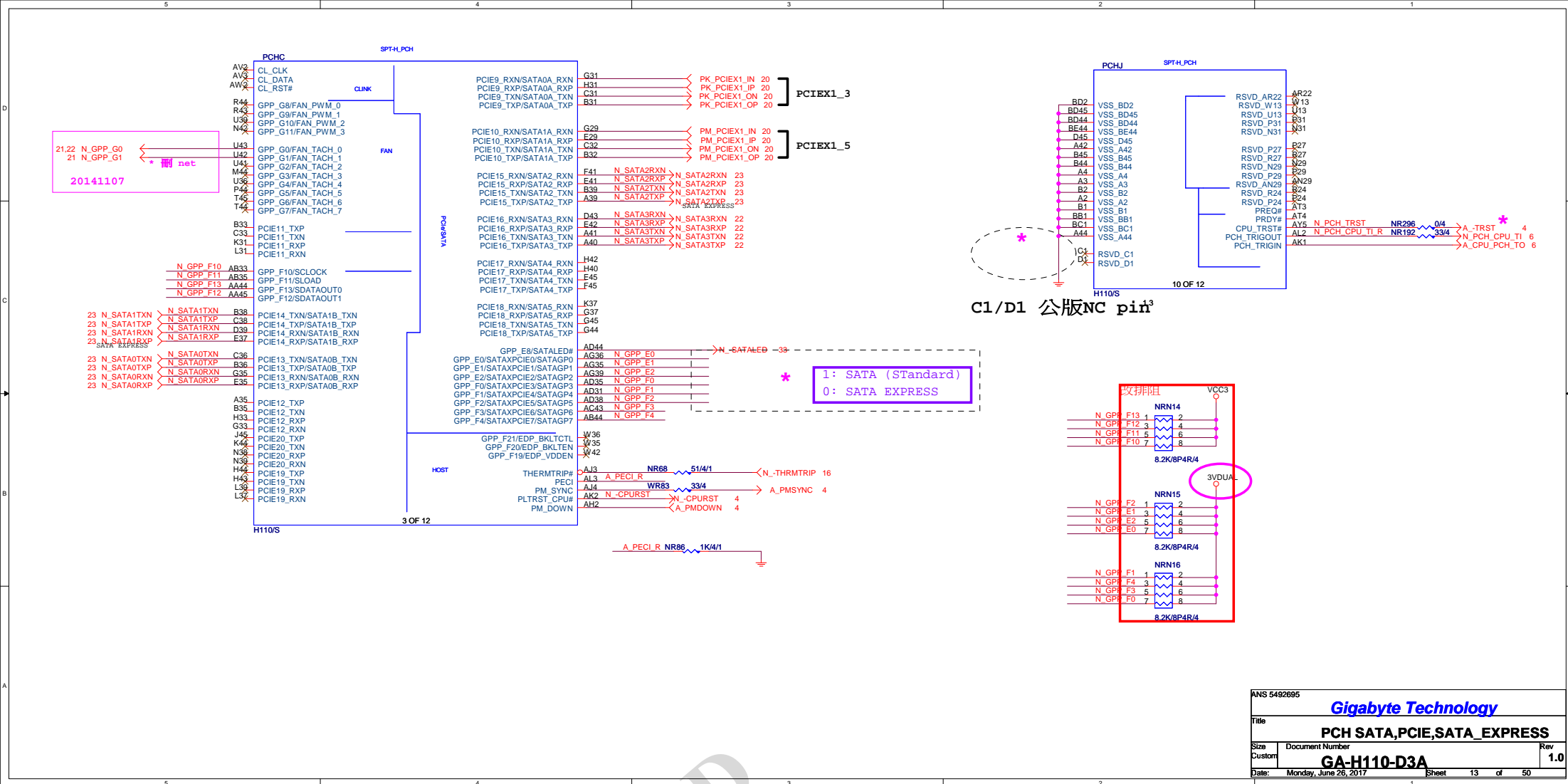
CHANNEL B
SA2:0=010

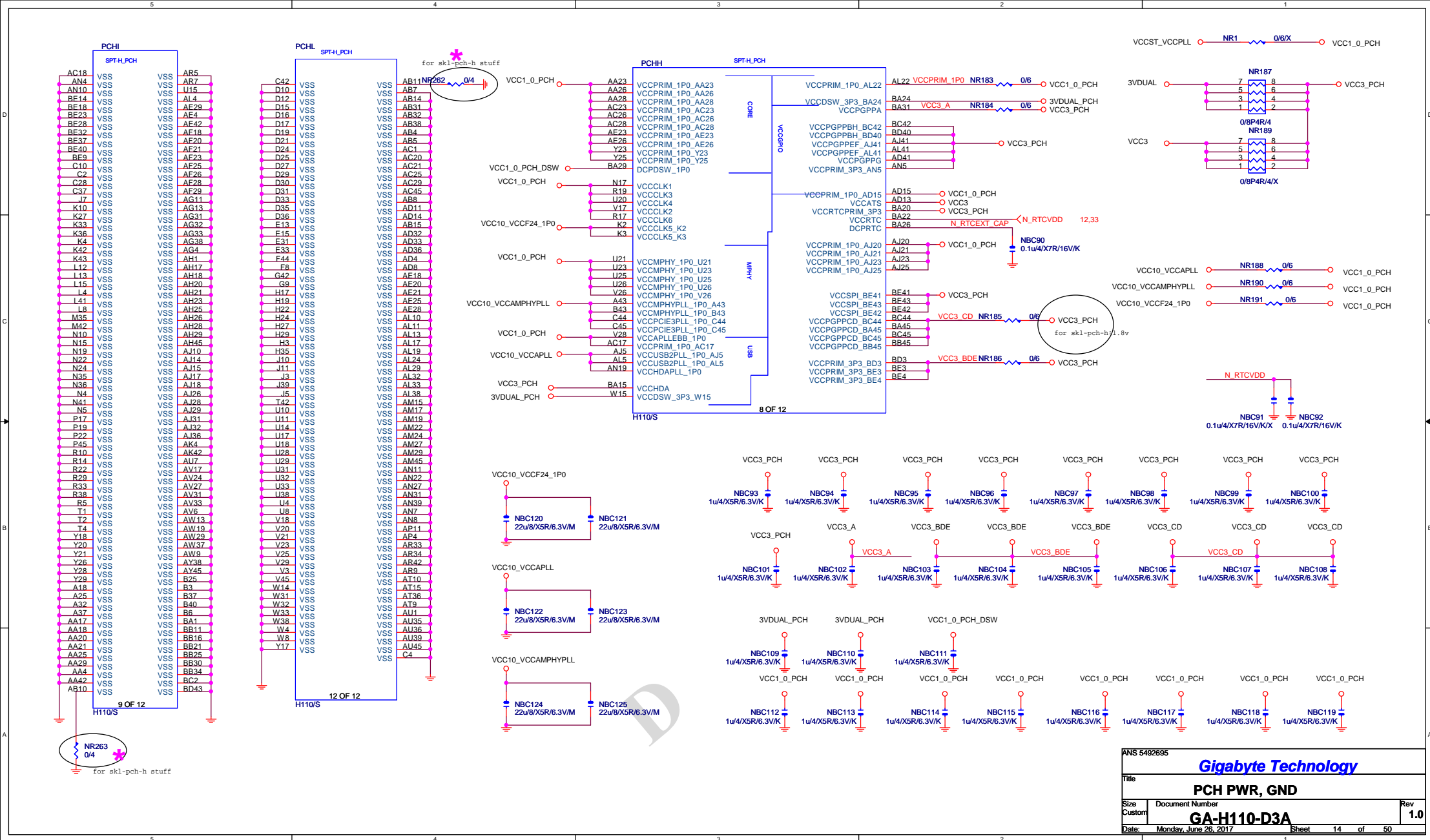


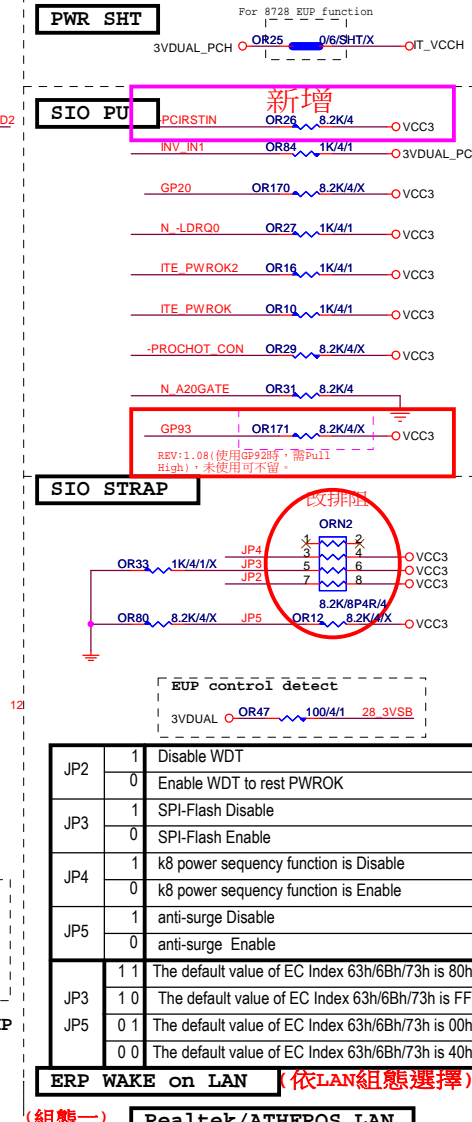
* Rev0.7



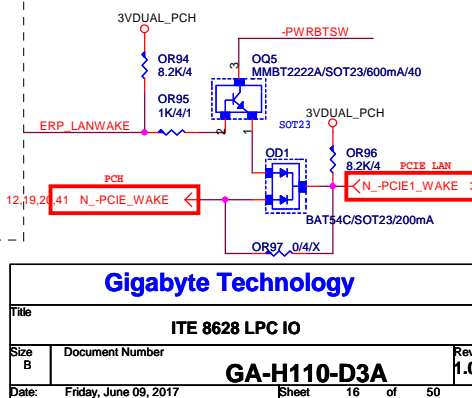
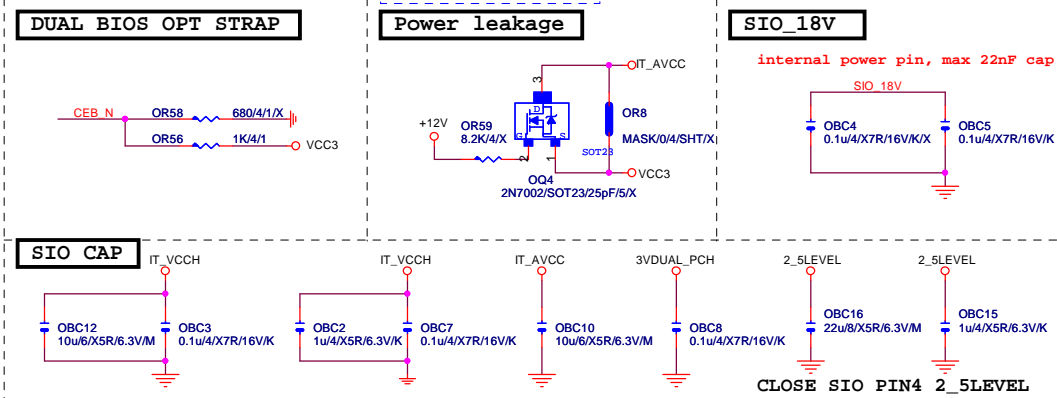


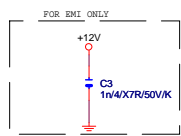
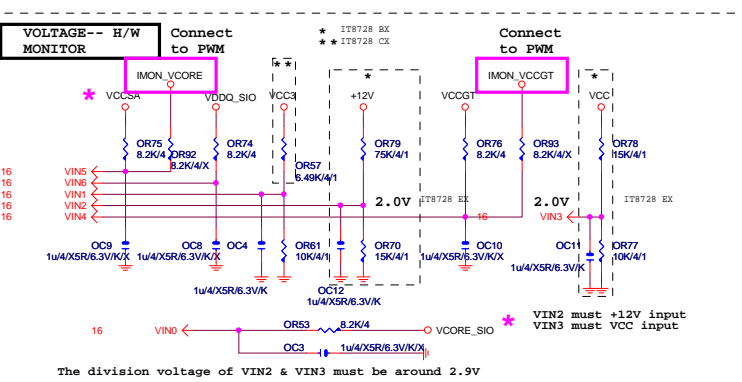
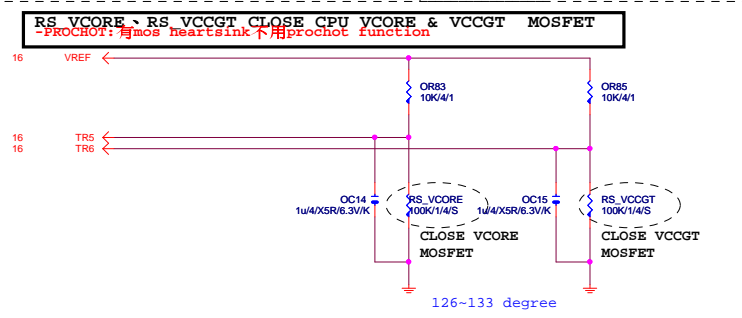
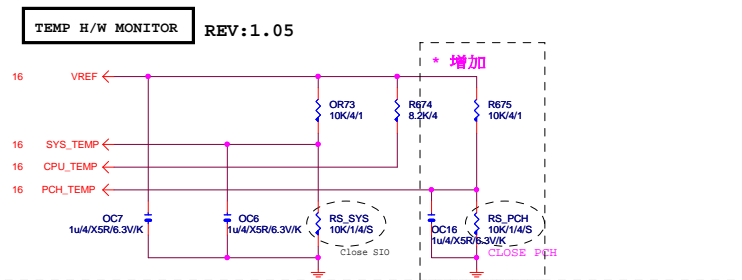




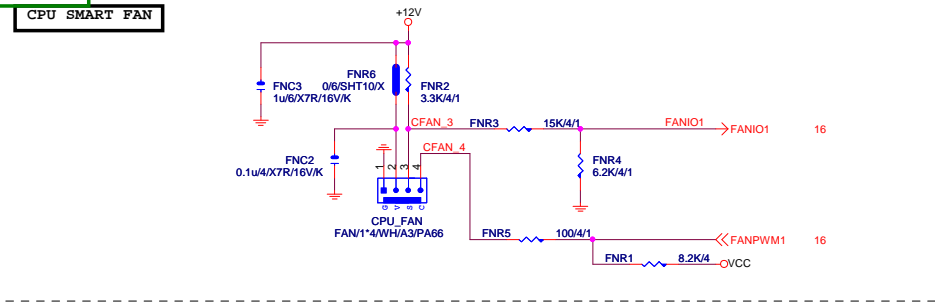


TT8620E GPIO問題匯整	
PIN 50	GP26-第一次接上POWER時 會拉 LO
PIN 90/91	DEFAULT為HDLed FUNCTION GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG)
PIN 108	GP40--- POWER ON 時會拉 LO
PIN 111/112	MOUSE 跟PAN6 FUNCTION 擇一使用，不然會互相干擾
PIN 22	PIN22，需高於3V，若低於 該部分COM PORT及LEFT裝置 蜂鳴器會異常動作。





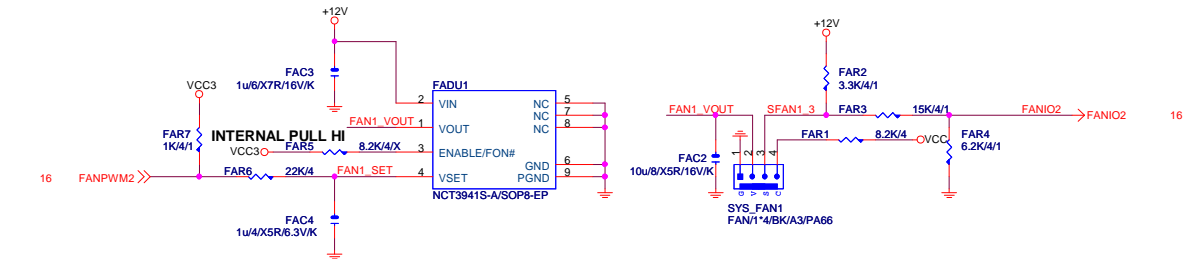
CPU SMART FAN



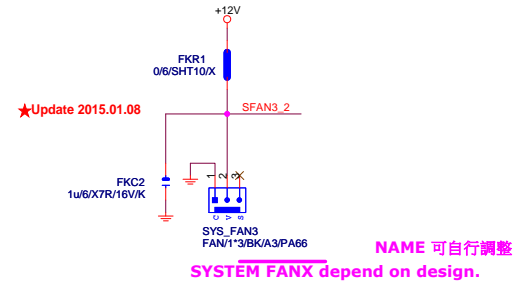
SYSTEM FAN1

Linear SYS_FAN

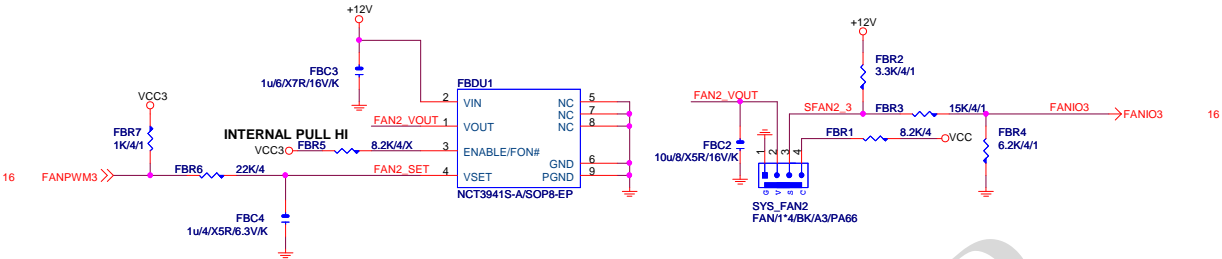
Enable Function (NCT3941S)
Full Turn On Function (NCT3941S-A)



SYSTEM FAN3

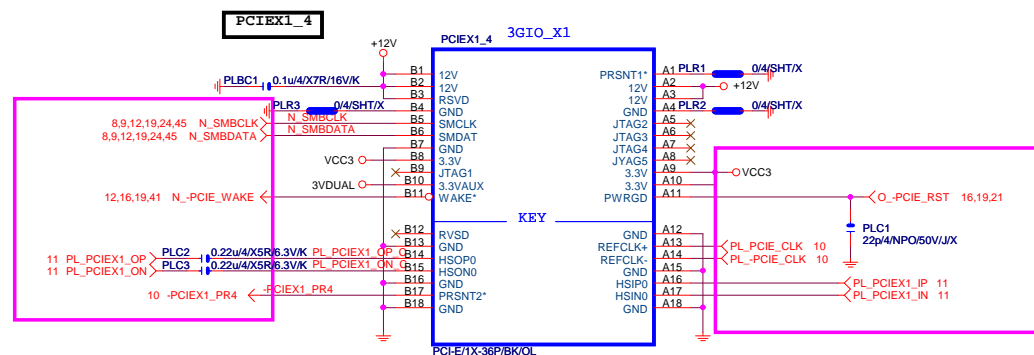
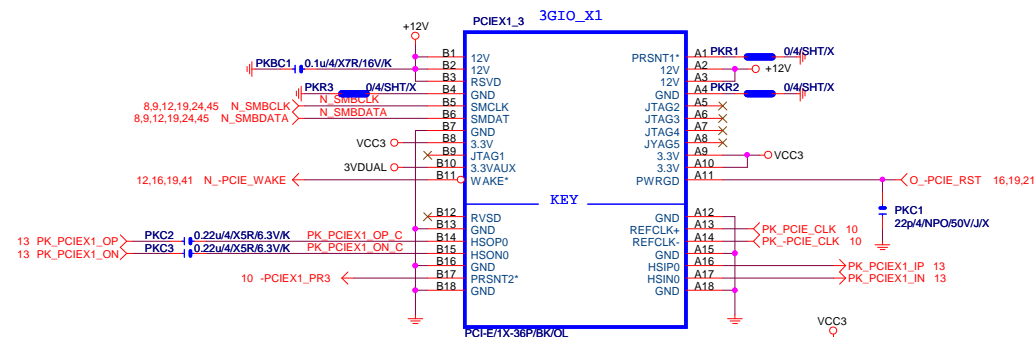


SYSTEM FAN2



GIGABYTE

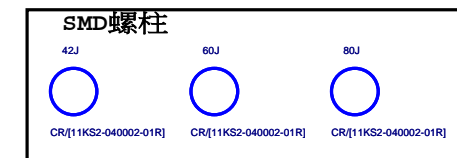
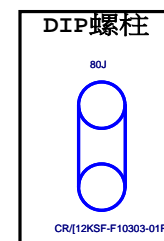
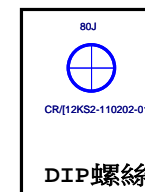
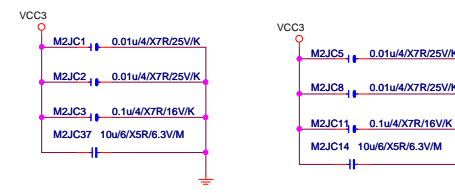
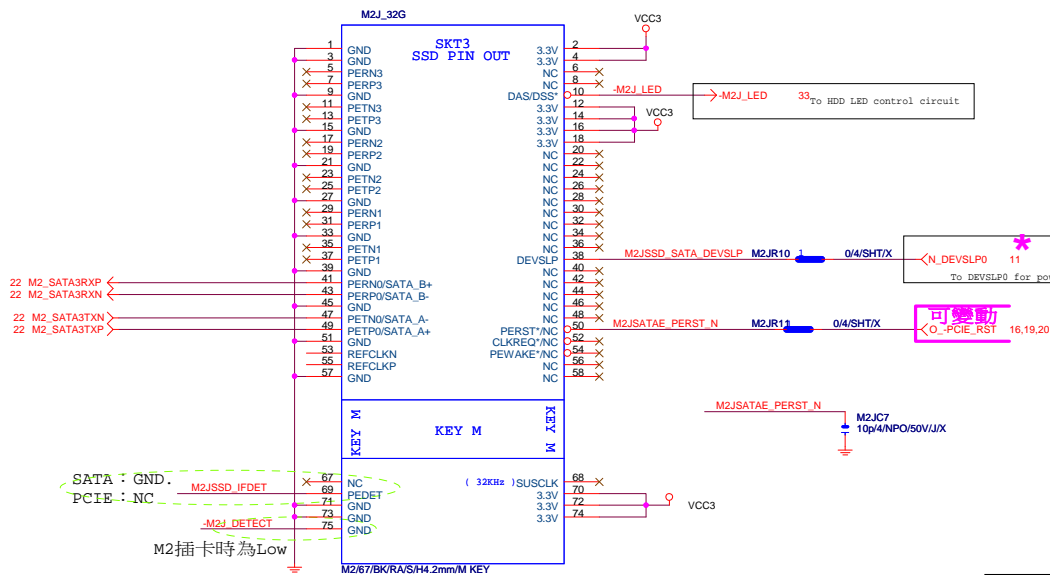
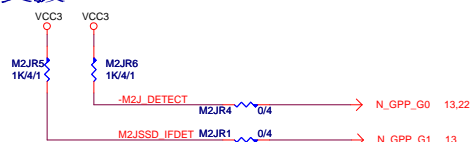
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Size	Custom	Document Number	GA-H110-D3A		Rev
Date:	Friday, June 09, 2017	Sheet	18	of	50



Title			
PCIEX1			
Size	Document Number	Rev	
Custom	GA-H110-D3A	1.0	
Date:	Friday, June 09, 2017	Sheet	20 of 50

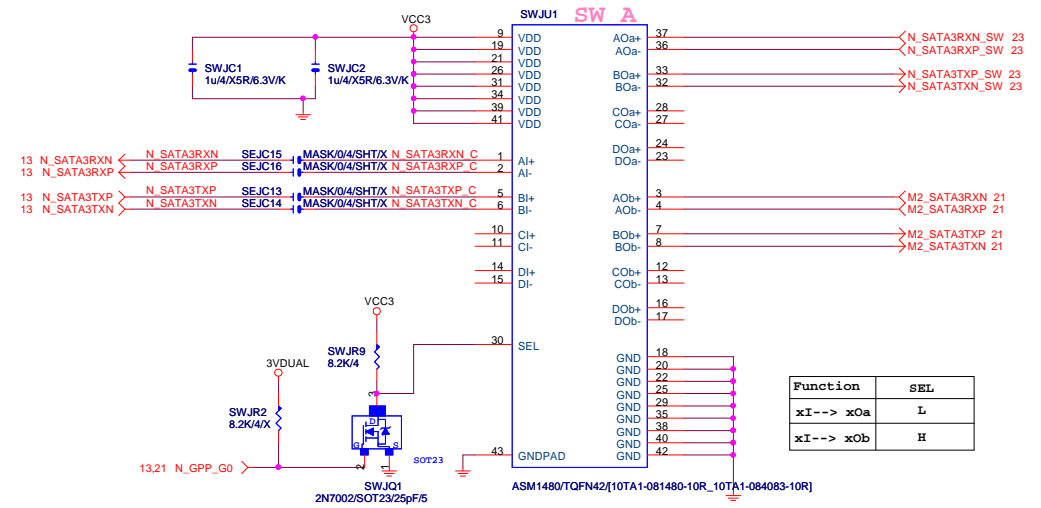
M.2 Lanel from PCH port9

支援SATA and M.2 function

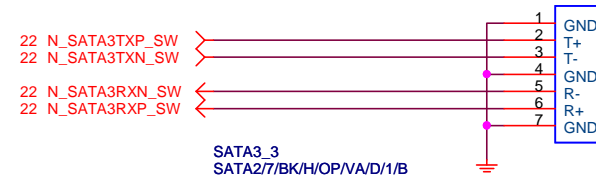
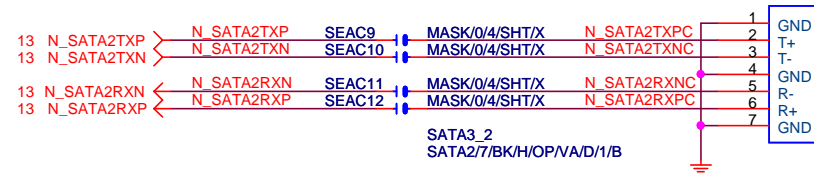
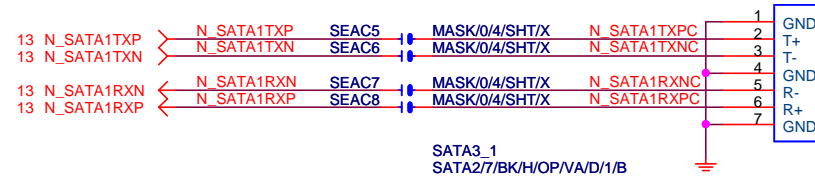
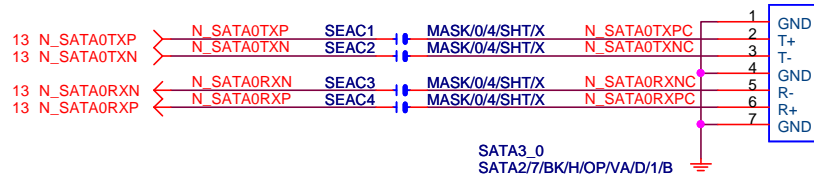


M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡? GPP_G1	SATA Express 插何種硬碟? GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE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

PCH (S3)



Rev 0.5a

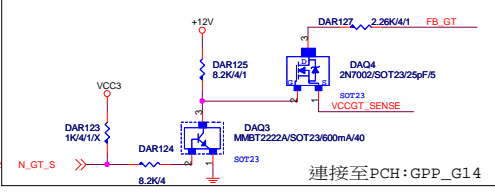
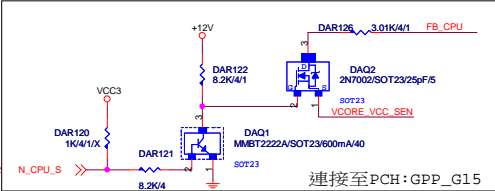
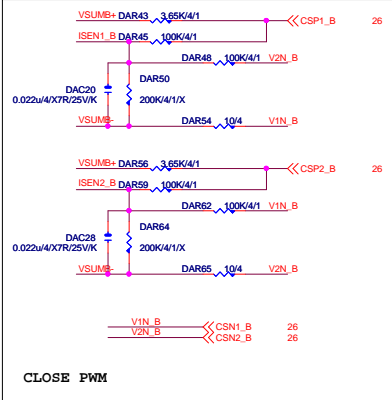
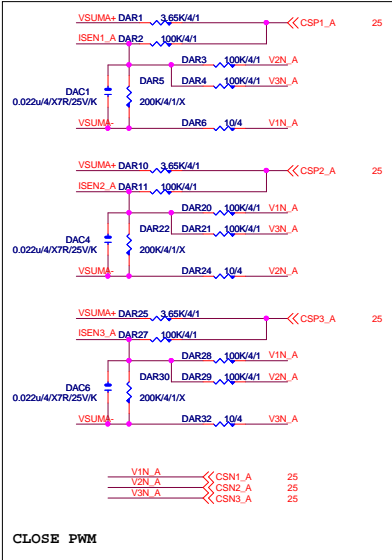
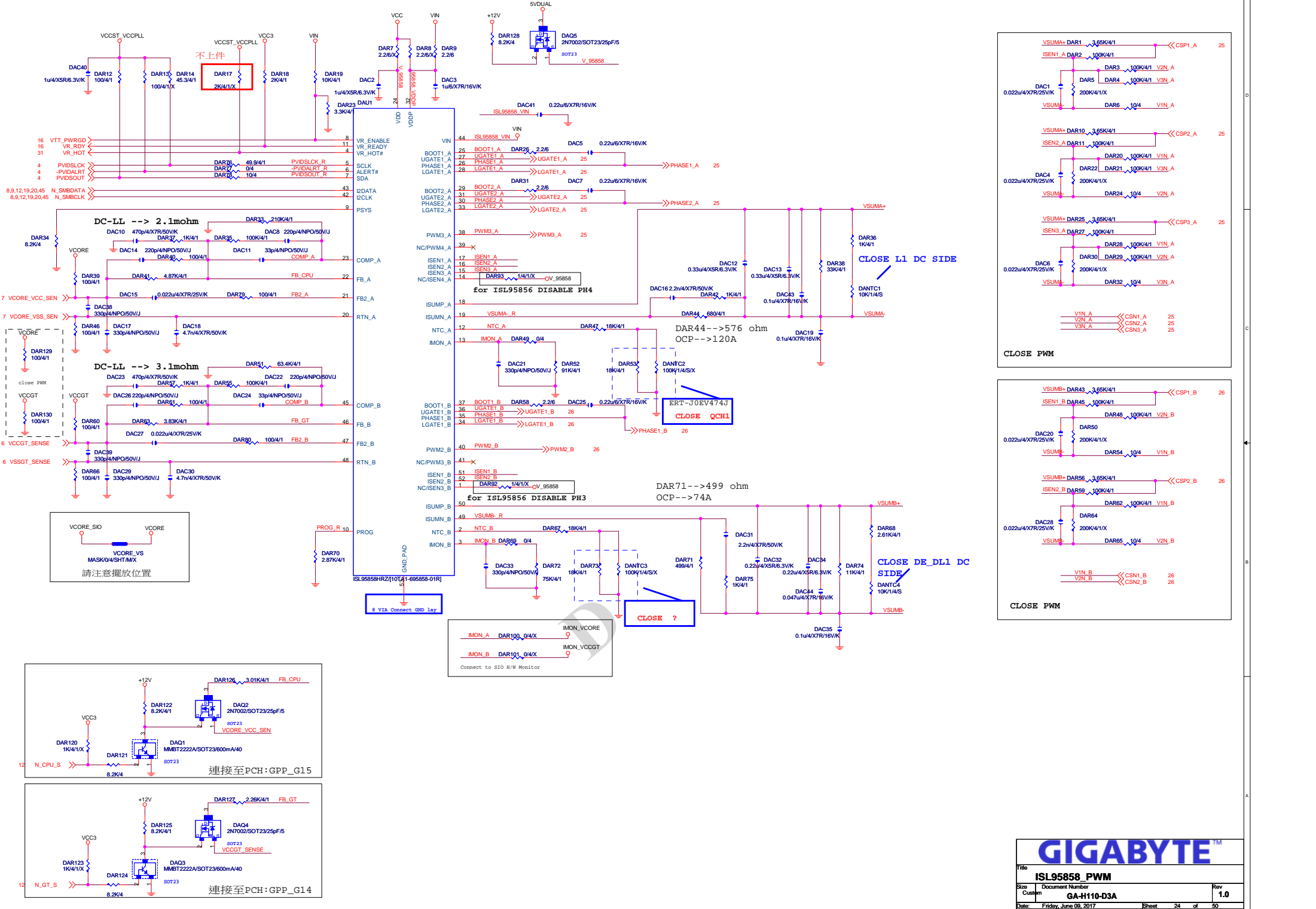


Gigabyte Technology

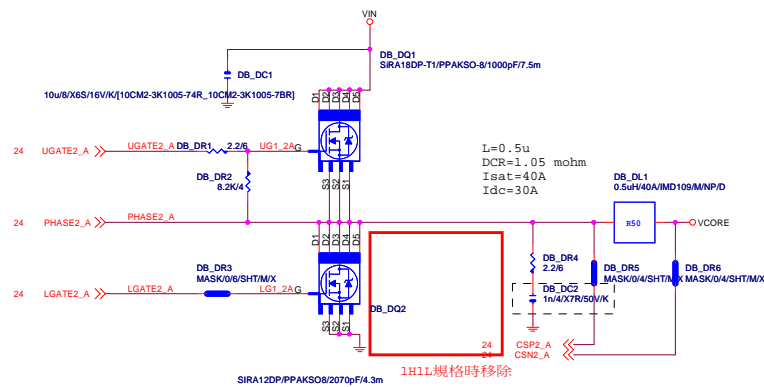
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SATA EXPRESS

Size Custom Document Number
GA-H110-D3A Rev 1.0

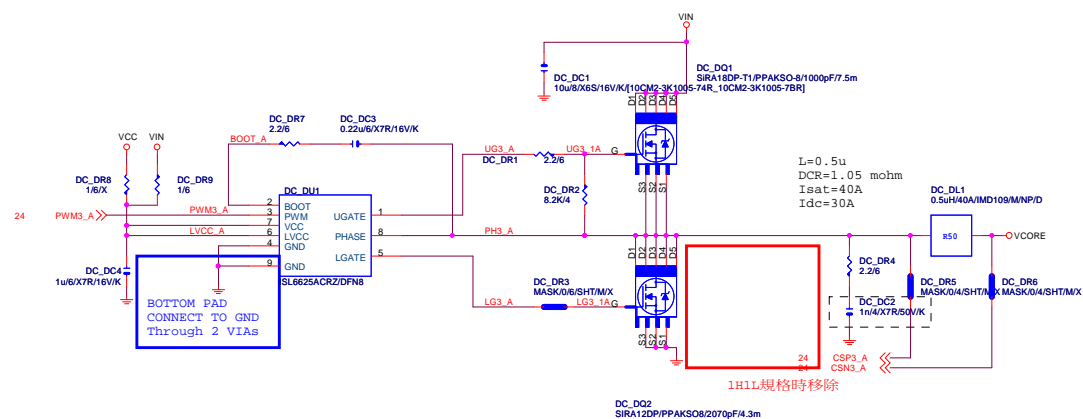
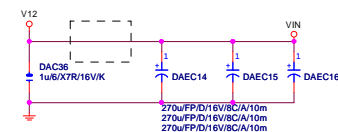
Date: Friday, June 09, 2017 Sheet 23 of 50



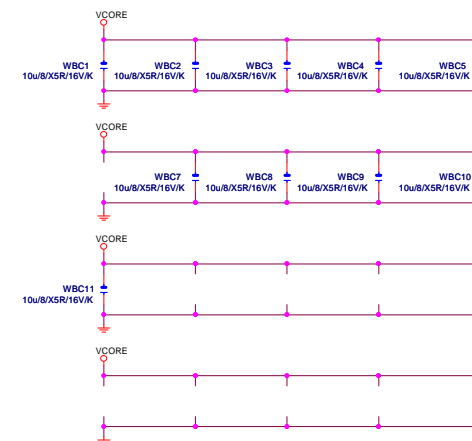
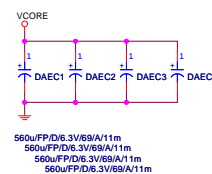
VCORE



VIN CAP 270u*3PCS

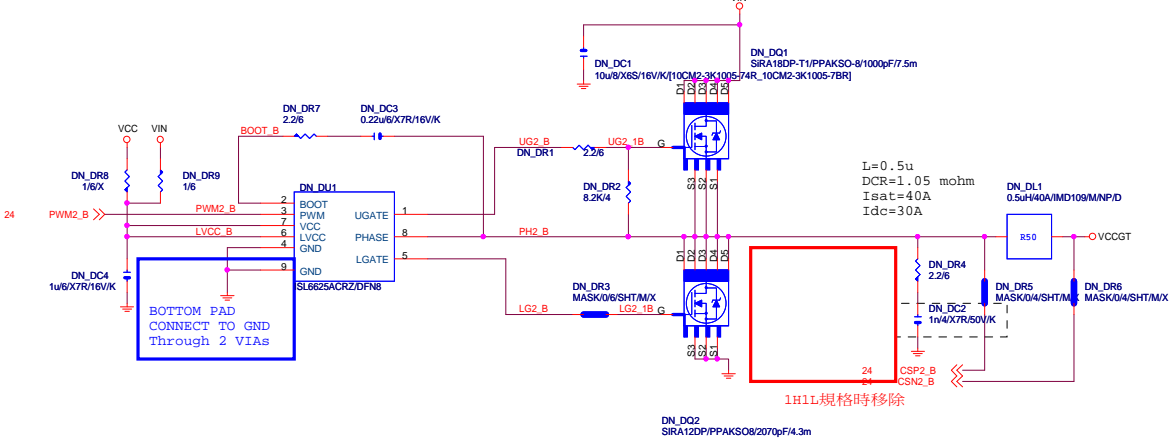
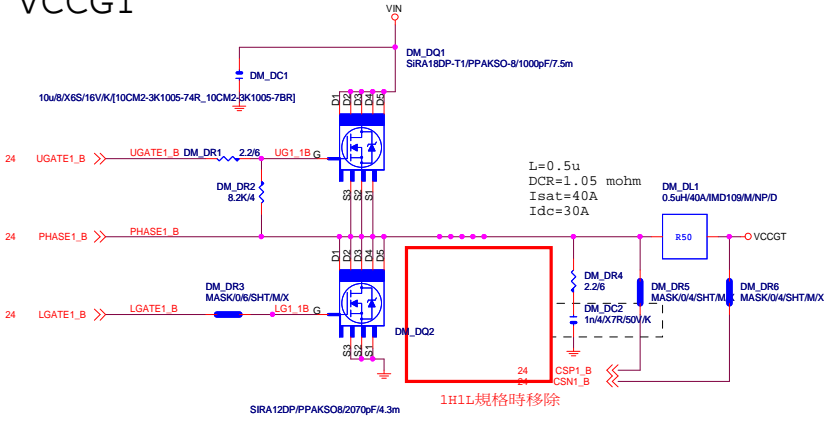


```
VCORE  CAP  560u*4PCS
          10u*10PCS
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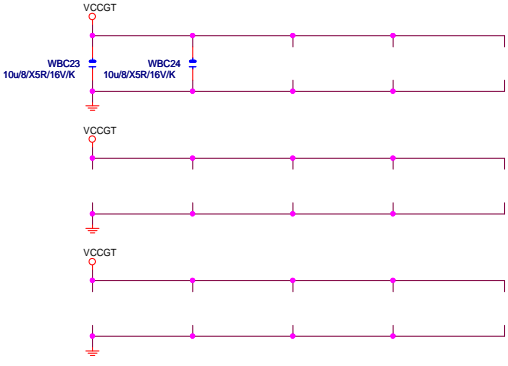
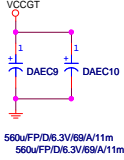
**GIGABYTE™**

Title			
ISL95858_MOS			
Size	Document Number		Rev
Custom	GA-H110-D3A		1.0
Date:	Friday, June 09, 2017	Sheet	25 of 50

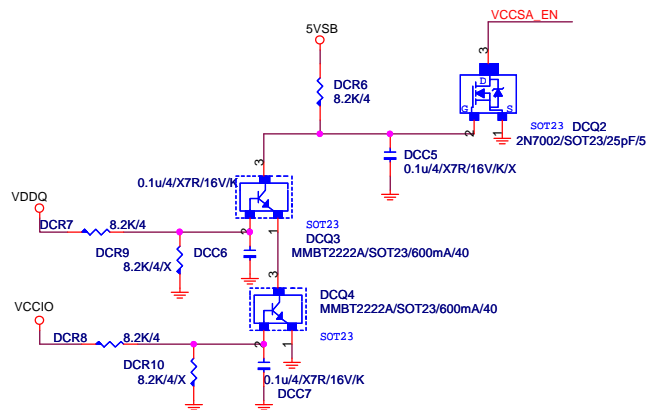
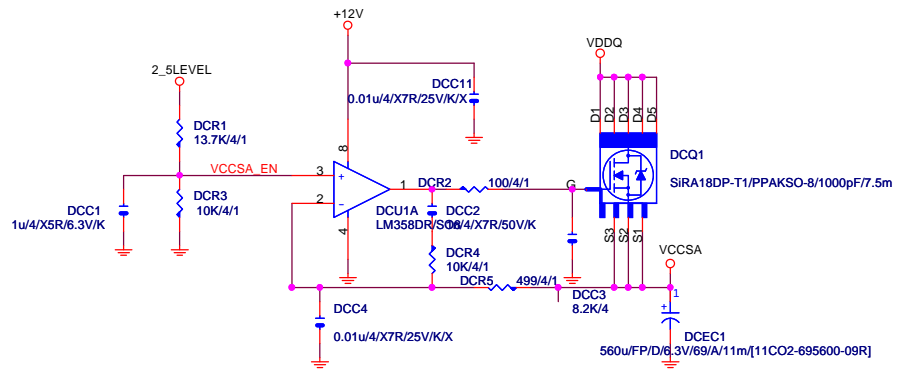
VCCGT



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

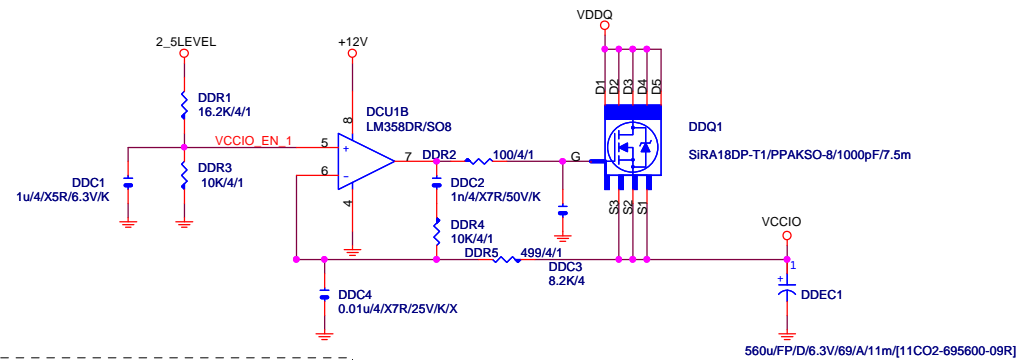
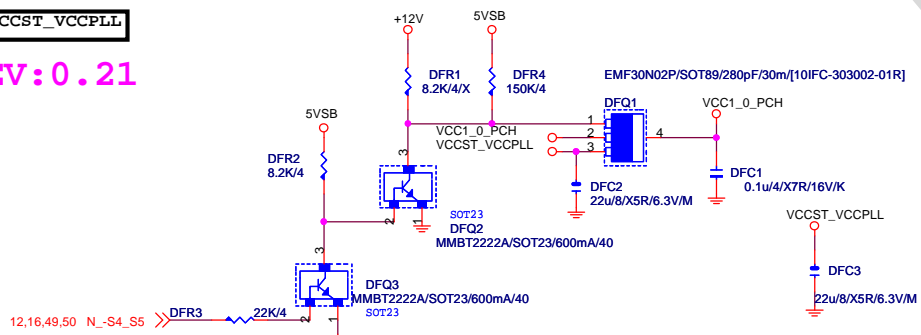


REV: 0.4




VCCST_VCCPLL

REV:0.21

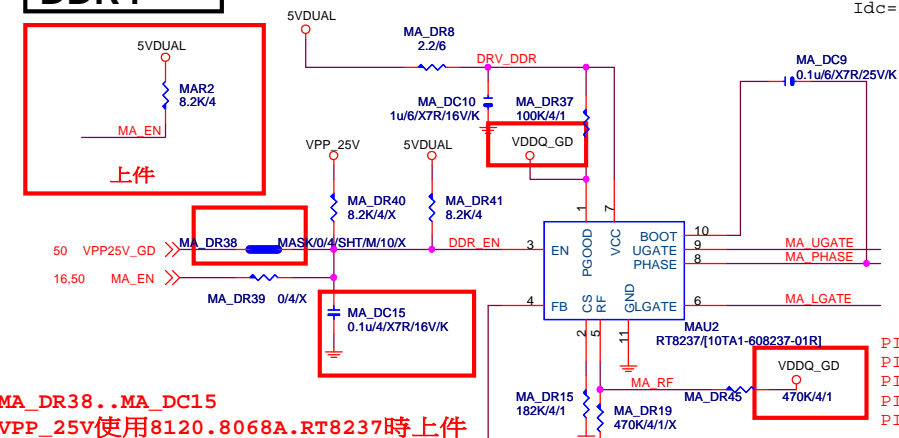


VCCIO_EN_1 DDR10 0/4 VCCIO_EN 16

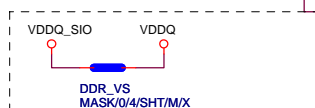
Connect to IT8620

			
Title			
VCCSA_VCCIO			
Size	Document Number		Rev
Custom	GA-H110-D3A		1.0
Date:	Friday, June 09, 2017	Sheet	27 of 50

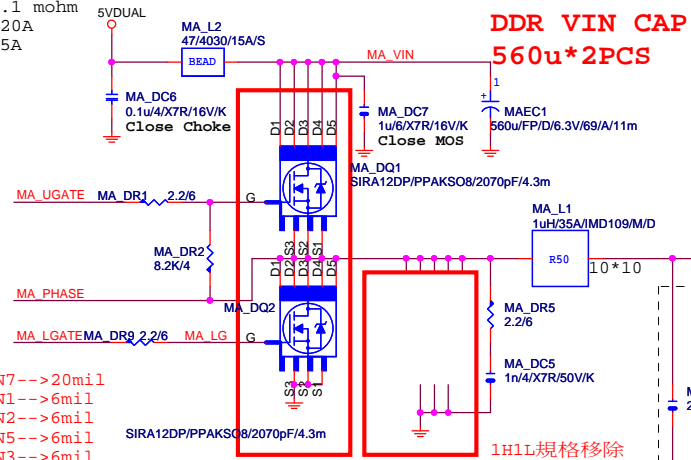
DDR4



MA_DR38..MA_DC15
VPP_25V使用8120.8068A.RT8237時上件



L=0.5u
DCR=2.1 mohm
Isat=20A
Idc=15A



CHOKES與CAP料號可變

DDR VIN CAP
560u*2PCS

SUPPORT DDR4

1.2V

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

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

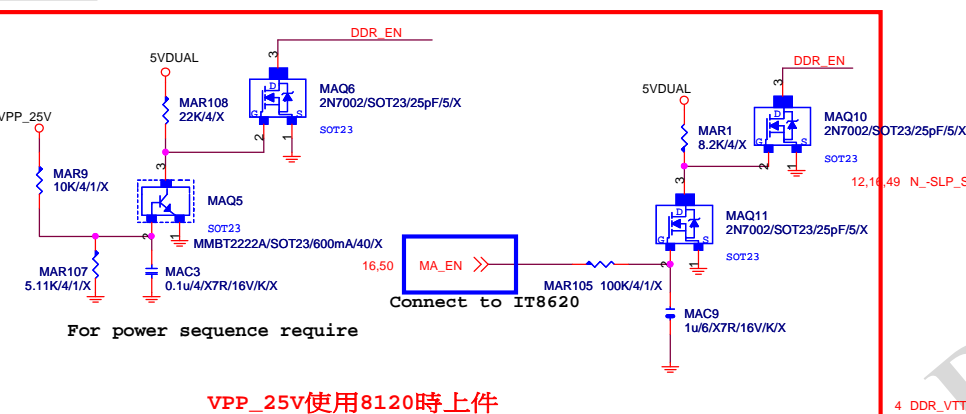
Remote sense請從最重的負載端點拉回

BB-10 2-11/11/12

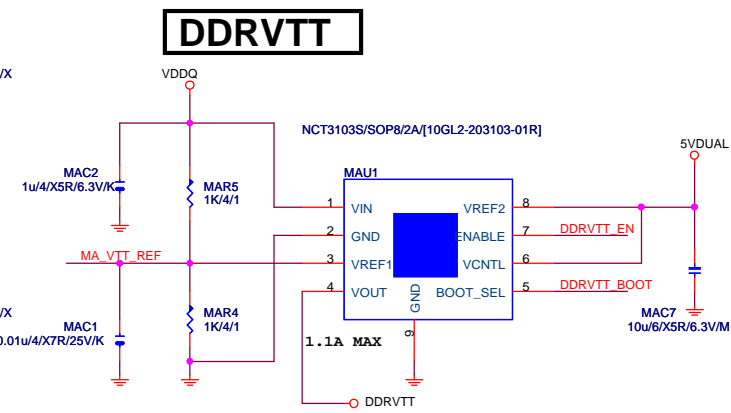
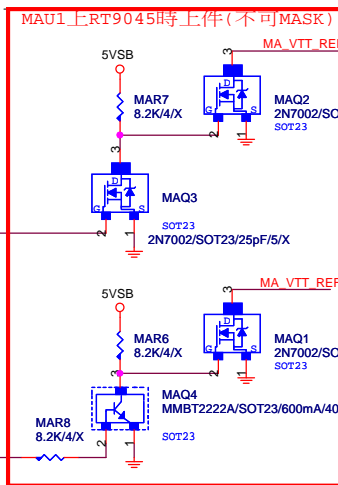
MA DR46 9.1K/4/1

MA_DR22 26.1K/4

CLOSE TO DDR POWER PLANE



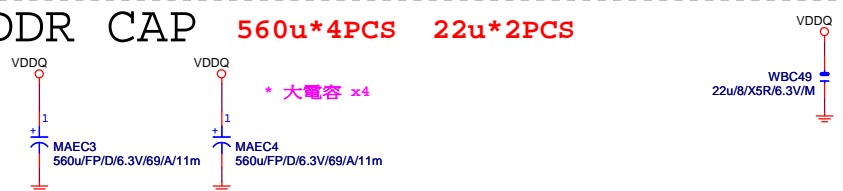
VPP_25V使用8120時上件



DDR_VTT_CTL	MAR110	0/4	DDRVTT_EN
N_SLP_S3	MAR111	0/4	DDRVTT_BOOT

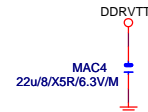
MAU1上NCT3103S時上件(不可以改short pad)

DDRVTT CAP



* 大電容 x4

* 大電容 x0

**GIGABYTE™**

RT8237_DDR4 POWER

Size	Document Number
Custom	GA-H110-D3A

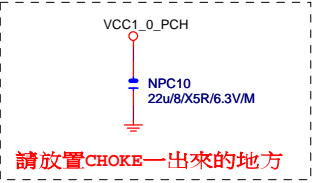
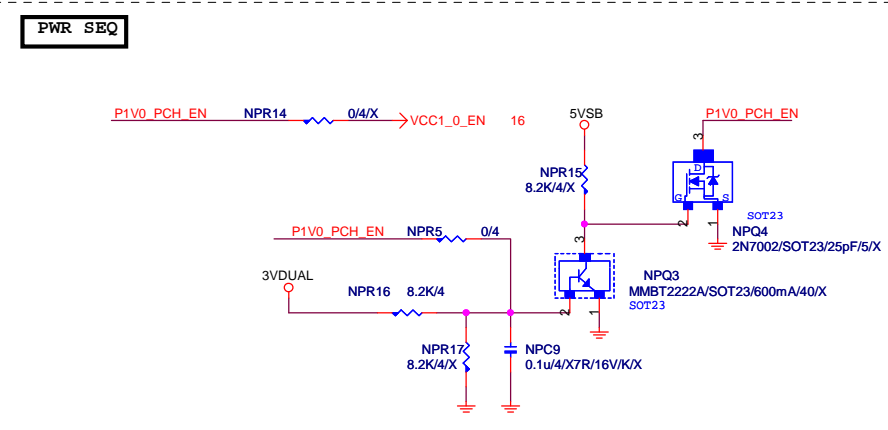
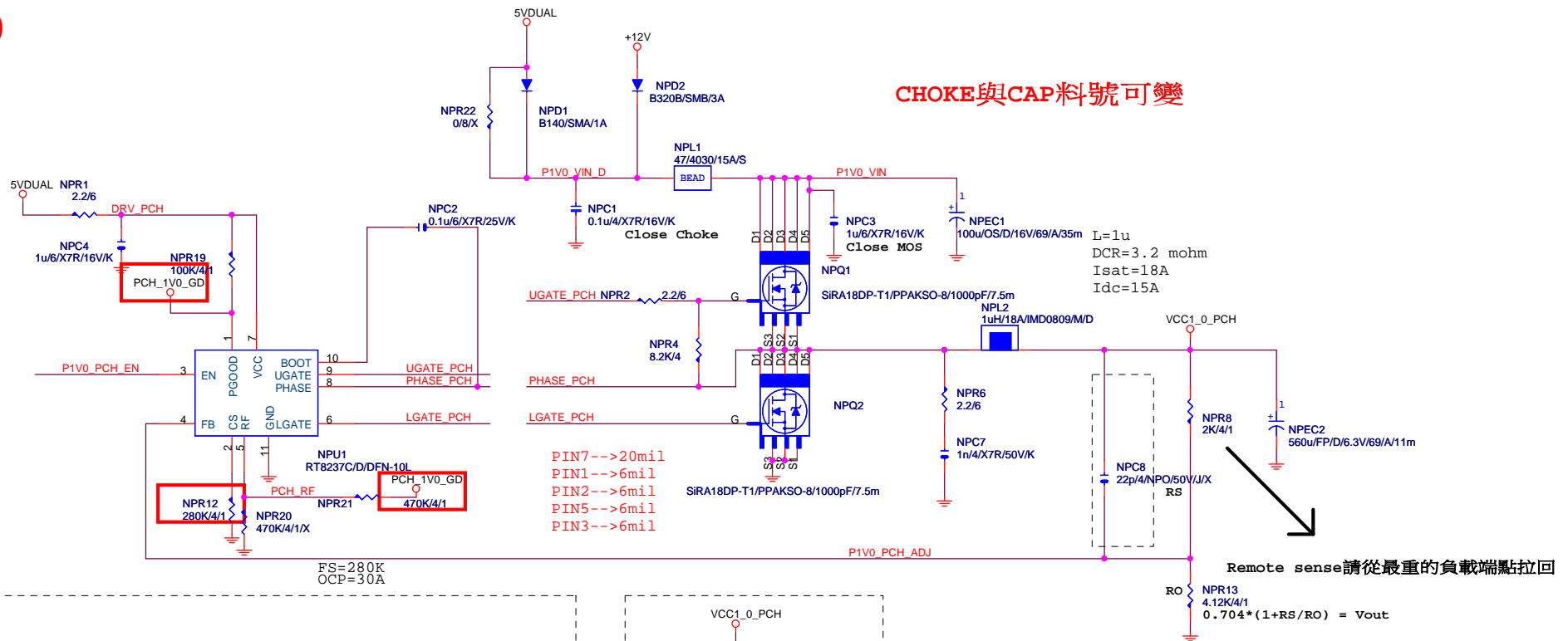
Date: Friday, June 09, 2017

2

Sheet 28 of 50

1

REV:0.50

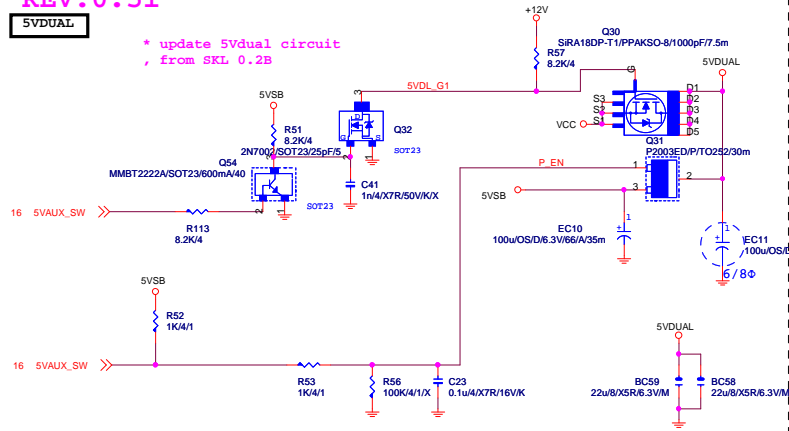


GIGABYTE™			
Title			
RT8237_PCH POWER			
Size	Document Number	Rev	
Custom	GA-H110-D3A	1.0	
Date:	Friday, June 09, 2017	Sheet	29 of 50

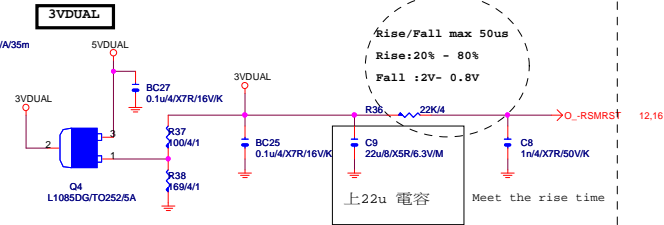
REV:0.51

5VDUAL

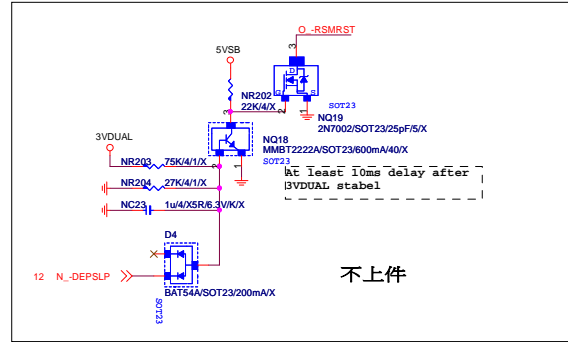
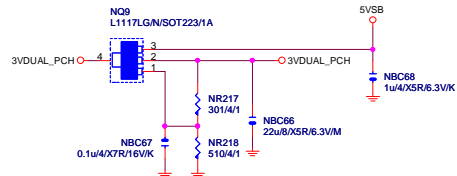
* update 5Vdual circuit
, from SKL 0.2B



3VDUAL



3VDUAL_PCH

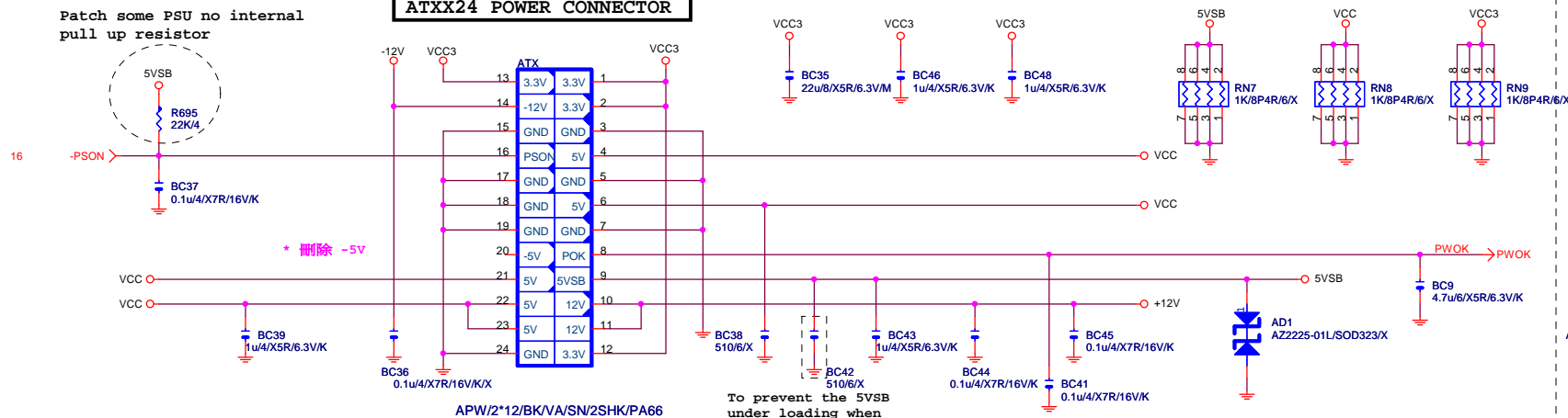


不上件

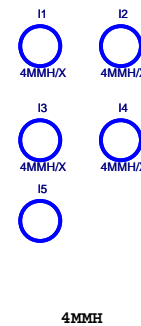
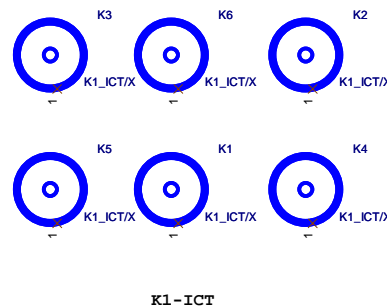
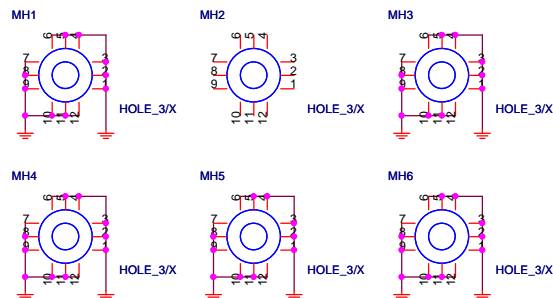
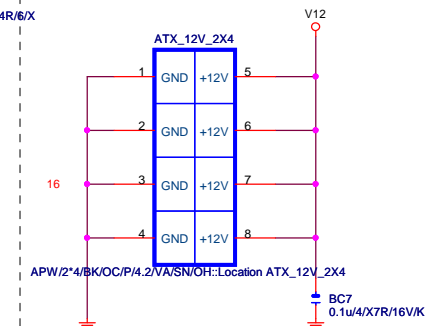
Gigabyte Technology

Title		
DISCRETE POWER		
Size	Document Number	Rev
Custom	GA-H110-D3A	1.0
Date:	Friday, June 09, 2017	Sheet 30 of 50

ATXX24 POWER CONNECTOR

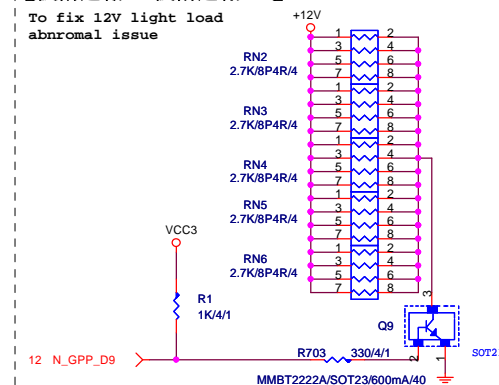


ATXX4 POWER CONNECTOR



【技術通報R&D技術通報153】

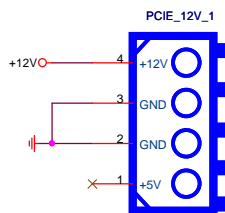
To fix 12V light load abnormal issue



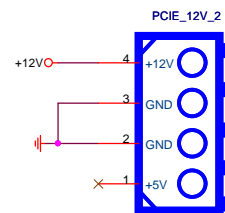
-PROHOT



COUPON



APW/1*4/BK/OC/P/5.08VA/SN/OH



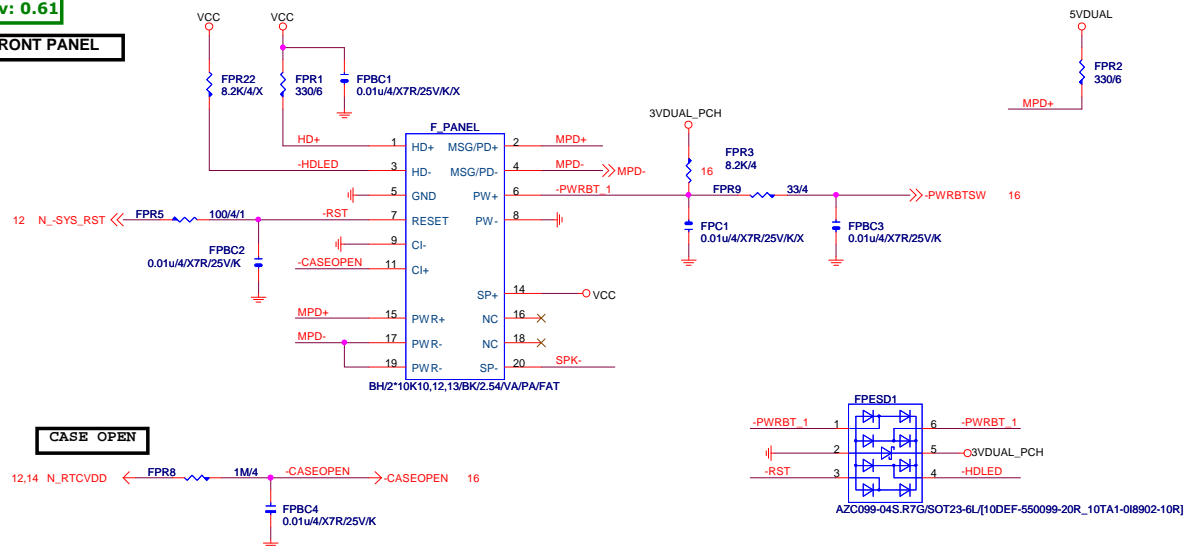
APW/1*4/BK/OC/P/5.08VA/SN/OH

Gigabyte Technology

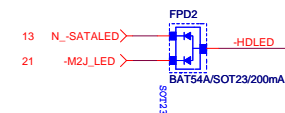
Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-H110-D3A	1.0
Date:	Friday, June 09, 2017	Sheet 31 of 50



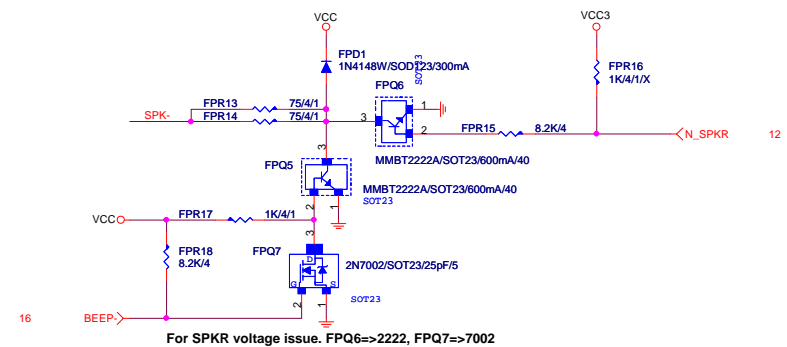
FRONT PANEL



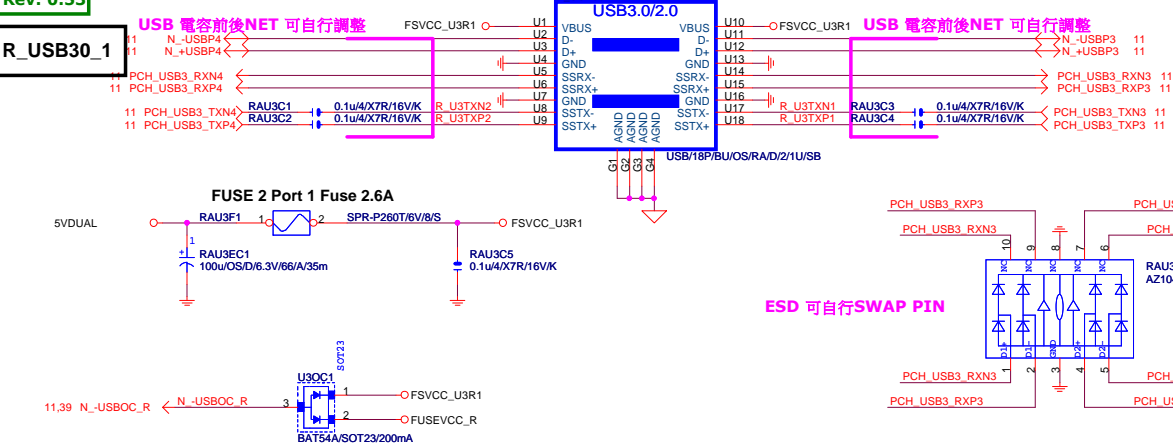
SATA LED



SPKR

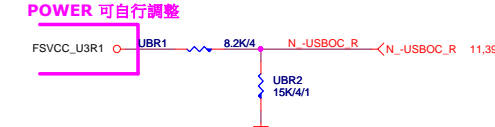


R_USB30_1

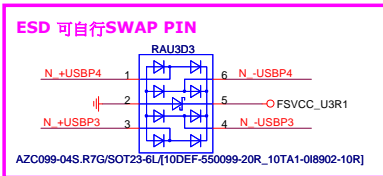


R_USB30_2

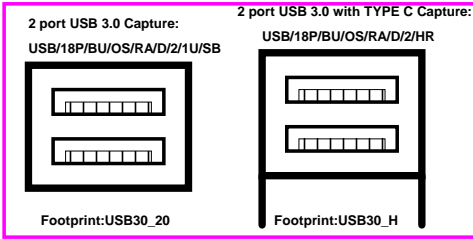
-USBOC_R

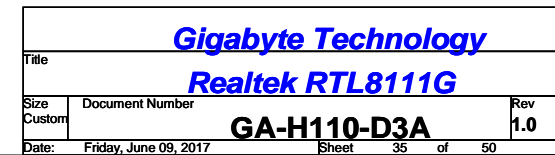


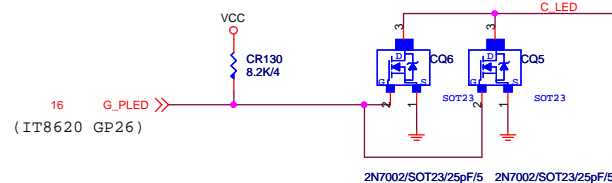
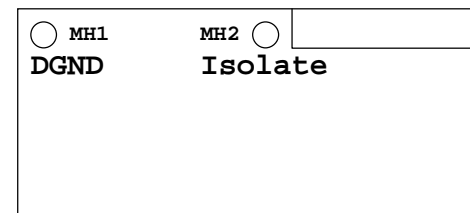
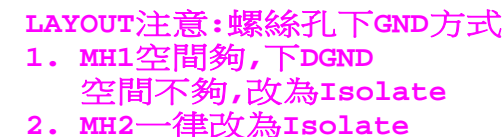
KB_MS_USB3



CONNECTOR 自行調整





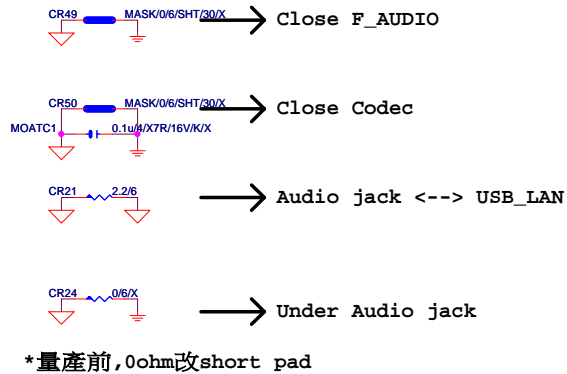


BOM OPTION : 1. Chemicon音效電容
2. 金屬外罩 Reserve (上件與否,依照各Model spec)
3. LED Reserve (上件與否和LED顏色,依照各Model spec)

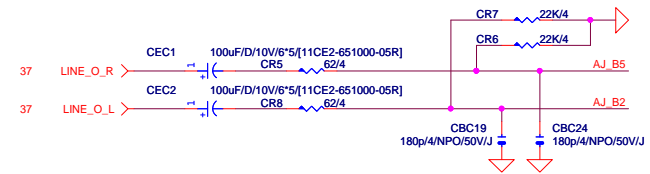
LAYOUT注意:要加
GND切割線

音效區域印刷

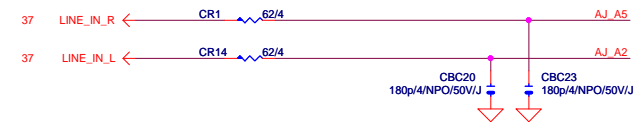
Rev 0.5



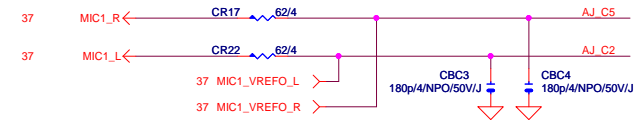
LINE-OUT



LINE-IN



MIC-IN

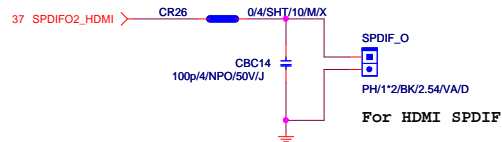


SURROUND

CEN/LFE

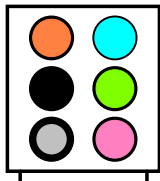
SURR BACK

SPDIF_OUT

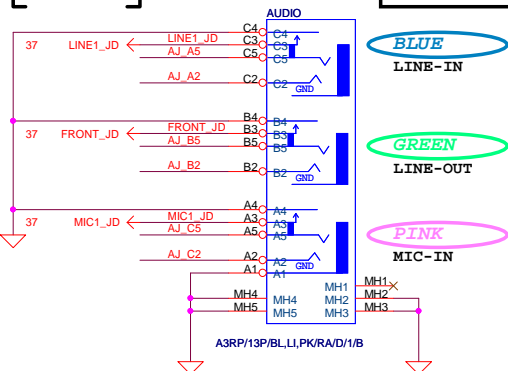


SPDIF_IN

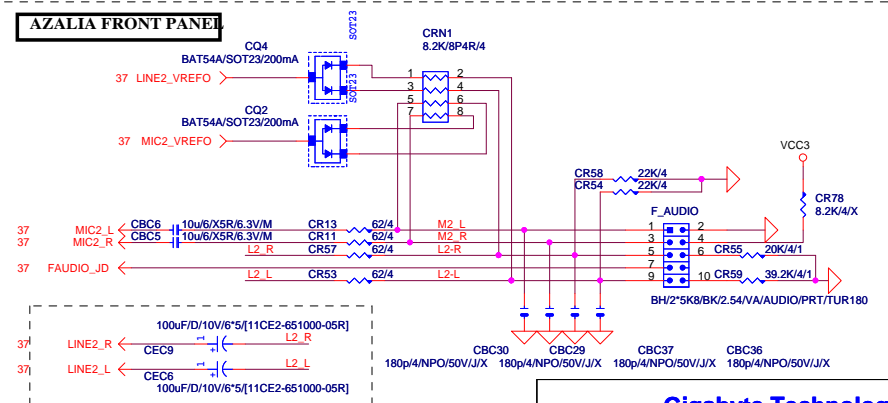
AZALIA JACK



AZALIA JACK



AZALIA FRONT PANEL



Gigabyte Technology

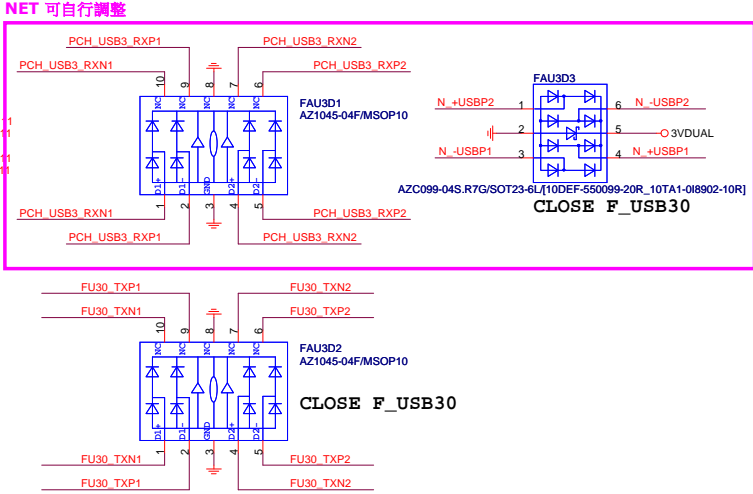
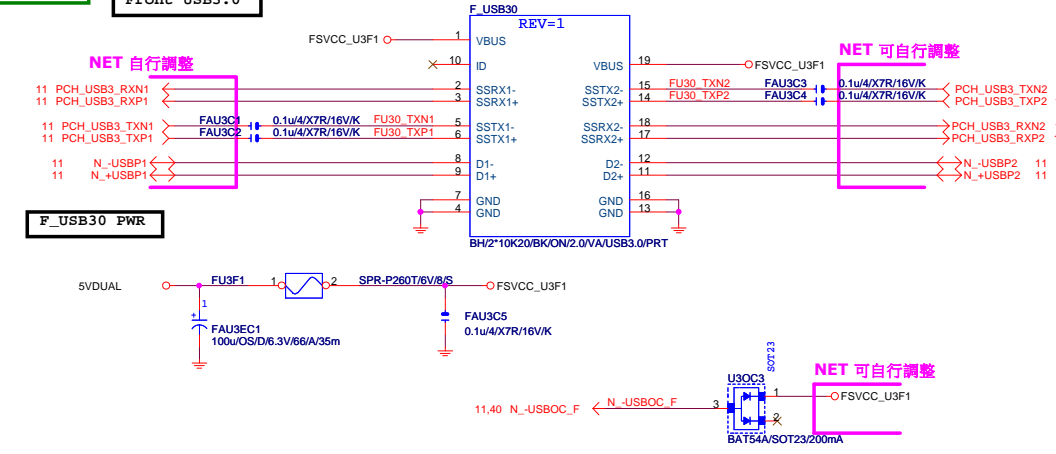
AUDIO JACK

GA-H110-D3A

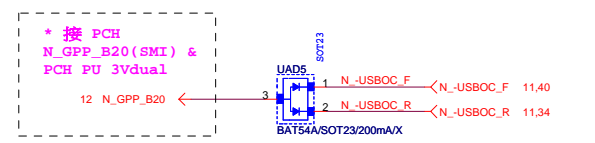
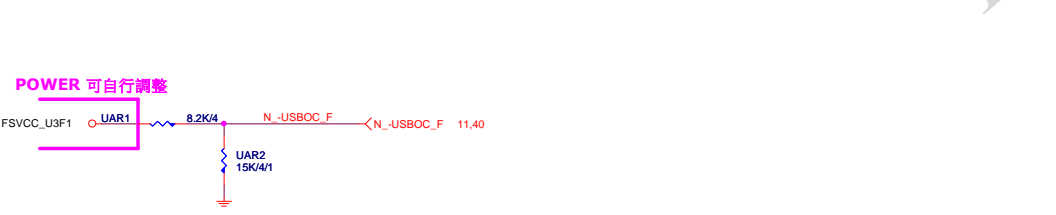
Rev 1.0

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Front USB3.0

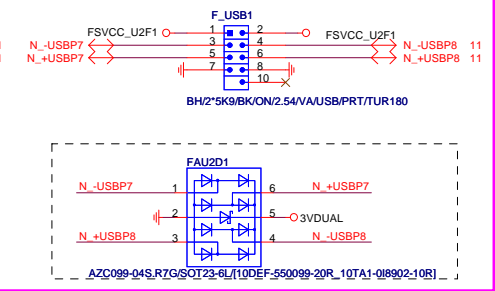


-USBOC_F

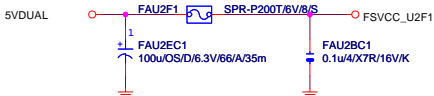


FRONT USB1

NET 可變

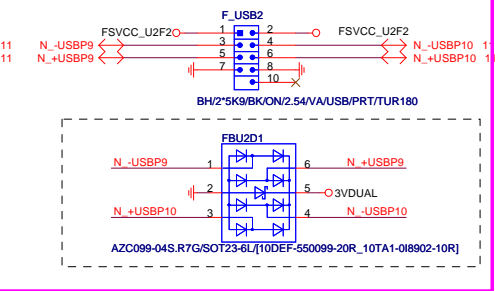


Close to connector
FUSE 2 Port 1 Fuse 2A

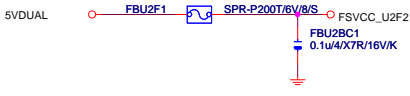


FRONT USB2

NET 可變



Close to connector
FUSE 2 Port 1 Fuse 2A



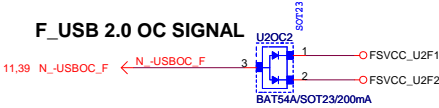
FRONT USB3

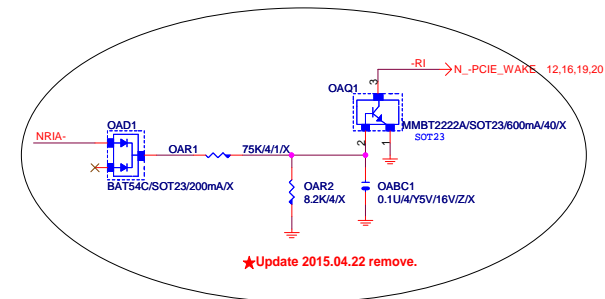
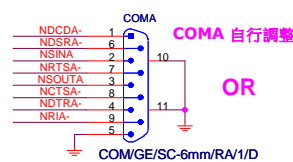
FRONT USB4

REAR USB1

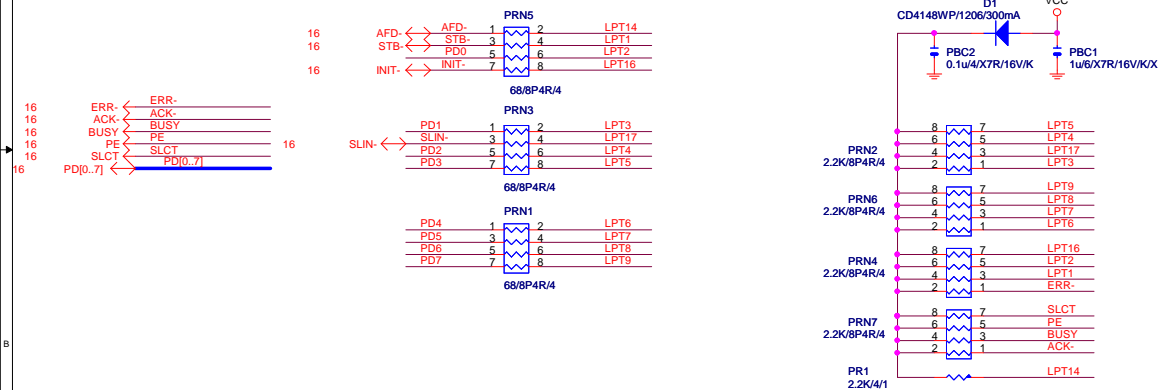
REAR USB2

F_USB 2.0 OC SIGNAL

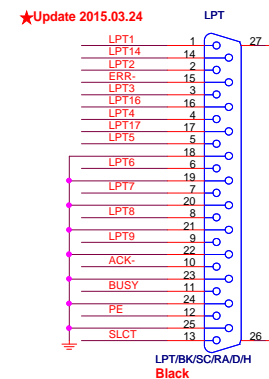




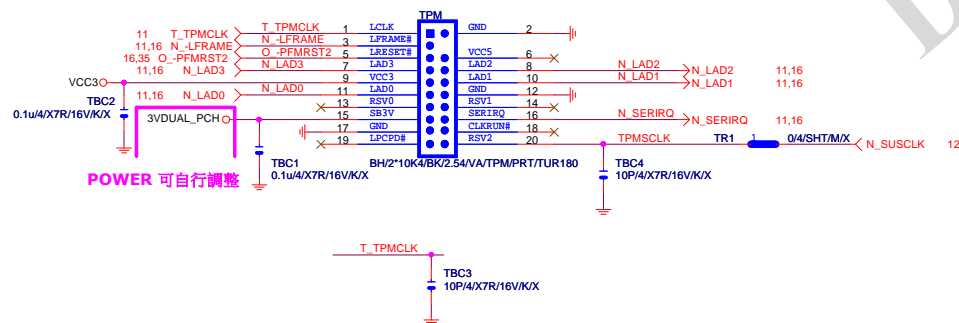
LPT PORT



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

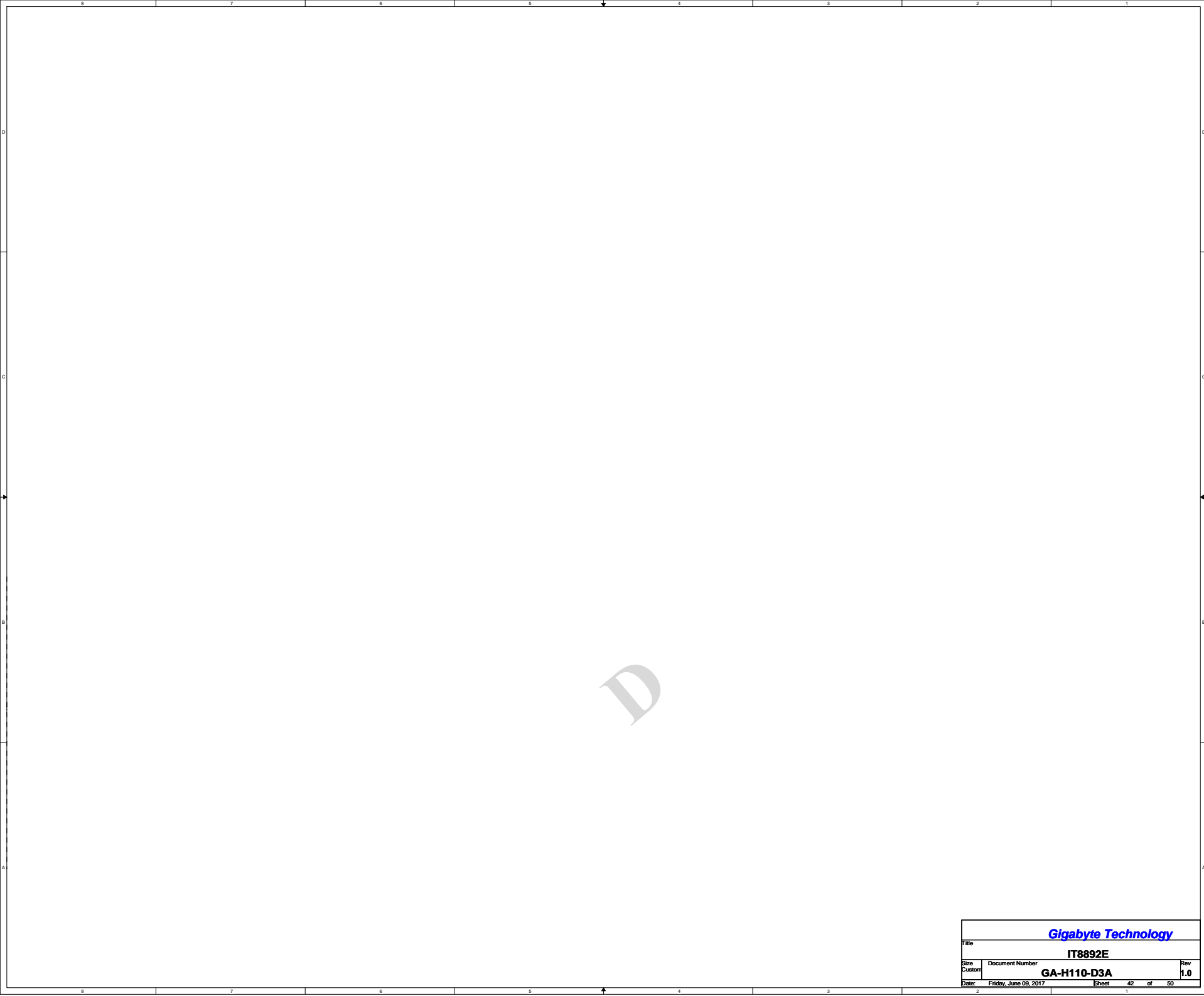


TPM CONNECTOR



Thunderbolt

BIOS PH



Gigabyte Technology			
File		IT8892E	
Size	Document Number	Rev	
Custom	GA-H110-D3A	1.0	
Date:	Friday, June 09, 2017	Sheet	42 of 50

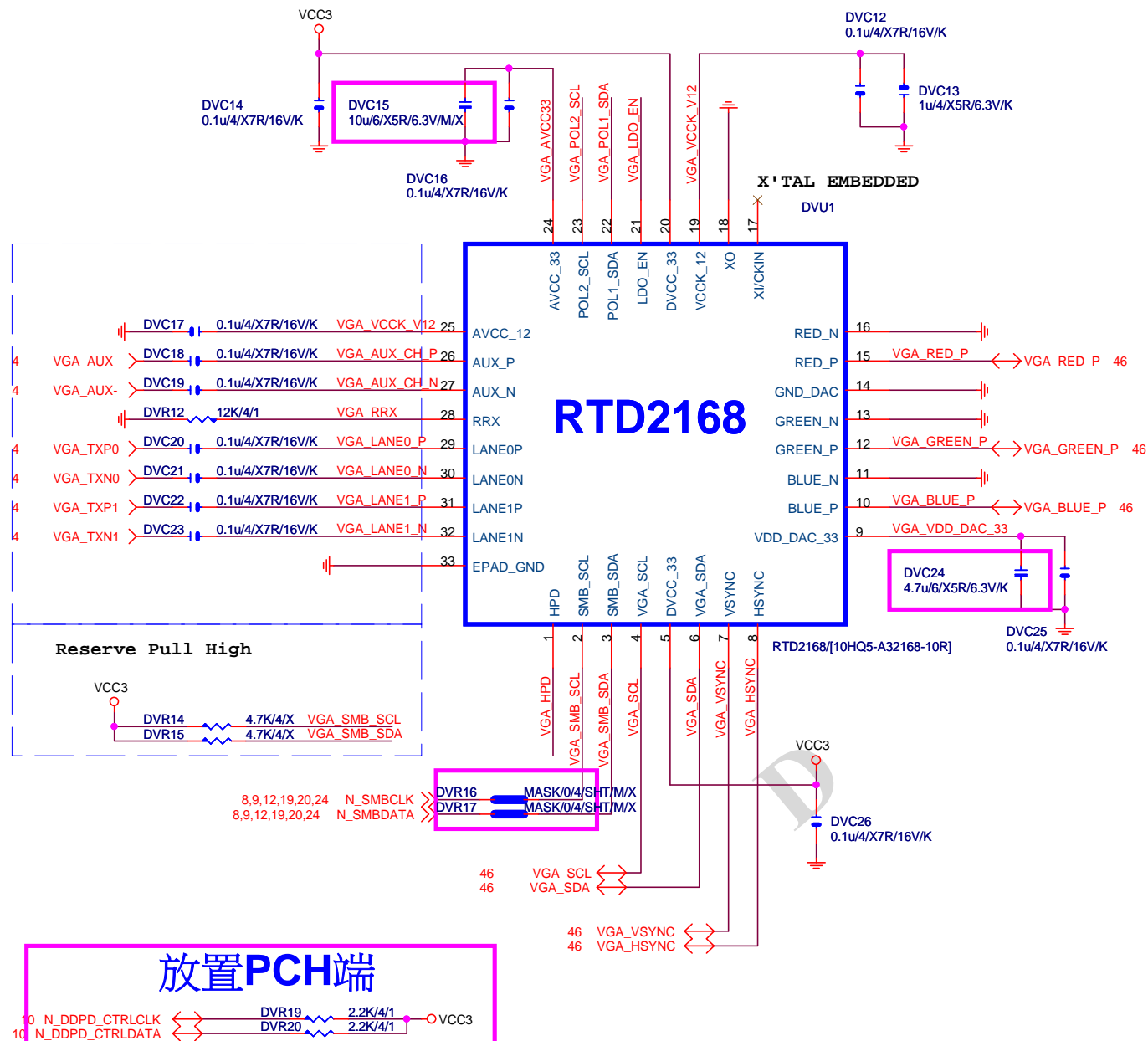
Rev 0.1



Gigabyte Technology			
Title			
ASM1085 POWER			
Size	Document Number		Rev
Custom	GA-H110-D3A		1.0
Date:	Friday, June 09, 2017		Sheet 43 of 50



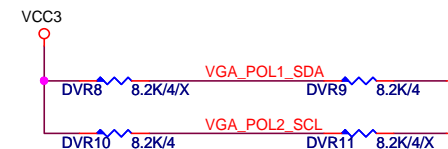
GIGABYTE™		
Title		
PCI SLOT 1&2&3		
Size	Document Number	Rev
C	GA-H110-D3A	1.0
Date:	Friday, June 09, 2017	Sheet 44 of 50



POWER

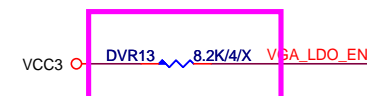


Power on latch



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

Embedded LDO

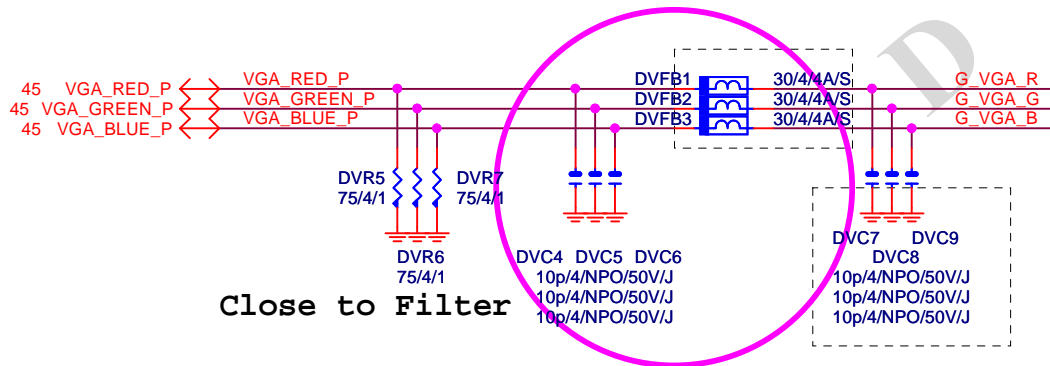
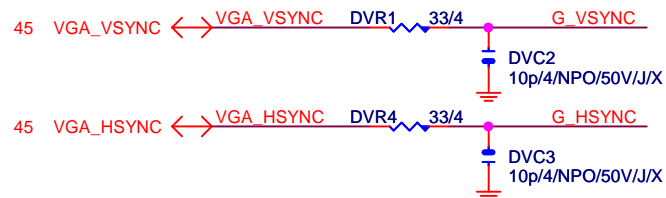
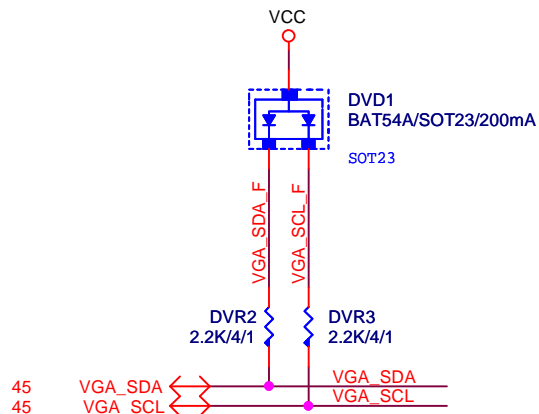


LDO_EN(PIN21)	
0	1
VCCK_V12 from External 1.2V	VCCK_V12 from Embedded LDO

DP HPD



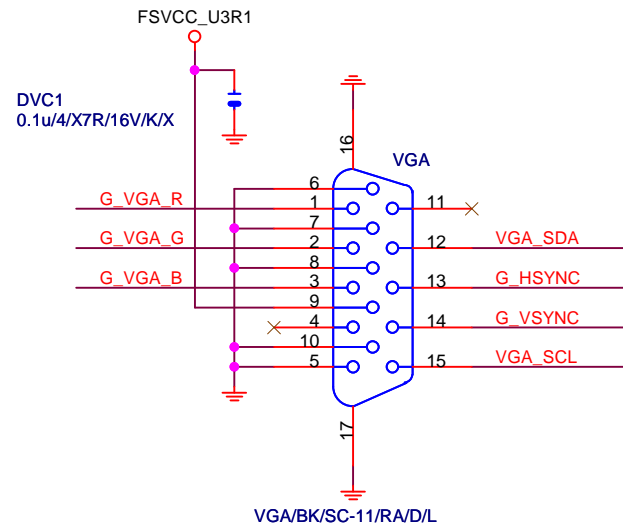
VGA SIGNAL R1.03



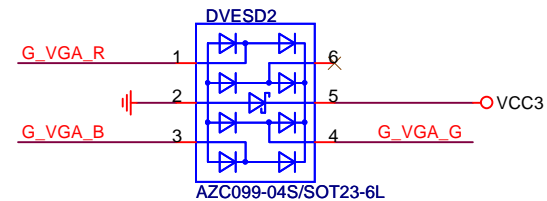
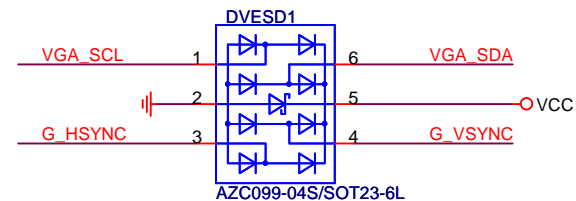
Close to Filter

FOR EMI

VGA CONN.



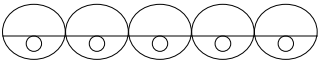
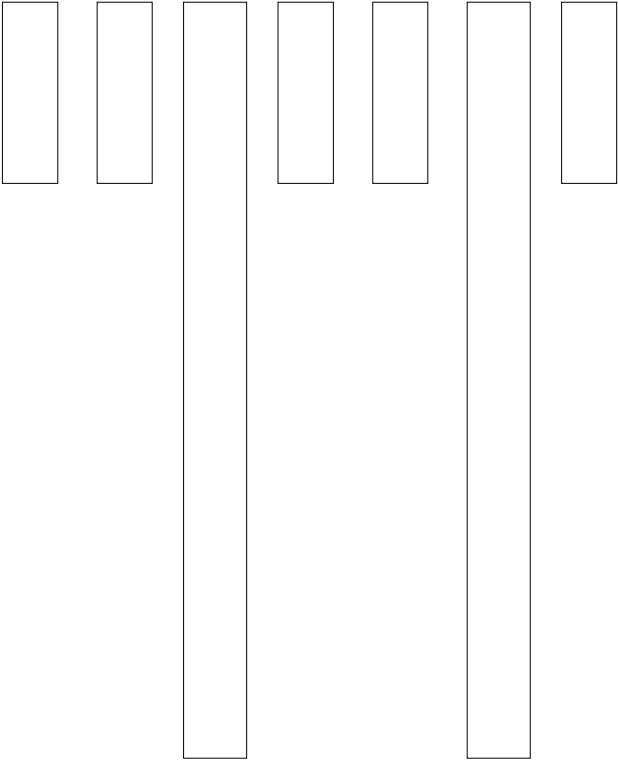
VGA ESD



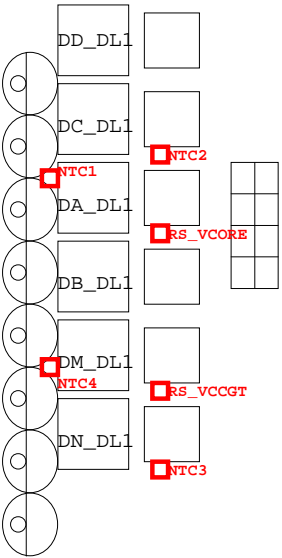
Gigabyte Technology			
Title DP-VGA RTD2168			
Size Custom	Document Number GA-H110-D3A		Rev 1.0
Date: Friday, June 09, 2017	Sheet 46	of 50	

SIO

rs_sys

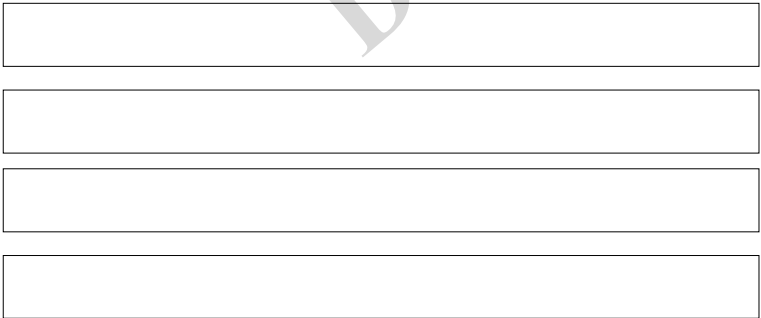


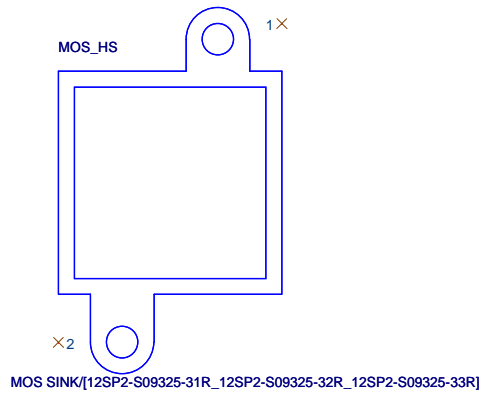
CPU



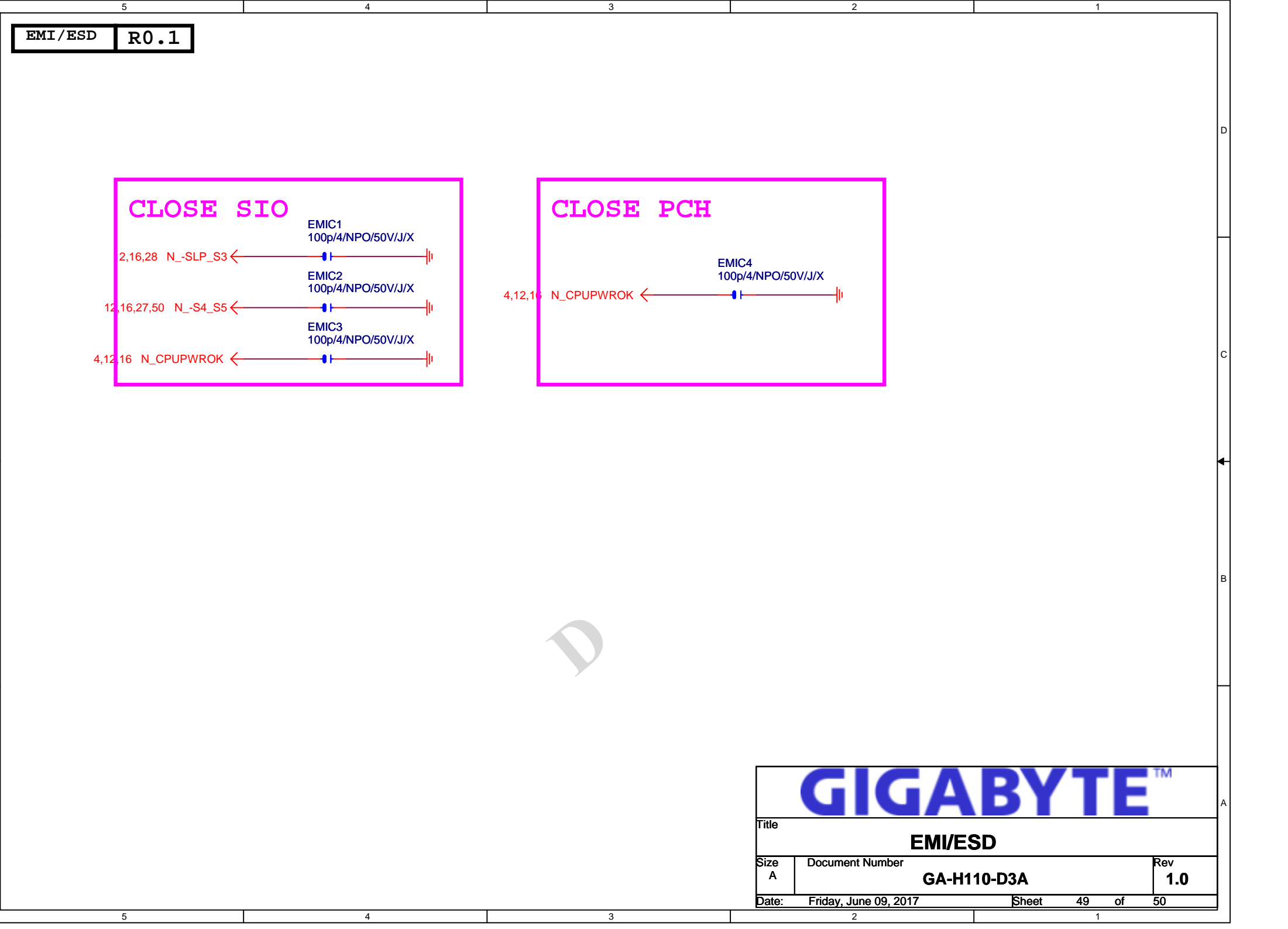
rs_pch

PCH





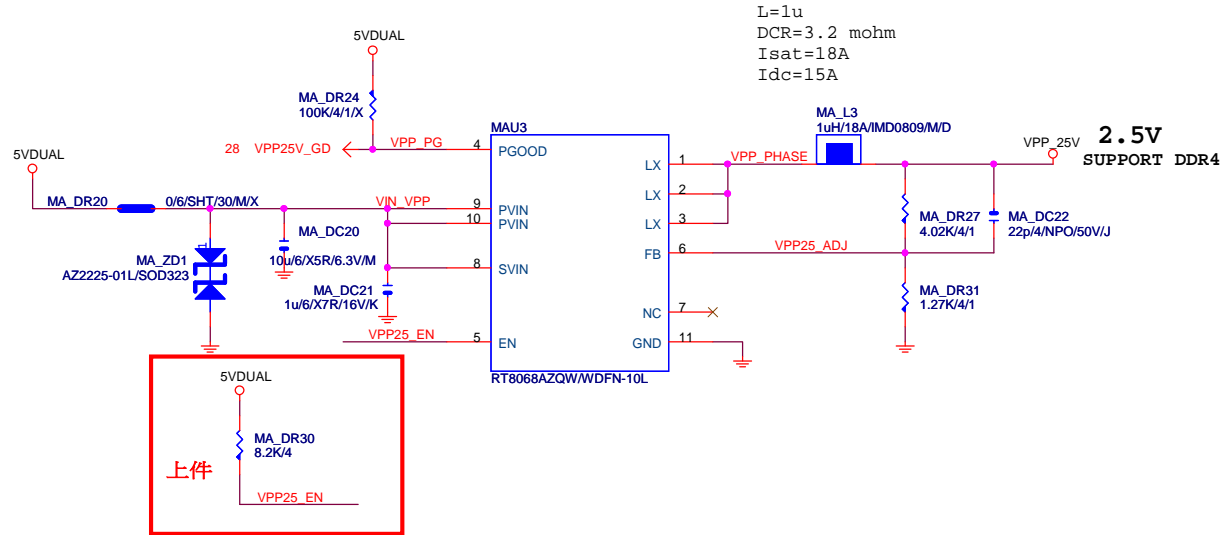
GIGABYTE™			
TitleHeatsink			
SizeCustom	Document NumberGA-H110-D3A		Rev1.0
Date:	Friday, June 09, 2017	Sheet1	48 of 50



REV:0.4

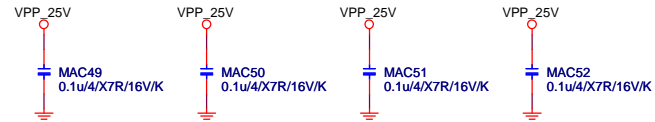
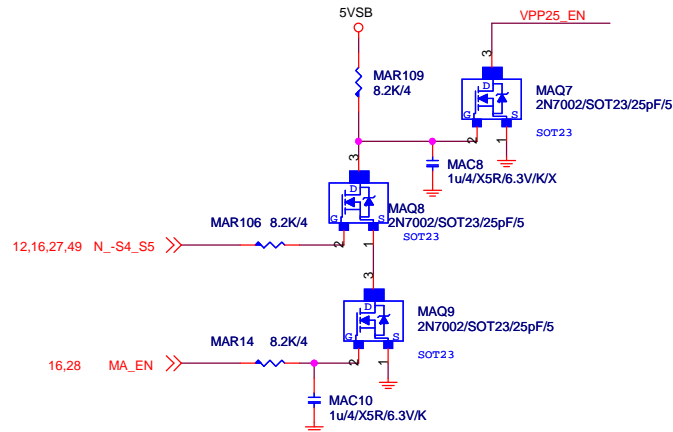
VPP_25V

CHOKE與CAP料號可變



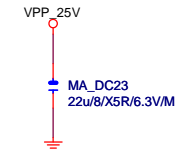
PWR_SEQ

* 刪 MA_DR32



VPP CAP 22u*1PCS

* 大電容 x0



GIGABYTE™

Title		
RT8068A_VPP25 POWER		
Size	Document Number	Rev
Custom	GA-H110-D3A	1.0
Date:	Friday, June 09, 2017	Sheet 50 of 50