

Model Name: GA-Q170M-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	BIOS
16	ITE 8628 LPC IO
17	HWM
18	FAN CTRL--SIO
19	PCI EXPRESS*16 SLOT
20	PCI EXPRESS*4 SLOT(PCH)
21	PCI EXPRESS*1 SLOT
22	M.2X4
23	SATA EXPRESS
24	ASM1083 PCI BRIDGE
25	ASM1083 POWER
26	PCI SLOT 1
27	ISL95858 PWM-IRON
28	ISL95858 MOS_VCORE-IRON
29	ISL95858 MOS_VCCGT-IRON

SHEET

TITLE

30	VCCSA_VCCIO_VCCPLL
31	RT8120_DDR_VDDQ
32	RT8120_VPP25 POWER
33	RT8120_PCH-CHOKE
34	DISCRETE POWER
35	NCT3933
36	ATX POWER , A_-PROCHOT
37	KB_MS
38	DVI CONN
39	PTN3356 - DP to VGA - IC
40	PTN3356 - DP to VGA - Conn
41	HDMI CONN
42	Display Port
43	R_USB30x4
44	INTEL I219
45	USB LAN CONNECTOR-I219
46	Realtek ALC887
47	MONO SPKR
48	REAR AUDIO JACK
49	F_USB30
50	F_USB
51	COM , LPT , TPM , DEBUG
52	FP,SPK,BZ
53	EMI-ESD
54	POWER MAP
55	POWER零件使用表
56	TABLE LIST
57	NTC MAP

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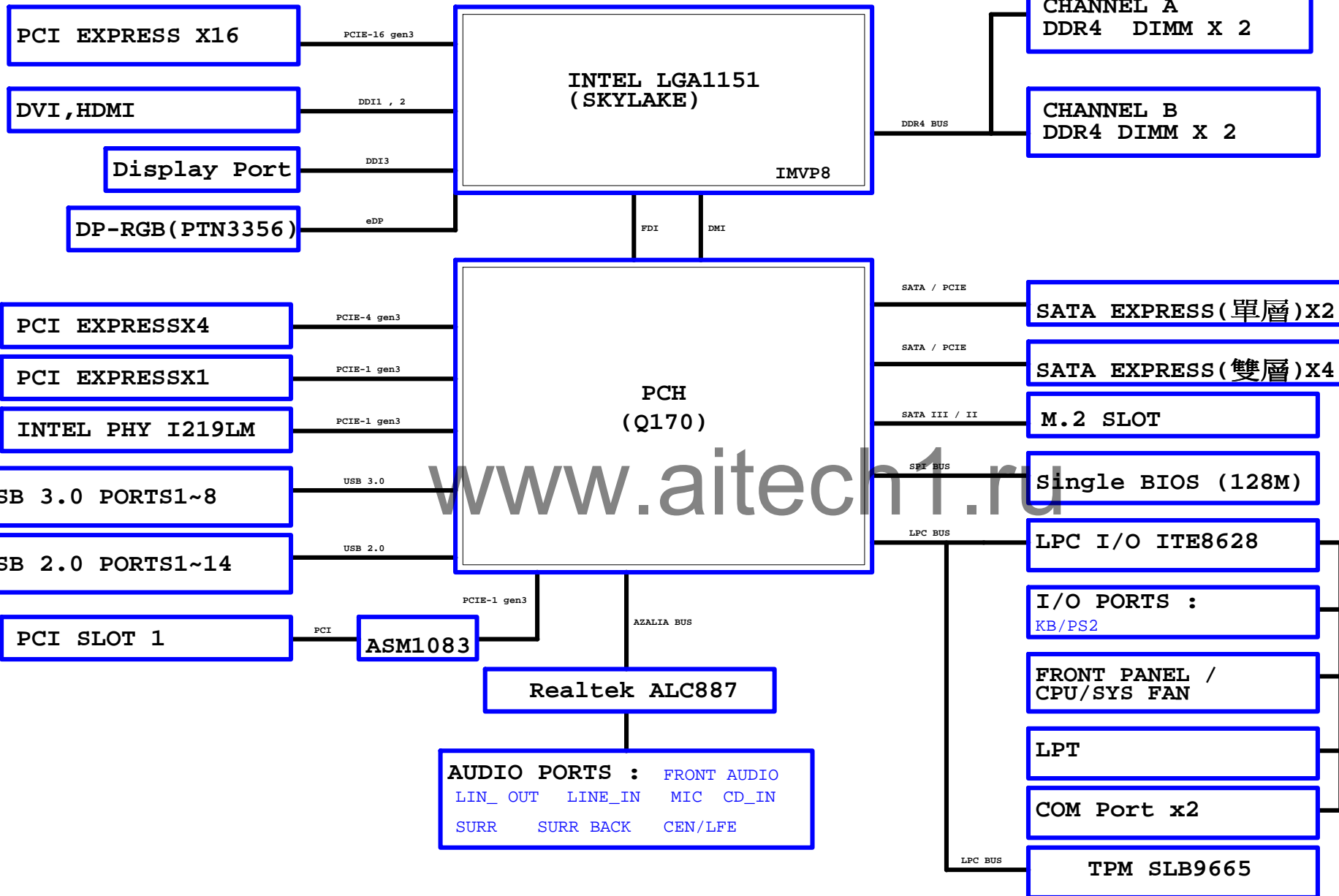
Title		
Cover Sheet		
Size	Document Number	Rev
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Component value change history

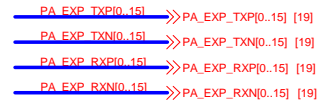
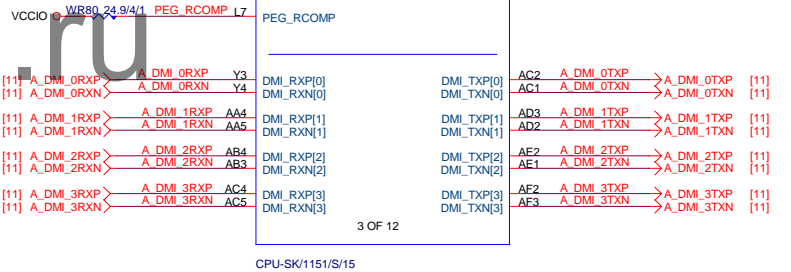
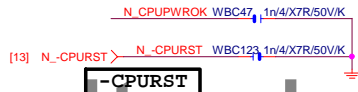
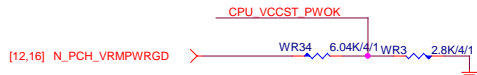
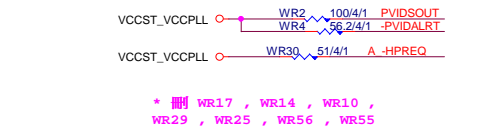
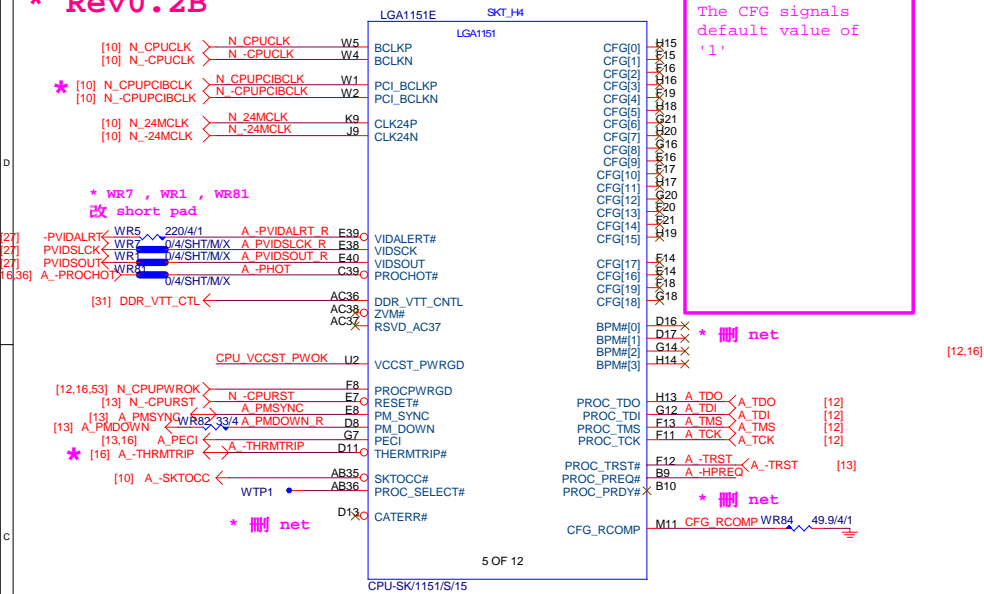
Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM



*** Rev0.2B**



```
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
```

IOF 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

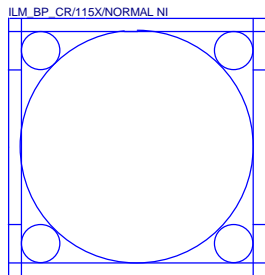
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Title			
CPU LGA1151-A			
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```
G-15u : (CPU-SK/1151/S/15)
10SC1-F01151-11R / 10SC1-F01151-12R
G-FL : (CPU-SK/1151/S/GF)
10SC1-F01151-21R / 10SC1-F01151-22R
```

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

Impedance=85 +- 15%

* 改DDR4 net



Need check the new CPU ME



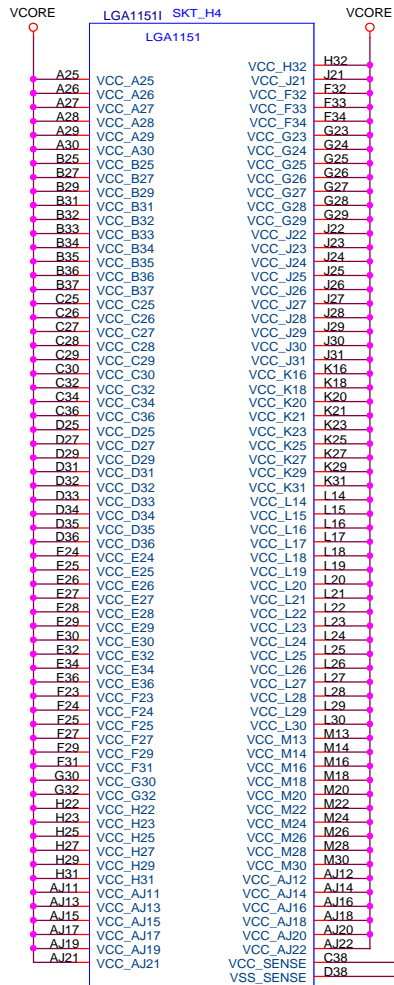
- [8] MODT_A[0..3] <=> MODT_A10..31
- [9] MODT_B[0..3] <=> MODT_B10..31
- [8] MDA[0..63] <=> MDA10..631
- [9] MDB[0..63] <=> MDB10..631
- [8] M_DQSA[0..7] <=> M_DQSA10..71
- [8] M_-DQSA[0..7] <=> M_-DQSA10..71
- [8] MAA[0..16] <=> MAA10..161
- [9] MAA[0..16] <=> MAA10..161
- [9] M_DQSB[0..7] <=> M_DQSB10..71
- [9] M_-DQSB[0..7] <=> M_-DQSB10..71

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Title: **CPU LGA1151-B**

Size: Custom Document Number: **GA-Q170M-D3H** Rev: **1.0**

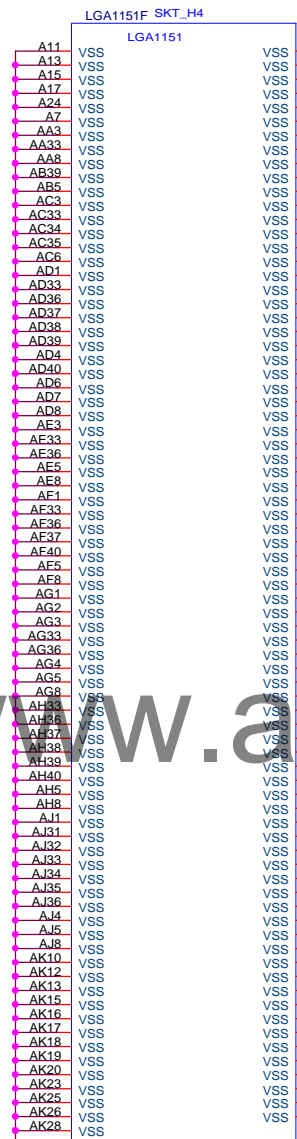
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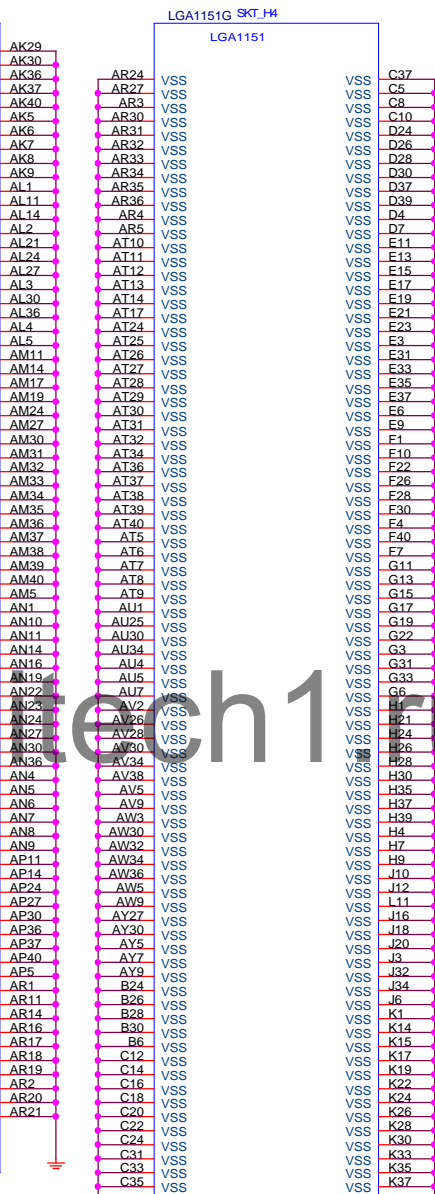
CPU-SK/1151/S/15

* 刪 Vcore 電容



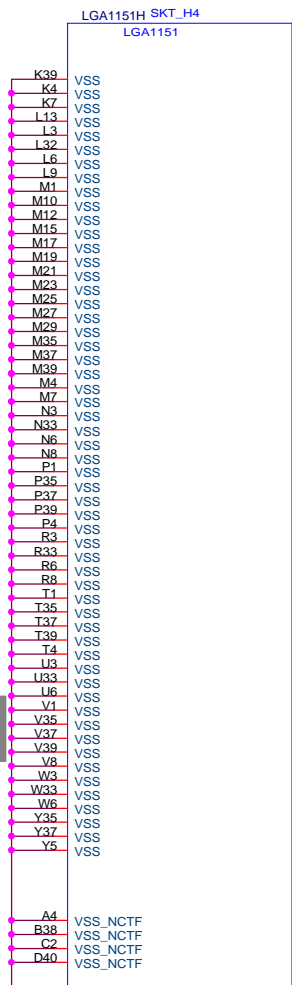
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CPU-SK/1151/S/15



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CPU-SK/1151/S/15



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CPU-SK/1151/S/15

A4 VSS_NCTF

B38 VSS_NCTF

C2 VSS_NCTF

D40 VSS_NCTF

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Title

CPU LGA1151-C

Size

Document Number

Rev

GA-Q170M-D3H

1.0

Date:

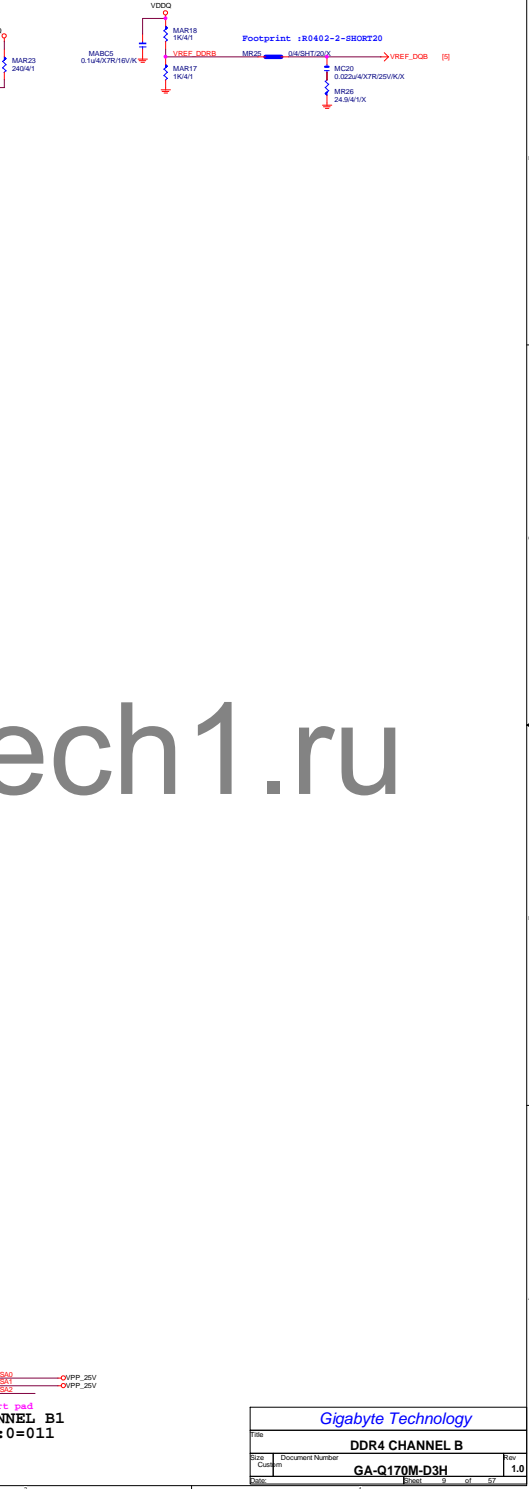
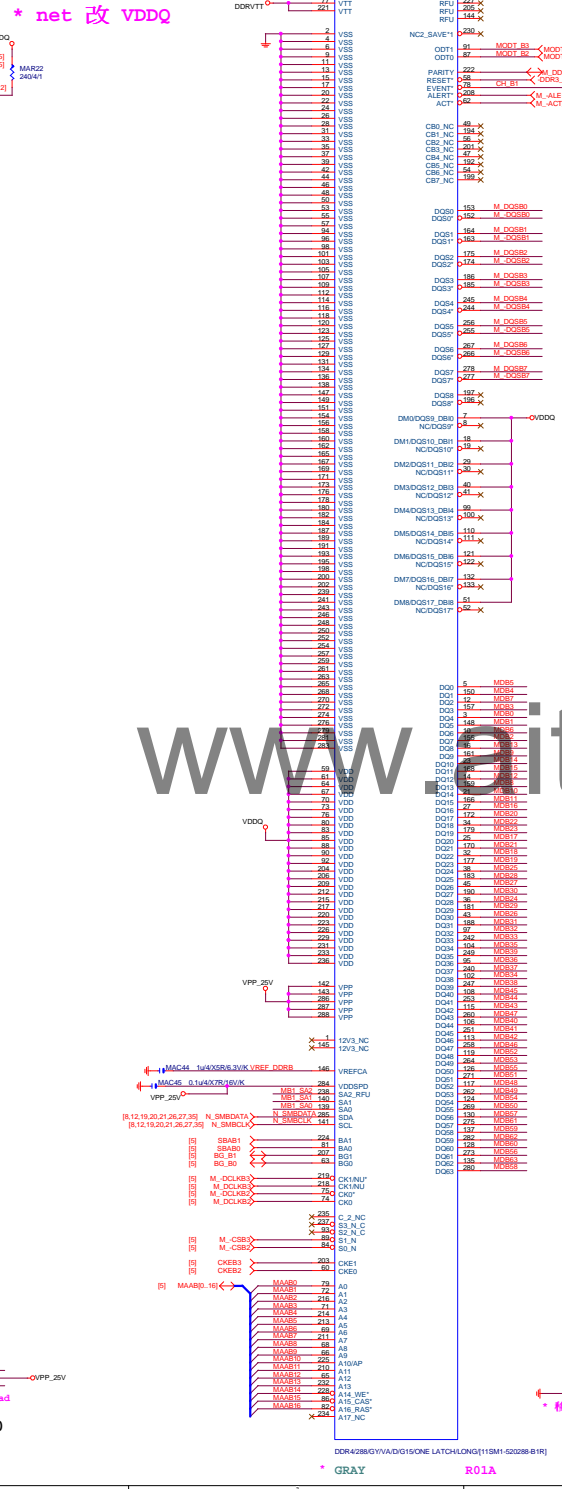
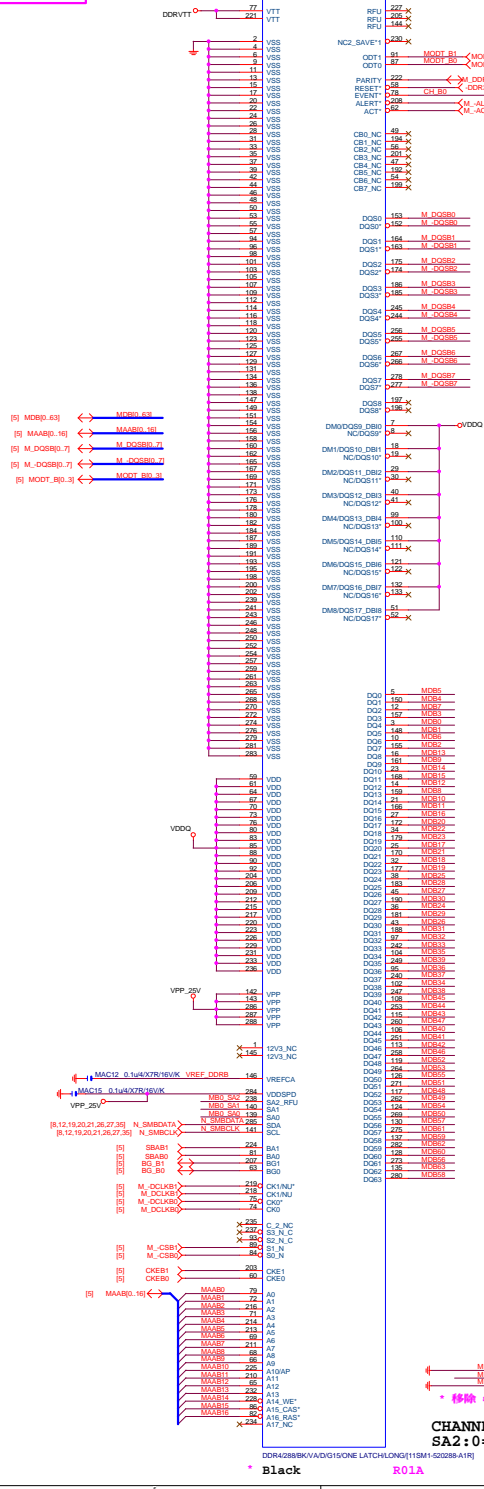
Monday, November 09, 2015

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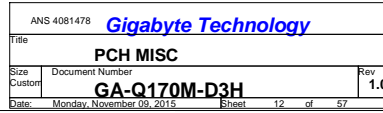




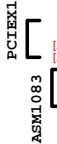
SATA 2/3

A

A

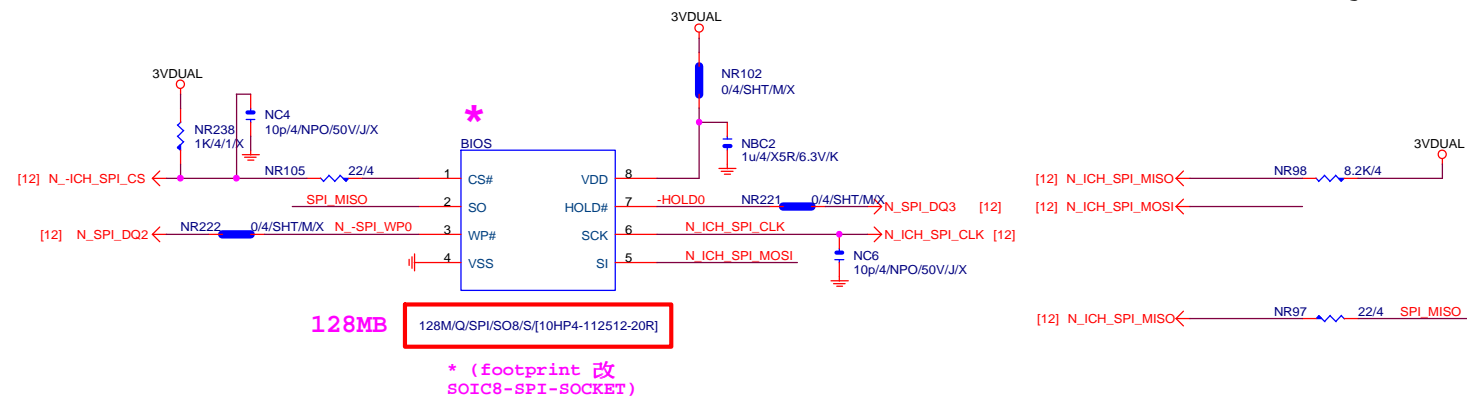


Rev 0.7



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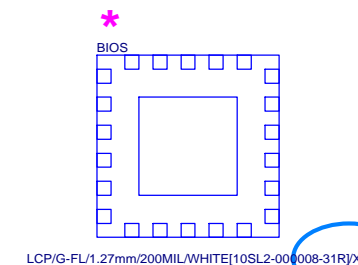




BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating
0 means PD 1K

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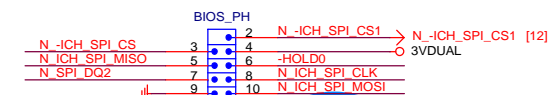


* 試産先上, PVT 移除

BIOS_PH

PVT
改FOOTPRINT 為"BIOS2X5-RH-1-MASK"

★Update
2015-01.29



Footprint the same, confirmed by Graceing.

Use COM port pin header part.

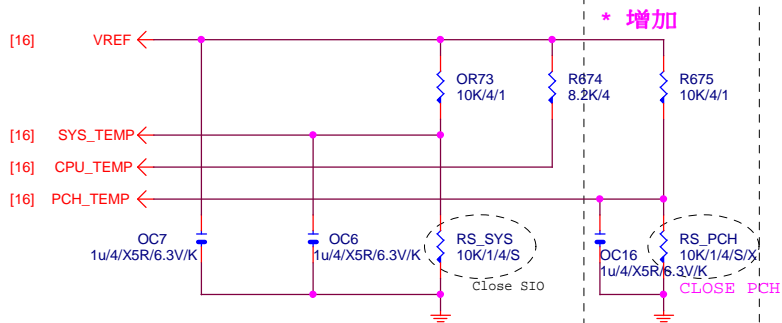
* 試産先上, PVT mask

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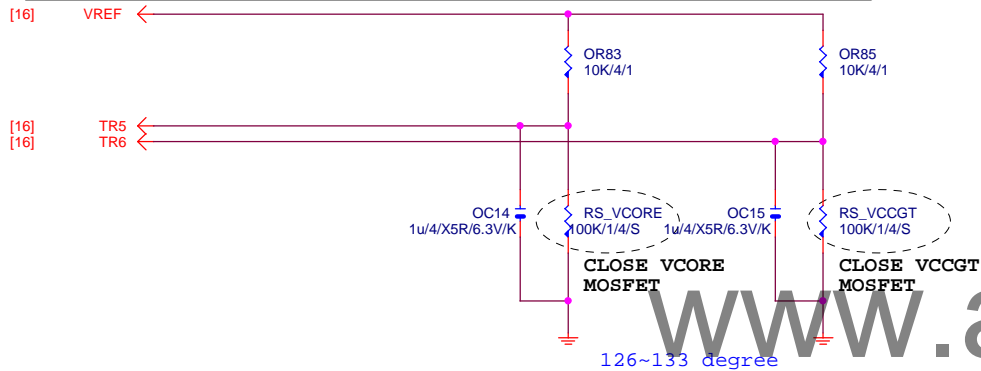
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TEMP H/W MONITOR

REV:1.08



RS_VCORE, RS_VCCGT, CLOSE CPU_VCORE & VCCGT MOSFET

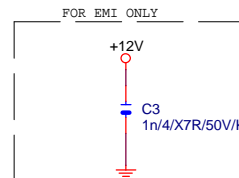
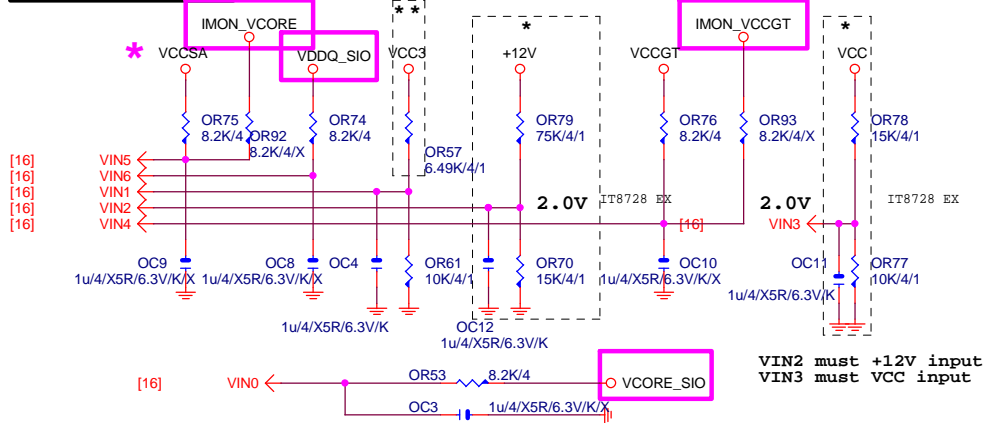
~~PROCHOT: 有mos heartsink不用prochot function~~

VOLTAGE-- H/W MONITOR

Connect to PWM

* IT8728 BX
** IT8728 CX

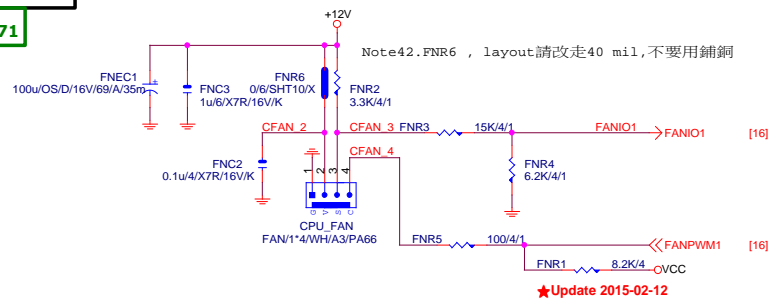
Connect to PWM



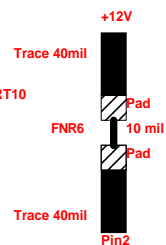
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Title					HWM,KB/MS, FAN CTRL				
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Rev: 0.71



★Update 2015-04.30 FNR6
footprint: FUSE-0603-SHORT10

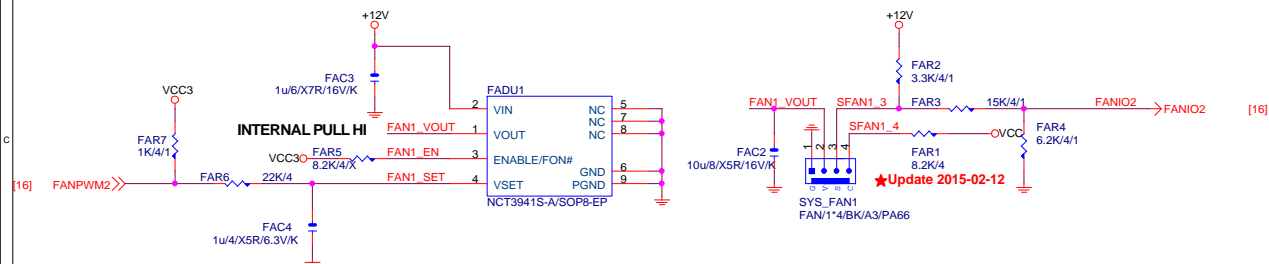


SYSTEM FAN1

Linear SYS_FAN

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

A.



SYSTEM FAN2

B.

SYSTEM FAN3

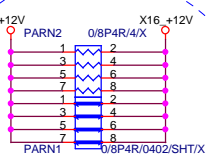
C.

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Title				
FAN CTRL				
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Rev 0.2

+12V_protect
short-wire test

PA_EXP_RXP0_15] >> PA_EXP_RXP0[0..15] [4]
 PA_EXP_RXN0_15] >> PA_EXP_RXN0[0..15] [4]
 PA_EXP_TXP0_15] >> PA_EXP_TXP0[0..15] [4]
 PA_EXP_TXN0_15] >> PA_EXP_TXN0[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

PCIEX16:16/5/5/5/16

PCI-E REV:1.1--> 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--> 5GHZ

Footprint : PCIESLOT-164P

3GIO_*16

[8,9,12,20,21,26,27,35] N_SMBCLK
[8,9,12,20,21,26,27,35] N_SMBDATA

[12,20,21,24,51] N_-PCIE_WAKE

[10] -PCIEX16_PR

PA_EXP_TXP1 C

PA_EXP_TXN1 C

PA_EXP_TXP2 C

PA_EXP_TXN2 C

PA_EXP_TXP3 C

PA_EXP_TXN3 C

PA_EXP_TXP4 C

PA_EXP_TXN4 C

PA_EXP_TXP5 C

PA_EXP_TXN5 C

PA_EXP_TXP6 C

PA_EXP_TXN6 C

PA_EXP_TXP7 C

PA_EXP_TXN7 C

PA_EXP_TXP8 C

PA_EXP_TXN8 C

PA_EXP_TXP9 C

PA_EXP_TXN9 C

PA_EXP_TXP10 C

PA_EXP_TXN10 C

PA_EXP_TXP11 C

PA_EXP_TXN11 C

PA_EXP_TXP12 C

PA_EXP_TXN12 C

PA_EXP_TXP13 C

PA_EXP_TXN13 C

PA_EXP_TXP14 C

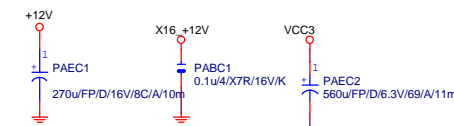
PA_EXP_TXN14 C

PA_EXP_TXP15 C

PA_EXP_TXN15 C

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

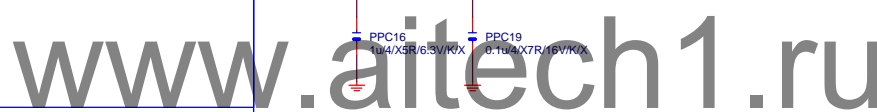
R01A



Gigabyte Technology		
Title		
PCI EXPRESS * 16		
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PCIE*4

3GIO_*4



M.2 Lane4 from PCH port18

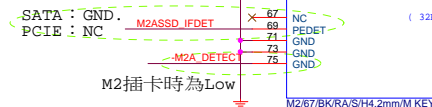
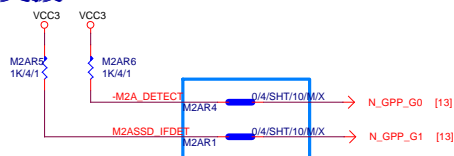
M.2 Lane3 from PCH port17

M.2 Lane2 from PCH port16

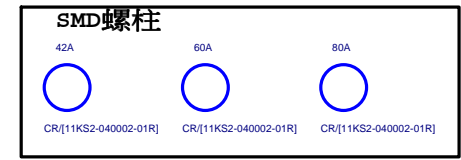
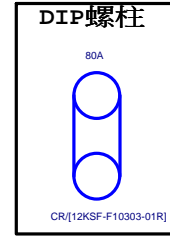
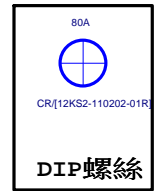
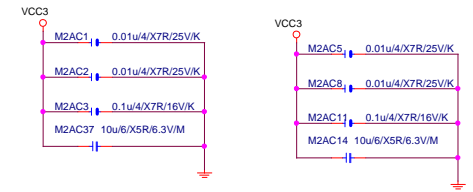
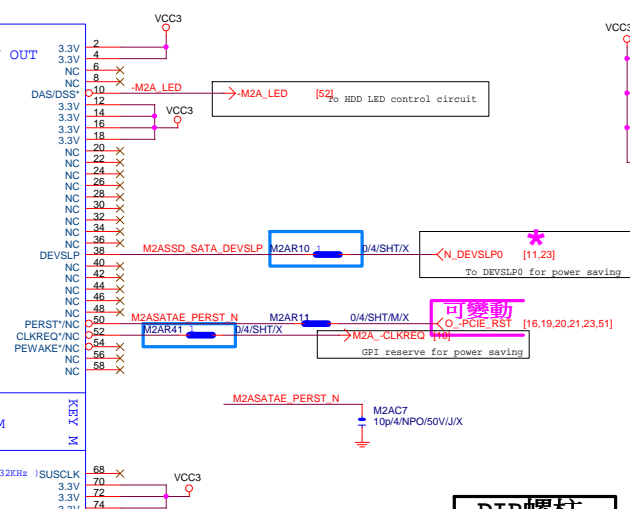
M.2 Lane2 from PCH port15

需與M2_-CLKREQ對應

支援SATA and M.2 function



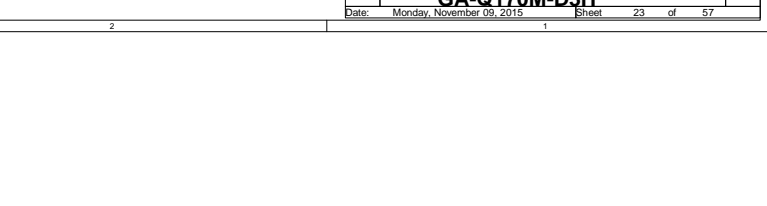
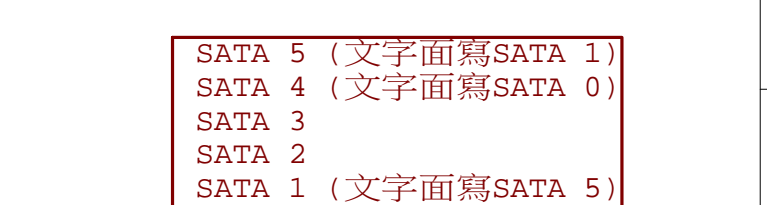
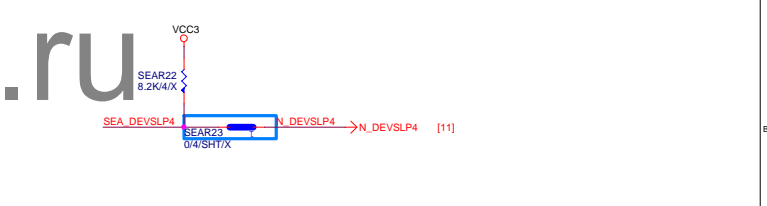
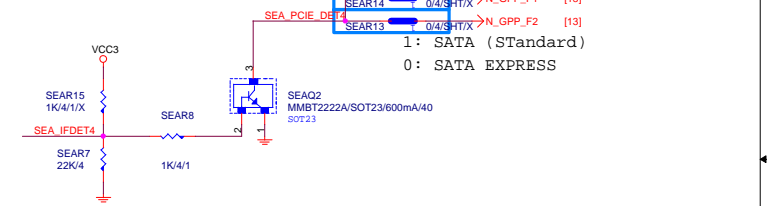
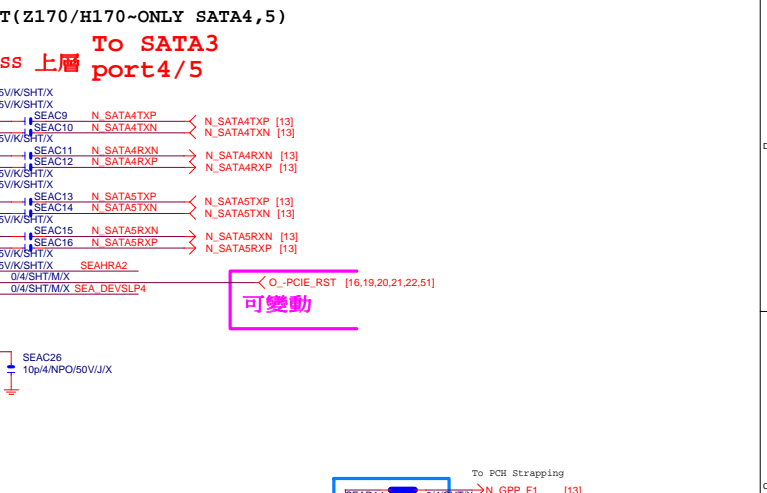
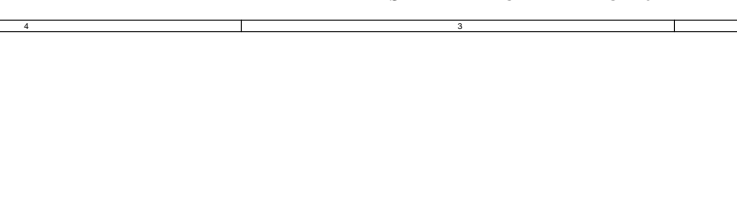
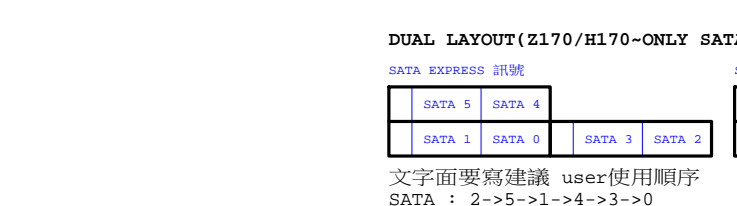
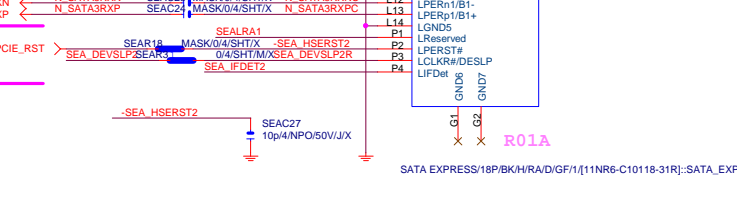
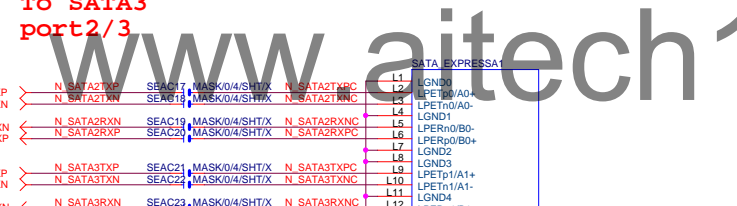
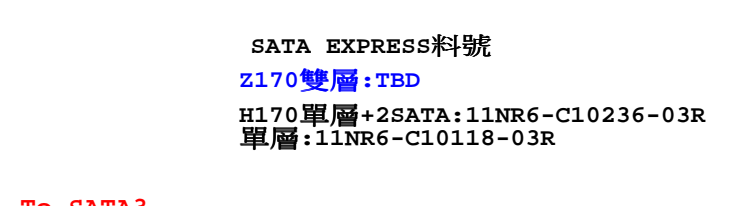
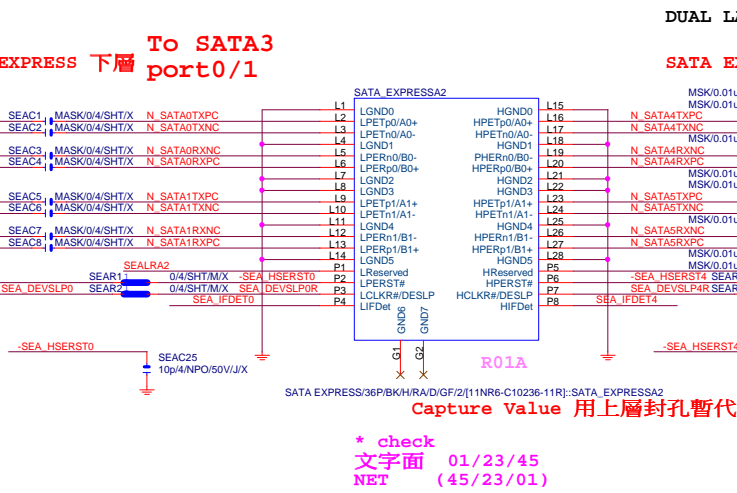
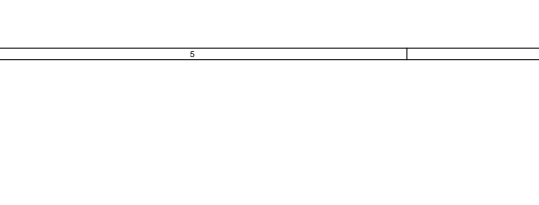
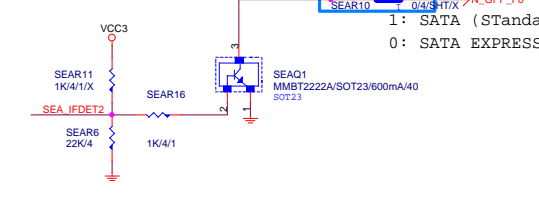
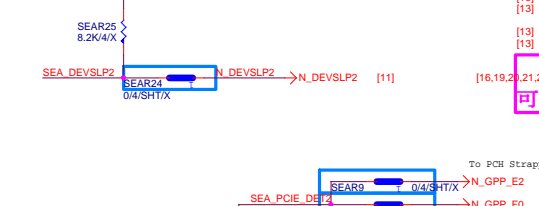
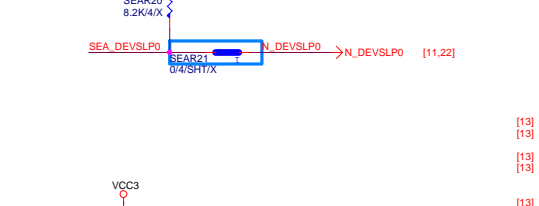
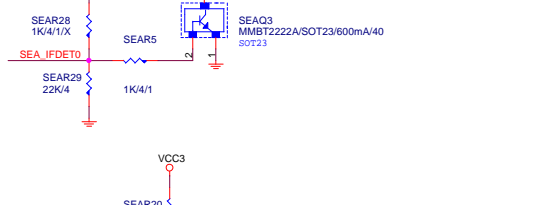
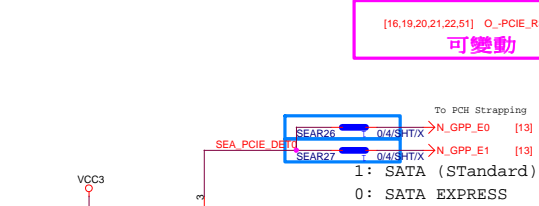
M.2 有插卡 /沒插卡 GPP_G0	M.2插何種卡? GPP_G1	SATA Express 插何種硬碟? GPP_E0/E2/F1	IO15 (S0)	IO16 (S1)	IO17	IO18	IO19 (S0)	IP20 (S1)
有插卡 (Low)	SATA Mode (Low)	SATA (Hi)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	PCIE x1	SATA
		SATA Express (Low)	SATA (M.2)	PCIE x1	PCIE x1	PCIE x1	SATA Express	
	PCIE Mode (Hi)	SATA (Hi)	PCIE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



SATA EXPRESS 下層 To SATA3
port0/1

SATA EXPRESS 上層 To SATA3
port4/5

0603 0 OHM, 走線40MILS 即可



SATA EXPRESS料號

Z170雙層:TBD

H170單層+2SATA:11NR6-C10236-03R

單層:11NR6-C10118-03R

To SATA3
port2/3

* check
文字面 01/23/45
NET (45/23/01)

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

SATA EXPRESS 訊號

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

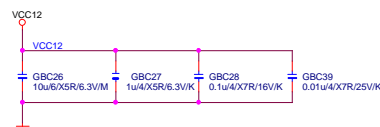
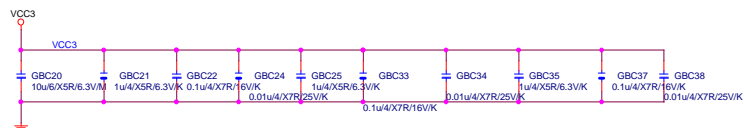
文字面要寫建議 user使用順序
SATA : 2->5->1->4->3->0

SATA EXPRESS 文字面

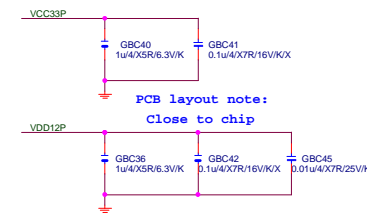
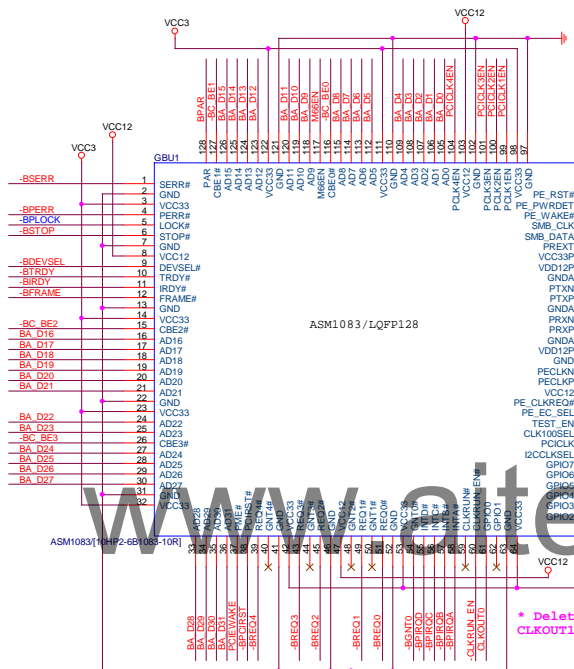
SATA 3	SATA 2		
SATA 5	SATA 4	SATA 1	SATA 0

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)

Gigabyte Technology			
SATA EXPRESS			
Size	Document Number	Rev	
Custom	GA-Q170M-D3H	1.0	
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BA D10_311 → BA_D[0..31] [26]
 -BC BE0 [26]
 -BC BE1 [26]
 -BC BE2 [26]
 -BC BE3 [26]
 -BPERR [26]
 -BSERR [26]
 -BPAR [26]
 -BPLOCK [26]
 -BDEVSEL [26]
 -BSTOP [26]
 -BTRDY [26]
 -BIRDY [26]
 -BFRAME [26]
 O_PFMIRST2 [16,44,51]
 -BPCIRST [26]
 -BREQ0 [26]
 * Delete -BRBQ1
 -BGNT0 [26]
 * Delete -BGNT1
 -BPIRQA [26]
 -BPIRQB [26]
 -BPIRQC [26]
 -BPIRQD [26]

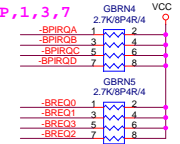


PCB layout note:
Close to chip

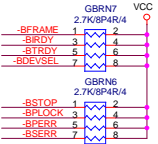
CLKOUT0 GBR11 224 → BPCLK0 [26]

* Delete BPCLK1

* SWAP, 1, 3, 7



* SWAP, 1, 3, 5, 7



* SWAP, 5, 7



* SWAP, 5, 7

CLK100SEL Strapping Set

CLK100SEL	H	L
PCIe CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLK0	33M +/-N%	33M

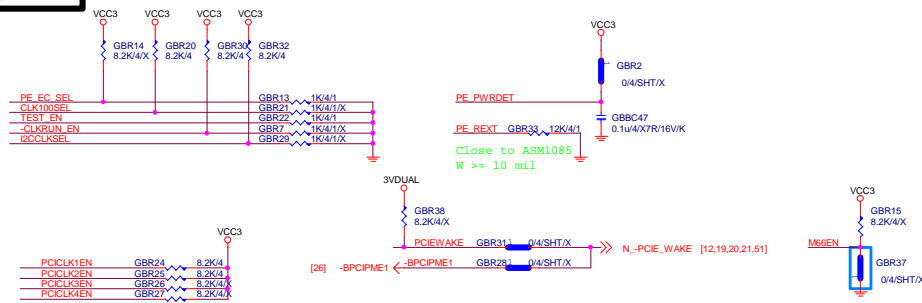
PE_EC_SEL-
 "H" for Express Card mode
 "L" for PCIe Riser Card mode

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

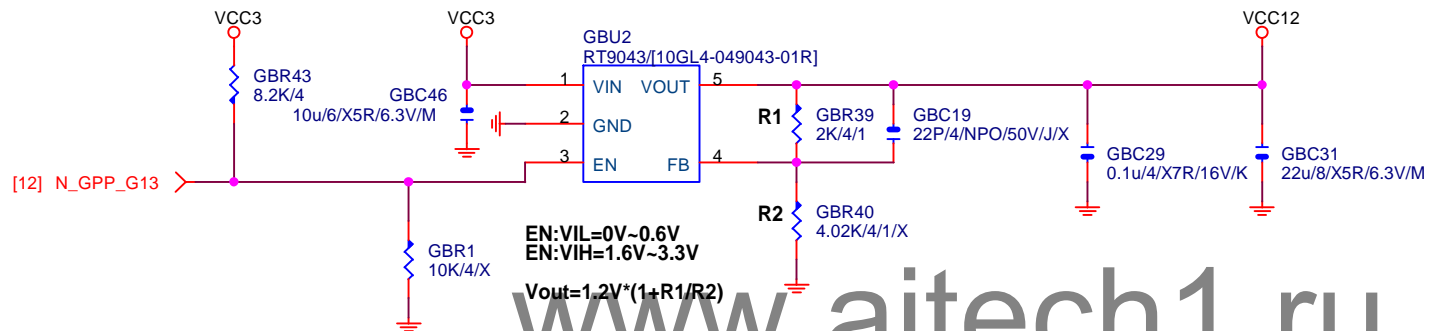
TEST_EN-
 "H" for Test Mode Enable
 "L" for Test Mode Disable

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

I2CCLKSEL-
 "H" is 135KHz I2CCLK
 "L" is 67.5KHz I2CCLK



Rev 0.9



Gigabyte Technology

Title

ASM1083 POWER

Size
Custom

Document Number

GA-Q170M-D3H

Rev
1.0

Date:

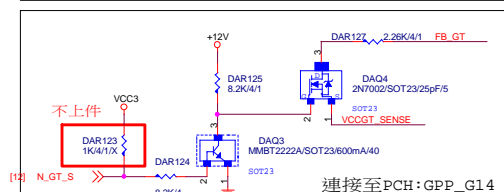
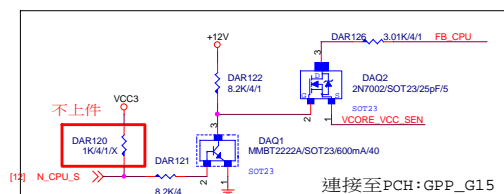
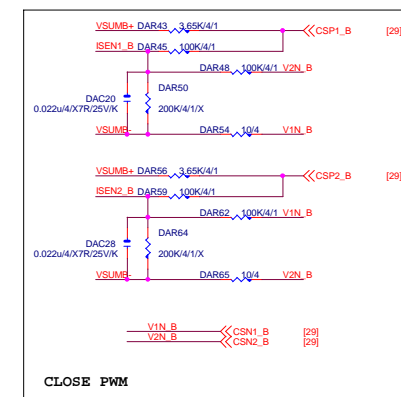
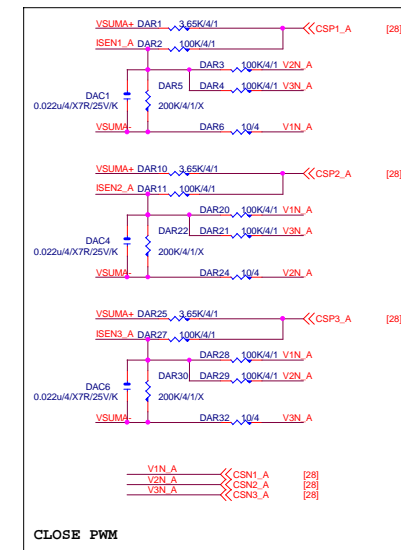
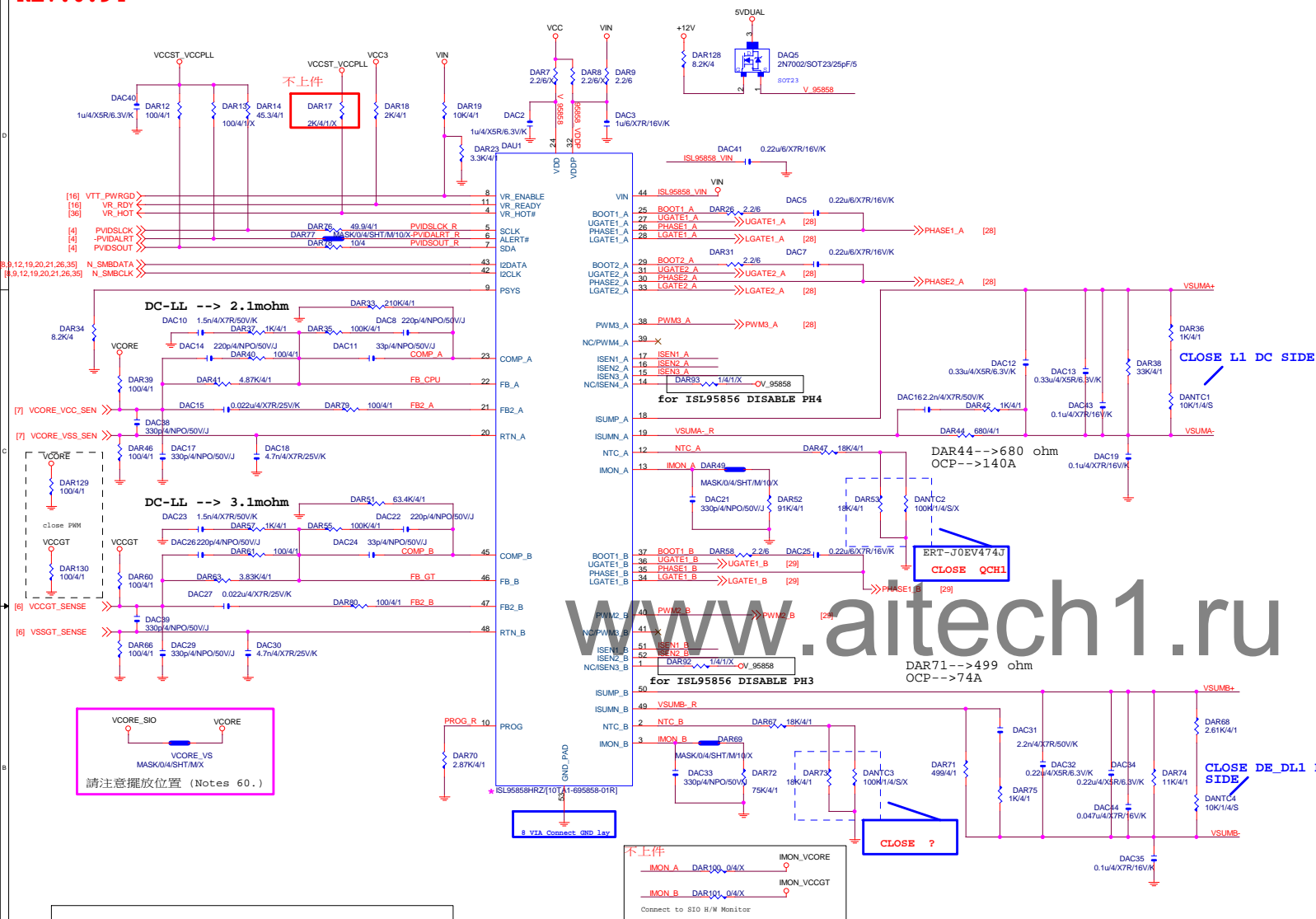
Monday, November 09, 2015

Sheet

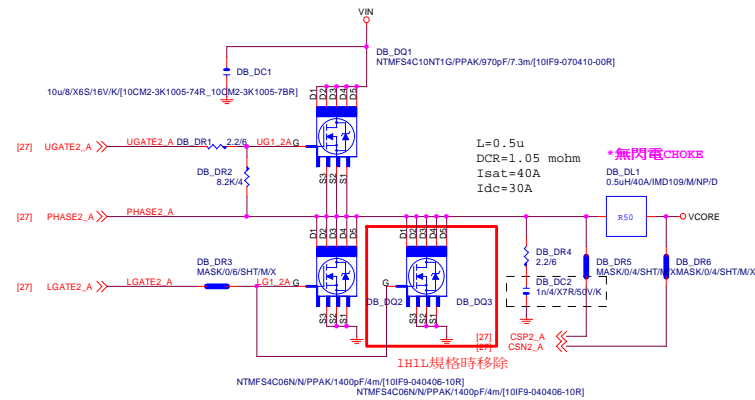
25

of

57



VCORE *限用ON MOS



◆無閃電CHOKE

DAL1
0.5uH/40A/MD109/MNP/D

V12

R50

DAC36
1u6/X7R/16V/K

VIN

1

1

1

1

DAEC14

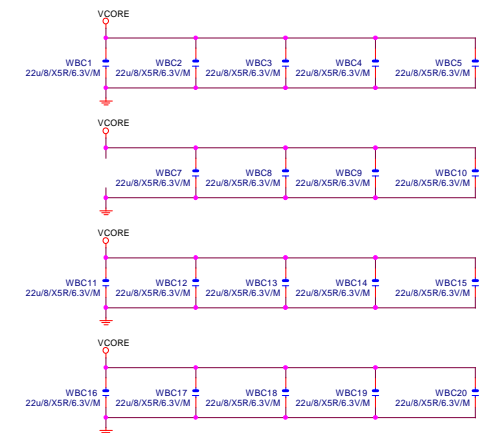
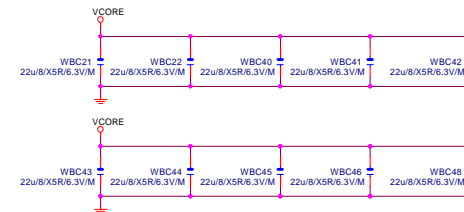
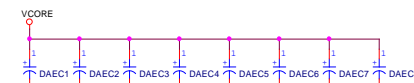
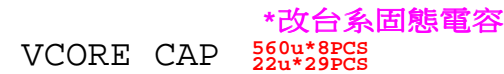
DAEC15

DAEC16

270uF/PPD/16V/8C/A/10m

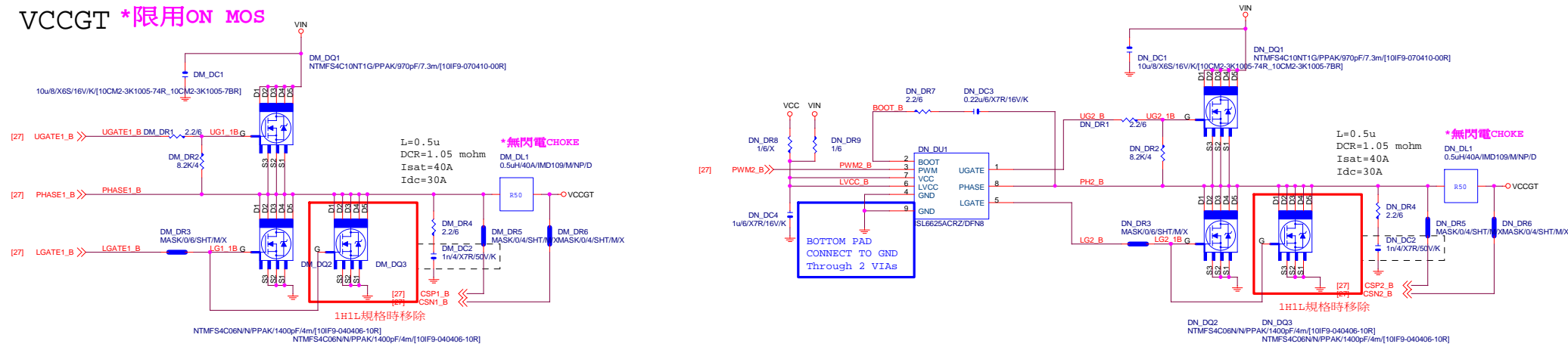
270uF/PPD/16V/8C/A/10m

270uF/PPD/16V/8C/A/10m

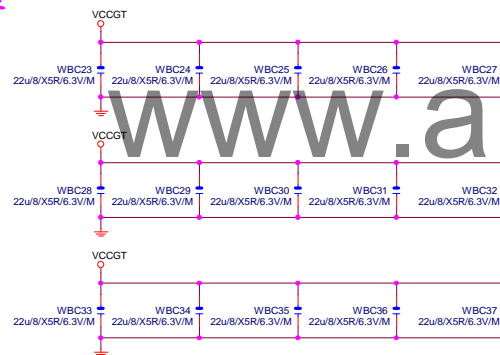
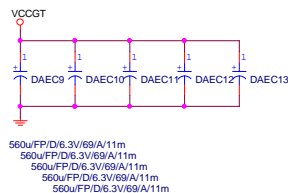
**GIGABYTE™**

Title			
ISL95858_MOS			
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VCCGT *限用ON MOS



VCCGT CAP *改台系固態電容



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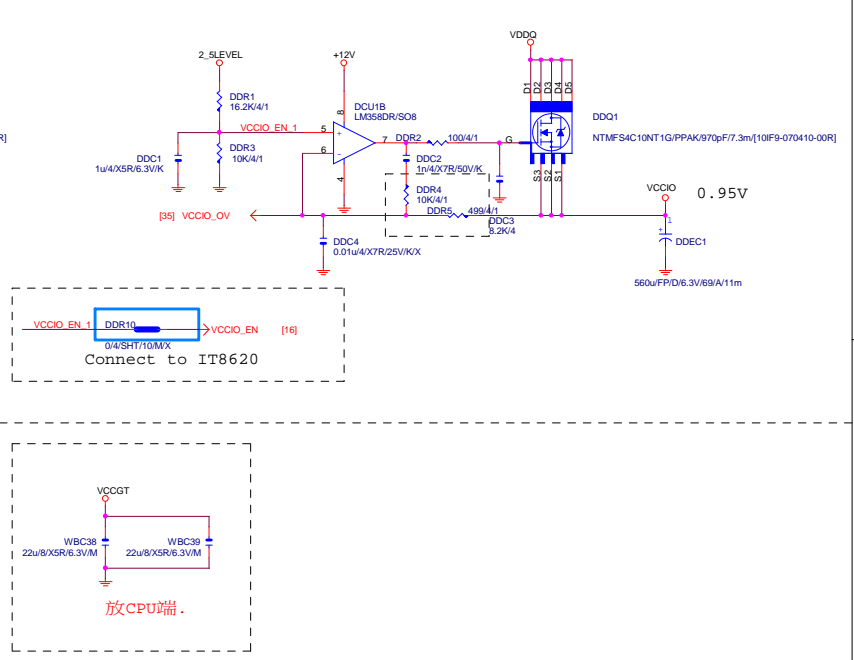
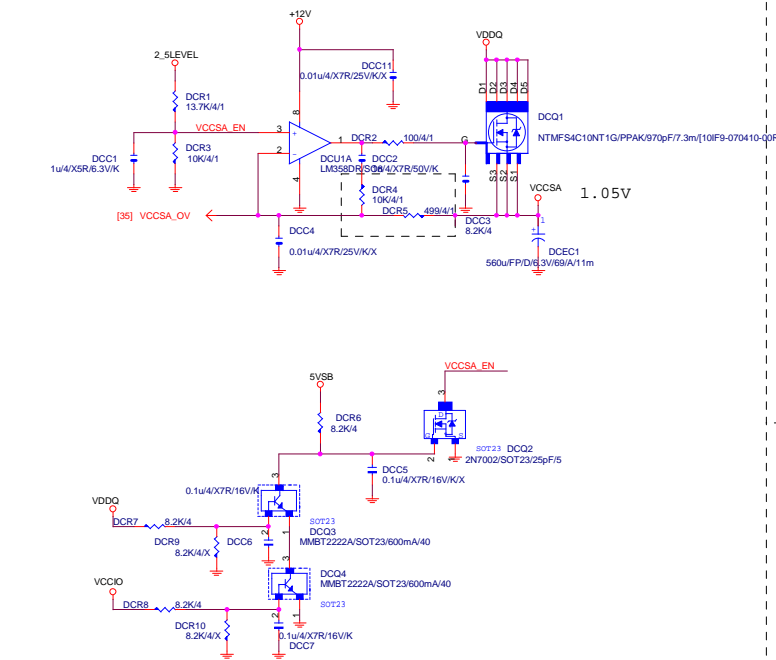
GIGABYTE™

Title		
ISL95858_MOS		
Size	Document Number	Rev
Custom	GA-Q170M-D3H	1.0
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VCCSA

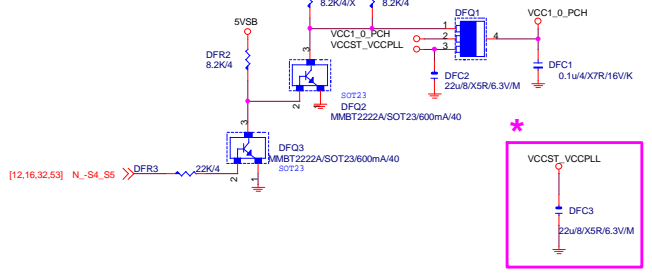
REV:0.4

VCCIO



REV:0.21

VCCST_VCCPLL



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REV:0.9



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



For power sequence require

[16,32] MA_EN >> MAR10

Connect to IT8620

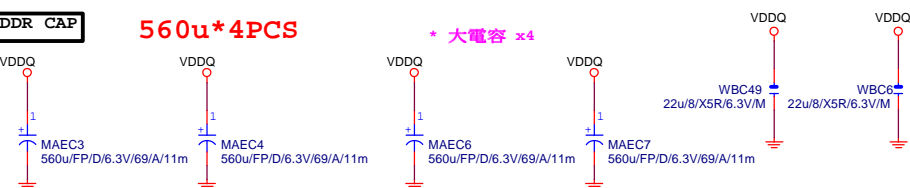
[4] DDR_VTT_CTL >>

3/25pF/5/X R01A

DDR VTT CTL MAR110 0/4 DDRVTT EN
N -SLP_S3 MAR111 0/4 DDRVTT BOOT

MAU1上NCT3103S時上件

560u*4PCS



* 大電容 x4

22u*2PCS



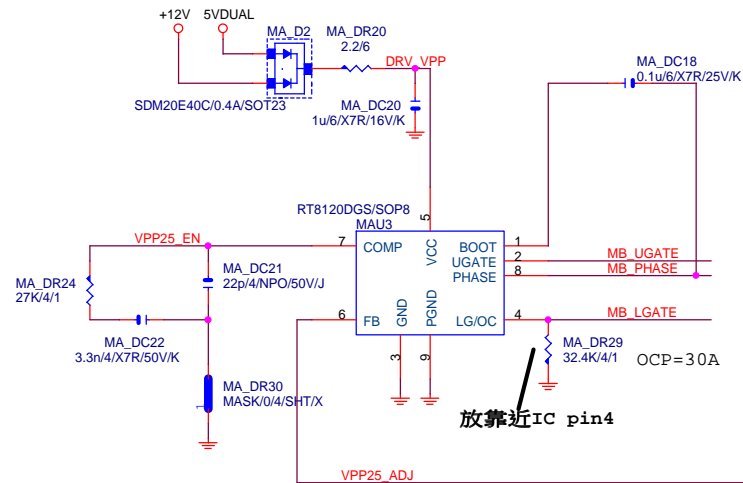
* 大電容 xC

GIGABYTE™

Title			
RT8120_DDR POWER			
Size	Document Number	Rev	
Custom	GA-Q170M-D3H	1.0	
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REV:0.9

VPP_25V



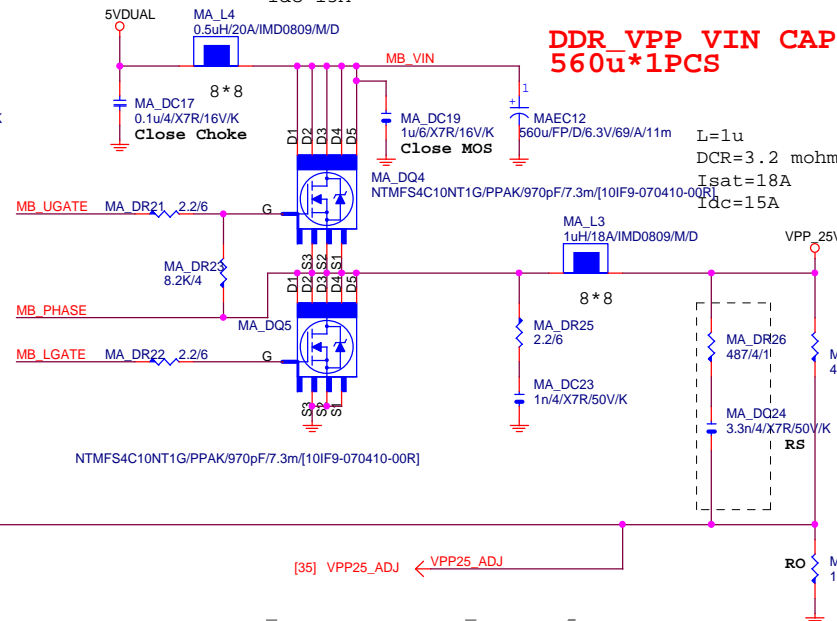
放靠近IC pin4

OCP=30A

VPP25_ADJ

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

CHOKE與CAP料號可變

DDR_VPP VIN CAP
560u*1PCS

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

SUPPORT DDR4

2.5V

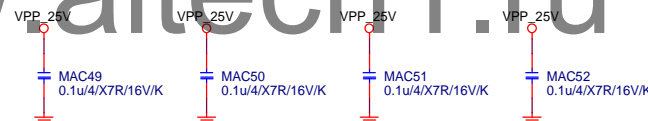
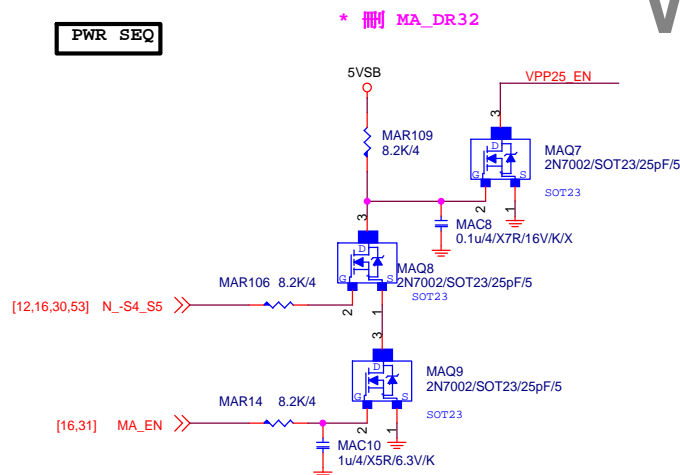
請放置CHOKE一出來位置.先預留.
請自行確認ripple後再決定是否上件

Remote sense請從最重的負載端點拉回

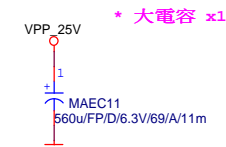
[35] VPP25_ADJ ← VPP25_ADJ

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PWR_SEQ



VPP CAP 560u*1PCS



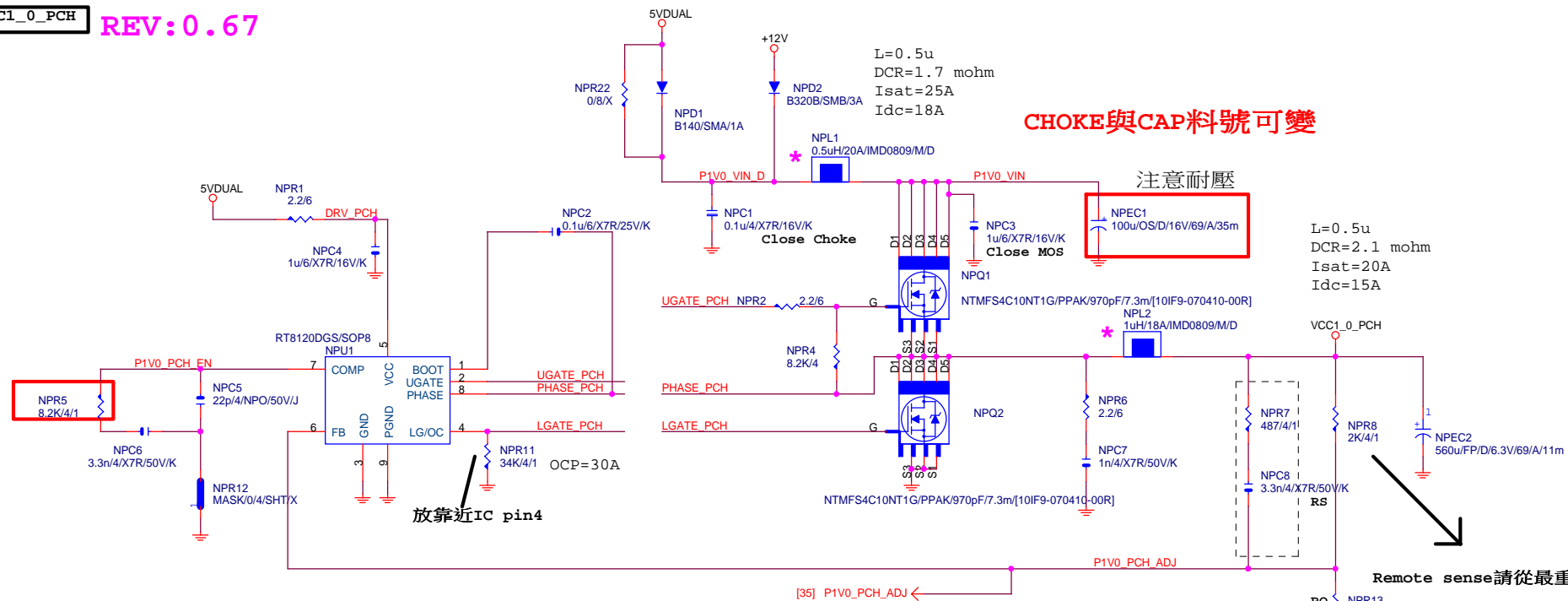
* 大電容 x1

GIGABYTE™

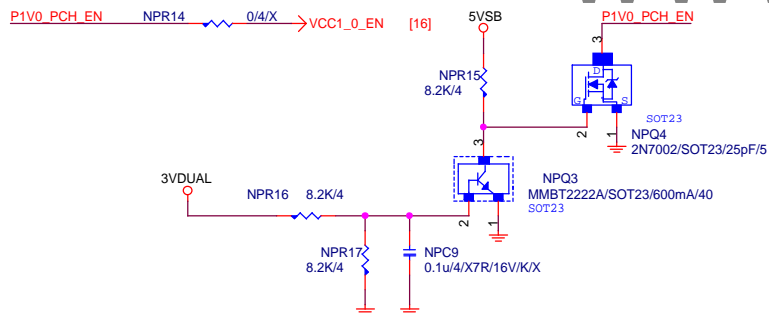
Title		
RT8120_VPP25 POWER		
Size	Document Number	Rev
Custom	GA-Q1704M-D3H	1.0
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VCC1_0_PCH

REV:0.67



PWR_SEQ



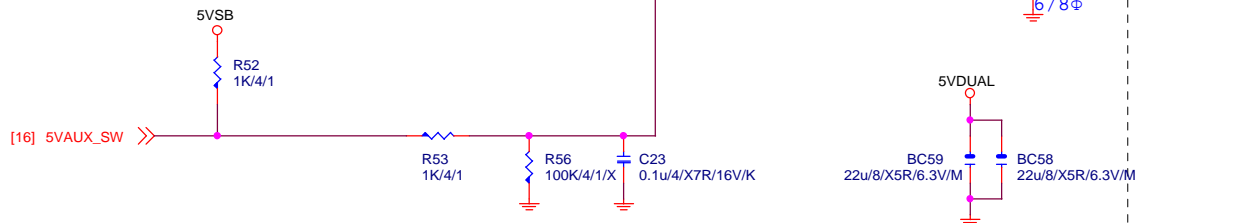
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Title		
RT8120_PCH-CHOKE		
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REV: 0.51

```
[16] 5VAUX_SW >>
```



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0-RSMRST

上22u 電容

Meet the rise time

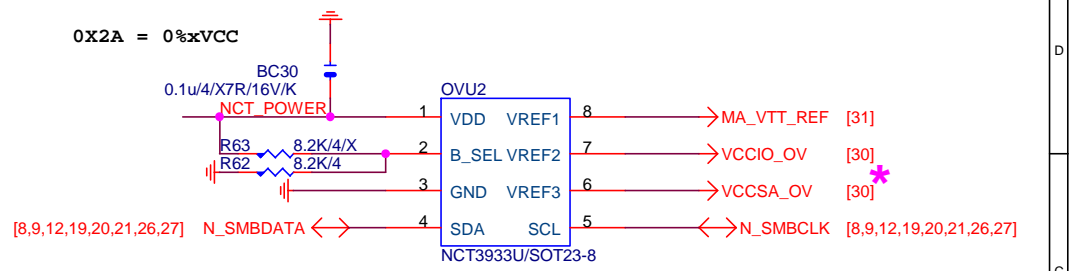
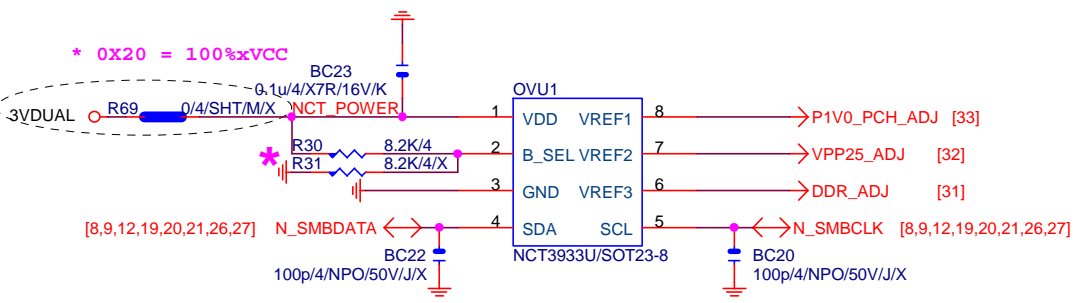
[12] N_-DEPSLP

不上件

Gigabyte Technology

Title			
DISCRETE POWER			
Size	Document Number		Rev
Custom	GA-Q170M-D3H		1.0
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OVER VOLTAGE



0X22 = 75%xVCC

* 删除 OVU3

NCT3933	0X20	0X2A
VREF1	VCC1_0_PCH	DDRVTT
VREF2	VPP_25V	VCCIO
VREF3	VDDQ	VCCSA

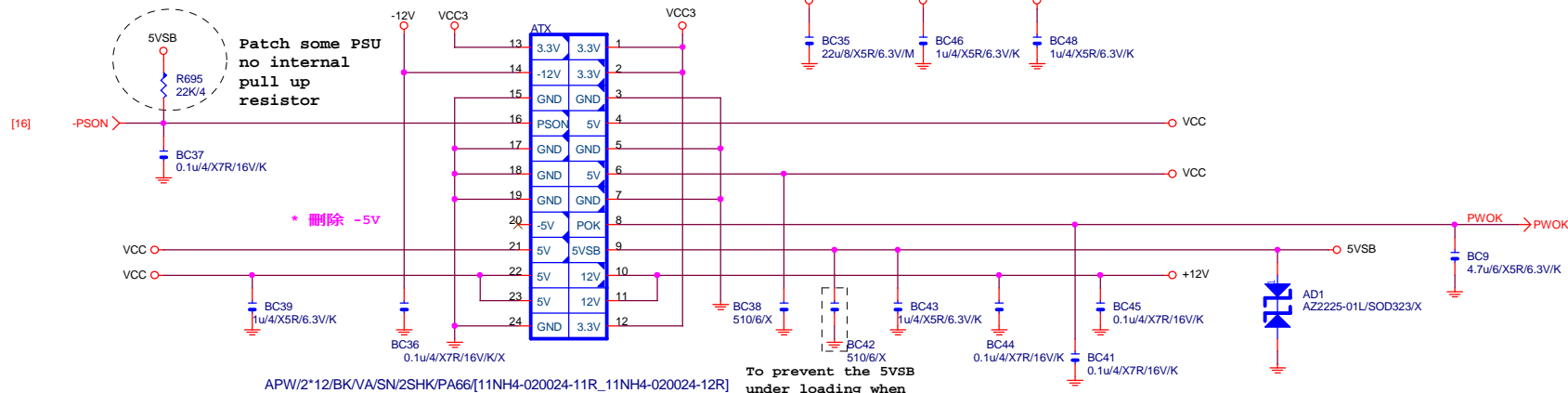
Gigabyte Technology

Title: CPU CORE VR-2

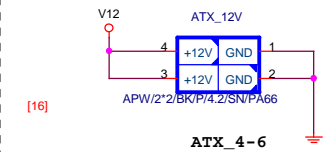
Size: Custom Document Number: GA-Q170M-D3H Rev: 1.0

Date: Monday, November 09, 2015 Sheet: 35 of 57

ATXX24 POWER CONNECTOR

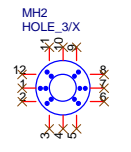
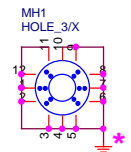


ATX POWER CONNECTOR

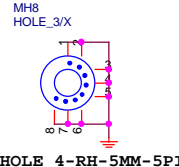
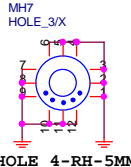
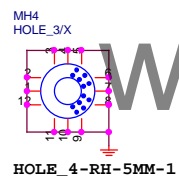
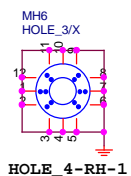
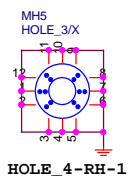
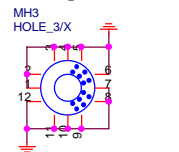


螺絲孔

MH1:GND-T
FOR EMI
TEST驗證

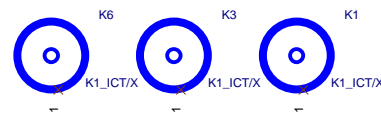


14/12/24
Modify for EMI

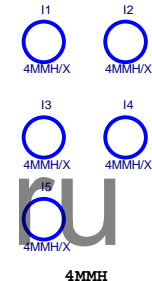


* Add MH8

固定孔/光學點

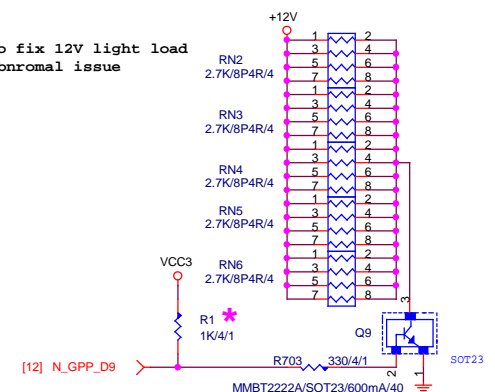


To prevent the 5VSB under loading when boot



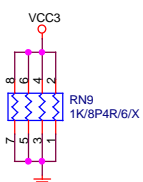
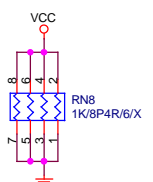
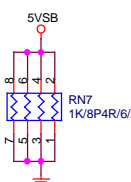
+12V DUMMY LOAD

To fix 12V light load abnormal issue

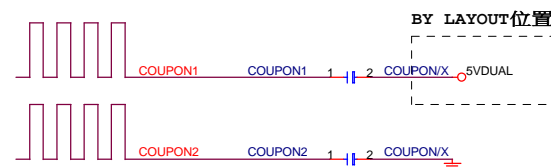


【技術通報R&D技術通報153】

DUMMY LOAD



COUPON



Gigabyte Technology

Title		
ATX POWER CONNECTOR		
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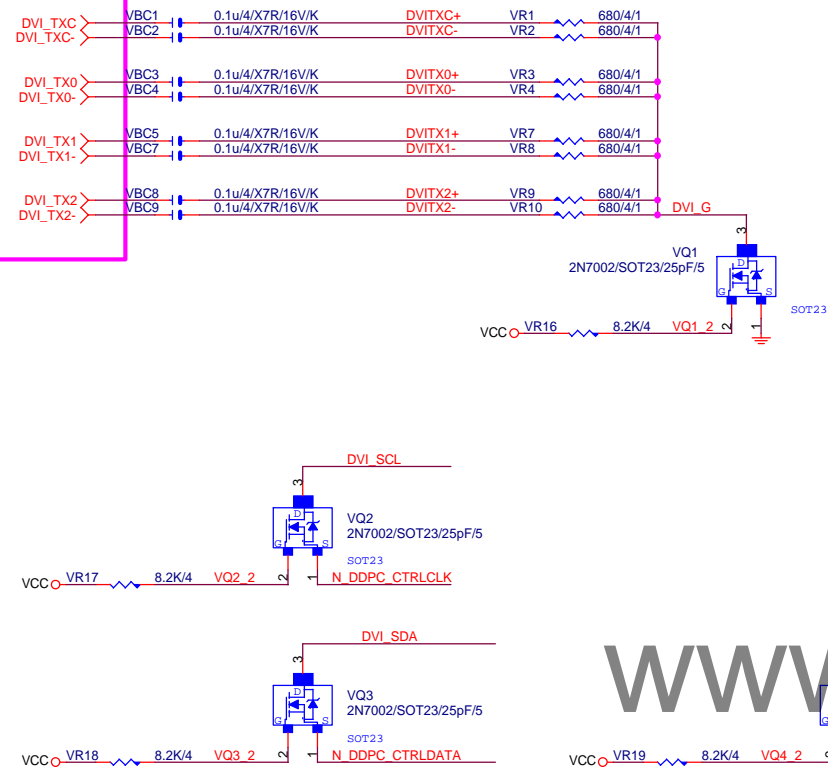


DVI

Rev: 0.71

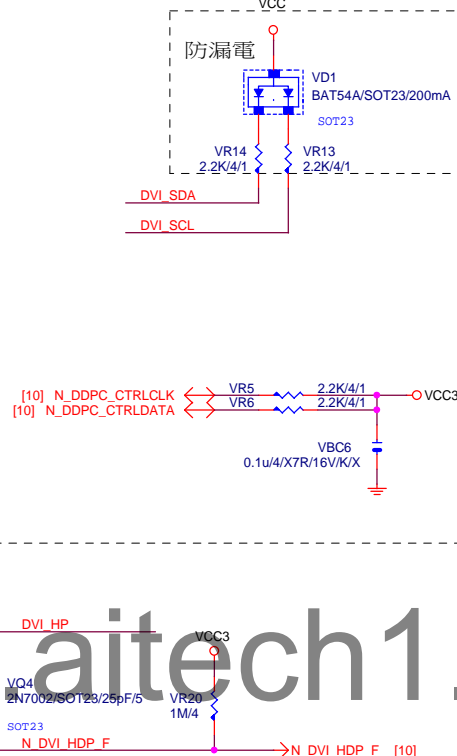
DVI:20/4/6/4/20
Impedance=85 +- 17.5%

NET 可變



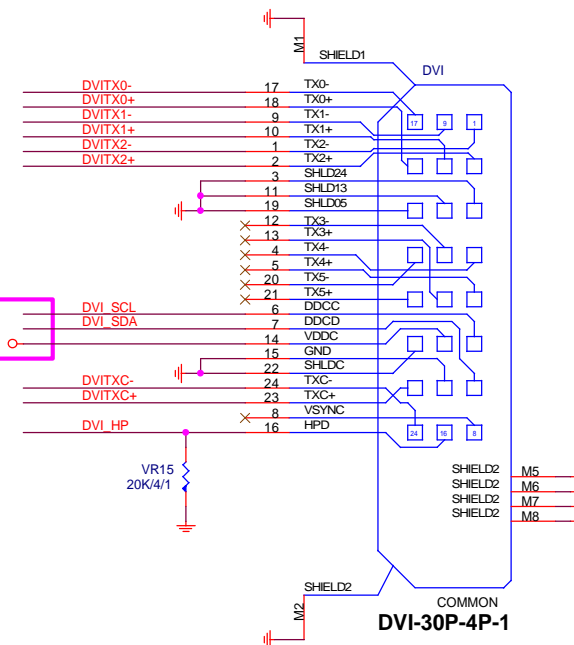
DVI PU

R&D技術通報 162



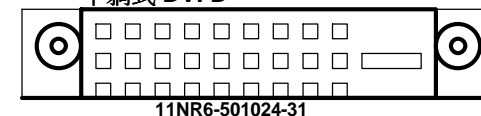
DVI CONN

NET 可變



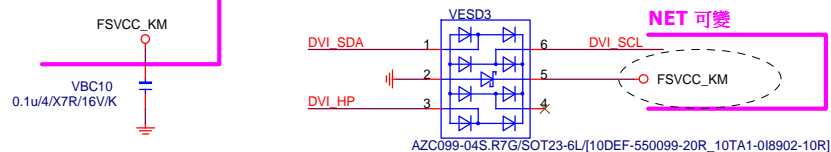
DVI-D/24P/SC/RA/D/SH/[11NR6-501024-31R 11NR6-501024-33R 11NR6-501024-34R]

平躺式 DVI-D

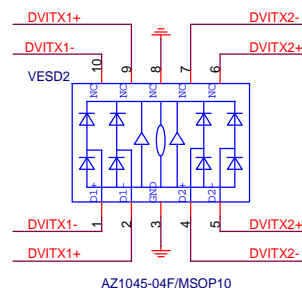


ESD

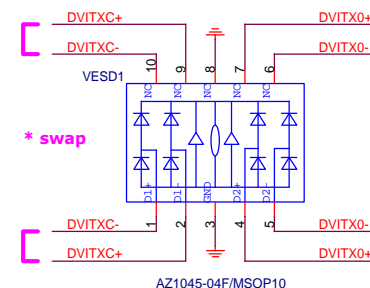
NET 可變



Close to connector



Close to connector



Close to connector

Gigabyte Technology

Title

DVI

Size	Custom
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GA-Q170M-D3H

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1.0

Date: Monday, November 09, 2015

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1

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

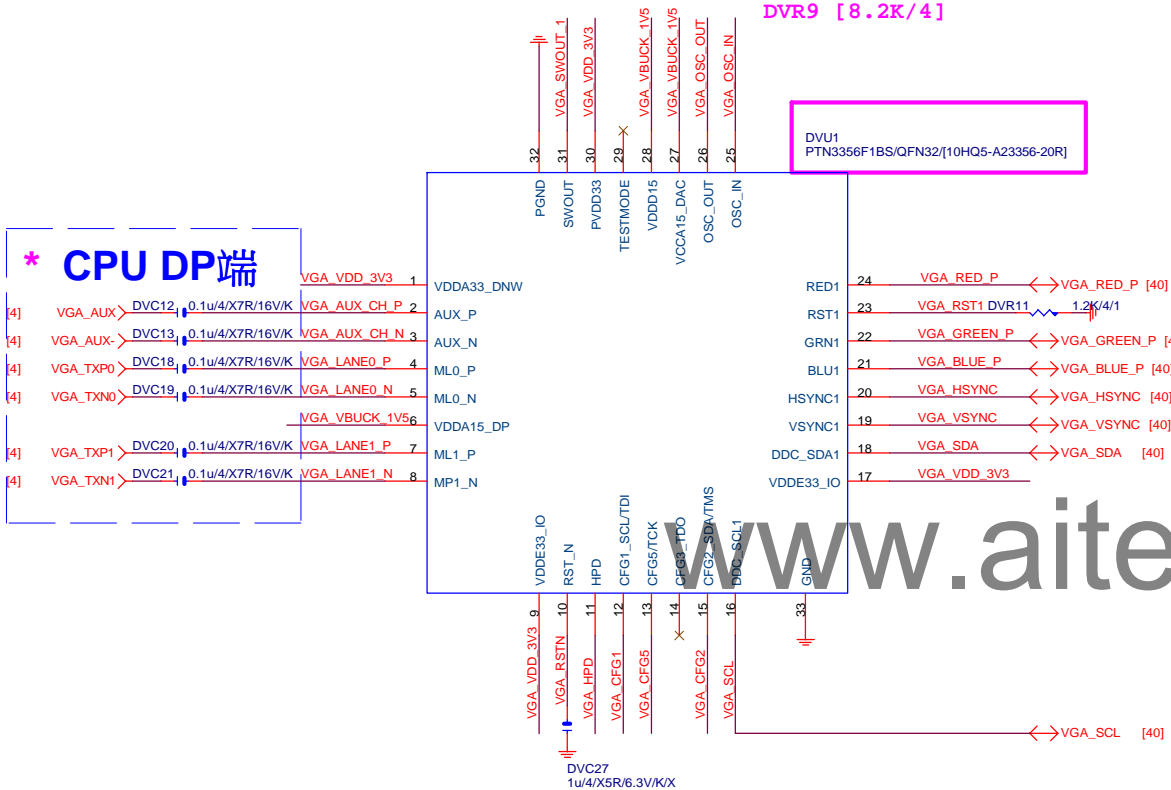
DVR10 [8.2K/4]

2. 删除:

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

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

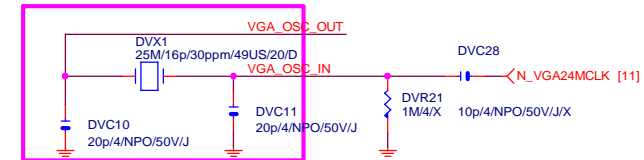
DVR9 [8.2K/4]



放置PCH端

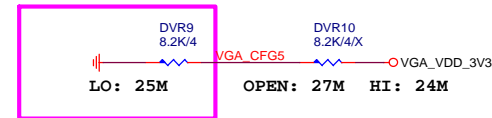
25M Crystal

FROM PCH 24MHZ ISSUE

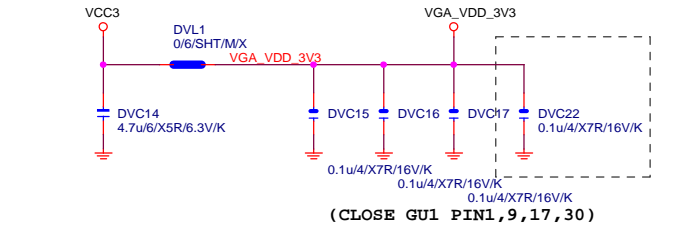


CFG5

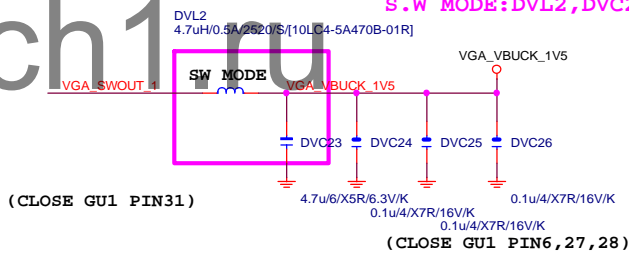
For Crystal Less



ADAPTER POWER

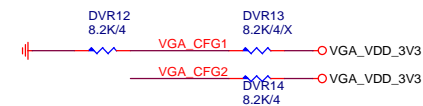


LDO MODE: DVL2, DVC23-->X
S.W MODE: DVL2, DVC23-->O



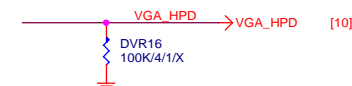
CFG1&2

Non-Compliant

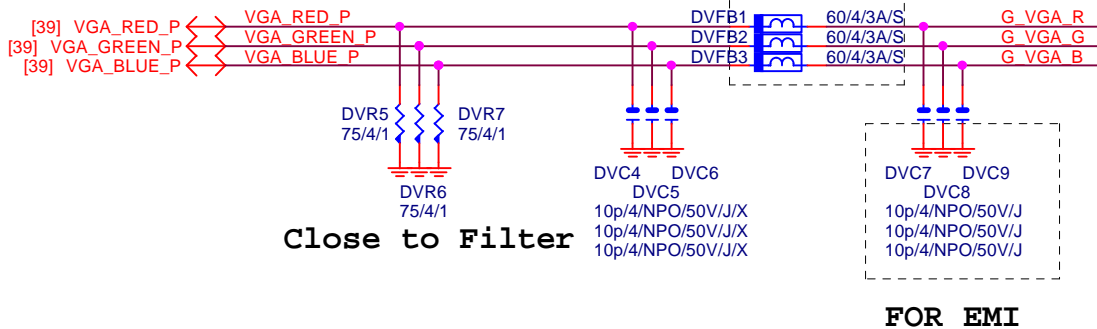
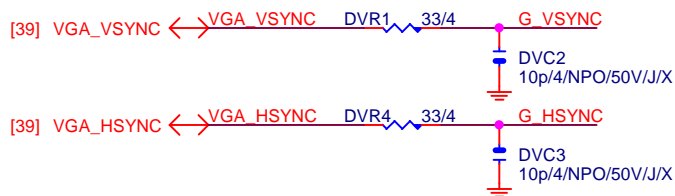
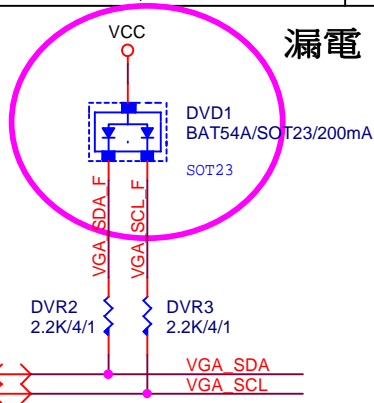


HPD

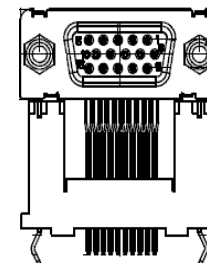
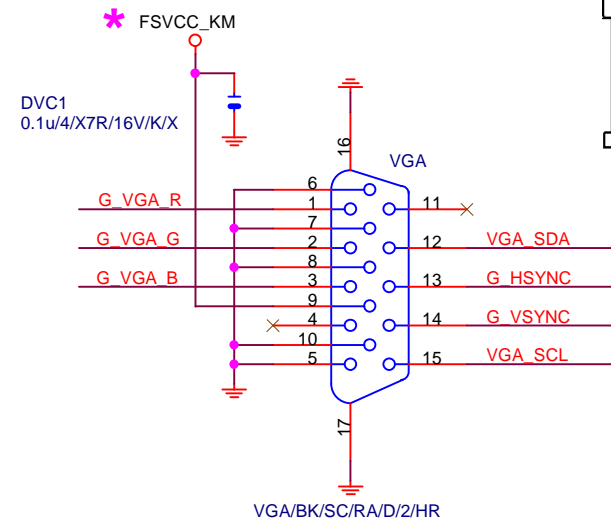
PCH端 *



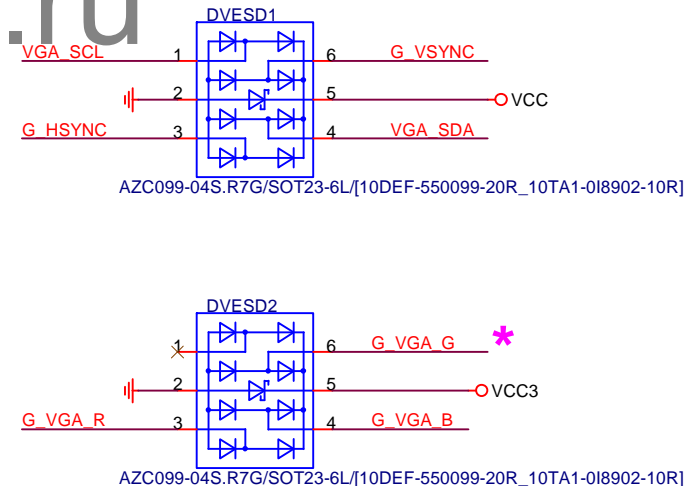
VGA SIGNAL R1.08



VGA CONN. 架高型VGA (BLACK)



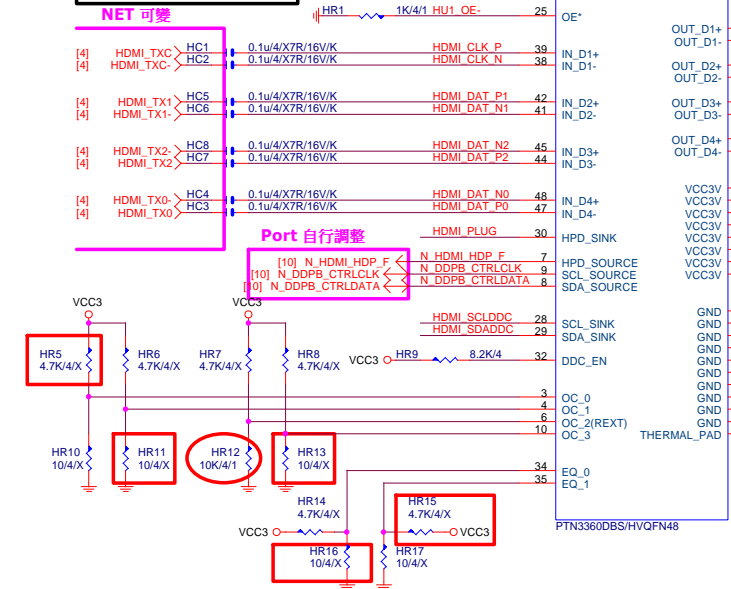
VGA ESD



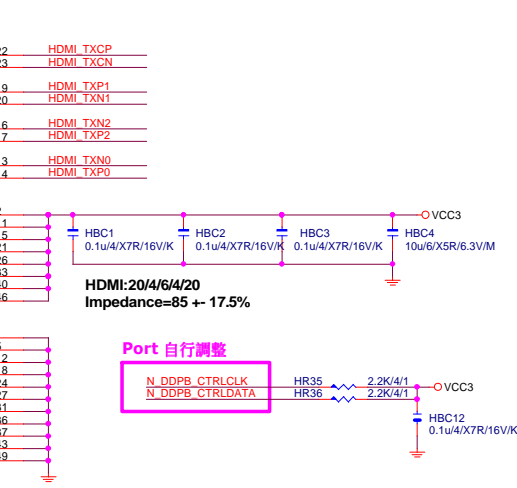
Gigabyte Technology
NXP-PTN3356

Title		
Size	Document Number	Rev
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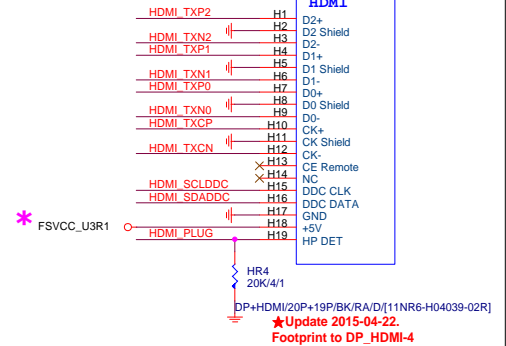
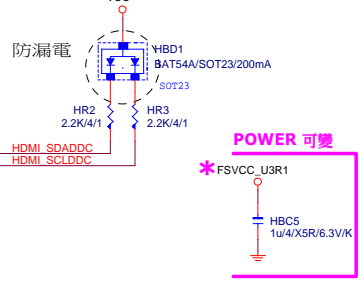
HDMI LEVEL SHIFT



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



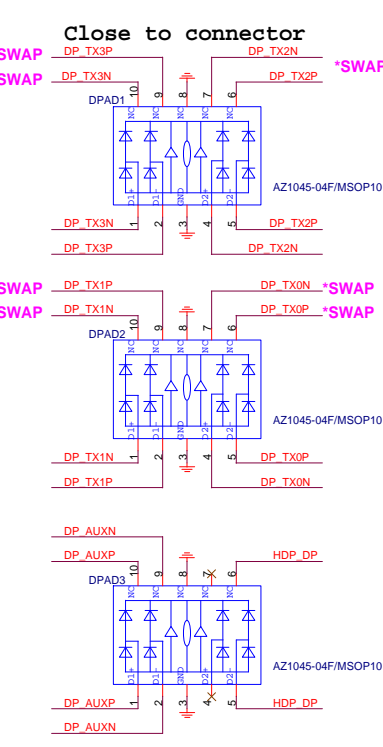
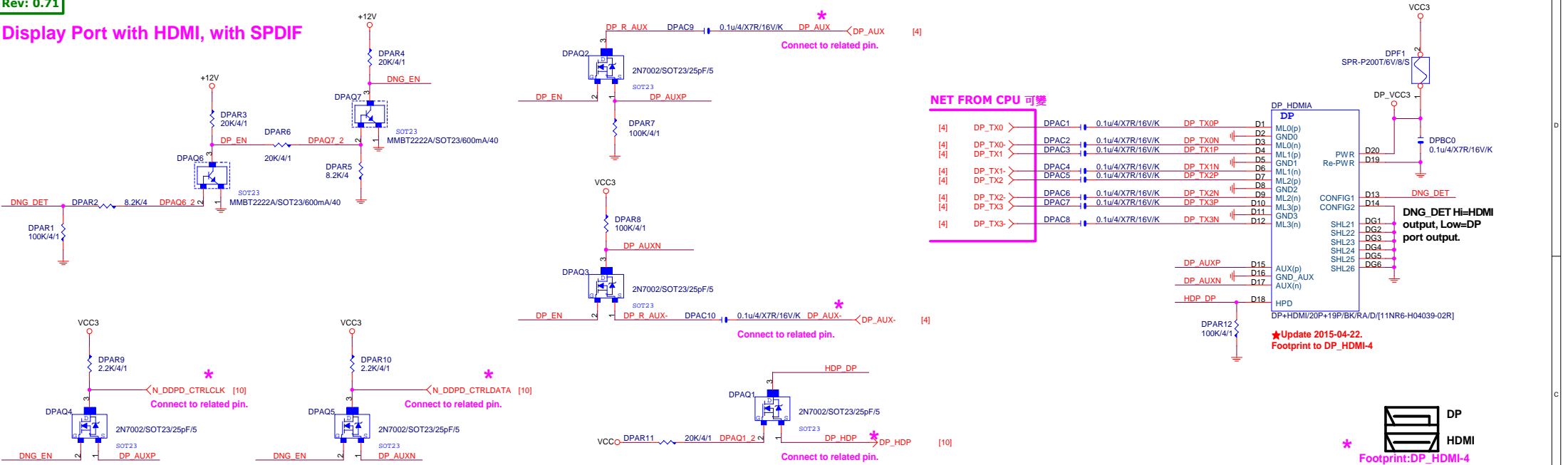
【技術通報R&D技術通報150】
HDMI eye diagram 1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)



Update 2015-04-22.
Footprint to DP_HDMI-4

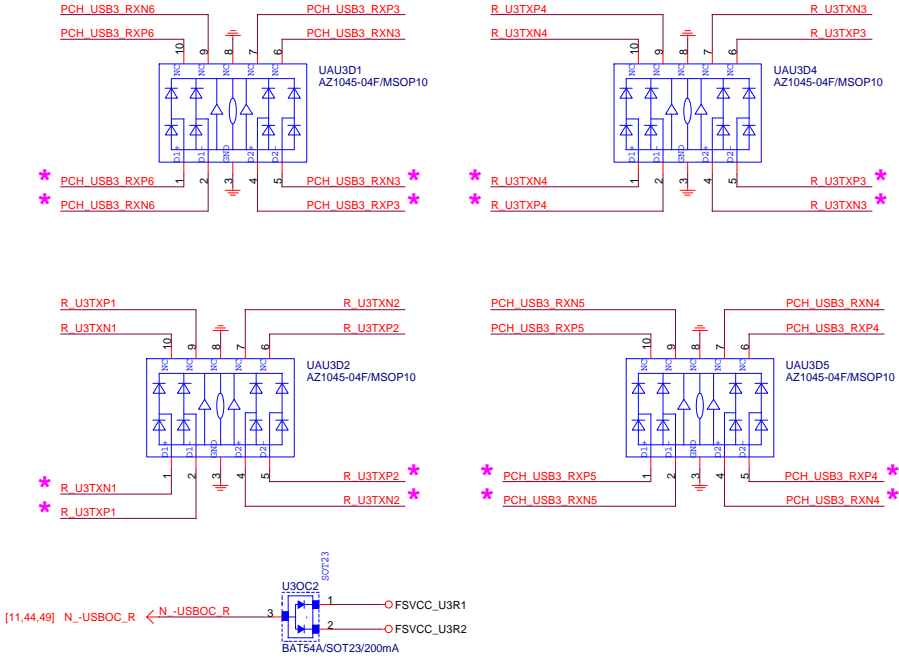
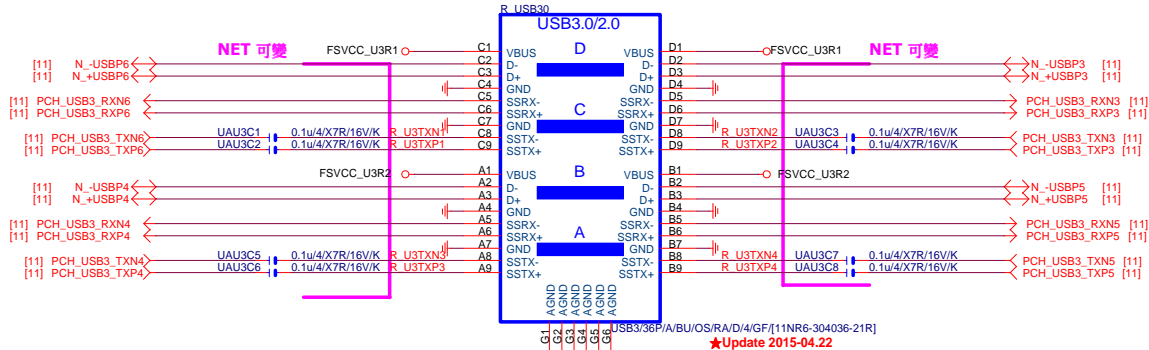
www.aitech1.ru

Display Port with HDMI, with SPDIF

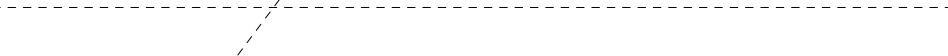
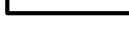
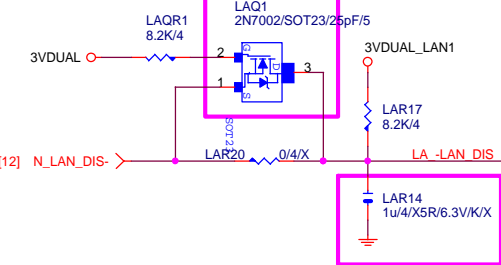


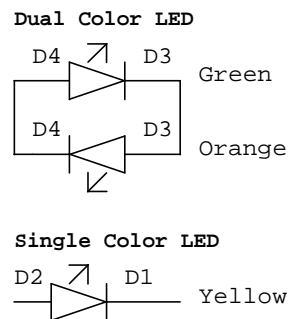
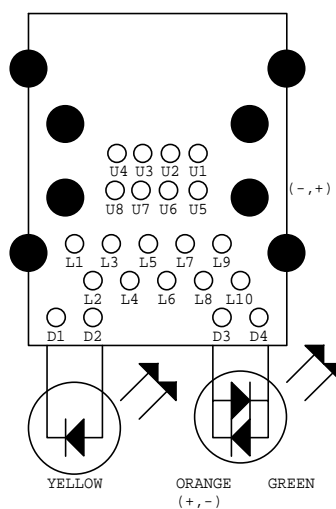
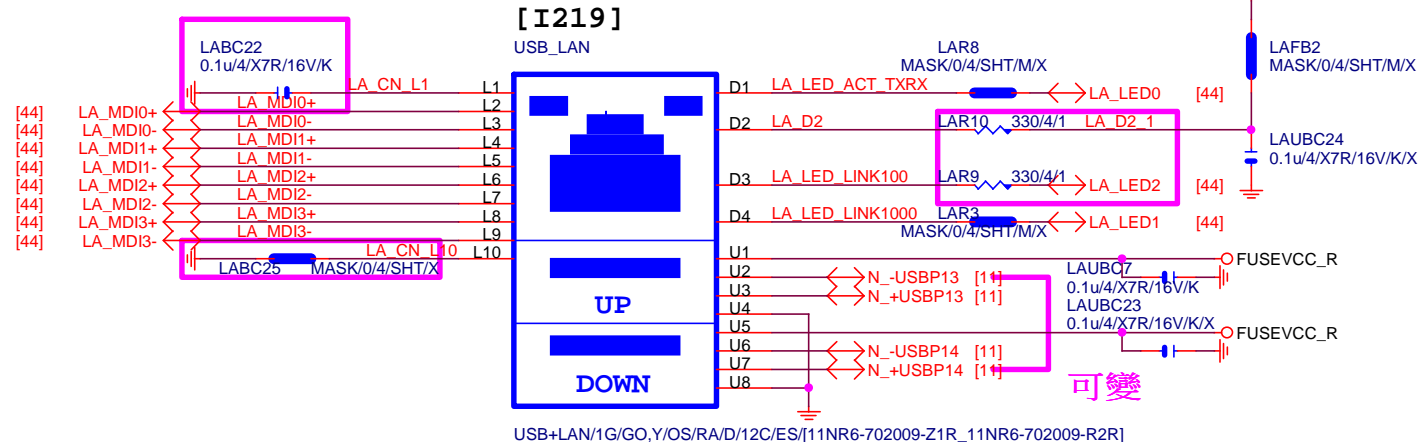
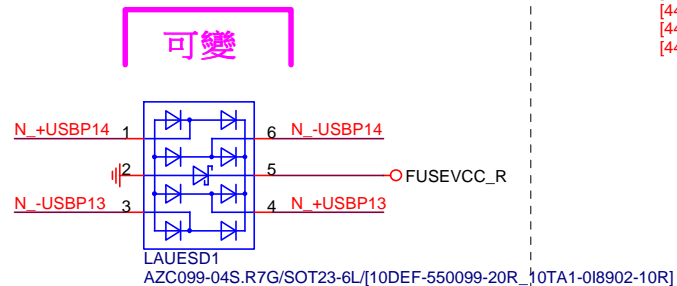
* 删除DP_HDMI_SPDIF, + Switch

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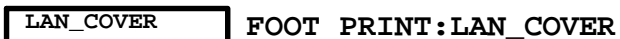




Close to connector

USB_LAN 2-Port 2.0A

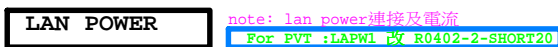
FUSE-0805



可變 * delete
[視SPEC需求]



PS:視EMI需求



Gigabyte Technology

LAN CONNECTOR-I219

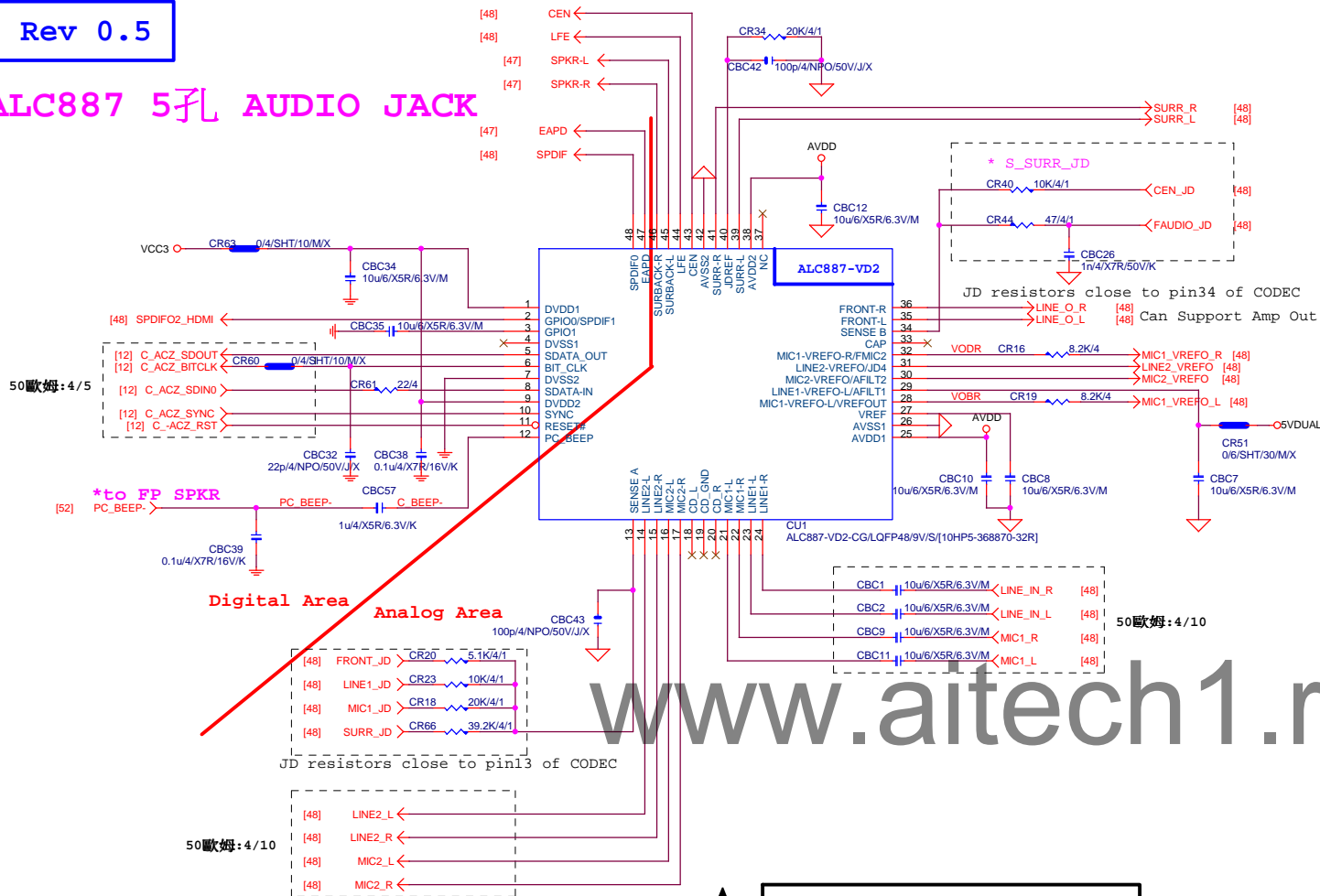
GA-Q170M-D3H

1.0

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Rev 0.5

ALC887 5孔 AUDIO JACK

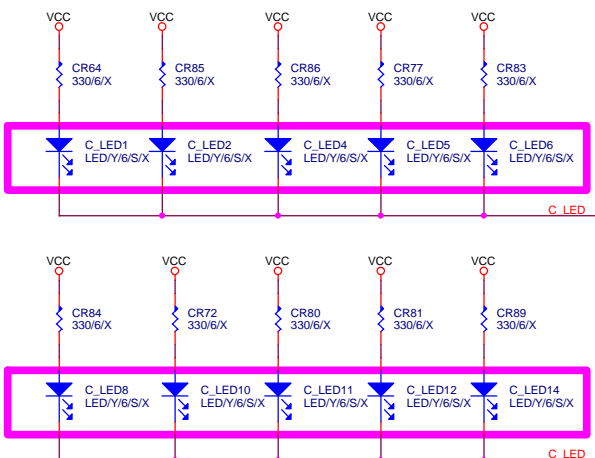


LAYOUT注意:螺絲孔下GND方式
1. MH1空間夠,下DGND
空間不夠,改為Isolate
2. MH2一律改為Isolate

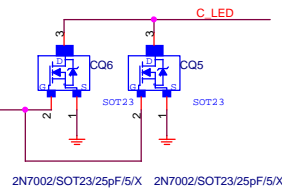
○ MH1
DGND
○ MH2
Isolate

★ PVT 時 LED circuit 背板mask

VALUE可變,LED顏色請自行修改
(預設:低亮度黃色LED:LED/Y/6/S)



★ (IT8620 GP37)



*料號後補

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

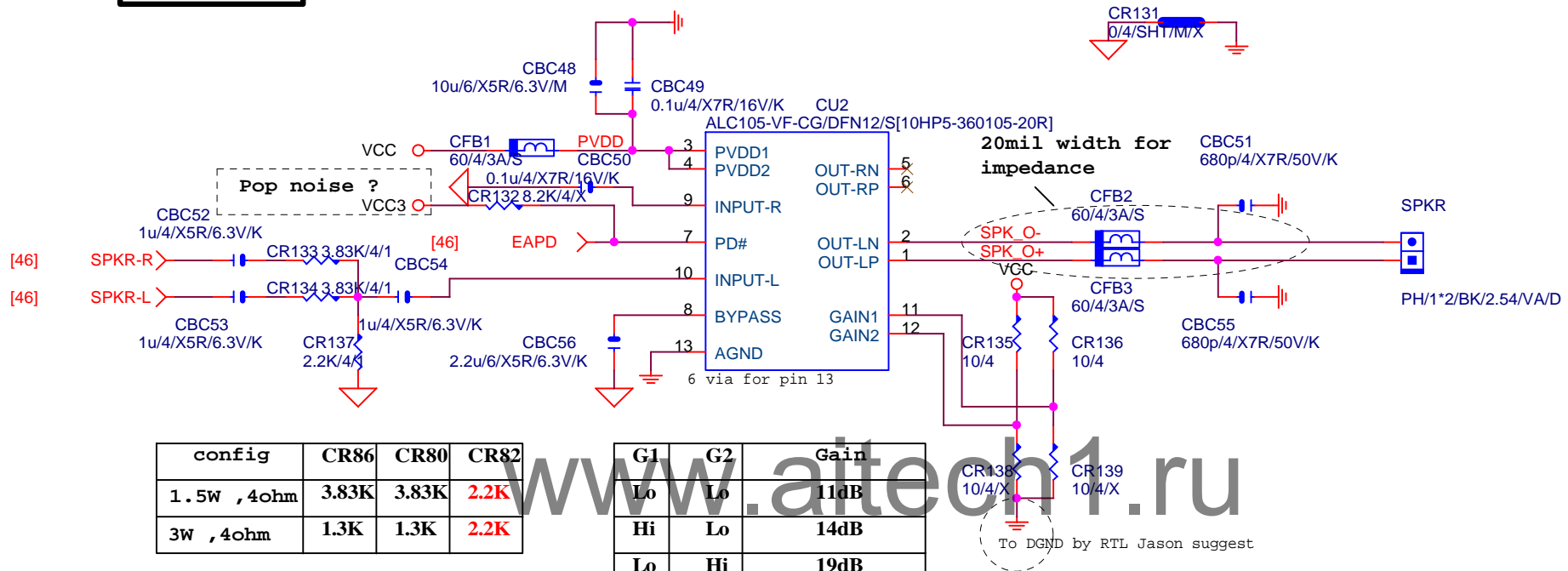
音效區域印刷

Gigabyte Technology

HD AUDIO ALC887

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MONO SPKR



config	CR86	CR80	CR82
1.5W ,4ohm	3.83K	3.83K	2.2K
3W ,4ohm	1.3K	1.3K	2.2K

* all 1% parts

*NOW

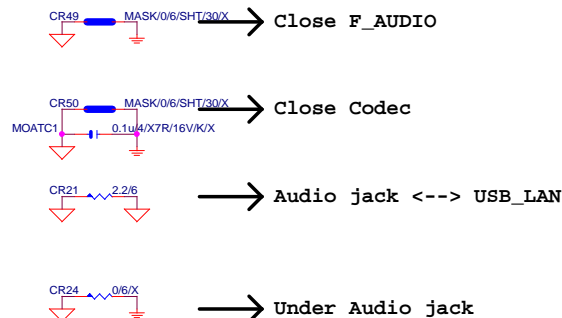
G1	G2	Gain
Lo	Lo	11dB
Hi	Lo	14dB
Lo	Hi	19dB
Hi	Hi	25dB

Pin1,2,3,4,5,6,7,13 ref GND
pin8,9,10,11,12 ref AGND

Gigabyte Technology

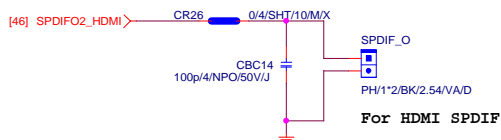
Title		
MONO SPKR		
Size A	Document Number	Rev
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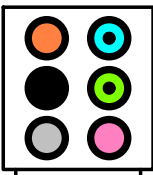
★ 量産前,0ohm改short pad

SPDIF_OUT



SPDIF_IN

AZALIA JACK



AZALIA JACK

BLUE

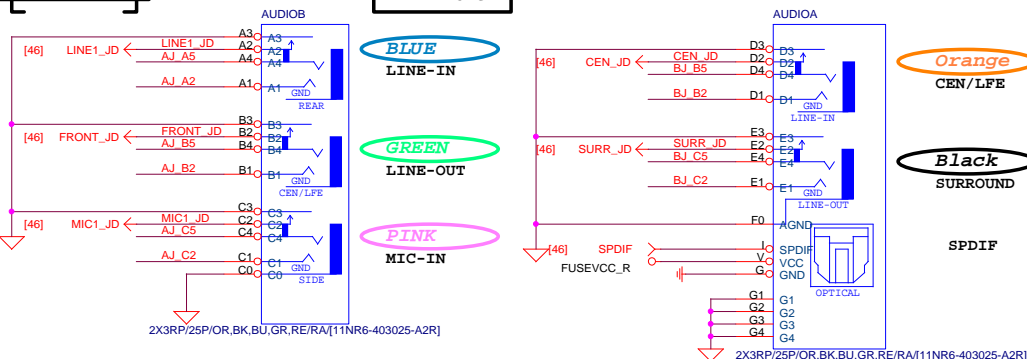
LINE-IN

GREEN

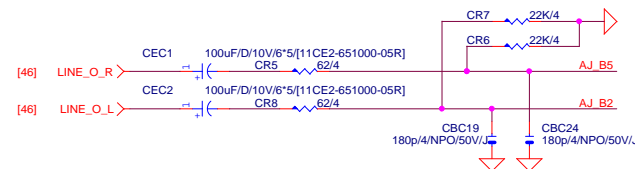
LINE-OUT

PINK

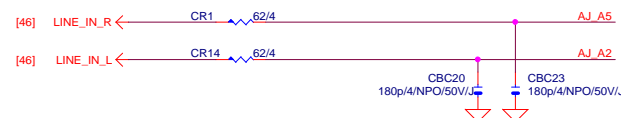
MIC-IN



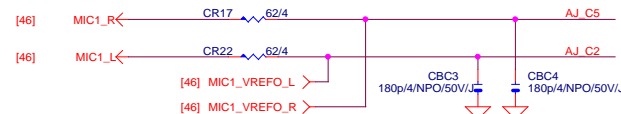
LINE-OUT



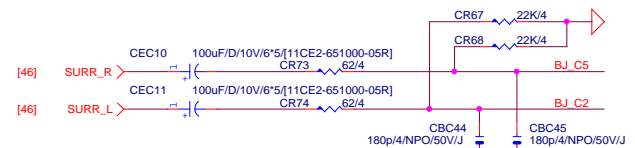
LINE-IN



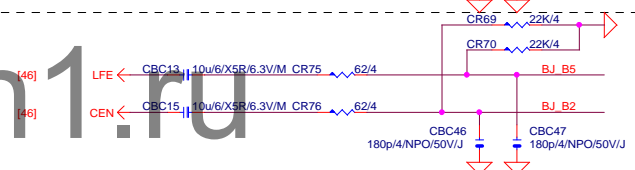
MIC-IN



SURROUND

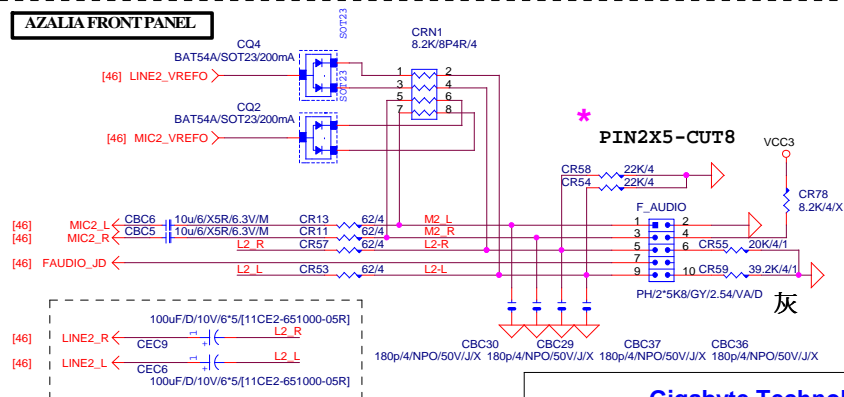


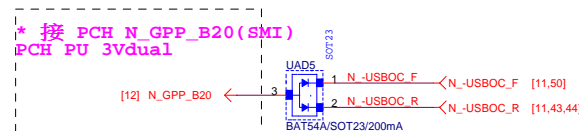
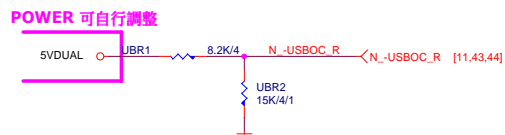
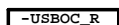
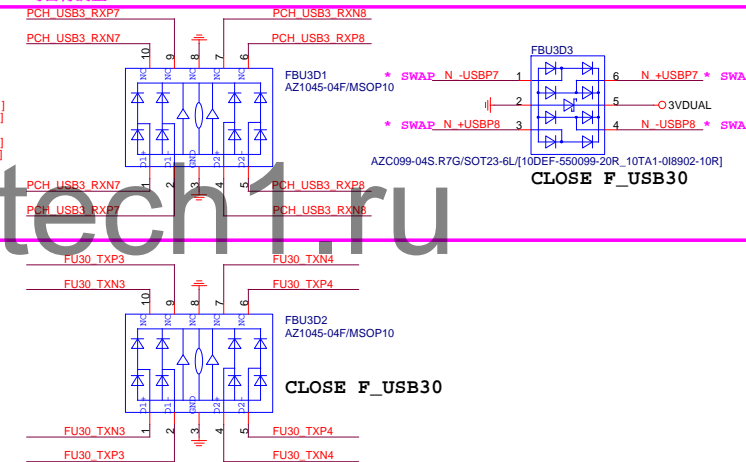
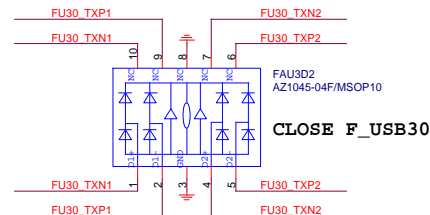
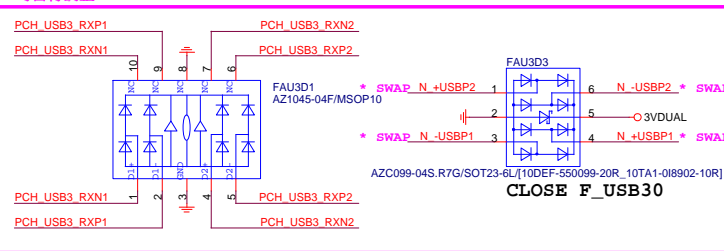
CEN/LFE



SURRBACK

AZALIA FRONT PANEL



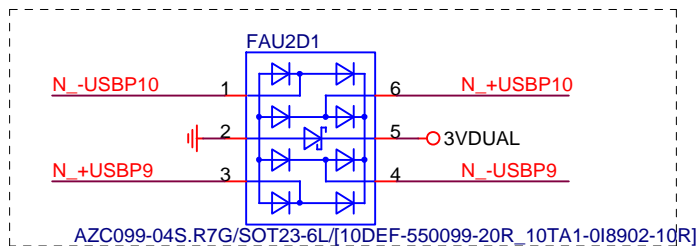
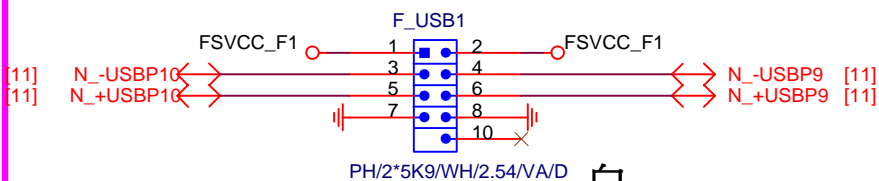


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FRONT USB1

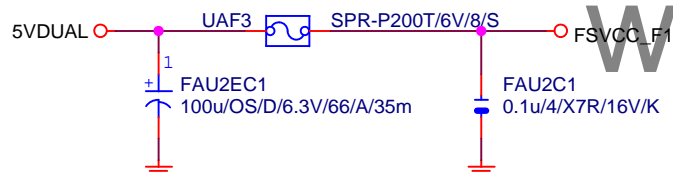
NET 可變

FUSB2X5-S



Close to connector

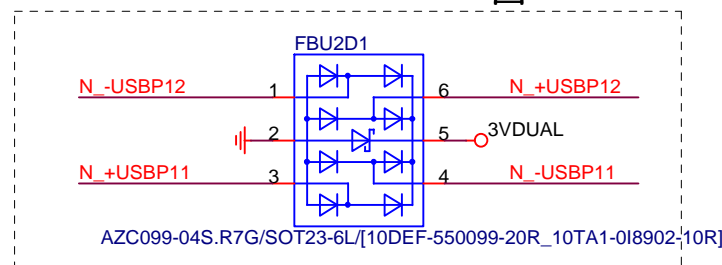
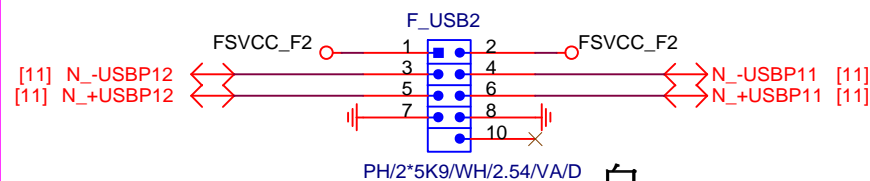
FUSE 2 Port 1 Fuse 2A



FRONT USB2

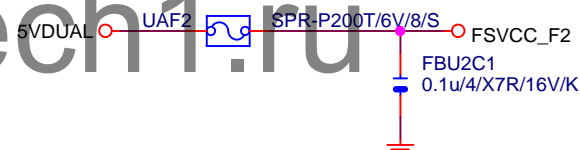
NET 可變

FUSB2X5-S

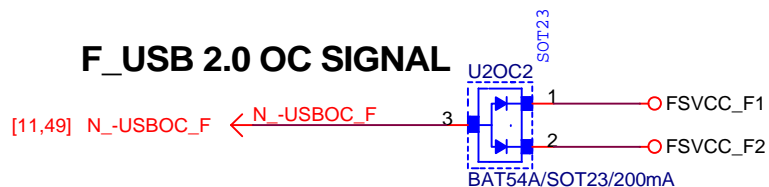


Close to connector

FUSE 2 Port 1 Fuse 2A



F_USB 2.0 OC SIGNAL



* 放置N_DB_CLK與T_TPMCLK中間(EMI)

Gigabyte Technology

Title

F_USB

Size
A

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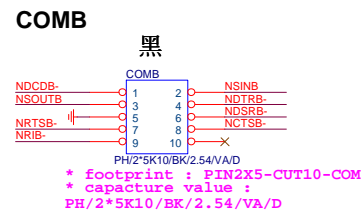
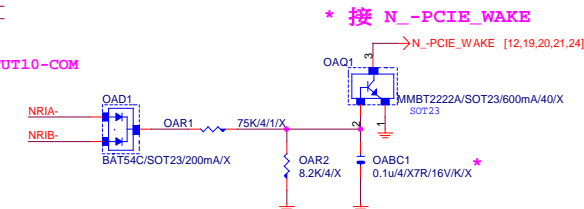
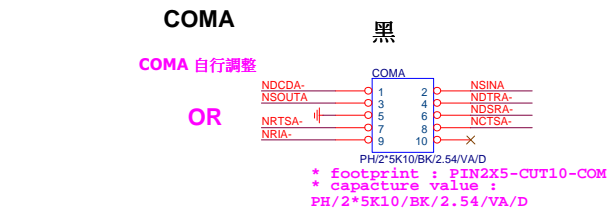


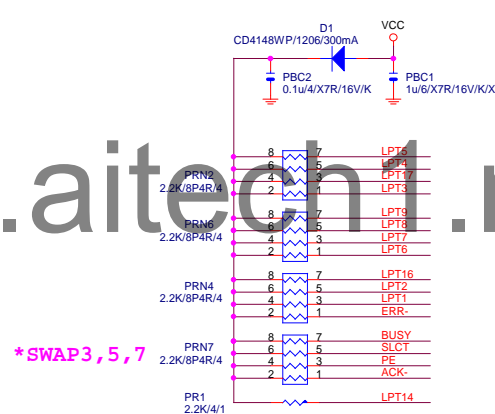
Figure 10 illustrates the connections for LPT14-LPT16 and LPT3-LPT9. The diagram is divided into two main sections, each featuring a 68/8P4R/4 connector.

Top Section (PRN5):

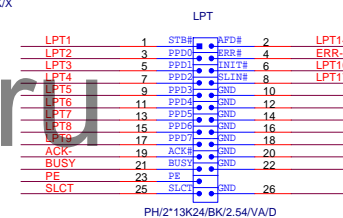
- On the left, three signals are listed: AFD-, STB-, and INIT-.
- On the right, three LPT ports are listed: LPT14, LPT1, and LPT2.
- Connections are shown as follows:
 - AFD- connects to LPT14 (pin 1).
 - STB- connects to LPT1 (pin 3).
 - INIT- connects to LPT2 (pin 7).

Bottom Section (PRN3):

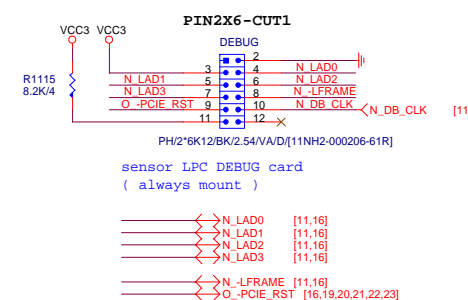
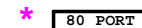
- On the left, four signals are listed: PD1-, SLIN-, PD2-, and PD3-.
- On the right, four LPT ports are listed: LPT3, LPT17, LPT4, and LPT5.
- Connections are shown as follows:
 - PD1- connects to LPT3 (pin 1).
 - SLIN- connects to LPT17 (pin 3).
 - PD2- connects to LPT4 (pin 5).
 - PD3- connects to LPT5 (pin 7).



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。



* footprint : 黒
PIN2X13 LPT-CUT24 黒

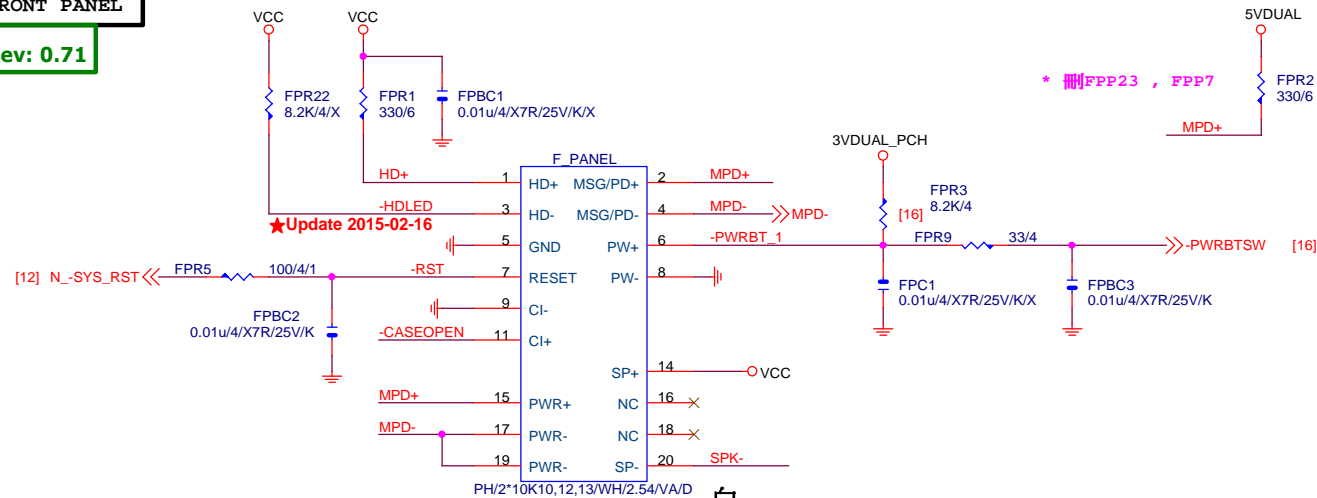
[illegible]

GIGABYTE

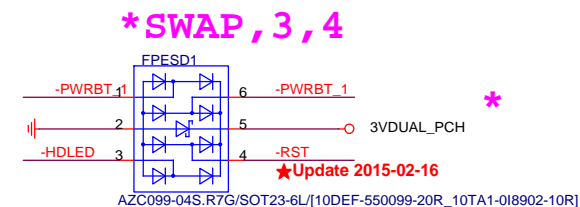
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COM, LPT, TPM, DEBUG			
Size	Document Number	Rev	
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FRONT PANEL

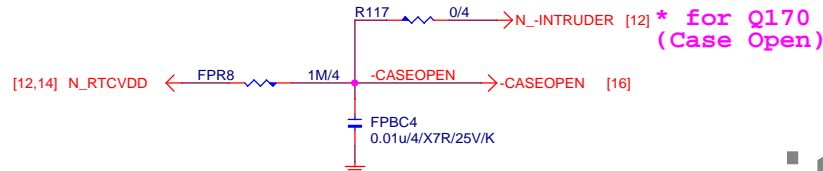
Rev: 0.71



ESD

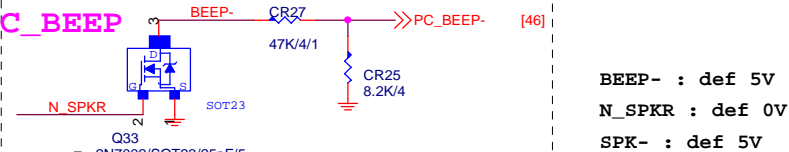


CASE OPEN

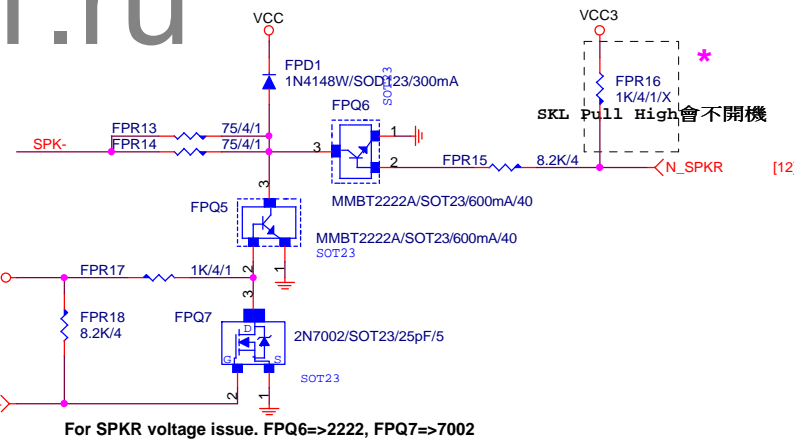
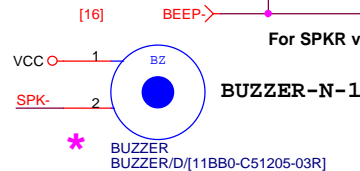
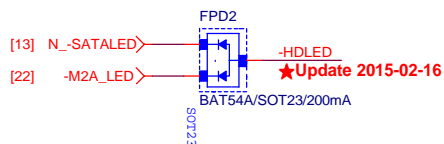


SPKR

* PC_BEEP



SATA LED

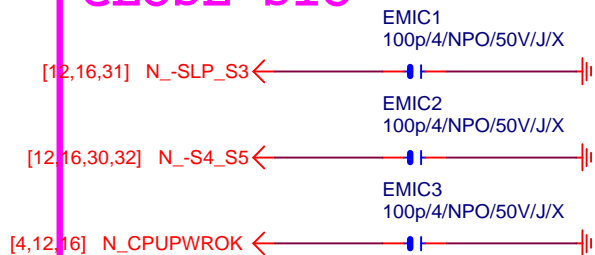


Gigabyte Technology

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FP,SPK,BZ		
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GA-Q170M-D3H

CLOSE SIO



CLOSE PCH

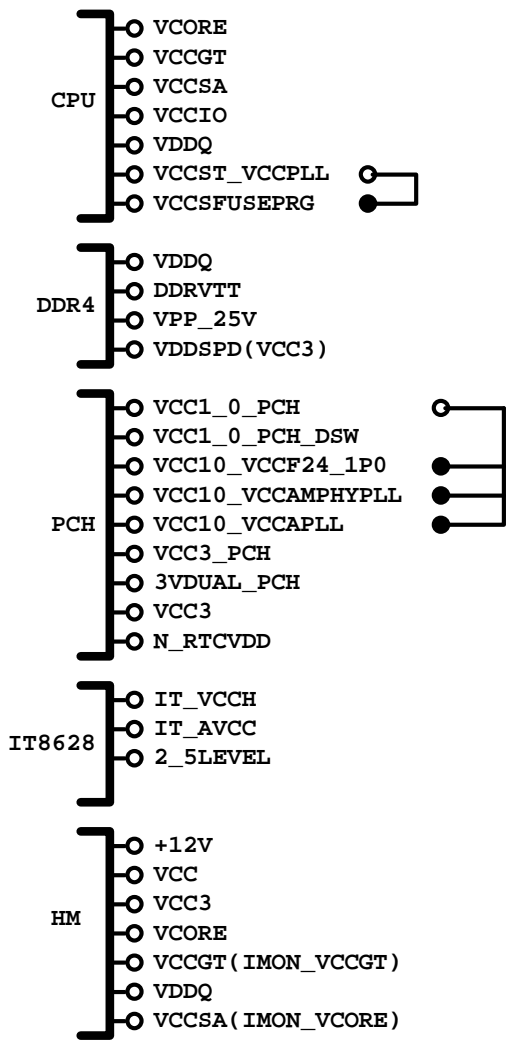


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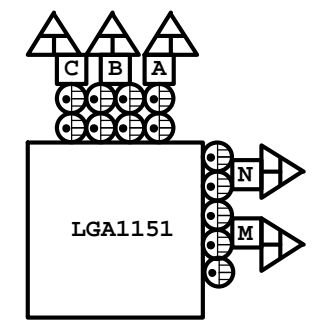
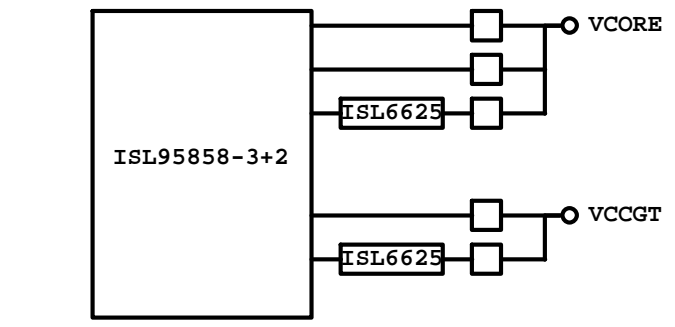
GIGABYTE™

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EM/ESD		
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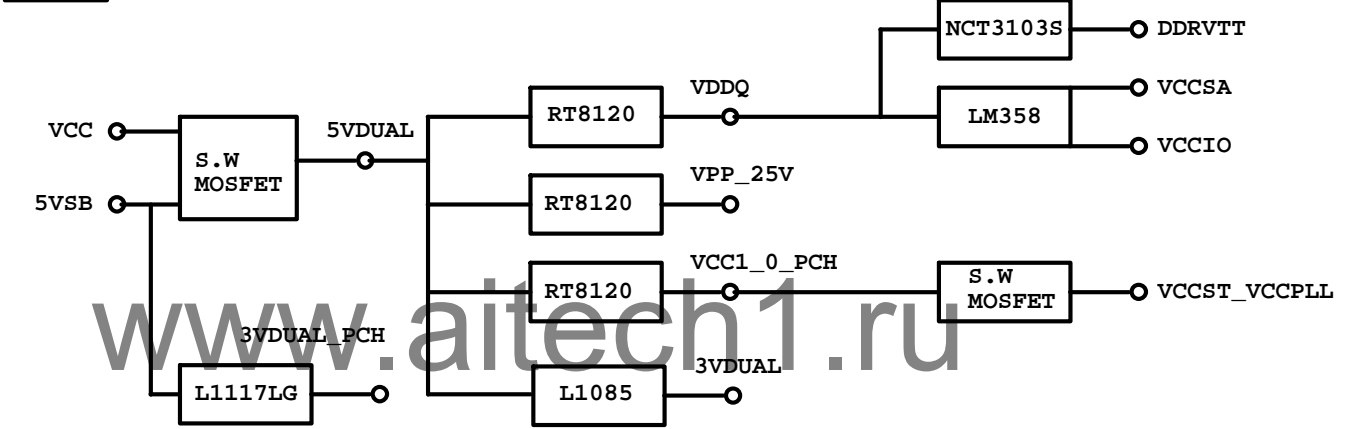
POWER BLOCK MAP



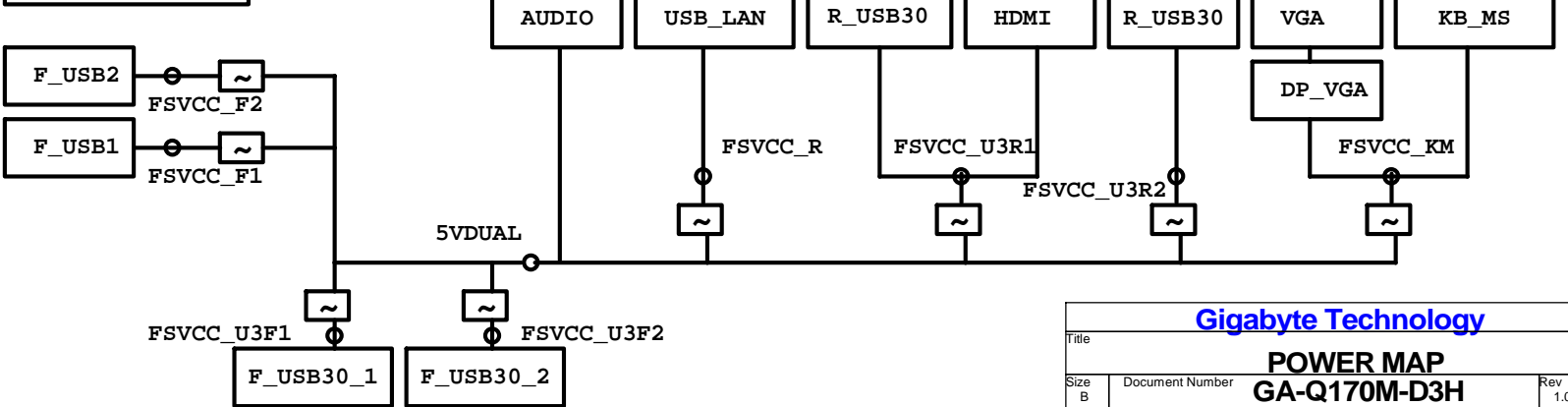
VCORE/VCCGT



POWER



FUSE POWER F/R



Rev 0.3

	料號	Capture Value	SIZE	Footprint	
DIP	11LC5-M4500C-01R	0.5uH/40A/IMD109/M/D	10*10	CHOKE05U-40A-1PQ-3	閃電P
DIP	11LC5-M4500C-11R	0.5uH/40A/IMD109/M/NP/D	10*10	CHOKE05U-40A-1PQ-3	無閃電P
DIP	11LC5-M2500C-01R	0.5uH/20A/IMD0809/M/D	8*8	CHOKE1U-R50M-IF	

Skylake Iron Choke閃電P導入機種如下：

- [1] Z170/H170 機種全部導入
- [2] B150/H110Gaming機種導入，其餘不導入

Ferrite

	料號	Capture Value	SIZE	Footprint
DIP	11LC5-F3500C-11R	0.5uH/32A/INCG109/FSI/D	10*10	CHOKE05U-40A-1PQ-3
DIP	11LC5-F2500C-11R	0.5uH/25A/INC0809/F/D	8*8	CHOKE1U-R50M-IF
SMD	10LC5-F4300C-01R	0.3uH/40A/SIUC/FR/S	10*7	CHOKE11X8MM-SMD

BEAD

	料號	Capture Value	SIZE	Footprint
DIP	10LFB-15470A-01R	47/4030/15A/S	4*3	BEADC8B-BPH_SMD











		料號	Capture Value	Footprint
PWM	ISL95856	10TA1-695856-01R		IC52QFN-6x6-G
PWM	ISL95858	10TA1-695858-01R		IC52QFN-6x6-G
PWM	IR35201	10TA1-635201-00R		IC56QFN-9VRS4339
PWM	IR3570	10TA1-603570-00R		IC40MLFP-ISL95835
PWM	RT8237C/D	10TA1-608237-01R		IC10DFN-NIS5132

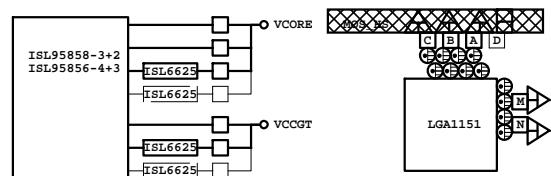
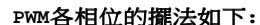
REGULATOR

		料號	Capture Value	Footprint
	NCT3103S	10GL2-203103-01R	NCT3103S/SOP8/2A	IC8-EPSOIC

GIGABYTE™			
Title POWER零件使用表			
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NAME	PWR	Default	USAGE	NOTE	
GPP_A0	MAIN	NATIVE	N_KERST	P/U 8.2K VCC3	
GPP_A1	MAIN	NATIVE	N_LADO	N/A	
GPP_A2	MAIN	NATIVE	N_LAD1	N/A	
GPP_A3	MAIN	NATIVE	N_LAD2	N/A	
GPP_A4	MAIN	NATIVE	N_LAD3	N/A	
GPP_A5	MAIN	NATIVE	N_LFRAME	N/A	
GPP_A6	MAIN	NATIVE	N_LSRIRG	P/U 8.2K VCC3	
GPP_A7	MAIN	NATIVE	N_LDRQ0	P/U 8.2K VCC3	
GPP_A8	MAIN	NATIVE	N_GPP_A8	P/U 8.2K VCC3	
GPP_A9	MAIN	NATIVE	N_TPWCLK / N_LPC24M4	N/A	
GPP_A10	MAIN	NATIVE	N_VGA24MCLK / N_DR_CLK	N/A	
GPP_A11	MAIN	NATIVE	N_P_PME	P/U 8.2K 3VDDAL, PC	
GPP_A12	MAIN	GPI	N_GPP_A12	P/U 8.2K VCC3	
GPP_A13	MAIN	NATIVE	N_S_WARN	N/A	
GPP_A14	MAIN	NATIVE	N_GPP_A14	P/U 8.2K 3VDDAL	
GPP_A15	MAIN	NATIVE	N_S_ACK	N/A	
GPP_B0	MAIN	CORE_VID0	N_DDR_V_SEL	P/U 8.2K VCC3	
GPP_B1	MAIN	CORE_VID0	N/A	N/A	
GPP_B2	MAIN	GPI	N_VKALERT	P/U 8.2K 3VDDAL	
GPP_B5	MAIN	GPI	-POICLK6_PR	P/U 8.2K VCC3	
GPP_B6	MAIN	GPI	N_GPP_B6	P/U 8.2K VCC3	
GPP_B7	MAIN	GPI	N_GPP_B7	P/U 8.2K VCC3	
GPP_B8	MAIN	GPI	-POICLK4_PR	P/U 8.2K VCC3	
GPP_B9	MAIN	GPI	N_GPP_B9	P/D GND	
GPP_B10	MAIN	GPI	NA_-CLKREQ	P/U 8.2K 3VDDAL	
GPP_B11	MAIN	GPO	N/A	N/A	
GPP_B12	MAIN	SLP_S0	N_SLP_S0	N/A	
GPP_B13	MAIN	PLTRST	N_PFRST2	N/A	
GPP_B14	MAIN	N=2	GPO	N_SPKR	P/U 1K VCC3
GPP_R18	MAIN	N=2	GPO	N_GPP_B18	P/D 1K GND
GPP_R20	MAIN	GPI	N_GPP_B20	P/U 8.2K 3VDDAL	
GPP_R22	MAIN	GPI	N_GPP_R22	P/D 1K GND	
GPP_R23	MAIN	GPI	N_PCH_HOT	N/A	
GPP_C0	MAIN	SMCLK	N_SMCCLK	P/U 1K 3VDDAL	
GPP_C1	MAIN	SHDATA	N_SHDATA	P/U 1K 3VDDAL	
GPP_C2	MAIN	N=2	GPI	N_GPP_C2	P/U 8.2K VCC3
GPP_C3	MAIN	SHCLK	N_SHCLK	P/U 499 3VDDAL	
GPP_C4	MAIN	SHGDAC	N_SHGDAC	P/U 499 3VDDAL	
GPP_C5	MAIN	N=2	GPI	N_GPP_C5	P/U 8.2K 3VDDAL
GPP_C6	MAIN	GPI	N_SHCLKAT	P/U 8.2K 3VDDAL	
GPP_D4	MAIN	GPI	N_SHCLKAT	P/U 8.2K 3VDDAL	
GPP_D7	MAIN	GPI	N_GPP_D7	P/U 8.2K 3VDDAL	
GPP_D9	MAIN	GPI	N_GPP_D9	P/U 1K VCC3	
GPP_D17	MAIN	GPI	N_GPP_D17	P/U 8.2K VCC3	
GPP_D18	MAIN	GPI	N_GPP_D18	P/U 8.2K VCC3	
GPP_D19	MAIN	GPI	N_GPP_D19	P/U 8.2K VCC3	
GPP_D20	MAIN	GPI	N_GPP_D20	P/U 8.2K VCC3	
GPP_D23	MAIN	GPI	N_GPP_D23	P/U 8.2K 3VDDAL	
GPP_E0	MAIN	NATIVE	N_GPP_E0	P/U 8.2K 3VDDAL	
GPP_E1	MAIN	NATIVE	N_GPP_E1	P/U 8.2K 3VDDAL	
GPP_E2	MAIN	NATIVE	N_GPP_E2	P/U 8.2K 3VDDAL	
GPP_E3	MAIN	GPI	N/A	N/A	
GPP_E4	MAIN	GPI	N_DEVSFP0	N/A	
GPP_E6	MAIN	GPI	N_DEVSFP2	N/A	
GPP_E7	MAIN	GPI	N/A	N/A	
GPP_E8	MAIN	GPI	N_-SATALED	N/A	
GPP_E9	MAIN	N=2	GPI	N_USBOC_F	N/A
GPP_E10	MAIN	N=2	GPI	N_USBOC_R	N/A
GPP_E11	MAIN	N=2	GPI	N_USBOC_R	N/A
GPP_E12	MAIN	N=2	GPI	N_USBOC_F	N/A
GPP_F0	MAIN	NATIVE	N_GPP_F0	P/U 8.2K 3VDDAL	
GPP_F1	MAIN	NATIVE	N_GPP_F1	P/U 8.2K 3VDDAL	
GPP_F2	MAIN	NATIVE	N_GPP_F2	P/U 8.2K 3VDDAL	
GPP_F3	MAIN	GPI	N_GPP_F3	P/U 8.2K 3VDDAL	
GPP_F4	MAIN	GPI	N_GPP_F4	P/U 8.2K 3VDDAL	
GPP_F5	MAIN	GPI	N_GPP_F5	P/U 8.2K VCC3	
GPP_F6	MAIN	GPI	N_DEVSFP4	N/A	
GPP_F10	MAIN	GPI	N_GPP_F10	P/U 8.2K VCC3	
GPP_F11	MAIN	GPI	N_GPP_F11	P/U 8.2K VCC3	
GPP_F12	MAIN	GPI	N_GPP_F12	P/U 8.2K VCC3	
GPP_F14	MAIN	GPI	N_GPP_F14	P/U 8.2K VCC3	
GPP_F15	MAIN	GPI	A_-SKEWOC	P/U 8.2K VCC3	
GPP_F16	MAIN	GPI	N_USBOC_F	N/A	
GPP_F17	MAIN	GPI	N_USBOC_R	N/A	
GPP_F18	MAIN	GPI	N_USBOC_7	P/U 8.2K 3VDDAL	
GPP_F22	MAIN	GPI	N_GPP_F22	P/U 8.2K VCC3	
GPP_F23	MAIN	GPI	N_GPP_F23	P/U 8.2K VCC3	
GPP_G0	MAIN	GPI	N_GPP_G0	P/U 1K VCC3	
GPP_G1	MAIN	GPI	N_GPP_G1	P/U 1K VCC3	
GPP_G12	MAIN	GPI	N_GPP_G12	P/U 3.3K VCC3	
GPP_G13	MAIN	GPI	N_GPP_G13	N/A	
GPP_G14	MAIN	GPI	N_GT_S	P/U 8.2K VCC3	
GPP_G15	MAIN	GPI	N_CPU_S	P/U 8.2K VCC3	
GPP_G16	MAIN	GPI	N/A	N/A	
GPP_G18	MAIN	GPI	N_GPP_G18	P/U 8.2K VCC3	
GPP_G19	MAIN	GPI	N_GPP_G19	P/U 8.2K VCC3	
GPP_G20</					

PIN NAME	USAGE	NOTE
PCIRST53#/GP10/VDIMM_STR_EN	N/A	
PCIRST2#/GP11	O - PCIR_RST	
PCIRST1#/GP12	O - FPMRST2	
SVC/PCQT_RQT/GP14	N - THRMTRIP	
SLP_SUS#/PCIRST1#/CIRX22/GP15	-PCIRSTIN	
FSL_L/FAN_CTL5/CIRX22/GP16	 FIN	
RI2#/GP17	RI2-	
THR_PWM_CTS2#/GP20	CTS2-	
IO_SMI#DCID2#/GP21	DCD2-	
SP1_S1/GP22	BEEP-	
PWR#OK/CPU_PG/GP23	N_PCH_DPM#OK	
FAN_TAC5/RTS2#/GP24	RTS2-	
FAN_TAC4/DSR2#/GP25	DSR2-	
INV_OUT1_SOUT2/GP26	TXD2	
INV_IN1/SIN2/GP27	RXD2	
ATXP0/GP30	PWOK	
CTS1/GP31	CTS1-	
OCWD73/RI1#/GP32	RI1-	
OCWD72/DCD1#/GP33	DCD1-	
VTT_PWRGD/GP34	VTT_PWRGD	
VCC18_EN/GP35	VCCIO_EN	
FAN_CTL3/GP36	 FIN	
FAN_TAC3/GP37	G_FAN#D	
3VBSW#/GP40	 FIN	
OCMDT1/SIN1/GP41	RXD1	
GP42/SCK/FAN_CTL4	N - THRMTRIP	
PANSW#/GP43	-PWRBTW	
PWRON#/GP44	O_PWRBTW	
OCWD70/DSR1#/GP45	DSR1-	
CE2_N/GP47/JP6	CEB_N	
GP50/JP1	 FIN	
FAN_CTL2/GP51	FANPWM2	
FAN_TAC2/GP52	FANIO2	
SUSC#/GP53	N - S4_S5	
PWR#/GP54	N - LFCPME	
LB#RST#/CIRXK1/GP55	O - HB#RST	
KCLK/FAN_TAC6/GP56	KCLK	
HDAT/FAN_CTL6/GP57	HDAT	
KCLK/GP60	KCLK	
KDAT/GP61	KDAT	
KRST#/GP62	N - YBRST	
HOLD_B#/GP63	 FIN	
HOLD_BB/GP64	 FIN	
VLDT_EN/PCH_D0/GP65	MB_ID2	
VCC1_05_EN/GP66	VCC1_0_EN	
GP67	 FIN	
USB_F#1/PD0/GP70	PD0	
USB_F#2/PD1/GP71	PD1	
USB_F#3/PD2/GP72	PD2	
USB_F#3/PD3/GP73	PD3	
USB_F#5/PD4/GP74	PD4	
USB_F#6/PD5/GP75	PD5	
USB_F#7/PD7/GP76	PD6	
USB_F#8/PD8/GP77	PD7	
LS_IN1/SLCT/GP80	ERR-	
LS_OUT1/PE/GP81	PE	
LS_IN2/BUSY/GP82	BUSY	
LS_OUT2/ACK#/GP83	ACK-	
IPHONE_CHARGE#/SLIN#/GP84	SLIN-	
OC_IN/INIT#/GP85	INIT-	
OC_OUT/AFD#/GP86	AFD-	
USB_OC2/STB#/GP87	STB-	
DDR_EN/GP90	MA_EN	
PWRLED/GP91	MPD-	
HOLD_OUT/GP92	 FIN	
HDLED_IN/GP93	 FIN	
PROCHOT#/GP94	-PROCHOT_CON	
CPUPWRGD/GP95	 FIN	
PCH_VKMPWRGD/GP96	N_PCH_VKMPWRGD	
VR_RDY/GP97	VR_RDY	

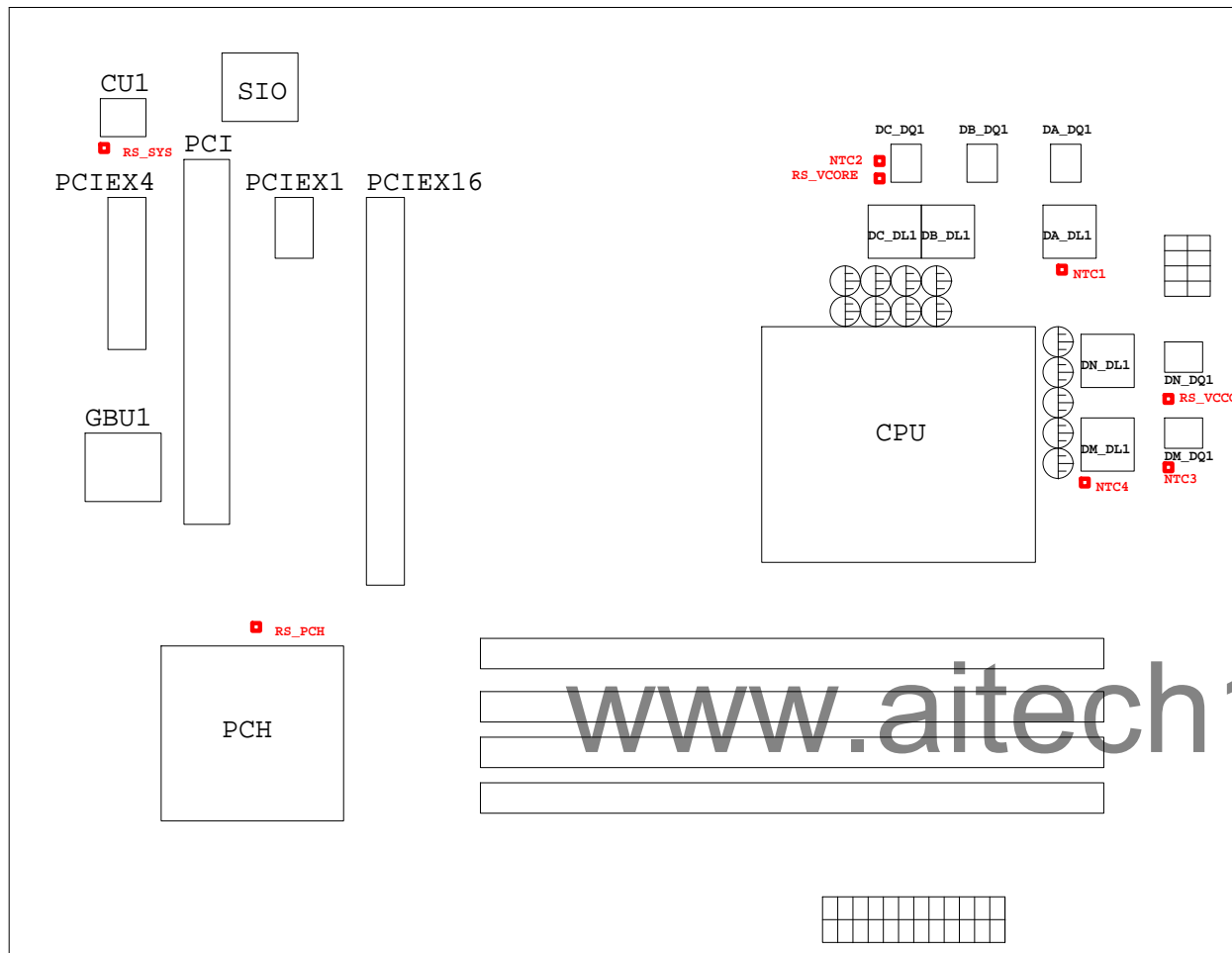


散熱模組料號:

Q170M-D3H :
PCH : 12SP2-030005-51R / 53R
MOSFET : N/A

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	+12V	FANPWM1	FANIO1	IT8628
SYS FAN1	FANPWM2	VCC	FANIO2	IT8628
	FAN1_VOUT	N/A	N/A	NCT3941

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熱敏電阻	擺放靠近位置	走線方式
NTC1	DM_DL1	Differential
NTC2	DA_DL1	Differential
NTC3	DA_DQ1	Differential
NTC4	DM_DQ1	Differential
RS_VCORE	DC_DQ1	N/A
RS_VCCGT	DN_DQ1	N/A
RS_PCH	PCH	N/A
RS_SYS	CU1	N/A