

SHEET

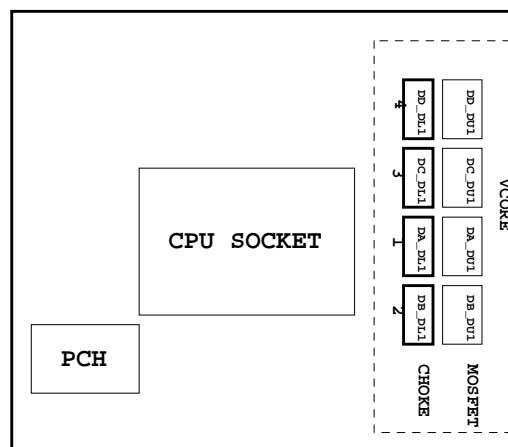
TITLE

| | |
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| 03 | BLOCK DIAGRAM |
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| 07 | CPU_LGA1151-D |
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SHEET

TITLE

| | |
|----|-------------------------------------|
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Gigabyte Technology

| | | | |
|-------------|--------------------------|------------|---------|
| Cover Sheet | | | |
| Size | Document Number | GA-H110-D3 | Rev 1.0 |
| Date: | Monday, October 26, 2015 | Sheet 1 | of 50 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|

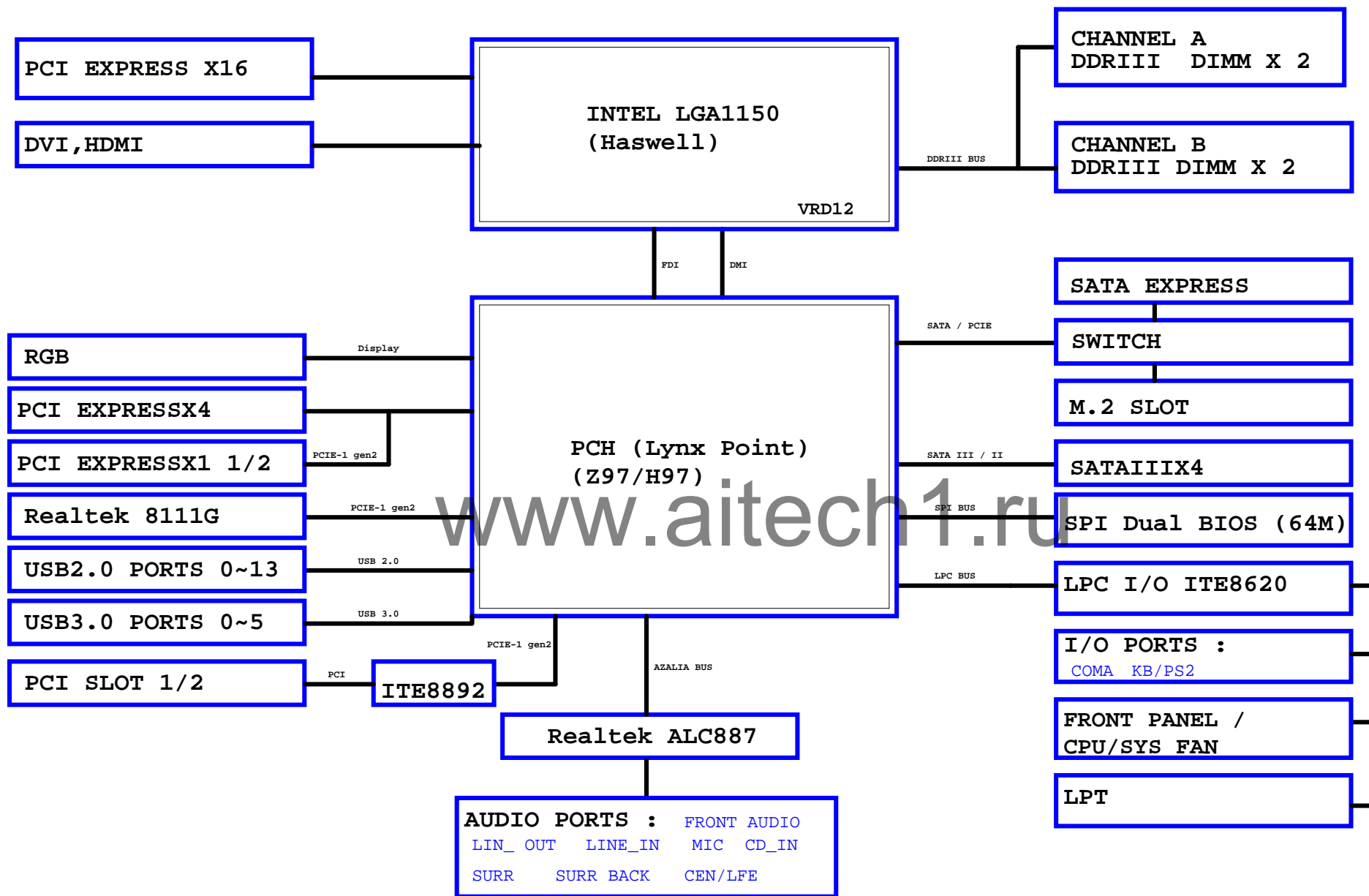
D

C

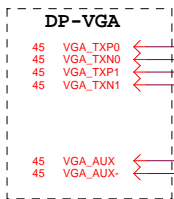
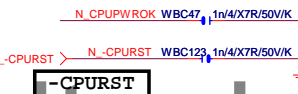
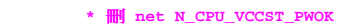
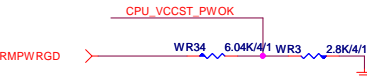
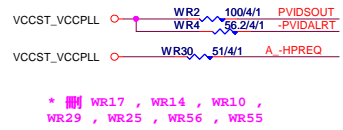
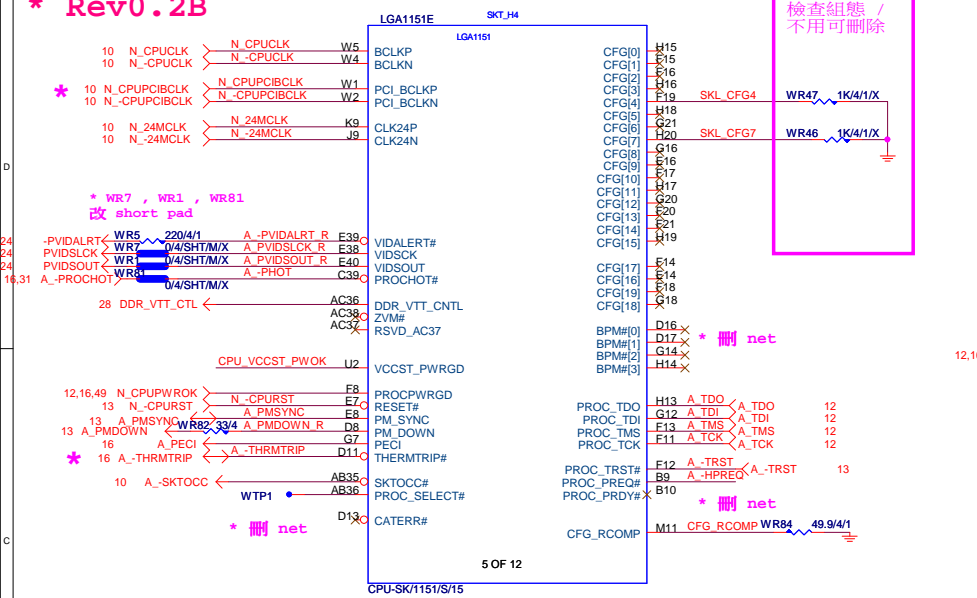
4

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

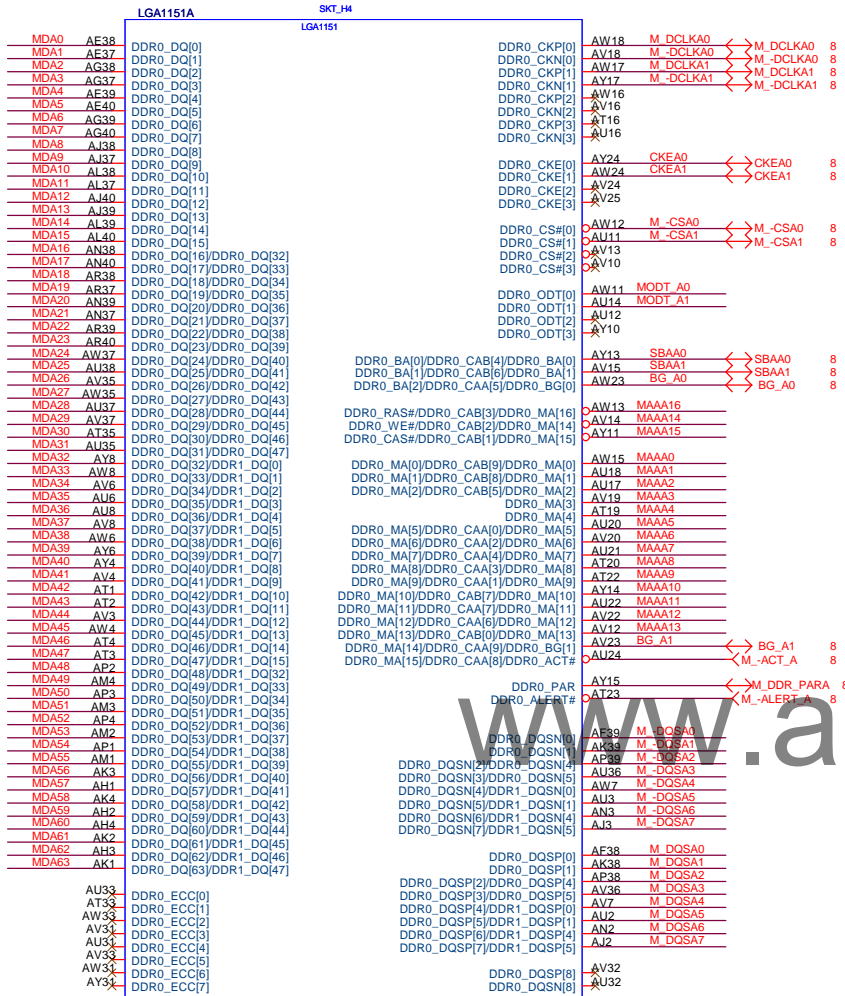
Gigabyte Technology

CPU LGA1151-A

GA-H110-D3

| | | | |
|---------------|--------------------------|---------------|---------|
| Title | | | |
| CPU LGA1151-A | | | |
| Size Custom | Document Number | | Rev 1.0 |
| GA-H110-D3 | | | |
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* 改DDR4 net

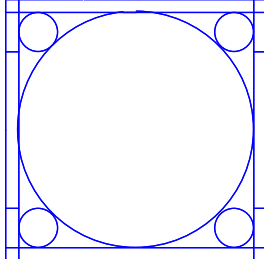


DDR CHANNEL A

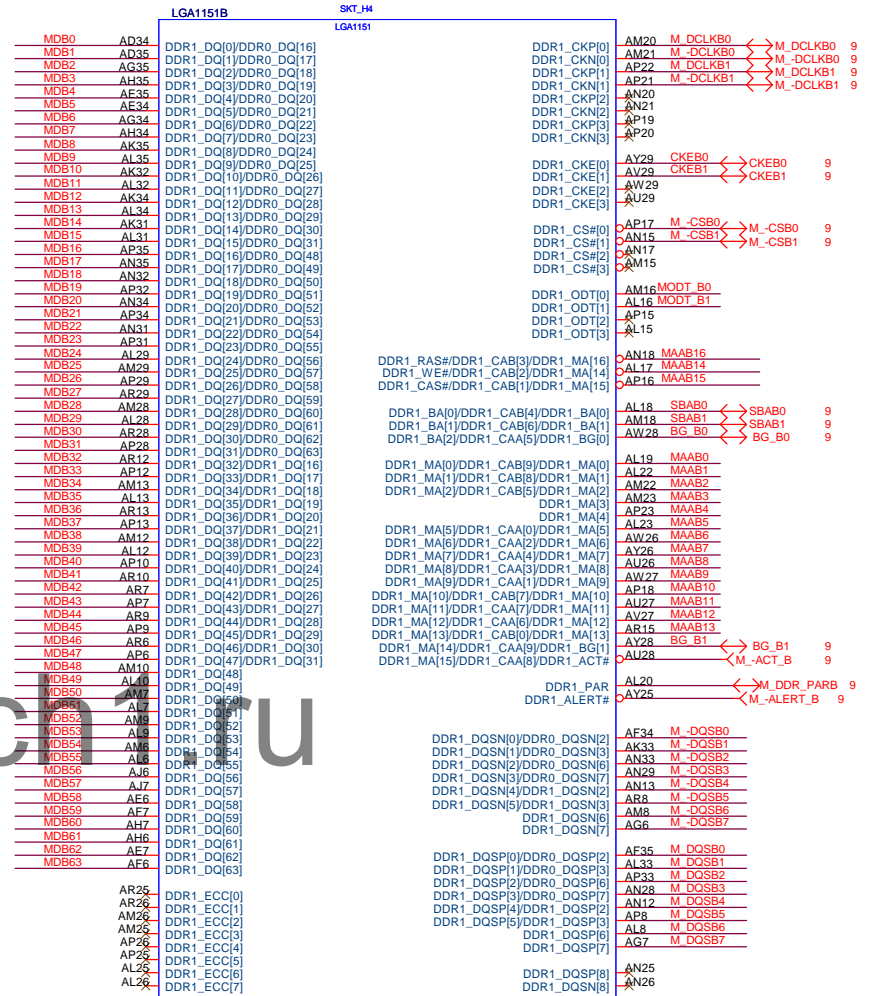
1 OF 12

CPU-SK/115/S/15

ILM_BP_CR/115X/NORMAL NI



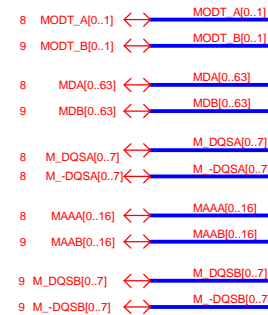
Need check the new CPU ME



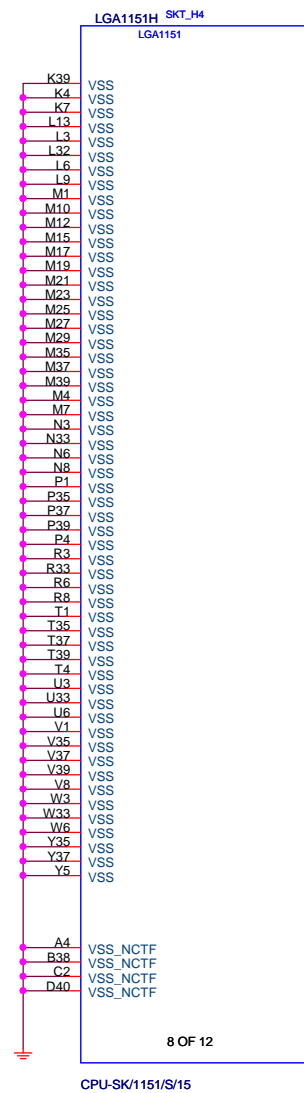
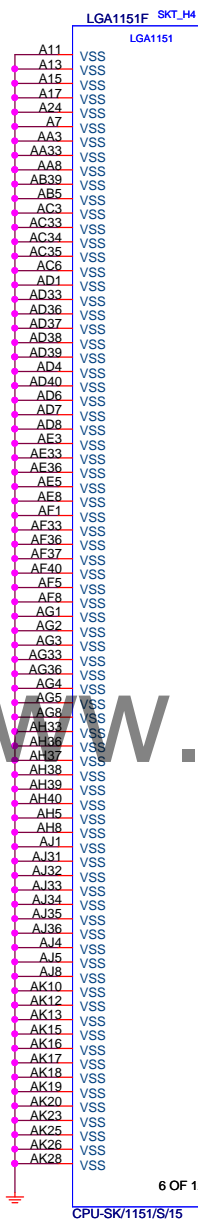
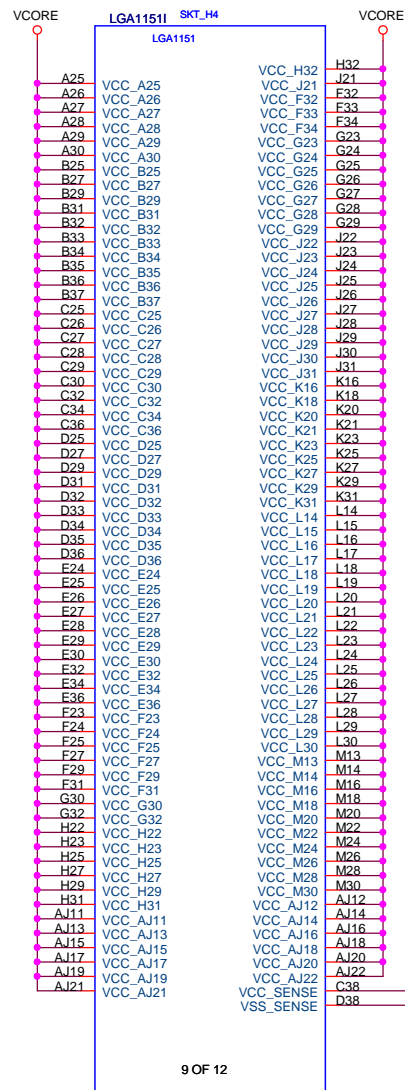
DDR CHANNEL B

2 OF 12

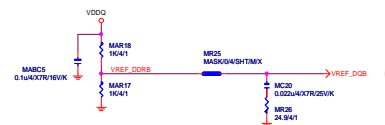
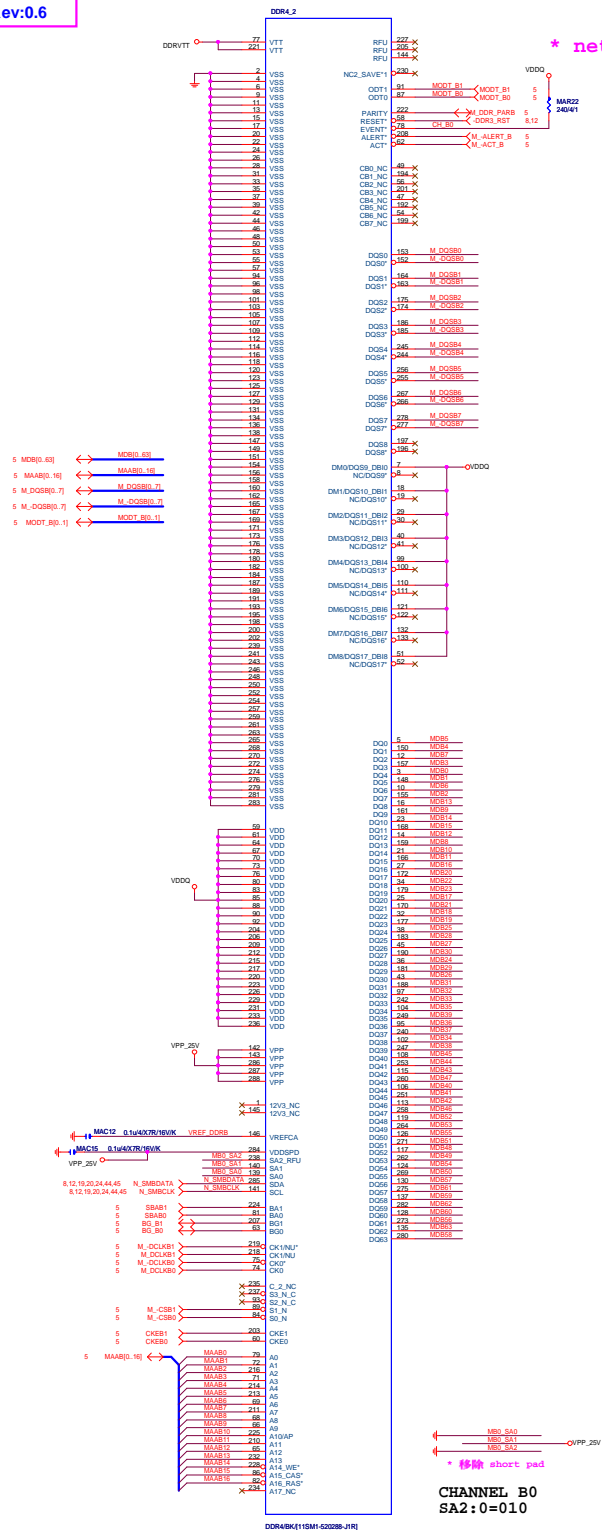
CPU-SK/115/S/15



| | | |
|--------------------------------|-----------------|---------|
| Gigabyte Technology | | |
| Title CPU LGA1151-B | | |
| Size | Document Number | Rev 1.0 |
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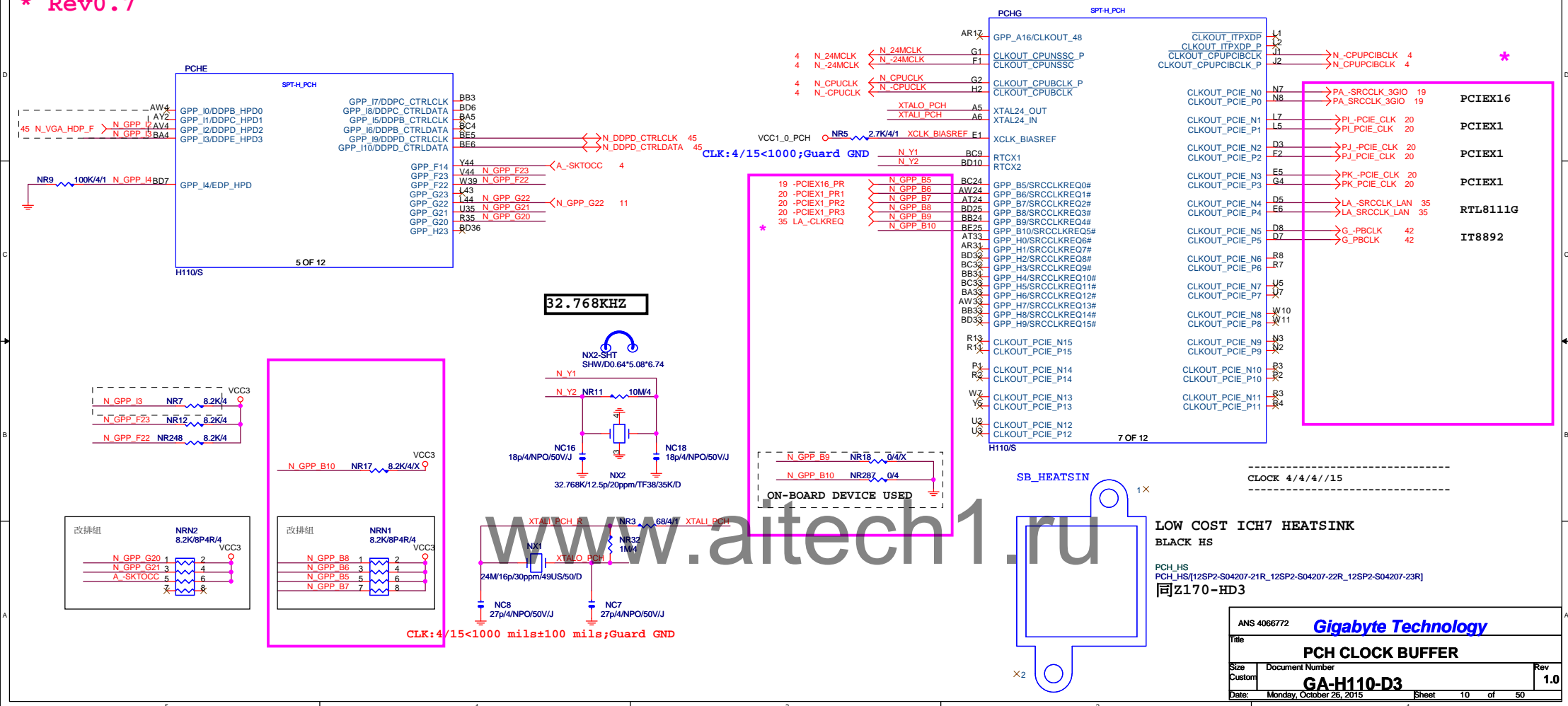
Rev:0.6

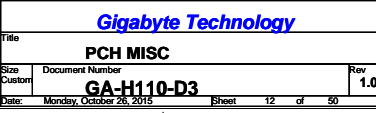


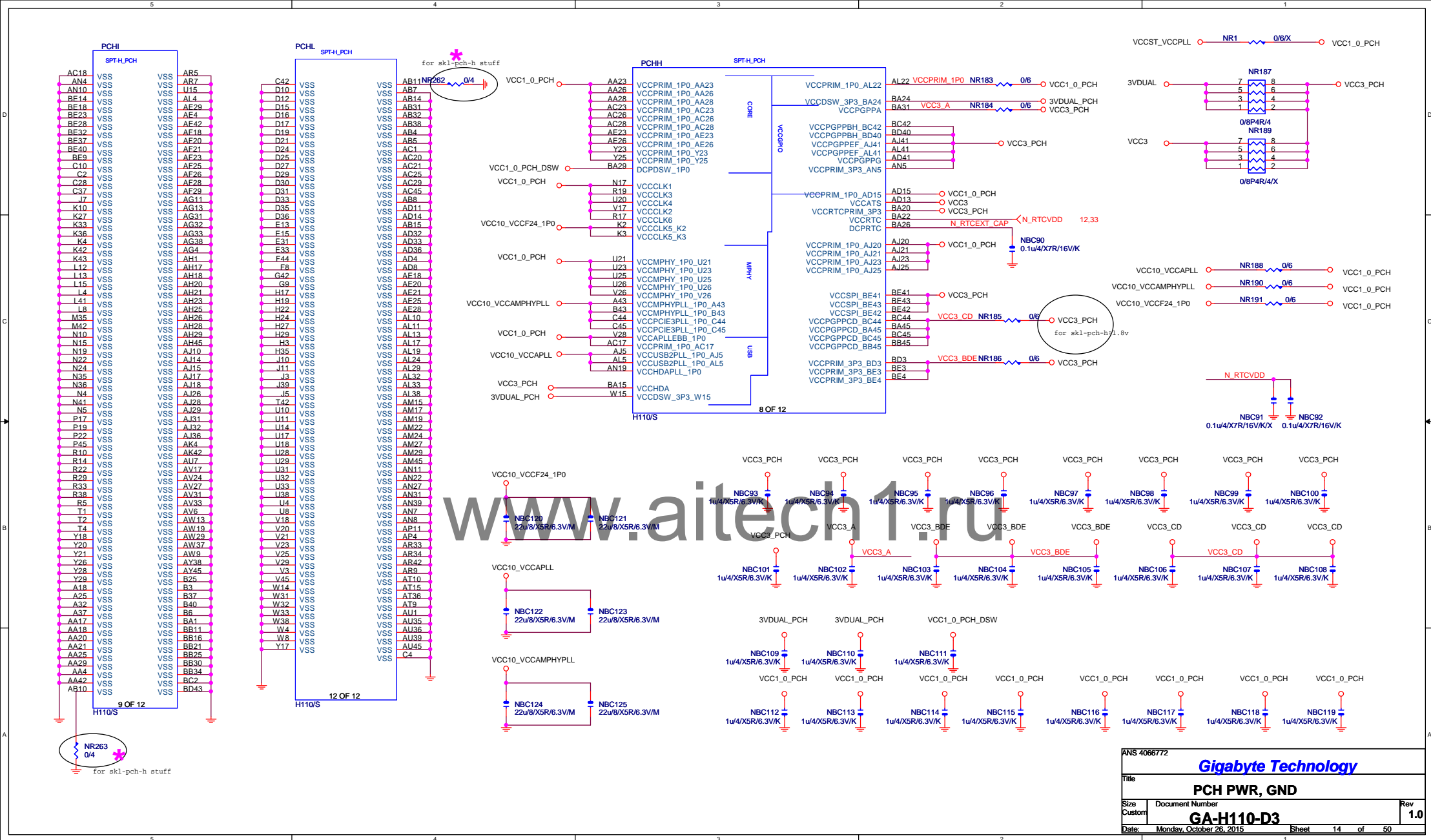
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| | | | |
|--------|-----------------|---------------------|-------|
| Title | | Gigabyte Technology | |
| Size | | DDR4 CHANNEL B | |
| Custom | Document Number | GA-H110-D3 | |
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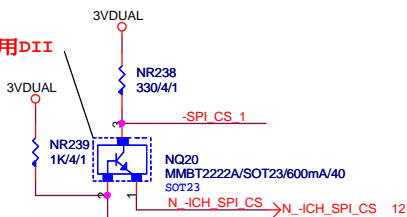
* Rev0.7



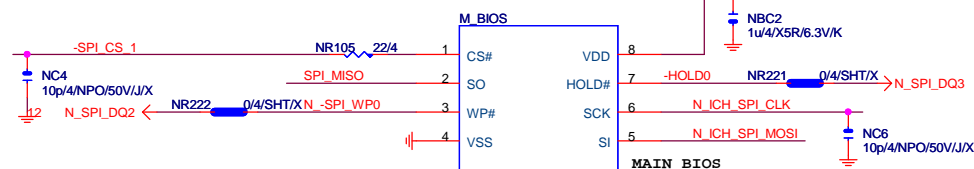
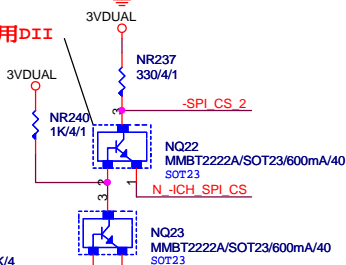




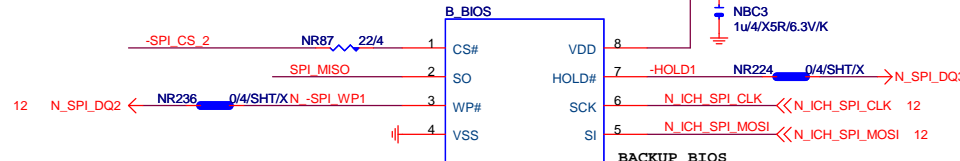
指定用DII



指定用DII

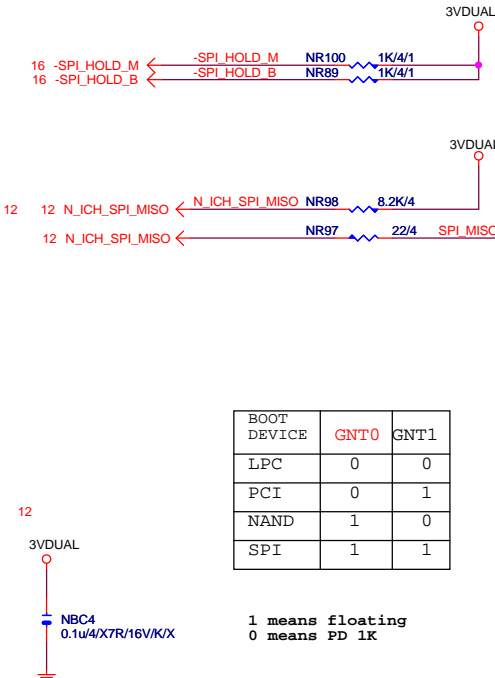


64M/Q/SP/508/S

* (footprint 改
SOIC8-SPI-SOCKET)

64M/Q/SP/508/S

* (footprint 改 IC8-BIOS)

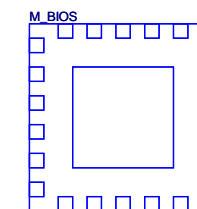


| BOOT DEVICE | GNT0 | GNT1 |
|----------------|------|------|
| LPC | 0 | 0 |
| PCI | 0 | 1 |
| NAND | 1 | 0 |
| SPI | 1 | 1 |

1 means floating
0 means PD 1K

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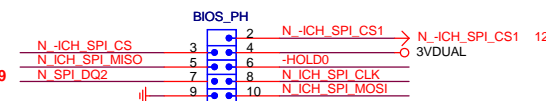
BIOS_PH



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

* 試産先上, PVT 移除

★Update 2015-01-29



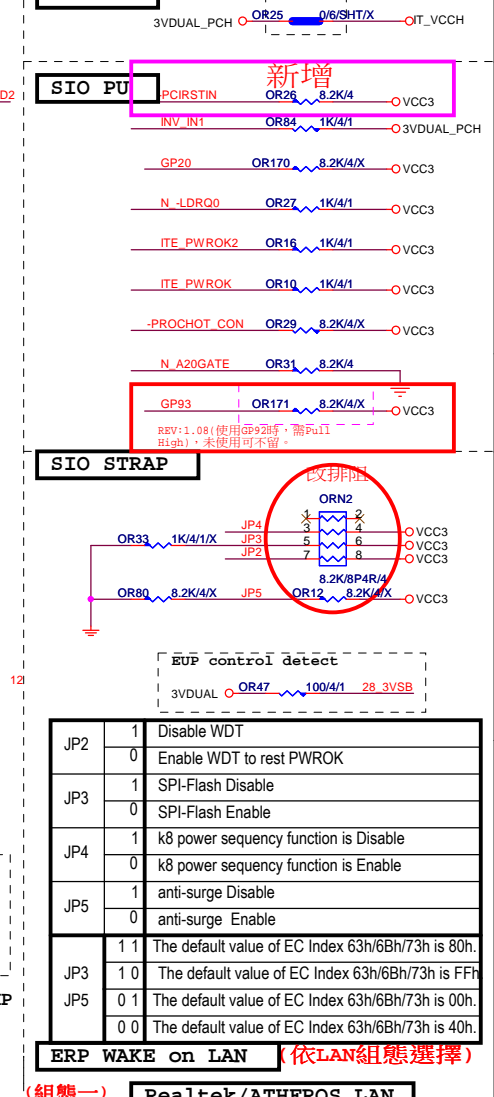
MASK/PH/2*5K10/BK/2.54/VA/D/X

Footprint the same, confirmed by Gracing.

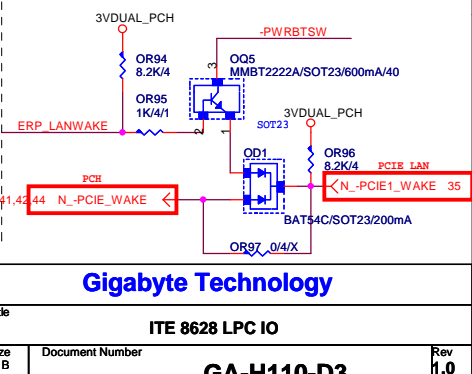
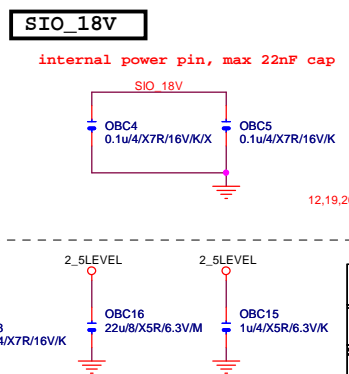
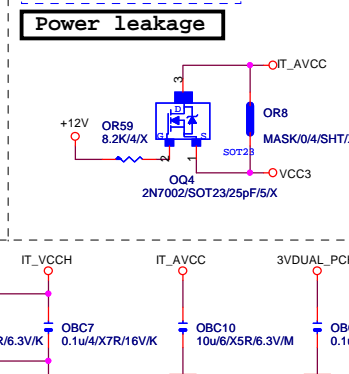
Use COM port pin header part.

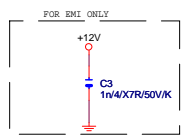
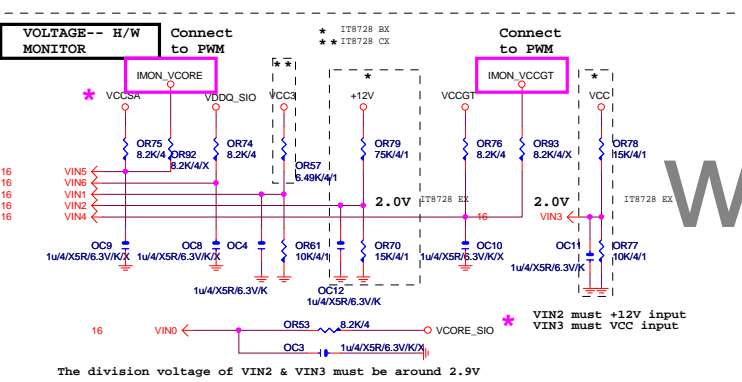
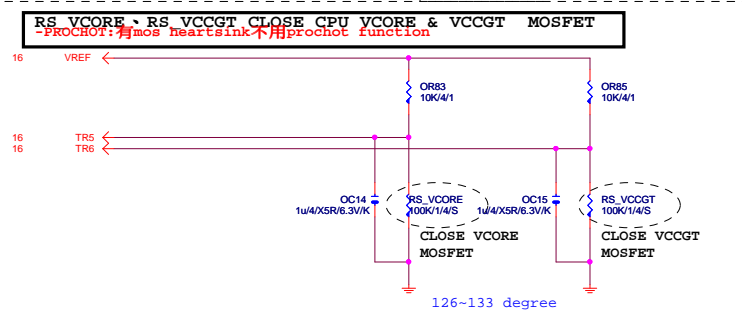
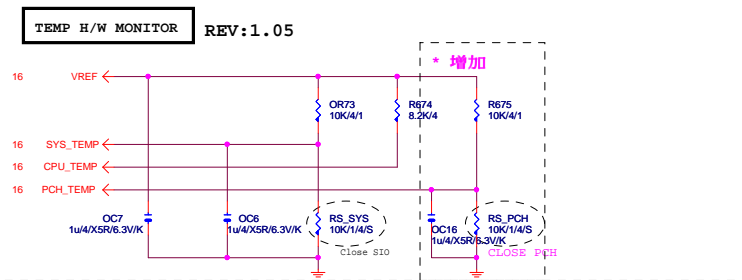
Gigabyte Technology

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|--------|--------------------------|------------|----------|
| Title | | | BIOS |
| Size | Document Number | GA-H110-D3 | |
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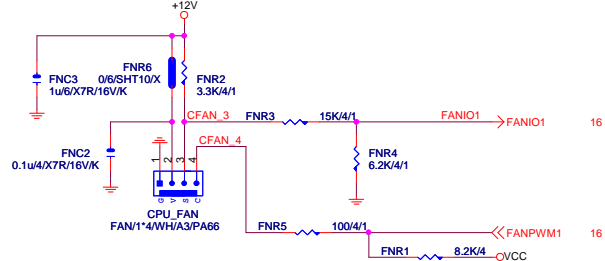
| TT8620E GPIO問題匯整 | |
|------------------|---|
| PIN 50 | GP26-第一次接上POWER時 會拉 Lo |
| PIN 90/91 | DEFAULT為HDLED FUNCTION GP93 BYPASS TO GP92 高溫時 GP92 會被拉Lo(ITE BUG) |
| PIN 108 | GP40--- POWER ON 時會拉 Lo |
| PIN 111/112 | MOUSE 跟PAN6 FUNCTION 擇一使用，不然會互相干擾 |
| PIN 22 | PIN22，需高於3V，若低於 接部分COM PORT及LET裝置 蜂鳴器會異常動作。 |
| | |





Rev: 0.61

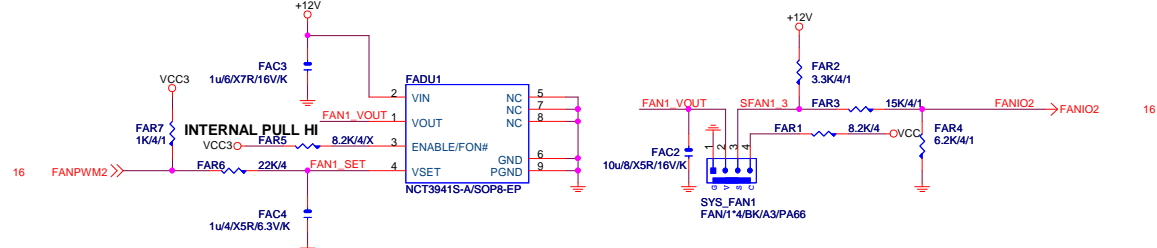
CPU SMART FAN



SYSTEM FAN1

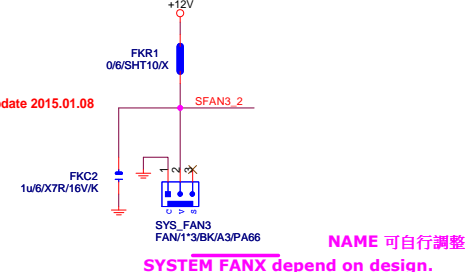
Linear SYS_FAN

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

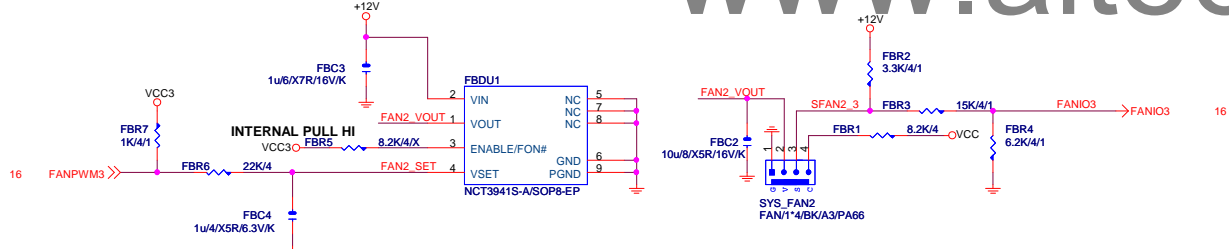


SYSTEM FAN3

★Update 2015.01.08



SYSTEM FAN2



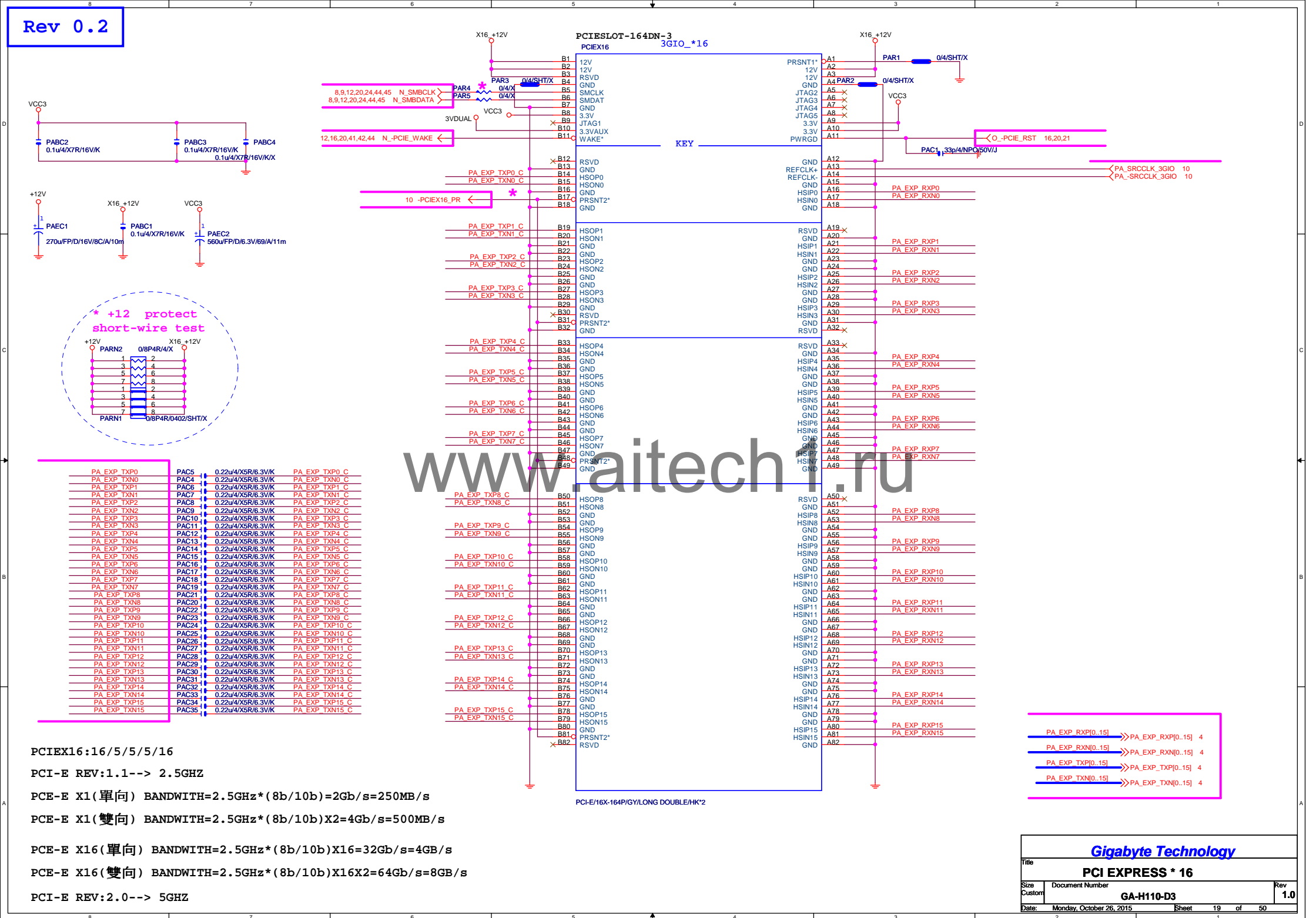
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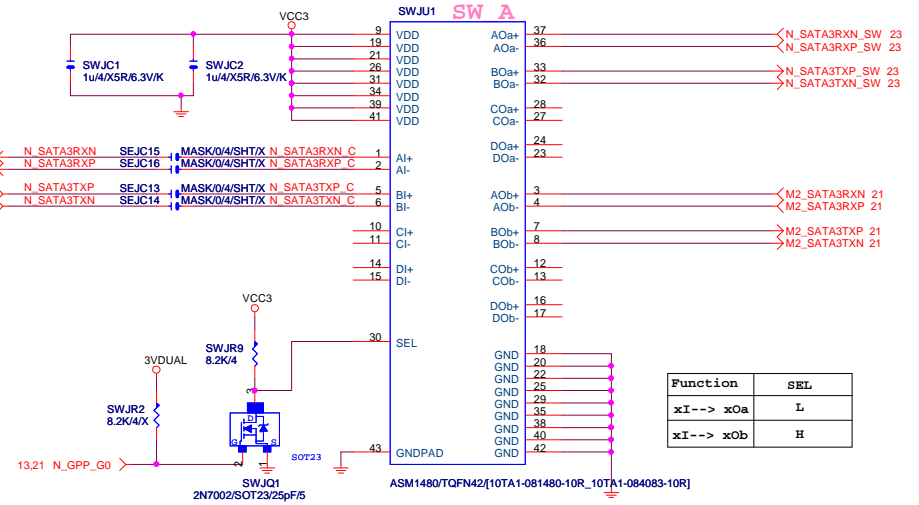
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|-------|--|
| Title | |
|-------|--|

| Size | Document Number | Rev |
|------|-----------------|-----|
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| | GA-H110-D3 | 1.0 |
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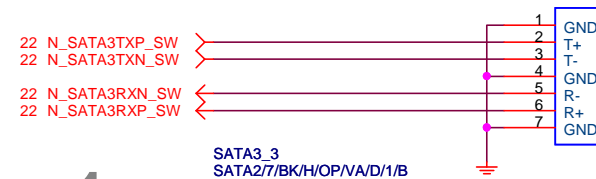
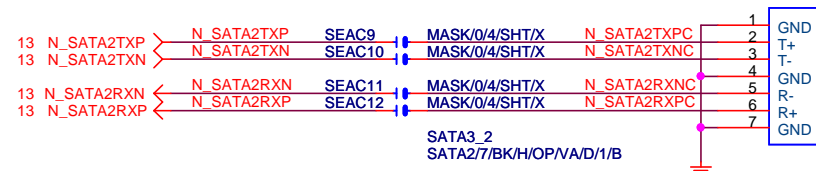
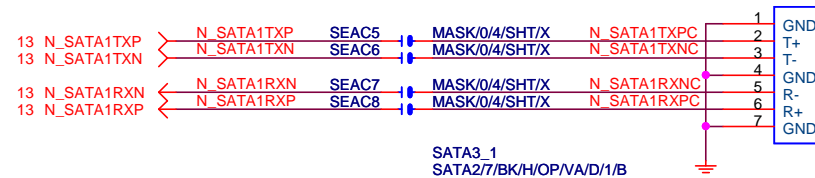
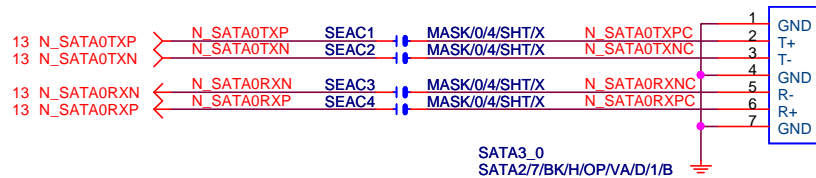


PCH (S3)



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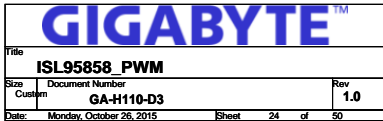
Rev 0.5a

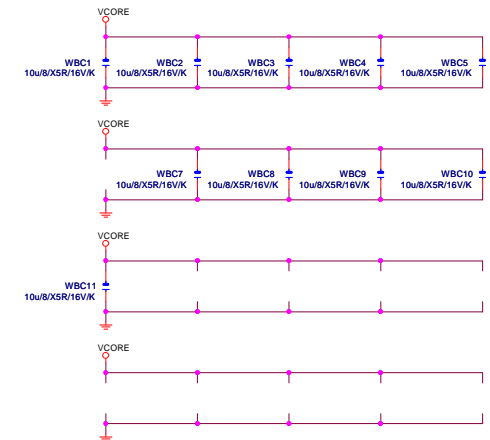
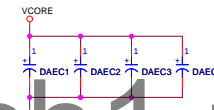
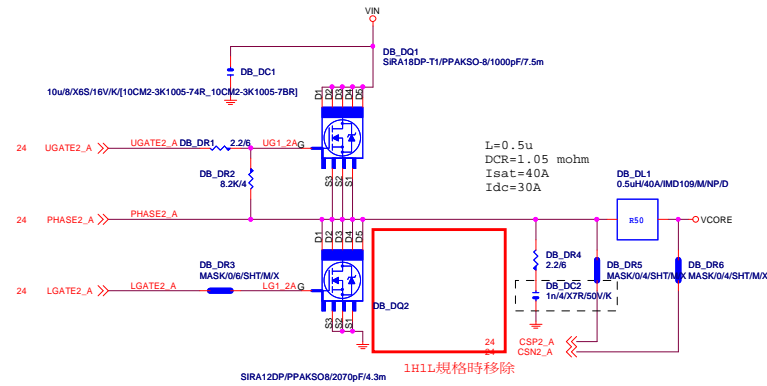


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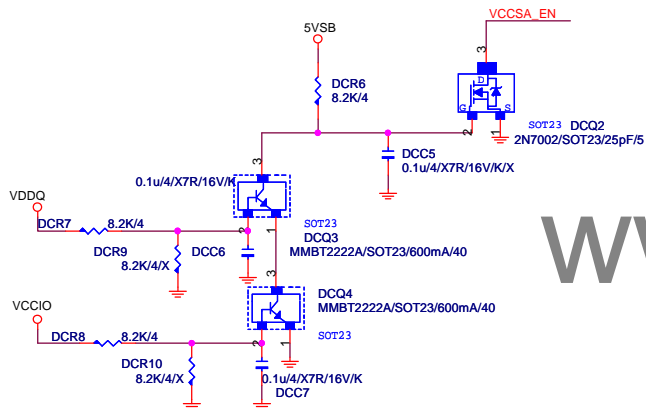
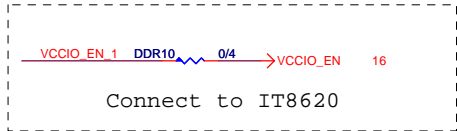
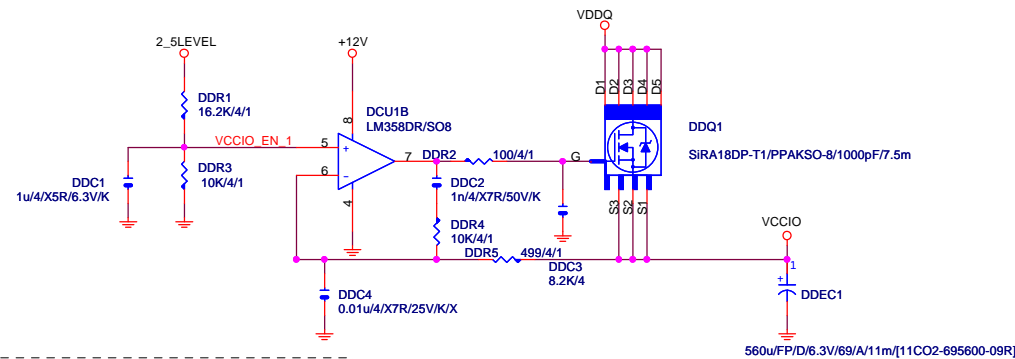
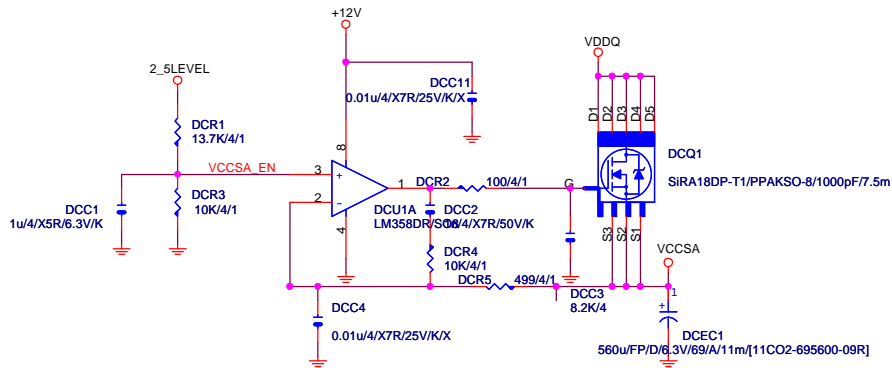
Gigabyte Technology

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|--------|--------------------------|--|--------------|----------|
| Title | | | SATA EXPRESS | |
| Size | Document Number | | Rev | |
| Custom | GA-H110-D3 | | 1.0 | |
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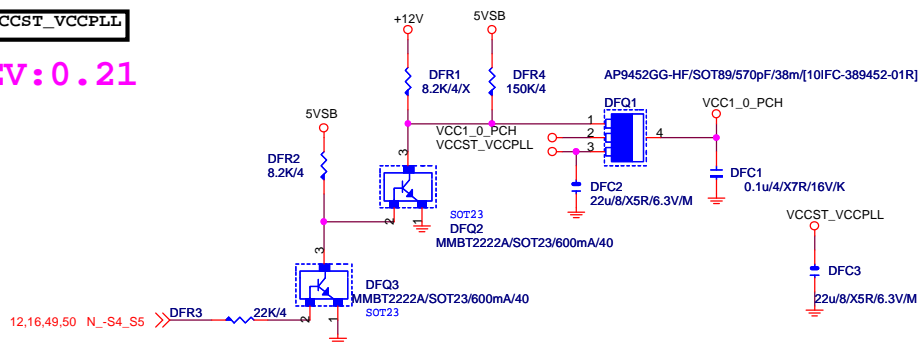
REV:0.4



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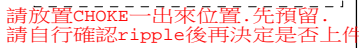
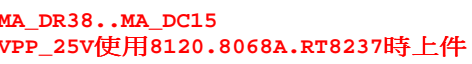
VCCST_VCCPLL

REV:0.21



| GIGABYTE™ | | | |
|--------------------------------|----------------------------|-------|---------|
| Title VCCSA_VCCIO | | | |
| Size Custom | Document Number GA-H110-D3 | | Rev 1.0 |
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DDR4



CLOSE TO DDR POWER PLANE



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

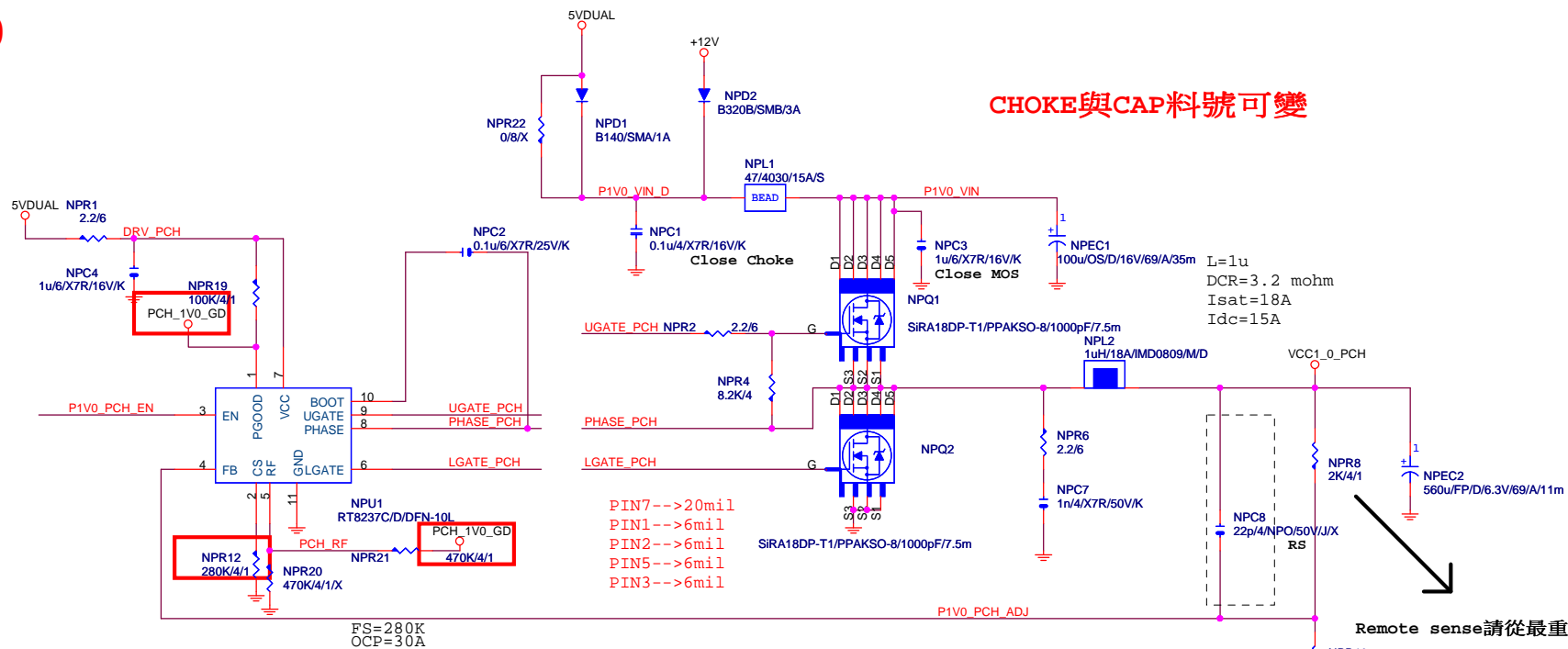
MAU1上NCT3103S時上件(不可以改short pad)

* 大電容 x4

* 大電容 x0

| | | | |
|--|---|--------------|--------------------------|
| GIGABYTE™ | | | |
| Title RT8237_DDR4 POWER | | | |
| Size Custom | Document Number GA-H110-D3 | | Rev 1.0 |
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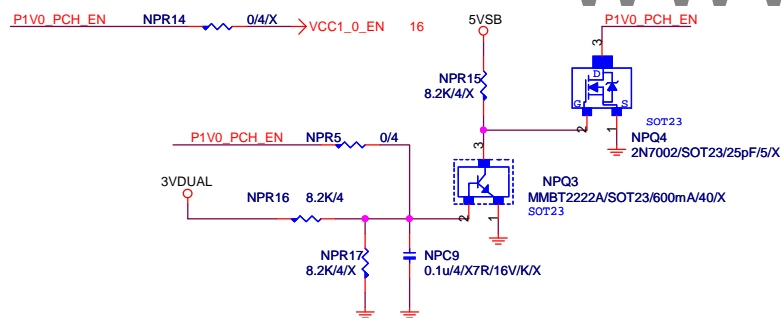
REV:0.50




Remote sense請從最重的負載端點拉回

RO \downarrow NPR13
4.12K/4/1
 $0.704 * (1 + RS / RO) = V_{out}$

請放置CHOKE一出來的地方

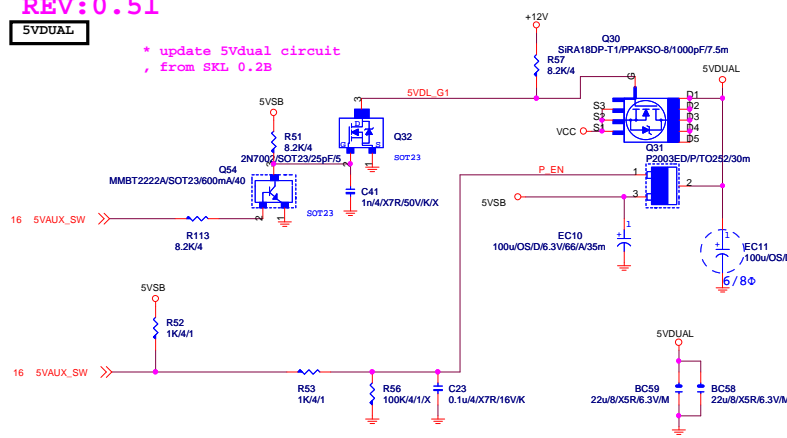


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|  | | | |
| Title | | | |
| RT8237_PCH POWER | | | |
| Size | Document Number | | Rev |
| Custom | GA-H110-D3 | | 1.0 |
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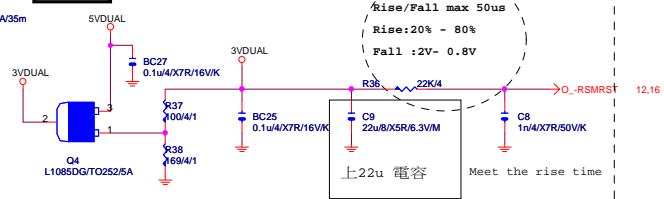
REV:0.51

5VDUAL

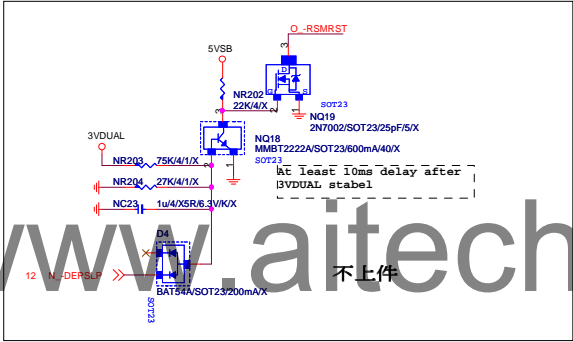
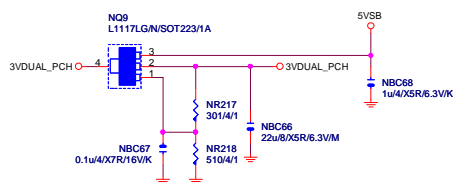
* update 5Vdual circuit
from SKL 0.2B



3VDUAL

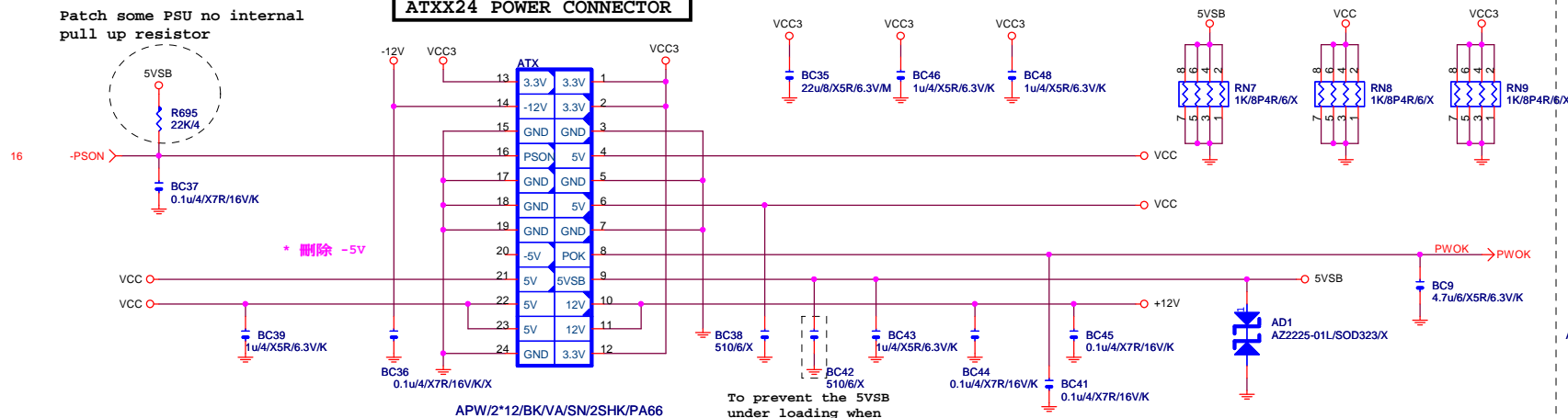


3VDUAL_PCH

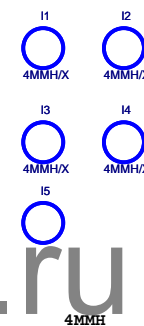
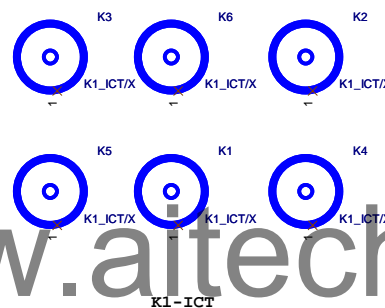
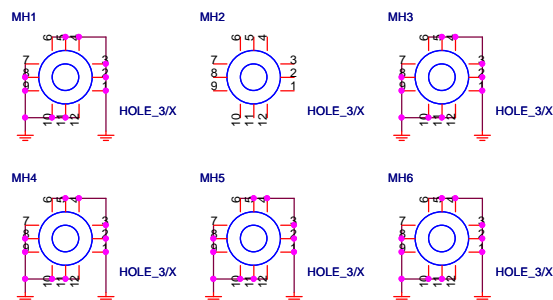
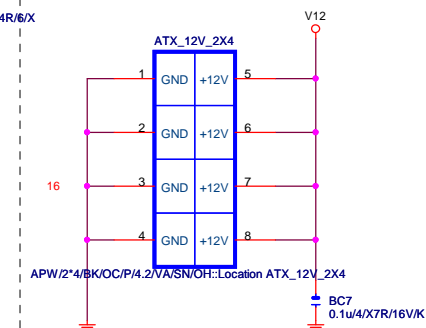


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ATXX24 POWER CONNECTOR

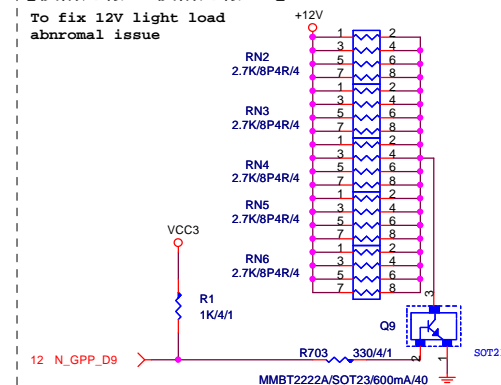


ATXX4 POWER CONNECTOR



【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



-PROHOT



COUPON

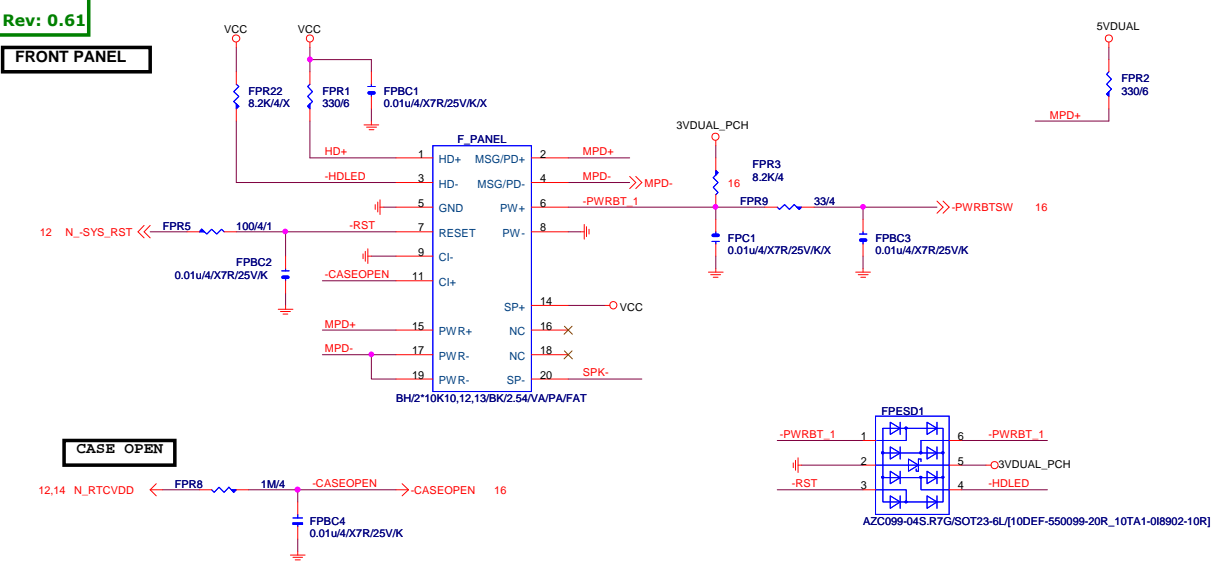


Gigabyte Technology

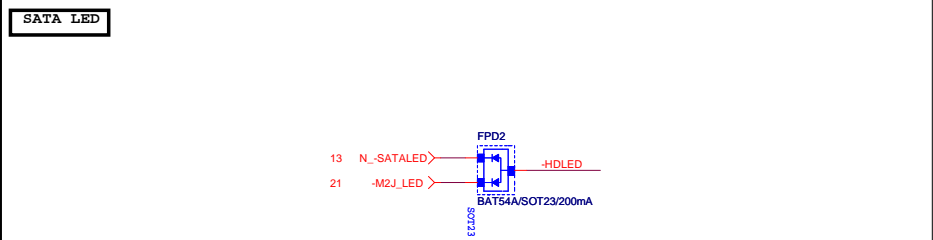
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| Title | | |
| ATX POWER CONNECTOR | | |
| Size | Document Number | Rev |
| Custom | GA-H110-D3 | 1.0 |
| Date: | Monday, October 26, 2015 | Sheet 31 of 50 |

[illegible]

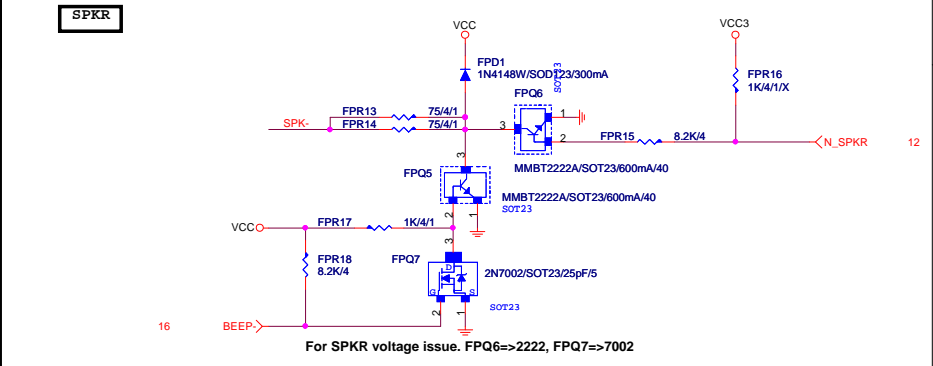
FRONT PANEL



SATA LED

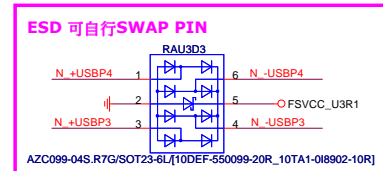
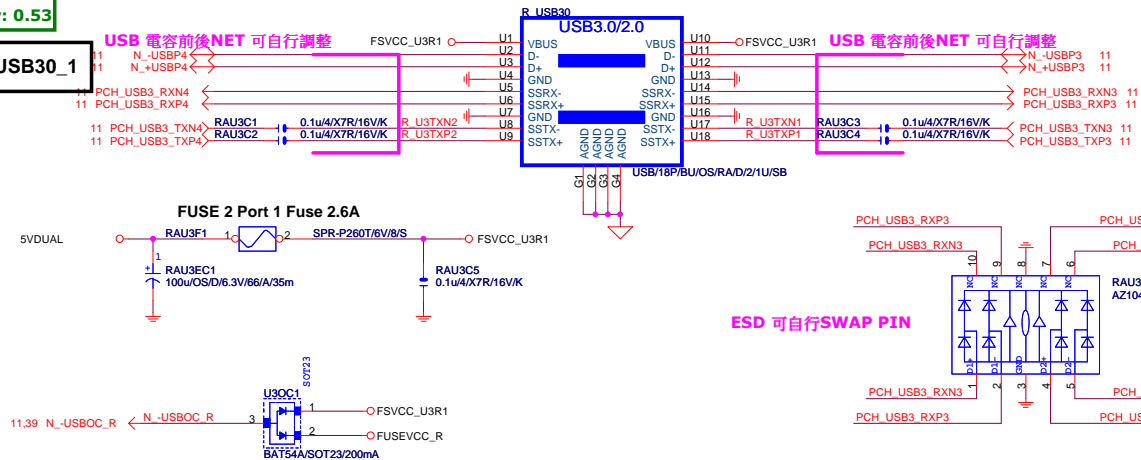


SPKR

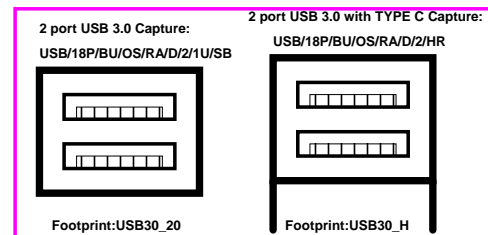


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R_USB30_1

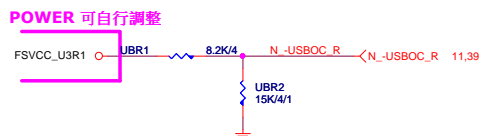


CONNECTOR 自行調整



JSB30_2

-USB0C_R



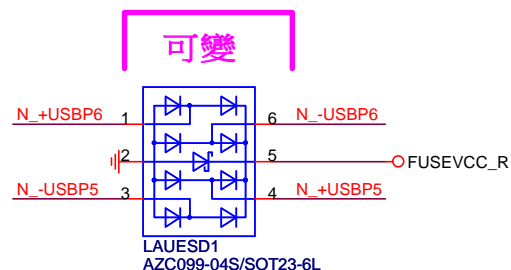
www.aitech1.ru

KB_MS_USB3

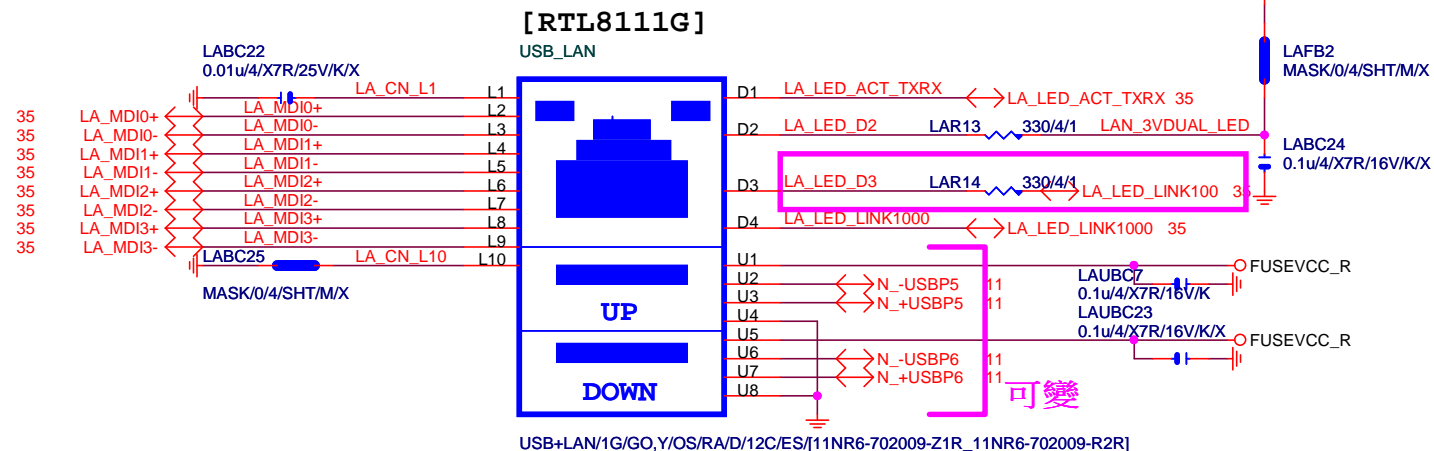


R1.05

note:可變更USB NAME

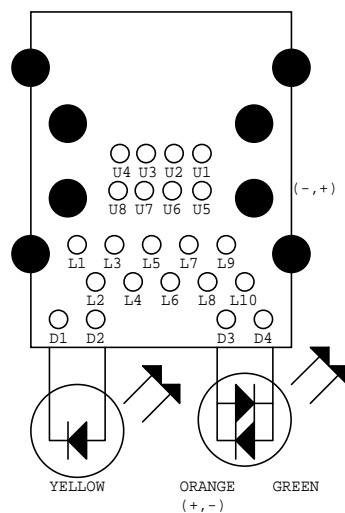


note:可變更USB NAME

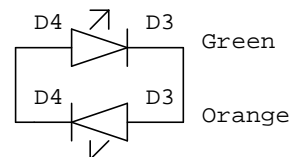


LA MDI-->100歐姐:[20/4/8/4/20]

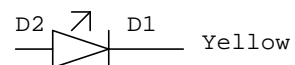
USB_LAN LAYOUT示意圖



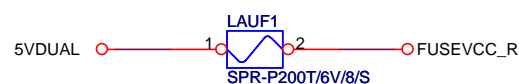
Dual Color LED



Single Color LED



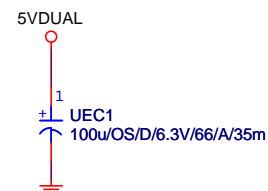
note:可變更FUSE



Close to connector

USB LAN 2-Port 2.0A

FUSE-0805

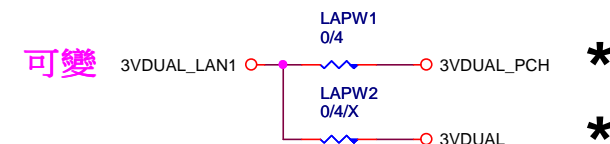


EMI SHORT PAD

PS:視EMI需求



note: lan power連接及電流



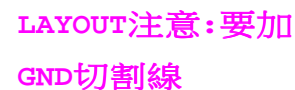
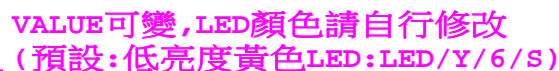
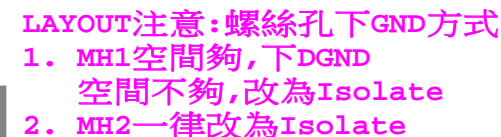
Gigabyte Technology

LAN CONNECTOR-RTL8111G

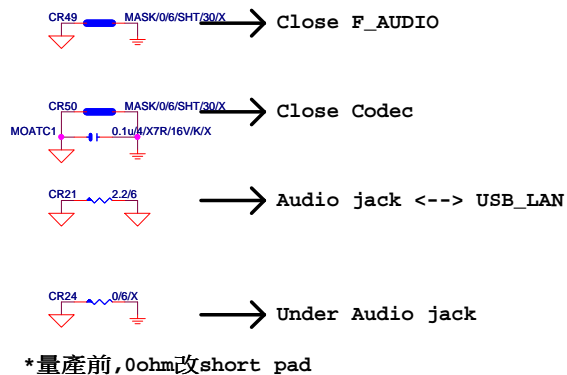
| | | |
|--------|-----------------|-----|
| Size | Document Number | Rev |
| Custom | GA-U110-B3 | 1.0 |

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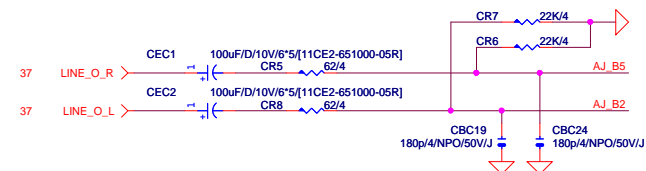
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|-----|-----|
| Rev | 1.0 |
|-----|-----|



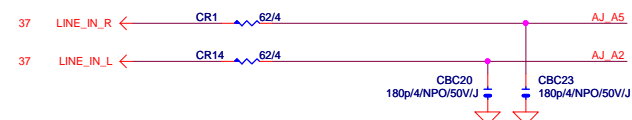
Rev 0.5



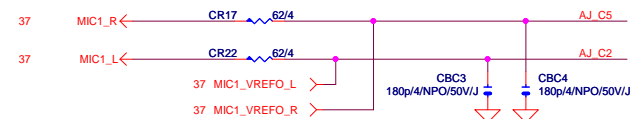
LINE-OUT



LINE-IN



MIC-IN

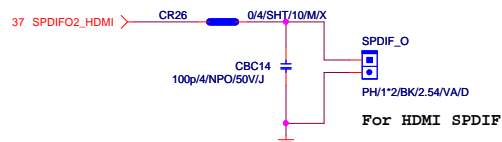


SURROUND

CEN/LFE

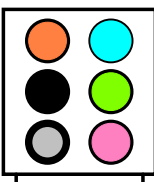
SURR BACK

SPDIF_OUT



SPDIF_IN

AZALIA JACK



AZALIA JACK

BLUE

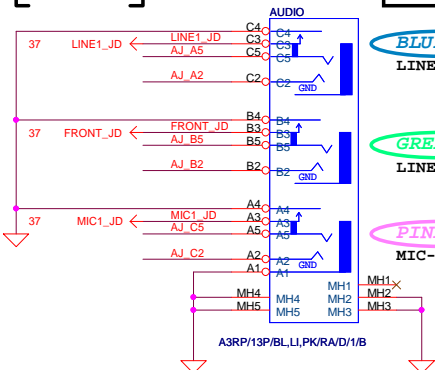
LINE-IN

GREEN

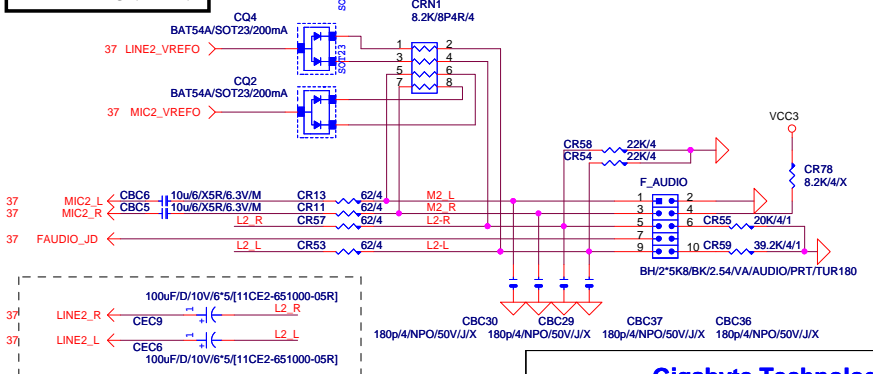
LINE-OUT

PINK

MIC-IN



AZALIA FRONT PANEL



Gigabyte Technology

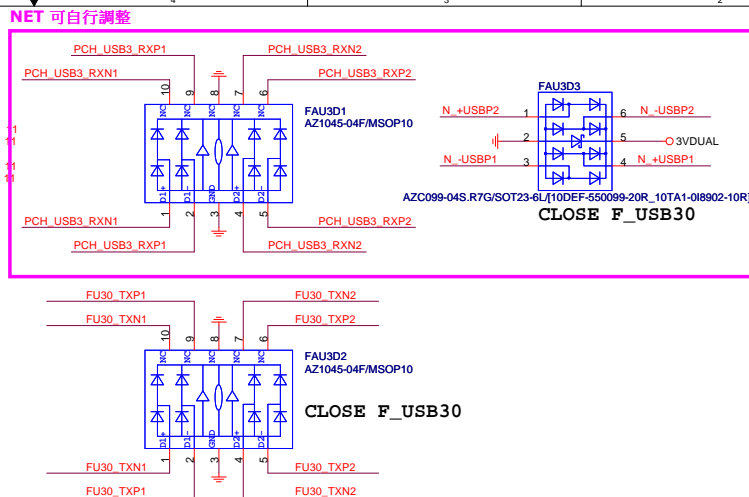
AUDIO JACK

GA-H110-D3

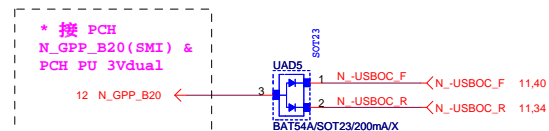
Rev 1.0

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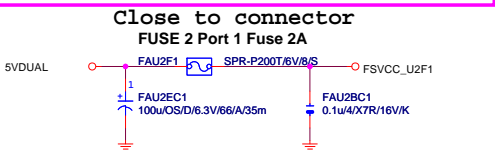
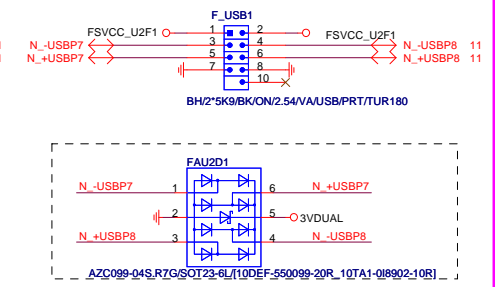


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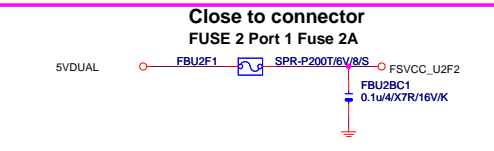
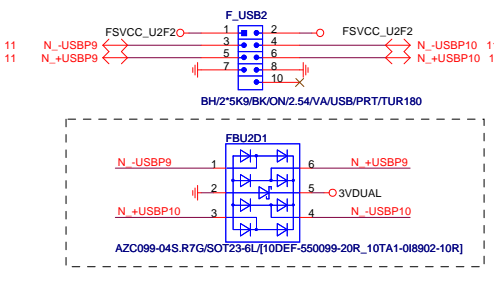
FRONT USB1

NET 可變



FRONT USB2

NET 可變



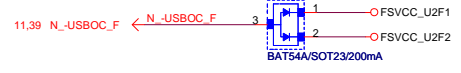
FRONT USB3

FRONT USB4

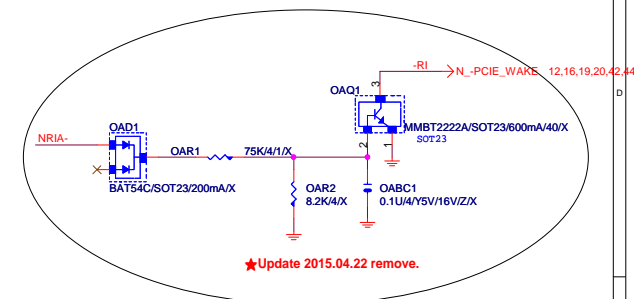
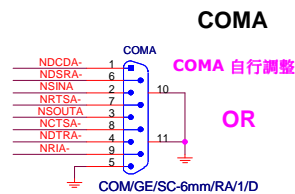
REAR USB1

REAR USB2

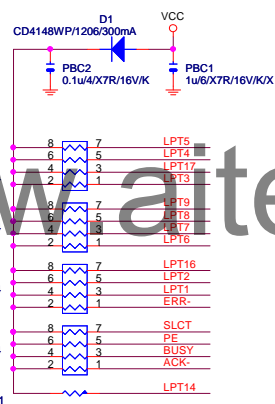
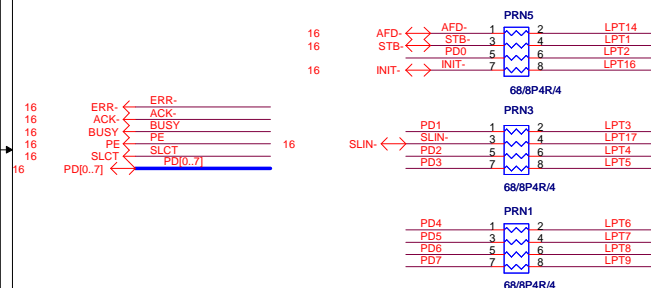
F_USB 2.0 OC SIGNAL



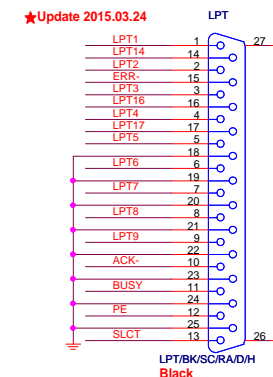
www.aitech1.ru



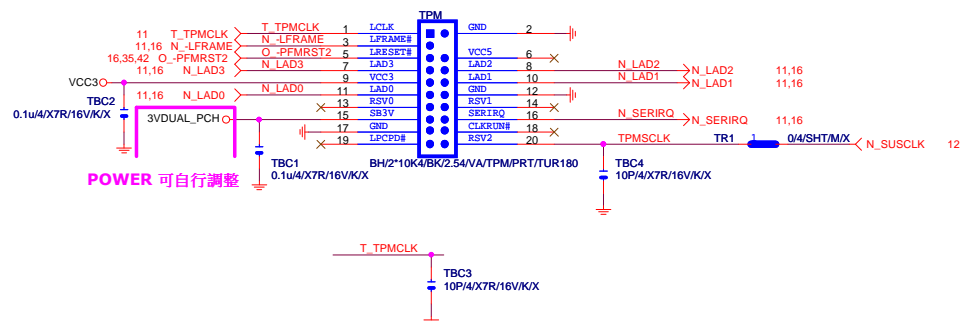
LPT PORT



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。

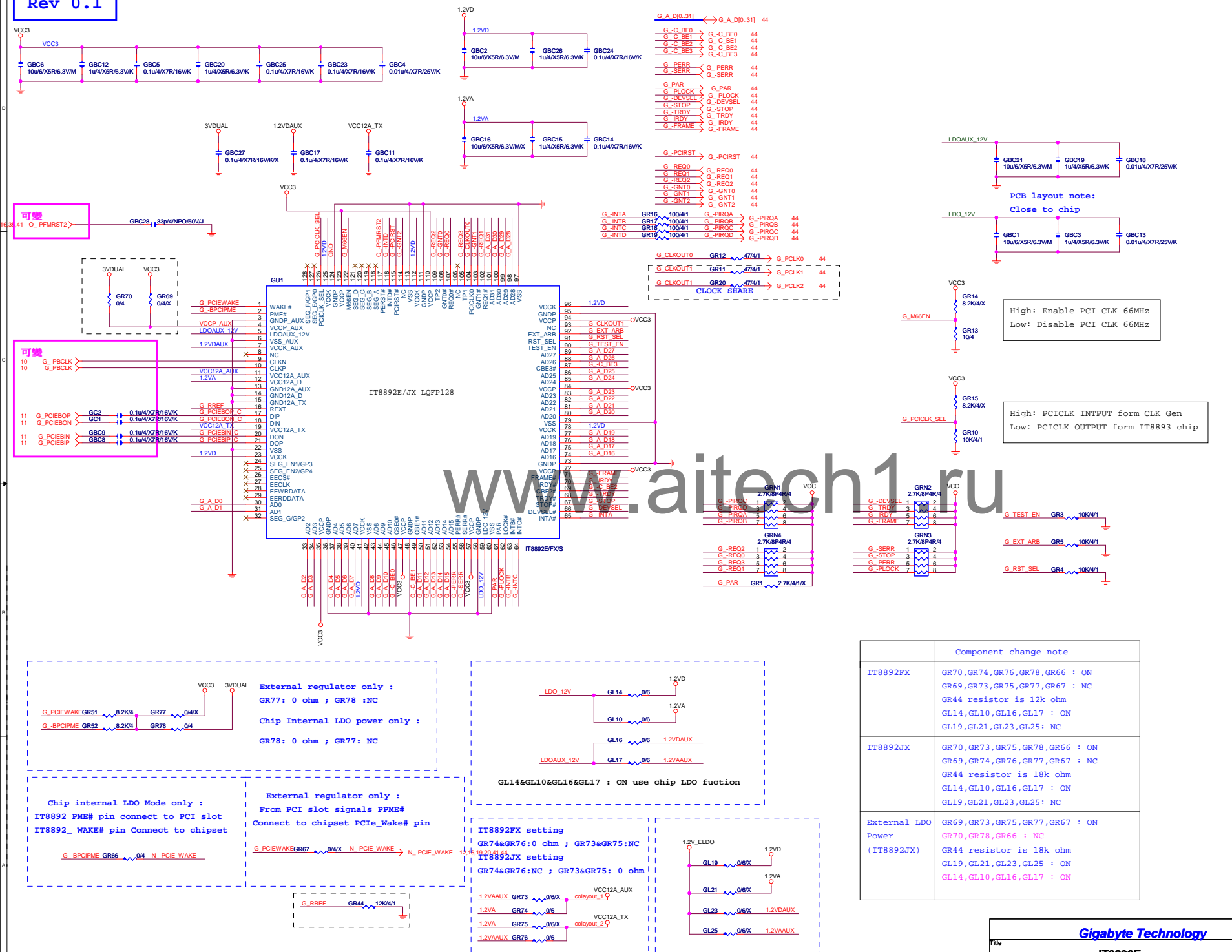


TPM CONNECTOR

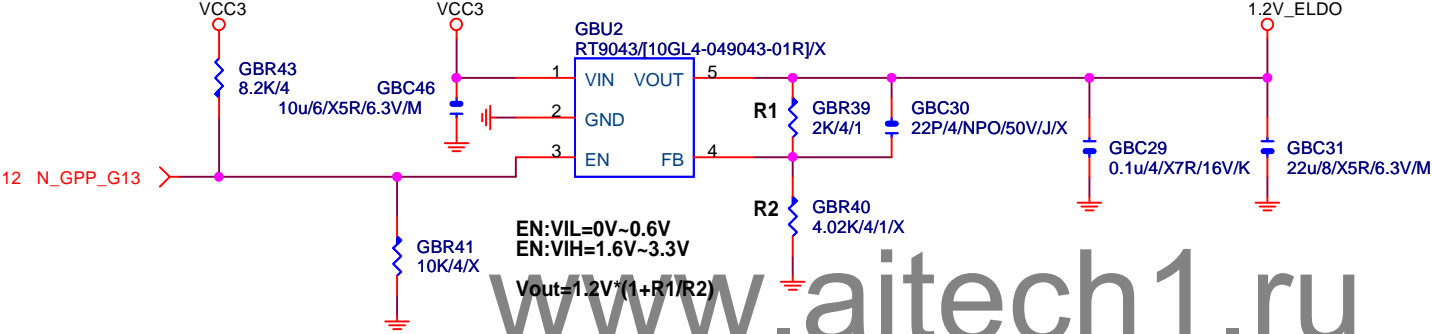


Thunderbolt

BIOS PH



Rev 0.1



Gigabyte Technology

Title

ASM1085 POWER

Size
Custom

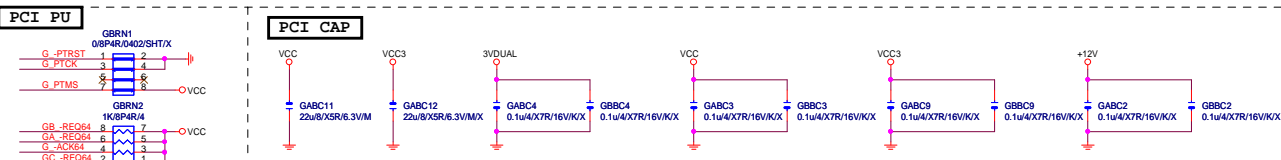
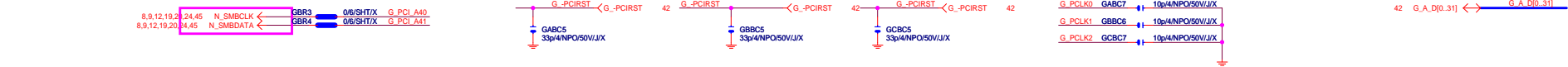
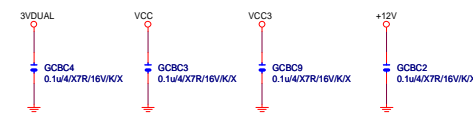
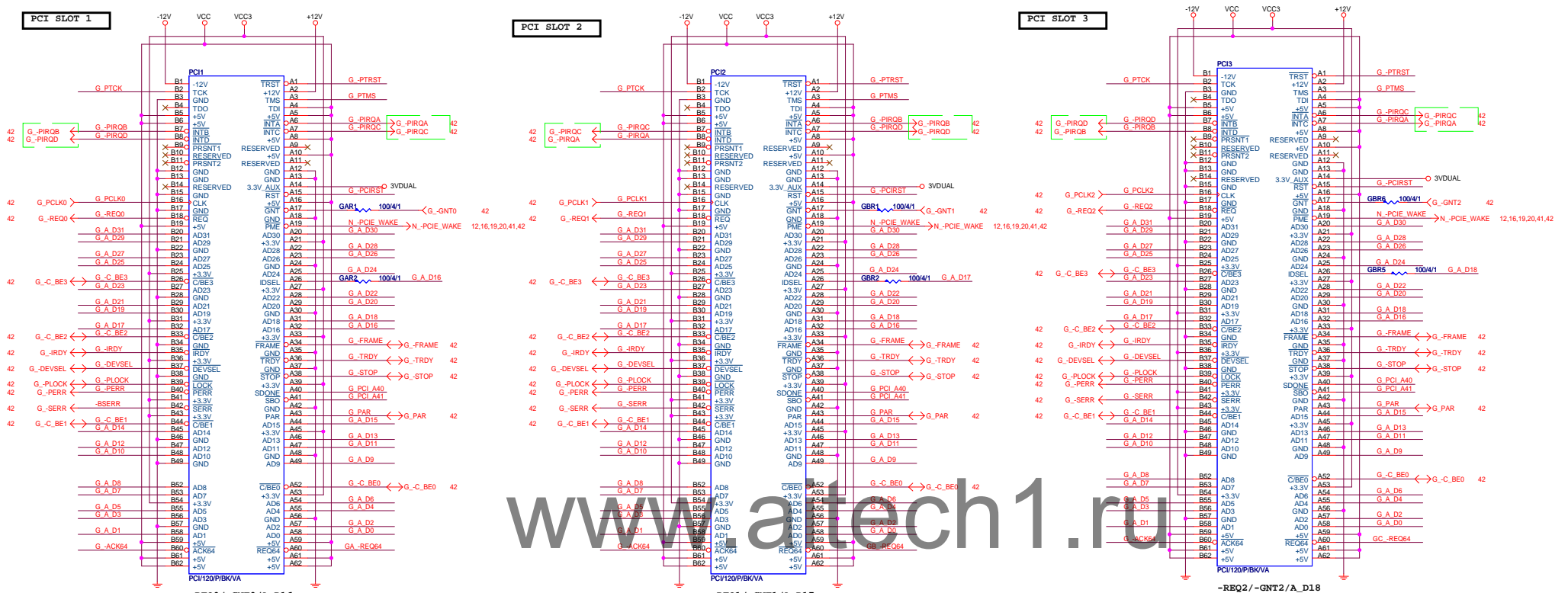
Document Number

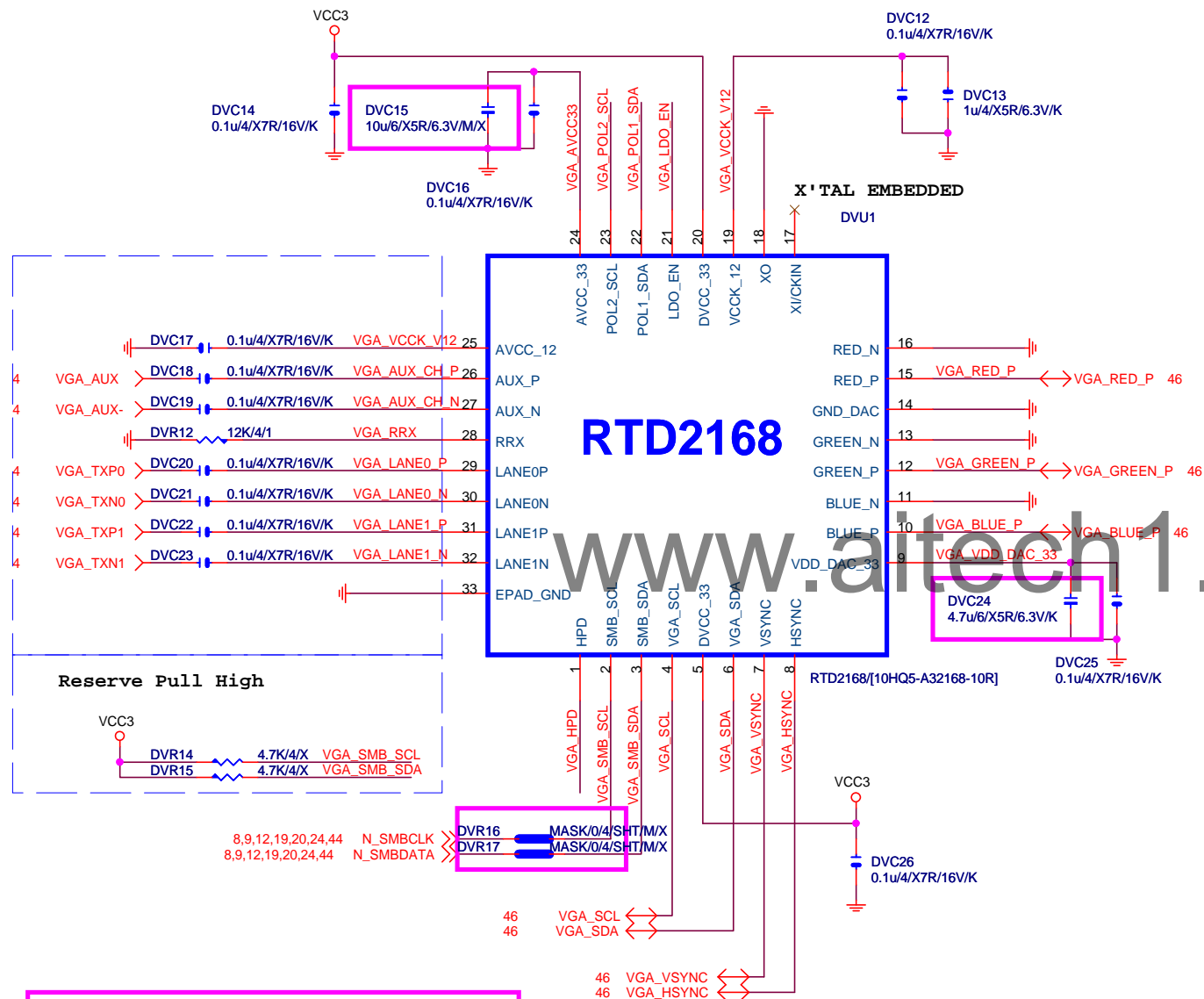
GA-H110-D3

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1.0

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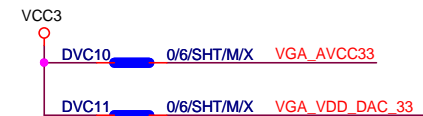




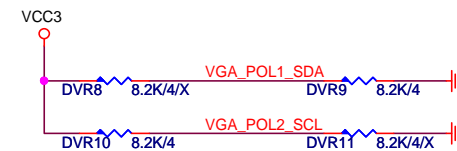
放置PCH端



POWER

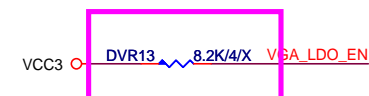


Power on latch



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

Embedded LDO

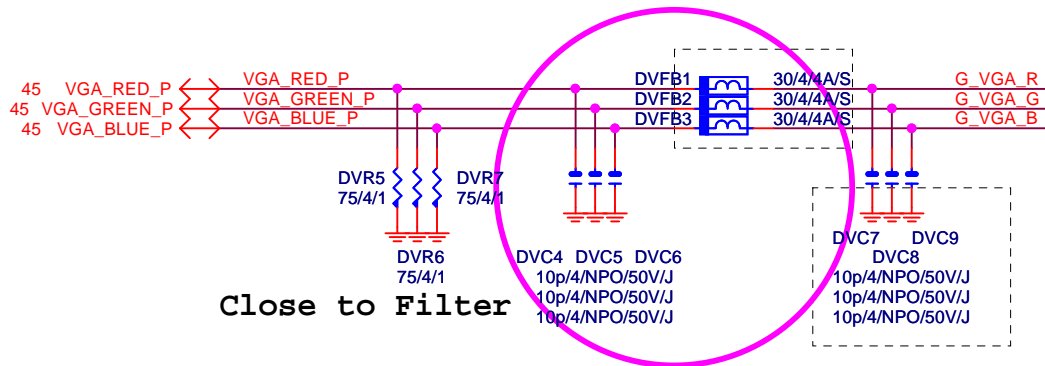
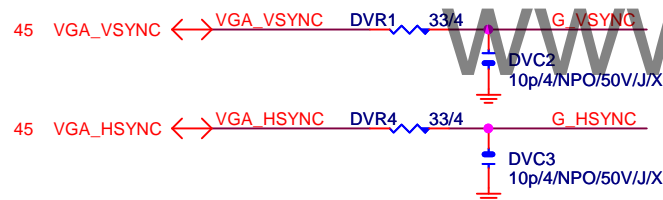
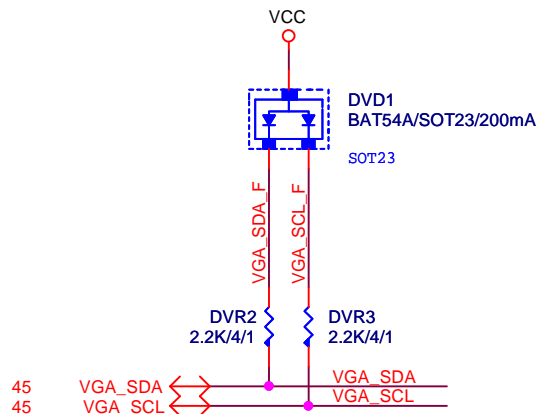


| LDO_EN(PIN21) | |
|-----------------------------|----------------------------|
| 0 | 1 |
| VCCK_V12 from External 1.2V | VCCK_V12 from Embedded LDO |

DP HPD

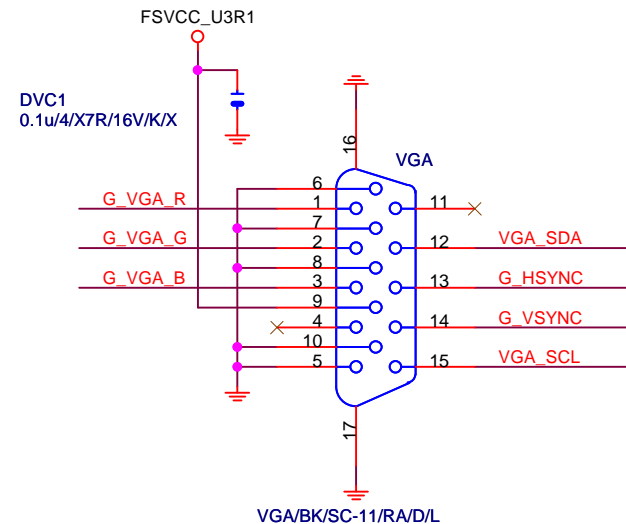


VGA SIGNAL R1.03

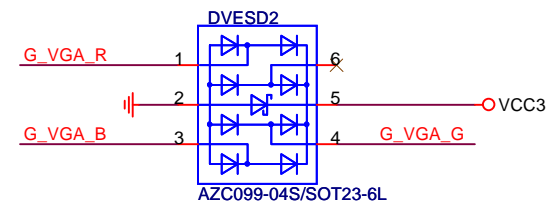
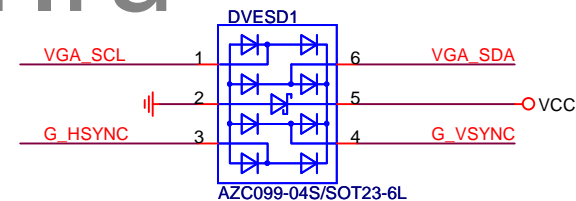


FOR EMI

VGA CONN.



VGA ESD



| | | | |
|--------------------------------|----------------------------|-------|---------|
| Gigabyte Technology | | | |
| Title DP-VGA RTD2168 | | | |
| Size Custom | Document Number GA-H110-D3 | | Rev 1.0 |
| Date: Monday, October 26, 2015 | Sheet 46 | of 50 | |

SIO

rs_sys

CPU

rs_PCH

PCH

DD_DL1

DC_DL1

NTC1

DA_DL1

DB_DL1

DM_DL1

NTC4

DN_DL1

NTC2

rs_VCORE

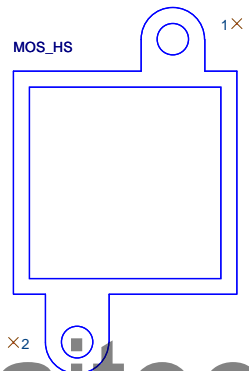
rs_VCCGT

NTC3

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Gigabyte Technology

| | | | | |
|-------|--------------------------|---------------------|----|-------|
| Title | | Thermister Location | | Rev |
| Doc | Document Number | GA-H110-D3 | | 1.0 |
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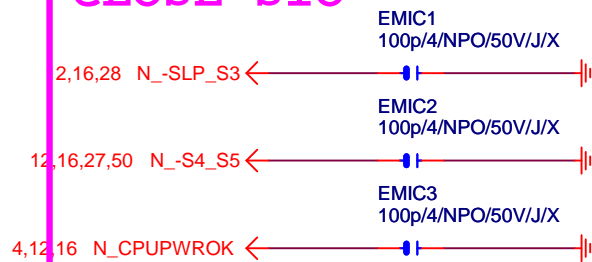


MOS SINK/[12SP2-S09325-31R_12SP2-S09325-32R_12SP2-S09325-33R]

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| | | | |
|-----------|--------------------------|-------|----------|
| GIGABYTE™ | | | |
| Title | | | |
| Heatsink | | | |
| Size | Document Number | | Rev |
| Custom | GA-H110-D3 | | 1.0 |
| Date: | Monday, October 26, 2015 | Sheet | 48 of 50 |

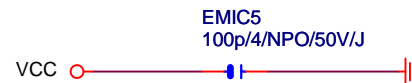
CLOSE SIO



CLOSE PCH



CLOSE TPM



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GIGABYTE™

Title

EMI/ESD

Size
A

Document Number

GA-H110-D3

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Date: Monday, October 26, 2015

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VPP_25V

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



| | | | |
|---------------------|--------------------------|-------|----------|
| Title | | | |
| RT8068A_VPP25 POWER | | | |
| Size | Document Number | Rev | |
| Custom | GA-H110-D3 | 1.0 | |
| Date: | Monday, October 26, 2015 | Sheet | 50 of 50 |