

# Model Name: GA-H110M-S2HP

SHEET

TITLE

|    |                            |
|----|----------------------------|
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| 02 | BOM & PCB MODIFY HISTORY   |
| 03 | BLOCK DIAGRAM              |
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| 05 | CPU_LGA1151-B-DDR4         |
| 06 | CPU_LGA1151-C              |
| 07 | CPU_LGA1151-D              |
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| 09 | DDR4 CHANNEL B             |
| 10 | PCH_CLK BUFFER             |
| 11 | PCH_DMI,USB,PCIE           |
| 12 | PCH_MISC                   |
| 13 | PCH SATA,PCIE,SATA_EXPRESS |
| 14 | PCH_PWR,GND                |
| 15 | Dual BIOS                  |
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| 23 | ISL95858_856 MOS_VCORE     |
| 24 | ISL95858_856 MOS_VCCGT     |
| 25 | VCCSA_VCCIO_VCCPLL         |
| 26 | RT8237_DDR_VDDQ            |
| 27 | RT8068_VPP                 |

rev:1.1

SHEET

TITLE

|    |                              |
|----|------------------------------|
| 28 | RT8237_PCH_VCC1_0_PCH        |
| 29 | DISCRETE POWER               |
| 30 | ATX POWER , A_-PROCHOT       |
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| 32 | RTD2168 - DP to VGA - IC     |
| 33 | RTD2168 - DP to VGA - Conn   |
| 34 | R_USB30                      |
| 35 | REALTEK - RTL8111G           |
| 36 | USB20_LAN CONNECTOR-RTL8111G |
| 37 | Realtek ALC887               |
| 38 | REAR AUDIO JACK              |
| 39 | F_USB30                      |
| 40 | F_USB20                      |
| 41 | ASM1142 USB31                |
| 42 | U3.1 PORT A                  |
| 43 | TI HD3SS3220                 |
| 44 | COM , LPT , TPM              |
| 45 | F_PANEL                      |
| 46 | DVI                          |
| 47 | HDMI                         |
| 48 | EMI/ESD                      |
| 49 | POWER MAP                    |
| 50 | TABLE LIST                   |
| 51 | NTC MAP                      |

|                            |                           |            |         |
|----------------------------|---------------------------|------------|---------|
| <b>Gigabyte Technology</b> |                           |            |         |
| <b>Cover Sheet</b>         |                           |            |         |
| Size                       | Document Number           | Rev        |         |
| Custom                     | <b>GA-H110M-S2HP</b>      | <b>1.1</b> |         |
| Date:                      | Friday, December 16, 2016 | Sheet      | 1 of 51 |

**rev:1.1**

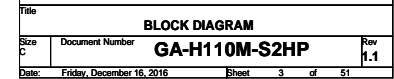
## Circuit or PCB layout change

## Component value change history

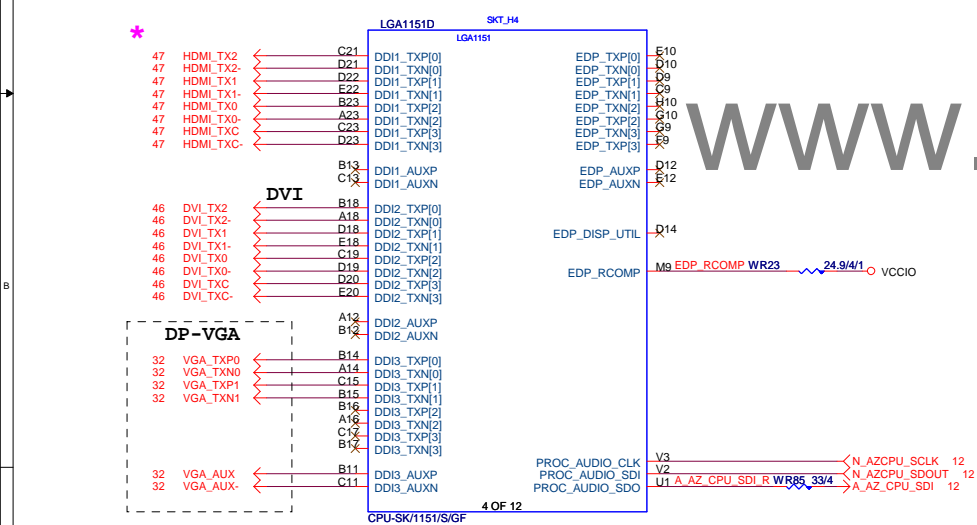
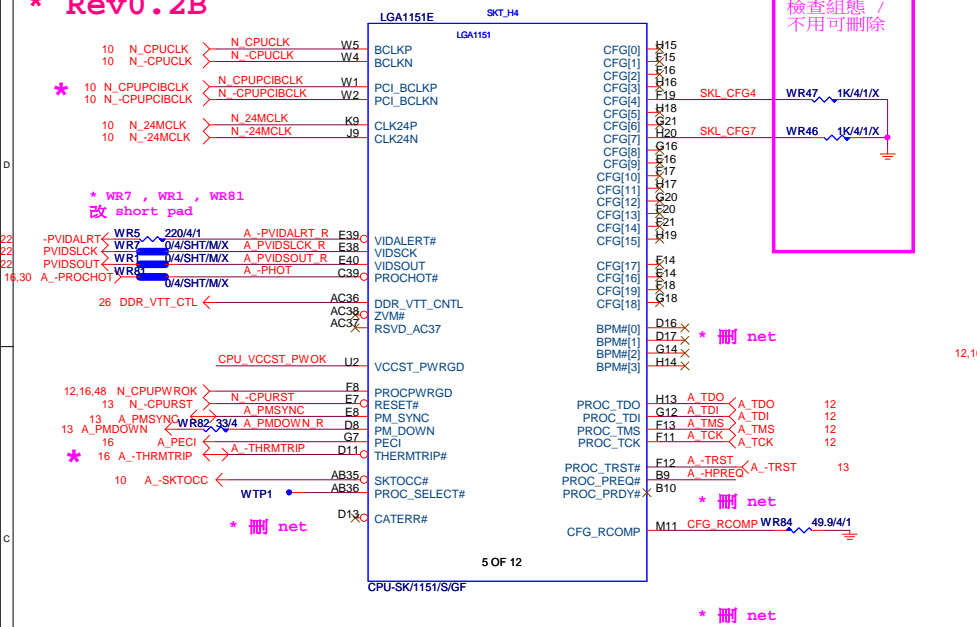
2016/12/08

[illegible][illegible]

## BLOCK DIAGRAM



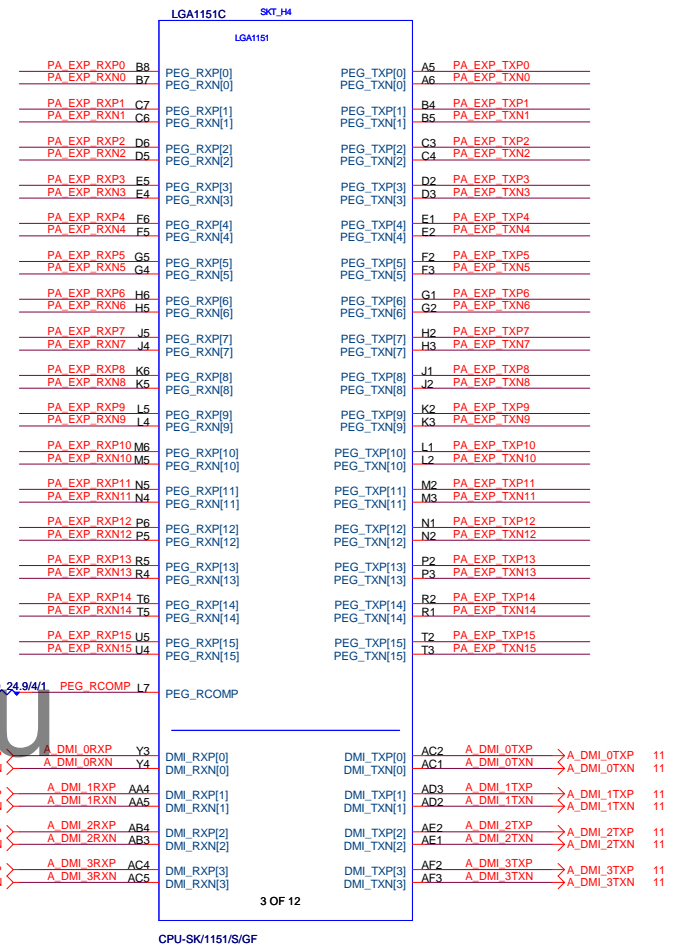
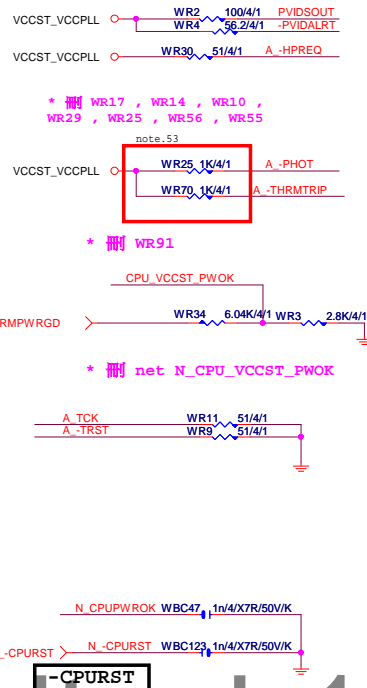
**\* Rev0.2B**



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

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

Impedance=85 +- 15%



|                   |   |                   |    |
|-------------------|---|-------------------|----|
| 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
```

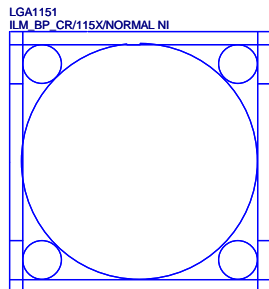
Impedance=85 +- 15%

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

| 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             | 1      | 0      |

|   |  |  |               |
|---|--|--|---------------|
| <p align="center"><b><i>Gigabyte Technology</i></b></p> |  |  |               |
| <p>Title</p>  |  |  |               |
| <p align="center"><b>CPU LGA1151-A</b></p>              |  |  |               |
| Size<br>Custom  | Document Number                            |  | Rev           |
|   | <p align="center"><b>GA-H110M-S2HP</b></p> |  | <b>1.1</b>    |
| Date:   | Friday, December 16, 2016                  |  | Sheet 4 of 51 |

\* 改DDR4 net

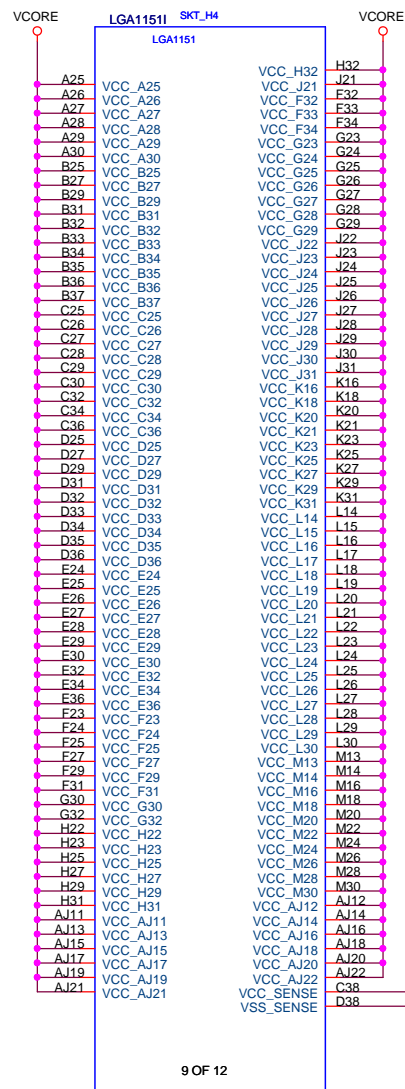


Need check the new CPU ME

Figure 1: Schematic representation of the 16-bit bus architecture. The diagram shows a 16-bit bus with 16 data lines and 16 address lines. The data lines are labeled with 'MODT\_A[0..1]', 'MODT\_B[0..1]', 'MDA[0..63]', 'MDB[0..63]', 'M\_DQSA[0..7]', 'M\_DQSB[0..7]', 'MAAA[0..16]', and 'MAAB[0..16]'. The address lines are labeled with 'MODT\_A[0..1]', 'MODT\_B[0..1]', 'MDA[0..63]', 'MDB[0..63]', 'M\_DQSA[0..7]', 'M\_DQSB[0..7]', 'MAAA[0..16]', and 'MAAB[0..16]'. The bus is connected to a 16-bit bus architecture.

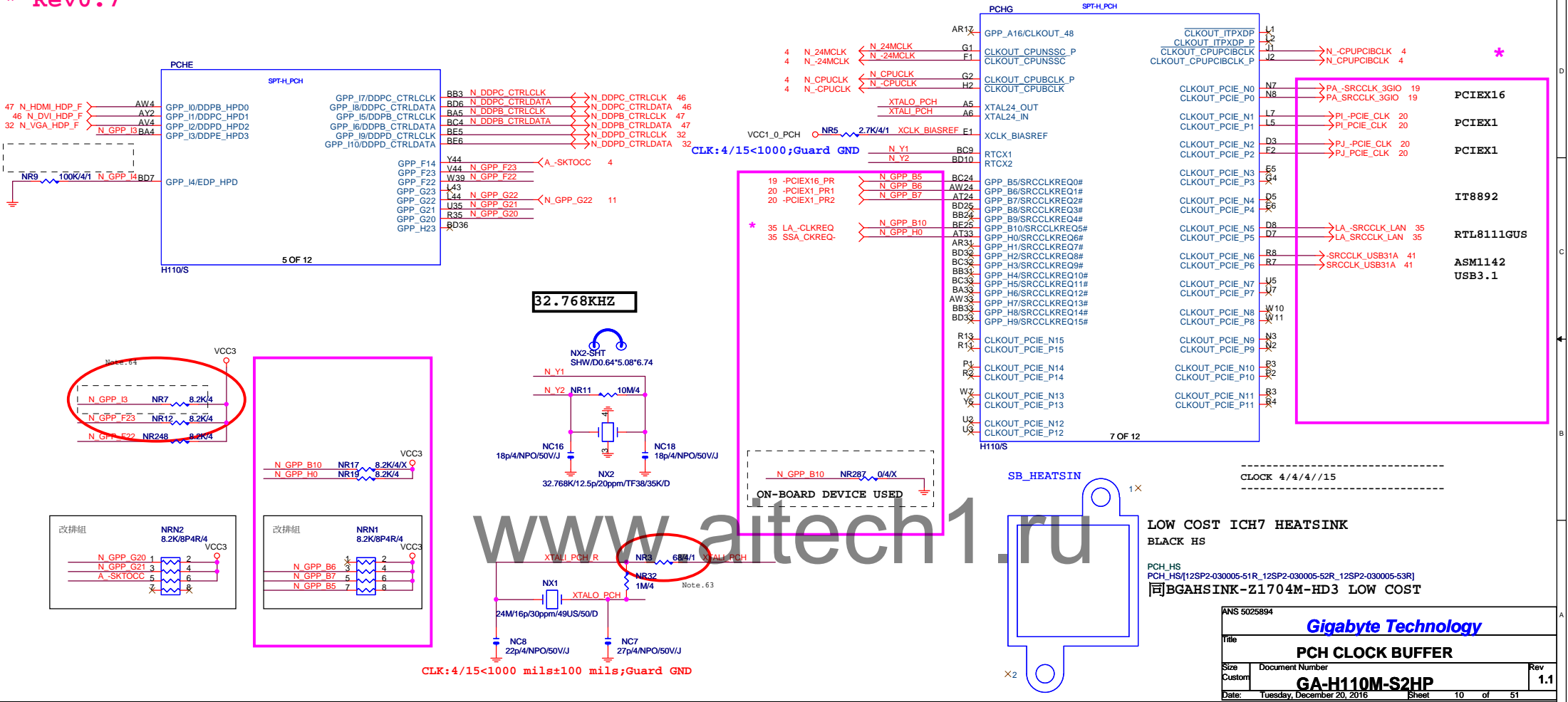
|                                   |                           |       |            |
|-----------------------------------|---------------------------|-------|------------|
| <b><i>Gigabyte Technology</i></b> |                           |       |            |
| Title                             |                           |       |            |
| <b>CPU LGA1151-B</b>              |                           |       |            |
| Size                              | Document Number           |       | Rev        |
| Custom                            | <b>GA-H110M-S2HP</b>      |       | <b>1.1</b> |
| Date:                             | Friday, December 16, 2016 | Sheet | 5 of 51    |

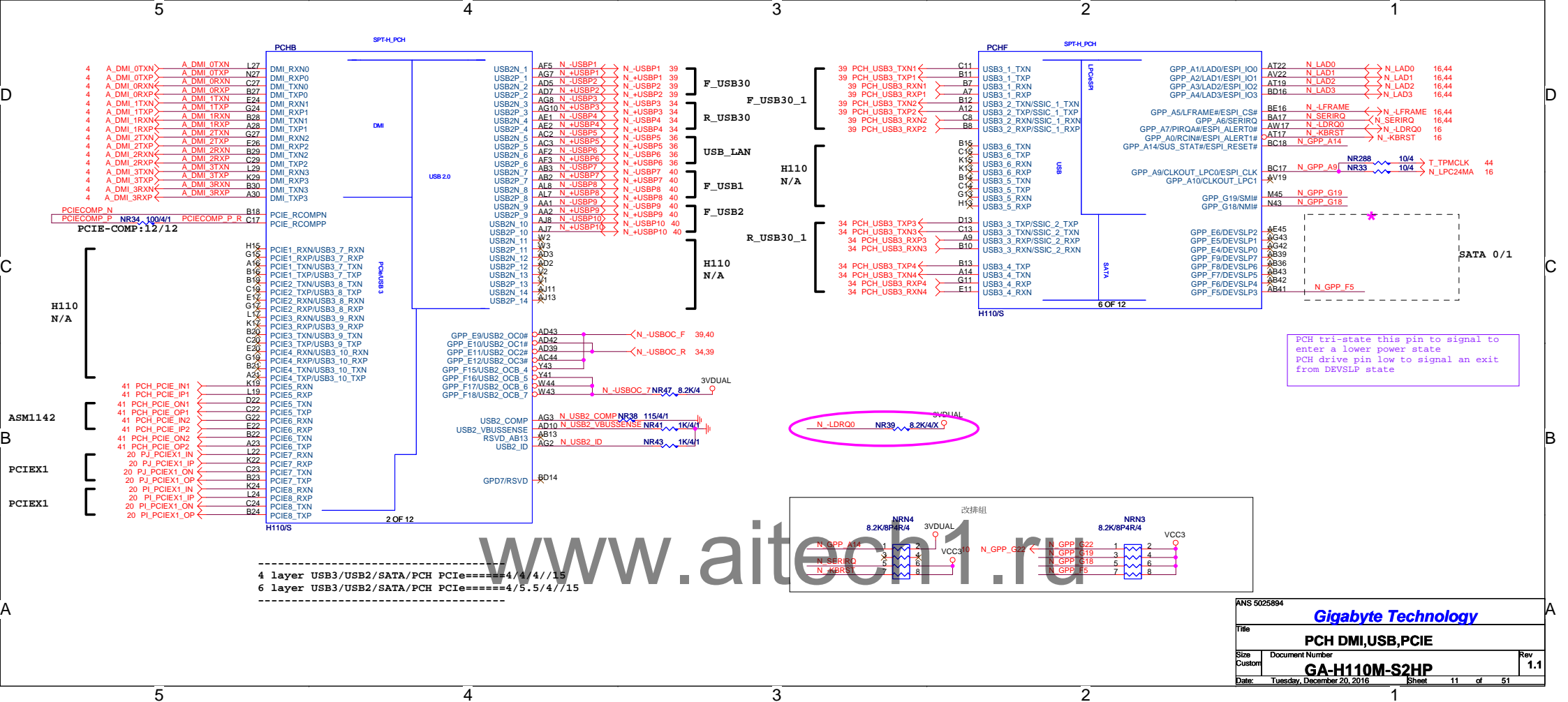


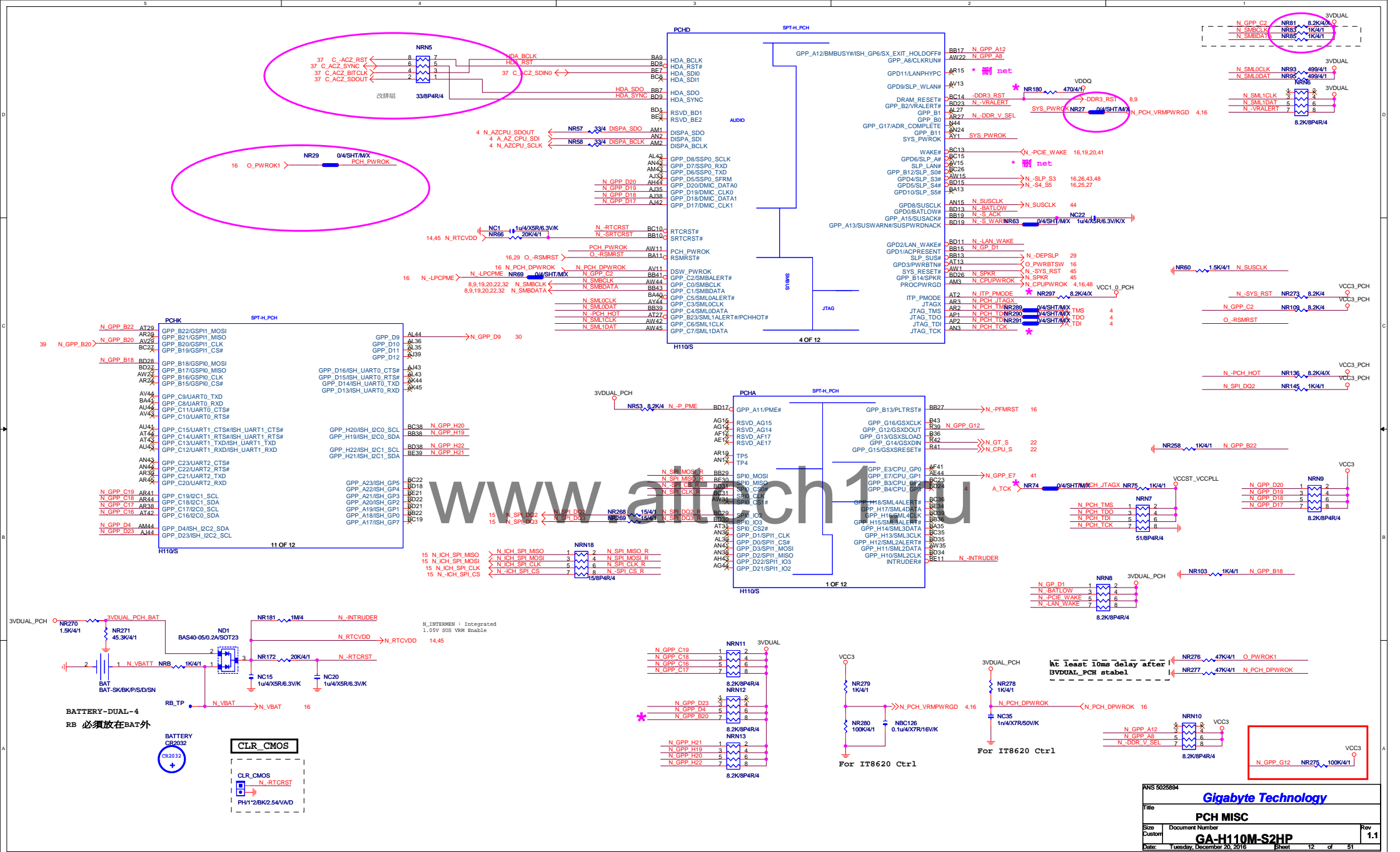




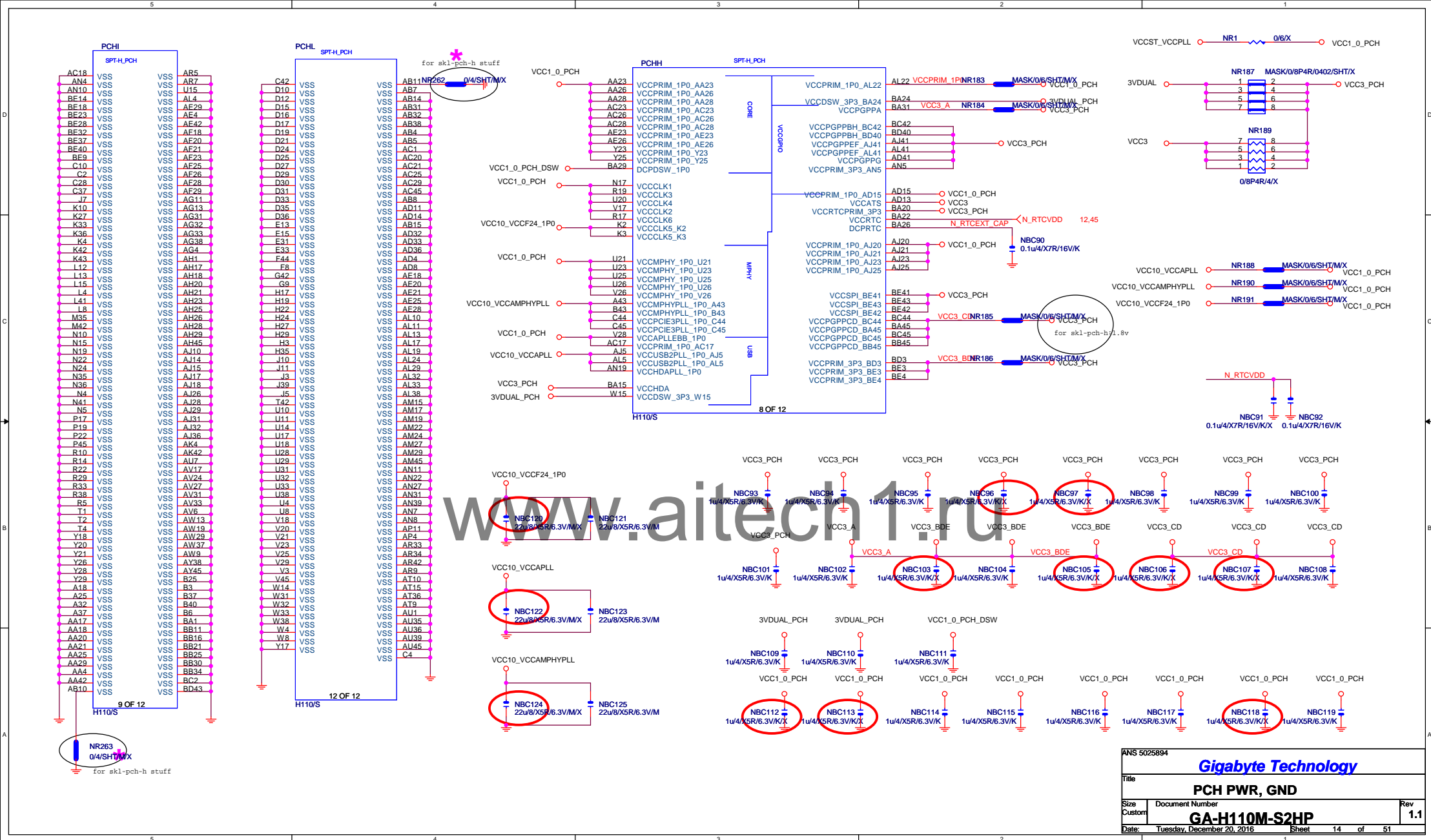








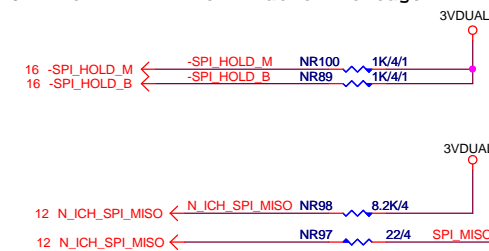
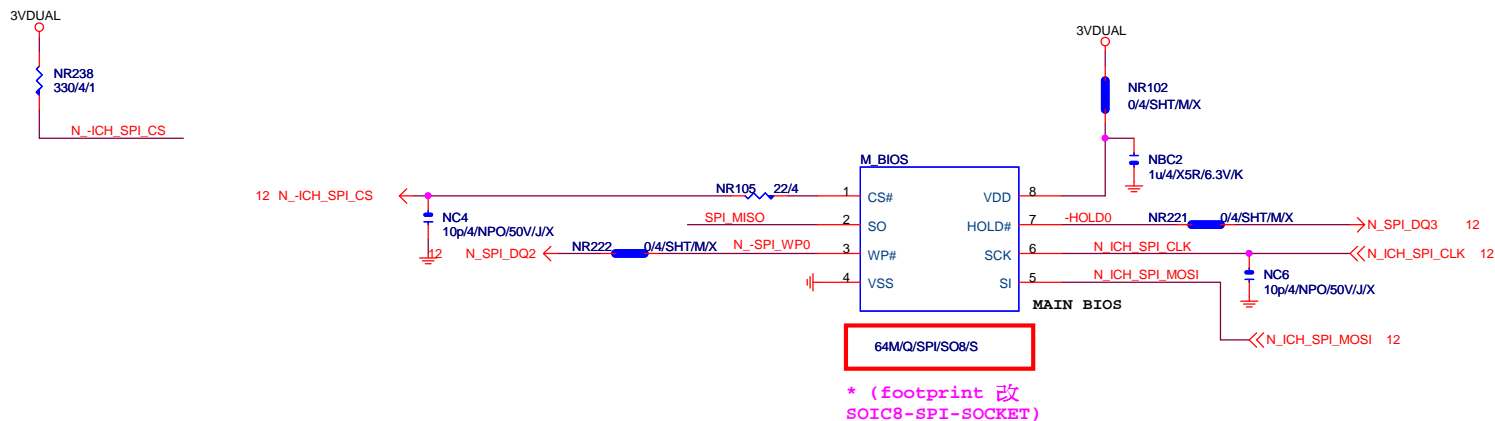




Rev 0.1

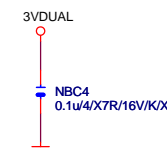
BIOS

MOSI For DMI RX Termination Voltage

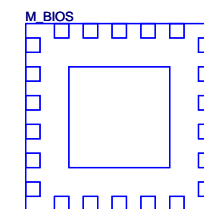


| BOOT<br>DEVICE | GNT0 | GNT1 |
|----------------|------|------|
| LPC            | 0    | 0    |
| PCI            | 0    | 1    |
| NAND           | 1    | 0    |
| SPI            | 1    | 1    |

1 means floating  
0 means PD 1K



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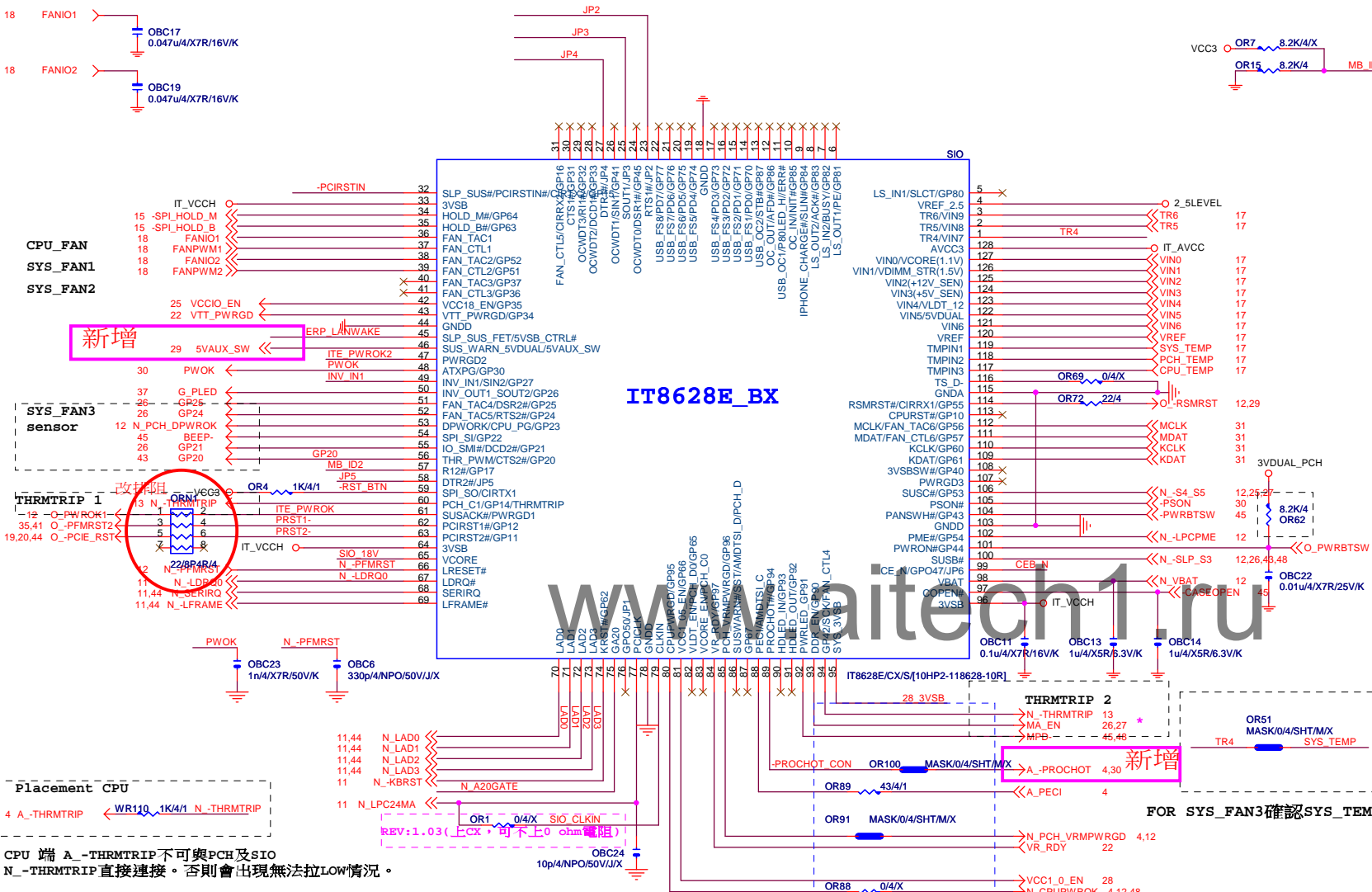
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]X

\* 試産先上, PVT 移除

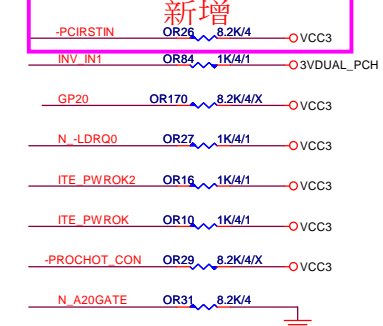
BIOS\_PH

**Gigabyte Technology**

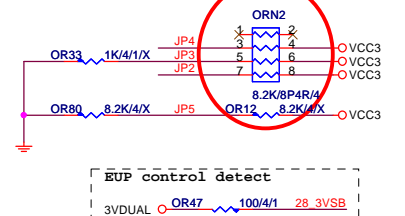
|        |                           |               |          |
|--------|---------------------------|---------------|----------|
| Title  |                           | BIOS          |          |
| Size   | Document Number           | GA-H110M-S2HP | Rev 1.1  |
| Custom |                           |               |          |
| Date:  | Friday, December 16, 2016 | Sheet         | 15 of 51 |



SIO PU



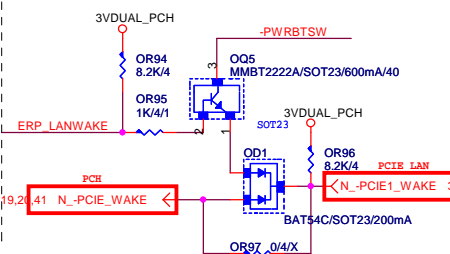
SIO STRAP



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

ERP WAKE on LAN (依LAN組態選擇)

(組態一) Realtek/ATHEROS LAN



Gigabyte Technology

Title: ITE 8628 LPC IO

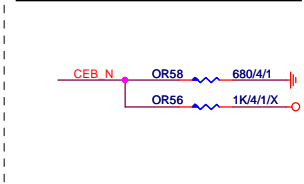
Size B Document Number: GA-H110M-S2HP Rev 1.1

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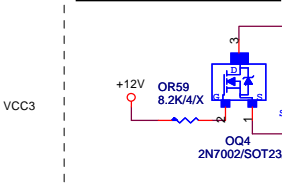
| FAN TABLE              |                      |
|------------------------|----------------------|
| CPU_FAN                | FAN_CTL1<br>FAN_TAC1 |
| SYS_FAN1               | FAN_CTL2<br>FAN_TAC2 |
| SYS_FAN2               | FAN_CTL3<br>FAN_TAC3 |
| SYS_FAN3               | FAN_CTL5<br>FAN_TAC5 |
| OPT FAN or<br>SYS_FAN4 | N/A                  |
| THRMTRIP1              | YES PIN60            |
| THRMTRIP2              | YES PIN94            |

| IT8620E GPIO問題隨整 |   |
|------------------|---|
| PIN 50           | GP26-第一次接上POWER時<br>會拉 Lo   |
| PIN 90/91        | DEFAULT為HDLN FUNCTION<br>GP93 BYPASS TO GP92<br>高溫時<br>會被拉Lo(ITE BUG) |
| PIN 108          | GP40--- POWER ON<br>時會拉 Lo  |
| PIN 111/112      | MOUSE 跟FAN6 FUNCTION<br>擇一使用,不然會互相干擾                                  |
| PIN 22           | PIN22,需高於3V,若低於<br>搭部分COM PORT及LPT裝置<br>蜂鳴器會異常動作。                     |

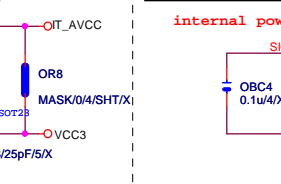
DUAL BIOS OPT STRAP



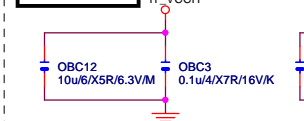
Power leakage



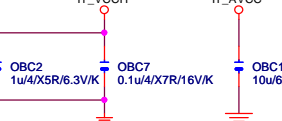
SIO\_18V



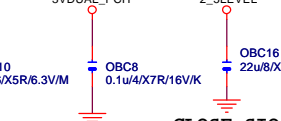
SIO CAP



IT\_VCCH



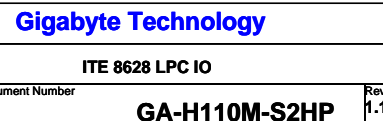
IT\_AVCC



3VDUAL\_PCH

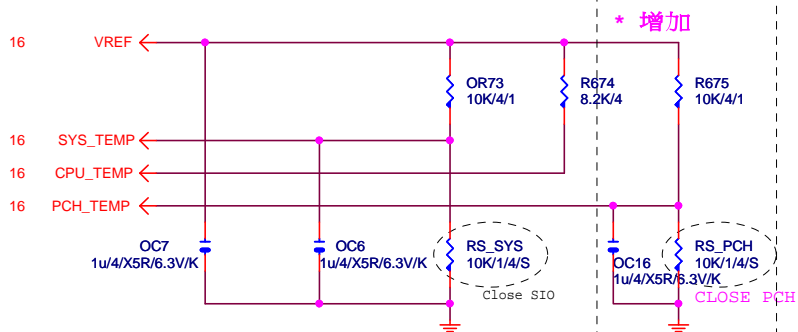


2\_5LEVEL



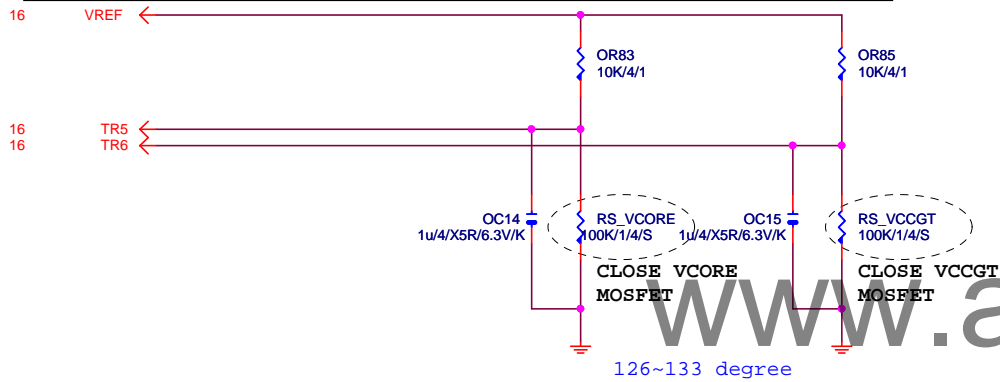
## TEMP H/W MONITOR

REV 1.08



## RS\_VCORE、RS\_VCCGT、CLOSE\_CPU\_VCORE &amp; VCCGT MOSFET

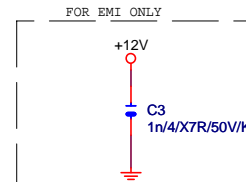
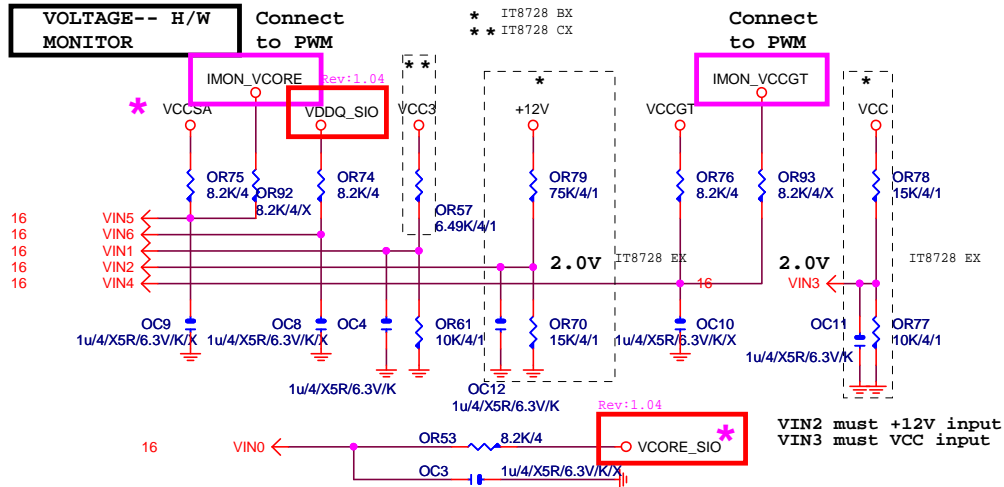
-PROCHOT:有mos heatsink不用prochot function



## VOLTAGE-- H/W MONITOR

Connect to PWM

Connect to PWM

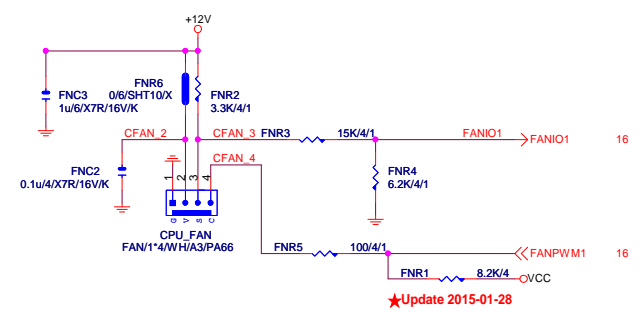


Gigabyte Technology

|        |                           |       |                     |
|--------|---------------------------|-------|---------------------|
| Title  |                           |       | HWM,KB/MS, FAN CTRL |
| Size   | Document Number           | Rev   | 1.1                 |
| Custom | GA-H110M-S2HP             |       |                     |
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CPU SMART FAN

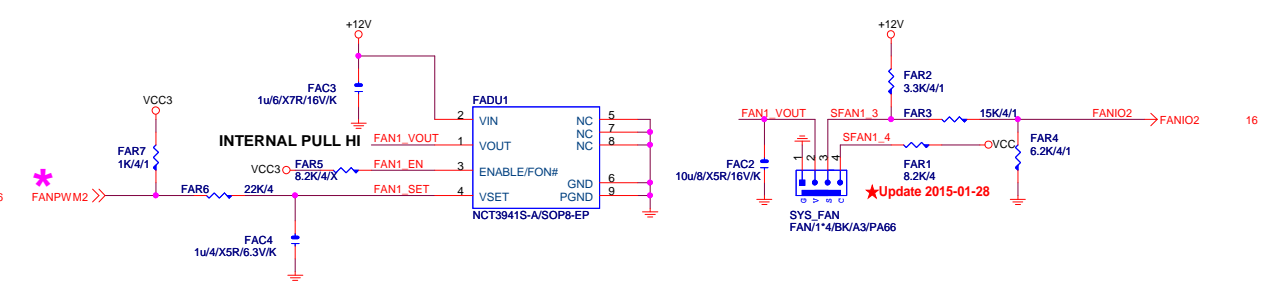
Rev: 0.7



SYSTEM FAN1

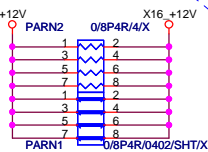
Linear SYS\_FAN  
Enable Function (NCT3941S)  
Full Turn On Function (NCT3941S-A)

A.



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+12 - protect  
short-wire test



PA\_EXP\_RXP[0..15] >> PA\_EXP\_RXN[0..15] 4  
PA\_EXP\_RXN[0..15] >> PA\_EXP\_RXP[0..15] 4  
PA\_EXP\_TXP[0..15] >> PA\_EXP\_TXN[0..15] 4  
PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXP[0..15] 4

|              |       |                  |                |
|--------------|-------|------------------|----------------|
| PA_EXP_TXP0  | PAC5  | 0.22u4/X5R6.3V/K | PA_EXP_TXP0_C  |
| PA_EXP_TXN0  | PAC4  | 0.22u4/X5R6.3V/K | PA_EXP_TXN0_C  |
| PA_EXP_TXP1  | PAC6  | 0.22u4/X5R6.3V/K | PA_EXP_TXP1_C  |
| PA_EXP_TXN1  | PAC7  | 0.22u4/X5R6.3V/K | PA_EXP_TXN1_C  |
| PA_EXP_TXP2  | PAC8  | 0.22u4/X5R6.3V/K | PA_EXP_TXP2_C  |
| PA_EXP_TXN2  | PAC9  | 0.22u4/X5R6.3V/K | PA_EXP_TXN2_C  |
| PA_EXP_TXP3  | PAC10 | 0.22u4/X5R6.3V/K | PA_EXP_TXP3_C  |
| PA_EXP_TXN3  | PAC11 | 0.22u4/X5R6.3V/K | PA_EXP_TXN3_C  |
| PA_EXP_TXP4  | PAC12 | 0.22u4/X5R6.3V/K | PA_EXP_TXP4_C  |
| PA_EXP_TXN4  | PAC13 | 0.22u4/X5R6.3V/K | PA_EXP_TXN4_C  |
| PA_EXP_TXP5  | PAC14 | 0.22u4/X5R6.3V/K | PA_EXP_TXP5_C  |
| PA_EXP_TXN5  | PAC15 | 0.22u4/X5R6.3V/K | PA_EXP_TXN5_C  |
| PA_EXP_TXP6  | PAC16 | 0.22u4/X5R6.3V/K | PA_EXP_TXP6_C  |
| PA_EXP_TXN6  | PAC17 | 0.22u4/X5R6.3V/K | PA_EXP_TXN6_C  |
| PA_EXP_TXP7  | PAC18 | 0.22u4/X5R6.3V/K | PA_EXP_TXP7_C  |
| PA_EXP_TXN7  | PAC19 | 0.22u4/X5R6.3V/K | PA_EXP_TXN7_C  |
| PA_EXP_TXP8  | PAC21 | 0.22u4/X5R6.3V/K | PA_EXP_TXP8_C  |
| PA_EXP_TXN8  | PAC20 | 0.22u4/X5R6.3V/K | PA_EXP_TXN8_C  |
| PA_EXP_TXP9  | PAC22 | 0.22u4/X5R6.3V/K | PA_EXP_TXP9_C  |
| PA_EXP_TXN9  | PAC23 | 0.22u4/X5R6.3V/K | PA_EXP_TXN9_C  |
| PA_EXP_TXP10 | PAC24 | 0.22u4/X5R6.3V/K | PA_EXP_TXP10_C |
| PA_EXP_TXN10 | PAC25 | 0.22u4/X5R6.3V/K | PA_EXP_TXN10_C |
| PA_EXP_TXP11 | PAC26 | 0.22u4/X5R6.3V/K | PA_EXP_TXP11_C |
| PA_EXP_TXN11 | PAC27 | 0.22u4/X5R6.3V/K | PA_EXP_TXN11_C |
| PA_EXP_TXP12 | PAC28 | 0.22u4/X5R6.3V/K | PA_EXP_TXP12_C |
| PA_EXP_TXN12 | PAC29 | 0.22u4/X5R6.3V/K | PA_EXP_TXN12_C |
| PA_EXP_TXP13 | PAC30 | 0.22u4/X5R6.3V/K | PA_EXP_TXP13_C |
| PA_EXP_TXN13 | PAC31 | 0.22u4/X5R6.3V/K | PA_EXP_TXN13_C |
| PA_EXP_TXP14 | PAC32 | 0.22u4/X5R6.3V/K | PA_EXP_TXP14_C |
| PA_EXP_TXN14 | PAC33 | 0.22u4/X5R6.3V/K | PA_EXP_TXN14_C |
| PA_EXP_TXP15 | PAC34 | 0.22u4/X5R6.3V/K | PA_EXP_TXP15_C |
| PA_EXP_TXN15 | PAC35 | 0.22u4/X5R6.3V/K | PA_EXP_TXN15_C |

PCIEX16:16/5/5/5/16

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

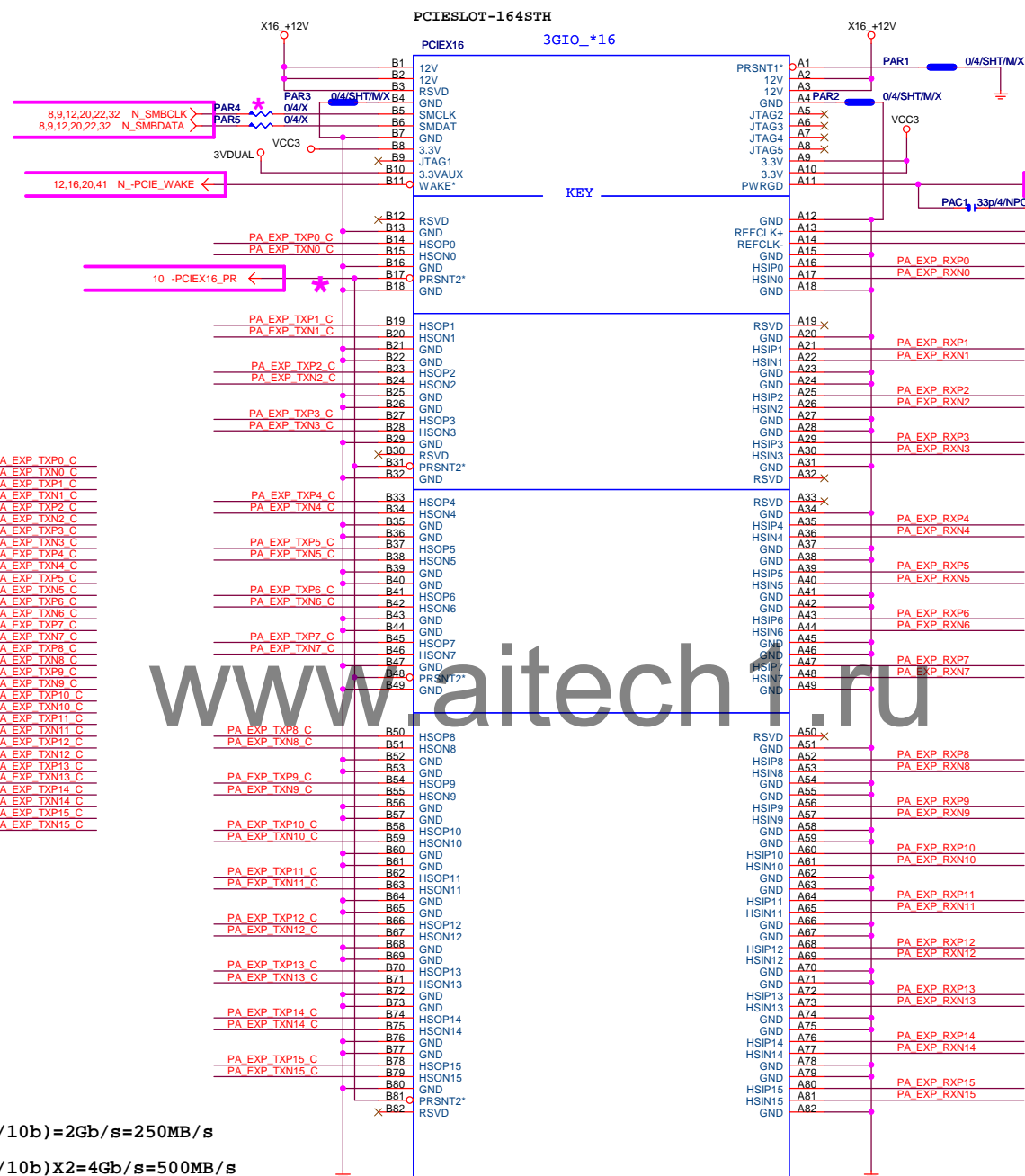
PCE-E X1(單向) BANDWITH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz\*(8b/10b)X2=4Gb/s=500MB/s

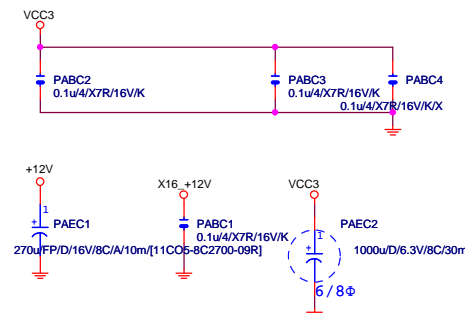
PCE-E X16(單向) BANDWITH=2.5GHz\*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz\*(8b/10b)X16X2=64Gb/s=8GB/s

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

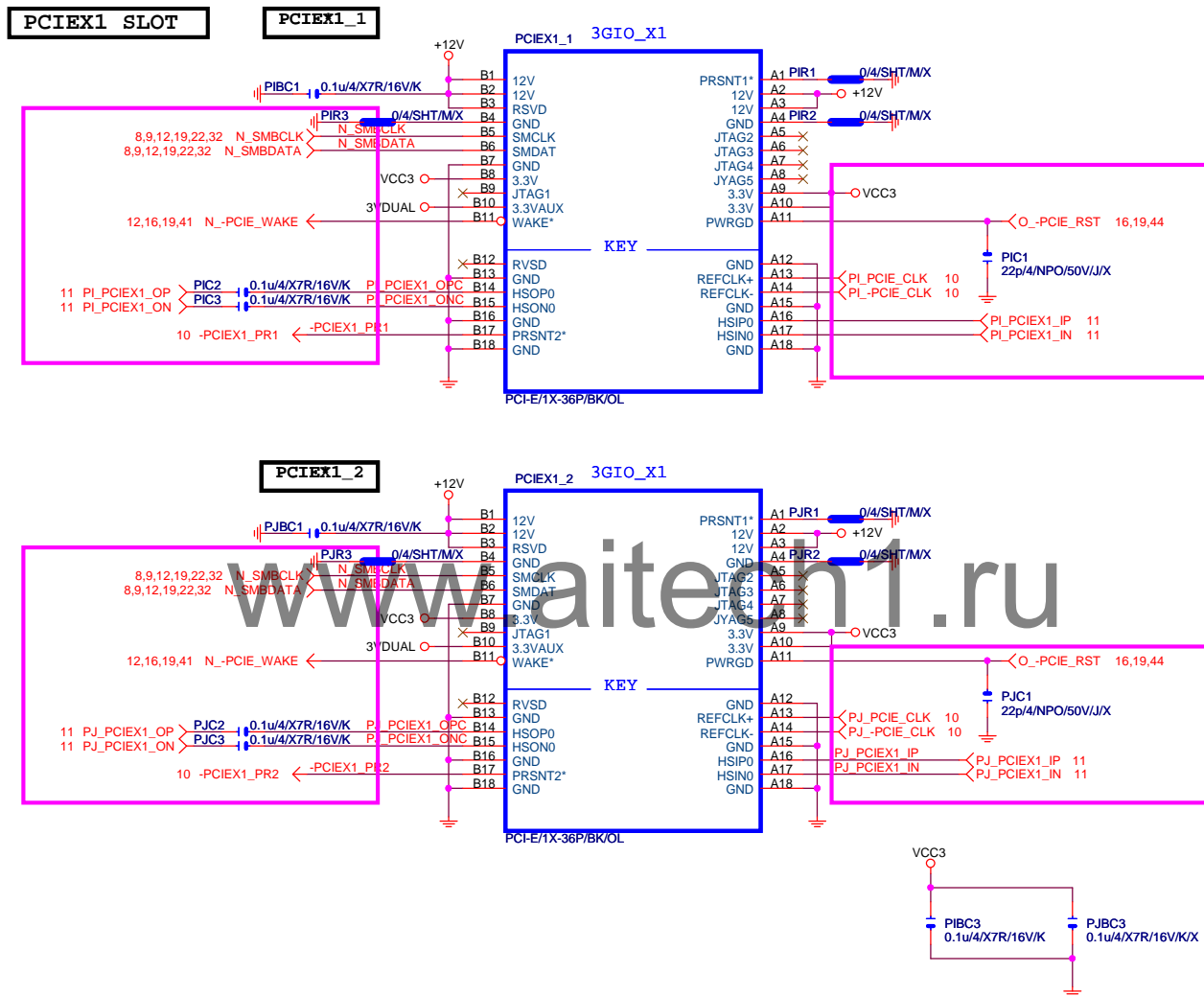


PCI-E16X-164P/GY/LONG DOUBLE/HK\*2



Gigabyte Technology

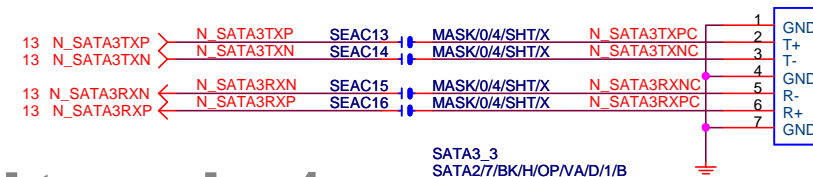
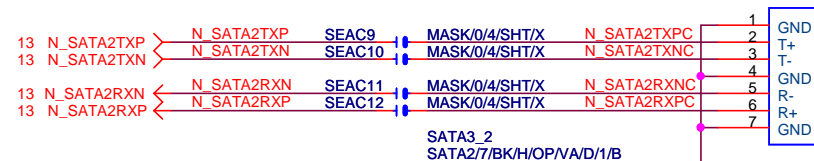
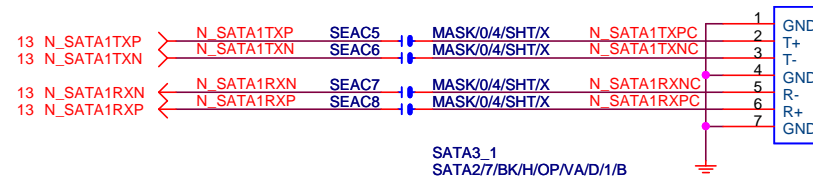
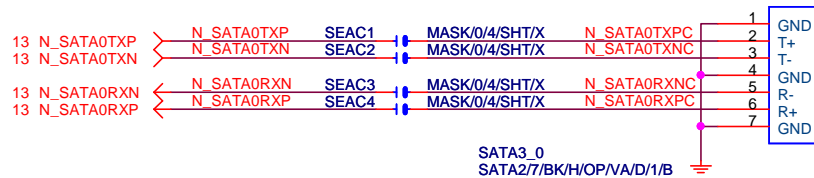
|        |                           |       |                  |
|--------|---------------------------|-------|------------------|
| Title  |                           |       | PCI EXPRESS * 16 |
| Size   | Document Number           | Rev   |                  |
| Custom | GA-H110M-S2HP             | 1.1   |                  |
| Date:  | Friday, December 16, 2016 | Sheet | 19 of 51         |



Gigabyte Technology

|        |                           |               |             |
|--------|---------------------------|---------------|-------------|
| Title  |                           |               | PCIE_X1 1,2 |
| Size   | Document Number           | GA-H110M-S2HP |             |
| Custom |                           | Rev           | 1.1         |
| Date:  | Friday, December 16, 2016 | Sheet         | 20 of 51    |

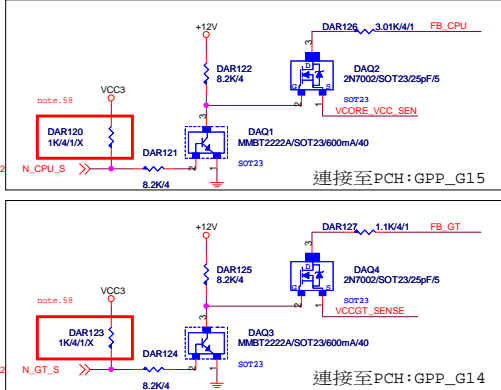
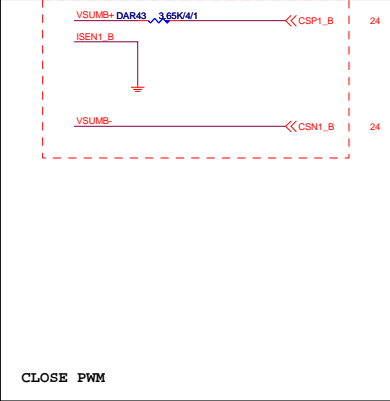
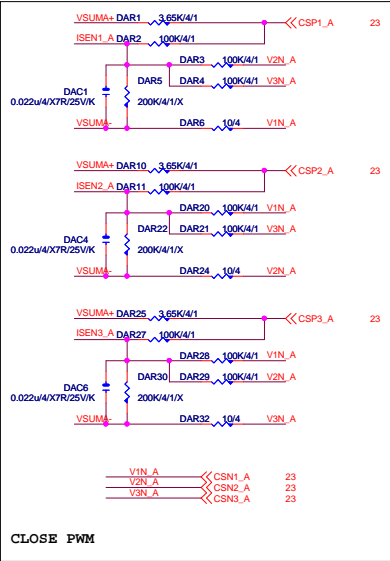
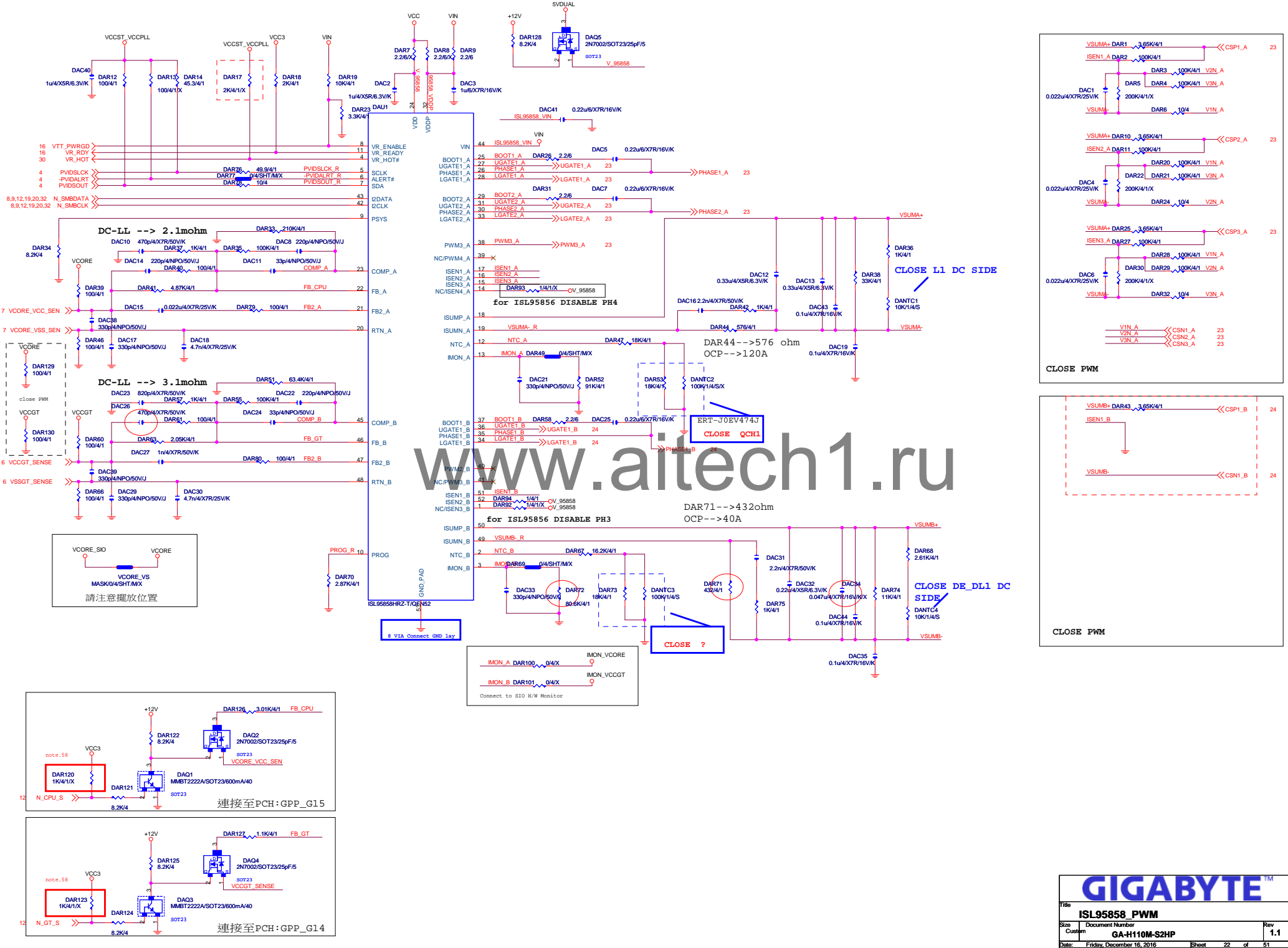
Rev 0.6



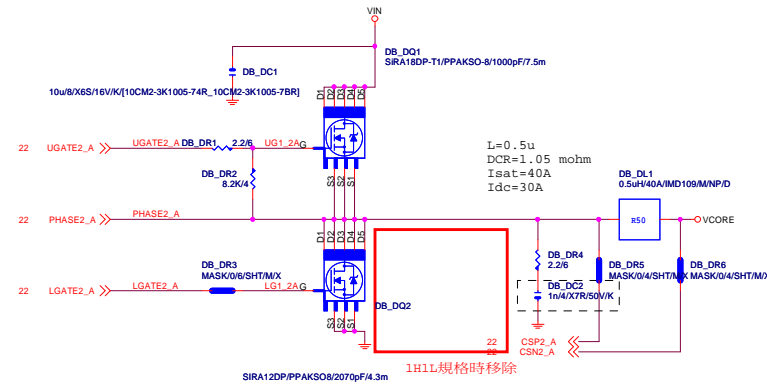
www.aitech1.ru

Gigabyte Technology

|              |                           |                |
|--------------|---------------------------|----------------|
| Title        |                           |                |
| SATA EXPRESS |                           |                |
| Size         | Document Number           | Rev            |
| Custom       | GA-H110M-S2HP             | 1.1            |
| Date:        | Friday, December 16, 2016 | Sheet 21 of 51 |



VCORE



DAC36  
1u5/X7R/16V/K

1

DAEC14

270uF/P/D/16V/8C/A/10m/11C05-8C2700-09R

1

DAEC15

270uF/P/D/16V/8C/A/10m/11C05-8C2700-09R

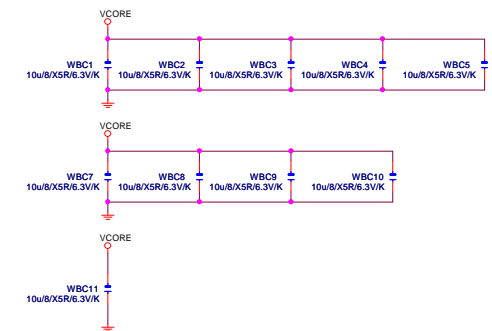
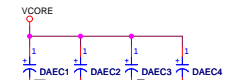
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DAEC16

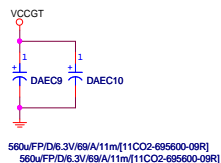
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V12

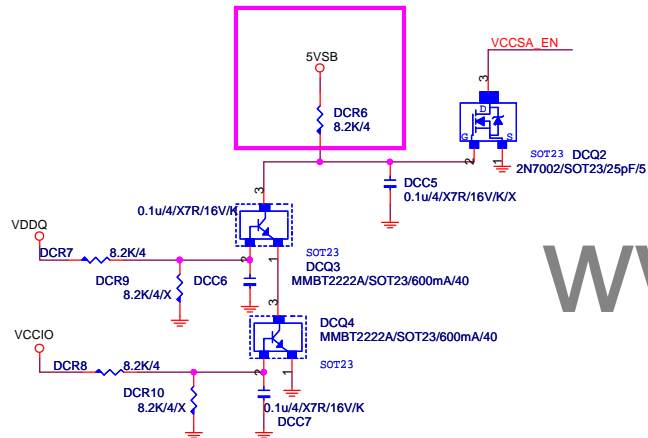
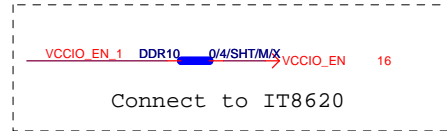
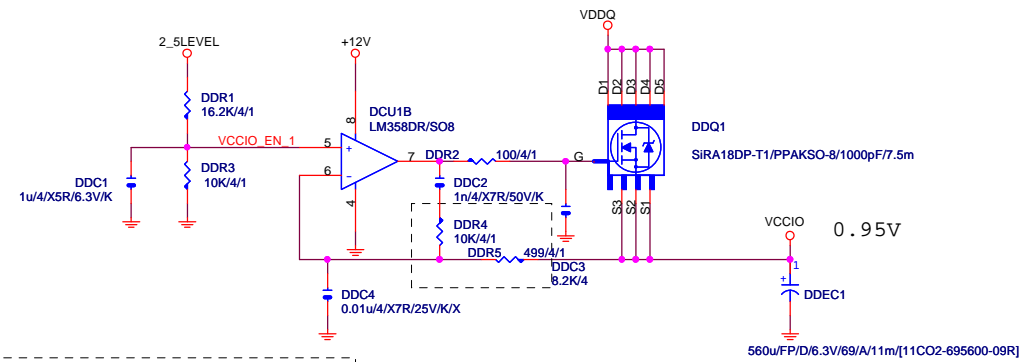
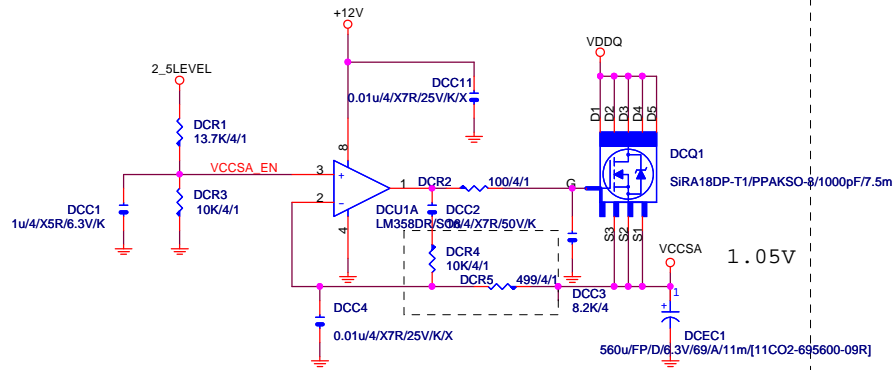
V1N

**GIGABYTE™**

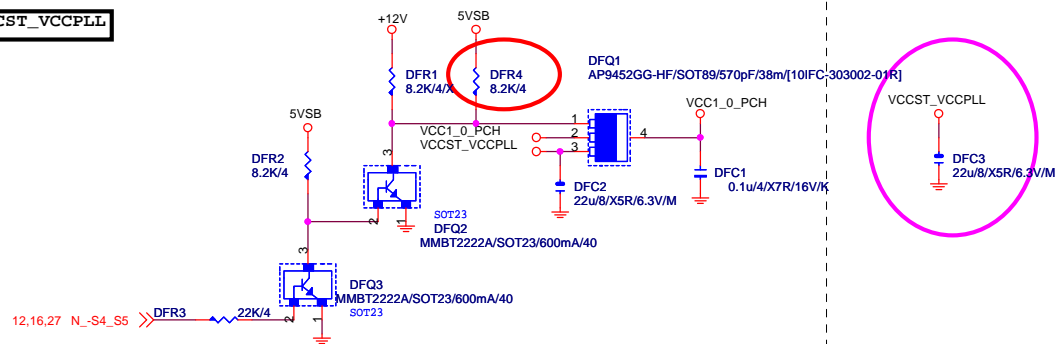
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|--------------|---------------------------|-------|----------|
| Title        |                           |       |          |
| ISL95858_MOS |                           |       |          |
| Size         | Document Number           | Rev   |          |
| Custom       | GA-H110M-S2HP             | 1.1   |          |
| Date:        | Friday, December 16, 2016 | Sheet | 23 of 51 |

[illegible]

[www.aitech1.ru](http://www.aitech1.ru)

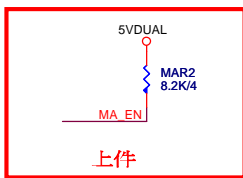


www.aitech1.ru

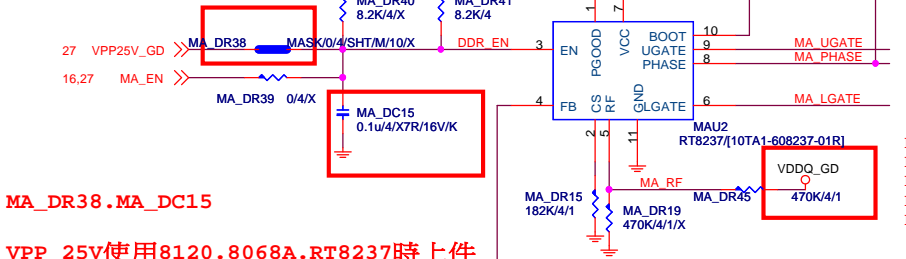


|                  |                           |                |
|------------------|---------------------------|----------------|
| <b>GIGABYTE™</b> |                           |                |
| Title            | <b>VCCSA_VCCIO</b>        |                |
| Size             | Document Number           | Rev            |
| Custom           | <b>GA-H110M-S2HP</b>      | <b>1.1</b>     |
| Date:            | Friday, December 16, 2016 | Sheet 25 of 51 |

## DDR4



上件



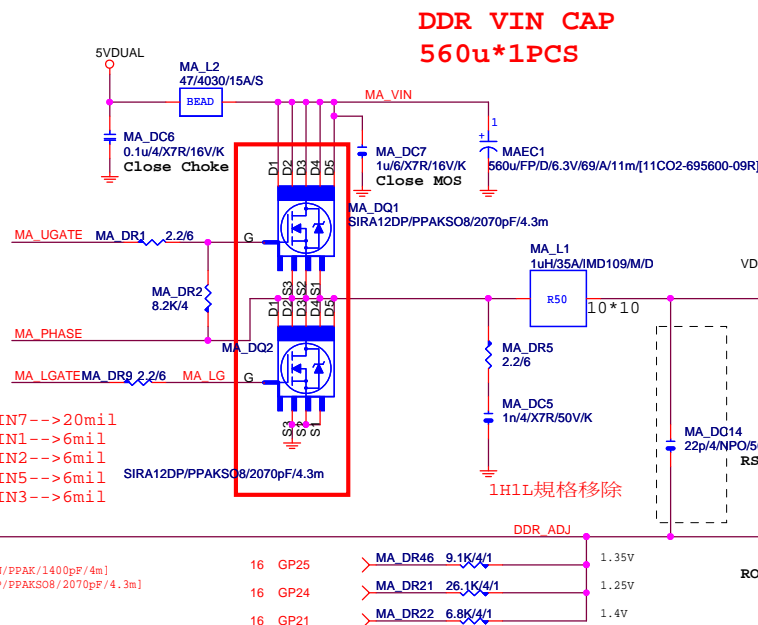
MA DR38.MA DC15

VPP\_25V使用8120.8068A.RT8237時上件



FS=290K  
OCP=40A

MOSFET請依MOSFET使用規則.自行選擇  
ON-->10IF9-040406-10R[NTMFS4C06N/N/PPAK/1400pF/4m]  
VISHAY-->10IF9-040012-10R[SIRAI2DP/PPAKS08/2070pF/4.3m]



DDR VIN CAP  
560u\*1PCS

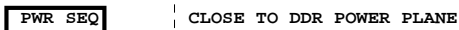
## CHOKES與CAP料號可變

SUPPORT DDR4

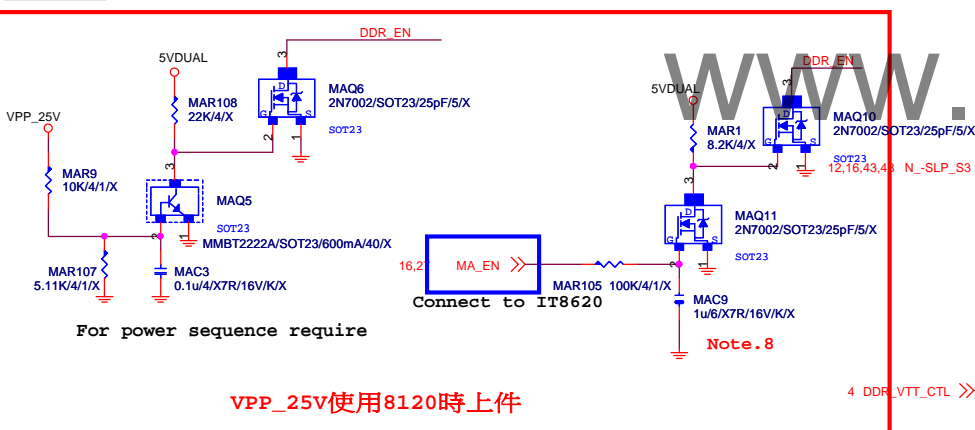
1.2V

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

Remote sense請從最重的負載端點拉回

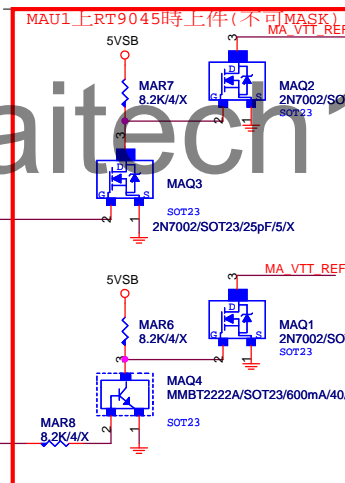


CLOSE TO DDR POWER PLANE

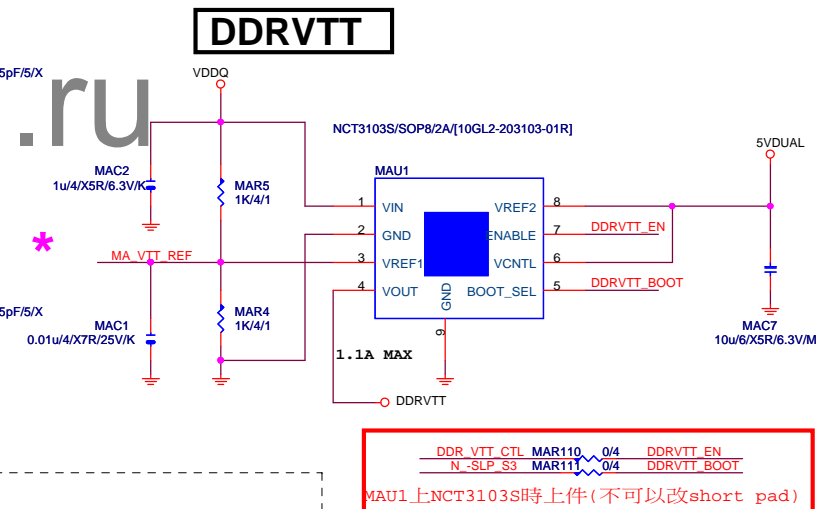


For power sequence require

VPP\_25V使用8120時上件

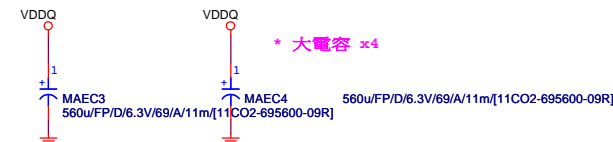


DDRVTT CAP



MAU1上NCT3103S時上件(不可以改short pad)

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

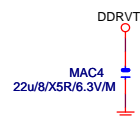


\* 大電容 x4

560u/FP/D/6.3V/69/A/11m/[11CO2-695600-09R]

WBC49 :  
10u/8/X5R/6.3V/K

\* 大電容 x0



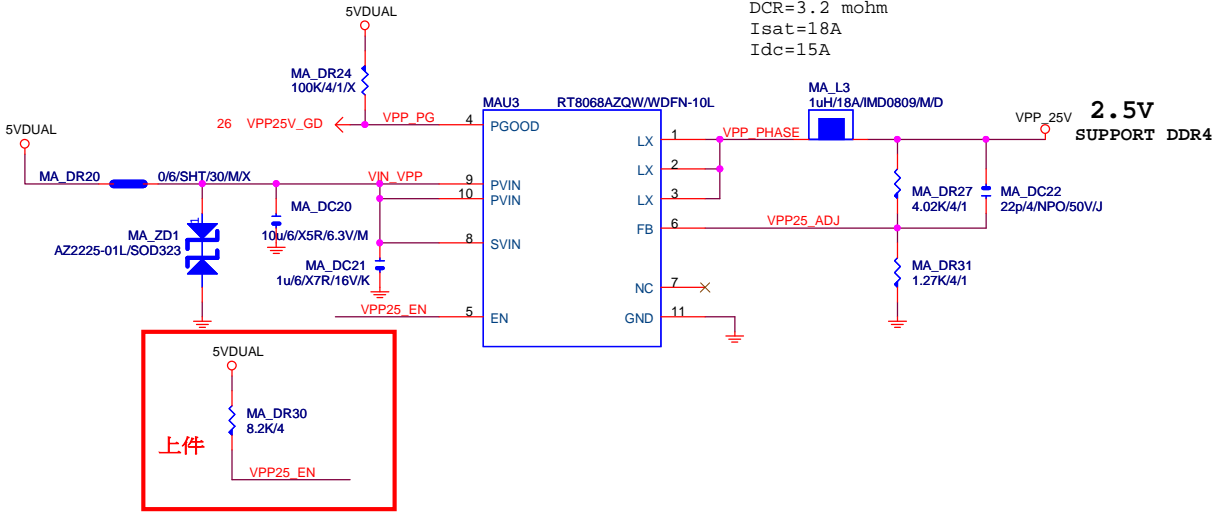
# GIGABYTE

|                          |                           |            |          |
|--------------------------|---------------------------|------------|----------|
| Title                    |                           |            |          |
| <b>RT8237_DDR4 POWER</b> |                           |            |          |
| Size                     | Document Number           | Rev        |          |
| Custom                   | <b>GA-H110M-S2HP</b>      | <b>1.1</b> |          |
| Date:                    | Friday, December 16, 2016 | Sheet      | 26 of 51 |

VPP\_25V

CHOKE與CAP料號可變

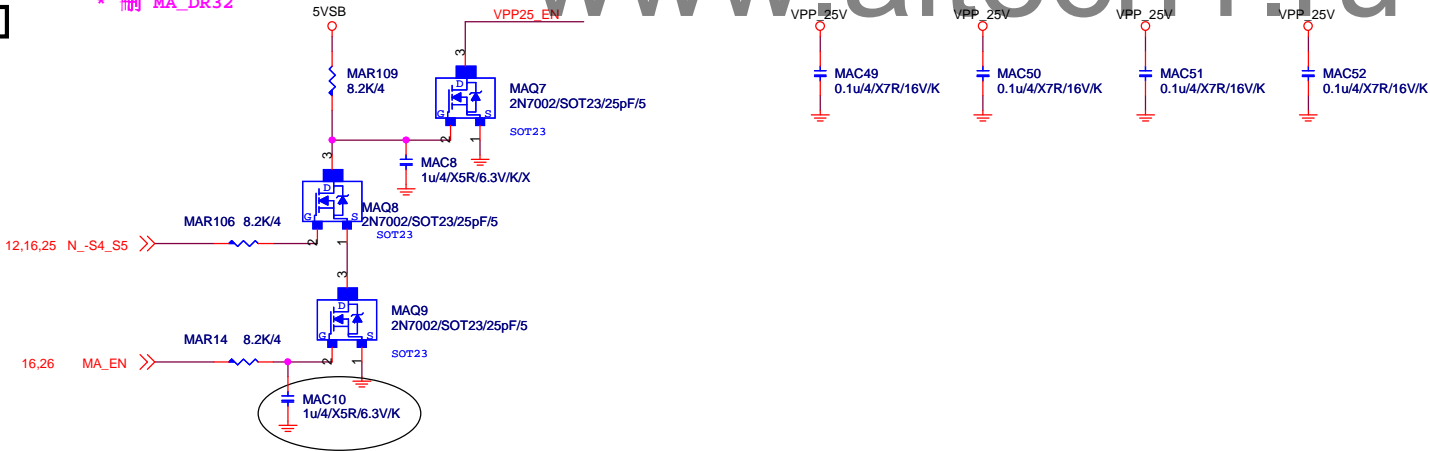
L=1u  
DCR=3.2 mohm  
Isat=18A  
Idc=15A



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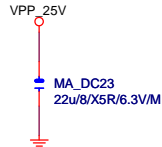
PWR\_SEQ

\* 刪 MA\_DR32



VPP CAP 22u\*1PCS

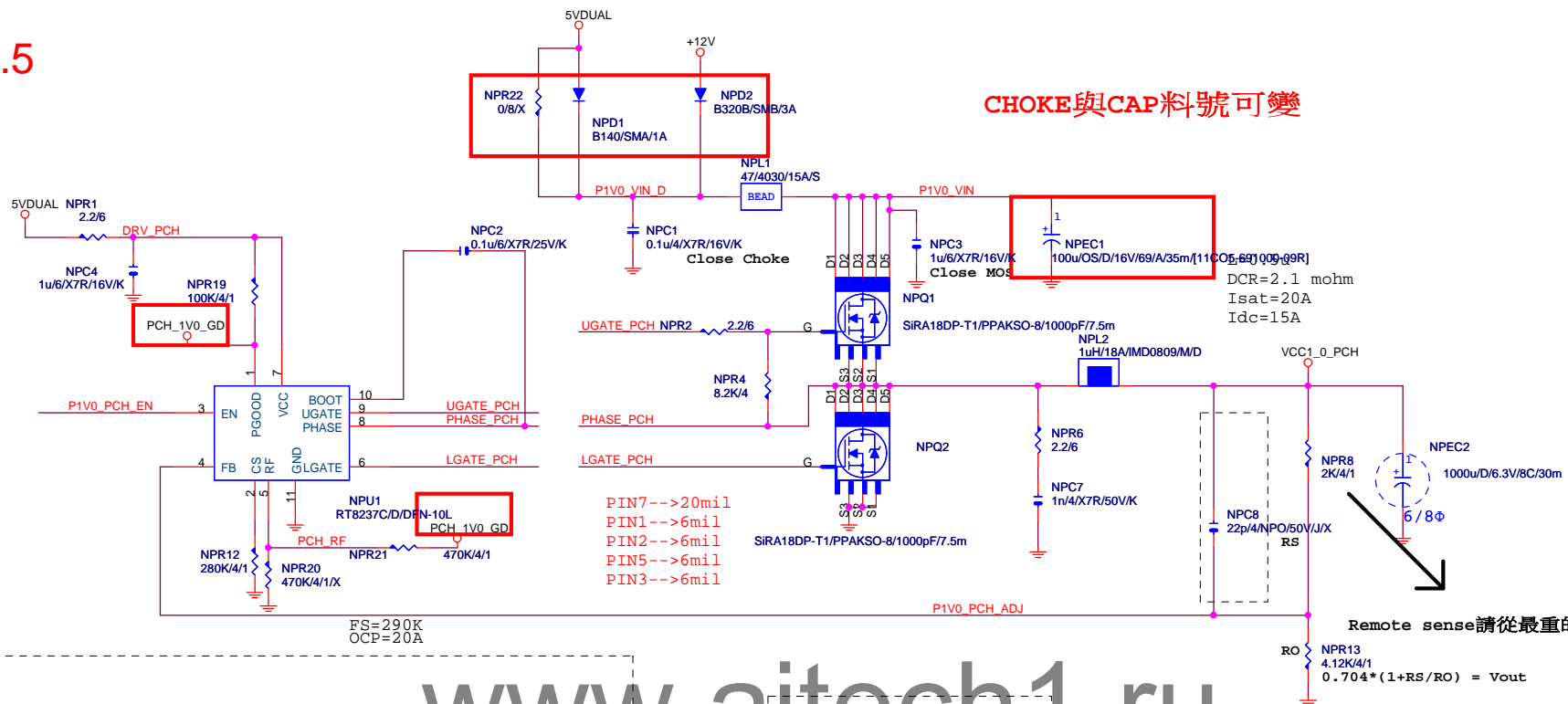
\* 大電容 x0



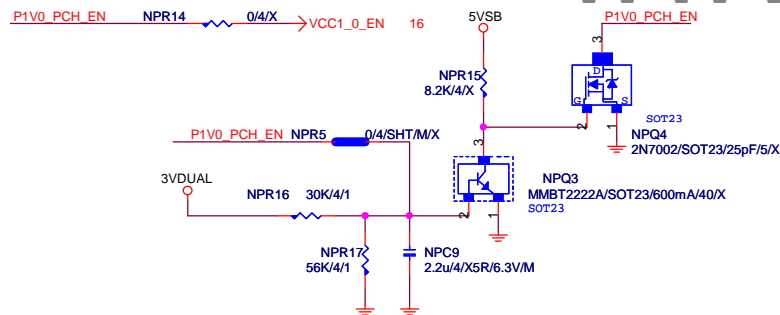
| GIGABYTE™          |                           |       |          |
|--------------------|---------------------------|-------|----------|
| Title              |                           |       |          |
| RT9018_VPP25 POWER |                           |       |          |
| Size               | Document Number           | Rev   |          |
| Custom             | GA-H110M-S2HP             | 1.1   |          |
| Date:              | Friday, December 16, 2016 | Sheet | 27 of 51 |

REV:0.5

CHOKE與CAP料號可變



PWR\_SEQ



請放置CHOKE—出來的地方

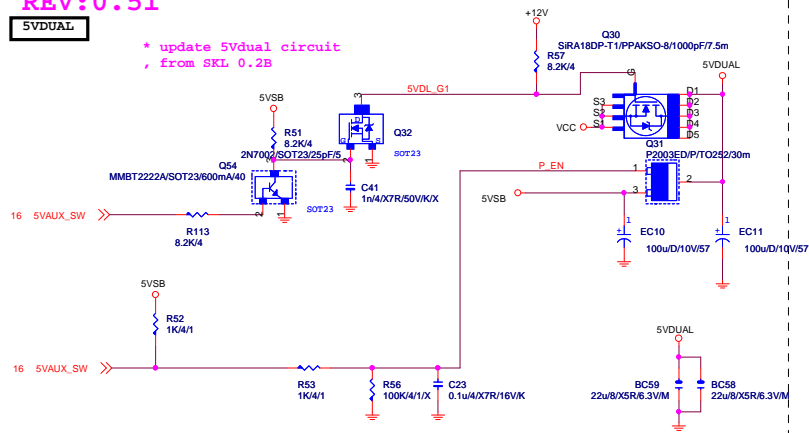
GIGABYTE™

|                  |                           |                |
|------------------|---------------------------|----------------|
| Title            |                           |                |
| RT8237_PCH POWER |                           |                |
| Size             | Document Number           | Rev            |
| Custom           | GA-H110M-S2HP             | 1.1            |
| Date:            | Friday, December 16, 2016 | Sheet 28 of 51 |

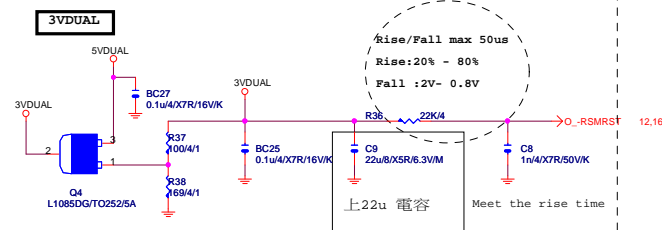
REV:0.51

5VDUAL

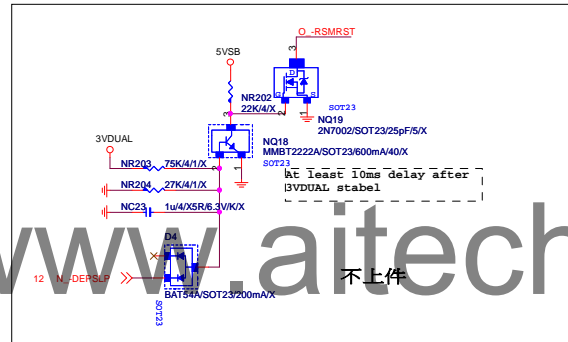
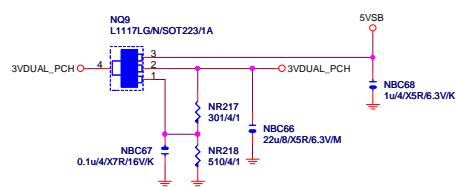
\* update 5Vdual circuit  
from SKL 0.2B



3VDUAL



3VDUAL\_PCH

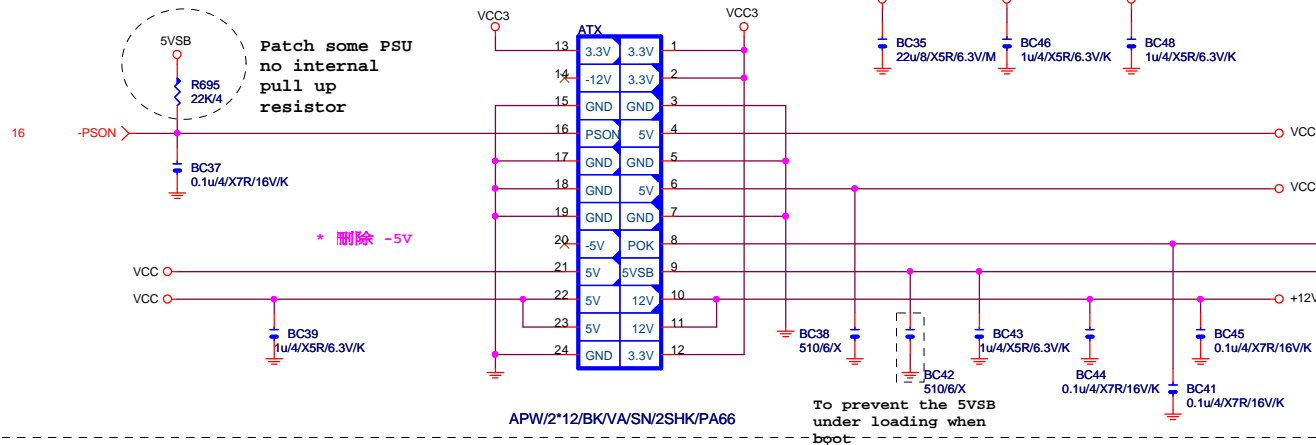


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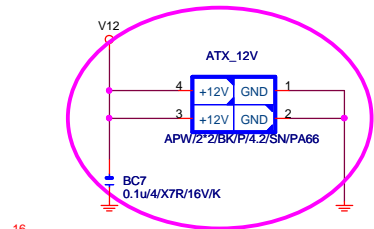
Gigabyte Technology

|        |                           |               |                |
|--------|---------------------------|---------------|----------------|
| Title  |                           |               | DISCRETE POWER |
| Size   | Document Number           | GA-H110M-S2HP |                |
| Custom |                           | Rev           | 1.1            |
| Date:  | Friday, December 16, 2016 | Sheet         | 29 of 51       |

## ATXX24 POWER CONNECTOR

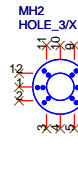
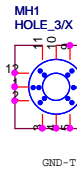


## ATXX4 POWER CONNECTOR

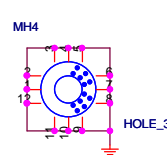
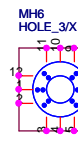
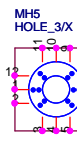
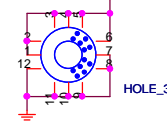


## 螺絲孔

MH1:GND-T  
FOR EMI  
TEST驗證



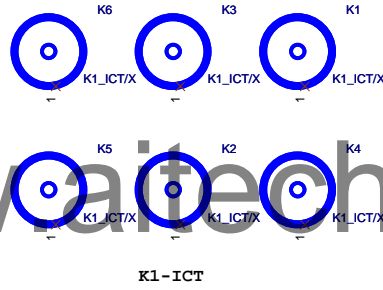
14/12/24  
Modify for EMI  
MH3



HOLE\_4-RH-1

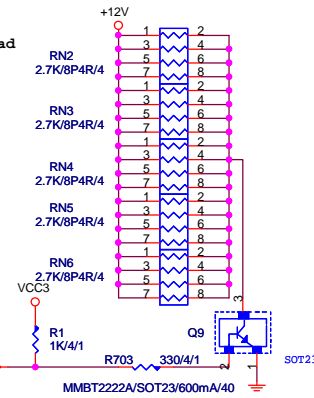
HOLE\_4-RH-5MM-1

## 固定孔/光學點



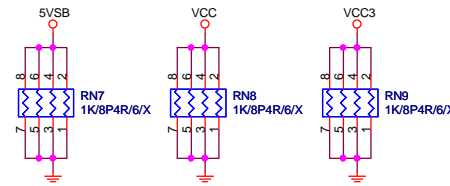
## +12V DUMMY LOAD

To fix 12V light load abnormal issue



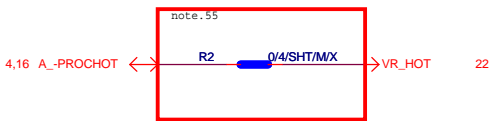
【技術通報R&D技術通報153】

## DUMMY LOAD

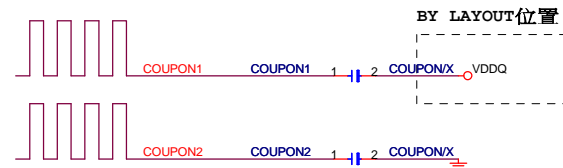


## -PROHOT

\* 保留 ?

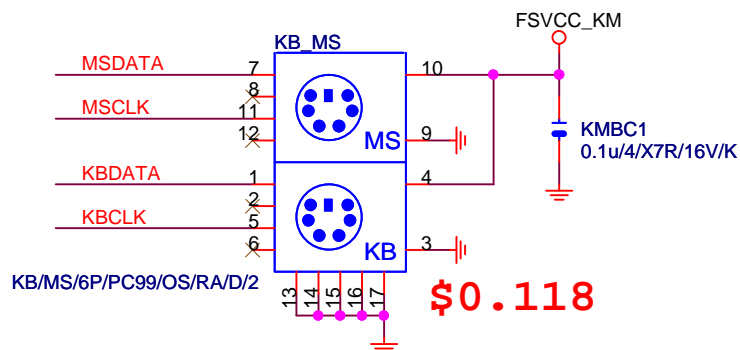


## COUPON



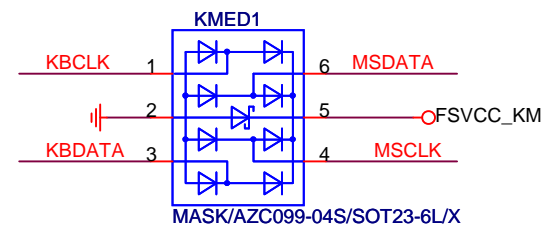
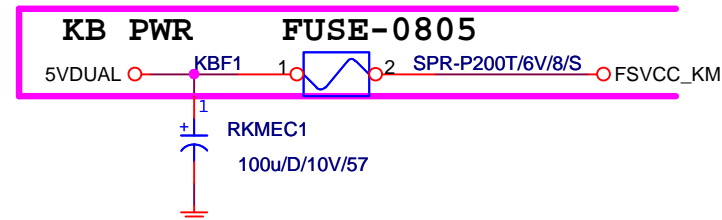
Gigabyte Technology

|        |                           |               |                     |
|--------|---------------------------|---------------|---------------------|
| Title  |                           |               | ATX POWER CONNECTOR |
| Size   | Document Number           | GA-H110M-S2HP |                     |
| Custom |                           |               | Rev 1.1             |
| Date:  | Friday, December 16, 2016 | Sheet         | 30 of 51            |

**Rev: 0.7**

**\$0.118**

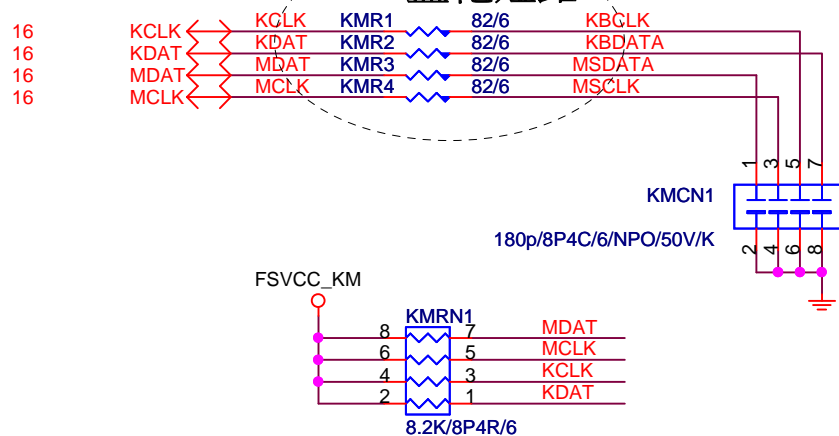
## NET 可變, 與其他USB SHARE



KB MS USB DAMPING/PU

KB MS USB PWR

## FOR鹽化短路



## Gigabyte Technology

| Title  | Author        | Year | Journal                       | Volume | Issue | Page    |
|--|---------------|------|-------------------------------|--------|-------|---------|
| 1. The Effect of Temperature on the Rate of Reaction                       | John Doe      | 2018 | Journal of Chemical Education | 95     | 3     | 456-462 |
| 2. Kinetics of the Reaction Between Hydrogen Peroxide and Potassium Iodide | Jane Smith    | 2017 | Journal of Chemical Education | 94     | 2     | 321-328 |
| 3. The Effect of Concentration on the Rate of Reaction                     | Michael Brown | 2016 | Journal of Chemical Education | 93     | 1     | 123-130 |
| 4. The Effect of Surface Area on the Rate of Reaction                      | Sarah White   | 2015 | Journal of Chemical Education | 92     | 4     | 567-574 |
| 5. The Effect of Catalyst on the Rate of Reaction                          | David Green   | 2014 | Journal of Chemical Education | 91     | 5     | 678-685 |

**KB\_MS\_USB**Size  
A

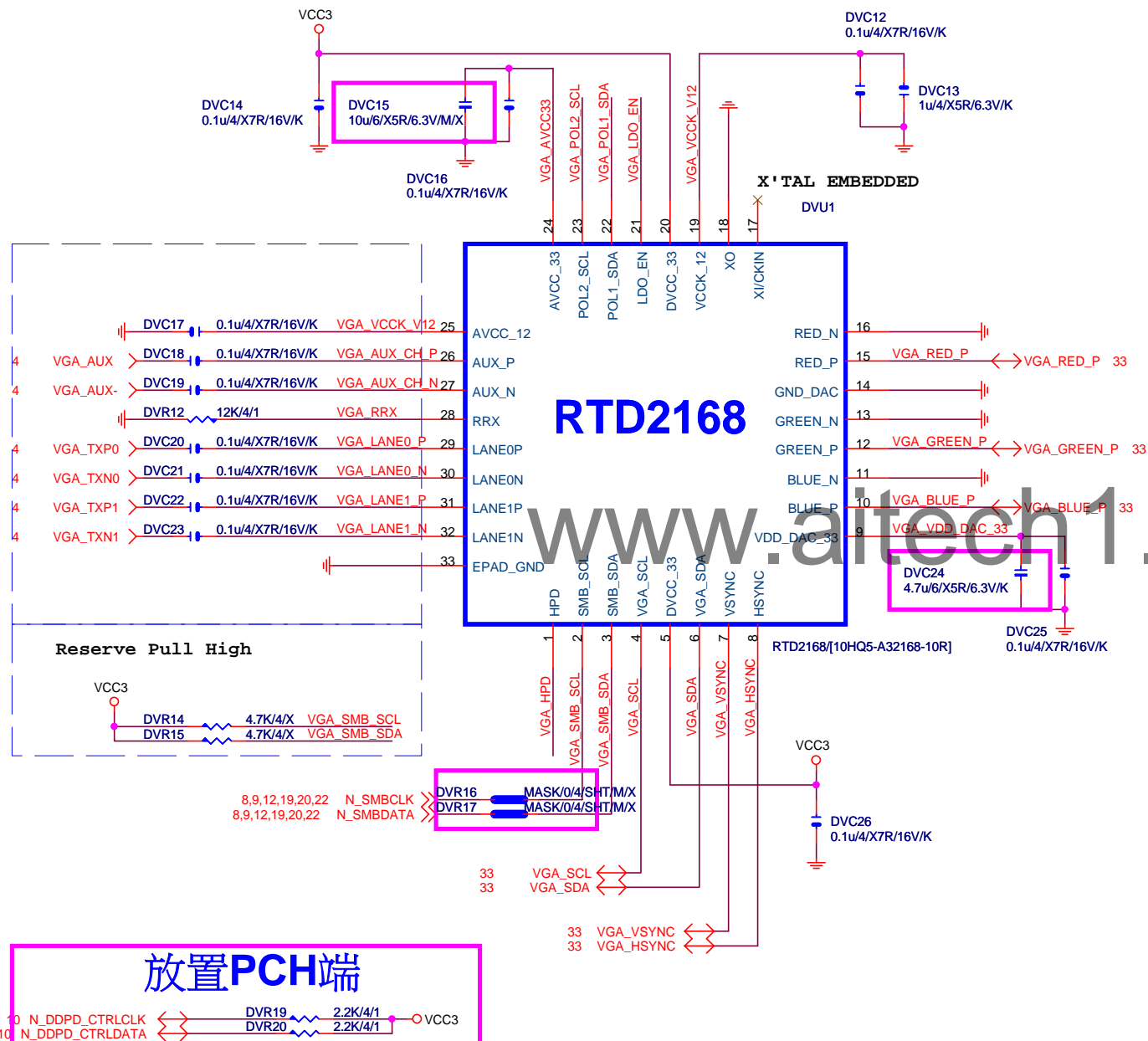
Document Number

**GA-H110M-S2HP**

|     |     |
|-----|-----|
| Rev | 1.1 |
|-----|-----|

Date: Friday, December 16, 2016

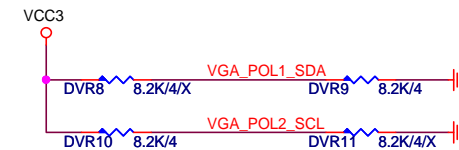
Sheet 31 of 51



## POWER

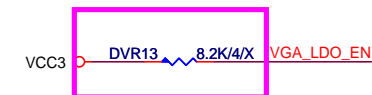


Power on latch



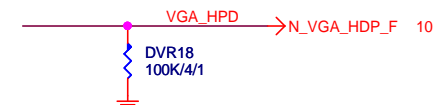
|                     |   | POL1_SDA(PIN22)          |                |
|---------------------|---|--------------------------|----------------|
|                     |   | 0                        | 1              |
| POL2_SCL<br>(PIN23) | 0 | X                        | EP MODE        |
|           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

## Embedded LDO

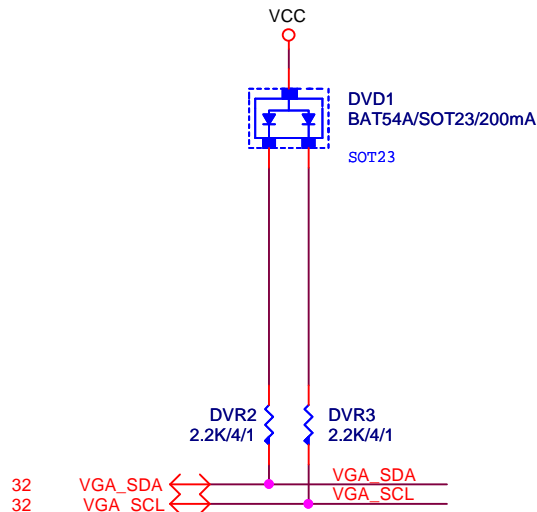


| LDO_EN(PIN21)               |                            |
|-----------------------------|----------------------------|
| 0                           | 1                          |
| VCCK_V12 from External 1.2V | VCCK_V12 from Embedded LDO |

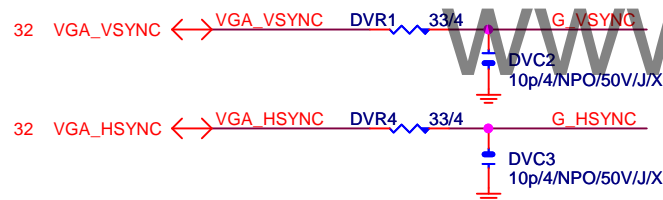
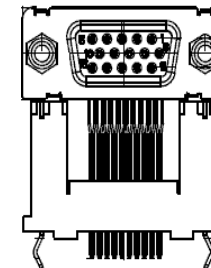
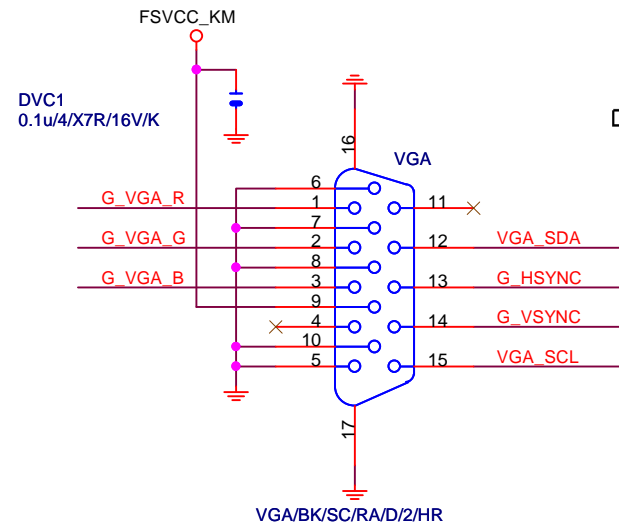
## DP HPD



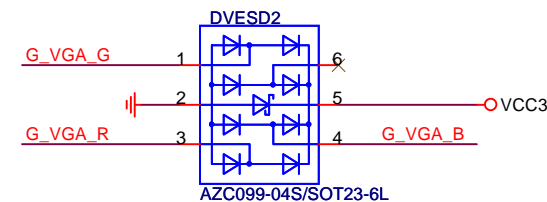
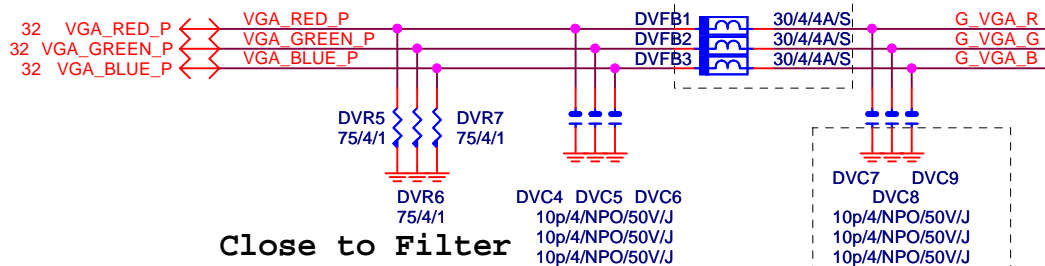
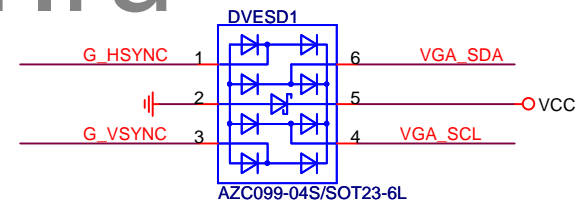
# VGA SIGNAL R1.03



# VGA CONN.



# VGA ESD



Close to Filter

FOR EMI

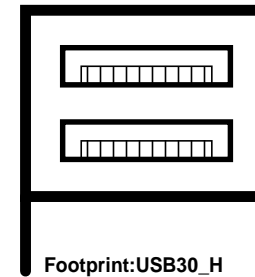
|                     |                           |               |          |
|---------------------|---------------------------|---------------|----------|
| Gigabyte Technology |                           |               |          |
| NXP-PTN3356         |                           |               |          |
| Title               |                           |               |          |
| Size                | Document Number           | GA-H110M-S2HP |          |
| Custom              |                           | Rev 1.1       |          |
| Date:               | Friday, December 16, 2016 | Sheet         | 33 of 51 |

Rev: 0.7

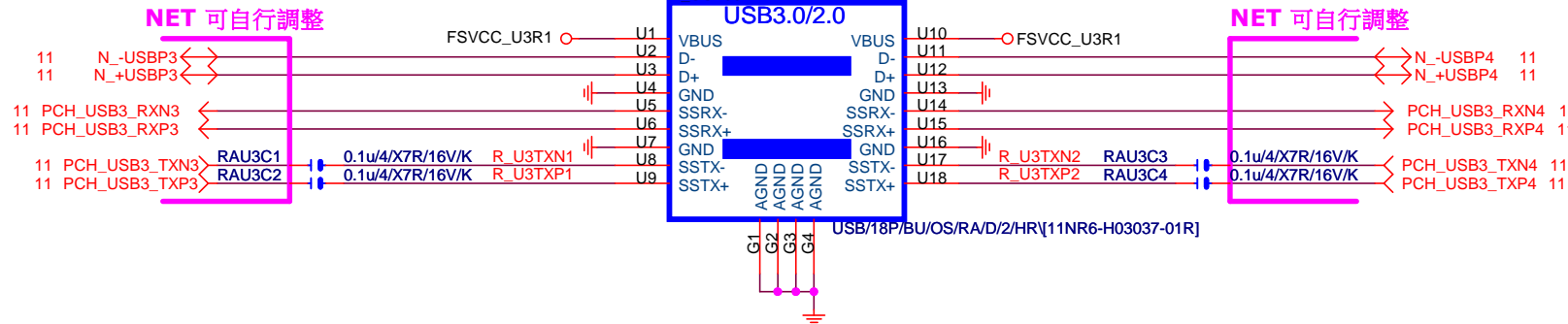
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可

2 port USB 3.0 with TYPE C Capture:

USB/18P/BU/OS/RA/D/2/HR



Footprint:USB30\_H

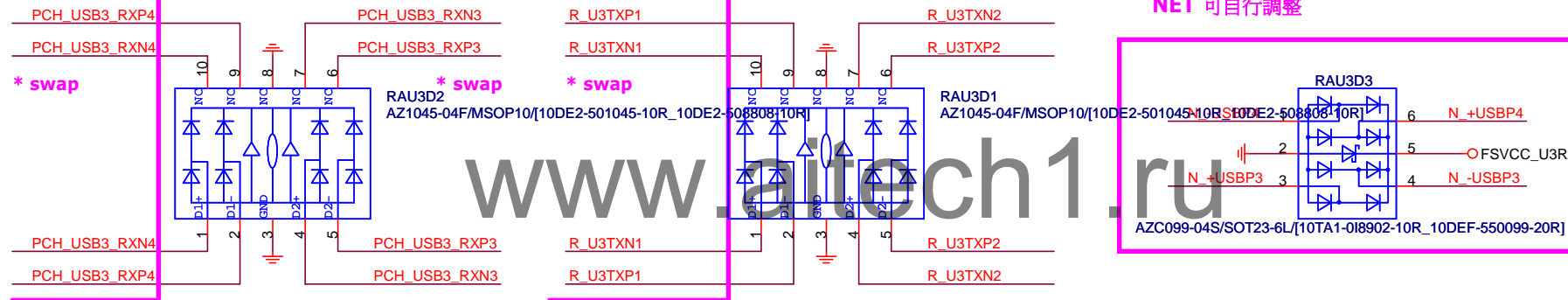


ESD

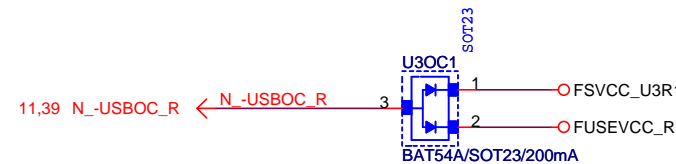
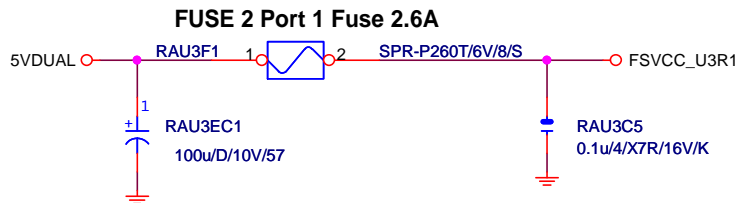
NET 可自行調整

NET 可自行調整

NET 可自行調整



FUSE



Gigabyte Technology

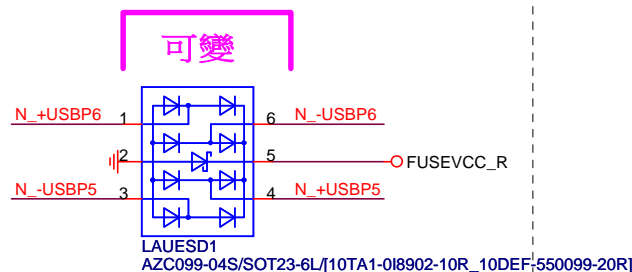
|                |                           |                |
|----------------|---------------------------|----------------|
| Title          |                           |                |
| R_USB30,USB_OC |                           |                |
| Size           | Document Number           | Rev            |
| Custom         | GA-H110M-S2HP             | 1.1            |
| Date:          | Friday, December 16, 2016 | Sheet 34 of 51 |



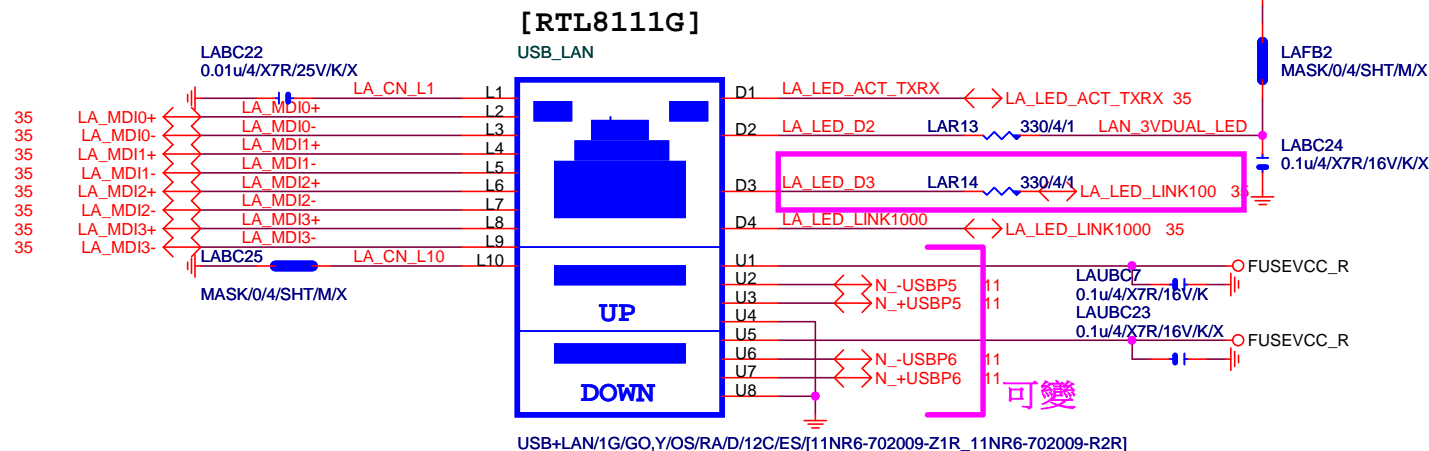
MDI ESD預留 \*

## R1.06

note:可變更USB NAME

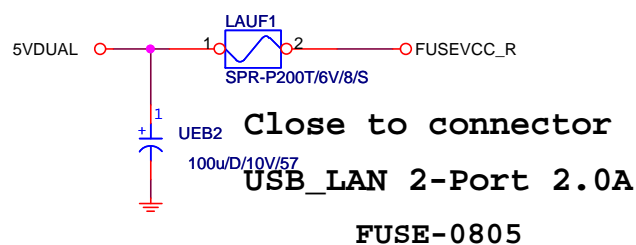
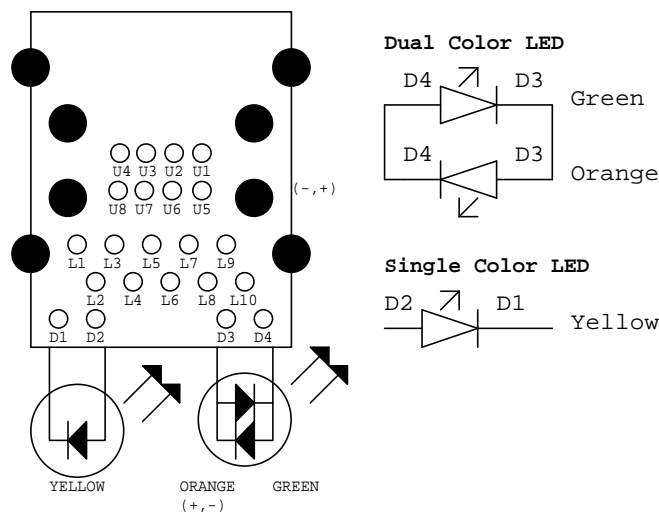


note:可變更USB NAME

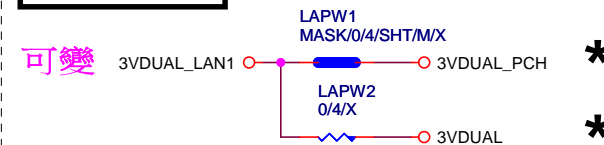
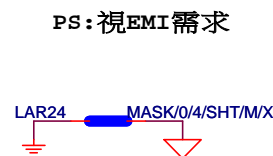


LA\_MDI-->100歐姆:[20/4/8/4/20]

note:可變更FUSE



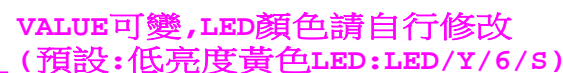
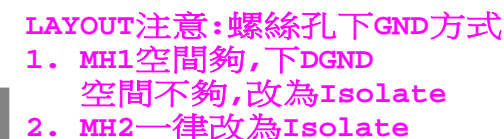
note: lan power連接及電流



## Gigabyte Technology

**LAN CONNECTOR-RTL8111G**

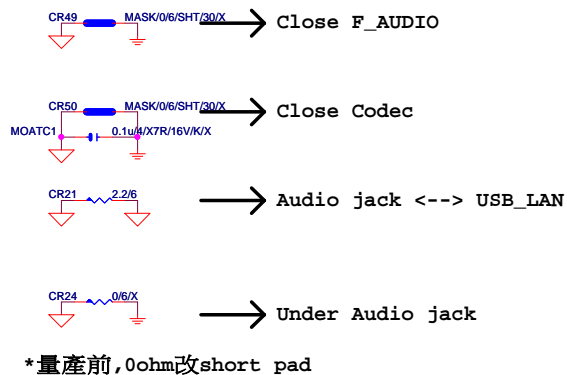
|                                 |   |            |
|---------------------------------|---|------------|
| Size<br>Custom                  | Document Number<br><b>GA-H110M-S2HP</b> | Rev<br>1.1 |
| Date: Friday, December 16, 2016 | Sheet 36 of 51                          |            |



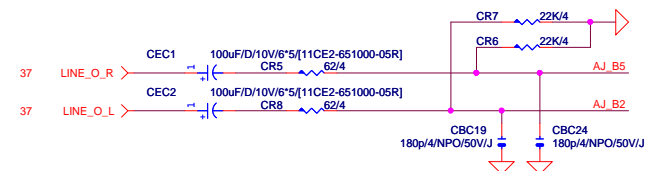
## 音效區域印刷



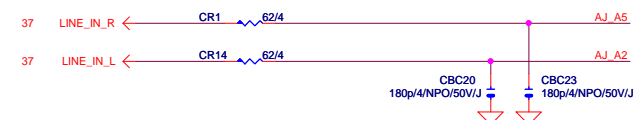
Rev 0.5



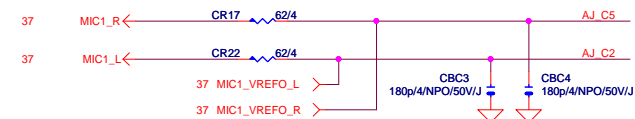
#### LINE-OUT



#### LINE-IN



#### MIC-IN

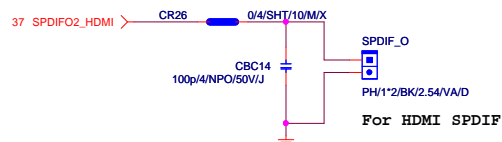


#### SURROUND

#### CEN/LFE

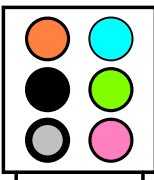
#### SURR BACK

#### SPDIF\_OUT



#### SPDIF\_IN

#### AZALIA JACK



#### AZALIA JACK

BLUE

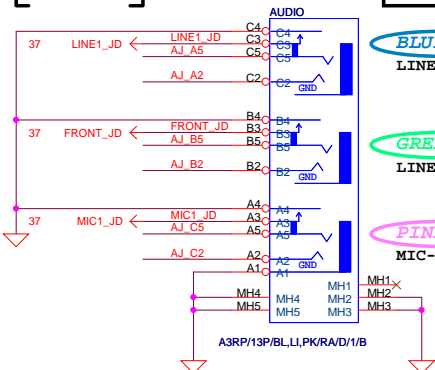
LINE-IN

GREEN

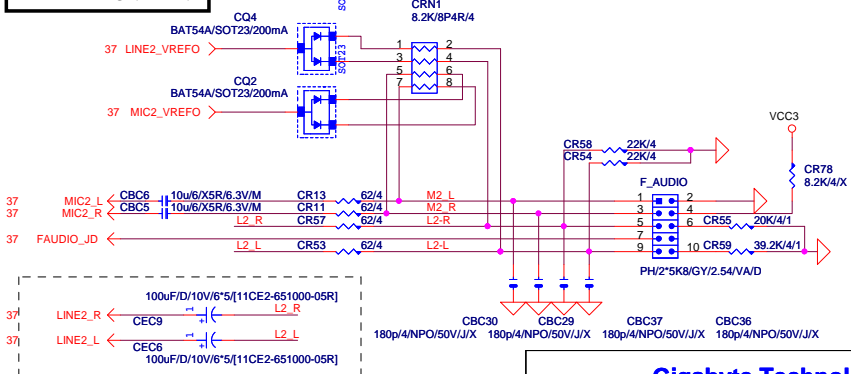
LINE-OUT

PINK

MIC-IN



#### AZALIA FRONT PANEL



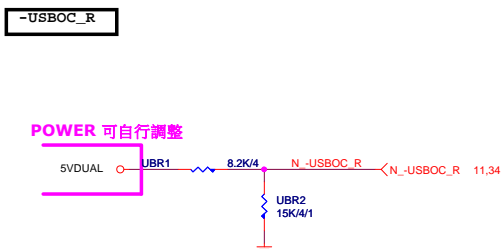
Gigabyte Technology

AUDIO JACK

GA-H110M-S2HP

Rev 1.1

Date: Friday, December 16, 2016 Sheet 38 of 51



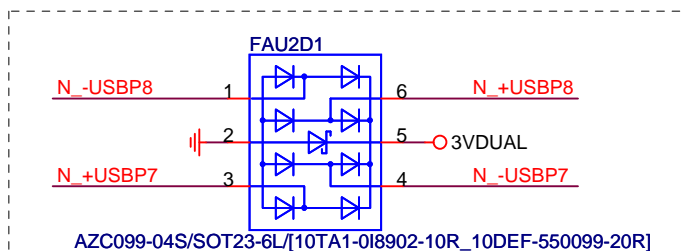
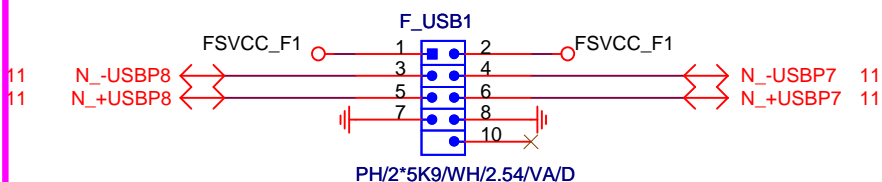
|     |  |
|-----|--|
| Rev |  |
| 1.1 |  |

Rev: 0.7

FRONT USB1

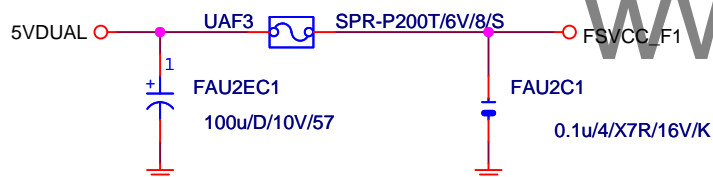
NET 可變

FUSB2X5-HS



Close to connector

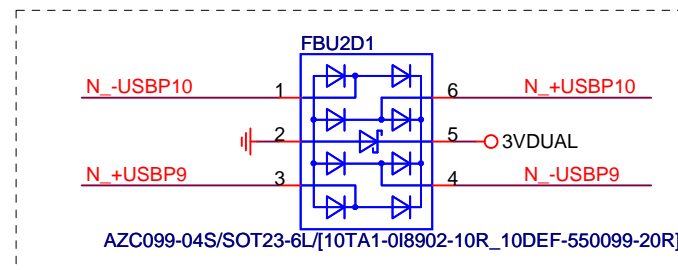
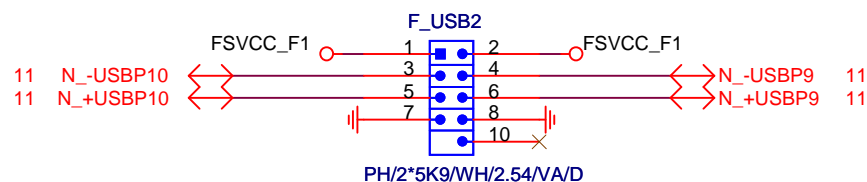
FUSE 2 Port 1 Fuse 2A



FRONT USB2

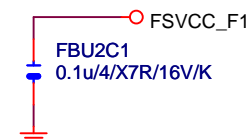
NET 可變

FUSB2X5-HS

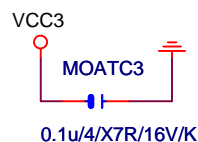
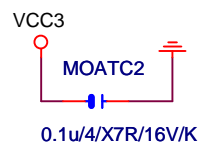
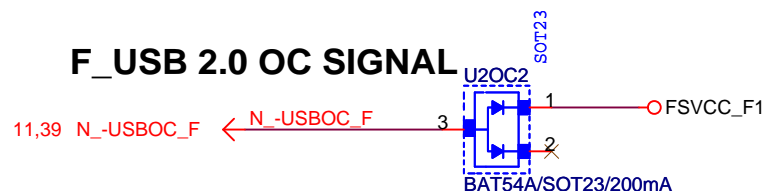


Close to connector

FUSE 2 Port 1 Fuse 2A



F\_USB 2.0 OC SIGNAL



Gigabyte Technology

Title

USB2.0

Size  
A

Document Number

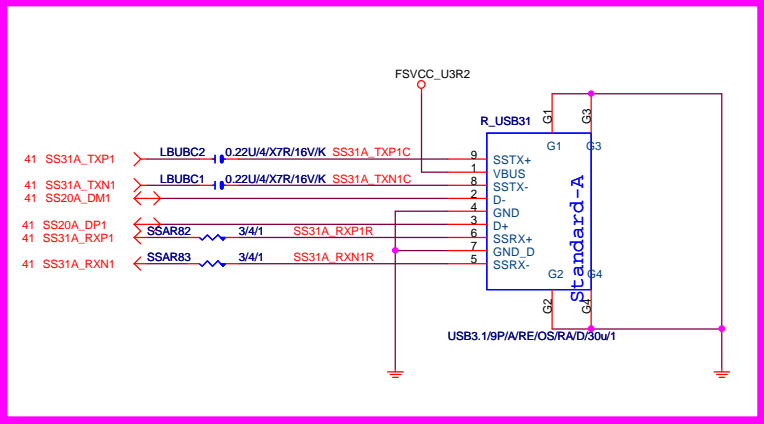
GA-H110M-S2HP

Rev  
1.1

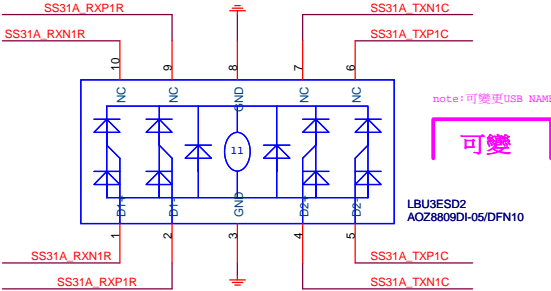
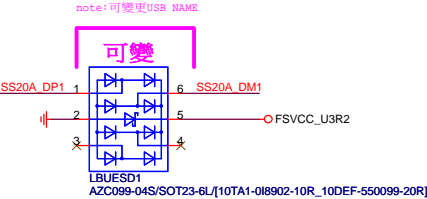
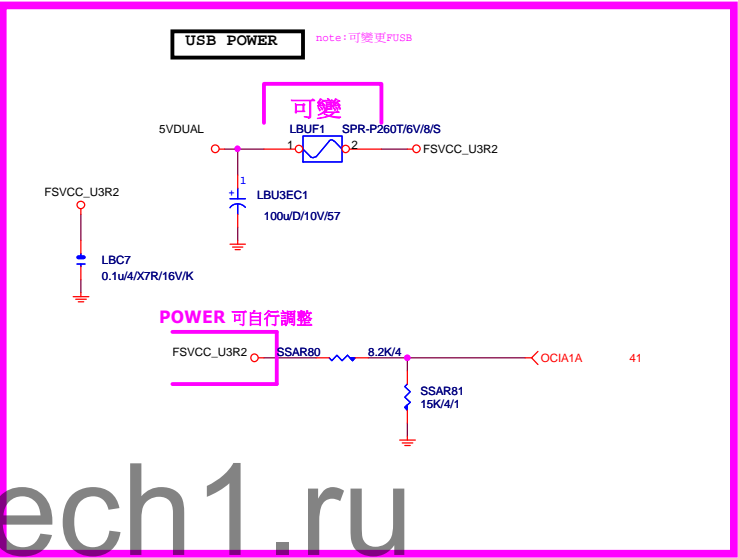
Date: Friday, December 16, 2016

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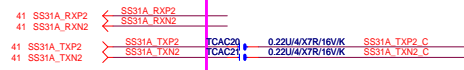




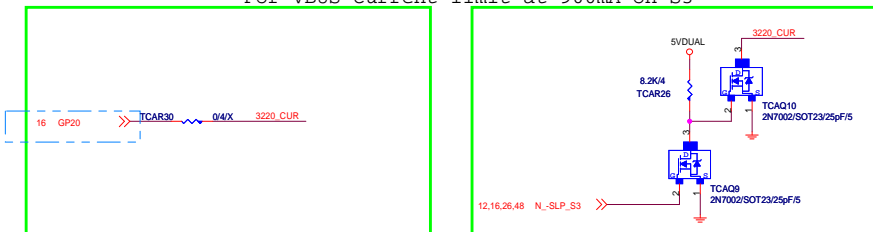
USB31 TYPE A Connector which chooses for project demand



## USB 3.x SuperSpeed

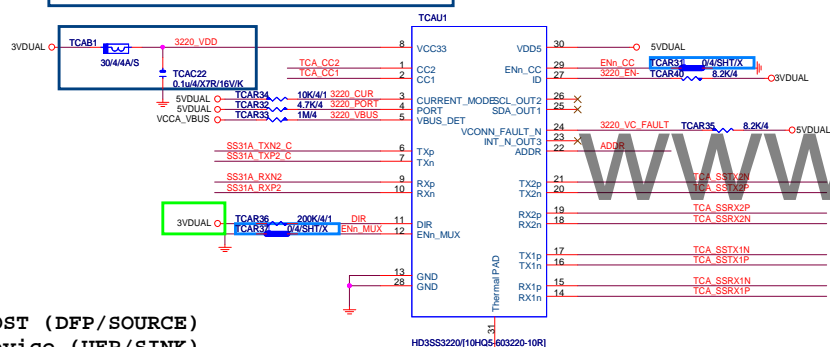


For VBUS current limit at 900mA on S3



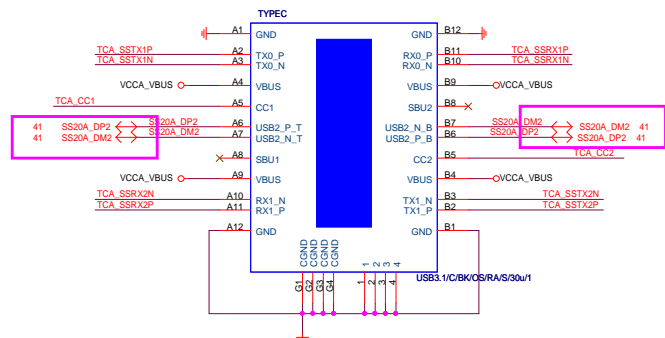
\* 0902 for rev0.2 實驗, if PVT 模組沒改, 還是加回去  
TCAB1:FB 改 0ohm & TCAC22:0.1u 不上件

1025 for rev1.0 實驗,PVT模組沒改,還是加回去

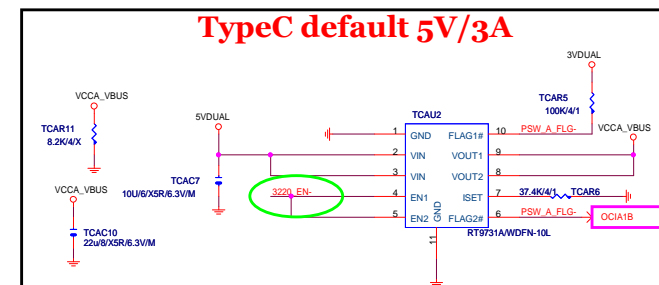


H - HOST (DFP/SOURCE)  
L - Device (UFP/SINK)  
NC - Dual Role (DRP)

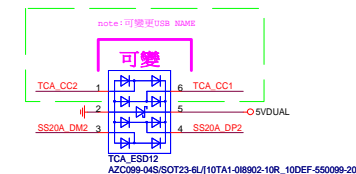
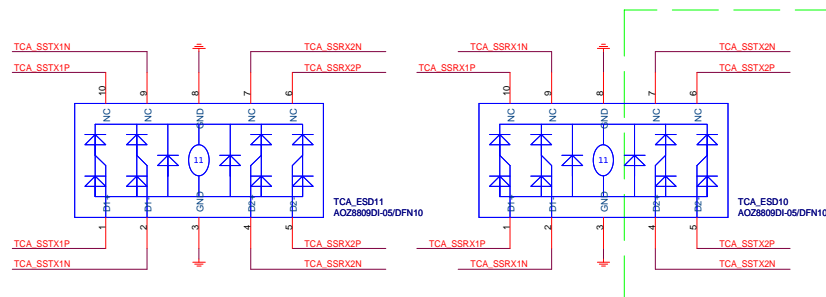
L - Default (900mA) / Pull down to GND or NC  
M - Medium (1.5A) / Pull up to VDD 500K  
H - High (3.0A) / Pull up to VDD 10K



## USB2.0 can be used the same source



## Color markers can be changed by model



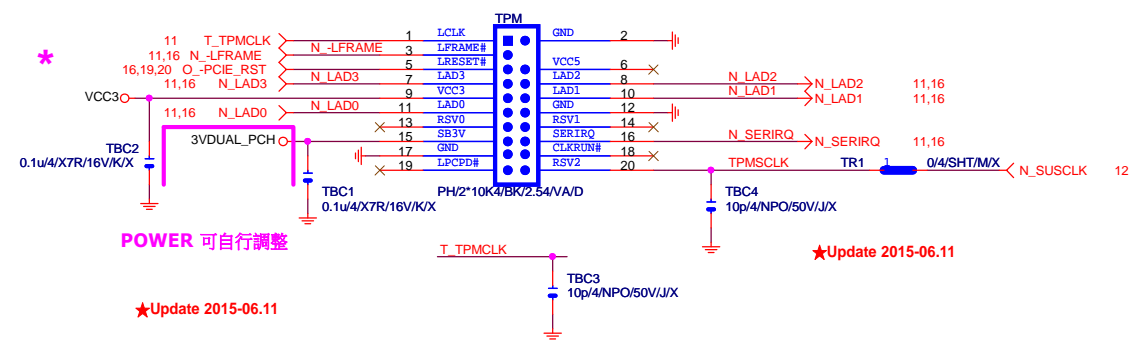
COM PORT

LPT PORT

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TPM CONNECT

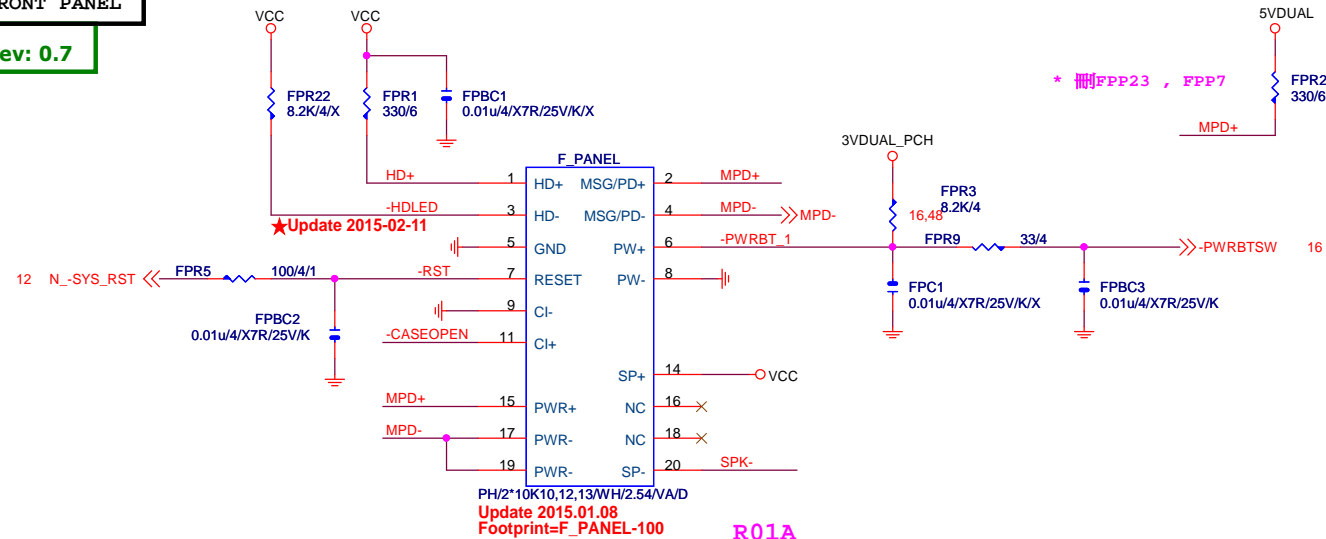
Thunderbolt (N/A)



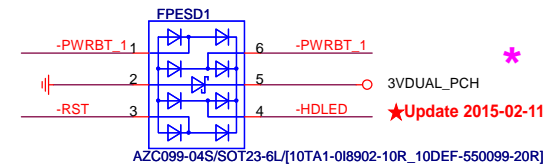
| Gigabyte Technology |                           |               |          |
|---------------------|---------------------------|---------------|----------|
| Title               |                           |               |          |
| FP,F_USB,USB PWR,BZ |                           |               |          |
| Size                | Document Number           | GA-H110M-S2HP |          |
| Custom              |                           |               | Rev 1.1  |
| Date:               | Friday, December 16, 2016 | Sheet         | 44 of 51 |

## FRONT PANEL

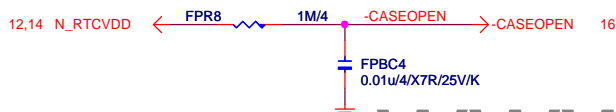
Rev: 0.7



## ESD



## CASE OPEN



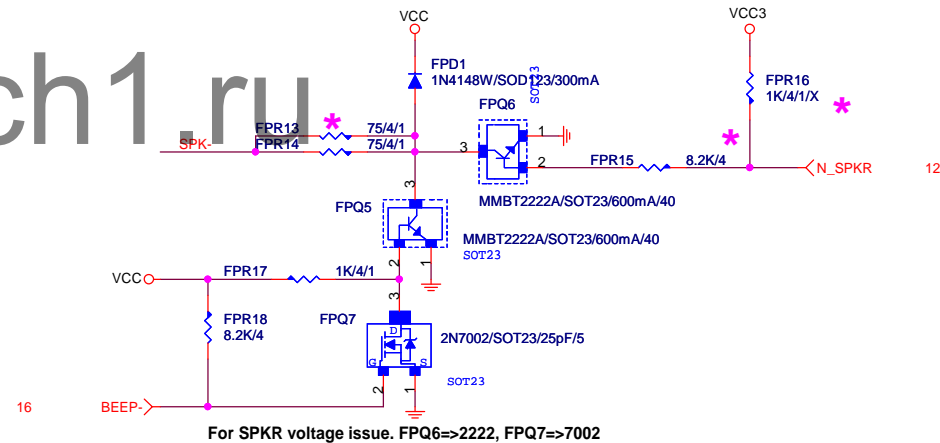
## SATA LED

SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3\_3

★Update 2015-02-12

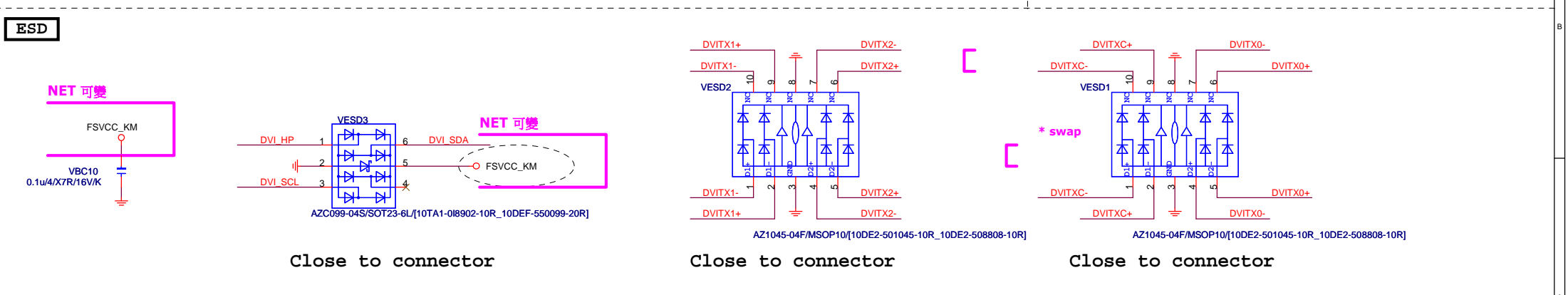
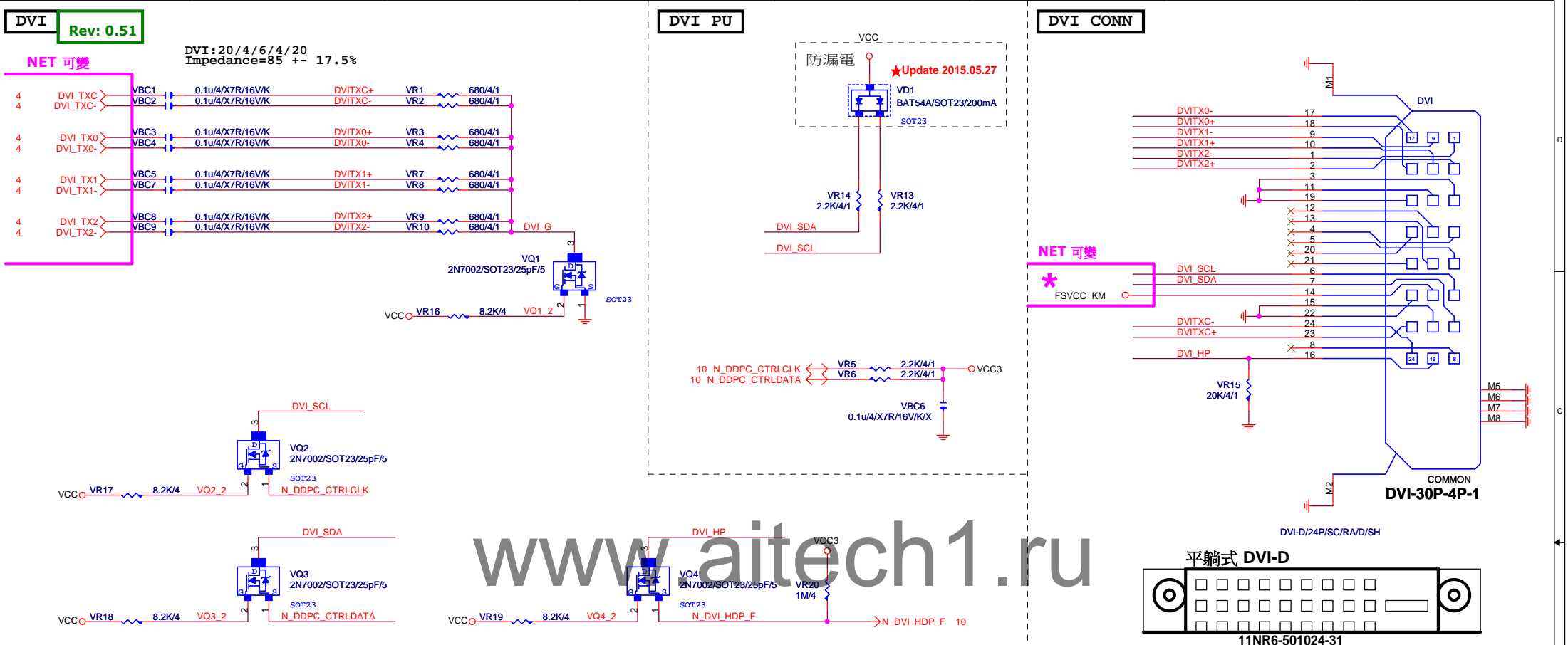


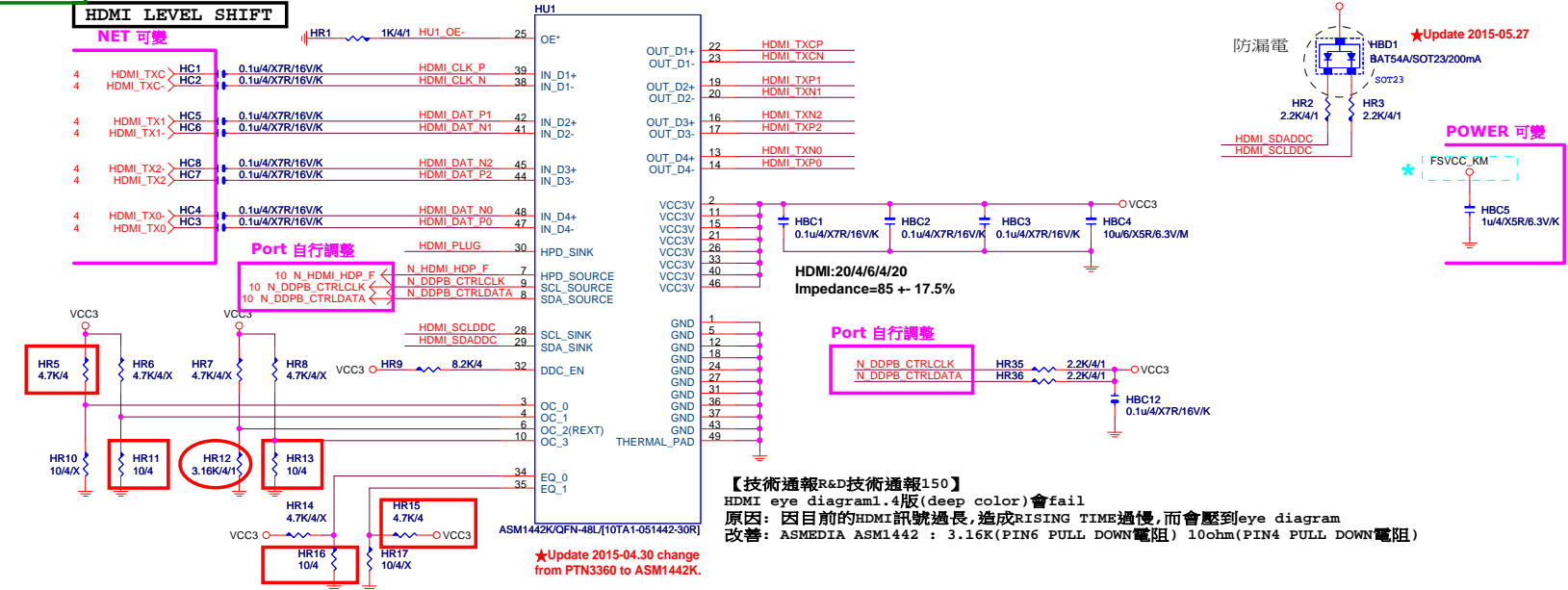
## SPKR



Gigabyte Technology

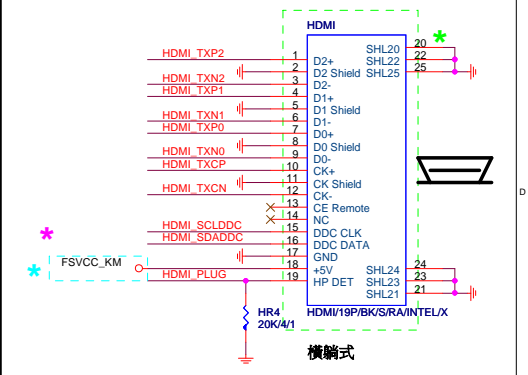
| Title       |                           |       |          |
|-------------|---------------------------|-------|----------|
| FRONT PANEL |                           |       |          |
| Size        | Document Number           | Rev   |          |
| Custom      | GA-H110M-S2HP             | 1.1   |          |
| Date:       | Friday, December 16, 2016 | Sheet | 45 of 51 |



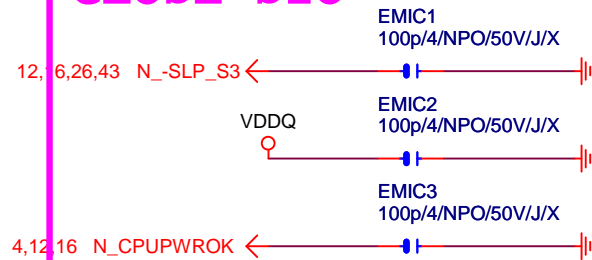


PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K  
ASM1442:紅色框要上,HR12:3.16K

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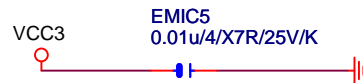
## CLOSE SIO



## CLOSE PCH



close to PCH (NR17) R\_USB30\_2 &amp; DVI 之間



close to SIO (PIN92) MPD-

**GIGABYTE™**

Title

**EMI/ESD**Size  
A

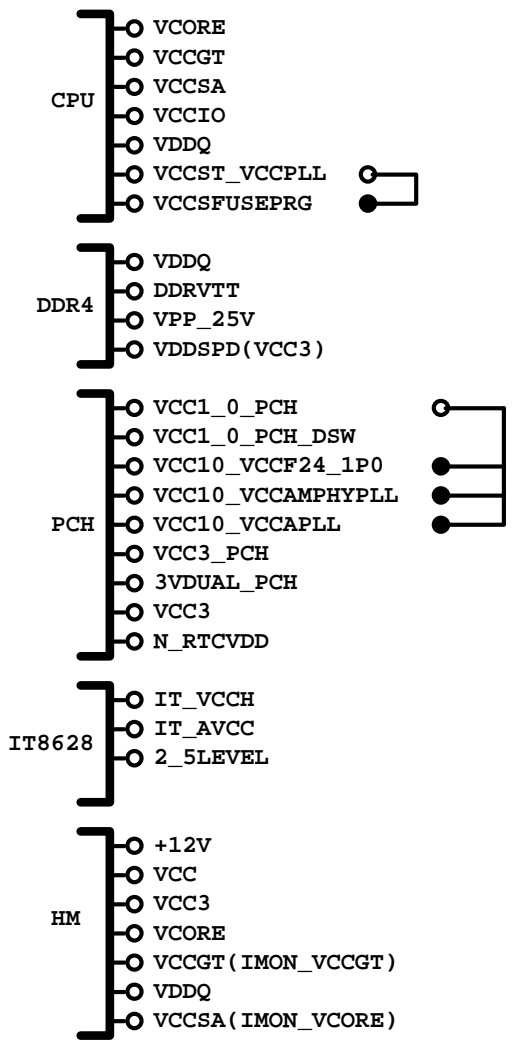
Document Number

**GA-H110M-S2HP**Rev  
**1.1**

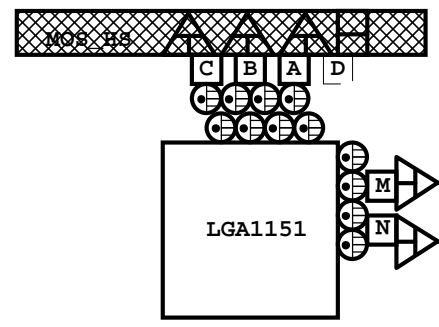
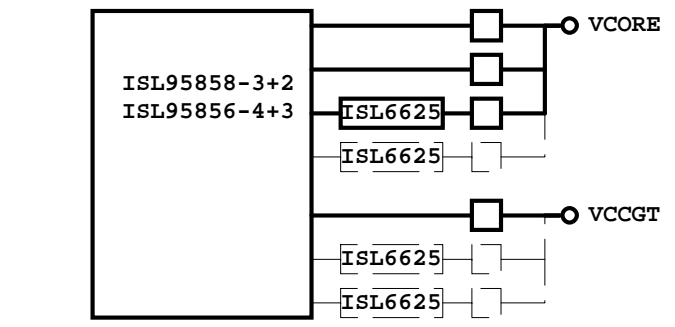
Date: Friday, December 16, 2016

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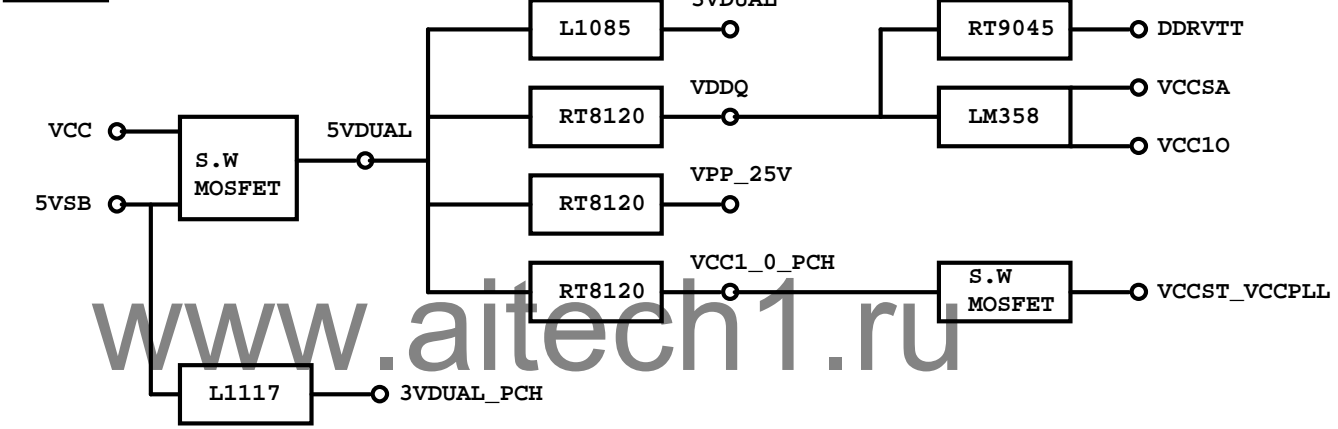
POWER BLOCK MAP



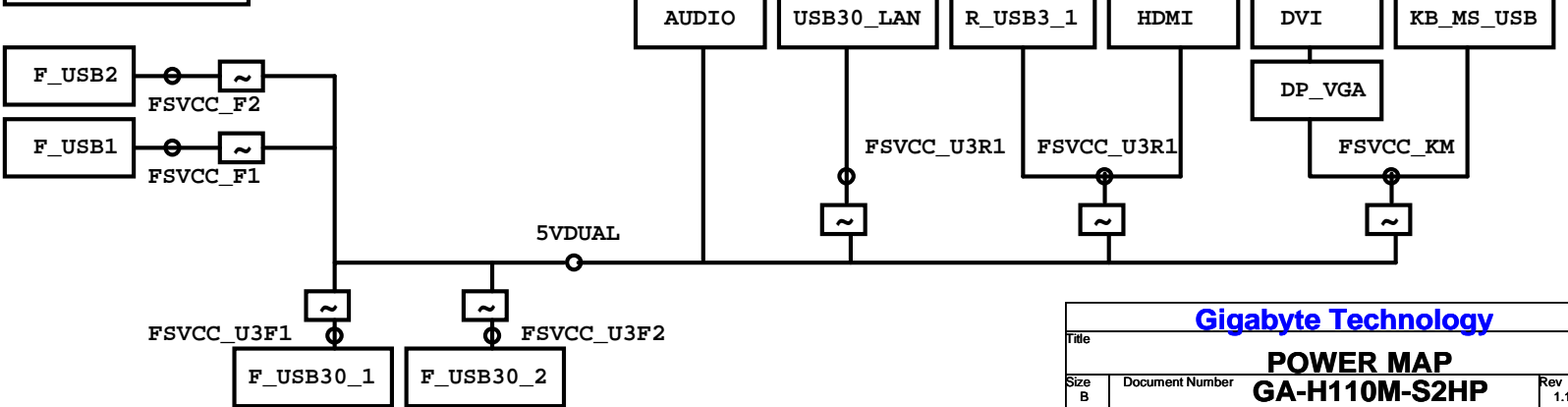
VCORE/VCCGT



POWER



FUSE POWER F/R



固態電容料號.請自行修改

| 日系黑色固態           | Capture Value           |
|------------------|-------------------------|
| 11C02-C85600-01R | 560u/FP/D/6.3V/68/C/8m  |
| 11C05-C82700-01R | 270u/FP/D/16V/88/C/12m  |
| 11C05-C61000-01R | 100u/OS/D/16V/66/C/30m  |
| 11C02-C51000-01R | 100u/FP/D/6.3V/65/C/13m |

| 日系一般固態           | Capture Value         |
|------------------|-----------------------|
| 11C02-685600-01R | 560u/FP/D/6.3V/68/8m  |
| 11C05-882700-01R | 270u/FP/D/16V/88/12m  |
| 11C05-661000-03R | 100u/OS/D/16V/66/30m  |
| 11C02-651000-02R | 100u/OS/D/6.3V/66/30m |

| 台系固態             | Capture Value           |
|------------------|-------------------------|
| 11C02-661000-09R | 100u/OS/D/6.3V/66/A/35m |
| 11C05-691000-09R | 100u/OS/D/16V/69/A/35m  |
| 11C05-8C2700-09R | 270u/FP/D/16V/8C/A/10m  |
| 11C02-695600-09R | 560u/FP/D/6.3V/69/A/11m |

IRON CHOKE

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

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 | 未建(SIUC1007-R30M-JJ1W) |                         | 10*7  | CHOKE11X8MM-SMD    |

BEAD

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

PWM料號

|     | 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 |



Title

RT8120\_DDR4 POWER

Size Custom

Document Number

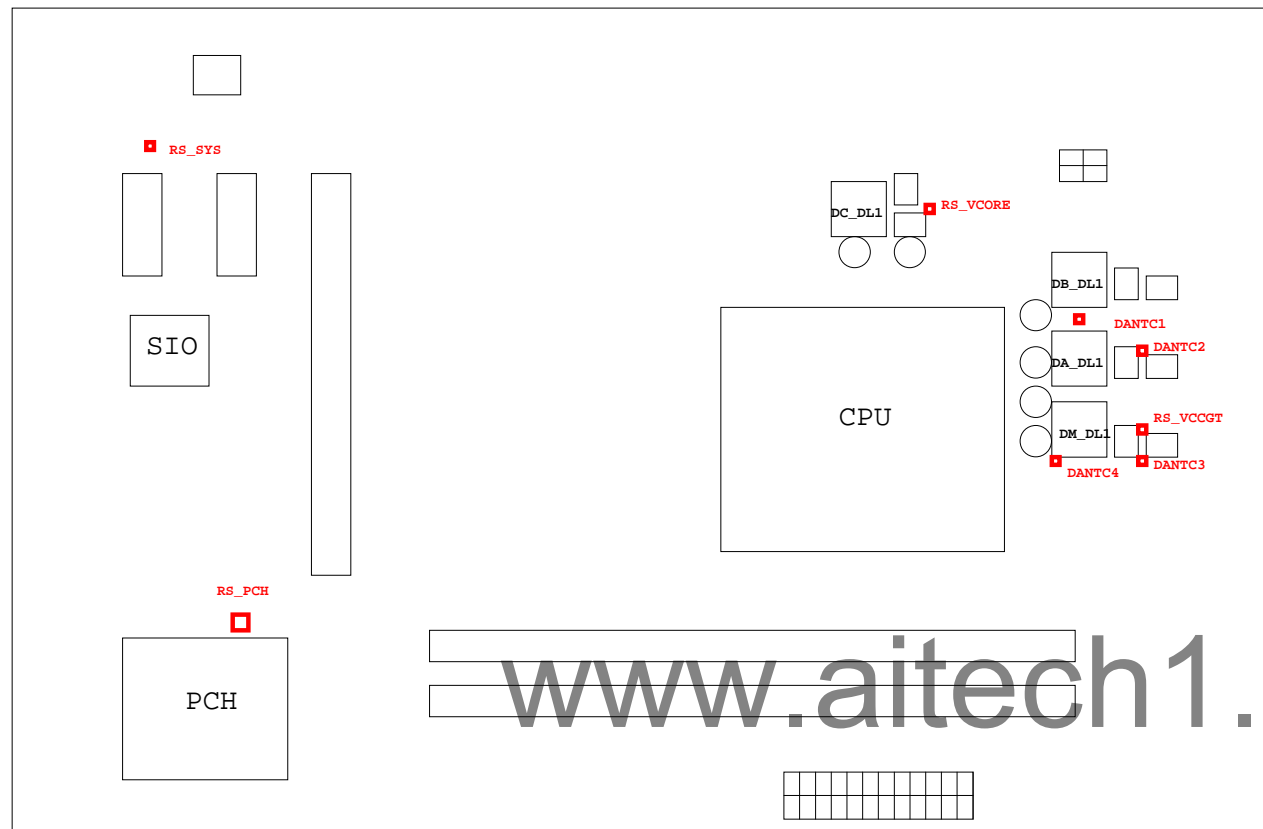
GA-H110M-S2HP

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Rev

1.1



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