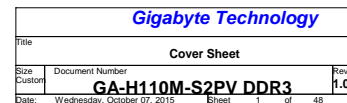


SHEET                      TITLE                      Rev 1.01

| SHEET | TITLE |
|-------|-------|
|-------|-------|

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## GA-H110M-S2PV DDR3

## Component value change history

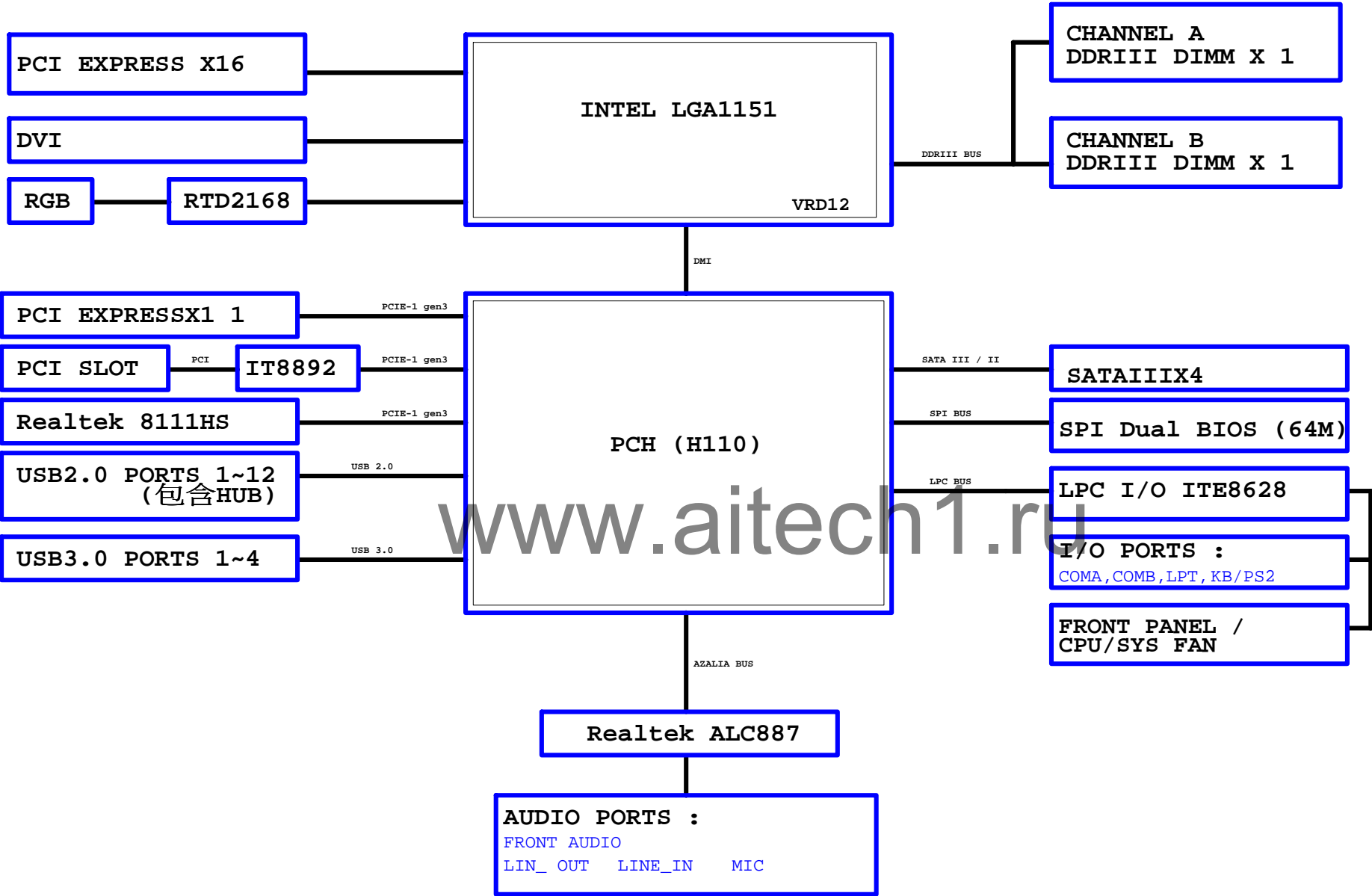
2015/08/14

[illegible]

## Circuit or PCB layout change

[illegible]

BLOCK DIAGRAM



\*  $\langle 10 \rangle$  N\_CPUPCIBCLK  $\rightarrow$  N\_CPUPCIBCLK  
 $\langle 10 \rangle$  N\_-CPUPCIBCLK  $\rightarrow$  N\_-CPUPCIBCLK

$\langle 10 \rangle$  N\_24MCLK  $\rightarrow$  N\_24MCLK  
 $\langle 10 \rangle$  N\_-24MCLK  $\rightarrow$  N\_-24MCLK

| Signal     | Pin | Function   | Direction     |
|------------|-----|------------|---------------|
| PVIDALRT   | WR5 | 220/4/1    | A -PVIDALRT R |
| PVIDSLCK   | WR7 | 0/4/SHT/MX | A PVIDSLCK R  |
| PVIDSOUT   | WR1 | 0/4/SHT/MX | A PVIDSOUT R  |
| A -PROCHOT | WR8 |            | A -PHOT       |

```

CPU VCCST PWOK
<12.45> N CPUPWOK

```

\* <16> A\_-THRMTRIP <-> A\_-THRMTRIP

<10> A\_-SKTOCC <-> WTP1

— *Continued*

<33> DVI TX2 ← DVI

<33> DVI\_TX0-  
<33> DVI\_TXC  
<33> DVI\_TXC-

<34> VGA\_TXN0  
<34> VGA\_TXP1  
<34> VGA\_TXN1

<34> VGA\_AUX-<↔>

```

4 layer HDMI/DP/eDP/=====4/4/4//15
5 layer HDMI/DP/eDP/=====4/5.5/4//15
-----

```

Impedance=85 +- 15%

\* 删除 net

not

\* 冊 WR91

```
net N_CPU_VCCST_PWORK
```

ST  $\rightarrow$  N-CPURST

VCCIO

|                |            |     |            |            |     |            |            |      |
|----------------|------------|-----|------------|------------|-----|------------|------------|------|
| <1> A DMI_0RXP | A DMI_0RXN | Y4  | DMI_RXP[0] | DMI_TXP[0] | AC1 | A DMI_0TXN | A DMI_0TXN | <11> |
| <1> A DMI_0RXN |            |     | DMI_RXN[0] |            |     |            |            | <11> |
| <1> A DMI_1RXP | A DMI_1RXN | AA5 | DMI_RXP[1] | DMI_TXP[1] | AD3 | A DMI_1TXN | A DMI_1TXN | <11> |
| <1> A DMI_1RXN |            |     | DMI_RXN[1] | DMI_TXN[1] | AD2 | A DMI_1TXN | A DMI_1TXN | <11> |
| <1> A DMI_2RXP | A DMI_2RXN | AB3 | DMI_RXP[2] | DMI_TXP[2] | AE2 | A DMI_2TXN | A DMI_2TXN | <11> |
| <1> A DMI_2RXN |            |     | DMI_RXN[2] | DMI_TXN[2] | AE1 | A DMI_2TXN | A DMI_2TXN | <11> |
| <1> A DMI_3RXP | A DMI_3RXN | AC5 | DMI_RXP[3] | DMI_TXP[3] | AF2 | A DMI_3TXN | A DMI_3TXN | <11> |
| <1> A DMI_3RXN |            |     | DMI_RXN[3] | DMI_TXN[3] | AF3 | A DMI_3TXN | A DMI_3TXN | <11> |


```
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
```

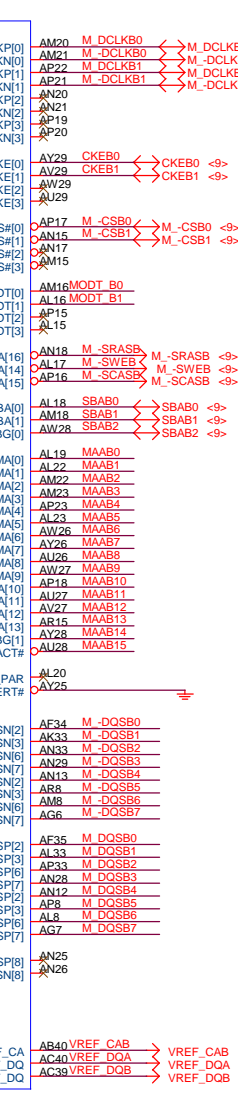
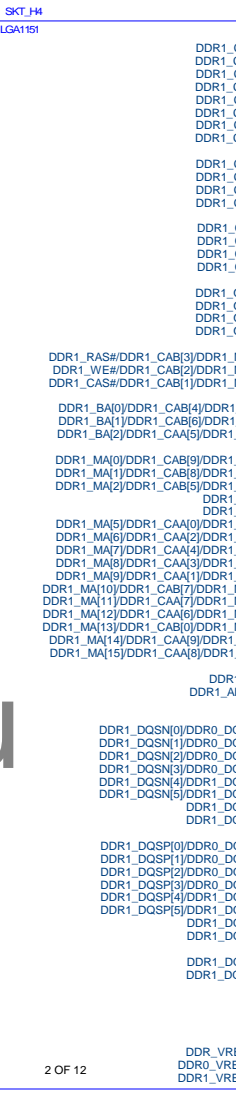
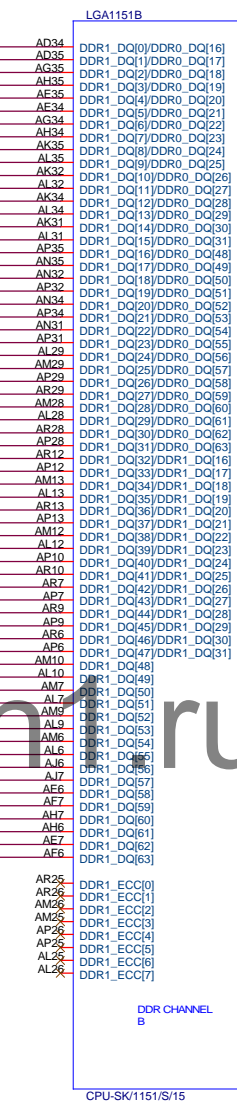
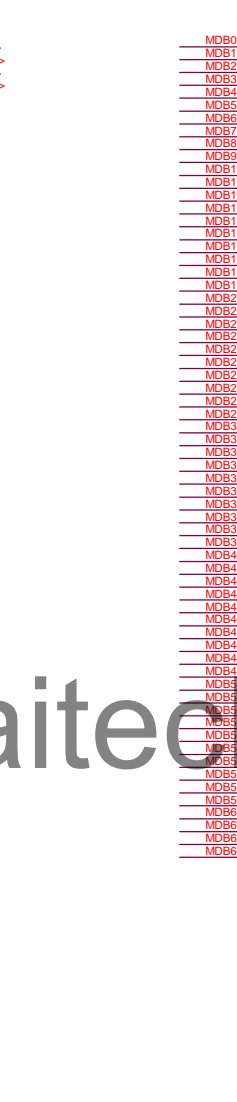
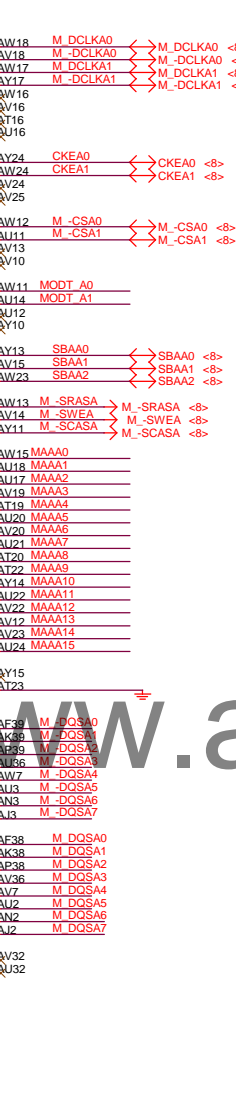
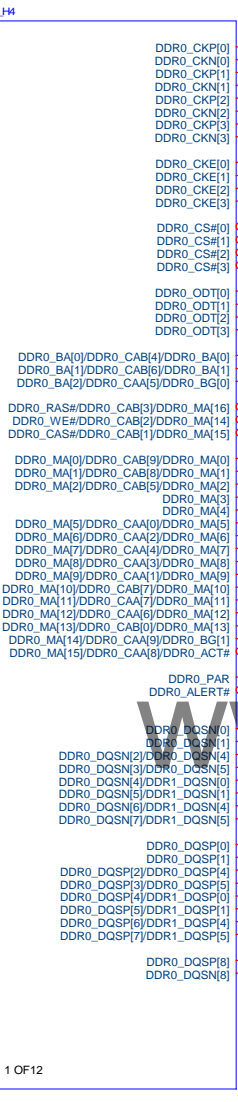
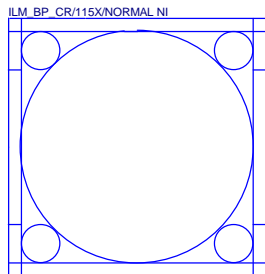
Impedance=85 +- 15

W=12 mil out of CP  
Q=15 mil out of CP

| 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      |

|   |  |                   |
|---|--|-------------------|
|  |  |                   |
| Title<br><b>CPU LGA1151-A</b>   |  |                   |
| Size<br>Custom  | Document Number<br><b>GA-H110M-S2PV DDR3</b> | Rev<br><b>1.0</b> |

# \* DDR3 net



<8> MODT\_A[0..1] <=> MODT\_A0..11  
 <9> MODT\_B[0..1] <=> MODT\_B0..11  
 <8> MDA[0..63] <=> MDA0..63  
 <9> MDB[0..63] <=> MDB0..63  
 <8> M\_DQSA[0..7] <=> M\_DQSA0..71  
 <8> M\_-DQSA[0..7] <=> M\_-DQSA0..71  
 <8> MAAA[0..15] <=> MAAA0..151  
 <9> MAAB[0..15] <=> MAAB0..151  
 <9> M\_DQSB[0..7] <=> M\_DQSB0..71  
 <9> M\_-DQSB[0..7] <=> M\_-DQSB0..71

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Title

CPU LGA1151-B

Size

Custom

Document Number

GA-H110M-S2PV DDR3

Date

Wednesday, October 07, 2015

Sheet

5

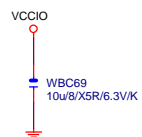
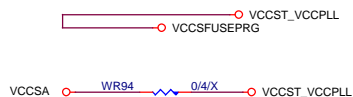
of

48

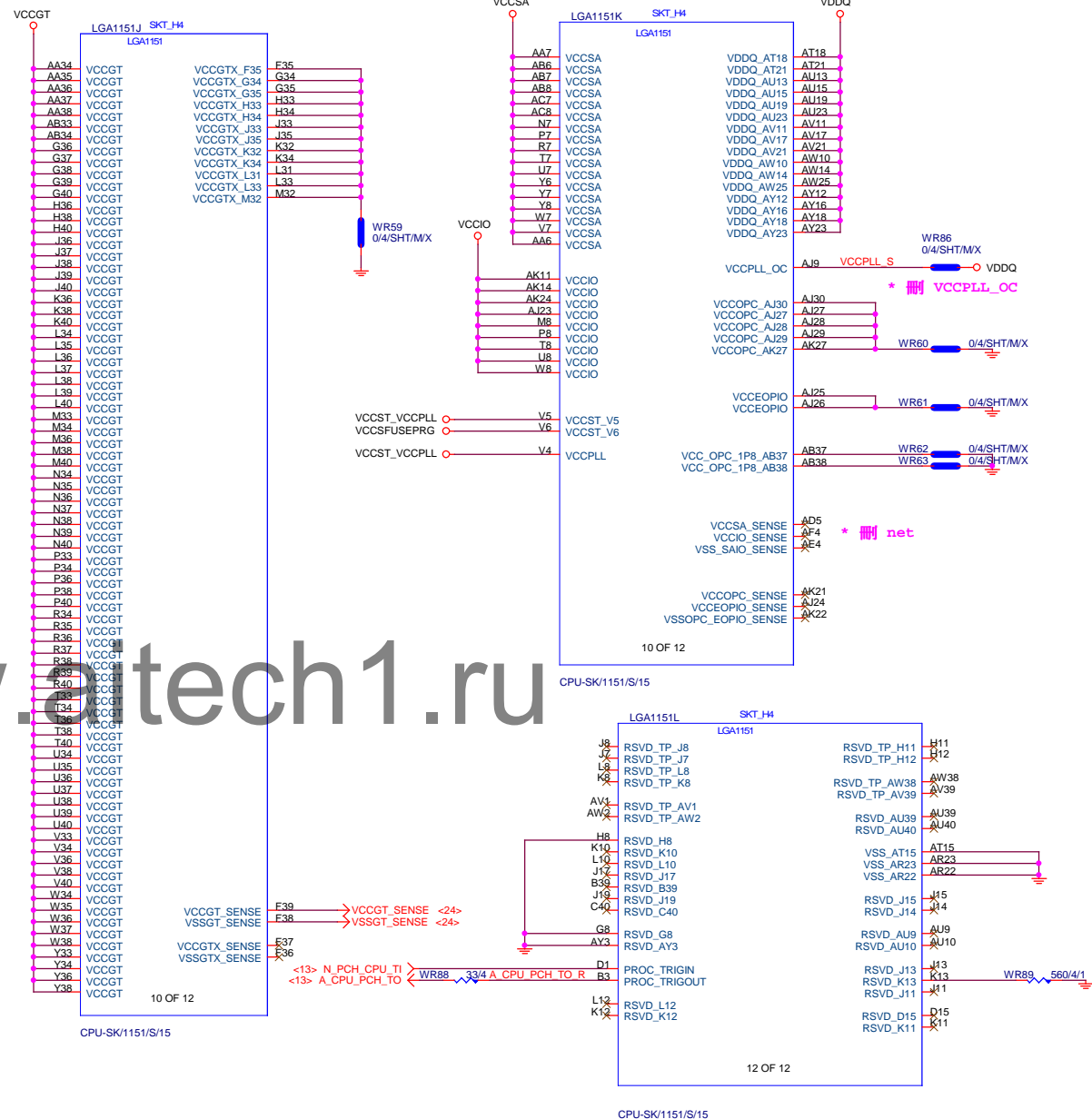
Rev

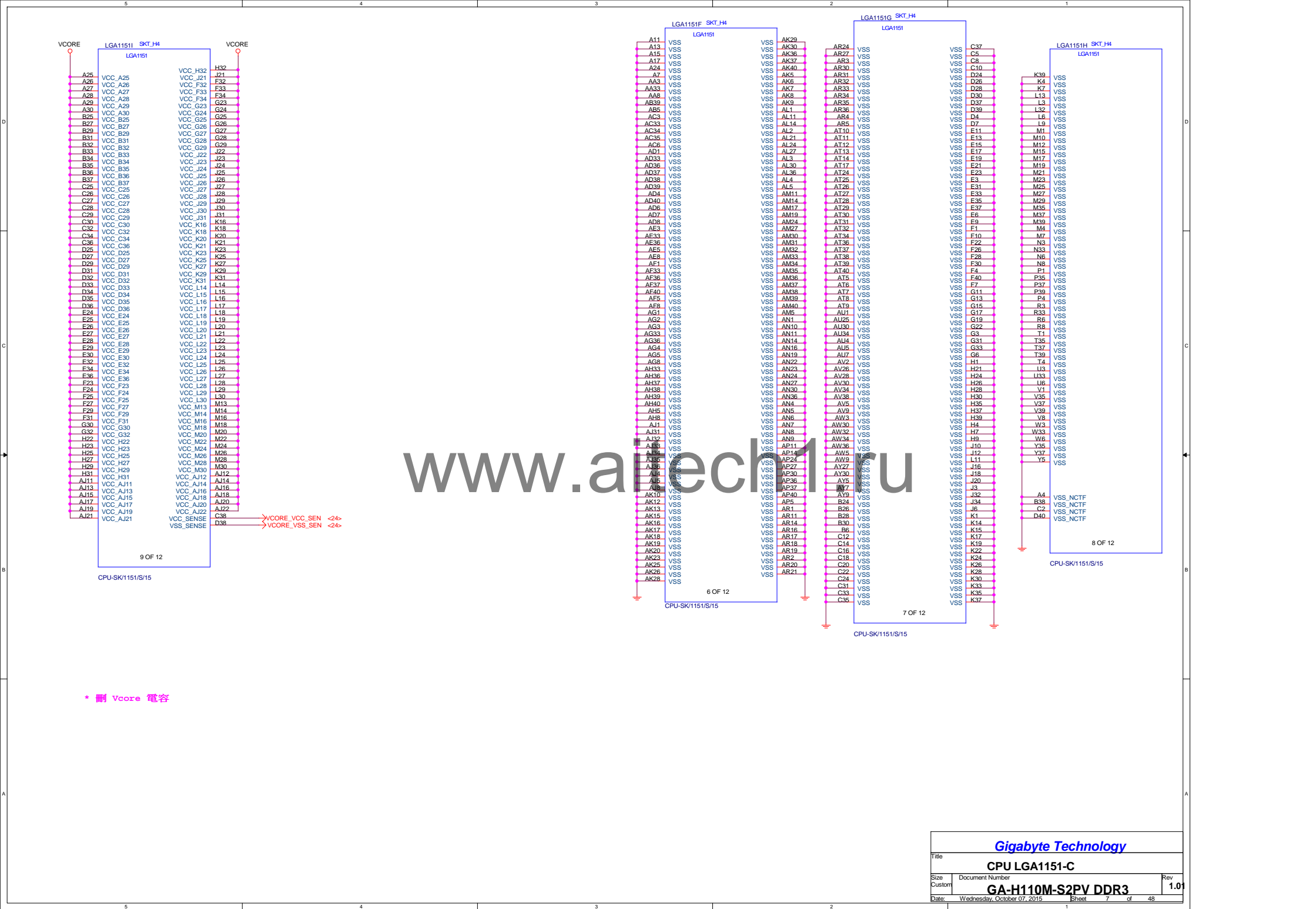
1.01

\* 刪 WBC124 , WBC125 , WBC126 , WBC127 電容



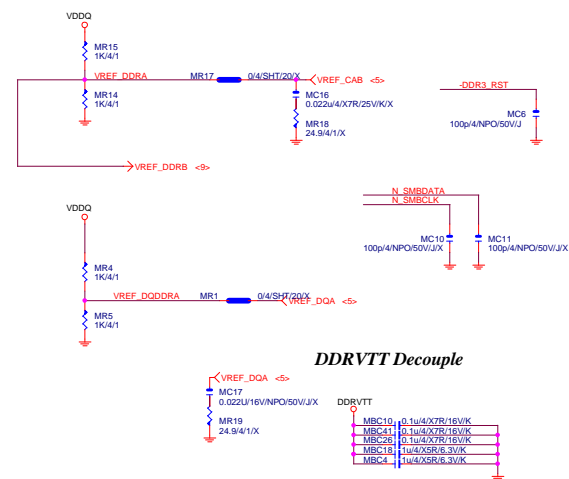
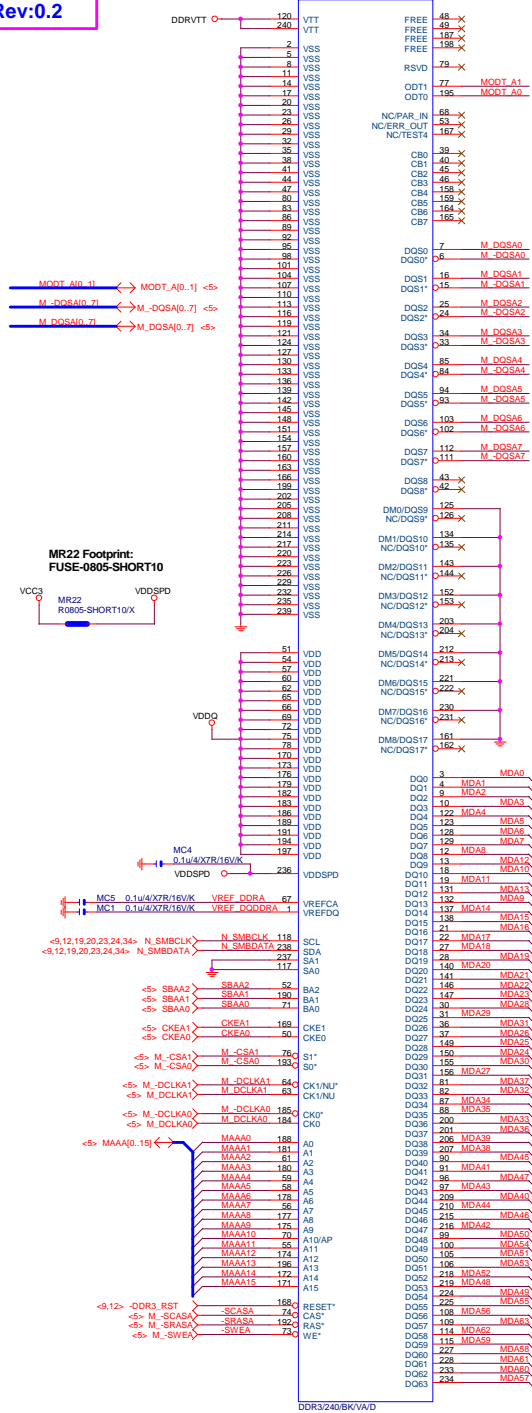
\* 刪 VCCGT 電容



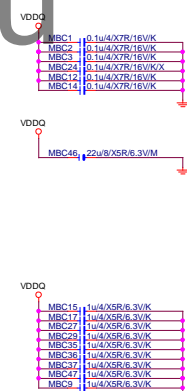




Rev:0.2

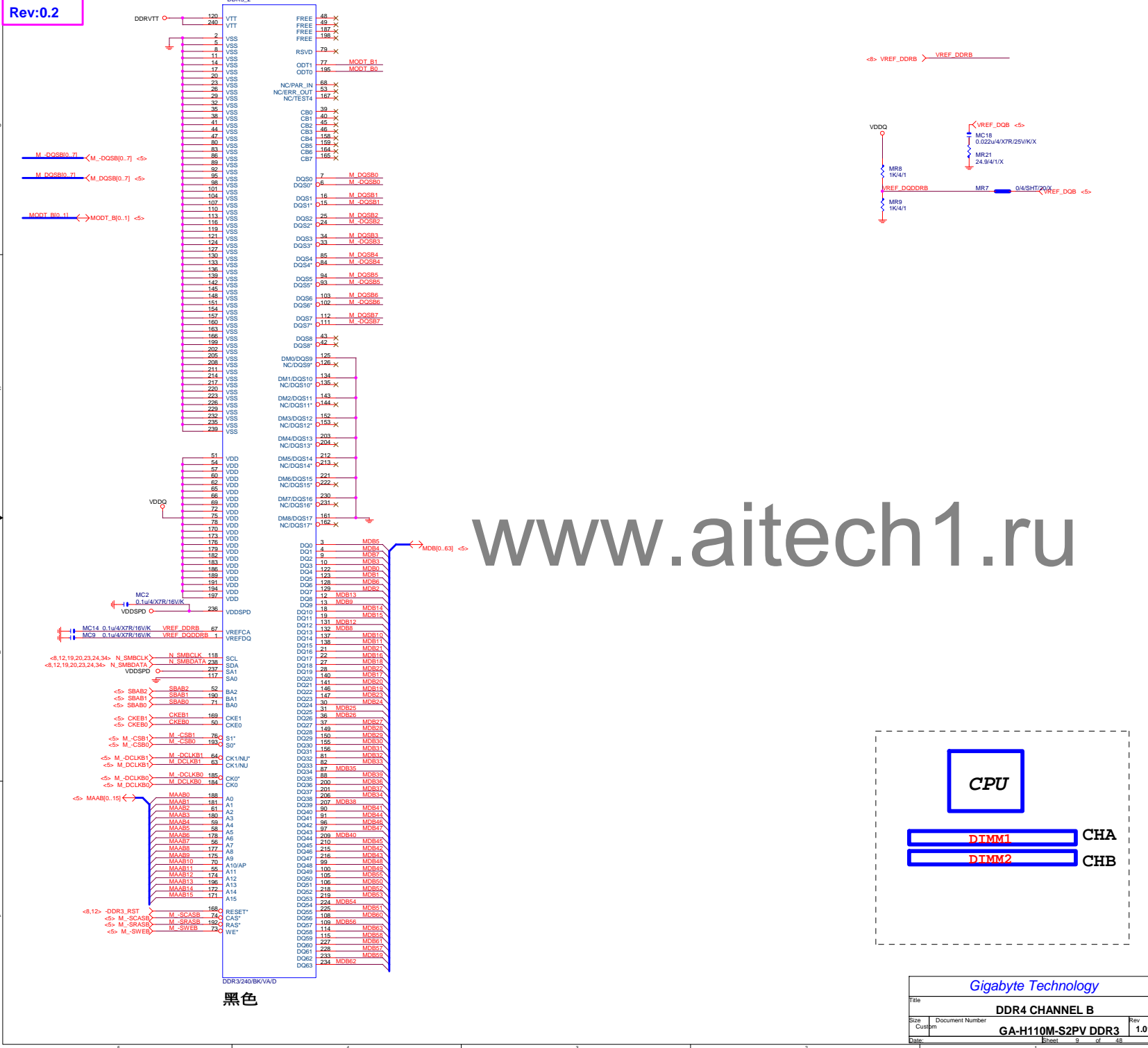
**DDR TERMINATION  
CHANNEL A/B**

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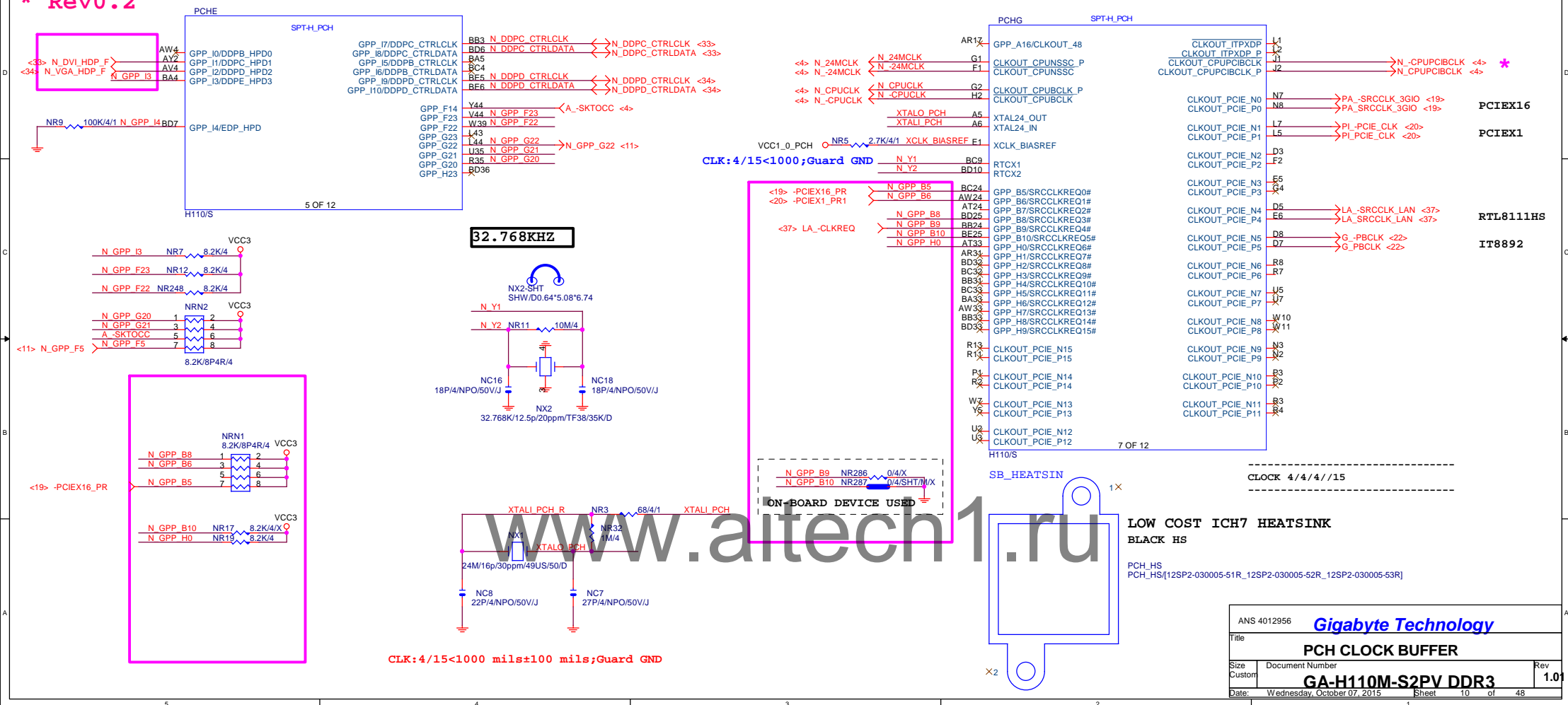


黑色

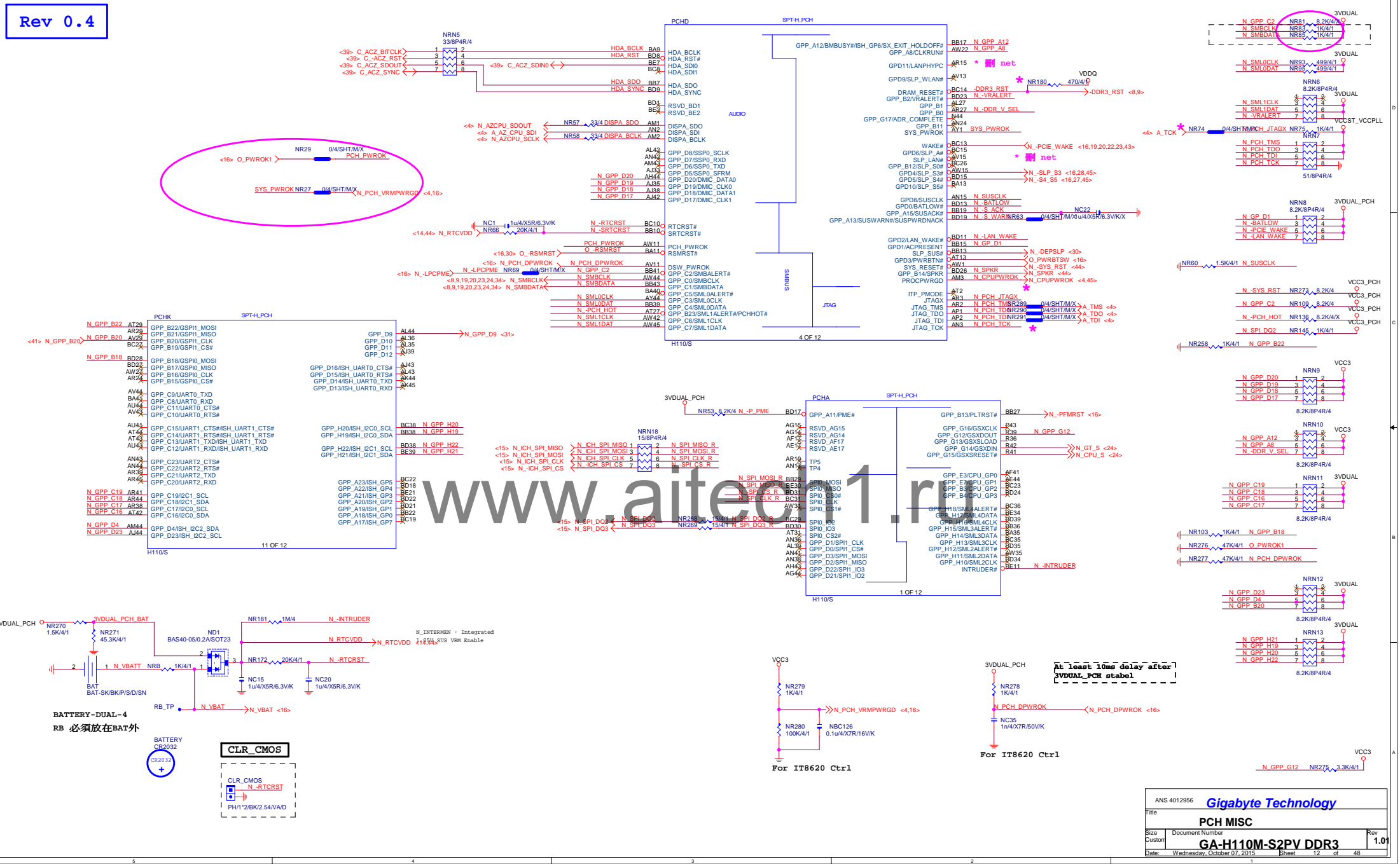




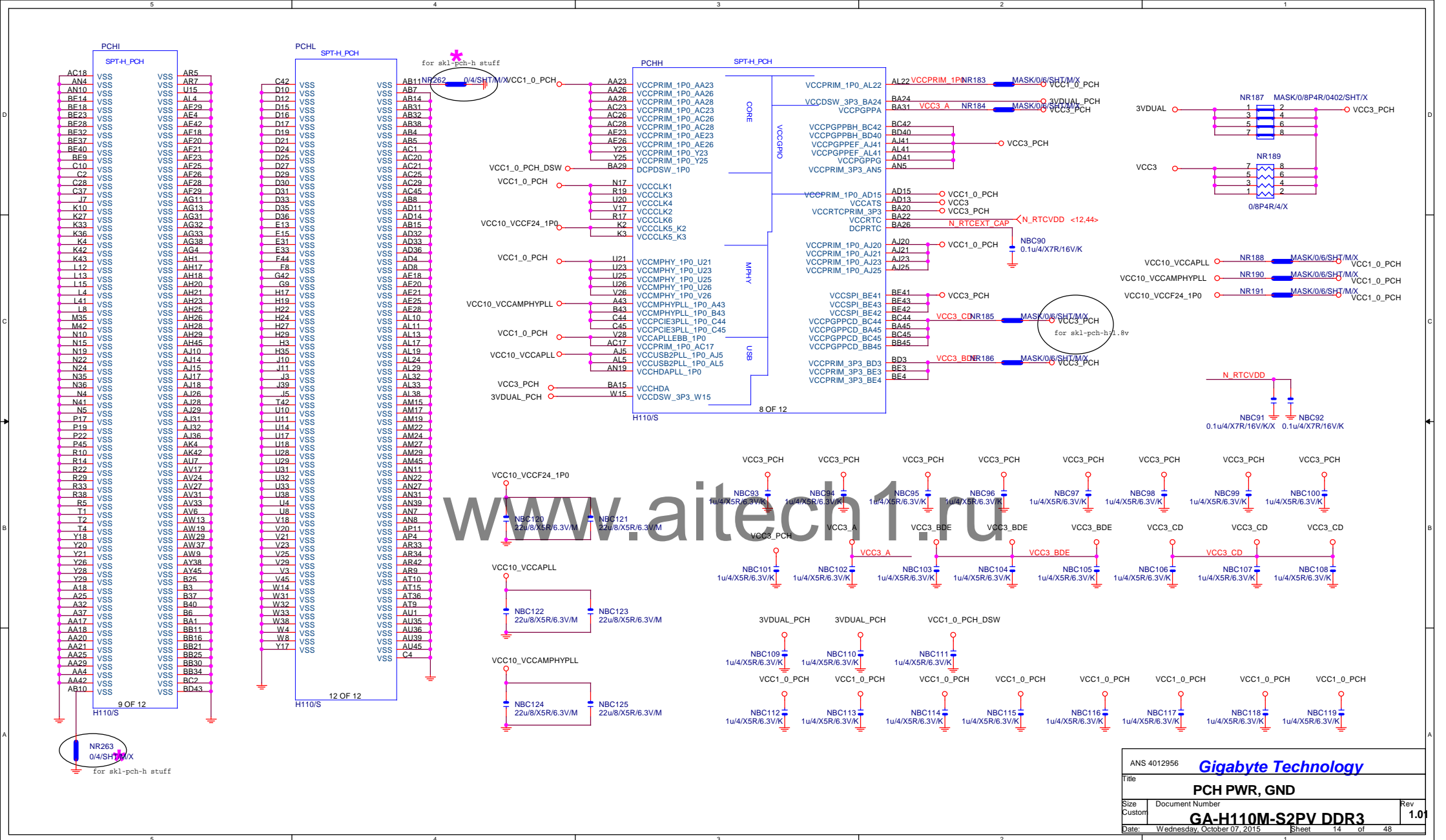
\* Rev0.2

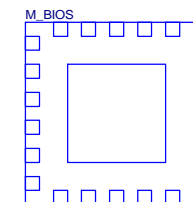












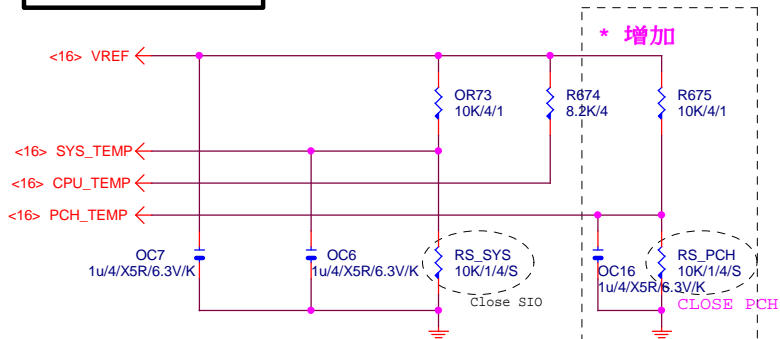
\* 試産先上，PVT 移除



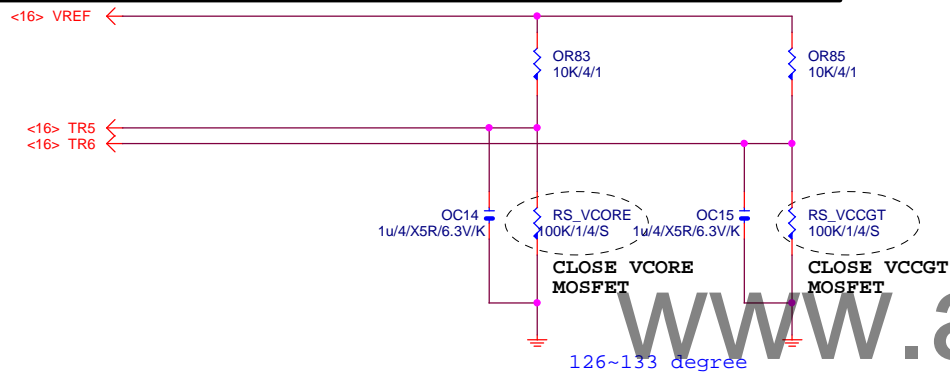


## TEMP H/W MONITOR

REV 1.04



## RS\_VCORE, RS\_VCCGT, CLOSE CPU\_VCORE &amp; VCCGT MOSFET

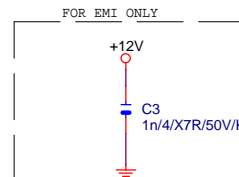
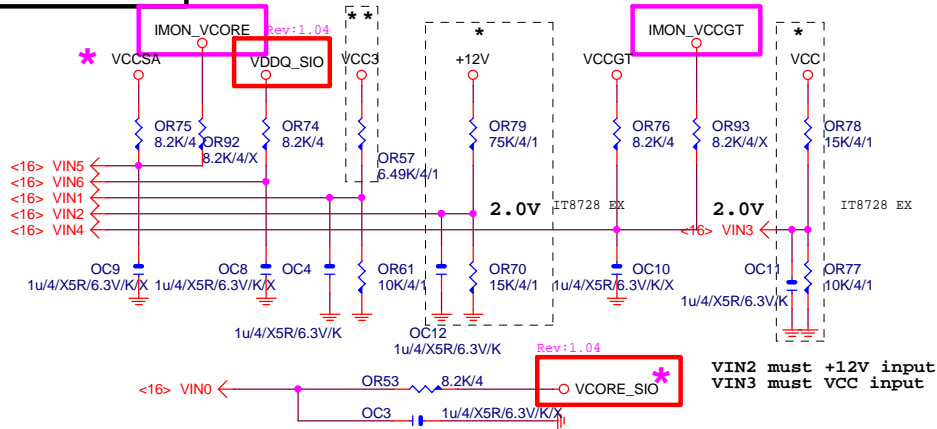
~~PROCHOT: 有mos heartsink不用prochot function~~

## VOLTAGE-- H/W MONITOR

Connect to PWM

\* IT8728 BX  
\*\* IT8728 CX

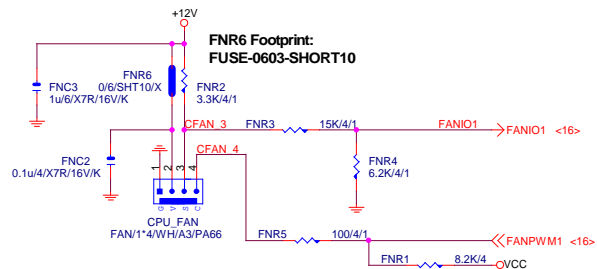
Connect to PWM

VIN2 must +12V input  
VIN3 must VCC input

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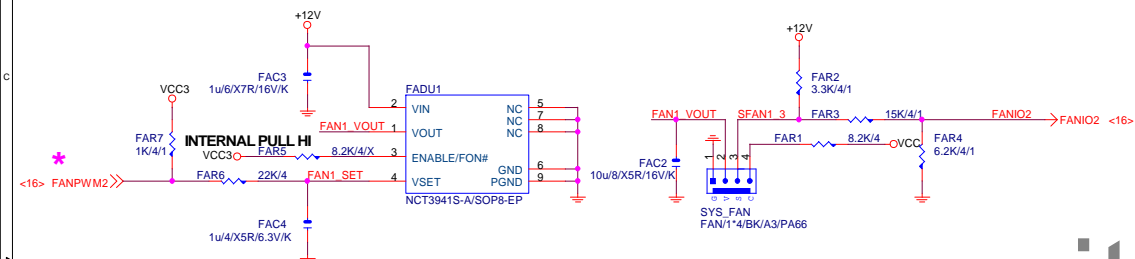
|       |                             |                 |  |       |                     |    |    |     |      |
|-------|-----------------------------|-----------------|--|-------|---------------------|----|----|-----|------|
| Title |                             |                 |  |       | HWM,KB/MS, FAN CTRL |    |    |     |      |
| Size  | Custom                      | Document Number |  |       | GA-H110M-S2PV DDR3  |    |    | Rev | 1.01 |
|       |                             |                 |  |       |                     |    |    |     |      |
| Date: | Wednesday, October 07, 2015 |                 |  | Sheet | 17                  | of | 48 |     |      |

## Rev: 0.53



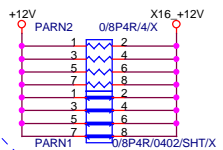
## SYSTEM FAN1

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



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Rev 0.2

\* +12 protect  
short-wire test

<8,9,12,20,23,24,34> N\_SMBCLK  
<8,9,12,20,23,24,34> N\_SMBDATA  
<12,16,20,22,23,43> N\_-PCIE\_WAKE

PA\_EXP\_RXP0\_15I >>> PA\_EXP\_RXP0[0..15] <4>  
PA\_EXP\_RXN0\_15I >>> PA\_EXP\_RXN0[0..15] <4>  
PA\_EXP\_TXP0\_15I >>> PA\_EXP\_TXP0[0..15] <4>  
PA\_EXP\_TXN0\_15I >>> PA\_EXP\_TXN0[0..15] <4>

|              |       |                   |                |
|--------------|-------|-------------------|----------------|
| PA_EXP_TXP0  | PAC5  | 0.22u4/X5R/6.3V/K | PA_EXP_TXP0 C  |
| PA_EXP_TXN0  | PAC4  | 0.22u4/X5R/6.3V/K | PA_EXP_TXN0 C  |
| PA_EXP_TXP1  | PAC6  | 0.22u4/X5R/6.3V/K | PA_EXP_TXP1 C  |
| PA_EXP_TXN1  | PAC7  | 0.22u4/X5R/6.3V/K | PA_EXP_TXN1 C  |
| PA_EXP_TXP2  | PAC8  | 0.22u4/X5R/6.3V/K | PA_EXP_TXP2 C  |
| PA_EXP_TXN2  | PAC9  | 0.22u4/X5R/6.3V/K | PA_EXP_TXN2 C  |
| PA_EXP_TXP3  | PAC10 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP3 C  |
| PA_EXP_TXN3  | PAC11 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN3 C  |
| PA_EXP_TXP4  | PAC12 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP4 C  |
| PA_EXP_TXN4  | PAC13 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN4 C  |
| PA_EXP_TXP5  | PAC14 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP5 C  |
| PA_EXP_TXN5  | PAC15 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN5 C  |
| PA_EXP_TXP6  | PAC16 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP6 C  |
| PA_EXP_TXN6  | PAC17 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN6 C  |
| PA_EXP_TXP7  | PAC18 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP7 C  |
| PA_EXP_TXN7  | PAC19 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN7 C  |
| PA_EXP_TXP8  | PAC21 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP8 C  |
| PA_EXP_TXN8  | PAC20 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN8 C  |
| PA_EXP_TXP9  | PAC22 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP9 C  |
| PA_EXP_TXN9  | PAC23 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN9 C  |
| PA_EXP_TXP10 | PAC24 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP10 C |
| PA_EXP_TXN10 | PAC25 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN10 C |
| PA_EXP_TXP11 | PAC26 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP11 C |
| PA_EXP_TXN11 | PAC27 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN11 C |
| PA_EXP_TXP12 | PAC28 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP12 C |
| PA_EXP_TXN12 | PAC29 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN12 C |
| PA_EXP_TXP13 | PAC30 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP13 C |
| PA_EXP_TXN13 | PAC31 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN13 C |
| PA_EXP_TXP14 | PAC32 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP14 C |
| PA_EXP_TXN14 | PAC33 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN14 C |
| PA_EXP_TXP15 | PAC34 | 0.22u4/X5R/6.3V/K | PA_EXP_TXP15 C |
| PA_EXP_TXN15 | PAC35 | 0.22u4/X5R/6.3V/K | PA_EXP_TXN15 C |

PCIE16:16/5/5/5/16

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

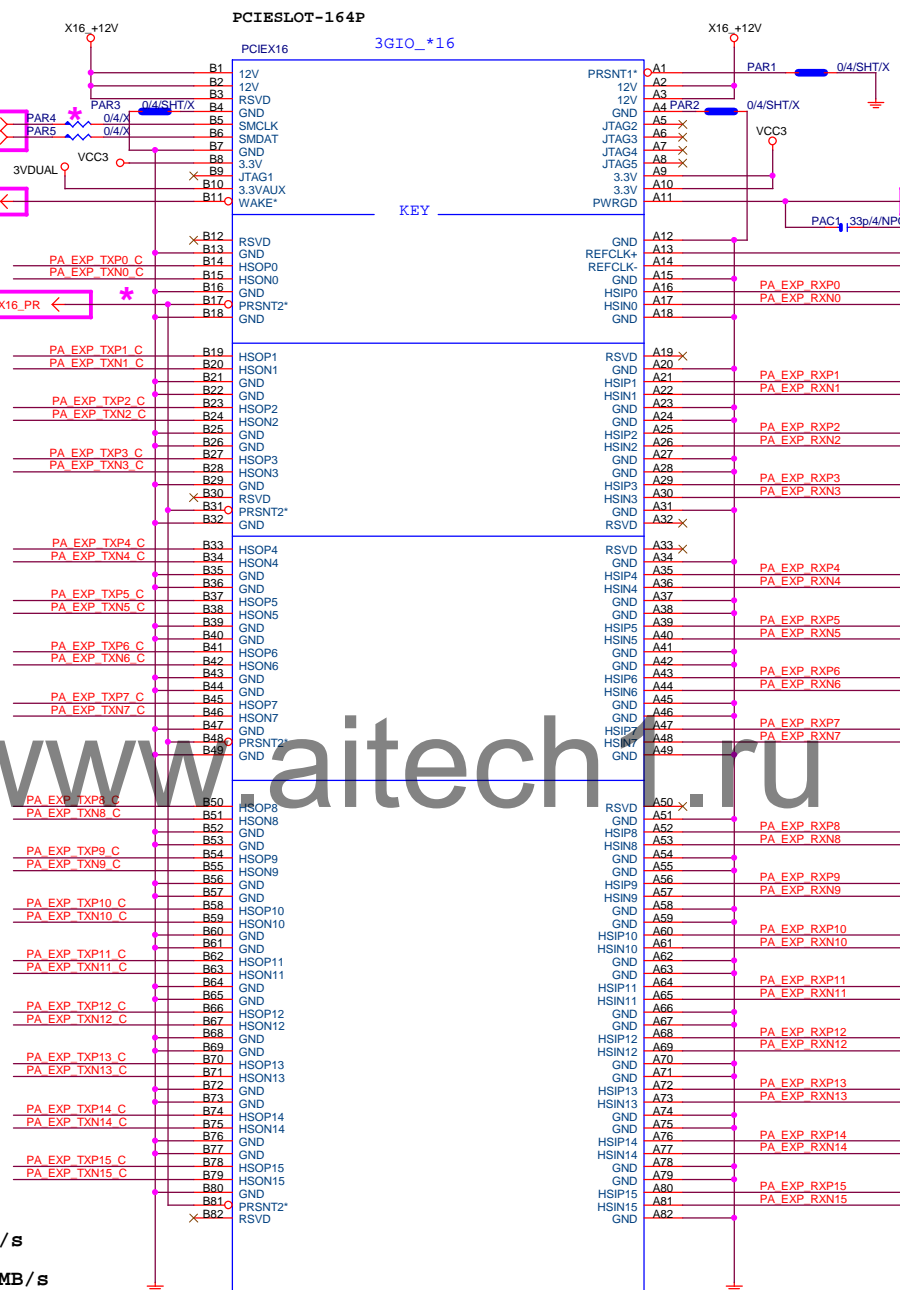
PCE-E X1(單向) BANDWIDTH=2.5GHz\*(8b/10b)=2Gb/s=250MB/s

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

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

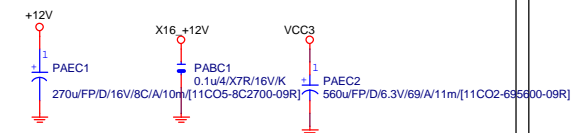
PCE-E X16(雙向) BANDWIDTH=2.5GHz\*(8b/10b)X16X2=64Gb/s=8GB/s

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



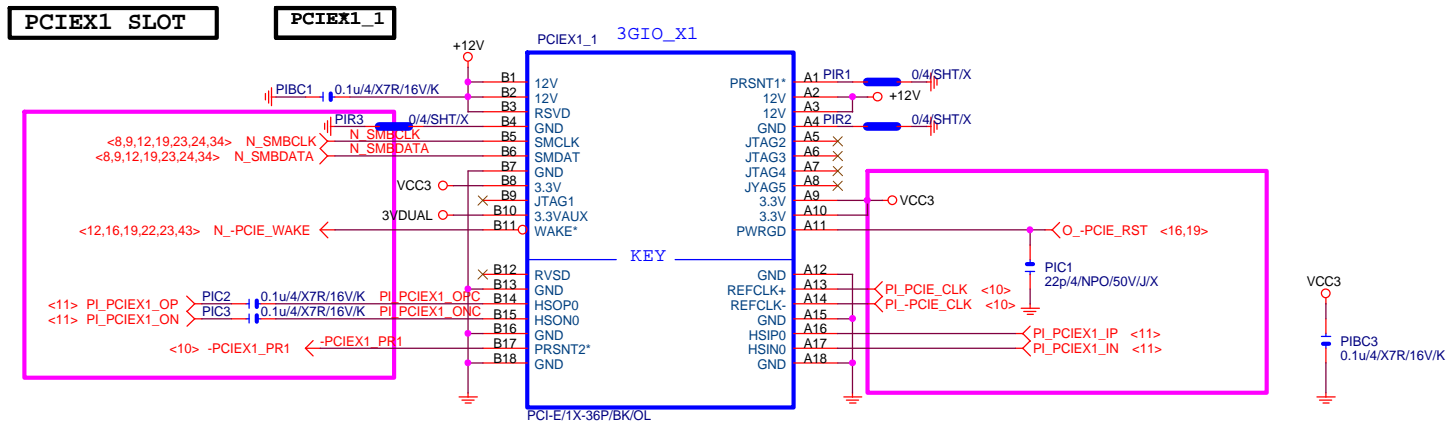
PCIE/16X-164P/BK/LONG DOUBLE[11AC1-023164-D1R]

R01A



Gigabyte Technology

|        |                             |                    |                  |       |
|--------|-----------------------------|--------------------|------------------|-------|
| Title  |                             |                    | PCI EXPRESS * 16 |       |
| Size   | Document Number             | GA-H110M-S2PV DDR3 |                  | Rev   |
| Custom |                             |                    |                  | 1.01  |
| Date:  | Wednesday, October 07, 2015 | Sheet              | 19               | of 48 |



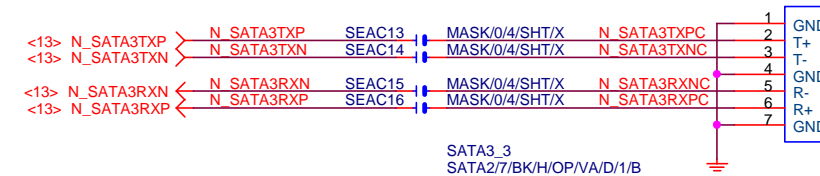
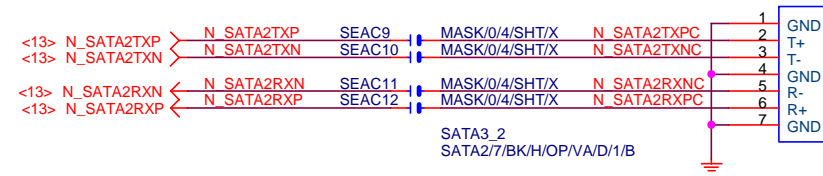
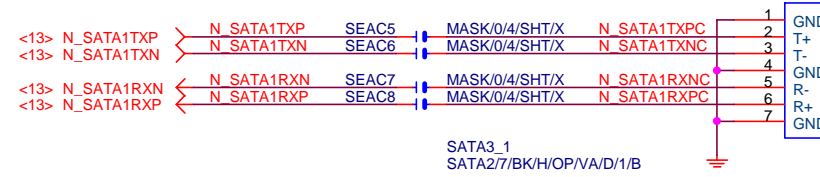
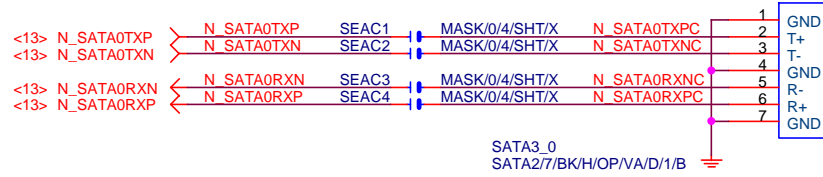
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Gigabyte Technology

|       |                             |                    |          |
|-------|-----------------------------|--------------------|----------|
| Title |                             | PCIE_X1 1,2        |          |
| Size  | Document Number             | GA-H110M-S2PV DDR3 |          |
| Date: | Wednesday, October 07, 2015 | Sheet              | 20 of 48 |

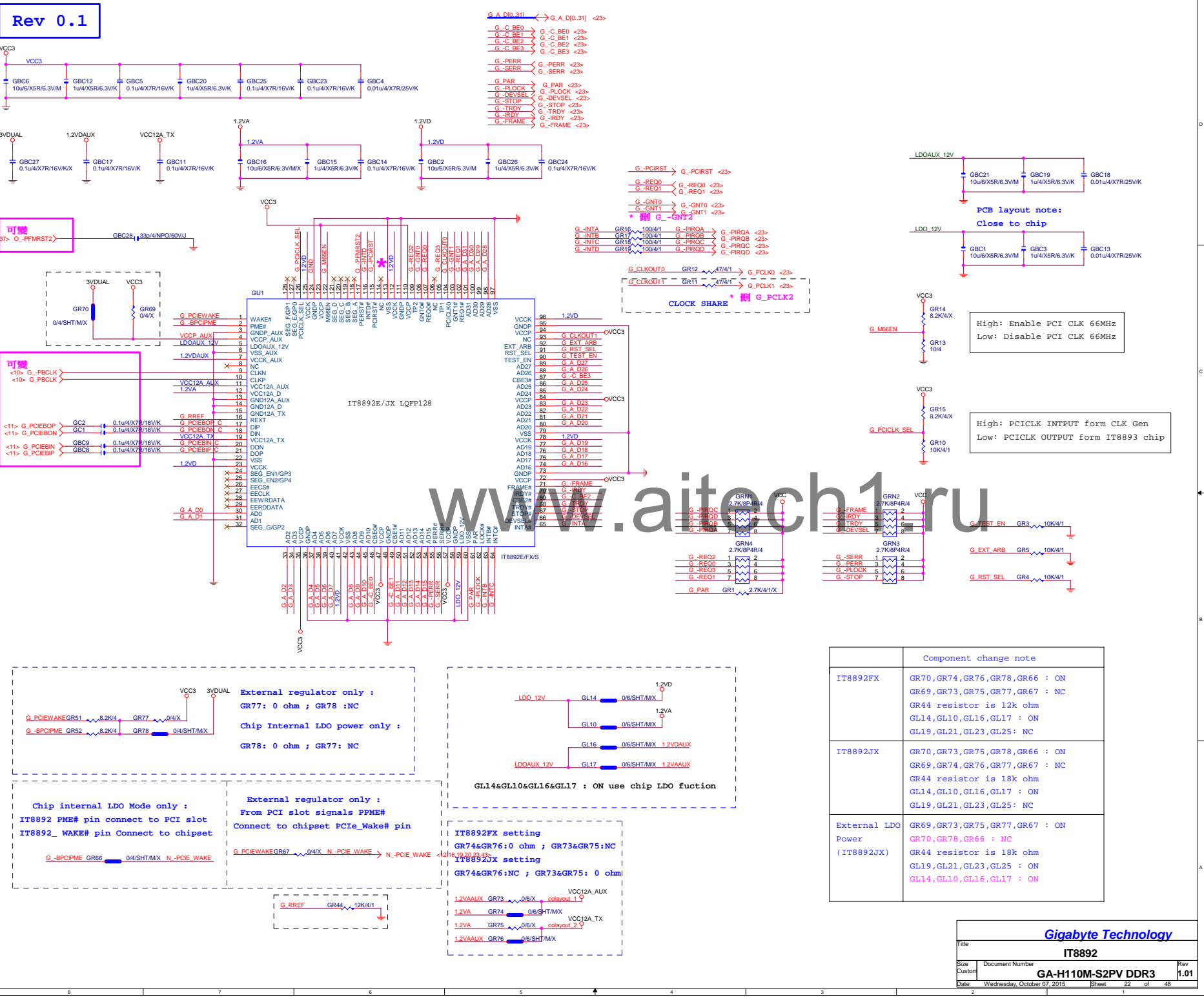
Rev 1.01

Rev 0.5a



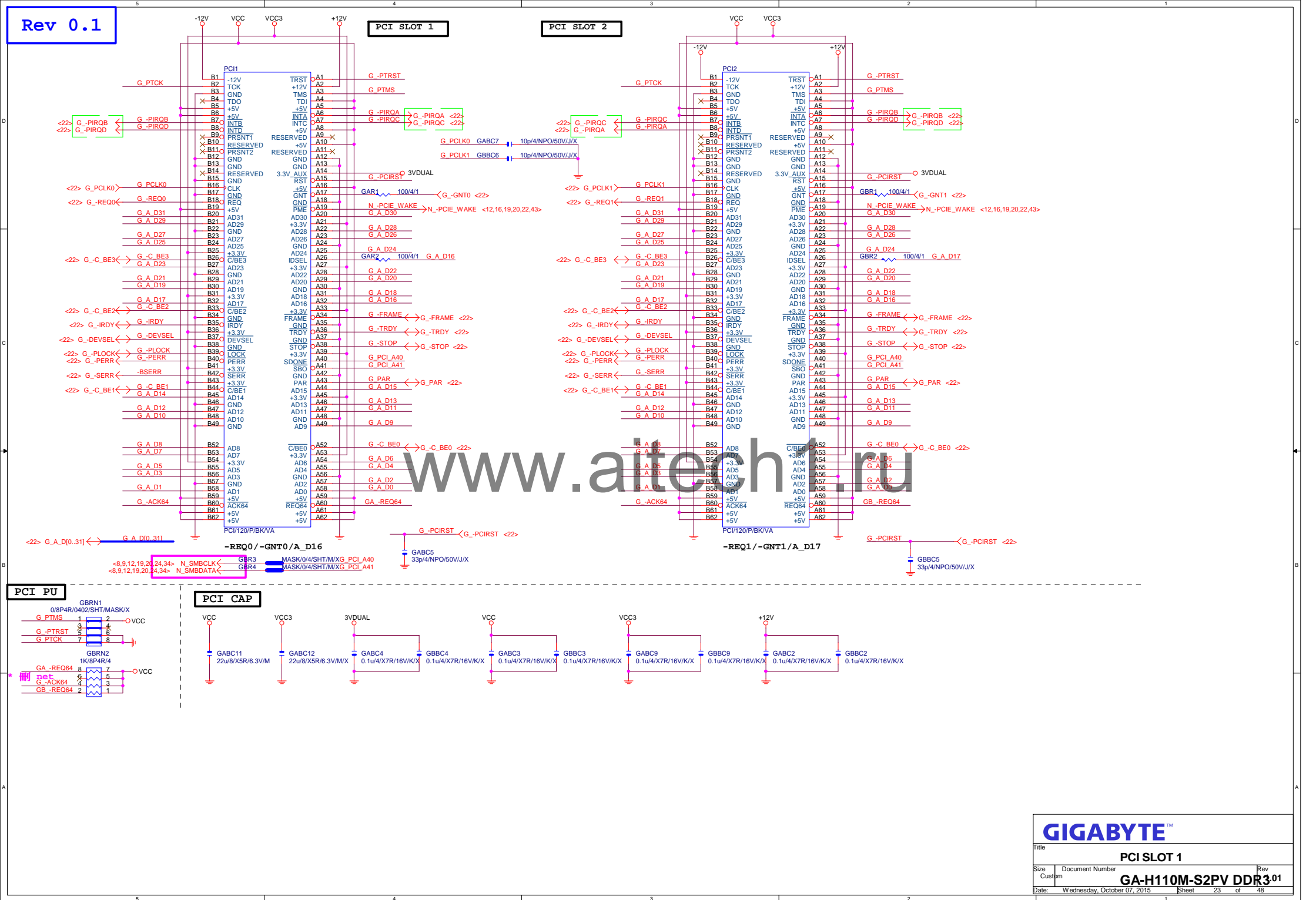
www.aitech1.ru

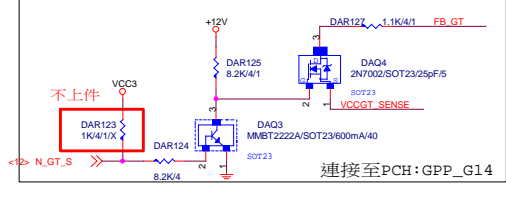
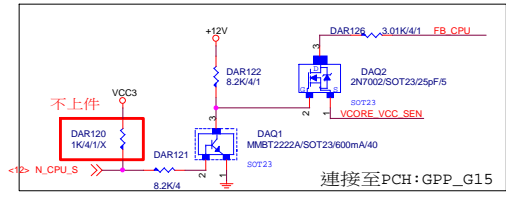
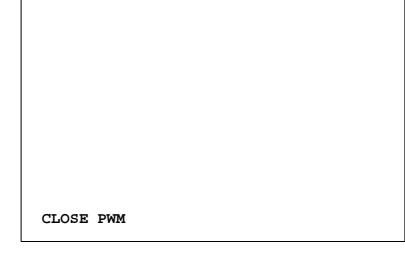
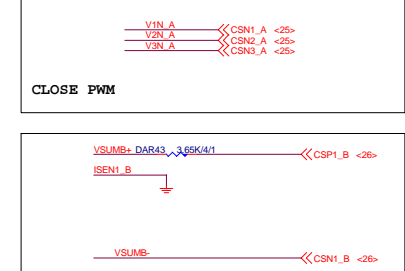
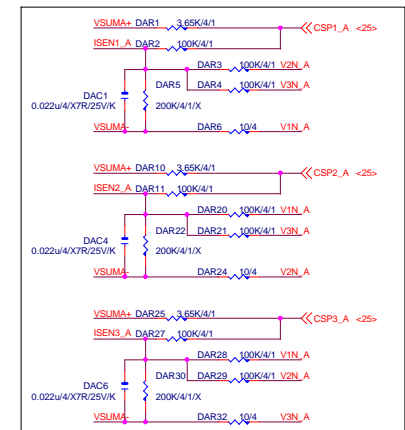
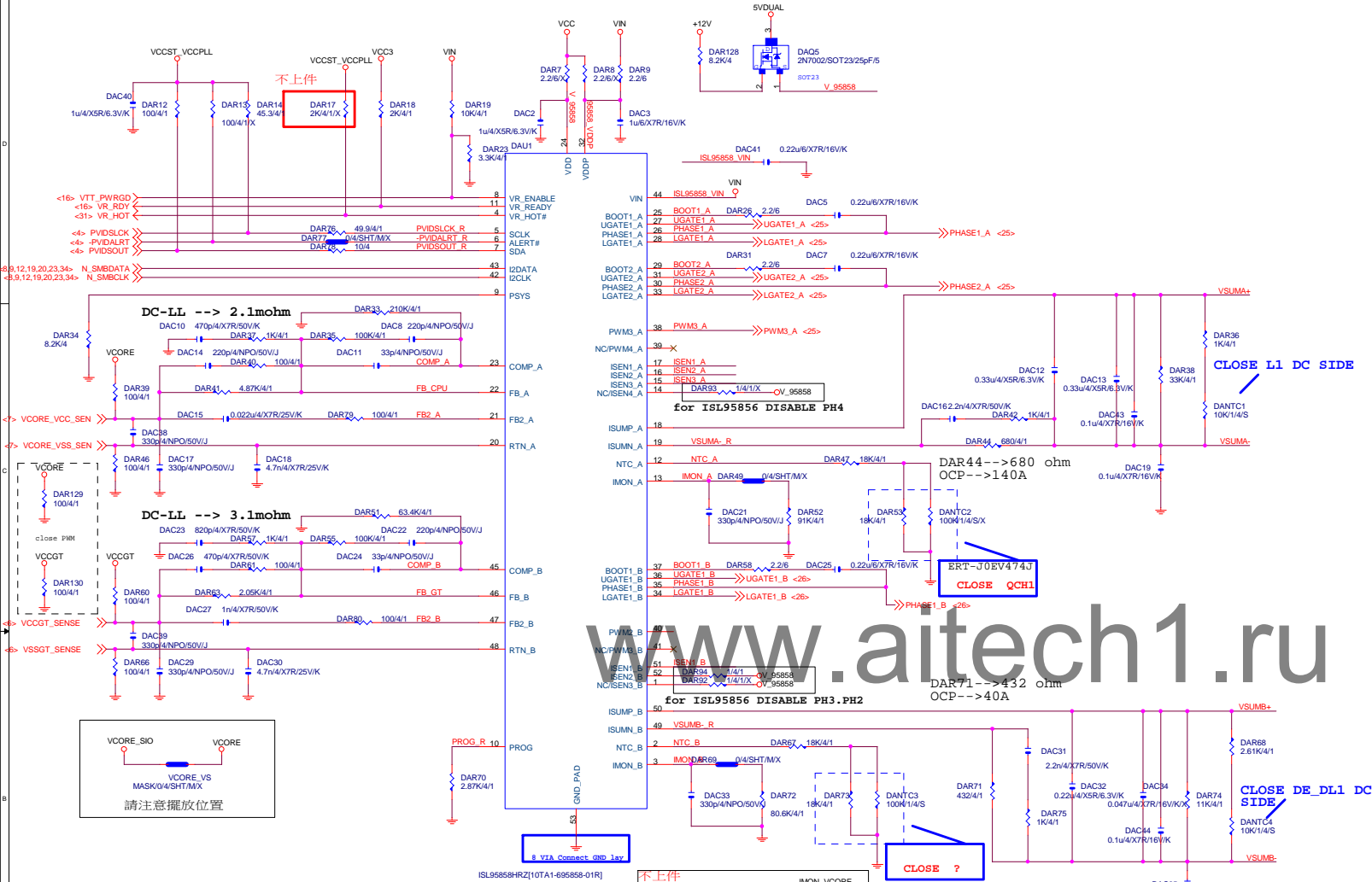
| Gigabyte Technology |                             |       |          |
|---------------------|-----------------------------|-------|----------|
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| SATA EXPRESS        |                             |       |          |
| Size                | Document Number             |       | Rev      |
| Custom              | GA-H110M-S2PV DDR3          |       | 1.01     |
| Date:               | Wednesday, October 07, 2015 | Sheet | 21 of 48 |

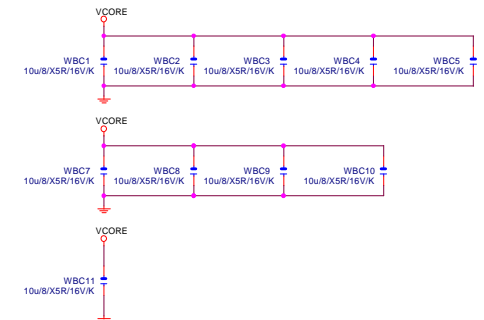
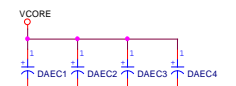
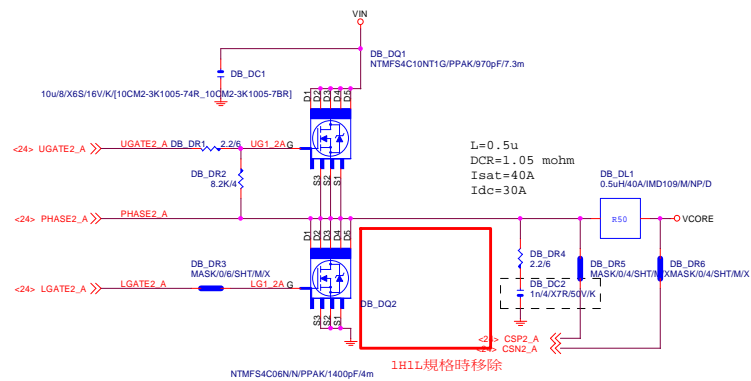


|                                     | Component change note   |
|-------------------------------------|---|
| IT8892FX                            | GR70, GR74, GR76, GR78, GR66 : ON<br>GR69, GR73, GR75, GR77, GR67 : NC<br>GR44 resistor is 12k ohm<br>GL14, GL10, GL16, GL17 : ON<br>GL19, GL21, GL23, GL25: NC |
| IT8892JX                            | GR70, GR73, GR75, GR78, GR66 : ON<br>GR69, GR74, GR76, GR77, GR67 : NC<br>GR44 resistor is 18k ohm<br>GL14, GL10, GL16, GL17 : ON<br>GL19, GL21, GL23, GL25: NC |
| External LDO<br>Power<br>(IT8892JX) | GR69, GR73, GR75, GR77, GR67 : ON<br>GR70, GR78, GR66 : NC<br>GR44 resistor is 18k ohm<br>GL19, GL21, GL23, GL25 : ON<br>GL14, GL10, GL16, GL17 : ON            |

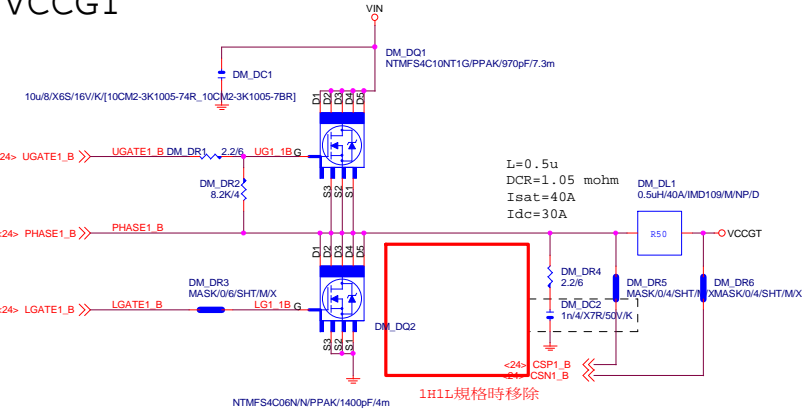




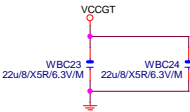
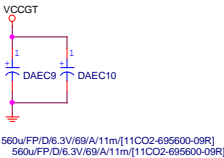




VCCGT



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



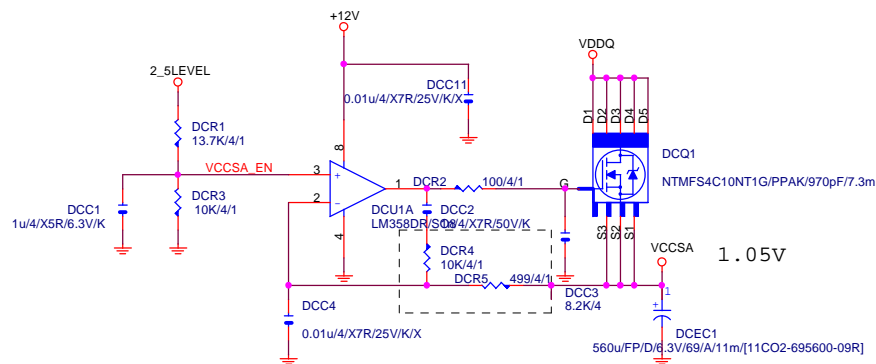
www.aitech1.ru

GIGABYTE™

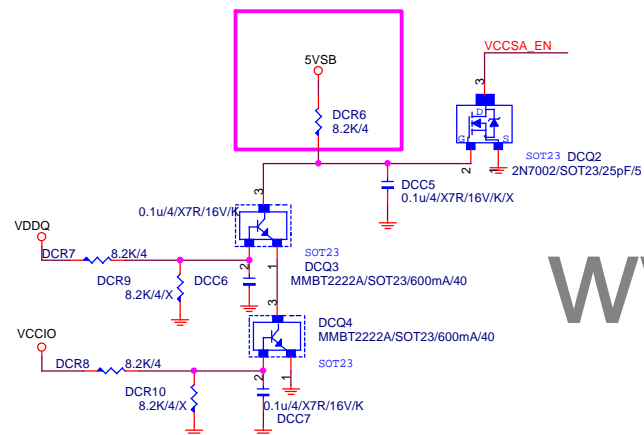
|              |                             |                |
|--------------|-----------------------------|----------------|
| Title        |                             |                |
| ISL95858_MOS |                             |                |
| Size         | Document Number             | Rev            |
| Custom       | GA-H110M-S2PV DDR3          | 1.01           |
| Date:        | Wednesday, October 07, 2015 | Sheet 26 of 49 |

VCCSA

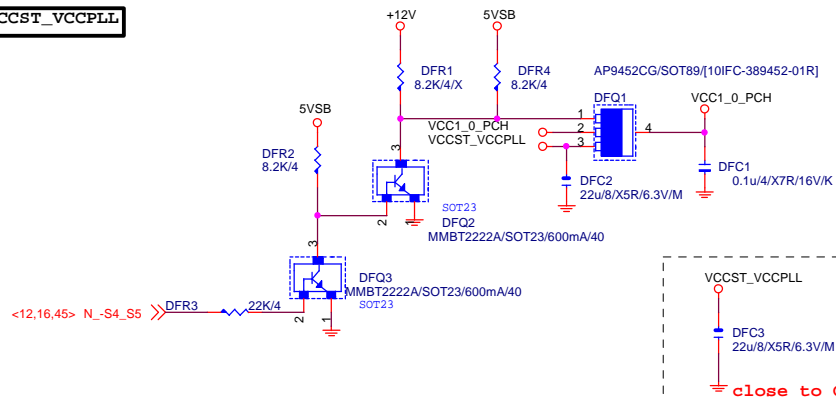
REV:0.4



1.05V

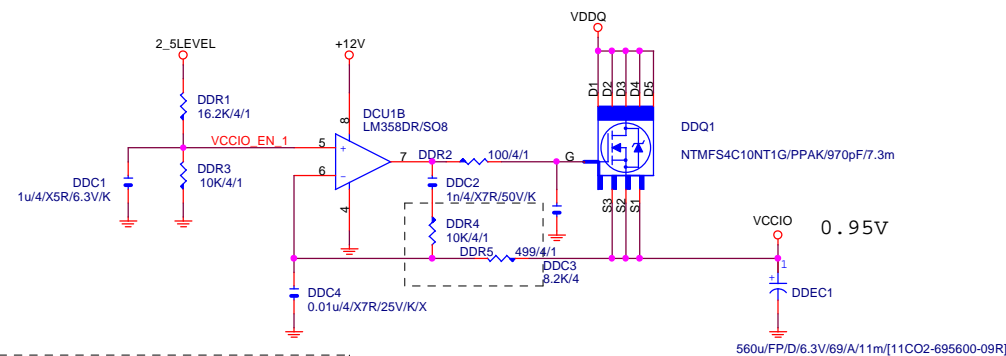


VCCST\_VCCPLL



close to CPU

VCCIO



0.95V

VCCIO\_EN\_1 DDR10 0/4/SHT/M/X

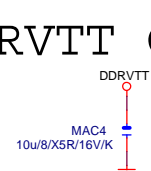
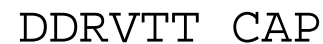
Connect to IT8620

www.aitech1.ru

GIGABYTE™

|        |                             |                |
|--------|-----------------------------|----------------|
| Title  | VCCSA_VCCIO                 |                |
| Size   | Document Number             | Rev            |
| Custom | GA-H110M-S2PV DDR3          | 1.01           |
| Date:  | Wednesday, October 07, 2015 | Sheet 27 of 48 |

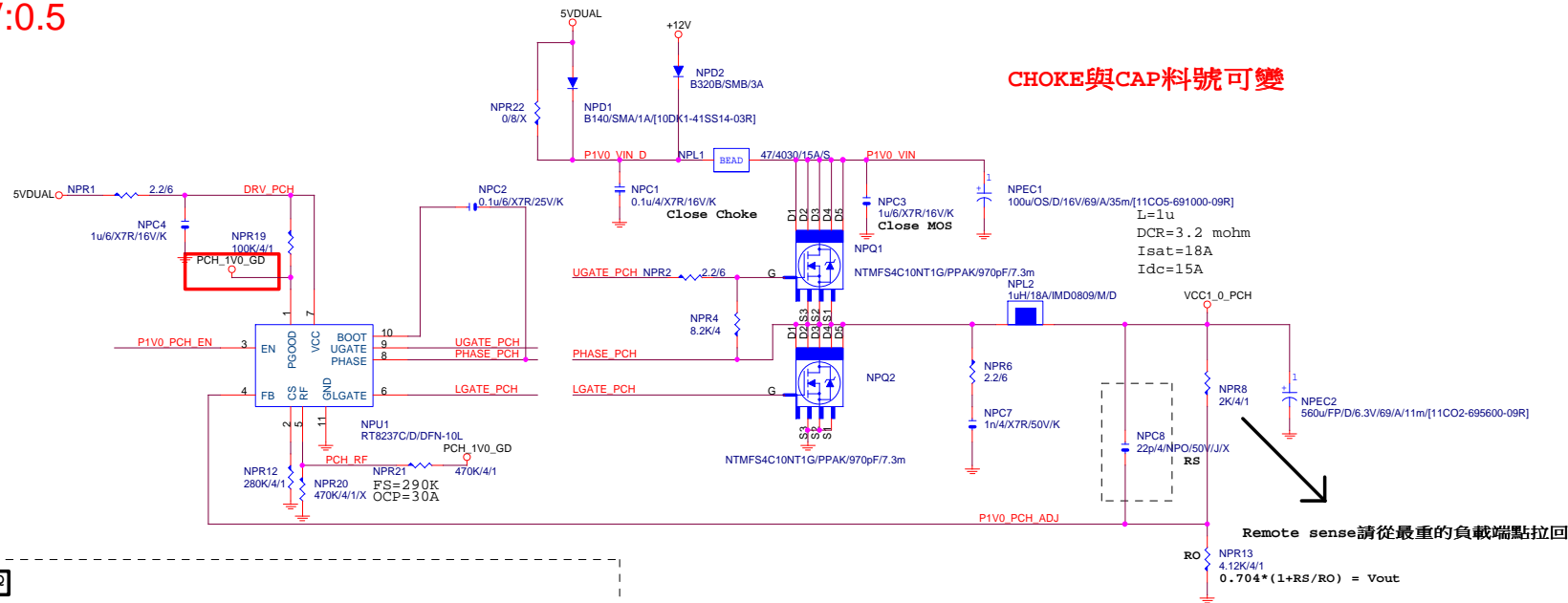
## DDR3



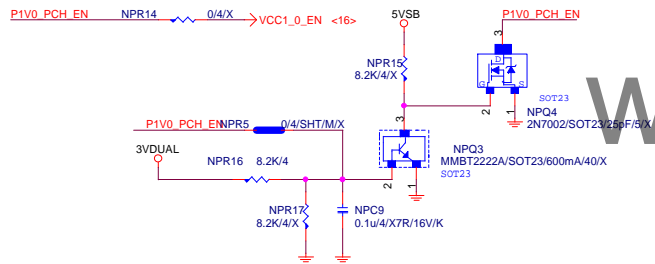
# GIGABYTE™

|                  |                             |       |          |
|------------------|-----------------------------|-------|----------|
| Title            |                             |       |          |
| RT8120_DDR POWER |                             |       |          |
| Size             | Document Number             | Rev   |          |
| Custom           | GA-H110M-S2PV DDR3          | 1.01  |          |
| Date:            | Wednesday, October 07, 2015 | Sheet | 28 of 48 |

REV:0.5



PWR SEQ



請放置CHOKES—出來的地方

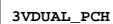
**GIGABYTE™**

|        |                             |                    |          |
|--------|-----------------------------|--------------------|----------|
| Title  |                             | RT8237_PCH POWER   |          |
| Size   | Document Number             | GA-H110M-S2PV DDR3 |          |
| Custom |                             | Rev 1.01           |          |
| Date:  | Wednesday, October 07, 2015 | Sheet              | 29 of 48 |



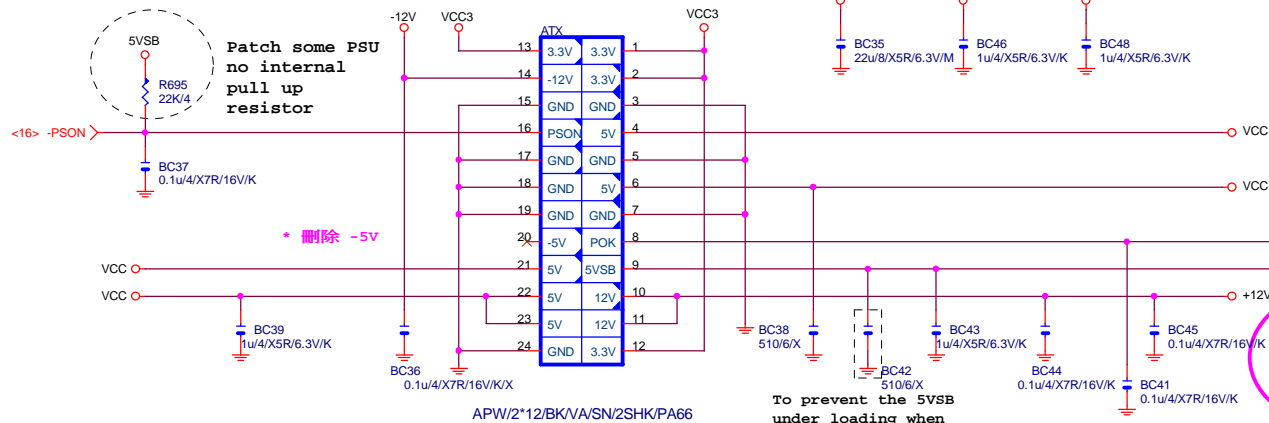
## REV:0.51

```
* 5Vdual , update
from SKL 0.2B
```

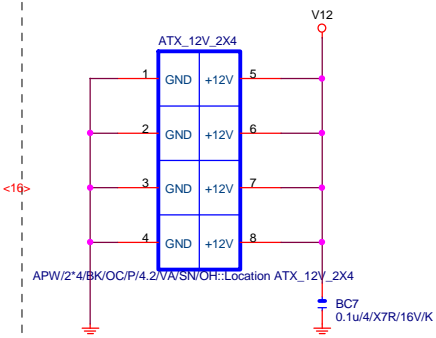


|                       |                             |                    |          |      |
|-----------------------|-----------------------------|--------------------|----------|------|
| Title                 |                             |                    |          |      |
| <b>DISCRETE POWER</b> |                             |                    |          |      |
| Size                  | Document Number             | GA-H110M-S2PV DDR3 |          | Rev  |
| Custom                |                             |                    |          | 1.01 |
| Date:                 | Wednesday, October 07, 2015 | Sheet              | 30 of 48 |      |

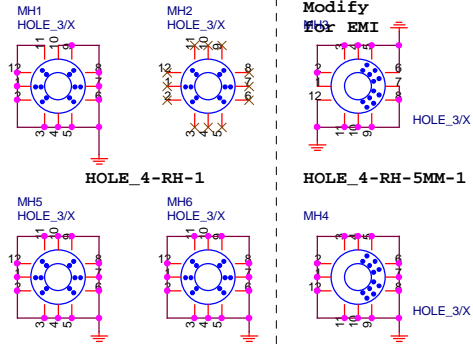
## ATXX24 POWER CONNECTOR



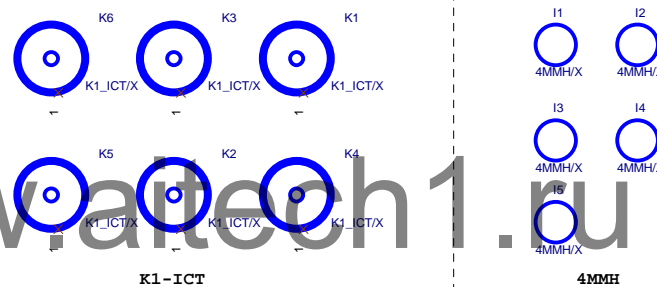
## ATXX4 POWER CONNECTOR



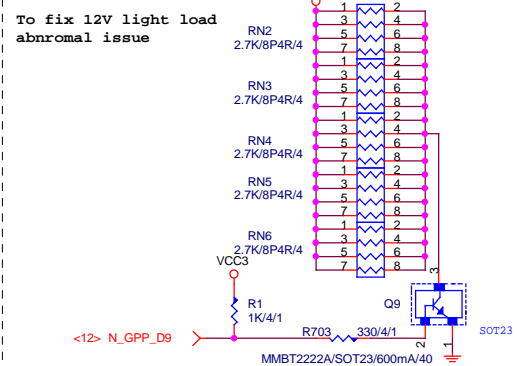
## 螺絲孔



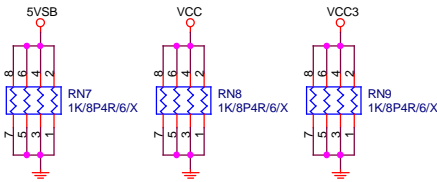
## 固定孔/光學點



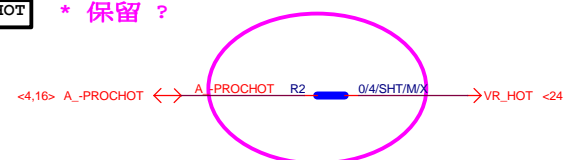
## +12V DUMMY LOAD



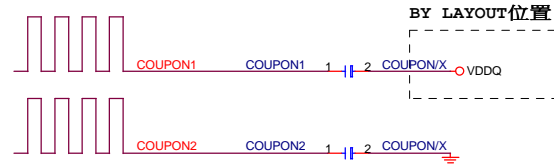
## DUMMY LOAD



## -PROHOT



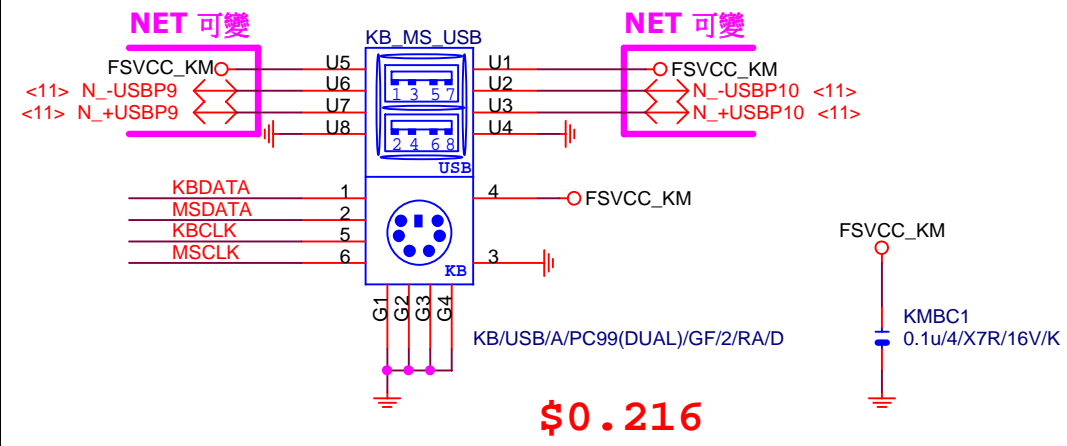
## COUPON



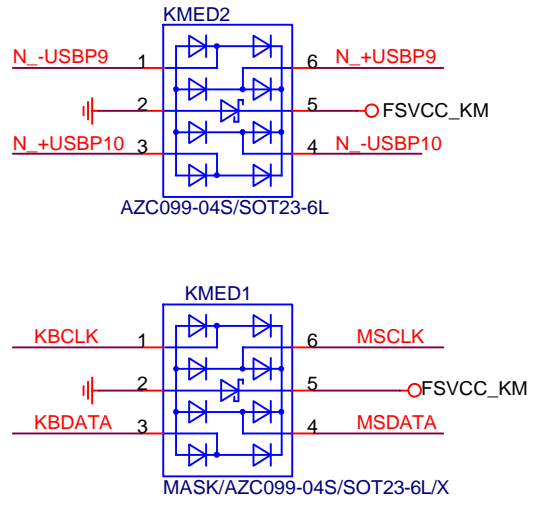
## Gigabyte Technology

|       |                             |                     |                    |
|-------|-----------------------------|---------------------|--------------------|
| Title |                             | ATX POWER CONNECTOR |                    |
| Size  | Custom                      | Document Number     | GA-H110M-S2PV DDR3 |
| Date: | Wednesday, October 07, 2015 | Sheet               | 31 of 48           |
|       | 2                           |                     | 1                  |

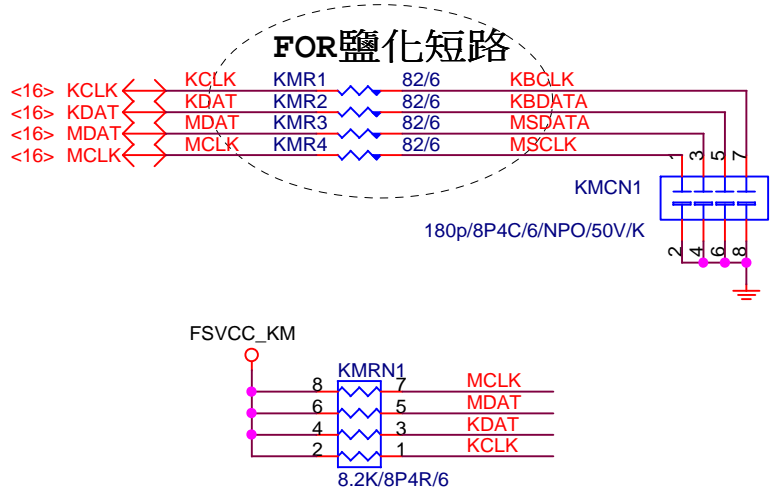
Rev 1.01



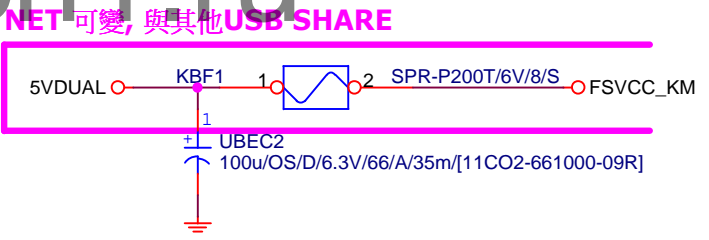
ESD



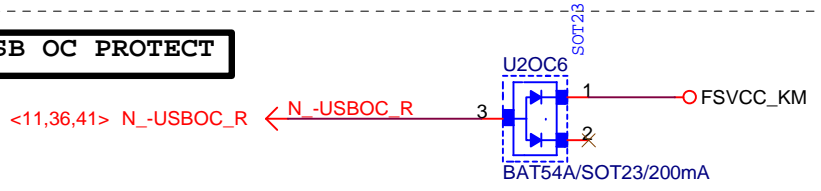
KB\_MS\_USB DAMPING/PU



KB\_MS\_USB PWR

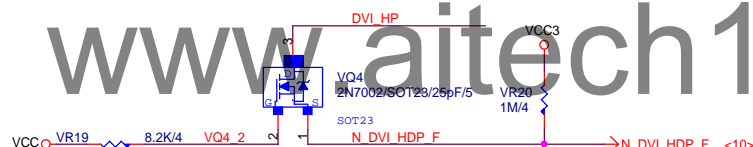
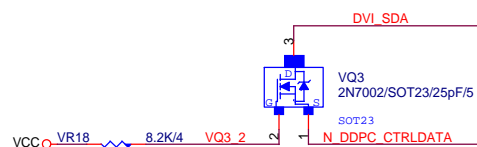
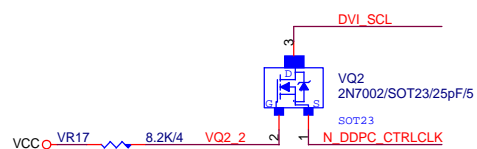
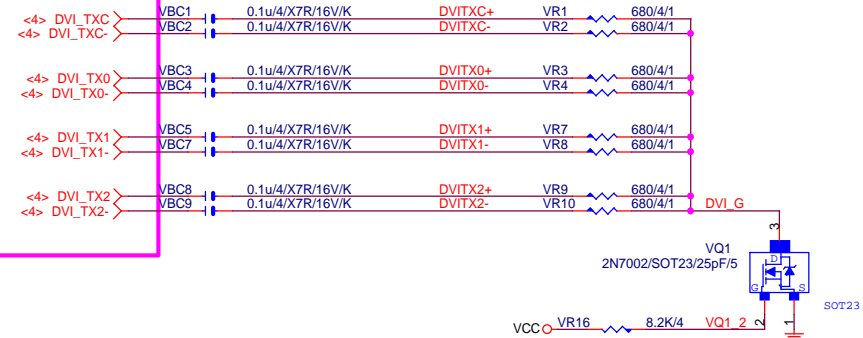


USB OC PROTECT

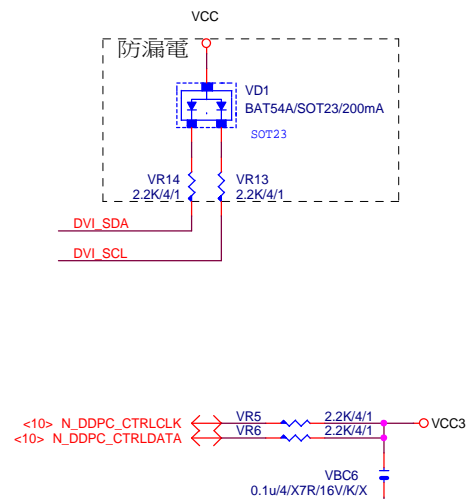


DVI:20/4/6/4/20  
Impedance=85 +- 17.5%

NET 可變



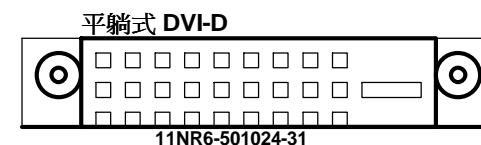
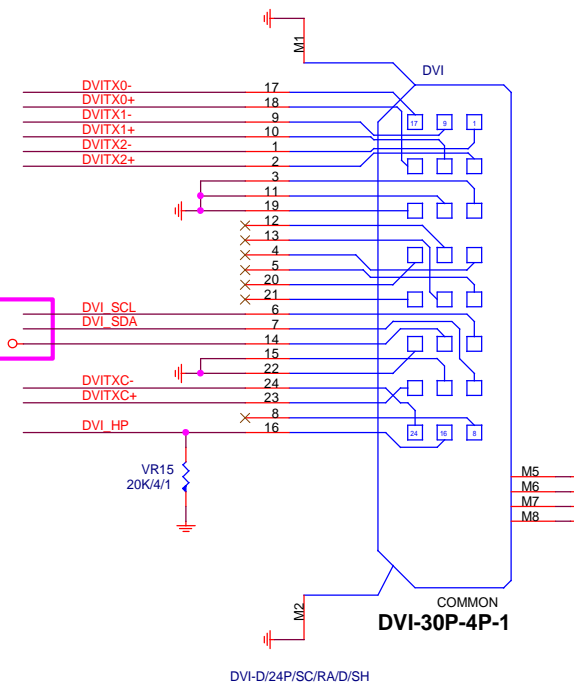
DVI PU



## DVI CONN

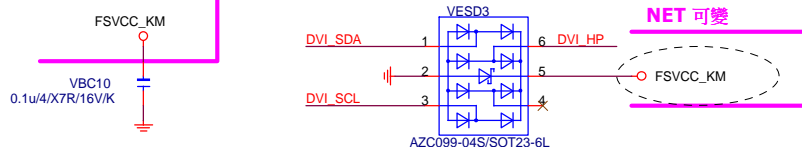
NET 可變

✱

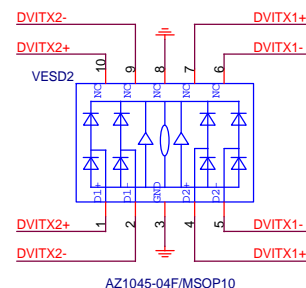


## ESD

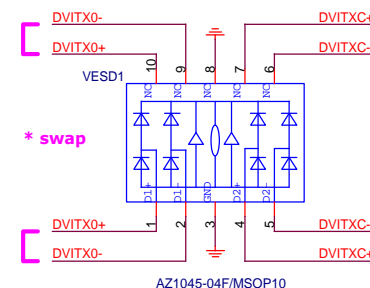
NET 可變



Close to connector



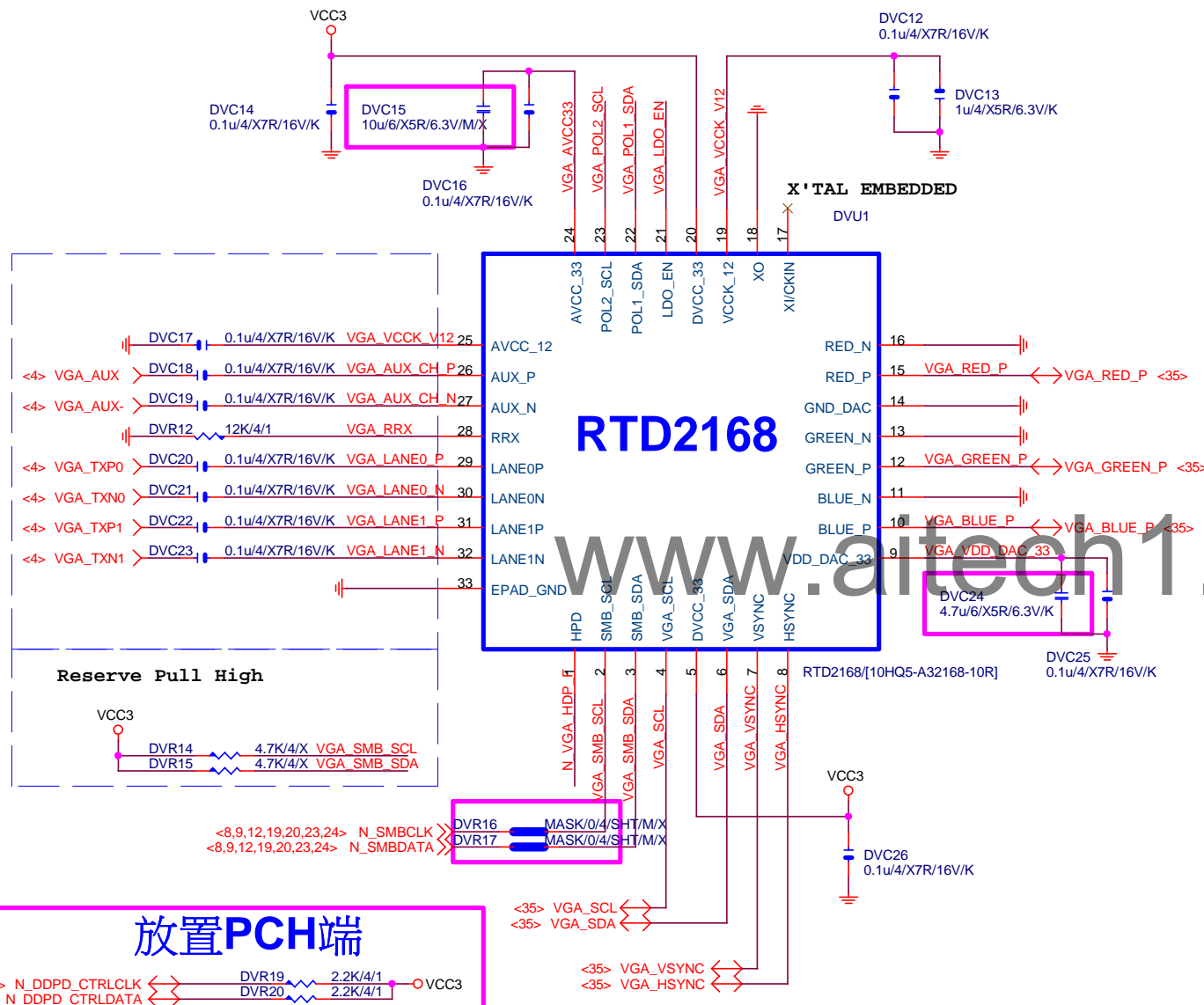
Close to connector



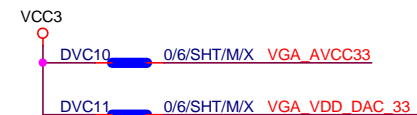
Close to connector

## Gigabyte Technology

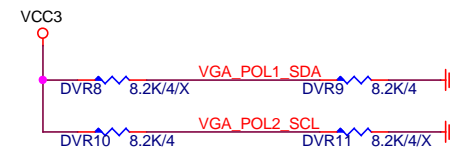
|                     |                             |       |             |
|---------------------|-----------------------------|-------|-------------|
| Title               |                             |       |             |
| FP,F_USB,USB PWR,BZ |                             |       |             |
| Size Custom         | Document Number             |       | Rev<br>1.01 |
|                     | GA-H110M-S2PV D9P3          |       |             |
| Date:               | Wednesday, October 07, 2015 | Sheet | 33 of 48    |



## POWER

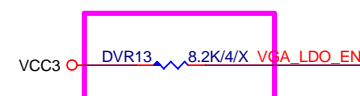


Power on latch



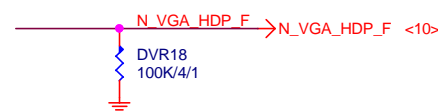
|                     |   | POL1_SDA(PIN22)          |                |
|---------------------|---|--------------------------|----------------|
|                     |   | 0                        | 1              |
| POL2_SCL<br>(PIN23) | 0 | X                        | EP MODE        |
|           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

## Embedded LDO

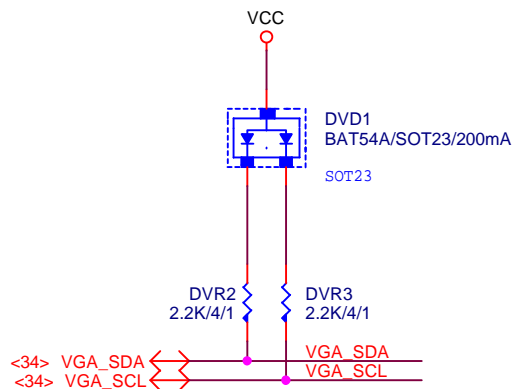


| LDO_EN(PIN21)               |                            |
|-----------------------------|----------------------------|
| 0                           | 1                          |
| VCCK_V12 from External 1.2V | VCCK_V12 from Embedded LDO |

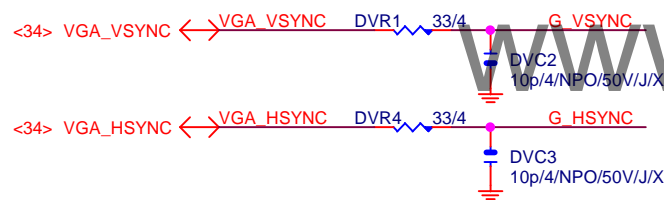
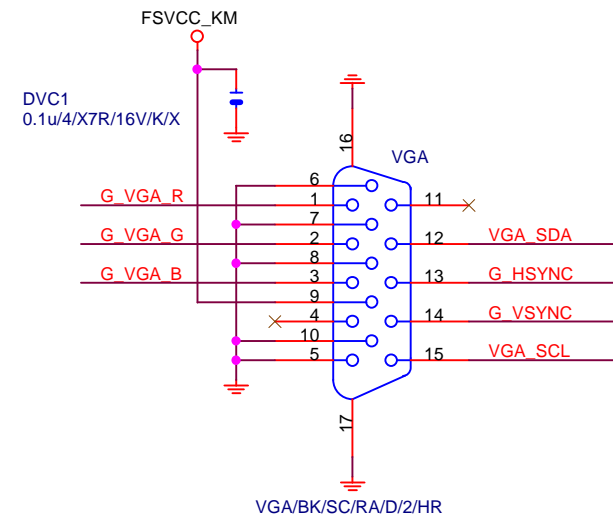
DP HPD



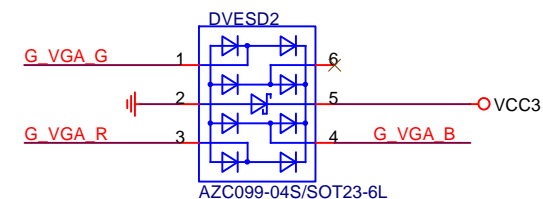
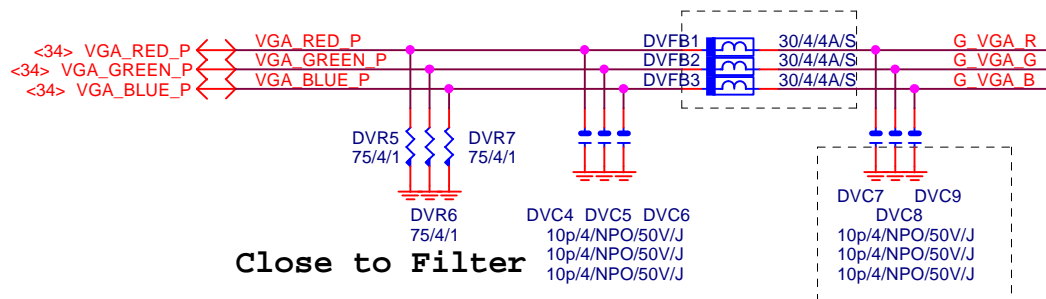
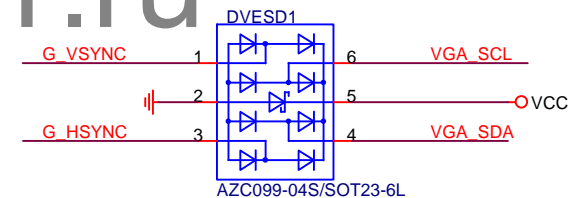
# VGA SIGNAL R1.03



# VGA CONN.



# VGA ESD



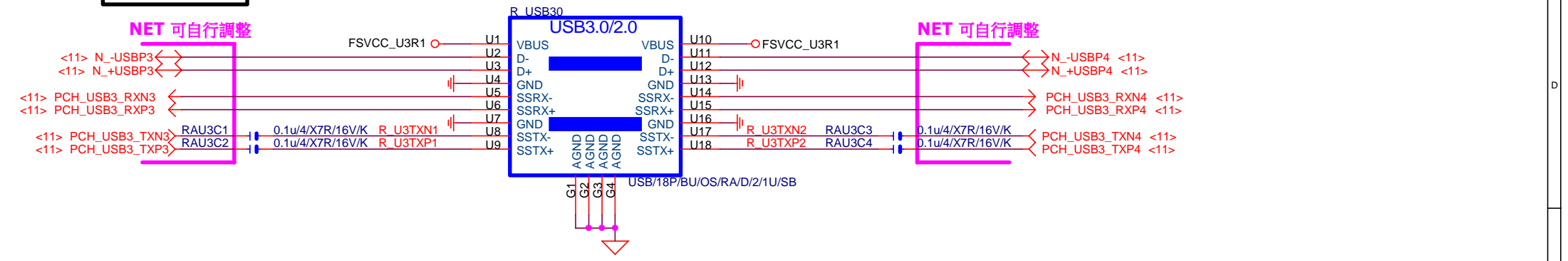
Close to Filter

FOR EMI

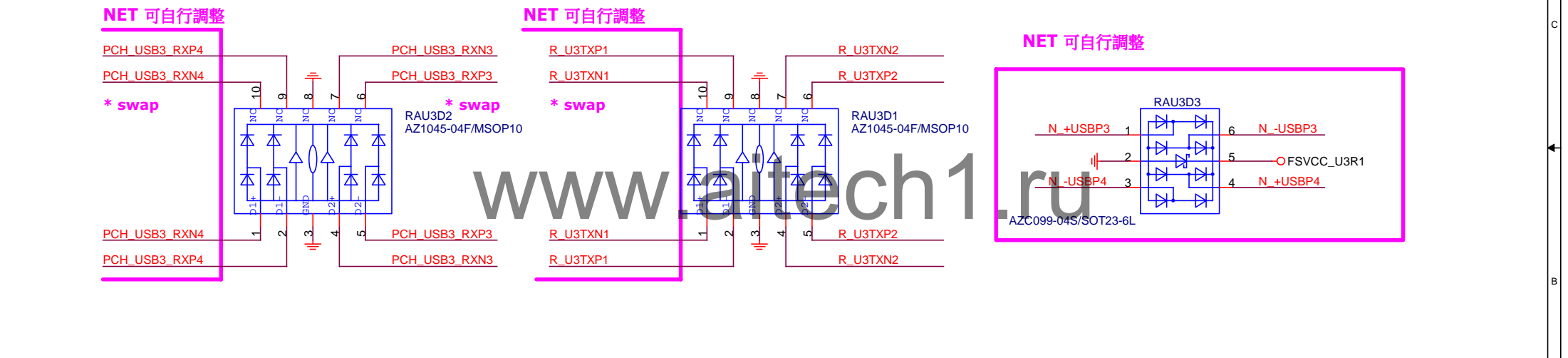
Gigabyte Technology  
DP-VGA RTD2168

|        |                             |                    |          |
|--------|-----------------------------|--------------------|----------|
| Title  |                             | GA-H110M-S2PV DDR3 |          |
| Size   | Document Number             | GA-H110M-S2PV DDR3 | Rev 1.01 |
| Custom |                             |                    |          |
| Date:  | Wednesday, October 07, 2015 | Sheet              | 35 of 48 |

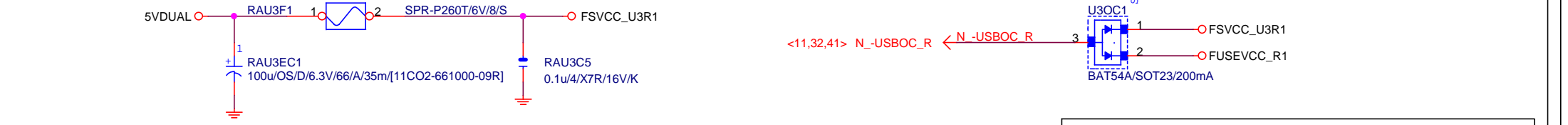
ESD 可自行SWAP PIN ,CONN端 NET 名稱 不可



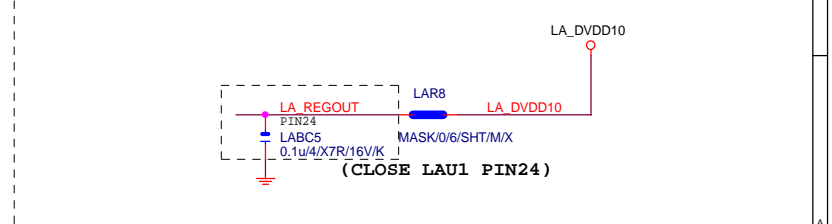
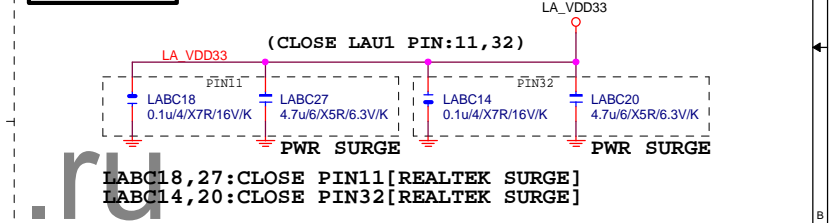
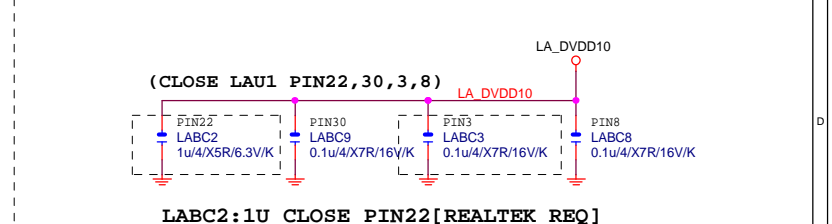
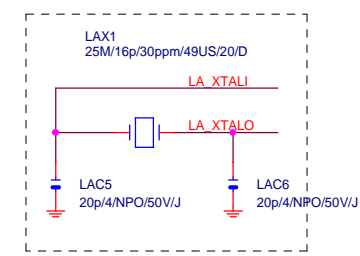
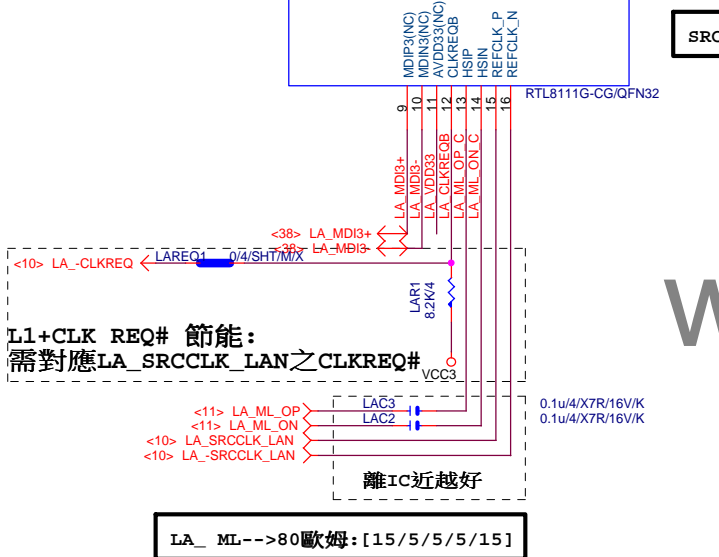
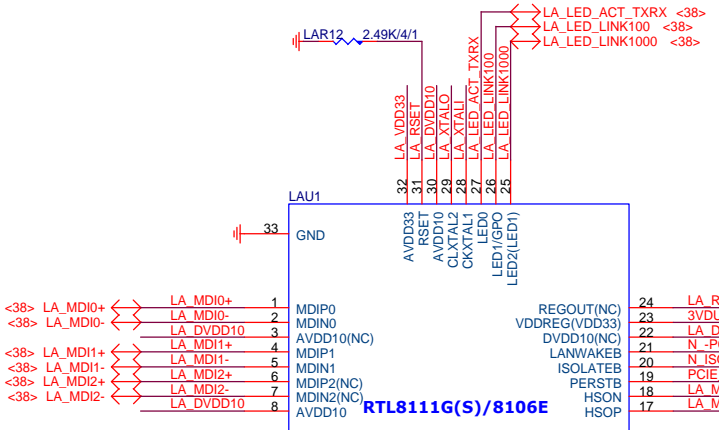
ESD



FUSE





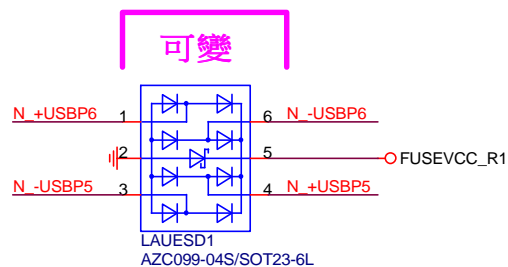


| Gigabyte Technology |                 |                             |                |
|---------------------|-----------------|-----------------------------|----------------|
| Realtek RTL8111GUS  |                 |                             |                |
| GA-H110M-S2PV DDR31 |                 |                             |                |
| Title               | Document Number | Rev                         |                |
| Size                | Custom          | Wednesday, October 07, 2015 | Sheet 37 of 48 |

## R1.06

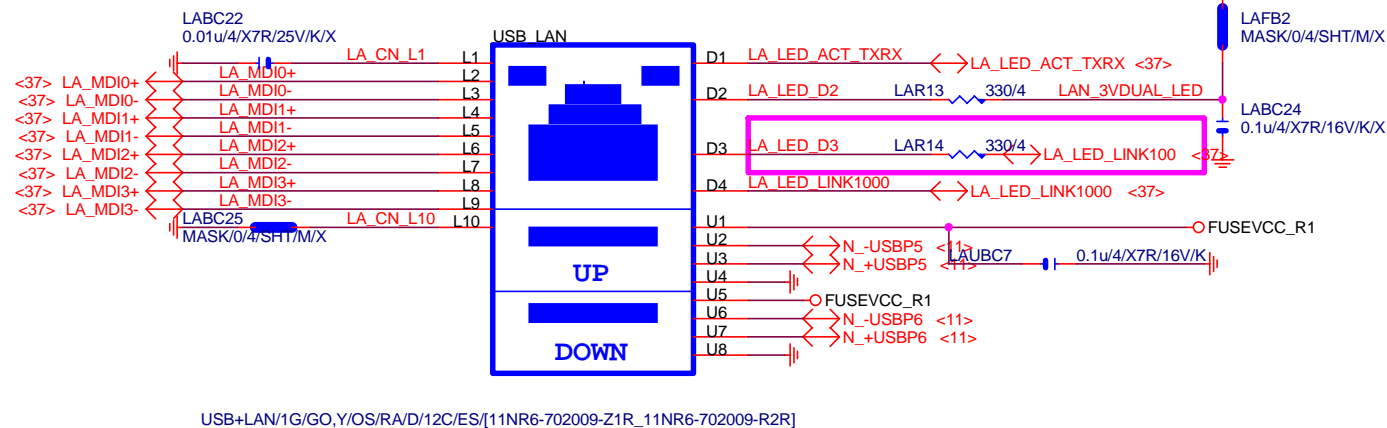
note:可變更USB NAME

RMA ESD PROTECT



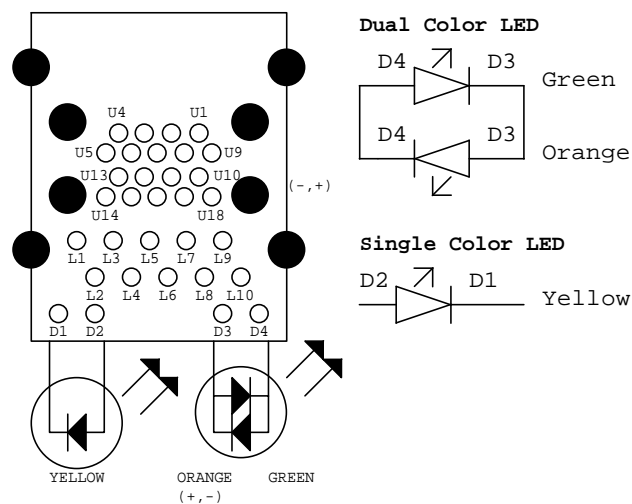
note:可變更USB NAME

[RTL8111G]



LA\_MDI-->100歐姆:[20/4/8/4/20]

### USB30\_LAN LAYOUT示意圖



USB POWER

note:可變更FUSE



Close to connector  
FUSE-0805

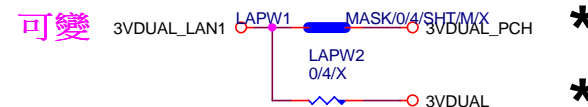
## EMI SHORT PAD

PS:視EMI需求



## LAN POWER

note: lan power連接及電流



## Gigabyte Technology

## LAN CONNECTOR-RTL8111G

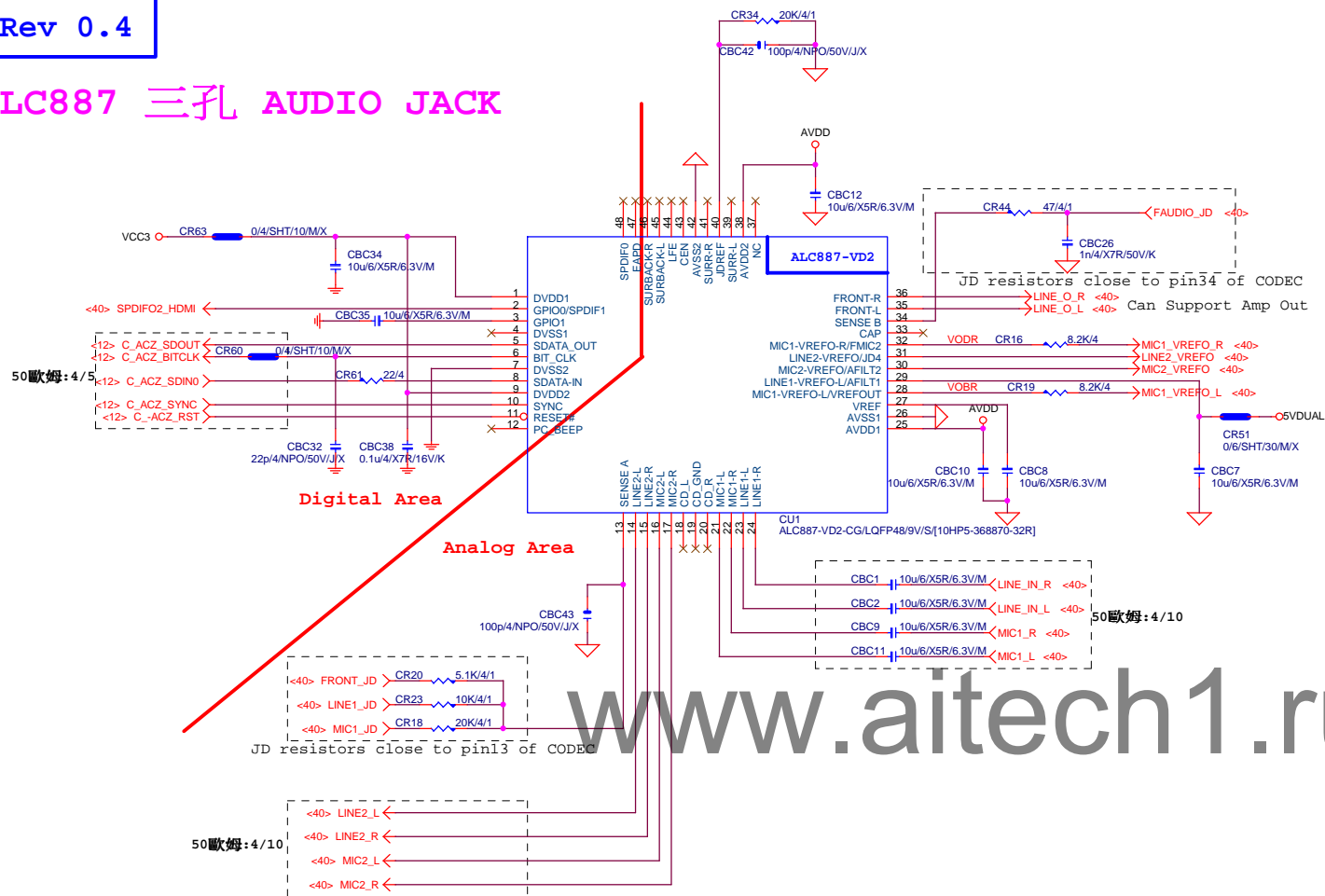
|        |                 |
|--------|-----------------|
| Size   | Document Number |
| Custom |                 |

**GA-H110M-S2PV DDR3**

Date: Wednesday, October 07, 2015 Sheet 38 of 48

|     |      |
|-----|------|
| Rev | 1.01 |
|-----|------|

## ALC887 三孔 AUDIO JACK

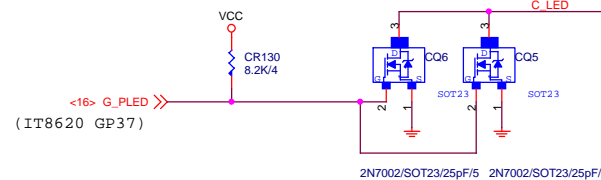
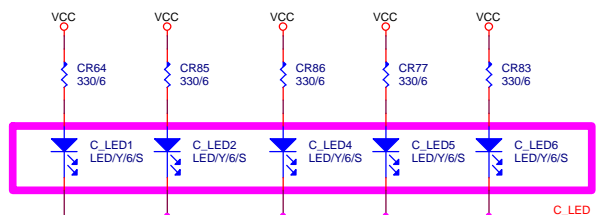


LAYOUT注意:螺絲孔下GND方式

1. MH1空間夠,下DGND  
空間不夠,改為Isolate
2. MH2一律改為Isolate

|       |         |
|-------|---------|
| ○ MH1 | MH2 ○   |
| DGND  | Isolate |

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



\*LAYOUT與否,依照各Model spec

LAYOUT注意:要加

GND切割線

音效區域印刷

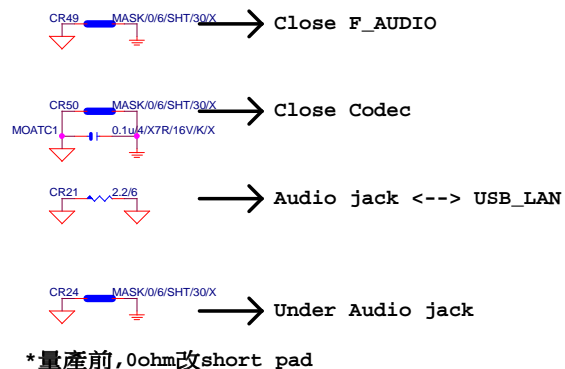


BOM OPTION : 1. Chemicon音效電容  
2. 金屬外罩 Reserve (上件與否,依照各Model spec)  
3. LED Reserve (上件與否和LED顏色,依照各Model spec)

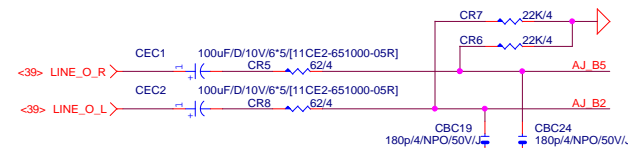
Gigabyte Technology

|        |                             |
|--------|-----------------------------|
| Title  | HD AUDIO ALC887             |
| Size   | Document Number             |
| Custom | GA-H110M-S2PV DDR4          |
| Date:  | Wednesday, October 07, 2015 |
| Sheet  | 39 of 48                    |

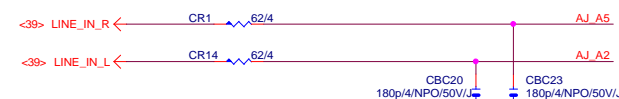
Rev 0.4



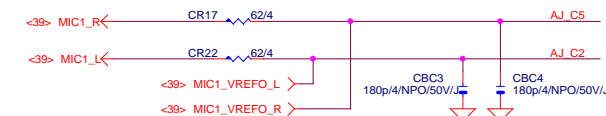
## LINE-OUT



## LINE-IN



## MIC-IN

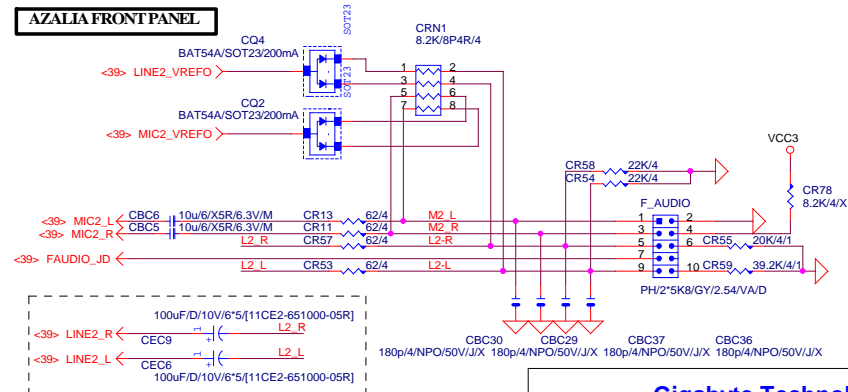


## SURROUND

## CEN/LFE

## SURRBACK

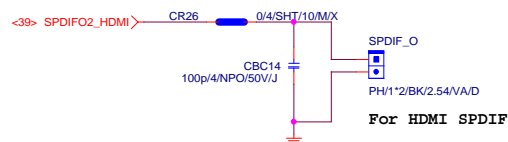
## AZALIA FRONT PANEL



Gigabyte Technology

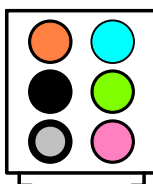
|        |                             |                    |          |
|--------|-----------------------------|--------------------|----------|
| Title  | AUDIO JACK                  |                    |          |
| Size   | Document Number             | GA-H110M-S2PV DDR4 |          |
| Custom |                             | Rev                | 1.01     |
| Date:  | Wednesday, October 07, 2015 | Sheet              | 40 of 48 |

## SPDIF\_OUT

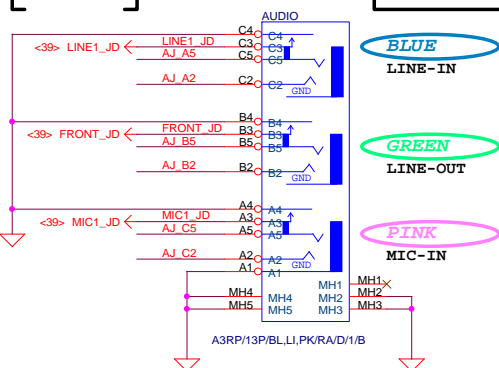


## SPDIF\_IN

## AZALIA JACK

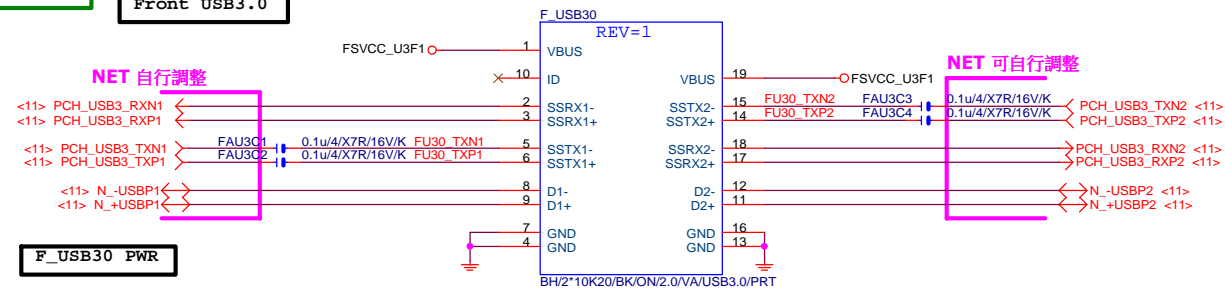


## AZALIA JACK

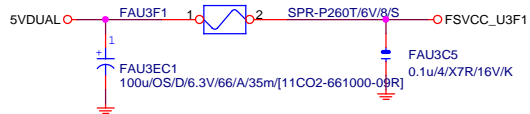


Rev: 0.53

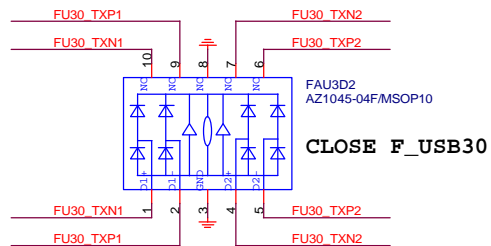
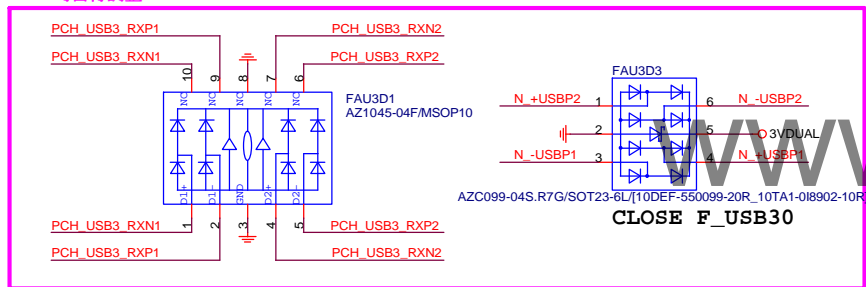
Front USB3.0



F\_USB30 PWR

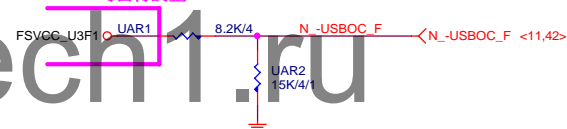


NET 可自行調整



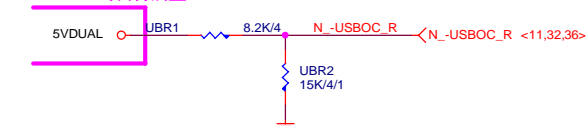
-USBOC\_F

POWER 可自行調整



-USBOC\_R

POWER 可自行調整



\* 接 PCH

N\_GPP\_B20(SMI) &amp;

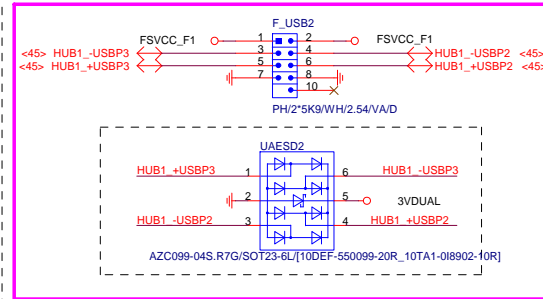
PCH PU 3Vdual



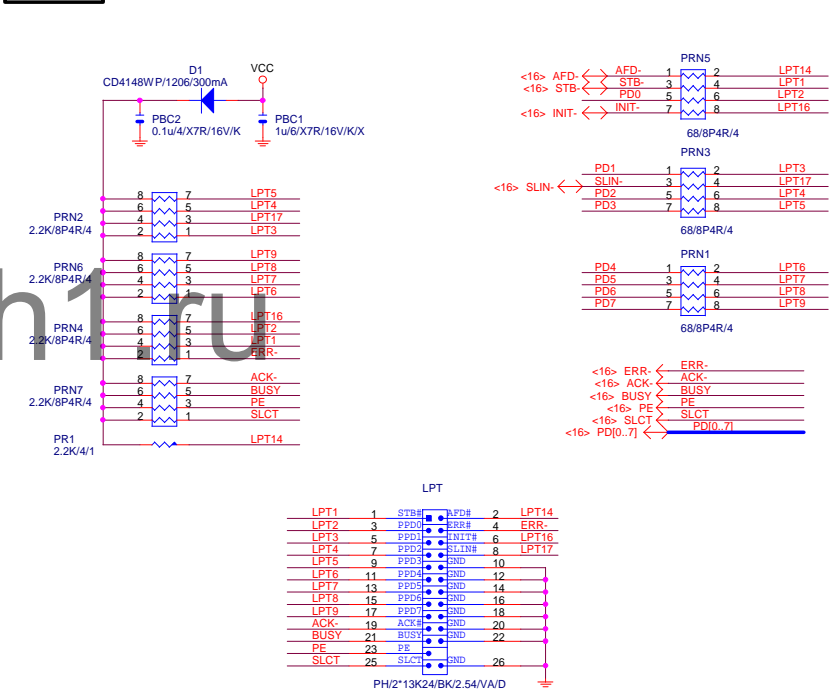
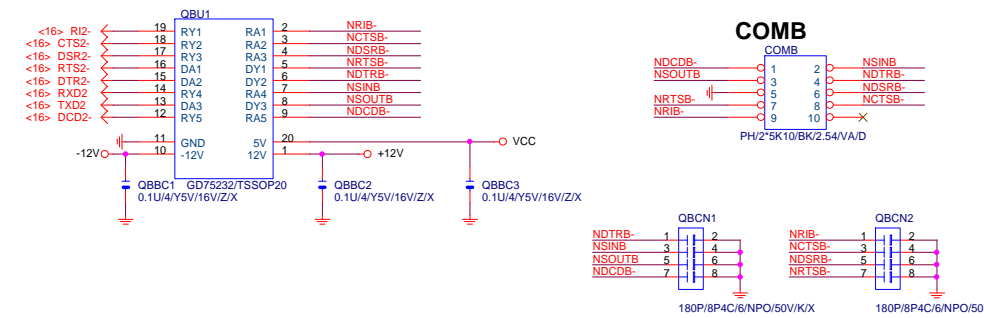
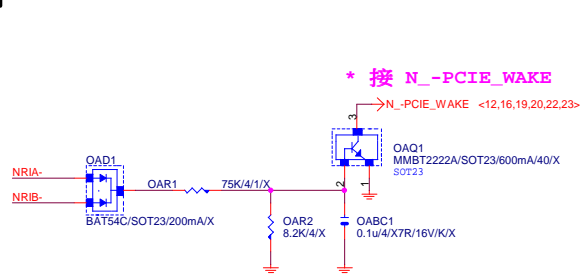
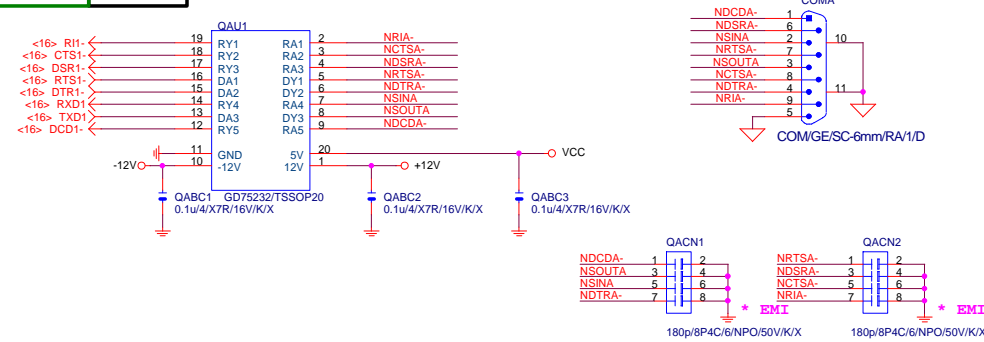
Gigabyte Technology

|        |                             |                         |          |
|--------|-----------------------------|-------------------------|----------|
| Title  |                             | R_USB30,F_USB30, USB_OC |          |
| Size   | Document Number             | GA-H110M-S2PV D0R3      |          |
| Custom |                             | Rev: 1.01               |          |
| Date:  | Wednesday, October 07, 2015 | Sheet                   | 41 of 48 |

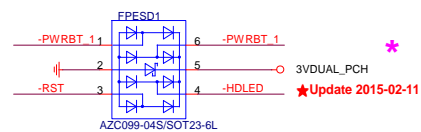
NET 可變



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

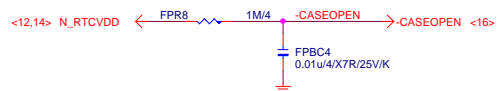


www.aitech.ru

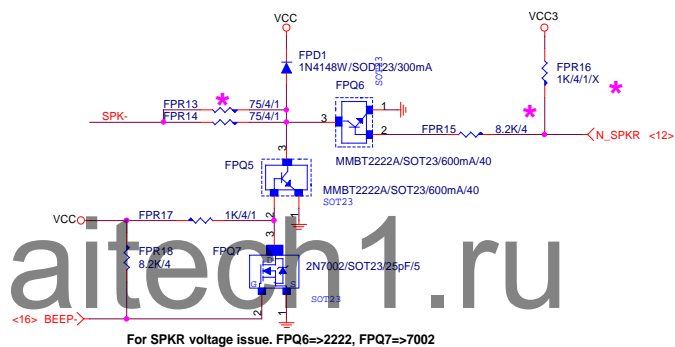


FOOTPRINT:PIN2X10PANEL-NEW

CASE OPEN



SPKR



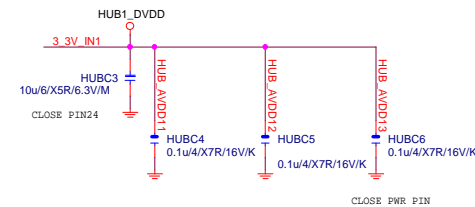
For SPKR voltage issue. FPQ6=>2222, FPQ7=>7002

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

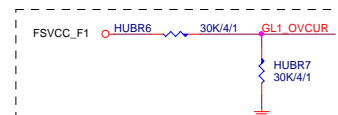
★Update 2015-02-12

<13> N-SATALED> -HDLED



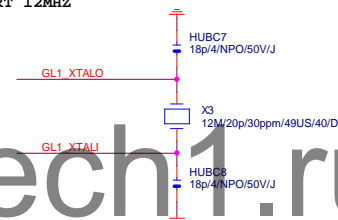


## HUB OVER CURRENT SENSE

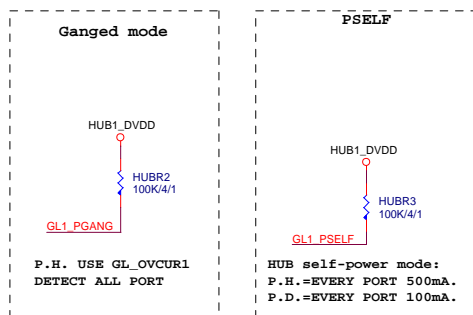


## HUB CRYSTAL

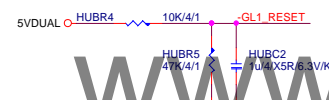
ONLY SUPPORT 12MHZ



## HUB MODE



## HUB RESET



## CLOSE SIO



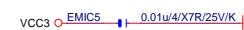
## close to SIO (PIN92)MPD-



## CLOSE PCH



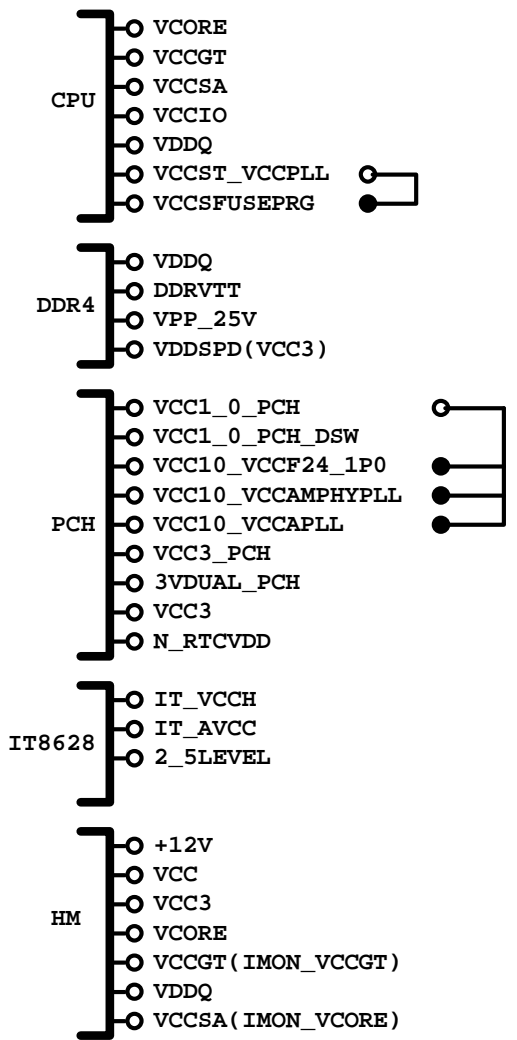
## For H1703M-HD3 USB



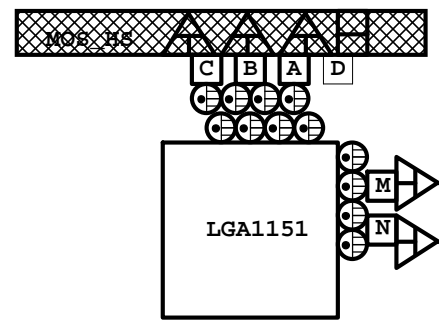
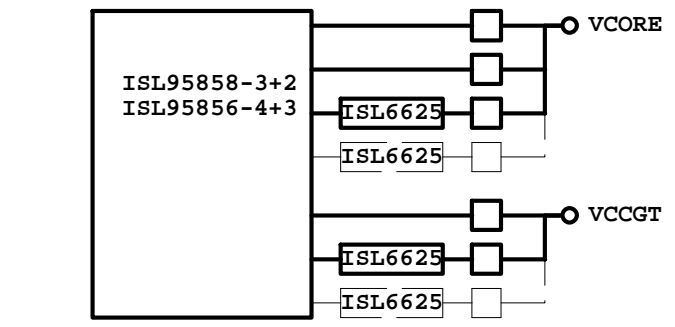
GIGABYTE™

|        |                             |                    |         |       |
|--------|-----------------------------|--------------------|---------|-------|
| Title  |                             |                    | EMI/ESD |       |
| Size   | Document Number             | GA-H110M-S2PV DDR3 |         | Rev   |
| Custom |                             |                    |         | 1.01  |
| Date:  | Wednesday, October 07, 2015 | Sheet              | 45      | of 48 |

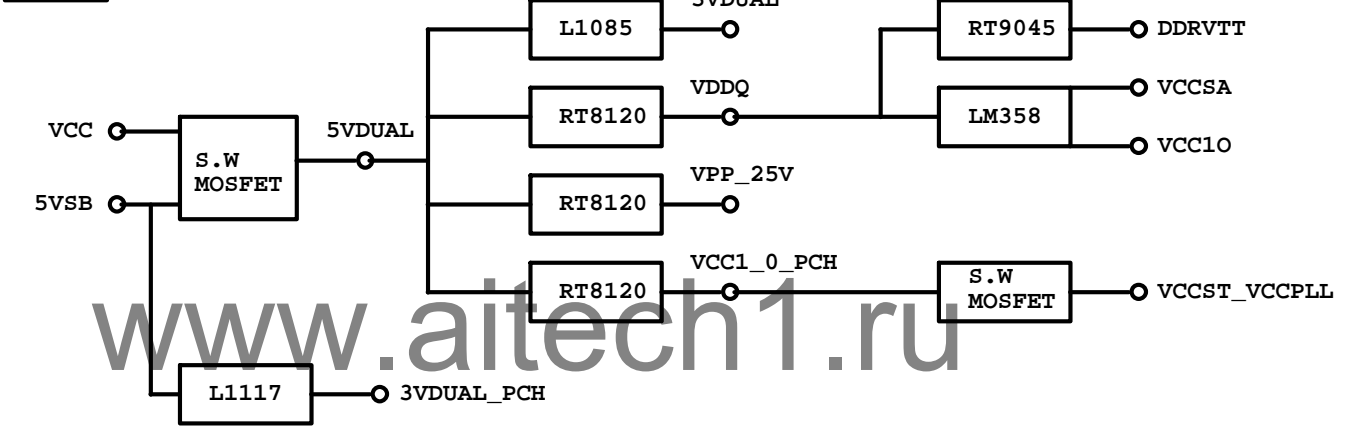
POWER BLOCK MAP



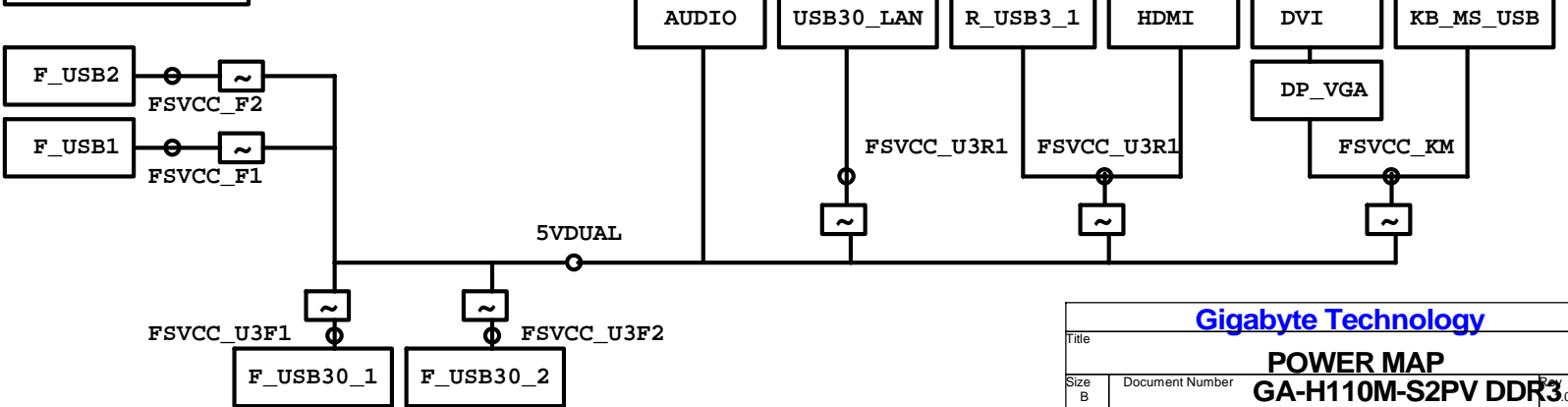
VCORE/VCCGT



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

POWER零件使用表

Size

Custom

Document Number

GA-H110M-S2PV DDR3

Rev

1.01

Date:

Wednesday, October 07, 2015

Sheet

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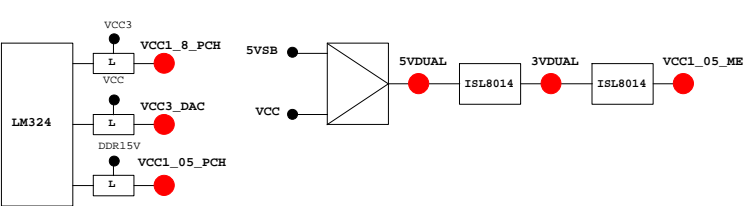
of

48

| PIN            | NAME | PWR | AFTER<br>S4728 | Default            | USAGE | NOTE            |
|----------------|------|-----|----------------|--------------------|-------|-----------------|
| GP0            | MAIN | H-Z | GPI            | GPIO0              |       | N/A             |
| GP1/TACH1      | MAIN |     | GPI            | GPIO1              |       | N/A             |
| GP2/PIRQE#     | MAIN |     | GPI            | -PIRQE             |       | P/U 8.2K VCC3   |
| GP3/PIRQF#     | MAIN |     | GPI            | -PIRQF             |       | P/U 8.2K VCC3   |
| GP4/PIRQG#     | MAIN |     | GPI            | -PIRQG             |       | P/U 8.2K VCC3   |
| GP5/PIRQH#     | MAIN |     | GPI            | -PIRQH             |       | P/U 8.2K VCC3   |
| GP6/TACH2      | MAIN |     | GPI            | PCIEX1 Detect      |       | P/U 8.2K VCC3   |
| GP7/TACH3      | MAIN |     | GPI            | GPIO7              |       | P/U 8.2K VCC3   |
| GP8            | STBY | H   | GPI            | GPIO8              |       | N/A             |
| GP9/OC5#       | STBY |     | NATIVE         | USB OC5#           |       | N/A             |
| GP10/OC6#      | STBY |     | NATIVE         | USB OC6#           |       | N/A             |
| GP11/SMBALERT# | STBY |     | NATIVE         | USB PWR protect    |       | P/U 8.2K 3VDUAL |
| GP12           | STBY | L   | GPI            | GPIO12             |       | N/A             |
| GP13           | STBY | L   | GPI            | LPCPM#             |       | P/U 8.2K 3VDUAL |
| GP14/OC7#      | STBY |     | NATIVE         | USB OC7#           |       | N/A             |
| GP15           | STBY | L   | GPI            | GPIO15(TLS Enable) |       | P/U 8.2K 3VDUAL |
| GP16           | MAIN |     | GPI            | GPIO16             |       | P/U 8.2K VCC3   |
| GP17/TACH0     | MAIN |     | GPI            | GPIO17             |       | P/U 8.2K VCC3   |
| GP18           | MAIN |     | GPI            | Mobile Only        |       | N/A             |
| GP19           | MAIN |     | GPI            | GPIO19             |       | P/U 8.2K VCC3   |
| GP20           | MAIN |     | GPI            | GPIO20             |       | P/U 8.2K VCC3   |
| GP21           | MAIN |     | GPI            | GPIO21             |       | P/U 8.2K VCC3   |
| GP22           | MAIN | H-Z | GPI            | GPIO22             |       | P/U 8.2K VCC3   |
| GP23           | MAIN |     | GPI            | GPIO23             |       | N/A             |
| GP24           | STBY | L   | GPI            | SKTOCC#            |       | N/A             |
| GP25           | STBY |     |                | Mobile Only        |       | N/A             |
| GP26           | STBY |     |                | Mobile Only        |       | N/A             |
| GP27           | STBY | H   | GPO            | GPIO27             |       | P/U 8.2K 3VDUAL |
| GP28           | STBY | H   | GPO            | PWR LED            |       | P/U 8.2K 3VDUAL |
| GP29           | STBY | L   | GPI            | GPIO29             |       | N/A             |
| GP30           | STBY | H-Z | GPI            | Mobile Only        |       | N/A             |
| GP31           | STBY | H-Z | GPI            | Mobile Only        |       | N/A             |
| GP32           | MAIN | H   | GPO            | N/A                |       | N/A             |
| GP33           | MAIN | H   | GPO            | N/A                |       | N/A             |
| GP34           | MAIN | H-Z | GPI            | -PCI_STOP          |       | P/U 8.2K VCC3   |
| GP35           | MAIN | L   | GPO            | -ACZ_DET           |       | P/U 8.2K VCC3   |
| GP36           | MAIN |     | GPI            | N/A                |       | N/A             |
| GP37           | MAIN |     | GPI            | N/A                |       | N/A             |
| GP38           | MAIN | H-Z | GPI            | PCIEX4 Detect      |       | P/U 8.2K VCC3   |
| GP39           | MAIN | H-Z | GPI            | GPIO39             |       | P/U 8.2K VCC3   |
| GP40           | STBY |     | NATIVE         | USB OC1#           |       | N/A             |
| GP41           | STBY |     | NATIVE         | USB OC2#           |       | N/A             |
| GP42           | STBY |     | NATIVE         | USB OC3#           |       | N/A             |
| GP43           | STBY |     | NATIVE         | USB OC4#           |       | N/A             |
| GP44           | STBY | L   | NATIVE         | GPIO44             |       | P/U 8.2K 3VDUAL |
| GP45           | STBY |     | NATIVE         | GPIO45             |       | P/U 8.2K 3VDUAL |
| GP46           | STBY | L   | NATIVE         | GPIO46             |       | P/U 8.2K 3VDUAL |
| GP47           | STBY |     |                | Mobile Only        |       | N/A             |
| GP48           | MAIN | H-Z | IN             | GPIO48             |       | P/U 8.2K 3VDUAL |
| GP49           | MAIN | H-Z | IN             | GPIO49             |       | P/U 8.2K 3VDUAL |
| GP50           | MAIN |     | NATIVE         | -REQ1              |       | P/U 2.2K VCC    |
| GP51           | MAIN | H   | NATIVE         | -GNT1              |       | N/A             |
| GP52           | MAIN |     | NATIVE         | -REQ2              |       | P/U 2.2K VCC    |
| GP53           | MAIN | H   | NATIVE         | -GNT2              |       | N/A             |
| GP54           | MAIN |     | NATIVE         | -REQ3              |       | P/U 2.2K VCC    |
| GP55           | MAIN | H   | NATIVE         | -GNT3              |       | N/A             |
| GP56           | STBY |     | NATIVE         | Mobile Only        |       | N/A             |
| GP57           | STBY | H-Z | IN             | VCORE_OV1          |       | P/U 8.2K 3VDUAL |
| GP58           | STBY | H-Z | NATIVE         | F_USB_OC           |       | P/U 8.2K 3VDUAL |
| GP59           | STBY |     | NATIVE         | USB_OC0#           |       | N/A             |
| GP60           | STBY | H-Z | NATIVE         | N/A(Reverse)       |       | P/U 8.2K 3VDUAL |
| GP61           | STBY | L   | NATIVE         | -SUSTAT            |       | N/A             |
| GP62           | STBY | L   | NATIVE         | SUSCLK             |       | N/A             |
| GP63           | STBY | L   | NATIVE         | GPIO63             |       | N/A             |
| GP64           | MAIN | L   | NATIVE         | CLKOUTFLEX0        |       | N/A             |
| GP65           | MAIN | L   | NATIVE         | CLKOUTFLEX1        |       | N/A             |
| GP66           | MAIN | L   | NATIVE         | CLKOUTFLEX2        |       | N/A             |
| GP67           | MAIN | L   | NATIVE         | CLKOUTFLEX3        |       | N/A             |
| GP72           | STBY | H-Z | NATIVE         | VCORE_OV4          |       | P/U 8.2K 3VDUAL |
| GP73           | STBY |     |                | Mobile Only        |       | N/A             |
| GP74           | STBY | H-Z | NATIVE         | 1_05V_OV2          |       | P/U 8.2K 3VDUAL |
| GP75           | STBY | H-Z | NATIVE         | N/A(Reverse)       |       | P/U 8.2K 3VDUAL |

| PIN NAME                   | USAGE            | NOTE |
|----------------------------|------------------|------|
| SVC/PECI_RQT/GP14          | -PECI_REQ        |      |
| PWROK1/GP13                | PWROK1/ITE_PWROK |      |
| KRST#/GP62                 | -KBRST           |      |
| SO/GP50                    | -ICH_SPI_CS      |      |
| IRTX/GP47/CE2_N/JP7        | CEB_N            |      |
| GP46/IRRX                  | -LAN2_DSM        |      |
| PSION#/GP42                | -PSON            |      |
| PWROK2#/GP41               | PECI_CTL         |      |
| PCIRST3#/GP10/VDIMM_STR_EN | -PCIE_RST        |      |
| RSMRST#CIRRXL1/GP55        | -RSMRST          |      |
| PME#/GP54                  | -LPCPME          |      |
| PD5/GP75/BUSS00            | N/A              |      |

| PIN NAME                   | USAGE             | NOTE             |
|----------------------------|-------------------|------------------|
| FAN_TAC2/GP52              | FANIO2            |                  |
| FAN_TAC3/GP37              | FANIO3            |                  |
| VIDO3/FAN_TAC4/GP25/DSR2#  | FANIO4            |                  |
| FAN_CTL2/GP51              | FANPWM2           |                  |
| FAN_CTL3/GP36              | FANPWM3           |                  |
| VID4/GP34                  | BEEP-             |                  |
| VID3/GP33                  | TURBO1            |                  |
| VID2/GP32                  | TURBO0            |                  |
| VCORE_GOOD/VID6/GP63       | CPUT_LED1_C       |                  |
| VID5/GP35                  | CPUT_LED2_C       |                  |
| VID1/GP31                  | CPUT_LED3_C       |                  |
| VID0/GP30                  | -LAN1_DSM         | NBT_LED1_C       |
| SLCT/GP80                  | CPU_LED1_C        |                  |
| PE/GP81                    | CPU_LED2_C        |                  |
| BUSY/GP82                  | CPU_LED3_C        |                  |
| PD3/GP73/BUSSI1            | SB_LED1_C         |                  |
| PD4/GP74/BUSSI2            | SB_LED2_C         |                  |
| VCORE_EN/VID7/GP64         | IT_GP64           | SB_LED3_C        |
| PD0/GP70                   | NB_LED1_C         |                  |
| PD1/GP71                   | NB_LED2_C         |                  |
| PD2/GP72/BUSSI0            | NB_LED3_C         |                  |
| GP22/SCK                   | LOW_PWR_1         |                  |
| VIDO5/GP27/SIN2            | LOW_PWR_2         |                  |
| PCIRST2#/GP11              | -PFMRST1          |                  |
| PCIRST1#/GP12              | -PFMRST2          |                  |
| 3VSBSW#/GP40               | CSI_F0            | BSEL166_1        |
| SUSC#/GP53                 | CSI_F1            | BSEL166_2        |
| GP23/SI                    | BSEL166_3/CSISBSL |                  |
| VIDO0/GP20/CTS2#           | CPUT_LED1_C       | BSEL166_4        |
| GP65/VDDA_EN/GB_01         | MB_ID2            |                  |
| PD6/GP76/BUSSO1            | MB_ID3            |                  |
| PD7/GP77/BUSSO2            | MB_ID4            |                  |
| AFD#/GP86/SMBC_R           | 2x PIN            | FST_2x8          |
| INIT#/GP85/SMBD_M          | SEC_2x8           | GTLREF_AD2       |
| ACK#/GP83                  | DDR_LED1_C        |                  |
| VIDO1/GP21/DCD2#           | DDR_LED2_C        |                  |
| STB#/GP87/SMBC_M           | DDR_LED3_C        |                  |
| PWRON#GP44                 | VCORE_OV1         |                  |
| PANSWH#/GP43               | PWRBTW            |                  |
| KDAT/GP61                  | -PWRBTW           |                  |
| KCLK/GP60                  | KDAT              |                  |
| MDAT/GP57                  | KCLK              |                  |
| MACL/GP56                  | MDAT              |                  |
| GP66/VLDT_EN/GB_02         | NBT_LED1_C        | MCLK             |
| SVD/PCIRSTIN#/CIRTX/GP15   | PWM2_CR           |                  |
| KDAT/GP61                  | PWM2_CR           |                  |
| GP67/CPU_PG/GB_03          | EN_LOADLINE       | IT_GP67/-EN_PWM2 |
| SLIN#/GP84/SMBD_R          | -EN_PWM2          |                  |
| PS1_L/FAN_CLT5/CIRRX2/GP16 | -THERM            |                  |
| VIDO4/GP26/SOUT2           | DDR18V_PH2_EN     |                  |
| VIDO2/FAN_TAC5/GP24/DSR2#  | DDR18V_LED        |                  |
| VIDO6/GP17/RI2#            | 1_1V_PH_EN        |                  |
| VIDO7/JP6/DTR2#            | JP6               |                  |
| PD5/GP75/BUSSO0            | SB_LED3_C         |                  |



The diagram illustrates a 2-core system layout. At the top, a dashed box labeled "VCORE" contains two columns of components. The left column, labeled "CPU\_VTT", includes MOSFETs (TQ3, TQ4) and CHOKEs (TL1, TL2). The right column includes DC components (DC\_DQ1, DC\_DQ2, DC\_DQ3, DC\_DL1, DC\_DL2) and DG components (DG\_DQ1, DG\_DQ2, DG\_DQ3, DG\_DL1, DG\_DL2). Below this, a large rectangle represents the "CPU SOCKET". To the left of the socket is the "PCH" (Peripheral Component Intercontroller Hub). To the right, another dashed box labeled "VCORE" contains VAXG components (VZ\_DQ1, VZ\_DQ2, VZ\_DQ3, VZ\_DQ4) and P-PAK components (PZ\_DQ1, PZ\_DQ2, PZ\_DQ3, PZ\_DQ4). The layout is symmetrical, with components mirrored across the central CPU SOCKET.

**散熱模組料號:**

| 線路圖名稱               | BIOS選項           |
|---------------------|------------------|
| Vcore               | CPU Vcore        |
| CPU_VTT             | CPU Termination  |
| CPU_VAXG            | CPU Graphic Core |
| VCC1_8_PCH          | CPU PLL          |
| VCC1_05_PCH         | PCH core         |
| 3VDUAL              | 3VDUAL           |
| DDR15V              | DRAM voltage     |
| DDRVTT              | DRAM Termination |
| VREF_CA_A/VREF_CA_B | DRAM Address Ref |
| VREF_DQ_A/VREF_DQ_B | DRAM Data Ref    |

Z77-D3H :  
PCH :  
12SP2-S05511-01R/02R/03R  
MOSFET :  
12SP2-S08924-01R/02R/03R

|         | 3 pin FAN control | 4 pin FAN control | FAN speed     | Controller |
|---------|-------------------|-------------------|---------------|------------|
| CPU FAN | FANPWM1           | FANPWM3           | FANIO1        | IT8720     |
|         | ICH_FAN_PWM2      | ICH_FAN_PWM0      | ICH_FAN_TACH0 | PCH        |
| SYS FAN | FANPWM2           | N/A               | FANIO2        | IT8720     |
|         | ICH_FAN_PWM1      | N/A               | ICH_FAN_TACH1 | PCH        |
| PWR FAN | N/A               | N/A               | FANIO3        | IT8720     |
|         |                   |                   | ICH_FAN_TACH2 | PCH        |