

Model Name: GA-H81M-S2PV

Revision 2.0

SHEET

TITLE

|    |                                 |
|----|---------------------------------|
| 01 | COVER SHEET                     |
| 02 | BOM & PCB MODIFY HISTORY        |
| 03 | BLOCK DIAGRAM                   |
| 04 | CPU LGA1150-A                   |
| 05 | CPU LGA1150-B                   |
| 06 | CPU LGA1150-C                   |
| 07 | DDR III CHANNEL A               |
| 08 | DDR III CHANNEL B               |
| 09 | PCH FDI ,DMI ,USB ,PCIE ,NVRAM  |
| 10 | PCH DP ,CLK BUFFER              |
| 11 | PCH HOST ,SATA ,PCI             |
| 12 | PCH GPIO ,CTRL ,AUDIO           |
| 13 | PCH PWR ,GND                    |
| 14 | PCI EXPRESS*16 SLOT             |
| 15 | PCI EXPRESS X1 SLOT             |
| 16 | PCI SLOT 1,2                    |
| 17 | ITE 8620 LPC IO                 |
| 18 | COM ,LPT ,KB MS                 |
| 19 | HWM ,FAN CTRL ,OV , -PROCHOT    |
| 20 | DUAL BIOS                       |
| 21 | R USB30 ,FP ,FUSB ,SPK ,SATALED |
| 22 | Realtek ALC887-VD2              |
| 23 | REAR AUDIO JACK                 |
| 24 | REALTEK RTL8111F                |
| 25 | DISCRETE POWER                  |
| 26 | ATX                             |
| 27 | VCORE ISL95812 1                |

SHEET

TITLE

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| 28 | VCORE ISL95812 2 |
| 29 | RT8120 DDR POWER |
| 31 | DVI              |
| 32 | IT8892E          |

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Gigabyte Technology

|                                 |                              |         |
|---------------------------------|------------------------------|---------|
| Cover Sheet                     |                              |         |
| Size Custom                     | Document Number GA-H81M-S2PV | Rev 2.0 |
| Date: Wednesday, April 09, 2014 | Sheet 1                      | of 31   |

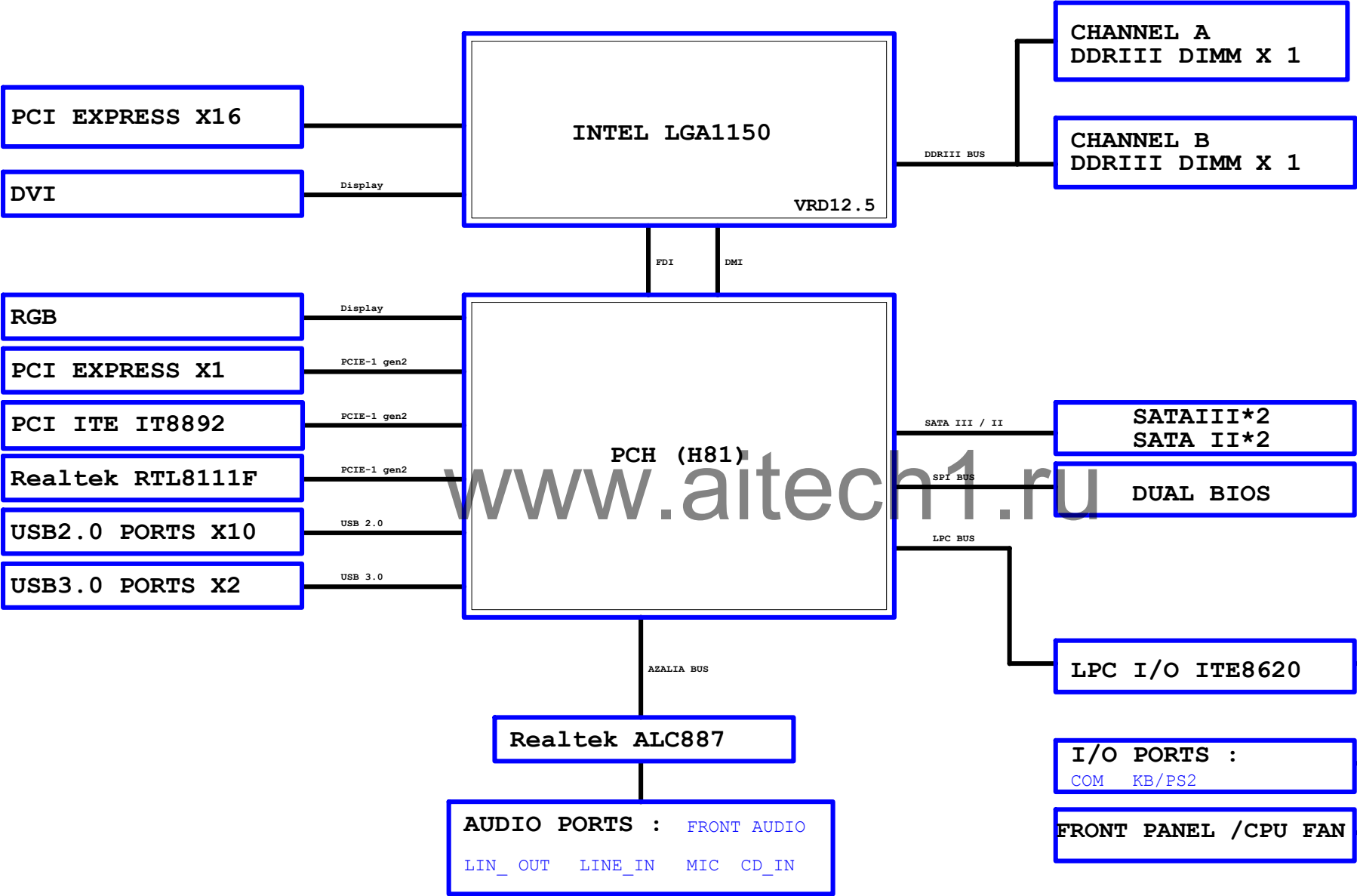
Revision 2.0

## Component value change history

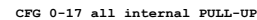
| Data       | Change Item                                    | Reason                          |
|------------|--|---------------------------------|
| 2013/06/24 | Update Rev to 1.0                              | FBOM: 9MH81MS2V-00-10A          |
| 2013/06/28 | Update Rev to 1.01                             | FBOM: 9MH81MS2V-00-10B          |
|            | ADD RSMRST DELAY                               |                                 |
|            | ADD 5VSB Protection                            |                                 |
| 2013/07/03 | Remove Super I/O OVP/UVF Function              | FBOM: 9MH81MS2V-00-10C          |
| 2013/07/11 | 導入5VSB OVP Protection                          | FBOM: 9MH81MS2V-00-10D          |
|            | DEL R704: 8.2K/4                               |                                 |
|            | ADD R706: 8.2K/4                               |                                 |
|            | R705: 715/4/1 -> 825/4/1                       |                                 |
|            | AUDIO AZ2225-01L CD1移除                         |                                 |
| 2013/08/19 | REMOVE WR57 FIX IT8620 TEMP ISSUE              | FPBOM: 9MH81MS2V-00-10E         |
| 2013/09/13 | Update to R1.02                                | www.2                           |
|            | Follow Crystal Trace Rule                      |                                 |
|            | SYS_FAN, DDR 0ohm 0402 -> 0603                 |                                 |
|            | Update Fuse 1206 Footprint "POLYSWITCH-1206-1" |                                 |
|            | Update PPAK Footprint "Q_TDSON8-GDS-T"         |                                 |
| 2013/10/22 | NX1: 25M/20p -> 12p                            | FPBOM: 9MH81MS2V-00-10F         |
|            | NC7, NX8: 27p -> 10p                           |                                 |
| 2013/11/04 | NC7, NX8: 10p -> 15p                           | FPBOM: 9MH81MS2V-00-10H         |
| 2013/11/19 | R1.03  | FPBOM: 9MH81MS2V-00-10G (R1.03) |
|            | FIX Crystal 2G phone issue                     |                                 |
| 2013/11/27 | MR17 0ohm -> 0603 FUSE(10FP5-06100B-00R)       | FPBOM: 9MH81MS2V-00-10I (R1.03) |
| 2014/02/17 | Sales Costdown Rev                             |                                 |
|            | CPU Power ISL95812 1U2D -> ISL95812 1U1D       |                                 |
|            | DVI Non-Level Shift                            |                                 |
|            | BIOS Size 64M -> 32M                           |                                 |
|            | 0ohm -> Short Pad                              |                                 |
| 2014/02/25 | 整合電阻成排阻  |                                 |
| 2014/04/02 | ADD NC60, NC61                                 | FPBOM: 9MH81MS2V-00-20A         |
|            | DEL OR47, OC27, RS2                            |                                 |
|            |  |                                 |

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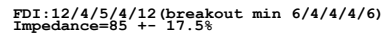
BLOCK DIAGRAM



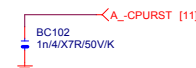
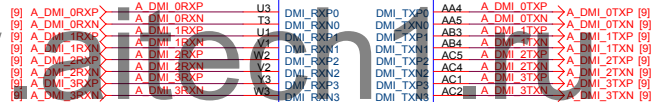
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| CPU | PU/PD |
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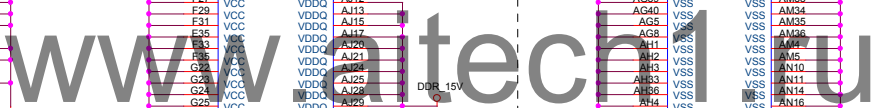


## Gigabyte Technology

|               |                           |       |         |
|---------------|---------------------------|-------|---------|
| Title         |                           |       |         |
| CPU LGA1150-A |                           |       |         |
| Size          | Document Number           |       | Rev     |
| Custom        | GA-H81M-S2PV              |       | 2.0     |
| Date:         | Wednesday, April 09, 2014 | Sheet | 4 of 31 |

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| LGA1150A |      |           |           |
| MAAA0    | AU13 | DDR0_MA0  | DDR0_D00  |
| MAAA1    | AV16 | DDR0_MA1  | DDR0_D01  |
| MAAA2    | AU16 | DDR0_MA2  | DDR0_D02  |
| MAAA3    | AW17 | DDR0_MA3  | DDR0_D03  |
| MAAA4    | AU17 | DDR0_MA4  | DDR0_D04  |
| MAAA5    | AW18 | DDR0_MA5  | DDR0_D05  |
| MAAA6    | AW17 | DDR0_MA6  | DDR0_D06  |
| MAAA7    | AT18 | DDR0_MA7  | DDR0_D07  |
| MAAA8    | AU18 | DDR0_MA8  | DDR0_D08  |
| MAAA9    | AT19 | DDR0_MA9  | DDR0_D09  |
| MAAA10   | AW11 | DDR0_MA10 | DDR0_D10  |
| MAAA11   | AV19 | DDR0_MA11 | DDR0_D11  |
| MAAA12   | AU19 | DDR0_MA12 | DDR0_D12  |
| MAAA13   | AY10 | DDR0_MA13 | DDR0_D13  |
| MAAA14   | AT20 | DDR0_MA14 | DDR0_D14  |
| MAAA15   | AU21 | DDR0_MA15 | DDR0_D15  |
| MODT_A0  | AW10 | DDR0_ODT0 | DDR0_D16  |
| MODT_A1  | AY3  | DDR0_ODT1 | DDR0_D17  |
|          | AW9  | DDR0_ODT2 | DDR0_D18  |
|          | AW8  | DDR0_ODT3 | DDR0_D19  |
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|          |      |           | DDR0_D384 |
|          |      |           | DDR0_D385 |
|          |      |           | DDR0_D386 |
|          |      |           | DDR0_D387 |
|          |      |           | DDR0_D388 |
|          |      |           | DDR0_D389 |
|          |      |           | DDR0_D390 |
|          |      |           | DDR0_D391 |
|          |      |           | DDR0_D392 |
|          |      |           | DDR0_D393 |
|          |      |           | DDR0_D394 |
|          |      |           | DDR0_D395 |
|          |      |           | DDR0_D396 |
|          |      |           | DDR0_D397 |
|          |      |           | DDR0_D398 |
|          |      |           | DDR0_D399 |
|          |      |           | DDR0_D400 |
|          |      |           | DDR0_D401 |
|          |      |           | DDR0_D402 |
|          |      |           | DDR0_D403 |
|          |      |           | DDR0_D404 |
|          |      |           | DDR0_D405 |
|          |      |           | DDR0_D406 |
|          |      |           | DDR0_D407 |
|          |      |           | DDR0_D408 |
|          |      |           | DDR0_D409 |
|          |      |           | DDR0_D410 |
|          |      |           | DDR0_D411 |
|          |      |           | DDR0_D412 |
|          |      |           | DDR0_D413 |
|          |      |           | DDR0_D414 |
|          |      |           | DDR0_D415 |
|          |      |           |           |

(F, J)



(G, H, I)



(x12)

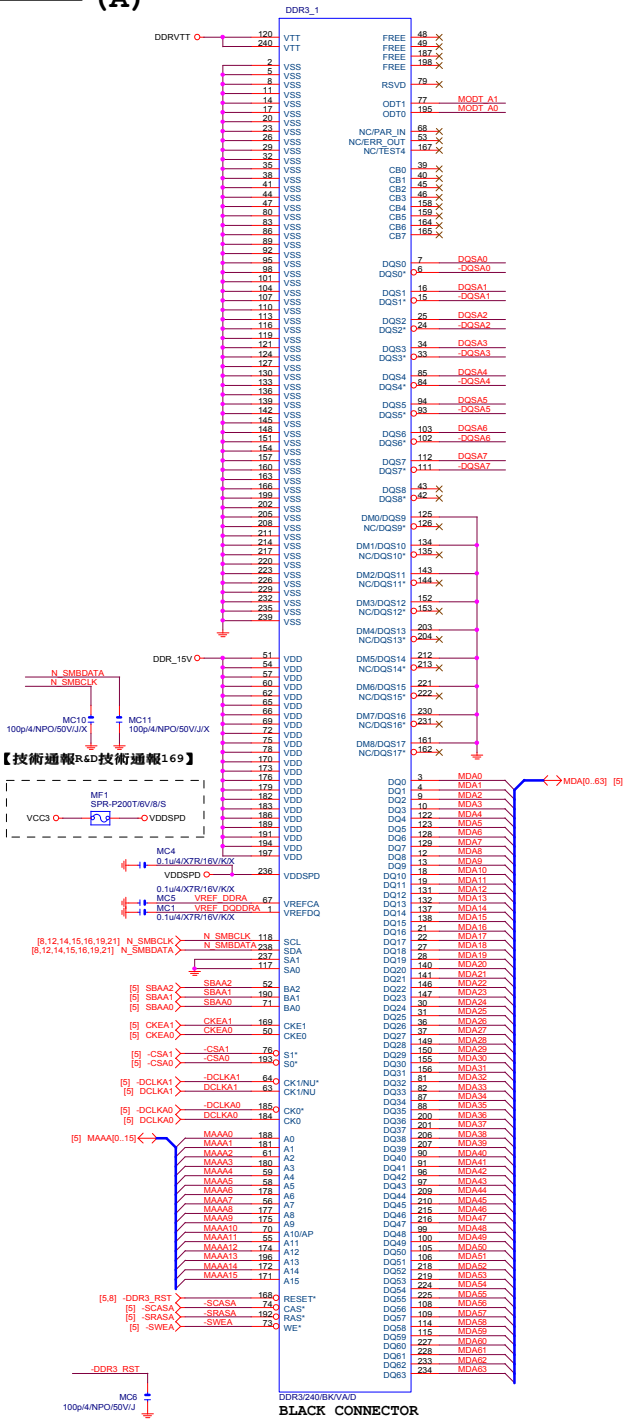


(x0)

Rev  
20

DDR3

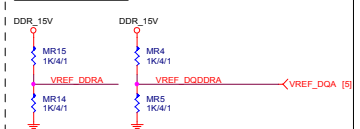
(A)



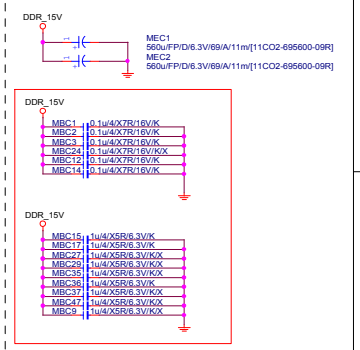
BLACK CONNECTOR



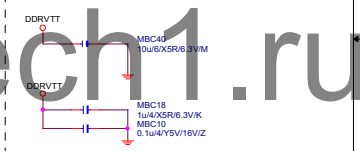
DDR3 VREF

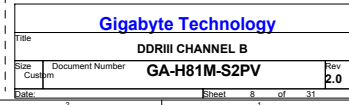


DDR15V Decouple

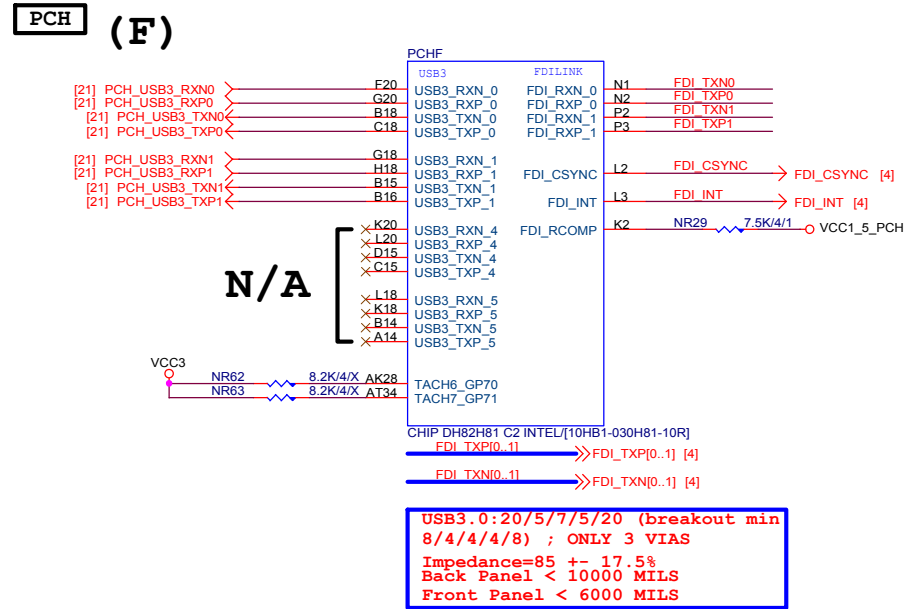
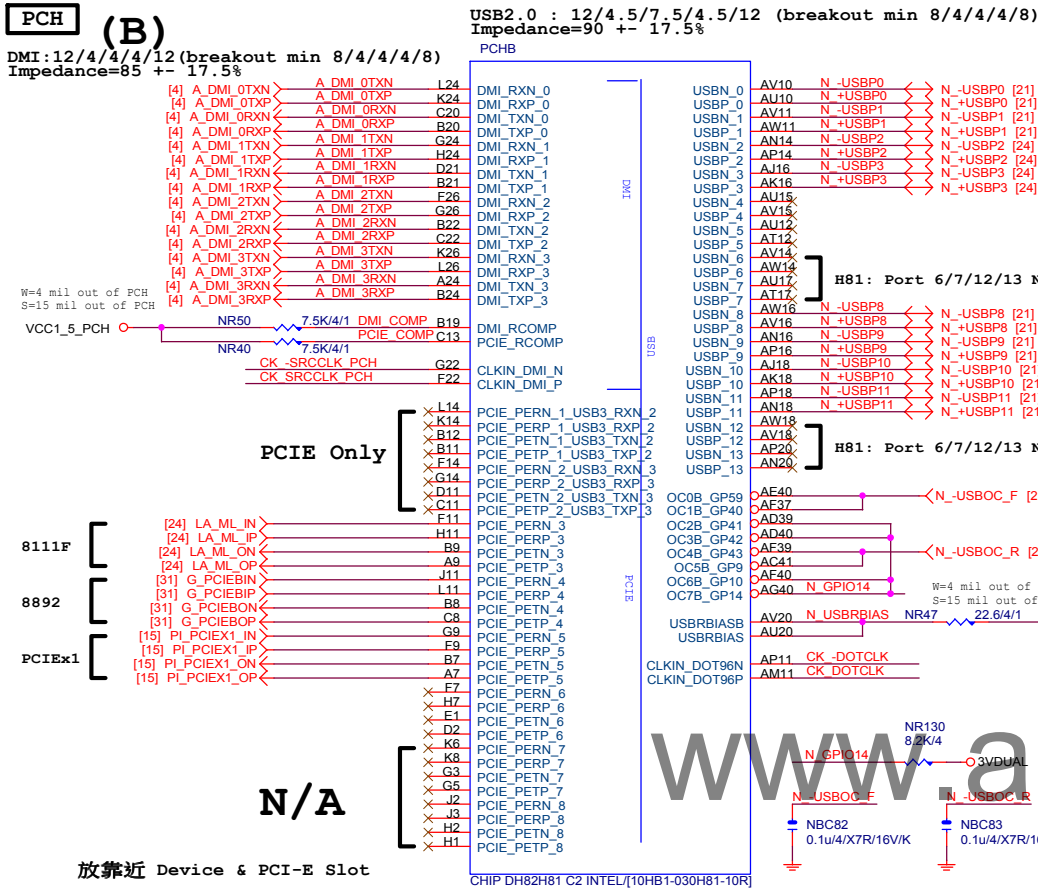


DDRVTT Decouple

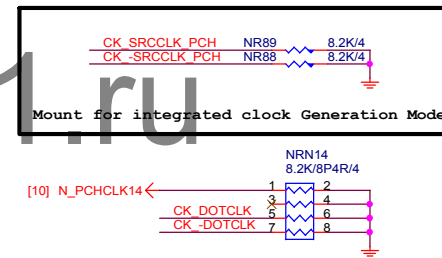




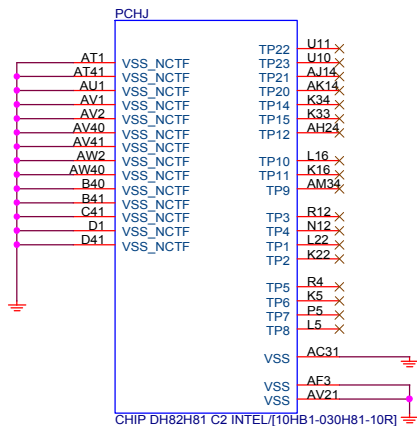




**PCH CLK PD**

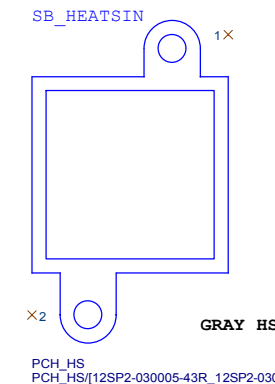


**PCH (J)**



**PCH H/S**

**LOW COST ICH7 HEATSINK**



**USB TABLE**

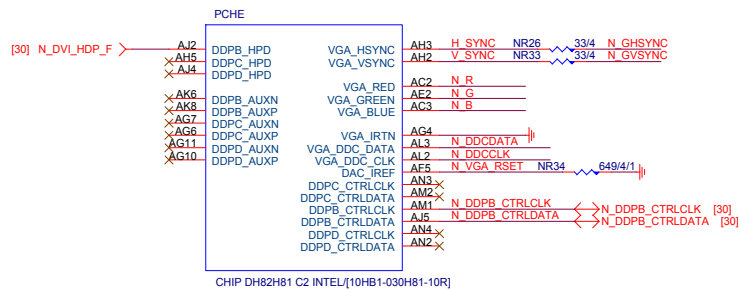
OC[3:0]# for Device 29 (ports 0-7)  
OC[7:4]# for Device 26 (ports 8-13)

| USB OC# | Configure |
|---------|-----------|
| OC0#    | R_USB30   |
| OC1#    | USB_LAN   |
| OC2#    | N/A       |
| OC3#    | N/A       |
| OC4#    | F_USB1    |
| OC5#    | F_USB2    |
| OC6#    | N/A       |
| OC7#    | Not Use   |

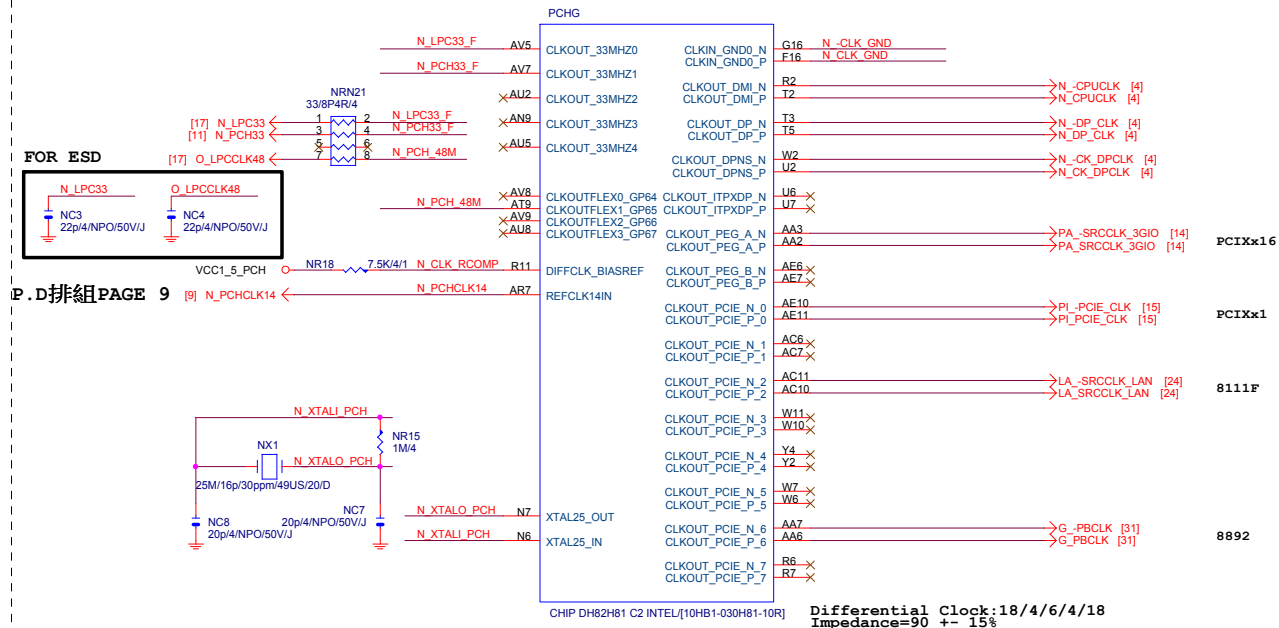
**Gigabyte Technology**

|       |  |  |                            |  |
|-------|--|--|----------------------------|--|
| Title |  |  | PCH FDI,DMI,USB,PCIE,NVRAM |  |
| Size  |  |  | Custom                     |  |
| Date: |  |  | Wednesday, April 09, 2014  |  |
| Sheet |  |  | 9 of 31                    |  |
| Rev   |  |  | 2.0                        |  |

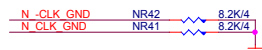
PCH



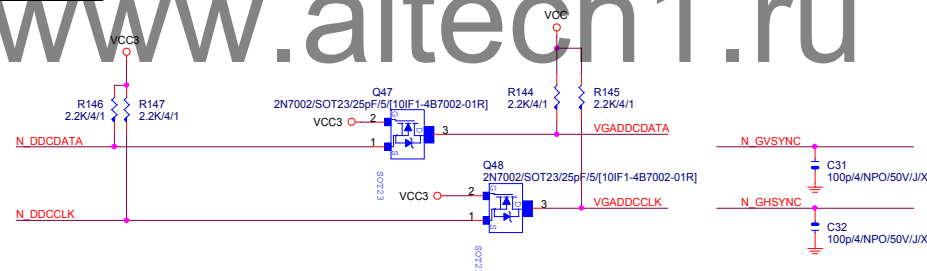
**PCH (G)**



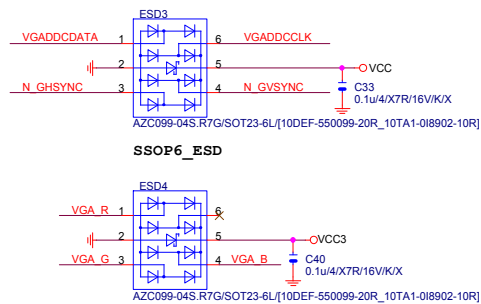
|            |
|------------|
| PCH CLK PD |
|------------|



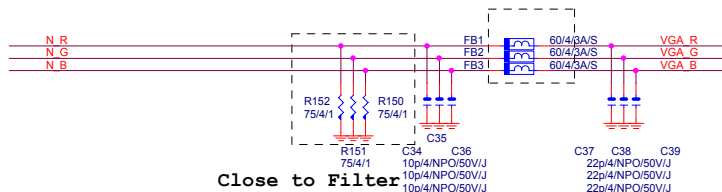
## VGA DDC



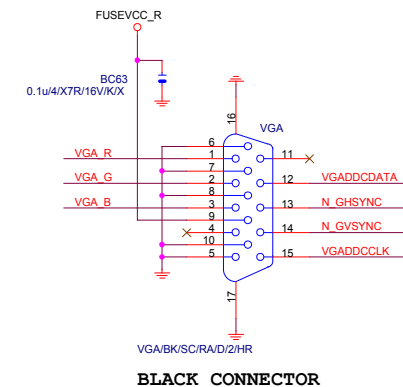
## VGA ESD



## VGA DDC



## VGA CONNECTOR



|                                |                           |       |          |     |
|--------------------------------|---------------------------|-------|----------|-----|
| <b>Gigabyte Technology</b>     |                           |       |          |     |
| Title                          |                           |       |          |     |
| <b>PCH DISPLAY ,CLK BUFFER</b> |                           |       |          |     |
| Size                           | Document Number           |       |          | Rev |
| Custom                         | <b>GA-H81M-S2PV</b>       |       |          | 2.0 |
| Date:                          | Wednesday, April 09, 2014 | Sheet | 10 of 31 |     |

(C)



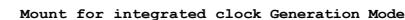
## SATA CONNECTOR



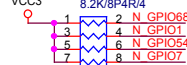
(A)



|     |     |    |
|-----|-----|----|
| PCH | CLK | PD |
|-----|-----|----|



| PCH | PU/PD |
|-----|-------|
|-----|-------|



GPI038 Ctrl

N/A



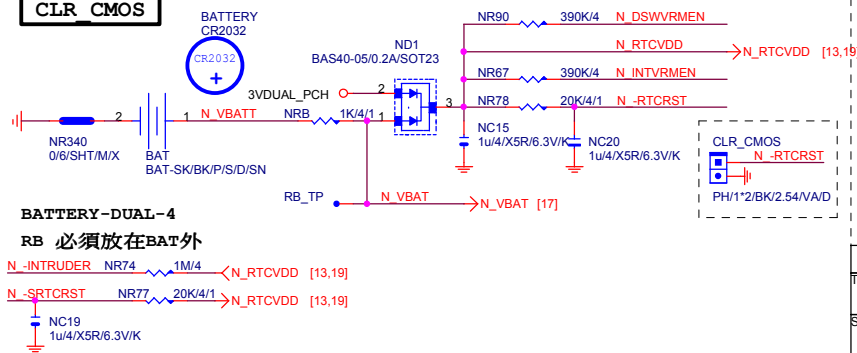
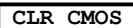
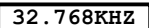
## Gigabyte Technology

|                      |                           |       |          |
|----------------------|---------------------------|-------|----------|
| Title                |                           |       |          |
| PCH HOST , SATA, PCI |                           |       |          |
| Size                 | Document Number           |       | Rev      |
| Custom               | GA-H81M-S2PV              |       | 2.0      |
| Date:                | Wednesday, April 09, 2014 | Sheet | 11 of 31 |

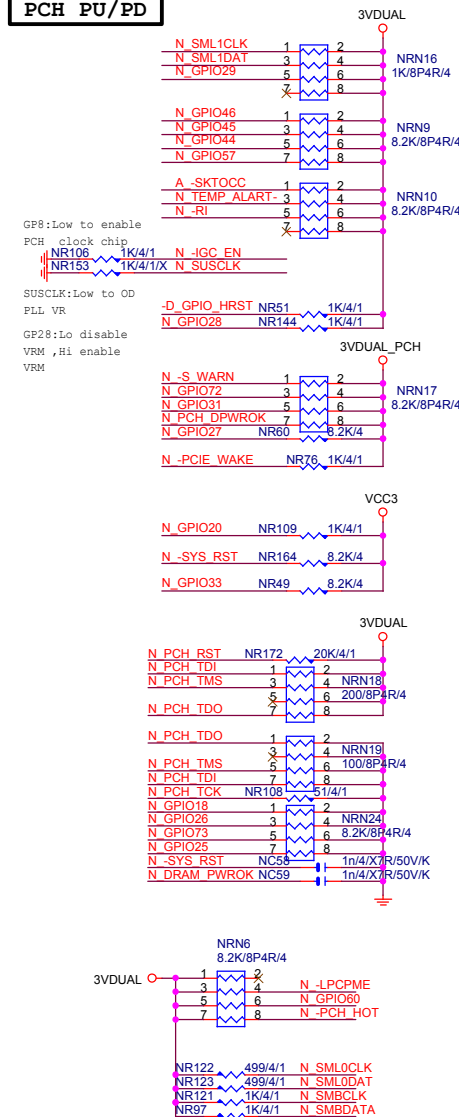
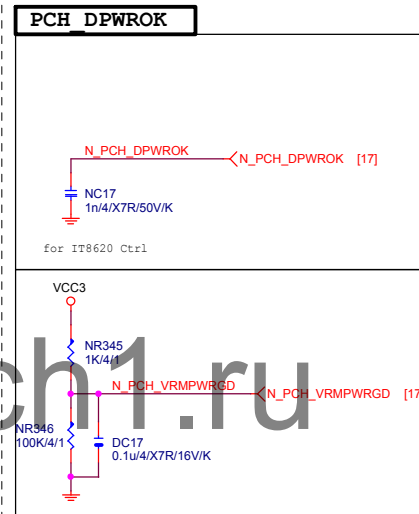
(D)



N/A



## N/A



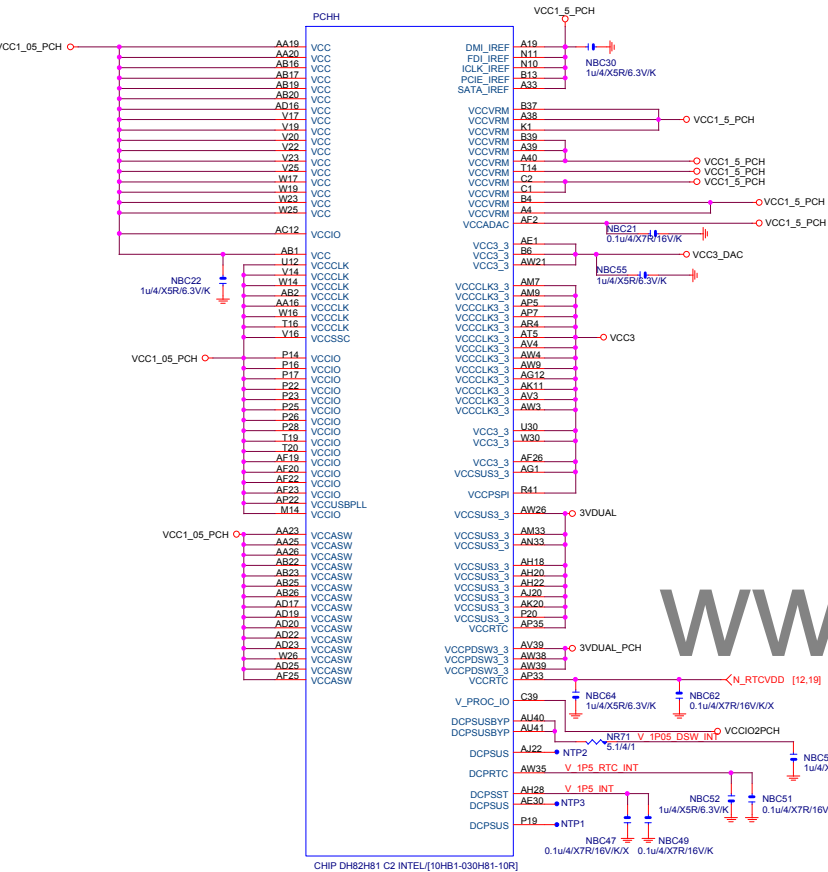
## Gigabyte Technology

## PCH GPIO , CTRL , AUDIO

|        |                     |     |
|--------|---------------------|-----|
| Size   | Document Number     | Rev |
| Custom | <b>GA-H81M-S2PV</b> | 2.0 |

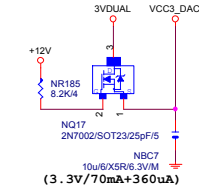
Date: Wednesday, April 02, 2014 Sheet 12 of 31

# PCH (H)

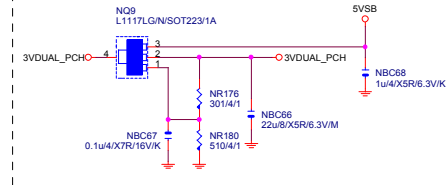


## VCC3\_DAC

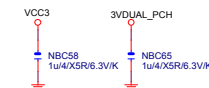
CLOSE北橋 (注意震盪水波紋)



## 3VDUAL\_PCH

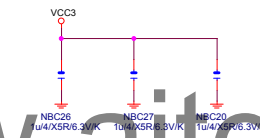


## SHT\_PWR



## CAP

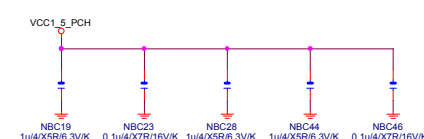
(3.3V) (X6)



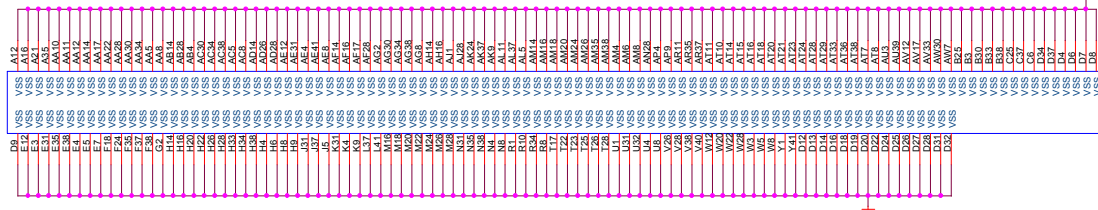
(1.05V)(X2) (3.3V) (X2)



(1.5V) (X5)



# PCH (I)

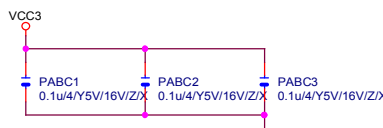


PCH: CHIP DH82H81 C2 INTEL[10HB1-030H81-10R]

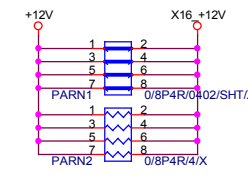
| Gigabyte Technology |                           |              |          |
|---------------------|---------------------------|--------------|----------|
| Title               |                           |              |          |
| PCH_PWR_GND         |                           |              |          |
| Size                | Document Number           | GA-H81M-S2PV |          |
| Custom              |                           | Rev 2.0      |          |
| Date:               | Wednesday, April 09, 2014 | Sheet        | 13 of 31 |

# PCIEX16 CAP

N/A



# PCIEX16 PROTECT SHT



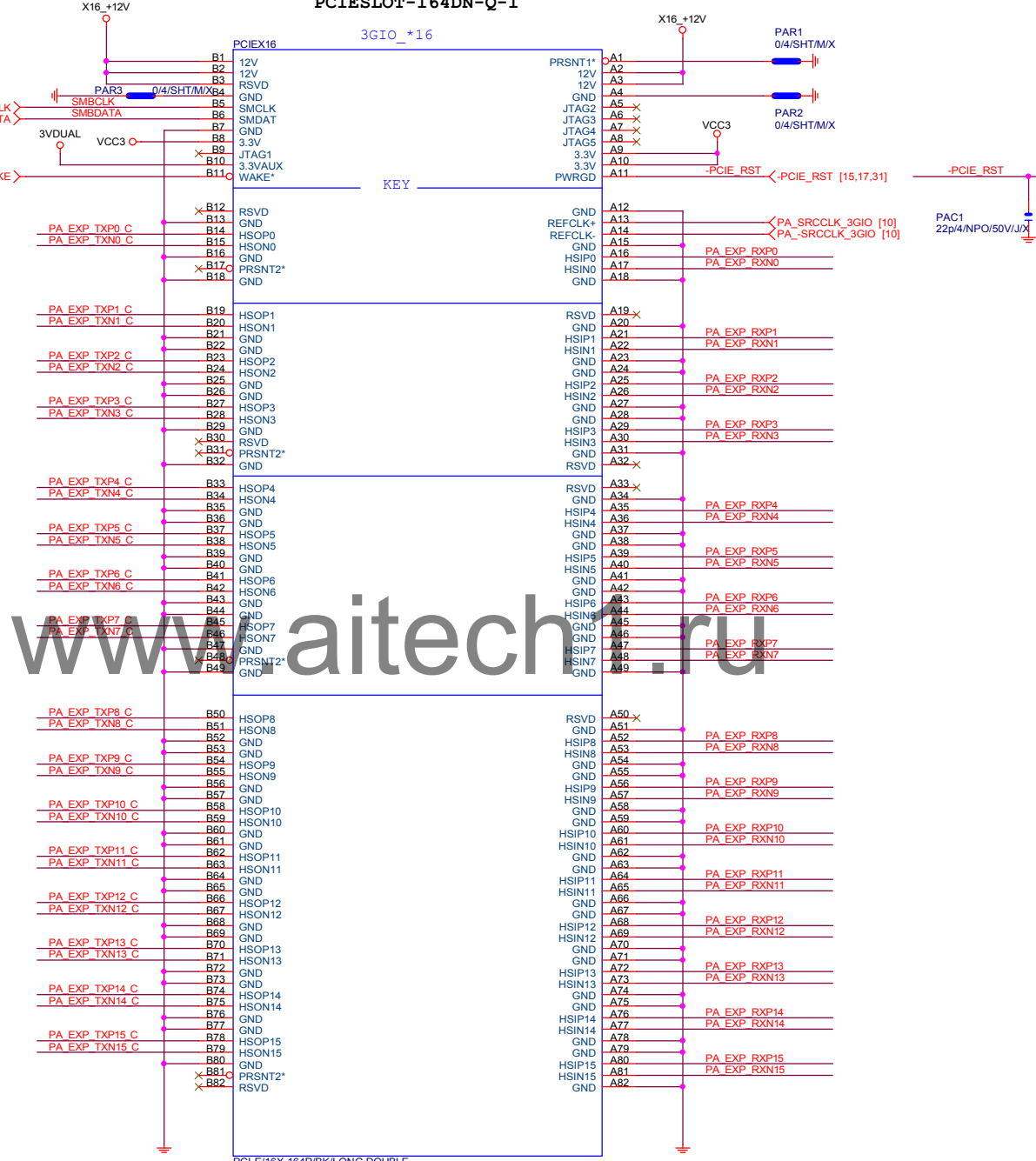
# PCIEX16 AC CAP

|              |       |                  |                |
|--------------|-------|------------------|----------------|
| 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  | PAC20 | 0.22u4/X5R6.3V/K | PA EXP TXP8 C  |
| PA EXP TXN8  | PAC21 | 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 |

PA EXP RXP0 [15] >>> PA\_EXP\_RXP[0..15] [4]  
 PA EXP RXN0 [15] >>> PA\_EXP\_RXN[0..15] [4]  
 PA EXP TXP0 [15] >>> PA\_EXP\_TXP[0..15] [4]  
 PA EXP TXN0 [15] >>> PA\_EXP\_TXN[0..15] [4]

# PCIEX16 SLOT

# PCIESLOT-164DN-Q-1



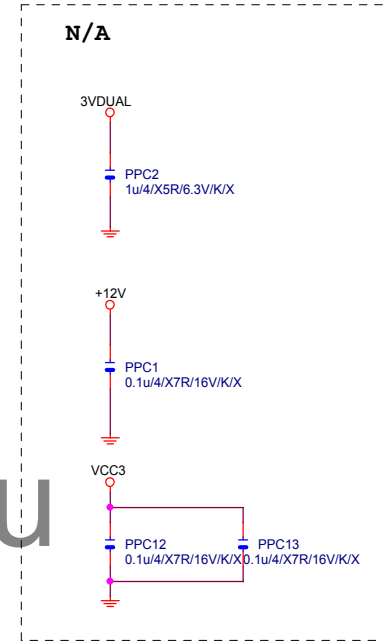
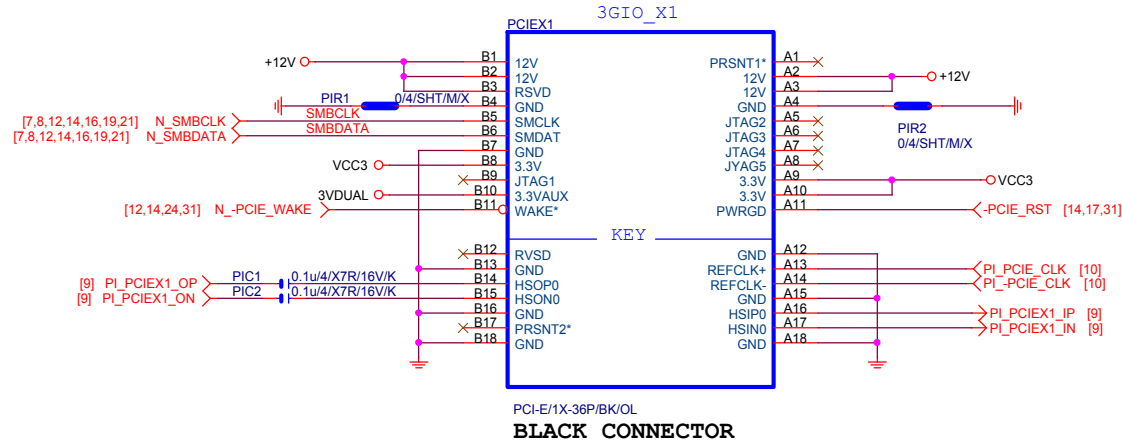
PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

Gigabyte Technology

|        |  |  |                           |                |
|--------|--|--|---------------------------|----------------|
| Title  |  |  | PCI EXPRESS * 16          |                |
| Size   |  |  | GA-H81M-S2PV              |                |
| Custom |  |  | Rev 2.0                   |                |
| Date:  |  |  | Wednesday, April 09, 2014 | Sheet 14 of 31 |

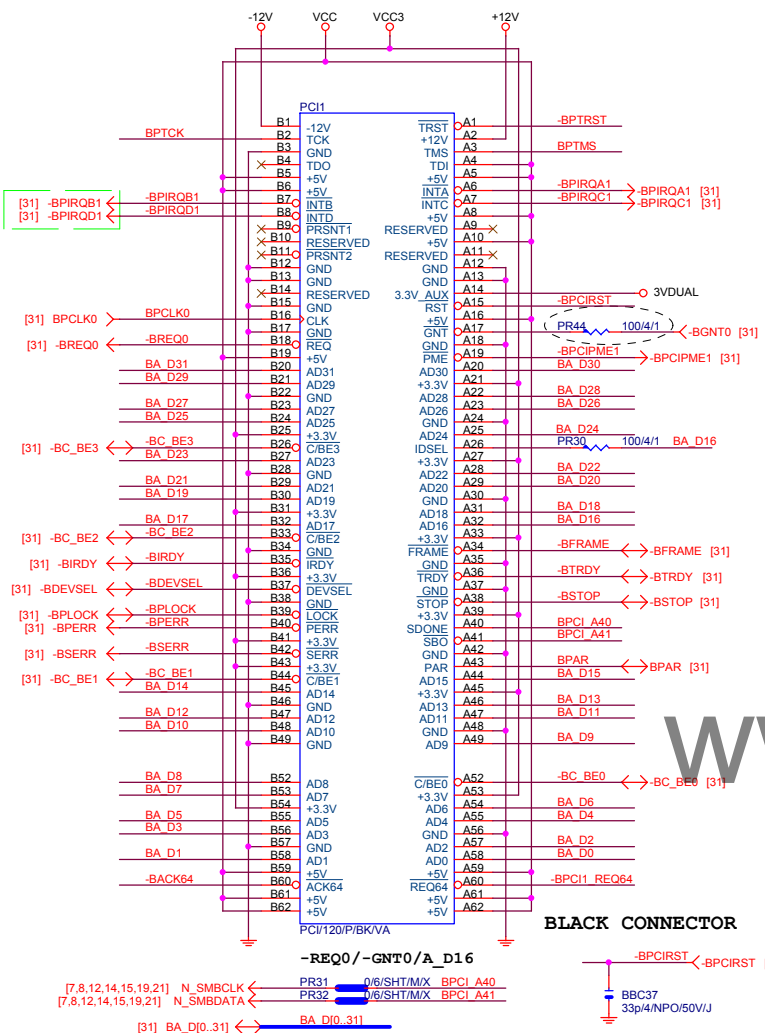
# PCIEX1 SLOT



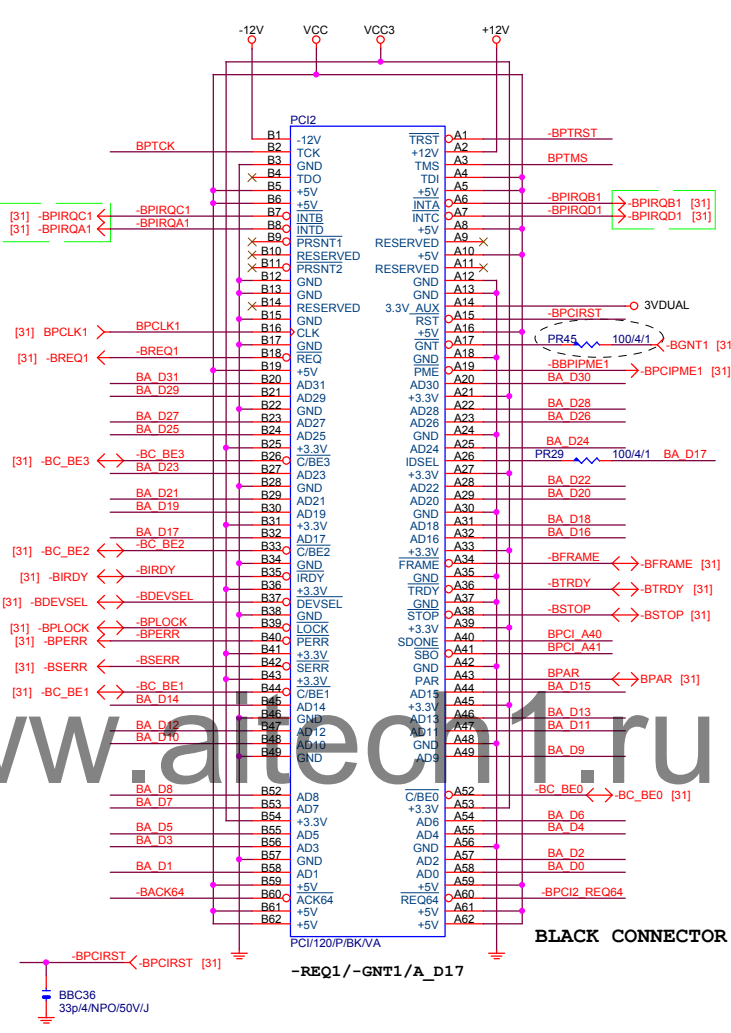
| Gigabyte Technology  |                           |       |          |
|----------------------|---------------------------|-------|----------|
| Title                |                           |       |          |
| PCI EXPRESS X 1 PORT |                           |       |          |
| Size                 | Document Number           | Rev   |          |
| Custom               | GA-H81M-S2PV              | 2.0   |          |
| Date:                | Wednesday, April 09, 2014 | Sheet | 15 of 31 |



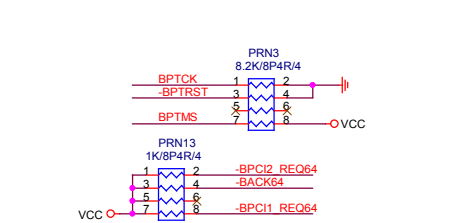
# PCI SLOT 1



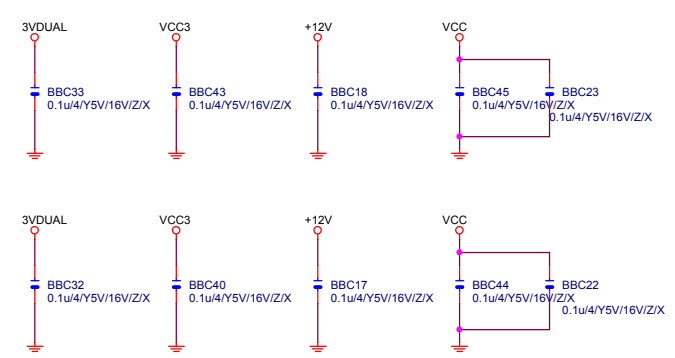
# PCI SLOT 2



# PCI PU



# PCI CAP N/A

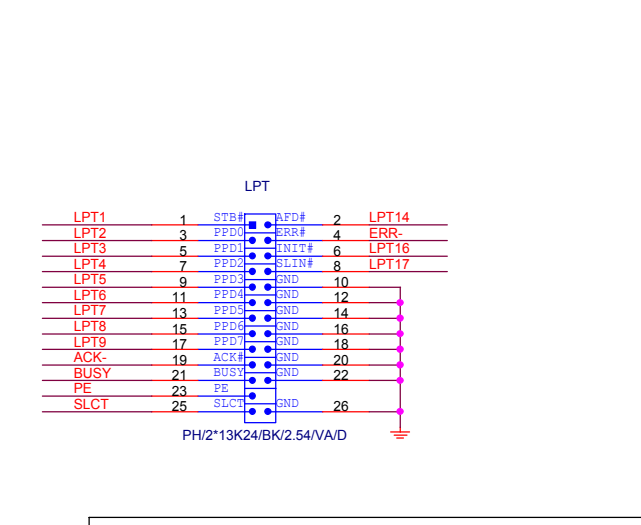
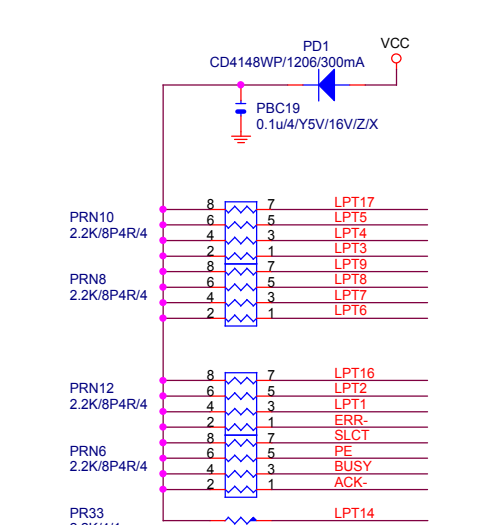
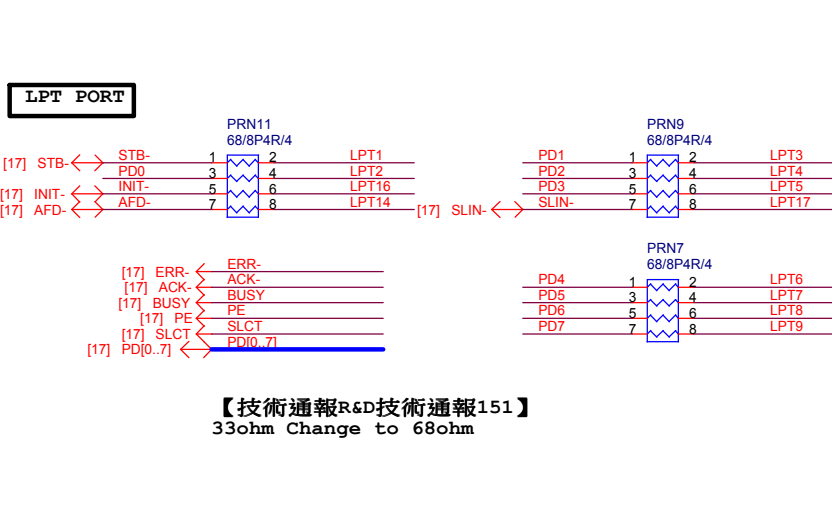
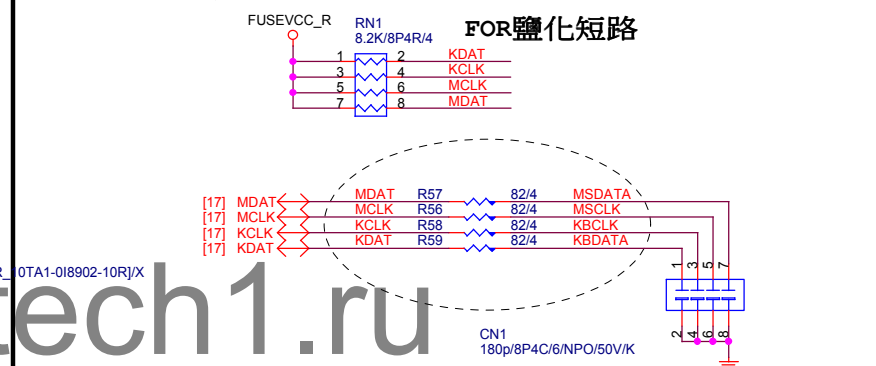
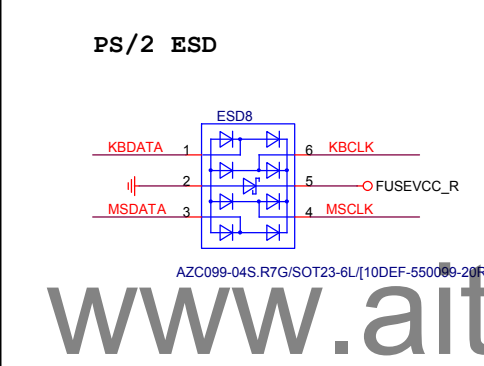
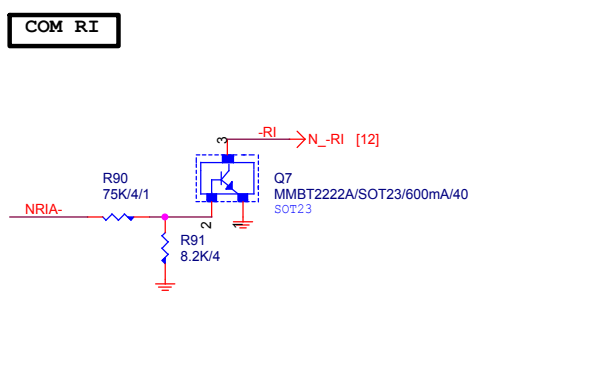
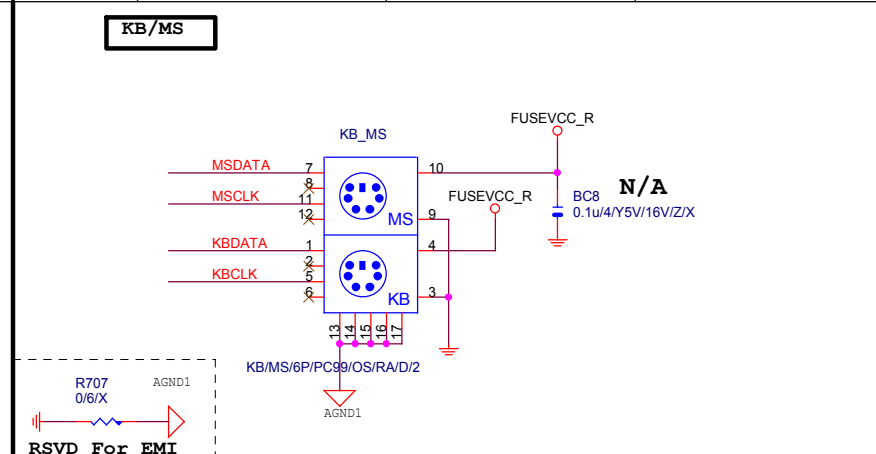
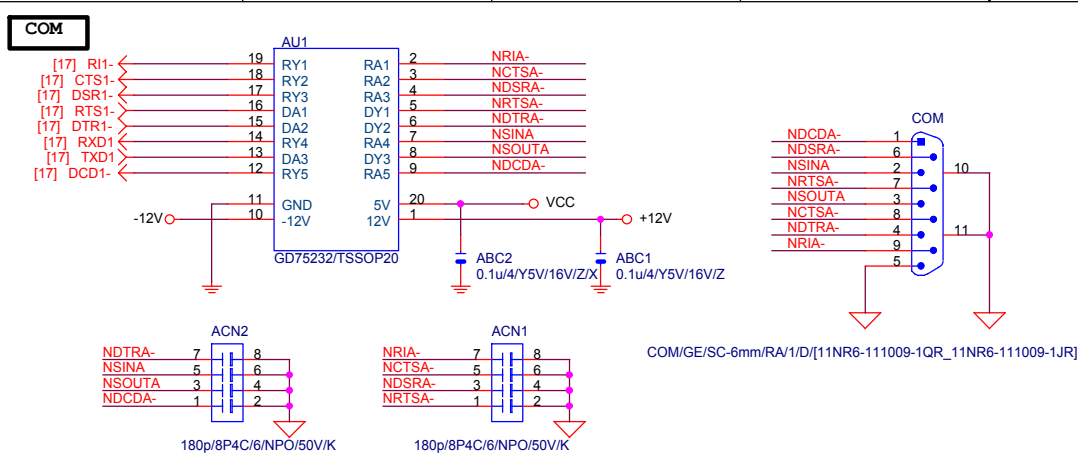


**Gigabyte Technology**

|                         |                           |                |
|-------------------------|---------------------------|----------------|
| Title                   |                           |                |
| <b>PCI SLOT 1&amp;2</b> |                           |                |
| Size                    | Document Number           | Rev            |
| Custom                  | <b>GA-H81M-S2PV</b>       | <b>2.0</b>     |
| Date:                   | Wednesday, April 09, 2014 | Sheet 16 of 31 |

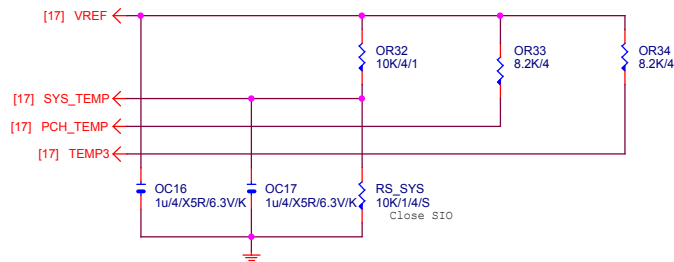




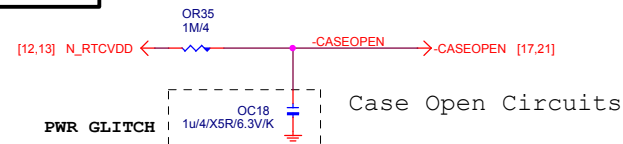


【技術通報R&D技術通報151】  
33ohm Change to 68ohm

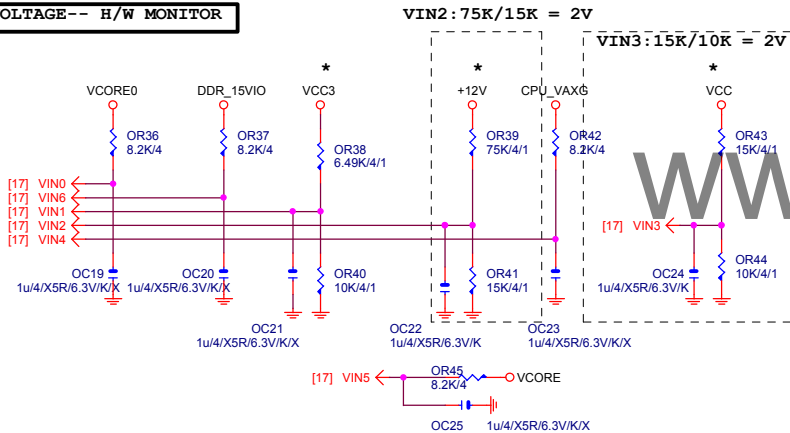
# TEMP H/W MONITOR



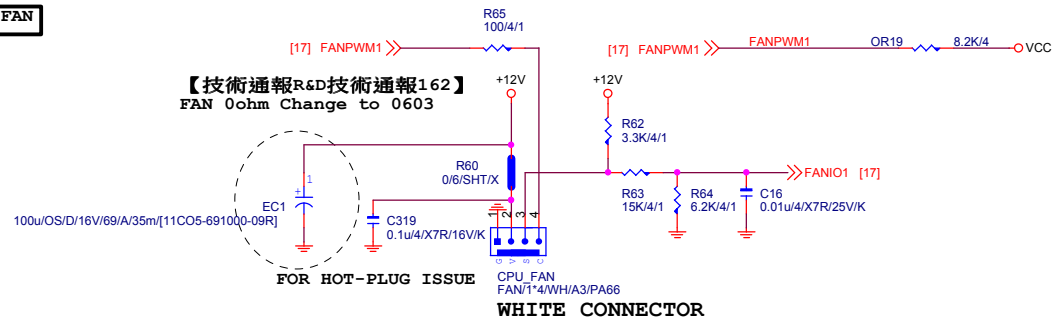
# CASE OPEN



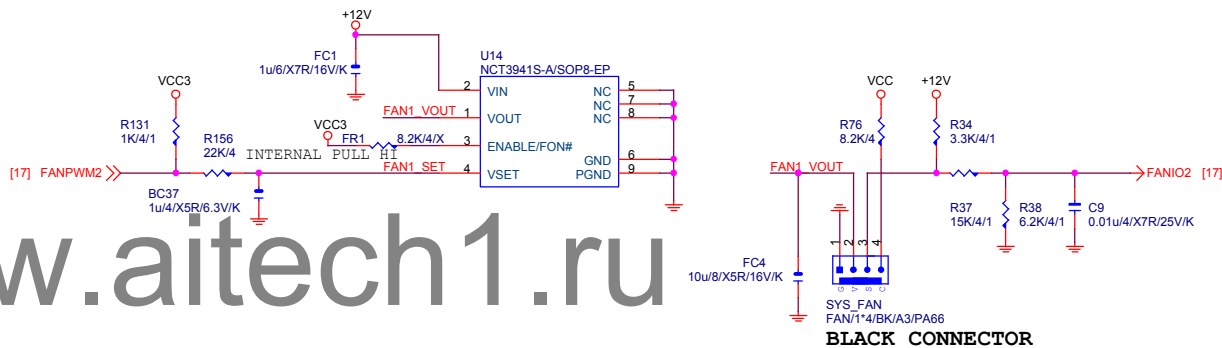
# VOLTAGE-- H/W MONITOR



# CPU SMART FAN

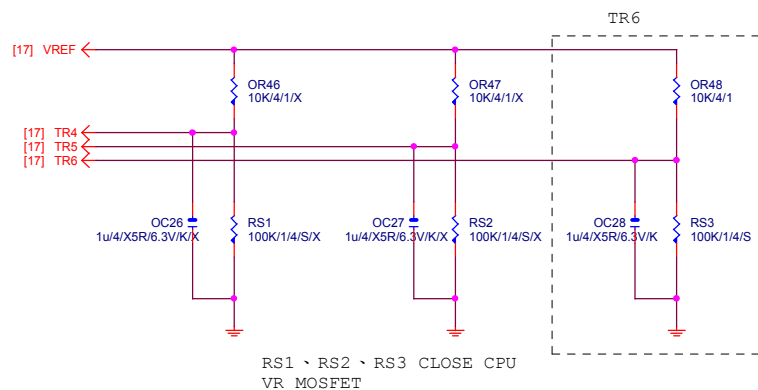
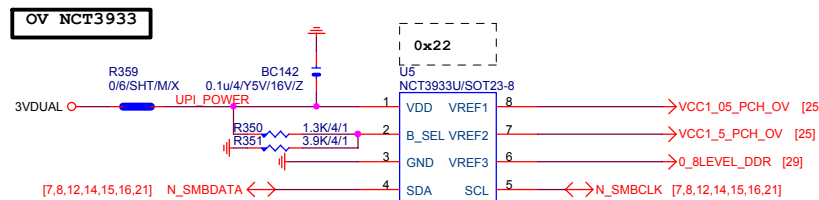


# SYS SMART FAN



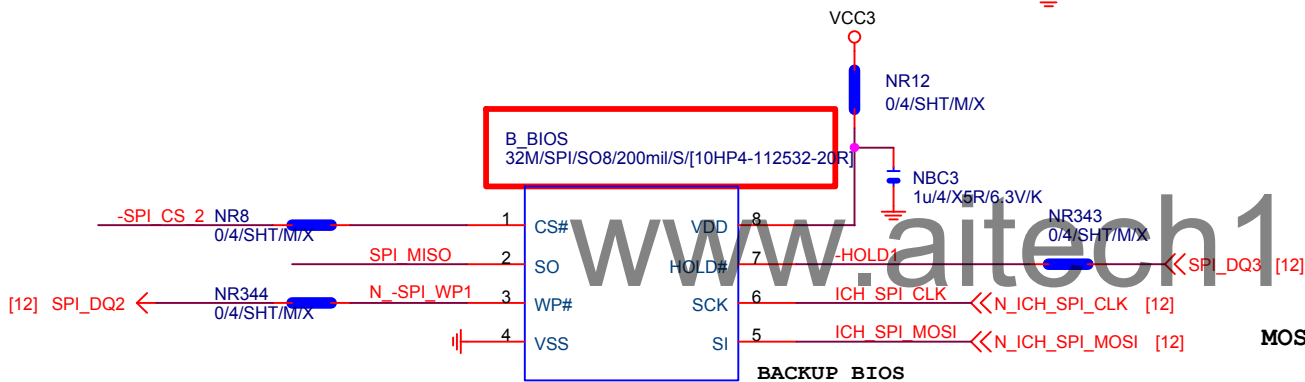
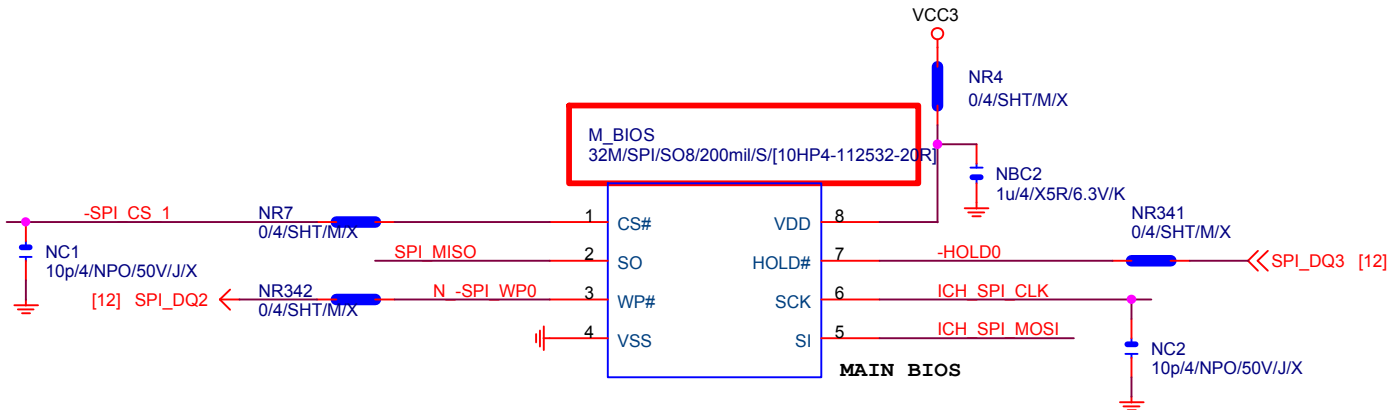
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# 接pwm feedback pin



Gigabyte Technology

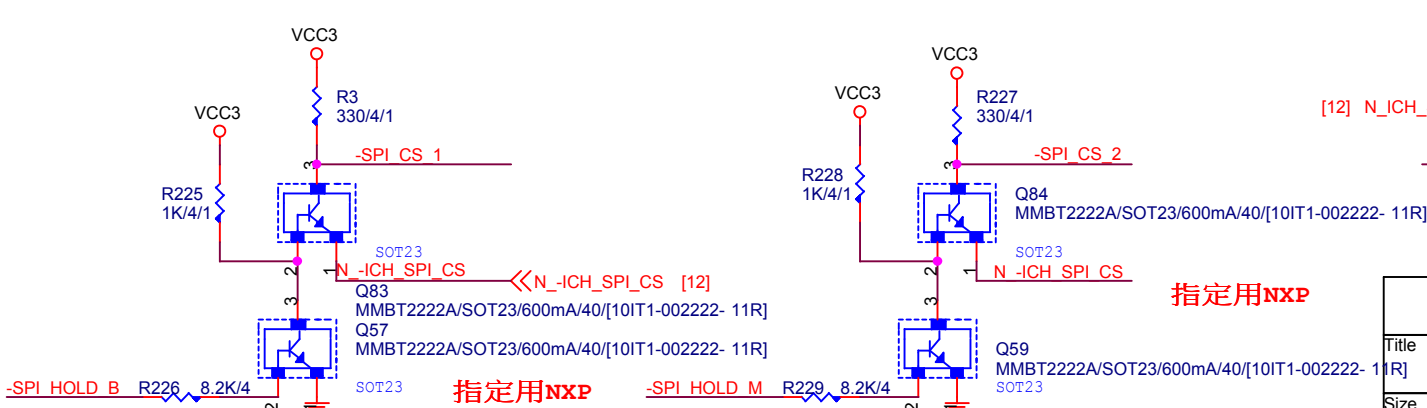
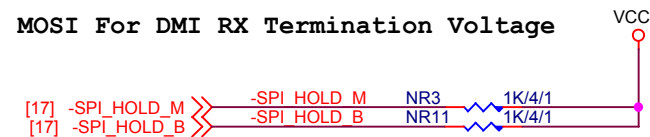
|                 |  |  |                           |  |
|-----------------|--|--|---------------------------|--|
| Title           |  |  | HWM,FAN CTRL,OV           |  |
| Size            |  |  | GA-H81M-S2PV              |  |
| Document Number |  |  | Rev 2.0                   |  |
| Date:           |  |  | Wednesday, April 02, 2014 |  |
| Sheet           |  |  | 19 of 31                  |  |



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

1 means floating  
0 means PD 1K

MOSI For DMI RX Termination Voltage



指定用NXP

指定用NXP

**Gigabyte Technology**

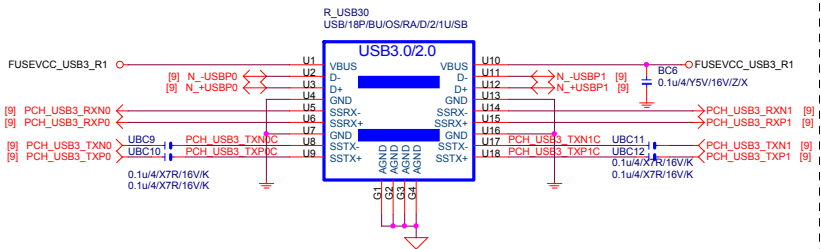
**DUAL BIOS**

**GA-H81M-S2PV**

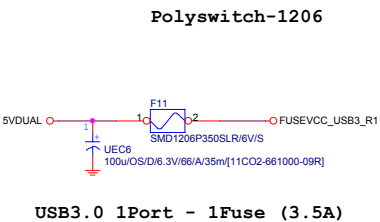
Rev  
**2.0**

|             |                           |       |          |
|-------------|---------------------------|-------|----------|
| Title       | Document Number           |       | Rev      |
| Size Custom | Wednesday, April 09, 2014 |       | 20 of 31 |
| Date:       | Wednesday, April 09, 2014 | Sheet | 20 of 31 |

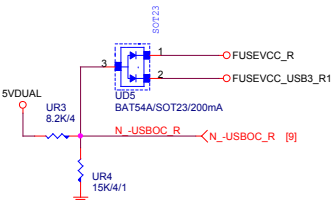
# USB30\_20



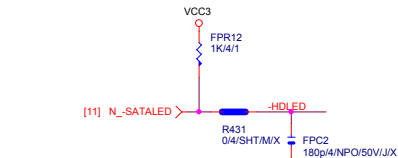
# USB30\_20 PWR



# -USBOC\_R

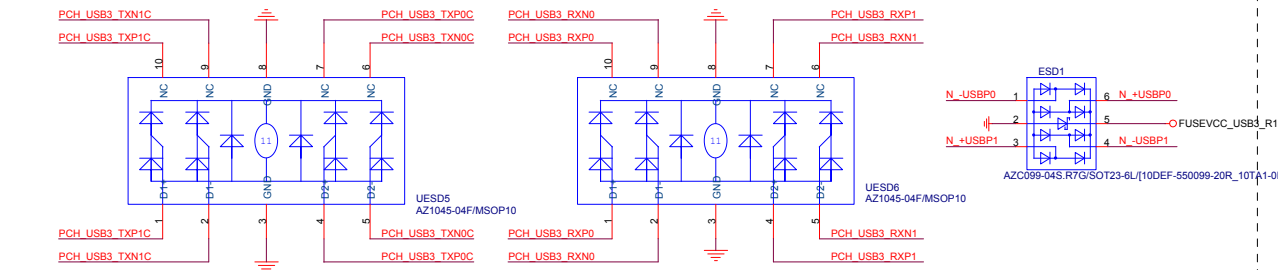


# SATA LED

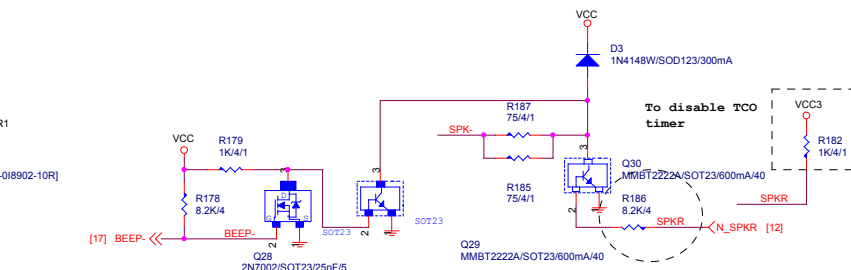


# USB30\_20 ESD PROTECT

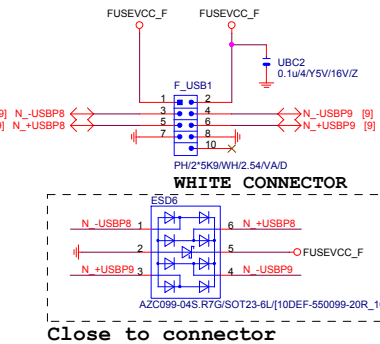
# USB3.0 ESD



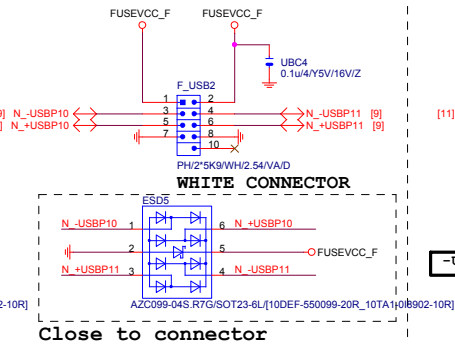
# SPKR



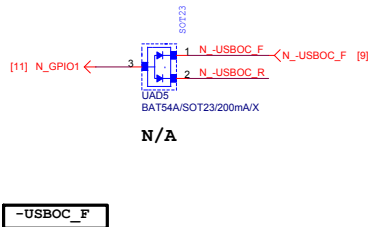
# FRONT USB1



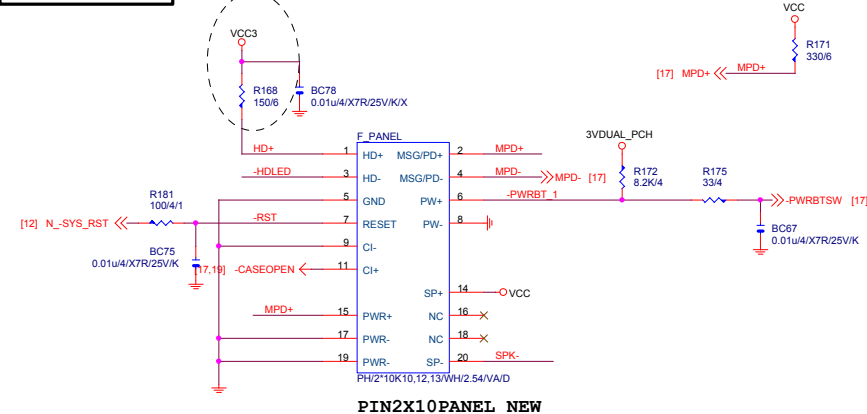
# FRONT USB2



# USB POWER PROTECT



# INTEL FRONT PANEL



# FUSE-0805

# F\_USB1, F\_USB2 4-Port 2.6A

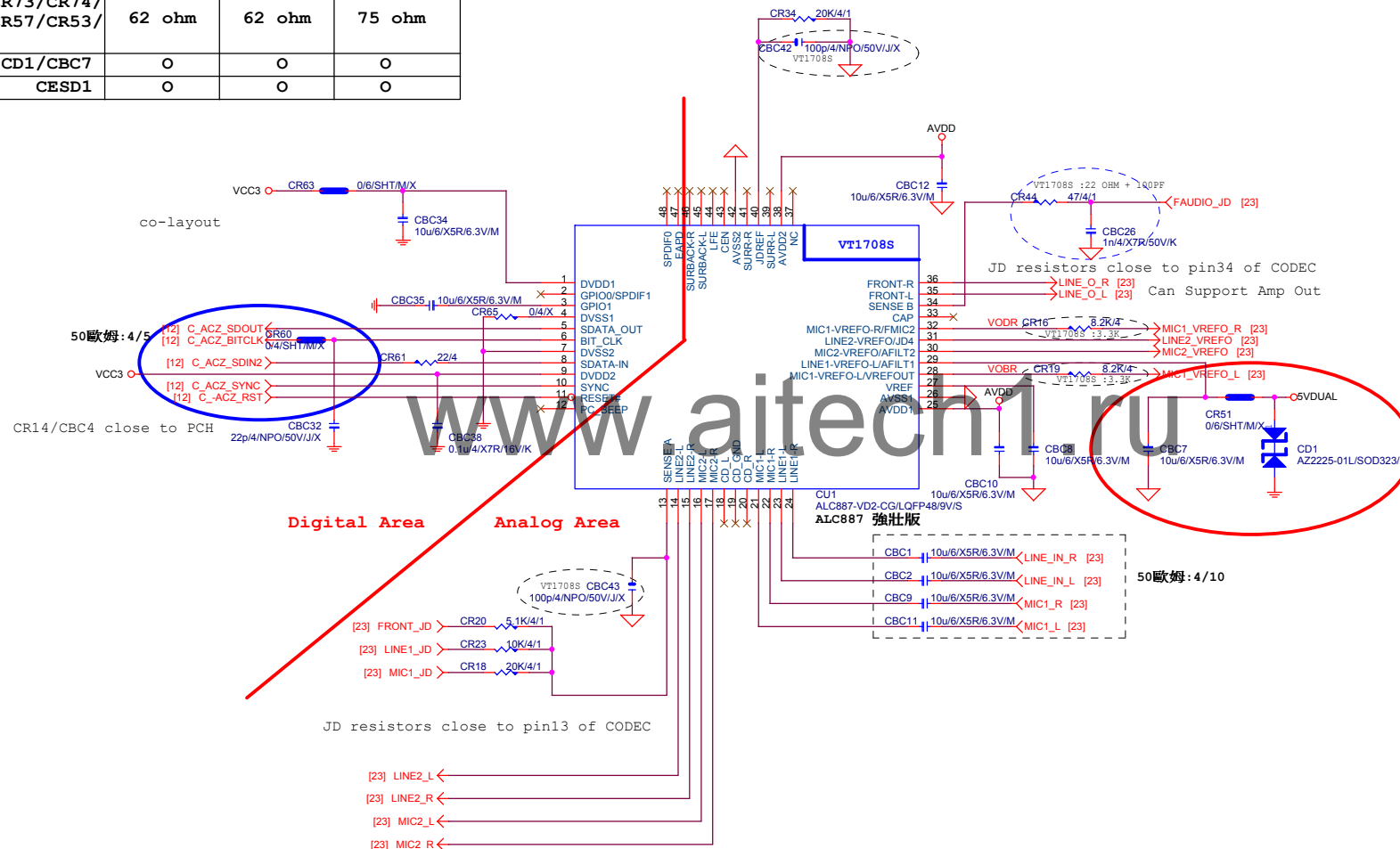
# F\_USB1, F\_USB2 4-Port 2.6A

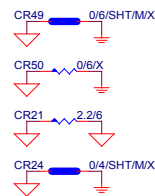
# F\_USB1, F\_USB2 4-Port 2.6A

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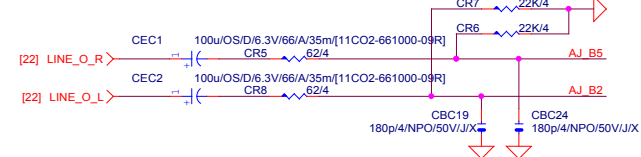
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

|  | ALC892    | ALC887-VD2 | VT1708S-CE |
|--|-----------|------------|------------|
| CR44/CBC26   | 47ohm+1nF | 47ohm+1nF  | 22ohm+100P |
| CBC42/CBC43  | X         | X          | 100P/4     |
| CR6/CR7/CR58/CR54/<br>CR67/CR68/CR69/CR70                                      | 22K/4     | 22K/4      | 10K/4/1    |
| CR5/CR8/CR1/CR14/<br>CR17/CR22/CR73/CR74/<br>CR13/CR11/CR57/CR53/<br>CR75/CR76 | 62 ohm    | 62 ohm     | 75 ohm     |
| CR51/CD1/CBC7  | O         | O          | O          |
| CESD1  | O         | O          | O          |





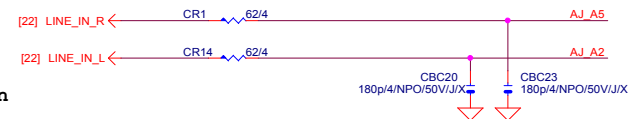
## LINE-OUT



## LINE-IN

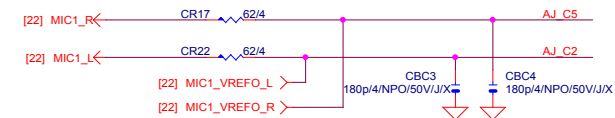
Verify MIC function  
in LINE-in

Only reserved for ALC888



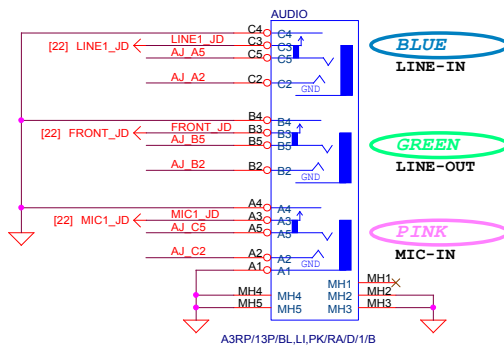
For 889A/888

## MIC-IN

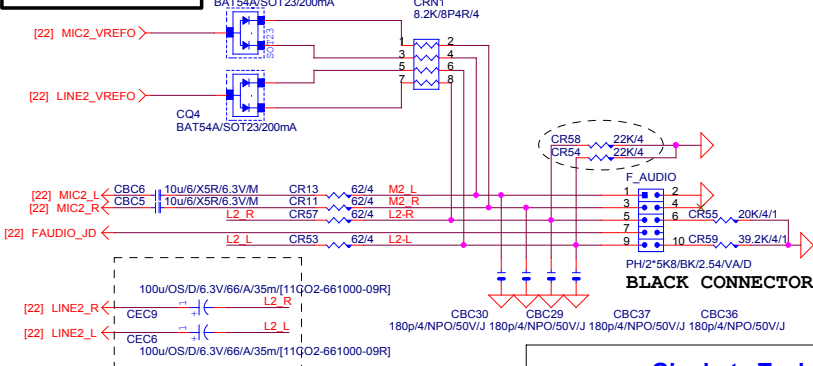


## SPDIF\_OUT

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## AZALIA FRONT PANEL



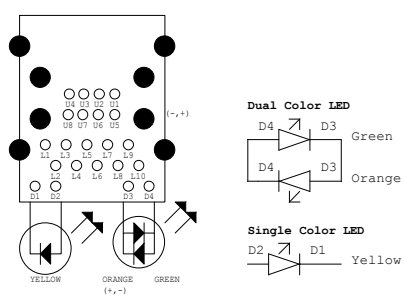
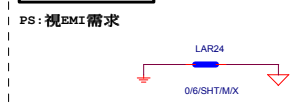
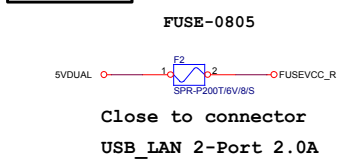
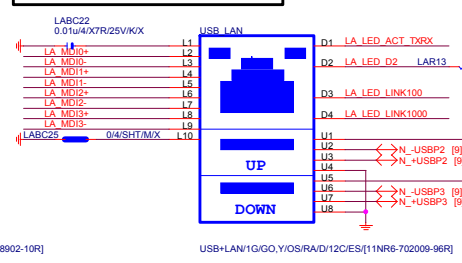
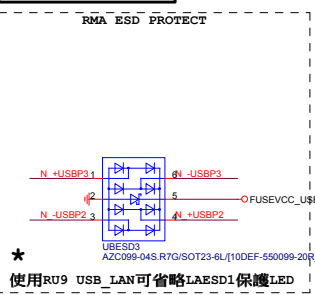
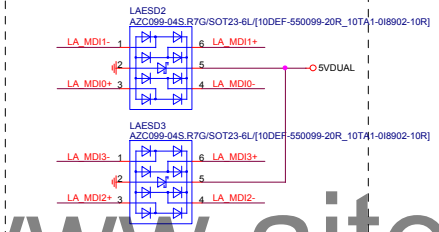
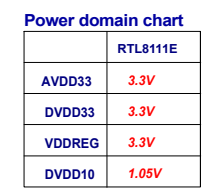
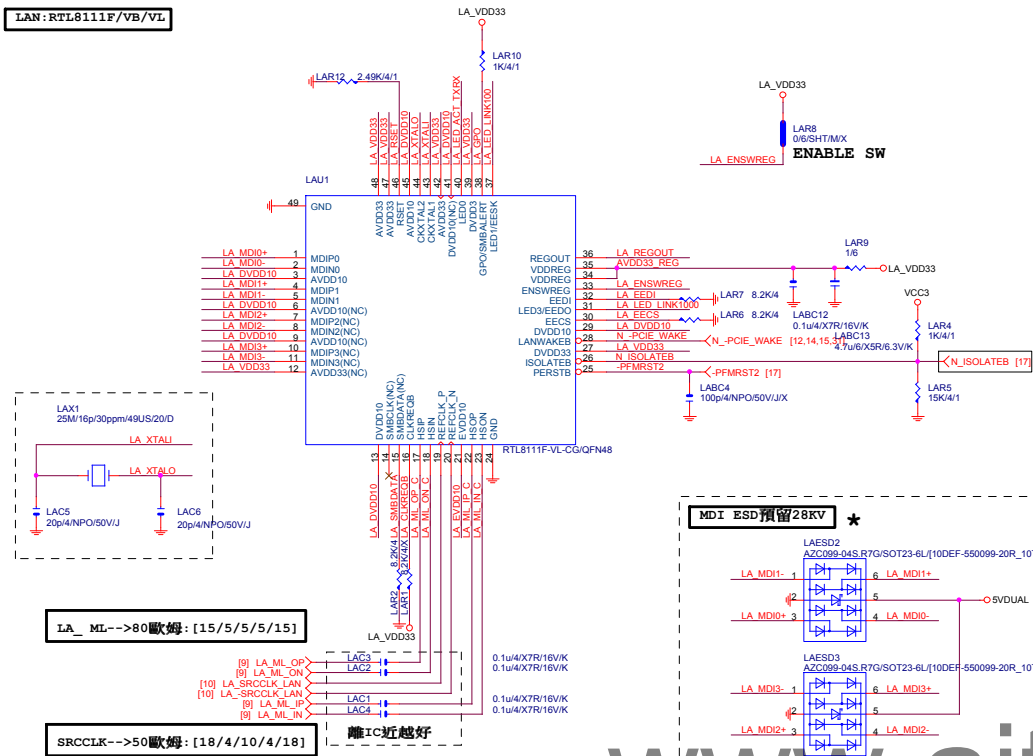
Gigabyte Technology

AUDIO JACK

GA-H81M-S2PV

Rev 2.0

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注意:USB PORT(目前:暫代6,7PORT)  
USB-->90歐姆:[15/4.5/7.5/4.5/15]

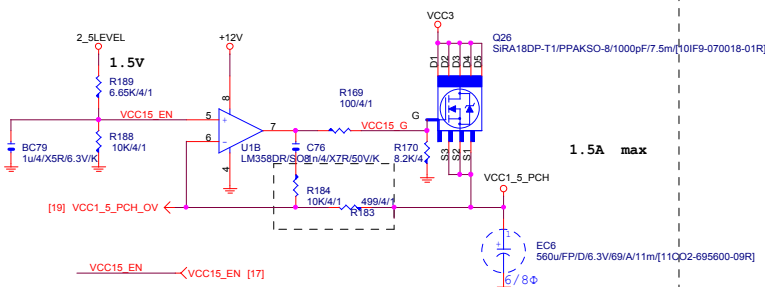
|                                  |                |           |
|----------------------------------|----------------|-----------|
| <b>料號</b>                        | <b>規格</b>      | <b>廠商</b> |
| 11NR6-702009-96R 1G LAN (12core) | UDE (RU9 ESD+) |           |
| [1NR6獨立走線, 可省略外加]AZC099料件LAESD1] |                |           |

|   |
|---|
| 1. 9KV ESD BOM:<br>USB LAN (RU9): 11NR6-702009-96R<br>2. 28KV ESD BOM:<br>USB LAN (RU9): 11NR6-702009-96R<br>LAESD2, LAESD3: 上件AZC398-04S |
|---|



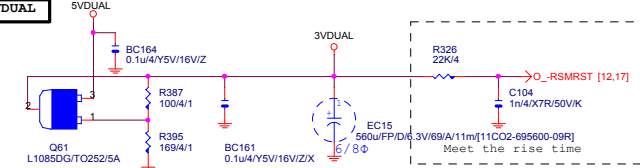
## VCC1\_5\_PCH



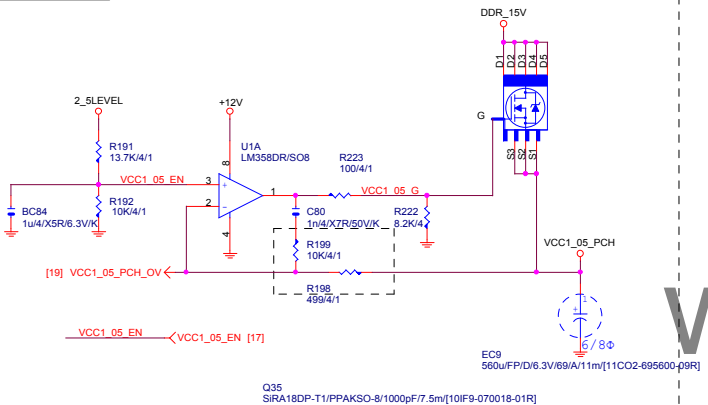
## 2\_5LEVEL



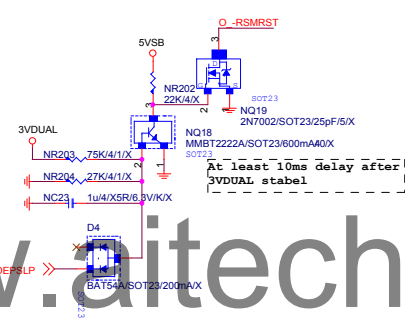
## 3VDUAL



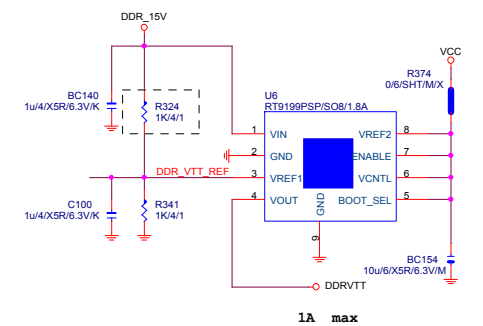
VCC1\_05\_PCH



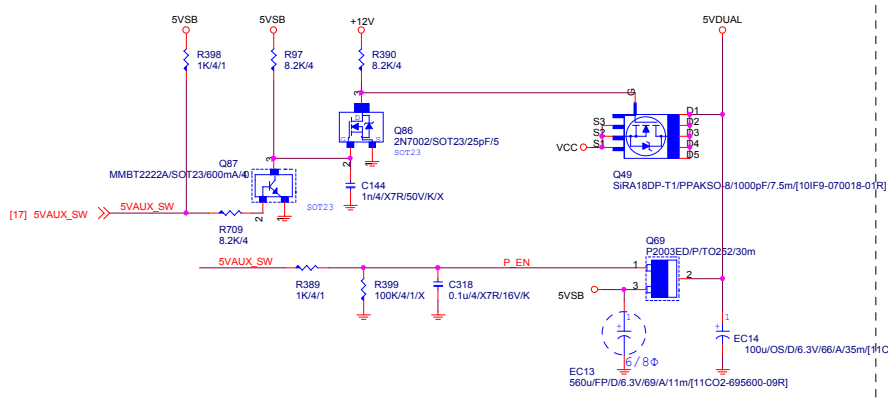
N/A



DDRVTT

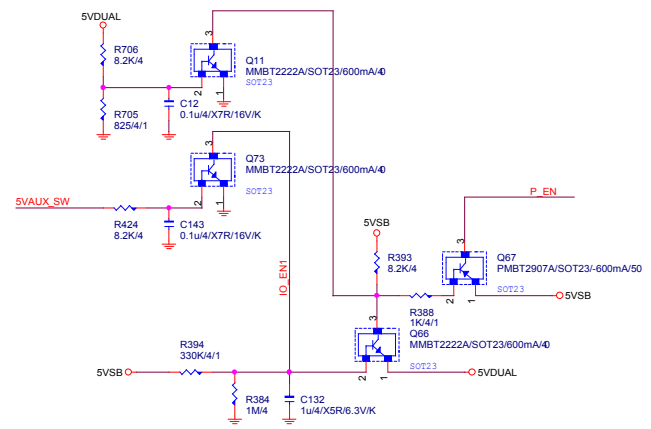


## 5VDUAL



**5VDUAL SHORT PROTECT**

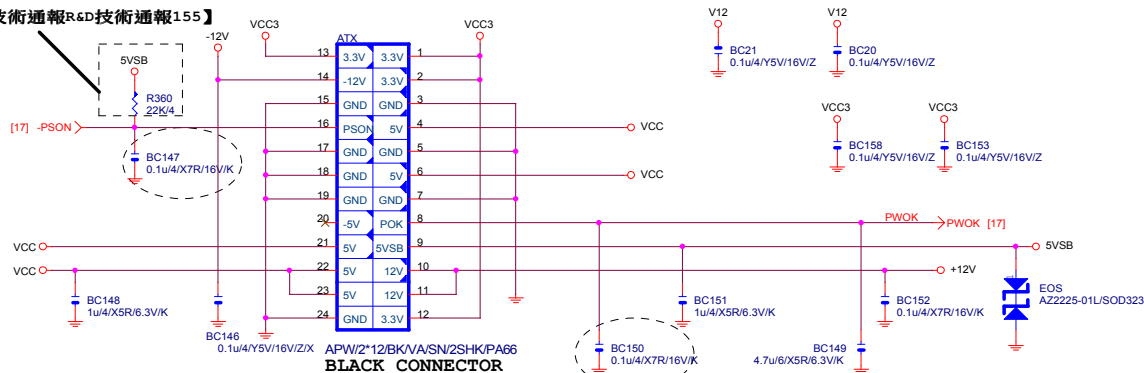
5VSB OVP:7.5V protection



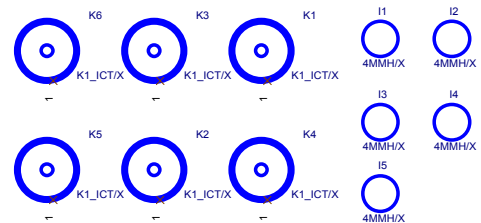
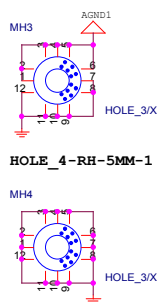
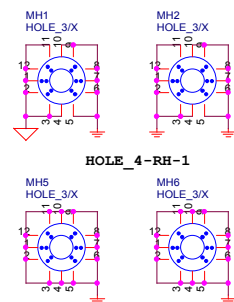
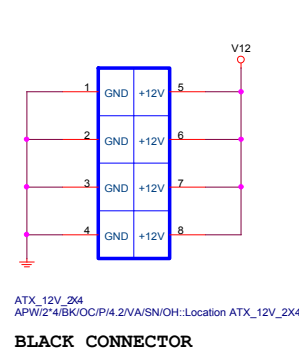
|                            |                           |  |                |
|----------------------------|---------------------------|--|----------------|
| <b>Gigabyte Technology</b> |                           |  |                |
| Title                      |                           |  |                |
| <b>DISCRETE POWER</b>      |                           |  |                |
| Size                       | Document Number           |  | Rev            |
| Custom                     | <b>GA-H81M-S2PV</b>       |  | <b>2.0</b>     |
| Date:                      | Wednesday, April 09, 2014 |  | Sheet 25 of 31 |

# ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



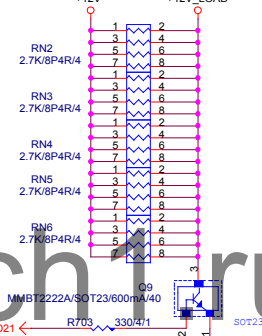
# ATXX4 POWER CONNECTOR



To prevent the 5VSB under loading when boot

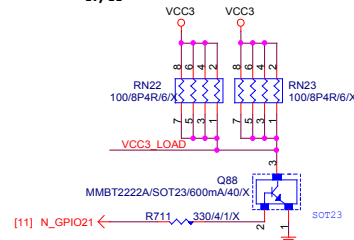
【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



FIX PWR MINMUN LOAD

N/A



Gigabyte Technology

ATX CONNECTOR

GA-H81M-S2PV

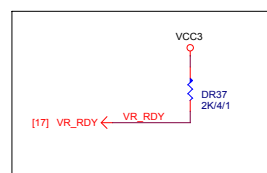
Rev 2.0

Date: Wednesday, April 09, 2014 Sheet 26 of 31

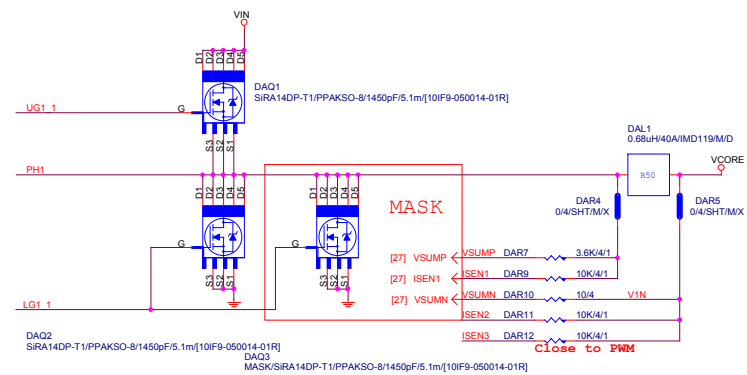
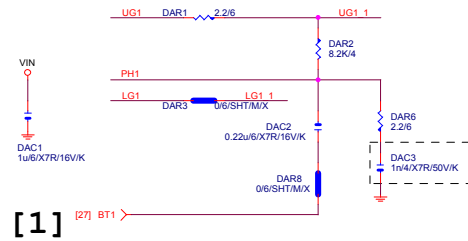
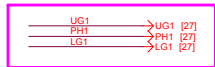
| R_PROG1<br>(Kohm) | 3-Phase<br>Iccmax (A) |
|-------------------|-----------------------|
| 24.9              | 105                   |
| 28.7              | 114                   |
| <b>34.0</b>       | <b>129</b>            |
| 42.2              | 144                   |

| R_PROG2<br>(Kohm) | Fsw (KHz)  | VBOOT       |
|-------------------|------------|-------------|
| <b>64.9</b>       | <b>315</b> | <b>1.75</b> |
| 73.2              | 315        | 1.70        |
| 80.6              | 315        | 1.65        |
| 90.9              | 315        | 0           |

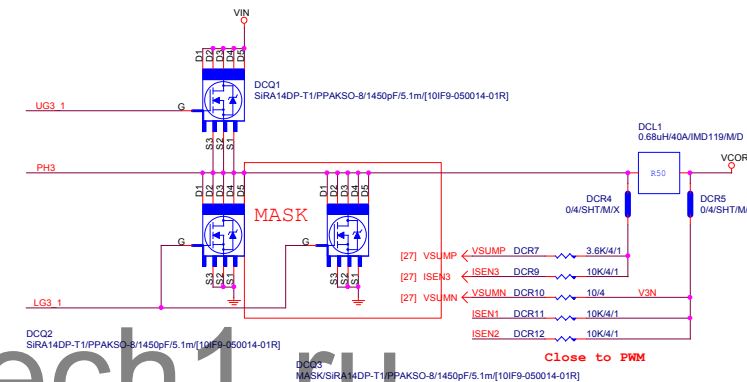
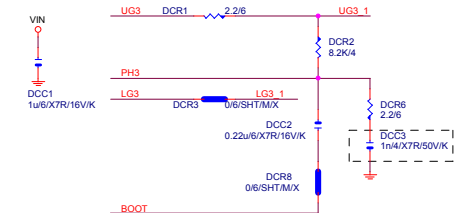
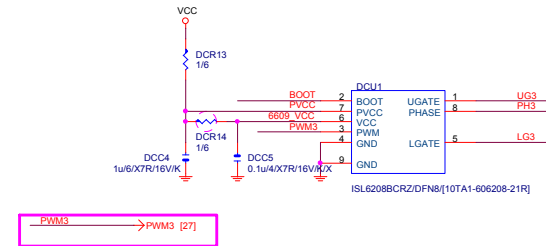
| R_PROG3<br>(Kohm) | Fast Slew Rate<br>(mV/us) |
|-------------------|---------------------------|
| <b>3.24</b>       | <b>12</b>                 |
| 5.76              | 24                        |
| 9.31              | 40                        |
| 13.3              | 45                        |



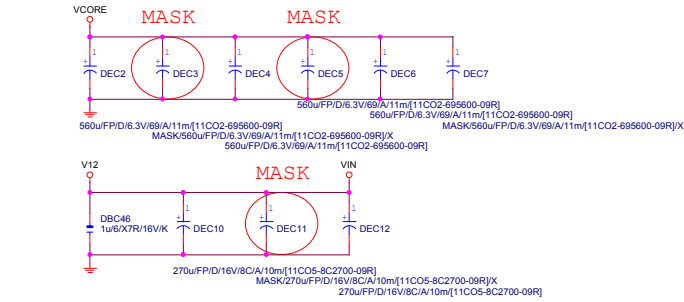
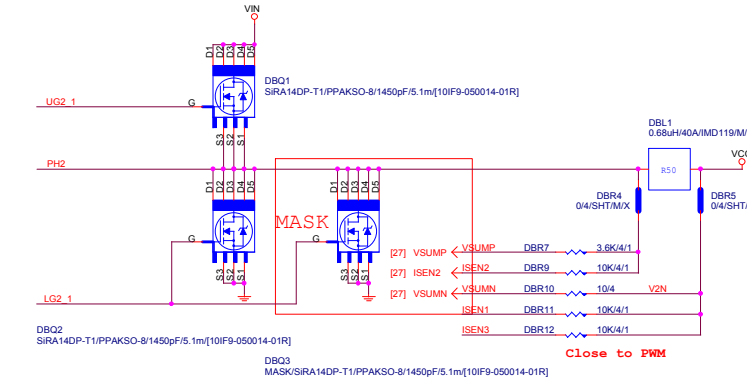
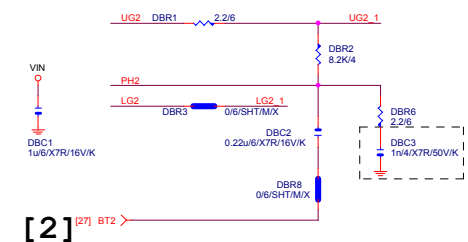
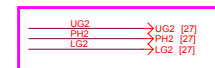
# PHASE 1



# PHASE 3

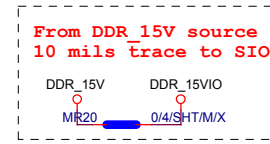


# PHASE 2



| Gigabyte Technology |  |                           |  |
|---------------------|--|---------------------------|--|
| File                |  | CPU CORE VR-2             |  |
| Size                |  | Document Number           |  |
| Custom              |  | GA-H81M-S2PV              |  |
| Date                |  | Wednesday, April 09, 2014 |  |
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DDR15V




PWR SEQ

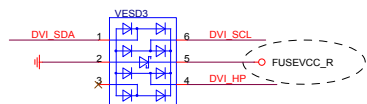
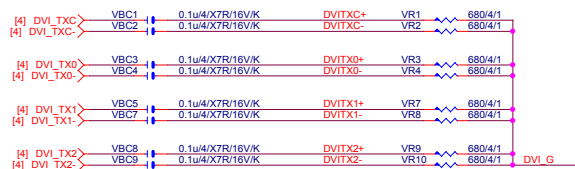
VIN=5V, VOUT=1.5V, IOUT=25A, P  
IRMS=11.45A  
560uF/FP/D/6.3V/68/8m RIPPLE

VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1  
IRMS=11.45A  
560uF/P/D/6.3V/68/8m RIPPLE CURRENT=4.7A  
Coefficient=1.7(85°C), 1(105°C)  
VIN Ripple current=4.7X1.7=7.99A(85°C)  
-->故固態電容須2X7.99=15.98>11.45A

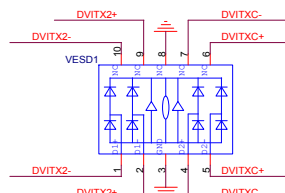
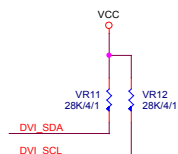
$$\begin{aligned} \text{Rocset} &= (\text{Iocp} * \text{Lgate}, \text{rdson}) / \text{Iocset} \\ \text{Rocset} &= (45\text{A} * 6.7\text{mOhm}) / 10\text{uA} = 30\text{K} \\ \text{Iocset} &= 10\text{uA} \end{aligned}$$

|  |                           |              |          |
|--|---------------------------|--------------|----------|
| <div style="text-align: center;">  </div> |                           |              |          |
| Title  |                           |              |          |
| DDR POWER  |                           |              |          |
| Size   | Document Number           | GA-H81M-S2PV | Rev      |
| Custom   |                           |              | 2.0      |
| Date:  | Wednesday, April 09, 2014 | Sheet        | 29 of 31 |

DVI

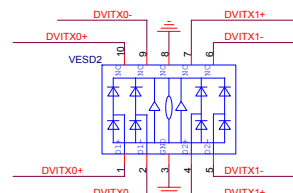
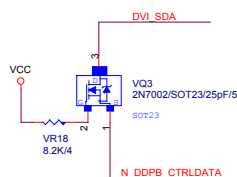
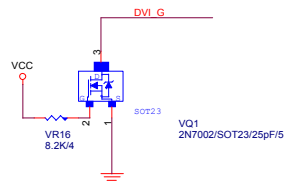


Close to connector



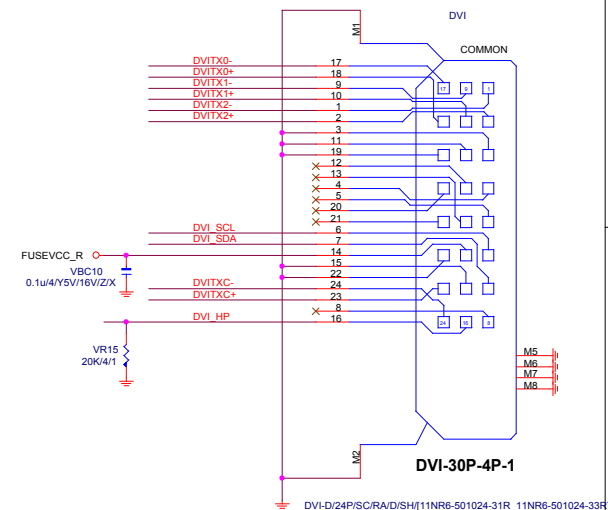
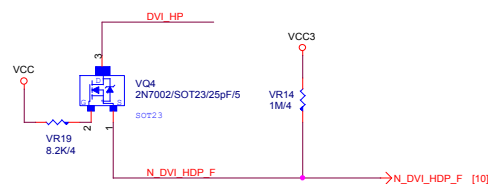
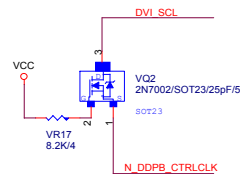
AZ1045-04F/MSOP10

Close to connector



AZ1045-04F/MSOP10

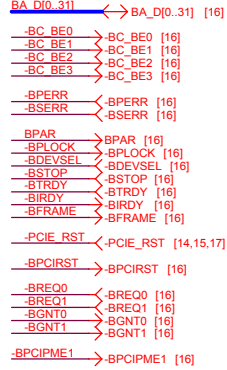
Close to connector



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# PCIE TO PCI

PCI: 5/4/5 Impedance=50 +- 15%

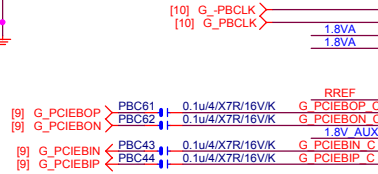
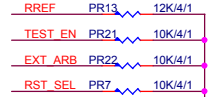
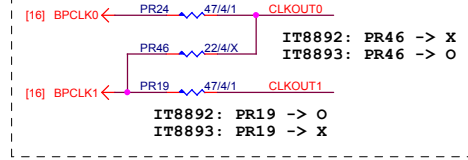


High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen  
Low: PCICLK OUTPUT form IT8893 chip

Co-Lay IT8893 (IT8893 CLKOUT1 N/A)

IT8892: PR24 -> 47ohm  
IT8893: PR24 -> 22ohm

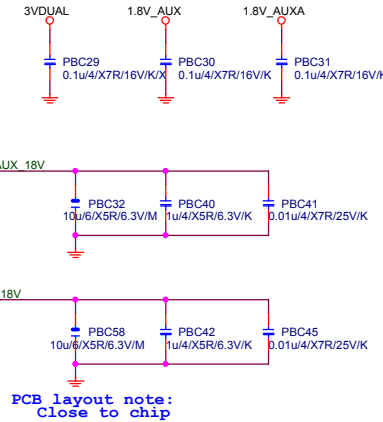
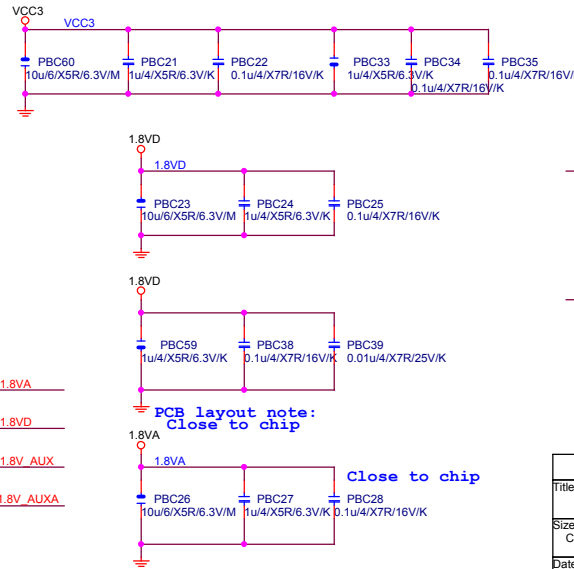
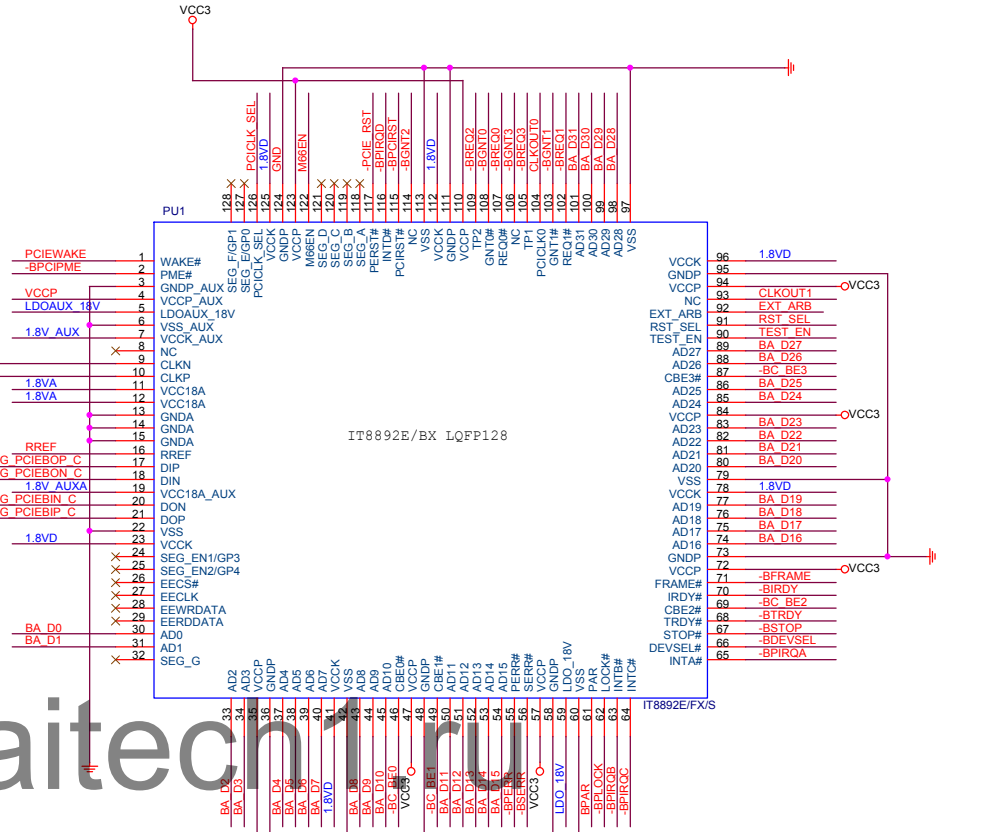
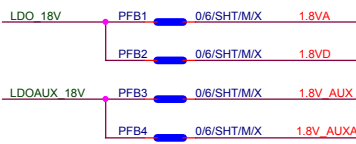
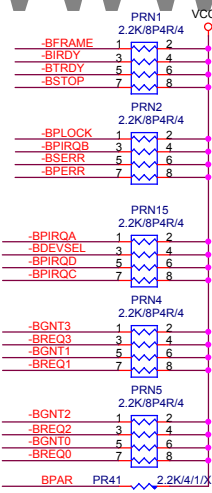
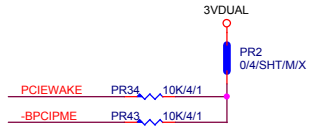


IT8892

PCI slot

PCI slot

chipset side



PCB layout note:  
Close to chip

Gigabyte Technology

ITE IT8892E  
GA-H81M-S2PV

|       |                           |                |
|-------|---------------------------|----------------|
| Title | Document Number           | Rev            |
| Size  | Custom                    | 2.0            |
| Date  | Wednesday, April 09, 2014 | Sheet 31 of 31 |