

# Model Name:GA-P41-ES3G Revision 1.0

SHEET TITLE

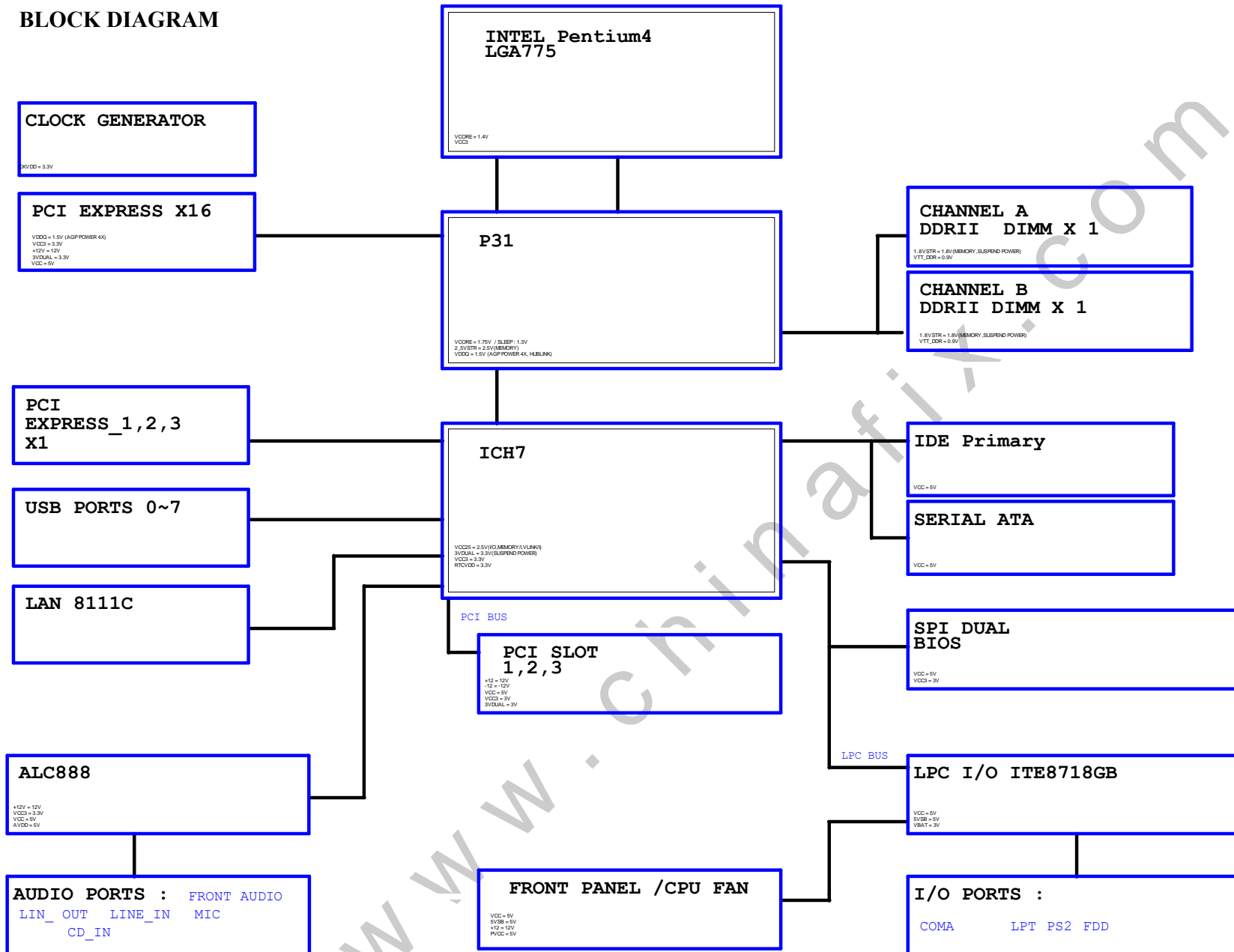
|    |                            |
|----|----------------------------|
| 01 | COVER SHEET                |
| 02 | BLOCK DIAGRAM              |
| 03 | BOM & PCB MODIFY HISTORY   |
| 04 | P4 LGA775 A                |
| 05 | P4 LGA775 B,D              |
| 06 | P4 LGA775 C                |
| 07 | P4 LGA775 E,F,G,H          |
| 08 | Eaglelake HOST             |
| 09 | Eaglelake DDR              |
| 10 | Eaglelake PCI EXP 16,DMI   |
| 11 | Eaglelake VGA              |
| 12 | Eaglelake GND              |
| 13 | Eaglelake PWR              |
| 14 | PCI EXPRESS*16 SLOT        |
| 15 | DDRII CHANNEL A            |
| 16 | DDRII CHANNEL B            |
| 17 | DDRII TERMINATION          |
| 18 | ICH7 PCI, USB, DMI, LAN    |
| 19 | ICH7 IDE, GPIO, SATA, CTRL |
| 20 | ICH7 VCC, GND              |
| 21 | CK505 CLOCK.               |
| 22 | PCI SLOT 1,2,PCIE*1        |
| 23 | IDE/FLOPPY                 |
| 24 | ITE 8718 GB/HX             |
| 25 | COM LPT                    |
| 26 | CI,HWM,KB/MS,DUAL BIOS     |
| 27 | ALC888                     |

SHEET TITLE

|    |                    |
|----|--------------------|
| 28 | REAR AUDIO JACK    |
| 29 | DISCRETE POWER     |
| 30 | VCORE PWM ISL6312  |
| 31 | ATX, OTHERS POWER  |
| 32 | FRONT PANEL        |
| 33 | REALTEK RTL8111D   |
| 34 | PCI SLOT3,PCIE*2,3 |

|                     |                            |               |     |
|---------------------|----------------------------|---------------|-----|
| Gigabyte Technology |                            |               |     |
| Cover Sheet         |                            |               |     |
| Size                | Document Number            | GA-P41-ES3G   | Rev |
| Custom              |                            |               | 1.0 |
| Date:               | Friday, September 18, 2009 | Sheet 1 of 34 |     |

# BLOCK DIAGRAM



|                          |                            |               |          |
|--------------------------|----------------------------|---------------|----------|
| Gigabyte Technology      |                            |               |          |
| BOM & PCB MODIFY HISTORY |                            |               |          |
| Doc. Number              | GA-P41-ES3G                |               | Rev. 1.0 |
| Date                     | Friday, September 18, 2009 | Sheet 2 of 54 |          |

**Version: 1.0**


### Component value change history

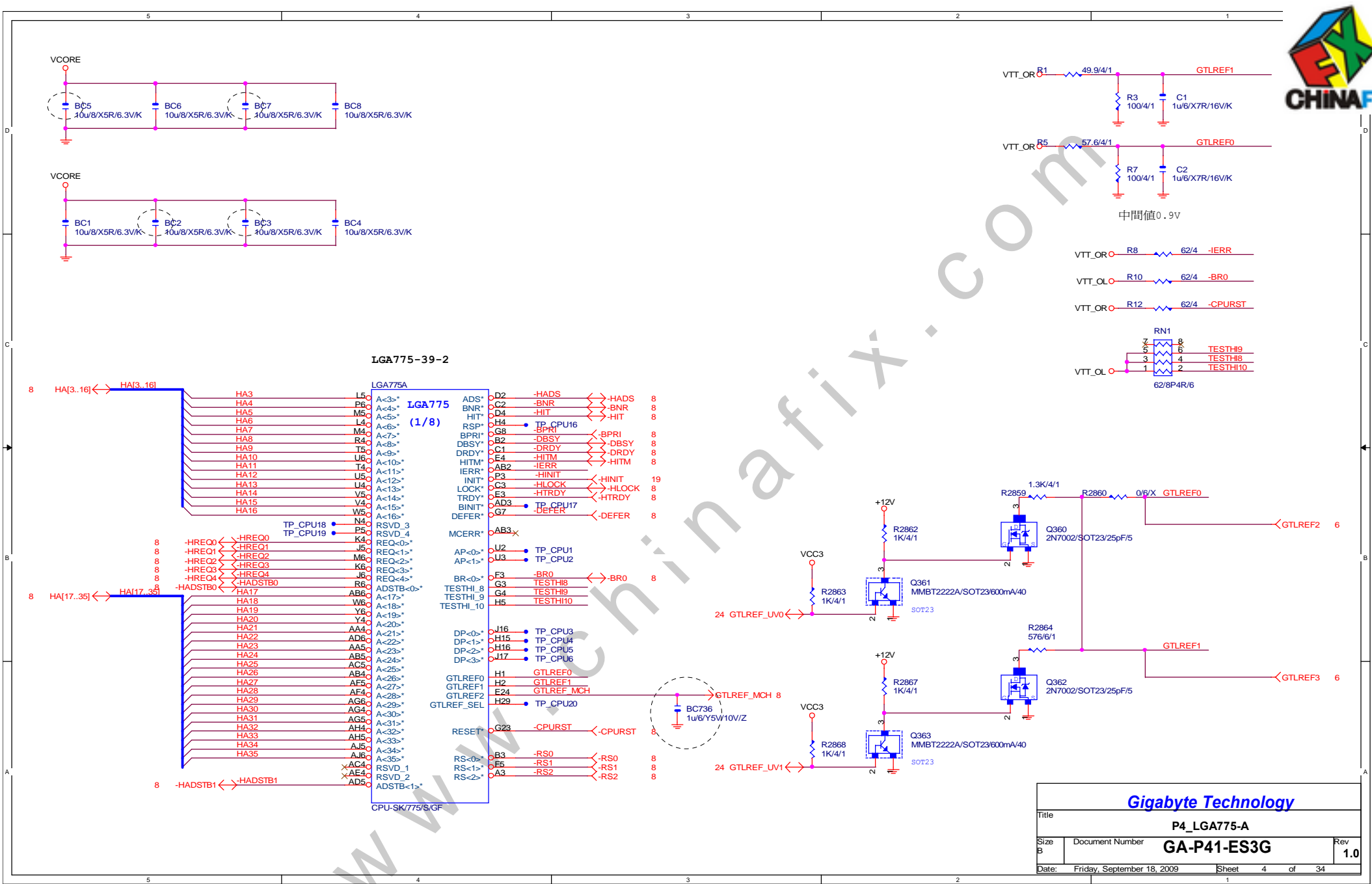
2007/08/02

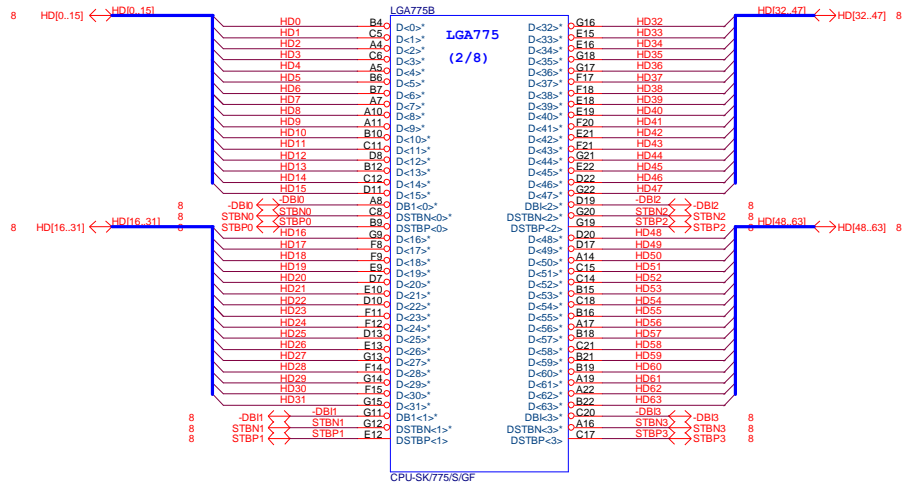
[illegible]

Circuit or PCB layout change  
for next version

[illegible]

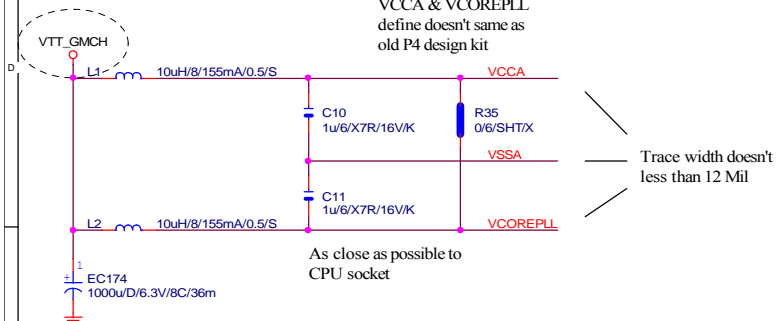
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| <div style="text-align: center;">  </div> |                            |       |         |
| <div style="text-align: center;"> <b>BOM &amp; PCB MODIFY HISTORY</b> </div>   |                            |       |         |
| Size Custom  | Document Number            | Rev 1 |         |
|  | <b>GA-P41-ES3G</b>         |       |         |
| Date:  | Friday, September 18, 2009 | Sheet | 3 of 34 |



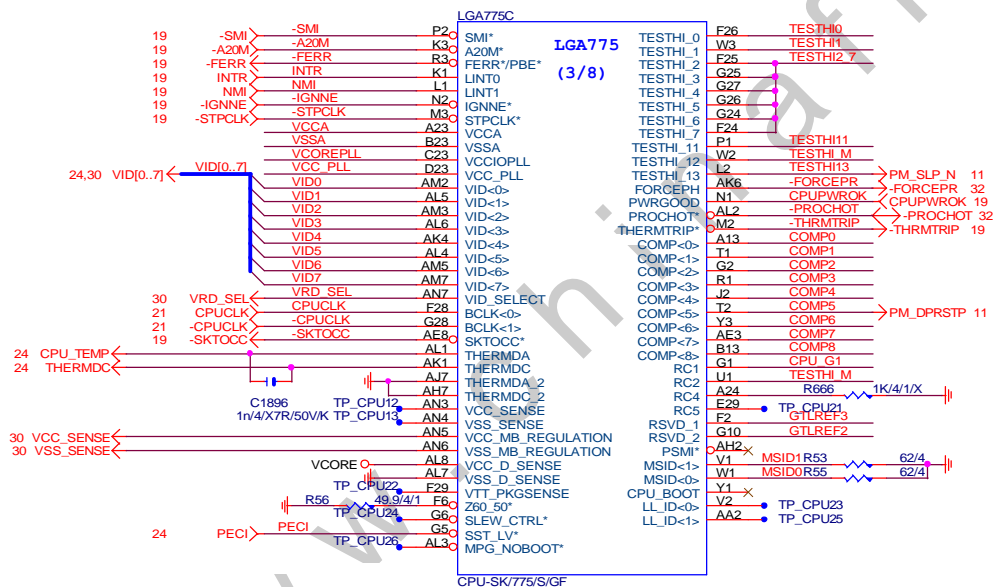
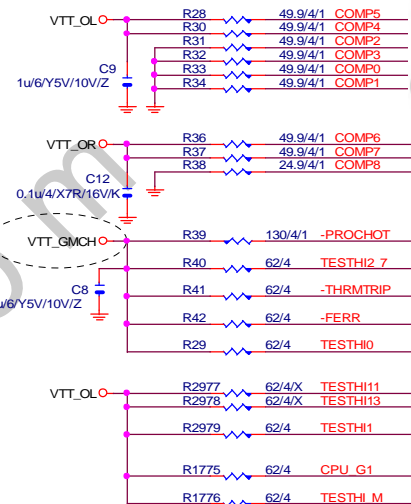
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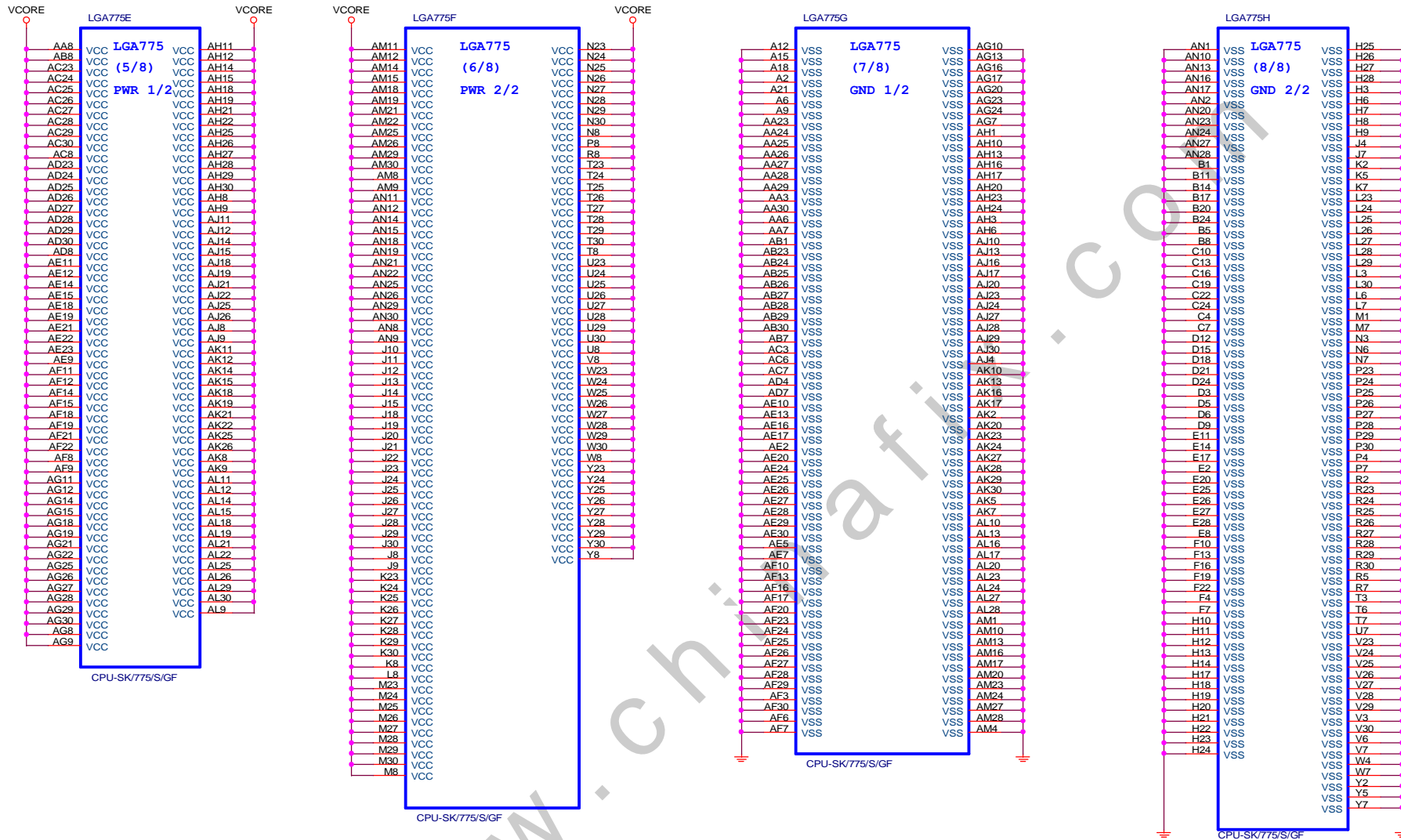


**Note:**  
VCCA & VCOREPLL  
define doesn't same as  
old P4 design kit

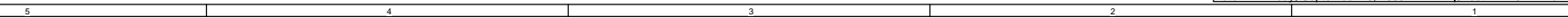
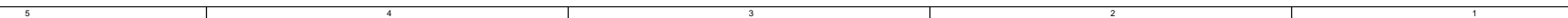


Place outside of CPU socket

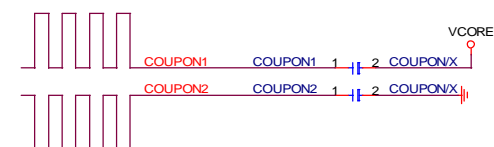




| Gigabyte Technology |                            |       |         |
|---------------------|----------------------------|-------|---------|
| Title               |                            |       |         |
| P4_LGA775-E,F,G,H   |                            |       |         |
| Size                | Document Number            | Rev   |         |
| B                   | GA-P41-ES3G                | 1.0   |         |
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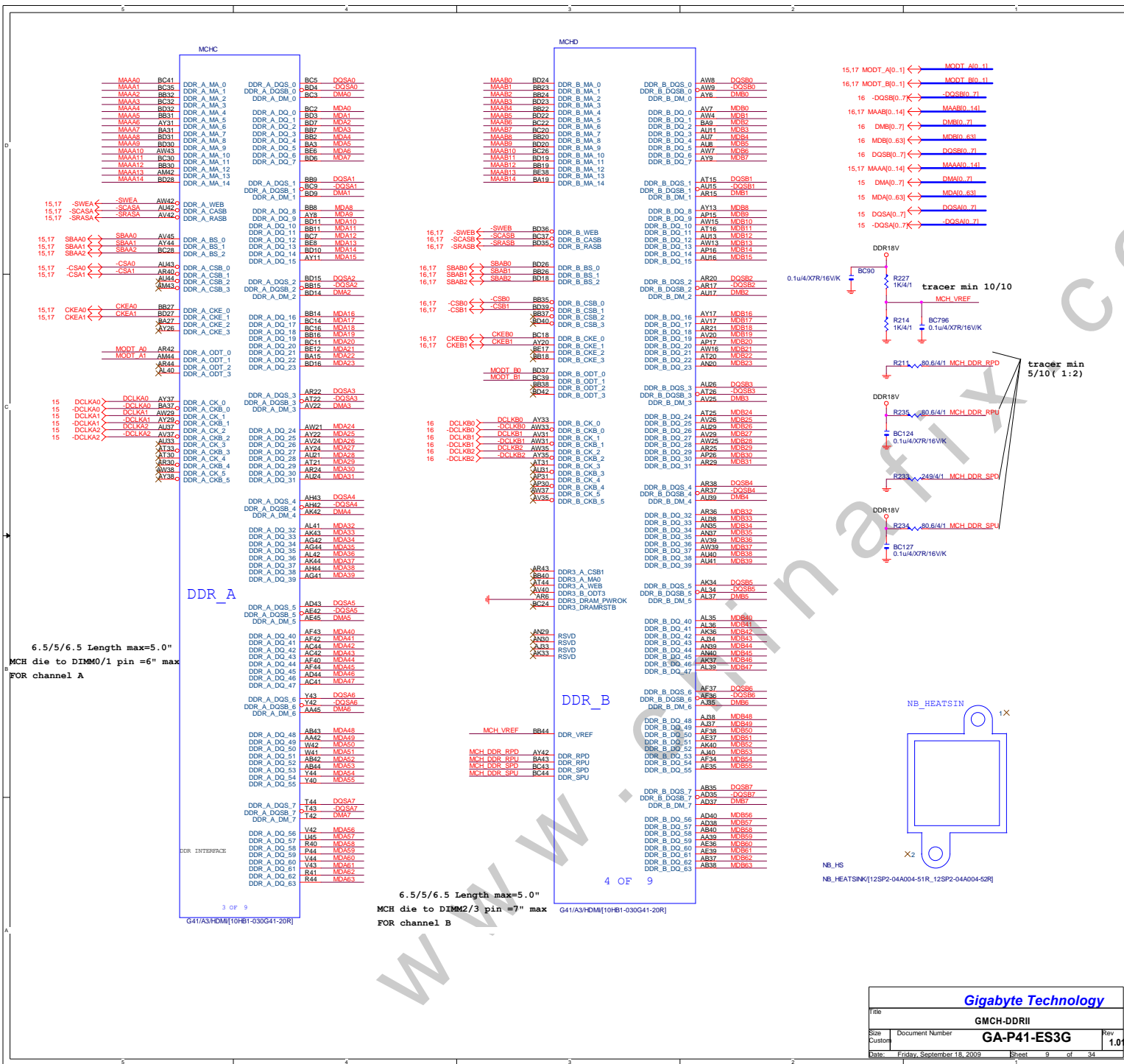


**Note**



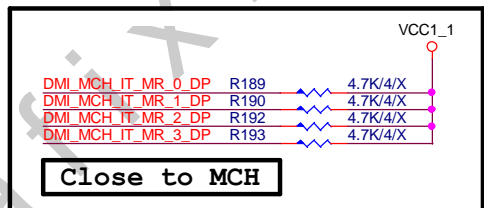
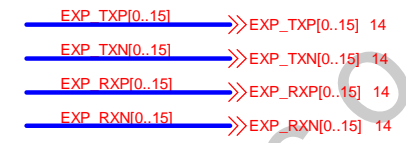
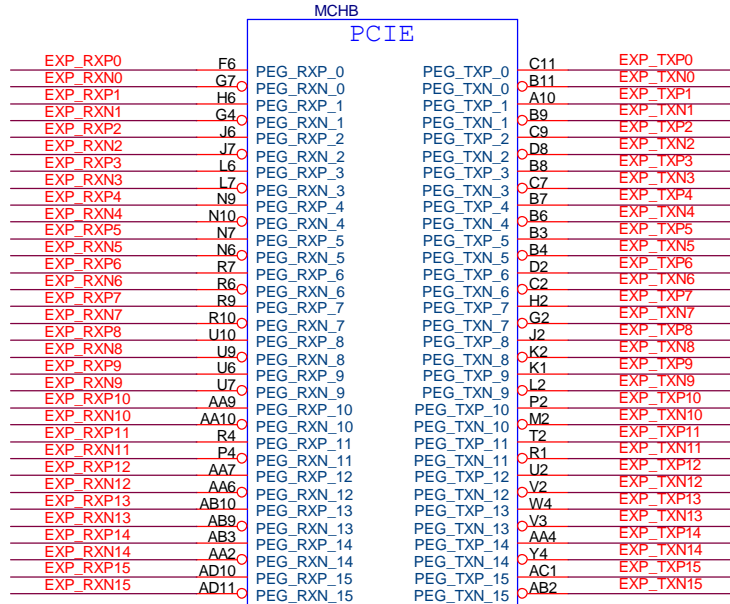
|   |   |   |   |   |
|---|---|---|---|---|
| 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|



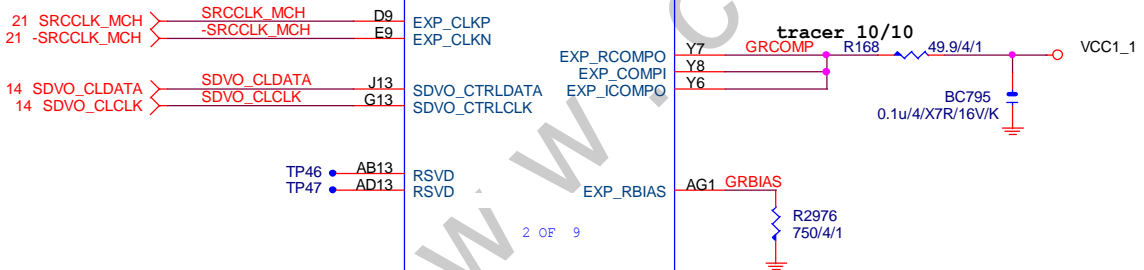
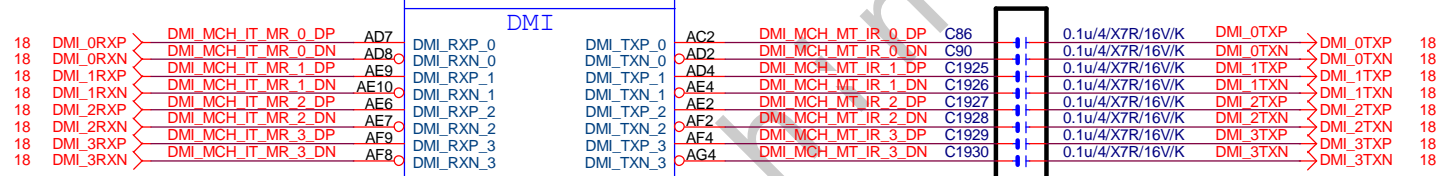


PCIEX16:16/5/5/5/16(breakout min 8/4/5/4/8)

Impedance=85 +- 17.5%



DMI:12/4/8/4/12  
Impedance=95 +- 17.5%



2 OF 9

G41/A3/HDMI[10HB1-030G41-20R]

|                            |                            |       |          |
|----------------------------|----------------------------|-------|----------|
| <b>Gigabyte Technology</b> |                            |       |          |
| Title                      |                            |       |          |
| GMCH-PCI E & DMI           |                            |       |          |
| Size                       | Document Number            | Rev   |          |
| Custom                     | GA-P41-ES3G                | 1.01  |          |
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EXP\_SM  
0:SDVO OR PCIE  
1:BOTH SDVO AND  
PCIE  
EXP\_SLR:  
0:BTX PCIE are reversed  
1:ATX PCIE normal

MCHE

4/10//15<500 MILS

1th RGB:7.5/6 < 300 MILS

2th RGB:4/20 <5"~8" inch

VGA

ON-BOARD VGA 75ohm  
non-ON-BOARD VGA 0ohm

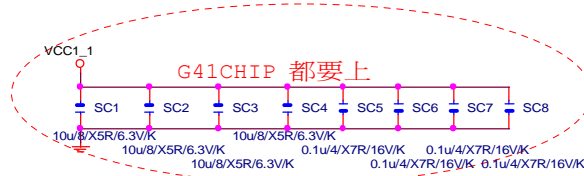
ON-BOARD VGA 1.02k  
non-ON-BOARD VGA 0ohm

MISC

不要上 (SAMPLE)  
BW+ICH7 要上

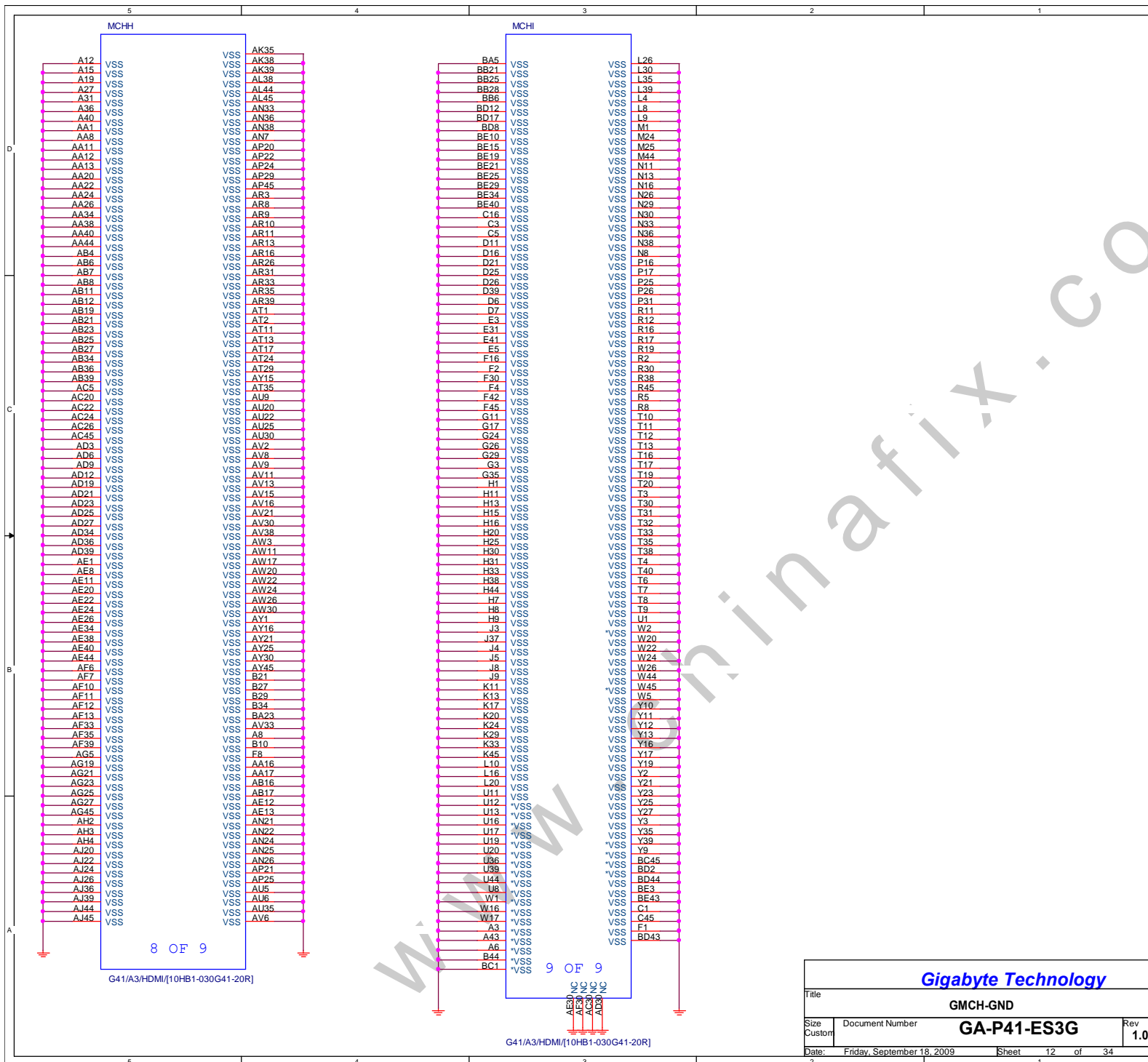
5 OF 9

G41/A3/HDMI/[10HB1-030G41-20R]

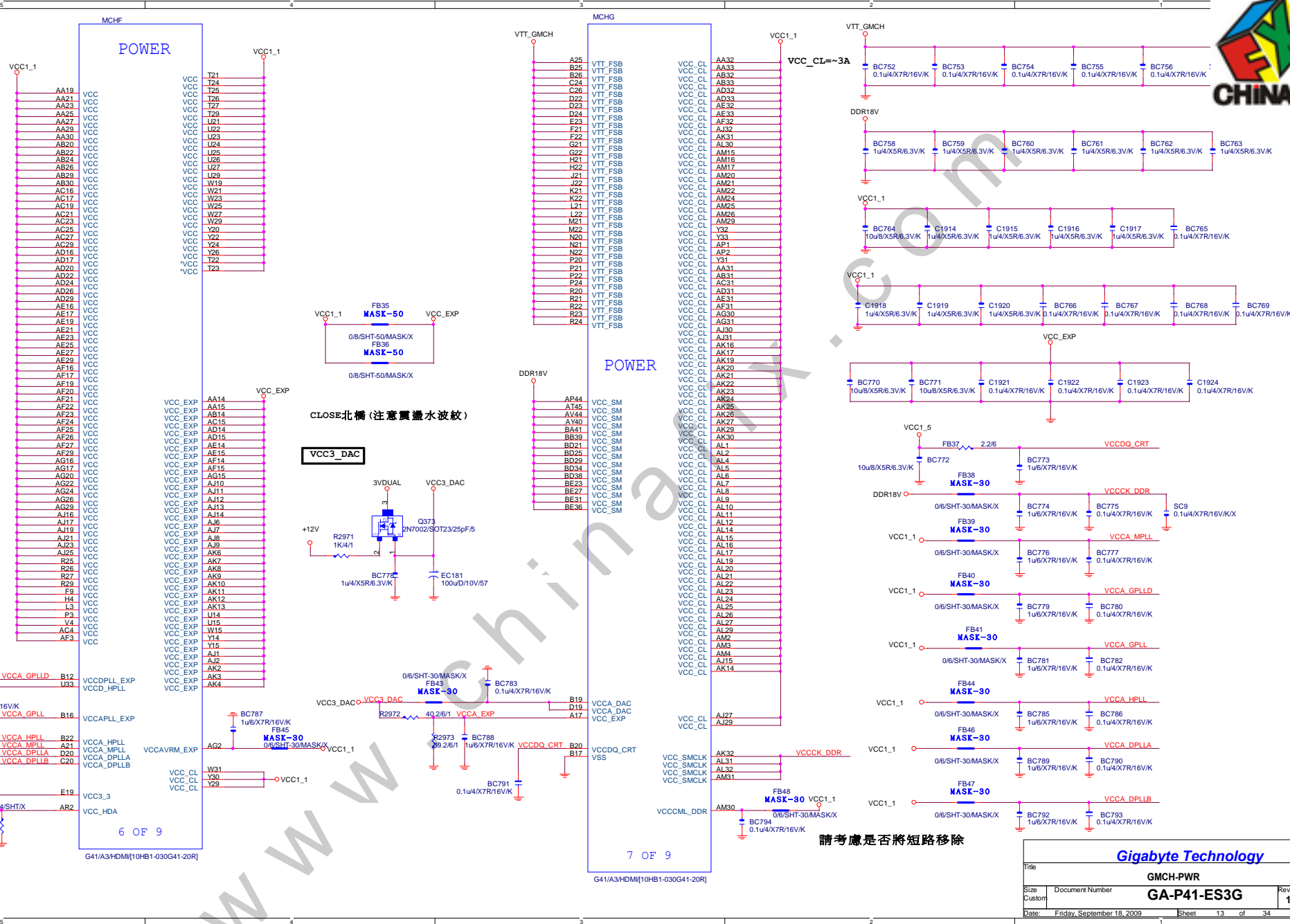


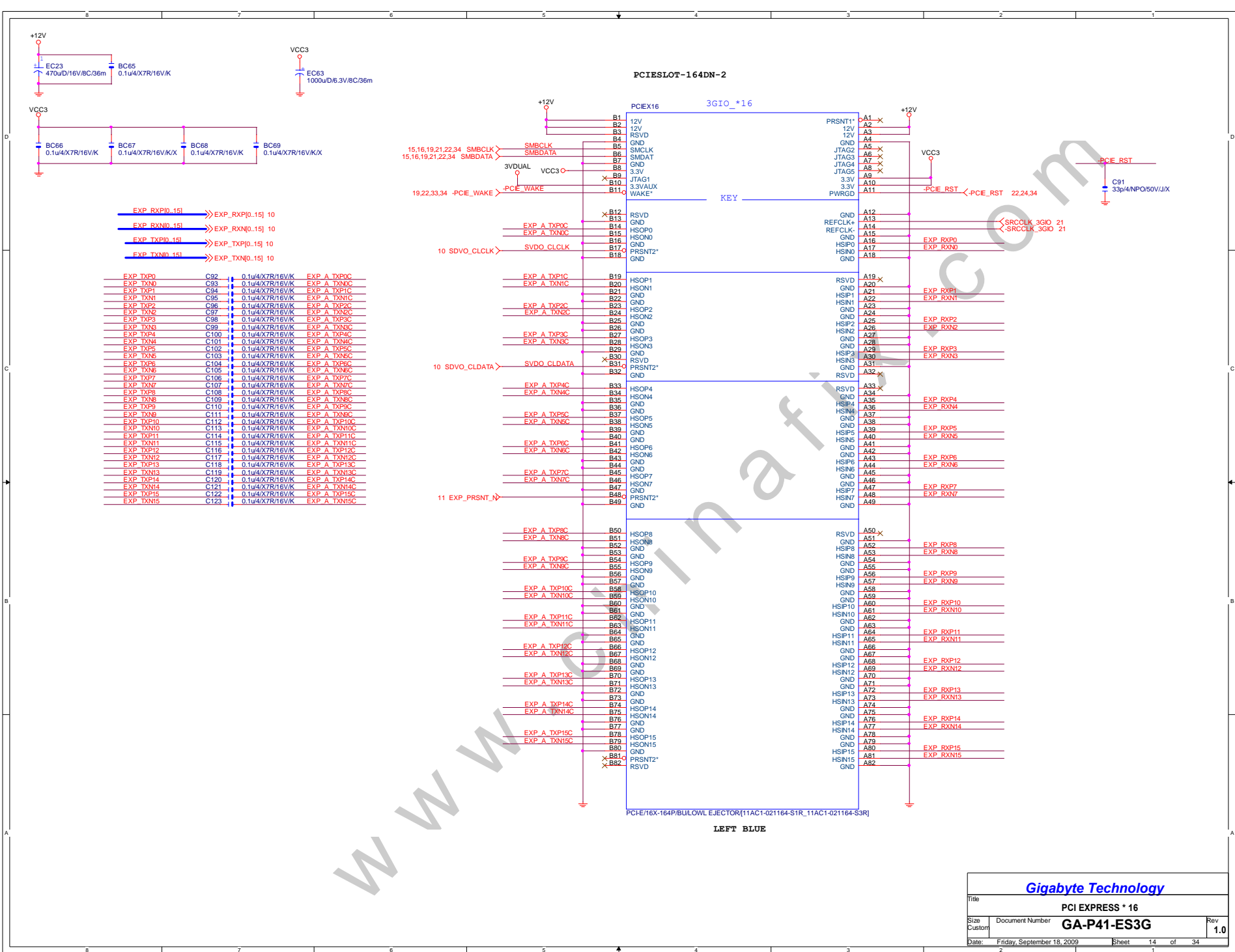
Gigabyte Technology

|       |                            |             |                   |      |
|-------|----------------------------|-------------|-------------------|------|
| Title |                            |             | GMCH-INTERNAL VGA |      |
| Size  | Document Number            | GA-P41-ES3G |                   | Rev  |
| B     |                            |             |                   | 1.01 |
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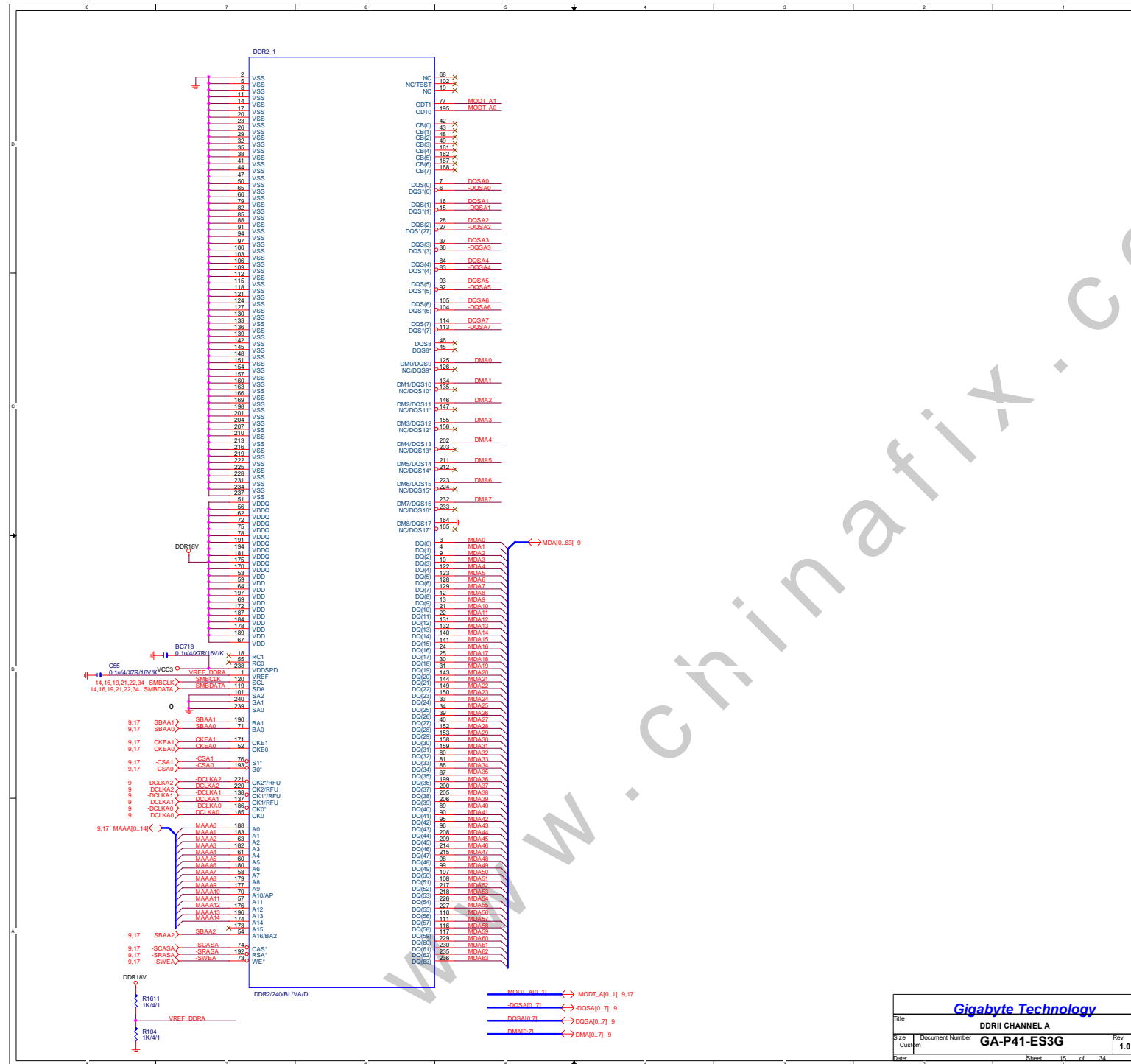


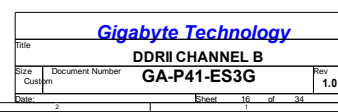
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|----------------------------------|-------------------------------------|-----------------|
| <b>Gigabyte Technology</b>       |                                     |                 |
| Title: <b>GMCH-GND</b>           |                                     |                 |
| Size: Custom                     | Document Number: <b>GA-P41-ES3G</b> | Rev: <b>1.0</b> |
| Date: Friday, September 18, 2009 | Sheet: 12 of 34                     |                 |







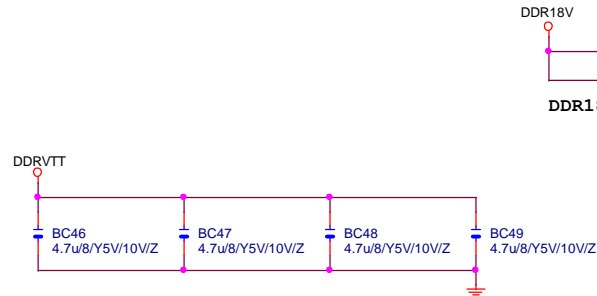




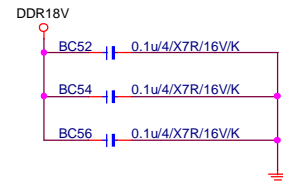


# DDR TERMINATION CHANNEL A

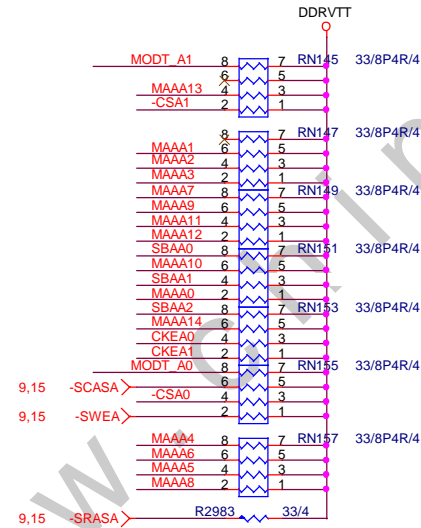
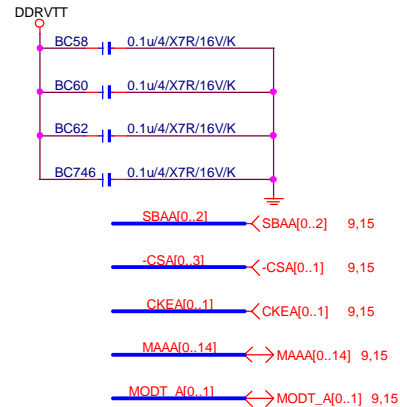
## DDRVTT Decouple



## DDR18V Decouple

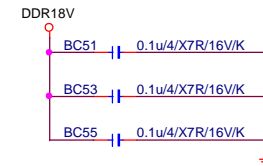


## DDRVTT Decouple

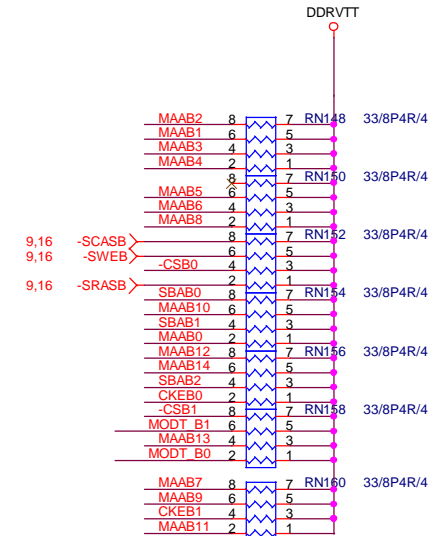
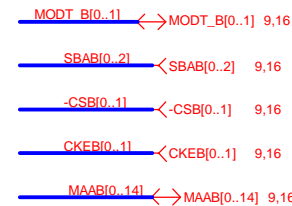
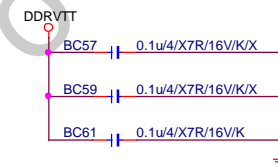


# DDR TERMINATION CHANNEL B

## DDR18V Decouple



## DDRVTT Decouple

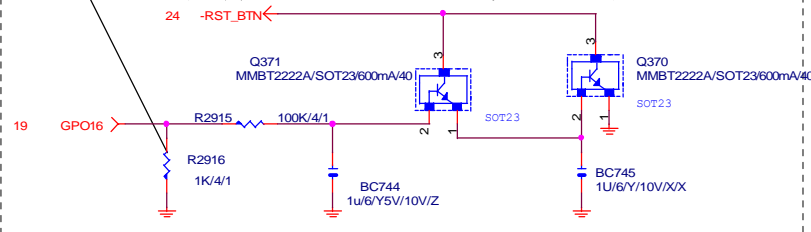


Gigabyte Technology

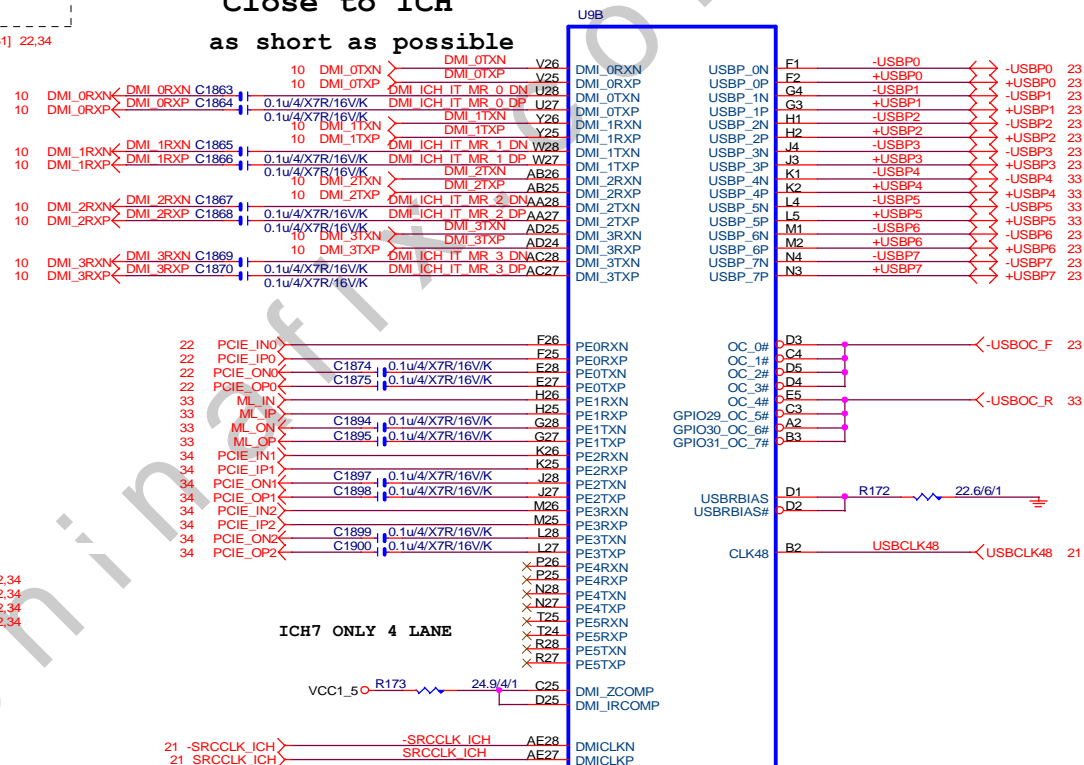
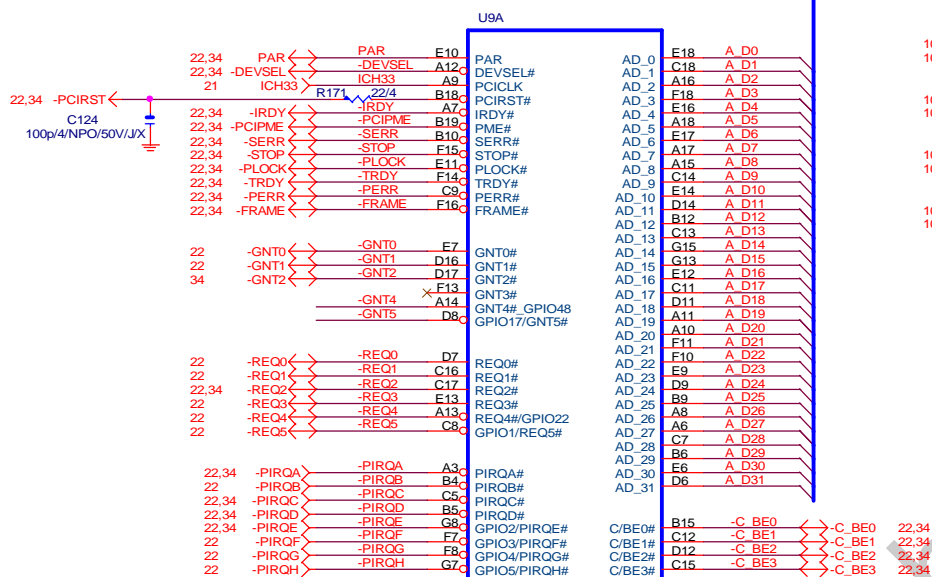
|        |                            |             |                   |
|--------|----------------------------|-------------|-------------------|
| Title  |                            |             | DDR II TERMINATOR |
| Size   | Document Number            | GA-P41-ES3G |                   |
| Custom |                            | Rev         | 1.0               |
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FOR ICH7R POWER ON 瞬間會HIGH 到1.8V 之後0V,必須PULL DOWN 1K/6

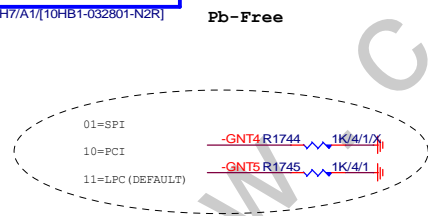
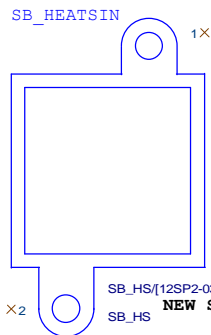
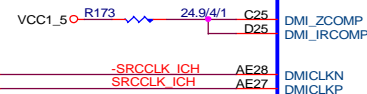
H/W  
RESET



Close to ICH  
as short as possible

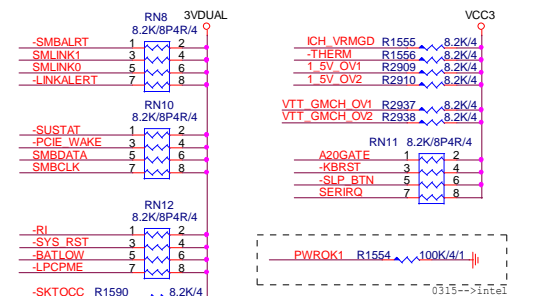


ICH7 ONLY 4 LANE



Gigabyte Technology

|                         |                            |       |          |
|-------------------------|----------------------------|-------|----------|
| Title                   |                            |       |          |
| ICH7-PCI, DMI, LAN, USB |                            |       |          |
| Size                    | Document Number            | Rev   |          |
| B                       | GA-P41-ES3G                | 1.0   |          |
| Date:                   | Friday, September 18, 2009 | Sheet | 18 of 34 |



**SATA2\_0**  
SATA2/7/BUH/OP/VA/D/I/B

| Controller Pin | Signal   | Device Pin | Signal |
|----------------|----------|------------|--------|
| C138           | SATA0TXP | 1          | GND    |
| C140           | SATA0TXN | 2          | B+     |
|                |          | 3          | A+     |
|                |          | 4          | GND    |
| C142           | SATA0RXN | 5          | B-     |
| C144           | SATA0RXP | 6          | A-     |
|                |          | 7          | GND    |

**SATA2\_1**  
SATA2/7/BUH/OP/VA/D/I/B

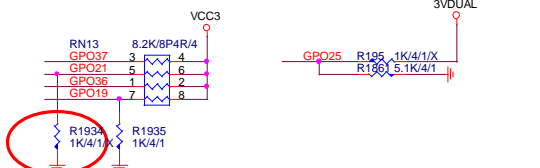
| Controller Pin | Signal   | Device Pin | Signal |
|----------------|----------|------------|--------|
| C139           | SATA1RXF | 7          | GND    |
|                |          | 6          | B+     |
| C141           | SATA1RXN | 5          | A+     |
|                |          | 4          | B-     |
|                |          | 3          | A-     |
| C143           | SATA1TXN | 2          | B+     |
| C145           | SATA1TXP | 1          | GND    |

**SATA2\_2**  
SATA2/7/BUH/OP/VA/D/I/B

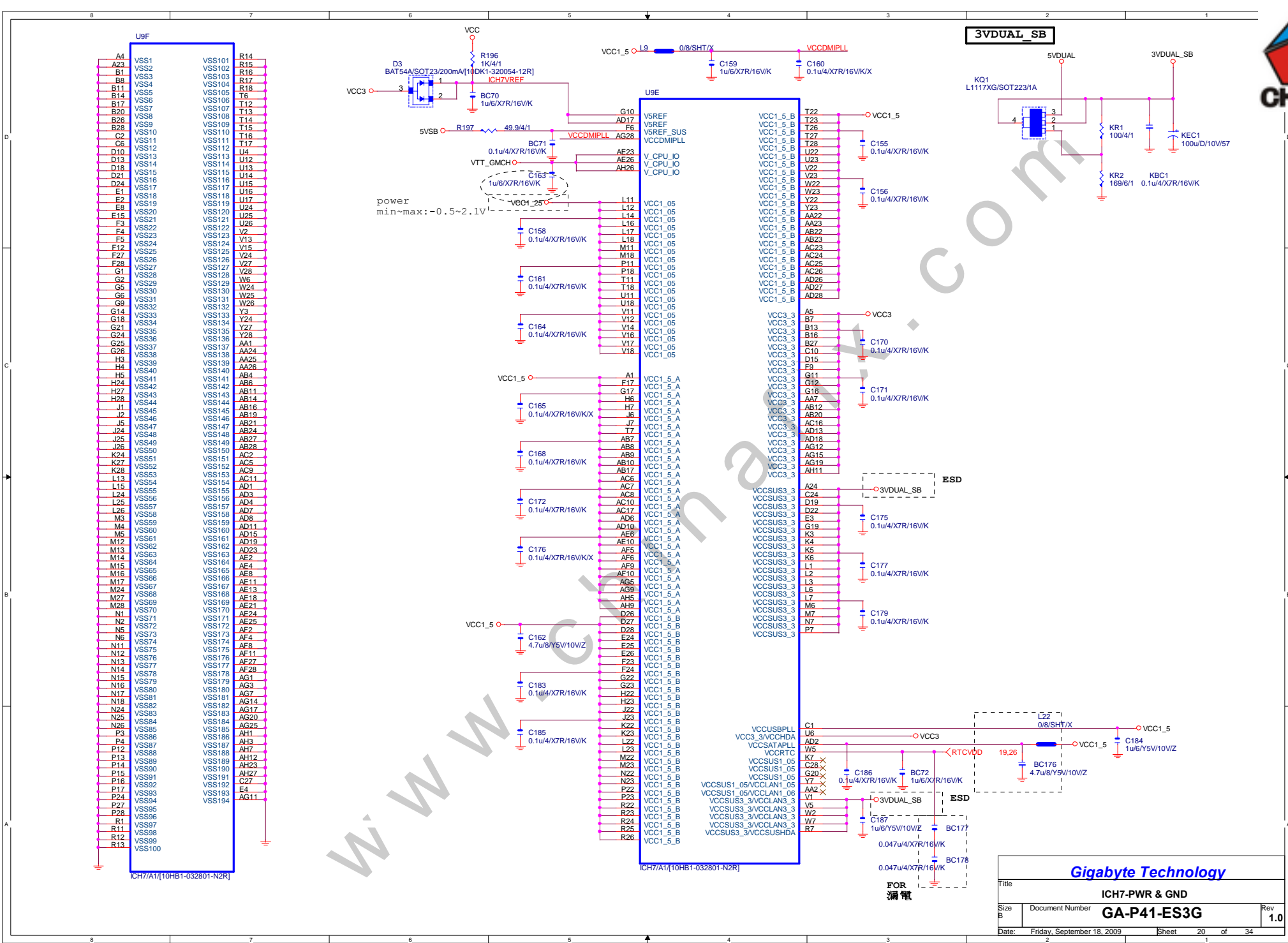
| Controller Pin | Signal   | Device Pin | Signal |
|----------------|----------|------------|--------|
| C146           | SATA2TXP | 1          | GND    |
| C148           | SATA2TXN | 2          | B+     |
|                |          | 3          | A+     |
|                |          | 4          | GND    |
| C150           | SATA2RXN | 5          | B-     |
| C152           | SATA2RXP | 6          | A-     |
|                |          | 7          | GND    |

**SATA2\_3**  
SATA2/7/BUH/OP/VA/D/I/B

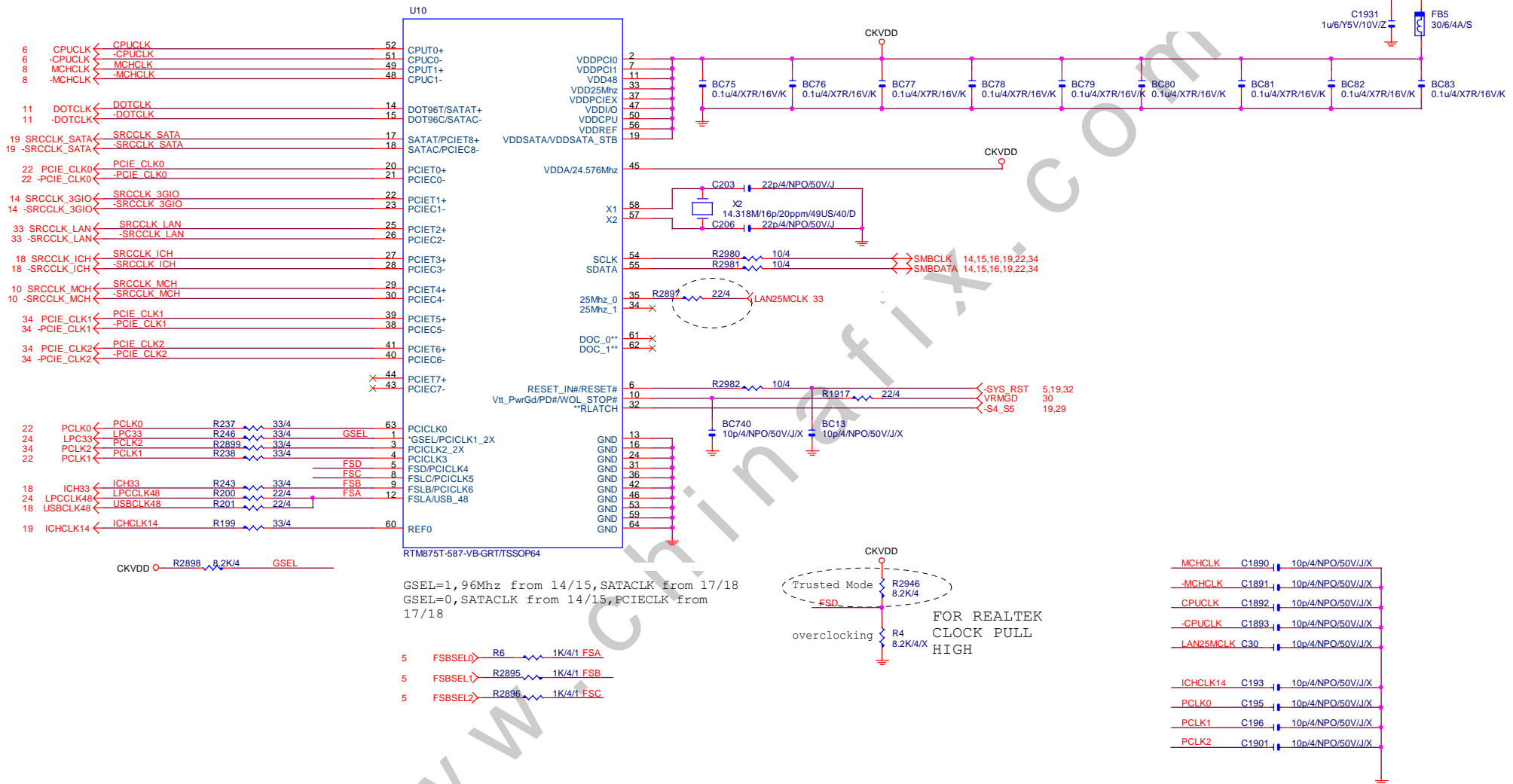
| Controller Pin | Signal   | Device Pin | Signal |
|----------------|----------|------------|--------|
| C147           | SATA3RXP | 7          | GND    |
|                |          | 6          | B+     |
| C149           | SATA3RXN | 5          | A+     |
|                |          | 4          | B-     |
|                |          | 3          | A-     |
| C151           | SATA3TXN | 2          | B+     |
| C153           | SATA3TXP | 1          | GND    |



|                            |                            |       |          |
|----------------------------|----------------------------|-------|----------|
| Title                      |                            |       |          |
| ICH7-IDE, SATA, GPIO, CTRL |                            |       |          |
| Size                       | Document Number            | Rev   |          |
| Custom                     | GA-P41-ES3G                | 1.0   |          |
| Date:                      | Friday, September 18, 2009 | Sheet | 19 of 34 |



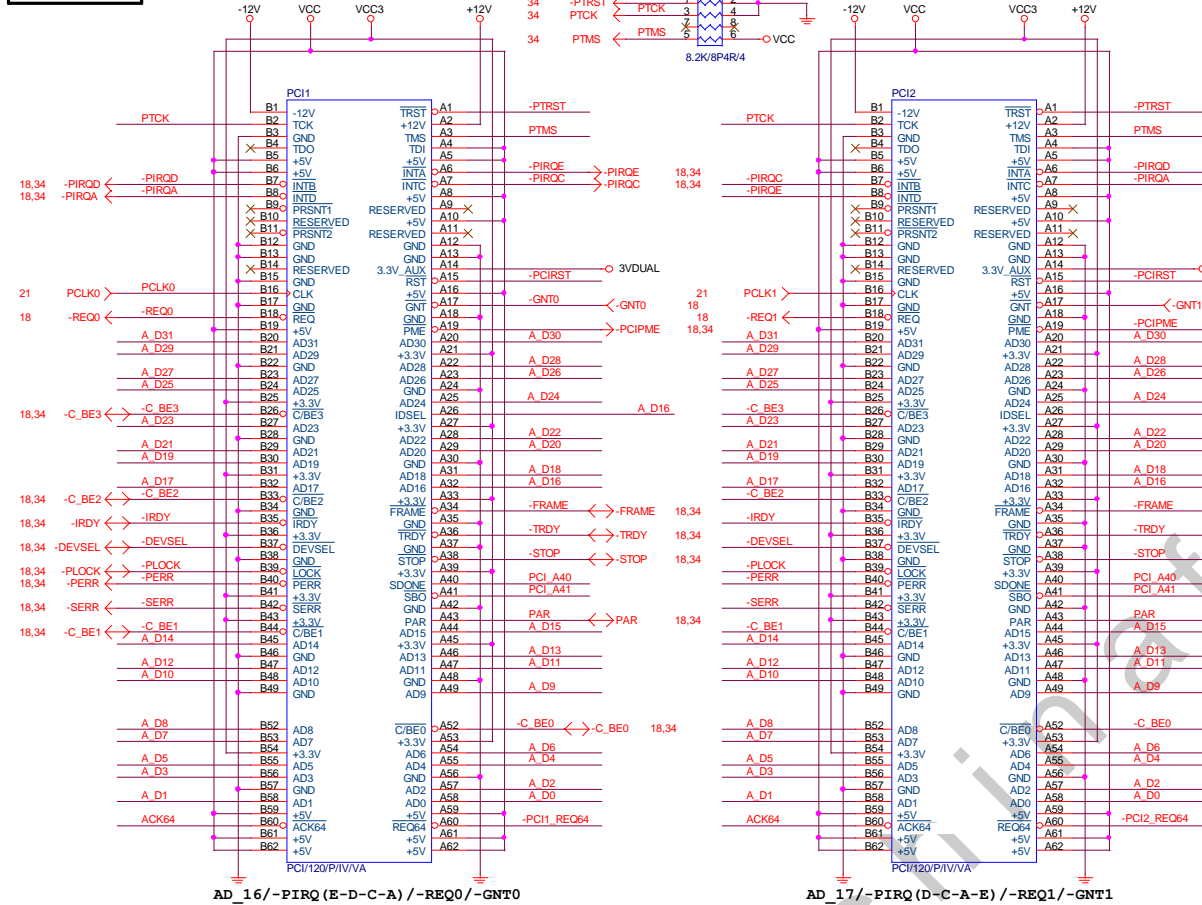
# CLK GEN CK505



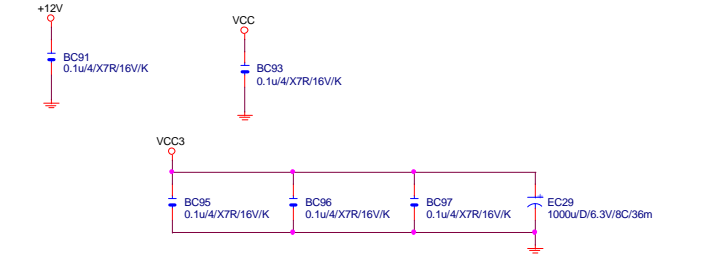
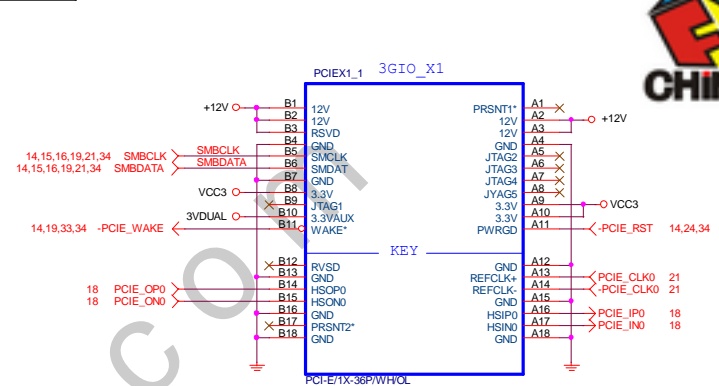
Gigabyte Technology

|        |                            |             |               |
|--------|----------------------------|-------------|---------------|
| Title  |                            |             | CK505 CLK GEN |
| Size   | Document Number            | GA-P41-ES3G |               |
| Custom |                            | Rev         | 1.0           |
| Date:  | Friday, September 18, 2009 | Sheet       | 21 of 34      |

# PC11,2 SLOT

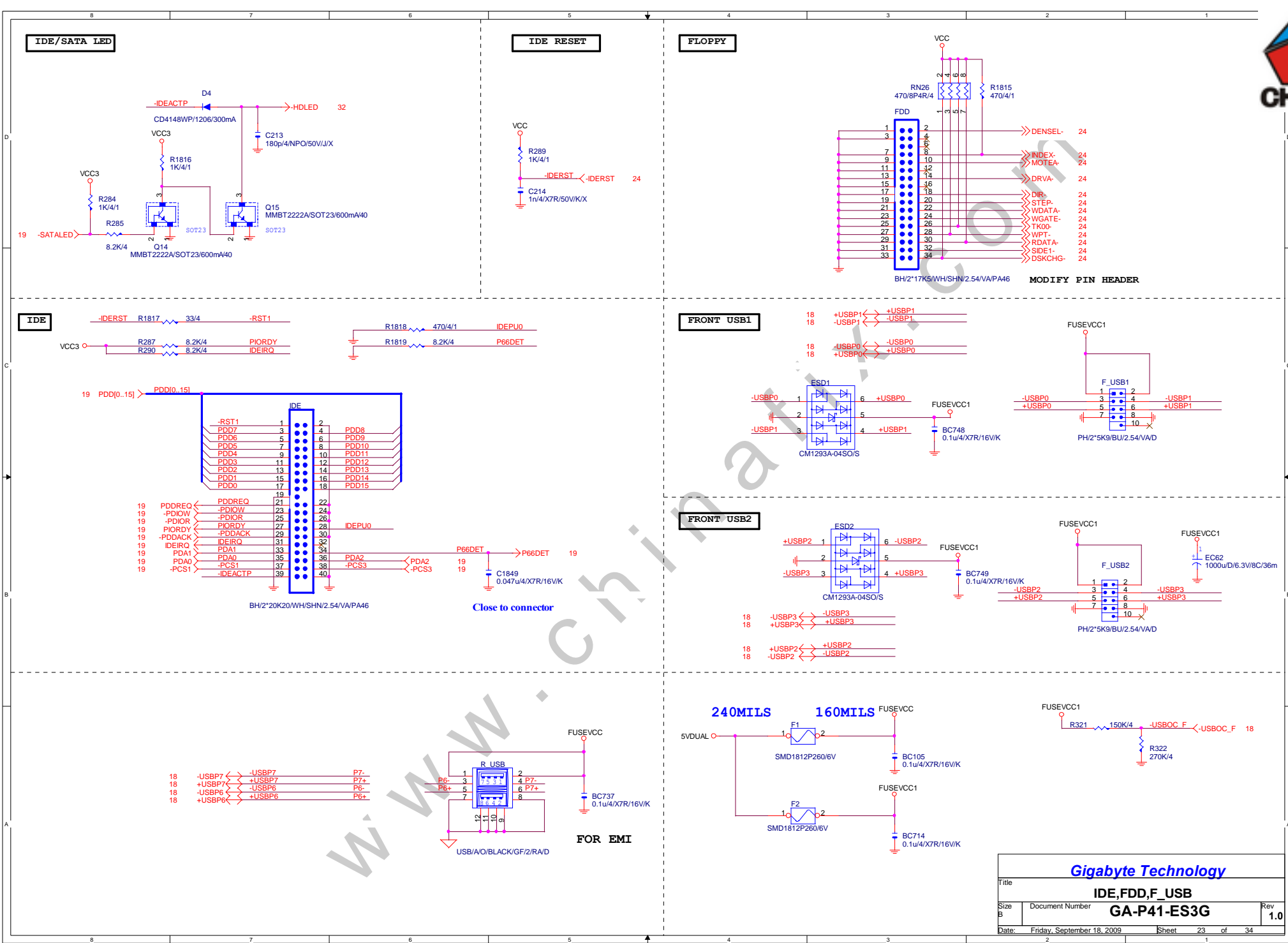


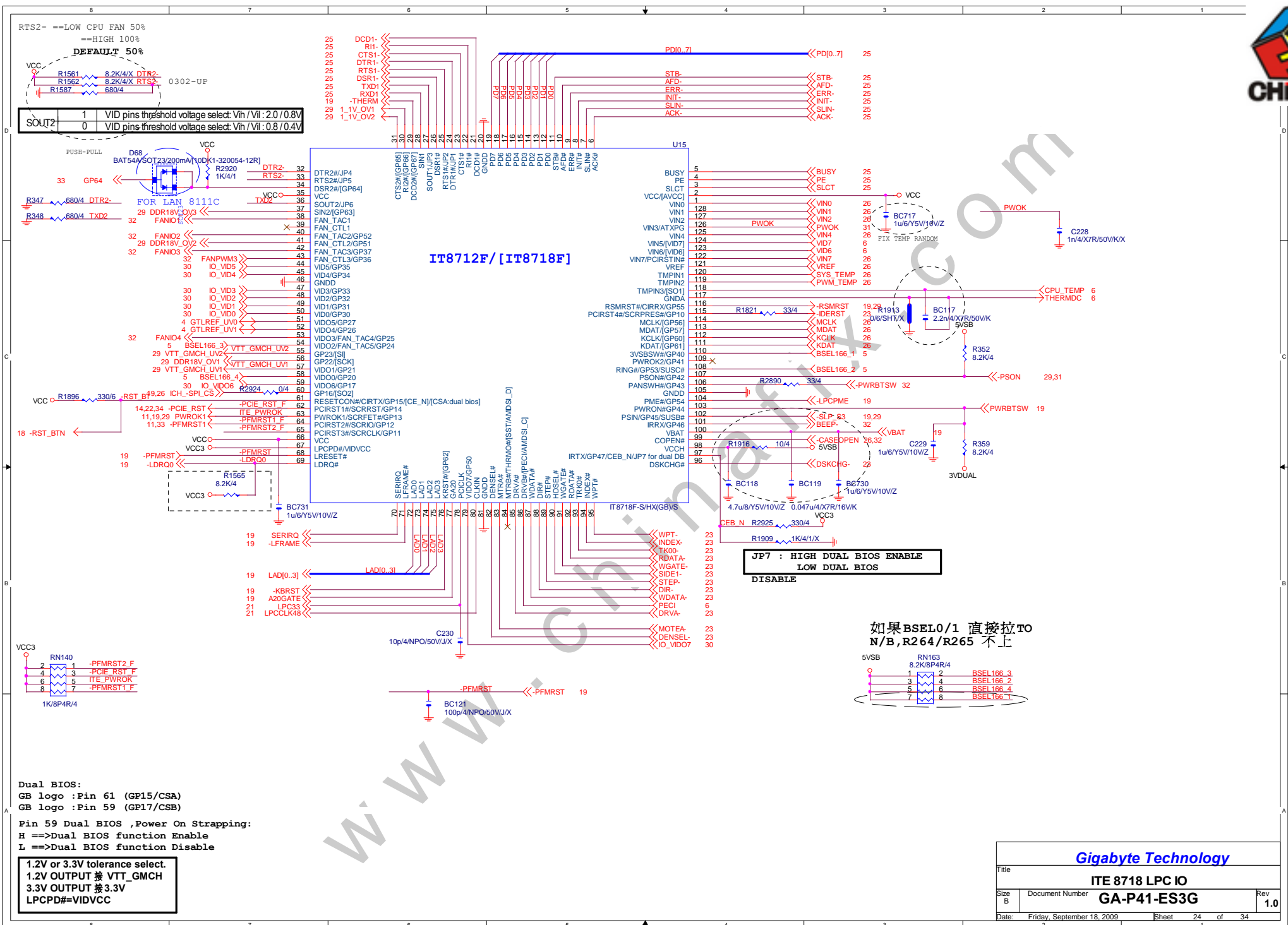
# PCIE\*1



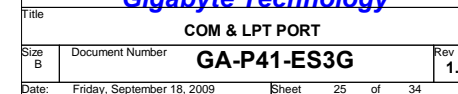
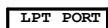
|                            |  |  |
|----------------------------|--|--|
| Gigabyte Technology        |  |  |
| Title                      |  |  |
| PCI SLOT 1, 2/PCIEX1       |  |  |
| Size                       |  |  |
| Custom                     |  |  |
| Document Number            |  |  |
| GA-P41-ES3G                |  |  |
| Rev                        |  |  |
| 1.0                        |  |  |
| Date                       |  |  |
| Friday, September 18, 2009 |  |  |
| Sheet                      |  |  |
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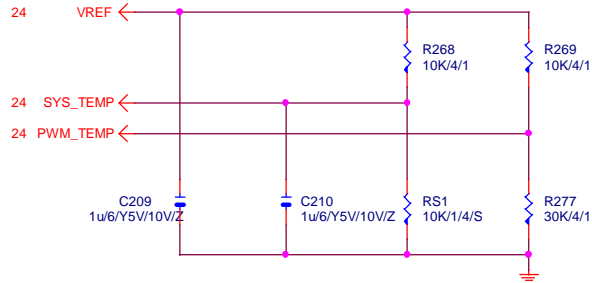




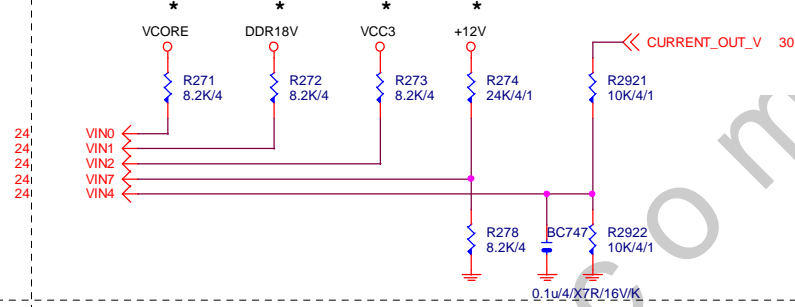




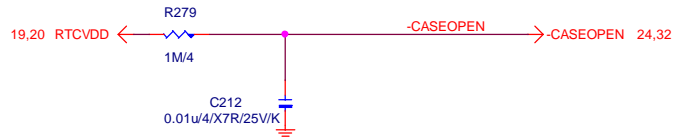
### TEMP H/W MONITOR



### VOLTAGE-- H/W MONITOR

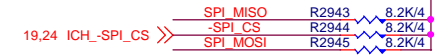
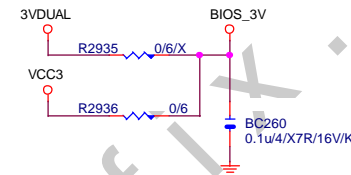


### CASE OPEN

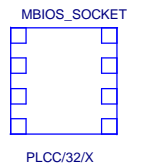
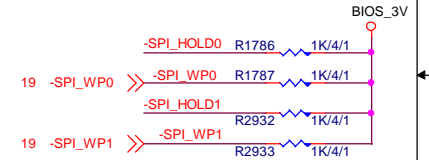
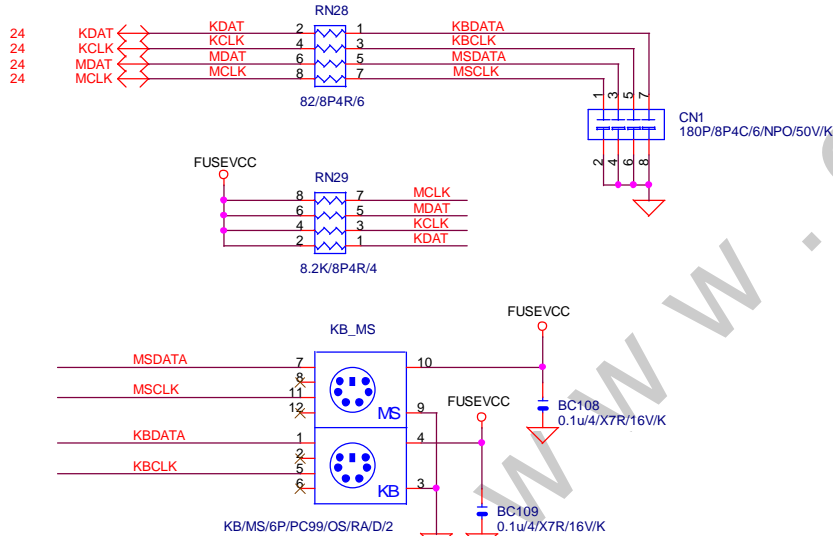


Case Open Circuits

### DUAL BIOS



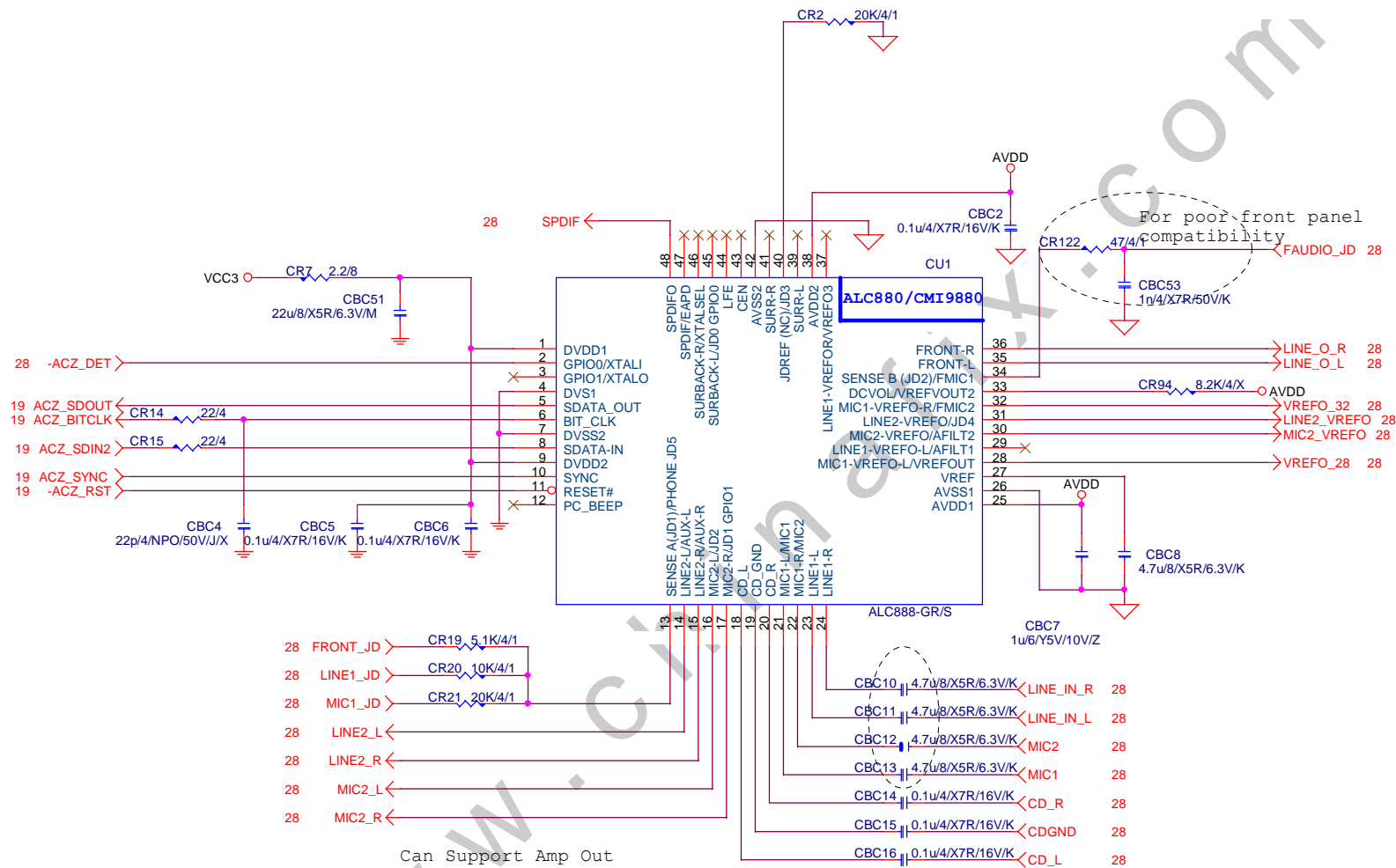
### KB/MS



BACKUP BIOS

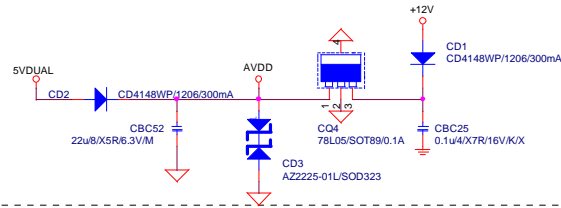
**Gigabyte Technology**

|        |                            |             |                          |       |
|--------|----------------------------|-------------|--------------------------|-------|
| Title  |                            |             | HW-MONITOR/CI/KB/MS/BIOS |       |
| Size   | Document Number            | GA-P41-ES3G |                          | Rev   |
| Custom |                            |             |                          | 1.0   |
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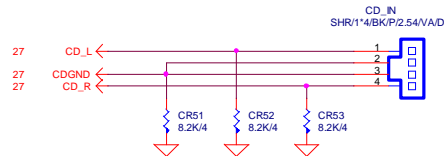


| Gigabyte Technology |                            |       |          |
|---------------------|----------------------------|-------|----------|
| Title               |                            |       |          |
| AZALIA ALC888       |                            |       |          |
| Size                | Document Number            | Rev   |          |
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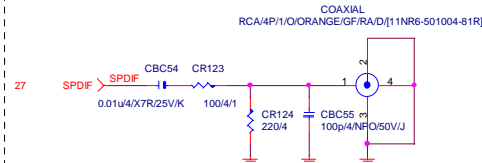
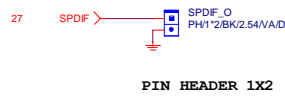
# CODEC POWER/EMI PAD



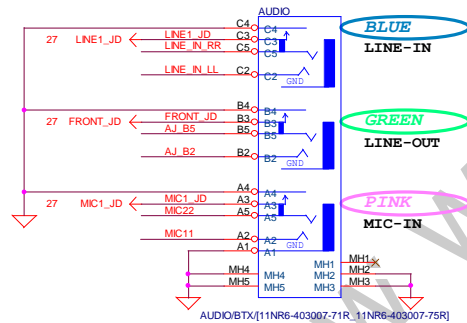
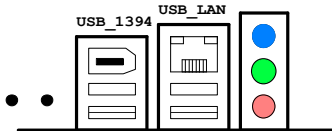
# CD IN



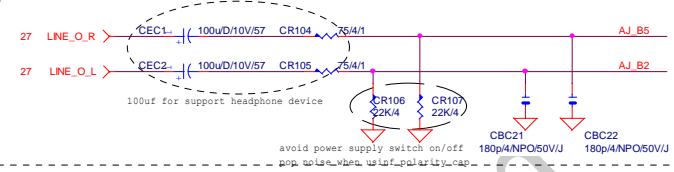
# SPDIF



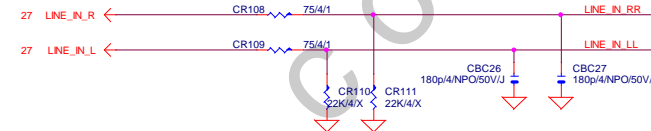
# AZALIA JACK



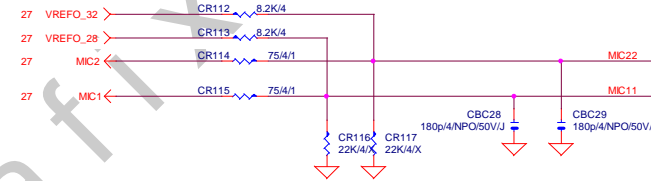
# LINE-OUT



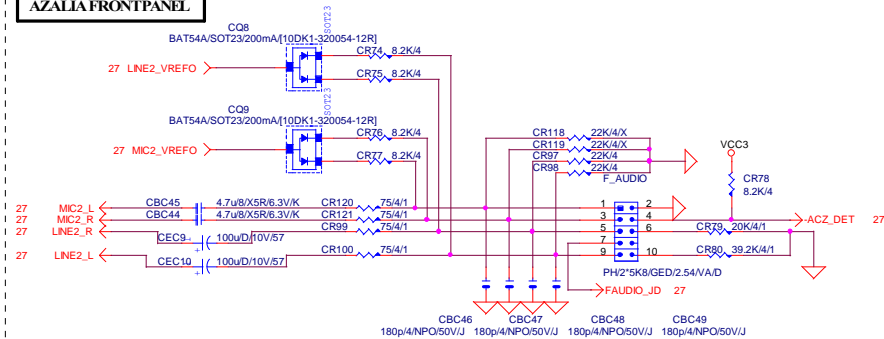
# LINE-IN



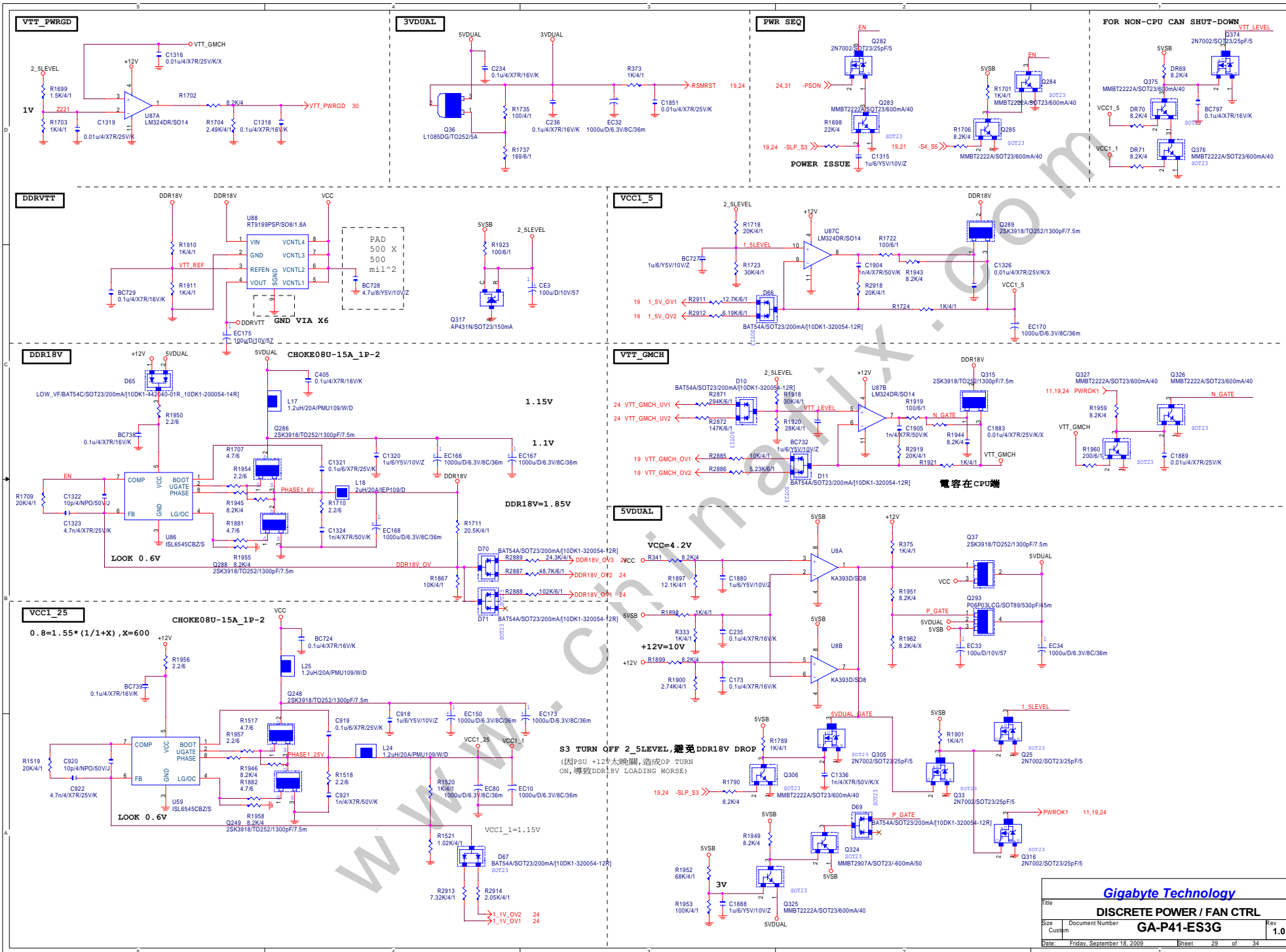
# MIC-IN

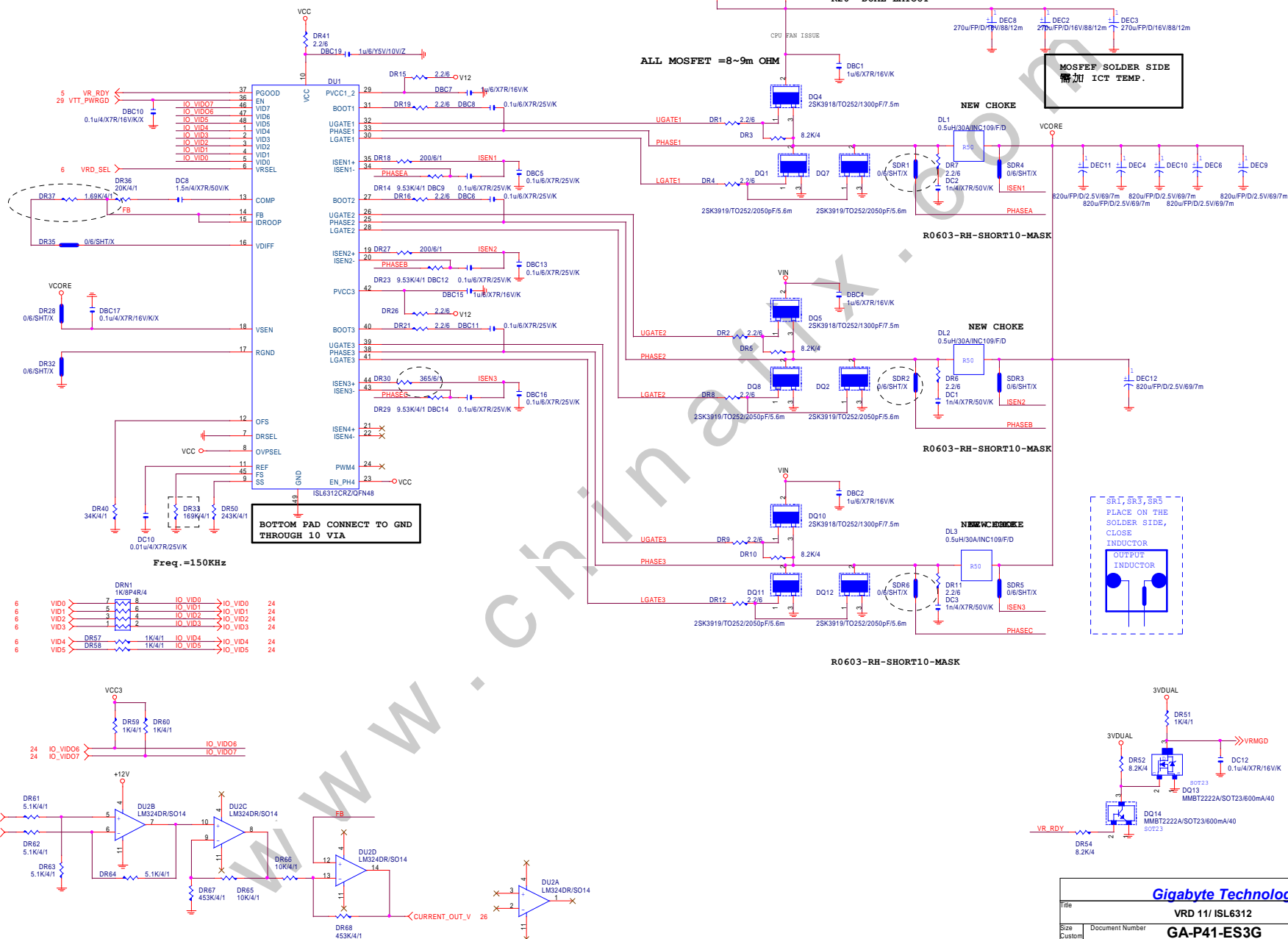


# AZALIA FRONT PANEL

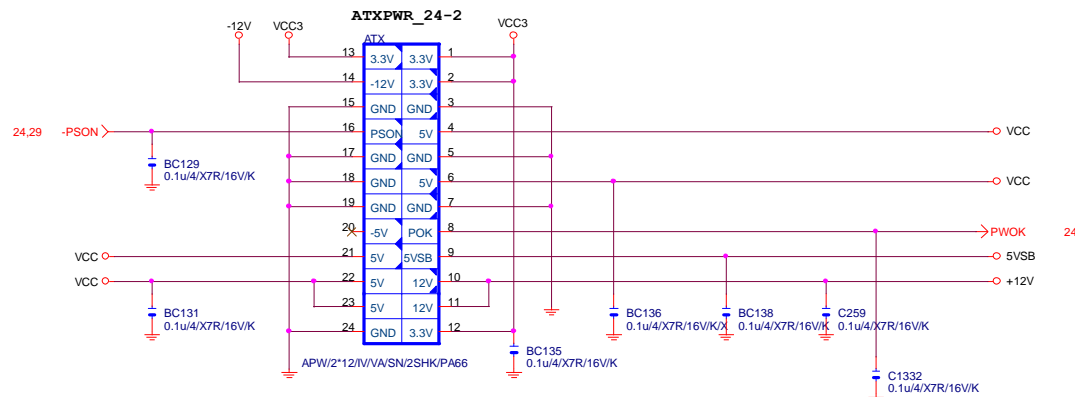


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|---------------------|-----------------|------|----------------------------|
| AUDIO JACK          |                 |      |                            |
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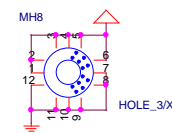
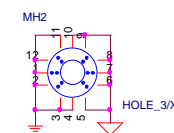
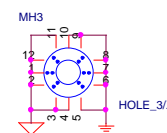
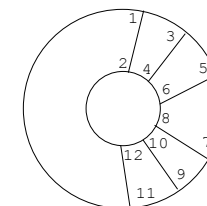
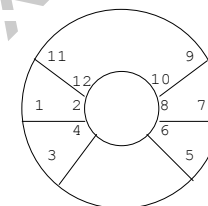
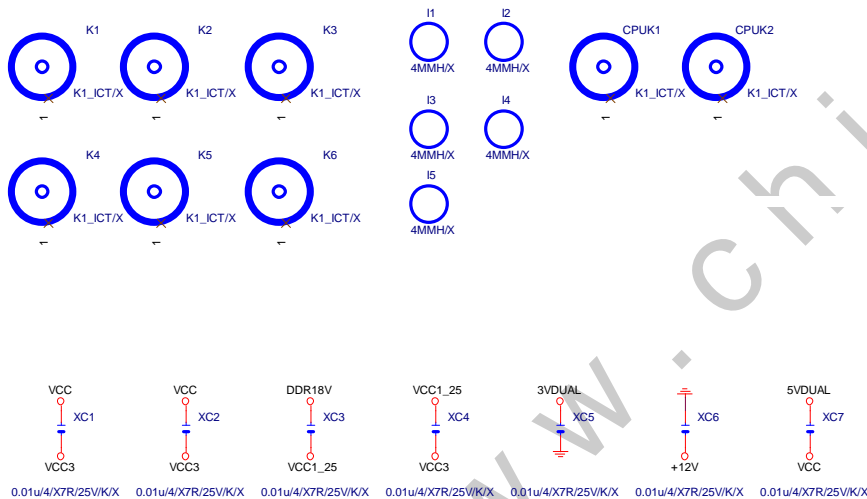
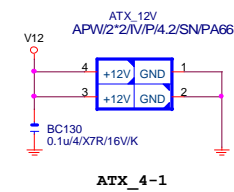
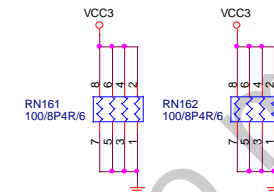




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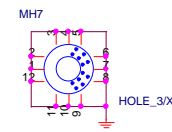
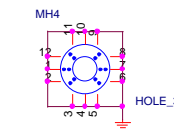
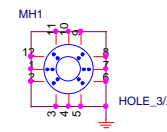


## FIX FWR AcBel (ATX-400C-A2ADB)



HOLE\_4-RH

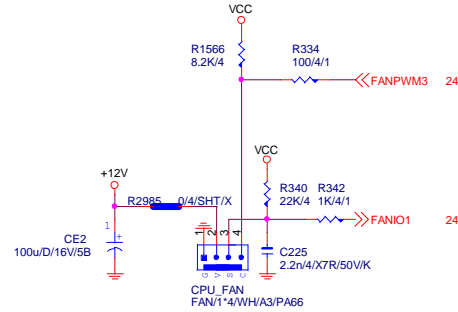
HOLE\_4-RH-5MM



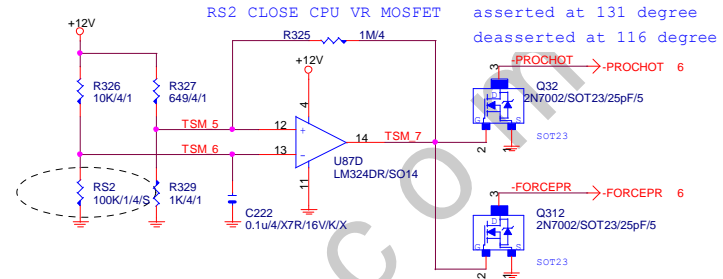
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|       |                            |             |                     |
|-------|----------------------------|-------------|---------------------|
| Title |                            |             | ATX POWER CONNECTOR |
| Size  | Document Number            | GA-P41-ES3G |                     |
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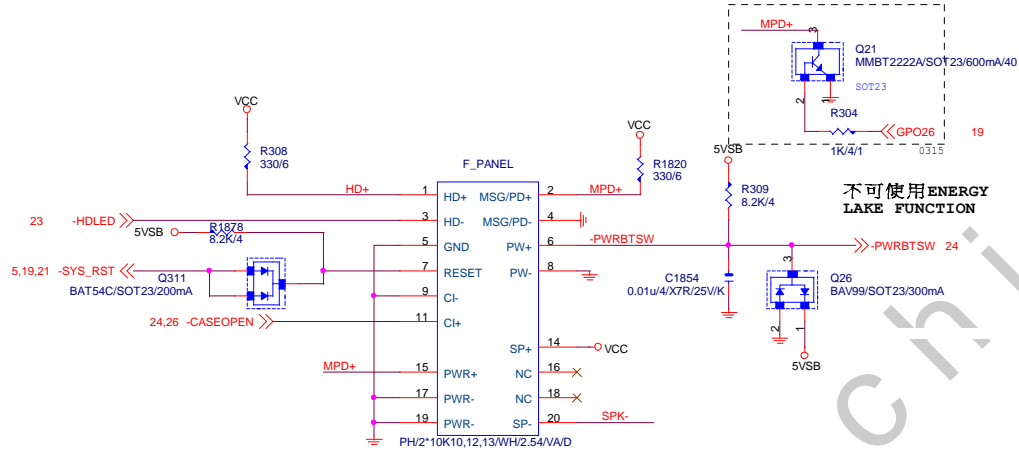
# CPU SMART FAN SMART FAN



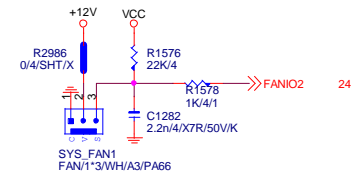
# PROCESSOR HOT



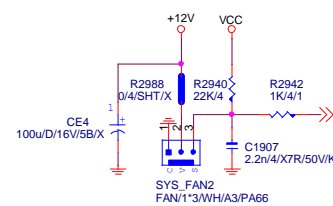
# INTEL FRONT PANEL



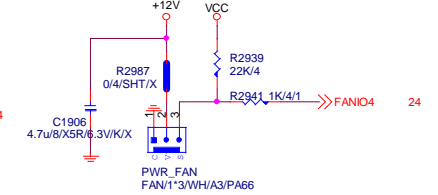
# SYS\_FAN1



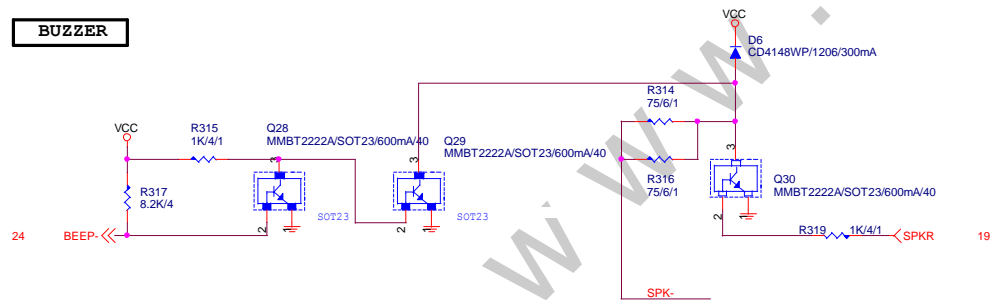
# SYS\_FAN2



# PWR\_FAN



# BUZZER



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|                        |                            |                |
|------------------------|----------------------------|----------------|
| Title                  |                            |                |
| FRONT PANEL / FAN CTRL |                            |                |
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