

# GIGABYTE GA-8IPE775 Pro

# Schematics

Revision 1.01





SHEET TITLE

|    |                               |
|----|-------------------------------|
| 01 | COVER SHEET                   |
| 02 | BOM & PCB MODIFY HISTORY      |
| 03 | BLOCK DIAGRAM                 |
| 04 | P4 LGA775A                    |
| 05 | P4_478B                       |
| 06 | P4_478C                       |
| 07 | SPRINGDALE HOST               |
| 08 | SPRINGDALE DDR                |
| 09 | SPRINGDALE AGP, HUB, CSA, VGA |
| 10 | SPRINGDALE PWR                |
| 11 | DDR1,2 CHANNEL A              |
| 12 | DDR3,4 CHANNEL B              |
| 13 | DDR TERMINATION               |
| 14 | AGP 8X SLOT                   |
| 15 | ICH5 PCI, USB, HUB, LAN       |
| 16 | ICH5 IDE, GPIO, SATA, CTRL    |
| 17 | ICH5 VCC, GND                 |
| 18 | DUAL FWH                      |
| 19 | ICS952635 CLOCK GENERATOR     |
| 20 | PCI SLOT1/SLOT2               |
| 21 | PCI SLOT3/SLOT4/RESET BUFFER  |
| 22 | PCI SLOT5/SLOT6               |

SHEET TITLE

|    |                              |
|----|------------------------------|
| 23 | AC '97 CODEC                 |
| 24 | AUDIO JACK, L_OUT, F_AUDIO   |
| 25 | ITE 8712/IR_CIR/SCR/S_IRQ    |
| 26 | COMA/VGA_COMB/LPT            |
| 27 | IDE1/IDE2/FDD                |
| 28 | FAN/HW MONITOR               |
| 29 | KB_MS/GAME/FUSEVCC           |
| 30 | FRONT PANEL                  |
| 31 | R_USB/F_USB1/F_USB2          |
| 32 | DDR/VDDQ/5VDUAL/VCCVID POWER |
| 33 | VCORE POWER                  |
| 34 | ATX/ATX_12V/FAN1655M         |
| 35 | MARVELL 88E8001              |
| 36 | TI TSB43AB23(1394)           |
| 37 | PCI ROUNTIONG                |
| 38 | GPIO PIN LIST                |
|    |                              |
|    |                              |
|    |                              |
|    |                              |
|    |                              |

PROCESS: C

|   |                                    |
|---|------------------------------------|
|  | COMPONENT SIDE<br>(0.5 oz. Copper) |
|  | VCC SIDE<br>(1 oz. Copper)         |
|  | GND SIDE<br>(1 oz. Copper)         |
|  | SOLDER SIDE<br>(0.5 oz. Copper)    |

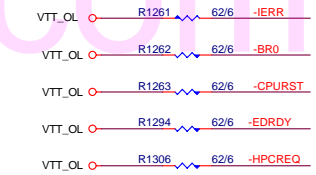
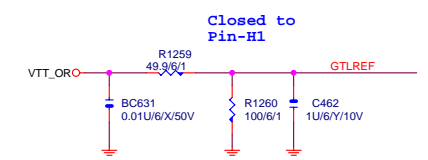
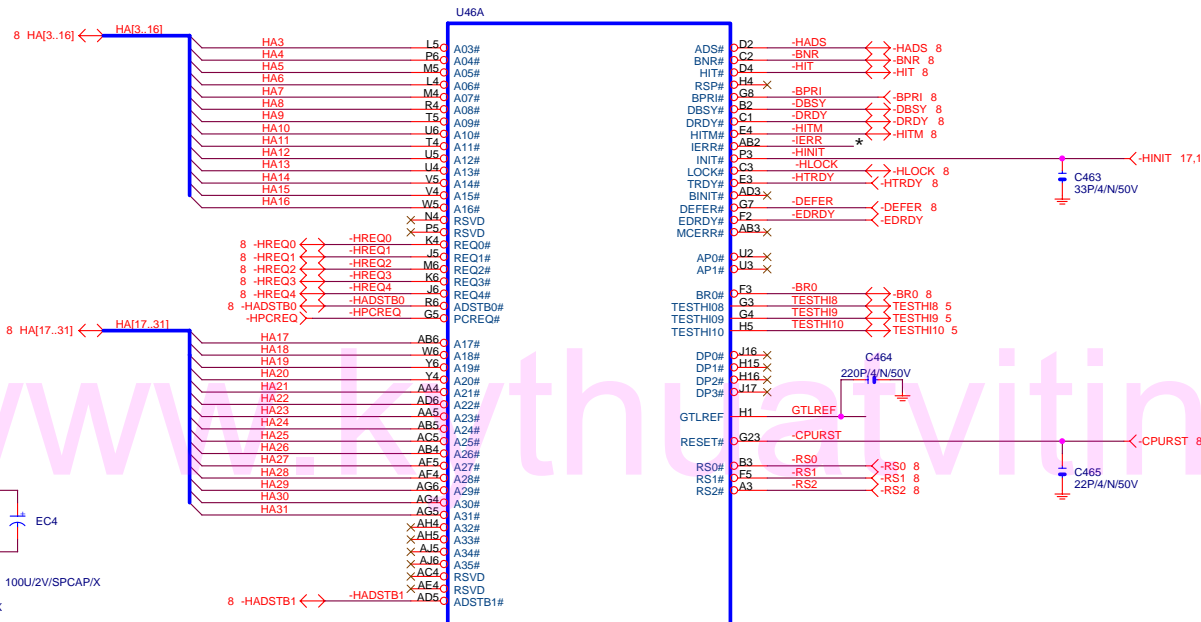
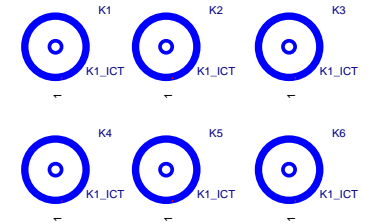
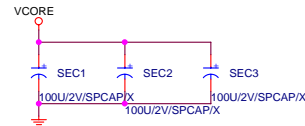
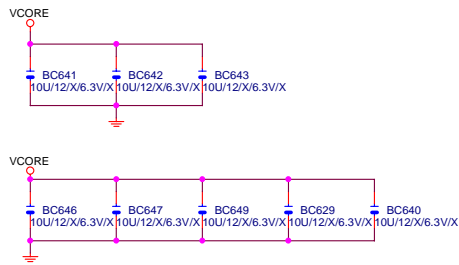
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Title: COVER SHEET

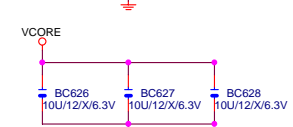
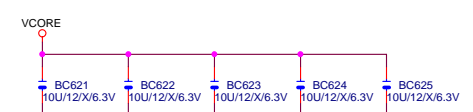
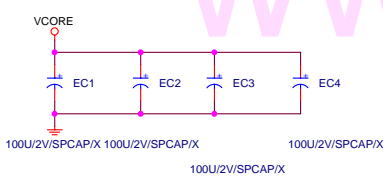
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| Size: Custom | Document Number: GA-8IPE775 PRO | Rev: 1.01 |
| Date:        | Sheet: 1                        | of 40     |



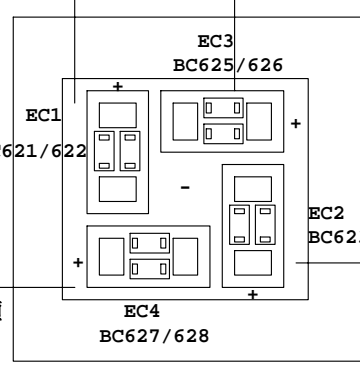




SP-CAP X 4PCS

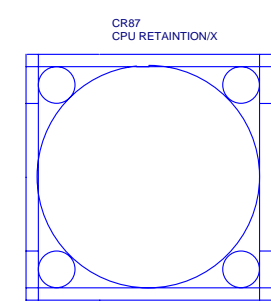


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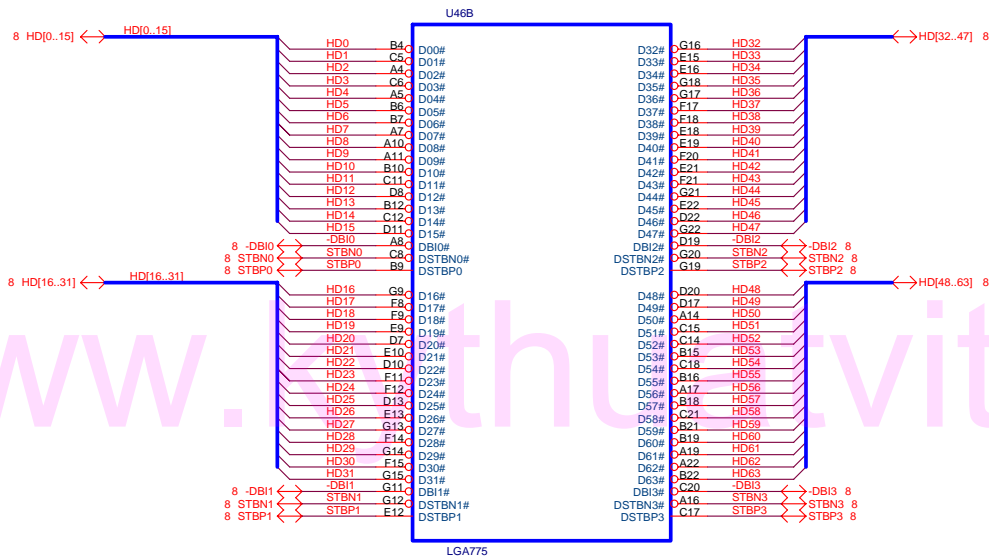
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上100U/2V/SPCAP



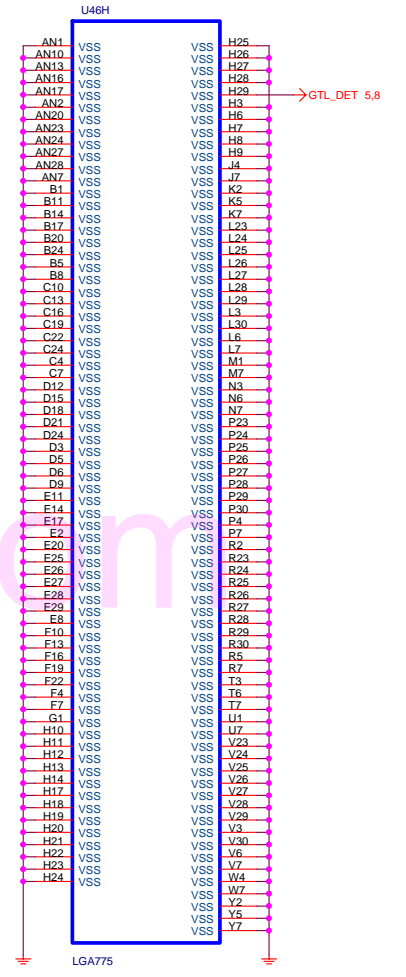
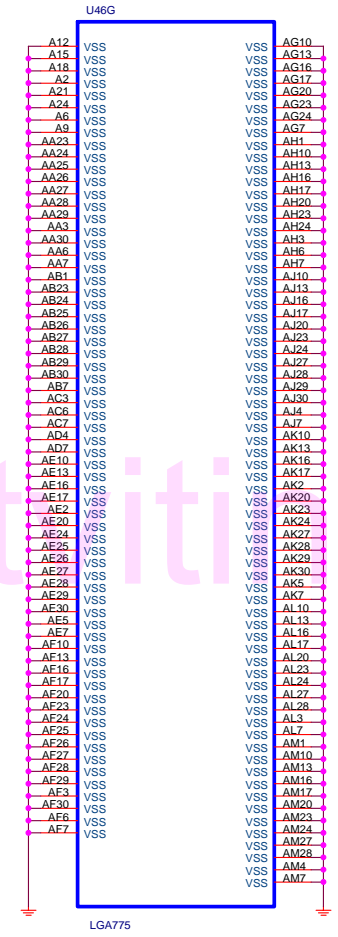
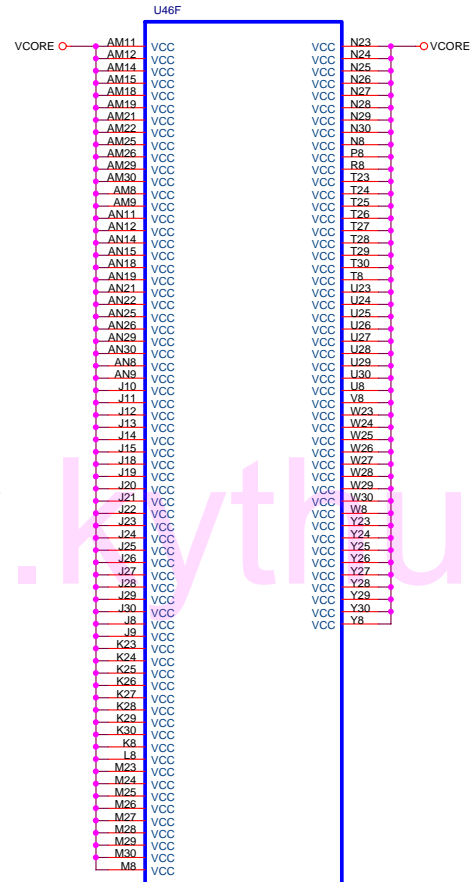
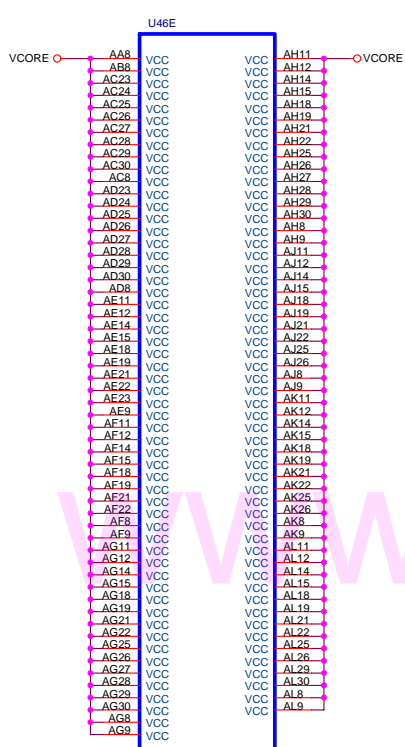
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| Size Custom            | Document Number | <b>GA-8IPE775 PRO</b> |       |
| Date: 星期二, 六月 23, 2004 | Sheet           | 4                     | of 40 |
|                        | Rev             | 1.01                  |       |

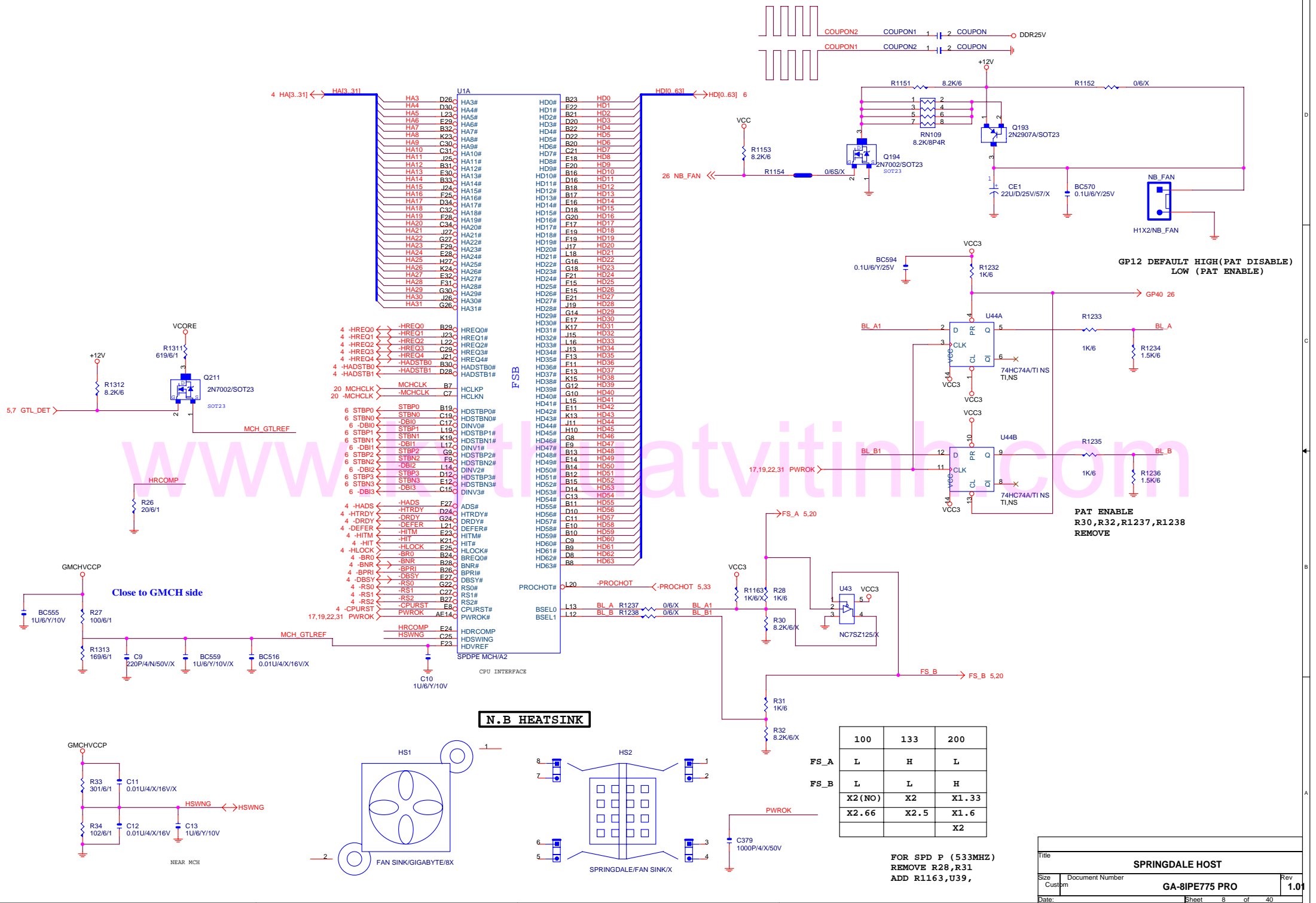




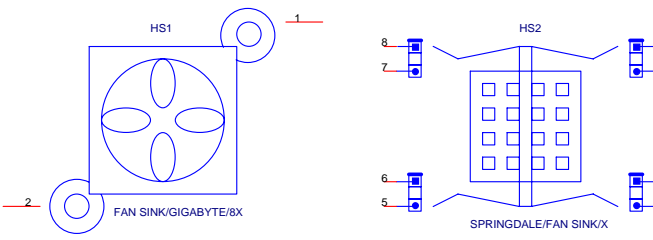
**GIGABYTE**

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| Date:            |  |  | Rev                   |  |  |
| 星期二, 六月 23, 2004 |  |  | 1.01                  |  |  |
| Sheet            |  |  | 6 of 40               |  |  |





**N.B HEATSINK**



|         |      |      |       |
|---------|------|------|-------|
|         | 100  | 133  | 200   |
| FS_A    | L    | H    | L     |
| FS_B    | L    | L    | H     |
| X2 (NO) | X2   | X2   | X1.33 |
| X2.66   | X2.5 | X1.6 | X2    |

FOR SPD P (533MHz)  
REMOVE R28,R31  
ADD R1163,U39,



15 GAD[0..31] <-> GAD[0..31]  
 15 SBA[0..7] <-> SBA[0..7]  
 16 HL[0..10] <-> HL[0..10]

**U1D**  
 15 -GCBE0 <-> -GCBE0 Y7 GCBE0  
 15 -GCBE1 <-> -GCBE1 W5 GCBE1  
 15 -GCBE2 <-> -GCBE2 AA3 GCBE2  
 15 -GCBE3 <-> -GCBE3 U2 GCBE3  
 15 -GFRAME <-> -GFRAME U6 GFRAME  
 20 GMCH3V66 <-> GMCH3V66 H4 GFRAME  
 15 -GDEVSEL <-> -GDEVSEL AB4 GDEVSEL  
 15 -GIRDY <-> -GIRDY V11 GIRDY  
 15 -GTRDY <-> -GTRDY V11 GTRDY  
 15 -GSTOP <-> -GSTOP W11 GSTOP  
 15 GPAR <-> GPAR AB5 GPARVADD\_DETECT  
 15 -GREQ <-> -GREQ NE GREQ  
 15 -GGNT <-> -GGNT M7 GGNT  
 GRCOMP AC2 GRCOMP  
 GSWING AC3 GSWING  
 MCH\_AGPREF AD2 MCH\_AGPREF  
 15 -RBF <-> -RBF R10 GRBF  
 15 -WBF <-> -WBF R9 GWBF  
 15 -PIPE <-> -PIPE M4 DBI\_HI  
 15 GDBI\_LO <-> GDBI\_LO M5 DBI\_LO  
 15 ST0 <-> ST0 N3 GST0  
 15 ST1 <-> ST1 N5 GST1  
 15 ST2 <-> ST2 N2 GST2

**AGP**

AC6 ADSTB0 <-> ADSTB0 15  
 AC5 -ADSTB0 <-> -ADSTB0 15  
 AE6 GAD0  
 AC11 GAD1  
 AD5 GAD2  
 AE5 GAD3  
 AA10 GAD4  
 AC9 GAD5  
 AB11 GAD6  
 AB7 GAD7  
 AA9 GAD8  
 AA6 GAD9  
 AA5 GAD10  
 W10 GAD11  
 AA11 GAD12  
 W6 GAD13  
 W9 GAD14  
 V7 GAD15  
 V4 ADSTB1 <-> ADSTB1 15  
 V5 -ADSTB1 <-> -ADSTB1 15  
 AA2 GAD16  
 Y4 GAD17  
 Y2 GAD18  
 W2 GAD19  
 Y5 GAD20  
 V2 GAD21  
 W3 GAD22  
 U3 GAD23  
 T2 GAD24  
 T4 GAD25  
 T5 GAD26  
 R2 GAD27  
 P2 GAD28  
 PE GAD29  
 P4 GAD30  
 M2 GAD31

**HUB**

**AGP**

**CSA**

**VGA**

**SPDPE MCH/A2**

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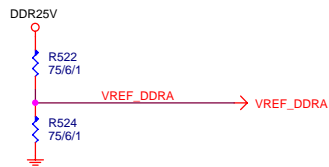
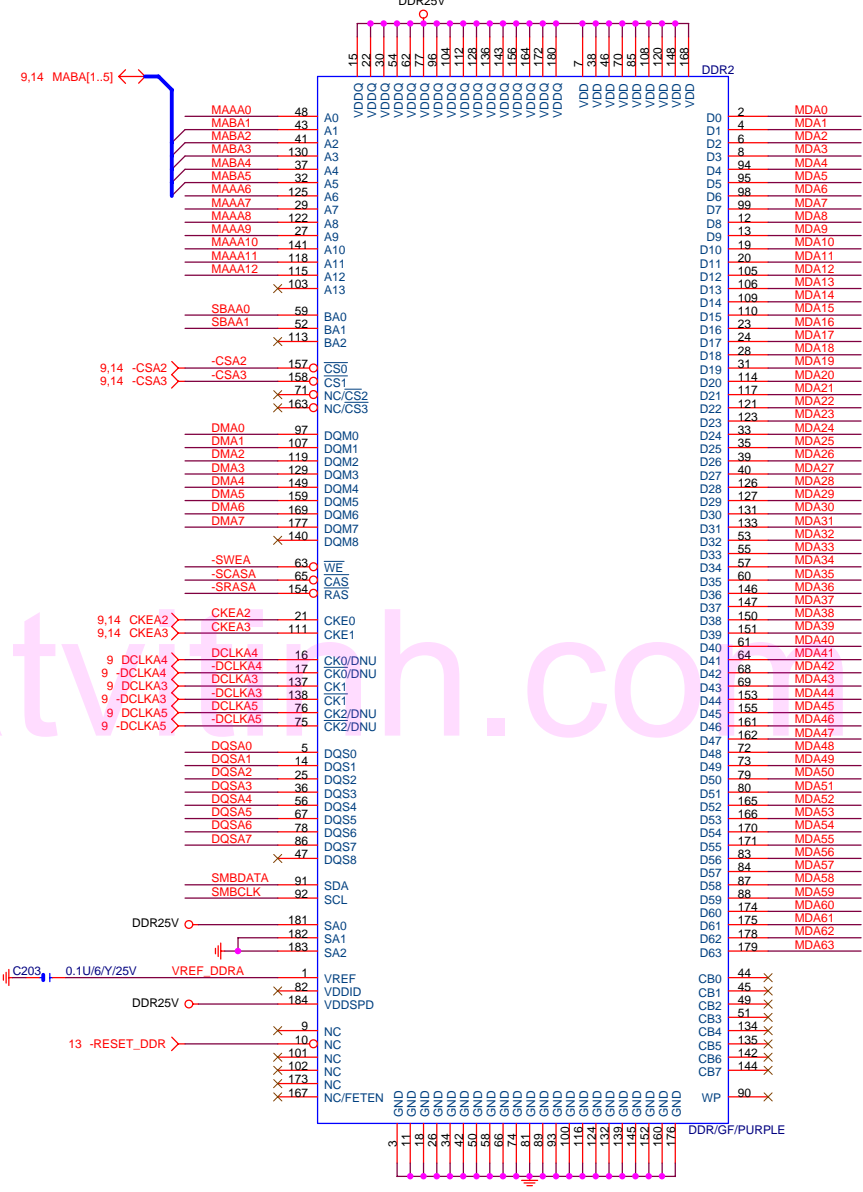
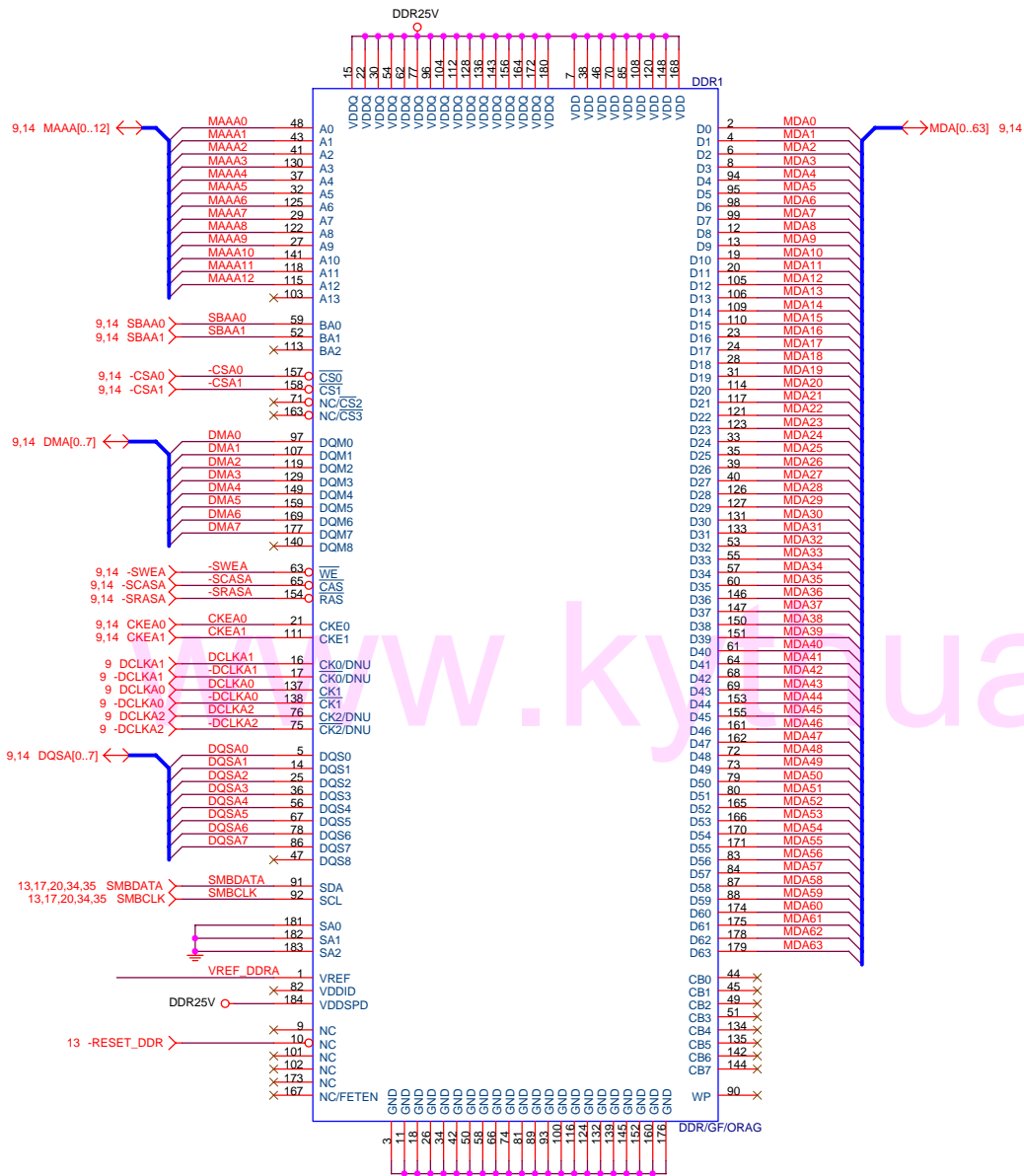
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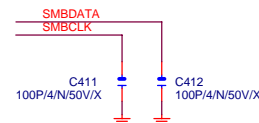
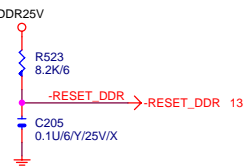
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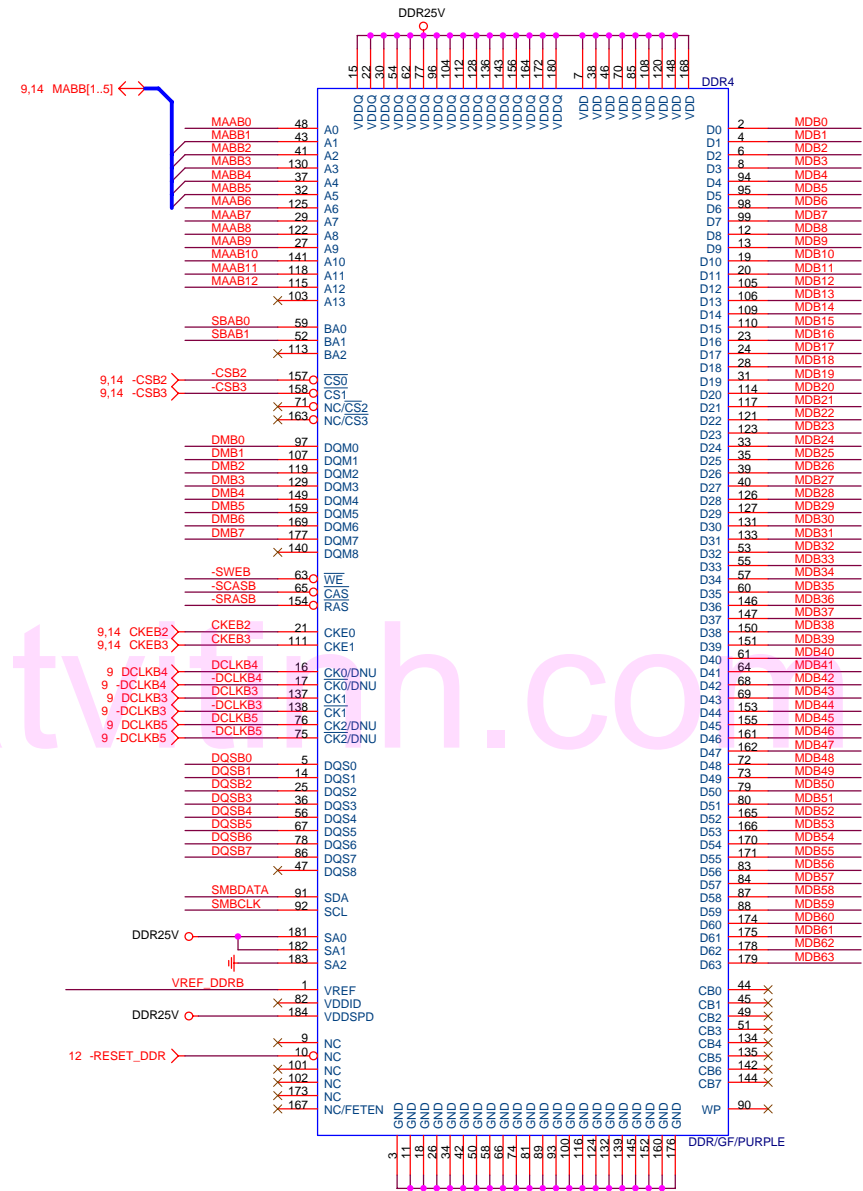
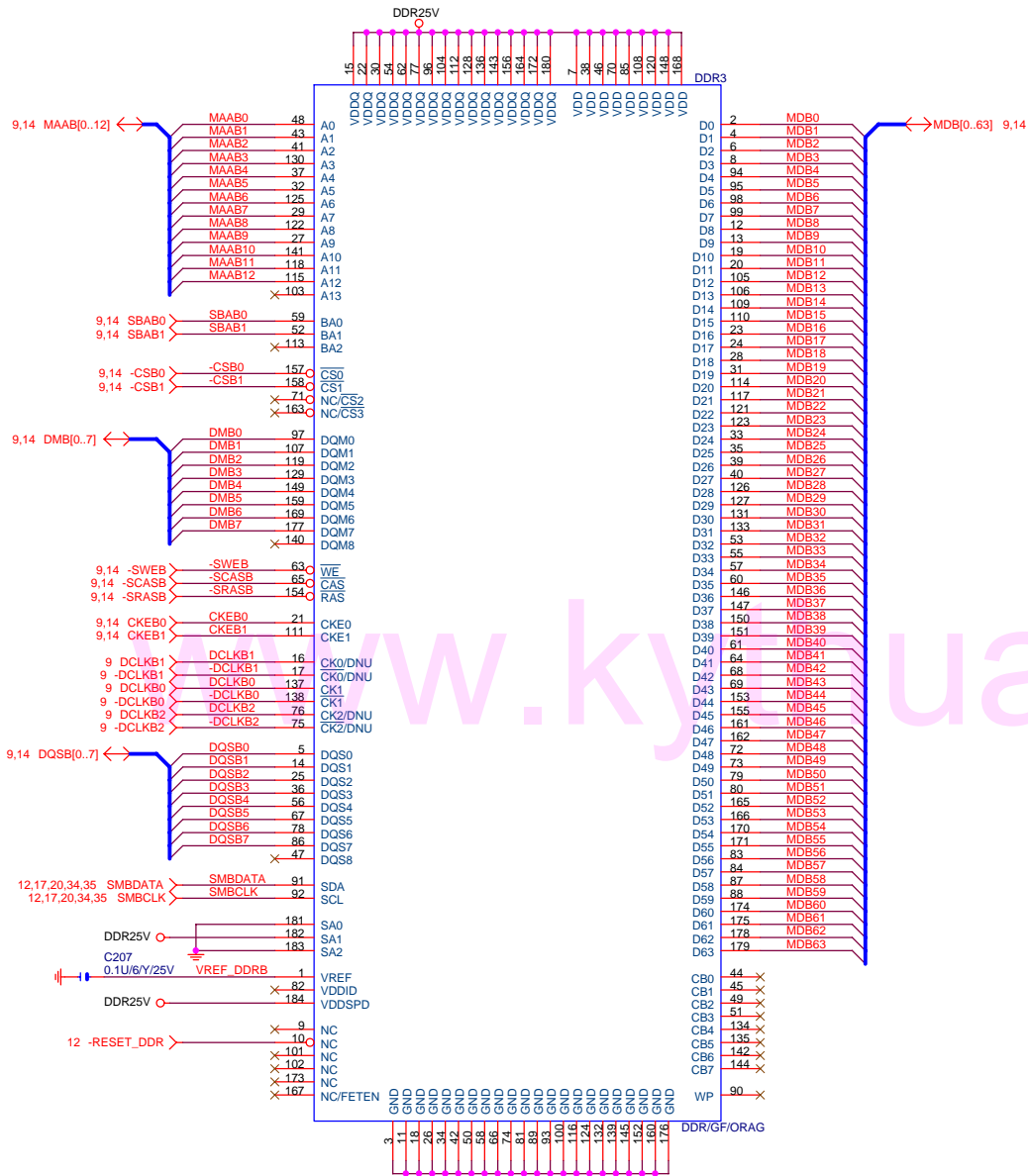




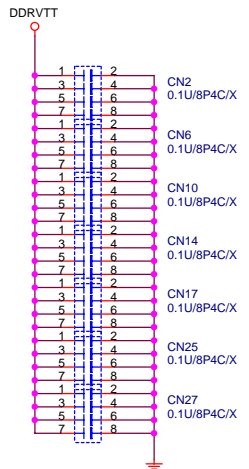
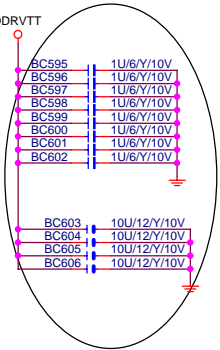
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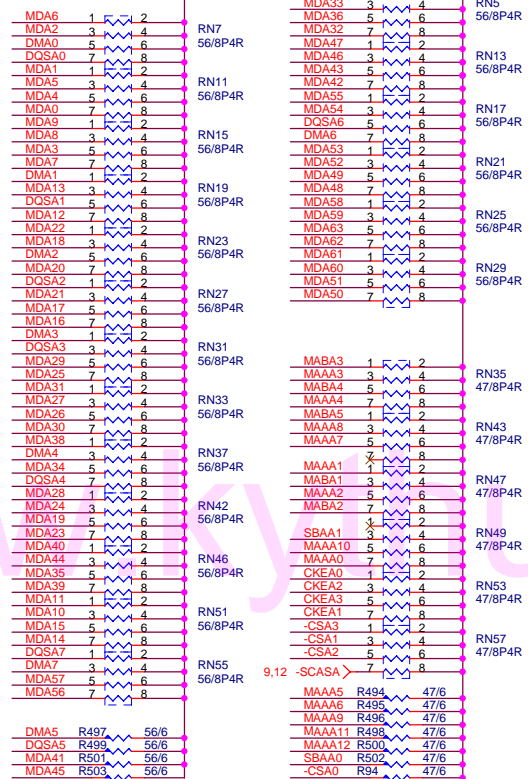
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| Title            |                 |      |
| DDR1,2 CHANNEL A |                 |      |
| Size             | Document Number | Rev  |
| B                | GA-8IPE75 PRO   | 1.01 |
| Date:            | Sheet 12 of 40  |      |



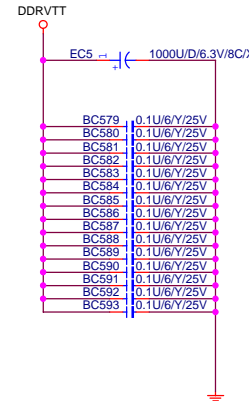
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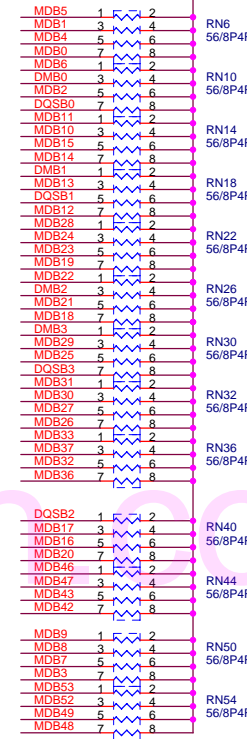
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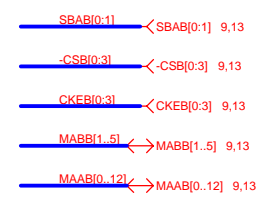
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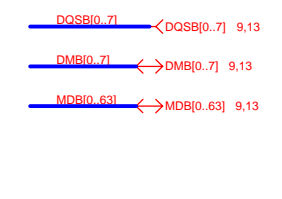
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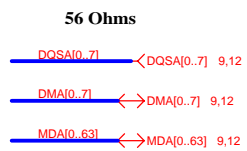
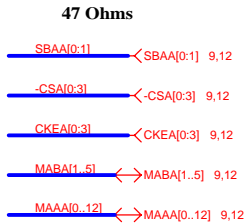
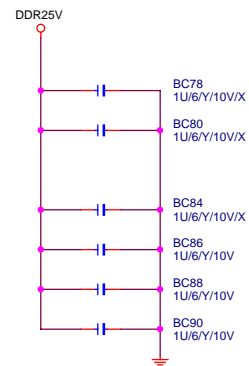
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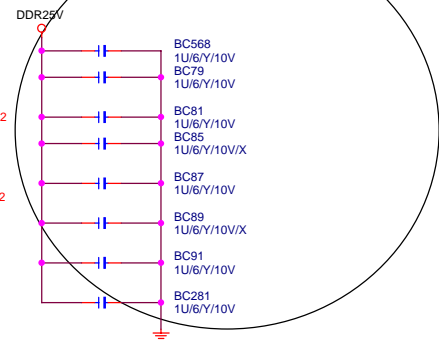
**56 Ohms**



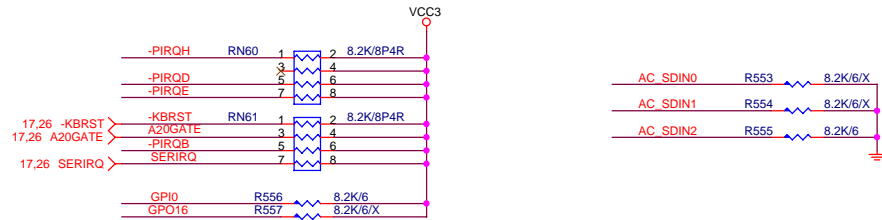
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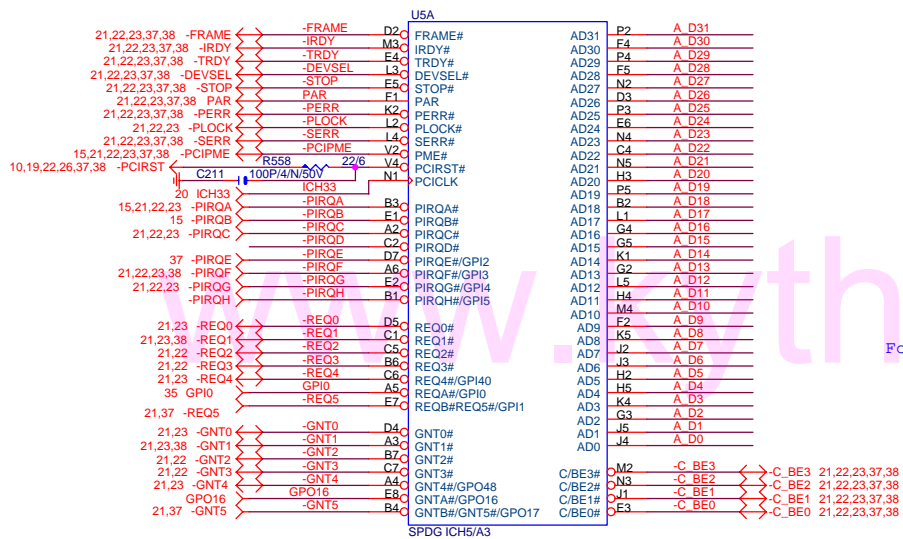
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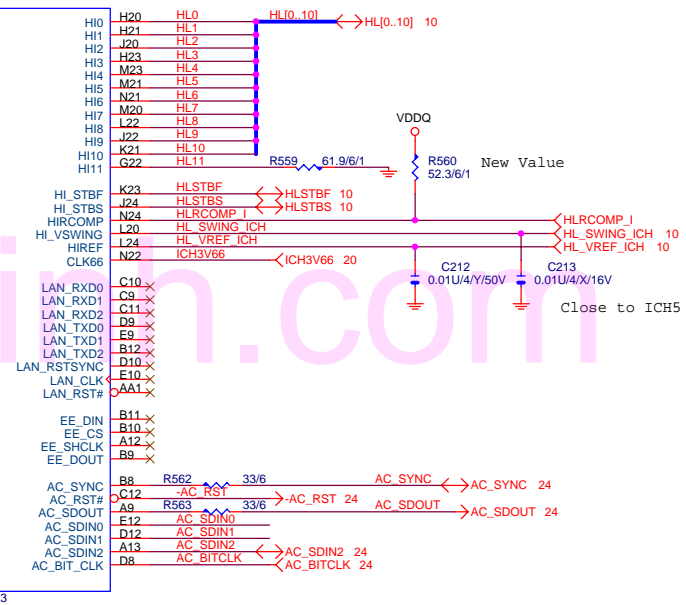
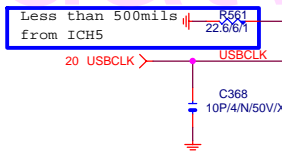




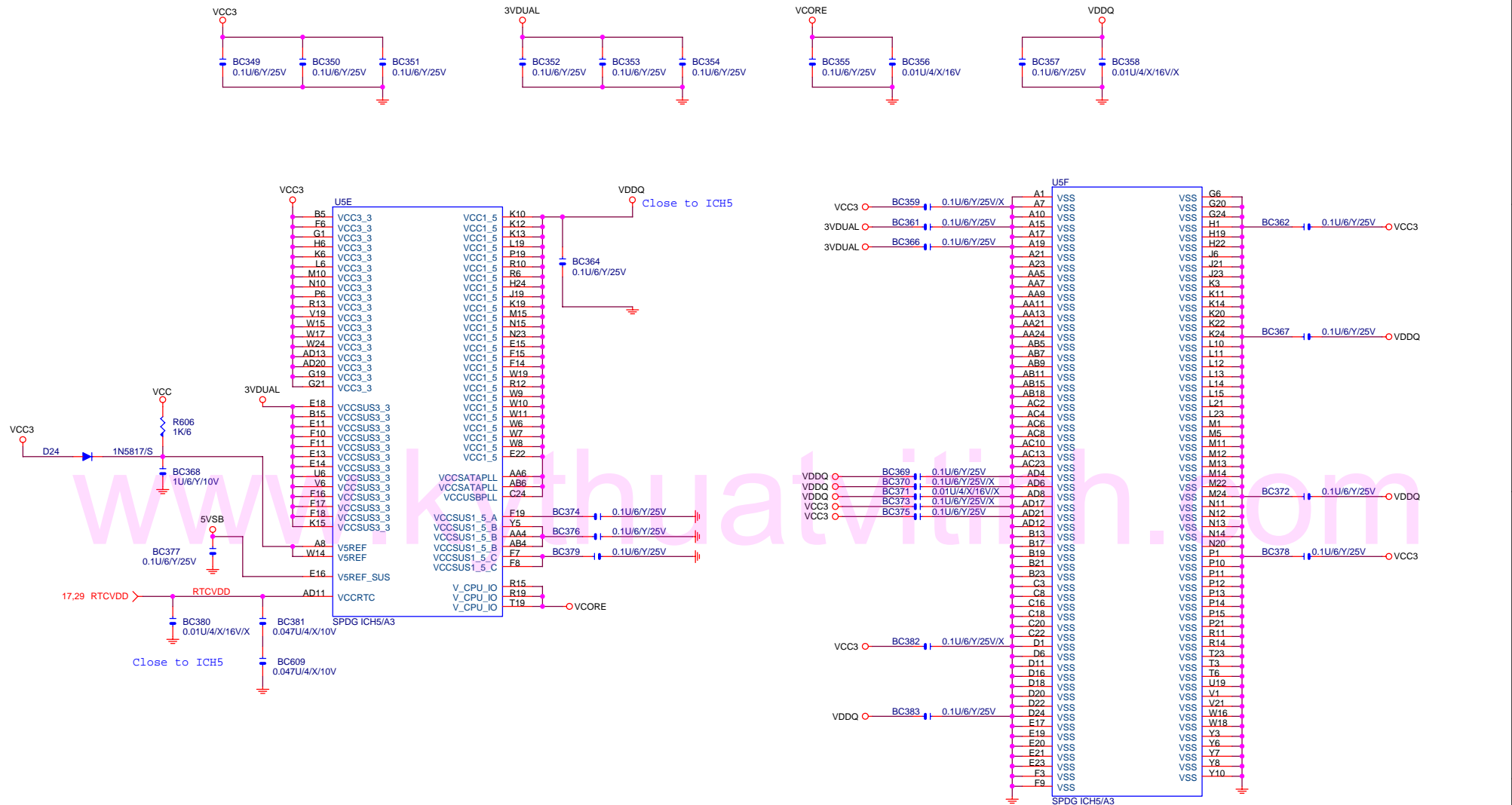
A\_DIO\_311 ↔ A\_D[0..31] 21,22,23,37,38



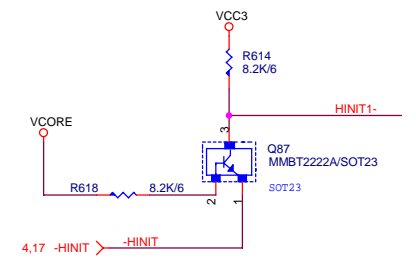
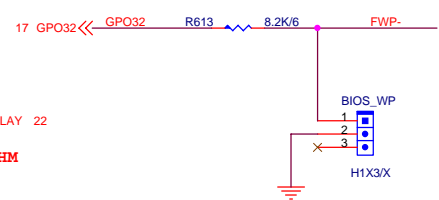
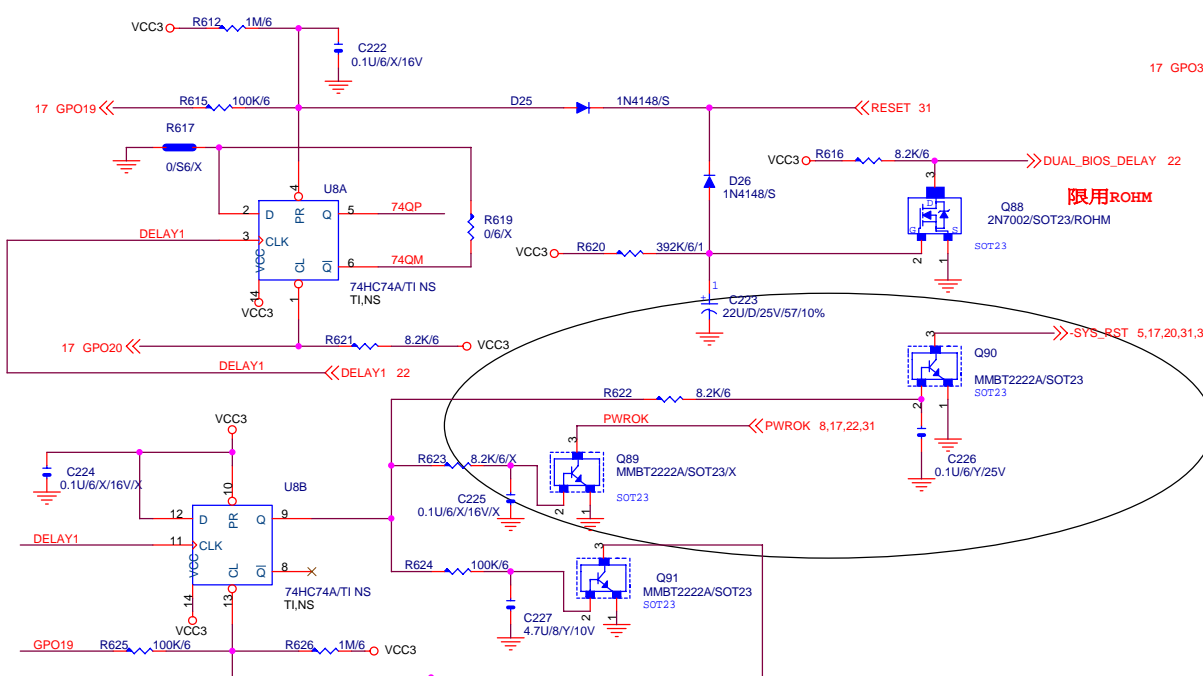
Follow Intel Layout





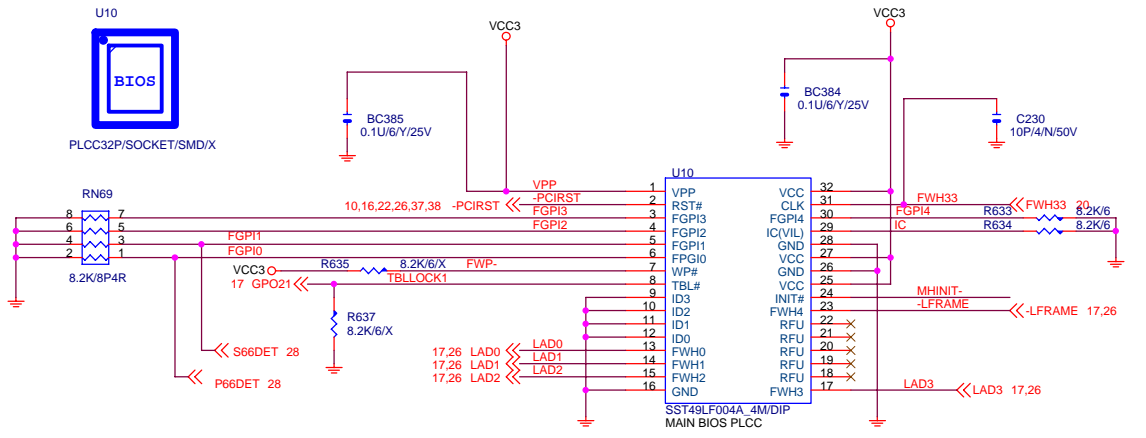
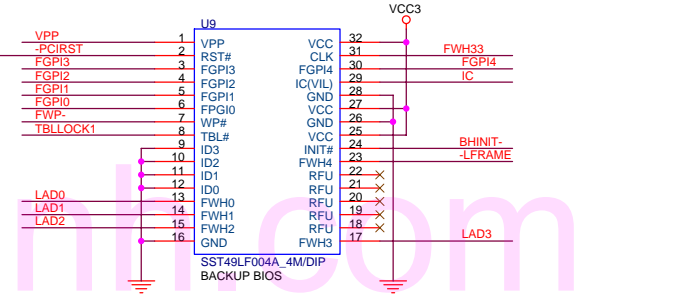
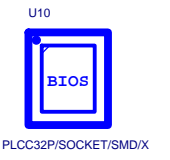
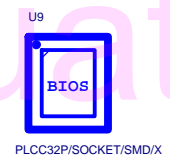
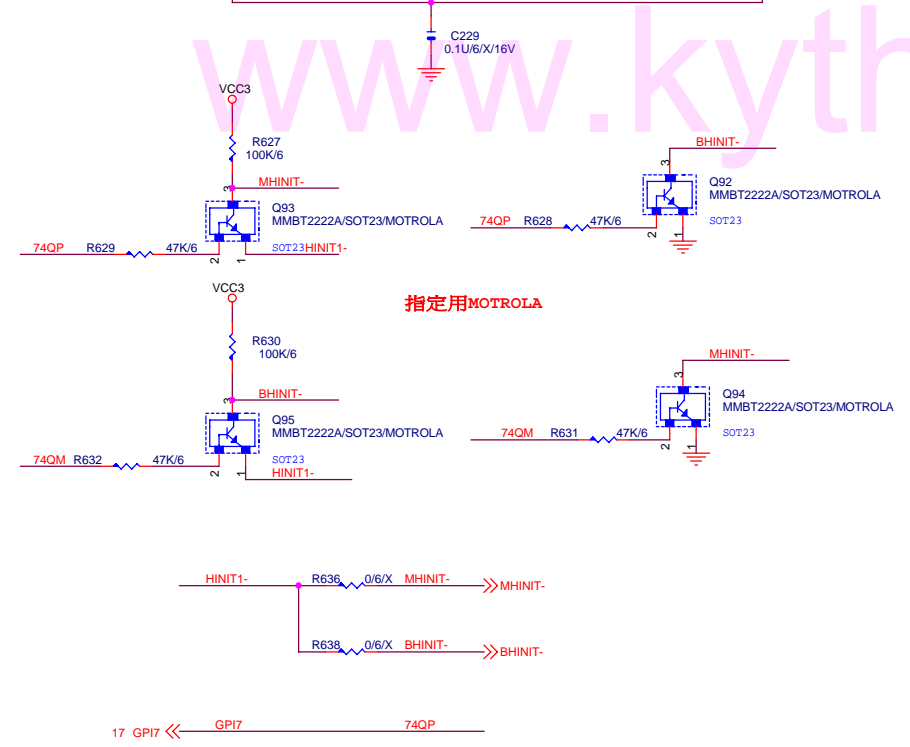


|                      |                       |             |
|----------------------|-----------------------|-------------|
| GIGABYTE CORP.       |                       |             |
| Title                |                       |             |
| <b>ICH5 VCC, GND</b> |                       |             |
| Size                 | Document Number       | Rev         |
| B                    | <b>GA-8IPE775 PRO</b> | <b>1.01</b> |
| Date:                | Sheet                 | 18 of 40    |



**BIOS\_WP:**

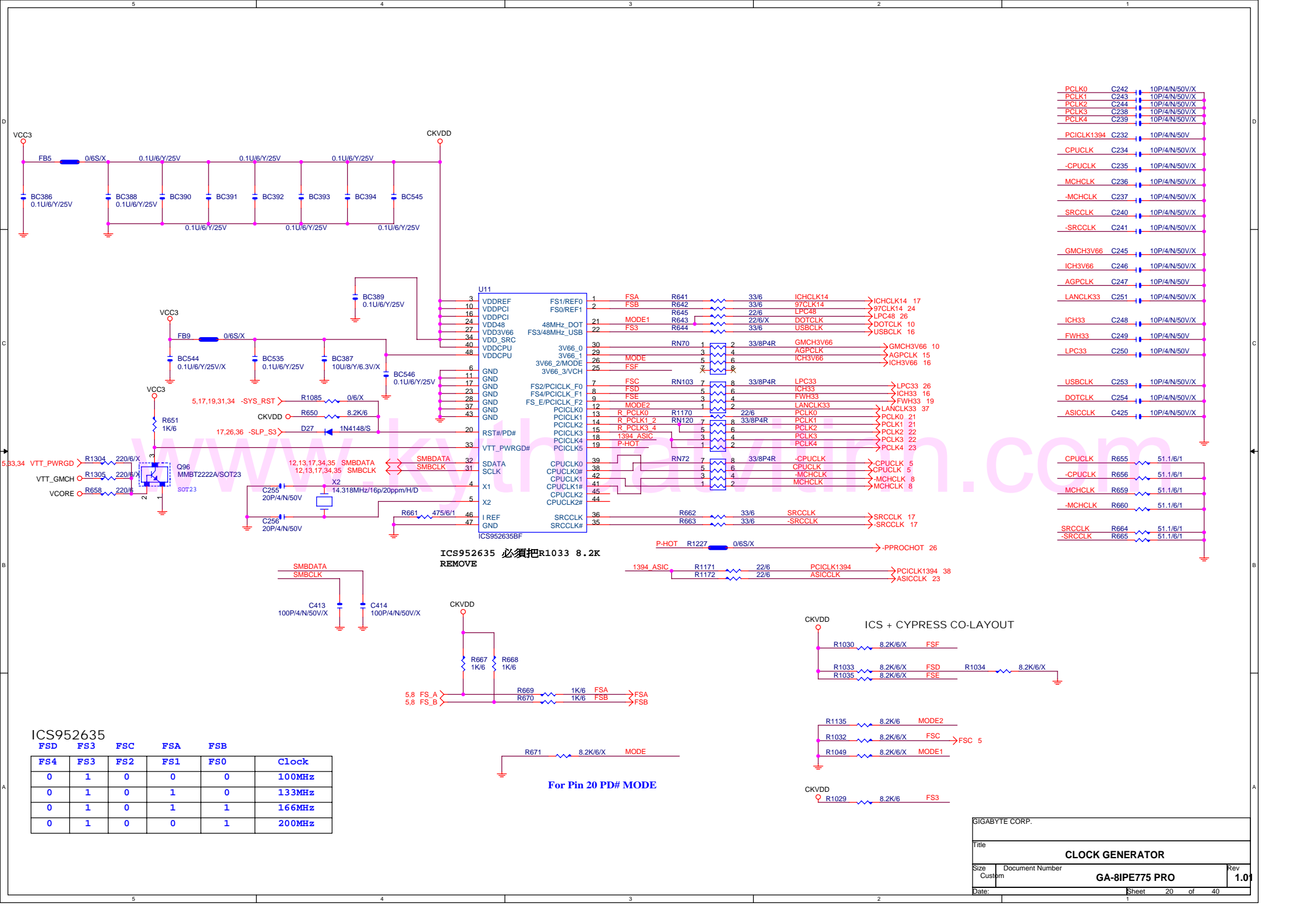
|     |               |
|-----|---------------|
| 1-2 | WRITE PROTECT |
| 2-3 | DISABLE       |



ADD WINBOUD FWH SEC. SOURCE

GIGABYTE CORP.

|       |                  |       |          |
|-------|------------------|-------|----------|
| Title |                  | FWH   |          |
| Size  | Document Number  | Rev   |          |
| B     | GA-8IPE775 PRO   | 1.01  |          |
| Date: | 星期三, 六月 23, 2004 | Sheet | 19 of 40 |



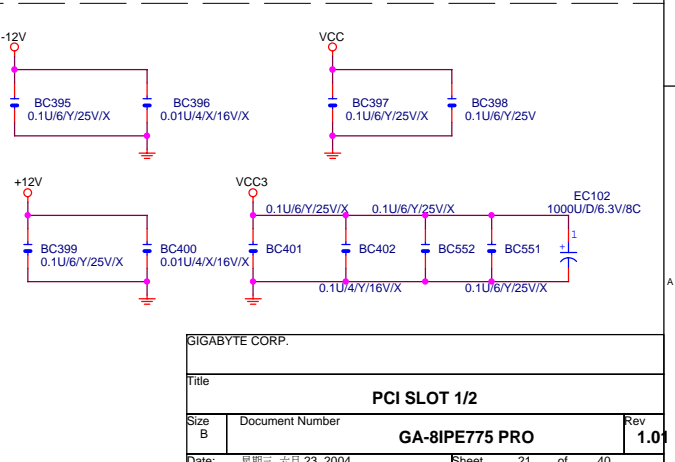
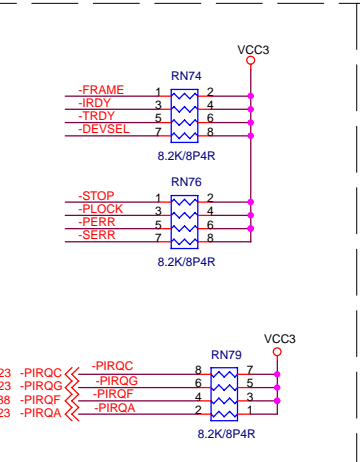
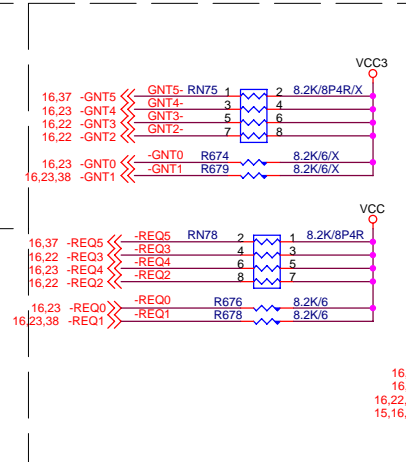
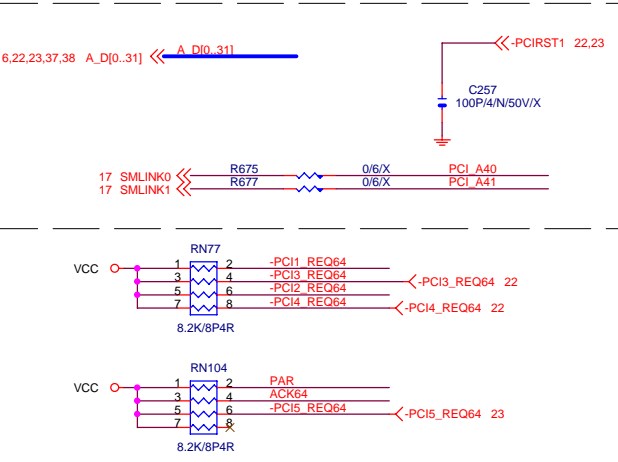
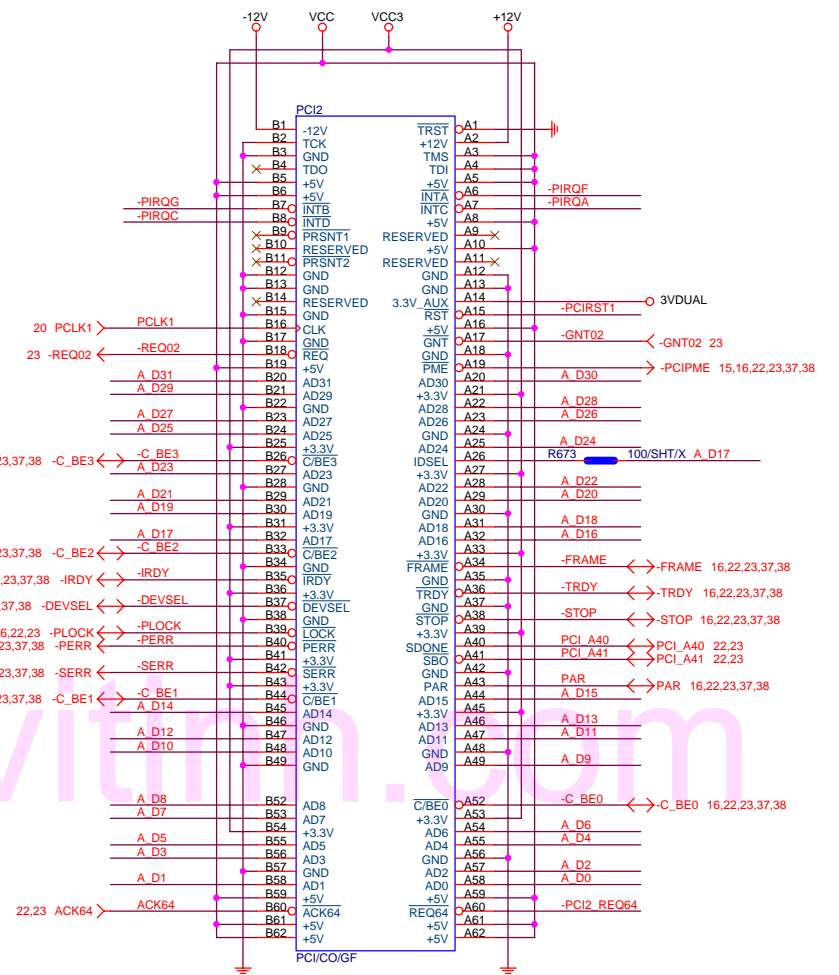
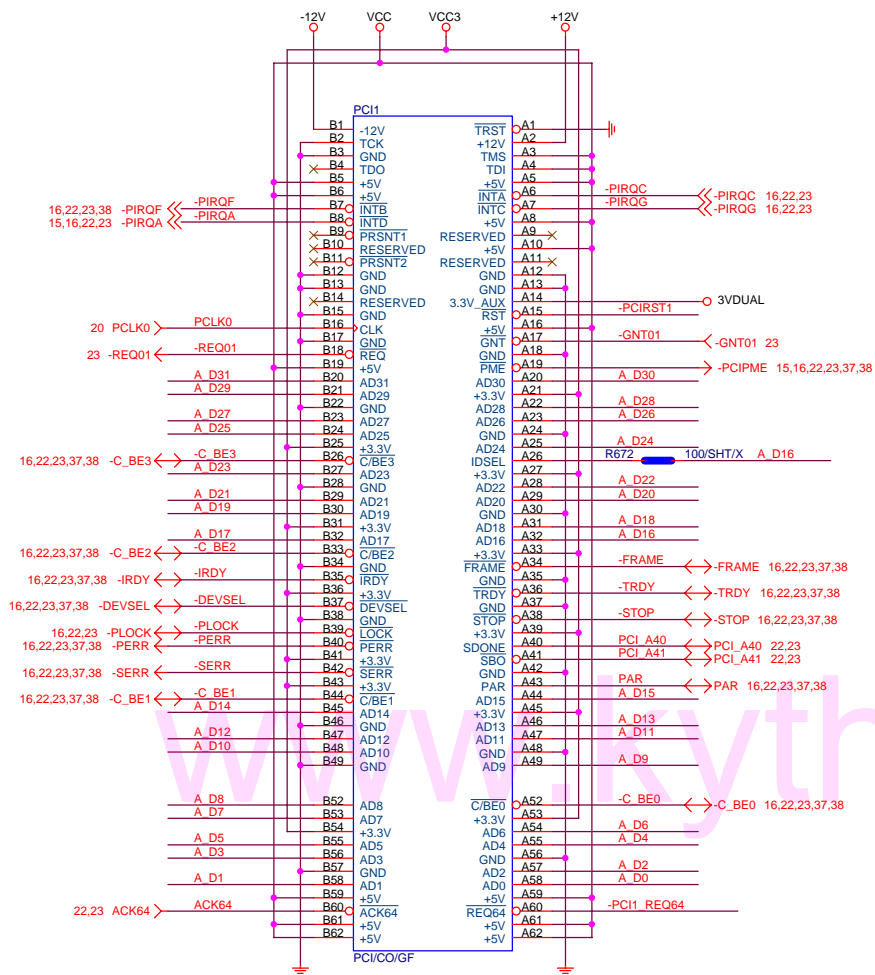
ICS952635

| FS4 | FS3 | FS2 | FS1 | FS0 | Clock  |
|-----|-----|-----|-----|-----|--------|
| 0   | 1   | 0   | 0   | 0   | 100MHz |
| 0   | 1   | 0   | 1   | 0   | 133MHz |
| 0   | 1   | 0   | 1   | 1   | 166MHz |
| 0   | 1   | 0   | 0   | 1   | 200MHz |

ICS952635 必須把R1033 8.2K REMOVE

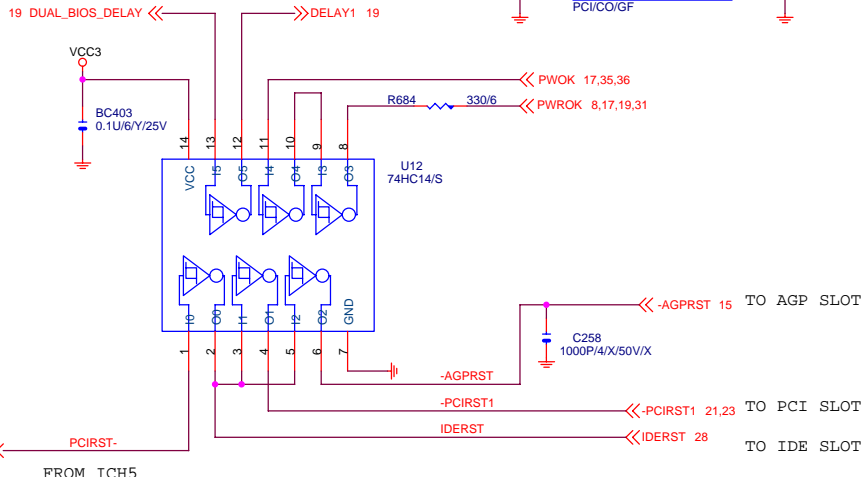
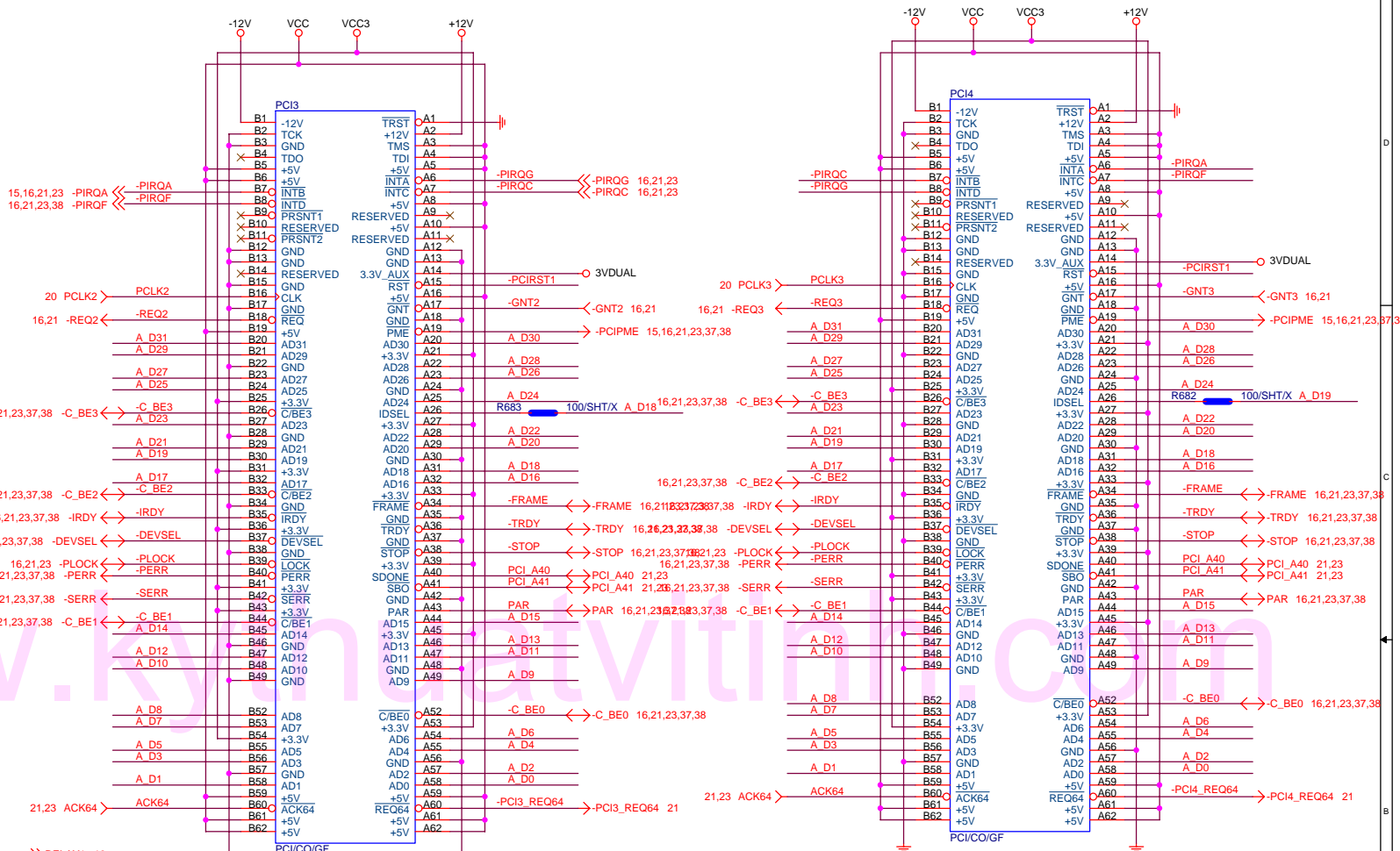
For Pin 20 PD# MODE

ICS + CYPRESS CO-LAYOUT



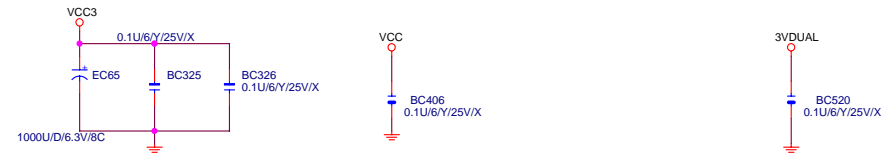
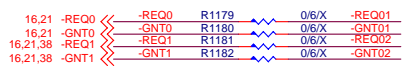
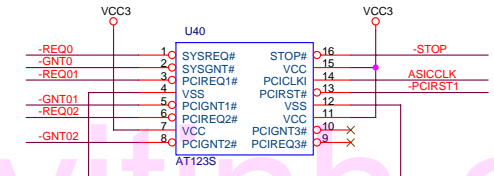
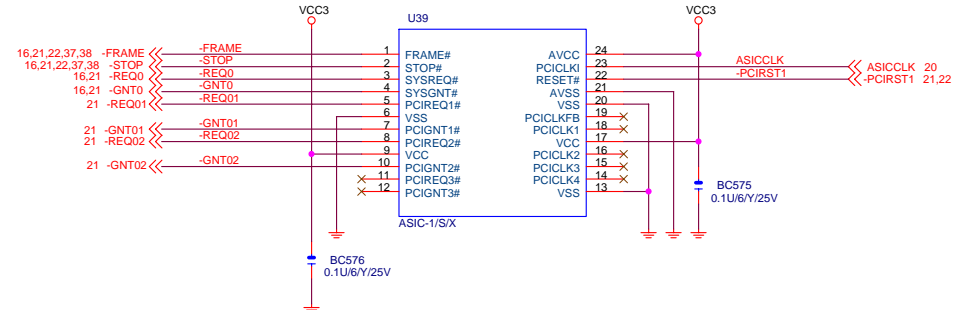
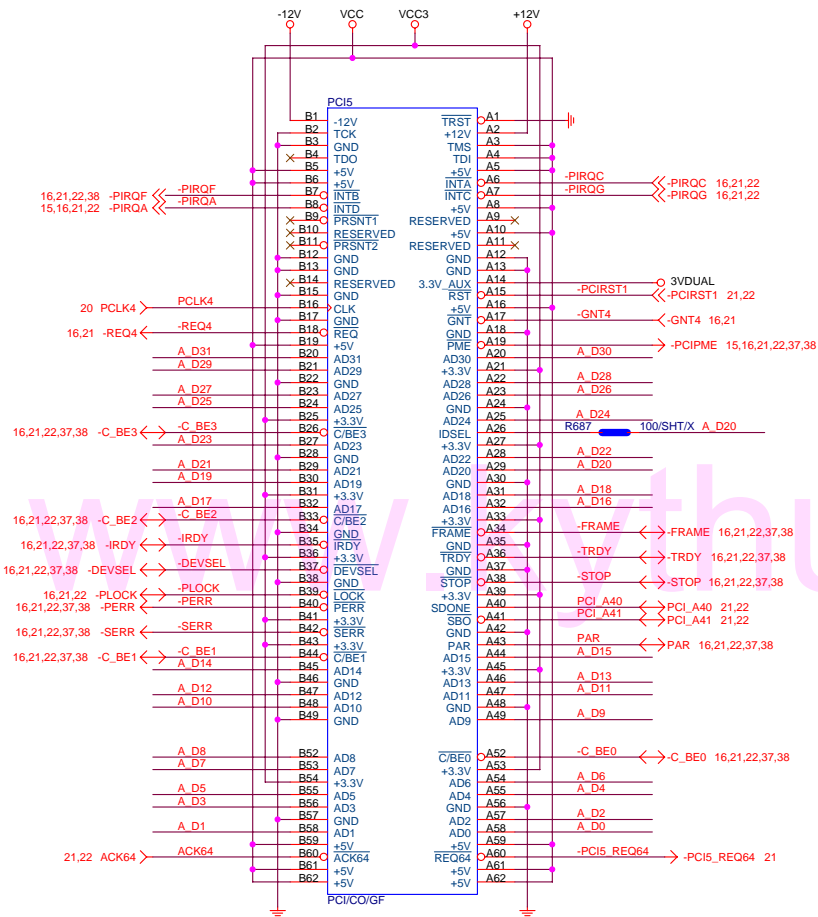
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|---------------------|-----------------------|----------------|
| GIGABYTE CORP.      |                       |                |
| Title               |                       |                |
| <b>PCI SLOT 1/2</b> |                       |                |
| Size B              | Document Number       | Rev            |
|                     | <b>GA-8IPE775 PRO</b> | <b>1.01</b>    |
| Date:               | 星期三, 六月 23, 2004      | Sheet 21 of 40 |

16,21,23,37,38 A\_D[0..31] << A D[0..31]



|                     |                       |                |
|---------------------|-----------------------|----------------|
| GIGABYTE CORP.      |                       |                |
| Title               |                       |                |
| <b>PCI SLOT 3/4</b> |                       |                |
| Size                | Document Number       | Rev            |
| B                   | <b>GA-8IPE775 PRO</b> | <b>1.01</b>    |
| Date:               | 星期三, 六月 23, 2004      | Sheet 22 of 40 |

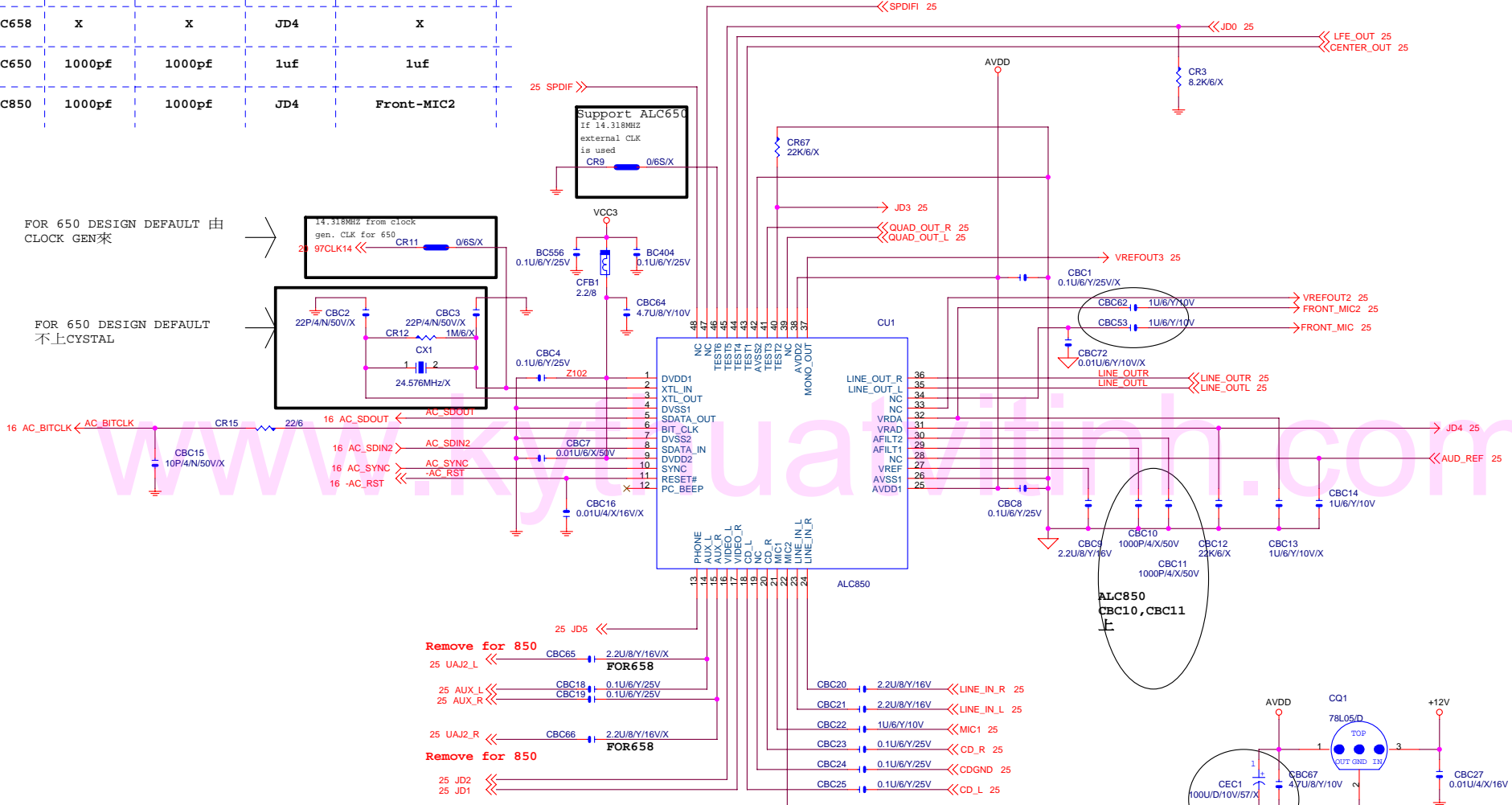
16,21,22,37,38 A\_D[0..31] << A D[0..31]



|                   |                       |             |          |
|-------------------|-----------------------|-------------|----------|
| GIGABYTE CORP.    |                       |             |          |
| Title             |                       |             |          |
| <b>PCI SLOT 5</b> |                       |             |          |
| Size              | Document Number       | Rev         |          |
| Custom            | <b>GA-8IPE775 PRO</b> | <b>1.01</b> |          |
| Date:             | 星期三, 六月 23, 2004      | Sheet       | 23 of 40 |

# Filter Cap design:

|              | Pin-29 | Pin-30 | Pin-31 | Pin-32     |
|--------------|--------|--------|--------|------------|
| ALC655 Rev D | 1000pf | 1000pf | 1uf    | Front-MIC2 |
| ALC655 Rev C | 1000pf | 1000pf | 1uf    | X          |
| ALC658       | X      | X      | JD4    | X          |
| ALC650       | 1000pf | 1000pf | 1uf    | 1uf        |
| ALC850       | 1000pf | 1000pf | JD4    | Front-MIC2 |



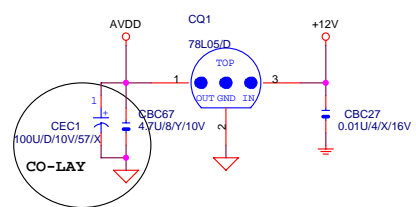
FOR 650 DESIGN DEFAULT 由 CLOCK GEN來

FOR 650 DESIGN DEFAULT 不上CRYSTAL

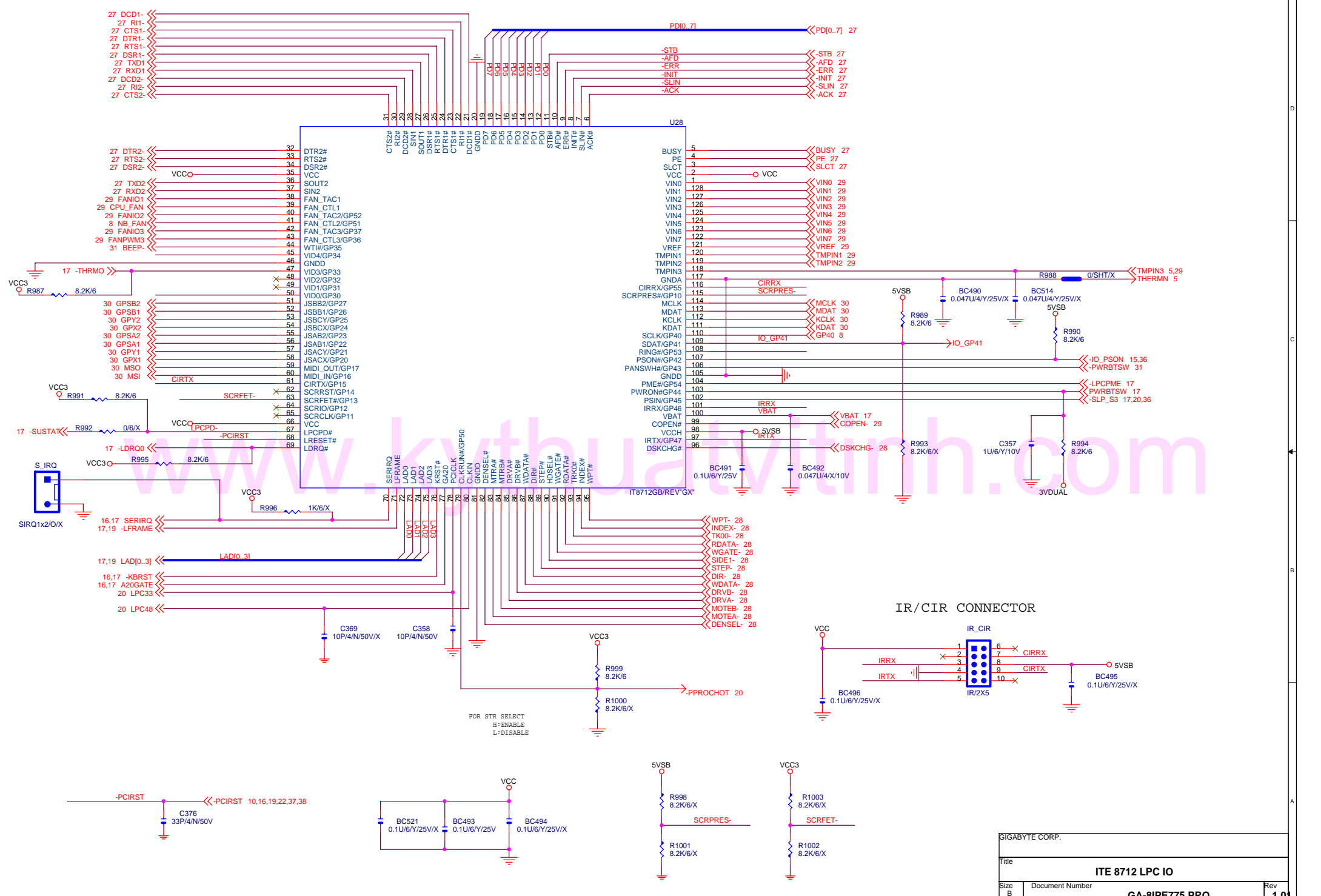
## Arrangement of Jack detection Pin:

|        | Pin-45(JD0) | Pin-17(JD1)          | Pin-16(JD2)         | Pin-40(JD3)                                   | Pin-31(JD4)                                 | Pin-13(JD5)      |
|--------|-------------|----------------------|---------------------|---|---|------------------|
| ALC655 | for MIC-IN  | for FRONT-OUT        | for LINE-IN         |   |   |                  |
| ALC658 | for MIC-IN  | for UAJ1             | for UAJ2            | for FRONT-OUT<br>External pull high is needed | for LINE-IN<br>External pull high is needed |                  |
| ALC850 | for MIC-IN  | for Front Pannel OUT | for Front Pannel IN | for FRONT-OUT                                 | for LINE-IN                                 | for SurrBack Out |

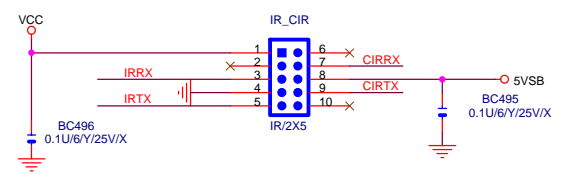
CBC28 1U/6/Y/10V <<MIC2 25  
FOR ALC650 CBC28要上,CBC26不上





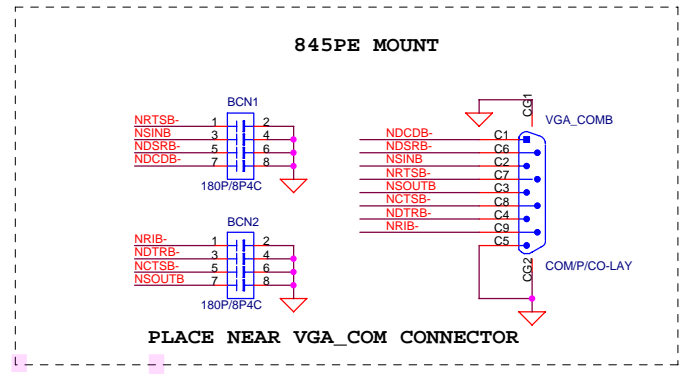
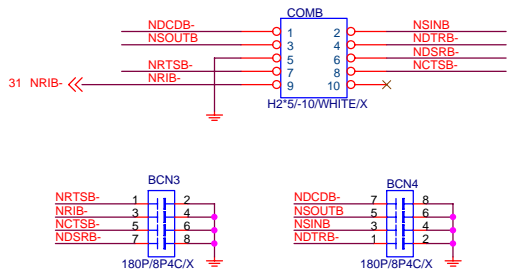
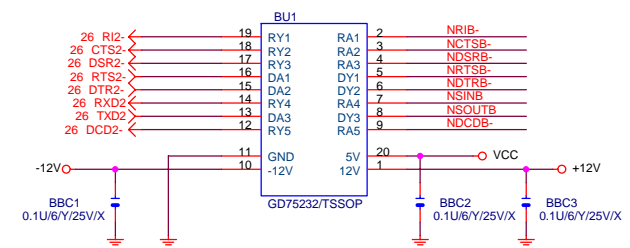
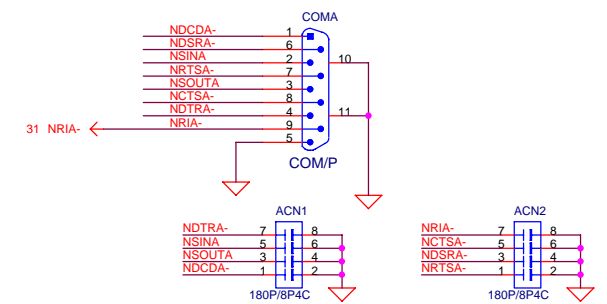
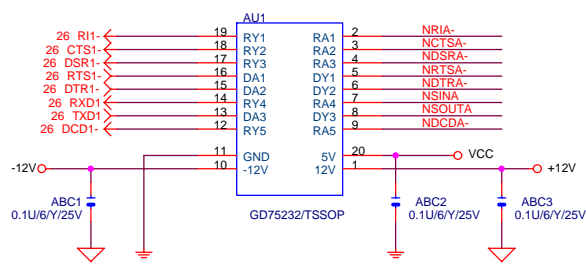


IR/CIR CONNECTOR

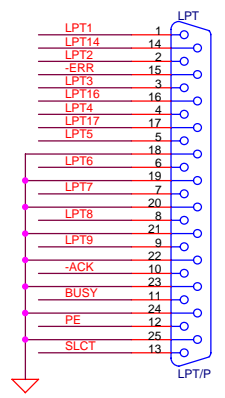
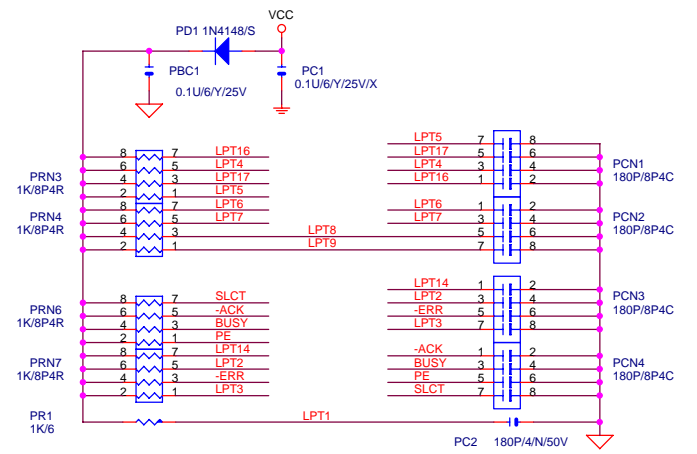
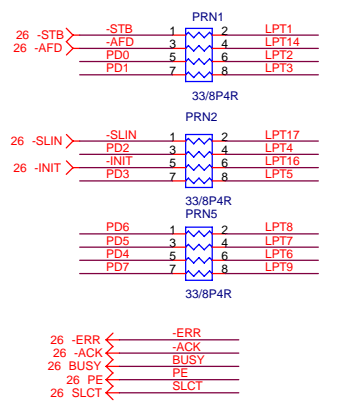


|                                 |  |                    |
|---------------------------------|--|--------------------|
| GIGABYTE CORP.                  |  |                    |
| Title<br><b>ITE 8712 LPC IO</b> |  |                    |
| Size<br>B                       | Document Number<br><b>GA-8IPE775 PRO</b> | Rev<br><b>1.01</b> |
| Date:<br>星期三, 六月 23, 2004       | Sheet<br>26                              | of 40              |

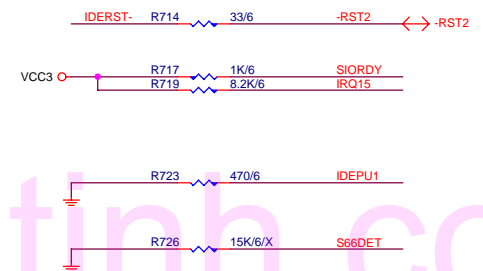
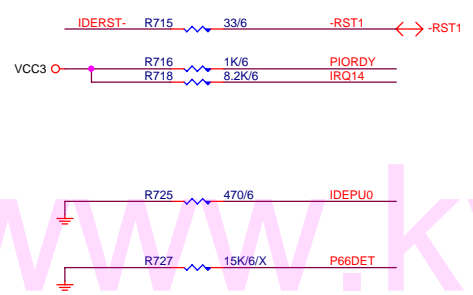
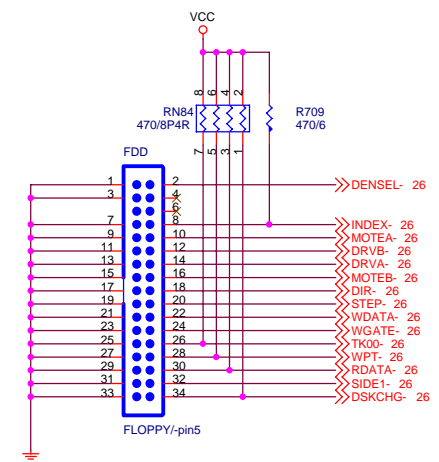
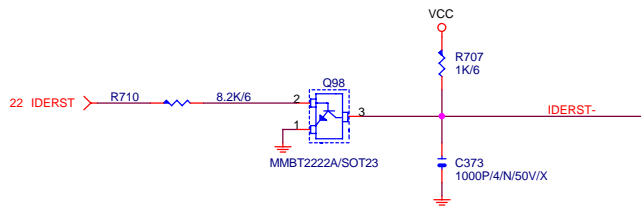
www.kythuatvithinh.com



26 PD0..71 ← PD0..71

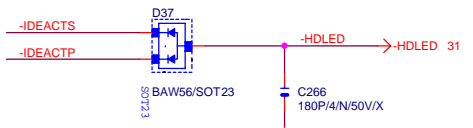
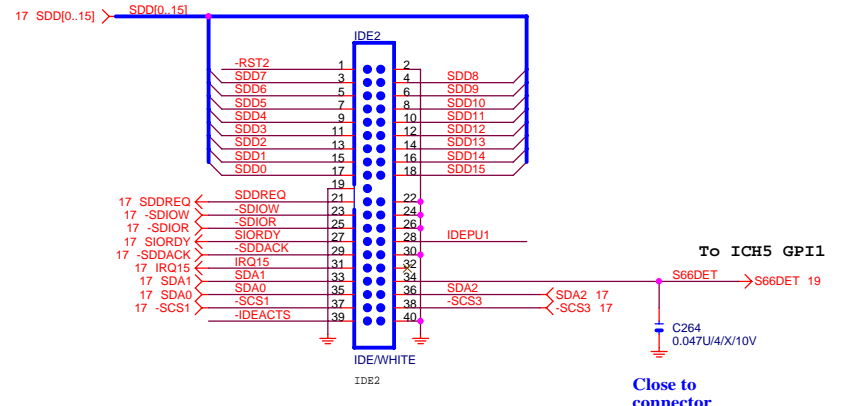
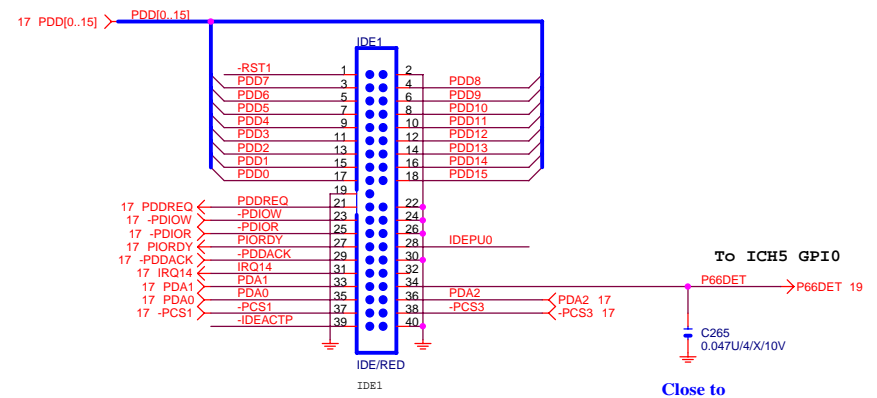


|   |                  |                       |          |
|---|------------------|-----------------------|----------|
| GIGABYTE CORP.                                  |                  |                       |          |
| Title   |                  |                       |          |
| <b>COM &amp; IR &amp; LPT PORT &amp; FLOOPY</b> |                  |                       |          |
| Size  | Document Number  | Rev                   |          |
| B   |                  | <b>GA-8IPE775 PRO</b> |          |
| Date:   | 星期三, 六月 23, 2004 | Sheet                 | 27 of 40 |



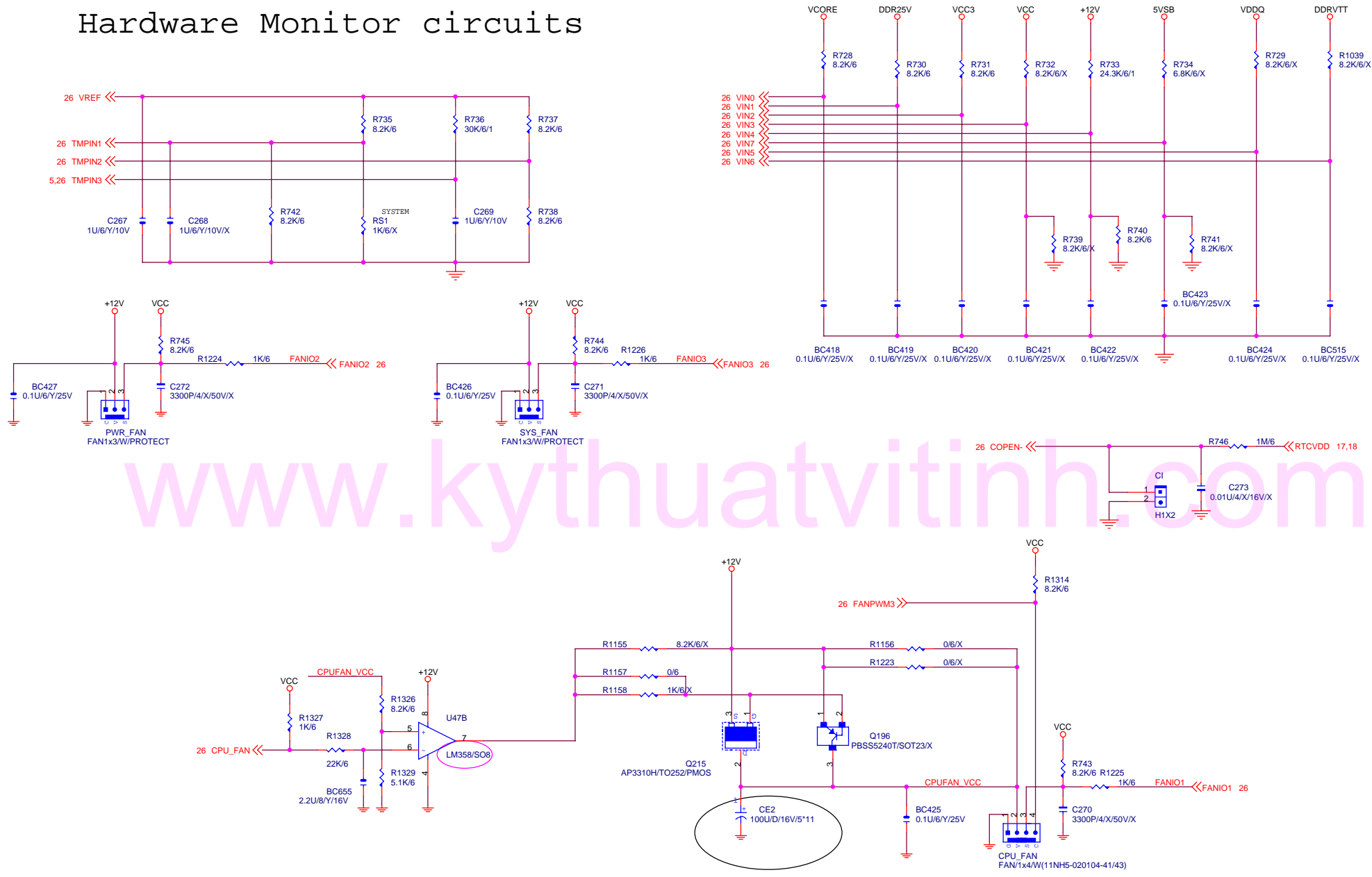
PRIMARY IDE CONNECTOR

SECONDARY IDE CONNECTOR



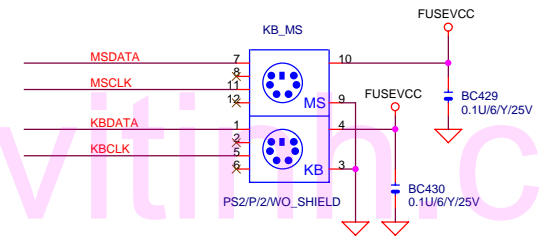
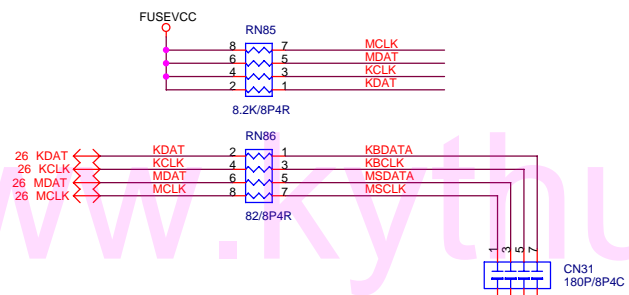
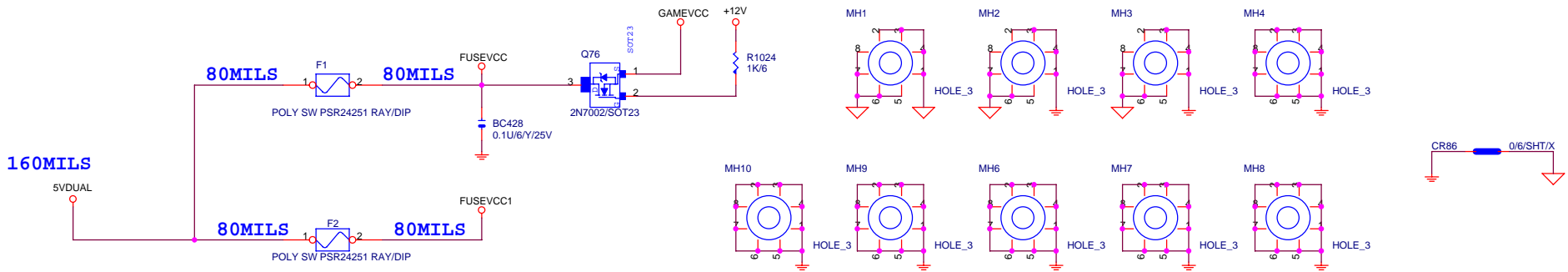
|                      |                 |                       |          |
|----------------------|-----------------|-----------------------|----------|
| GIGABYTE CORP.       |                 |                       |          |
| Title                |                 |                       |          |
| <b>IDE CONNECTOR</b> |                 |                       |          |
| Size                 | Document Number | Rev                   |          |
| B                    |                 | <b>GA-8IPE775 PRO</b> |          |
| Date:                |                 | Sheet                 | 28 of 40 |
|                      |                 | 1                     |          |

# Hardware Monitor circuits

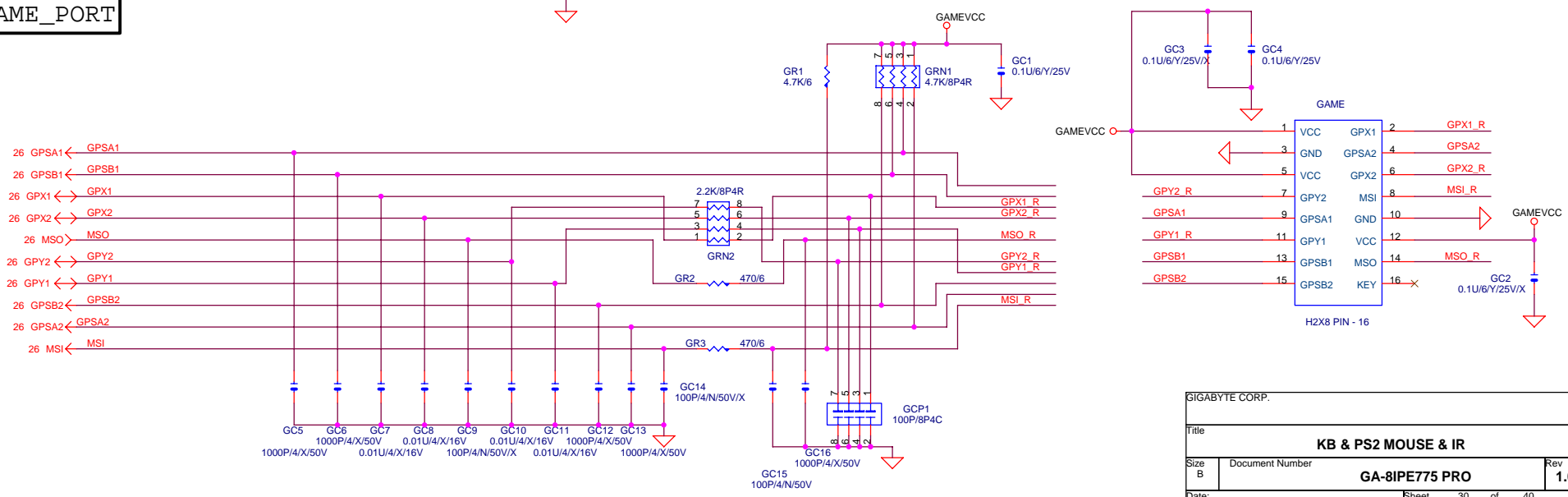


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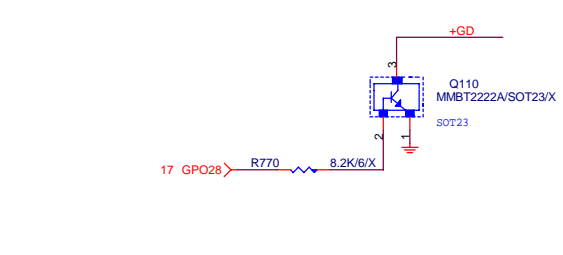
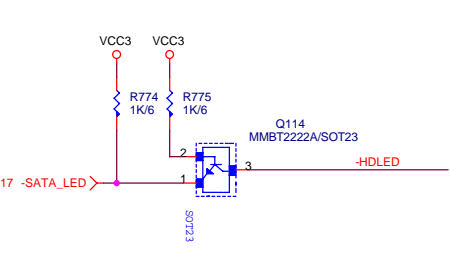
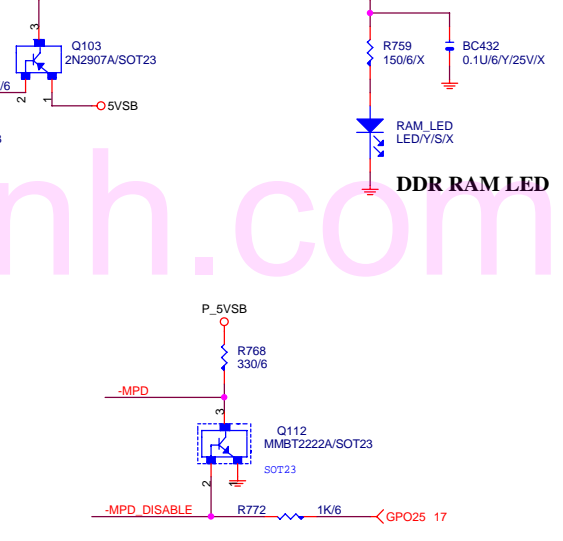
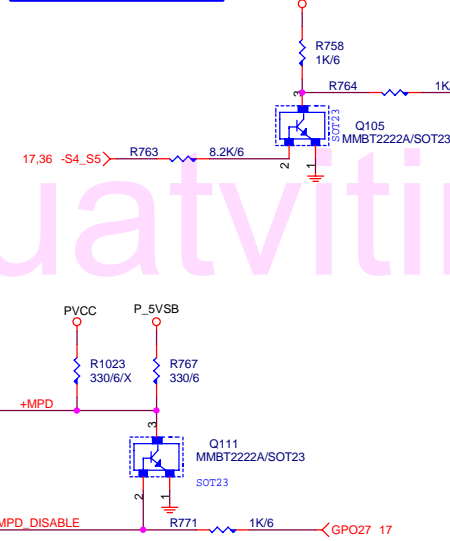
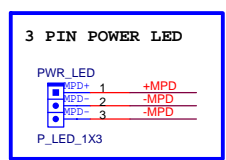
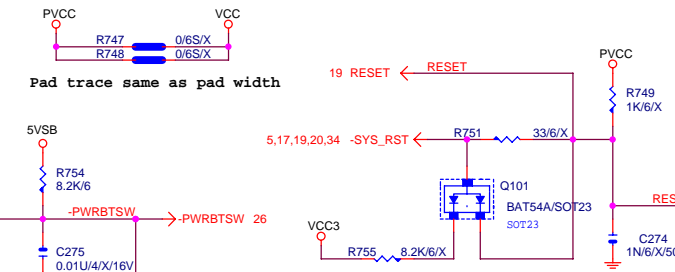
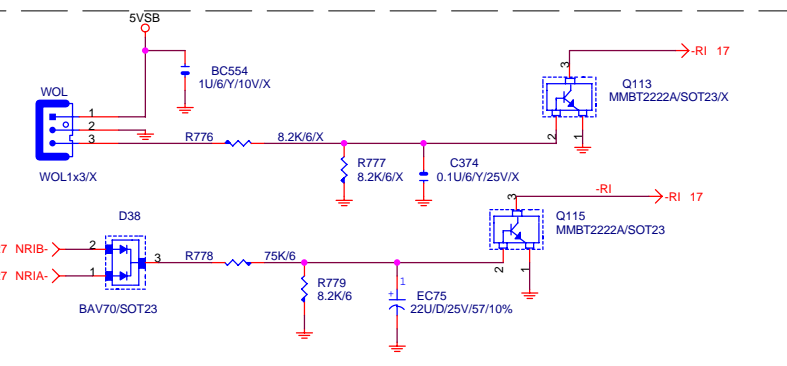
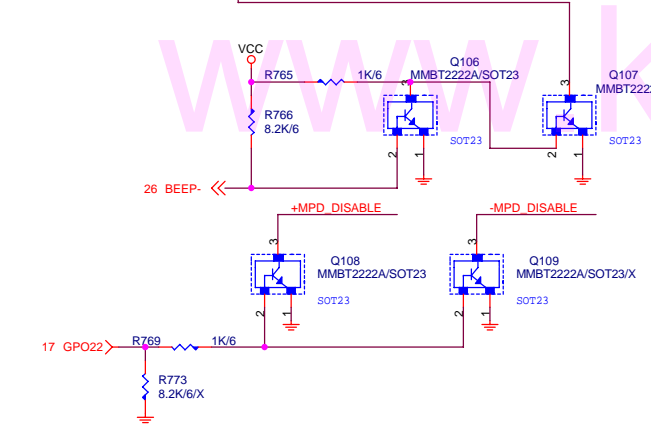
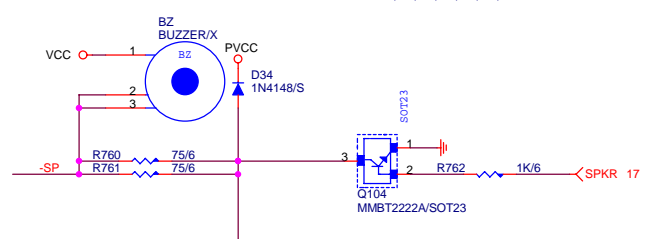
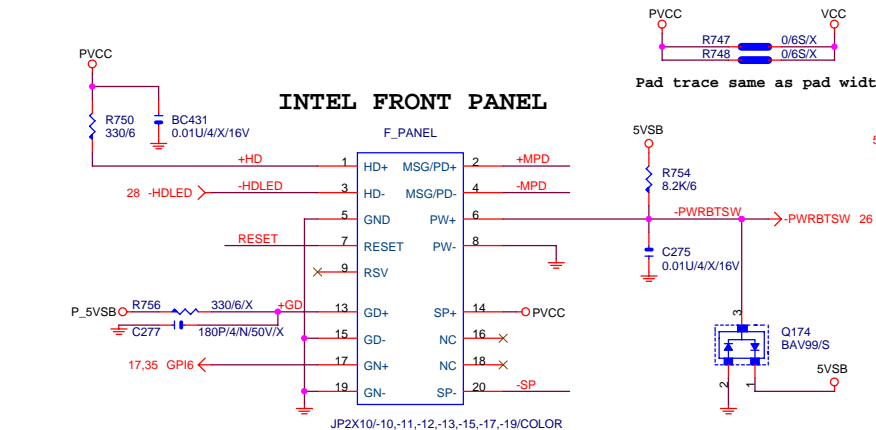
|                 |                       |       |            |
|-----------------|-----------------------|-------|------------|
| GIGABYTE CORP.  |                       |       |            |
| Title           |                       |       |            |
| <b>FAN/HWMO</b> |                       |       |            |
| Size            | Document Number       |       | Rev        |
| B               | <b>GA-8IPE775 PRO</b> |       | <b>1.0</b> |
| Date:           | 星期三, 六月 23, 2004      | Sheet | 29 of 40   |



**GAME\_PORT**

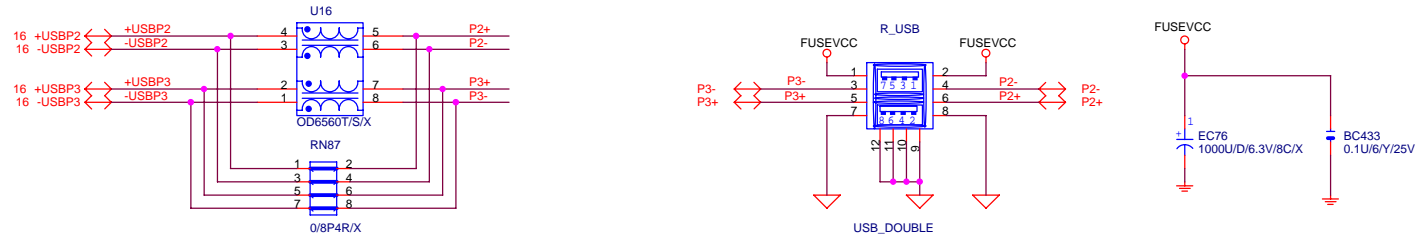


### INTEL FRONT PANEL

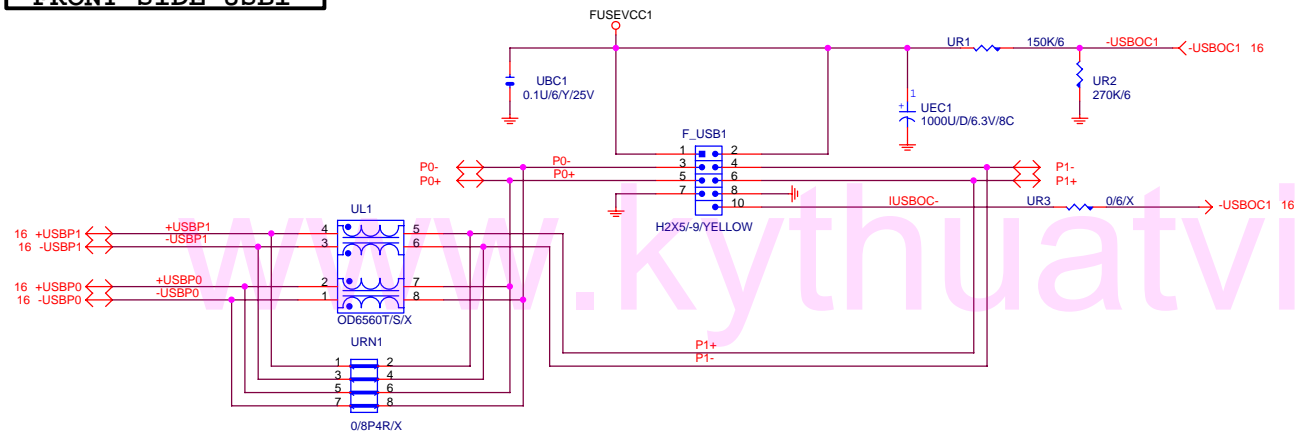


|                      |                 |      |       |
|----------------------|-----------------|------|-------|
| GIGABYTE CORP.       |                 |      |       |
| Title                |                 |      |       |
| PANEL & STR LED & RI |                 |      |       |
| Size                 | Document Number | Rev  |       |
| B                    | GA-8IPE775 PRO  | 1.01 |       |
| Date:                | Sheet           | 31   | of 40 |

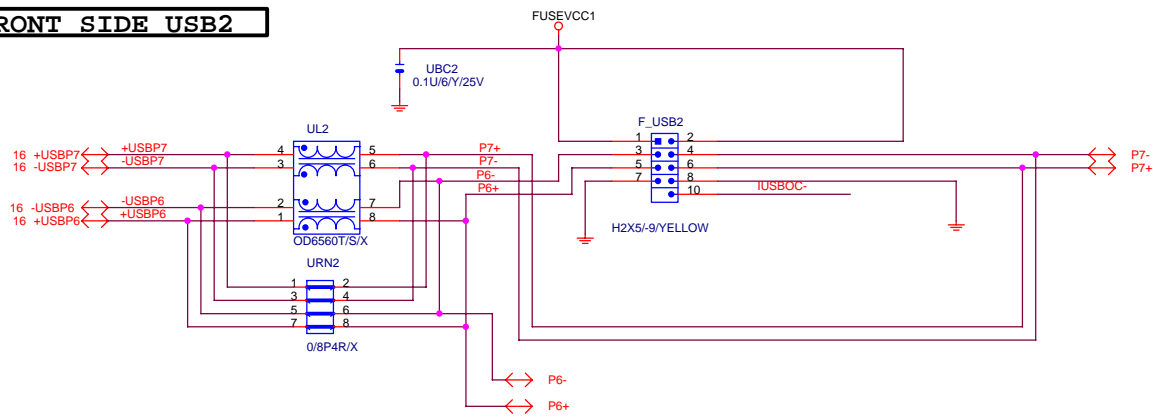
# REAR USB



# FRONT SIDE USB1



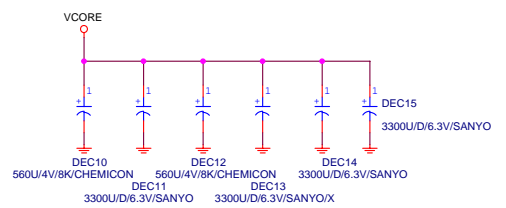
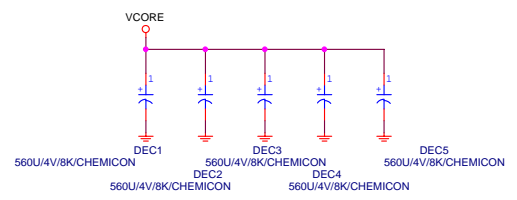
# FRONT SIDE USB2



GIGABYTE CORP.

|       |                 |                       |             |
|-------|-----------------|-----------------------|-------------|
| Title |                 | <b>ICH USB PORT</b>   |             |
| Size  | Document Number | <b>GA-8IPE775 PRO</b> | Rev         |
| B     |                 |                       | <b>1.01</b> |
| Date: |                 | Sheet                 | 32 of 40    |





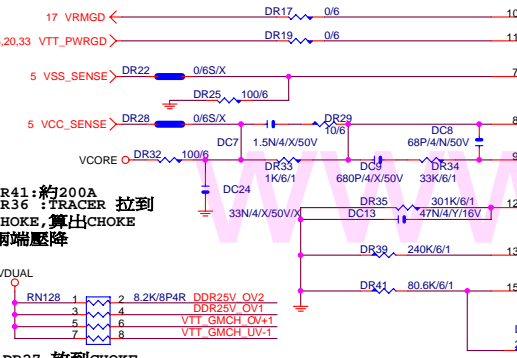
DD1 :在HIGH SIDE 發生S-D SHORT時(OVP), LOW SIDE MOSFET TURN ON,讓VCORE降壓,同時V12也會下降6-7V以下時,造成PWM無法提供POWER TO LOW SIDE TURN ON,所以加DD1 延長PWM POWER 提供給LOW SIDE MOSFET TURN ON 保護CPU VOLTAGE 過高.

DR9,DC5 FOR V12 OVER 19V 以上,SPEC (18V)

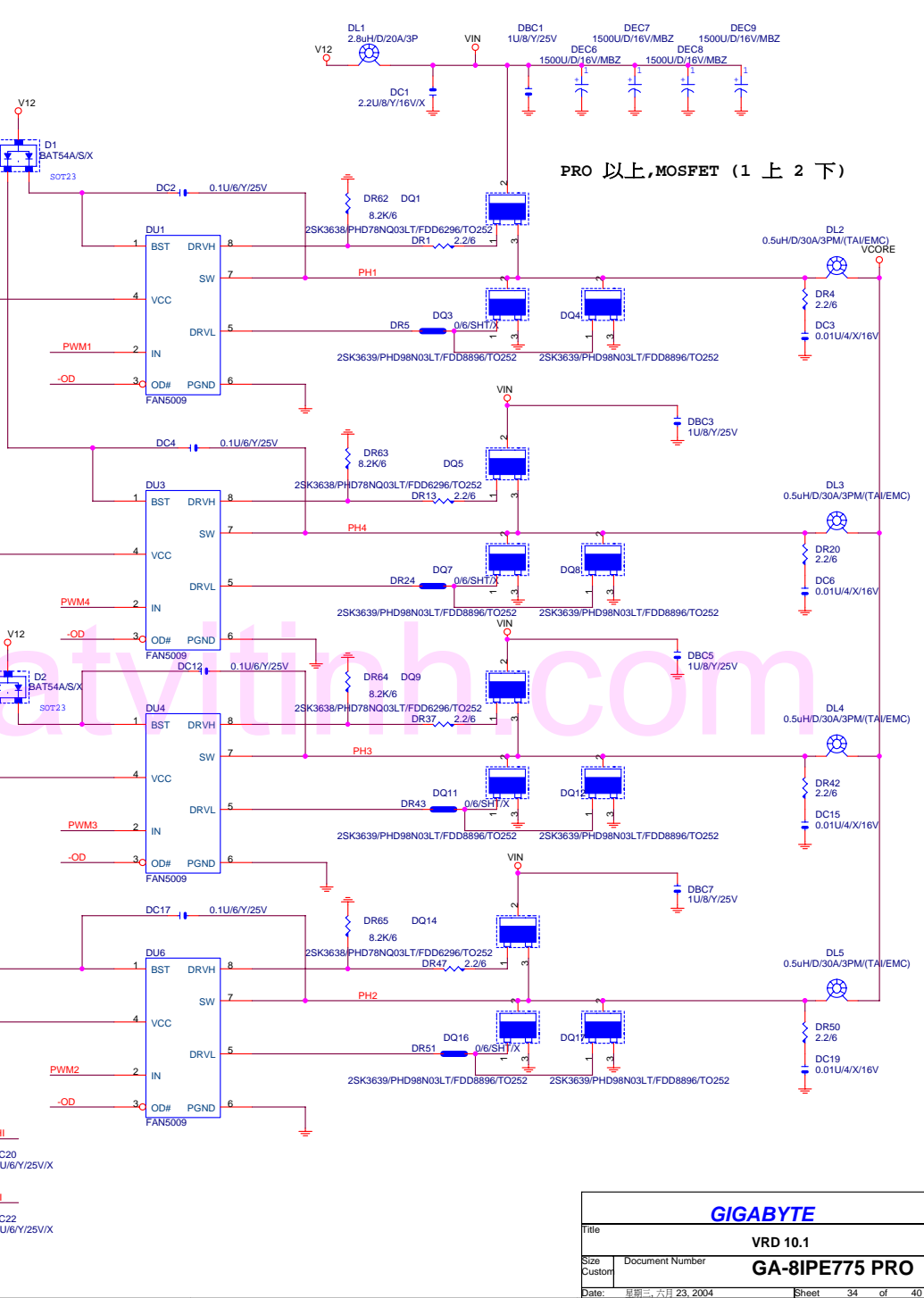
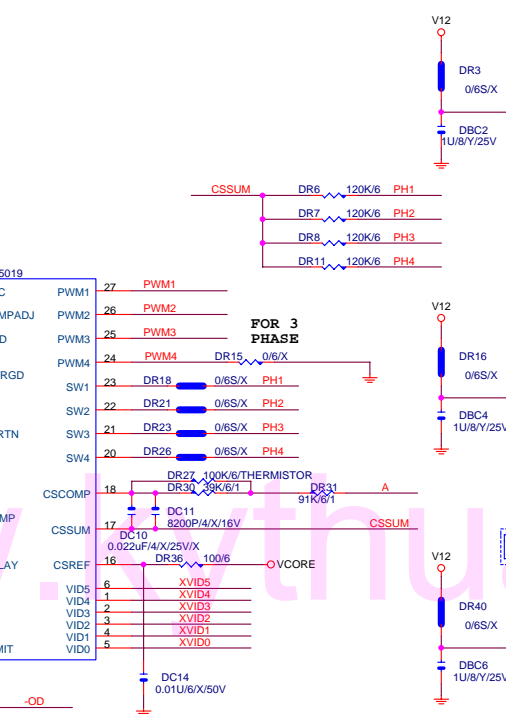
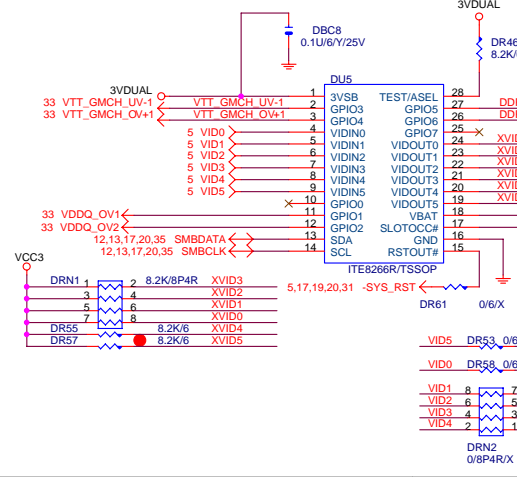
DR12 為一個 CYCLE的DUTY(50%)

DELAY :讓限流時間DELAY (DR35,DC13) 才啓動.

DR39 : 240K  
工作頻率=720KHZ /  
4PHASE=180K(1 PHASE)



DR27 放到CHOKE 為溫度補償

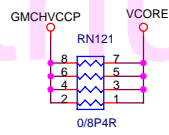
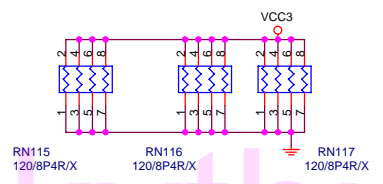
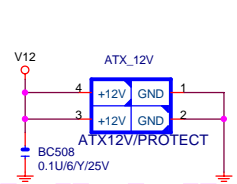
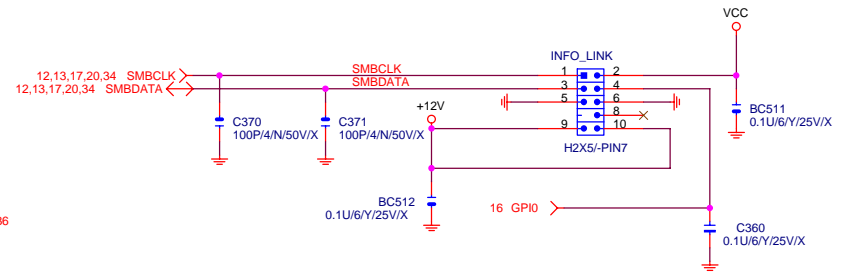
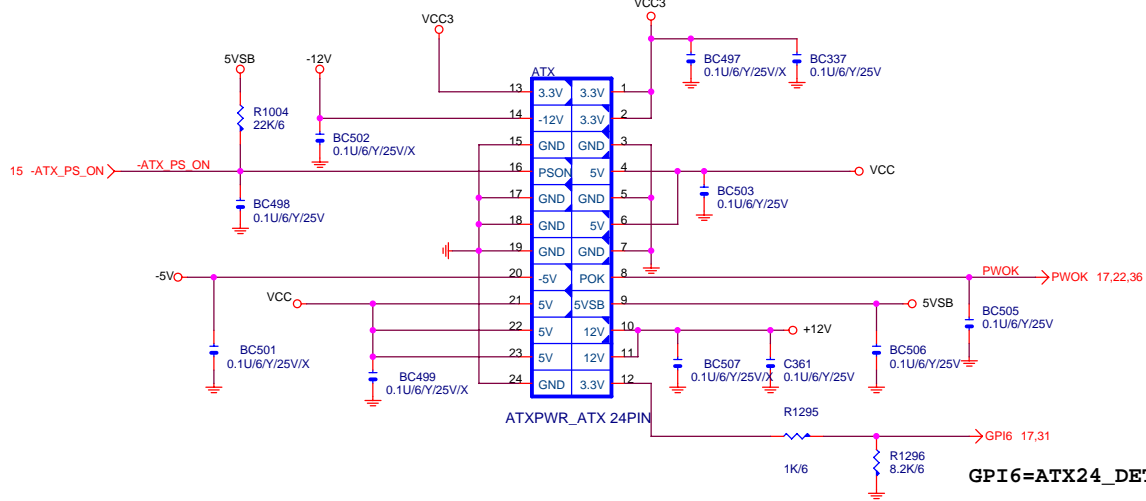


PRO 以上,MOSFET (1 上 2 下)

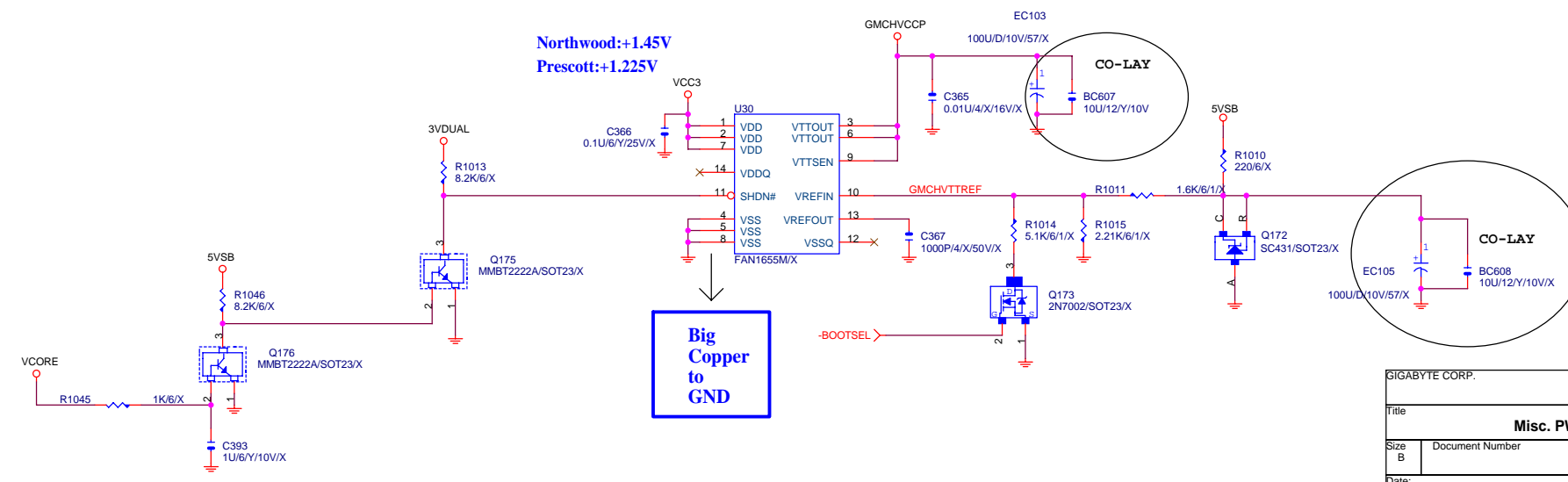
|                        |                                       |
|------------------------|---------------------------------------|
| <b>GIGABYTE</b>        |                                       |
| <b>VRD 10.1</b>        |                                       |
| Size Custom            | Document Number <b>GA-8IPE775 PRO</b> |
| Date: 星期二, 六月 23, 2004 | Rev <b>1.01</b>                       |
| Sheet 34               | of 40                                 |

# ATX POWER CONNECTOR

# SMBUS CONN.

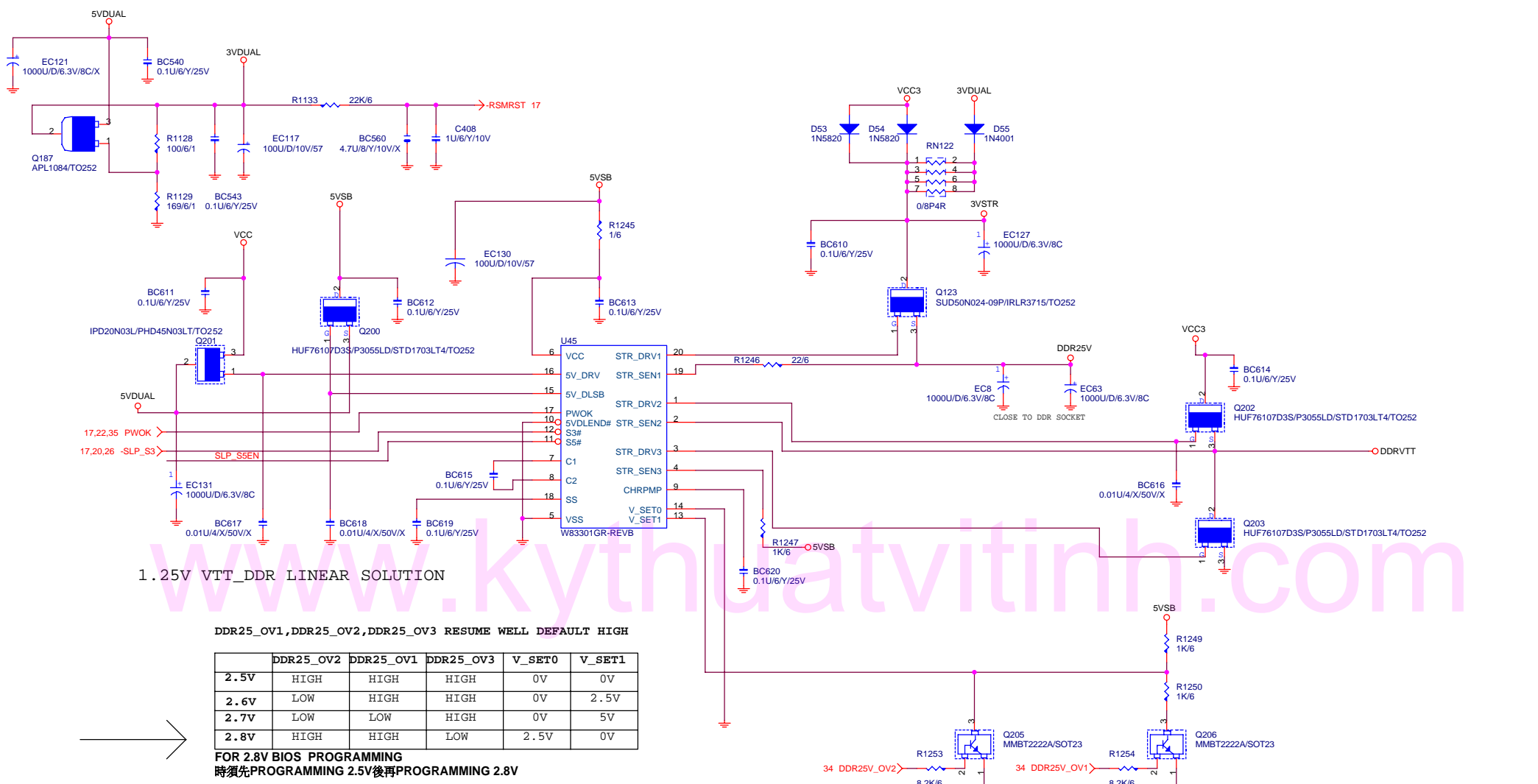


Northwood:+1.45V  
Prescott:+1.225V



|                |                       |          |
|----------------|-----------------------|----------|
| GIGABYTE CORP. |                       |          |
| Title          | Misc. PWR & ATX CONN. |          |
| Size           | Document Number       | Rev      |
| B              | GA-8IPE775 PRO        | 1.01     |
| Date:          | Sheet                 | 35 of 40 |

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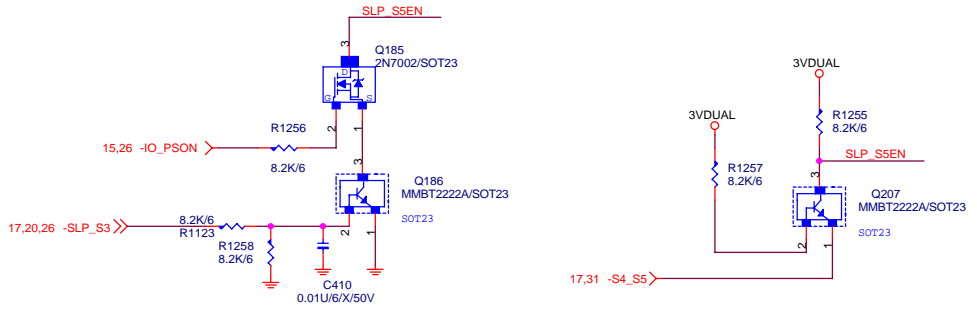


1.25V VTT\_DDR LINEAR SOLUTION

DDR25\_OV1,DDR25\_OV2,DDR25\_OV3 RESUME WELL DEFAULT HIGH

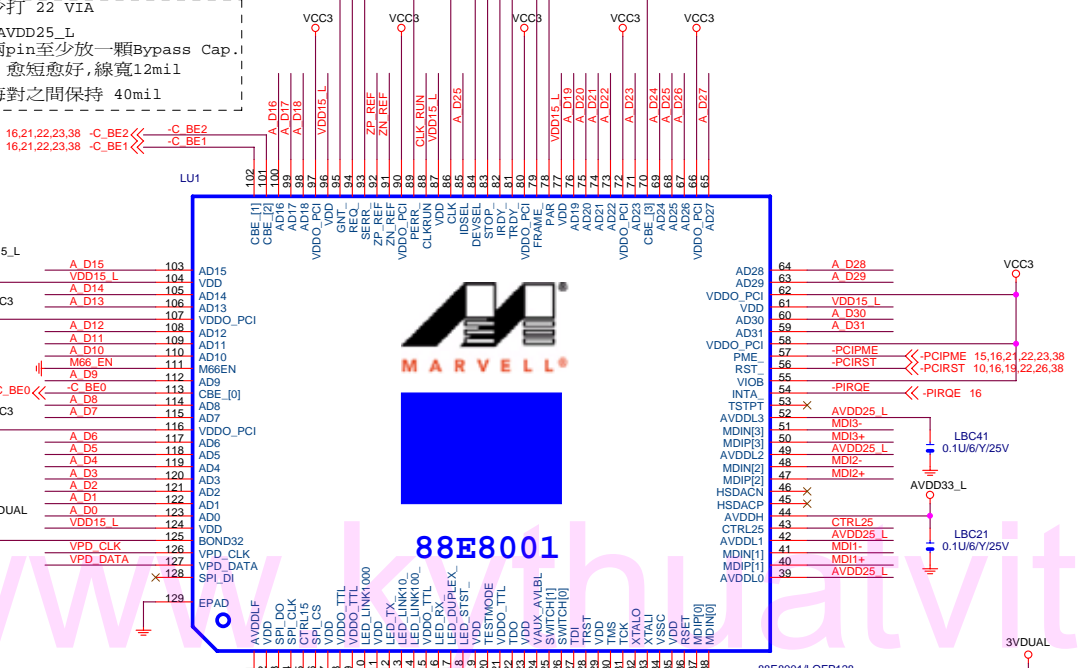
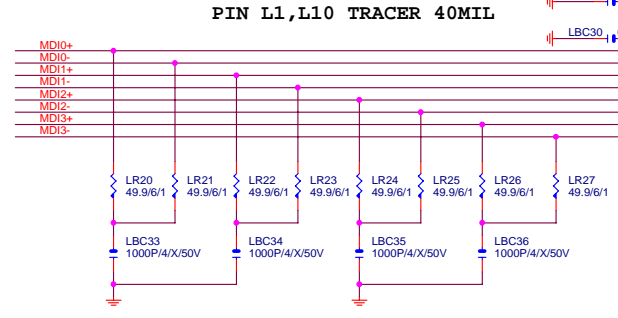
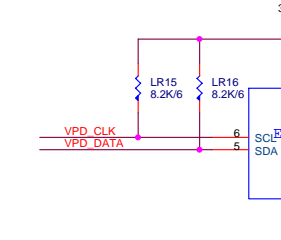
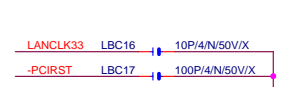
|      | DDR25_OV2 | DDR25_OV1 | DDR25_OV3 | V_SET0 | V_SET1 |
|------|-----------|-----------|-----------|--------|--------|
| 2.5V | HIGH      | HIGH      | HIGH      | 0V     | 0V     |
| 2.6V | LOW       | HIGH      | HIGH      | 0V     | 2.5V   |
| 2.7V | LOW       | LOW       | HIGH      | 0V     | 5V     |
| 2.8V | HIGH      | HIGH      | LOW       | 2.5V   | 0V     |

FOR 2.8V BIOS PROGRAMMING  
時須先PROGRAMMING 2.5V後再PROGRAMMING 2.8V



16.21,22,23,38 -C BE3<< -C BE3  
 16.21,22,23,38 PAR -PAR  
 16.21,22,23,38 -FRAME -FRAME  
 16.21,22,23,38 -TRDY -TRDY  
 16.21,22,23,38 -IRDY -IRDY  
 16.21,22,23,38 -STOP -STOP  
 16.21,22,23,38 -STOR -STOR  
 16.21,22,23,38 -DEVSEL -DEVSEL  
 20 LANCLK33 LANCLK33  
 16.21,22,23,38 -PERR -PERR  
 16.21,22,23,38 -SERR -SERR  
 16.21,22,23,38 -REO5 -REO5  
 16.21 -GNT5 -GNT5

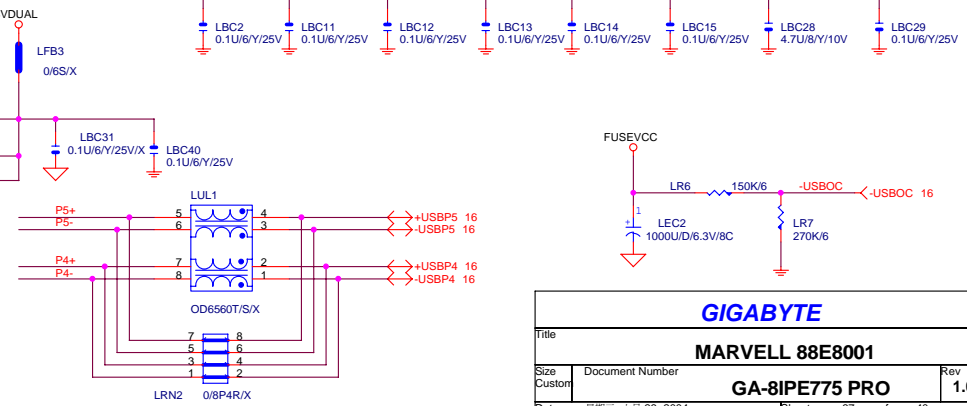
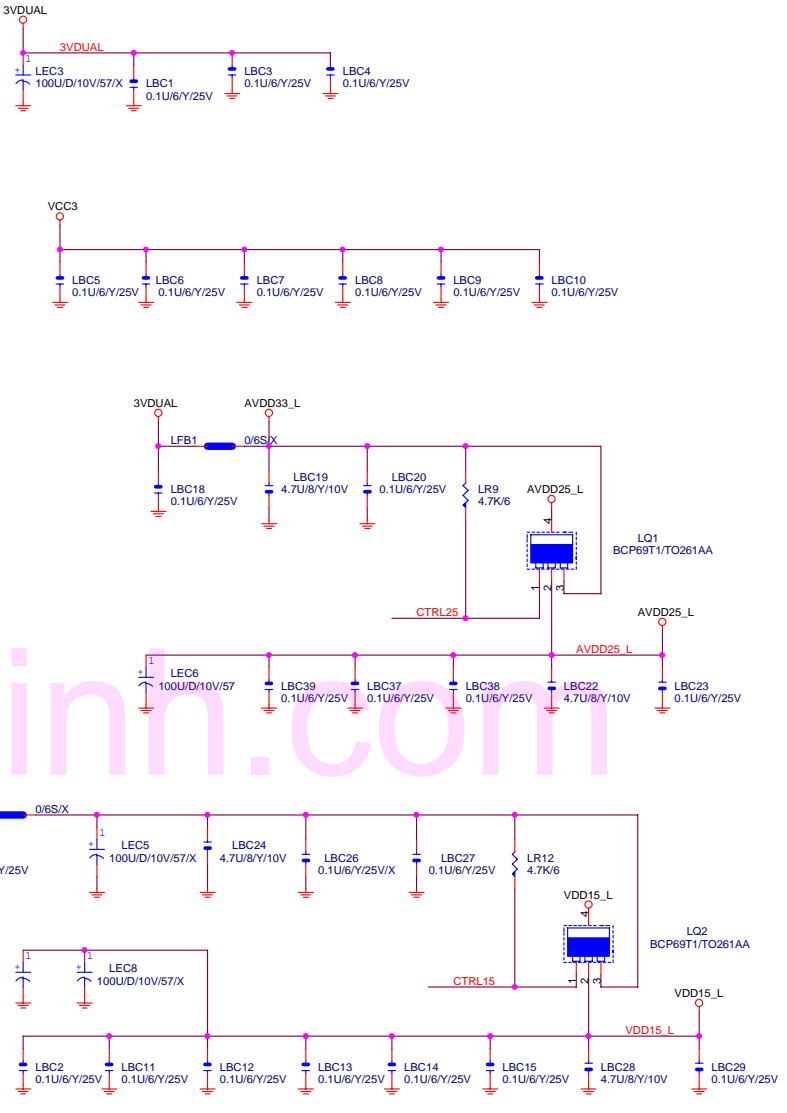
# Layout Check 注意事項  
 1. LU1 PIN129 需下內層GND,至少打 22-VIA  
 2. 3VDUAL, VCC3, VDD15\_L, AVDD25\_L 至少走20mil寬,並且電容擺設每兩pin至少放一顆Bypass Cap.  
 3. X'TAL 25MHz 兩訊號線,TRACE 愈短愈好,線寬12mil  
 4. MDI正負0-3,TRACE 8:7:8, 每對之間保持 40mil



88E8001

88E8001/LQFP128

POWER DECOUPLING CAP.



|                        |                       |                |
|------------------------|-----------------------|----------------|
| <b>GIGABYTE</b>        |                       |                |
| <b>MARVELL 88E8001</b> |                       |                |
| Title                  | Document Number       | Rev            |
|                        | <b>GA-8IPE775 PRO</b> | <b>1.01</b>    |
| Date:                  | 星期 三, 六月 23, 2004     | Sheet 37 of 40 |



# GIGABYTE GA-8IPE775 PRO PCI ROUNTING LIST

| PCI DEVICE    | IDSEL | INT     | CLOCK      | REQ           | GNT           |
|---------------|-------|---------|------------|---------------|---------------|
| PCI SLOT1     | 16    | C,F,G,A | PCLK0      | -REQ01        | -GNT01        |
| PCI SLOT2     | 17    | F,G,A,C | PCLK1      | -REQ02        | -GNT02        |
| PCI SLOT3     | 18    | G,A,C,F | PCLK2      | -REQ2         | -GNT2         |
| PCI SLOT4     | 19    | A,C,F,G | PCLK3      | -REQ3         | -GNT3         |
| PCI SLOT5     | 20    | C,F,G,A | PCLK4      | -REQ4         | -GNT4         |
| TI 1394       | 21    | F       | PCICLK1394 | -REQ1         | -GNT1         |
| LAN (Marvell) | 25    | E       | LANCLK33   | -REQ5 (REQB#) | -GNT5 (GNTB#) |
|               |       |         |            |               |               |
|               |       |         |            |               |               |
|               |       |         |            |               |               |

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|                                |  |                    |
|--------------------------------|--|--------------------|
| <b>GIGABYTE</b>                |  |                    |
| Title<br><b>PCI ROUNT LIST</b> |  |                    |
| Size<br>Custom                 | Document Number<br><b>GA-8IPE775 PRO</b> | Rev<br><b>1.01</b> |
| Date: 星期二, 六月 23, 2004         | Sheet 39                                 | of 40              |

