

Model Name:GA-G41MT-S2

Revision 1.3

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 | G41_HOST |
| 09 | G41_DDRII |
| 10 | G41_PCI E, DMI |
| 11 | G41_VGA |
| 12 | G41_GND |
| 13 | G41_PWR |
| 14 | PCI EXPRESS*16 SLOT |
| 15 | DDR3 CHANNEL A |
| 16 | DDR3 CHANNEL B |
| 17 | DDR3 TERMINATION |
| 18 | ICH7 PCI, USB, DMI, LAN |
| 19 | ICH7 IDE, GPIO, SATA, CTRL |
| 20 | ICH7 VCC, GND |
| 21 | CK505 CLOCK. |
| 22 | PCI SLOT 1,PCIE*1,2 |
| 23 | IDE/FLOPPY/F_USB/R_USB |
| 24 | ITE 8718 GB |
| 25 | COM_LPT |
| 26 | CI,HWM,KB/MS,DUALBIOS |
| 27 | VIA VT1708S/1705 |

SHEET

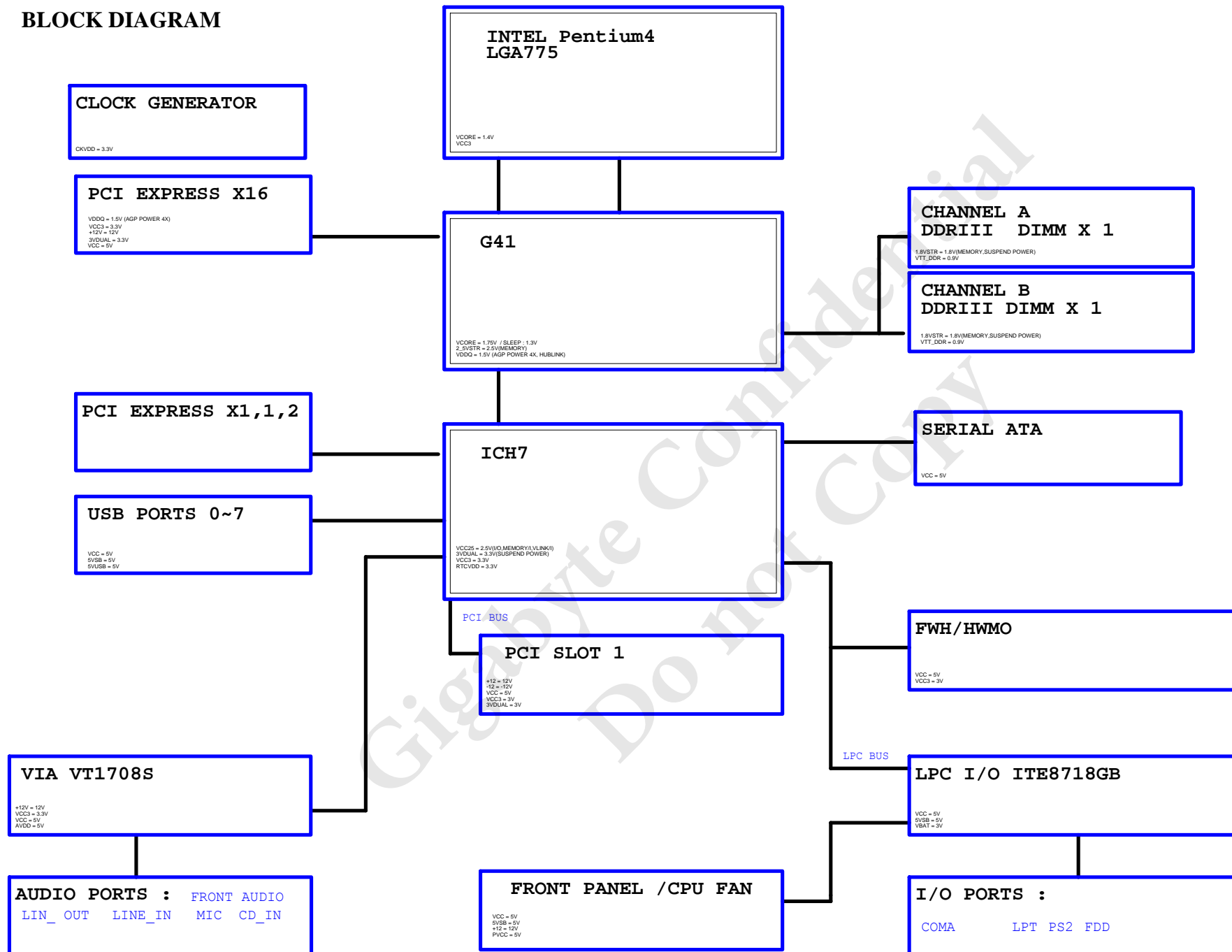
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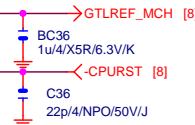
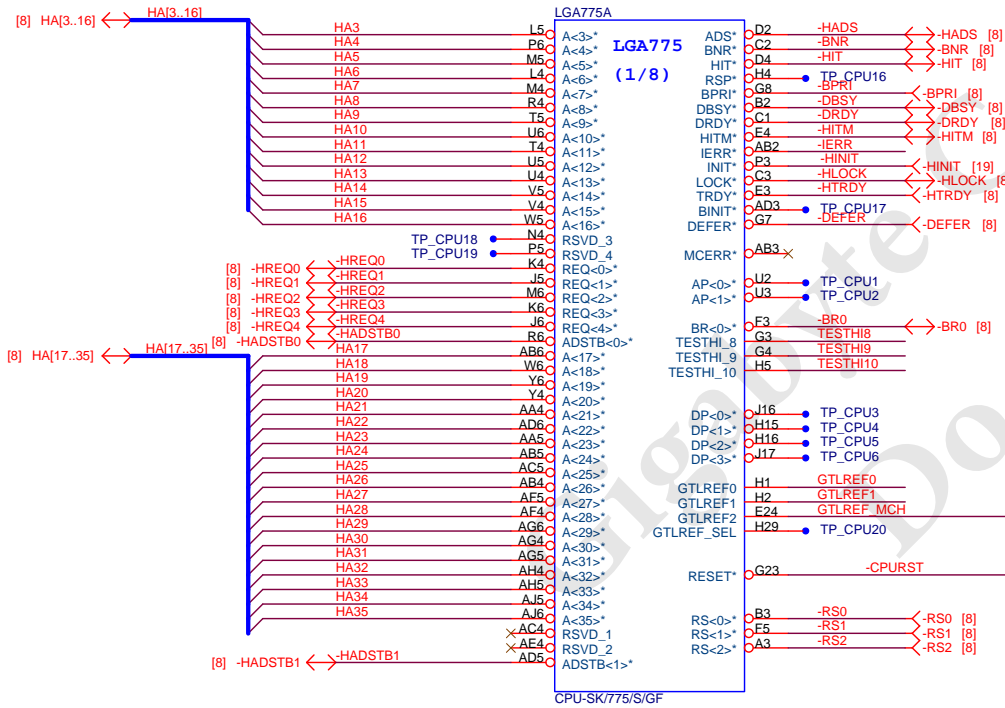
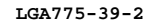
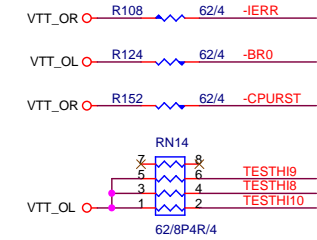
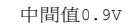
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|----|------------------------|
| 28 | REAR AUDIO JACK |
| 29 | DISCRETE POWER |
| 30 | VCORE PWM_ISL6312 |
| 31 | ATX, OTHERS POWER |
| 32 | FRONT PANEL |
| 33 | ARTHEROS AR8151/AR8152 |

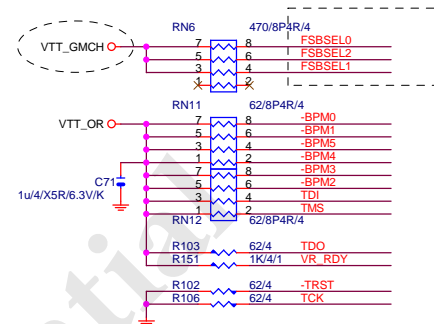
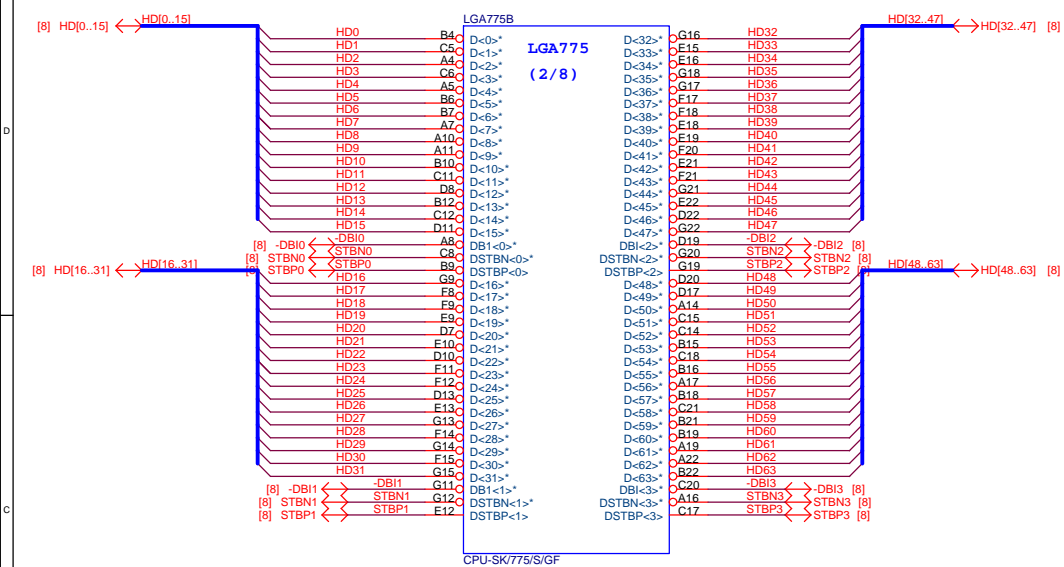
Gigabyte Technology

| | | | |
|-------------|-----------------------------|-------|---------|
| Cover Sheet | | | |
| Title | GA-G41MT-S2 | | |
| Size | Document Number | Rev | 1.3 |
| Custom | | | |
| Date: | Tuesday, September 28, 2010 | Sheet | 1 of 33 |

BLOCK DIAGRAM

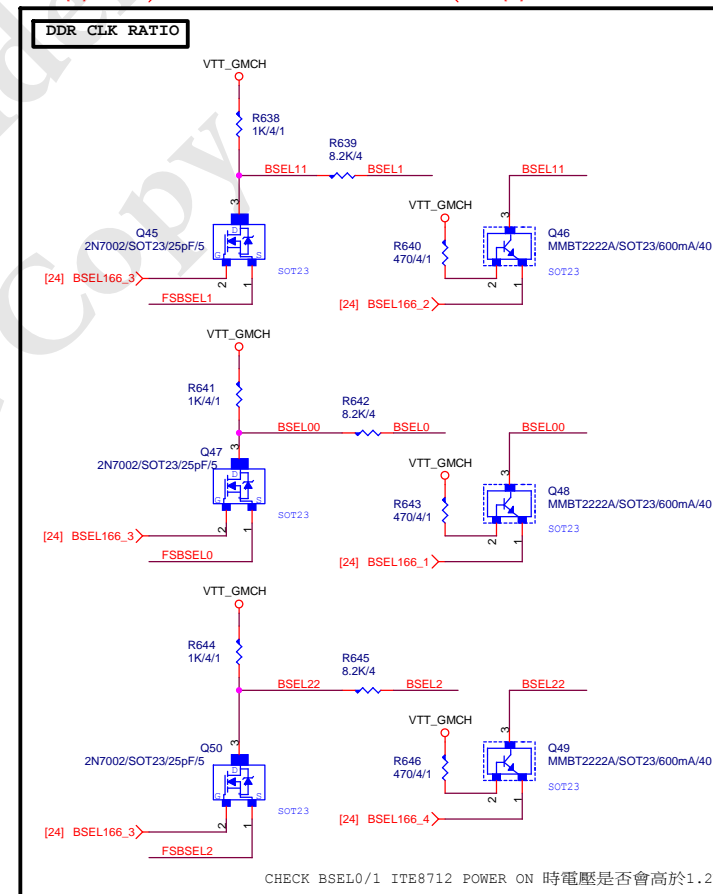






TO CLK GEN

TO NB



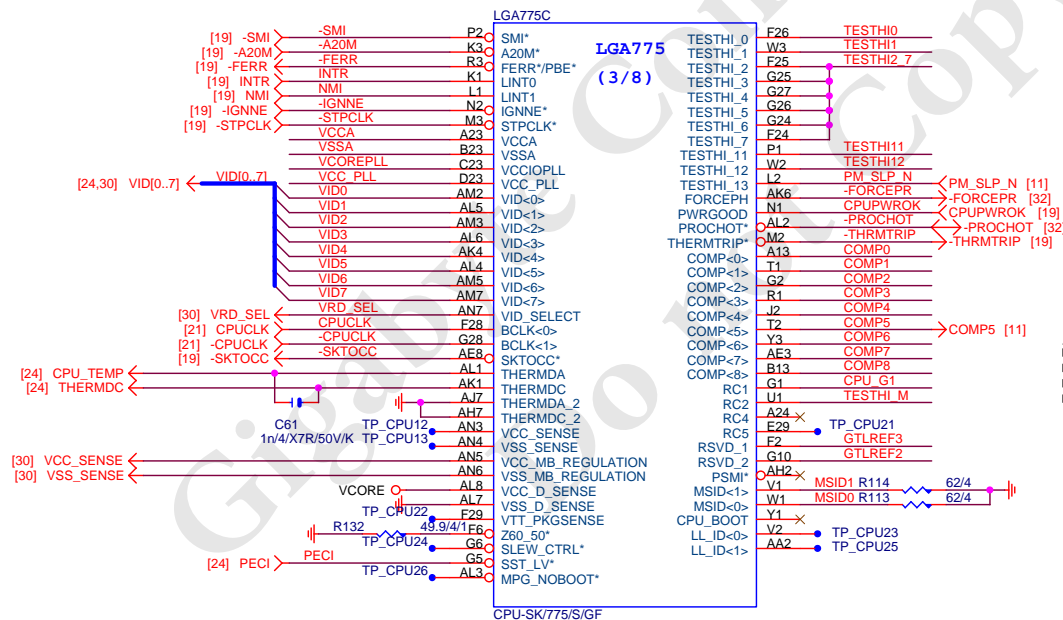
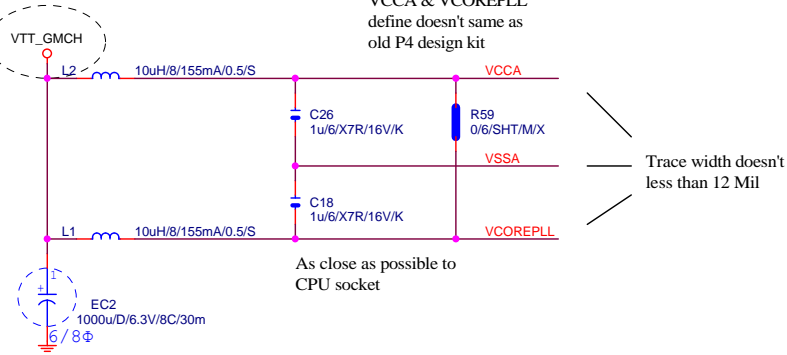
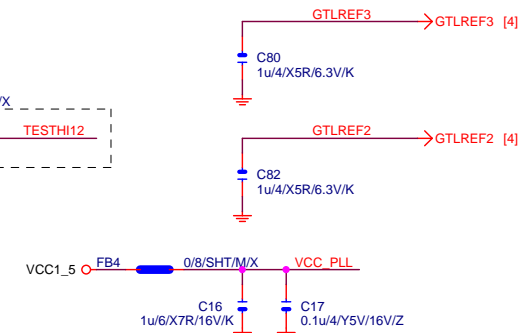
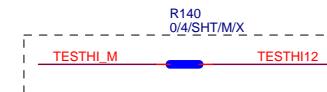
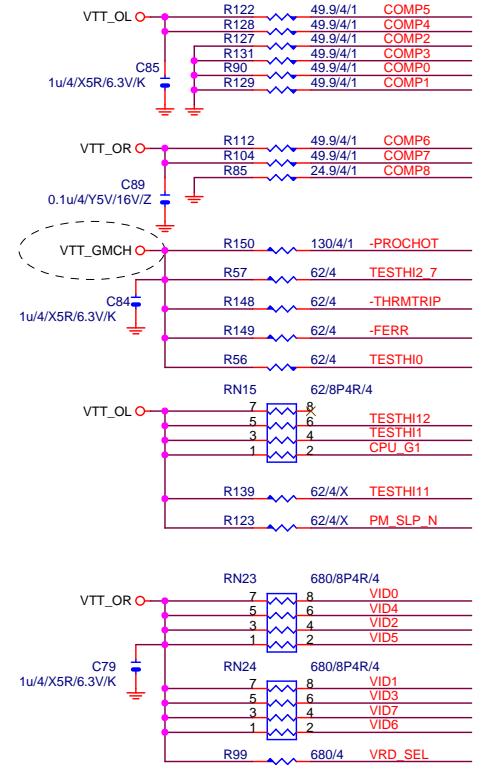
CPU

| NA | FSB | FSA | |
|---------|---------|---------|--------|
| FSBSEL3 | FSBSEL1 | FSBSEL0 | Clock |
| 1 | 0 | 1 | 100MHz |
| 0 | 0 | 1 | 133MHz |
| 0 | 1 | 1 | 166MHz |
| 0 | 1 | 0 | 200MHz |
| 0 | 0 | 0 | 266MHz |

x

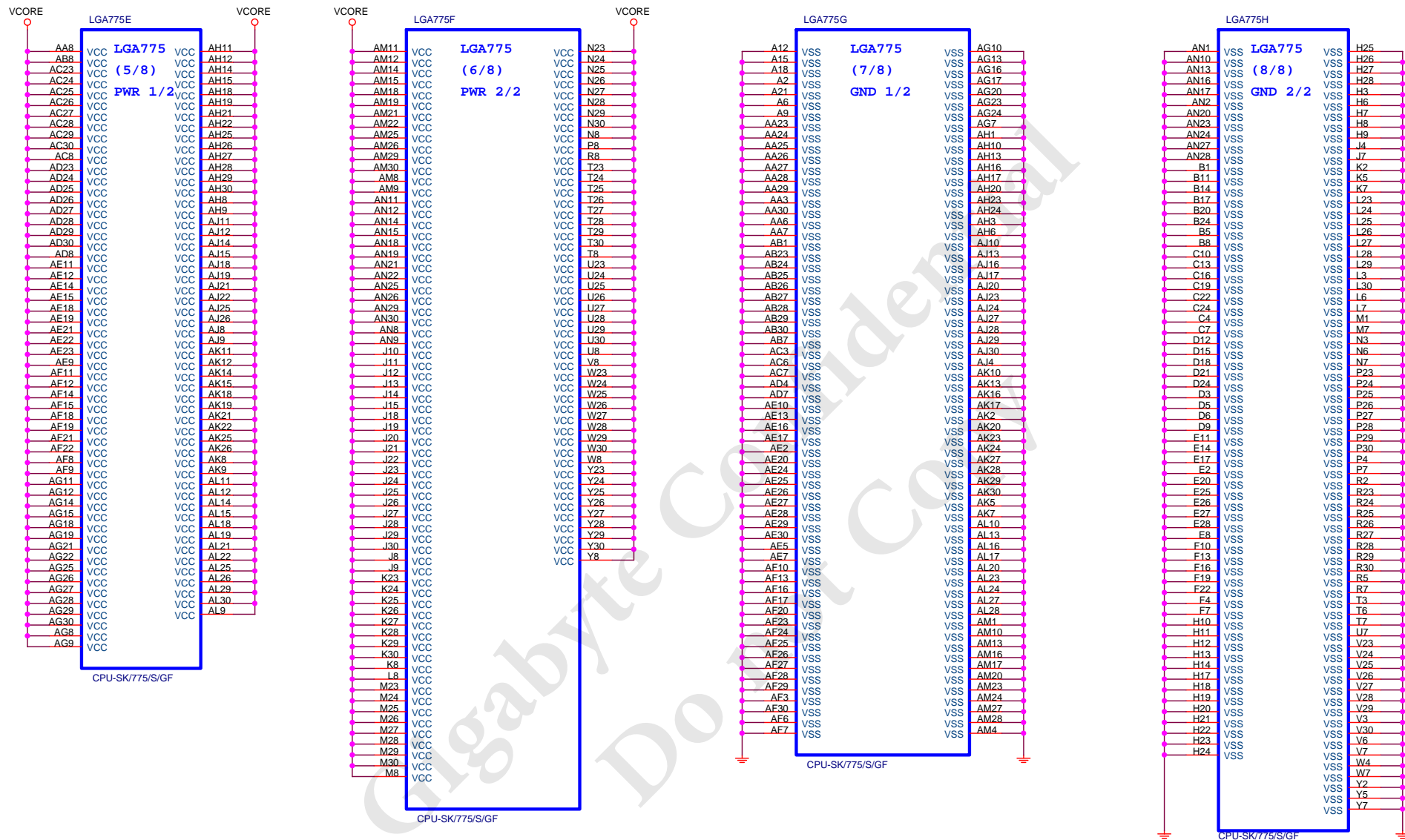
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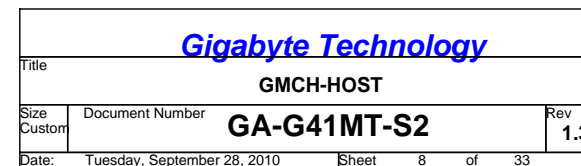
VCCA & VCOREPLL
define doesn't same as
old P4 design kit

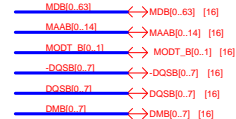
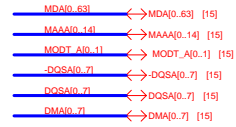
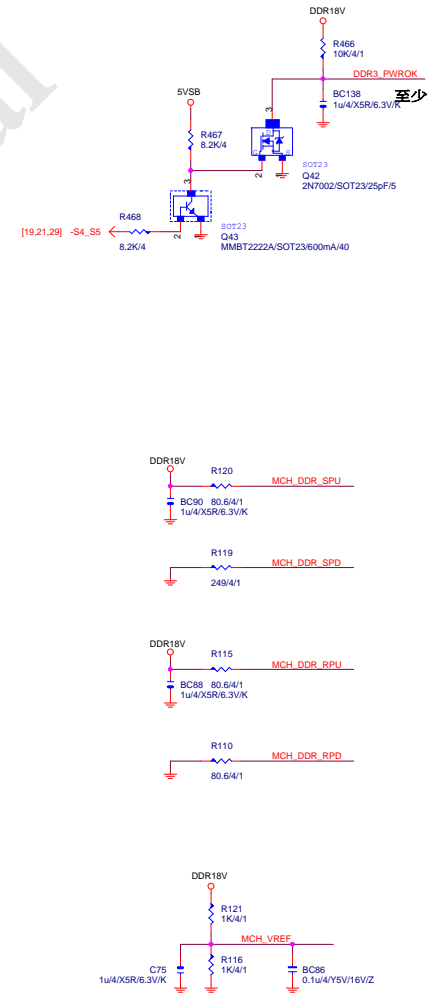
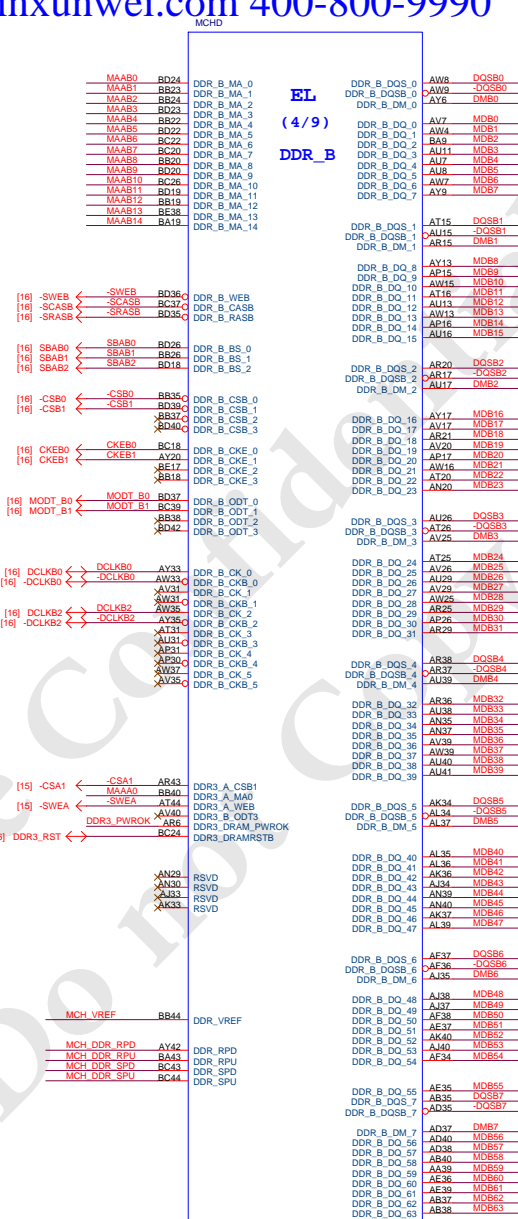
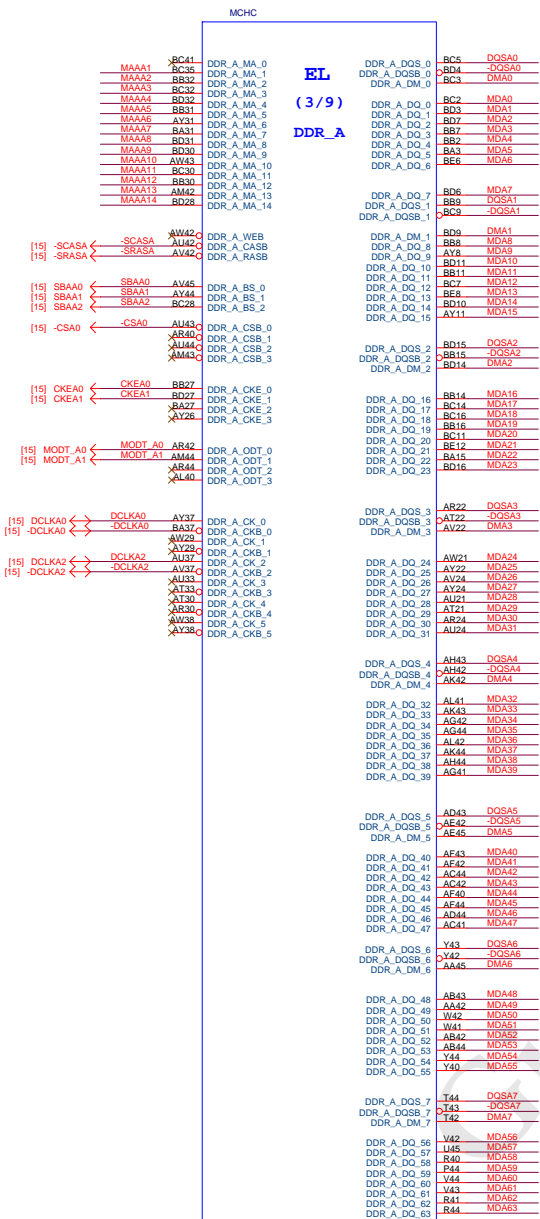
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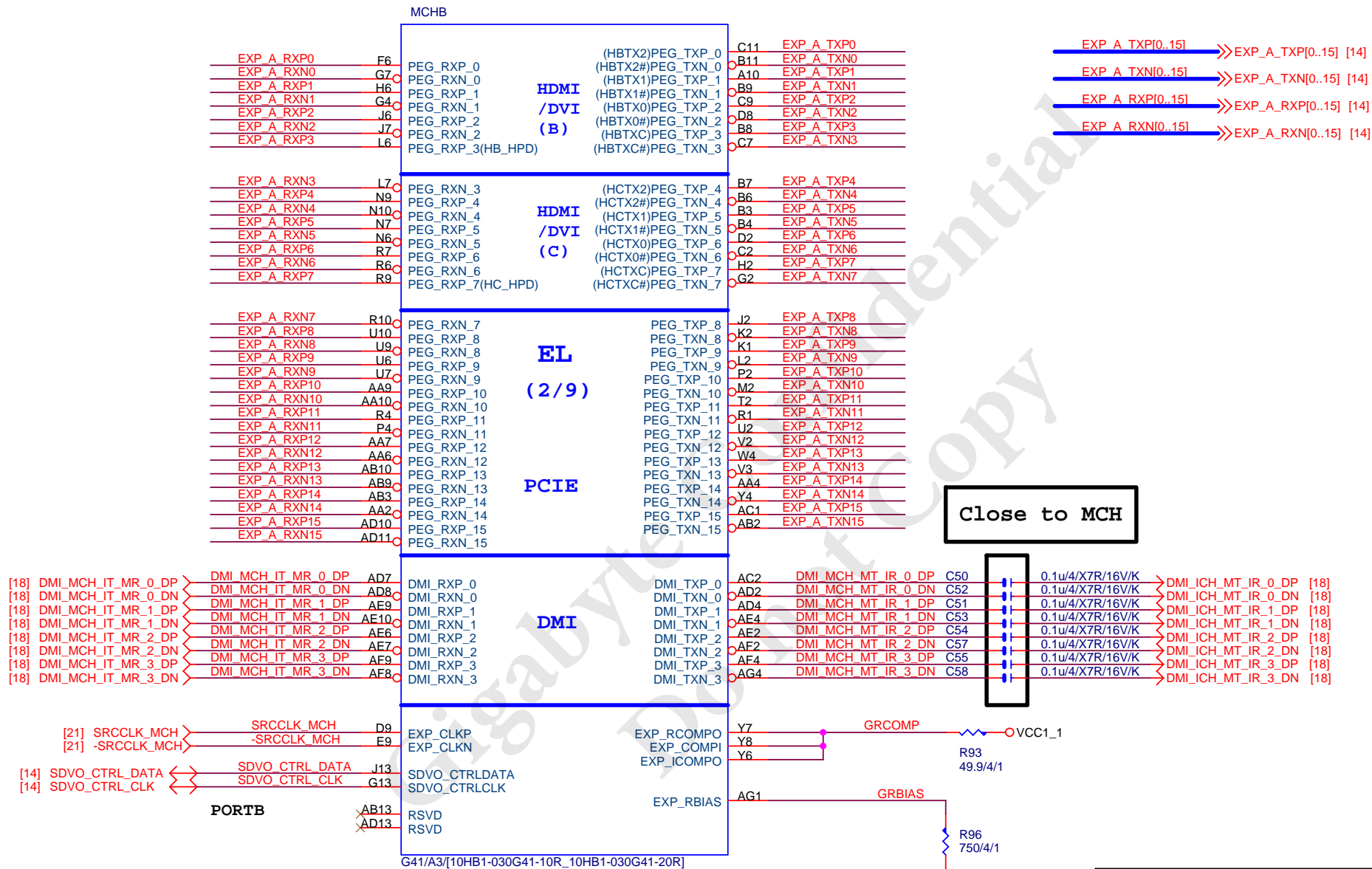
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|-------|-----------------------------|-------------|-------------|-------|
| Title | | | P4_LGA775-C | |
| Size | Document Number | GA-G41MT-S2 | | Rev |
| B | | | | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet | 6 | of 33 |

PECI:Platform Environment Control Interface



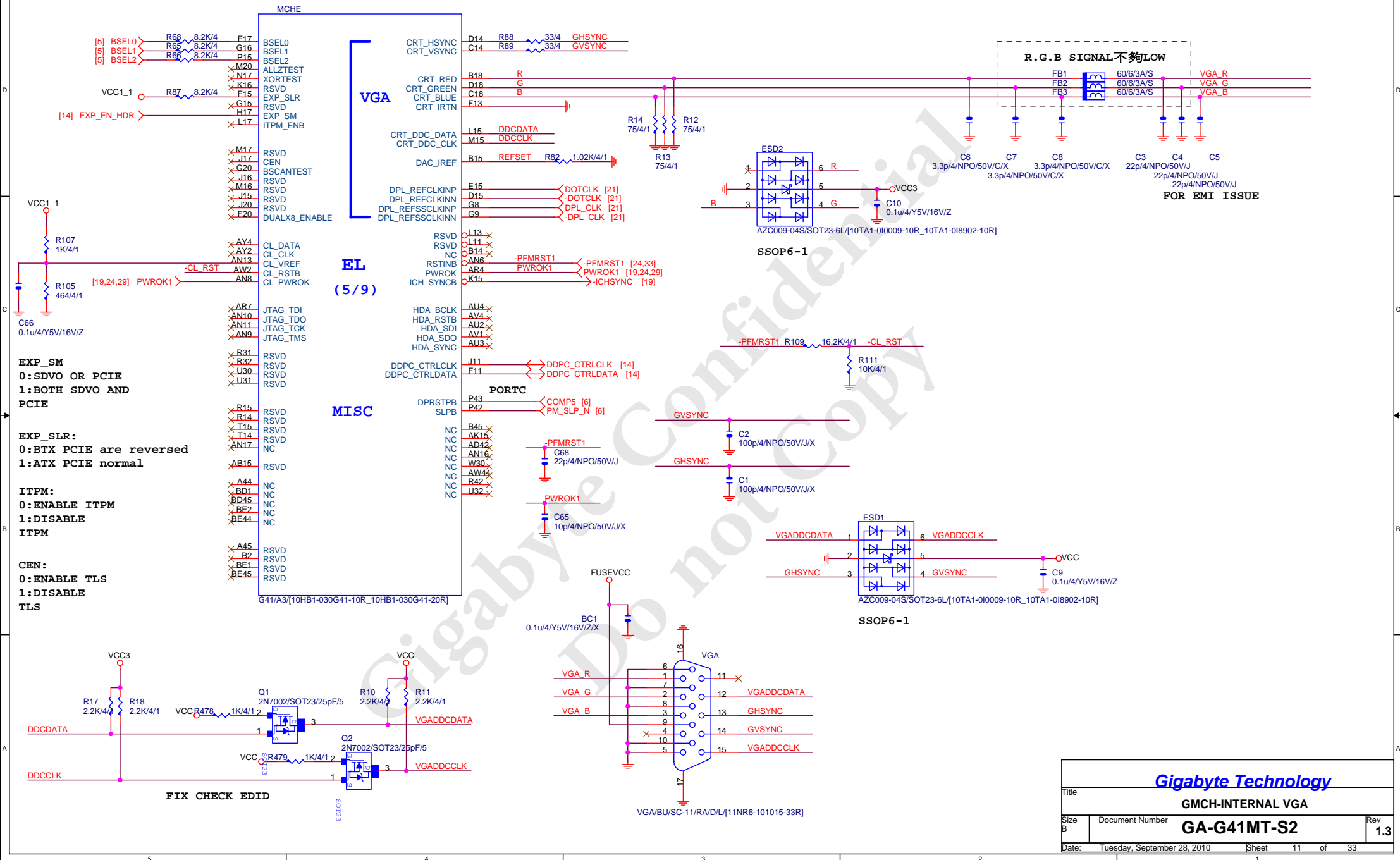






Gigabyte Technology

| | | |
|------------------|-----------------------------|----------------|
| Title | | |
| GMCH-PCI E & DMI | | |
| Size | Document Number | Rev |
| Custom | GA-G41MT-S2 | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet 10 of 33 |



MCHH

| | | | | |
|------|-----|-------|-----|------|
| A12 | VSS | | VSS | AK35 |
| A15 | VSS | | VSS | AK38 |
| A19 | VSS | EL | VSS | AK39 |
| A27 | VSS | (8/9) | VSS | AL38 |
| A31 | VSS | | VSS | BB6 |
| A36 | VSS | | VSS | BD12 |
| A40 | VSS | | VSS | BD17 |
| AA1 | VSS | | VSS | BD8 |
| AA8 | VSS | GND | VSS | BE10 |
| AA11 | VSS | | VSS | BE15 |
| AA12 | VSS | | VSS | BE19 |
| AA13 | VSS | | VSS | BE22 |
| AA20 | VSS | | VSS | BE24 |
| AA22 | VSS | | VSS | BE29 |
| AA24 | VSS | | VSS | BE34 |
| AA26 | VSS | | VSS | BE40 |
| AA34 | VSS | | VSS | AR3 |
| AA38 | VSS | | VSS | AR8 |
| AA40 | VSS | | VSS | AR9 |
| AA44 | VSS | | VSS | AR10 |
| AB4 | VSS | | VSS | AR11 |
| AB6 | VSS | | VSS | AR13 |
| AB7 | VSS | | VSS | AR16 |
| AB8 | VSS | | VSS | AR26 |
| AB11 | VSS | | VSS | AR31 |
| AB12 | VSS | | VSS | AR33 |
| AB19 | VSS | | VSS | AR35 |
| AB21 | VSS | | VSS | AR39 |
| AB23 | VSS | | VSS | AT1 |
| AB25 | VSS | | VSS | AT2 |
| AB27 | VSS | | VSS | AT11 |
| AB34 | VSS | | VSS | AT13 |
| AB36 | VSS | | VSS | AT17 |
| AB39 | VSS | | VSS | AT24 |
| AC5 | VSS | | VSS | AT29 |
| AC20 | VSS | | VSS | AY15 |
| AC22 | VSS | | VSS | AT35 |
| AC24 | VSS | | VSS | AU9 |
| AC26 | VSS | | VSS | AU20 |
| AC45 | VSS | | VSS | AU22 |
| AD3 | VSS | | VSS | AU25 |
| AD6 | VSS | | VSS | AU30 |
| AD9 | VSS | | VSS | AV2 |
| AD12 | VSS | | VSS | AV8 |
| AD19 | VSS | | VSS | AV9 |
| AD21 | VSS | | VSS | AV11 |
| AD23 | VSS | | VSS | AV13 |
| AD25 | VSS | | VSS | AV15 |
| AD27 | VSS | | VSS | AV16 |
| AD34 | VSS | | VSS | AV21 |
| AD36 | VSS | | VSS | AV30 |
| AD39 | VSS | | VSS | AV38 |
| AE1 | VSS | | VSS | H3 |
| AE8 | VSS | | VSS | H11 |
| AE11 | VSS | | VSS | H13 |
| AE20 | VSS | | VSS | H15 |
| AE22 | VSS | | VSS | H16 |
| AE24 | VSS | | VSS | H20 |
| AE26 | VSS | | VSS | H25 |
| AE34 | VSS | | VSS | H30 |
| AE38 | VSS | | VSS | H31 |
| AE40 | VSS | | VSS | H33 |
| AE44 | VSS | | VSS | H38 |
| AF6 | VSS | | VSS | H44 |
| AF7 | VSS | | VSS | H7 |
| AF10 | VSS | | VSS | H8 |
| AF11 | VSS | | VSS | H9 |
| AF12 | VSS | | VSS | J3 |
| AF13 | VSS | | VSS | J37 |
| AF33 | VSS | | VSS | J4 |
| AF36 | VSS | | VSS | J5 |
| AF39 | VSS | | VSS | J8 |
| AG5 | VSS | | VSS | J9 |
| AG19 | VSS | | VSS | K11 |
| AG21 | VSS | | VSS | K13 |
| AG23 | VSS | | VSS | K17 |
| AG25 | VSS | | VSS | K24 |
| AG27 | VSS | | VSS | K29 |
| AG45 | VSS | | VSS | K33 |
| AH2 | VSS | | VSS | K45 |
| AH3 | VSS | | VSS | L10 |
| AH4 | VSS | | VSS | L16 |
| AJ20 | VSS | | VSS | L20 |
| AJ22 | VSS | | VSS | U11 |
| AJ24 | VSS | | VSS | U12 |
| AJ26 | VSS | | VSS | U13 |
| AJ36 | VSS | | VSS | U16 |
| AJ39 | VSS | | VSS | U17 |
| AJ44 | VSS | | VSS | U19 |
| AJ45 | VSS | | VSS | U20 |

G41/A3/[10HB1-030G41-10R_10HB1-030G41-20R]

| | | | | |
|------|-----|-------|-----|------|
| BA5 | VSS | | VSS | L26 |
| BB21 | VSS | | VSS | L30 |
| BB25 | VSS | EL | VSS | L35 |
| BB28 | VSS | (9/9) | VSS | L39 |
| BB6 | VSS | | VSS | L4 |
| BD12 | VSS | | VSS | L8 |
| BD17 | VSS | | VSS | L9 |
| BD8 | VSS | | VSS | M1 |
| BE10 | VSS | GND | VSS | M24 |
| BE15 | VSS | | VSS | M25 |
| BE19 | VSS | | VSS | M44 |
| BE22 | VSS | | VSS | N11 |
| BE24 | VSS | | VSS | N13 |
| BE29 | VSS | | VSS | N16 |
| BE34 | VSS | | VSS | N26 |
| BE40 | VSS | | VSS | N29 |
| AR3 | VSS | | VSS | N30 |
| AR8 | VSS | | VSS | N33 |
| AR9 | VSS | | VSS | N36 |
| AR10 | VSS | | VSS | N8 |
| AR11 | VSS | | VSS | P16 |
| AR13 | VSS | | VSS | P17 |
| AR16 | VSS | | VSS | P25 |
| AR26 | VSS | | VSS | P26 |
| AR31 | VSS | | VSS | P31 |
| AR33 | VSS | | VSS | R11 |
| AR35 | VSS | | VSS | R12 |
| AR39 | VSS | | VSS | R16 |
| AT1 | VSS | | VSS | R17 |
| AT2 | VSS | | VSS | R19 |
| AT11 | VSS | | VSS | R2 |
| AT13 | VSS | | VSS | R30 |
| AT17 | VSS | | VSS | R38 |
| AT24 | VSS | | VSS | R45 |
| AT29 | VSS | | VSS | R5 |
| AY15 | VSS | | VSS | R8 |
| AT35 | VSS | | VSS | T10 |
| AU9 | VSS | | VSS | T11 |
| AU20 | VSS | | VSS | T12 |
| AU22 | VSS | | VSS | T13 |
| AU25 | VSS | | VSS | T16 |
| AU30 | VSS | | VSS | T17 |
| AV2 | VSS | | VSS | T19 |
| AV8 | VSS | | VSS | T20 |
| AV9 | VSS | | VSS | T3 |
| AV11 | VSS | | VSS | T30 |
| AV13 | VSS | | VSS | T31 |
| AV15 | VSS | | VSS | T32 |
| AV16 | VSS | | VSS | T33 |
| AV21 | VSS | | VSS | T35 |
| AV30 | VSS | | VSS | T38 |
| AV38 | VSS | | VSS | T4 |
| H3 | VSS | | VSS | T40 |
| H11 | VSS | | VSS | T6 |
| H13 | VSS | | VSS | T7 |
| H15 | VSS | | VSS | T8 |
| H16 | VSS | | VSS | T9 |
| H20 | VSS | | VSS | U1 |
| H25 | VSS | | VSS | W2 |
| H30 | VSS | | VSS | W20 |
| H31 | VSS | | VSS | W22 |
| H33 | VSS | | VSS | W24 |
| H38 | VSS | | VSS | W26 |
| H44 | VSS | | VSS | W44 |
| H7 | VSS | | VSS | W45 |
| H8 | VSS | | VSS | W5 |
| H9 | VSS | | VSS | Y10 |
| J3 | VSS | | VSS | Y11 |
| J37 | VSS | | VSS | Y12 |
| J4 | VSS | | VSS | Y13 |
| J5 | VSS | | VSS | Y16 |
| J8 | VSS | | VSS | Y17 |
| J9 | VSS | | VSS | Y19 |
| K11 | VSS | | VSS | Y2 |
| K13 | VSS | | VSS | Y21 |
| K17 | VSS | | VSS | Y23 |
| K24 | VSS | | VSS | Y25 |
| K29 | VSS | | VSS | Y27 |
| K33 | VSS | | VSS | Y3 |
| K45 | VSS | | VSS | Y35 |
| L10 | VSS | | VSS | Y39 |
| L16 | VSS | | VSS | Y9 |
| L20 | VSS | | VSS | BC45 |
| U11 | VSS | | VSS | BD2 |
| U12 | VSS | | VSS | BD44 |
| U13 | VSS | | VSS | BE3 |
| U16 | VSS | | VSS | BE43 |
| U17 | VSS | | VSS | C1 |
| U19 | VSS | | VSS | C45 |
| U20 | VSS | | VSS | BD43 |
| U36 | VSS | | VSS | AD30 |
| U39 | VSS | | VSS | AC30 |
| U44 | VSS | | VSS | AE30 |
| U8 | VSS | | VSS | AE30 |
| W1 | VSS | | VSS | |
| W16 | VSS | | VSS | |
| W17 | VSS | | VSS | |
| A3 | VSS | | VSS | |
| A43 | VSS | | VSS | |
| A6 | VSS | | VSS | |
| B44 | VSS | | VSS | |
| BC1 | VSS | | VSS | |

G41/A3/[10HB1-030G41-10R_10HB1-030G41-20R]



NB_HEATSIN

1X

X2

NB_HS

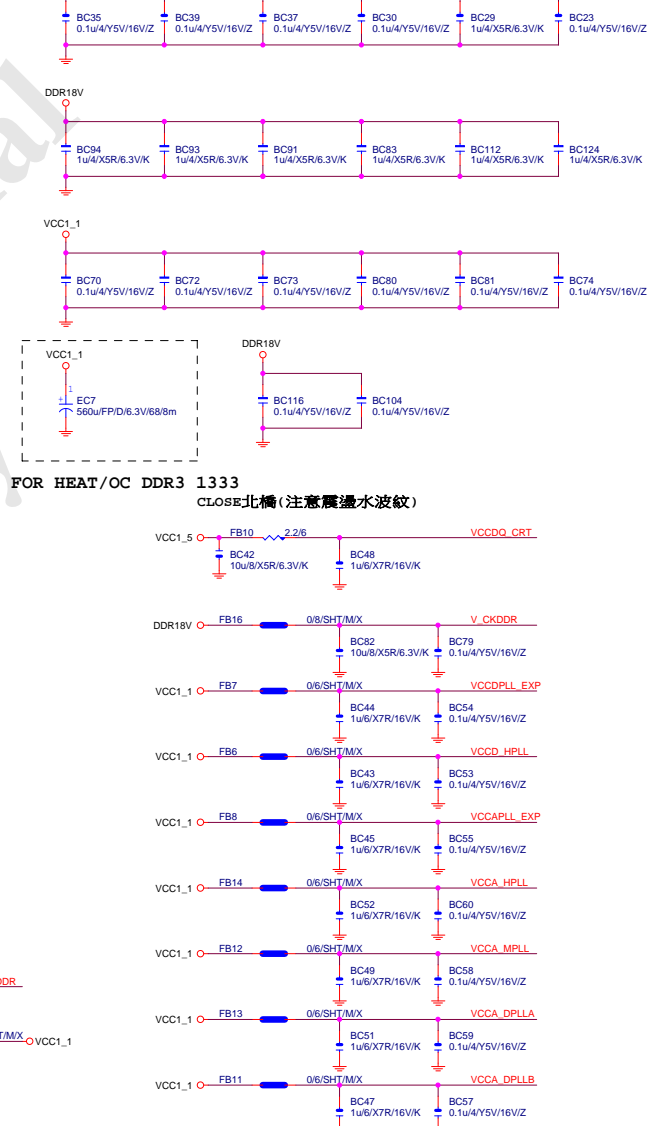
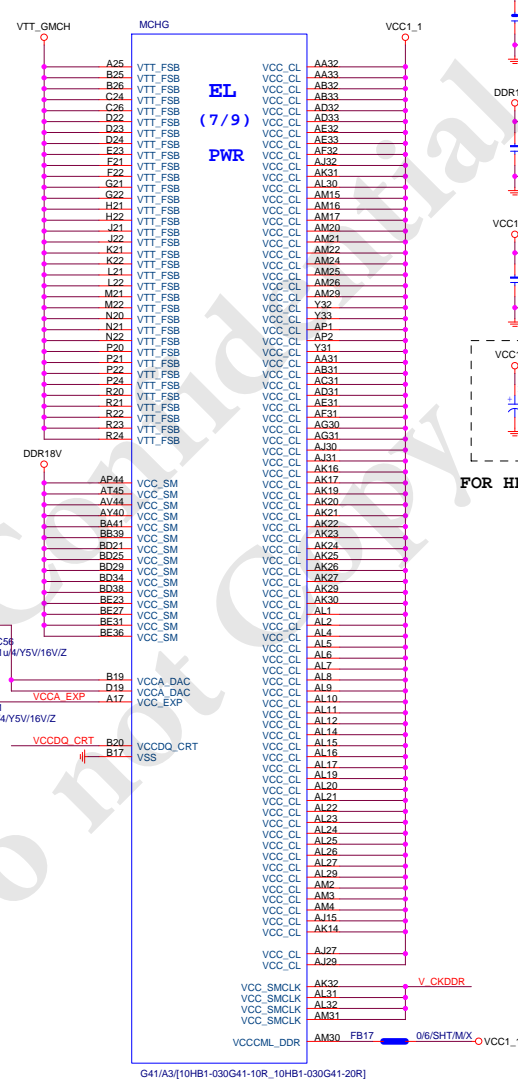
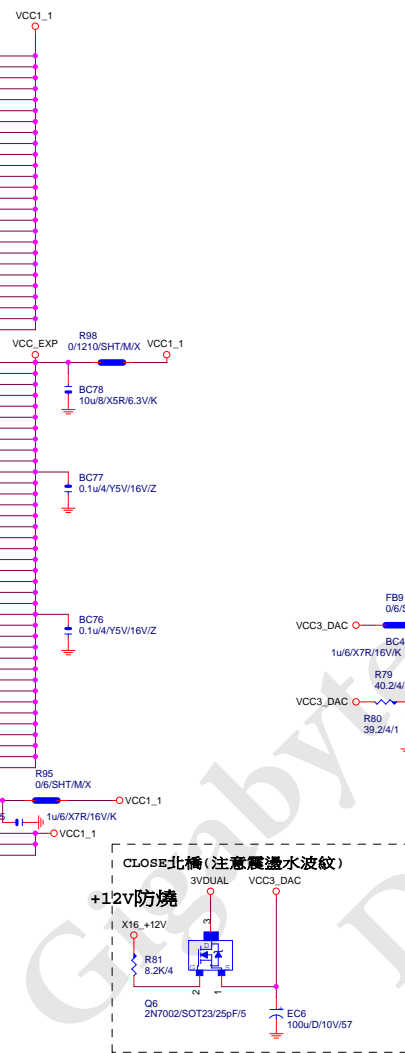
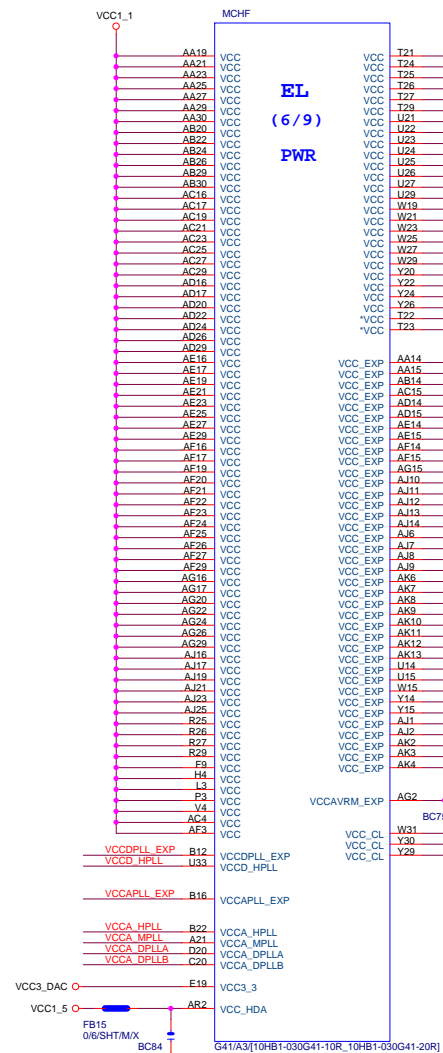
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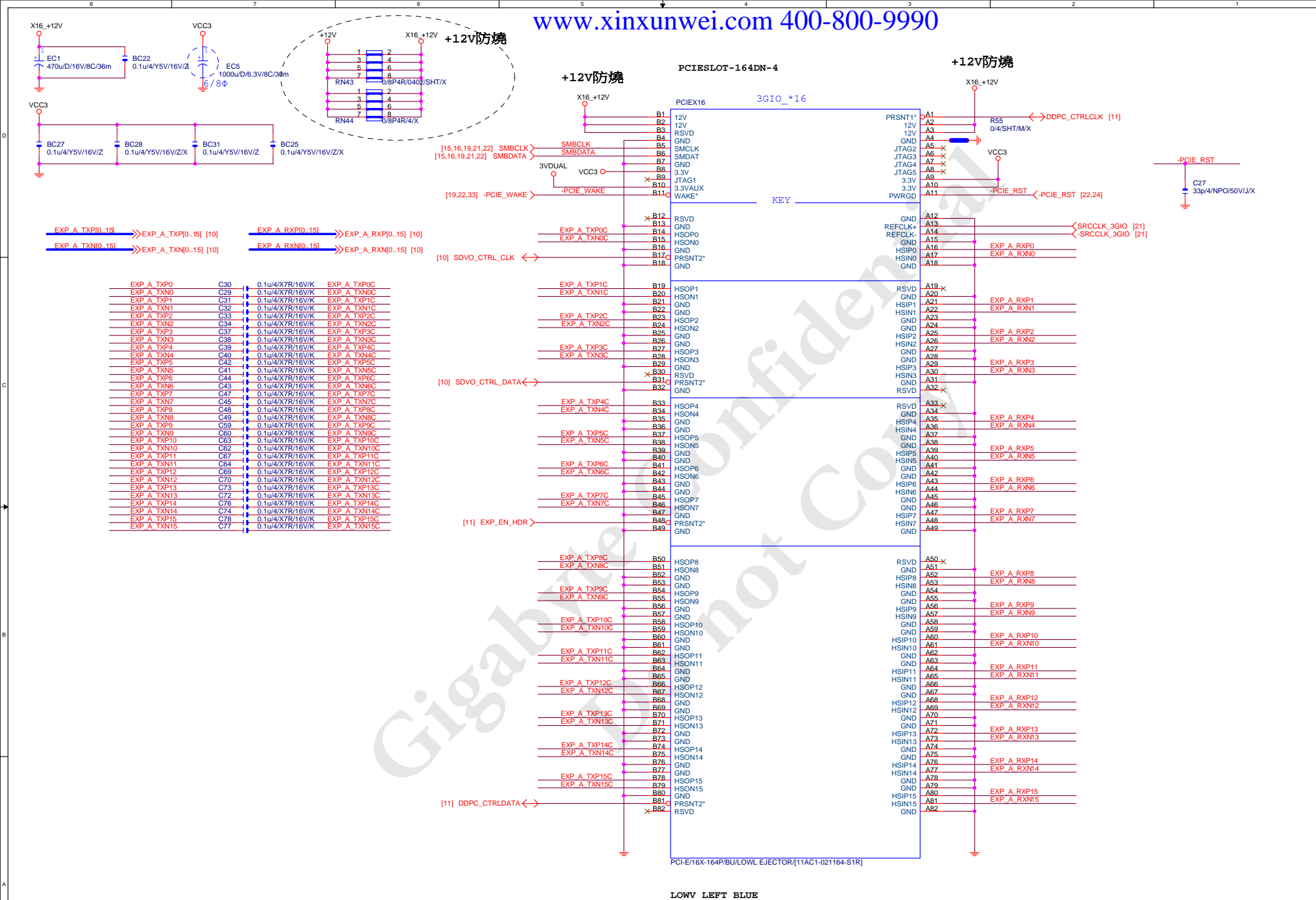
BGASINK445A-L

NEW COST DOWN

Gigabyte Technology

| | | | |
|--------|-----------------------------|-------------|----------|
| Title | | GMCH-GND | |
| Size | Document Number | GA-G41MT-S2 | Rev |
| Custom | | | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet | 12 of 33 |





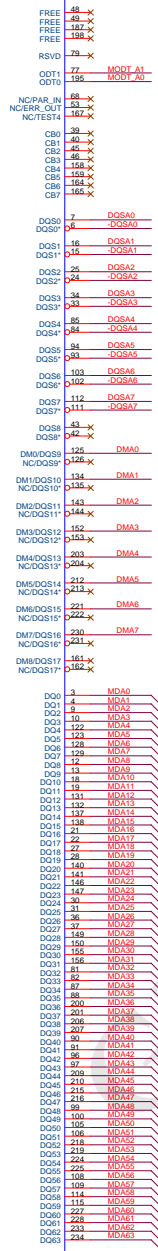
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PCI EXPRESS * 16

Size Custom Document Number **GA-G41MT-S2** Rev 1.3

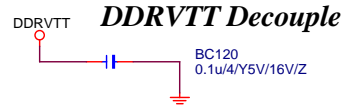
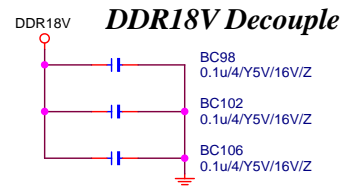
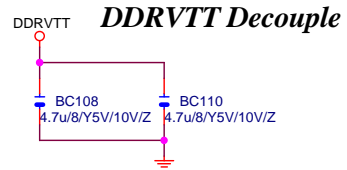
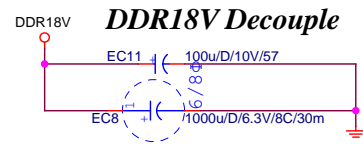
Date: Tuesday, September 28, 2010 Sheet 14 of 33



MODT_A[0..1] ↔ MODT_A[0..1] [9]
 -DQSA[0..7] ↔ -DQSA[0..7] [9]
 DQSA[0..7] ↔ DQSA[0..7] [9]
 DMA[0..7] ↔ DMA[0..7] [9]

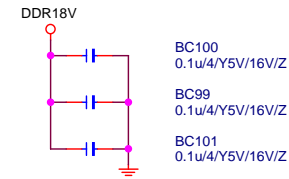


DDR TERMINATION CHANNEL A

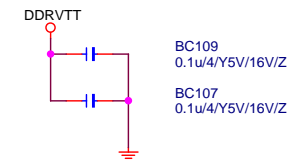


DDR TERMINATION CHANNEL B

DDR18V Decouple

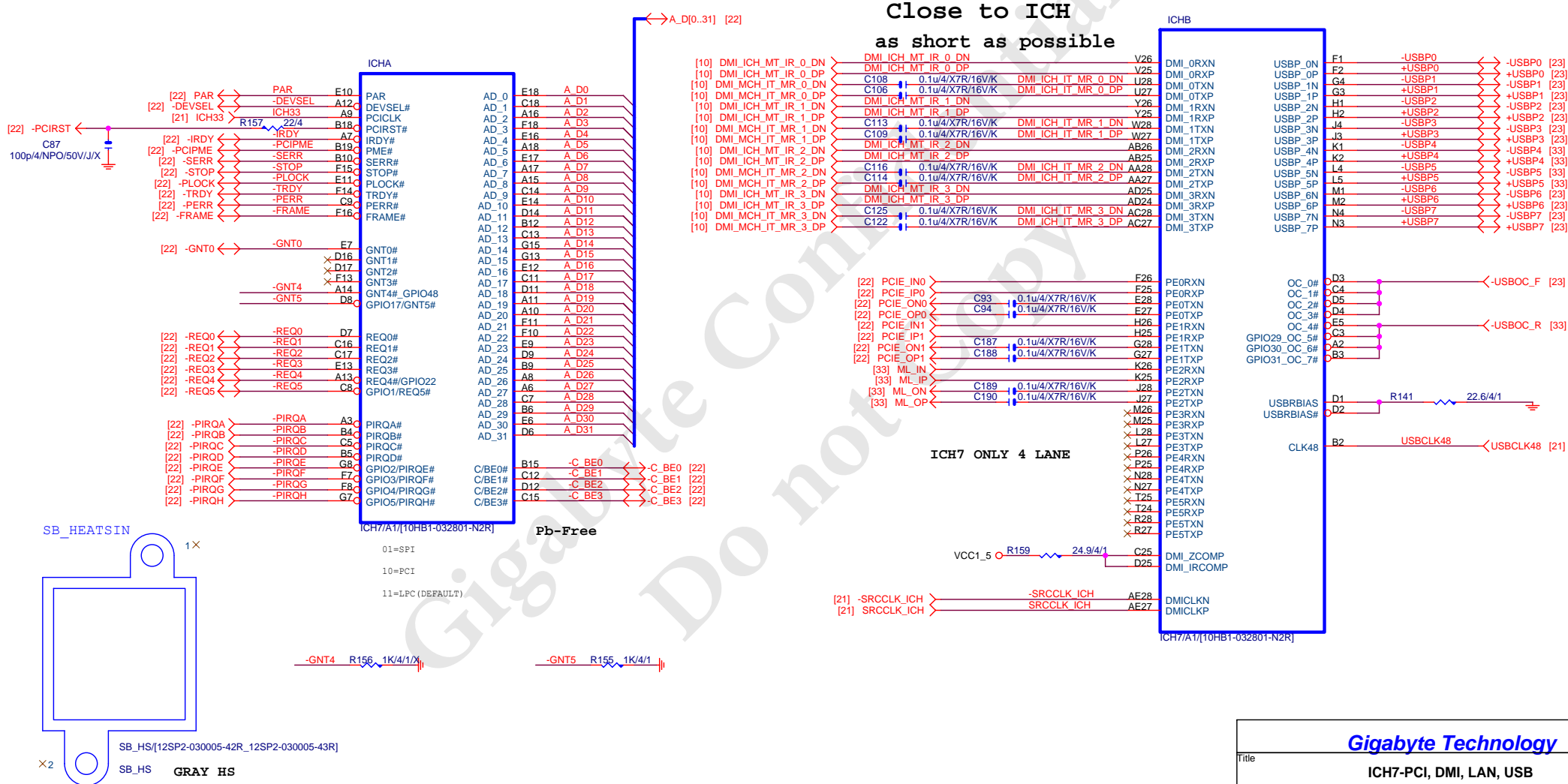


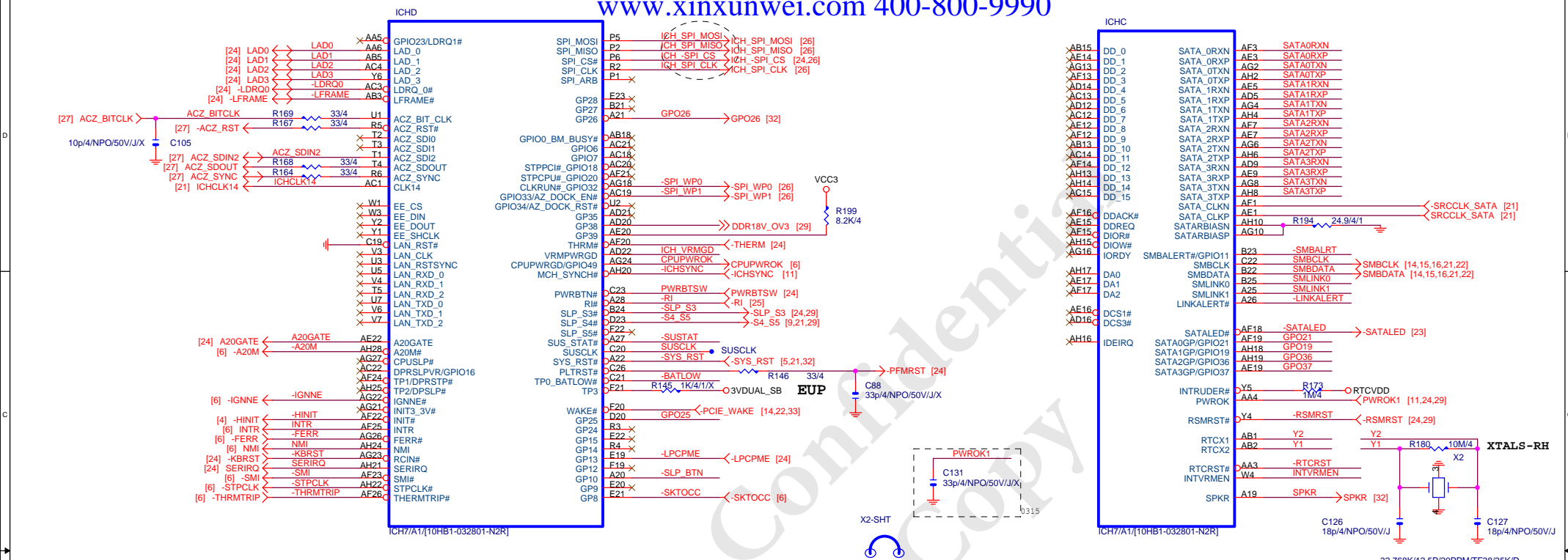
DDRVTT Decouple



Gigabyte Technology

| | | | |
|--------|-----------------------------|-------|------------------|
| Title | | | DDRII TERMINATOR |
| Size | Document Number | Rev | |
| Custom | GA-G41MT-S2 | 1.3 | |
| Date: | Tuesday, September 28, 2010 | Sheet | 17 of 33 |

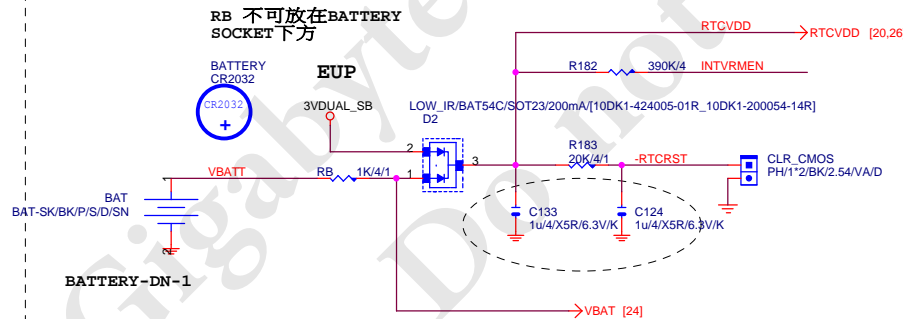




NEW TYPE:BATTERY-DUAL-4

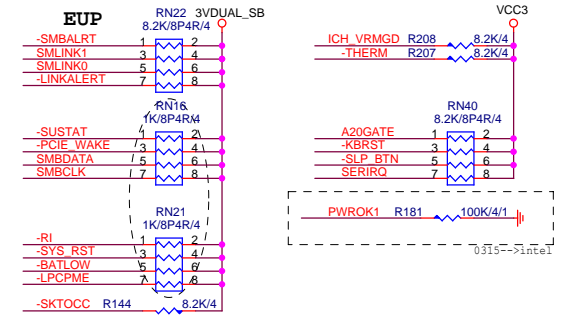
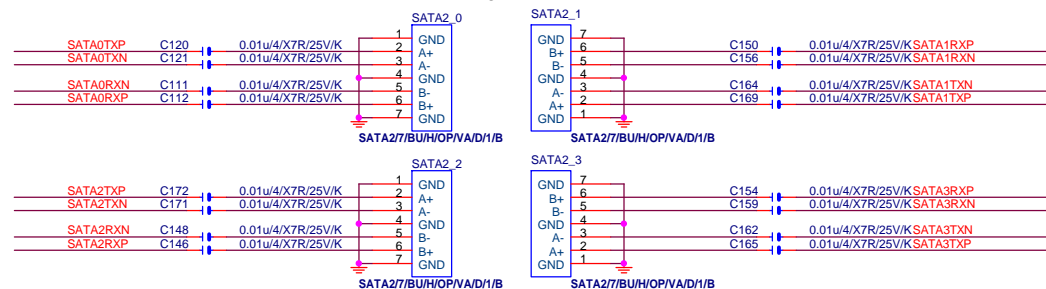
SHW/D0.64*5.08*6.74

RB 不可放在BATTERY
SOCKET下方



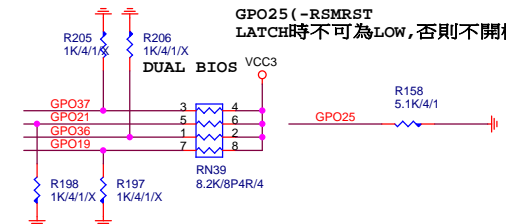
H1X7-SATA2-HS-MASK

BLUE



GPO25 PULL-DOWN CHECK

GPO25 (-RSMRST
LATCH時不可為LOW,否則不開機)



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ICH7-IDE, SATA, GPIO, CTRL

GA-G41MT-S2

Date: Tuesday, September 28, 2010 Sheet 19 of 33

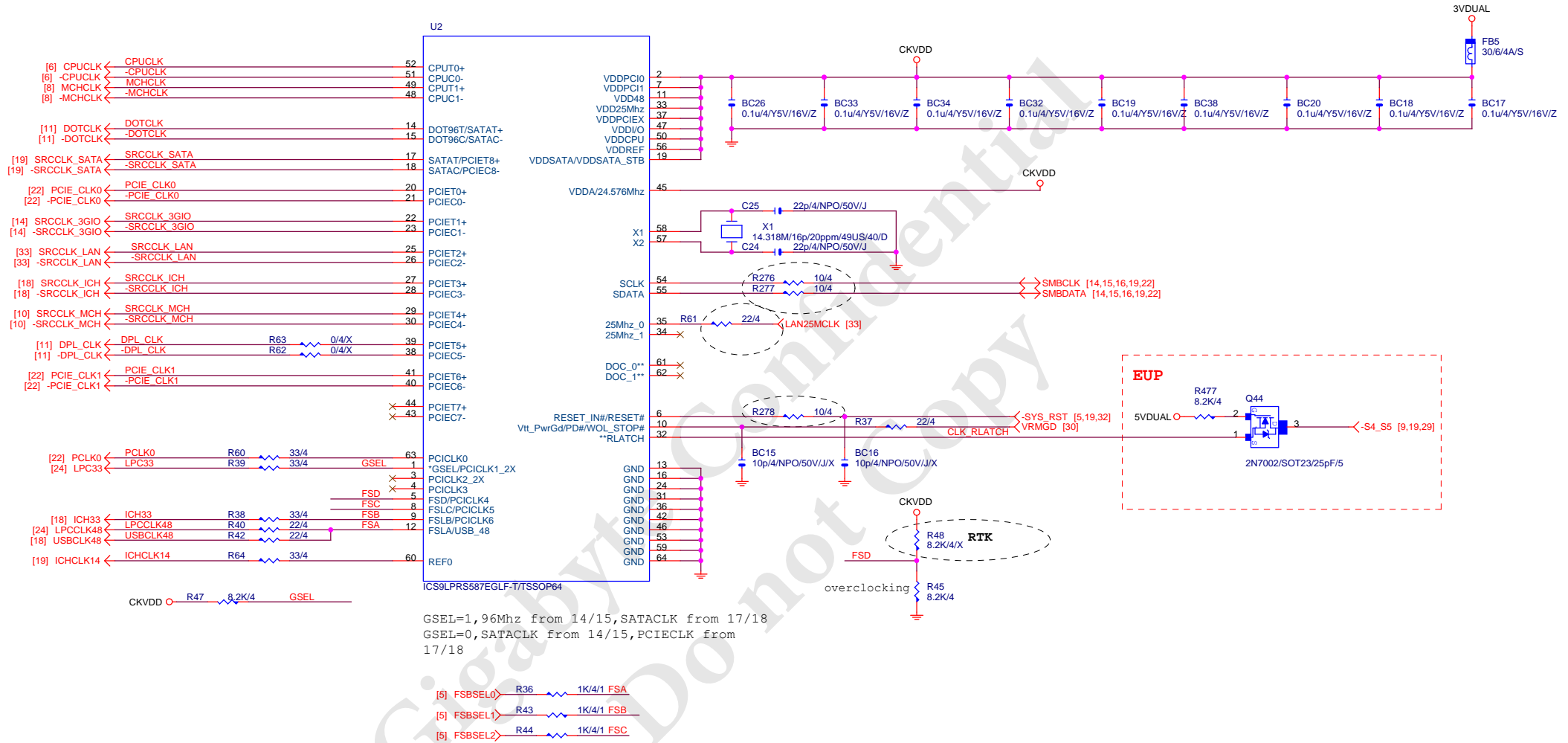


ICH7-PWR & GND

GA-G41MT-S2

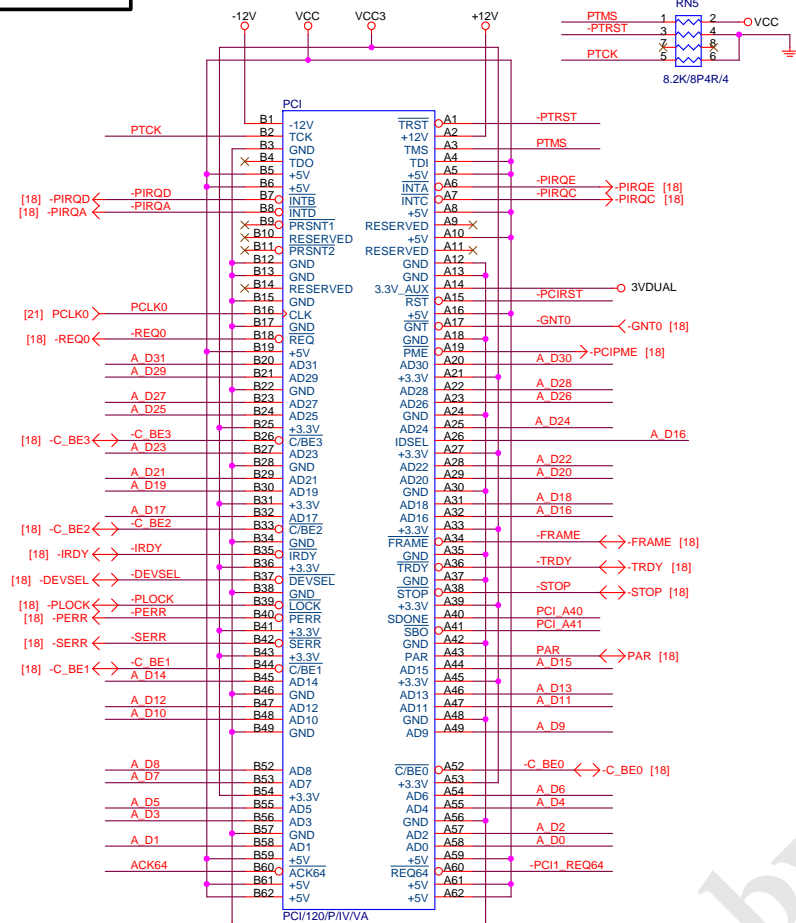
1.3

Date: Tuesday, September 28, 2010 Sheet 20 of 33



PCI1,2 SLOT

PCI1,2

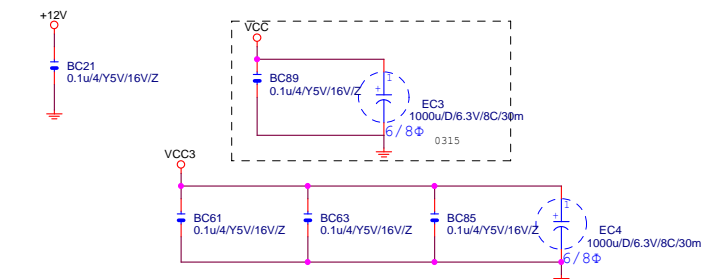
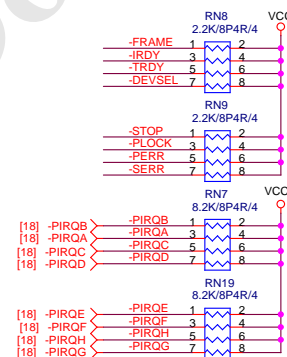
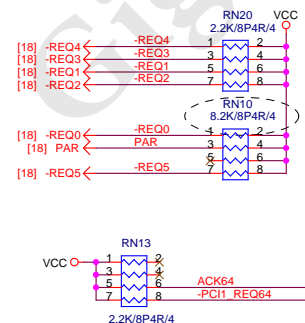


AD_16/-PIRQ(E-D-C-A)/-REQ0/-GNT0

[18] A_D[0..31] ↔ A_D[0..31]

-PCIRST ↔ -PCIRST [18]

Place close to PCI1

[14,15,16,19,21] SMBCLK ↔ PCI_A40
[14,15,16,19,21] SMBDATA ↔ PCI_A41

| Gigabyte Technology | | | |
|----------------------|-----------------------------|-------|----------|
| Title | | | |
| PCI SLOT 1, 2/PCIEX1 | | | |
| Size | Document Number | Rev | |
| Custom | GA-G41MT-S2 | 1.3 | |
| Date: | Tuesday, September 28, 2010 | Sheet | 22 of 33 |

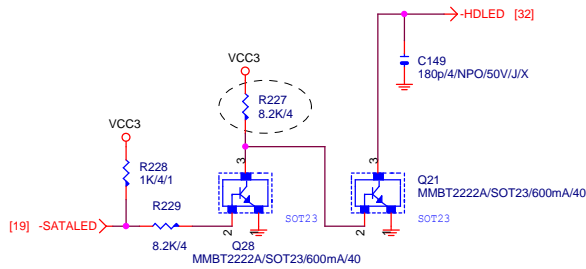
IDE/SATA LED

IDE RESET

N/A

FLOPPY

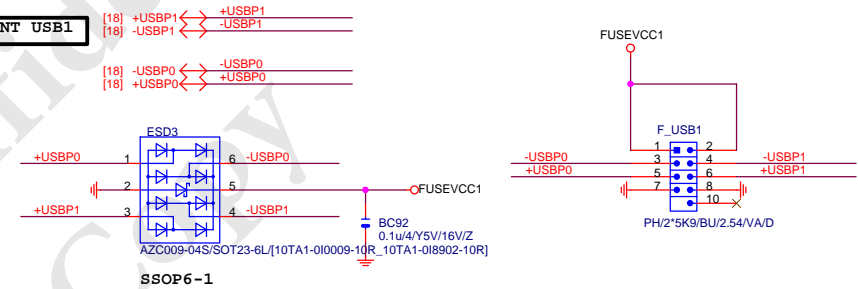
N/A



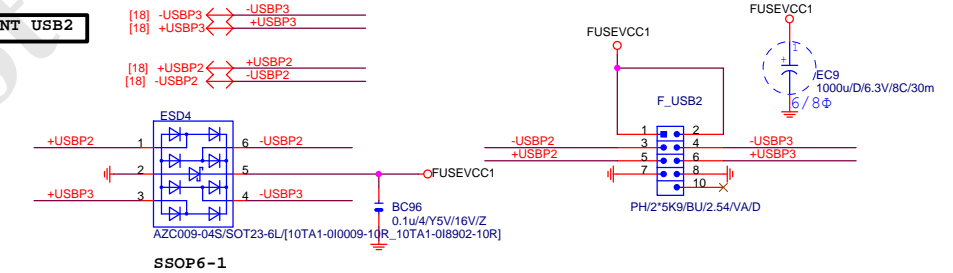
IDE

N/A

FRONT USB1



FRONT USB2



[18] -USBP7 ↔ -USBP7

[18] +USBP7 ↔ +USBP7

[18] -USBP6 ↔ -USBP6

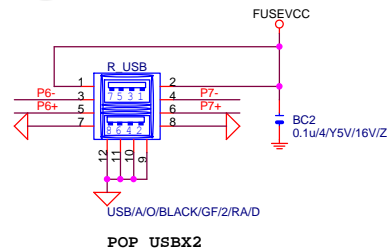
[18] +USBP6 ↔ +USBP6

P7-

P7+

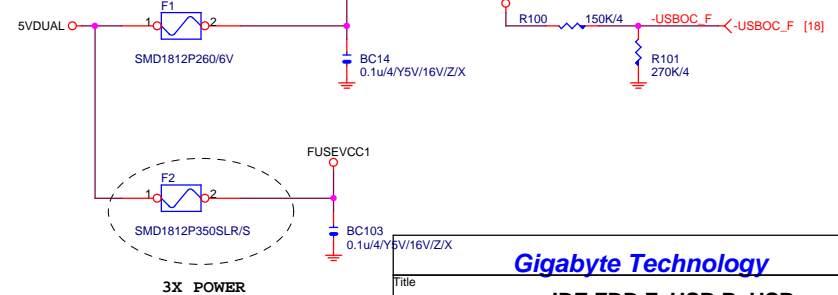
P6-

P6+



240MILS

160MILS



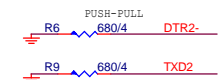
Gigabyte Technology

| | | |
|---------------------|-----------------------------|----------------|
| Title | | |
| IDE,FDD,F_USB,R_USB | | |
| Size | Document Number | Rev |
| B | GA-G41MT-S2 | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet 23 of 33 |

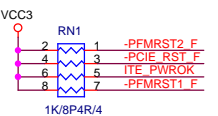
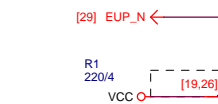
RTS2- ==LOW CPU FAN 50%

==HIGH 100%

DEFAULT 50%



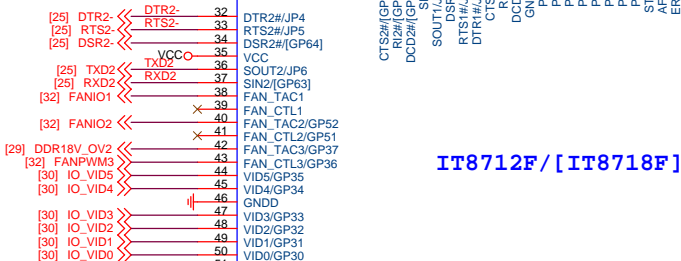
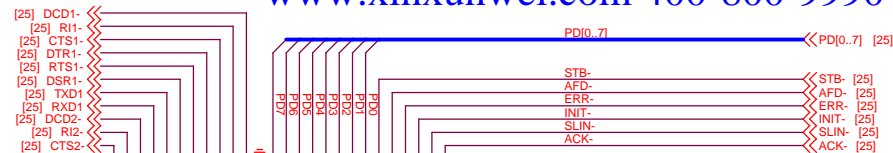
EUP



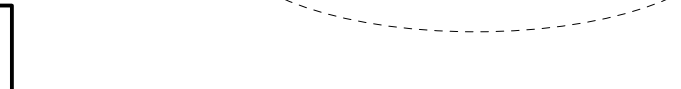
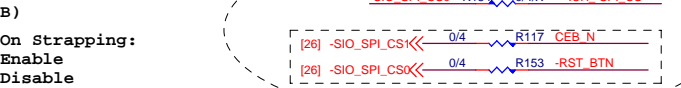
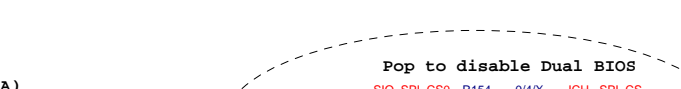
Dual BIOS:
GB logo :Pin 61 (GP15/CSA)
GB logo :Pin 59 (GP17/CSB)

Pin 59 Dual BIOS ,Power On Strapping:
H ==>Dual BIOS function Enable
L ==>Dual BIOS function Disable

1.2V or 3.3V tolerance select.
1.2V OUTPUT 接 VTT_GMCH
3.3V OUTPUT 接3.3V
LPCPD#=VIDVCC



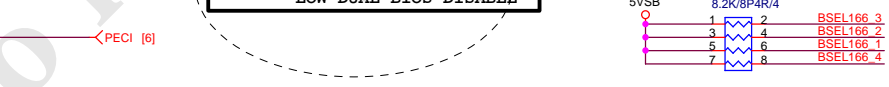
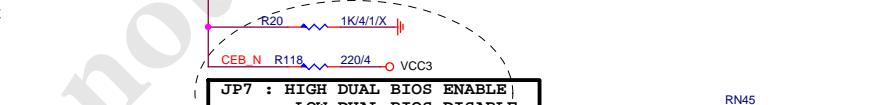
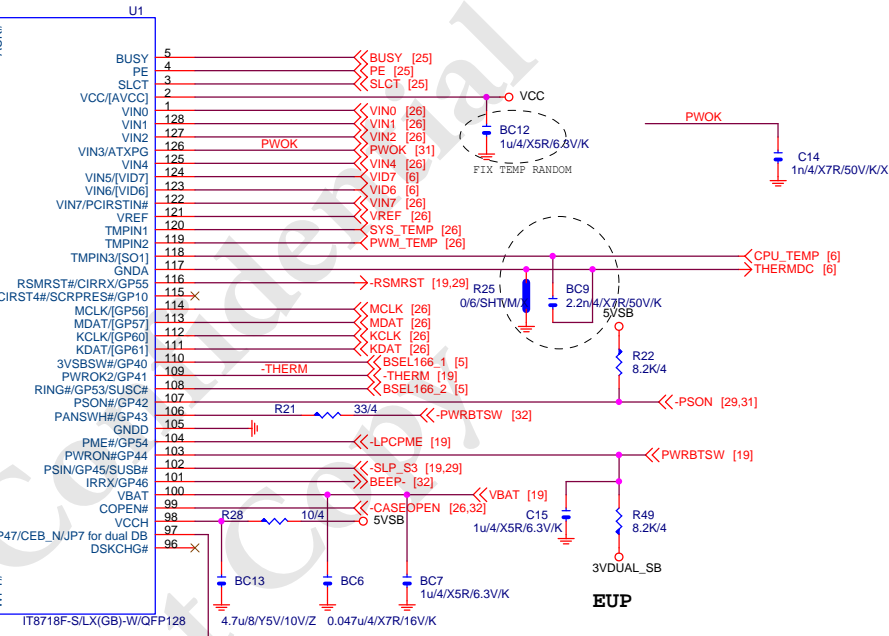
EUP



Pop to disable Dual BIOS

-SIO_SPL_CS0 R154 0/4/X ICH_SPL_CS

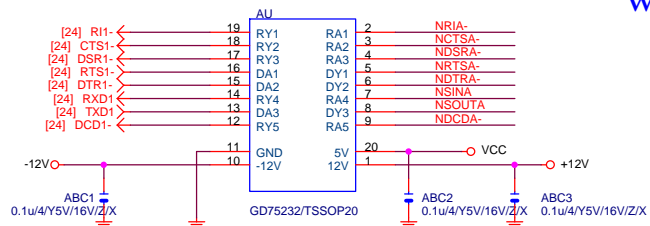
[26] -SIO_SPL_CS1<< 0/4 R117 CEB_N
[26] -SIO_SPL_CS0<< 0/4 R153 -RST_BTN



Gigabyte Technology

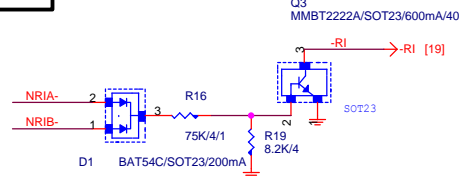
| | | | |
|--------------------|-----------------------------|-------|----------|
| Title | | | |
| ITE 8712/18 LPC IO | | | |
| Size | Document Number | Rev | |
| B | GA-G41MT-S2 | 1.3 | |
| Date: | Tuesday, September 28, 2010 | Sheet | 24 of 33 |

COMA

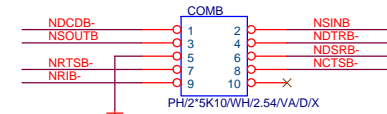
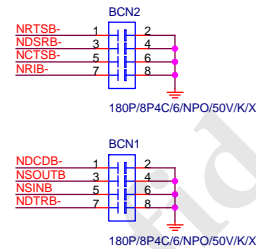
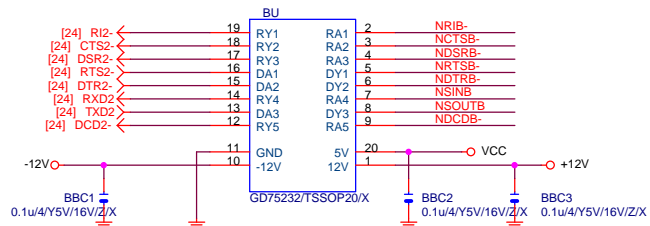
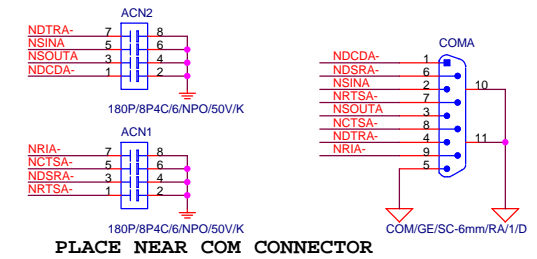


IC20TSSOP-1

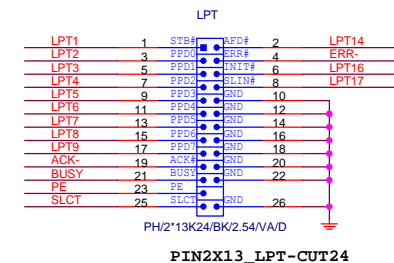
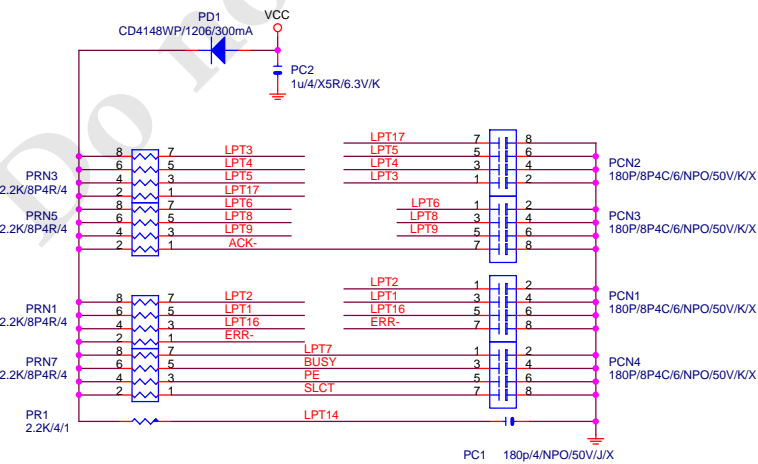
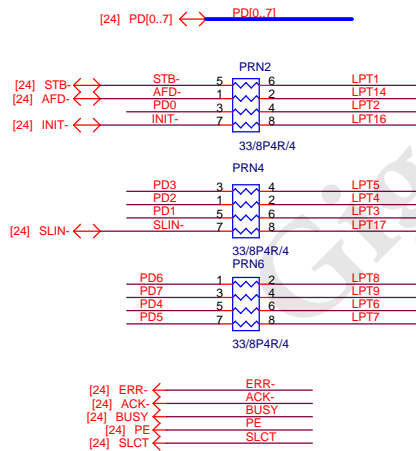
RING IN



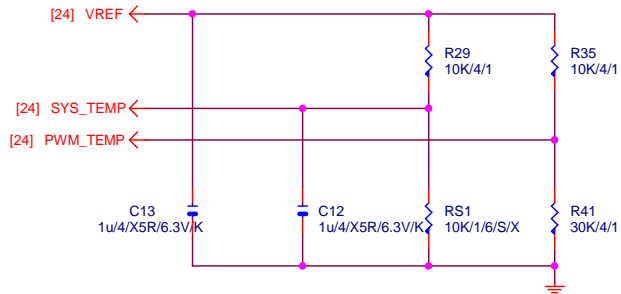
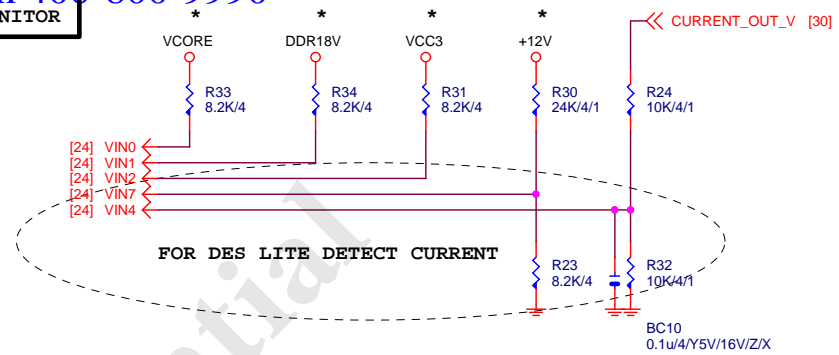
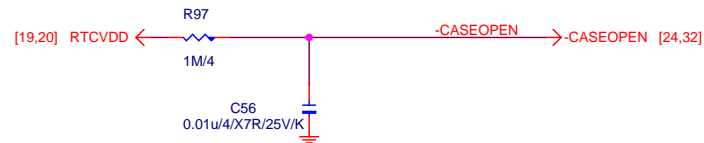
EXTERNAL COMA



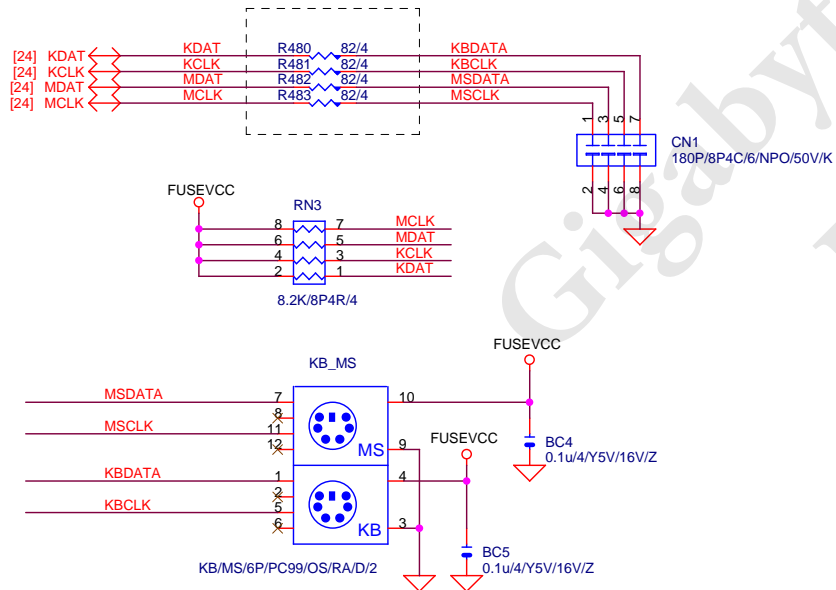
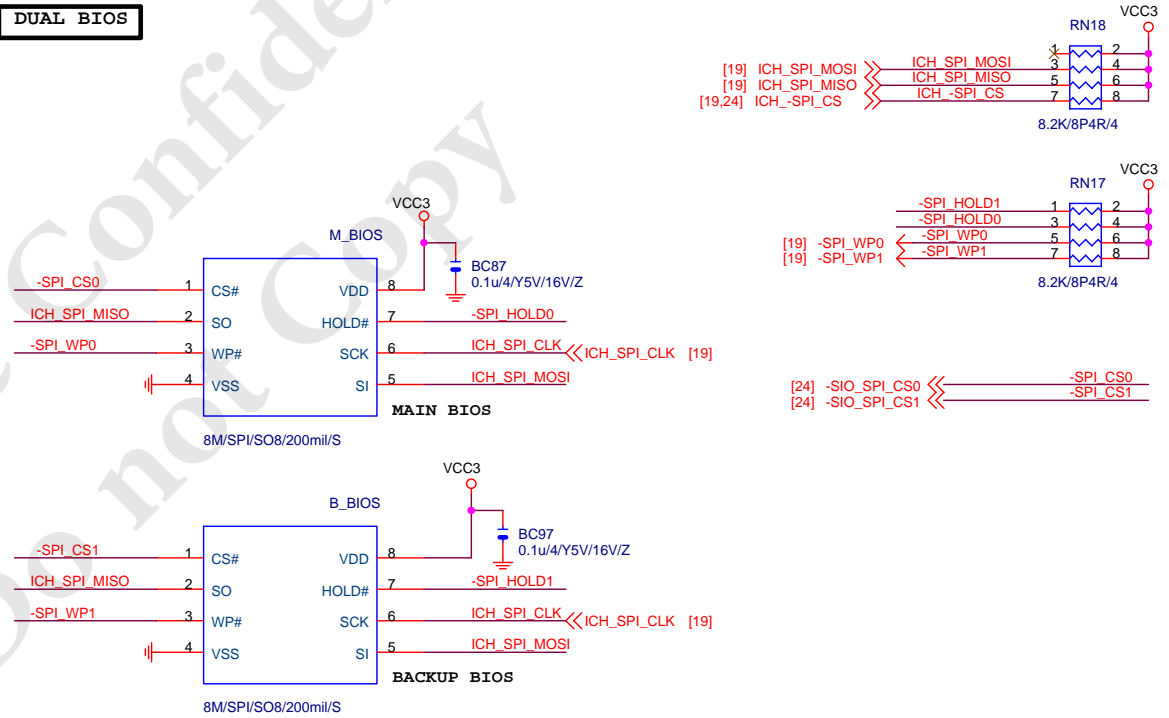
LPT PORT



Gigabyte Technology

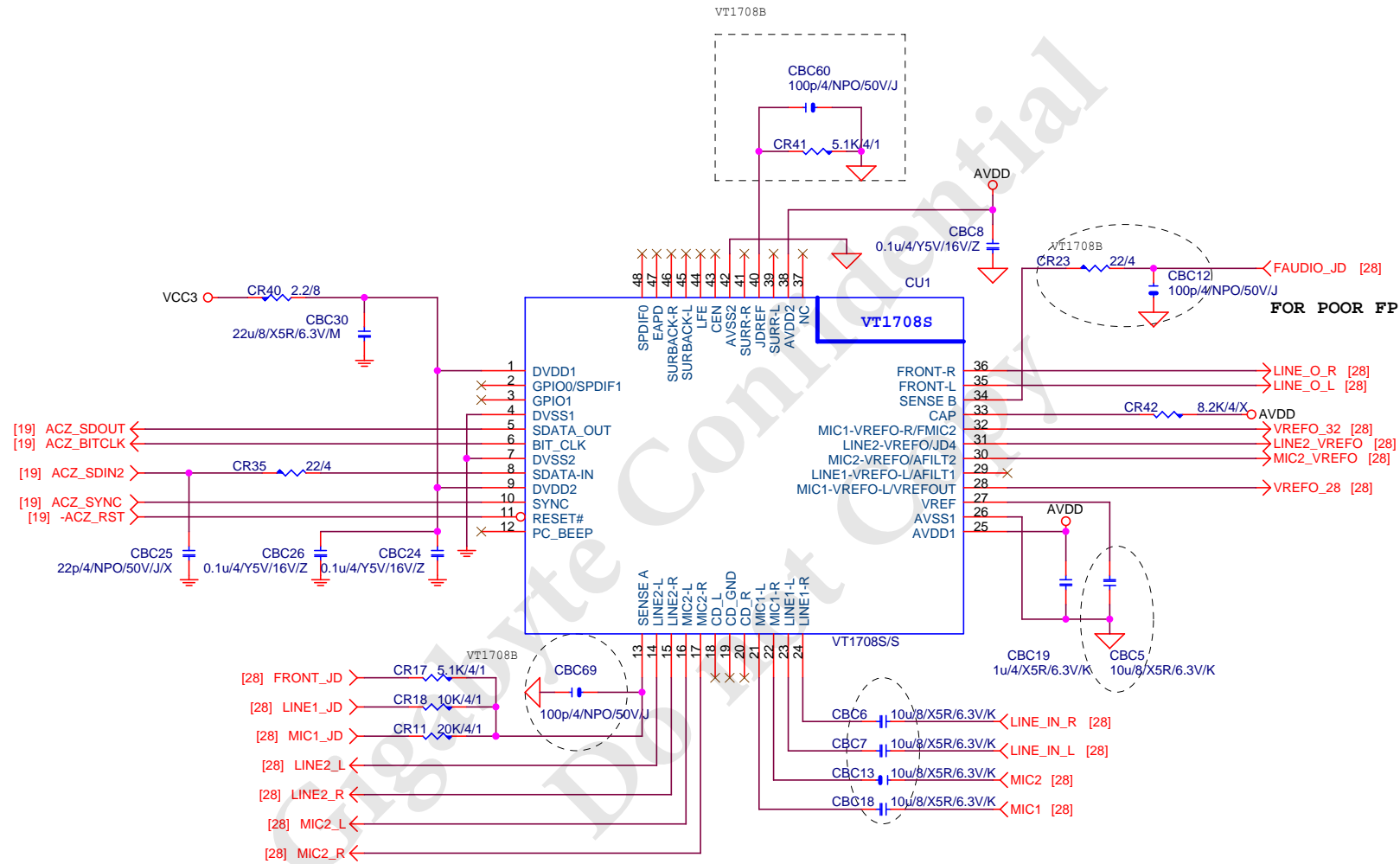
TEMP H/W MONITOR**VOLTAGE-- H/W MONITOR****CASE OPEN**

Case Open Circuits

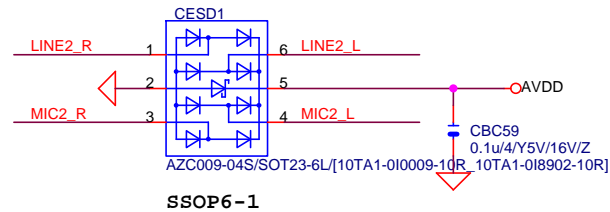
KB/MS**DUAL BIOS****Gigabyte Technology**

| | | | | |
|--------|-----------------------------|--------------------|---------------------------------|------------|
| Title | | | HW-MONITOR/CI/KB/MS/BIOS | |
| Size | Document Number | GA-G41MT-S2 | | Rev |
| Custom | | | | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet | 26 | of 33 |

AZALIA CODEC



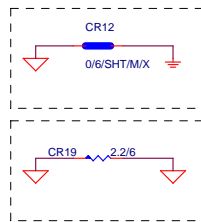
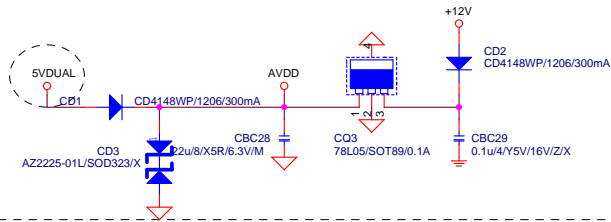
Can Support Amp Out



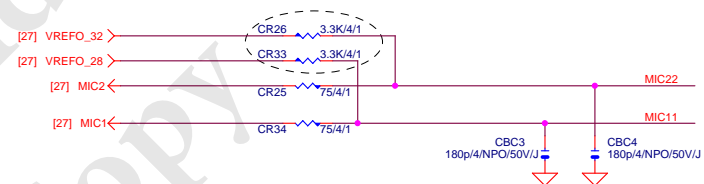
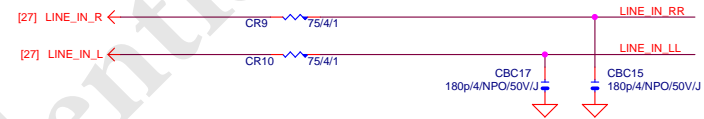
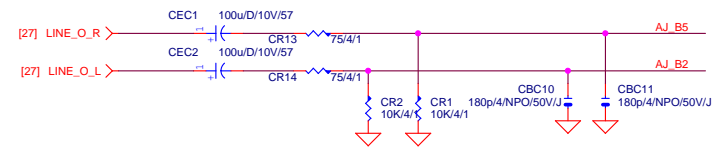
Gigabyte Technology

| | | |
|-------------|-----------------------------|----------------|
| Title | | |
| VIA VT1708S | | |
| Size | Document Number | Rev |
| Custom | GA-G41MT-S2 | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet 27 of 33 |

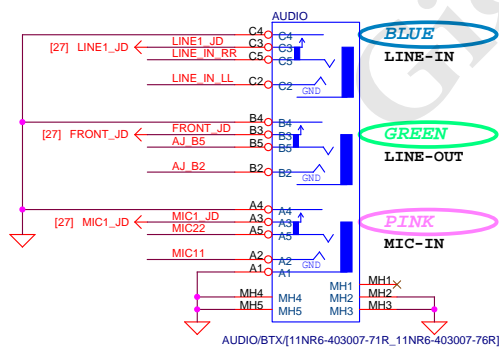
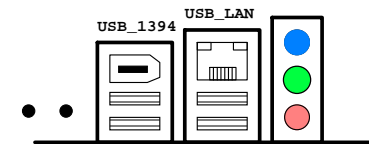
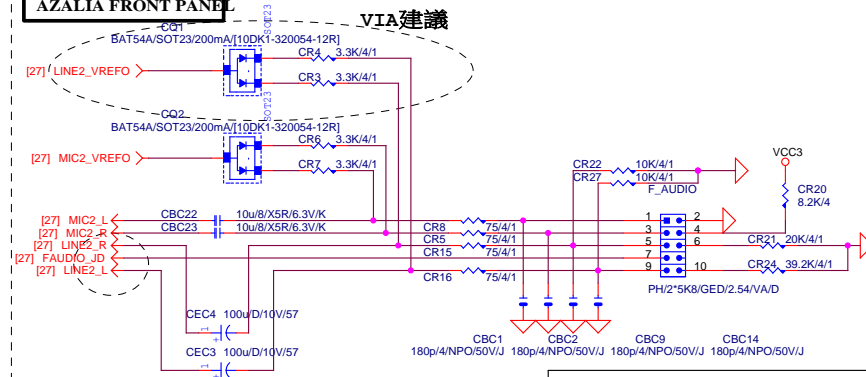
AZALIA JACK



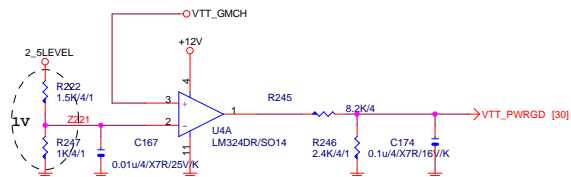
LINE-IN



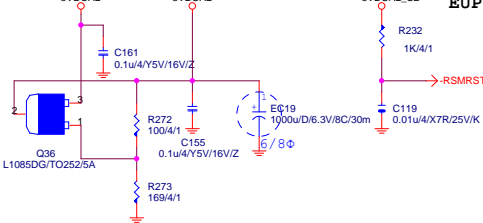
MIC-IN

**AZALIA FRONT PANEL**

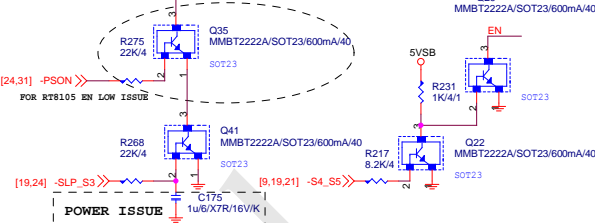
VTT_PWRGD



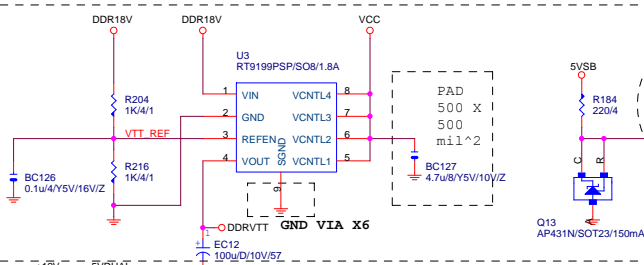
3VDUAL



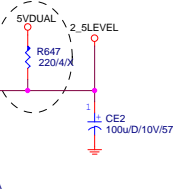
PWR_S5



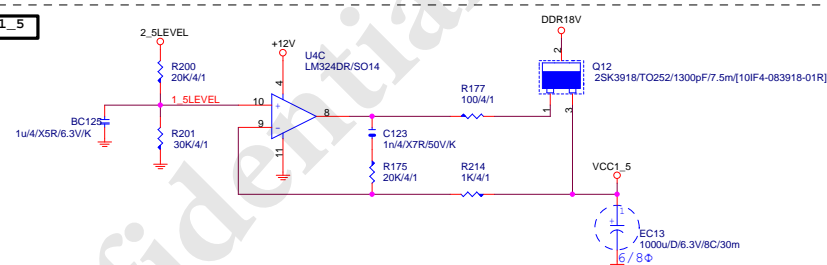
DDR_VTT



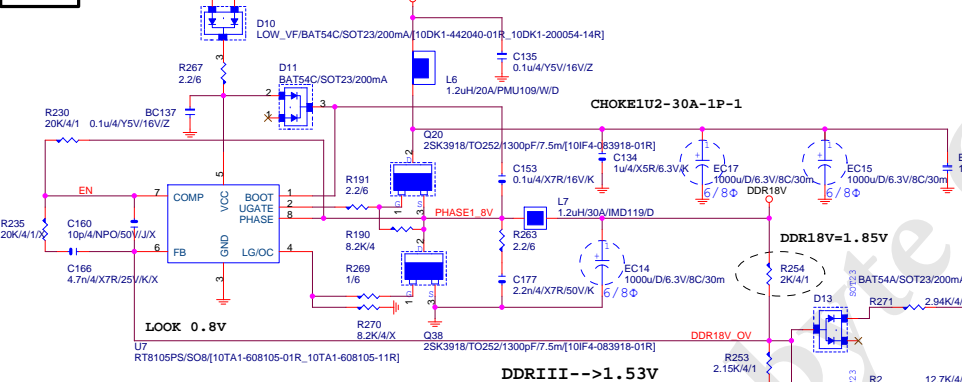
ERP



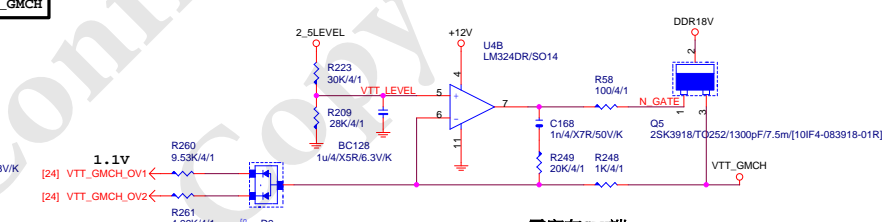
VCC1_5



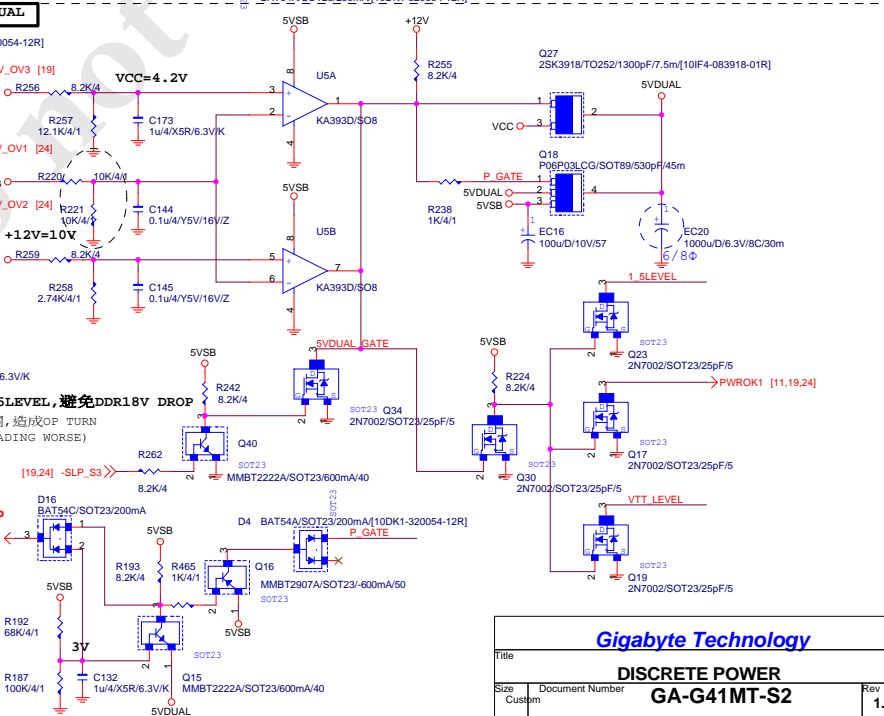
DDR18V



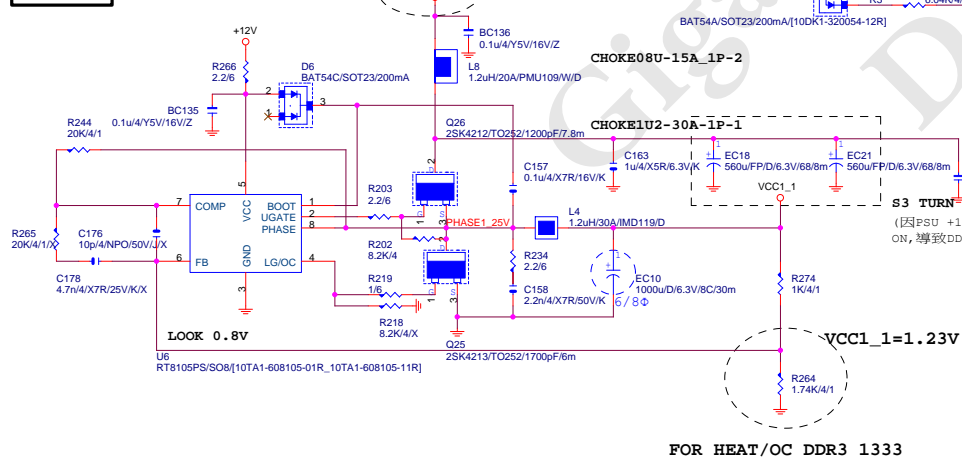
VTT_GMCH



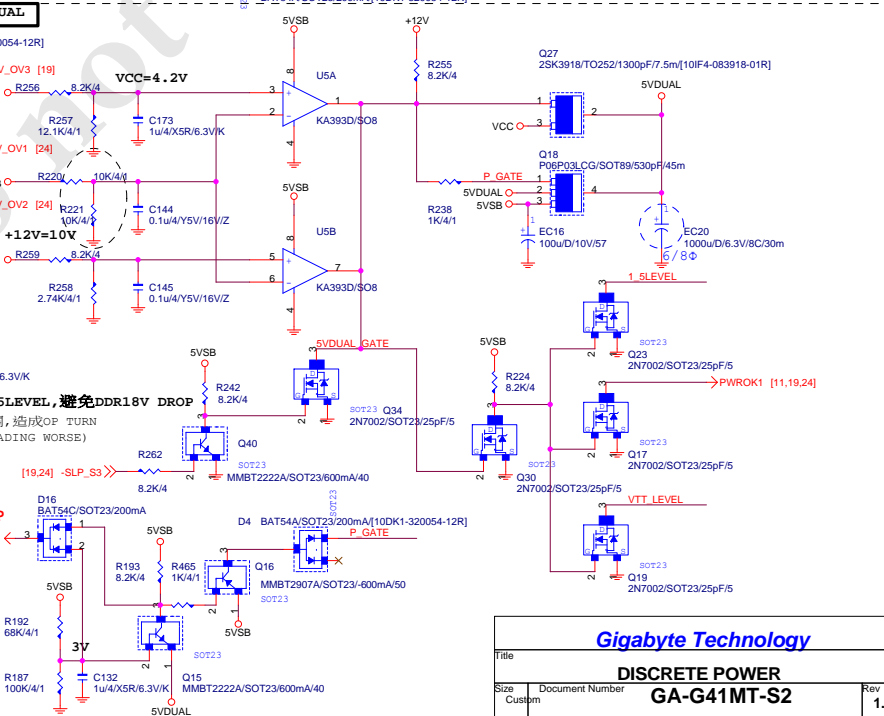
5VDUAL

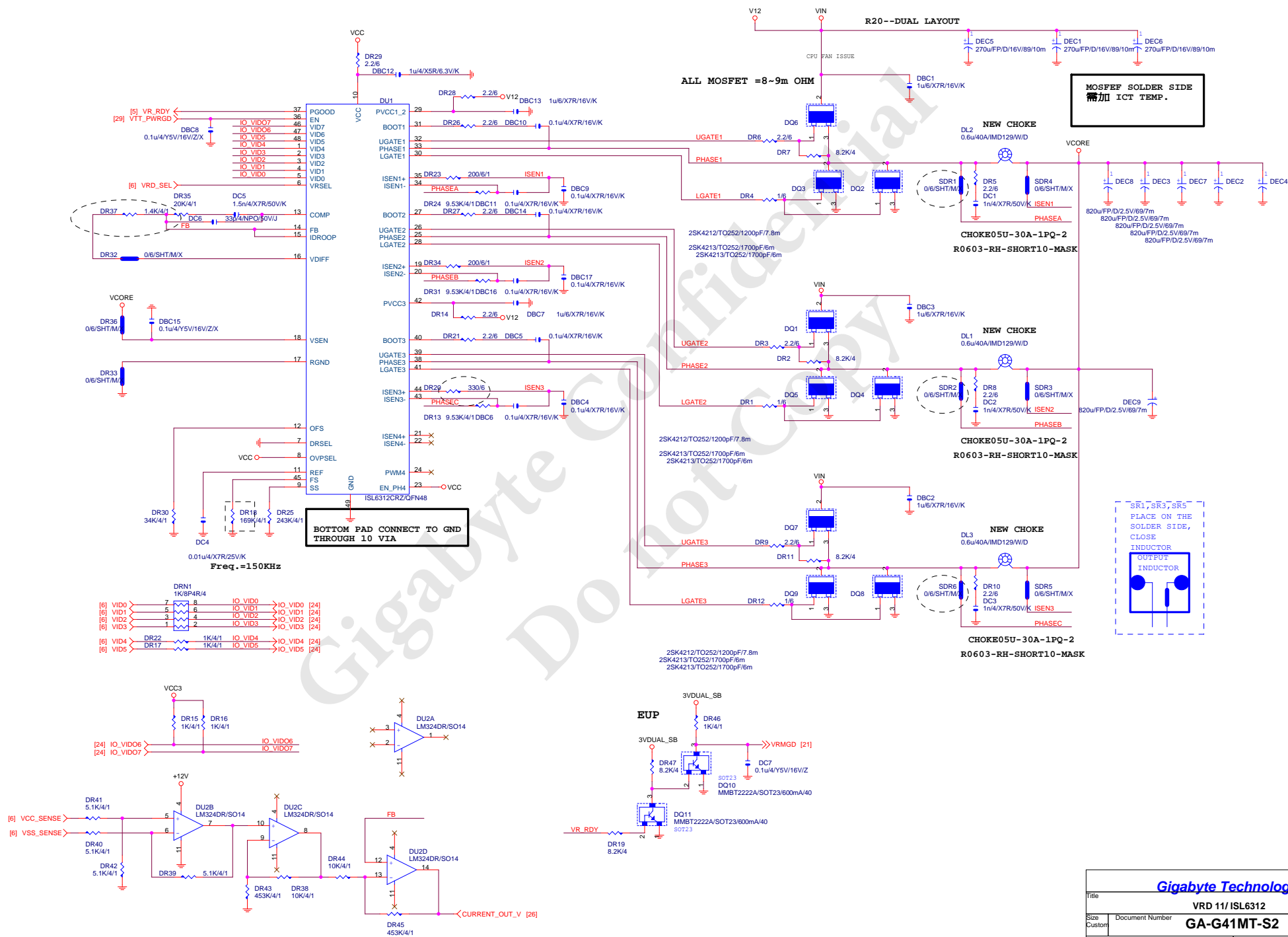


VCC1_1

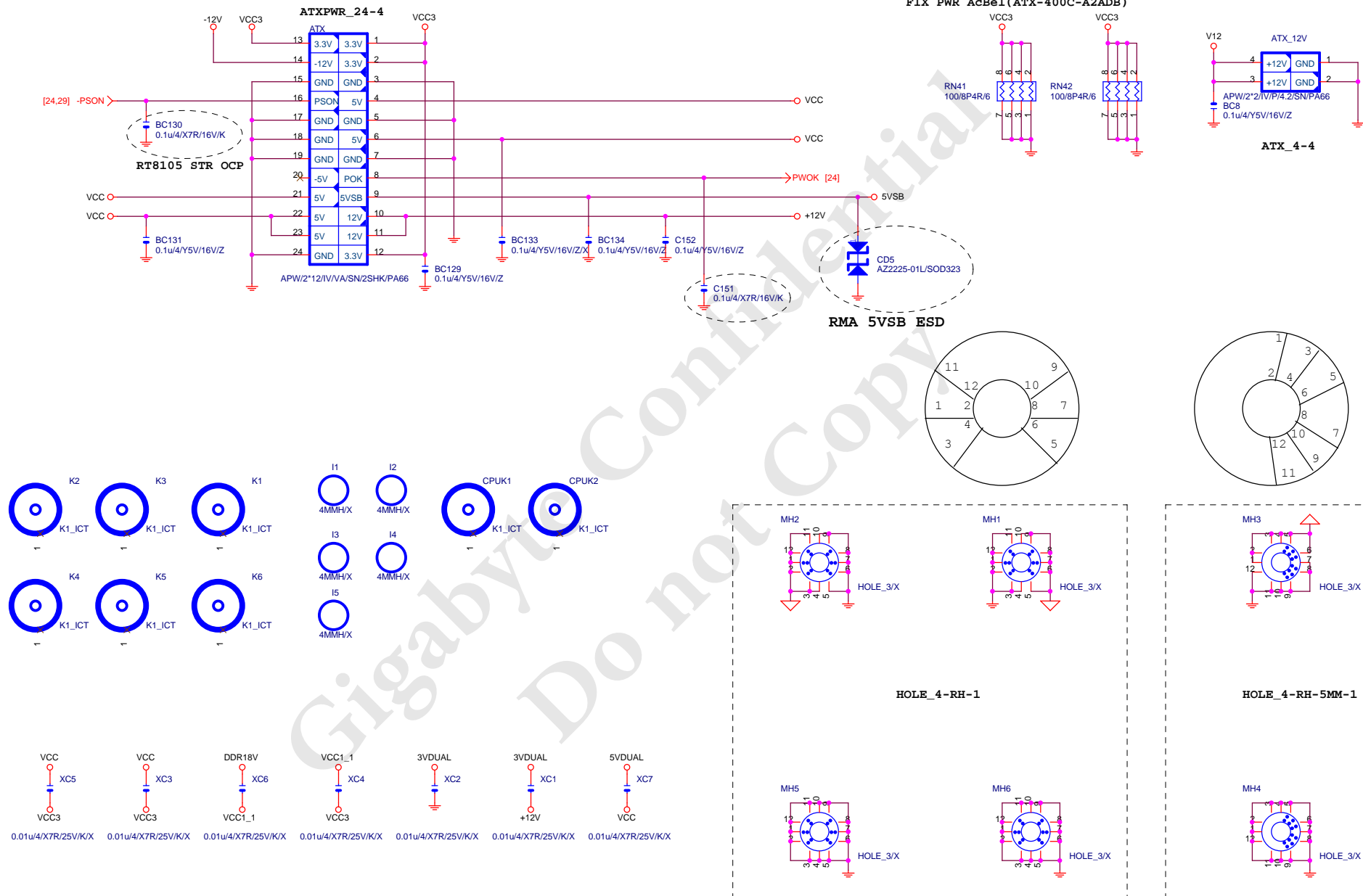


5VDUAL





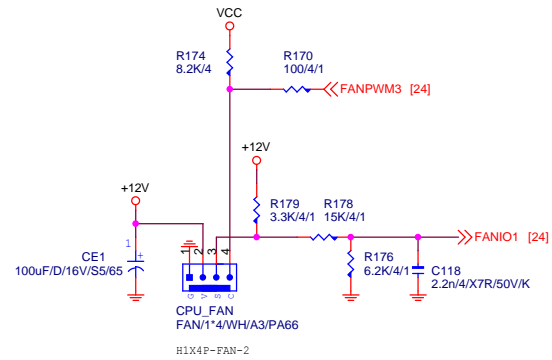
ATX POWER CONNECTOR



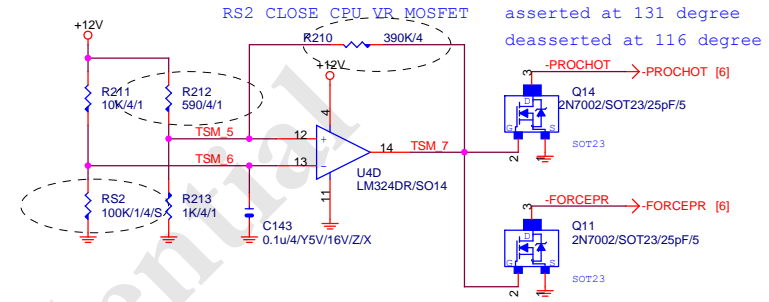
Gigabyte Technology

| Title | | |
|---------------------|-----------------------------|----------------|
| ATX POWER CONNECTOR | | |
| Size | Document Number | Rev |
| B | GA-G41MT-S2 | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet 31 of 33 |

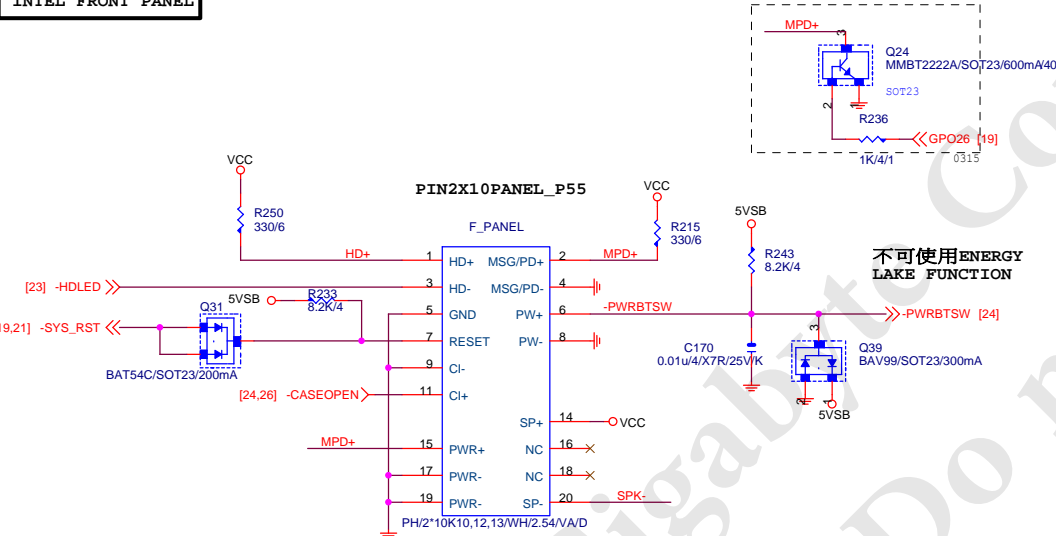
CPU SMART FAN SMART FAN



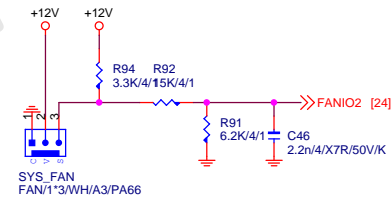
PROCESSOR HOT



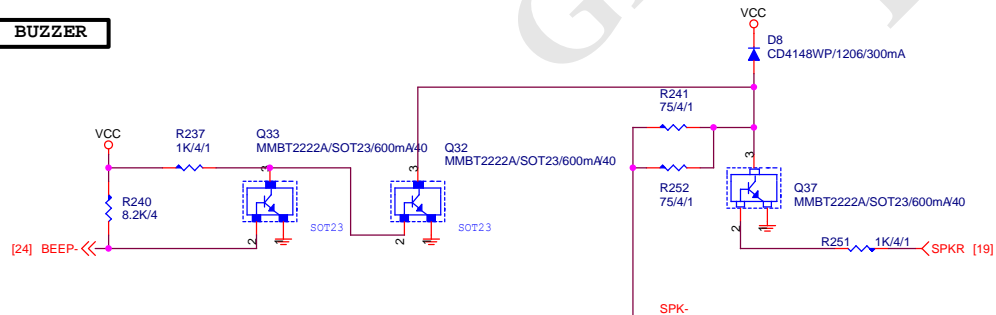
INTEL FRONT PANEL



SYS_FAN



BUZZER



Gigabyte Technology

| | | |
|-------------|-----------------------------|----------------|
| Title | | |
| FRONT PANEL | | |
| Size | Document Number | Rev |
| Custom | GA-G41MT-S2 | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet 32 of 33 |

CHOK4U7-500MA-1

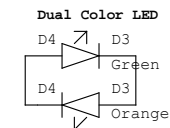
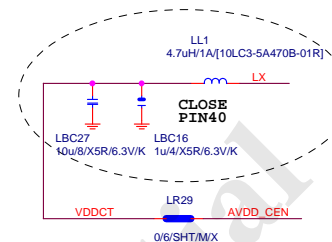
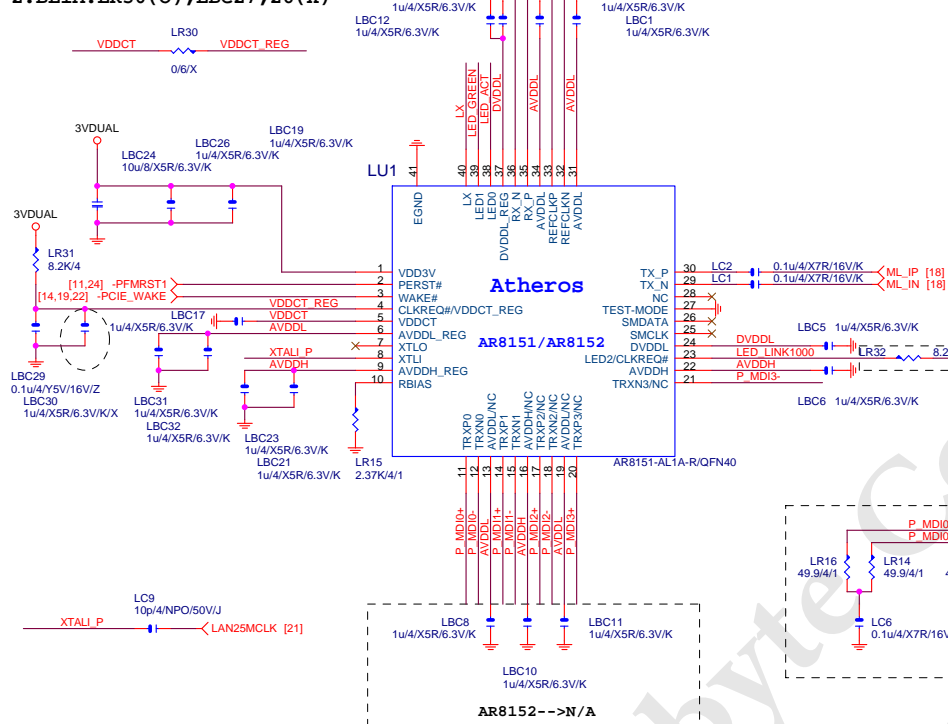
AR8131/AR8132 SWR:

LL1,LBC27,LBC16(O),LR30(X)

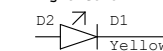
AR8152 LDO OUTPUT(PIN4):LL1(X)

1.AL1A:LR30(O),LBC27,26(O)

2. BL1A:LR30(O),LBC27,26(X)



Single Color LED

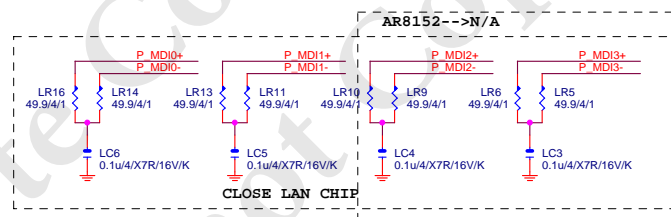
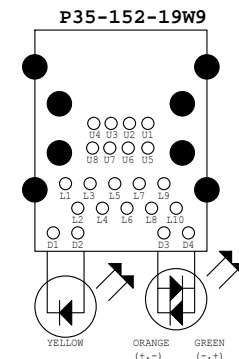


LED0 (ACT) LED1 (LINK) LED2 (LINK1G)

CLKREQ# PULL-UP FOR EFUSE:

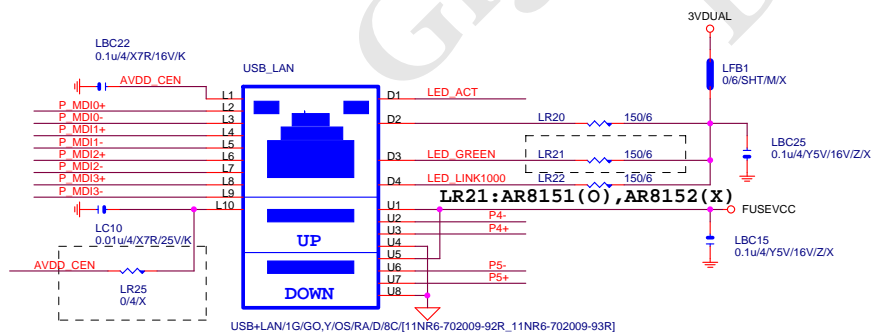
1.AR8151:LR31(O),LR32(X)

2.AR8152:LR31(X),LR32(O)



USB_LAN CONNECTOR

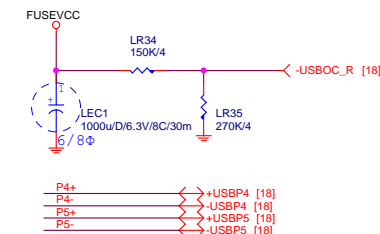
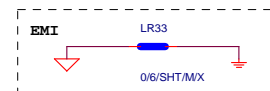
```
1G  :USB+LAN/1G/GO,Y/OS/RA/D/1
100M:USB+LAN/100/GO,Y/OS/RA/D/1
```



LR25:AR8151(X),AR8152(O)

因100M LAN
CONNECTOR差異

USB_LAN



Gigabyte Technology

| | | | |
|------------------------|-----------------------------|-------|----------|
| Title | | | |
| ARTHEROS AR8151/AR8152 | | | |
| Size | Document Number | | Rev |
| Custom | GA-G41MT-S2 | | 1.3 |
| Date: | Tuesday, September 28, 2010 | Sheet | 33 of 33 |