

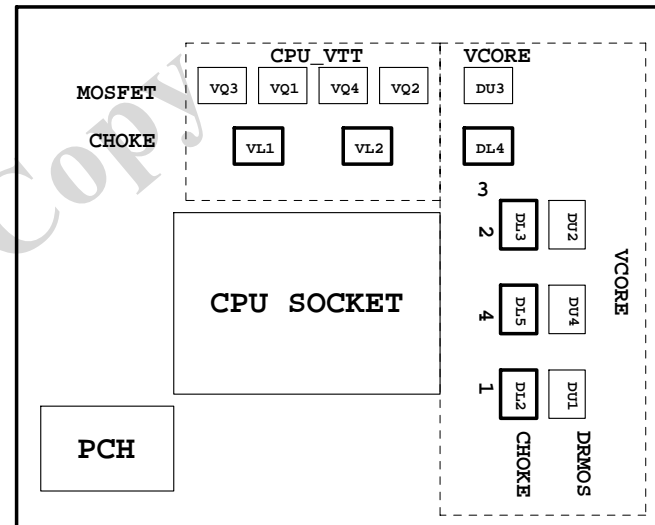
Model Name: GA-Z68XP-D3

SHEET TITLE

| | |
|----|-----------------------------|
| 01 | COVER SHEET |
| 02 | BOM & PCB MODIFY HISTORY |
| 03 | BLOCK DIAGRAM |
| 04 | CPU_LGA1155-A |
| 05 | CPU_LGA1155-B |
| 06 | CPU_LGA1155-C |
| 07 | DDR III CHANNEL A |
| 08 | DDR III CHANNEL B |
| 09 | PCH_FDI,DMI,USB,PCIE,NVRAM |
| 10 | PCH_DP,CLK BUFFER |
| 11 | PCH_HOST,SATA,PCI |
| 12 | PCH_GPIO,CTRL,AUDIO |
| 13 | PCH_PWR,GND |
| 14 | PCI EXPRESS*16 SLOT |
| 15 | PCI EXPRESS*8 SLOT |
| 16 | PCI EXPRESS*16/*8 SWITCH |
| 17 | PCI EXPRESS*1 SLOTS X3 |
| 18 | PI7C9X113SL |
| 19 | PI7C9X113SL POWER |
| 20 | PCI SLOT 1&2 |
| 21 | I/O ITE8728 |
| 22 | COM, -PROHOT, ESATA CONNECT |
| 23 | Dual BIOS , TPM SLB9635TT |
| 24 | ALC892 |
| 25 | REAR AUDIO JACK |
| 26 | VCORE PWM_ISL6366CRZ-1 |
| 27 | VCORE PWM_ISL6366CRZ-2 |

SHEET TITLE

| | |
|----|--------------------------------------|
| 28 | VCORE PWM_ISL6366CRZ-3 |
| 29 | DISCRETE POWER I |
| 30 | DDR_15V & VCC1_05_PCH PWM_ISL6545CBZ |
| 31 | CPU_VTT PWM_ISL6322G |
| 32 | VCCSA POWER |
| 33 | F_PANEL , F_USB , FDD |
| 34 | ATX POWER, CLOCK GEN |
| 35 | HWM,KB/MS , FAN CTRL |
| 36 | REALTEK RTL8111E |
| 37 | ESATA SE9128 |
| 38 | FRONT NEC USB3.0 |
| 39 | REAR NEC USB3.0 |
| 40 | TABLE LIST |



GA-Z68XP-D3

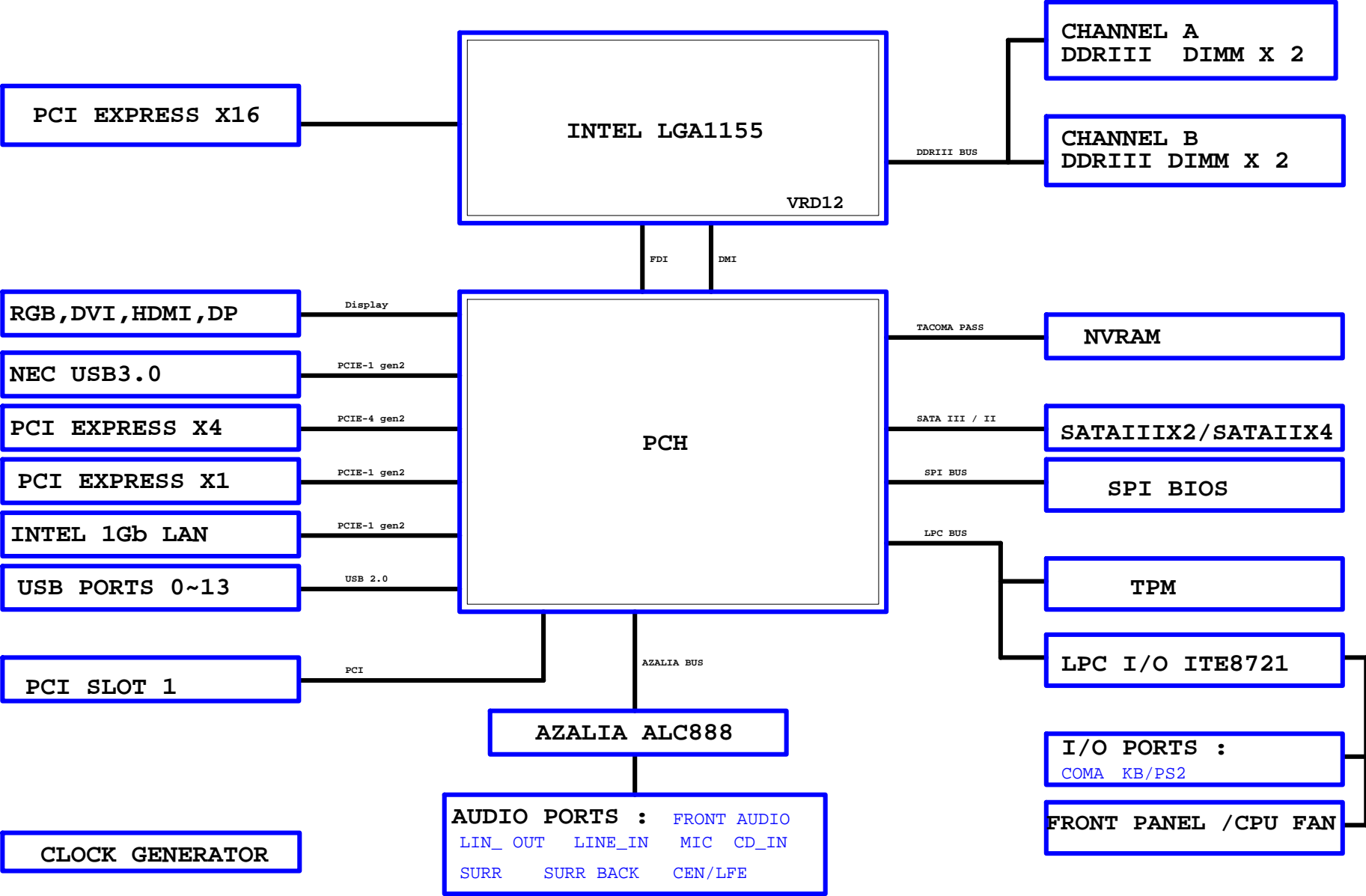
Component value change history

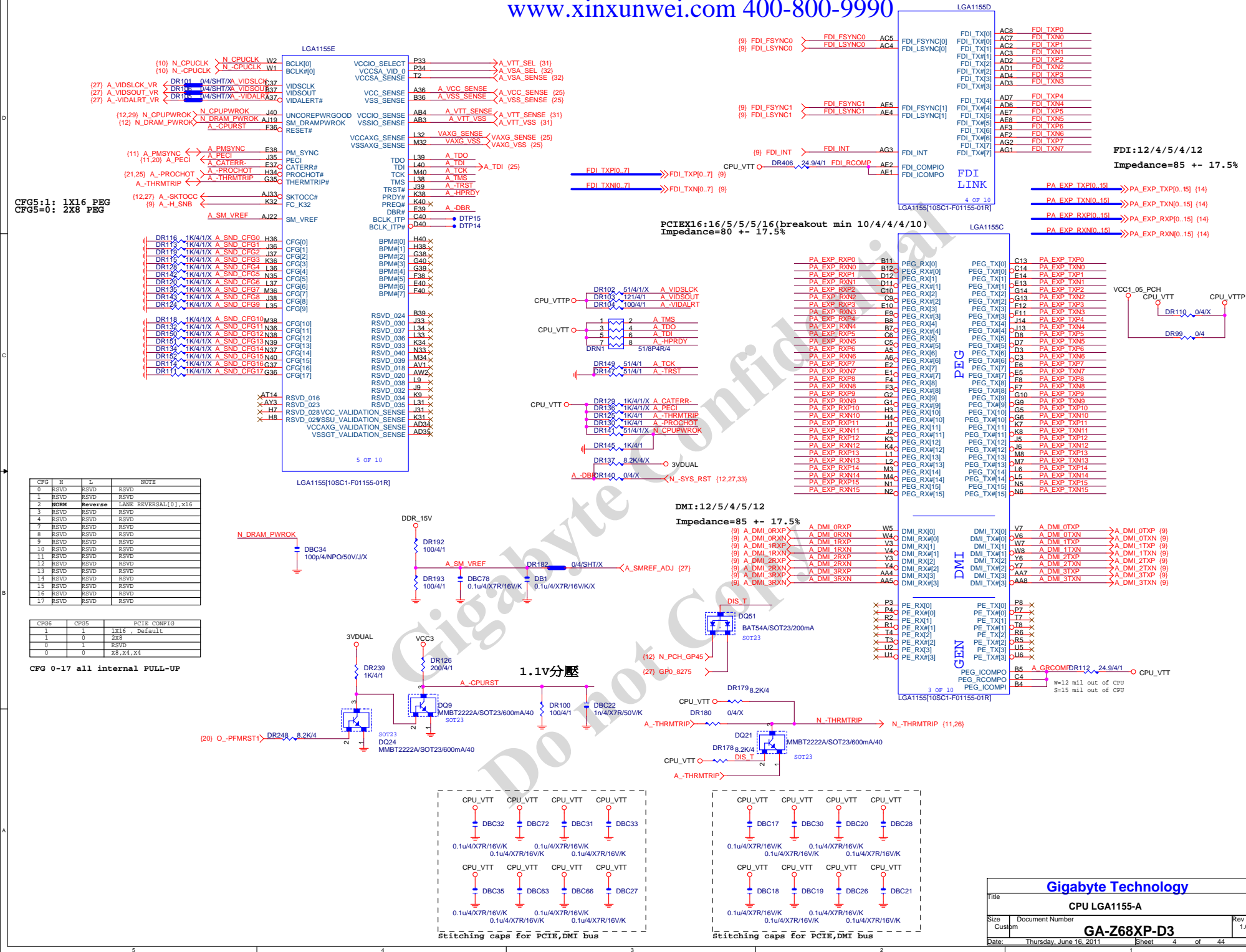
| Data | Change Item | Reason |
|--------------------|---|--------|
| P67X-UD3-B3 REV0.1 | | |
| 10A | 1. ESD IC 只上USB2.0/3.0,其餘移除 | |
| | 2. 精成PCB移除 | |
| 10B | 1. UAFB1,UAFB2,UBF1,UBF2 Footprint update 1206-->1812 | |
| | 2. Add "AD1" FOR 5VSB | |
| P67X-D3-B3 REV0.1 | | |
| 01 | 1. PCB 1 oz | |
| 1.0A | PCIEX1/X4 SEL N_GPIO39 --> SIO GPIO can keep states | |
| | Add PCIEX4 H/W setting BAT54C | |
| | 1. Add NEC --> ON TO-252替料 , 2N7002料號 | |
| | 2. PCB確認"精成"超頻 | |
| | 3. ITE8892/CX --> ITE8892/EX | |
| | 4. EUP FUNCTION C14 4.7u --> 1u , R95 1K --> 8.2K | |
| | 5. PCH Chips update : 10HB1-030Z68-21R | |
| | 6. 2N7002,MMBT2222,2N2907 --> NXP | |
| Z68XP-D3-01-0526 | 1. Add m-SATA , CPU_VAXG , HDMI | |
| | 2. Remove usb3 turbo | |
| Z68XP-D3-10 | 1. Update MSATA footprint | |
| | 2. VCORE & VAXG LOAD-LINE 調整 | |
| | 3. DR404 Change to mask | |
| | 4. Update 9172 RA_VDD10 power | |
| | 5. mini_pcie --> mSATA , Add 文字面: Intel Smart Response Technology | |
| 10B-ECN-0516 | 1. Add ITE8892/CX替料 | |
| 10B-0607 | 1. MSATA_L Location移除說明 | |
| | 2. MSATA CHANGE TO 10NR5-050052-11R | |
| | 3. Add PCB "依利安達" | |

Circuit or PCB layout change

| DATE | Change Item | Reason |
|----------------|--|--------|
| P67X-UD3-B3 | | |
| 2011/02/18-0.1 | 1. 移除LAR11 ,LAR14 , NR28 ,新增NTP11 | |
| 2011/02/18-1.0 | 2. 新增DR388,DR389,DR391 ; Remove DQ49,DR347,DR371 3. CR44改成R0603-RH 4. R1,LAR3,RBR20,LABC25 -->R0402-2-SHORT 5. RAQ1 --> Q_TO223-MASK 6. RARN1 --> R8P4R-0402-SHORT 7. CESD1-5 --> SSOP5 8. RAQ2,RAEC1一起往下移40mil 9. CESD2文字面要標pin1 | |
| 2011/03/8-1.01 | 1. Add "Dolby" logo | |
| 2011/03/8-1.02 | 1. UAFB1,UAFB2,UBF1,UBF2 Footprint update 1206-->1812 2. Add "AD1" FOR 5VSB | |
| Z68XP-D3 | | |
| 1.0 | 1. update MINI_PCIE footprint 2. 文字面 : SLOT部分全對齊 | |

BLOCK DIAGRAM





LGA1155A

| | | | | | |
|--------------|------|-----------|-----------|-------|---------|
| M_AAA0 | AV27 | SA_MA[0] | SA_DQ[0] | AK3 | M_DQSA0 |
| M_AAA1 | AY24 | SA_MA[1] | SA_DQ[1] | AK2 | M_DQSA0 |
| M_AAA2 | AW24 | SA_MA[2] | | | |
| M_AAA3 | AW23 | SA_MA[3] | | | |
| M_AAA4 | AV23 | SA_MA[4] | SA_DQ[0] | AJ3 | M_DA0 |
| M_AAA5 | AT24 | SA_MA[5] | SA_DQ[1] | AJ4 | M_DA1 |
| M_AAA6 | AT23 | SA_MA[6] | SA_DQ[2] | AL3 | M_DA2 |
| M_AAA7 | AU22 | SA_MA[7] | SA_DQ[3] | AL4 | M_DA3 |
| M_AAA8 | AV22 | SA_MA[8] | AJ2 | M_DA4 | |
| M_AAA9 | AT22 | SA_MA[9] | AJ1 | M_DA5 | |
| M_AAA10 | AV28 | SA_MA[10] | AL2 | M_DA6 | |
| M_AAA11 | AU21 | SA_MA[11] | AL1 | M_DA7 | |
| M_AAA12 | AT21 | SA_MA[12] | | | |
| M_AAA13 | AW32 | SA_MA[13] | SA_DQ[11] | AP3 | M_DQSA1 |
| M_AAA14 | AU20 | SA_MA[14] | SA_DQ[11] | AP2 | M_DQSA1 |
| M_AAA15 | AT20 | SA_MA[15] | | | |
| (7) M_SWEA | AW29 | SA_WE# | SA_DQ[8] | AN1 | M_DA8 |
| (7) M_SCASA | AV30 | SA_CAS# | SA_DQ[9] | AN4 | M_DA9 |
| (7) M_SRASA | AU28 | SA_RAS# | SA_DQ[10] | AR3 | M_DA10 |
| | | | SA_DQ[11] | AR4 | M_DA12 |
| (7) M_SBA0 | AY29 | SA_BS[0] | SA_DQ[12] | AN2 | M_DA13 |
| (7) M_SBA1 | AW28 | SA_BS[1] | SA_DQ[13] | AN3 | M_DA13 |
| (7) M_SBA2 | AV20 | SA_BS[2] | SA_DQ[14] | AR2 | M_DA14 |
| | | | SA_DQ[15] | AR1 | M_DA15 |
| (7) M-CSA0 | AU29 | SA_CS# | SA_DQ[2] | AW4 | M_DQSA2 |
| (7) M-CSA1 | AV32 | SA_CS# | SA_DQ[2] | AW4 | M_DQSA2 |
| (7) M-CSA2 | AW30 | SA_CS# | SA_DQ[2] | AW4 | M_DQSA2 |
| (7) M-CSA3 | AU33 | SA_CS# | SA_DQ[2] | AW4 | M_DQSA2 |
| (7) M-CKEA0 | AV19 | SA_CKE[0] | SA_DQ[16] | AV2 | M_DA16 |
| (7) M-CKEA1 | AT19 | SA_CKE[1] | SA_DQ[17] | AV3 | M_DA17 |
| (7) M-CKEA2 | AU18 | SA_CKE[2] | SA_DQ[18] | AV5 | M_DA18 |
| (7) M-CKEA3 | AV18 | SA_CKE[3] | SA_DQ[19] | AV5 | M_DA19 |
| | | | SA_DQ[20] | AV5 | M_DA20 |
| (7) M_ODT_A0 | AV31 | SA_ODT[0] | SA_DQ[21] | AU3 | M_DA21 |
| (7) M_ODT_A1 | AU32 | SA_ODT[1] | SA_DQ[22] | AU5 | M_DA22 |
| (7) M_ODT_A2 | AU30 | SA_ODT[2] | SA_DQ[23] | AY5 | M_DA23 |
| (7) M_ODT_A3 | AW33 | SA_ODT[3] | | | |
| | | | SA_DQ[3] | AV8 | M_DQSA3 |
| (7) M-DCLKA0 | AY25 | SA_CK[0] | SA_DQ[3] | AV8 | M_DQSA3 |
| (7) M-DCLKA1 | AW25 | SA_CK[0] | SA_DQ[24] | AY7 | M_DA24 |
| (7) M-DCLKA2 | AU24 | SA_CK[1] | SA_DQ[25] | AU7 | M_DA25 |
| (7) M-DCLKA3 | AW27 | SA_CK[2] | SA_DQ[26] | AU9 | M_DA26 |
| (7) M-DCLKA4 | AY27 | SA_CK[3] | SA_DQ[27] | AV7 | M_DA27 |
| (7) M-DCLKA5 | AW26 | SA_CK[3] | SA_DQ[28] | AW7 | M_DA28 |
| (7) M-DCLKA6 | AW26 | SA_CK[3] | SA_DQ[29] | AW9 | M_DA30 |
| (7) M-DCLKA7 | AW26 | SA_CK[3] | SA_DQ[30] | AY9 | M_DA31 |
| | | | SA_DQ[31] | | |
| | | | SA_DQ[4] | AV37 | M_DQSA4 |
| | | | SA_DQ[4] | AV36 | M_DQSA4 |
| | | | SA_DQ[32] | AU35 | M_DA32 |
| | | | SA_DQ[33] | AW37 | M_DA33 |
| | | | SA_DQ[34] | AU36 | M_DA34 |
| | | | SA_DQ[35] | AU36 | M_DA35 |
| | | | SA_DQ[36] | AY36 | M_DA36 |
| | | | SA_DQ[37] | AU36 | M_DA37 |
| | | | SA_DQ[38] | AU38 | M_DA38 |
| | | | SA_DQ[39] | AU37 | M_DA39 |
| | | | SA_DQ[5] | AP38 | M_DQSA5 |
| | | | SA_DQ[5] | AP39 | M_DQSA5 |
| | | | SA_DQ[40] | AR40 | M_DA40 |
| | | | SA_DQ[41] | AR37 | M_DA41 |
| | | | SA_DQ[42] | AN38 | M_DA42 |
| | | | SA_DQ[43] | AN37 | M_DA43 |
| | | | SA_DQ[44] | AR39 | M_DA44 |
| | | | SA_DQ[45] | AR38 | M_DA45 |
| | | | SA_DQ[46] | AN38 | M_DA46 |
| | | | SA_DQ[47] | AN40 | M_DA47 |
| | | | SA_DQ[6] | AK38 | M_DQSA6 |
| | | | SA_DQ[6] | AK39 | M_DQSA6 |
| | | | SA_DQ[48] | AL40 | M_DA48 |
| | | | SA_DQ[49] | AL37 | M_DA49 |
| | | | SA_DQ[50] | AJ38 | M_DA50 |
| | | | SA_DQ[51] | AJ37 | M_DA51 |
| | | | SA_DQ[52] | AL39 | M_DA52 |
| | | | SA_DQ[53] | AL38 | M_DA53 |
| | | | SA_DQ[54] | AJ39 | M_DA54 |
| | | | SA_DQ[55] | AJ40 | M_DA55 |
| | | | SA_DQ[7] | AF38 | M_DQSA7 |
| | | | SA_DQ[7] | AF39 | M_DQSA7 |
| | | | SA_DQ[56] | AG40 | M_DA56 |
| | | | SA_DQ[57] | AG37 | M_DA57 |
| | | | SA_DQ[58] | AE38 | M_DA58 |
| | | | SA_DQ[59] | AE37 | M_DA59 |
| | | | SA_DQ[60] | AG39 | M_DA60 |
| | | | SA_DQ[61] | AG38 | M_DA61 |
| | | | SA_DQ[62] | AE39 | M_DA62 |
| | | | SA_DQ[63] | AE40 | M_DA63 |

DDR_0

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LGA1155[10SC1-F01155-01R]

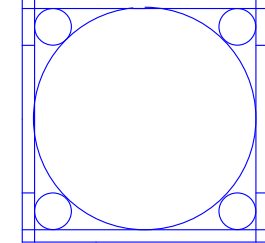
LGA1155B

| | | | | | |
|----------------|------|-----------|-----------|------|---------|
| M_AAB0 | AK24 | SB_MA[0] | SB_DQ[0] | AH7 | M_DQSB0 |
| M_AAB1 | AM20 | SB_MA[1] | SB_DQ[0] | AH6 | M_DQSB0 |
| M_AAB2 | AM19 | SB_MA[2] | | | |
| M_AAB3 | AK18 | SB_MA[3] | | | |
| M_AAB4 | AP19 | SB_MA[4] | SB_DQ[0] | AG7 | M_D80 |
| M_AAB5 | AP18 | SB_MA[5] | SB_DQ[1] | AG8 | M_D81 |
| M_AAB6 | AM18 | SB_MA[6] | SB_DQ[2] | AJ9 | M_D82 |
| M_AAB7 | AL18 | SB_MA[7] | SB_DQ[3] | AJ8 | M_D83 |
| M_AAB8 | AY17 | SB_MA[8] | SB_DQ[4] | AG5 | M_D84 |
| M_AAB9 | AN18 | SB_MA[9] | SB_DQ[5] | AG6 | M_D85 |
| M_AAB10 | AN13 | SB_MA[10] | SB_DQ[6] | AJ6 | M_D86 |
| M_AAB11 | AU17 | SB_MA[11] | SB_DQ[7] | AJ7 | M_D87 |
| M_AAB12 | AT18 | SB_MA[12] | | | |
| M_AAB13 | AR26 | SB_MA[13] | SB_DQ[11] | AM8 | M_DQSB1 |
| M_AAB14 | AY16 | SB_MA[14] | SB_DQ[11] | AL8 | M_DQSB1 |
| M_AAB15 | AV16 | SB_MA[15] | | | |
| (8) M_SWEB | AR25 | SB_WE# | SB_DQ[8] | AL7 | M_D88 |
| (8) M_SCASB | AK25 | SB_CAS# | SB_DQ[9] | AM7 | M_D89 |
| (8) M_SRASB | AP24 | SB_RAS# | SB_DQ[10] | AM10 | M_D810 |
| | | | SB_DQ[11] | AL10 | M_D811 |
| (8) M_SBA0 | AP23 | SB_BS[0] | SB_DQ[12] | AL6 | M_D812 |
| (8) M_SBA1 | AY17 | SB_BS[1] | SB_DQ[13] | AM6 | M_D813 |
| (8) M_SBA2 | AW17 | SB_BS[2] | SB_DQ[14] | AL9 | M_D814 |
| | | | SB_DQ[15] | AM9 | M_D815 |
| (8) M-CSB0 | AN25 | SB_CS# | SB_DQ[2] | AR8 | M_DQSB2 |
| (8) M-CSB1 | AN26 | SB_CS# | SB_DQ[2] | AP8 | M_DQSB2 |
| (8) M-CSB2 | AL25 | SB_CS# | SB_DQ[2] | AP8 | M_DQSB2 |
| (8) M-CSB3 | AT26 | SB_CS# | | | |
| (8) M-CKEB0 | AU18 | SB_CKE[0] | SB_DQ[16] | AP7 | M_D816 |
| (8) M-CKEB1 | AY15 | SB_CKE[1] | SB_DQ[17] | AR7 | M_D817 |
| (8) M-CKEB2 | AW15 | SB_CKE[2] | SB_DQ[18] | AP10 | M_D818 |
| (8) M-CKEB3 | AV15 | SB_CKE[3] | SB_DQ[19] | AR10 | M_D819 |
| | | | SB_DQ[20] | AP6 | M_D820 |
| | | | SB_DQ[21] | AP6 | M_D821 |
| | | | SB_DQ[22] | AP9 | M_D822 |
| | | | SB_DQ[23] | AR9 | M_D823 |
| | | | SB_DQ[3] | AN13 | M_DQSB3 |
| | | | SB_DQ[3] | AN12 | M_DQSB3 |
| (8) M-DCLKB0 | AL21 | SB_CK[0] | SB_DQ[24] | AM12 | M_D824 |
| (8) M-DCLKB1 | AL22 | SB_CK[0] | SB_DQ[25] | AM13 | M_D825 |
| (8) M-DCLKB2 | AK20 | SB_CK[1] | SB_DQ[26] | AR13 | M_D826 |
| (8) M-DCLKB3 | AL20 | SB_CK[1] | SB_DQ[27] | AP13 | M_D827 |
| (8) M-DCLKB4 | AM22 | SB_CK[2] | SB_DQ[28] | AL12 | M_D828 |
| (8) M-DCLKB5 | AP21 | SB_CK[2] | SB_DQ[29] | AL13 | M_D829 |
| (8) M-DCLKB6 | AN21 | SB_CK[3] | SB_DQ[30] | AR12 | M_D830 |
| | | | SB_DQ[31] | AP12 | M_D831 |
| | | | SB_DQ[4] | AN29 | M_DQSB4 |
| | | | SB_DQ[4] | AN28 | M_DQSB4 |
| (8) M_VREF_DQB | AH1 | FC_AH1 | | | |
| (7) M_VREF_DOA | AH4 | FC_AH4 | | | |
| | | | SB_DQ[32] | AR28 | M_D832 |
| | | | SB_DQ[33] | AR29 | M_D833 |
| | | | SB_DQ[34] | AL28 | M_D834 |
| | | | SB_DQ[35] | AL29 | M_D835 |
| | | | SB_DQ[36] | AP28 | M_D836 |
| | | | SB_DQ[37] | AP29 | M_D837 |
| | | | SB_DQ[38] | AM28 | M_D838 |
| | | | SB_DQ[39] | AM29 | M_D839 |
| | | | SB_DQ[5] | AP33 | M_DQSB5 |
| | | | SB_DQ[5] | AP33 | M_DQSB5 |
| | | | SB_DQ[40] | AP21 | M_D840 |
| | | | SB_DQ[41] | AP35 | M_D841 |
| | | | SB_DQ[42] | AP34 | M_D842 |
| | | | SB_DQ[43] | AR32 | M_D843 |
| | | | SB_DQ[44] | AR31 | M_D844 |
| | | | SB_DQ[45] | AR35 | M_D845 |
| | | | SB_DQ[46] | AR34 | M_D846 |
| | | | SB_DQ[47] | | |
| | | | SB_DQ[6] | AL33 | M_DQSB6 |
| | | | SB_DQ[6] | AM33 | M_DQSB6 |
| | | | SB_DQ[48] | AM32 | M_D848 |
| | | | SB_DQ[49] | AM31 | M_D849 |
| | | | SB_DQ[50] | AL35 | M_D850 |
| | | | SB_DQ[51] | AL32 | M_D851 |
| | | | SB_DQ[52] | AM34 | M_D852 |
| | | | SB_DQ[53] | AL31 | M_D853 |
| | | | SB_DQ[54] | AM35 | M_D854 |
| | | | SB_DQ[55] | AL34 | M_D855 |
| | | | SB_DQ[7] | AG35 | M_DQSB7 |
| | | | SB_DQ[7] | AG34 | M_DQSB7 |
| | | | SB_DQ[56] | AH35 | M_D856 |
| | | | SB_DQ[57] | AH34 | M_D857 |
| | | | SB_DQ[58] | AE34 | M_D858 |
| | | | SB_DQ[59] | AE35 | M_D859 |
| | | | SB_DQ[60] | AJ35 | M_D860 |
| | | | SB_DQ[61] | AJ34 | M_D861 |
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| | | | SB_DQ[63] | AF35 | M_D863 |

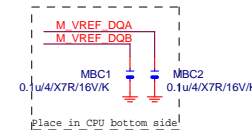
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LGA1155[10SC1-F01155-01R]

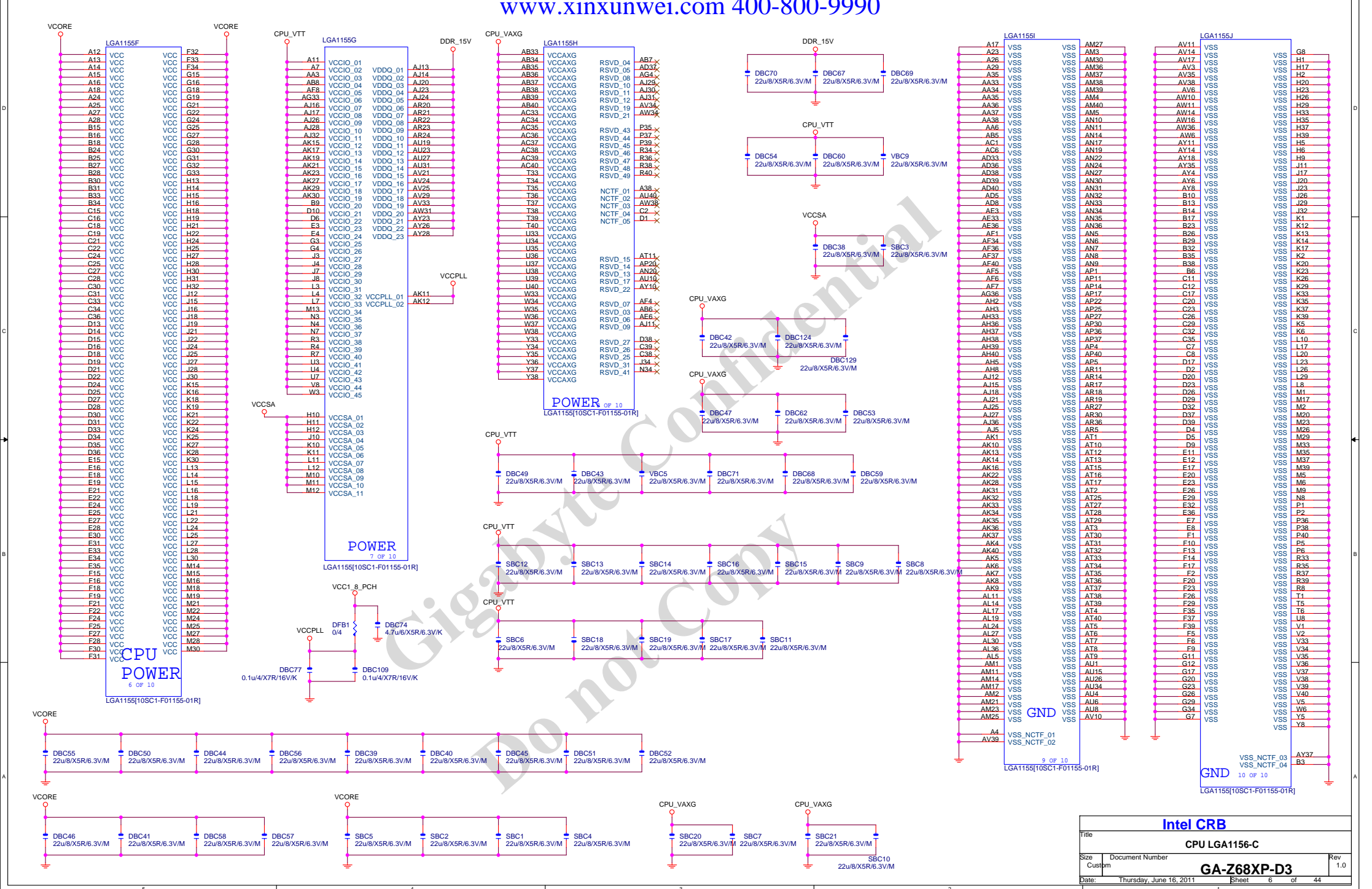
LGA1155
ILM BP/1156/CSP

Need check the new CPU ME

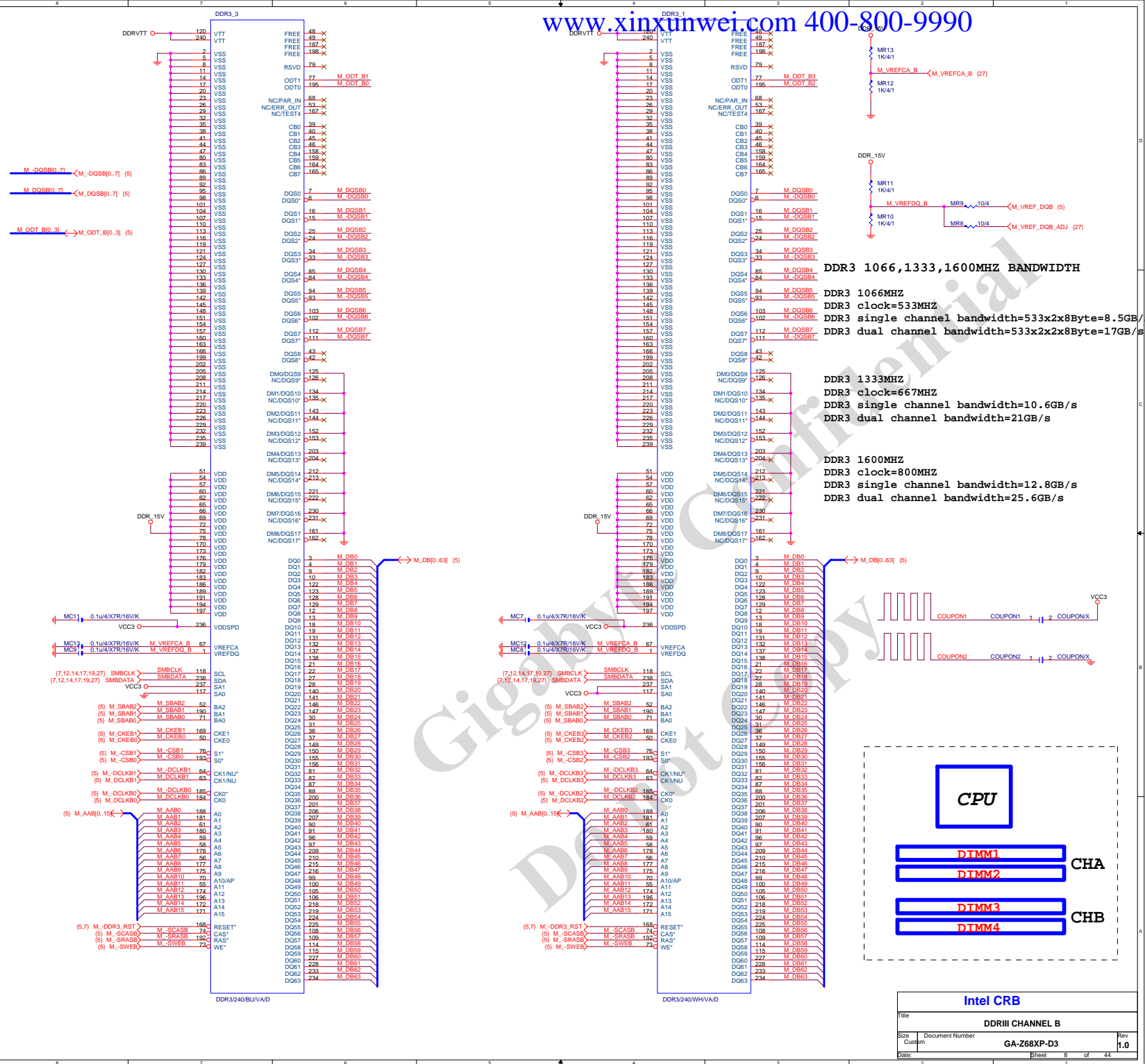


Intel CRB

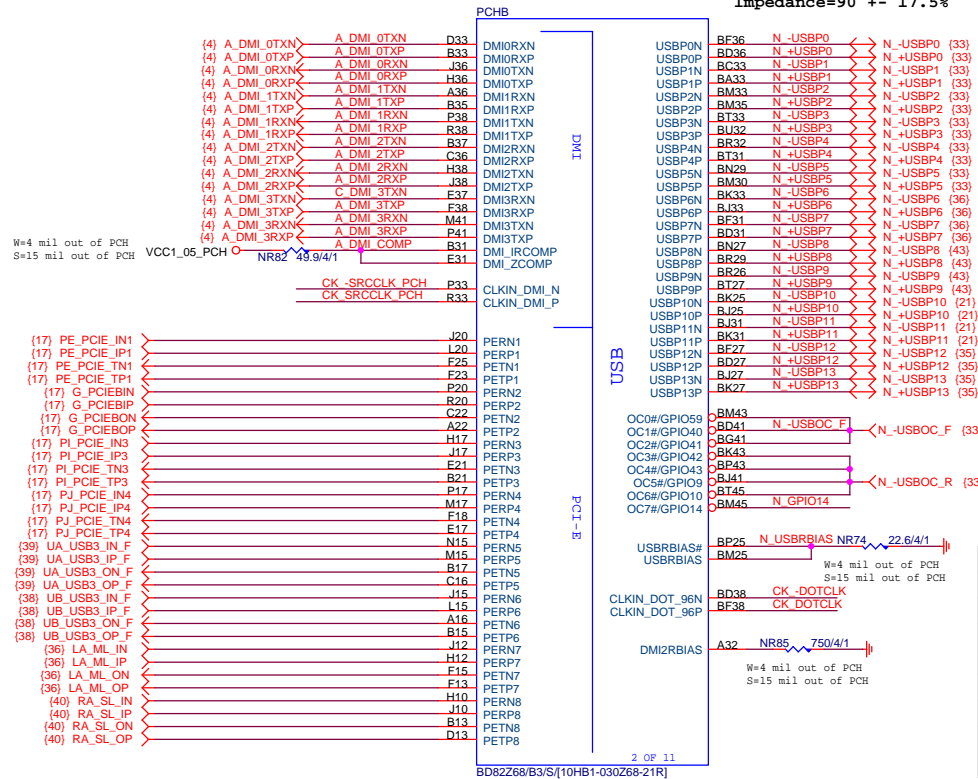
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| Title | | | CPU LGA1156-B | | |
| Size | | | Document Number | | |
| Custom | | | GA-Z68XP-D3 | | |
| Date: | | | Thursday, June 16, 2011 | | |
| Sheet | | | 5 of 44 | | |
| Rev | | | 1.0 | | |







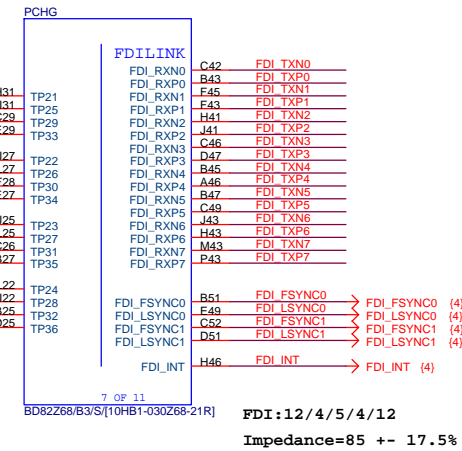
USB:12/7.5/4.5/7.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



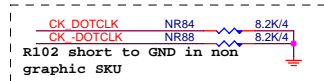
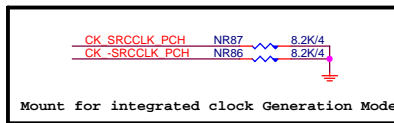
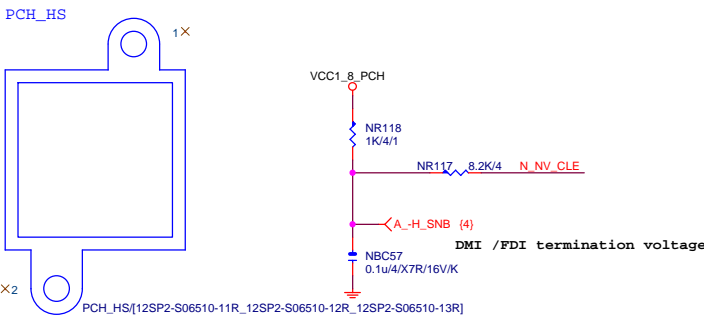
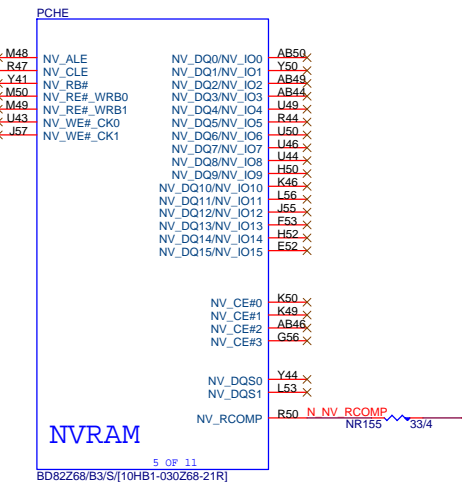
PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

Impedance=80 +- 17.5%

| USB OC# Configure | |
|-------------------|----------|
| OC0# | USB0,1 |
| OC1# | USB2,3 |
| OC2# | USB4,5 |
| OC3# | USB6,7 |
| OC4# | USB8,9 |
| OC5# | USB10,11 |
| OC6# | USB12,13 |
| OC7# | Not Use |



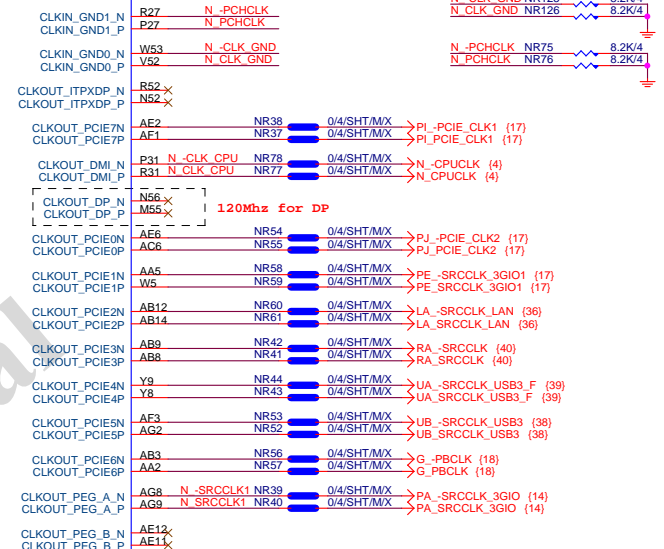
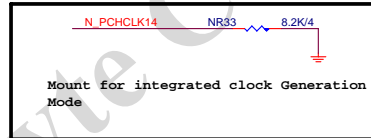
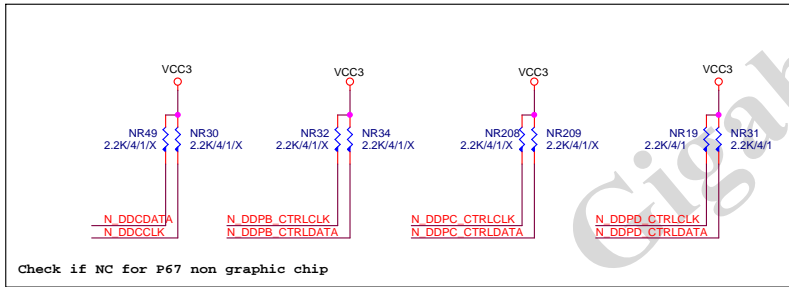
FDI_TXP0_71 FDI_TXP0[0..7] (4)
FDI_TXN0_71 FDI_TXN0[0..7] (4)



Gigabyte Technology

| | | | |
|--------|-----------------|-------------------------|--|
| Title | | PCH FDI,DMI,USB,PCIE | |
| Size | Document Number | Rev | |
| Custom | | 1.0 | |
| Date: | | Thursday, June 16, 2011 | |
| Sheet | | 9 of 44 | |

GA-Z68XP-D3

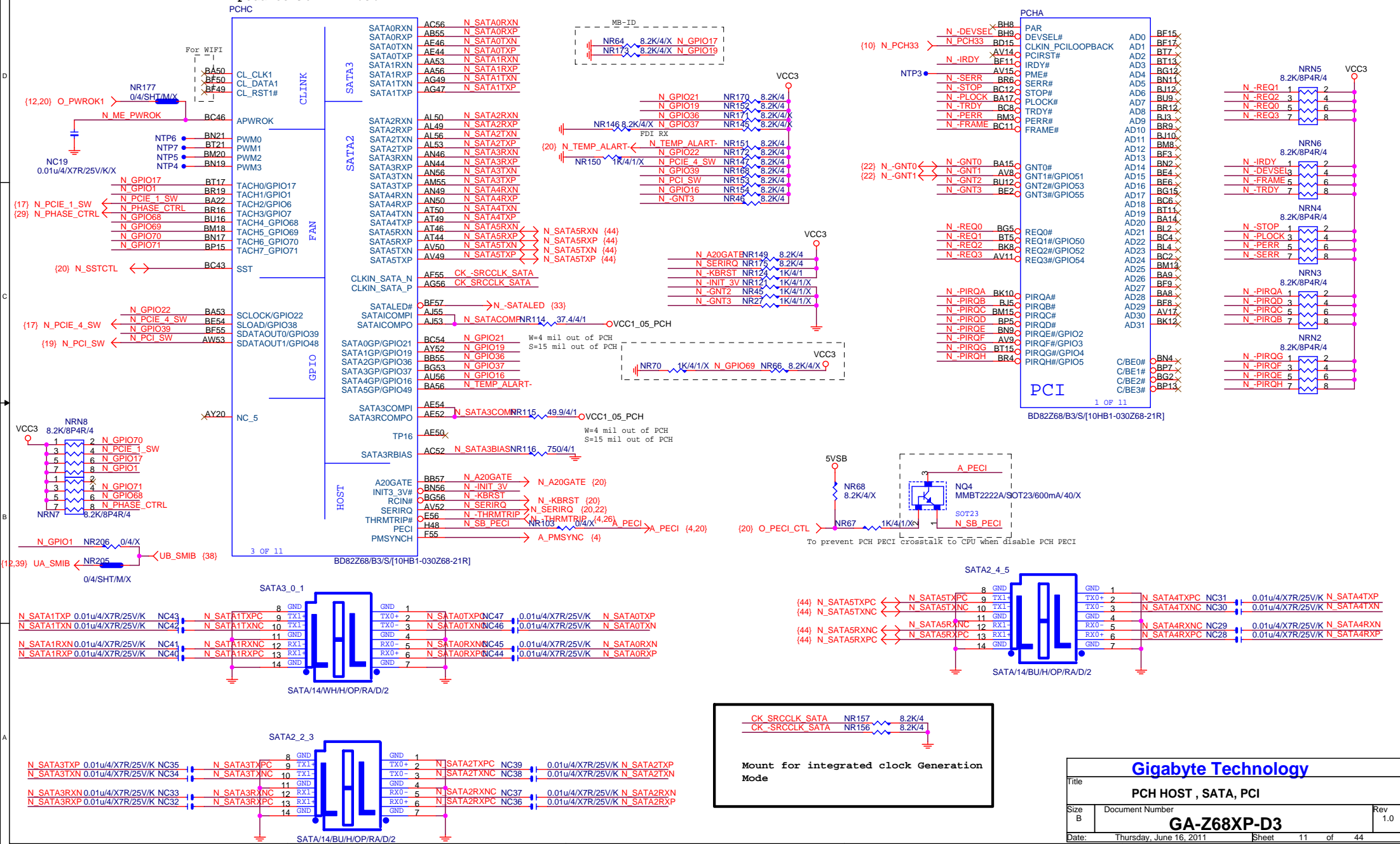


Strapping Signals

```
GP29 , 35, 36 , 37 power on with 3.3V pluse
GP8 always Hi without PU
GP20 with pluse during power on & reset
```

A

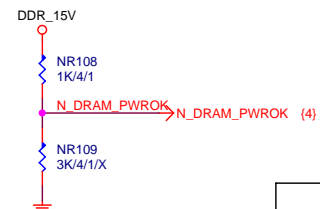
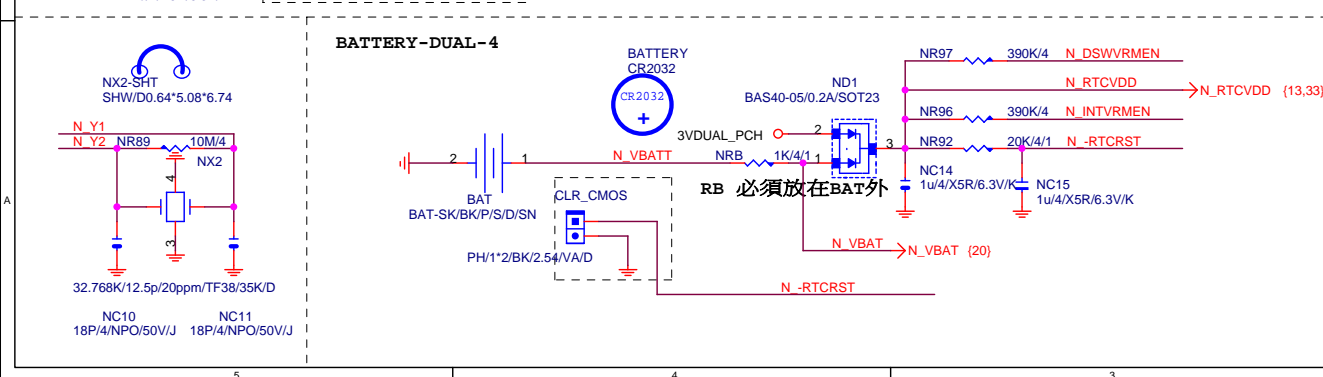
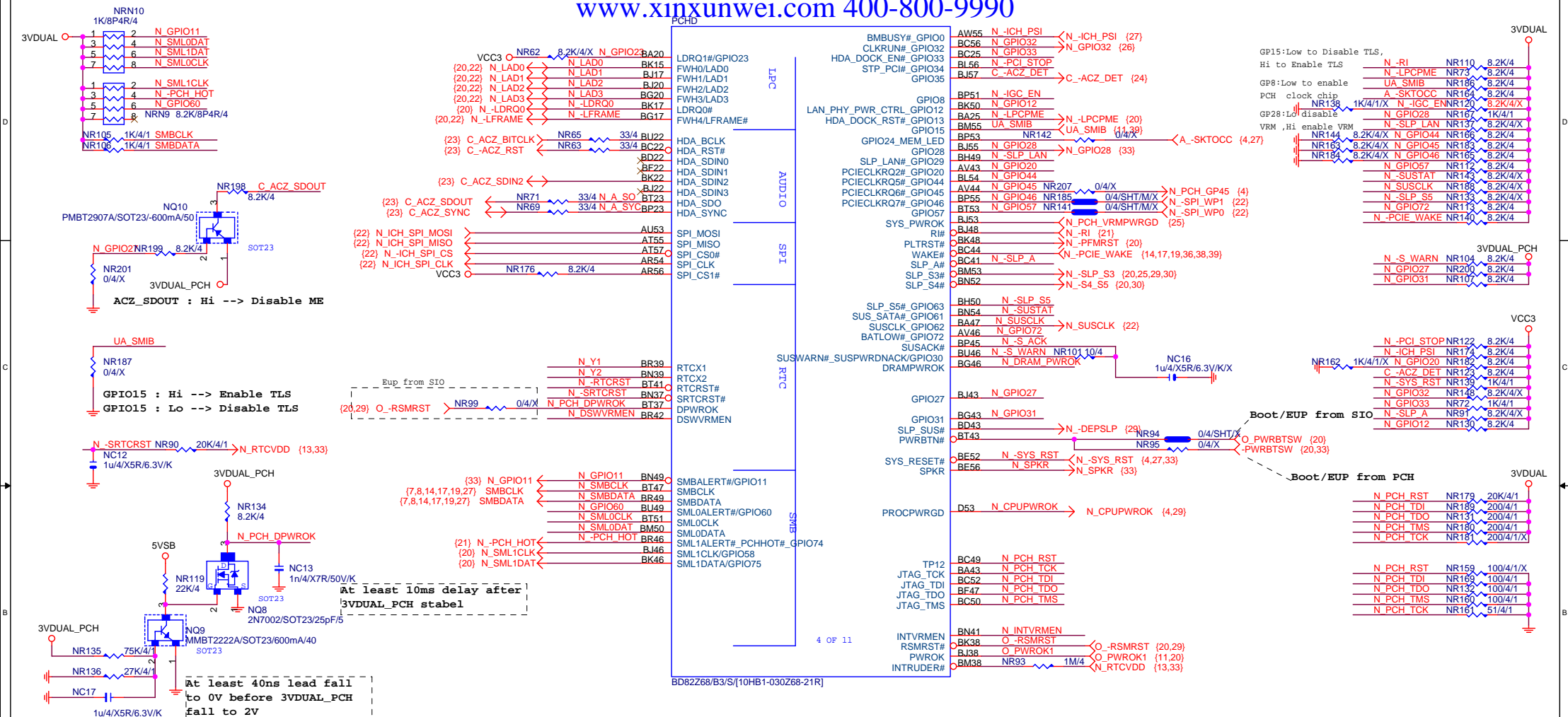
SATA:20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

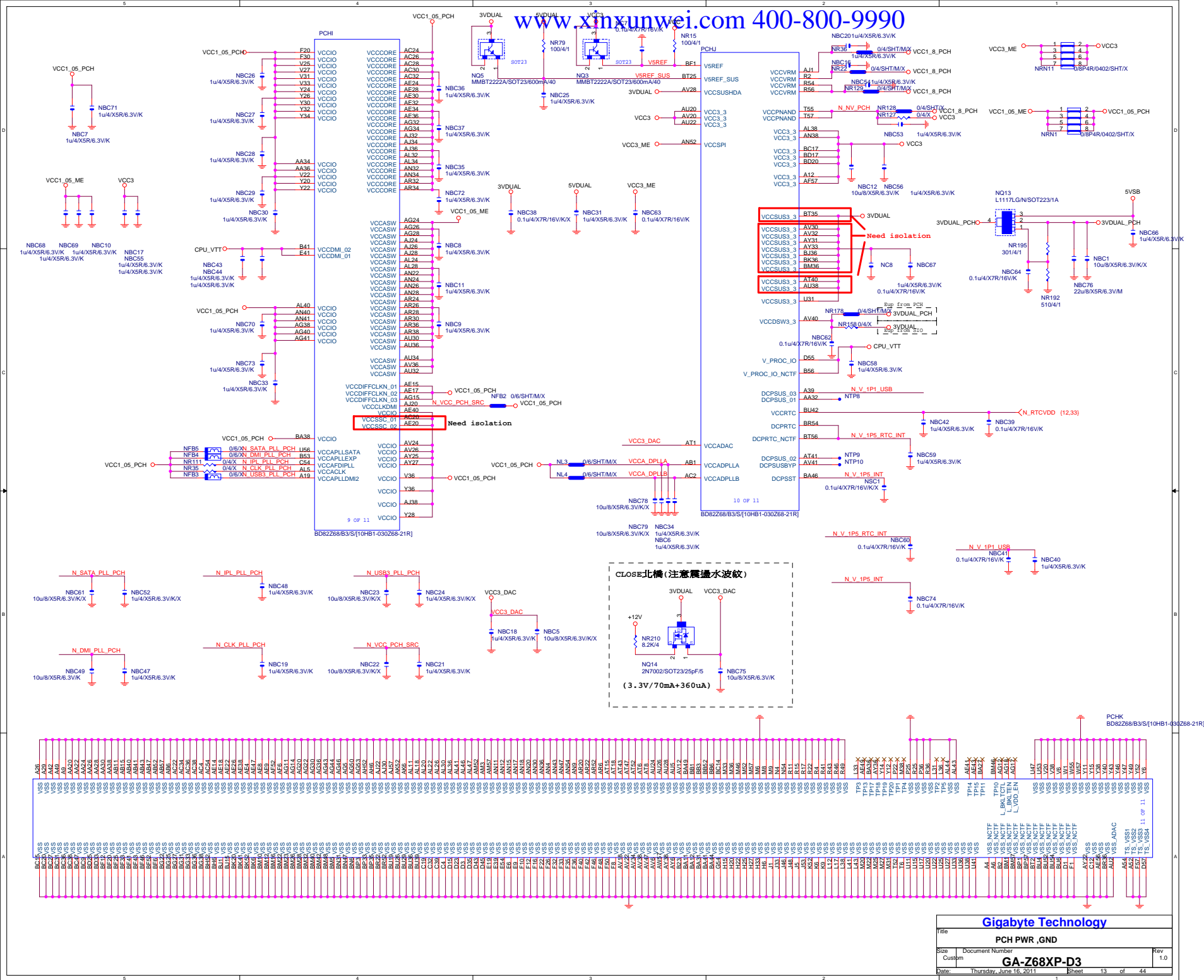


Gigabyte Technology

PCH HOST, SATA, PCI

| Title | Document Number | Rev |
|-------|-------------------------|----------------|
| B | GA-Z68XP-D3 | 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet 11 of 44 |







PCI-E REV:2.0--> 5GHZ

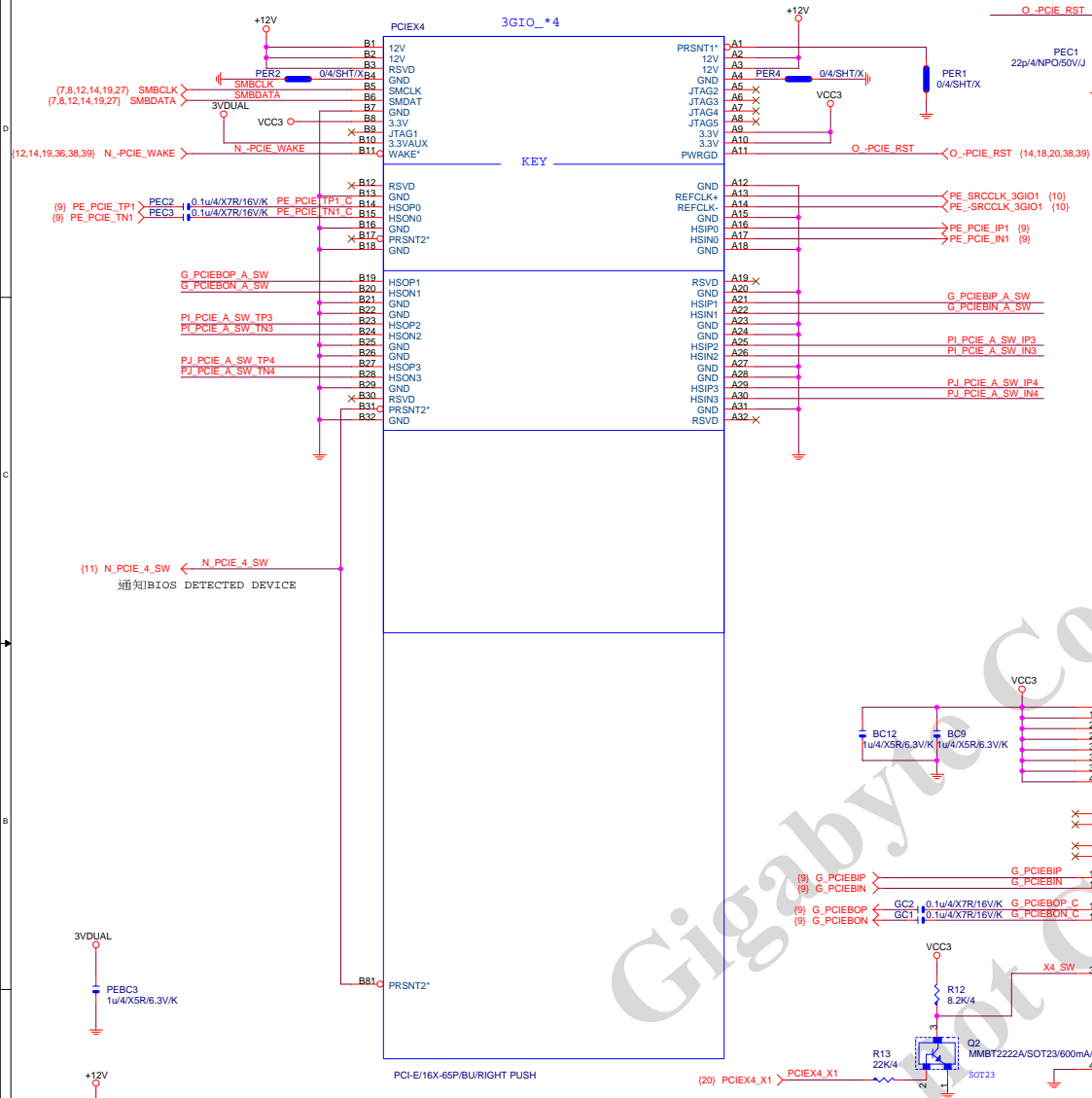
Gigabyte Confidential
Do not Copy

| | | | |
|----------------------|-------------------------|-------|----------|
| Gigabyte Technology | | | |
| Title | | | |
| PCI EXPRESS X 4 PORT | | | |
| Size | Document Number | | Rev |
| Custom | GA-Z68XP-D3 | | 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet | 15 of 44 |
| | 2 | | 1 |

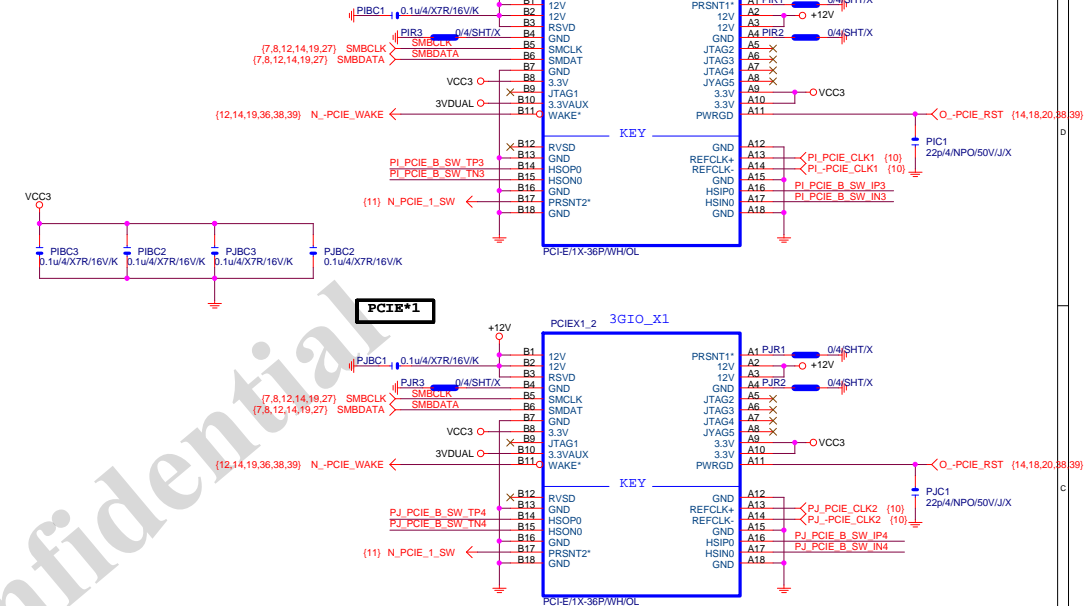
Gigabyte Confidential
Do not Copy

| | | | |
|---------------------|-------------------------|------------------------|---------|
| Gigabyte Technology | | | |
| Title | | PCI EXPRESS X16 SWITCH | |
| Size | Document Number | GA-Z68XP-D3 | Rev 1.0 |
| Custom | | | |
| Date: | Thursday, June 16, 2011 | Sheet 16 | of 44 |

PCIE*4



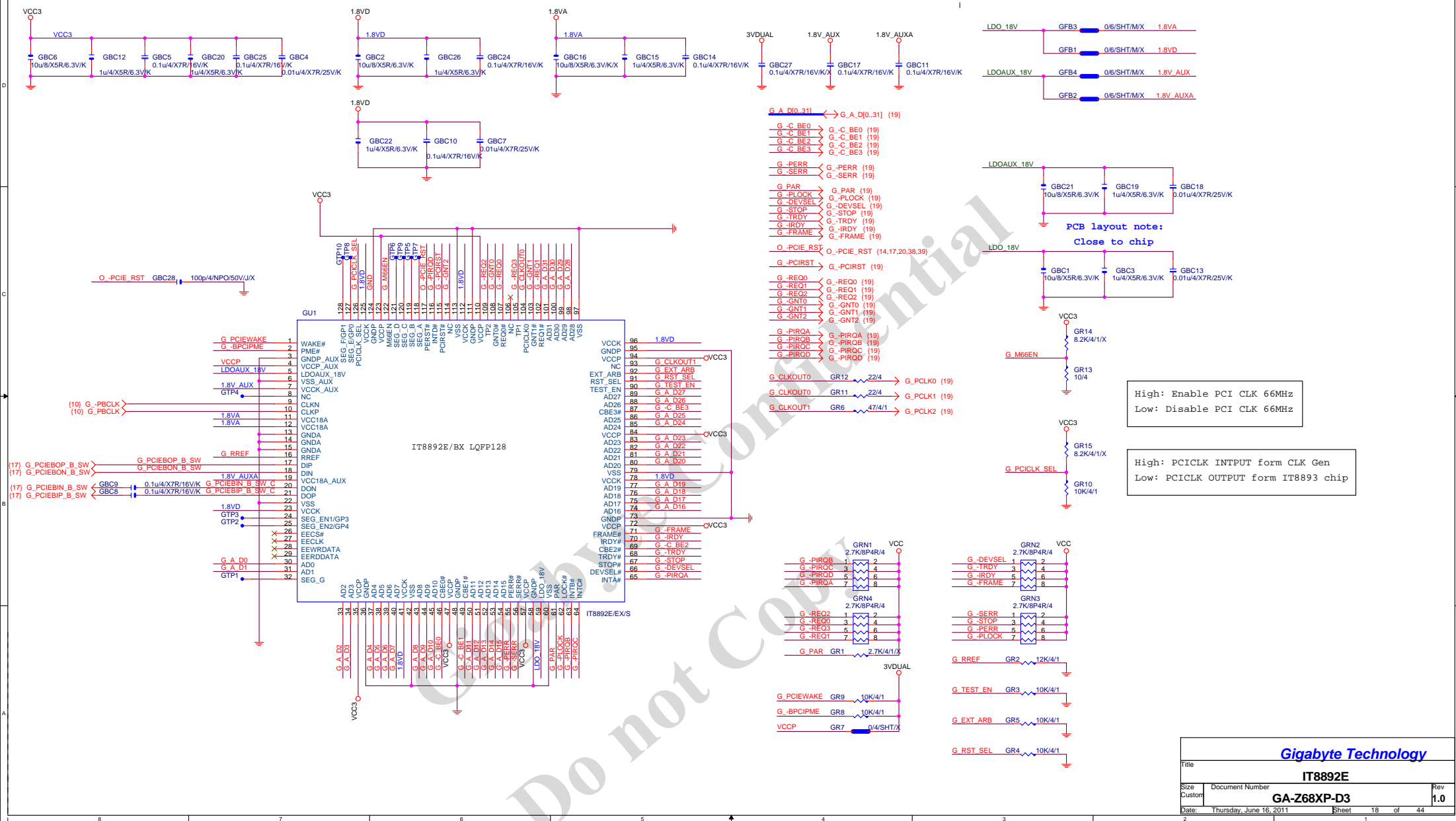
PCIE*1

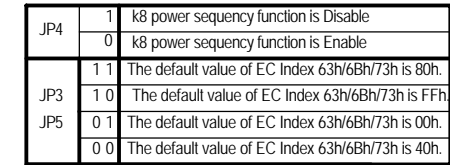


| Function | SEL |
|------------------------------|-----|
| x1--> x0a L;PCIEX4 SLOT-->x1 | |
| x1--> x0b H;PCIEX4 SLOT-->x4 | |

| | N_PCIE_4_SW (PCH GPIO38) | N_PCIE_1_SW (PCH GPIO6) | N_PCI_SW (PCH GPIO48) | PCIEX4_X1 (SIO_GPIO27) |
|---|-----------------------------|----------------------------|--------------------------|---------------------------|
| PCIEX1,PCIEX4 --> X1 (Default) | H | H | H | H |
| PCIEX1,PCI Have/No devices PCIEX4 -> X1 | H | H/L | H/L | H |
| PCIEX1,PCI Have/No devices PCIEX4 -> X4 | L | H/L | H/L | L |

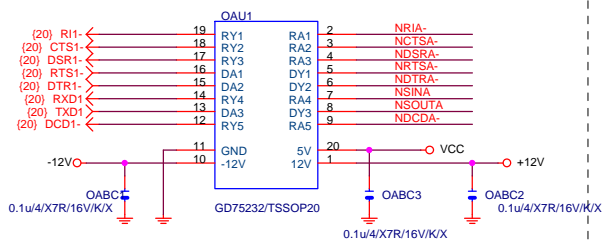
| Gigabyte Technology | | |
|---------------------|-------------------------|----------------|
| PCIE X1 1,2 | | |
| Size | Document Number | Rev |
| Custom | GA-Z68XP-D3 | 1.0 |
| Date | Thursday, June 16, 2011 | Sheet 17 of 44 |





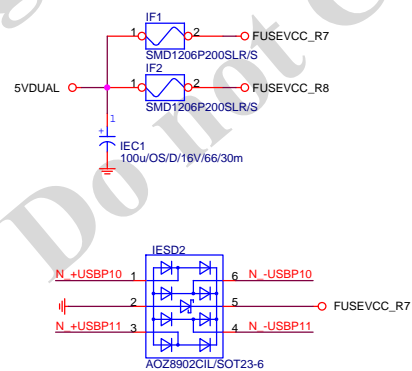
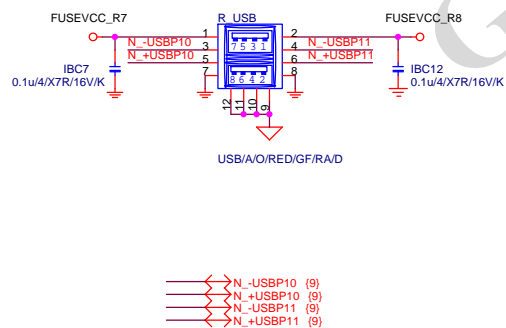
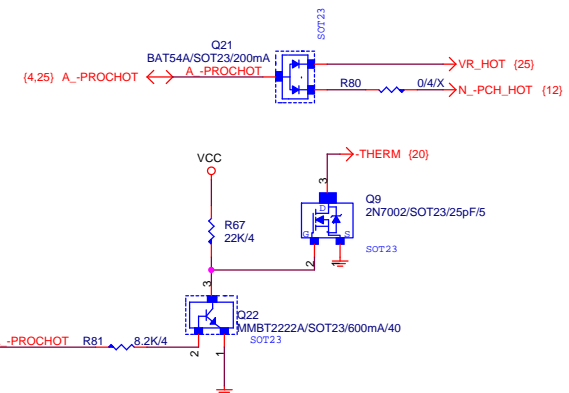
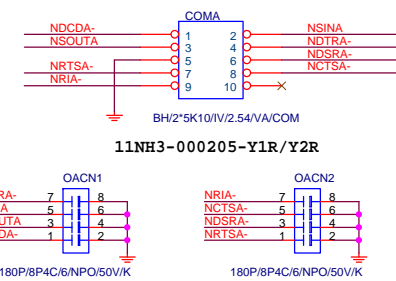
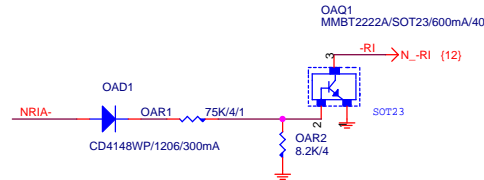
| | IT8721 | IT8728 |
|--------|----------------------------------|--------------------------|
| PIN121 | FAN_CTL4/VID_TURBO | VCORE_EN/PCH_C0 |
| PIN120 | VDDA_EN | VLDT_EN/PCH_D0 |
| PIN19 | GP30 | ATXPG |
| PIN31 | GP14 | PCH_C1 |
| PIN53 | SST/AMDSI_D/PECI_AVA/MTRB#/PCH_D | SST/AMDSI_D/MTRB#/PCH_D1 |
| PIN55 | PECI/AMDSI_C/DRVBB#/PCH_C | PECI/AMDSI_C/DRVBB# |
| PIN66 | GP47 | SYS_3VSB |
| PIN70 | SYS_3VSB | GP47 |
| PIN95 | VIN3/ATXPG | VIN2 (VCC5) |
| PIN96 | VIN2 | VIN1 (VCC12) |
| PIN97 | VIN1 (VCC5) | VIN1/VDIMM_STR(1.5V) |
| PIN98 | VIN0 (VCC12) | VINO/VCORE(1.1V) |

COMA



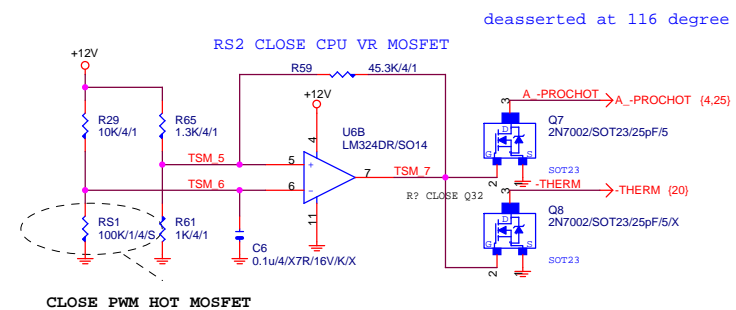
www.xinxunwei.com 400-800-9990

COM R1

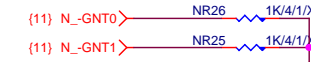
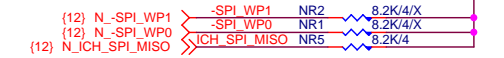
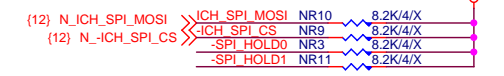


Place close to Header or connector

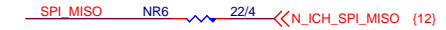
-PROHOT



| Gigabyte Technology | | | |
|---------------------------|-------------------------|-------|----------|
| Title | | | |
| COM & PROHOT/Dynamic O.C. | | | |
| Size | Document Number | Rev | |
| Custom | | 1.0 | |
| Date: | Thursday, June 16, 2011 | Sheet | 21 of 44 |

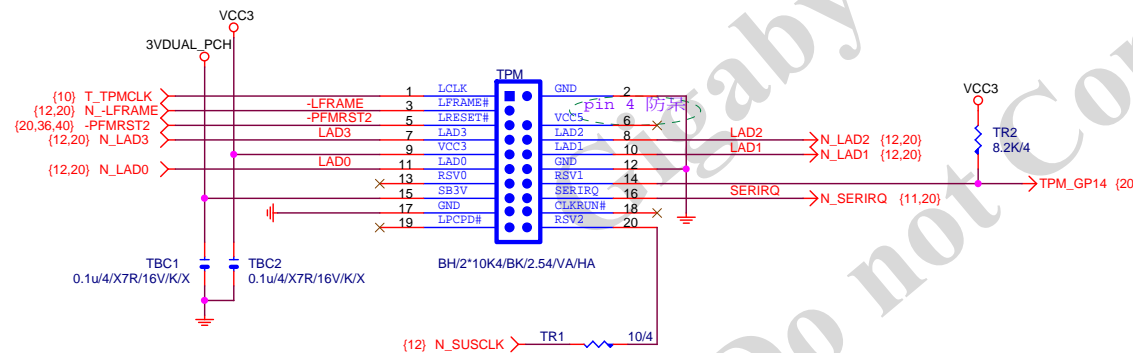


Default int pull up



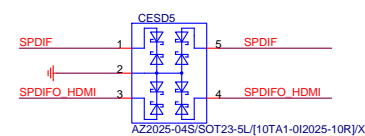
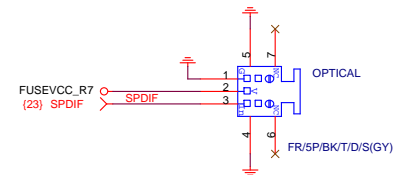
| BOOT DEVICE | GNT0 | GNT1 |
|----------------|------|------|
| LPC | 0 | 0 |
| PCI | 0 | 1 |
| NAND | 1 | 0 |
| SPI | 1 | 1 |

1 means floating
0 means PD 1K

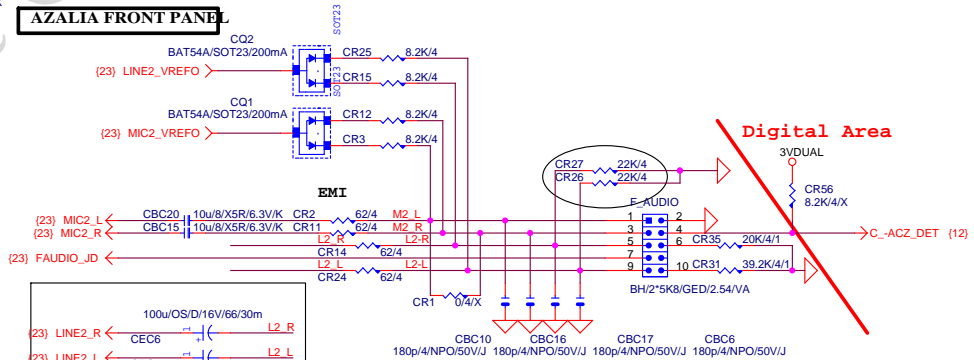
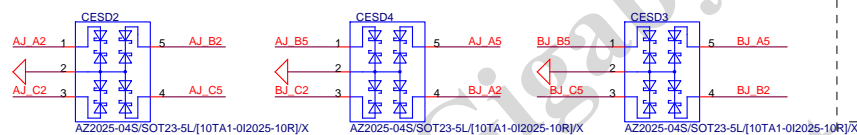


Gigabyte Technology

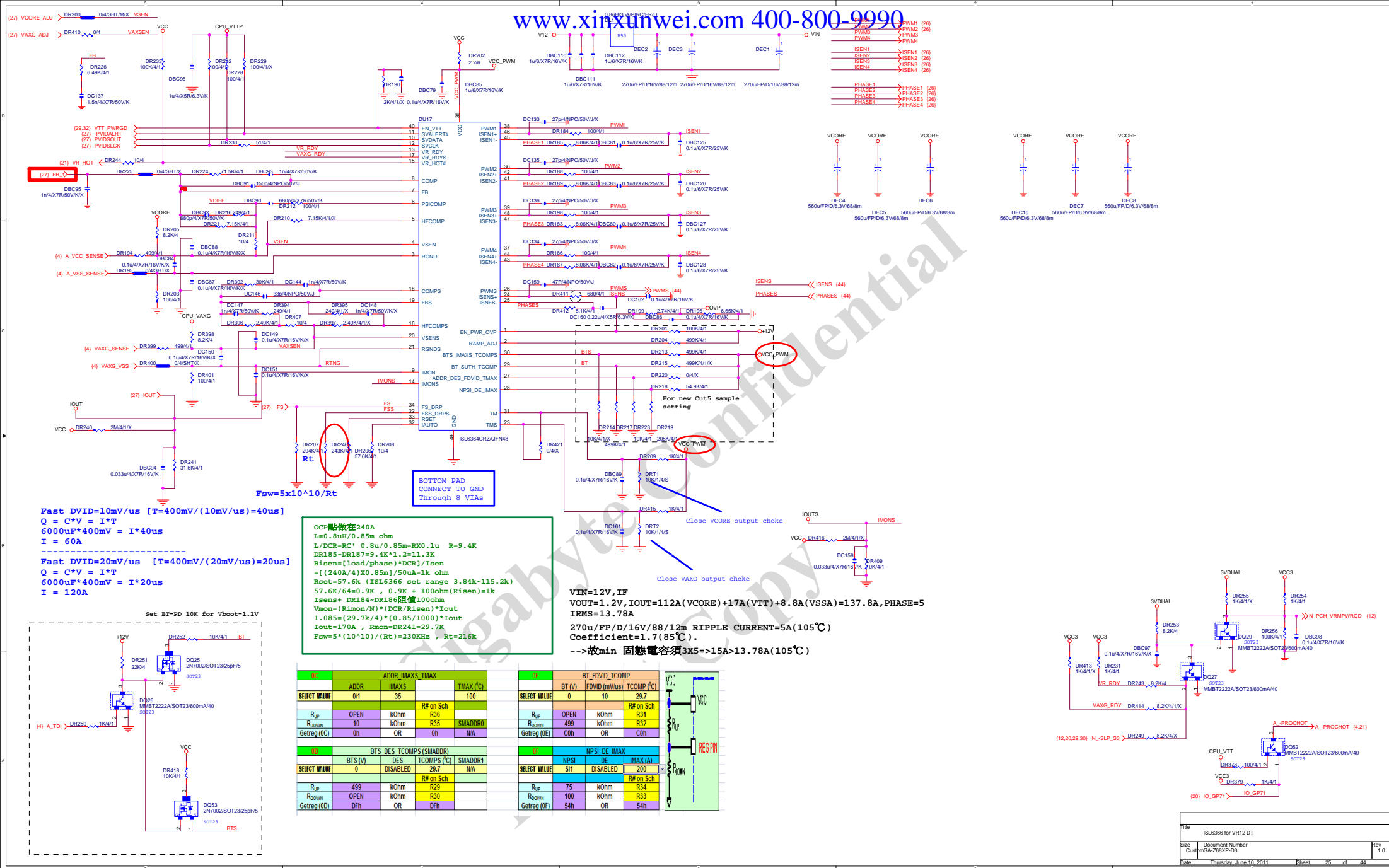
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| Title | | | |
| BIOS | | | |
| Size | Document Number | Rev | |
| Custom | GA-Z68XP-D3 | 1.0 | |
| Date: | Thursday, June 16, 2011 | Sheet | 22 of 44 |

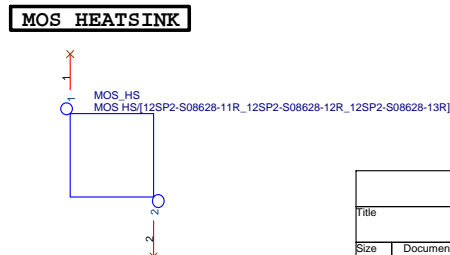
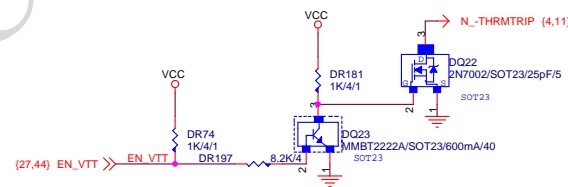
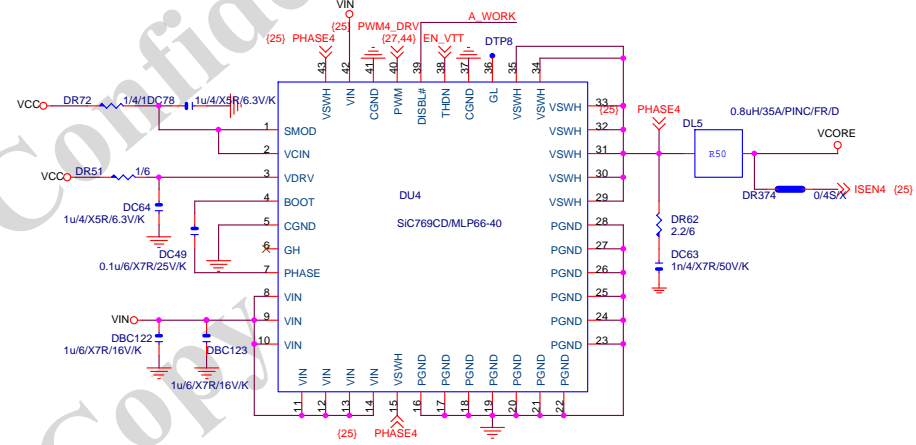
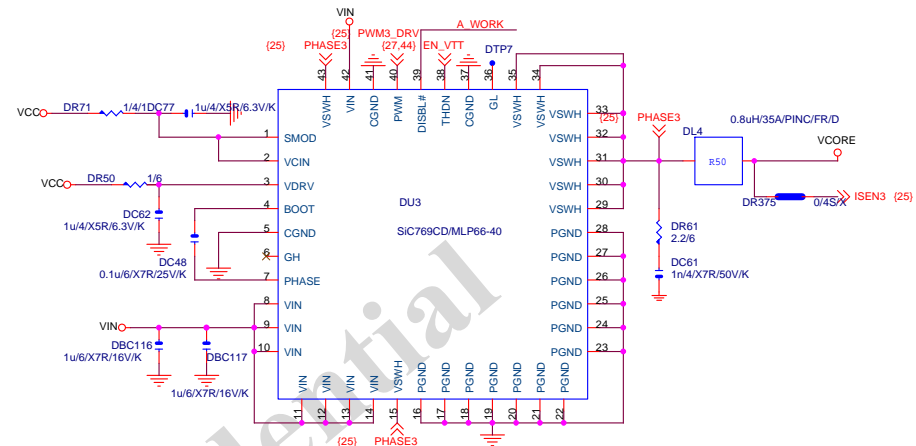


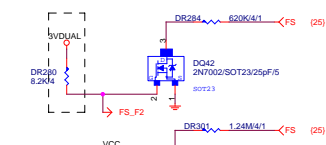
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| | | | |
|----------------------------|-------------------------|--------------------|----------------|
| Gigabyte Technology | | | |
| Title | | | |
| AUDIO JACK | | | |
| Size Custom | Document Number | GA-Z68XP-D3 | Rev 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet 24 | of 44 |



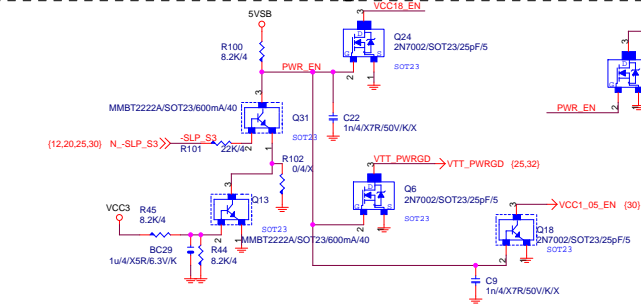
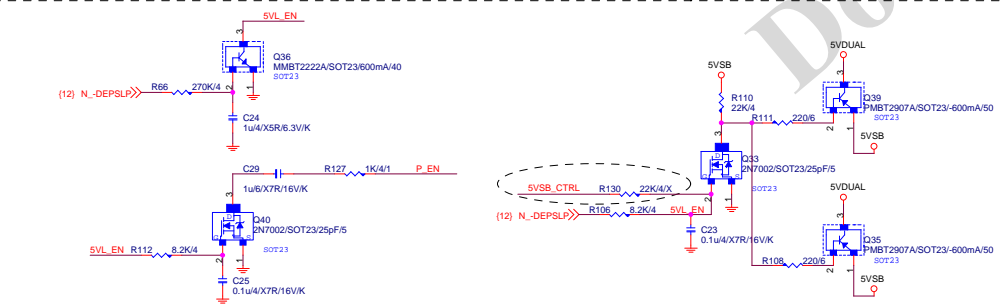
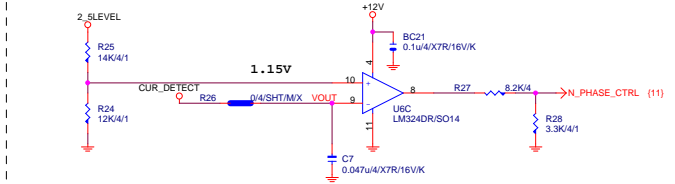
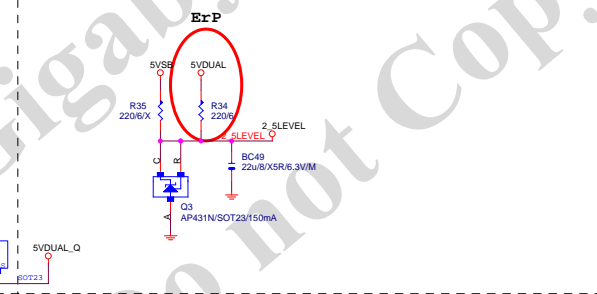
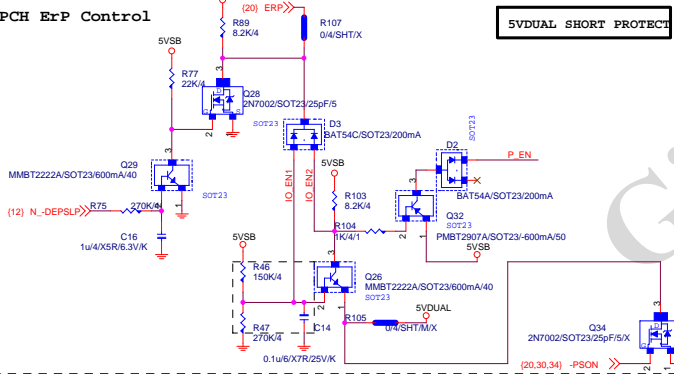
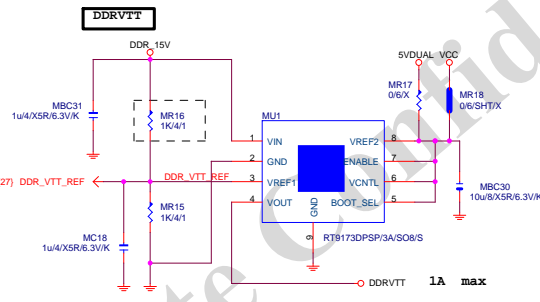
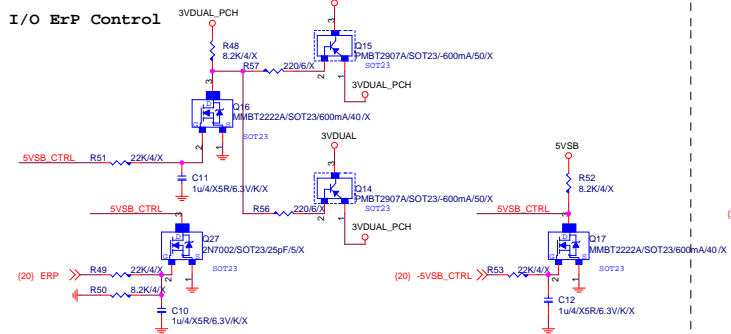
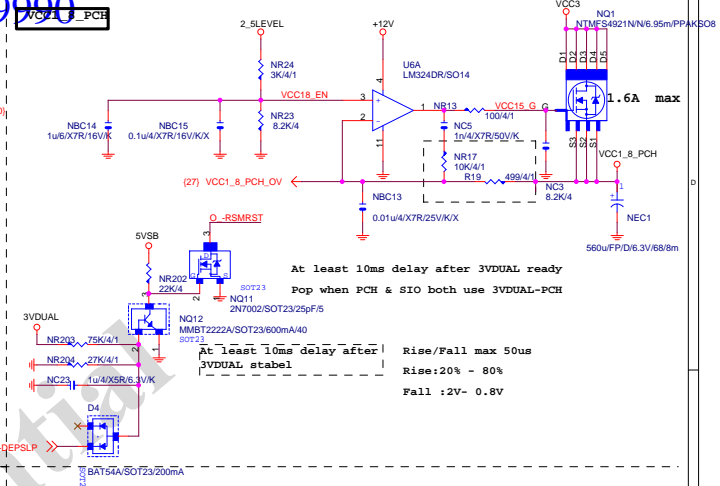
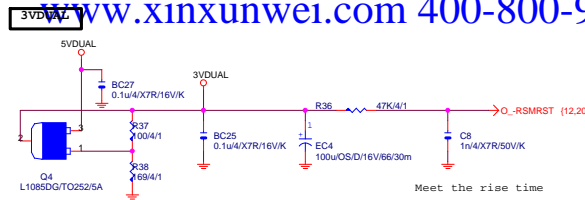
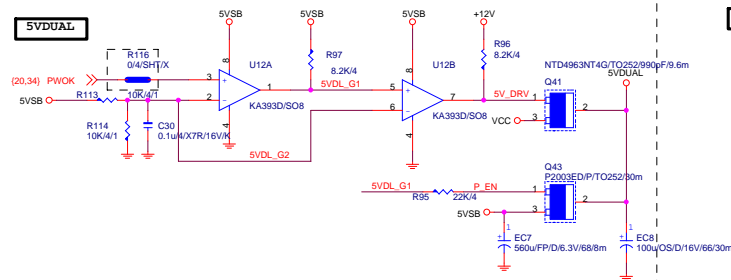


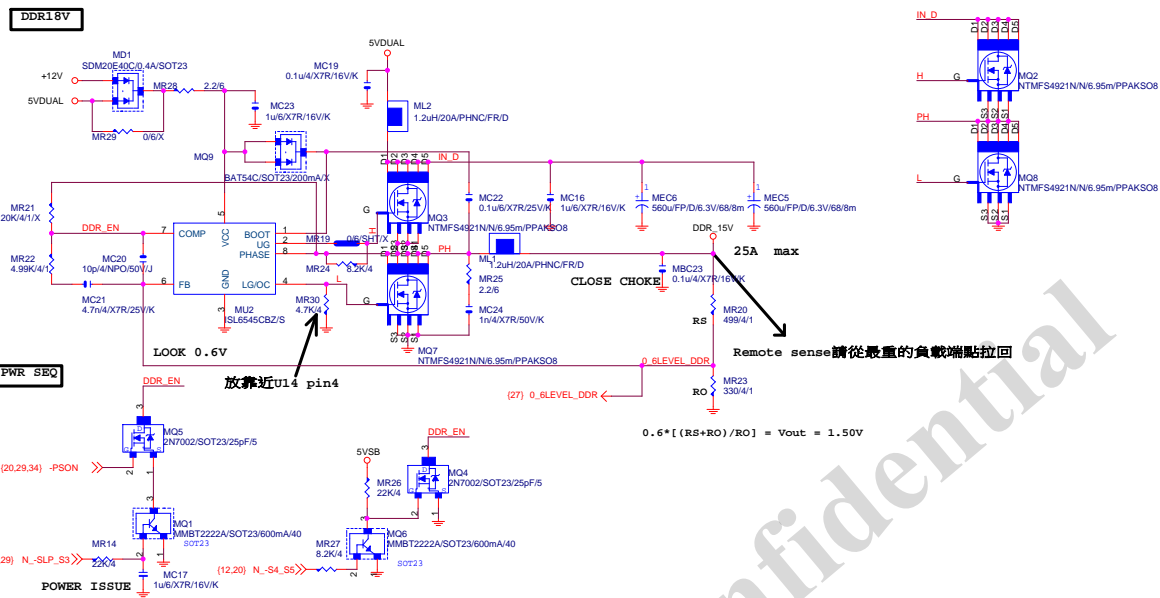


| | | PWM FREQUENCY (200K-375KHz) | |
|---------|------|-----------------------------|---------|
| | | ITE8275 | ITE8275 |
| | | GP26 | GP25 |
| | 200K | L | H |
| | 250K | L | L |
| Default | 300K | H | H |
| | 375K | H | L |

| | | | |
|-----------------------------|-------------------------|--------------------|------------|
| Gigabyte Technology | | | |
| Title: CPU CORE VR-2 | | | |
| Size Custom | Document Number | GA-Z68XP-D3 | Rev 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet | 27 of 44 |

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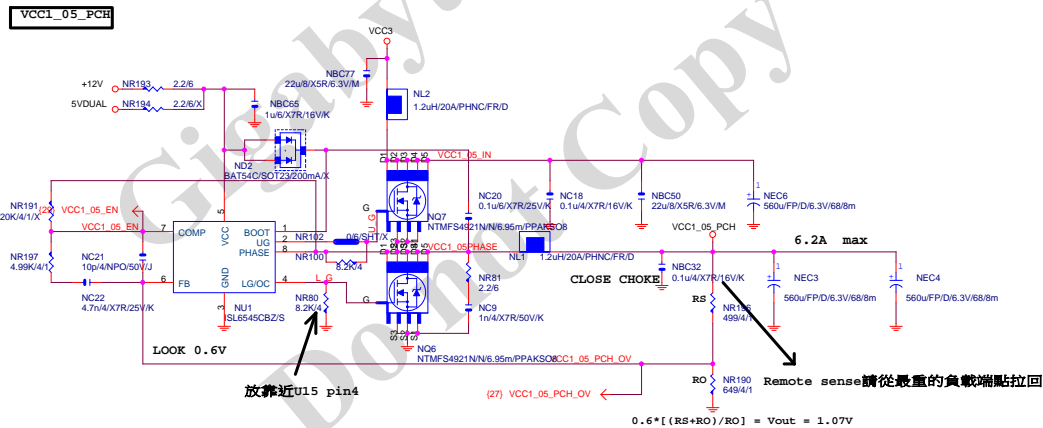




OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 $I_{ocset} = 21.5\mu A$, $R_{ocset} = 8.2k$

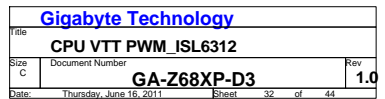
OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 $= (2 \times 21.5\mu A \times 8.2k) / 7m$
 $= 50.37A$

注意 : R_{ocset} 的阻值要依據 Lo side R_{dson} 改變
 一般 I_{peak} 設定在 50~60A 即可

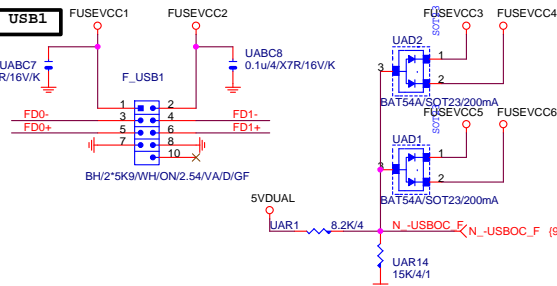


Gigabyte Technology

| | | | |
|-------|-------------------------|-------|----------|
| File | DDR_15V | Rev | 1.0 |
| Size | Document Number | | |
| C | GA-Z68XP-D3 | | |
| Date: | Thursday, June 16, 2011 | Sheet | 30 of 44 |



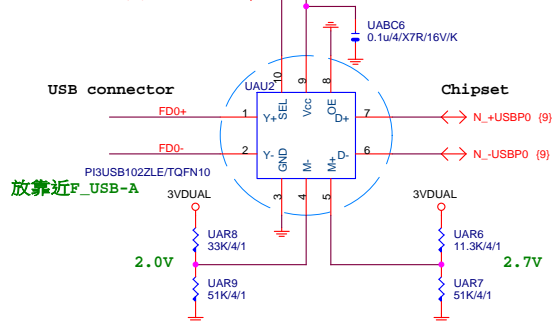
FRONT USB1



i_phone charger circuit

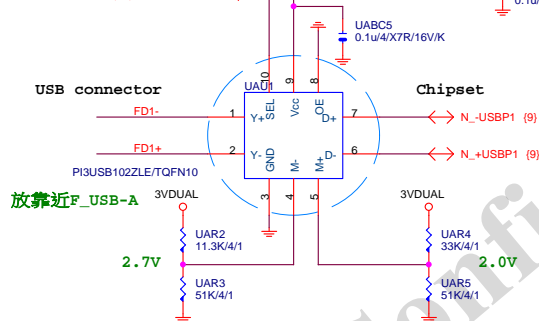
DEFAULT H, STABBY POWER

(20) CHARGE_SEL0

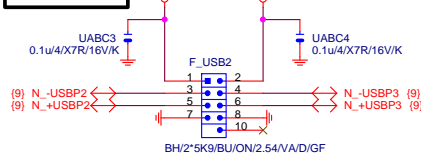


DEFAULT H, STABBY POWER

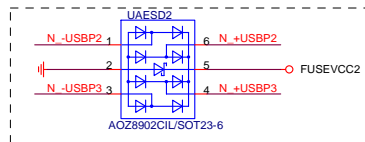
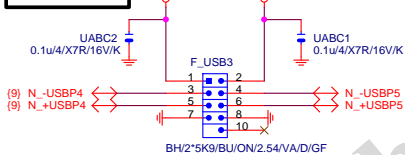
(20) CHARGE_SEL1



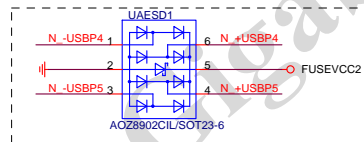
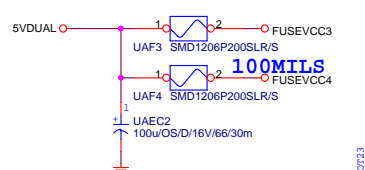
FRONT USB2



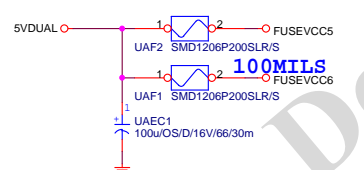
FRONT USB3



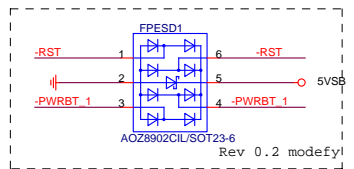
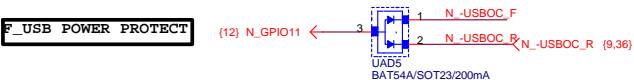
Close to connector



Close to connector



F_USB POWER PROTECT



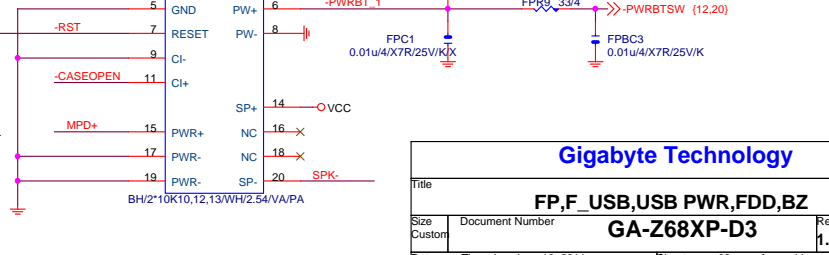
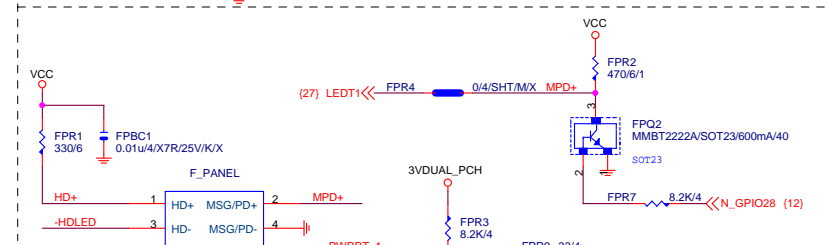
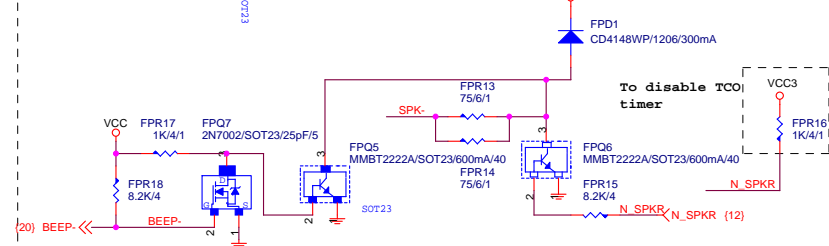
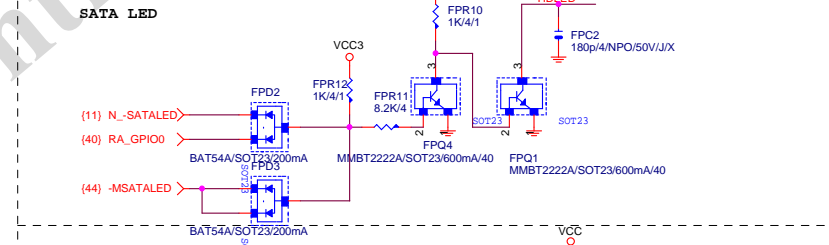
INTEL FRONT PANEL

(4,12,27) N_-SYS_RST

Rev 0.2 modify

CASE OPEN

SATA LED

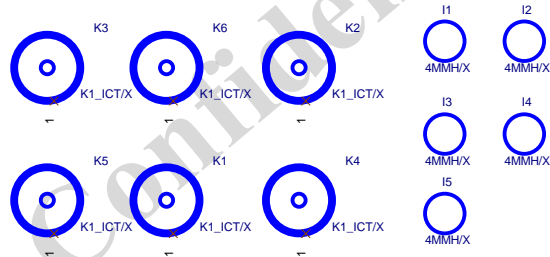
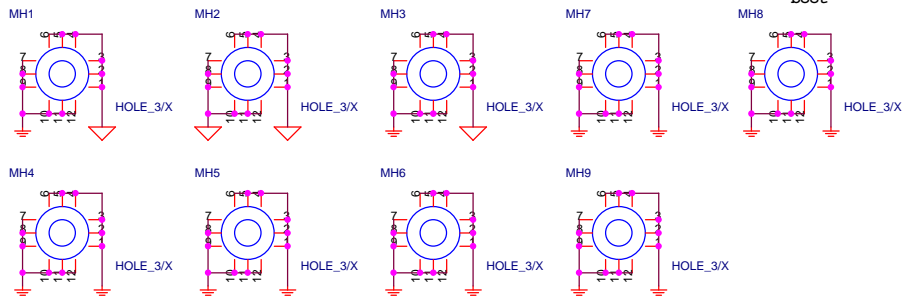
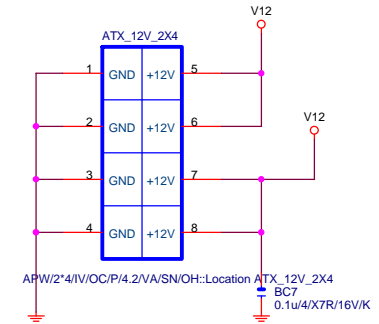
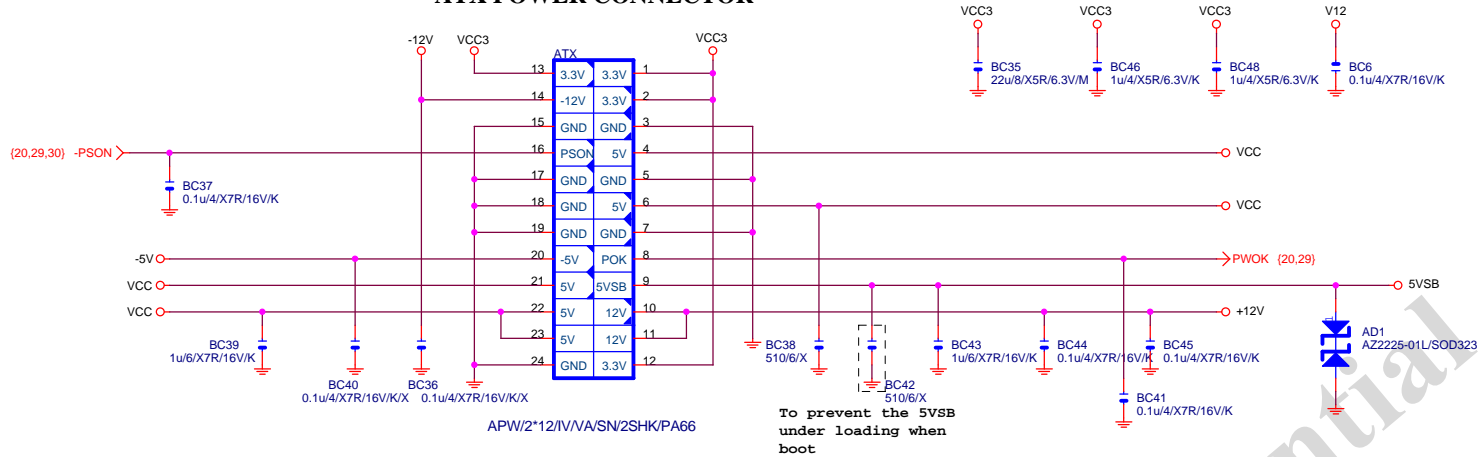


Gigabyte Technology

| | | | |
|-------|-------------------------|-----------------|-------------|
| Title | FF,F_USB,USB PWR,FDD,BZ | | |
| Size | Custom | Document Number | GA-Z68XP-D3 |
| Date | Thursday, June 16, 2011 | Sheet | 33 of 44 |

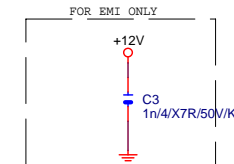
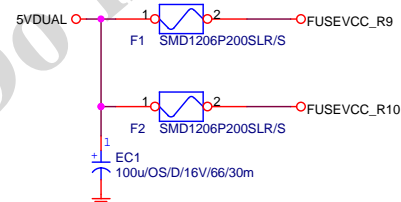
ATX POWER CONNECTOR

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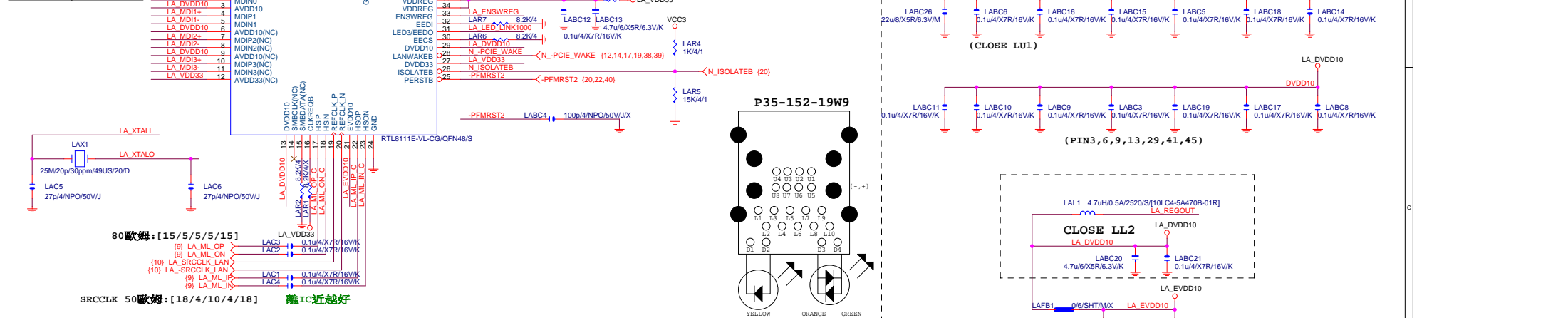
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|--------|-------------------------|-------------|---------------------|
| Title | | | ATX POWER CONNECTOR |
| Size | Document Number | GA-Z68XP-D3 | |
| Custom | | | Rev 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet | 34 of 44 |

[illegible][illegible][illegible]

LA_VDD33

 LAR10
 1k/4"

LARN1
 0/8P4R/4/X

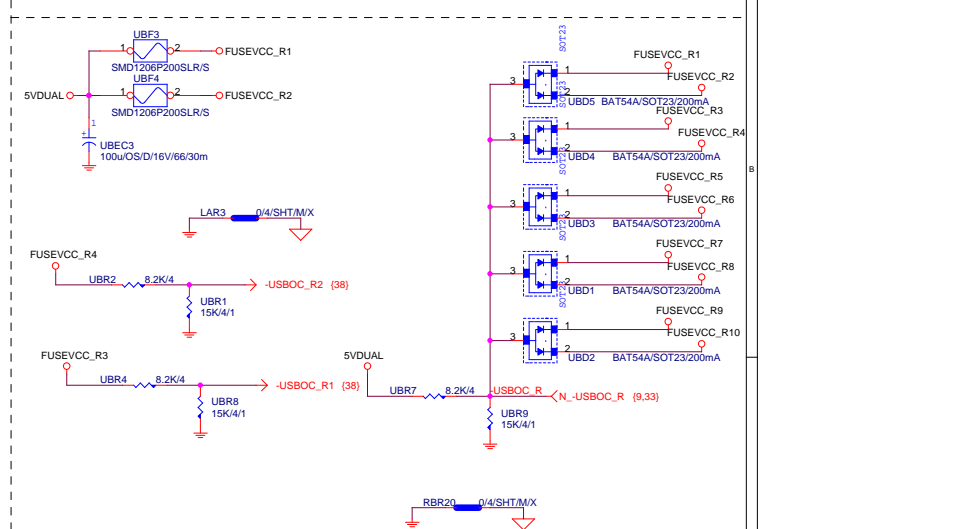
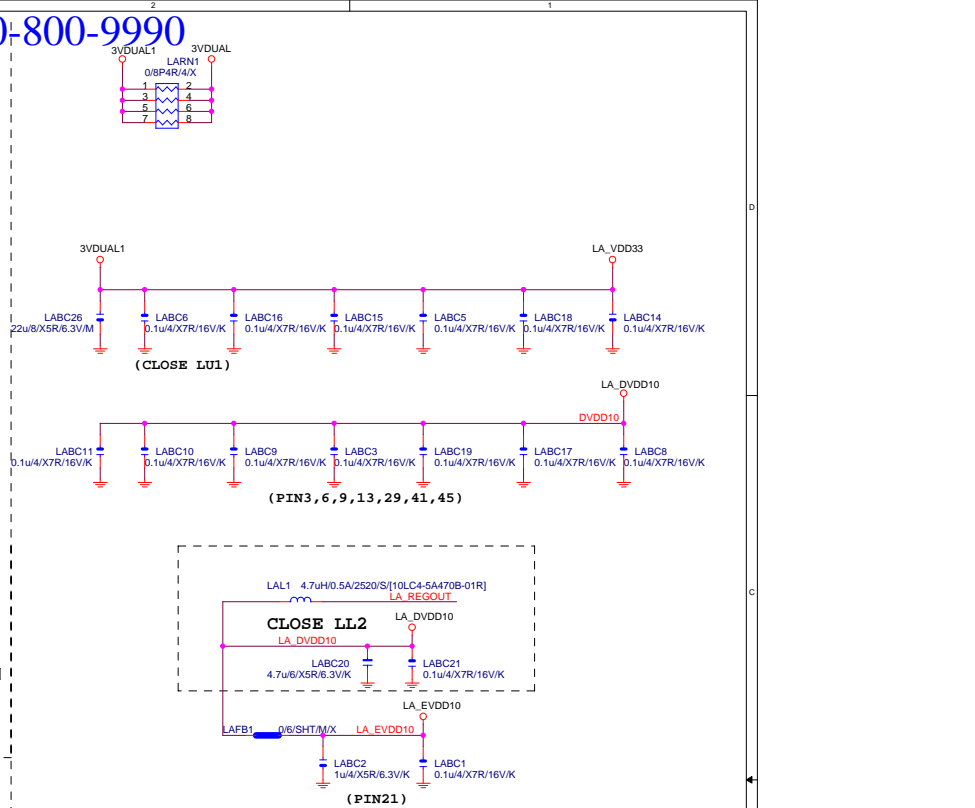
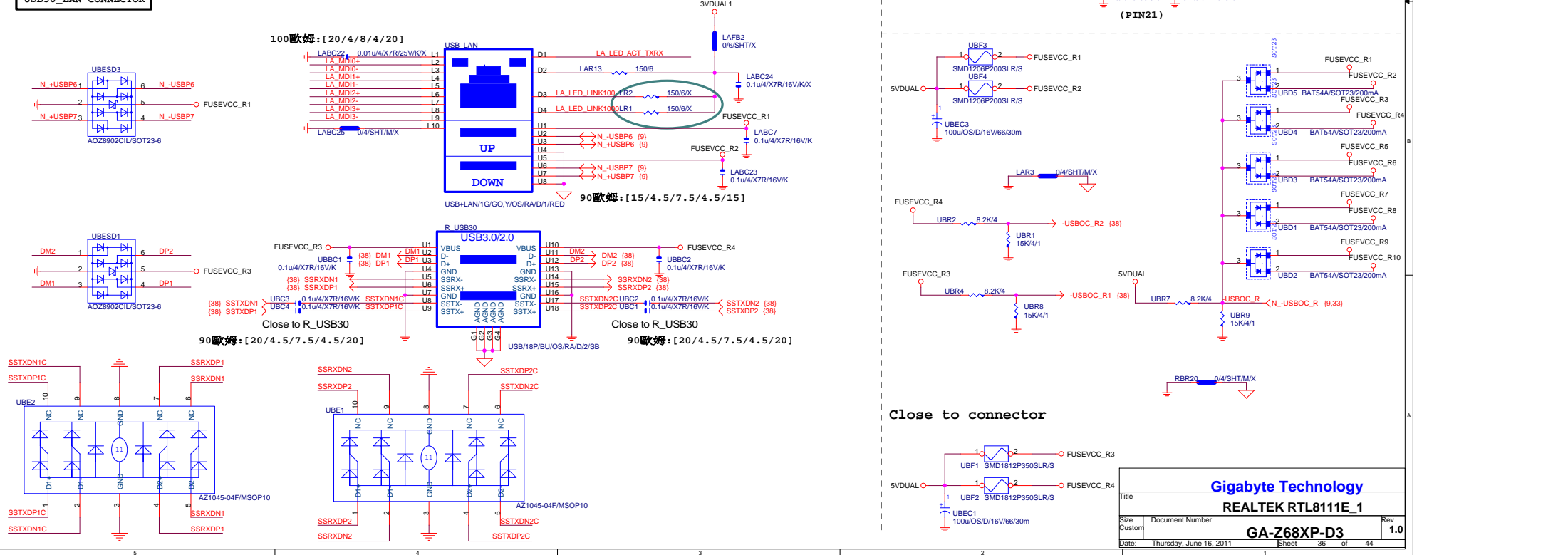


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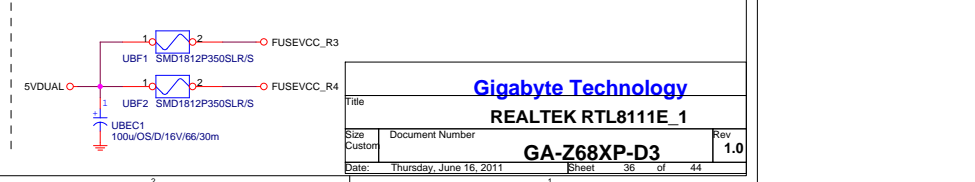
TSB30 T.A.N. CONNECTOR

LABC2 1W4X5R/6.3V/K

LABC1 0.1W4X7R/16V/K

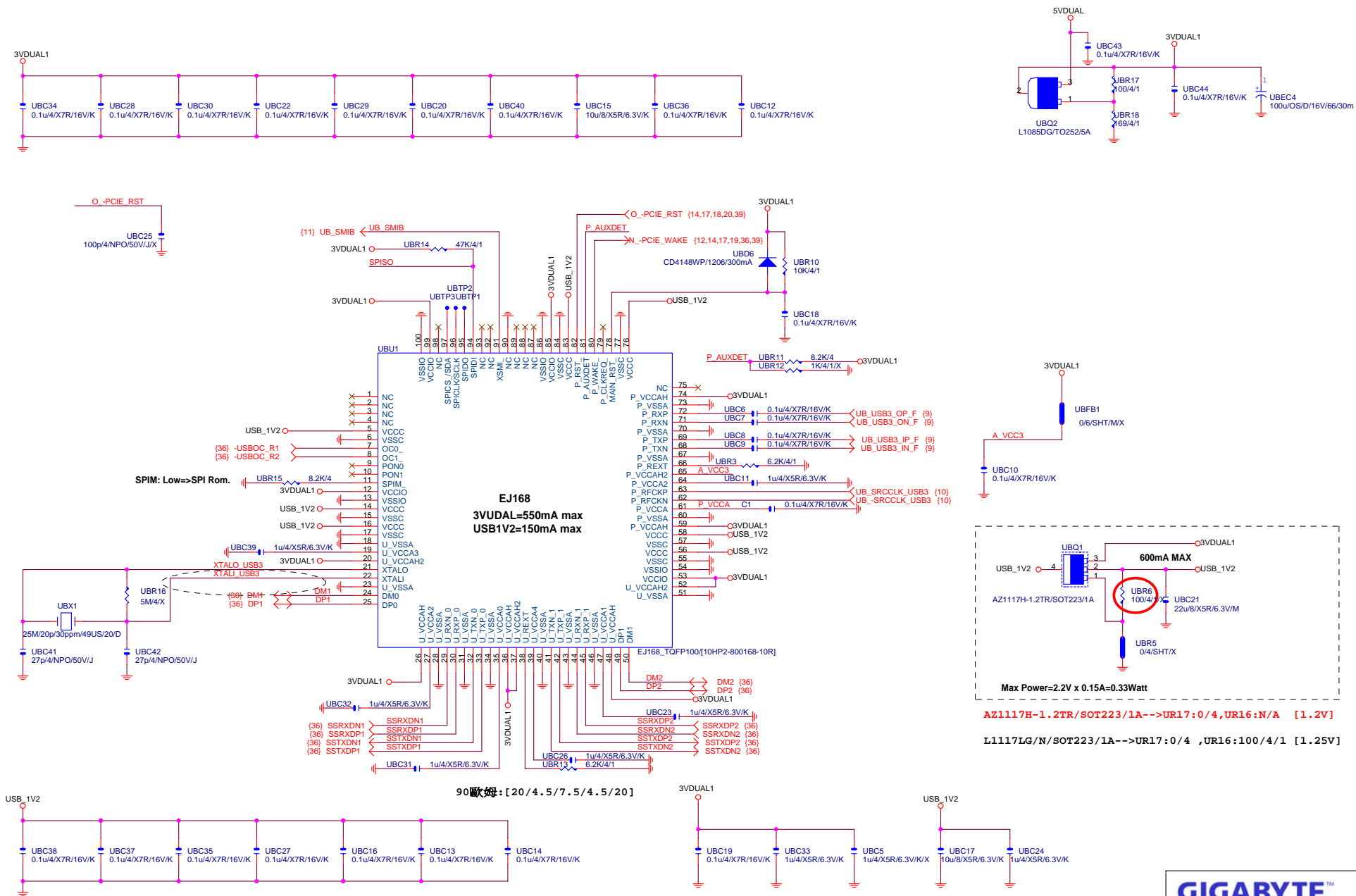


Close to connector

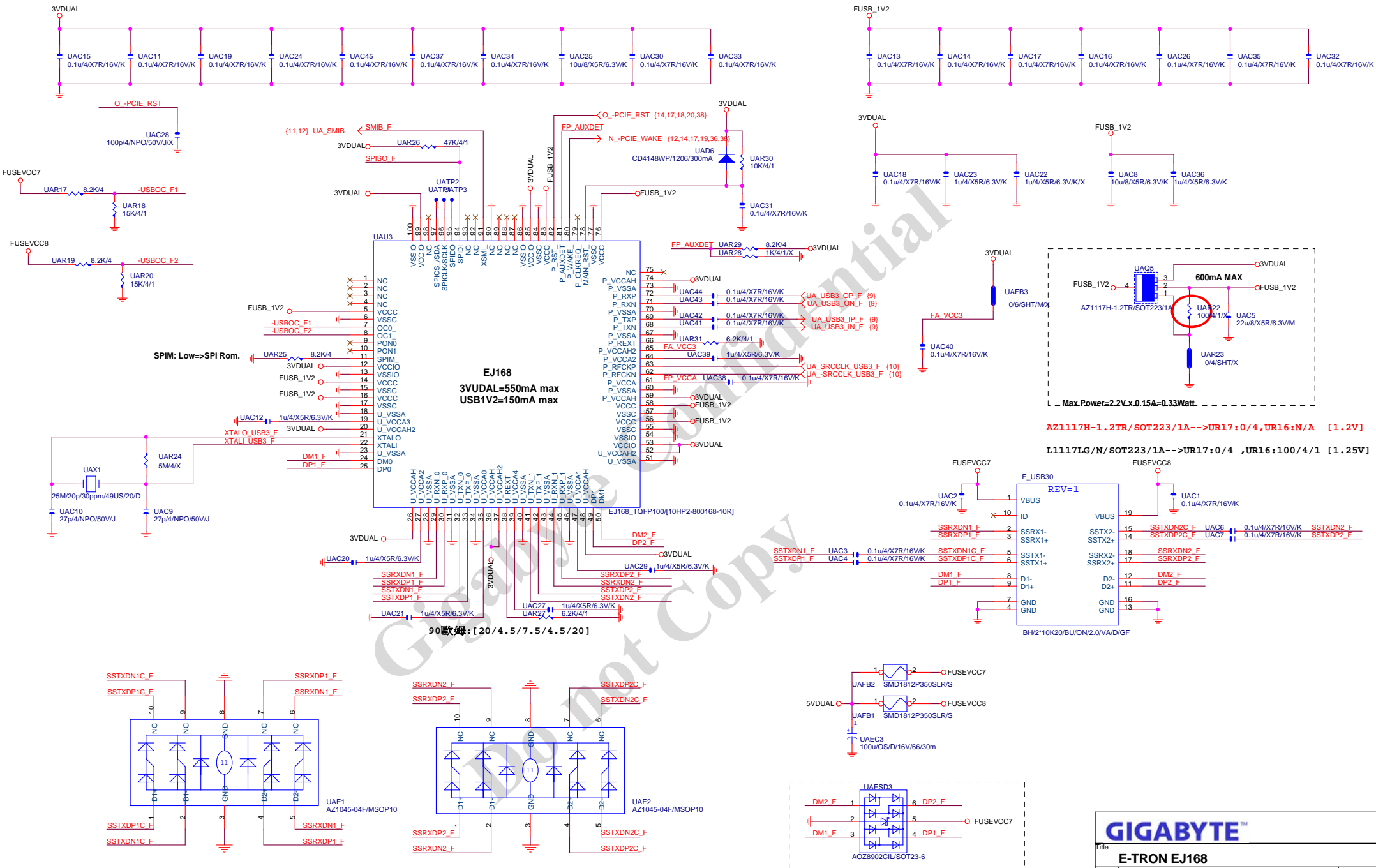


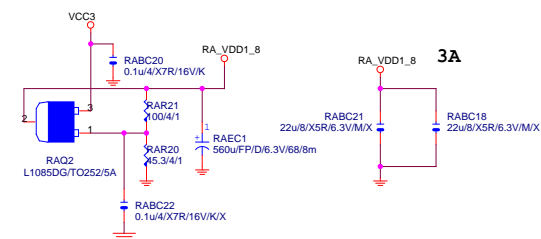
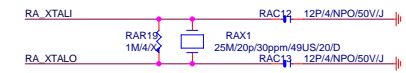
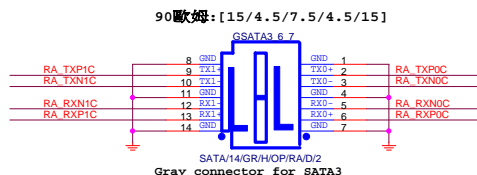
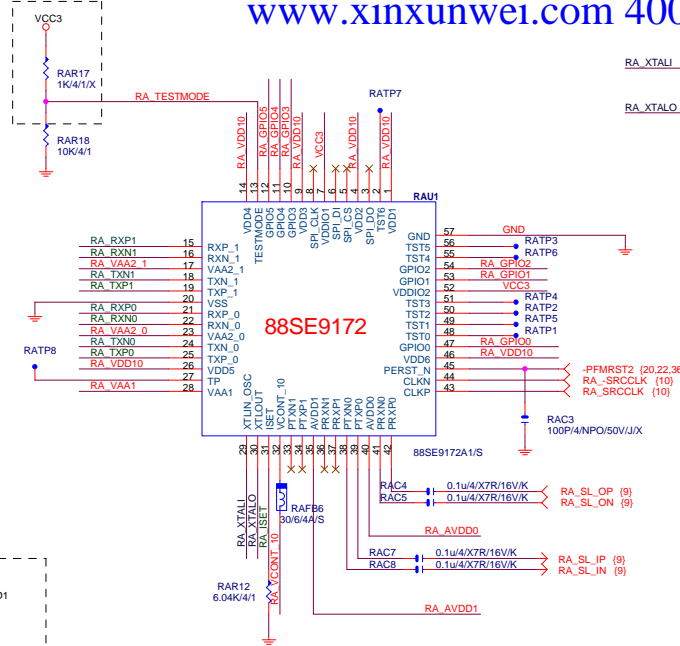
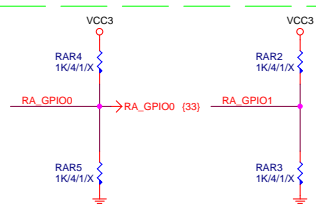
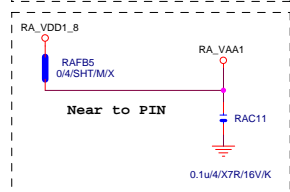
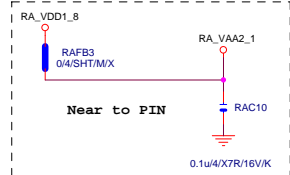
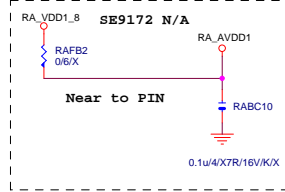
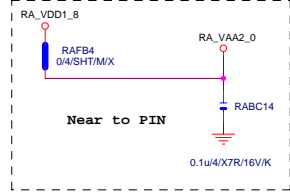
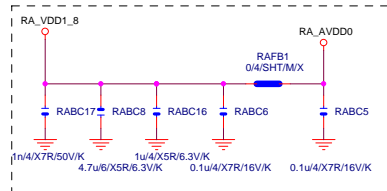
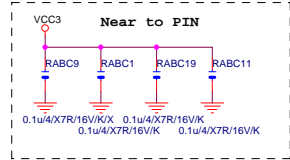
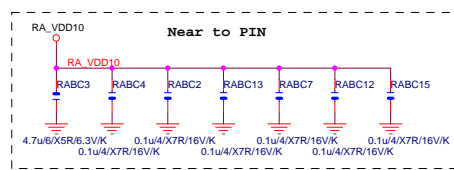
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| Gigabyte Technology | | |
| Title | | |
| TI TSB43AB23 1394 | | |
| Size | Document Number | Rev |
| Custom | GA-Z68XP-D3 | 1.0 |
| Date: | Thursday, June 16, 2011 | Sheet 37 of 44 |

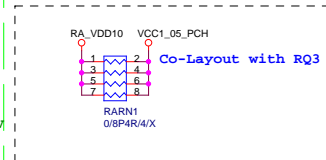
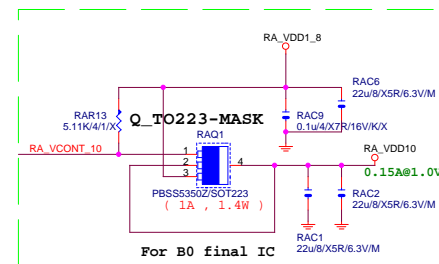


| GIGABYTE™ | | |
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| Title | | |
| E-TRON EJ168 | | |
| Size | Document Number | Rev |
| Custom | GA-Z68XP-D3 | 1.0 |
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| | | | |
|---------|------------------|-------|----------|
| RA_TXP0 | 0.01u/4X7R/25V/K | RAC21 | RA_TXP0C |
| RA_TXN0 | 0.01u/4X7R/25V/K | RAC20 | RA_TXN0C |
| RA_RXN0 | 0.01u/4X7R/25V/K | RAC19 | RA_RXN0C |
| RA_RXP0 | 0.01u/4X7R/25V/K | RAC18 | RA_RXP0C |
| RA_TXP1 | 0.01u/4X7R/25V/K | RAC16 | RA_TXP1C |
| RA_TXN1 | 0.01u/4X7R/25V/K | RAC17 | RA_TXN1C |
| RA_RXN1 | 0.01u/4X7R/25V/K | RAC15 | RA_RXN1C |
| RA_RXP1 | 0.01u/4X7R/25V/K | RAC14 | RA_RXP1C |



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| Marvell 9172 | | | |
| Size | Document Number | | Rev |
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| Date: | Thursday, June 16, 2011 | Sheet | 41 of 44 |

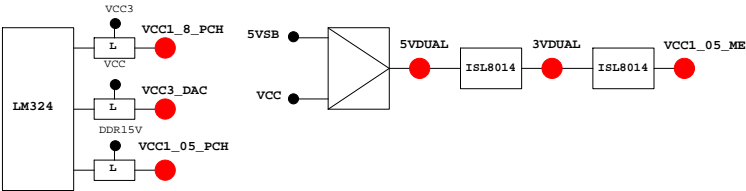
PCH GPIO LIST TABLE

| PIN NAME | PWR | AFTER RESET | Default | USAGE | NOTE |
|----------------|------|----------------|---------|------------------|-----------------|
| GP0 | MAIN | H-Z | GPI | -PECI_REQ | N/A |
| GP1/TACH1 | MAIN | | GPI | ICH_FAN_TACH1 | N/A |
| GP2/PIRQE# | MAIN | | GPI | -PIRQE | P/U 8.2K VCC3 |
| GP3/PIRQF# | MAIN | | GPI | -PIRQF | P/U 8.2K VCC3 |
| GP4/PIRQG# | MAIN | | GPI | -PIRQG | P/U 8.2K VCC3 |
| GP5/PIRQH# | MAIN | | GPI | -PIRQH | P/U 8.2K VCC3 |
| GP6/TACH2 | MAIN | | GPI | ICH_FAN_TACH2 | N/A |
| GP7/TACH3 | MAIN | | GPI | ICH_FAN_TACH3 | N/A |
| GP8 | STBY | H | GPO | GPIO8 | P/U 8.2K 3VDUAL |
| GP9/OC5# | STBY | | NATIVE | OC5# | N/A |
| GP10/OC6# | STBY | | NATIVE | OC6# | N/A |
| GP11/SMBALERT# | STBY | | NATIVE | -SMBALERT | P/U 8.2K 3VDUAL |
| GP12 | STBY | L | GPI | LAN_PHY_PWR_CTRL | P/U 8.2K 3VDUAL |
| GP13 | STBY | L | GPI | GPIO13 | P/U 8.2K 3VDUAL |
| GP14/OC7# | STBY | | NATIVE | OC7# | N/A |
| GP15 | STBY | L | GPO | GPIO15 | N/A |
| GP16 | MAIN | | GPI | -SKTOCC | P/U 8.2K VCC3 |
| GP17/TACH0 | MAIN | | GPI | ICH_FAN_TACH0 | N/A |
| GP18 | MAIN | | NATIVE | MB_ID0 | P/D 8.2K GND |
| GP19 | MAIN | | GPI | -LAN1_ISO | P/U 8.2K VCC3 |
| GP20 | MAIN | | NATIVE | LED_CTL | P/U 1K VCC3 |
| GP21 | MAIN | | GPI | VCC18_PCH_OV2 | P/U 8.2K VCC3 |
| GP22 | MAIN | H-Z | GPI | VCORE_OV3 | P/U 8.2K VCC3 |
| GP23 | MAIN | | NATIVE | -LDRQ1 | P/U 8.2K VCC3 |
| GP24 | STBY | L | GPO | TLS | P/U 8.2K 3VDUAL |
| GP25 | STBY | | NATIVE | -CPU_STOP | P/U 8.2K 3VDUAL |
| GP26 | STBY | | NATIVE | -ACZ_DET | P/U 8.2K 3VDUAL |
| GP27 | STBY | H | GPO | GPIO27 | P/U 8.2K 3VDUAL |
| GP28 | STBY | H | GPO | GPIO28 | P/U 8.2K 3VDUAL |
| GP29 | STBY | L | GPI | GPIO29 | N/A |
| GP30 | STBY | H-Z | GPI | S_PWR_ACK | P/U 100K 3VDUAL |
| GP31 | STBY | H-Z | GPI | N/A(Reverse) | P/U 8.2K VCC3 |
| GP32 | MAIN | H | GPO | MB_ID1 | P/D 8.2K GND |
| GP33 | MAIN | H | GPO | LOAD-LINE | P/U 1K VCC3 |
| GP34 | MAIN | H-Z | GPI | -PCI_STOP | P/U 8.2K VCC3 |
| GP35 | MAIN | L | GPO | GPIO35 | P/U 8.2K VCC3 |
| GP36 | MAIN | | GPI | -LAN1_DSM | P/U 8.2K VCC3 |
| GP37 | MAIN | | GPI | N/A | P/U 8.2K VCC3 |
| GP38 | MAIN | H-Z | GPI | VCORE_OV2 | P/U 8.2K VCC3 |
| GP39 | MAIN | H-Z | GPI | -LAN_DSM | P/U 8.2K VCC3 |
| GP40 | STBY | | NATIVE | OC1# | N/A |
| GP41 | STBY | | NATIVE | OC2# | N/A |
| GP42 | STBY | | NATIVE | OC3# | N/A |
| GP43 | STBY | | NATIVE | OC4# | N/A |
| GP44 | STBY | L | NATIVE | N/A | P/U 8.2K 3VDUAL |
| GP45 | STBY | | NATIVE | -LPCPME | P/U 8.2K 3VDUAL |
| GP46 | STBY | L | NATIVE | PWR_LED | P/U 8.2K 3VDUAL |
| GP47 | STBY | | NATIVE | PSI_LED | P/U 8.2K 3VDUAL |
| GP48 | MAIN | H-Z | IN | EN_PWM | P/U 8.2K VCC3 |
| GP49 | MAIN | H-Z | IN | VCC18_OV1 | P/U 8.2K VCC3 |
| GP50 | MAIN | | NATIVE | -REQ1 | P/U 2.2K VCC |
| GP51 | MAIN | H | NATIVE | -GNT1 | N/A |
| GP52 | MAIN | | NATIVE | -REQ2 | P/U 2.2K VCC |
| GP53 | MAIN | H | NATIVE | -GNT2 | N/A |
| GP54 | MAIN | | NATIVE | -REQ3 | P/U 2.2K VCC |
| GP55 | MAIN | H | NATIVE | -GNT3 | N/A |
| GP56 | STBY | | NATIVE | N/A(Reverse) | P/U 8.2K 3VDUAL |
| GP57 | STBY | H-Z | IN | VCORE_OV1 | P/U 8.2K 3VDUAL |
| GP58 | STBY | H-Z | NATIVE | F_USB_OC | P/U 8.2K 3VDUAL |
| GP59 | STBY | | NATIVE | USB_OC0# | N/A |
| GP60 | STBY | H-Z | NATIVE | N/A(Reverse) | P/U 8.2K 3VDUAL |
| GP61 | STBY | L | NATIVE | -SUSTAT | N/A |
| GP62 | STBY | L | NATIVE | SUSCLK | N/A |
| GP63 | STBY | L | NATIVE | GPIO63 | N/A |
| GP64 | MAIN | L | NATIVE | CLKOUTFLEX0 | N/A |
| GP65 | MAIN | L | NATIVE | CLKOUTFLEX1 | N/A |
| GP66 | MAIN | L | NATIVE | CLKOUTFLEX2 | N/A |
| GP67 | MAIN | L | NATIVE | CLKOUTFLEX3 | N/A |
| GP72 | STBY | H-Z | NATIVE | VCORE_OV4 | P/U 8.2K 3VDUAL |
| GP73 | STBY | | NATIVE | 1_05V_OV1 | P/U 8.2K 3VDUAL |
| GP74 | STBY | H-Z | NATIVE | 1_05V_OV2 | P/U 8.2K 3VDUAL |
| GP75 | STBY | H-Z | NATIVE | N/A(Reverse) | P/U 8.2K 3VDUAL |

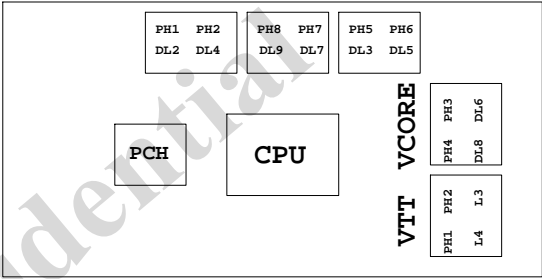
Super I/O ITE8720 GPIO Table

| PIN NAME | USAGE | NOTE |
|----------------------------|------------------|------|
| SVC/PECI_RQT/GP14 | -PECI_REQ | |
| PWROK1/GP13 | PWROK1/ITE_PWROK | |
| KRST#/GP62 | -KBRST | |
| SO/GP50 | -ICH_SPI_CS | |
| IRTX/GP47/CE2_N/JP7 | CEB_N | |
| GP46/IRRX | -LAN2_DSM | |
| PSION#/GP42 | -PSON | |
| PWROK2#/GP41 | PECI_CTL | |
| PCIRST3#/GP10/VDIMM_STR_EN | -PCIE_RST | |
| RSMRST#CIRRX1/GP55 | -RSMRST | |
| PME#/GP54 | -LPCPME | |
| PD5/GP75/BUSS00 | N/A | |

| PIN NAME | USAGE | NOTE |
|----------------------------|-------------------|------------------|
| FAN_TAC2/GP52 | FANIO2 | |
| FAN_TAC3/GP37 | FANIO3 | |
| VIDO3/FAN_TAC4/GP25/DSR2# | FANIO4 | |
| FAN_CTL2/GP51 | FANPWM2 | |
| FAN_CTL3/GP36 | FANPWM3 | |
| VID4/GP34 | BEEP- | |
| VID3/GP33 | TURBO1 | |
| VID2/GP32 | TURBO0 | |
| VCORE_GOOD/VID6/GP63 | CPUT_LED1_C | |
| VID5/GP35 | CPUT_LED2_C | |
| VID1/GP31 | CPUT_LED3_C | |
| VID0/GP30 | -LAN1_DSM | NBT_LED1_C |
| SLCT/GP80 | CPU_LED1_C | |
| PE/GP81 | CPU_LED2_C | |
| BUSY/GP82 | CPU_LED3_C | |
| PD3/GP73/BUSS11 | SB_LED1_C | |
| PD4/GP74/BUSS12 | SB_LED2_C | |
| VCORE_EN/VID7/GP64 | IT_GP64 | SB_LED3_C |
| PD0/GP70 | NB_LED1_C | |
| PD1/GP71 | NB_LED2_C | |
| PD2/GP72/BUSS10 | NB_LED3_C | |
| GP22/SCK | LOW_PWR_1 | |
| VIDO5/GP27/SIN2 | LOW_PWR_2 | |
| PCIRST2#/GP11 | -PFMRST1 | |
| PCIRST1#/GP12 | -PFMRST2 | |
| 3VSBSW#/GP40 | CSI_F0 | BSEL166_1 |
| SUSC#/GP53 | CSI_F1 | BSEL166_2 |
| GP23/SI | BSEL166_3/CSISBSL | |
| VIDO0/GP20/CTS2# | CPUT_LED1_C | BSEL166_4 |
| GP65/VDDA_EN/GB_01 | MB_ID2 | |
| PD6/GP76/BUSS01 | MB_ID3 | |
| PD7/GP77/BUSS02 | MB_ID4 | |
| AFD#/GP86/SMBC_R | 2X PIN | FST_2X8 |
| INIT#/GP85/SMBD_M | SEC_2x8 | GTLREF_AD2 |
| ACK#/GP83 | DDR_LED1_C | |
| VIDO1/GP21/DCD2# | DDR_LED2_C | |
| STB#/GP87/SMBC_M | DDR_LED3_C | |
| PWRON#GP44 | VCORE_OV1 | |
| PANSWH#/GP43 | PWRBTSW | |
| KDAT/GP61 | -PWRBTSW | |
| KCLK/GP60 | KDAT | |
| MDAT/GP57 | KCLK | |
| MACL/GP56 | MDAT | |
| GP66/VLDT_EN/GB_02 | NBT_LED1_C | MCLK |
| SVD/PCIRSTIN#/CIRTX/GP15 | PWM2_CR | |
| KDAT/GP61 | PWM2_CR | |
| GP67/CPU_PG/GB_03 | EN_LOADLINE | IT_GP67/-EN_PWM2 |
| SLIN#/GP84/SMBD_R | -EN_PWM2 | |
| PSI_L/FAN_CLT5/CIRRX2/GP16 | -THERM | |
| VIDO4/GP26/SOUT2 | DDR18V_PH2_EN | |
| VIDO2/FAN_TAC5/GP24/DSR2# | DDR18V_LED | |
| VIDO6/GP17/RI2# | 1_1V_PH_EN | |
| VIDO7/JP6/DTR2# | JP6 | |
| PD5/GP75/BUSS00 | SB_LED3_C | |



PWM各相位的擺法如下：



BIOS超電壓對應表：

散熱模組料號：

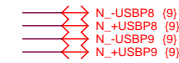
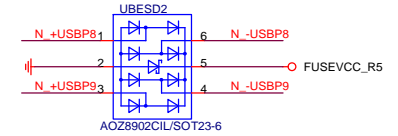
| 線路圖名稱 | BIOS選項 |
|---------------------|------------------|
| Vcore | CPU Vcore |
| CPU_VTT | CPU Termination |
| CPU_VAXG | CPU Graphic Core |
| VCC1_8_PCH | CPU PLL |
| VCC1_05_PCH | PCH core |
| 3VDUAL | 3VDUAL |
| DDR15V | DRAM voltage |
| DDRVTT | DRAM Terminatio |
| VREF_CA_A/VREF_CA_B | DRAM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

8IBP:
1.12SP2-01A001-Y1R/Y2R
2.12SP2-01A001-Z1R/Z2R
(HIBRID模組)包材階

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

| Gigabyte Technology | | | |
|---------------------|-------------------------|-------|----------|
| TABLE LIST | | | |
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