

Model Name: GA-Z68XP-UD3

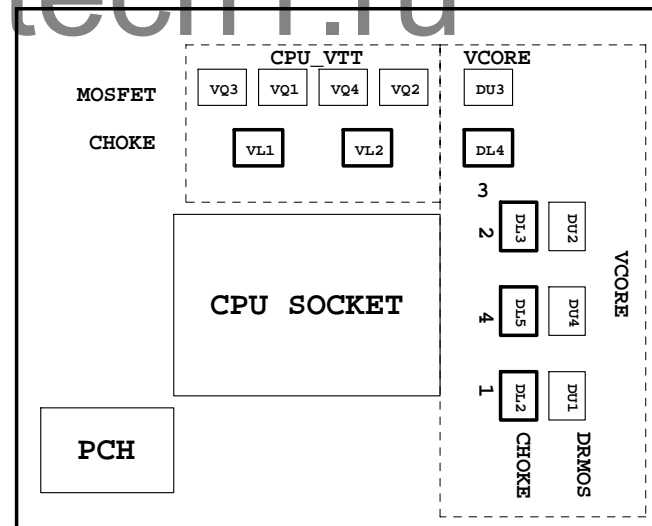
1.3

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 |




Component value change history

[illegible]

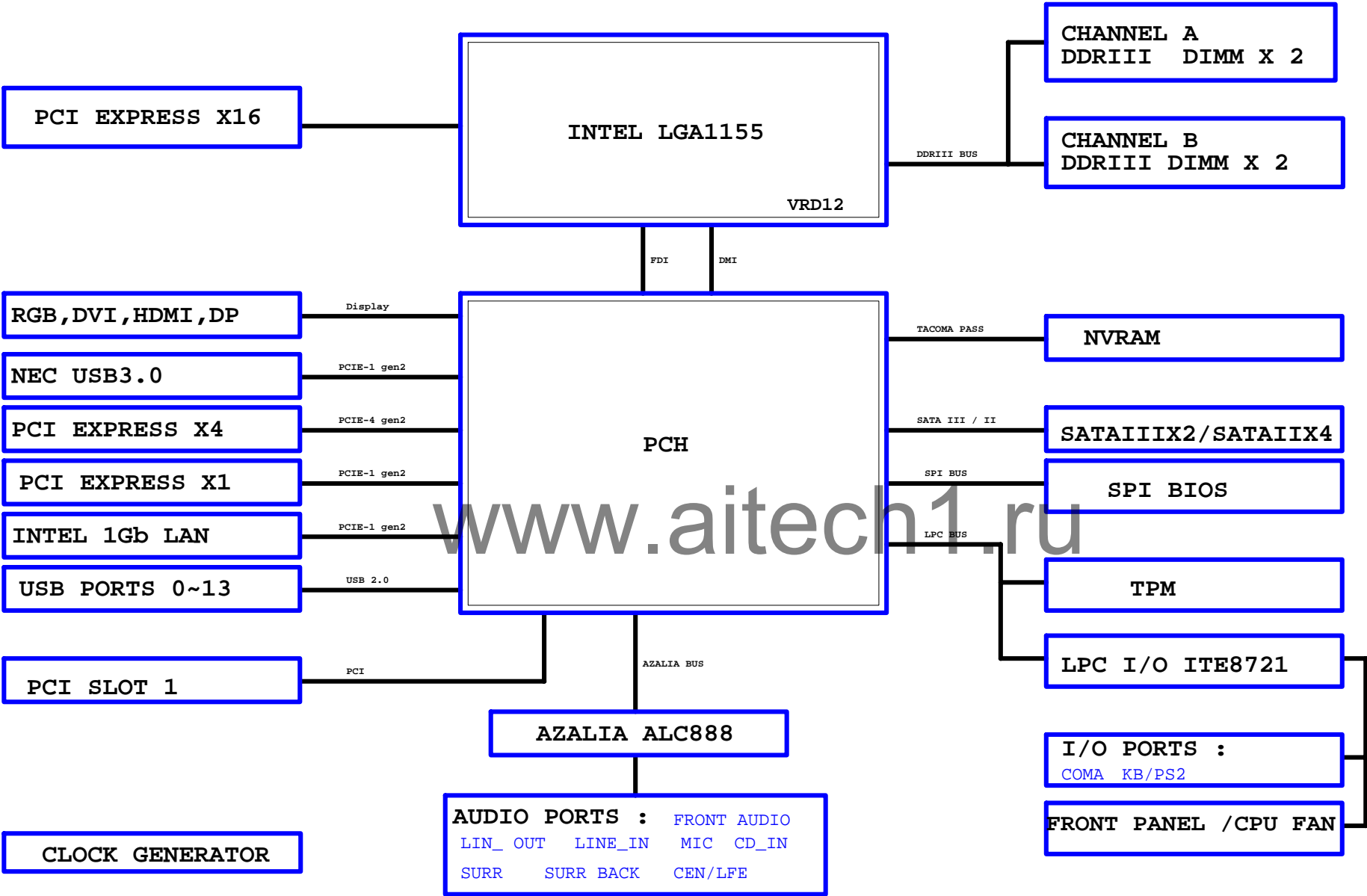
| DATE | Change Item | Reason |
|-------------------------|--|--------|
| P67X-UD3-B3 REV0.1 | 1. EVT Release | |
| | 1. 移除LARI1 ,LARI4 , NR28 ,新增NTP11 2. 新增DR388,DR389,DR391 ; Remove DQ49,DR347,DR371 3. CR444改成R0603-RH 4. R1,LAR3,RBR20,LABC25 -->R0402-2-SHORT 5. RAQ1 --> Q_TO223-MASK 6. RARN1 --> R8P4R-0402-SHORT 7. CESD1-5 --> SSOP5 8. RAQ2,RAEC1一起往下移40mil 9. CESD2文字面要標pin1 | |
| P67X-UD3-B3 1.0-0308 | 1. Add "Dolby" logo | |
| 1.02 | 1. UAFB1,UAFB2,UBF1,UBF2 Footprint update 1206-->1812 2. Add "AD1" FOR 5VSB | |
| Z68X-UD3-B3 1.02 | 1. 文字面 : P67X-UD3-B3 --> Z68X-UD3-B3 | |
| Z68X-UD3-B3-new 0.1 | 1. Add M-SATA , HDMI , GPU 2. Remove usb3 turbo 3. M-SATA SWITCH的預留電阻T型,注意走線 | |
| Z68X-UD3-B3-new 1.0 | 1. 文字面 : Dolby change to DTS logo 2. 文字面 : SLOT部分全對齊 3. update MINI_PCIE footprint | |
| | | |
| | | |

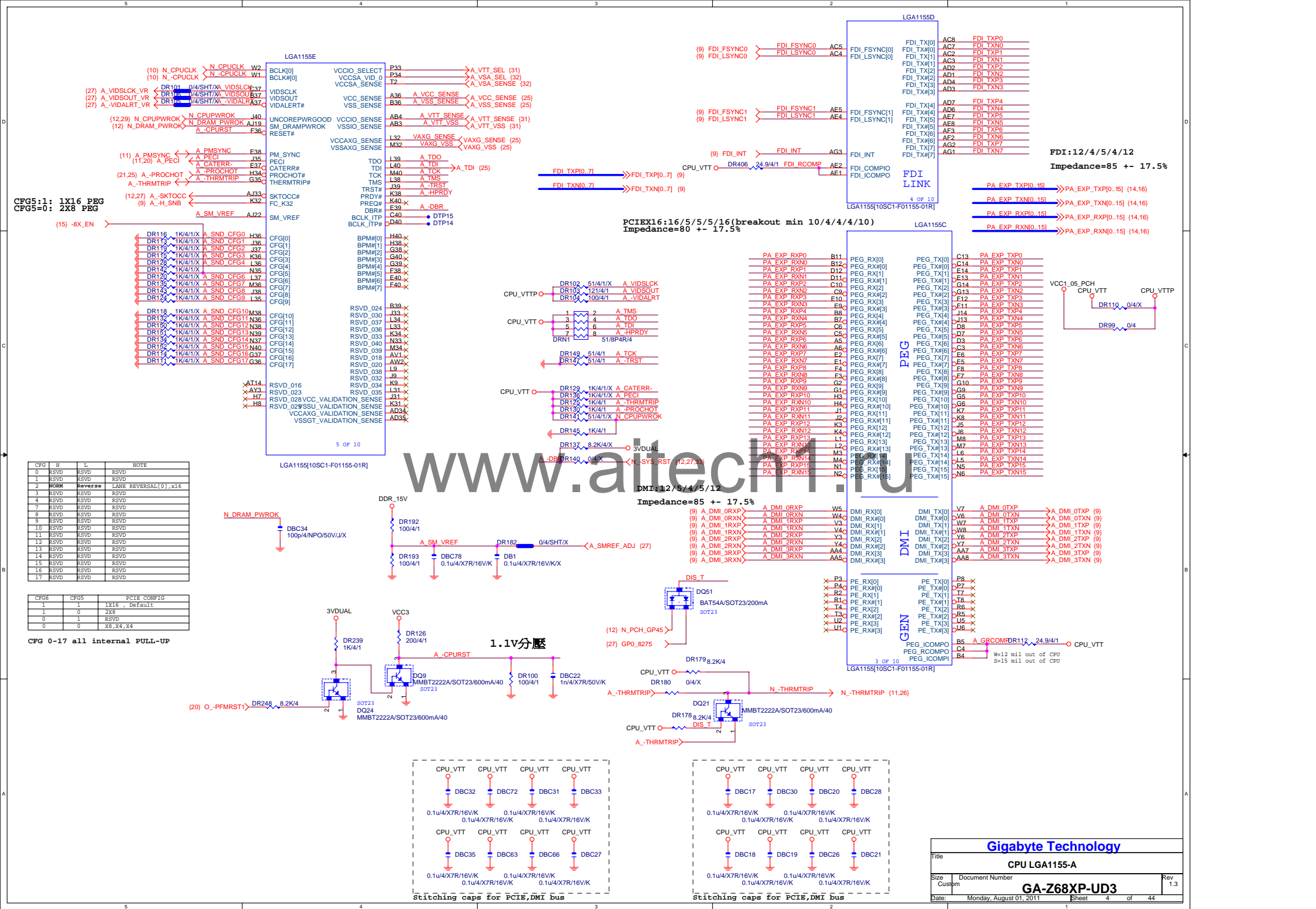
4. Add TM & TMS 0 ohm

5. ITE8275_CLK CHANGE TO PCH.AW5

| | | | |
|---|-------------------------|--------------|------------|
|  | | | |
| Title | | | |
| BOM & PCB MODIFY HISTORY | | | |
| Size Custom | Document Number | GA-Z68XP-UD3 | Rev 1.3 |
| Date: | Monday, August 01, 2011 | Sheet | 2 of 44 |

BLOCK DIAGRAM





| LGA1155A | | | |
|------------------|------|-------------------|------------|
| M_AAA0 | AV27 | SA_MA[0] | SA_DSQ[0] |
| M_AAA1 | AY24 | SA_MA[1] | SA_DSQ[0] |
| M_AAA2 | AW24 | SA_MA[2] | |
| M_AAA3 | AV23 | SA_MA[3] | |
| M_AAA4 | AV23 | SA_MA[4] | |
| M_AAA5 | AT24 | SA_MA[5] | |
| M_AAA6 | AT23 | SA_MA[6] | |
| M_AAA7 | AU22 | SA_MA[7] | |
| M_AAA8 | AV22 | SA_MA[8] | |
| M_AAA9 | AT22 | SA_MA[9] | |
| M_AAA10 | AV28 | SA_MA[10] | |
| M_AAA11 | AU21 | SA_MA[11] | |
| M_AAA12 | AU21 | SA_MA[12] | |
| M_AAA13 | AW32 | SA_MA[13] | |
| M_AAA14 | AU20 | SA_MA[14] | |
| M_AAA15 | AT20 | SA_MA[15] | |
| (7) M_SWEA | AW29 | SA_WE# | SA_DSQ[8] |
| (7) M_SCASA | AV30 | SA_CAS# | SA_DSQ[8] |
| (7) M_SRASA | AU28 | SA_RAS# | SA_DSQ[8] |
| (7) M_SBA0 | AY29 | SA_BS[0] | SA_DSQ[10] |
| (7) M_SBA1 | AW28 | SA_BS[1] | SA_DSQ[10] |
| (7) M_SBA2 | AV20 | SA_BS[2] | SA_DSQ[10] |
| (7) M-CSA0 | AU29 | SA_CS# | SA_DSQ[11] |
| (7) M-CSA1 | AV32 | SA_CS# | SA_DSQ[11] |
| (7) M-CSA2 | AW30 | SA_CS# | SA_DSQ[11] |
| (7) M-CSA3 | AU33 | SA_CS# | SA_DSQ[11] |
| (7) M_CKEA0 | AV19 | SA_CKE[0] | SA_DSQ[16] |
| (7) M_CKEA1 | AT19 | SA_CKE[1] | SA_DSQ[16] |
| (7) M_CKEA2 | AU18 | SA_CKE[2] | SA_DSQ[16] |
| (7) M_CKEA3 | AV18 | SA_CKE[3] | SA_DSQ[16] |
| M_ODT_A0 | AV31 | SA_ODT[0] | SA_DSQ[21] |
| M_ODT_A1 | AU32 | SA_ODT[1] | SA_DSQ[21] |
| M_ODT_A2 | AU30 | SA_ODT[2] | SA_DSQ[21] |
| M_ODT_A3 | AW33 | SA_ODT[3] | SA_DSQ[21] |
| (7) M_DCLKA0 | AY25 | SA_CK[0] | SA_DSQ[24] |
| (7) M_DCLKA0 | AW25 | SA_CK# | SA_DSQ[24] |
| (7) M_DCLKA1 | AU24 | SA_CK[1] | SA_DSQ[25] |
| (7) M_DCLKA1 | AU25 | SA_CK# | SA_DSQ[25] |
| (7) M_DCLKA2 | AY27 | SA_CK[2] | SA_DSQ[27] |
| (7) M_DCLKA2 | AW26 | SA_CK# | SA_DSQ[27] |
| (7) M_DCLKA3 | AW26 | SA_CK[3] | SA_DSQ[29] |
| (7) M_DCLKA3 | AW26 | SA_CK# | SA_DSQ[29] |
| (7.8) M_DDR3_RST | MR1 | SM_DRAMRST# | SA_DSQ[30] |
| | MBC8 | 0.1u4/X7R/16V/K/X | SA_DSQ[31] |
| | | | SA_DSQ[32] |
| | | | SA_DSQ[33] |
| | | | SA_DSQ[34] |
| | | | SA_DSQ[35] |
| | | | SA_DSQ[36] |
| | | | SA_DSQ[37] |
| | | | SA_DSQ[38] |
| | | | SA_DSQ[39] |
| | | | SA_DSQ[40] |
| | | | SA_DSQ[41] |
| | | | SA_DSQ[42] |
| | | | SA_DSQ[43] |
| | | | SA_DSQ[44] |
| | | | SA_DSQ[45] |
| | | | SA_DSQ[46] |
| | | | SA_DSQ[47] |
| | | | SA_DSQ[48] |
| | | | SA_DSQ[49] |
| | | | SA_DSQ[50] |
| | | | SA_DSQ[51] |
| | | | SA_DSQ[52] |
| | | | SA_DSQ[53] |
| | | | SA_DSQ[54] |
| | | | SA_DSQ[55] |
| | | | SA_DSQ[56] |
| | | | SA_DSQ[57] |
| | | | SA_DSQ[58] |
| | | | SA_DSQ[59] |
| | | | SA_DSQ[60] |
| | | | SA_DSQ[61] |
| | | | SA_DSQ[62] |
| | | | SA_DSQ[63] |

DDR_0

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LGA1155[10SC1-F01155-01R]

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| | |
|-------------------|---------------|
| (7) M_ODT_A[0..3] | M_ODT_A[0..3] |
| (8) M_ODT_B[0..3] | M_ODT_B[0..3] |
| (7) M_DA[0..63] | M_DA[0..63] |
| (8) M_DB[0..63] | M_DB[0..63] |
| (7) M_DQSA[0..7] | M_DQSA[0..7] |
| (7) M_-DQSA[0..7] | M_-DQSA[0..7] |
| (7) M_AA[0..15] | M_AA[0..15] |
| (8) M_AAB[0..15] | M_AAB[0..15] |
| (8) M_DQSB[0..7] | M_DQSB[0..7] |
| (8) M_-DQSB[0..7] | M_-DQSB[0..7] |

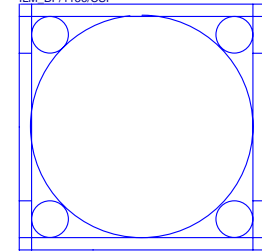
| LGA1155B | | | |
|----------------|------|-----------|------------|
| M_AAB0 | AK24 | SB_MA[0] | SB_DSQ[0] |
| M_AAB1 | AM20 | SB_MA[1] | SB_DSQ[0] |
| M_AAB2 | AM19 | SB_MA[2] | |
| M_AAB3 | AK18 | SB_MA[3] | |
| M_AAB4 | AP19 | SB_MA[4] | |
| M_AAB5 | AP18 | SB_MA[5] | |
| M_AAB6 | AM18 | SB_MA[6] | |
| M_AAB7 | AL18 | SB_MA[7] | |
| M_AAB8 | AY17 | SB_MA[8] | |
| M_AAB9 | AN13 | SB_MA[9] | |
| M_AAB10 | AN23 | SB_MA[10] | |
| M_AAB11 | AU17 | SB_MA[11] | |
| M_AAB12 | AR26 | SB_MA[12] | |
| M_AAB13 | AM26 | SB_MA[13] | |
| M_AAB14 | AV16 | SB_MA[14] | |
| M_AAB15 | AV16 | SB_MA[15] | |
| (8) M_SWEB | AR25 | SB_WE# | SB_DSQ[8] |
| (8) M_SCASB | AK25 | SB_CAS# | SB_DSQ[8] |
| (8) M_SRASB | AP24 | SB_RAS# | SB_DSQ[8] |
| (8) M_SBA0 | AP23 | SB_BS[0] | SB_DSQ[10] |
| (8) M_SBA1 | AM23 | SB_BS[1] | SB_DSQ[10] |
| (8) M_SBA2 | AW17 | SB_BS[2] | SB_DSQ[10] |
| (8) M-CSB0 | AN25 | SB_CS# | SB_DSQ[11] |
| (8) M-CSB1 | AN26 | SB_CS# | SB_DSQ[11] |
| (8) M-CSB2 | AL25 | SB_CS# | SB_DSQ[11] |
| (8) M-CSB3 | AT26 | SB_CS# | SB_DSQ[11] |
| (8) M_CKEB0 | AL18 | SB_CKE[0] | SB_DSQ[16] |
| (8) M_CKEB1 | AY15 | SB_CKE[1] | SB_DSQ[16] |
| (8) M_CKEB2 | AW15 | SB_CKE[2] | SB_DSQ[16] |
| (8) M_CKEB3 | AV15 | SB_CKE[3] | SB_DSQ[16] |
| M_ODT_B0 | AL26 | SB_ODT[0] | SB_DSQ[21] |
| M_ODT_B1 | AM26 | SB_ODT[1] | SB_DSQ[21] |
| M_ODT_B2 | AM26 | SB_ODT[2] | SB_DSQ[21] |
| M_ODT_B3 | AK26 | SB_ODT[3] | SB_DSQ[21] |
| (8) M_DCLKB0 | AL21 | SB_CK[0] | SB_DSQ[24] |
| (8) M_DCLKB0 | AL22 | SB_CK# | SB_DSQ[24] |
| (8) M_DCLKB1 | AL20 | SB_CK[1] | SB_DSQ[25] |
| (8) M_DCLKB1 | AK20 | SB_CK# | SB_DSQ[25] |
| (8) M_DCLKB2 | AL23 | SB_CK[2] | SB_DSQ[27] |
| (8) M_DCLKB2 | AM22 | SB_CK# | SB_DSQ[27] |
| (8) M_DCLKB3 | AP21 | SB_CK[3] | SB_DSQ[29] |
| (8) M_DCLKB3 | AN21 | SB_CK# | SB_DSQ[29] |
| (8) M_VREF_DQB | AH1 | FC_AH1 | SB_DSQ[30] |
| (7) M_VREF_DQB | AH4 | FC_AH4 | SB_DSQ[31] |
| | | | SB_DSQ[32] |
| | | | SB_DSQ[33] |
| | | | SB_DSQ[34] |
| | | | SB_DSQ[35] |
| | | | SB_DSQ[36] |
| | | | SB_DSQ[37] |
| | | | SB_DSQ[38] |
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| | | | SB_DSQ[40] |
| | | | SB_DSQ[41] |
| | | | SB_DSQ[42] |
| | | | SB_DSQ[43] |
| | | | SB_DSQ[44] |
| | | | SB_DSQ[45] |
| | | | SB_DSQ[46] |
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| | | | SB_DSQ[50] |
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DDR_1

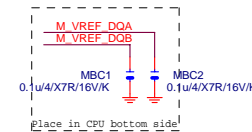
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LGA1155[10SC1-F01155-01R]

LGA1155
ILM_BP/1156/CSP

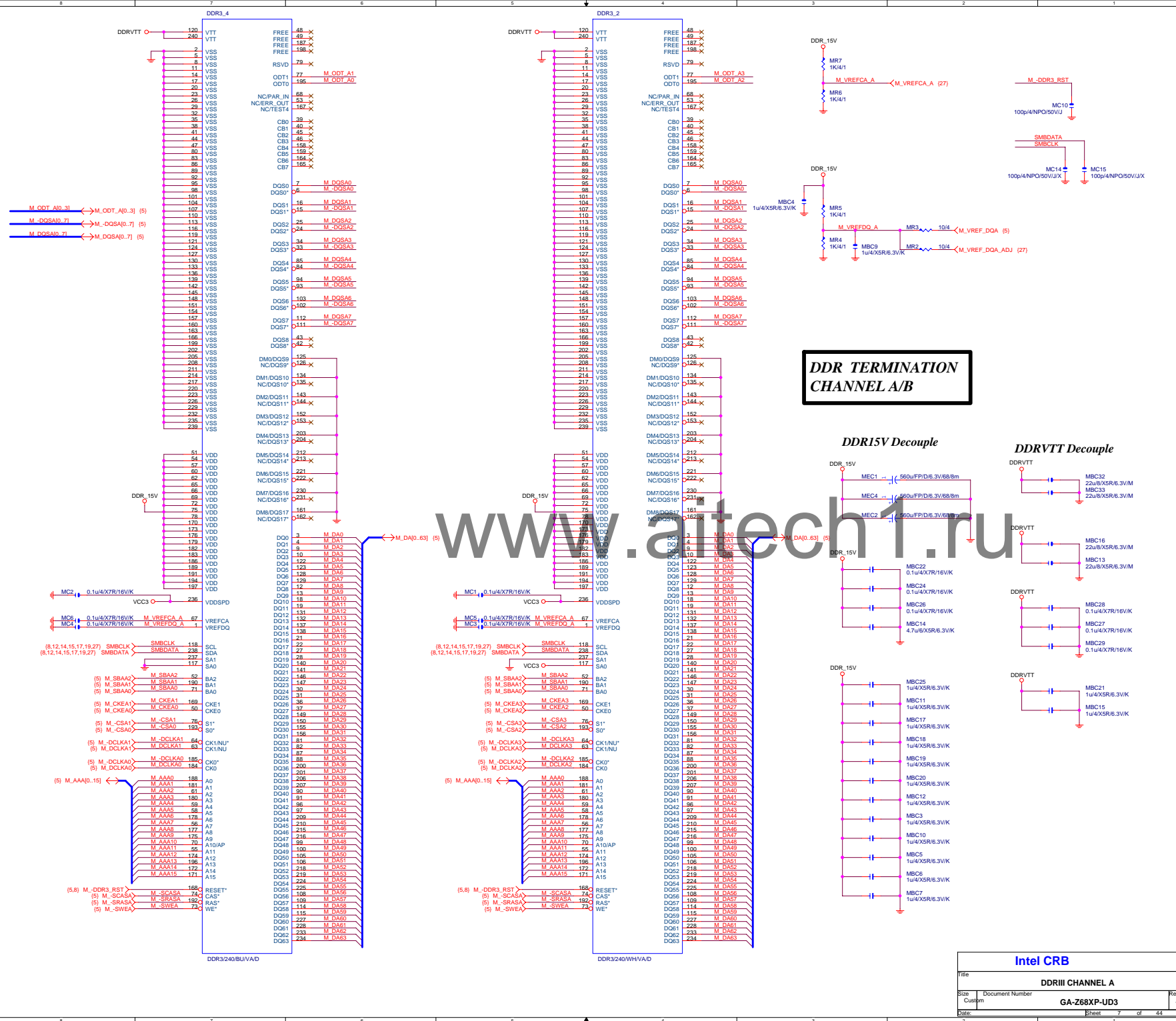


Need check the new CPU ME



Intel CRB

| Title | | |
|---------------|-------------------------|---------------|
| CPU LGA1156-B | | |
| Size | Document Number | Rev |
| Custpm | GA-Z68XP-UD3 | 1.3 |
| Date: | Monday, August 01, 2011 | Sheet 5 of 44 |



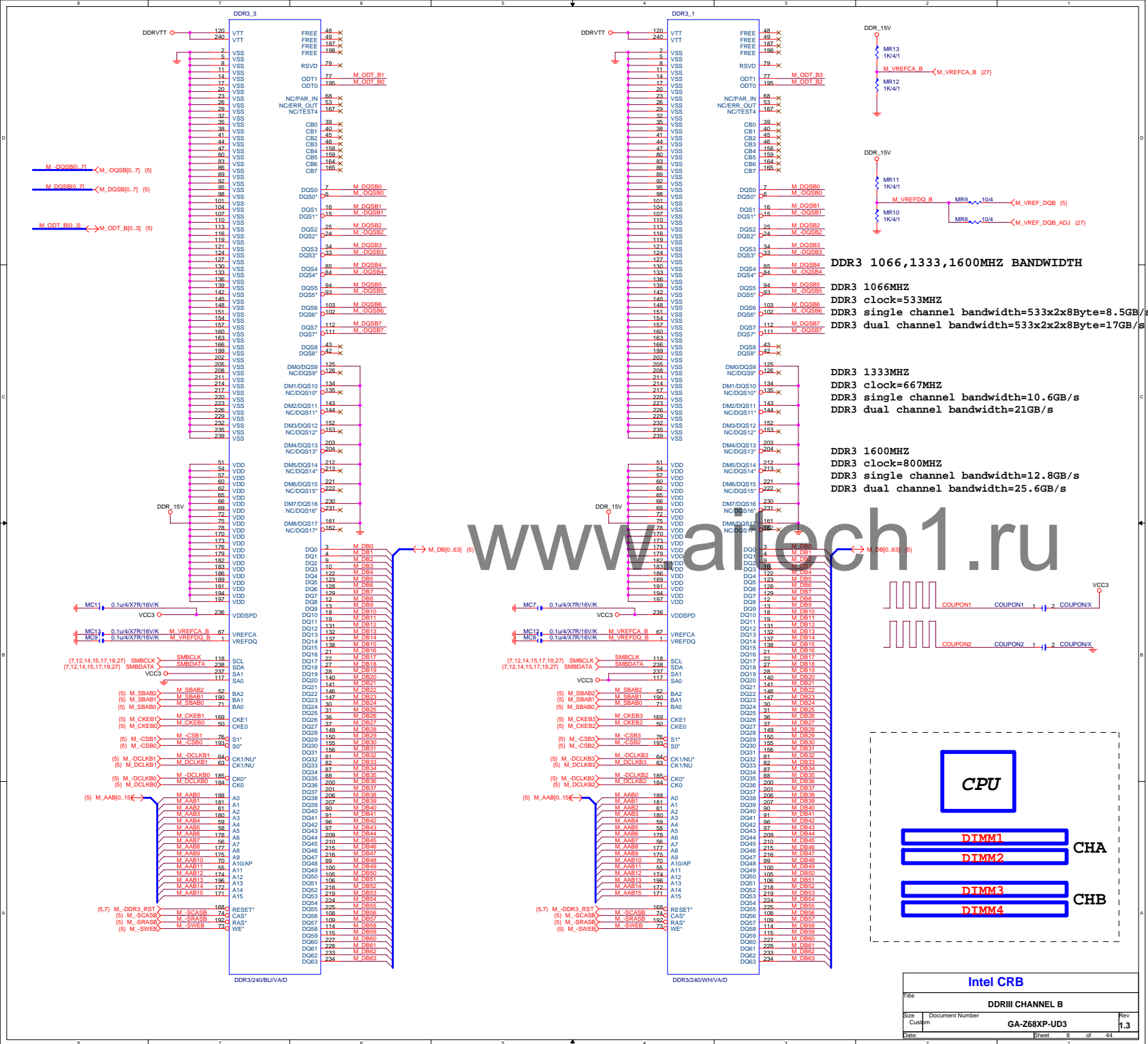
DDR TERMINATION
CHANNEL A/B

DDR15V Decouple

DDRVTT Decouple

Intel CRB

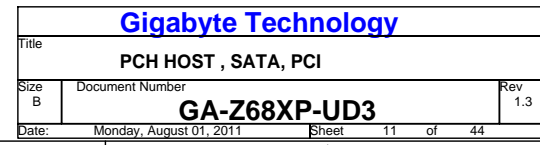
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|-----------------|--|--|------------------|
| Title | | | DDRIII CHANNEL A |
| Size | | | Custom |
| Document Number | | | GA-Z68XP-UD3 |
| Date: | | | Sheet 7 of 44 |
| | | | Rev 1.3 |

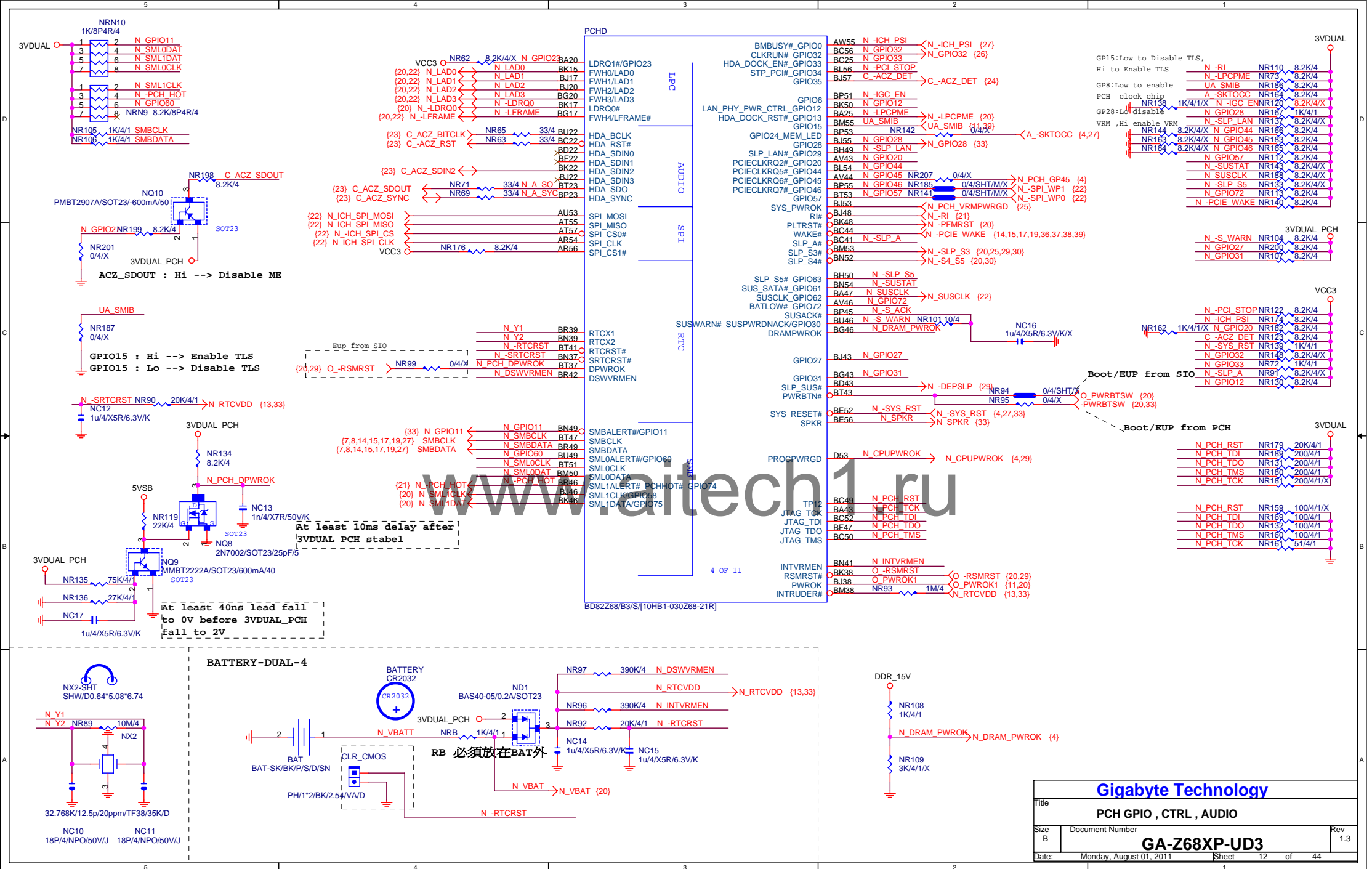


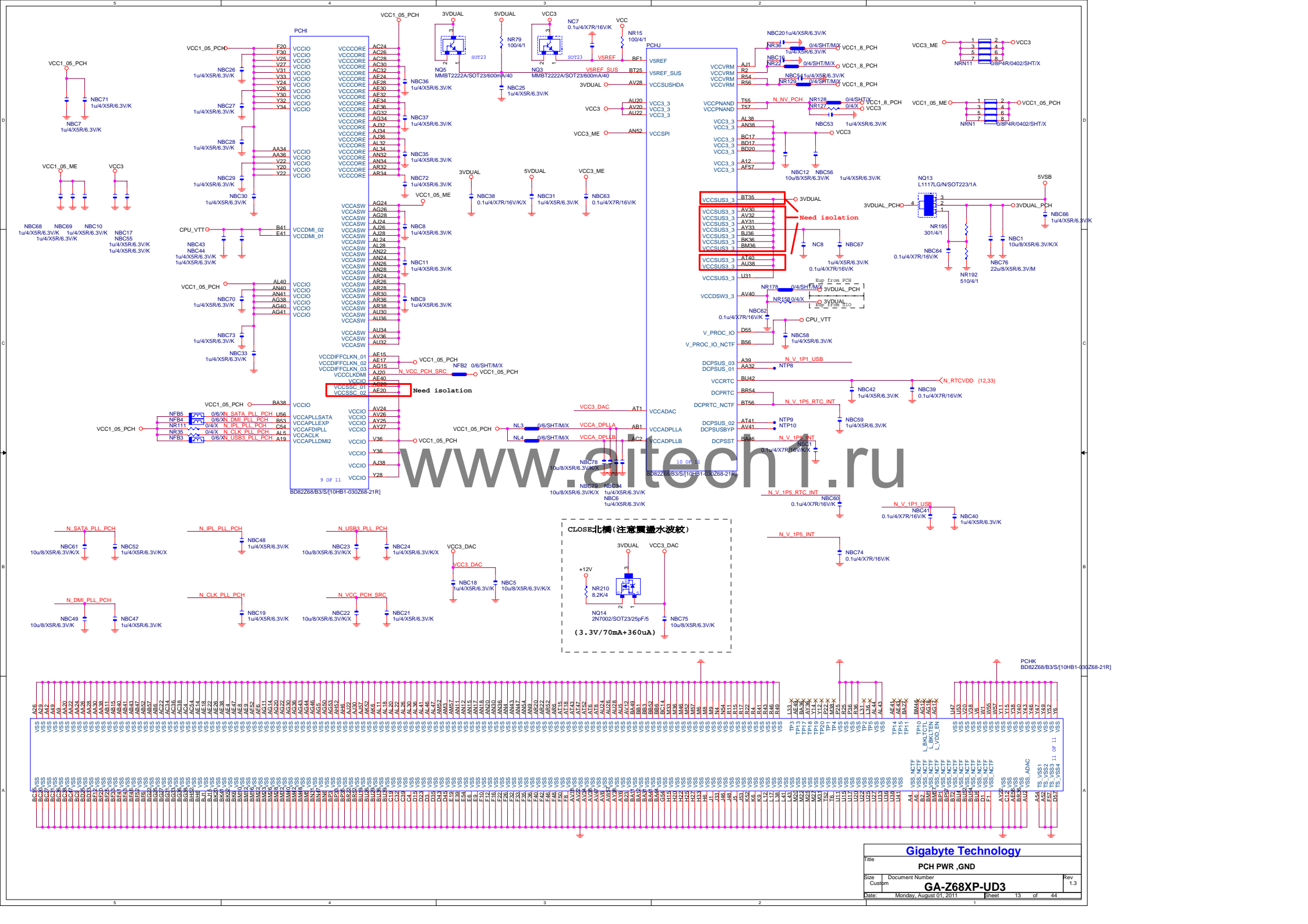
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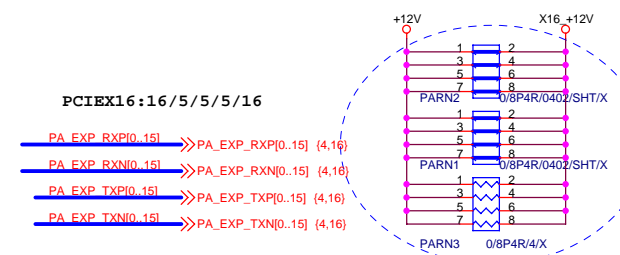
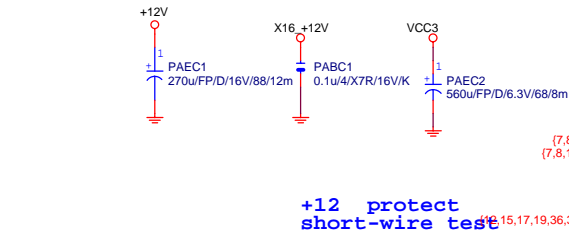
NR64 8.2K/4/X N GPIO17

NR173 8.2K/4/X N GPIO19









| | | | |
|-----------------|-------|-------------------|-------------------|
| PA EXP TXP0 | PAC5 | 0.22u4/X5R/6.3V/K | PA EXP TXP0 C |
| PA EXP TXN0 | PAC4 | 0.22u4/X5R/6.3V/K | PA EXP TXN0 C |
| PA EXP TXP1 | PAC6 | 0.22u4/X5R/6.3V/K | PA EXP TXP1 C |
| PA EXP TXN1 | PAC7 | 0.22u4/X5R/6.3V/K | PA EXP TXN1 C |
| PA EXP TXP2 | PAC8 | 0.22u4/X5R/6.3V/K | PA EXP TXP2 C |
| PA EXP TXN2 | PAC9 | 0.22u4/X5R/6.3V/K | PA EXP TXN2 C |
| PA EXP TXP3 | PAC10 | 0.22u4/X5R/6.3V/K | PA EXP TXP3 C |
| PA EXP TXN3 | PAC11 | 0.22u4/X5R/6.3V/K | PA EXP TXN3 C |
| PA EXP TXP4 | PAC12 | 0.22u4/X5R/6.3V/K | PA EXP TXP4 C |
| PA EXP TXN4 | PAC13 | 0.22u4/X5R/6.3V/K | PA EXP TXN4 C |
| PA EXP TXP5 | PAC14 | 0.22u4/X5R/6.3V/K | PA EXP TXP5 C |
| PA EXP TXN5 | PAC15 | 0.22u4/X5R/6.3V/K | PA EXP TXN5 C |
| PA EXP TXP6 | PAC16 | 0.22u4/X5R/6.3V/K | PA EXP TXP6 C |
| PA EXP TXN6 | PAC17 | 0.22u4/X5R/6.3V/K | PA EXP TXN6 C |
| PA EXP TXP7 | PAC18 | 0.22u4/X5R/6.3V/K | PA EXP TXP7 C |
| PA EXP TXN7 | PAC19 | 0.22u4/X5R/6.3V/K | PA EXP TXN7 C |
| PA EXP SW TXP8 | PAC20 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP8 C |
| PA EXP SW TXN8 | PAC21 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN8 C |
| PA EXP SW TXP9 | PAC22 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP9 C |
| PA EXP SW TXN9 | PAC23 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN9 C |
| PA EXP SW TXP10 | PAC24 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP10 C |
| PA EXP SW TXN10 | PAC25 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN10 C |
| PA EXP SW TXP11 | PAC26 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP11 C |
| PA EXP SW TXN11 | PAC27 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN11 C |
| PA EXP SW TXP12 | PAC28 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP12 C |
| PA EXP SW TXN12 | PAC29 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN12 C |
| PA EXP SW TXP13 | PAC30 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP13 C |
| PA EXP SW TXN13 | PAC31 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN13 C |
| PA EXP SW TXP14 | PAC32 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP14 C |
| PA EXP SW TXN14 | PAC33 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN14 C |
| PA EXP SW TXP15 | PAC34 | 0.22u4/X5R/6.3V/K | PA EXP SW TXP15 C |
| PA EXP SW TXN15 | PAC35 | 0.22u4/X5R/6.3V/K | PA EXP SW TXN15 C |

| | | | |
|---------------------|---------------------|---------------------|---------------------|
| PA EXP SW RXP8.15] | PA EXP SW RXN8.15] | PA EXP SW TXP8.15] | PA EXP SW TXN8.15] |
| PA EXP SW RXP9.15] | PA EXP SW RXN9.15] | PA EXP SW TXP9.15] | PA EXP SW TXN9.15] |
| PA EXP SW RXP10.15] | PA EXP SW RXN10.15] | PA EXP SW TXP10.15] | PA EXP SW TXN10.15] |
| PA EXP SW RXP11.15] | PA EXP SW RXN11.15] | PA EXP SW TXP11.15] | PA EXP SW TXN11.15] |
| PA EXP SW RXP12.15] | PA EXP SW RXN12.15] | PA EXP SW TXP12.15] | PA EXP SW TXN12.15] |
| PA EXP SW RXP13.15] | PA EXP SW RXN13.15] | PA EXP SW TXP13.15] | PA EXP SW TXN13.15] |
| PA EXP SW RXP14.15] | PA EXP SW RXN14.15] | PA EXP SW TXP14.15] | PA EXP SW TXN14.15] |
| PA EXP SW RXP15.15] | PA EXP SW RXN15.15] | PA EXP SW TXP15.15] | PA EXP SW TXN15.15] |

PCI-E REV:1.1--> 2.5GHZ

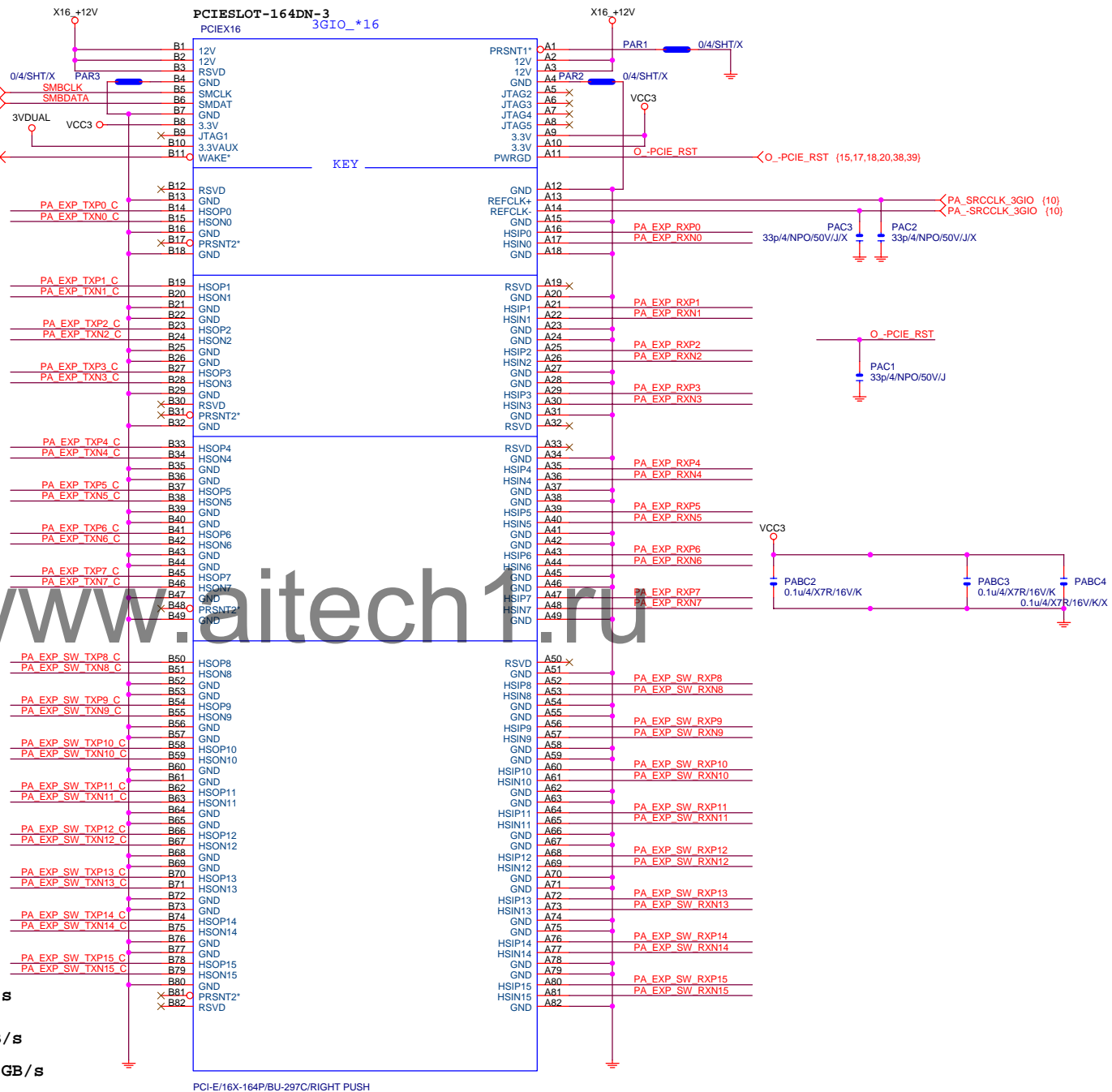
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

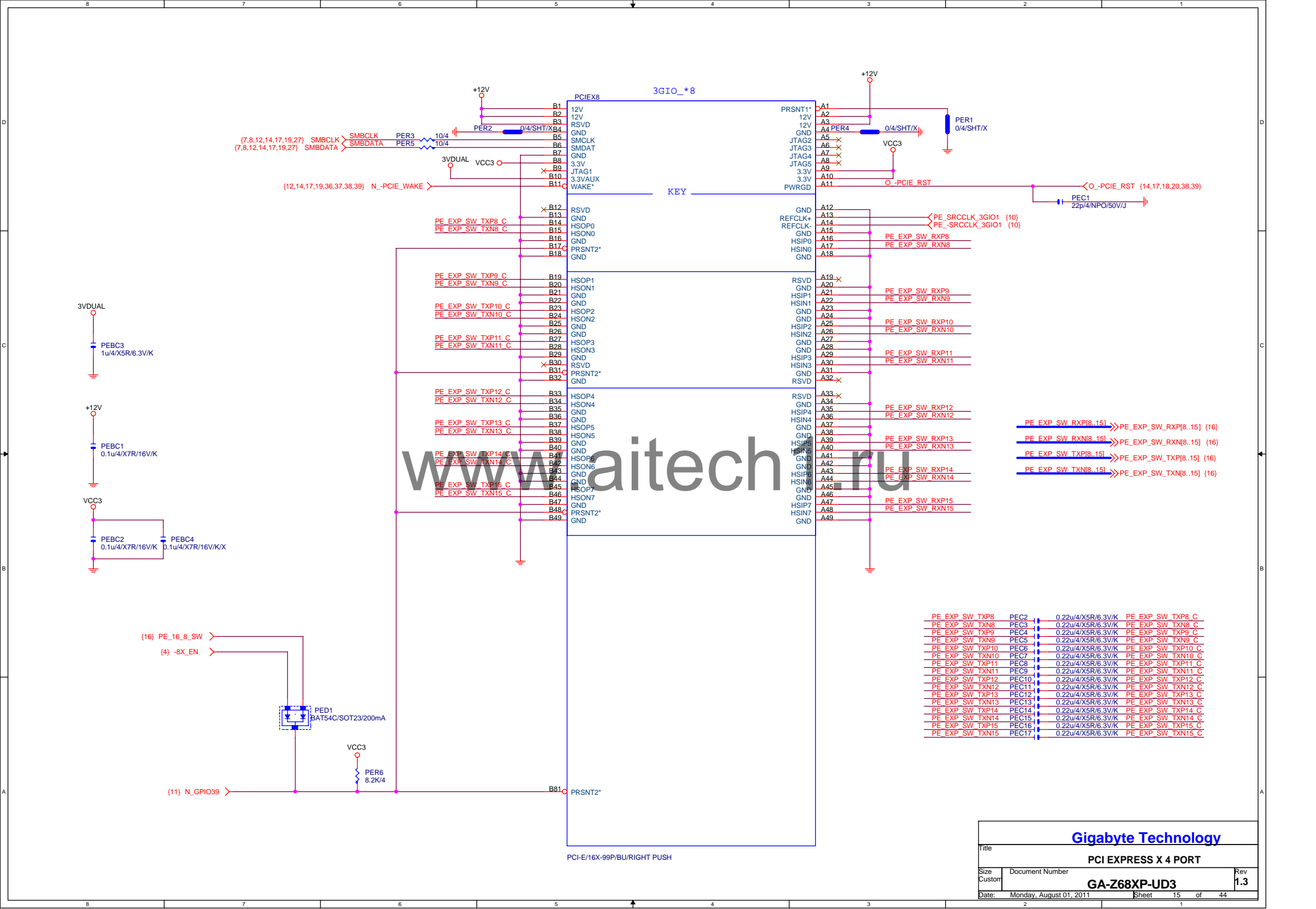
PCI-E REV:2.0--> 5GHZ

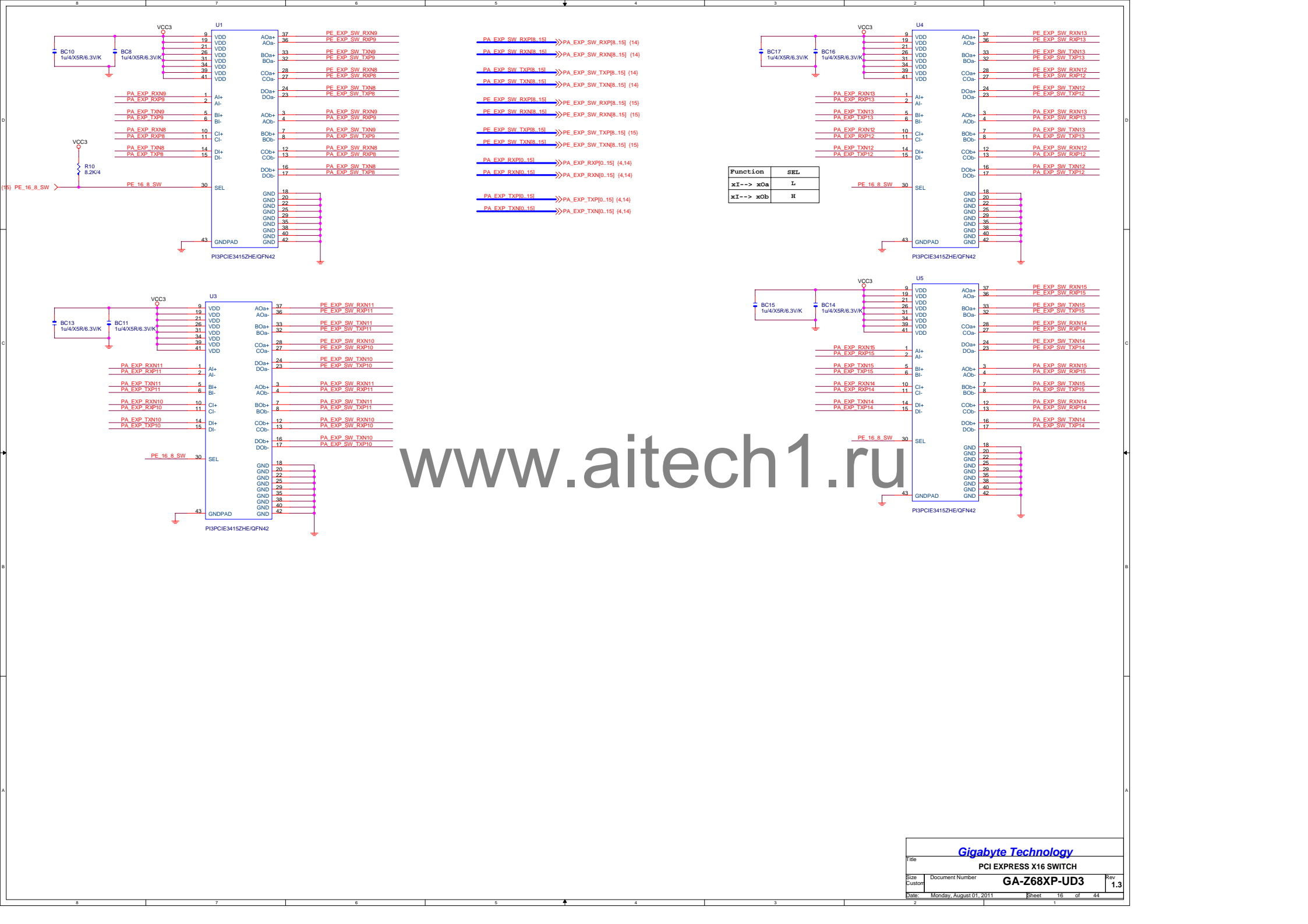


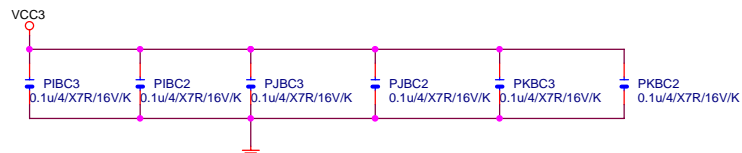
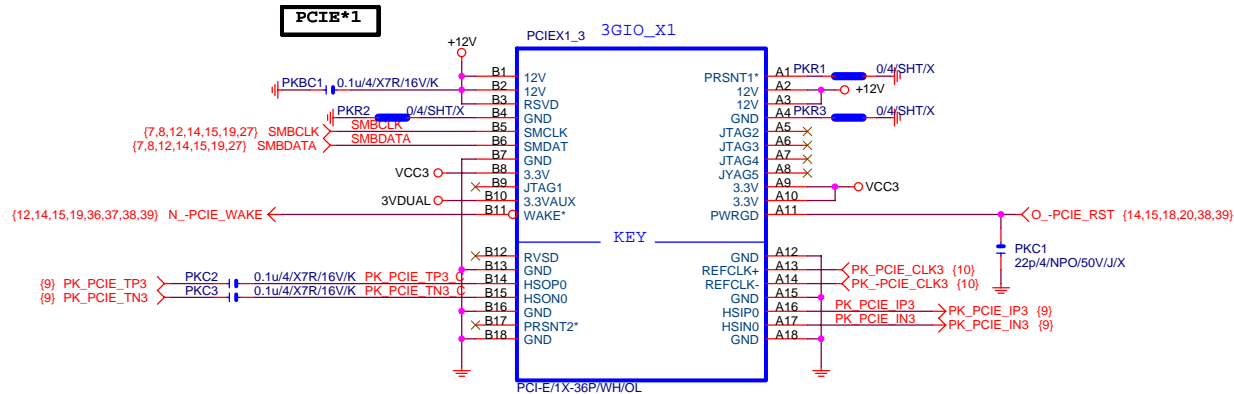
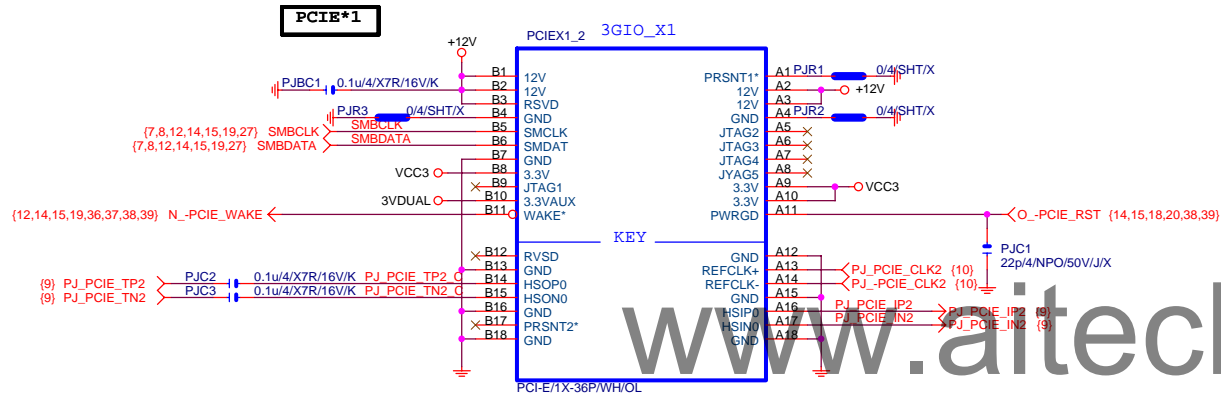
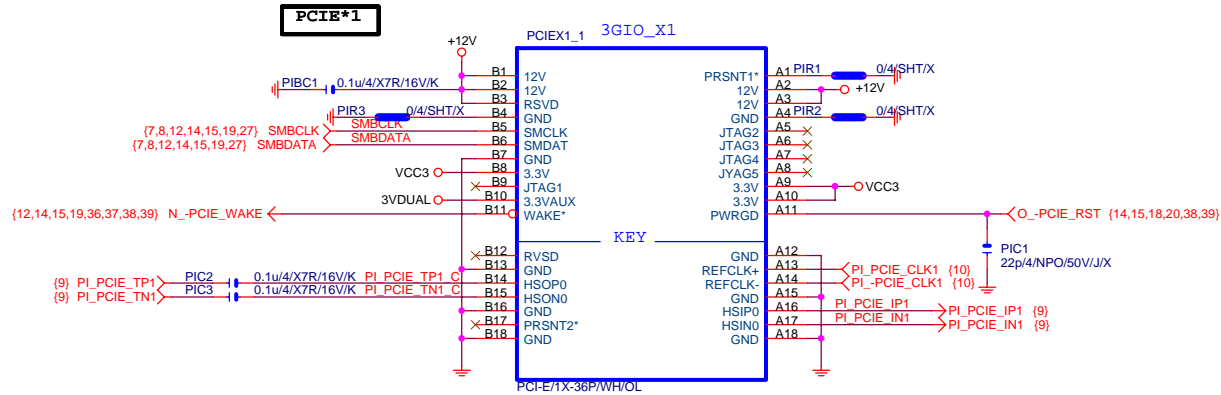
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|-------------------------|--|--|--|
| Title | | | |
| PCI EXPRESS * 16 | | | |
| Size | | | |
| Custom | | | |
| Document Number | | | |
| GA-Z68XP-UD3 | | | |
| Rev | | | |
| 1.3 | | | |
| Date: | | | |
| Monday, August 01, 2011 | | | |
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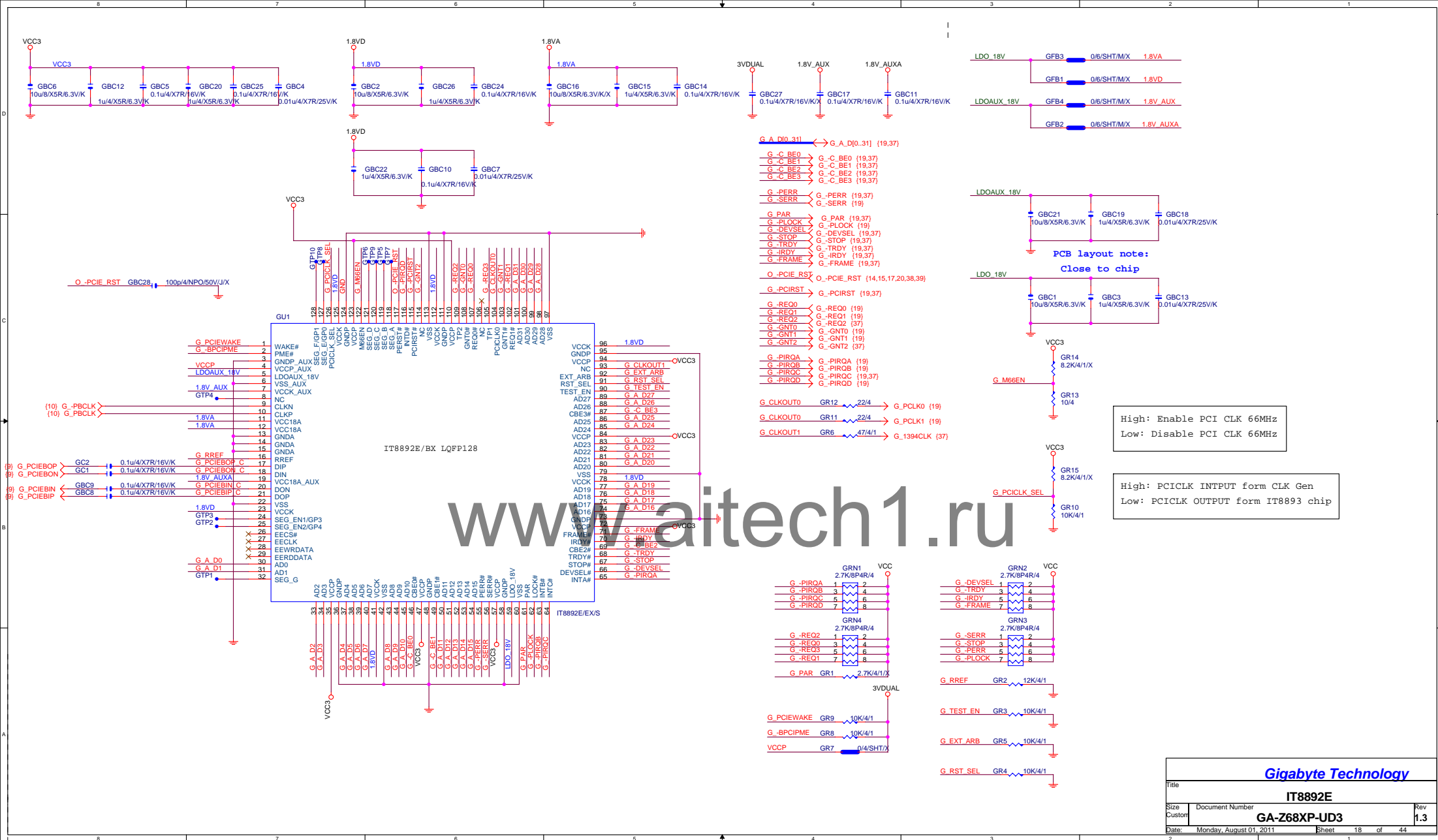






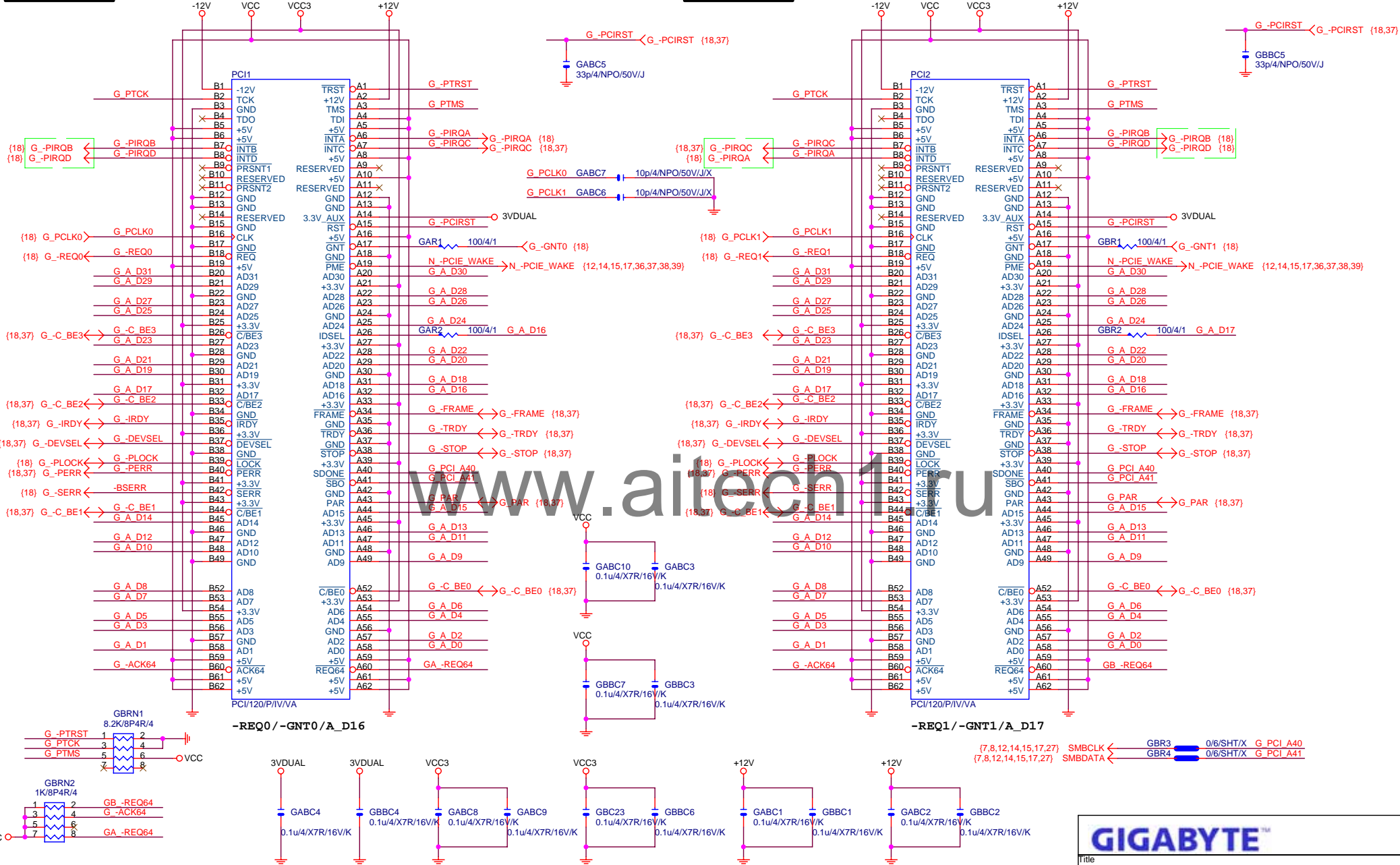
Gigabyte Technology

| | | |
|-------------|-------------------------|----------------|
| Title | | |
| PCIE_X1 1,2 | | |
| Size | Document Number | Rev |
| Custom | GA-Z68XP-UD3 | 1.3 |
| Date: | Monday, August 01, 2011 | Sheet 17 of 44 |

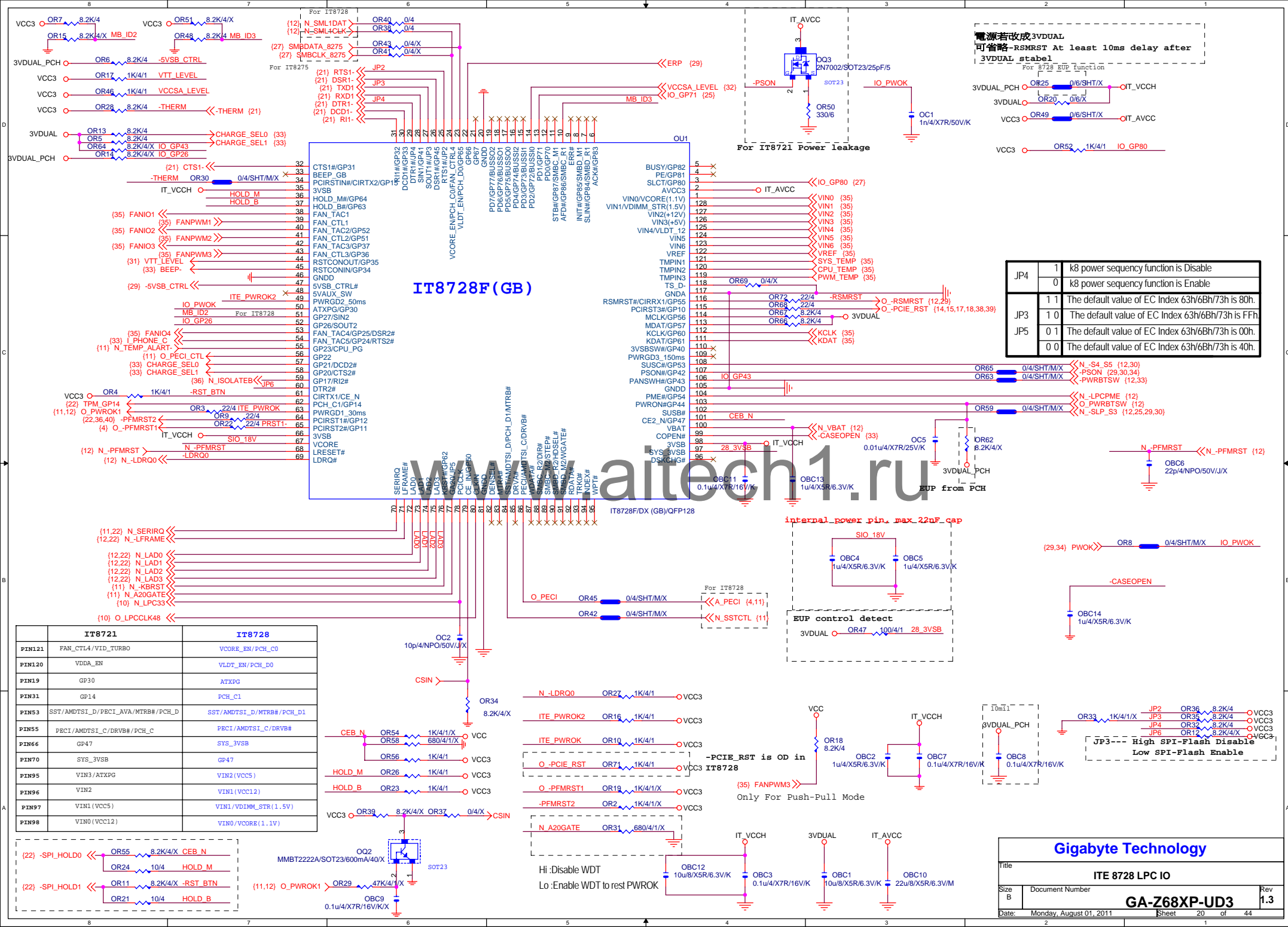


PCI SLOT 1

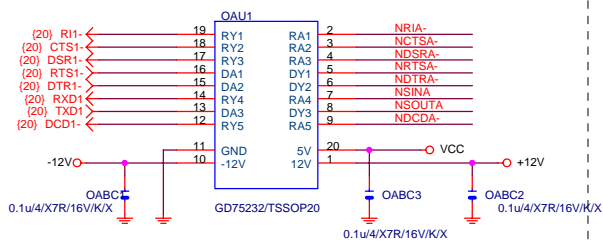
PCI SLOT 2



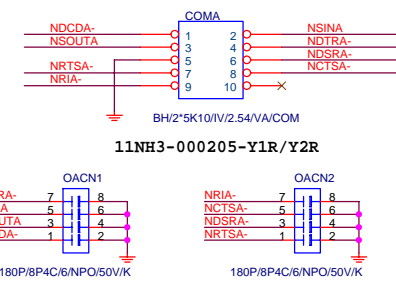
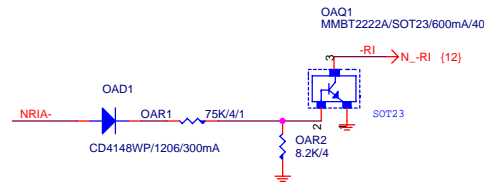
| | | | |
|--------------|-------------------------|--------------|----------|
| GIGABYTE™ | | | |
| Title | | | |
| PCI SLOT 1&2 | | | |
| Size | Document Number | Rev | |
| Custom | | GA-Z68XP-UD3 | |
| Date: | Monday, August 01, 2011 | Sheet | 19 of 44 |



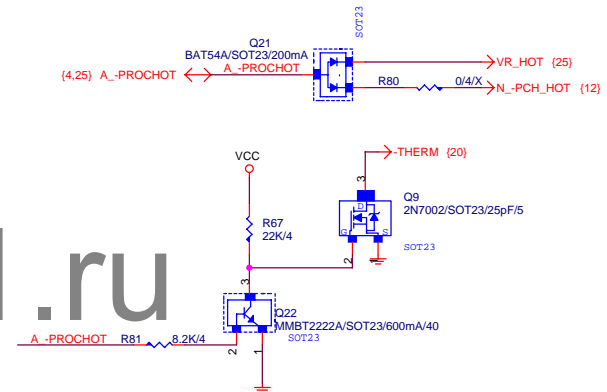
COMA



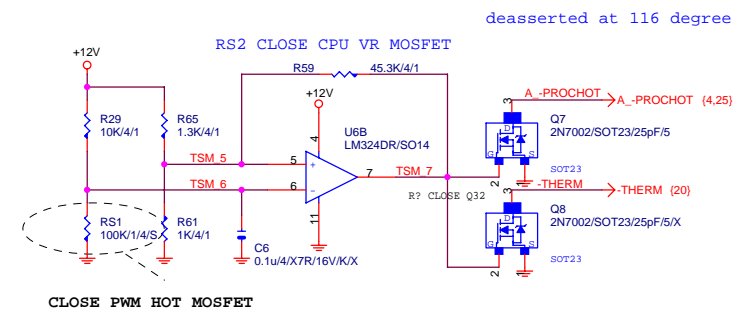
COM RI



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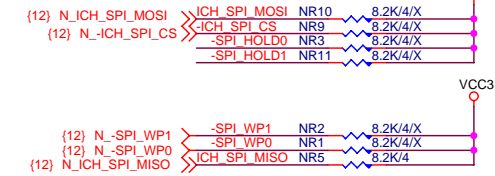
-PROHOT



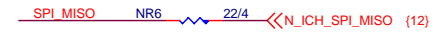
Gigabyte Technology

| | | | |
|---------------------------|-------------------------|-------|----------|
| Title | | | |
| COM & PROHOT/Dynamic O.C. | | | |
| Size | Document Number | Rev | |
| Custom | | 1.3 | |
| Date: | Monday, August 01, 2011 | Sheet | 21 of 44 |

MOSI For DMI RX Termination Voltage



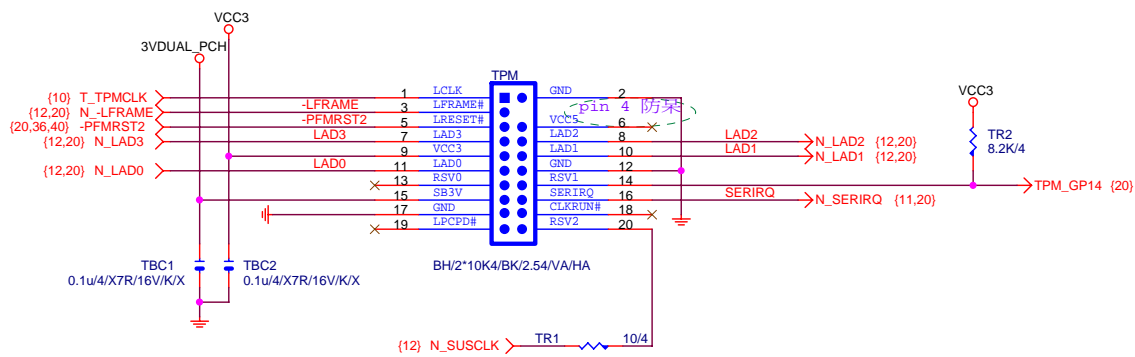
Default int pull up



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

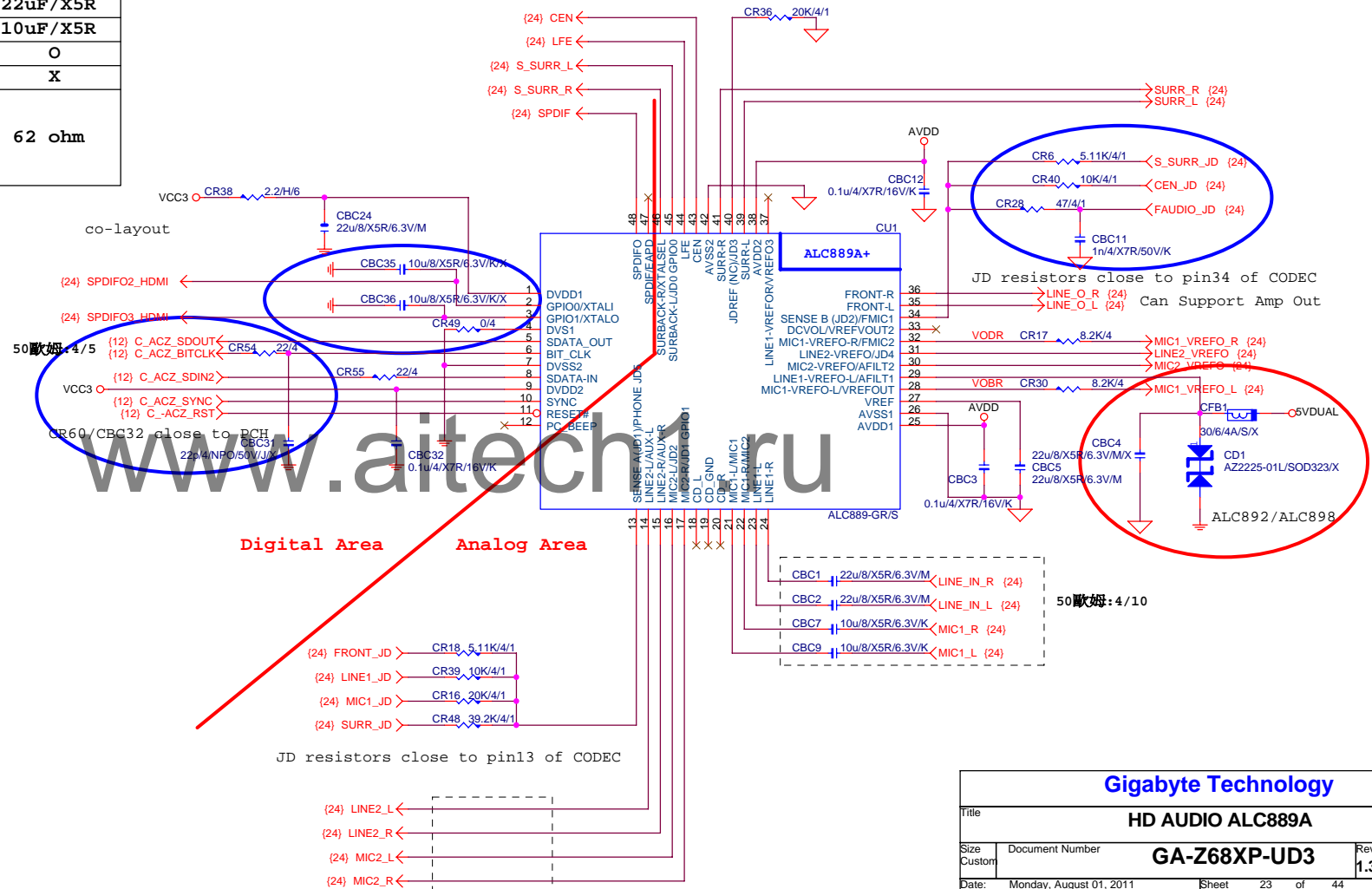
1 means floating
0 means PD 1K

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|---------------------|-------------------------|--------------|----------|
| Title | | BIOS | |
| Size | Document Number | GA-Z68XP-UD3 | |
| Custom | | Rev 1.3 | |
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| | ALC889 | ALC889B | ALC898/ALC892 |
|---|----------|----------|---------------|
| CR49 | O | O | X |
| CBC36 | X | X | 10uF/X5R |
| CBC35 | X | 10uF/X5R | X |
| CR52 | O | X | O |
| CR53 | X | O | X |
| CBC1/CBC2 | 22uF/X5R | 22uF/X5R | 22uF/X5R |
| CBC7/CBC9/CBC20/CBC15 | 10uF/X5R | 10uF/X5R | 10uF/X5R |
| CFB1/CD1/CBC4 | X | X | O |
| CD2/CD3/CQ3/CQ4 | O | O | X |
| CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR21/CR47/ CR2/CR11/CR14/CR24 | 62 ohm | 62 ohm | 62 ohm |



Gigabyte Technology

HD AUDIO ALC889A

Title

Document Number

GA-Z68XP-UD3

Size

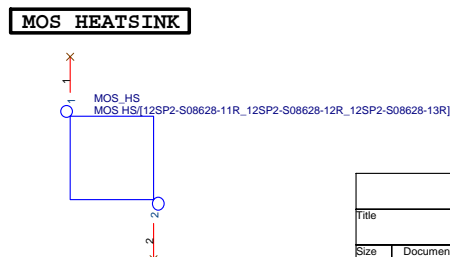
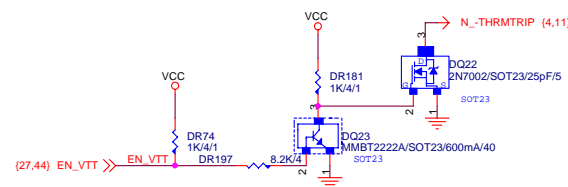
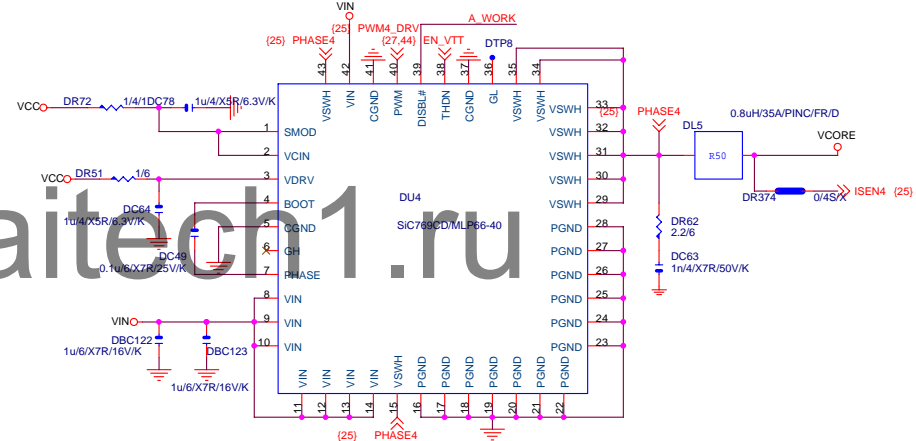
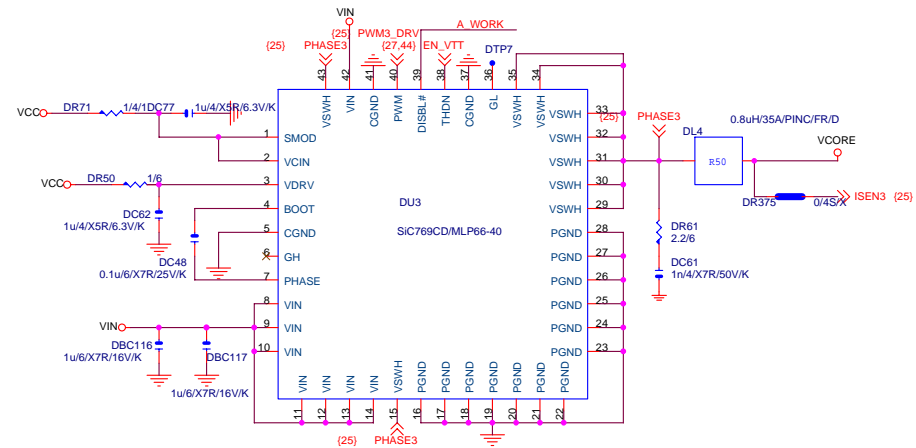
Custom

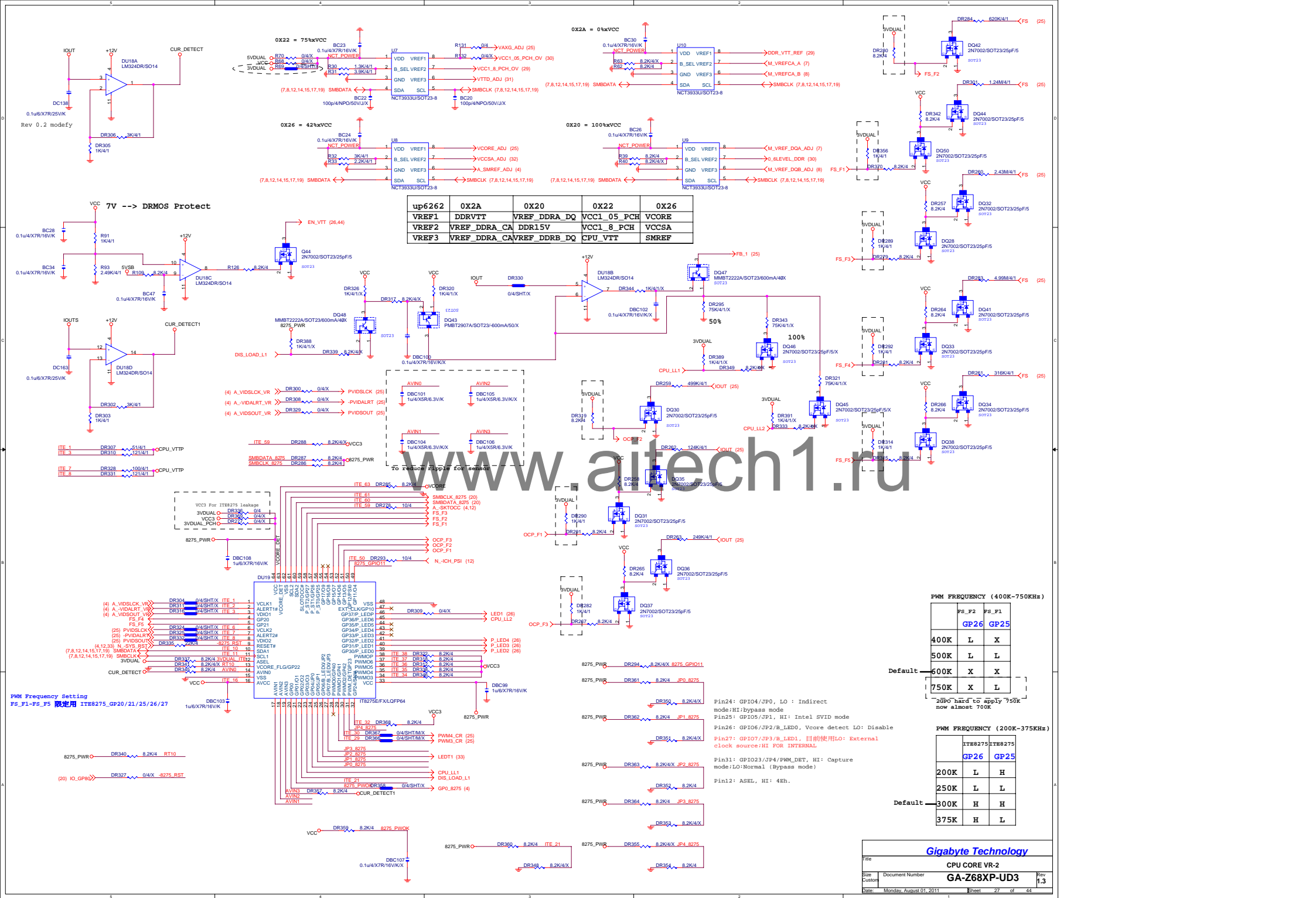
Date: Monday, August 01, 2011

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1.3





| up6262 | 0X2A | 0X20 | 0X22 | 0X26 |
|--------|--------------------------|--------------|-------------|-------|
| VREF1 | DDRVT | VREF_DDRA_DQ | VCC1_05_PCH | VCORE |
| VREF2 | VREF_DDRA_CA | DDR15V | VCC1_8_PCH | VCCSA |
| VREF3 | VREF_DDRA_CAVREF_DDRB_DQ | | CPU_VTT | SMREF |

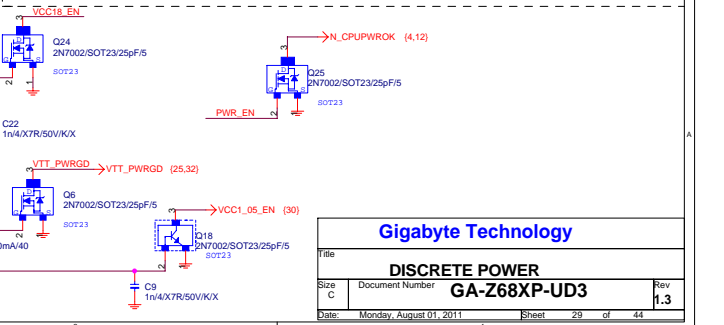
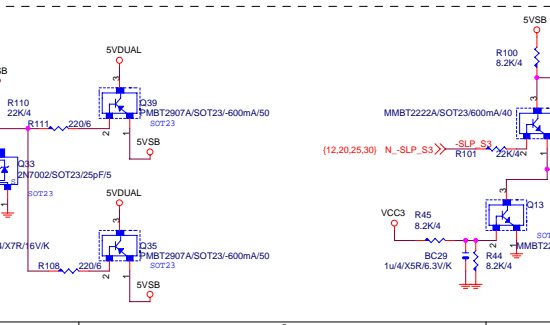
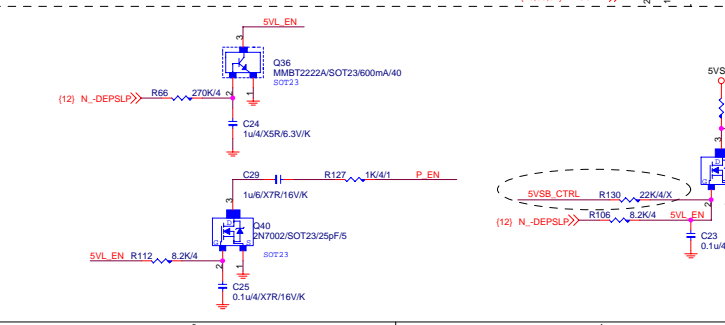
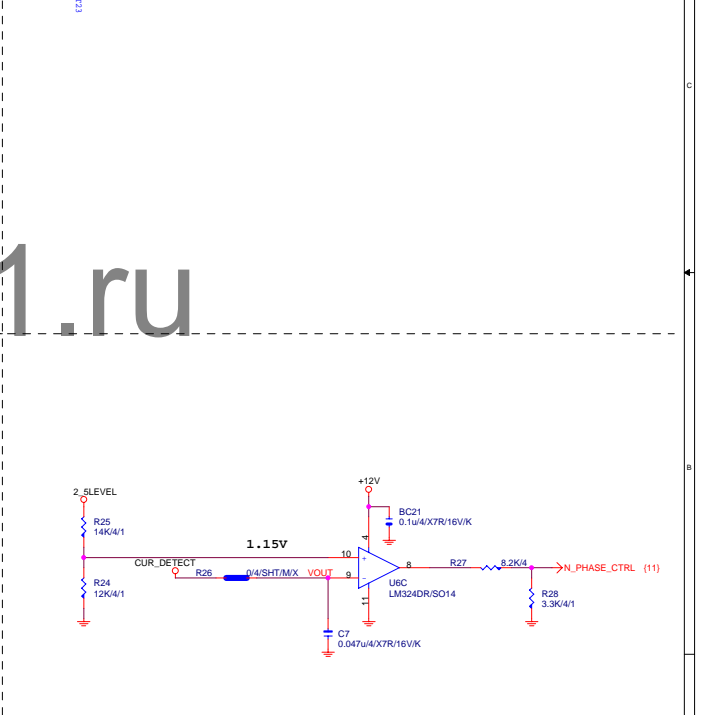
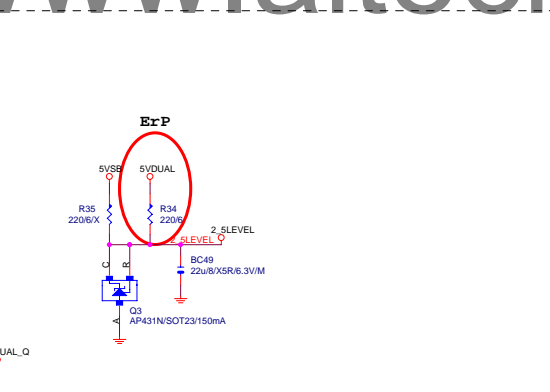
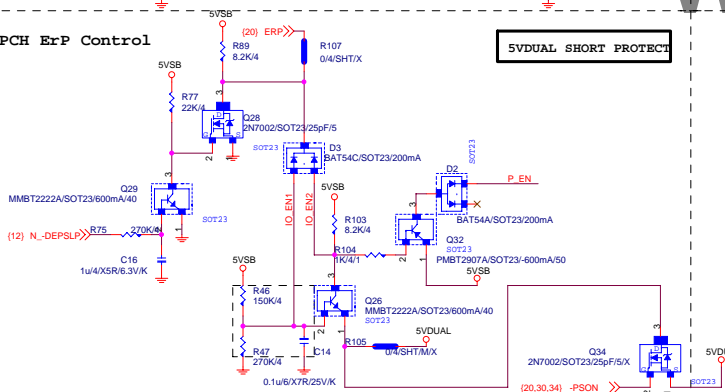
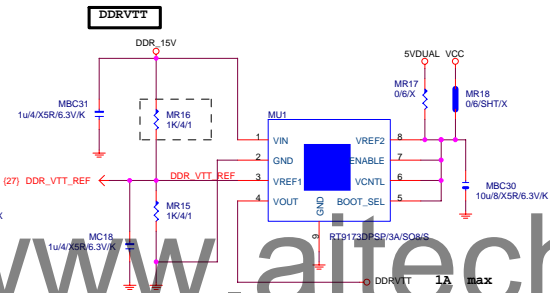
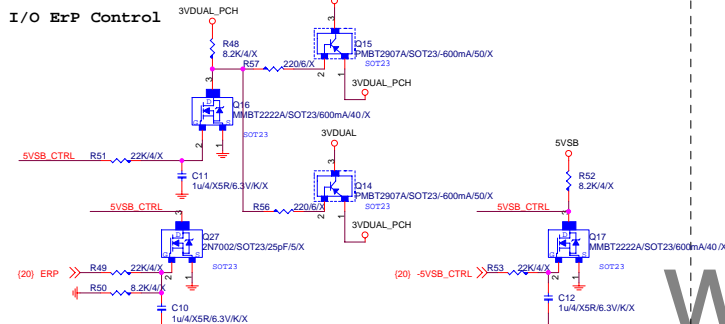
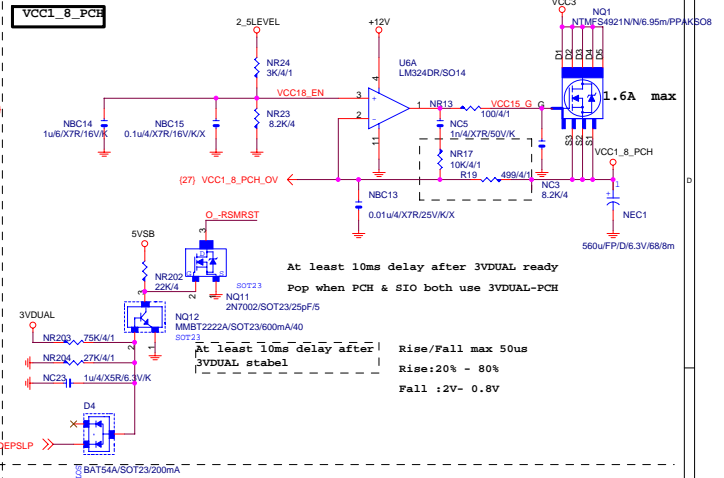
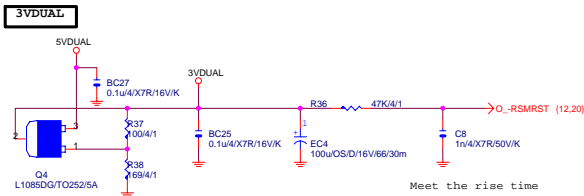
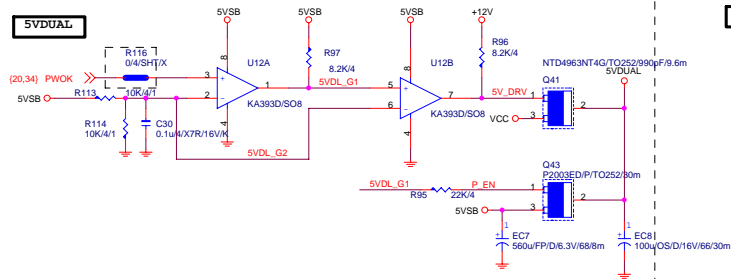
| PWM FREQQUENCY (400K-750KHz) | | |
|------------------------------|-------|-------|
| | FS_F2 | FS_F1 |
| Default | GP26 | GP25 |
| 400K | L | X |
| 500K | L | L |
| 600K | X | X |
| 750K | X | L |

26P hard to apply 750K now almost 700K

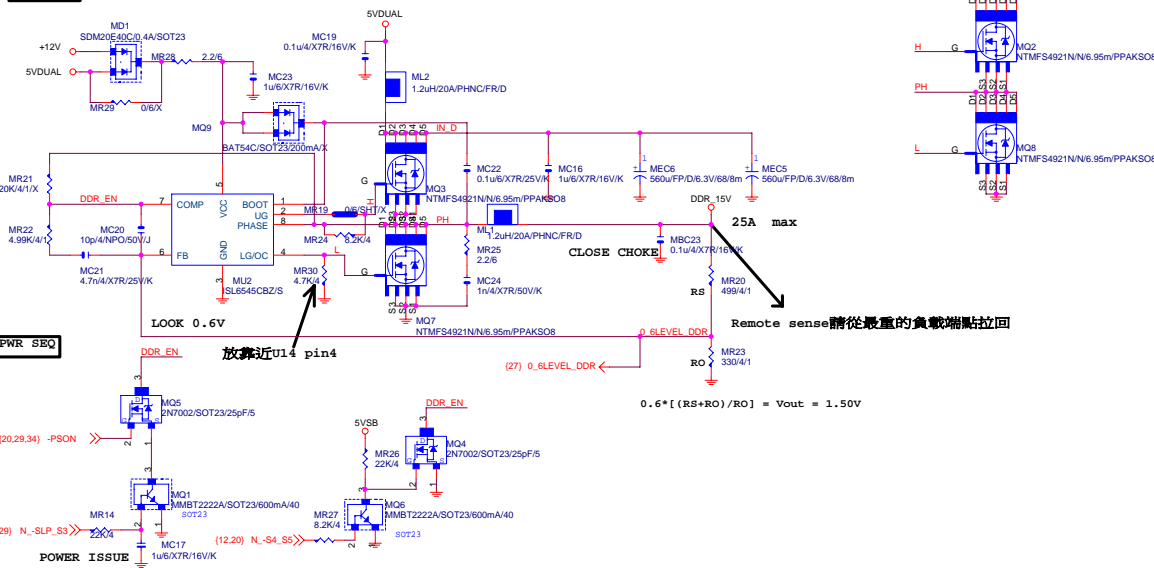
| PWM FREQQUENCY (200K-375KHz) | | |
|------------------------------|---------|---------|
| | ITE8275 | ITE8275 |
| Default | GP26 | GP25 |
| 200K | L | H |
| 250K | L | L |
| 300K | H | H |
| 375K | H | L |

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| | | | |
|---------------------------------|-------------------------|----------------|------------|
| GIGABYTE™ | | | |
| Title VCORE PHASE GEAR 4 | | | |
| Size | Document Number | | Rev |
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DDR18V

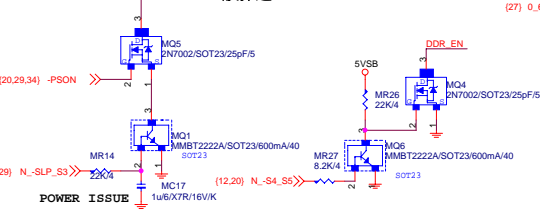


OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 $I_{ocset} = 21.5\mu A$, $R_{ocset} = 4.7k$

OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 $= (2 \times 21.5\mu A \times 4.7k) / (7m/2)$
 $= 57.74A$

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

PWR SEQ



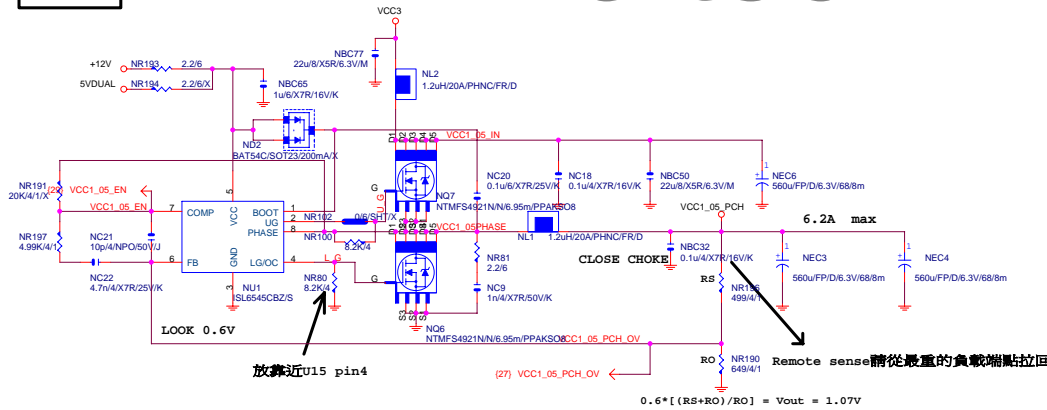
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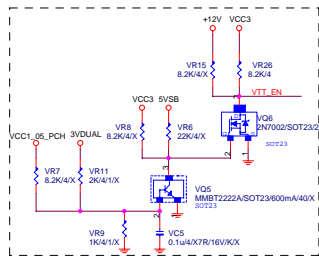
VCC1_05_PCH

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

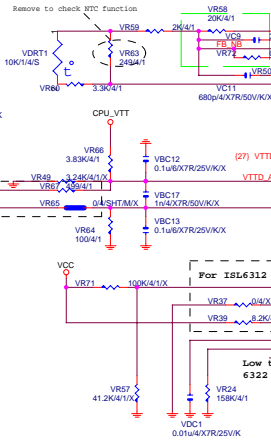
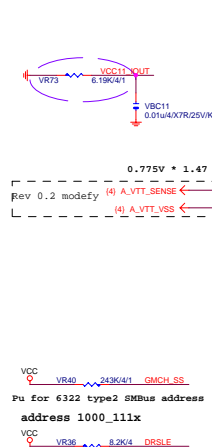
OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 $= (2 \times 21.5\mu A \times 8.2k) / 7m$
 $= 50.37A$

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



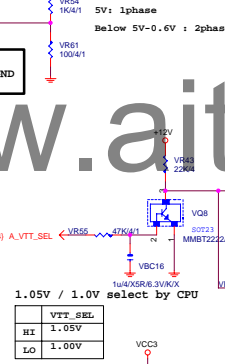


Patch EUP function

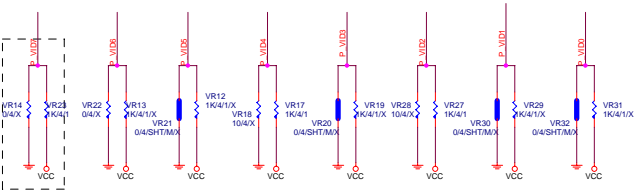


OCF點做在120A
Isense+ R176阻值做在432ohm
 $I_{ocp} = (I_{sense} \times R_{isense} \times Phase) / DCR$
 $= [(120uA \times 432X2) / 0.85m] = 120A$
 $L / DCR = R \times C$
 $L = 0.8uH$ $DCR = 0.85 m\Omega$, $0.8uH / 0.85m\Omega = 4.3k \times 0.22uF$
 $R_{isense} R175$ 阻值=4.3k ohm, $C_{isense} BC51 = 0.22u$
 $Rt = 10 \times [10.61 - [1.035 \times \log(FS)]]$ $Rt = R301 = 158 kohm$, $FS = 170KHz$
 $OVP = V_{DAC} + 225mV$

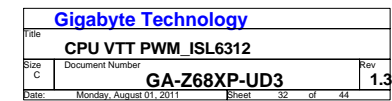
BOTTOM PAD CONNECT TO GND
THROUGH 10 VIA



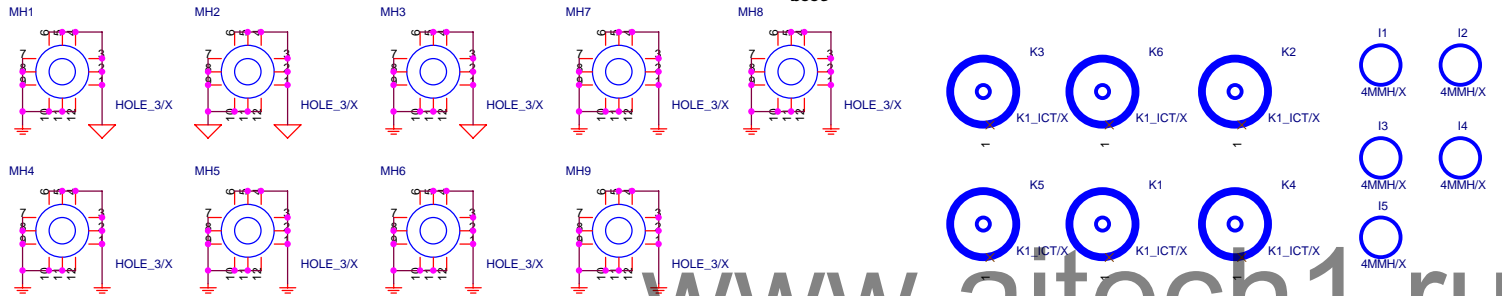
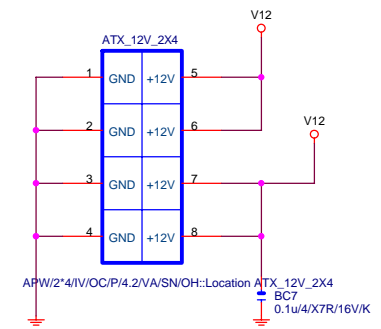
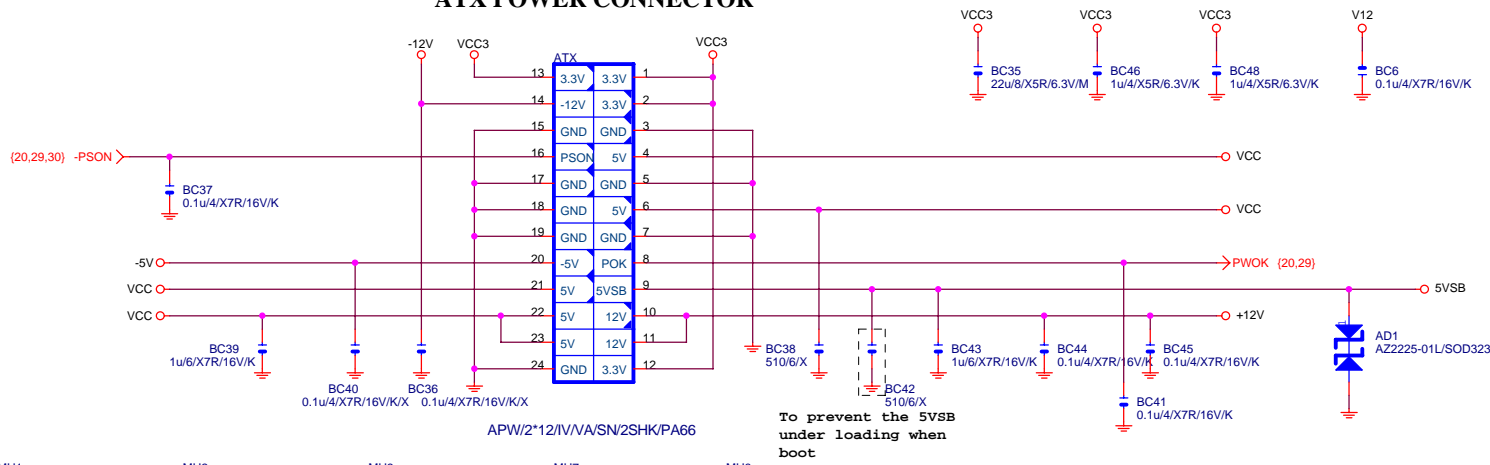
Bit 7 Pull High for AMD 6bit mode
Reactive Bit6 when use AMD mode
AMD 6bit mode
SET 1.05V
[1x010100]



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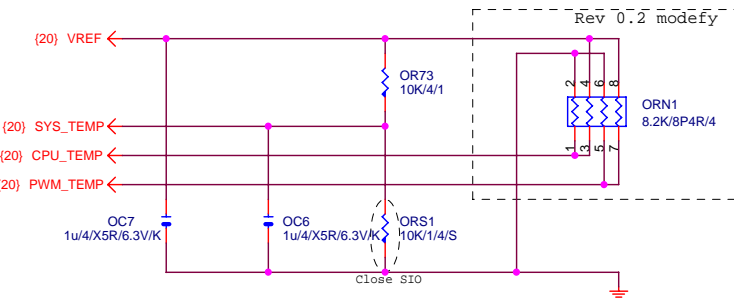
ATX POWER CONNECTOR



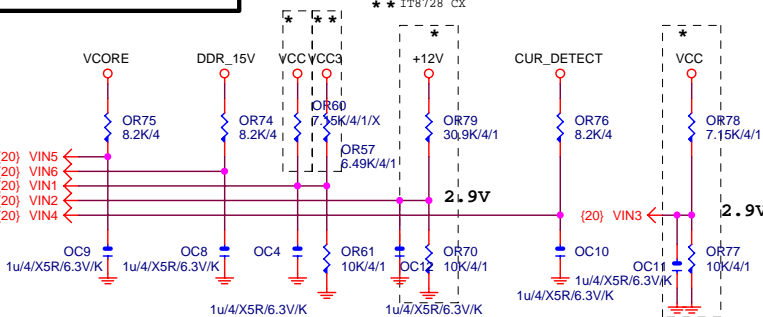
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|---------------------|-------------------------|-------|----------|
| Title | | | |
| ATX POWER CONNECTOR | | | |
| Size | Document Number | Rev | |
| Custom | GA-Z68XP-UD3 | 1.3 | |
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| | 2 | | 1 |

TEMP H/W MONITOR

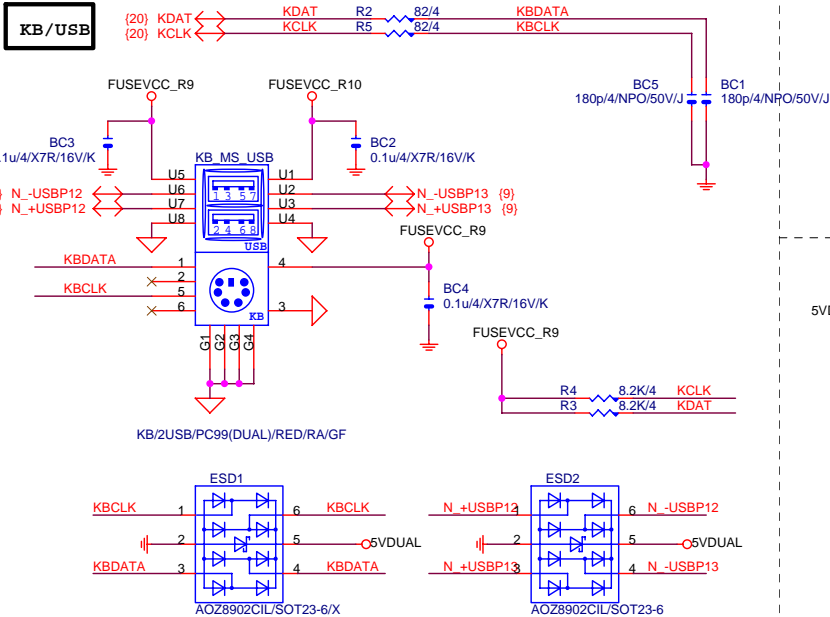


VOLTAGE-- H/W MONITOR

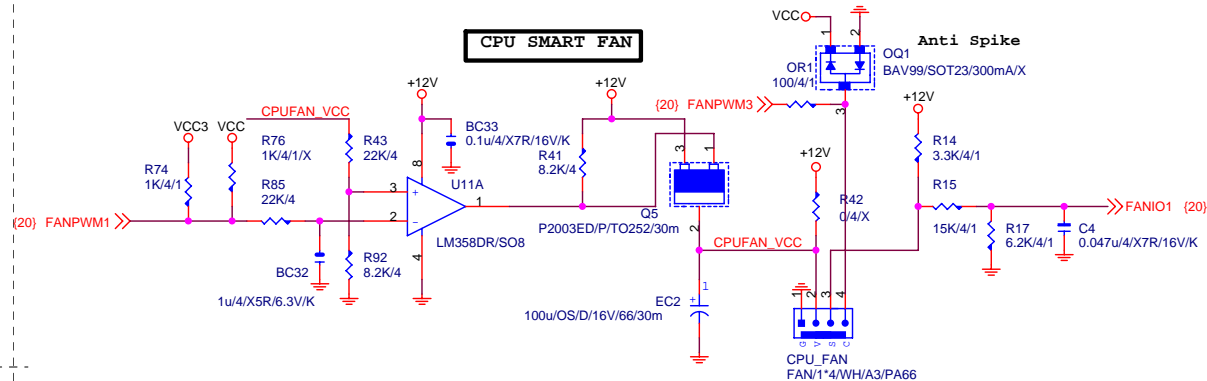


The division voltage of VIN2 & VIN3 must be around 2.9V

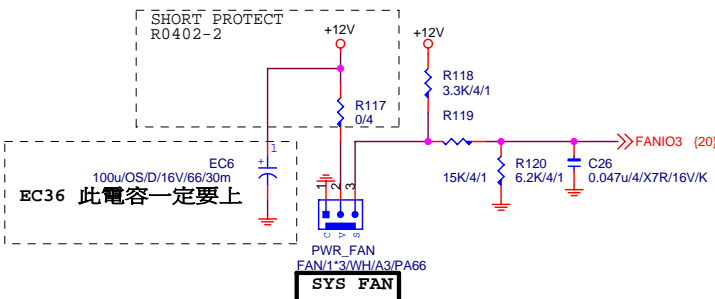
KB/USB



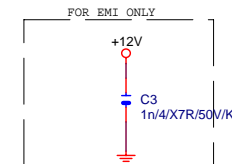
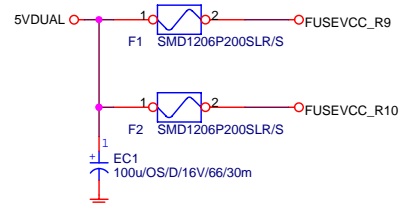
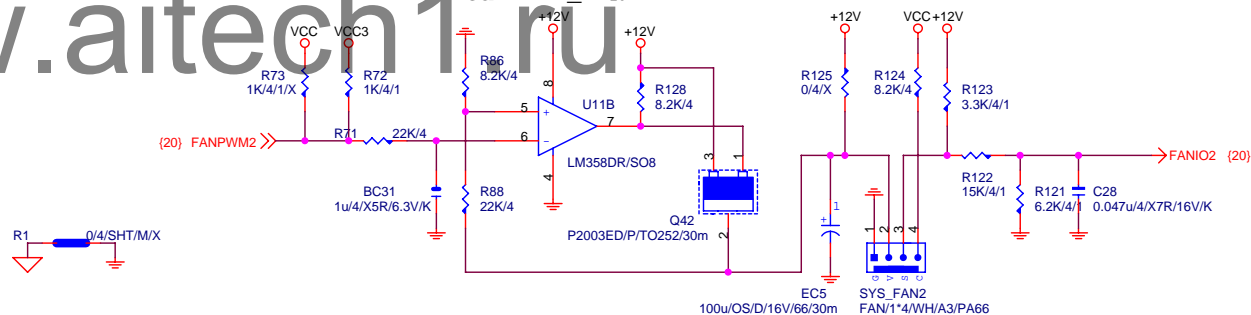
CPU SMART FAN



SYS FAN



Linear SYS_FAN



Gigabyte Technology

| | |
|-------|---------------------|
| Title | HWM,KB/MS, FAN CTRL |
|-------|---------------------|

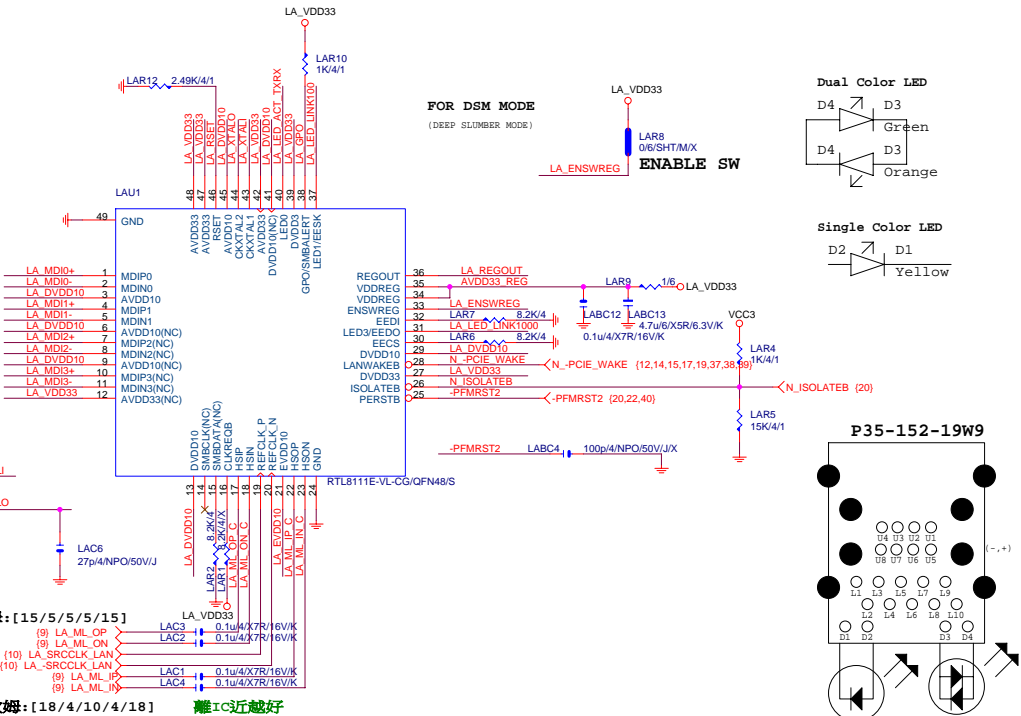
| | |
|--------|---------------------|
| Size | Document Number |
| Custom | GA-Z68XP-UD3 |

| | |
|-----|--|
| Rev | |
| 1.3 | |

PCIE-1G LAN

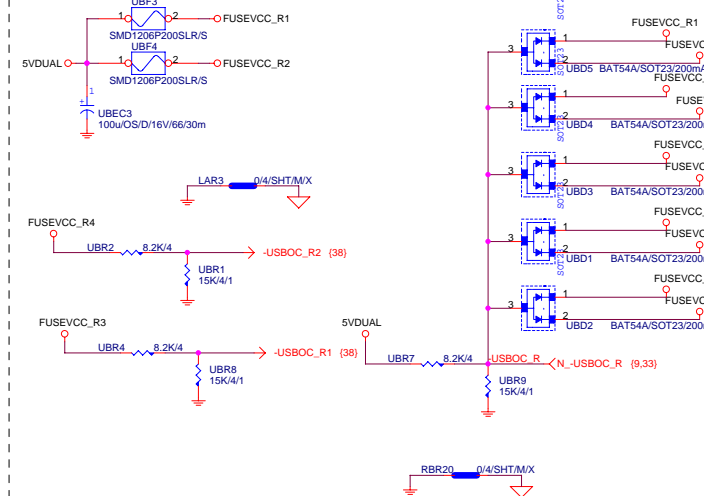
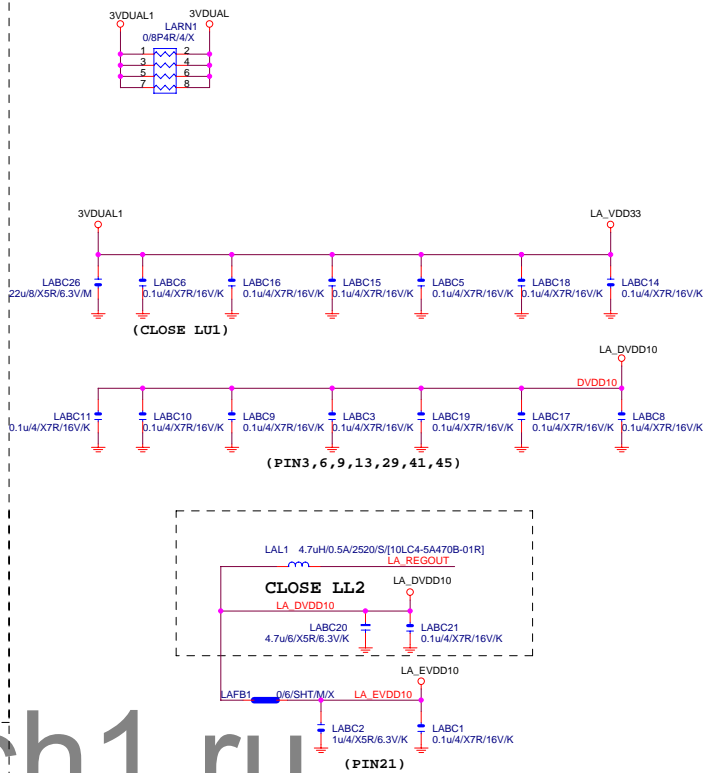
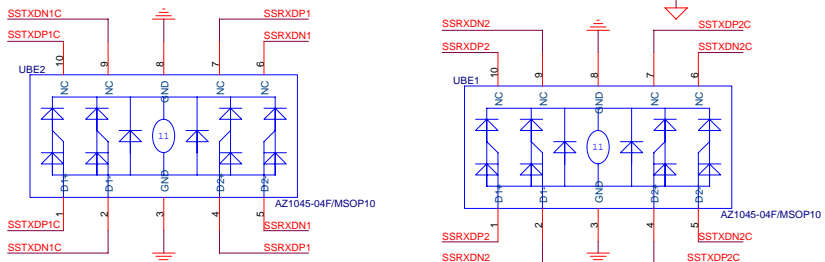
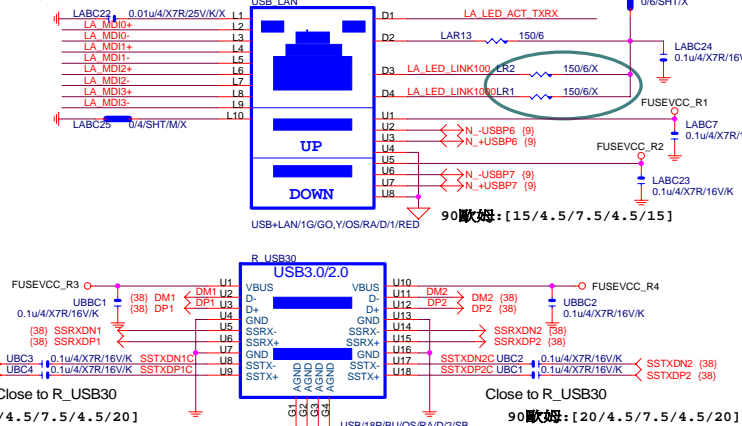
Power domain chart

| | RTL8111E |
|--------|----------|
| AVDD33 | 3.3V |
| DVDD33 | 3.3V |
| VDDREG | 3.3V |
| DVDD10 | 1.05V |

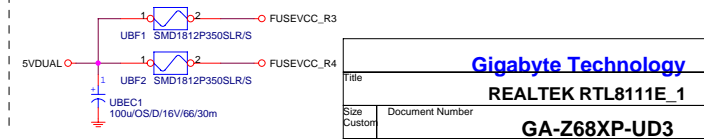


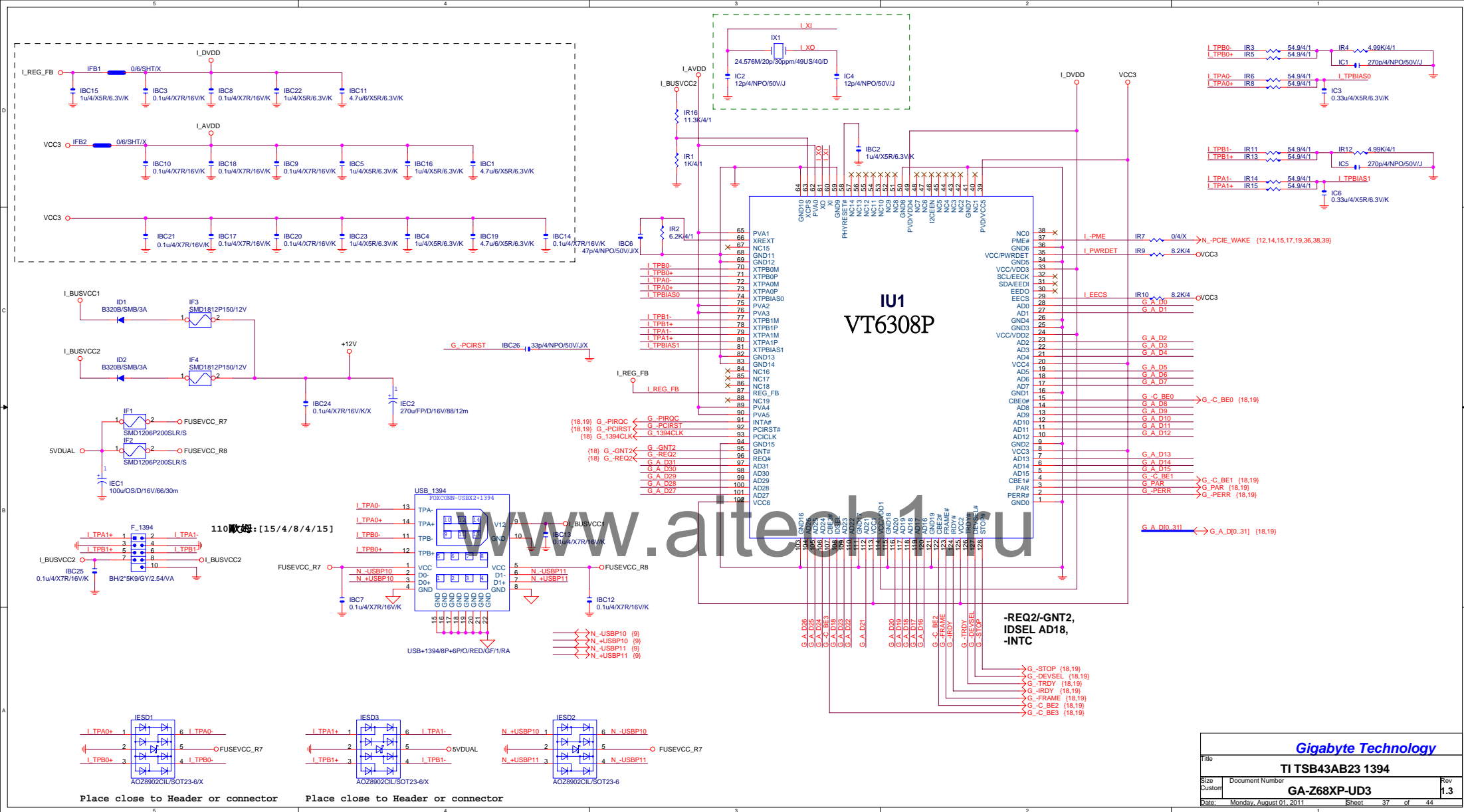
USB30_LAN CONNECTOR

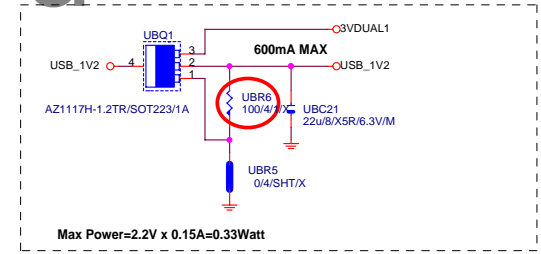
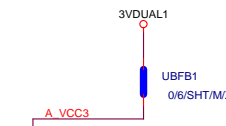
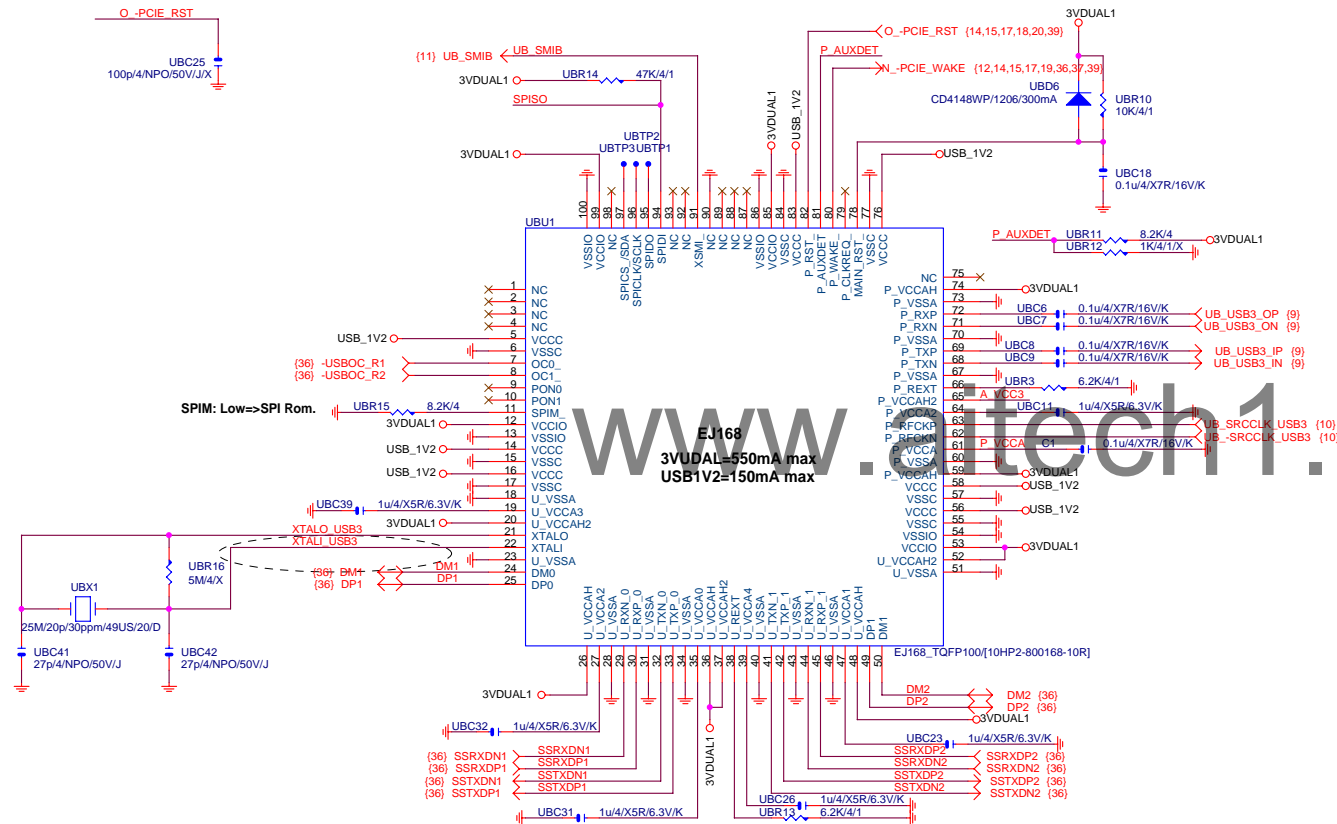
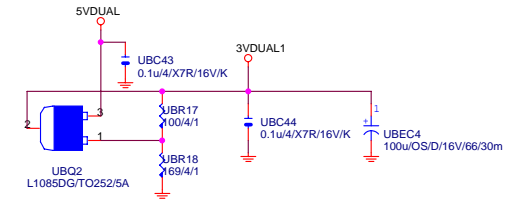
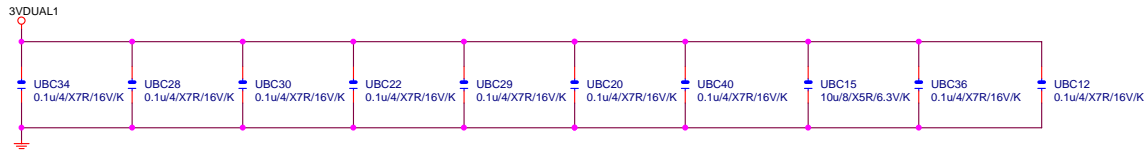
100 歐姆: [20/4/8/4/20]



Close to connector



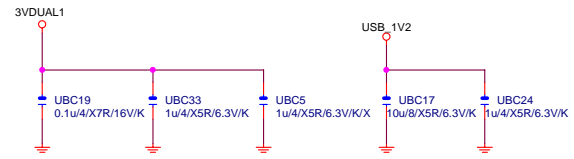
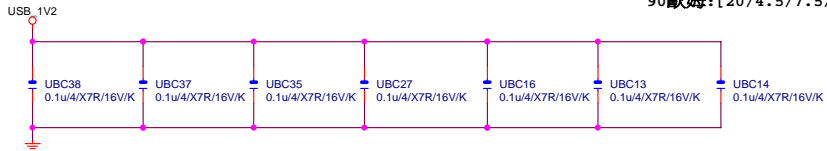




Max Power=2.2V x 0.15A=0.33Watt

AZ1117H-1.2TR/SOT223/1A-->UR17:0/4,UR16:N/A [1.2V]

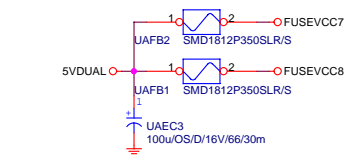
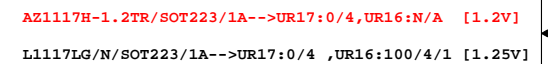
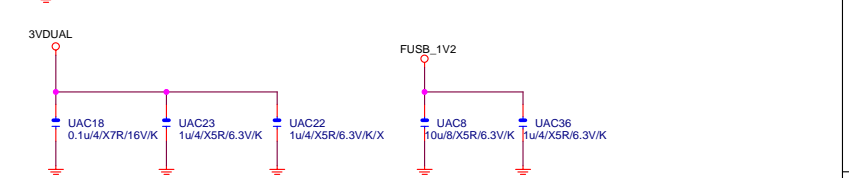
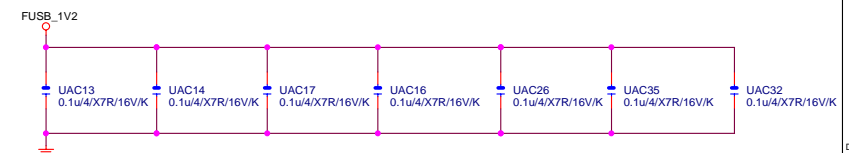
L1117LG/N/SOT223/1A-->UR17:0/4,UR16:100/4/1 [1.25V]

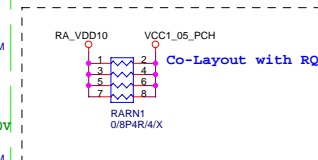
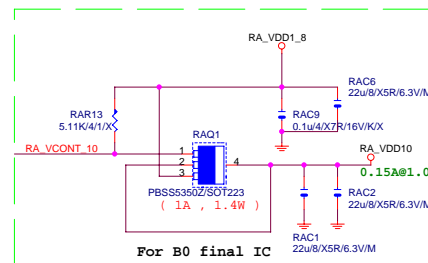
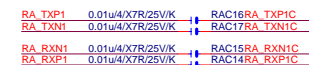
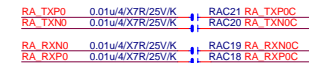
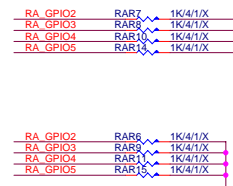
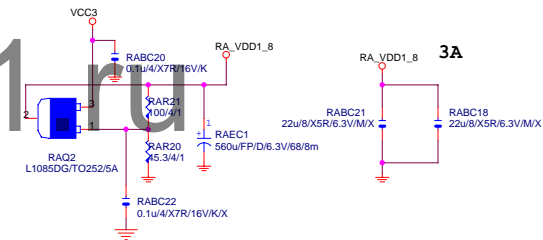
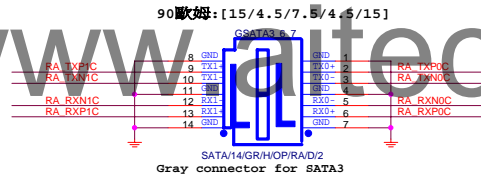
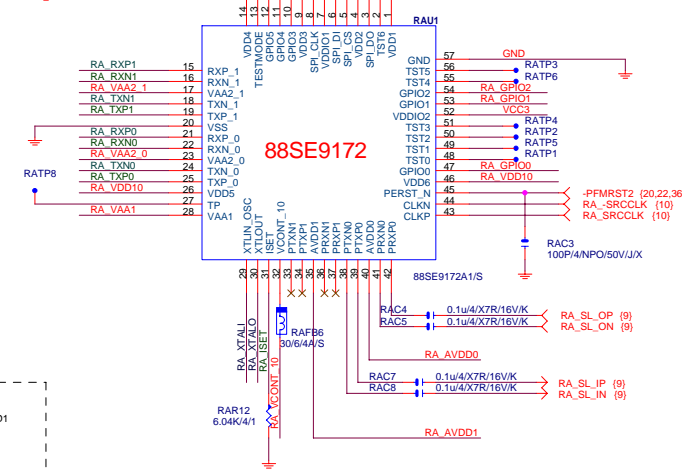
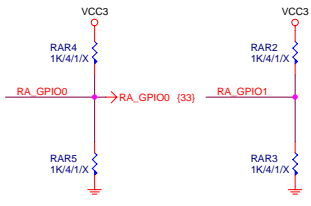
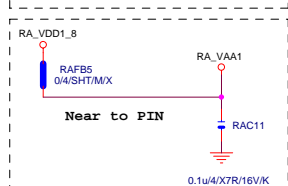
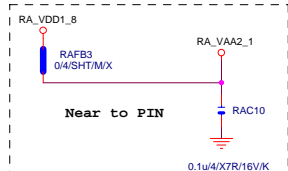
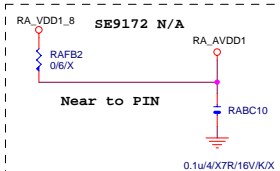
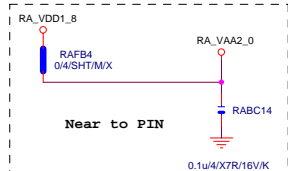
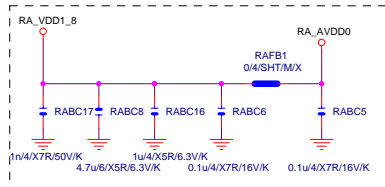
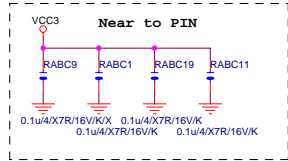
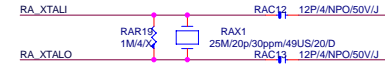


USB3.0 --> 5GHz

BANDWITH=5GHz * (8b/10b)=4Gb/s=500MB/s

| GIGABYTE | | |
|--------------|-------------------------|----------------|
| Title | | |
| E-TRON EJ168 | | |
| Size | Document Number | Rev |
| Custom | GA-Z68XP-UD3 | 1.3 |
| Date: | Monday, August 01, 2011 | Sheet 38 of 44 |





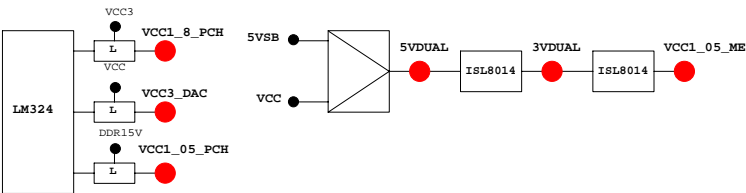
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|---------------------|-------------------------|--------------|----------------|
| Gigabyte Technology | | | |
| File | | Marvell 9172 | |
| Size | Document Number | | Rev |
| Custom | GA-Z68XP-UD3 | | 1.3 |
| Date: | Monday, August 01, 2011 | | Sheet 41 of 44 |

| 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 |
| | 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 | -SKT0CC | 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 | TL5 | 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_FWM | 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 |

| 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 | |
| FME#/GP54 | -LPCPME | |
| PD5/GP75/BUS00 | 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/BUSSII1 | SB_LED1_C | |
| PD4/GP74/BUSSII2 | SB_LED2_C | |
| VCORE_EN/VID7/GP64 | IT_GP64 | SB_LED3_C |
| PD0/GP70 | NB_LED1_C | |
| PD1/GP71 | NB_LED2_C | |
| PD2/GP72/BUSSIO | 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/BUSSO1 | MB_ID3 | |
| PD7/GP77/BUSSO2 | MB_ID4 | |
| AFD#/GP86/SMB_C | 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/SMB_C | 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_CTL5/CIRRX2/GP16 | -THERM | |
| VIDO4/GP26/SOUT2 | DDR18V_PH2_EN | |
| VIDO2/FAN_TAC5/GP24/DSR2# | DDR18V_LED | |
| VIDO6/GP17/RI2# | 1_IV_PH_EN | |
| VIDO7/JP6/DTR2# | JP6 | |
| PD5/GP75/BUSSO0 | SB_LED3_C | |



The diagram illustrates a 2D mesh network topology. It features a central square node labeled "CPU". Surrounding the CPU are 16 peripheral nodes arranged in a 4x4 grid. The nodes are labeled as follows:

- Top row: PH1, PH2, PH8, PH7
- Second row: DL2, DL4, DL9, DL7
- Third row: PH5, PH6, DL3, DL5
- Bottom row: PH11, PH12, L4, L3

On the right side of the diagram, there are two vertical labels: "VTT" and "VCORE", each positioned next to a vertical stack of four nodes (PH11, PH12, L4, L3 for VTT and PH4, PH3, DL8, DL6 for VCORE).

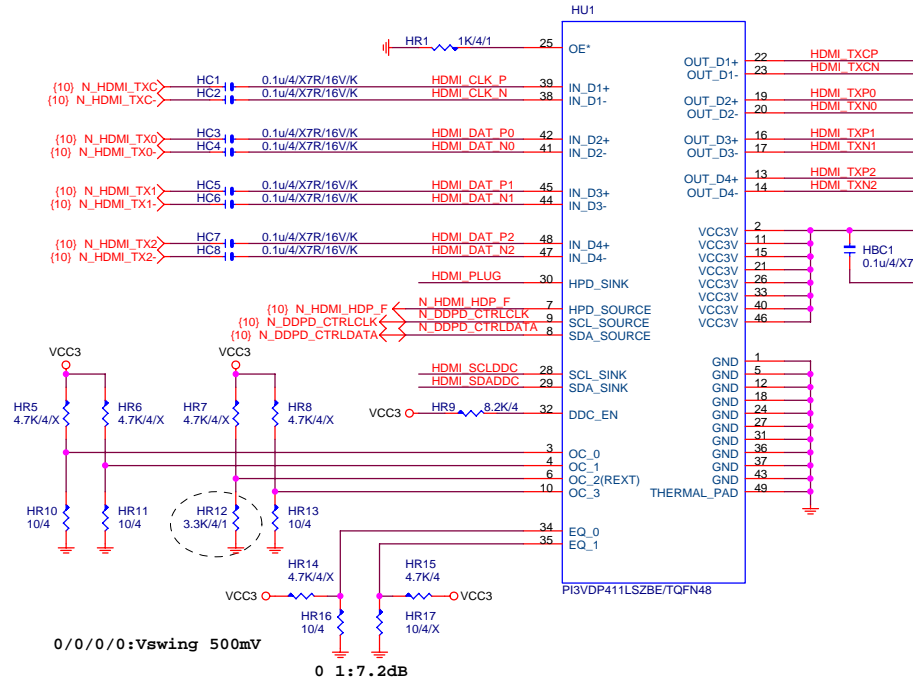
散熱模組料號：

| 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 Termination |
| VREF_CA_A/VREF_CA_B | DRAM Address Ref |
| VREF_DQ_A/VREF_DQ_B | DRAM Data Ref |

| | 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 |

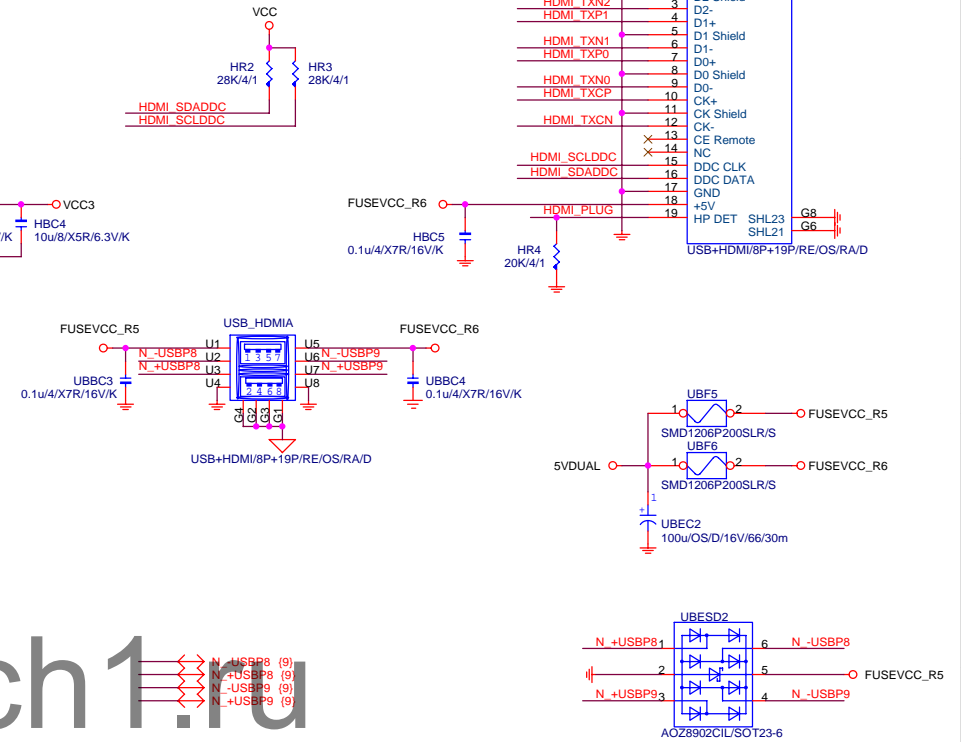
| | | | |
|----------------------------|-------------------------|-------|------------|
| Gigabyte Technology | | | |
| Title | | | |
| TABLE LIST | | | |
| Size C | Document Number | | Rev |
| | GA-Z68XP-UD3 | | 1.3 |
| Date: | Monday, August 01, 2011 | Sheet | 42 of 44 |

HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



0/0/0/0:Vswing 500mV

0 1:7.2dB



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| GIGABYTE™ | | | |
|------------|-------------------------|-------|----------|
| Title | | | |
| HDMI & USB | | | |
| Size | Document Number | Rev | |
| Custom | GA-Z68XP-UD3 | 1.3 | |
| Date: | Monday, August 01, 2011 | Sheet | 43 of 44 |

