

Model Name: GA-H87N-WIFI

Revision 2.02

SHEET

TITLE

| | |
|----|----------------------------|
| 01 | COVER SHEET |
| 02 | BOM & PCB MODIFY HISTORY |
| 03 | BLOCK DIAGRAM |
| 04 | CPU_LGA1150-A |
| 05 | CPU_LGA1150-B |
| 06 | CPU_LGA1150-C |
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| 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 | ITE 8728 LPC IO |
| 16 | COM,KB_USB30 |
| 17 | HWM,FAN CTRL,OV,-PROCHOT |
| 18 | DUAL BIOS |
| 19 | FP,FUSB,SPK,SATALED |
| 20 | Realtek ALC892 |
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| 24 | DISCRETE POWER |
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| 26 | RT8120_DDR POWER,M3 POWER |
| 27 | VCORE ISL95820_1 |

SHEET

TITLE

| | |
|----|------------------|
| 28 | VCORE ISL95820_2 |
| 29 | DVI-I |
| 30 | HDMI * 2 |
| 31 | mini PCI-E |

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Gigabyte Technology

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| Size | Document Number | GA-H87N-WIFI | |
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Revision 2.02

Component value change history

2013/11/15

[illegible]

Circuit or PCB layout change

[illegible]

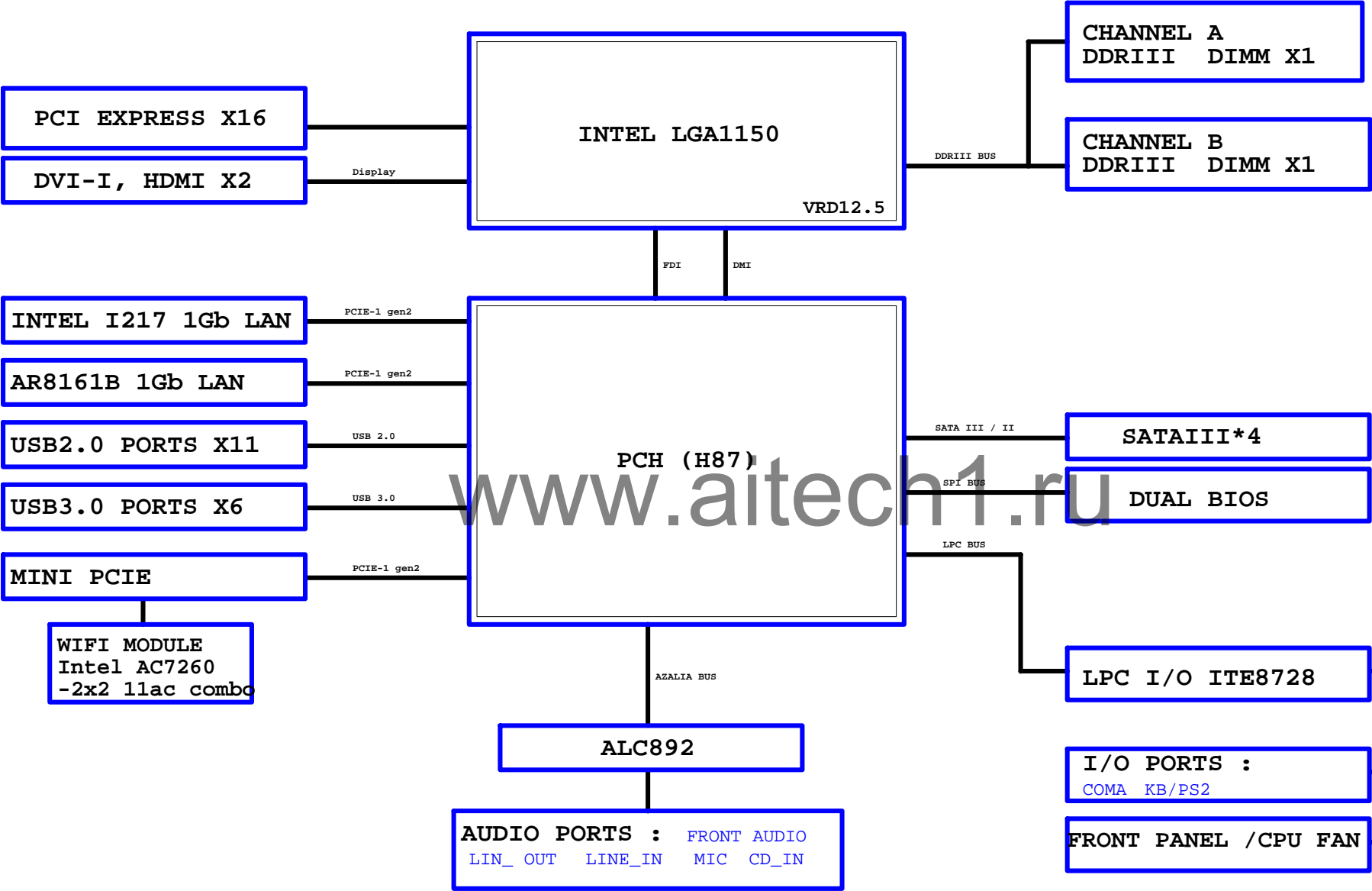
Revision 2.02

2013/11/15

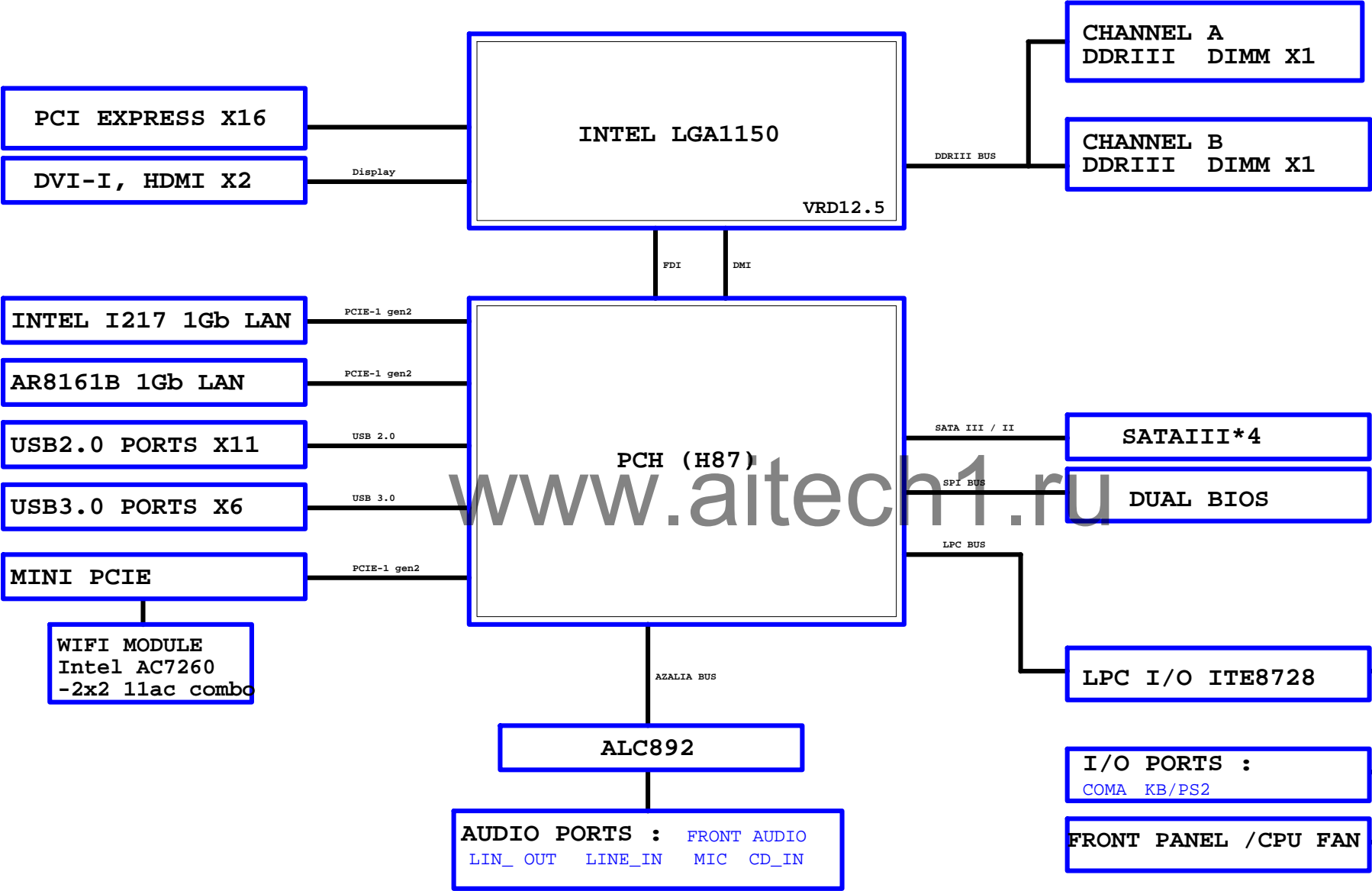
PBOM:9MH87NWIF-00-20A
 L. PBOM:9MH87NWIF-00-20C

[illegible]

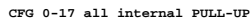
BLOCK DIAGRAM



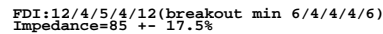
BLOCK DIAGRAM



(E)



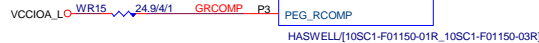
(D)



FDI_TXP[0..1] >> FDI_TXP[0..1] [9]
FDI_TXN[0..1] >> FDI_TXN[0..1] [9]

(C)

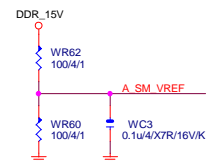
LGA11



100%

```
PA_EXP_TXP[0..15]    >> PA_EXP_TXP[0..15] [14]
PA_EXP_TXN[0..15]    >> PA_EXP_TXN[0..15] [14]
PA_EXP_RXP[0..15]    >> PA_EXP_RXP[0..15] [14]
PA_EXP_RXN[0..15]    >> PA_EXP_RXN[0..15] [14]
```

| CPU | PU/PD |
|-----|-------|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
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| 11 | 11 |
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| 13 | 13 |
| 14 | 14 |
| 15 | 15 |
| 16 | 16 |
| 17 | 17 |
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| 88 | 88 |
| 89 | 89 |
| 90 | 90 |
| 91 | 91 |
| 92 | 92 |
| 93 | 93 |
| 94 | 94 |
| 95 | 95 |
| 96 | 96 |
| 97 | 97 |
| 98 | 98 |
| 99 | 99 |
| 100 | 100 |



VCC1_05_PCH

WR8
1K4/1

WR71
04/X

WR72
510/4/1

SOT23

N-THRMTRIP [11,17]

A-THRMTRIP

WtG
MVB7222A/SOT23/600mA/40

[12] DIS_T

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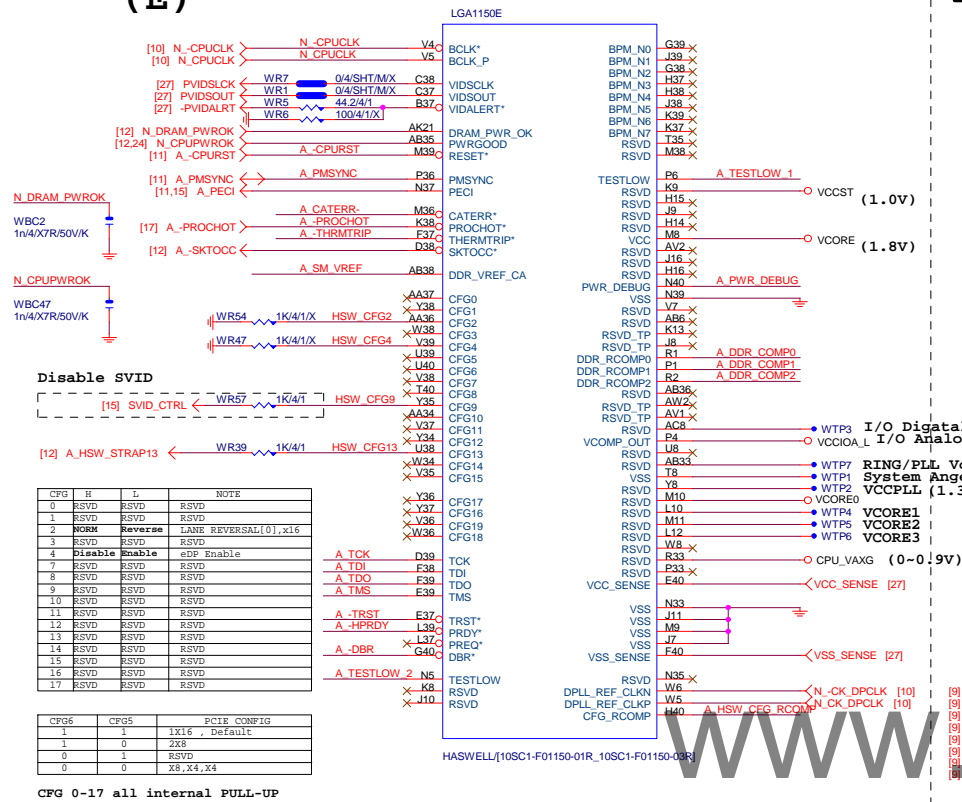
CPU LGA1150-A

GA-H87N-WIFI

2.02

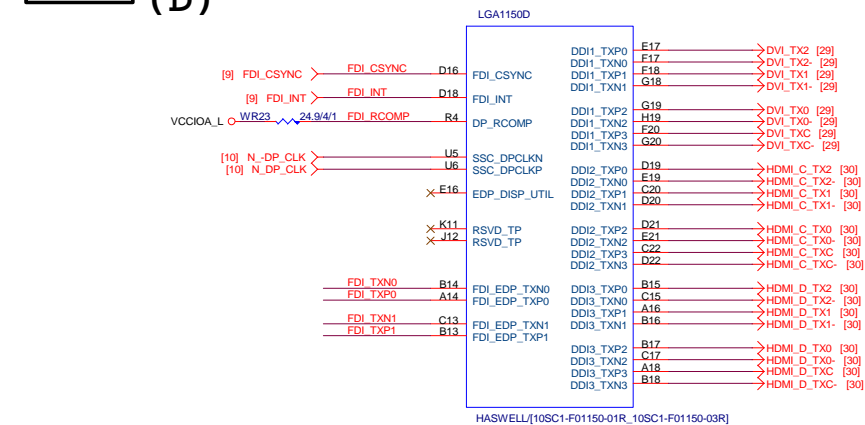
LGA1150

(E)



LGA1150

(D)



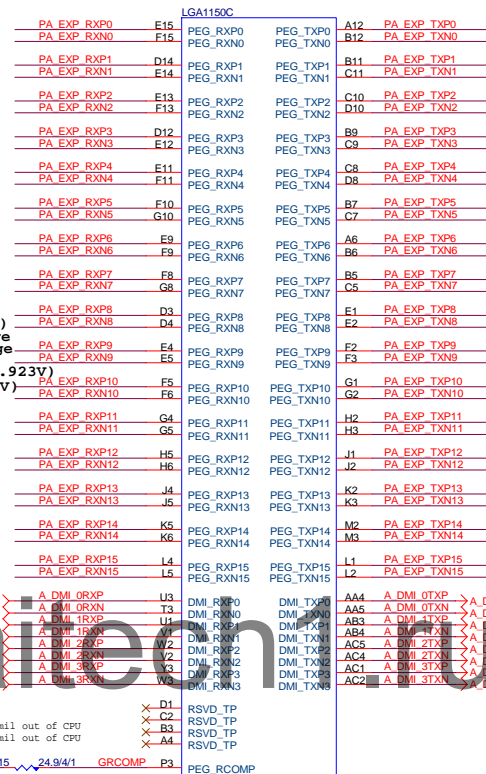
FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

FDI_TXP0_11 → FDI_TXP[0..1] [9]
FDI_TXN0_11 → FDI_TXN[0..1] [9]

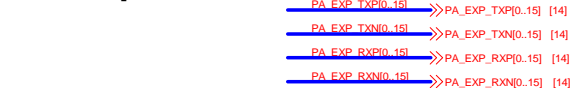
LGA1155

(C)

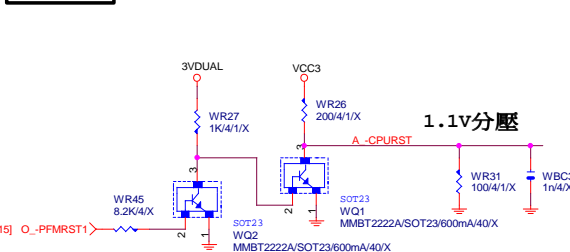
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



DMI:12/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%



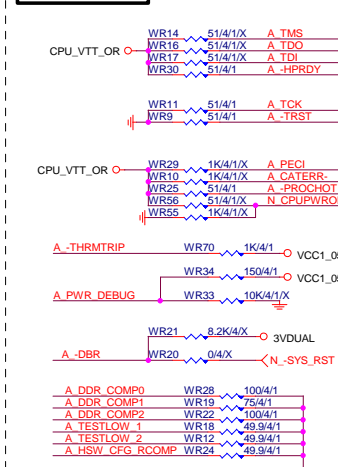
-CPURST



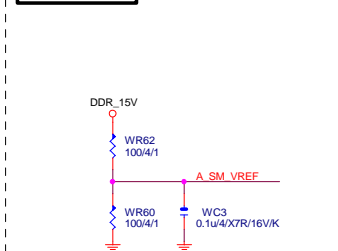
CPU SVID



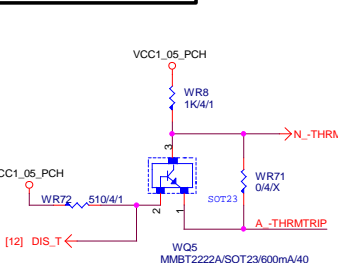
CPU PU/PD



SM REF



THRMTRIP DISABLE



Gigabyte Technology

Document Number
CPU LGA1150-A
GA-H87N-WIFI
Rev 2.02

HASWELL/10SC1-F01150-01R_10SC1-F01150-03R

HASWELL/10SC1-F01150-01R_10SC1-F01150-03R

Diagram illustrating the input nodes WBC34 and WBC33, each connected to ground through a capacitor with value $0.1\mu/4/X7R/16V/K$. The nodes are connected to VREF DQA and VREF DQB respectively.



COVER+BLACK NI

ILM_BP/1156/BKNI/12KRC-0F0001-61R_12KRC-0F0001-62R

DDR BUS

[8] -DQSB[0..7] \longleftrightarrow -DQSB[0..7]

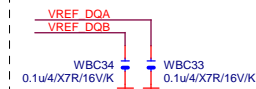
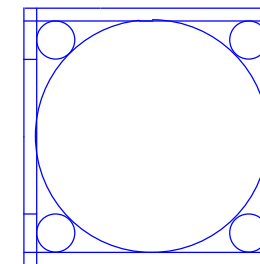
| LGA1150A | | | |
|----------|----------|-------------|-----------|
| MAAA0 | AU13 | DDR0_M0 | DDR0_D00 |
| MAAA1 | AV16 | DDR0_M1 | DDR0_D01 |
| MAAA2 | AU16 | DDR0_M2 | DDR0_D02 |
| MAAA3 | AW17 | DDR0_M3 | DDR0_D03 |
| MAAA4 | AU17 | DDR0_M4 | DDR0_D04 |
| MAAA5 | AU18 | DDR0_M5 | DDR0_D05 |
| MAAA6 | AV17 | DDR0_M6 | DDR0_D06 |
| MAAA7 | AT18 | DDR0_M7 | DDR0_D07 |
| MAAA8 | AU18 | DDR0_M8 | DDR0_D08 |
| MAAA9 | AT19 | DDR0_M9 | DDR0_D09 |
| MAAA10 | AW11 | DDR0_M10 | DDR0_D10 |
| MAAA11 | AV19 | DDR0_M11 | DDR0_D11 |
| MAAA12 | AU19 | DDR0_M12 | DDR0_D12 |
| MAAA13 | AY10 | DDR0_M13 | DDR0_D13 |
| MAAA14 | AT20 | DDR0_M14 | DDR0_D14 |
| MAAA15 | AU21 | DDR0_M15 | DDR0_D15 |
| MODT_A0 | AW10 | DDR0_ODT0 | DDR0_ODT0 |
| MODT_A1 | AY8 | DDR0_ODT1 | DDR0_ODT1 |
| AW9 | AW9 | DDR0_ODT2 | DDR0_ODT2 |
| AW8 | AW8 | DDR0_ODT3 | DDR0_ODT3 |
| AW33 | AW33 | DDR0_ECC0 | DDR0_ECC0 |
| AW33 | AW33 | DDR0_ECC1 | DDR0_ECC1 |
| AW33 | AW33 | DDR0_ECC2 | DDR0_ECC2 |
| AW33 | AW33 | DDR0_ECC3 | DDR0_ECC3 |
| AW33 | AW33 | DDR0_ECC4 | DDR0_ECC4 |
| AW33 | AW33 | DDR0_ECC5 | DDR0_ECC5 |
| AW33 | AW33 | DDR0_ECC6 | DDR0_ECC6 |
| AW33 | AW33 | DDR0_ECC7 | DDR0_ECC7 |
| SBAA0 | SBAA0 | DDR0_BA0 | DDR0_D031 |
| SBAA1 | SBAA1 | DDR0_BA1 | DDR0_D032 |
| SBAA2 | SBAA2 | DDR0_BA2 | DDR0_D033 |
| CKEA0 | CKEA0 | DDR0_CKE0 | DDR0_D036 |
| CKEA1 | CKEA1 | DDR0_CKE1 | DDR0_D037 |
| CSA0 | CSA0 | DDR0_CS_N0 | DDR0_D041 |
| CSA1 | CSA1 | DDR0_CS_N1 | DDR0_D042 |
| DCLKA0 | DCLKA0 | DDR0_CLK_P0 | DDR0_D047 |
| DCLKA0 | DCLKA0 | DDR0_CLK_N0 | DDR0_D048 |
| DCLKA1 | DCLKA1 | DDR0_CLK_P1 | DDR0_D049 |
| DCLKA1 | DCLKA1 | DDR0_CLK_N1 | DDR0_D050 |
| RSVD | RSVD | DDR0_RSVD | DDR0_D056 |
| SRASA | SRASA | DDR0_RAS* | DDR0_D062 |
| SWEA | SWEA | DDR0_WE* | DDR0_D063 |
| SCASA | SCASA | DDR0_CAS* | DDR0_D064 |
| DDR3_RST | DDR3_RST | DDR0_RESET* | DDR0_D065 |

HASWELL(10SC1-F01150-01R_10SC1-F01150-03R)

| LGA1150B | | | |
|----------|----------|---------------|-----------|
| MAAB0 | AL19 | DDR1_M0 | DDR1_D00 |
| MAAB1 | AK23 | DDR1_M1 | DDR1_D01 |
| MAAB2 | AK23 | DDR1_M2 | DDR1_D02 |
| MAAB3 | AK23 | DDR1_M3 | DDR1_D03 |
| MAAB4 | AK23 | DDR1_M4 | DDR1_D04 |
| MAAB5 | AK23 | DDR1_M5 | DDR1_D05 |
| MAAB6 | AK23 | DDR1_M6 | DDR1_D06 |
| MAAB7 | AK23 | DDR1_M7 | DDR1_D07 |
| MAAB8 | AK23 | DDR1_M8 | DDR1_D08 |
| MAAB9 | AK23 | DDR1_M9 | DDR1_D09 |
| MAAB10 | AK23 | DDR1_M10 | DDR1_D10 |
| MAAB11 | AK23 | DDR1_M11 | DDR1_D11 |
| MAAB12 | AK23 | DDR1_M12 | DDR1_D12 |
| MAAB13 | AK23 | DDR1_M13 | DDR1_D13 |
| MAAB14 | AK23 | DDR1_M14 | DDR1_D14 |
| MAAB15 | AK23 | DDR1_M15 | DDR1_D15 |
| MODT_B0 | AK17 | DDR1_ODT0 | DDR1_ODT0 |
| MODT_B1 | AK16 | DDR1_ODT1 | DDR1_ODT1 |
| AW16 | AW16 | DDR1_ODT2 | DDR1_ODT2 |
| AK15 | AK15 | DDR1_ODT3 | DDR1_ODT3 |
| AW26 | AW26 | DDR1_ECC0 | DDR1_ECC0 |
| AW26 | AW26 | DDR1_ECC1 | DDR1_ECC1 |
| AW26 | AW26 | DDR1_ECC2 | DDR1_ECC2 |
| AW26 | AW26 | DDR1_ECC3 | DDR1_ECC3 |
| AW26 | AW26 | DDR1_ECC4 | DDR1_ECC4 |
| AW26 | AW26 | DDR1_ECC5 | DDR1_ECC5 |
| AW26 | AW26 | DDR1_ECC6 | DDR1_ECC6 |
| AW26 | AW26 | DDR1_ECC7 | DDR1_ECC7 |
| SBAB0 | SBAB0 | DDR1_BA0 | DDR1_D031 |
| SBAB1 | SBAB1 | DDR1_BA1 | DDR1_D032 |
| SBAB2 | SBAB2 | DDR1_BA2 | DDR1_D033 |
| CKEB0 | CKEB0 | DDR1_CKE0 | DDR1_D036 |
| CKEB1 | CKEB1 | DDR1_CKE1 | DDR1_D037 |
| CSB0 | CSB0 | DDR1_CS_N0 | DDR1_D041 |
| CSB1 | CSB1 | DDR1_CS_N1 | DDR1_D042 |
| DCLKB0 | DCLKB0 | DDR1_CLK_P0 | DDR1_D047 |
| DCLKB0 | DCLKB0 | DDR1_CLK_N0 | DDR1_D048 |
| DCLKB1 | DCLKB1 | DDR1_CLK_P1 | DDR1_D049 |
| DCLKB1 | DCLKB1 | DDR1_CLK_N1 | DDR1_D050 |
| RSVD | RSVD | DDR1_RSVD | DDR1_D056 |
| SCASB | SCASB | DDR1_RAS* | DDR1_D062 |
| SRASB | SRASB | DDR1_WE* | DDR1_D063 |
| SWEB | SWEB | DDR1_CAS* | DDR1_D064 |
| VREF_DQA | VREF_DQA | DDR1_VREF_DQA | DDR1_D065 |
| VREF_DQB | VREF_DQB | DDR1_VREF_DQB | DDR1_D066 |

HASWELL(10SC1-F01150-01R_10SC1-F01150-03R)

Place in CPU bottom side

CR
CPU RETENTION/X

LGA1150_P



COVER+BLACK NI

ILM_BP/1156/BKNI[12KRC-0F0001-61R_12KRC-0F0001-62R]

DDR BUS

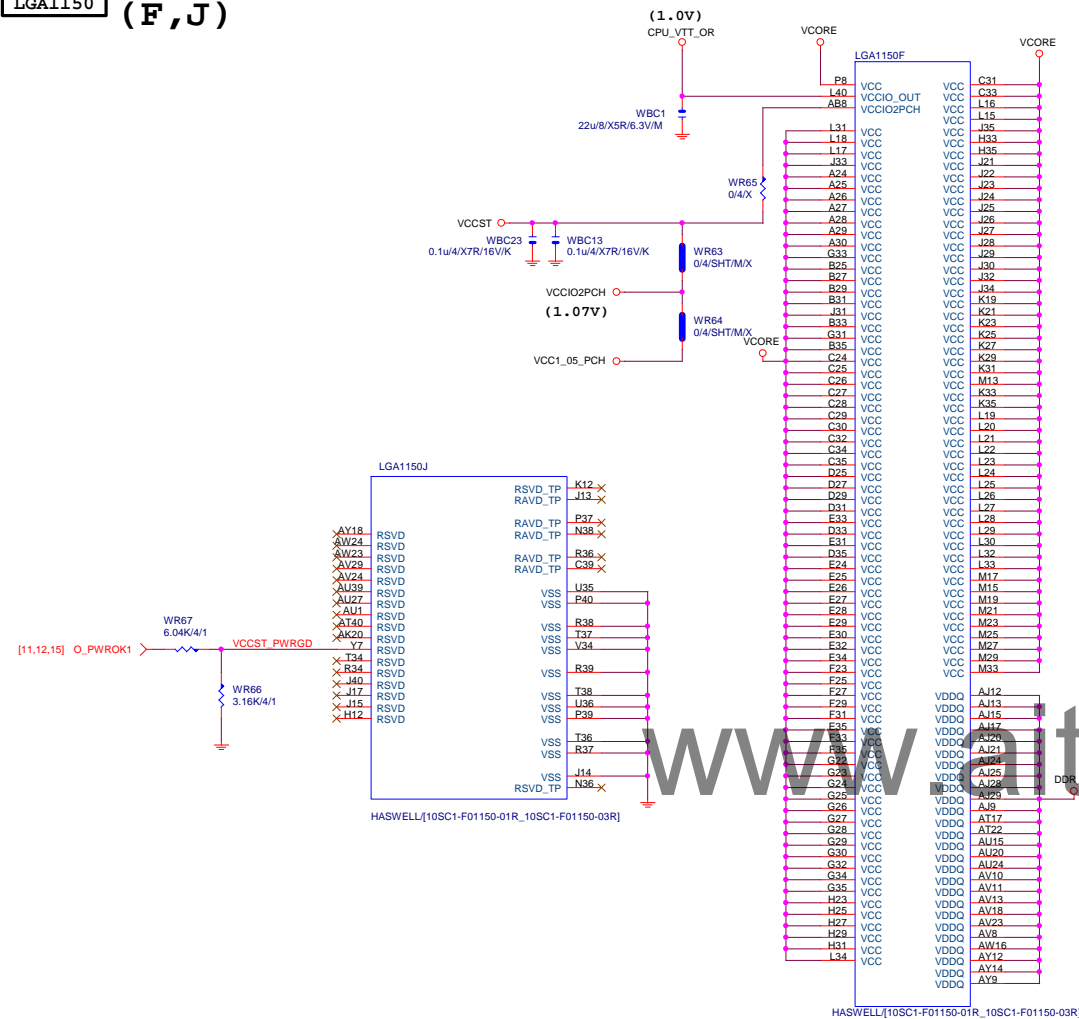
| | |
|------------------|-------------|
| [7] MODT_A[0..1] | MODT_A0_11 |
| [8] MODT_B[0..1] | MODT_B0_11 |
| [7] MDA[0..63] | MDA[0..63] |
| [8] MDB[0..63] | MDB[0..63] |
| [7] DQSA[0..7] | DQSA[0..7] |
| [7] -DQSA[0..7] | -DQSA[0..7] |
| [7] MAAA[0..15] | MAAA[0..15] |
| [8] MAAB[0..15] | MAAB[0..15] |
| [8] DQSB[0..7] | DQSB[0..7] |
| [8] -DQSB[0..7] | -DQSB[0..7] |

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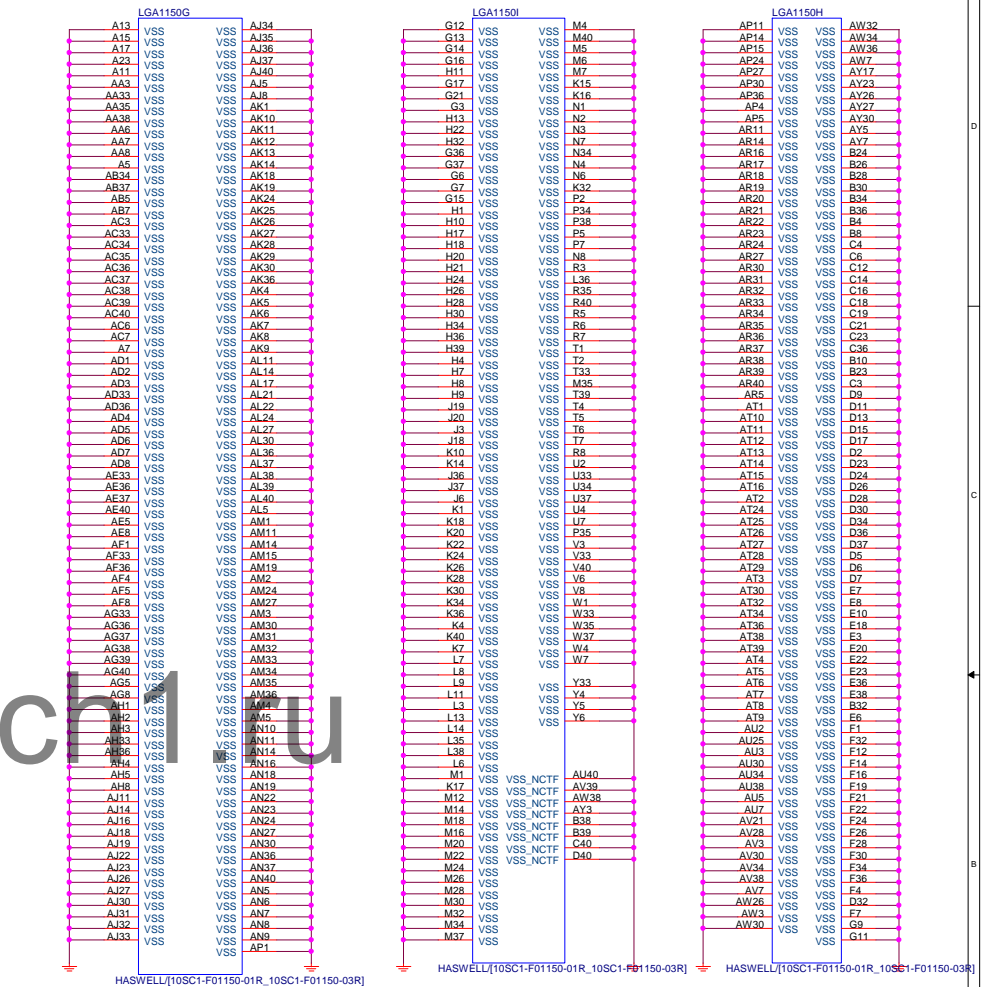
CPU LGA1156-B

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|--------|-----------------------------|---------------|---------|
| Title | | CPU LGA1156-B | |
| Size | Document Number | GA-H87N-WIFI | Rev |
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LGA1150 (F, J)

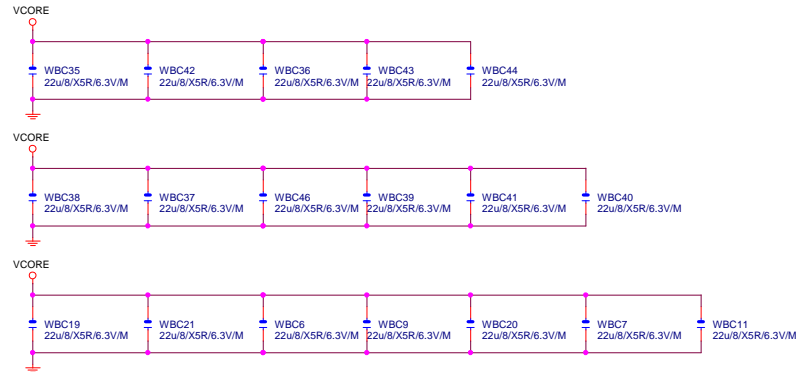


LGA1155 (G,H,I)



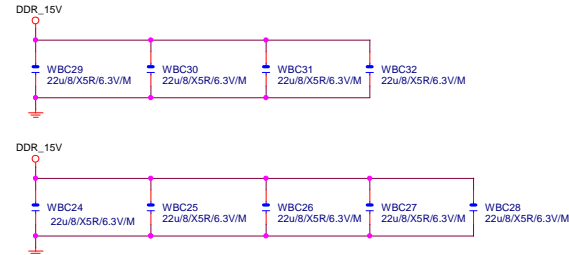
VCore CAP

(X18)



DDR CAP

(x9)

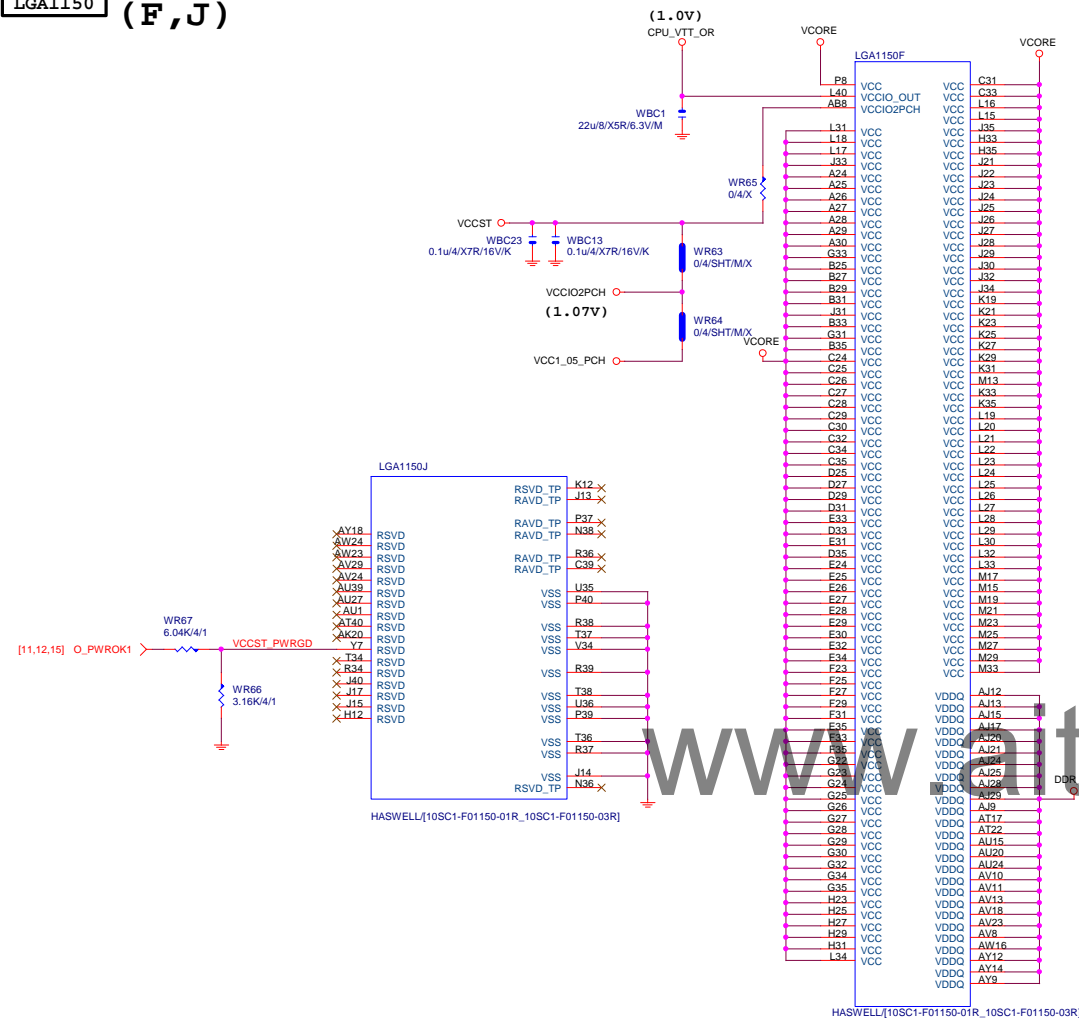


Gigabyte Technology

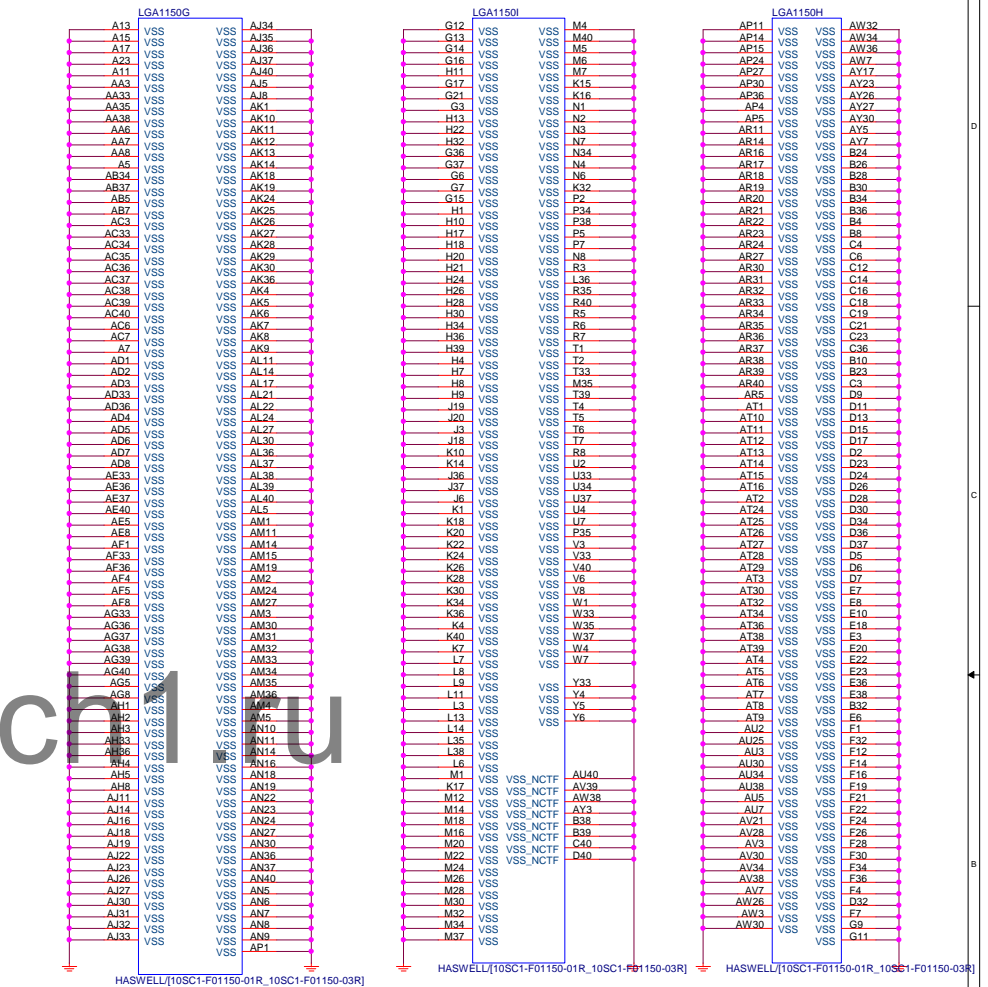
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| Title | CPU LGA1150-C |
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| Size | Document Number | Rev |
| Custom | GA-H87N-WIFI | 2.02 |

LGA1150 (F,J)

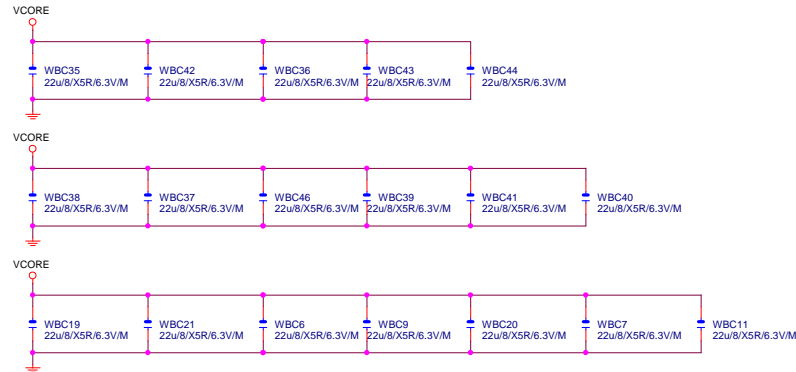


LGA1155 (G,H,I)



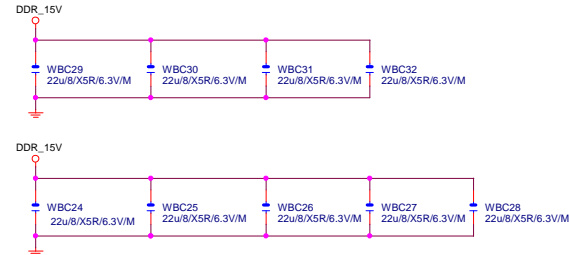
VCore CAP

(X18)



DDR CAP

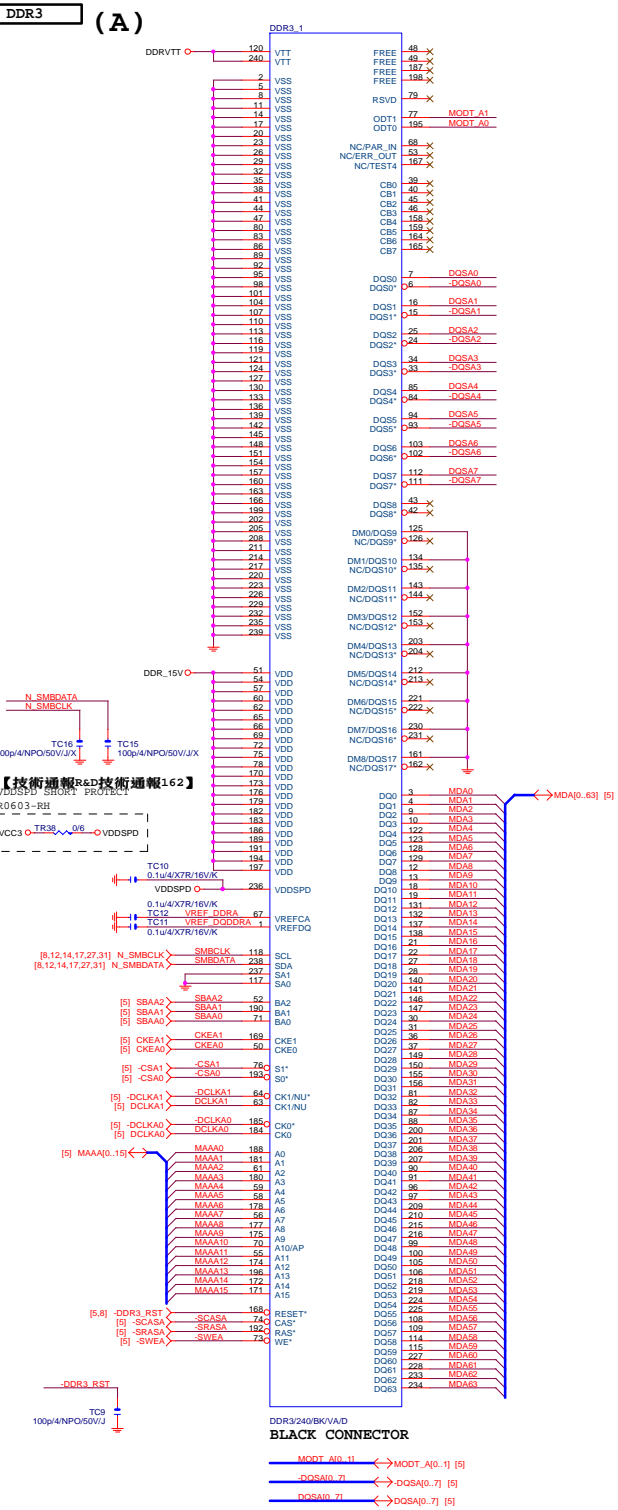
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Gigabyte Technology

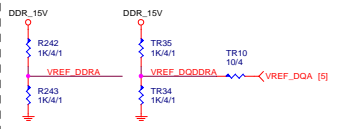
| | |
|-------|---------------|
| Title | CPU LGA1150-C |
|-------|---------------|

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| Size | Document Number | Rev |
| Custom | GA-H87N-WIFI | 2.02 |

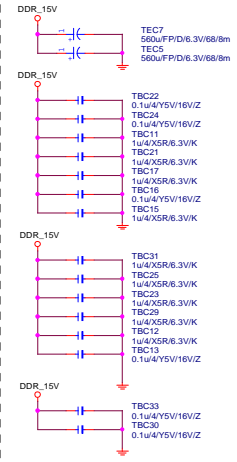


DDR3

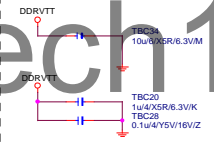
DDR3 VREF



DDR15V Decouple



DDRVTT Decouple

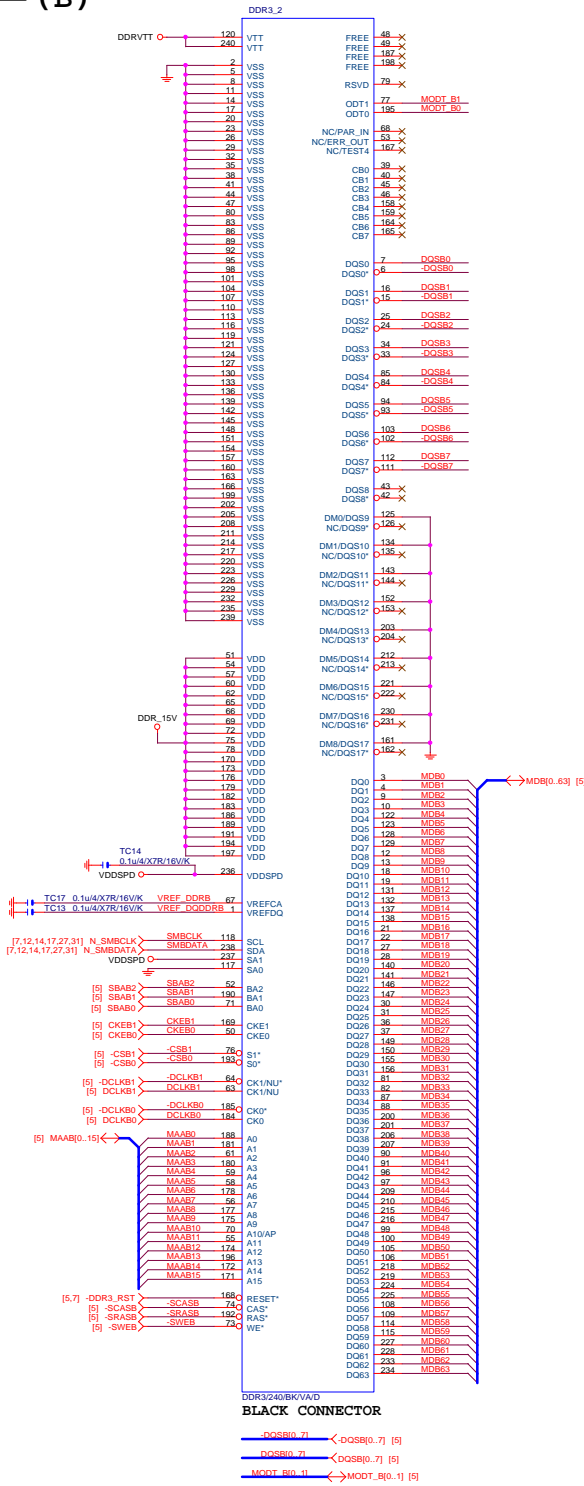


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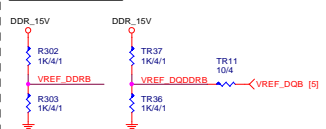
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| Gigabyte Technology | | | |
| DDRIII CHANNEL A | | | |
| GA-H87N-WIFI | | | |
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| Size | Custom | | |
| Date | | Sheet | 7 of 31 |

DDR3

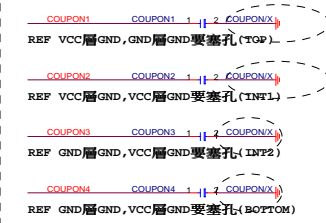
(B)



DDR3 VREF



COUPON



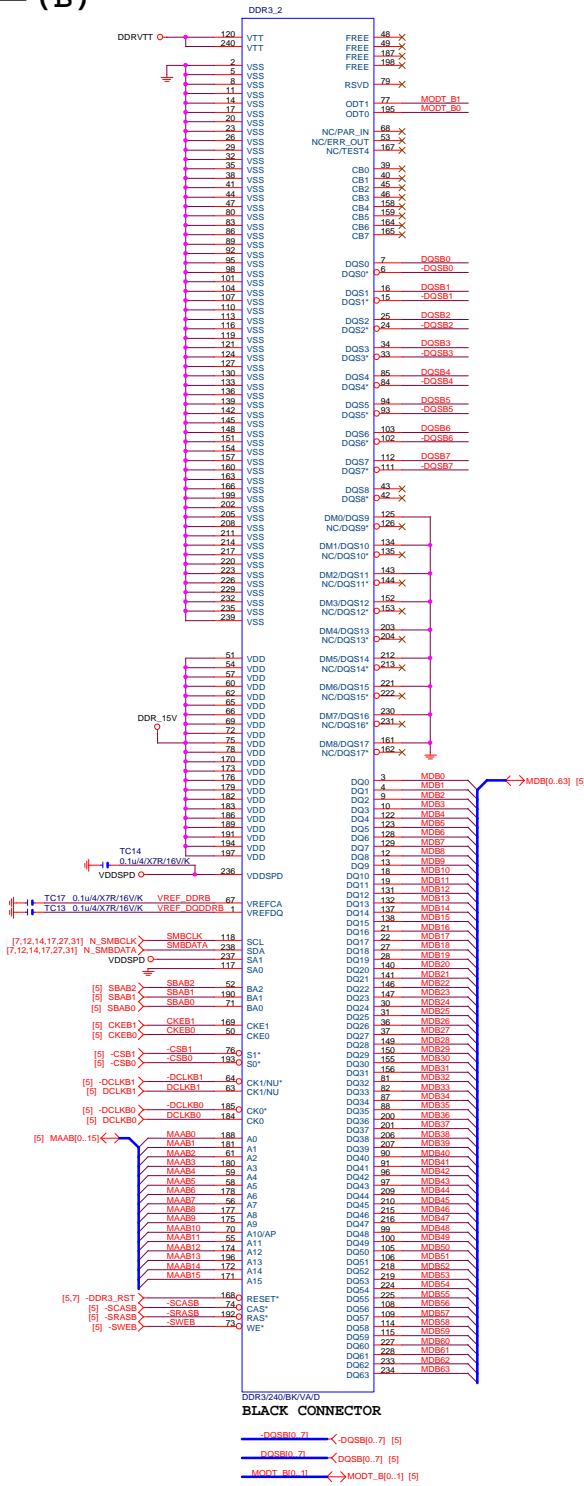
CPU

DIMM1 CHA
DIMM2 CHB

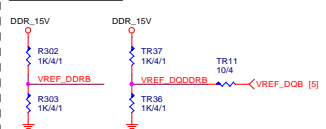
www.aitech1.ru

DDR3

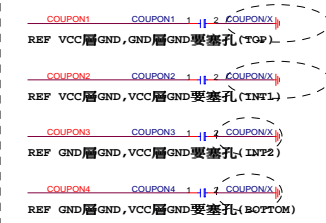
(B)



DDR3 VREF



COUPON



CPU

DIMM1 CHA
DIMM2 CHB

www.aitech1.ru

| Gigabyte Technology | | | |
|---------------------|--|--|--|
| File | | | |
| DDRIII CHANNEL B | | | |
| Size | | | |
| Document Number | | | |
| GA-H87N-WIFI | | | |
| Rev | | | |
| 2.02 | | | |
| Date | | | |
| Sheet 1 of 31 | | | |

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

VCC1_5_PCH

NR50 7.5K/4/1 DMI_COMP B19

PCIE_COMP C13

NR40 7.5K/4/1

CK -SRCCLK_PCH G22

CK SRCCLK_PCH F22

H7
E1
D2
K8
G3
G5
J2
J3
H2
H1

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



PCHB

B85: Port 6/7 N/A

H81: Port 6/7/12/13 N/A

PCIE PERP_2_USB3_RXP_3
PCIE PETN_2_USB3_TXN_3
PCIE PETP_2_USB3_TXP_3
PCIE PERN_3
PCIE PERP_3
PCIE PETN_3
PCIE PETP_3
PCIE PERN_4
PCIE PERP_4

OC0B GP59
OC1B GP40
OC2B GP41
OC3B GP42
OC4B GP43
OC5B GP9
OC6B GP10
OC7B GP14

AE40
AF32
AD39
AD40
AF39
AC41
AF40
N GPIO14

N_USB0C_F [16]
N_USB0C_R [16]

W=4 mil out of P

DH82H87/C2/[10HB1-030H87-20R]

PCHE USB3

VCC3

NR62 8.2K/4 AK28 TACH0

NR63 8.2K/4 AT34 TACH1

CK SRCCLK PCH

Don't miss

| | Size (μ) |
|-----|-------------------|
| Dan | 2 |

FDILINK

6_GP70
7_GP71

33 0:20/5/7/5/20 (breakout min

| | | | |
|------------------------------------|-----------------------------|-------|---------|
| Gigabyte Technology | | | |
| PCH FDI,DMI,USB ,PCIE,NVRAM | | | |
| Document Number | GA-H87N-WIFI | | |
| Date: | Wednesday, January 15, 2014 | Sheet | 9 of 31 |

PCH

(B)

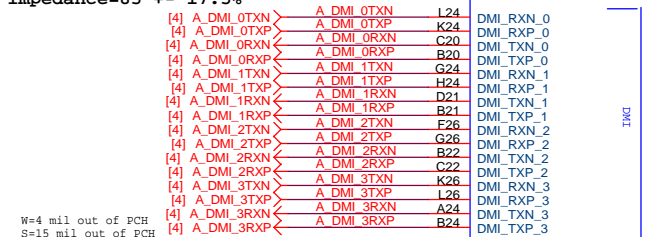
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHB

B85: Port 6/7 N/A

H81: Port 6/7/12/13 N/A



W=4 mil out of PCH

S=15 mil out of PCH

VCC1_5_PCH

USB3.0

MINI AR8161B

PCI-E

I217

I217

I217

I217

I217

I217

I217

I217

I217

I217

I217

I217

I217

I217

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I217

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I217

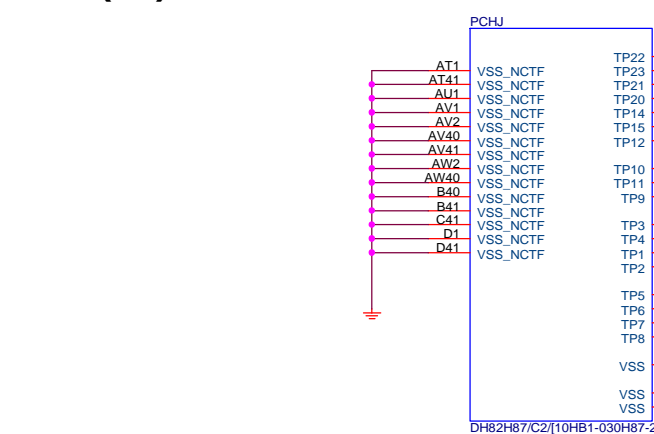
放靠近 Device & PCI-E Slot

Impedance=80 +- 17.5%

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

PCH

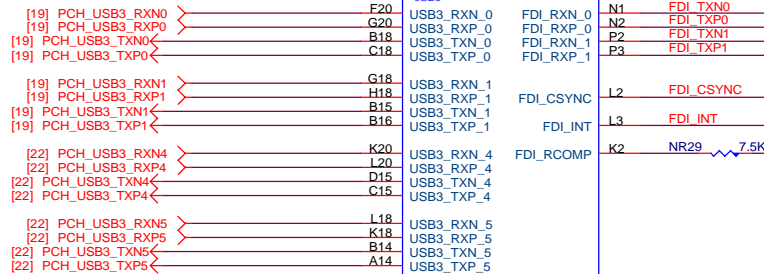
(J)



DH82H87/C2[10HB1-030H87-20R]

PCH

(F)



VCC3

NR62

NR63

NR62

NR63

NR62

NR63

NR62

NR63

NR62

NR63

NR62

NR63

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NR63

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NR63

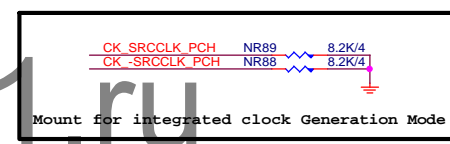
NR62

NR63

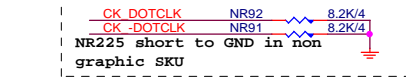
NR62

NR63

PCH CLK PD



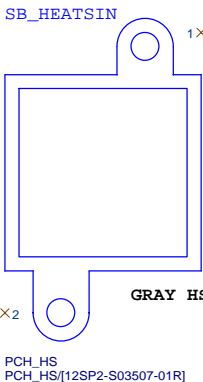
Mount for integrated clock Generation Mode



NR225 short to GND in non graphic SKU

PCH H/S

H77 HEATSINK



X2

PCH_HS
PCH_HS[12SP2-S03507-01R]

USB TABLE

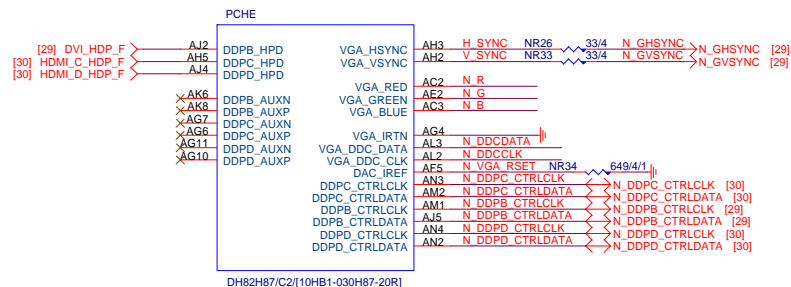
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

| USB OC# | Configure |
|---------|------------|
| OC0# | F_USB30 |
| OC1# | USB30_LAN2 |
| OC2# | USB30_LAN1 |
| OC3# | N/A |
| OC4# | F_USB20 |
| OC5# | KB_MS_USB |
| OC6# | MINI_PCIE |
| OC7# | Not Use |

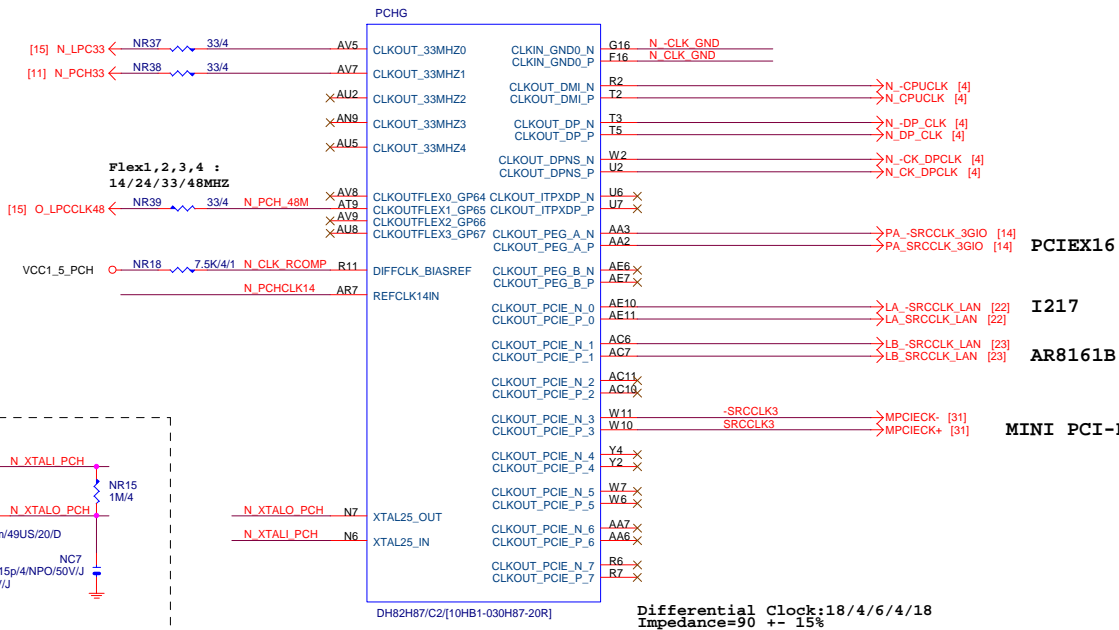
Gigabyte Technology

| | | | |
|--------|-----------------------------|---------------|----------|
| Title | PCH FDI,DMI,USB ,PCIE,NVRAM | | |
| Size | Document Number | GA-H87N-WIFI | Rev 2.02 |
| Custom | | | |
| Date: | Wednesday, January 15, 2014 | Sheet 9 of 31 | 1 |

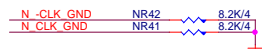
PCH (E)



PCH (G)



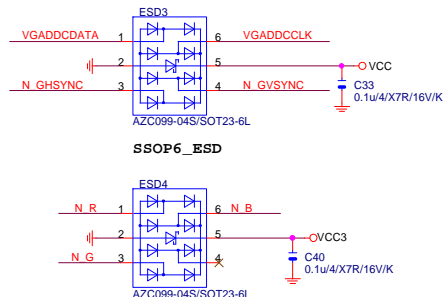
PCH CLK PD



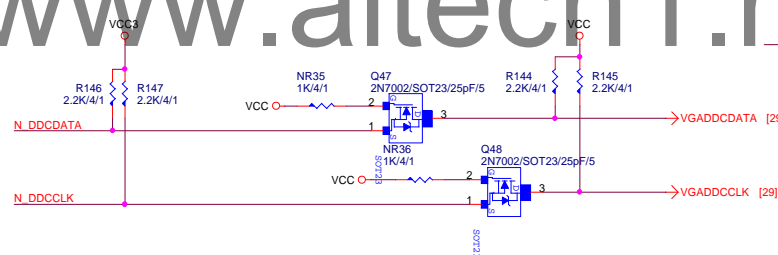
Mount for integrated clock Generation Mode



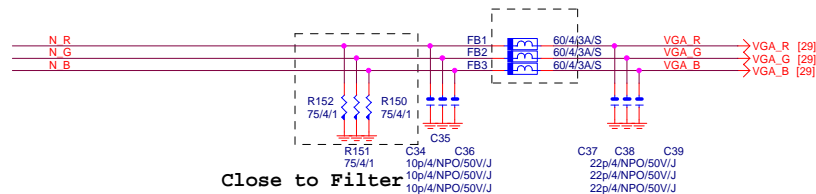
VGA ESD



VGA DDC



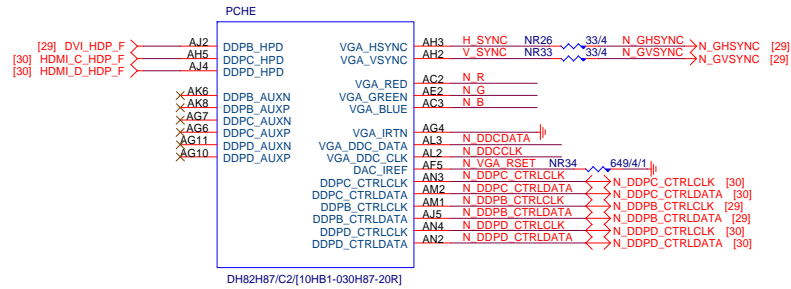
VGA DDC



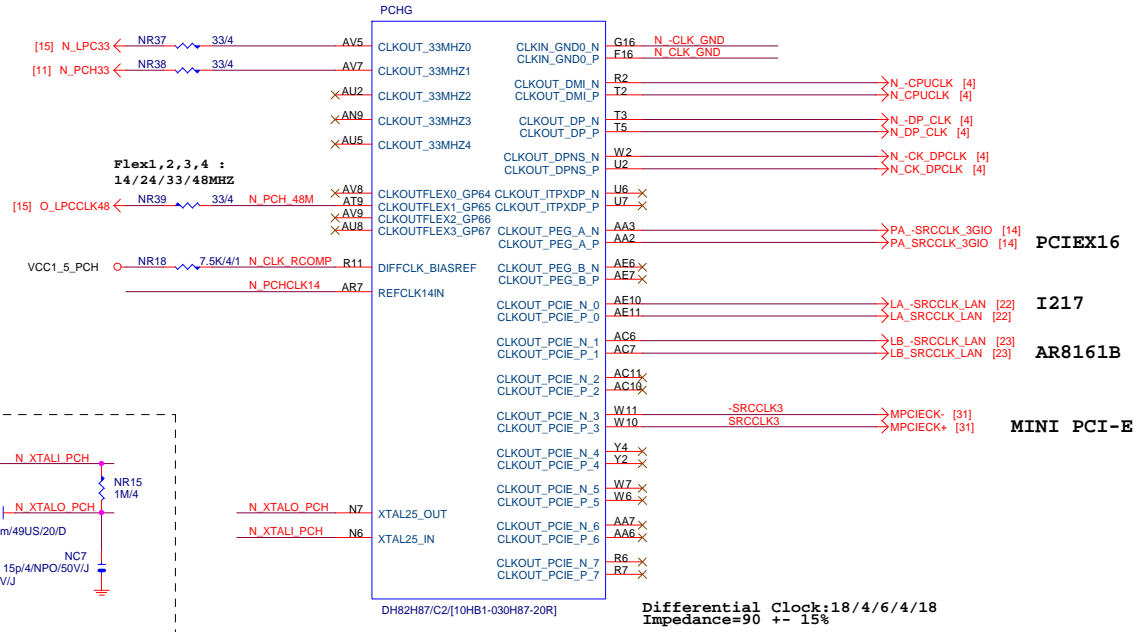
VGA CONNECTOR

| Gigabyte Technology | | | |
|-----------------------------------|--|--|--|
| Title | | | |
| PCH DISPLAY_CLK BUFFER | | | |
| Size | | | |
| Custom | | | |
| GA-H87N-WIFI | | | |
| Date: Wednesday, January 15, 2014 | | | |
| Sheet 10 of 31 | | | |
| Rev 2.02 | | | |

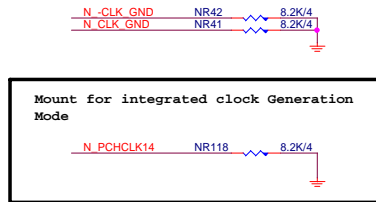
PCH (E)



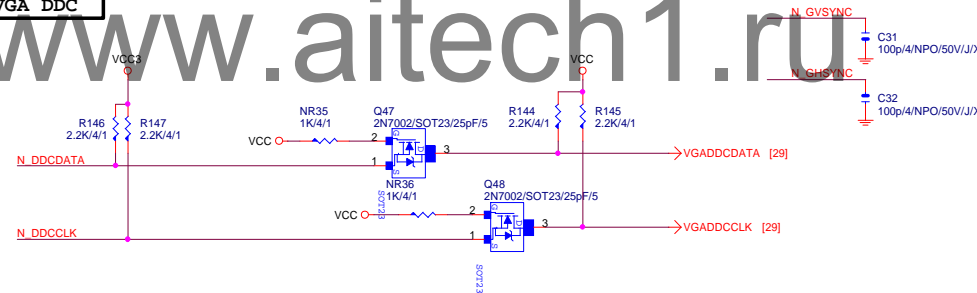
PCH (G)



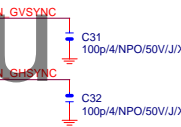
PCH CLK PD



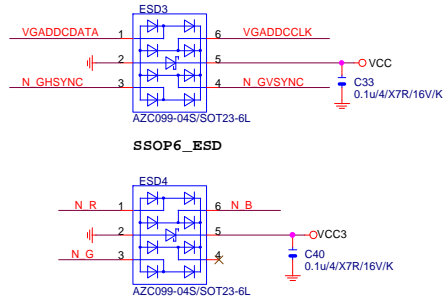
VGA DDC



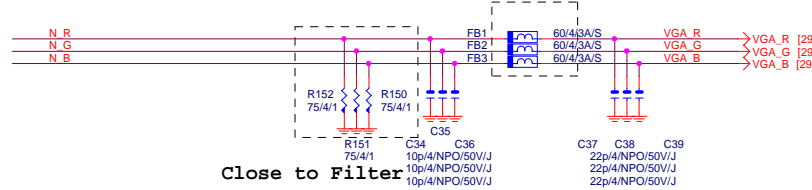
VGA CONNECTOR



VGA ESD



VGA DDC



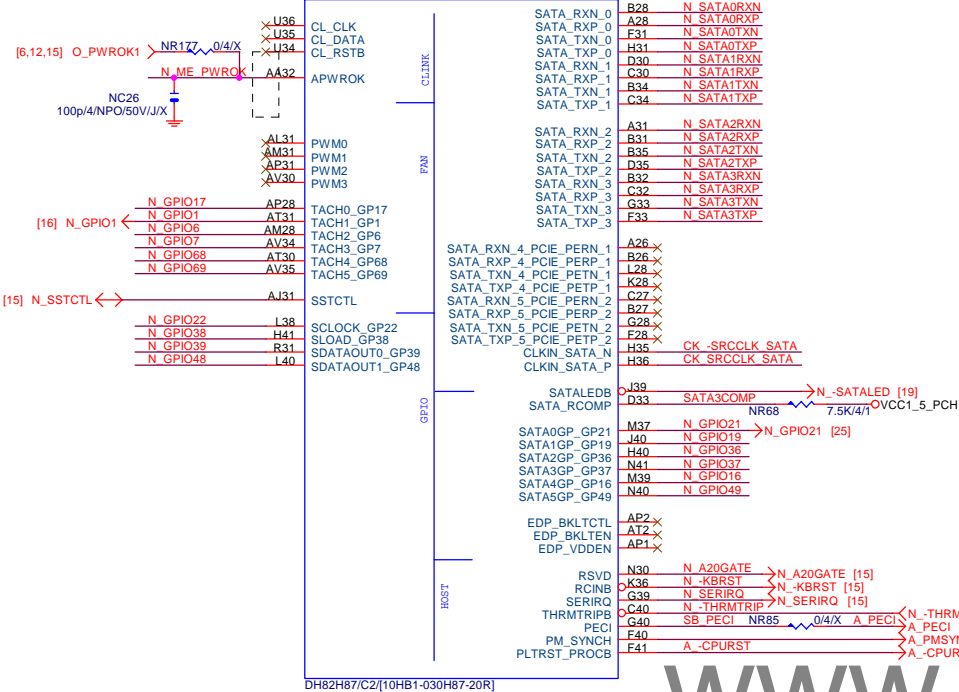
Gigabyte Technology

| Title | | |
|------------------------|-----------------------------|----------------|
| PCH DISPLAY_CLK BUFFER | | |
| GA-H87N-WIFI | | |
| Size | Document Number | Rev |
| Custom | | 2.02 |
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PCH (C)

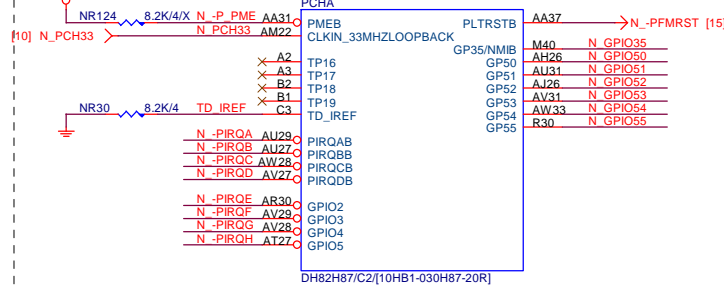
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHC

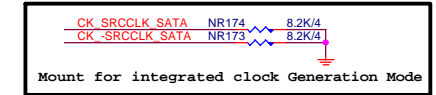


PCH (A)

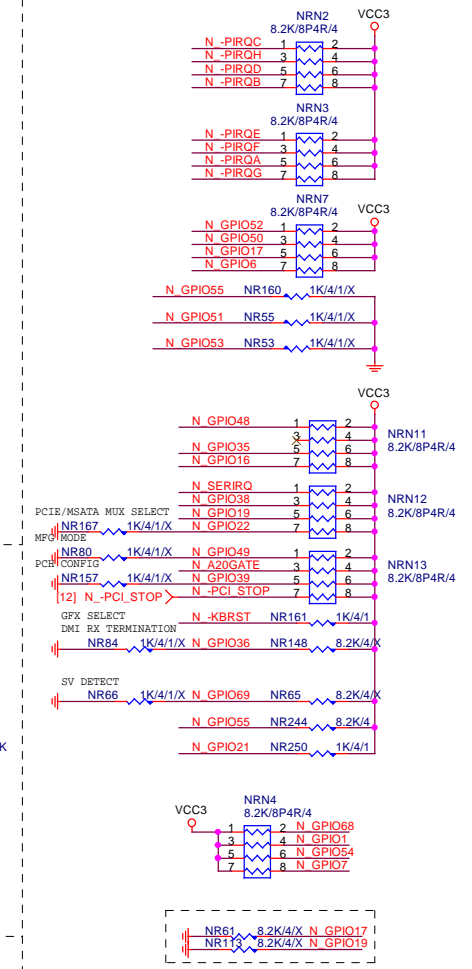
3VDUAL_PCH



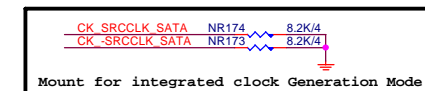
PCH CLK PD



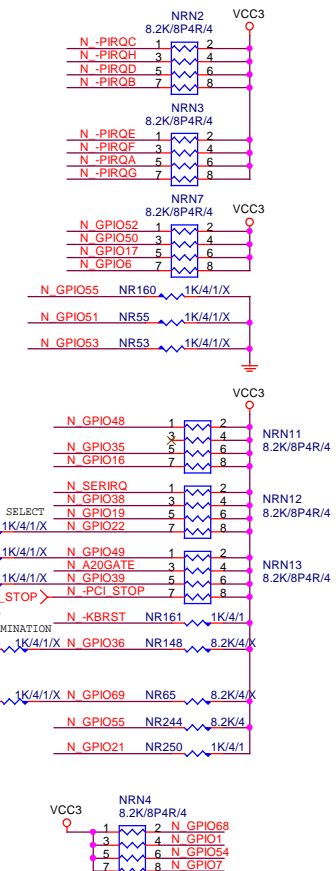
PCH PU/PD



SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



| PCH | PU/PD |
|-----|-------|
|-----|-------|



SATA3_0
SATA2/7/BKH/OP/NA/D/1/B
BLACK CONNECTOR

SATA3_1
SATA2/7/BKH/OP/NA/D/1/B
BLACK CONNECTOR

SATA3_2
SATA2/7/BKH/OP/NA/D/1/B
BLACK CONNECTOR

H81 Port 2/3 N/A

Pin headers for SATA3_0, SATA3_1, and SATA3_2 are shown with pins 1 through 7. The H81 Port 2/3 N/A is shown with pins 1 through 7. The connections are as follows:

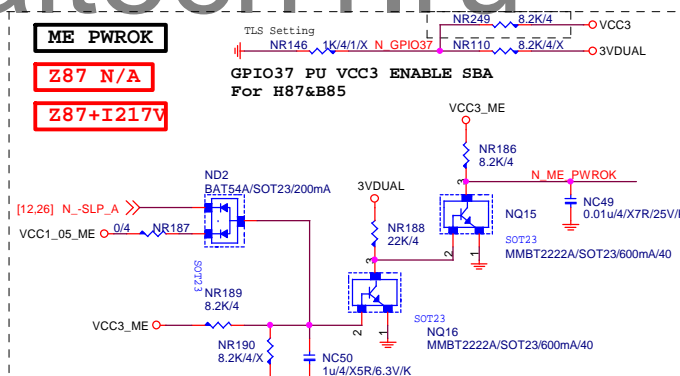
- SATA3_0:**
 - Pin 1: N_SATA0TXP
 - Pin 2: N_SATA0TXN
 - Pin 3: N_SATA0RXN
 - Pin 4: N_SATA0RXPC
 - Pin 5: NC44
 - Pin 6: NC38
 - Pin 7: NC37
- SATA3_1:**
 - Pin 1: N_SATA1TXP
 - Pin 2: N_SATA1TXN
 - Pin 3: N_SATA1RXN
 - Pin 4: N_SATA1RXPC
 - Pin 5: NC42
 - Pin 6: NC40
 - Pin 7: NC39
- SATA3_2:**
 - Pin 1: N_SATA2TXP
 - Pin 2: N_SATA2TXN
 - Pin 3: N_SATA2RXN
 - Pin 4: N_SATA2RXPC
 - Pin 5: NC34
 - Pin 6: NC32
 - Pin 7: NC31

N/A

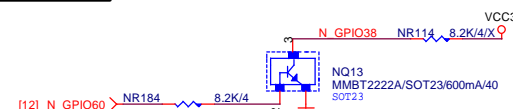
ME PWROK

Z87 N/A

Z87+I217V



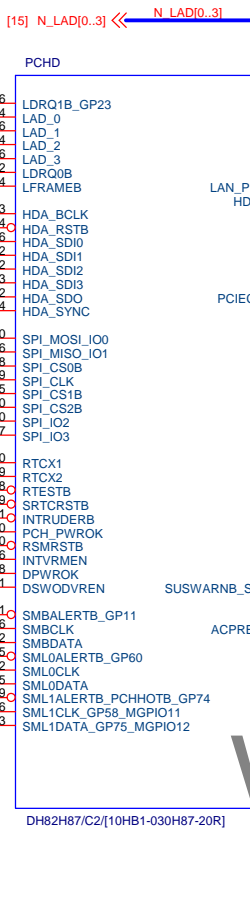
GPIO38 Ctrl



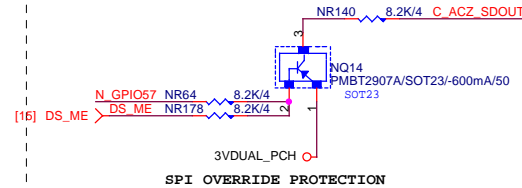
Gigabyte Technology

| | | | |
|----------------------|-----------------------------|-------|----------|
| Title | | | |
| PCH HOST , SATA, PCI | | | |
| Size | Document Number | | Rev |
| Custom | GA-H87N-WIFI | | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet | 11 of 31 |

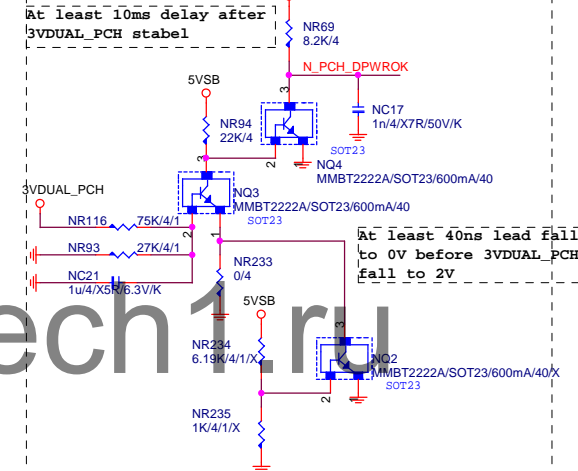
(D)



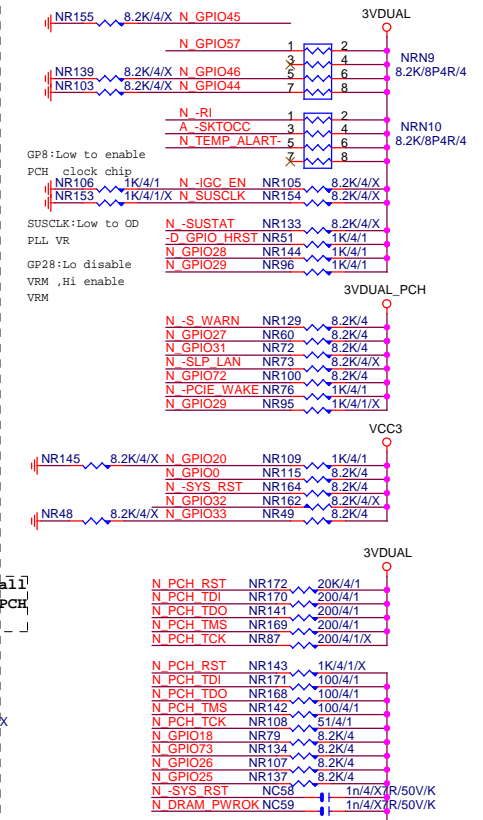
ACZ_SDOUT



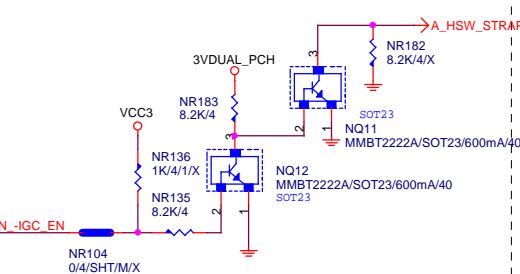
PCH_DPWROK



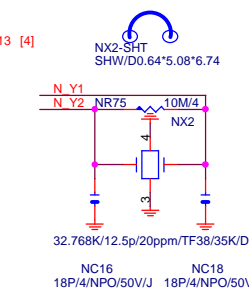
| | |
|-----|-------|
| PCH | PU/PD |
|-----|-------|



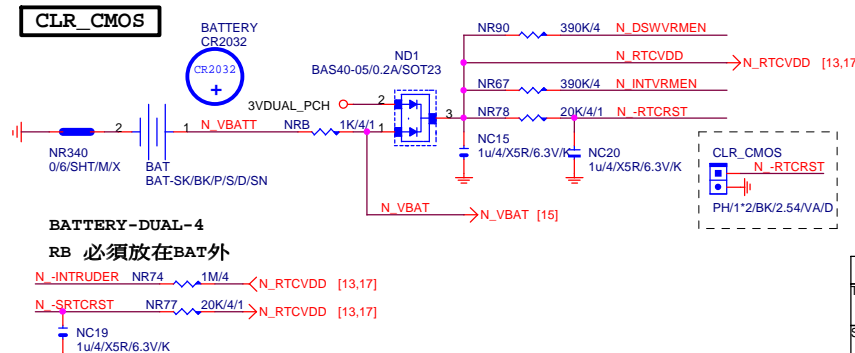
HSW_STRAP13



32.768KHZ



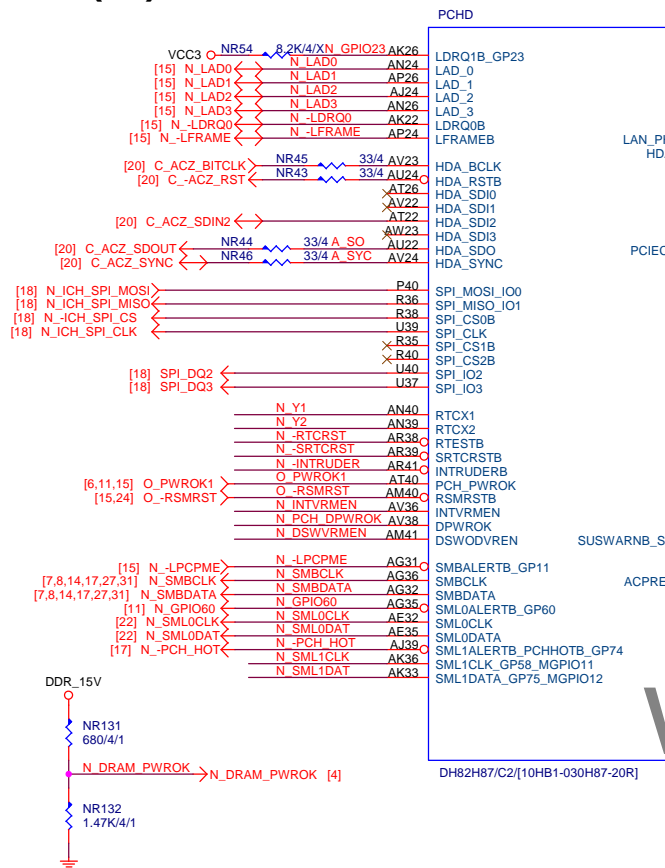
CLR_CMOS



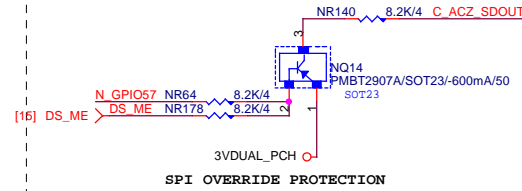
Gigabyte Technology

| | | | |
|-----------------------|-----------------------------|-------|----------|
| Title | | | |
| PCH GPIO, CTRL, AUDIO | | | |
| Size | Document Number | Rev | |
| Custom | GA-H87N-WIFI | 2.03 | |
| Date: | Wednesday, January 15, 2014 | Sheet | 12 of 31 |

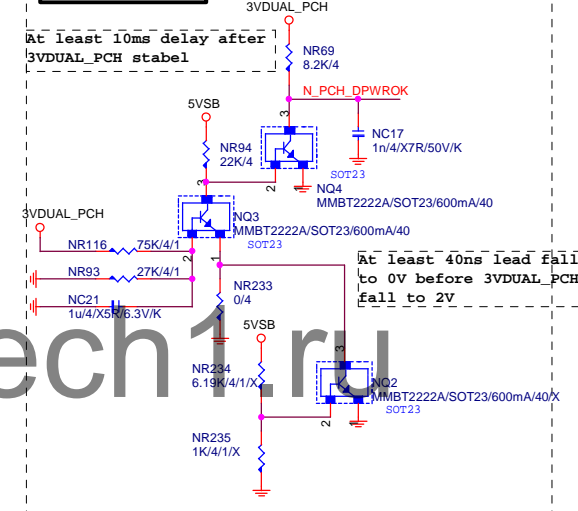
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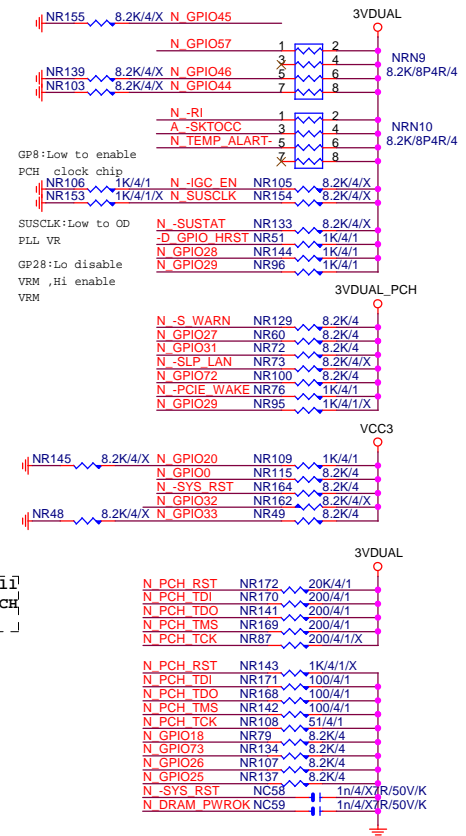
ACZ_SDOUT



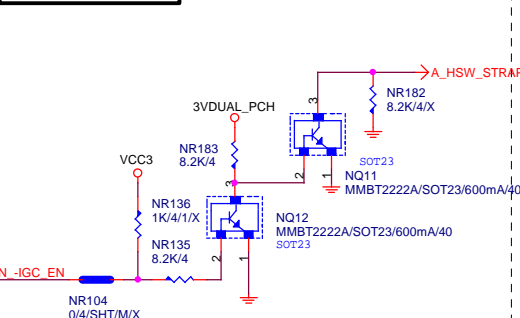
PCH_DPWROK



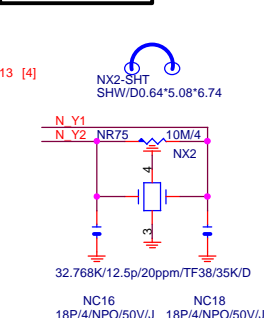
| | |
|-----|-------|
| PCH | PU/PD |
|-----|-------|



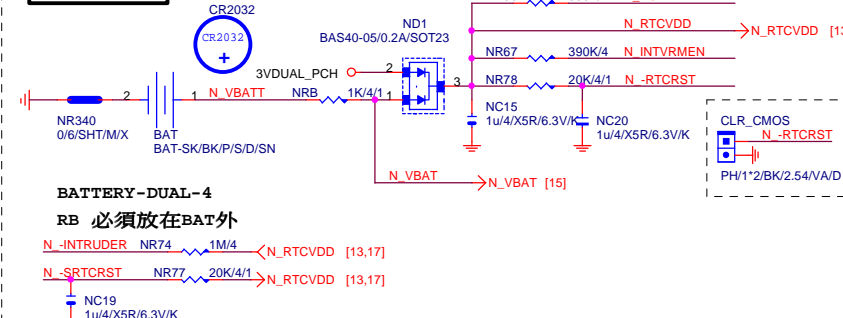
HSW_STRAP13



32.768KHZ



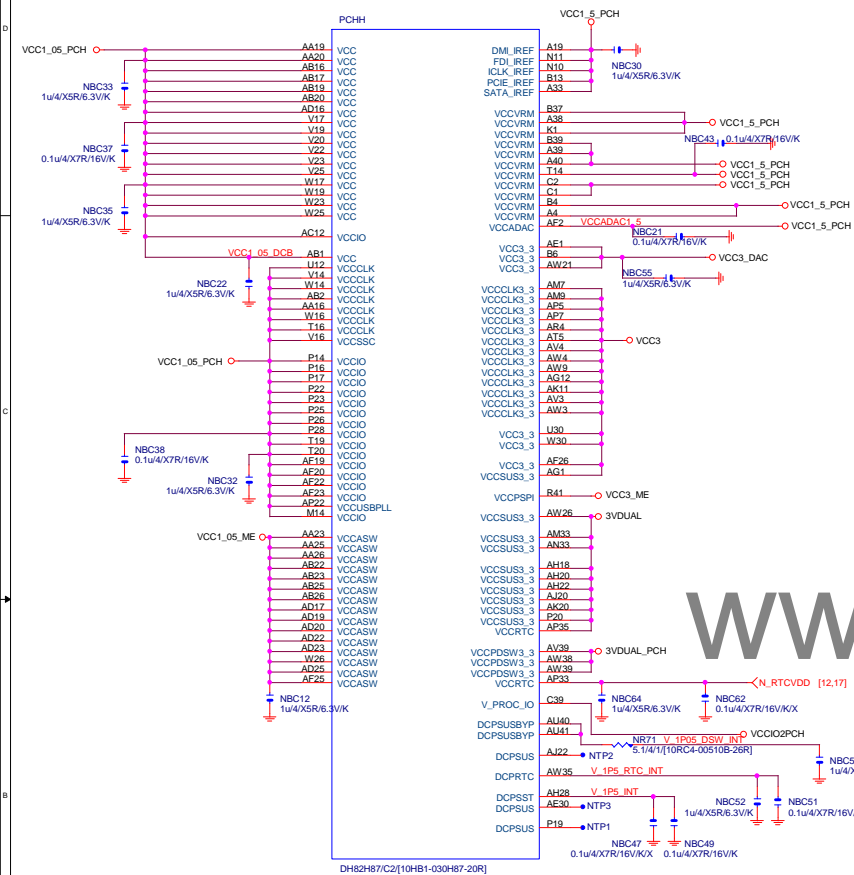
| |
|----------|
| CLR_CMOS |
|----------|



Gigabyte Technology

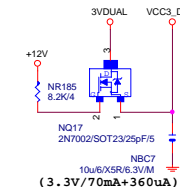
| | | | | | | | |
|--------|-----------------------------|--|--|-------------------------|----|-----|----|
| Title | | | | PCH GPIO , CTRL , AUDIO | | | |
| Size | Document Number | | | | | Rev | |
| Custom | GA-H87N-WIFI | | | | | 2.0 | |
| Date: | Wednesday, January 15, 2014 | | | Sheet | 12 | of | 31 |

PCH (H)

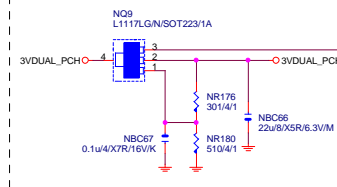


VCC3_DAC

CLOSE北橋(注意震盪水波紋)

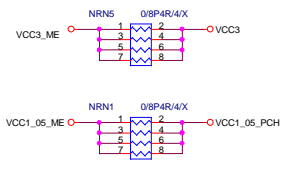


3VDUAL_PCH



SHT_PWR

M3 POWER



CAP

(3.3V) (X6)

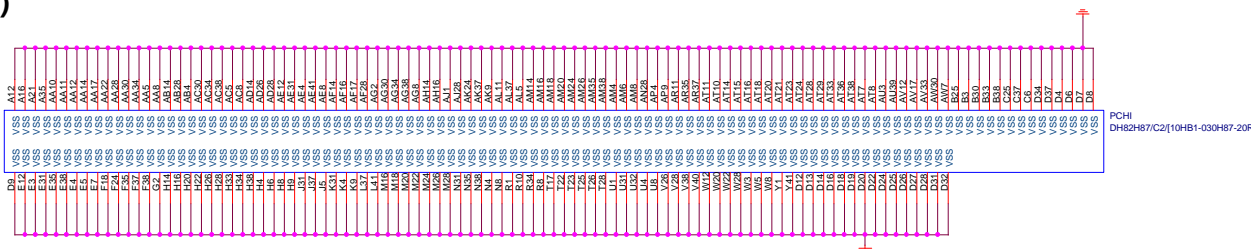
(1.05V) (X5)

(1.05V) (X6)

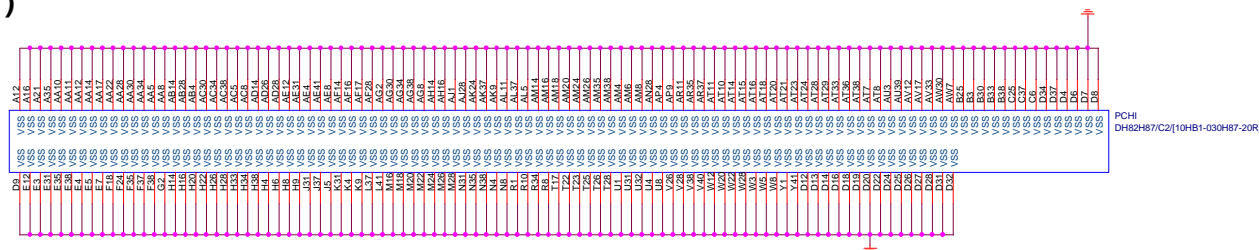
(1.05V) (X2) (3.3V) (X2)

(1.05V) (X10)

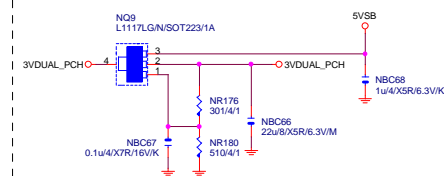
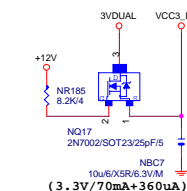
PCH (I)



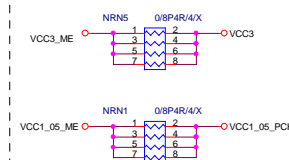
PCH (I)



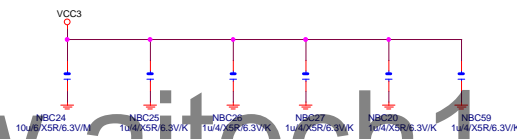
3VDUAL_PCH



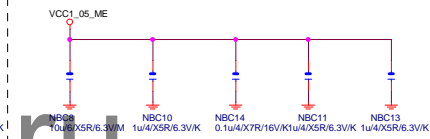
M3 POWER



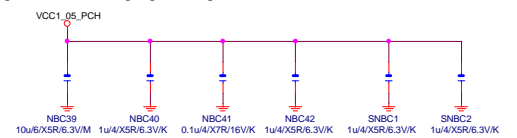
(3.3V) (X6)



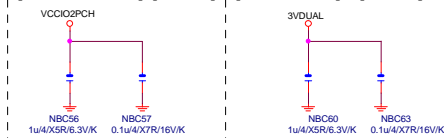
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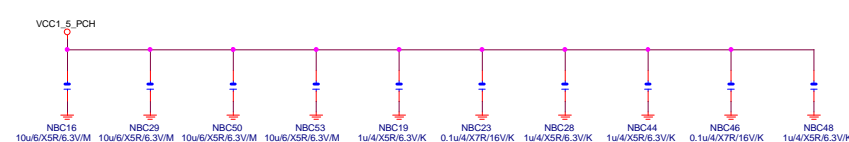
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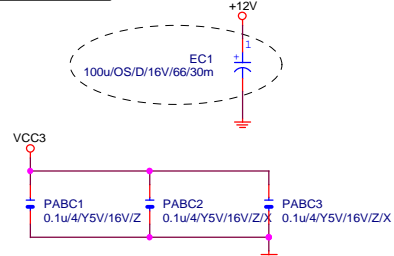
(1.05V)(x2) (3.3V) (x2)



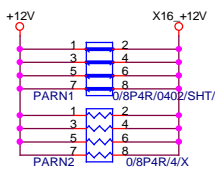
(1.05V) (x10)



PCIEX16 CAP



PCIEX16 PROTECT SHT

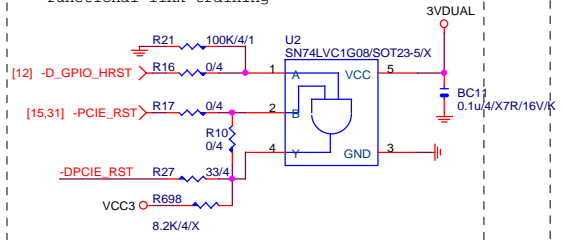


PCIEX16 AC CAP

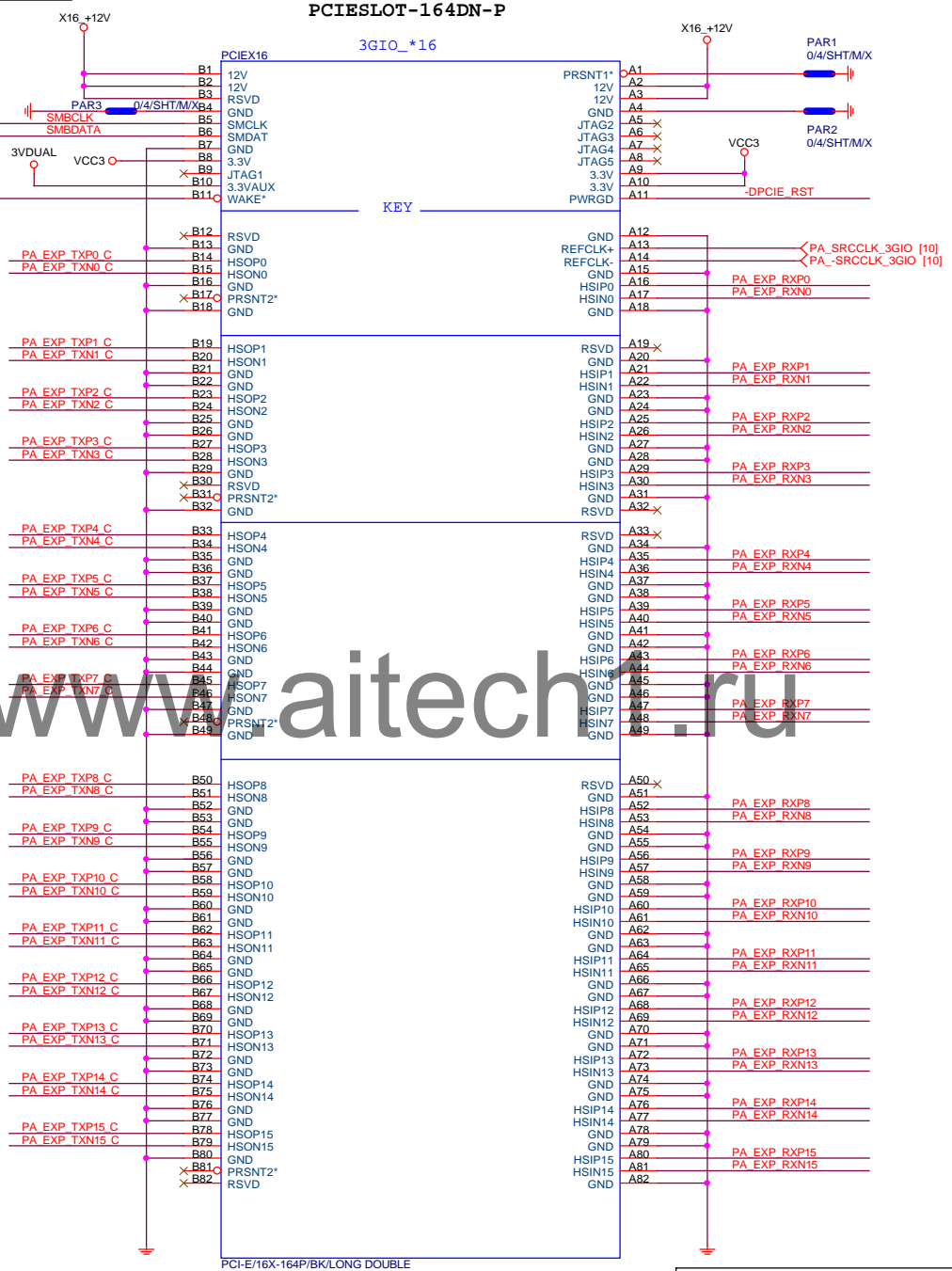
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| PA EXP TXN0 | PAC4 | 0.22u4/X5R/6.3V/K | PA EXP TXN0 C |
| PA EXP TXP1 | PAC6 | 0.22u4/X5R/6.3V/K | PA EXP TXP1 C |
| PA EXP TXN1 | PAC7 | 0.22u4/X5R/6.3V/K | PA EXP TXN1 C |
| PA EXP TXP2 | PAC8 | 0.22u4/X5R/6.3V/K | PA EXP TXP2 C |
| PA EXP TXN2 | 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 | PAC19 | 0.22u4/X5R/6.3V/K | PA EXP TXP7 C |
| PA EXP TXN7 | PAC18 | 0.22u4/X5R/6.3V/K | PA EXP TXN7 C |
| PA EXP TXP8 | PAC20 | 0.22u4/X5R/6.3V/K | PA EXP TXP8 C |
| PA EXP TXN8 | PAC21 | 0.22u4/X5R/6.3V/K | PA EXP TXN8 C |
| PA EXP TXP9 | PAC22 | 0.22u4/X5R/6.3V/K | PA EXP TXP9 C |
| PA EXP TXN9 | PAC23 | 0.22u4/X5R/6.3V/K | PA EXP TXN9 C |
| PA EXP TXP10 | PAC24 | 0.22u4/X5R/6.3V/K | PA EXP TXP10 C |
| PA EXP TXN10 | PAC25 | 0.22u4/X5R/6.3V/K | PA EXP TXN10 C |
| PA EXP TXP11 | PAC26 | 0.22u4/X5R/6.3V/K | PA EXP TXP11 C |
| PA EXP TXN11 | PAC27 | 0.22u4/X5R/6.3V/K | PA EXP TXN11 C |
| PA EXP TXP12 | PAC28 | 0.22u4/X5R/6.3V/K | PA EXP TXP12 C |
| PA EXP TXN12 | PAC29 | 0.22u4/X5R/6.3V/K | PA EXP TXN12 C |
| PA EXP TXP13 | PAC30 | 0.22u4/X5R/6.3V/K | PA EXP TXP13 C |
| PA EXP TXN13 | PAC31 | 0.22u4/X5R/6.3V/K | PA EXP TXN13 C |
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| PA EXP TXP15 | PAC34 | 0.22u4/X5R/6.3V/K | PA EXP TXP15 C |
| PA EXP TXN15 | PAC35 | 0.22u4/X5R/6.3V/K | PA EXP TXN15 C |

PA EXP RXP0.15] >>> PA_EXP_RXP[0.15] [4]
 PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] [4]
 PA EXP TXP0.15] >>> PA_EXP_TXP[0.15] [4]
 PA EXP TXN0.15] >>> PA_EXP_TXN[0.15] [4]

The auxiliary reset circuit is only required for PCIe Gen3 margining and functional link training



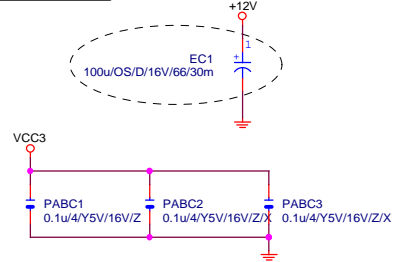
PCIEX16 SLOT



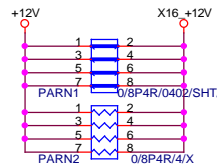
BLACK CONNECTOR

| | | |
|---------------------|-----------------------------|----------------|
| Gigabyte Technology | | |
| PCI EXPRESS * 16 | | |
| Title | Document Number | Rev |
| | GA-H87N-WIFI | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet 14 of 31 |

PCIEX16 CAP



PCIEX16 PROTECT SHT

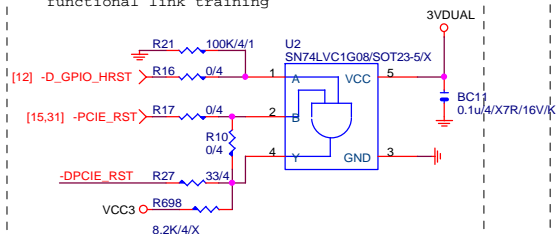


PCIEX16 AC CAP

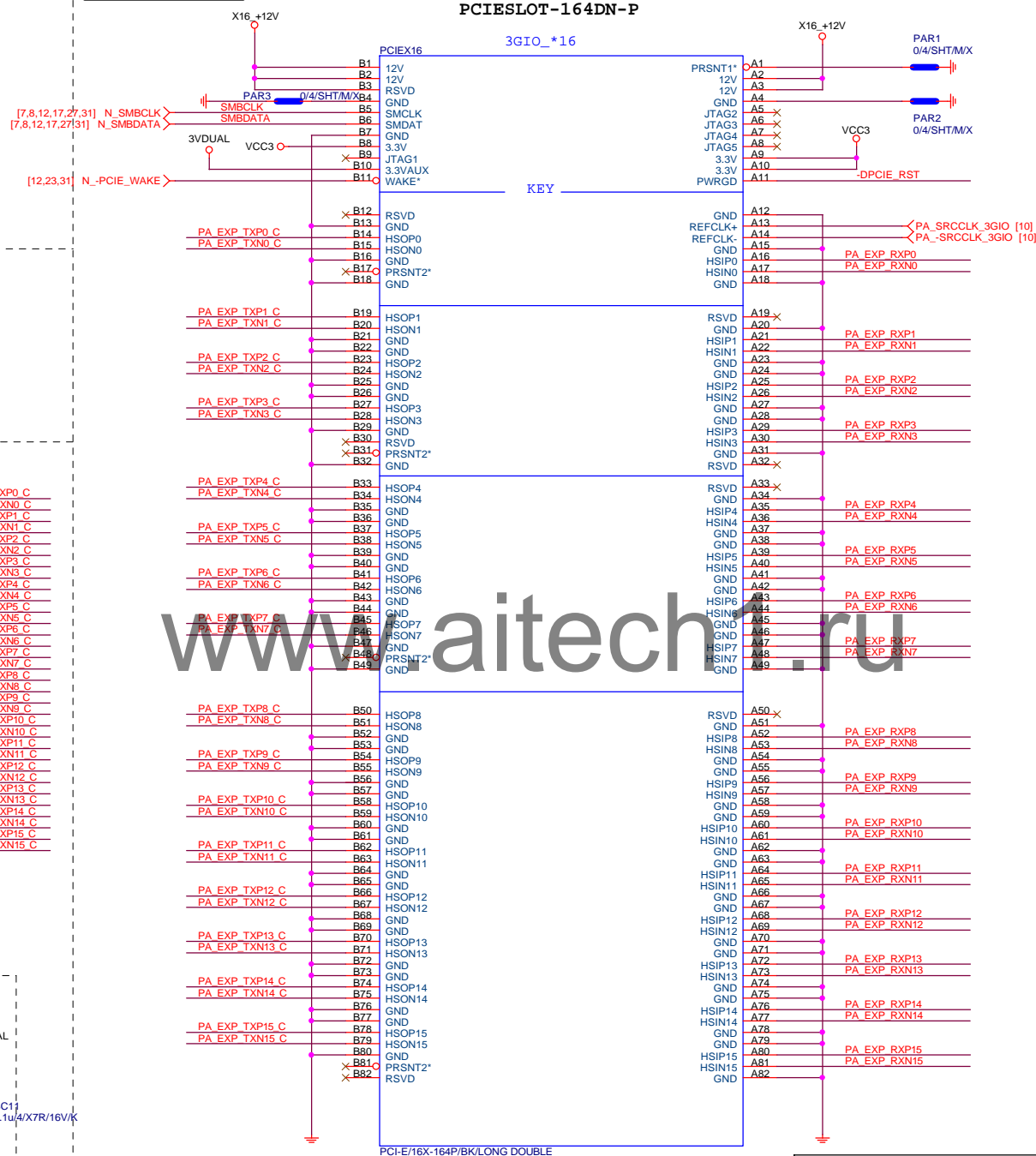
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|--------------|-------|-------------------|----------------|
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| PA EXP TXN0 | PAC4 | 0.22u4/X5R/6.3V/K | PA EXP TXN0 C |
| PA EXP TXP1 | PAC6 | 0.22u4/X5R/6.3V/K | PA EXP TXP1 C |
| PA EXP TXN1 | 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 | PAC19 | 0.22u4/X5R/6.3V/K | PA EXP TXP7 C |
| PA EXP TXN7 | PAC18 | 0.22u4/X5R/6.3V/K | PA EXP TXN7 C |
| PA EXP TXP8 | PAC20 | 0.22u4/X5R/6.3V/K | PA EXP TXP8 C |
| PA EXP TXN8 | PAC21 | 0.22u4/X5R/6.3V/K | PA EXP TXN8 C |
| PA EXP TXP9 | PAC22 | 0.22u4/X5R/6.3V/K | PA EXP TXP9 C |
| PA EXP TXN9 | PAC23 | 0.22u4/X5R/6.3V/K | PA EXP TXN9 C |
| PA EXP TXP10 | PAC24 | 0.22u4/X5R/6.3V/K | PA EXP TXP10 C |
| PA EXP TXN10 | PAC25 | 0.22u4/X5R/6.3V/K | PA EXP TXN10 C |
| PA EXP TXP11 | PAC26 | 0.22u4/X5R/6.3V/K | PA EXP TXP11 C |
| PA EXP TXN11 | PAC27 | 0.22u4/X5R/6.3V/K | PA EXP TXN11 C |
| PA EXP TXP12 | PAC28 | 0.22u4/X5R/6.3V/K | PA EXP TXP12 C |
| PA EXP TXN12 | PAC29 | 0.22u4/X5R/6.3V/K | PA EXP TXN12 C |
| PA EXP TXP13 | PAC30 | 0.22u4/X5R/6.3V/K | PA EXP TXP13 C |
| PA EXP TXN13 | PAC31 | 0.22u4/X5R/6.3V/K | PA EXP TXN13 C |
| PA EXP TXP14 | PAC32 | 0.22u4/X5R/6.3V/K | PA EXP TXP14 C |
| PA EXP TXN14 | PAC33 | 0.22u4/X5R/6.3V/K | PA EXP TXN14 C |
| PA EXP TXP15 | PAC34 | 0.22u4/X5R/6.3V/K | PA EXP TXP15 C |
| PA EXP TXN15 | PAC35 | 0.22u4/X5R/6.3V/K | PA EXP TXN15 C |

PA EXP RXP0.15] >>> PA_EXP_RXP[0.15] [4]
PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] [4]
PA EXP TXP0.15] >>> PA_EXP_TXP[0.15] [4]
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The auxiliary reset circuit is only required for PCIe Gen3 margining and functional link training



PCIEX16 SLOT



BLACK CONNECTOR

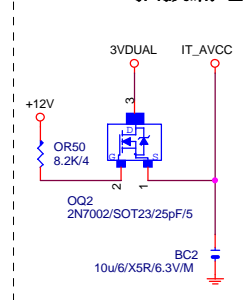
Gigabyte Technology

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| Title | | | PCI EXPRESS * 16 | | |
| Size | | | Document Number | | |
| Custom | | | GA-H87N-WIFI | | |
| Date: | | | Rev | | |
| Wednesday, January 15, 2014 | | | 2.02 | | |
| Sheet | | | 14 of 31 | | |
| 2 | | | 1 | | |

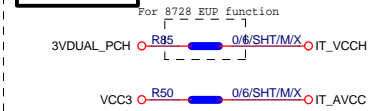
SIO IT8728F

【技術通報R&D技術通報151】
有使用PRINT PORT的 MODEL
需使用新料號:10HP2-118728-72R

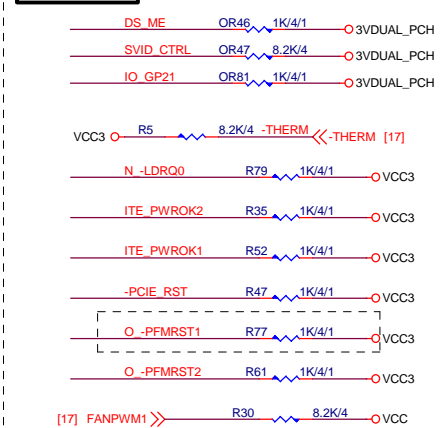
FIX ATX 插拔漏電



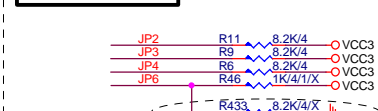
| | |
|-----|-----|
| PWR | SHT |
|-----|-----|



| | |
|-----|----|
| SIO | PU |
|-----|----|



SIO STRAP



IT8728-EX
PULL DOWN ENABLE OVP

EUP control by PCH

```

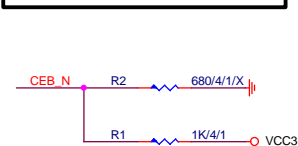
TP3--- High SPI-Flash Disable
      Low SPI-Flash Enable

```

IT8728F NOTE

| | IT8728 |
|--------|---------------------------|
| PIN121 | VCORE_EN/PCH_C0 |
| PIN120 | VLDT_EN/PCH_D0 |
| PIN19 | ATXPG |
| PIN31 | PCH_C1 |
| PIN53 | SST/AMDTSI_D/MTRB#/PCH_D1 |
| PIN55 | PECI/AMDTSI_C/DRV# |
| PIN66 | SYS_3VSB |
| PIN70 | GP47 |
| PIN95 | VIN2(VCC5) |
| PIN96 | VIN1(VCC12) |
| PIN97 | VIN1/VDIMM_STR(1.5V) |
| PIN98 | VIN0/VCORE(1.1V)/NC |

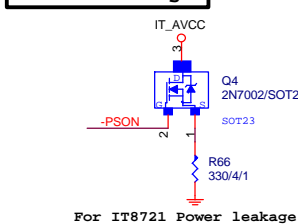
DUAL BIOS OPT STRAP



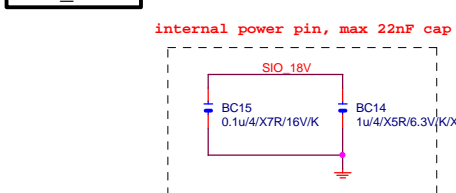
SIO CAP



Power leakage

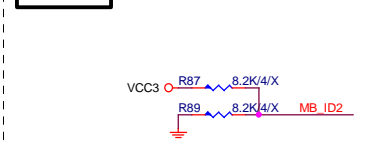


SIO_18V



FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

| | |
|----|----|
| MB | ID |
|----|----|



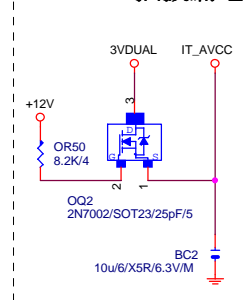
Gigabyte Technology

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| Title | | | |
| ITE 8728 LPC IO | | | |
| Size | Document Number | | Rev |
| Custom | GA-H87N-WIFI | | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet | 15 of 31 |

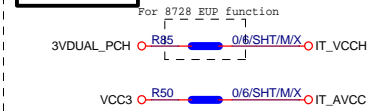
SIO IT8728F

【技術通報R&D技術通報151】
有使用PRINT PORT的 MODEL
需使用新料號:10HP2-118728-72R

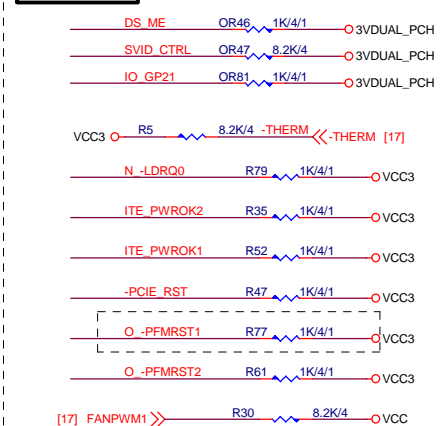
FIX ATX 插拔漏電



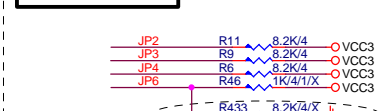
| | |
|-----|-----|
| PWR | SHT |
|-----|-----|



| | |
|-----|----|
| SIO | PU |
|-----|----|



SIO STRAP



IT8728-EX
PULL DOWN ENABLE OVP

EUP control by PCH

```

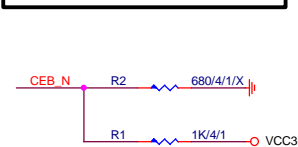
P3--- High SPI-Flash Disable
      Low SPI-Flash Enable

```

IT8728F NOTE

| | IT8728 |
|--------|--------------------------|
| PIN121 | VCORE_EN/PCH_C0 |
| PIN120 | VLDT_EN/PCH_D0 |
| PIN19 | ATXPG |
| PIN31 | PCH_C1 |
| PIN53 | SST/AMDS1_D_MTRB#/PCH_D1 |
| PIN55 | PEC1/AMDS1_C/DRV# |
| PIN66 | SYS_3VSB |
| PIN70 | GP47 |
| PIN95 | VIN2(VCC5) |
| PIN96 | VIN1(VCC12) |
| PIN97 | VIN1/VDIMM_STR(1.5V) |
| PIN98 | VIN0/VCORE(1.1V)/NC |

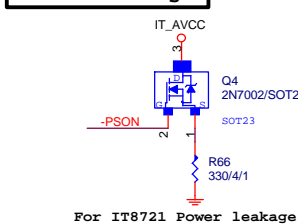
DUAL BIOS OPT STRAP



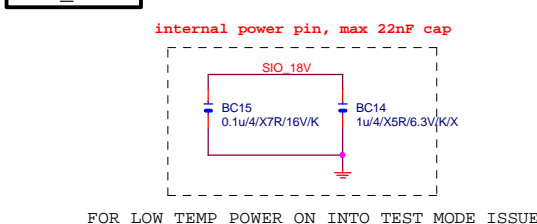
SIO CAP



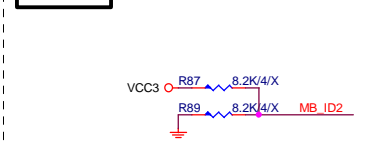
Power leakage



SIO_18V



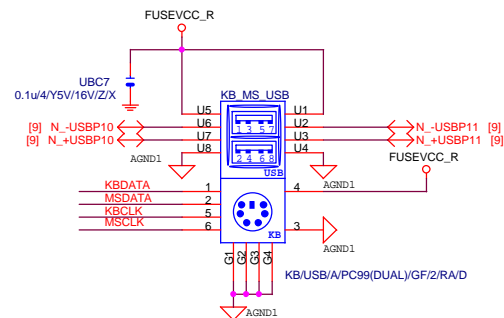
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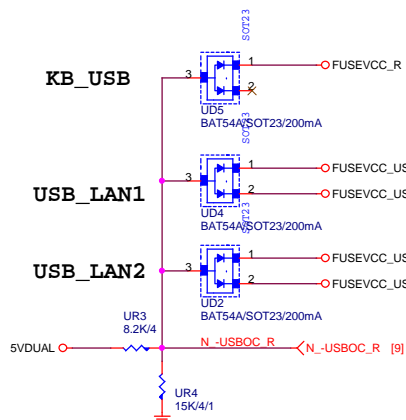
Gigabyte Technology

| | | | |
|-----------------|-----------------------------|-------|----------|
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| ITE 8728 LPC IO | | | |
| Size | Document Number | | Rev |
| Custom | GA-H87N-WIFI | | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet | 15 of 31 |

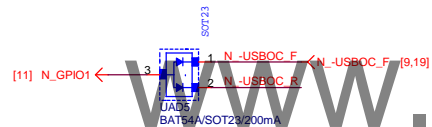
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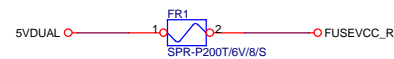
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USB POWER PROTECT

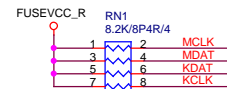


USB2.0 PWR

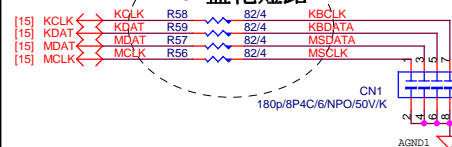


Close to connector
KB_MS_USB 2-Port 2.0A

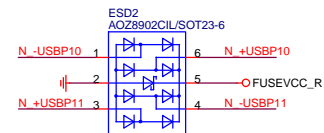
KB_MS



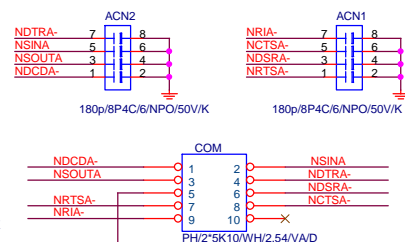
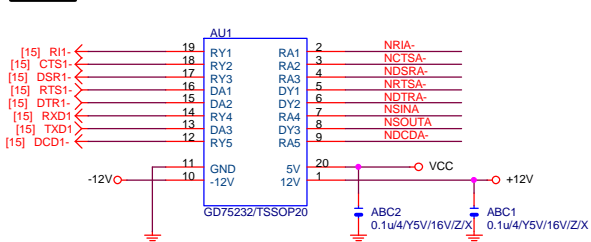
FOR鹽化短路



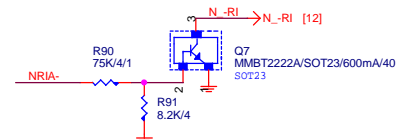
USB2.0 ESD



COM



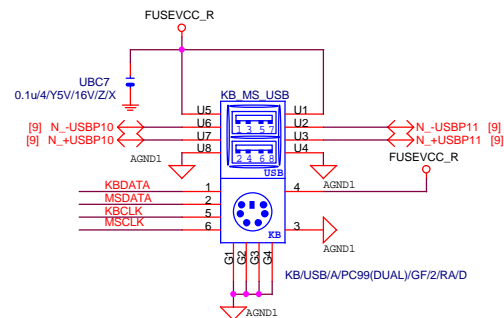
COM RI



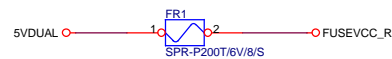
Gigabyte Technology

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| Title | | | |
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| Size | Document Number | Rev | |
| Custom | GA-H87N-WIFI | 2.02 | |
| Date: | Wednesday, January 15, 2014 | Sheet | 16 of 31 |

KB/MS

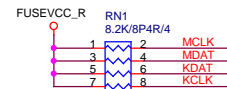


USB2.0 PWR

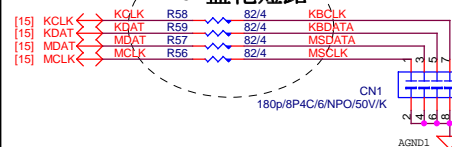


Close to connector
KB_MS_USB 2-Port 2.0A

KB_MS



FOR 鹽化短路



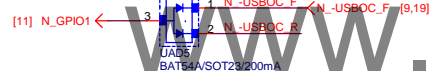
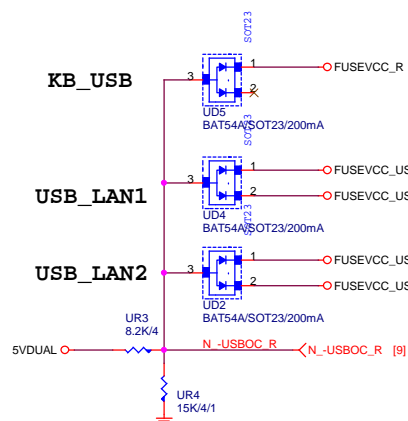
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USB POWER PROTECT

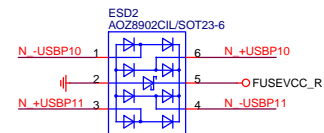
KB_USB

USB_LAN1

USB_LAN2

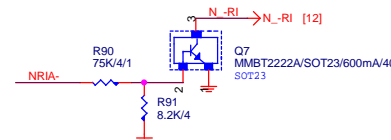
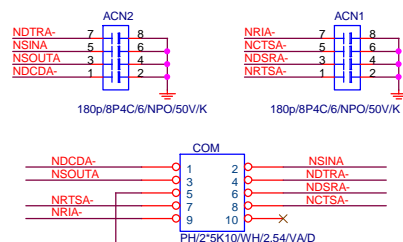
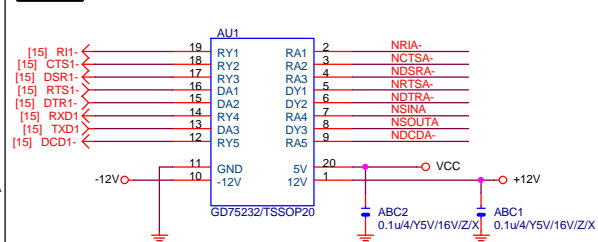


USB2.0 ESD



COM

COM RI



Gigabyte Technology

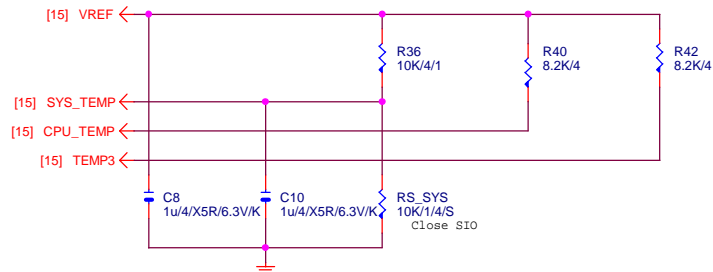
Title COM,-RI,KB_USB,USB_ESATA,-PROCHOT

Size Document Number GA-H87N-WIFI

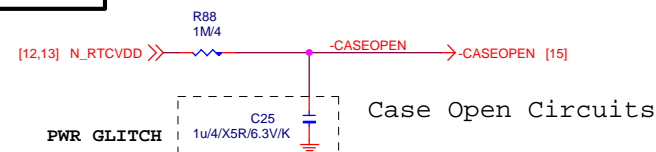
Rev 2.02

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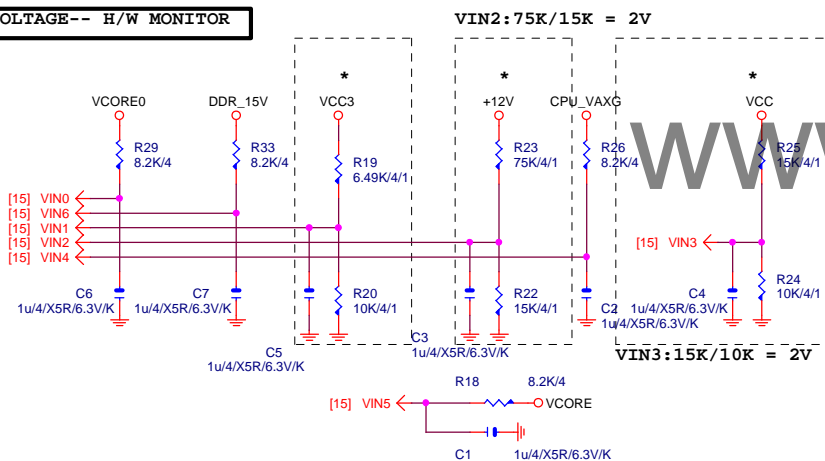
TEMP H/W MONITOR



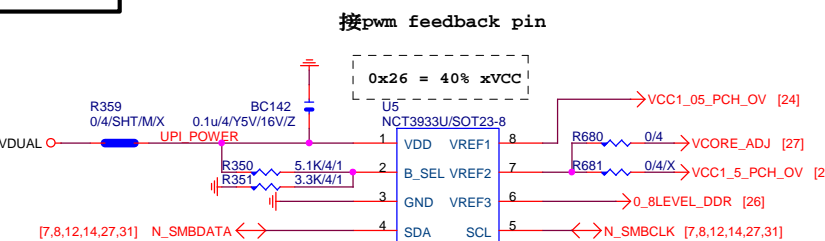
CASE OPEN



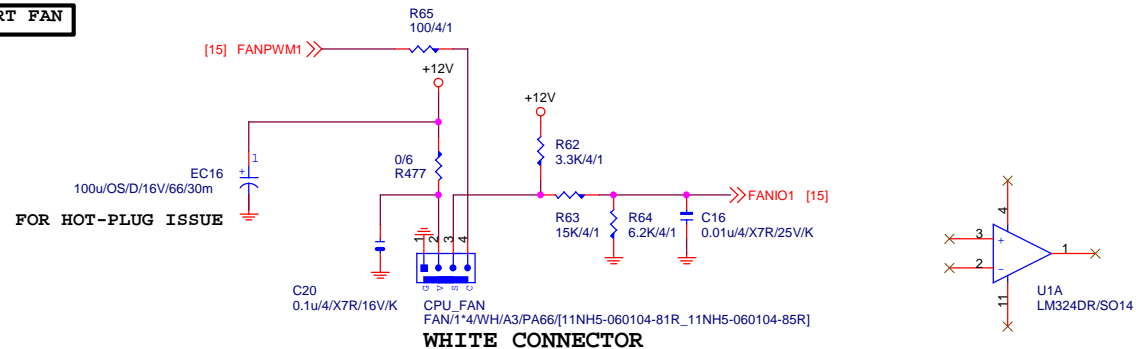
VOLTAGE-- H/W MONITOR



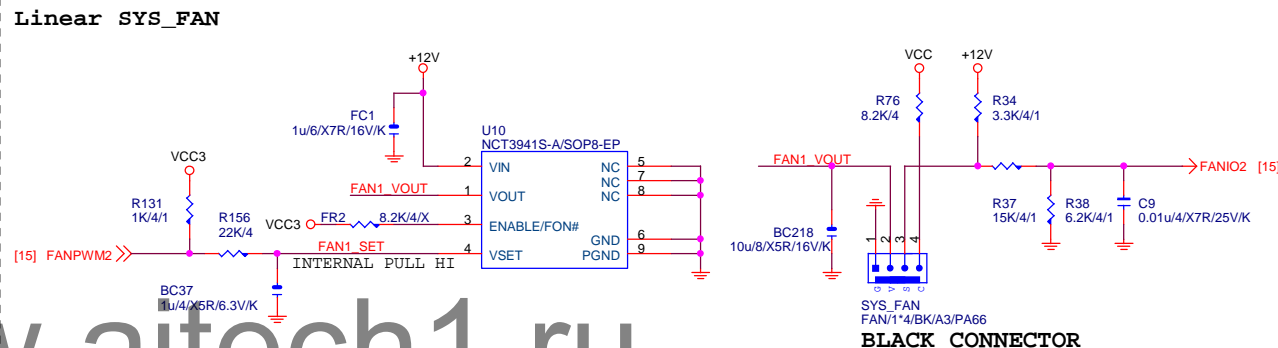
OV NCT3933



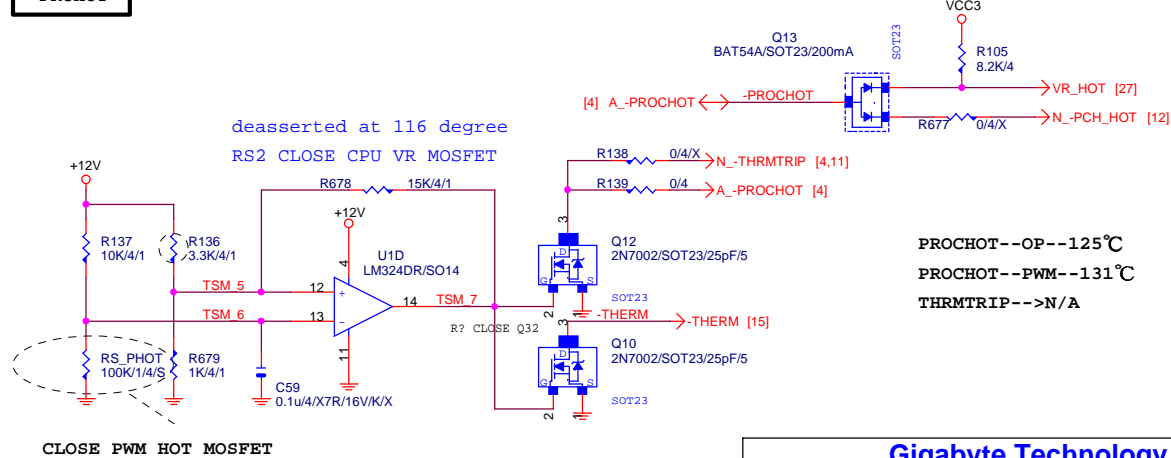
CPU SMART FAN



SYS SMART FAN



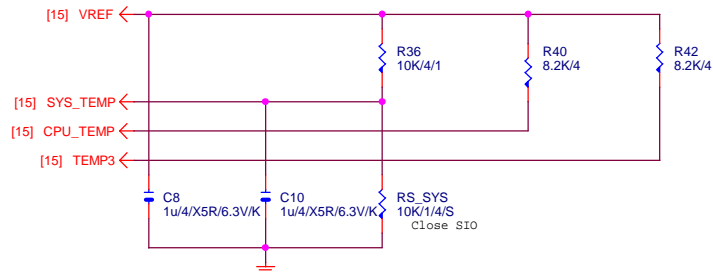
-PROHOT



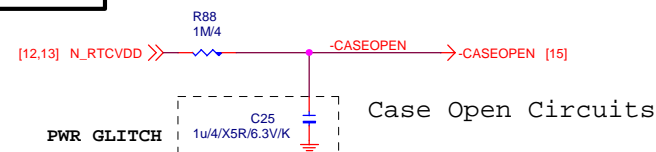
Gigabyte Technology

| Title | | |
|-----------------|-----------------------------|----------------|
| HWM,FAN CTRL,OV | | |
| Size | Document Number | Rev |
| Custom | GA-H87N-WIFI | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet 17 of 31 |

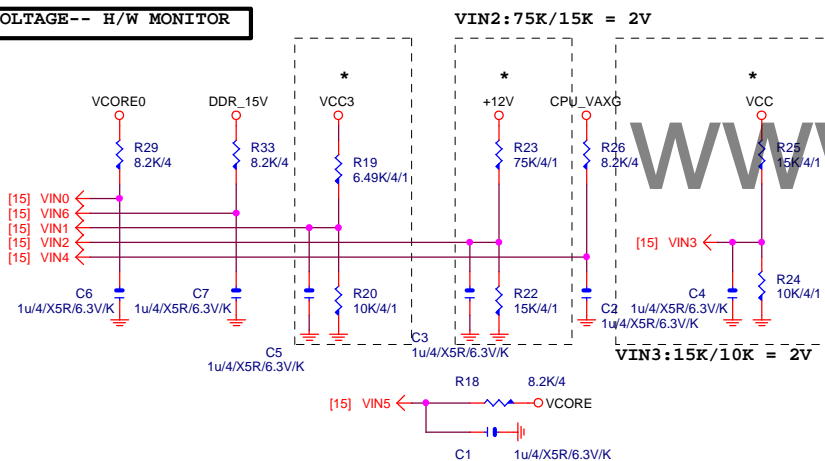
TEMP H/W MONITOR



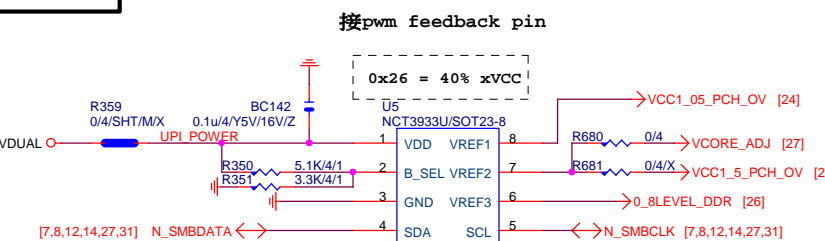
CASE OPEN



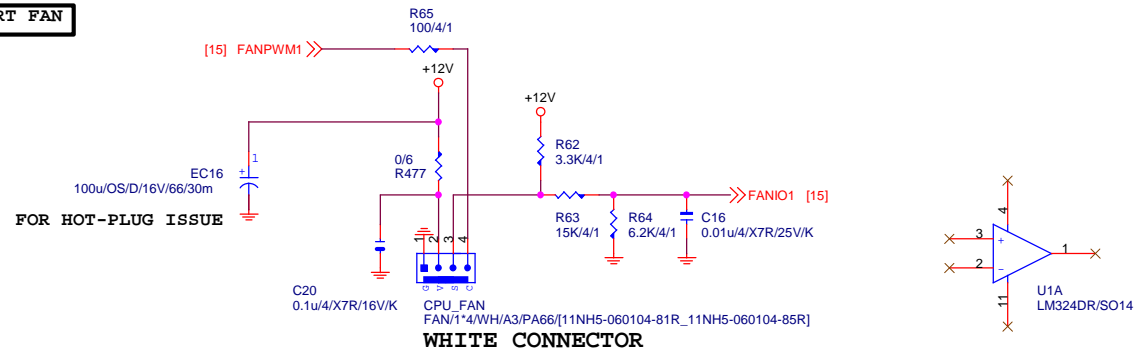
VOLTAGE-- H/W MONITOR



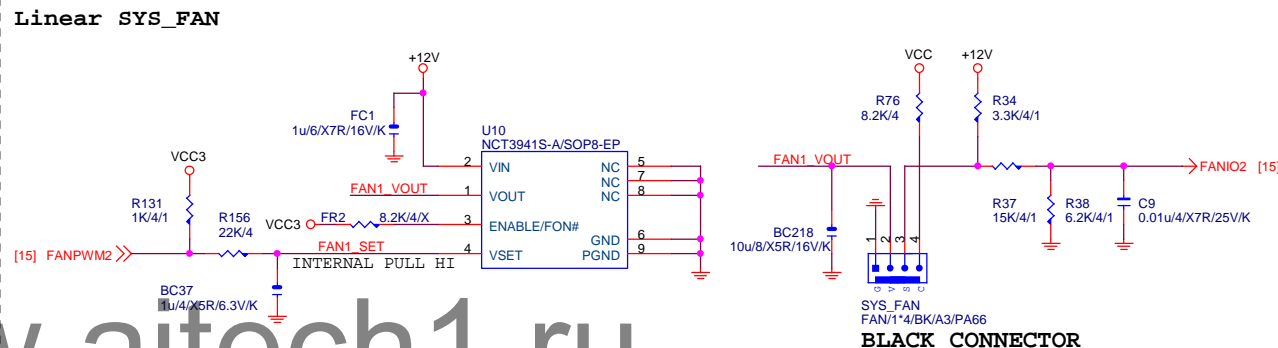
OV NCT3933



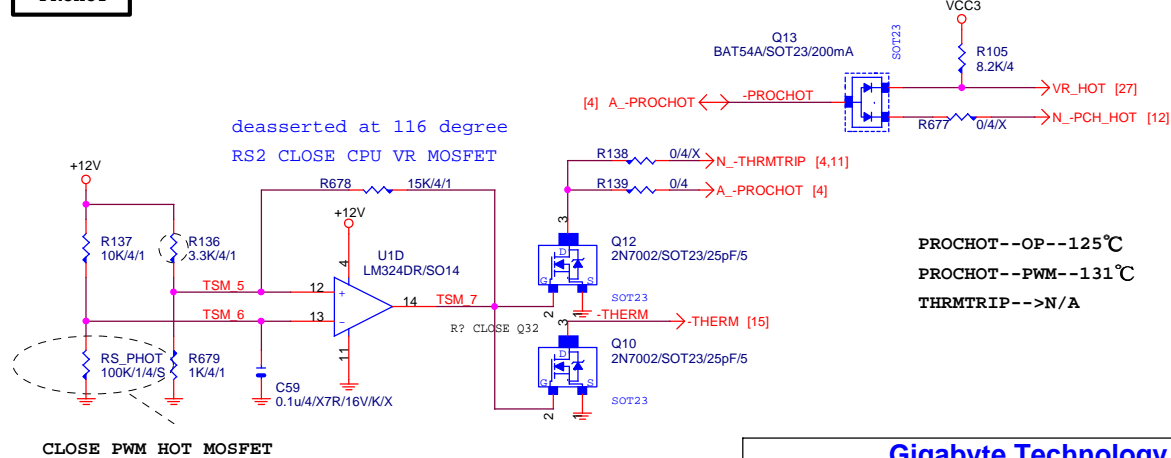
CPU SMART FAN



SYS SMART FAN

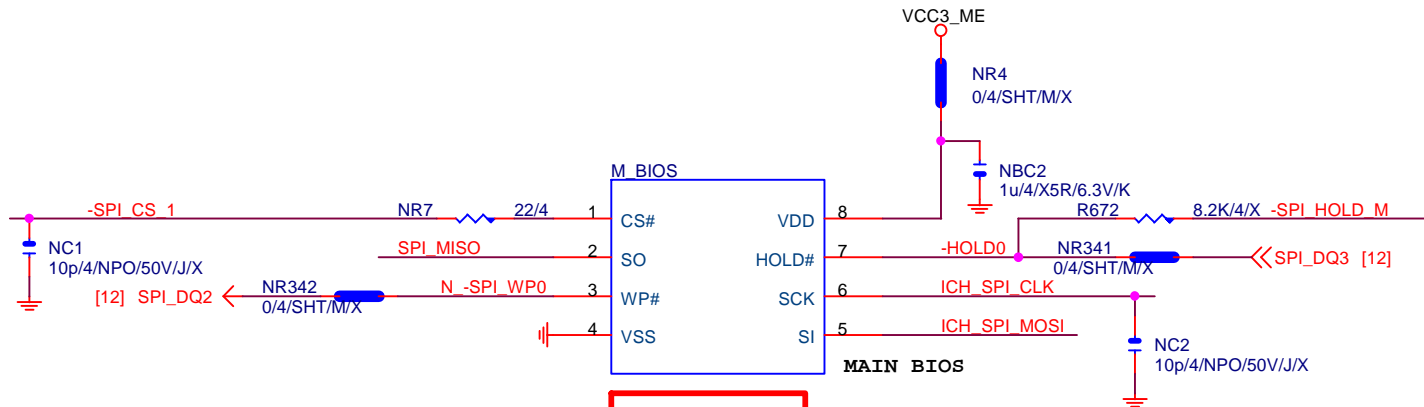


-PROHOT



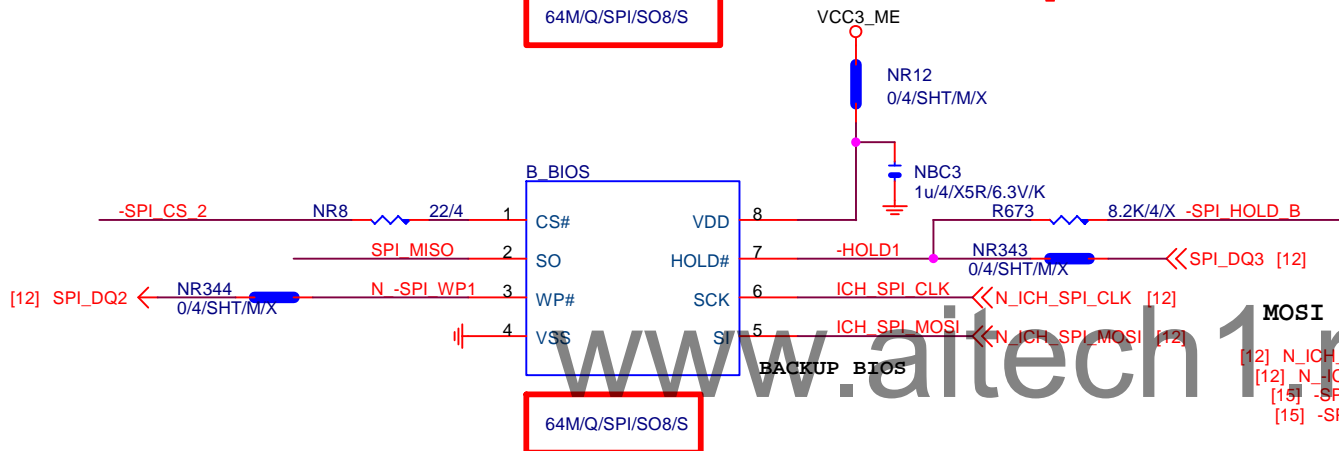
Gigabyte Technology

| Title | | |
|-----------------|-----------------------------|----------------|
| HWM,FAN CTRL,OV | | |
| Size | Document Number | Rev |
| Custom | GA-H87N-WIFI | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet 17 of 31 |

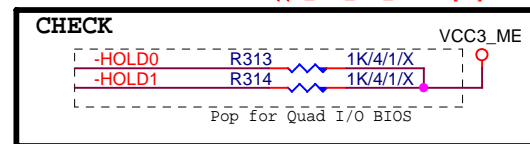
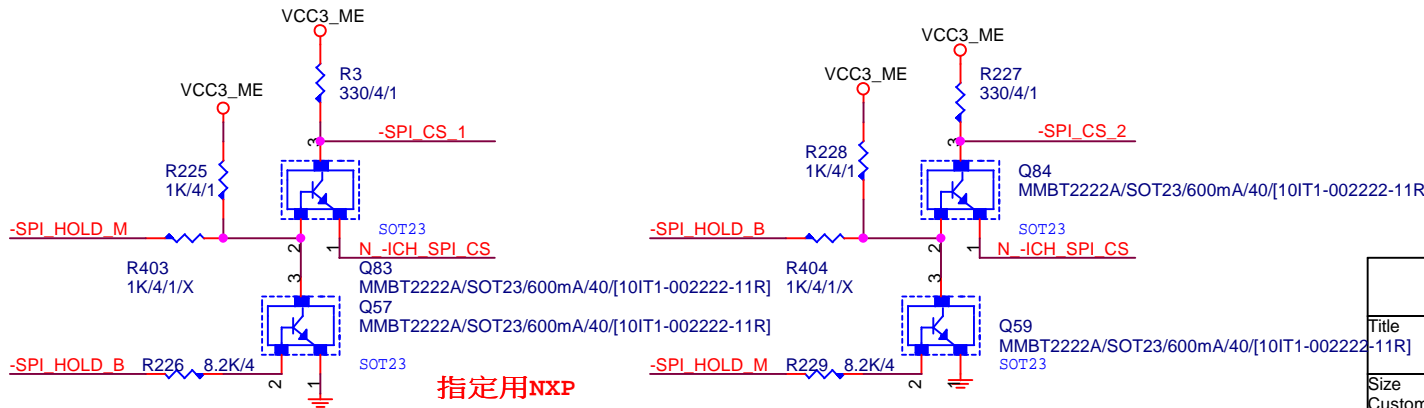
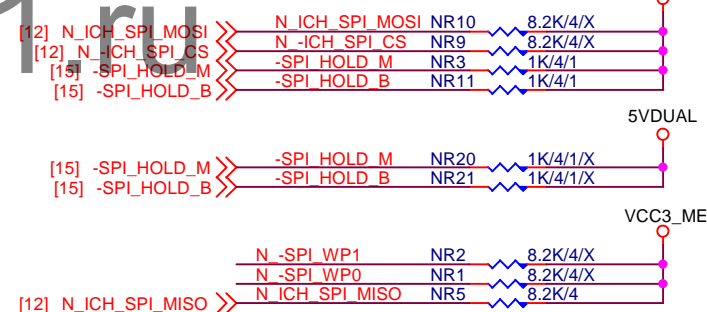


| BOOT DEVICE | GNT0 | GNT1 |
|-------------|------|------|
| LPC | 0 | 0 |
| PCI | 0 | 1 |
| NAND | 1 | 0 |
| SPI | 1 | 1 |

1 means floating
0 means PD 1K



MOSI For DMI RX Termination Voltage



Gigabyte Technology

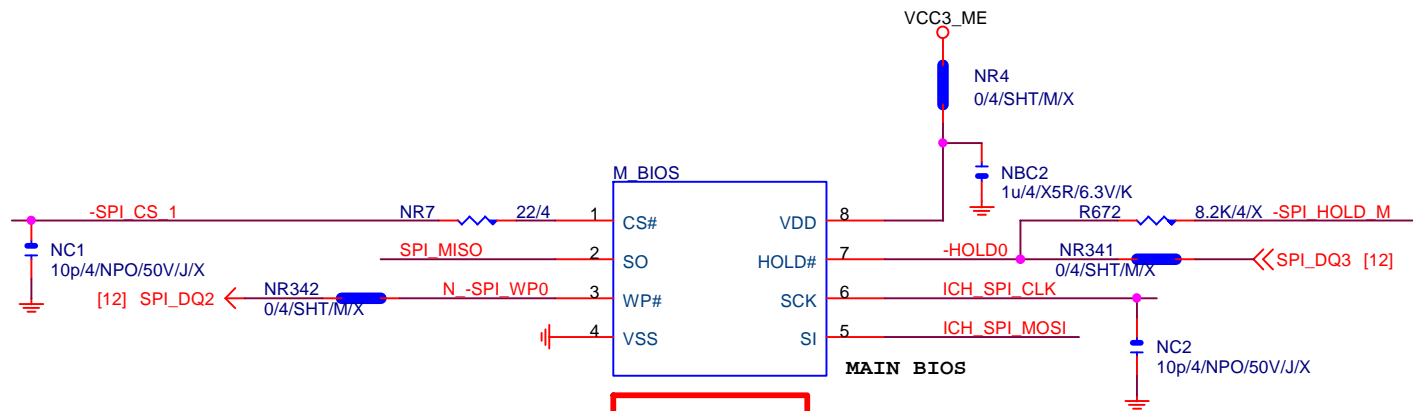
DUAL BIOS

GA-H87N-WIFI

Rev 2.02

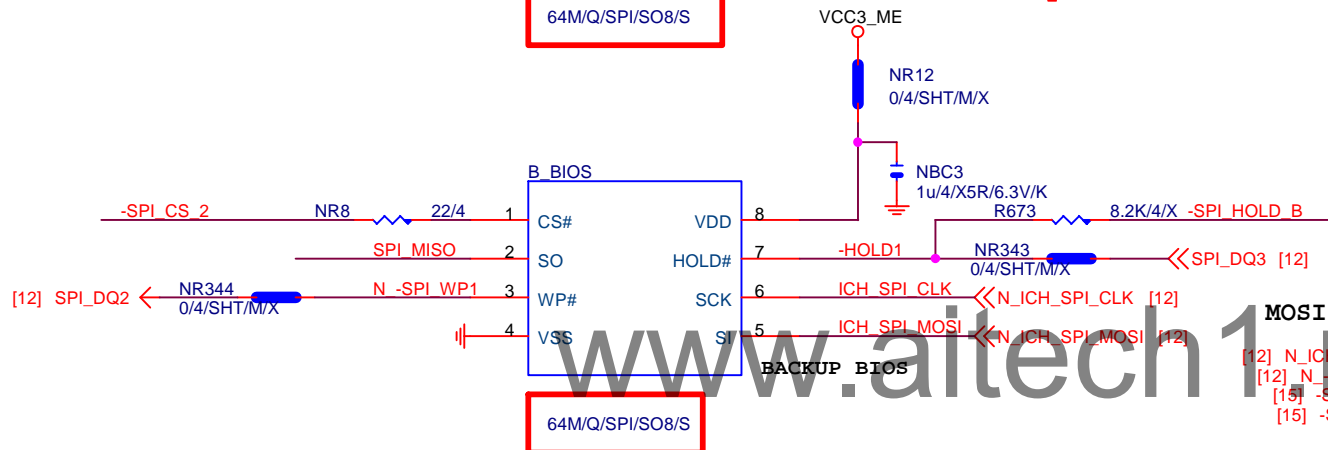
Size Custom Document Number

Date: Wednesday, January 15, 2014 Sheet 18 of 31

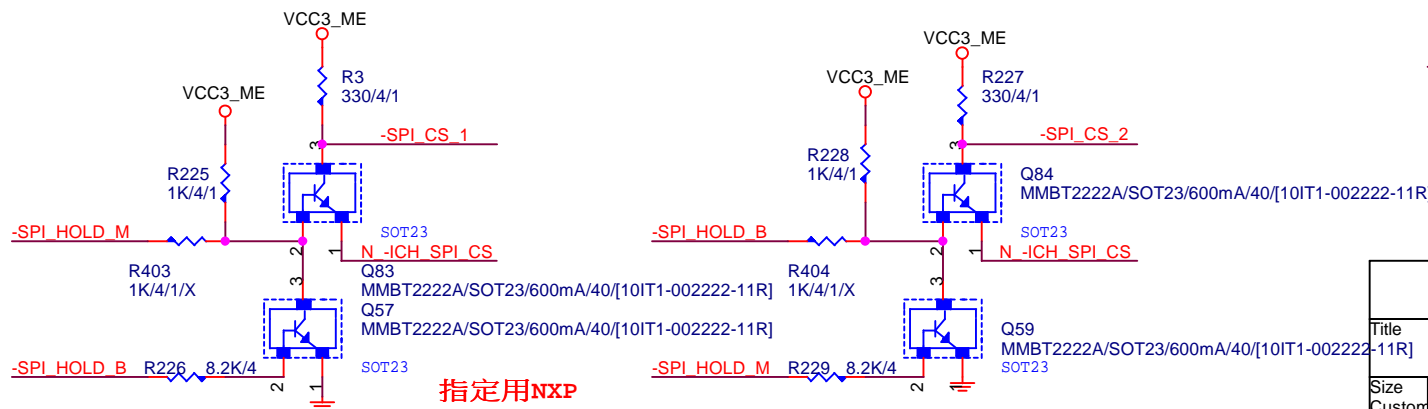
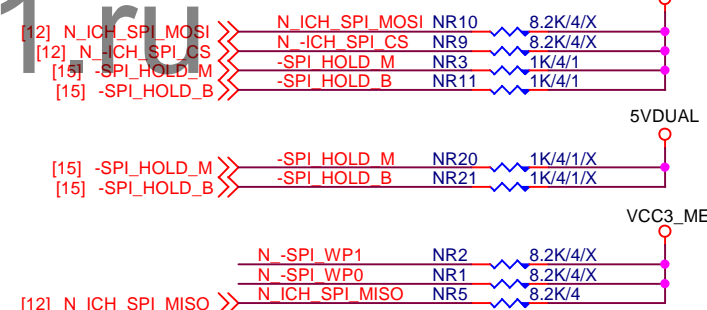


| BOOT DEVICE | GNT0 | GNT1 |
|----------------|------|------|
| LPC | 0 | 0 |
| PCI | 0 | 1 |
| NAND | 1 | 0 |
| SPI | 1 | 1 |

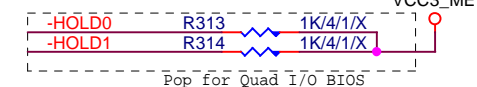
1 means floating
0 means PD 1K



MOSI For DMI RX Termination Voltage



CHECK



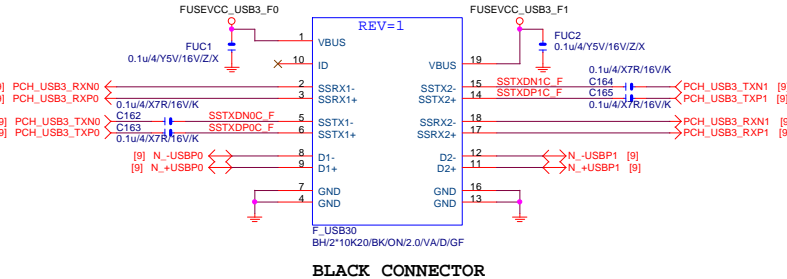
Gigabyte Technology

DUAL BIOS

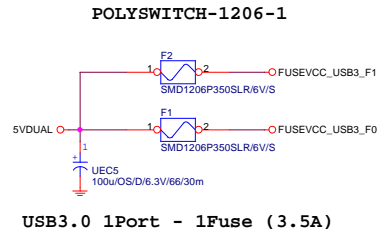
GA-H87N-WIFI

| | | | |
|-------|-----------------------------|-----------------|----------|
| Title | Custom | Document Number | Rev |
| | | | 2.02 |
| Date: | Wednesday, January 15, 2014 | Sheet | 18 of 31 |

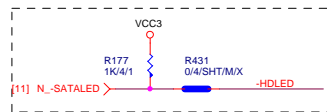
F_USB30



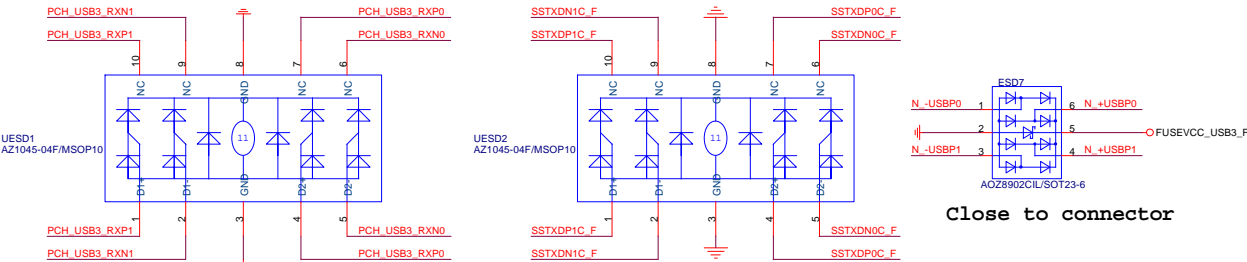
F_USB30 PWR



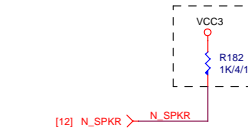
SATA LED



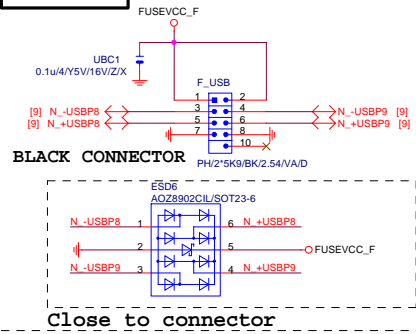
F_USB30 ESD PROTECT



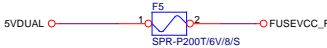
SPKR



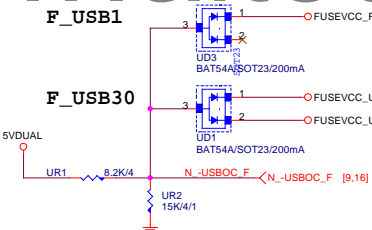
FRONT USB1



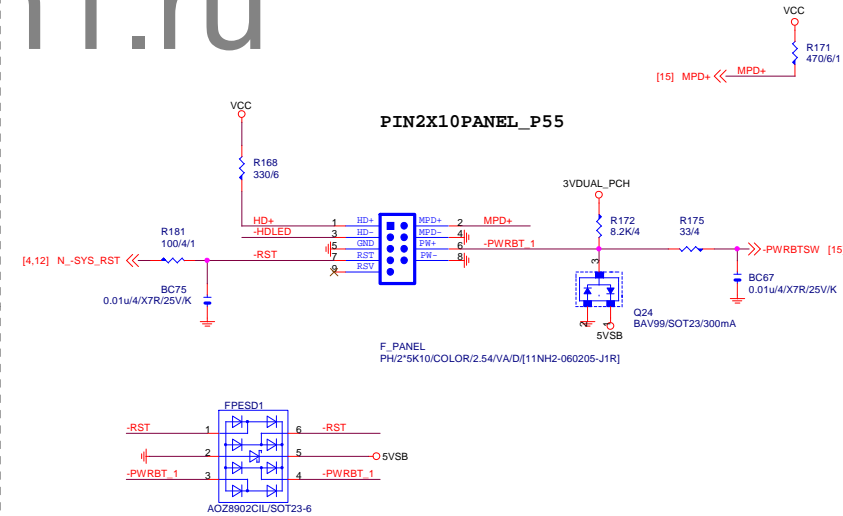
FUSEVCC_F



-USBOC_F

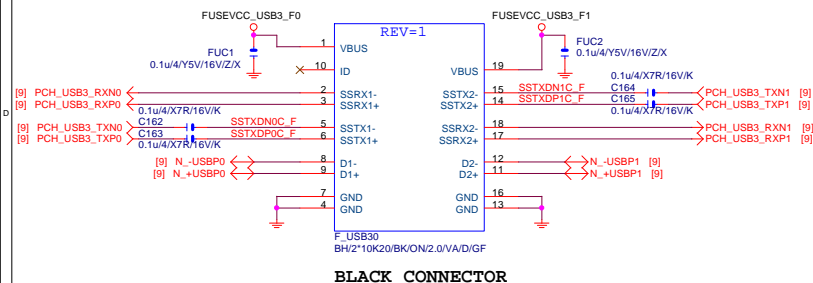


INTEL FRONT PANEL

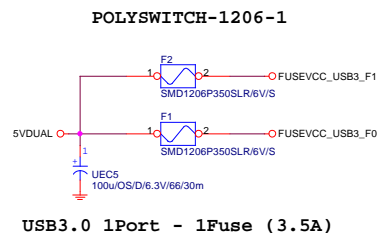


| Gigabyte Technology | | | |
|---------------------|--------------------------------|-----------------|--------------|
| Title | FP,F_USB,USB PWR,SPKR,SATA LED | | |
| Size | Custom | Document Number | GA-H87N-WIFI |
| Date | Wednesday, January 15, 2014 | Sheet | 19 of 31 |
| Rev | 2.02 | | |

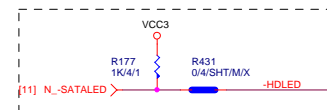
F_USB30



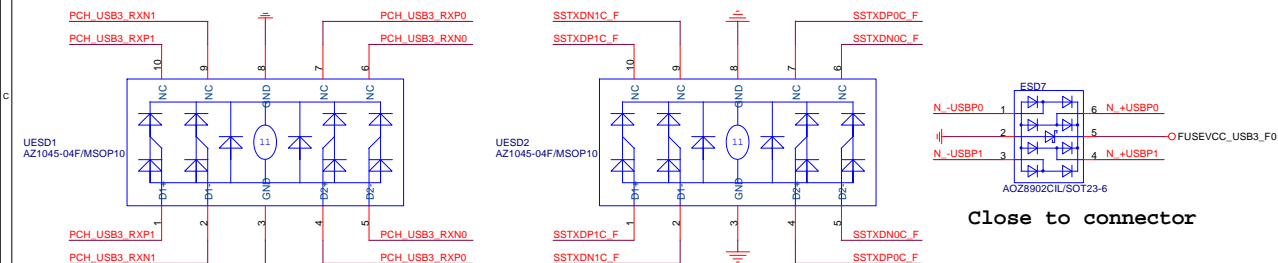
| | |
|-------------|--|
| F_USB30 PWR | |
|-------------|--|



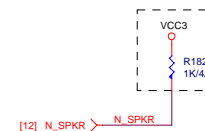
SATA LED



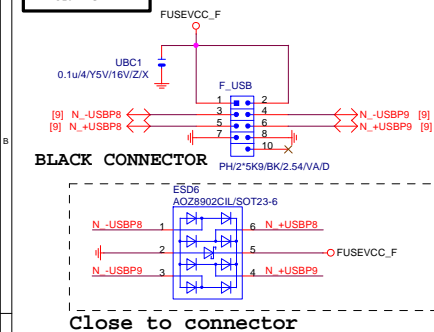
| | |
|---------|-------------|
| F_USB30 | ESD PROTECT |
|---------|-------------|



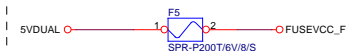
SPKR



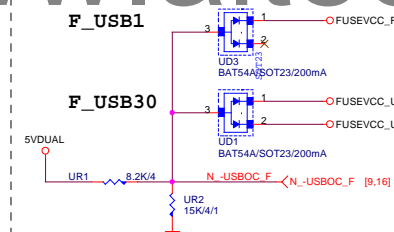
FRONT USB1



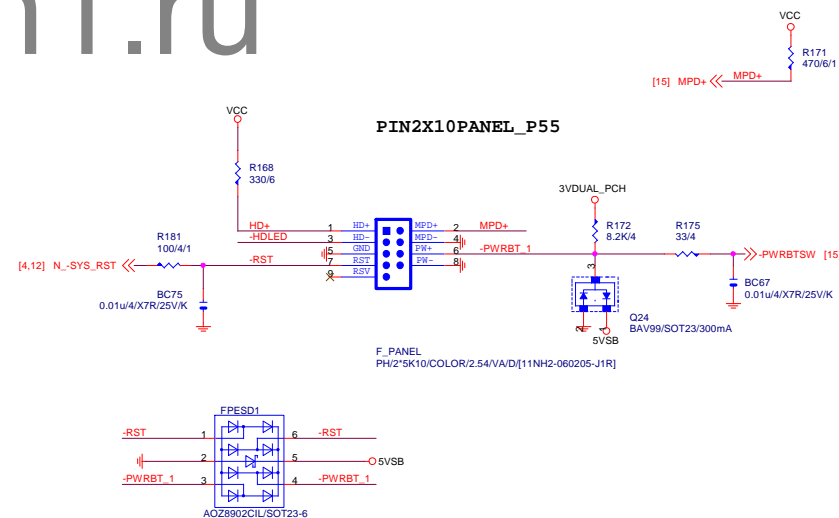
FUSEVCC_F



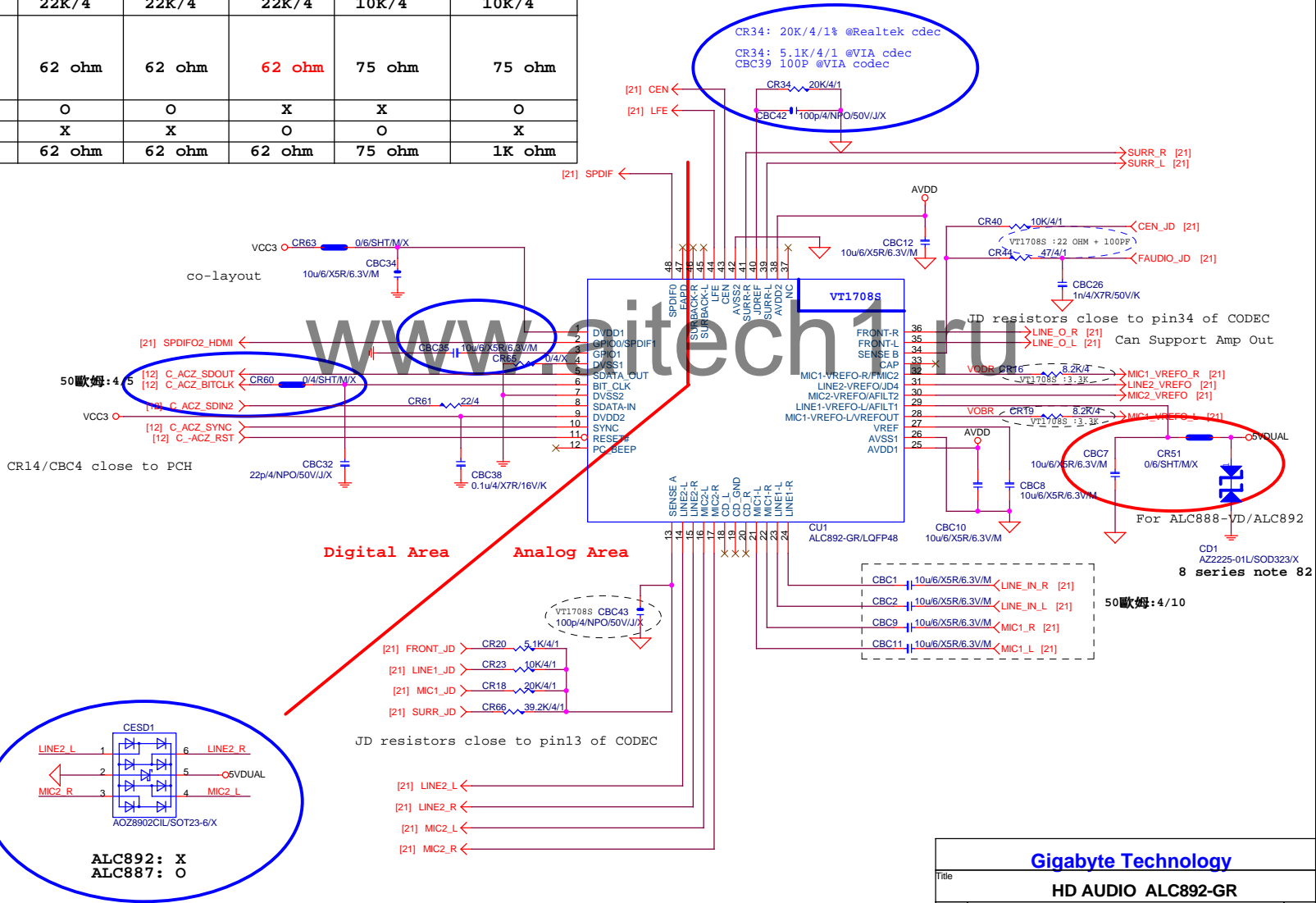
-USB_OC_F



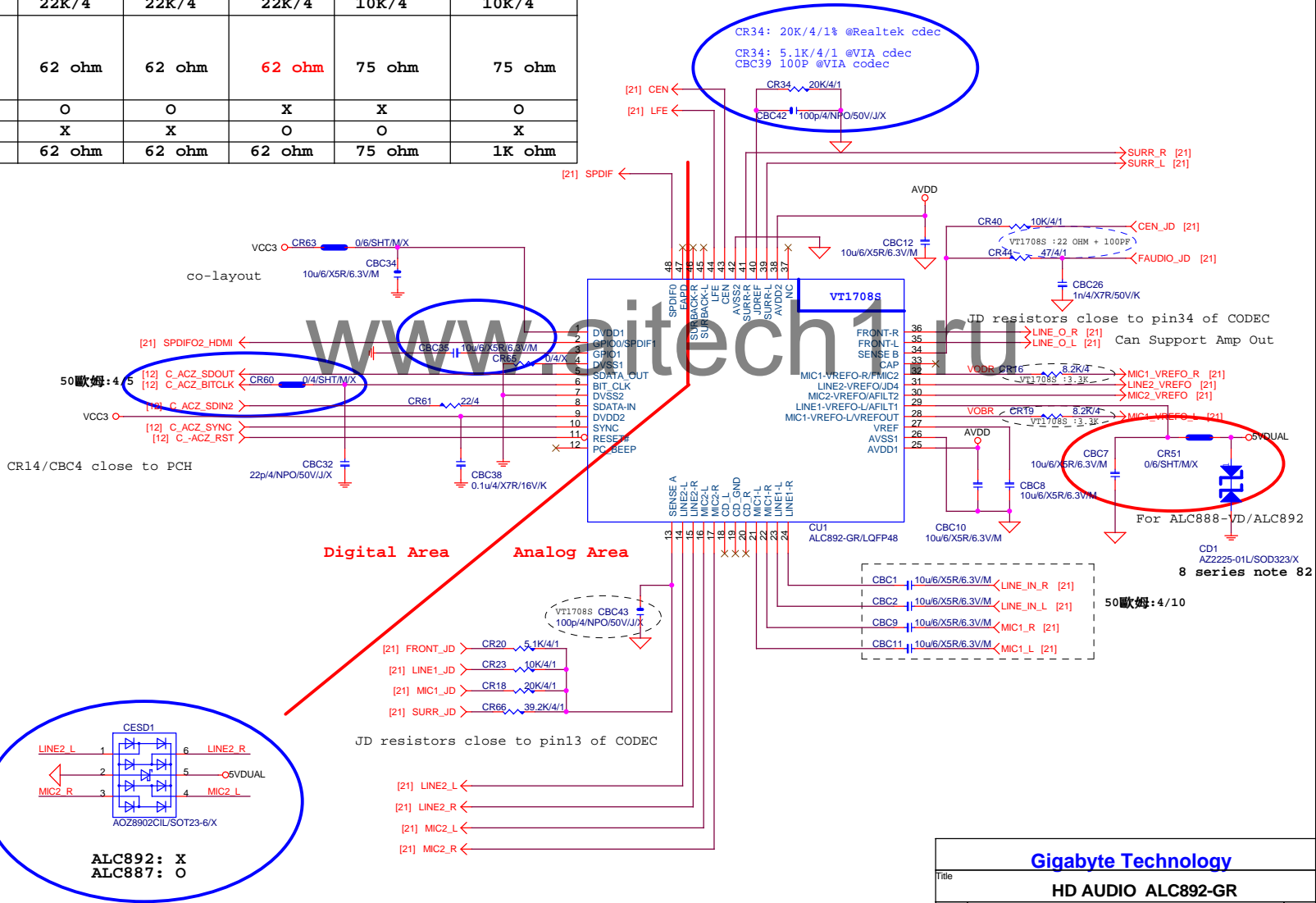
INTEL FRONT PANEL



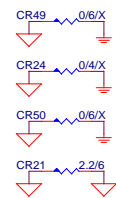
| | ALC662 | ALC887-VD2 | ALC889 | VT1708S | VT1708SCE |
|--|-----------|------------|-----------|------------|------------|
| CR65 | X | X | O | O | X |
| CR64 | X | X | X | X | 0.1u/4 |
| CBC35 | O | O | X | X | O |
| CR44/CBC6 | 47ohm+1nF | 47ohm+1nF | 47ohm+1nF | 22ohm+100P | 22ohm+100P |
| CR31 | X | O | O | O | O |
| CR30 | O | X | X | X | X |
| CBC1/CBC2 | 22uF/X5R | 22uF/X5R | 22uF/X5R | 22uF/X5R | 22uF/X5R |
| CR20 | 5.11K/4/1 | 5.11K/4/1 | 5.11K/4/1 | 5.1K/4/1 | 5.1K/4/1 |
| CR34 | 20K/4/1 | 20K/4/1 | 20K/4/1 | 5.1K/4/1 | 20K/4/1 |
| CBC39/CBC40 | N/A | N/A | N/A | 100P/4 | 100P/4 |
| CR6/CR7/CR54/CR58 | 22K/4 | 22K/4 | 22K/4 | 10K/4 | 10K/4 |
| CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53 | 62 ohm | 62 ohm | 62 ohm | 75 ohm | 75 ohm |
| CR51/CD1/CBC7 | O | O | X | X | O |
| CD2/CD3/CQ3/CQ5 | X | X | O | O | X |
| CR1/CR14/CR17/CR22 | 62 ohm | 62 ohm | 62 ohm | 75 ohm | 1K ohm |



| | ALC662 | ALC887-VD2 | ALC889 | VT1708S | VT1708SCE |
|--|-----------|------------|-----------|------------|------------|
| CR65 | X | X | O | O | X |
| CR64 | X | X | X | X | 0.1u/4 |
| CBC35 | O | O | X | X | O |
| CR44/CBC6 | 47ohm+1nF | 47ohm+1nF | 47ohm+1nF | 22ohm+100P | 22ohm+100P |
| CR31 | X | O | O | O | O |
| CR30 | O | X | X | X | X |
| CBC1/CBC2 | 22uF/X5R | 22uF/X5R | 22uF/X5R | 22uF/X5R | 22uF/X5R |
| CR20 | 5.11K/4/1 | 5.11K/4/1 | 5.11K/4/1 | 5.1K/4/1 | 5.1K/4/1 |
| CR34 | 20K/4/1 | 20K/4/1 | 20K/4/1 | 5.1K/4/1 | 20K/4/1 |
| CBC39/CBC40 | N/A | N/A | N/A | 100P/4 | 100P/4 |
| CR6/CR7/CR54/CR58 | 22K/4 | 22K/4 | 22K/4 | 10K/4 | 10K/4 |
| CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53 | 62 ohm | 62 ohm | 62 ohm | 75 ohm | 75 ohm |
| CR51/CD1/CBC7 | O | O | X | X | O |
| CD2/CD3/CQ3/CQ5 | X | X | O | O | X |
| CR1/CR14/CR17/CR22 | 62 ohm | 62 ohm | 62 ohm | 75 ohm | 1K ohm |

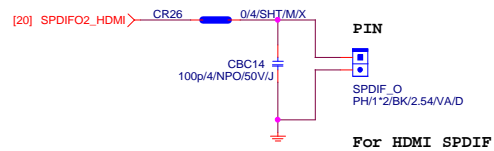


CODEC POWER/EMI PAD

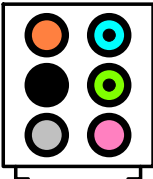


ADD CD2 For ESD PROTECT DIODE

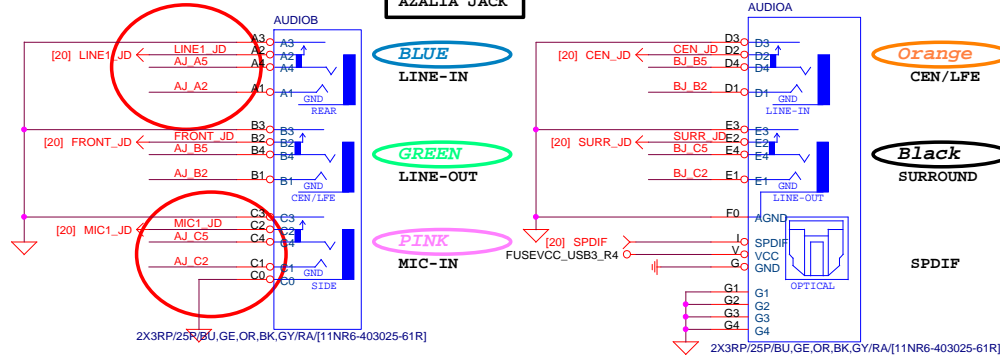
SPDIF_OUT



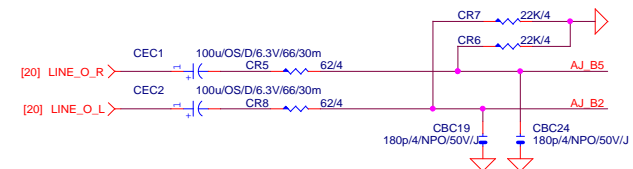
AZALIA JACK



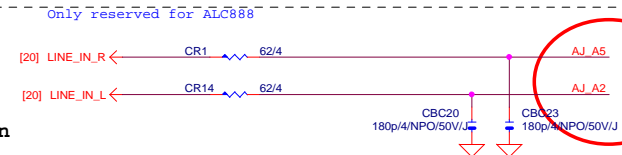
AZALIA JACK

BLUE
LINE-INGREEN
LINE-OUTPINK
MIC-IN

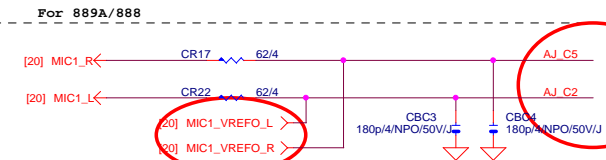
LINE-OUT



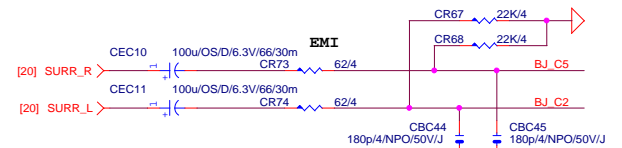
LINE-IN

Verify MIC function
in LINE-in

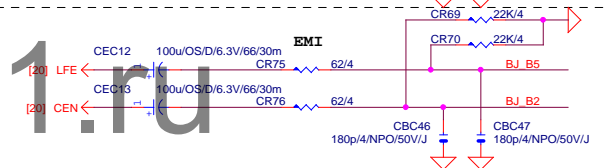
MIC-IN



SURROUND

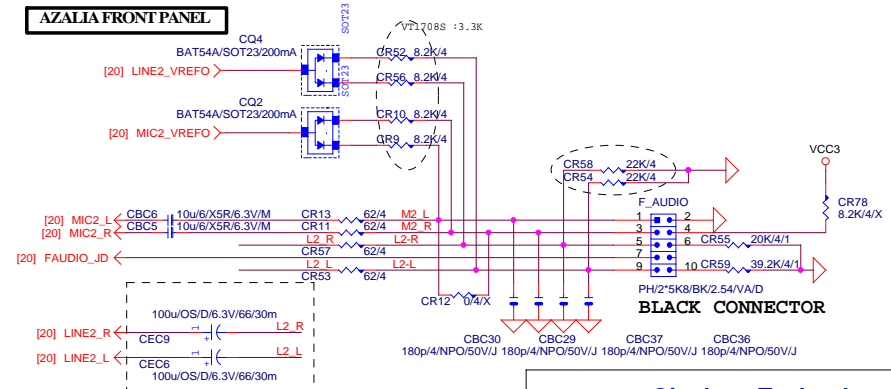


CEN/LFE



SURRBACK

AZALIA FRONT PANEL



Gigabyte Technology

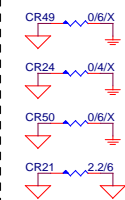
AUDIO JACK

GA-H87N-WIFI

Rev
2.02

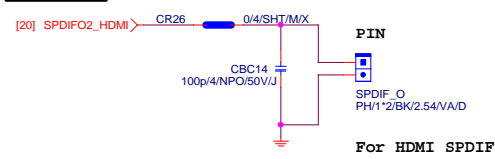
Date: Wednesday, January 15, 2014 Sheet 21 of 31

CODEC POWER/EMI PAD

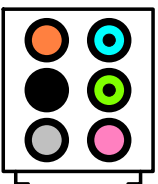


ADD CD2 For ESD PROTECT DIODE

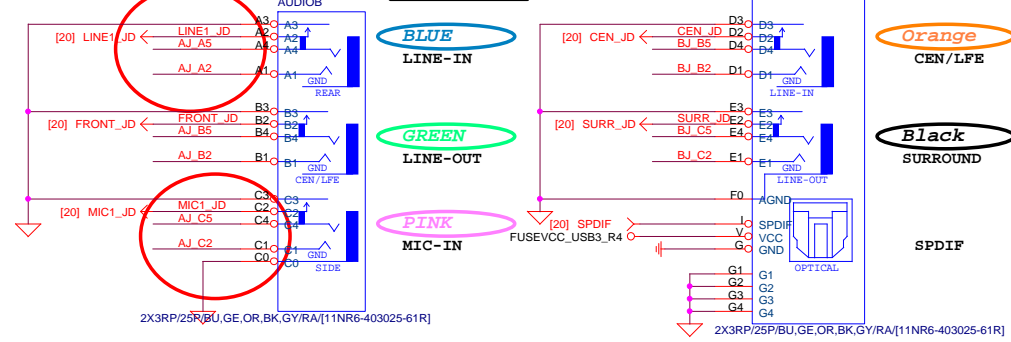
SPDIF_OUT



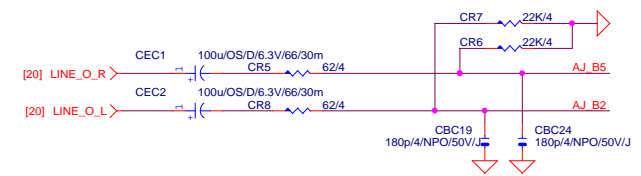
AZALIA JACK



AZALIA JACK

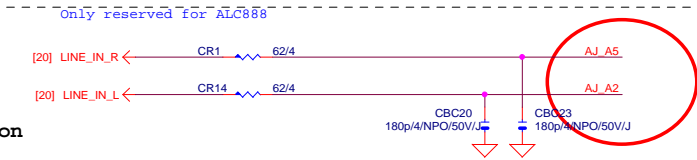


LINE-OUT

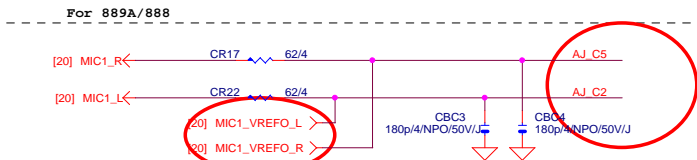


LINE-IN

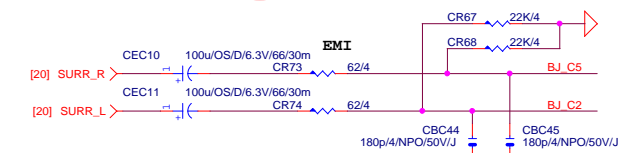
Verify MIC function in LINE-in



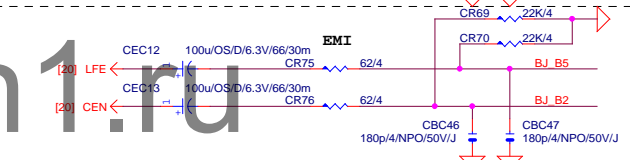
MIC-IN



SURROUND

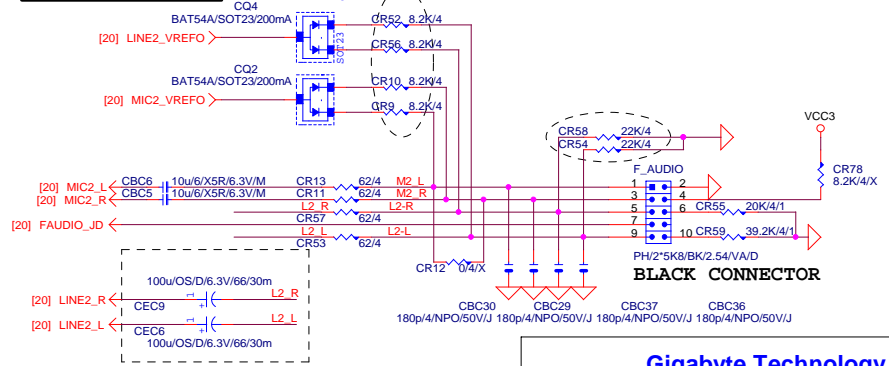


CEN/LFE



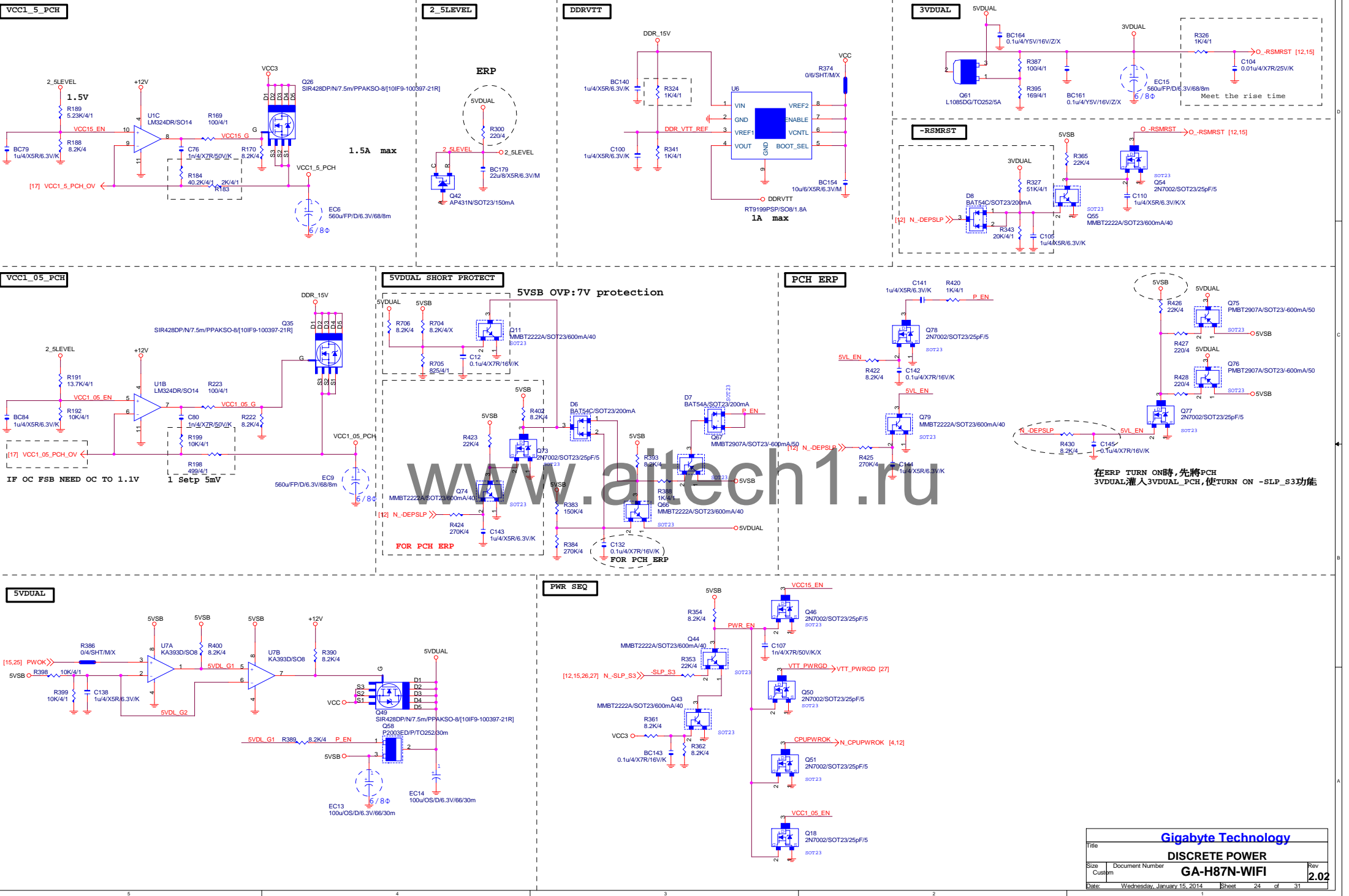
SURRBACK

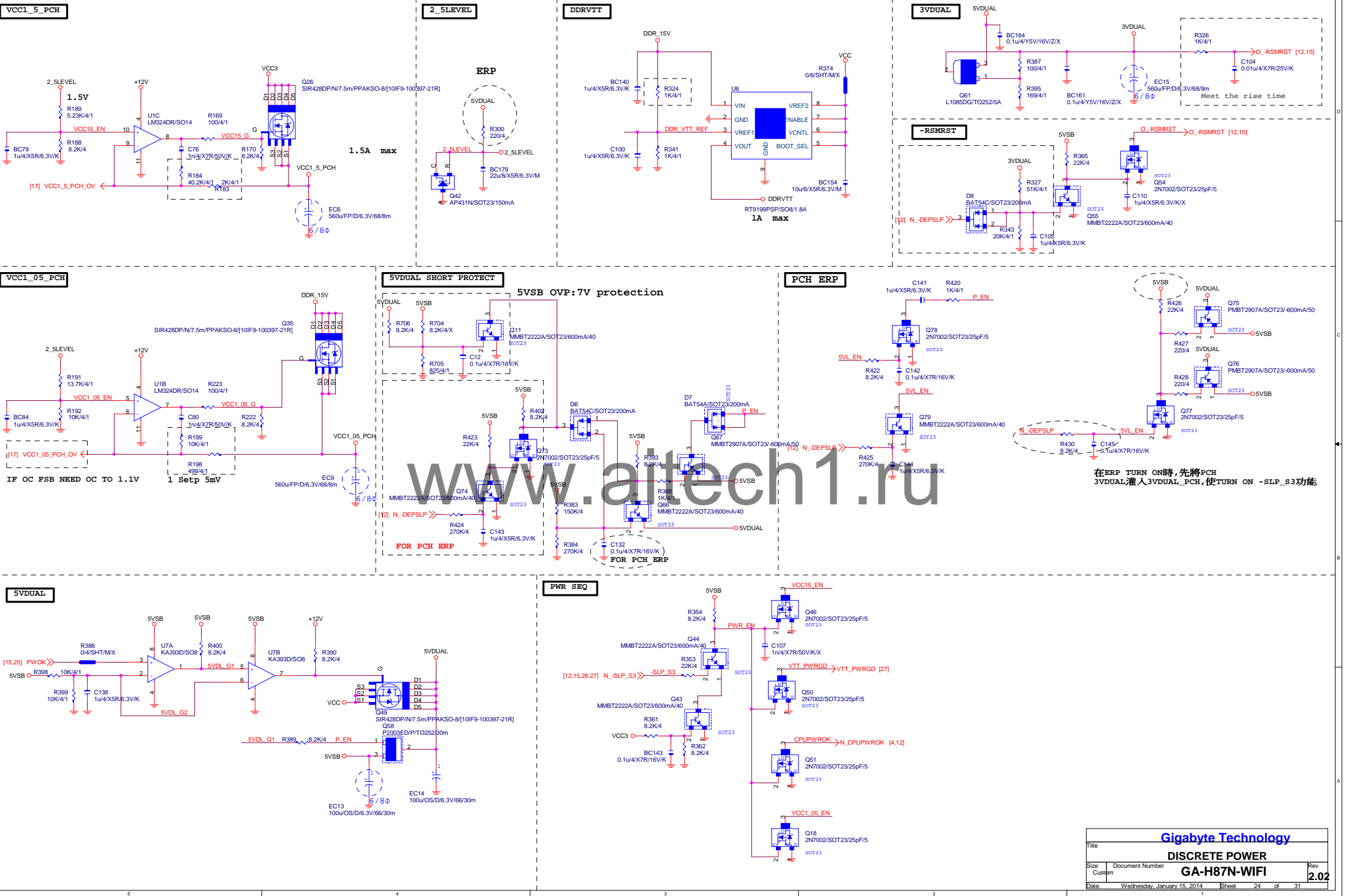
AZALIA FRONT PANEL



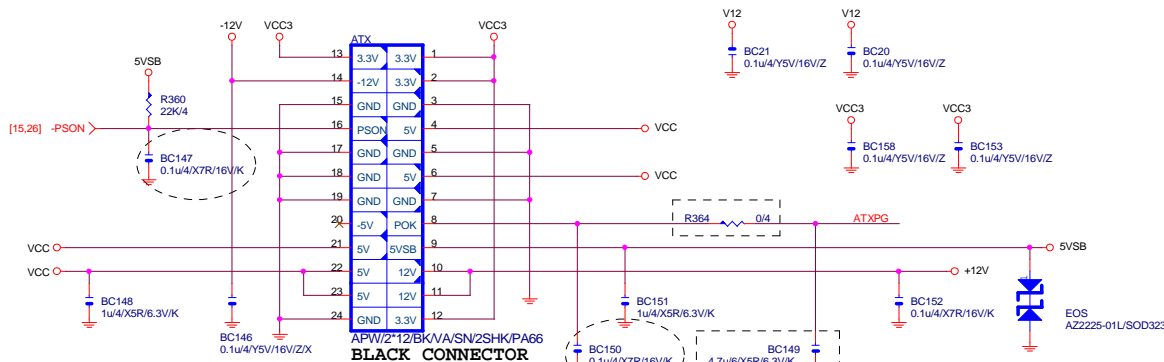
Gigabyte Technology

| AUDIO JACK | | | |
|-------------|-----------------------------------|----------------|----------|
| Title | Document Number | GA-H87N-WIFI | Rev 2.02 |
| Size Custom | Date: Wednesday, January 15, 2014 | Sheet 21 of 31 | |

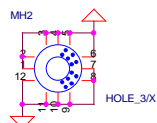




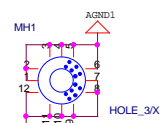
ATXX24 POWER CONNECTOR



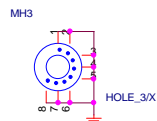
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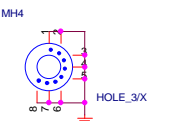
HOLE_4-RH-5MM-1



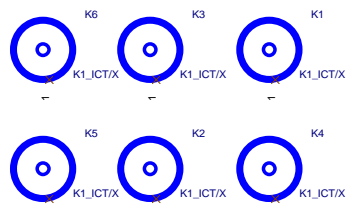
HOLE_4-RH-5MM-1



HOLE_4-RH-5MM-5PIN-1

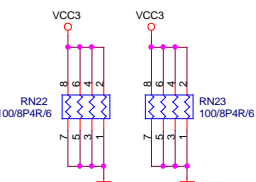


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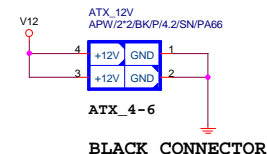


To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD

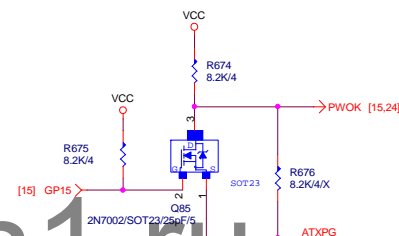


ATXX4 POWER CONNECTOR



PWOK PATCH

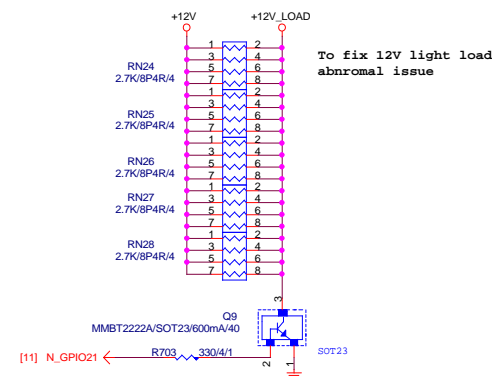
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】

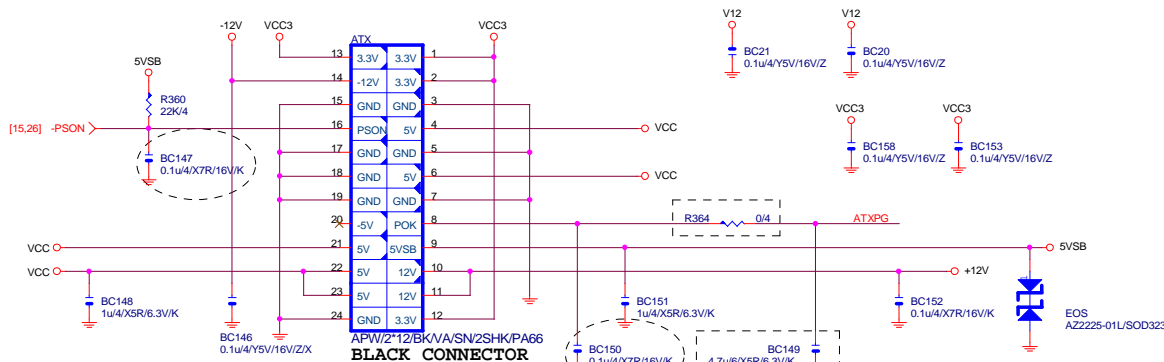


To fix 12V light load abnormal issue

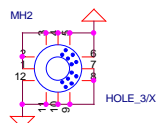
Gigabyte Technology

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|---------------|-----------------------------|----------------|
| Title | | |
| ATX CONNECTOR | | |
| Size | Document Number | Rev |
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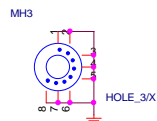
ATXX24 POWER CONNECTOR



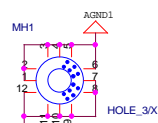
MB LOCATION



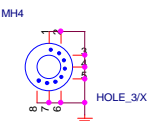
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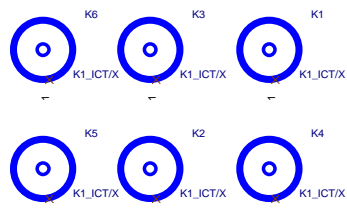
HOLE_4-RH-5MM-5PIN-1



HOLE_4-RH-5MM-1

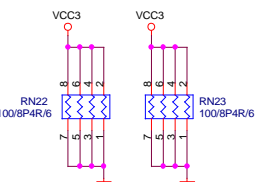


HOLE_4-RH-5MM-5PIN-1

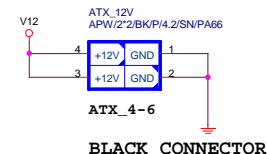


To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



ATXX4 POWER CONNECTOR

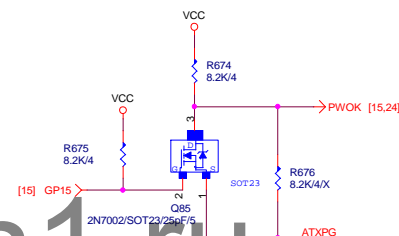


ATX_4-6

BLACK CONNECTOR

PWOK PATCH

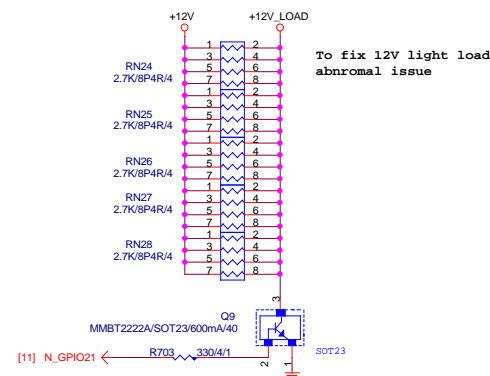
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】

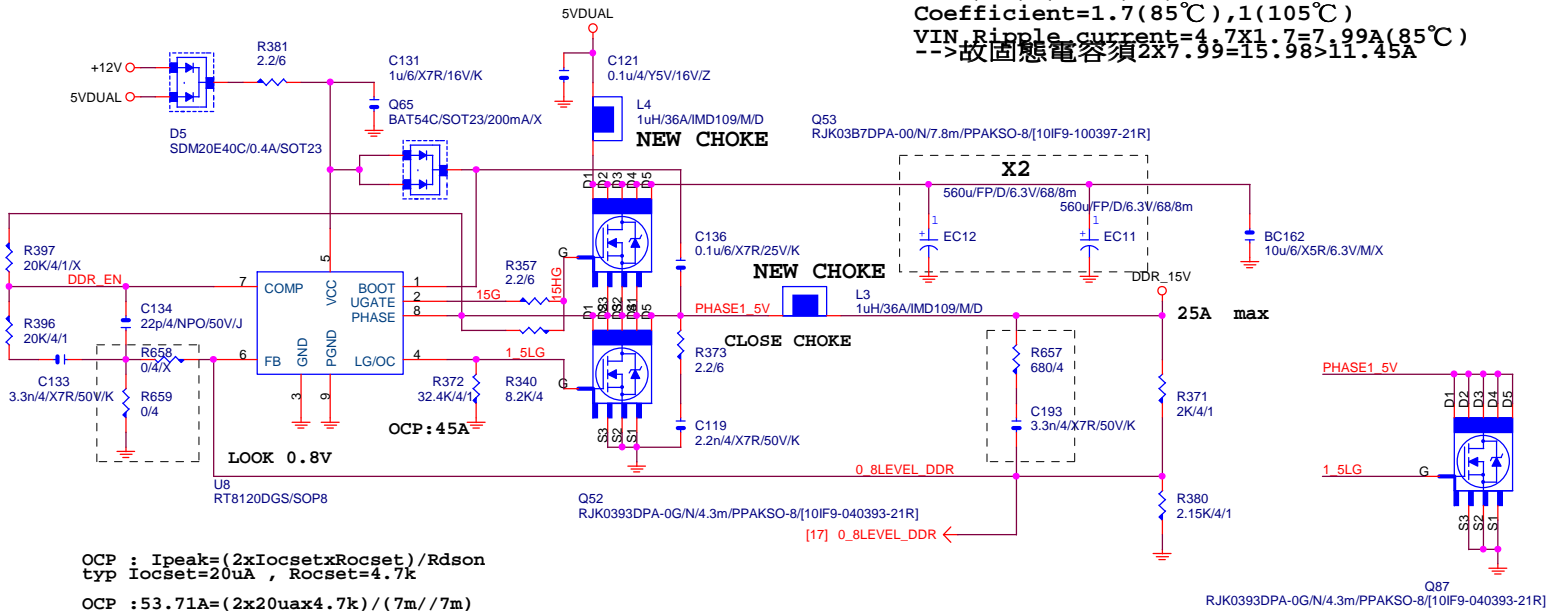


To fix 12V light load abnormal issue

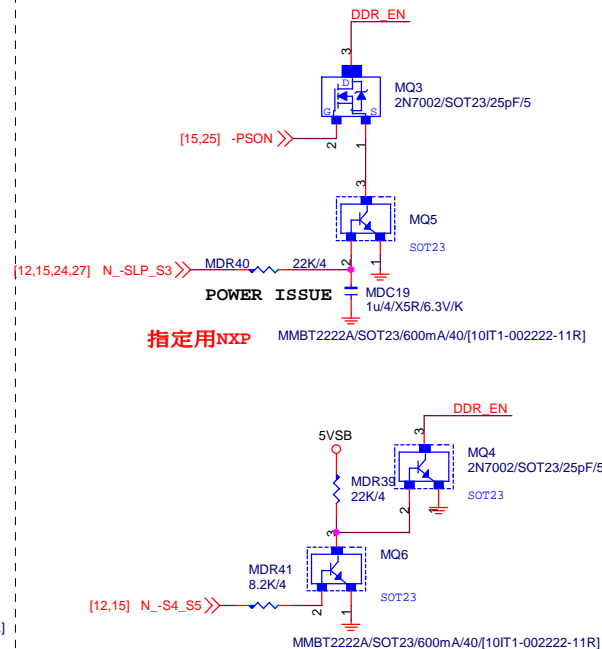
Gigabyte Technology

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|---------------|-----------------------------|----------------|
| Title | | |
| ATX CONNECTOR | | |
| Size | Document Number | Rev |
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DDR15V



PWR SEQ

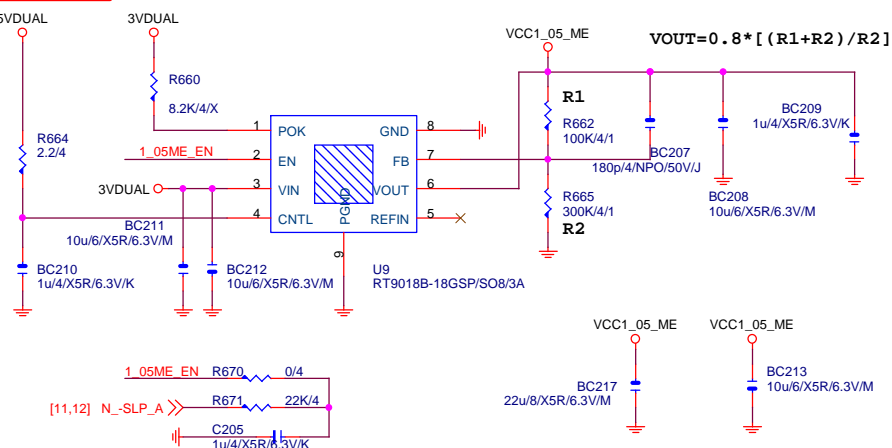


VCC1_05_ME

Z87 N/A

Z87+I217V

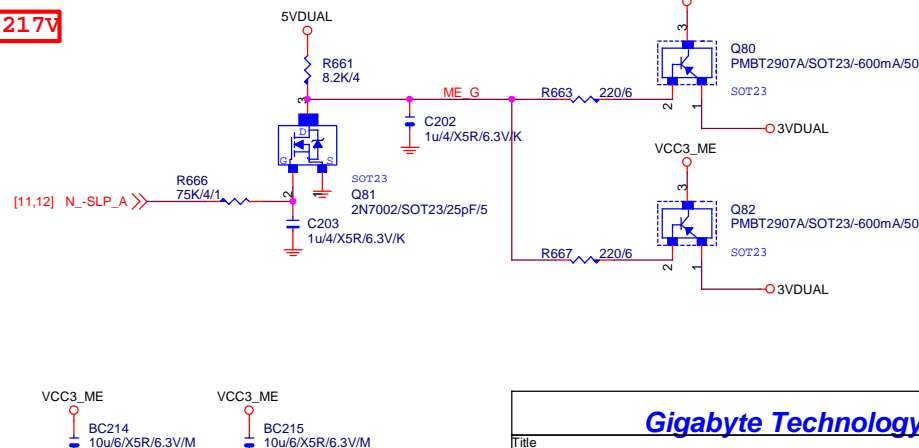
【技術通報R&D技術通報156】
(RICHTER), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME

Z87 N/A

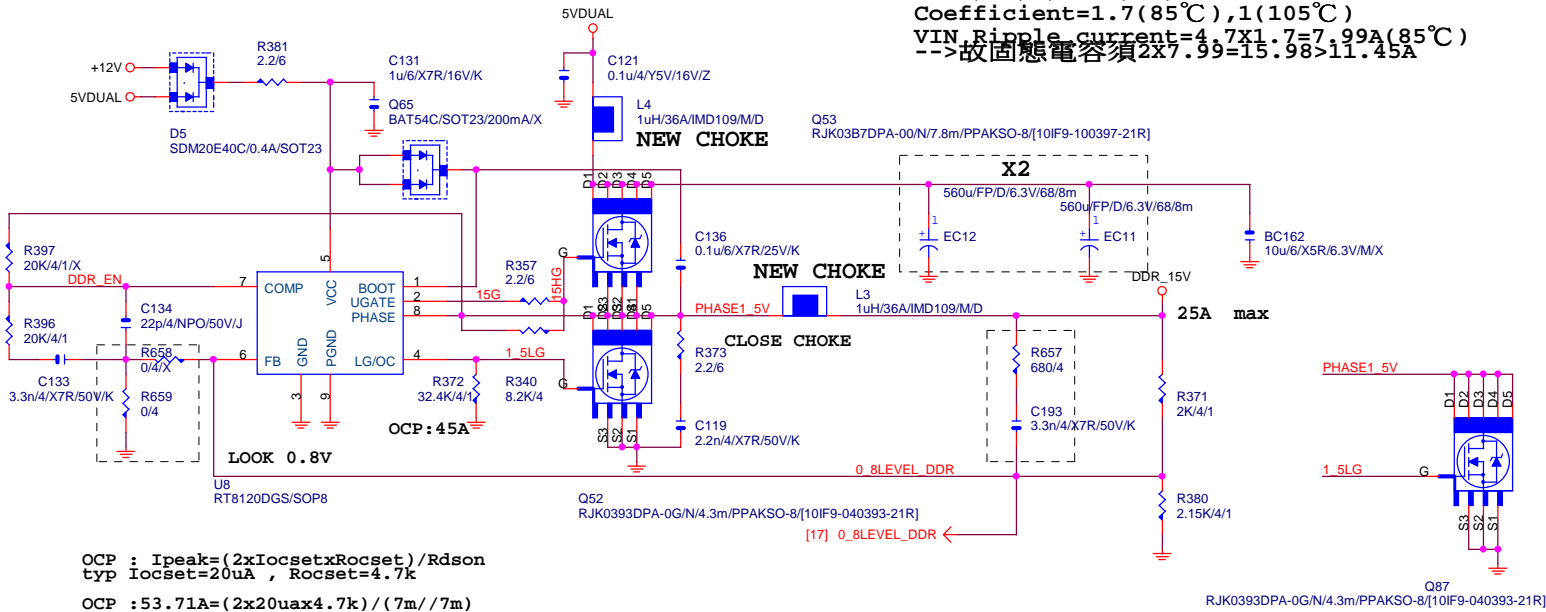
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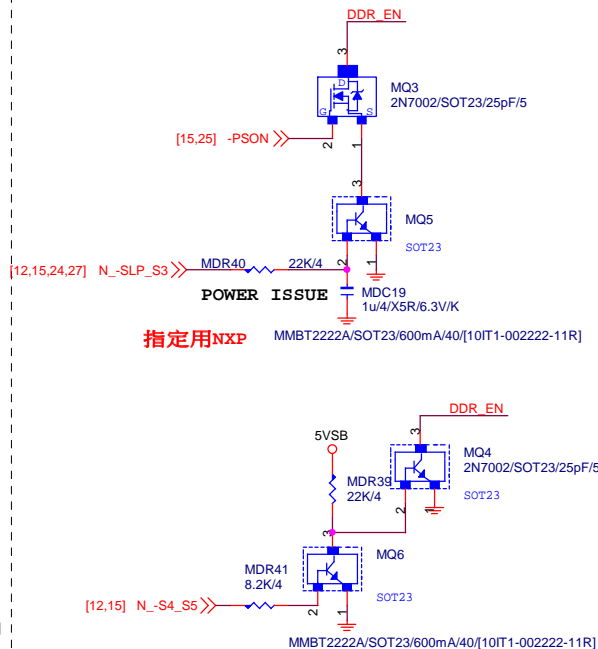
Gigabyte Technology

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| Title | | | |
| DDR & M3 POWER | | | |
| Size B | Document Number | GA-H87N-WIFI | Rev 2.02 |
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DDR15V



PWR SEQ

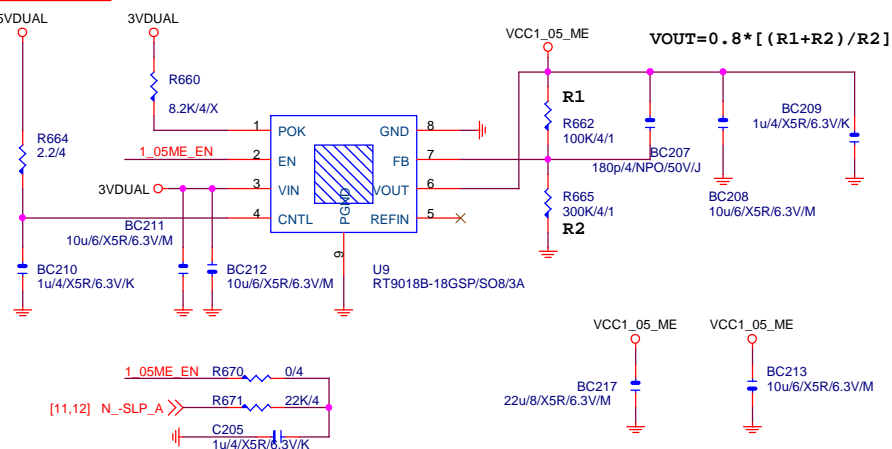


VCC1_05_ME

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Z87+I217V

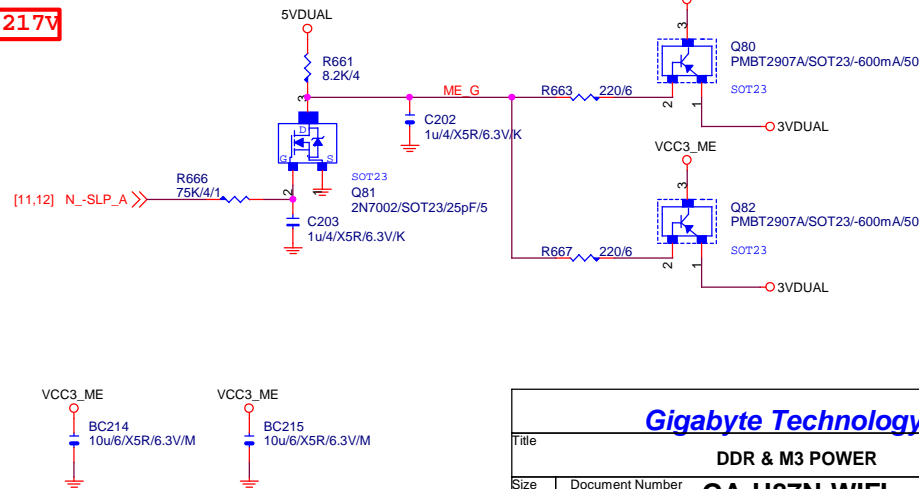
【技術通報R&D技術通報156】
(RICHTER), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME

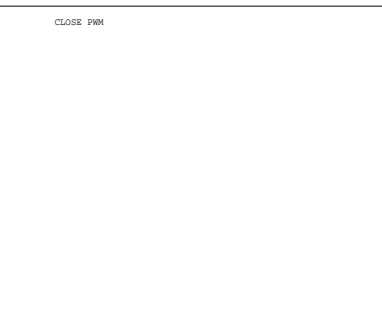
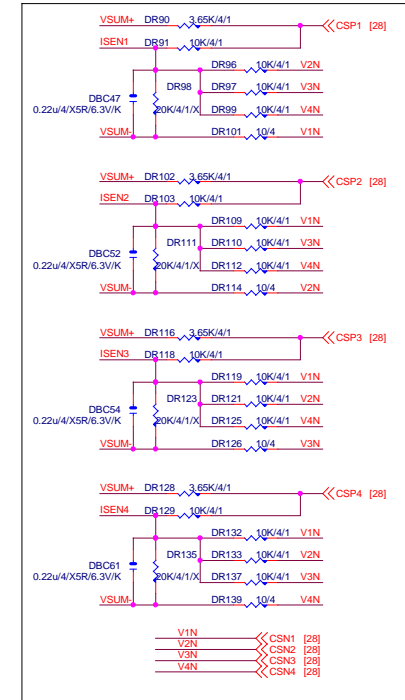
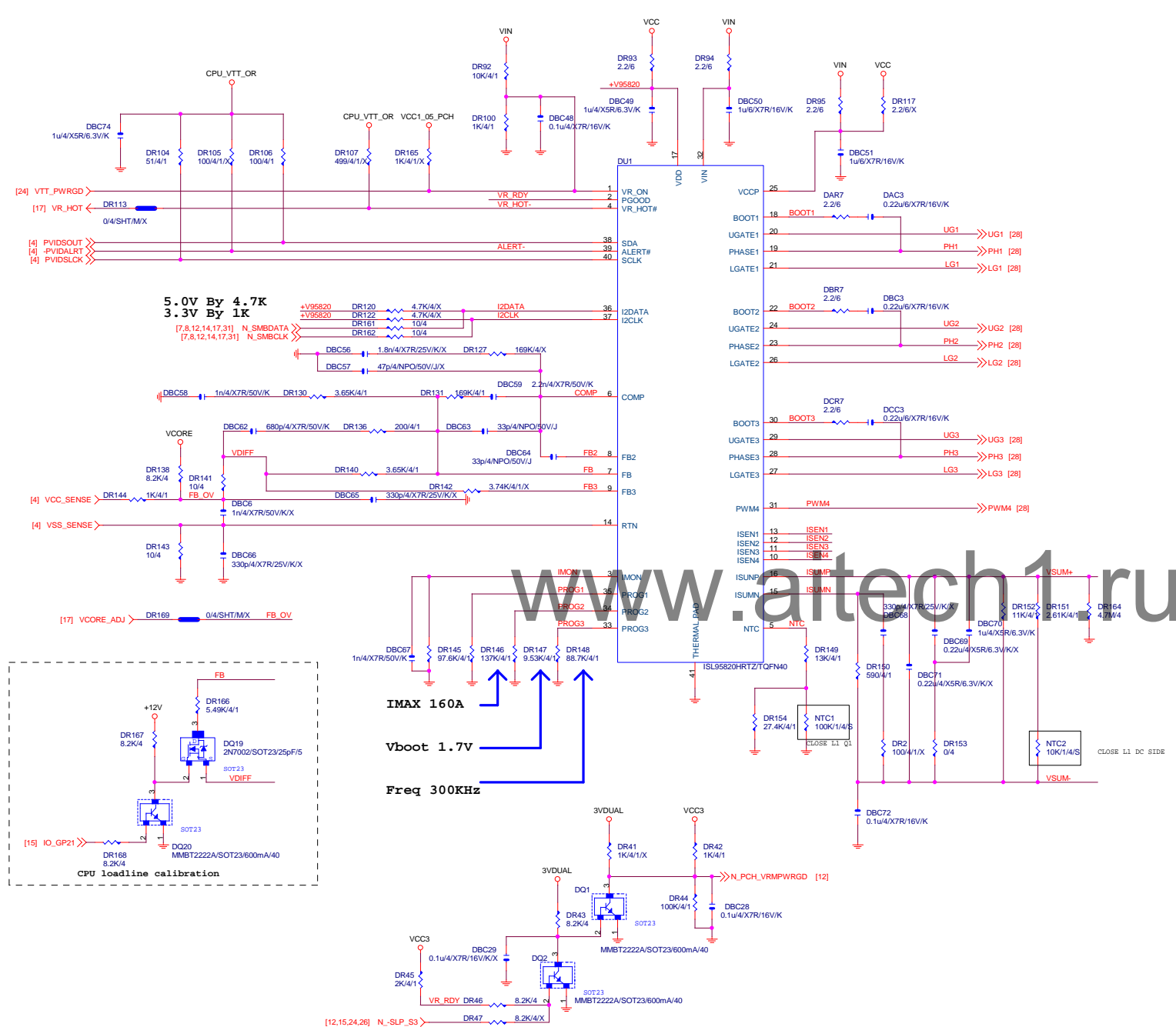
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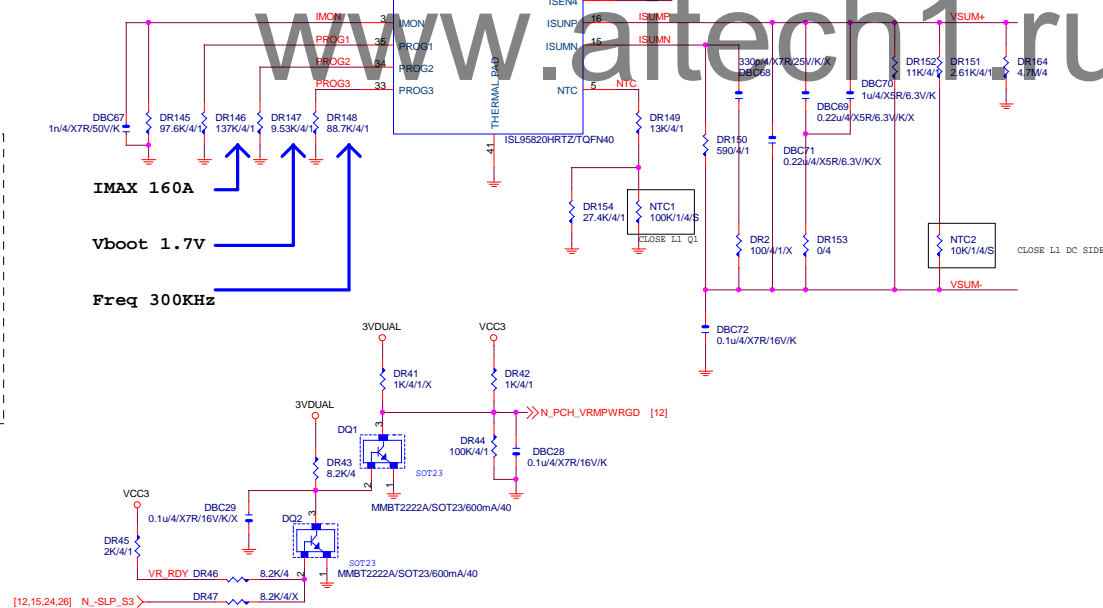
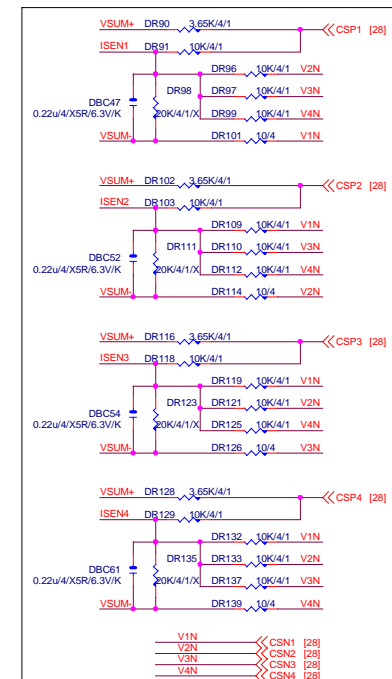
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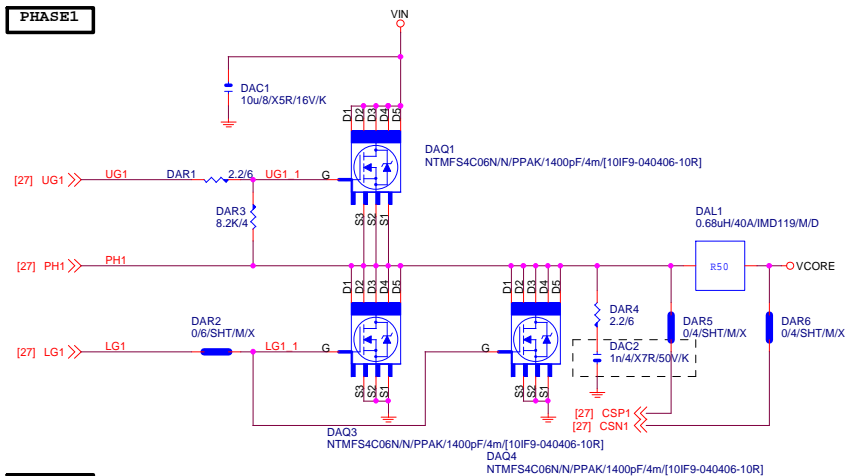
Gigabyte Technology

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| Title | | | |
| DDR & M3 POWER | | | |
| Size B | Document Number | GA-H87N-WIFI | Rev 2.02 |
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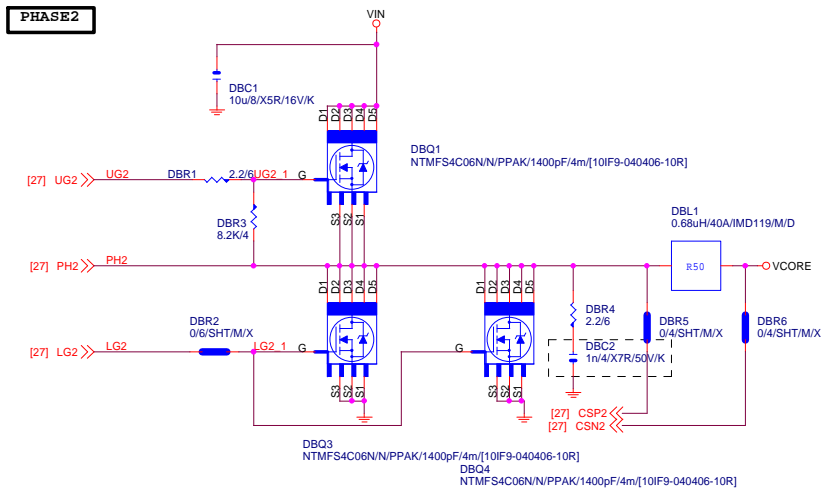




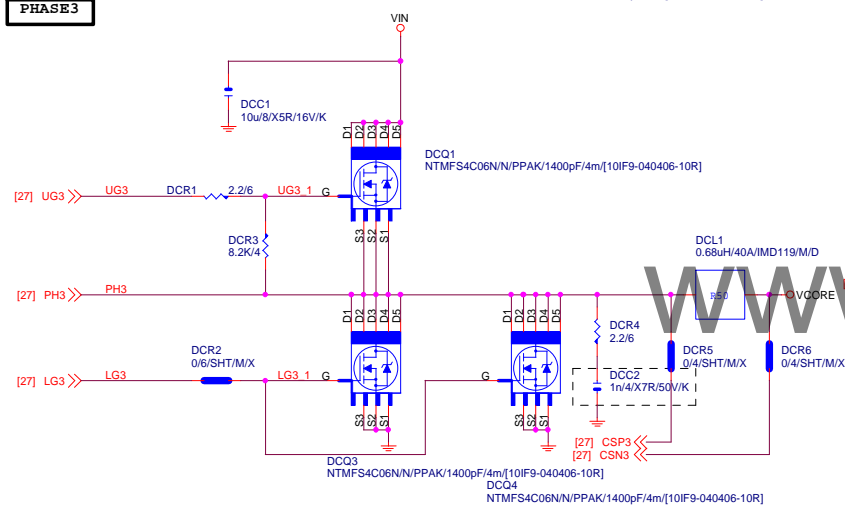
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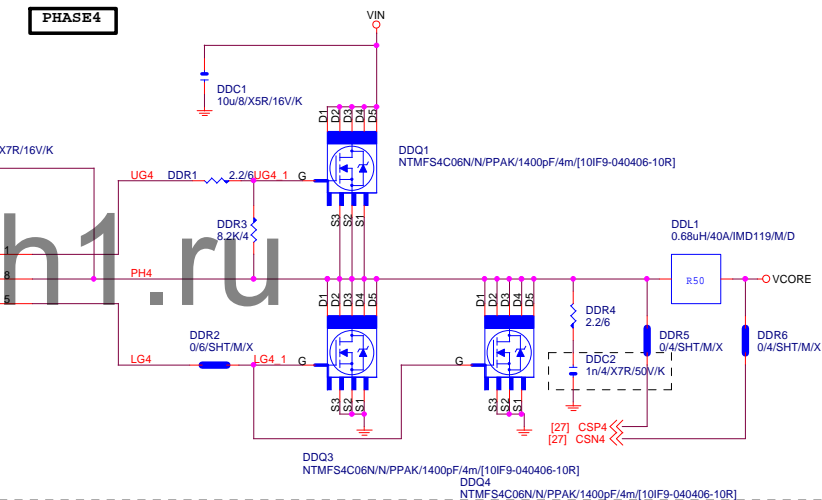
PHASE2



PHASE3

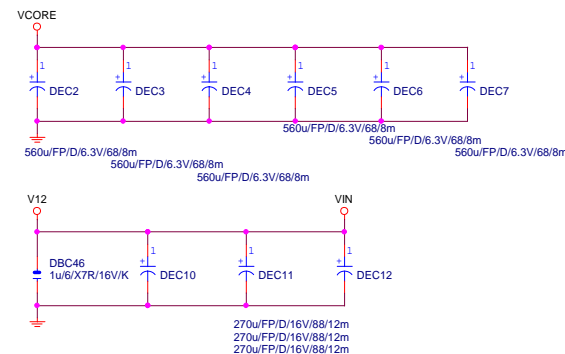


PHASE4



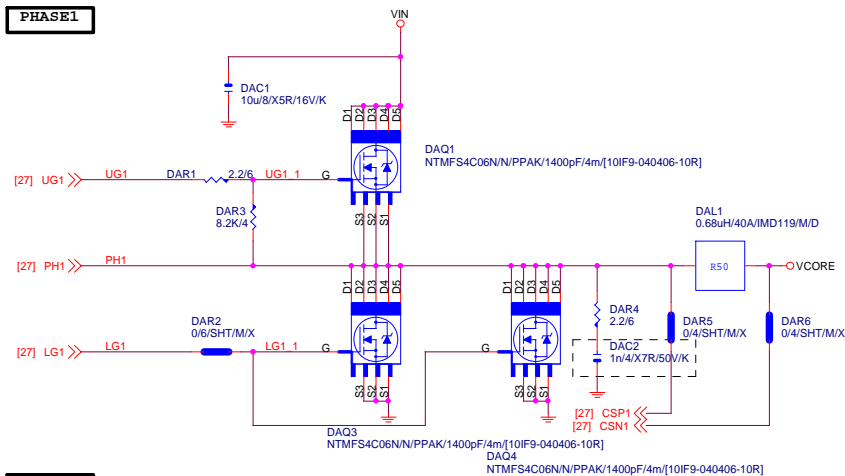
MOS HEATSINK

N/A

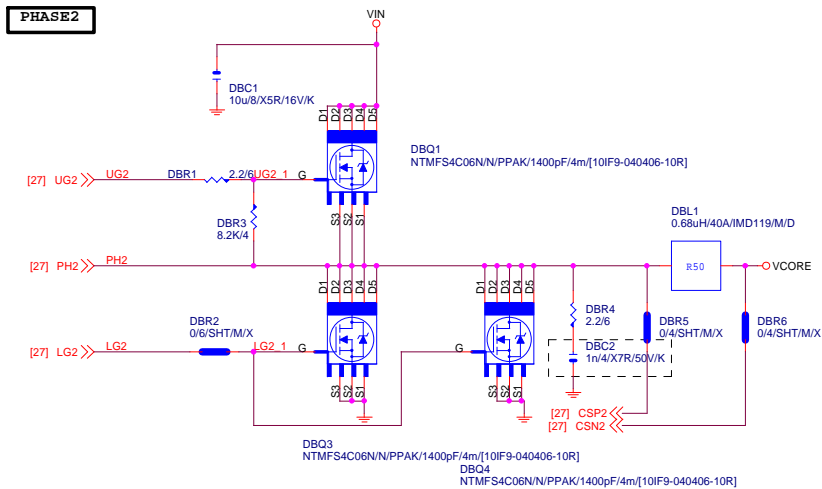


| Gigabyte Technology | | | |
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| Title | | | |
| CPU CORE VR-2 | | | |
| Size Custom | | | |
| Document Number | | | |
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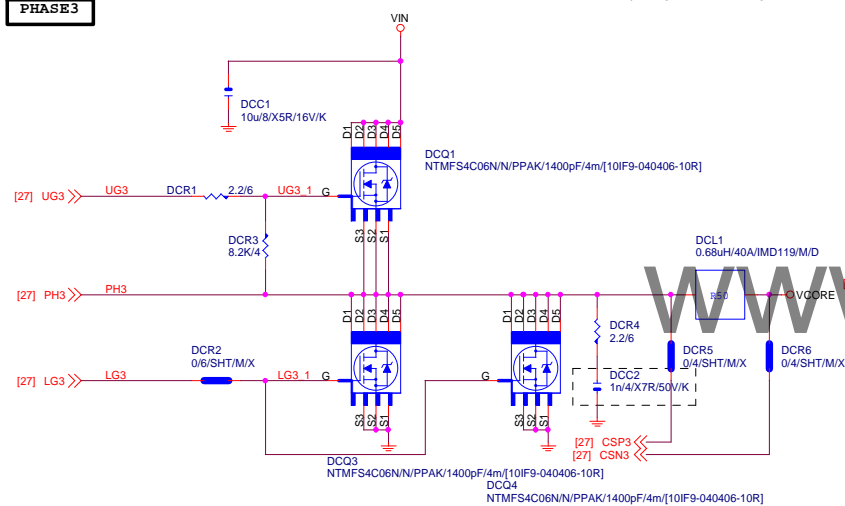
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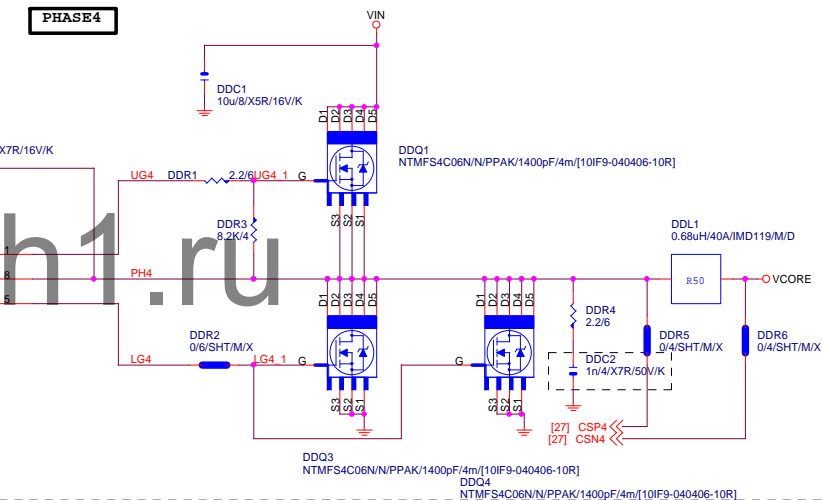
PHASE2



PHASE3

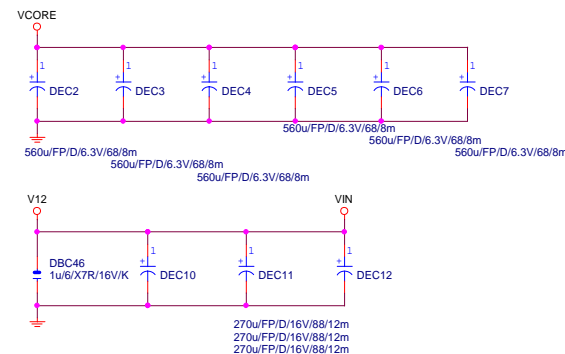


PHASE4



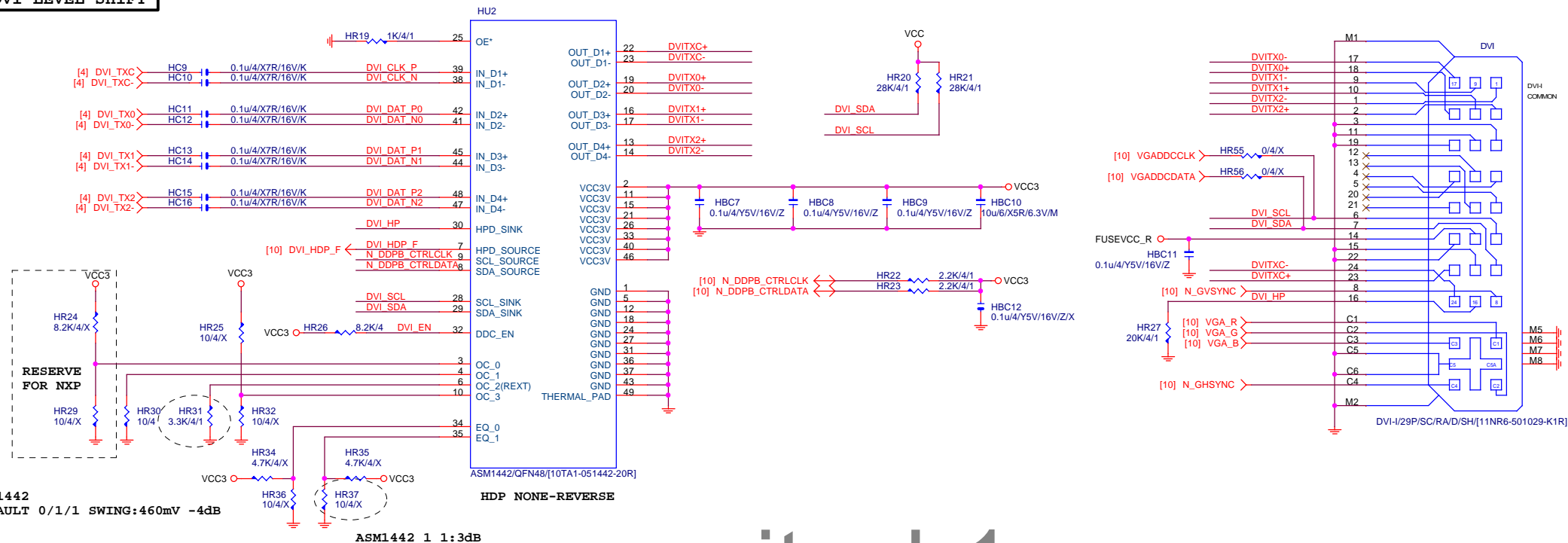
MOS HEATSINK

N/A



| Gigabyte Technology | | | |
|---------------------|-----------------------------|--------------|----------|
| Title | | | |
| CPU CORE VR-2 | | | |
| Size | Document Number | GA-H87N-WIFI | |
| Custom | | | Rev 2.02 |
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DVI LEVEL SHIFT



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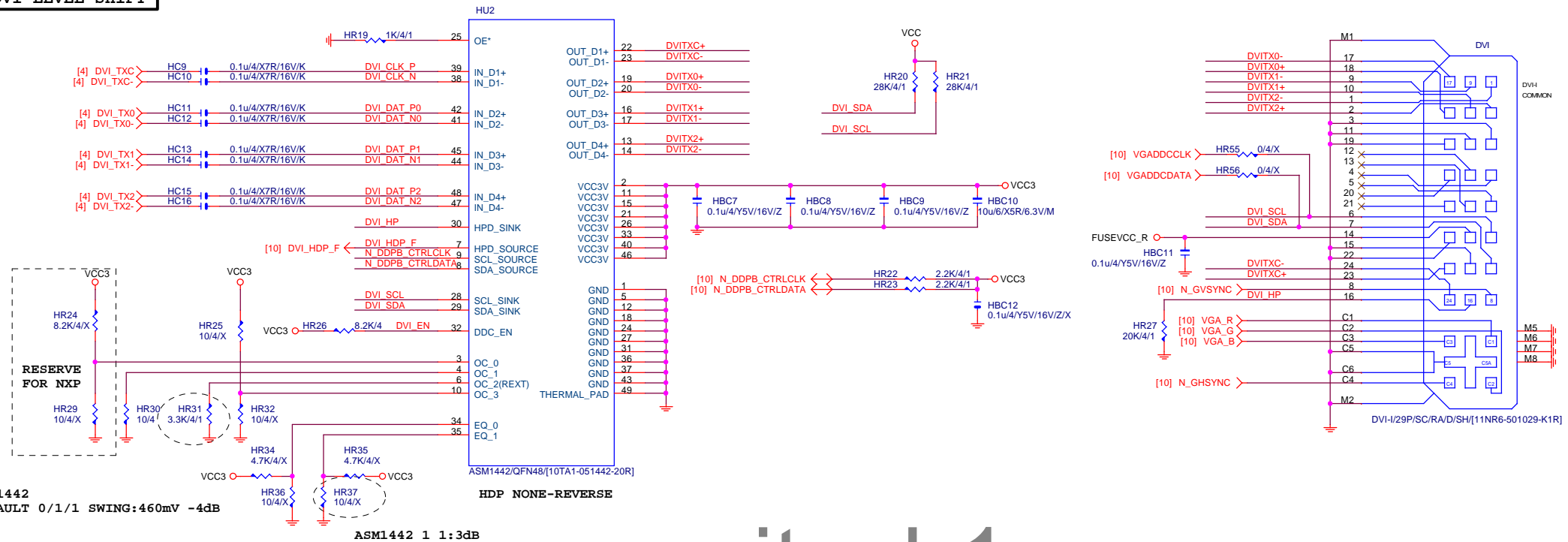
DVI

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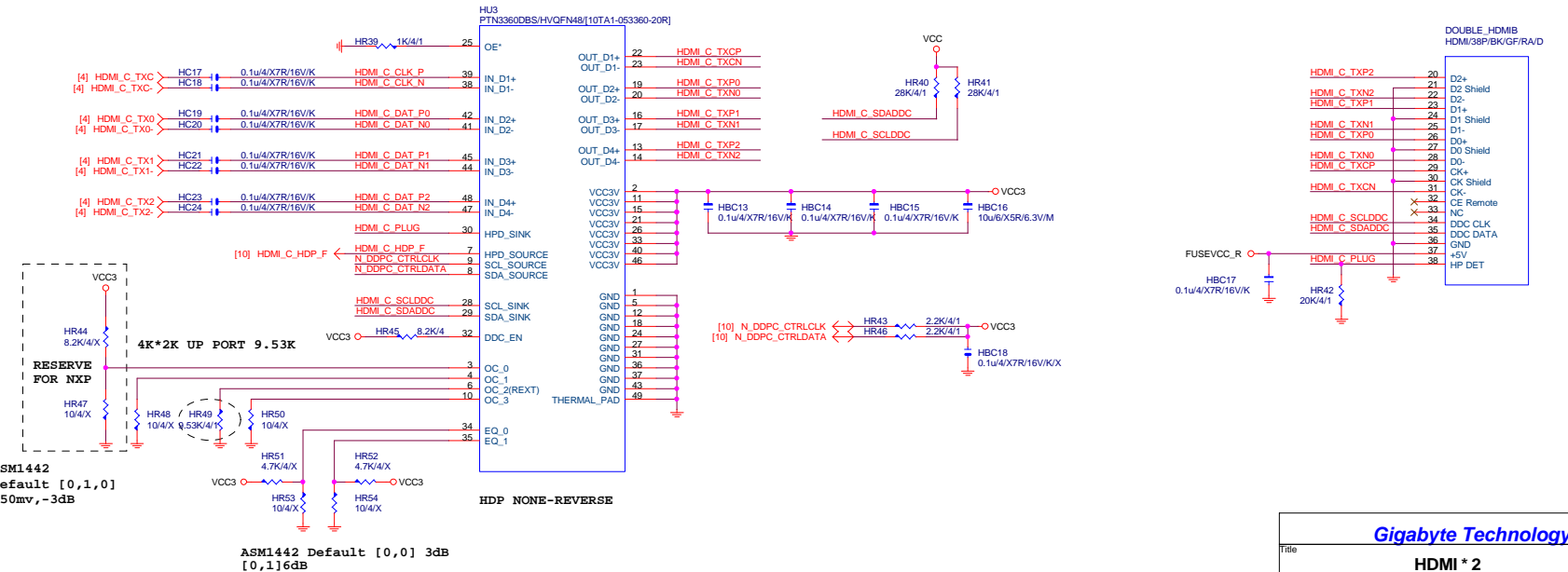
DVI LEVEL SHIFT



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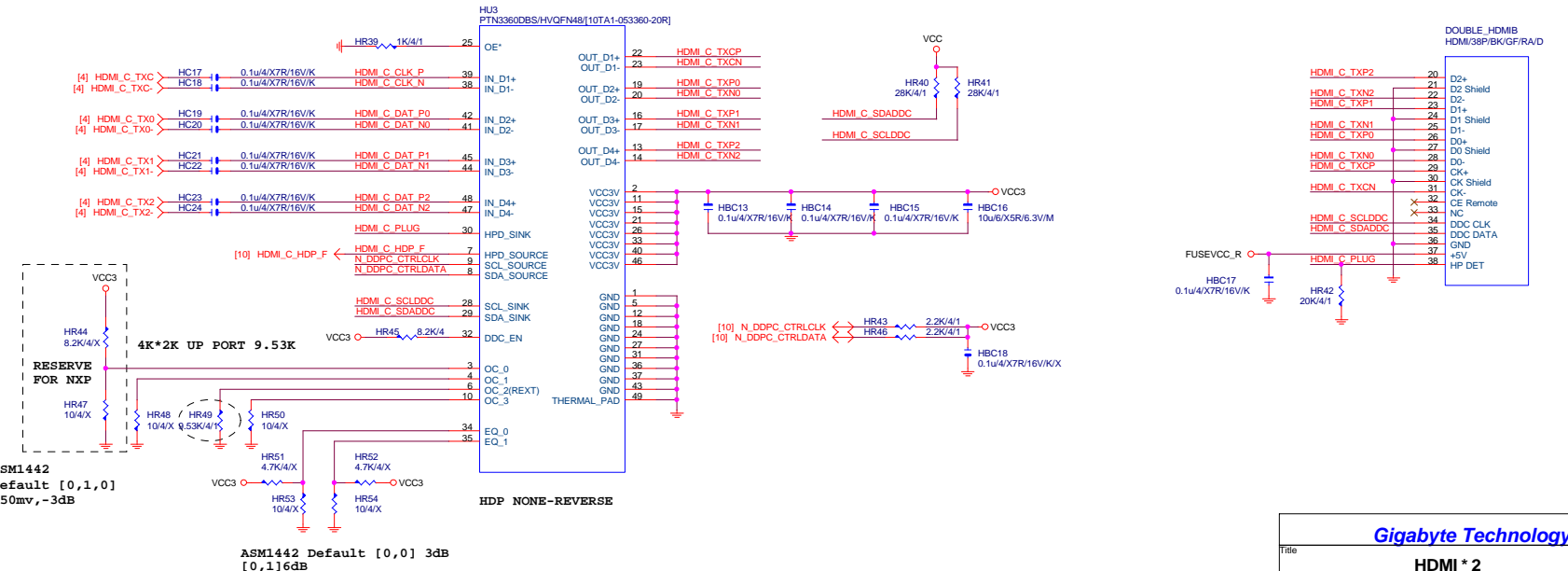
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| Title | | | |
| DVI | | | |
| Size | Document Number | GA-H87N-WIFI | |
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HDMI LEVEL SHIFT



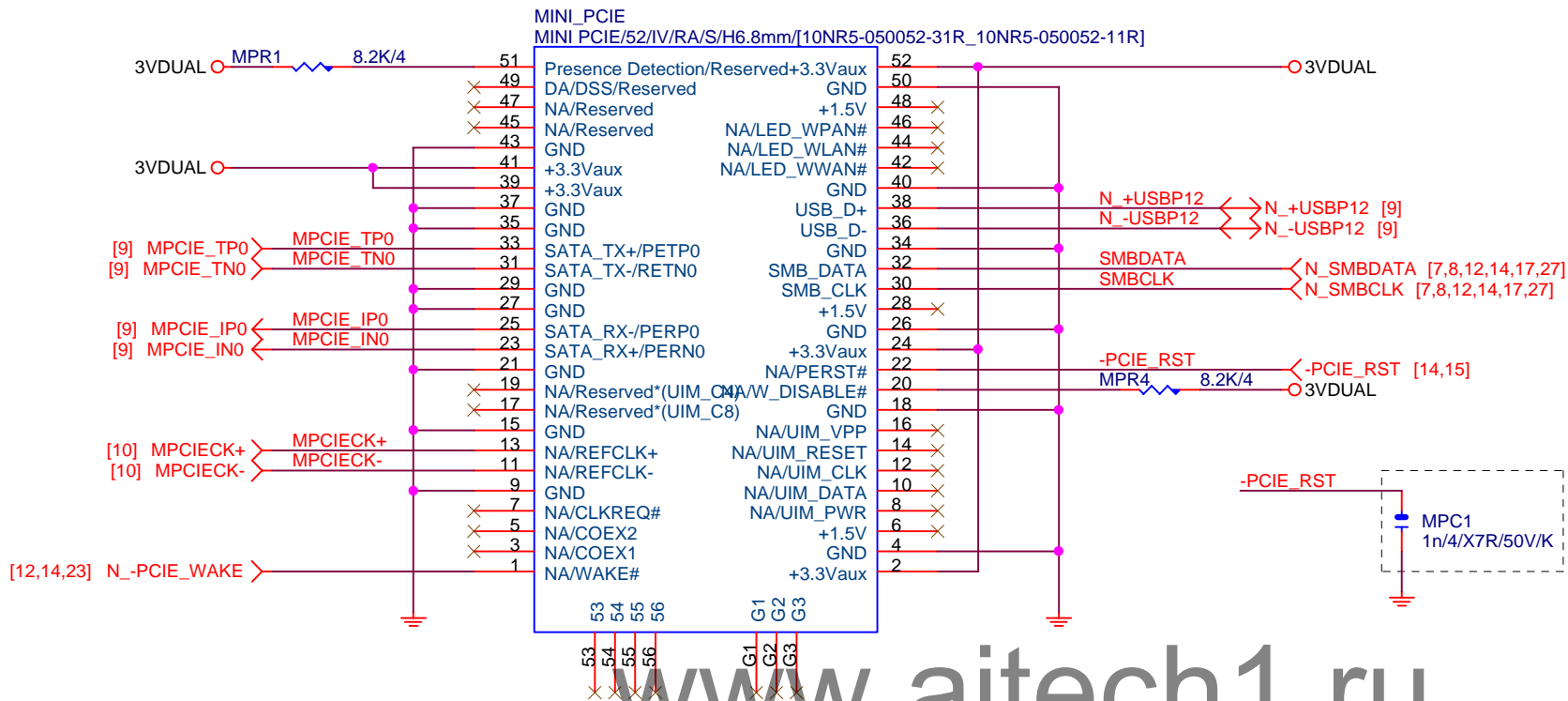
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| Size | Document Number | | Rev |
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HDMI LEVEL SHIFT

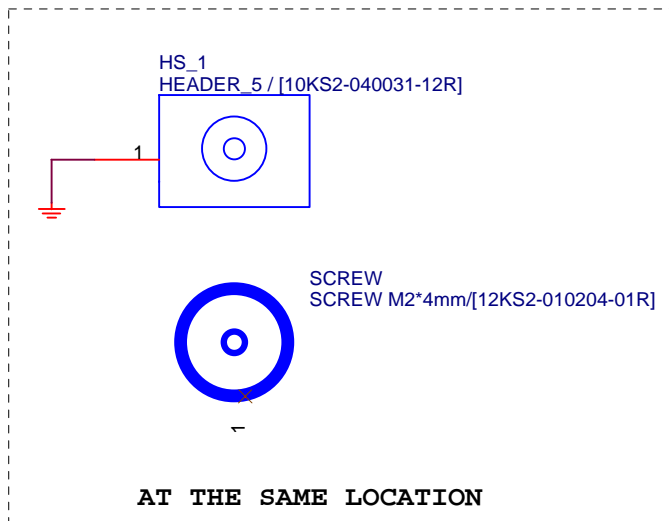


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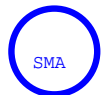
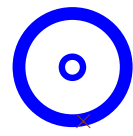
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| Custom | GA-H87N-WIFI | | 2.02 |
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ANTENNA_BRACKET
BRACKET/[12AC2-000001-01R]



ANT1

SMA/[11NH6-010001-11R]



ANT2

SMA/[11NH6-010001-11R]

Intel 7260 - 2x2 11ac combo



WIFI_MODULE
WI-FI WITH BT MINI CARD INTEL/[20CB1-027260-00R]

| | | | |
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| Gigabyte Technology | | | |
| Title | | | |
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| Size A | Document Number | GA-H87N-WIFI | Rev 2.02 |
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