

Model Name: GA-H81M-S2V

Revision 1.0

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
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 X1 *1 SLOT
16	ITE 8620 LPC IO
17	COM,KB_MS_USB,USB30_20
18	HWM,FAN CTRL,OV,-PROCHOT
19	SINGLE BIOS
20	FP,FUSB,SPK,SATALED
21	Realtek ALC887-VD2
22	REAR AUDIO JACK
23	REALTEK RTL8111G
24	DISCRETE POWER
25	ATX , CLOCK GEN
26	VCORE ISL95812_1
27	VCORE ISL95812_2

SHEET

TITLE

28	RT8120_DDR POWER
29	DVI

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Gigabyte Technology

Cover Sheet

Size Custom	Document Number	GA-H81M-S2V	Rev 1.0
Date:	Thursday, May 15, 2014	Sheet 1 of 29	

## D

CD

B

A

Size  
Custo

GA-H81M-S2V

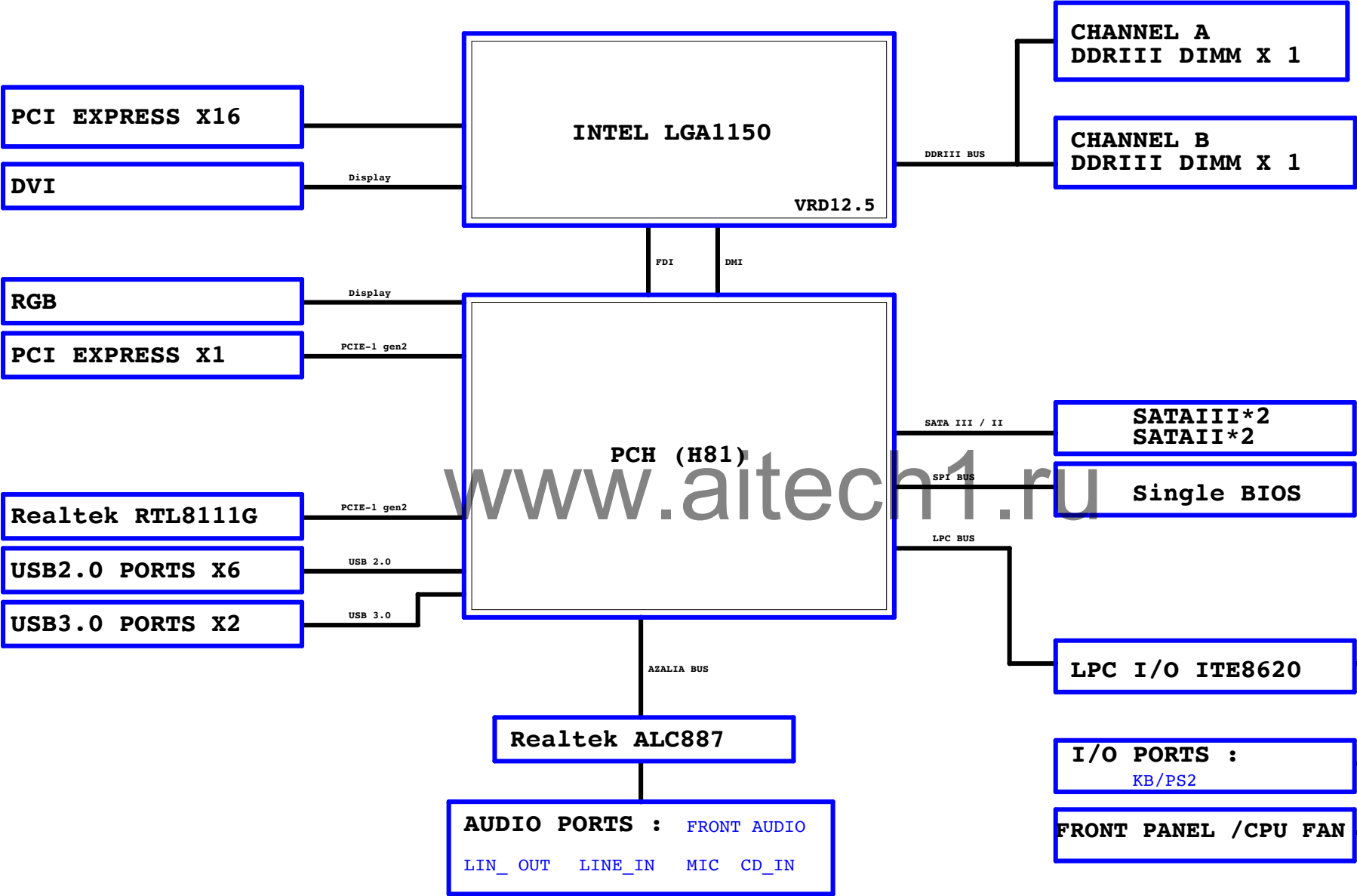
Date:

Sheet

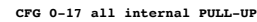
2 0

1.0	
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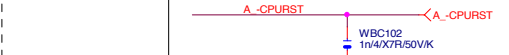
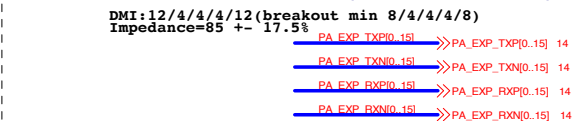
BLOCK DIAGRAM



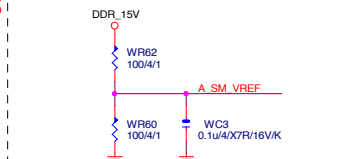
**LGA1150 (D)**



**-CPURST**



SM REF
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LGA1150

(A)

LGA1150

(B)

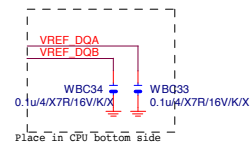
LGA1150

(CR)

LGA1150A	
MAAA0 AU13	DDR0_MA0
MAAA1 AV16	DDR0_MA1
MAAA2 AU16	DDR0_MA2
MAAA3 AW17	DDR0_MA3
MAAA4 AU17	DDR0_MA4
MAAA5 AW18	DDR0_MA5
MAAA6 AV17	DDR0_MA6
MAAA7 AT18	DDR0_MA7
MAAA8 AU18	DDR0_MA8
MAAA9 AT19	DDR0_MA9
MAAA10 AW11	DDR0_MA10
MAAA11 AV19	DDR0_MA11
MAAA12 AU19	DDR0_MA12
MAAA13 AT20	DDR0_MA13
MAAA14 AT20	DDR0_MA14
MAAA15 AU21	DDR0_MA15
MODT_A0 AW10	DDR0_ODT0
MODT_A1 AV8	DDR0_ODT1
AW9	DDR0_ODT2
AW8	DDR0_ODT3
AW33	DDR0_ECC0
AW33	DDR0_ECC1
AU31	DDR0_ECC2
AW31	DDR0_ECC3
AT33	DDR0_ECC4
AU33	DDR0_ECC5
AT31	DDR0_ECC6
AW31	DDR0_ECC7
SBA00 <-> SBA01 AV12	DDR0_BA0
SBA01 <-> SBA02 AT21	DDR0_BA1
SBA02 <-> SBA01 AT21	DDR0_BA2
CKEA0 <-> CKEA1 AV22	DDR0_CKE0
CKEA1 <-> CKEA0 AT23	DDR0_CKE1
AW22	DDR0_CKE2
AW23	DDR0_CKE3
CSA0 <-> CSA0 AU14	DDR0_CS_N0
CSA1 <-> CSA1 AV9	DDR0_CS_N1
AU10	DDR0_CS_N2
AW8	DDR0_CS_N3
DCLKA0 <-> DCLKA0 AY15	DDR0_CLK_P0
DCLKA0 <-> DCLKA0 AY16	DDR0_CLK_N0
DCLKA1 <-> DCLKA1 AY15	DDR0_CLK_P1
DCLKA1 <-> DCLKA1 AY16	DDR0_CLK_N1
AW14	DDR0_CLK_P2
AW14	DDR0_CLK_N2
AW13	DDR0_CLK_P3
AW13	DDR0_CLK_N3
AW12	RSVD
RSVD	DDR0_RAS*
RSVD	DDR0_WE*
RSVD	DDR0_DQS_P0
RSVD	DDR0_DQS_P1
RSVD	DDR0_DQS_P2
RSVD	DDR0_DQS_P3
RSVD	DDR0_DQS_P4
RSVD	DDR0_DQS_P5
RSVD	DDR0_DQS_P6
RSVD	DDR0_DQS_P7
RSVD	DDR0_DQS_P8
RSVD	DDR0_DQS_N0
RSVD	DDR0_DQS_N1
RSVD	DDR0_DQS_N2
RSVD	DDR0_DQS_N3
RSVD	DDR0_DQS_N4
RSVD	DDR0_DQS_N5
RSVD	DDR0_DQS_N6
RSVD	DDR0_DQS_N7
RSVD	DDR0_DQS_N8

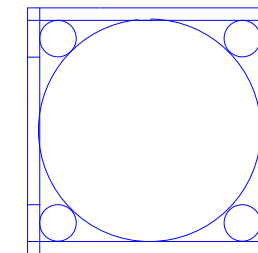
HASWELL[10SC1-F01150-11R\_10SC1-F01150-12R]

LGA1150B	
MAAB0 AL19	DDR1_MA0
MAAB1 AK23	DDR1_MA1
MAAB2 AM22	DDR1_MA2
MAAB3 AM23	DDR1_MA3
MAAB4 AP23	DDR1_MA4
MAAB5 AL23	DDR1_MA5
MAAB6 AY24	DDR1_MA6
MAAB7 AV25	DDR1_MA7
MAAB8 AU26	DDR1_MA8
MAAB9 AW25	DDR1_MA9
MAAB10 AY26	DDR1_MA10
MAAB11 AY26	DDR1_MA11
MAAB12 AR15	DDR1_MA12
MAAB13 AV27	DDR1_MA13
MAAB14 AY28	DDR1_MA14
MAAB15 AY28	DDR1_MA15
MODT_B0 AM17	DDR1_ODT0
MODT_B1 AL18	DDR1_ODT1
AM18	DDR1_ODT2
AK15	DDR1_ODT3
AM26	DDR1_ECC0
AM25	DDR1_ECC1
AP25	DDR1_ECC2
AP26	DDR1_ECC3
AL26	DDR1_ECC4
AL25	DDR1_ECC5
AR26	DDR1_ECC6
AR25	DDR1_ECC7
SBA00 <-> SBA01 AK17	DDR1_BA0
SBA01 <-> SBA02 AL18	DDR1_BA1
SBA02 <-> SBA01 AW28	DDR1_BA2
CKEB0 <-> CKEB1 AW29	DDR1_CKE0
CKEB1 <-> CKEB0 AW29	DDR1_CKE1
AW29	DDR1_CKE2
AW29	DDR1_CKE3
CSB0 <-> CSB0 AP17	DDR1_CS_N0
CSB1 <-> CSB1 AL15	DDR1_CS_N1
AL15	DDR1_CS_N2
AL15	DDR1_CS_N3
DCLKB0 <-> DCLKB0 AM20	DDR1_CLK_P0
DCLKB0 <-> DCLKB0 AM21	DDR1_CLK_N0
DCLKB1 <-> DCLKB1 AP22	DDR1_CLK_P1
DCLKB1 <-> DCLKB1 AP21	DDR1_CLK_N1
AN20	DDR1_CLK_P2
AN21	DDR1_CLK_N2
AP21	DDR1_CLK_P3
AP20	DDR1_CLK_N3
SCASB <-> SCASB AP16	DDR1_CAS*
SRASB <-> SRASB AL20	RSVD
SWEB <-> SWEB AL18	DDR1_RAS*
SWEB <-> SWEB AL18	DDR1_WE*
VREF_DOA <-> VREF DOA AR39	DDR_VREF_DQ0
VREF_DQB <-> VREF DOB AB40	DDR_VREF_DQ1
DQA00 <-> DQA01 AK23	DDR1_DQS_P0
DQA01 <-> DQA02 AK23	DDR1_DQS_P1
DQA02 <-> DQA03 AK23	DDR1_DQS_P2
DQA03 <-> DQA04 AK23	DDR1_DQS_P3
DQA04 <-> DQA05 AK23	DDR1_DQS_P4
DQA05 <-> DQA06 AK23	DDR1_DQS_P5
DQA06 <-> DQA07 AK23	DDR1_DQS_P6
DQA07 <-> DQA08 AK23	DDR1_DQS_P7
DQA08 <-> DQA09 AK23	DDR1_DQS_P8
DQA09 <-> DQA10 AK23	DDR1_DQS_N0
DQA10 <-> DQA11 AK23	DDR1_DQS_N1
DQA11 <-> DQA12 AK23	DDR1_DQS_N2
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DQA14 <-> DQA15 AK23	DDR1_DQS_N5
DQA15 <-> DQA16 AK23	DDR1_DQS_N6
DQA16 <-> DQA17 AK23	DDR1_DQS_N7
DQA17 <-> DQA18 AK23	DDR1_DQS_N8



未上件

HASWELL[10SC1-F01150-11R\_10SC1-F01150-12R]

CR  
CPU RETAINION/X

LGA1150



ILM\_BP/1156/CSP/ILM\_BP/1156/CSP/[12KRC-0F0001-52R\_12KRC-0F0001-51R]

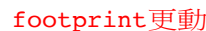
DDR BUS

7	MODT_A[0..1]	<->	MODT_A0..1
8	MODT_B[0..1]	<->	MODT_B0..1
7	MDA[0..63]	<->	MDA0..63
8	MDB[0..63]	<->	MDB0..63
7	DQSA[0..7]	<->	DQSA0..7
7	-DQSA[0..7]	<->	-DQSA0..7
7	MAAA[0..15]	<->	MAAA0..15
8	MAAB[0..15]	<->	MAAB0..15
8	DQSB[0..7]	<->	DQSB0..7
8	-DQSB[0..7]	<->	-DQSB0..7

Gigabyte Technology

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CPU LGA1150-B			
Size			
Custom			
Document Number			
GA-H81M-S2V			
Date			
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1.0			

**(F, J)**



**(G, H, I)**



(X18)



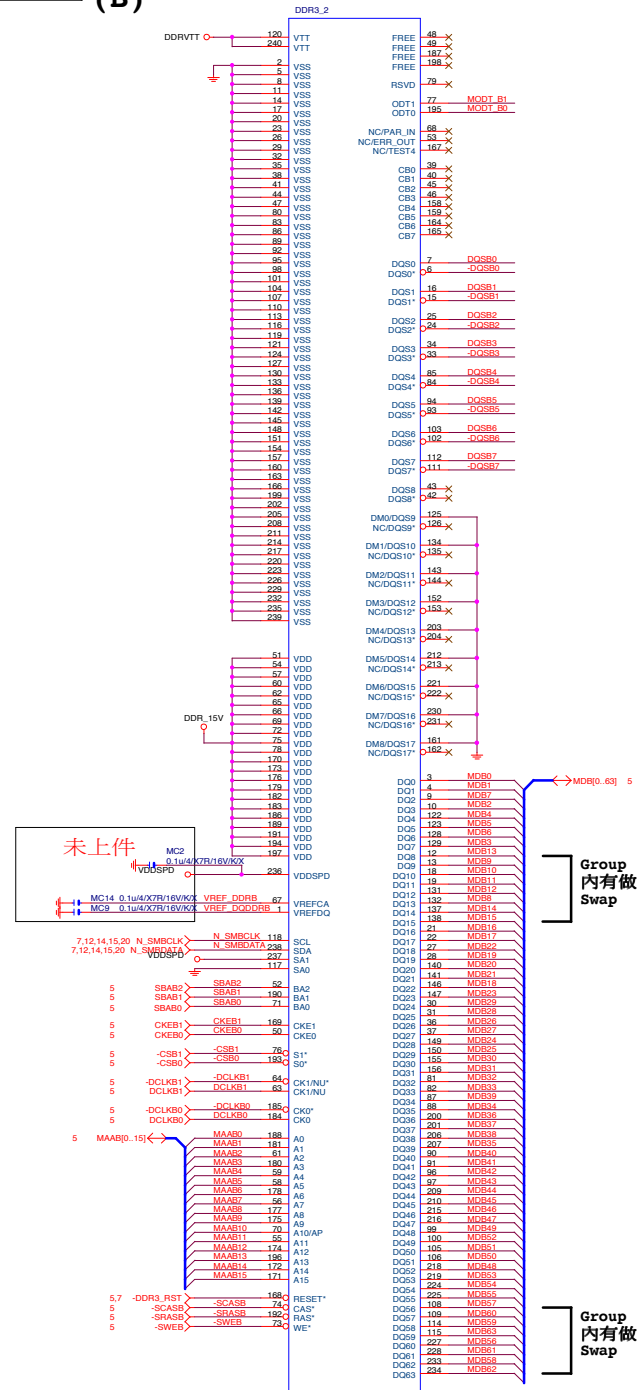
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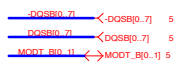


DDR3

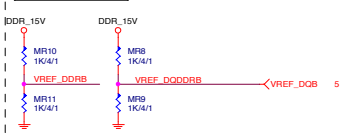
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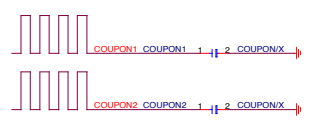
DDR3/240/BK/VA/D  
BLACK CONNECTOR



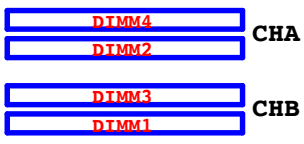
DDR3 VREF



COUPON



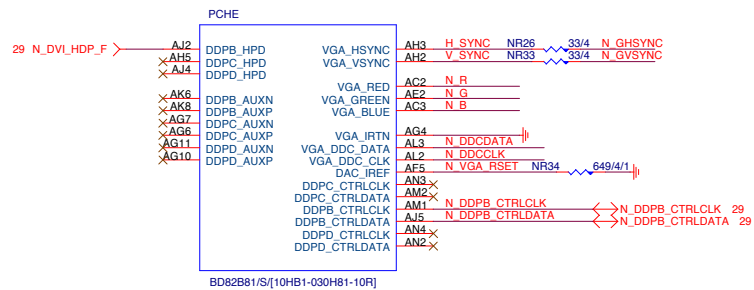
CPU



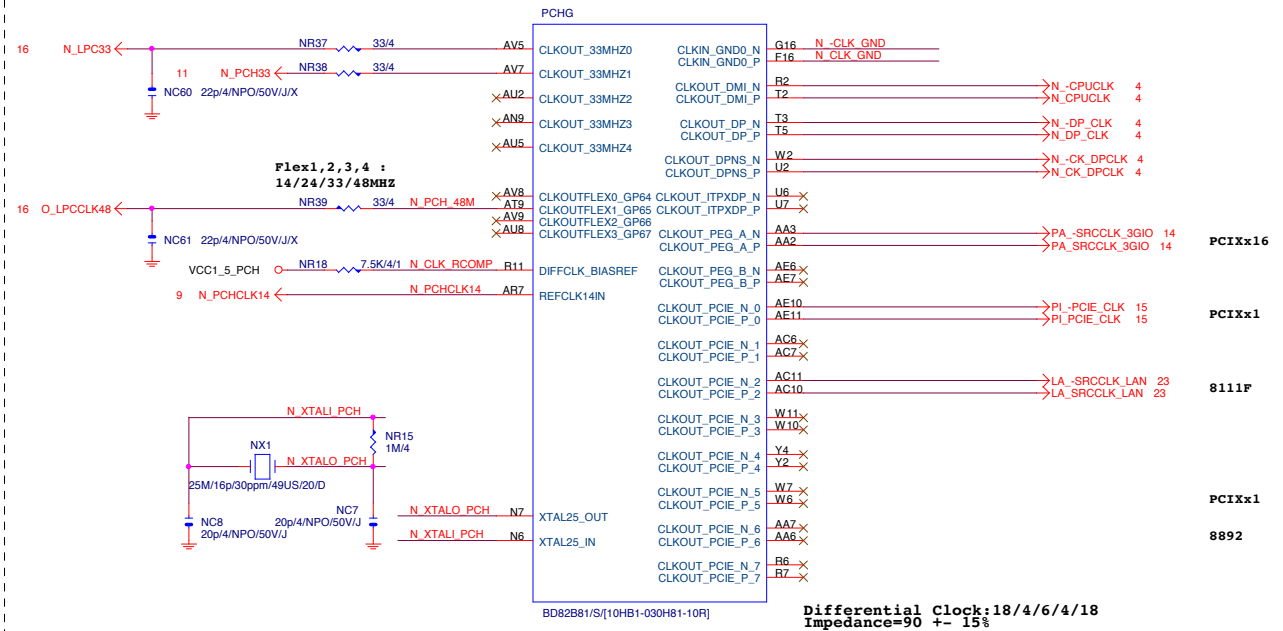


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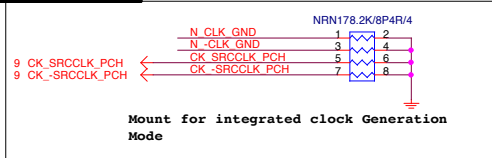
**PCH (E)**



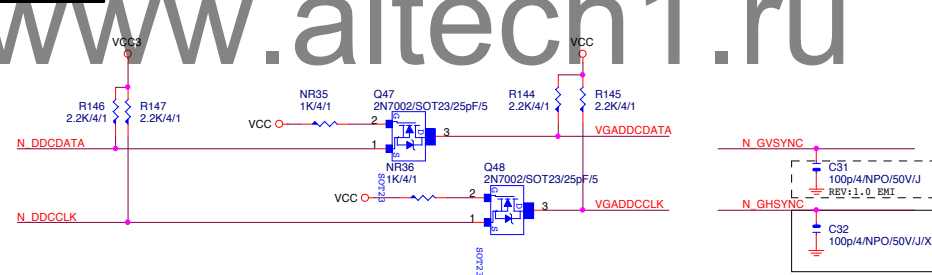
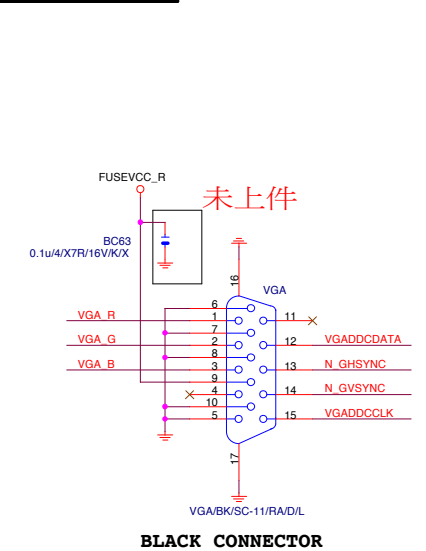
**PCH (G)**



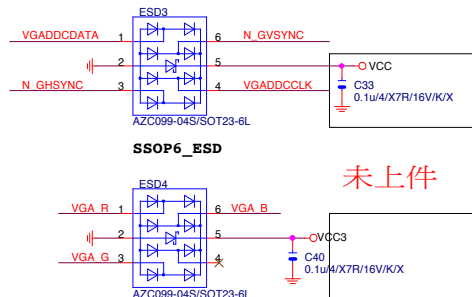
PCH CLK PD



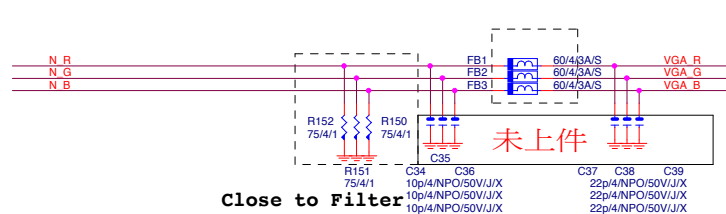
## VGA DDC

**VGA CONNECTOR**

## VGA ESD

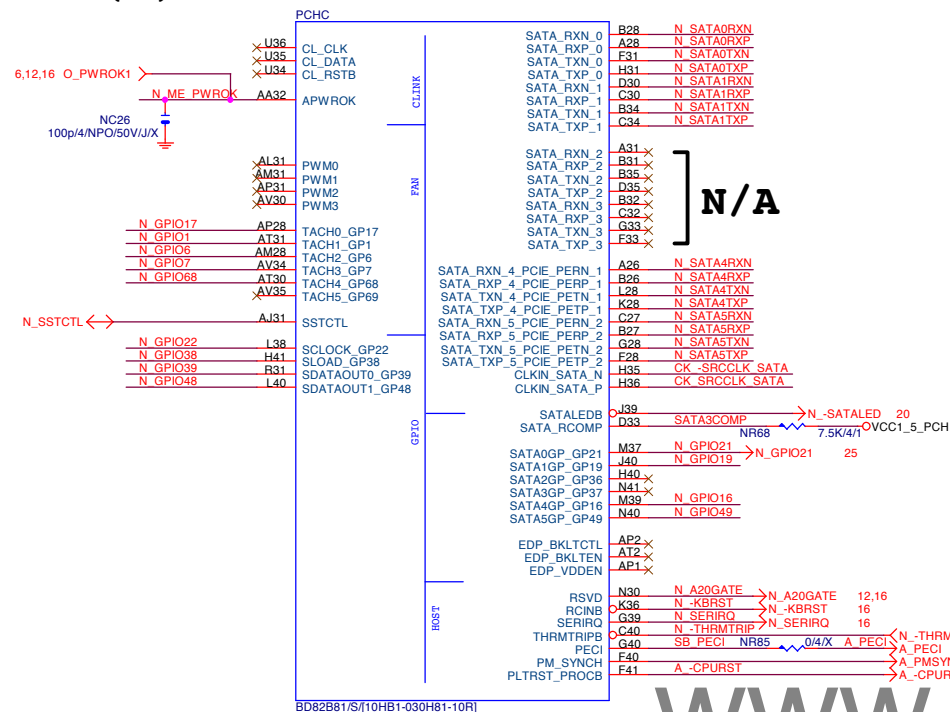


## VGA DDC

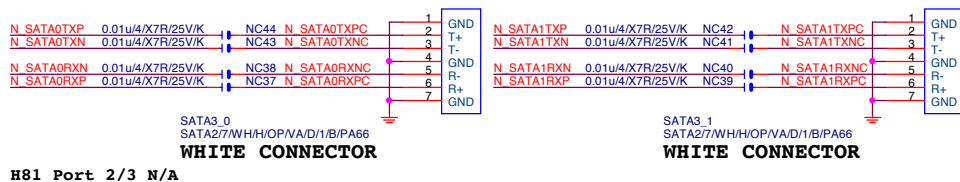


**PCH (C)**

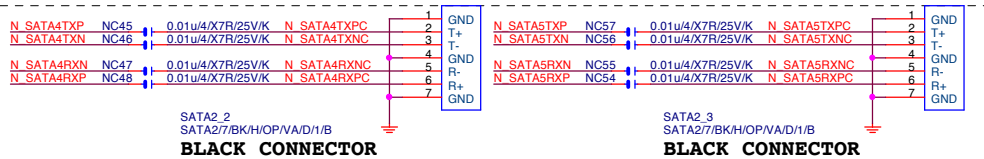
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%  
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)  
Impedance=90 +- 17.5%



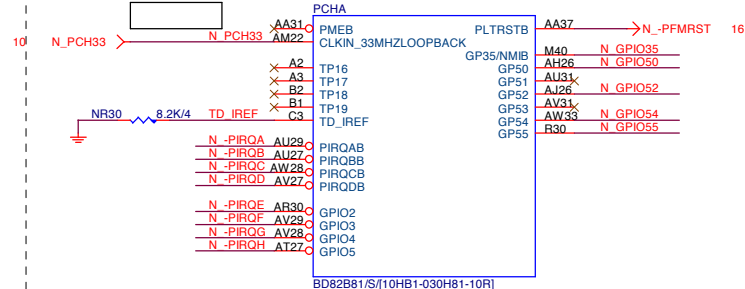
## SATA CONNECTOR



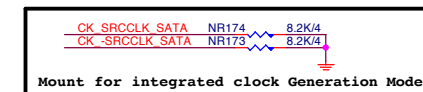
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** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0
```



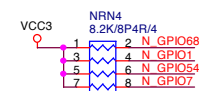
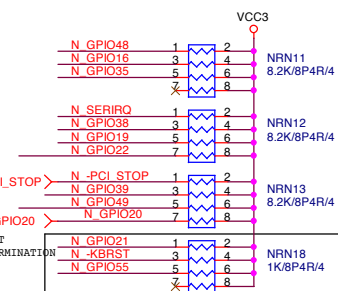
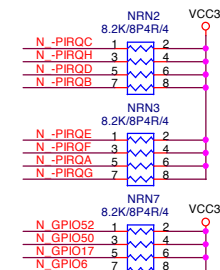
**PCH (A)**

Del

PCH CLK PD
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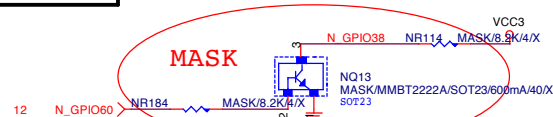


PCH	PU/PD
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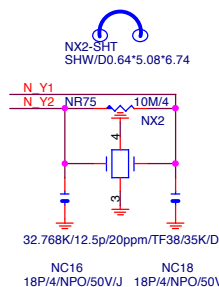
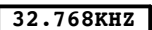


**ME PWROK**

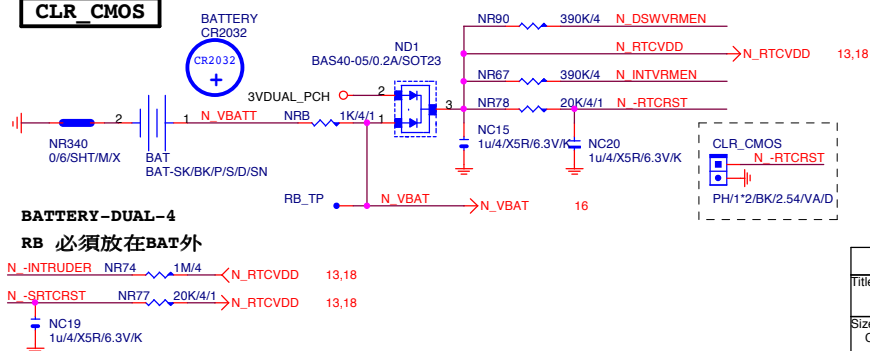
**GPI038 Ctrl**



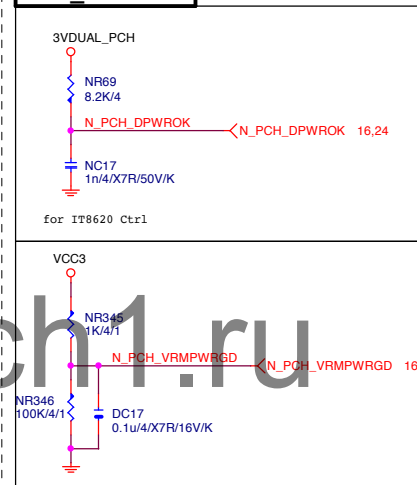
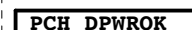
**(D)**



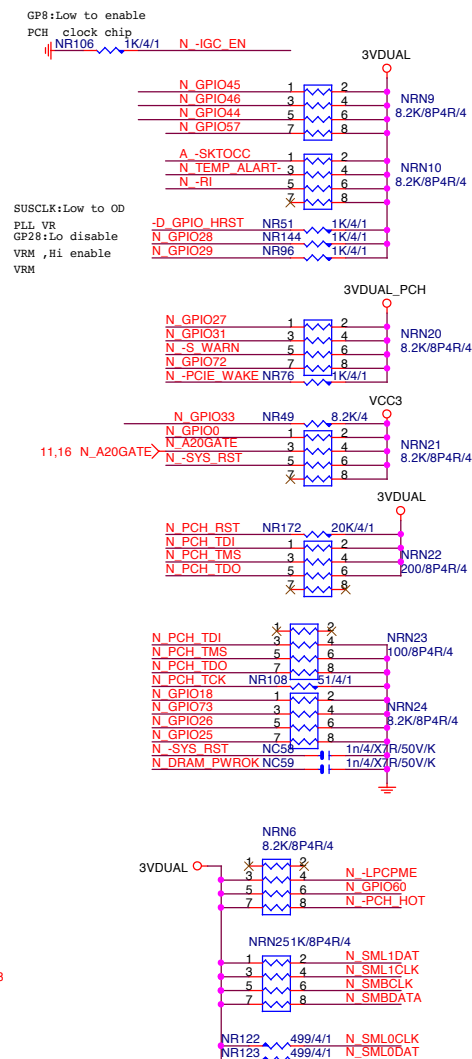
CLR	CMOS
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## ACZ SDOUT



PCH	PU/PD
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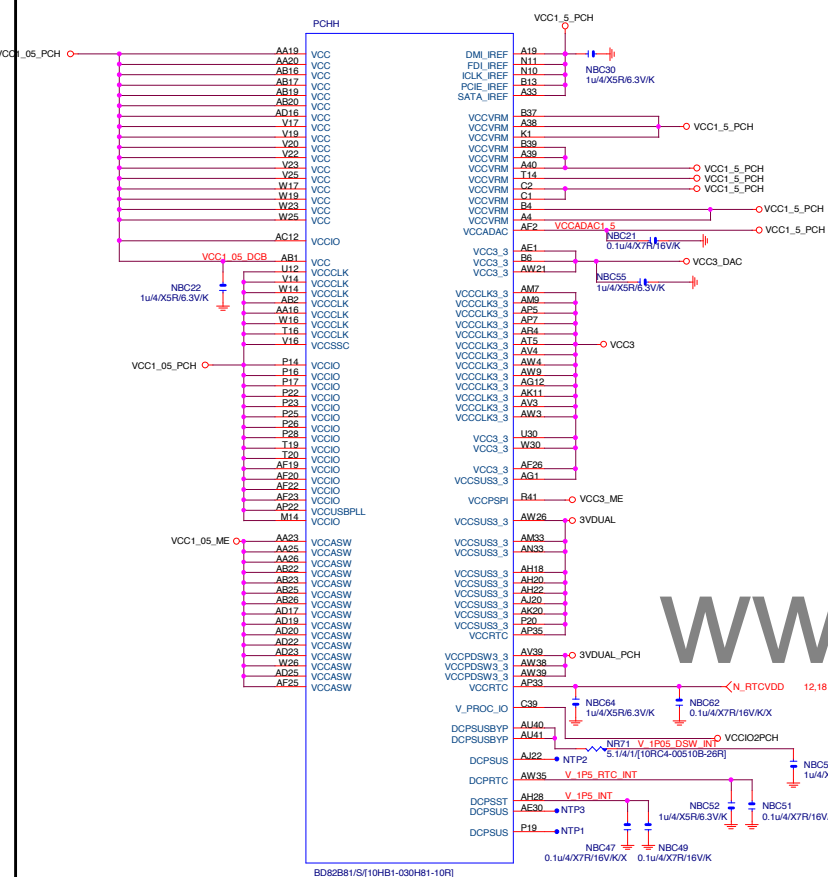
## Gigabyte Technology

## PCH GPIO , CTRL , AUDIO

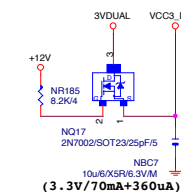
er **GA-H81M-S2V**

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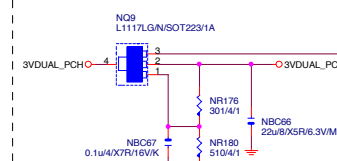
**(H)**



## VCC3\_DAC



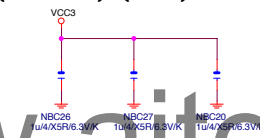
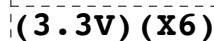
## 3VDUAL\_PCH



SHT PWR

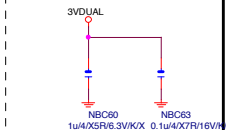
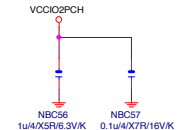


## CAP

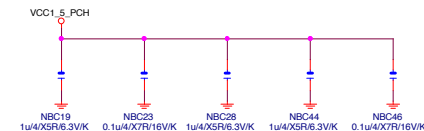


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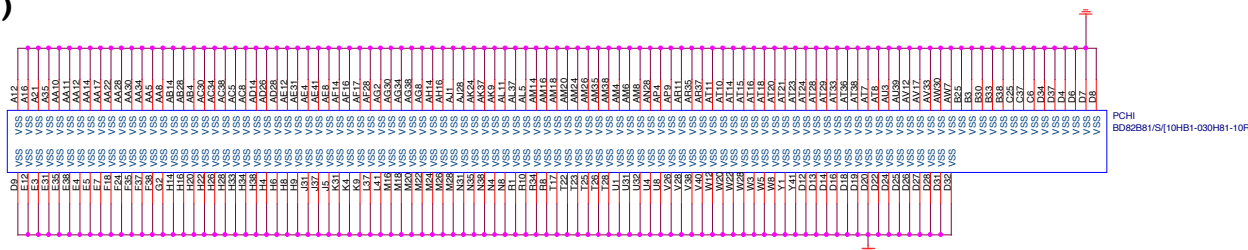
(1.05V)(x2) (3.3V) (x2)



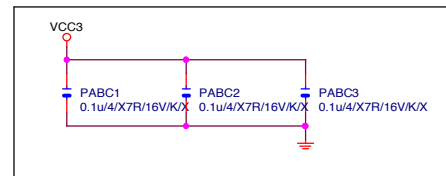
(1.05V) (x10)



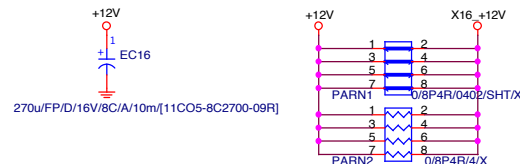
(I)



## PCIEX16 CAP



## PCIEX16 PROTECT SHT

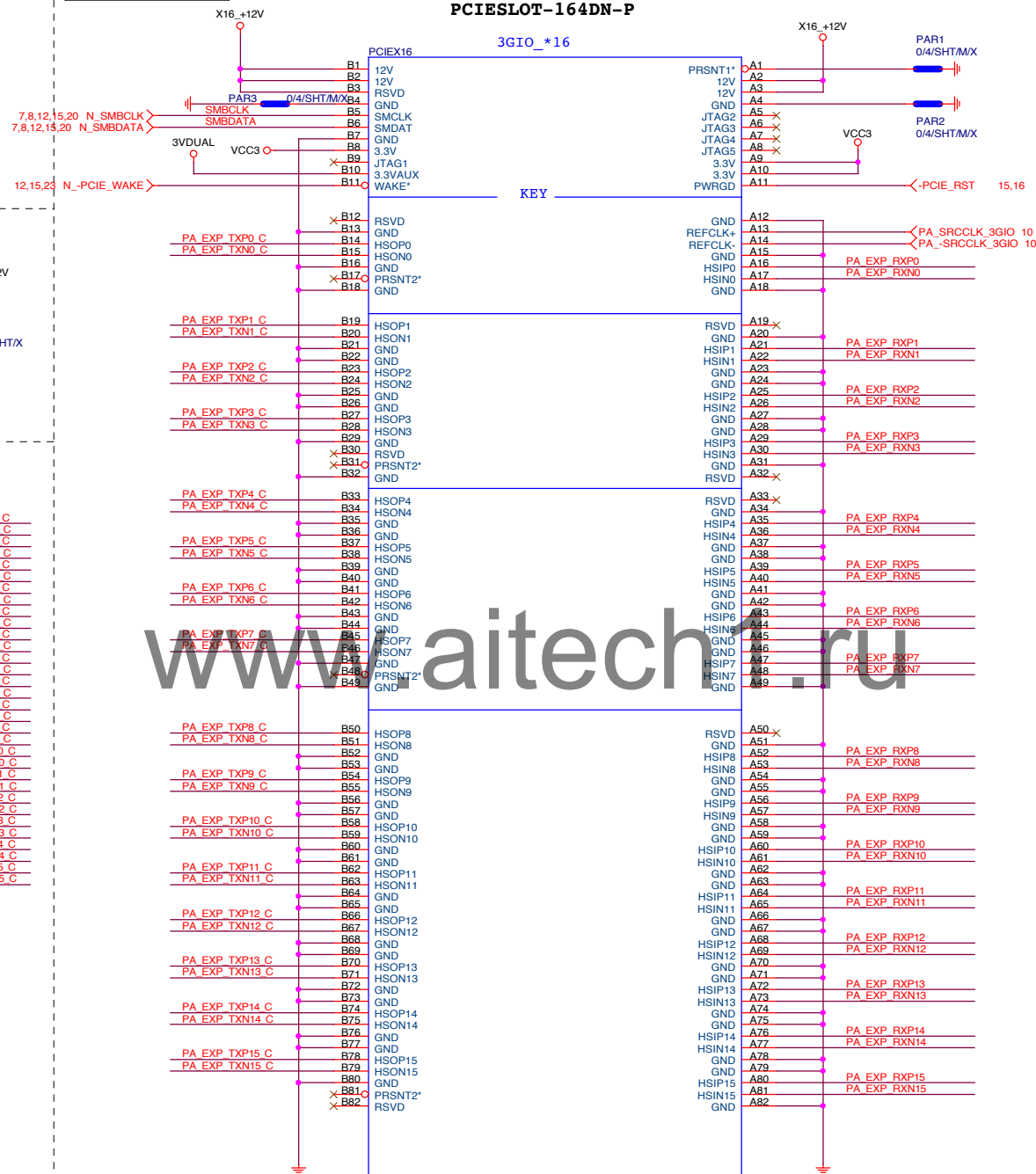


## PCIEX16 AC CAP

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 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  
 PA EXP TXN0\_15] >>> PA\_EXP\_TXN[0..15] 4

## PCIEX16 SLOT



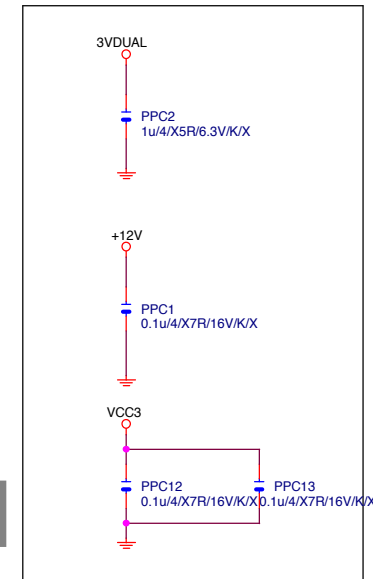
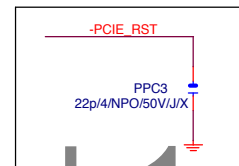
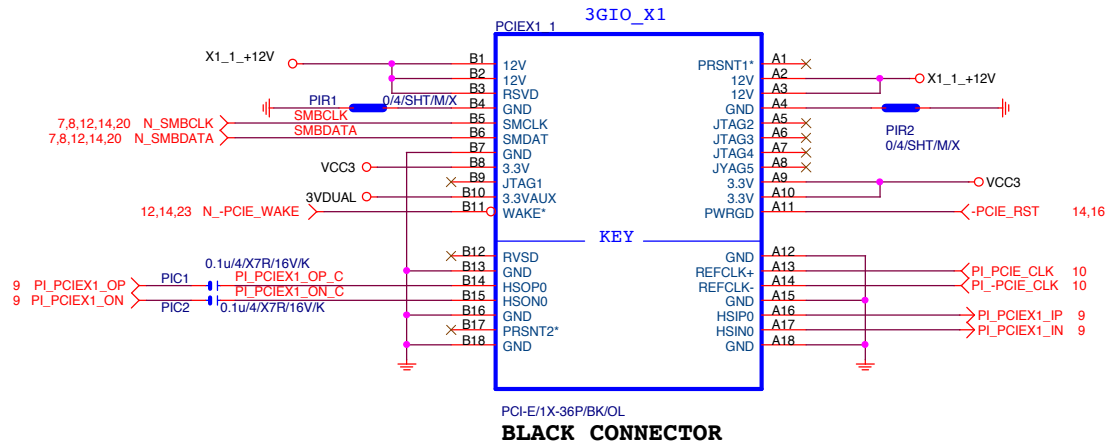
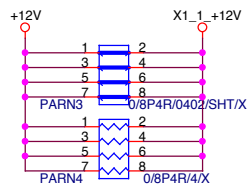
BLACK CONNECTOR

Gigabyte Technology

Title			
PCI EXPRESS * 16			
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# PCIEX1 SLOT

# PCIEX1 PROTECT SHT



未上件

Gigabyte Technology			
PCI EXPRESS X 1 PORT			
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COM

KB/MS

KB\_MS ESD

USB2.0 PWR

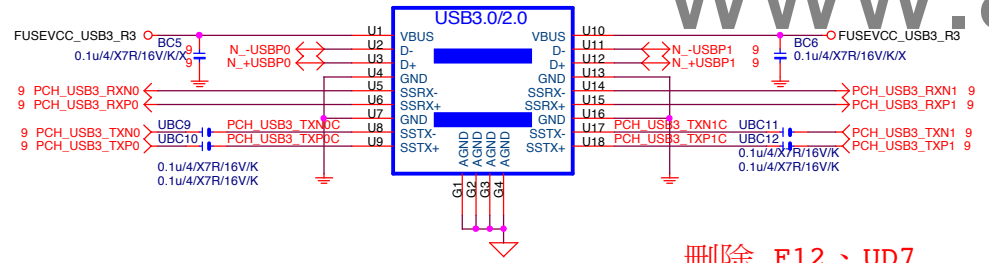
COM RI

USB30\_20

USB30\_20 ESD PROTECT

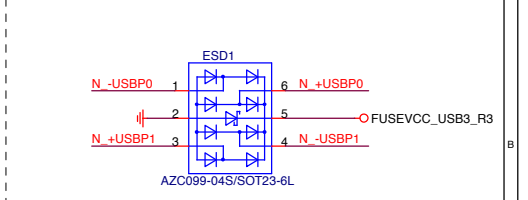
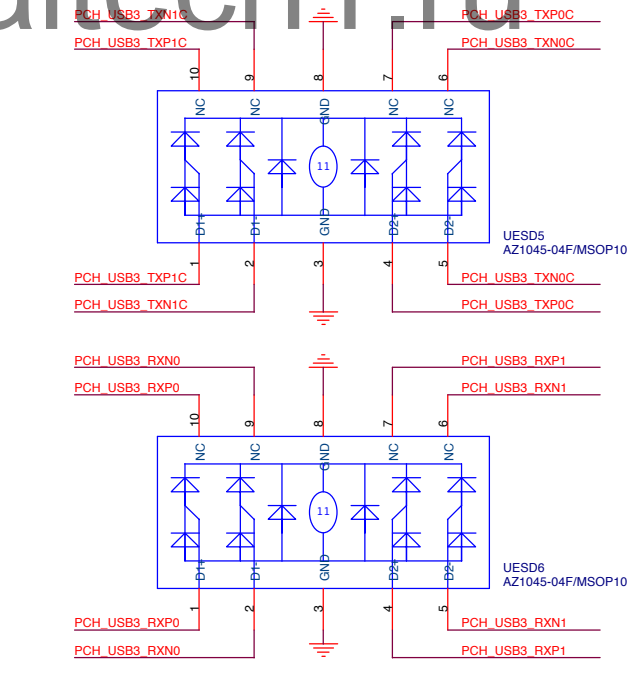
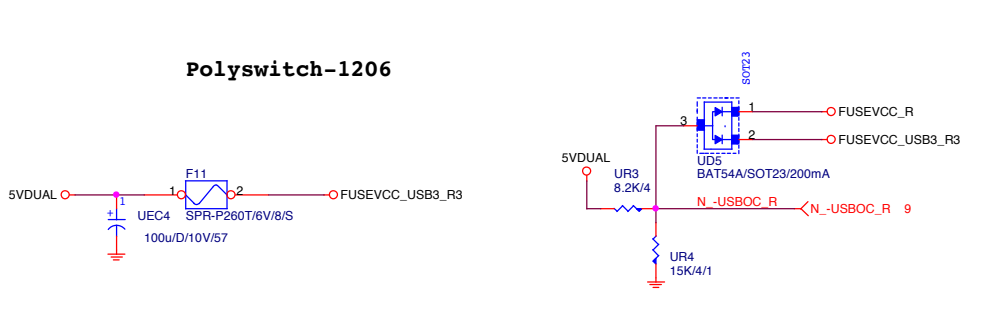
USB3.0 ESD

USB POWER PROTECT

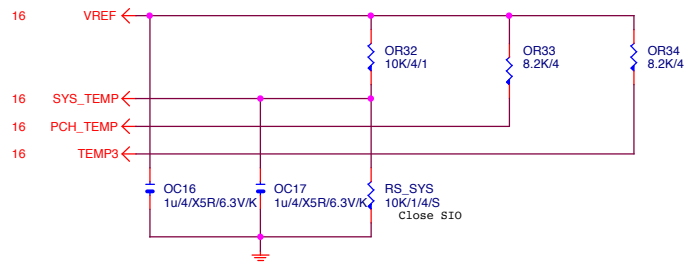


USB30\_20 PWR

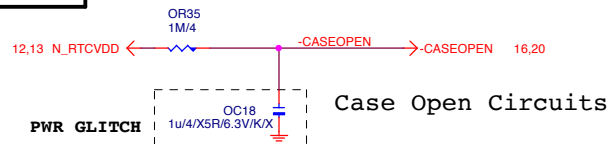
-USBOC\_R0



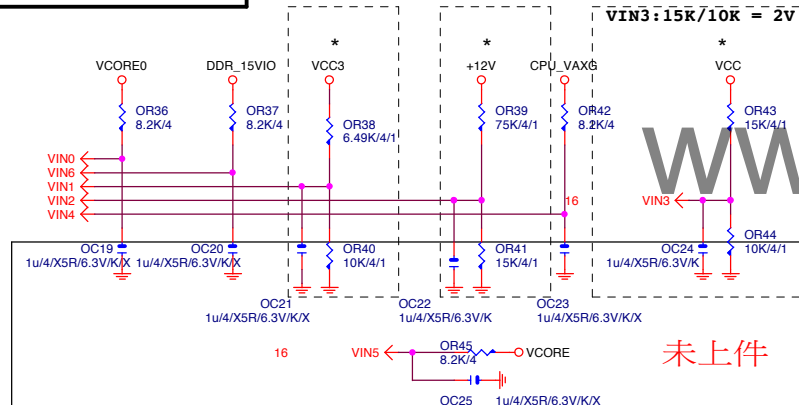
# TEMP H/W MONITOR



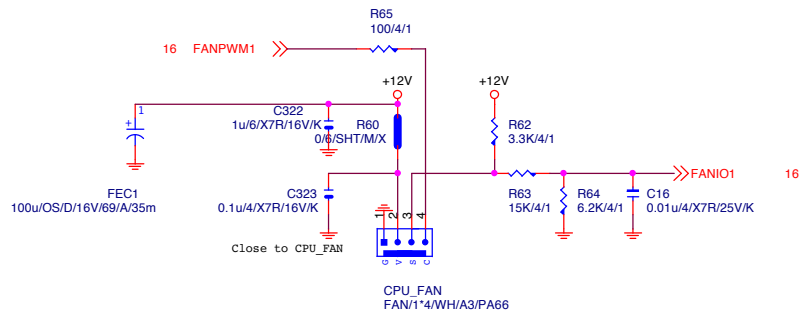
# CASE OPEN



# VOLTAGE-- H/W MONITOR



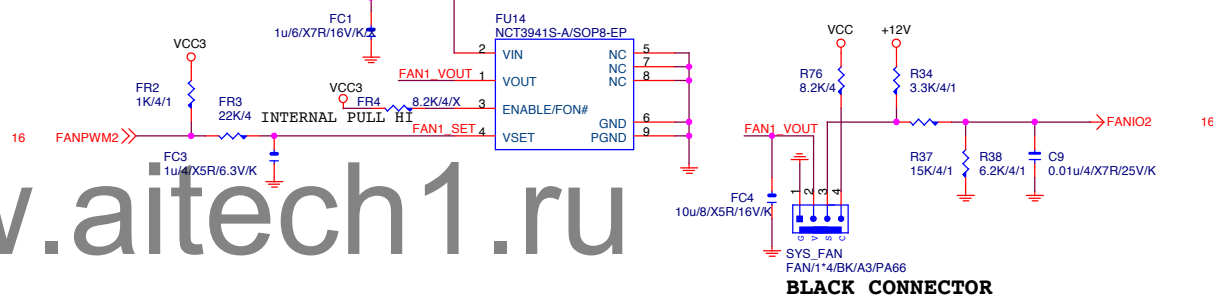
# CPU SMART FAN



# SYS SMART FAN

## Linear SYS\_FAN

Enable Function (NCT3941S)  
Full Turn On Function  
(NCT3941S-A)

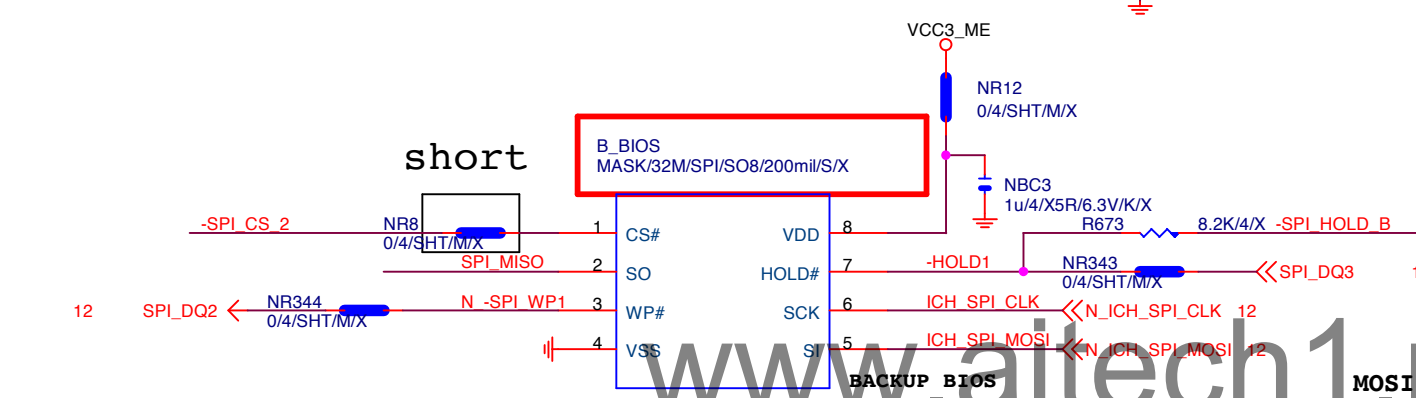
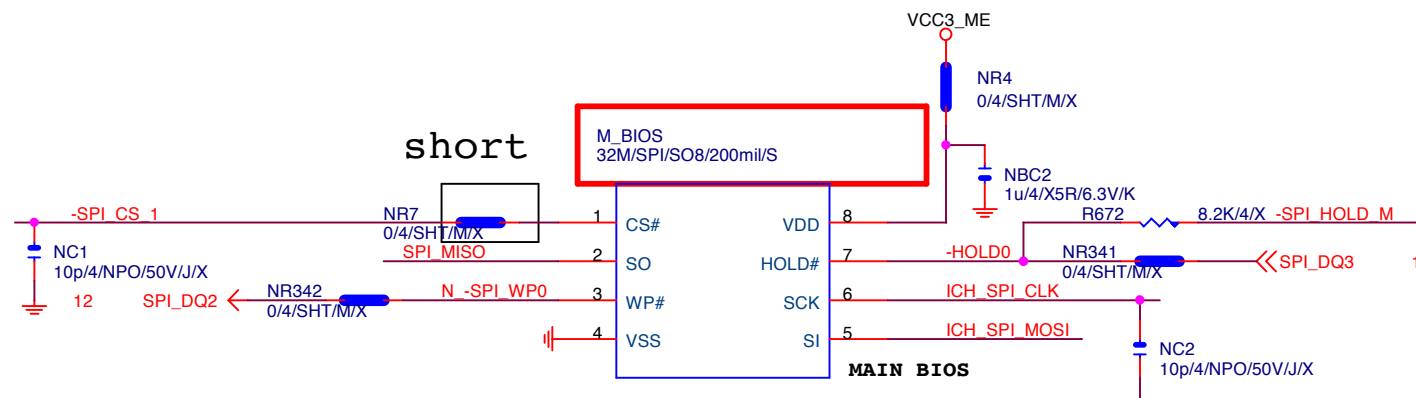


BLACK CONNECTOR

-PROHOT

Gigabyte Technology

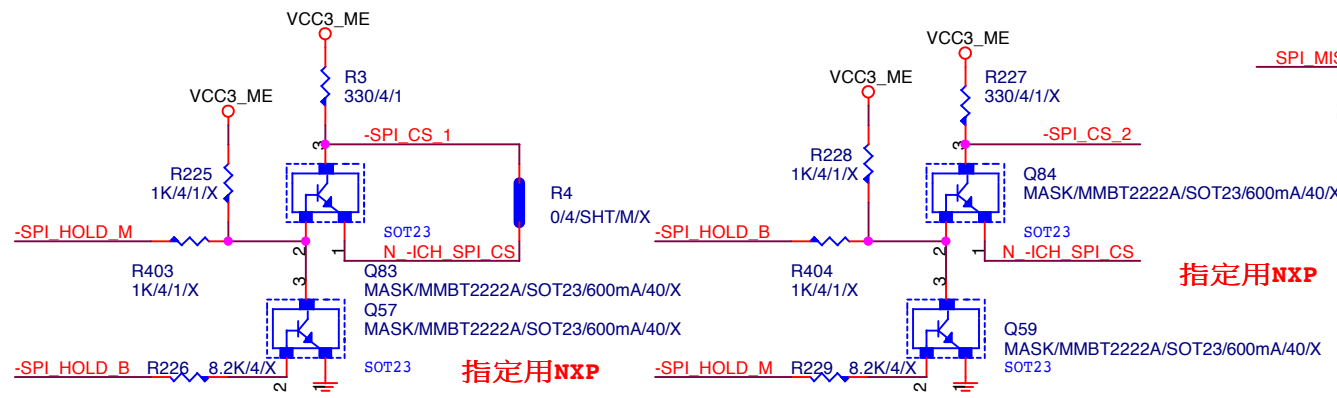
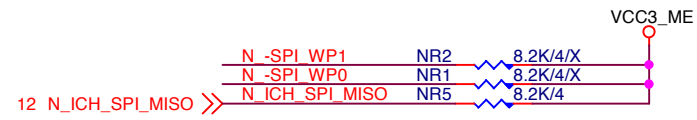
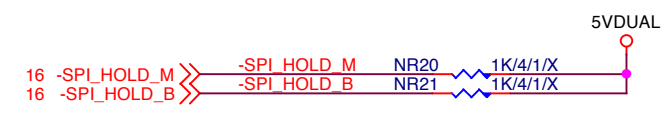
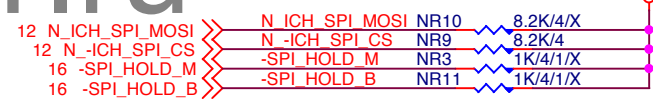
Title			HWM,FAN CTRL,OV
Size	Document Number	GA-H81M-S2V	
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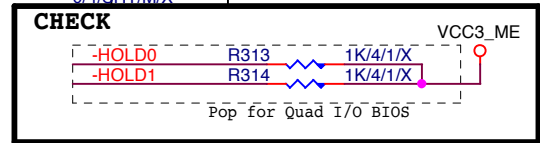
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

1 means floating  
0 means PD 1K

### MOSI For DMI RX Termination Voltage



short



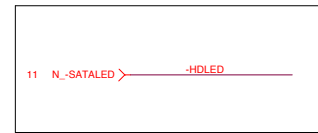
指定用NXP

## Gigabyte Technology

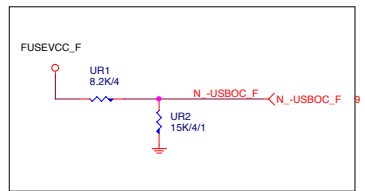
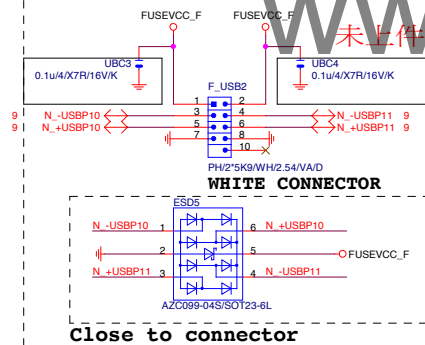
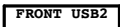
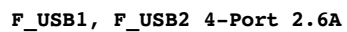
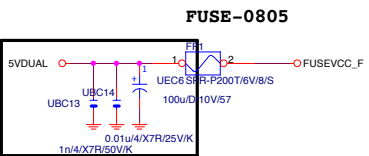
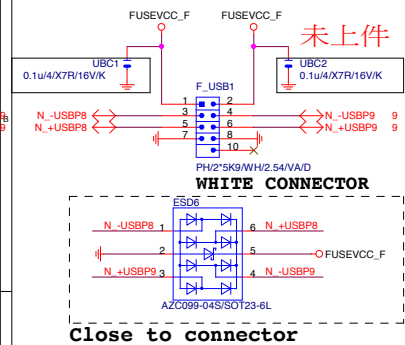
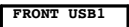
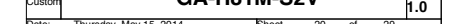
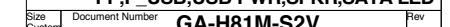
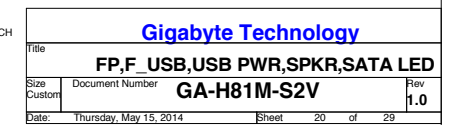
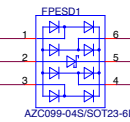
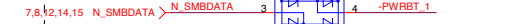
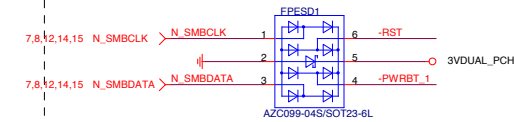
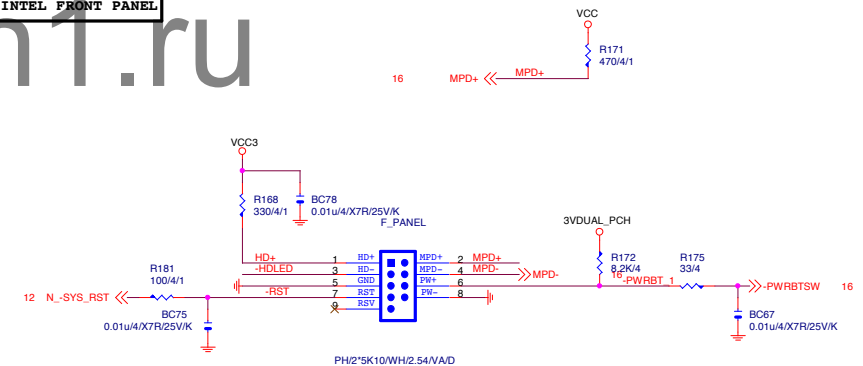
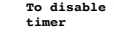
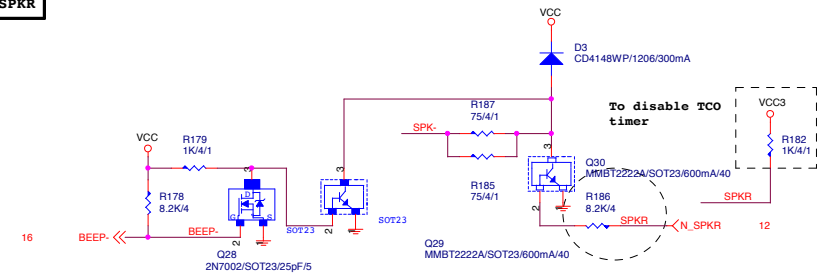
# SINGLE BIOS

## GA-H81M-S2V

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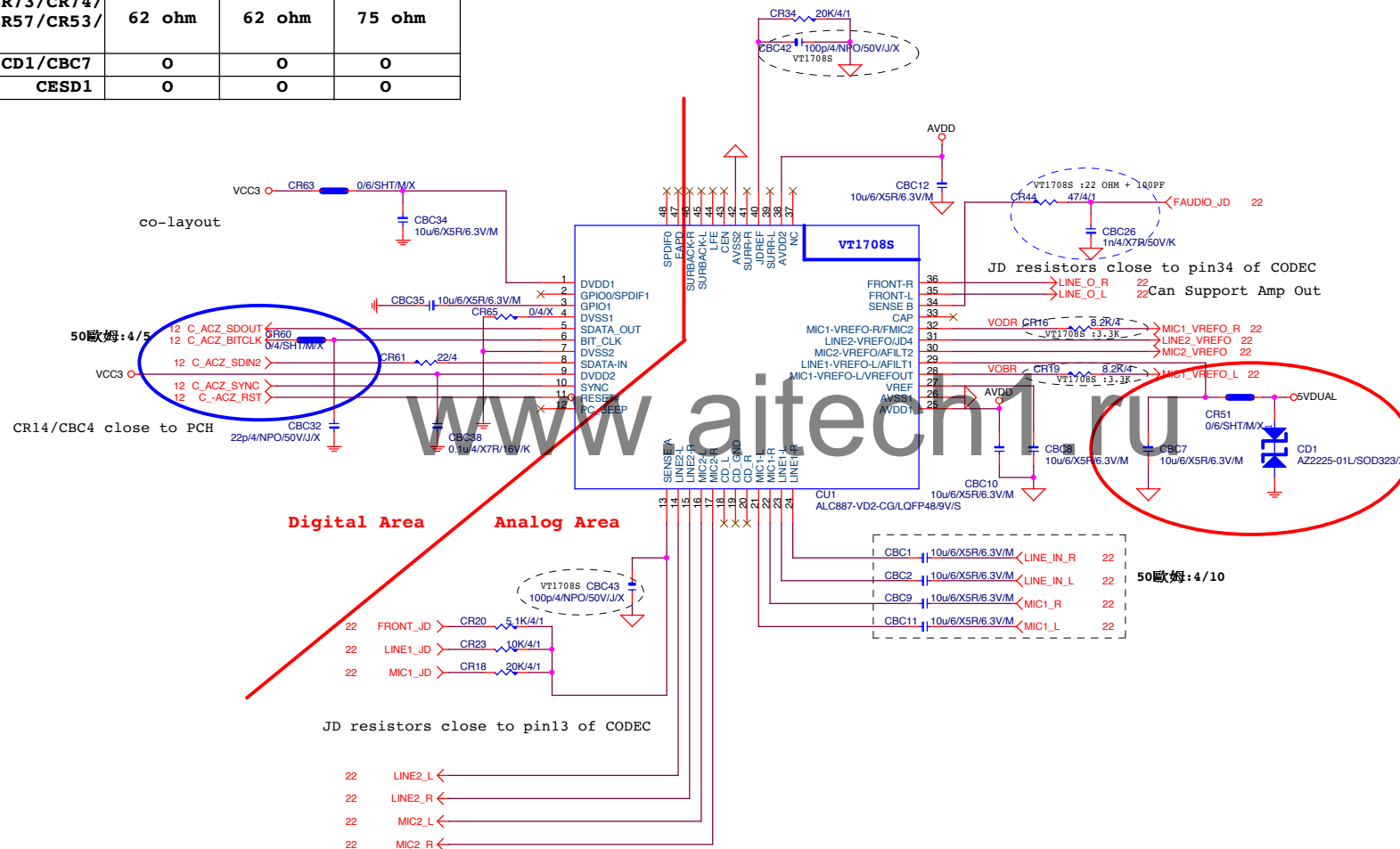


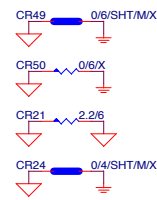
新增



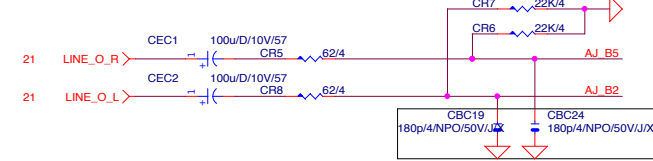
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	0	0	0





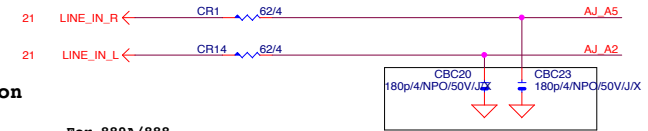
## LINE-OUT



## LINE-IN

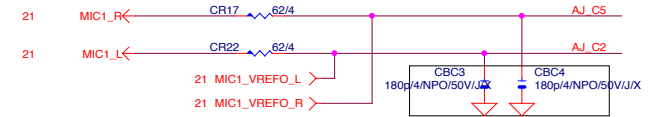
Verify MIC function  
in LINE-in

Only reserved for ALC888



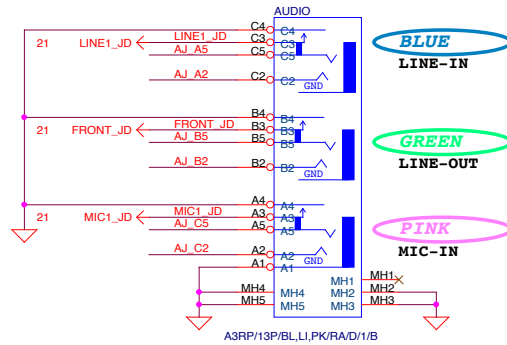
For 889A/888

## MIC-IN



## SPDIF\_OUT

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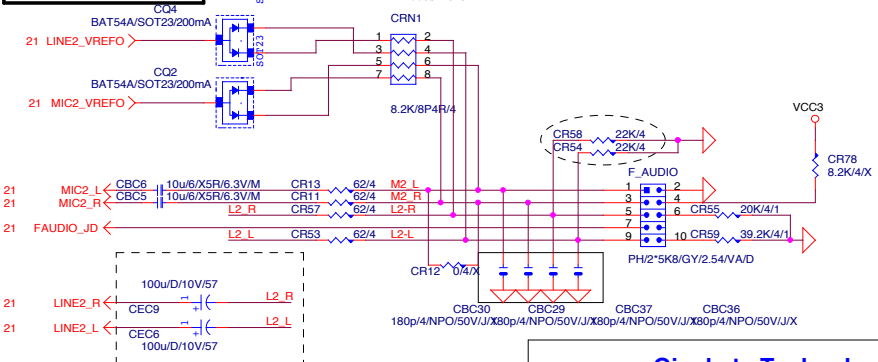


BLUE  
LINE-IN

GREEN  
LINE-OUT

PINK  
MIC-IN

## AZALIA FRONT PANEL

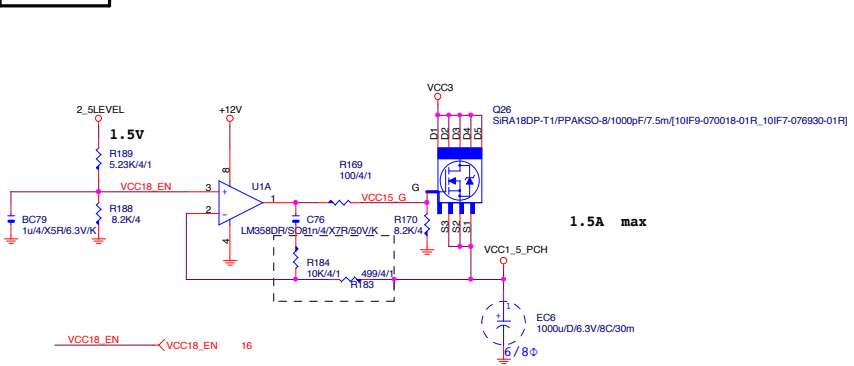


Gigabyte Technology

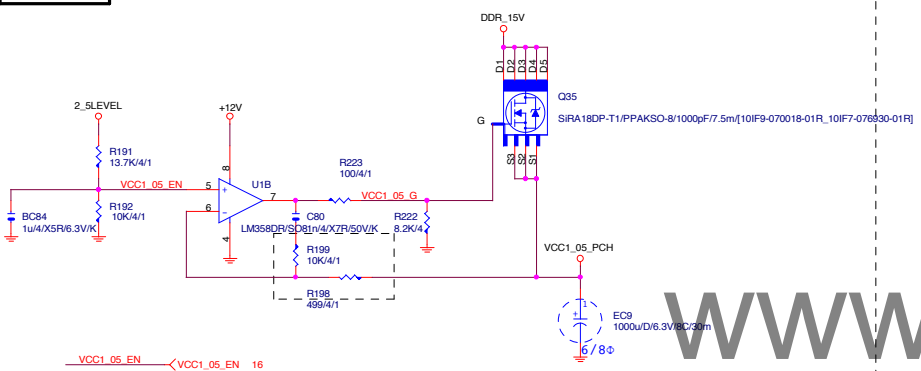
Title		
AUDIO JACK		
GA-H81M-S2V		
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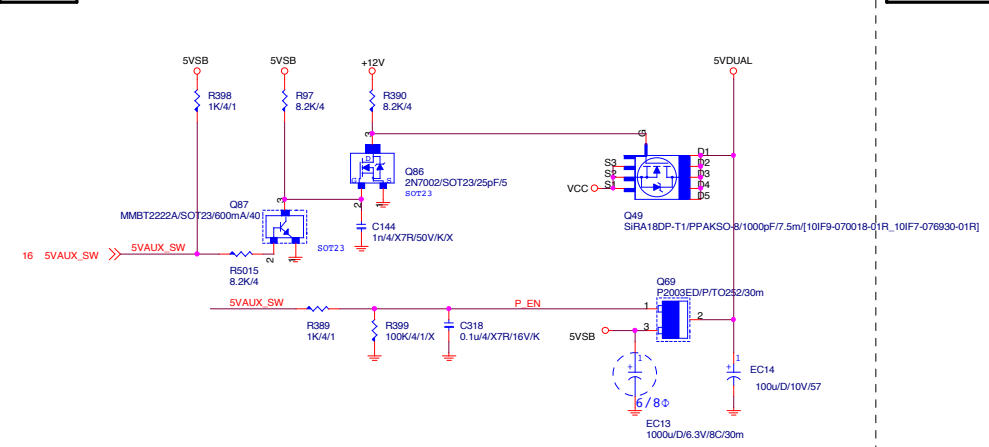
## VCC1\_8\_PCH



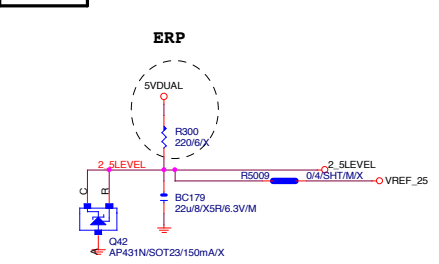
## VCC1\_05\_PCH



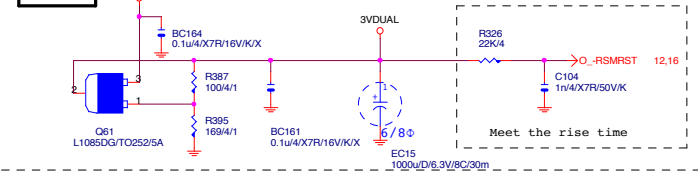
## 5VDUAL



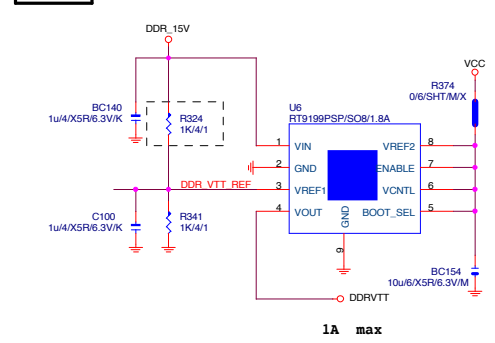
## 2\_5LEVEL



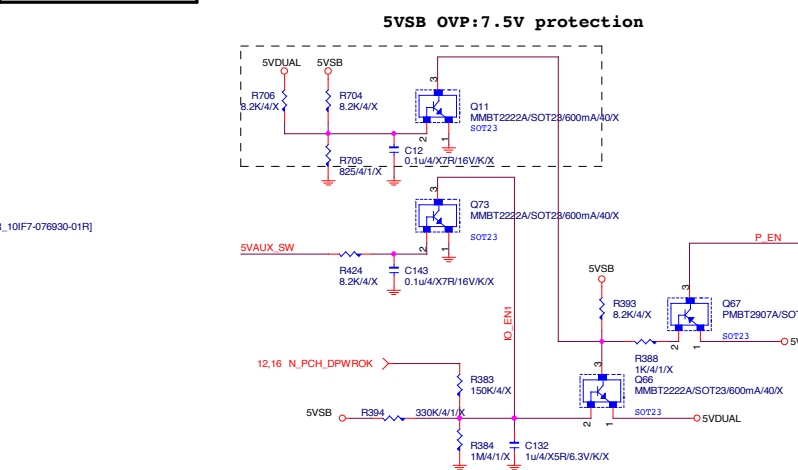
## 3VDUAL



DDRVTT



## 5VDUAL SHORT PROTECT

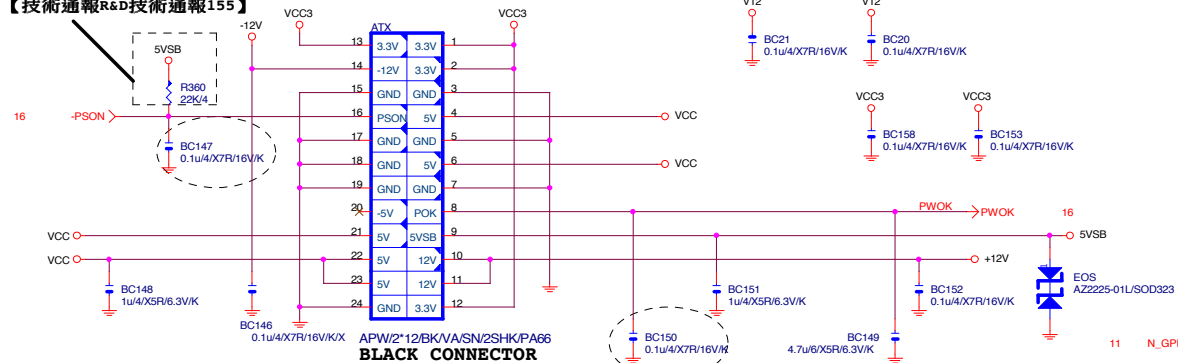


<b>Gigabyte Technology</b>			
<b>DISCRETE POWER</b>			
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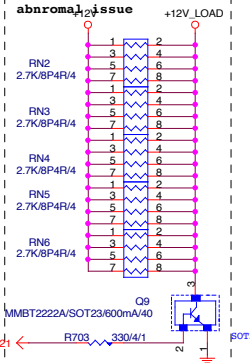
# ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】



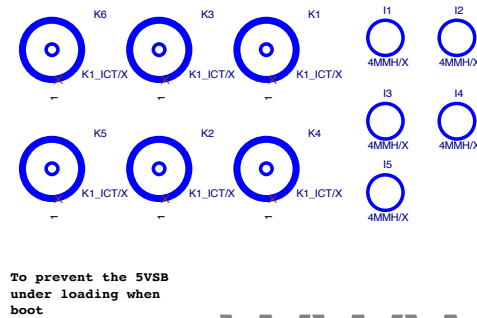
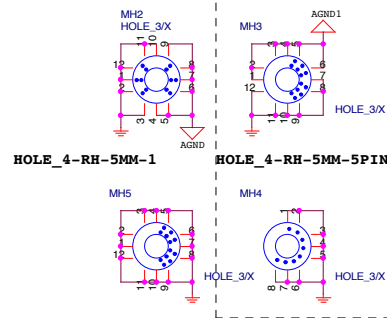
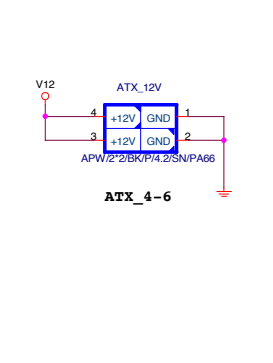
# 【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



# ATXX4 POWER CONNECTOR

To fix 12V light load abnormal issue

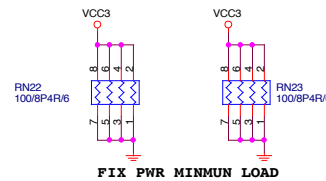


To prevent the 5VSB under loading when boot

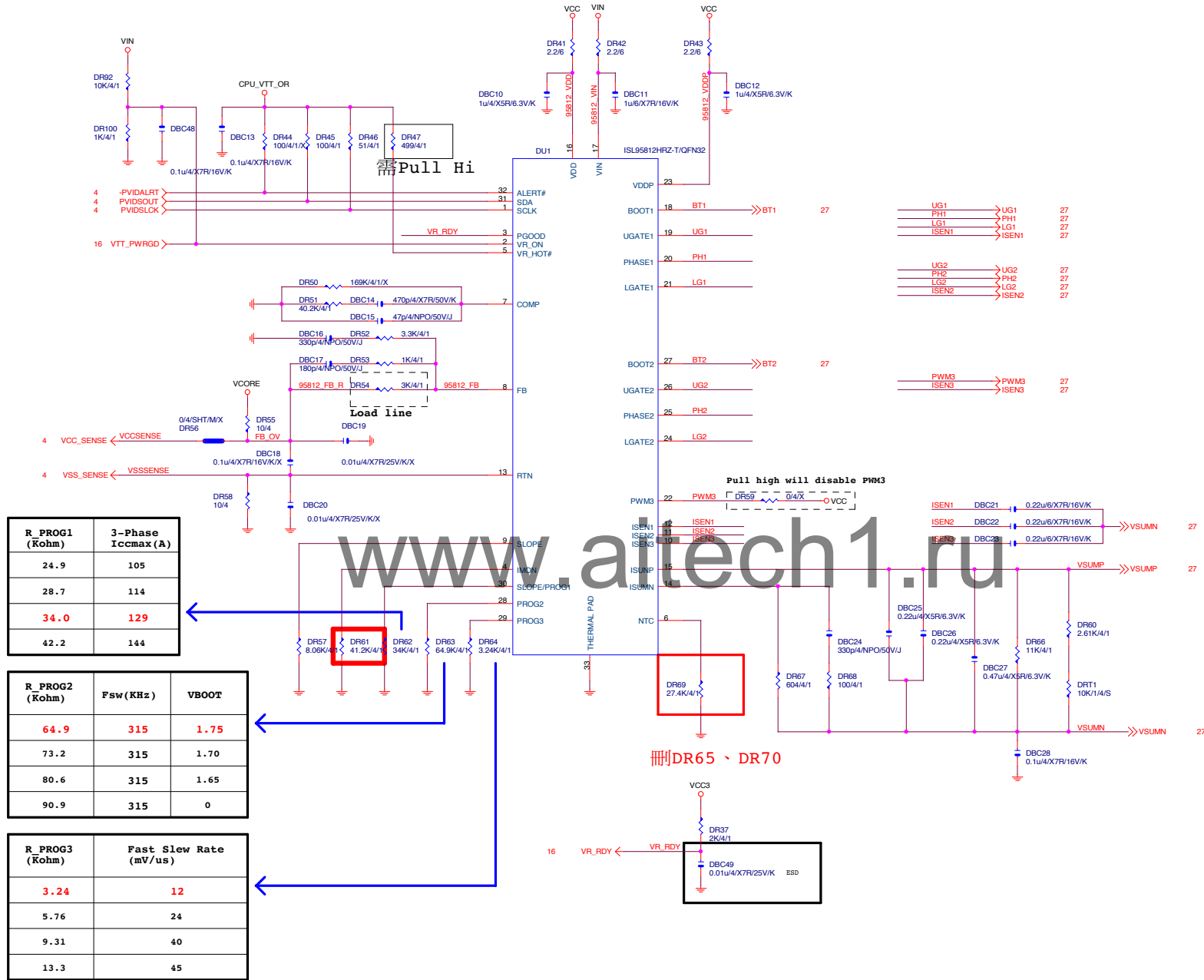
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# PWOK PATCH

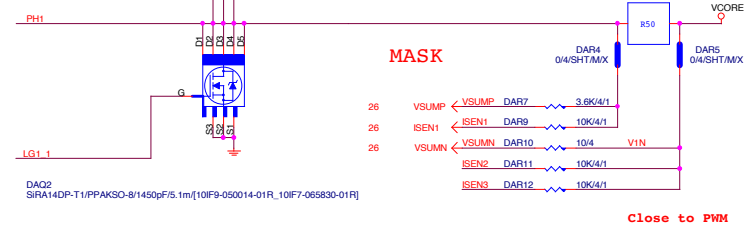
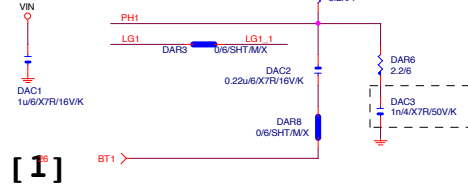
【技術通報R&D技術通報154】



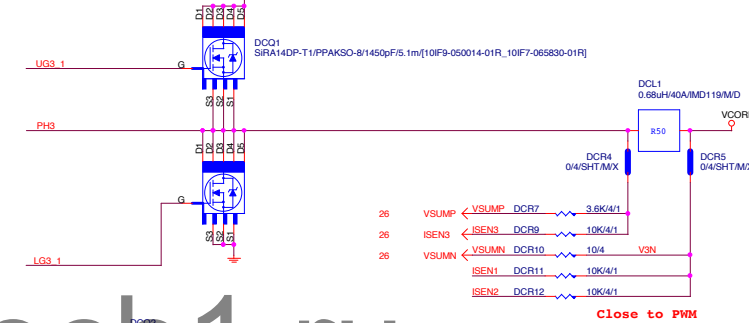
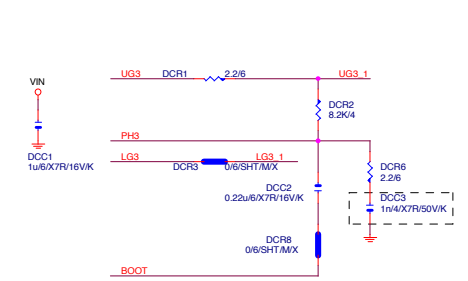
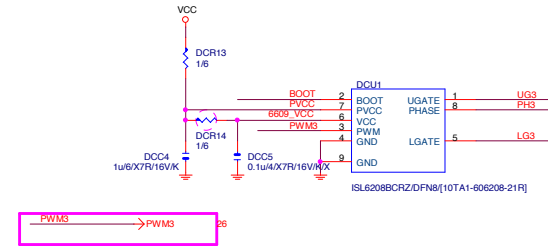
Gigabyte Technology		
ATX CONNECTOR		
GA-H81M-S2V		Rev 1.0
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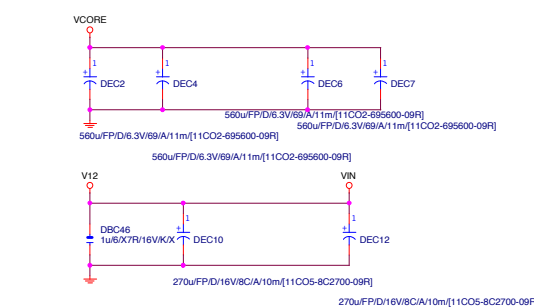
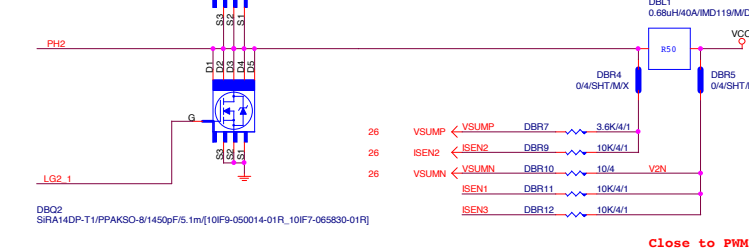
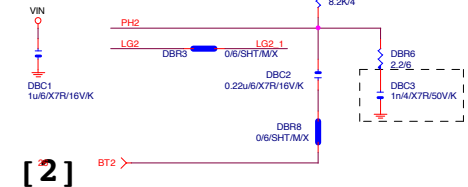
# PHASE 1



# PHASE 3

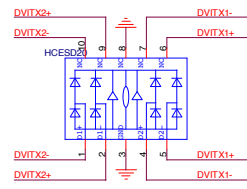
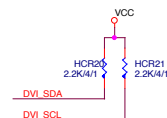


# PHASE 2

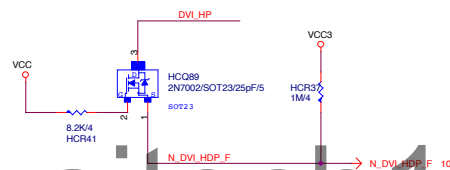
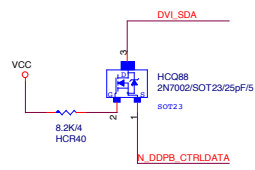
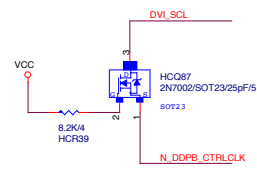
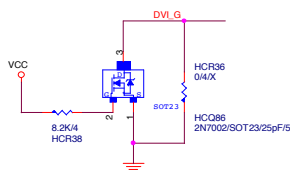
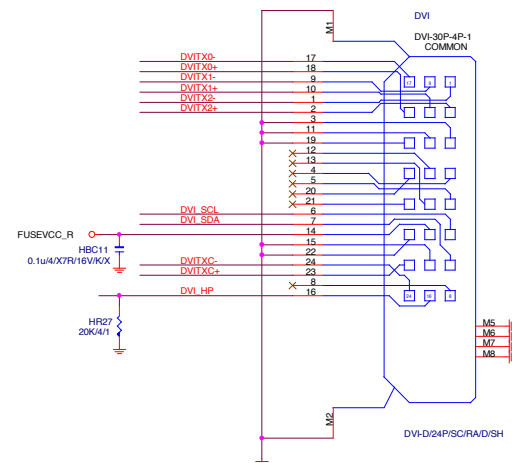
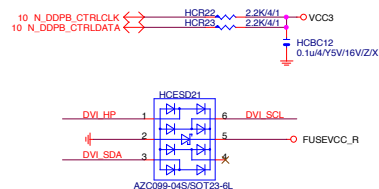


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**Close to connector**



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