

Model Name: GA-H81M-S2PT

Revision 1.01

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	ITE 8620 LPC IO
16	COM,KB_MS,USB PWR
17	IT8892E
18	PCI SLOT 1,2
19	PCI EXPRESS*1 SLOT.LPT
20	HWM,FAN CTRL,OV,-PROCHOT
21	DUAL BIOS
22	FP,F_USB,SPK,SATALED
23	Realtek ALC887-VD2
24	REAR AUDIO JACK
25	REALTEK RTL8111F
26	DISCRETE POWER
27	ATX,DUMMY LOAD

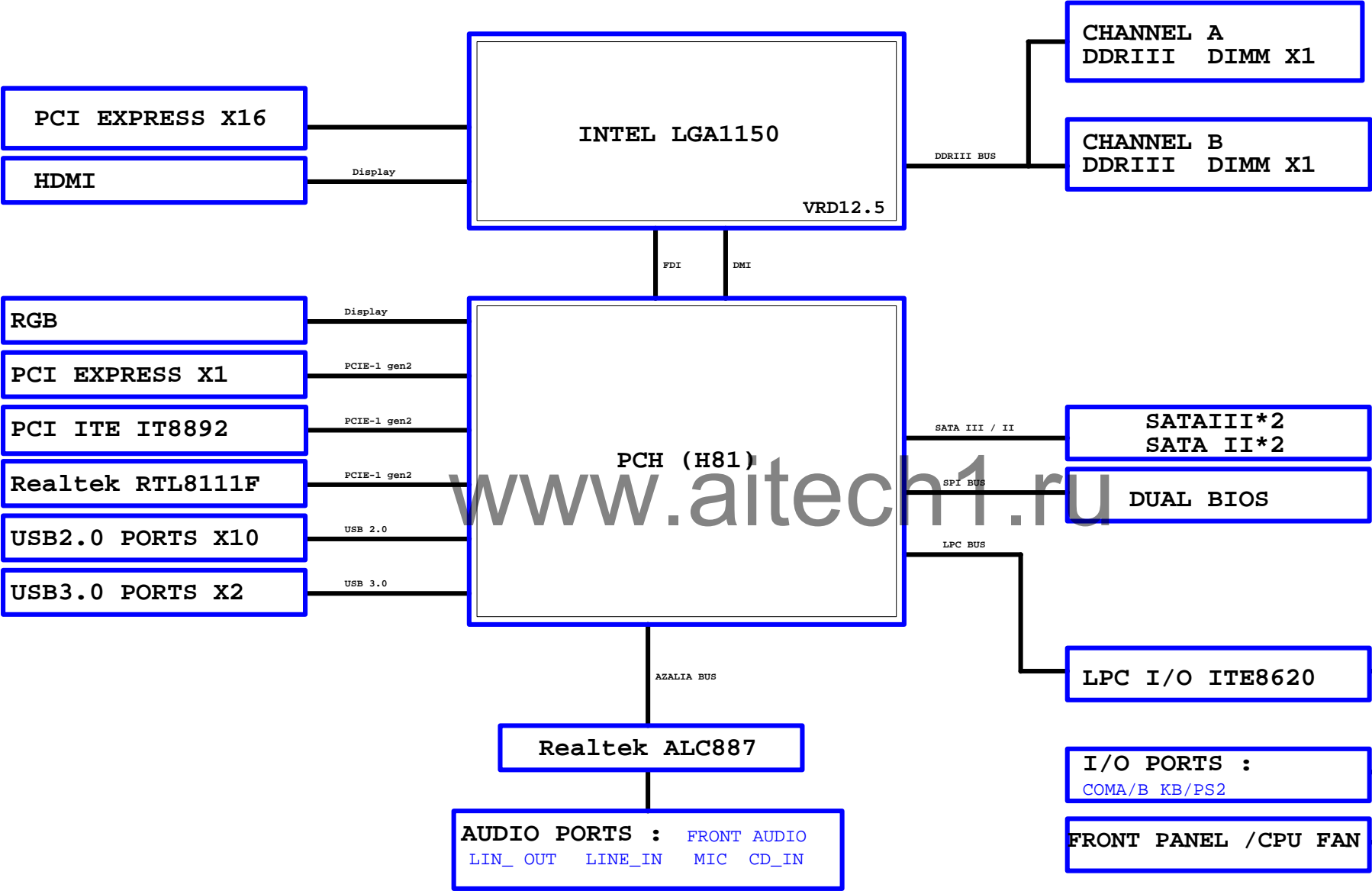
SHEET TITLE

28	RT8120_DDR POWER
29	VCORE ISL95812_1
30	VCORE ISL95812_2
31	HDMI

www.aitech1.ru

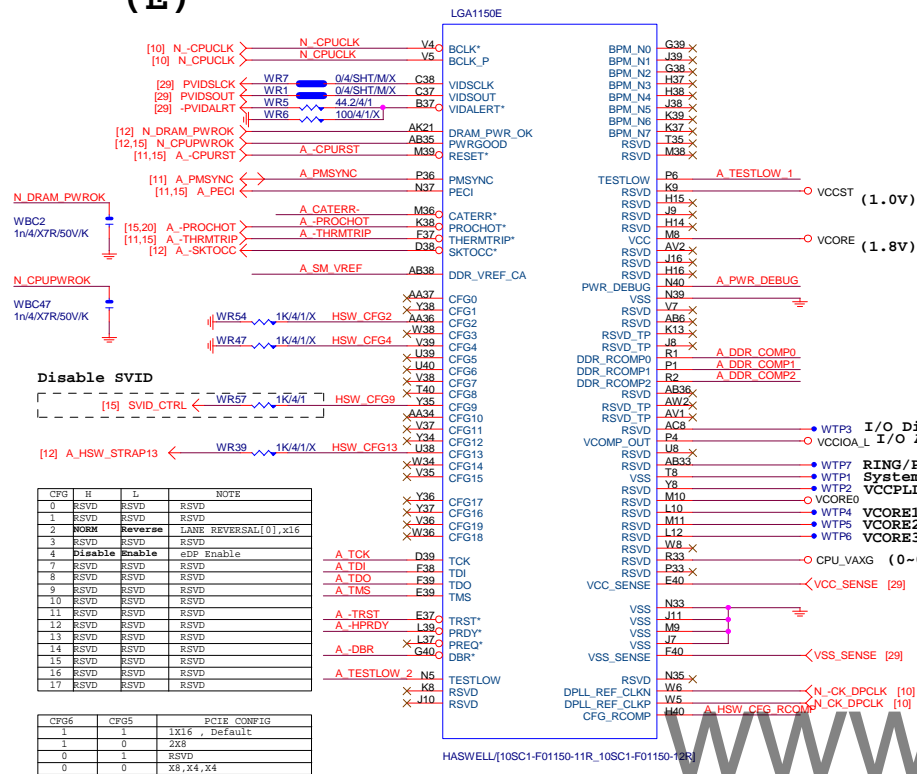
Gigabyte Technology			
Cover Sheet			
Size Custom	Document Number GA-H81M-S2PT	Rev 1.01	
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BLOCK DIAGRAM



LGA1150

(E)



LGA1155

(C)

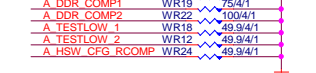
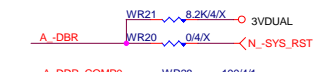
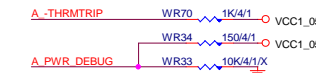
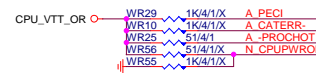
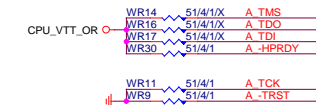
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%



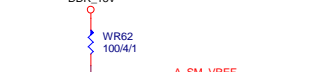
CPU SVID



CPU PU/PD

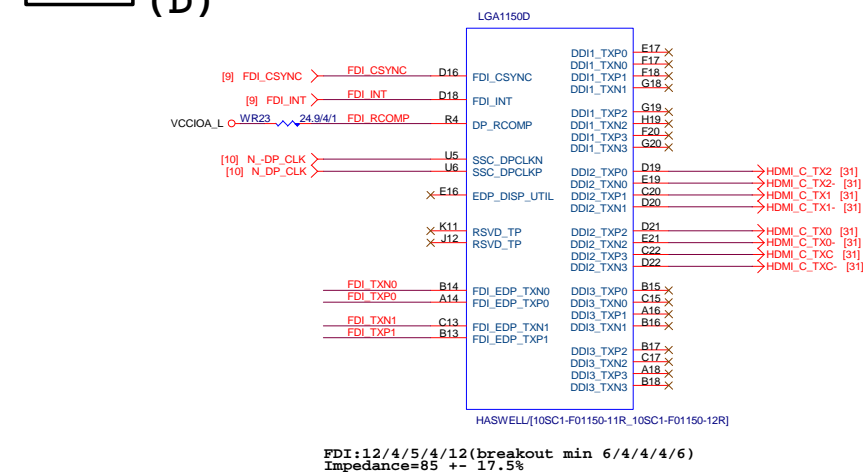


SM REF



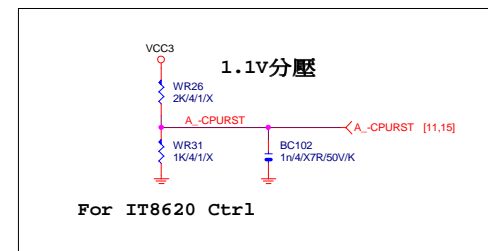
LGA1150

(D)



-CPURST

FOR IT8620 Ctrl1



THRMTRIP DISABLE

Gigabyte Technology

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HASWELL/10SC1-F01150-11R_10SC1-F01150-12R

HASWELL/J10SC1-F01150-11R_10SC1-F01150-12R

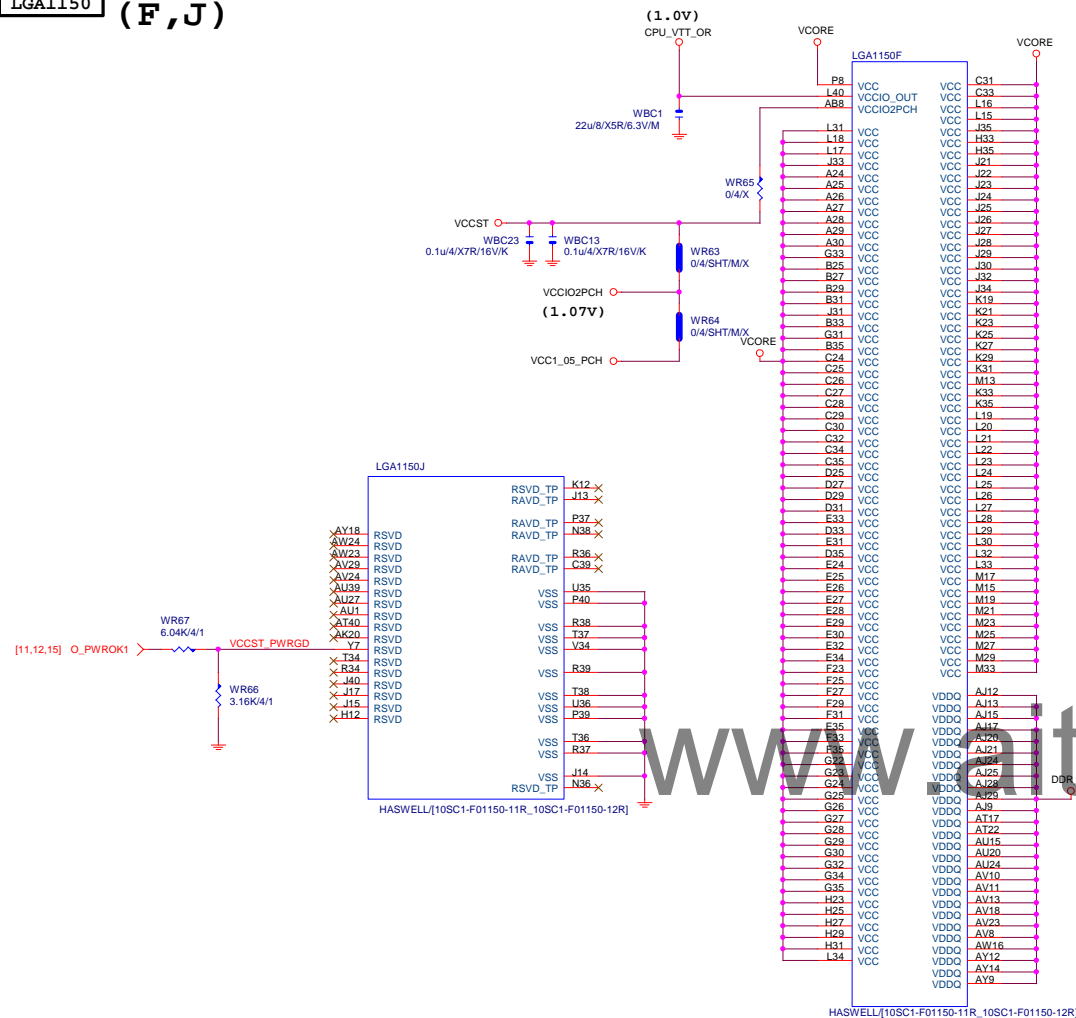
T

DDR BUS

Diagram illustrating connections between two columns of labels:

- [7] MODT_A[0..1] (Red) ↔ MODT_A[0..1] (Blue)
- [8] MODT_B[0..1] (Red) ↔ MODT_B[0..1] (Blue)
- [7] MDA[0..63] (Red) ↔ MDA[0..63] (Blue)
- [8] MDB[0..63] (Red) ↔ MDB[0..63] (Blue)
- [7] DQSA[0..7] (Red) ↔ DQSA[0..7] (Blue)
- [7] -DQSA[0..7] (Red) ↔ -DQSA[0..7] (Blue)
- [7] MAAA[0..15] (Red) ↔ MAAA[0..15] (Blue)
- [8] MAAB[0..15] (Red) ↔ MAAB[0..15] (Blue)
- [8] DQSB[0..7] (Red) ↔ DQSB[0..7] (Blue)
- [8] -DQSB[0..7] (Red) ↔ -DQSB[0..7] (Blue)

LGA1150 (F,J)

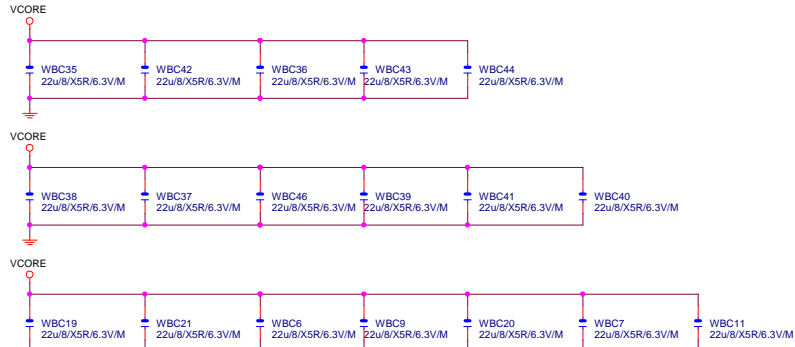


LGA1155 (G,H,I)



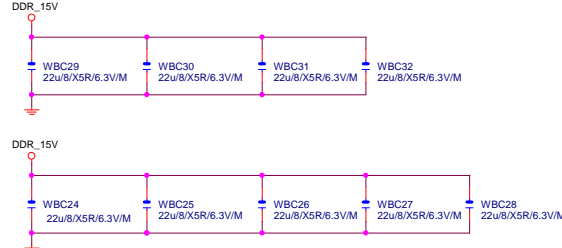
VCore CAP

(X18)



DDR CAP

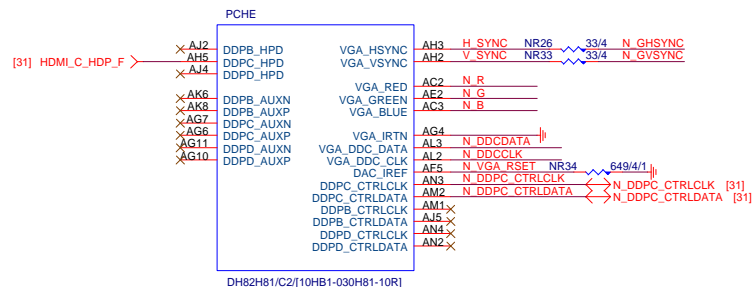
(X9)



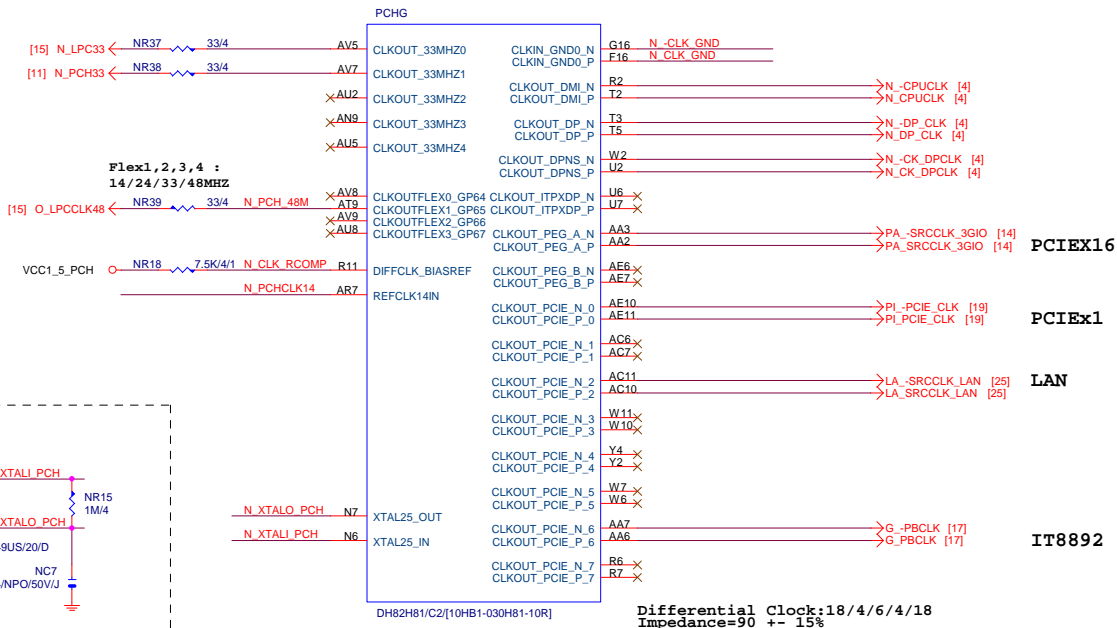
Gigabyte Technology

Title	CPU LGA1150-C	Rev	1.01
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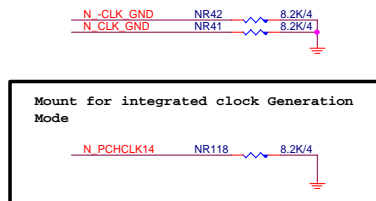
PCH (E)



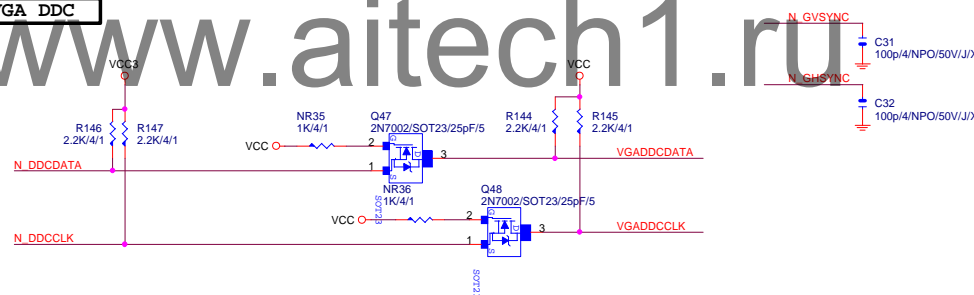
PCH (G)



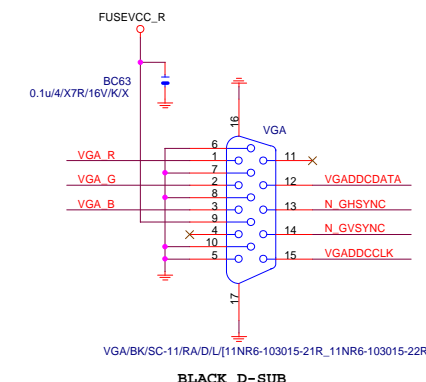
PCH CLK PD



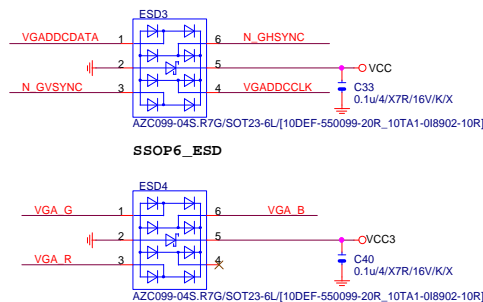
VGA DDC



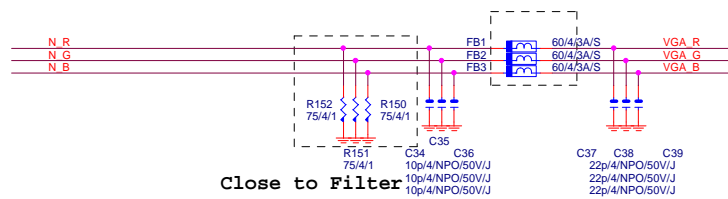
VGA CONNECTOR



VGA ESD



VGA DDC

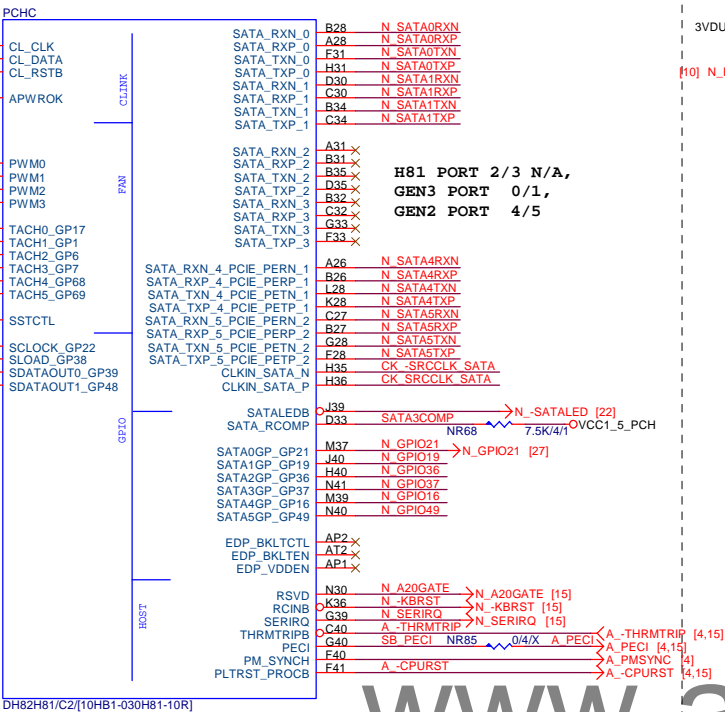


Gigabyte Technology

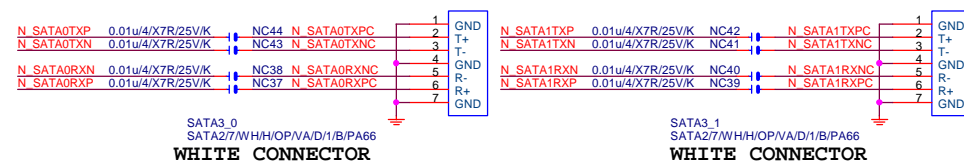
Title			
PCH DISPLAY,CLK BUFFER			
GA-H81M-S2PT			
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(C)

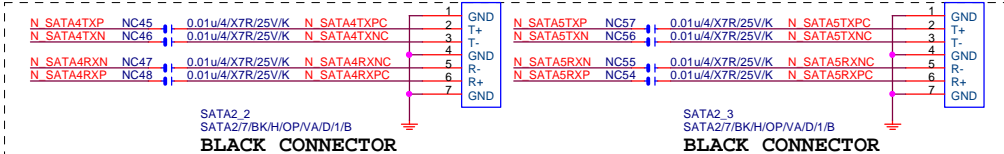
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



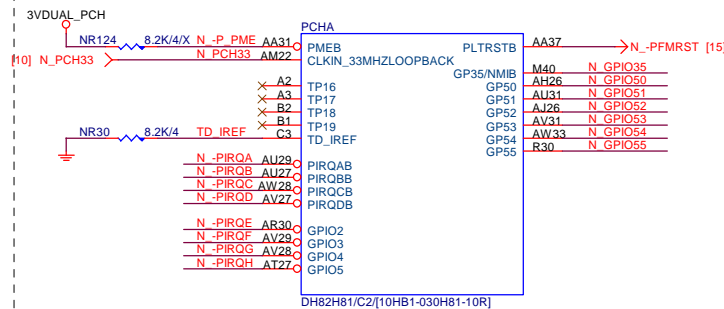
SATA CONNECTOR



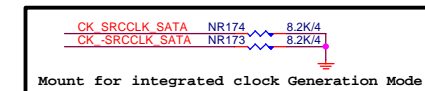
```
** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0
```



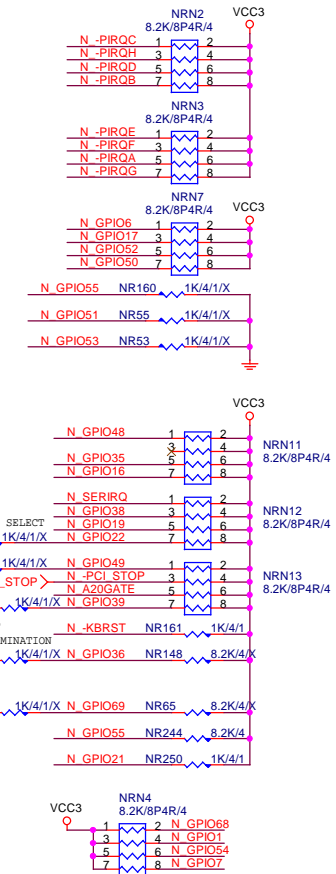
(A)



PCH CLK PD

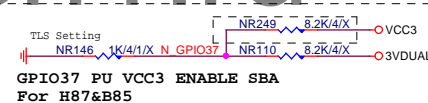


PCH PU/PD



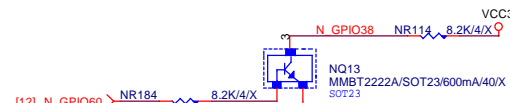
ME PWROK

H81 N/A



GPIO38 Ctrl

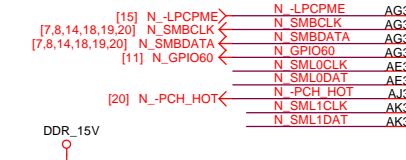
N/A



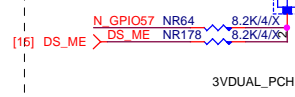
Gigabyte Technology

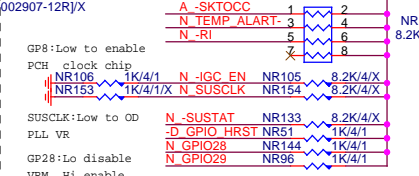
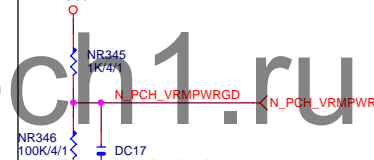
Title			
PCH HOST , SATA, PCI			
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(D)

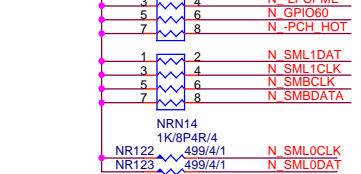
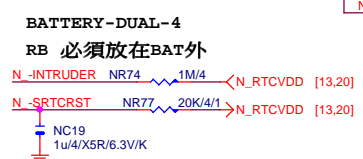
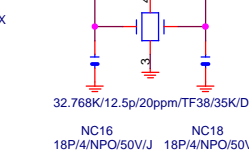
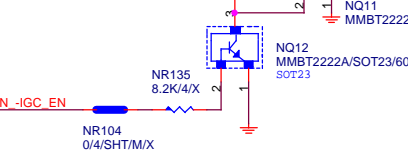


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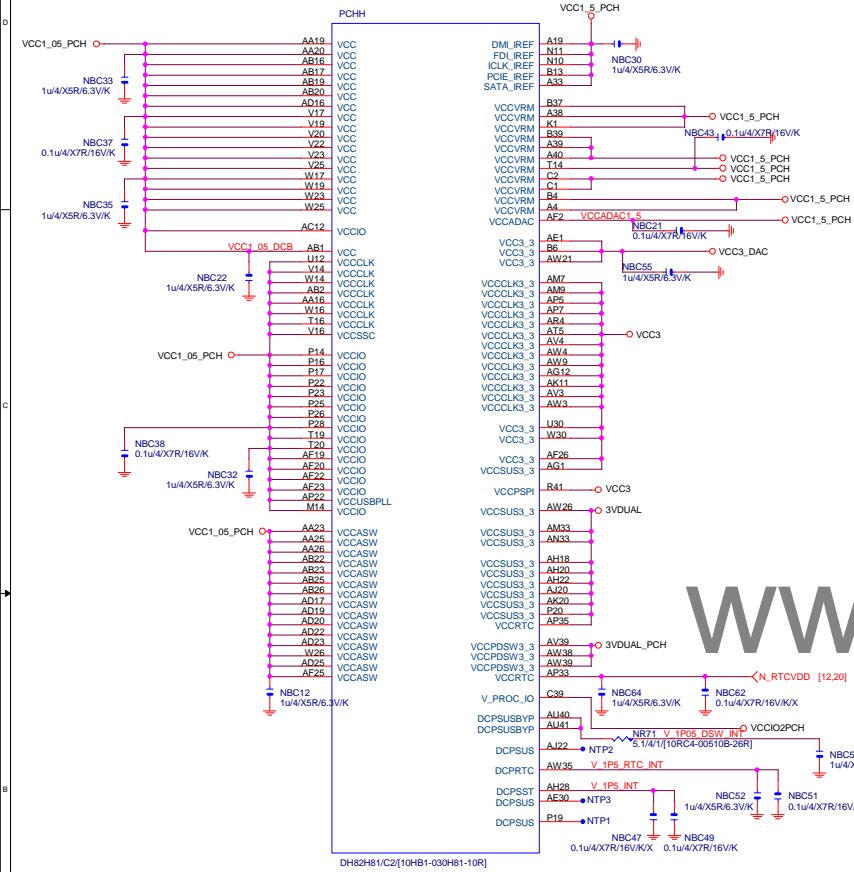
N/A



PCH GPIO , CTRL , AUDIO

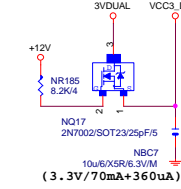
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PCH (H)

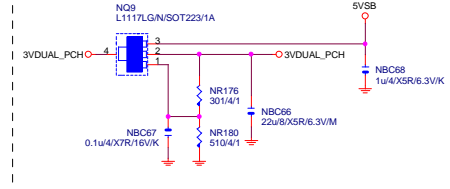


VCC3_DAC

CLOSE北橋(注意震盪水波紋)



3VDUAL_PCH

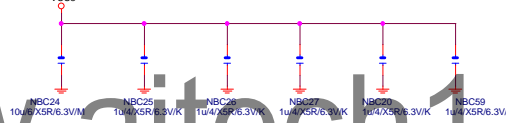


SHT_PWR

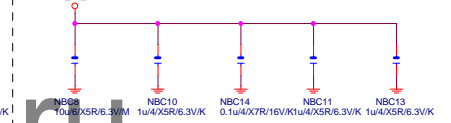
M3 POWER

CAP

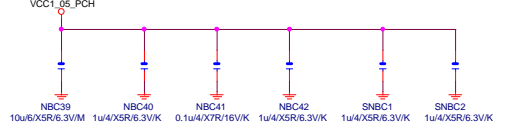
(3.3V) (X6)



(1.05V) (X5)



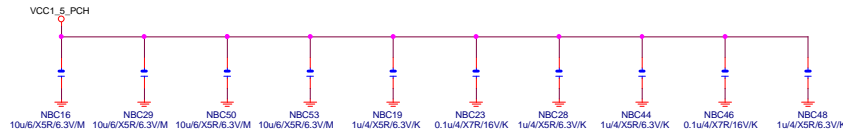
(1.05V) (X6)



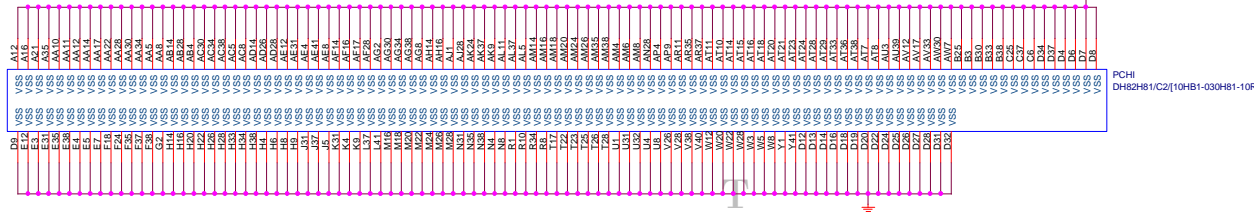
(1.05V) (X2) (3.3V) (X2)



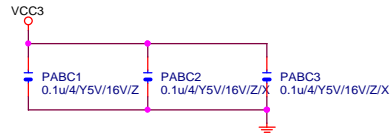
(1.05V) (X10)



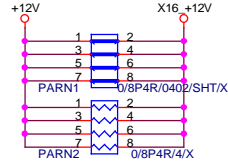
PCH (I)



PCIEX16 CAP



PCIEX16 PROTECT SHT

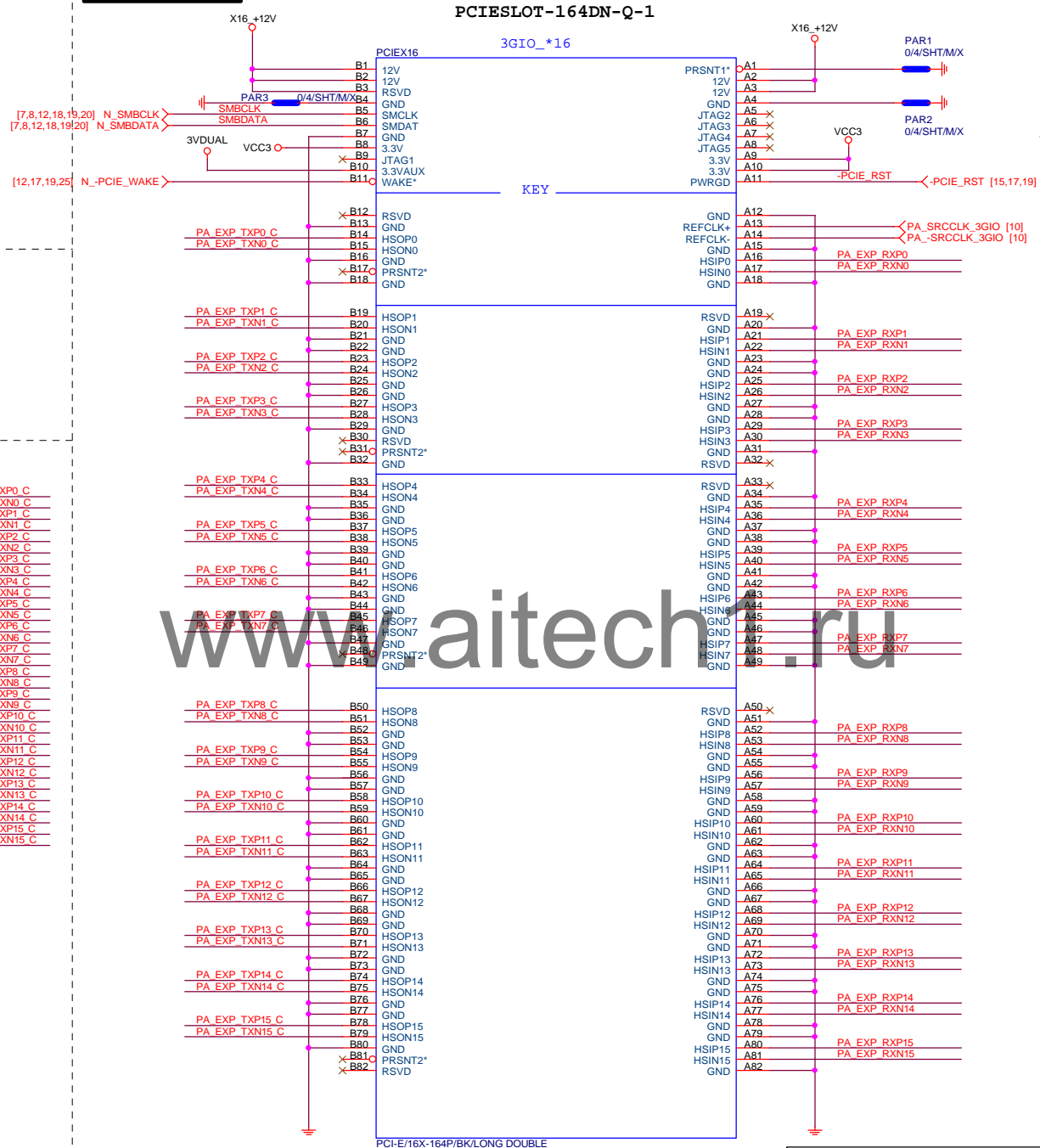


PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXP0[0..15] >>> PA_EXP_RXP[0..15] [4]
PA EXP RXN0[0..15] >>> PA_EXP_RXN[0..15] [4]
PA EXP TXP0[0..15] >>> PA_EXP_TXP[0..15] [4]
PA EXP TXN0[0..15] >>> PA_EXP_TXN[0..15] [4]

PCIEX16 SLOT



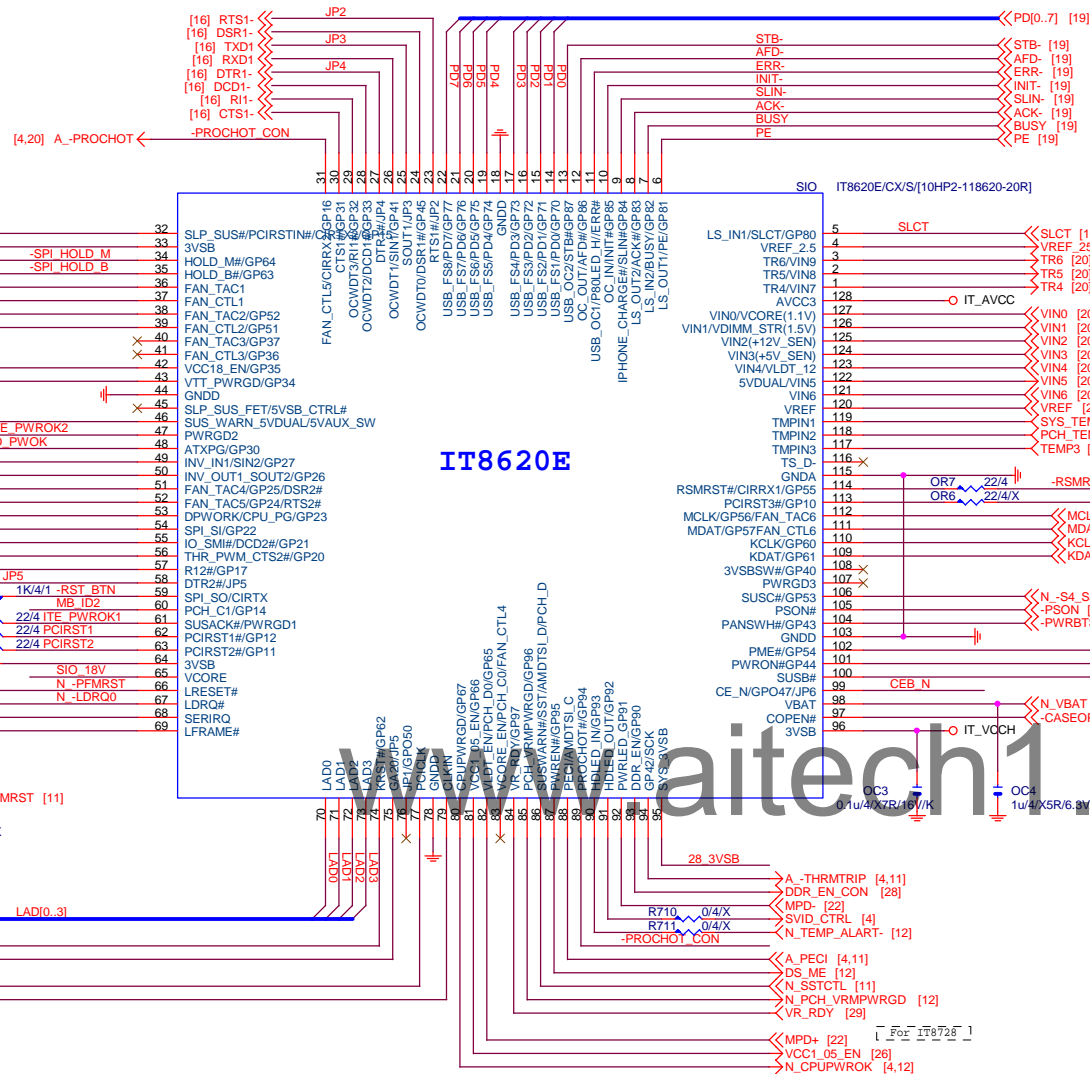
PCI-E/16X-164P/BK/LONG DOUBLE

BLACK CONNECTOR

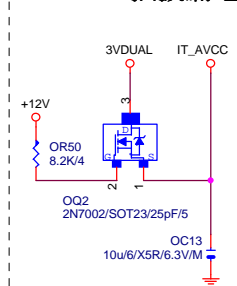
Gigabyte Technology

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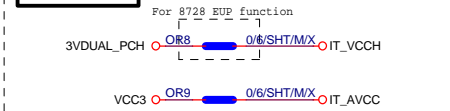
SIO IT8620E



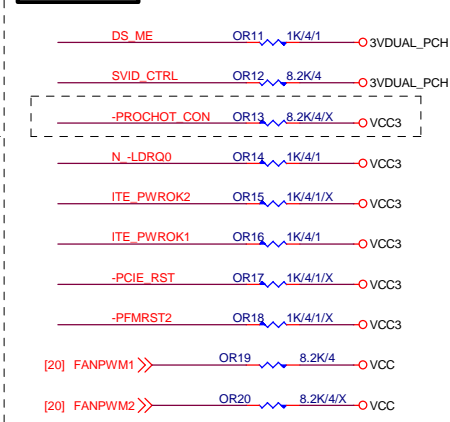
FIX ATX 插拔漏電



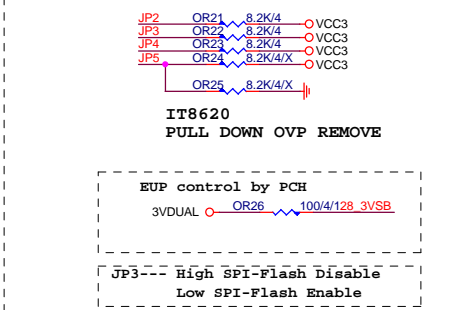
PWR SHT



SIO PU



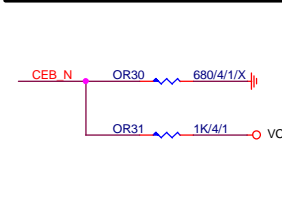
SIO STRAP



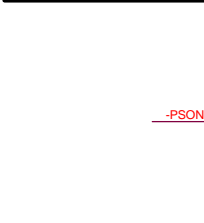
IT8620 NOTE

	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDI_EN/PCH_D0
PIN19	ATXPG
PIN31	PCH_C1
PIN53	SST/AMDS1_D/MTRB#/PCH_D1
PIN55	PECI/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



Power leakage



SIO_18V



MB ID



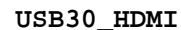
SIO CAP



FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

Gigabyte Technology

Title		ITE 8620 LPC IO	
Size	Document Number	GA-H81M-S2PT	
Custom			
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KB_MS_USB 2-Port 2.0A

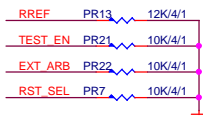
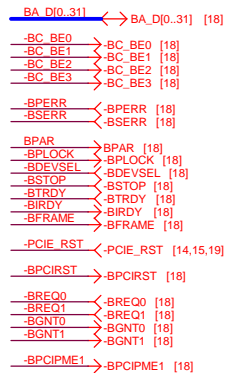


WHITE CONNECTOR PIN2X5-CUT10-COM



PCIe TO PCI

PCI:5/4/5 Impedance=50 +- 15%



High: Enable PCI CLK 66MHz
 Low: Disable PCI CLK 66MHz



High: PCICLK INPUT form CLK Gen
 Low: PCICLK OUTPUT form IT8893 chip

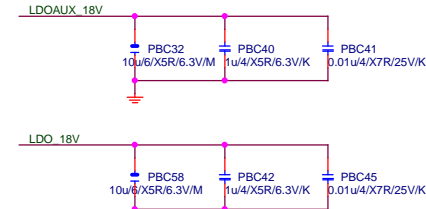
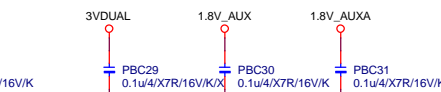
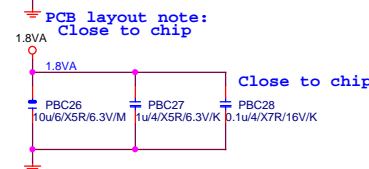
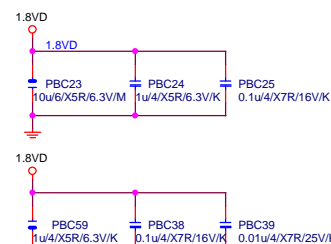
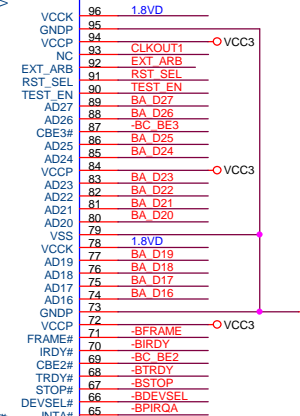
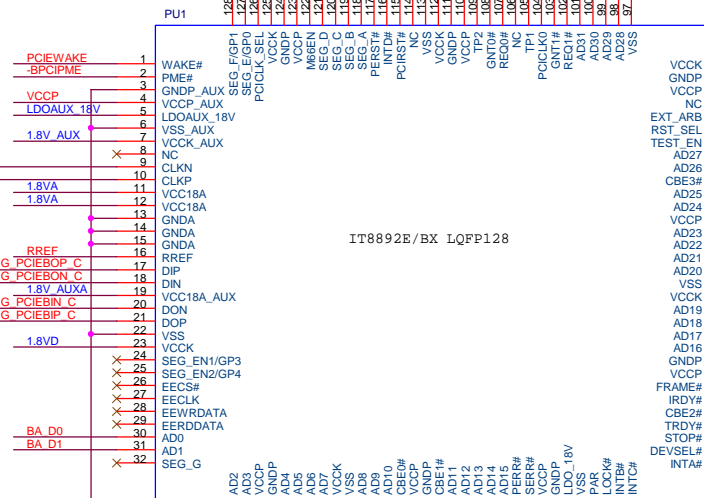
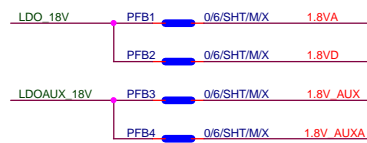
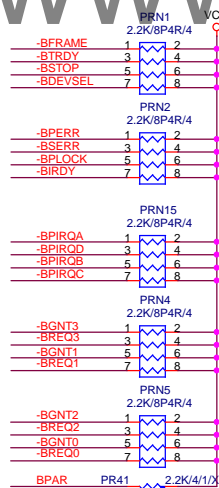
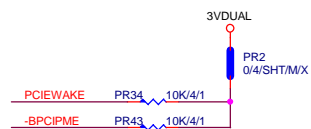
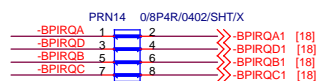


IT8892

PCI slot

PCI slot

chipset side

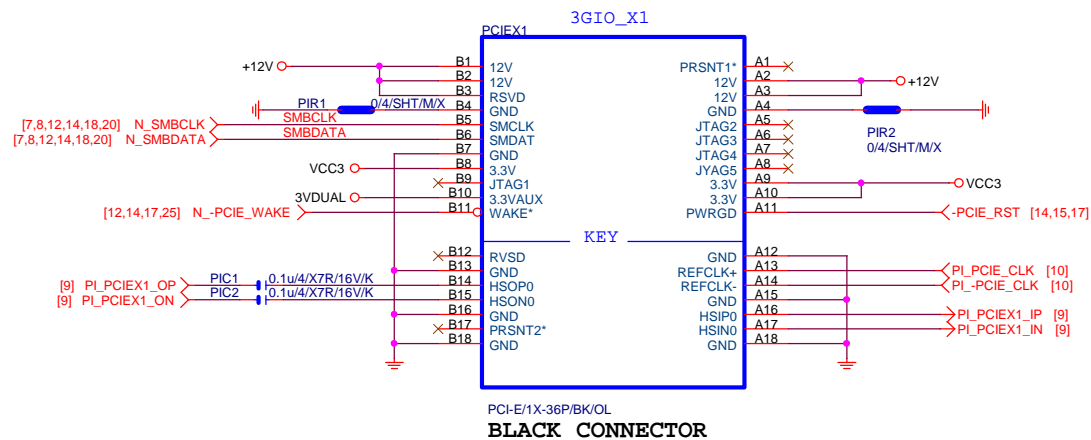


PCB layout note: Close to chip

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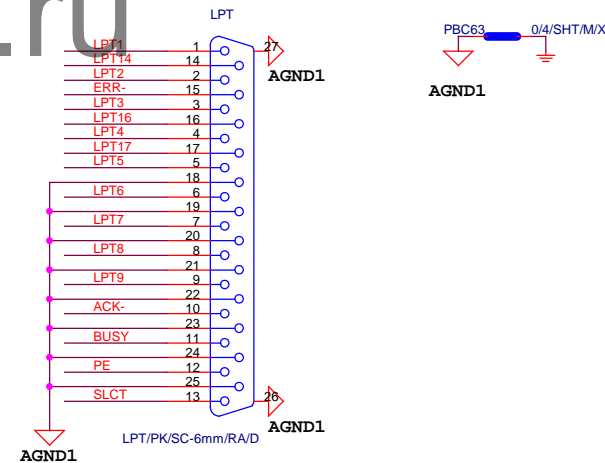
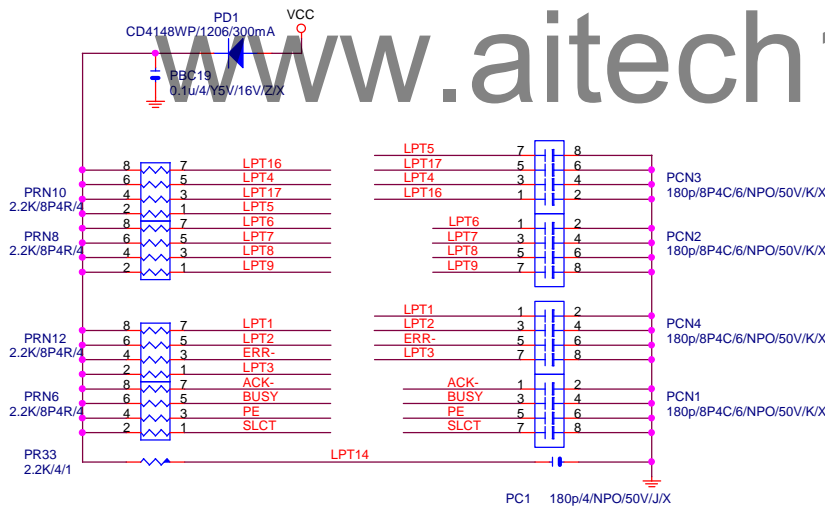
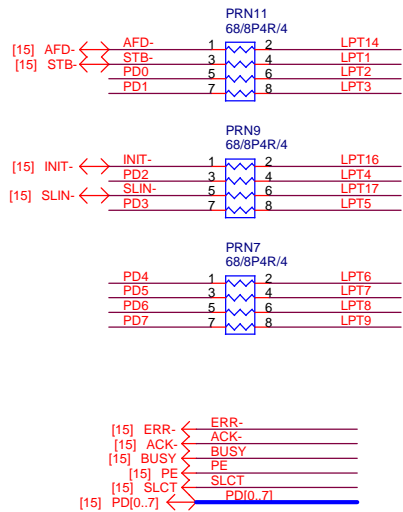
Singapore Technology			
Title			
ITE IT8892E			
Size	Document Number	Rev	
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Date: Monday, May 19, 2014		Sheet 17 of 31	

PCIEX1 SLOT



LPT PORT

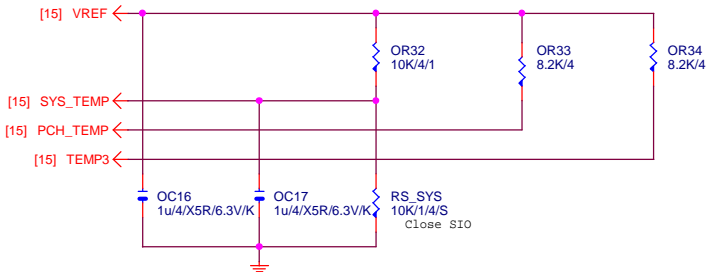
【技術通報R&D技術通報151】
33ohm Change to 68ohm



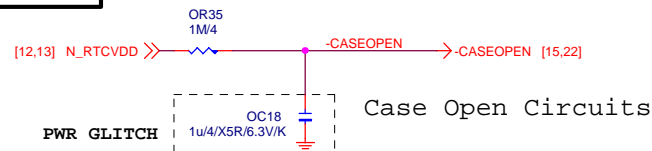
Gigabyte Technology

Title			LPT
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Rev			1.01

TEMP H/W MONITOR



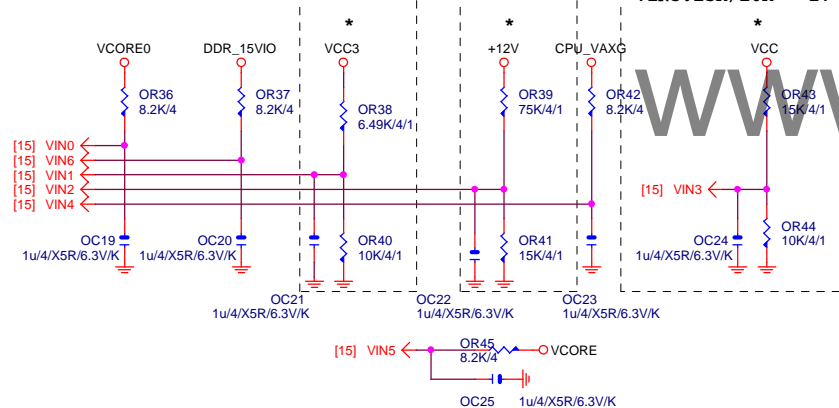
CASE OPEN



VOLTAGE-- H/W MONITOR

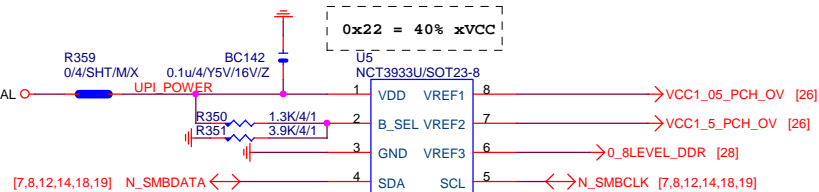
VIN2:75K/15K = 2V

VIN3:15K/10K = 2V



OV NCT3933

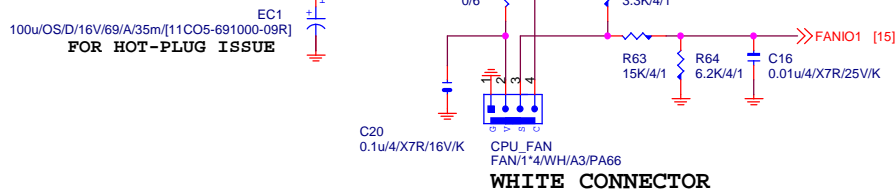
接pwm feedback pin



CPU SMART FAN

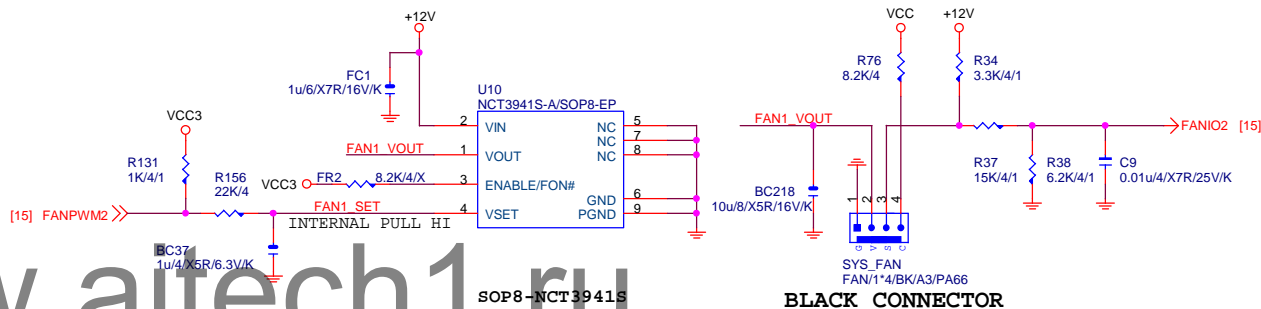
【技術通報R&D技術通報162】
FAN 0ohm Change to 0603

100u/OS/D/16V/69/A/35m/[11CO5-691000-09R]
FOR HOT-PLUG ISSUE



SYS SMART FAN

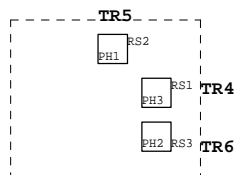
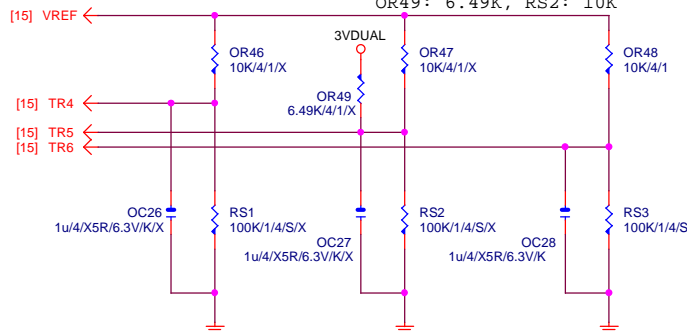
Linear SYS_FAN



THERMISTOR MONITOR

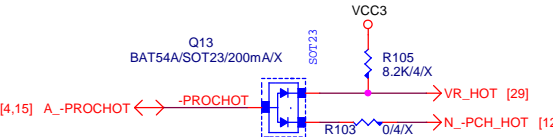
TEST 3VDUAL Protection

OR49: 6.49K, RS2: 10K



RS1、RS2、RS3 CLOSE CPU
VR MOSFET

-PROHOT



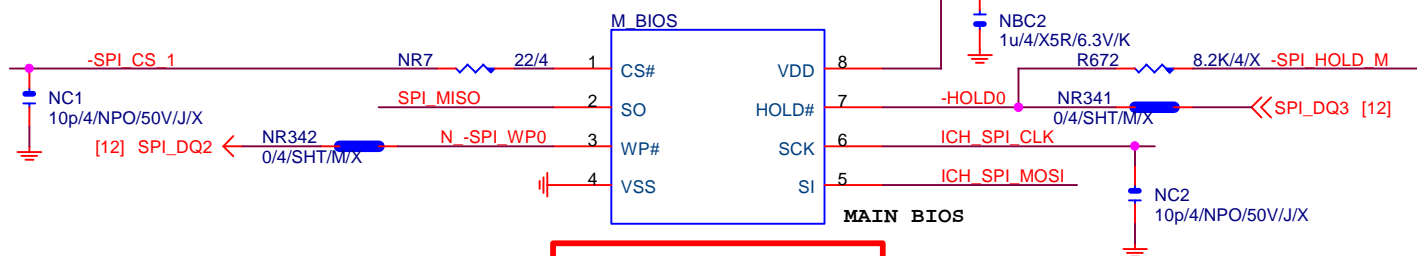
Gigabyte Technology

HWM,FAN CTRL,OV

GA-H81M-S2PT

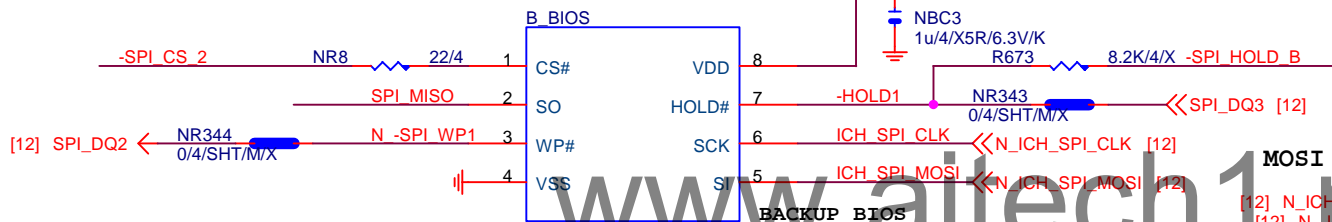
Rev 1.01

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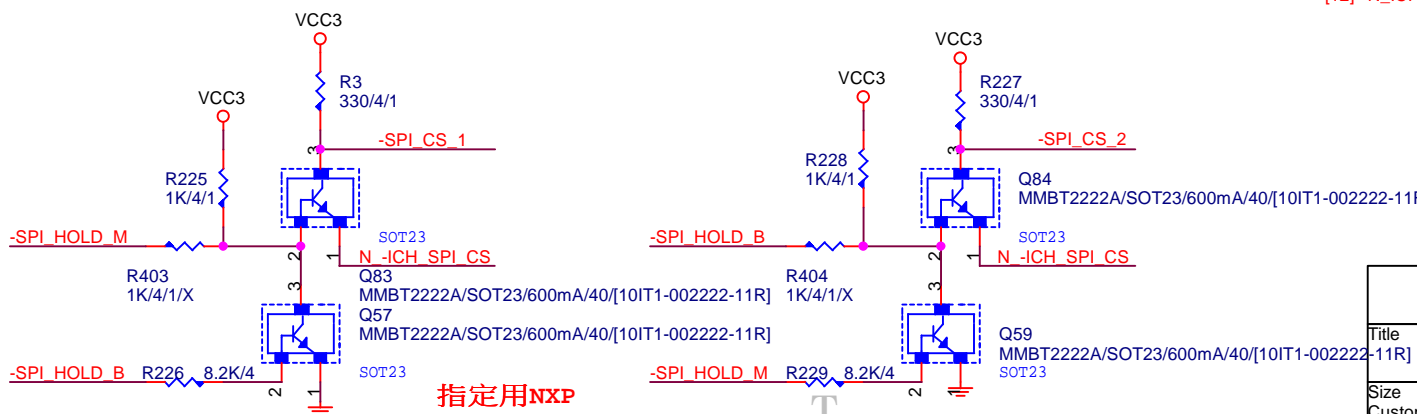
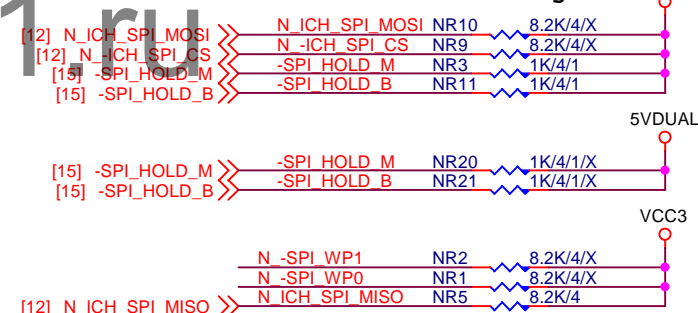
32M/SPI/SO8/200mil/S/[10HP4-112532-20R]

GA-H81M-S2P R1.0 32Mb*2



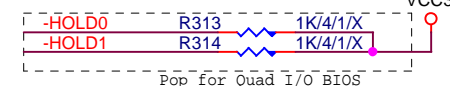
32M/SPI/SO8/200mil/S/[10HP4-112532-20R]

MOSI For DMI RX Termination Voltage



指定用NXP

CHECK



Gigabyte Technology

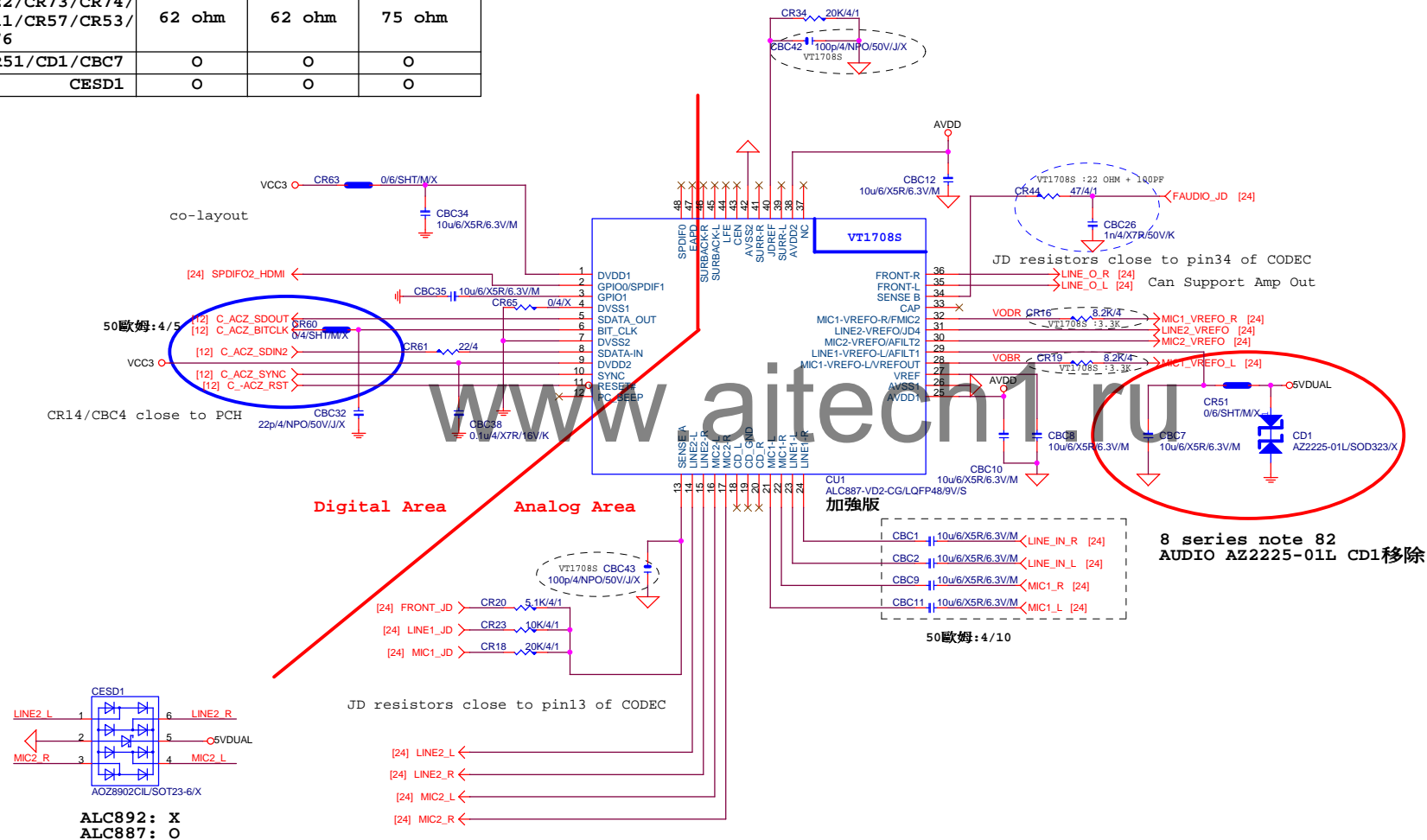
DUAL BIOS

GA-H81M-S2PT

Title	Document Number	Rev
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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	O	O	O
CESD1	O	O	O



LINE-OUT

Only reserved for ALC888

LINE-IN

Verify MIC function
in LINE-in

For 889A/888

MIC-IN

SPDIF_OUT

SPDIF_OUT

BLUE
LINE-IN

GREEN
LINE-OUT

PINK
MIC-IN

AZALIA FRONT PANEL

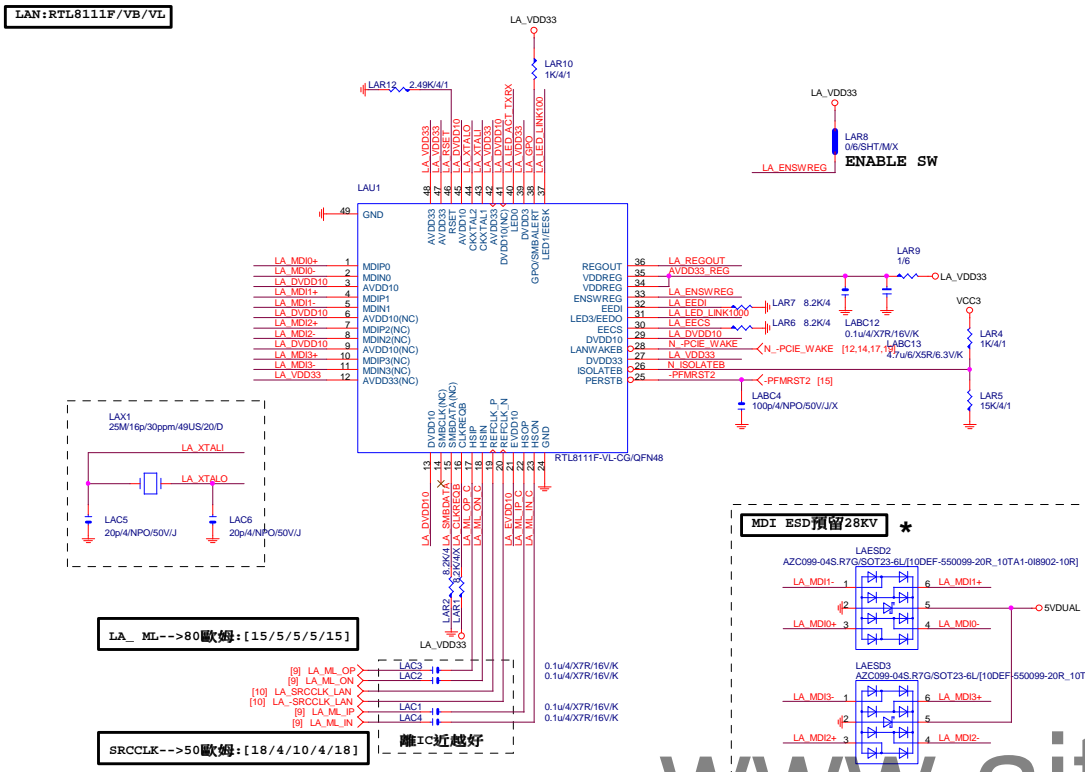
Gigabyte Technology

AUDIO JACK

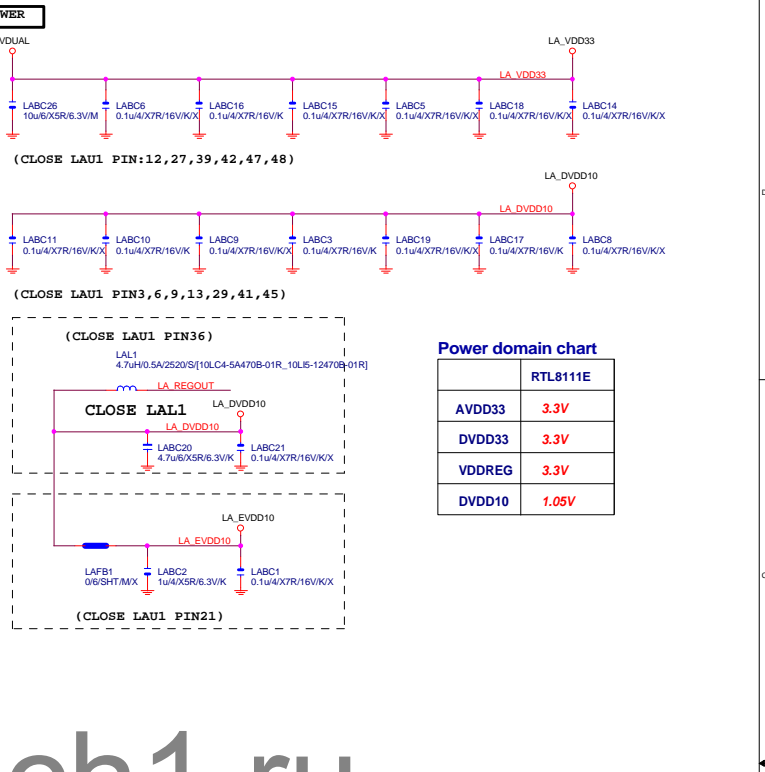
GA-H81M-S2PT

Rev
1.01

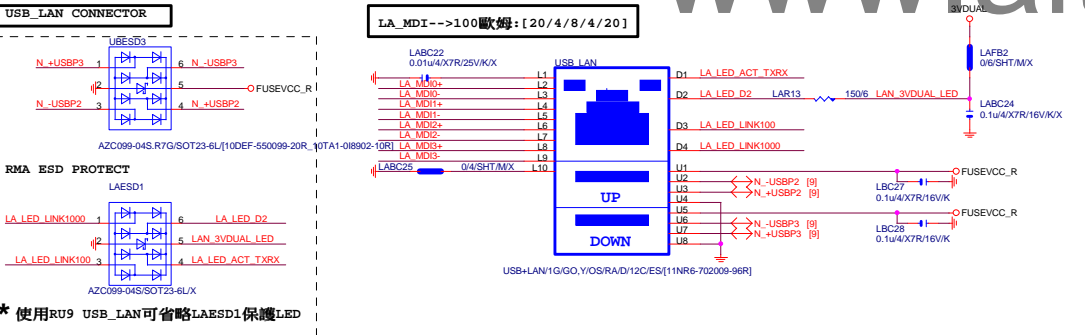
LAN:RTL8111F/VB/VL



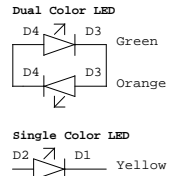
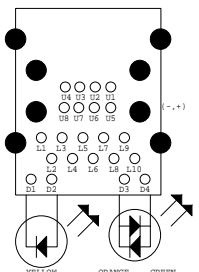
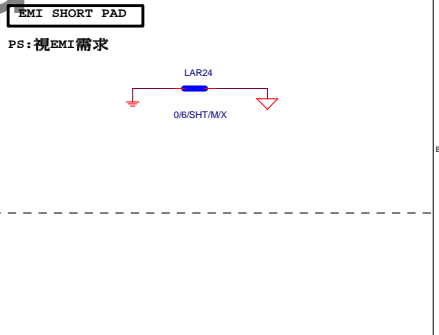
LAN POWER



USB LAN CONNECTOR



EMI SHORT PAD



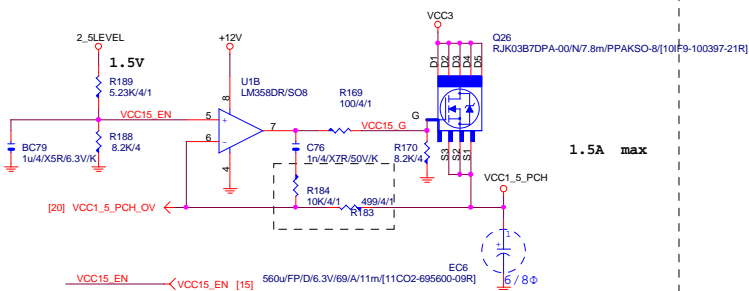
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

BOM NOTICE

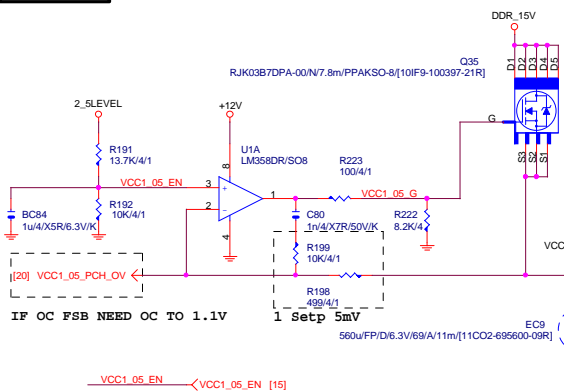
料號	規格	廠商
11NR6-702009-96R	1G LAN (12core)	UDE(RU9 ESD+)
[LED獨立走線,可省略外加AZC099料件LAESD1]		
1. 9KV ESD BOM: USB LAN (RU9):11NR6-702009-96R		
2. 28KV ESD BOM: USB LAN (RU9):11NR6-702009-96R		
LAESD2,LAESD3:上件AZC398-04S		

Gigabyte Technology		
Title	Realtek RTL8111F	
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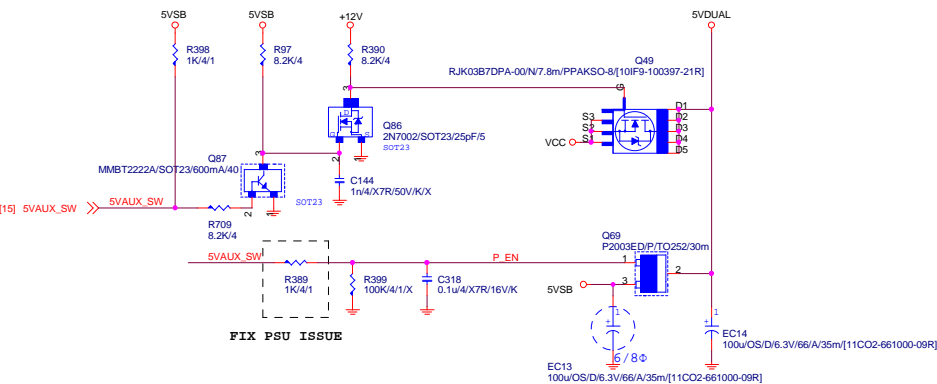
VCC1_5_PCH



VCC1_05_PCH

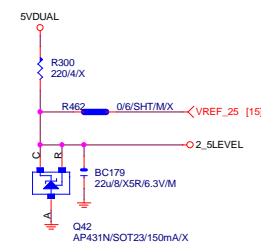


5VDUAL



2_5LEVEL

FROM I/O

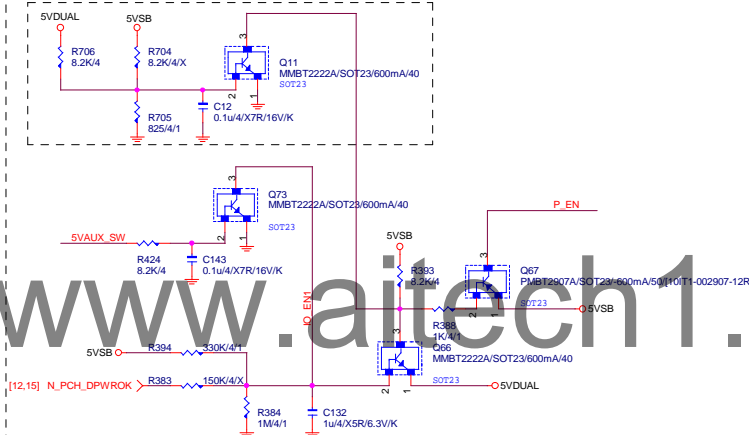


5VDUAL SHORT PROTECT

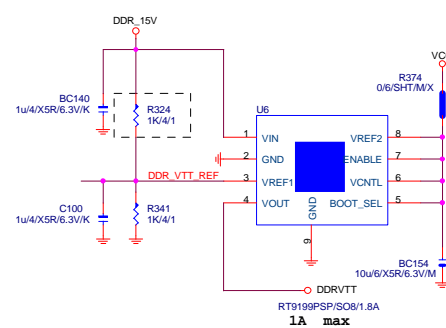
```

8 series note 82
5VSB OVP:6V protection

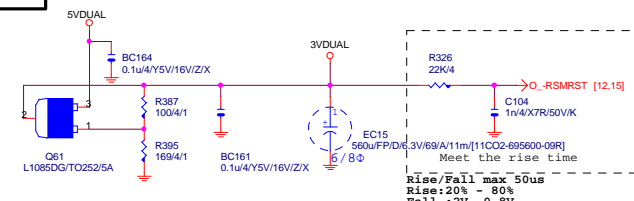
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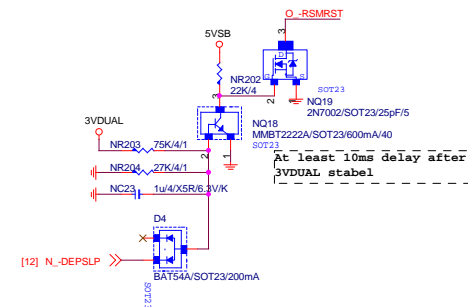
DDRVTT



3VDUAL

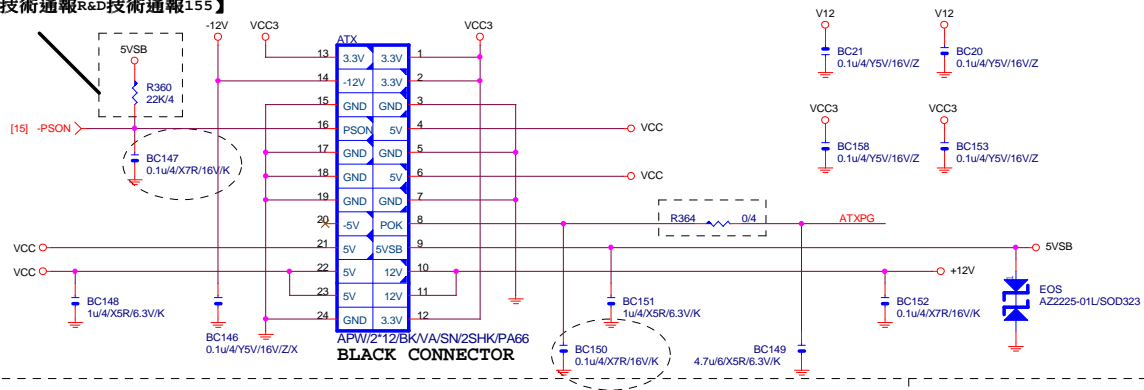


- RSMRST

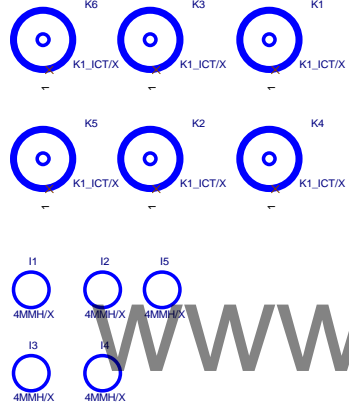
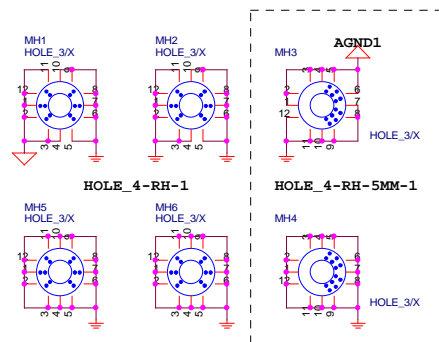


ATXX24 POWER CONNECTOR

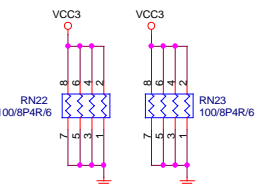
【技術通報R&D技術通報155】



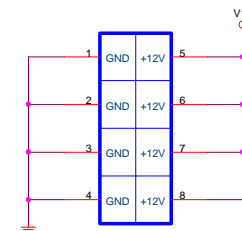
MB LOCATION



FIX PWR MINMUN LOAD



ATXX4 POWER CONNECTOR

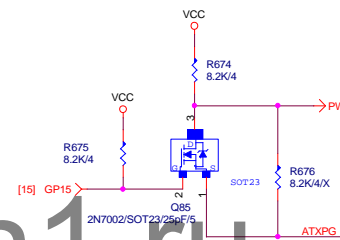


ATX_12V_2X4
APW/Z*4/BK/OC/P/4.2/VA/SN/OH:Location ATX_12V_2X4

BLACK CONNECTOR

PWOK PATCH

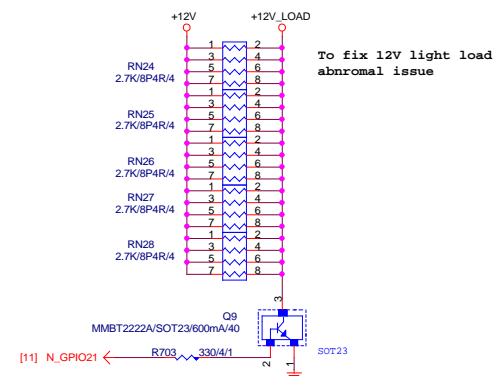
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】



To fix 12V light load
abnormal issue

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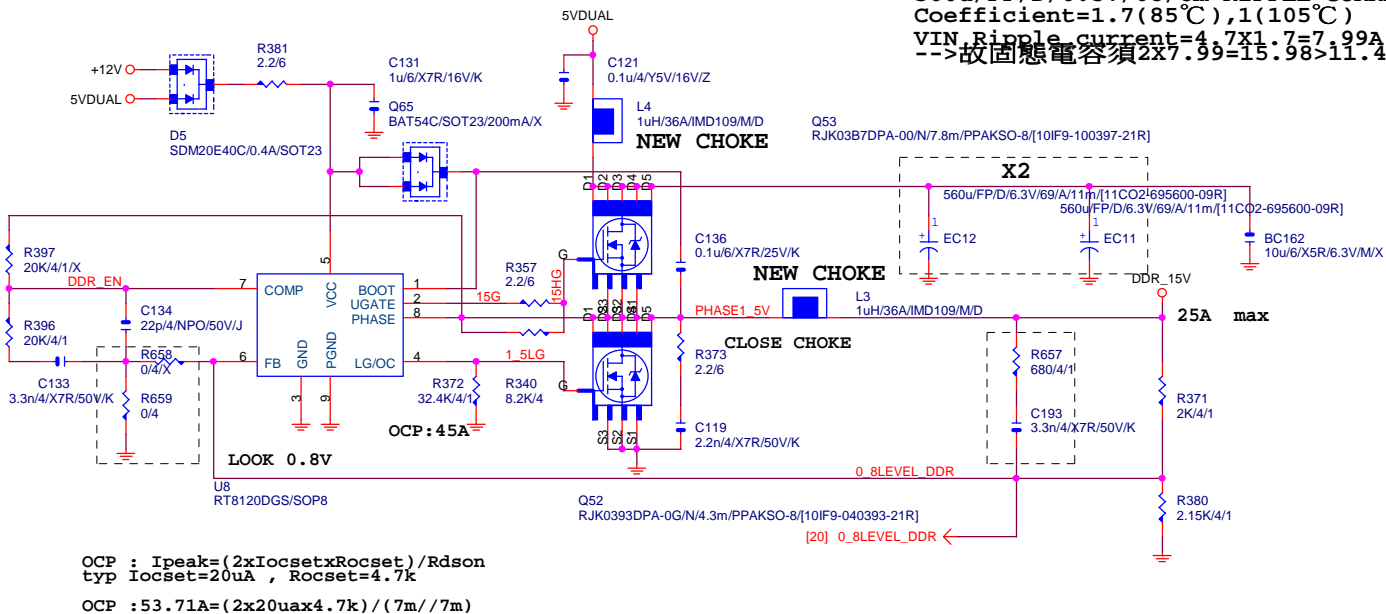
ATX CONNECTOR

GA-H81M-S2PT

Rev 1.01

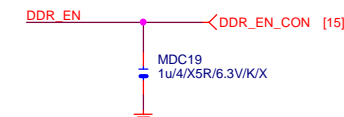
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DDR15V



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A
560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C),1(105°C)
VIN, RIPPLE CURRENT=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

PWR SEQ



From DDR_15V source
10 mils trace to SIO



VCC1_05_ME

Z81 N/A

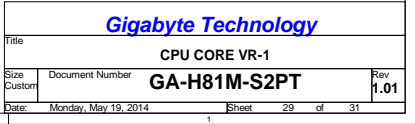
VCC3_ME

H81 N/A

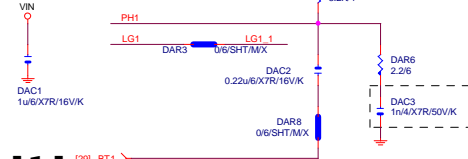
www.aitech1.ru

Gigabyte Technology

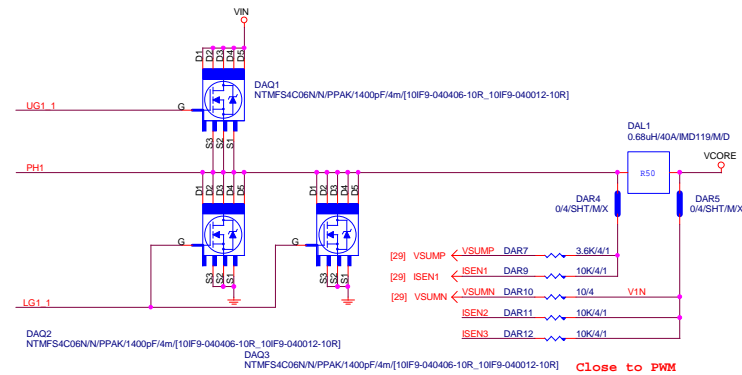
Title			
DDR & M3 POWER			
Size B	Document Number	GA-H81M-S2PT	Rev 1.01
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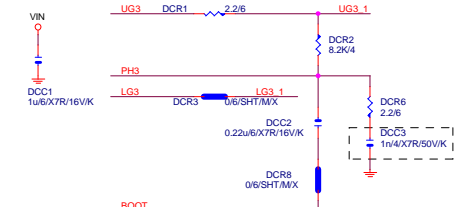
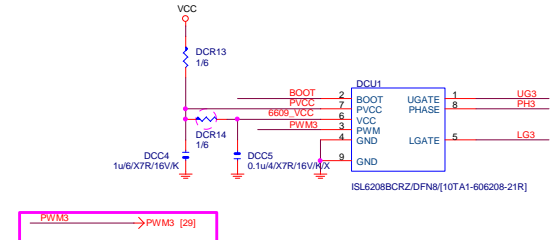
PHASE 1



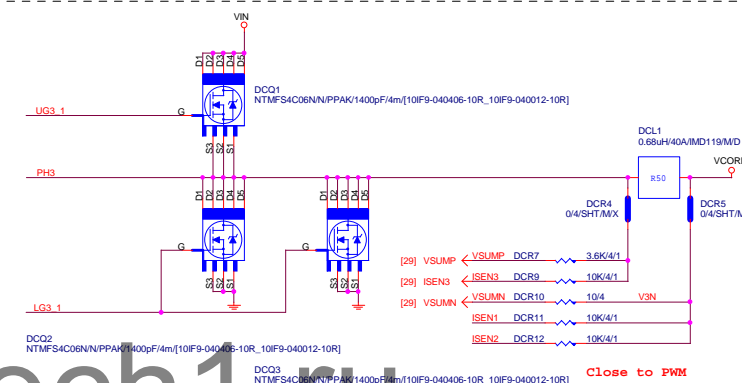
[1] [29] BT1



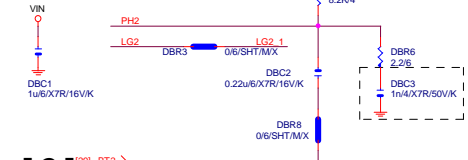
PHASE 3



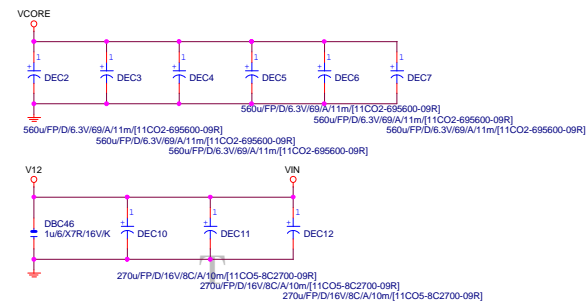
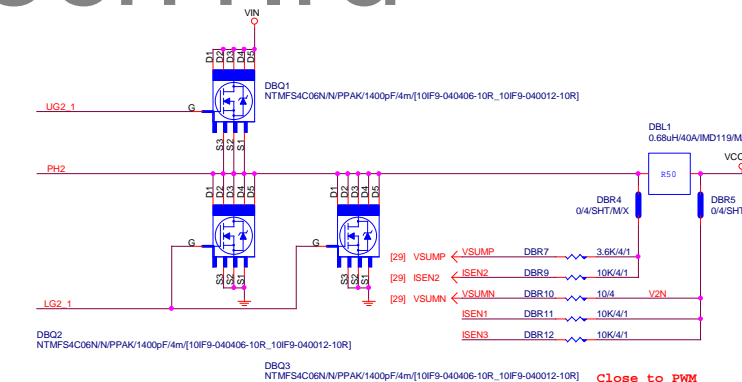
[3] [29] BT2



PHASE 2




[2] [29] BT2



Gigabyte Technology			
Title		CPU CORE VR-2	
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GA-H81M-S2P R1.0 N/A



<div style="text-align: center;">  </div>			
Title			
HDMI			
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Date:	Monday, May 19, 2014	Sheet	31 of 31