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03	BLOCK DIAGRAM
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05	CPU_LGA1150-B
06	CPU_LGA1150-C
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08	DDR III CHANNEL B
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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
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20	FP,FUSB,SPK,SATALED
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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

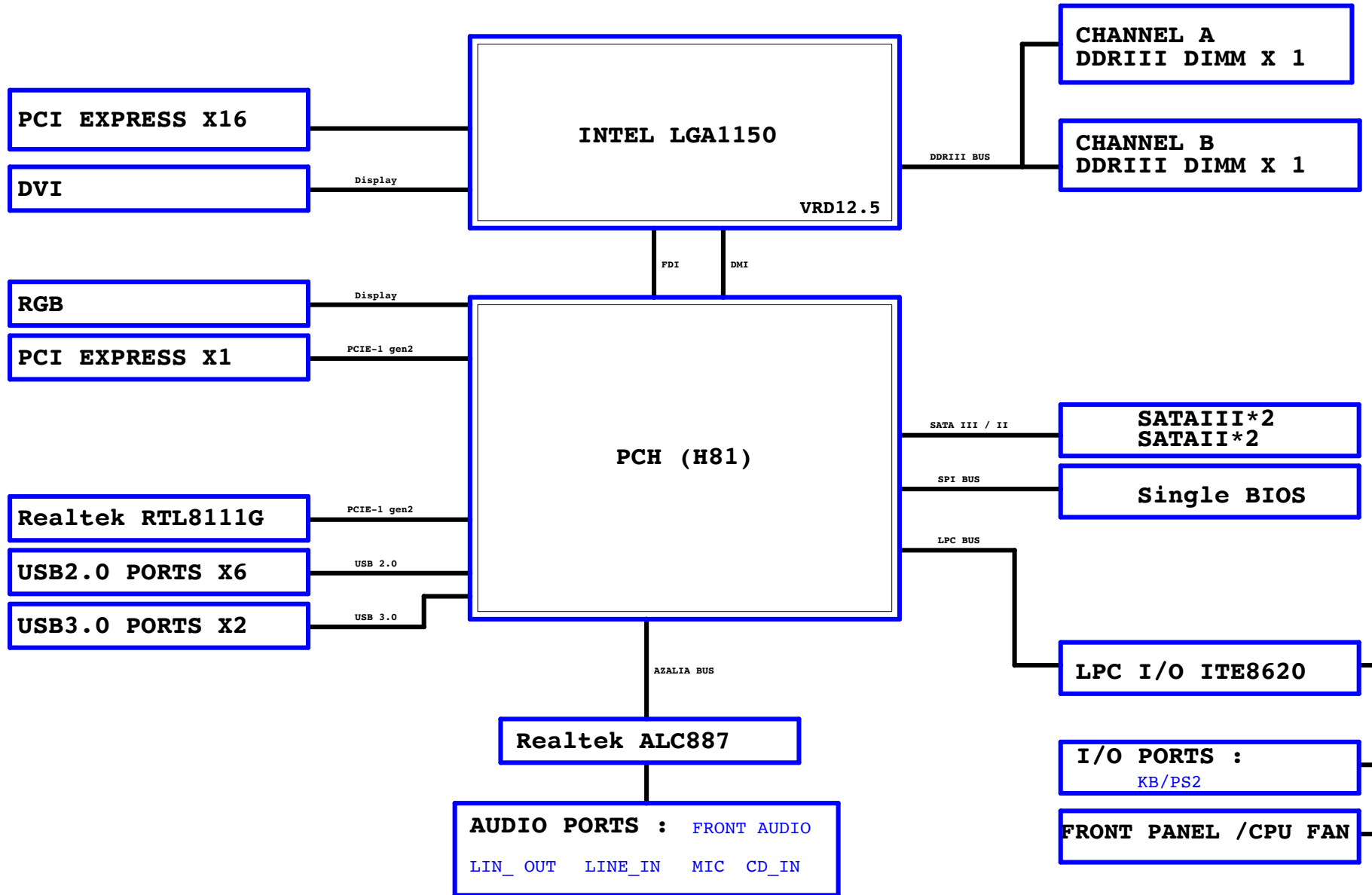
**Gigabyte Technology**

Cover Sheet

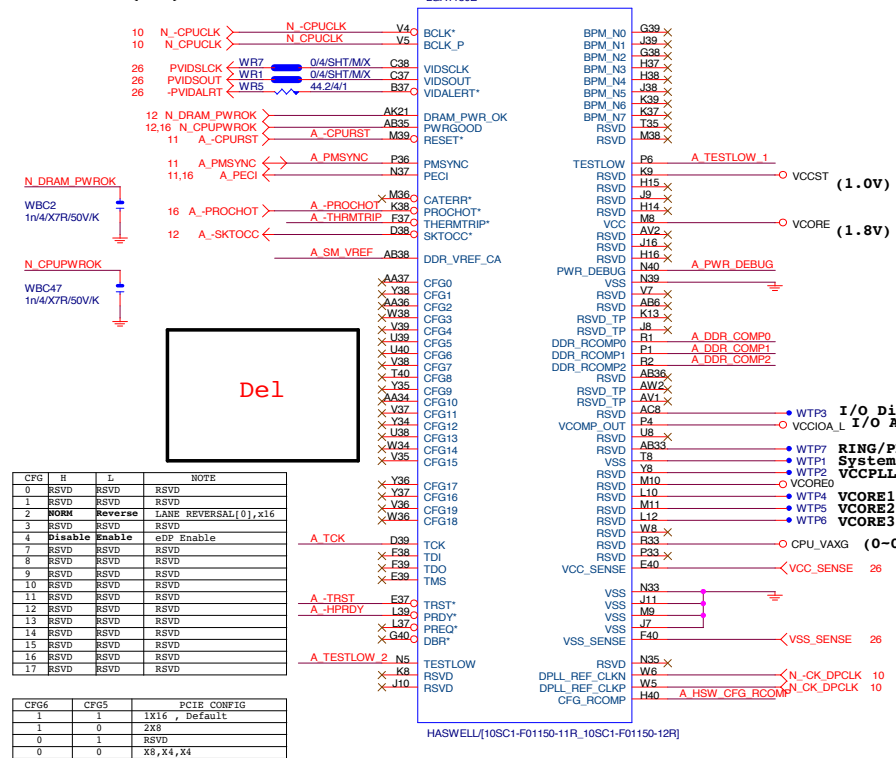
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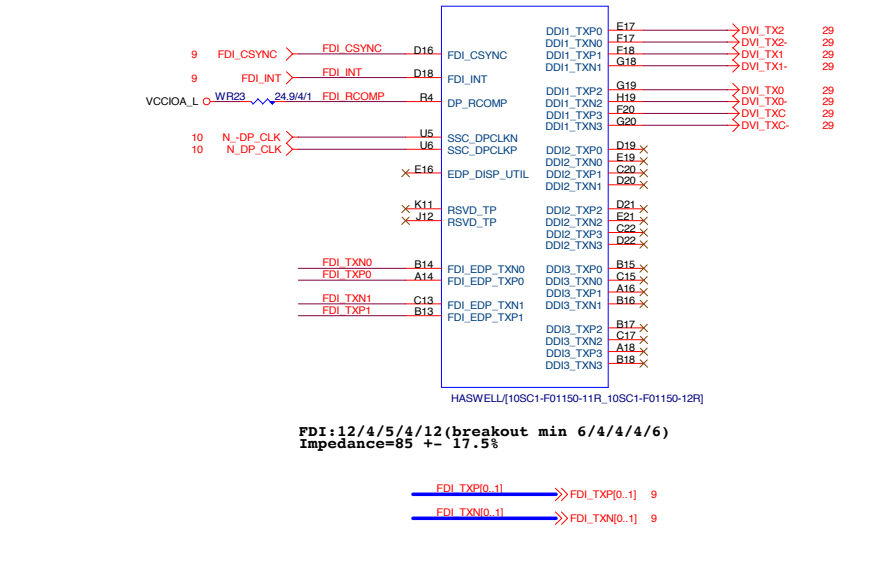
# BLOCK DIAGRAM



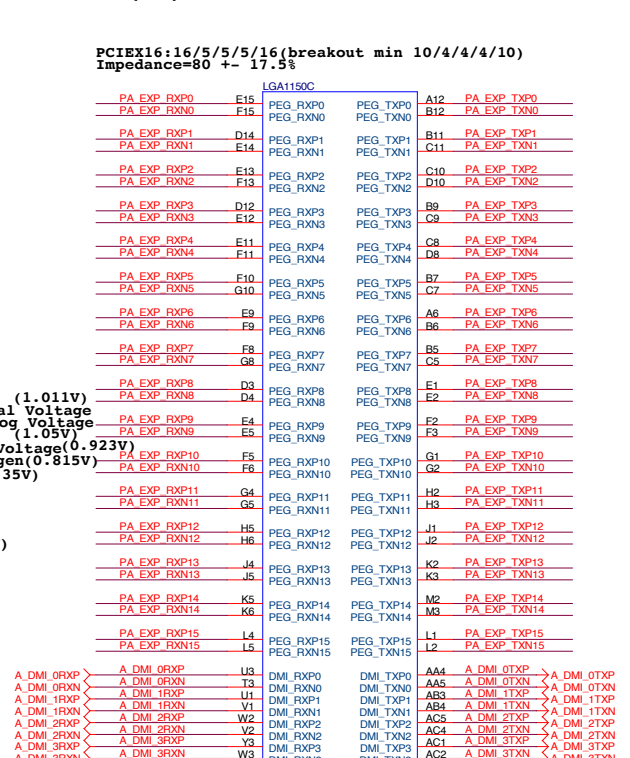
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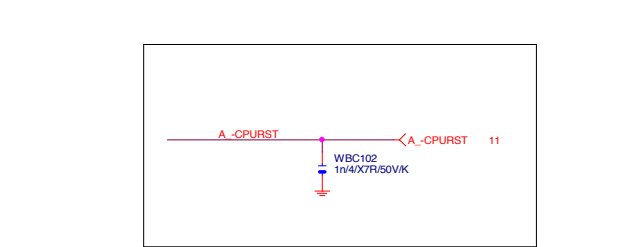
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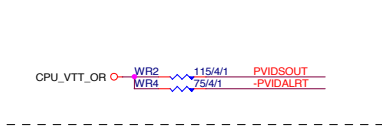
**LGA1155 (C)**



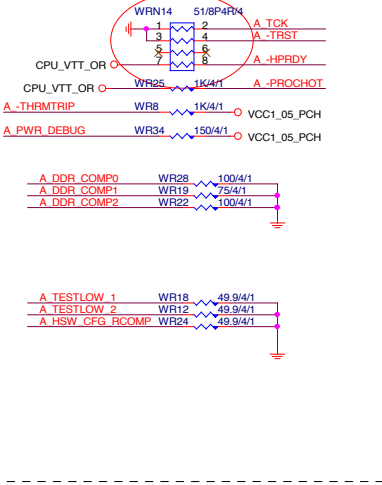
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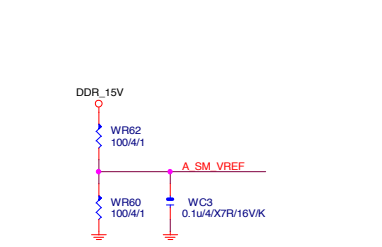
**CPU SVID**



**CPU PU/PD**



**SM REF**



**Gigabyte Technology**

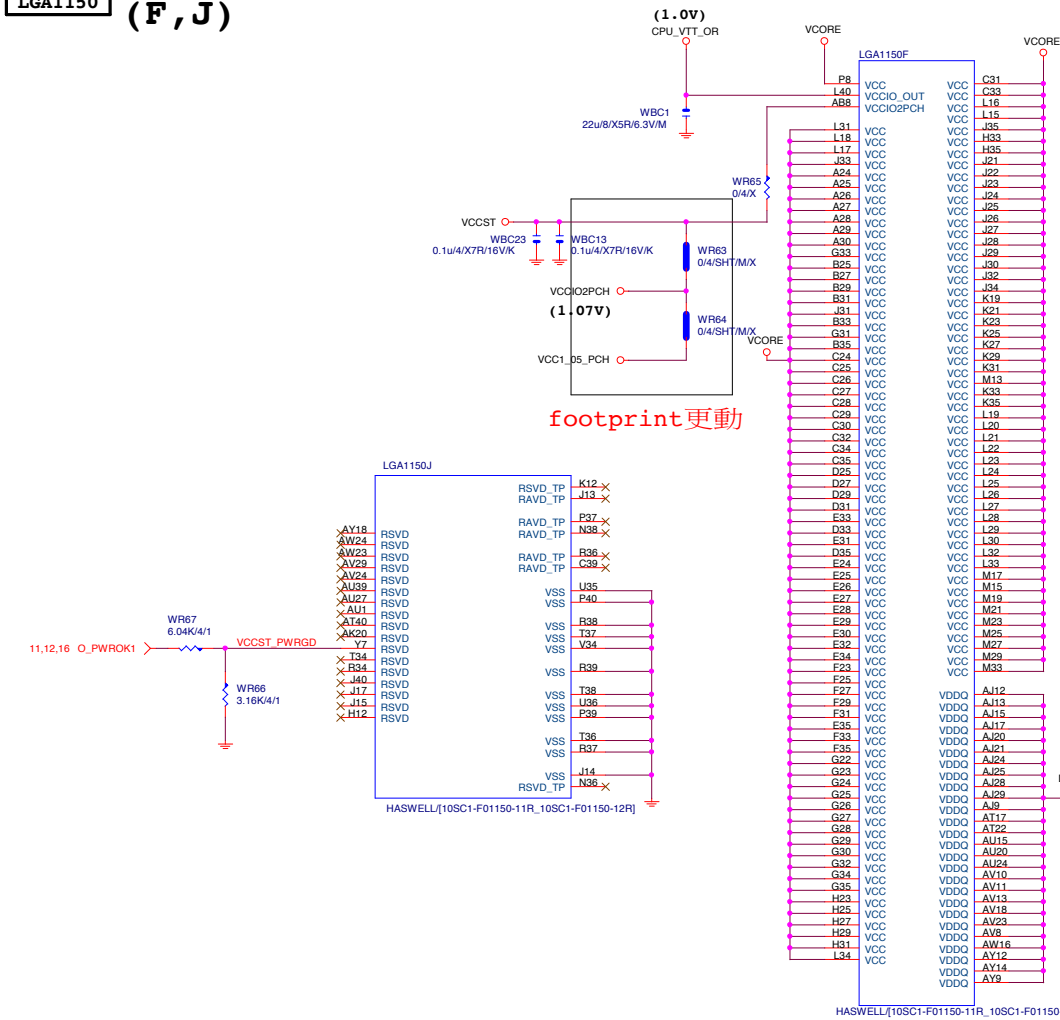
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Size: Custom    Document Number: GA-H81M-S2V    Rev: 1.0

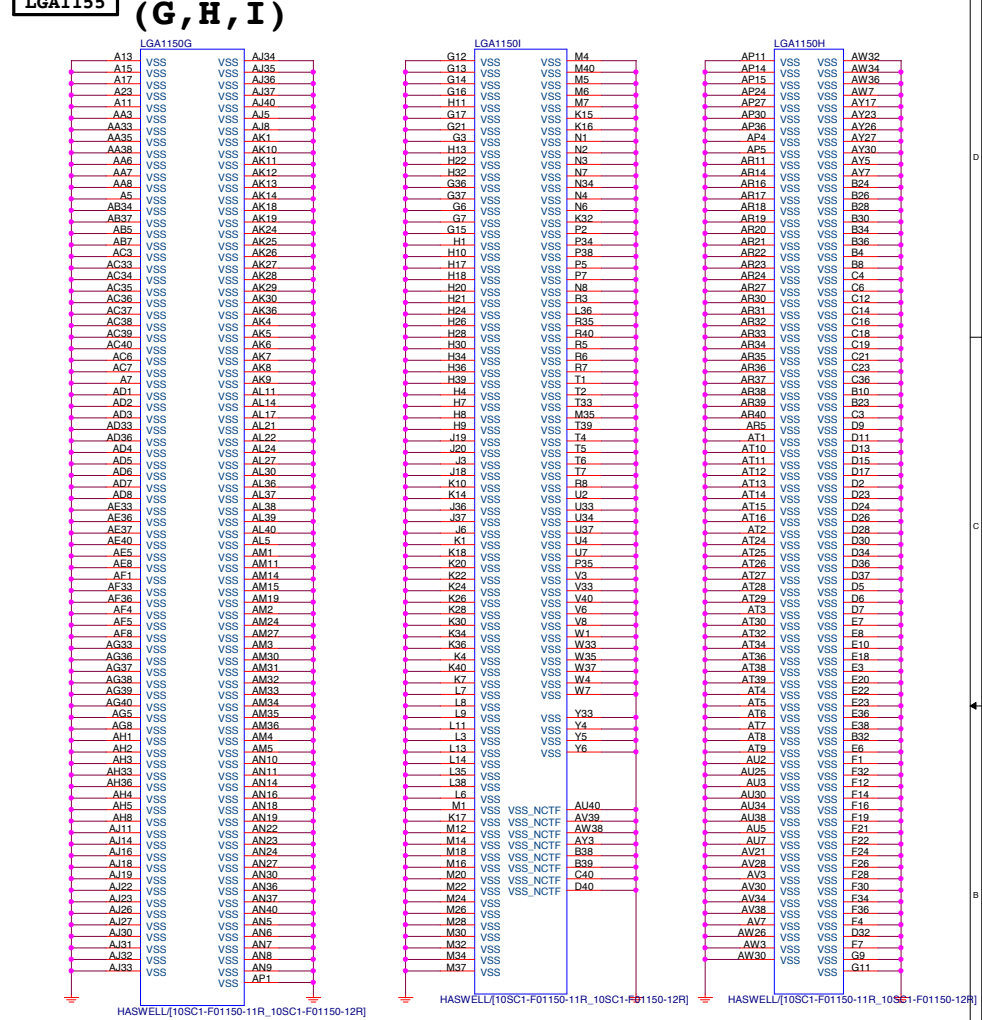
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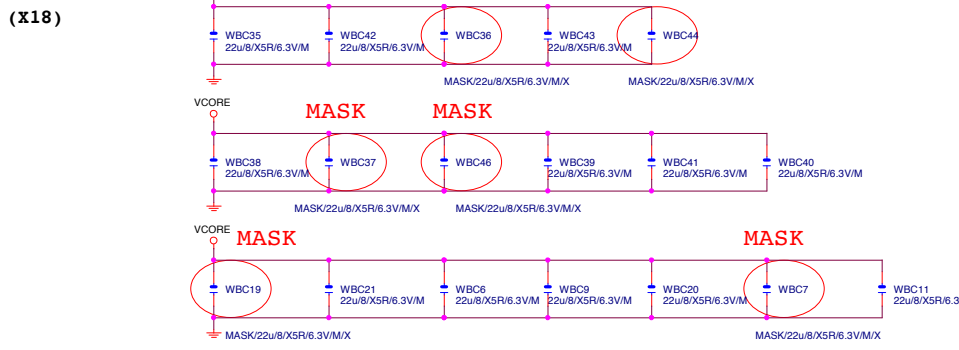
**LGA1150 (F, J)**



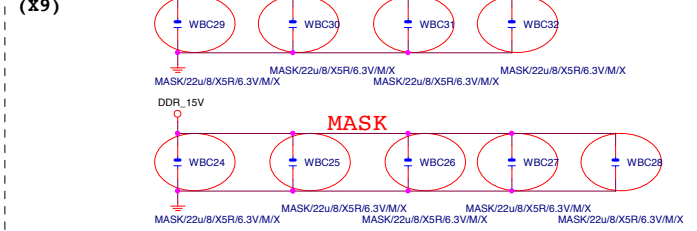
**LGA1155 (G, H, I)**



**VCore CAP (X18)**



**DDR CAP (X9)**



**Gigabyte Technology**

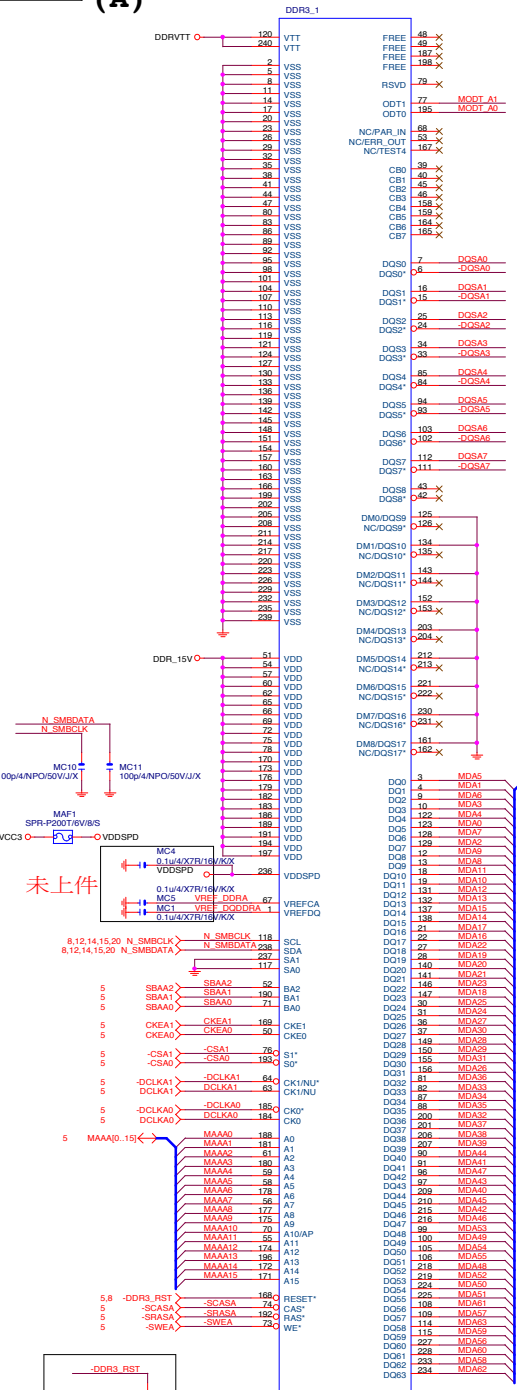
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Size: Custom Document Number: **GA-H81M-S2V**

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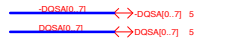
DDR3

(A)

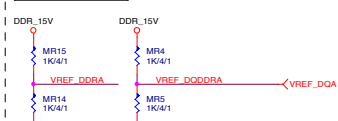


DDR3240BK/VAD

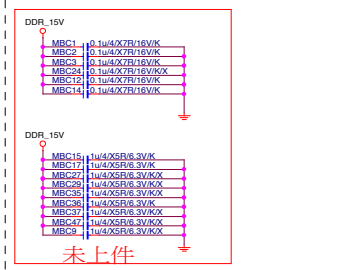
BLACK CONNECTOR



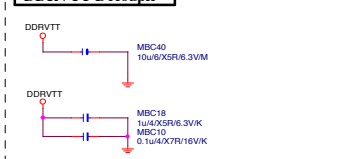
DDR3 VREF



DDR15V Decouple



DDRVTT Decouple



Gigabyte Technology

Title: DDRIII CHANNEL A

Size: Document Number GA-H81M-S2V

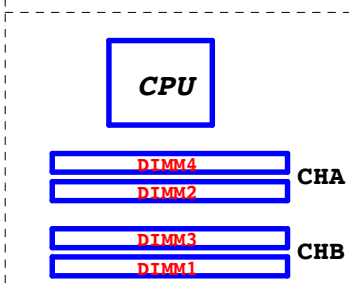
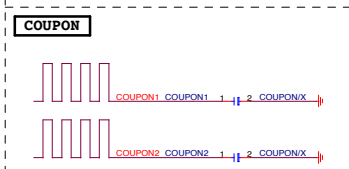
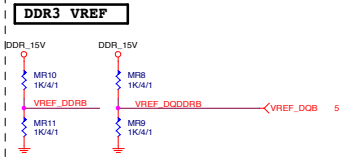
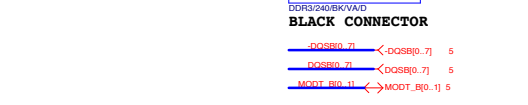
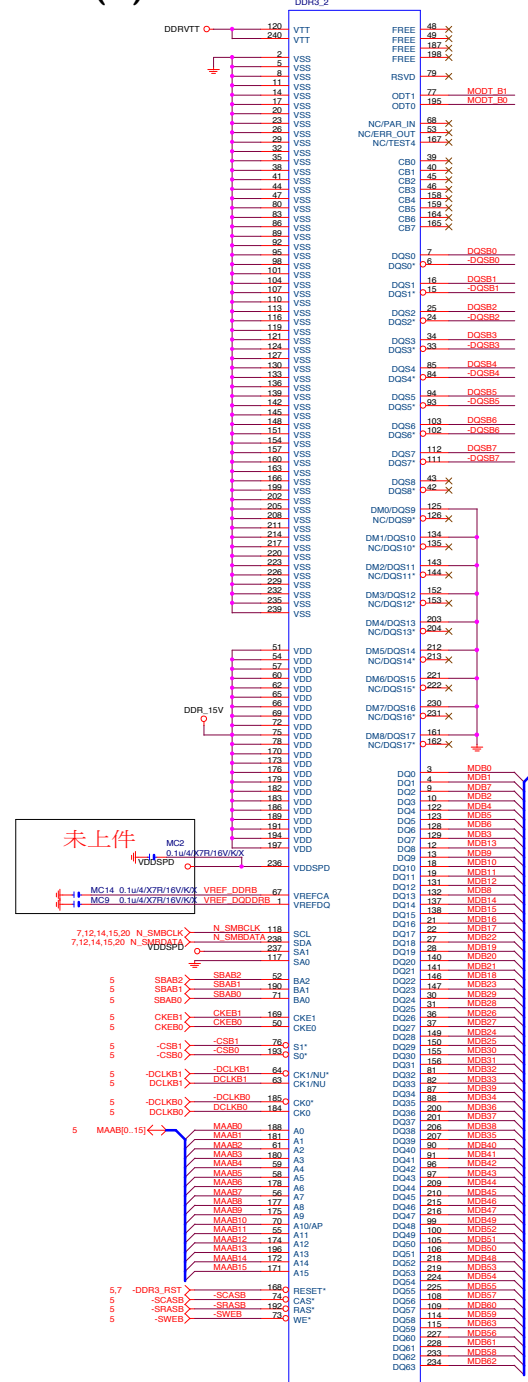
Customer: GA-H81M-S2V

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DDR3

(B)



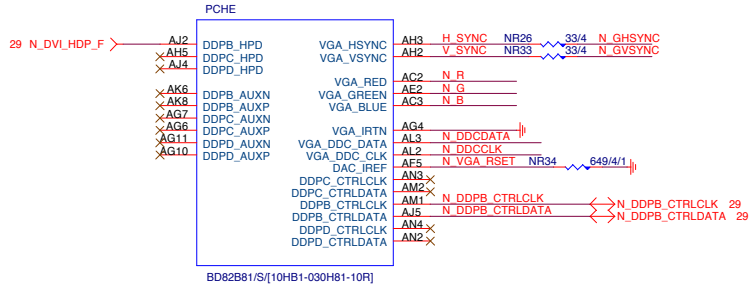
Group 内有做 Swap

Group 内有做 Swap

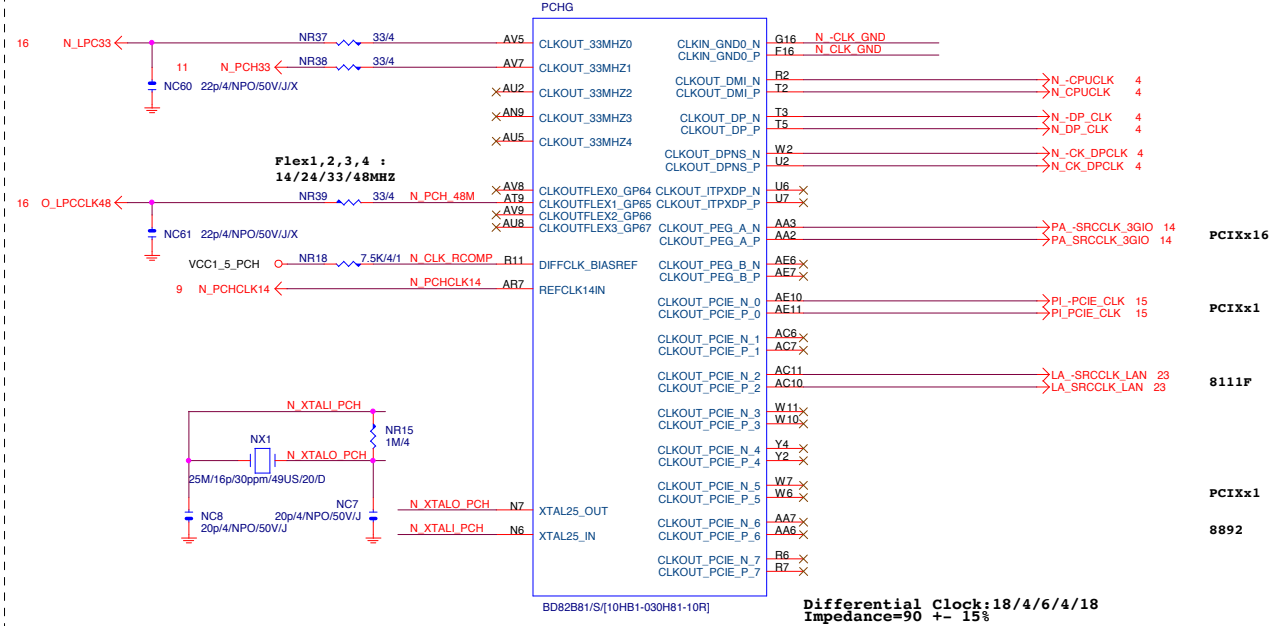




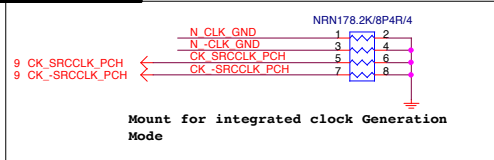
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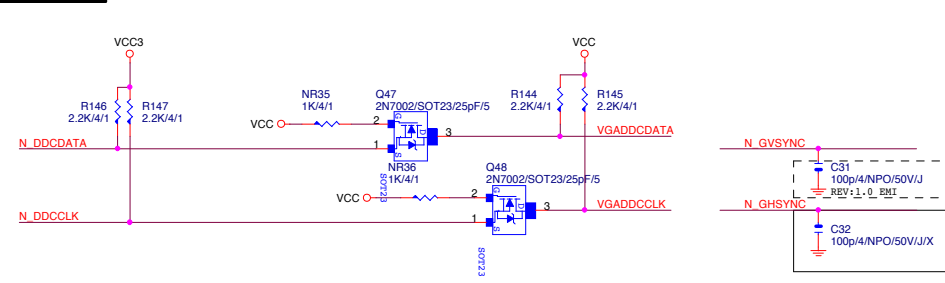
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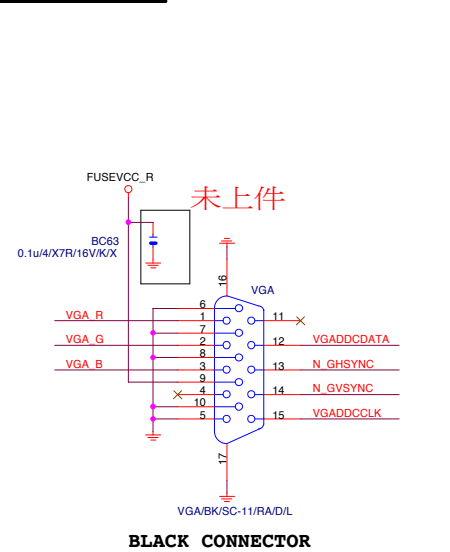
**PCH CLK PD**



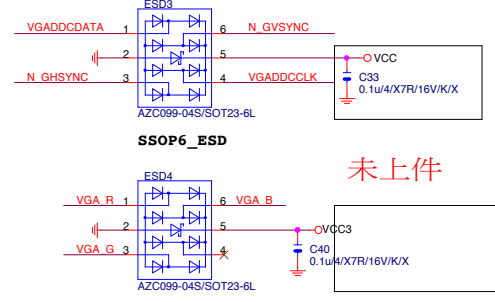
**VGA DDC**



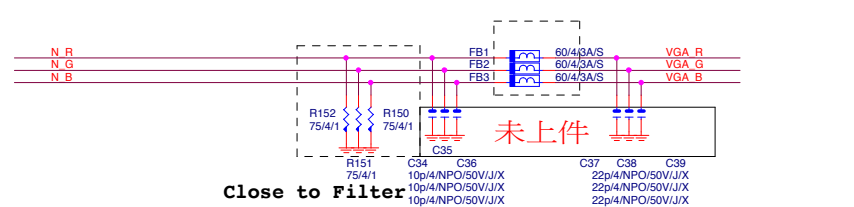
**VGA CONNECTOR**



**VGA ESD**



**VGA DDC**

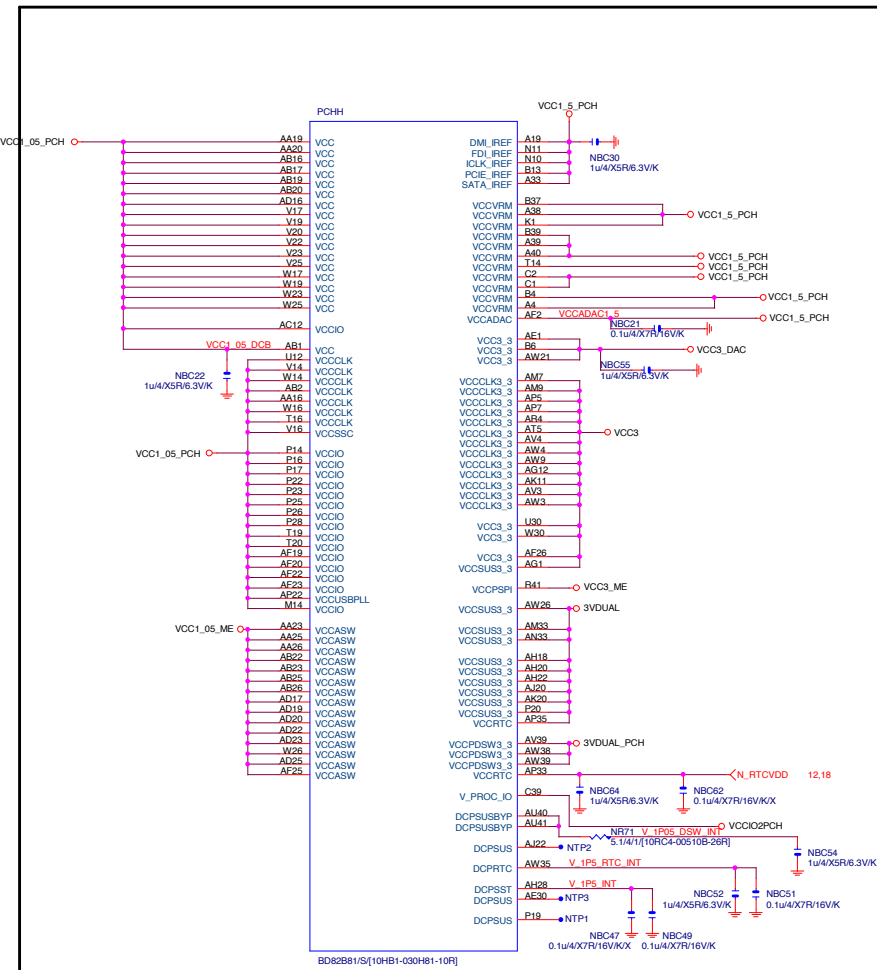


<b>Gigabyte Technology</b>		
<b>PCH DISPLAY ,CLK BUFFER</b>		
<b>GA-H81M-S2V</b>		
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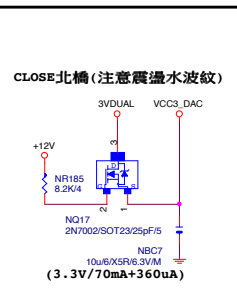




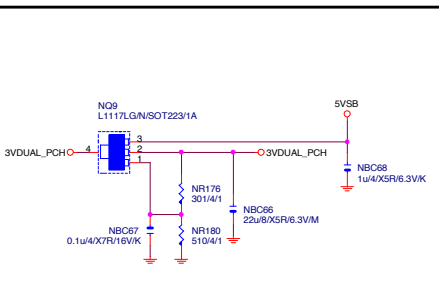
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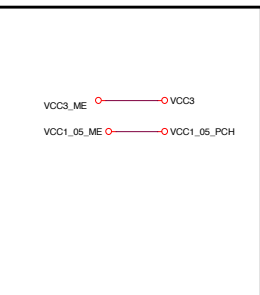
**VCC3\_DAC**



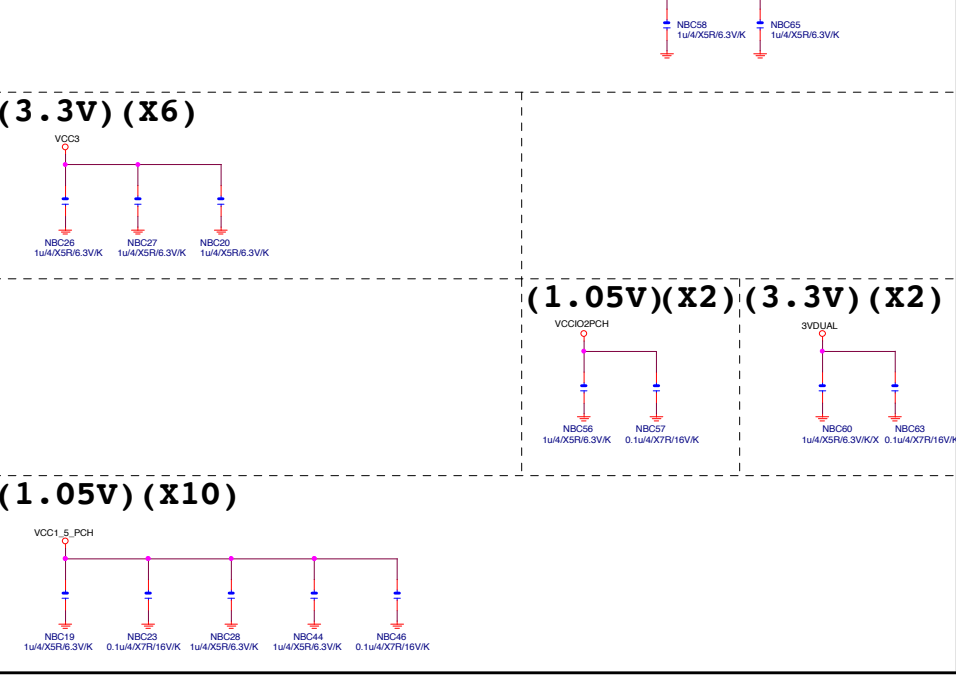
**3VDUAL\_PCH**



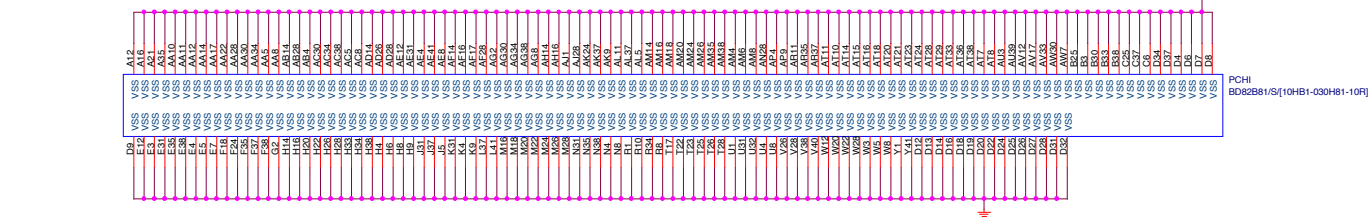
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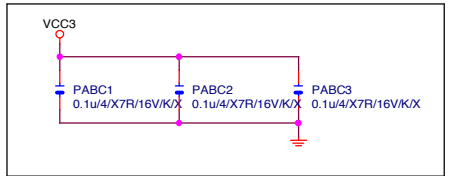
**CAP**



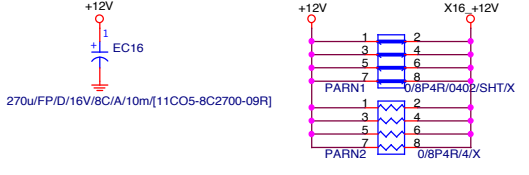
**PCH (I)**



**PCIEX16 CAP**



**PCIEX16 PROTECT SHT**

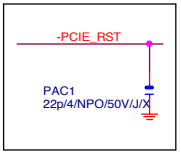
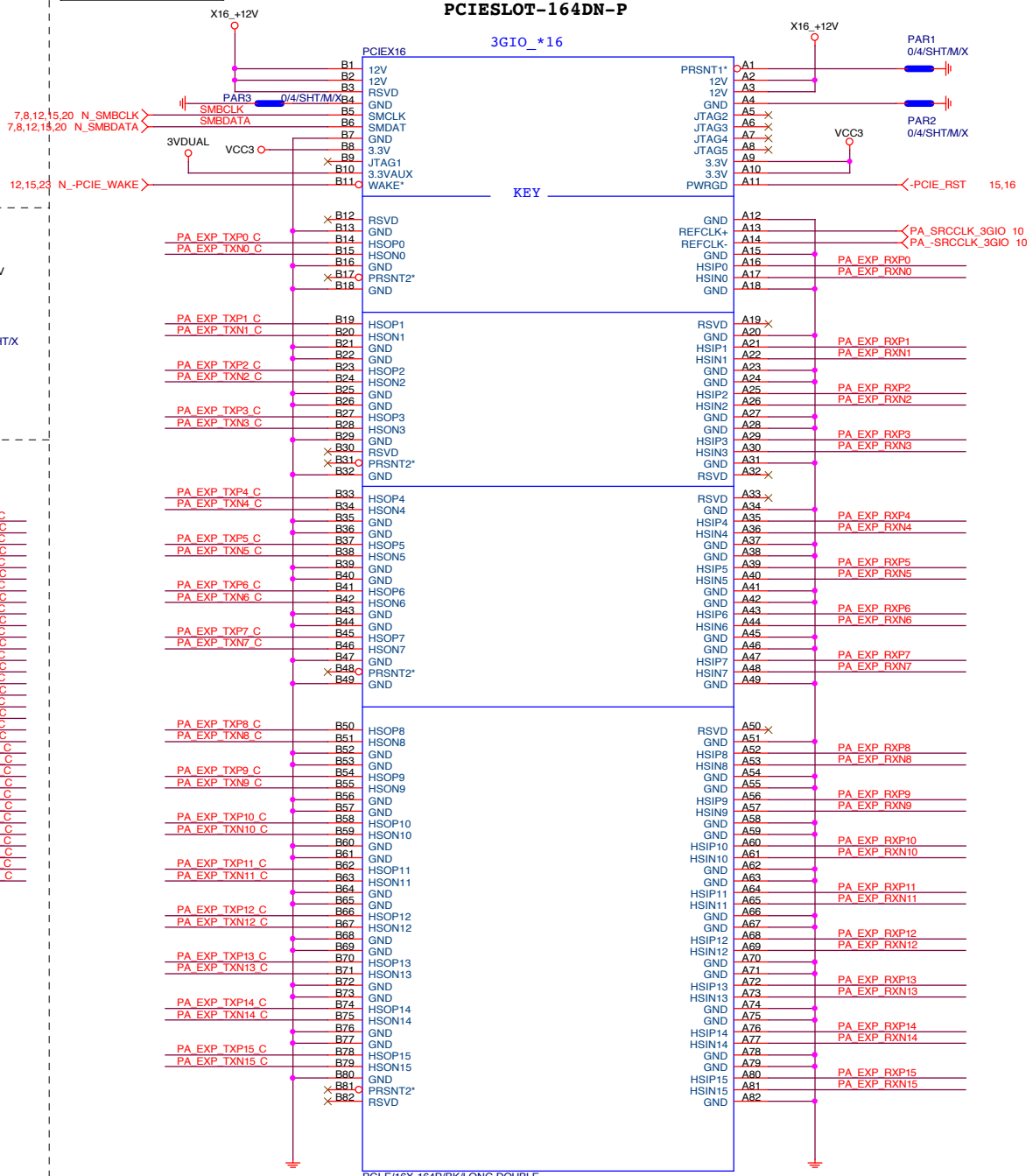


**PCIEX16 AC CAP**

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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
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PA_EXP_TXN7	PAC18	0.22u4/X5R/6.3V/K	PA_EXP_TXN7_C
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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\_RXP0\_15] 4  
 PA\_EXP\_RXN0\_15] >>> PA\_EXP\_RXN0\_15] 4  
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**PCIEX16 SLOT**



PCI-E16X-164P/BK/LONG DOUBLE  
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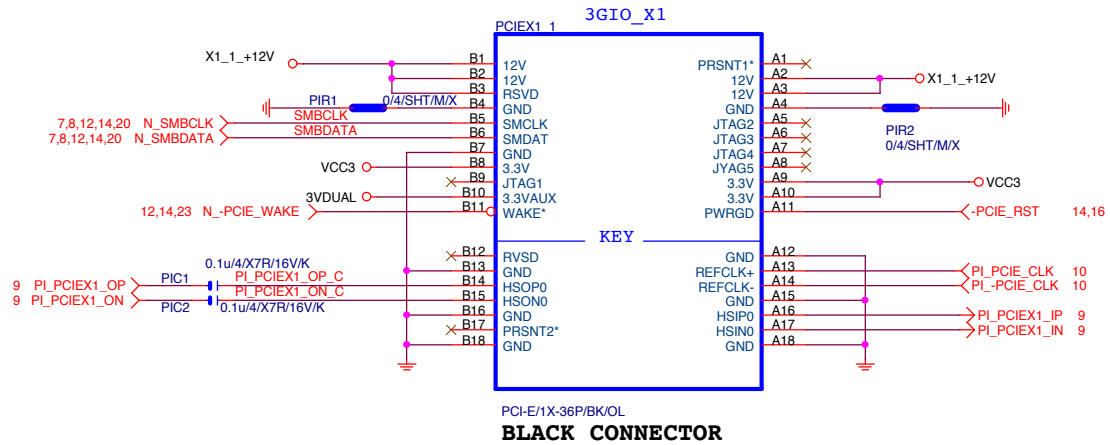
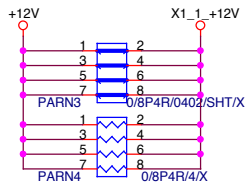
**Gigabyte Technology**

**PCI EXPRESS \* 16**

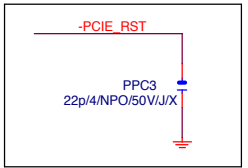
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**PCIEX1 SLOT**

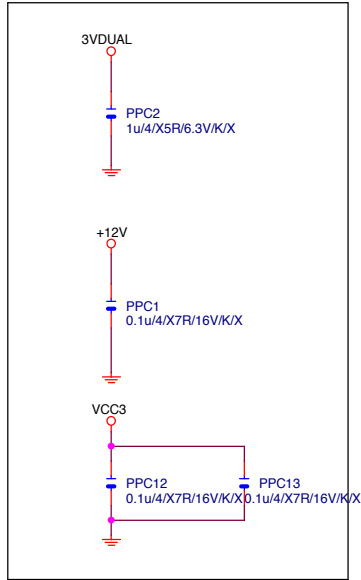
**PCIEX1 PROTECT SHT**



PCI-E1X-36P/BK/OL  
**BLACK CONNECTOR**



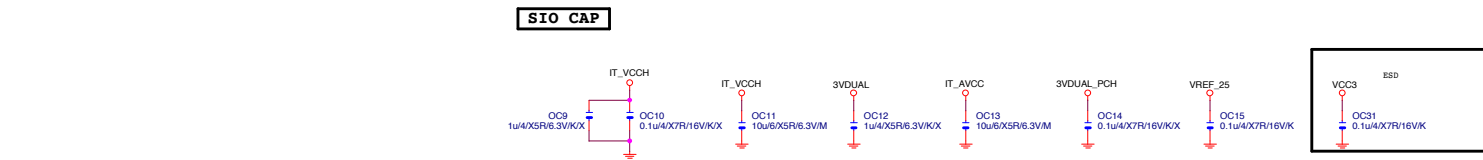
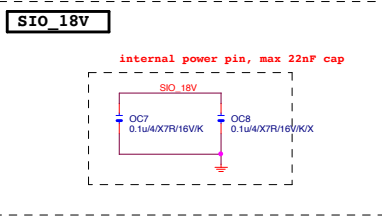
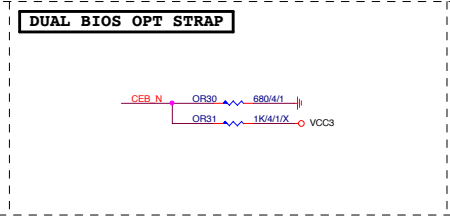
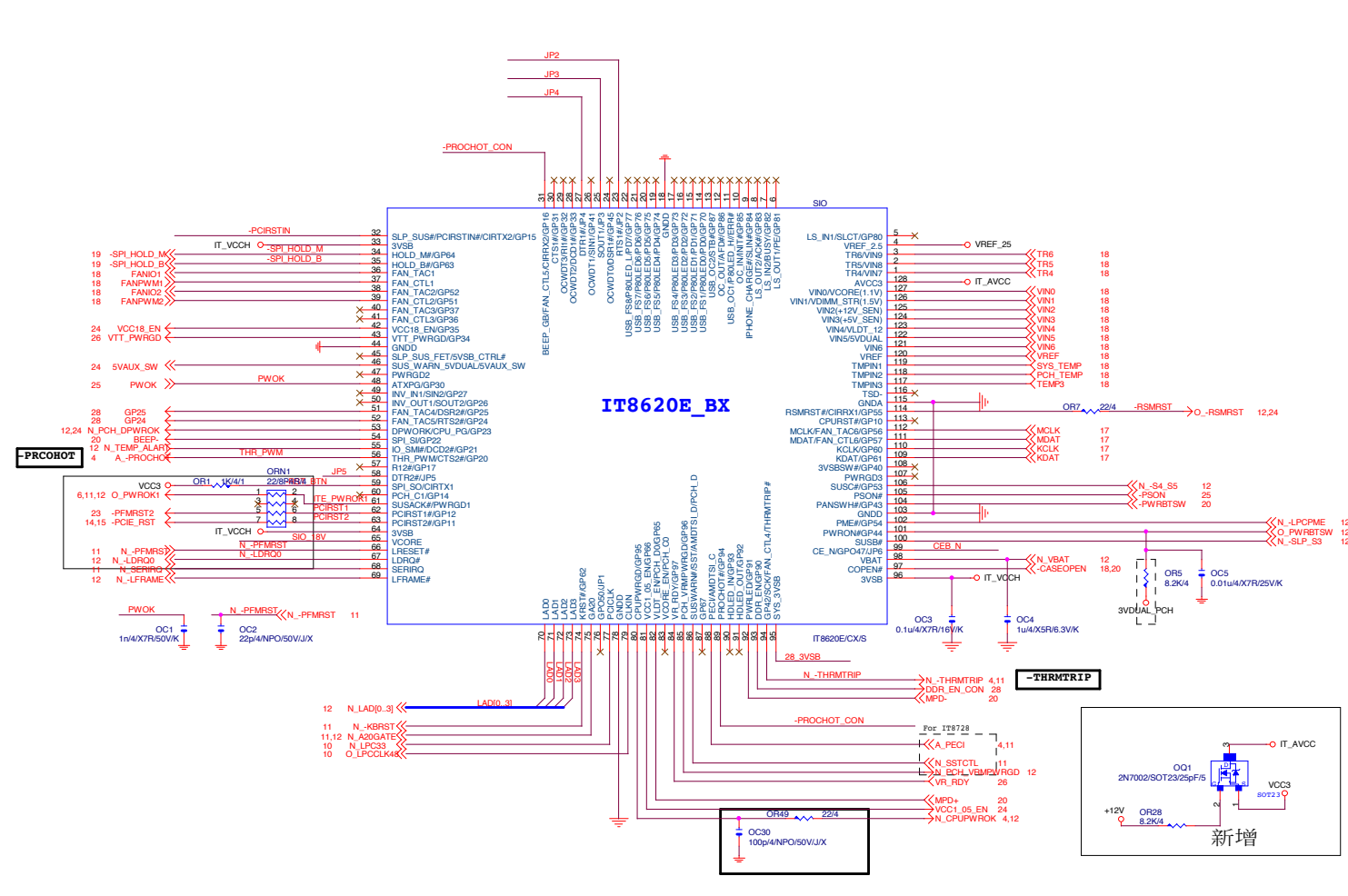
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未上件

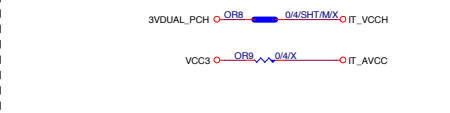
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<b>PCI EXPRESS X 1 PORT</b>			
Title	Document Number		Rev
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**SIO IT8620**

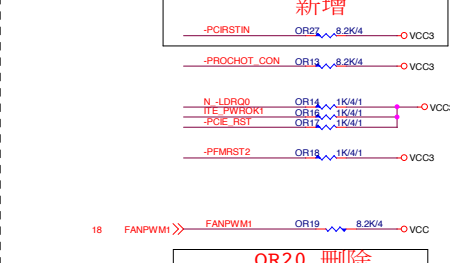


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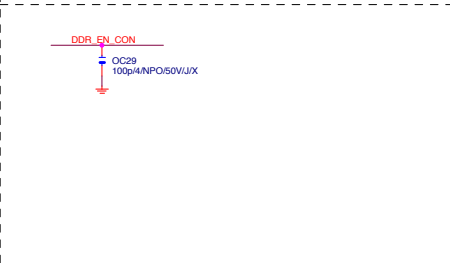
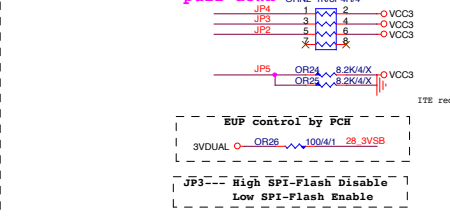
**PWR SHT**



**SIO PU**



**SIO STRAP**



**MB ID**

<b>Gigabyte Technology</b>		
Title	PCH GPIO, CTRL, AUDIO	
Size	Document Number	Rev
C	<b>GA-H81M-S2V</b>	<b>1.0</b>
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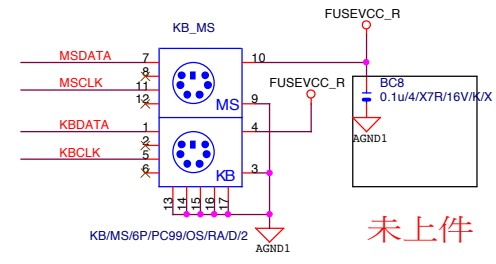


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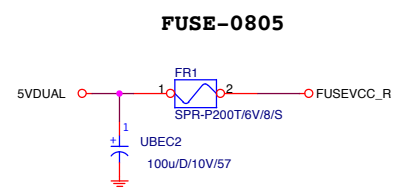
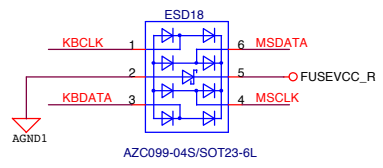
**KB/MS**

**KB\_MS ESD**

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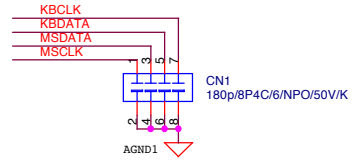
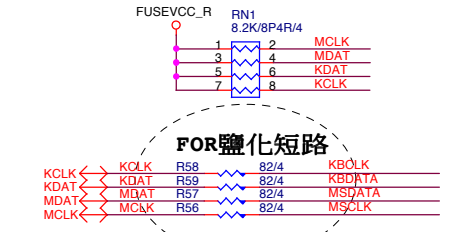
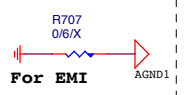


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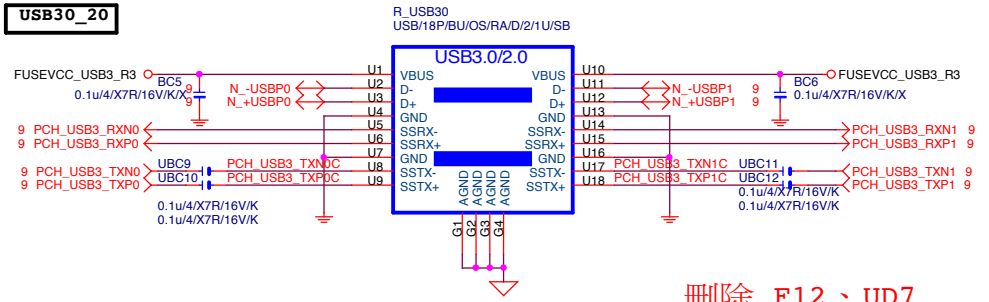


Close to connector

**COM RI**



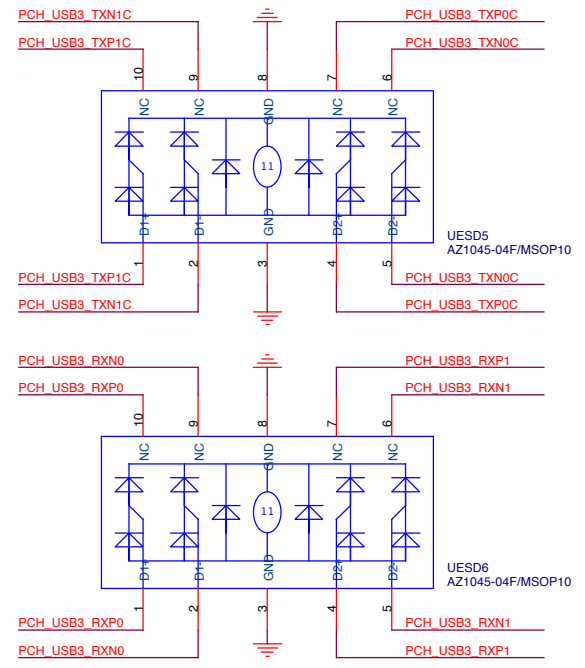
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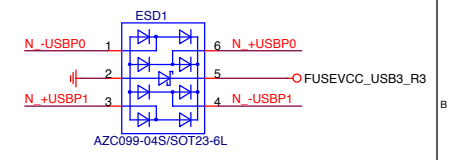
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**USB30\_20 ESD PROTECT**

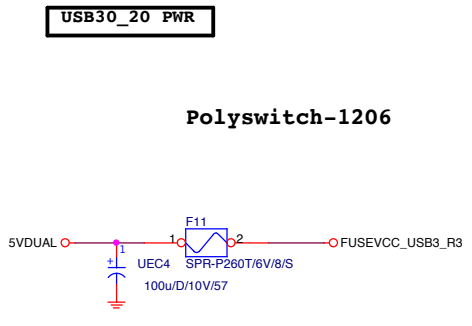
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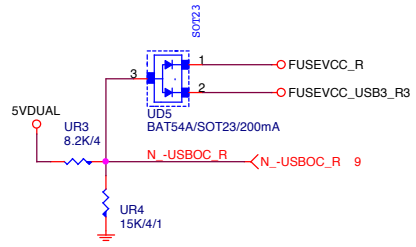
**USB POWER PROTECT**



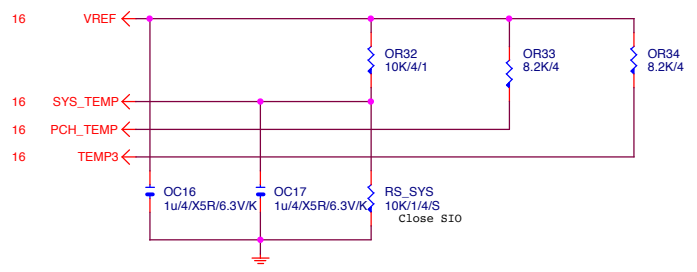
**USB30\_20 PWR**



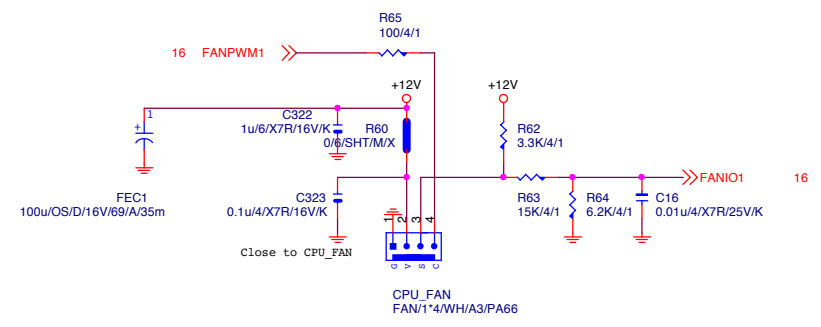
**-USB0C\_R0**



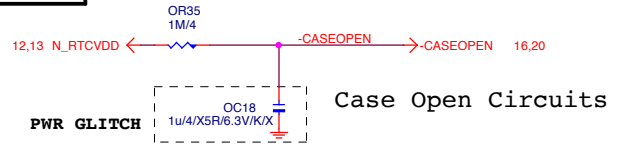
**TEMP H/W MONITOR**



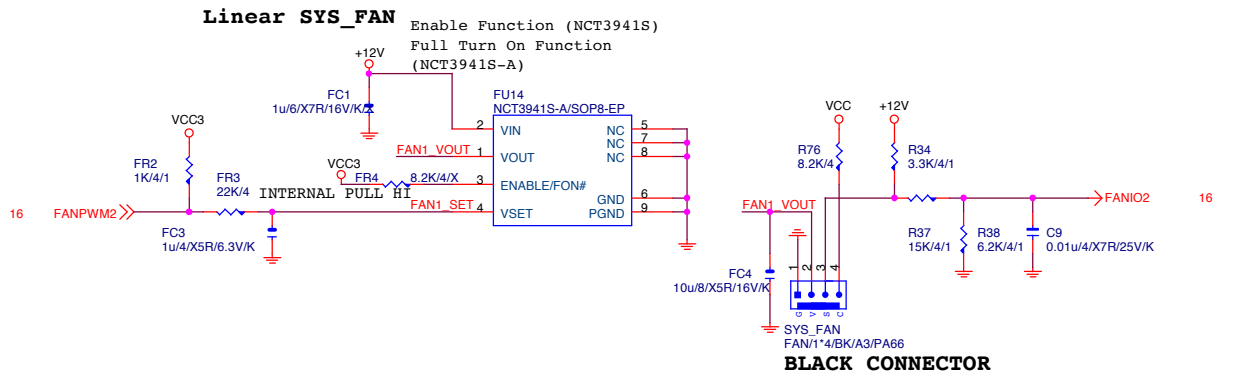
**CPU SMART FAN**



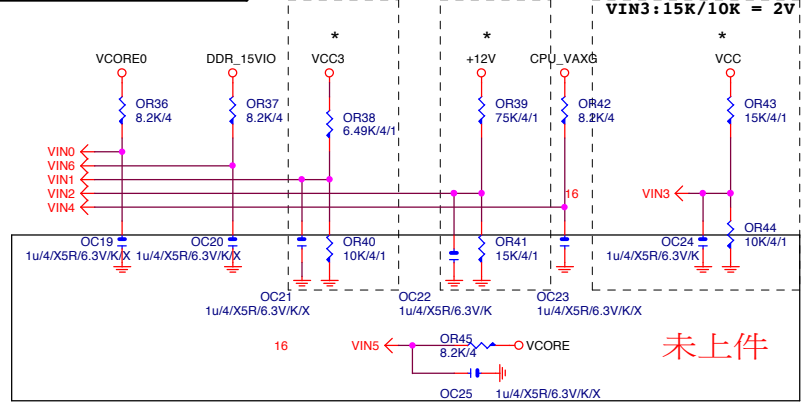
**CASE OPEN**



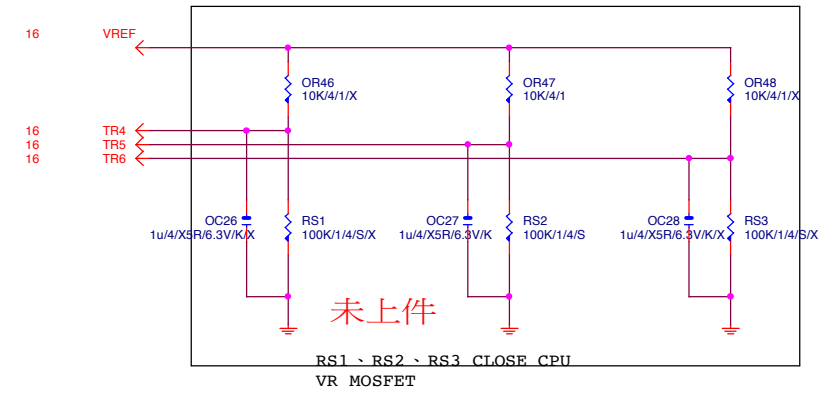
**SYS SMART FAN**



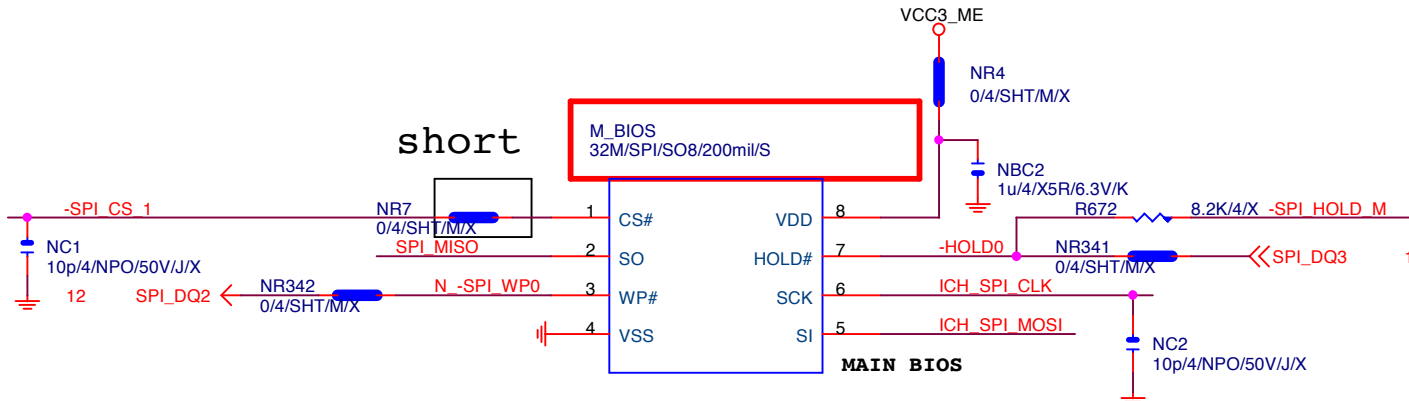
**VOLTAGE-- H/W MONITOR**



**-PROHOT**

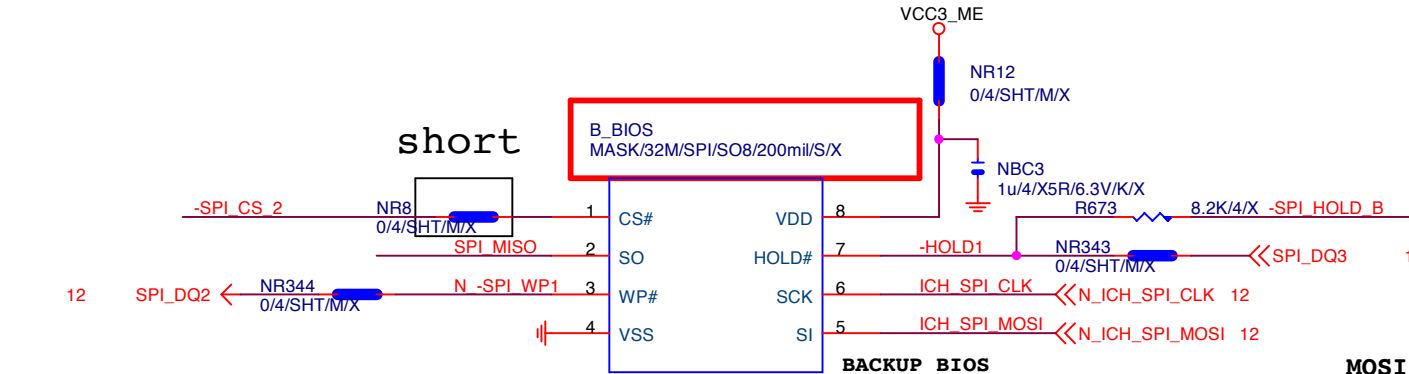


<b>Gigabyte Technology</b>			
Title <b>HWM,FAN CTRL,OV</b>			
Size Custom	Document Number <b>GA-H81M-S2V</b>	Rev <b>1.0</b>	
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**short**

M\_BIOS  
32M/SPI/SO8/200mil/S

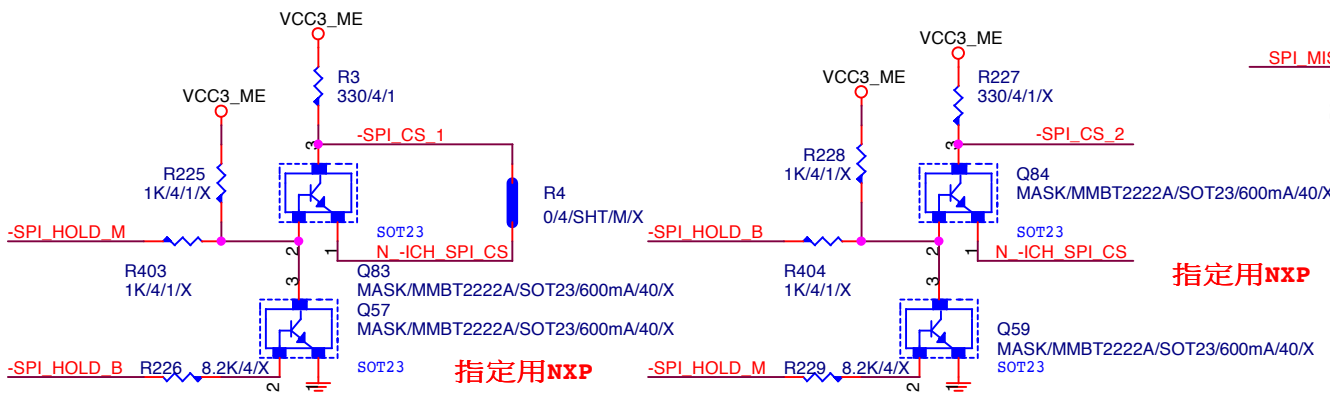
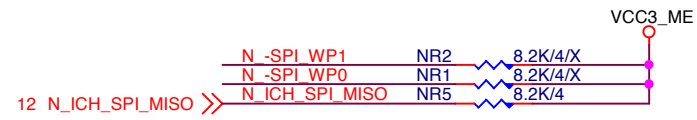
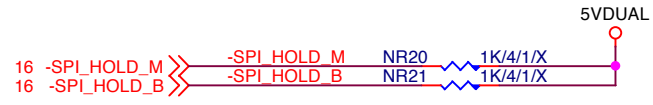
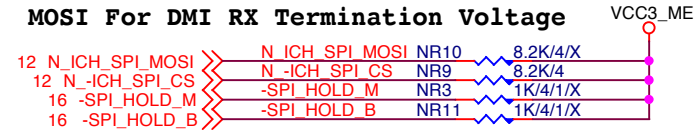


**short**

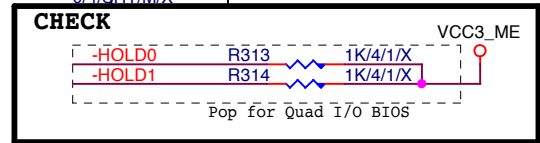
B\_BIOS  
MASK/32M/SPI/SO8/200mil/S/X

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

1 means floating  
0 means PD 1K



**short**



**Gigabyte Technology**

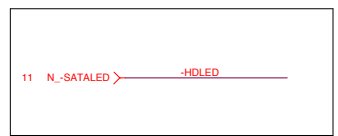
**SINGLE BIOS**

GA-H81M-S2V

Rev 1.0

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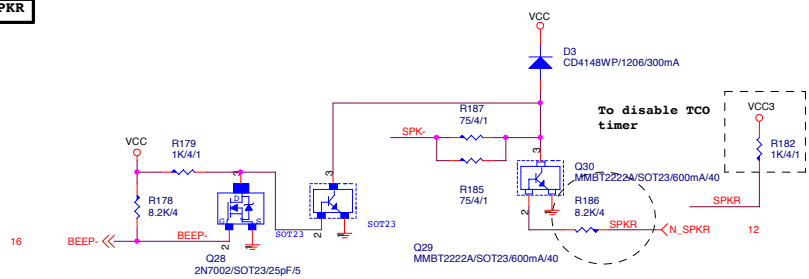
SATA LED



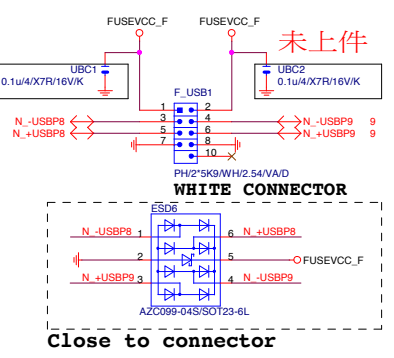
新增

-USB0C\_F

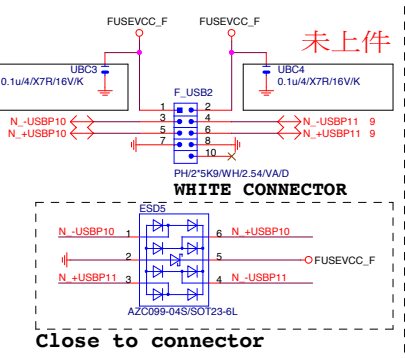
SPKR



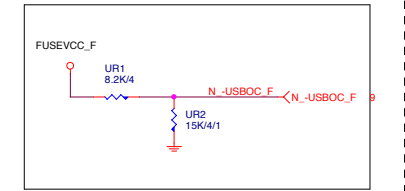
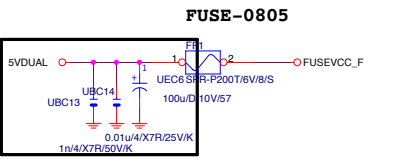
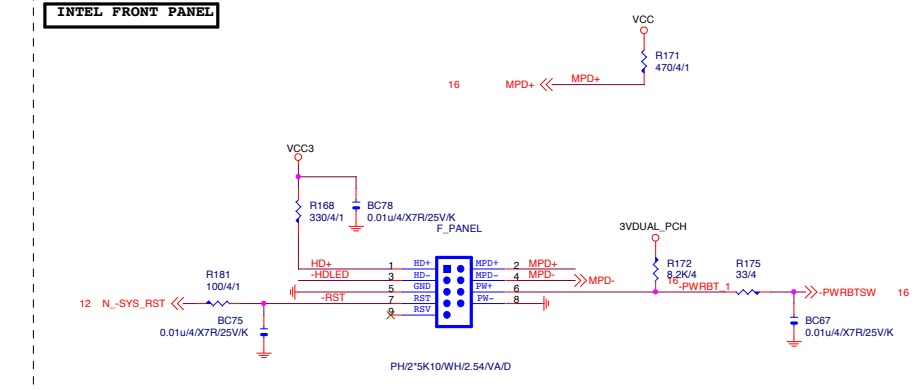
FRONT USB1



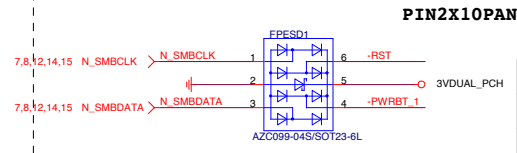
FRONT USB2



INTEL FRONT PANEL



删除UD8，原UR1 5VDUAL改接FUSEVCC\_F

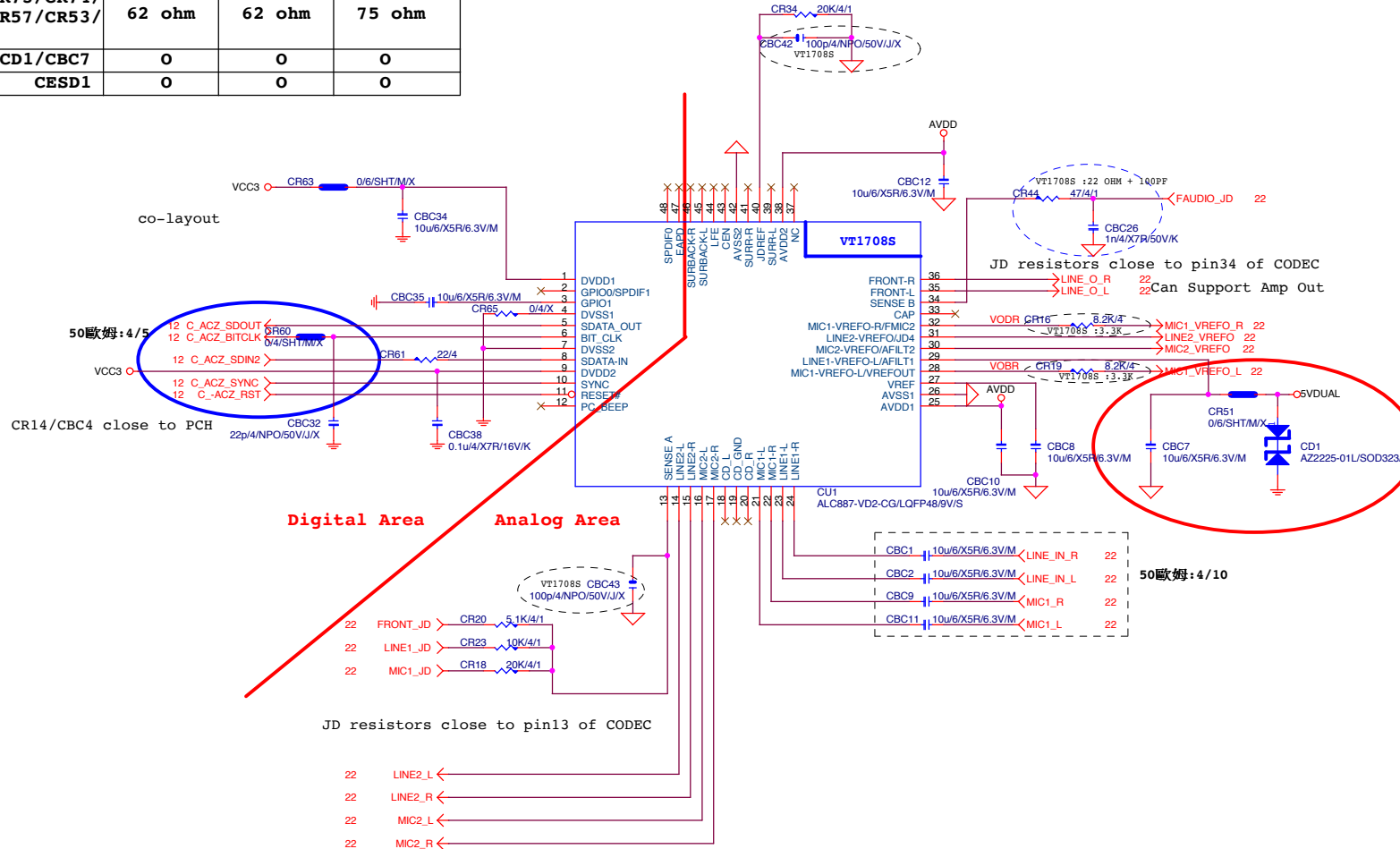


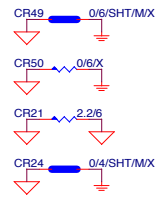
<b>Gigabyte Technology</b>			
<b>FP,F_USB,USB PWR,SPKR,SATA LED</b>			
Size Custom	Document Number	<b>GA-H81M-S2V</b>	
Date: Thursday, May 15, 2014	Sheet	20	of 29
			Rev <b>1.0</b>

F\_USB1, F\_USB2 4-Port 2.6A

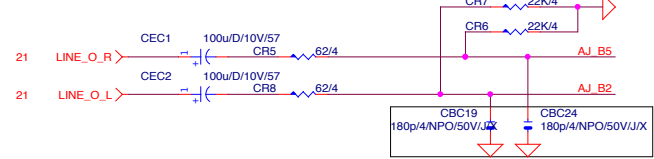
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	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





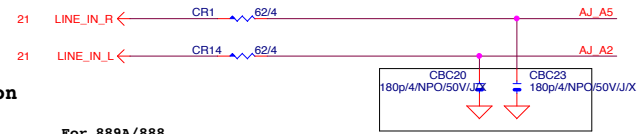
**LINE-OUT**



**LINE-IN**

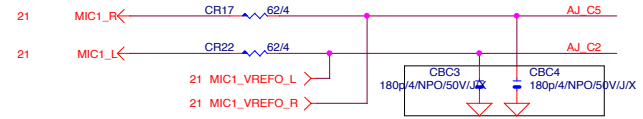
Verify MIC function in LINE-in

Only reserved for ALC888

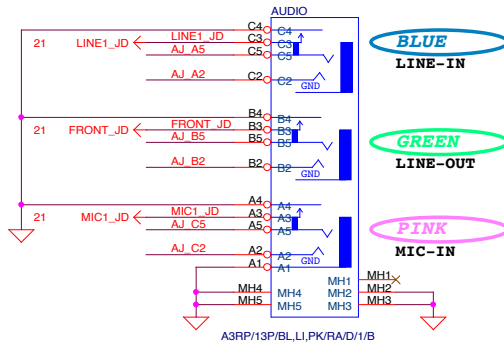


For 889A/888

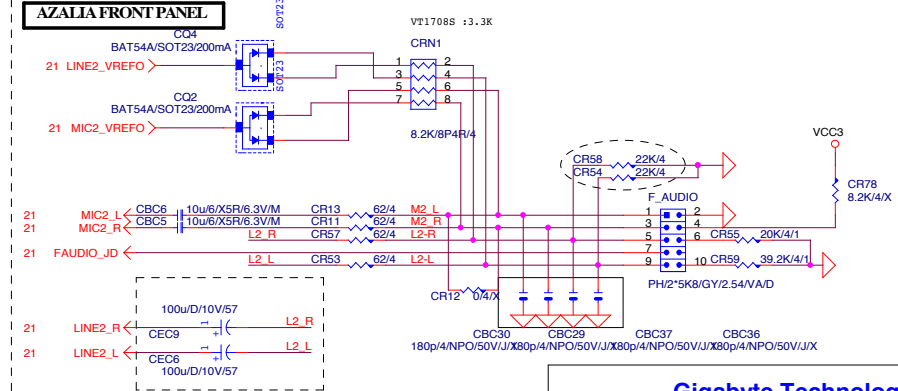
**MIC-IN**



**SPDIF\_OUT**



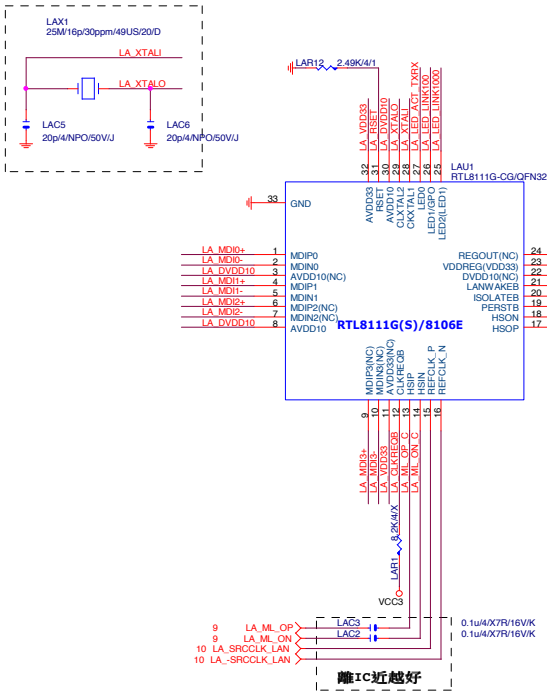
**AZALIA FRONT PANEL**



**Gigabyte Technology**

Title			AUDIO JACK		
Size			GA-H81M-S2V		
Custom	Document Number				Rev
					1.0
Date:	Thursday, May 15, 2014	Sheet	22	of	29

**LAN:RTL8111G**

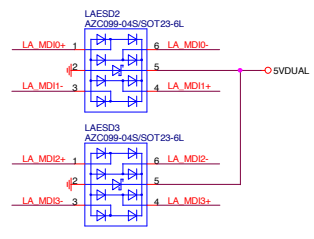


**SRCCLK-->50歐姆:[18/4/10/4/18]**

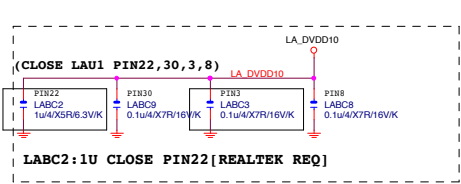
**LA\_ML-->80歐姆:[15/5/5/15]**

離IC近越好

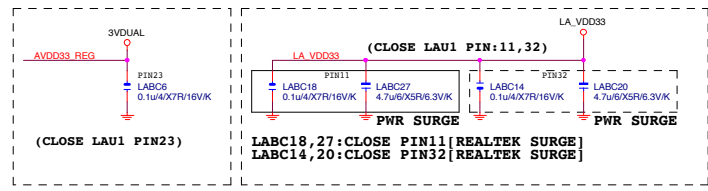
**MDI ESD預留28KV \***



**LAN POWER**

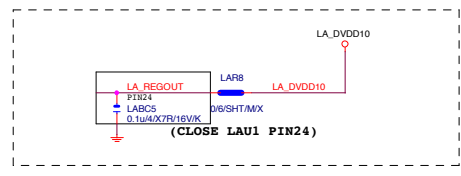


**LABC2:1U CLOSE PIN22[REALTEK REQ]**



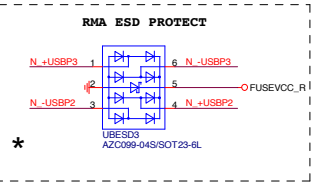
**(CLOSE LAU1 PIN23)**

**LABC18,27:CLOSE PIN11[REALTEK SURGE]**  
**LABC14,20:CLOSE PIN32[REALTEK SURGE]**

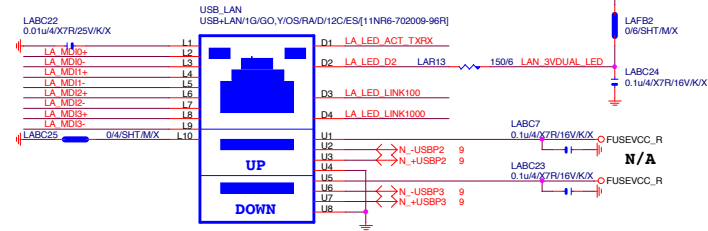


**NOTE:**  
**RT8106B: PIN3, 11, 22, 24-->NC**  
**LABC2LABC3, LABC5, LABC18, LABC27-->N/A**

**USB LAN CONNECTOR**

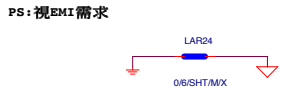


使用RU9 USB\_LAN可省略LAESD1保護LED

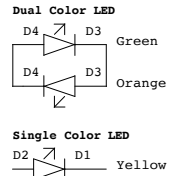
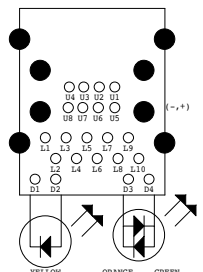


**LA\_MDI-->100歐姆:[20/4/8/4/20]**

**EMI SHORT PAD**



PS:視EMI需求



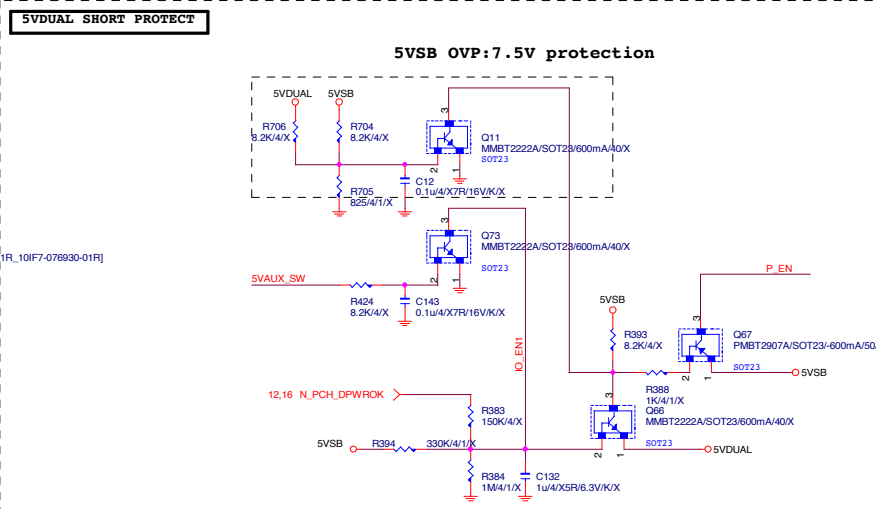
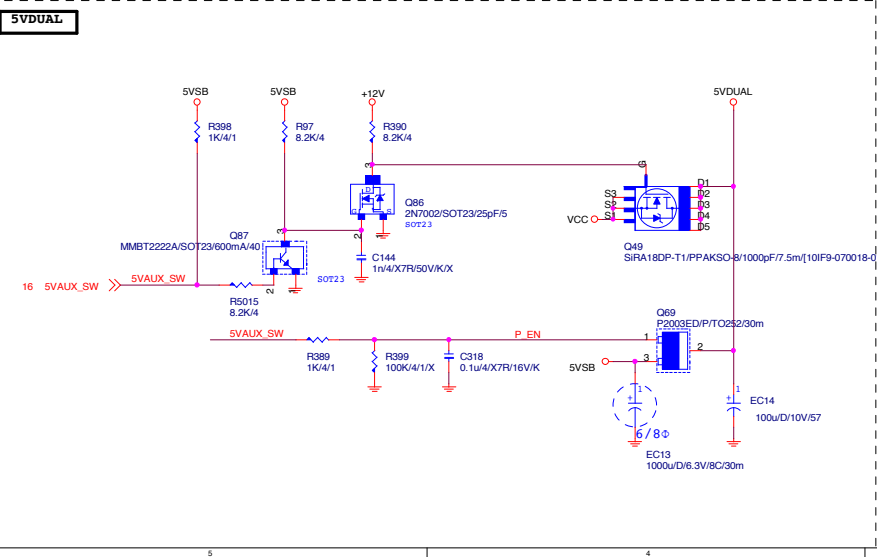
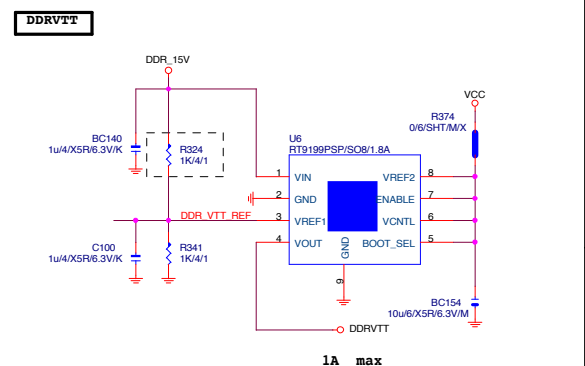
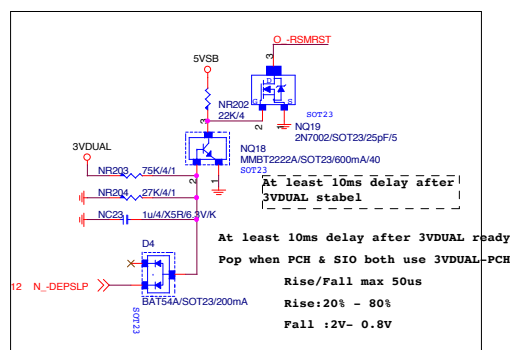
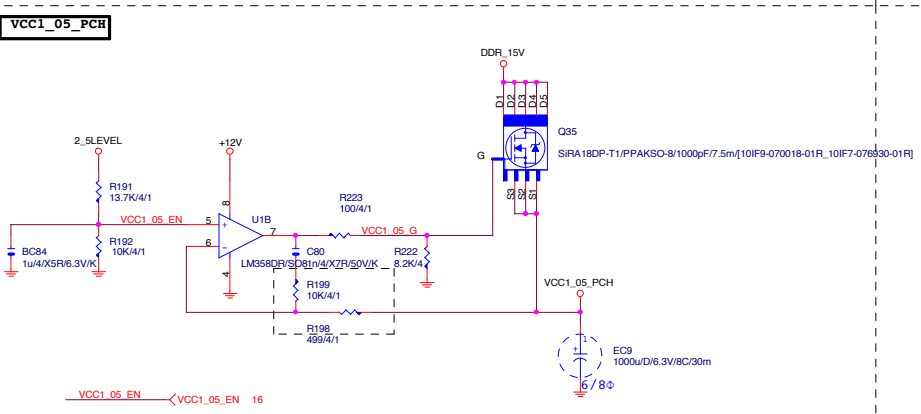
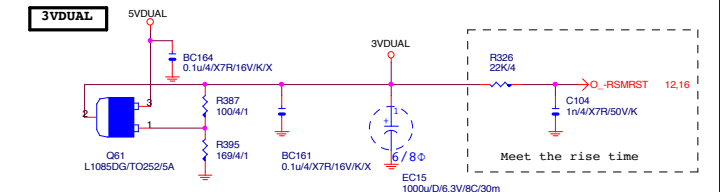
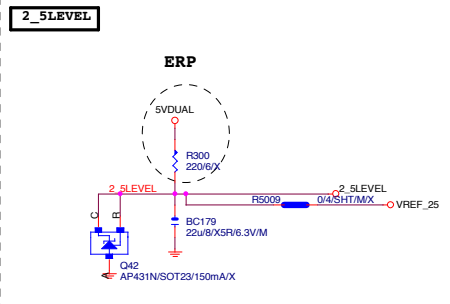
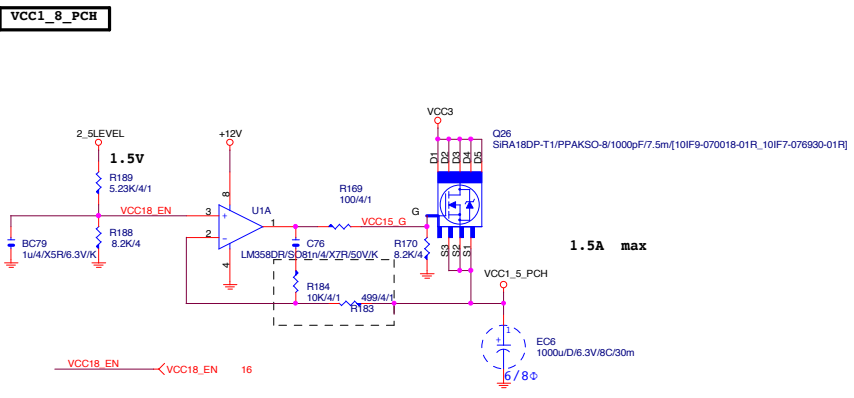
**注意:USB PORT(目前:暫代6,7PORT)**  
**USB-->90歐姆:[15/4.5/7.5/4.5/15]**

**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

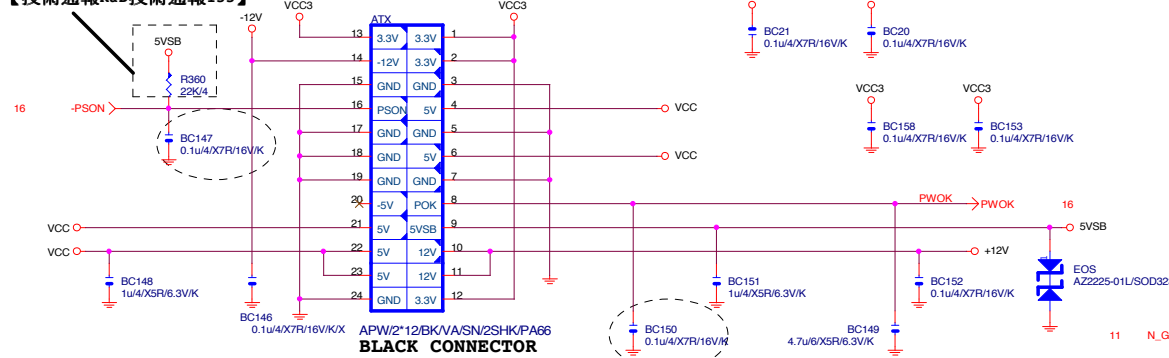
<b>Gigabyte Technology</b>		
<b>REALTEK RTL8111G</b>		
Size	Document Number	Rev
Custom	<b>GA-H81M-S2V</b>	<b>1.0</b>
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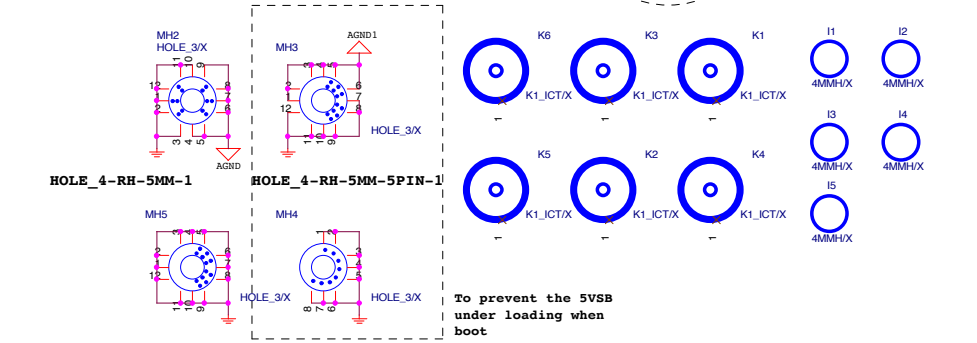


**ATXX24 POWER CONNECTOR**

【技術通報R&D技術通報155】

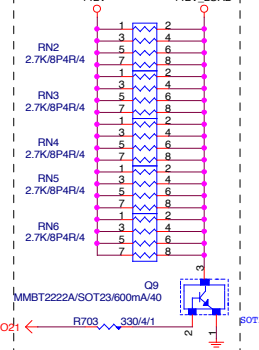


**BLACK CONNECTOR**

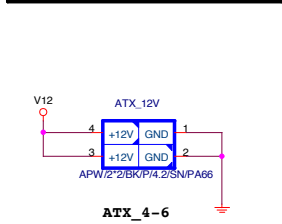


【技術通報R&D技術通報153】

To fix 12V light load abnormal issue

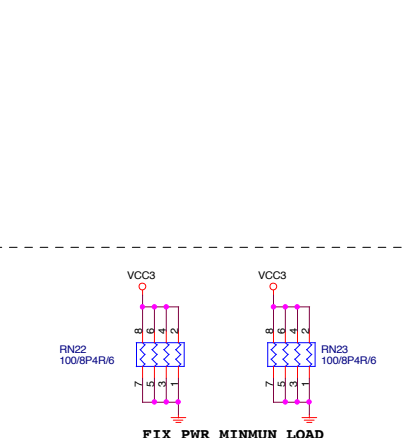


**ATXX4 POWER CONNECTOR**

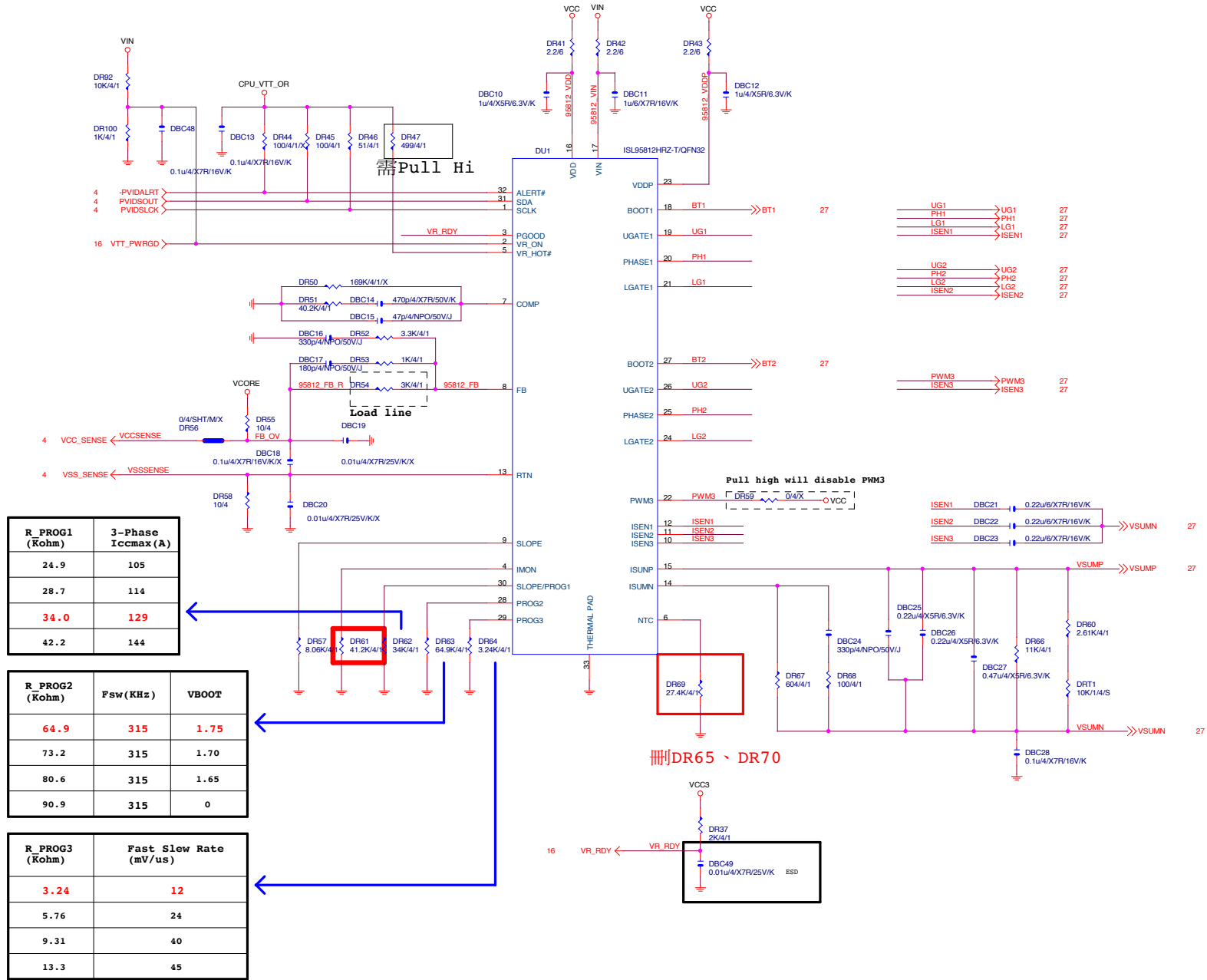


**PWOK PATCH**

【技術通報R&D技術通報154】



Gigabyte Technology		
Title <b>ATX CONNECTOR</b>		
Size	Document Number	Rev
Custom	<b>GA-H81M-S2V</b>	<b>1.0</b>
Date:	Thursday, May 15, 2014	Sheet 25 of 29

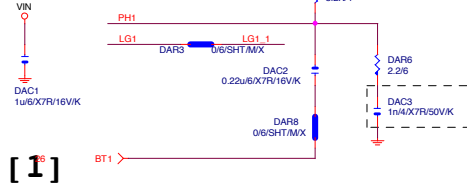
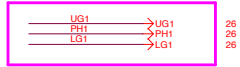


R_PROG1 (Kohm)	3-Phase Iccmax (A)
24.9	105
28.7	114
<b>34.0</b>	<b>129</b>
42.2	144

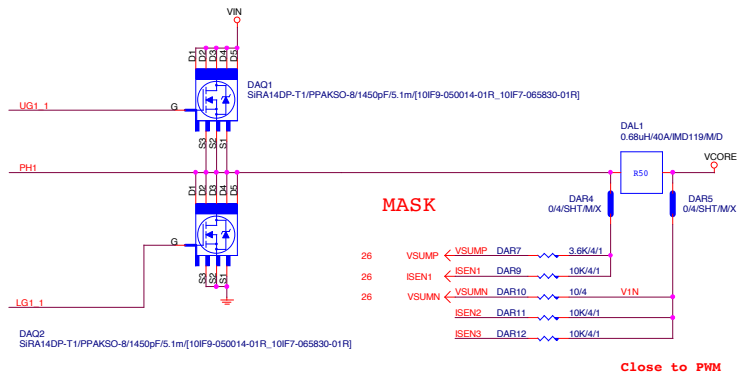
R_PROG2 (Kohm)	Fsw (KHz)	VBOOT
<b>64.9</b>	<b>315</b>	<b>1.75</b>
73.2	315	1.70
80.6	315	1.65
90.9	315	0

R_PROG3 (Kohm)	Fast Slew Rate (mV/us)
<b>3.24</b>	<b>12</b>
5.76	24
9.31	40
13.3	45

**PHASE 1**

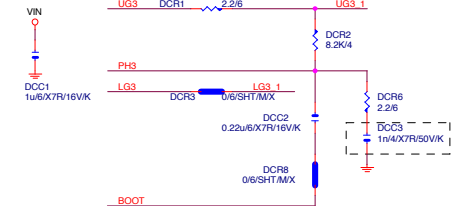
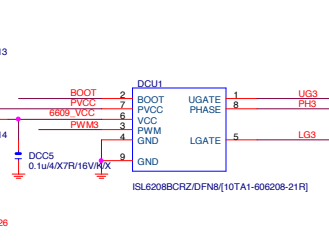


[ 1 ]

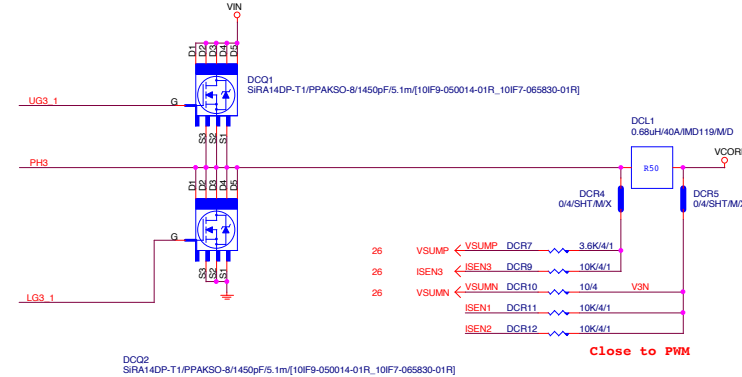


Close to PWM

**PHASE 3**

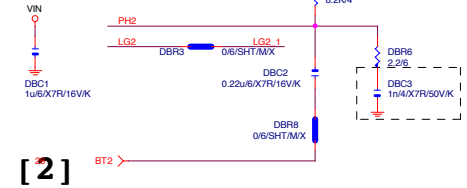
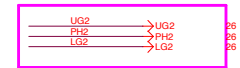


[ 3 ]

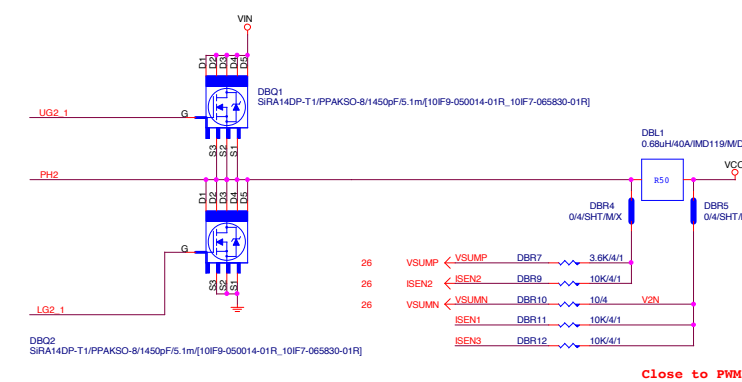


Close to PWM

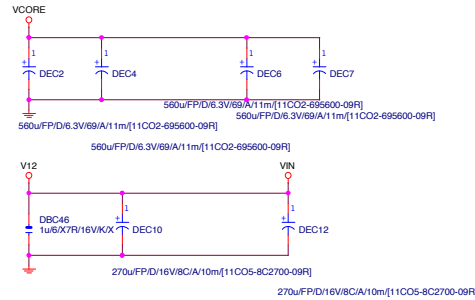
**PHASE 2**

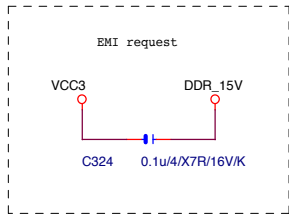
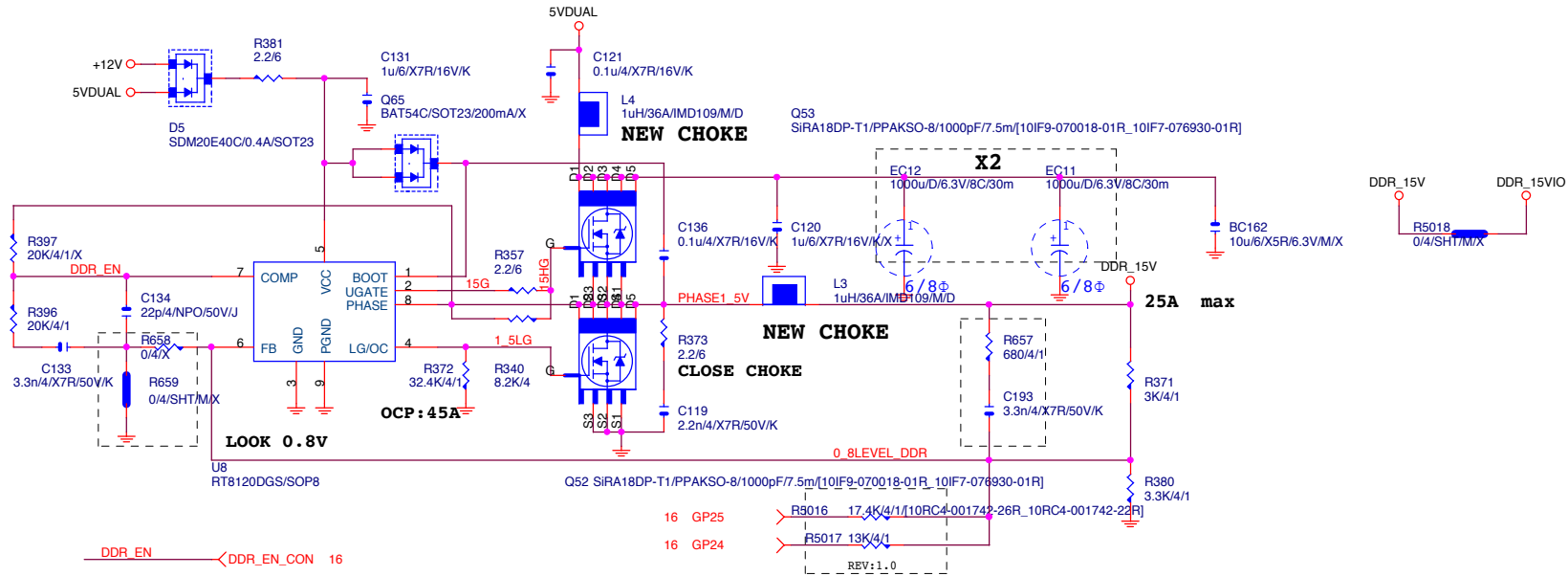


[ 2 ]



Close to PWM





VIN=5V, VOUT=1.5V, IOU=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

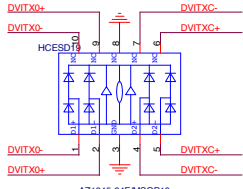
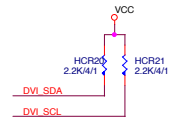
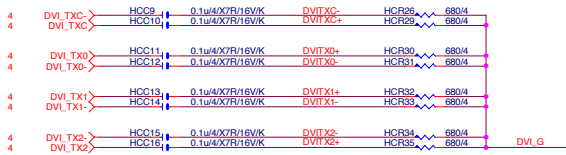
$$Rocset = (Iocp * Lgate, rdson) / Iocset$$

$$Rocset = (45A * 6.7mOhm) / 10uA = 30K$$

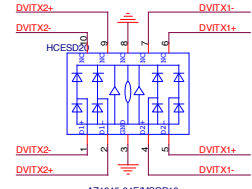
$$Iocset = 10uA$$

Gigabyte Technology

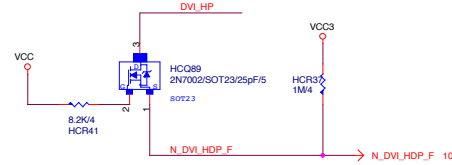
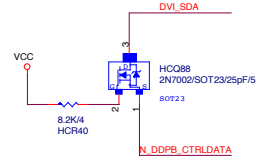
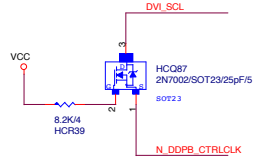
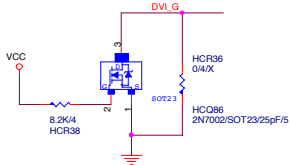
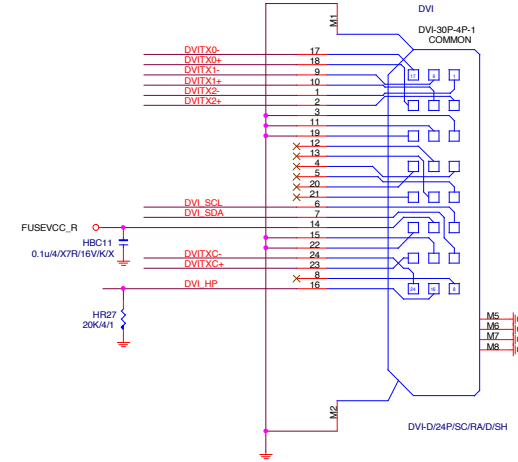
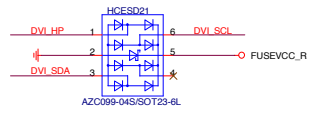
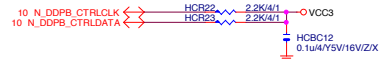
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