

Model Name: GA-H87N-WIFI

Revision 1.1

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 8728 LPC IO
16	COM,KB_USB30
17	HWM,FAN CTRL,OV,-PROCHOT
18	DUAL BIOS
19	FP,FUSB,SPK,SATALED
20	Realtek ALC892
21	REAR AUDIO JACK
22	INTEL LAN I217 (A)
23	Artheros AR8161B (B)
24	DISCRETE POWER
25	ATX,CLK GEN
26	RT8120_DDR POWER,M3 POWER
27	VCORE ISL95820_1

SHEET

TITLE

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

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Gigabyte Technology

Title			Cover Sheet
Size	Document Number	GA-H87N-WIFI	
Custom		Rev	1.1
Date:	Thursday, July 11, 2013	Sheet	1 of 31

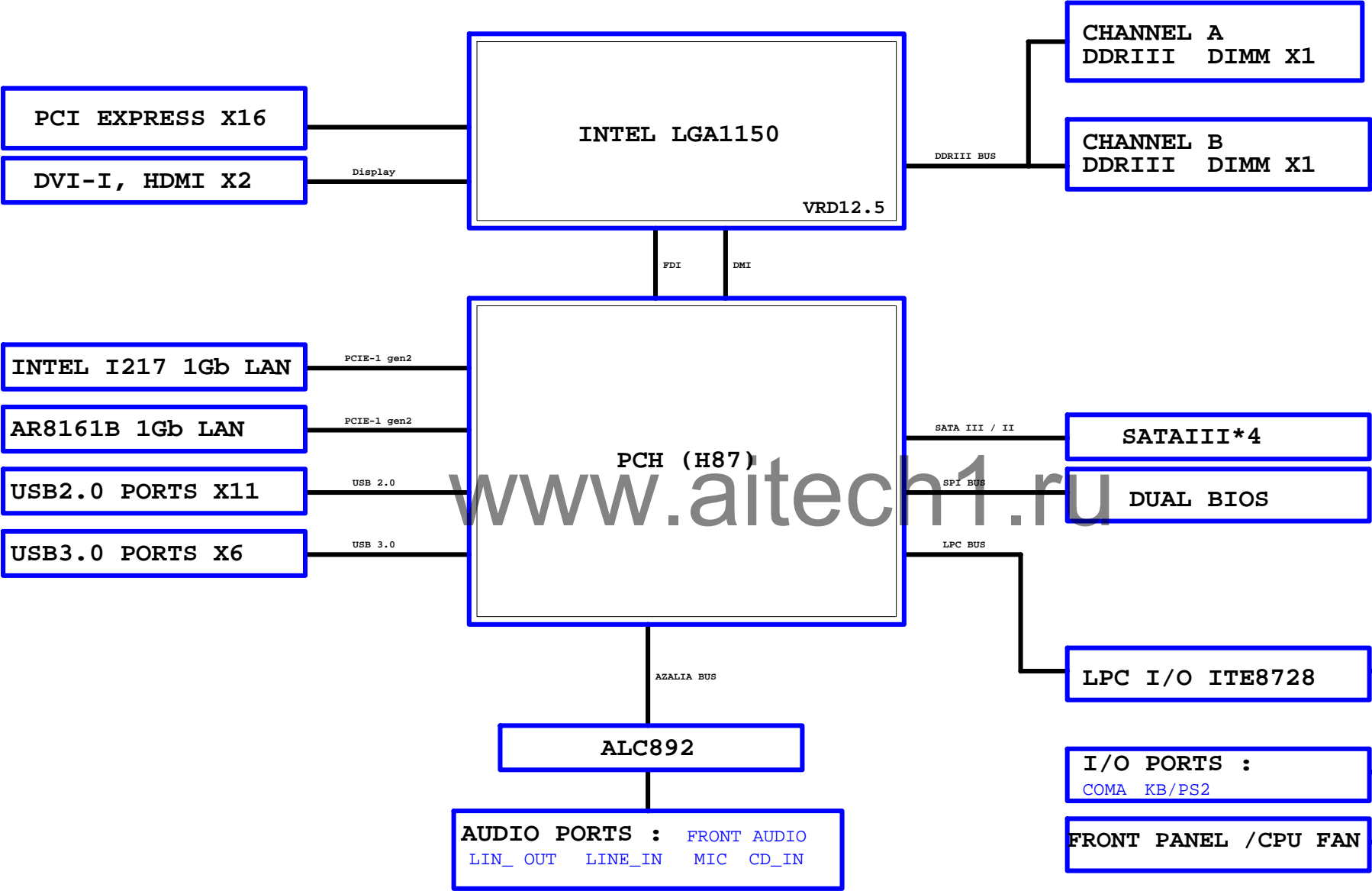
## Revision 1.1

## 2013/07/11

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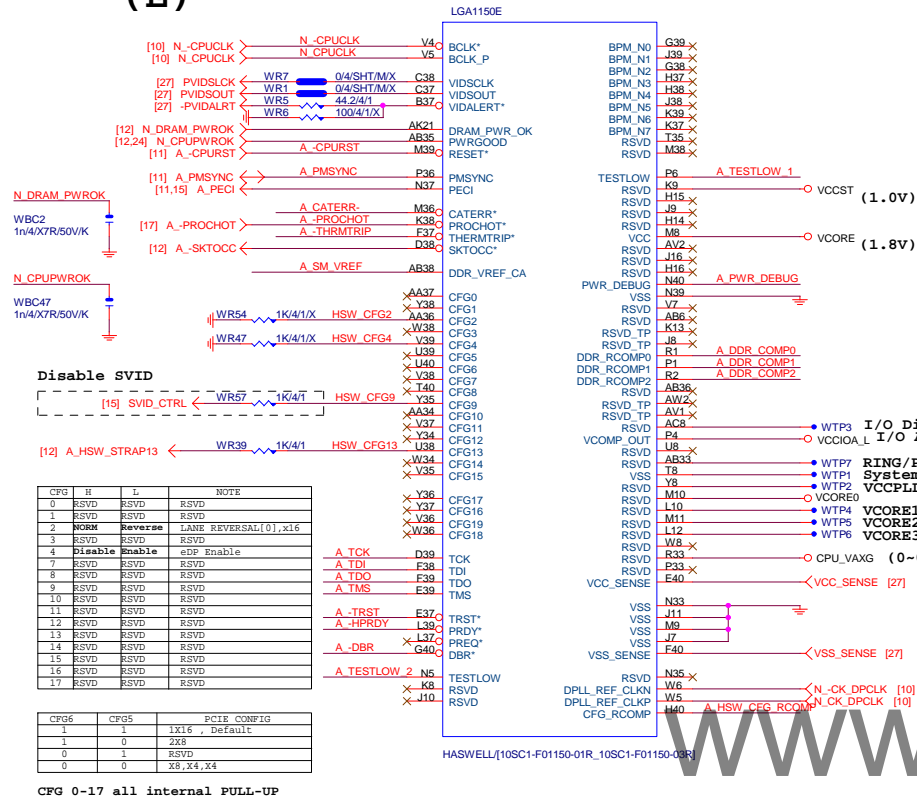
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BLOCK DIAGRAM



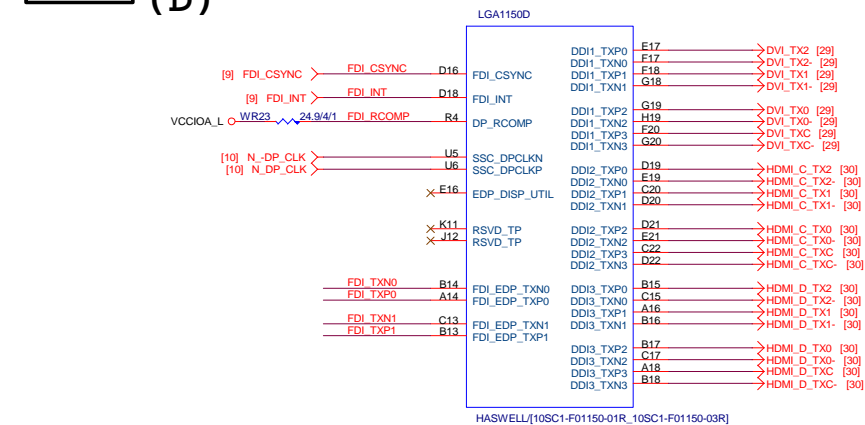
## LGA1150

(E)



## LGA1150

(D)



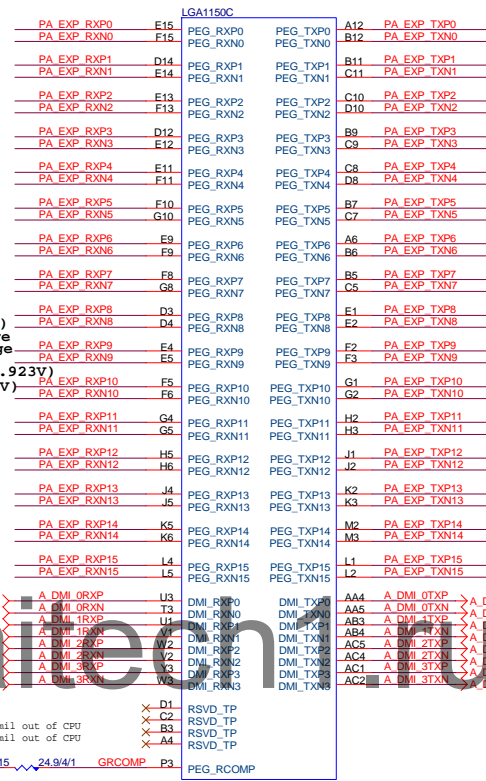
FDI:12/4/5/4/12(breakout min 6/4/4/4/6)  
Impedance=85 +- 17.5%

FDI\_TXP0\_11 → FDI\_TXP[0..1] [9]  
FDI\_TXN0\_11 → FDI\_TXN[0..1] [9]

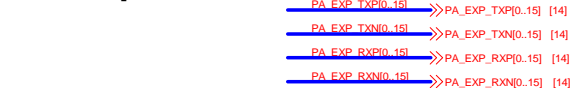
## LGA1155

(C)

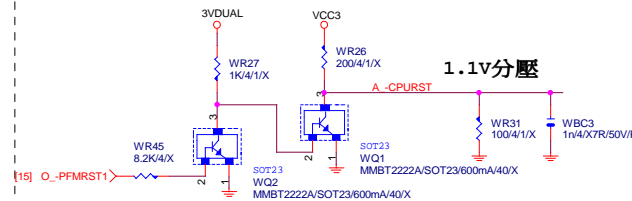
PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)  
Impedance=80 +- 17.5%



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



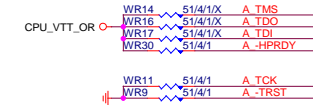
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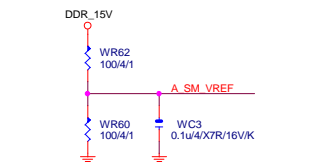
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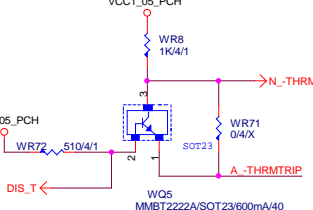
## CPU PU/PD



## SM REF



## THRMTRIP DISABLE

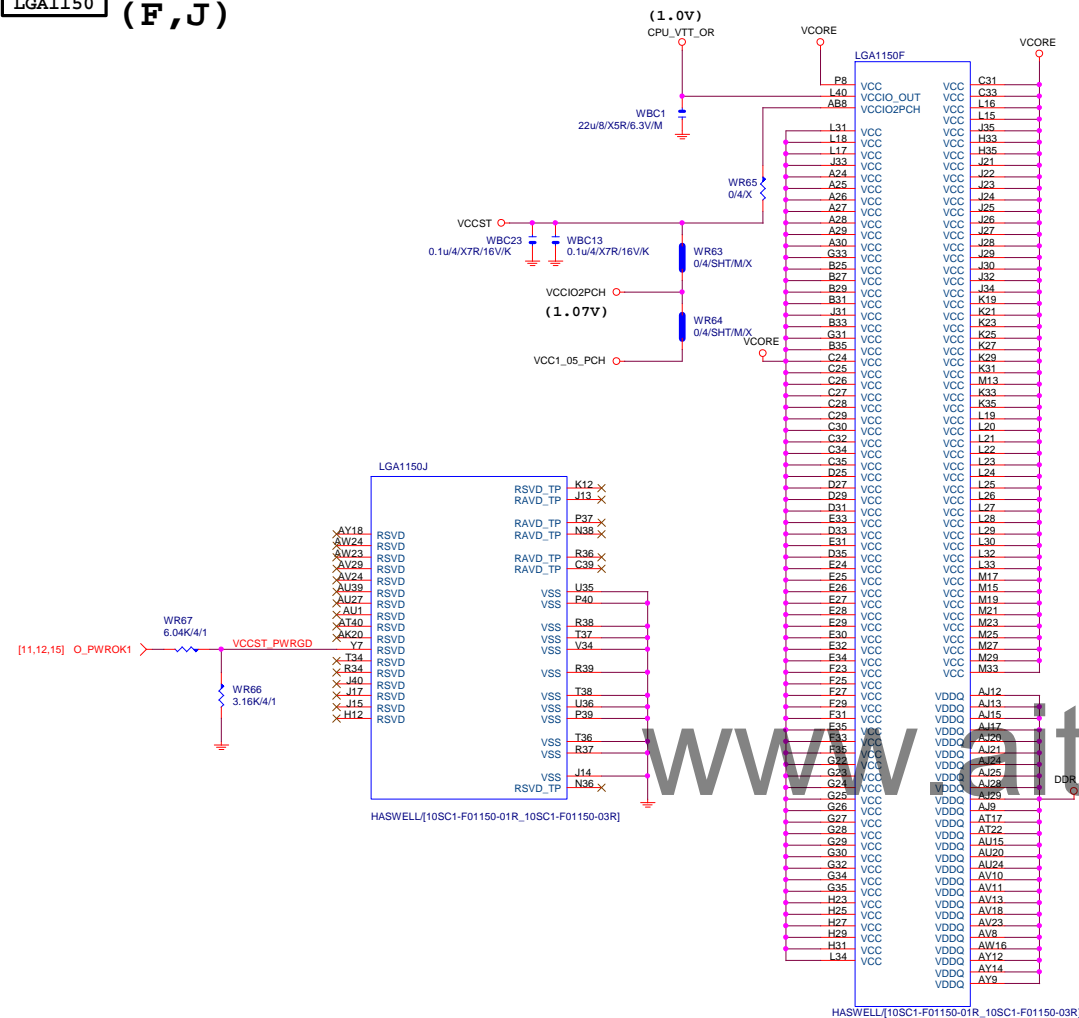


## Gigabyte Technology

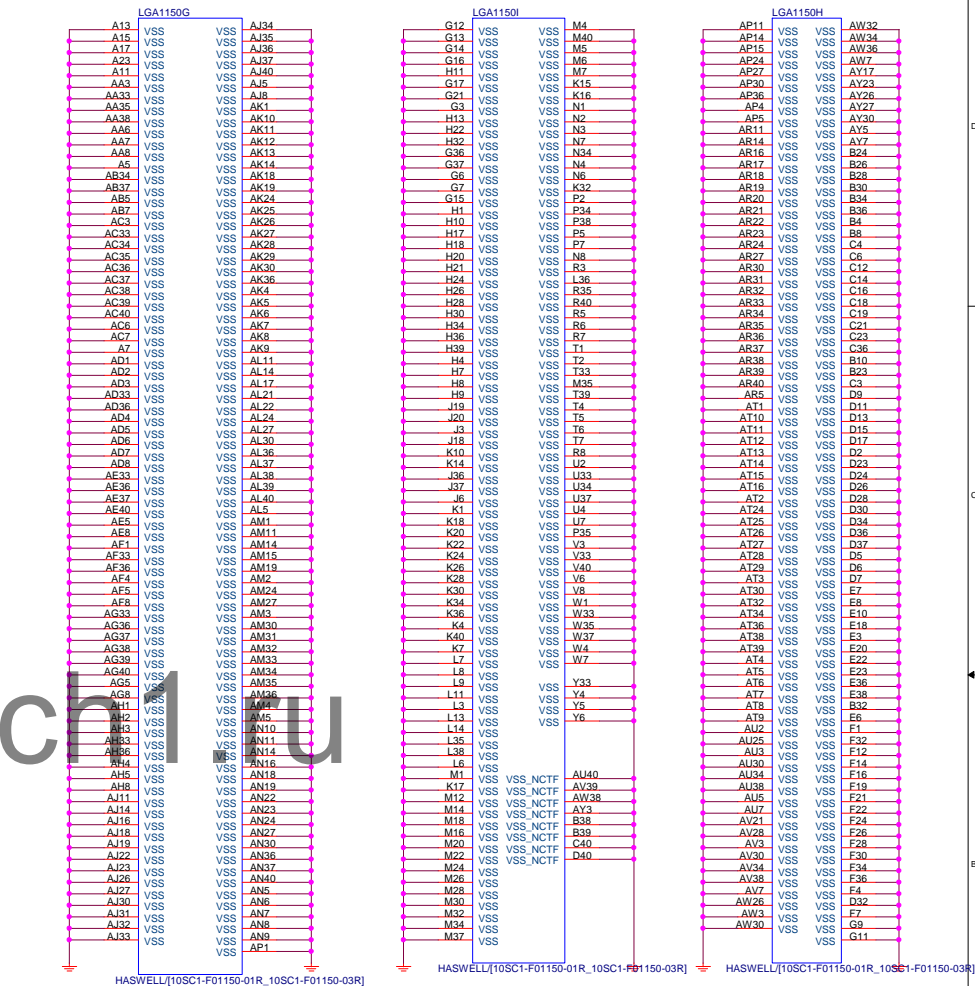
Title			CPU LGA1150-A	
Size	Custom	Document Number	GA-H87N-WIFI	
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Rev			1.1	

LGA1150A			
MAAA0	AU13	DDR0_M0	DDR0_D00
MAAA1	AV16	DDR0_M1	DDR0_D01
MAAA2	AU16	DDR0_M2	DDR0_D02
MAAA3	AW17	DDR0_M3	DDR0_D03
MAAA4	AU17	DDR0_M4	DDR0_D04
MAAA5	AU18	DDR0_M5	DDR0_D05
MAAA6	AV17	DDR0_M6	DDR0_D06
MAAA7	AT18	DDR0_M7	DDR0_D07
MAAA8	AU18	DDR0_M8	DDR0_D08
MAAA9	AT19	DDR0_M9	DDR0_D09
MAAA10	AW11	DDR0_M10	DDR0_D10
MAAA11	AV19	DDR0_M11	DDR0_D11
MAAA12	AU19	DDR0_M12	DDR0_D12
MAAA13	AY10	DDR0_M13	DDR0_D13
MAAA14	AT20	DDR0_M14	DDR0_D14
MAAA15	AU21	DDR0_M15	DDR0_D15
MODT_A0	AW10	DDR0_ODT0	DDR0_ODT0
MODT_A1	AY8	DDR0_ODT1	DDR0_ODT1
AW9	AW9	DDR0_ODT2	DDR0_ODT2
AW8	AW8	DDR0_ODT3	DDR0_ODT3
AW33	AW33	DDR0_ECC0	DDR0_ECC0
AW33	AW33	DDR0_ECC1	DDR0_ECC1
AW33	AW33	DDR0_ECC2	DDR0_ECC2
AW33	AW33	DDR0_ECC3	DDR0_ECC3
AW33	AW33	DDR0_ECC4	DDR0_ECC4
AW33	AW33	DDR0_ECC5	DDR0_ECC5
AW33	AW33	DDR0_ECC6	DDR0_ECC6
AW33	AW33	DDR0_ECC7	DDR0_ECC7
SBAA0	SBAA0	DDR0_BA0	DDR0_D031
SBAA1	SBAA1	DDR0_BA1	DDR0_D032
SBAA2	SBAA2	DDR0_BA2	DDR0_D033
CKEA0	CKEA0	DDR0_CKE0	DDR0_D034
CKEA1	CKEA1	DDR0_CKE1	DDR0_D035
CSA0	CSA0	DDR0_CS_N0	DDR0_D041
CSA1	CSA1	DDR0_CS_N1	DDR0_D042
DCLKA0	DCLKA0	DDR0_CLK_P0	DDR0_D047
DCLKA1	DCLKA1	DDR0_CLK_P1	DDR0_D048
DCLKA2	DCLKA2	DDR0_CLK_P2	DDR0_D049
DCLKA3	DCLKA3	DDR0_CLK_P3	DDR0_D050
DCLKA4	DCLKA4	DDR0_CLK_P4	DDR0_D051
DCLKA5	DCLKA5	DDR0_CLK_P5	DDR0_D052
DCLKA6	DCLKA6	DDR0_CLK_P6	DDR0_D053
DCLKA7	DCLKA7	DDR0_CLK_P7	DDR0_D054
DCLKA8	DCLKA8	DDR0_CLK_P8	DDR0_D055
DCLKA9	DCLKA9	DDR0_CLK_P9	DDR0_D056
DCLKA10	DCLKA10	DDR0_CLK_P10	DDR0_D057
DCLKA11	DCLKA11	DDR0_CLK_P11	DDR0_D058
DCLKA12	DCLKA12	DDR0_CLK_P12	DDR0_D059
DCLKA13	DCLKA13	DDR0_CLK_P13	DDR0_D060
DCLKA14	DCLKA14	DDR0_CLK_P14	DDR0_D061
DCLKA15	DCLKA15	DDR0_CLK_P15	DDR0_D062
DCLKA16	DCLKA16	DDR0_CLK_P16	DDR0_D063
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DCLKA18	DCLKA18	DDR0_CLK_P18	DDR0_D065
DCLKA19	DCLKA19	DDR0_CLK_P19	DDR0_D066
DCLKA20	DCLKA20	DDR0_CLK_P20	DDR0_D067
DCLKA21	DCLKA21	DDR0_CLK_P21	DDR0_D068
DCLKA22	DCLKA22	DDR0_CLK_P22	DDR0_D069
DCLKA23	DCLKA23	DDR0_CLK_P23	DDR0_D070
DCLKA24	DCLKA24	DDR0_CLK_P24	DDR0_D071
DCLKA25	DCLKA25	DDR0_CLK_P25	DDR0_D072
DCLKA26	DCLKA26	DDR0_CLK_P26	DDR0_D073
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DCLKA31	DCLKA31	DDR0_CLK_P31	DDR0_D078
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DCLKA36	DCLKA36	DDR0_CLK_P36	DDR0_D083
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DCLKA62	DCLKA62	DDR0_CLK_P62	DDR0_D109
DCLKA63	DCLKA63	DDR0_CLK_P63	DDR0_D110
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DCLKA102	DCLKA102	DDR0_CLK_P102	DDR0_D149
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DCLKA187	DCLKA187	DDR0_CLK_P187	DDR0_D234
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DCLKA189	DCLKA189	DDR0_CLK_P189	DDR0_D236
DCLKA190	DCLKA190	DDR0_CLK_P190	DDR0_D237
DCLKA191	DCLKA191	DDR0_CLK_P191	DDR0_D238
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DCLKA196	DCLKA196	DDR0_CLK_P196	DDR0_D243
DCLKA197	DCLKA197	DDR0_CLK_P197	DDR0_D244
DCLKA198	DCLKA198	DDR0_CLK_P198	DDR0_D245
DCLKA199	DCLKA199	DDR0_CLK_P199	DDR0_D246
DCLKA200	DCLKA200	DDR0_CLK_P200	DDR0_D247
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DCLKA202	DCLKA202	DDR0_CLK_P202	DDR0_D249
DCLKA203	DCLKA203	DDR0_CLK_P203	DDR0_D250
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DCLKA206	DCLKA206	DDR0_CLK_P206	DDR0_D253
DCLKA207	DCLKA207	DDR0_CLK_P207	DDR0_D254
DCLKA208	DCLKA208	DDR0_CLK_P208	DDR0_D255
DCLKA209	DCLKA209	DDR0_CLK_P209	DDR0_D256
DCLKA210	DCLKA210	DDR0_CLK_P210	DDR0_D257
DCLKA211	DCLKA211	DDR0_CLK_P211	DDR0_D258
DCLKA212	DCLKA212	DDR0_CLK_P212	DDR0_D259
DCLKA213	DCLKA213	DDR0_CLK_P213	DDR0_D260
DCLKA214	DCLKA214	DDR0_CLK_P214	DDR0_D261
DCLKA215	DCLKA215	DDR0_CLK_P215	DDR0_D262
DCLKA216	DCLKA216	DDR0_CLK_P216	DDR0_D263
DCLKA217	DCLKA217	DDR0_CLK_P217	DDR0_D264
DCLKA218	DCLKA218	DDR0_CLK_P218	DDR0_D265
DCLKA219	DCLKA219	DDR0_CLK_P219	DDR0_D266
DCLKA220	DCLKA220	DDR0_CLK_P220	DDR0_D267
DCLKA221	DCLKA221	DDR0_CLK_P221	DDR0_D268
DCLKA222	DCLKA222	DDR0_CLK_P222	DDR0_D269
DCLKA223	DCLKA223	DDR0_CLK_P223	DDR0_D270
DCLKA224	DCLKA224	DDR0_CLK_P224	DDR0_D271
DCLKA225	DCLKA225	DDR0_CLK_P225	DDR0_D272
DCLKA226	DCLKA226	DDR0_CLK_P226	DDR0_D273
DCLKA227	DCLKA227	DDR0_CLK_P227	DDR0_D274
DCLKA228	DCLKA228	DDR0_CLK_P228	DDR0_D275
DCLKA229</			

**LGA1150 (F,J)**

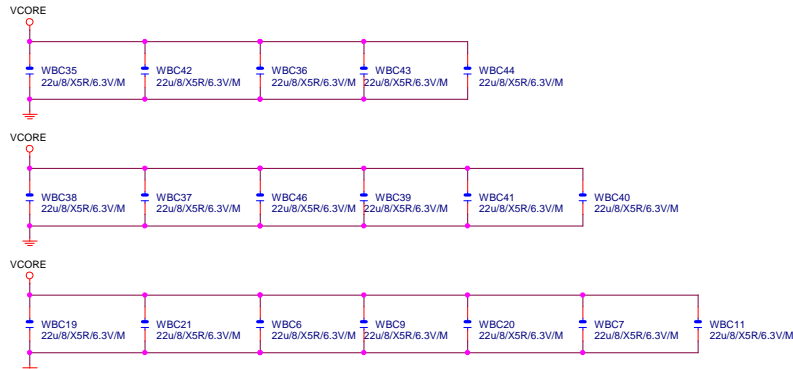


LGA1155 (G,H,I)



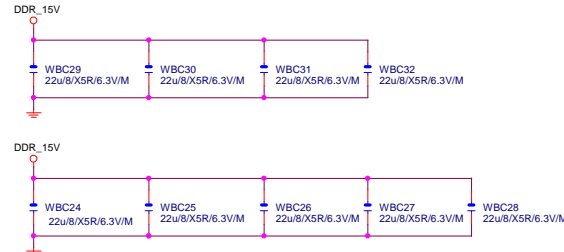
## VCore CAP

(x18)



## DDR CAP

(x9)

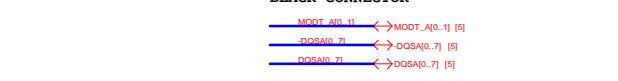
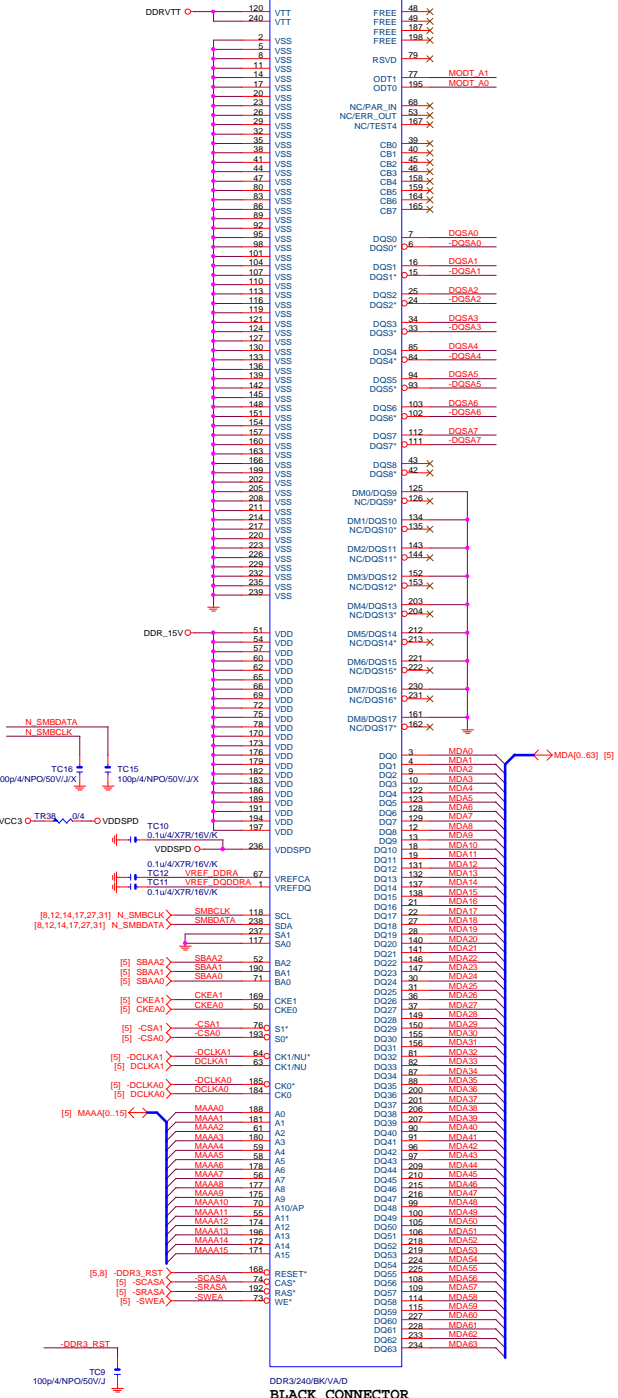


## Gigabyte Technology

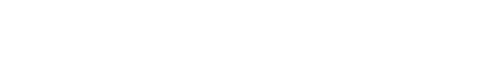
Title			
CPU LGA1150-C			
Size	Document Number	Rev	
Custom	GA-H87N-WIFI	1.1	
Date:	Thursday, July 11, 2013	Sheet	6 of 31

DDR3

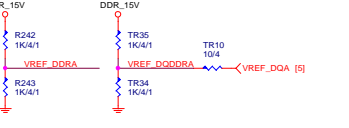
(A)



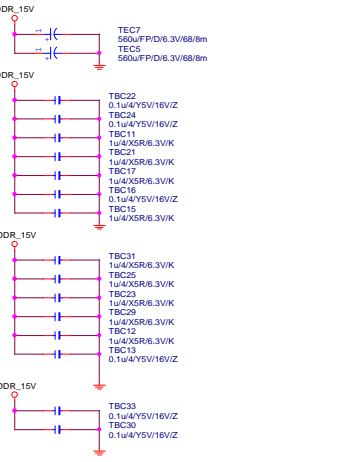
DDR3



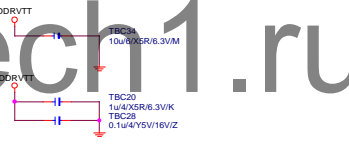
DDR3 VREF



DDR15V Decouple



DDRVTT Decouple

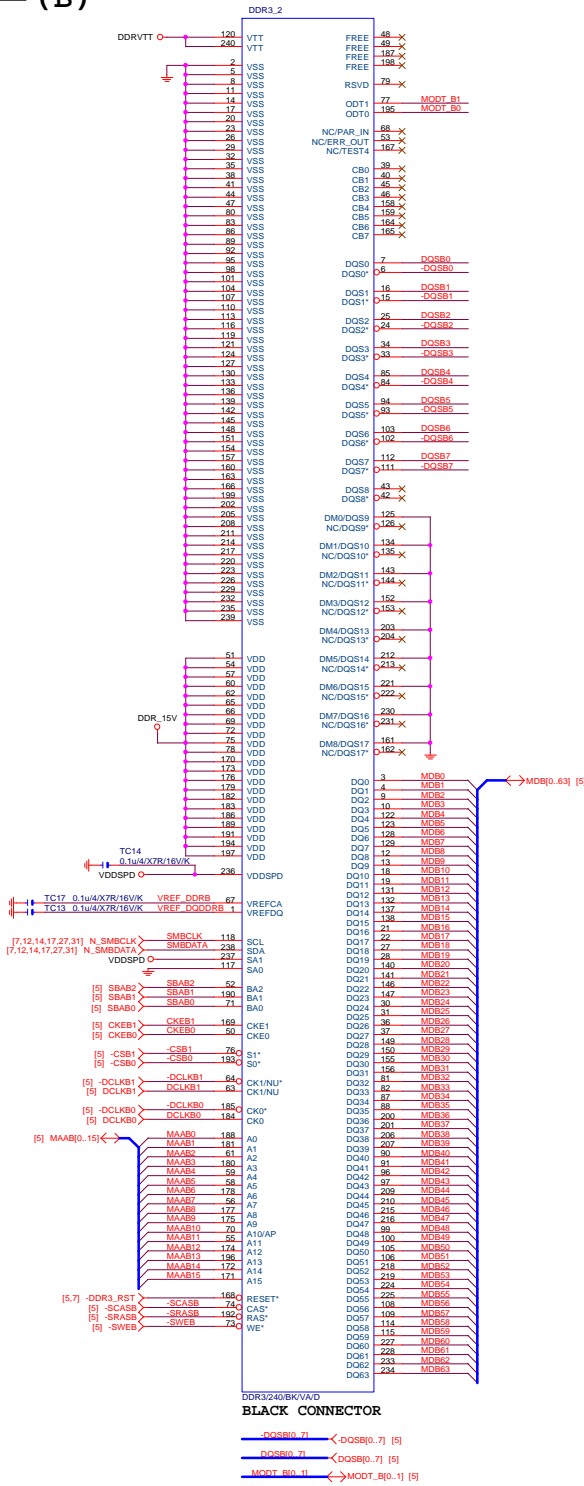


www.aitech1.ru

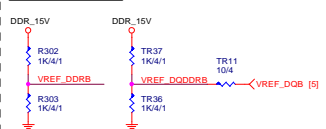
Gigabyte Technology		
DDR3 CHANNEL A		
File	Document Number	Rev
	GA-H87N-WIFI	1.1
Date	Sheet	7 of 31

DDR3

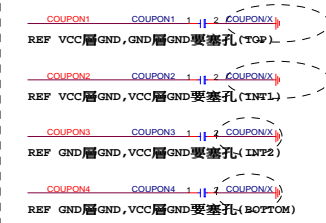
(B)



DDR3 VREF



COUPON



CPU

DIMM1 CHA  
DIMM2 CHB

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Gigabyte Technology			
File			
DDR3 CHANNEL B			
Size			
Document Number			
GA-H87N-WIFI			
Date			
Sheet 1 of 31			



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

VCC1\_5\_PCH

NR50 7.5K/4/1 DMI\_COMP B19

NR40 7.5K/4/1 PCIE\_COMP C13

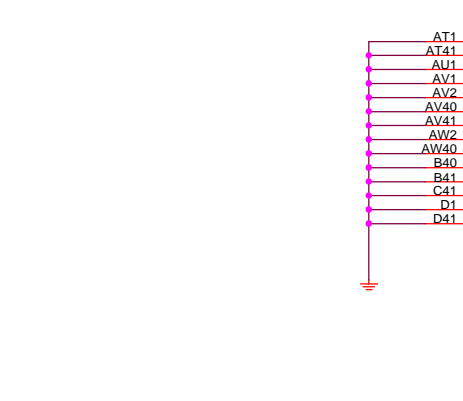
CK -SRCLK PCH G22

CK SRCLK PCH F22

<b>USB3.0</b>	[23]	PCH_USB3_RXP2	K14
	[23]	PCH_USB3_TXN2	B12
	[23]	PCH_USB3_TXP2	B11
	[23]	PCH_USB3_RXN3	F14
	[23]	PCH_USB3_RXP3	G14
	[23]	PCH_USB3_TXN3	D11
<b>I217</b>	[23]	PCH_USB3_TXP3	C11
			F11
	[22]	LA_ML_IN	H11
	[22]	LA_ML_OP	A9
	[22]	LA_ML_ON	B9
	[22]	LA_ML_OP	J11
	[23]	LB_ML_IN	L11
<b>PCI-E</b>	[23]	LB_ML_IP	B8
	[23]	LB_ML_ON	C8
	[23]	LB_ML_OP	G9
	[31]	MPCIE_IN0	F9
	[31]	MPCIE_IP0	A7
	[31]	MPCIE_TP0	B7
	[31]	MPCIE_TNO	AZ
	[31]	MPCIE_TPO	BZ

放靠近 Device & PCI-E Slot  
Impedance=80 +- 17.5%

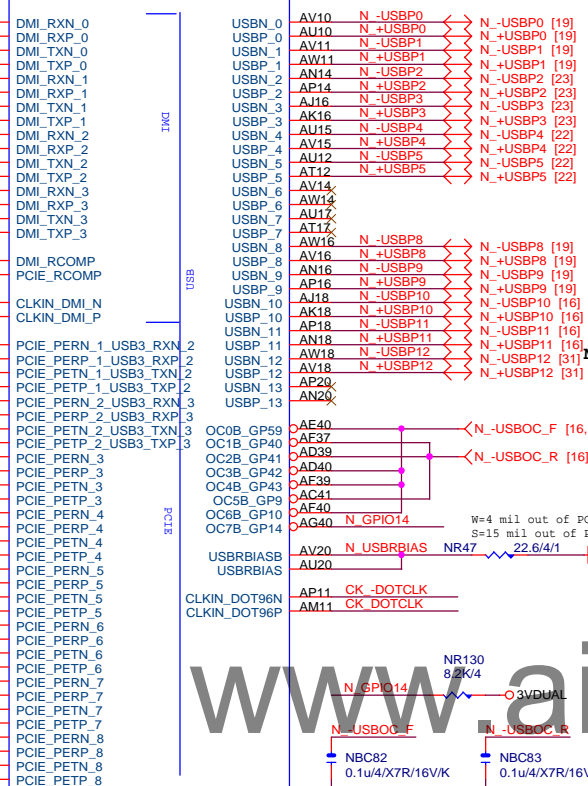
PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)



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

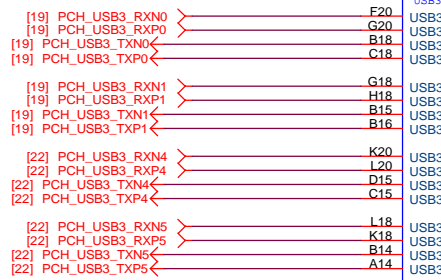
PCHB

B85: Port 6/7 N/A  
H81: Port 6/7/12/13 N/A

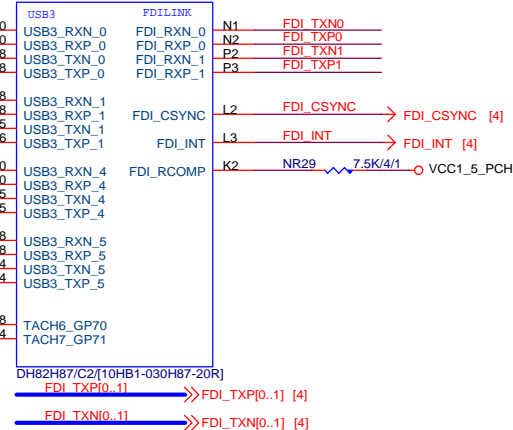


DH82H87/C2/[10HB1-030H87-20R]

PCHF  
USB3



PCHF

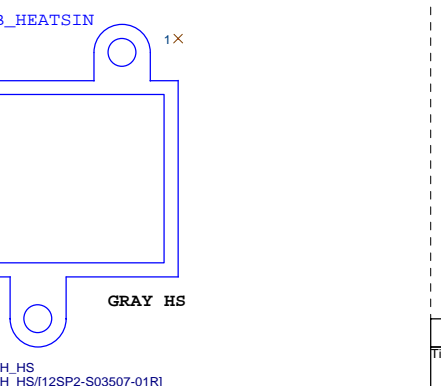


USB3.0:20/5/7/5/20 (breakout min  
8/4/4/4/8) ; ONLY 3 VIAS  
Impedance=85 +- 17.5%  
Back Panel < 10000 MILS  
Front Panel < 6000 MILS

CK SRCCL K PCH



## 1177 HEADSINK |



USE TABLE

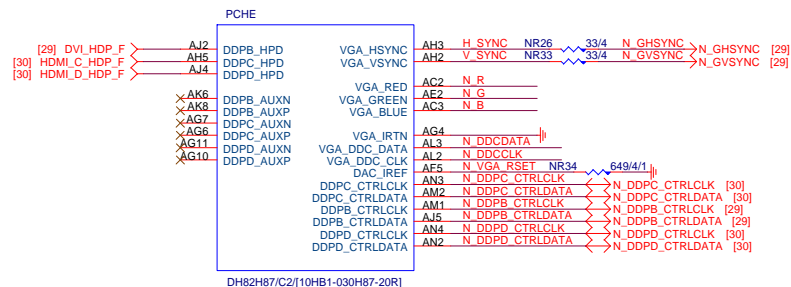
```
OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)
```

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

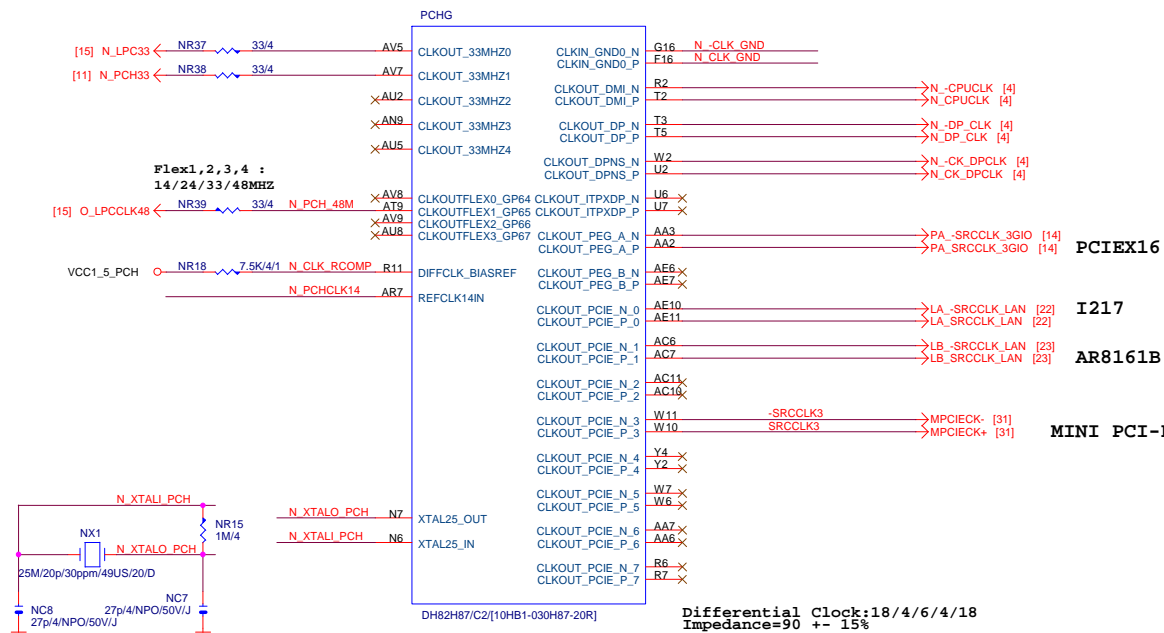
## Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE,NVRAM			
Size	Document Number		Rev
Custom	GA-H87N-WIFI		1.1
Date:	Thursday, July 11, 2013	Sheet	9 of 31

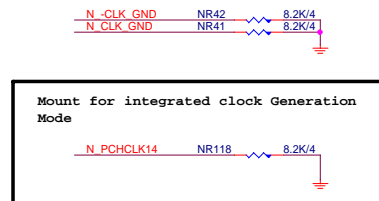
# PCH (E)



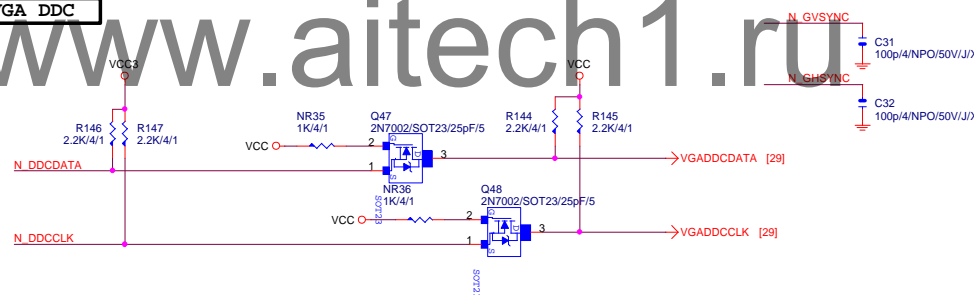
# PCH (G)



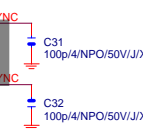
## PCH CLK PD



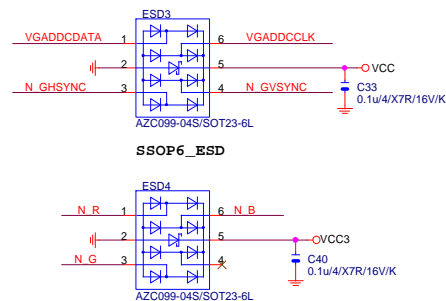
## VGA DDC



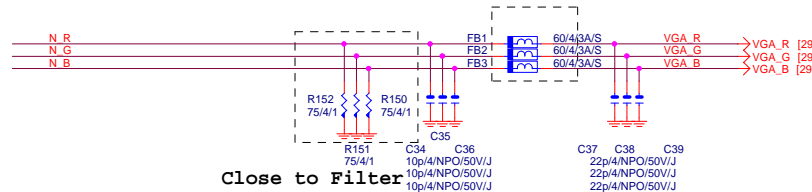
## VGA CONNECTOR



## VGA ESD



## VGA DDC



Gigabyte Technology

PCH DISPLAY\_CLK BUFFER

GA-H87N-WIFI

Title	Document Number	Rev
Size	Custom	1.1
Date:	Thursday, July 11, 2013	Sheet 10 of 31

(C)



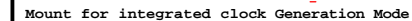
## SATA CONNECTOR



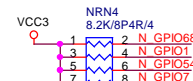
(A)



## PCH CLK PD



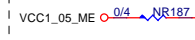
PCH	PU/PD
-----	-------



## ME PWROK

Z87 N/A

Z87+I217\



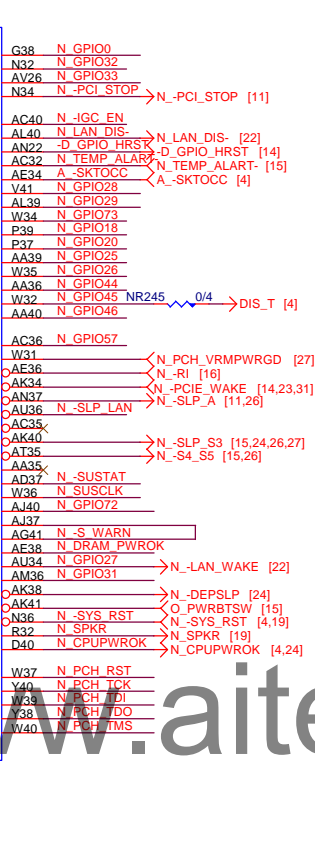
GPIO38 Ctrl



## Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
Size	Document Number	Rev	
Custom	GA-H87N-WIFI	1.1	
Date:	Thursday, July 11, 2013	Sheet	11 of 31

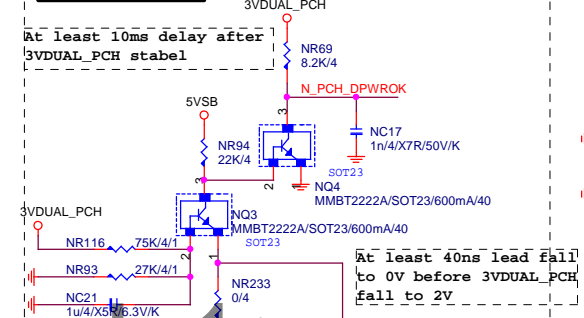
(D)



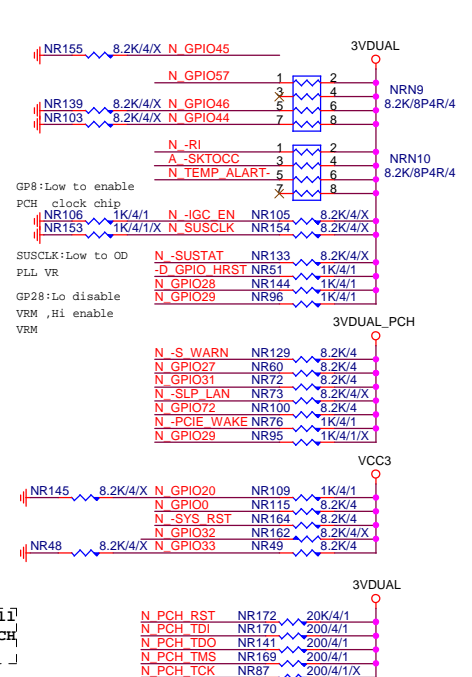
## ACZ\_SDOUT



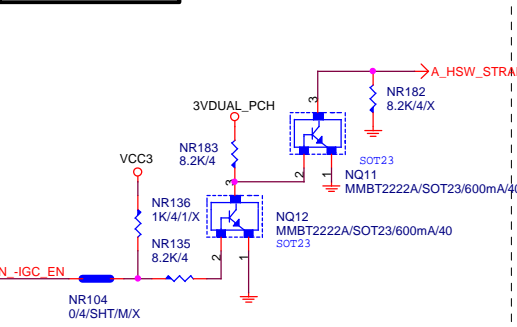
PCH\_DPWROK



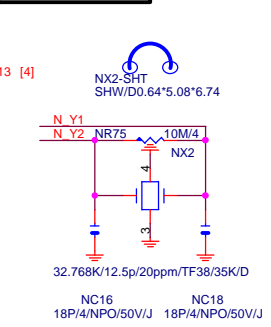
PCH PU/PD



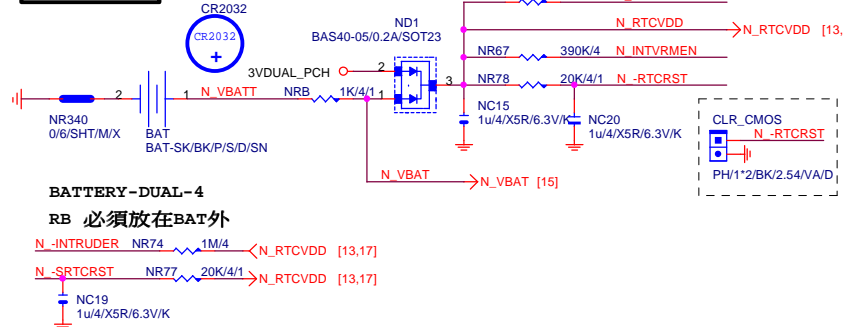
HSW\_STRAP13



32.768KHZ



CLR\_CMOS



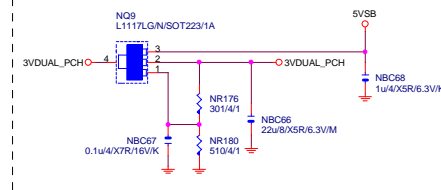
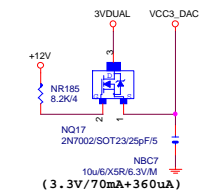
## Gigabyte Technology

Title				PCH GPIO , CTRL , AUDIO			
Size	Document Number	GA-H87N-WIFI				Rev	
Custom						1.1	
Date:	Thursday, July 11, 2013			Sheet	12	of	31

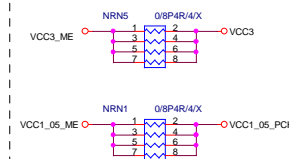
**PCH (I)**



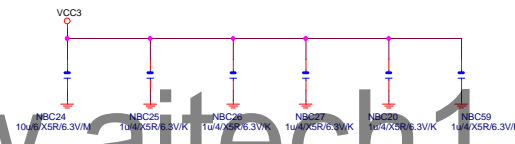
## 3VDUAL\_PCH



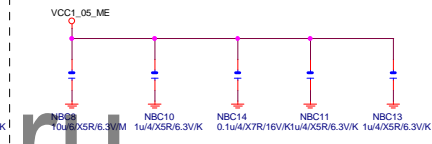
**M3 POWER**



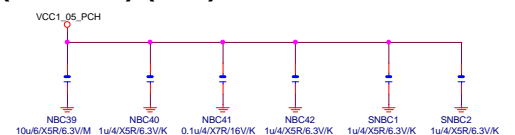
( 3.3V ) ( X6 )



(1.05V) (x5)



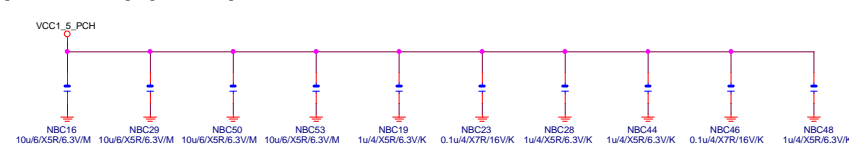
(1.05V)(x6)



$(1.05V)(x2) + (3.3V)(x2)$

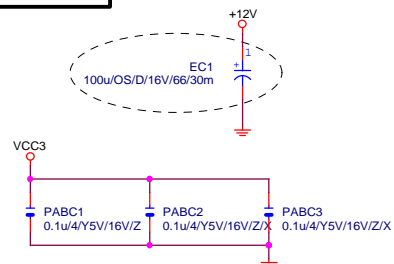


**(1.05V) (x10)**

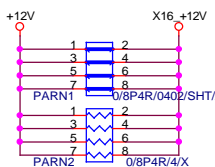




# PCIEX16 CAP



# PCIEX16 PROTECT SHT

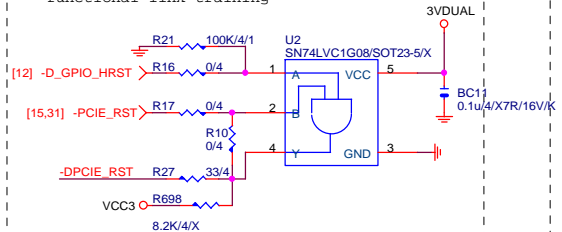


# PCIEX16 AC CAP

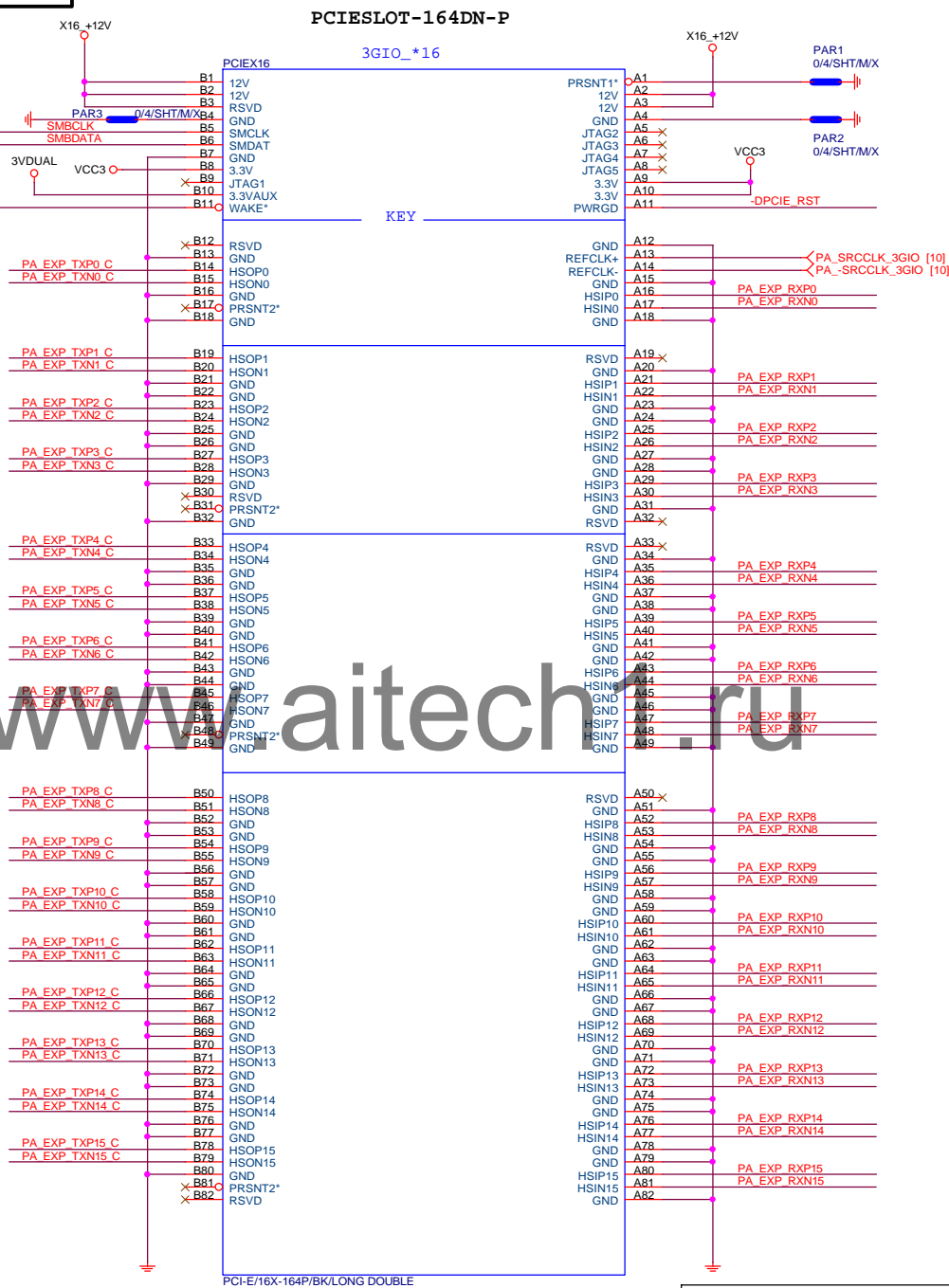
PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP 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	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

PA EXP RXP0.15] >>> PA\_EXP\_RXP[0.15] [4]  
 PA EXP RXN0.15] >>> PA\_EXP\_RXN[0.15] [4]  
 PA EXP TXP0.15] >>> PA\_EXP\_TXP[0.15] [4]  
 PA EXP TXN0.15] >>> PA\_EXP\_TXN[0.15] [4]

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



# PCIEX16 SLOT



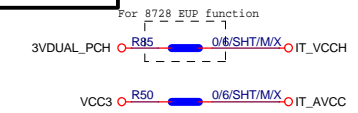
BLACK CONNECTOR

Gigabyte Technology		
PCI EXPRESS * 16		
Title		Rev
Size		1.1
Custom	Document Number	
GA-H87N-WIFI		
Date: Thursday, July 11, 2013		Sheet 14 of 31

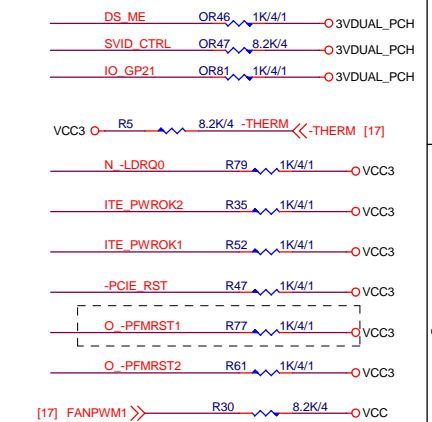
## SIO IT8728F

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

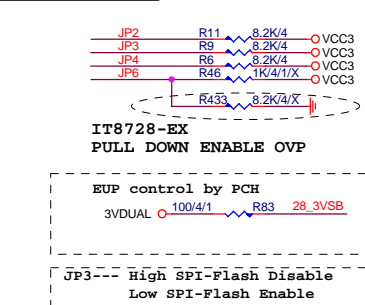
## PWR SHT



## SIO PU



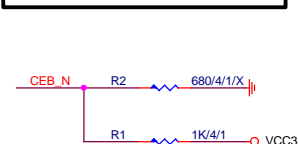
## SIO STRAP



## IT8728F NOTE

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

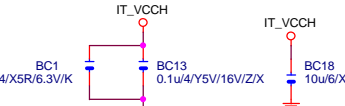
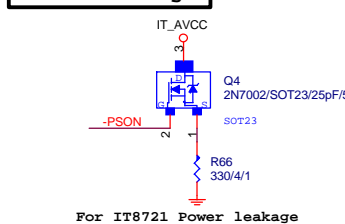
## DUAL BIOS OPT STRAP



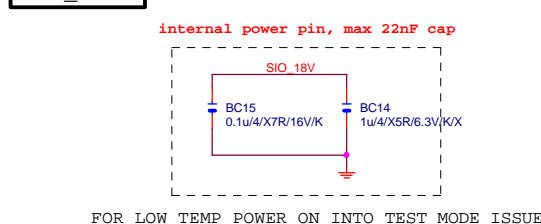
## SIO CAP



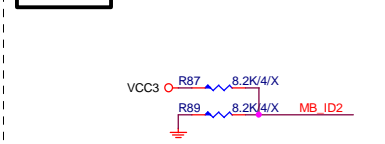
## Power leakage



## SIO\_18V



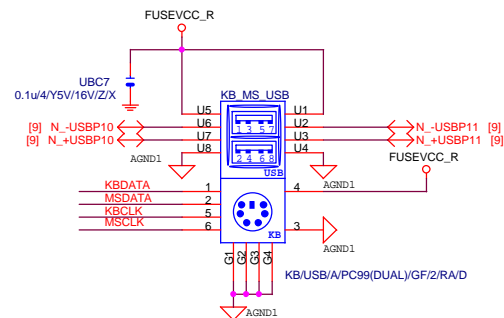
## MB ID



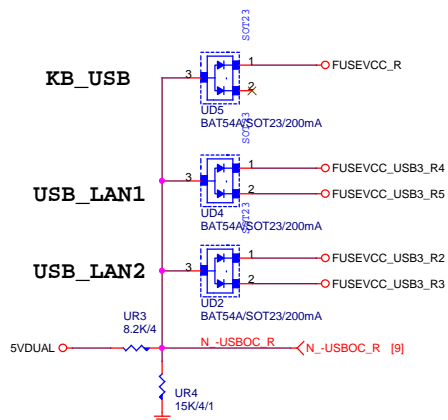
## Gigabyte Technology

Title			ITE 8728 LPC IO
Size	Document Number		GA-H87N-WIFI
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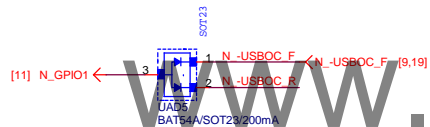
## KB/MS



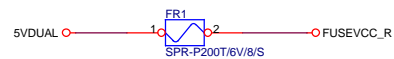
## -USB0C\_R



USB POWER PROTECT

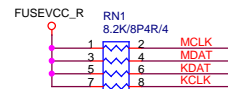


USB2.0 PWR

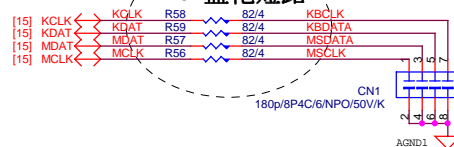


Close to connector  
KB\_MS\_USB 2-Port 2.0A

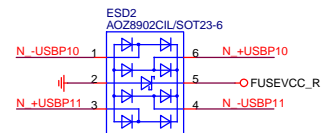
## KB\_MS



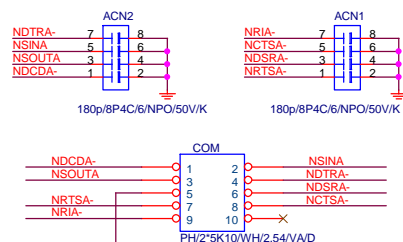
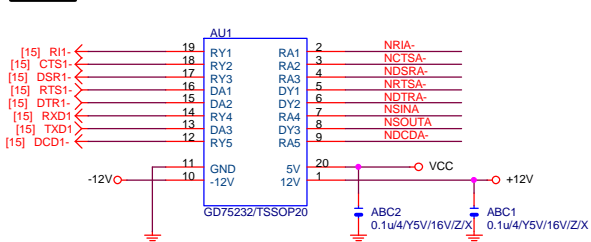
FOR鹽化短路



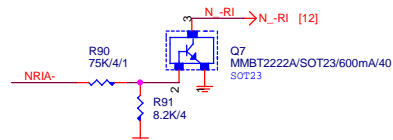
USB2.0 ESD



## COM



COM RI

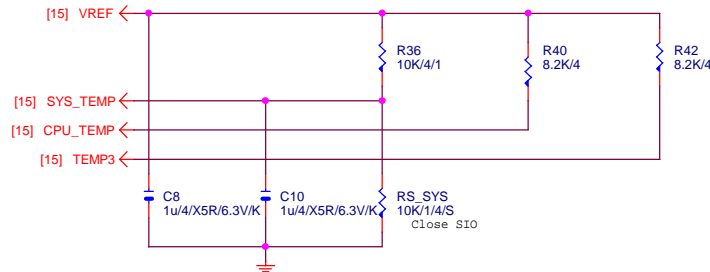


## Gigabyte Technology

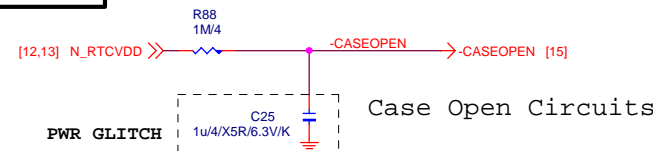
Title			
COM,-RI,KB_USB,USB_ESATA,-PROCHOT			
Size	Document Number	Rev	
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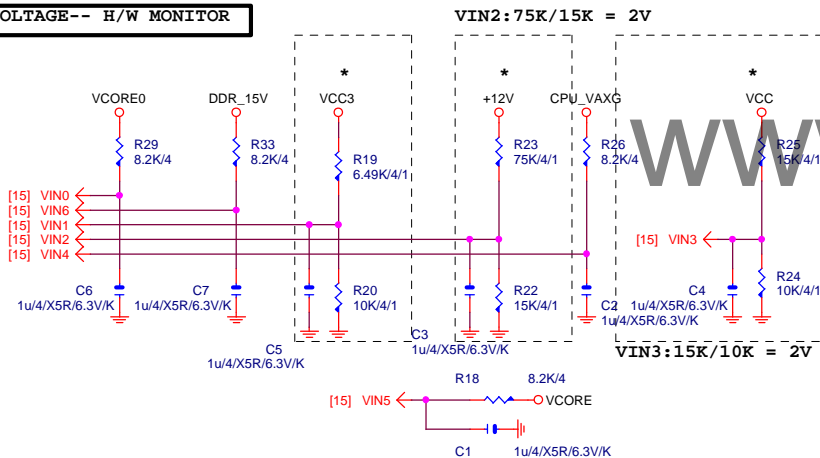
# TEMP H/W MONITOR



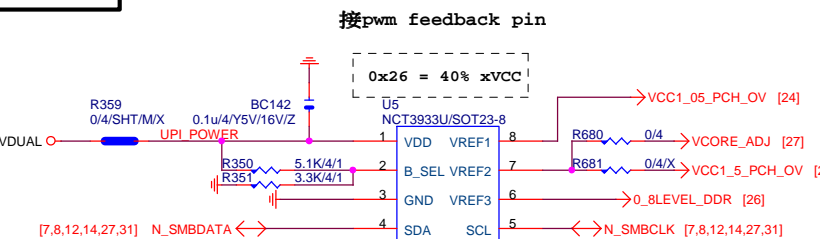
# CASE OPEN



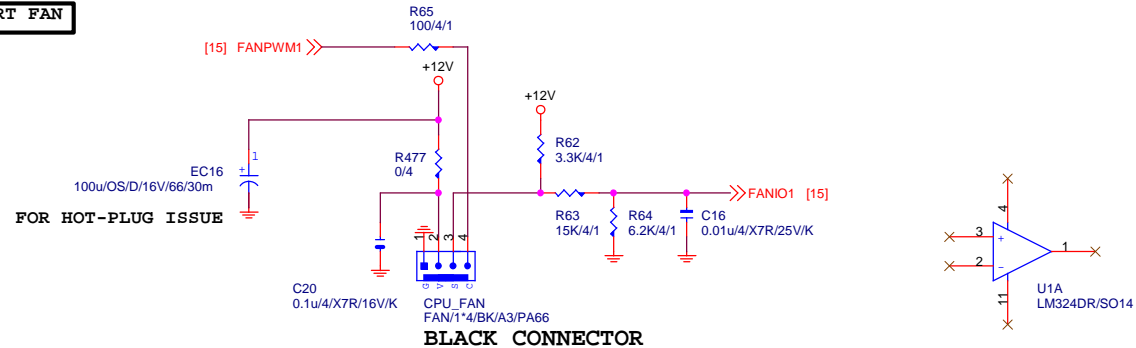
# VOLTAGE-- H/W MONITOR



# OV NCT3933

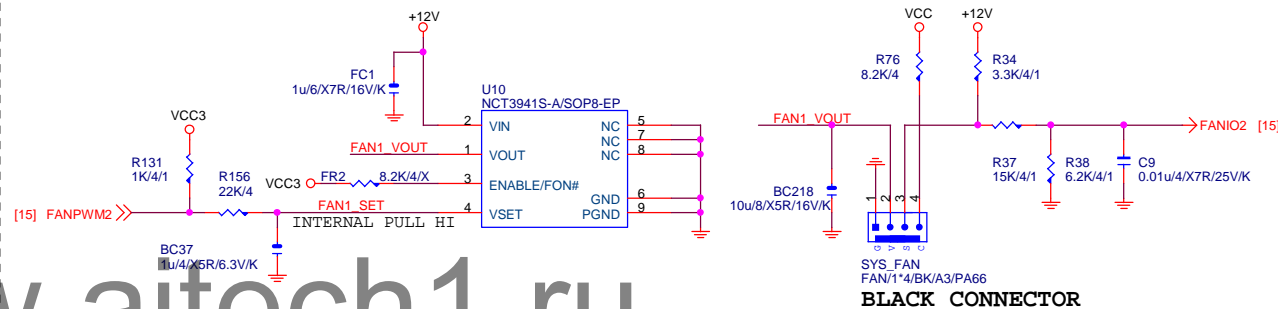


# CPU SMART FAN

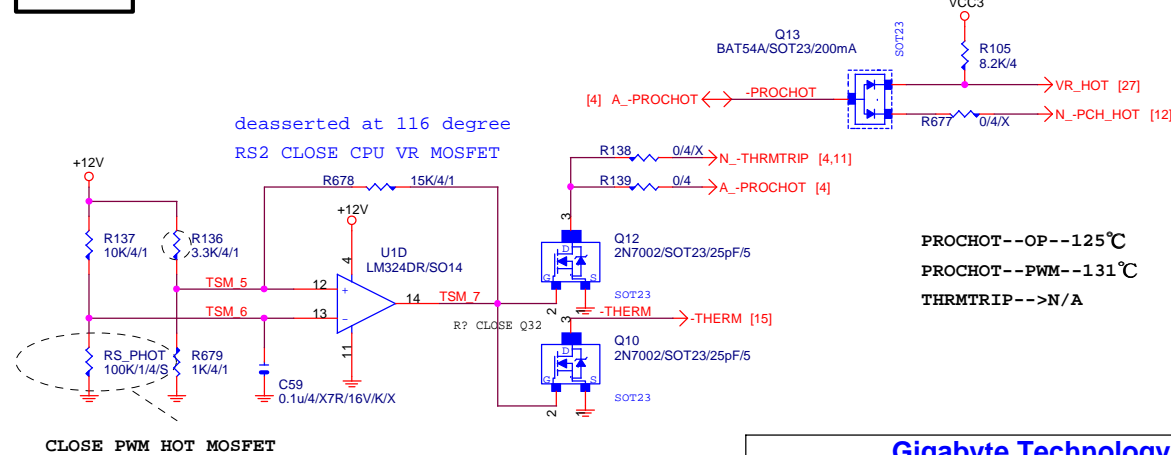


# SYS SMART FAN

## Linear SYS\_FAN

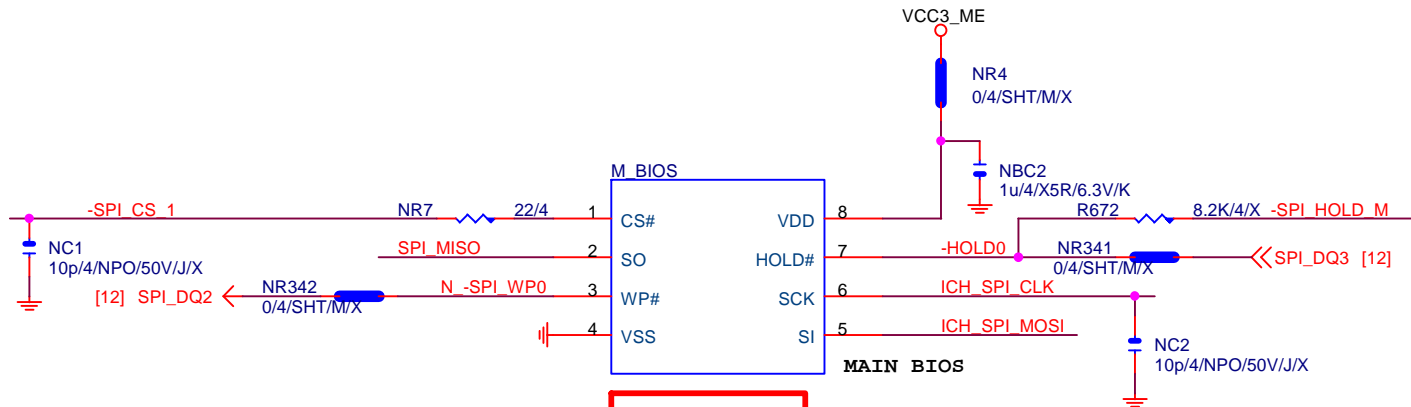


# -PROHOT



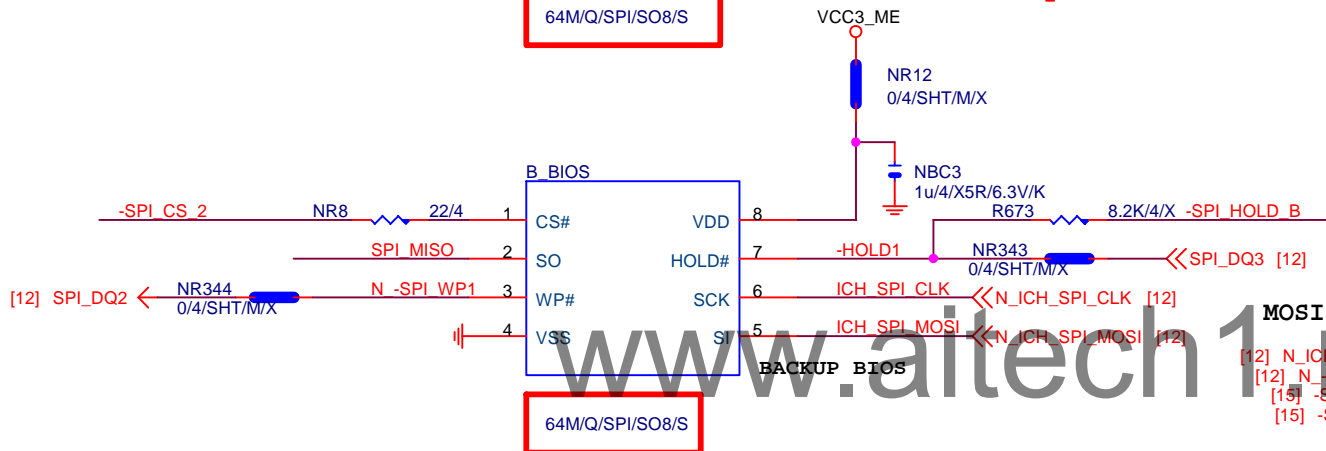
Gigabyte Technology

Title		
HWM,FAN CTRL,OV		
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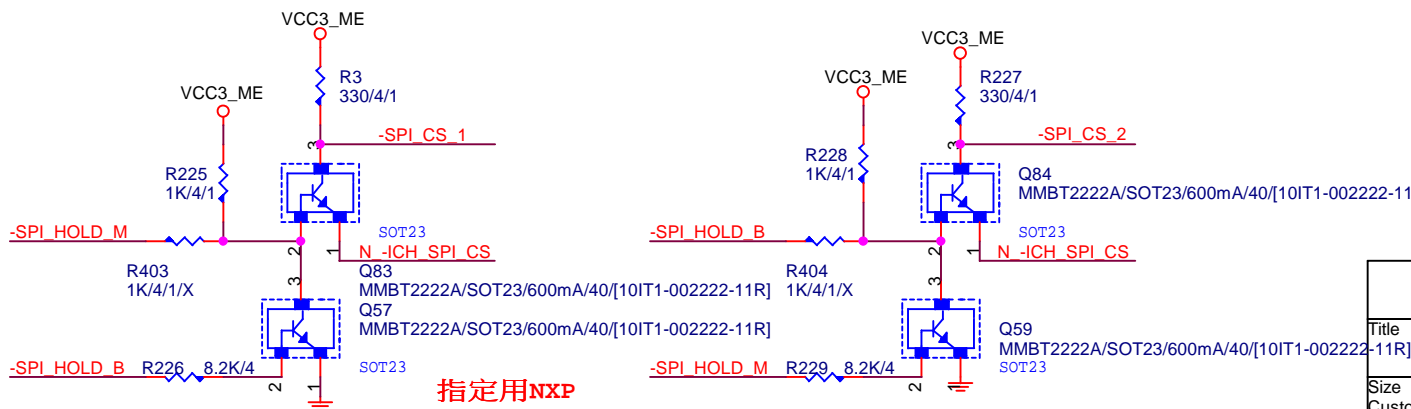
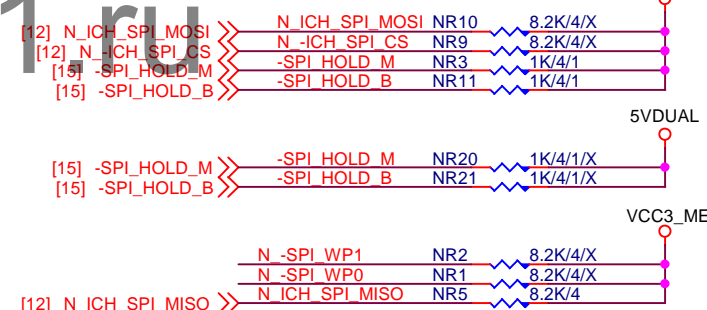


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

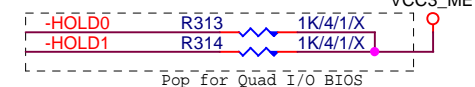
1 means floating  
0 means PD 1K



#### MOSI For DMI RX Termination Voltage



#### CHECK



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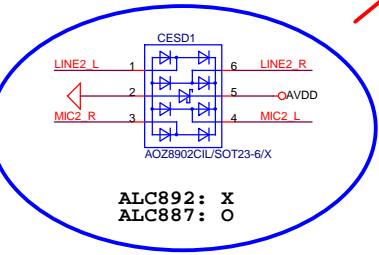
**DUAL BIOS**

**GA-H87N-WIFI**

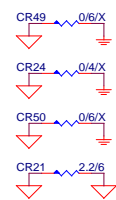
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			1.1
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CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	O	O	X	X	O
CD2/CD3/CQ3/CQ5	X	X	O	O	X
CR1/CR14/CR17/CR22	62 ohm	62 ohm	62 ohm	75 ohm	1K ohm

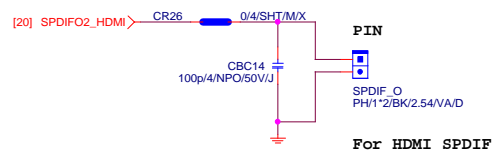


## CODEC POWER/EMI PAD

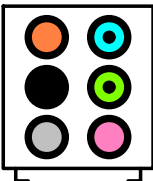


ADD CD2 For ESD PROTECT DIODE

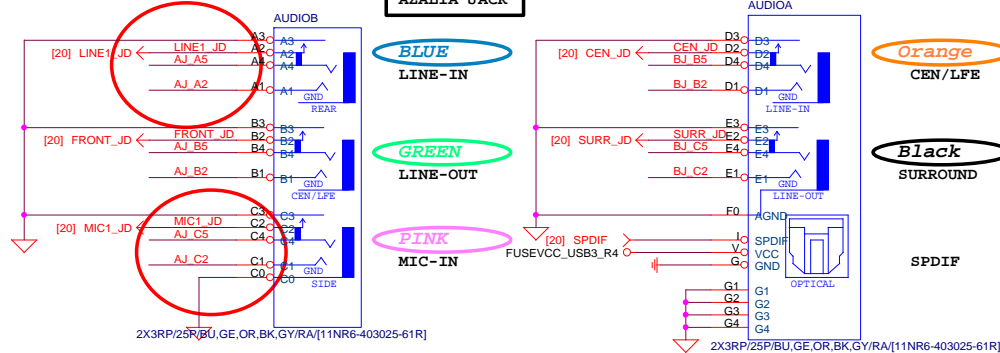
## SPDIF\_OUT



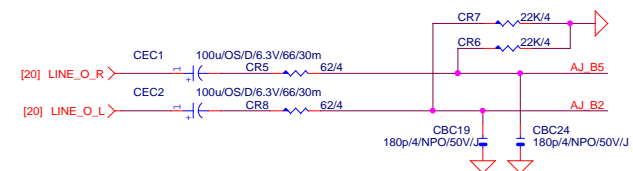
## AZALIA JACK



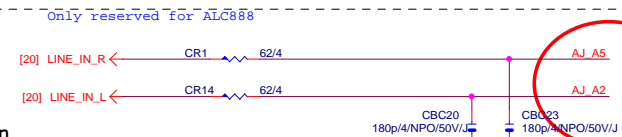
## AZALIA JACK

BLUE  
LINE-INGREEN  
LINE-OUTPINK  
MIC-IN

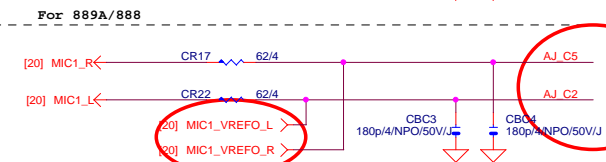
## LINE-OUT



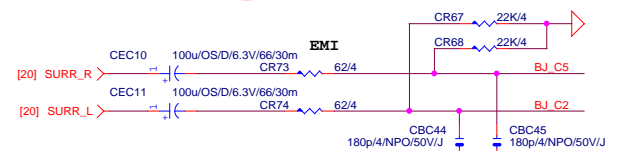
## LINE-IN

Verify MIC function  
in LINE-in

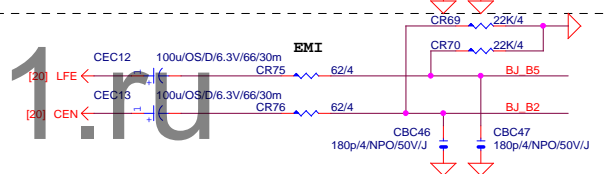
## MIC-IN



## SURROUND

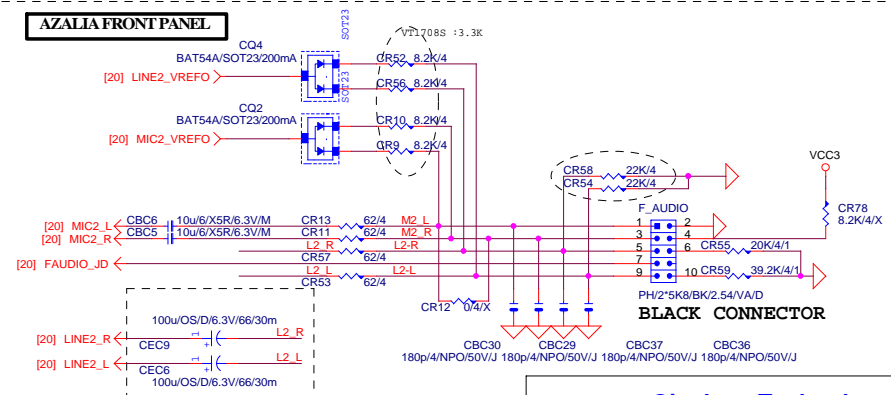


## CEN/LFE



## SURRBACK

## AZALIA FRONT PANEL



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AUDIO JACK

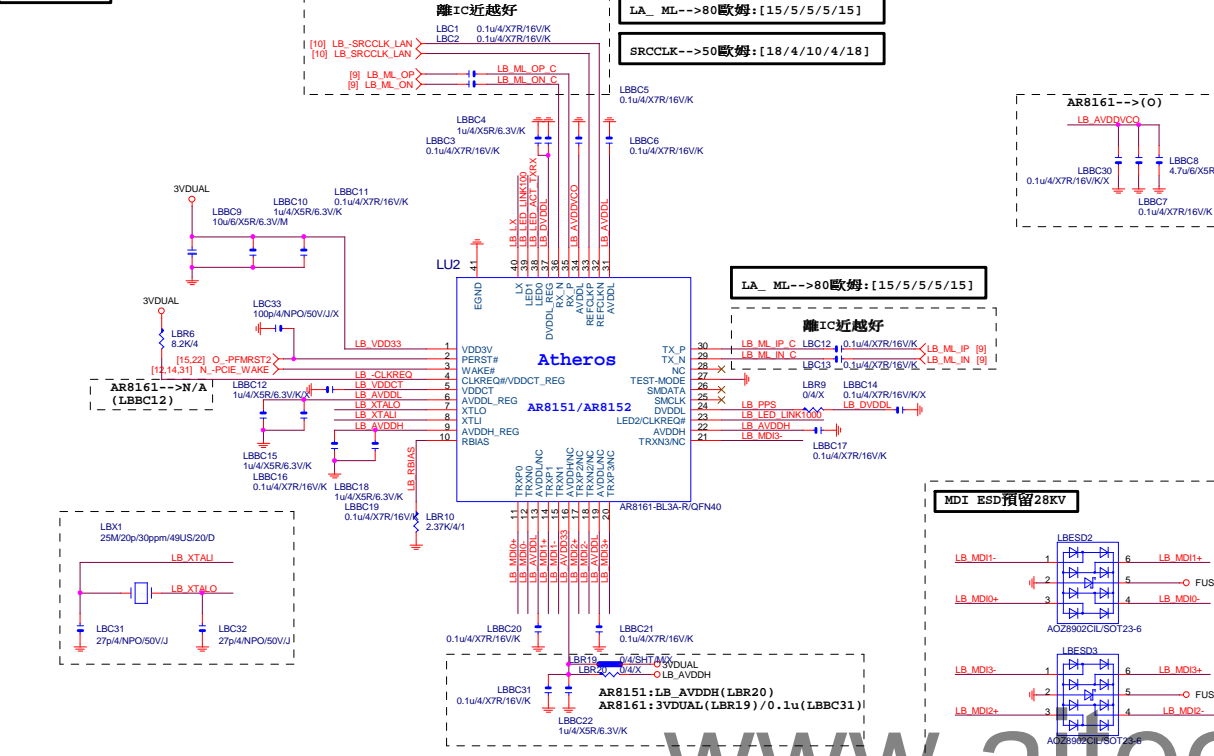
GA-H87N-WIFI

Rev  
1.1

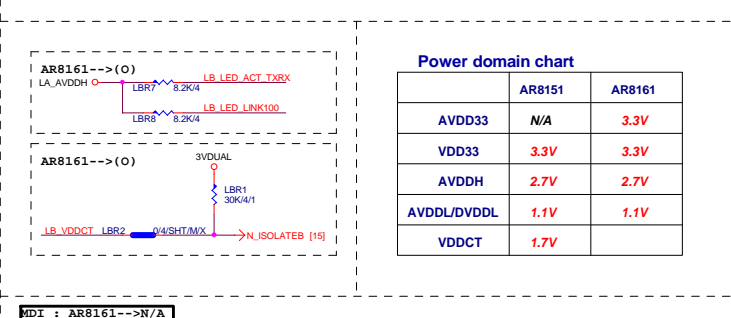
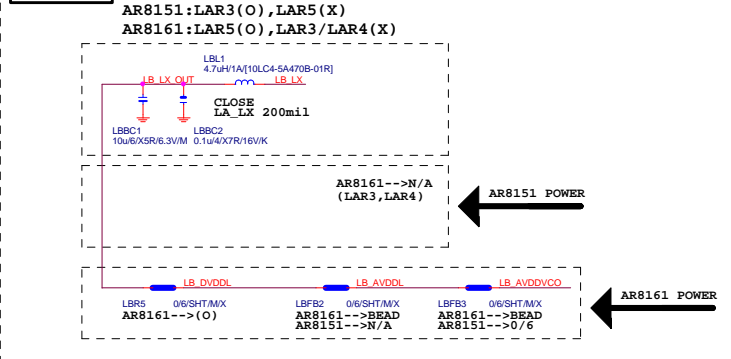
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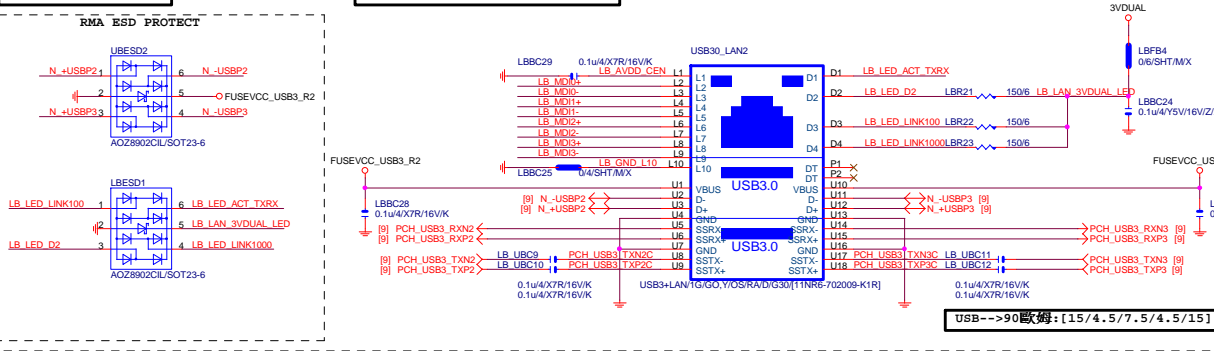
LAN:AR8161B



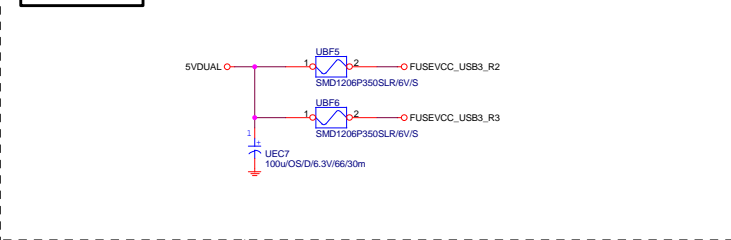
LAN POWER



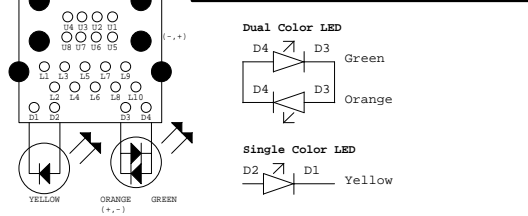
USB LAN CONNECTOR



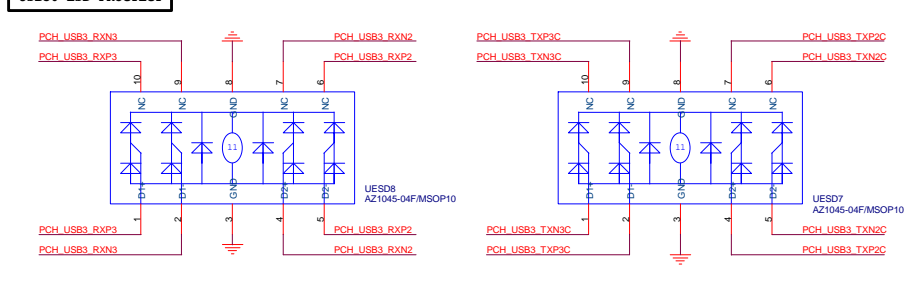
USB X3 POWER



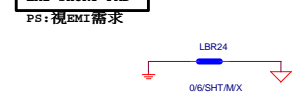
注意:LAN LED PROTECT:(CO-LAYOUT)  
1.ESD(6PIN):AZ028902CIL/SOT23-6(DEFAULT)  
2.SURGE(5PIN):AZ2025-04S/SOT23-5L

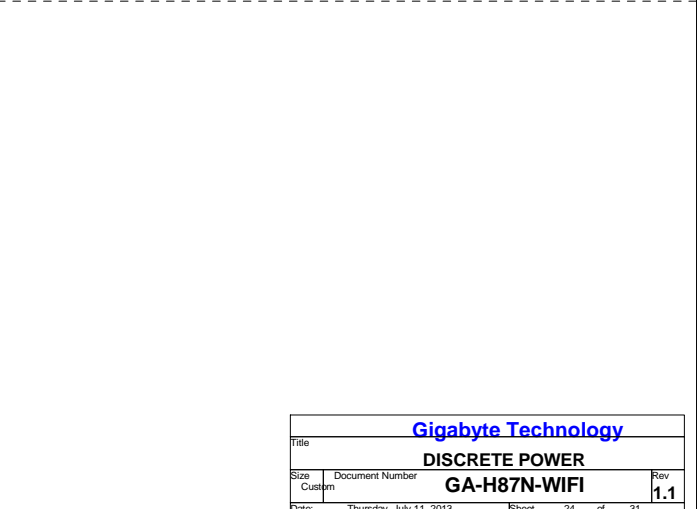
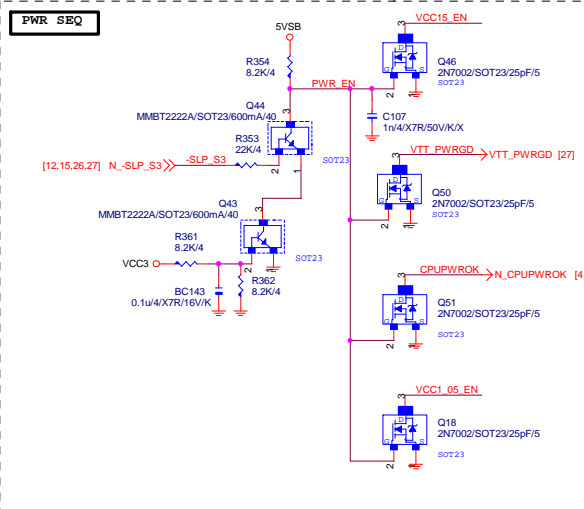
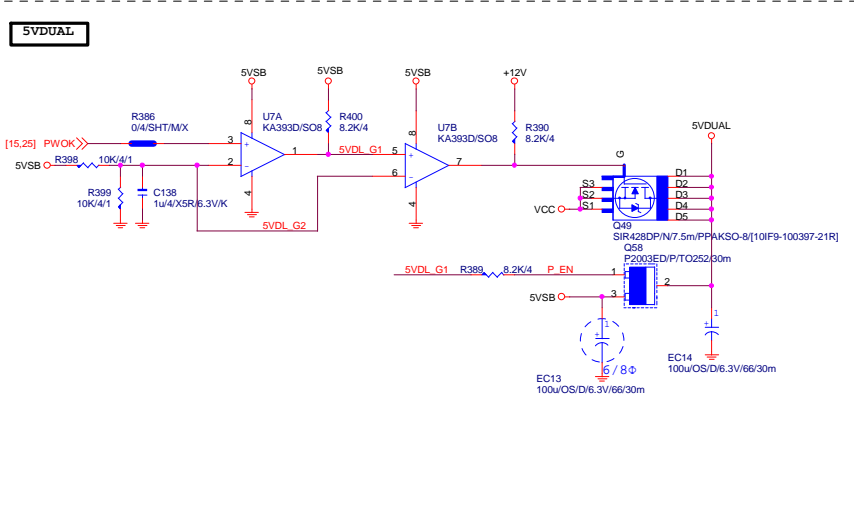
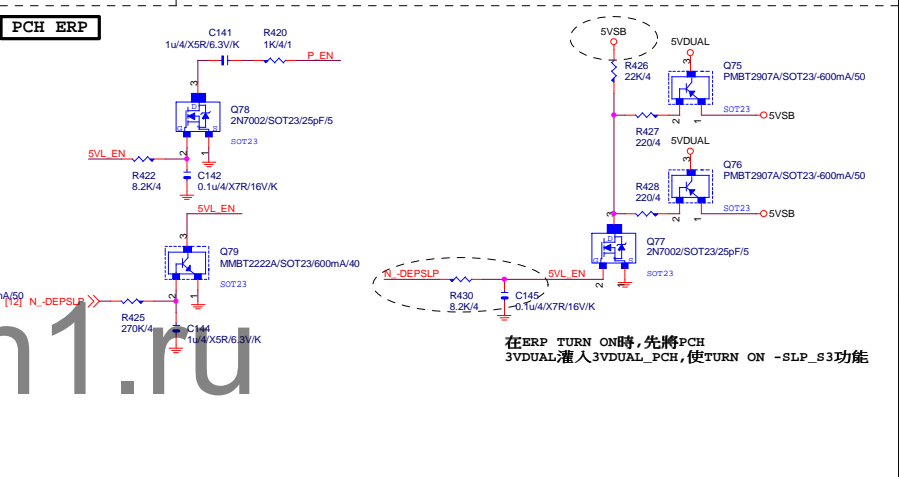
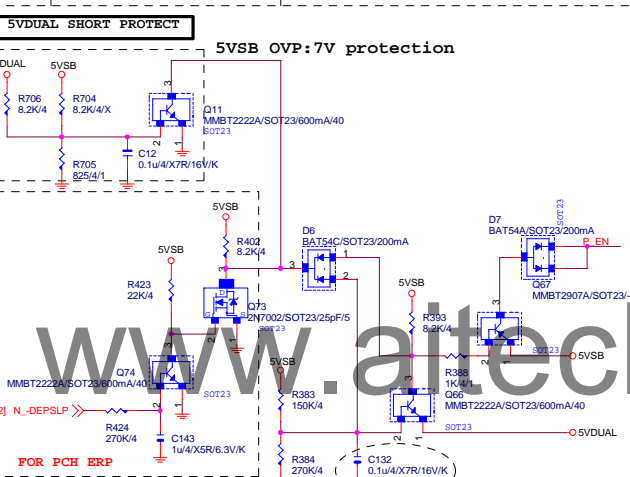
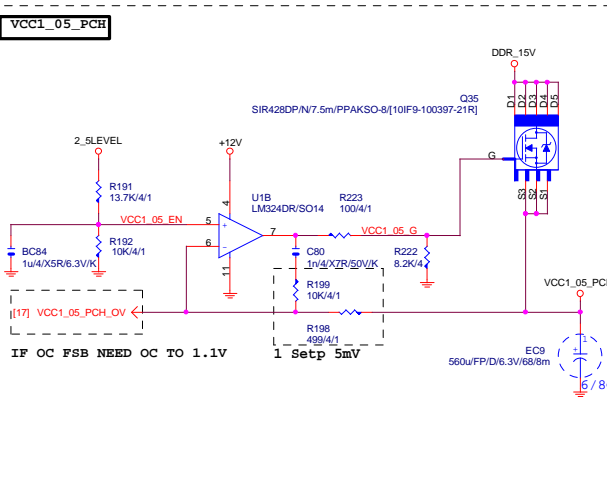
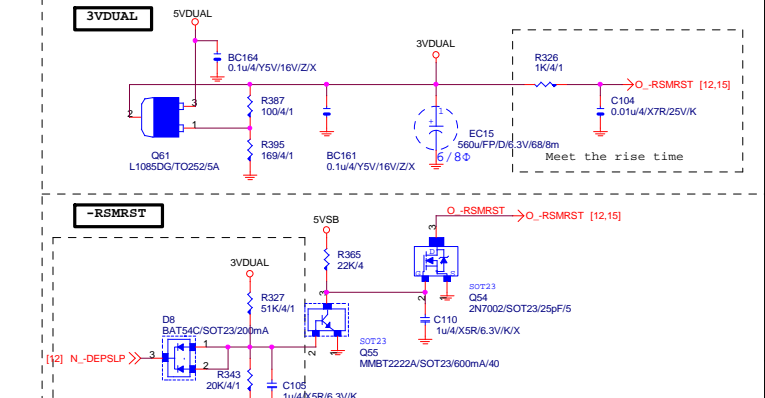
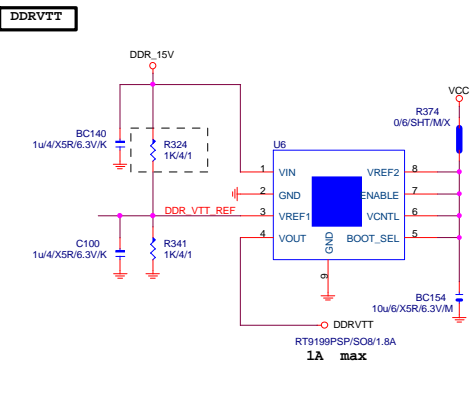
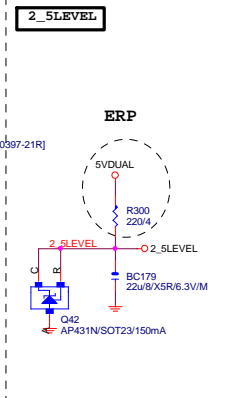
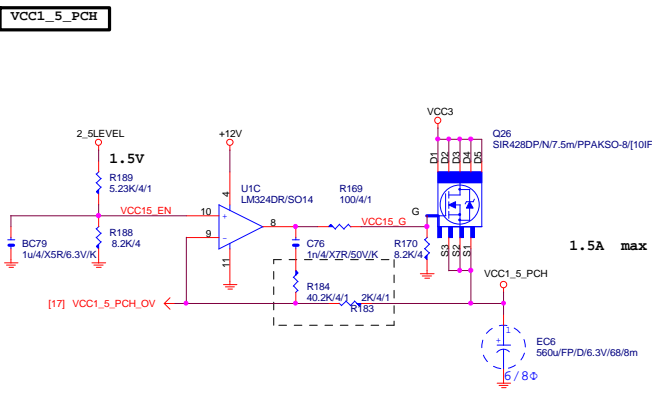


USB30 ESD PROTECT



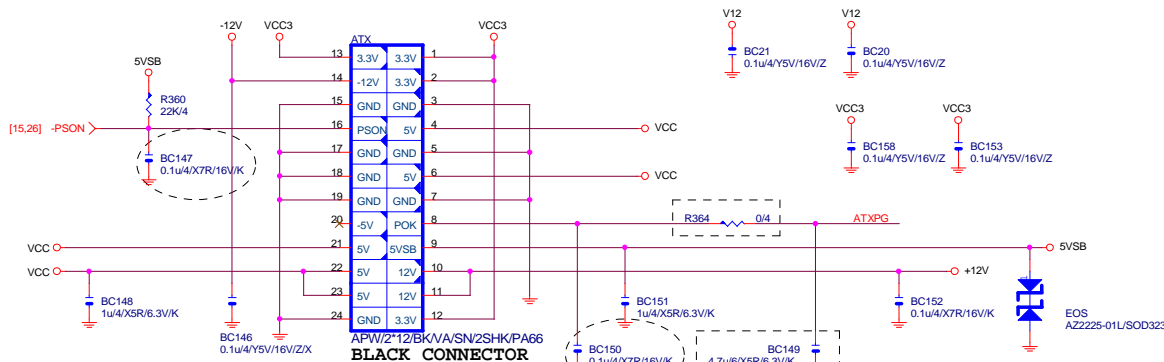
EMI SHORT PAD



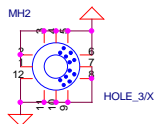




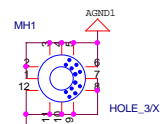
# ATXX24 POWER CONNECTOR



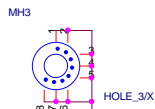
## MB LOCATION



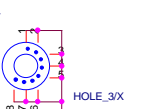
HOLE\_4-RH-5MM-1



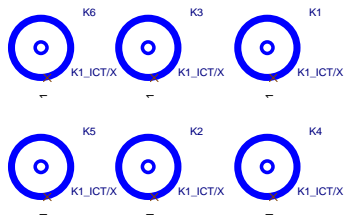
HOLE\_4-RH-5MM-1



HOLE\_4-RH-5MM-5PIN-1

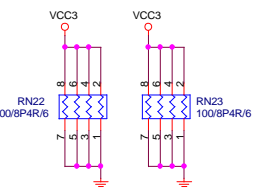


HOLE\_4-RH-5MM-5PIN-1

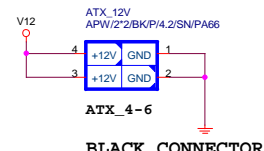


To prevent the 5VSB under loading when boot

## FIX PWR MINMUN LOAD

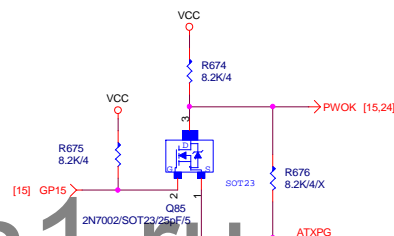


# ATXX4 POWER CONNECTOR



## PWOK PATCH

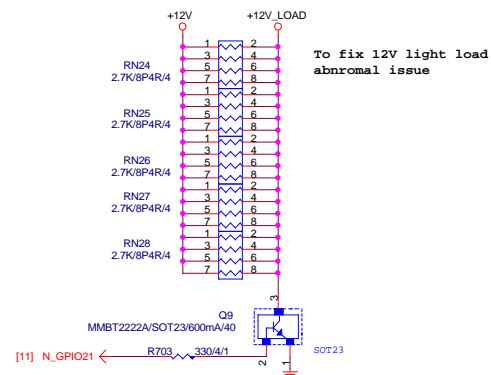
【技術通報R&D技術通報154】



## CLK GEN

N/A

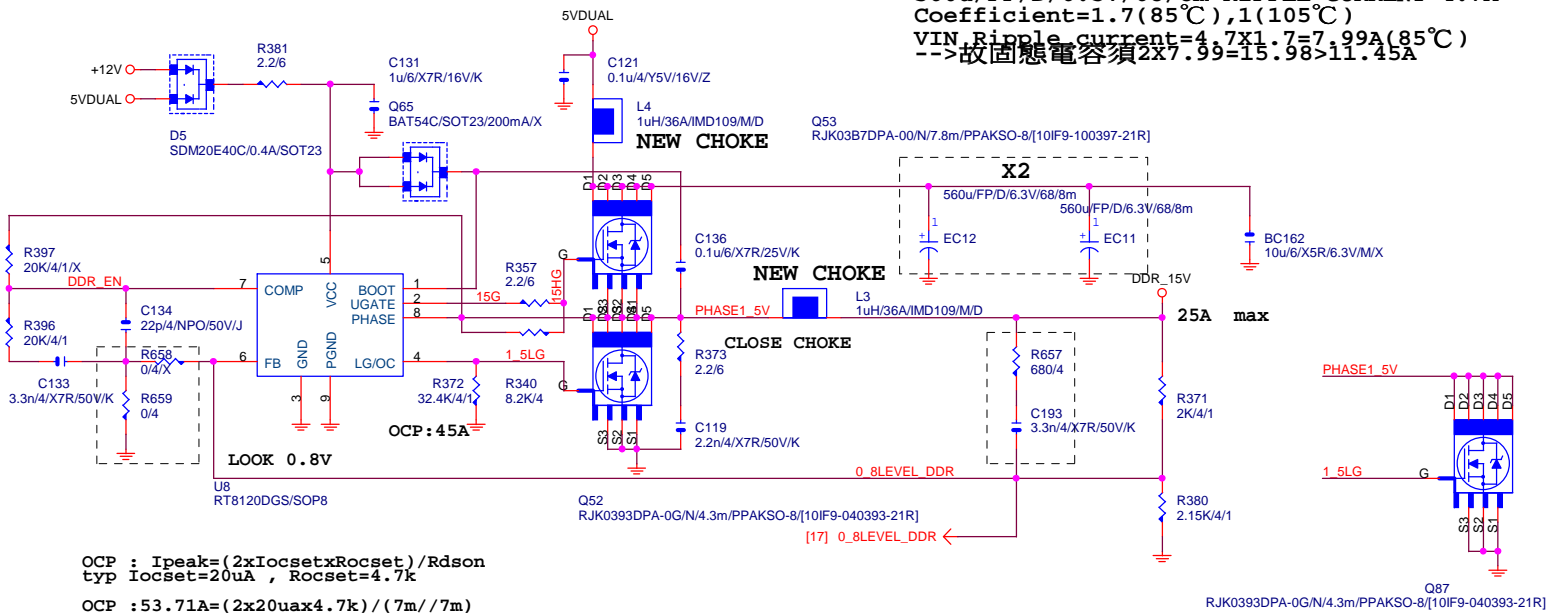
【技術通報R&D技術通報153】



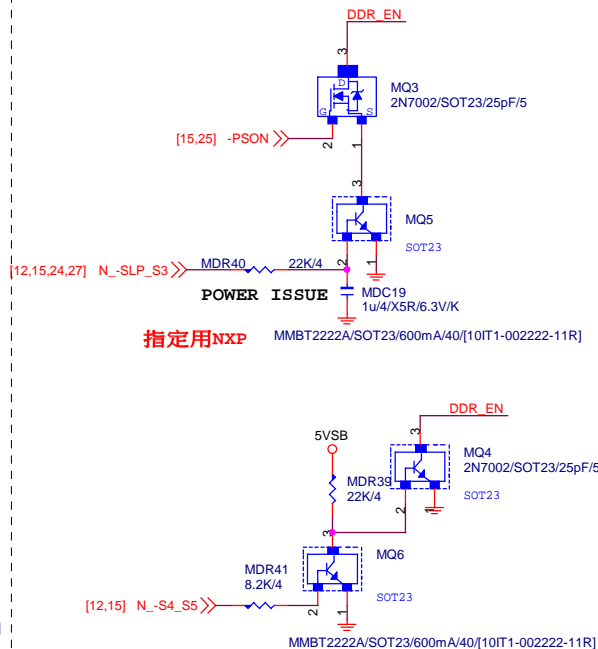
Gigabyte Technology

Title		
ATX CONNECTOR		
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DDR15V



PWR SEQ

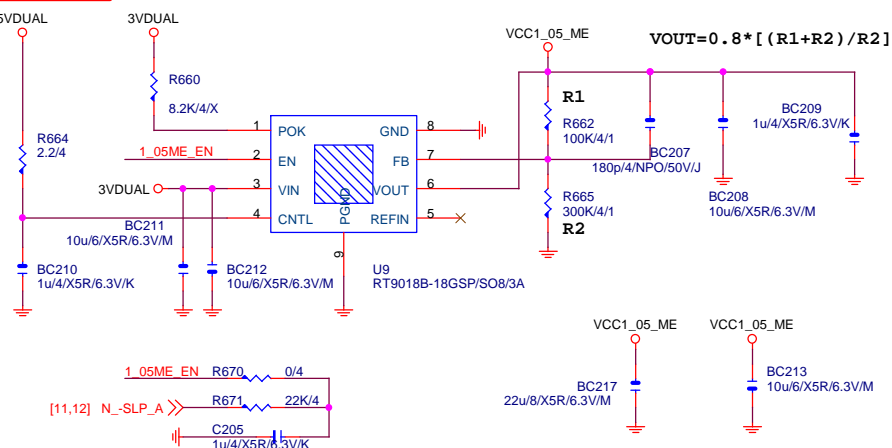


## VCC1\_05\_ME

**Z87 N/A**

Z87+I217V

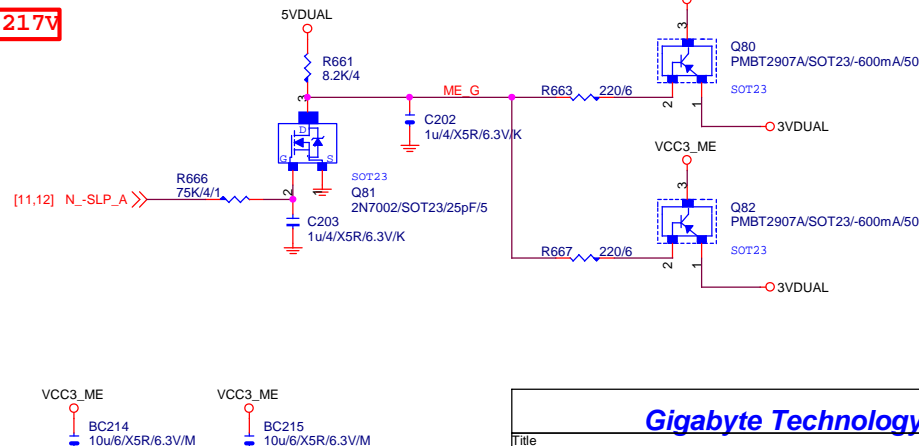
【技術通報R&D技術通報156】  
(RICHTER), (NUVOTON), (EMC)做共用  
PIN7分壓阻值須做修改為100K以上電阻值



VCC3\_ME

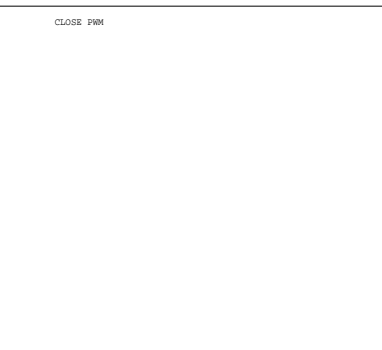
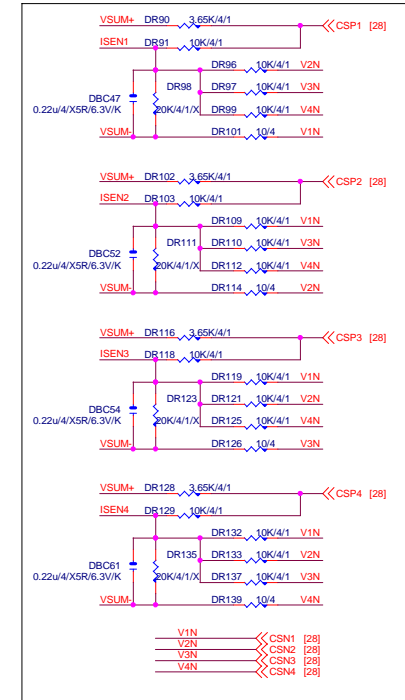
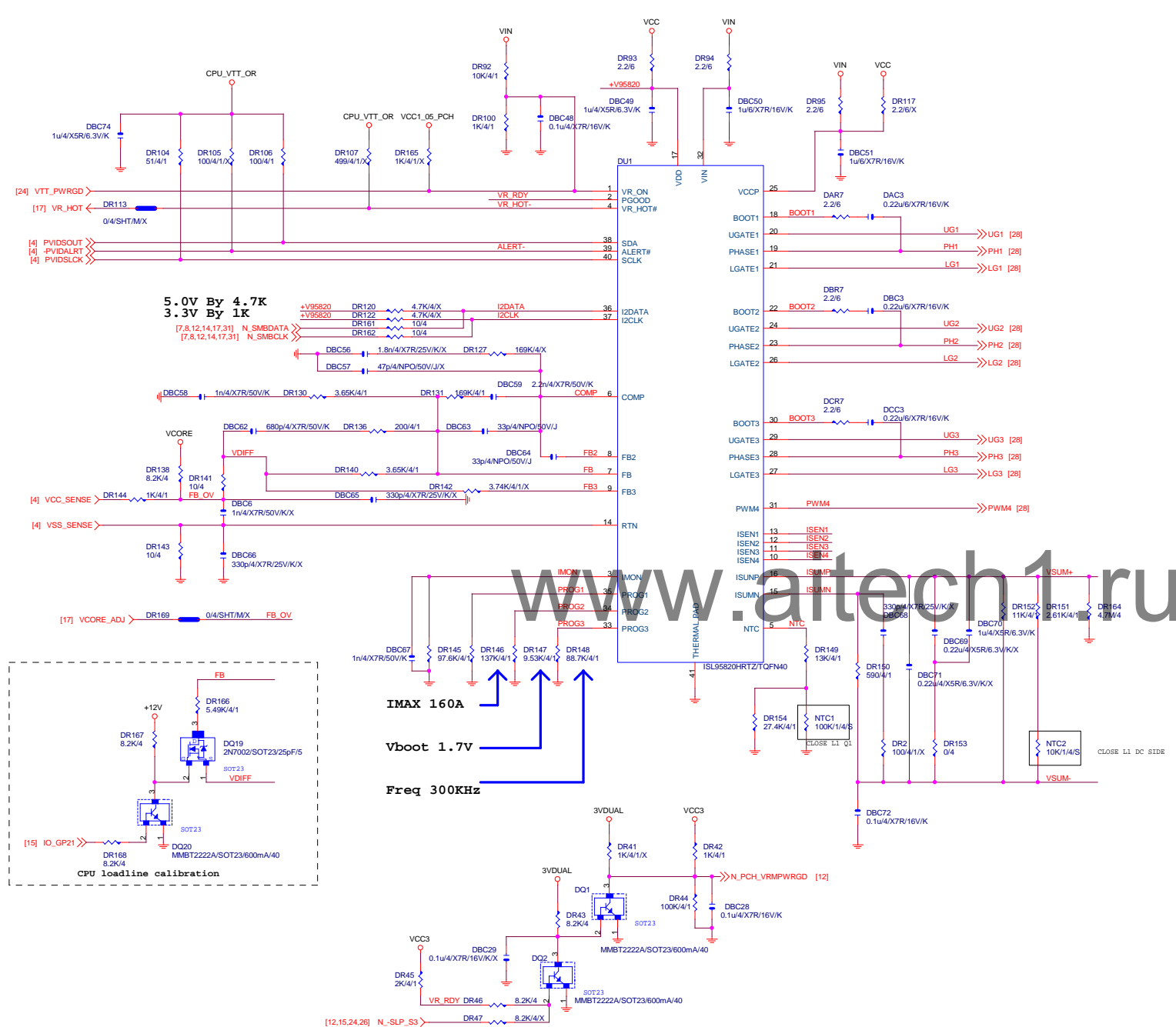
**Z87 N/A**

Z87+I217V

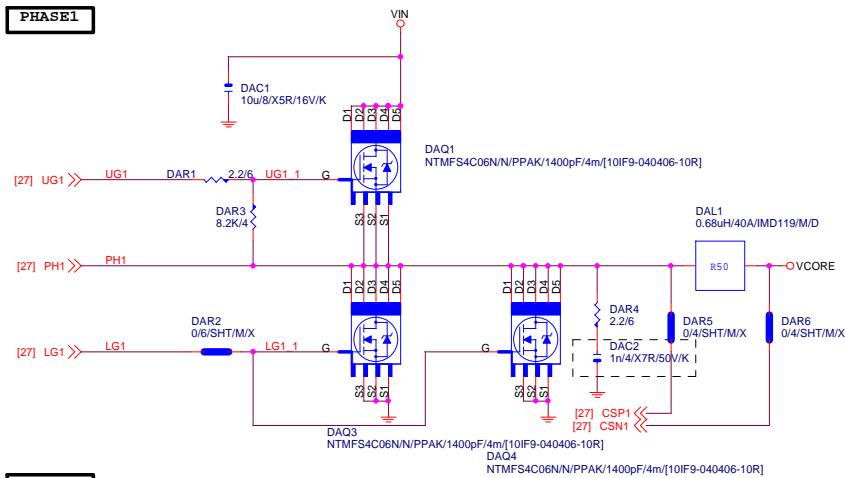


## Gigabyte Technology

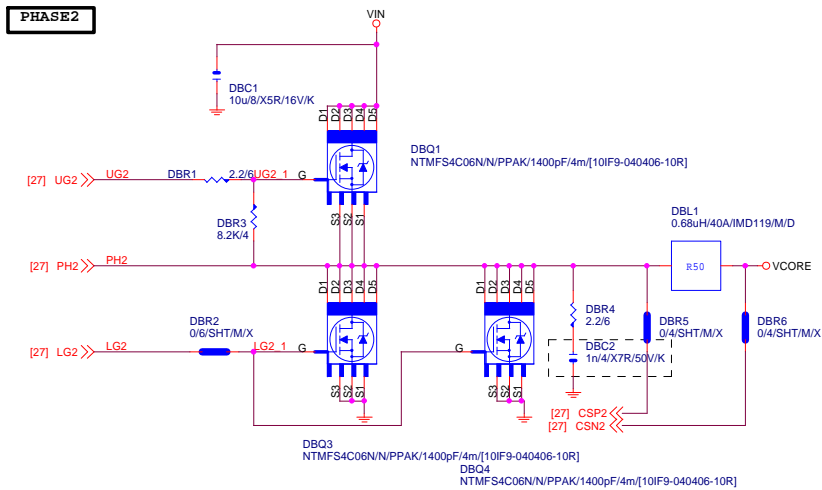
Title				DDR & M3 POWER				Revision	
Size B		Document Number		GA-H87N-WIFI				Rev 1.	
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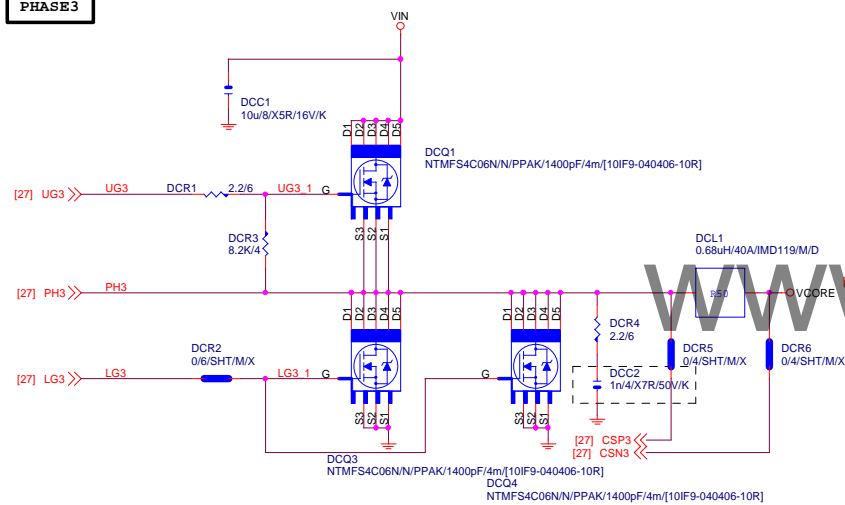
# PHASE1



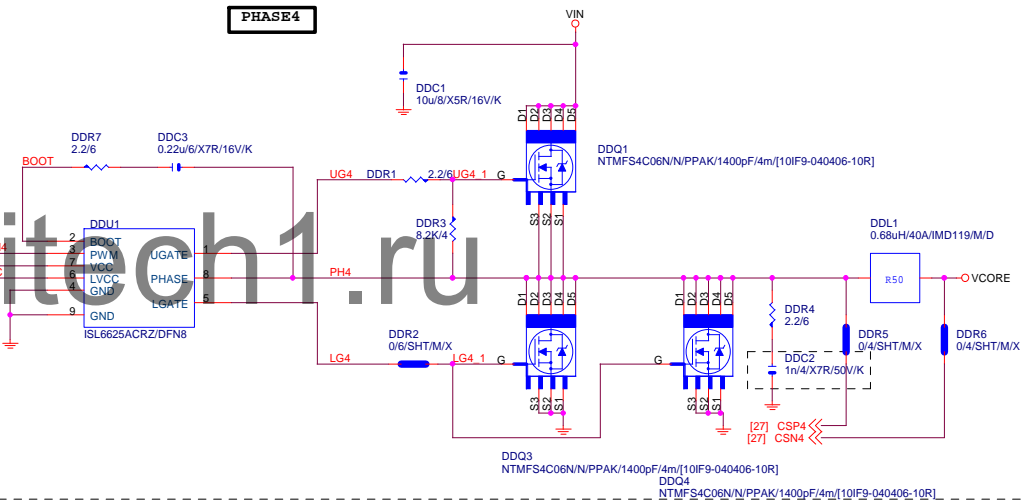
# PHASE2



# PHASE3

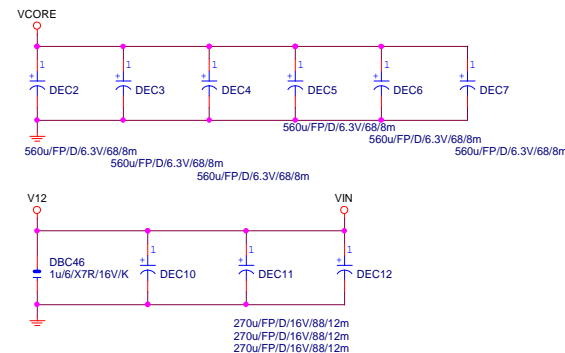


# PHASE4



# MOS HEATSINK

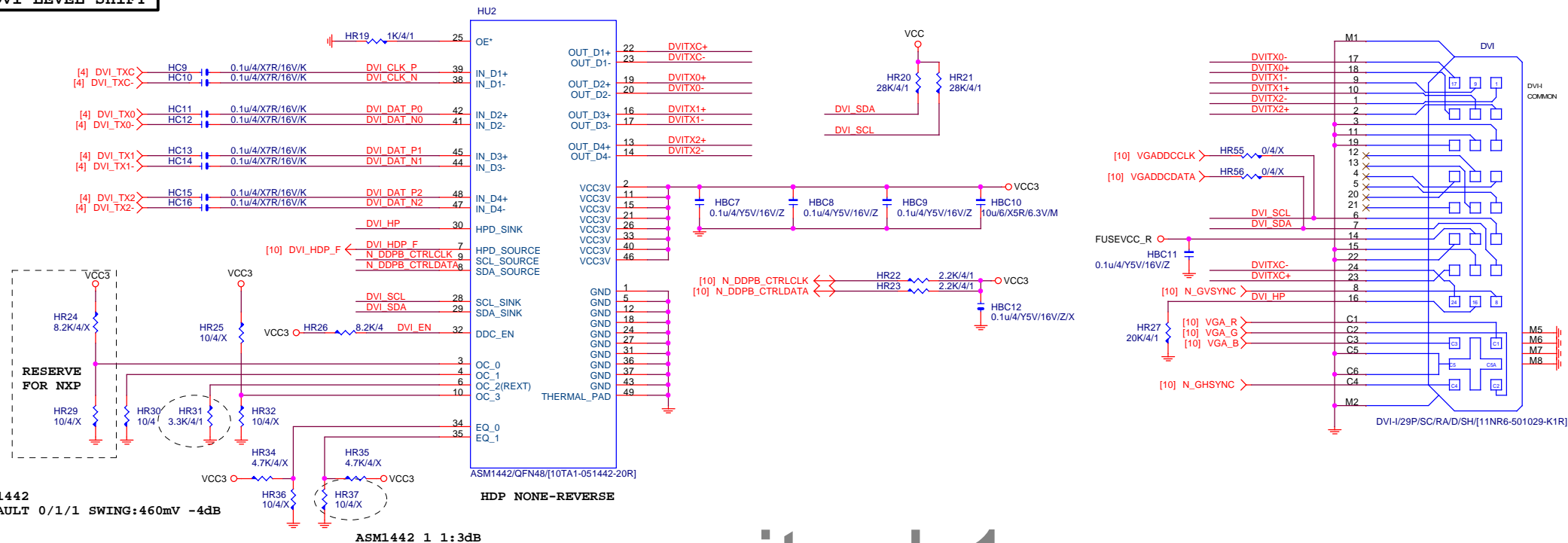
N/A



Gigabyte Technology

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# DVI LEVEL SHIFT



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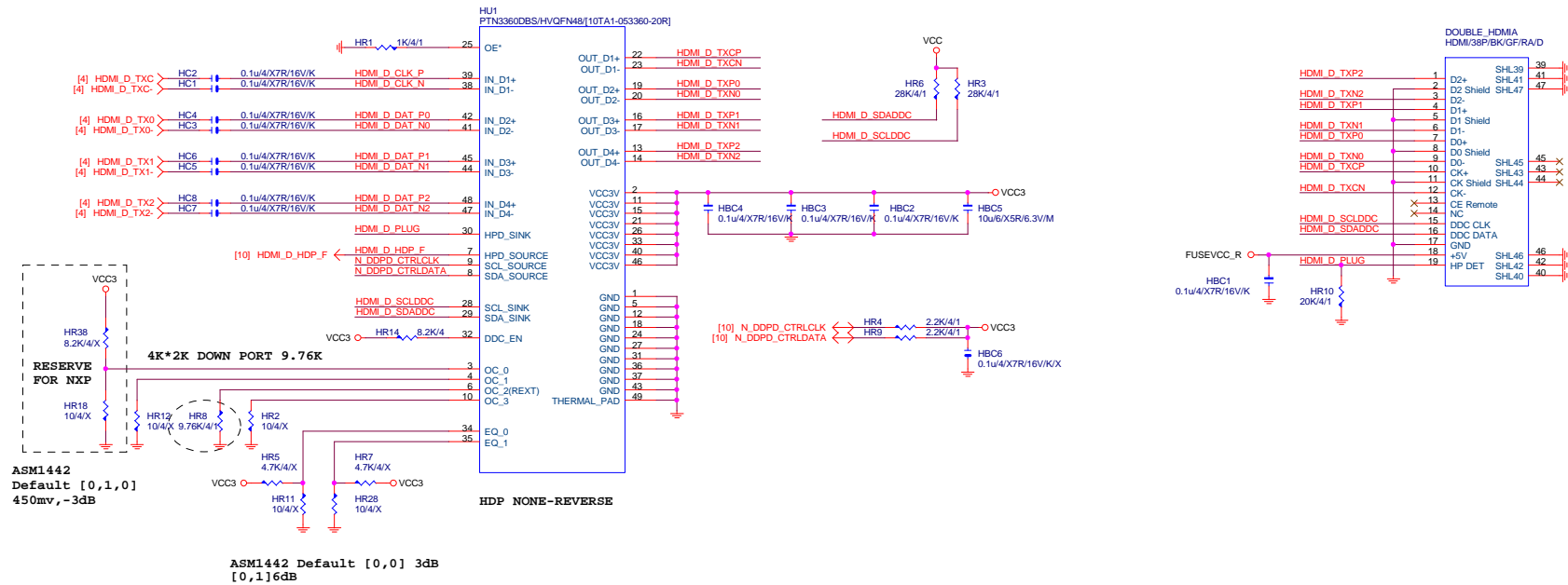
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GA-H87N-WIFI

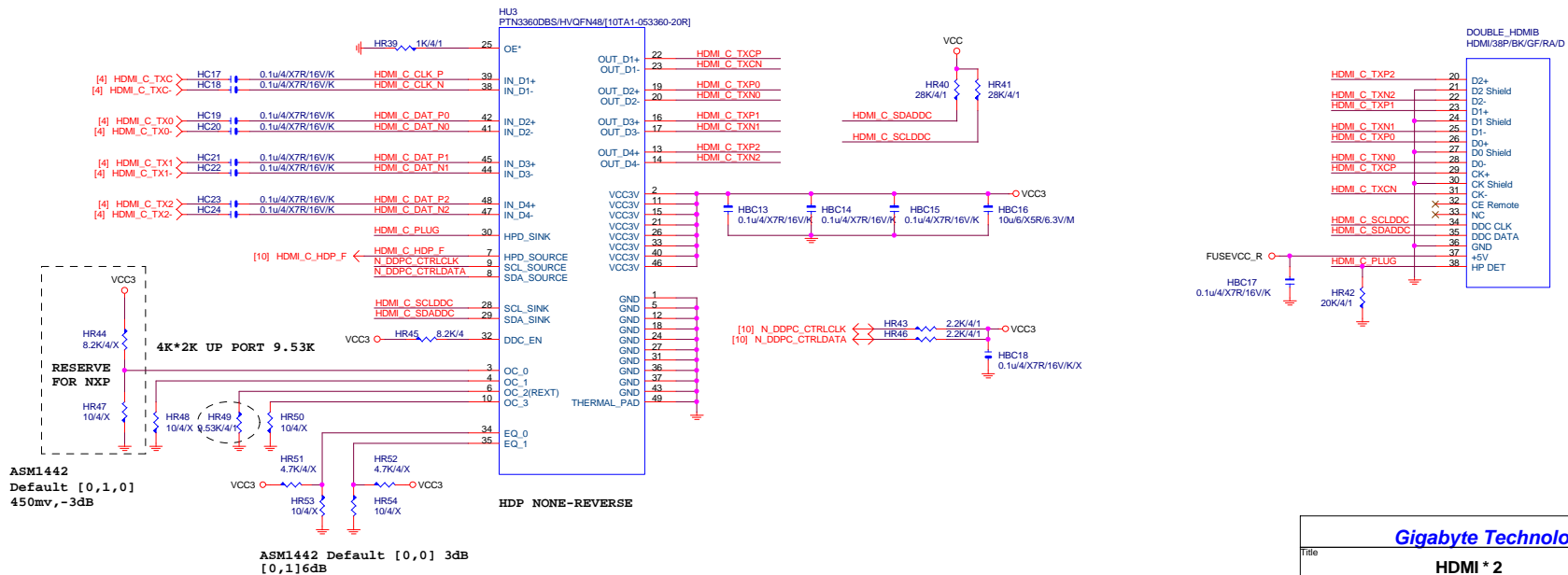
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## HDMI LEVEL SHIFT



## HDMI LEVEL SHIFT



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