

Model Name: GA-B85N PHOENIX-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 8620 LPC IO
16	COM,KB_USB30
17	HWM,FAN CTRL,OV,-PROCHOT
18	DUAL BIOS
19	FP,FUSB,SPK,SATALED
20	Realtek ALC898
21	REAR AUDIO JACK
22	USB DAC POWER, mini PCI-E
23	INTEL LAN I217V
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+USB2.0*2
31	mSATA, Mini-PCIe
32	Breathing LED

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Gigabyte Technology			
Cover Sheet			
Size	Document Number	Rev	
Custom	GA-B85N-Phoenix-WIFI	1.1	
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Model Name: GA-B85N PHOENIX-WIFI *Revision 1.1*

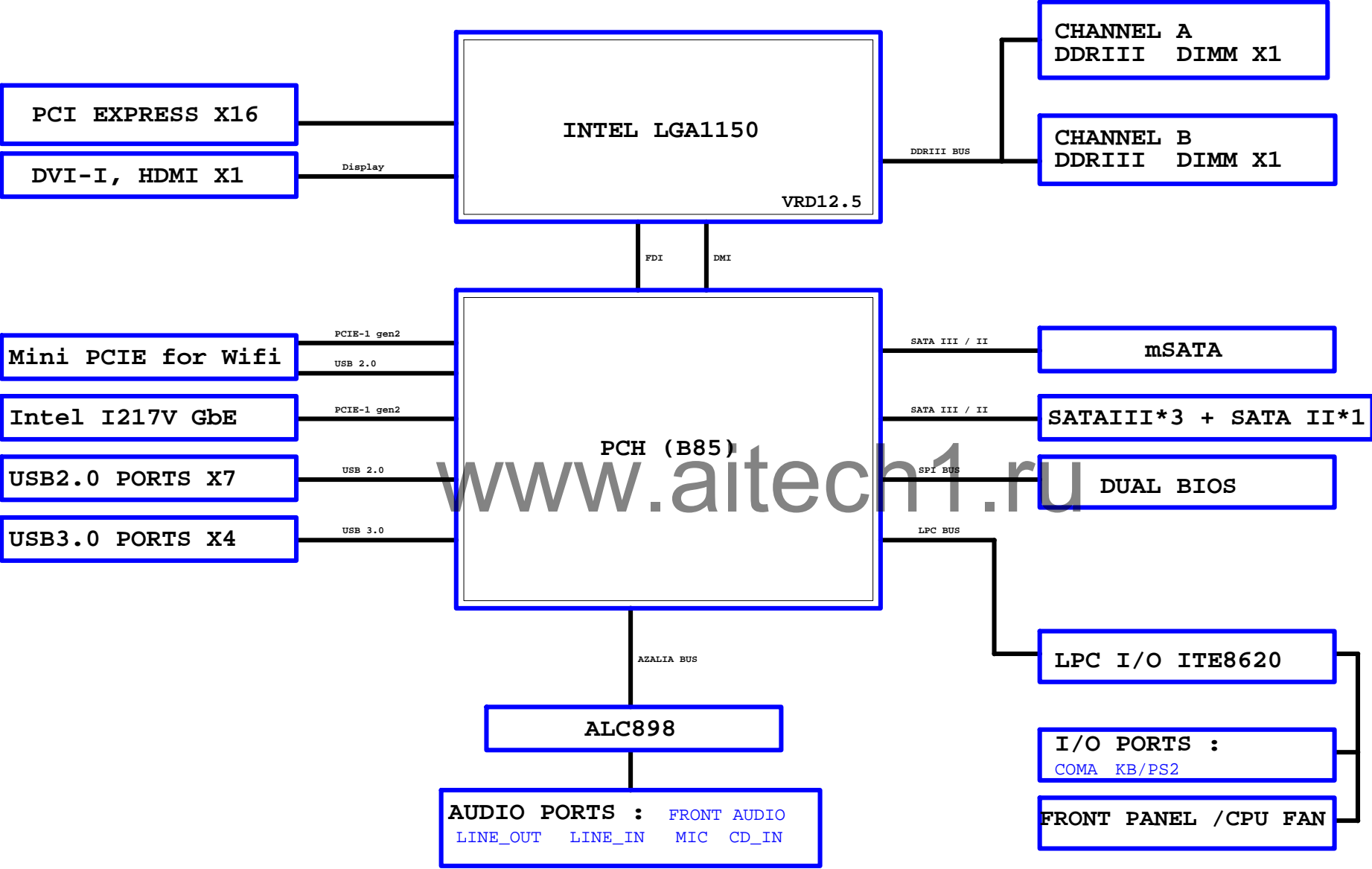
Circuit or PCB layout change

Component value change history

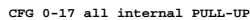
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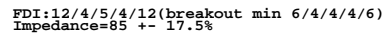
BLOCK DIAGRAM



(E)



(D)



(c)

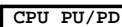
IGA11



100



CPU	SVID
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CPU LGA1150-A

Size	Document Number	GA-B85N-Phoenix-WIFI	Rev
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Custom	GA-BUSN-F-Fluorix-WIFI	1.1
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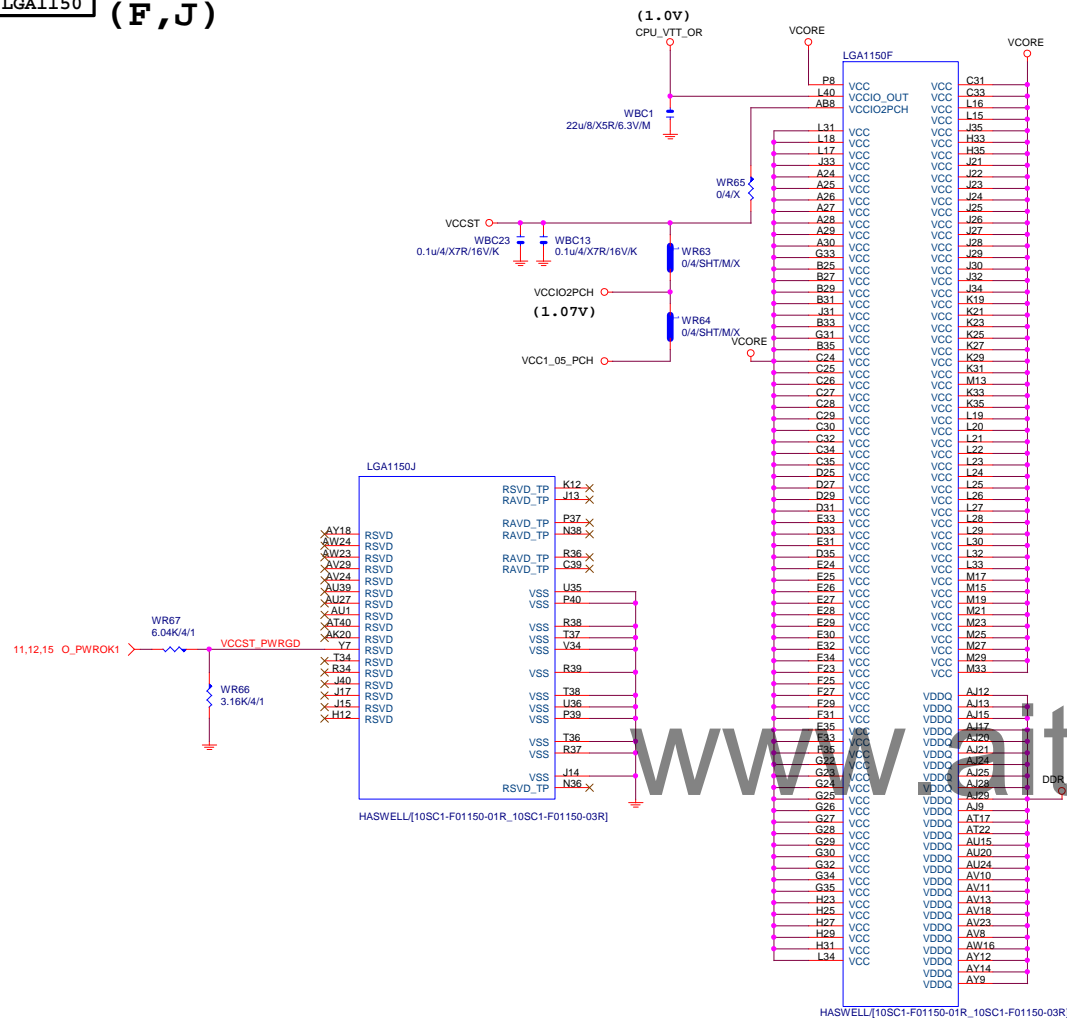
Date: Tuesday, April 01, 2014 Sheet 4 of 32

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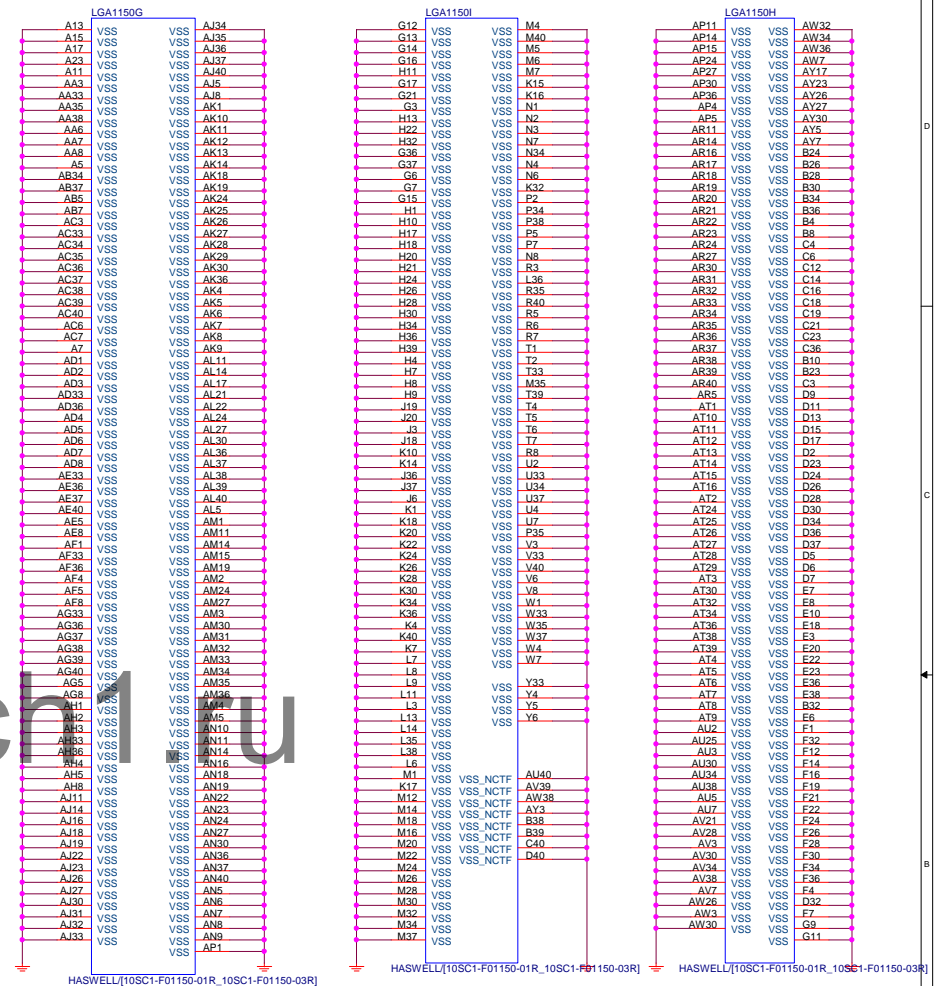
LGA1150A

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MAAA3	AW17	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA5	AU18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
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MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AH38	MDA10
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AH37	MDA11
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LGA1150 (F, J)

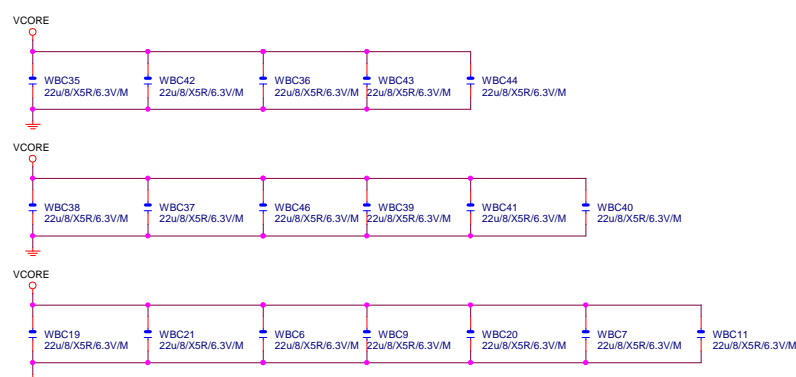


LGA1150 (G,H,I)



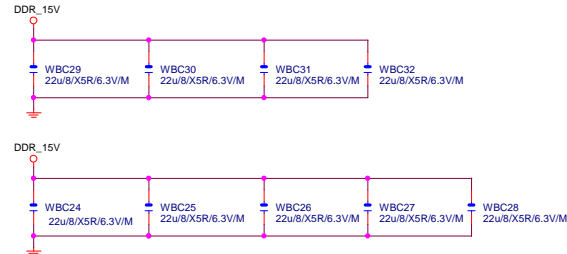
VCore CAP

(X18)



DDR CAP

(x9)

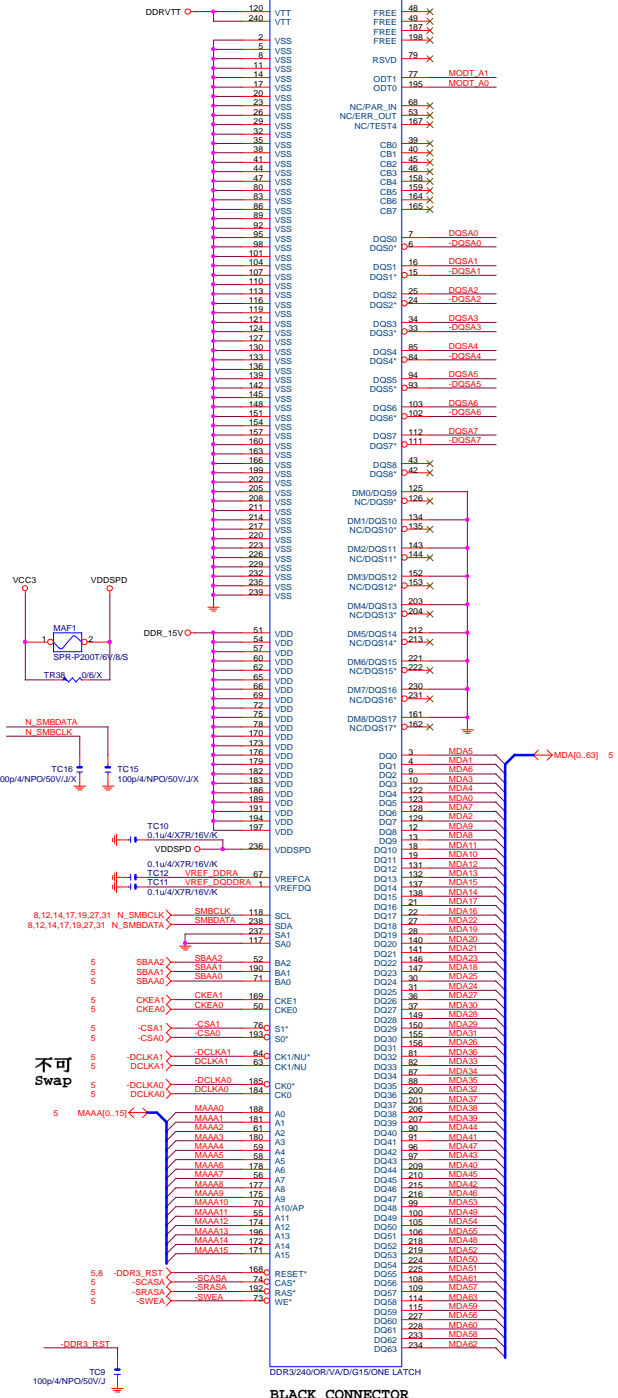


Gigabyte Technology

Title			
CPU LGA1150-C			
Size	Document Number	Rev	
Custom	GA-B85N-Phoenix-WIFI	1.1	
Date:	Tuesday, April 01, 2014	Sheet	6 of 32

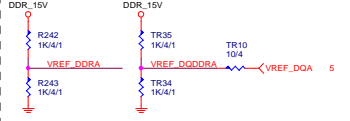
DDR3

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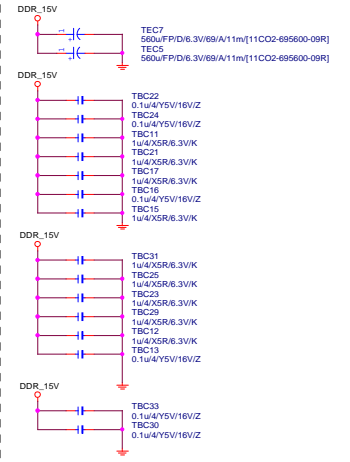


DDR3

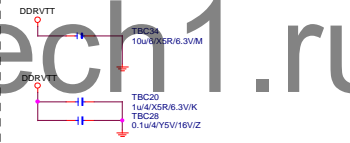
DDR3 VREF



DDR15V Decouple



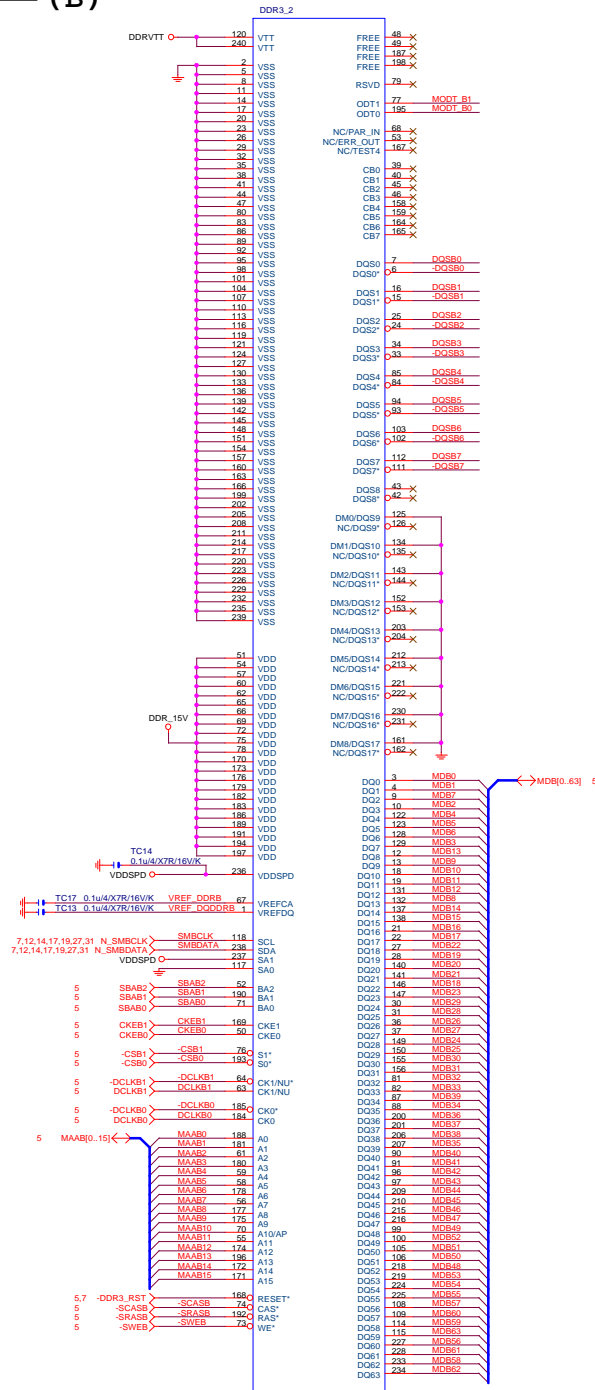
DDRVTT Decouple



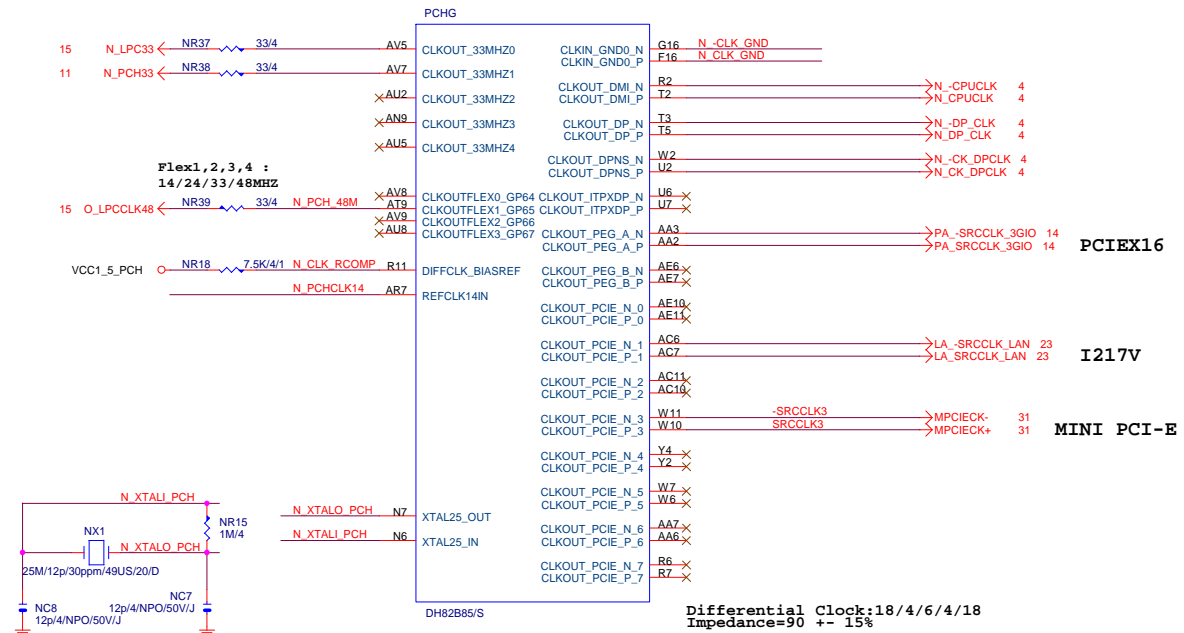
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DDR3

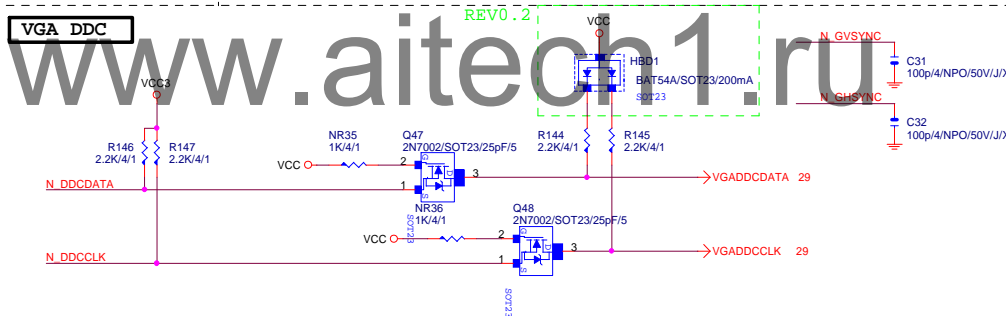
(B)



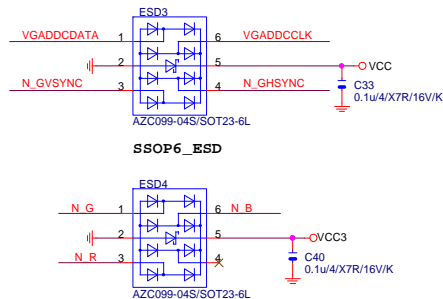
PCH (G)



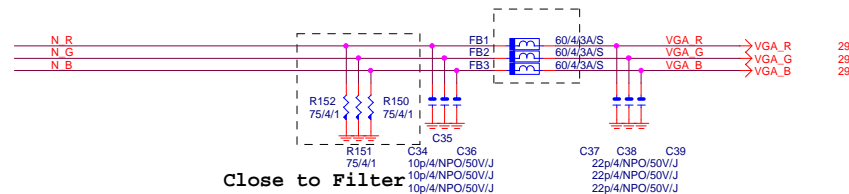
VGA DDC



VGA ESD



VGA DDC



Close to Filter

Gigabyte Technology

Title	PCH DISPLAY ,CLK BUFFER
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Size Custom	Document Number GA-B85N-Phoenix-WIFI	Rev 1.1
Date: Tuesday, April 01, 2014	Sheet 10 of 32	

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%

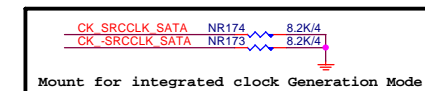
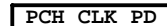


Figure 1 shows the pin connections for three components: NR160, NR55, and NR53. Each component is connected to VCC3 and has four signal pins (1, 2, 3, 4) connected to specific input/output pins (N_PIQRB, N_PIQRD, N_PIQRH, N_PIQRC for NR160; N_PIQRO, N_PIQRA, N_PIQRF, N_PIQRE for NR55; N_GPIO55, N_GPIO5, N_GPIO17, N_GPIO6 for NR53). The components are labeled with their part numbers and pin counts (8.2K/8P4R/4).

Component	Pin	Signal
NR160 (8.2K/8P4R/4)	1	N_PIQRB
	2	N_PIQRD
	3	N_PIQRH
	4	N_PIQRC
NR55 (8.2K/8P4R/4)	1	N_PIQRO
	2	N_PIQRA
	3	N_PIQRF
	4	N_PIQRE
NR53 (8.2K/8P4R/4)	1	N_GPIO55
	2	N_GPIO5
	3	N_GPIO17
	4	N_GPIO6

SATA3.0
 SATA2/7/WH/OP/VA/D/1/B/PA66
BLACK CONNECTOR

SATA3.1
 SATA2/7/WH/OP/VA/D/1/B/PA66
BLACK CONNECTOR

SATA3.2
 SATA2/7/WH/OP/VA/D/1/B/PA66
BLACK CONNECTOR

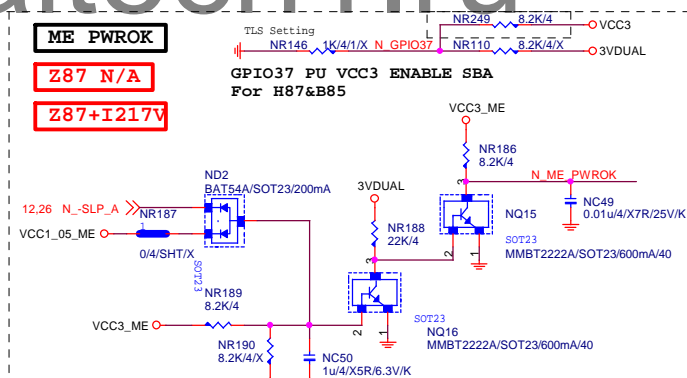
SATA2
 SATA2/7/BK/H/OP/VA/D/1/B
BLACK CONNECTOR

SATA2.0

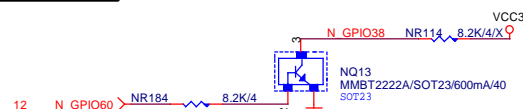
ME PWROK

Z87 N/A

Z87+I217V



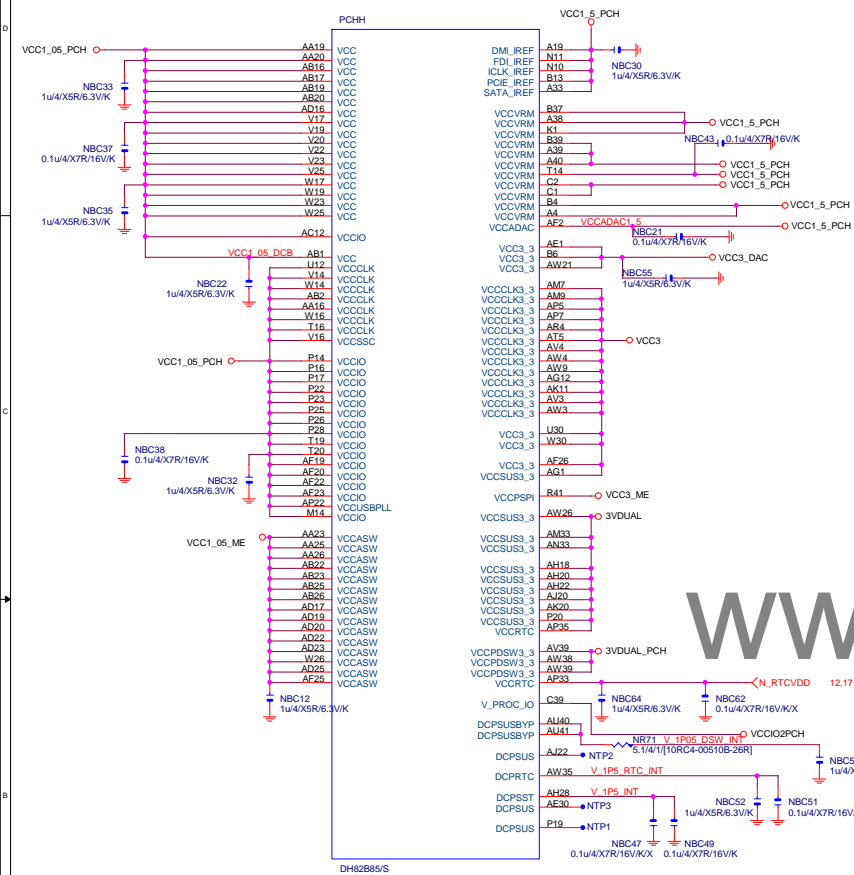
GPIO38 Ctrl



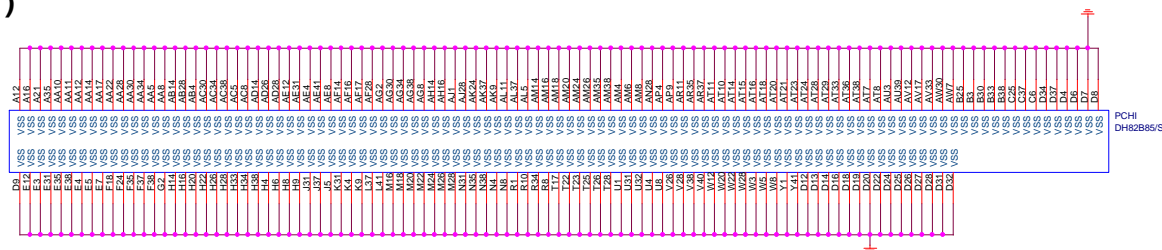
Gigabyte Technology

Title				PCH HOST , SATA, PCI			
Size	Document Number	Rev					
Custom	GA-B85N-Phoenix-WiFi	1.1					
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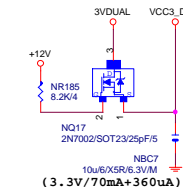
PCH (H)



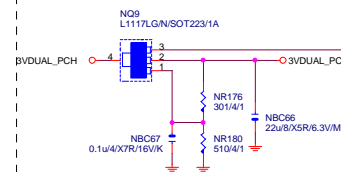
PCH (I)



VCC3_DAC

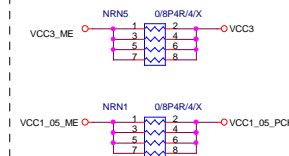


3VDUAL_PCH



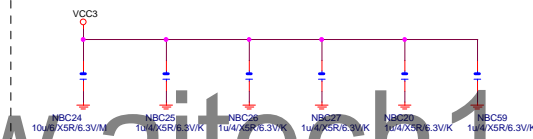
SHT PWR

M3 POWER

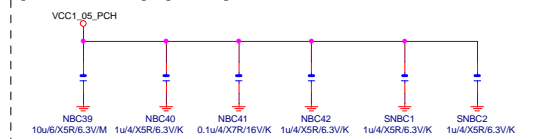


CAP

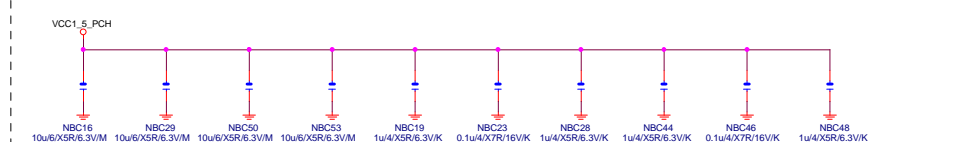
(3.3V) (X6)



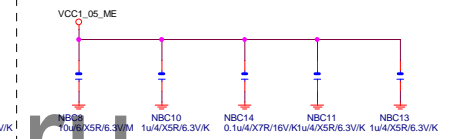
(1.05V)(x6)



(1.05V) (x10)



(1.05V) (x5)



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



)(3.3V) (x2)

3VDUAL

	NBC60	NBC63
1u/4/X5R/6.3V/K	0.1u/4/X7R/16	

Figure 1. The effect of the α -value on the estimated value of β for the 1000 simulated datasets. The α -value is varied from 0.001 to 0.01. The β -value is estimated by the proposed method. The β -value is estimated by the proposed method. The β -value is estimated by the proposed method.

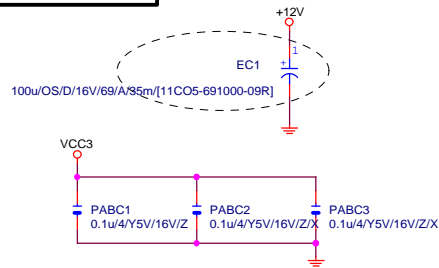
NBC48
1u4/X5R/6.3V/K

gabyte Technology

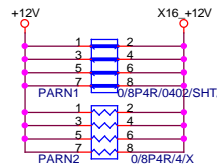
GA-B85N-Phoenix-WIFI

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1				

PCIEX16 CAP



PCIEX16 PROTECT SHT

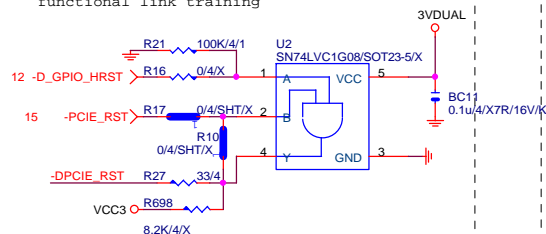


PCIEX16 AC CAP

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

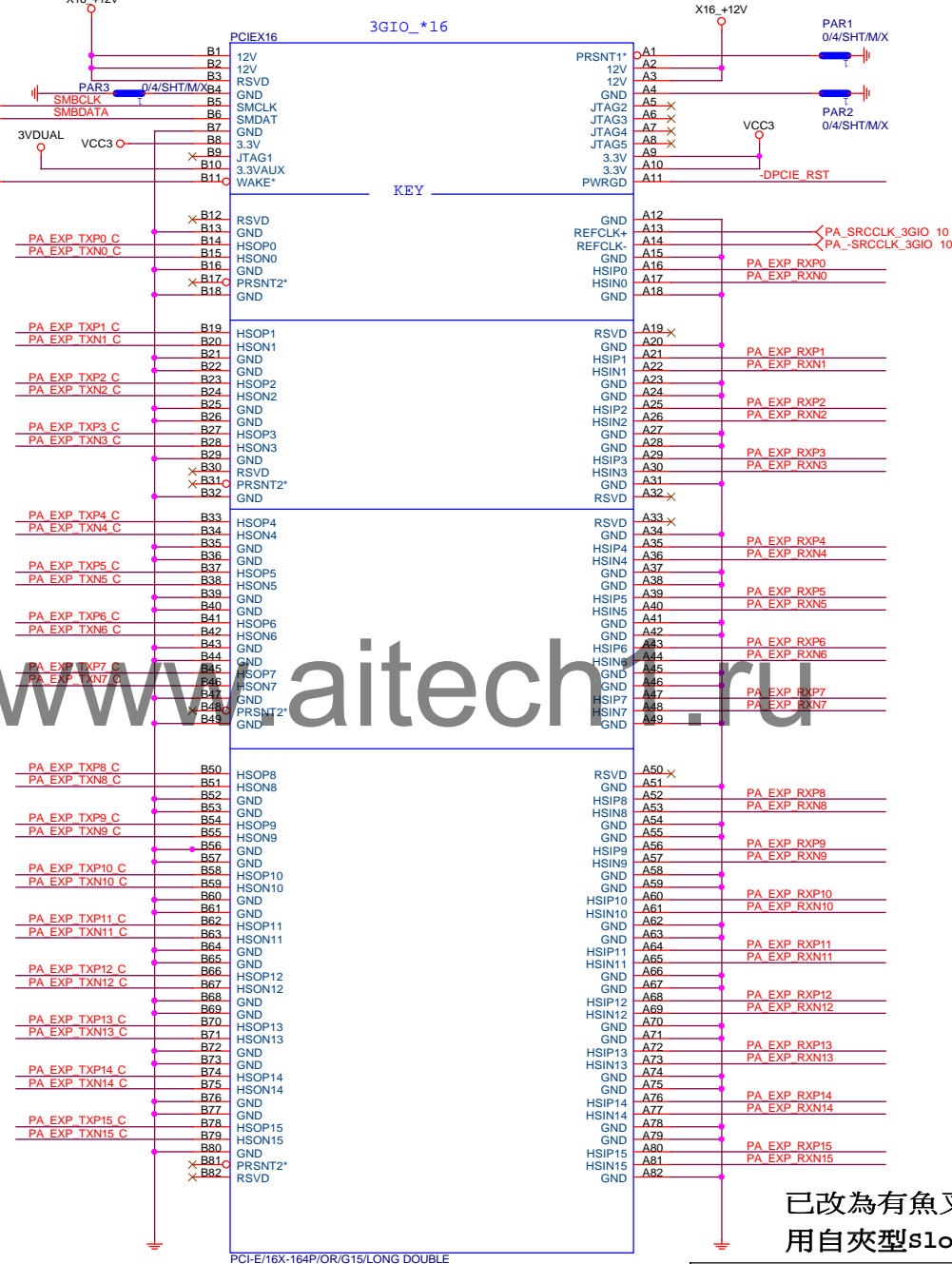
PA EXP RXP0.15] >>> PA_EXP_RXP[0.15] 4
 PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] 4
 PA EXP TXP0.15] >>> PA_EXP_TXP[0.15] 4
 PA EXP TXN0.15] >>> PA_EXP_TXN[0.15] 4

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



PCIEX16 SLOT

PCIESLOT-164DN-P



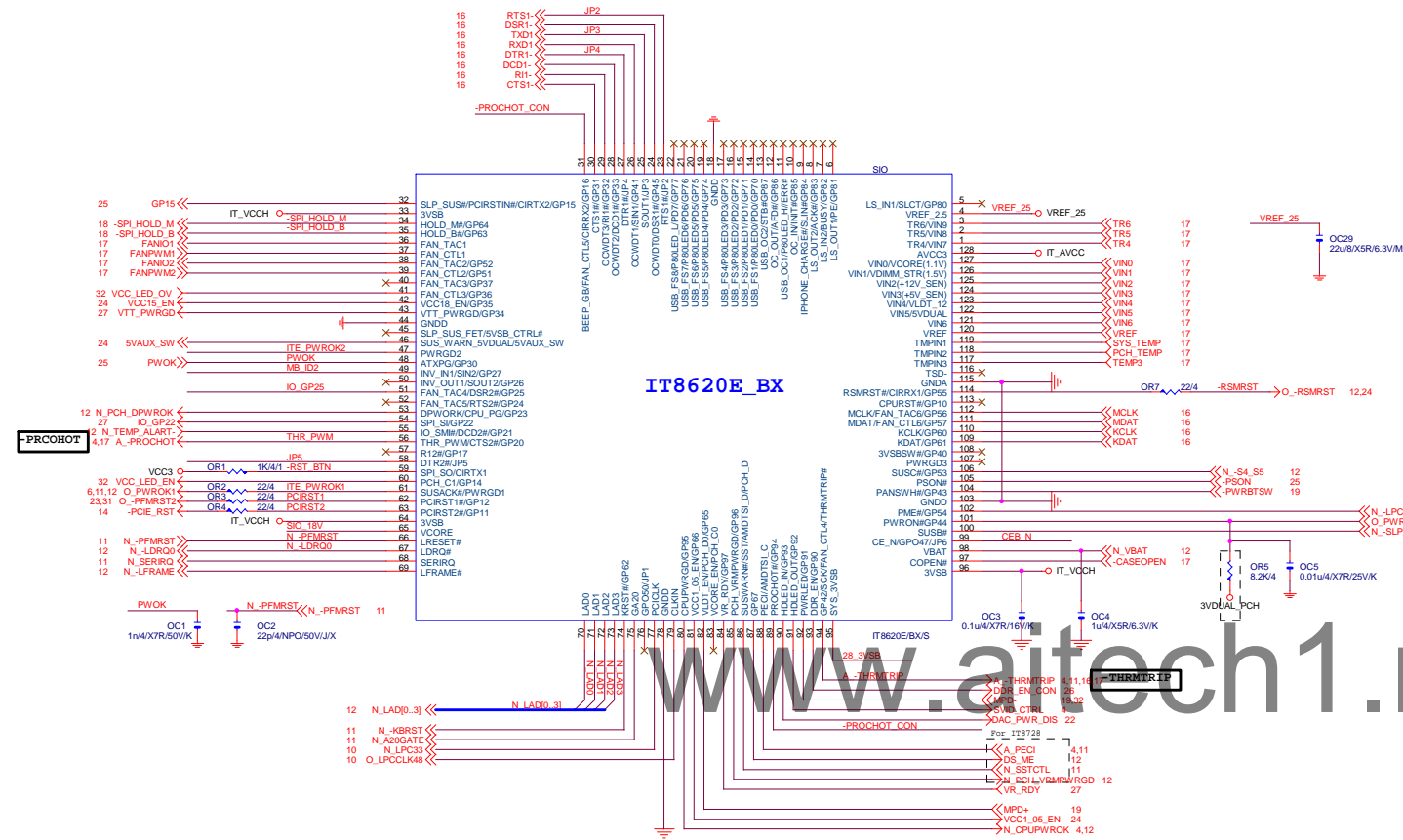
BLACK CONNECTOR

已改為有魚叉腳的slot
用自夾型slot

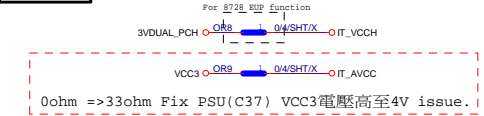
Gigabyte Technology

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PCI EXPRESS * 16			
Size	Document Number	Rev	
Custom			
GA-B85N-Phoenix-WIFI 1.1			
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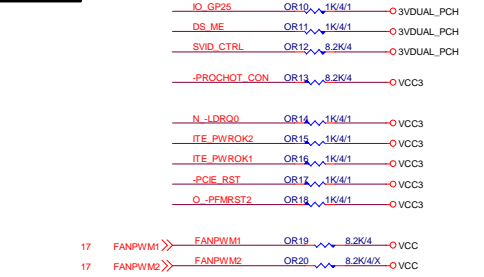
SIO IT8620



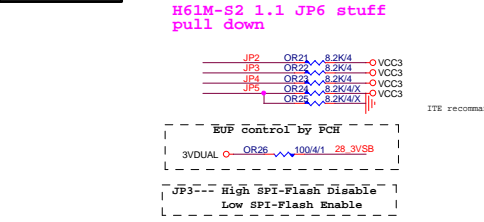
PWR SHT



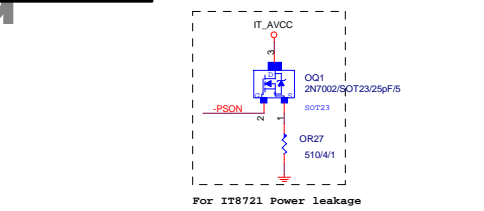
SIO PU



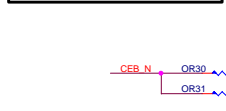
SIO STRAP



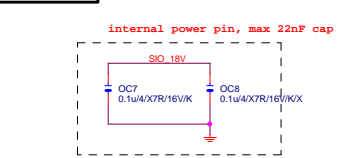
Power leakage



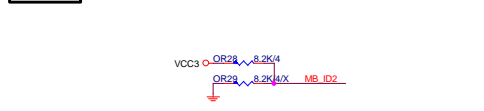
DUAL BIOS OPT STRAP



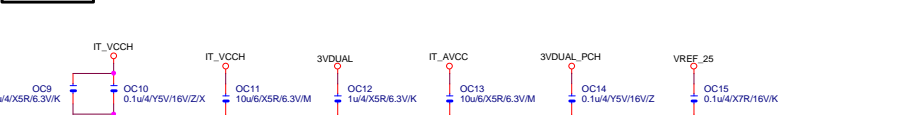
SIO_18V



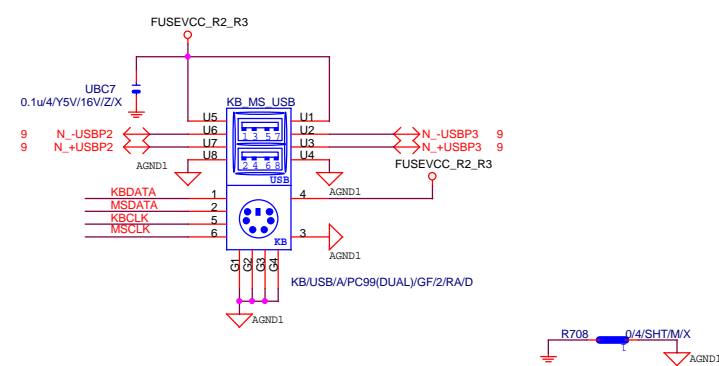
MB ID



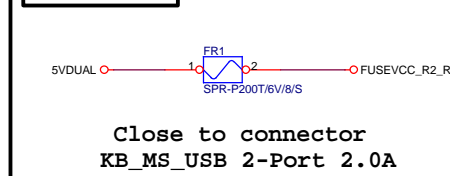
SIO CAP



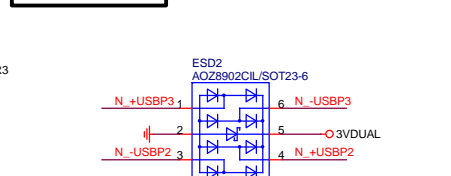
KB/MS



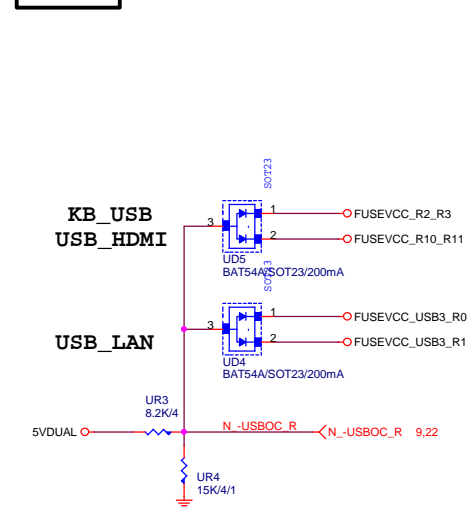
USB2.0 PWR



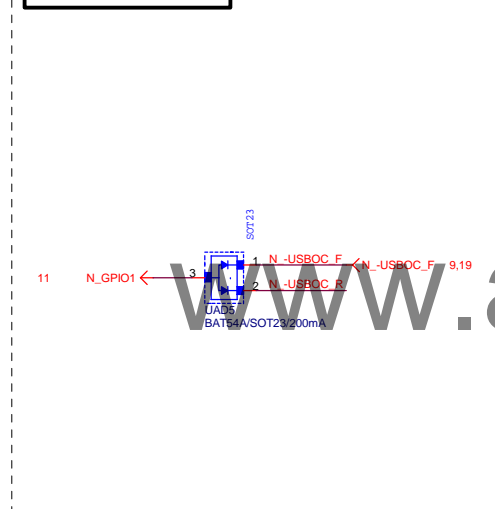
USB2.0 ESD



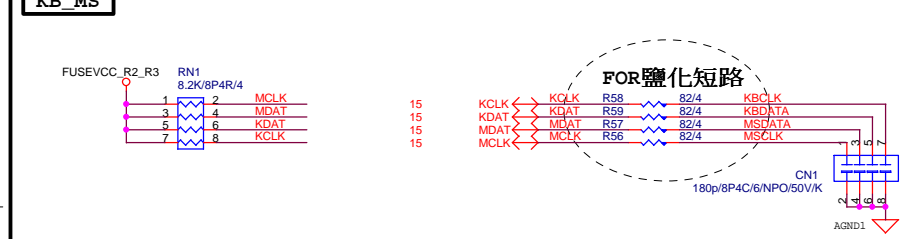
-USBOC_R



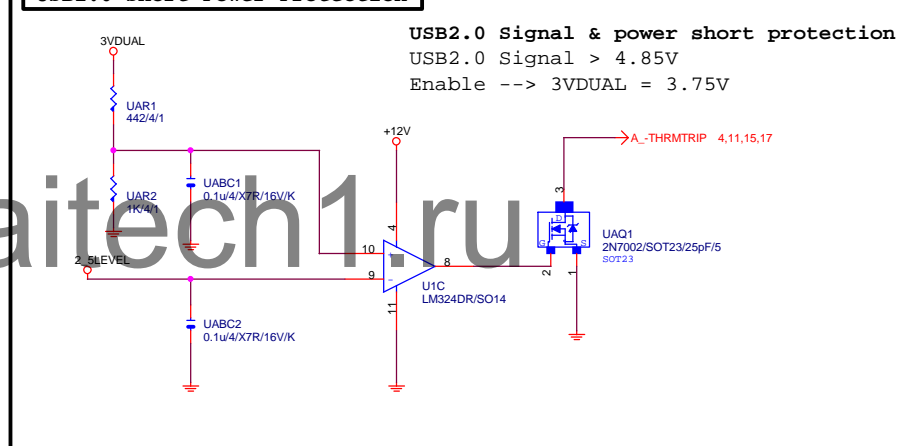
USB POWER PROTECT



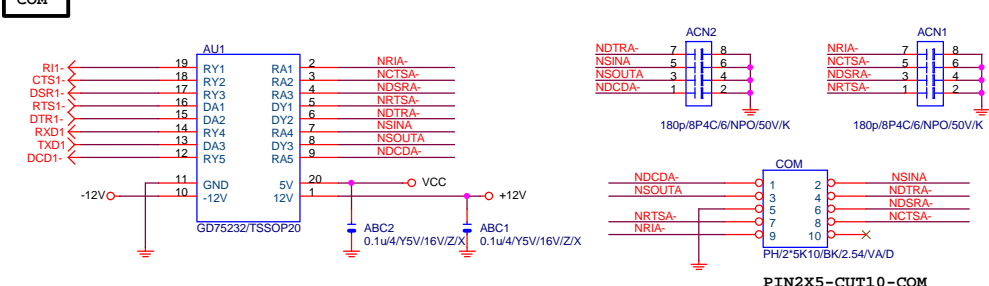
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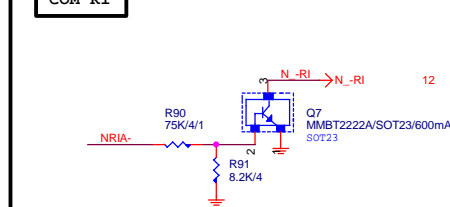
USB2.0 Short Power Protection



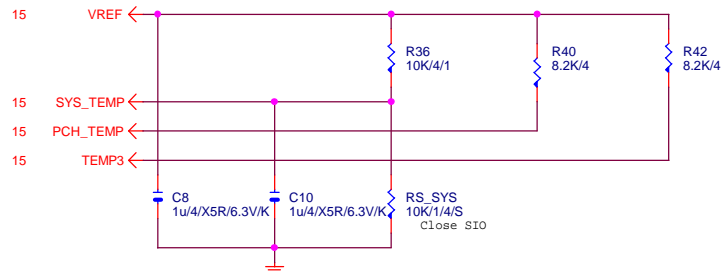
COM



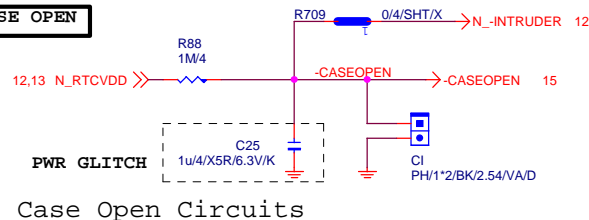
COM RI



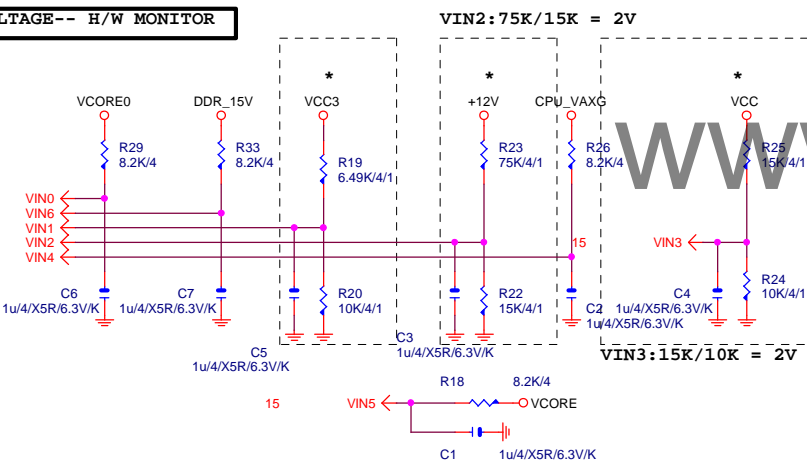
TEMP H/W MONITOR



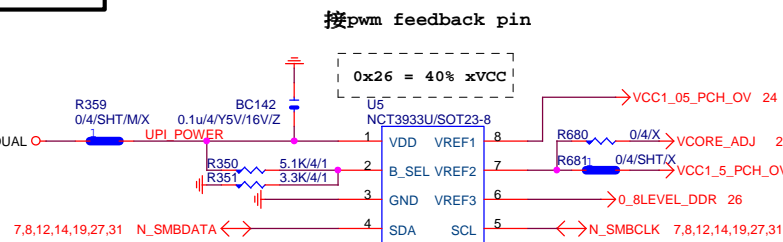
CASE OPEN



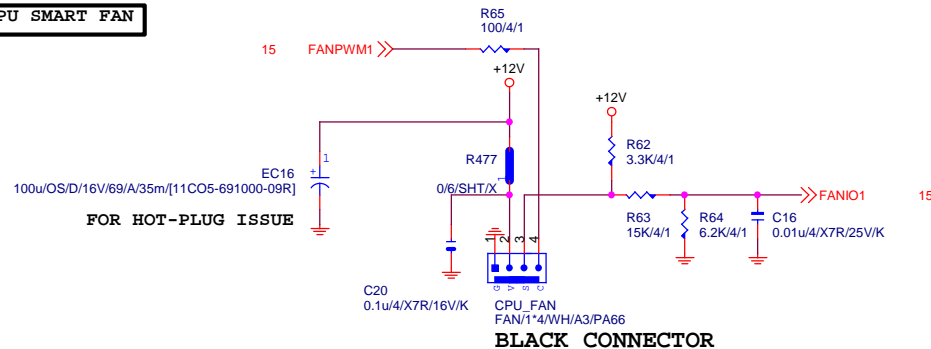
VOLTAGE-- H/W MONITOR



OV NCT3933

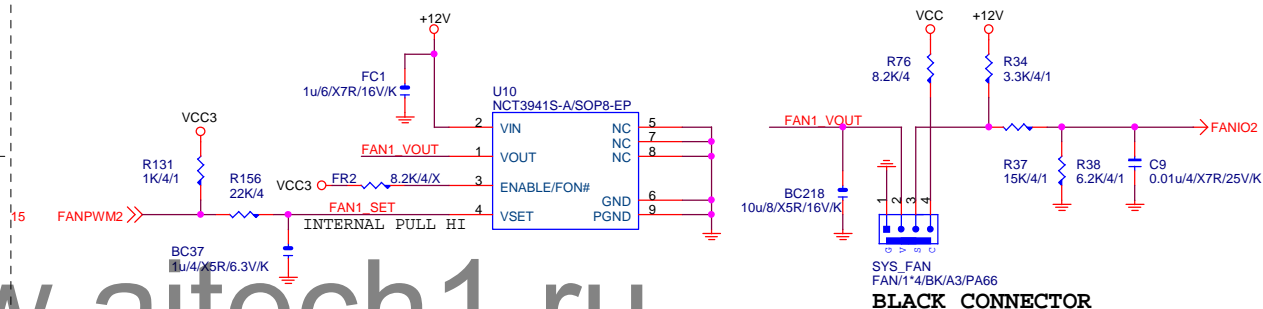


CPU SMART FAN

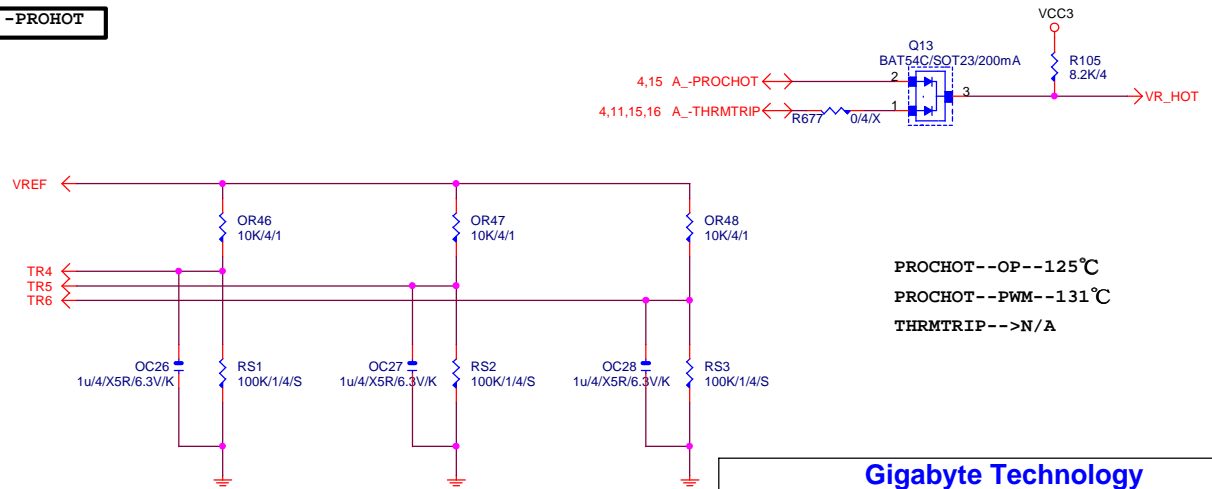


SYS SMART FAN

Linear SYS_FAN



-PROHOT

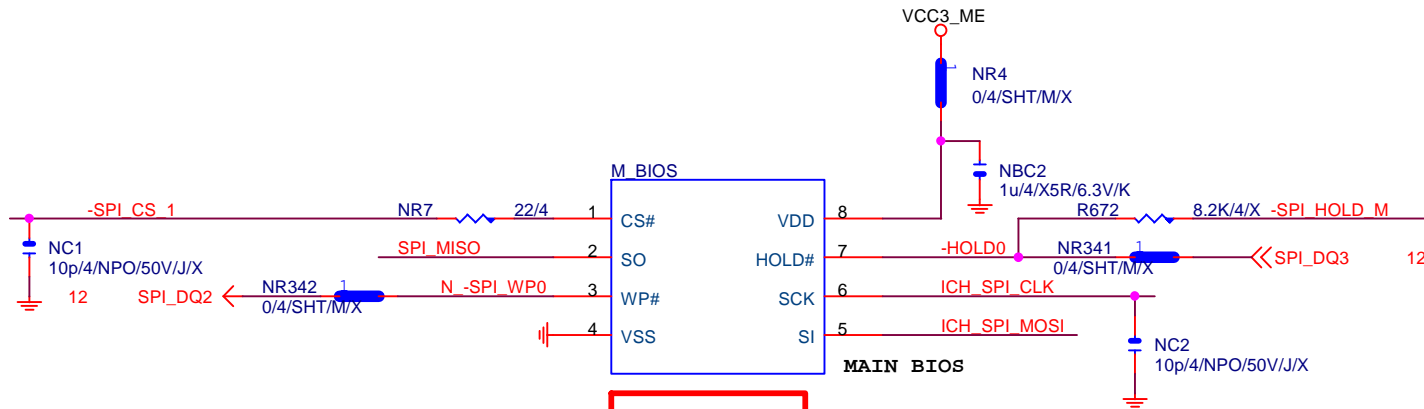


RS1、RS2、RS3 CLOSE CPU
VR MOSFET

Gigabyte Technology

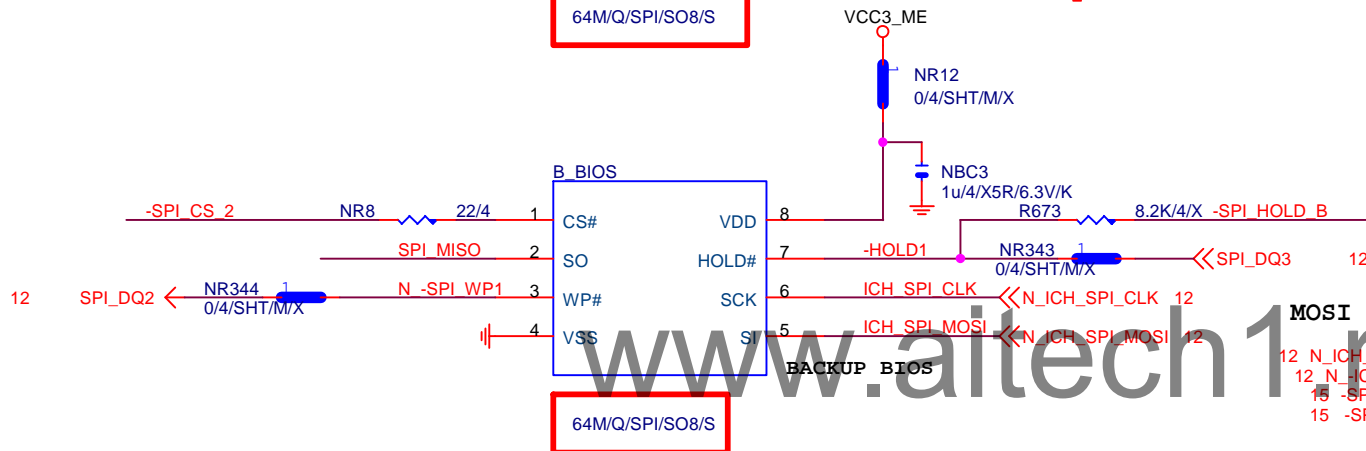
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Size	Document Number	Rev	
Custom			
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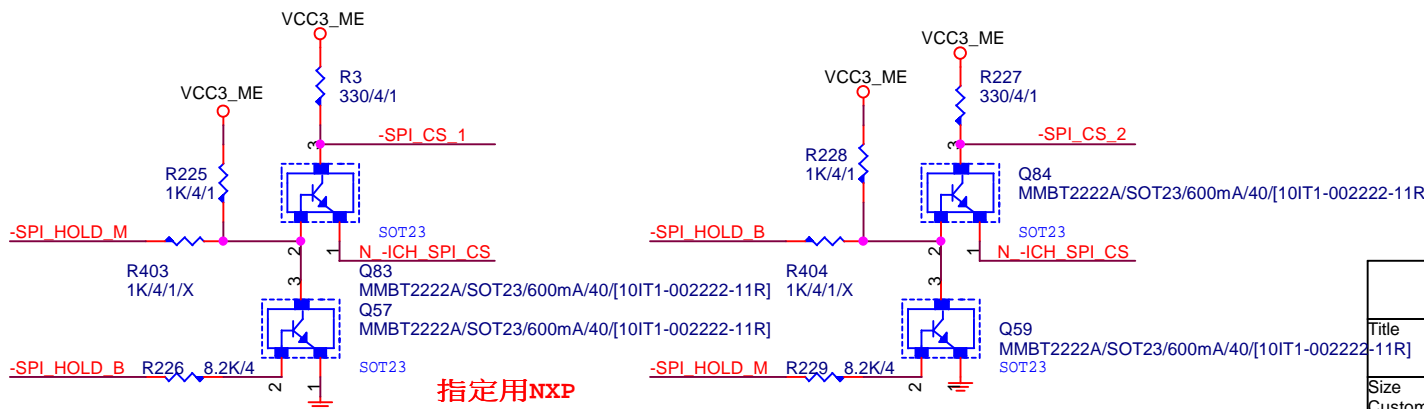
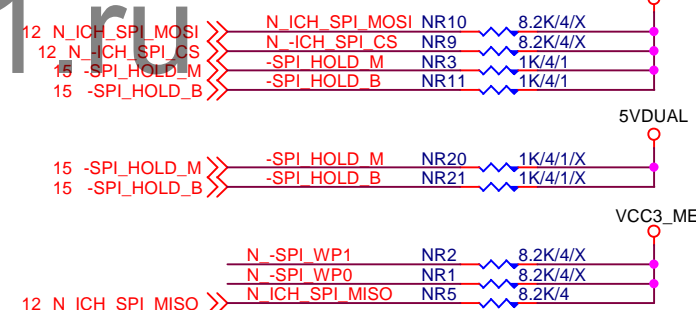


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

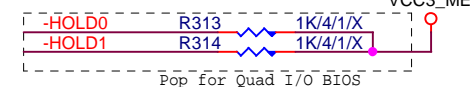
1 means floating
0 means PD 1K



MOSI For DMI RX Termination Voltage



CHECK

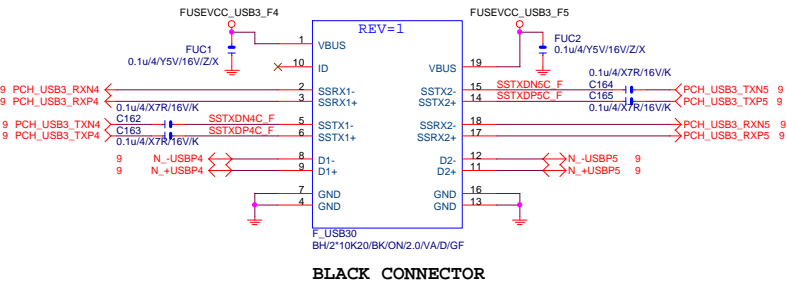


Gigabyte Technology

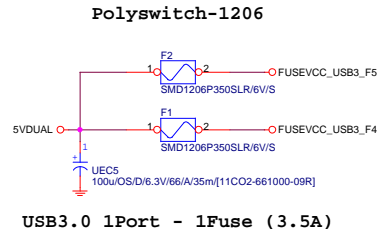
DUAL BIOS

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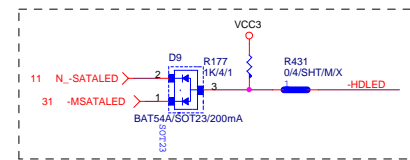
F_USB30



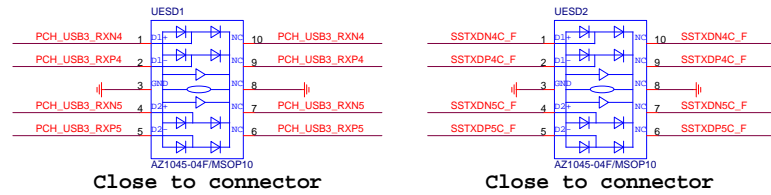
F_USB30 PWR



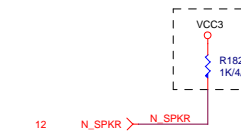
SATA LED



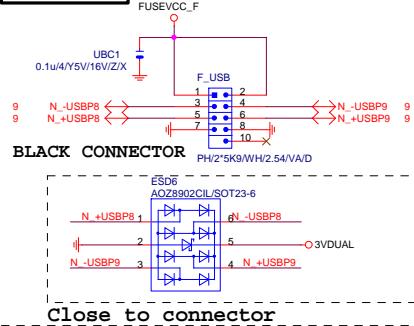
F_USB30 ESD PROTECT



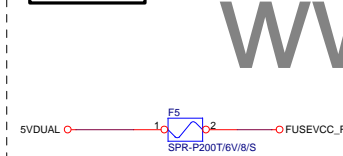
SPKR



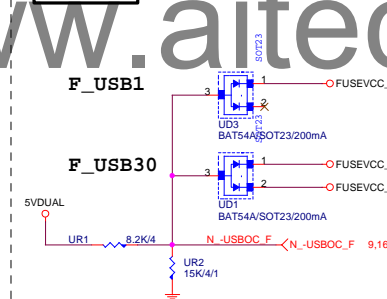
FRONT USB1



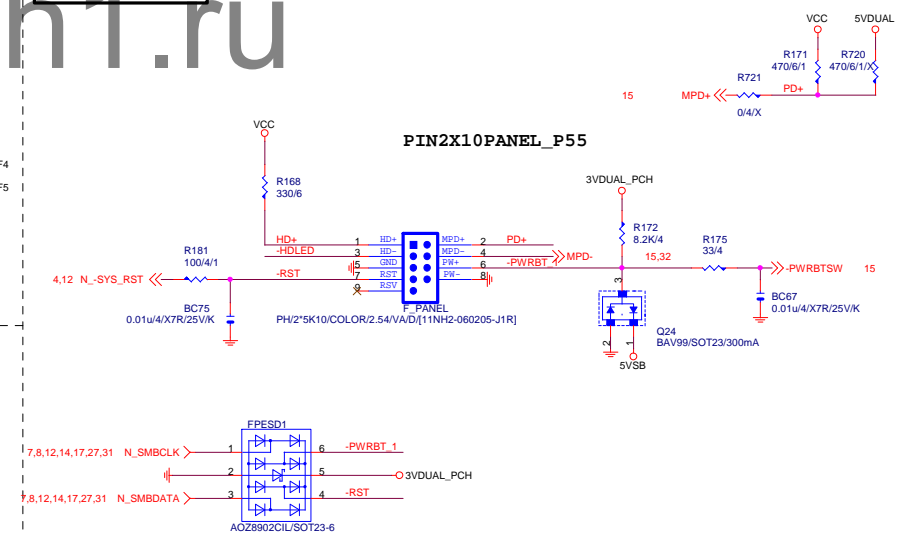
FUSEVCC_F



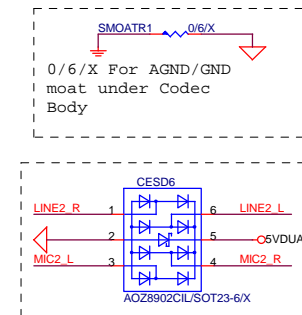
-USBOC_F

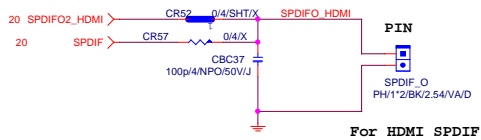
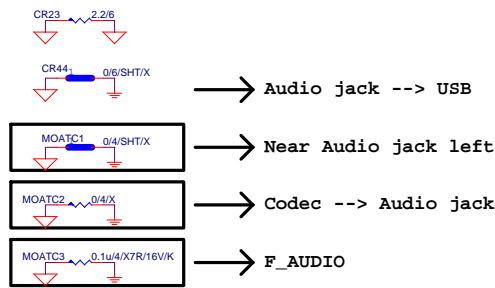


INTEL FRONT PANEL

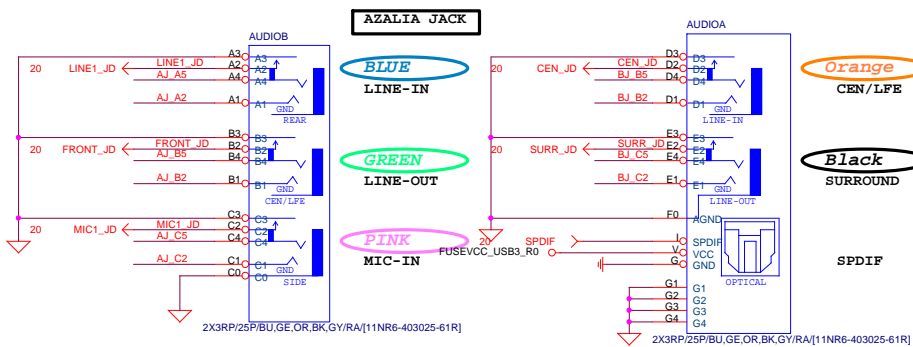


Gigabyte Technology			
Title	FP,F_USB,USB PWR,SPKR,SATA LED		
Size	Custom	Document Number	Rev
Date	Tuesday, April 01, 2014	GA-B85N-Phoenix-WIFI	1.1
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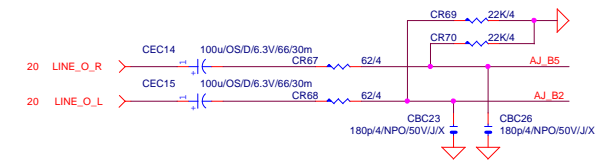
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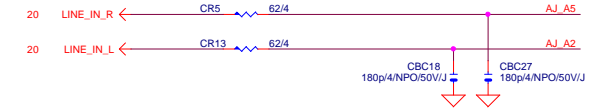
AZALIA JACK BTX AZALIA CONNECTOR



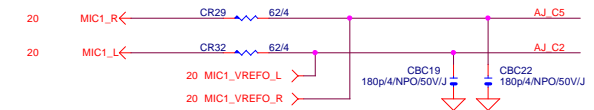
LINE-OUT



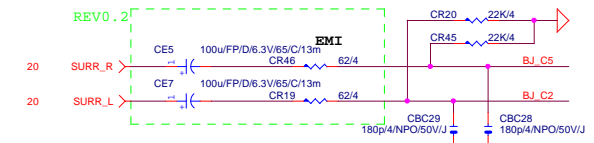
LINE-IN



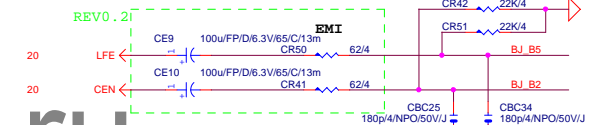
MIC-IN



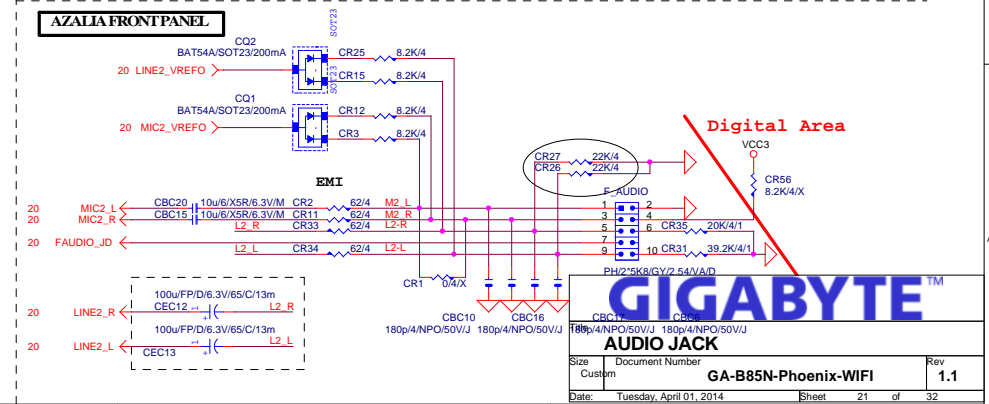
SURROUND

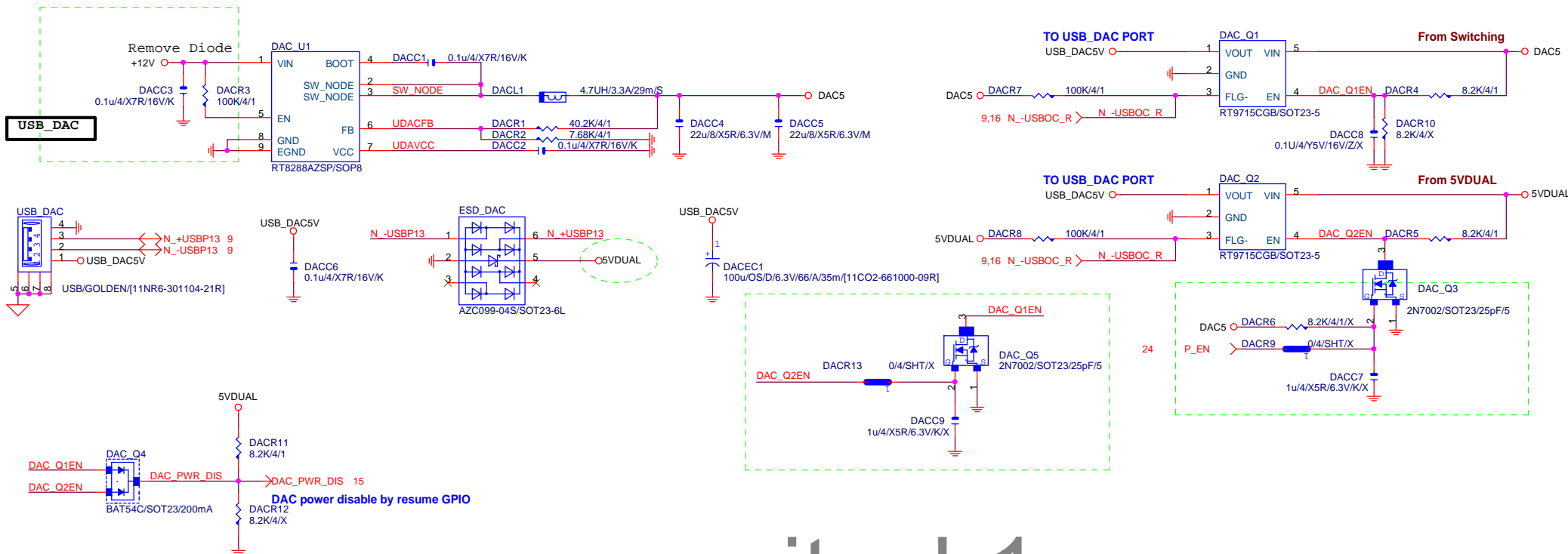


CEN/LFE



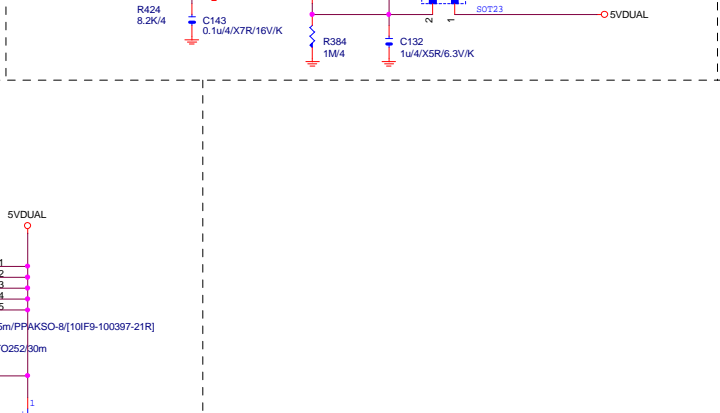
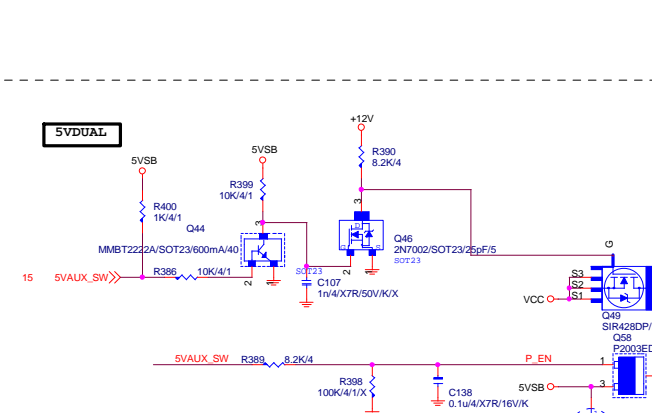
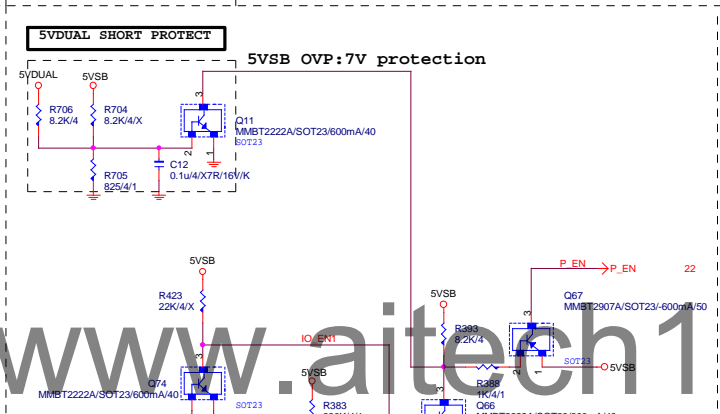
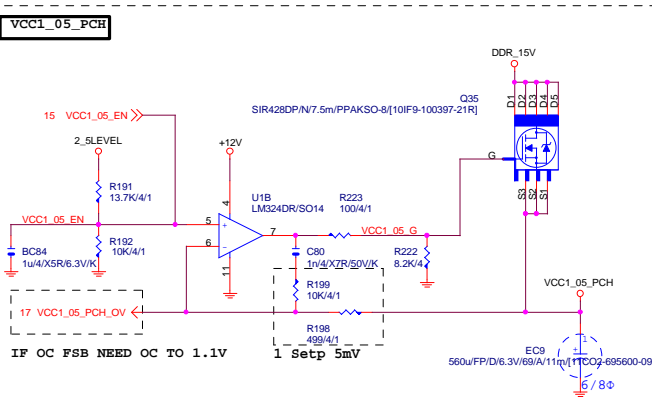
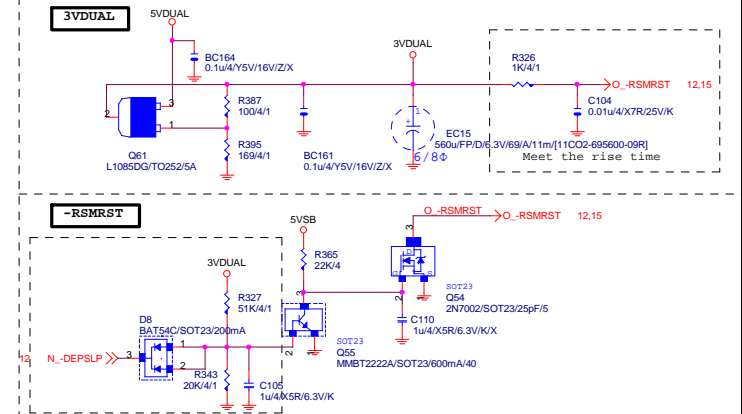
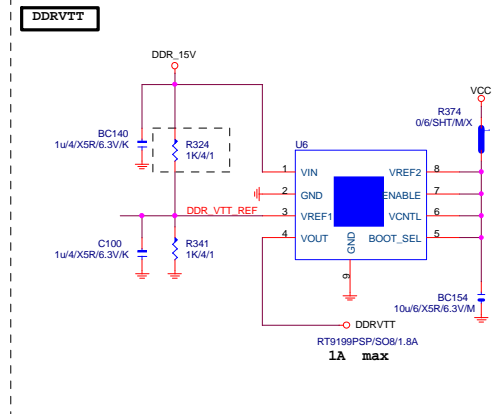
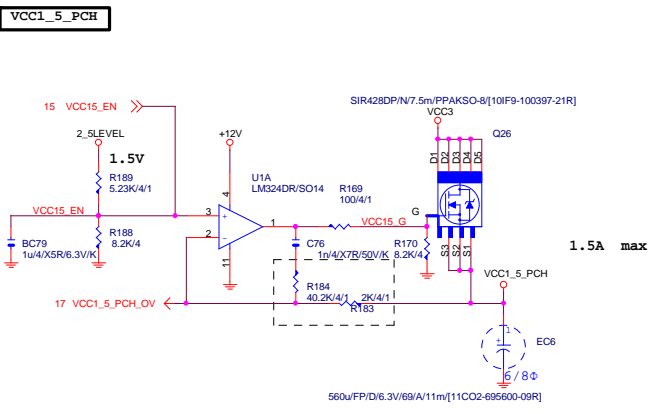
AZALIA FRONT PANEL



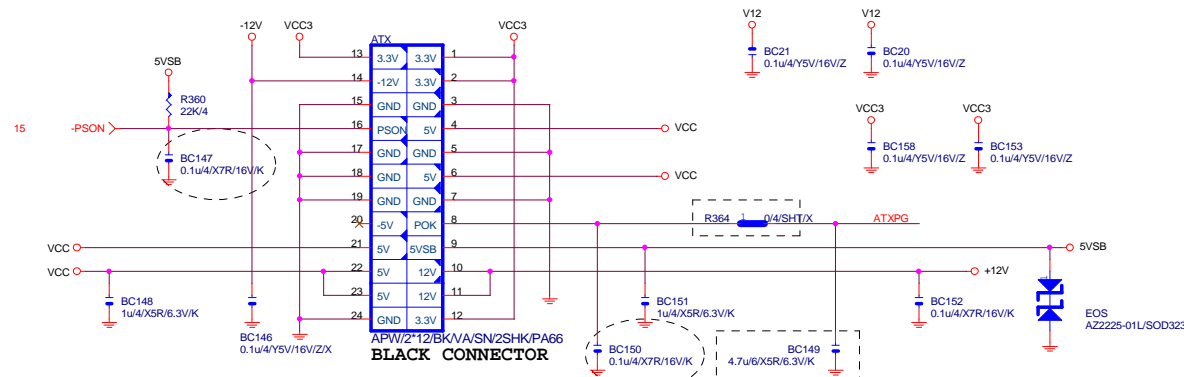


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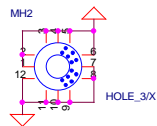
Gigabyte Technology			
Title			
USB DAC POWER			
Size	Document Number	GA-B85N-Phoenix-WIFI	
B		Rev 1.1	
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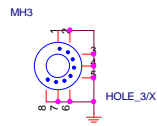
ATXX24 POWER CONNECTOR



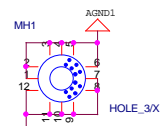
MB LOCATION



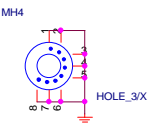
HOLE_4-RH-5MM-1



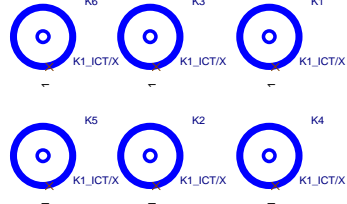
HOLE_4-RH-5MM-5PIN-1



HOLE_4-RH-5MM-1

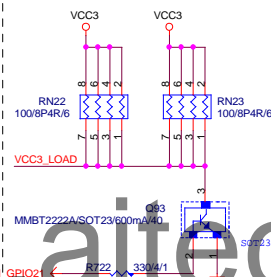


HOLE_4-RH-5MM-5PIN-1



To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



ATXX4 POWER CONNECTOR

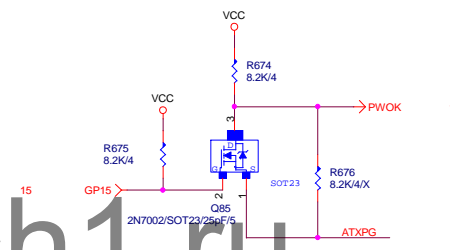


ATX_4-6

BLACK CONNECTOR

PWOK PATCH

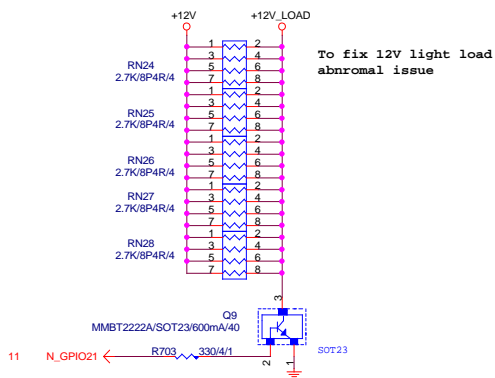
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】



To fix 12V light load abnormal issue

Gigabyte Technology

ATX CONNECTOR

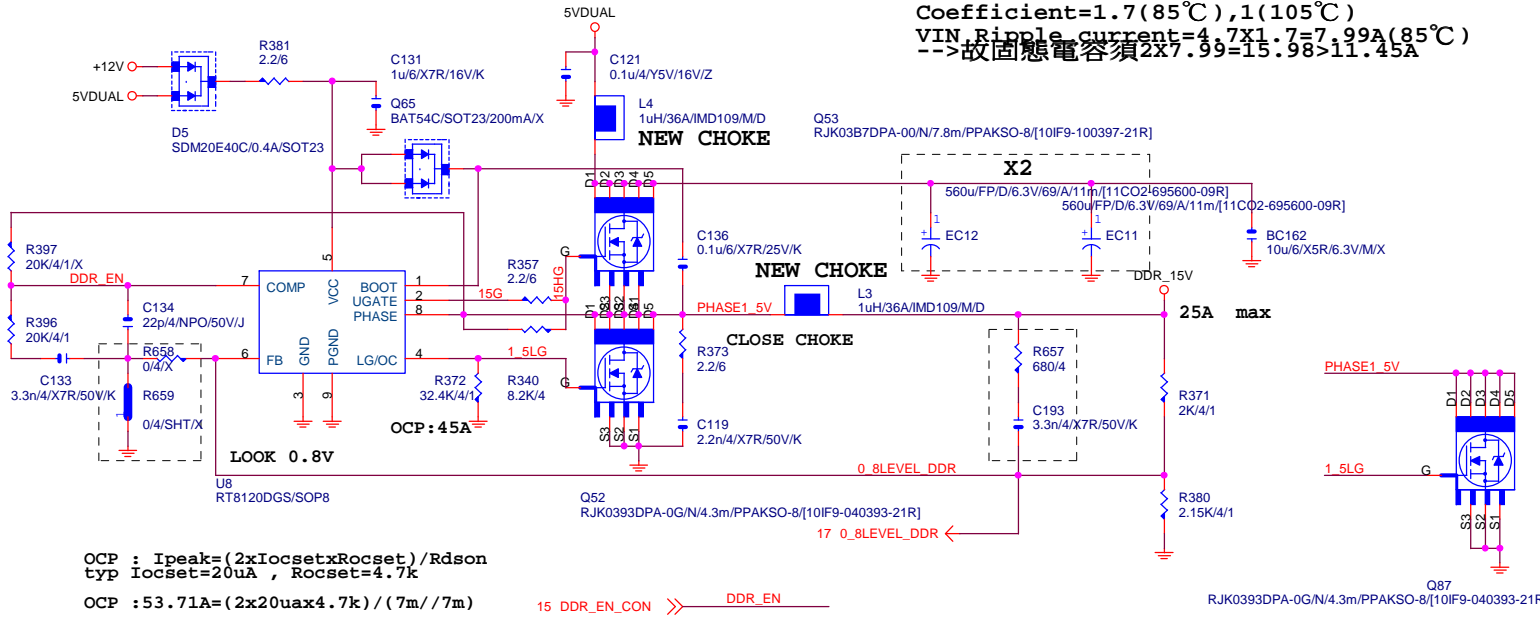
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DDR15V

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

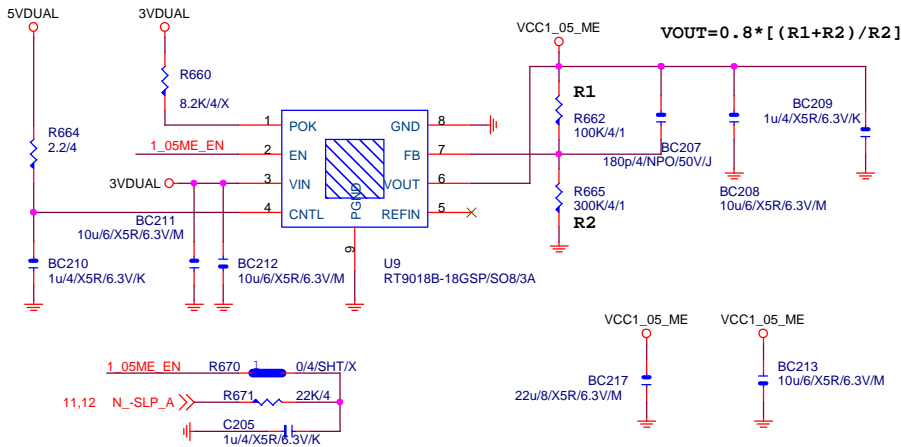


VCC1_05_ME

Z87 N/A

Z87+I217V

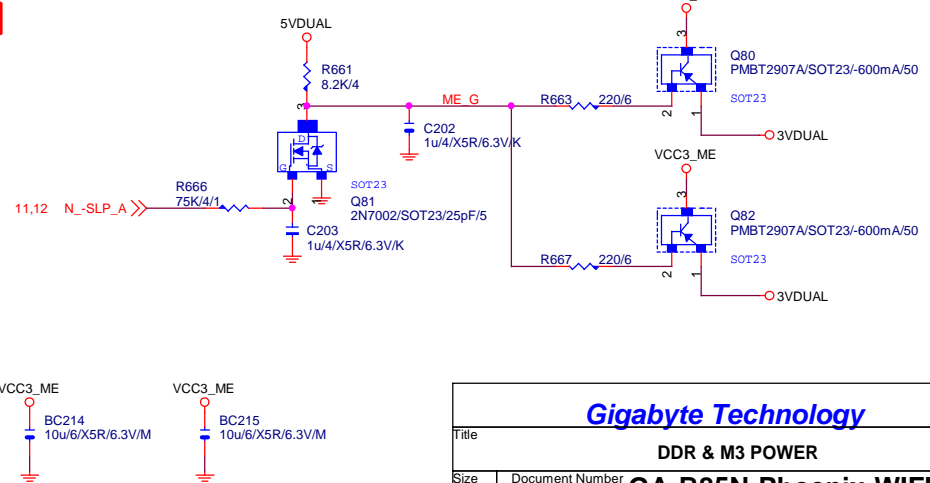
【技術通報R&D技術通報156】
(RICHTEK), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME

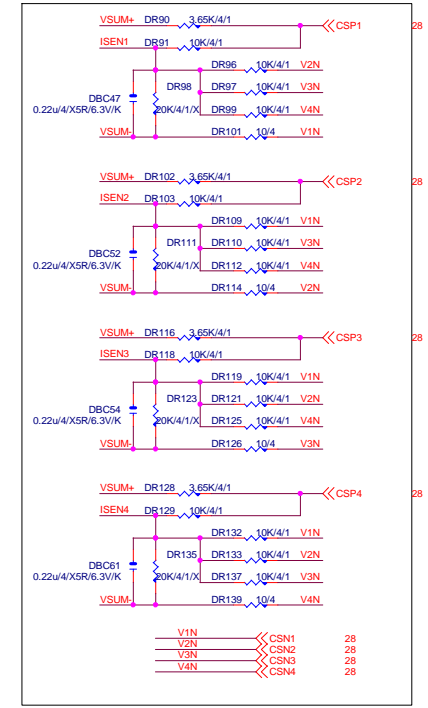
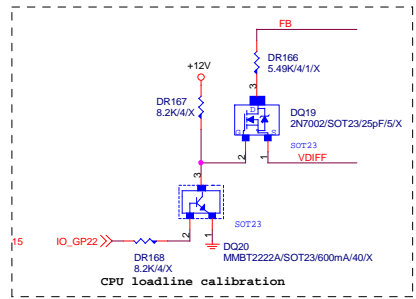
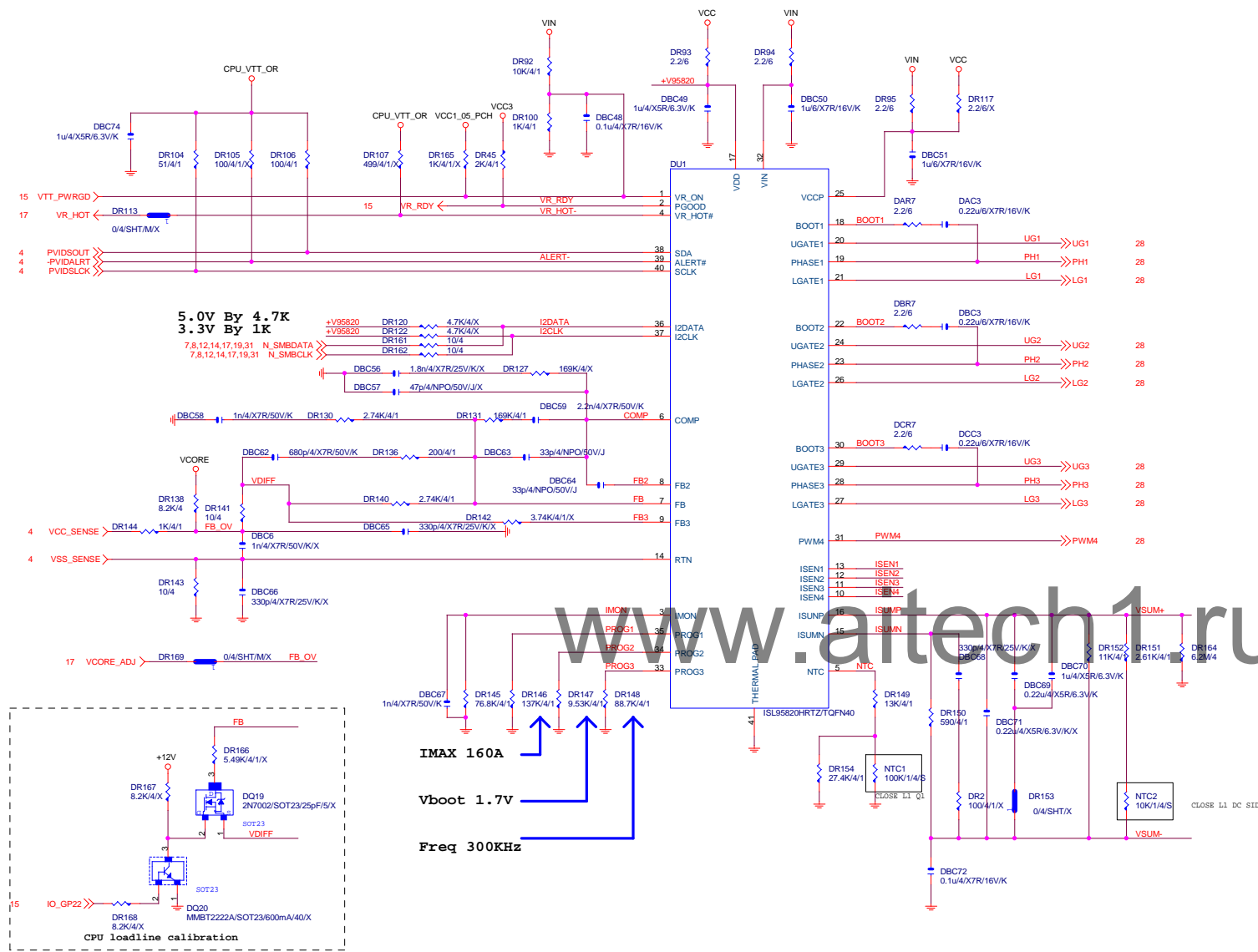
Z87 N/A

Z87+I217V

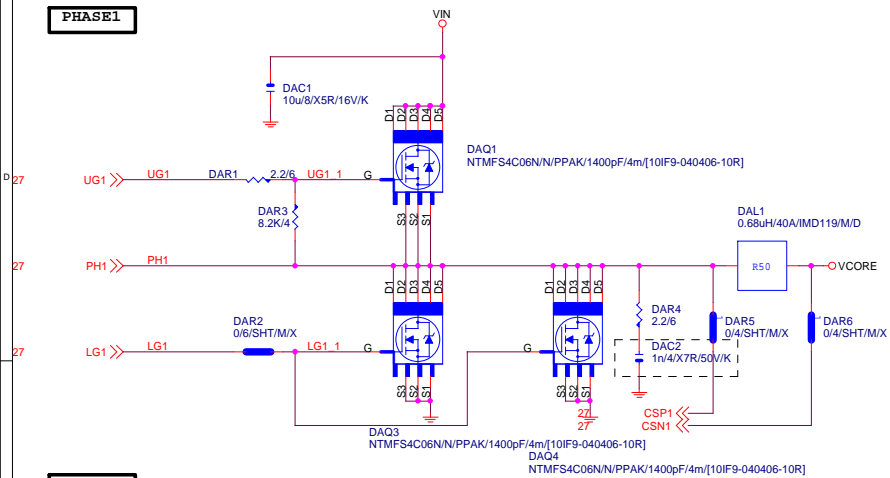


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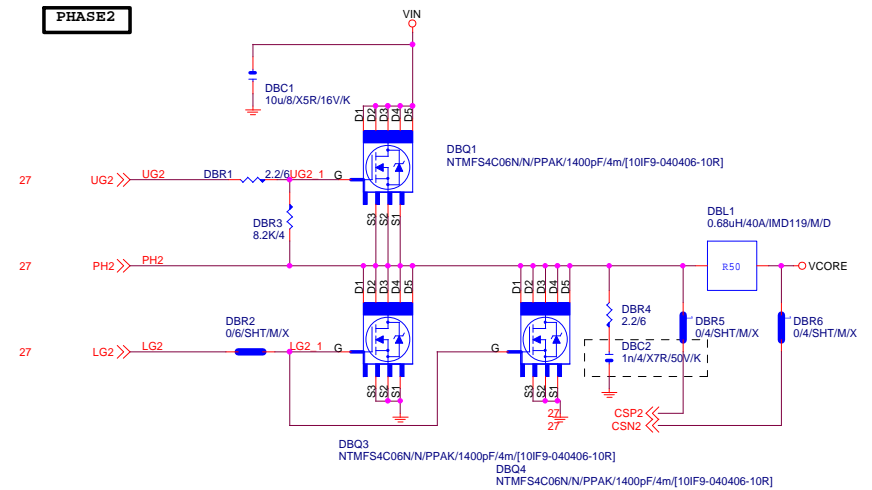
Title			
DDR & M3 POWER			
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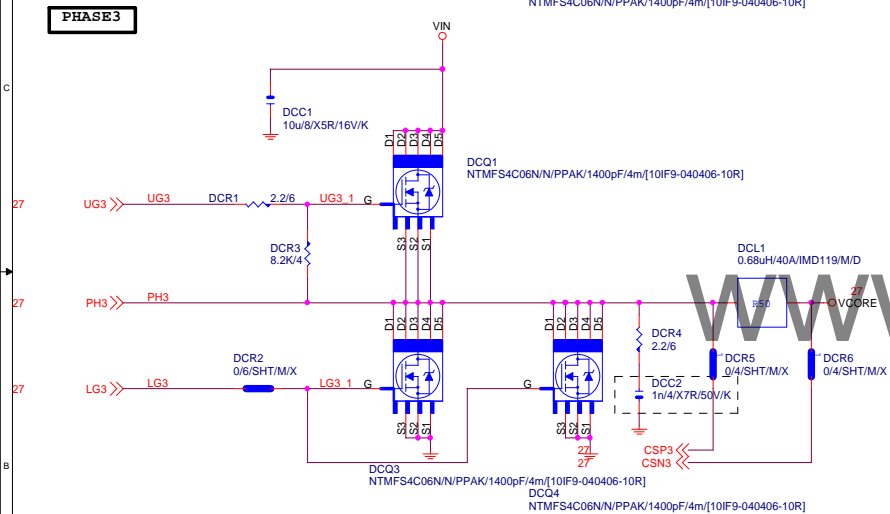
PHASE1



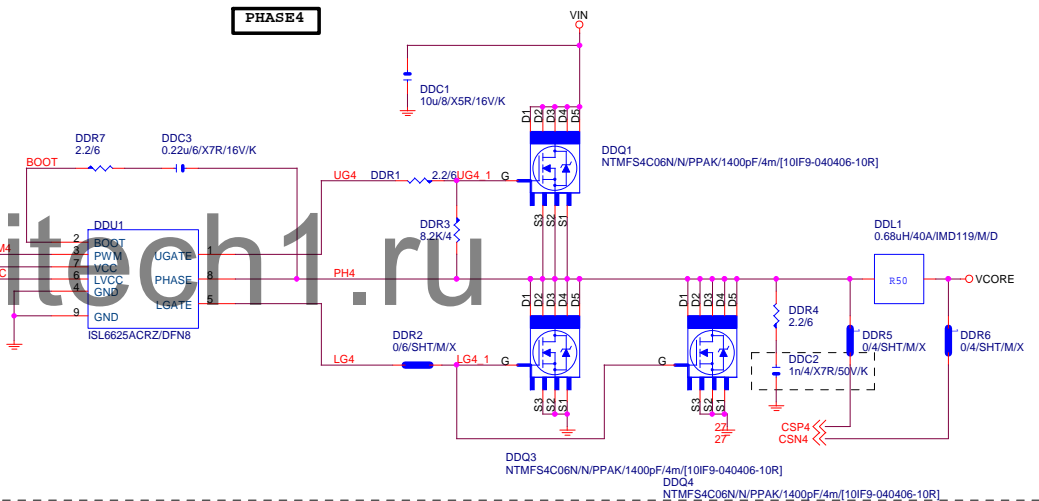
PHASE2



PHASE3

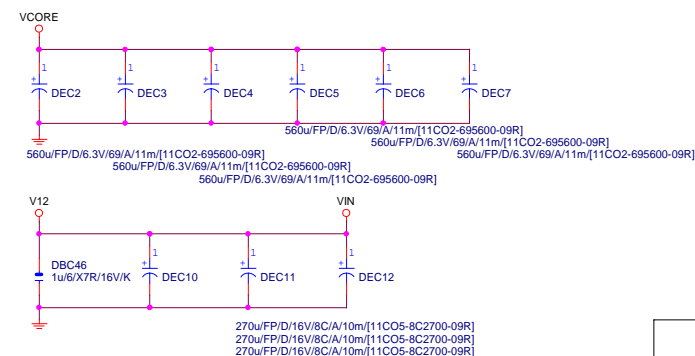


PHASE4



MOS HEATSINK

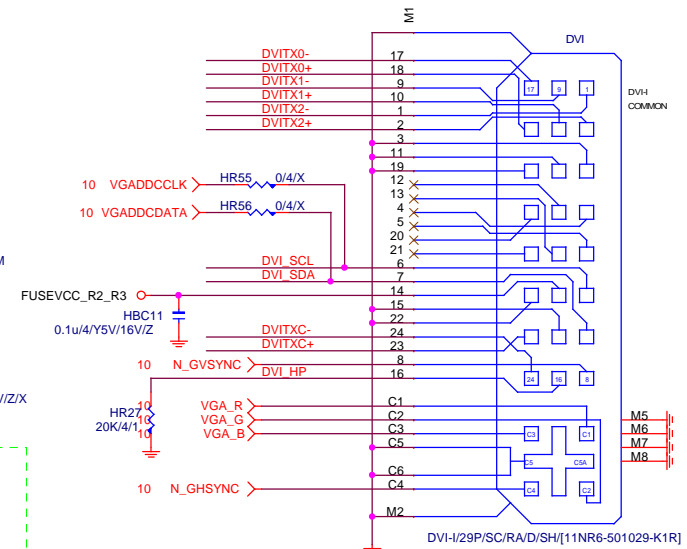
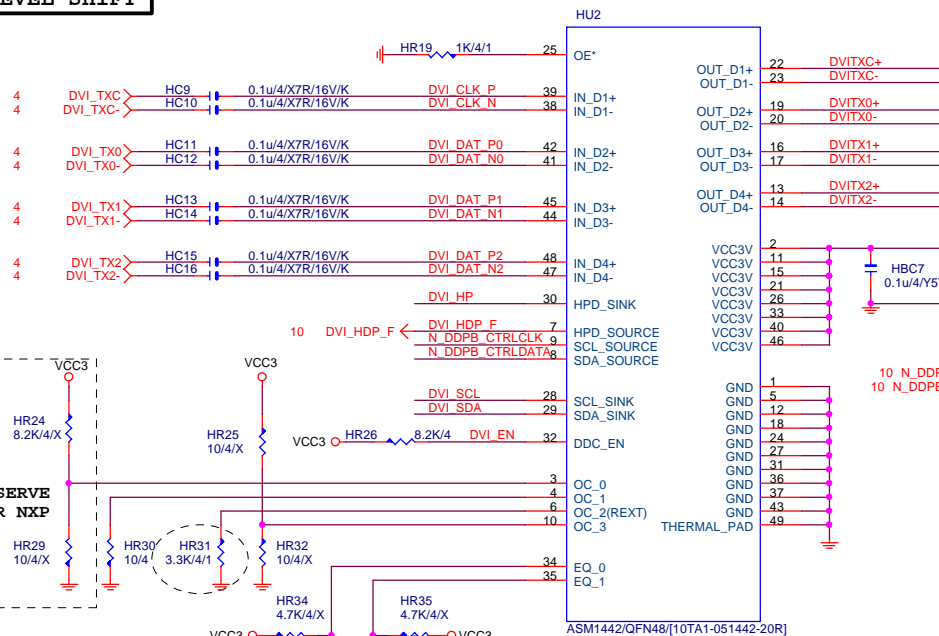
N/A



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DVI LEVEL SHIFT

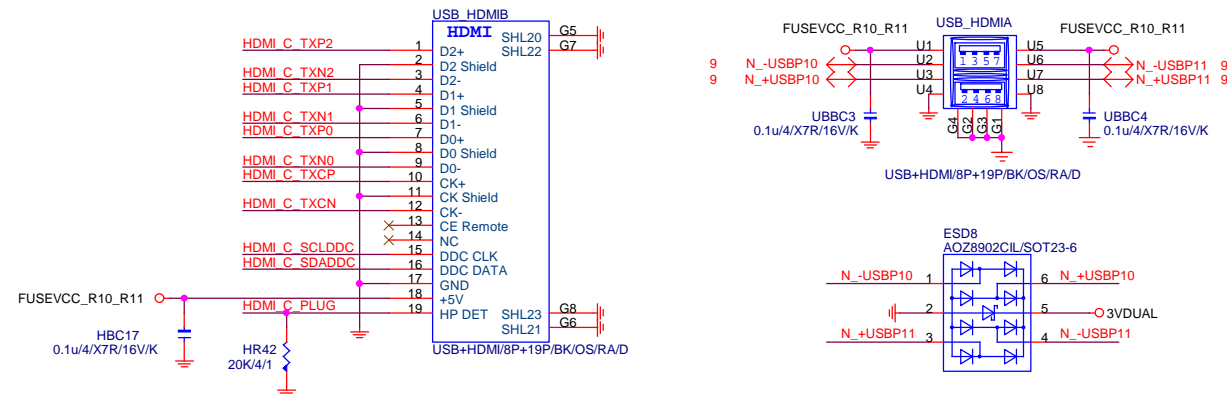
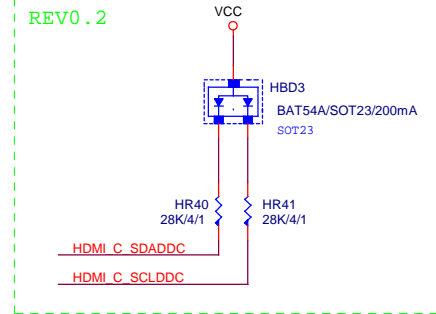
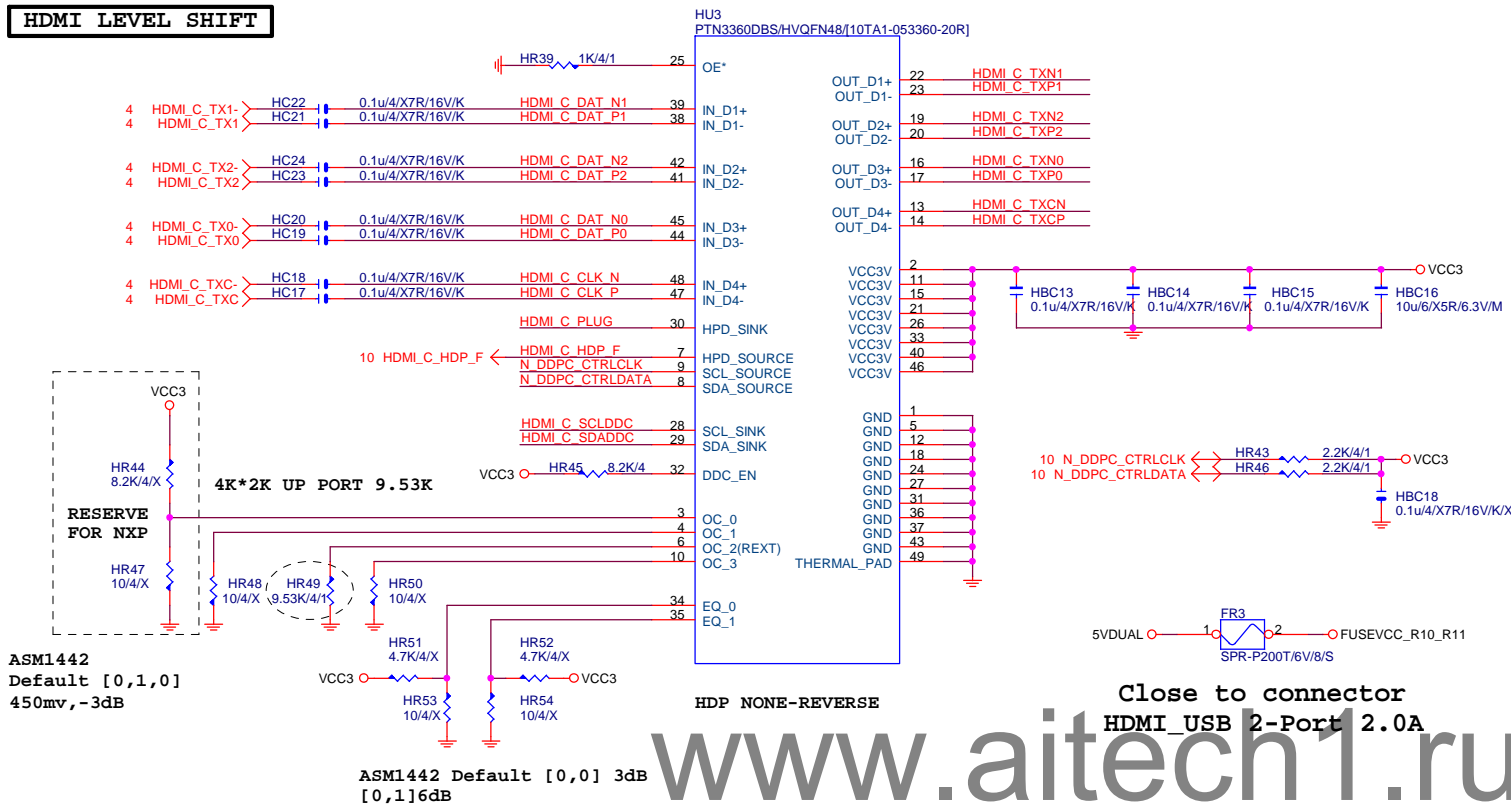


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Title		
DVI		
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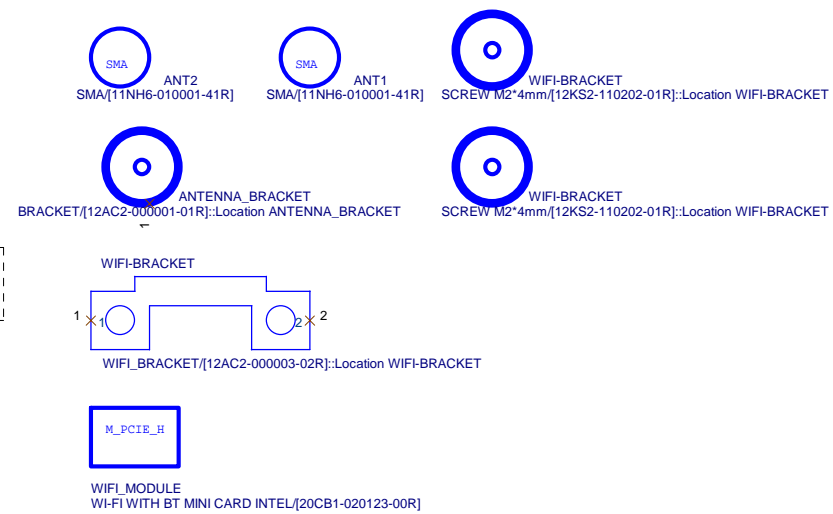
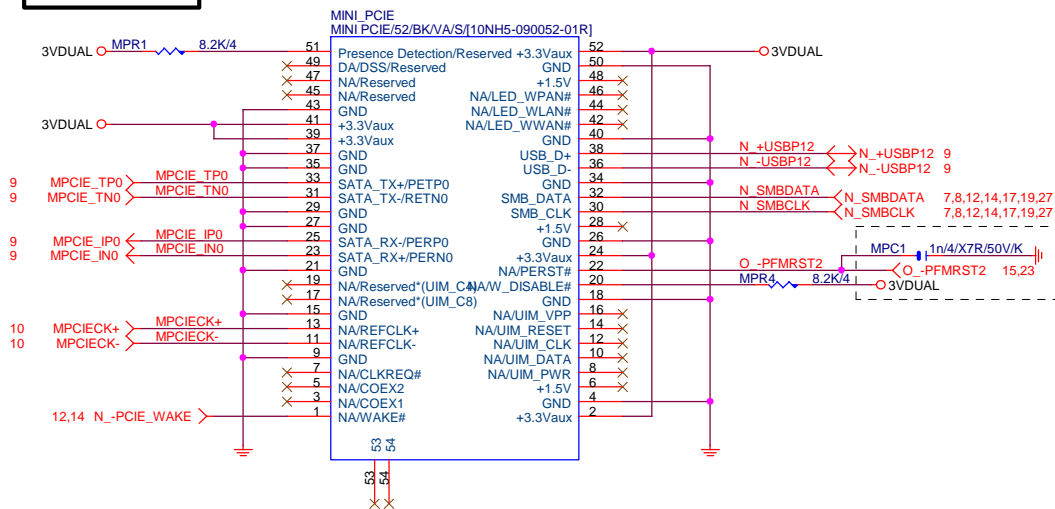
HDMI LEVEL SHIFT



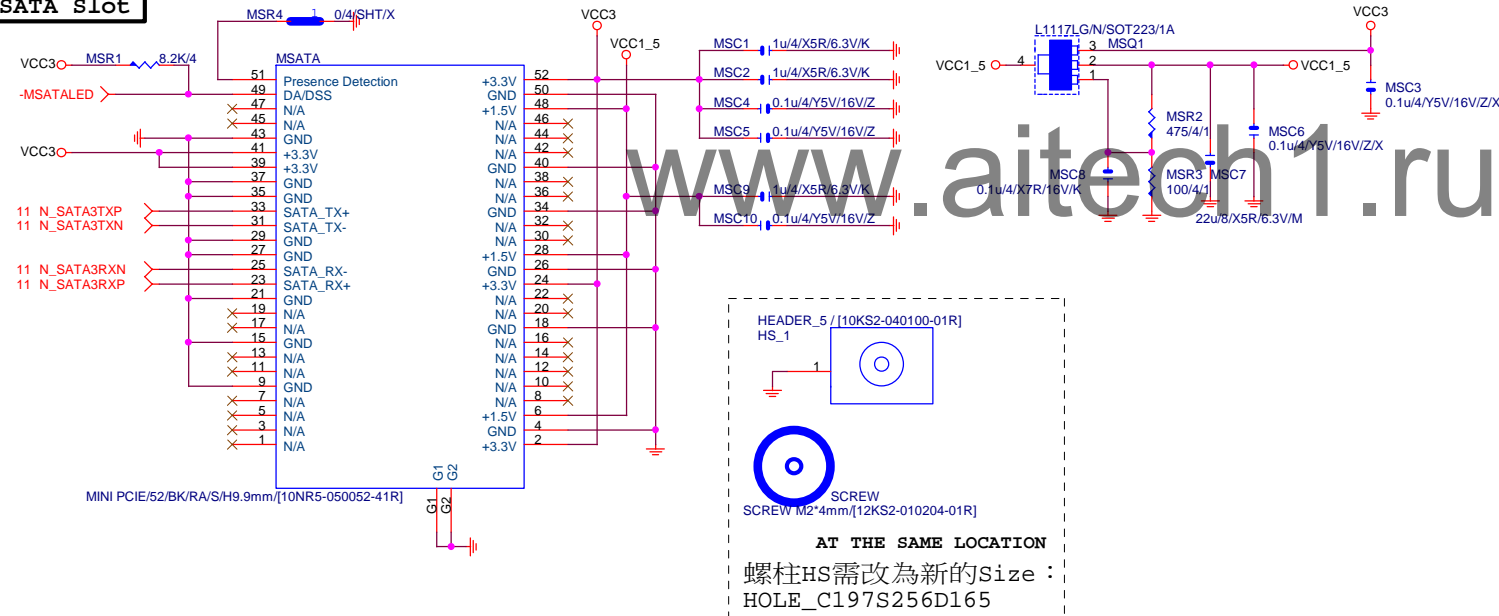
Gigabyte Technology

Title		HDMI + USB2.0 * 2	
Size	Document Number	GA-B85N-Phoenix-WIFI	Rev 1.1
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Mini PCIe

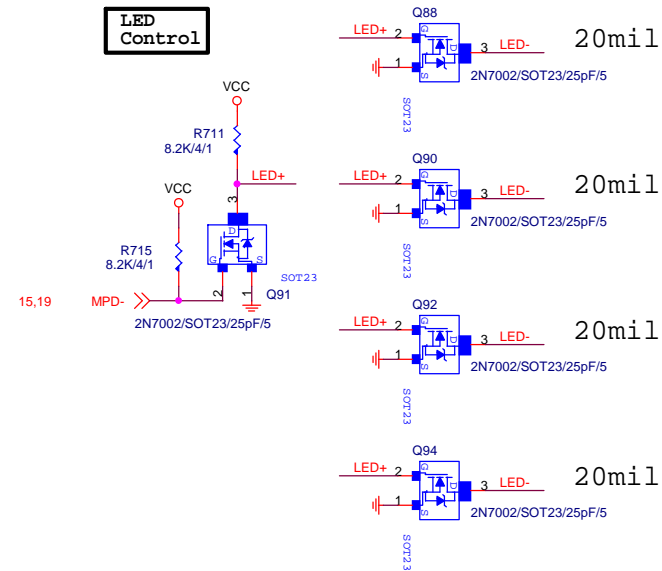
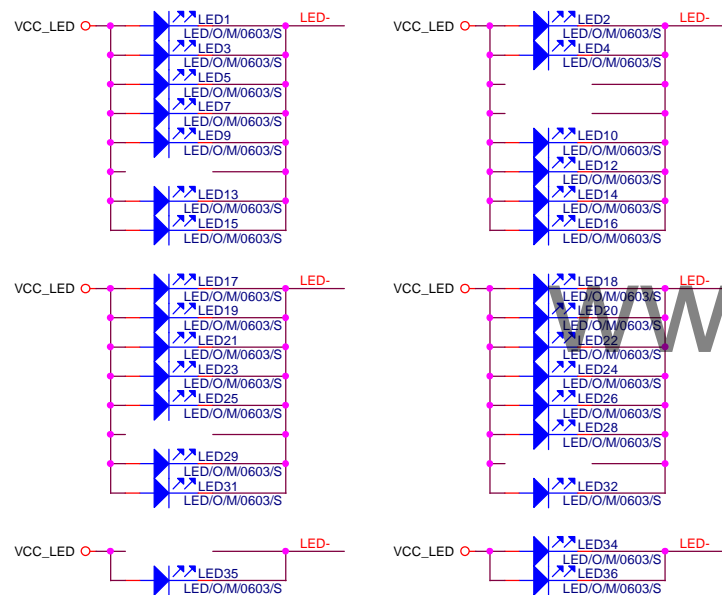
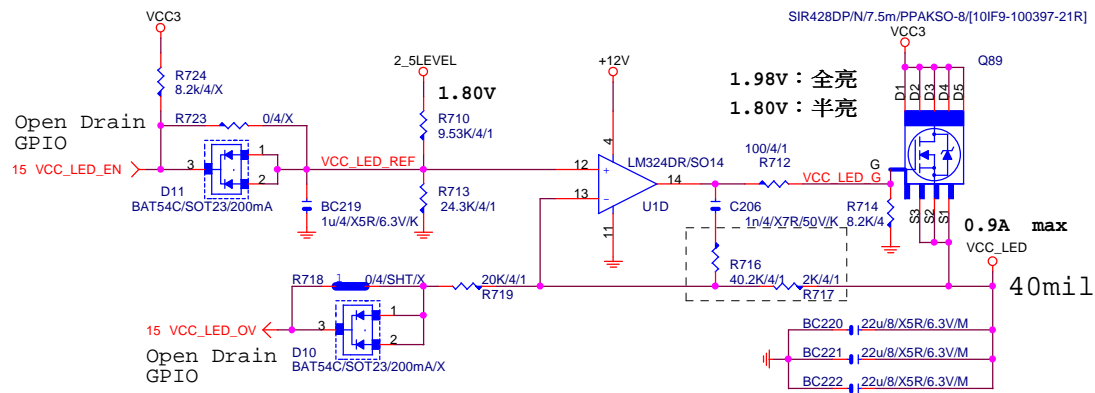


mSATA Slot



AT THE SAME LOCATION

螺柱HS需改為新的Size :
HOLE_C197S256D165



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Gigabyte Technology			
Title			
Breathing LED			
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