

Model Name: GA-H77N-WIFI

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-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	Realtek RT8111E / RT8111F (A)
23	Realtek RT8111E / RT8111F (B)
24	DISCRETE POWER
25	ATX,CLK GEN
26	RT8120_CPU_VTT
27	RT8120_DDR POWER

www.xinxunwei.com 400-800-9990

Revision 1.0

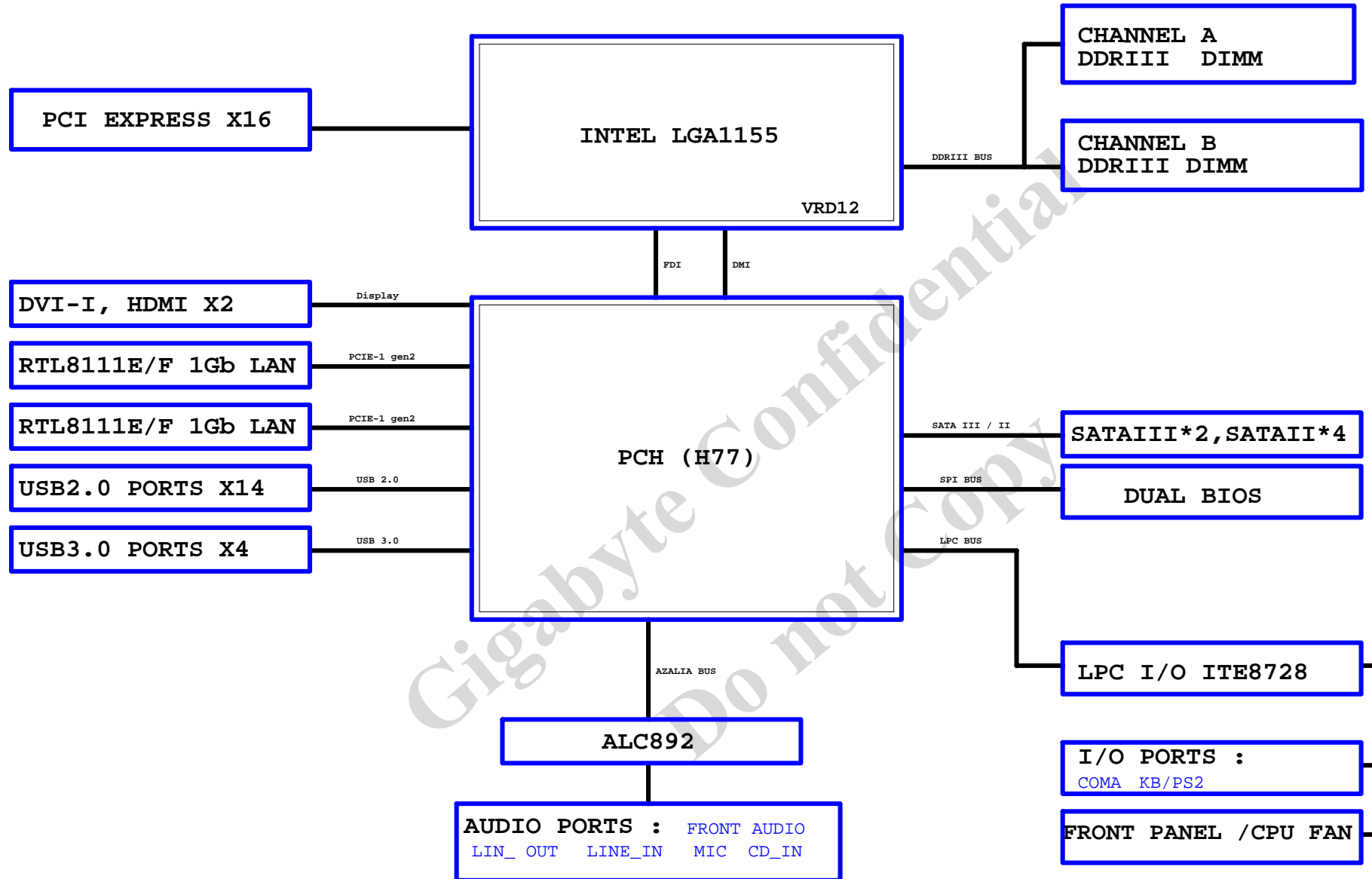
SHEET

TITLE

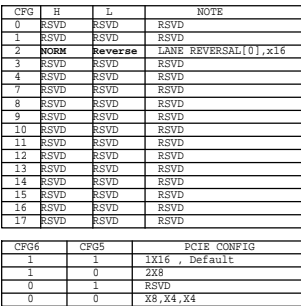
28	VCORE ISL95836_1
29	VCORE ISL95836_2
30	DVI-I
31	HDMI * 2
32	mini PCI-E

Gigabyte Technology		
Cover Sheet		
Size Custom	Document Number GA-H77N-WIFI	Rev 1.0
Date: Wednesday, August 08, 2012	Sheet 1	of 32

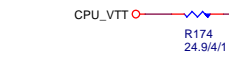
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BLOCK DIAGRAM

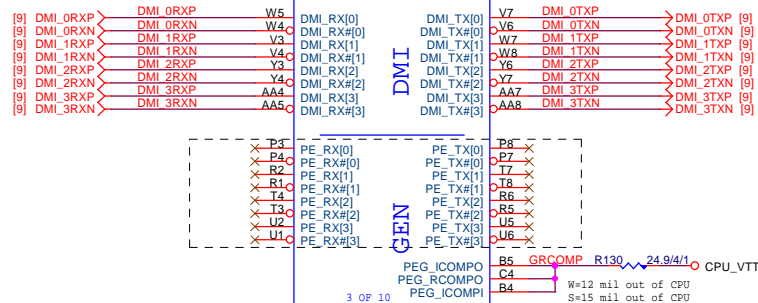
(E)



(D)



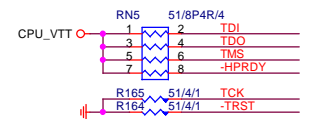
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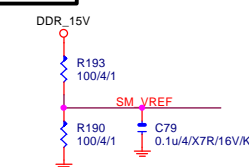
-CPURST



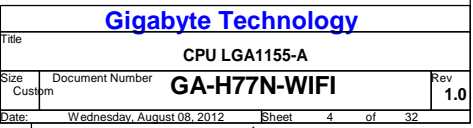
CPU PU/PD

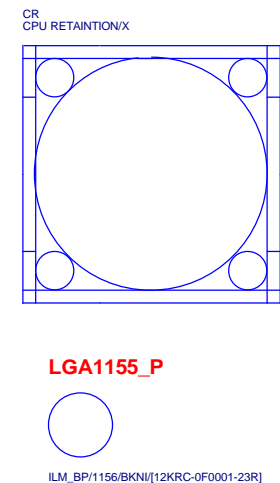
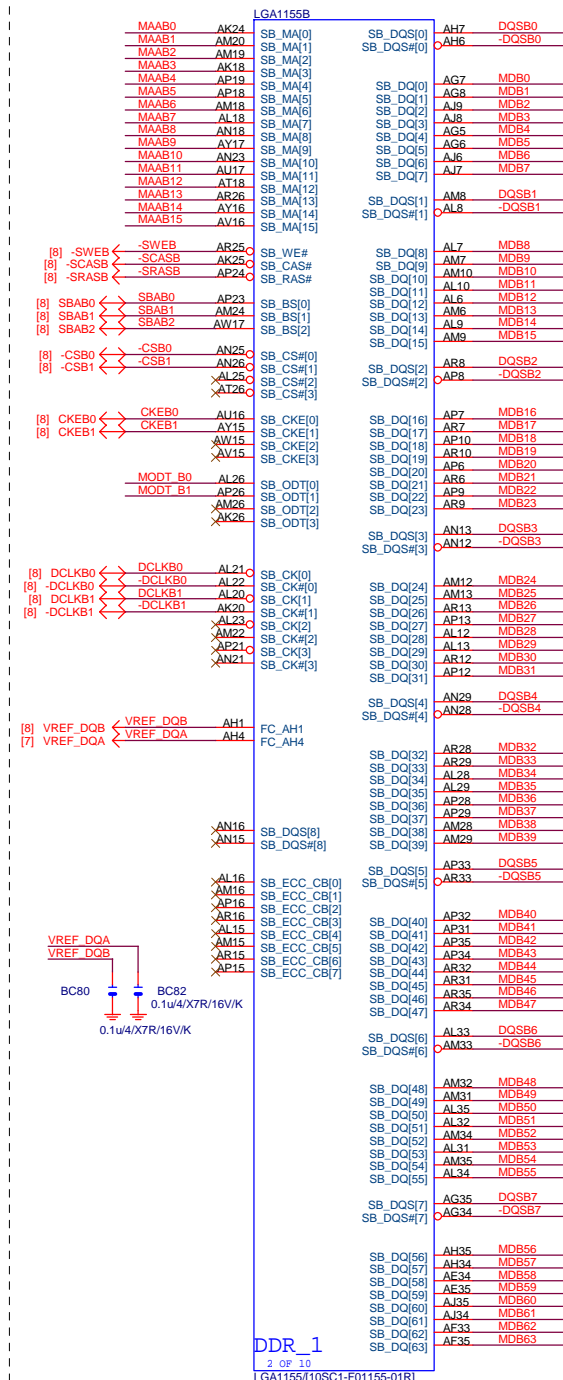
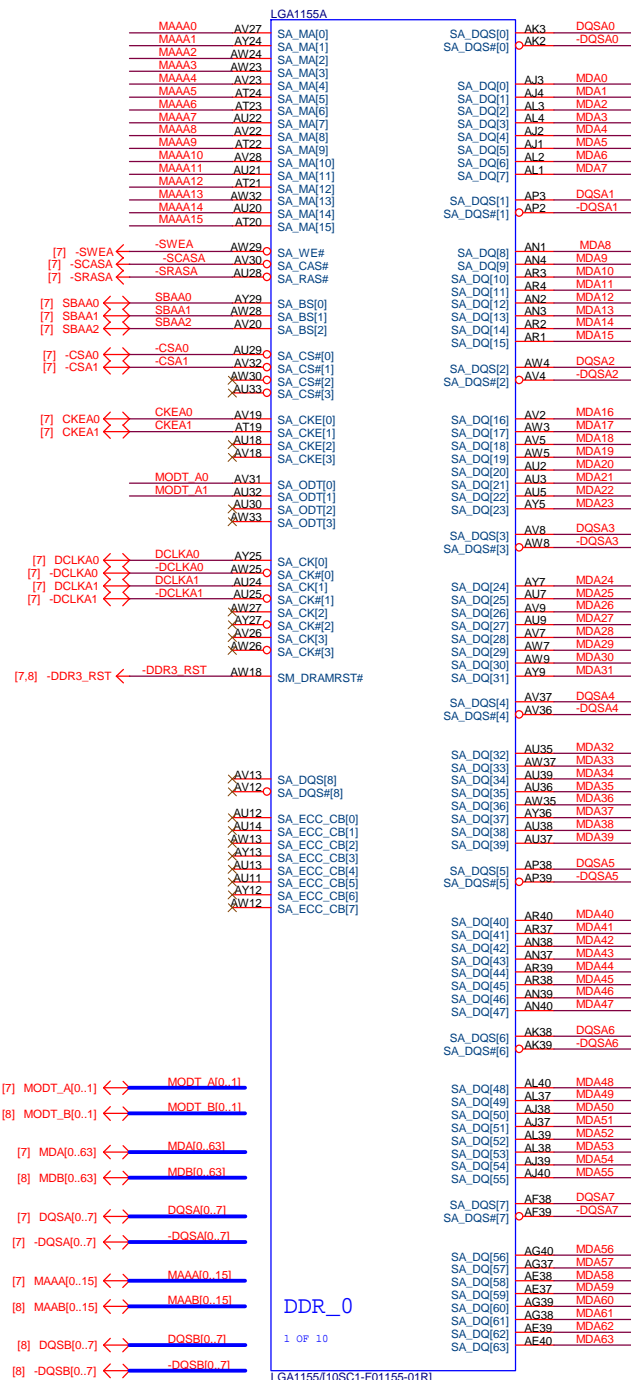


CPU SVID



SM	REF
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Gigabyte Technology

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CPU LGA1156-B		
Size	Document Number	Rev
Custom	GA-H77N-WIFI	1.0
Date: Wednesday, August 08, 2012		
Sheet 5 of 32		

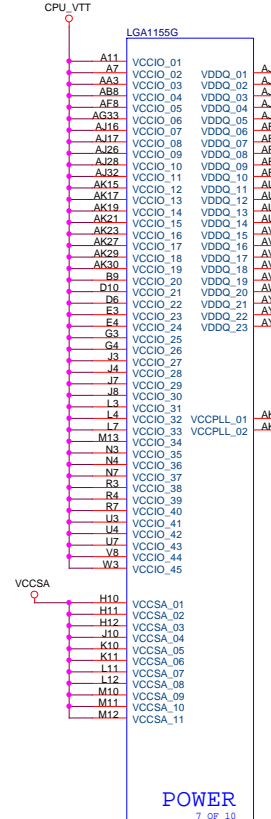
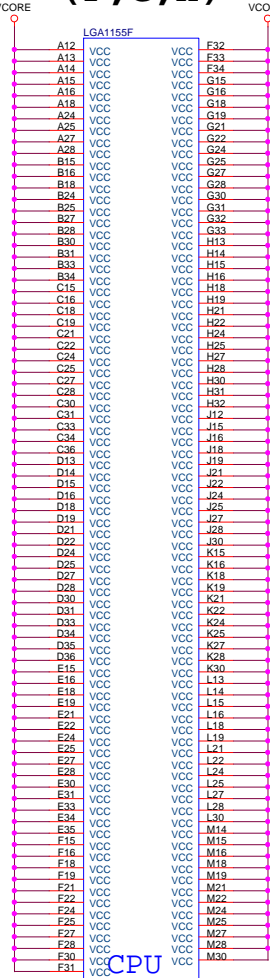
LGA1155

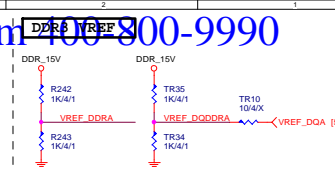
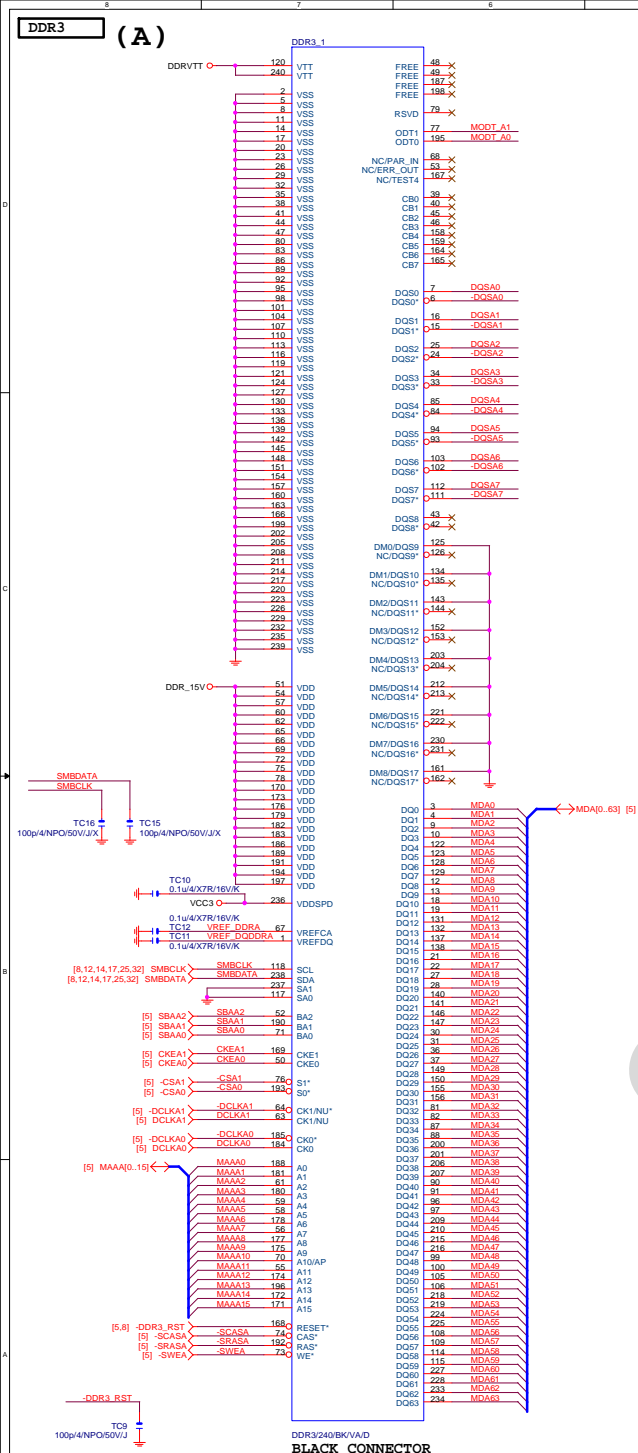
(F,G,H)

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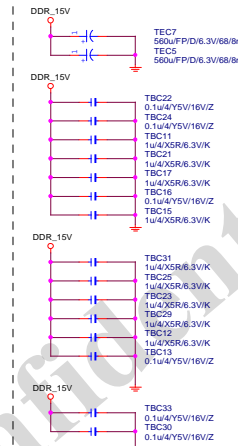
LGA1155 (1,2,3)

CAP

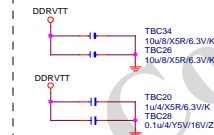




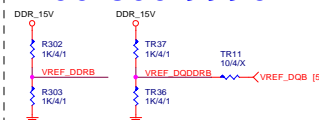
DDR15V Decouple



DDRVTT Decouple



DDR3

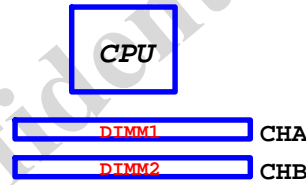



COUPON1 COUPON1 1 2 COUPONX CPU_V REF VCC層GND, GND層GND要蓋孔(TOP)

COUPON2 COUPON2 1 2 COUPONX CPU_V REF VCC層GND, VCC層GND要蓋孔(TINF1)

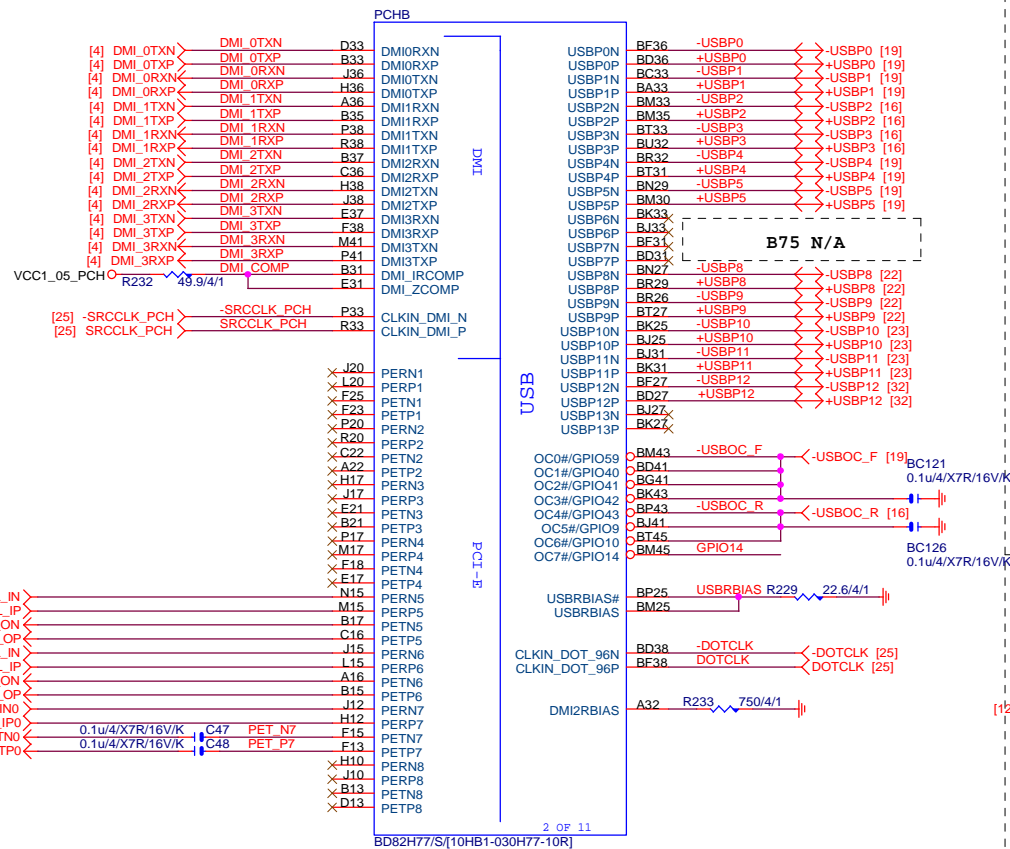
COUPON3 COUPON3 1 2 COUPONX CPU_V REF GND層GND, VCC層GND要蓋孔(IMF2)

COUPON4 COUPON4 1 2 COUPONX CPU_V REF GND層GND, VCC層GND要蓋孔(BOTTOM)

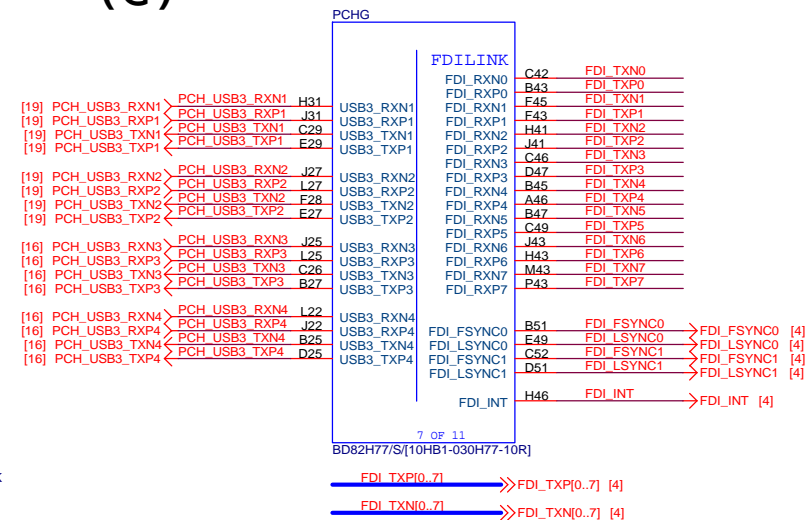


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DDRIII CHANNEL B			
Size	Document Number	Rev	
Custom	GA-H77N-WIFI	1.0	
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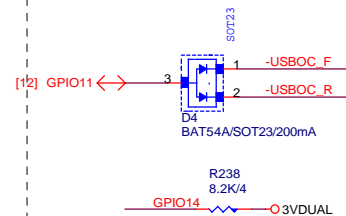
PCH (B)



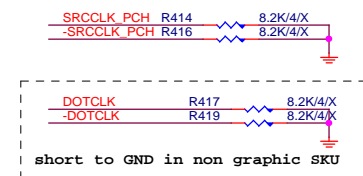
PCH (G)



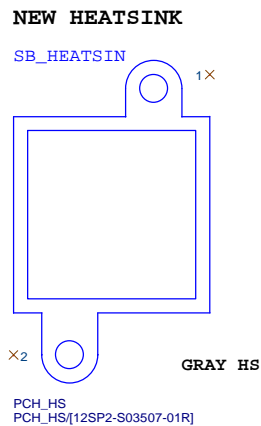
-USBOC F/R PROTECT



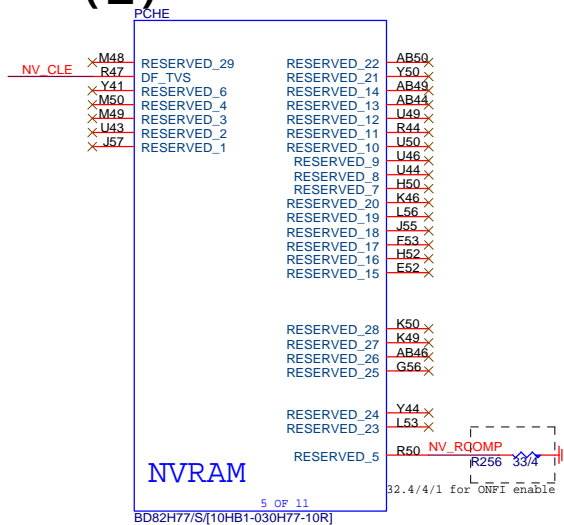
PCH	CLK	PD
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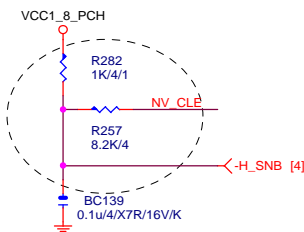
PCH H/S



PCH (E)



NVRAM PU



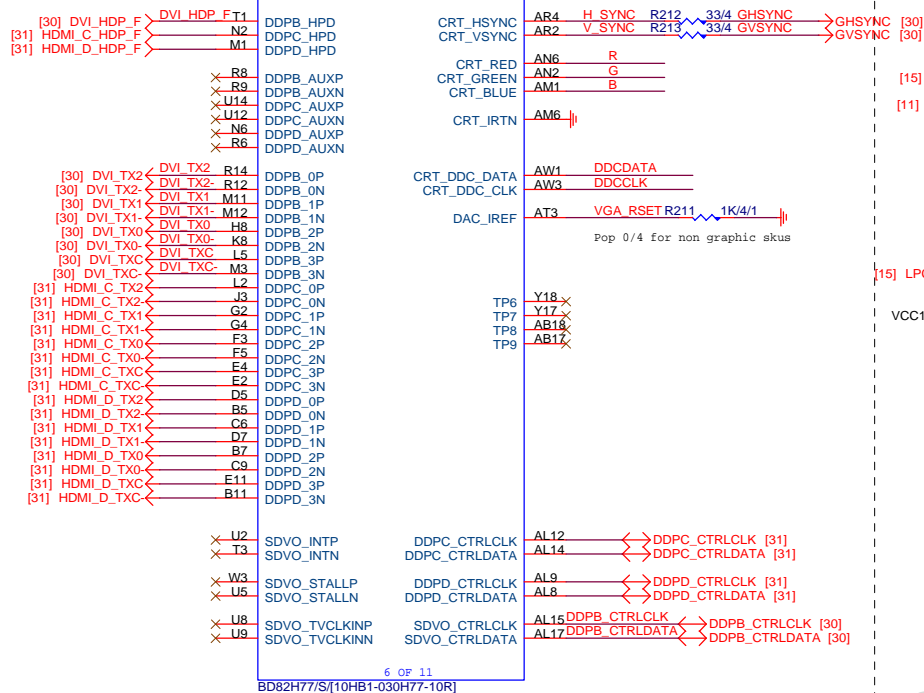
USB TABLE

USB OC#	Configure
OC0#	USB0,1(F_USB30)
OC1#	USB2,3(USB30_LAN)
OC2#	USB4,5(F_USB1)
OC3#	USB6,7(B75:N/A)
OC4#	USB8,9(USB_LAN)
OC5#	USB10,11(KB_USB)
OC6#	USB12(mini PCI-E)
OC7#	N/A

PCH

(F)

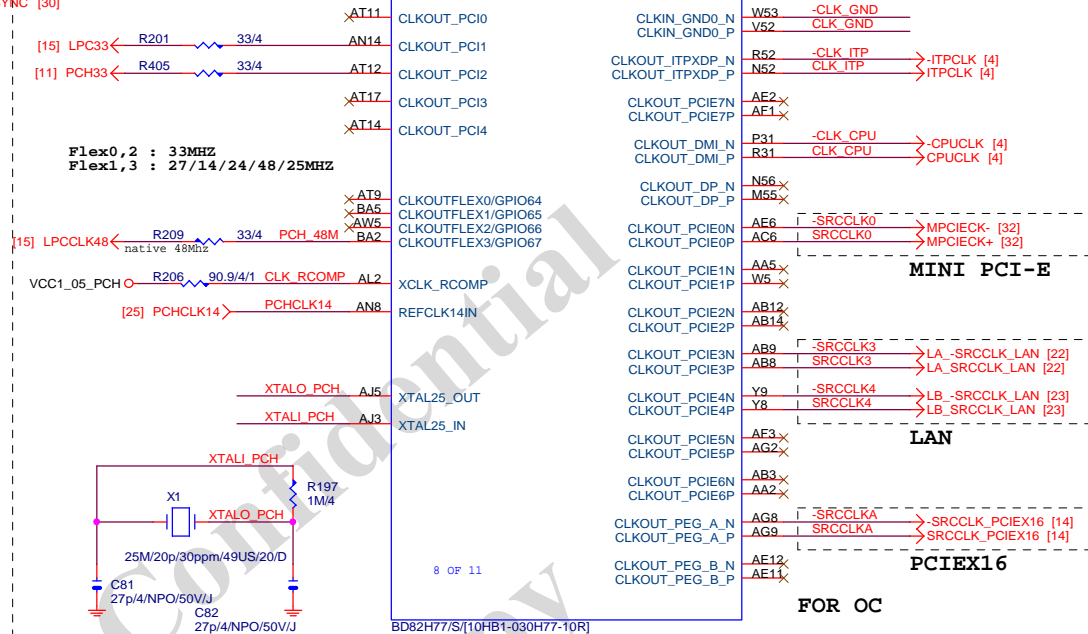
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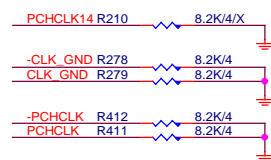
PCH

(H)

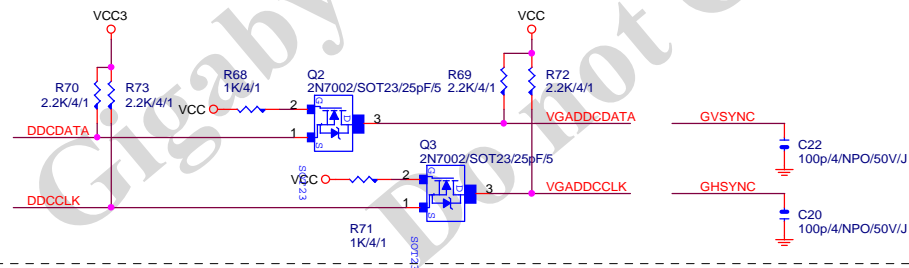
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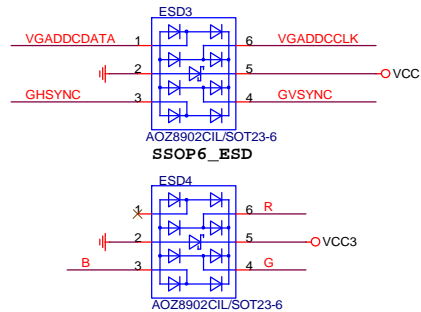
PCH CLK PD



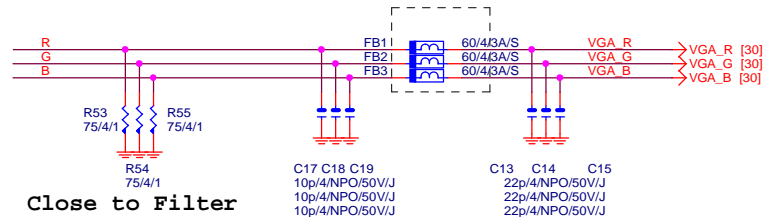
VGA DDC



VGA ESD

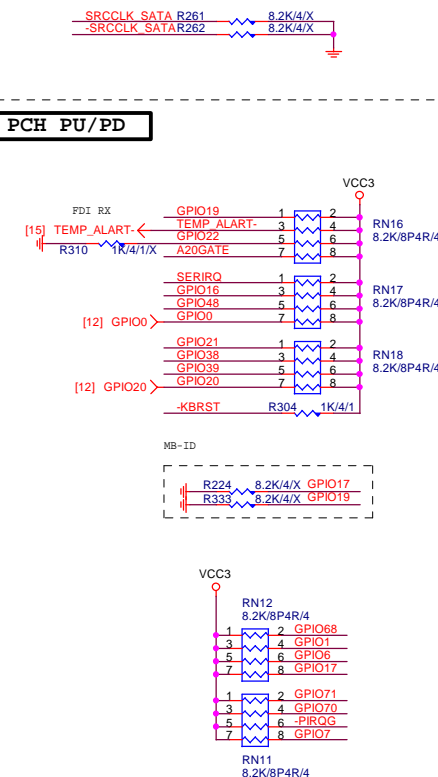


VGA DDC

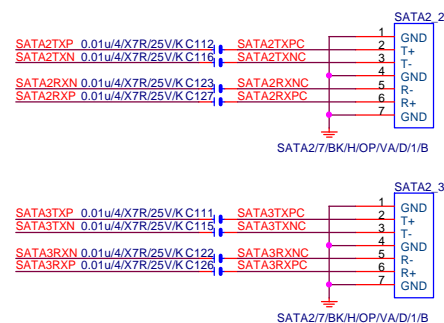
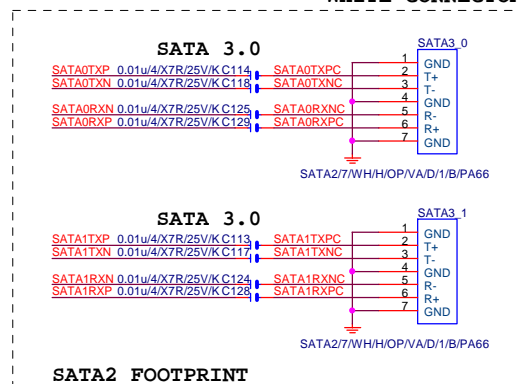


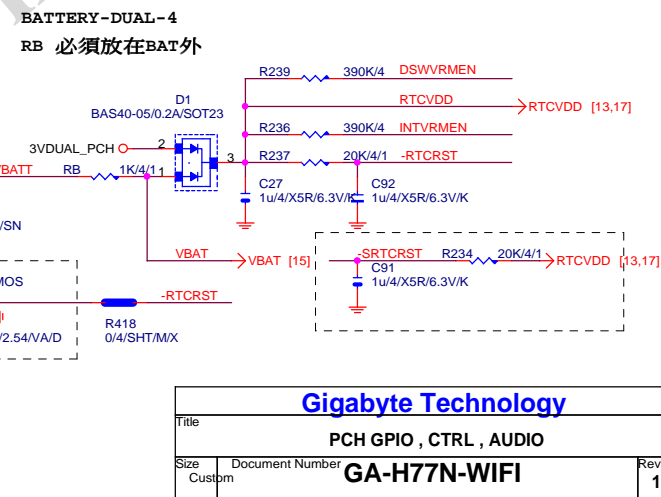
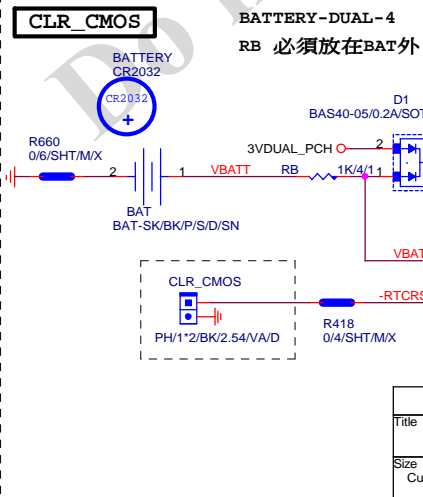
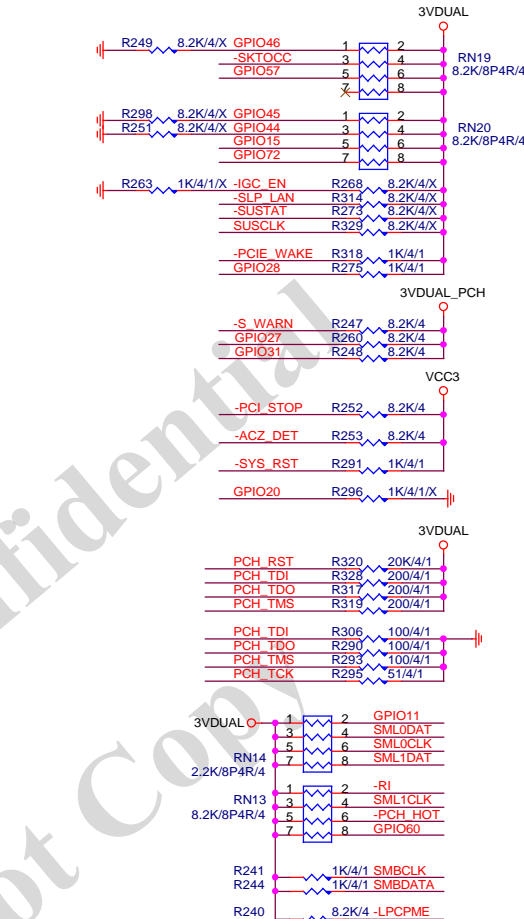
Gigabyte Technology

Title			PCH DISPLAY ,CLK BUFFER
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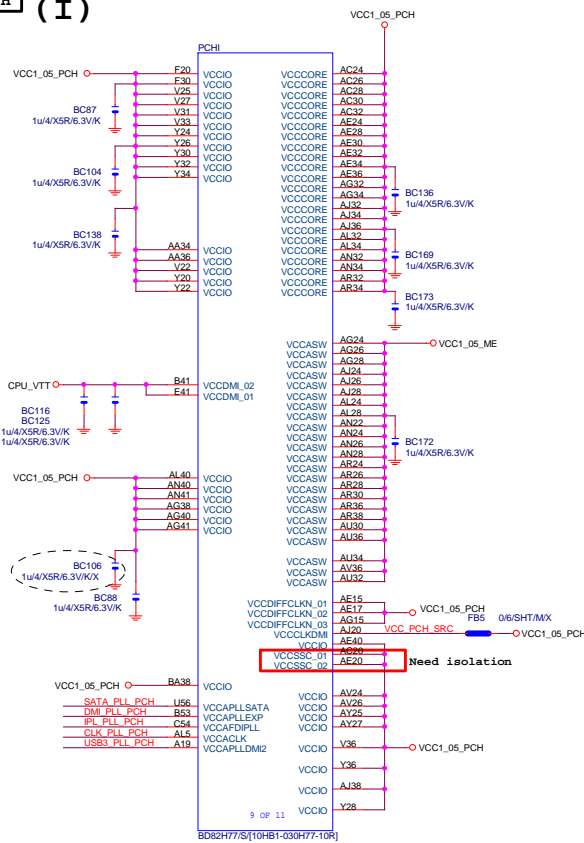


BLACK CONNECTOR

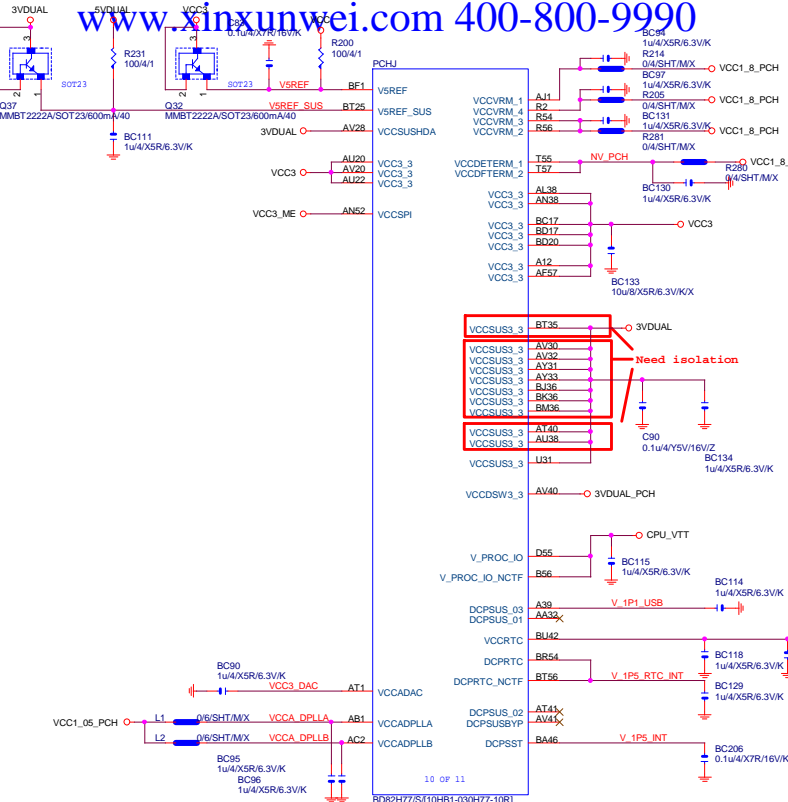




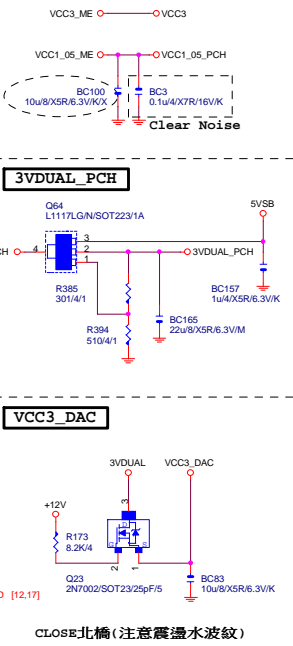
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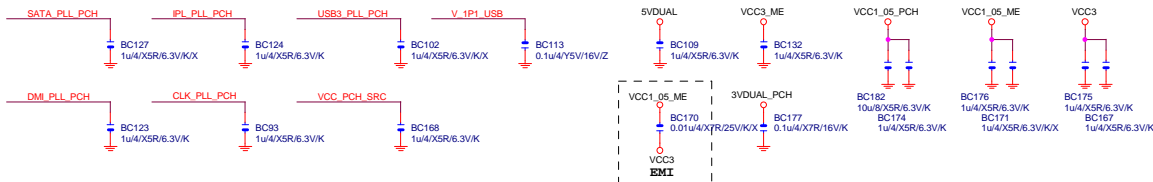
(J)



VCC:3 MF



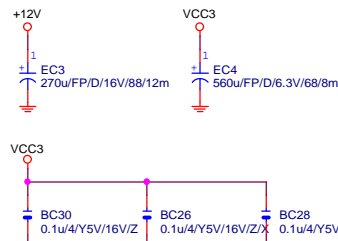
SA



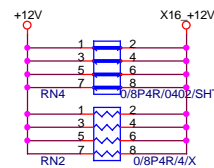
(I)



PCIEX16 CAP



PCIEX16 PROTECT SHT



PCIEX16 AC CAP

EXP A TXP0	C32	0.22u/4X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C30	0.22u/4X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C35	0.22u/4X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C37	0.22u/4X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C39	0.22u/4X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C41	0.22u/4X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C43	0.22u/4X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C45	0.22u/4X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C46	0.22u/4X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C49	0.22u/4X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C50	0.22u/4X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C51	0.22u/4X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C52	0.22u/4X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C54	0.22u/4X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C57	0.22u/4X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C58	0.22u/4X5R/6.3V/K	EXP A TXN7C
EXP A TXP8	C60	0.22u/4X5R/6.3V/K	EXP A TXP8C
EXP A TXN8	C61	0.22u/4X5R/6.3V/K	EXP A TXN8C
EXP A TXP9	C62	0.22u/4X5R/6.3V/K	EXP A TXP9C
EXP A TXN9	C63	0.22u/4X5R/6.3V/K	EXP A TXN9C
EXP A TXP10	C64	0.22u/4X5R/6.3V/K	EXP A TXP10C
EXP A TXN10	C65	0.22u/4X5R/6.3V/K	EXP A TXN10C
EXP A TXP11	C66	0.22u/4X5R/6.3V/K	EXP A TXP11C
EXP A TXN11	C67	0.22u/4X5R/6.3V/K	EXP A TXN11C
EXP A TXP12	C68	0.22u/4X5R/6.3V/K	EXP A TXP12C
EXP A TXN12	C70	0.22u/4X5R/6.3V/K	EXP A TXN12C
EXP A TXP13	C72	0.22u/4X5R/6.3V/K	EXP A TXP13C
EXP A TXN13	C73	0.22u/4X5R/6.3V/K	EXP A TXN13C
EXP A TXP14	C74	0.22u/4X5R/6.3V/K	EXP A TXP14C
EXP A TXN14	C75	0.22u/4X5R/6.3V/K	EXP A TXN14C
EXP A TXP15	C77	0.22u/4X5R/6.3V/K	EXP A TXP15C
EXP A TXN15	C78	0.22u/4X5R/6.3V/K	EXP A TXN15C

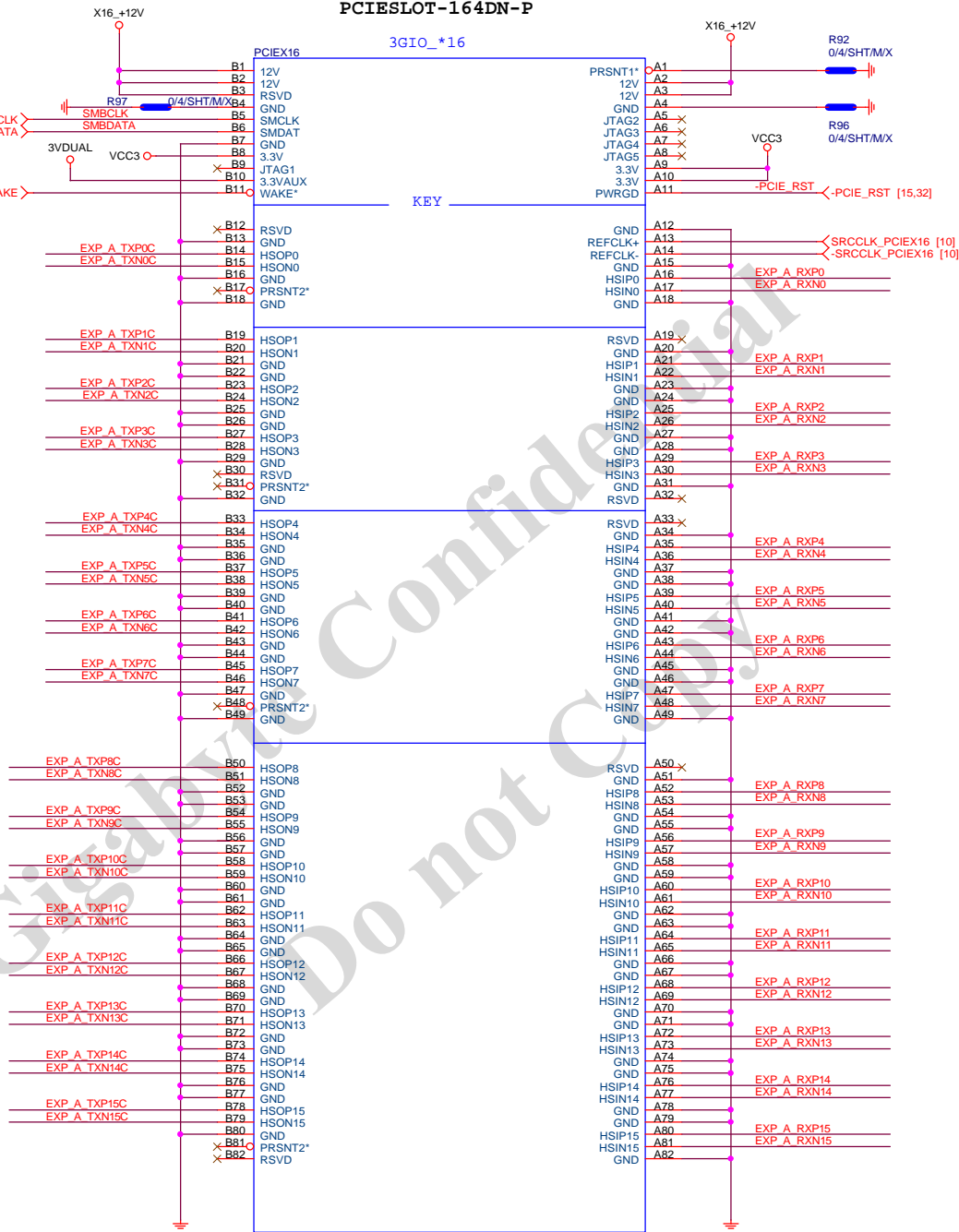
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 EXP A RXN0.15] >> EXP_A_RXN0.15] [4]
 EXP A TXP0.15] >> EXP_A_TXP0.15] [4]
 EXP A TXN0.15] >> EXP_A_TXN0.15] [4]

PCIEX16 SLOT

[7,8,12,17,25,32] SMBCLK
 [7,8,12,17,25,32] SMBDATA
 [12,22,23,32] -PCIE_WAKE

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PCIESLOT-164DN-P

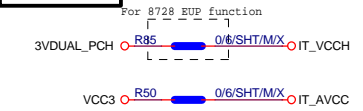


PCI-E16X-164P/BK/RIGHT PUSH

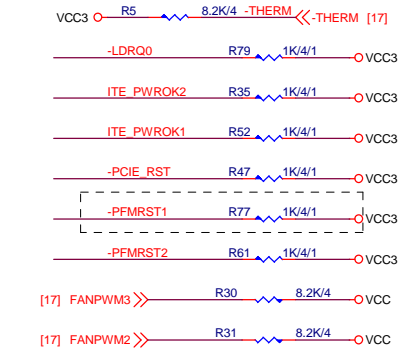
BLACK CONNECTOR

Gigabyte Technology

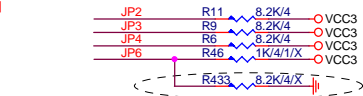
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Size	Document Number	GA-H77N-WIFI		Rev
Custom				1.0
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SIO PU



SIO STRAP



IT8728-EX
PULL DOWN ENABLE OVP

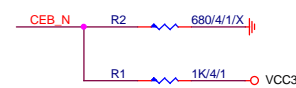
EUP control by PCH
3VDUAL \circ 100/4/1 $\frac{28_3VSB}{\text{---}}$ R83

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

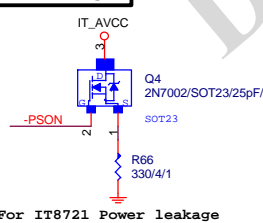
IT8728F NOTE

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

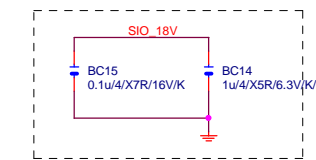


Power leakage



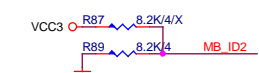
SIO_18V

internal power pin, max 22nF cap



FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

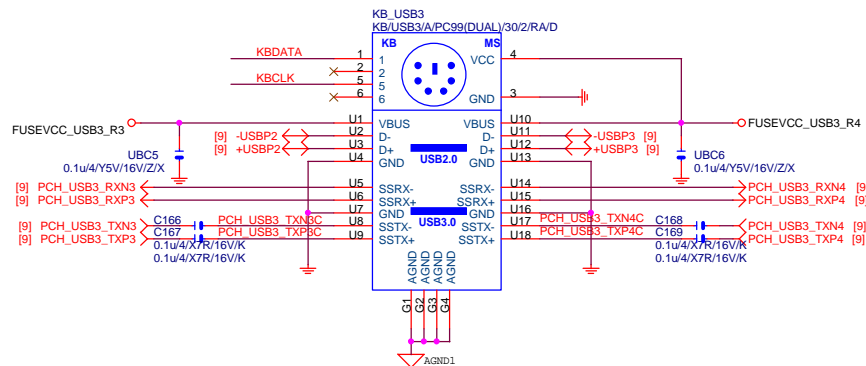
MB ID



Gigabyte Technology

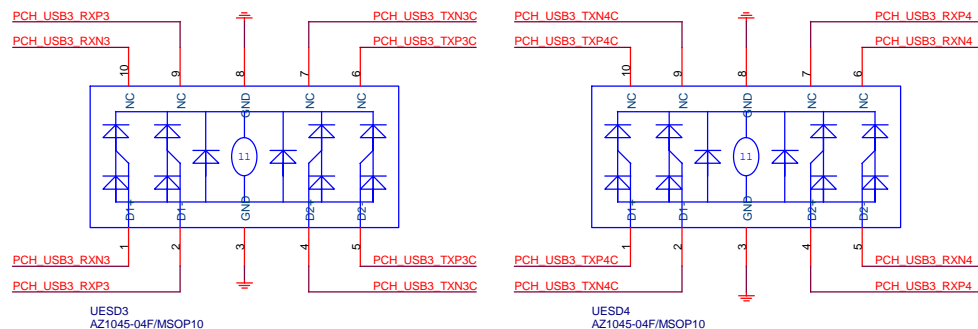
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Size	Document Number	GA-H77N-WIFI	
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KB/MS

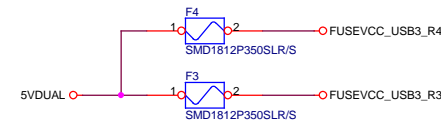


USB3.0 LAN ESD PROTECT

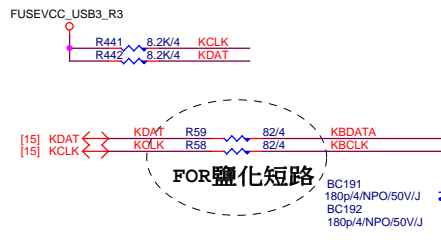
USB3.0 ESD



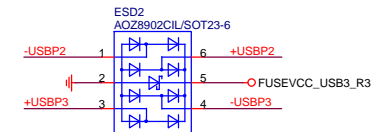
USB3.0 FWR



USB3.0 1Port - 1Fuse (3.5A)

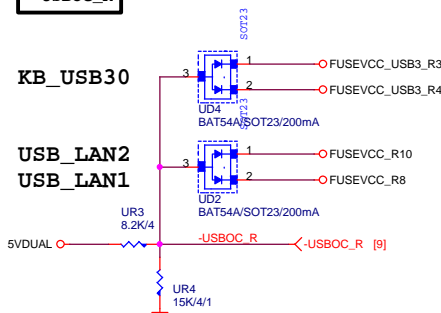


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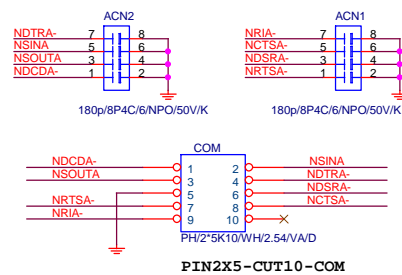
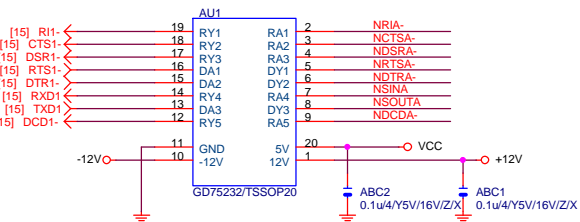


-USBOC_R

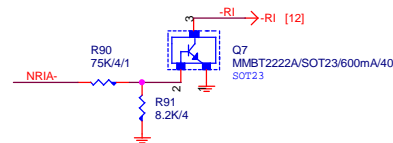
KB_USB30

USB_LAN2
USB_LAN1

COM



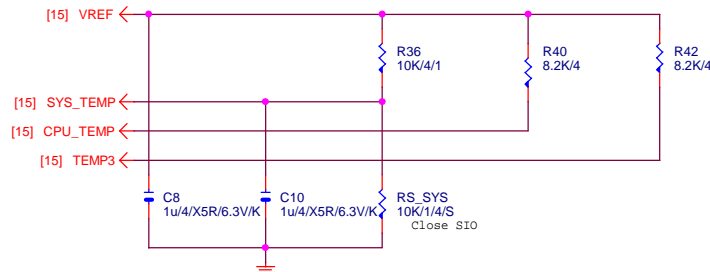
COM RI



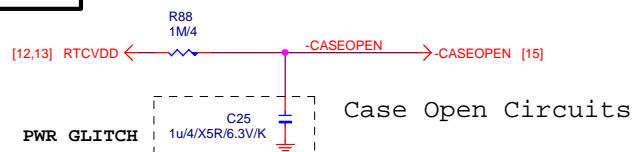
Gigabyte Technology

Title			COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size	Document Number	GA-H77N-WIFI			Rev
Custom					1.0
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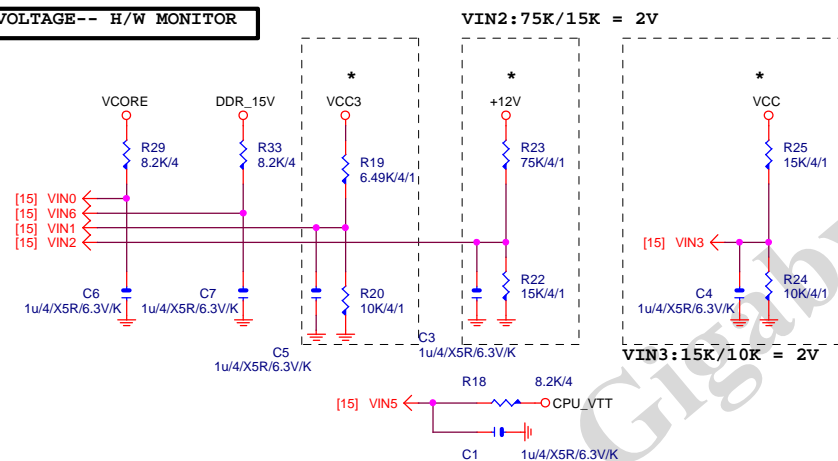
TEMP H/W MONITOR



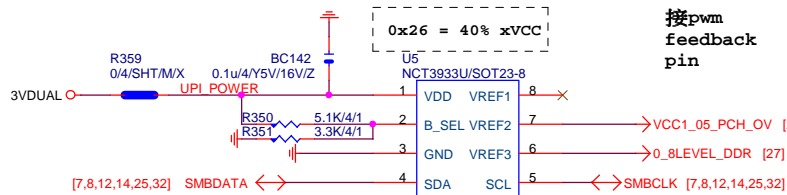
CASE OPEN



VOLTAGE-- H/W MONITOR

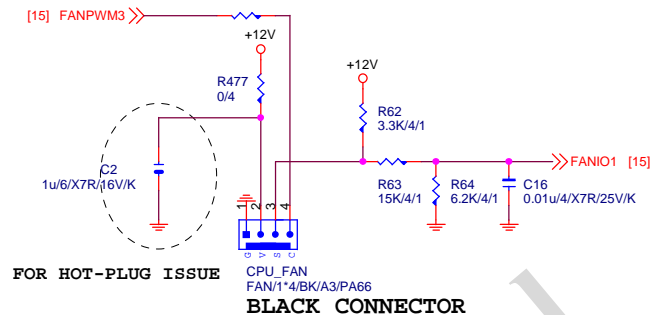


OV NCT3933

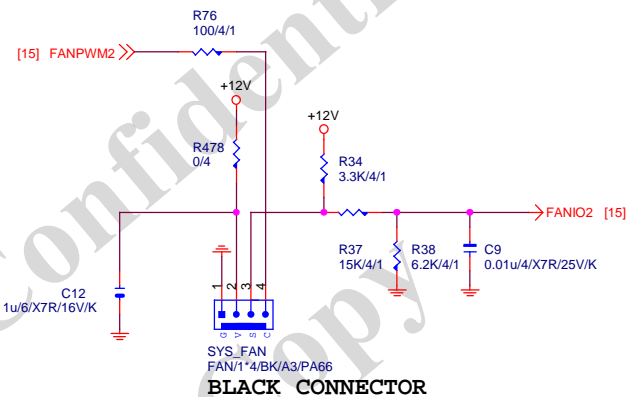


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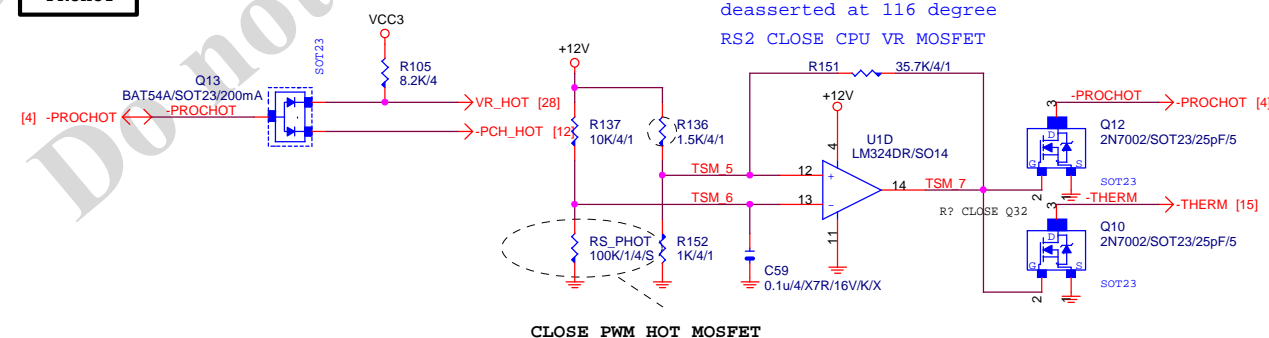
CPU SMART FAN



SYS SMART FAN



-PROHOT

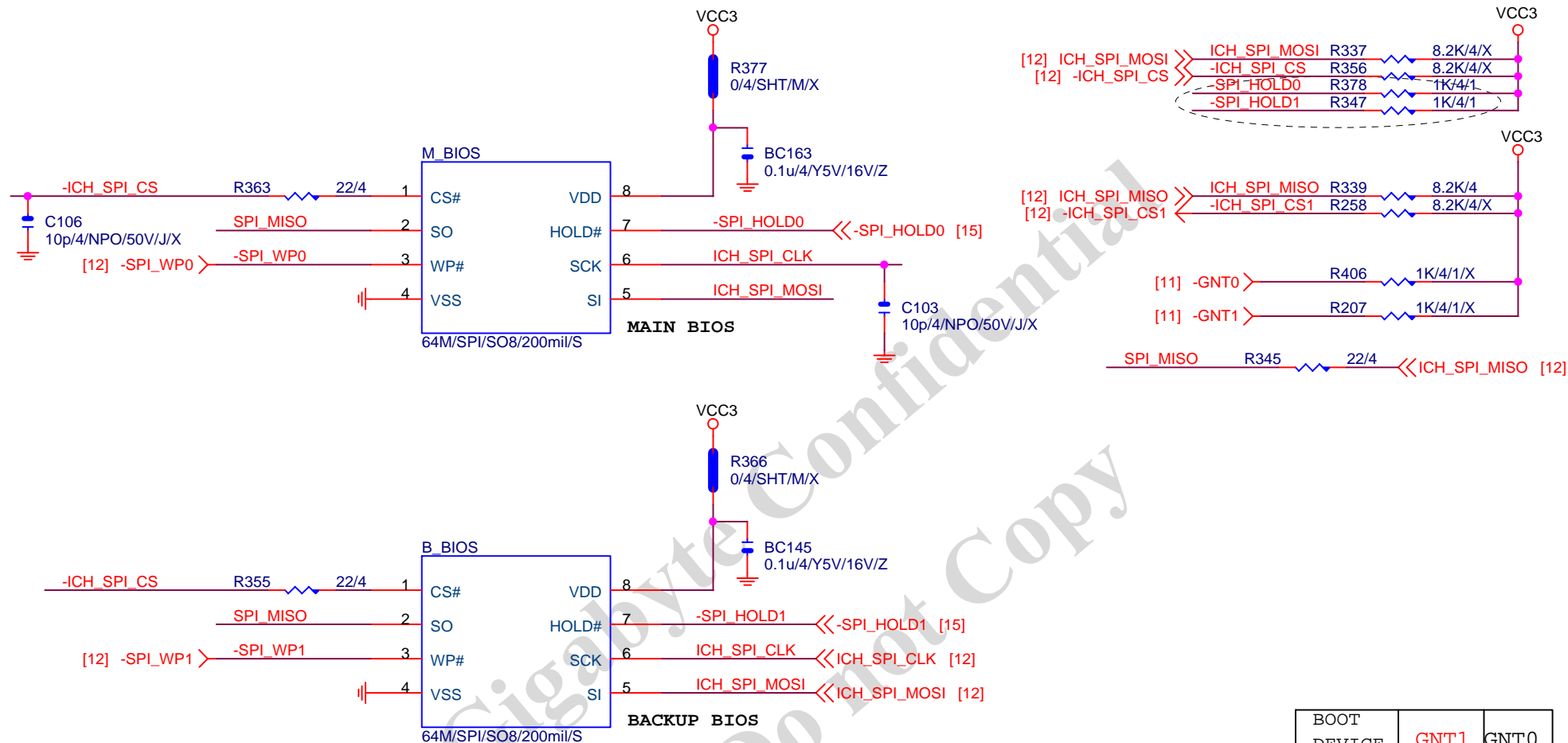


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Title			HWM,FAN CTRL,OV
Size	Document Number	GA-H77N-WIFI	
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DUAL BIOS

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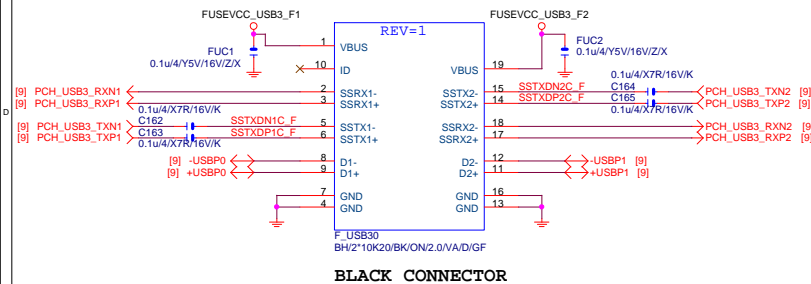
B65使用64M BIOS
使用H67暫用32M
H61使用32M BIOS

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

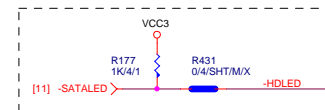
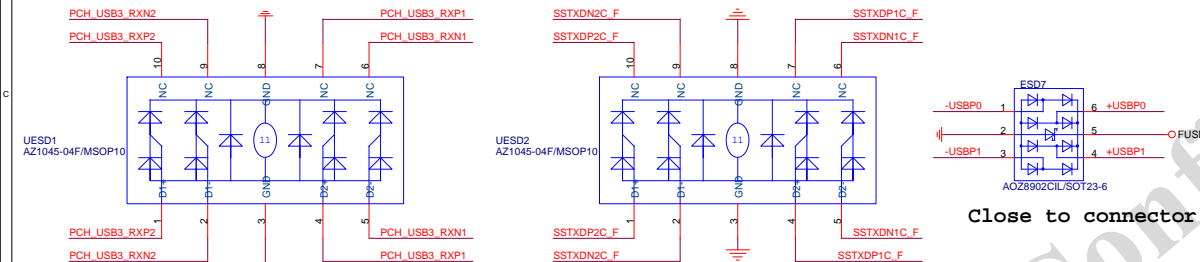
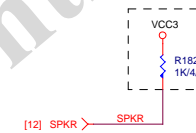
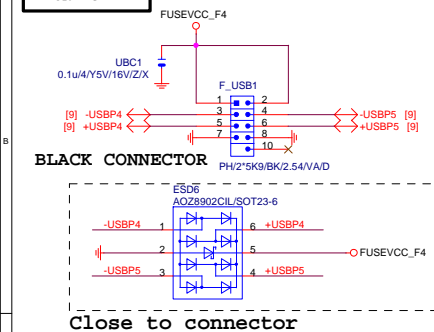
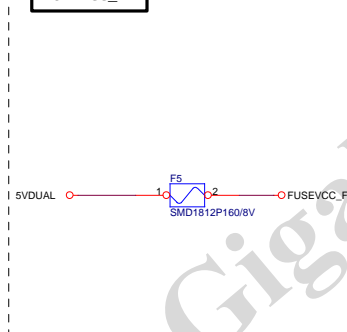
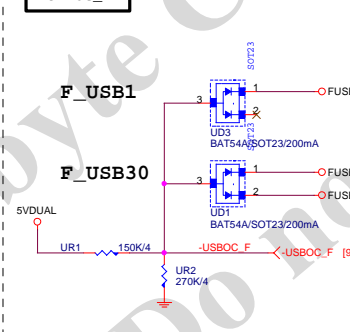
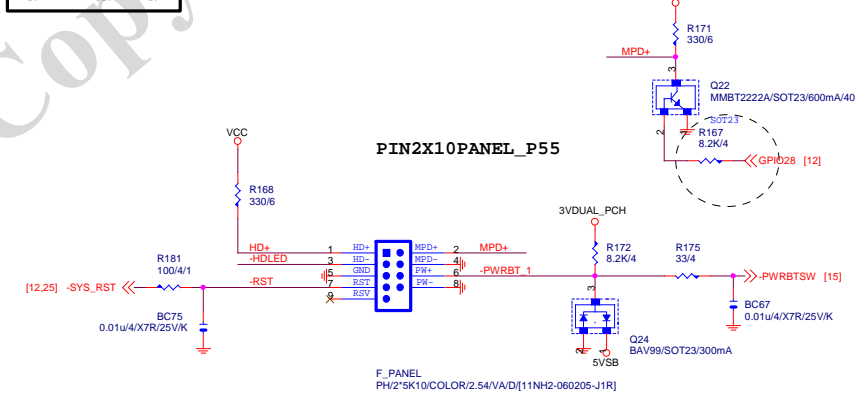
1 means floating
0 means PD 1K

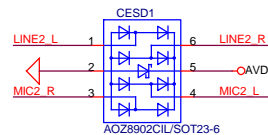
Gigabyte Technology

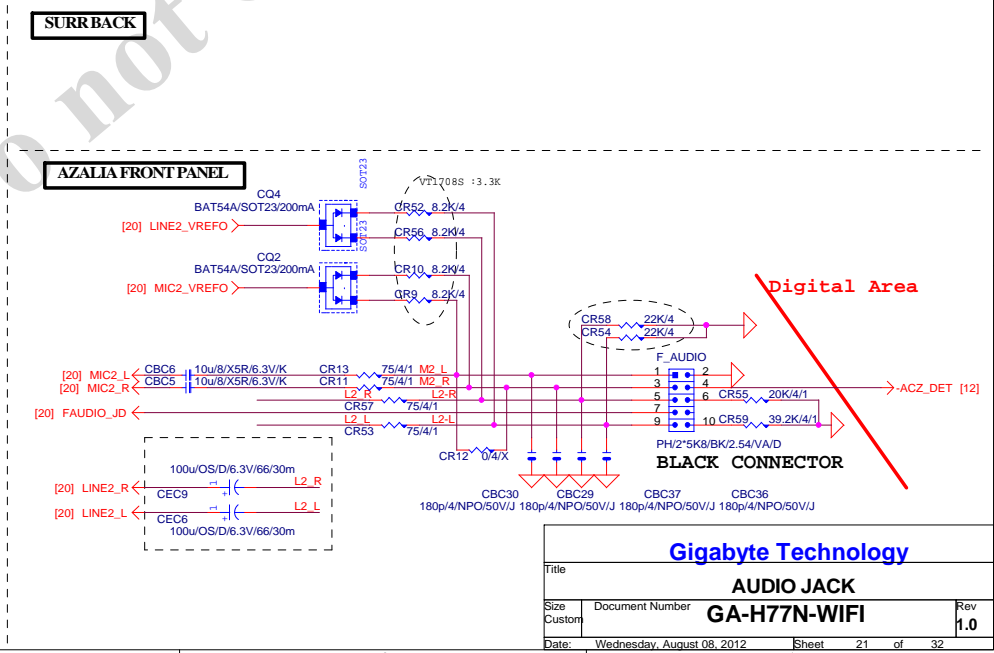
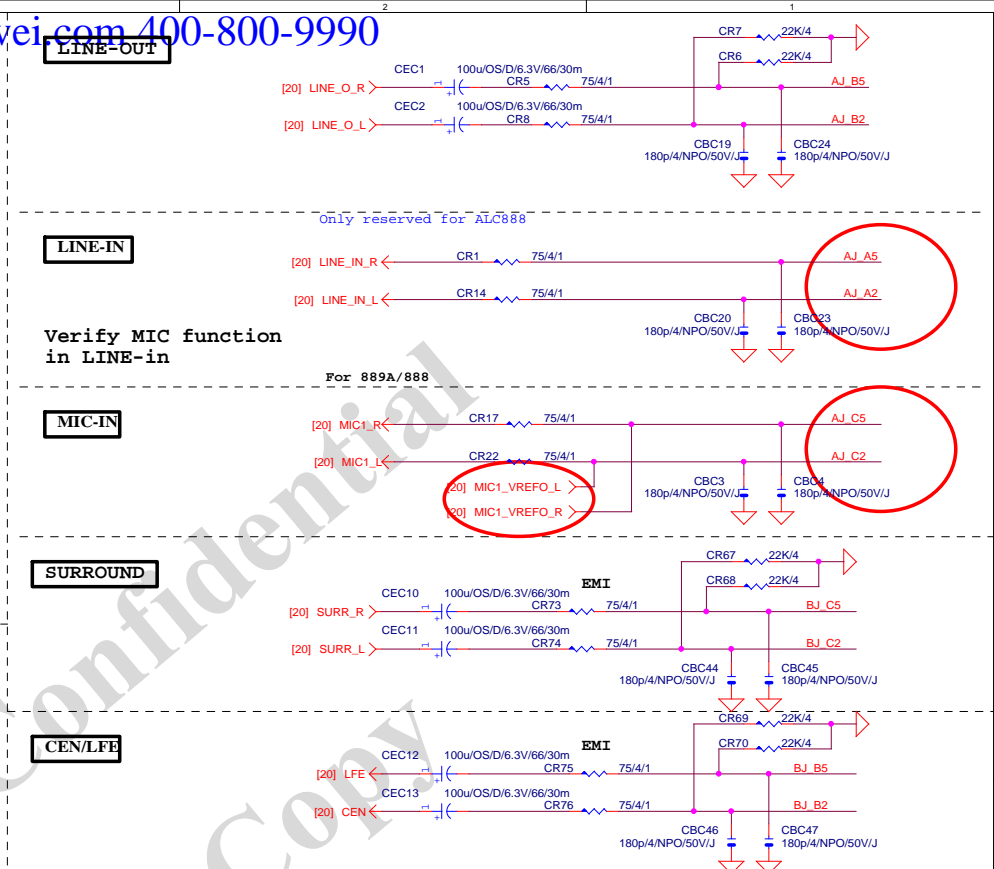
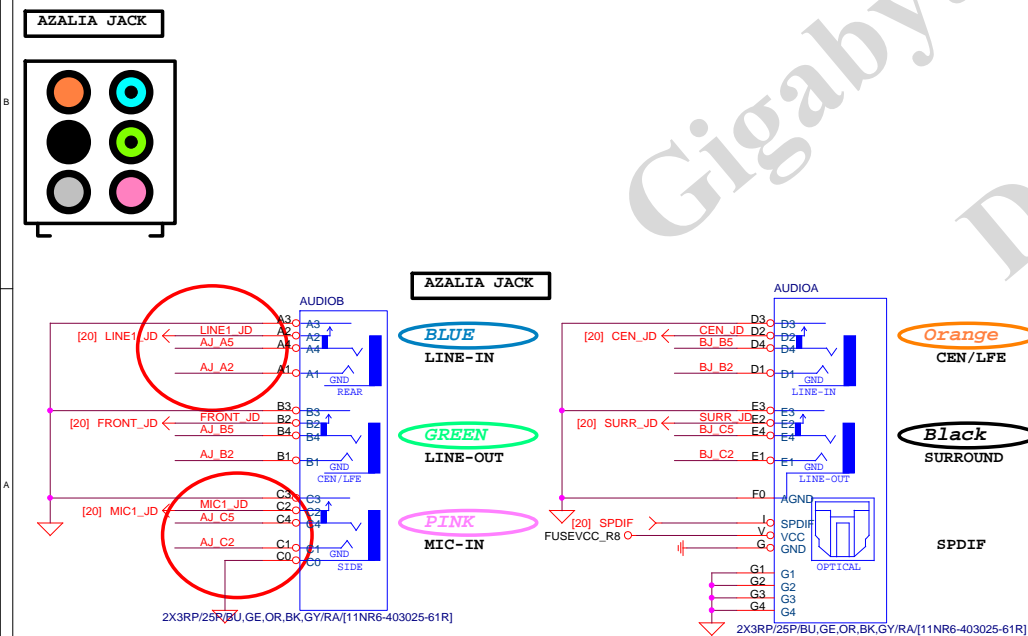
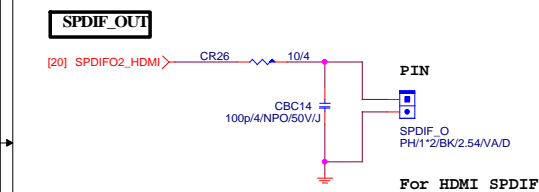
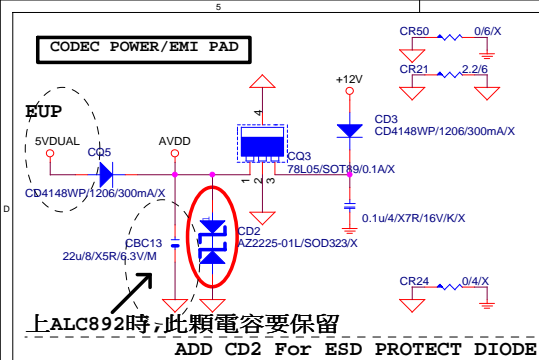
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DUAL BIOS		
Size A	Document Number	Rev
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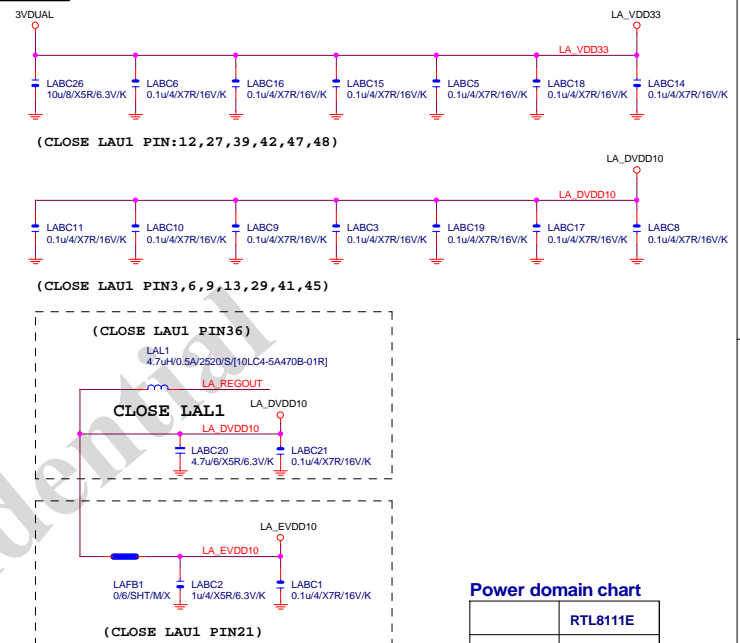
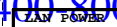
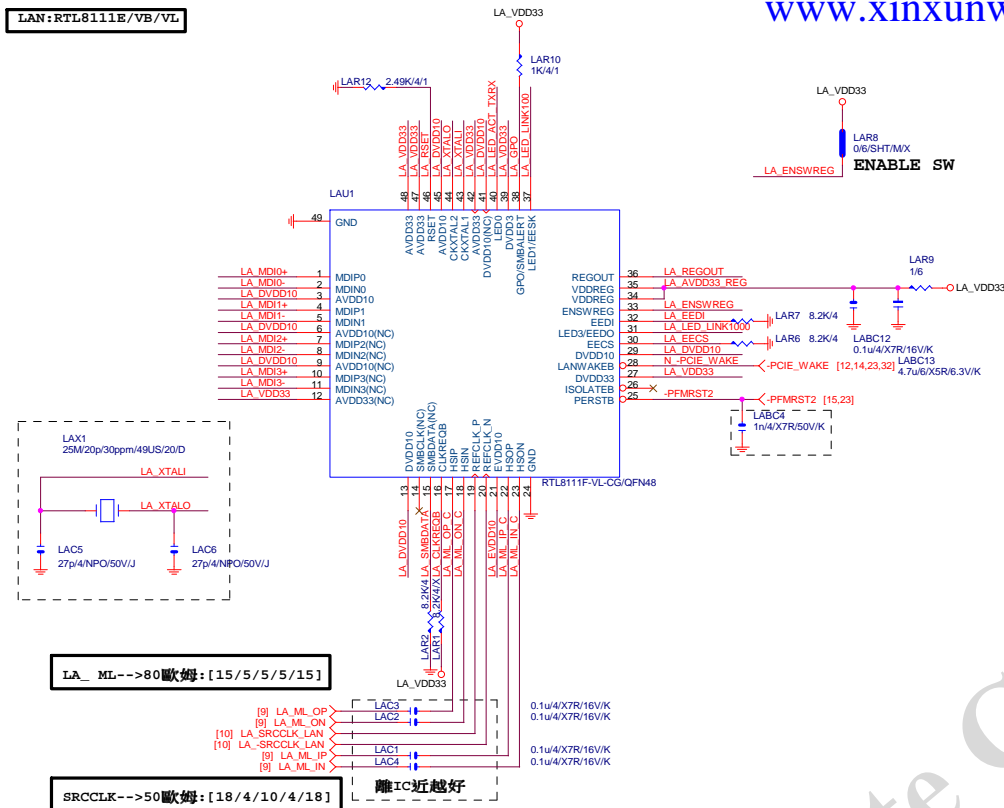
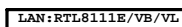
F_USB30

USB3.0 1Port - 1Fuse (3.5A)

SATA LED**F_USB30 ESD PROTECT****SPKR****FRONT USB1****FUSEVCC_F****-USBOC_F****INTEL FRONT PANEL**

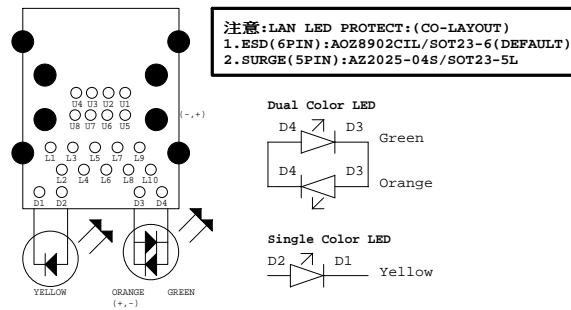
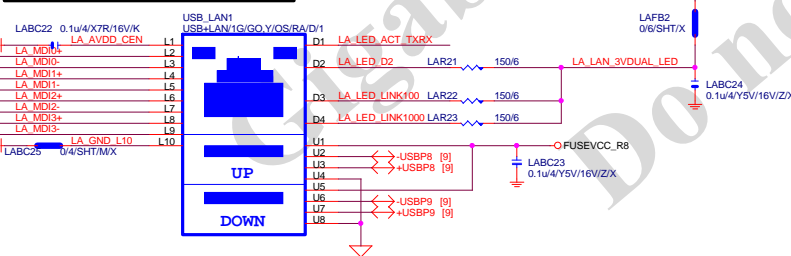
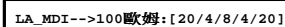
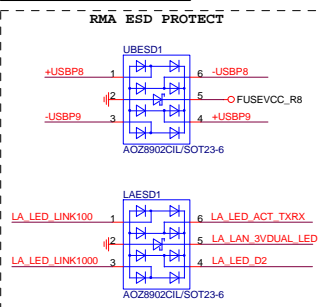
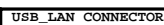
[illegible]





Power domain chart

	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

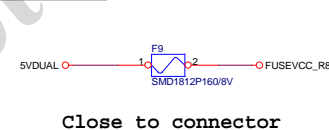
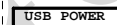


USB-->90歐姆:[15/4.5/7.5/4.5/15

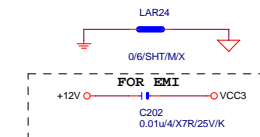
料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN (8 core)	FOXCONN
11NR6-702009-92R	1G LAN (8 core)	UDE
11NR6-702009-11R	1G LAN (12core/RED)	UDE
11NR6-702009-12R	1G LAN (8 core/RED)	FOXCONN

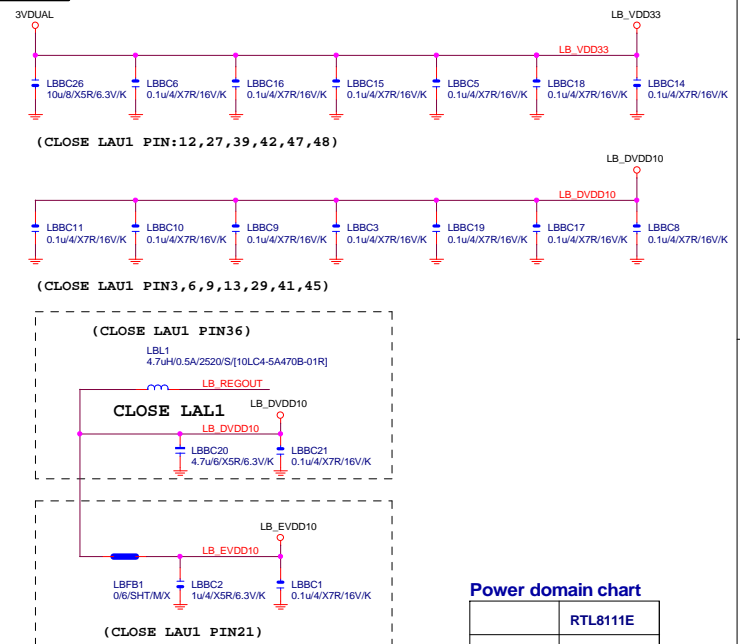
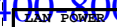
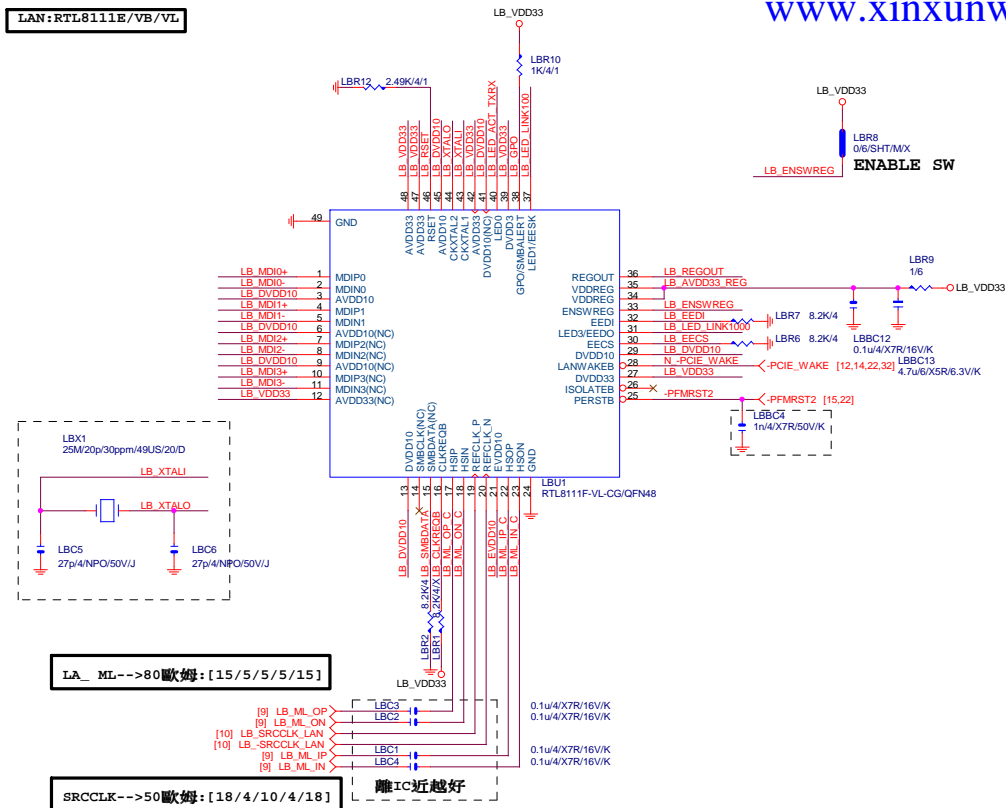
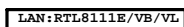
USB_LAN BOM區分:

1. (紅色/12CORE/三倍):USB+LAN/1G/GO,Y/OS/RA/D/1/RED
2. (黑色/12CORE):USB+LAN/1G/GO,Y/OS/RA/D/1
3. (黑色/8CORE):USB+LAN/1G/GO,Y/OS/RA/D/8C



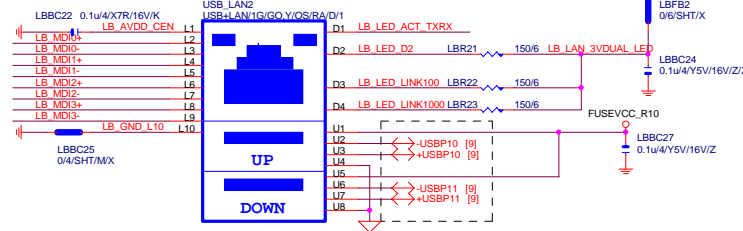
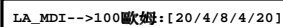
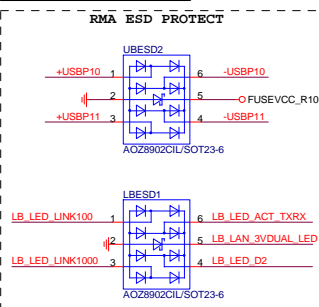
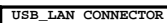
PS:視EMI需求





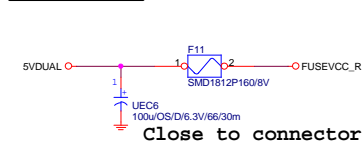
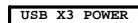
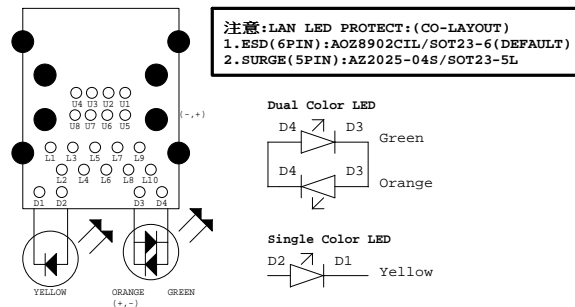
Power domain chart

	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

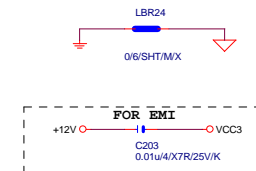


注意:USB PORT(目前:暫代6,7PORT)

USB-->90歐姆:[15/4.5/7.5/4.5/15]



PS:視EMI需求

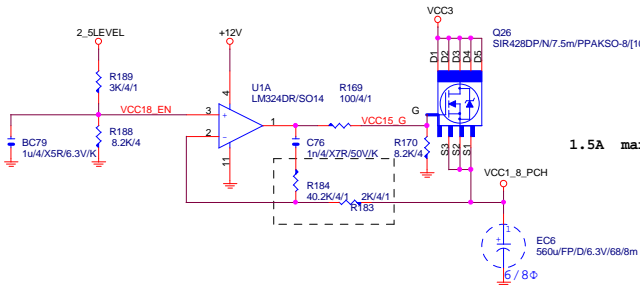


料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN(8 core)	FOXCONN
11NR6-702009-92R	1G LAN(8 core)	UDE
11NR6-702009-11R	1G LAN(12core/RED)	UDE
11NR6-702009-12R	1G LAN(8 core/RED)	FOXCONN

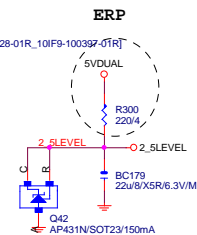
USB_LAN BOM區分:

1. (紅色/12CORE/三倍):USB+LAN/1G/GO,Y/OS/RA/D/1/RED
2. (黑色/12CORE):USB+LAN/1G/GO,Y/OS/RA/D/1
3. (黑色/8CORE):USB+LAN/1G/GO,Y/OS/RA/D/8C

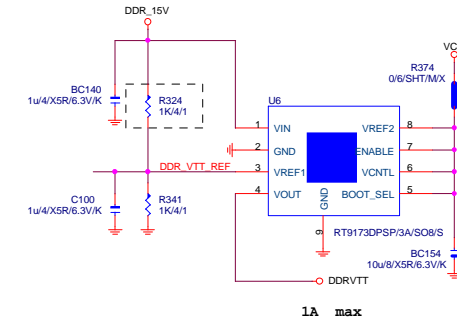
VCC1_8_PCH



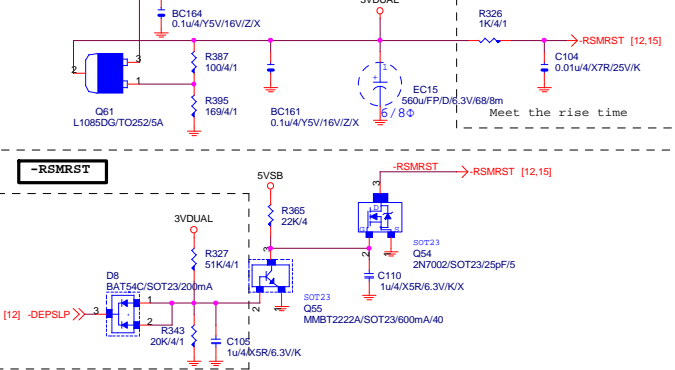
2_5LEVEL



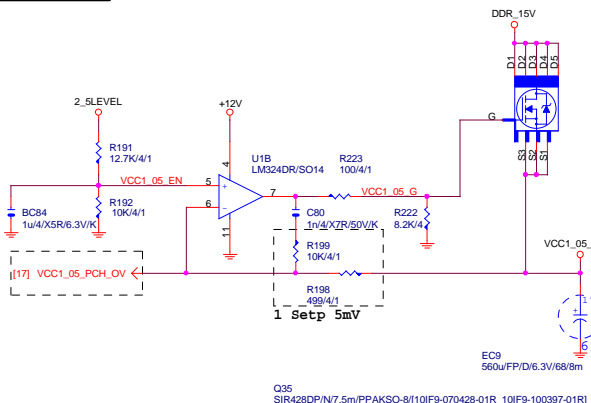
DDR_VTT



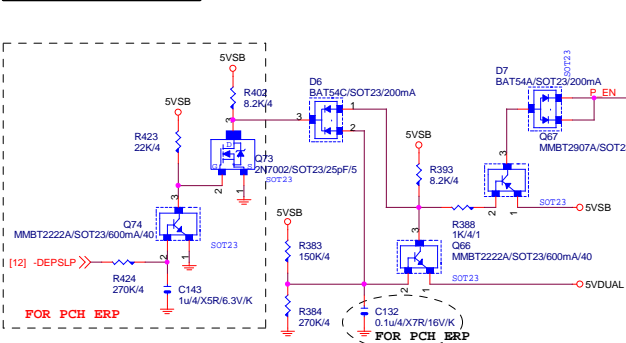
3VDUAL



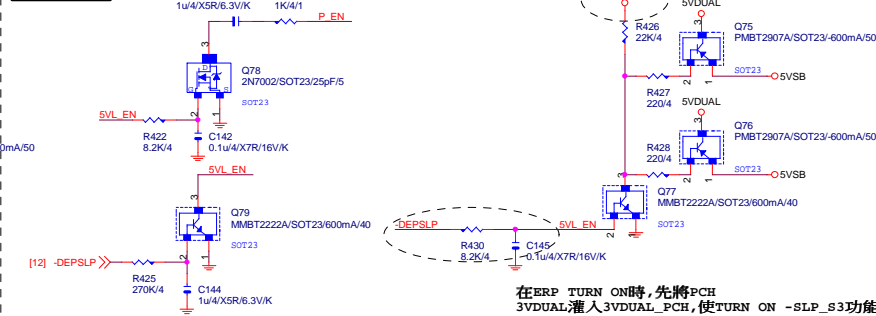
VCC1_05_PCH



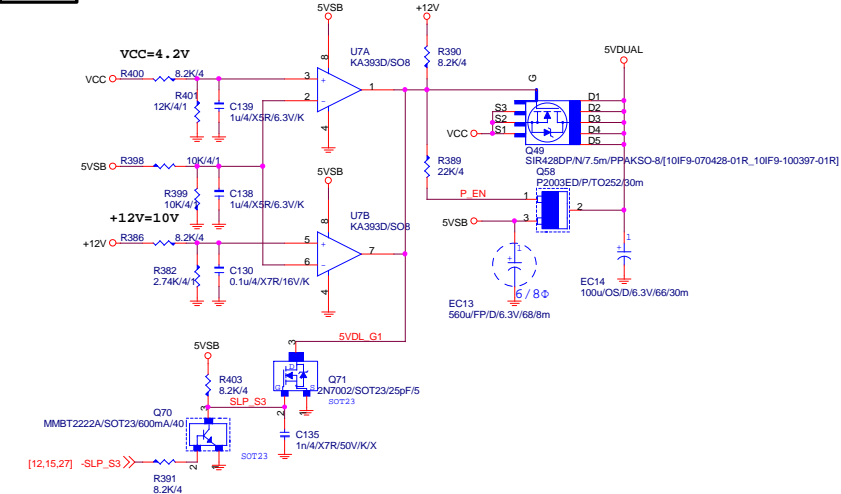
5VDUAL SHORT PROTECT



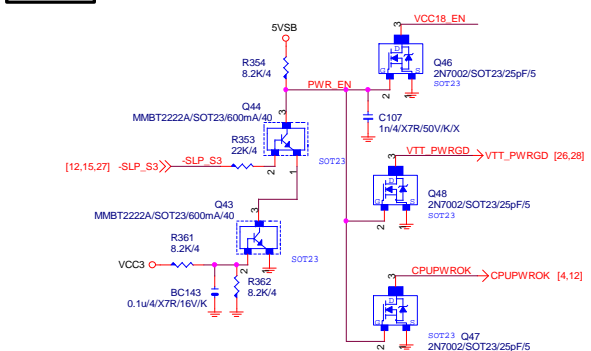
PCH ERP



5VDUAL



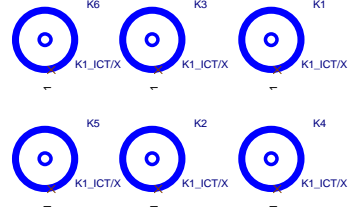
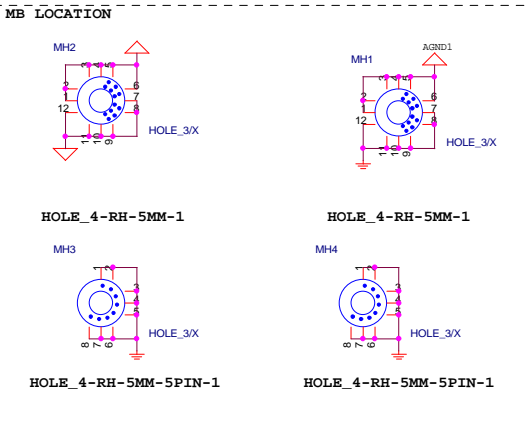
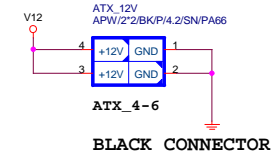
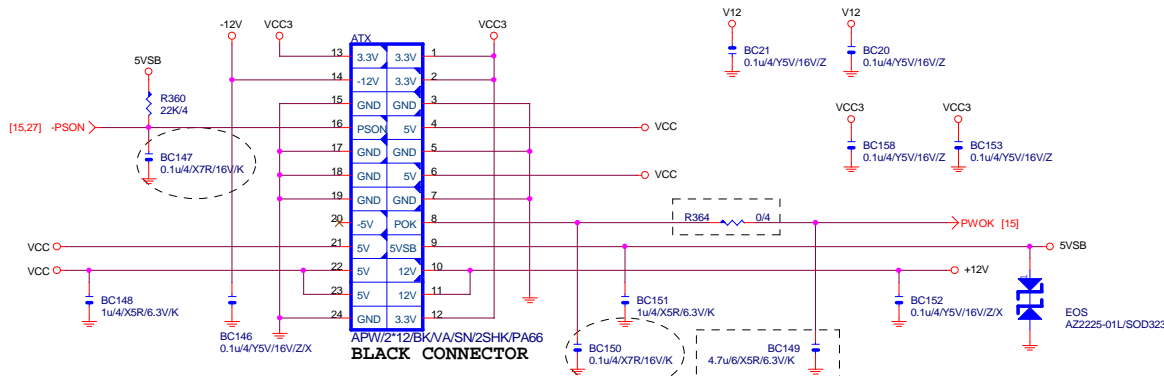
PWR SEQ



ATXX24 POWER CONNECTOR

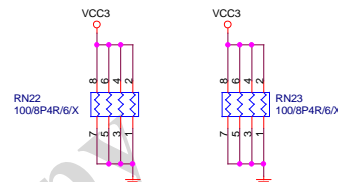
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ATXX24 POWER CONNECTOR

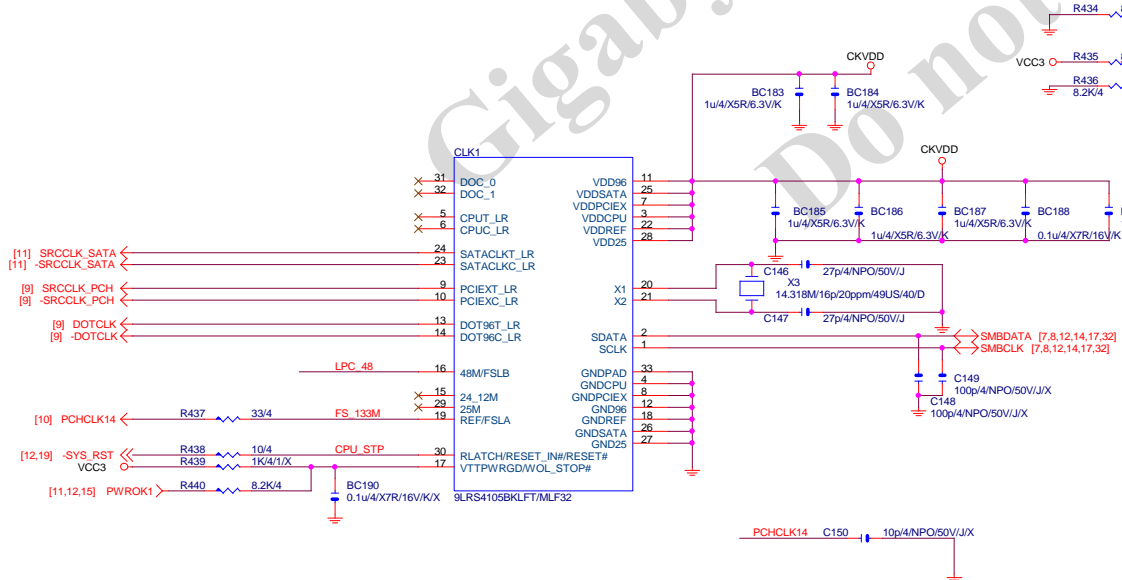


To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



CLK GEN



CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M

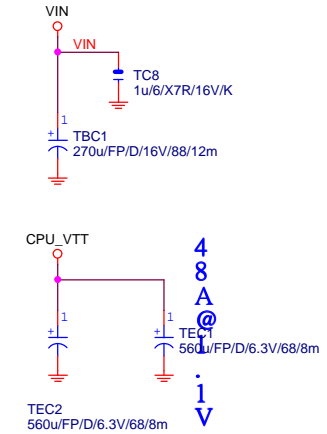
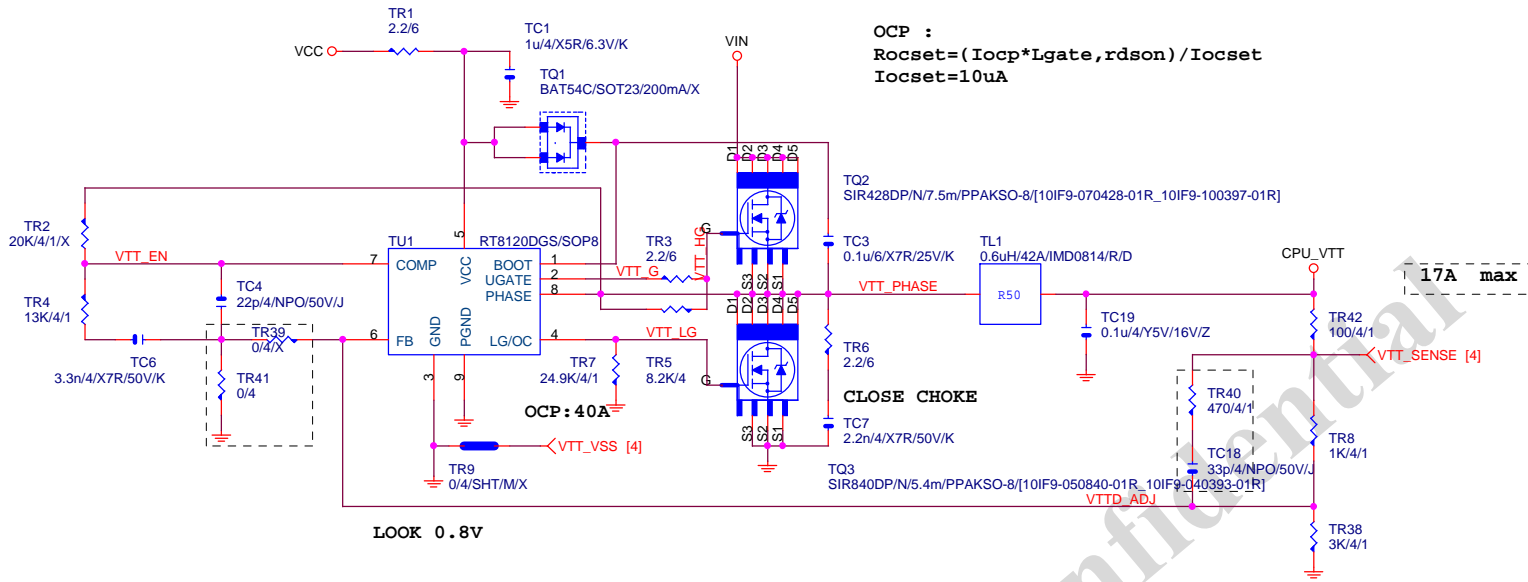
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ATX CONNECTOR

GA-H77N-WIFI

Rev 1.0

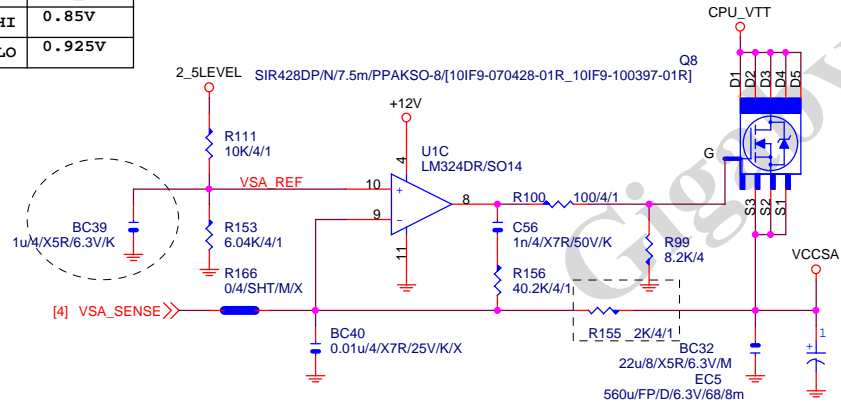
CPU_VTT



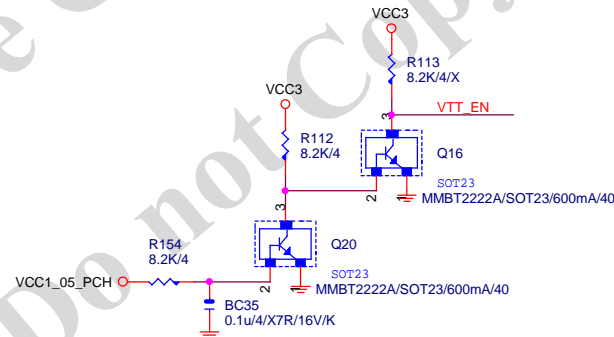
VCCSA

PDG 0.8

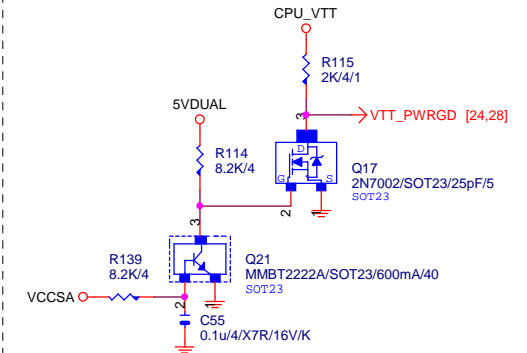
	VSA_SEL
HI	0.85V
LO	0.925V



CPU_VTT_PWR_SEQ



VTT_PWRGD



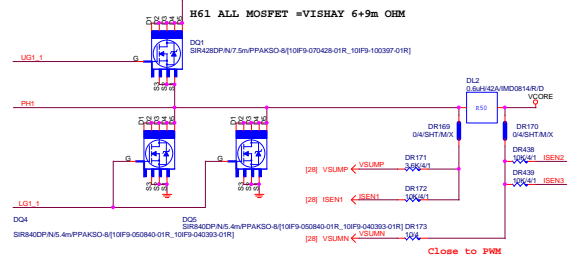
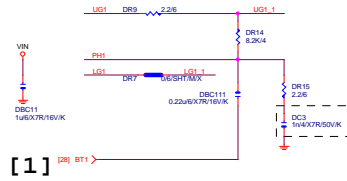
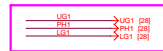
GIGABYTE

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Size	Document Number	Rev	
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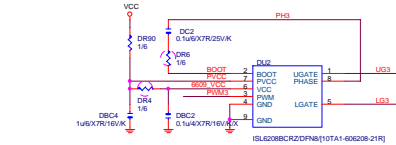
Size Custom	Document Number GA-H77N-WIFI	Rev 1.0
Date: Wednesday, August 08, 2012	Sheet 27 of 32	

PHASE 1

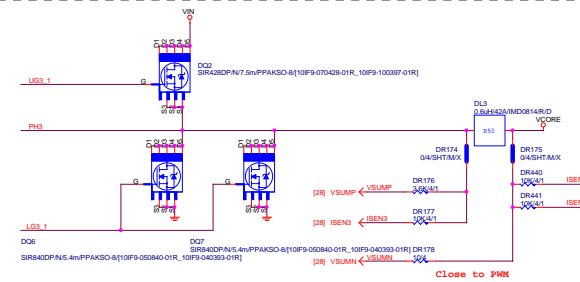


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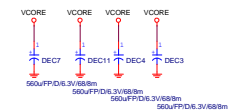
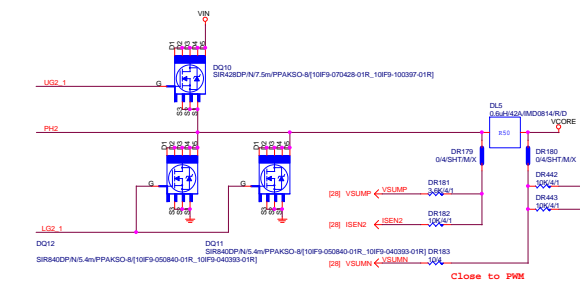
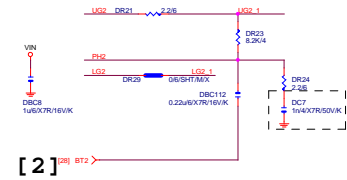
Fig 10.66/5C3 for P1
(10.66/5C3 for P1)



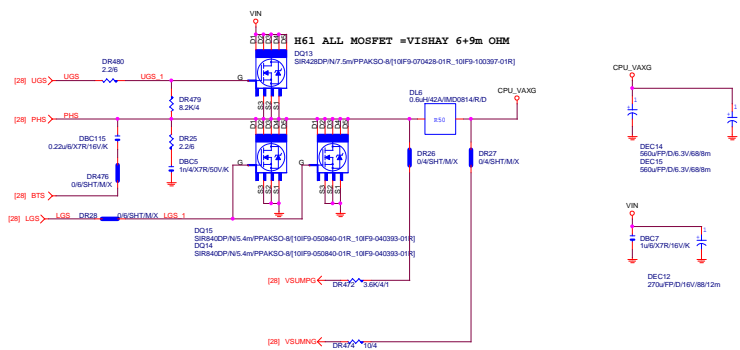
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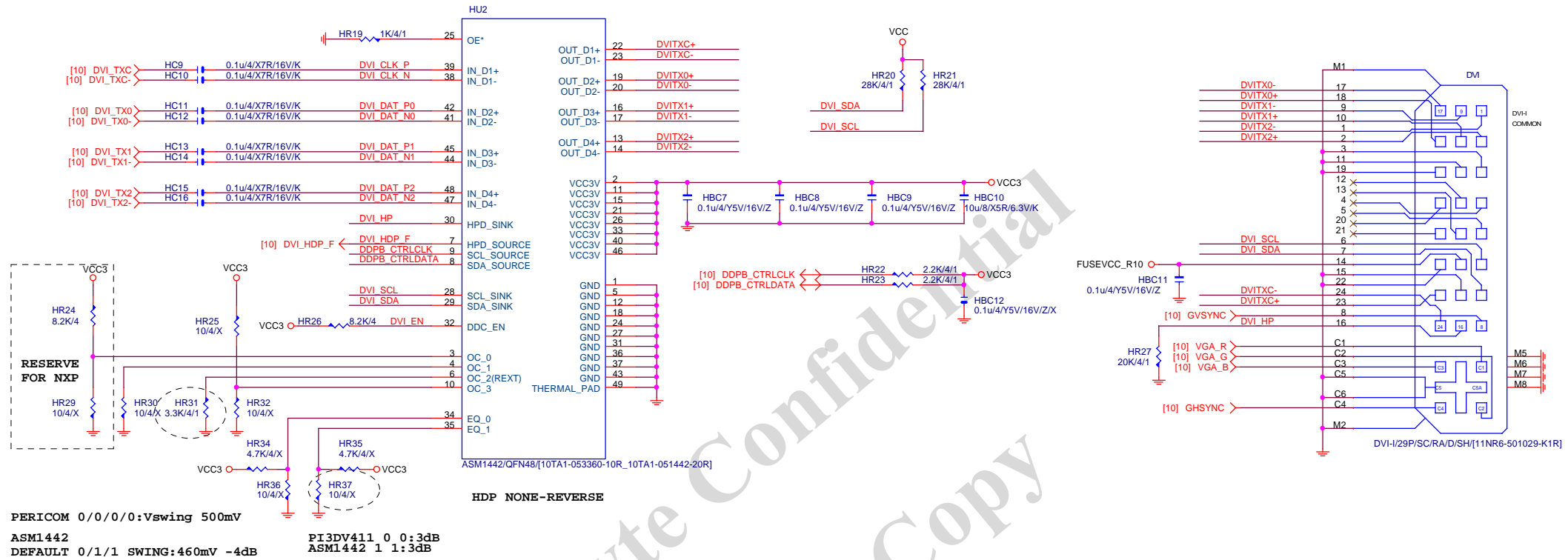
PHASE 2



VAXG



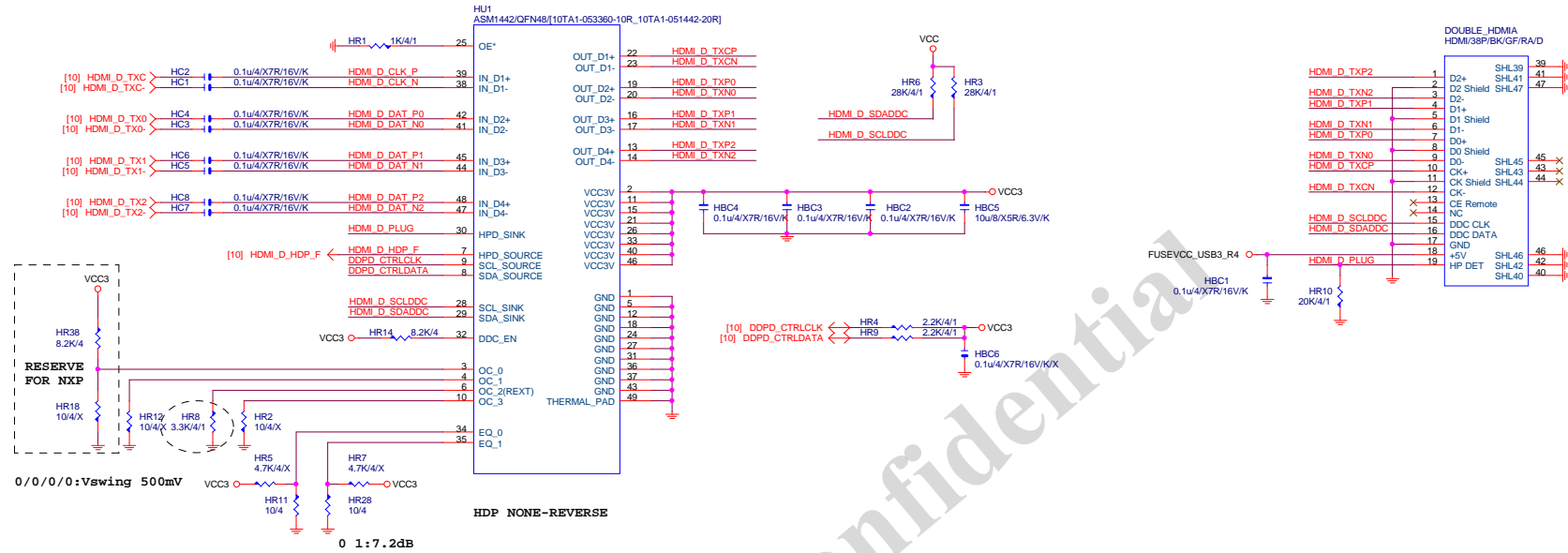
DVI LEVEL SHIFT



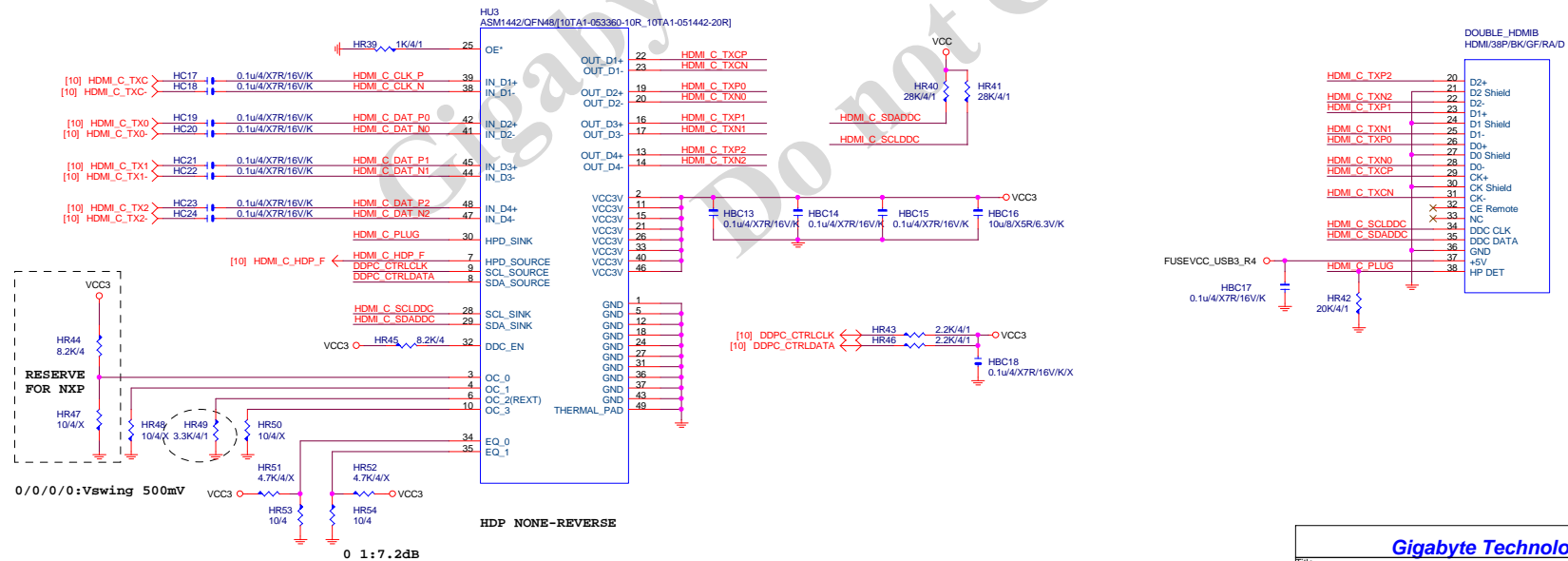
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DVI			
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HDMI LEVEL SHIFT

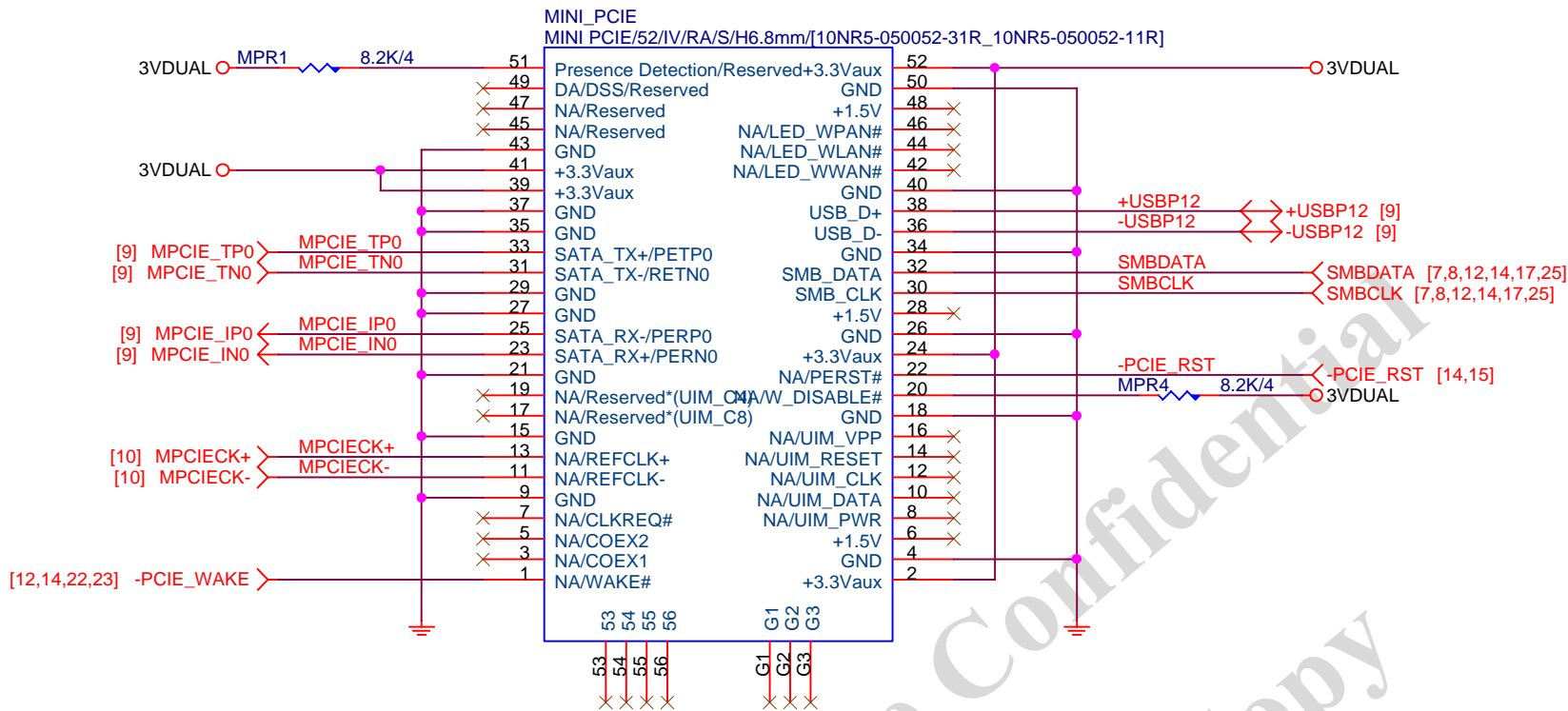


HDMI LEVEL SHIFT



Gigabyte Technology

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SMA
ANT1
SMA[11NH6-010001-11R]

SMA
ANT2
SMA[11NH6-010001-11R]

Gigabyte Technology			
Title			
mini PCI-E			
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