

Model Name: GA-H77N-WIFI

Revision 1.1

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

SHEET

TITLE

28	VCORE ISL95836 1
29	VCORE ISL95836 2
30	DVI-I
31	HDMI * 2
32	mini PCI-E

www.aitech1.ru

Gigabyte Technology

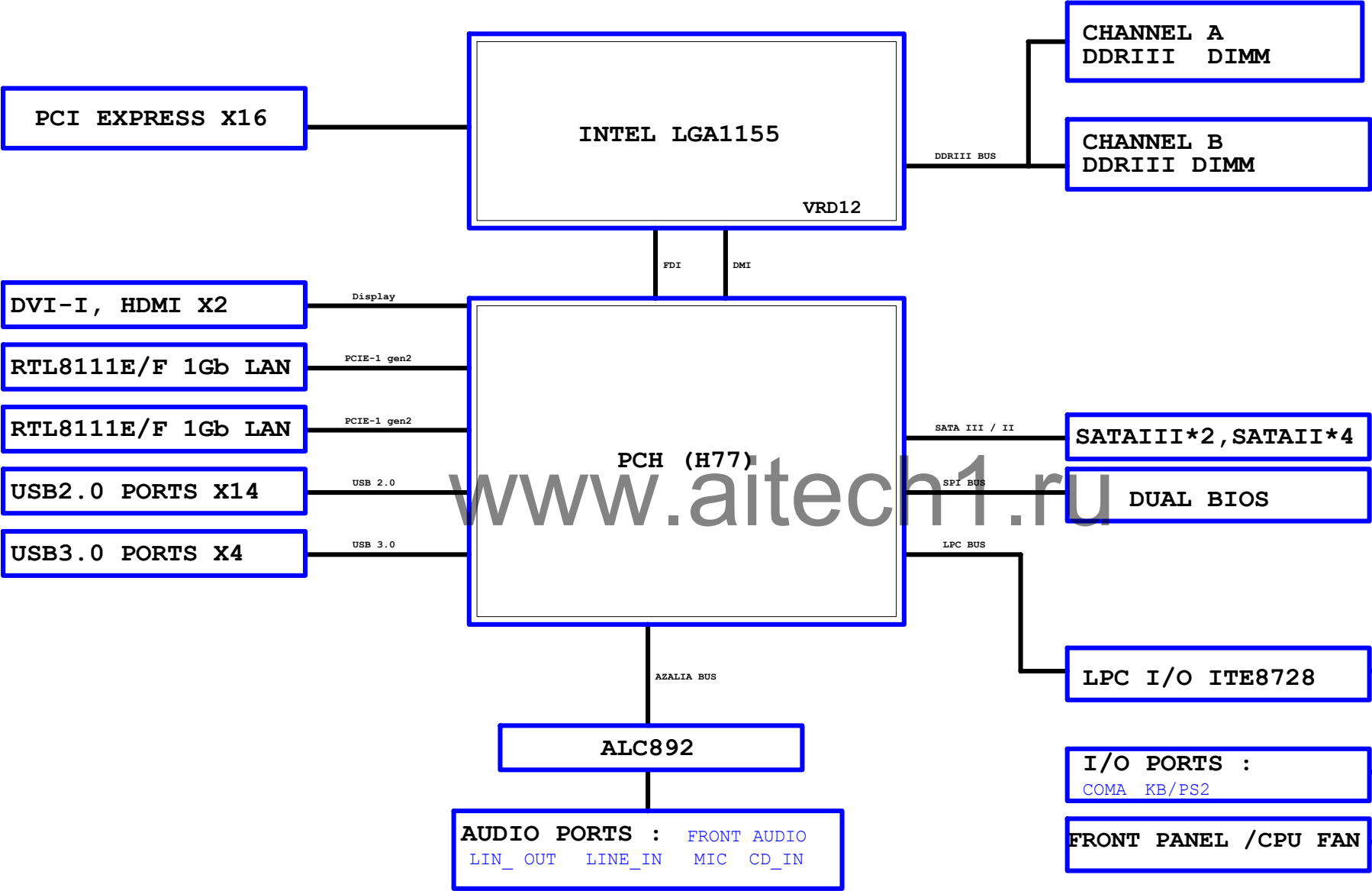
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Size	Document Number	GA-H77N-WIFI	
Custom		Rev	1.1
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Revision 1.1

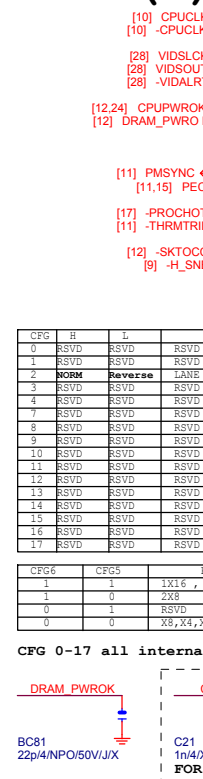
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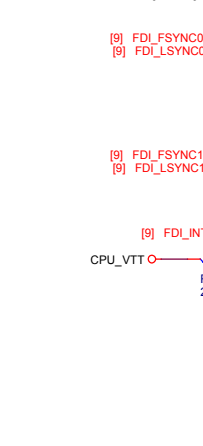
BLOCK DIAGRAM



LGA1155 (E)



LGA1155 (D)



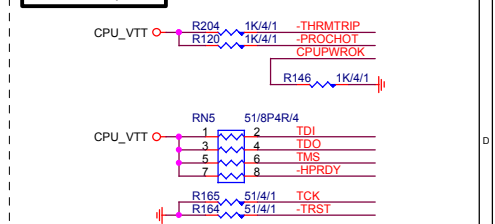
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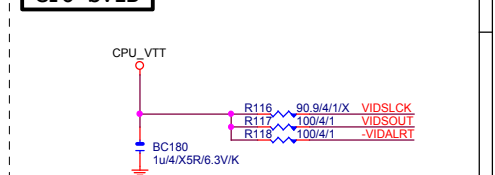
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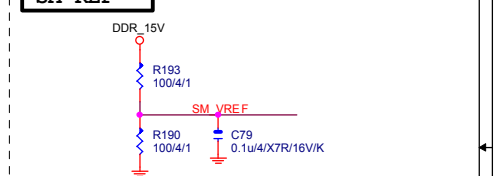
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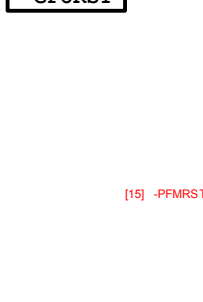
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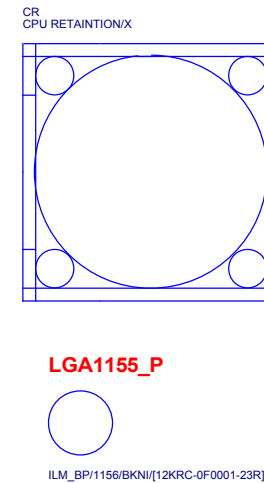
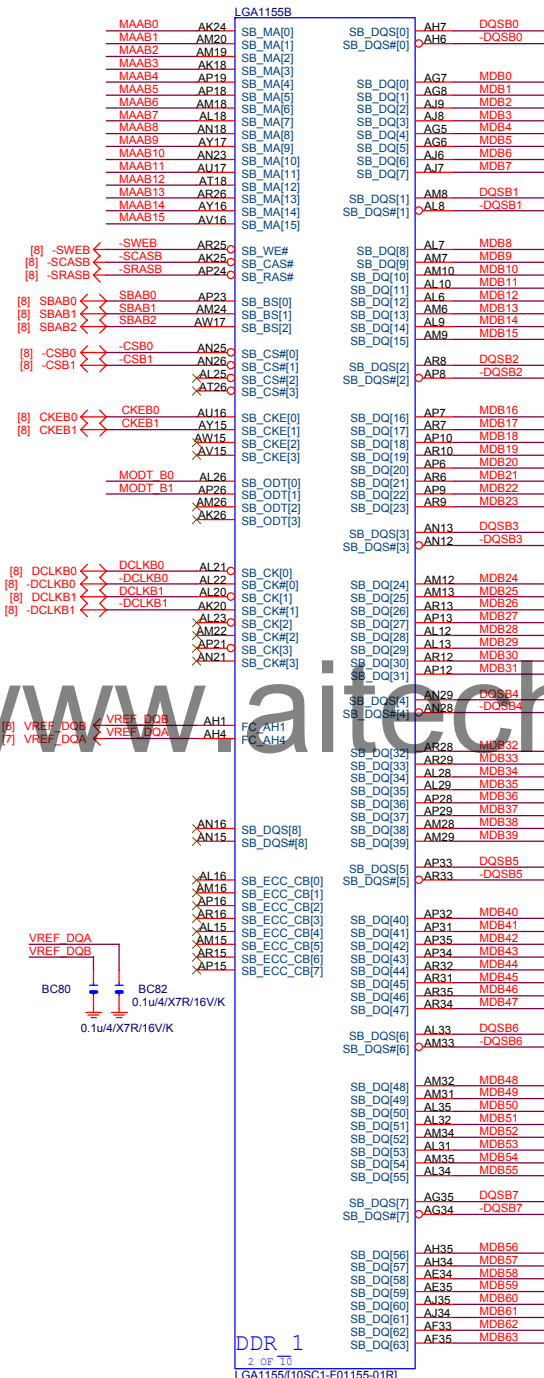
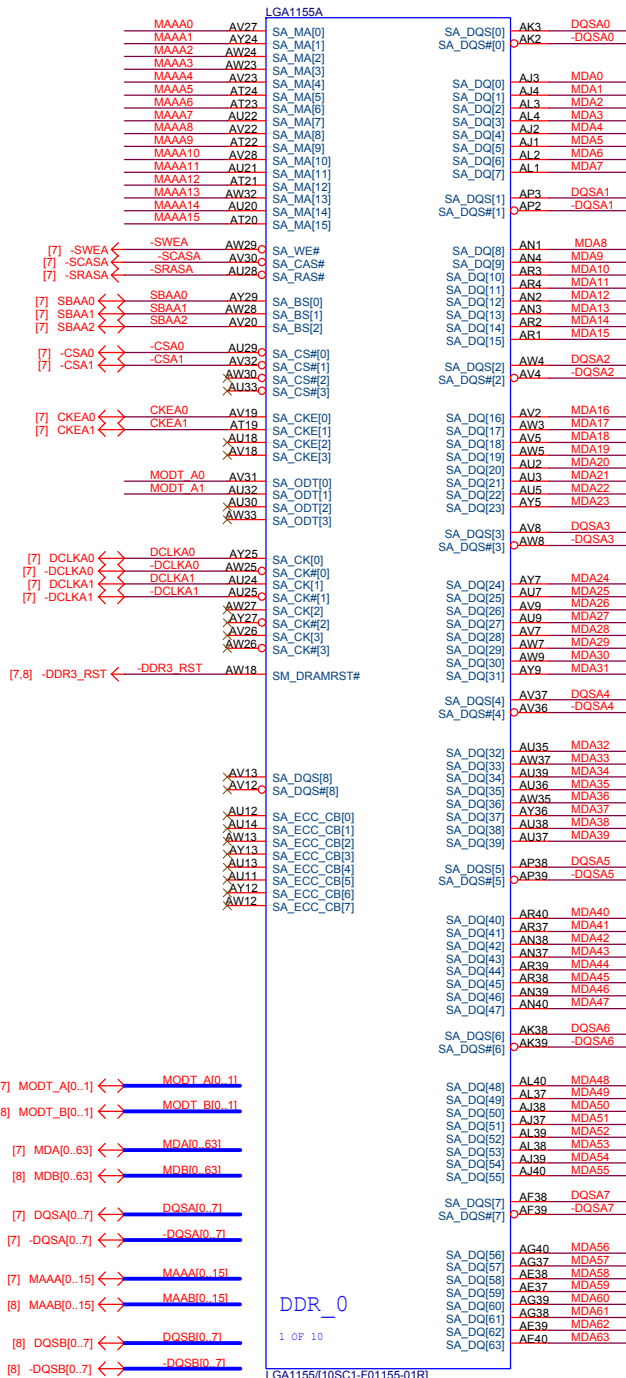


SM REF



-CPURST





(F, G, H)



LGA1155/I10SC1-F01155-01R

POWER
7 OF 10

LGA1155/[10SC1-F01155-01R]

CPU POWER

(I, J)

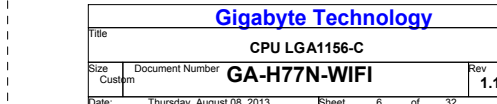


GND

LGA1155/J10SC1-F01155-01F

GND

CAP



Gigabyte Technology

CPU LGA1156-C

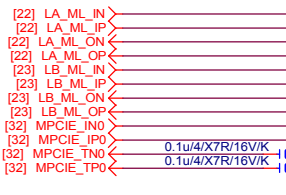
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Custom	GA-F77N-WIFI	1.1
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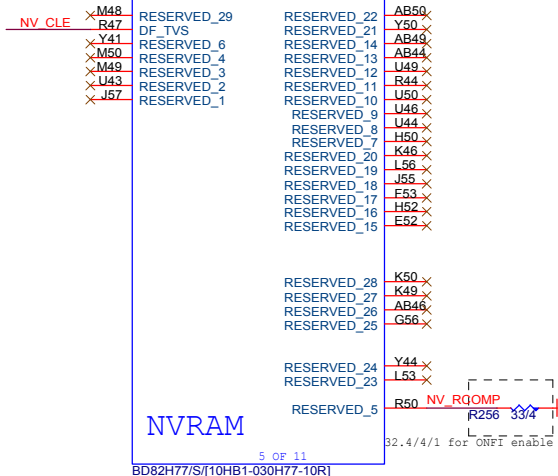
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1.1

(B)



(E)



(G)



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

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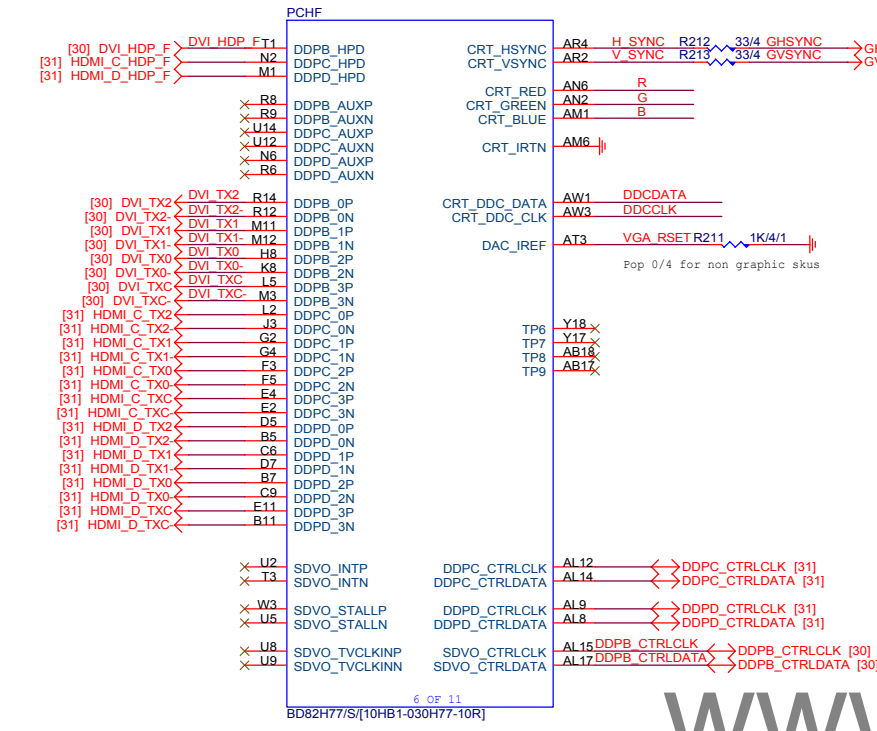
Title	PCH FDI,DMI,USB ,PCIE,NVRAM
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Size	Document Number	Rev
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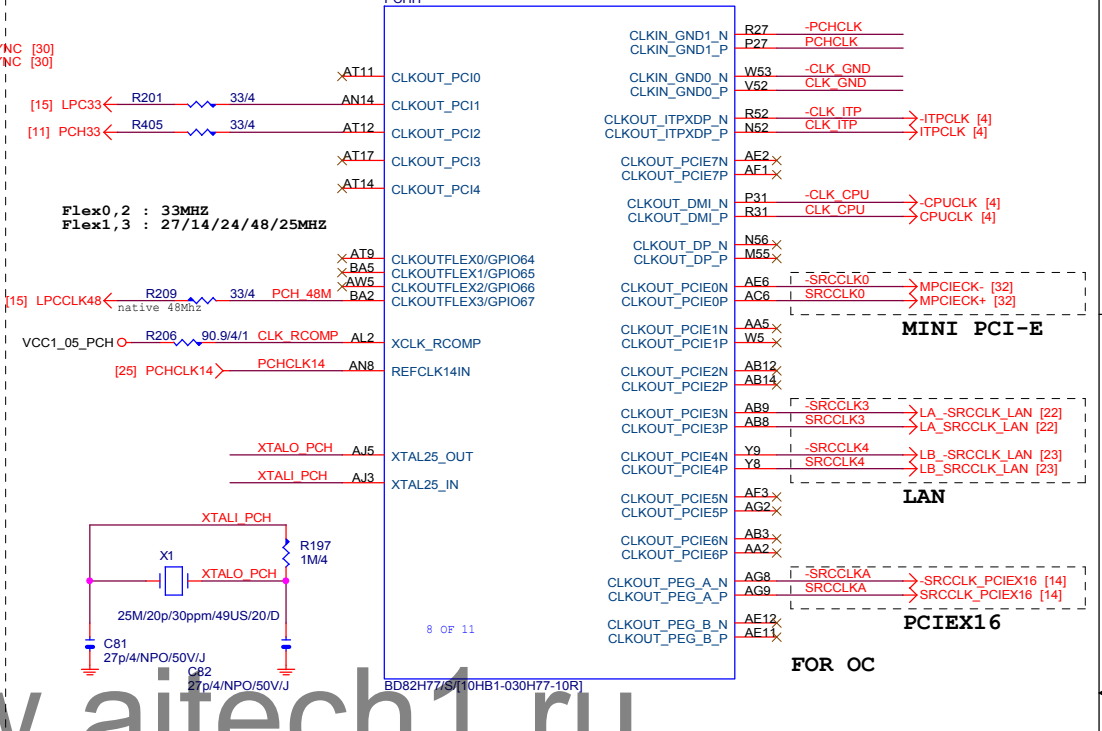
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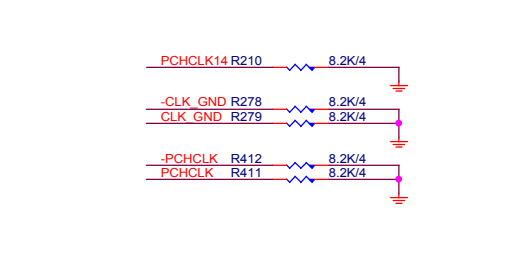


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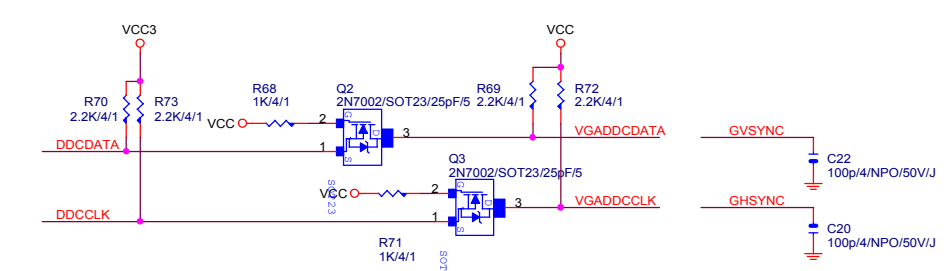
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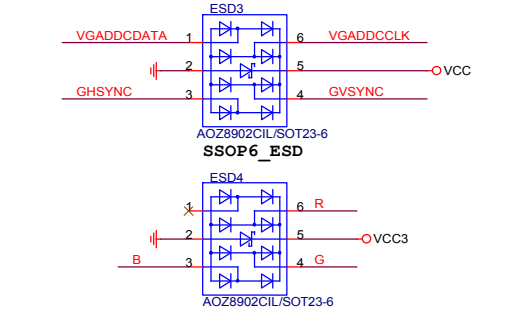
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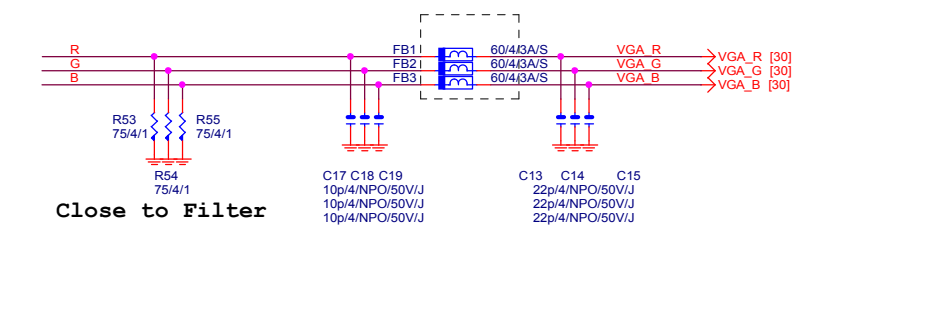
VGA DDC



VGA ESD



VGA DDC



Gigabyte Technology

Title

PCH DISPLAY, CLK BUFFER

Size

Document Number

GA-H77N-WIFI

Rev

1.1

Date:

Thursday, August 08, 2013

Sheet

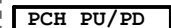
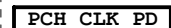
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of

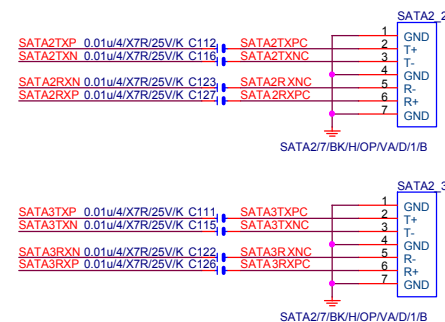
32

(C)

PCHC

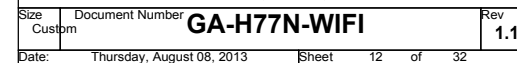
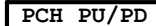


BLACK CONNECTOR

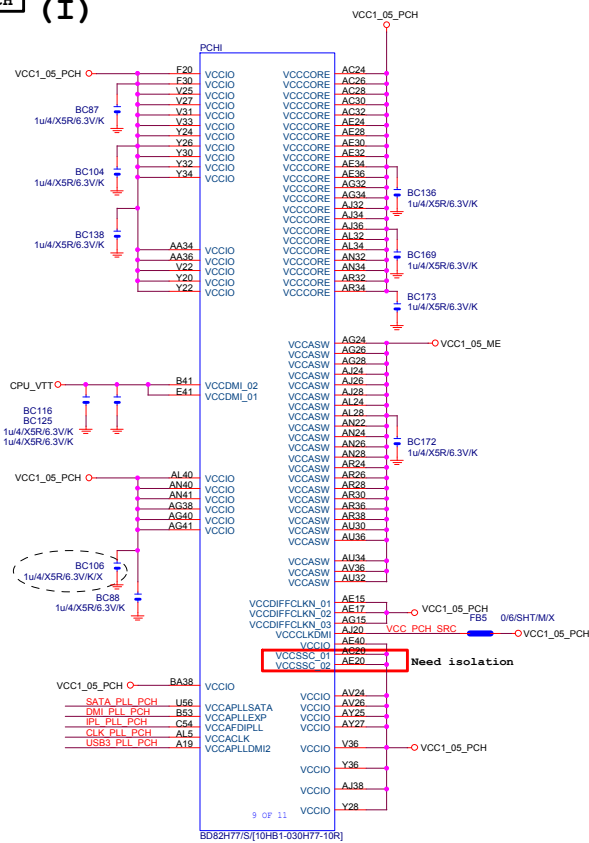


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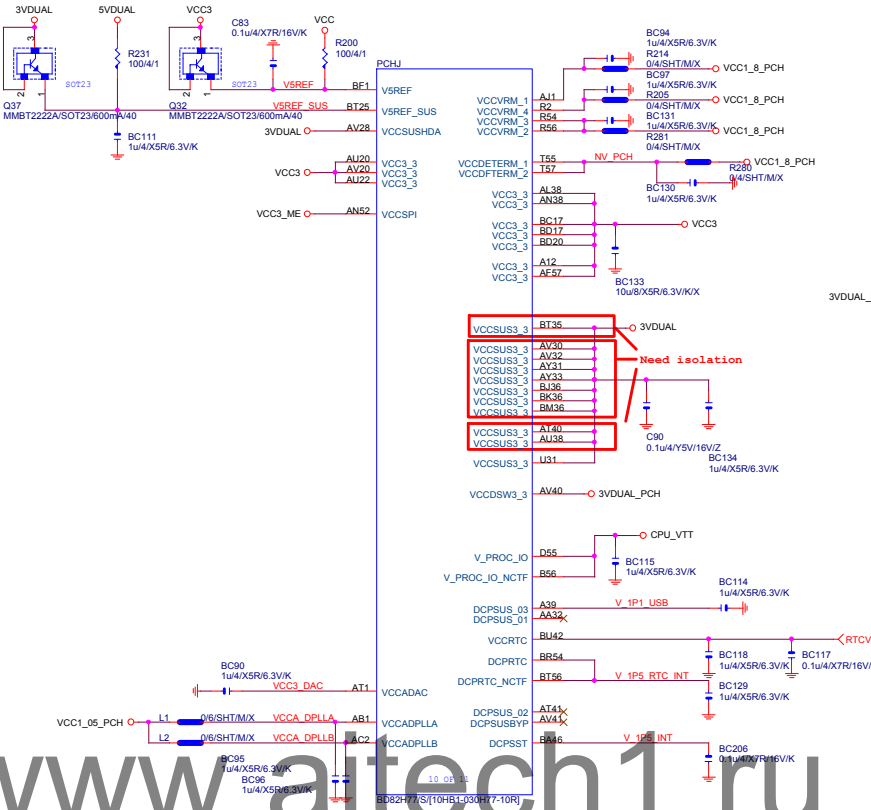
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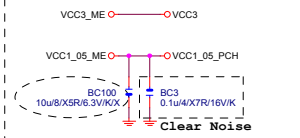
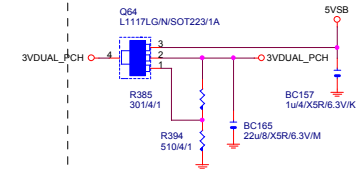
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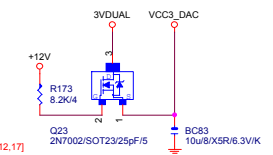
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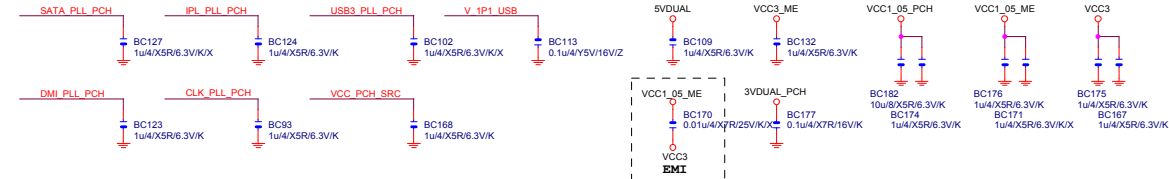
VCC3 ME

Q64
L1117LG/N/SOT22

1



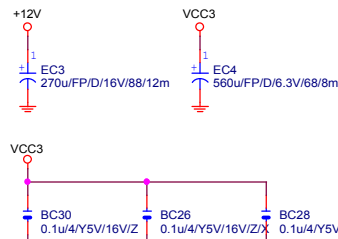
SA



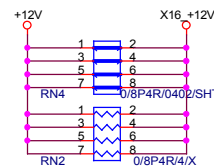
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PCIEX16 CAP



PCIEX16 PROTECT SHT

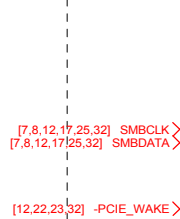


PCIEX16 AC CAP

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

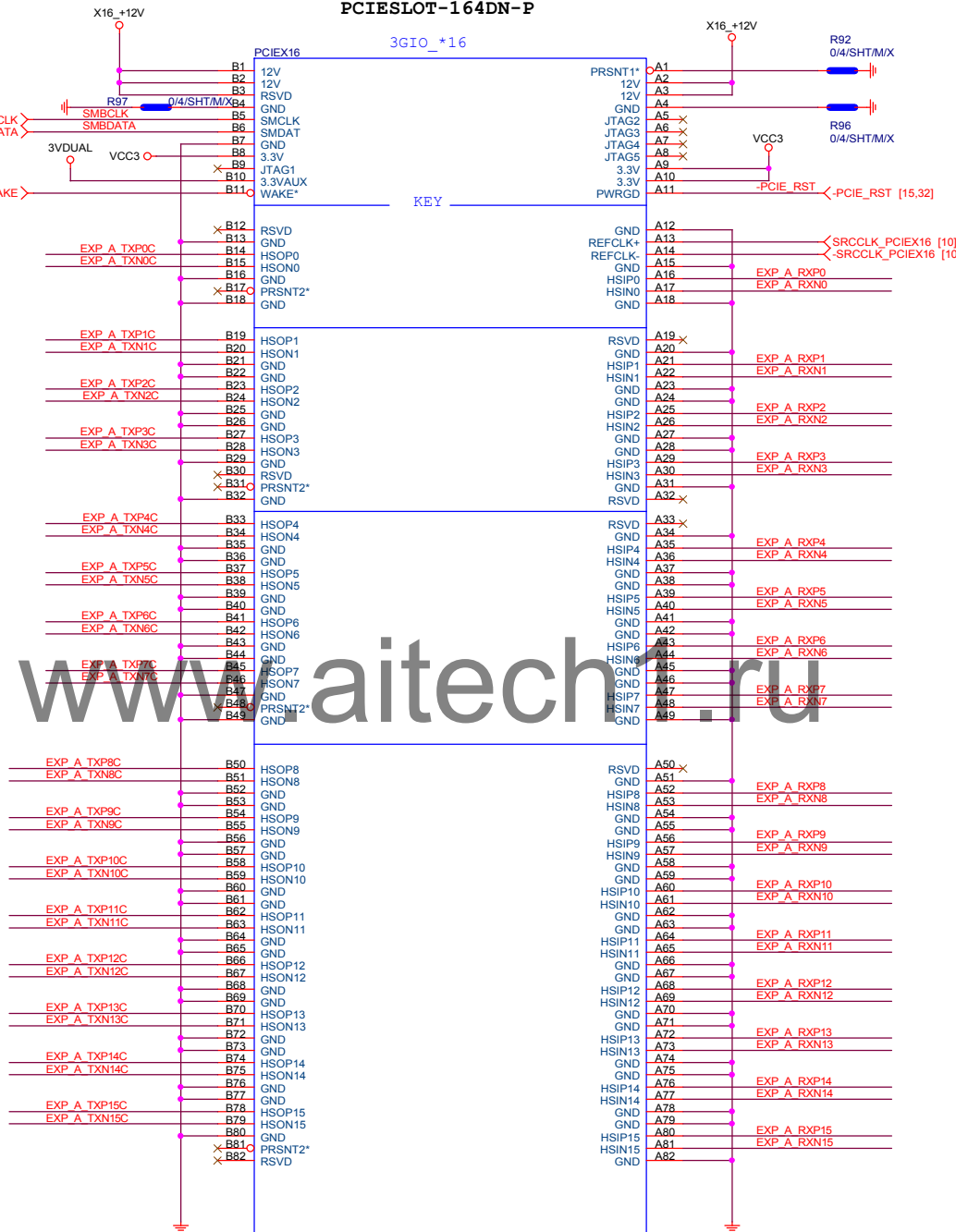
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 EXP A TXN0.15] >> EXP_A_TXN0.15] [4]

PCIEX16 SLOT



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

PCIESLOT-164DN-P



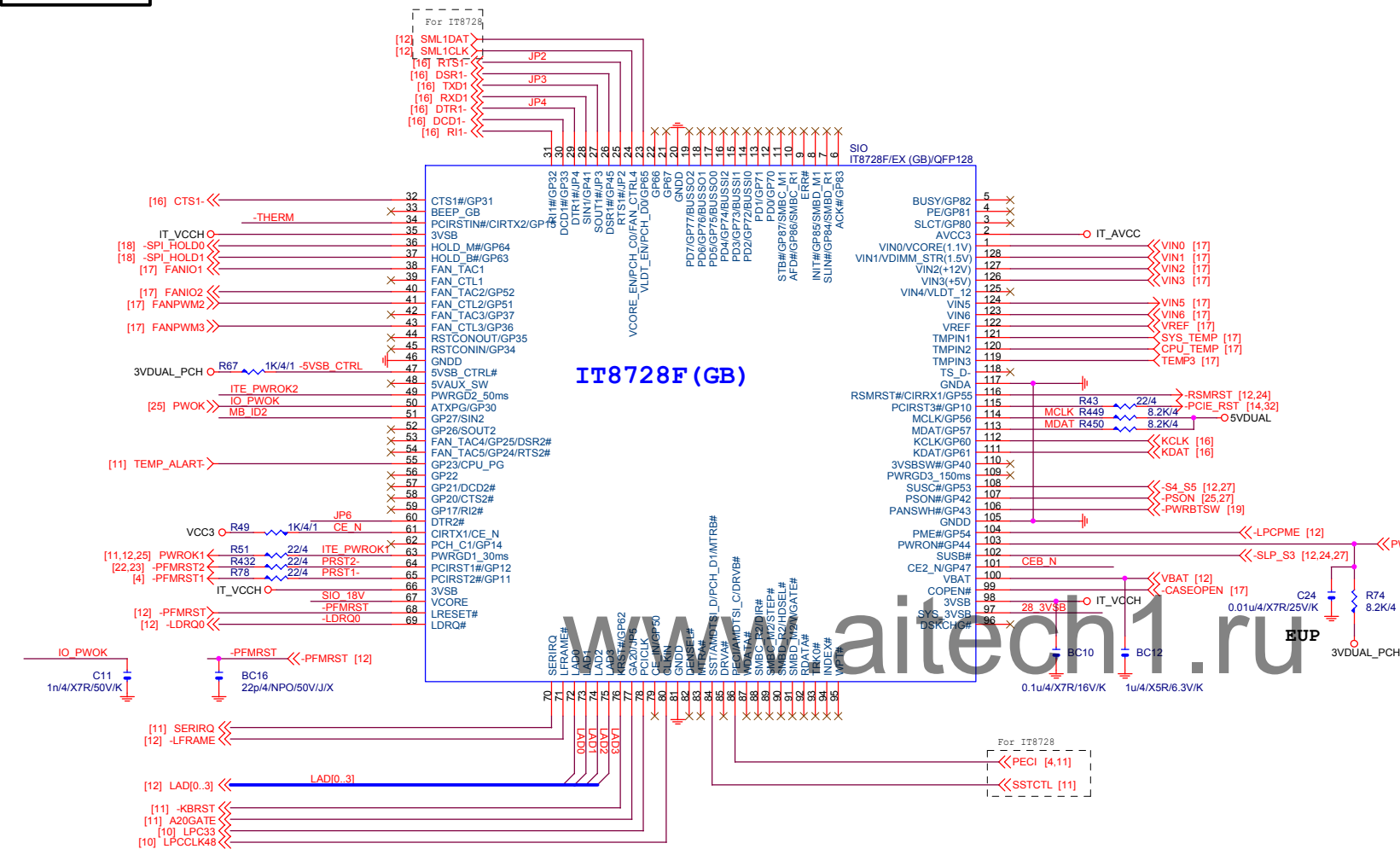
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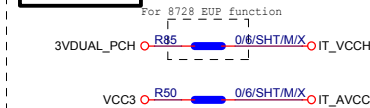
Gigabyte Technology

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Size			GA-H77N-WIFI	
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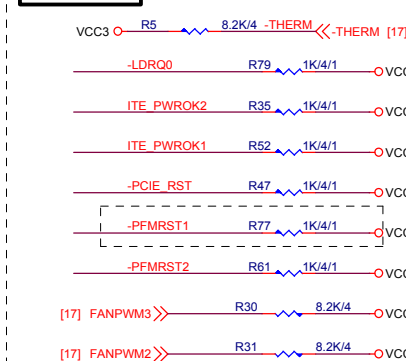
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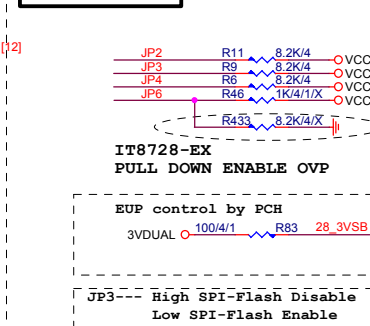
PWR SHT



SIO PU



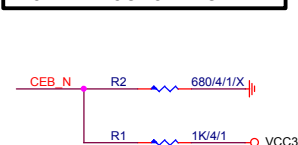
SIO STRAP



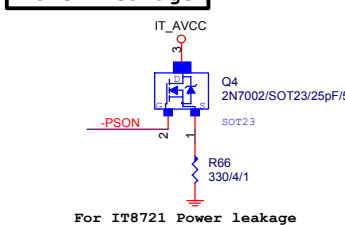
IT8728F NOTE

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

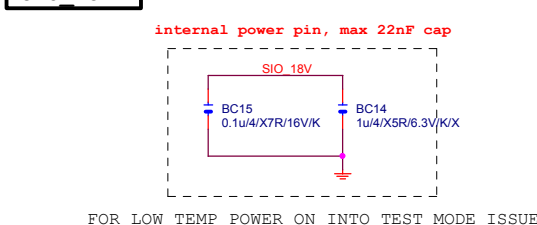
DUAL BIOS OPT STRAP



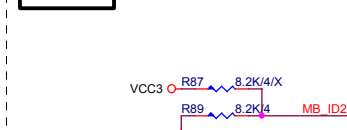
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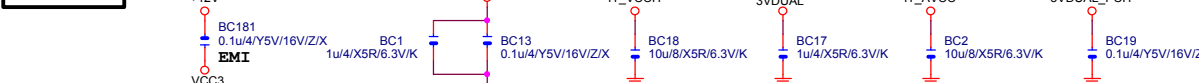
SIO_18V



MB ID



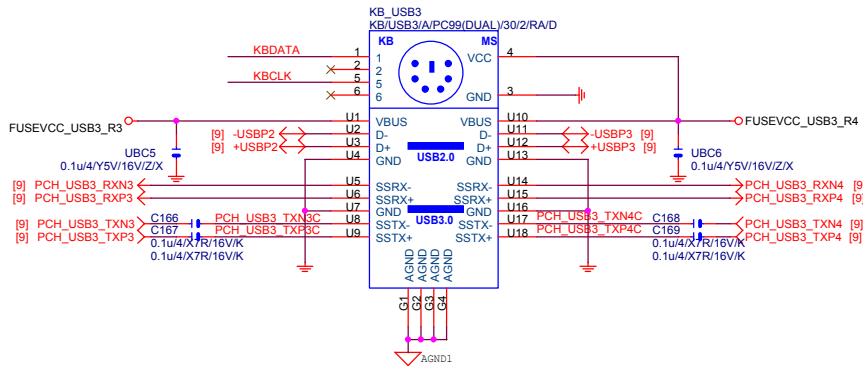
SIO CAP



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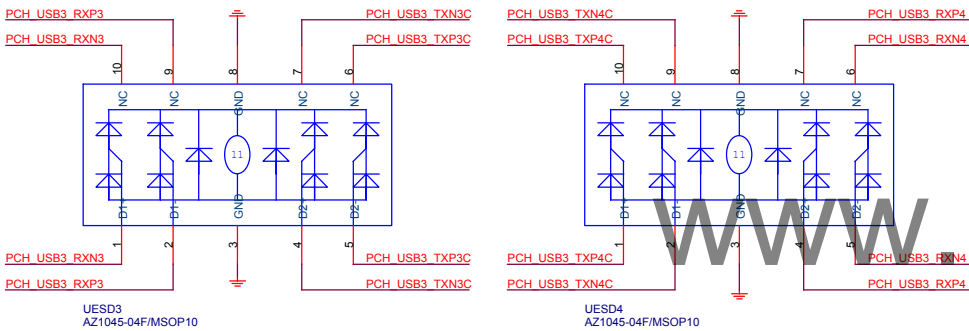
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Size	Document Number	GA-H77N-WIFI	
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KB/MS

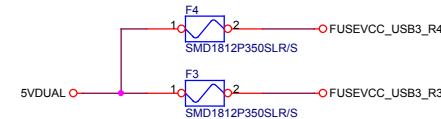


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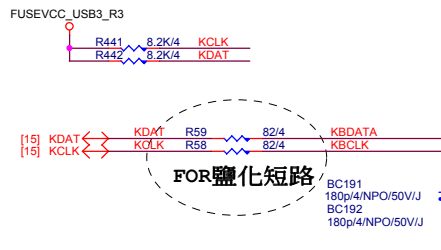
USB3.0 ESD



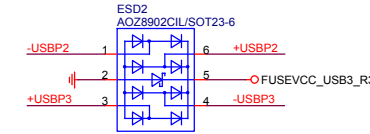
USB3.0 PWR



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



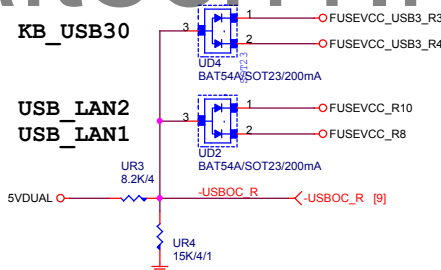
USB2.0 ESD



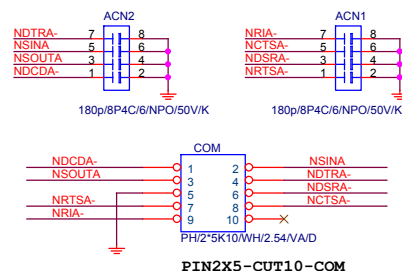
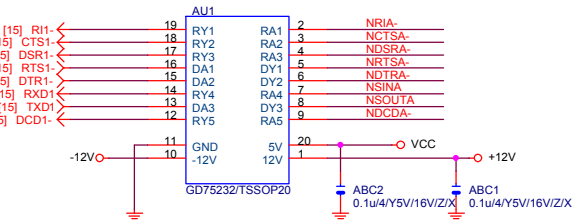
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KB_USB30

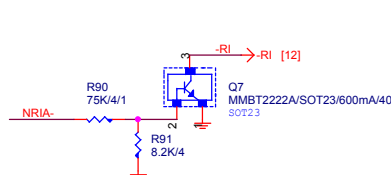
USB_LAN2 USB_LAN1



COM



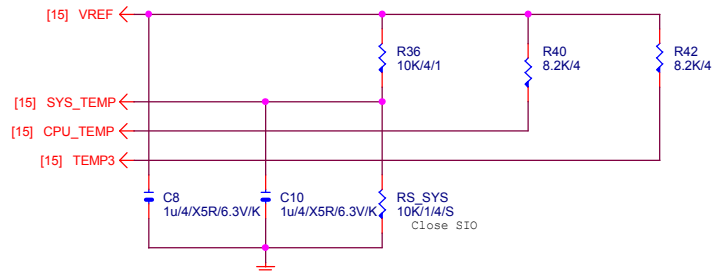
COM RI



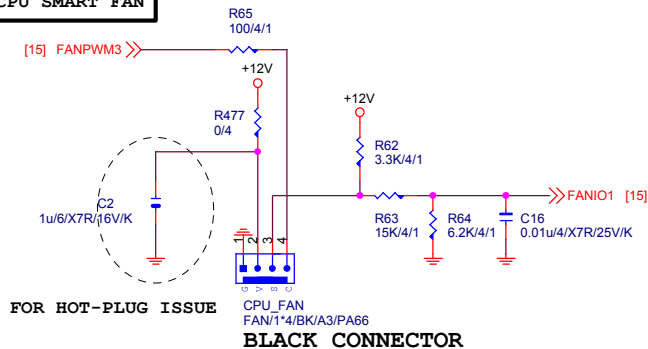
Gigabyte Technology

Title			COM,-RI,KB_USB,USB_ESATA,-PROCHOT		
Size	Document Number	GA-H77N-WIFI			Rev
Custom					1.1
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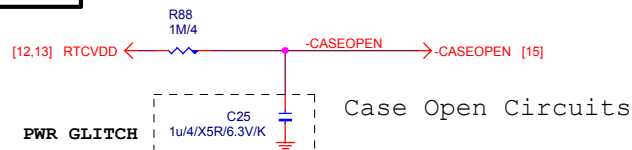
TEMP H/W MONITOR



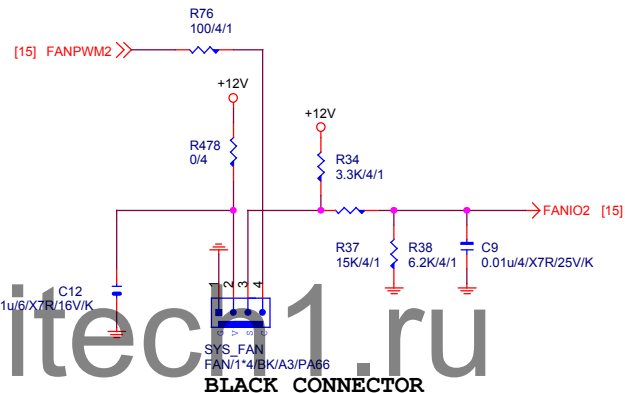
CPU SMART FAN



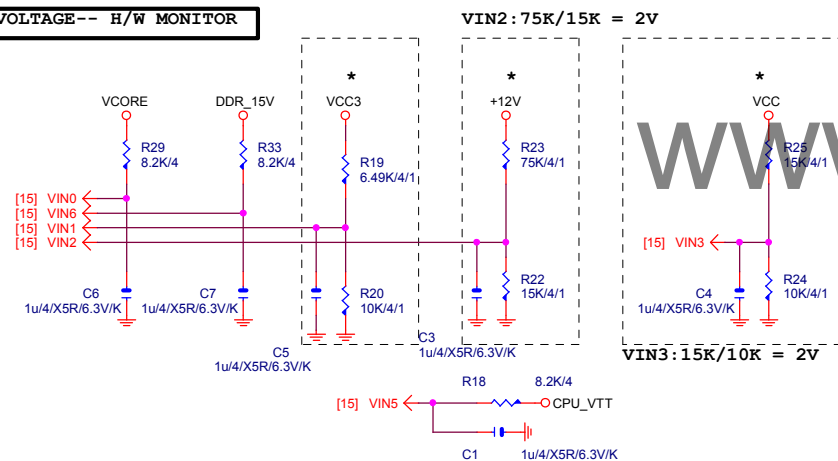
CASE OPEN



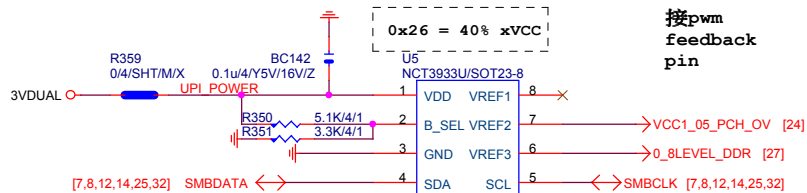
SYS SMART FAN



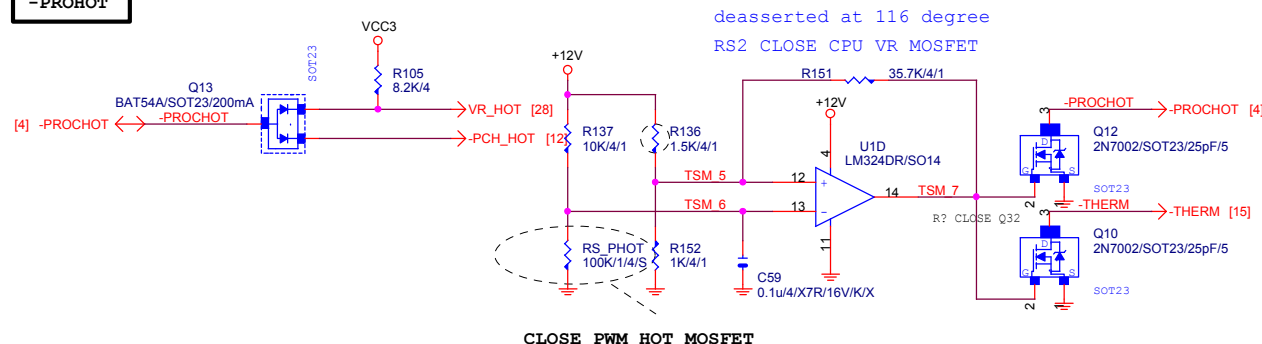
VOLTAGE-- H/W MONITOR



OV NCT3933



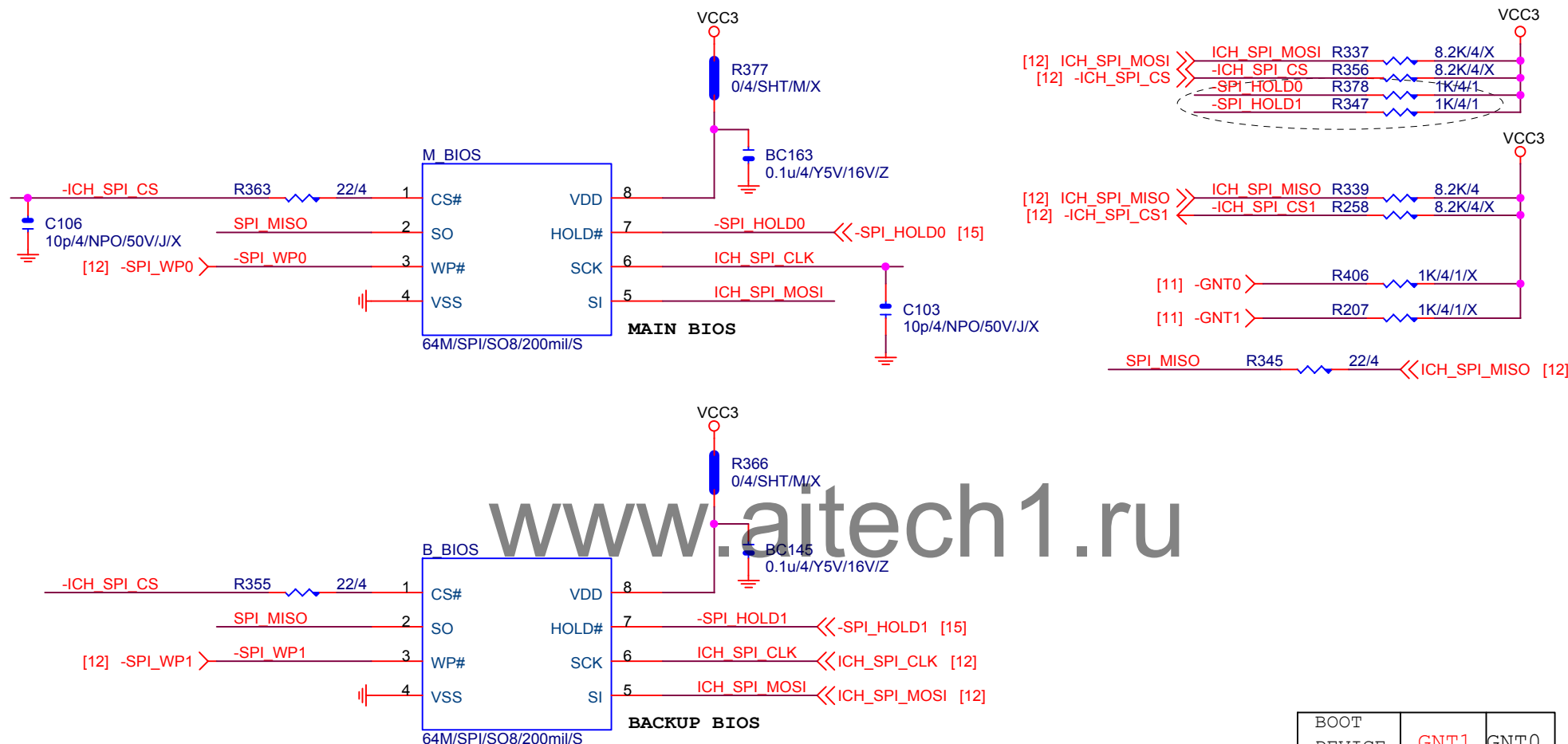
-PROHOT



Gigabyte Technology

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



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

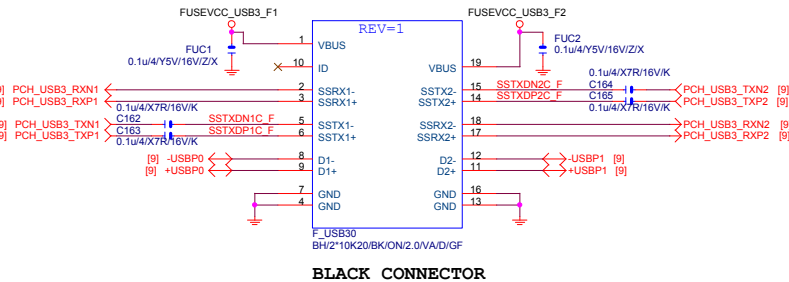
BOOT DEVICE	GNT1	GNT0
LPC	0	0
PCI	0	1
SPI	1	1

1 means floating
0 means PD 1K

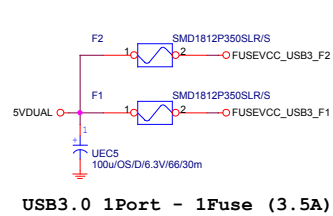
Gigabyte Technology

Title		
DUAL BIOS		
Size A	Document Number GA-H77N-WIFI	Rev 1.1
Date:	Thursday, August 08, 2013	Sheet 18 of 32

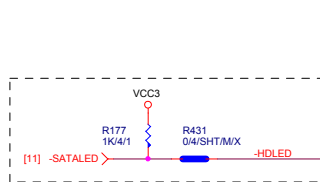
F_USB30



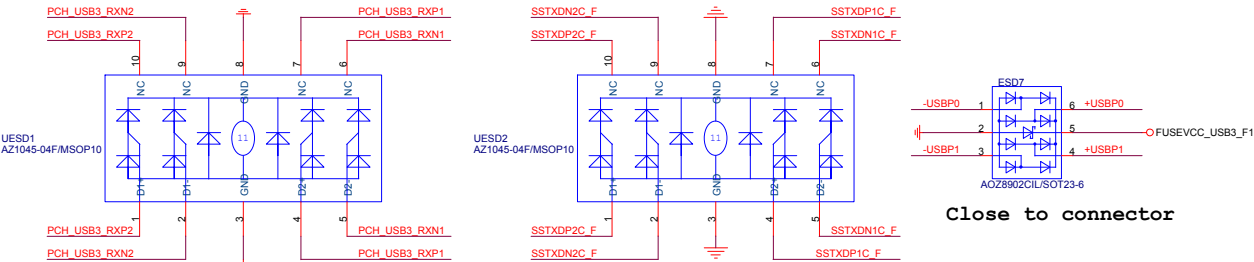
F_USB30 PWR



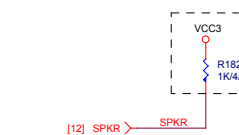
SATA LED



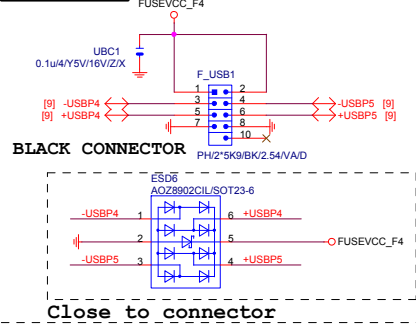
F_USB30 ESD PROTECT



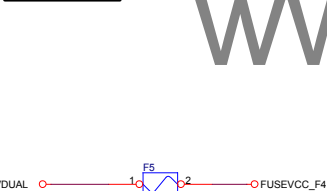
SPKR



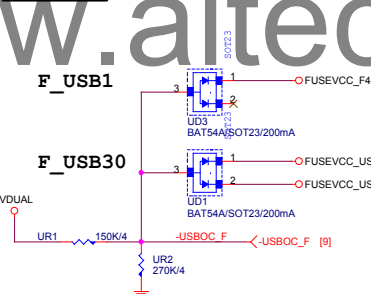
FRONT USB1



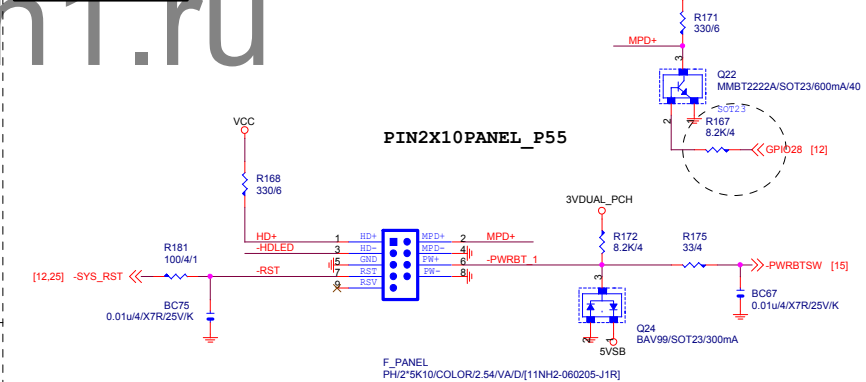
FUSEVCC_F



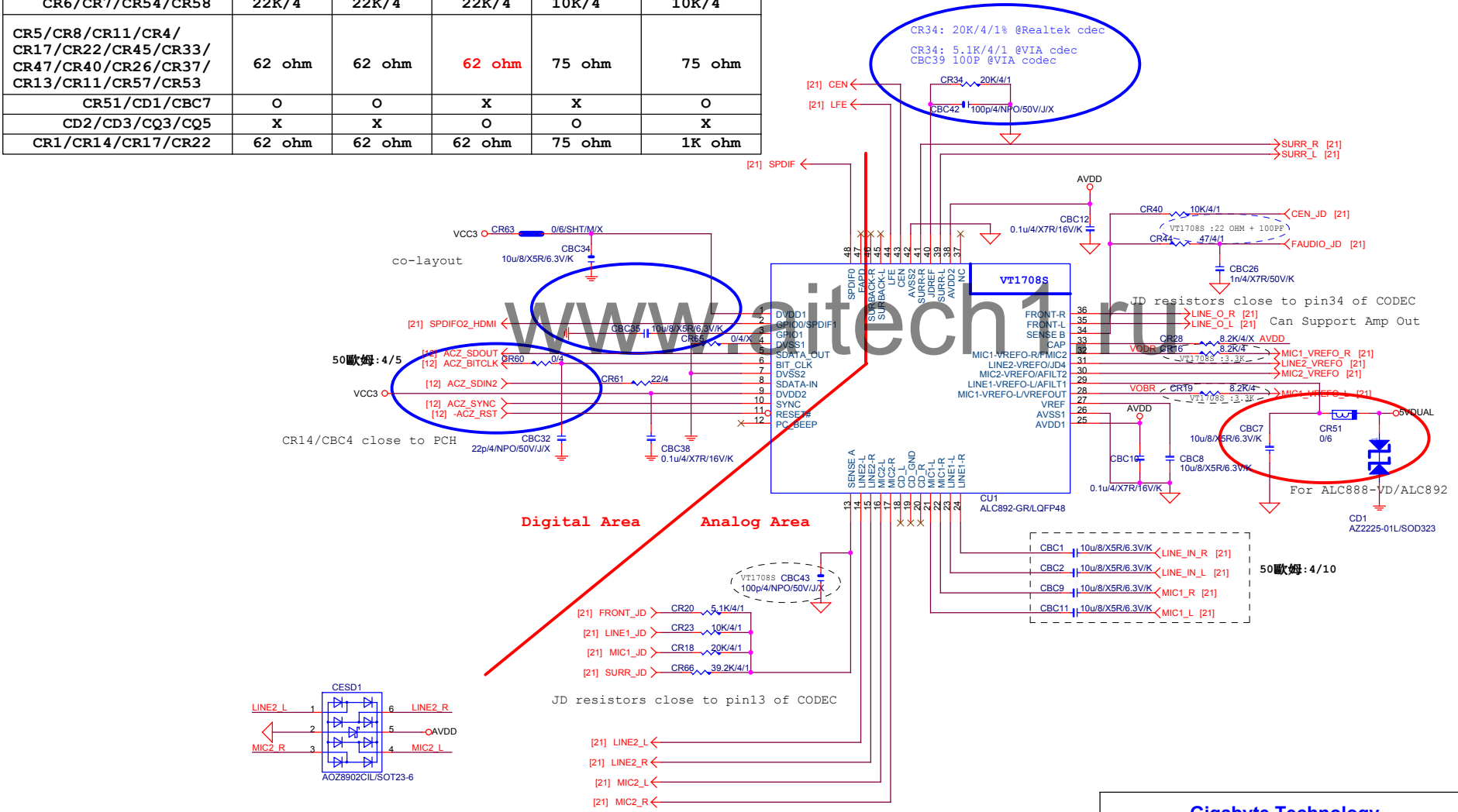
-USBOC_F

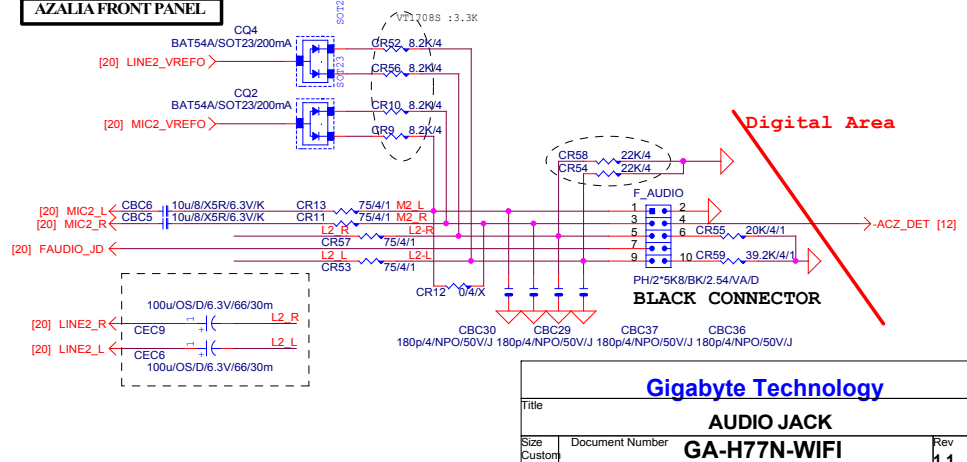
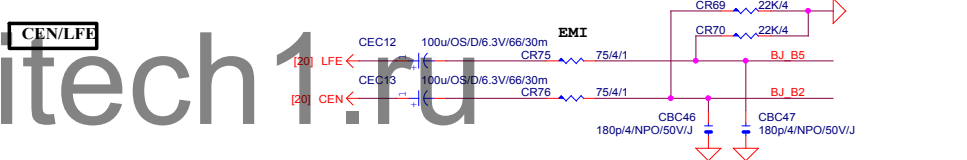
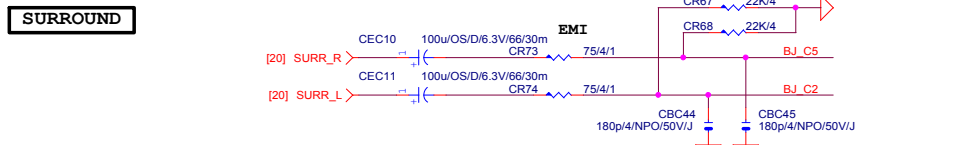
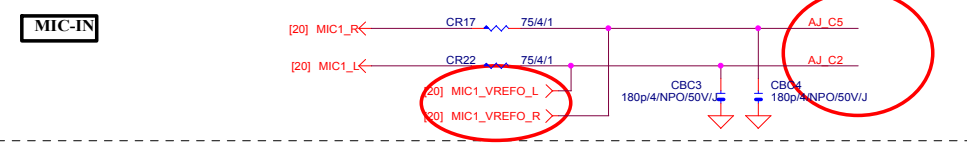
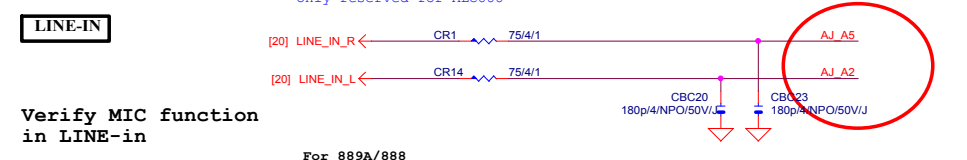
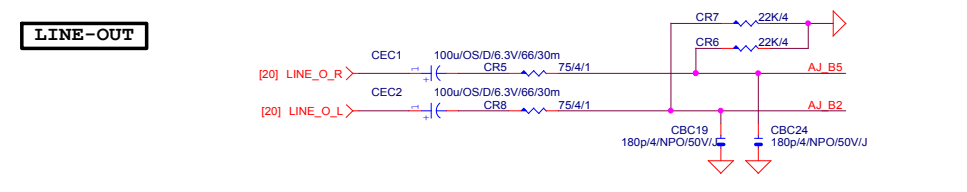
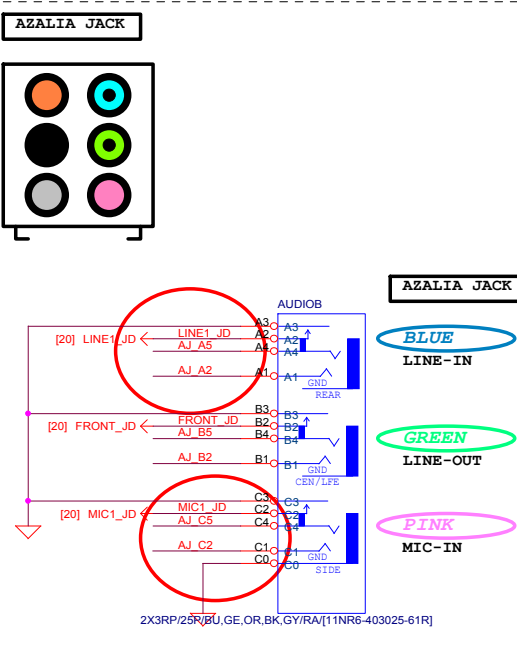
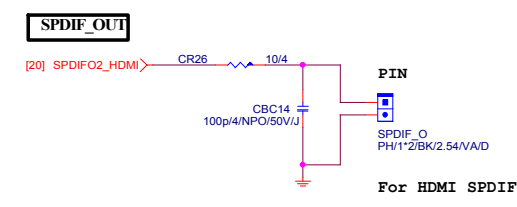
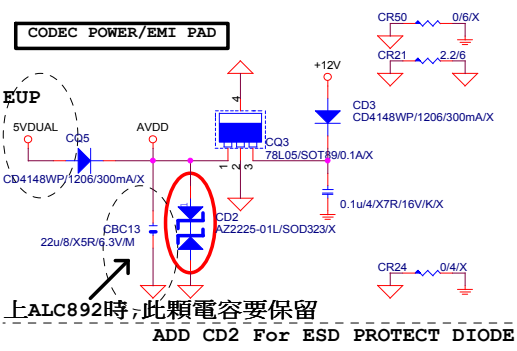


INTEL FRONT PANEL

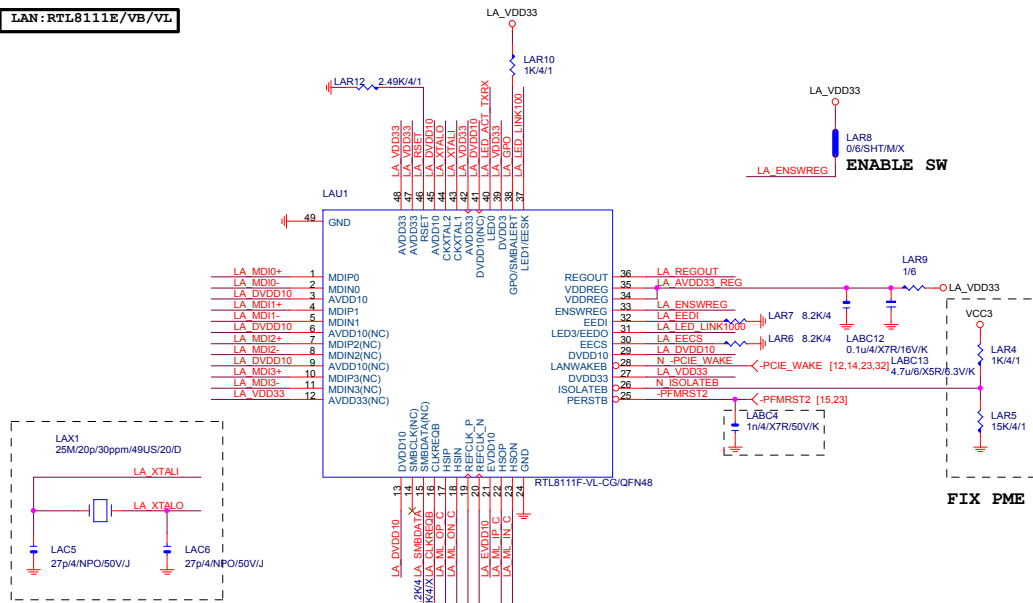


	ALC662	ALC887-VD2	ALC889	VT1708S	VT1708SCE
CR65	X	X	O	O	X
CR64	X	X	X	X	0.1u/4
CBC35	O	O	X	X	O
CR44/CBC6	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P
CR31	X	O	O	O	O
CR30	O	X	X	X	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1
CR34	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CBC39/CBC40	N/A	N/A	N/A	100P/4	100P/4
CR6/CR7/CR54/CR58	22K/4	22K/4	22K/4	10K/4	10K/4
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





```
LAN:RTL8111E/VB/VL
```

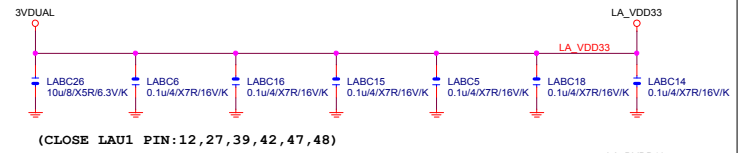


FIX PME ISSUE

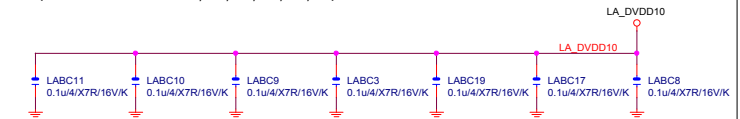
LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LAN POWER

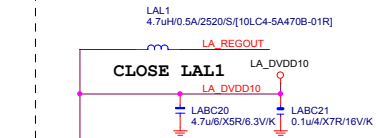


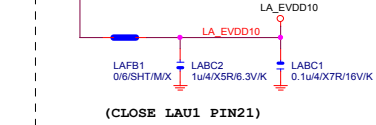
(CLOSE LAU1 PIN:12,27,39,42,47,48)



(CLOSE LAU1 PIN3,6,9,13,29,41,45)

(CLOSE LAU1 PIN36)



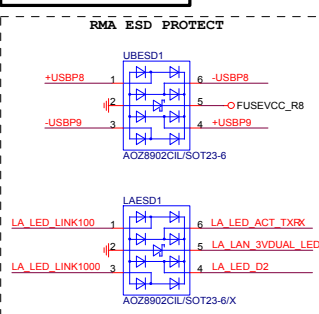


(CLOSE LAU1 PIN21

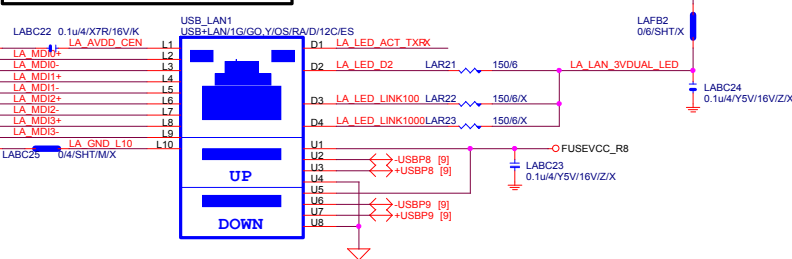
Power domain chart

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

USB_LAN CONNECTOR



LA_MDI-->100歐姆:[20/4/8/4/20]



注意:LAN LED PROTECT:(CO-LAYOUT)
1.ESD(6PIN):AOZ8902CIL/SOT23-6(DEFAULT)
2.SURGE(5PIN):AZ2025-04S/SOT23-5L

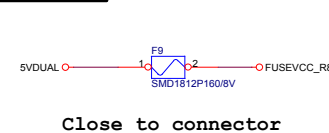
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

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

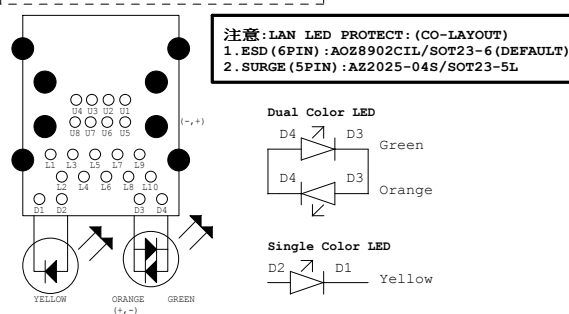
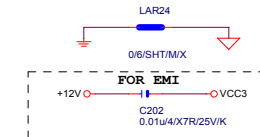
USB POWER




Close to connector

EMI SHORT PAD

PS:視EMI需求




Dual Color LED



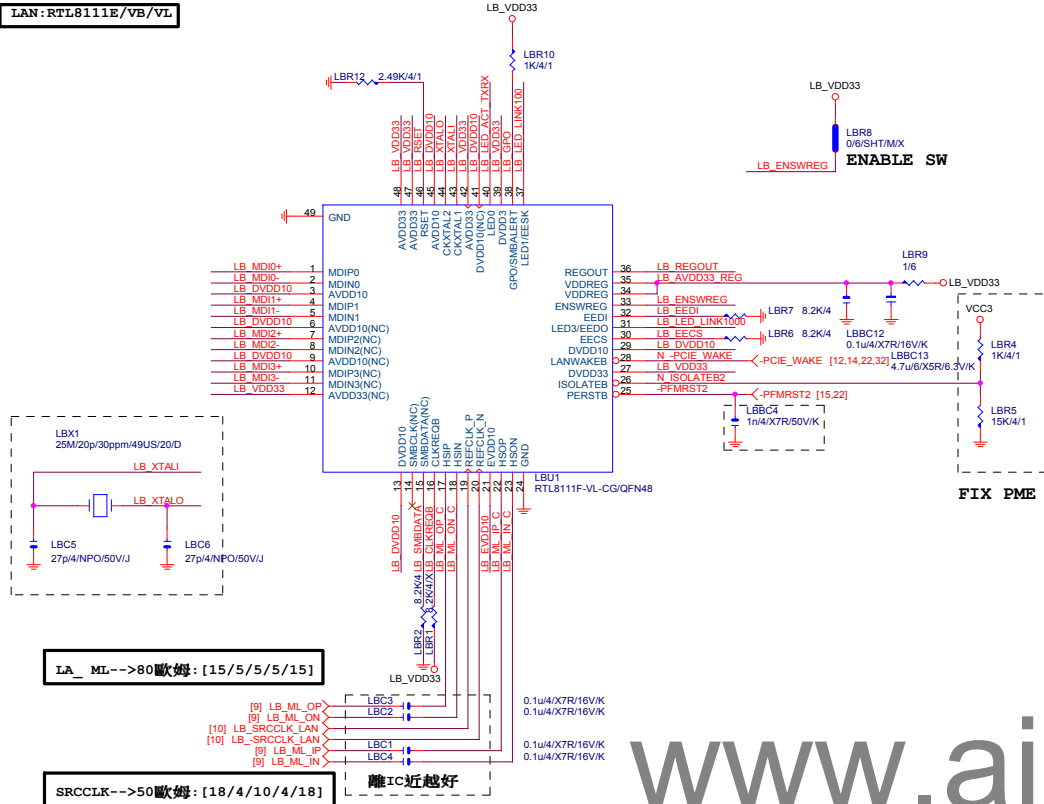
Green

Orange

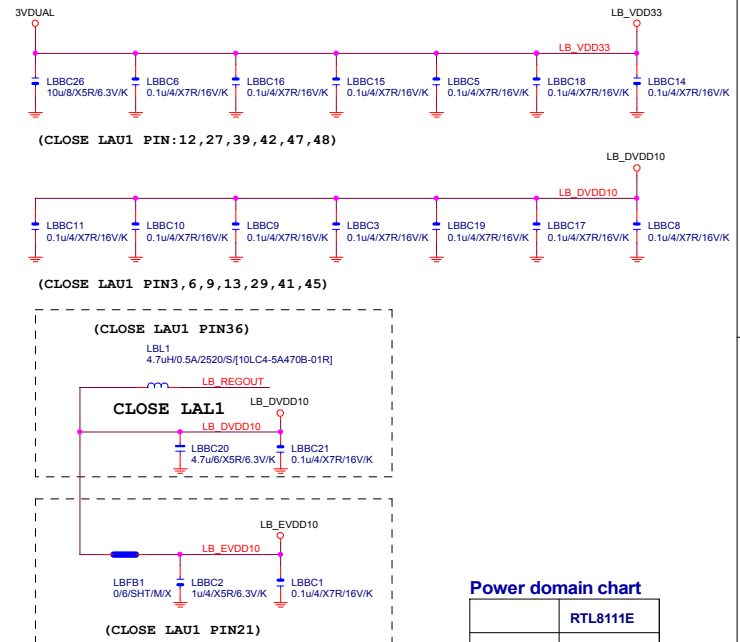
Single Color LED

D2  D1 Yellow

```
LAN:RTL8111E/VB/VL
```



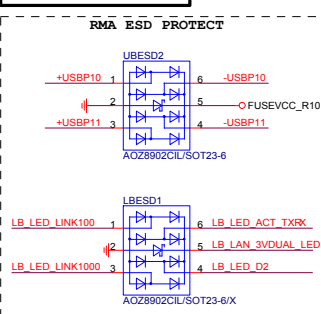
LAN POWER



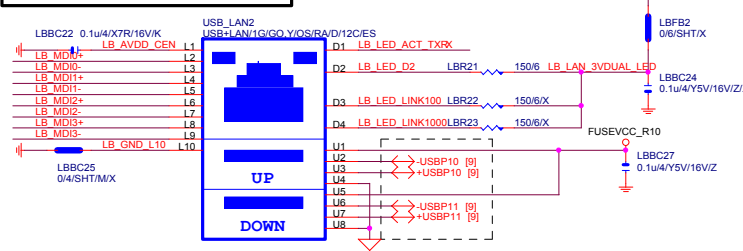
Power domain chart

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

USB_LAN CONNECTOR

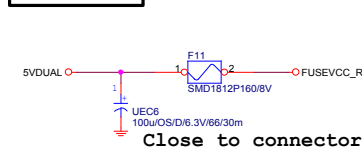


LA_MDI-->100歐姆:[20/4/8/4/20]



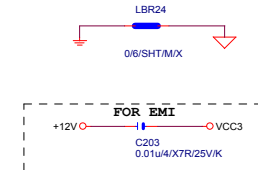
注意:USB PORT(目前:暫代6,7PORT)
USB-->90歐姆:[15/4.5/7.5/4.5/15]

USB X3 POWER

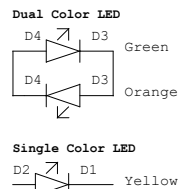


EMI SHORT PAD

PS: 視EMI需求



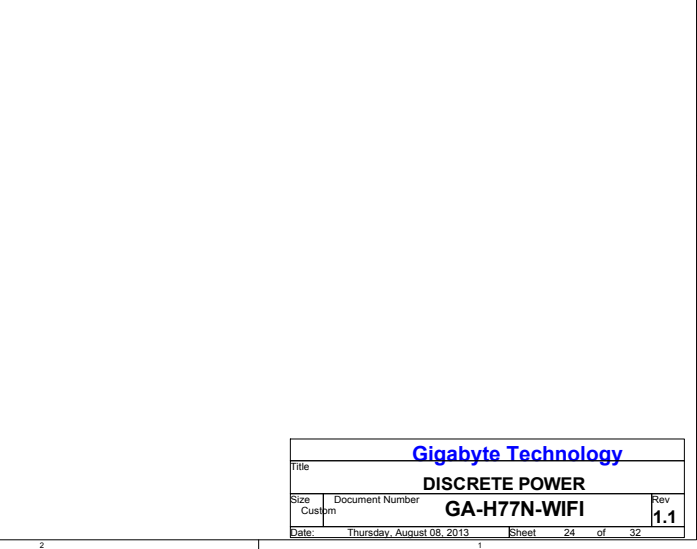
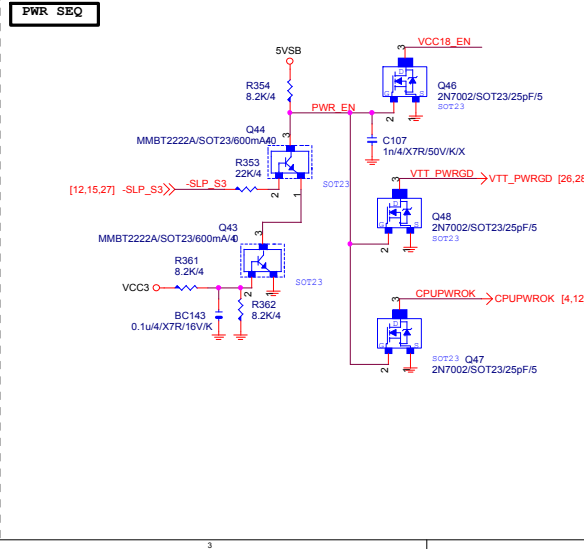
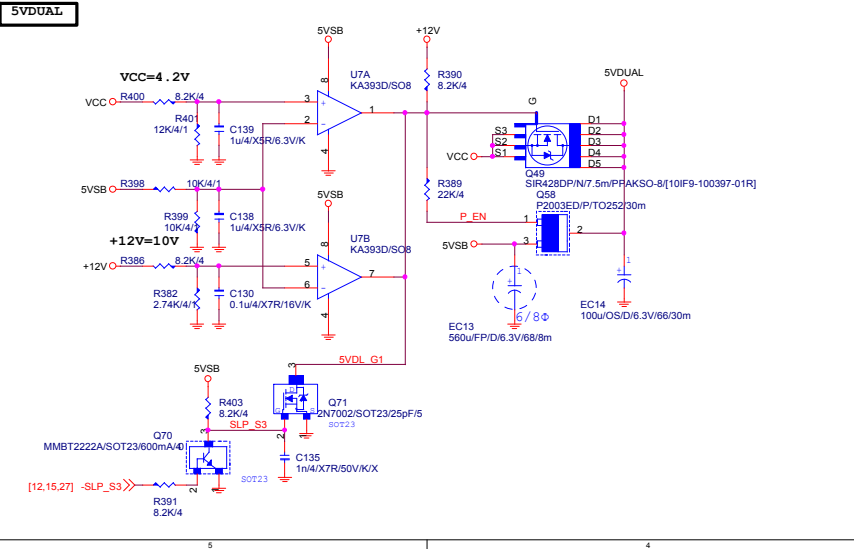
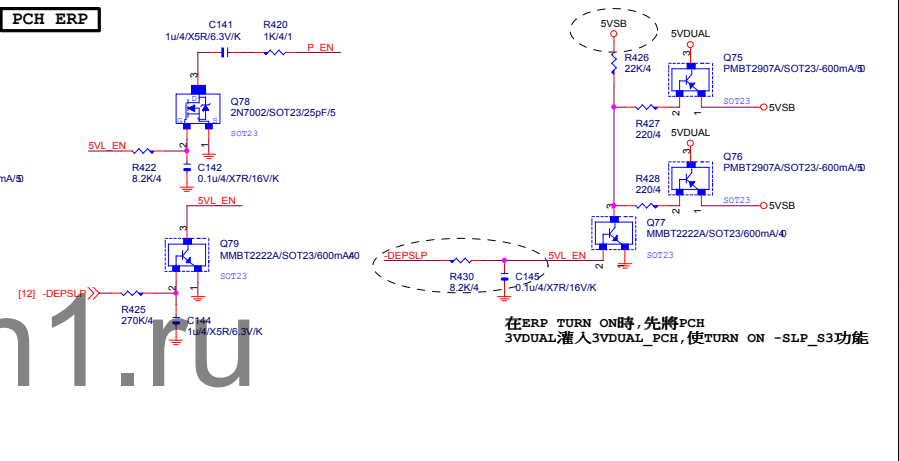
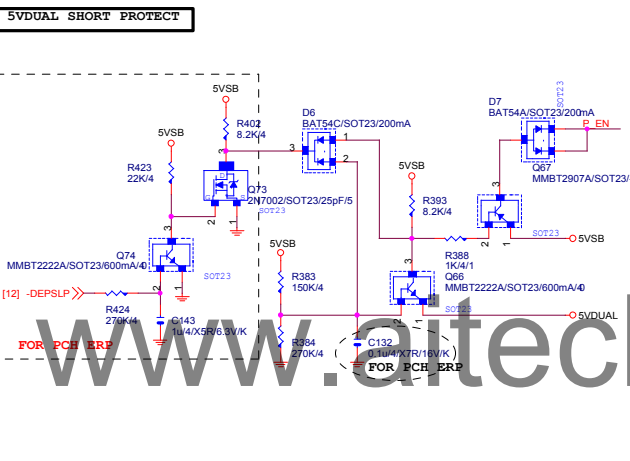
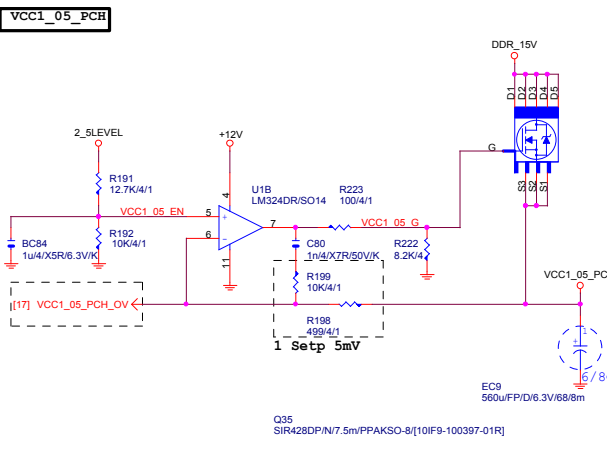
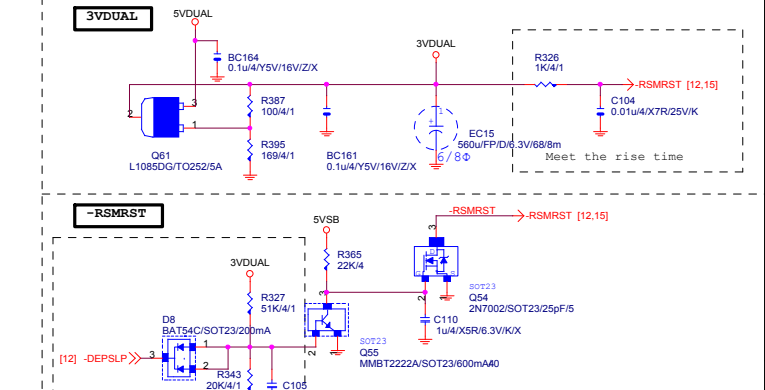
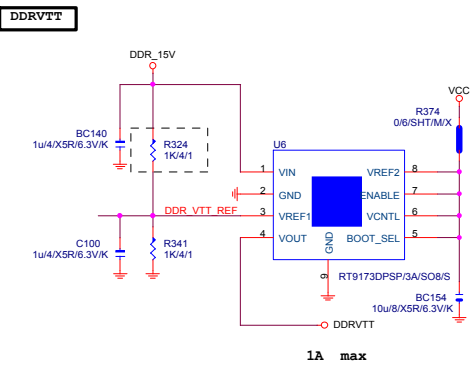
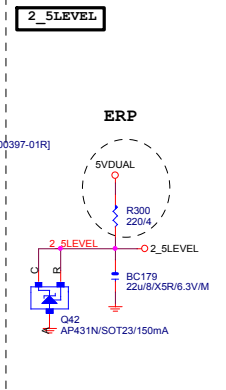
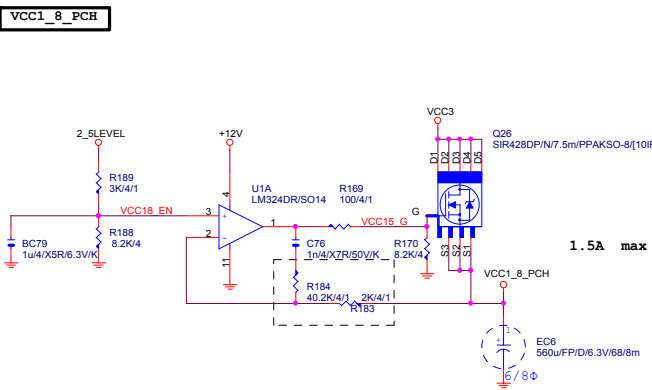
注意:LAN LED PROTECT:(CO-LAYOUT)
1.ESD(6PIN):AOZ8902CIL/SOT23-6(DEFAULT)
2.SURGE(5PIN):AZ2025-04S/SOT23-5L



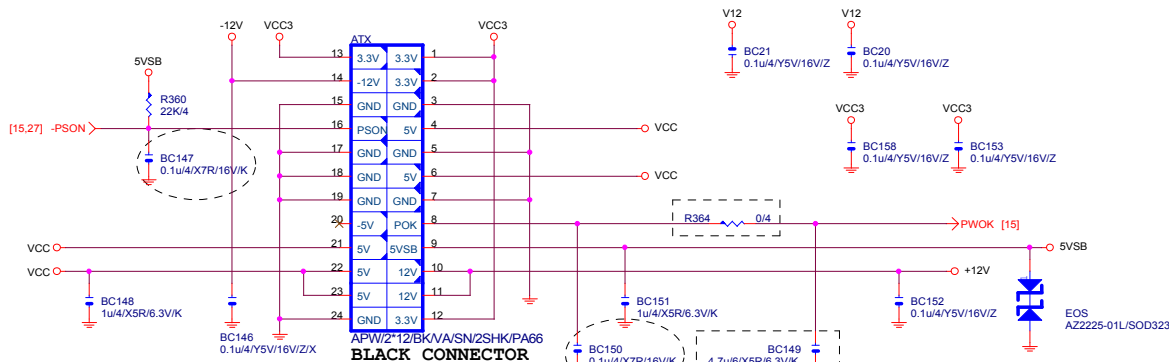
料號	規格	廠商
11NR6-702009-0ER	1G LAN (12core)	UDE
11NR6-702009-91R	1G LAN(8 core)	FOXCONN
11NR6-702009-92R	1G LAN(8 core)	UDE
11NR6-702009-11R	1G LAN(12core/RED)	UDE
11NR6-702009-12R	1G LAN(8 core/RED)	FOXCONN

USB LAN BOM區分:

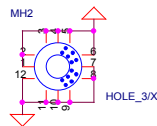
1. (紅色/12CORE/三倍): USB+LAN/1G/GO, Y/OS/RA/D/1/RED
2. (黑色/12CORE): USB+LAN/1G/GO, Y/OS/RA/D/1
3. (黑色/8CORE): USB+LAN/1G/GO, Y/OS/RA/D/8C



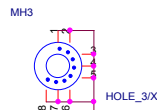
ATXX24 POWER CONNECTOR



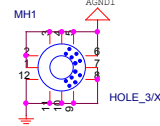
MB LOCATION



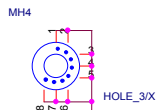
HOLE_4-RH-5MM-1



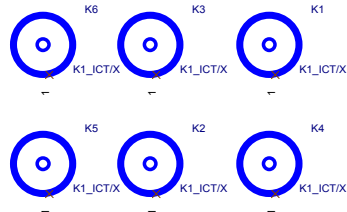
HOLE_4-RH-5MM-5PIN-1



HOLE_4-RH-5MM-1

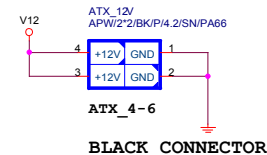


HOLE_4-RH-5MM-5PIN-1



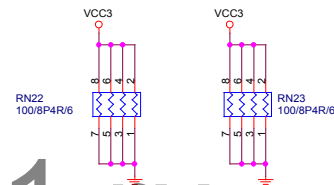
To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

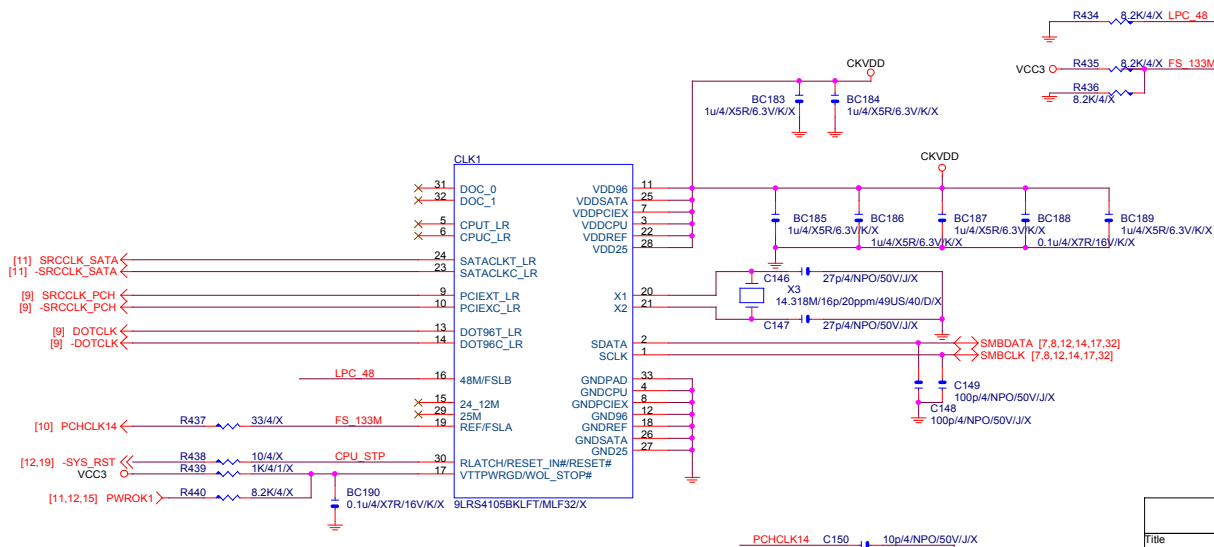


BLACK CONNECTOR

FIX PWR MINMUN LOAD



CLK GEN



CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M

Gigabyte Technology

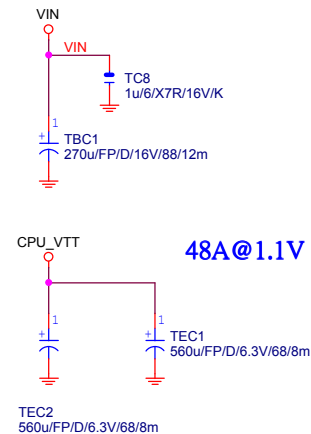
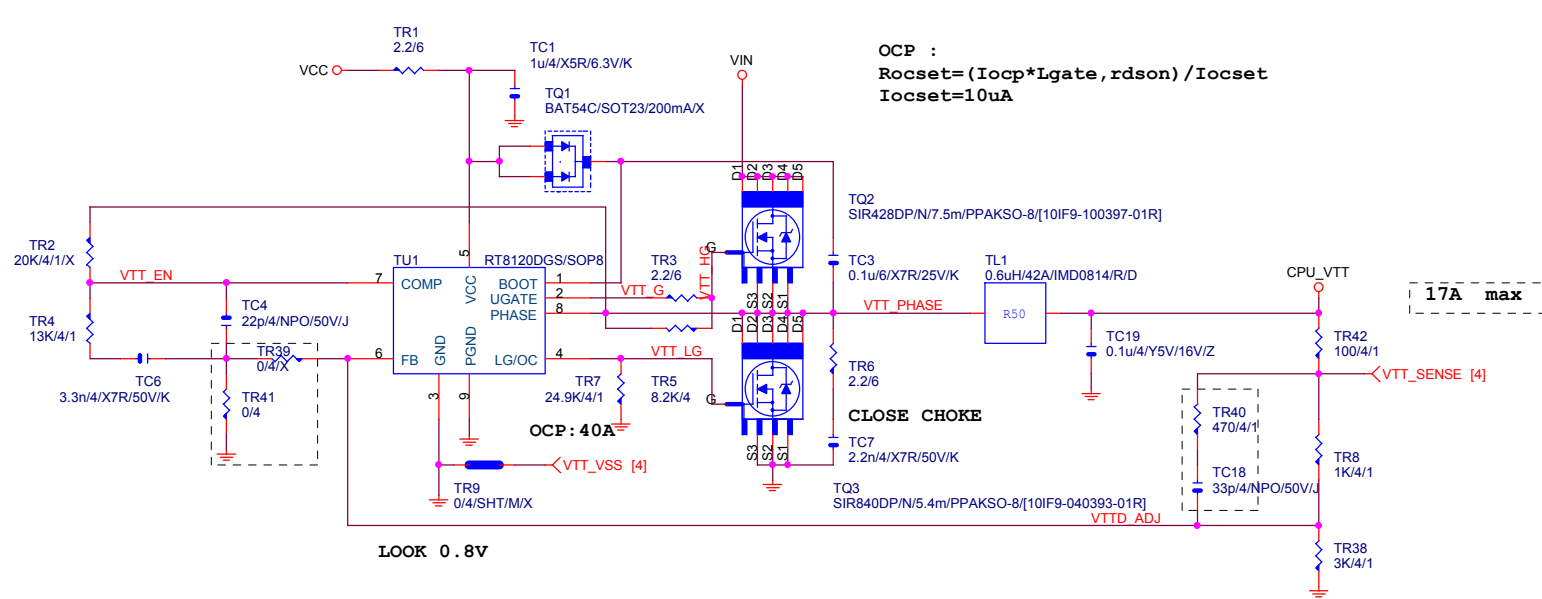
ATX CONNECTOR

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Rev 1.1

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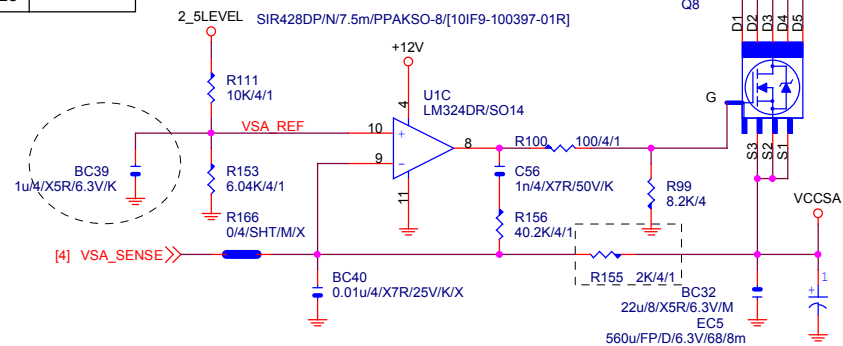
CPU VTT



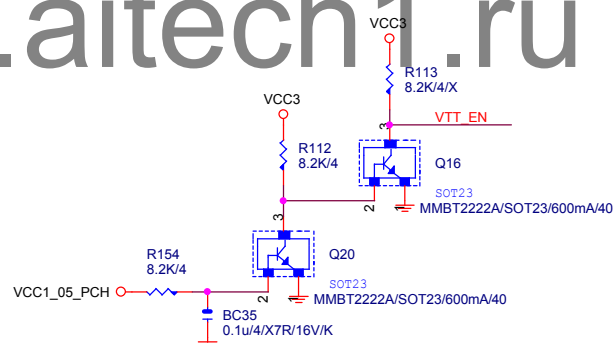
VCCSA

PDG 0.8

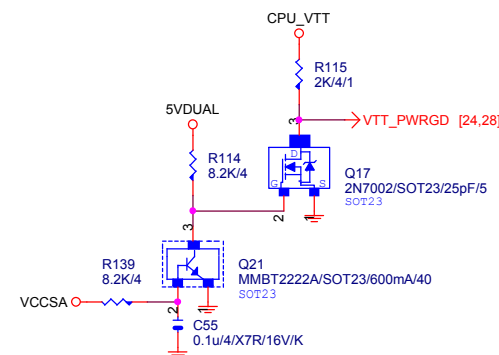
	VSA_SEL
HI	0.85V
LO	0.925V



CPU	VTT	PWR	SEQ
-----	-----	-----	-----



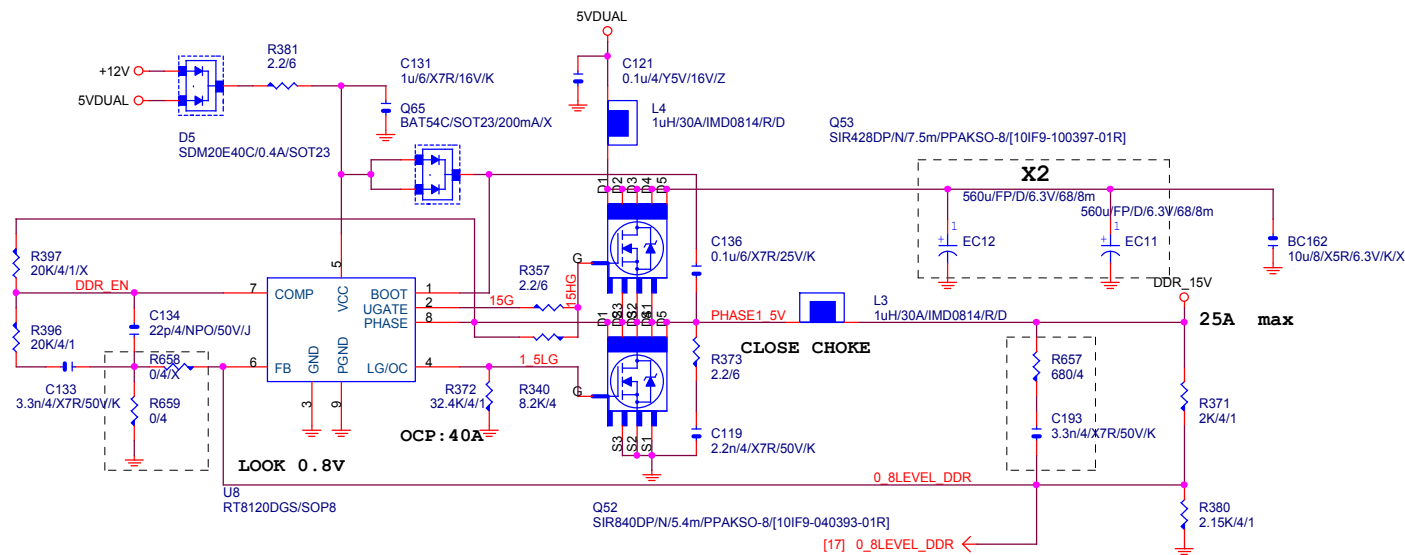
VTT PWRGD



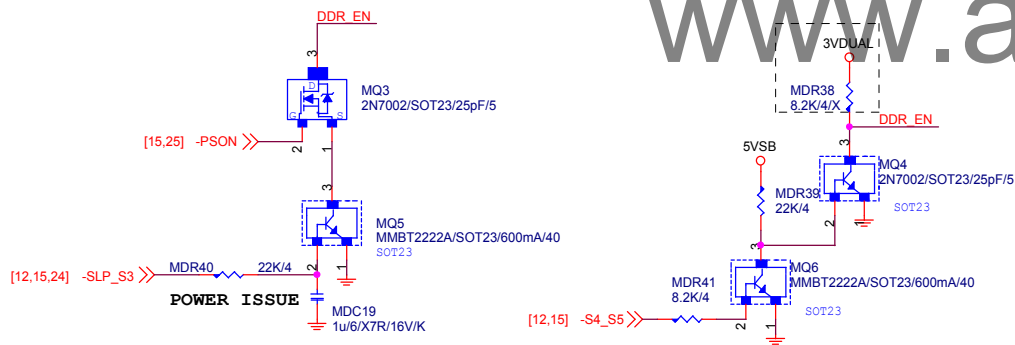
GIGABYTE™

Title			
CPU_VTT			
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DDR15V



PWR SEQ



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A
560uF/P/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C), 1(105°C)

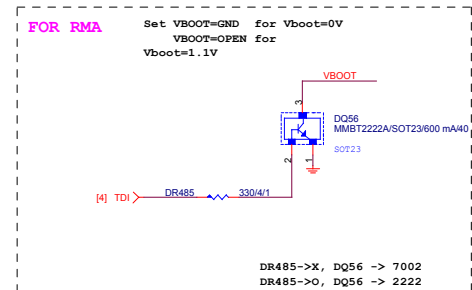
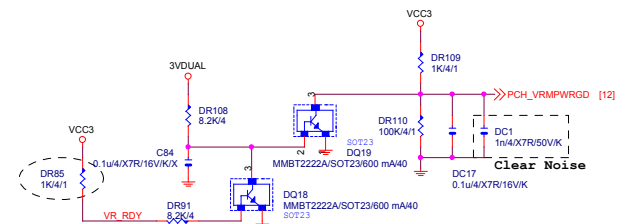
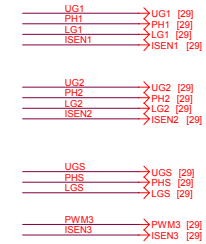
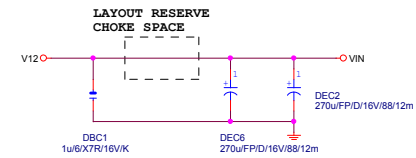
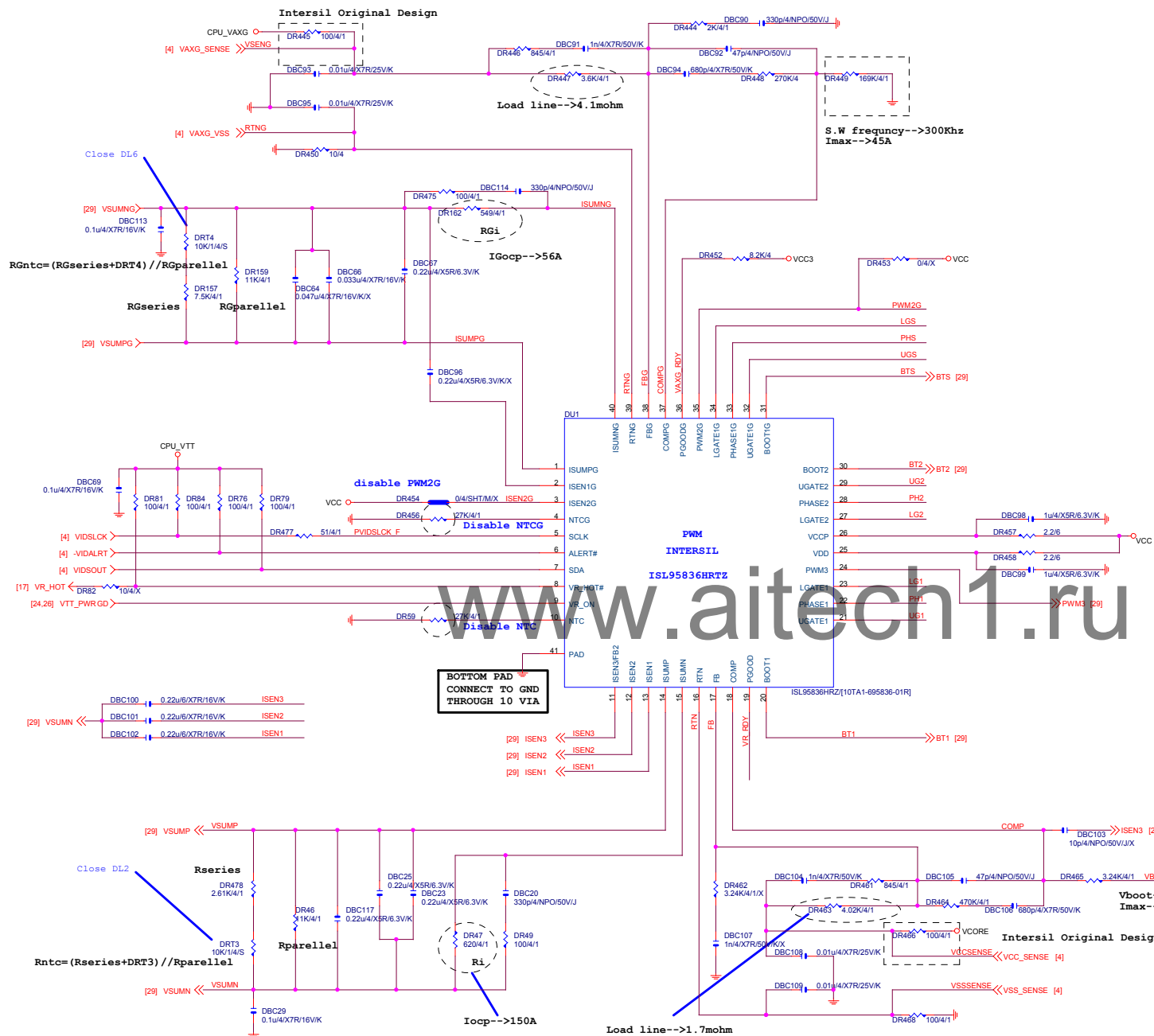
VIN Ripple current=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 typ $I_{ocset} = 20\mu A$, $R_{ocset} = 4.7k$
 OCP : $53.71A = (2 \times 20\mu a \times 4.7k) / (7m / 7m)$

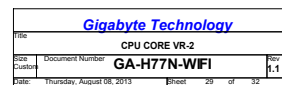
Gigabyte Technology

DDR POWER

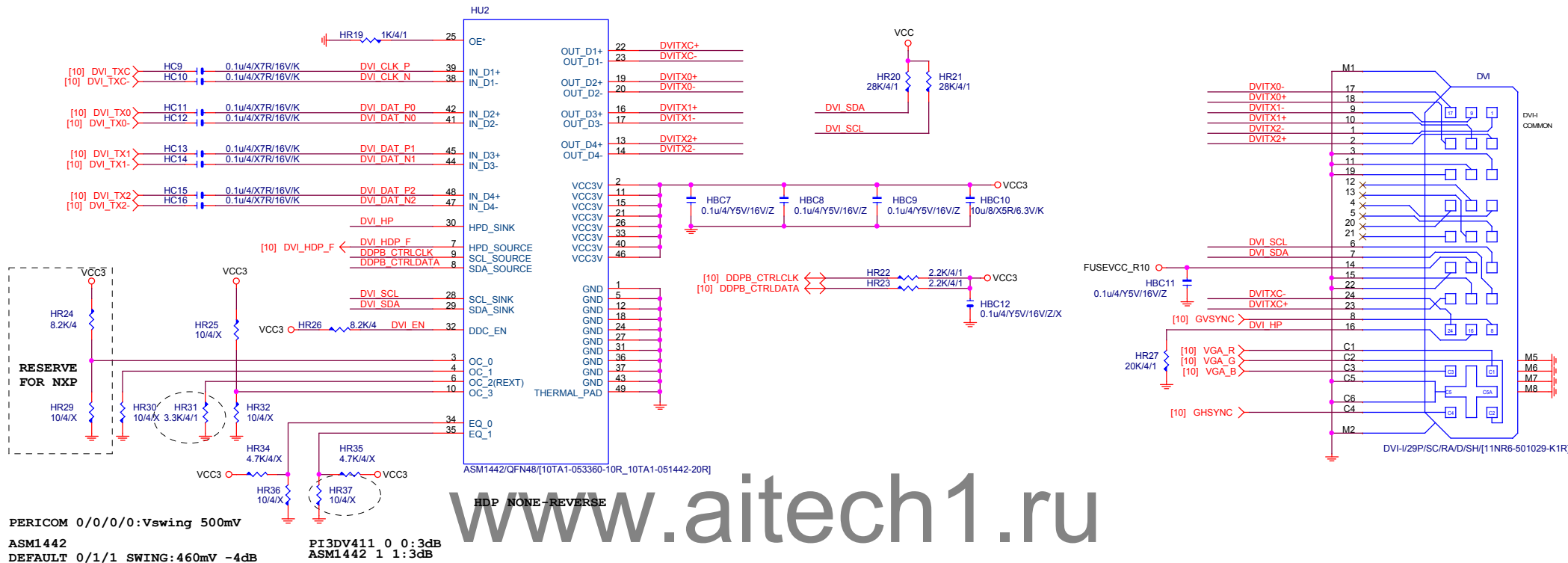
Size Custom	Document Number	GA-H77N-WIFI	Rev	1.1
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PHASE 1

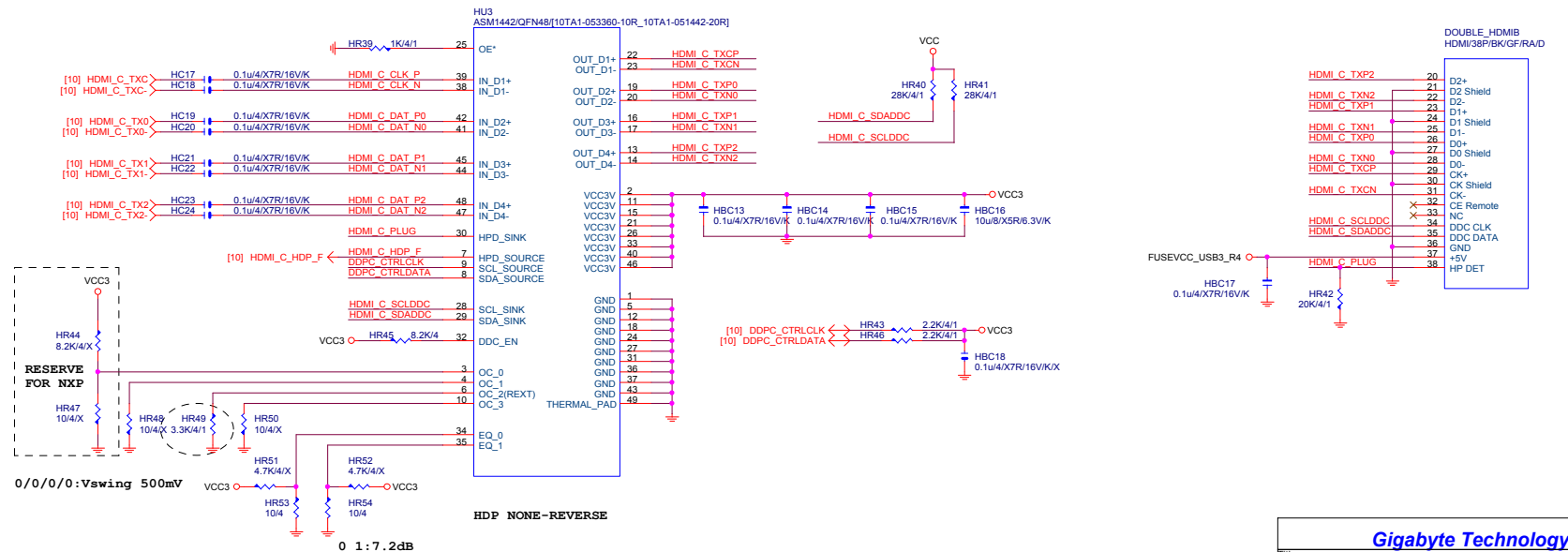


DVI LEVEL SHIFT



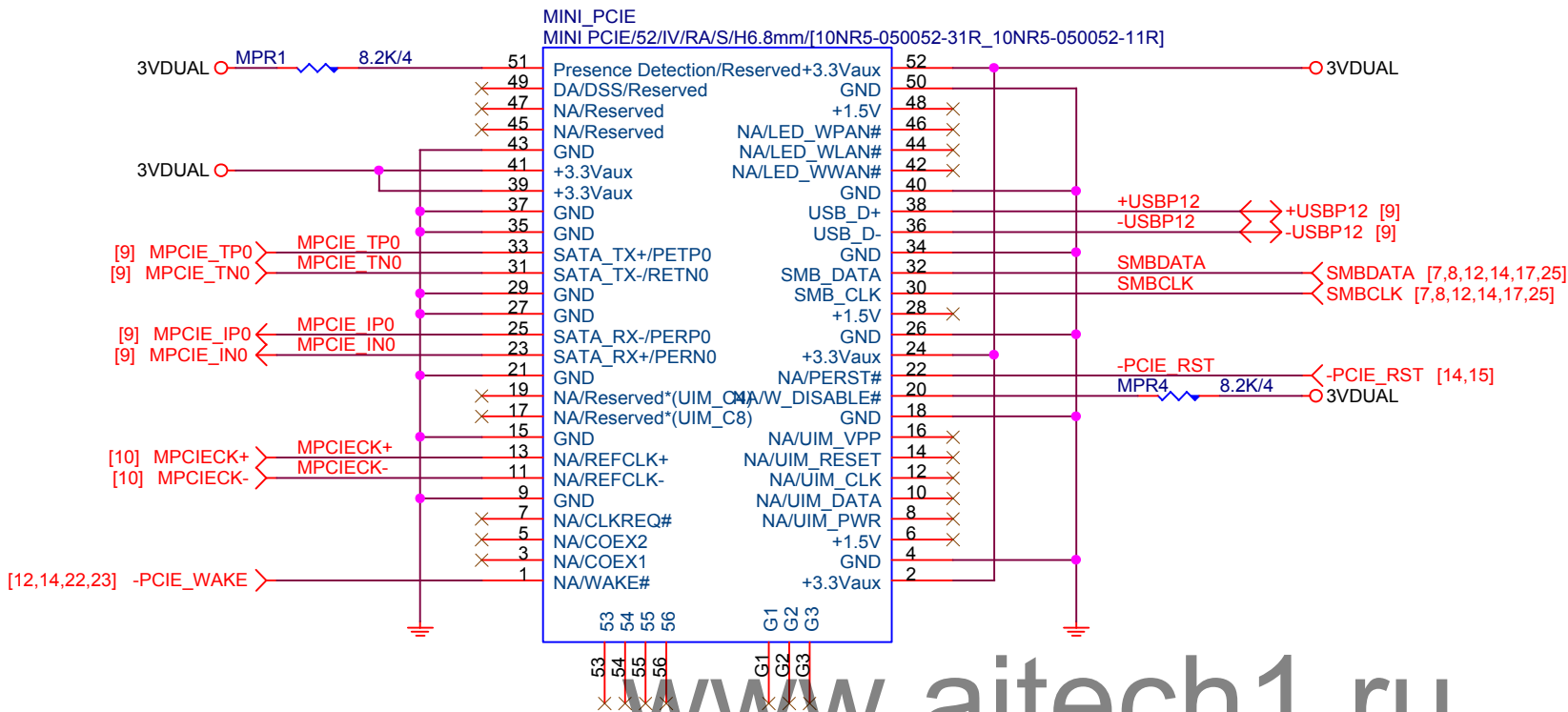
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HDMI LEVEL SHIFT

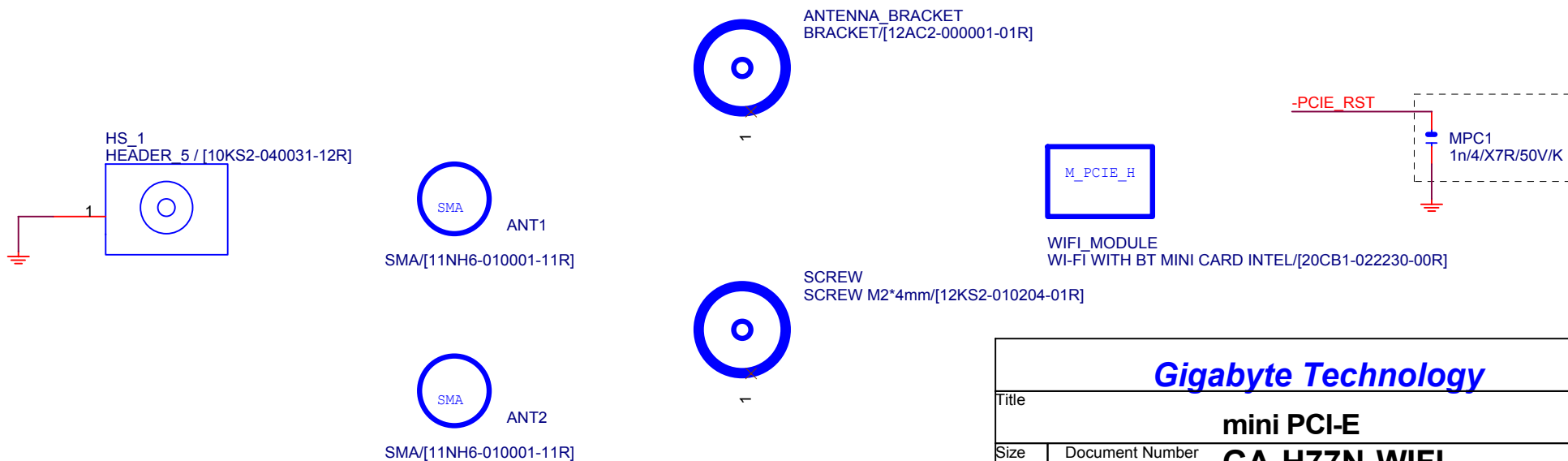


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