

Model Name: GA-Z68MA-D2H

Revision 1.3

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 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*4 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*16 SWITCH
18	PCI EXPRESS*1 SLOT
19	ITE 8728 LPC IO
20	COM,KB_USB,USB_ESATA,-PROCHOT
21	HWM,FAN CTRL
22	DUAL BIOS
23	FP,FUSB,SPK,SATALED
24	ALC889
25	REAR AUDIO JACK
26	REALTEK RTL8111E
27	HDMI/DVI

SHEET

TITLE

28	USB3.0- EJ168
29	DISCRETE POWER
30	ATX,TPM
31	ISL95870_CPU_VTT
32	VCORE ISL6364_1
33	VCORE ISL6364_2
34	VCORE ISL6364_3

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Cover Sheet

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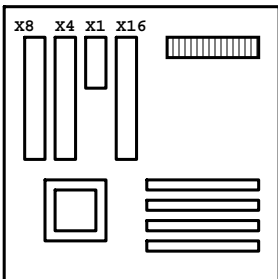
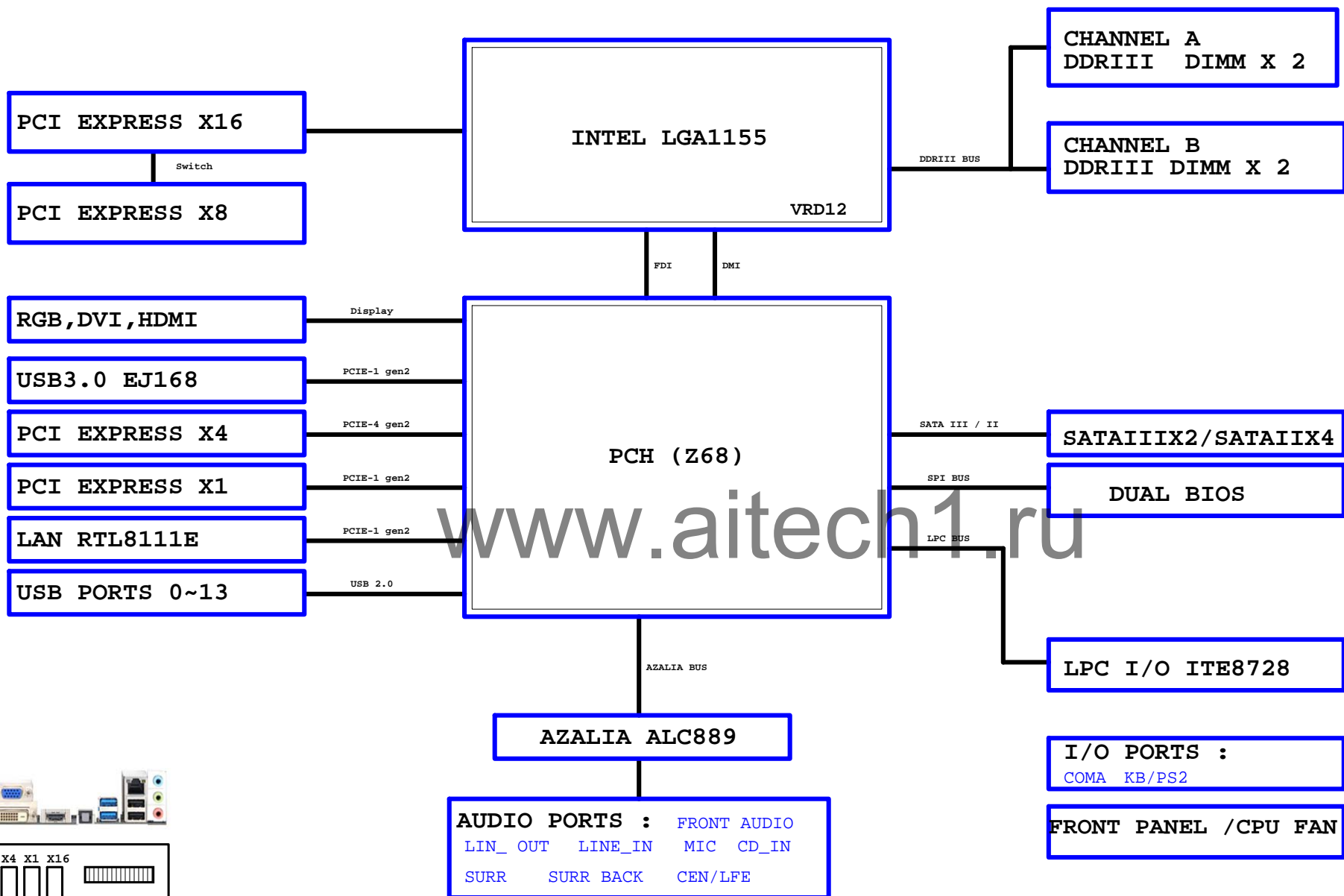
Circuit or PCB layout change

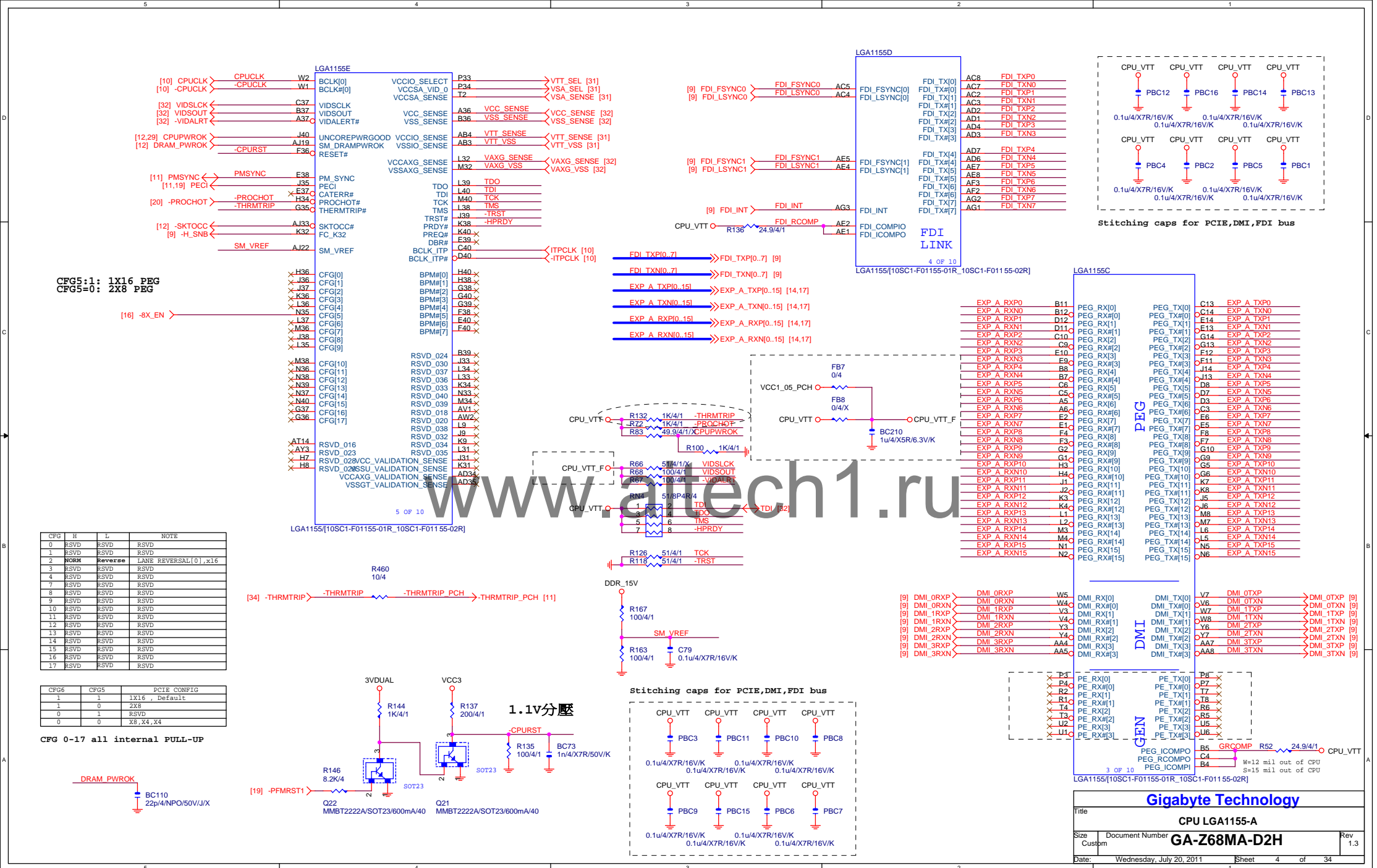
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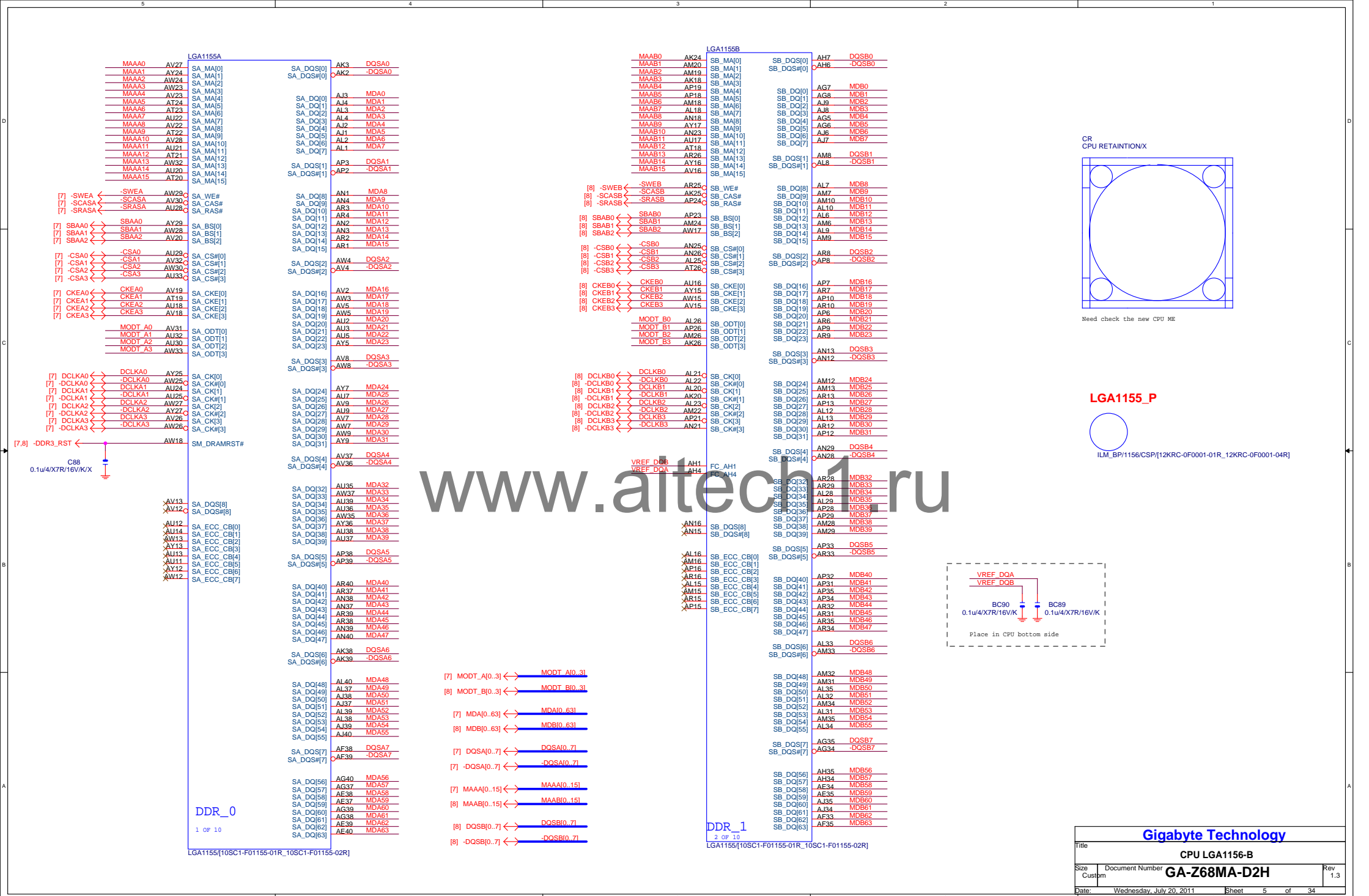
2011/07/20

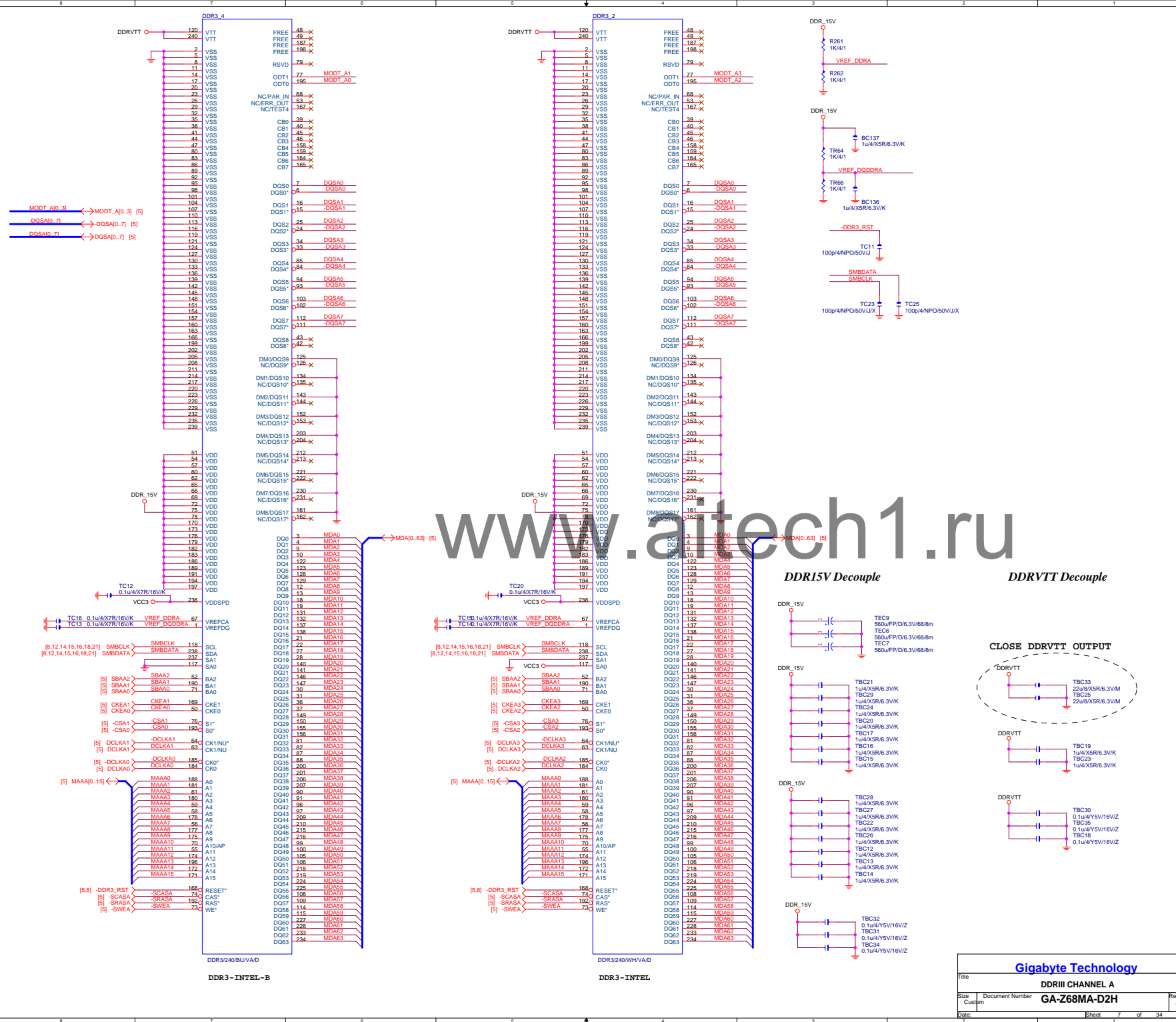
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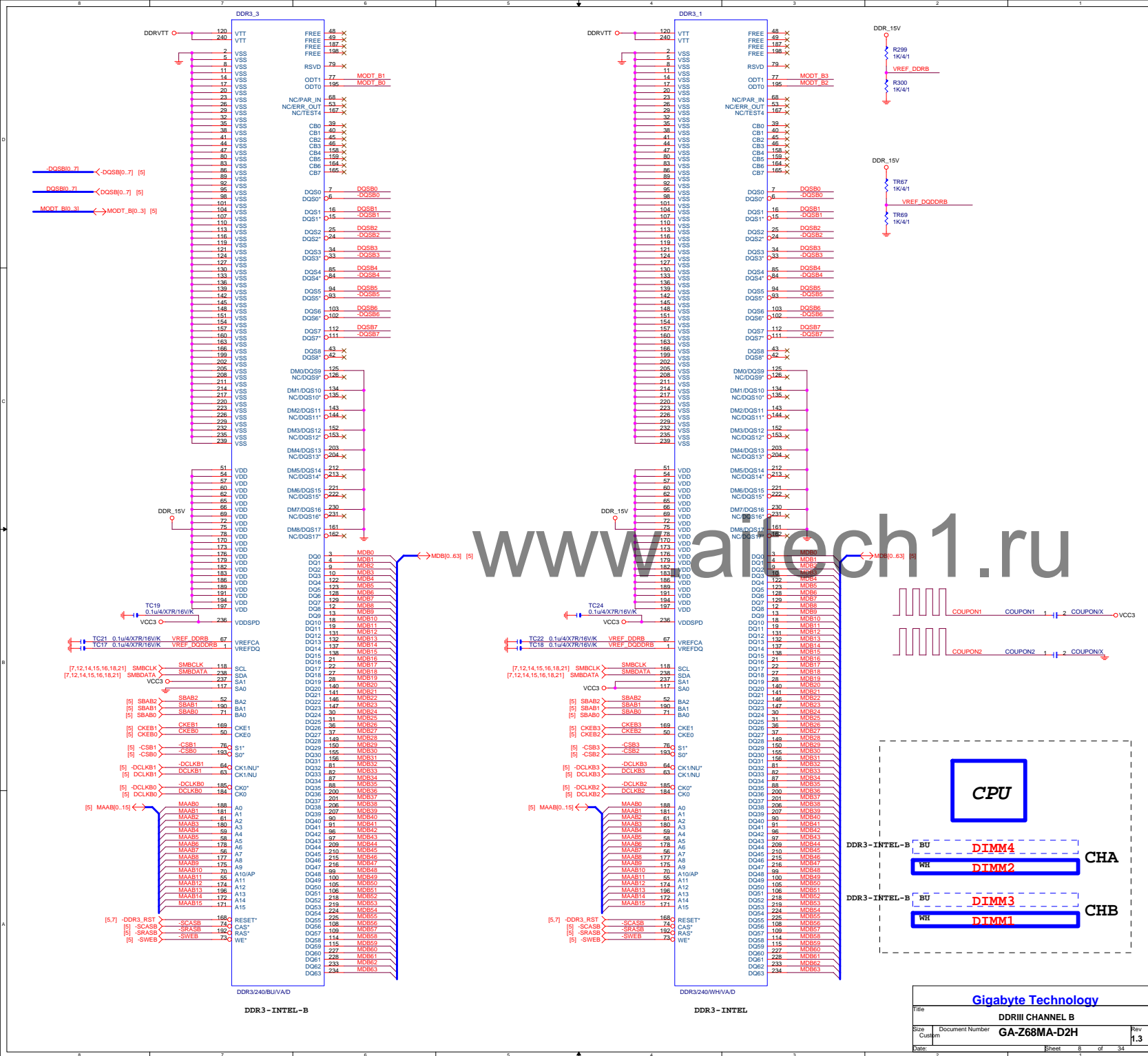
BLOCK DIAGRAM

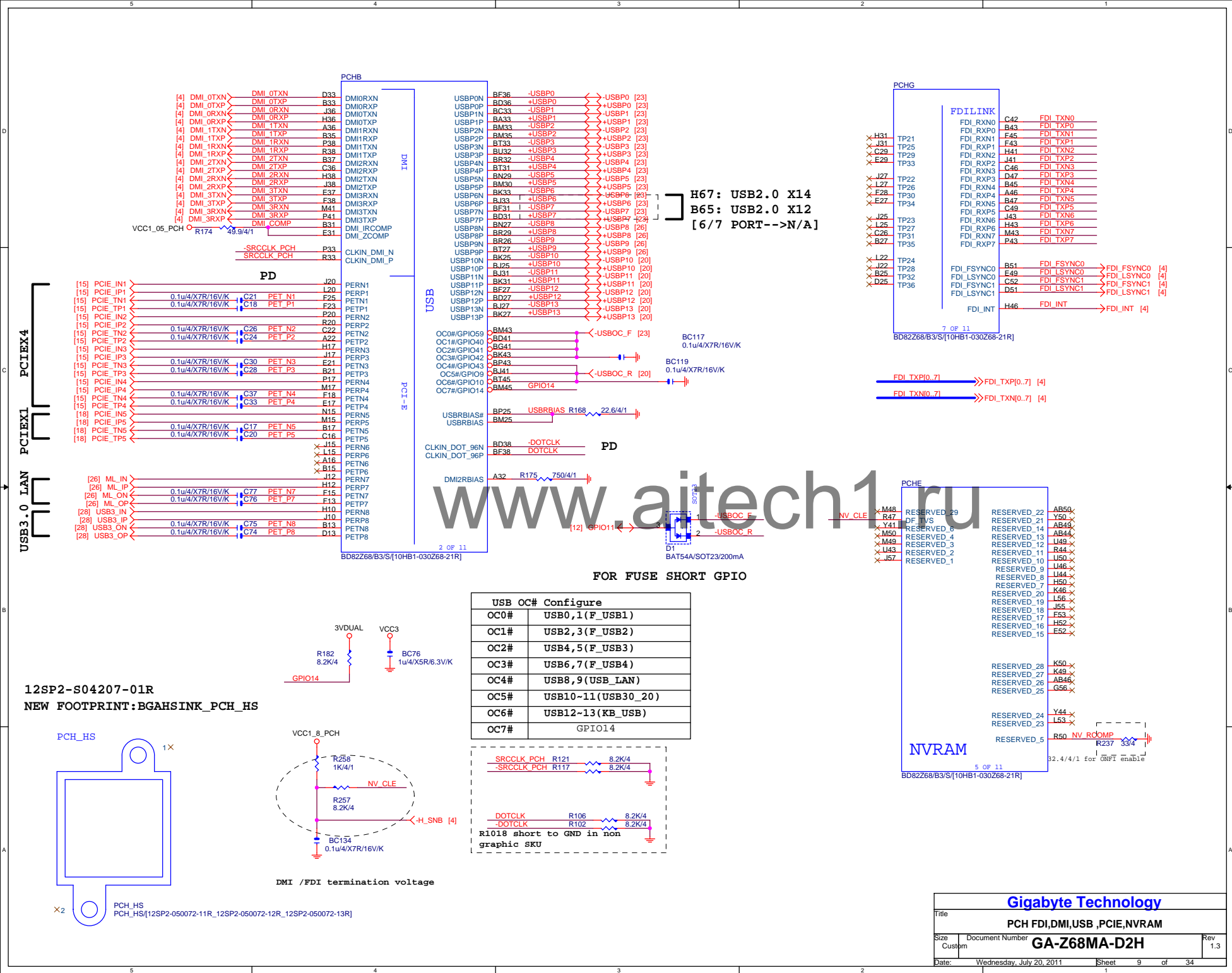


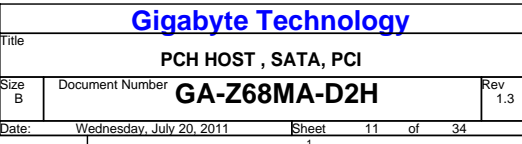


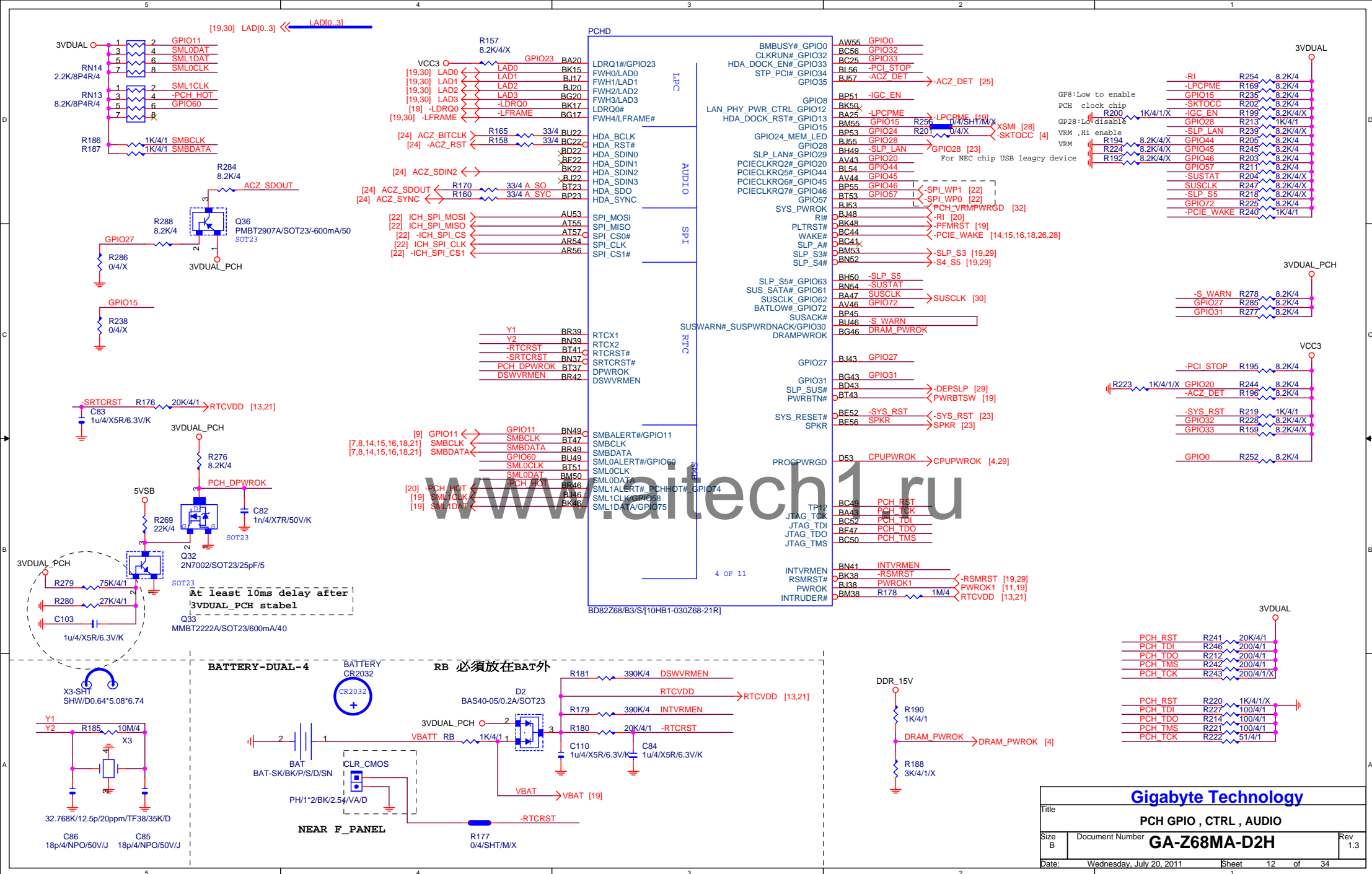


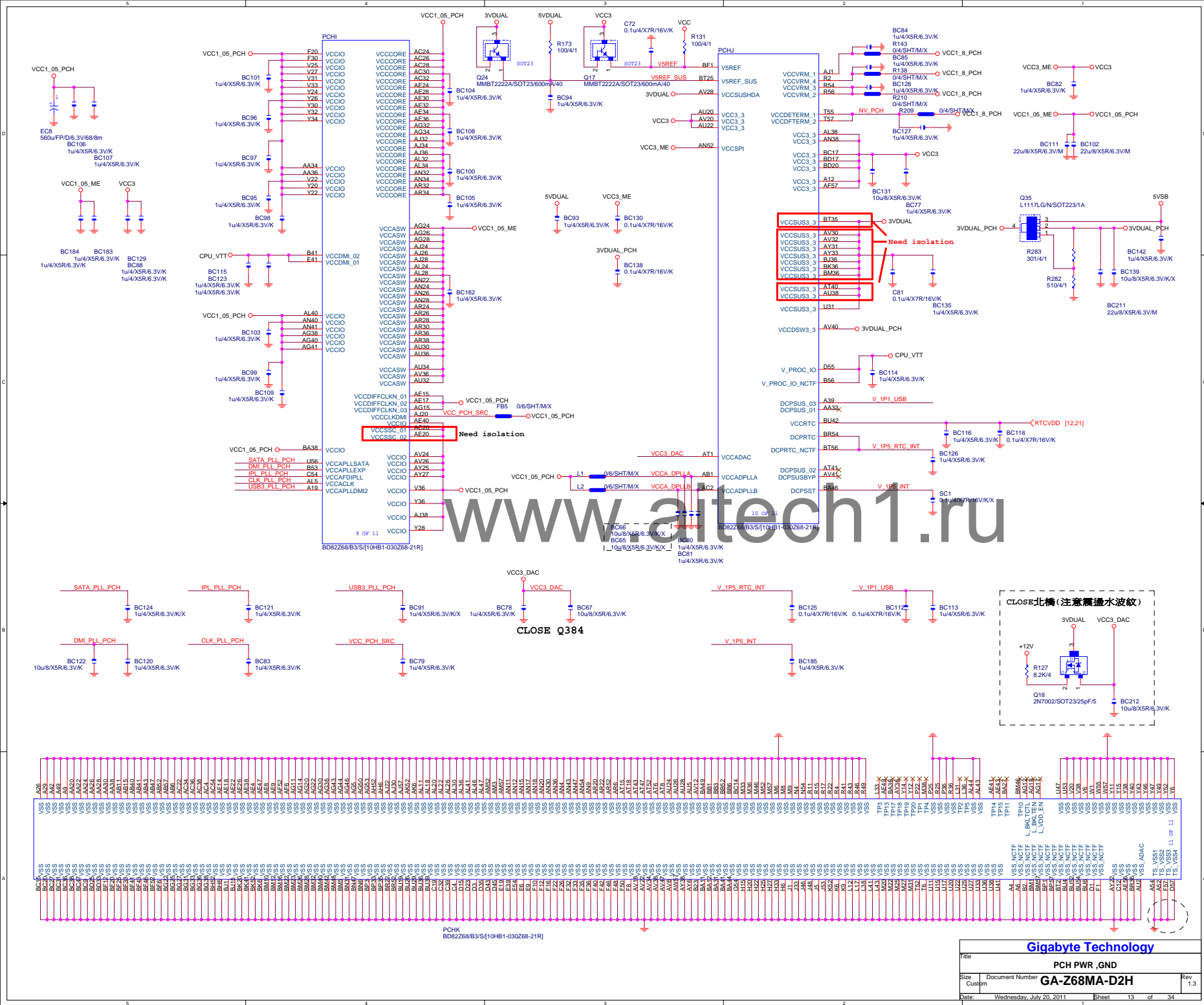


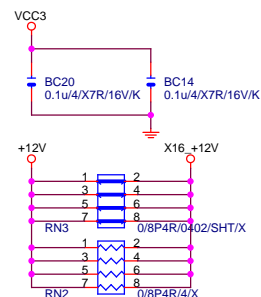
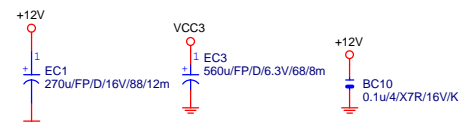












EXP A RXP0[0..15] >> EXP_A_RXP[0..15] [4,17]
 EXP A RXN0[0..15] >> EXP_A_RXN[0..15] [4,17]
 EXP A TXP0[0..15] >> EXP_A_TXP[0..15] [4,17]
 EXP A TXN0[0..15] >> EXP_A_TXN[0..15] [4,17]

EXP A TXP0	C22	0.22u/4/X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C23	0.22u/4/X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C25	0.22u/4/X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C27	0.22u/4/X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C29	0.22u/4/X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C31	0.22u/4/X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C34	0.22u/4/X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C38	0.22u/4/X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C39	0.22u/4/X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C41	0.22u/4/X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C42	0.22u/4/X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C43	0.22u/4/X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C44	0.22u/4/X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C45	0.22u/4/X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C46	0.22u/4/X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C47	0.22u/4/X5R/6.3V/K	EXP A TXN7C
EXP A SW TXP8	C52	0.22u/4/X5R/6.3V/K	EXP A SW TXP8C
EXP A SW TXN8	C53	0.22u/4/X5R/6.3V/K	EXP A SW TXN8C
EXP A SW TXP9	C54	0.22u/4/X5R/6.3V/K	EXP A SW TXP9C
EXP A SW TXN9	C55	0.22u/4/X5R/6.3V/K	EXP A SW TXN9C
EXP A SW TXP10	C57	0.22u/4/X5R/6.3V/K	EXP A SW TXP10C
EXP A SW TXN10	C59	0.22u/4/X5R/6.3V/K	EXP A SW TXN10C
EXP A SW TXP11	C61	0.22u/4/X5R/6.3V/K	EXP A SW TXP11C
EXP A SW TXN11	C60	0.22u/4/X5R/6.3V/K	EXP A SW TXN11C
EXP A SW TXP12	C63	0.22u/4/X5R/6.3V/K	EXP A SW TXP12C
EXP A SW TXN12	C64	0.22u/4/X5R/6.3V/K	EXP A SW TXN12C
EXP A SW TXP13	C66	0.22u/4/X5R/6.3V/K	EXP A SW TXP13C
EXP A SW TXN13	C67	0.22u/4/X5R/6.3V/K	EXP A SW TXN13C
EXP A SW TXP14	C69	0.22u/4/X5R/6.3V/K	EXP A SW TXP14C
EXP A SW TXN14	C68	0.22u/4/X5R/6.3V/K	EXP A SW TXN14C
EXP A SW TXP15	C70	0.22u/4/X5R/6.3V/K	EXP A SW TXP15C
EXP A SW TXN15	C71	0.22u/4/X5R/6.3V/K	EXP A SW TXN15C

EXP A SW RXP8[0..15] >> EXP_A_SW_RXP[8..15] [17]
 EXP A SW RXN8[0..15] >> EXP_A_SW_RXN[8..15] [17]
 EXP A SW TXP8[0..15] >> EXP_A_SW_TXP[8..15] [17]
 EXP A SW TXN8[0..15] >> EXP_A_SW_TXN[8..15] [17]

PCI-E REV:1.1--> 2.5GHZ

PCE-E X1(單向) BANDWIDTH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

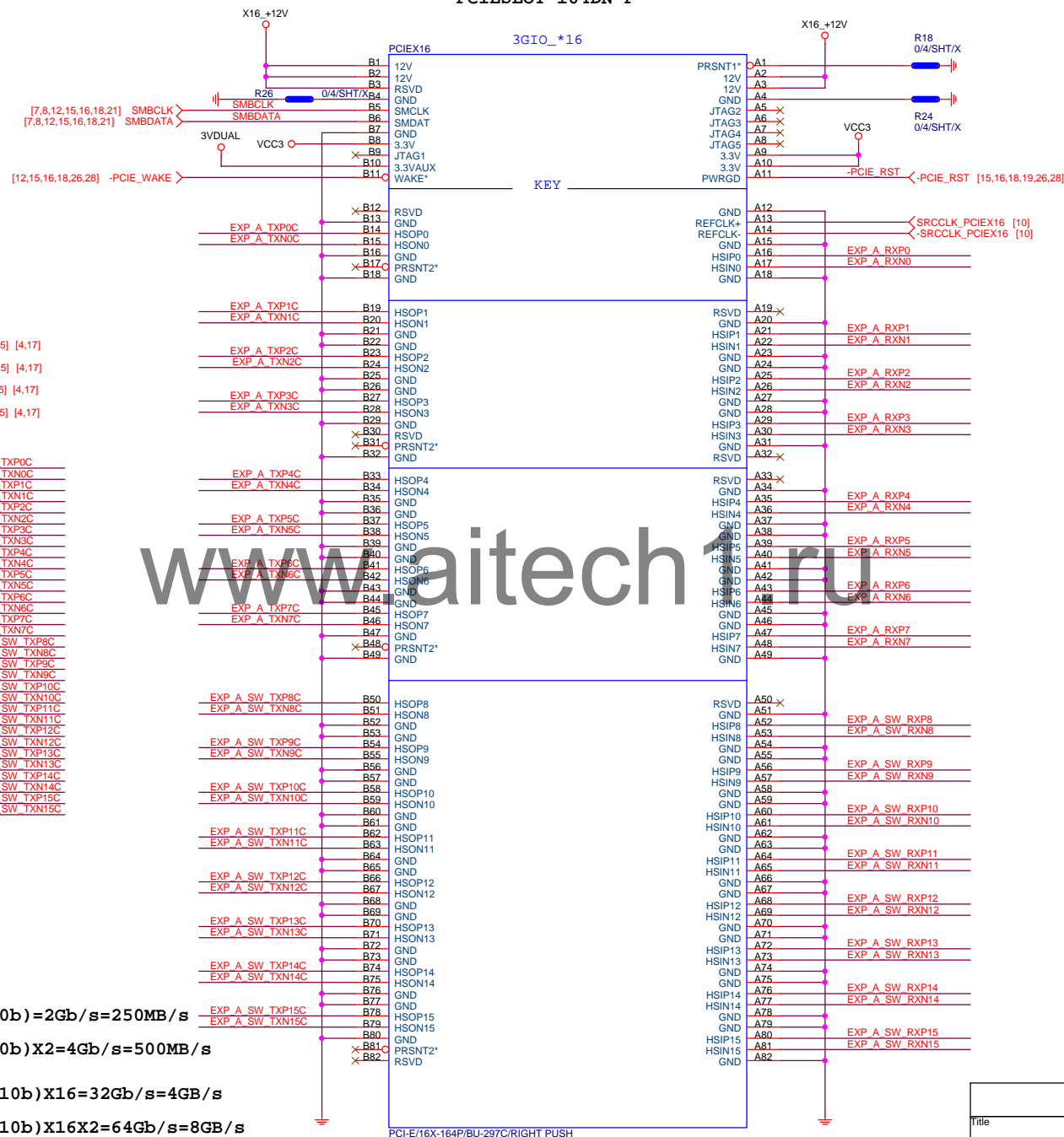
PCE-E X1(雙向) BANDWIDTH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

PCE-E X16(單向) BANDWIDTH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

PCE-E X16(雙向) BANDWIDTH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ

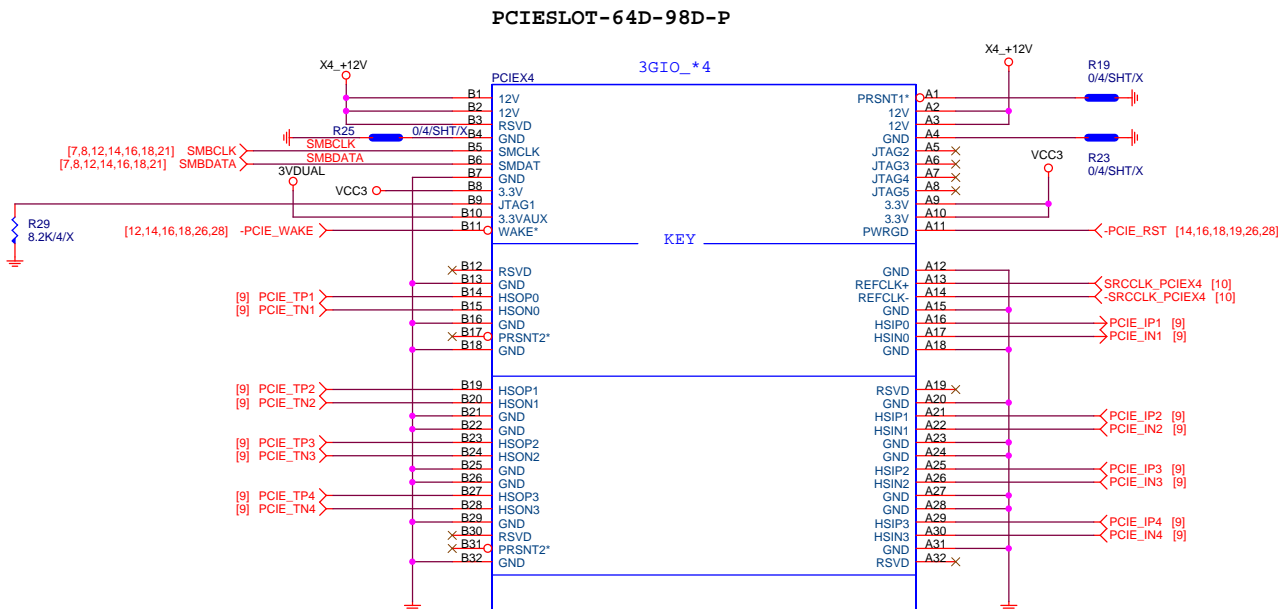
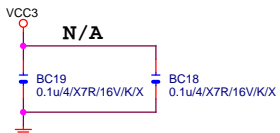
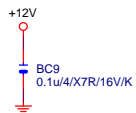
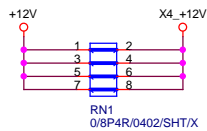
PCIESLOT-164DN-P



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PCI EXPRESS * 16

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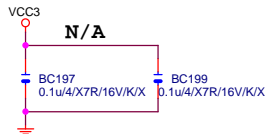
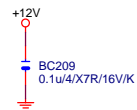
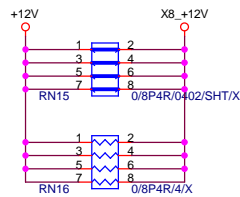


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PCI-E/16X-65P/BU/RIGHT PUSH

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[7,8,12,14,15,18,21] SMBCLK
[7,8,12,14,15,18,21] SMBDATA

[12,14,15,18,26,28] -PCIE_WAKE

EXP_B_SW_TXP8C
EXP_B_SW_TXN8C

EXP_B_SW_TXP9C
EXP_B_SW_TXN9C

EXP_B_SW_TXP10C
EXP_B_SW_TXN10C

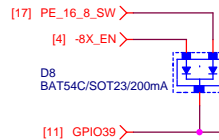
EXP_B_SW_TXP11C
EXP_B_SW_TXN11C

EXP_B_SW_TXP12C
EXP_B_SW_TXN12C

EXP_B_SW_TXP13C
EXP_B_SW_TXN13C

EXP_B_SW_TXP14C
EXP_B_SW_TXN14C

EXP_B_SW_TXP15C
EXP_B_SW_TXN15C



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PCI-E/16X-99P/BU/RIGHT PUSH

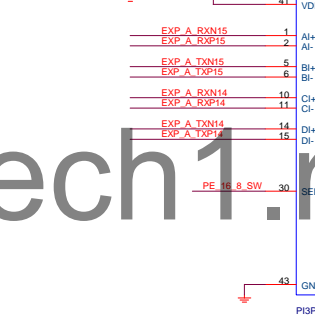
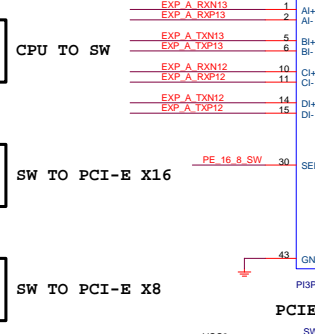
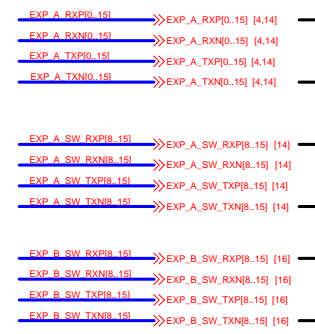
EXP_B_SW_RXP8_15] >> EXP_B_SW_RXP[8..15] [17]
EXP_B_SW_RXN8_15] >> EXP_B_SW_RXN[8..15] [17]
EXP_B_SW_TXP8_15] >> EXP_B_SW_TXP[8..15] [17]
EXP_B_SW_TXN8_15] >> EXP_B_SW_TXN[8..15] [17]

EXP_B_SW_TXP8	C161	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP8C
EXP_B_SW_TXN8	C162	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN8C
EXP_B_SW_TXP9	C163	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP9C
EXP_B_SW_TXN9	C164	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN9C
EXP_B_SW_TXP10	C165	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP10C
EXP_B_SW_TXN10	C166	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN10C
EXP_B_SW_TXP11	C167	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP11C
EXP_B_SW_TXN11	C168	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN11C
EXP_B_SW_TXP12	C169	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP12C
EXP_B_SW_TXN12	C170	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN12C
EXP_B_SW_TXP13	C171	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP13C
EXP_B_SW_TXN13	C172	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN13C
EXP_B_SW_TXP14	C173	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP14C
EXP_B_SW_TXN14	C174	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN14C
EXP_B_SW_TXP15	C175	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXP15C
EXP_B_SW_TXN15	C176	0.22u/4/X5R/6.3V/K	EXP_B_SW_TXN15C

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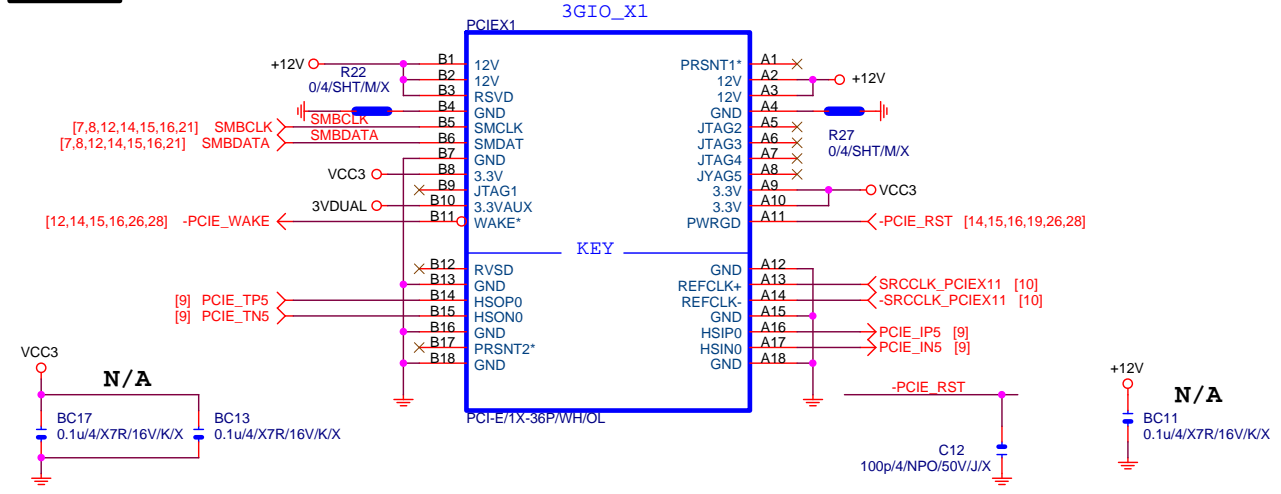
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PCI EXPRESS X 8 PORT			
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PCI-E X16



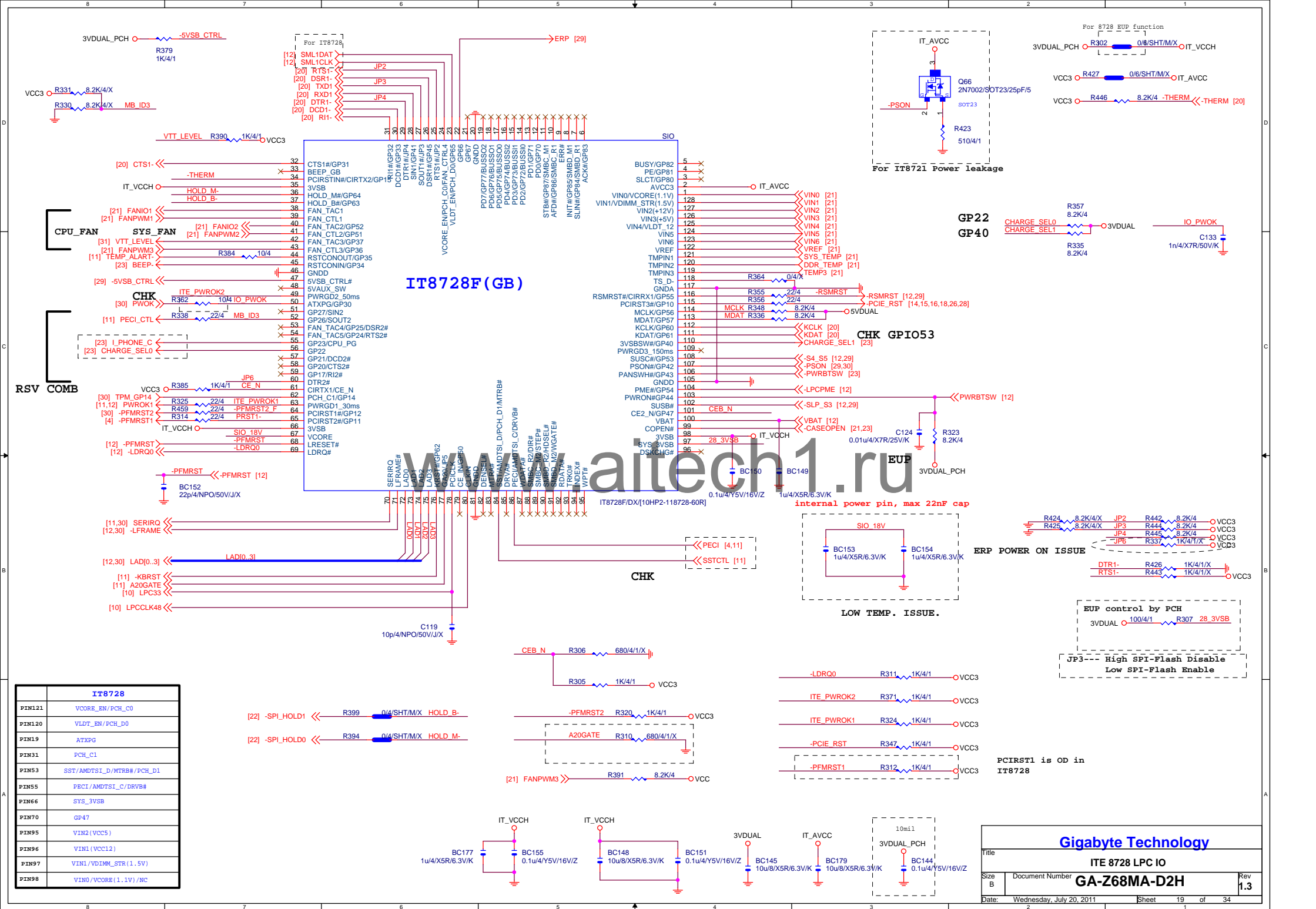
PCIEX1

CLK GEN CK505

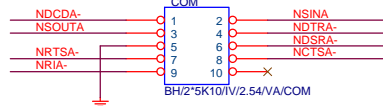
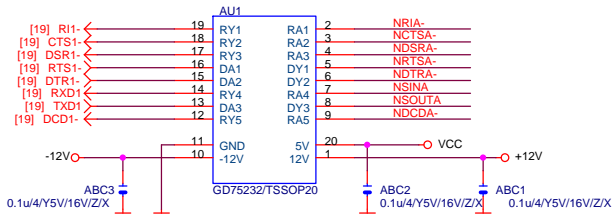


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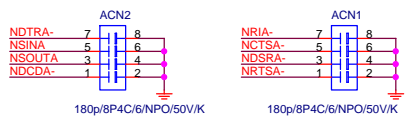
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Size	Document Number	GA-Z68MA-D2H	Rev
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2		1	



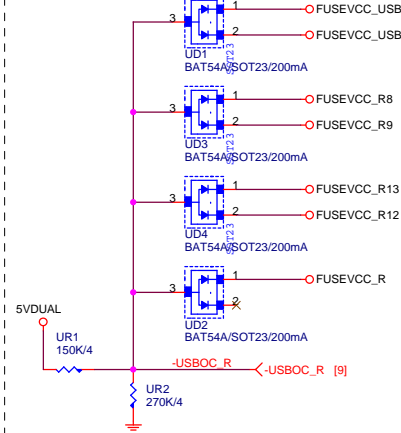
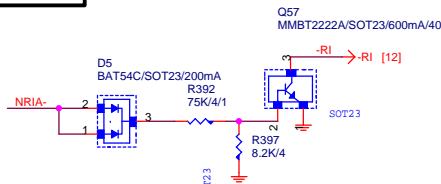
COM



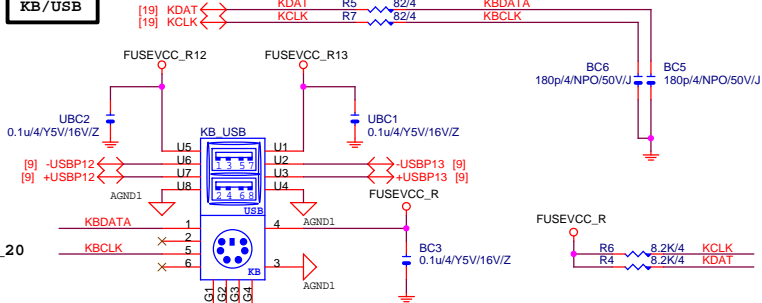
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COM RI



KB/USB



USB30_20

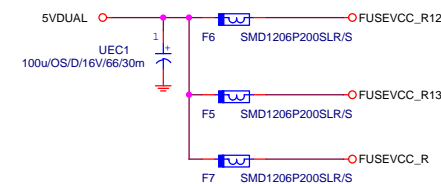
USB_LAN

KB_USB

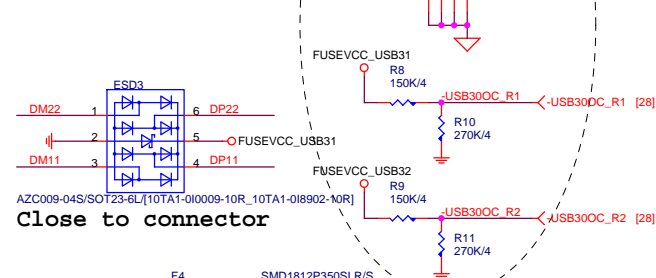
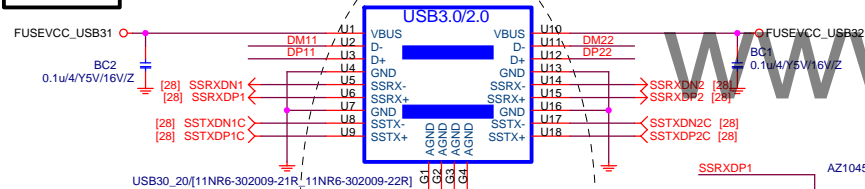
KB/VGA/DVI

KB/2USB/PC99(DUAL)/RED/RA/GF:NEW

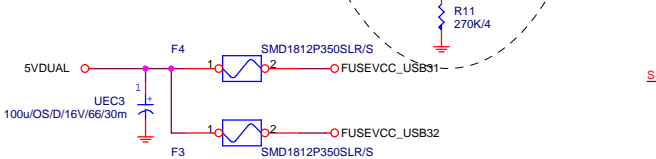
CLOSE KB_USB



USB30_20



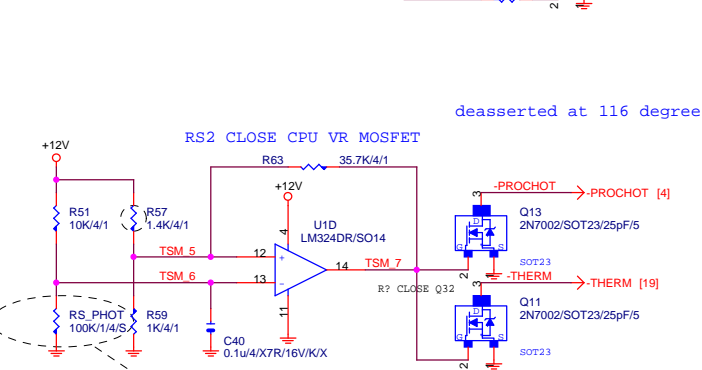
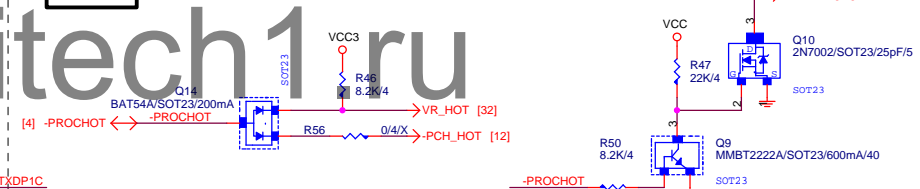
Close to connector



CLOSE USB30_LAN



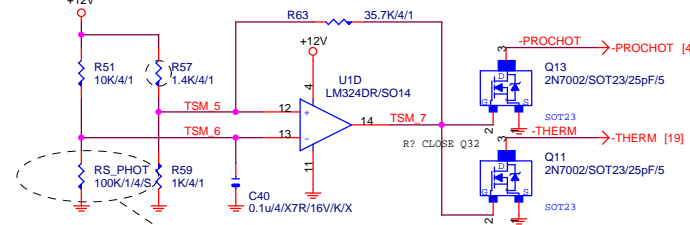
-PROHOT



CLOSE PWM HOT MOSFET

deasserted at 116 degree

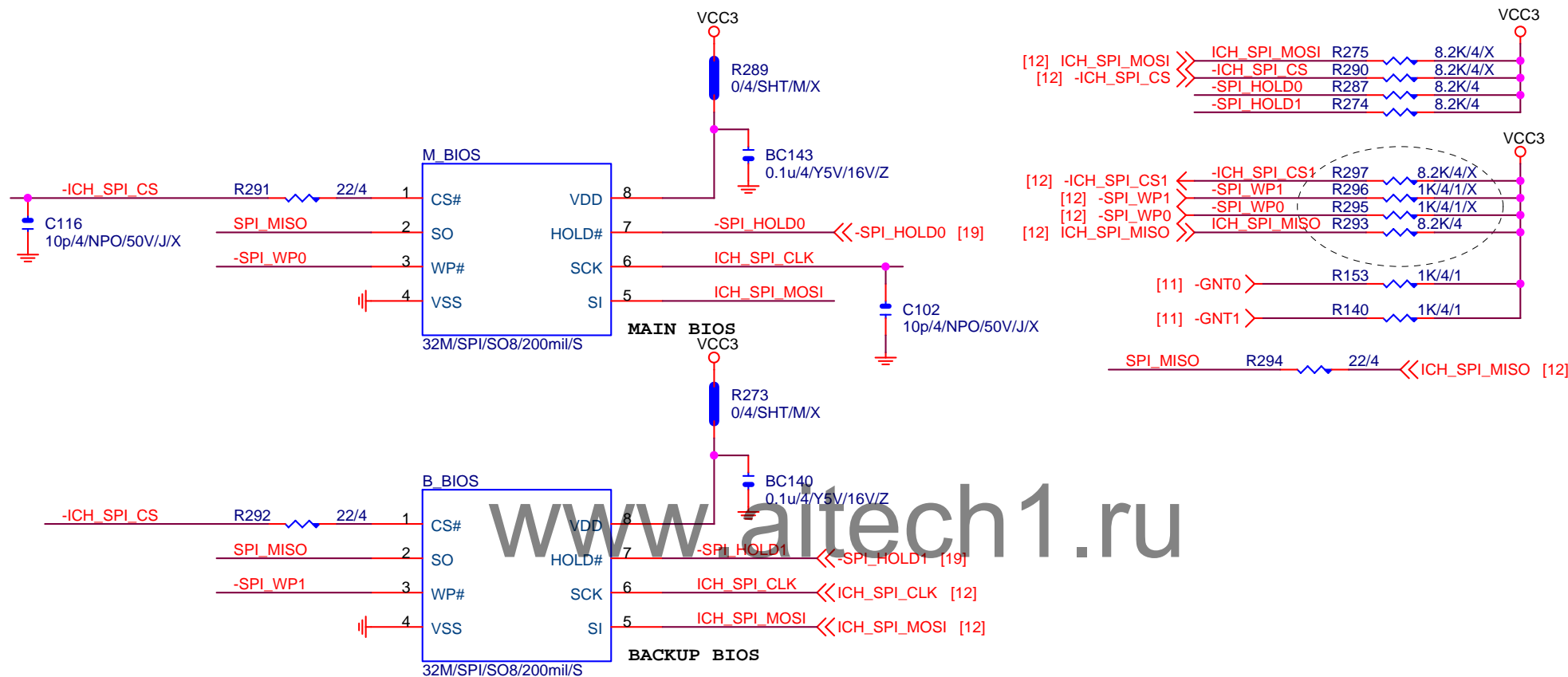
RS2 CLOSE CPU VR MOSFET



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DUAL BIOS



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

1 means floating
0 means PD 1K

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DUAL BIOS

Title

Size
A

Document Number

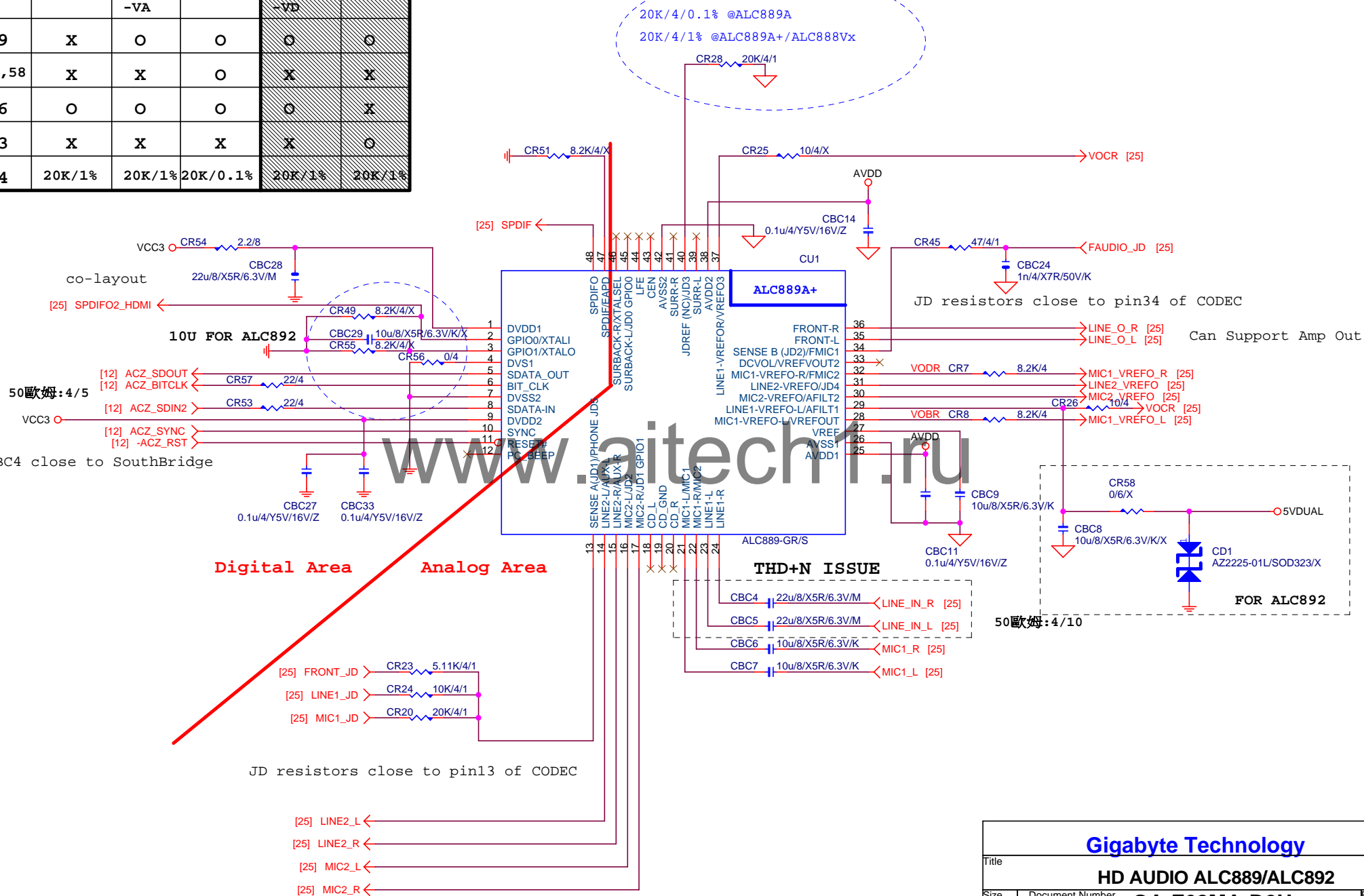
GA-Z68MA-D2H

Rev
1.3

Date: Wednesday, July 20, 2011

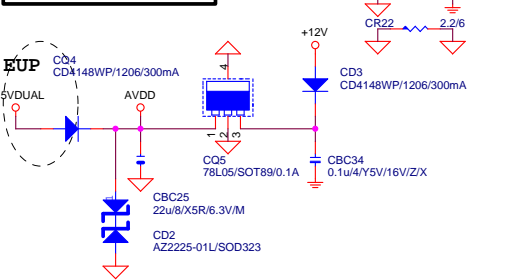
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	ALC888B	ALC888 -VA	ALC889A	ALC888 -VD	ALC892
CR59	X	O	O	O	O
CR53,58	X	X	O	X	X
CR56	O	O	O	O	X
CR63	X	X	X	X	O
CR34	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%

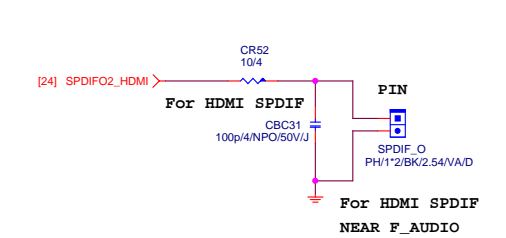


Can Support Amp Out

CODEC POWER/EMI PAD



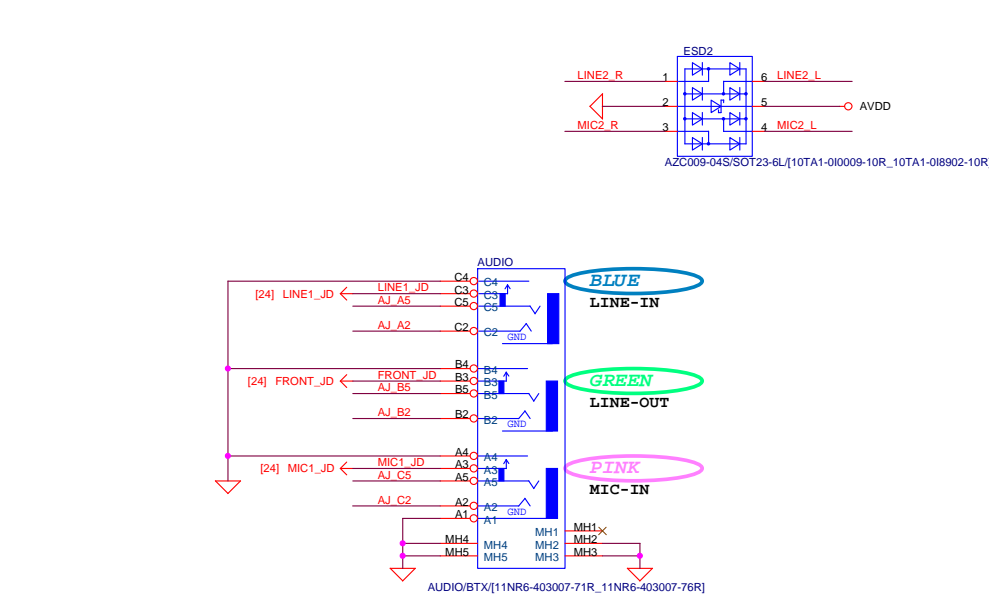
HDMI SPDIF



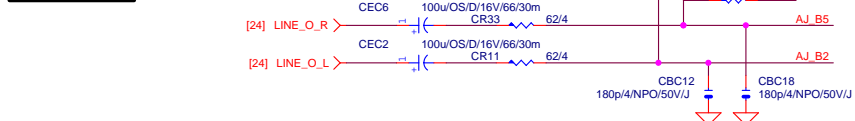
SPDIF_IN



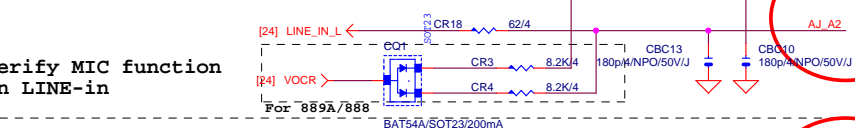
AZALIA JACK



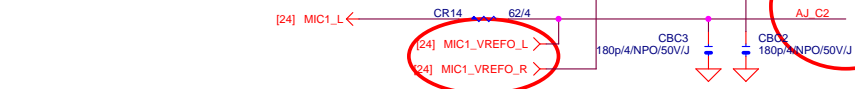
LINE-OUT



LINE-IN

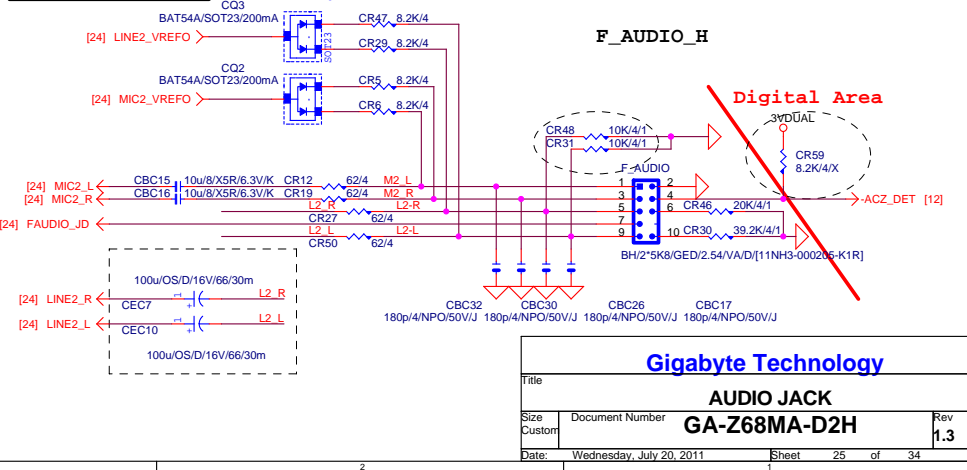


MIC-IN



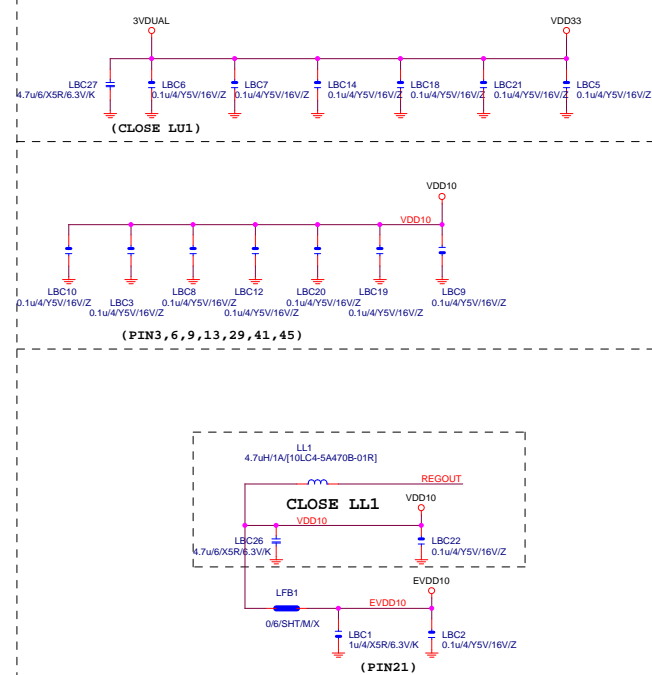
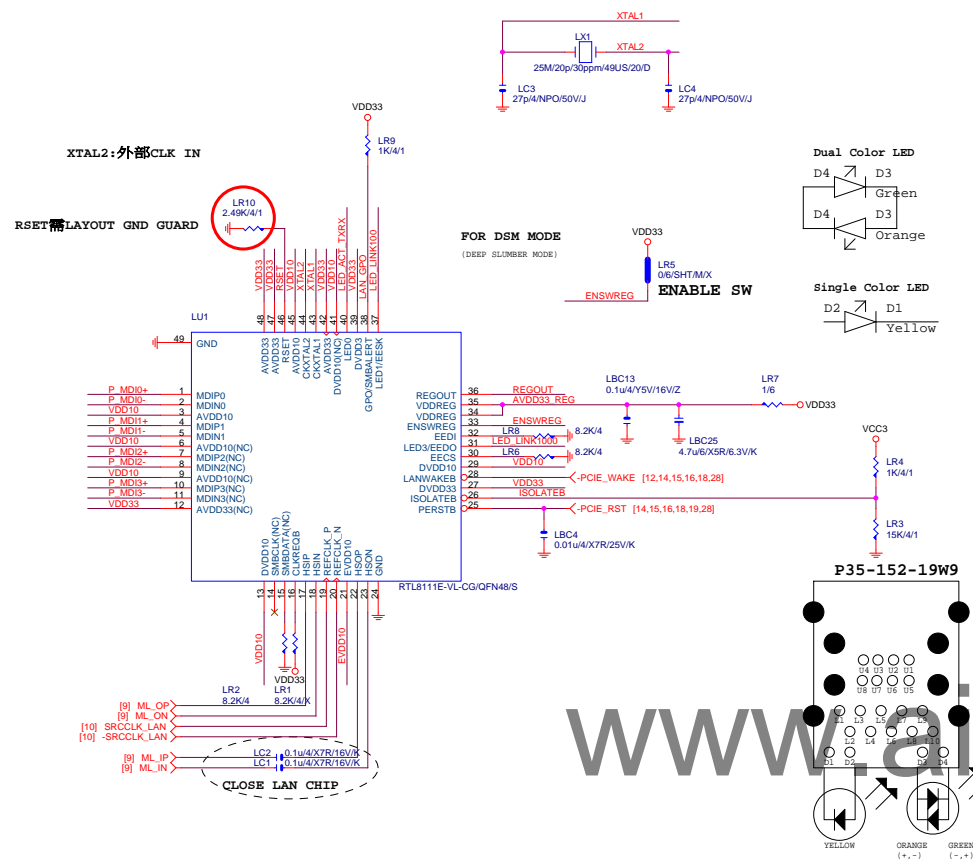
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AZALIA FRONT PANEL



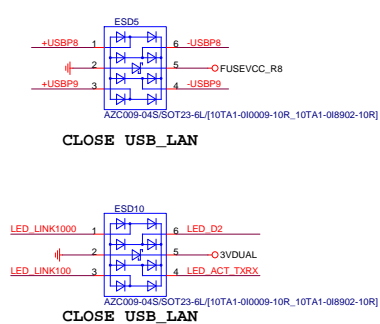
Gigabyte Technology			
AUDIO JACK			
Title	Document Number	GA-Z68MA-D2H	Rev 1.3
Size Custom	Date: Wednesday, July 20, 2011	Sheet 25 of 34	

PCIE-1G LAN



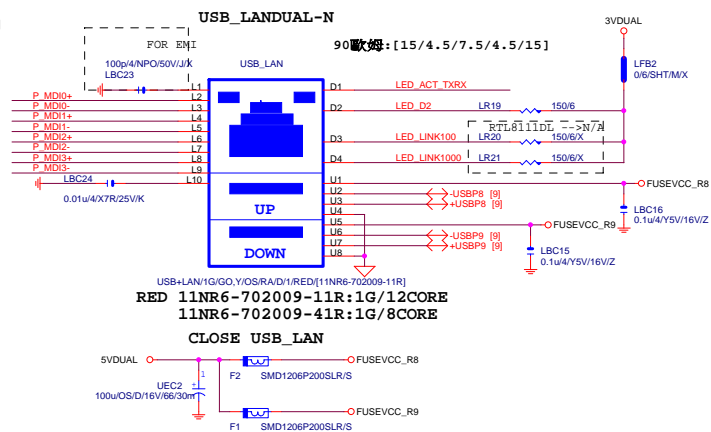
USB_LAN CONNECTOR

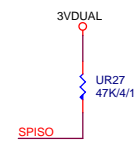
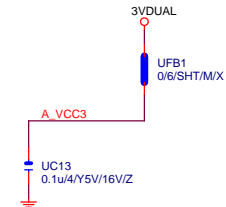
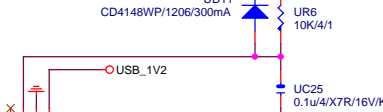
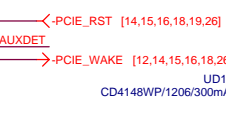
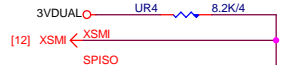
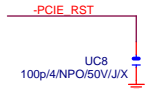
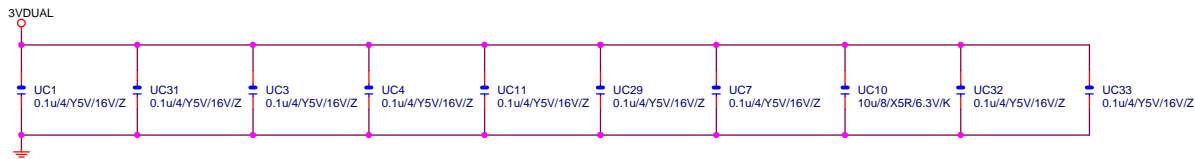
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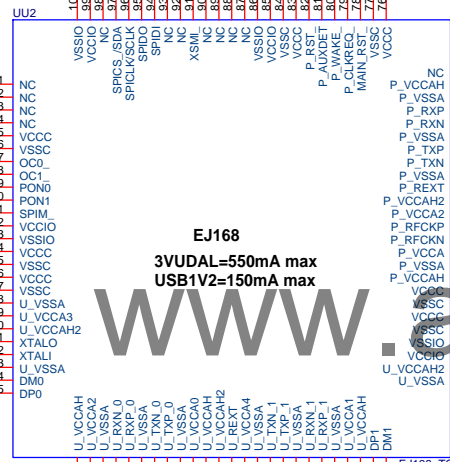
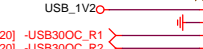
USB_LANDUAL-N

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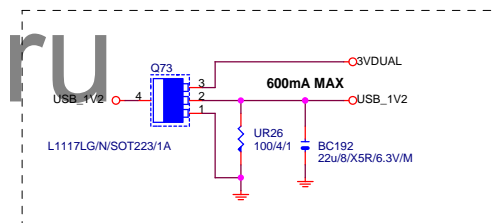
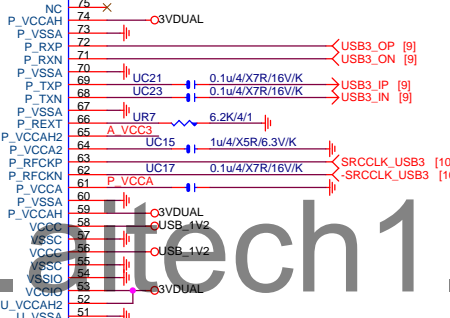




SPI50: Low=>SPI Rom.



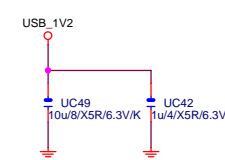
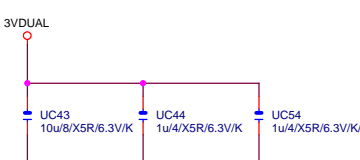
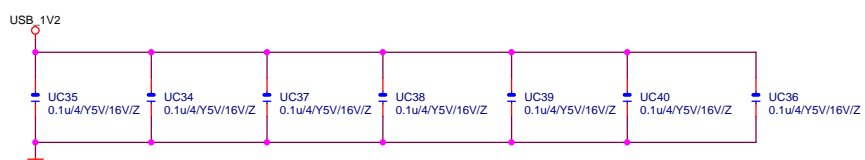
EJ168
3VUDAL=550mA max
USB1V2=150mA max



Max Power=2.2V x 0.15A=0.33Watt

AZ1117H-1.2TR/SOT223/1A-->UR17:0/4,UR16:N/A [1.2V]

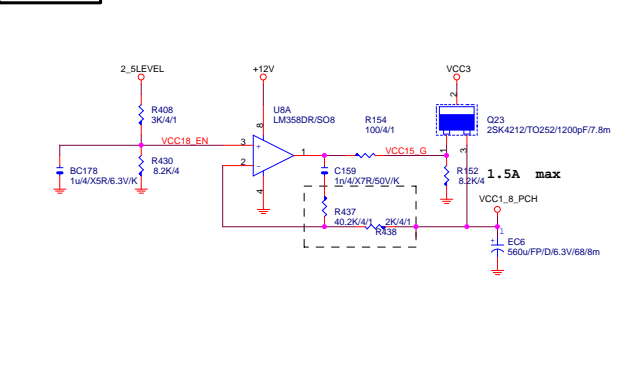
L1117LG/N/SOT223/1A-->UR17:0/4 ,UR16:100/4/1 [1.25V]



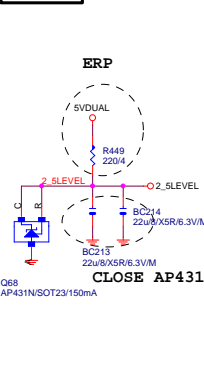
GIGABYTE

Title			
USB3.0 EJ168			
Size	Document Number	Rev	
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Date:	Wednesday, July 20, 2011	Sheet	28 of 34

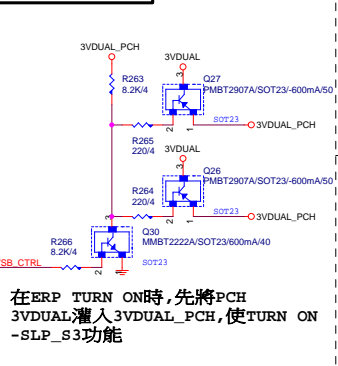
VCC1_8_PCH



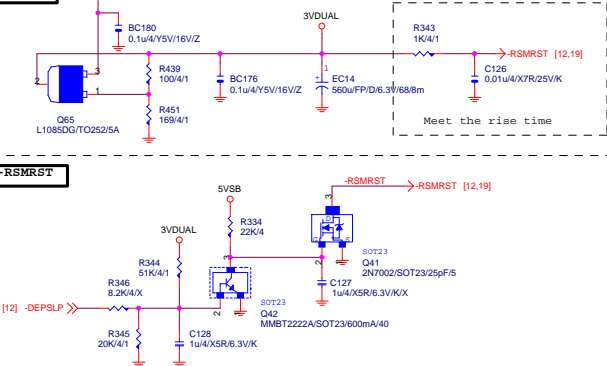
2_5LEVEL



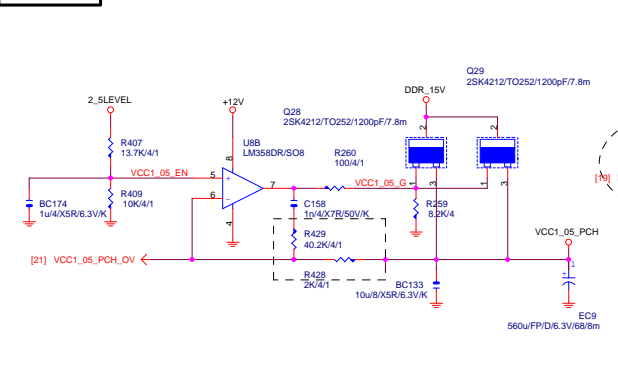
FIX ERP 5VSB DROP



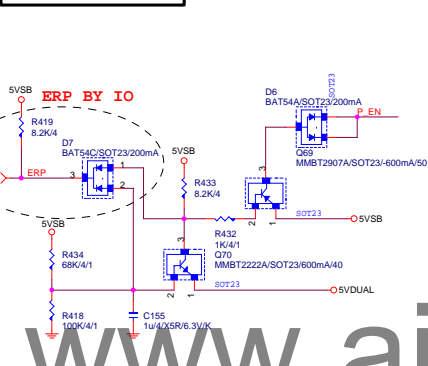
3VDUAL



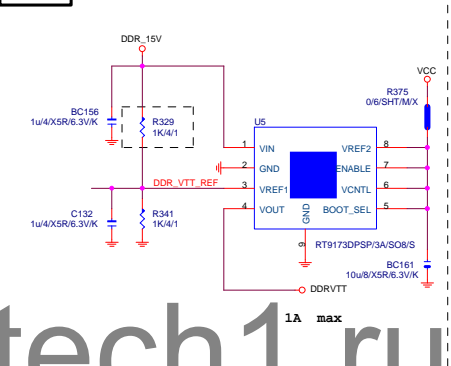
VCC1_05_PCH



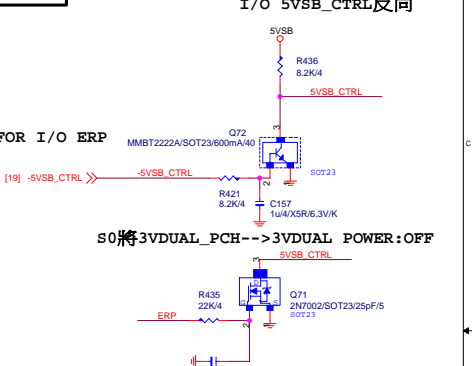
5VDUAL SHORT PROTECT



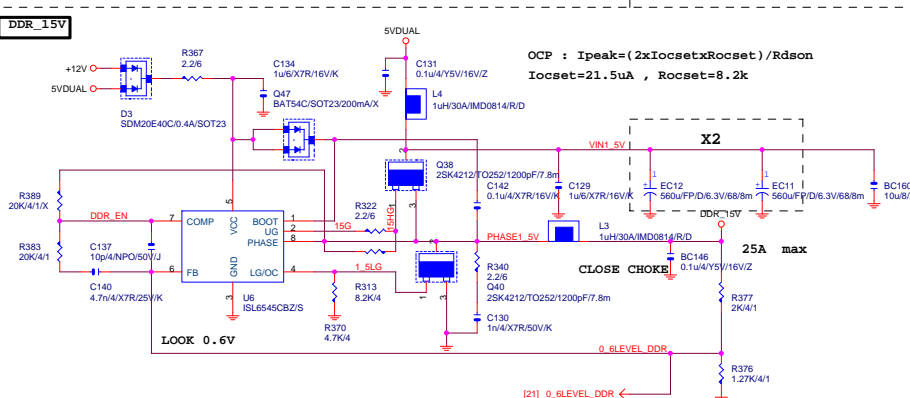
DDR_VTT



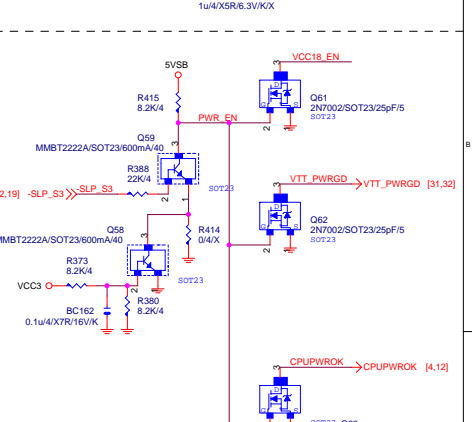
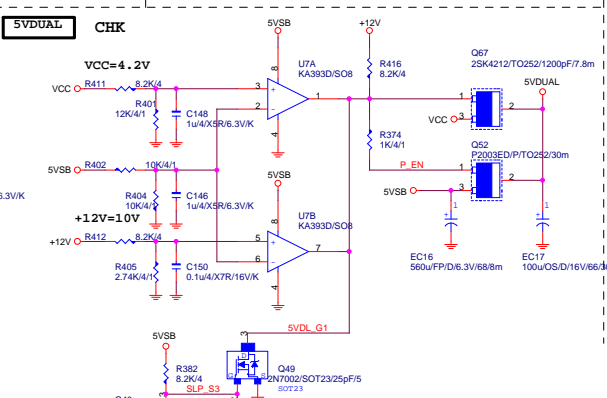
PWR_SEQ



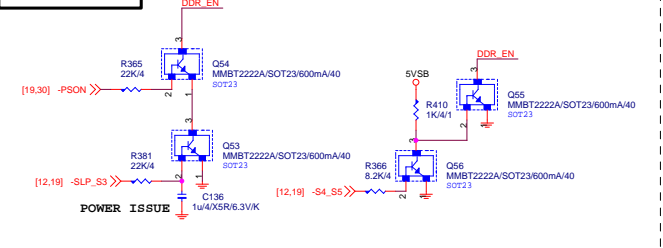
DDR_15V



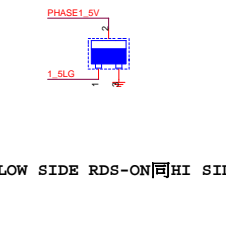
5VDUAL_CHK



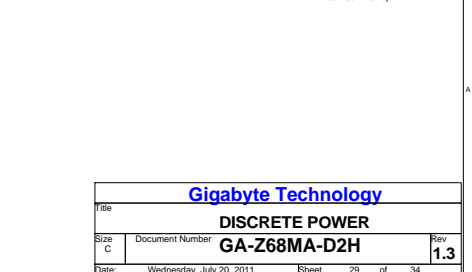
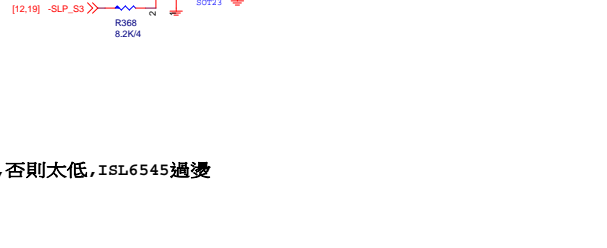
DDR_15V_PWR_SEQ



PHASE1_5V

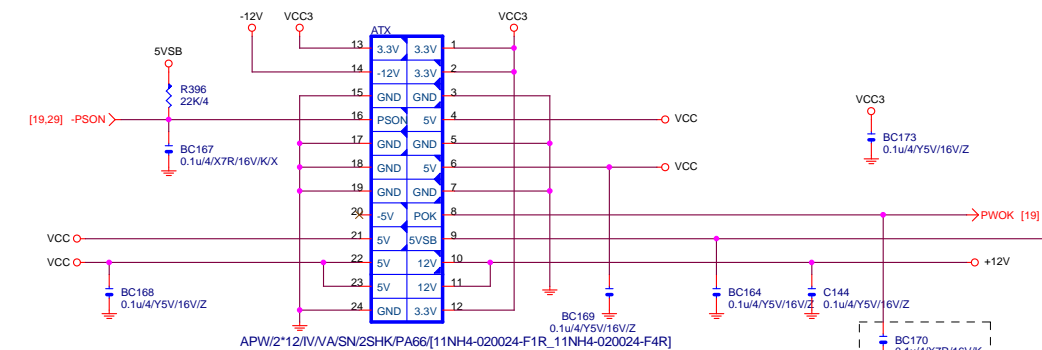


5VDUAL_CHK

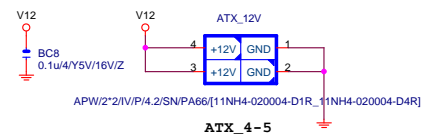


LOW SIDE RDS-ON同HI SIDE, 否則太低, ISL6545過燙

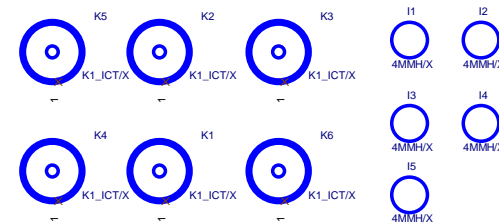
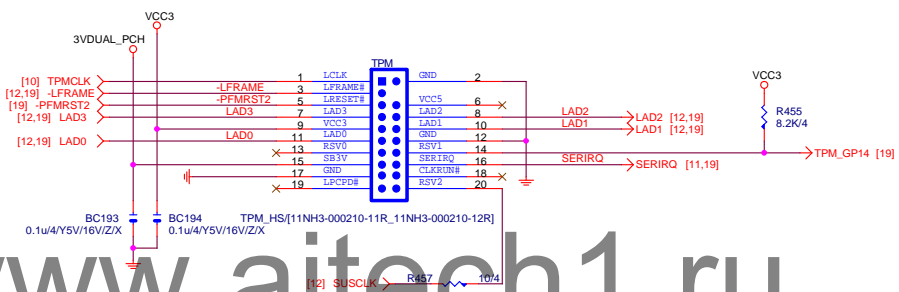
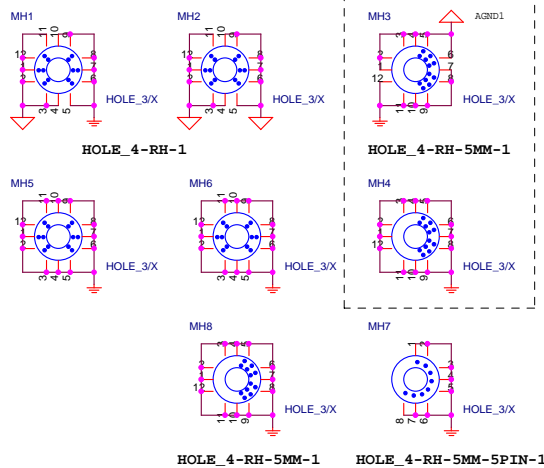
ATXX24 POWER CONNECTOR



ATXX4 POWER CONNECTOR

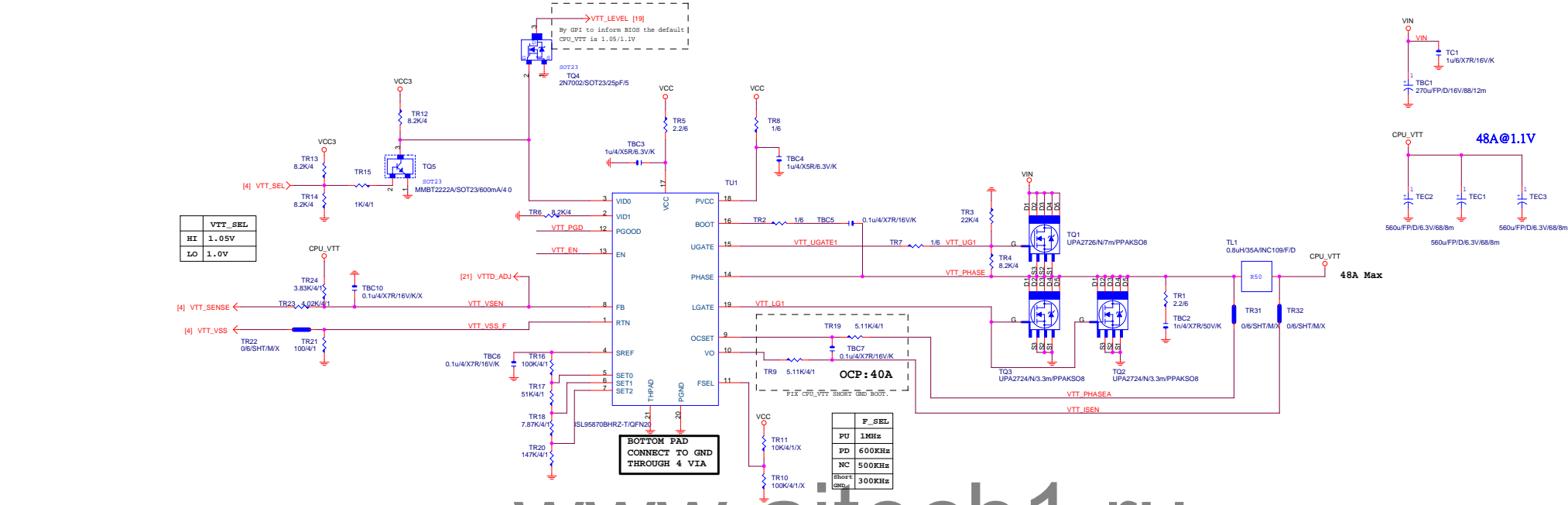


TPM



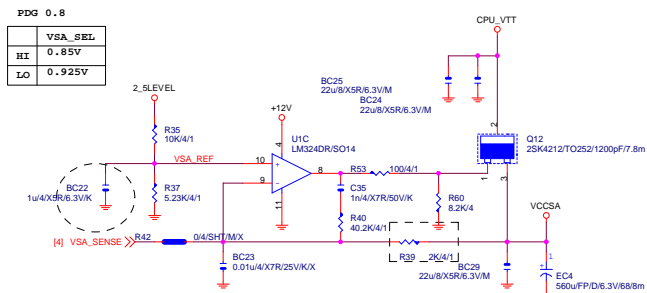
To prevent the 5VSB under loading when boot

CPU_VTT

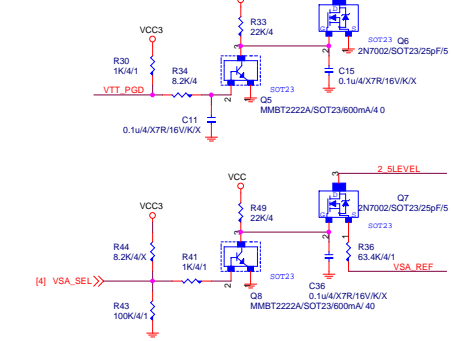


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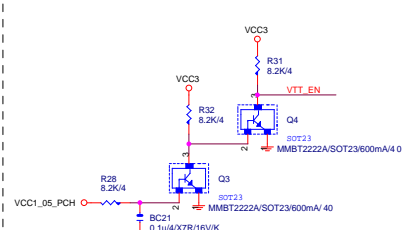
VCCSA



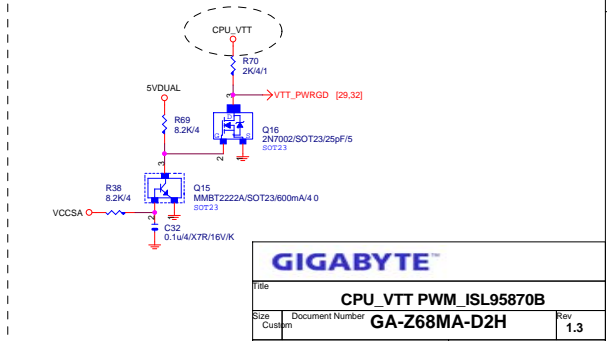
VCCSA PWR SEQ



CPU_VTT PWR SEQ



VTT_PWRGD



FIX CPU BOOT TO OS FAIL ISSUE

DBC36
1u4/XSR/6.3V/K

DR83
100/4/1

DR76
100/4/1

DR79
100/4/1

DR86
1K/4/1

DR80
51/4/1

DR77
0/4/SHT/M/X

DR257
2.2K/4/1

DR206
8.2K/4

DR55
1K/4/1

DR56
0/4/SHT/M/X

DR58
100/4/1

DR98
8.2K/4

DR214
1K/4/1

DR213
0/4/SHT/M/X

DR90
100/4/1

DR213
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DR90
100/4/1

DR213
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DR213
0/4/SHT/M/X

DR90
100/4/1

DR213
0/4/SHT/M/X

DR90
100/4/1

FOLLOW SB VALUE

DR87
24.9K/4/1

DR59
249/4/1

DR62
1.4K/4/1

DR60
1.4K/4/1

DR63
249/4/1

DR64
249/4/1

DR65
24.9K/4/1

DR66
24.9K/4/1

DR67
24.9K/4/1

DR68
24.9K/4/1

DR69
24.9K/4/1

DR70
200K/4/1

DR71
2M/4/1/X

DR72
10K/4/1

DR73
10K/4/1

DR74
10K/4/1

DR75
10K/4/1

DR76
10K/4/1

DR77
0/4/SHT/M/X

DR78
243K/4/1

DR79
100/4/1

DR80
51/4/1

DR81
1K/4/1

DR82
100K/4/1

DR83
100/4/1

DR84
24.9K/4/1

DR85
24.9K/4/1

DR86
1K/4/1

DR87
24.9K/4/1

DR88
24.9K/4/1

DR89
24.9K/4/1

FOR DVCS

DR87
24.9K/4/1

DR59
249/4/1

DR62
1.4K/4/1

DR60
1.4K/4/1

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249/4/1

DR64
249/4/1

DR65
24.9K/4/1

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24.9K/4/1

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24.9K/4/1

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51/4/1

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1K/4/1

DR82
100K/4/1

DR83
100/4/1

DR84
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DR85
24.9K/4/1

DR86
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DR87
24.9K/4/1

DR88
24.9K/4/1

DR89
24.9K/4/1

200KHZ
200KHZ
CUT6

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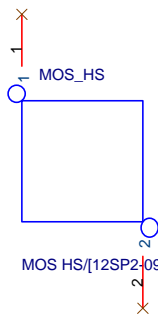
DR346
0/4/SHT/M/X

VAXG



MOS HEATSINK

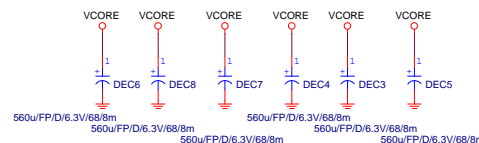
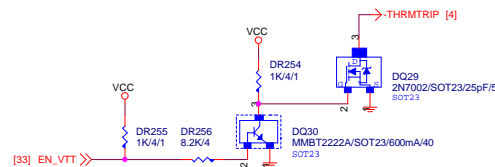
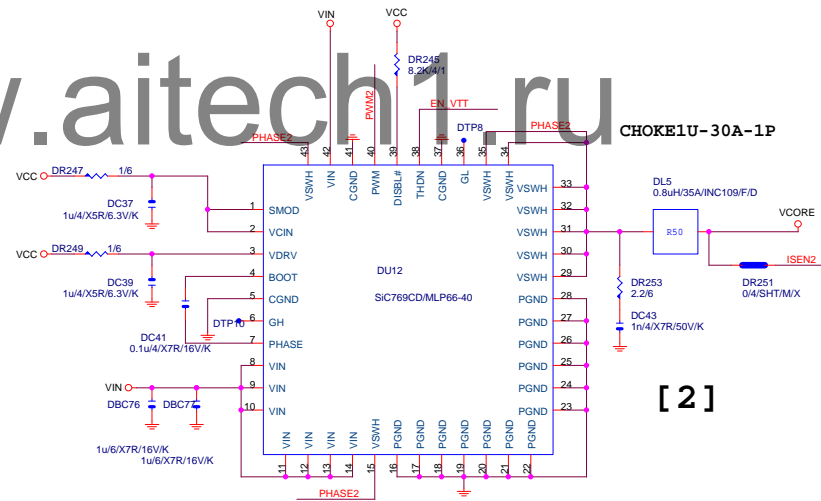
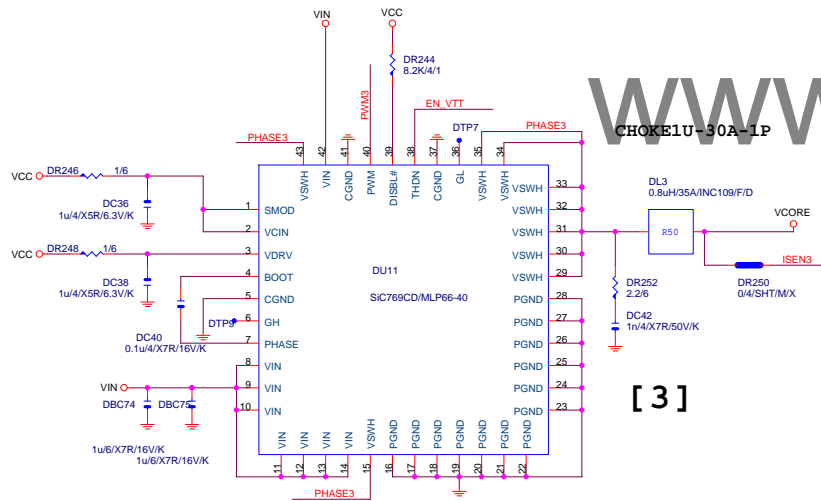
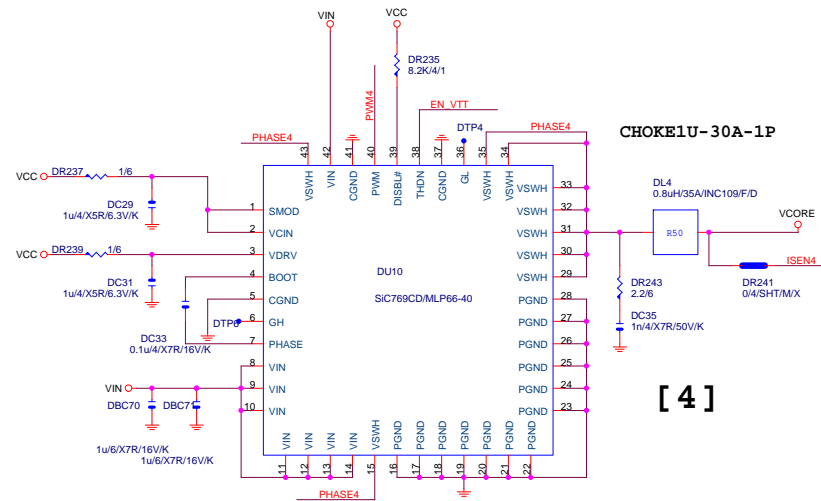
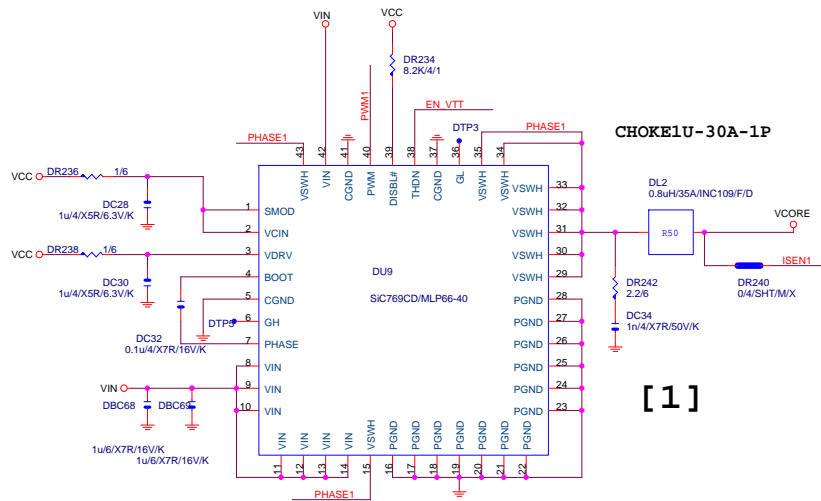
MOSHSINK-P67A-D3



PWM1 → PWM1 [32]
 PWM2 → PWM2 [32]
 PWM3 → PWM3 [32]
 PWM4 → PWM4 [32]

ISEN1 → ISEN1 [32]
 ISEN2 → ISEN2 [32]
 ISEN3 → ISEN3 [32]
 ISEN4 → ISEN4 [32]

PHASE1 → PHASE1 [32]
 PHASE2 → PHASE2 [32]
 PHASE3 → PHASE3 [32]
 PHASE4 → PHASE4 [32]



Gigabyte Technology			
File			
CPU CORE VR-3			
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Custom		Rev 1.3	
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