

Model Name: GA-X79-UP4 Rev 1.1

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA2011-DDR
05	CPU_LGA2011-CTRL_PCIE_DMI
06	CPU_LGA2011-PWR
07-08	DDR III CHANNEL A/B
09-10	DDR III CHANNEL C/D
11	PCH_SATA_GPIO_AUDIO
12	PCH_DMI_USB_PCIE_PCI
13	PCH_PWR_GND
14	PCI EXPRESS X16 SLOT_1
15	PCI EXPRESS X16 SLOT 2
16-18	PCI EXPRESS X8 SLOT 1/2
19	PCI EXPRESS X1 & PCI SLOT
20	ITE 8728 SIO
21	DUAL BIOS , TPM
22	-PROHOT,KB/MS,RUSB,COMA
23-25	VCORE IR3567
26-28	DDR CH A/B & CPUVTT IR3570*2
29	PBG CORE POWER RT8120
30-31	DISCRETE POWER
32	FP ,FUSB
33	ATX , OC
34-35	ALC898 & AUDIO JACK
36	HWM ,FAN CTRL
37	CLOCK GEN & BUFFER

SHEET TITLE

38	F_USB3_FL1009
39	R_USB3_FL1009
40	Gb LAN-INTEL 82579V
41-42	Marvell 9172 SATA 3.0-A/B
43	Marvell 9172 eSATA
44	PCH GPIO LIST

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Gigabyte Technology		
Title		
Cover Sheet		
Size	Document Number	Rev
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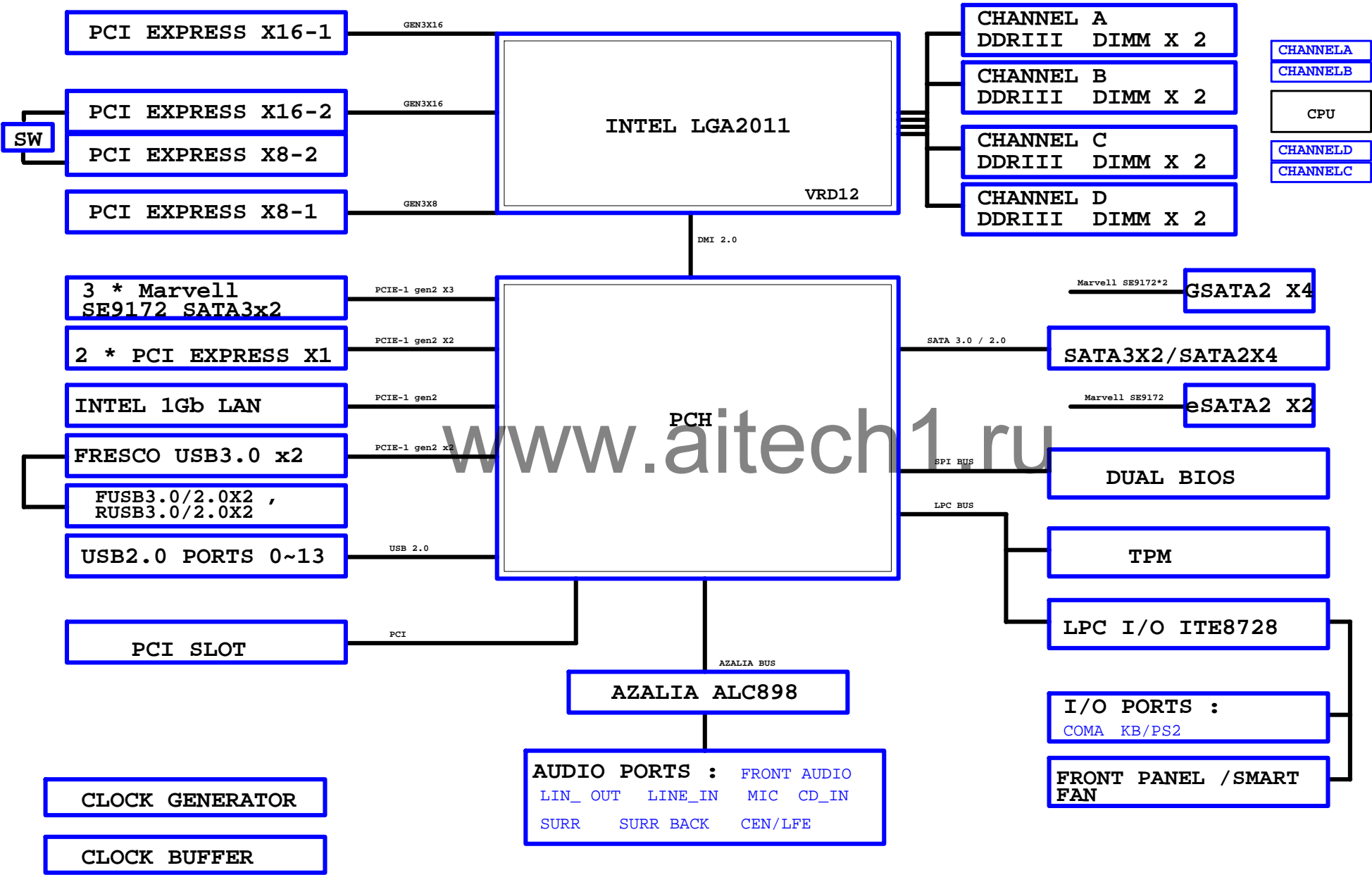
Component value change history

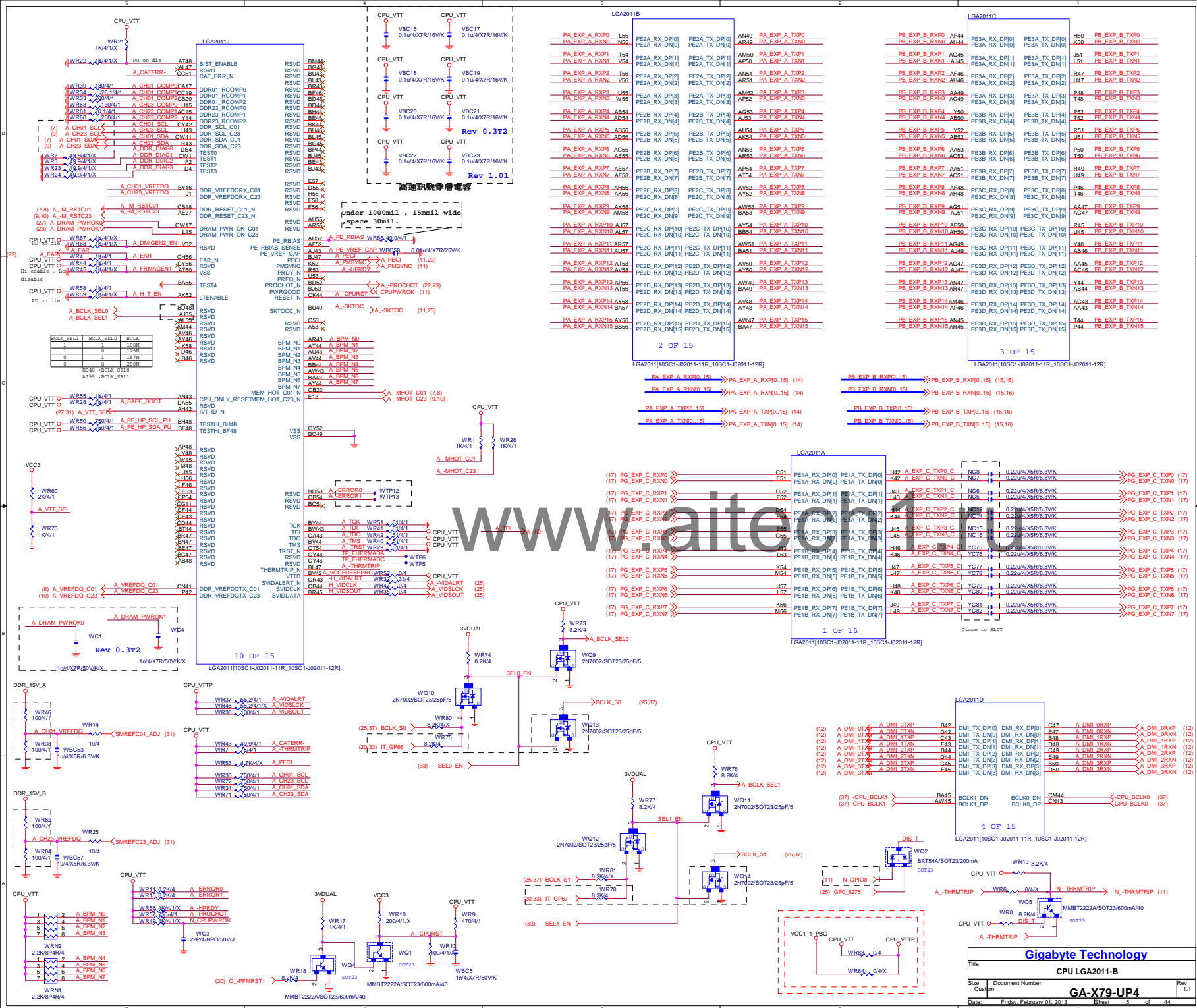
[illegible]

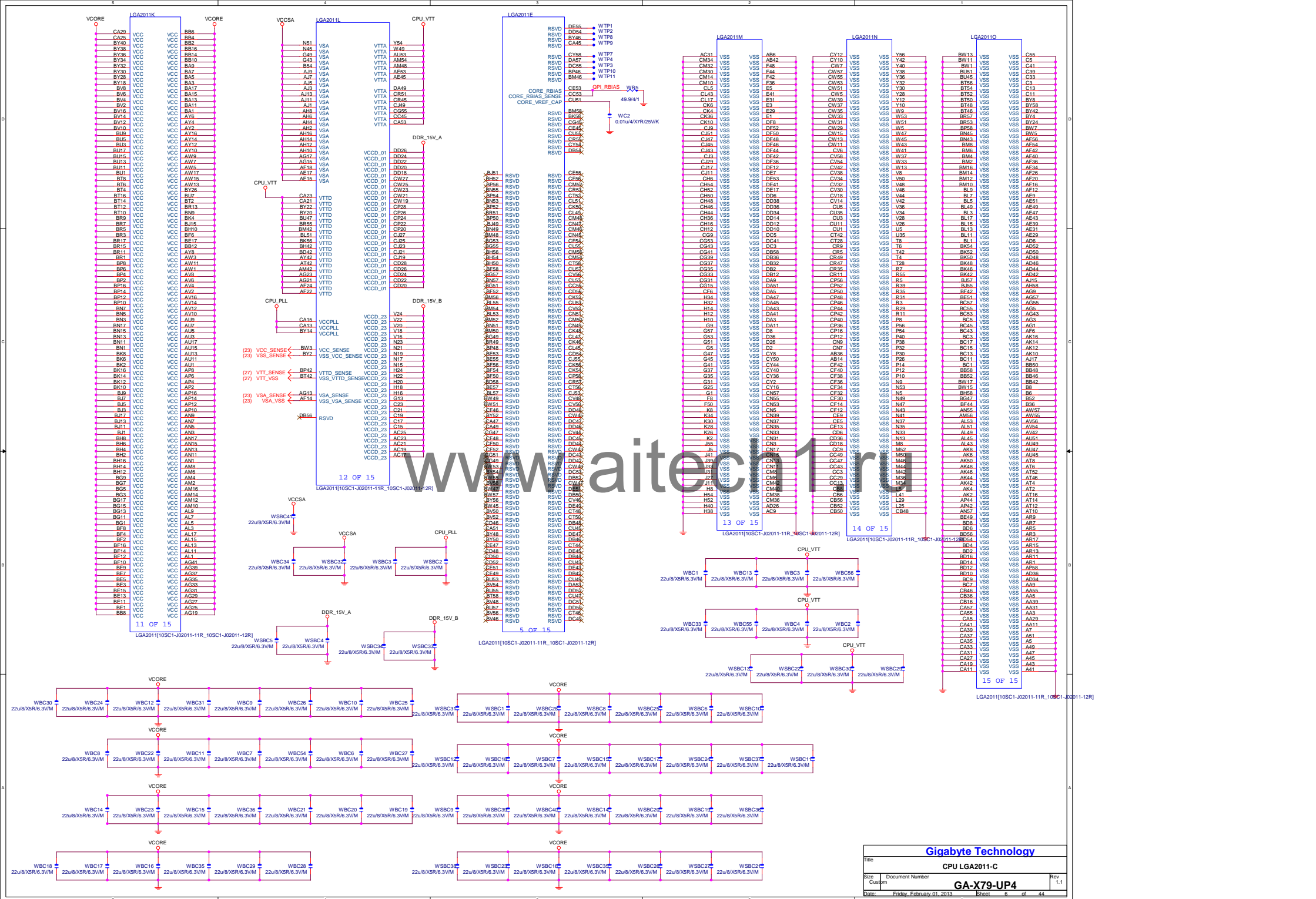
Circuit or PCB layout change

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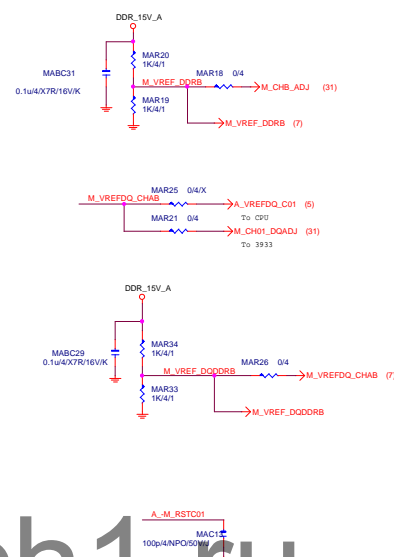
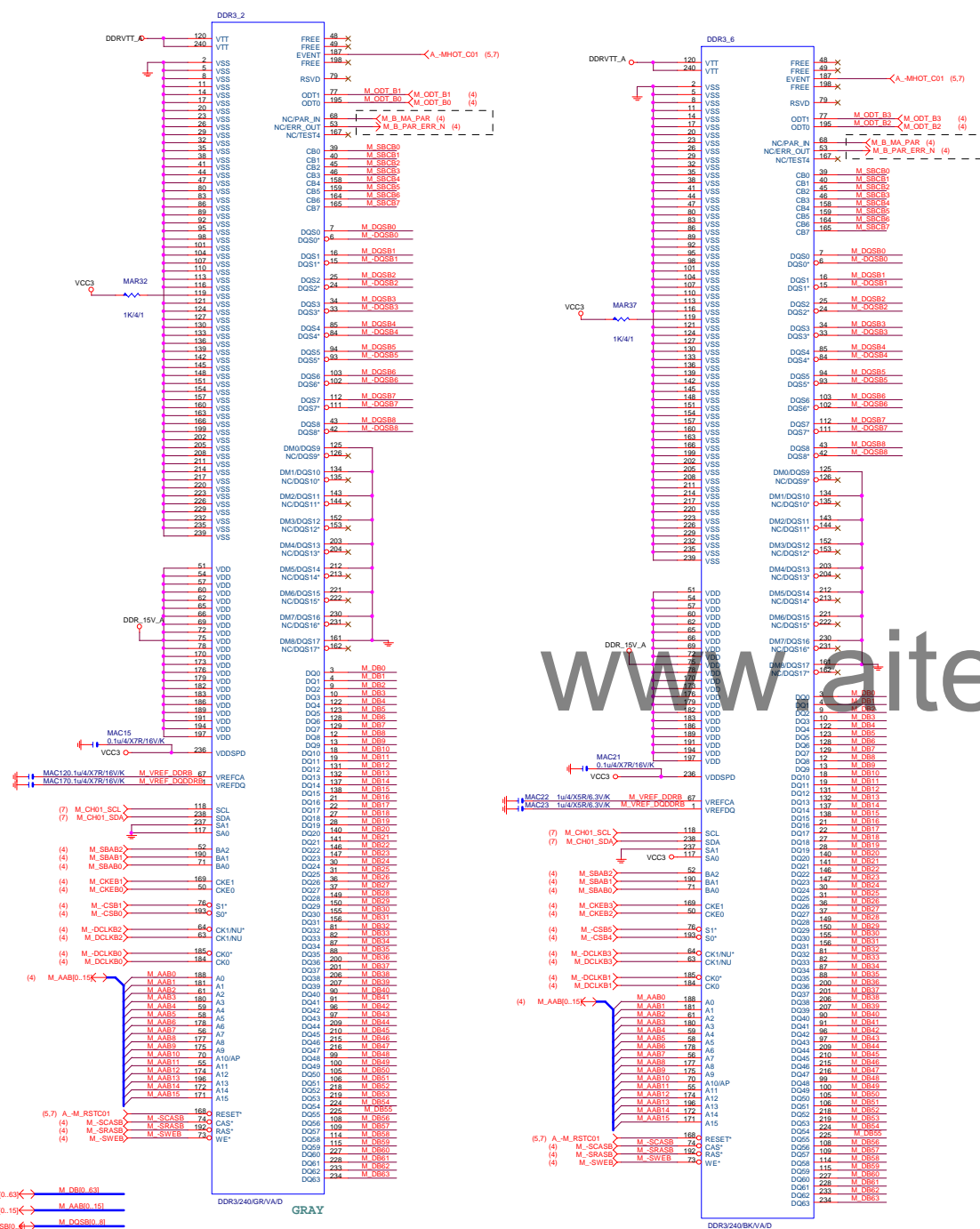
BLOCK DIAGRAM







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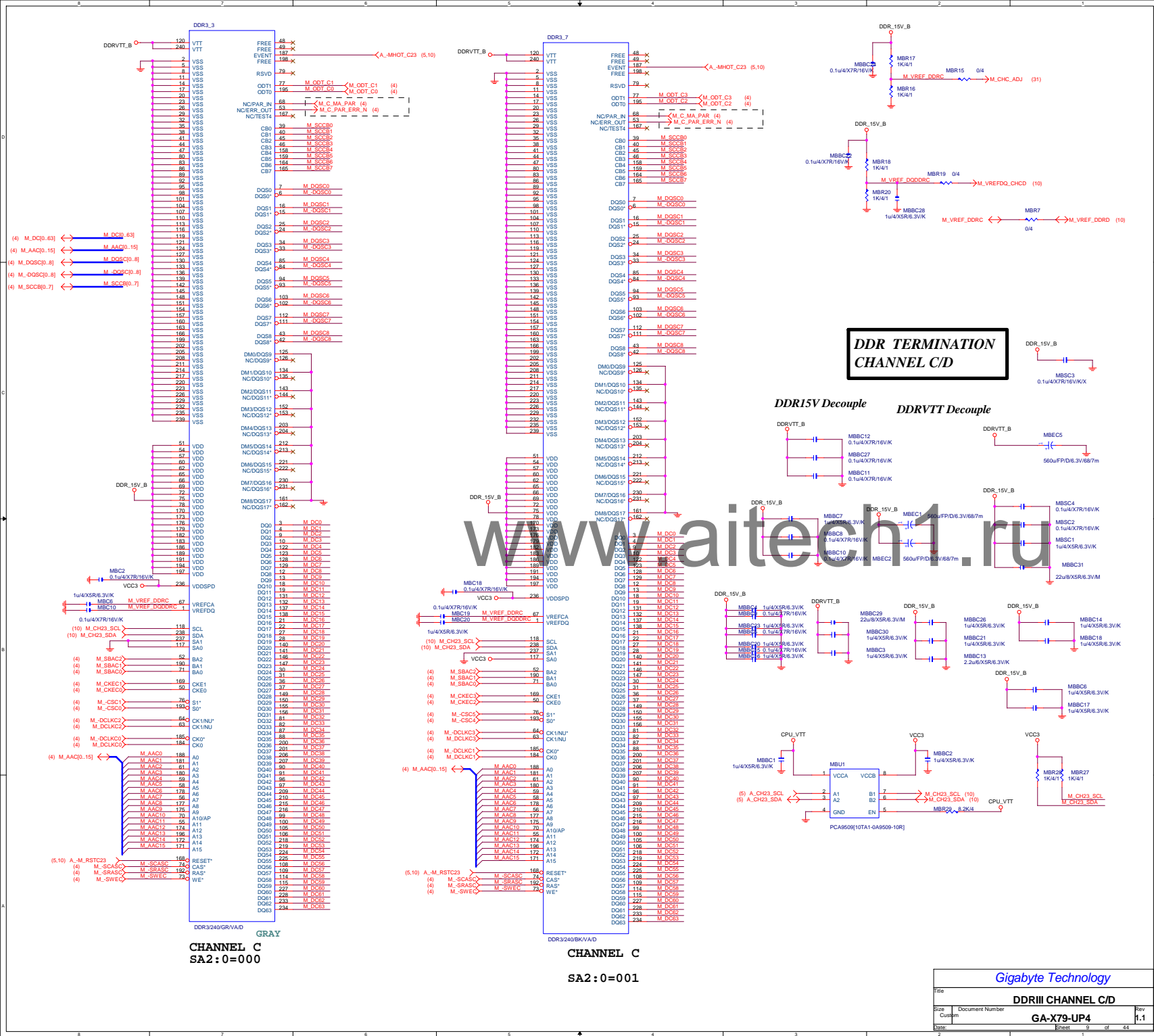


- (4) M_DB0_63<-> M_DB0_63<->
- (4) M_AA0_15<-> M_AA0_15<->
- (4) M_DQS0_0<-> M_DQS0_0<->
- (4) M_DQS0_0<-> M_DQS0_0<->
- (4) M_SBC0_0<-> M_SBC0_0<->

CHANNEL B
CHANNEL B
SA2:0=100

CHANNEL B
SA2:0=101

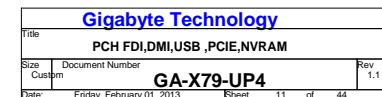
Gigabyte Technology		
DDR3 CHANNEL A/B		
File	Document Number	Rev
GA-X79-UP4	GA-X79-UP4	1.1
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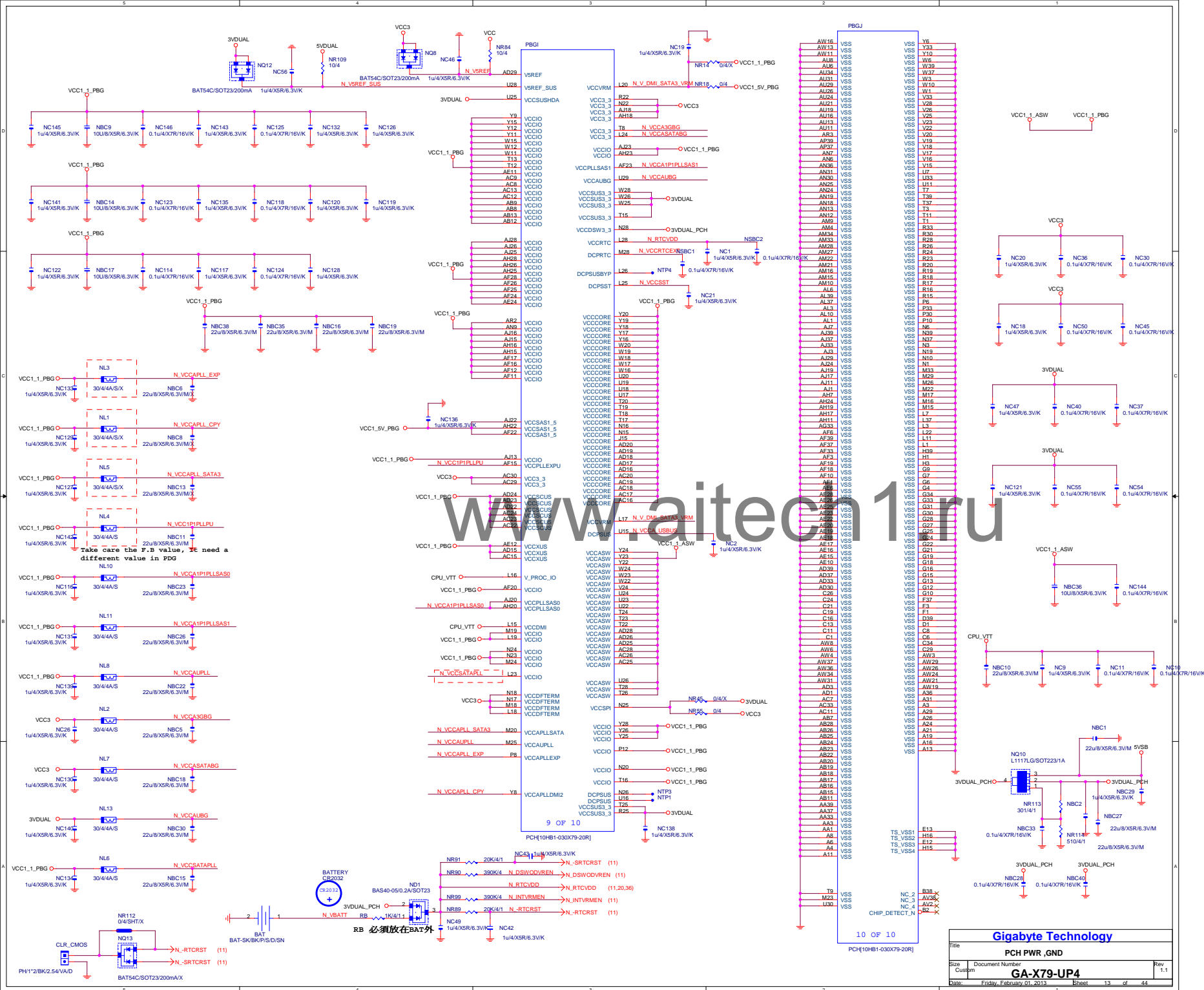


CHANNEL C
SA2:0=000

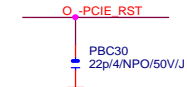
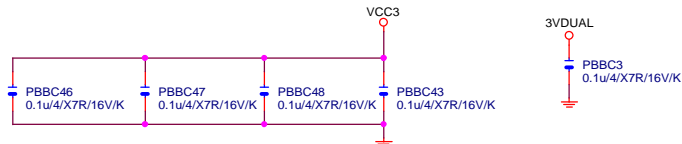
CHANNEL C
SA2:0=001

Gigabyte Technology		
Title	DDR3 CHANNEL C/D	
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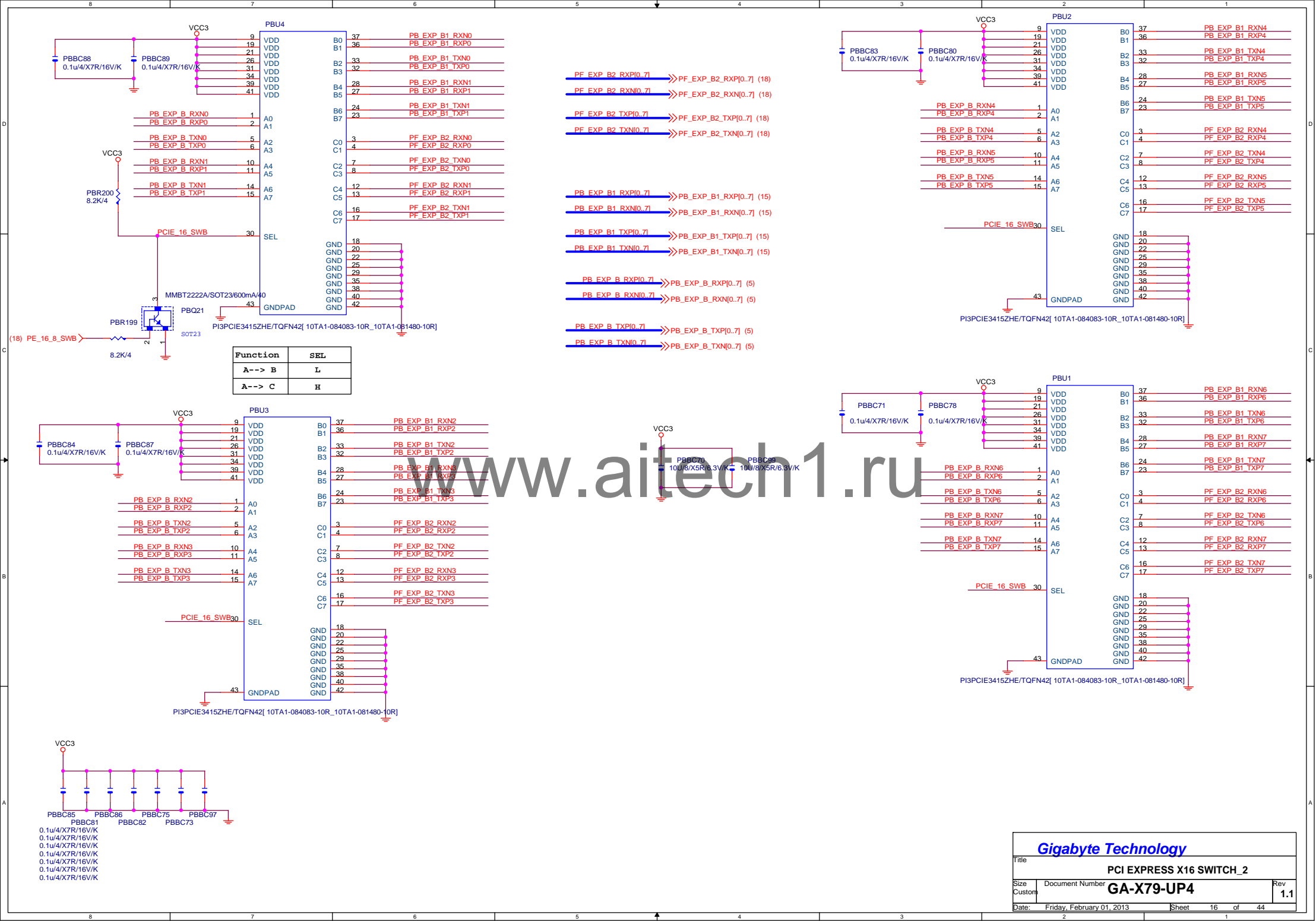


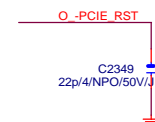


PCIEX16_2 3GIO_*16



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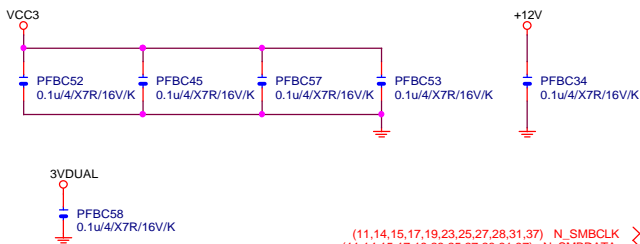
PCI EXPRESS X 8 PORT

GA-X79-UP4

1.1

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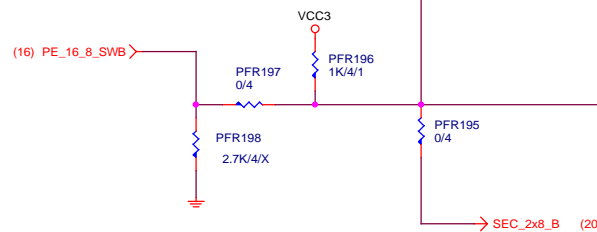
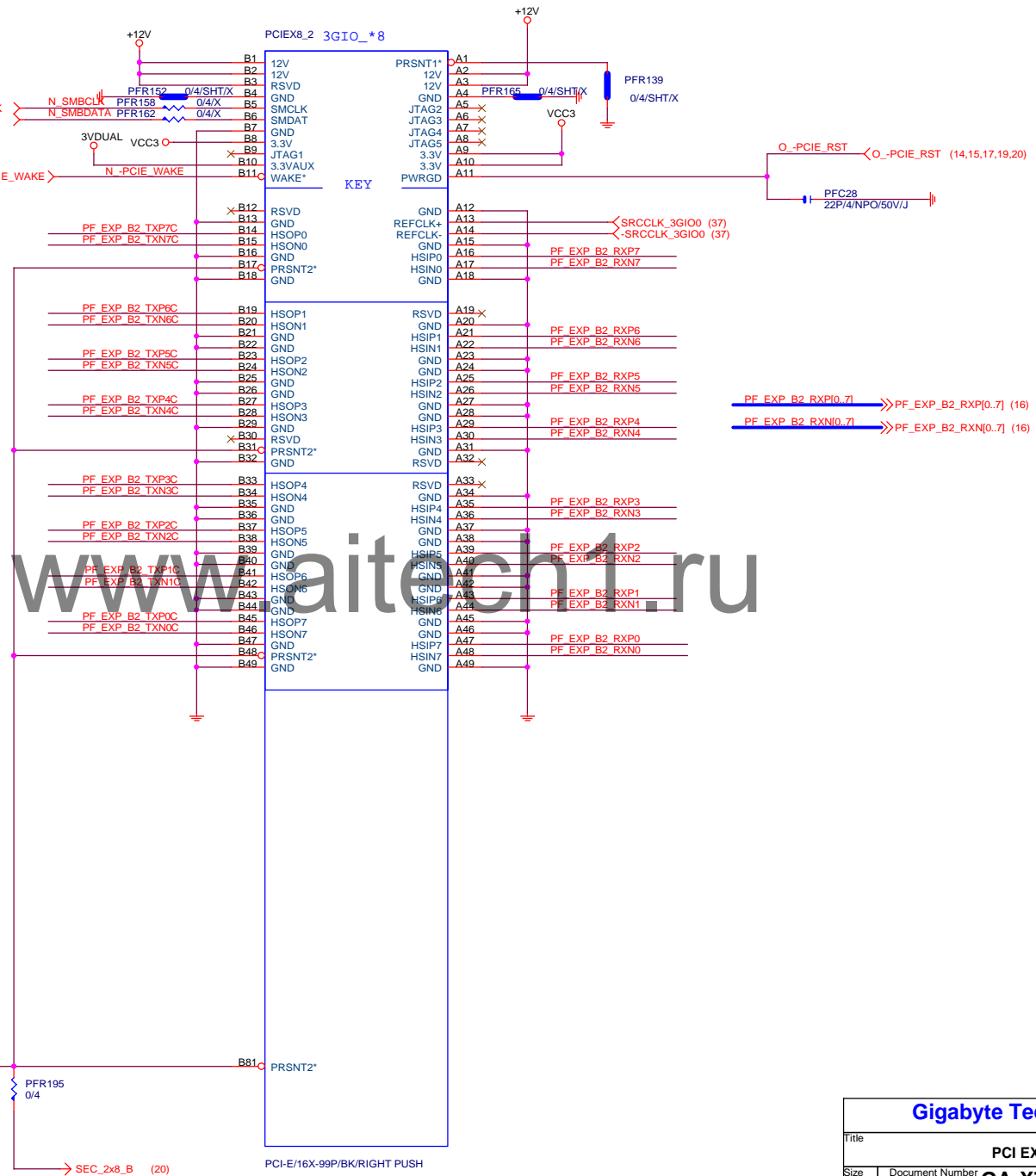
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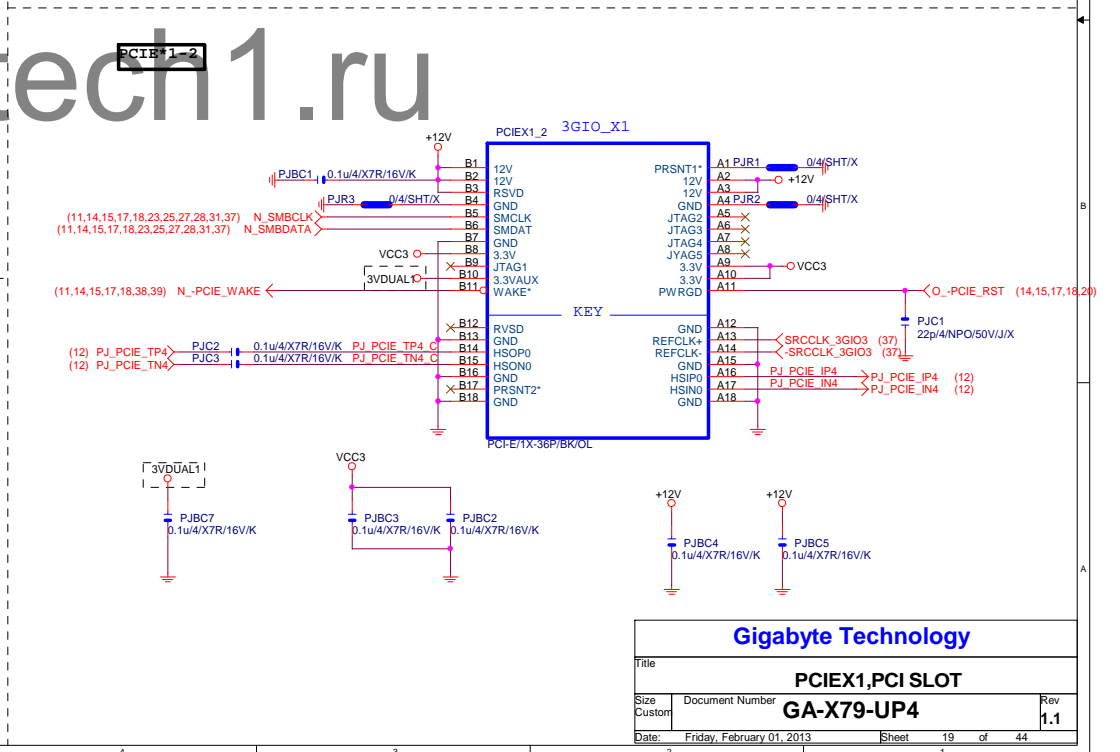
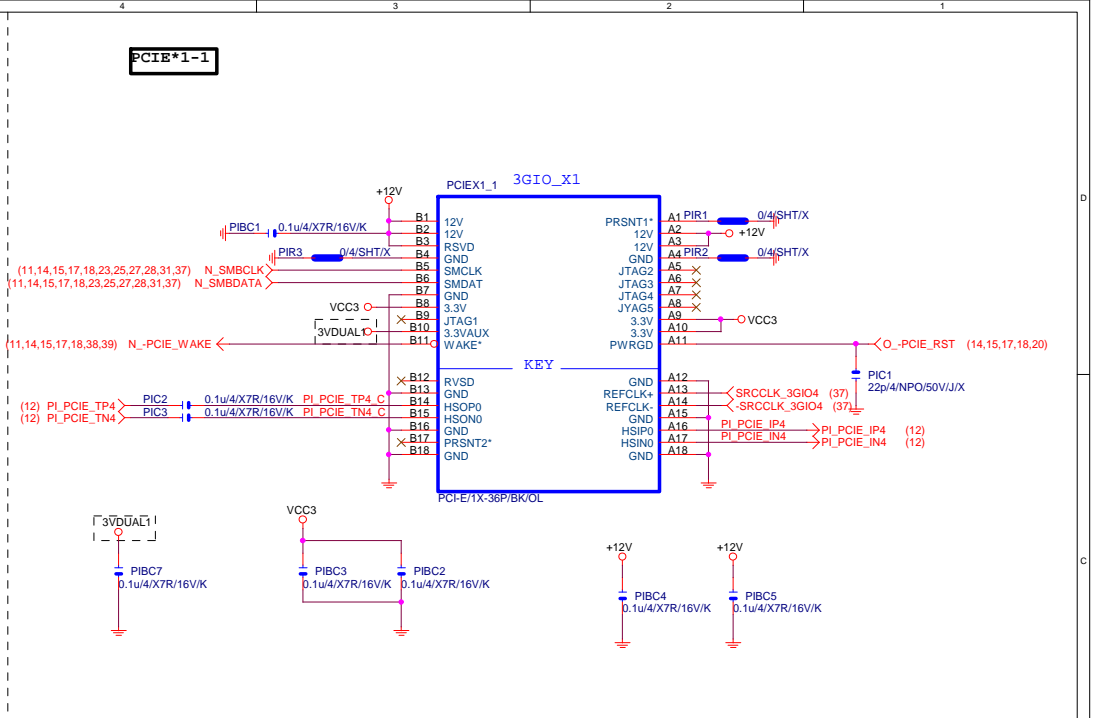


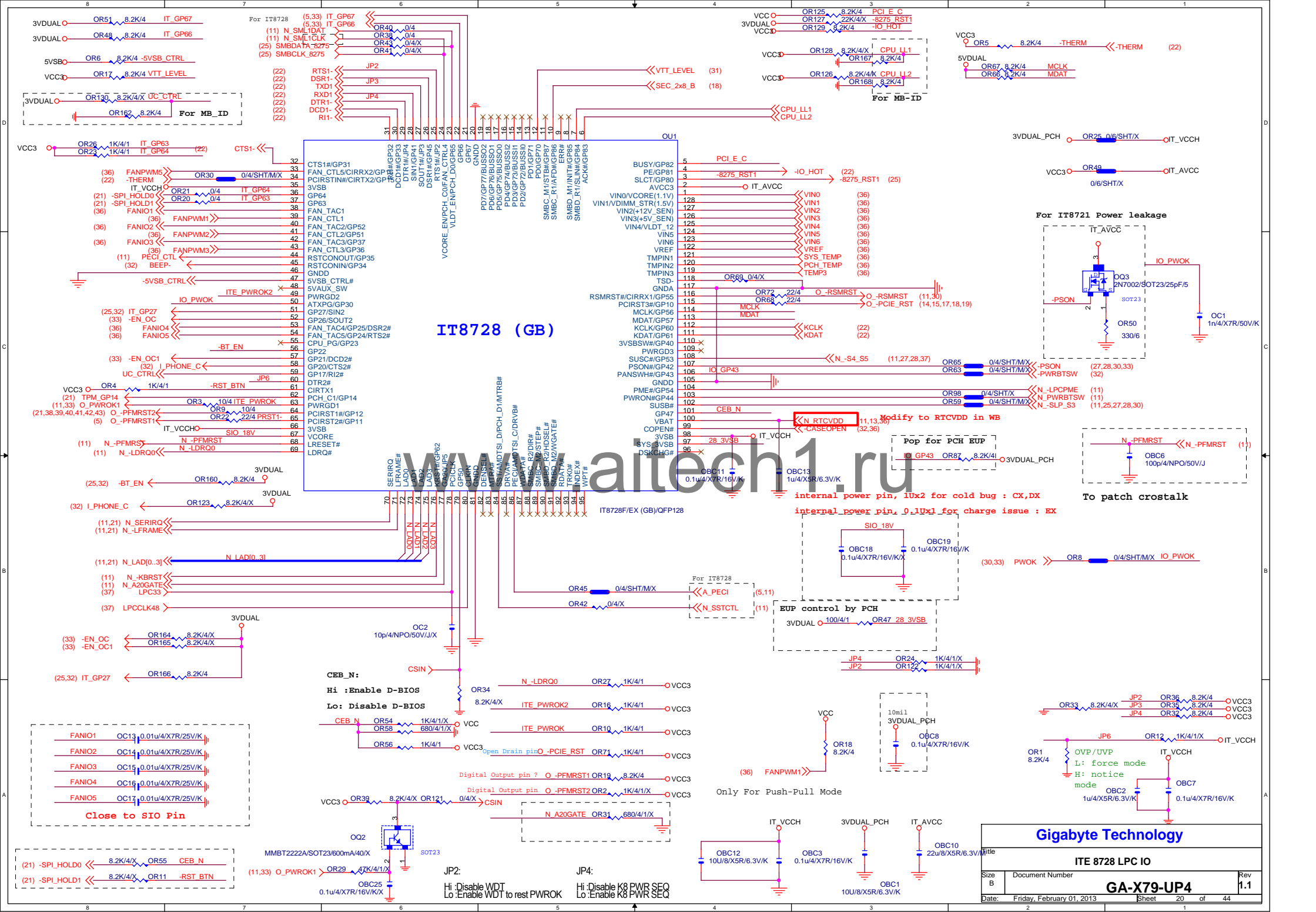
(11,14,15,17,19,23,25,27,28,31,37) N_SMBCLK
(11,14,15,17,19,23,25,27,28,31,37) N_SMBDATA
(11,14,15,17,19,38,39) N_-PCIE_WAKE

PF_EXP_B2_TXP[0..7] >> PF_EXP_B2_TXP[0..7] (16)
PF_EXP_B2_TXN[0..7] >> PF_EXP_B2_TXN[0..7] (16)

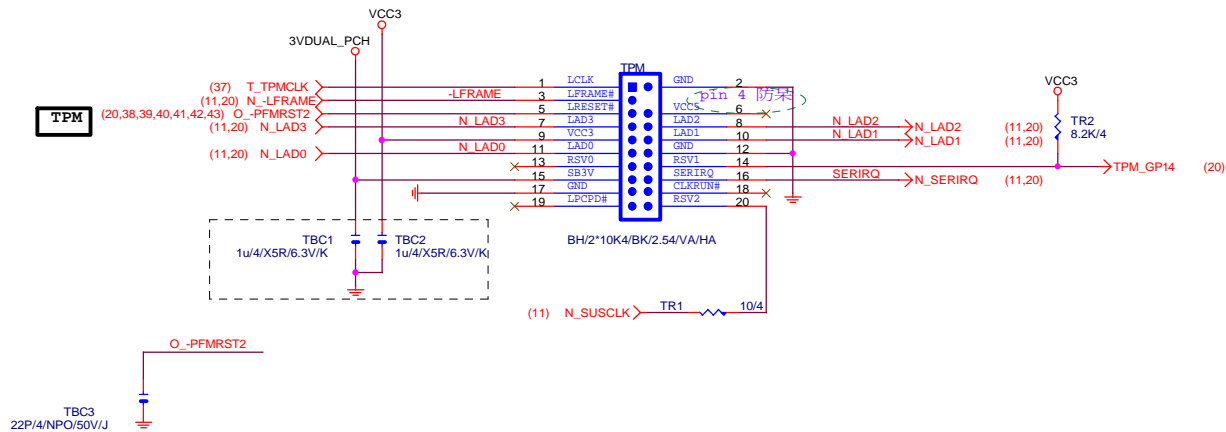
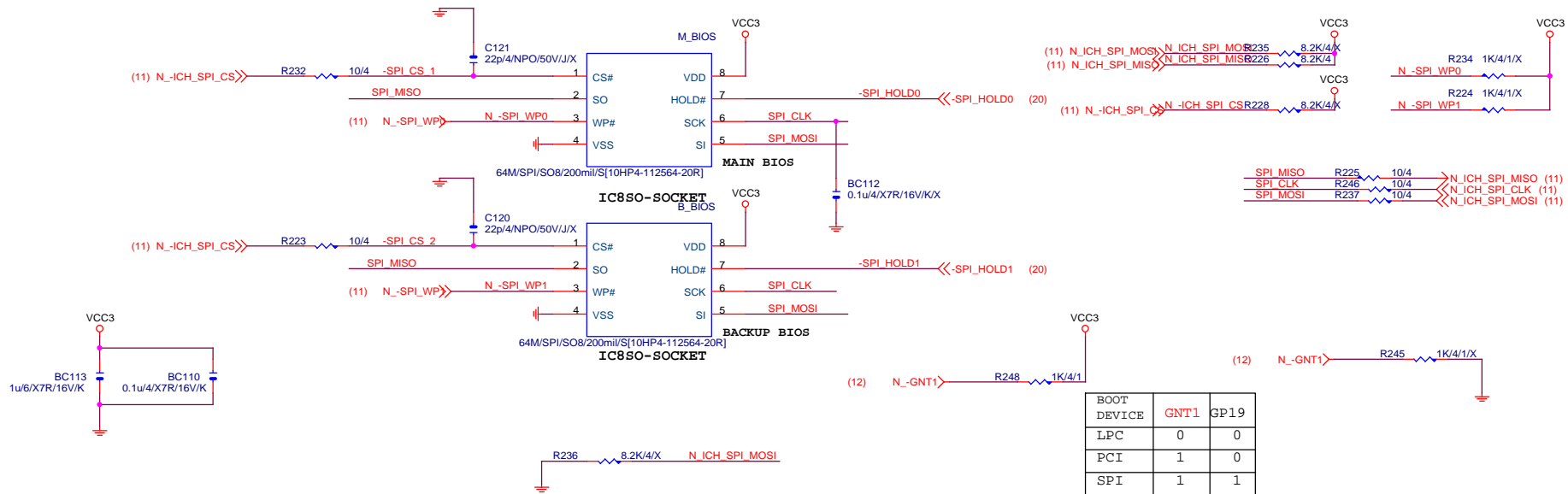
PF_EXP_B2_TXP0	PFC79	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP0C
PF_EXP_B2_TXN0	PFC81	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN0C
PF_EXP_B2_TXP1	PFC73	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP1C
PF_EXP_B2_TXN1	PFC76	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN1C
PF_EXP_B2_TXP2	PFC67	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP2C
PF_EXP_B2_TXN2	PFC69	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN2C
PF_EXP_B2_TXP3	PFC61	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP3C
PF_EXP_B2_TXN3	PFC63	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN3C
PF_EXP_B2_TXP4	PFC55	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP4C
PF_EXP_B2_TXN4	PFC57	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN4C
PF_EXP_B2_TXP5	PFC49	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP5C
PF_EXP_B2_TXN5	PFC51	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN5C
PF_EXP_B2_TXP6	PFC42	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP6C
PF_EXP_B2_TXN6	PFC45	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN6C
PF_EXP_B2_TXP7	PFC34	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXP7C
PF_EXP_B2_TXN7	PFC36	0.22u/4/X5R/6.3V/K	PF_EXP_B2_TXN7C



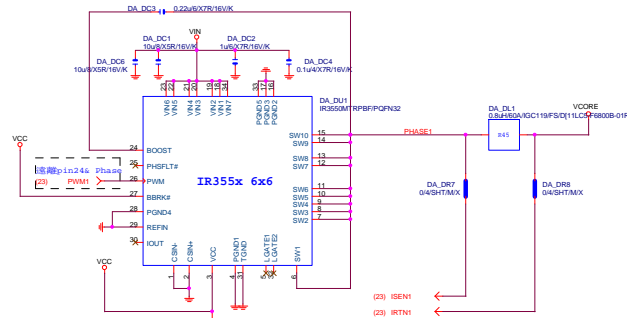




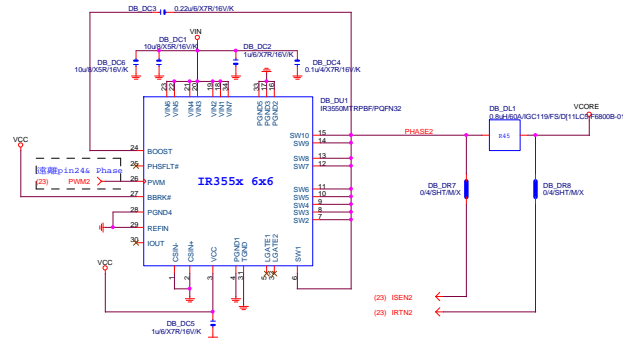
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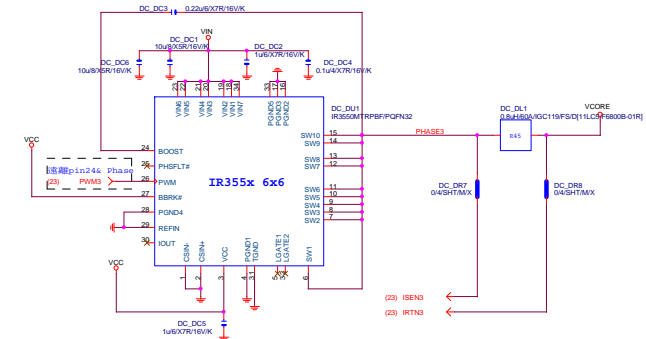
VCORE-PHASE1



VCORE-PHASE2

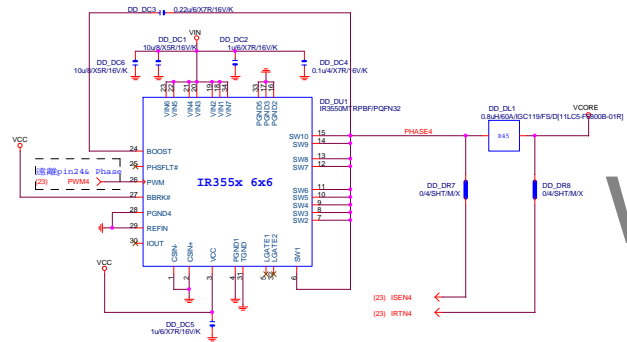


VCORE-PHASE3

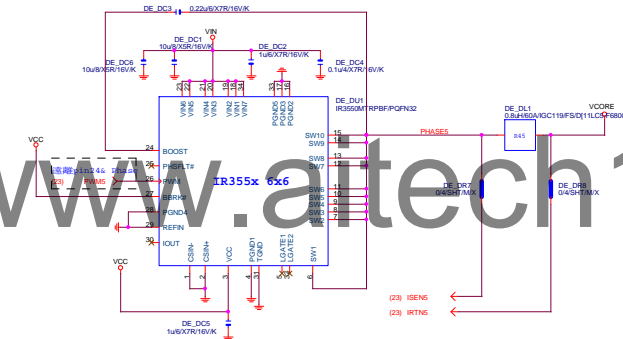


Choke need change to correct parts : 0.8u/60A

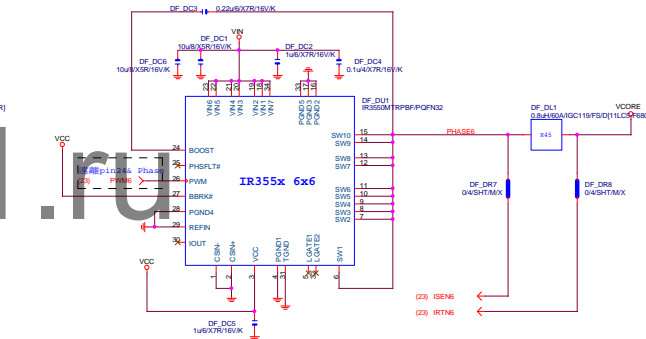
VCORE-PHASE4



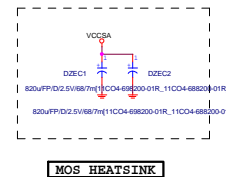
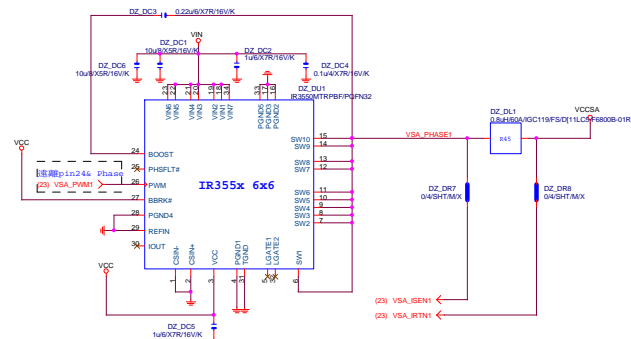
VCORE-PHASE5



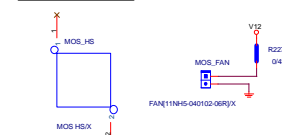
VCORE-PHASE6



VSA-PHASE



MOS HEATSINK



Close to Vcore
output inductor

MAR_MOAT

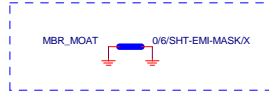
should be routed as
differential pair,
7mil width,8mil
spacing

For power sequence require

A_VTT_SEL	
HI	1.05V (SNB)
LO	1.0V(IVB)

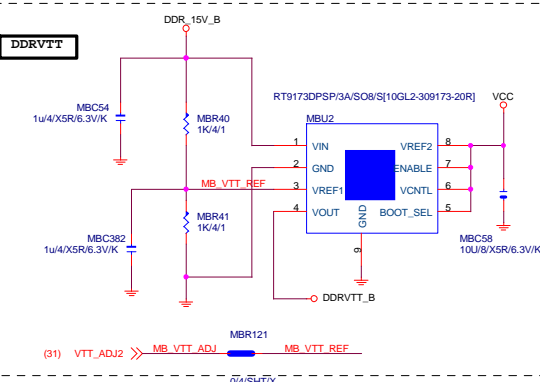
(6,31) A_VTT_SEL ← MAR134 8.2K/4
1.05V / 1.1V
select by
CPU

GIGABYTE™		
Title DDR_A& CPU_VTT POWER IR3570		
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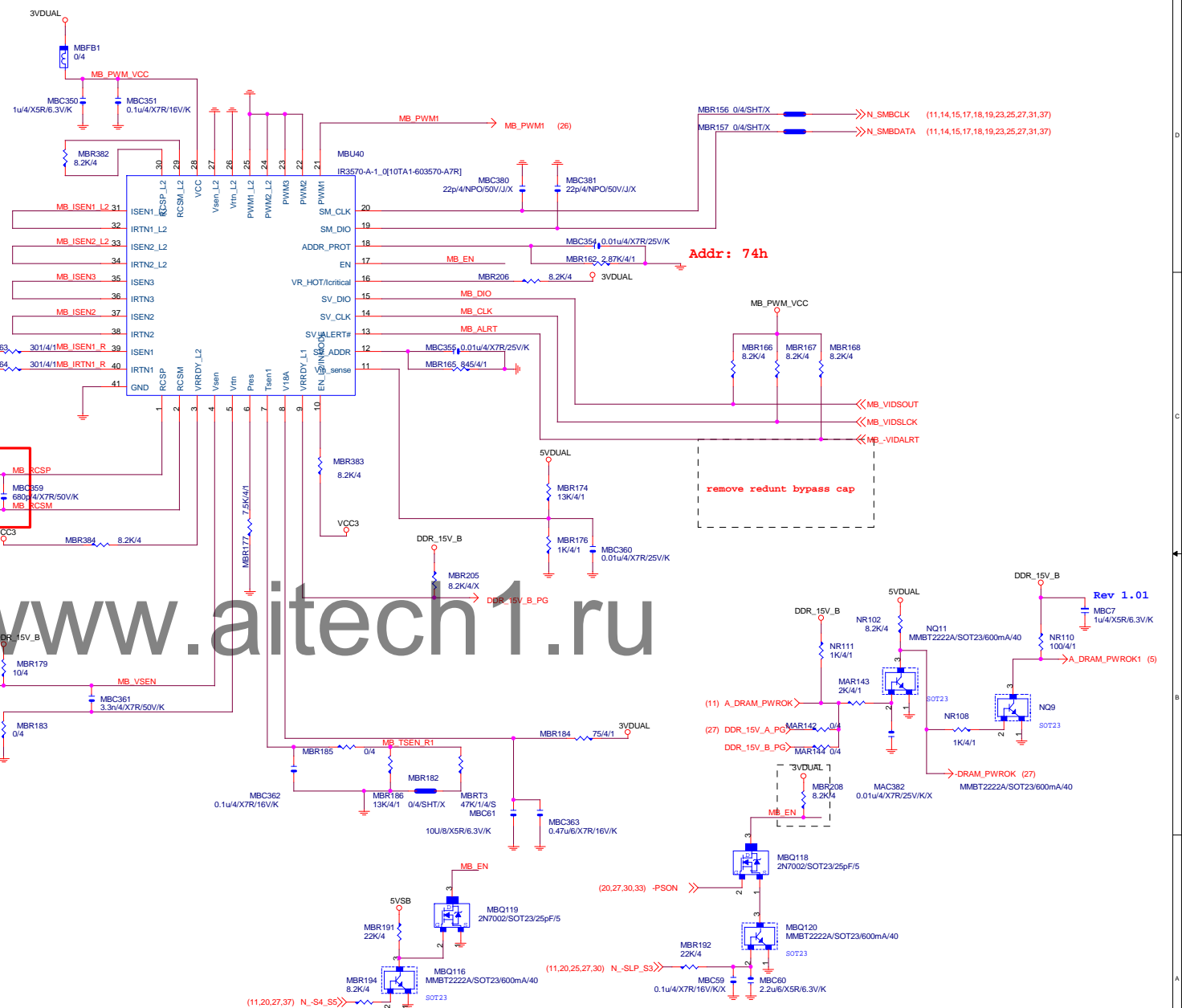


Close to Vcore output inductor

should be routed as differential pair, 7mil width, 8mil spacing



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POWER ISSUE

GIGABYTE™			
Title			
DDR POWER_B IR3570			
Size	Document Number	Rev	
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PBG_1.1V

(30) V_PCH_EN

VCC1_05PHASE

NR132
20K/4/1/X

NR118
13K/4/1

NC58
3.3n/4/X7R/50V/K

NC57
22p/4/NPO/50V/J

NR133
0/4/X

NR134
0/4

VREF IS 0.8V

NR117
0/4S/X

VCC1_05_PCH_ADJ (31)

NR115
2.2/6/X

NR116
2.2/6

NBC34
1u/6/X7R/16V/K

NQ18
BAT54C/SOT23/200mA/X

OCF: 26A

NR96
8.2K/4/1

OCF :
Rocset=(Iocp*Lgate,rdson)/Iocset
Iocset=10uA

PBG_BOOT

VCC1_05U_G

VCC1_05L_G

NC51
0.1u/6/X7R/25V/K

NR71
2.2/6

NC44
2.2n/4/X7R/50V/K

CLOSE CHOKE

NL9
1.2uH/20A/HNC0909/F/NM/D

NBC20
0.1u/4/Y5V/16V/Z

VCC1_1_PBG

DEF=1.1V

NR135
470/4/1

NBC31
33p/4/NPO/50V/J

NRF_PCH1
499/4/1

NRF_PCH2
1.3K/4/1

VCC3

NEC7
560u/FP/D/6.3V/68/7m

NL12
1.2uH/20A/HNC0909/F/NM/D

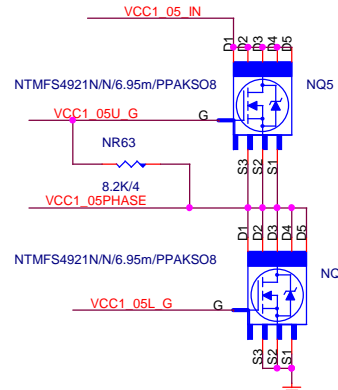
NC41
1u/4/X7R/16V/K

VCC1_05_IN

NBC21
22u/8/X5R/6.3V/M

NC32
0.1u/4/X7R/16V/K

NEC2
560u/FP/D/6.3V/68/7m



VCC1_1_PBG 20Amp

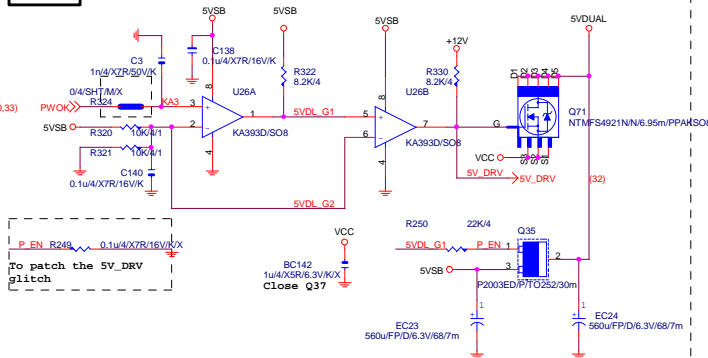
NEC5
560u/FP/D/6.3V/68/7m

NEC1
560u/FP/D/6.3V/68/7m

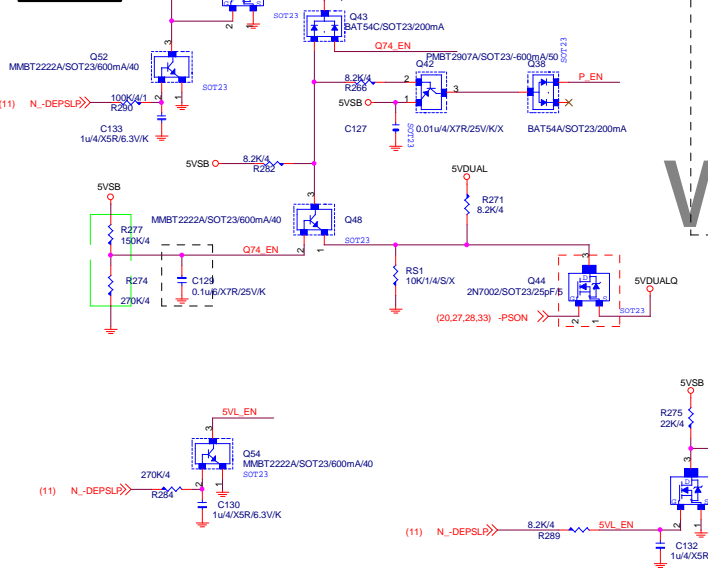
Gigabyte Technology

Title		
ISL6545 PCH		
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GA-X79-UP4		
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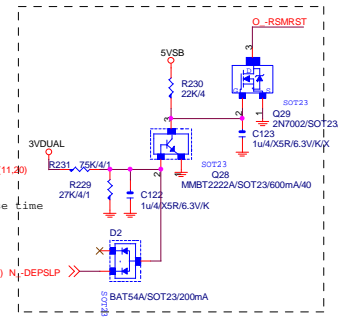
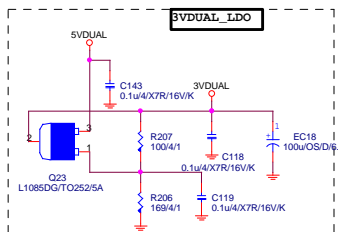
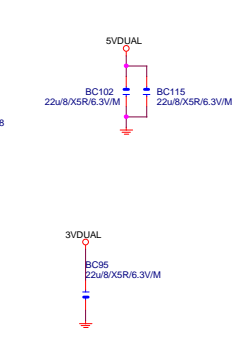
5VDUAL



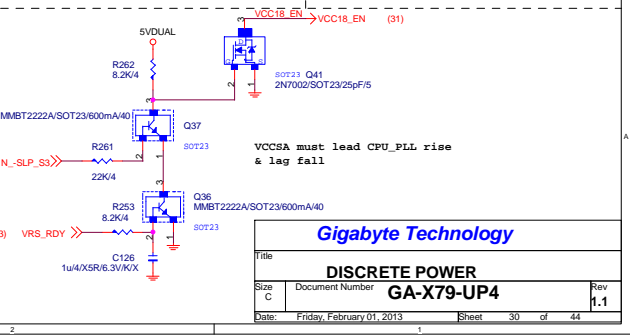
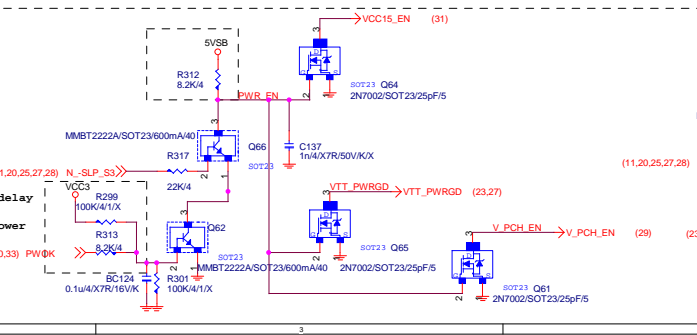
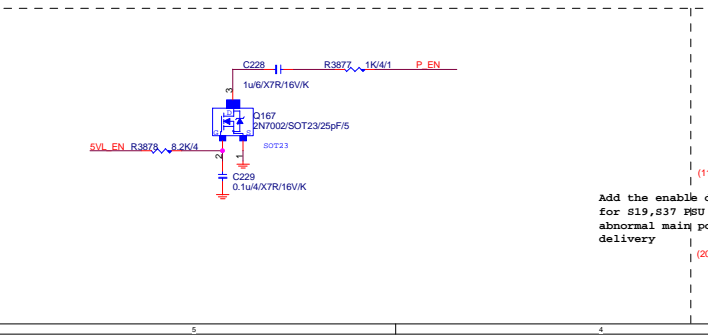
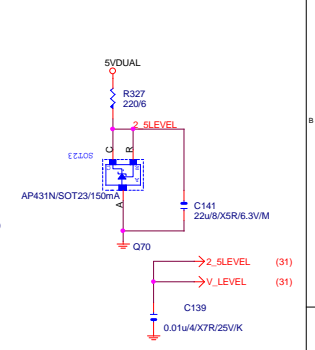
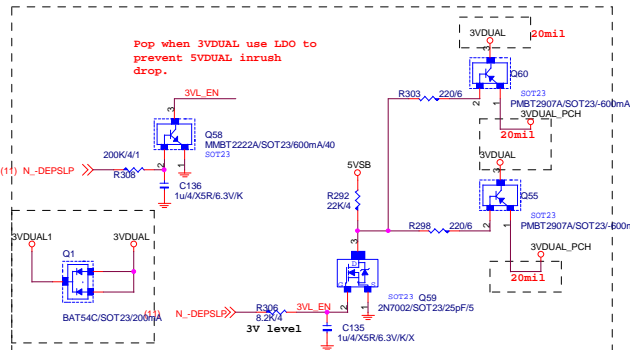
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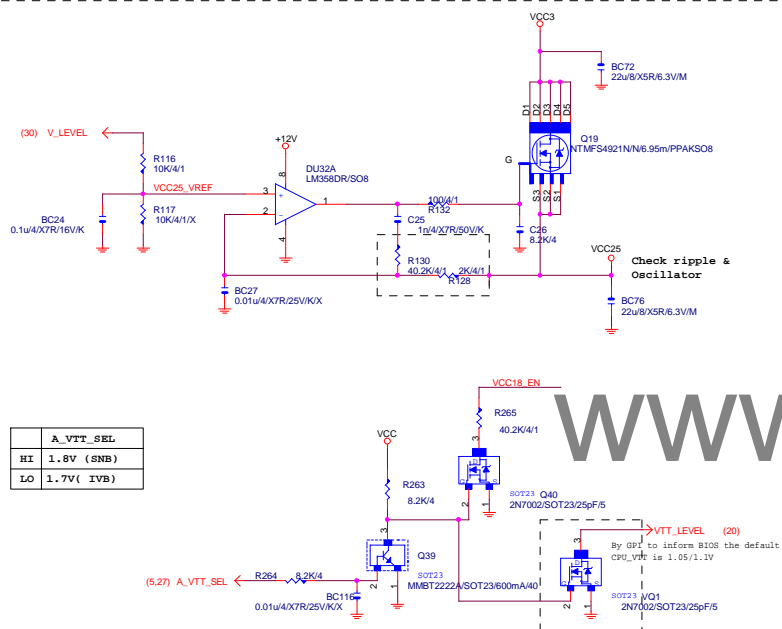
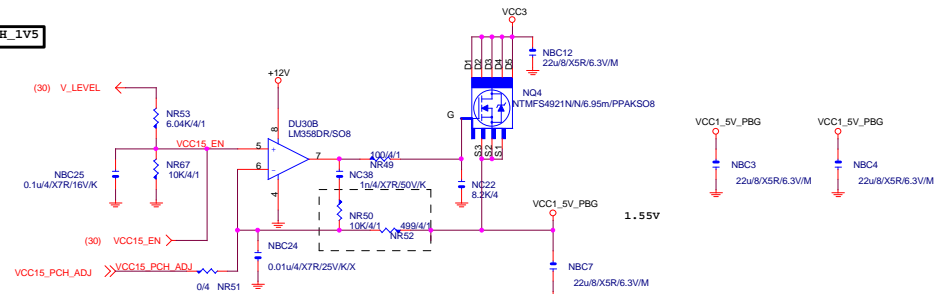
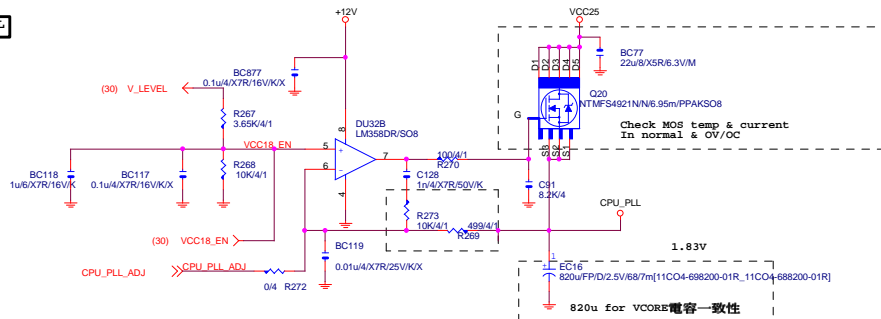


3VDUAL

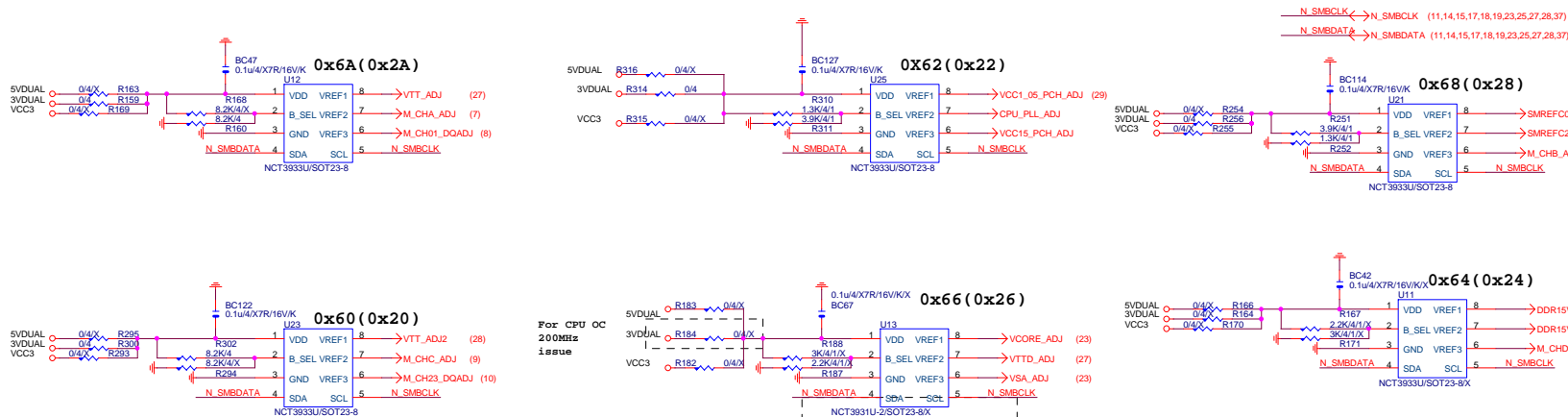
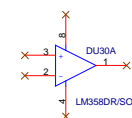


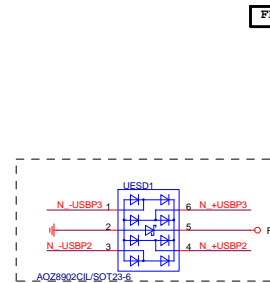
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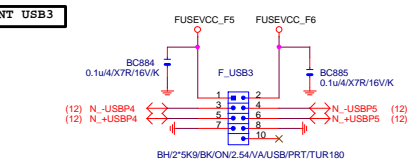
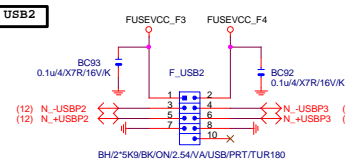


	A_VTT_SEL
HI	1.8V (SNB)
LO	1.7V(IVB)

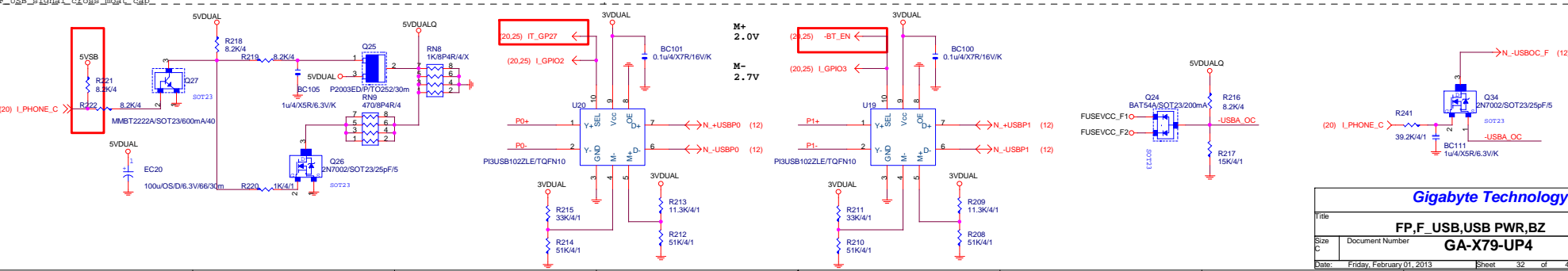
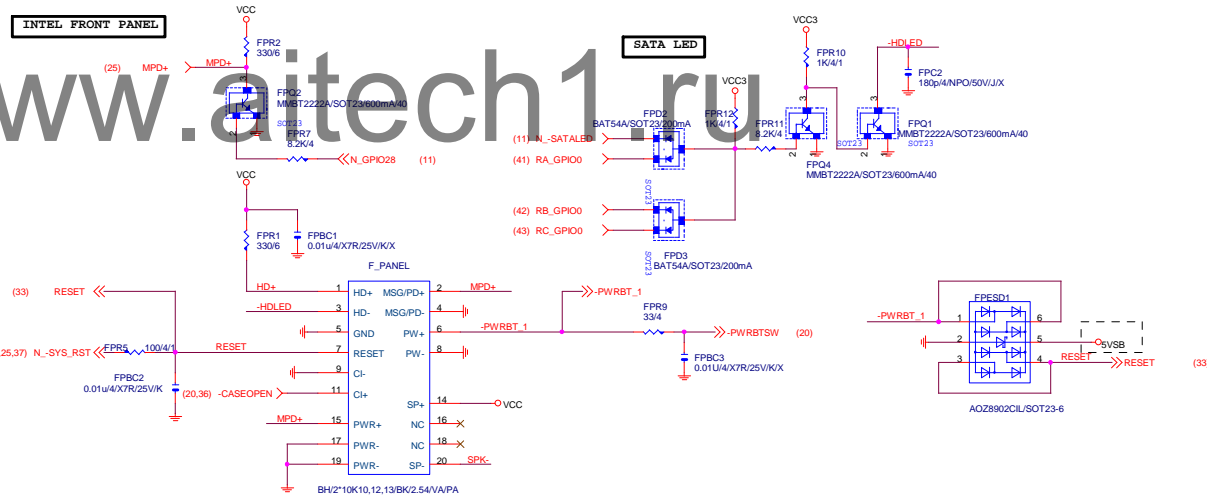
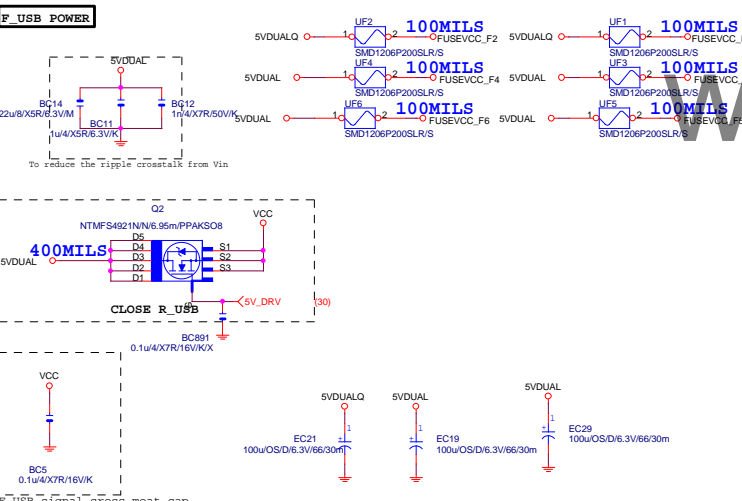
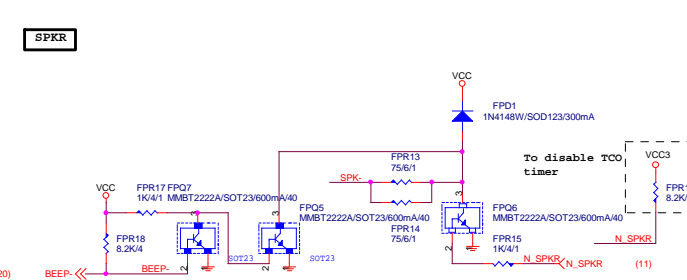
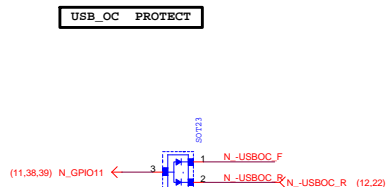
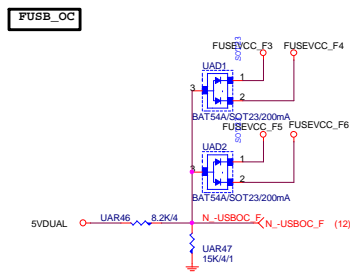




Close to connector

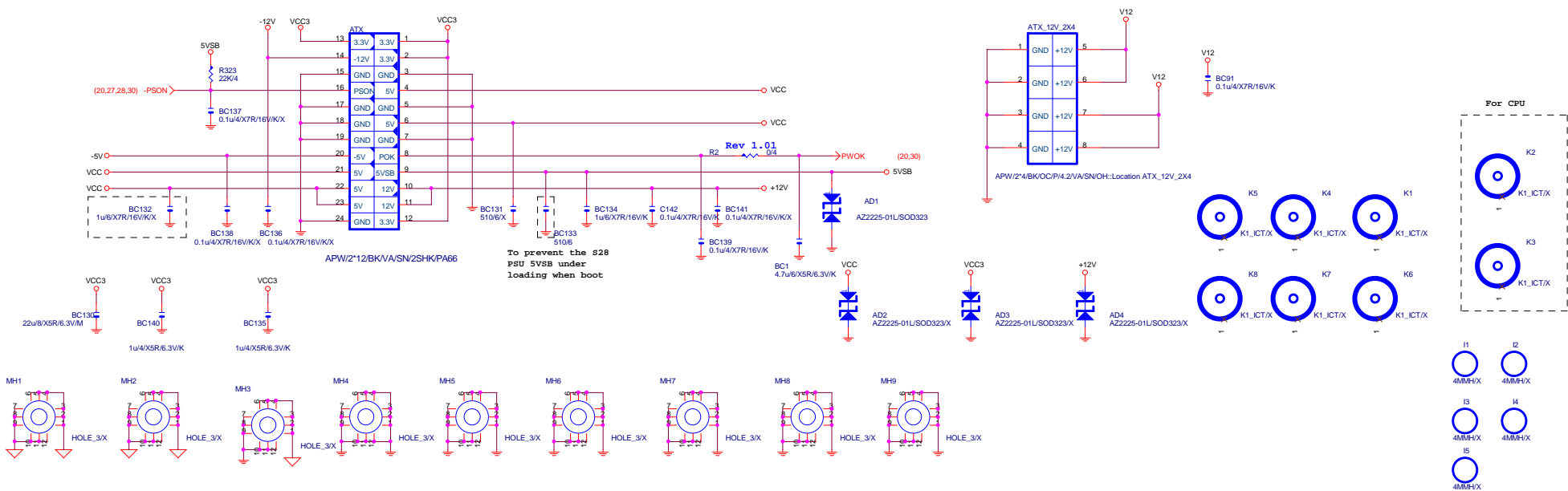


Close to connector

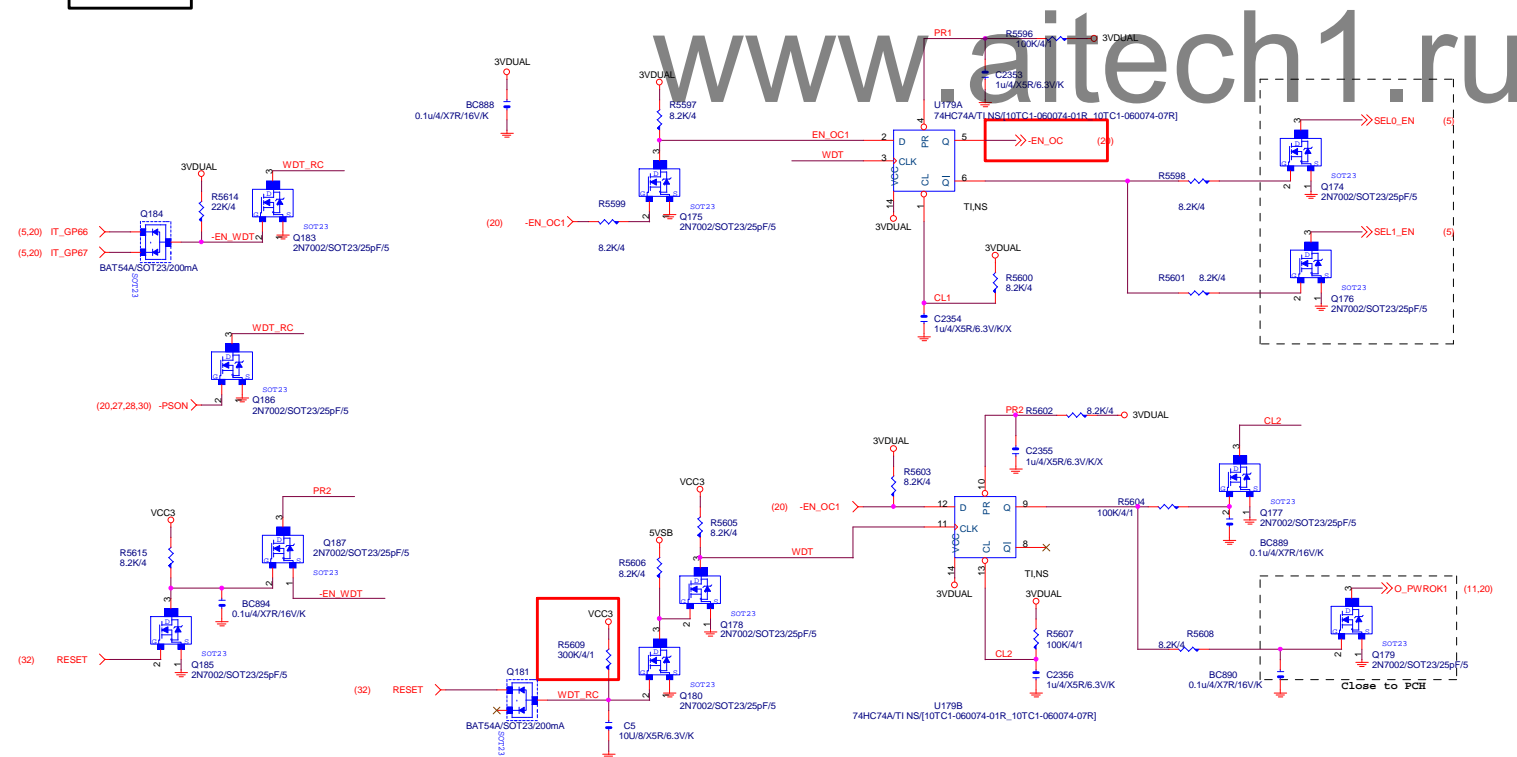


Gigabyte Technology

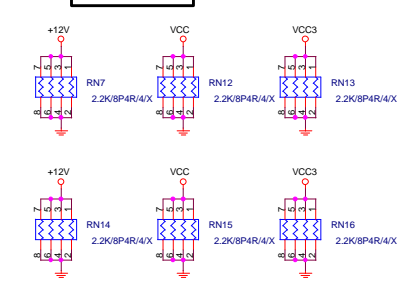
ATX POWER CONNECTOR



OVER CLOCKING

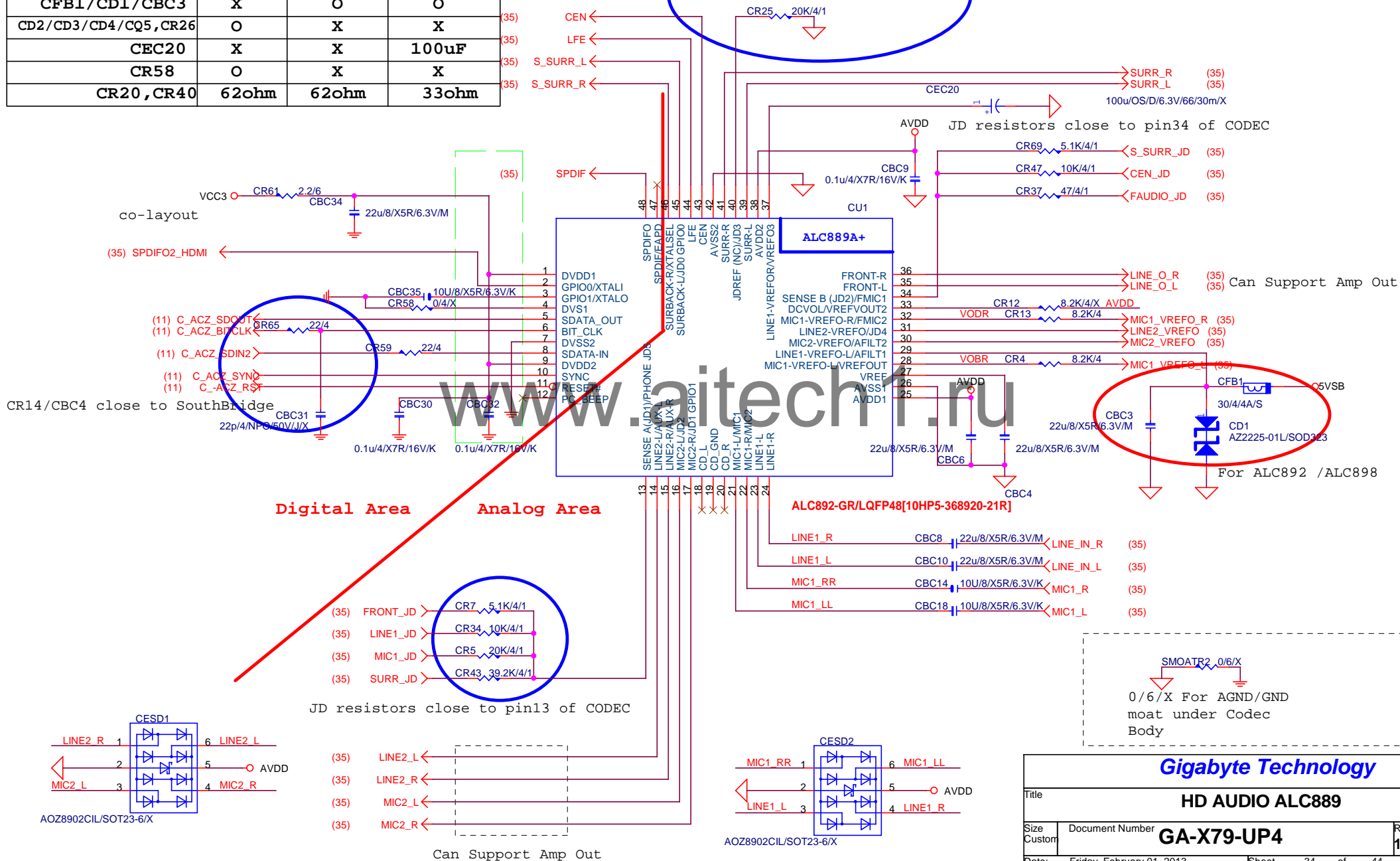


OVER CLOCKING



INPUT		CLOCK		DATA		OUTPUT	
PR	CL	CLOCK	DATA	Q	-Q	Q	-Q
L	H	X	X	H	L	H	L
H	L	X	X	L	H	L	H
L	L	X	X	H	H	H	H
H	H	X	X	L	L	L	L
H	H	Rising	L	H	H	H	H
H	H	Rising	L	L	L	L	L
H	H	L	X	No Change	No Change	No Change	No Change
H	H	Falling	X	No Change	No Change	No Change	No Change

	ALC889	ALC892	ALC898
CBC35	X	10uF/X5R	10uF/X5R
CFB1/CD1/CBC3	X	O	O
CD2/CD3/CD4/CQ5,CR26	O	X	X
CEC20	X	X	100uF
CR58	O	X	X
CR20,CR40	62ohm	62ohm	33ohm



Gigabyte Technology

HD AUDIO ALC889

Size
Custom

Document Number

GA-X79-UP4

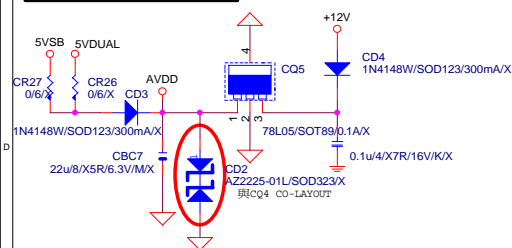
Rev

1.1

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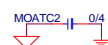
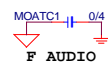
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5VSB



MOAT CAP.



Codec to AUDIO JACK

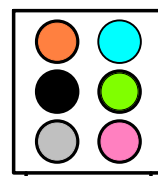


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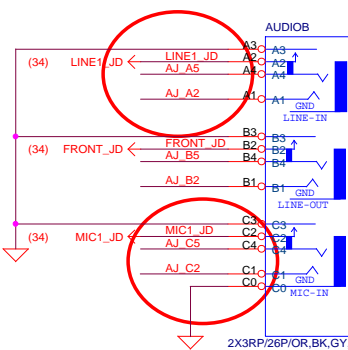


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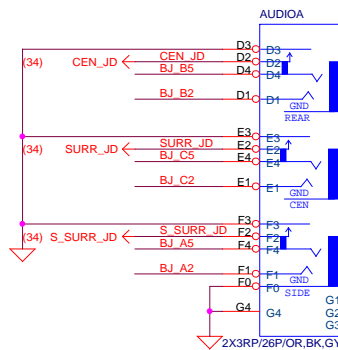
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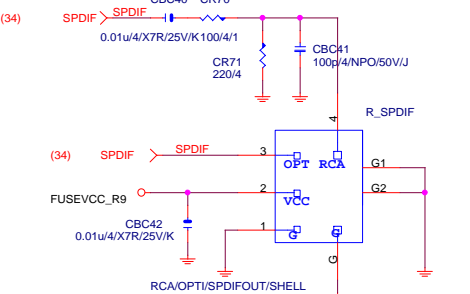
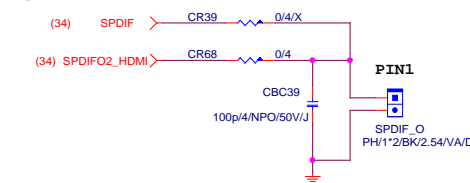
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LINE-INGREEN
LINE-OUTPINK
MIC-IN

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

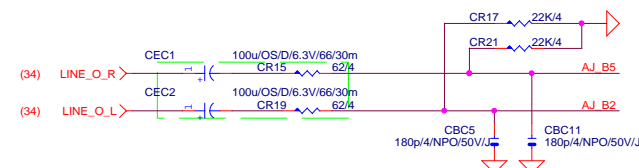
Orange
CEN/LFEBlack
SURROUNDGray
SURROUND SIDE

2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

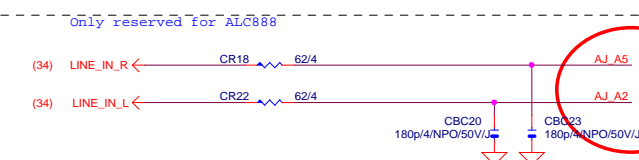
For HDMI SPDIF



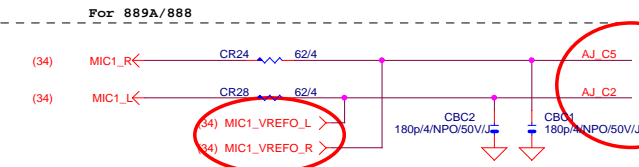
LINE-OUT



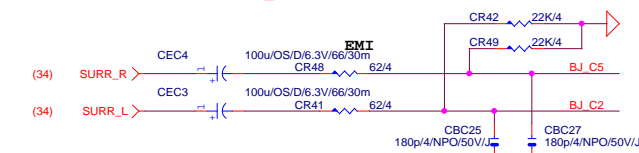
LINE-IN



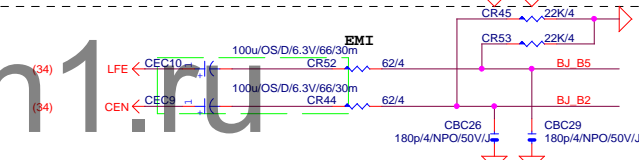
MIC-IN



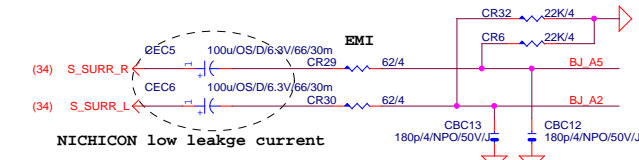
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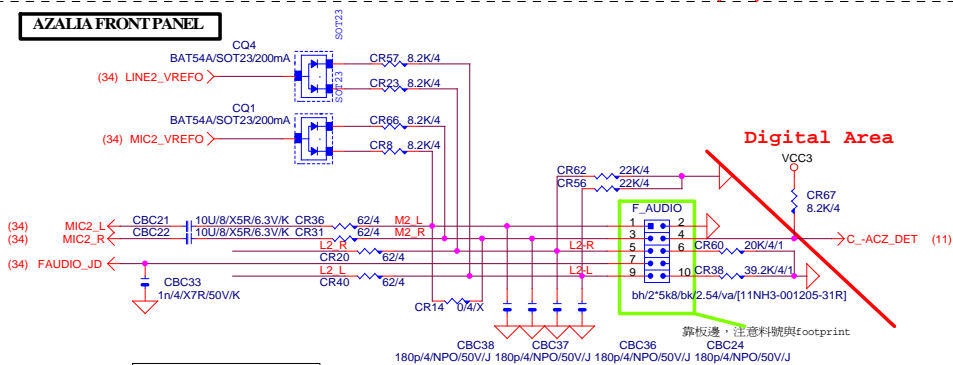
CEN/LFE



SURRBACK



AZALIA FRONT PANEL

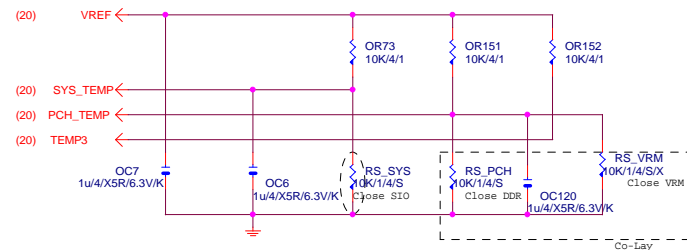


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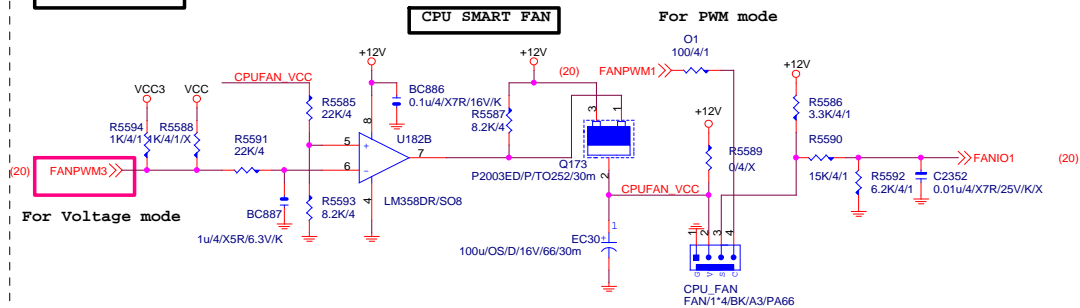
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AUDIO JACK		
Size Custom	Document Number	Rev
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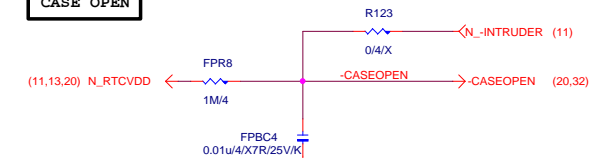
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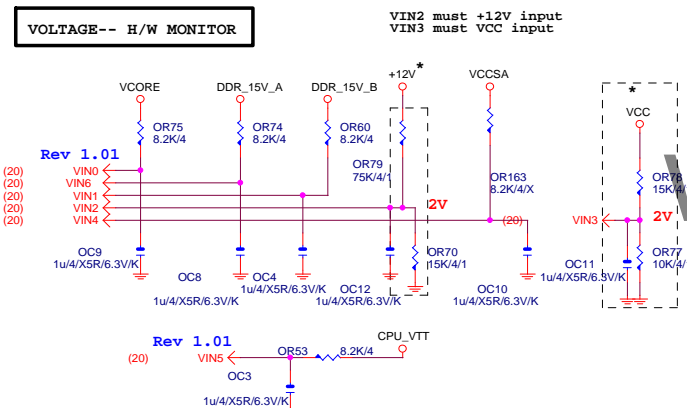
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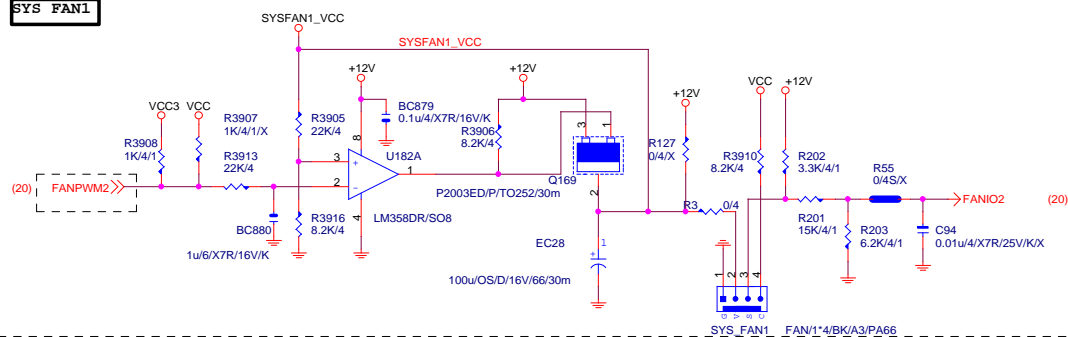
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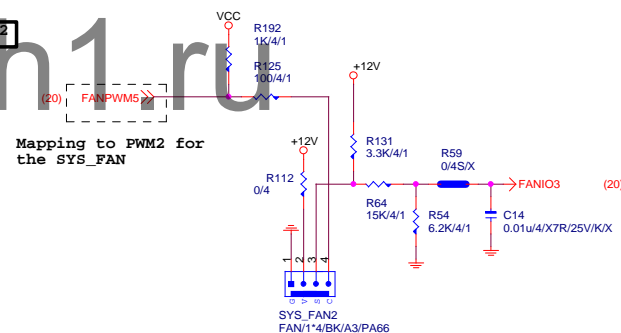
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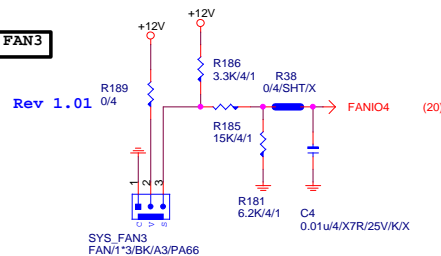
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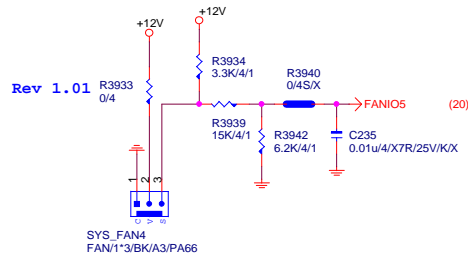
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SYS FAN3



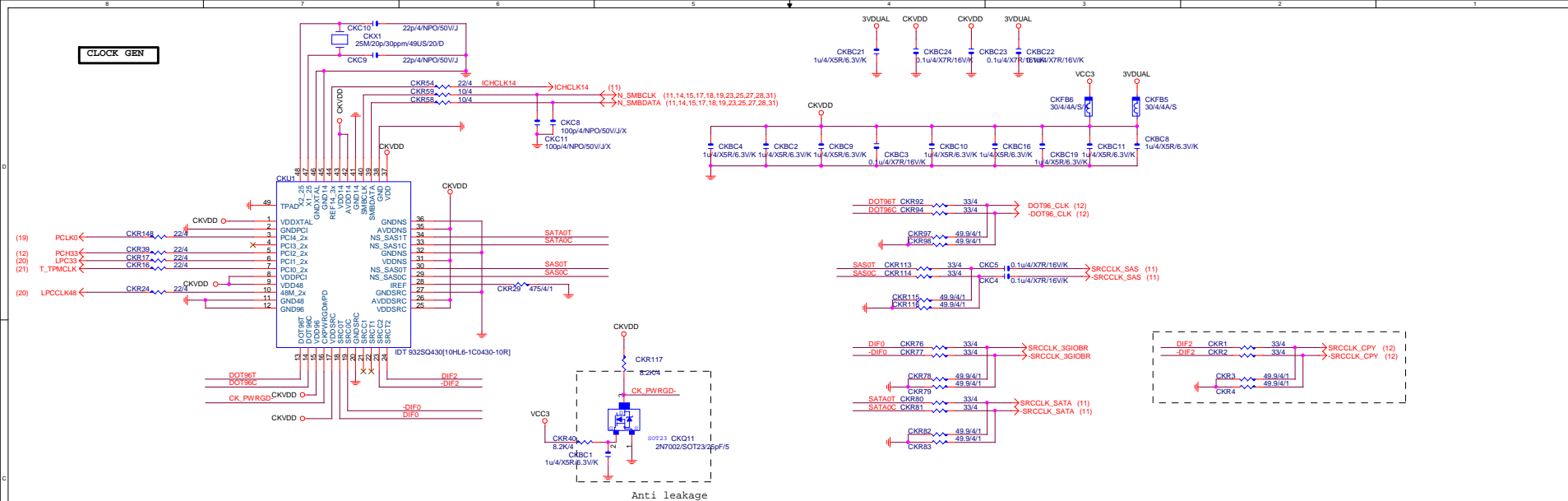
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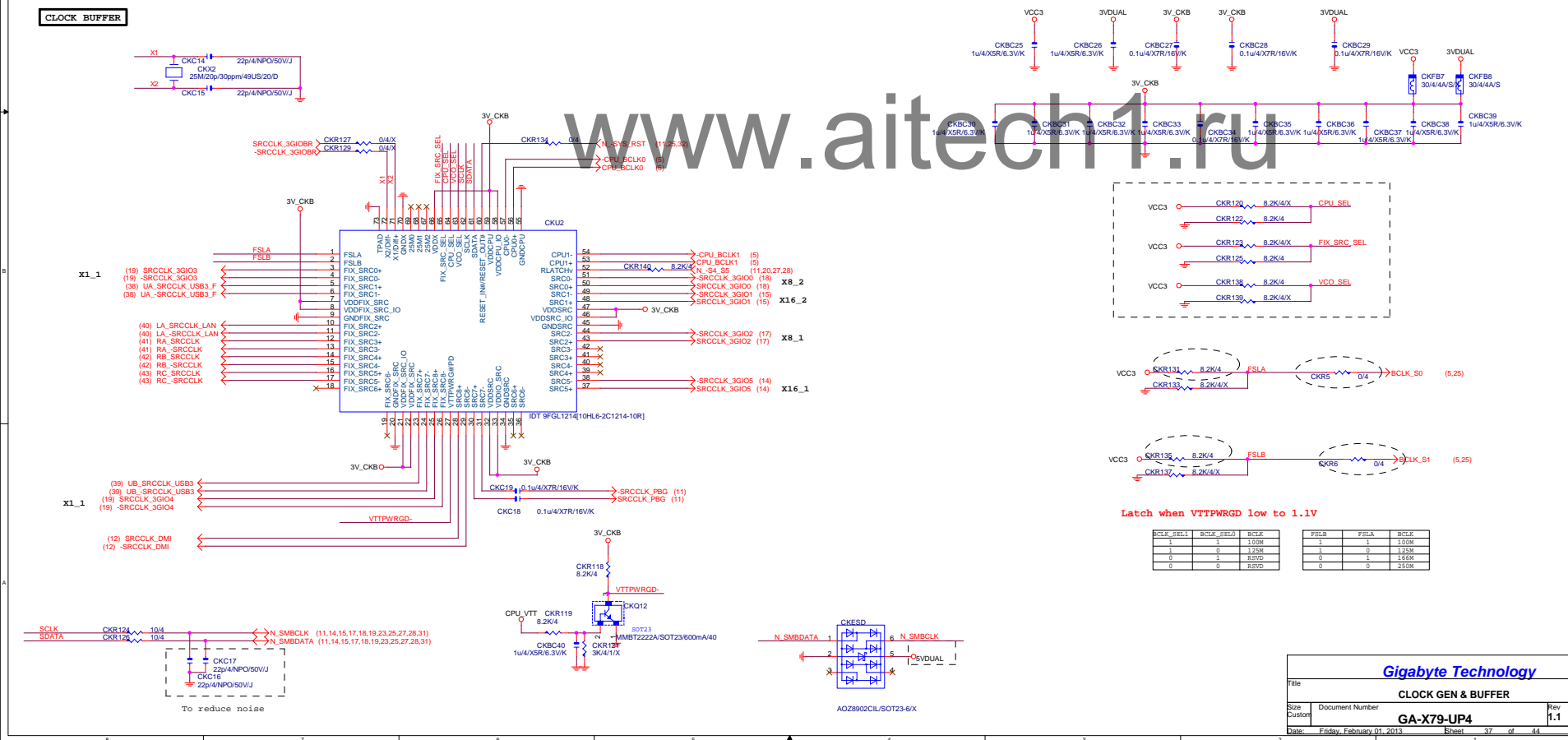
Gigabyte Technology

Title			HWM,FAN CTRL
Size	Document Number	GA-X79-UP4	
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CLOCK GEN

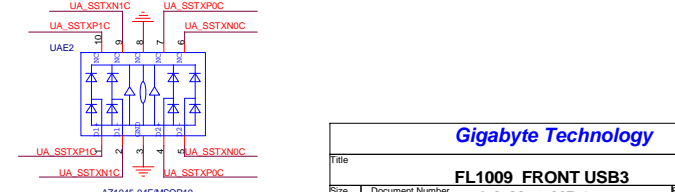
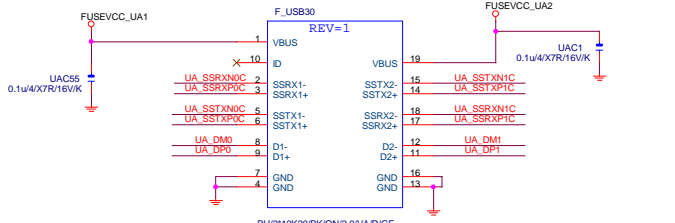
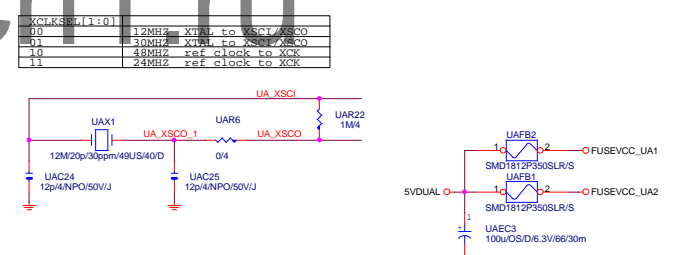
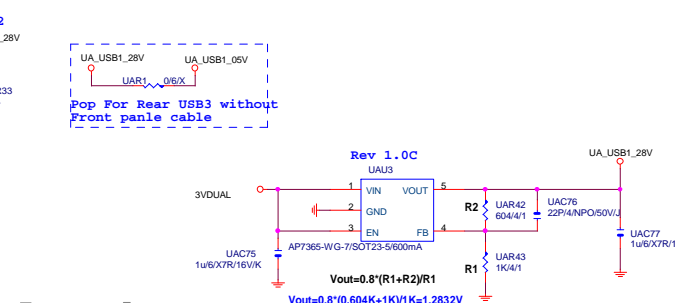
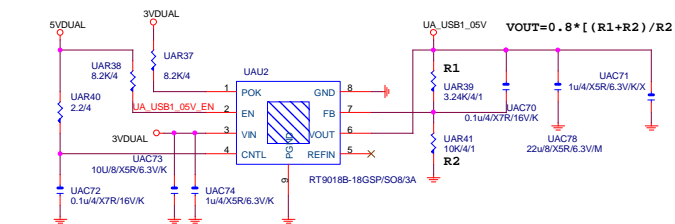
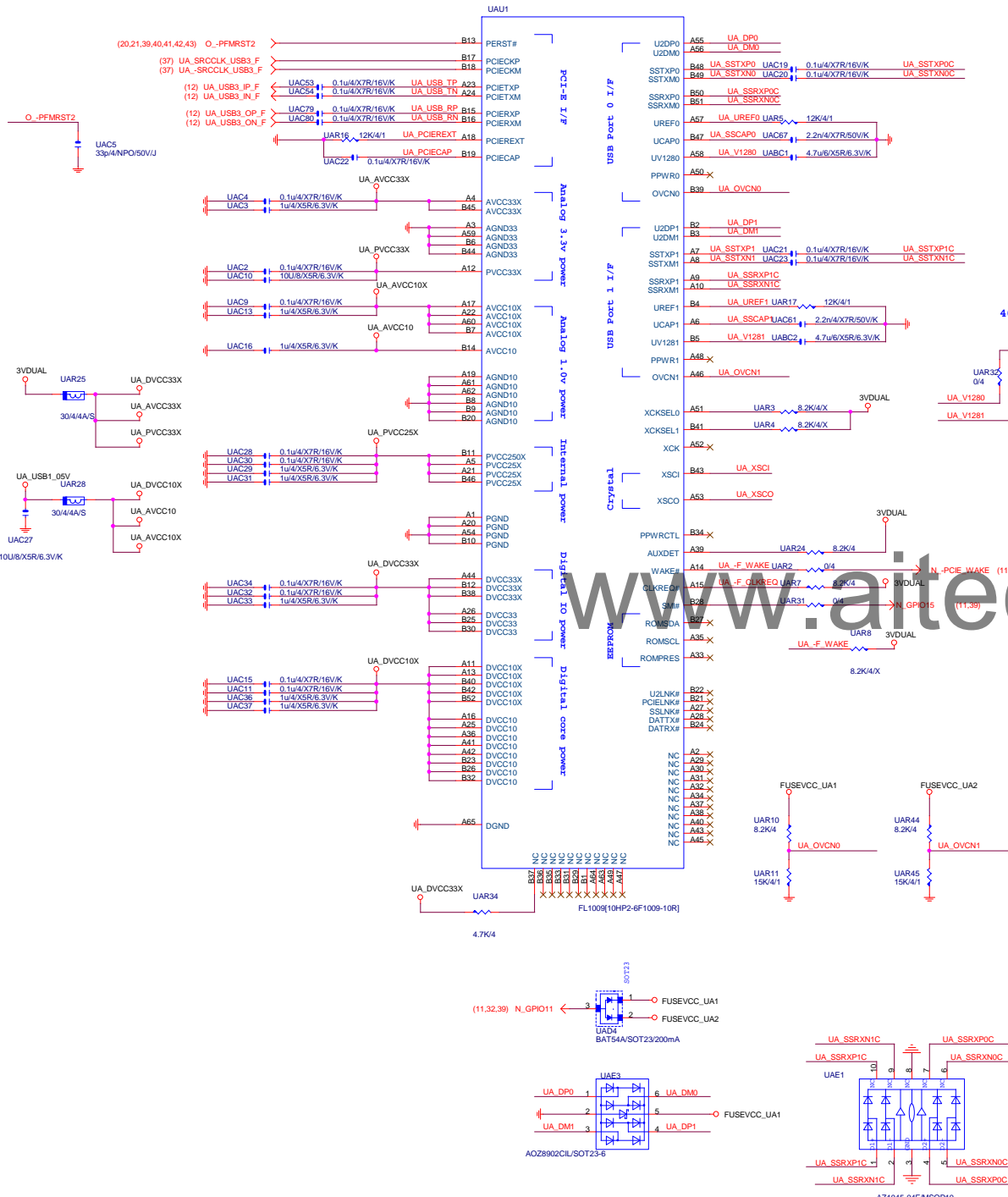


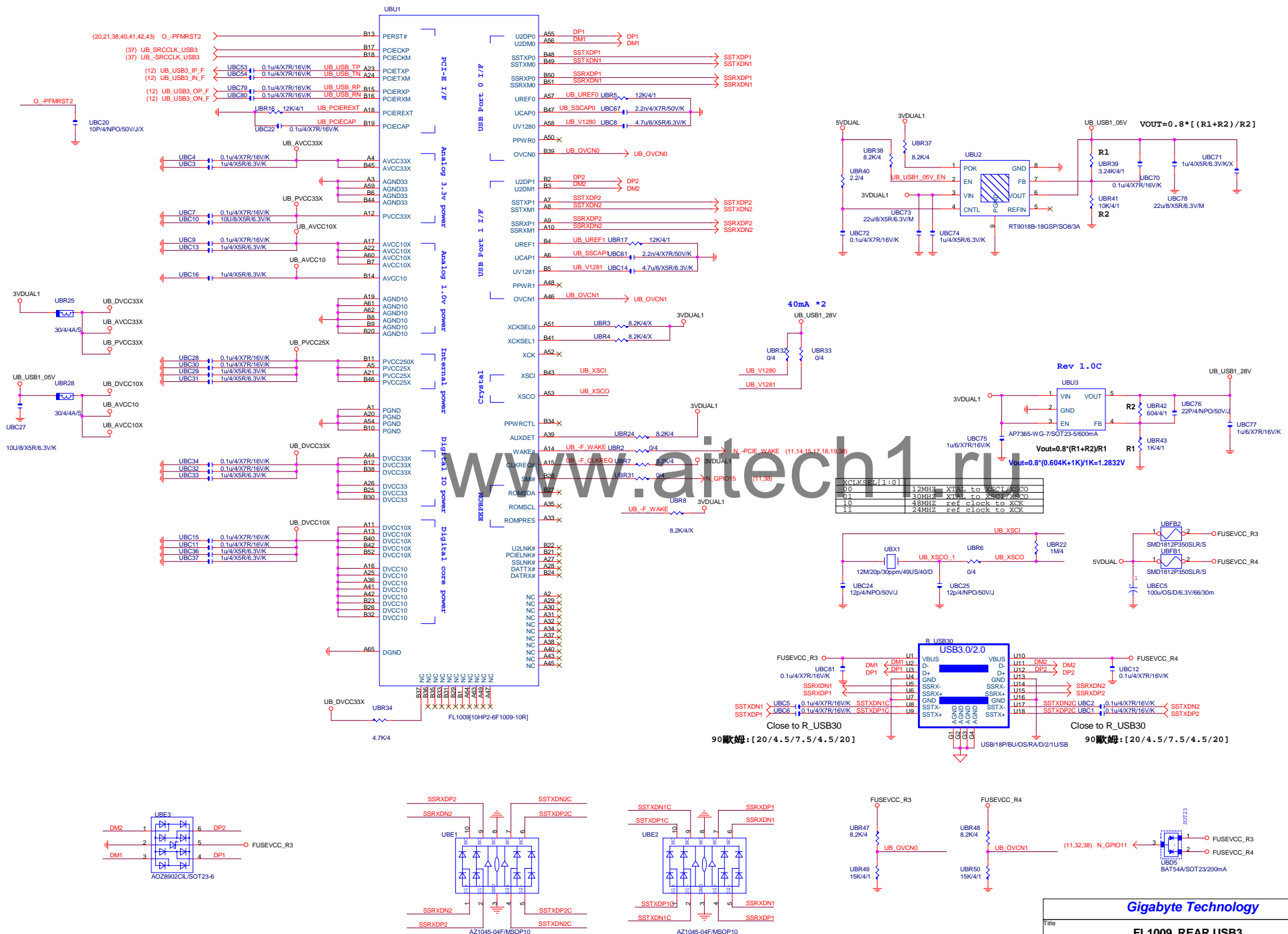
CLOCK BUFFER

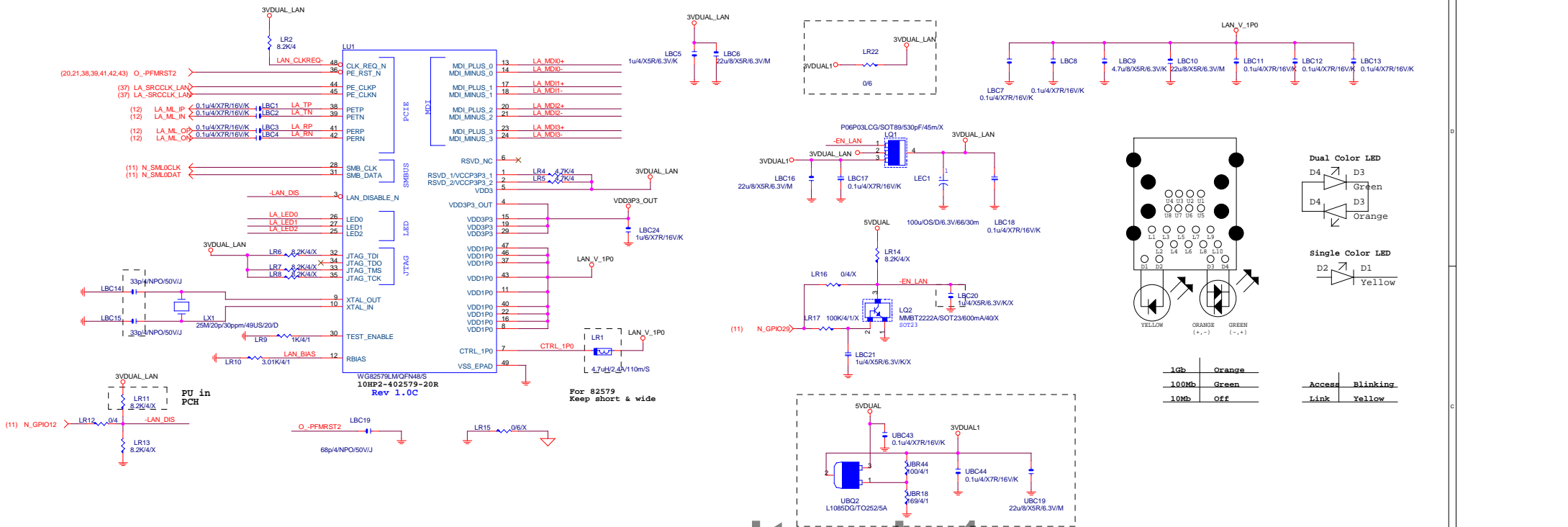


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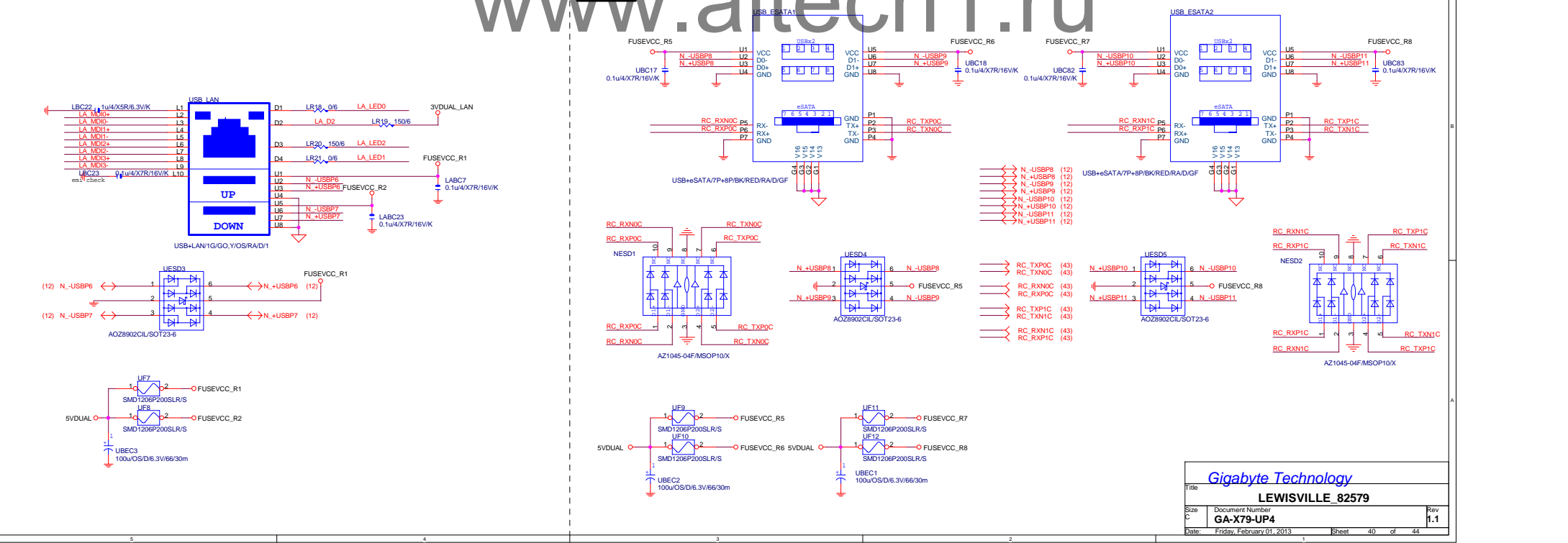
File	Document Number	Rev
CLOCK GEN & BUFFER	GA-X79-UP4	1.1
Size	Custom	Date: Friday, February 01, 2013
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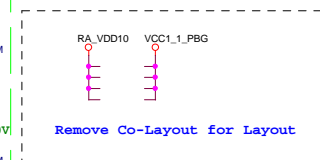
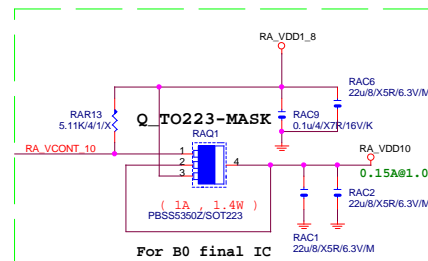
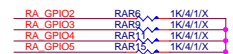
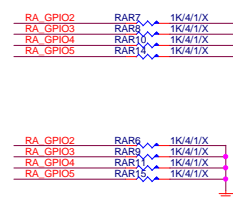
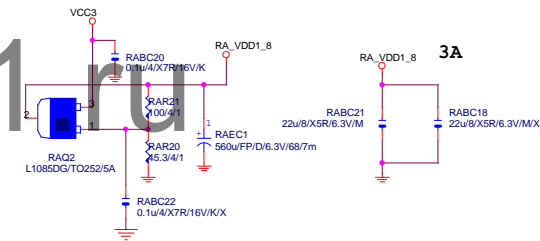
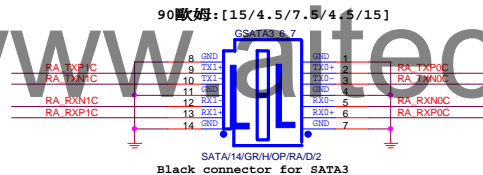
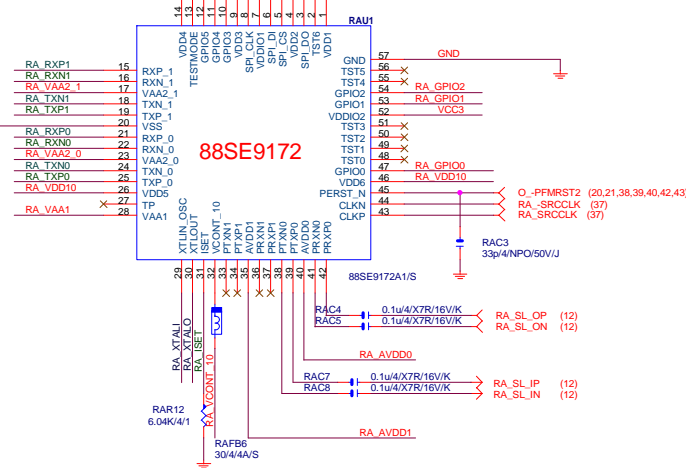
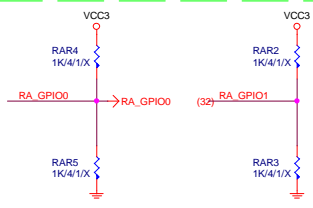
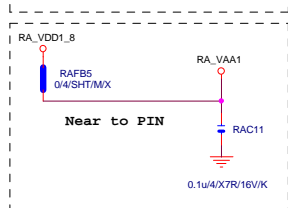
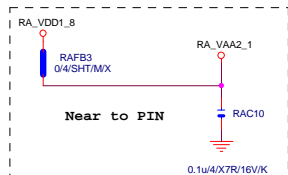
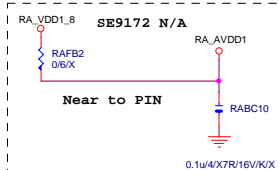
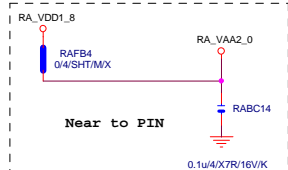
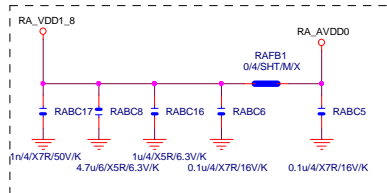
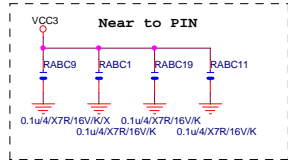
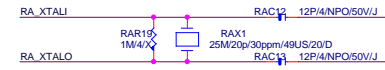




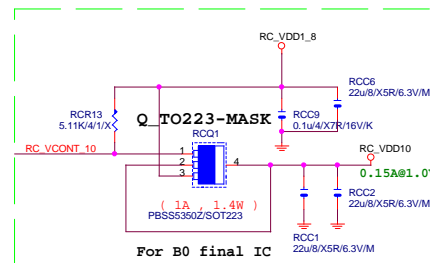
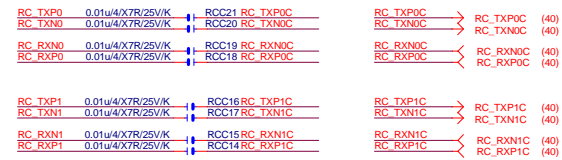
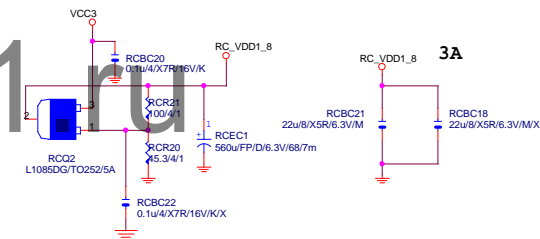
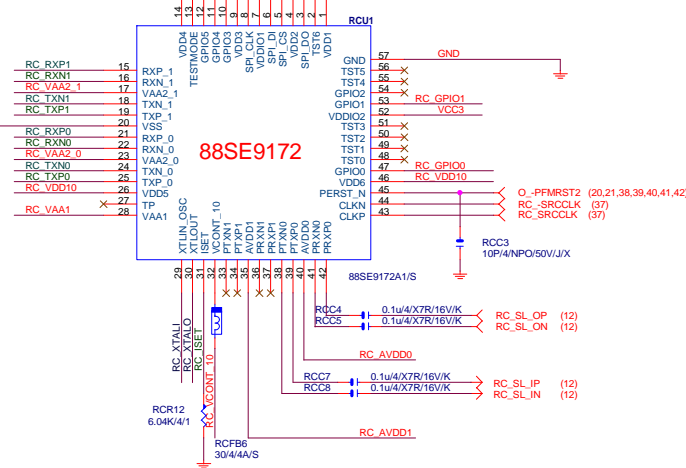
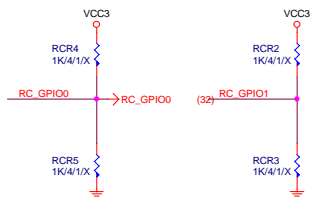
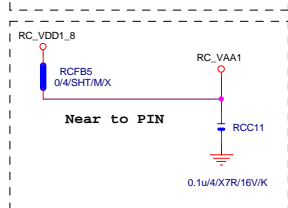
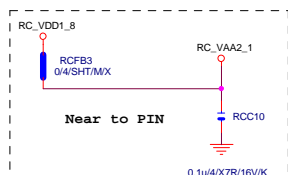
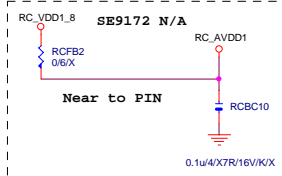
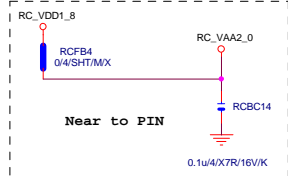
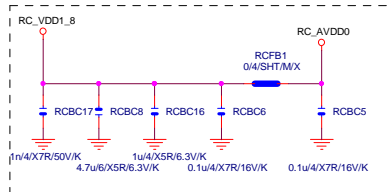
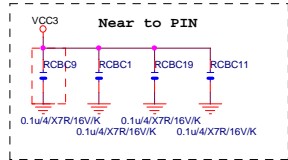
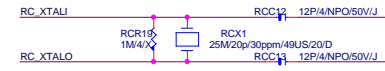


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Remove Co-Layout for Layout

PCH GPIO

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[0]	VCC3	-ICH_PSI	IN		8.2K P/U TO VCC3
GP[1]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[2]	VCC3	-PIRQE	IN		8.2K P/U TO VCC3
GP[3]	VCC3	-PIRQF	IN		8.2K P/U TO VCC3
GP[4]	VCC3	-PIRQG	IN		8.2K P/U TO VCC3
GP[5]	VCC3	-PIRQH	IN		8.2K P/U TO VCC3
GP[6]	VCC3	GPIO6	IN		8.2K P/U TO VCC3
GP[7]	VCC3	GPIO7	IN		8.2K P/U TO VCC3
GP[8]	3VDUAL	GPIO8	OUT		8.2K P/U TO 3VDUAL
GP[9]	3VDUAL	-USBOC5	IN		USB OVER-CURRENT
GP[10]	3VDUAL	-USBOC6	IN		USB OVER-CURRENT
GP[11]	3VDUAL	GPIO11	IN		8.2K P/U TO 3VDUAL
GP[12]	3VDUAL	GPIO12	OUT		8.2K P/U TO 3VDUAL
GP[13]	3VDUAL	-LPCPME	IN		8.2K P/U TO 3VDUAL
GP[14]	3VDUAL	GPIO14	IN		8.2K P/U TO 3VDUAL
GP[15]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[16]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[17]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[18]	VCC3	-SPI_WP0	OUT		8.2K P/U TO VCC3
GP[19]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[20]	VCC3	-SPI_WP1	OUT		8.2K P/U TO VCC3
GP[21]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[22]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[23]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[24]	3VDUAL	-SKTOC	IN		8.2K P/U TO 3VDUAL (N/A)
GP[25]	3VDUAL	GPIO25	OUT		8.2K P/U TO 3VDUAL
GP[26]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[27]	3VDUAL_PCH	SPARE	OUT		8.2K P/U TO 3VDUAL_PCH
GP[28]	3VDUAL	GPIO28	OUT		8.2K P/U TO 3VDUAL
GP[29]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL (N/A)
GP[30]	3VDUAL	-S_WARN	OUT		CONNECT TO -S_ACK
GP[31]	3VDUAL_PCH	SPARE	IN		8.2K P/U TO 3VDUAL_PCH(N/A)
GP[32]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[33]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[34]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[35]	VCC3	-ACZ_DET	OUT		8.2K P/U TO VCC3
GP[36]	VCC3	SPARE	IN		8.2K P/U TO VCC3(N/A)
GP[37]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[38]	VCC3	SPARE	IN		1K P/U TO VCC3

PIN NAME	POWER WELL	USAGE	AFTER PLTRST	S3/S5	NOTES
GP[39]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[40]	3VDUAL	-USBOC1	IN		USB OVER-CURRENT
GP[41]	3VDUAL	-USBOC2	IN		USB OVER-CURRENT
GP[42]	3VDUAL	-USBOC3	IN		USB OVER-CURRENT
GP[43]	3VDUAL	-USBOC4	IN		USB OVER-CURRENT
GP[44]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[45]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[46]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[47]	3VDUAL	SPARE	IN		1K P/U TO 3VDUAL
GP[48]	VCC3	SPARE	IN		1K P/U TO VCC3
GP[49]	VCC3	SPARE	IN		8.2K P/U TO VCC3
GP[50]	VCC3	-REQ1	OUT		8.2K P/U TO VCC3
GP[51]	VCC3	-GNT1	OUT		1K P/U TO VCC3
GP[52]	VCC3	-REQ2	OUT		8.2K P/U TO VCC3
GP[53]	VCC3	-GNT2	IN		8.2K P/U TO VCC3(N/A)
GP[54]	VCC3	-REQ3	IN		8.2K P/U TO VCC3
GP[55]	VCC3	-GNT3	IN		8.2K P/U TO VCC3(N/A)
GP[56]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[57]	3VDUAL	SPARE	IN		8.2K P/U TO 3VDUAL
GP[58]	3VDUAL	SML1CLK	OUT		8.2K P/U TO 3VDUAL
GP[59]	3VDUAL	-USBOC0	IN		USB OVER-CURRENT
GP[60]	3VDUAL	SML0ART	OUT		1K P/U TO 3VDUAL
GP[61]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[62]	3VDUAL	SUSCLK	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[63]	3VDUAL	-SLP_S5	OUT		8.2K P/U TO 3VDUAL(N/A)
GP[64]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[65]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[66]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[67]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[68]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[69]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[70]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[71]	VCC3	SPARE	OUT		8.2K P/U TO VCC3
GP[72]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[73]	3VDUAL	SPARE	OUT		8.2K P/U TO 3VDUAL
GP[74]	3VDUAL	SML1ART	OUT		1K P/U TO 3VDUAL
GP[75]	3VDUAL	SML1DAT	IN/OUT		8.2K P/U TO 3VDUAL

Gigabyte Technology

Title			
PCH GPIO LIST			
Size	Document Number		Rev
Custom	GA-X79-UP4		1.1
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