

SHEET

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SHEET

TITLE

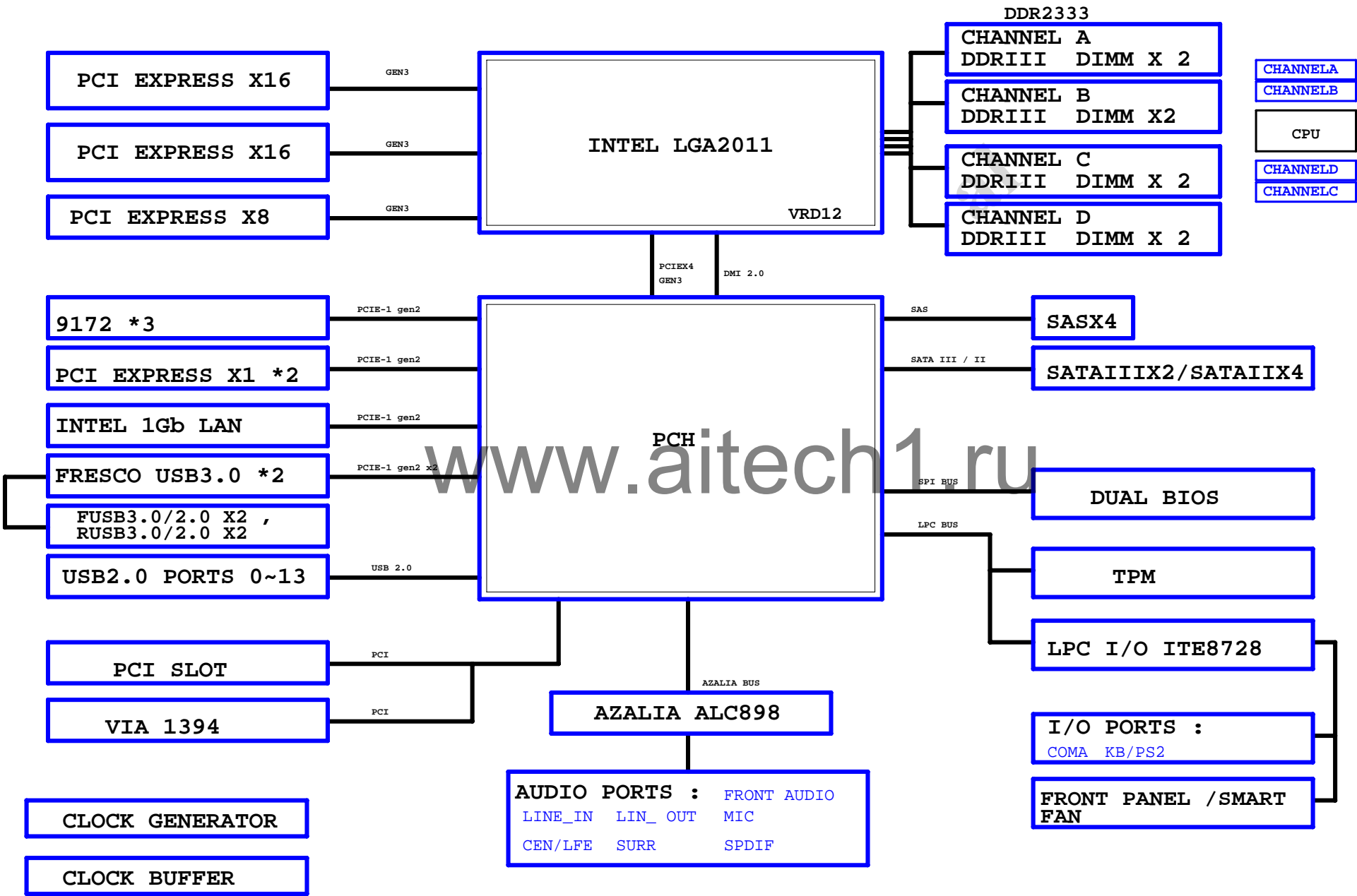
28	DDR CH C/D POWER
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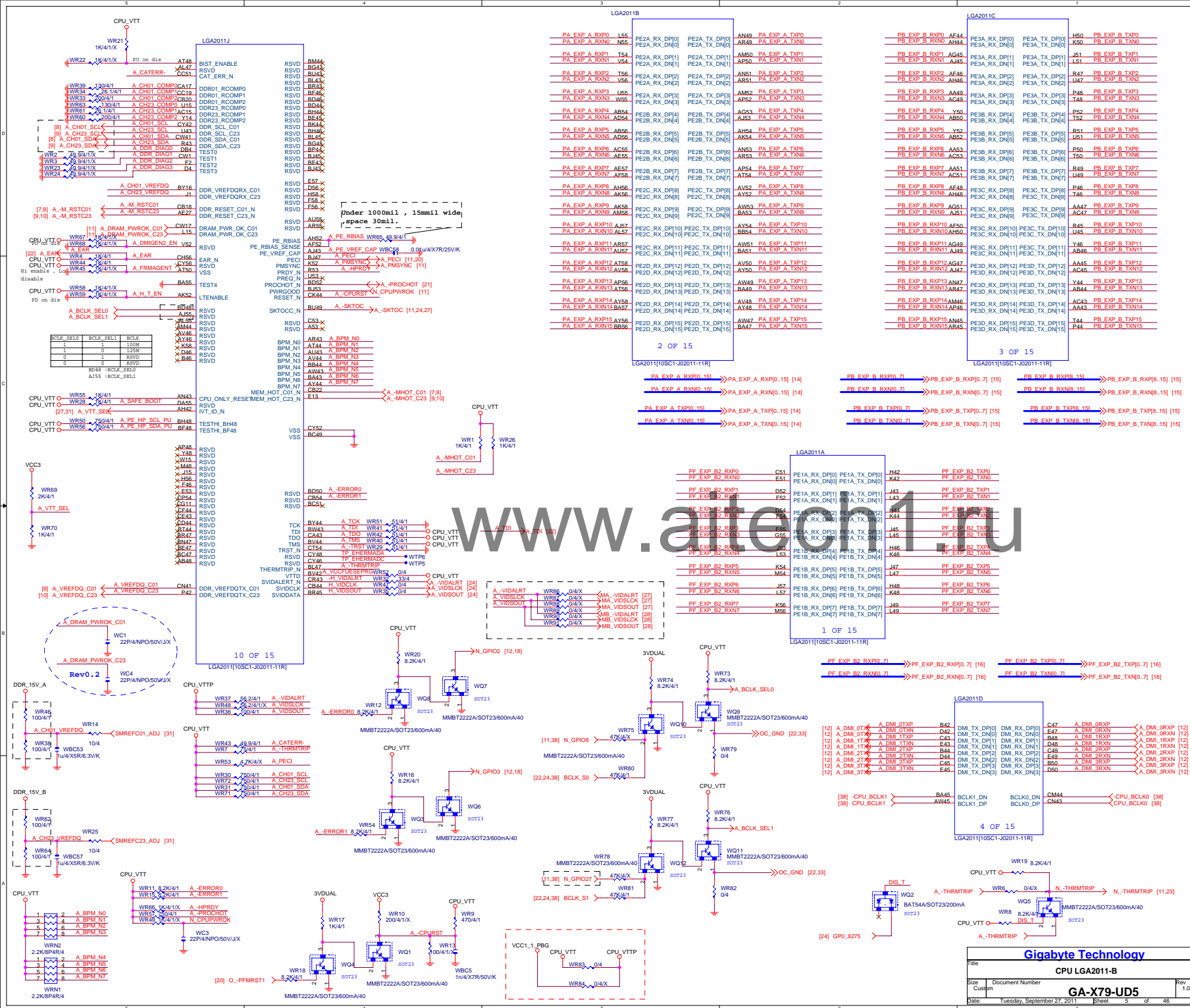
Gigabyte Technology

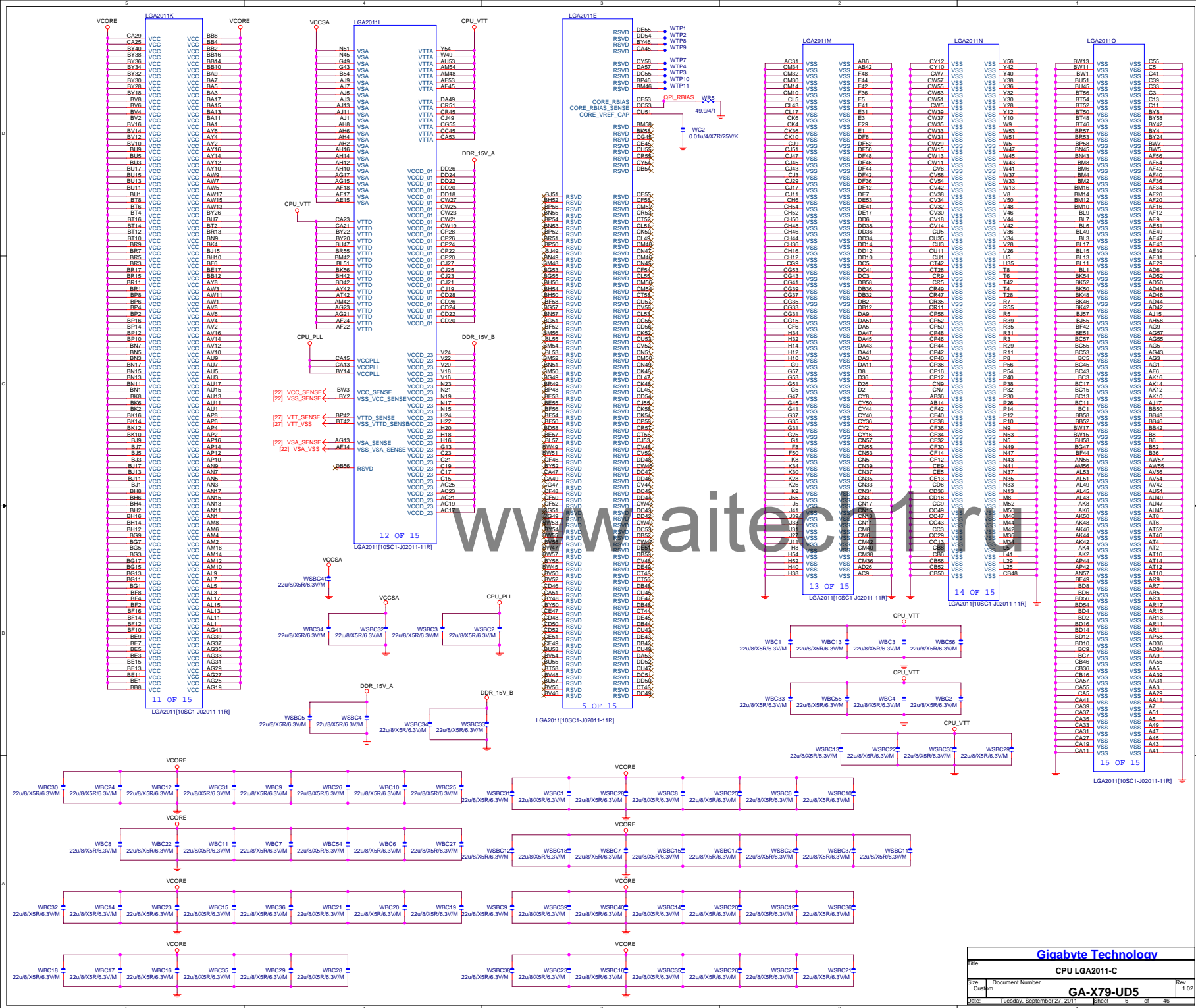
Cover Sheet			
Title	GA-X79-UD5		
Size	Document Number	Rev	1.02
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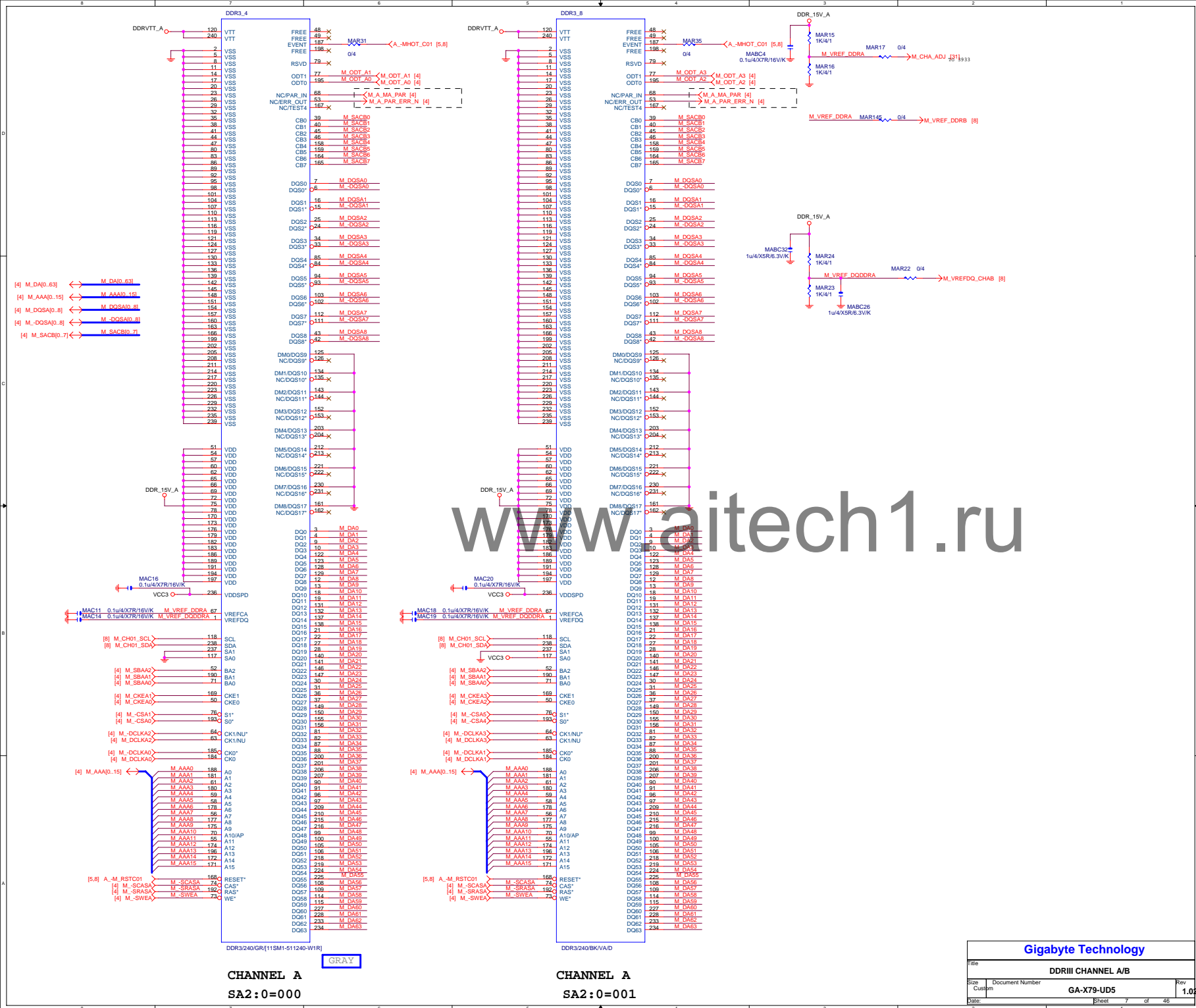
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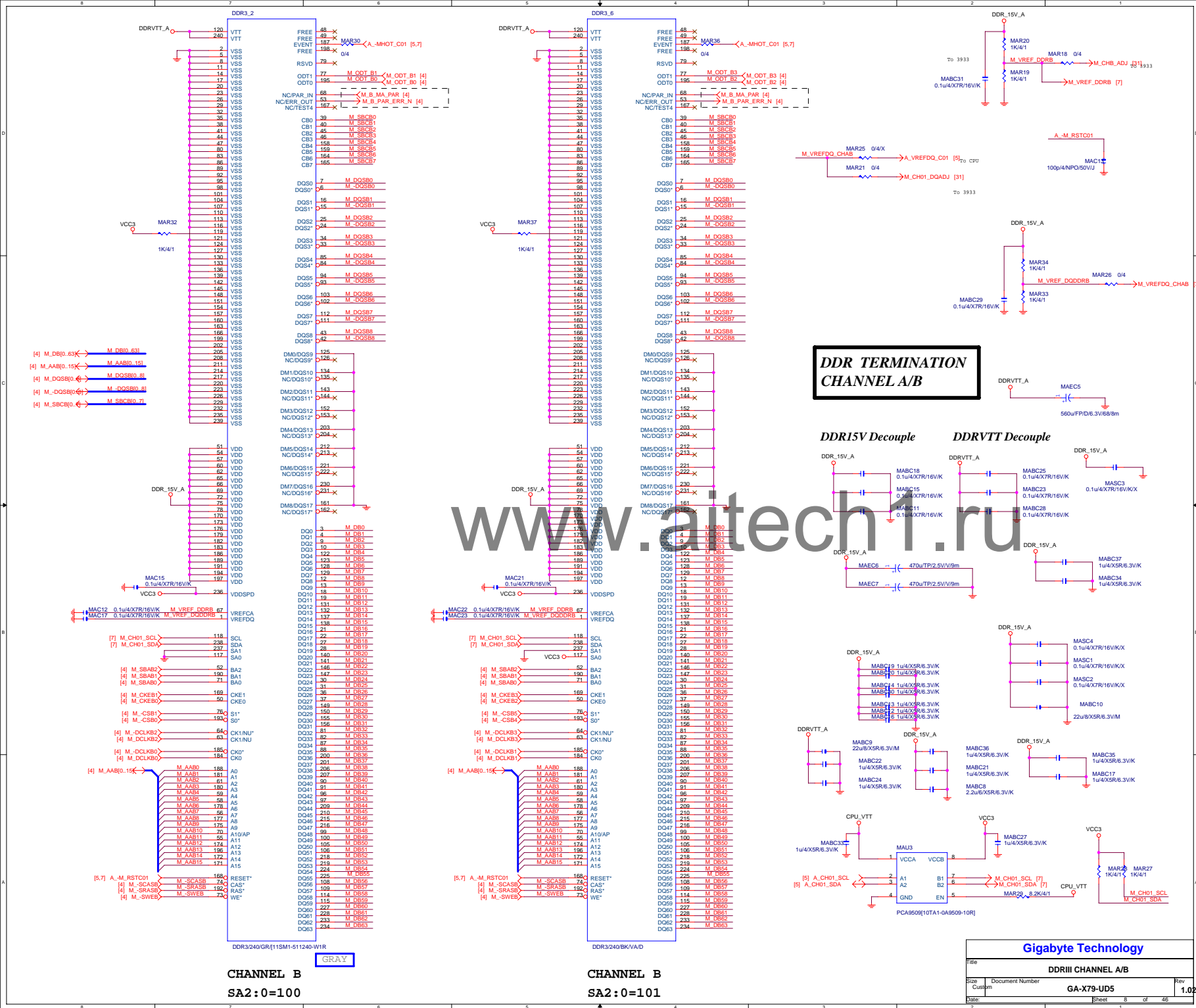
BLOCK DIAGRAM











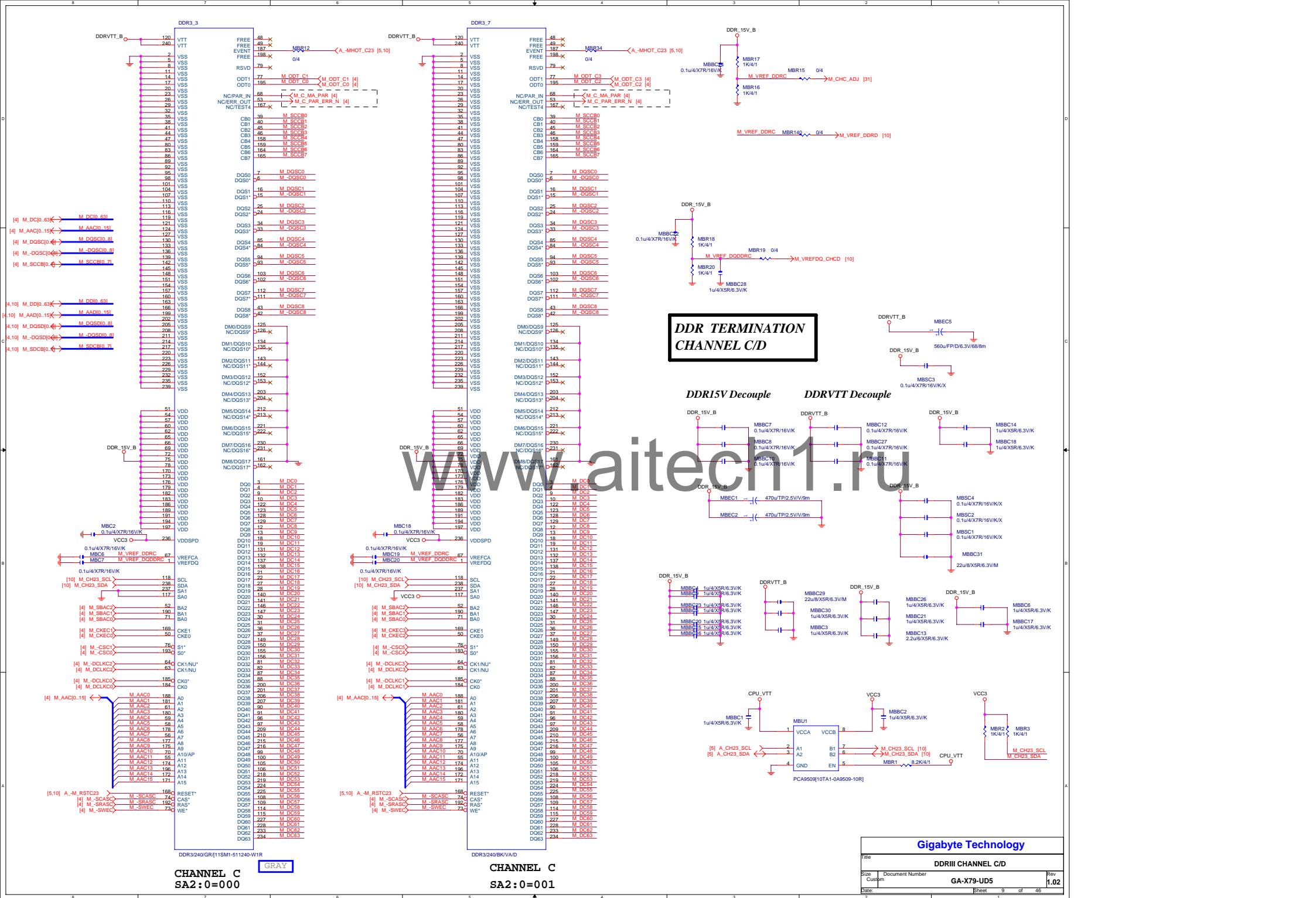
DDR TERMINATION
CHANNEL A/B

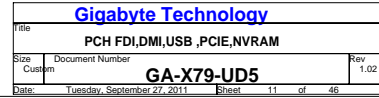
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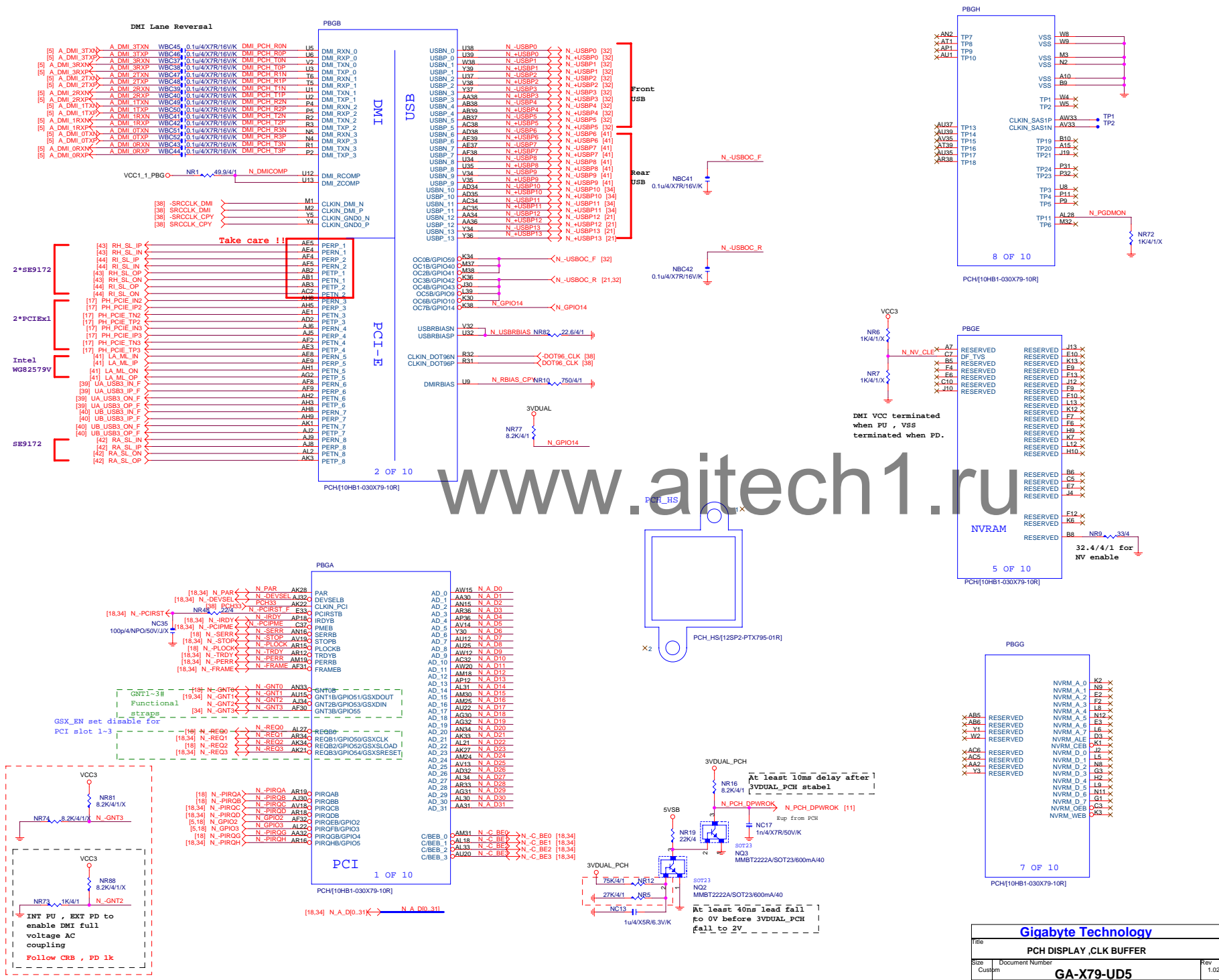
DDRVTT Decouple

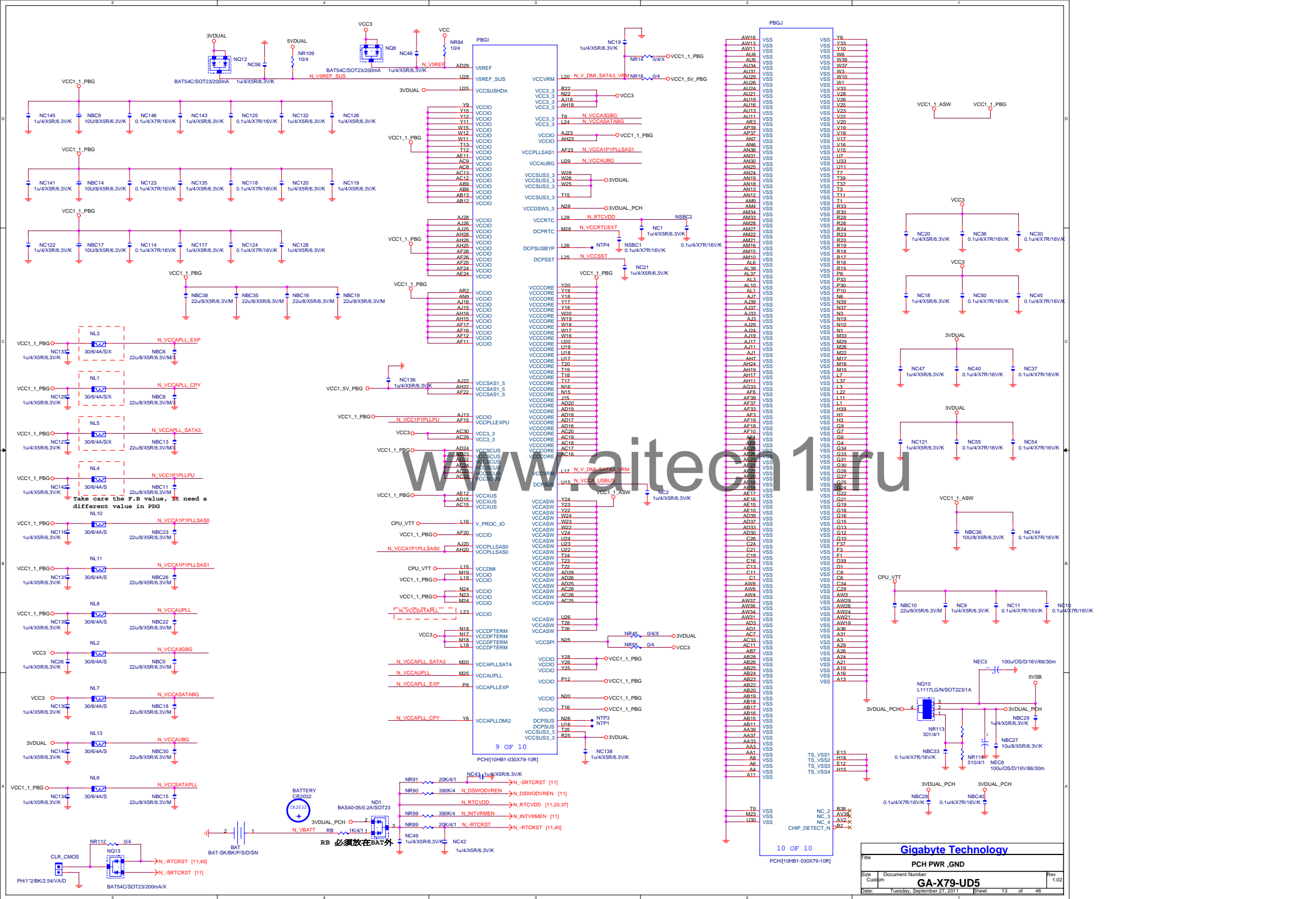
Gigabyte Technology

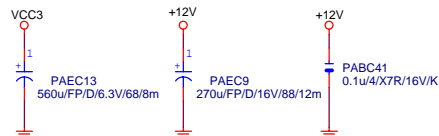
Title		DDR3 CHANNEL A/B	
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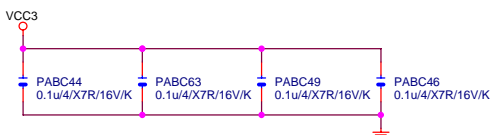


PCIESLOT-164DN-2

PA_EXP_A_TXP0..15] >> PA_EXP_A_TXP[0..15] [5]
PA_EXP_A_TXN0..15] >> PA_EXP_A_TXN[0..15] [5]

PA_EXP_A_TXP0	PAC114	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP0C
PA_EXP_A_TXN0	PAC110	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN0C
PA_EXP_A_TXP1	PAC110	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP1C
PA_EXP_A_TXN1	PAC111	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN1C
PA_EXP_A_TXP2	PAC109	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP2C
PA_EXP_A_TXN2	PAC109	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN2C
PA_EXP_A_TXP3	PAC109	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP3C
PA_EXP_A_TXN3	PAC109	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN3C
PA_EXP_A_TXP4	PAC97	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP4C
PA_EXP_A_TXN4	PAC99	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN4C
PA_EXP_A_TXP5	PAC92	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP5C
PA_EXP_A_TXN5	PAC93	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN5C
PA_EXP_A_TXP6	PAC87	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP6C
PA_EXP_A_TXN6	PAC88	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN6C
PA_EXP_A_TXP7	PAC83	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP7C
PA_EXP_A_TXN7	PAC85	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN7C

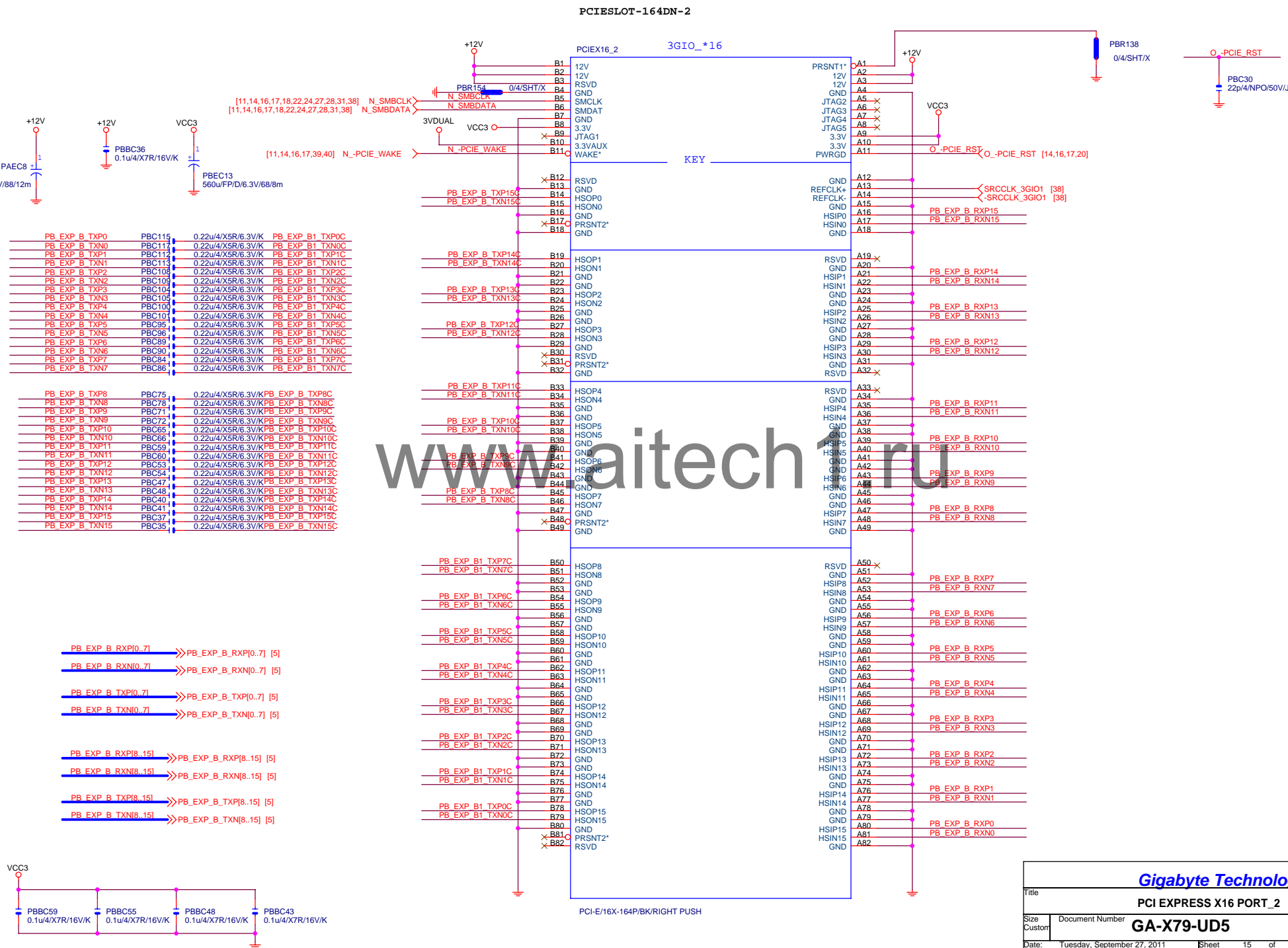
PA_EXP_A_TXP8	PAC80	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP8C
PA_EXP_A_TXN8	PAC82	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN8C
PA_EXP_A_TXP9	PAC74	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP9C
PA_EXP_A_TXN9	PAC77	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN9C
PA_EXP_A_TXP10	PAC68	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP10C
PA_EXP_A_TXN10	PAC70	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN10C
PA_EXP_A_TXP11	PAC62	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP11C
PA_EXP_A_TXN11	PAC64	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN11C
PA_EXP_A_TXP12	PAC56	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP12C
PA_EXP_A_TXN12	PAC58	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN12C
PA_EXP_A_TXP13	PAC50	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP13C
PA_EXP_A_TXN13	PAC52	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN13C
PA_EXP_A_TXP14	PAC43	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP14C
PA_EXP_A_TXN14	PAC46	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN14C
PA_EXP_A_TXP15	PAC39	0.22u4/X5R/6.3V/K	PA_EXP_A_TXP15C
PA_EXP_A_TXN15	PAC38	0.22u4/X5R/6.3V/K	PA_EXP_A_TXN15C

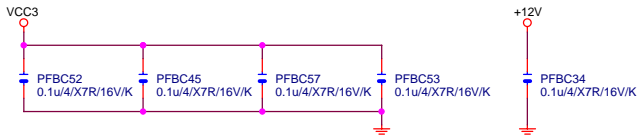


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PCI-E/16X-164P/BK/RIGHT PUSH

Gigabyte Technology	
Title	
PCI EXPRESS X16 PORT_1	
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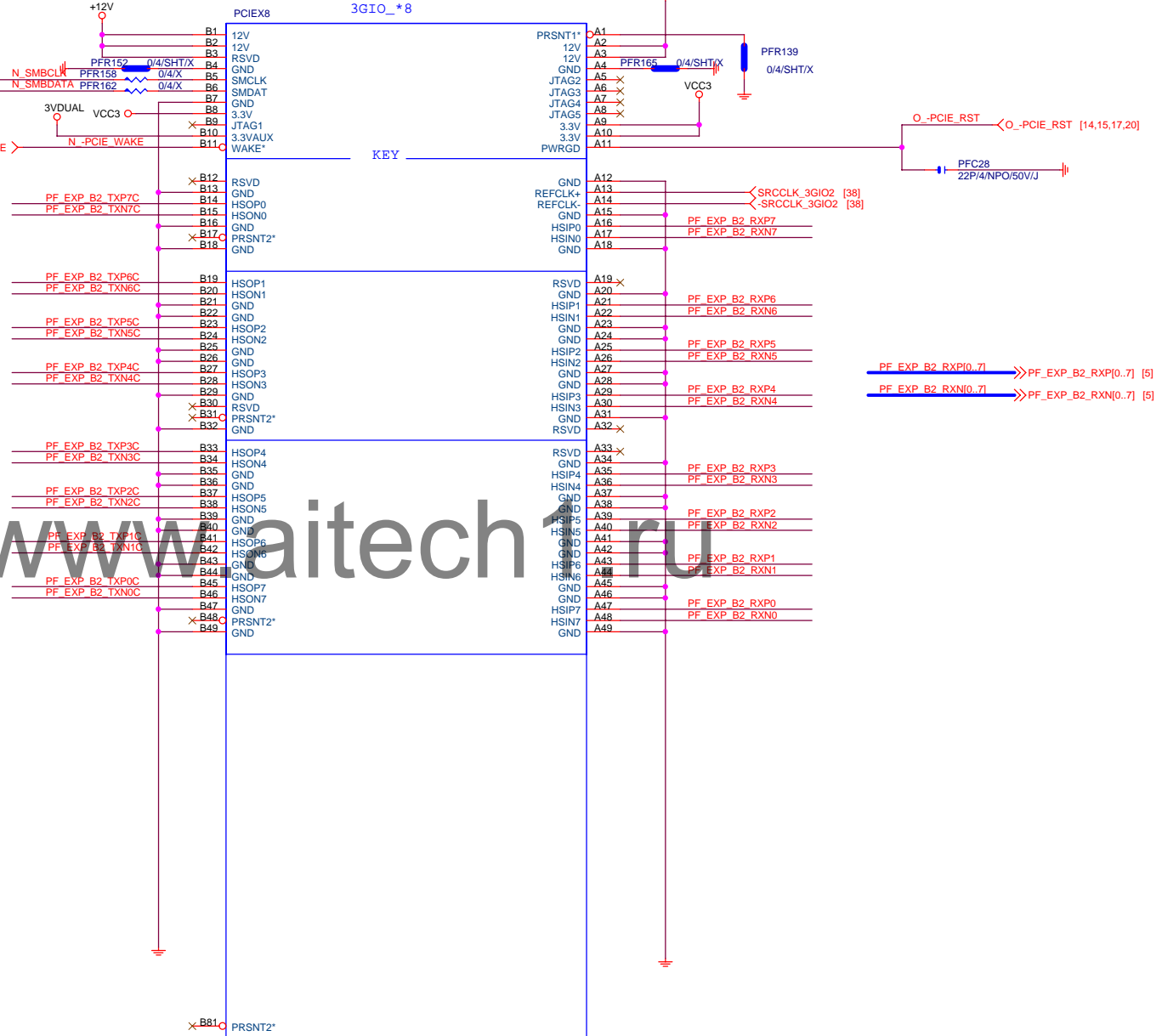


[11,14,15,17,18,22,24,27,28,31,38] N_SMBCLK
[11,14,15,17,18,22,24,27,28,31,38] N_SMBDATA

[11,14,15,17,39,40] N_-PCIE_WAKE

PF_EXP_B2_TXP0.7I >> PF_EXP_B2_TXP[0..7] [5]
PF_EXP_B2_TXN0.7I >> PF_EXP_B2_TXN[0..7] [5]

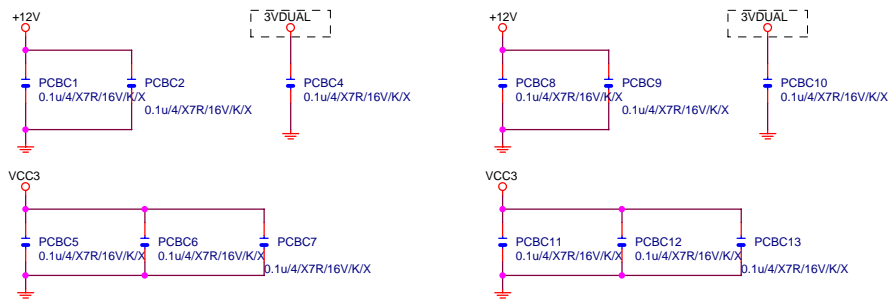
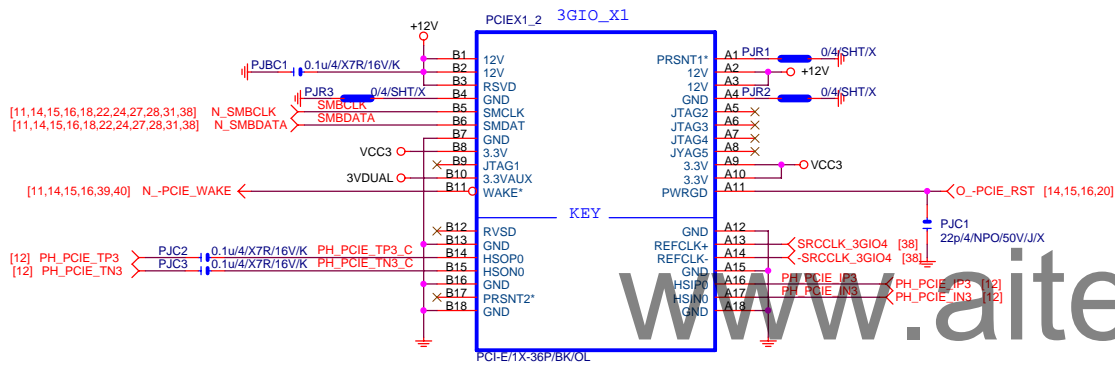
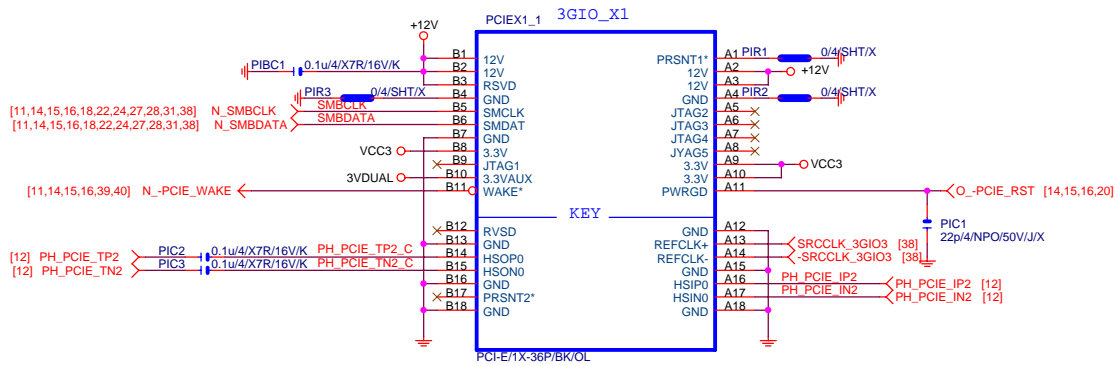
PF_EXP_B2_TXP0	PFC79	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP0C
PF_EXP_B2_TXN0	PFC81	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN0C
PF_EXP_B2_TXP1	PFC73	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP1C
PF_EXP_B2_TXN1	PFC76	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN1C
PF_EXP_B2_TXP2	PFC67	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP2C
PF_EXP_B2_TXN2	PFC69	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN2C
PF_EXP_B2_TXP3	PFC61	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP3C
PF_EXP_B2_TXN3	PFC63	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN3C
PF_EXP_B2_TXP4	PFC55	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP4C
PF_EXP_B2_TXN4	PFC57	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN4C
PF_EXP_B2_TXP5	PFC49	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP5C
PF_EXP_B2_TXN5	PFC51	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN5C
PF_EXP_B2_TXP6	PFC42	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP6C
PF_EXP_B2_TXN6	PFC45	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN6C
PF_EXP_B2_TXP7	PFC34	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXP7C
PF_EXP_B2_TXN7	PFC36	0.22u/4/X5R/6.3V/KPF_EXP_B2_TXN7C

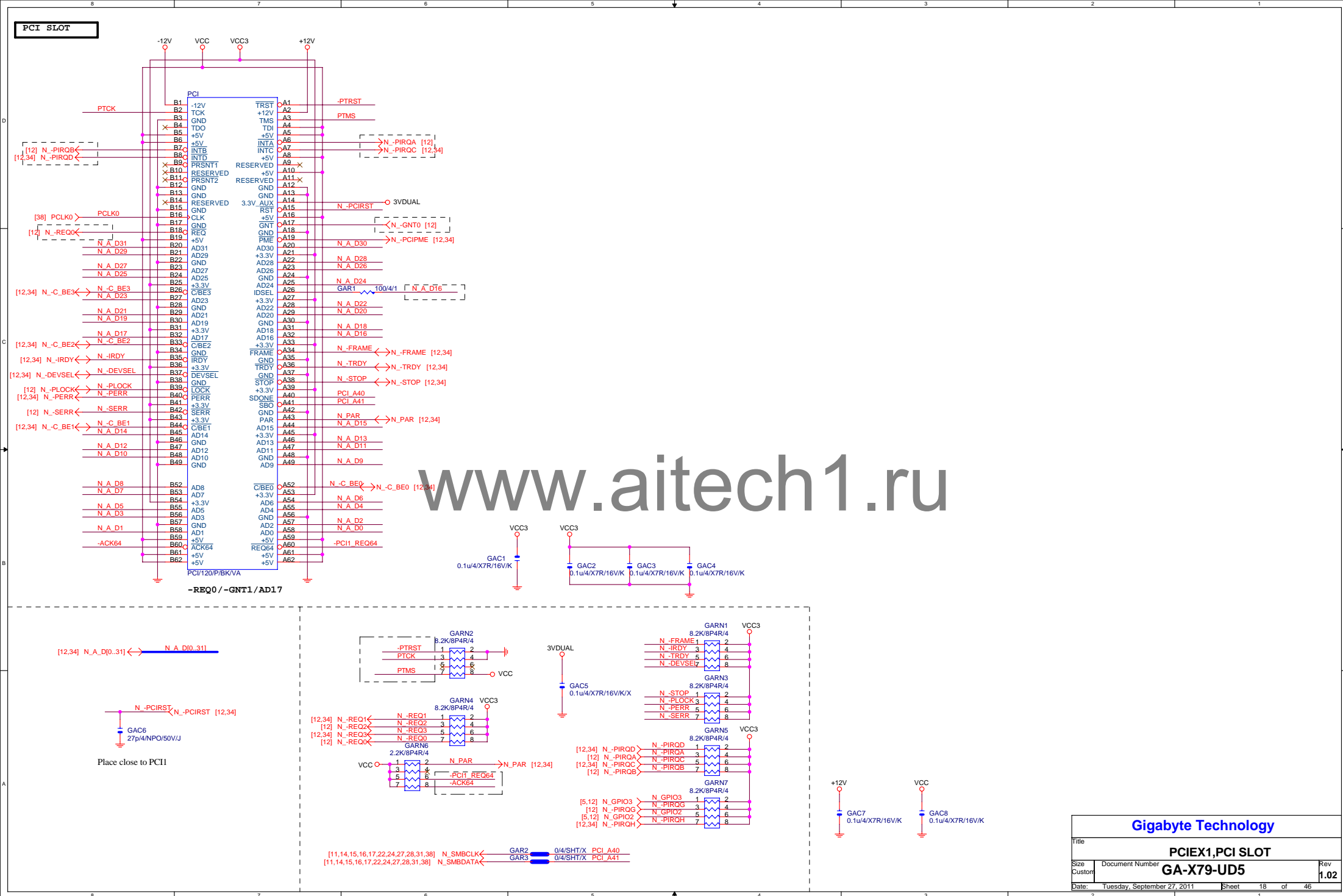


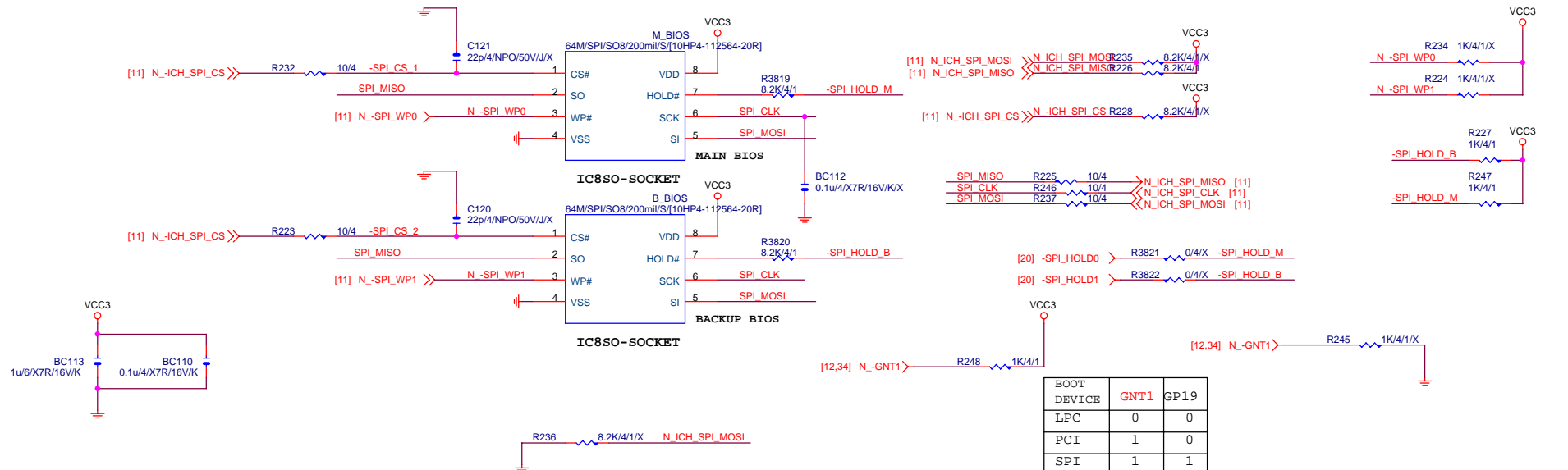
PCI-E/16X-99P/BK/RIGHT PUSH

Gigabyte Technology

Title			PCI EXPRESS X8_2	
Size			Document Number	
Custom			GA-X79-UD5	
Date:			Tuesday, September 27, 2011	Sheet 16 of 46
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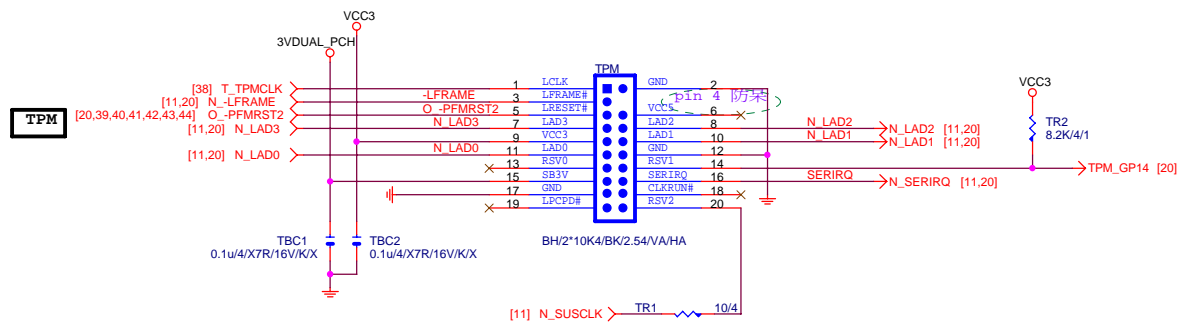
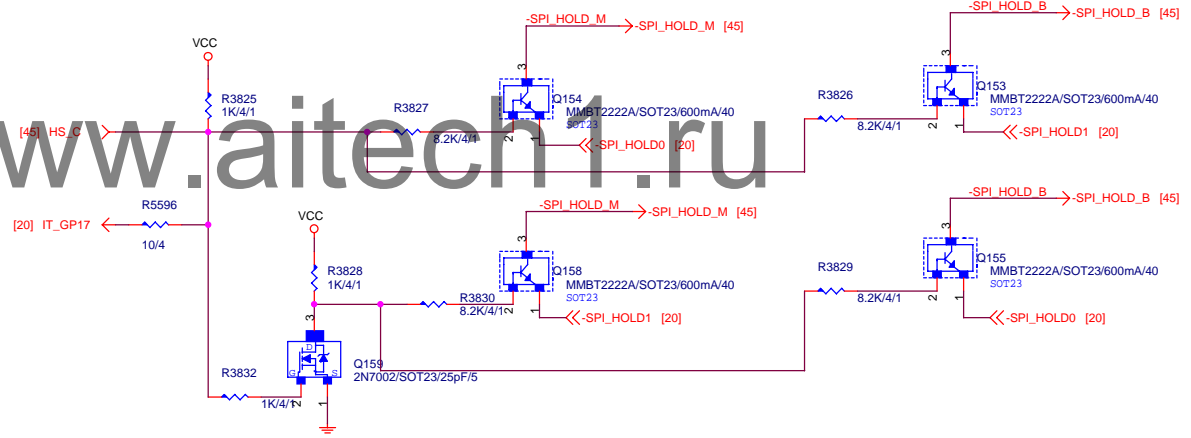


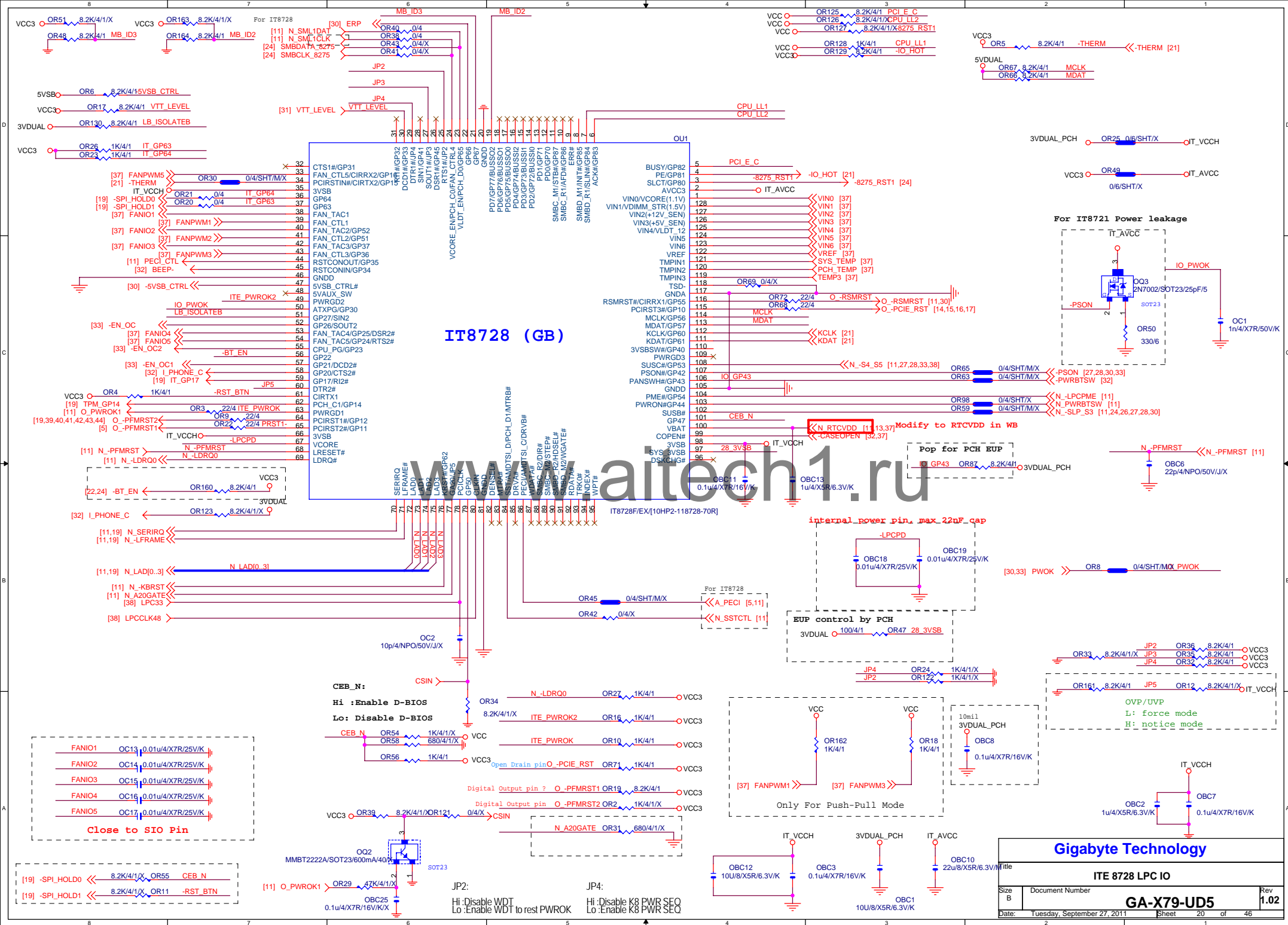


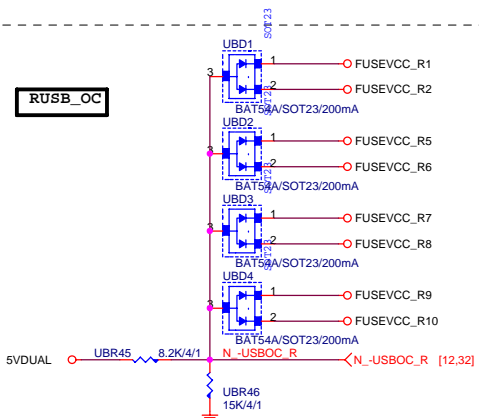
BOOT DEVICE	GNT1	GP19
LPC	0	0
PCI	1	0
SPI	1	1

1 means PU
0 means PD 1K

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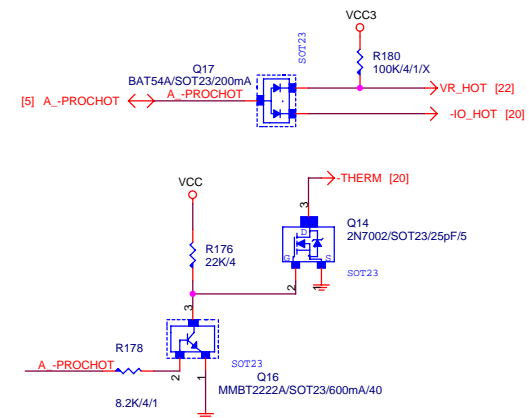




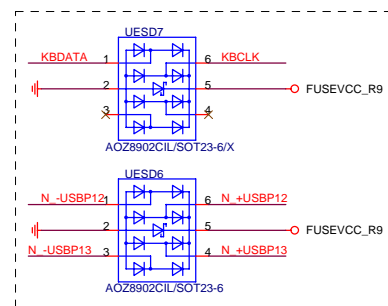
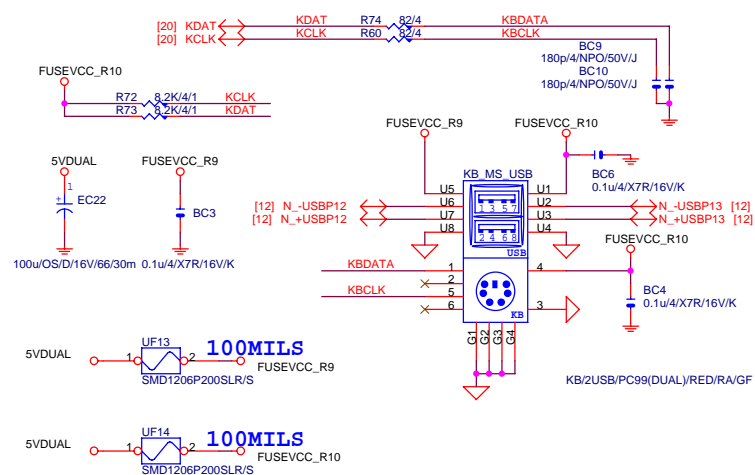


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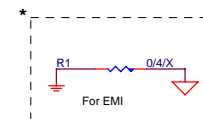
~PROHOT



KB/MS



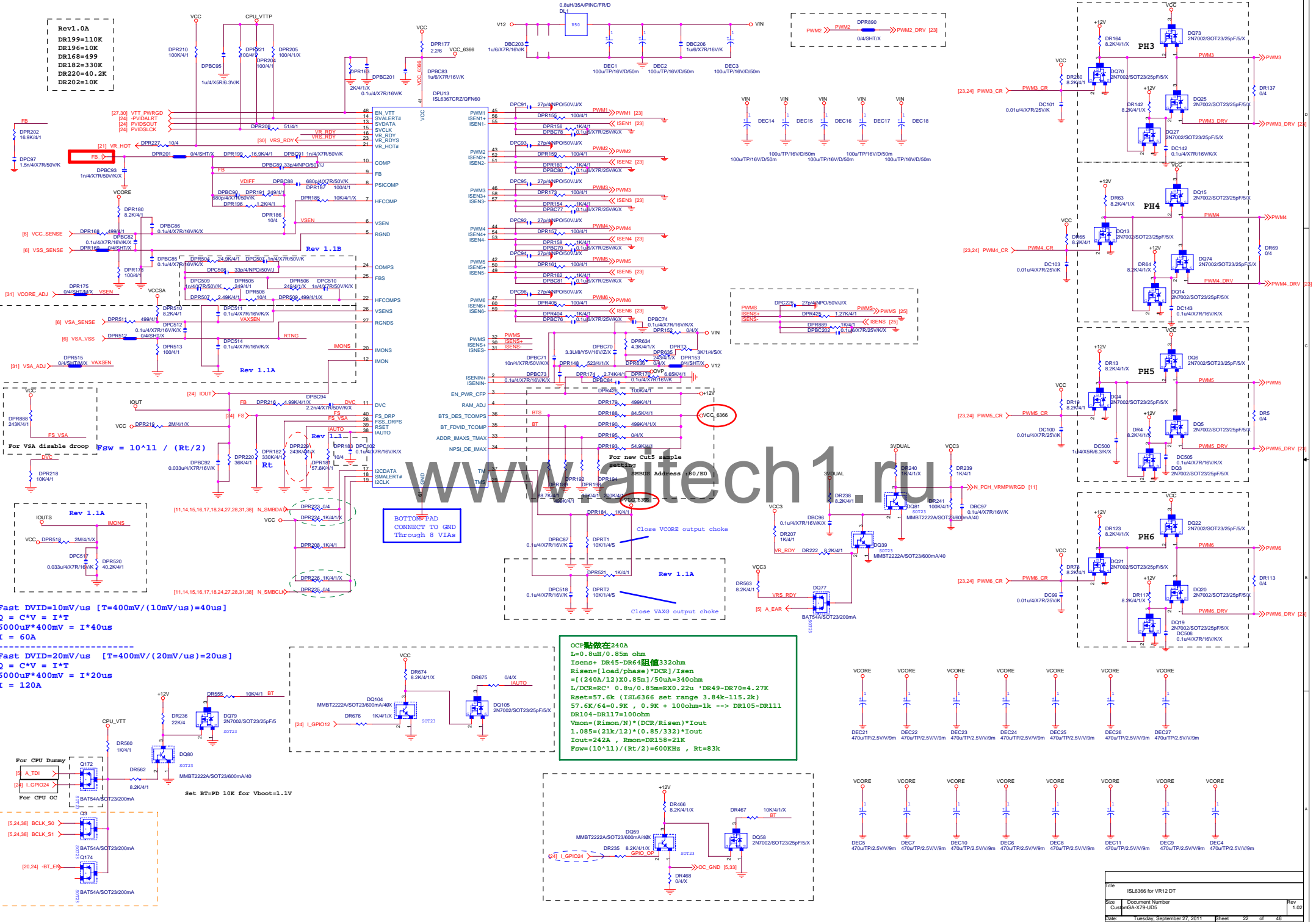
Close to connector



Gigabyte Technology

Gigabyte Technology			
Title			
PROHOT/Dynamic O.C.			
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Rev1.0A
DR199=110K
DR196=10K
DR168=499
DR182=330K
DR220=40.2K
DR202=10K



Fast DVID=10mV/us [T=400mV/(10mV/us)=40us]
 $Q = C \cdot V = I \cdot T$
 $6000uF \cdot 400mV = I \cdot 40us$
 $I = 60A$

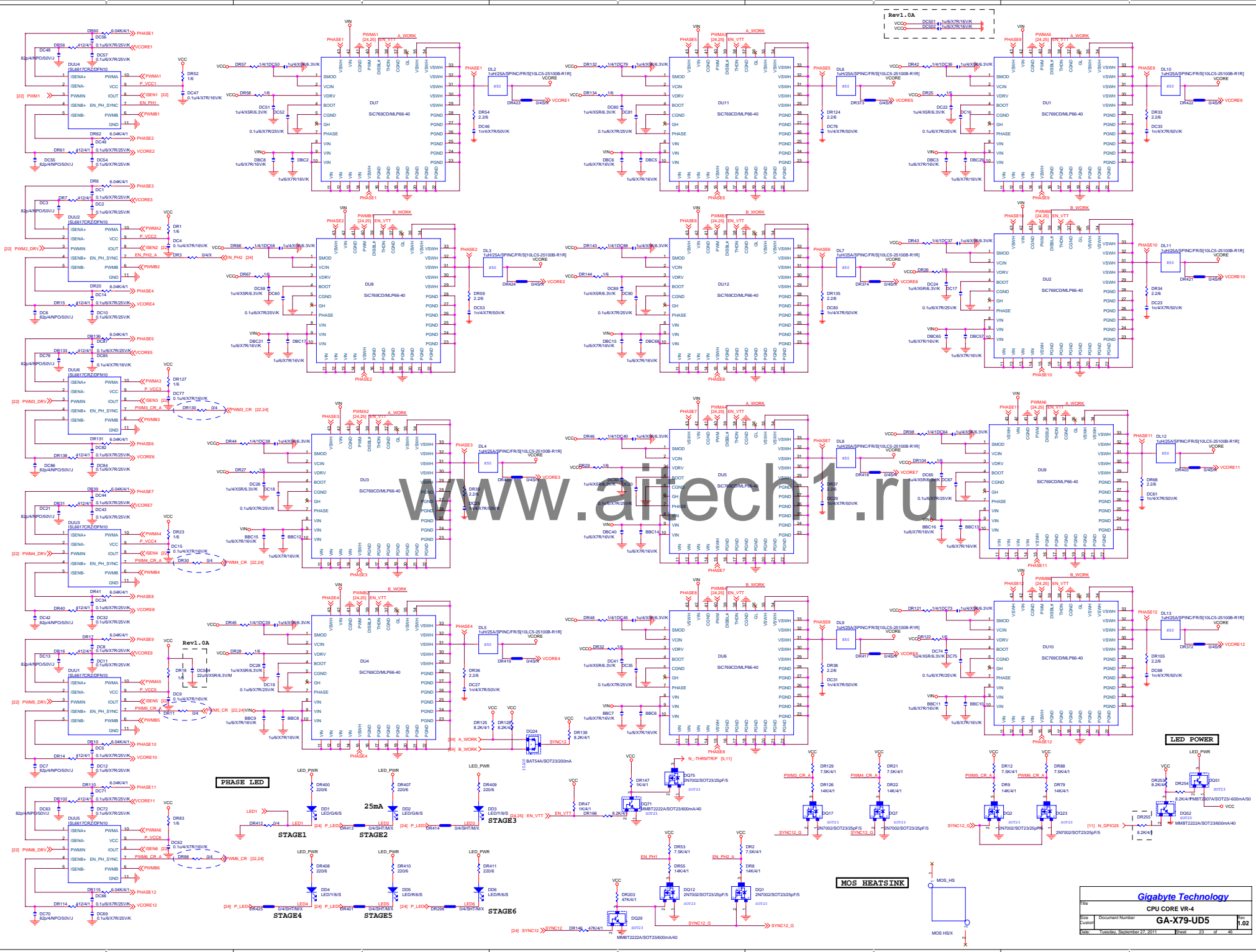
Fast DVID=20mV/us [T=400mV/(20mV/us)=20us]
 $Q = C \cdot V = I \cdot T$
 $6000uF \cdot 400mV = I \cdot 20us$
 $I = 120A$

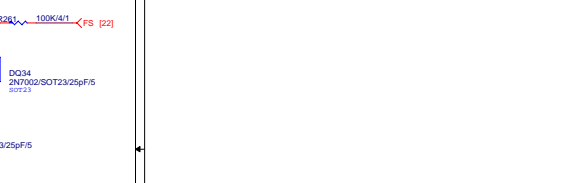
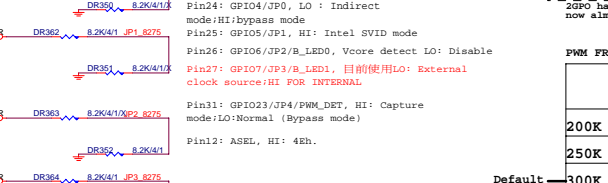
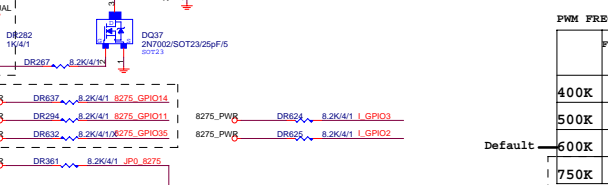
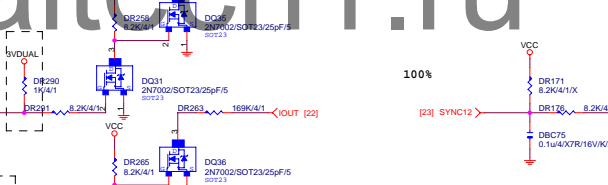
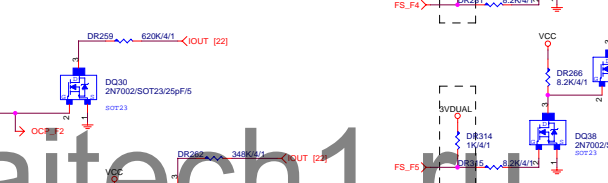
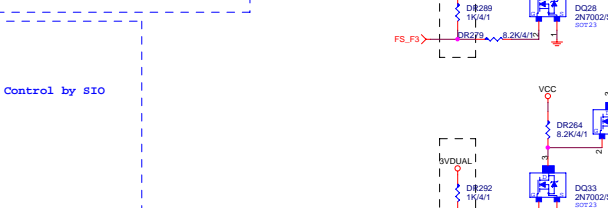
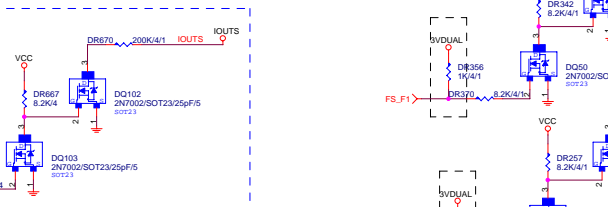
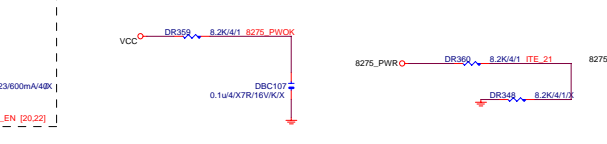
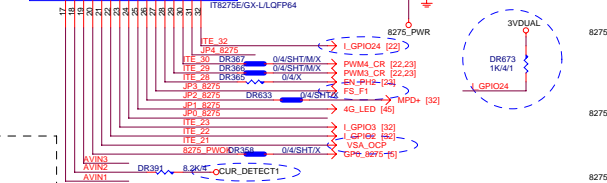
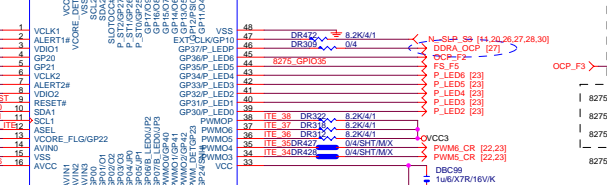
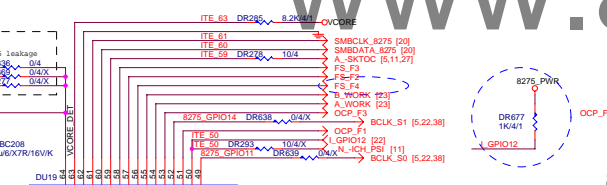
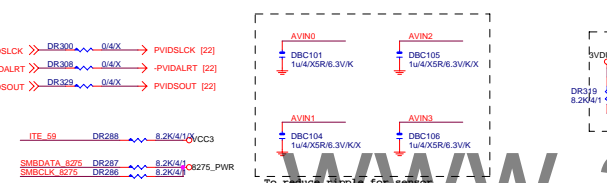
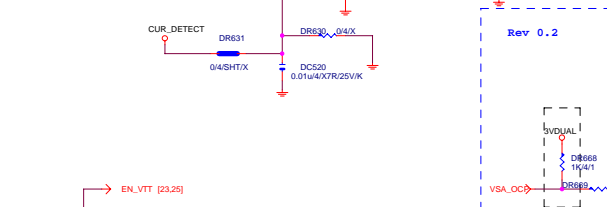
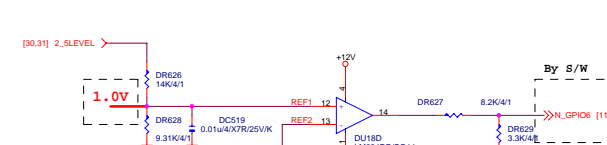
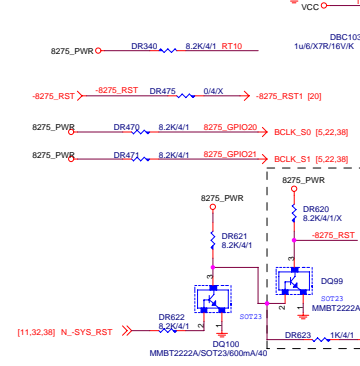
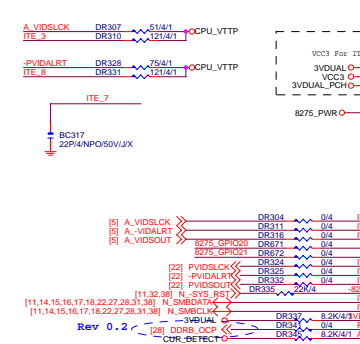
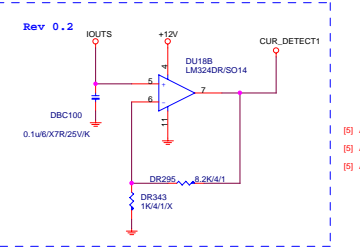
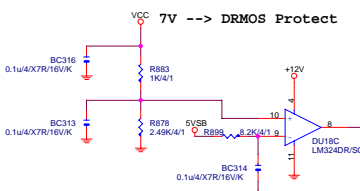
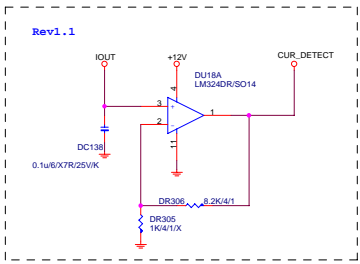
For CPU Dummy
[5.24.38] BCLK_S0
[5.24.38] BCLK_S1
[20.24] -BT_EF

[5.24.38] BCLK_S0
[5.24.38] BCLK_S1
[20.24] -BT_EF

BOTTOM PAD
CONNECT TO GND
Through 8 Vias

OCF點做在240A
 $L=0.8uH/0.85m\ ohm$
 $I_{sens+}=DR45-DR64阻值332ohm$
 $R_{isen+}=[load/phase]*DCR/I_{sen+}$
 $=((240A/12)*0.85m/150uA)=340ohm$
 $L/DCR=R_{OC} \ 0.8u/0.85m=920.22u \ DR49-DR70=4.27K$
 $R_{set}=57.6K \ (ISL6366\ set\ range\ 3.84k-115.2K)$
 $57.6K/64=0.9K, \ 0.9K + 100ohm=1k \ --> \ DR105-DR111$
 $DR104-DR117=100ohm$
 $V_{mon}=(R_{imom}/N)*(DCR/R_{isen})*I_{out}$
 $1.085=(21k/12)*(0.85/332)*I_{out}$
 $I_{out}=242A, \ R_{mon}=DR158=21K$
 $F_{sw}=10^{*}11/(Rt/2)=600KHz, \ Rt=83k$





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PWM FREQUENCY (400K-750KHz)

	FS_F2	FS_F1
GP26	GP25	
400K	L	X
500K	L	L
600K	X	X
750K	X	L

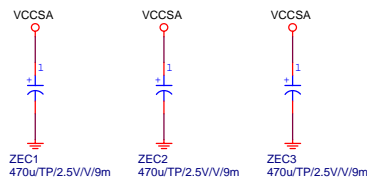
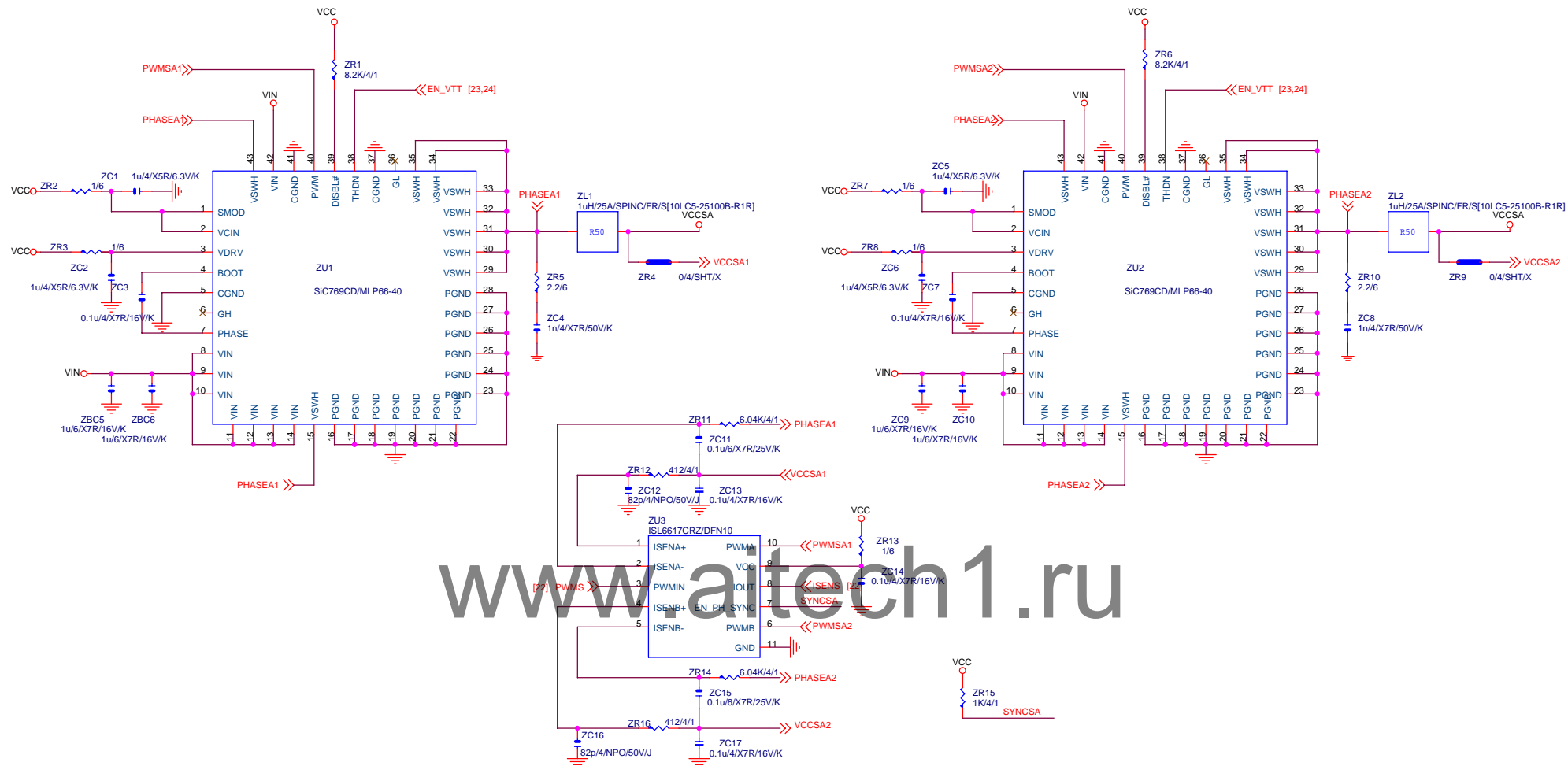
Default

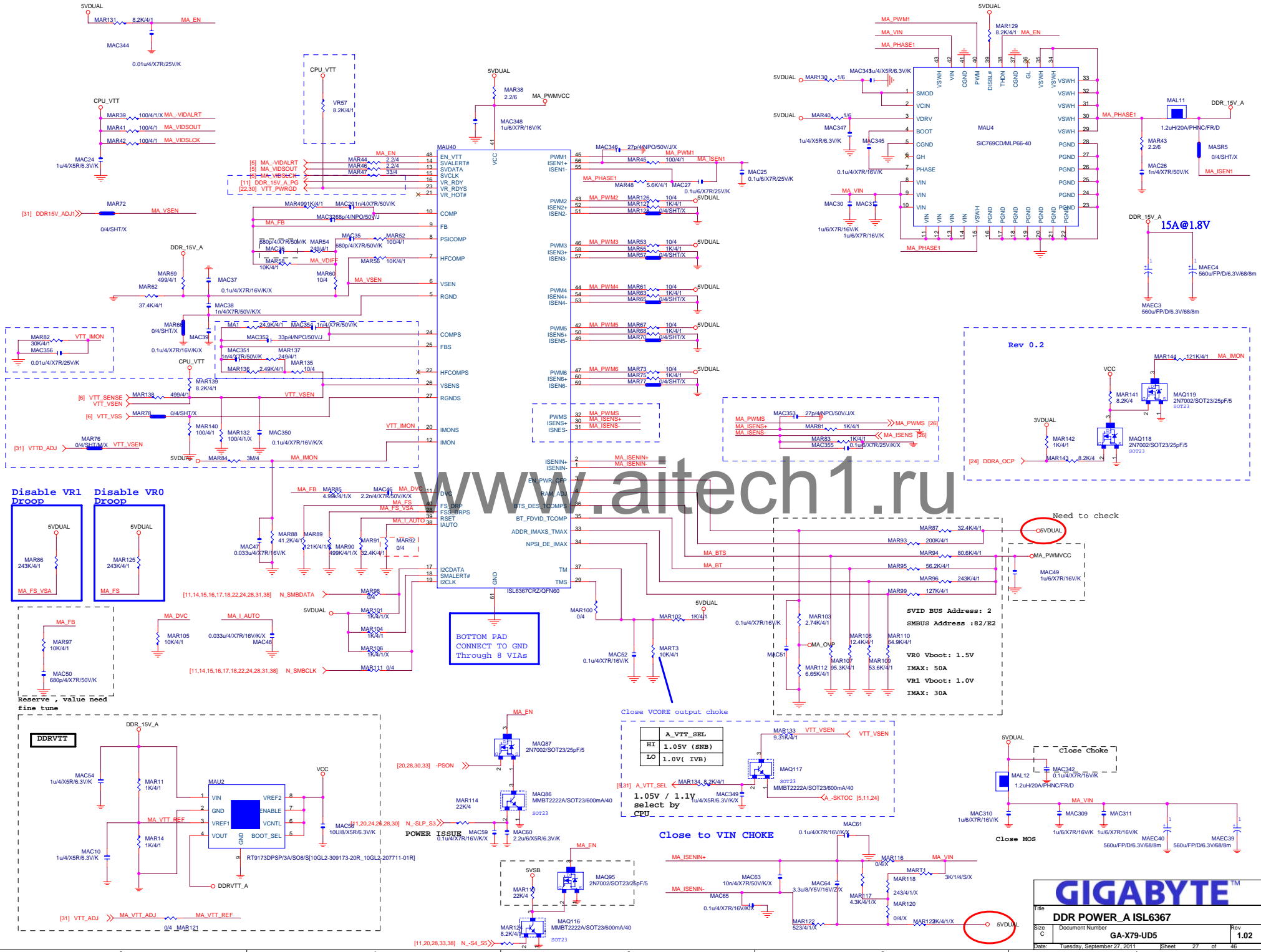
260 hard to apply 750K now almost 700K

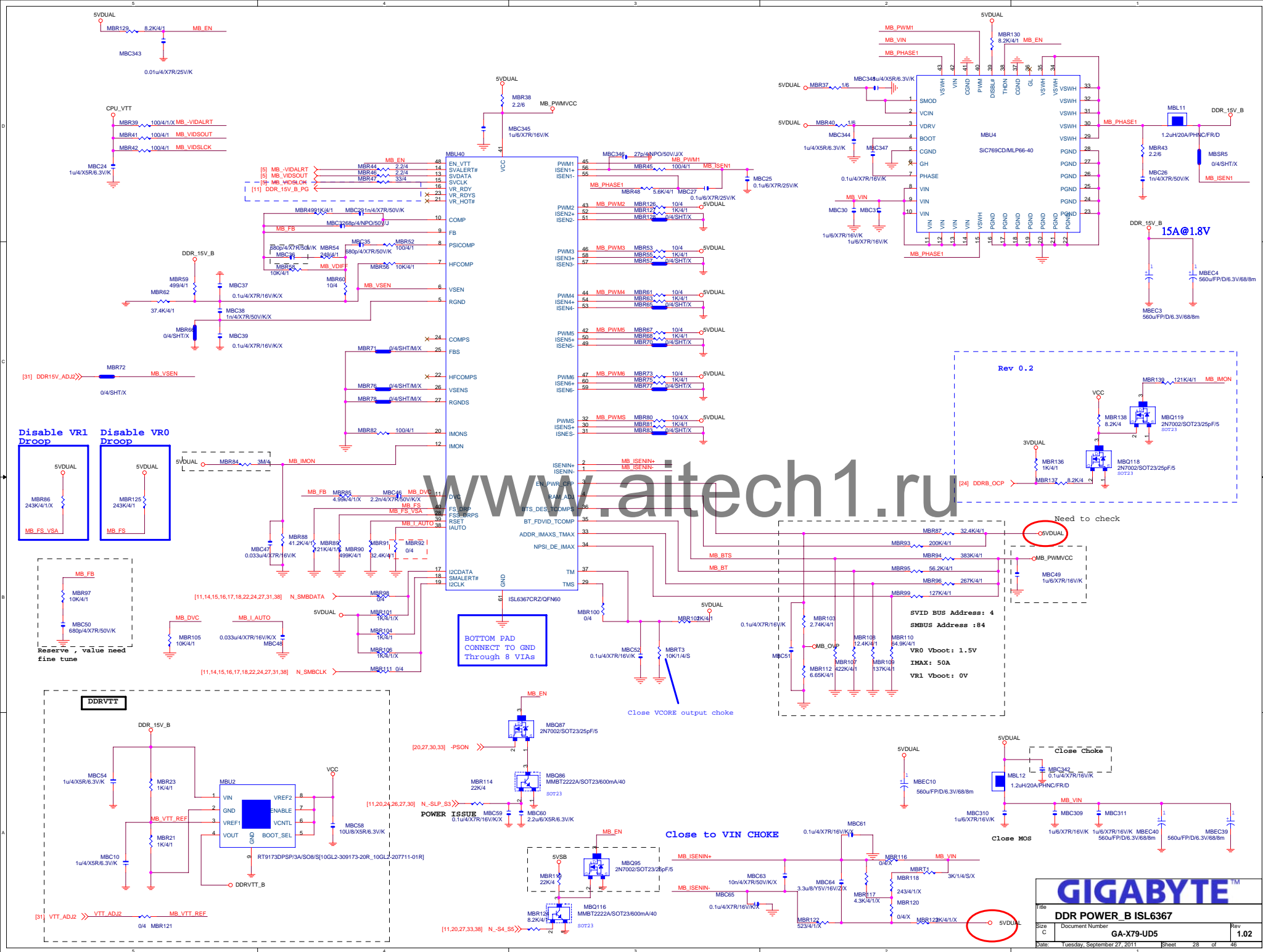
PWM FREQUENCY (200K-375KHz)

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GP26	GP25	
200K	L	H
250K	L	L
300K	H	H
375K	H	L

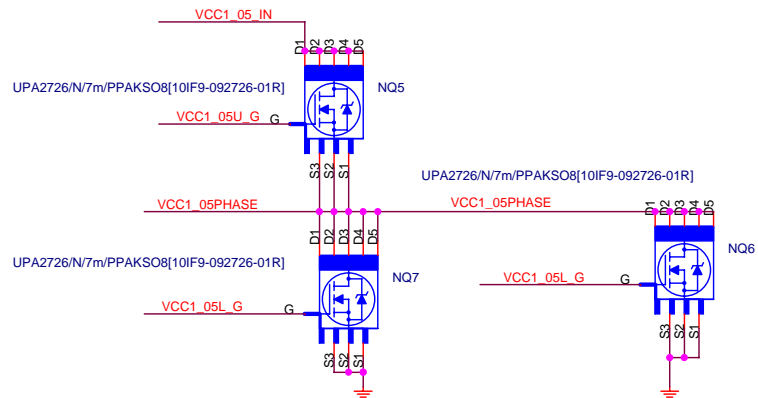
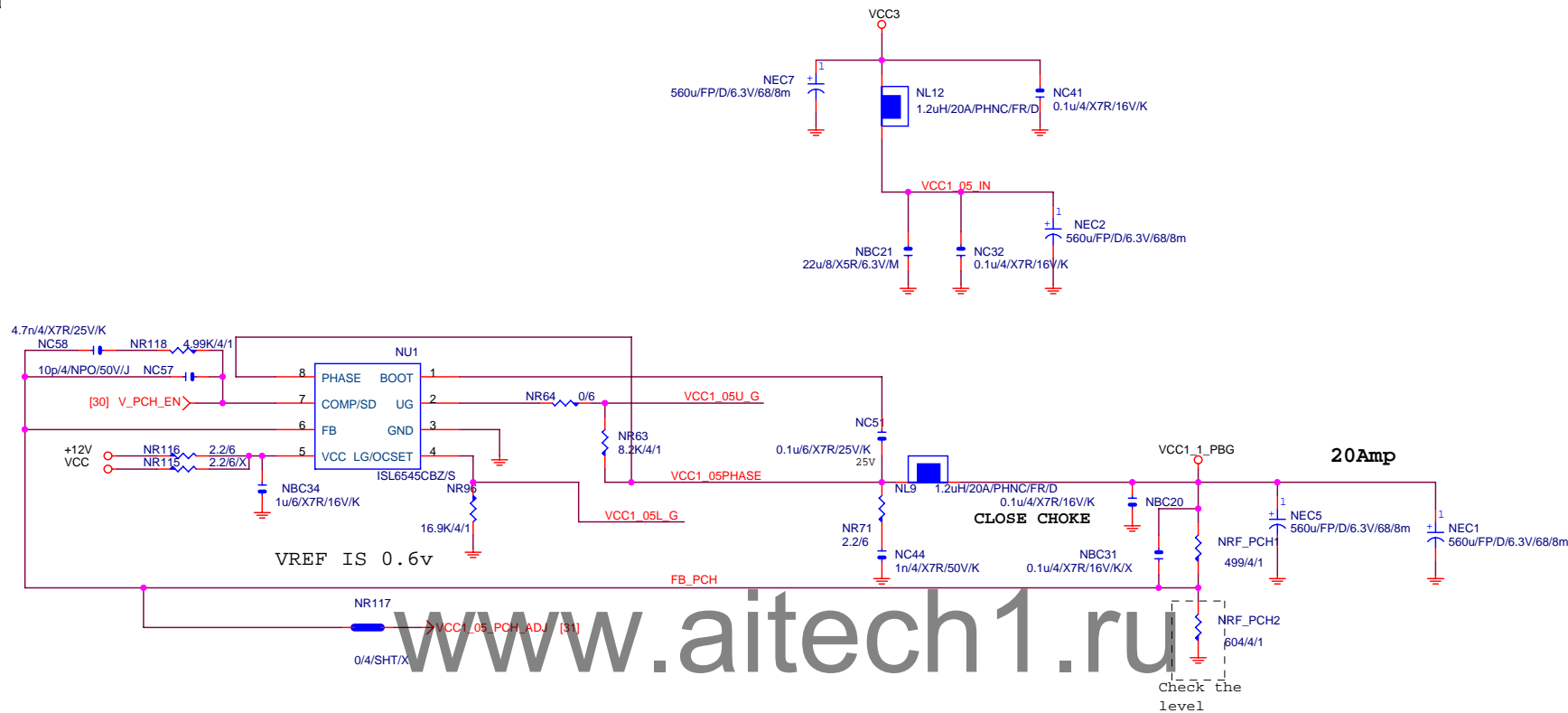
Default



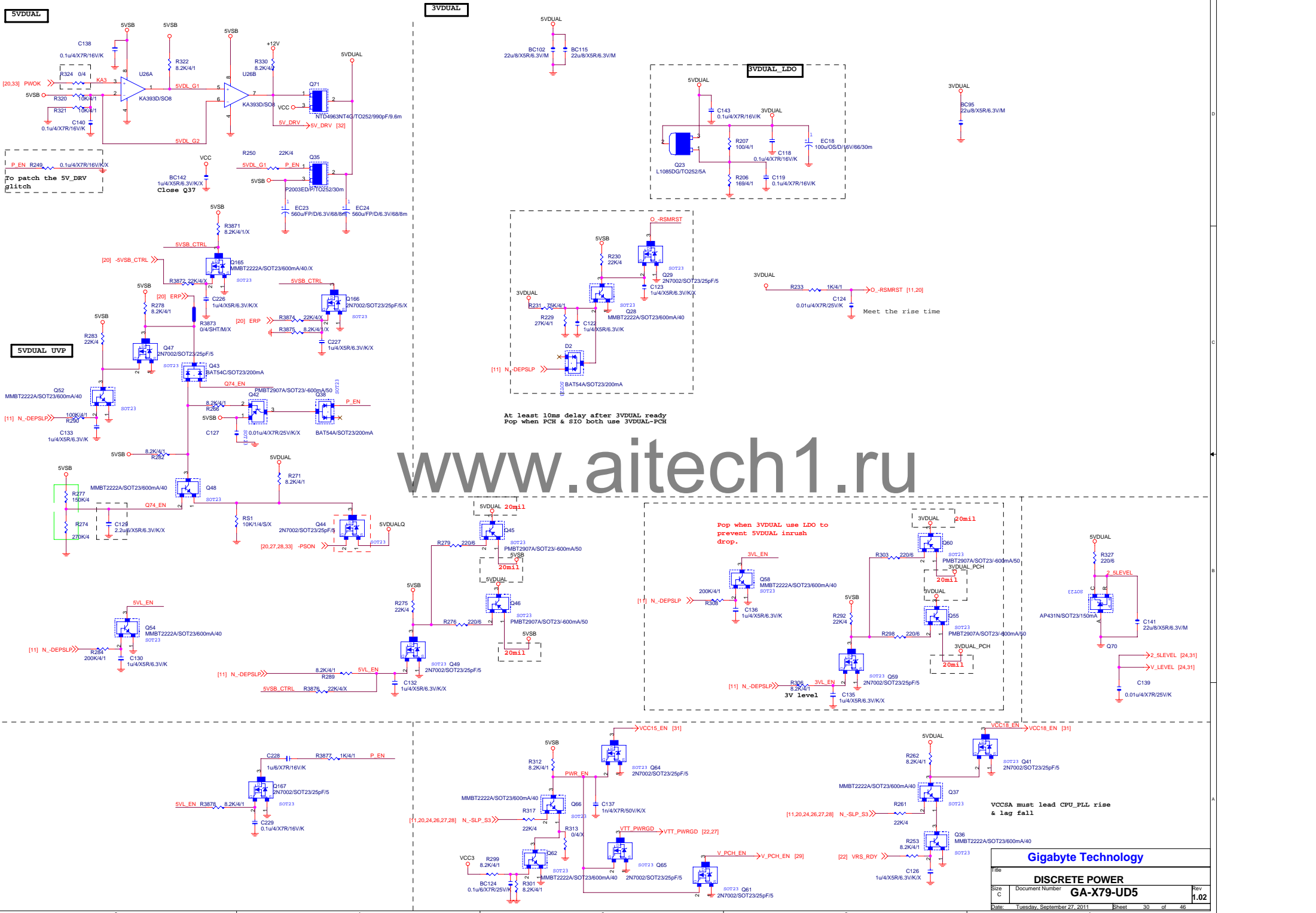




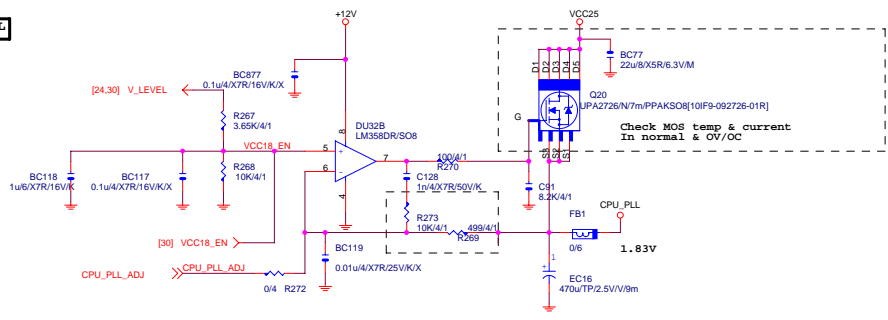
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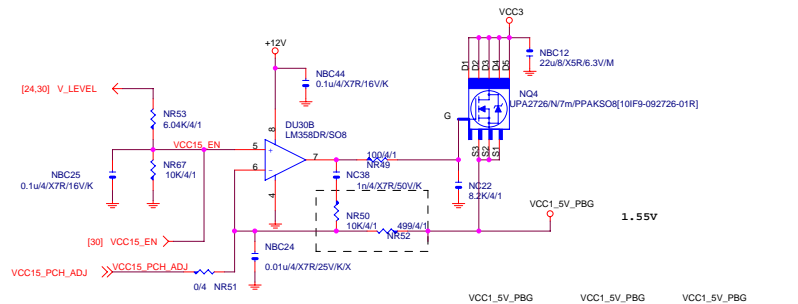
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Size	Document Number	Rev
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Date:	Tuesday, September 27, 2011	Sheet 29 of 46



CPU_PLL

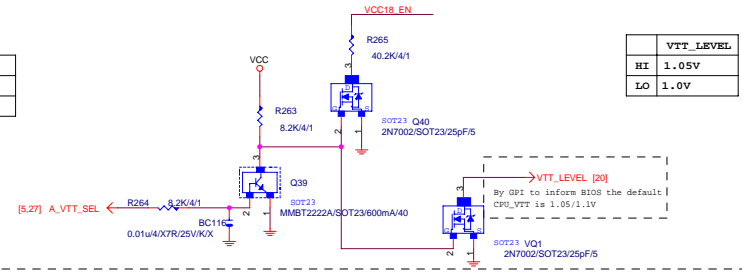


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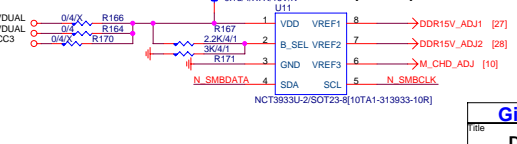
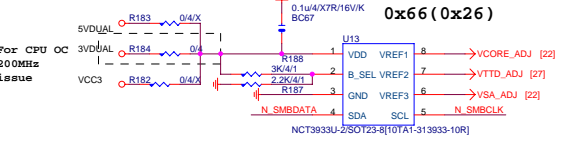
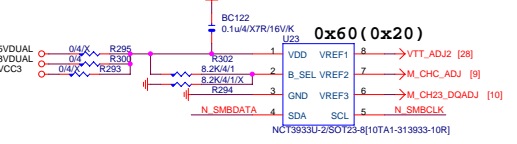
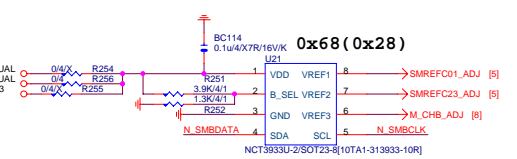
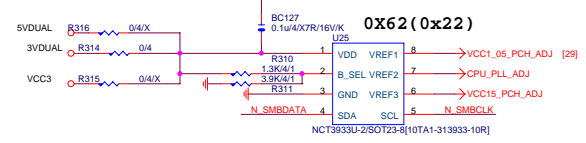
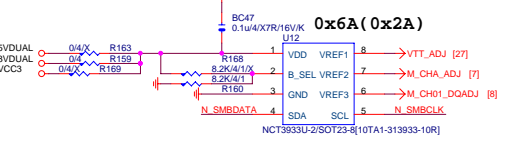
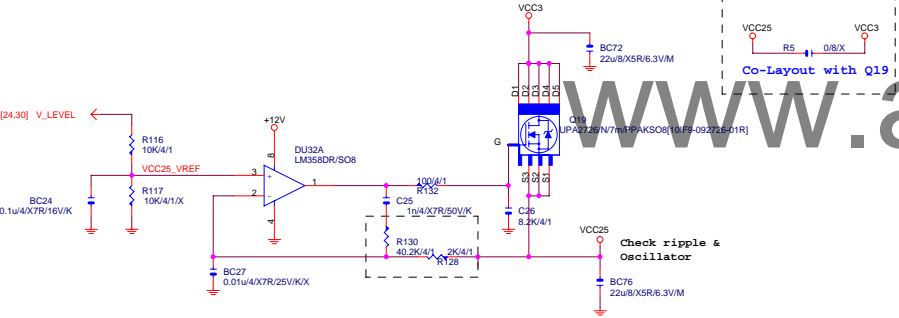


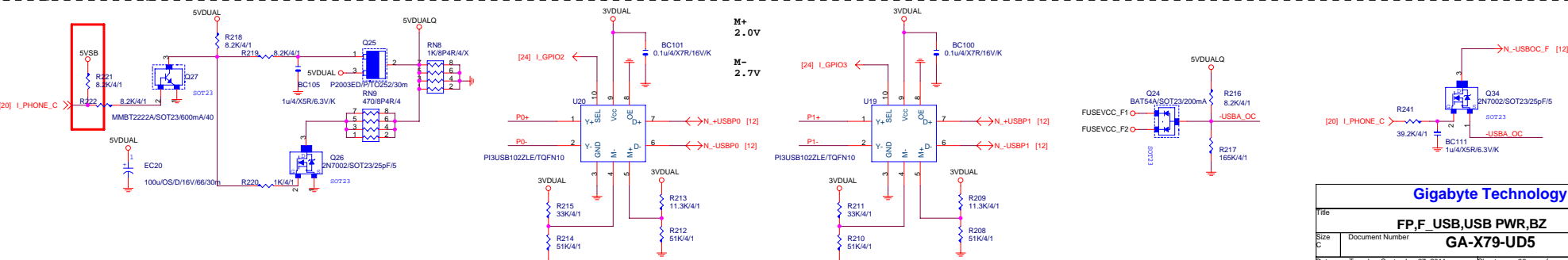
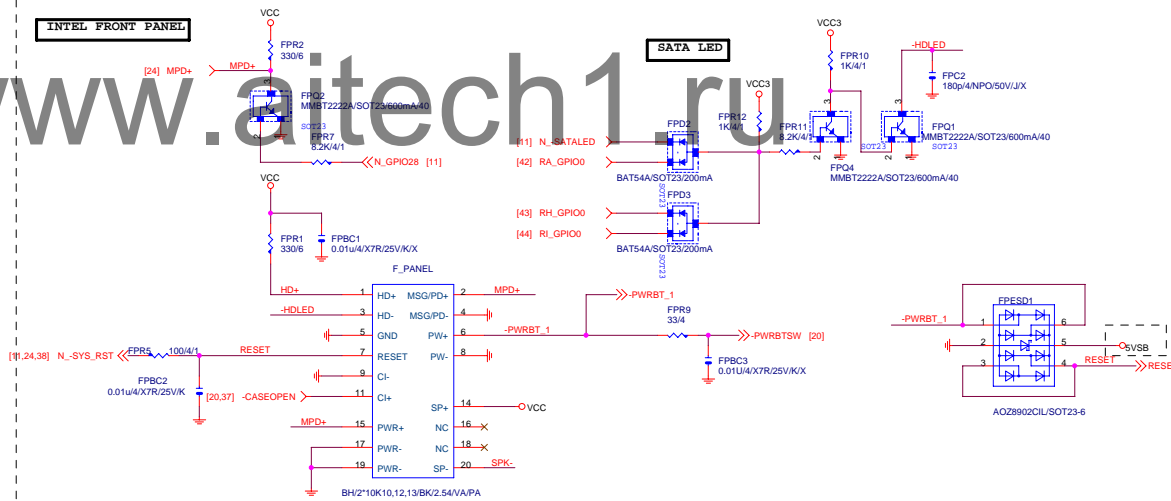
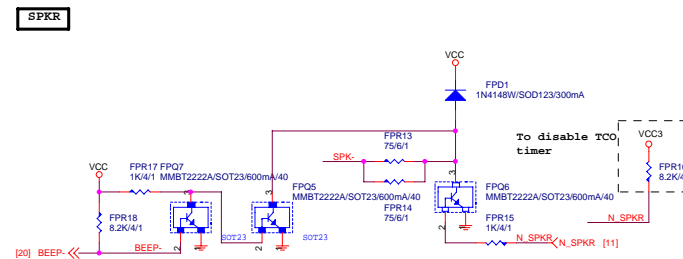
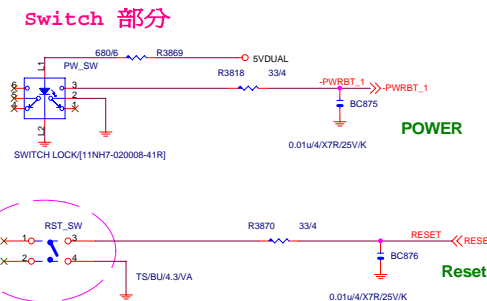
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LO 1.7V (IVB)

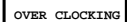
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LO 1.0V



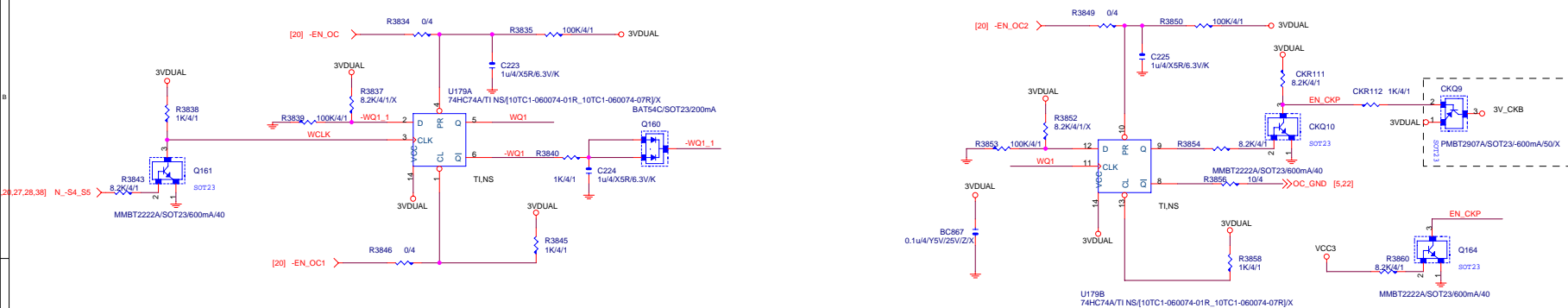
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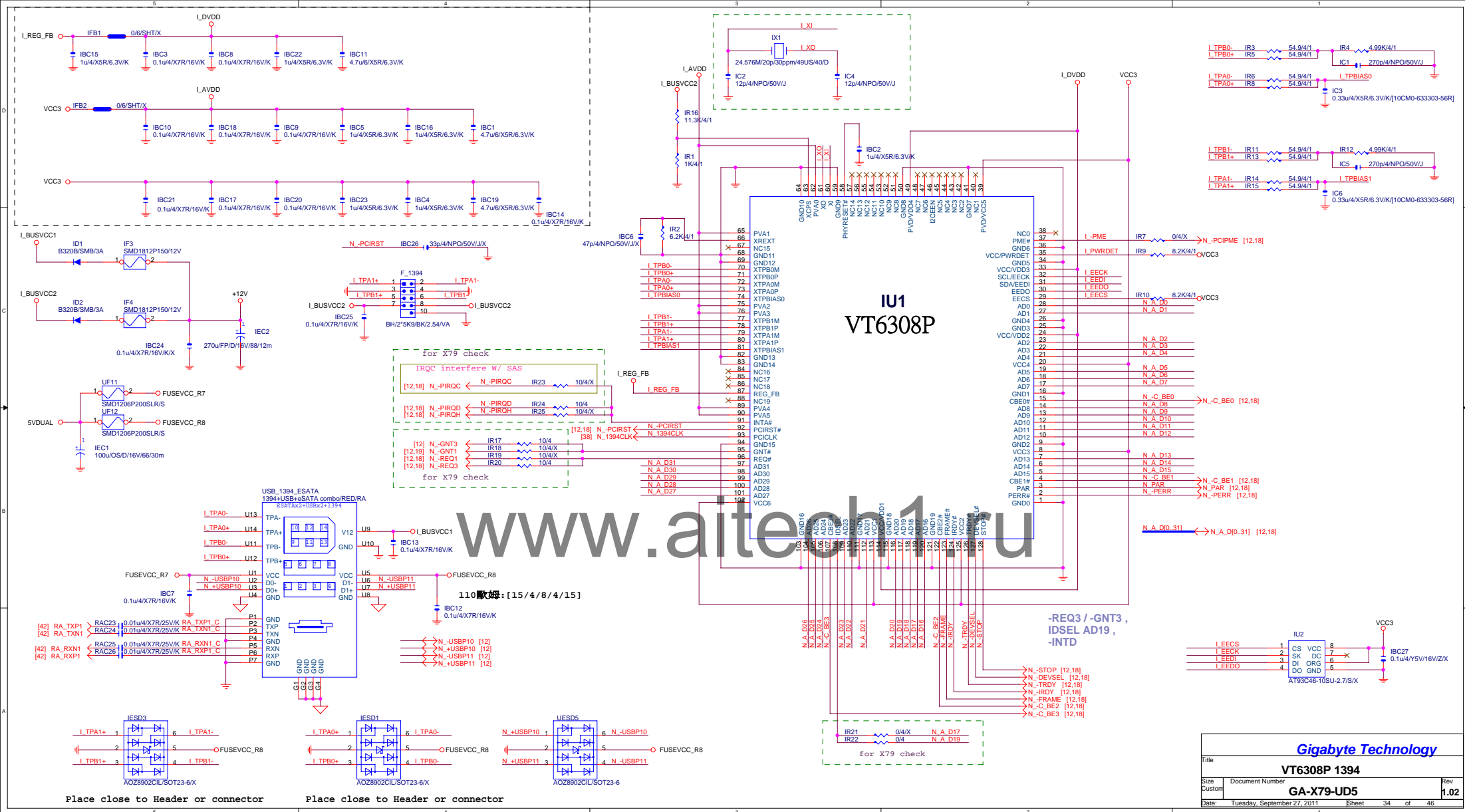




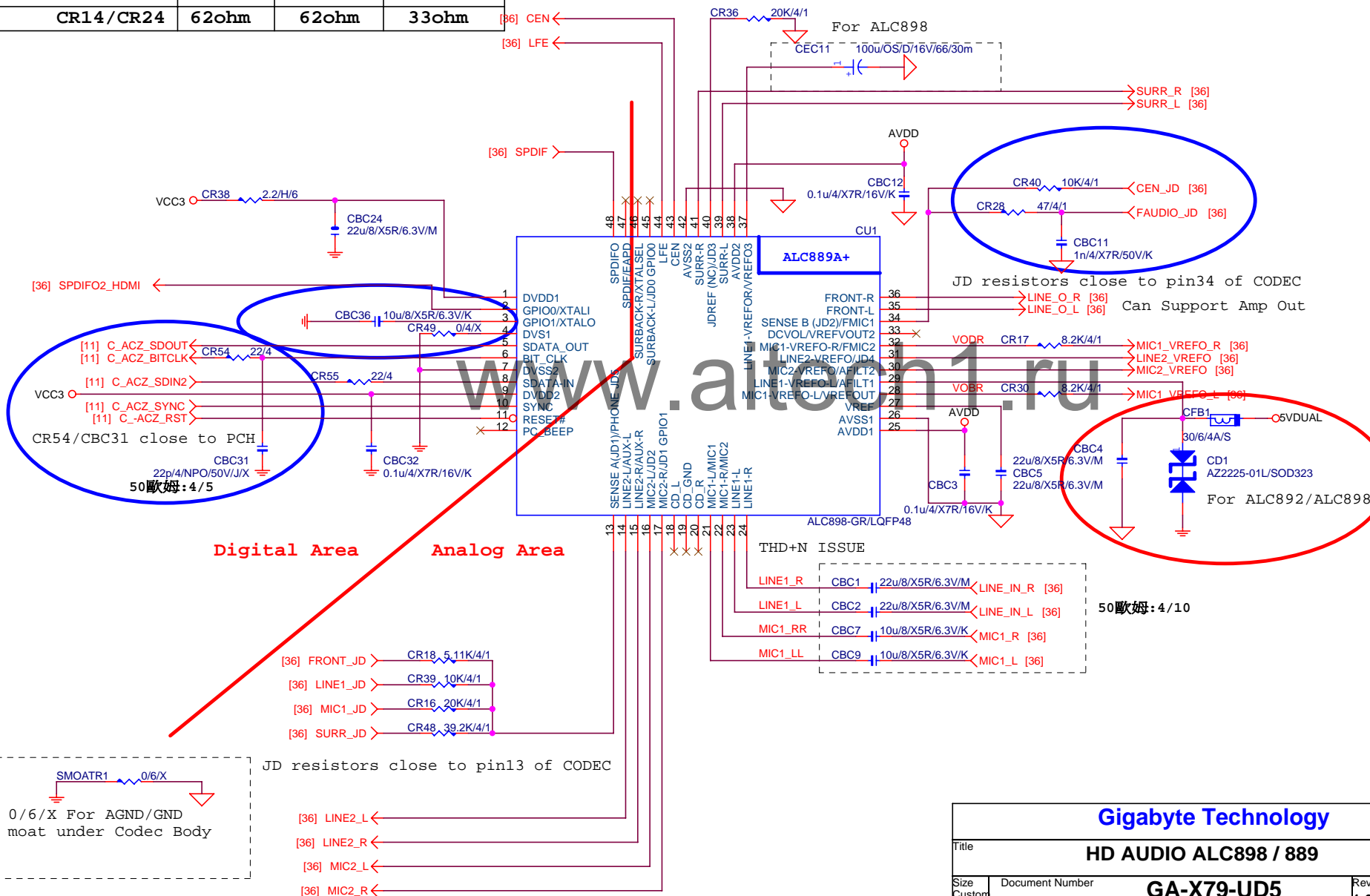
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CBC36	X	10uF/X5R	10uF/X5R
CR49	O	X	X
CFB1/CD1/CBC4	X	O	O
CD2/CD3/CQ3/CQ4	O	X	X
CEC11	X	X	100uF
CR14/CR24	62ohm	62ohm	33ohm



Gigabyte Technology

Title HD AUDIO ALC898 / 889

Size Custom

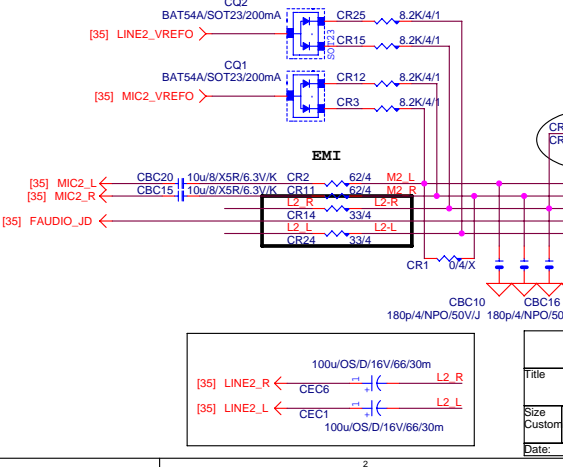
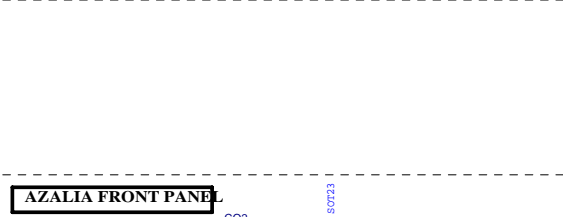
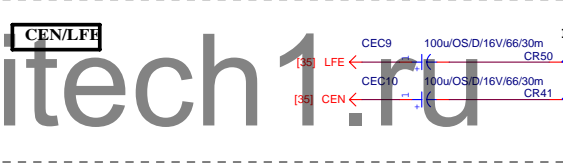
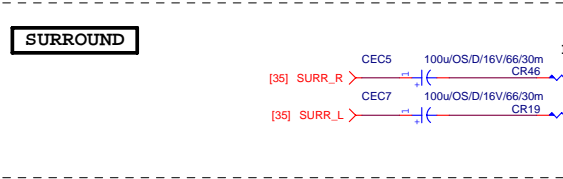
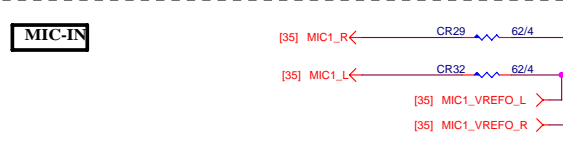
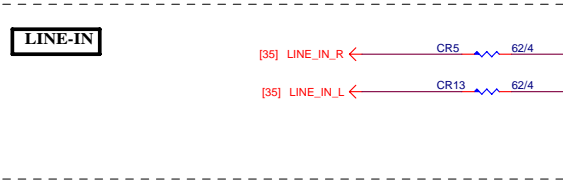
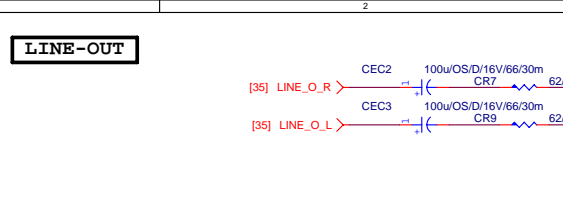
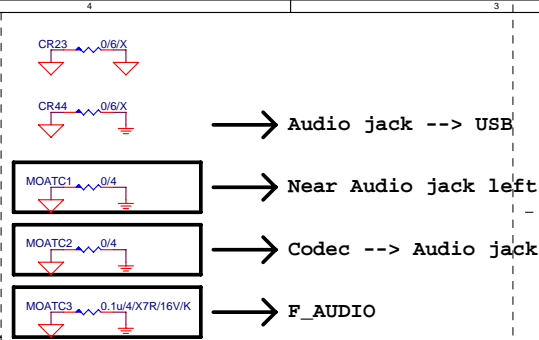
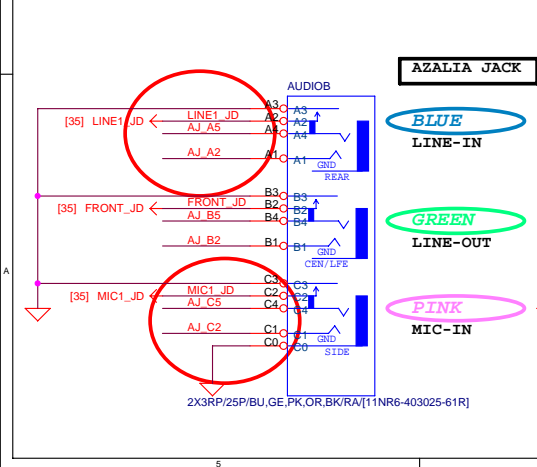
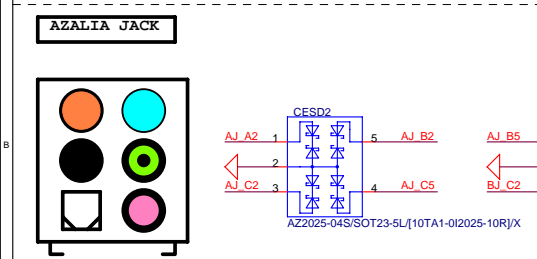
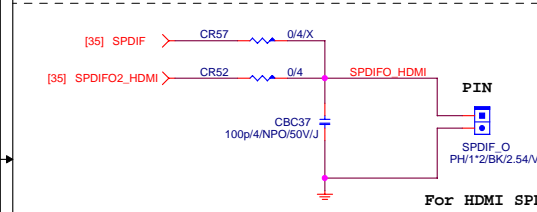
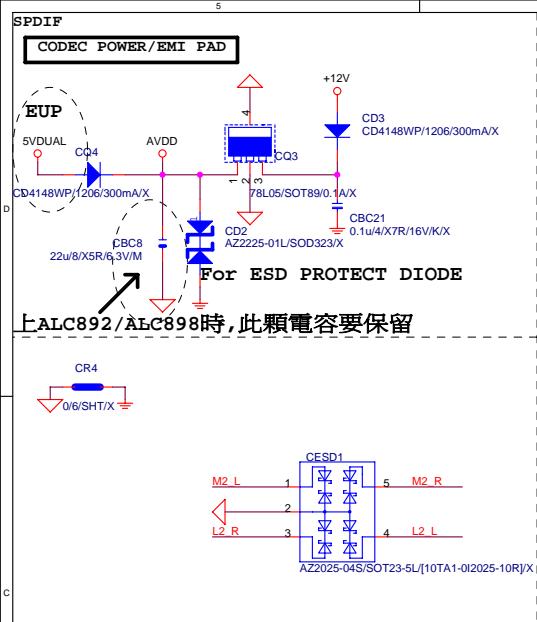
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GA-X79-UD5

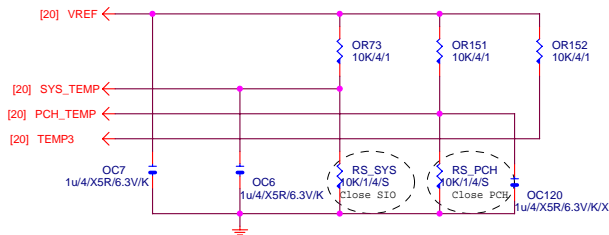
Rev 1.02

Date: Tuesday, September 27, 2011

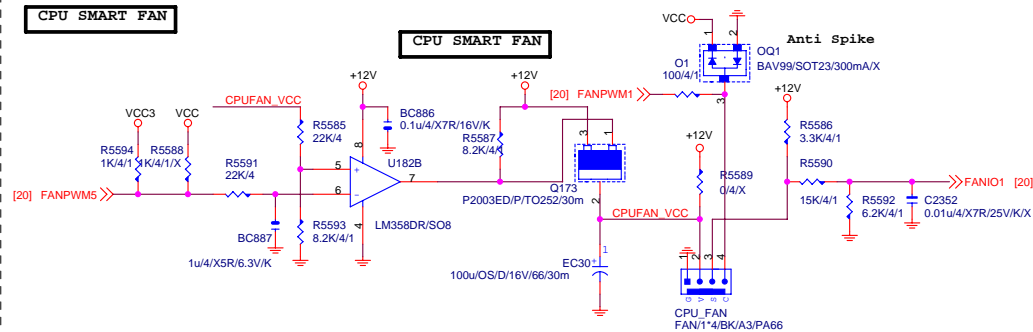
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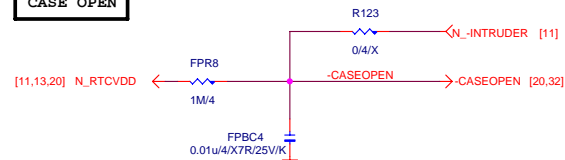
TEMP H/W MONITOR



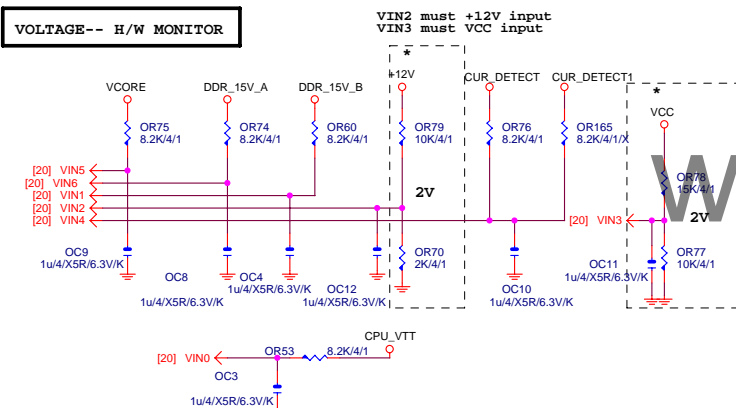
CPU SMART FAN



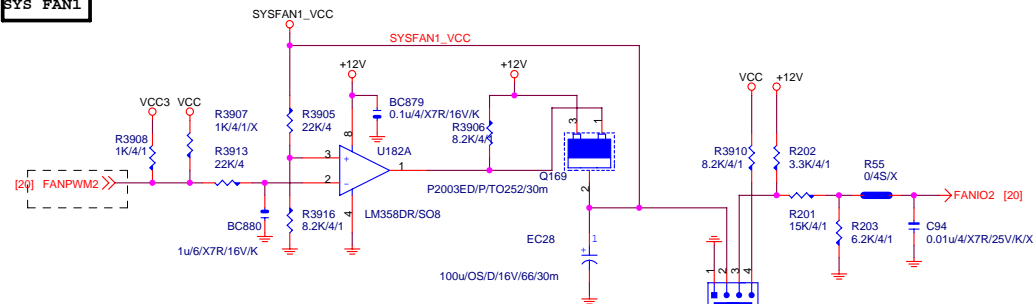
CASE OPEN



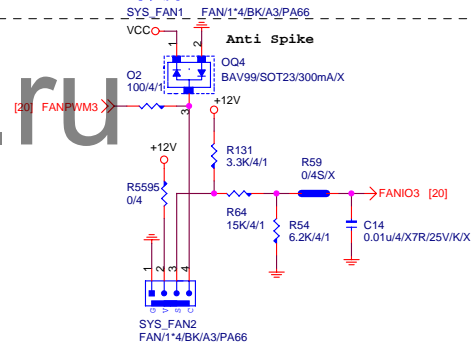
VOLTAGE-- H/W MONITOR



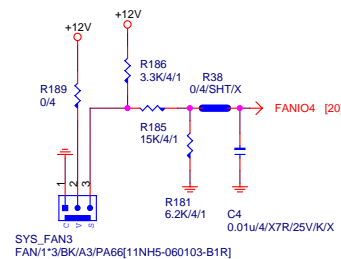
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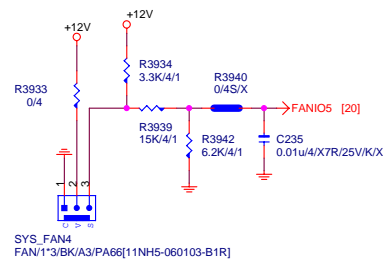
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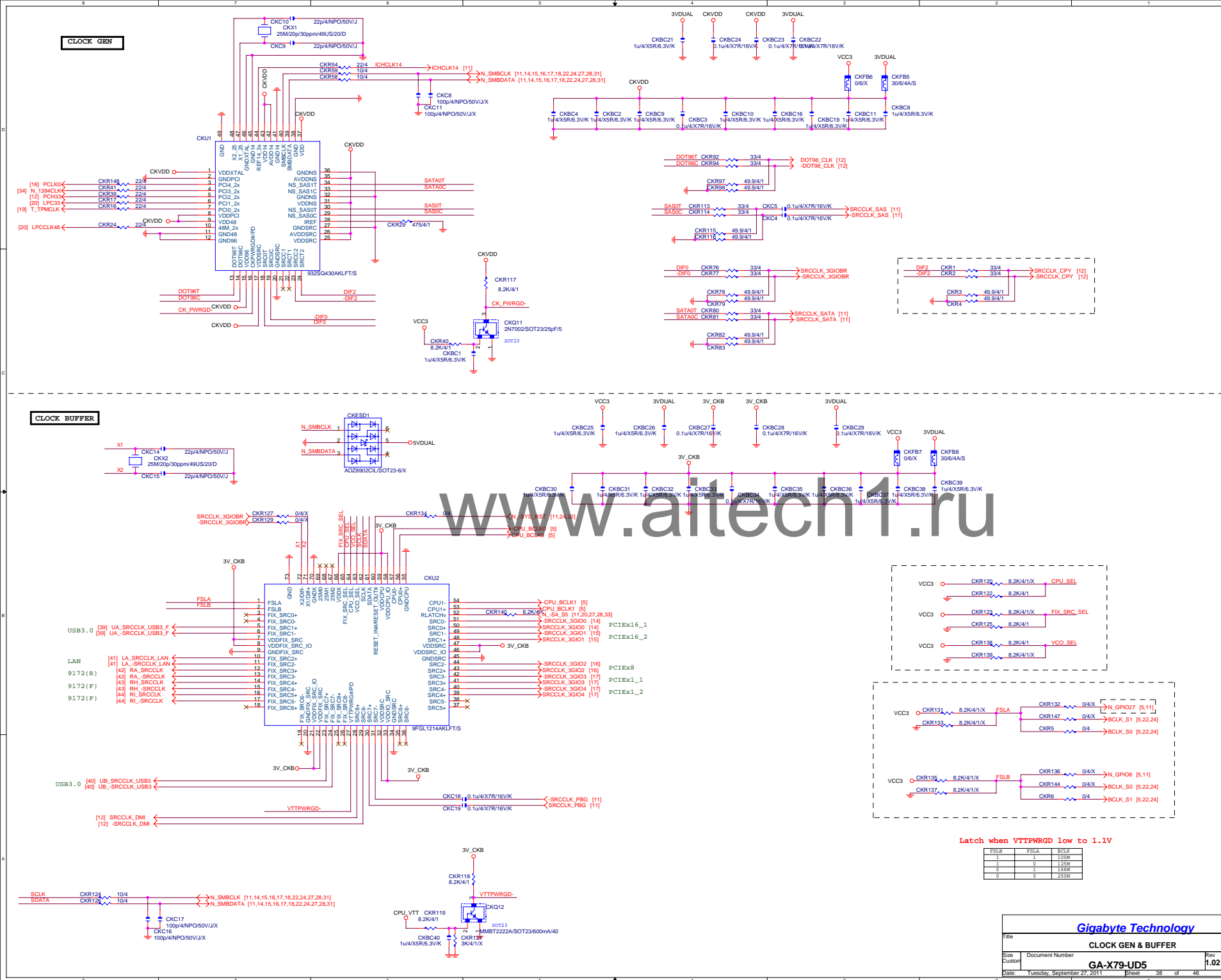


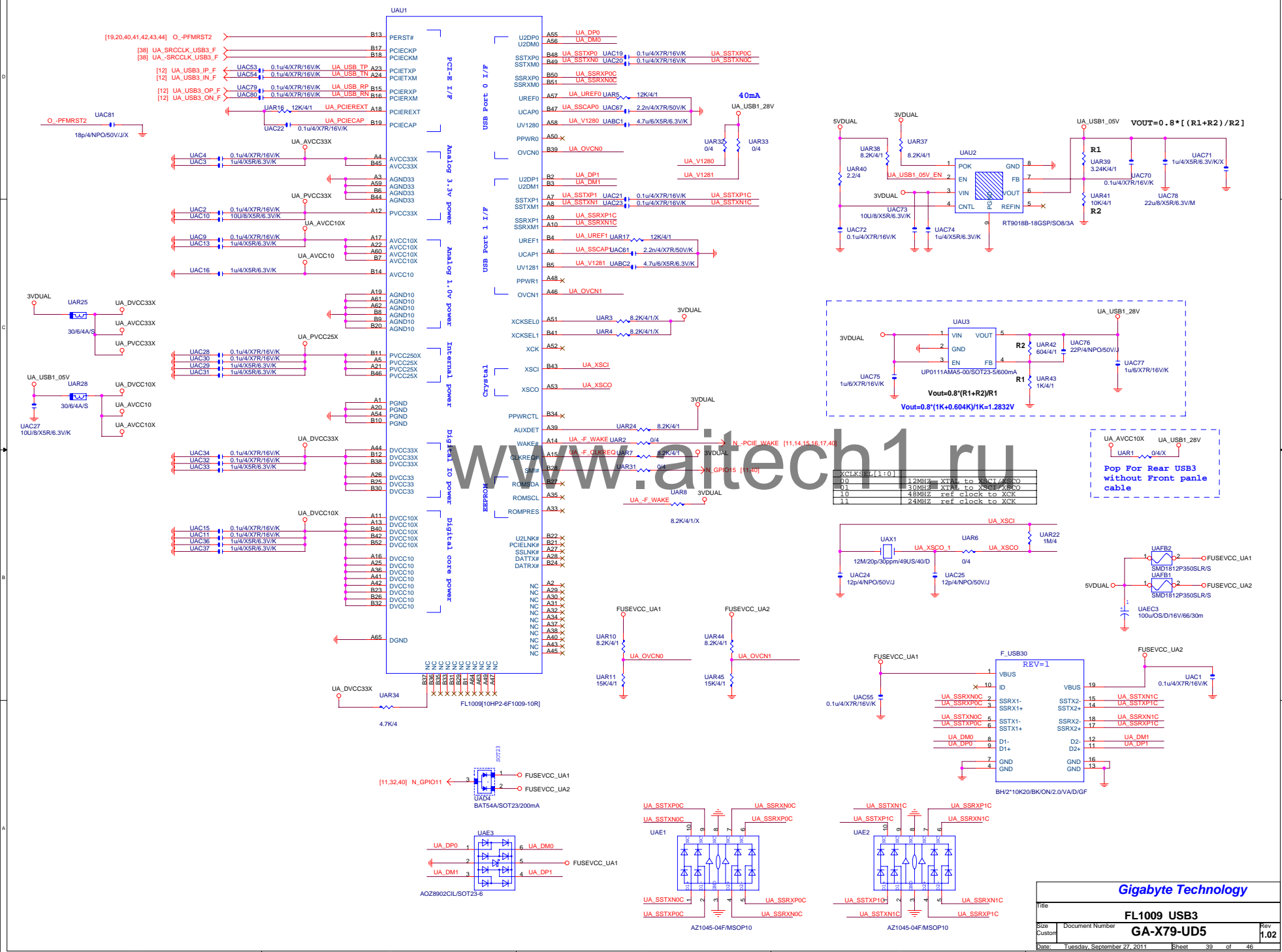
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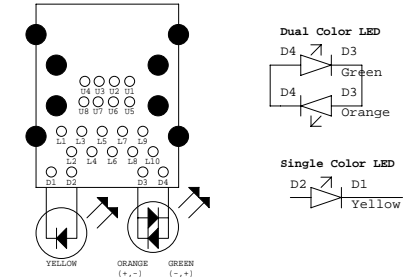
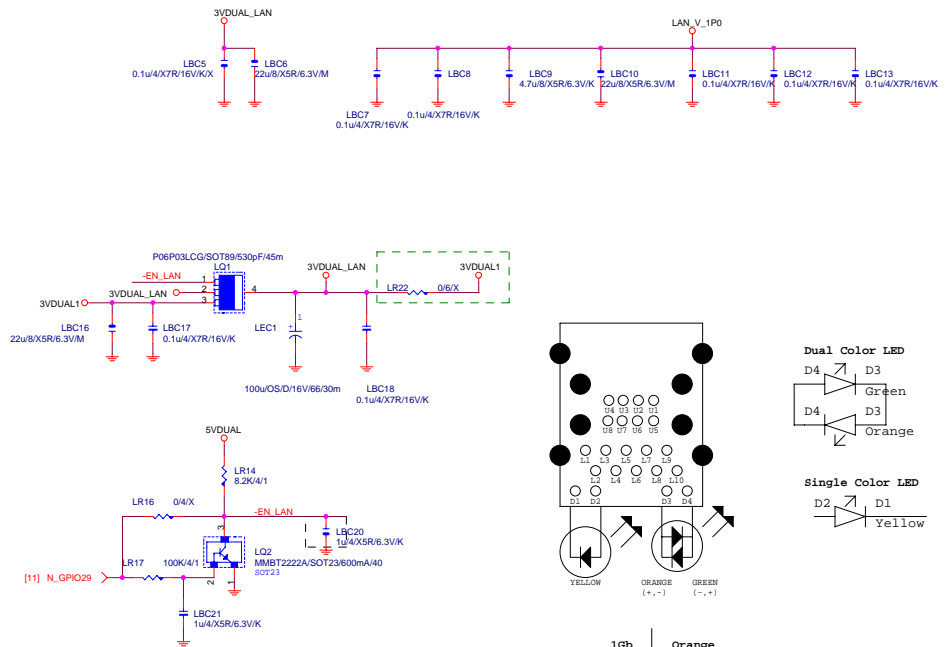
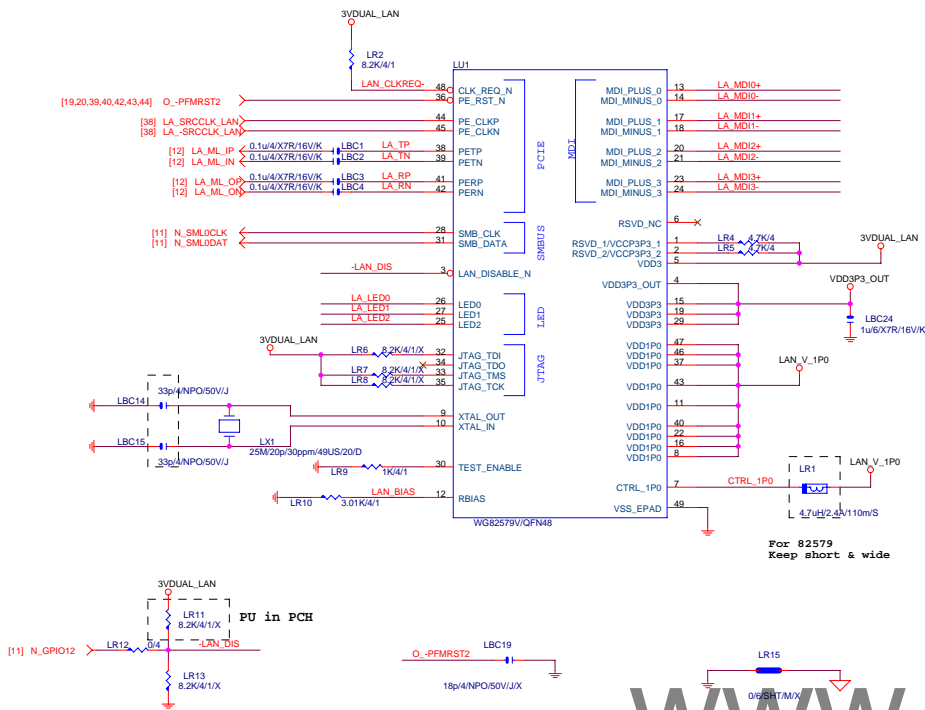


SYS FAN4



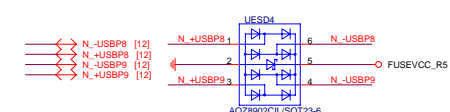
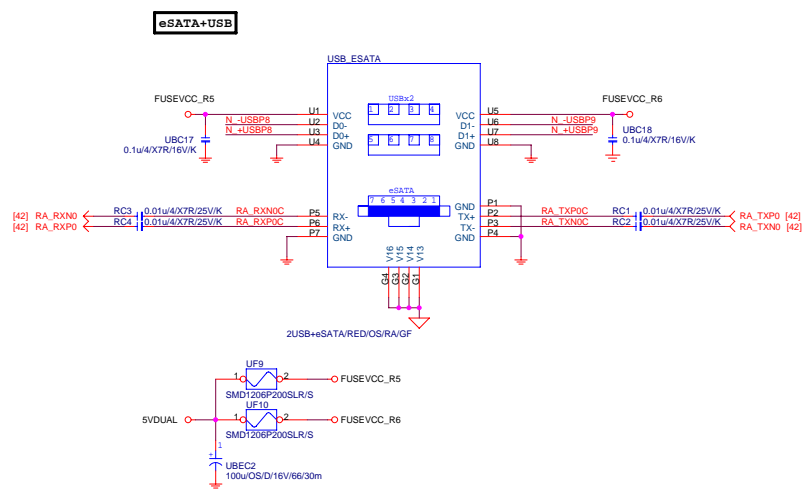
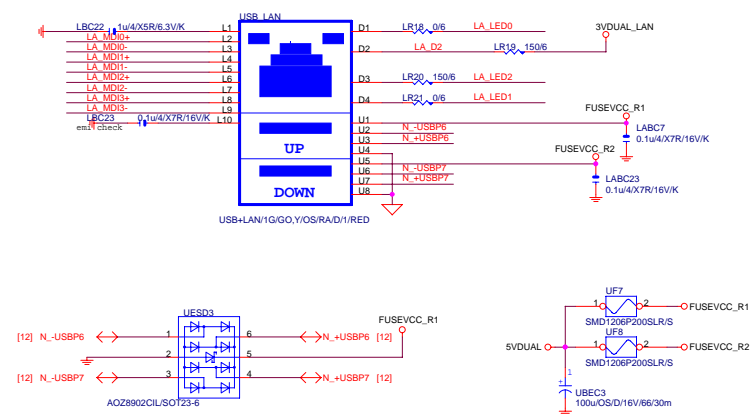




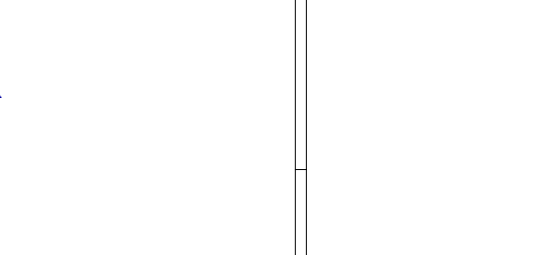
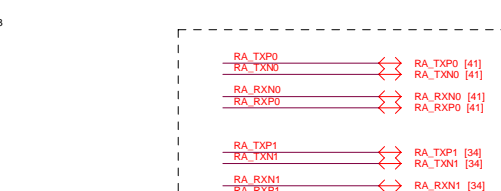
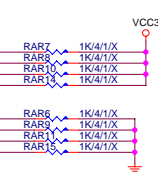
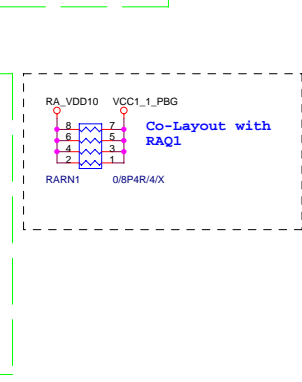
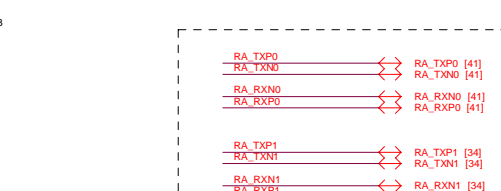
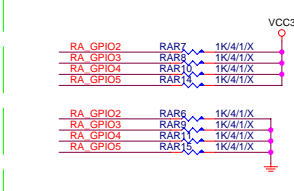
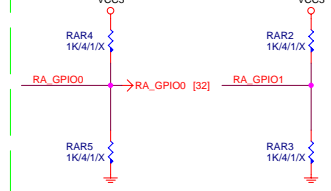
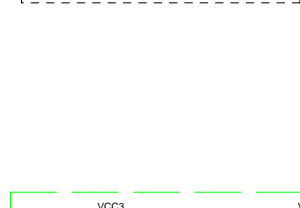
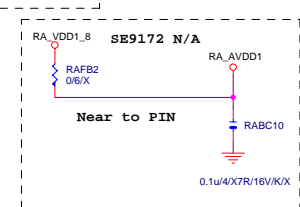
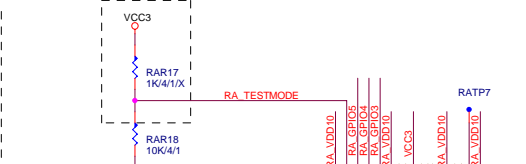


1Gb	Orange
100Mb	Green
10Mb	Off
Access	Blinking
Link	Yellow

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2	1
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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

Title			
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Size	Document Number		Rev
Custom	GA-X79-UD5		1.02
Date:	Tuesday, September 27, 2011	Sheet	46 of 46