

Model Name: GA-Z87MX-D3H

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*8 SLOT
16	PCI EXPRESS X8 SWITCH
17	PCI EXPRESS X1/X4 SLOTS
18	ITE8728 LPC IO
19	COM, LPT, -PROHOT,RUSB,KB/MS
20	BIOS , TPM
21	IR 3564-PWM
22	IR VCORE & DDR15V
23	CODEC ALC892
24	REAR AUDIO JACK
25	DISCRETE POWER & USB OV PROTECT
26	FP , FUSB
27	ATX ,CLOCK GEN , M3 POWER

SHEET TITLE

28	HWM,FAN CTRL
29	PCH HDMI/DP
30	INTEL i217 PHY

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Gigabyte Technology

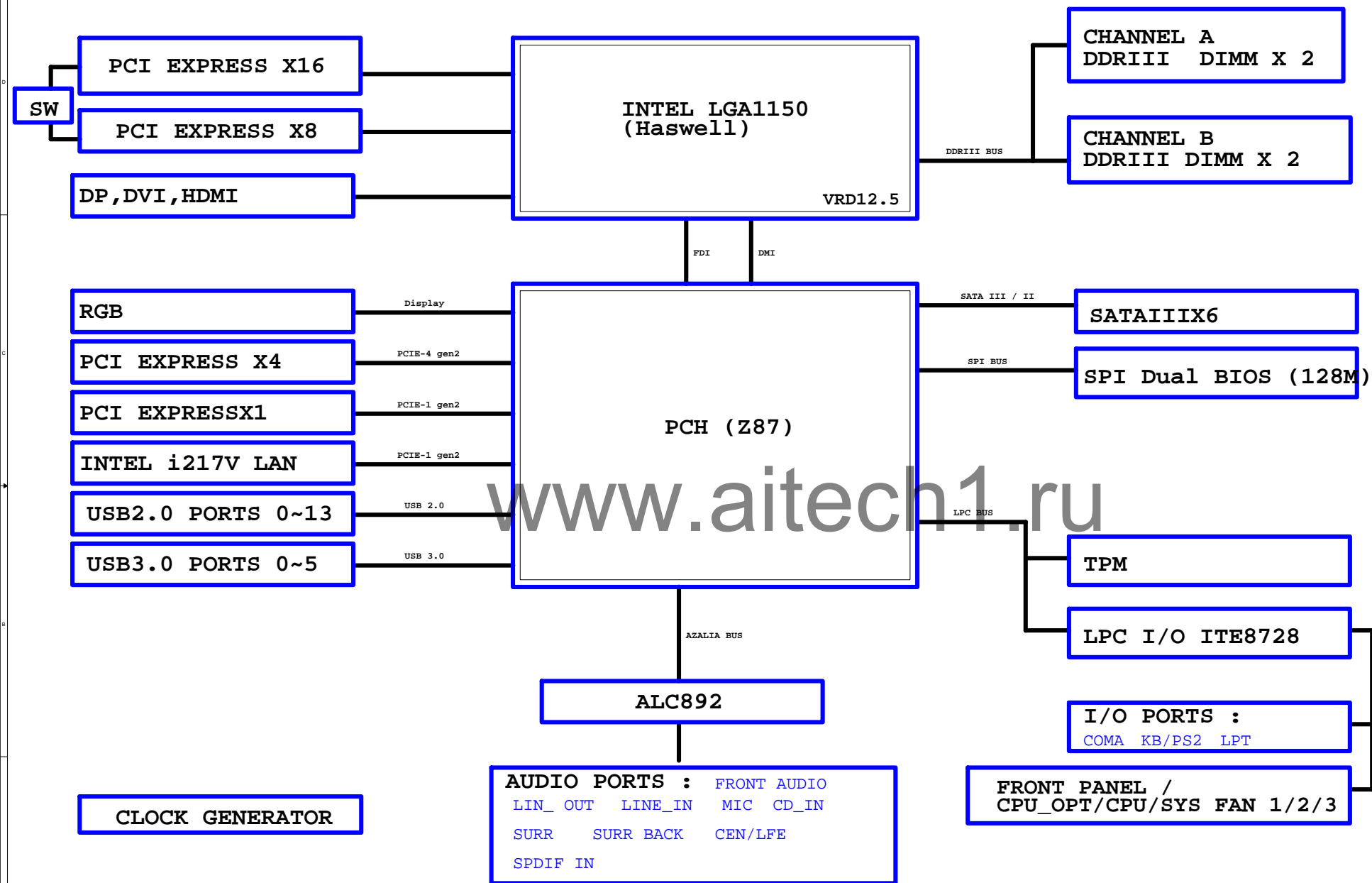
Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-Z87MX-D3H	1.1
Date:	Thursday, June 27, 2013	Sheet 1 of 30

Component value change history

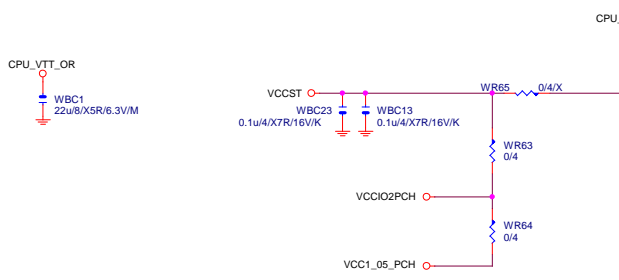
Circuit or PCB layout change

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BLOCK DIAGRAM



LGA1150A					
MAAA0	AU13	DDR0_MA0	DDR0_DQ0	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_DQ1	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_DQ2	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_MA4	DDR0_DQ4	AD37	MDA4
MAAA5	AW18	DDR0_MA5	DDR0_DQ5	AD40	MDA5
MAAA6	AV17	DDR0_MA6	DDR0_DQ6	AE37	MDA6
MAAA7	AT18	DDR0_MA7	DDR0_DQ7	AE40	MDA7
MAAA8	AU18	DDR0_MA8	DDR0_DQ8	AH40	MDA9
MAAA9	AT19	DDR0_MA9	DDR0_DQ9	AH39	MDA10
MAAA10	AW11	DDR0_MA10	DDR0_DQ10	AH38	MDA11
MAAA11	AV19	DDR0_MA11	DDR0_DQ11	AH37	MDA12
MAAA12	AU19	DDR0_MA12	DDR0_DQ12	AH38	MDA8
MAAA13	AY10	DDR0_MA13	DDR0_DQ13	AK37	MDA14
MAAA14	AT20	DDR0_MA14	DDR0_DQ14	AK40	MDA15
MAAA15	AU21	DDR0_MA15	DDR0_DQ15	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_DQ16	AM38	MDA21
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ18	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	DDR0_DQ19	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AP37	MDA22
			DDR0_DQ22	AP40	MDA23
			DDR0_DQ23	AW35	MDA30
			DDR0_DQ24	AW37	MDA29
			DDR0_DQ25	AW38	MDA28
			DDR0_DQ26	AV35	MDA27
			DDR0_DQ27	AV37	MDA26
			DDR0_DQ28	AT37	MDA24
			DDR0_DQ29	AT35	MDA30
			DDR0_DQ30	AW36	MDA31
			DDR0_DQ31	AY4	MDA34
			DDR0_DQ32	AY6	MDA37
			DDR0_DQ33	AY8	MDA34
			DDR0_DQ34	AW4	MDA38
			DDR0_DQ35	AW6	MDA39
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			DDR0_DQ40	AR4	MDA45
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			DDR0_DQ42	AR2	MDA44
			DDR0_DQ43	AR2	MDA44
			DDR0_DQ44	AR3	MDA40
			DDR0_DQ45	AN2	MDA47
			DDR0_DQ46	AN1	MDA47
			DDR0_DQ47	AL1	MDA49
			DDR0_DQ48	AL4	MDA53
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			DDR0_DQ51	DJ2	MDA52
			DDR0_DQ52	AL3	MDA48
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			DDR0_DQ55	AG1	MDA57
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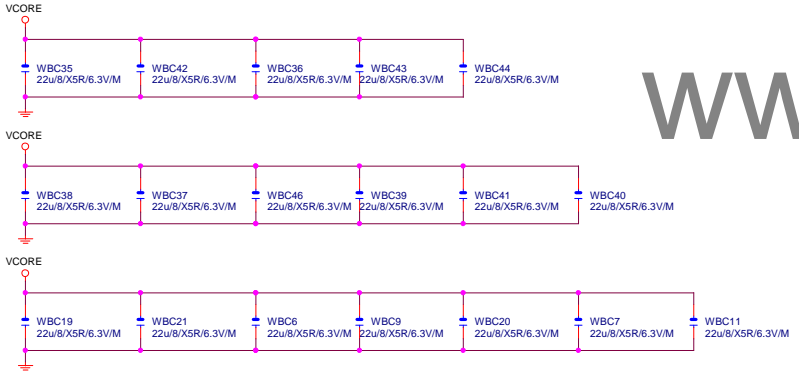


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VCCST_PWRGD

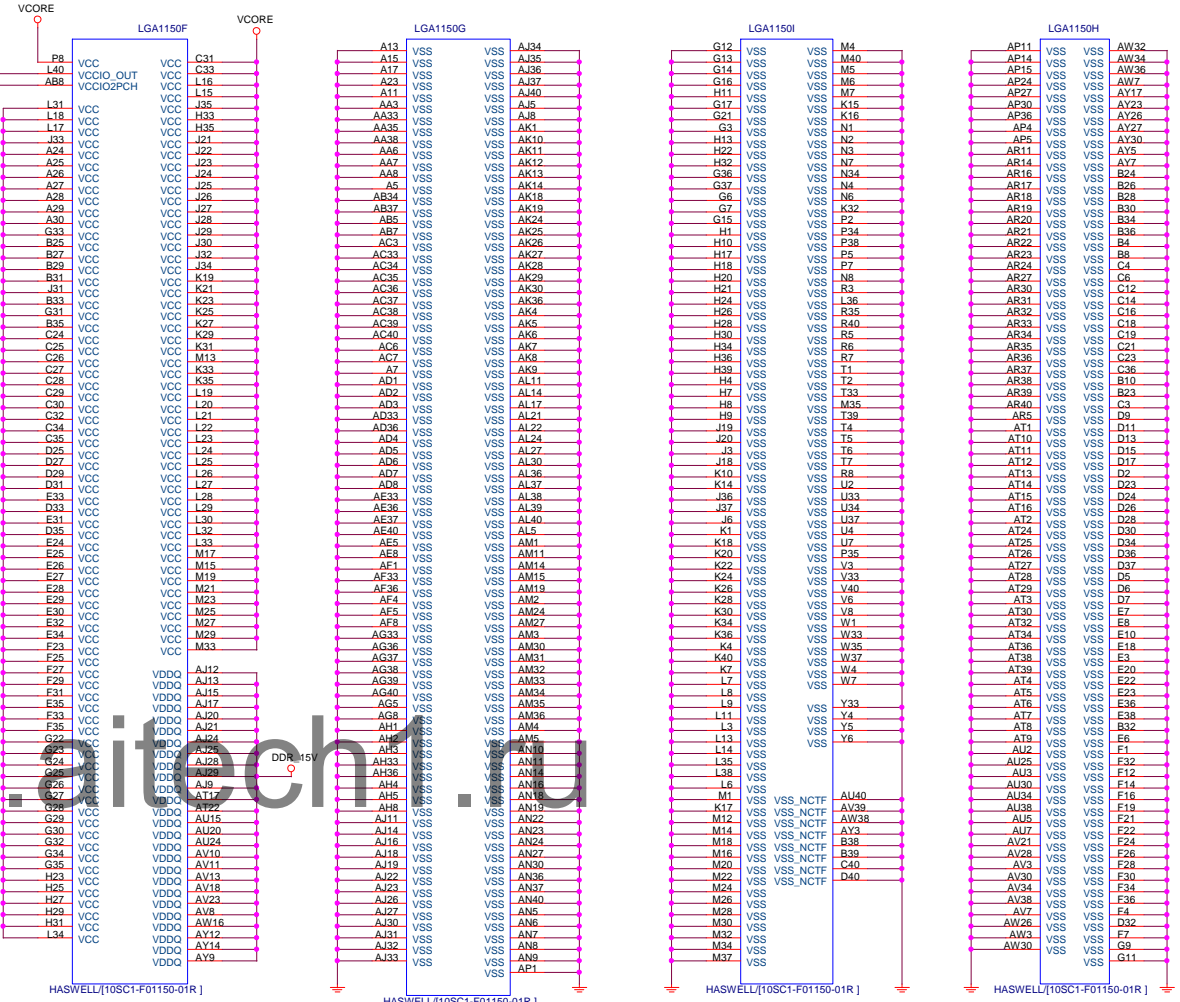
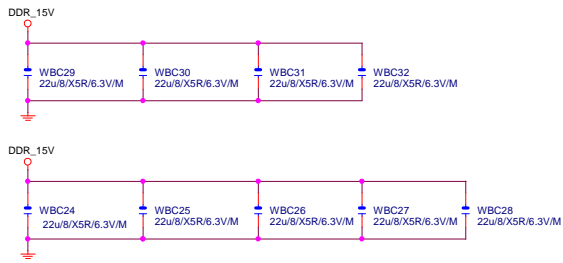
VCore CAP

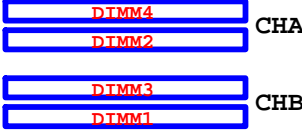
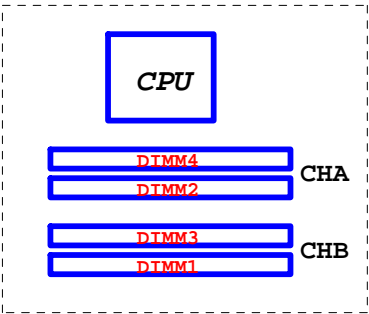
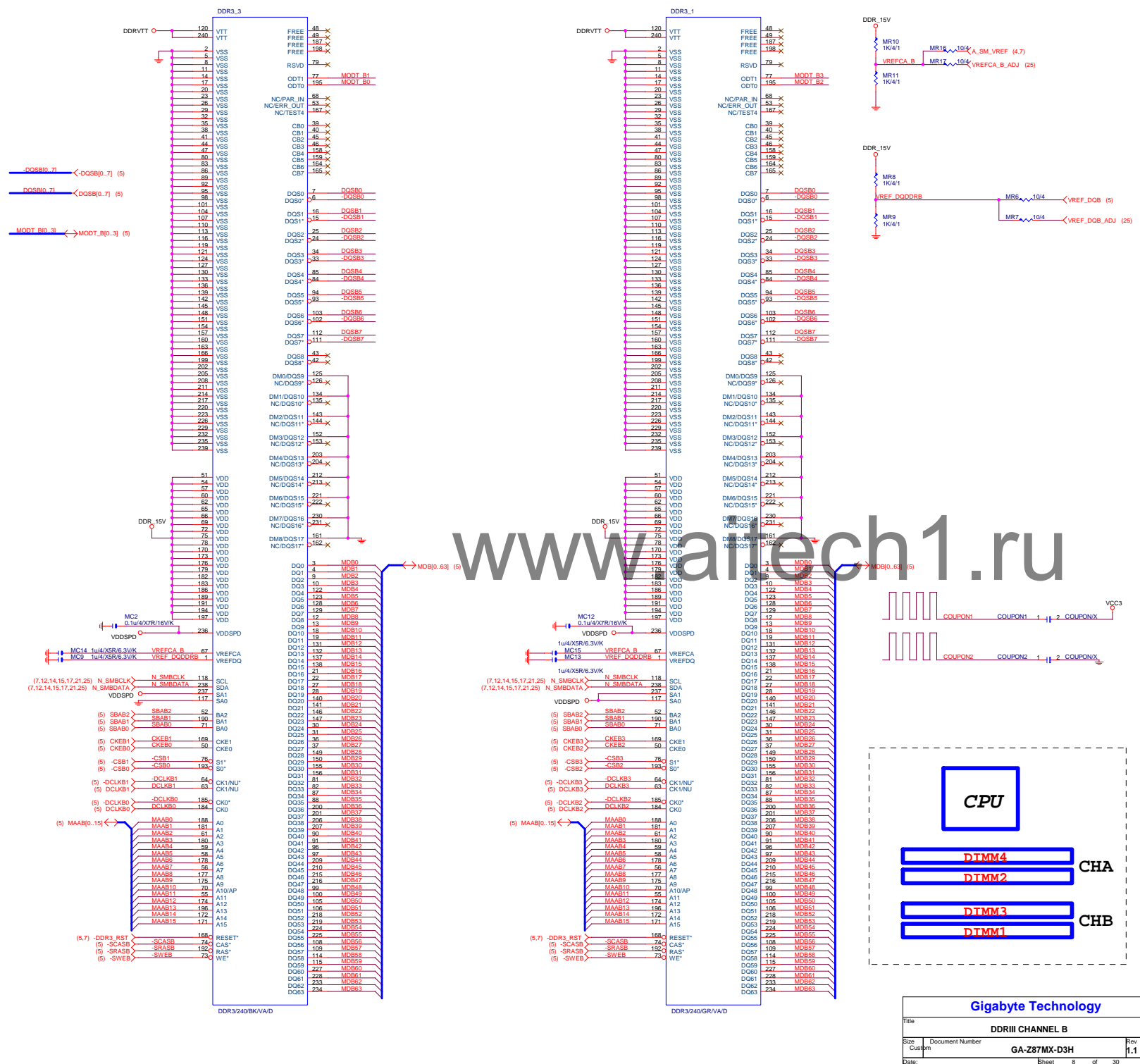
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DDR CAP

(X9)

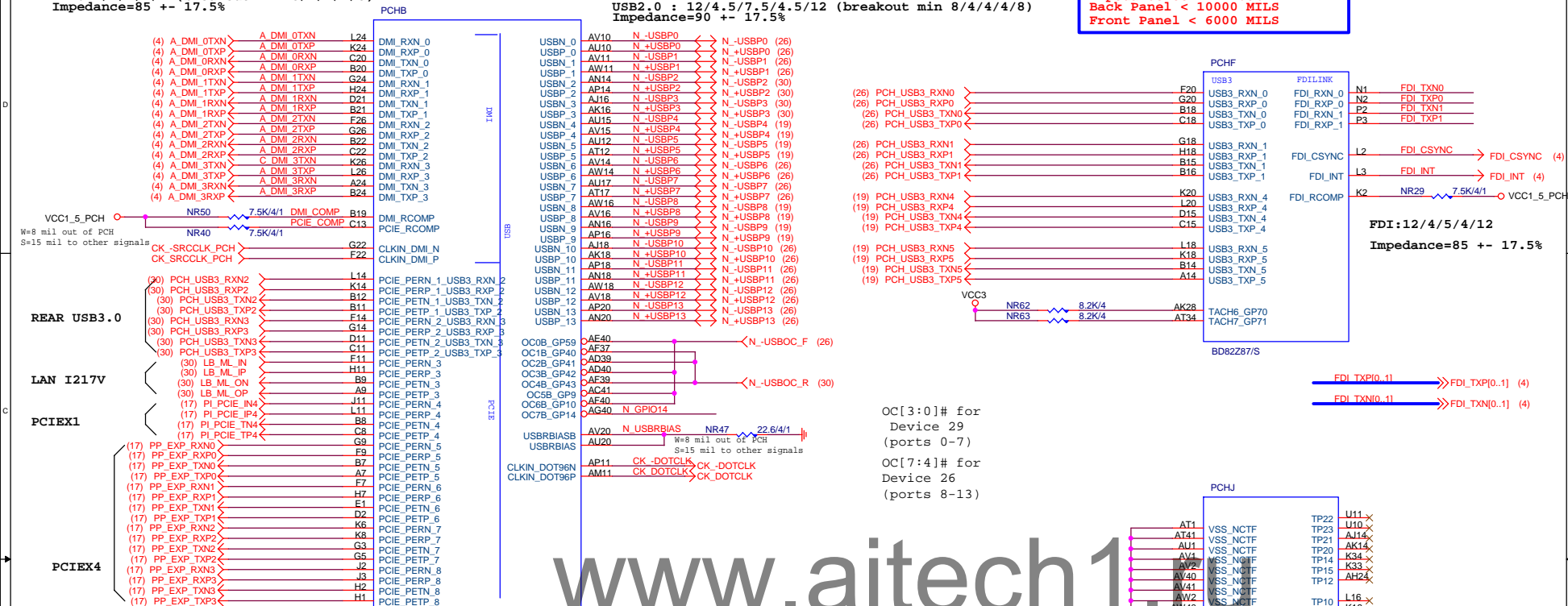




PCH

Impedance=90 +- 17.5%

USB3.0:20/5/7/5/20 (breakout min
8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

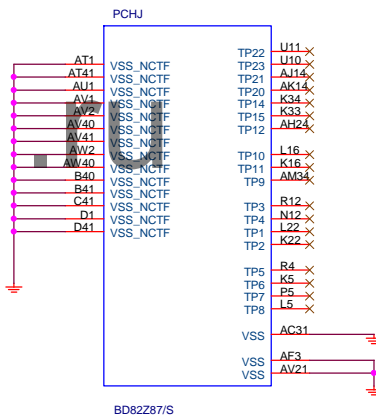
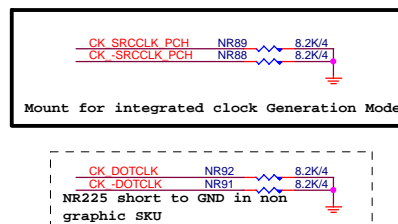
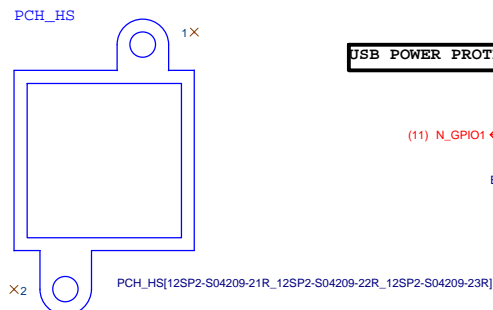
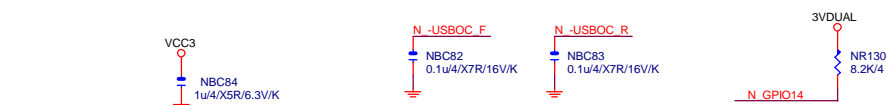


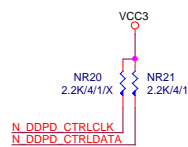
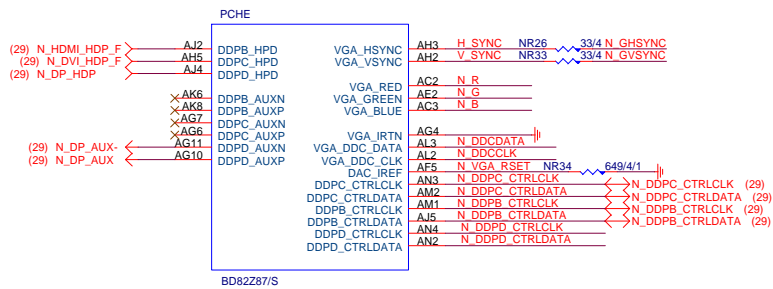
放靠近 Device & PCI-E Slot

PCIEEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

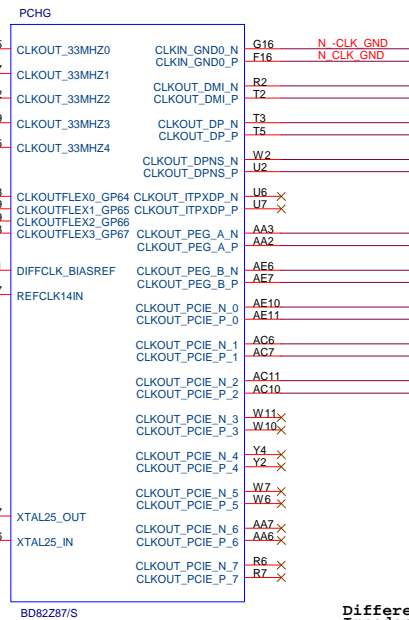
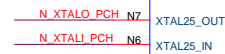
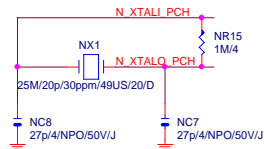
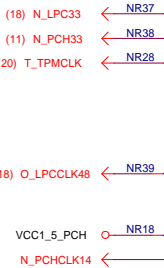
Impedance=80 +- 17.5%

Must change to Z87 P/N
before MP





Flex1,2,3,4 :
14/24/33/48MHZ



Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

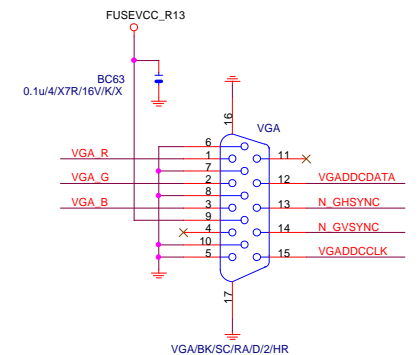
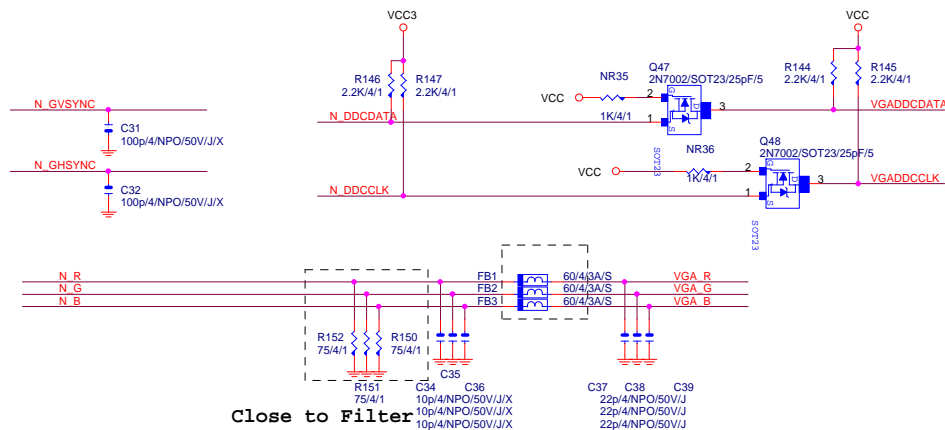
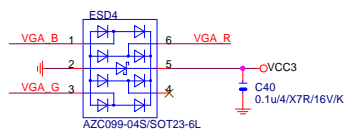
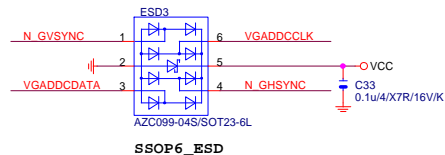
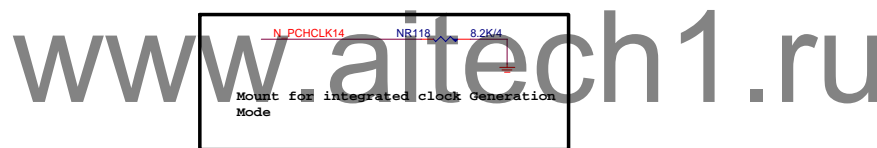
PCIXx16

PCIXx8

PCIXx4

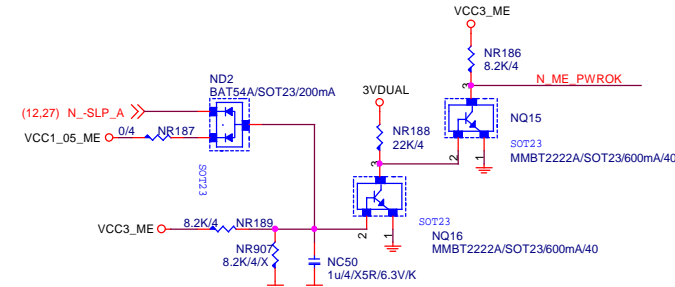
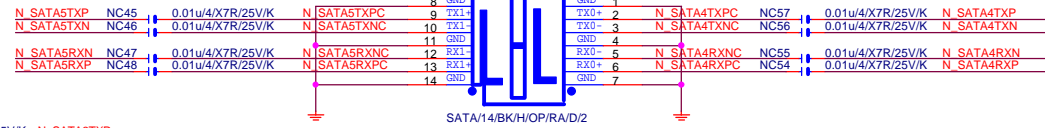
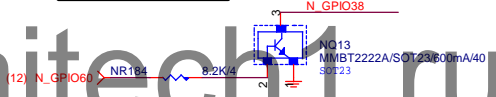
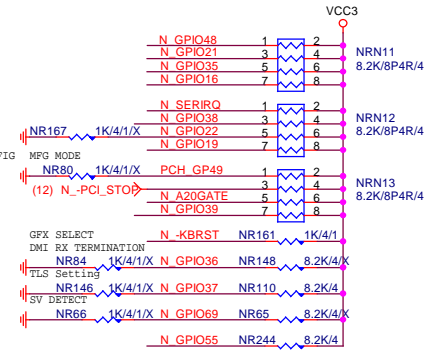
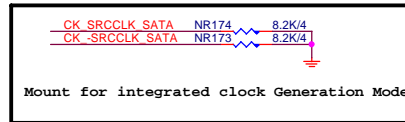
PCIXx1

i217V

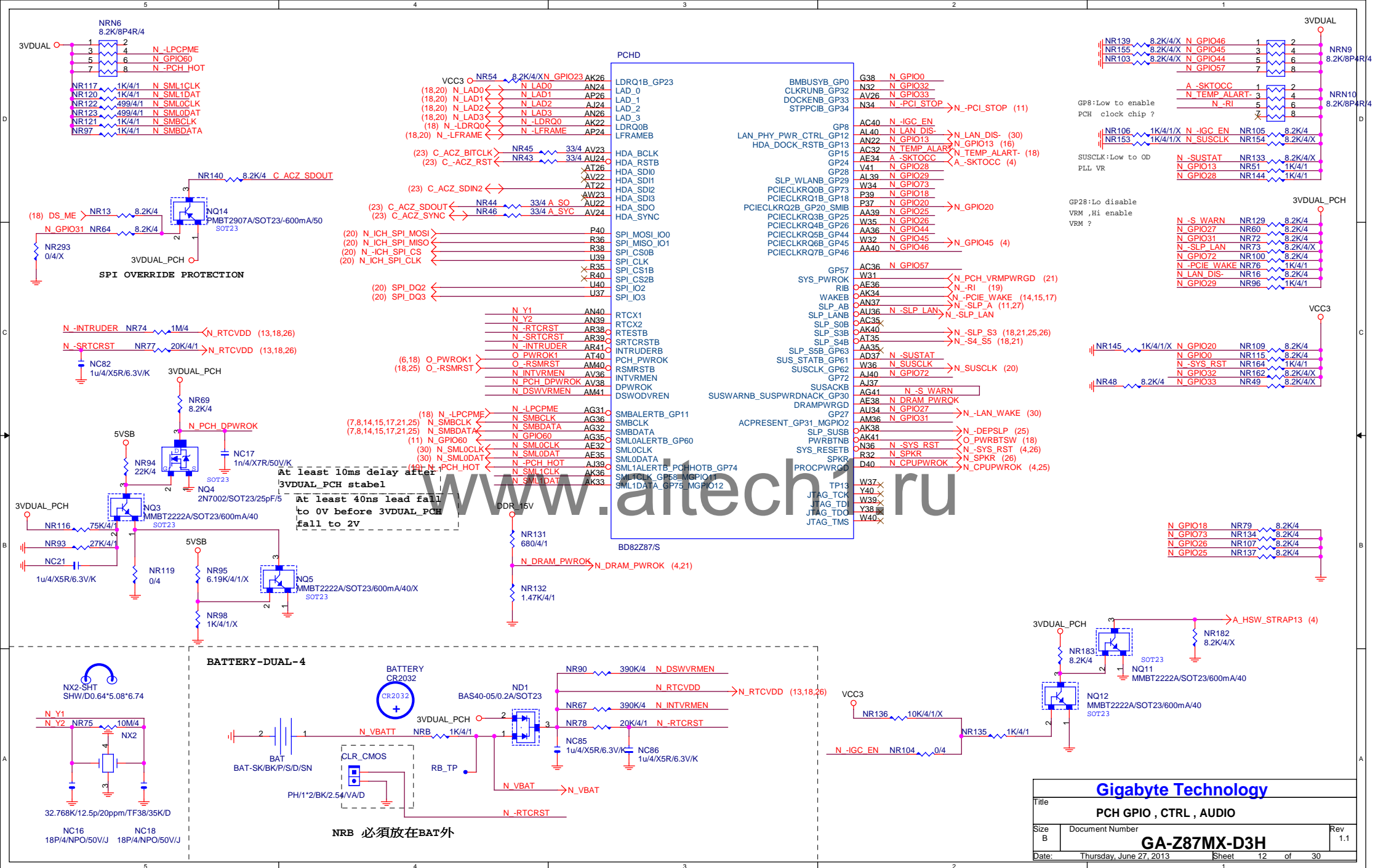


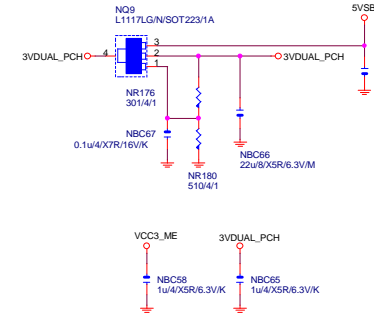
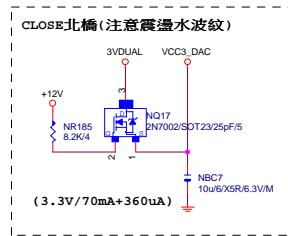
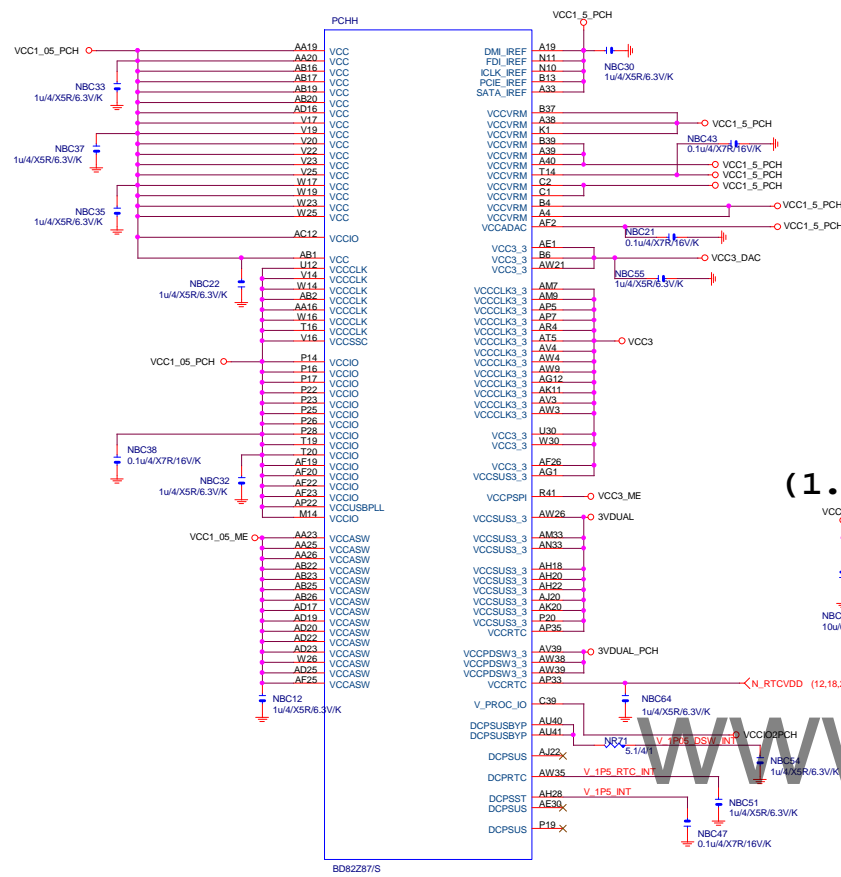
Gigabyte Technology			
Title			
PCH VGA ,CLK BUFFER			
Size	Document Number	Rev	
Custom	GA-Z87MX-D3H		1.1
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PCHC							
36	CL_CLK	CLINK		SATA_RXN_0	B28	N SATA0RXN	
35	CL_DATA			SATA_RXP_0	A28	N SATA0RX	
34	CL_RSTB			SATA_TXN_0	F31	N SATA0TX	
32	APWROK			SATA_TXP_0	B30	N SATA1RX	
				SATA_RXN_1	C30	N SATA1RX	
				SATA_RXP_1	B34	N SATA1TX	
				SATA_TXN_1	C34	N SATA1TX	
				SATA_TXP_1	B31	N SATA2RX	
		FPM		SATA_RXN_2	A31	N SATA2RX	
31	PWM0			SATA_RXP_2	B35	N SATA2TX	
31	PWM1			SATA_TXN_2	B35	N SATA2TX	
31	PWM2			SATA_TXP_2	B32	N SATA3RX	
30	PWM3			SATA_RXN_3	C32	N SATA3RX	
				SATA_RXP_3	G33	N SATA3TX	
28	TACH0_GP17			SATA_TXN_3	F33	N SATA3TX	
31	TACH1_GP1			SATA_TXP_3	A26	N SATA4RX	
34	TACH2_GP6				B26	N SATA4RX	
34	TACH3_GP7		SATA_RXN_4_PCIE_PERN_1	A26	N SATA4RX		
35	TACH4_GP68		SATA_RXP_4_PCIE_PERP_1	K28	N SATA4TX		
35	TACH5_GP69		SATA_TXN_4_PCIE_PETP_1	C27	N SATA5RX		
			SATA_TXP_4_PCIE_PETP_1	B27	N SATA5RX		
31	SSCTCL		SATA_RXN_5_PCIE_PERN_2	G28	N SATA5TX		
			SATA_RXP_5_PCIE_PERP_2	F28	N SATA5TX		
38	SCLOCK_GP22		SATA_TXN_5_PCIE_PETP_2	H35			
41	SLOAD_GP38		SATA_TXP_5_PCIE_PETP_2	H36			
41	SDATAOUT0_GP39		CLKIN_SATA_P				
40	SDATAOUT1_GP48		CLKIN_SATA_P				
		GPIO		SATALEDB	OJ39		
				SATA_RCOMP	D33	SATA3COMP	
					M37	N GPIO21	
				SATA0GP_GP21	J40	N GPIO19	
			SATA1GP_GP19	H40	N GPIO36		
			SATA2GP_GP36	N41	N GPIO37		
			SATA3GP_GP37	M39	N GPIO16		
			SATA4GP_GP16	N40	PCH_GP49		
			SATA5GP_GP49				
		HOST		EDP_BKLTCTL	AP2	×	
				EDP_BKLTEN	AT2	×	
				EDP_VDDEN	AP1	×	
					N30	N A20GATE	
			RSVD	K36	N -KBRST		
			RCN6	G39	N SERIRQ		
			SERIRO	C40	N -THRMTRIP		
			THRMTRIPB	G40	SB PECC		
			PECI	F40			
			PM_SYNCN	F41			
			PLRST_PROCB				



Gigabyte Technology			
Title: PCH HOST , SATA, PCI			
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(3.3V) (X6)

(1.05V) (X5)

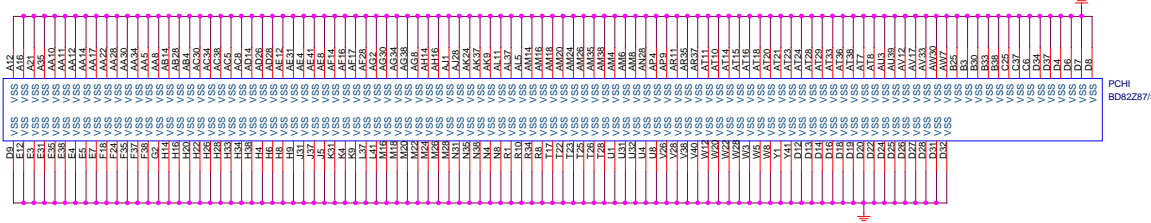
(1.05V) (X6)

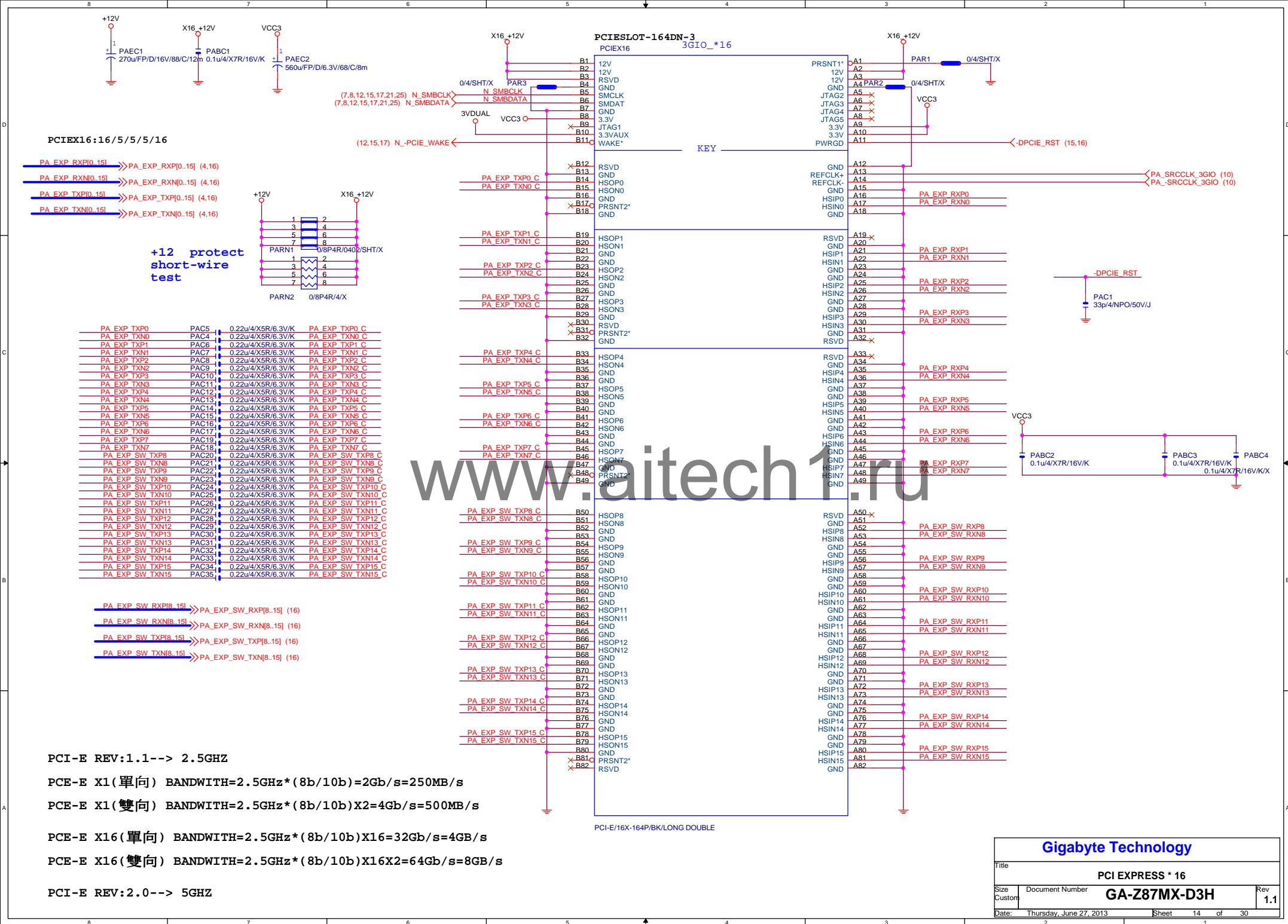
(1.5V) (X10)

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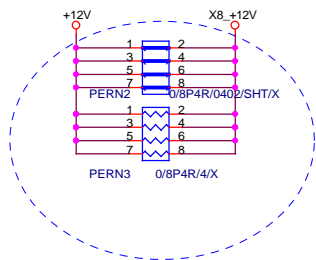
(1.05V) (X2)

(3.3V) (X2)

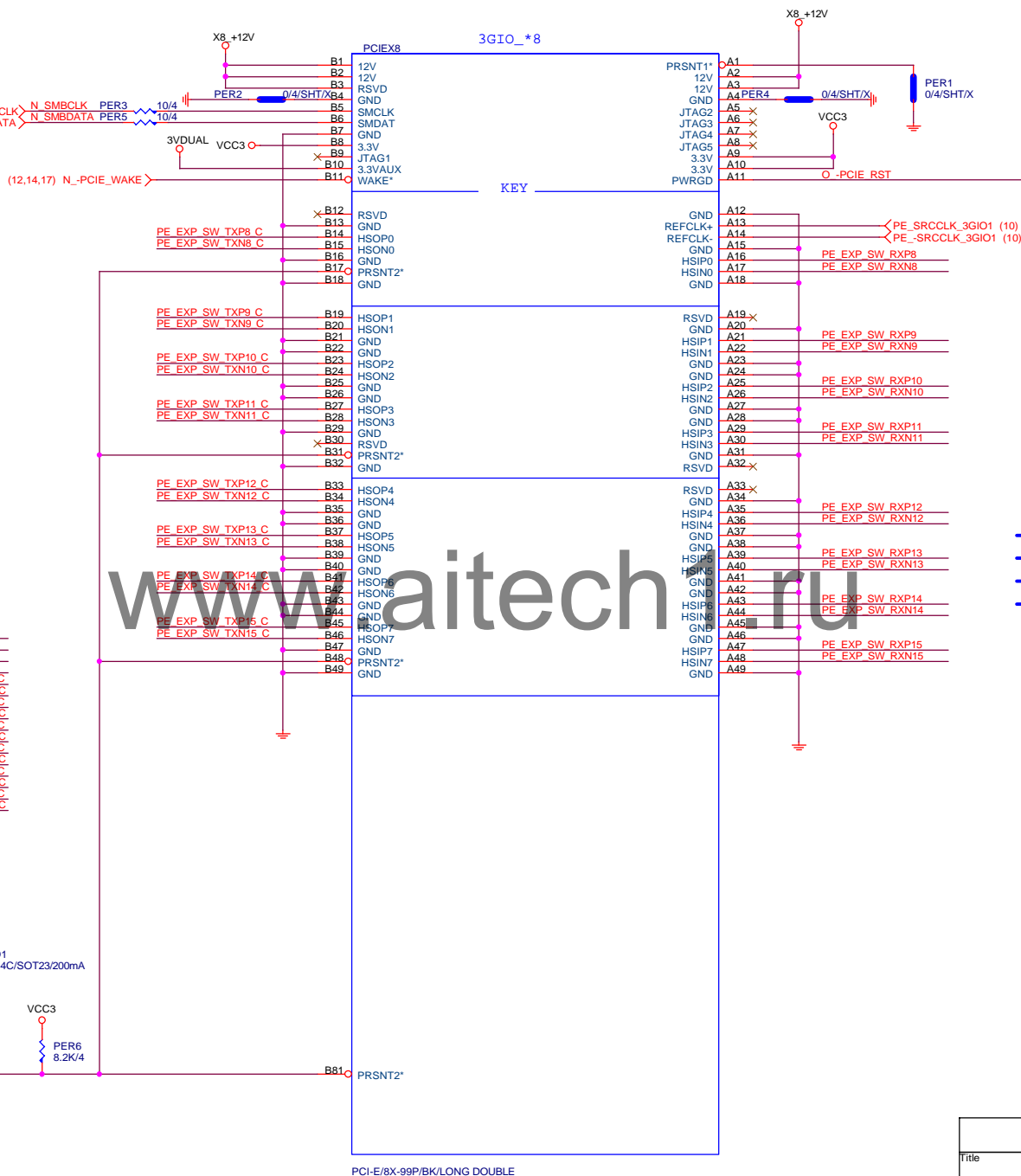
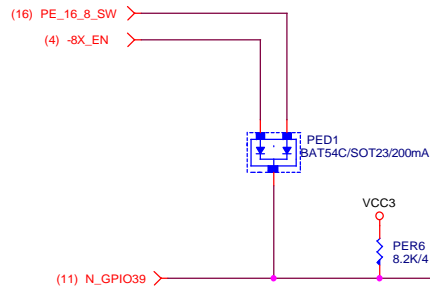




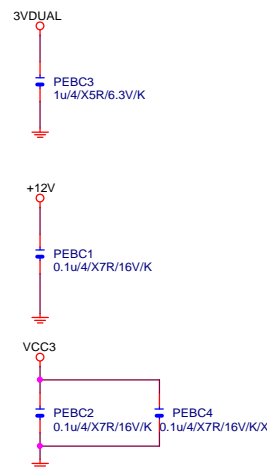
**+12 protect
short-wire test**

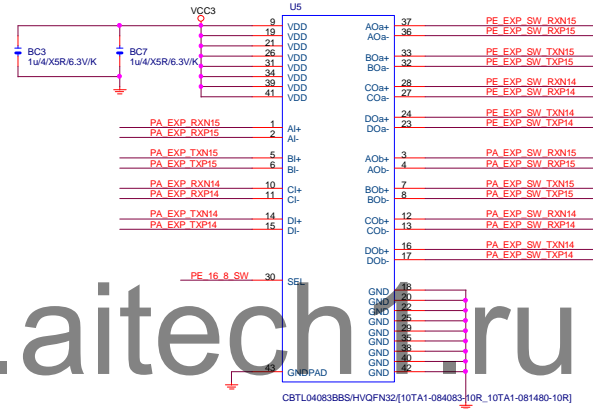
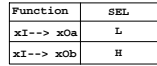


PE EXP SW TXP8	PEC2	0.22u/4/X5R/6.3V/K	PE EXP SW TXP8 C
PE EXP SW TXN8	PEC3	0.22u/4/X5R/6.3V/K	PE EXP SW TXN8 C
PE EXP SW TXP9	PEC4	0.22u/4/X5R/6.3V/K	PE EXP SW TXP9 C
PE EXP SW TXN9	PEC5	0.22u/4/X5R/6.3V/K	PE EXP SW TXN9 C
PE EXP SW TXP10	PEC6	0.22u/4/X5R/6.3V/K	PE EXP SW TXP10 C
PE EXP SW TXN10	PEC7	0.22u/4/X5R/6.3V/K	PE EXP SW TXN10 C
PE EXP SW TXP11	PEC8	0.22u/4/X5R/6.3V/K	PE EXP SW TXP11 C
PE EXP SW TXN11	PEC9	0.22u/4/X5R/6.3V/K	PE EXP SW TXN11 C
PE EXP SW TXP12	PEC10	0.22u/4/X5R/6.3V/K	PE EXP SW TXP12 C
PE EXP SW TXN12	PEC11	0.22u/4/X5R/6.3V/K	PE EXP SW TXN12 C
PE EXP SW TXP13	PEC12	0.22u/4/X5R/6.3V/K	PE EXP SW TXP13 C
PE EXP SW TXN13	PEC13	0.22u/4/X5R/6.3V/K	PE EXP SW TXN13 C
PE EXP SW TXP14	PEC14	0.22u/4/X5R/6.3V/K	PE EXP SW TXP14 C
PE EXP SW TXN14	PEC15	0.22u/4/X5R/6.3V/K	PE EXP SW TXN14 C
PE EXP SW TXP15	PEC16	0.22u/4/X5R/6.3V/K	PE EXP SW TXP15 C
PE EXP SW TXN15	PEC17	0.22u/4/X5R/6.3V/K	PE EXP SW TXN15 C

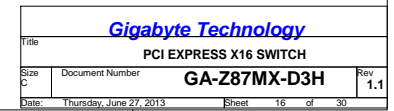


PE EXP SW RXP18.15] >>> PE_EXP_SW_RXP[8.15] (16)
 PE EXP SW RXN18.15] >>> PE_EXP_SW_RXN[8.15] (16)
 PE EXP SW TXP18.15] >>> PE_EXP_SW_TXP[8.15] (16)
 PE EXP SW TXN18.15] >>> PE_EXP_SW_TXN[8.15] (16)

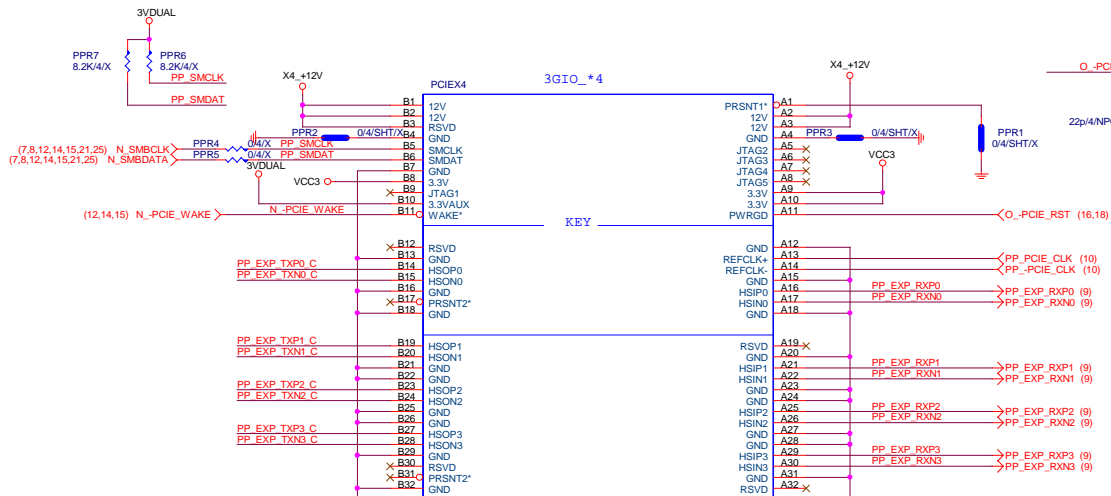




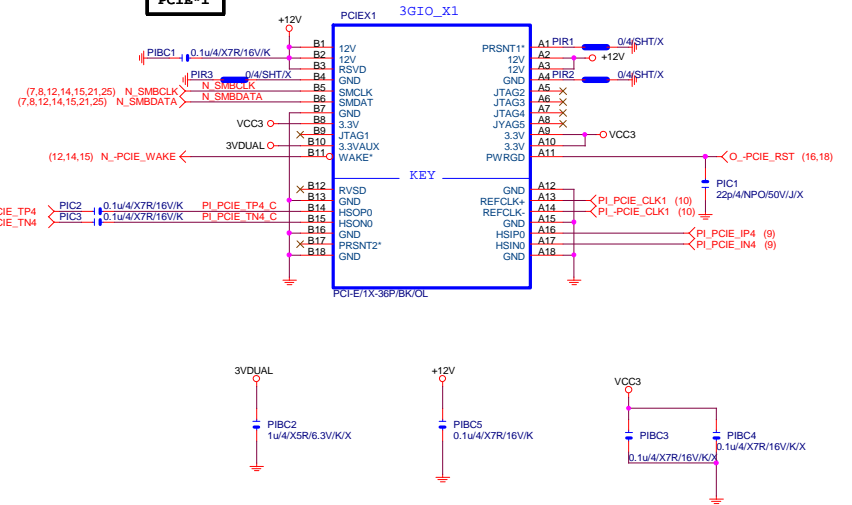
PCIE GEN3 SOFT RESET



PCIE*4

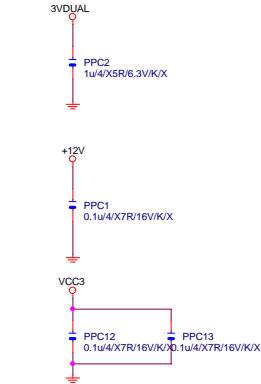


PCIE*1



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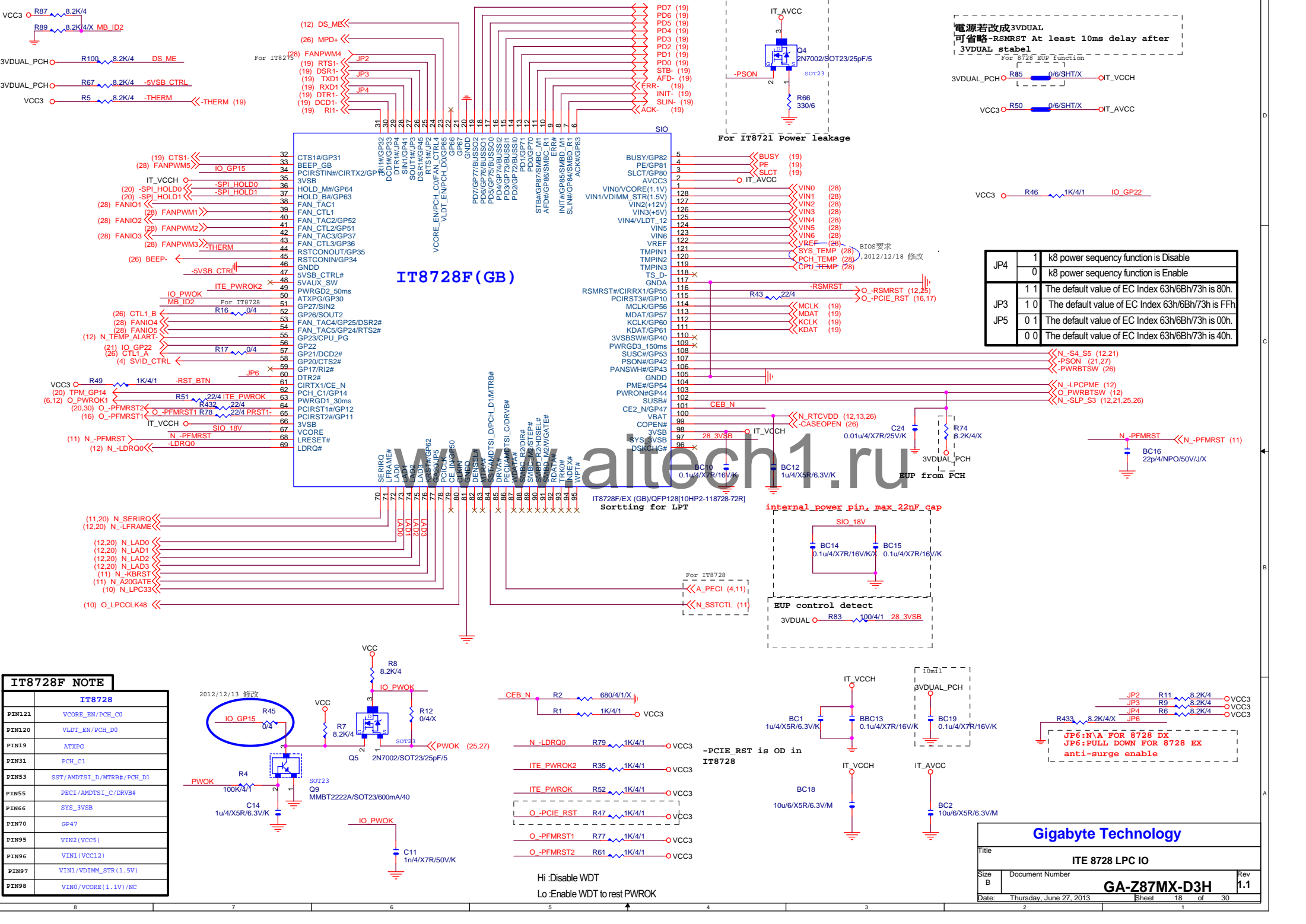
(9) PP_EXP_TXP0	PP_EXP_TXP0	PPC4	0.22u4/X5R/6.3V/K	PP_EXP_TXP0_C
(9) PP_EXP_TXN0	PP_EXP_TXN0	PPC5	0.22u4/X5R/6.3V/K	PP_EXP_TXN0_C
(9) PP_EXP_TXP1	PP_EXP_TXP1	PPC6	0.22u4/X5R/6.3V/K	PP_EXP_TXP1_C
(9) PP_EXP_TXN1	PP_EXP_TXN1	PPC7	0.22u4/X5R/6.3V/K	PP_EXP_TXN1_C
(9) PP_EXP_TXP2	PP_EXP_TXP2	PPC8	0.22u4/X5R/6.3V/K	PP_EXP_TXP2_C
(9) PP_EXP_TXN2	PP_EXP_TXN2	PPC9	0.22u4/X5R/6.3V/K	PP_EXP_TXN2_C
(9) PP_EXP_TXP3	PP_EXP_TXP3	PPC10	0.22u4/X5R/6.3V/K	PP_EXP_TXP3_C
(9) PP_EXP_TXN3	PP_EXP_TXN3	PPC11	0.22u4/X5R/6.3V/K	PP_EXP_TXN3_C



PCI-E/4X-65P/BK/LONG DOUBLE

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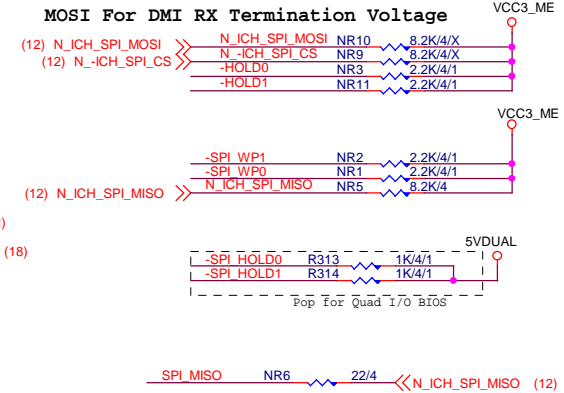
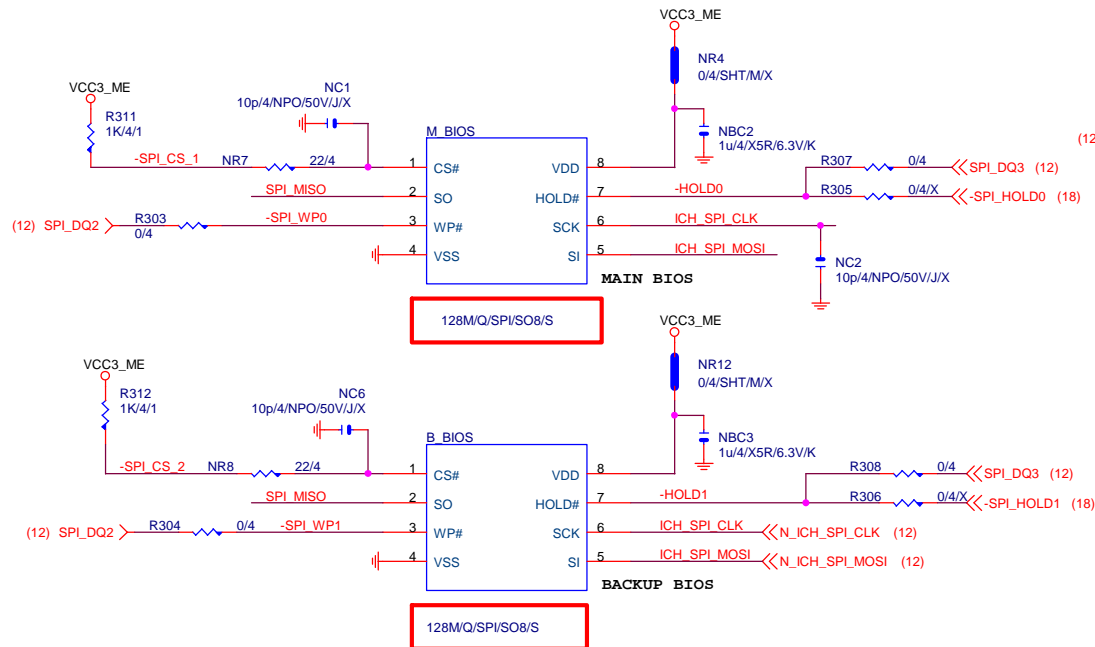
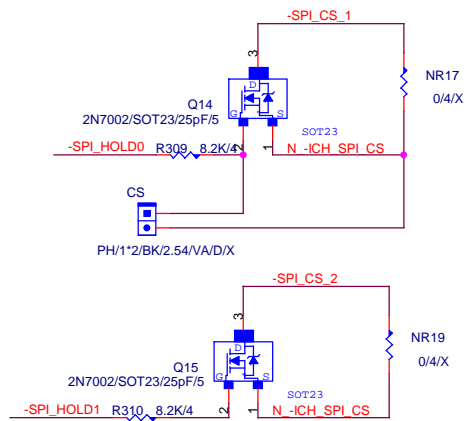
Title			PCIE_X4 , X1
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電源若改成3VDUAL
可省略-RSMRST At least 10ms delay after
3VDUAL stabel
For 8728 EUP Function

JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
JP5	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h is 40h.

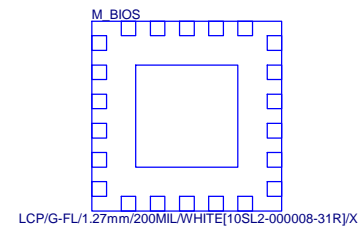
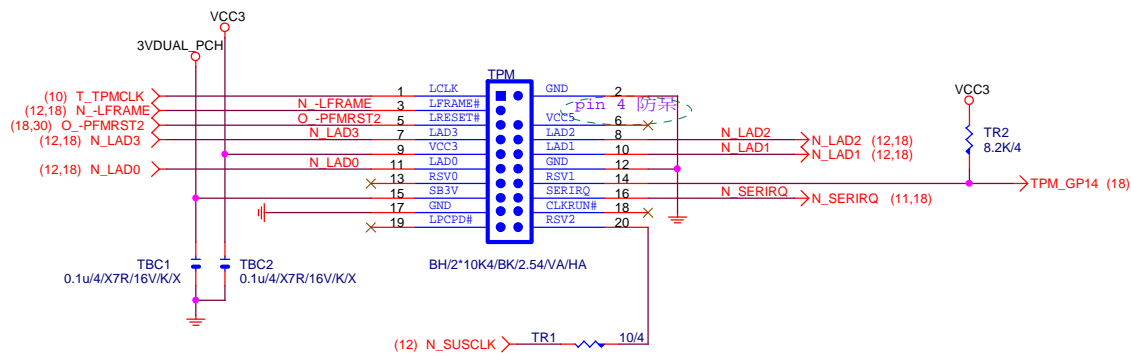
IT8728F NOTE	
	IT8728
PIN121	VCORE_EN/PCH_C0
PIN120	VLDI_EN/PCH_D0
PIN19	ATXP_G
PIN31	PCH_C1
PIN53	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#
PIN66	SYS_3VSB
PIN70	GP47
PIN95	VIN2 (VCC5)
PIN96	VIN1 (VCC12)
PIN97	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0/VCORE(1.1V)/NC



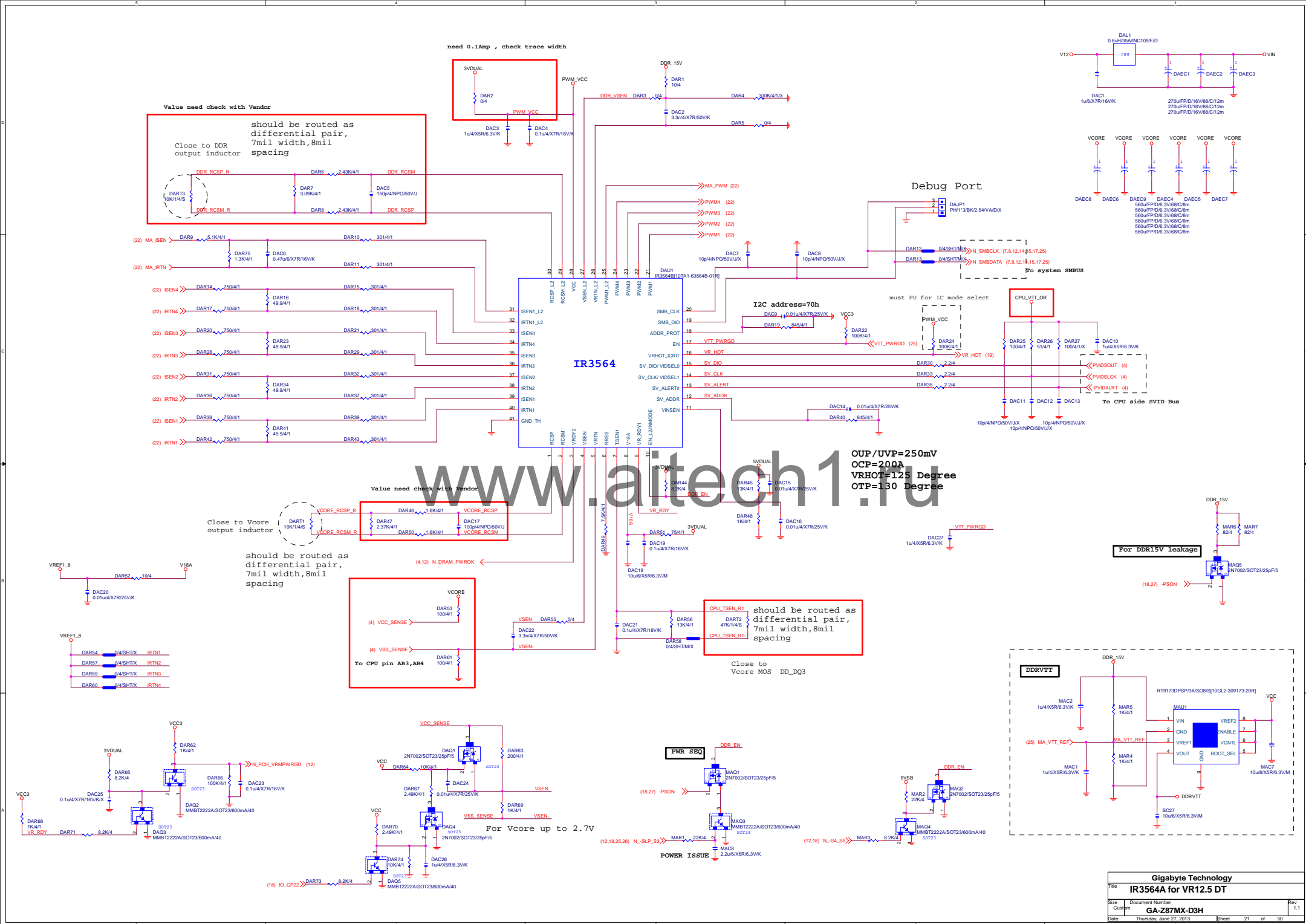
BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

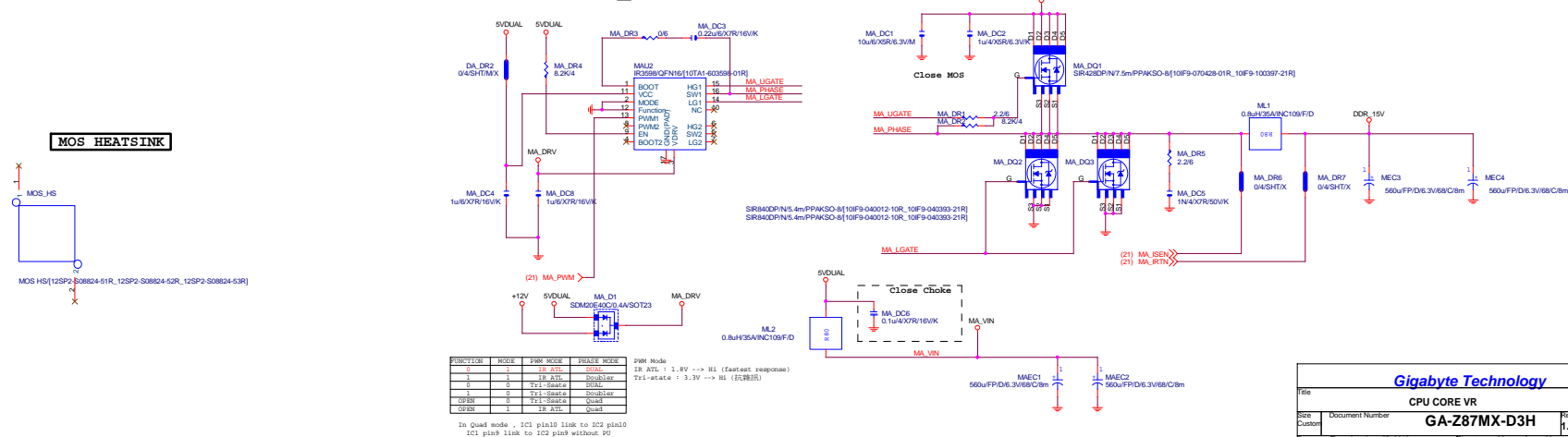
1 means internal PU
0 means PD 1K

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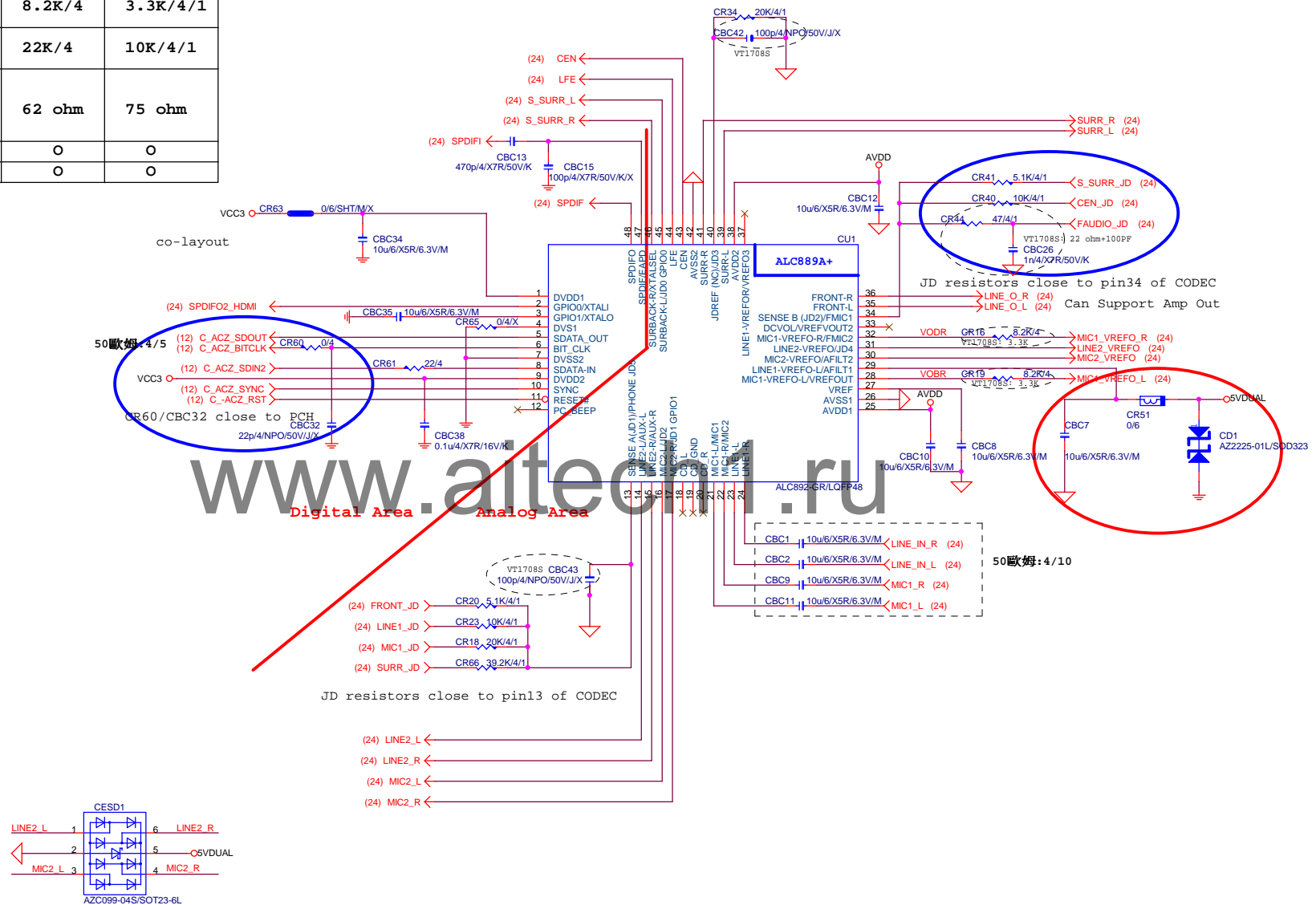


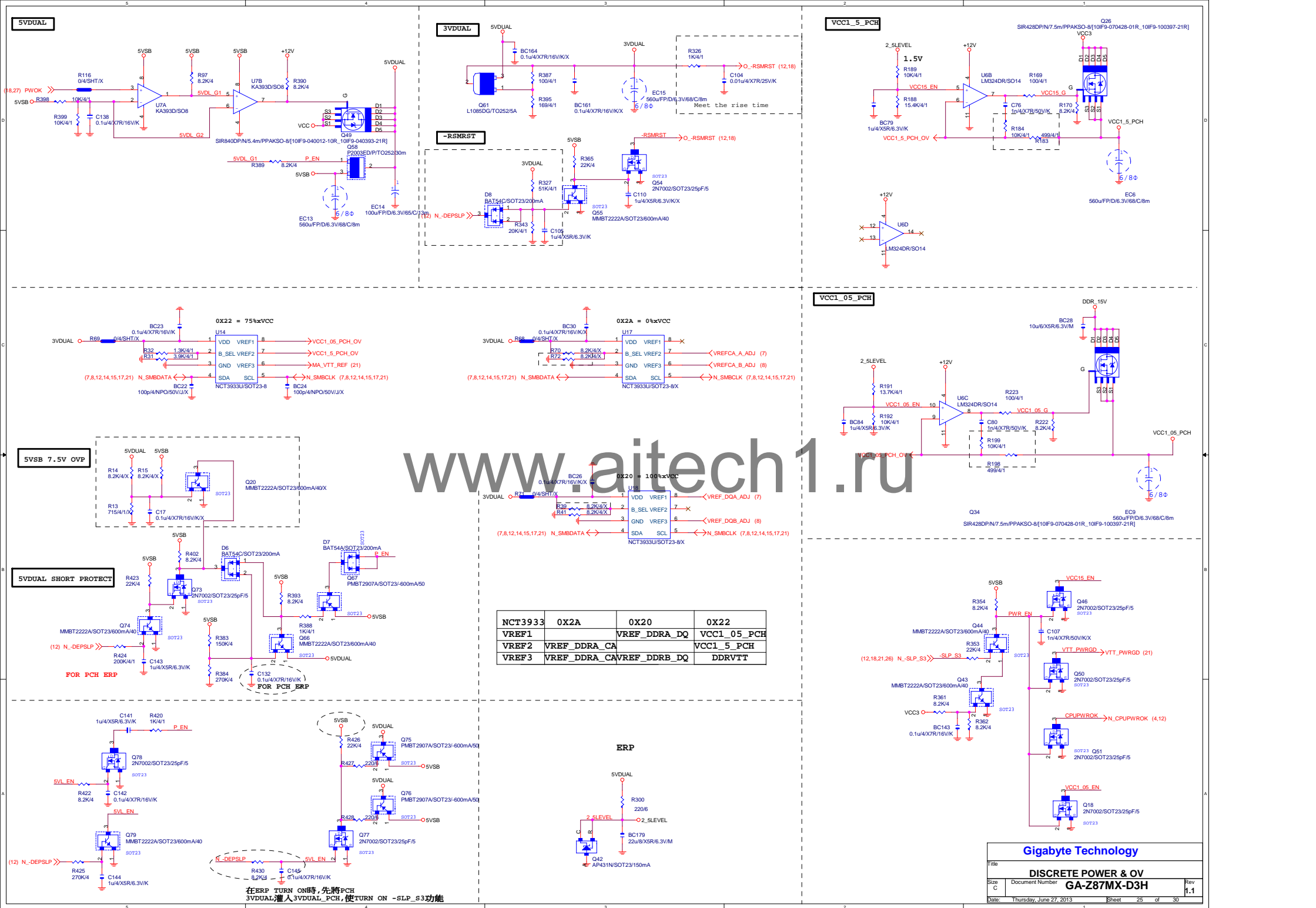
Gigabyte Technology			
Title			
BIOS & TPM			
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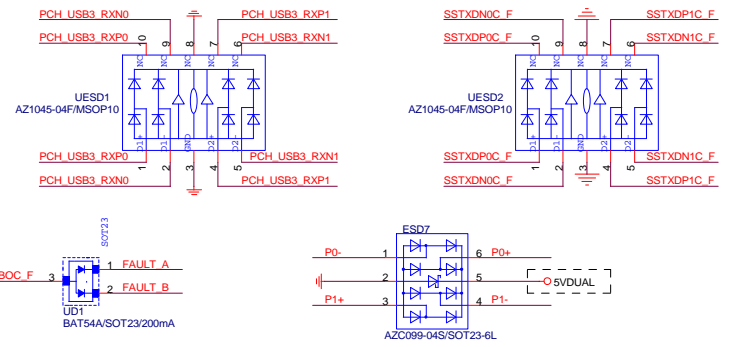


	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	O	O	O
CESD1	O	O	O



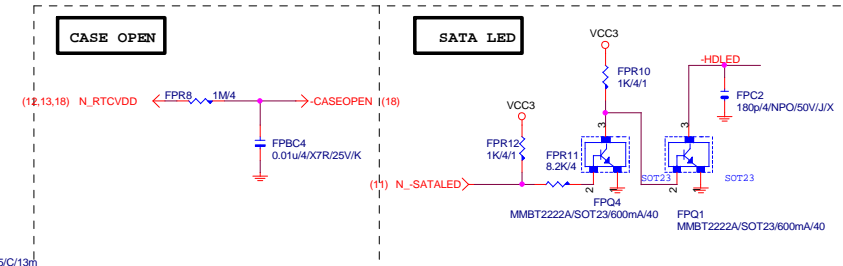


F_USB30

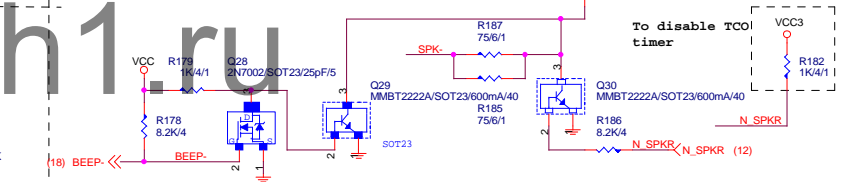
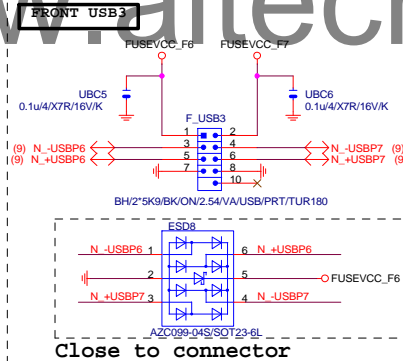


F_USB30 PWR

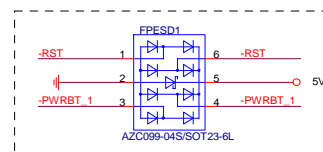
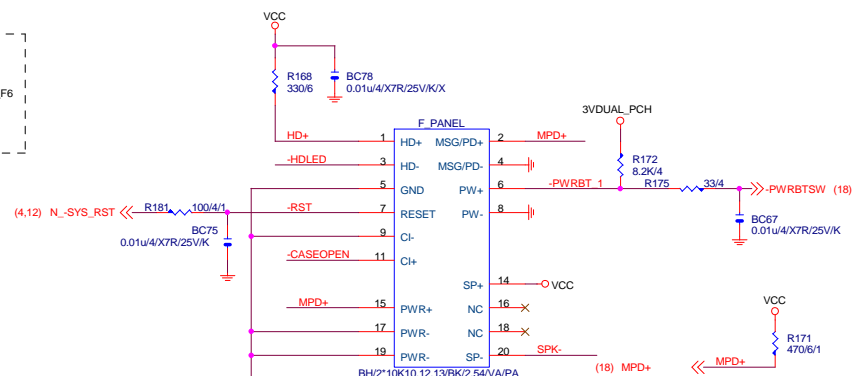
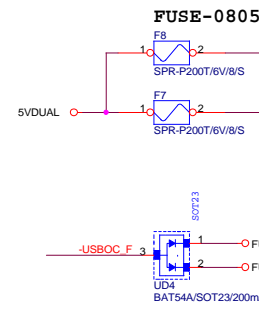
CTL1/2/3/ILIM_SEL	MODE
1111	CDP / ILIM_HI
0111	DCP_AUTO / ILIM_HI /HID wake
0100	SDP/ILIM_LO



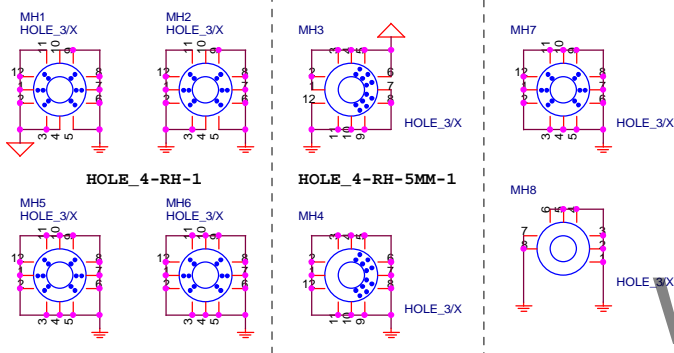
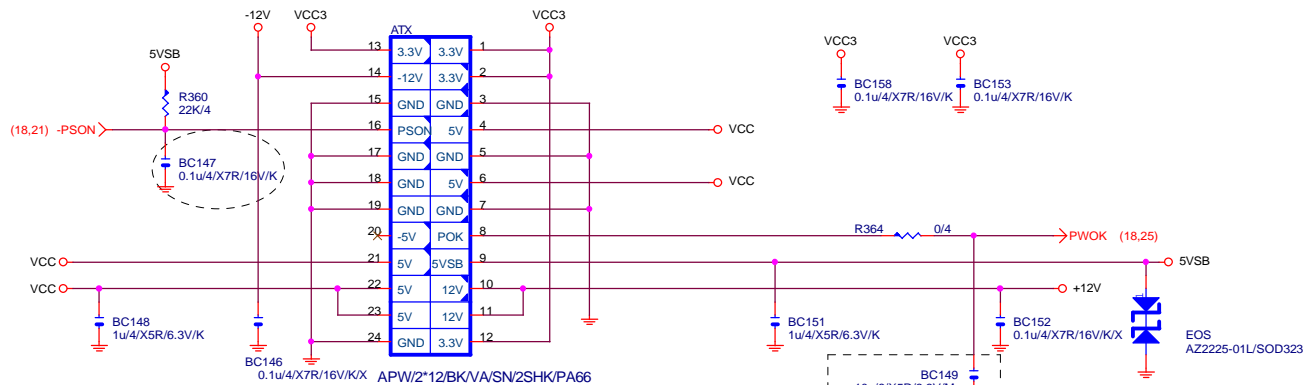
FRONT USB1



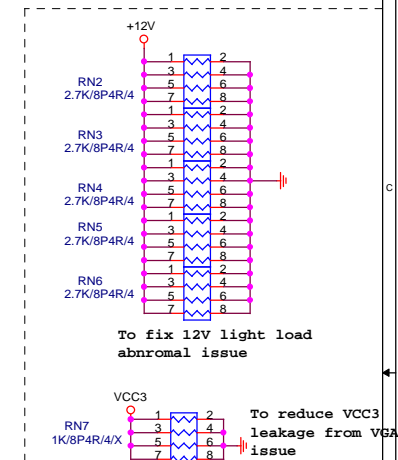
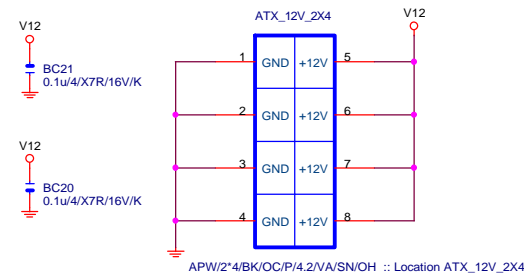
INTEL FRONT PANEL



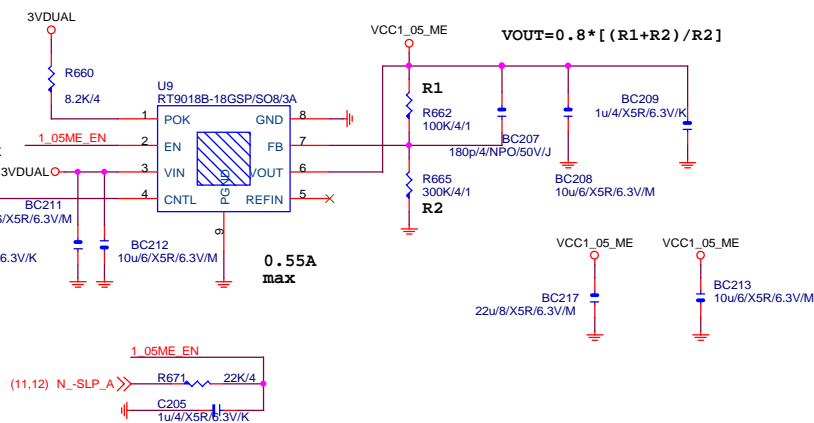
ATXX24 POWER CONNECTOR



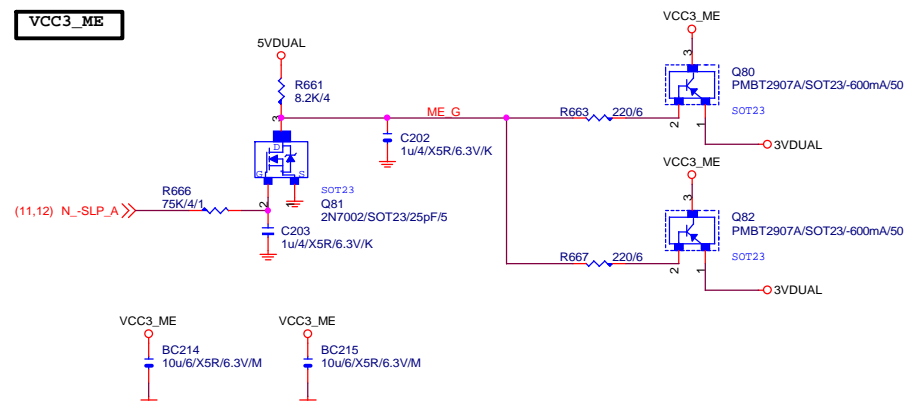
ATXX4 POWER CONNECTOR



VCC1_05_ME



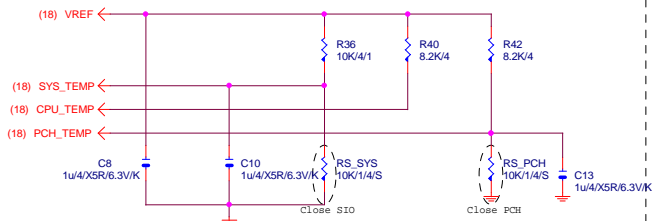
VCC3_ME



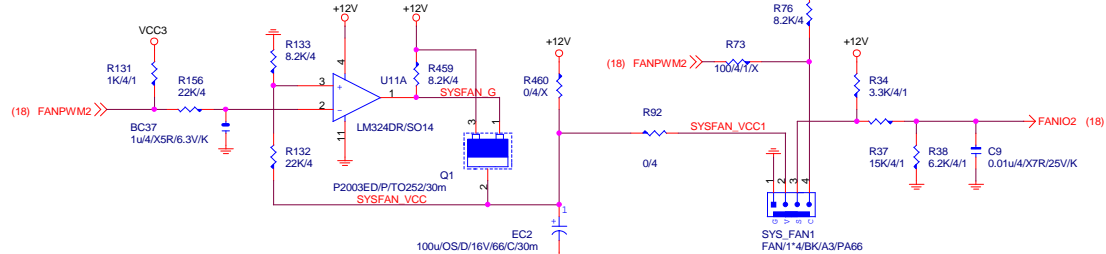
Gigabyte Technology

Title			ATX,CLOCK GEN ,M3 POWER
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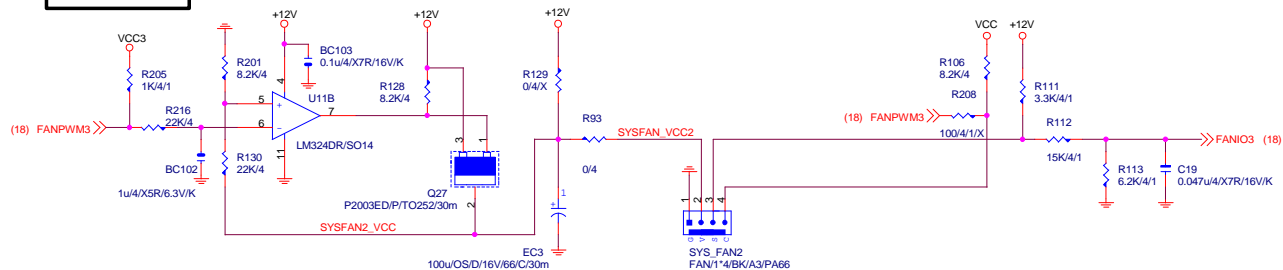
TEMP H/W MONITOR



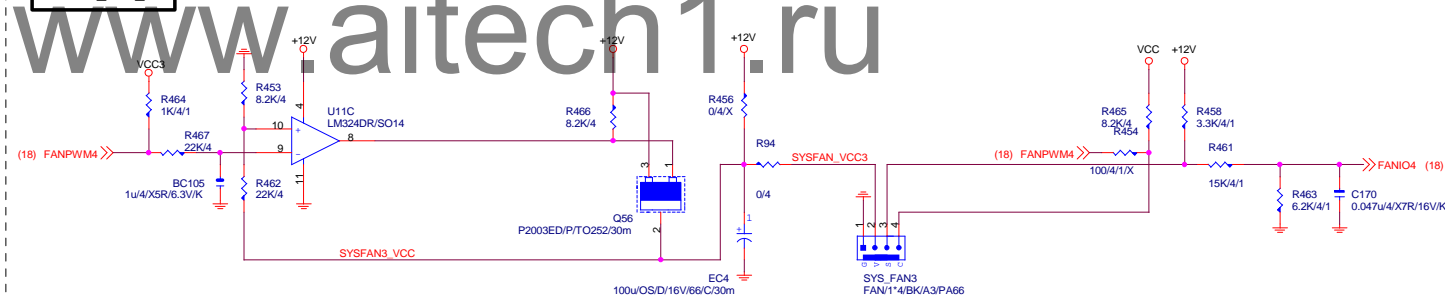
SYS_FAN_1



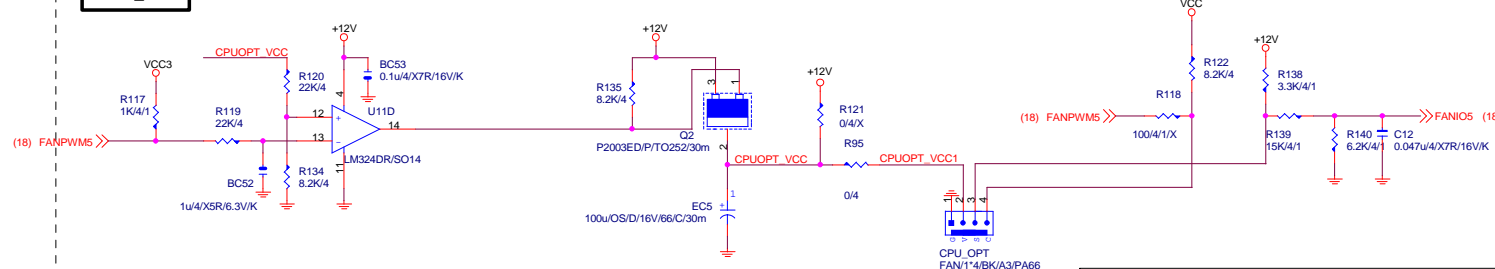
SYS_FAN_2



SYS_FAN_3



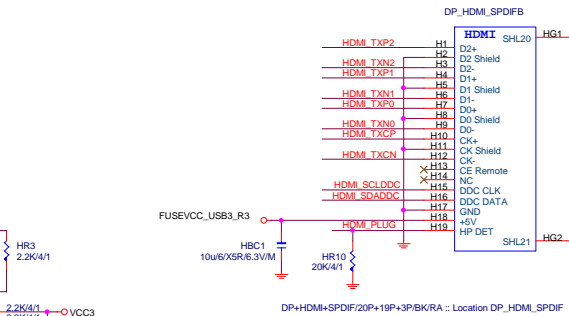
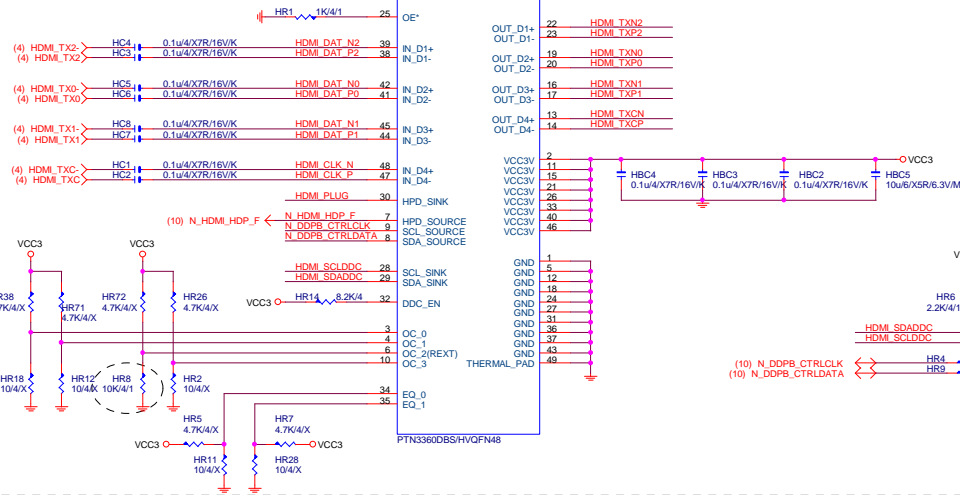
CPU_OPT



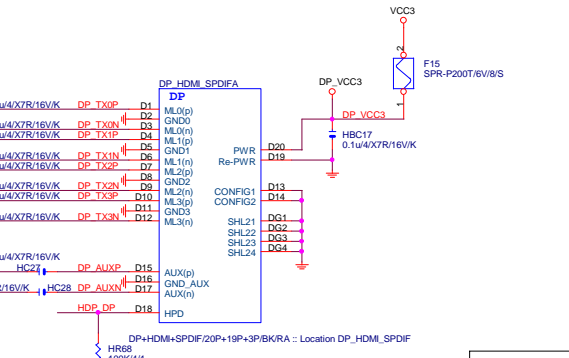
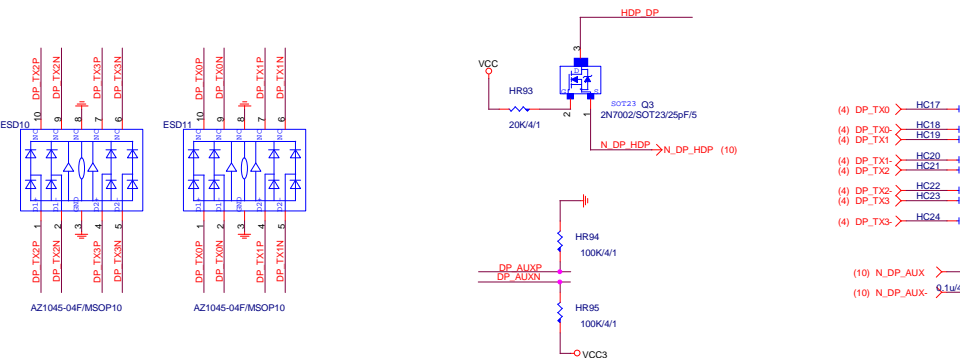
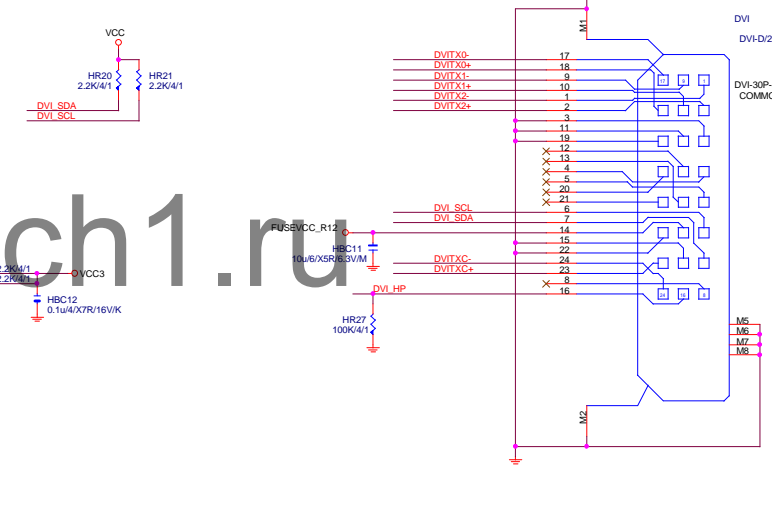
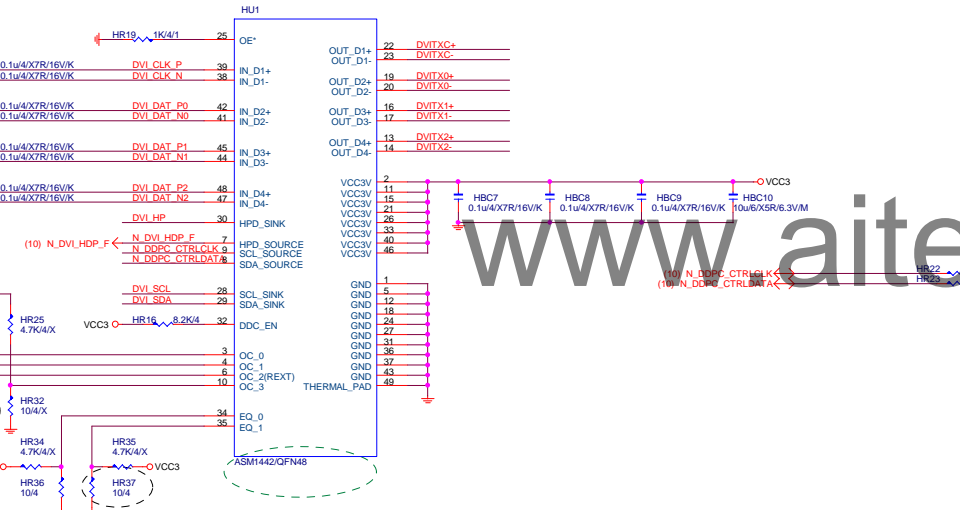
Gigabyte Technology

Title			HWM, FAN CTRL
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HDMI LEVEL SHIFT



DVI LEVEL SHIFT



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HDMI / DVI/DP			
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