

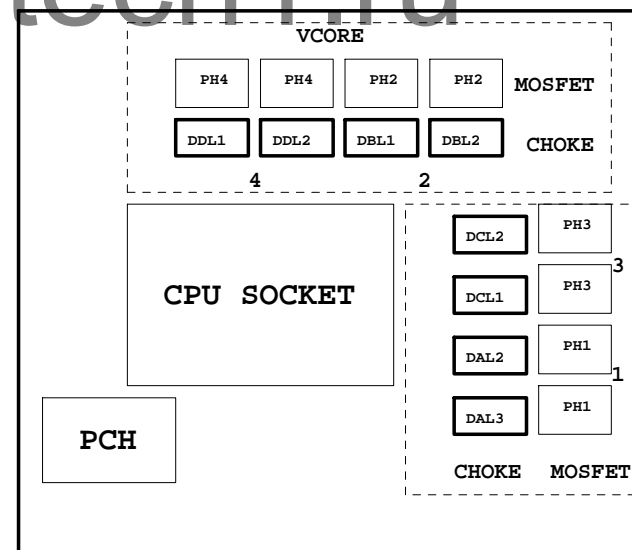
Model Name: GA-Z87X-SLI

SHEET TITLE Rev.1.1

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
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE
10	PCH_RGB,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*16 SWITCH
17	PCIEX1&2&3
18	ITE8892 PCI BRIDGE
19	PCI SLOT 1&2
20	I/O ITE8728
21	COM, -PROHOT, R_USB
22	Dual BIOS / LPT
23	ALC892 CODEC
24	REAR AUDIO JACK
25	VCORE_ ISL95820_1
26	VCORE_ ISL95820_2
27	DDR15V / M3 POWER

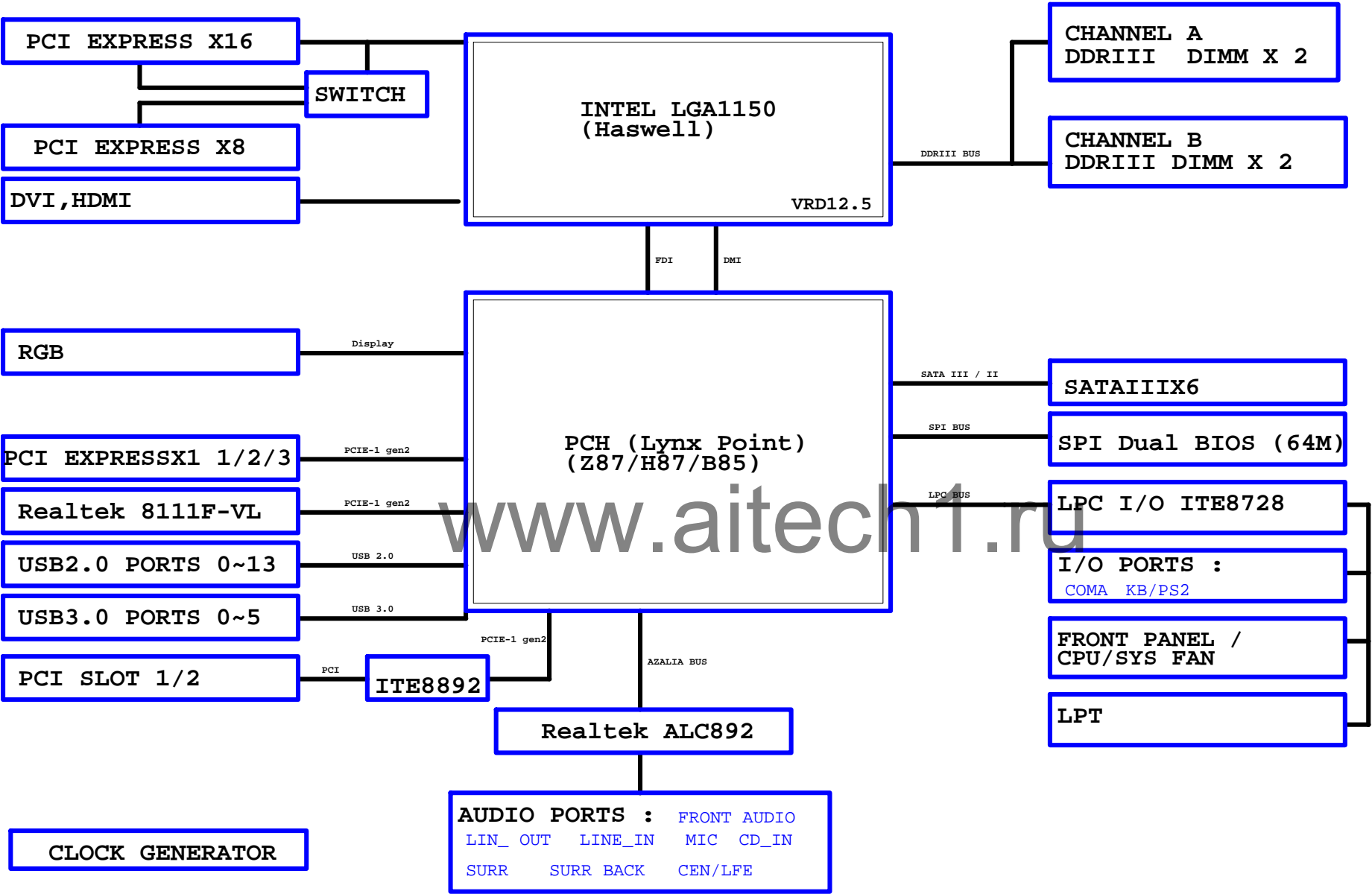
SHEET TITLE

28	NCP3933 OVER VOLTAGE
29	DISCRETE POWER
30	F_PANEL , F_USB2.0/3.0
31	ATX POWER, CLOCK GEN
32	HWM , KB/MS , FAN CTRL
33	Realtek 8111F-VL
34	DVI
35	HDMI
36	TABLE LIST
37	
38	
39	
40	

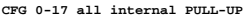


[illegible][illegible][illegible][illegible][illegible]

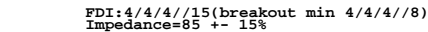
BLOCK DIAGRAM



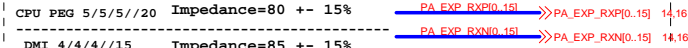
(E)



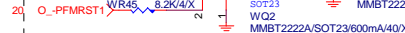
(D)



(c)



-CPURST



CPU SVII



CPU PU/PD



SM	REF
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THRMTRIP DISABLE FOR Z87 OVERCLOCK
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Gigabyte Technology

CPU LGA1150-A

Size	Document Number	GA-Z87X-SLI
Custom		

Date: Wednesday, October 09, 2013 Sheet 4 of 36

LGA1150 (A)

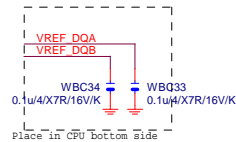
LGA1150 (B)

LGA1150 (CR)

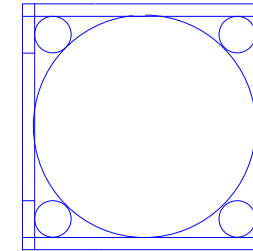
LGA1150A		DDR0_D00	AD38	MDA0
MAAA0	AU13	DDR0_D01	AD39	MDA1
MAAA1	AV16	DDR0_D02	AF38	MDA2
MAAA2	AU16	DDR0_D03	AF39	MDA3
MAAA3	AW17	DDR0_D04	AD37	MDA4
MAAA4	AU17	DDR0_D05	AD40	MDA5
MAAA5	AW18	DDR0_D06	AE37	MDA6
MAAA6	AV17	DDR0_D07	AF40	MDA7
MAAA7	AT18	DDR0_D08	AH40	MDA9
MAAA8	AU18	DDR0_D09	AH39	MDA10
MAAA9	AT19	DDR0_D10	AK38	MDA11
MAAA10	AW11	DDR0_D11	AK39	MDA12
MAAA11	AV19	DDR0_D12	AH37	MDA13
MAAA12	AU19	DDR0_D13	AH38	MDA14
MAAA13	AW10	DDR0_D14	AK40	MDA15
MAAA14	AT20	DDR0_D15	AK40	MDA16
MAAA15	AU21	DDR0_D16	AM40	MDA17
MODT_A0	AW10	DDR0_ODT0	AM39	MDA21
MODT_A1	AV8	DDR0_ODT1	AP38	MDA18
MODT_A2	AW9	DDR0_ODT2	AP39	MDA19
MODT_A3	AU8	DDR0_ODT3	AM37	MDA20
		DDR0_DQ21	AM38	MDA16
		DDR0_DQ22	AP37	MDA22
		DDR0_DQ23	AP40	MDA23
		DDR0_DQ24	AW37	MDA29
		DDR0_DQ25	AU35	MDA26
		DDR0_DQ26	AW35	MDA27
		DDR0_DQ27	AT37	MDA28
		DDR0_DQ28	AU37	MDA24
		DDR0_DQ29	AT35	MDA30
		DDR0_DQ30	AW35	MDA31
		DDR0_DQ31	AW6	MDA33
		DDR0_DQ32	AU6	MDA37
		DDR0_DQ33	AW4	MDA34
		DDR0_DQ34	AW4	MDA35
		DDR0_DQ35	AW6	MDA32
		DDR0_DQ36	AW4	MDA38
		DDR0_DQ37	AW4	MDA39
		DDR0_DQ38	AR1	MDA41
		DDR0_DQ39	AR4	MDA45
		DDR0_DQ40	AN3	MDA42
		DDR0_DQ41	AN4	MDA43
		DDR0_DQ42	AR2	MDA44
		DDR0_DQ43	AR3	MDA40
		DDR0_DQ44	AN2	MDA46
		DDR0_DQ45	AN1	MDA47
		DDR0_DQ46	AL1	MDA49
		DDR0_DQ47	AL4	MDA53
		DDR0_DQ48	AL4	MDA50
		DDR0_DQ49	AJ4	MDA51
		DDR0_DQ50	AL2	MDA52
		DDR0_DQ51	AL3	MDA48
		DDR0_DQ52	AJ2	MDA54
		DDR0_DQ53	AJ1	MDA55
		DDR0_DQ54	AG1	MDA57
		DDR0_DQ55	AG4	MDA61
		DDR0_DQ56	AE3	MDA58
		DDR0_DQ57	AE4	MDA59
		DDR0_DQ58	AG2	MDA60
		DDR0_DQ59	AG3	MDA56
		DDR0_DQ60	AE2	MDA62
		DDR0_DQ61	AE1	MDA63
		DDR0_DQ62	AE39	DQSA0
		DDR0_DQ63	AJ39	DQSA1
		DDR0_DQ64	AN39	DQSA2
		DDR0_DQ65	AV36	DQSA3
		DDR0_DQ66	AV5	DQSA4
		DDR0_DQ67	AP3	DQSA5
		DDR0_DQ68	AK3	DQSA6
		DDR0_DQ69	AF3	DQSA7
		DDR0_DQ70	AV32	DQSA8
		DDR0_DQ71	AE38	DQSA9
		DDR0_DQ72	AJ38	DQSA10
		DDR0_DQ73	AN38	DQSA11
		DDR0_DQ74	AJ36	DQSA12
		DDR0_DQ75	AW5	DQSA13
		DDR0_DQ76	AP2	DQSA14
		DDR0_DQ77	AK2	DQSA15
		DDR0_DQ78	AF2	DQSA16
		DDR0_DQ79	AU32	DQSA17

HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150B		DDR1_D00	AE34	MDB0
MAAB0	AL19	DDR1_D01	AE35	MDB1
MAAB1	AK23	DDR1_D02	AG35	MDB2
MAAB2	AM23	DDR1_D03	AH35	MDB3
MAAB3	AM23	DDR1_D04	AD34	MDB4
MAAB4	AP23	DDR1_D05	AD35	MDB5
MAAB5	AL23	DDR1_D06	AG34	MDB6
MAAB6	AY24	DDR1_D07	AH34	MDB7
MAAB7	AV25	DDR1_D08	AL34	MDB8
MAAB8	AU26	DDR1_D09	AL35	MDB9
MAAB9	AW25	DDR1_D10	AL31	MDB10
MAAB10	AY25	DDR1_D11	AL31	MDB11
MAAB11	AY26	DDR1_D12	AK34	MDB12
MAAB12	AY26	DDR1_D13	AK35	MDB13
MAAB13	AR15	DDR1_D14	AK32	MDB14
MAAB14	AV27	DDR1_D15	AL32	MDB15
MAAB15	AY28	DDR1_D16	AL34	MDB17
		DDR1_D17	AP34	MDB21
		DDR1_D18	AN31	MDB19
		DDR1_D19	AP31	MDB23
		DDR1_D20	AN35	MDB20
		DDR1_D21	AP35	MDB16
		DDR1_D22	AN32	MDB18
		DDR1_D23	AP32	MDB22
		DDR1_D24	AM29	MDB25
		DDR1_D25	AM28	MDB28
		DDR1_D26	AR29	MDB27
		DDR1_D27	AR28	MDB30
		DDR1_D28	AL28	MDB24
		DDR1_D29	AP29	MDB26
		DDR1_D30	AP28	MDB31
		DDR1_D31	AR12	MDB32
		DDR1_D32	AL13	MDB33
		DDR1_D33	AL12	MDB35
		DDR1_D34	AR13	MDB36
		DDR1_D35	AP13	MDB37
		DDR1_D36	AM13	MDB38
		DDR1_D37	AM12	MDB39
		DDR1_D38	AR9	MDB45
		DDR1_D39	AP9	MDB41
		DDR1_D40	AR6	MDB47
		DDR1_D41	AP6	MDB43
		DDR1_D42	AR10	MDB44
		DDR1_D43	AP10	MDB40
		DDR1_D44	AR7	MDB46
		DDR1_D45	AP7	MDB42
		DDR1_D46	AM9	MDB52
		DDR1_D47	AL9	MDB53
		DDR1_D48	AL6	MDB50
		DDR1_D49	AL7	MDB55
		DDR1_D50	AM10	MDB48
		DDR1_D51	AL10	MDB49
		DDR1_D52	AM6	MDB54
		DDR1_D53	AM7	MDB51
		DDR1_D54	AH6	MDB61
		DDR1_D55	AH7	MDB60
		DDR1_D56	AE6	MDB59
		DDR1_D57	AE7	MDB63
		DDR1_D58	AJ6	MDB56
		DDR1_D59	AJ7	MDB57
		DDR1_D60	AG6	MDB58
		DDR1_D61	AF7	MDB62
		DDR1_D62	AF35	DQSB0
		DDR1_D63	AL33	DQSB1
		DDR1_D64	AN28	DQSB2
		DDR1_D65	AN28	DQSB3
		DDR1_D66	AN12	DQSB4
		DDR1_D67	AP8	DQSB5
		DDR1_D68	AL8	DQSB6
		DDR1_D69	AG7	DQSB7
		DDR1_D70	AN25	DQSB8
		DDR1_D71	AF34	DQSB9
		DDR1_D72	AK33	DQSB1
		DDR1_D73	AN33	DQSB2
		DDR1_D74	AN29	DQSB3
		DDR1_D75	AN13	DQSB4
		DDR1_D76	AR8	DQSB5
		DDR1_D77	AM8	DQSB6
		DDR1_D78	AG6	DQSB7
		DDR1_D79	AN26	DQSB8



HASWELL[10SC1-F01150-01R_10SC1-F01150-03R]

LGA1150
ILM_BP/1156/CSP

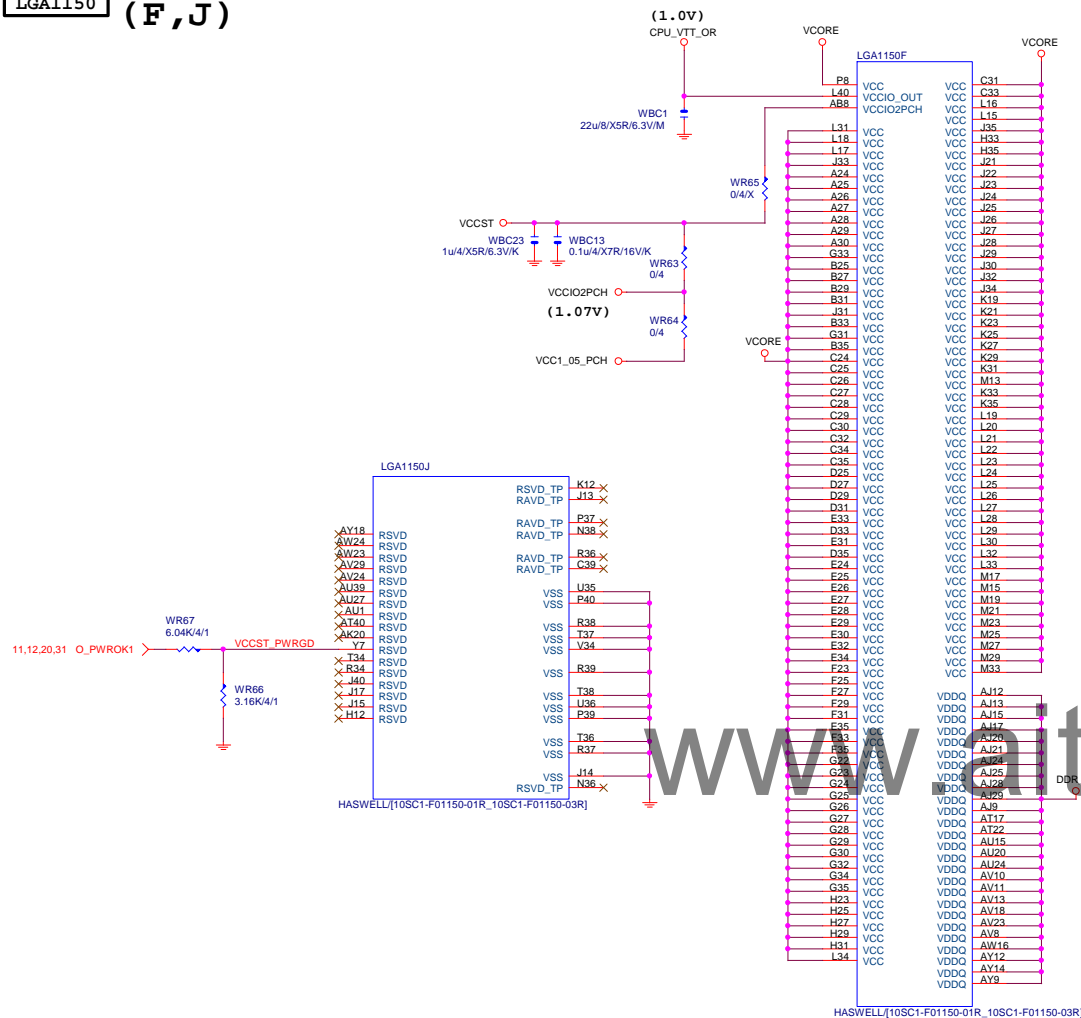
DDR BUS

7	MODT_A[0..3]	MODT_A10..31
8	MODT_B[0..3]	MODT_B10..31
7	MDA[0..63]	MDA10..63
8	MDB[0..63]	MDB10..63
7	DQSA[0..7]	DQSA10..71
7	DQSA[0..7]	DQSA10..71
7	MAAA[0..15]	MAAA10..15
8	MAAB[0..15]	MAAB10..15
8	DQSB[0..7]	DQSB10..71
8	DQSB[0..7]	DQSB10..71

Gigabyte Technology

Title		CPU LGA1150-B	
Size	Document Number	GA-Z87X-SLI	
Custom			Rev 1.1
Date:	Wednesday, October 09, 2013	Sheet	5 of 36

LGA1150 (F, J)

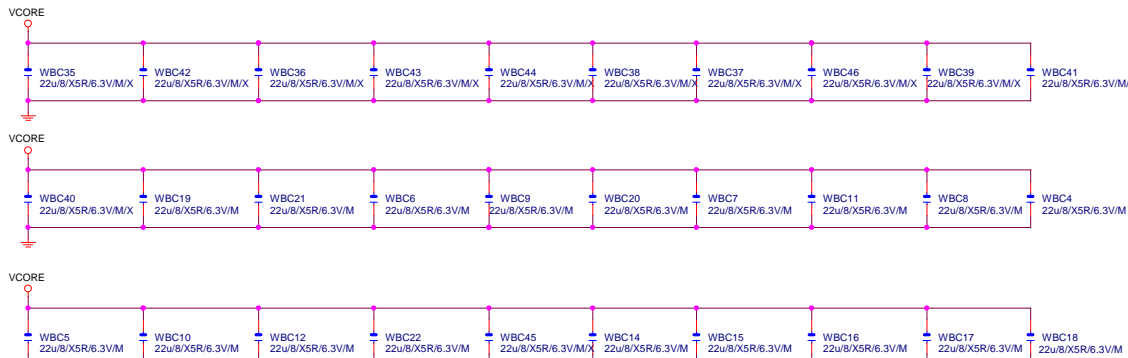


LGA1150 (G,H,I)



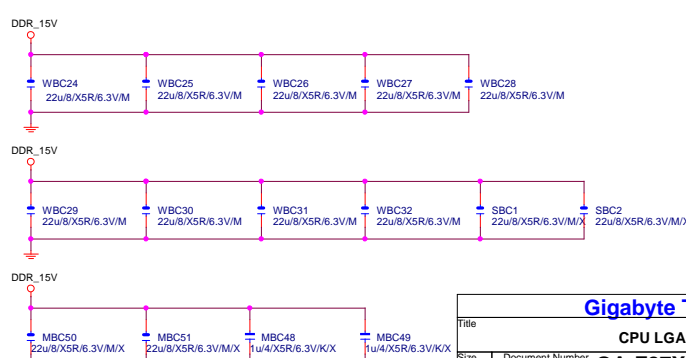
VCore CAP

(X30)



DDR CAP

(X15)



Gigabyte Technology

Title			
CPU LGA1150-C			
Size	Document Number	Rev	
Custom	GA-Z87X-SLI	1.1	
Date:	Wednesday, October 09, 2013	Sheet	6 of 36

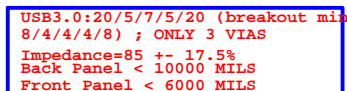
(B)

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 15%



usb2.0 5/7/5//12
usb3.0 5/7/5//20 Impedance=85 +- 15%

PCH (F)



CK_DOTCLK NR92 8.2K Ω
CK_-DOTCLK NR91 8.2K Ω
NR92 short to GND in non
graphic SKU

(J)



PCH H/S

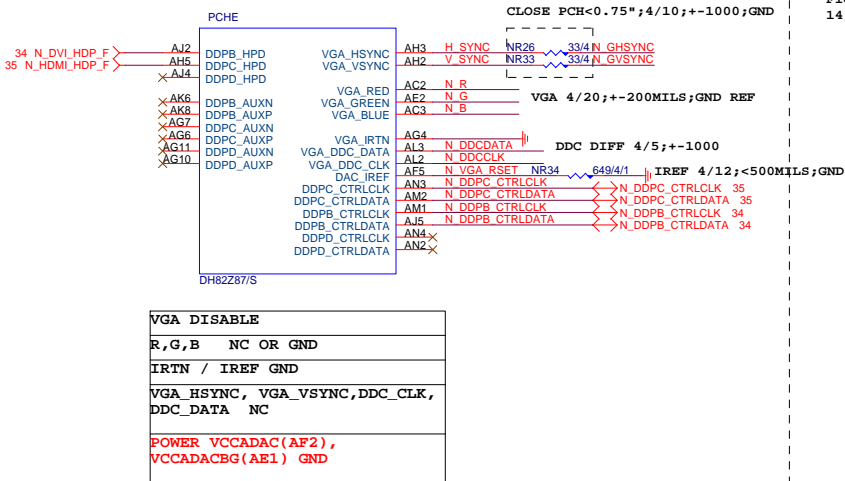


USB TABLE

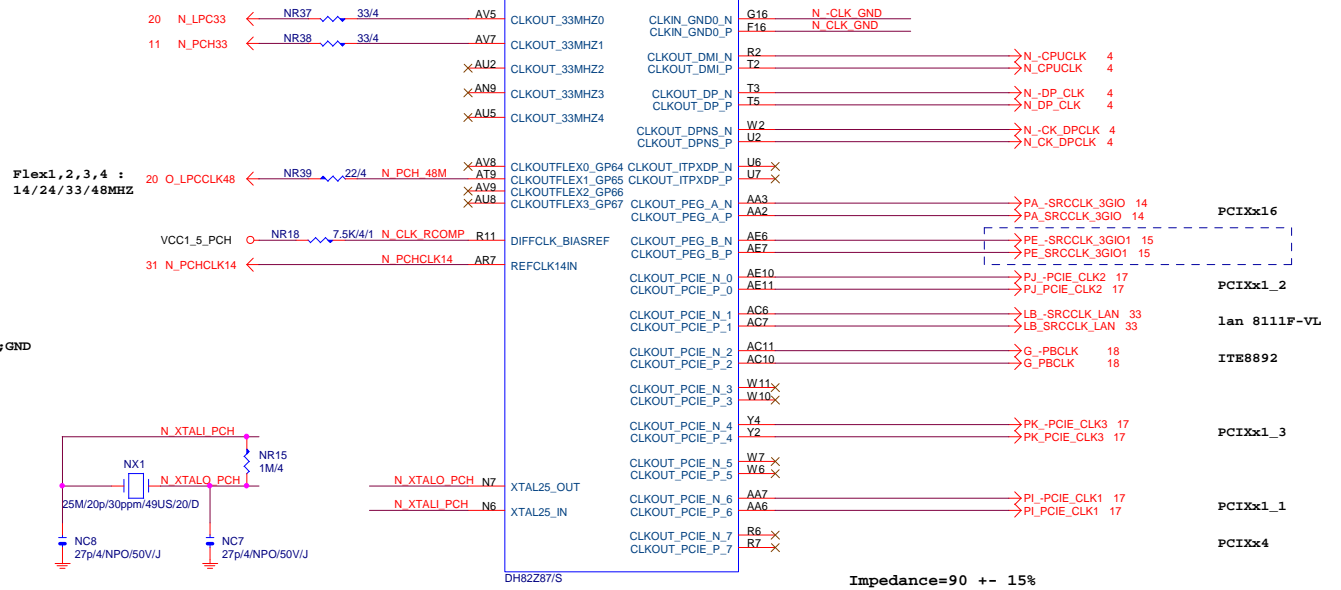
USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

Title			
PCH FDI,DMI,USB ,PCIE			
Size	Document Number	Rev	
Custom	GA-Z87X-SLI	1:	
Date:	Wednesday, October 09, 2013	Sheet	9 of 36

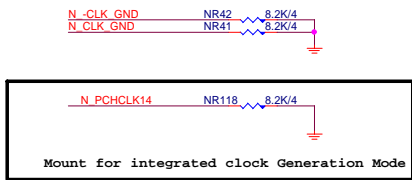
PCH (E)



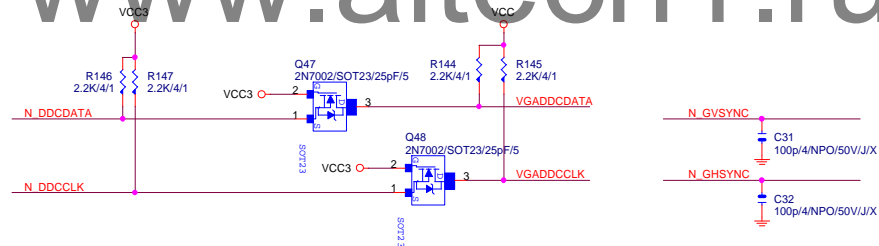
PCH (G)



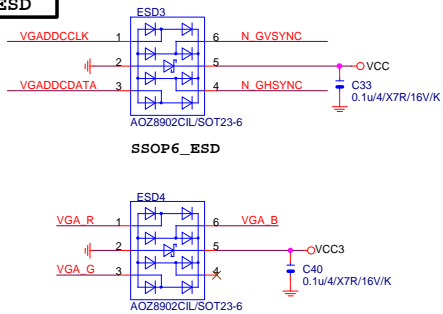
PCH CLK PD



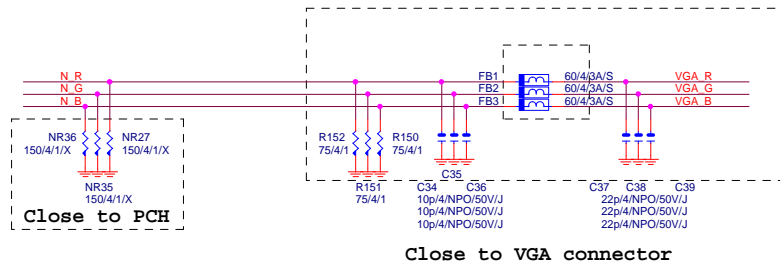
VGA DDC



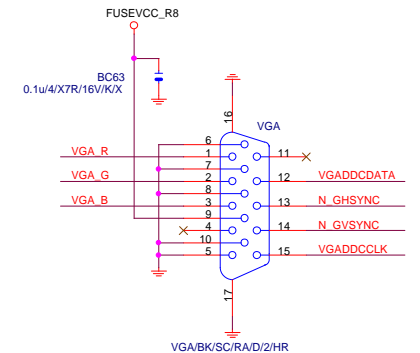
VGA ESD



VGA DDC



VGA CONNECTOR



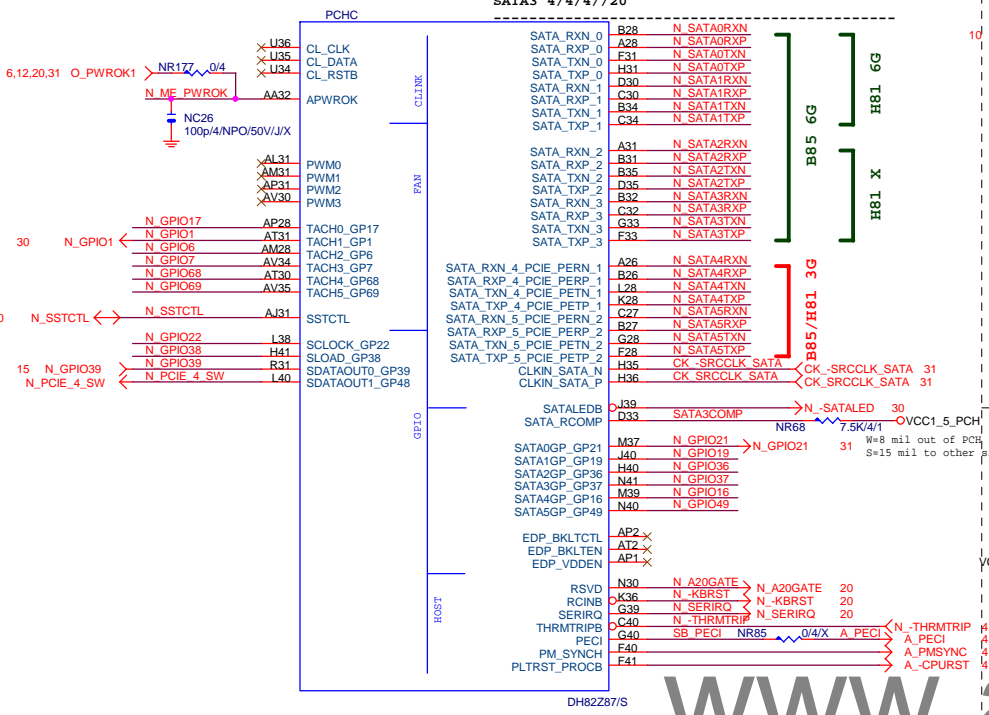
Gigabyte Technology

Title		
PCH DISPLAY ,CLK BUFFER		
Size	Document Number	Rev
Custom	GA-Z87X-SLI	1.1
Date:	Wednesday, October 09, 2013	Sheet 10 of 36

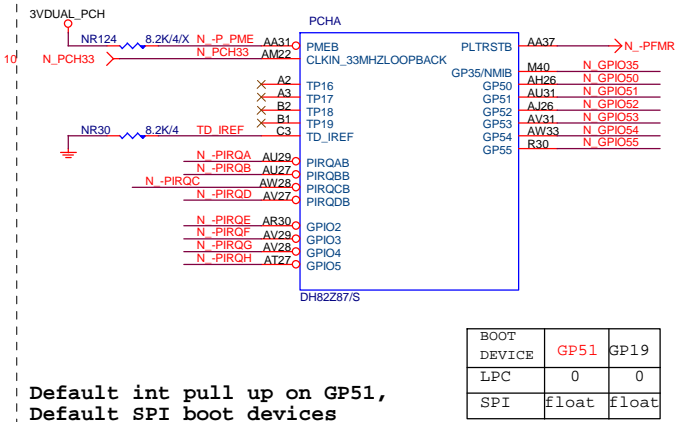
PCH (C)

SATA3 : 20/4/4/20 (breakout min 8/4/4/8)
Impedance=95 +- 17.5%

SATA2 4/4/4/15
SATA3 4/4/4/20



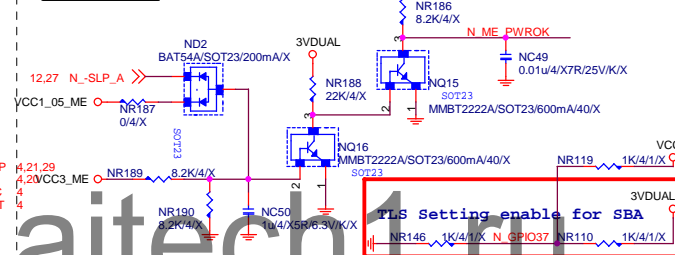
PCH (A)



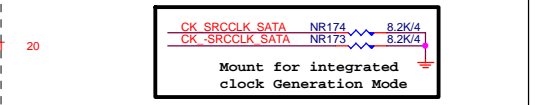
Default int pull up on GP51,
Default SPI boot devices

BOOT	GP51	GP19
DEVICE	0	0
LPC	0	0
SPI	float	float

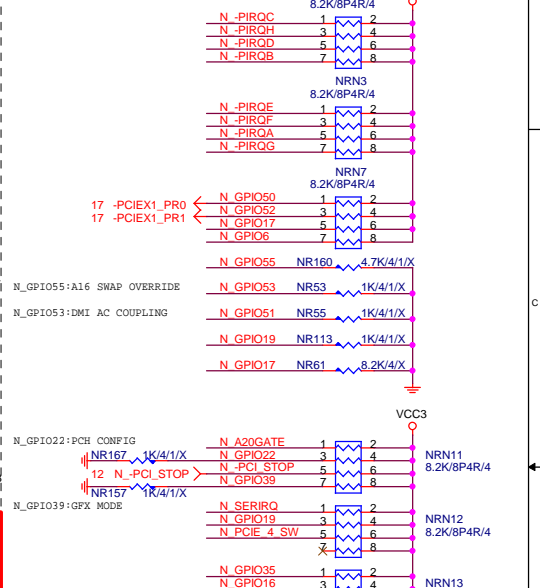
ME PWROK



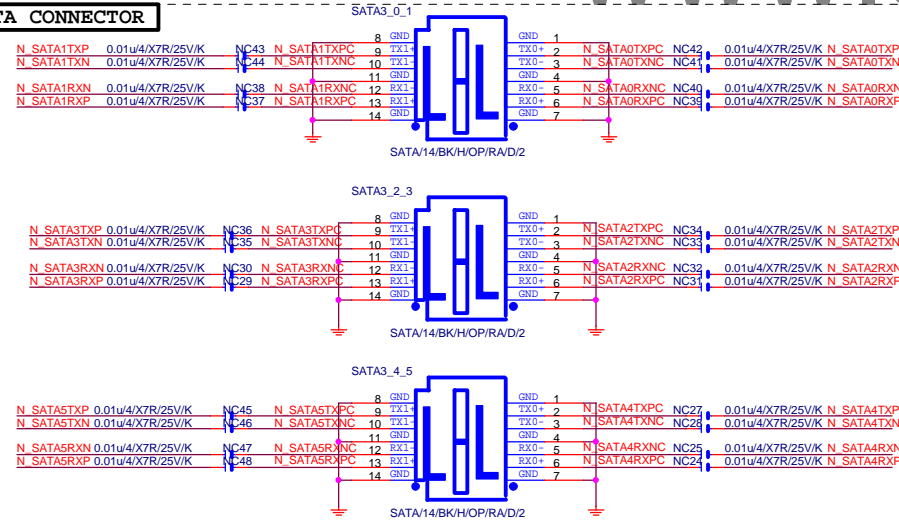
PCH CLK PD



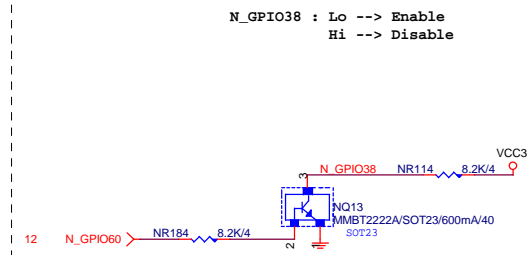
PCH PU/PD



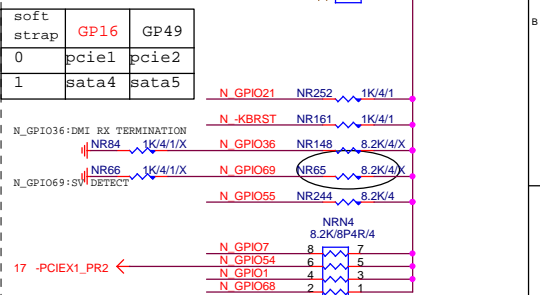
SATA CONNECTOR



GPIO38 Ctrl



MFG Mode
N_GPIO38 : Lo --> Enable
Hi --> Disable



Gigabyte Technology

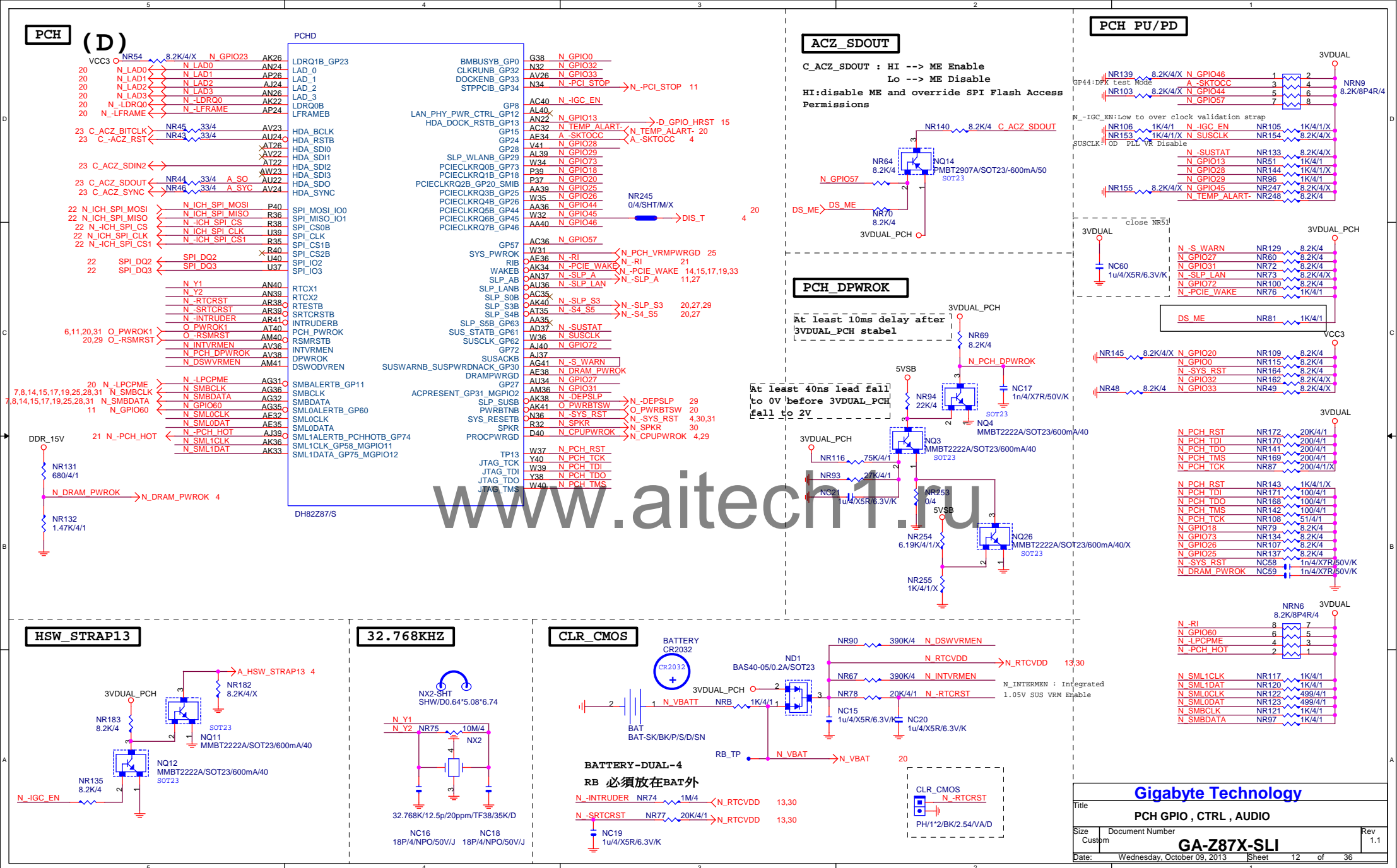
Title: PCH HOST , SATA, PCI

Size: Custom

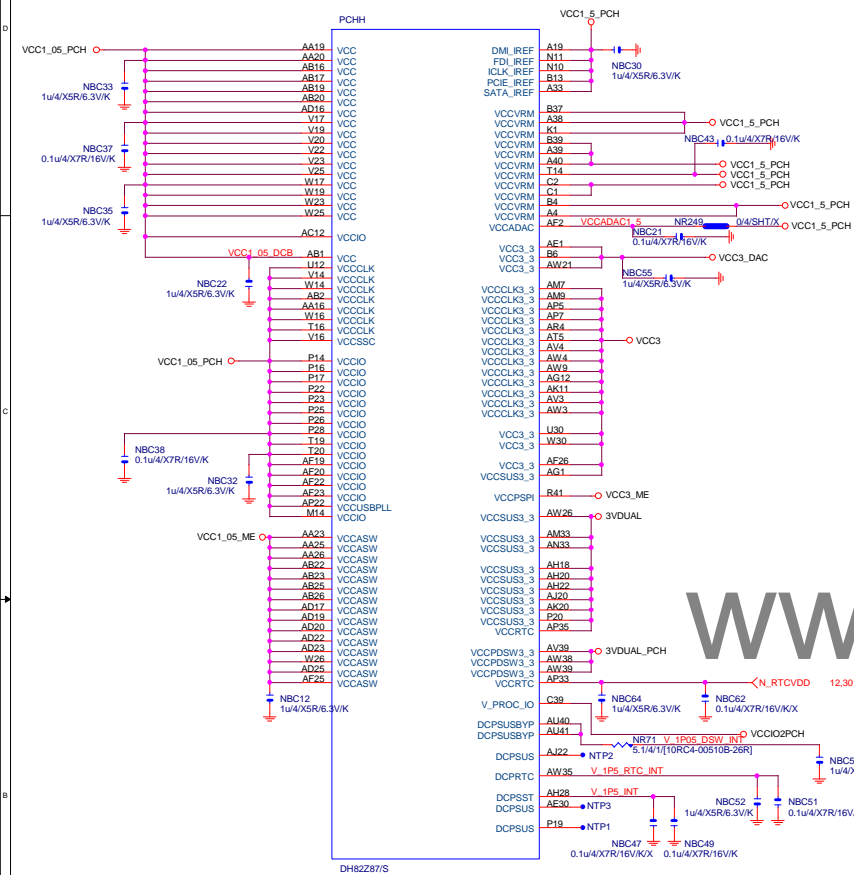
Document Number: GA-Z87X-SLI

Date: Wednesday, October 09, 2013

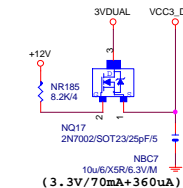
Sheet: 11 of 36



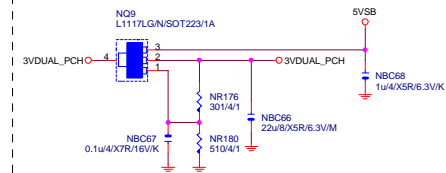
PCH (H)



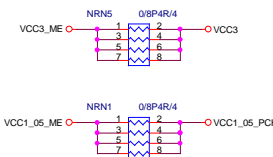
VCC3_DAC



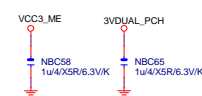
3VDUAL_PCH



SHT PWR

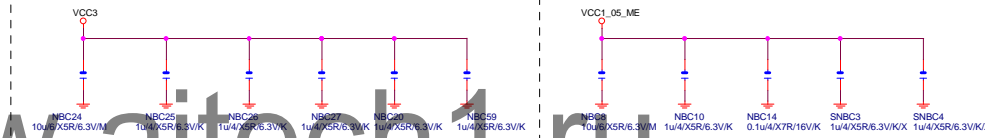


CAP



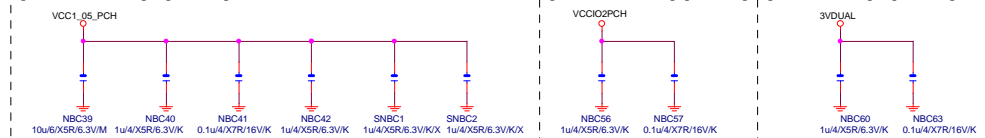
(3.3V) (X6)

(1.05V) (x5)

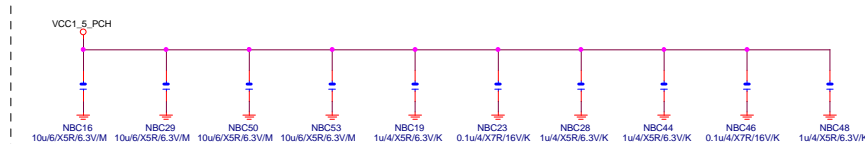


(1.05V) (x6)

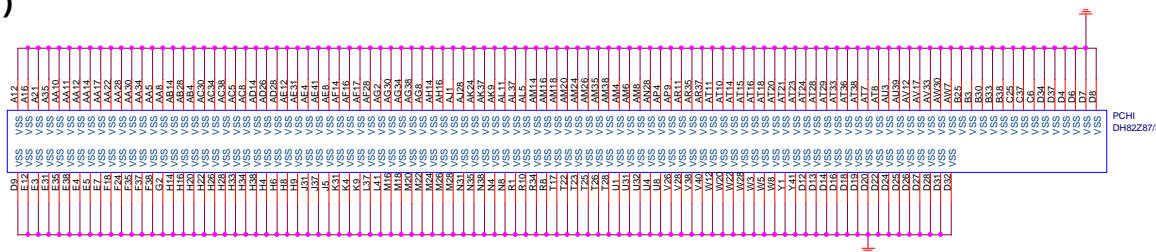
(1.05V)(x2) (3.3V) (x2)



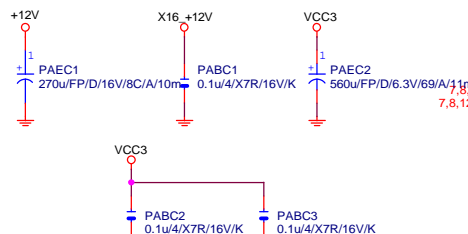
(1.5V) (x10)



PCH (I)

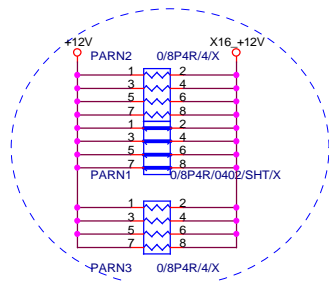


PCIEX16	CAP
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PCIEX16 PROTECT SHT

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+12 protect
short-wire test
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PCIEX16 AC CAP

PA EXP TXP0	PA C5	0.22u4/X5R6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PA C4	0.22u4/X5R6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PA C6	0.22u4/X5R6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PA C7	0.22u4/X5R6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PA C8	0.22u4/X5R6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PA C9	0.22u4/X5R6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PA C10	0.22u4/X5R6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PA C11	0.22u4/X5R6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PA C12	0.22u4/X5R6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PA C13	0.22u4/X5R6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PA C14	0.22u4/X5R6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PA C15	0.22u4/X5R6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PA C16	0.22u4/X5R6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PA C17	0.22u4/X5R6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PA C18	0.22u4/X5R6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PA C19	0.22u4/X5R6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8 C	PA C20	0.22u4/X5R6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PA C21	0.22u4/X5R6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9 C	PA C22	0.22u4/X5R6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PA C23	0.22u4/X5R6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PA C24	0.22u4/X5R6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PA C25	0.22u4/X5R6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11 C	PA C26	0.22u4/X5R6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PA C27	0.22u4/X5R6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12 C	PA C28	0.22u4/X5R6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12 C	PA C29	0.22u4/X5R6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13 C	PA C30	0.22u4/X5R6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PA C31	0.22u4/X5R6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PA C32	0.22u4/X5R6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PA C33	0.22u4/X5R6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15 C	PA C34	0.22u4/X5R6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PA C35	0.22u4/X5R6.3V/K	PA EXP SW TXN15 C

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

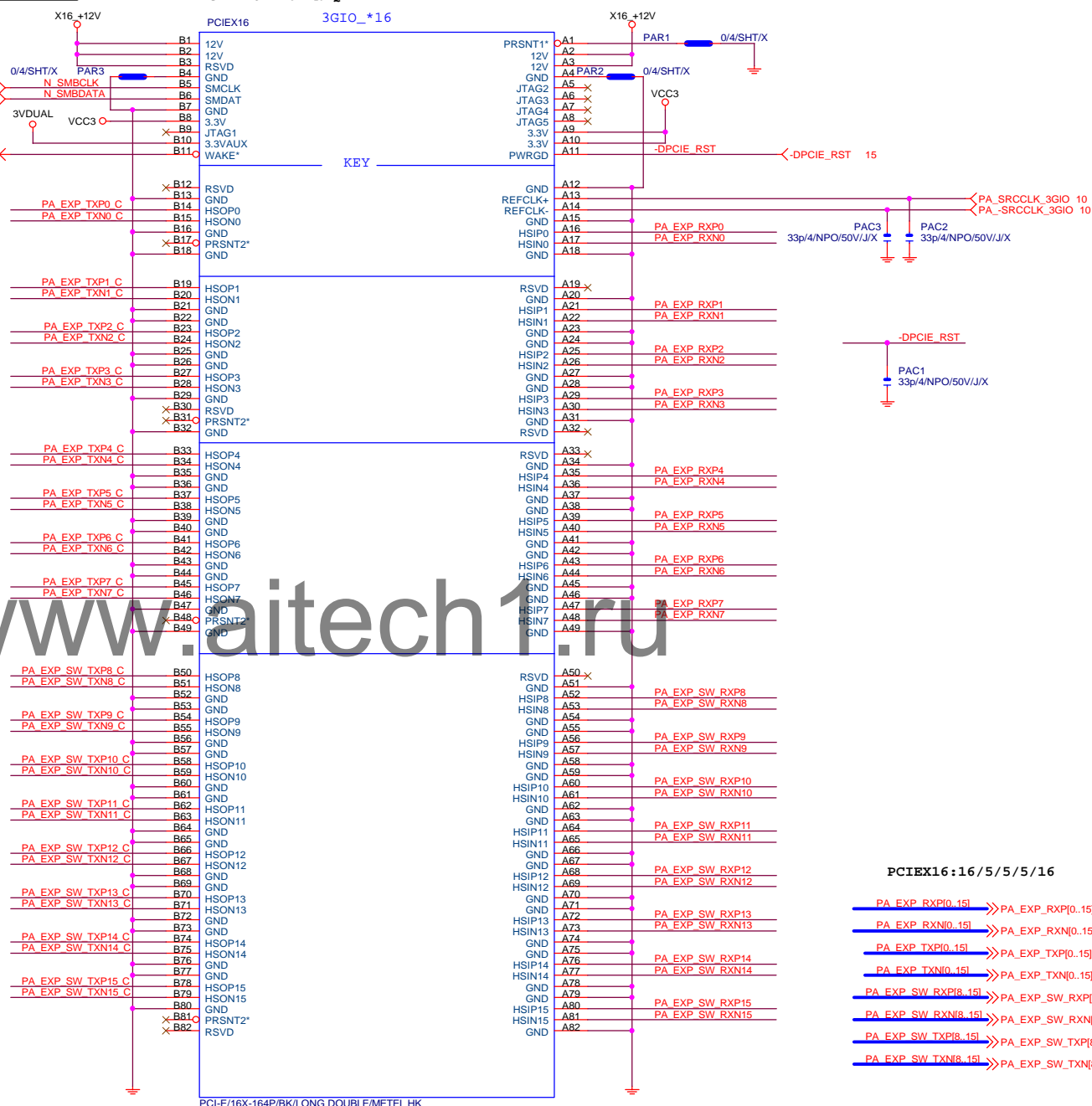
PCE-E X16(單向) BANDWIDTH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DN-Q



PCI-E/16X-164P/BK/LONG DOUBLE/METEL HK

PCIEX16:16/5/5/5/16

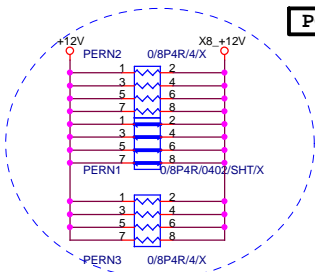
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<u>PA_EXP_RXN[0..15]</u>	<u>>>>PA_EXP_RXN[0..15]</u>	4,16
<u>PA_EXP_TXP[0..15]</u>	<u>>>>PA_EXP_TXP[0..15]</u>	4,16
<u>PA_EXP_TXN[0..15]</u>	<u>>>>PA_EXP_TXN[0..15]</u>	4,16
<u>PA_EXP_SW_RXP[8..15]</u>	<u>>>>PA_EXP_SW_RXP[8..15]</u>	16
<u>PA_EXP_SW_RXN[8..15]</u>	<u>>>>PA_EXP_SW_RXN[8..15]</u>	16
<u>PA_EXP_SW_TXP[8..15]</u>	<u>>>>PA_EXP_SW_TXP[8..15]</u>	16
<u>PA_EXP_SW_TXN[8..15]</u>	<u>>>>PA_EXP_SW_TXN[8..15]</u>	16

Gigabyte Technology

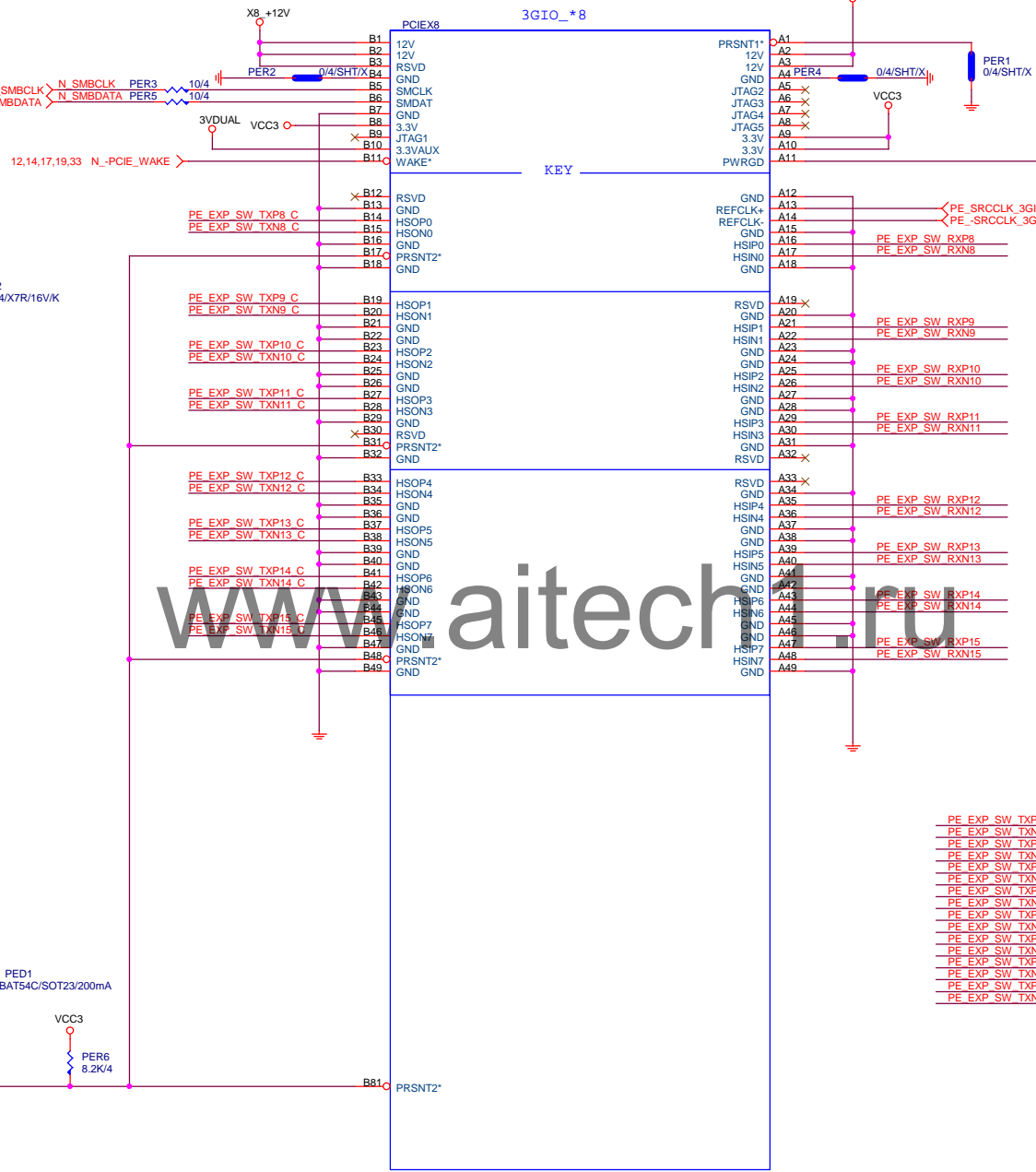
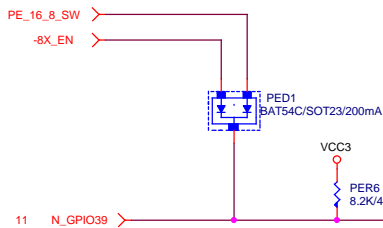
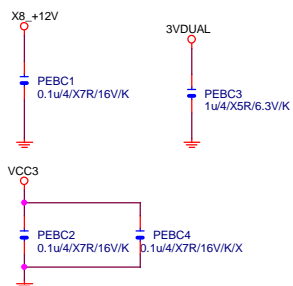
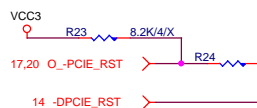
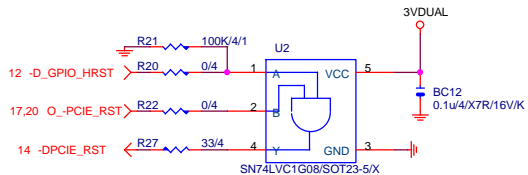
Title				PCI EXPRESS * 16			
Size Custom		Document Number				Rev	
		GA-Z87X-SLI				1.1	
Date:		Wednesday, October 09, 2013		Sheet		14 of 36	

PCIEX8 PROTECT SHT

+12 protect
short-wire
test

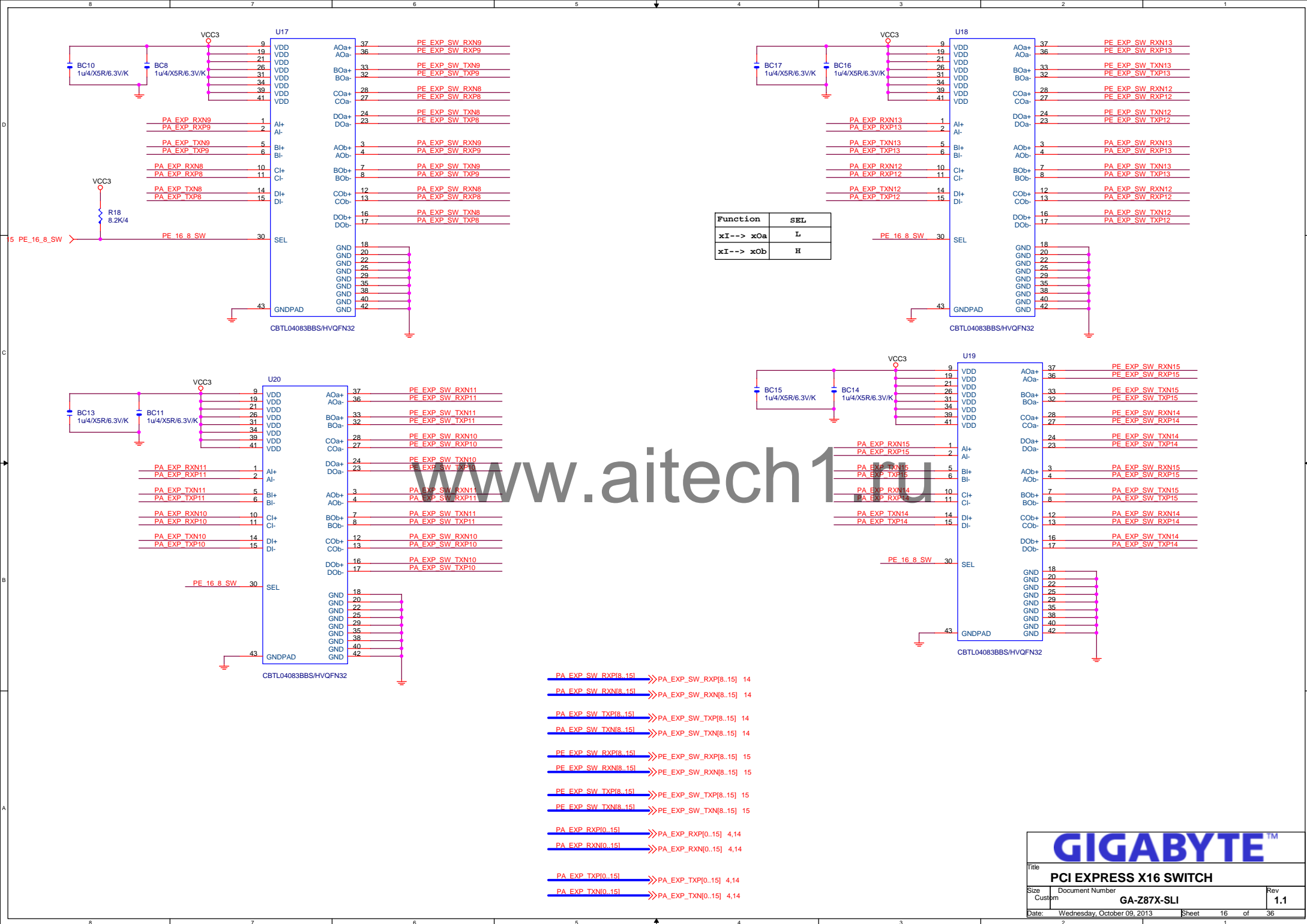


7,8,12,14,17,19,25,28,31 N_SMBCLK N_SMBCLK PER3 10/4
7,8,12,14,17,19,25,28,31 N_SMBDATA N_SMBDATA PER5 10/4



PE_EXP_SW_RXP[8..15] >> PE_EXP_SW_RXP[8..15] 16
PE_EXP_SW_RXN[8..15] >> PE_EXP_SW_RXN[8..15] 16
PE_EXP_SW_TXP[8..15] >> PE_EXP_SW_TXP[8..15] 16
PE_EXP_SW_TXN[8..15] >> PE_EXP_SW_TXN[8..15] 16

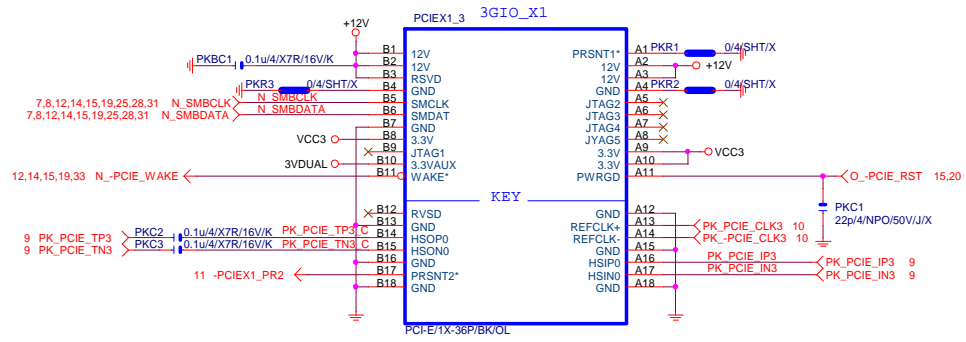
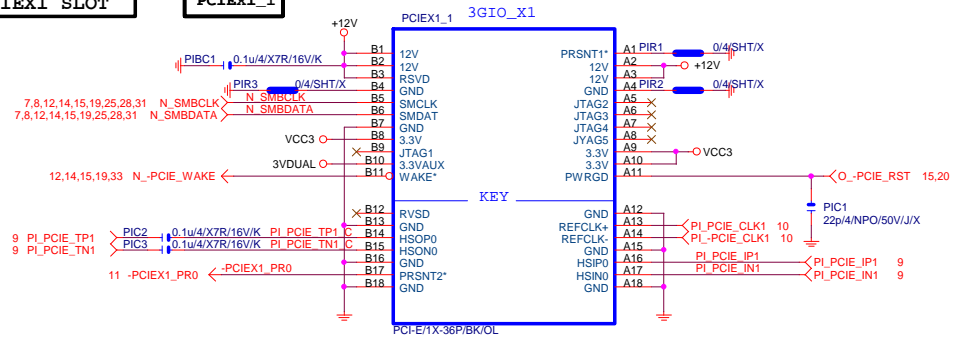
PE_EXP_SW_TXP8	PEC2	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP8_C
PE_EXP_SW_TXN8	PEC3	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN8_C
PE_EXP_SW_TXP9	PEC4	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP9_C
PE_EXP_SW_TXN9	PEC5	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXN9_C
PE_EXP_SW_TXP10	PEC6	0.22u/4/X5R/6.3V/K	PE_EXP_SW_TXP10_C
PE_EXP_SW_TXN10	PEC7	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



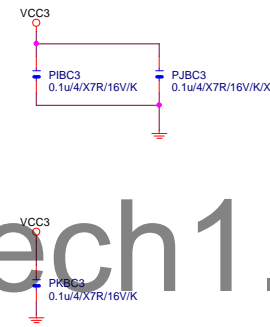
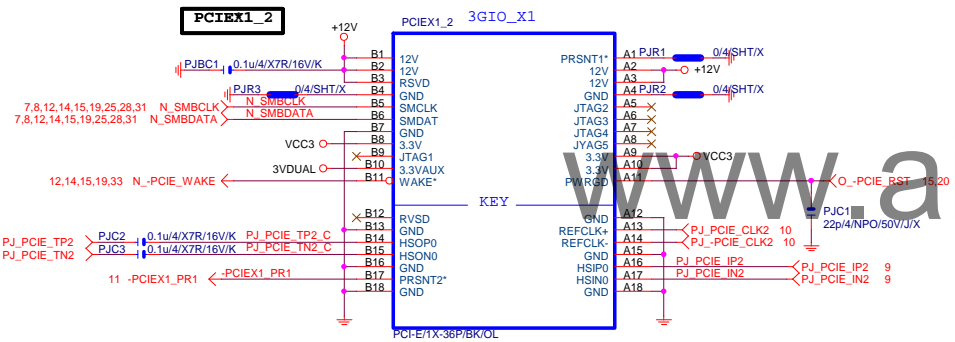
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PA EXP SW_RXN[8..15] >> PA_EXP_SW_RXN[8..15] 14
PA EXP SW_TXP[8..15] >> PA_EXP_SW_TXP[8..15] 14
PA EXP SW_TXN[8..15] >> PA_EXP_SW_TXN[8..15] 14
PE EXP SW_RXP[8..15] >> PE_EXP_SW_RXP[8..15] 15
PE EXP SW_RXN[8..15] >> PE_EXP_SW_RXN[8..15] 15
PE EXP SW_TXP[8..15] >> PE_EXP_SW_TXP[8..15] 15
PE EXP SW_TXN[8..15] >> PE_EXP_SW_TXN[8..15] 15
PA EXP_RXP[0..15] >> PA_EXP_RXP[0..15] 4,14
PA EXP_RXN[0..15] >> PA_EXP_RXN[0..15] 4,14
PA EXP_TXP[0..15] >> PA_EXP_TXP[0..15] 4,14
PA EXP_TXN[0..15] >> PA_EXP_TXN[0..15] 4,14

PCIEX1 SLOT

PCIEX1_1

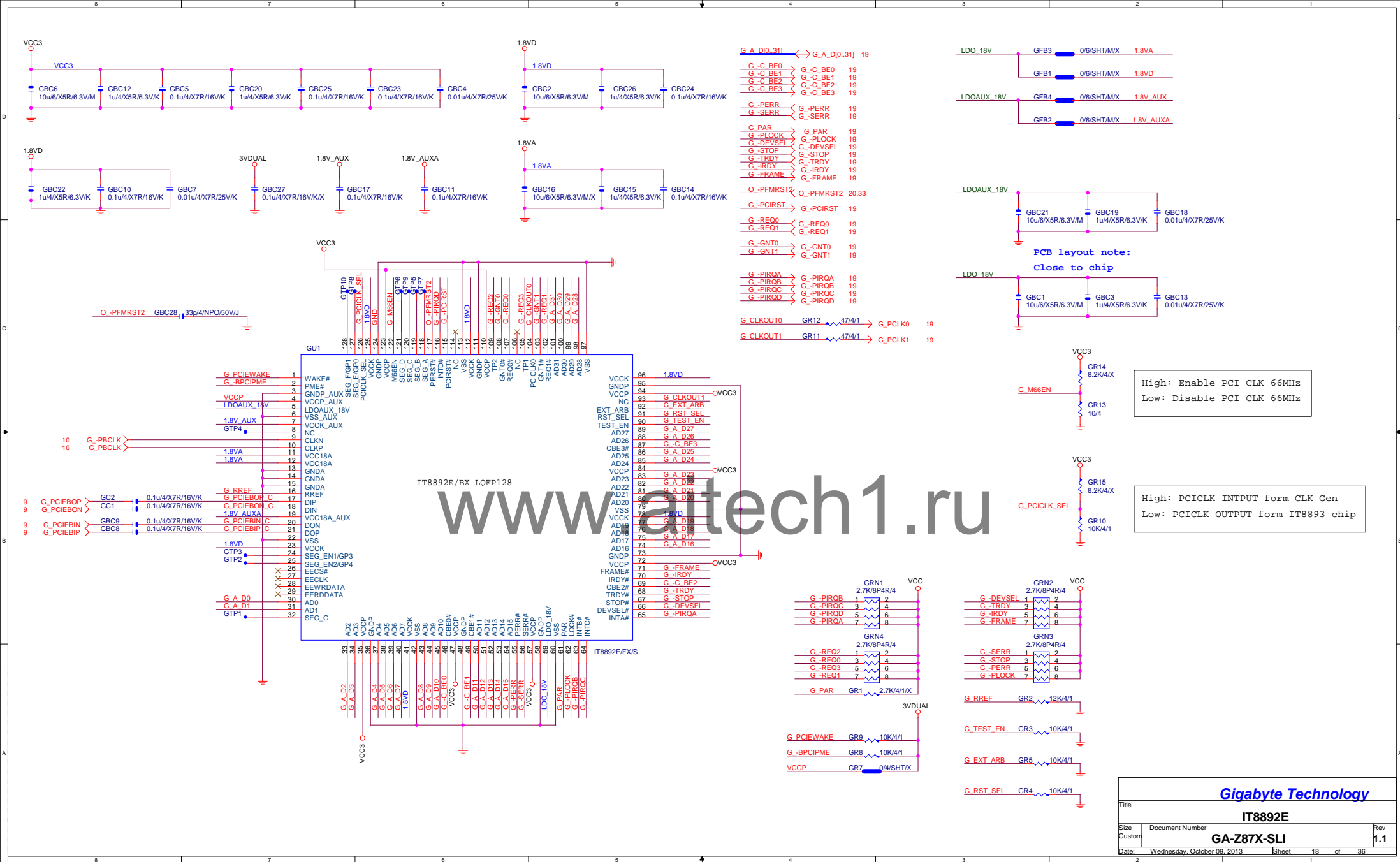


PCIEX1_2



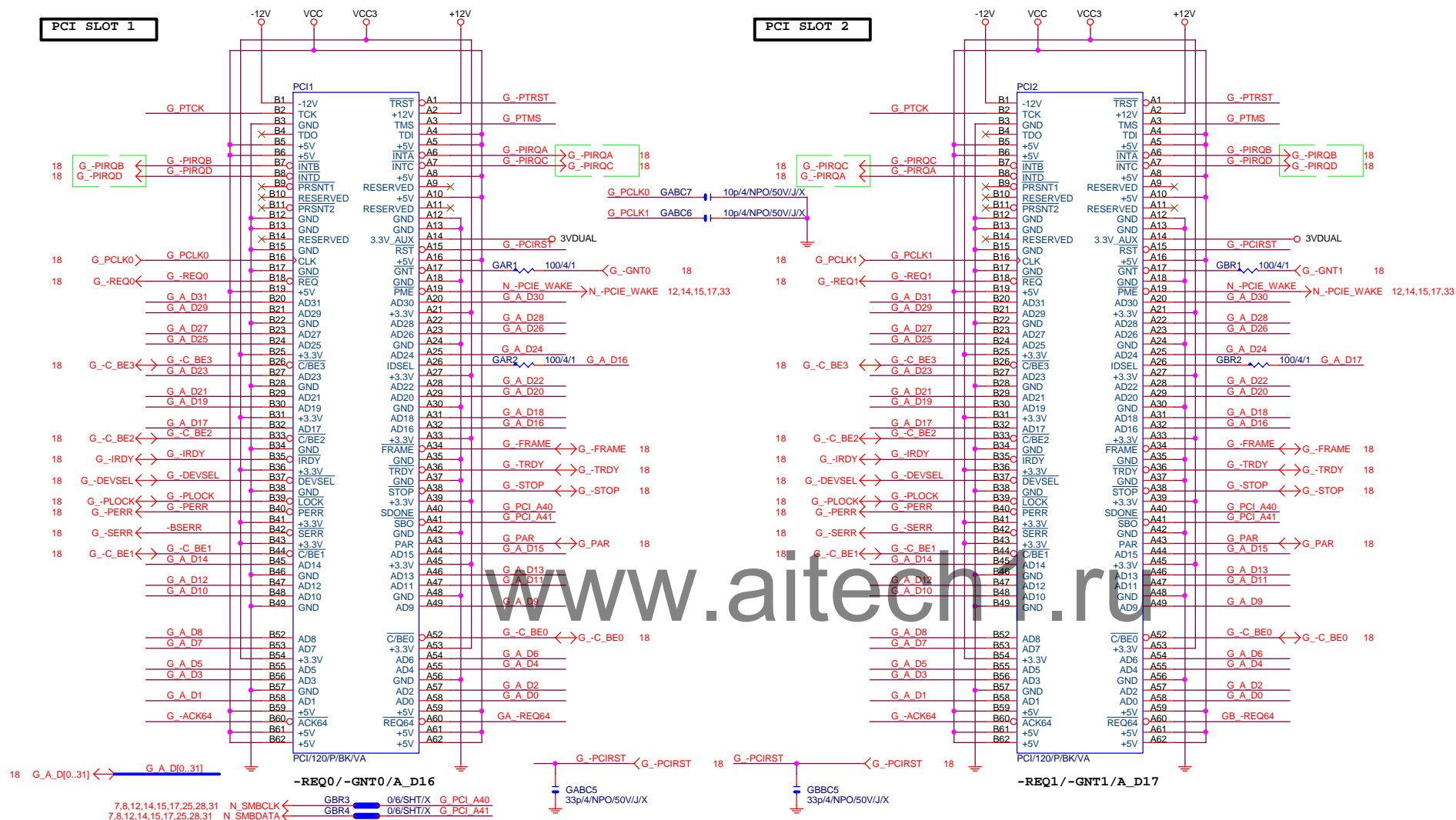
www.aitech1.ru

Gigabyte Technology		
Title		
PCIE X1 1,2		
Size	Document Number	Rev
Custom	GA-Z87X-SLI	1.1
Date:	Wednesday, October 09, 2013	Sheet 17 of 36



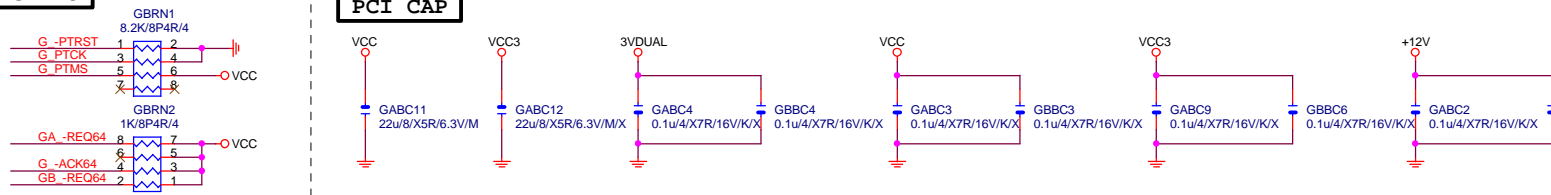
PCI SLOT 1

PCI SLOT 2



PCI PU

PCI CAP

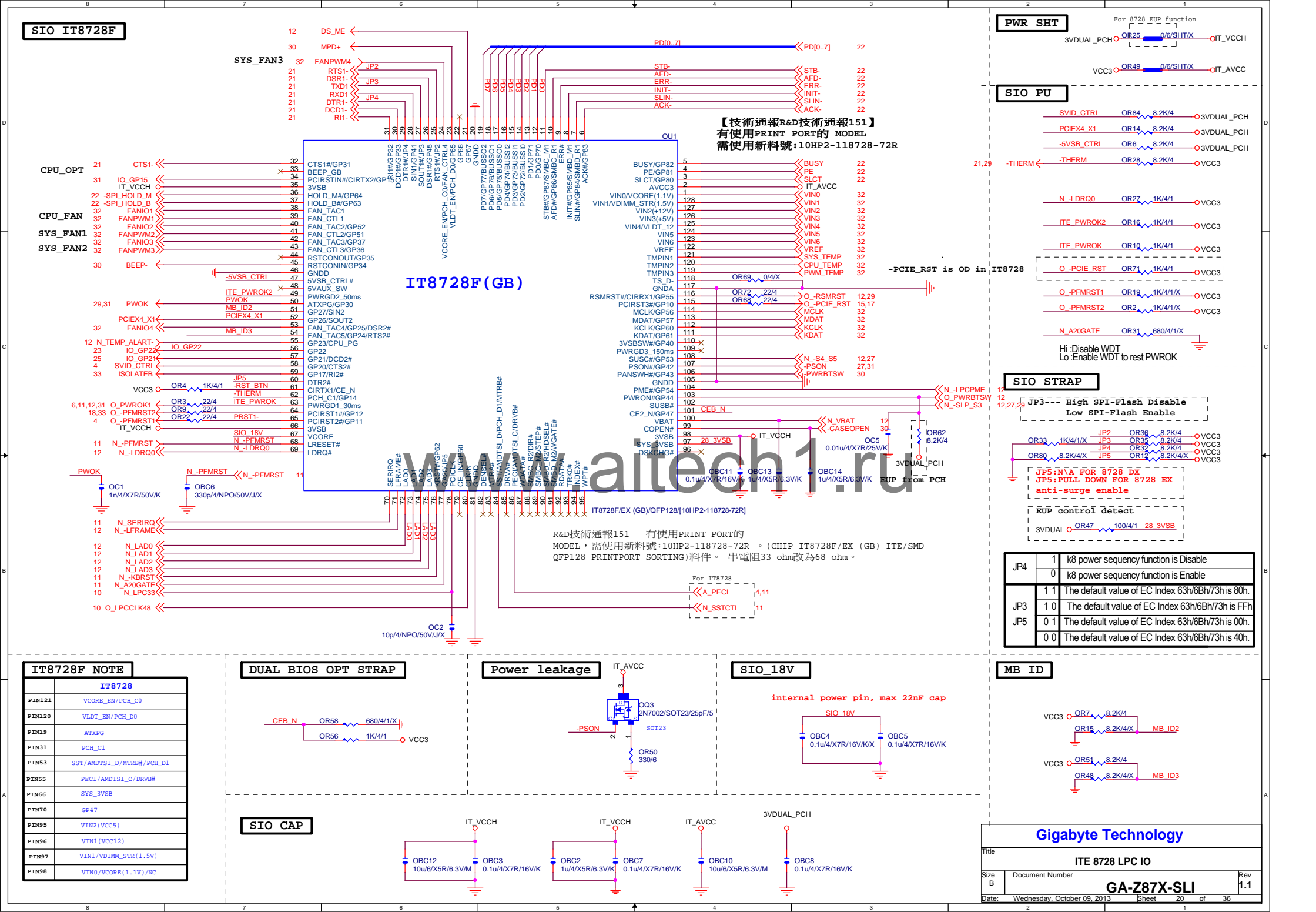


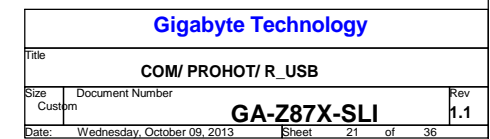
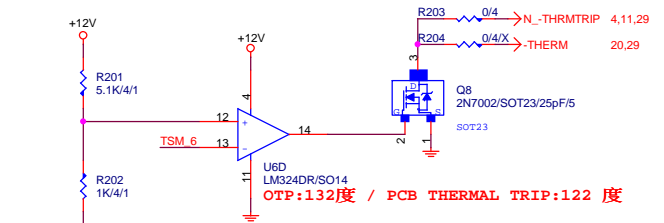
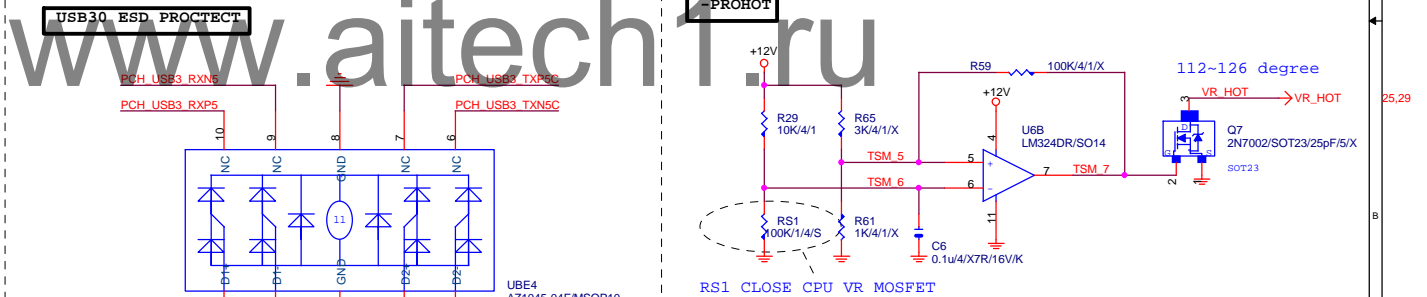
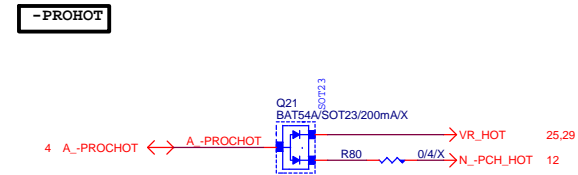
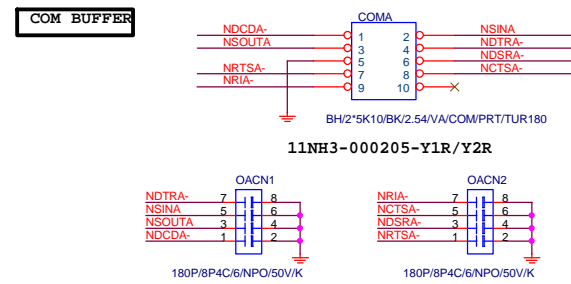
GIGABYTE™

PCI SLOT 1&2

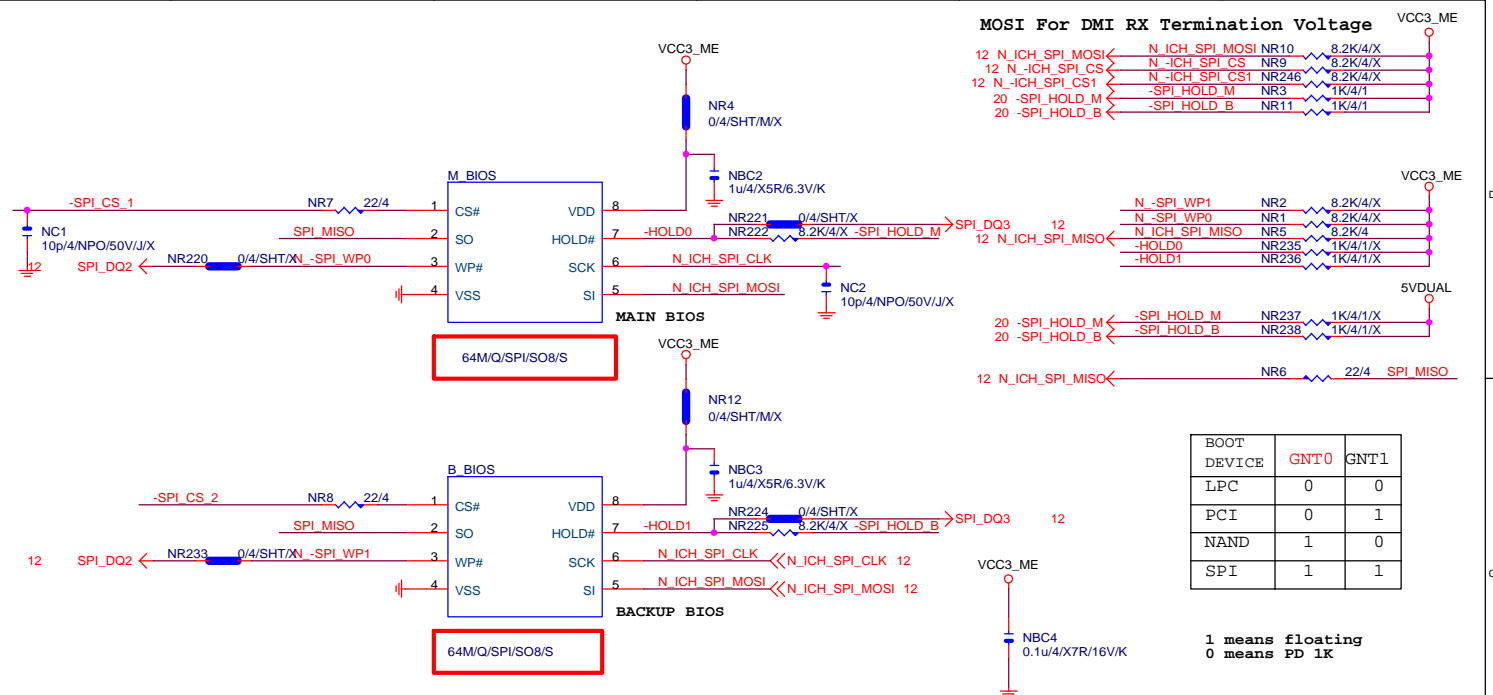
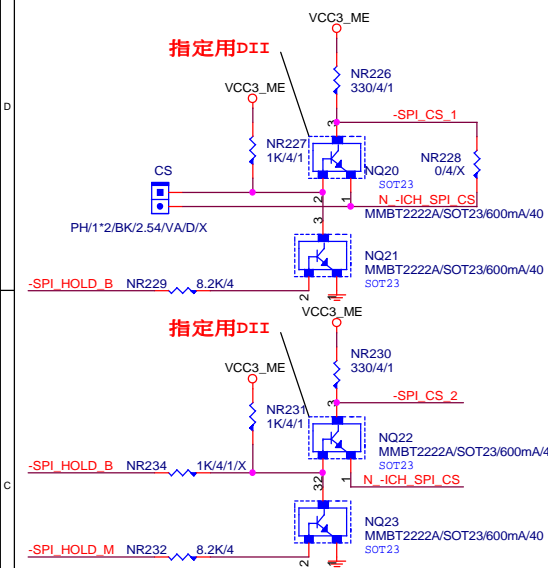
Size: Custom Document Number: GA-Z87X-SLI Rev: 1.1

Date: Wednesday, October 09, 2013 Sheet: 19 of 36

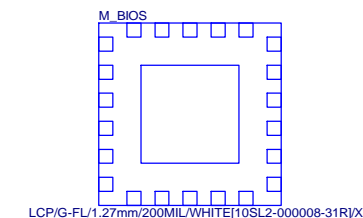
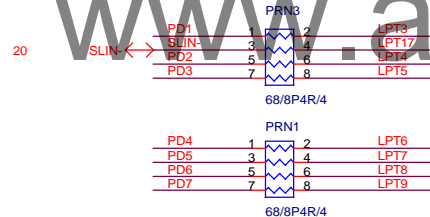
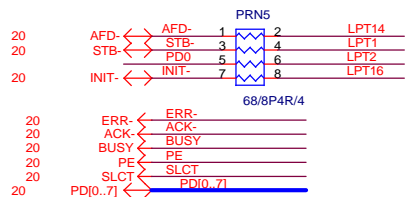




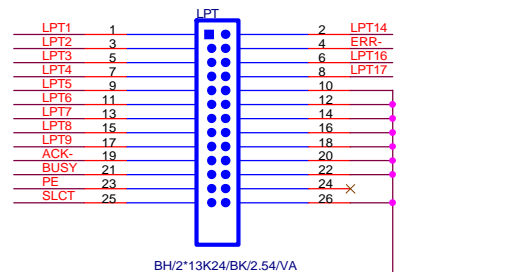
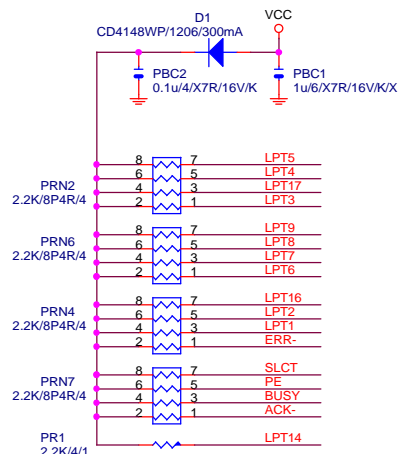
DUAL BIOS



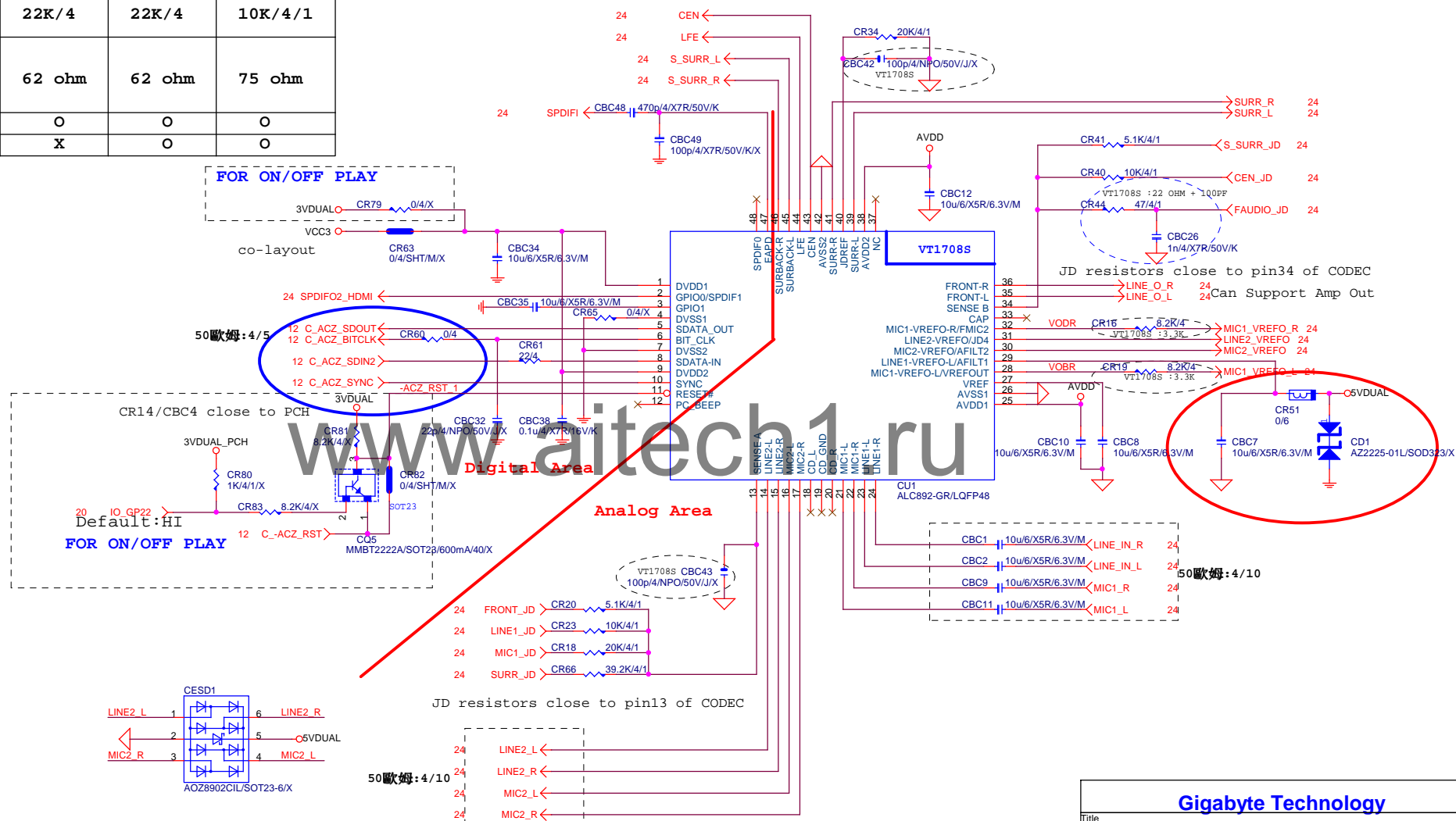
LPT PORT

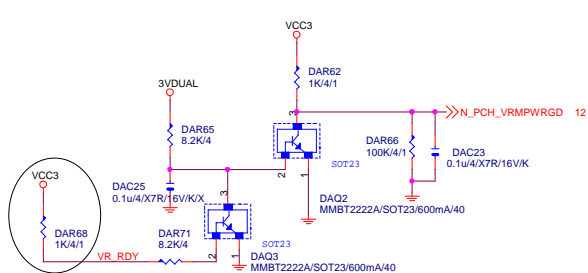
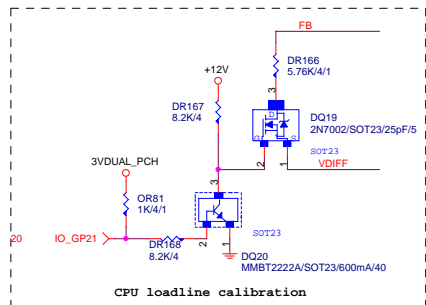
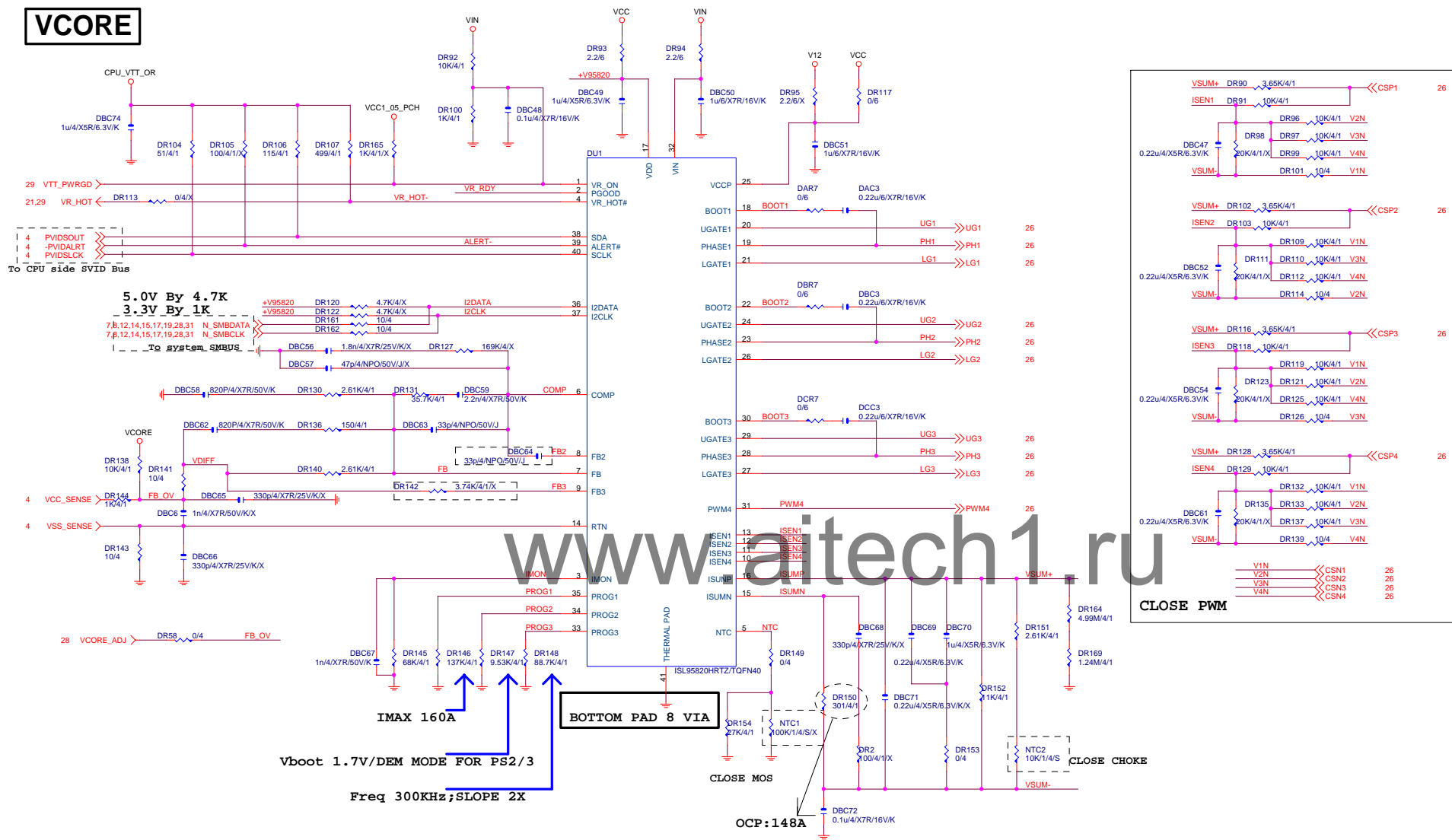


R&D技術通報151 有使用PRINT PORT的
MODEL, 需使用新料號:10HP2-118728-72R。(CHIP IT8728F/EX (GB) ITE/SMD
QFP128 PRINTPORT SORTING)料件。串電阻33 ohm改為68 ohm。



ALC892	ALC887-VD2	VT1708S-CE
47ohm+1nF	47ohm+1nF	22ohm+100P
X	X	100P/4
8.2K/4	8.2K/4	3.3K/4/1
22K/4	22K/4	10K/4/1
62 ohm	62 ohm	75 ohm
O	O	O
X	O	O



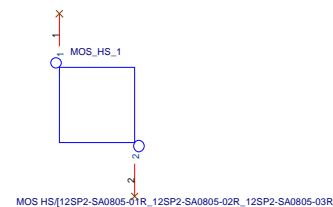
VCORE

Gigabyte Technology				
Title VCORE_ISL95820				
Size	Document Number			Rev
Custom	GA-Z87X-SLI			1
Date:	Wednesday, October 09, 2013	Sheet	25 of 36	

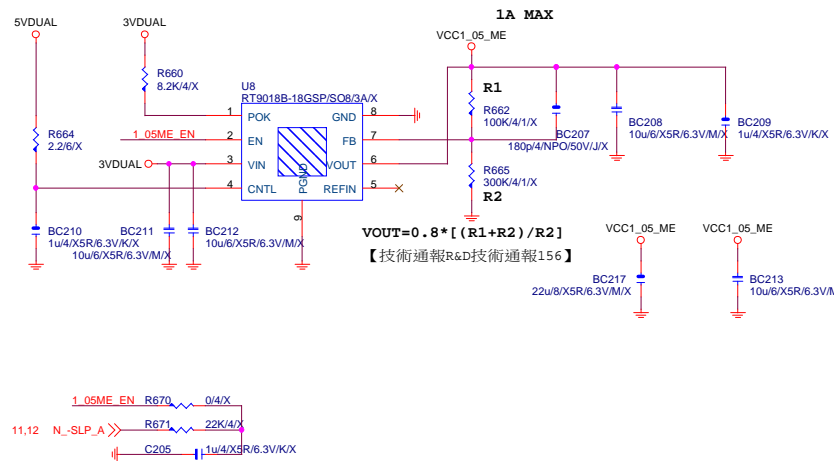
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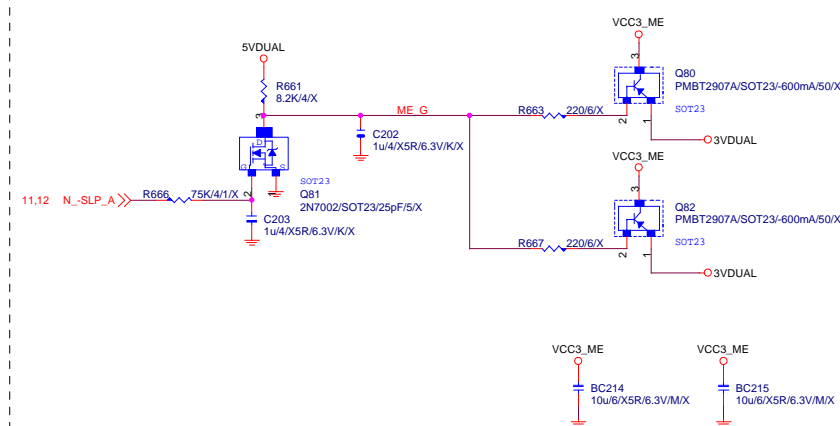
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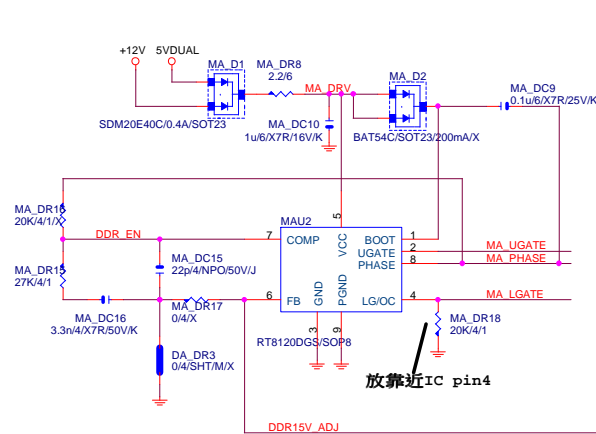
VCC1_05_ME



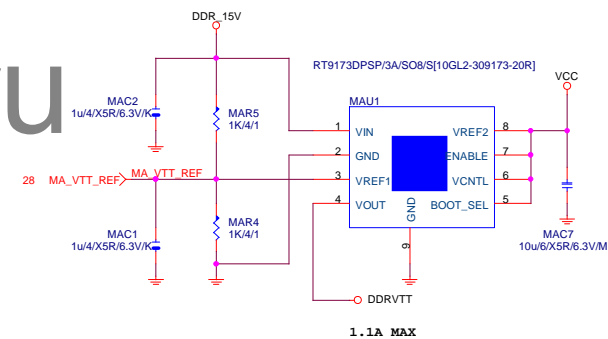
VCC3_ME



DDR 15V



DDRVTT



VIN=5V, VOUT=1.5V, IOUT=25A, PHASE=1
IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C), 1(105°C)

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

OCP:35.82A for Rds=6.7m for vishay@4.5V
OCP:72.727A for Rds=3.3m for renesas@10V
OCP:48A=RoSet*Iocset / Rds(on)
=12K*10uA / [5/5]

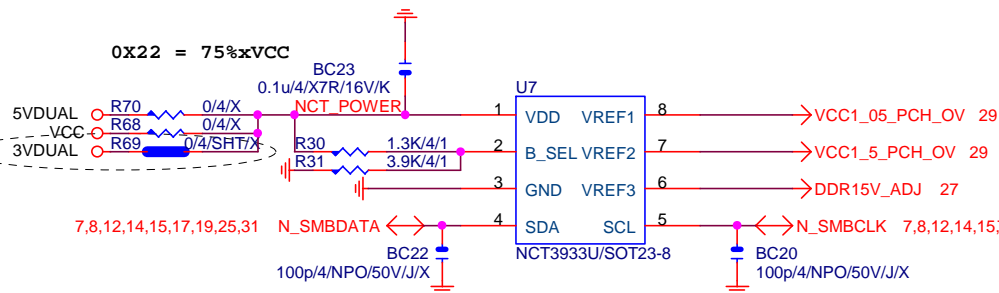
GIGABYTE™

DDR15V / M3 POWER

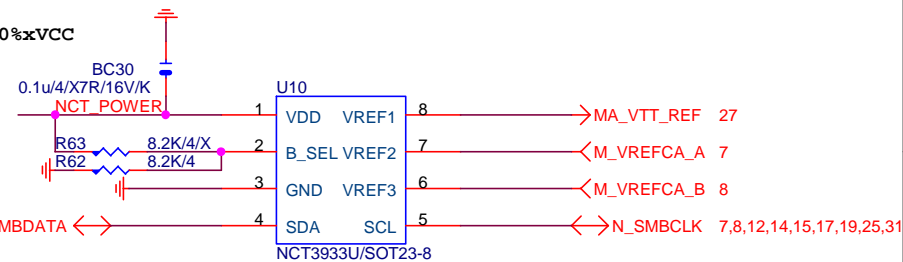
Size	Document Number	Rev
Custom	GA-Z87X-SLI	1.1

Date: Wednesday, October 09, 2013 Sheet 27 of 36

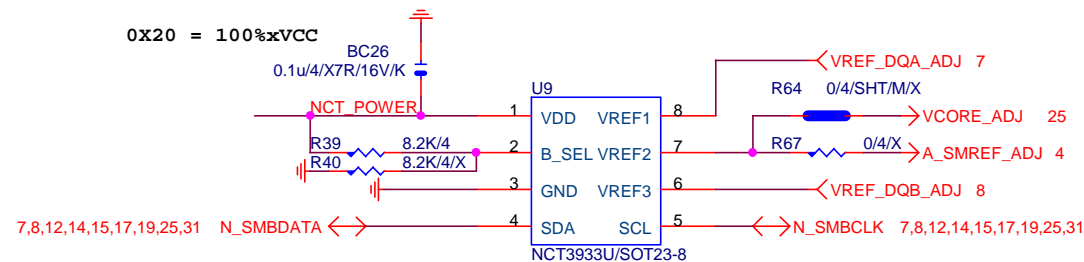
OVER VOLTAGE



0X2A = 0%xVCC



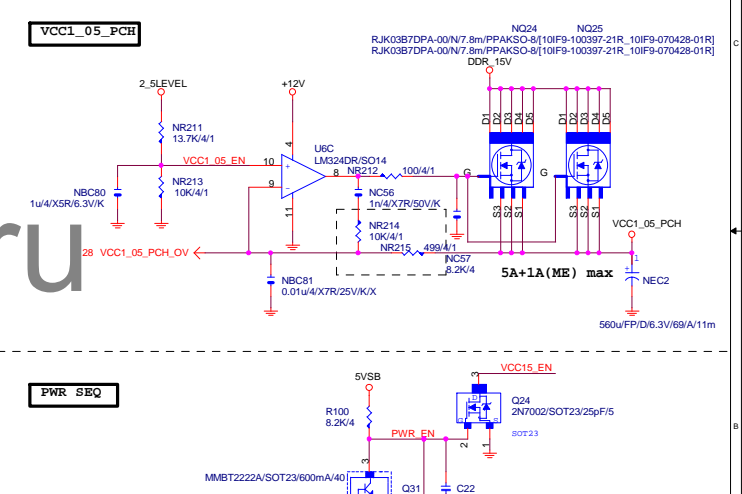
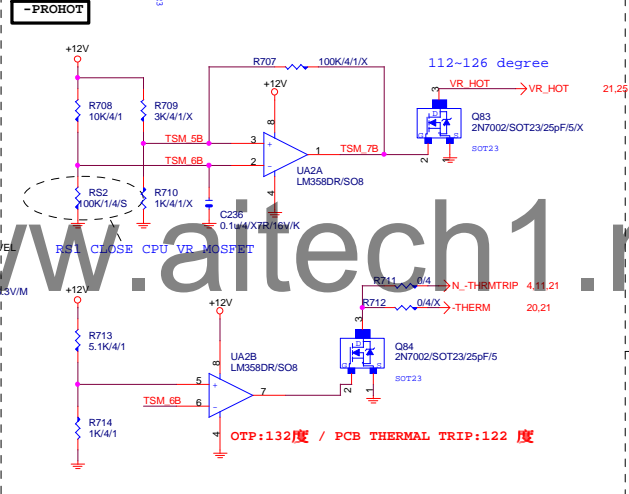
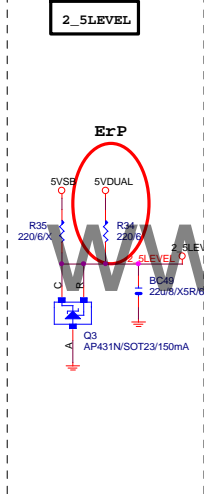
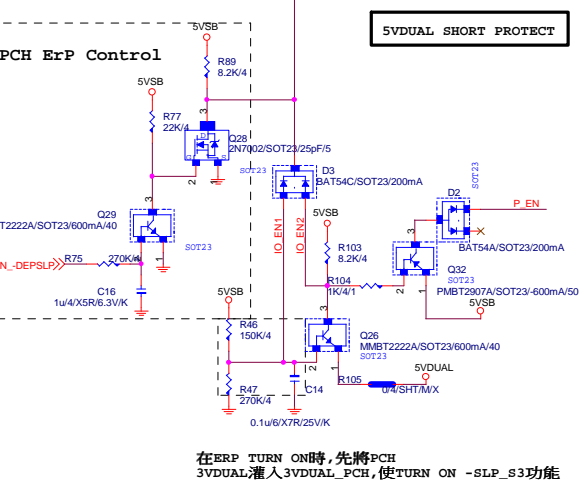
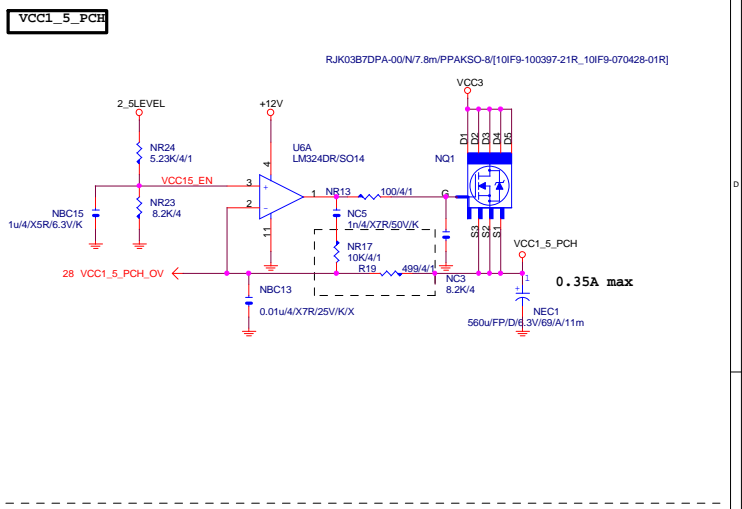
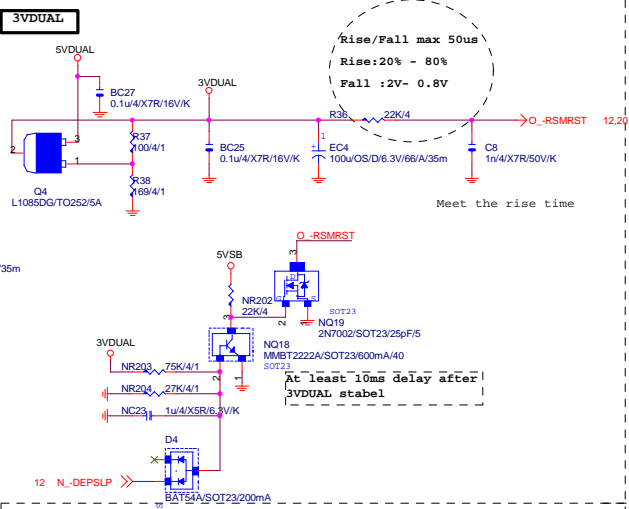
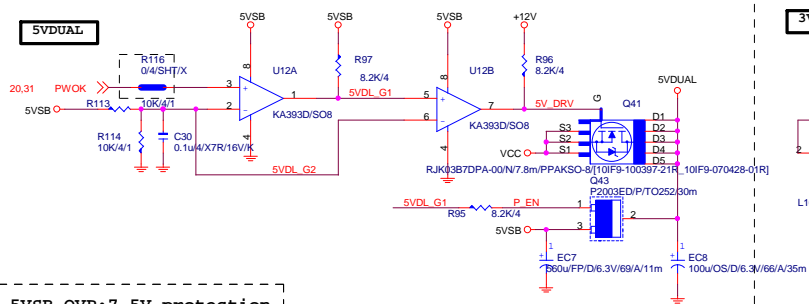
0X20 = 100%xVCC



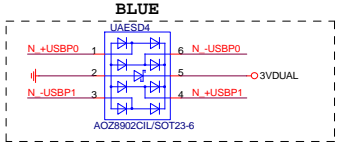
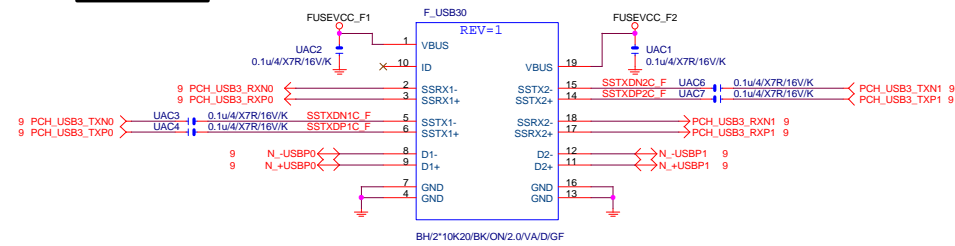
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

Title		
CPU CORE VR-2		
Size	Document Number	Rev
Custom	GA-Z87X-SLI	1.1
Date:	Wednesday, October 09, 2013	Sheet 28 of 36

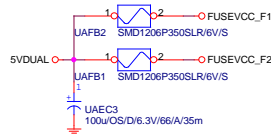


Front USB3.0

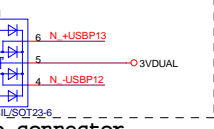
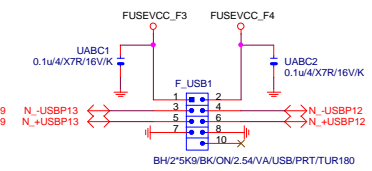


Close to connector

F_USB30 PWR

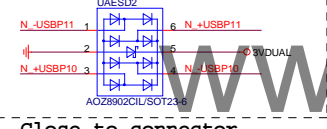
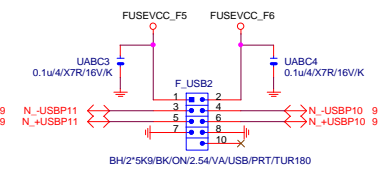


FRONT USB1



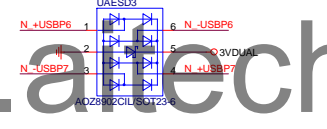
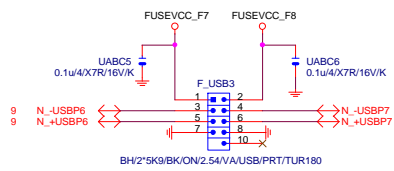
Close to connector

FRONT USB2

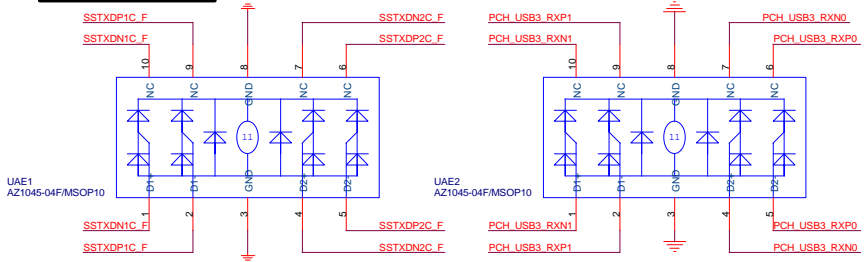


Close to connector

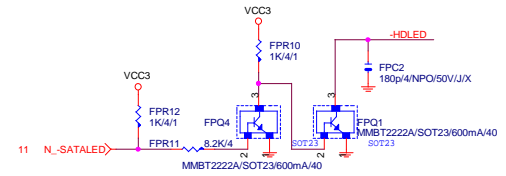
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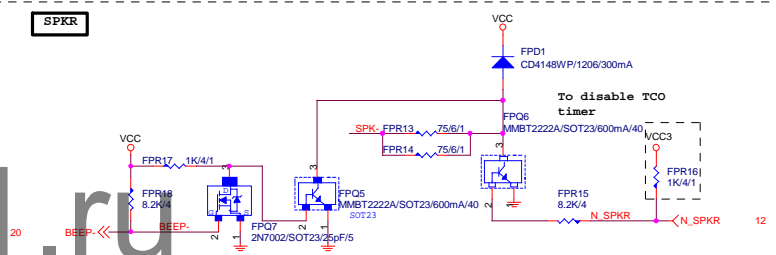
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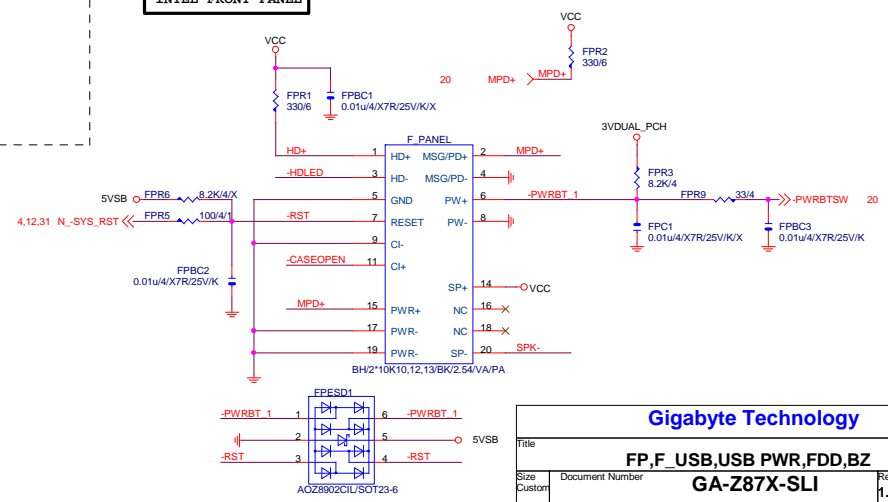
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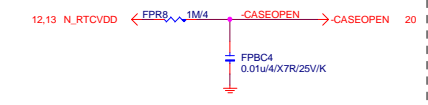
SPKR



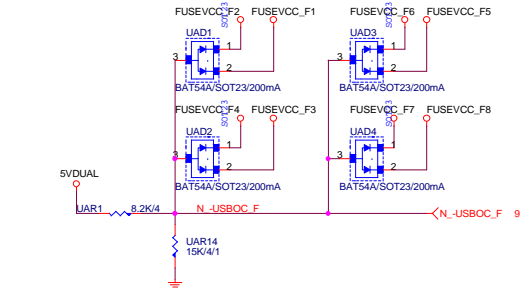
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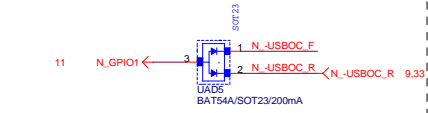
CASE OPEN



-USBOC_F



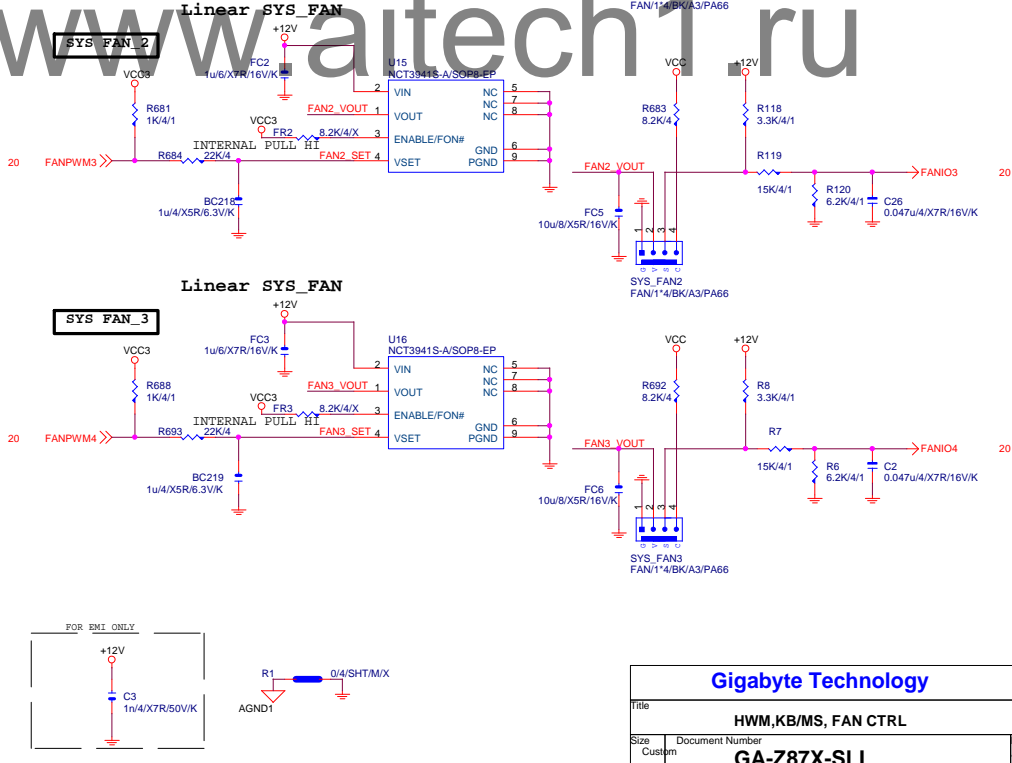
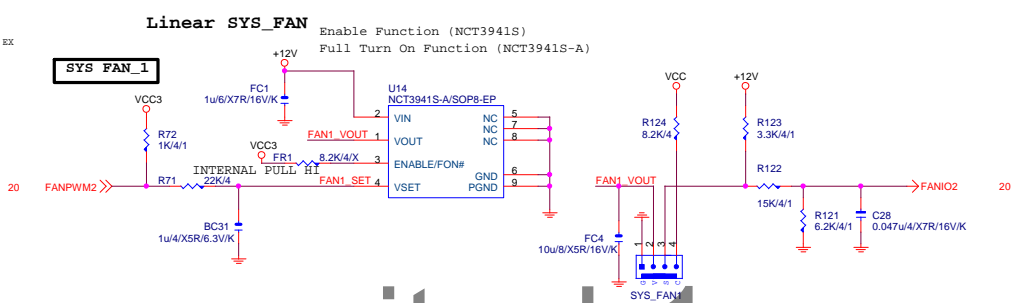
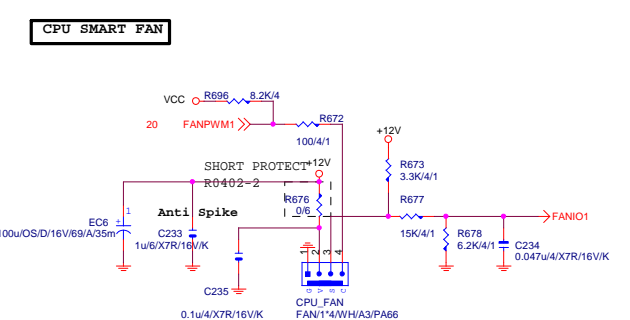
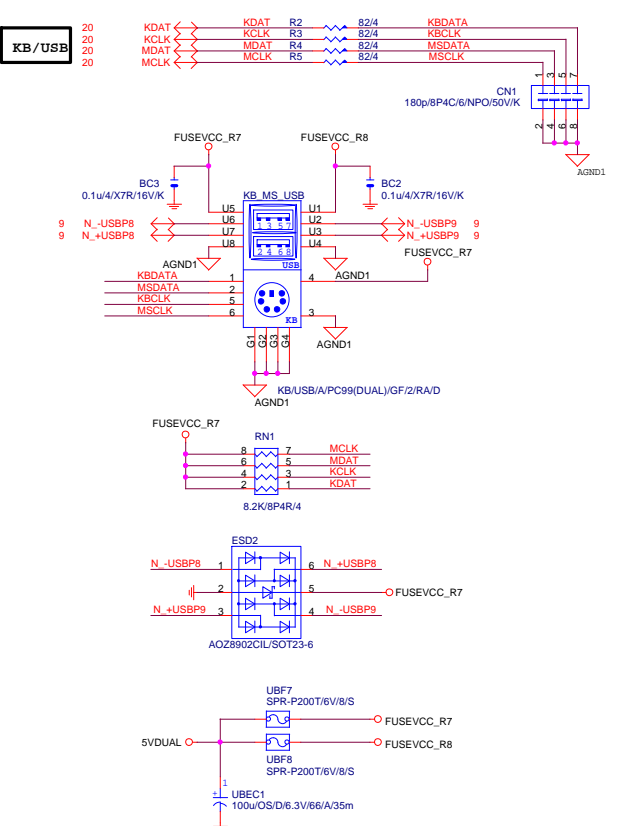
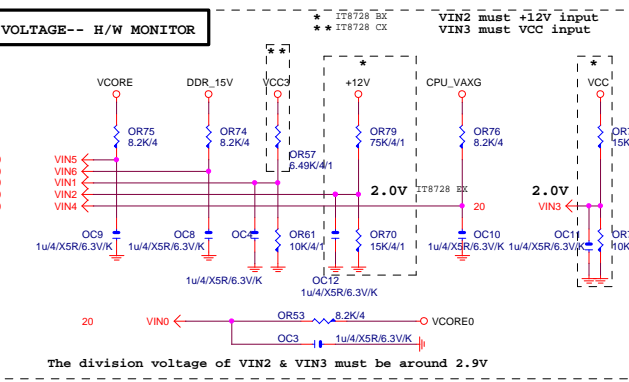
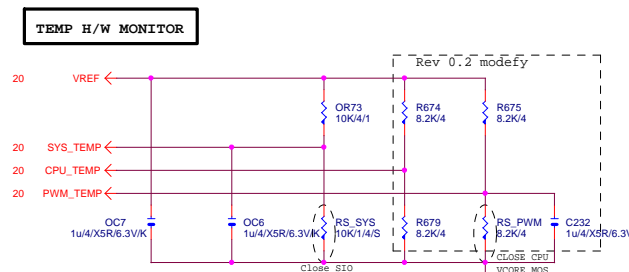
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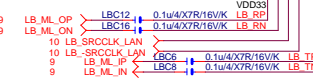
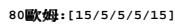
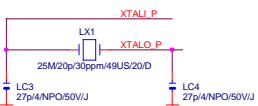
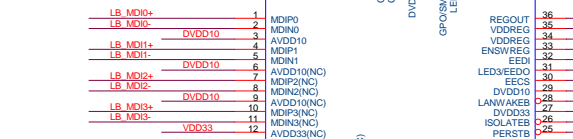
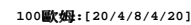


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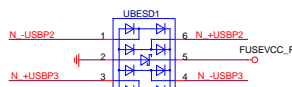
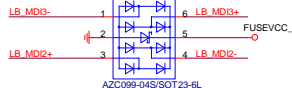
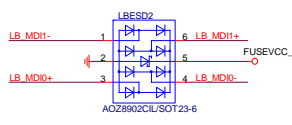
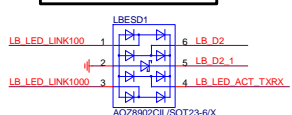
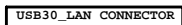
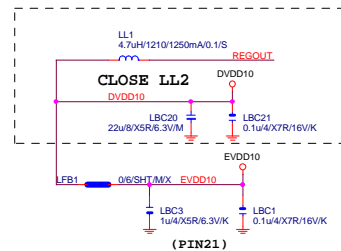
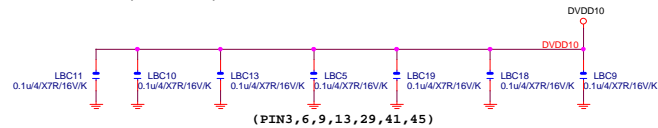
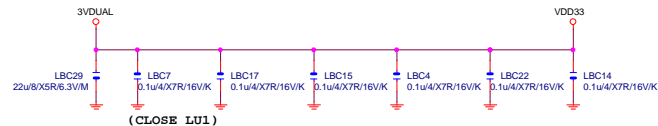
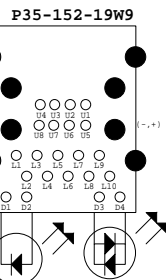
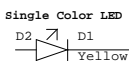
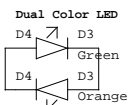
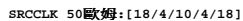
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Size	Document Number	GA-Z87X-SLI	
Custom		Rev 1.1	
Date:	Wednesday, October 09, 2013	Sheet	30 of 36

Size Custom	Document Number GA-Z87X-SLI
Date: Wednesday, October 09, 2013	Sheet 31 of 36

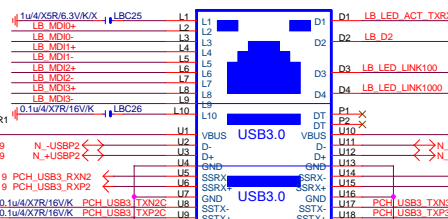
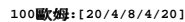




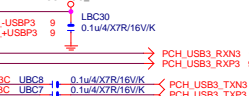
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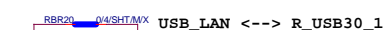
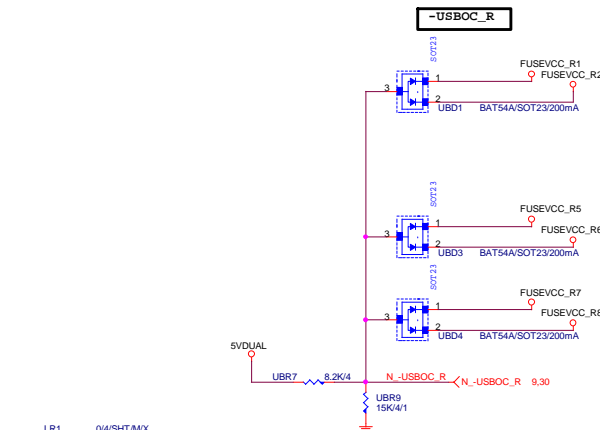
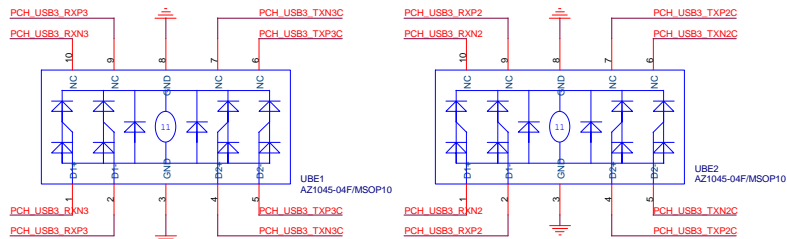
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90 歐姆:[15/4.5/7.5/4.5/15]



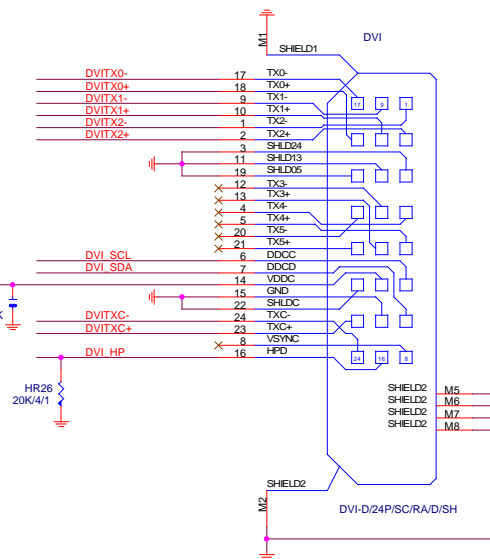
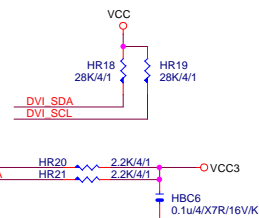
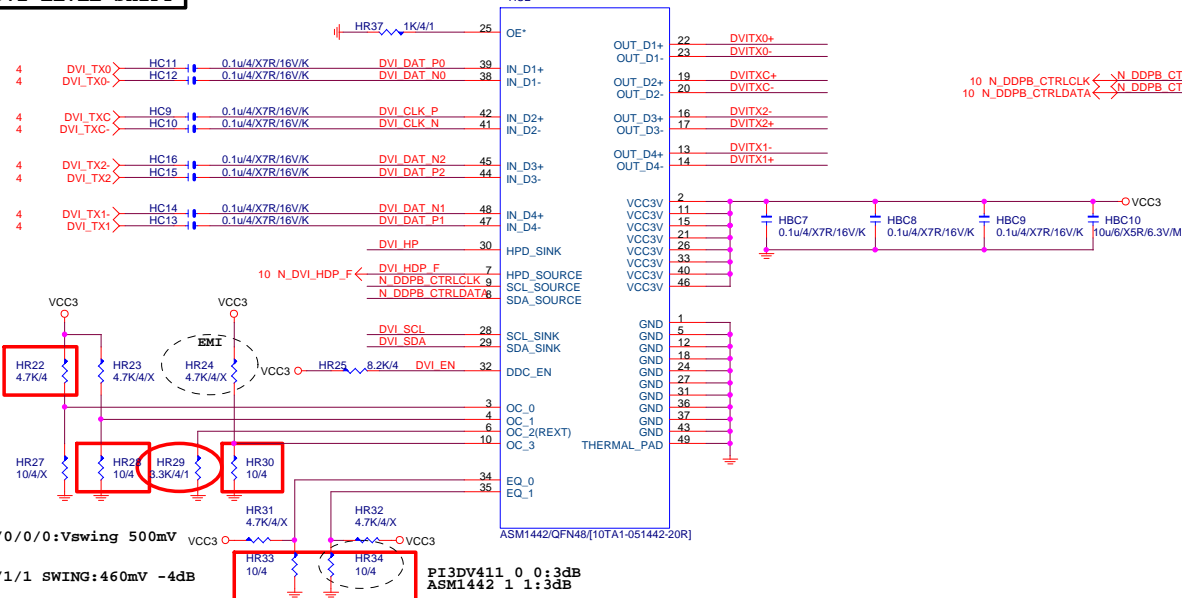
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DVI LEVEL SHIFT

DVI:20/4/6/4/20

Impedance=85 +- 17.5%

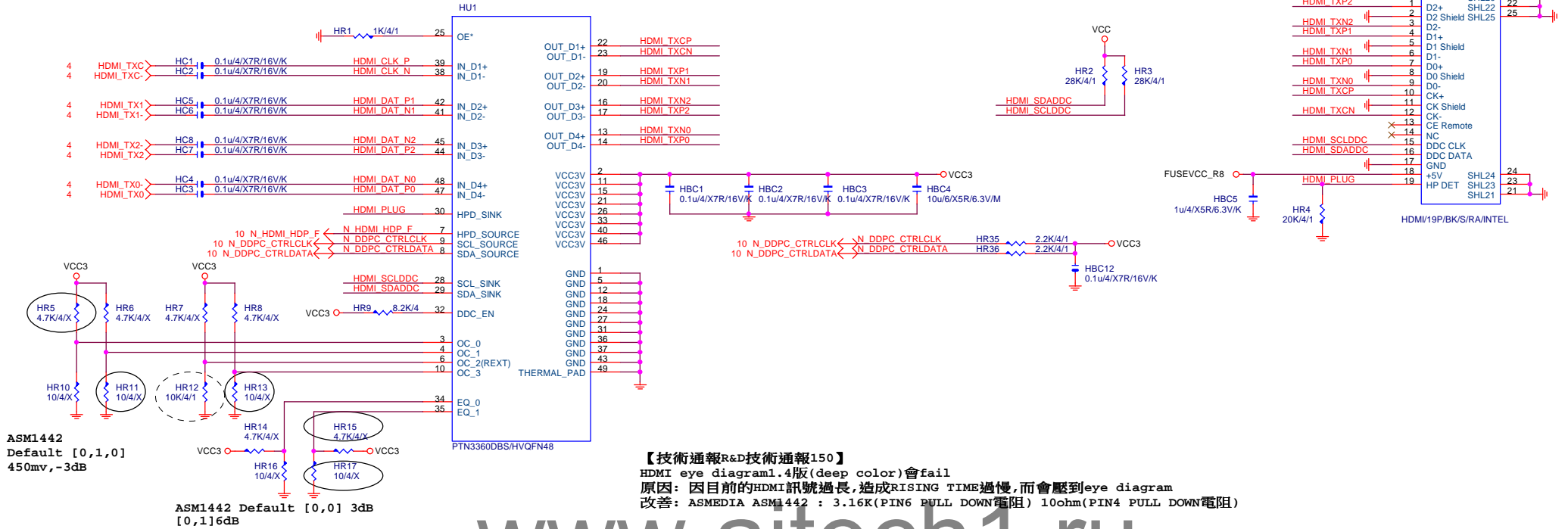


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Gigabyte Technology			
Title			
TI TSB43AB23 1394			
Size	Document Number	Rev	
Custom	GA-Z87X-SLI	1.1	
Date:	Wednesday, October 09, 2013	Sheet	34 of 36

HDMI LEVEL SHIFT

HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K

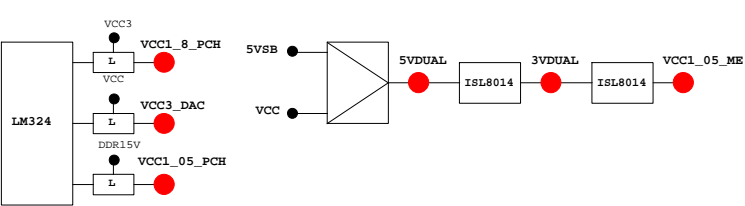
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Title			
HDMI			
Size	Document Number	Rev	
Custom	GA-Z87X-SLI	1.1	
Date:	Wednesday, October 09, 2013	Sheet	35 of 36

PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

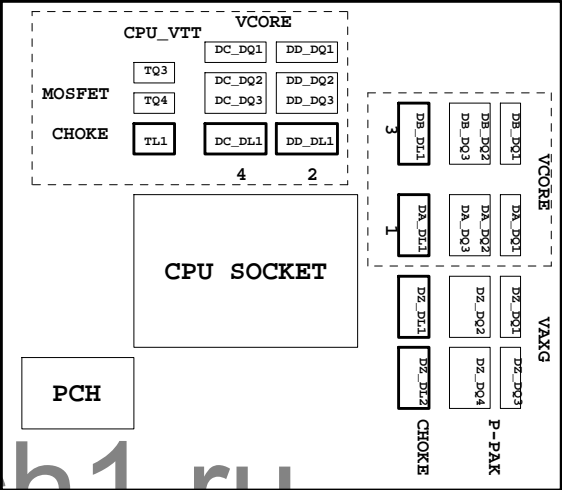
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRXL/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSS00	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VID00/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VID02/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VID06/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

散熱模組料號：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

Z77-D3H :
PCH :
12SP2-S05511-01R/02R/03R
MOSFET :
12SP2-S08924-01R/02R/03R

	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

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Title	TABLE LIST		
Size C	Document Number	GA-Z87X-SLI	Rev 1.1
Date:	Wednesday, October 09, 2013	Sheet 36	of 36