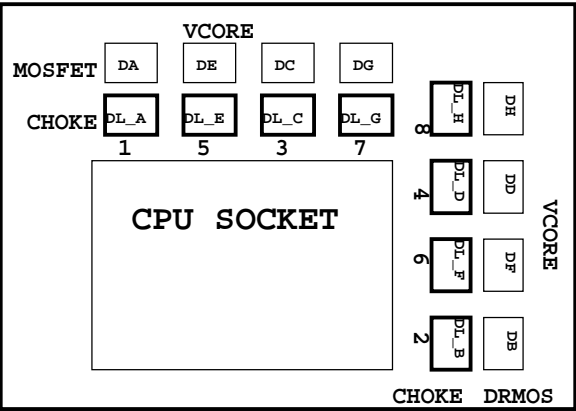


SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCH HDMI/DP
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*16/*8 SWITCH
18	PCI EXPRESS*1 SLOTS X3
19	PCI EXPRESS*4 SLOT
20	ITE 8892
21	PCI SLOT 1
22	Dual BIOS
23	ALC898
24	REAR AUDIO JACK
25	AMPLIFIER
26	IR3563A PWM
27	IR3550-VCORE

SHEET	TITLE
28	IR3570-DDR PWM
29	IR3598-DDR POWER
30	5VDUAL, 3VDAUL, ERP
31	PCH1.05V, PCH1.5V, VCC3_DAC
32	I/O ITE8728
33	USB3_ESATA,KB/USB3
34	F_PANEL , F_USB , PHOT
35	F_USB 2.0
36	F_USB 3.0
37	ATX POWER, CLOCK GEN
38	HWM, FAN CTRL
39	INTEL I217
40	Marvell 9172
41	SATA SWITCH
42	RST, PWR, CLR_CMOS
43	USB 3.0 uPD720201
44	USB 3.0 uPD720201 POWER
45	TABLE LIST
46	

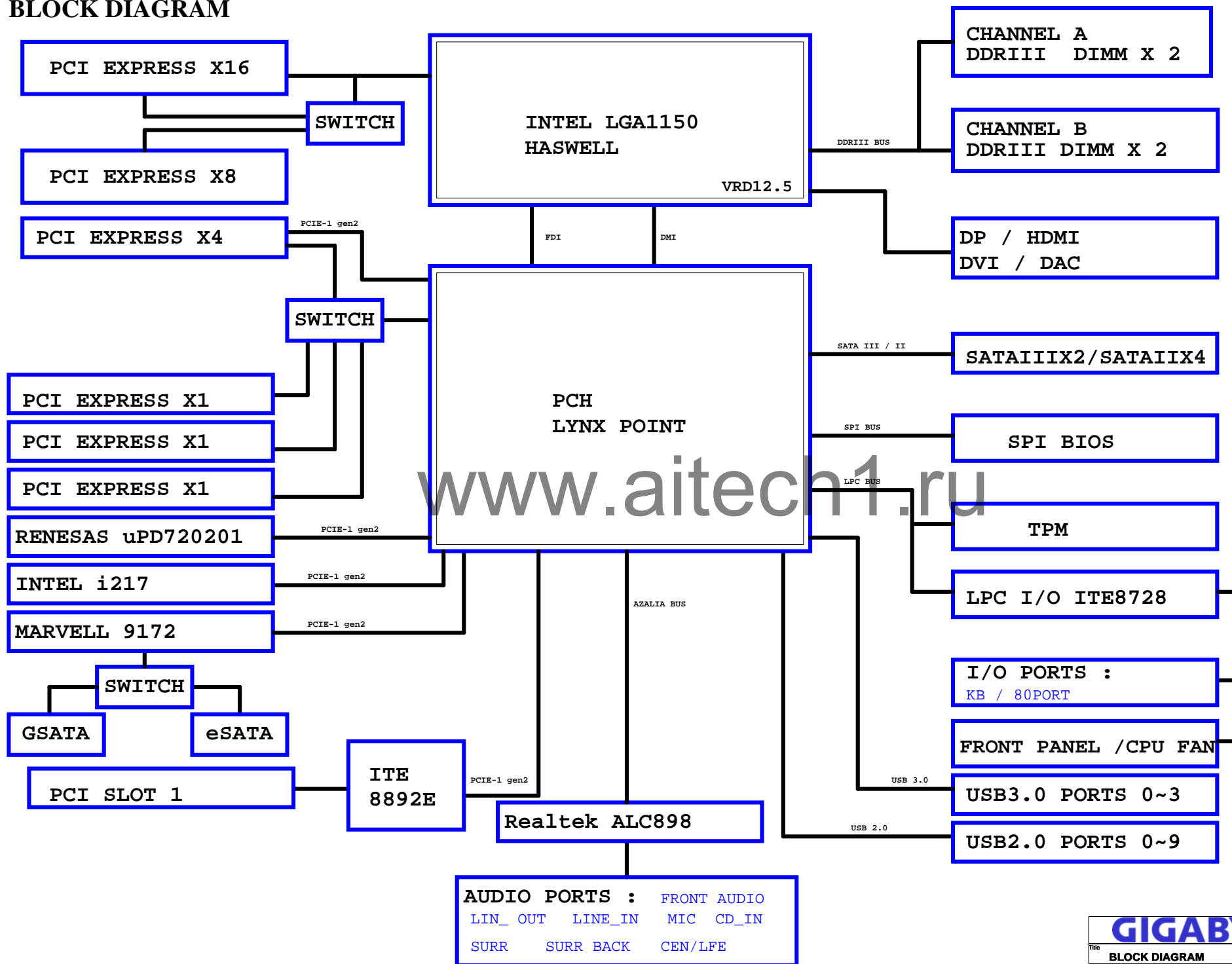


## Component value change history

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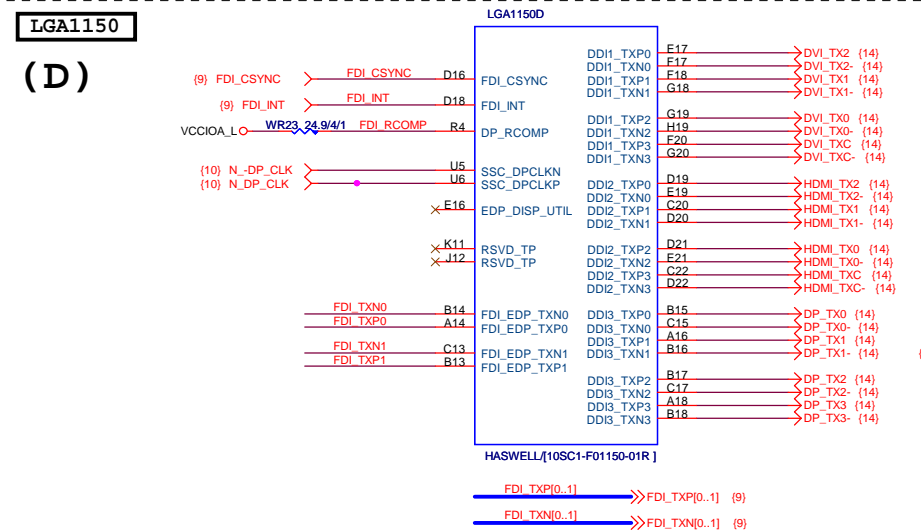
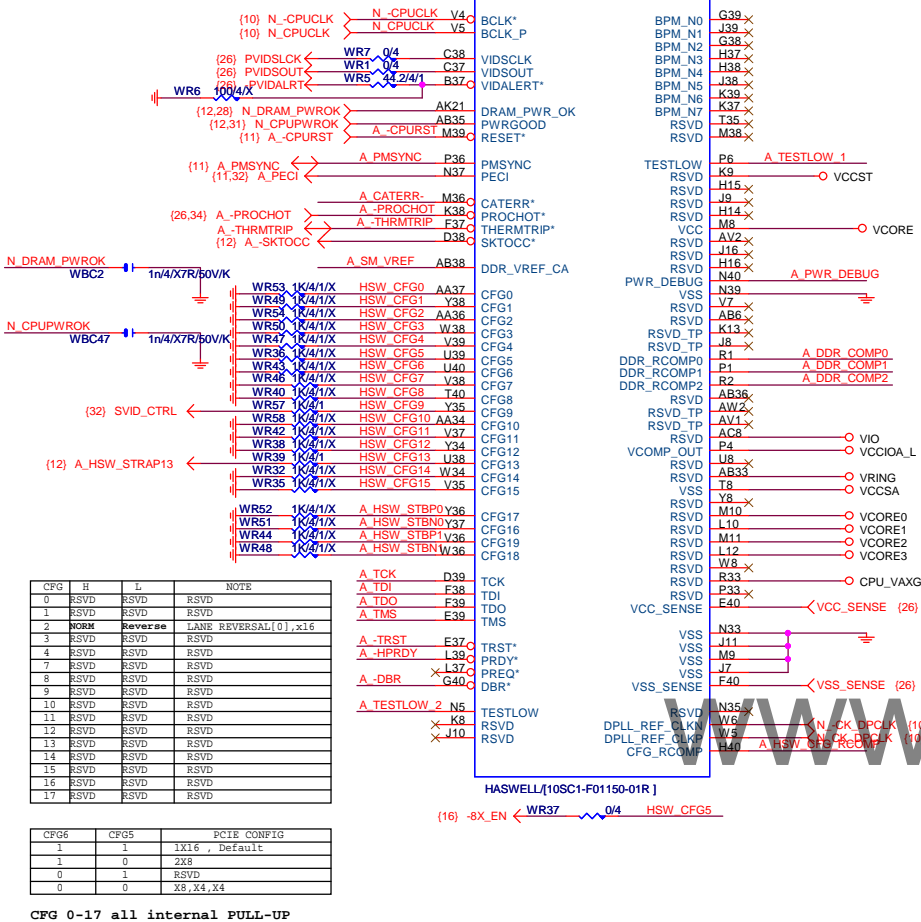
DATE	Change Item	Reason
2012/11/12	REV0.1 Z87X-UD3H 0.1 gerber out	
2012/11/30	REV0.2	
2013/03/27	REV1.02 Modify from Z87X-UD3H 7.0 所有的FAN都加一顆0.1u/4/X7R/16V/K ATX4P 統一命名為OC_PEG VIO統一更名為VIOD F_USB30_2 rename F_USB30_1 F_USB30_1 rename F_USB30_2 Add NC62 靠近PCH 新增MOS防燒線路 PHSFLT-串電阻改接到N_-THRMTRIP	
2013/04/01	USB3.0 HUB	

# BLOCK DIAGRAM



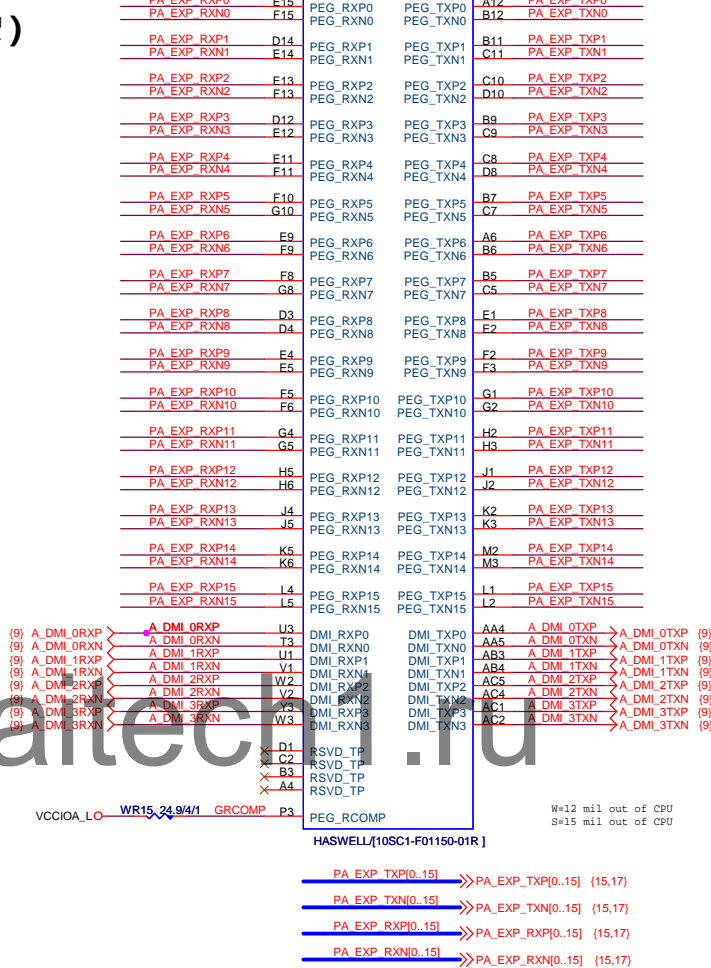
## LGA1150

(D)

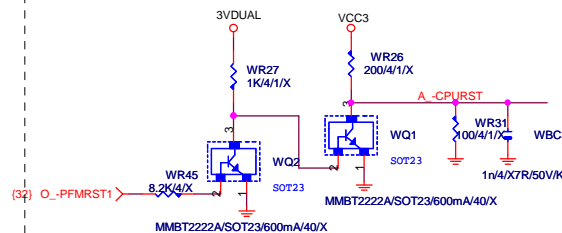


## LGA1150

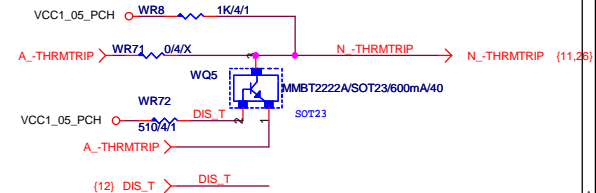
(C)



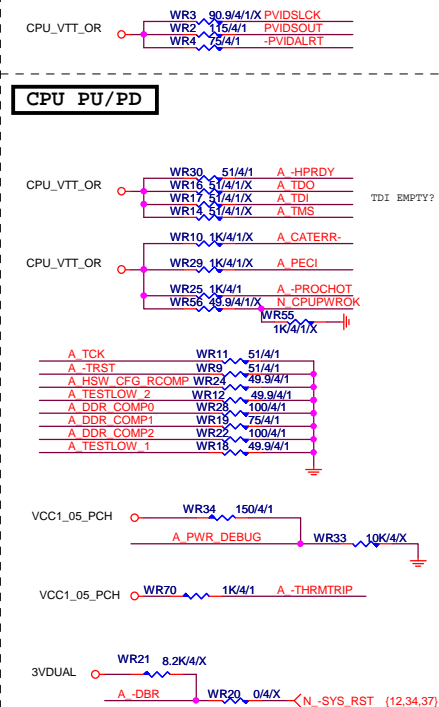
**-CPURST**



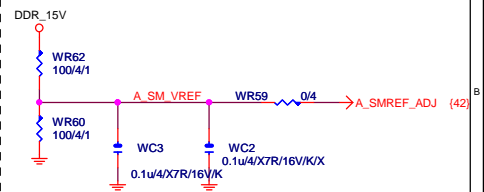
THRMTRIP DISABLE



## CPU SVID



## SM REF





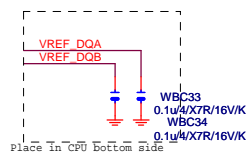
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MAAA2	AU16	DDR0_DQ2	AF38	MDA2
MAAA3	AW17	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_DQ4	AD37	MDA4
MAAA5	AW18	DDR0_DQ5	AD40	MDA5
MAAA6	AV17	DDR0_DQ6	AF37	MDA6
MAAA7	AT18	DDR0_DQ7	AF40	MDA7
MAAA8	AU18	DDR0_DQ8	AH40	MDA8
MAAA9	AT19	DDR0_DQ9	AH39	MDA9
MAAA10	AW11	DDR0_DQ10	AK38	MDA10
MAAA11	AV19	DDR0_DQ11	AK39	MDA11
MAAA12	AU19	DDR0_DQ12	AH38	MDA12
MAAA13	AY10	DDR0_DQ13	AH38	MDA8
MAAA14	AT20	DDR0_DQ14	AK37	MDA14
MAAA15	AU21	DDR0_DQ15	AK40	MDA15
MODT_A0	AW10	DDR0_DQ16	AM40	MDA17
MODT_A1	AY8	DDR0_DQ17	AM39	MDA21
MODT_A2	AW9	DDR0_ODT1	AP38	MDA18
MODT_A3	AU8	DDR0_ODT2	AP39	MDA19
		DDR0_ODT3	AM37	MDA20
			AM38	MDA16
			AM37	MDA23
			AP37	MDA23
			AP40	MDA25
			AW37	MDA29
			AU35	MDA26
			AV35	MDA27
			AT37	MDA28
			AU37	MDA24
			AT35	MDA30
			AW35	MDA31
			AY6	MDA33
			AU6	MDA37
			AV4	MDA34
			AU4	MDA35
			AW6	MDA36
			AV6	MDA32
			AW4	MDA38
			AR1	MDA39
			AR4	MDA45
			AN3	MDA42
			AN4	MDA43
			AR2	MDA44
			AR3	MDA40
			AN2	MDA46
			AN1	MDA47
			AL1	MDA49
			AL4	MDA53
			AJ3	MDA50
			AJ4	MDA51
			AL2	MDA52
			AL3	MDA48
			AJ2	MDA54
			AJ1	MDA55
			AG4	MDA57
			AG1	MDA61
			AE3	MDA58
			AE4	MDA59
			AG2	MDA60
			AG3	MDA56
			AE1	MDA62
			AE2	MDA63
			AE39	DQSA0
			AJ39	DQSA1
			AN39	DQSA2
			AV36	DQSA3
			AV5	DQSA4
			AP3	DQSA5
			AK3	DQSA6
			AF3	DQSA7
			AV32	DQSA0
			AE38	DQSA1
			AJ38	DQSA2
			AN38	DQSA3
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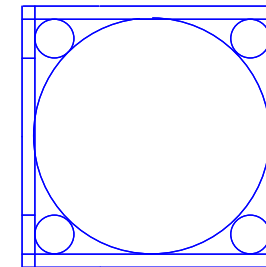
HASWELL[10SC1-F01150-01R]

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MAAB3	AM23	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_DQ7	AL34	MDB7
MAAB8	AU26	DDR1_DQ8	AL35	MDB8
MAAB9	AW25	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_DQ12	AK34	MDB12
MAAB13	AY27	DDR1_DQ13	AK35	MDB13
MAAB14	AY27	DDR1_DQ14	AK32	MDB14
MAAB15	AY28	DDR1_DQ15	AL32	MDB15
		DDR1_DQ16	AN34	MDB17
		DDR1_DQ17	AP34	MDB21
		DDR1_DQ18	AN31	MDB19
		DDR1_DQ19	AP31	MDB23
		DDR1_DQ20	AN35	MDB20
		DDR1_DQ21	AP35	MDB16
		DDR1_DQ22	AN32	MDB18
		DDR1_DQ23	AP32	MDB22
		DDR1_DQ24	AM29	MDB25
		DDR1_DQ25	AM28	MDB28
		DDR1_DQ26	AR29	MDB27
		DDR1_DQ27	AR28	MDB30
		DDR1_DQ28	AL29	MDB24
		DDR1_DQ29	AL28	MDB29
		DDR1_DQ30	AP29	MDB26
		DDR1_DQ31	AP28	MDB31
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		DDR1_DQ33	AP12	MDB33
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		DDR1_DQ35	AL12	MDB35
		DDR1_DQ36	AR13	MDB36
		DDR1_DQ37	AP13	MDB37
		DDR1_DQ38	AM13	MDB38
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		DDR1_DQ40	AR9	MDB45
		DDR1_DQ41	AP9	MDB41
		DDR1_DQ42	AR6	MDB47
		DDR1_DQ43	AP6	MDB43
		DDR1_DQ44	AR10	MDB44
		DDR1_DQ45	AP10	MDB40
		DDR1_DQ46	AR7	MDB46
		DDR1_DQ47	AP7	MDB42
		DDR1_DQ48	AM9	MDB52
		DDR1_DQ49	AL9	MDB53
		DDR1_DQ50	AL6	MDB50
		DDR1_DQ51	AL7	MDB55
		DDR1_DQ52	AL10	MDB49
		DDR1_DQ53	AM6	MDB54
		DDR1_DQ54	AM7	MDB51
		DDR1_DQ55	AH6	MDB61
		DDR1_DQ56	AH7	MDB60
		DDR1_DQ57	AE6	MDB59
		DDR1_DQ58	AE7	MDB63
		DDR1_DQ59	AJ6	MDB56
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		DDR1_DQ61	AE6	MDB58
		DDR1_DQ62	AE7	MDB62
		DDR1_DQ63	AE35	DQSB0
		DDR1_DQ64	AL33	DQSB1
		DDR1_DQ65	AP33	DQSB2
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		DDR1_DQ75	AN29	DQSB3
		DDR1_DQ76	AN13	DQSB4
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HASWELL[10SC1-F01150-01R]

CPU  
ILM\_BP/1156/CSP/[12KRC-0F0001-61R]

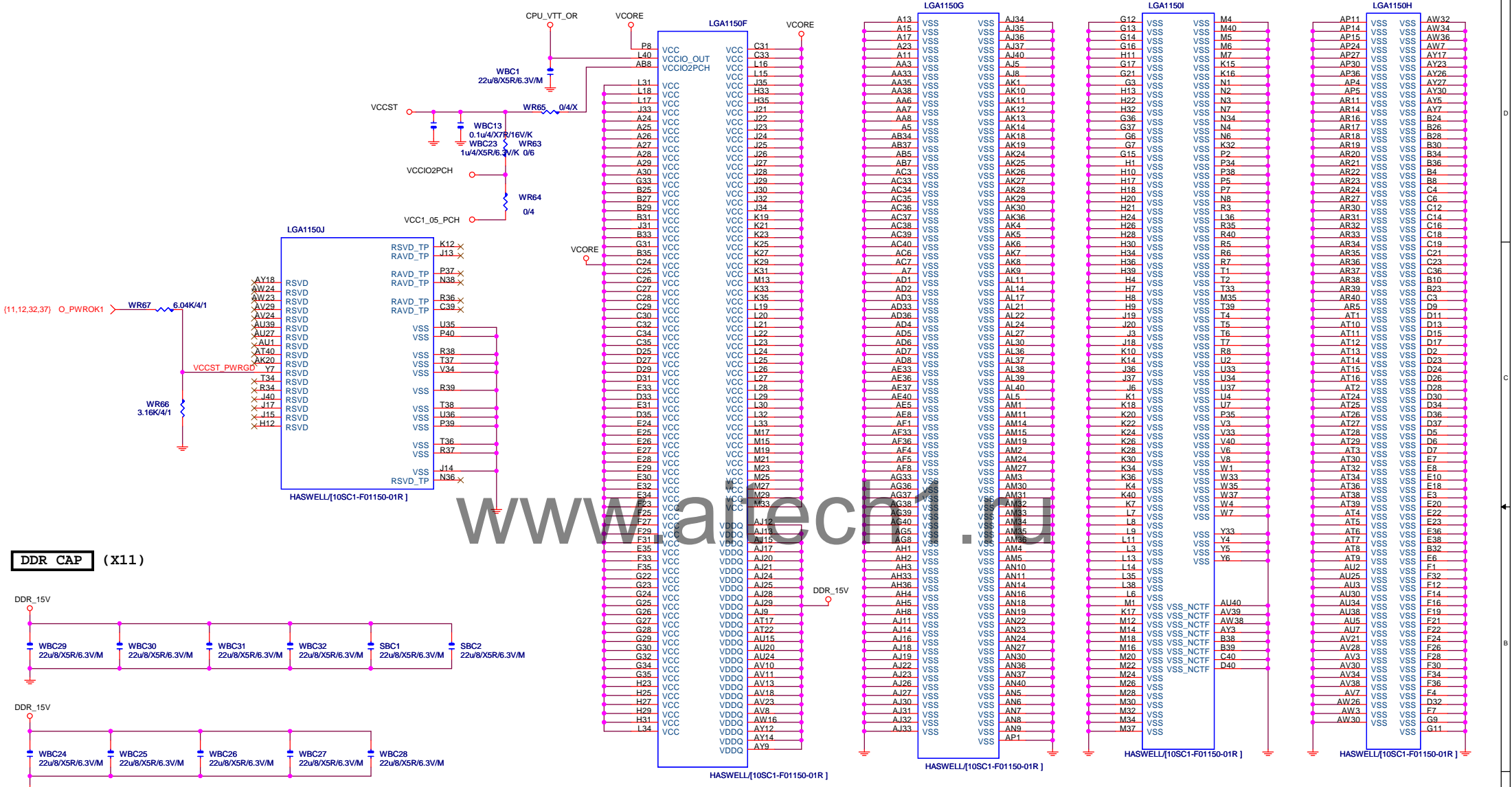
Need check the new CPU ME

## DDR BUS

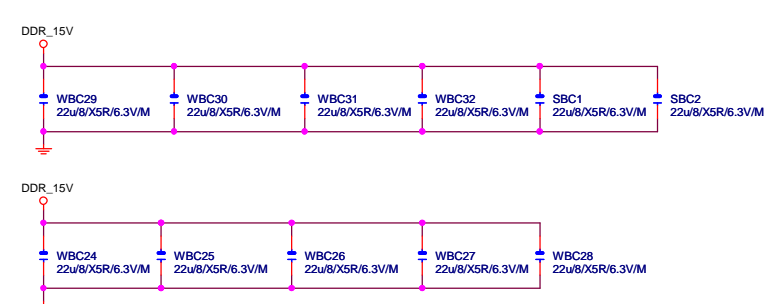
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(8) MODT_B[0..3]	MODT_B[0..3]
(7) MDA[0..63]	MDA[0..63]
(8) MDB[0..63]	MDB[0..63]
(7) DQSA[0..7]	DQSA[0..7]
(7) -DQSA[0..7]	-DQSA[0..7]
(7) MAAA[0..15]	MAAA[0..15]
(8) MAAB[0..15]	MAAB[0..15]
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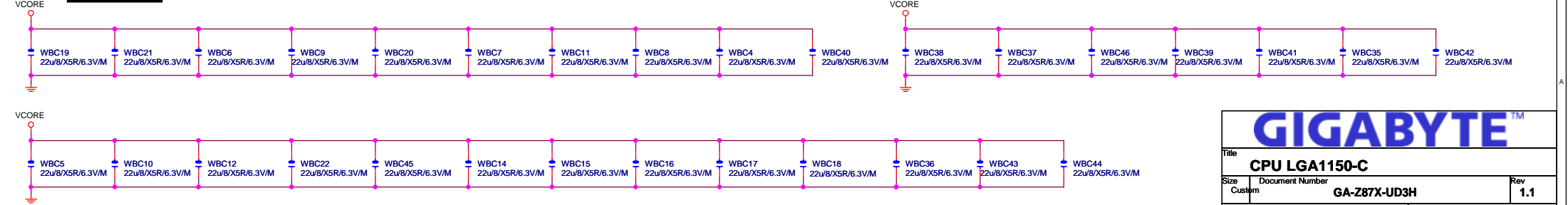
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Size Custom	Document Number <b>GA-Z87X-UD3H</b>	Rev <b>1.1</b>
Date: Tuesday, July 30, 2013	Sheet 5	of 48



DDR CAP (X11)

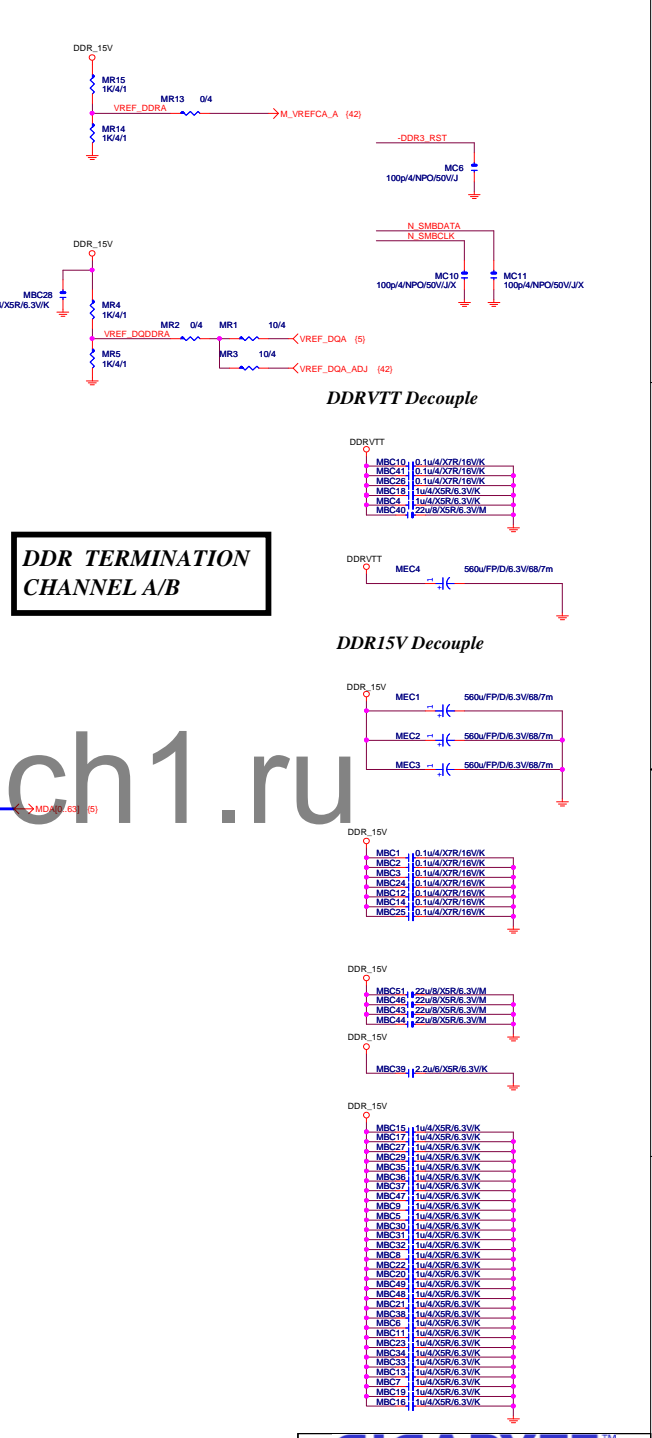
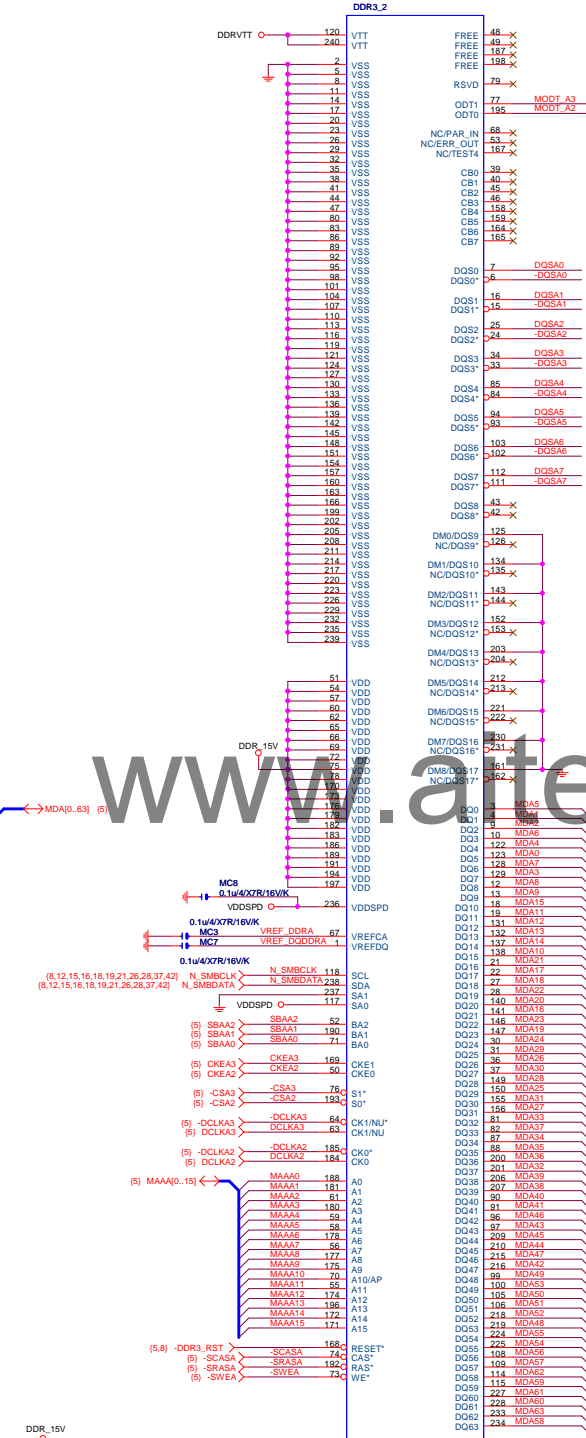
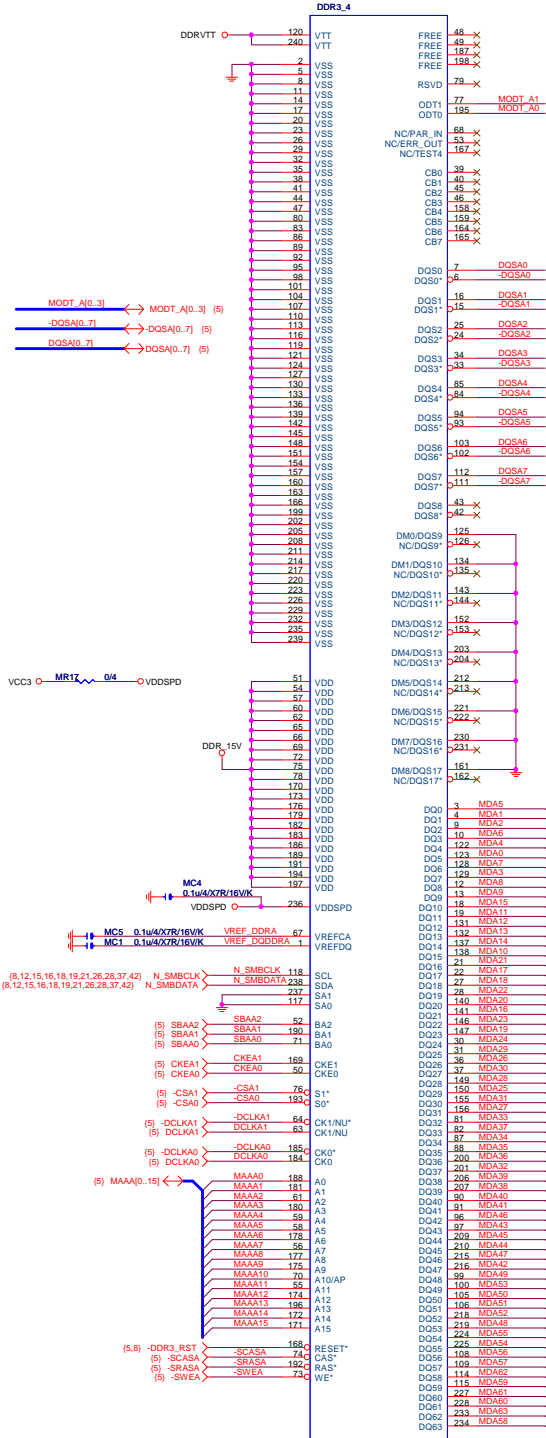


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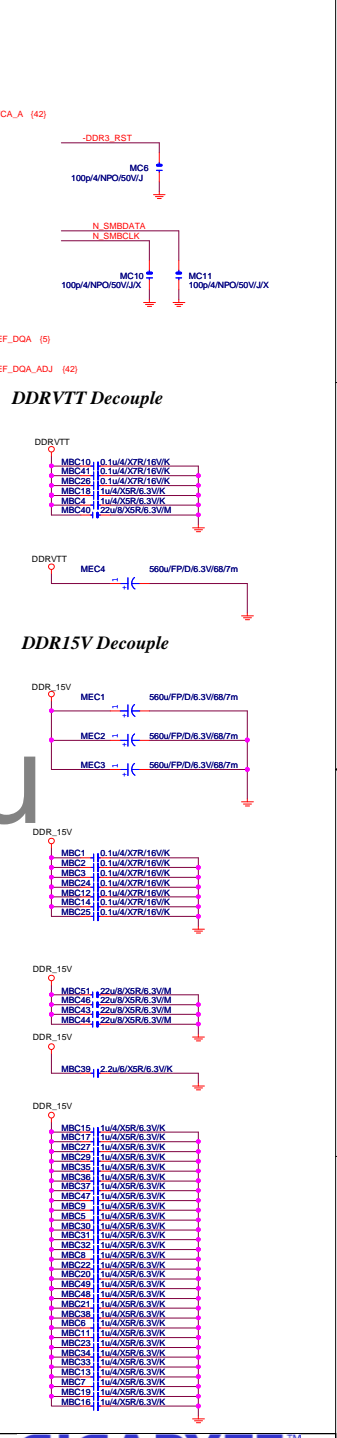


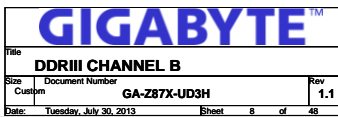
**CPU LGA1150-C**

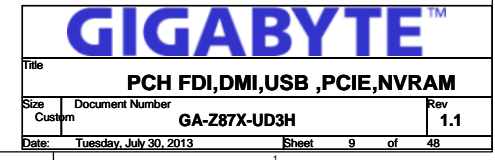
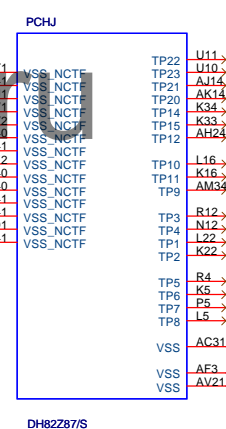
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Custom	<b>GA-Z87X-UD3H</b>	<b>1.1</b>
Date:	Tuesday, July 30, 2013	Sheet 6 of 48



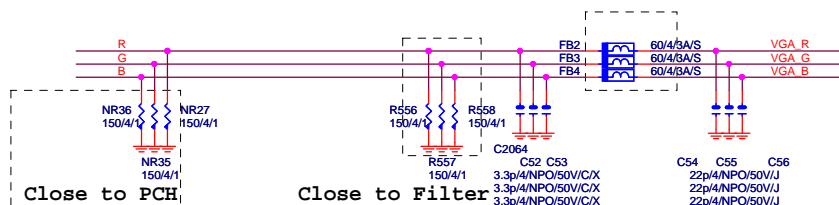
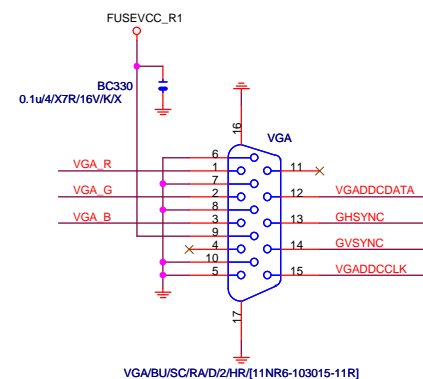
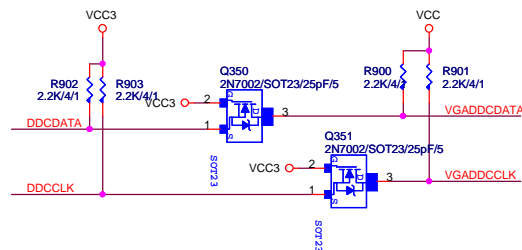
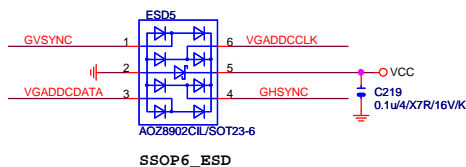
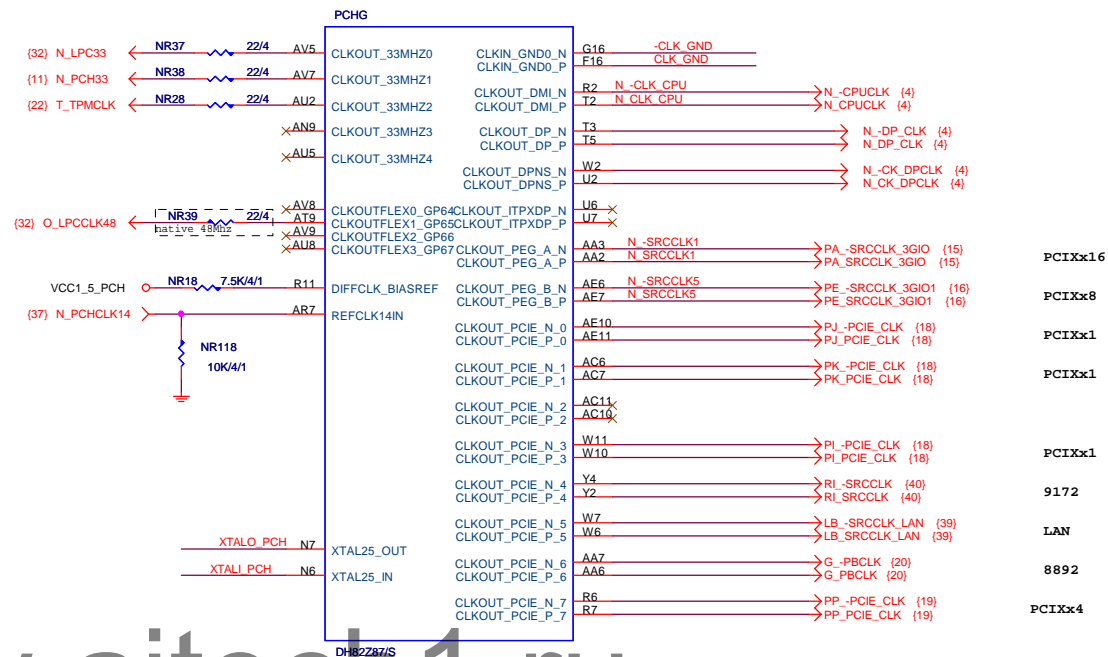
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CHANNEL A/B

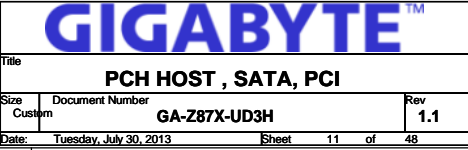


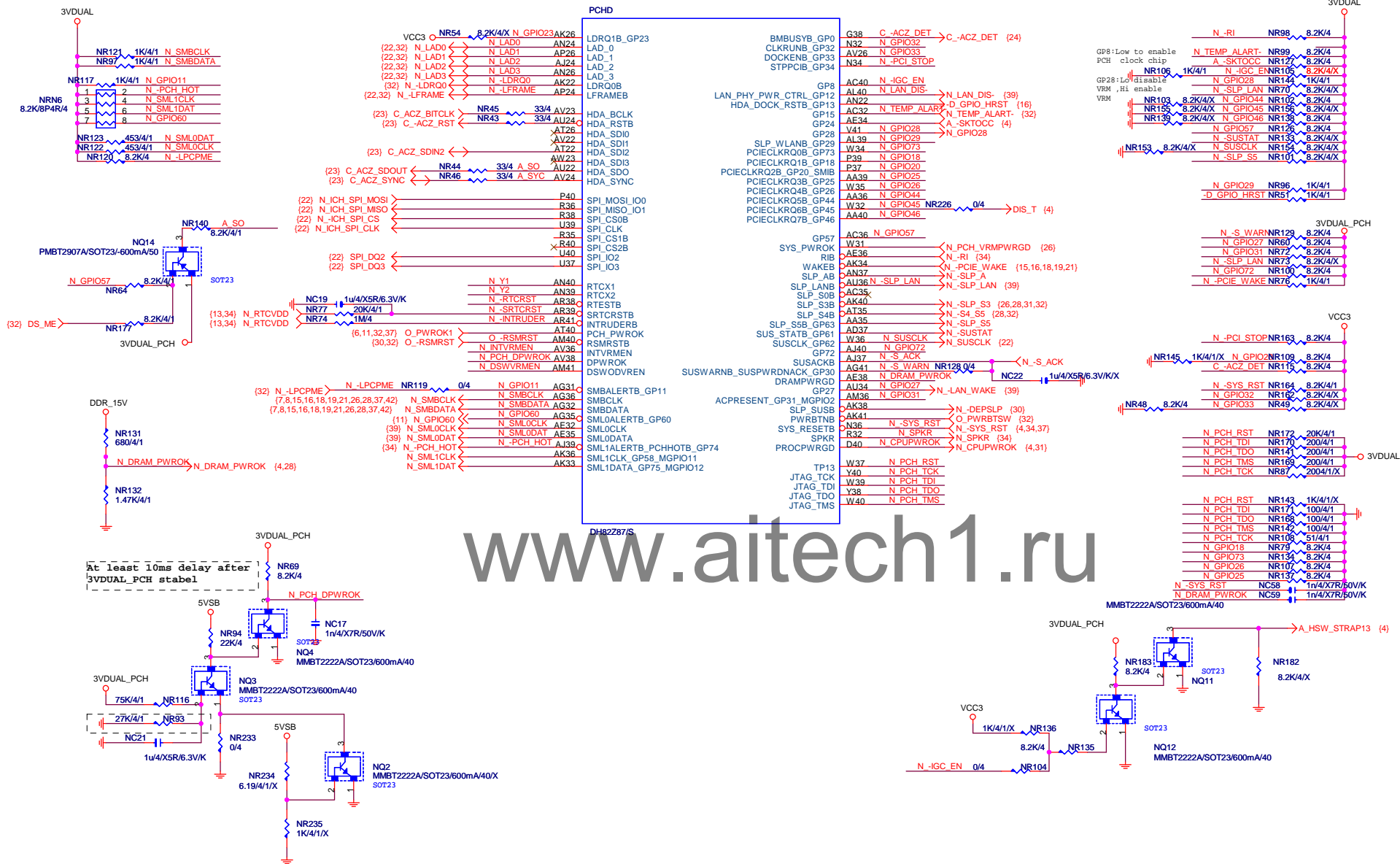




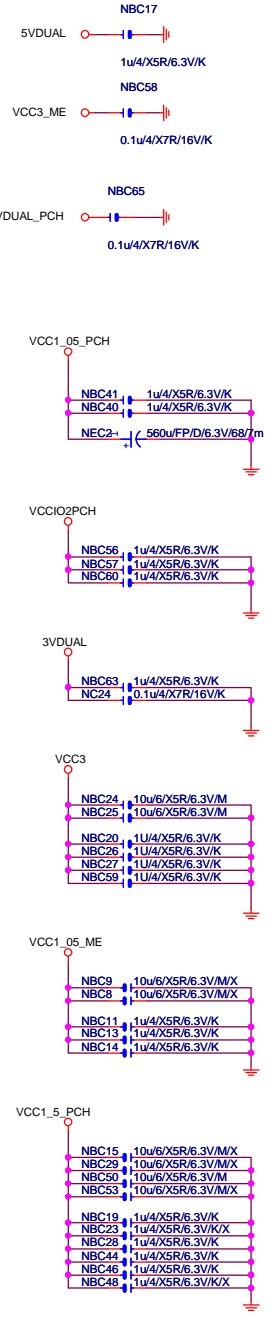
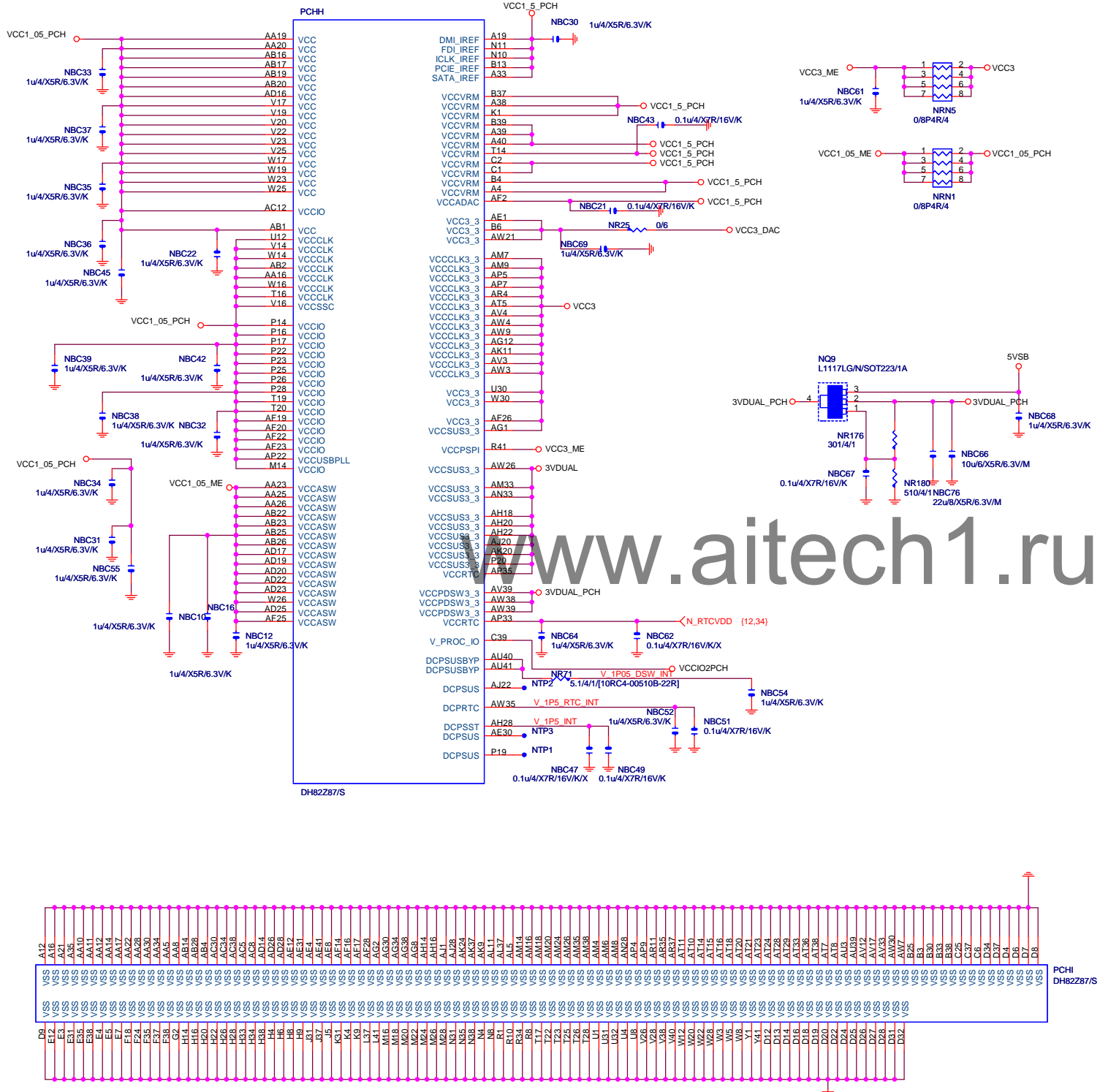










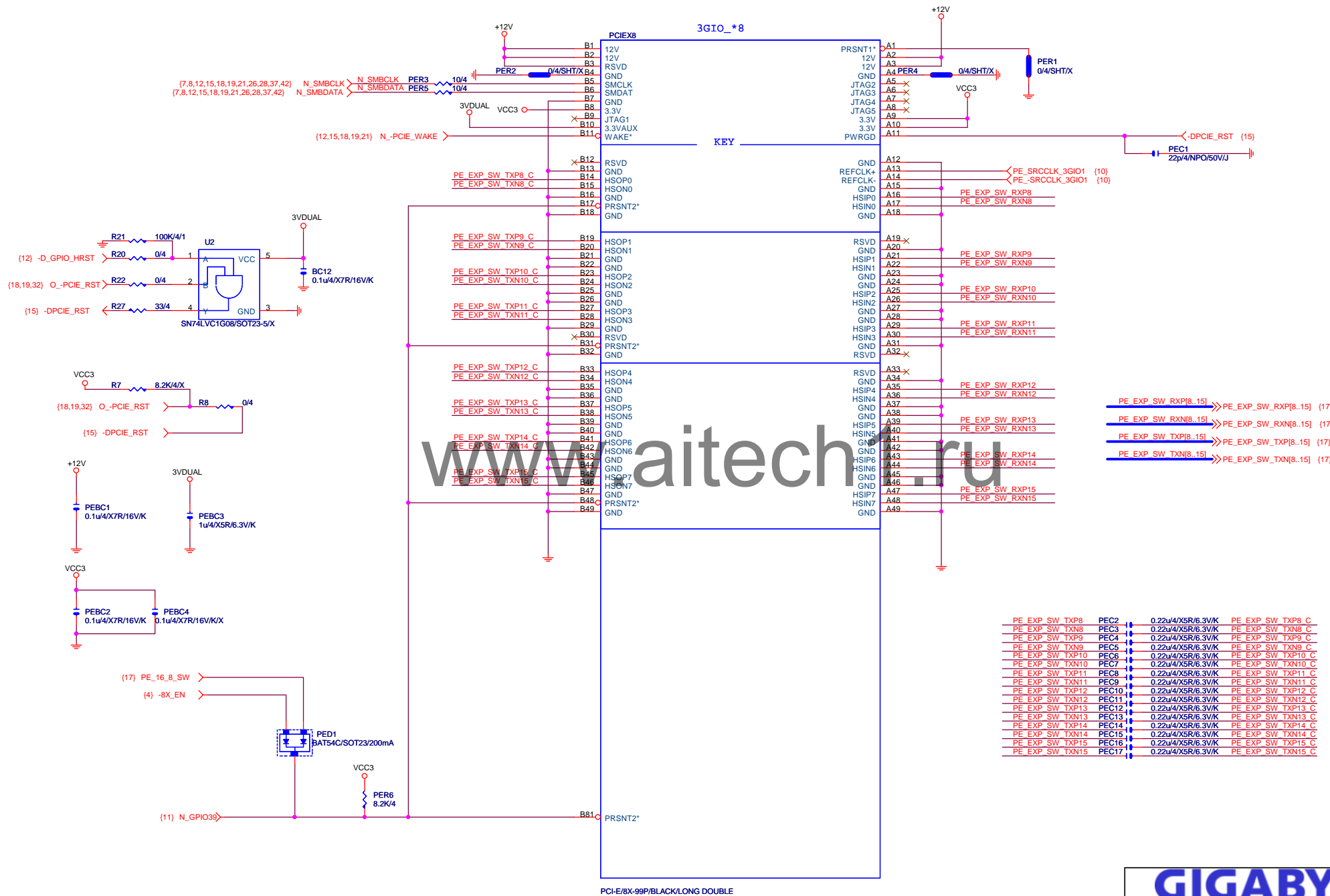


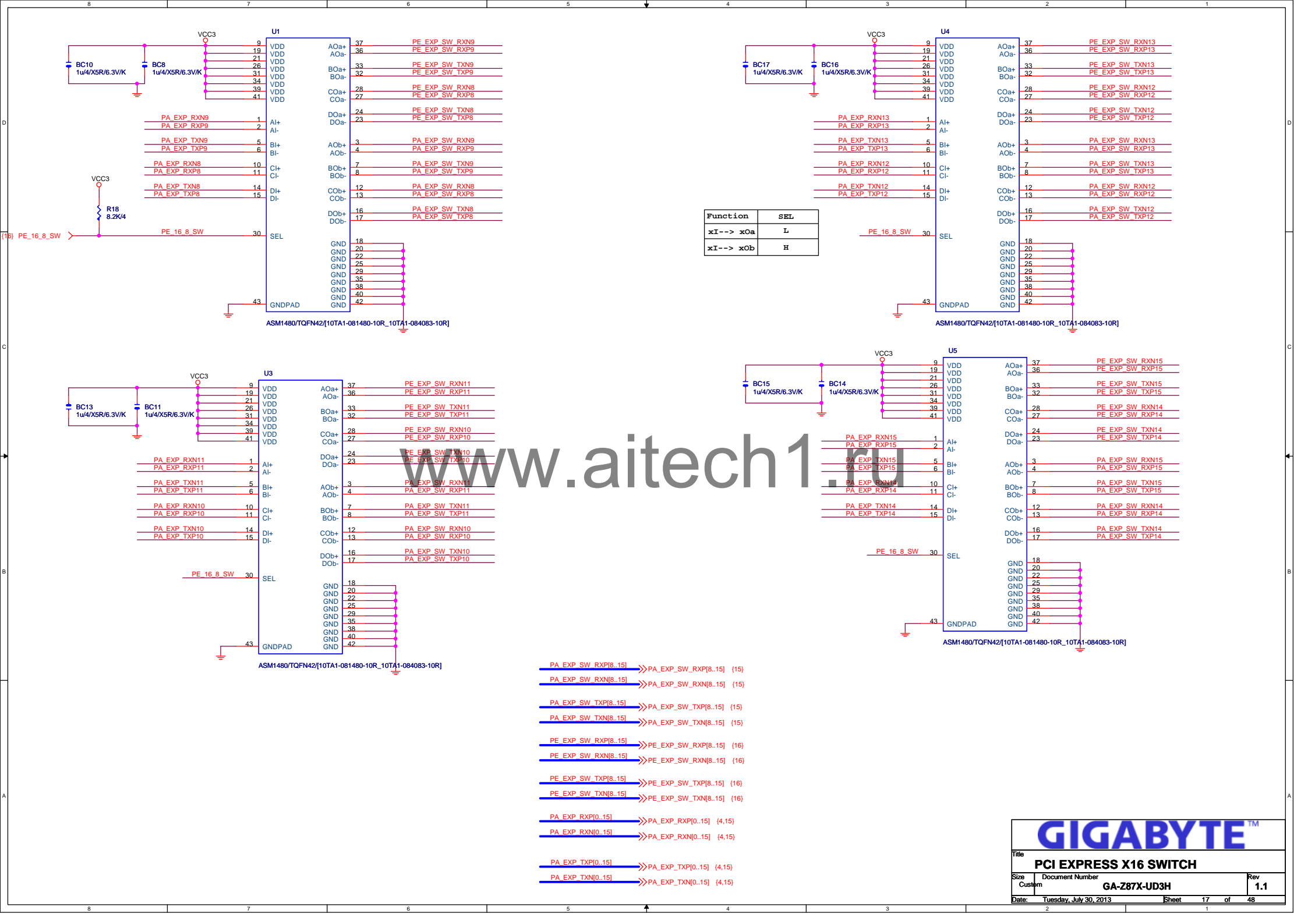
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Size Custom	Document Number <b>GA-Z87X-UD3H</b>	Rev <b>1.1</b>
Date: Tuesday, July 30, 2013	Sheet 13	of 48

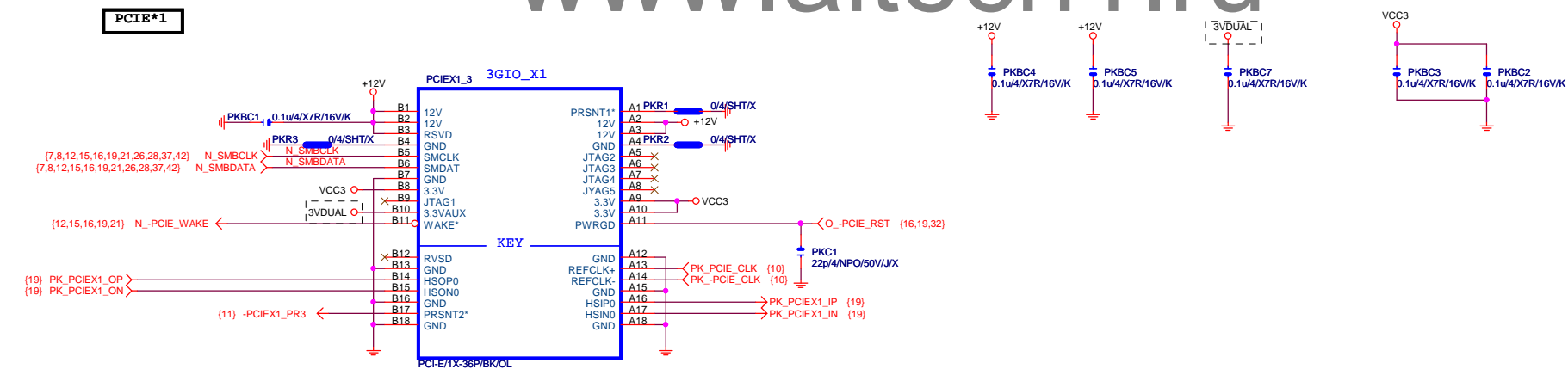
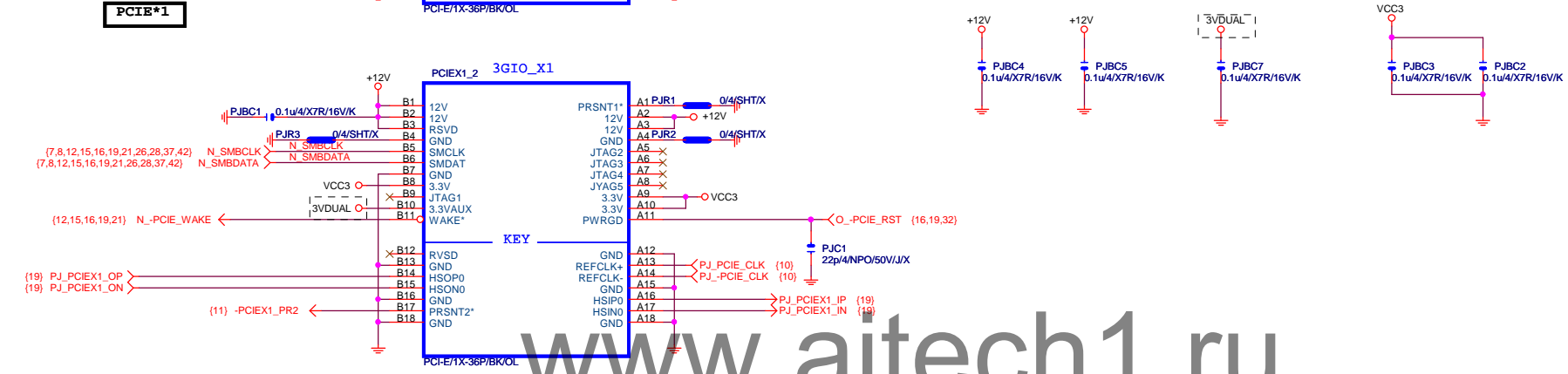
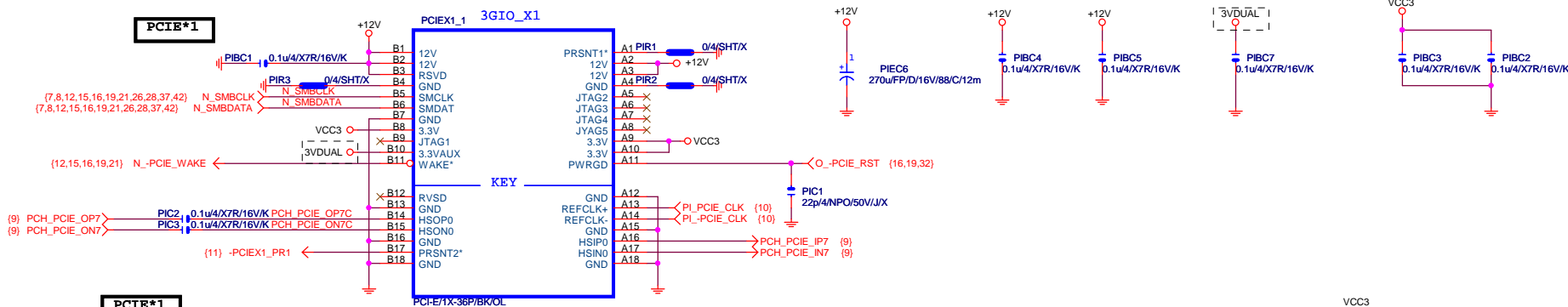
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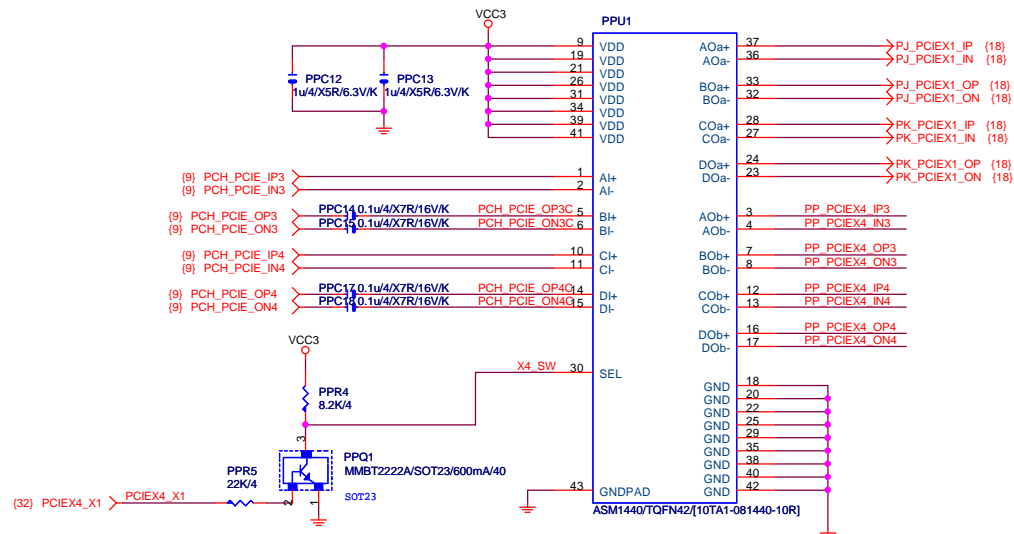
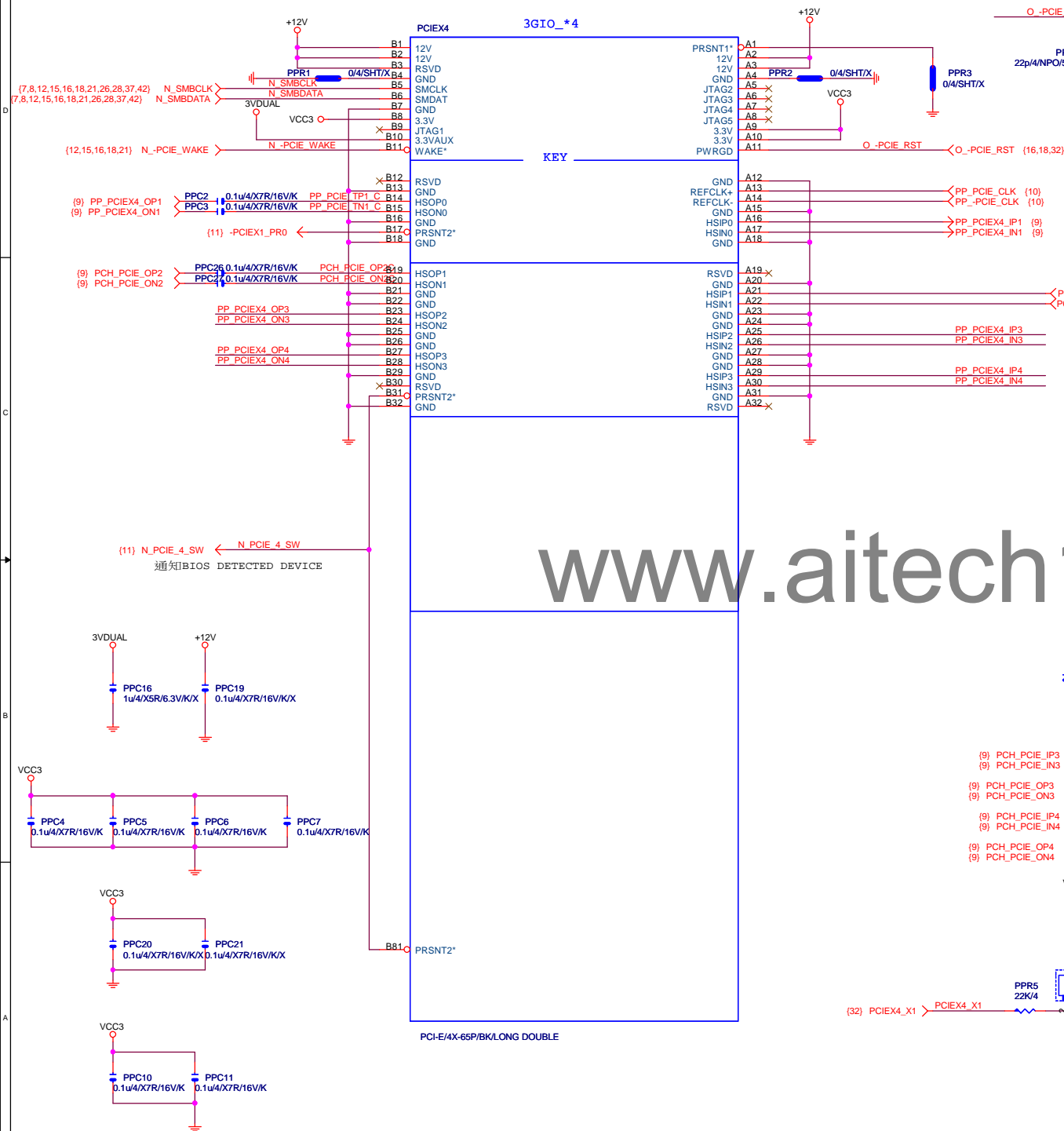








PCIE\*4



Function	SEL
xI--> xOa	L; PCIE4 SLOT-->X1
xI--> xOb	H; PCIE4 SLOT-->X4

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Title: **PCIE\_X4**

Size: Custom

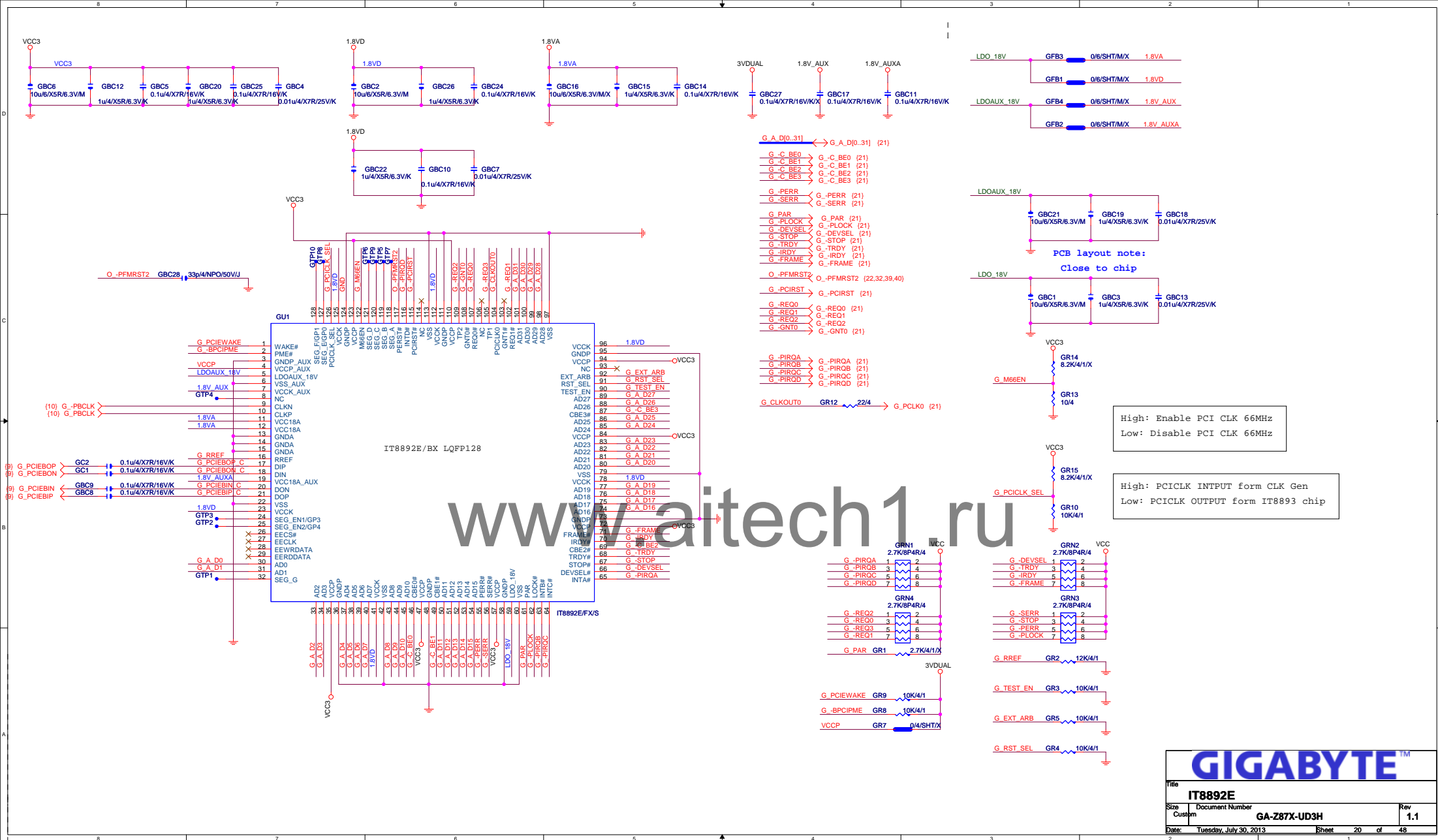
Document Number: **GA-Z87X-UD3H**

Rev: **1.1**

Date: Tuesday, July 30, 2013

Sheet: 19 of 48

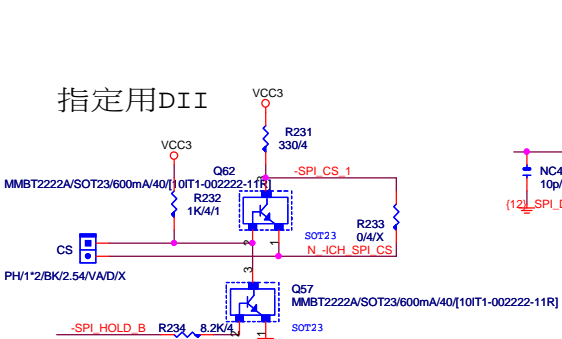




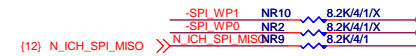
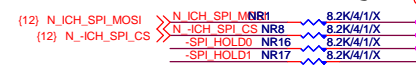
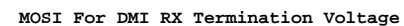
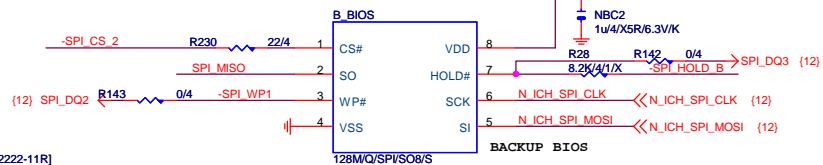
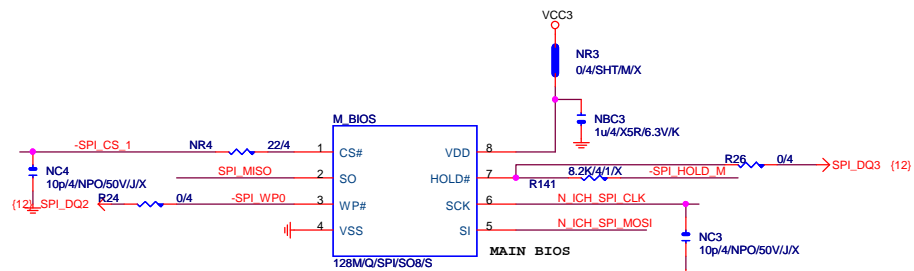
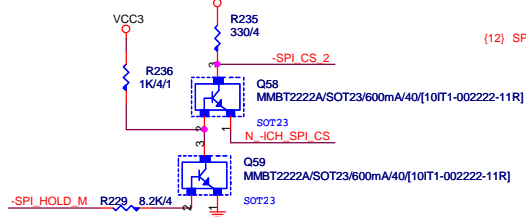




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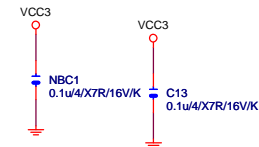
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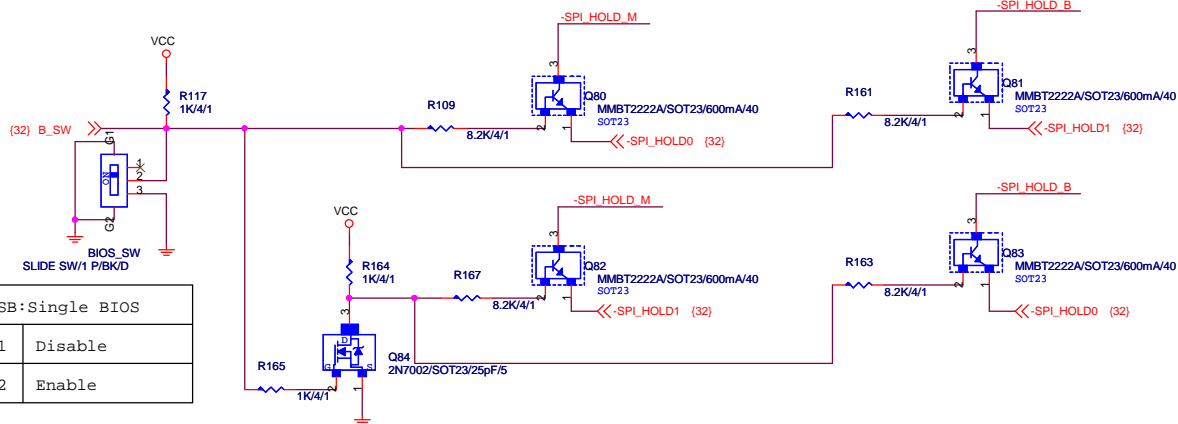
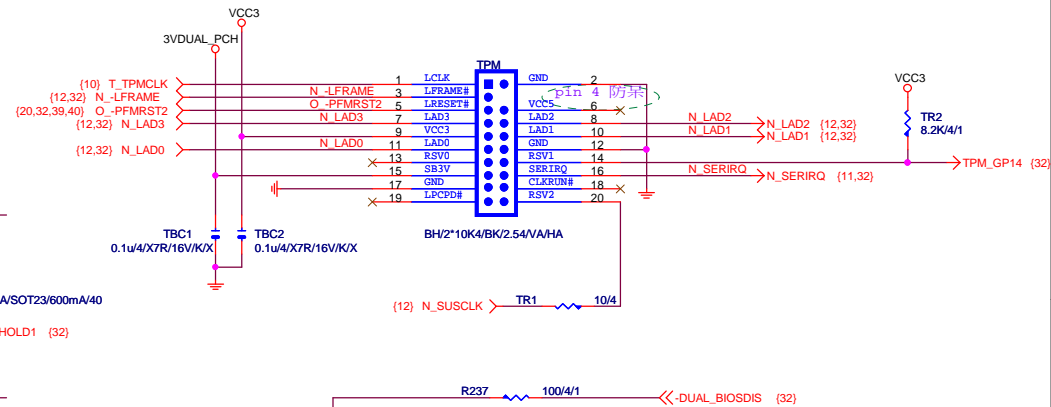
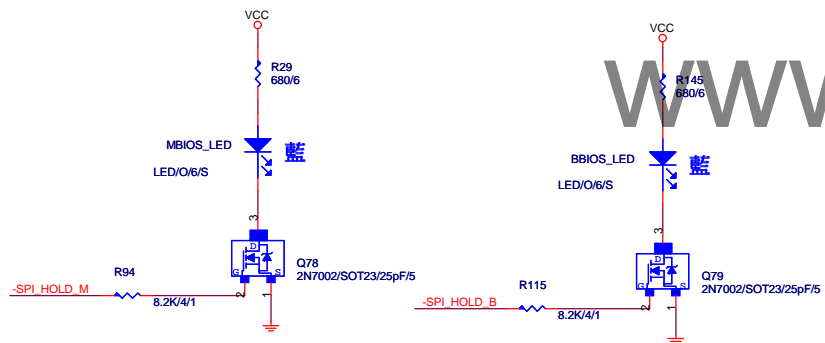
1 means floating  
0 means PD 1K



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



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SB:Single BIOS	
1	Disable
2	Enable

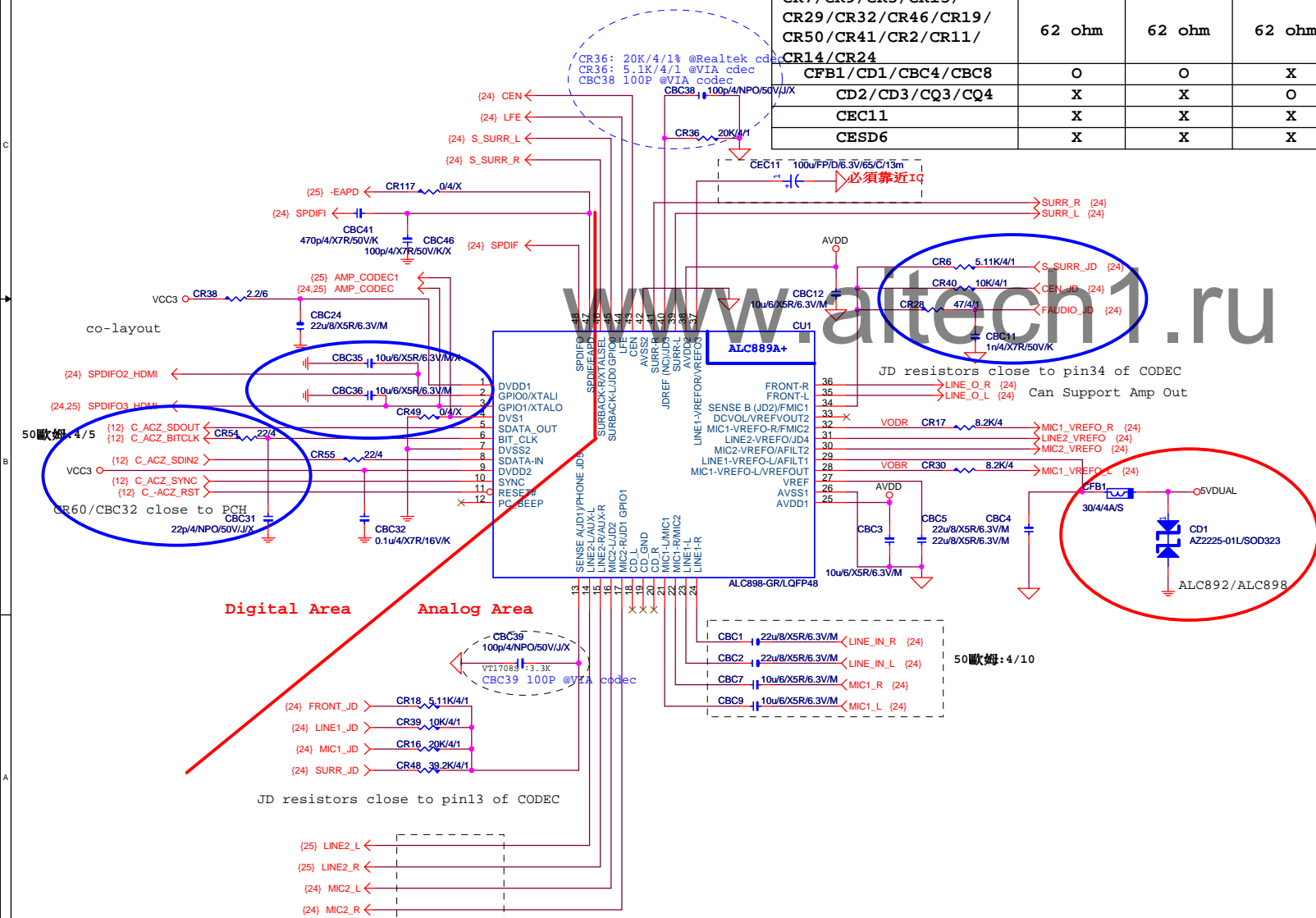
# GIGABYTE™

Title	DUAL BIOS, TPM
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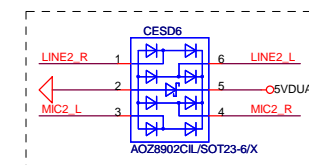
Size	Document Number	Rev
Custom	<b>GA-Z87X-UD3H</b>	<b>1.1</b>

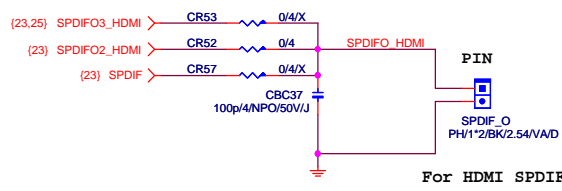
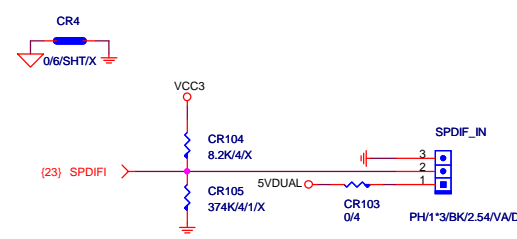
Date: Tuesday, July 30, 2013 Sheet 22 of 48

	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021	ALC898/ALC892
CR49	X	X	O	O	X	O	X
CBC36	O	O	X	X	O	X	O
CR28/CBC11	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF	47ohm+1nF
CR52	X	O	O	O	O	O	O
CR57	O	X	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R	22uF/X5R
CR36	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CR17/CR30/ CR25/CR15/CR12/CR3/	8.2K/4	8.2K/4	8.2K/4	3.3K/4/1	3.3K/4/1	3.3K/4/1	8.2K/4
CBC38/CBC39	X	X	X	100P/4	100P/4	X	X
CR10/CR8/CR20/CR45/ CR42/CR51/CR27/CR26	22K/4	22K/4	22K/4	10K/4/1	10K/4/1	10K/4/1	22K/4
CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR2/CR11/ CR14/CR24	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm	75 ohm	62 ohm
CFB1/CD1/CBC4/CBC8	O	O	X	X	O	X	O
CD2/CD3/CQ3/CQ4	X	X	O	O	X	O	X
CEC11	X	X	X	X	X	X	O
CESD6	X	X	X	O	O	O	X

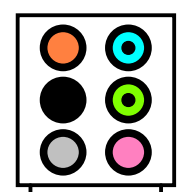


0/6/X For AGND/GND  
moat under Codec  
Body

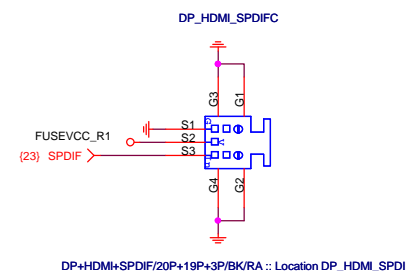
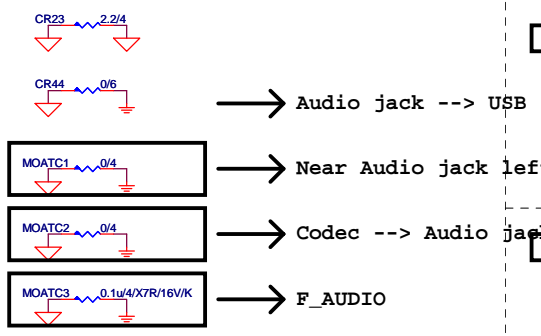
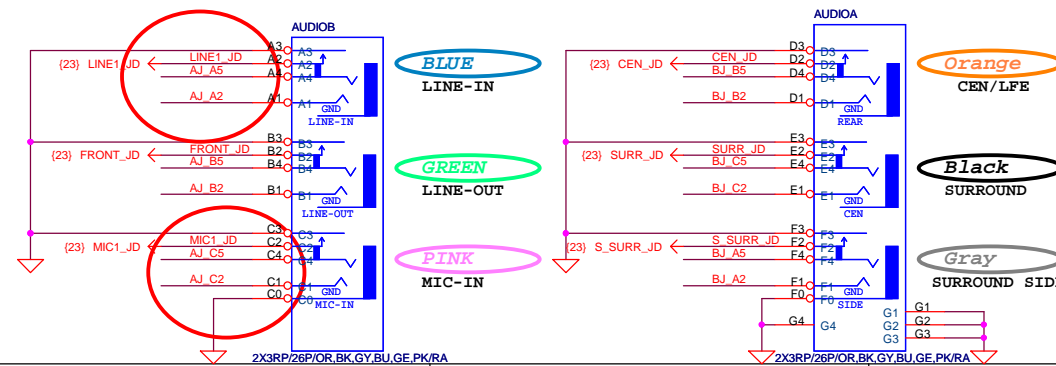




**AZALIA JACK**  
BTX AZALIA CONNECTOR



11NR6-403007-21R



**LINE-OUT**

**LINE-IN**

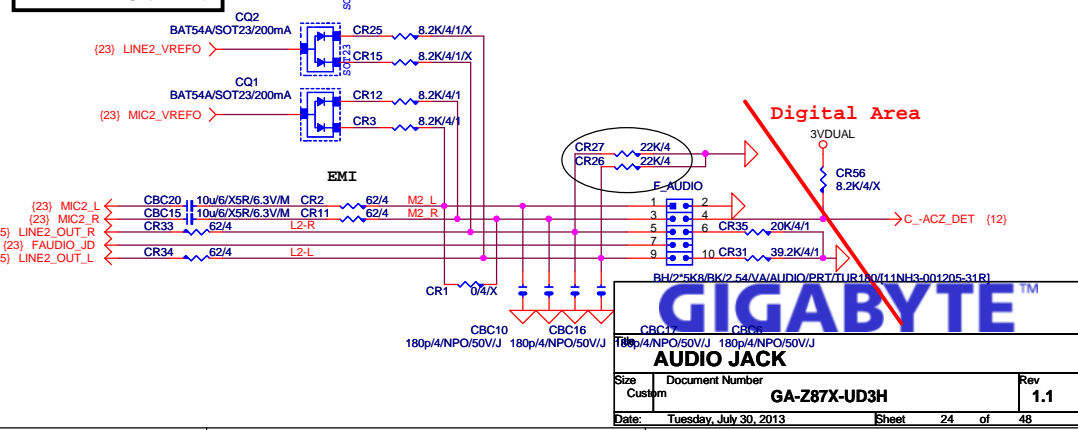
**MIC-IN**

**SURROUND**

**CEN/LFE**

**SURR BACK**

**AZALIA FRONT PANE**



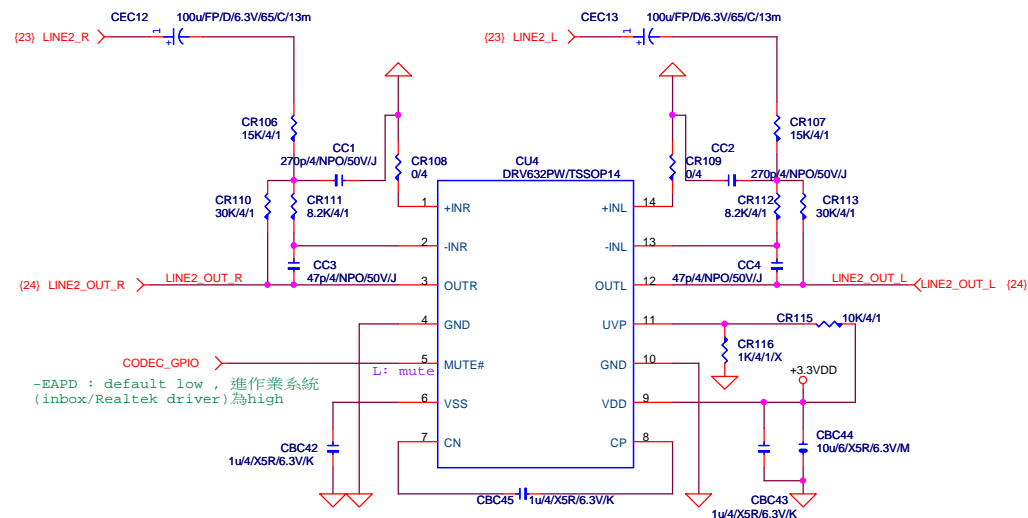
**GIGABYTE**

**AUDIO JACK**

Size: Custom Document Number: **GA-Z87X-UD3H** Rev: **1.1**

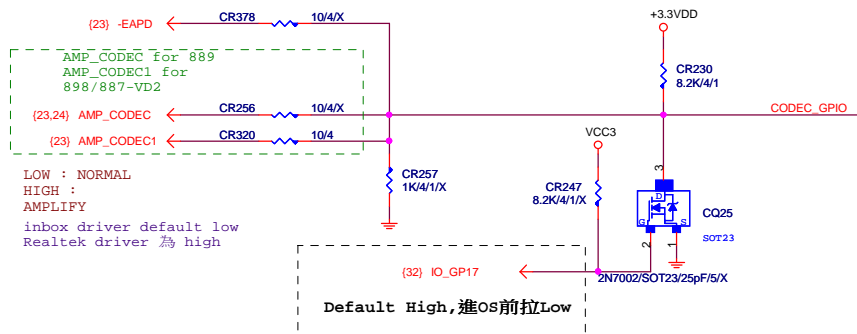
Date: Tuesday, July 30, 2013 Sheet: 24 of 48

# HEADPHONE



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# HEADPHONE

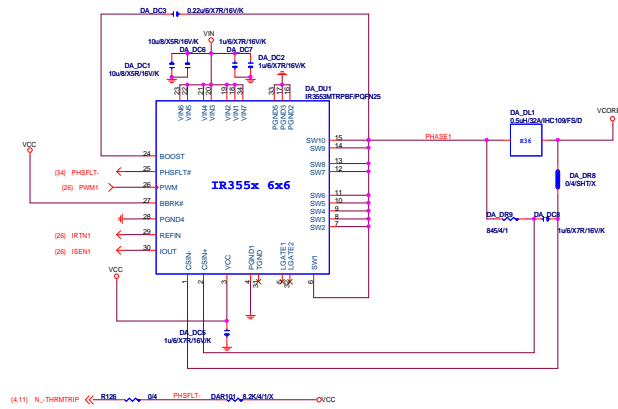


**GIGABYTE™**

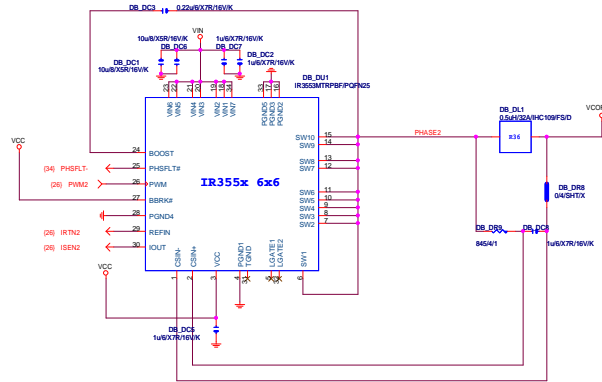
Title		
Audio Amplifier		
Size	Document Number	Rev
Custom	GA-Z87X-UD3H	1.1
Date:	Tuesday, July 30, 2013	Sheet 25 of 48



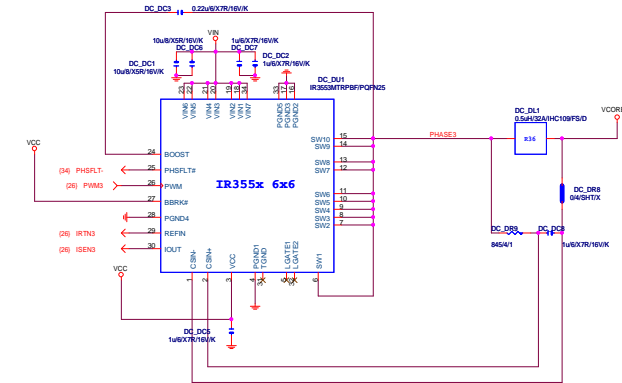
## VCORE-PHASE1



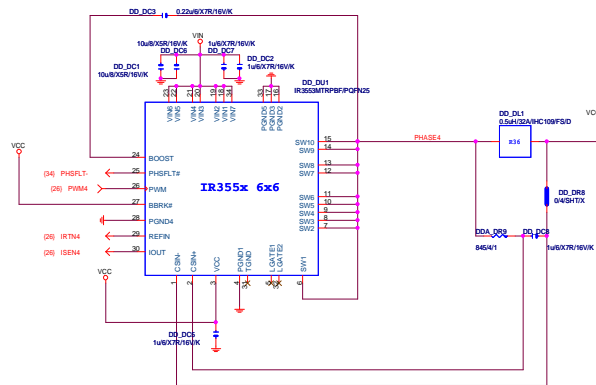
## VCORE-PHASE2



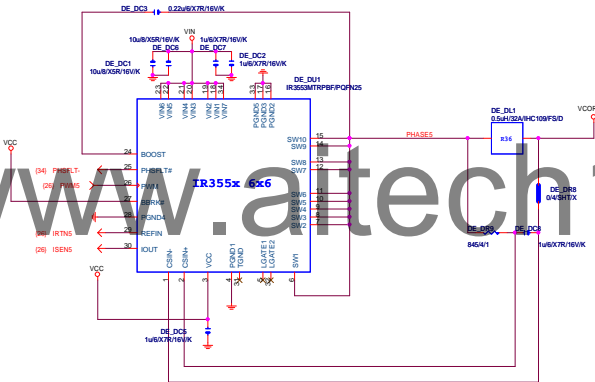
## VCORE-PHASE3



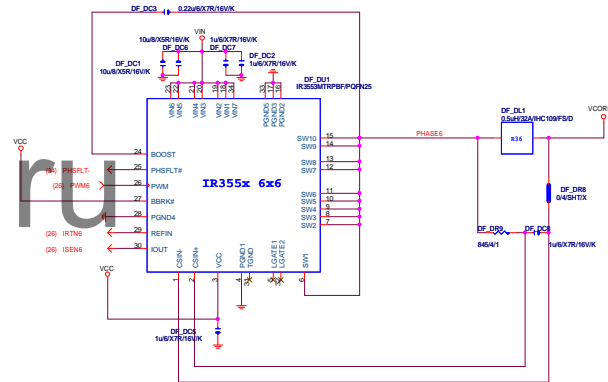
## VCORE-PHASE4



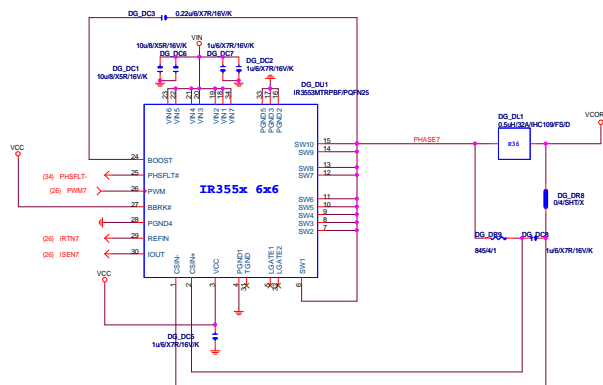
## VCORE-PHASE5



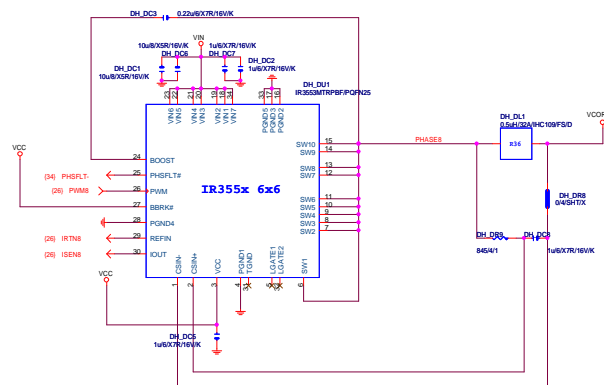
## VCORE-PHASE6

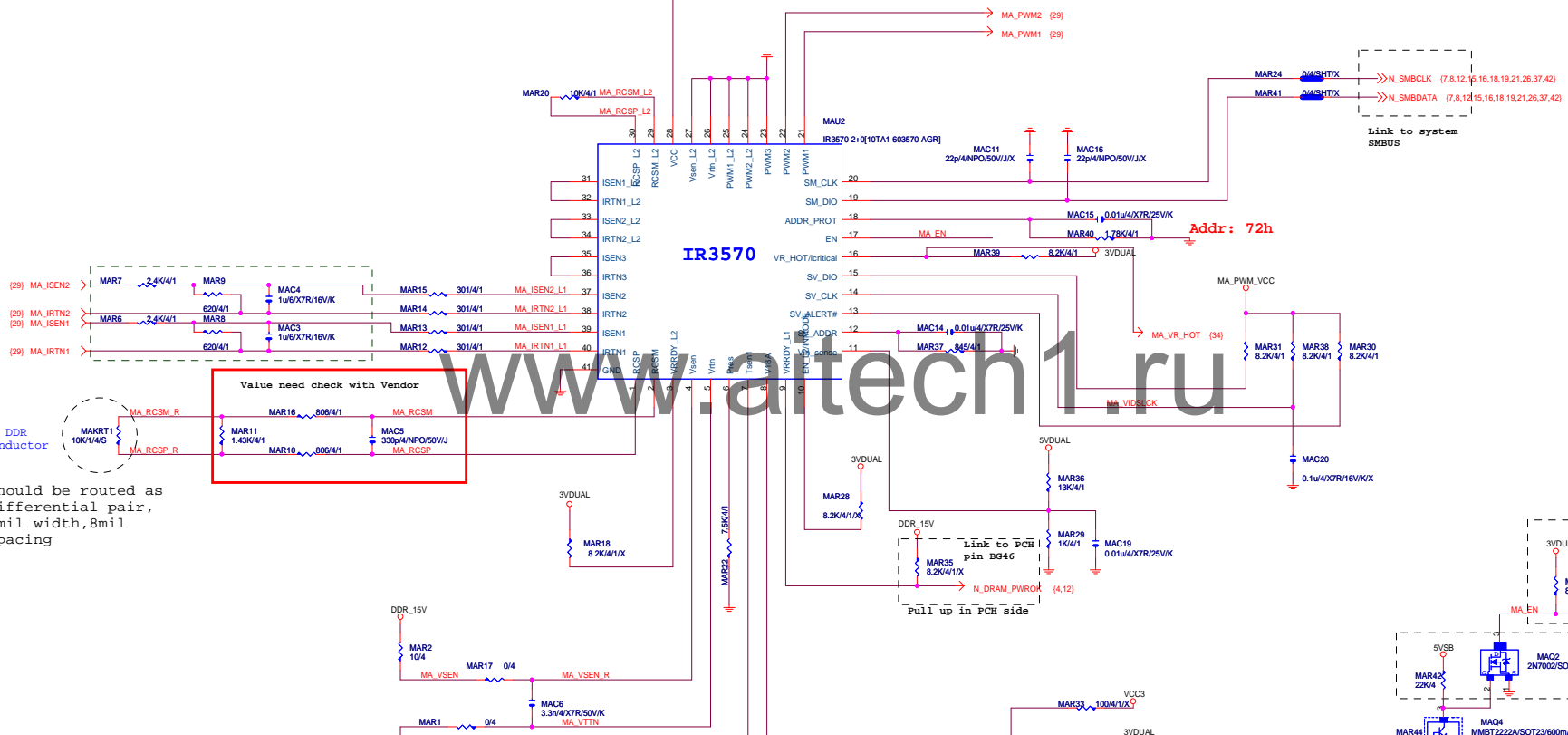
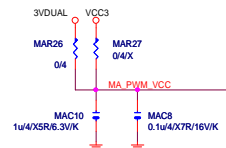
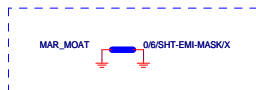


## VCORE-PHASE7



## VCORE-PHASE8

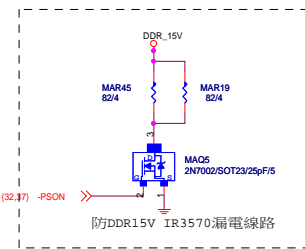
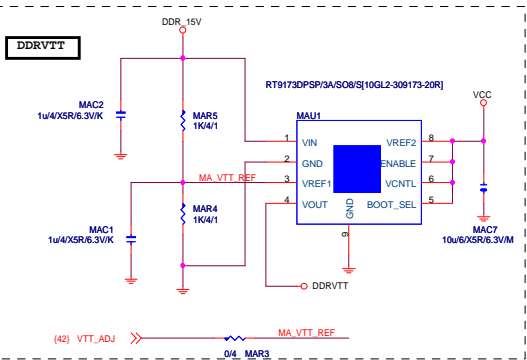




Close to DDR  
output inductor

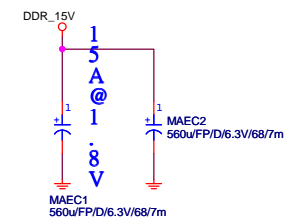
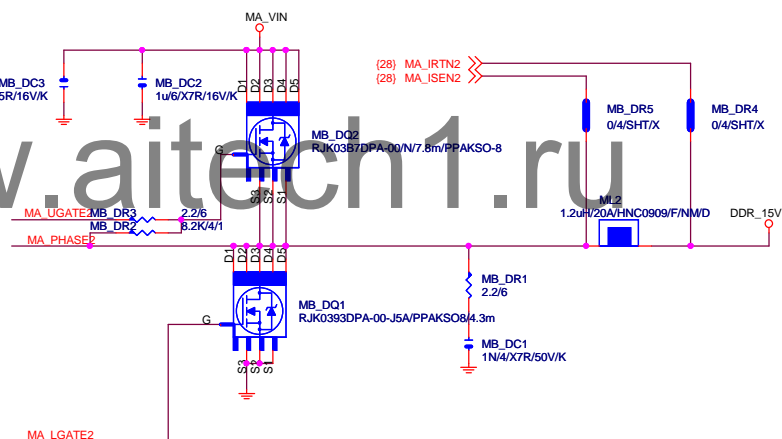
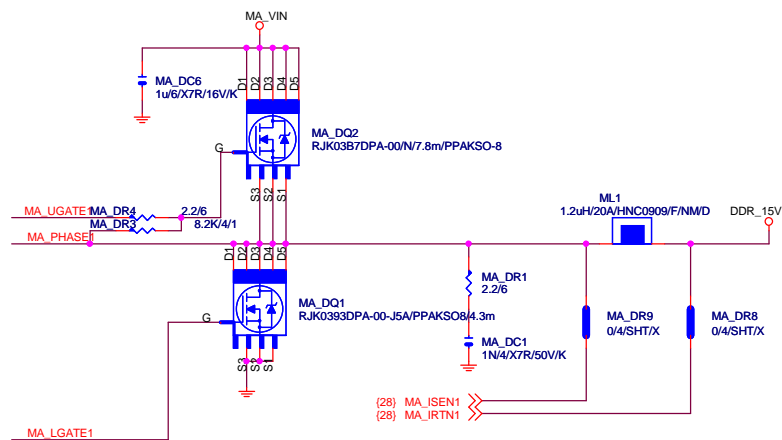
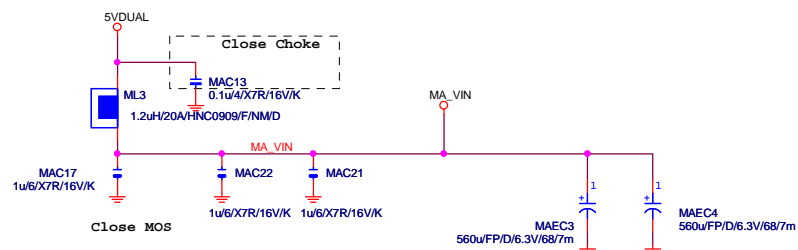
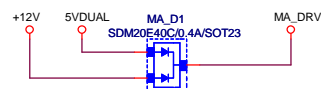
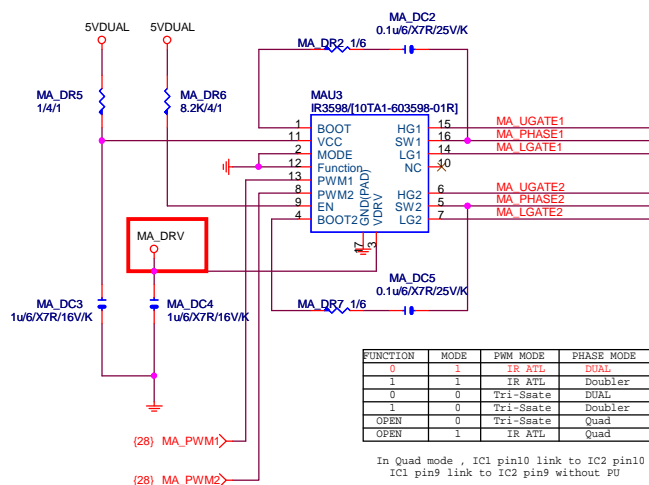
should be routed as  
differential pair,  
7mil width,8mil  
spacing

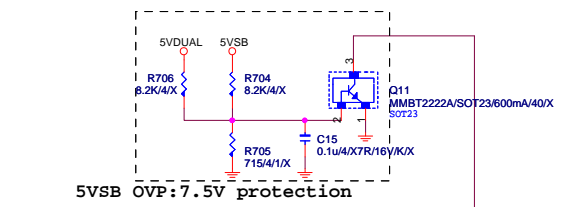
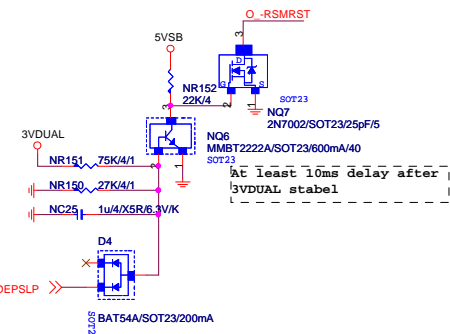
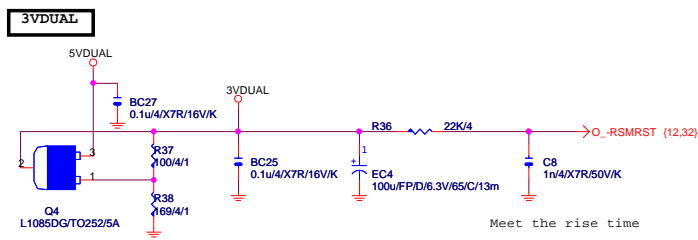
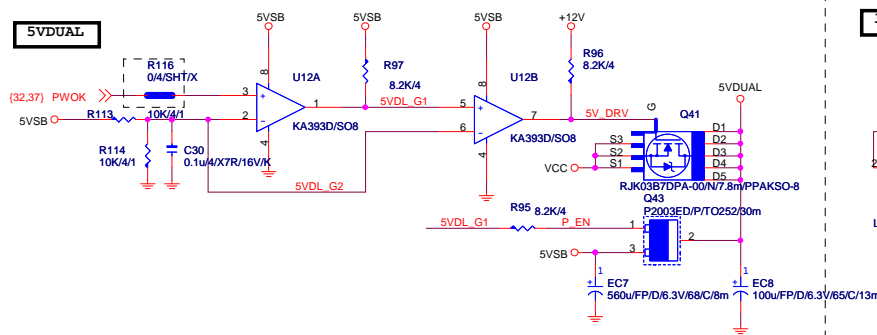
Value need check with Vendor



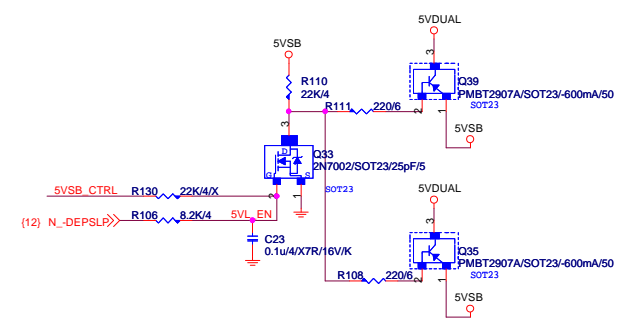
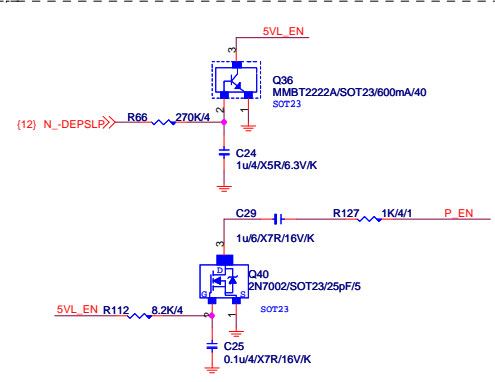
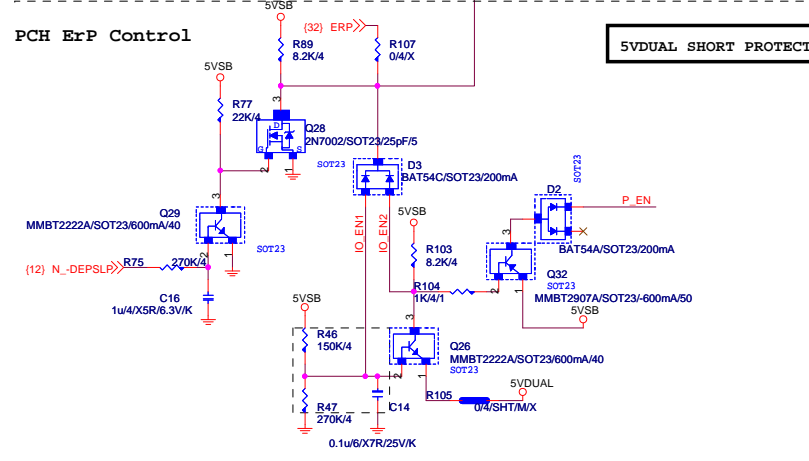
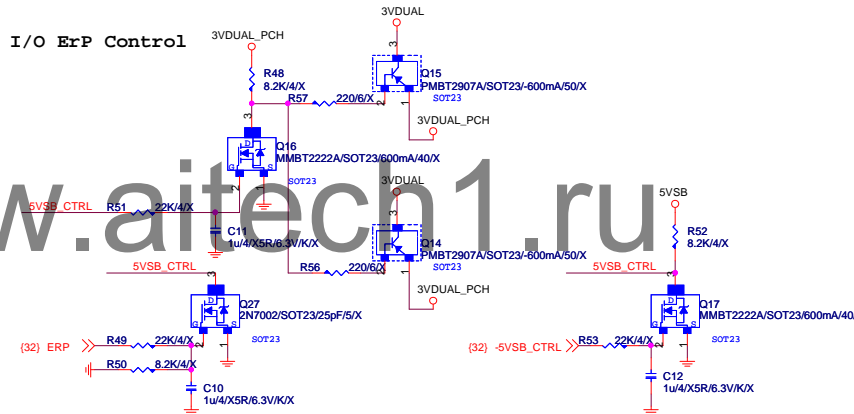


# DDR 15V

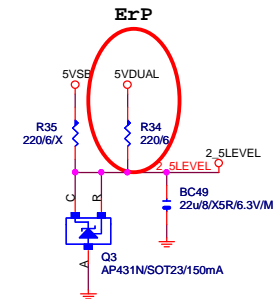
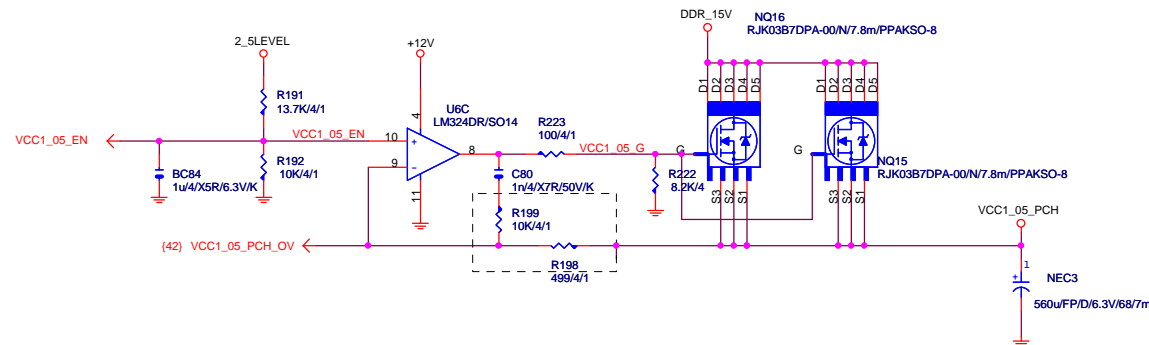




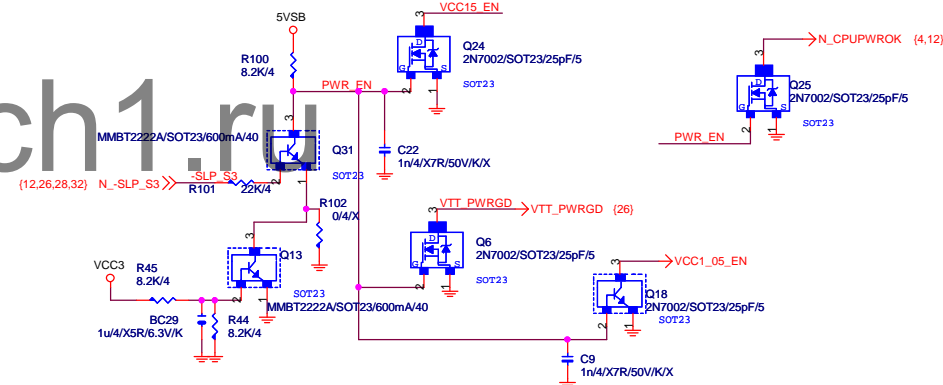
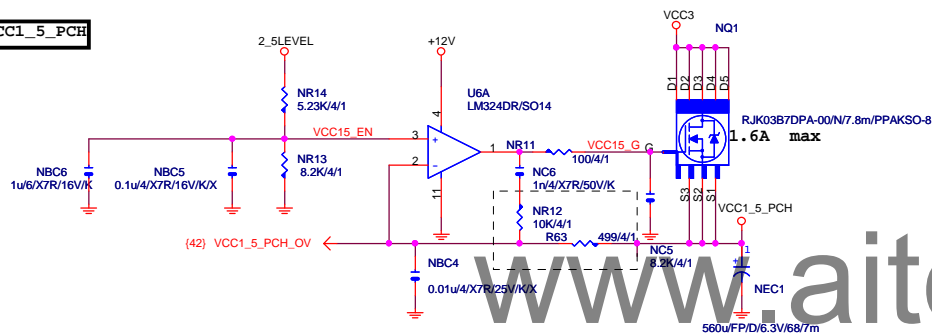
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# VCC1\_05\_PCH



# VCC1\_5\_PCH

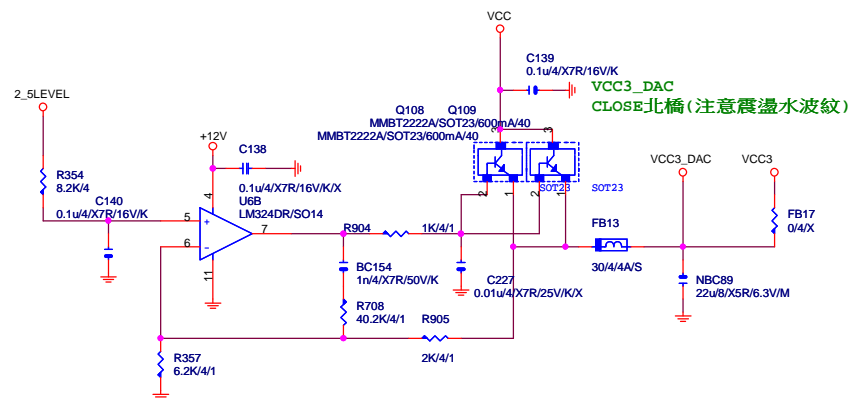


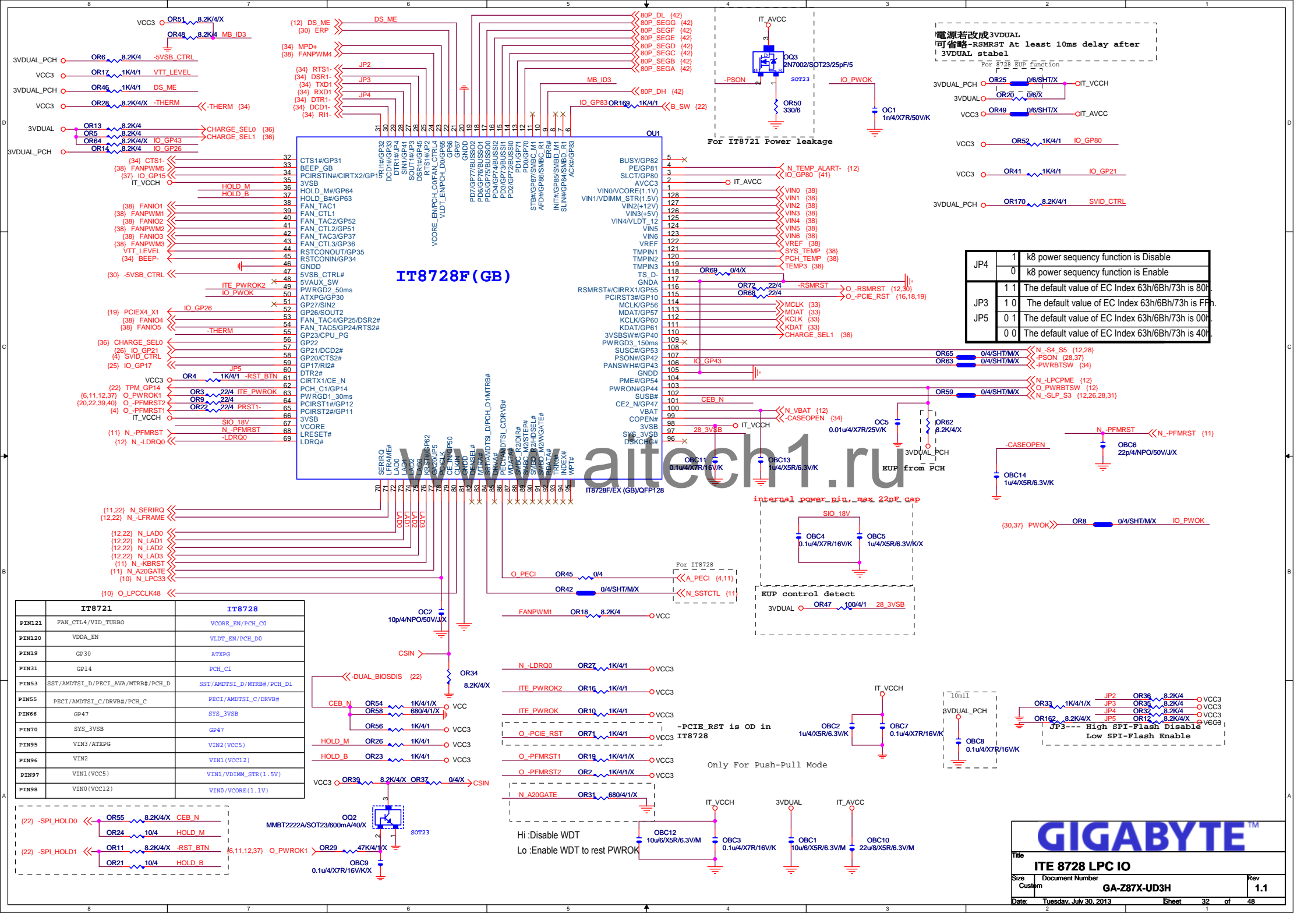
Rise/Fall max 50us  
Rise:20% - 80%  
Fall :2V- 0.8V

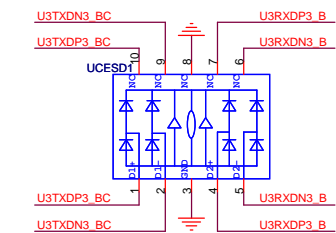
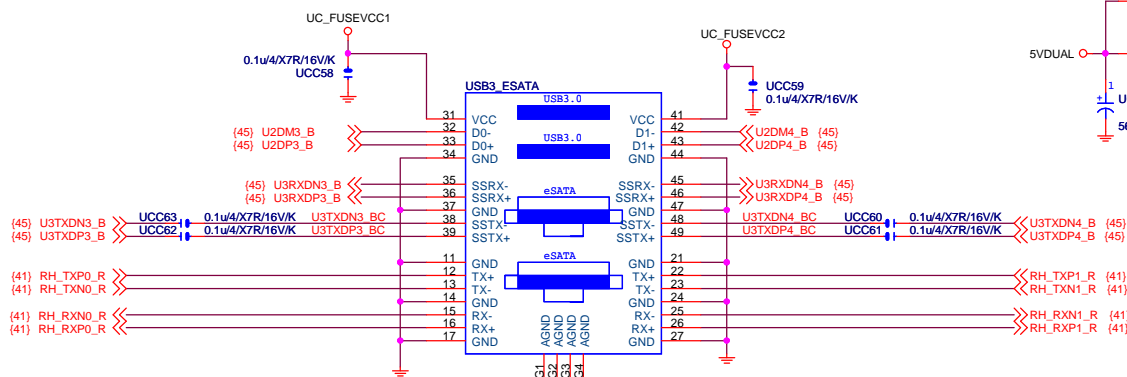
At least 10ms delay after 3VDUAL ready  
Pop when PCH & SIO both use 3VDUAL-PCH

# VCC3\_DAC

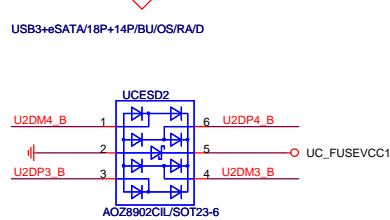
(3.3V/70mA+360uA)



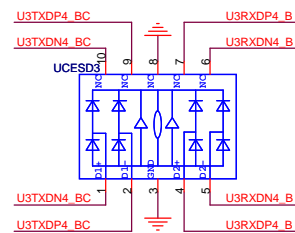




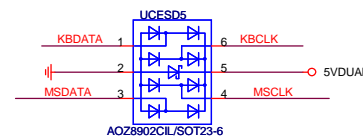
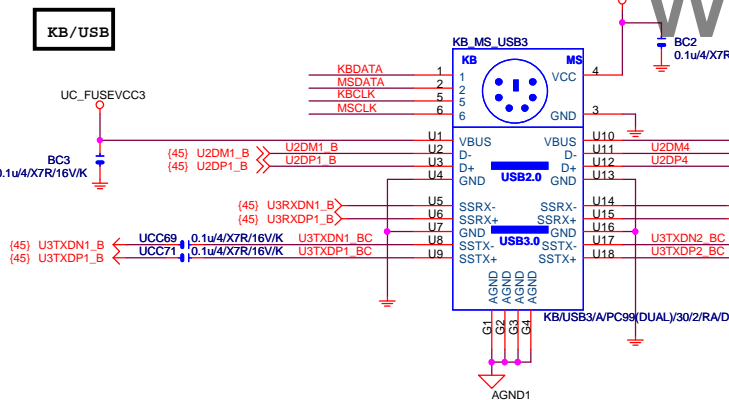
AZ1045-04F/MSOP10  
Close to connector



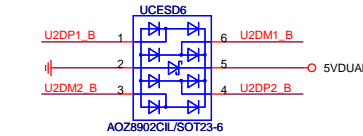
Close to connector



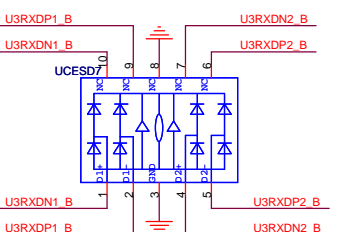
AZ1045-04F/MSOP10  
Close to connector



Close to connector

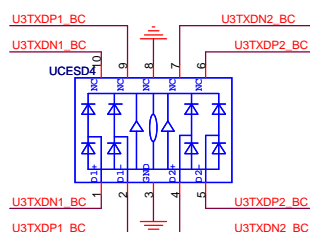


Close to connector



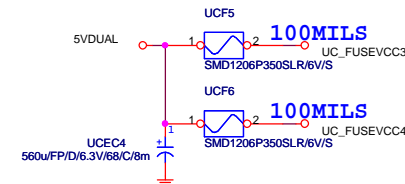
AZ1045-04F/MSOP10

Close to connector

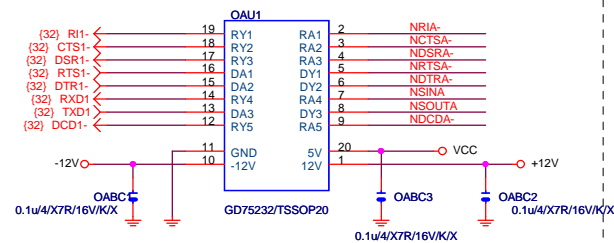


AZ1045-04F/MSOP10

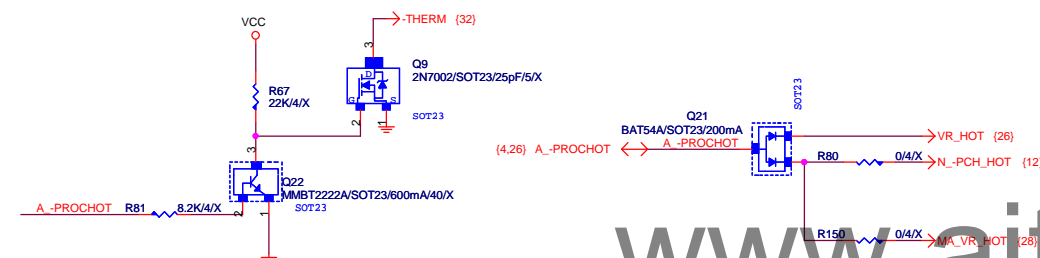
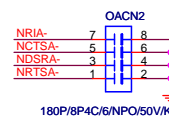
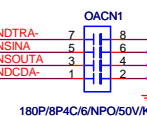
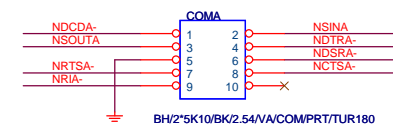
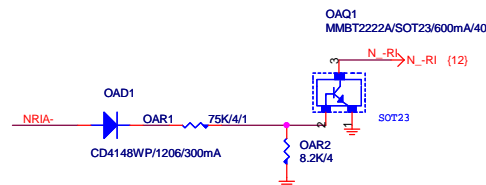
Close to connector



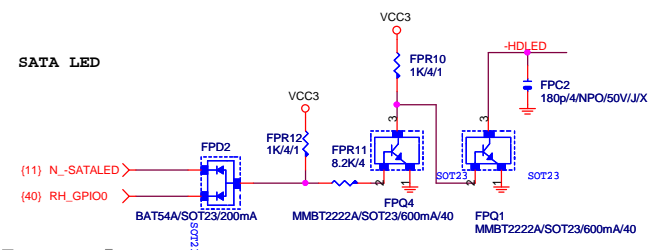
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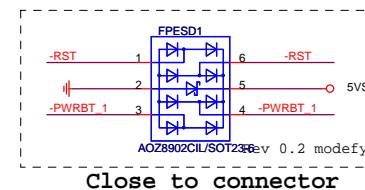
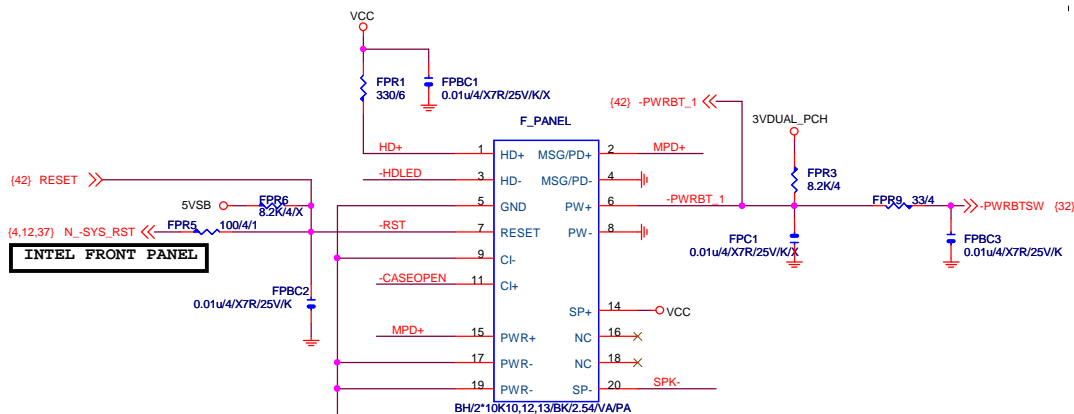
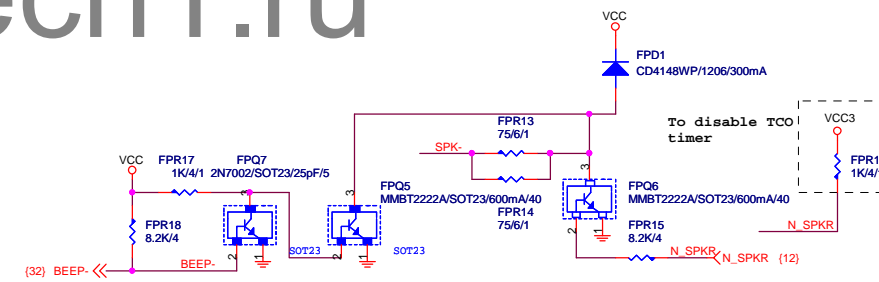
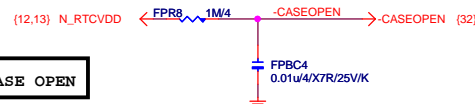
## COM RI



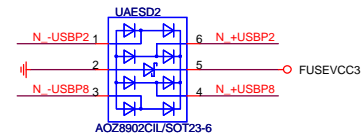
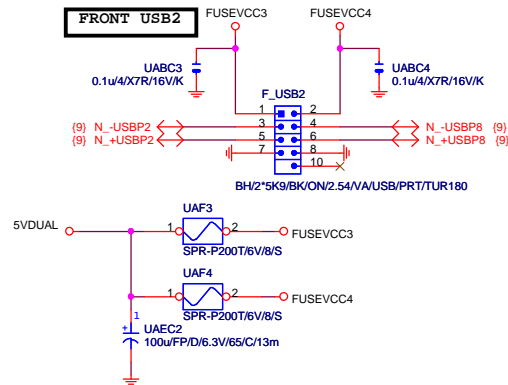
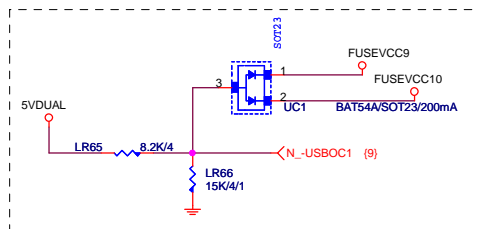
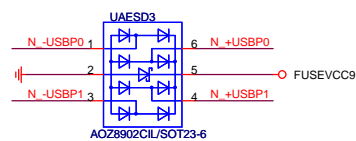
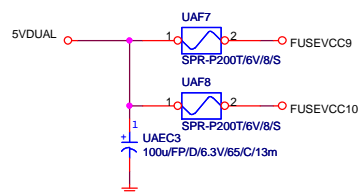
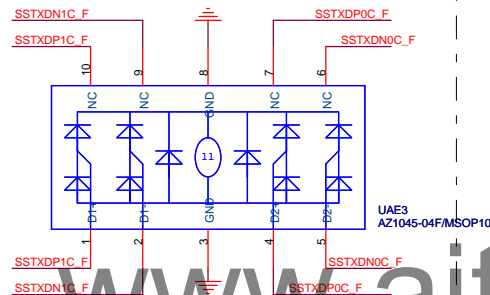
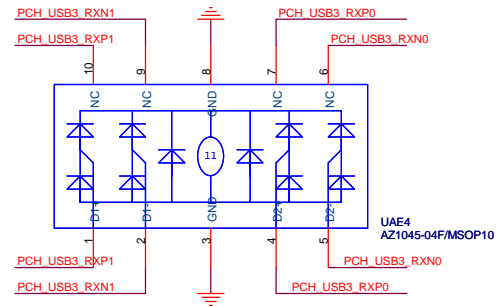
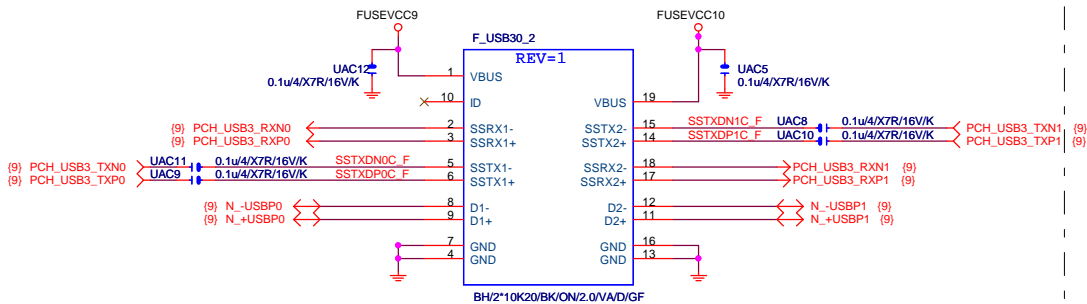
## SATA LED



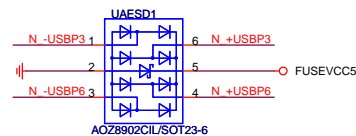
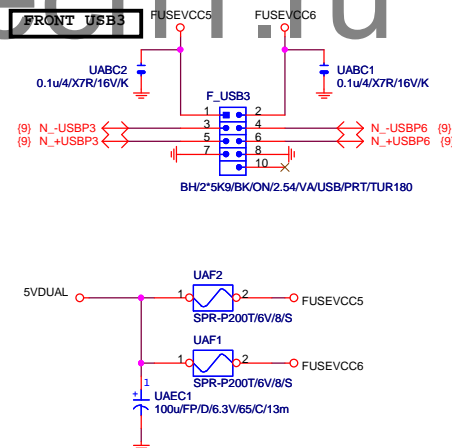
## CASE OPEN



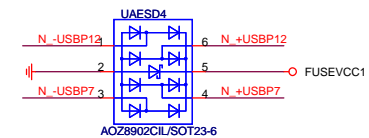
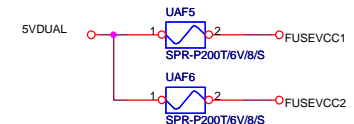
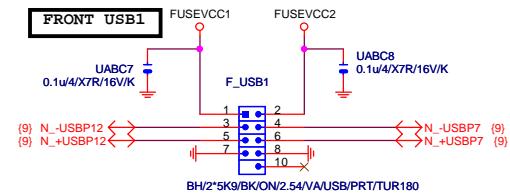
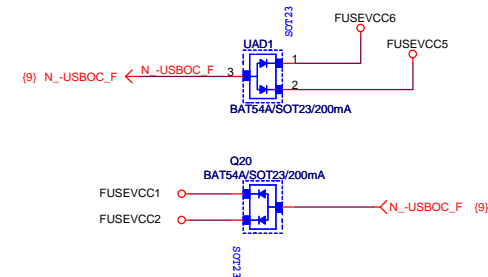
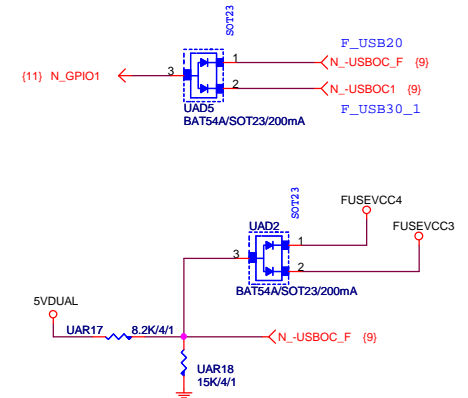
# GIGABYTE™

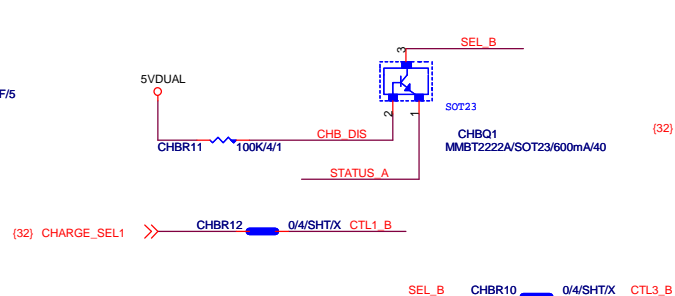
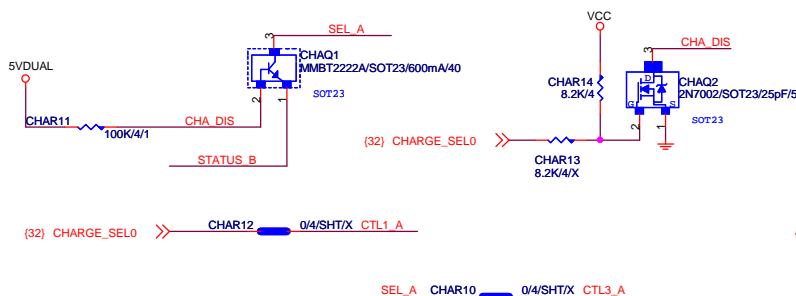
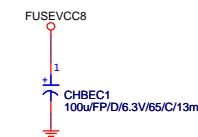
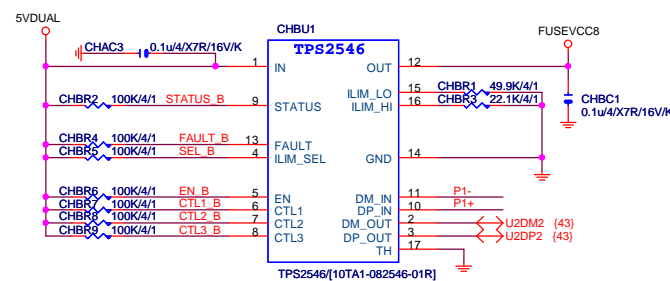
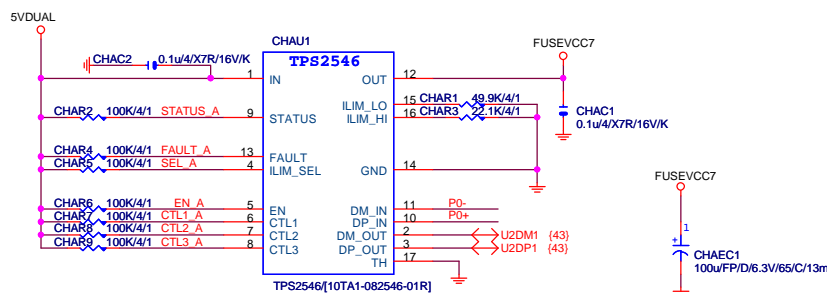
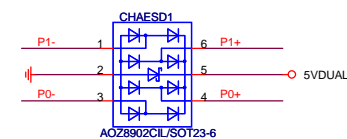
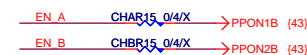
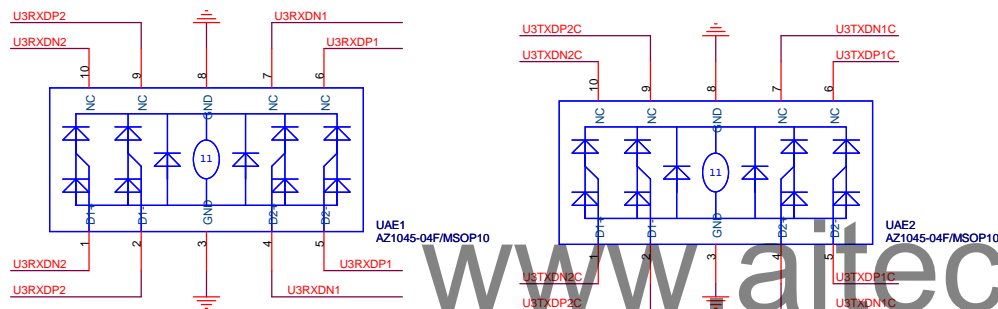
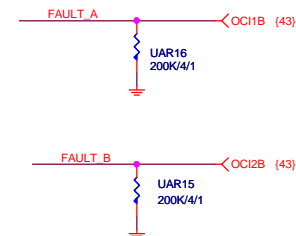
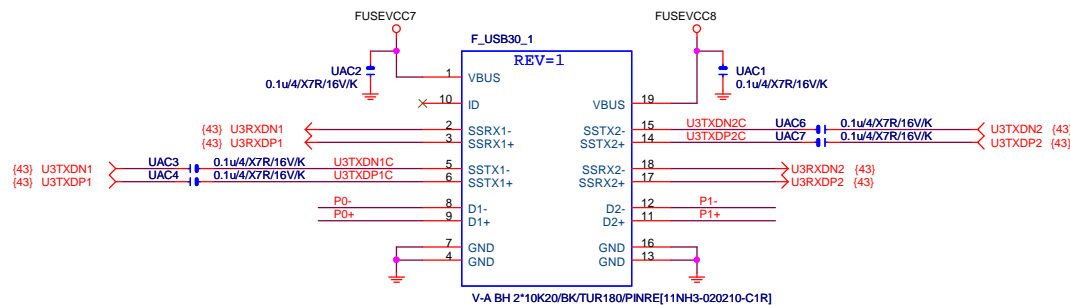


Close to connector



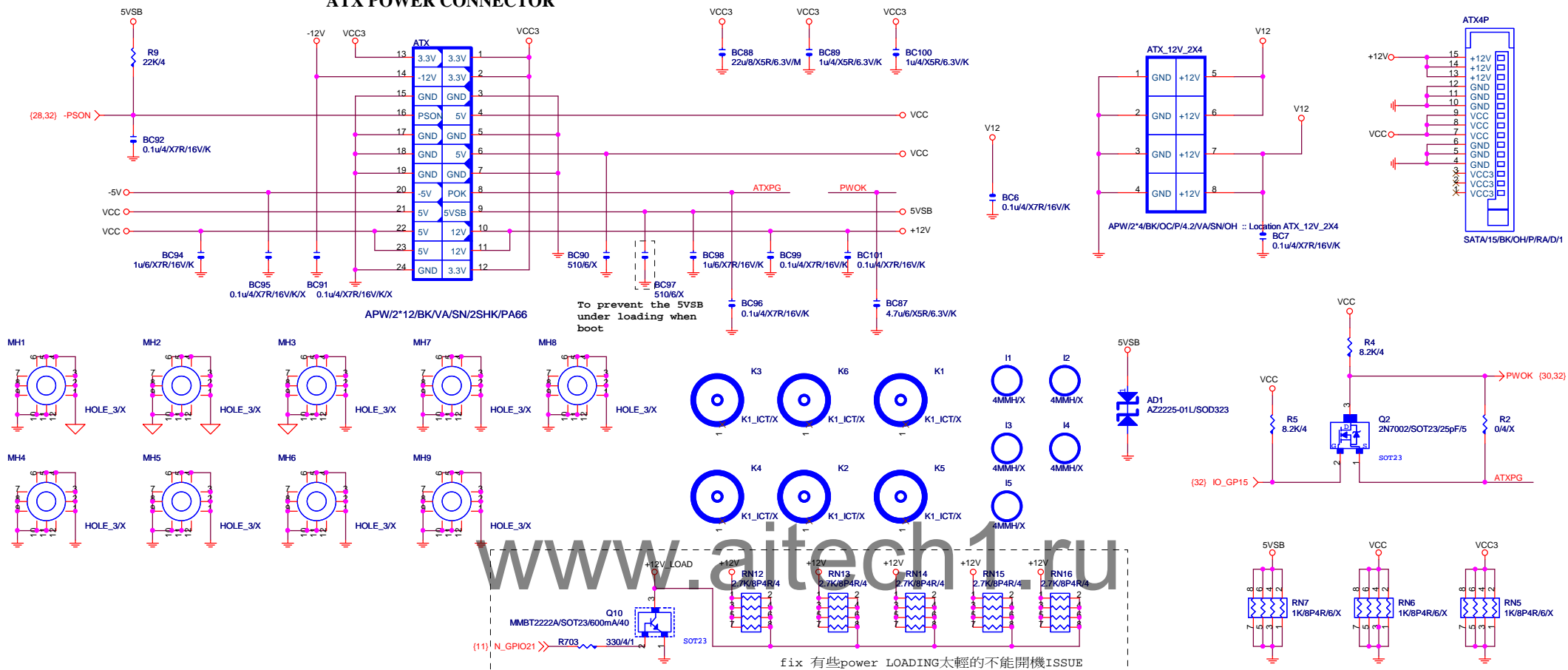
Close to connector







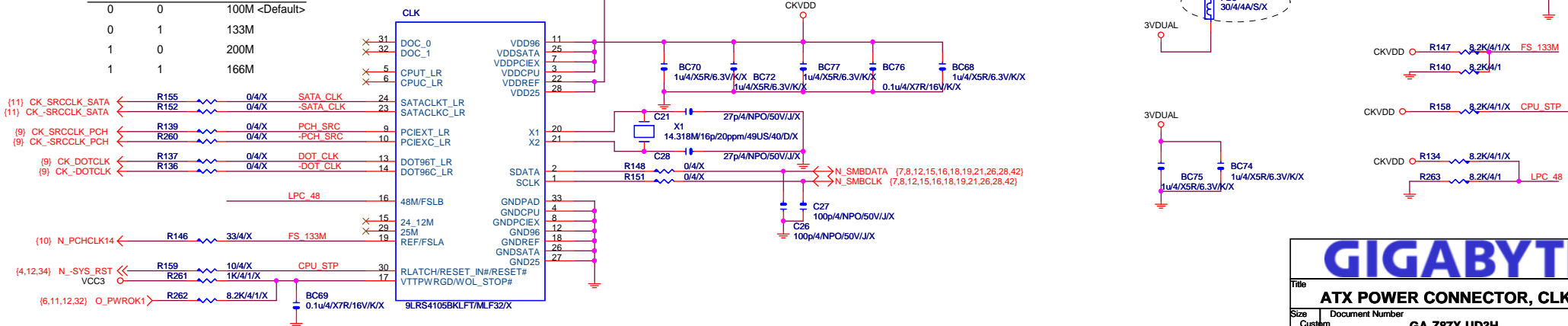
## ATX POWER CONNECTOR



CLK GEN CK505

### CPU Frequency Selection

FSLB	FSLA	CPU
0	0	100M <Default>
0	1	133M
1	0	200M
1	1	166M

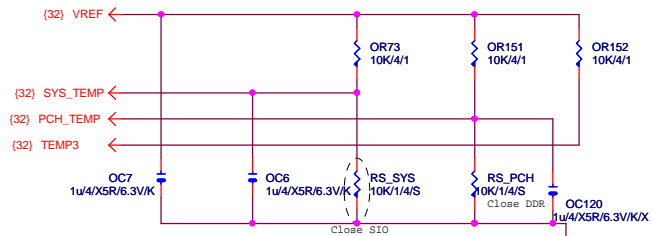


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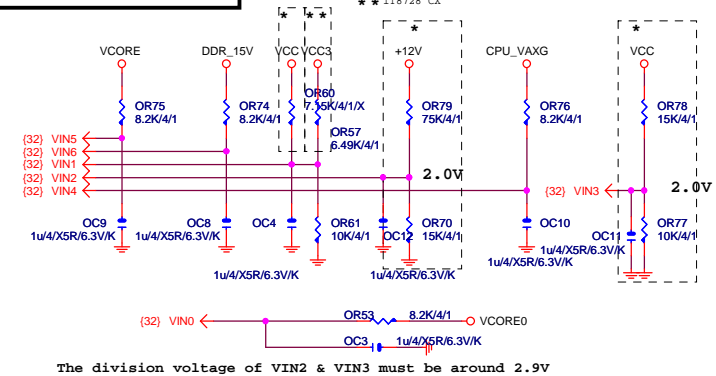
Title	<b>ATX POWER CONNECTOR, CLK GEN</b>
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Size	Document Number	Rev
Custom	<b>GA-Z87X-UD3H</b>	<b>1.1</b>

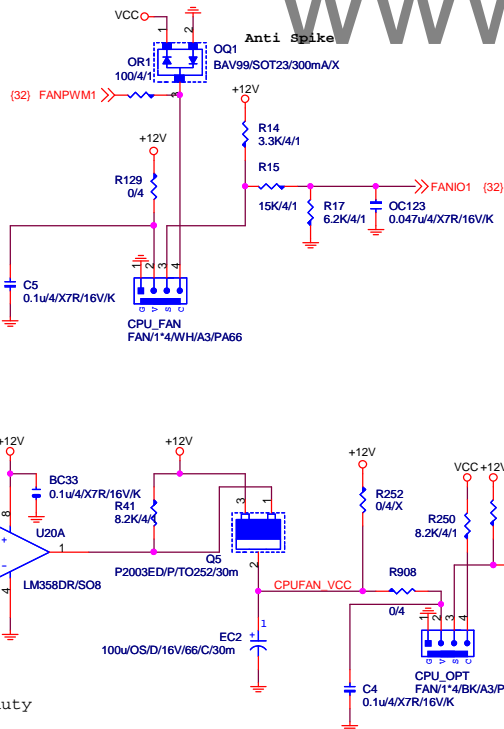
# TEMP H/W MONITOR



# VOLTAGE-- H/W MONITOR

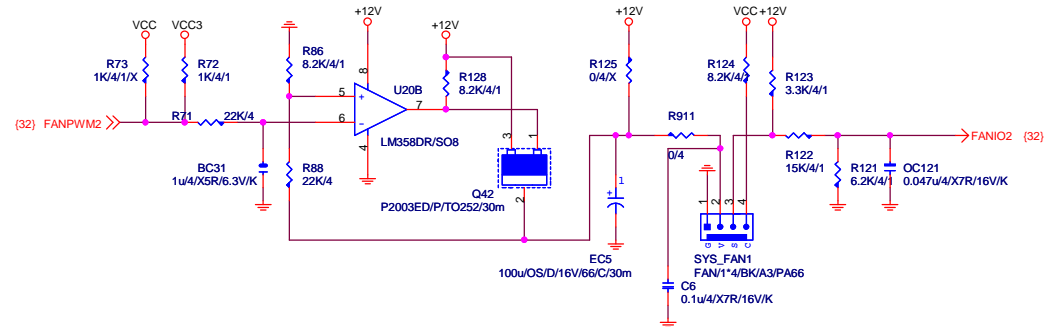


# CPU SMART FAN

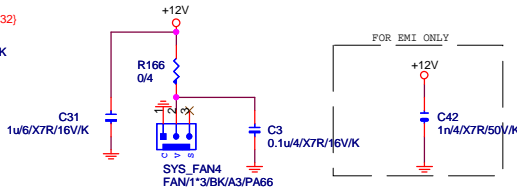
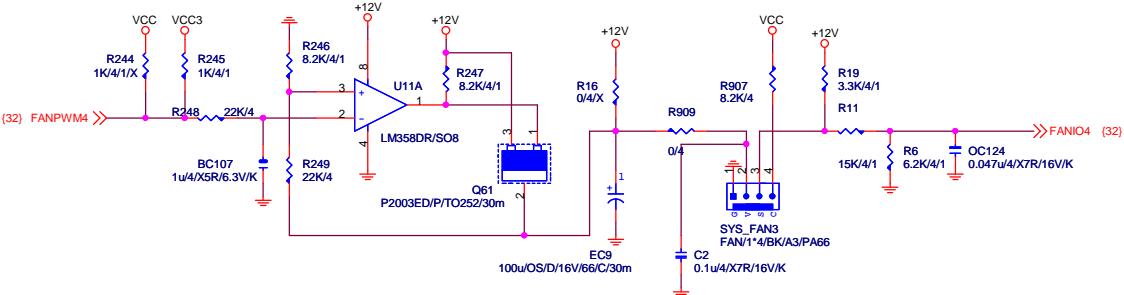
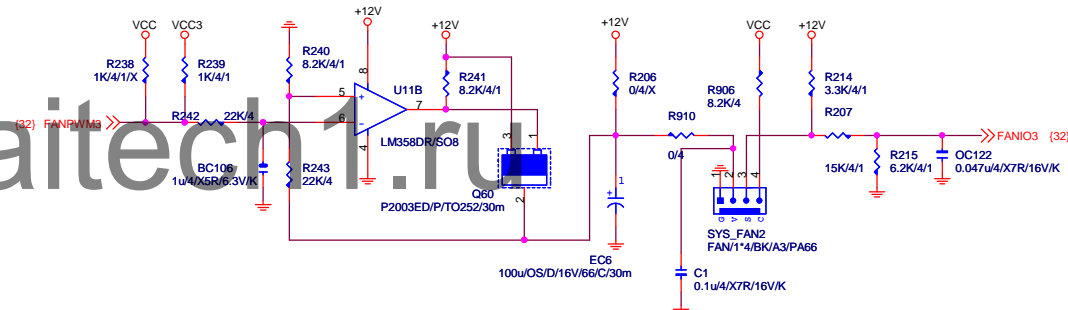


CTL5 (follow 1), default 100% duty

# Linear SYS\_FAN



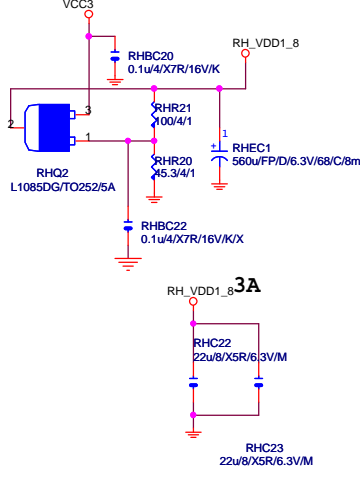
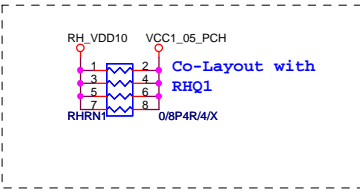
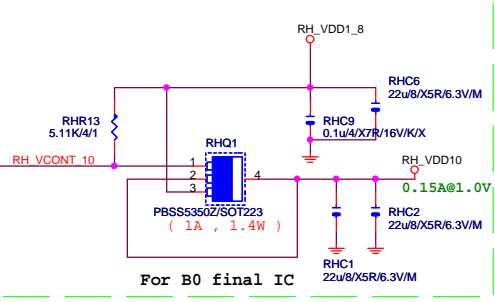
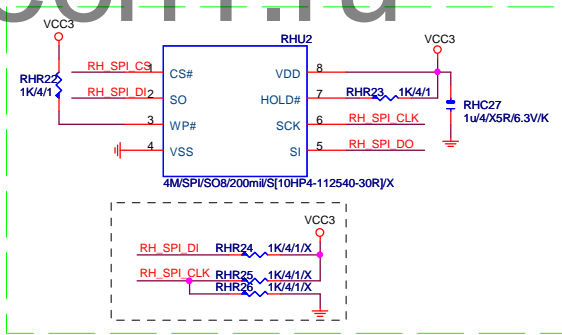
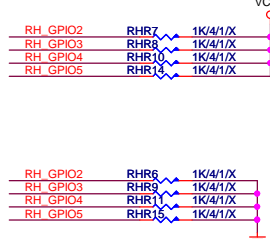
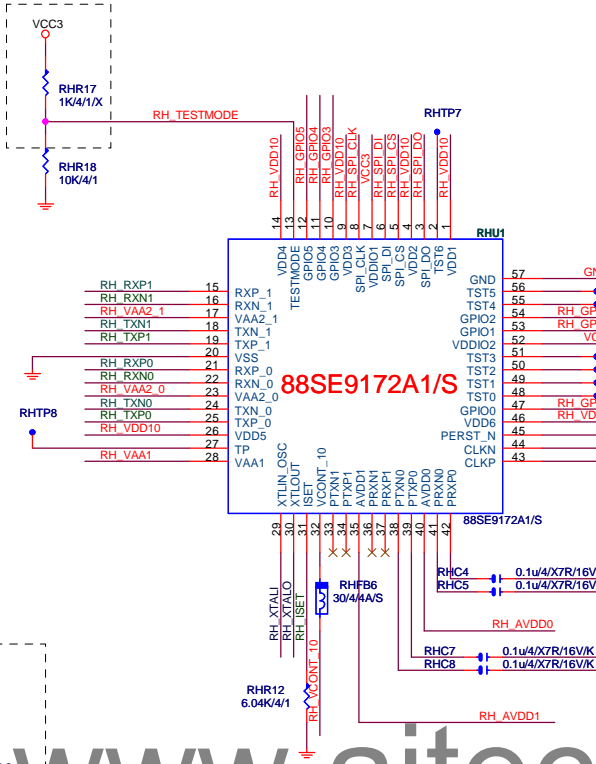
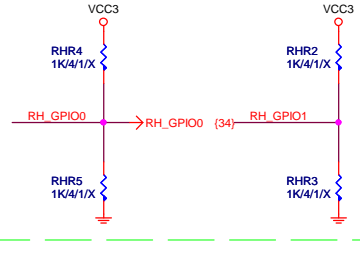
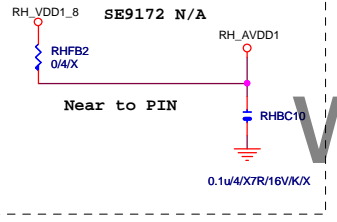
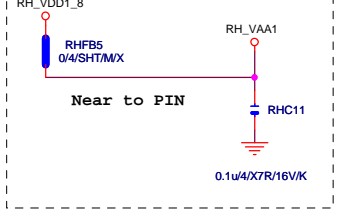
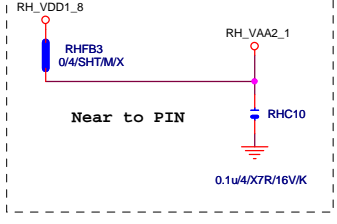
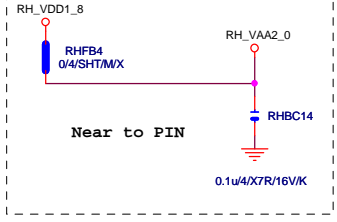
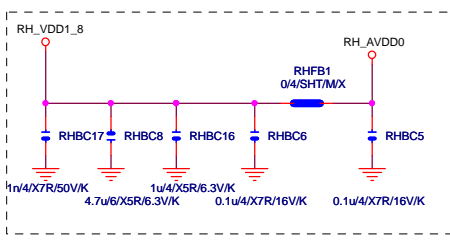
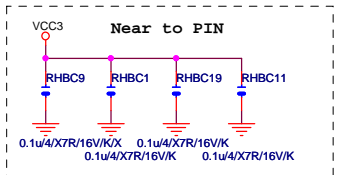
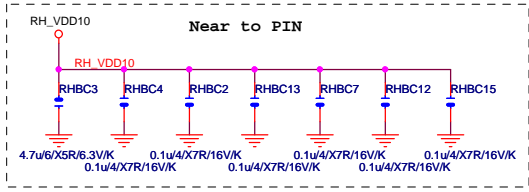
# Linear SYS\_FAN



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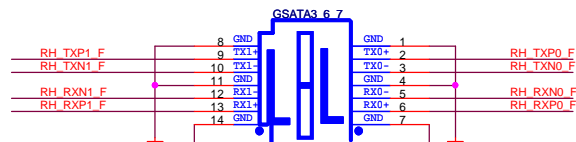
Title			
HWM, FAN CTRL			
Size	Document Number		Rev
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Date:	Tuesday, July 30, 2013	Sheet	38 of 48





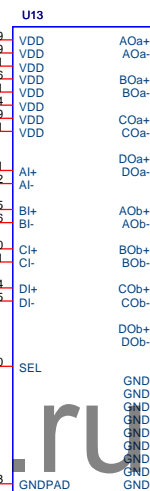
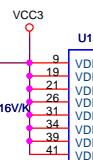
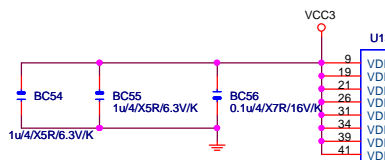
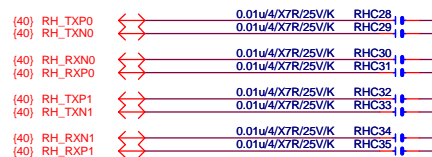
Marvell 9172 Power Requirements  
 Analog 1.8V 230mA  
 Core 1.0V 900mA  
 I/O 3.3V 50mA

Title			Marvell 9172 SATA 3.0		
Size	Document Number		GA-Z87X-UD3H		Rev
Custom					1.1
Date:	Tuesday, July 30, 2013		Sheet	40	of 48

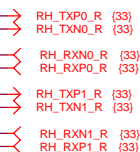


SATA14/GR/HOP/RA/D/2  
GRAY connector for SATA3

90欧姆:[15/4.5/7.5/4.5/15]



eSATA



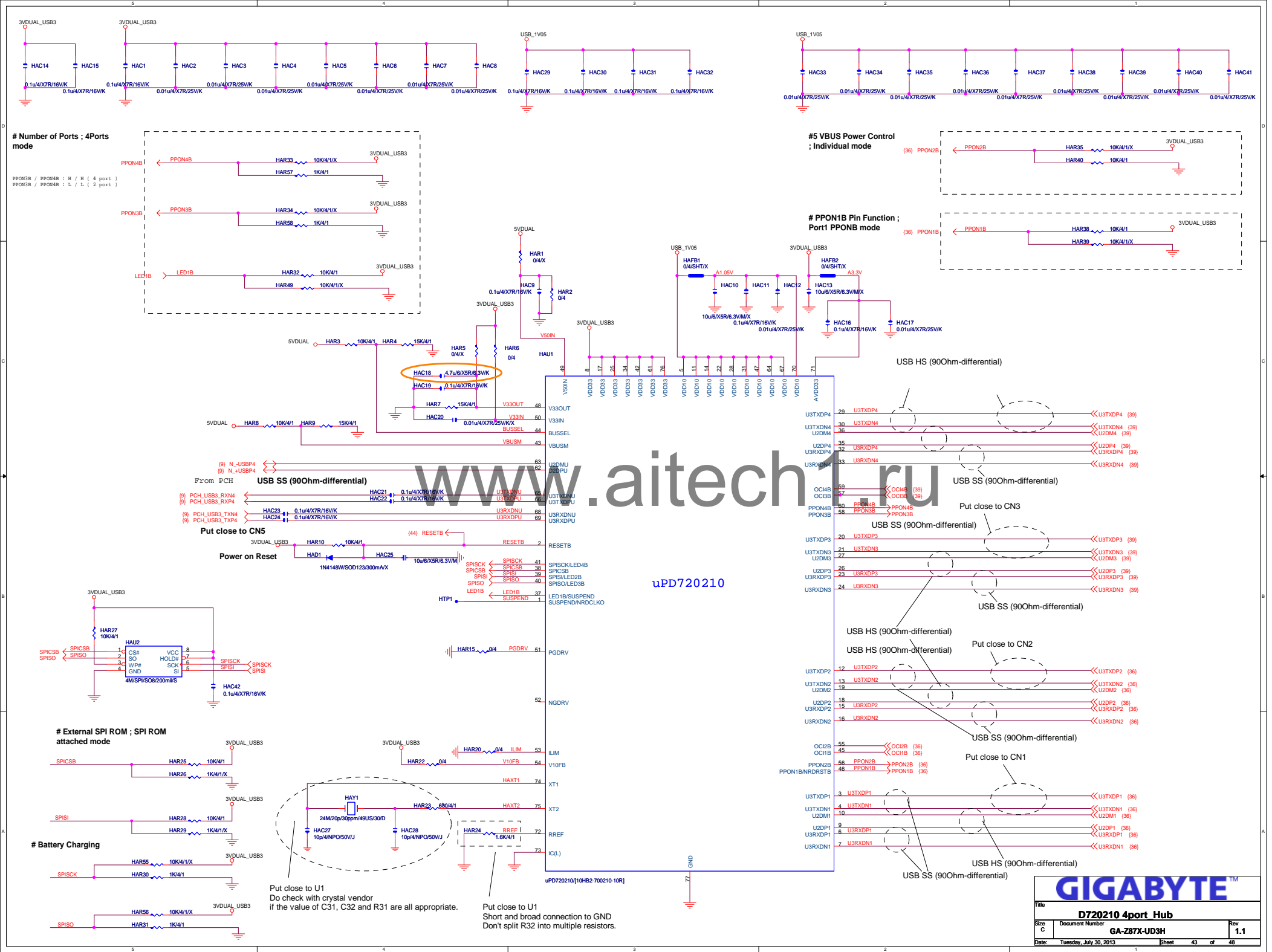
Front  
SATA

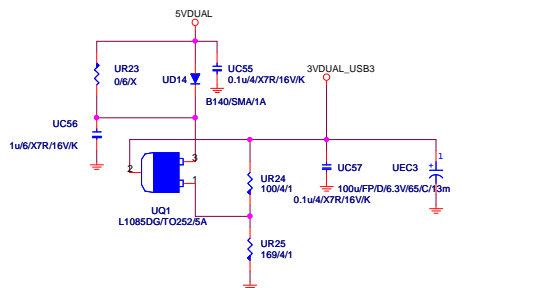
Function	SEL
xI--> xOa	L
xI--> xOb	H

www.aitech1.ru

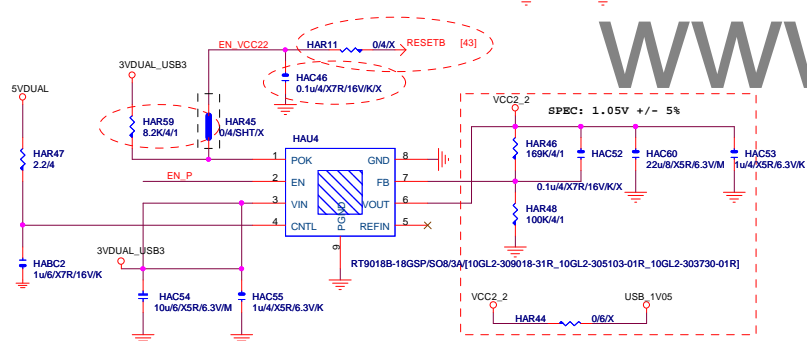
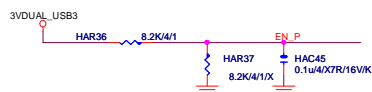
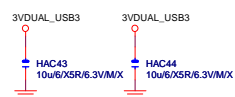
(32) IO\_GP80



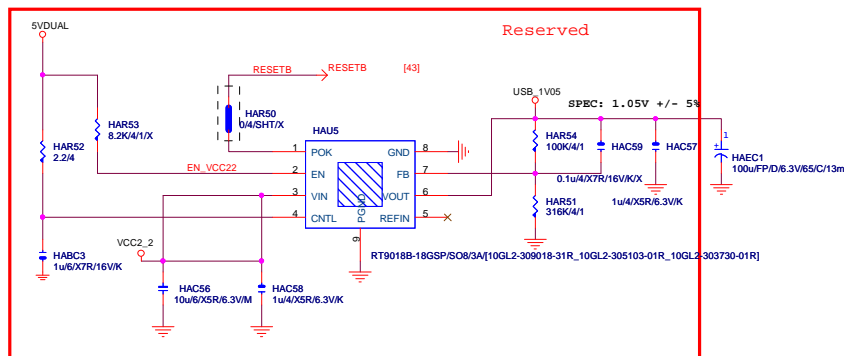




USB1\_05V power consumption is 0.7A (w/o onchip regulators)



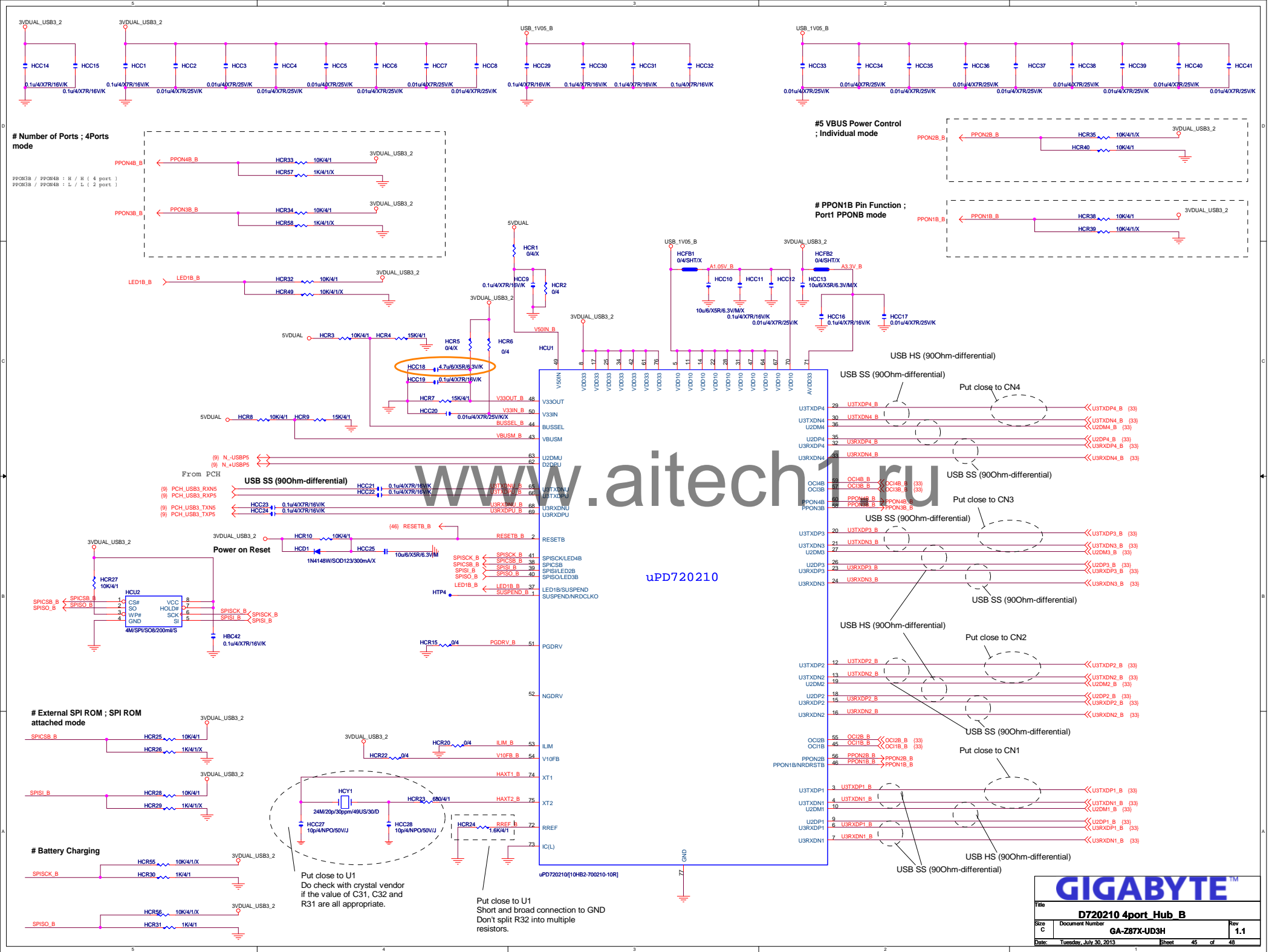
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Title			
D720210 4port Hub			
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<b>GIGABYTE™</b>		
Title <b>RESET TABLE</b>		
Size Custom	Document Number <b>GA-Z87X-UD3H</b>	Rev <b>1.1</b>
Date: Tuesday, July 30, 2013	Sheet 48	of 48