

Model Name: GA-Z68MX-UD2H-B3

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 1,2
08	DDR III CHANNEL B 1,2
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	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*16 SWITCH
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*1,*4,SWITCH
18	ITE 8728 LPC IO
19	COM,KB_USB,USB_ESATA,-PROCHOT
20	HWM,FAN CTRL,OV
21	DUAL BIOS
22	FP,FUSB,SPK,SATALED
23	ALC889
24	REAR AUDIO JACK
25	LAN RTL8111E
26	DISCRETE POWER
27	ATX,TPM

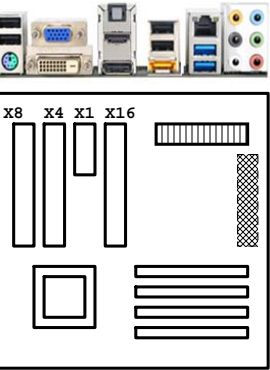
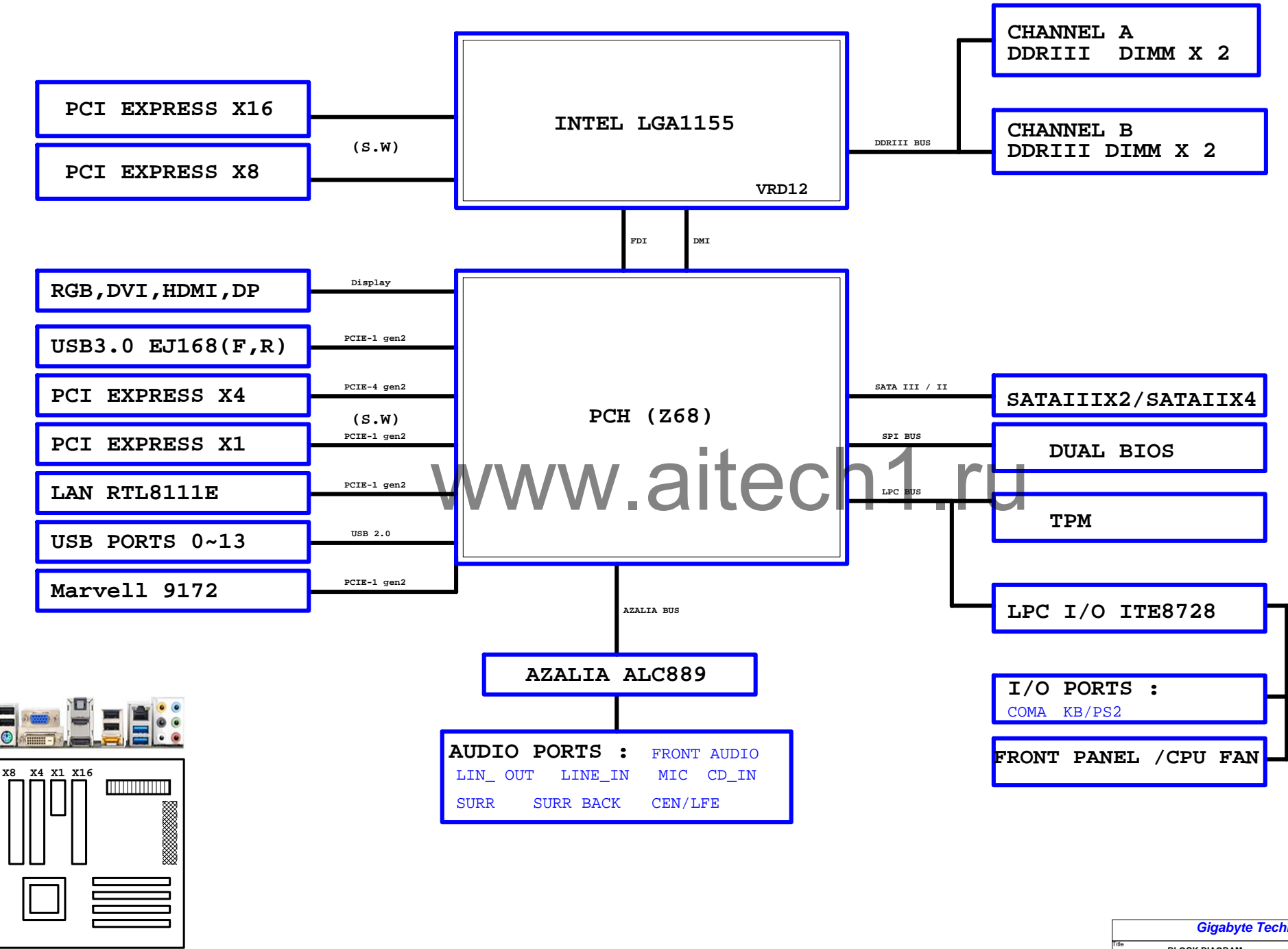
Revision 1.3

SHEET TITLE

28	HDMI/DVI/DP
29	CPU_VTT ISL6322
30	VCORE ISL6364_1,PWM
31	VCORE ISL6364_2,VCORE
32	VCORE ISL6364_3,VAXG
33	VCORE ISL6364_4,IT8275C
34	R_USB3.0-EJ168
35	F_USB3.0-EJ168
36	Marvell 9172 SATA3

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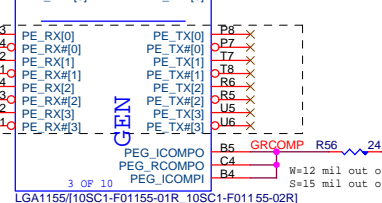
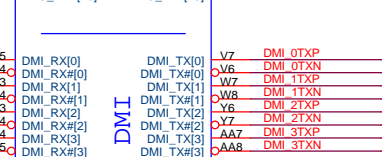
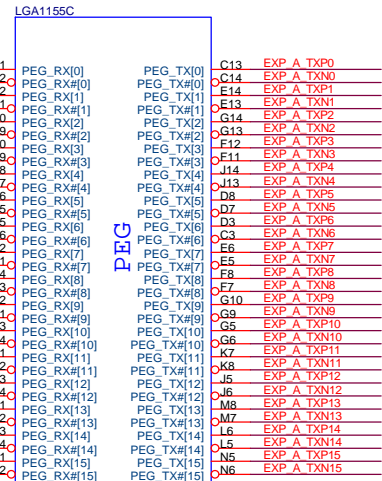
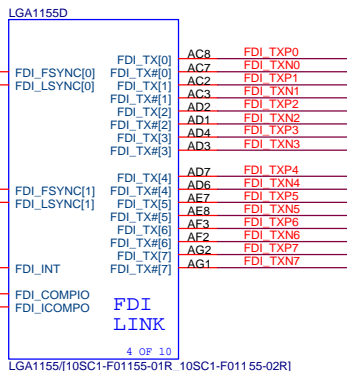
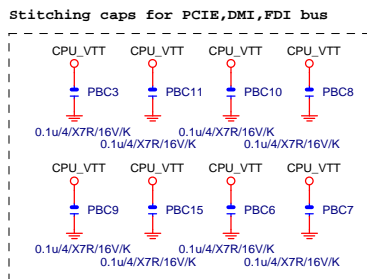
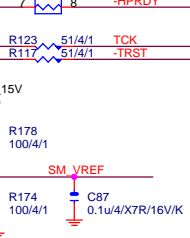
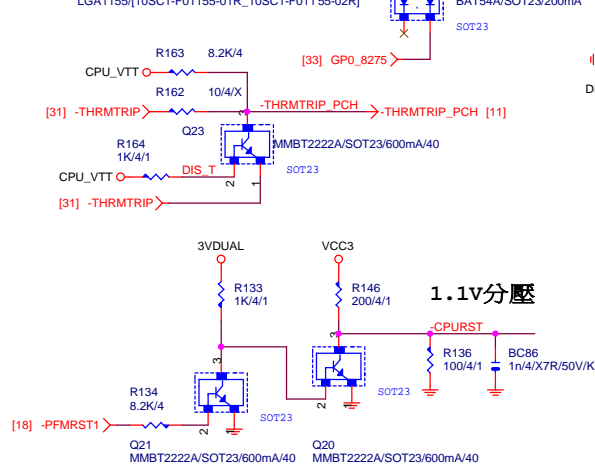
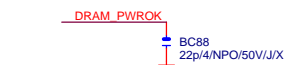
BLOCK DIAGRAM



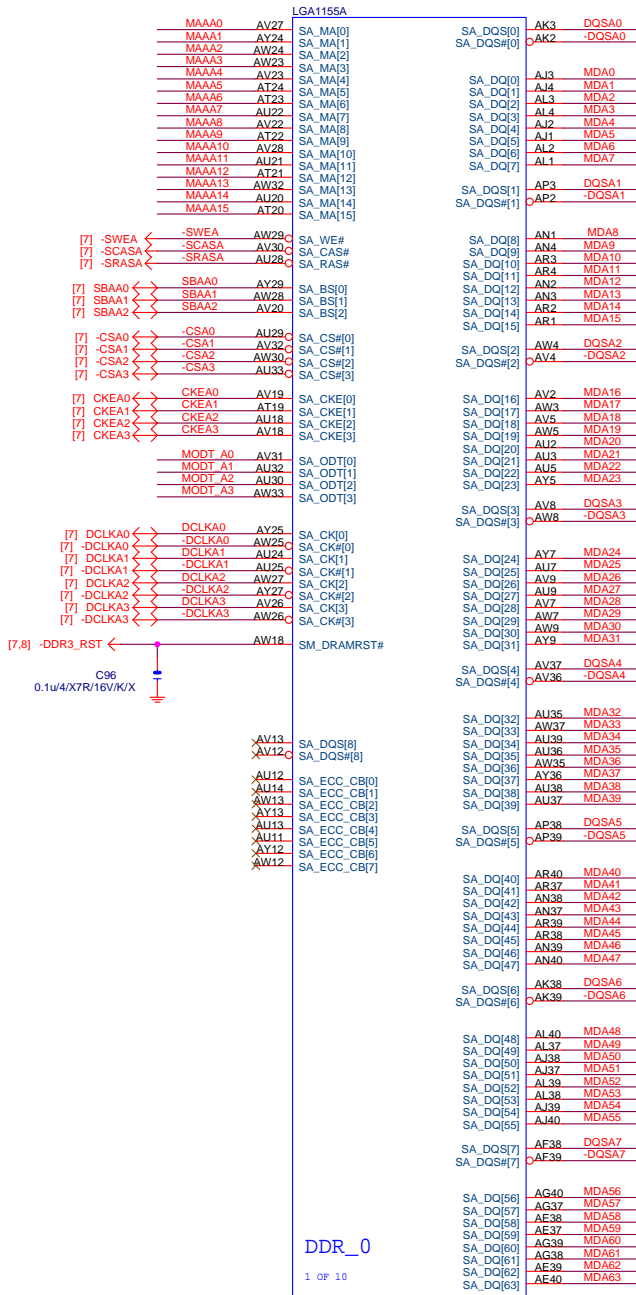
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	NORM	Reverse	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1x16, Default
1	0	2x8
0	1	RSVD
0	0	X8,X4,X4

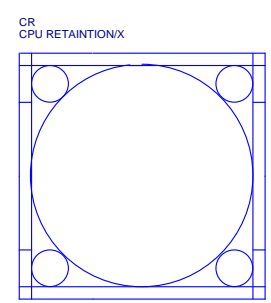
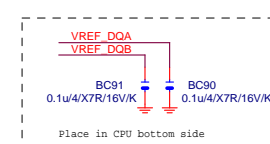
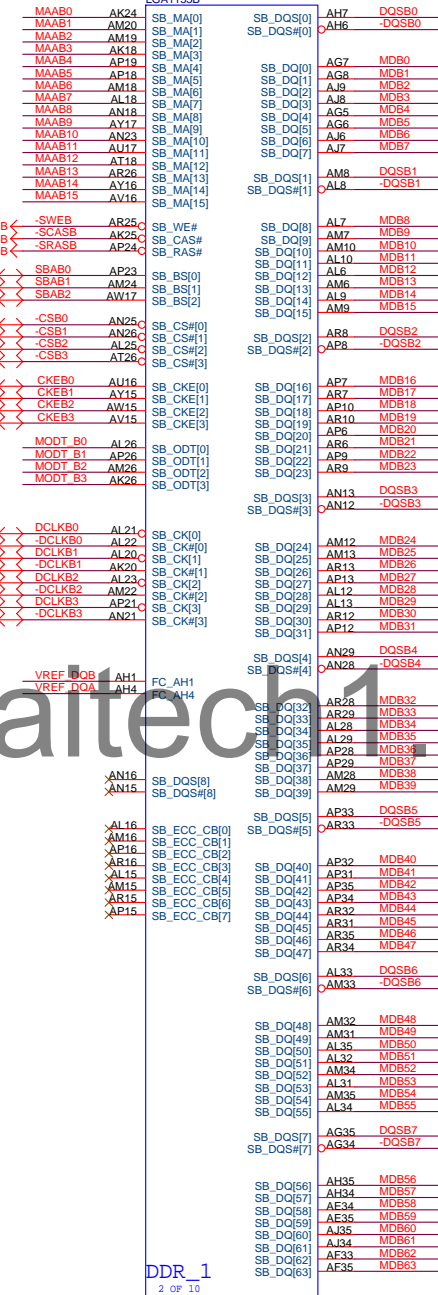
CFG 0-17 all internal PULL-UP



Gigabyte Technology			
Title			
CPU LGA1155-A			
Size	Document Number	Rev	
Cuspm	GA-Z68MX-UD2H-B3	1.3	
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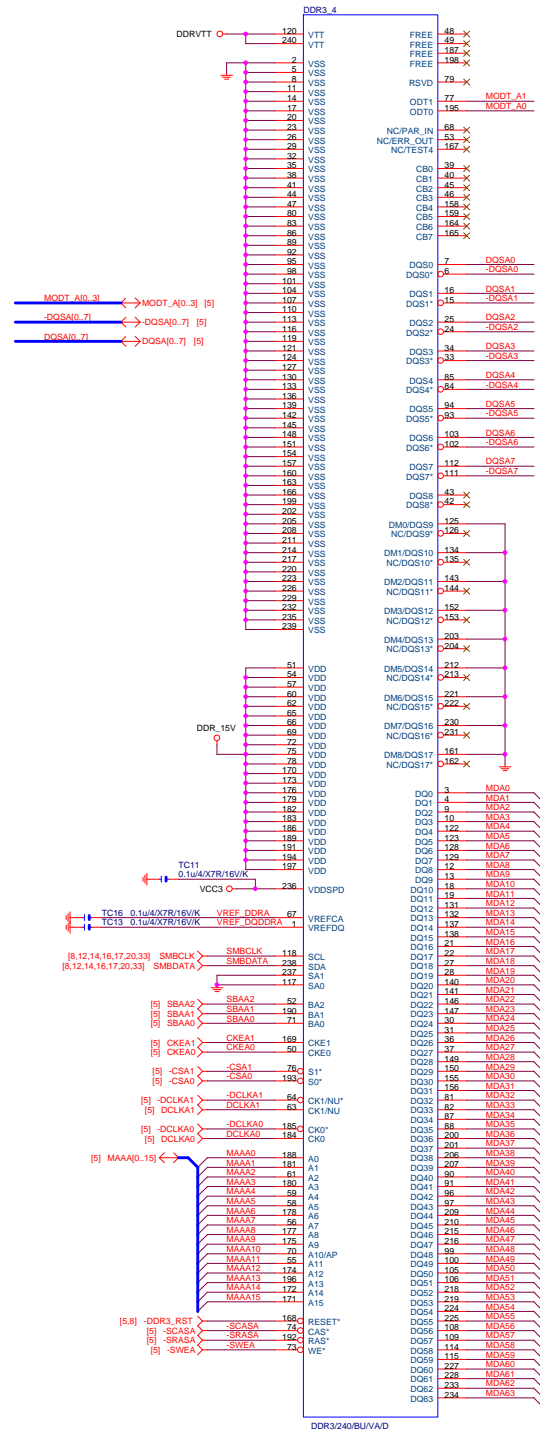


Need check the new CPU ME

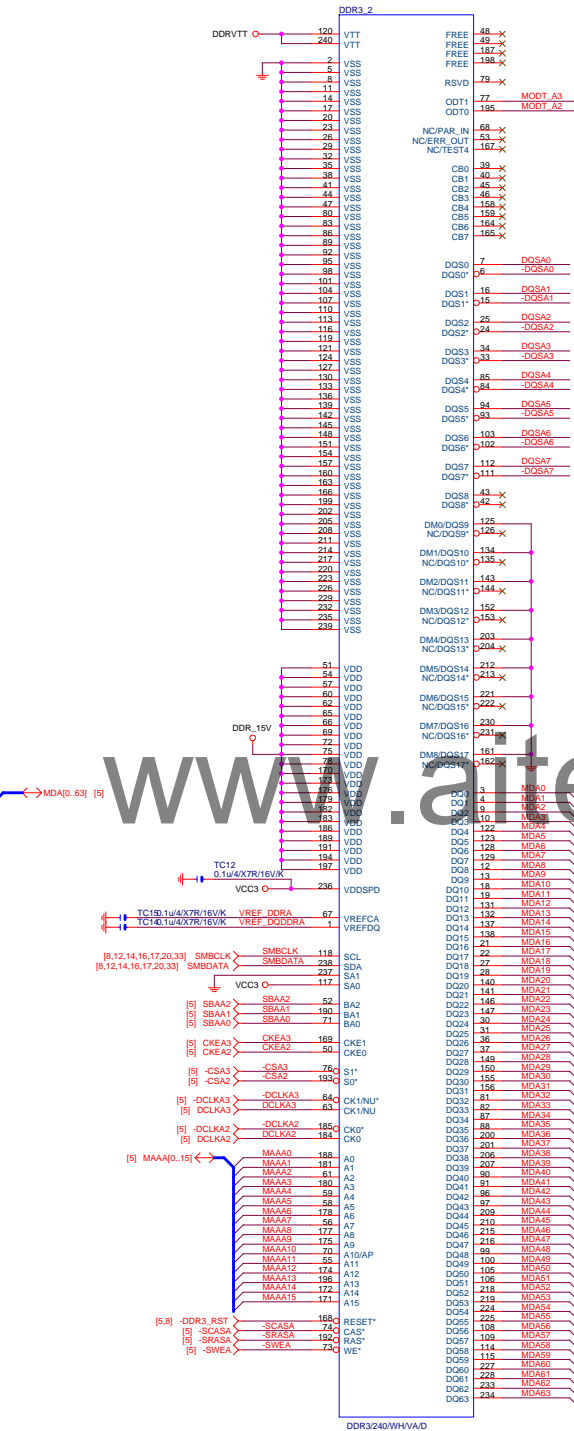
LGA1155_P



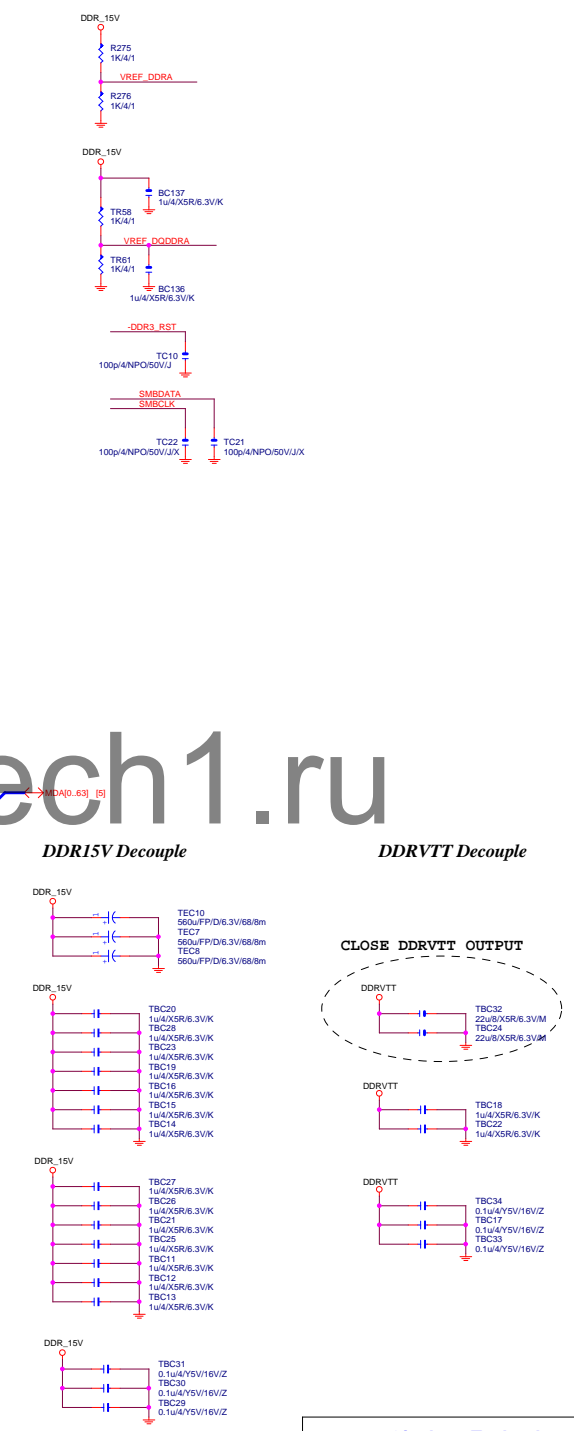
ILM_BP/1156/CSP/[12KRC-OF0001-01R_12KRC-OF0001-04R]



DDR3-4



DDR3-2



DDR3-1



DDR3-4



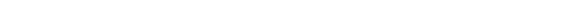
DDR3-2



DDR3-1



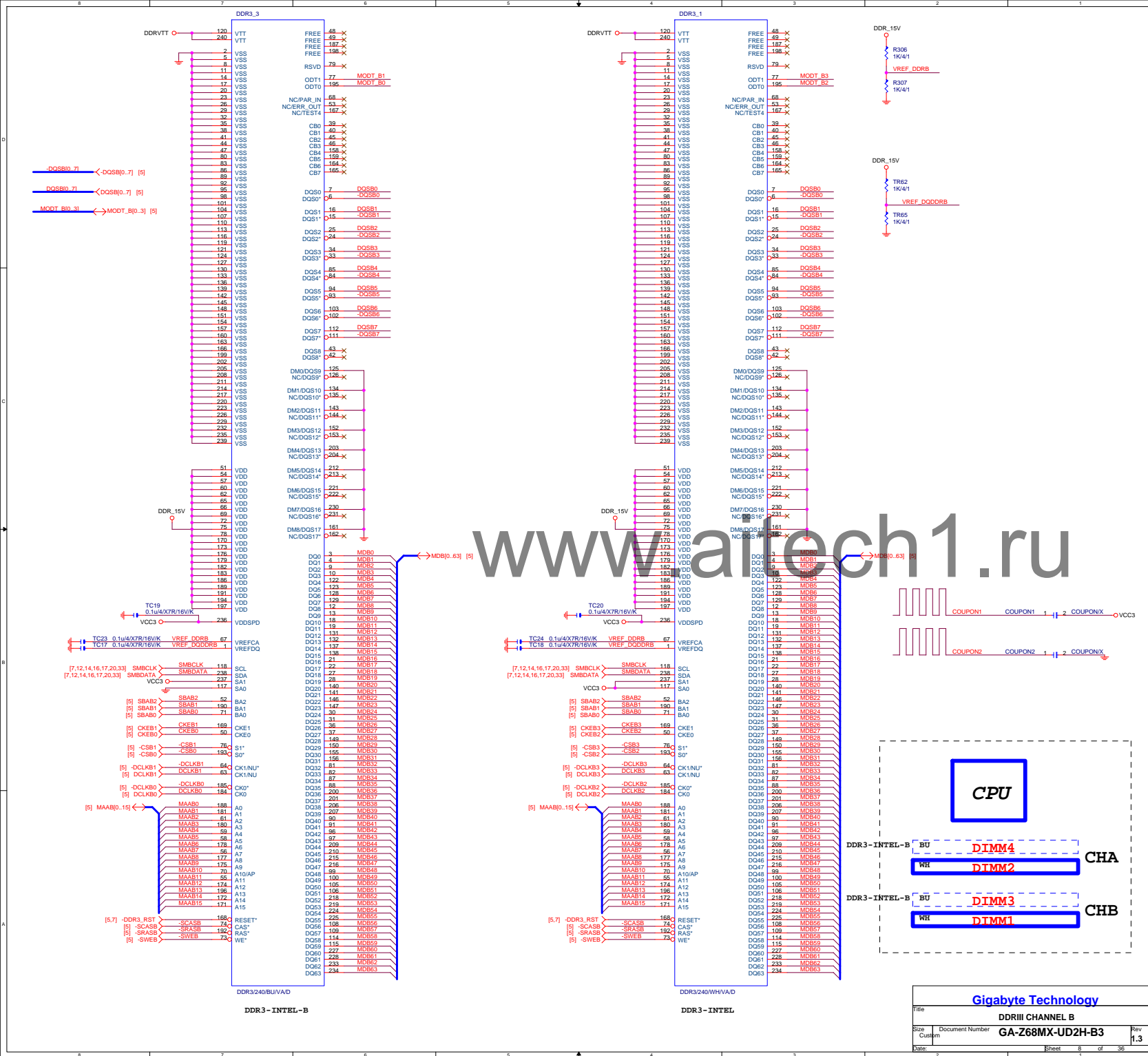
DDR3-4

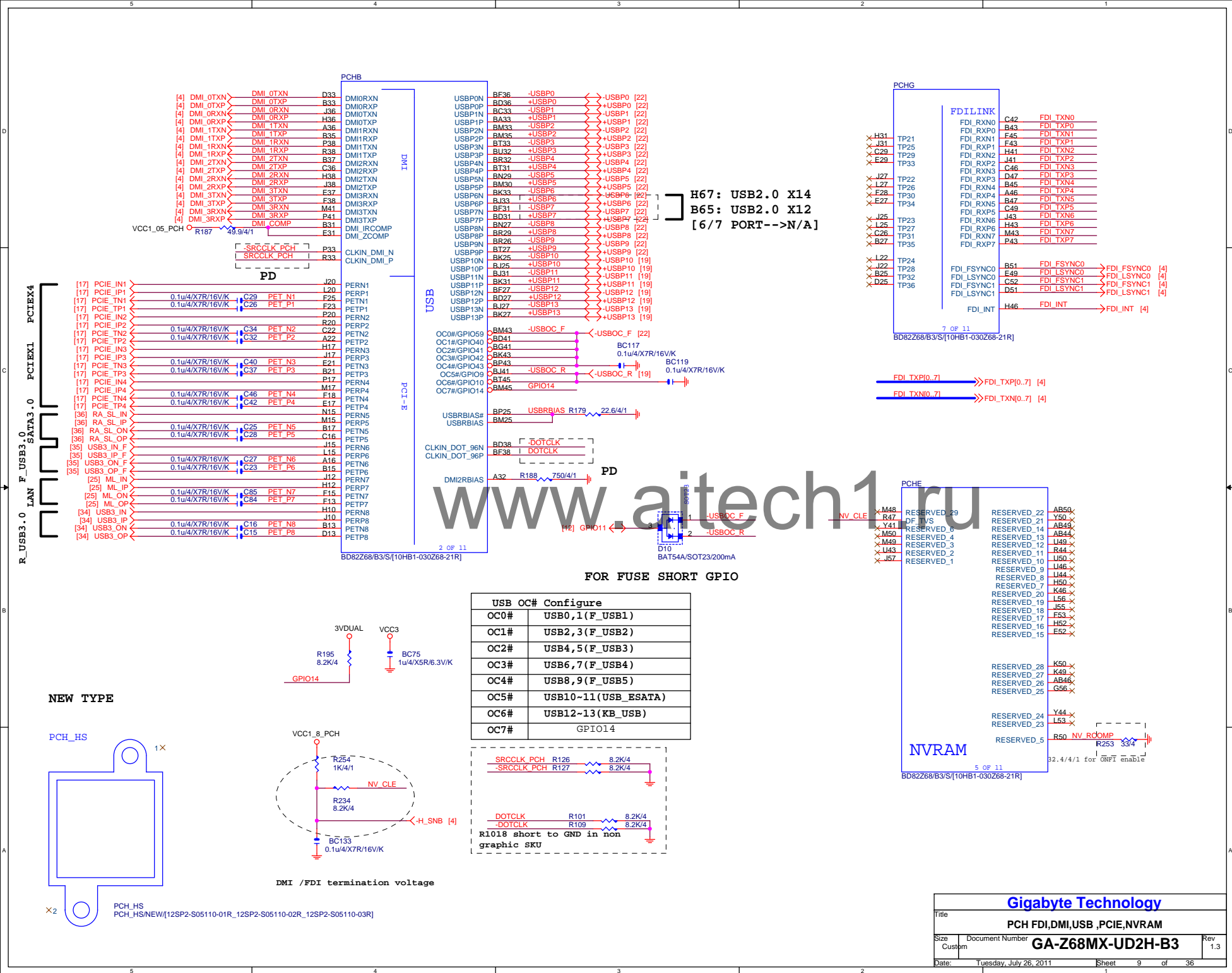


DDR3-2



DDR3-1

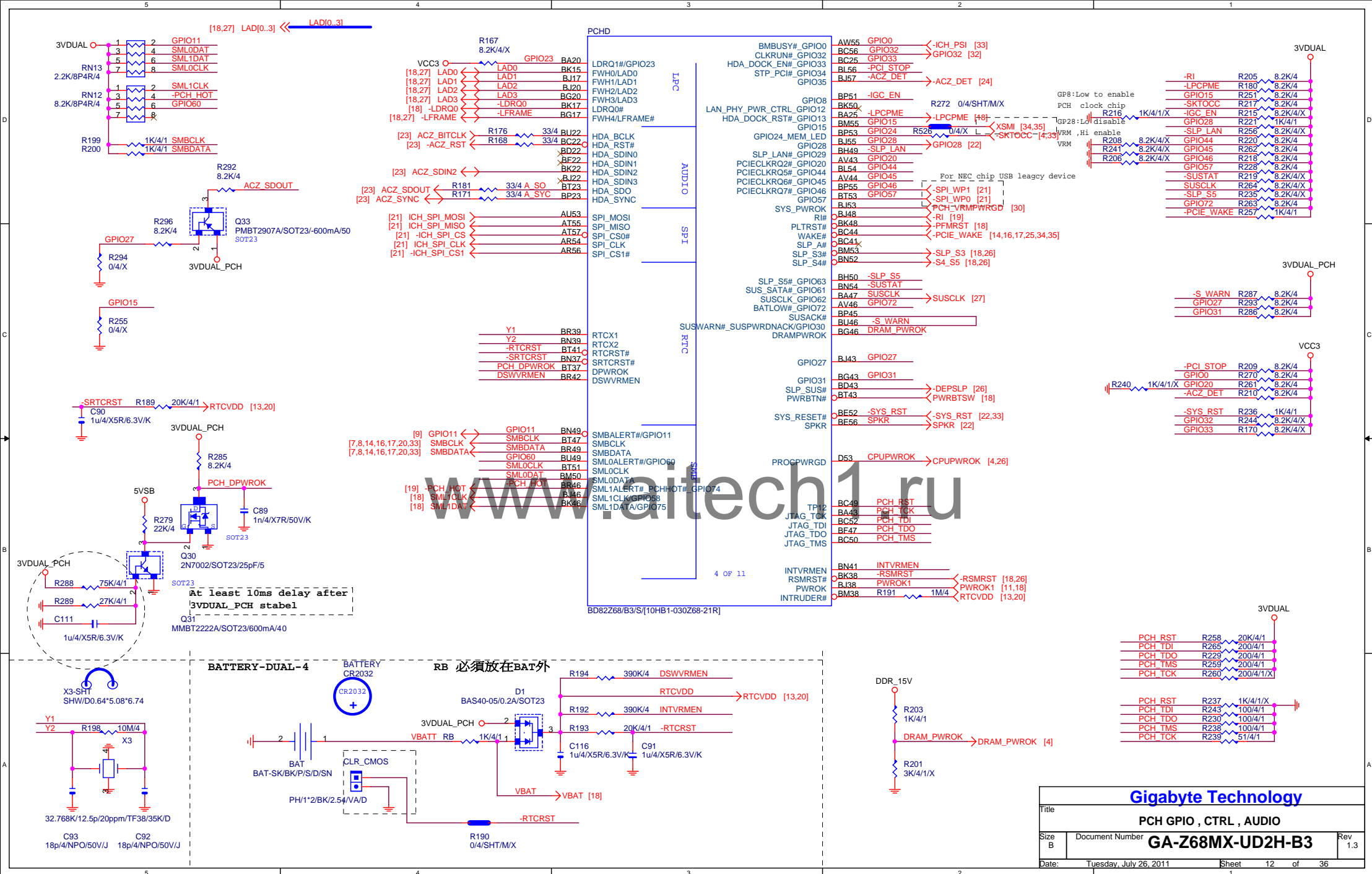


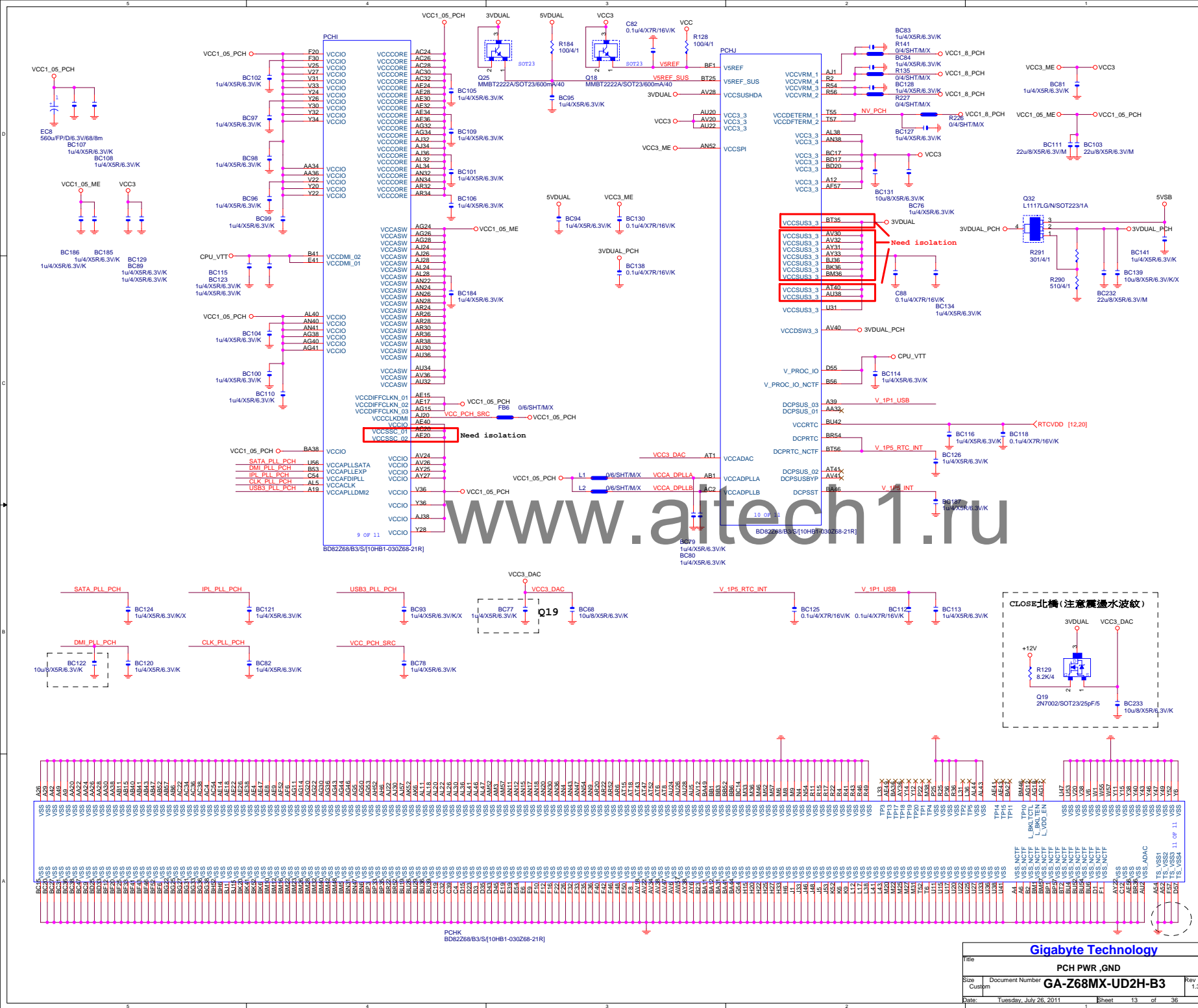


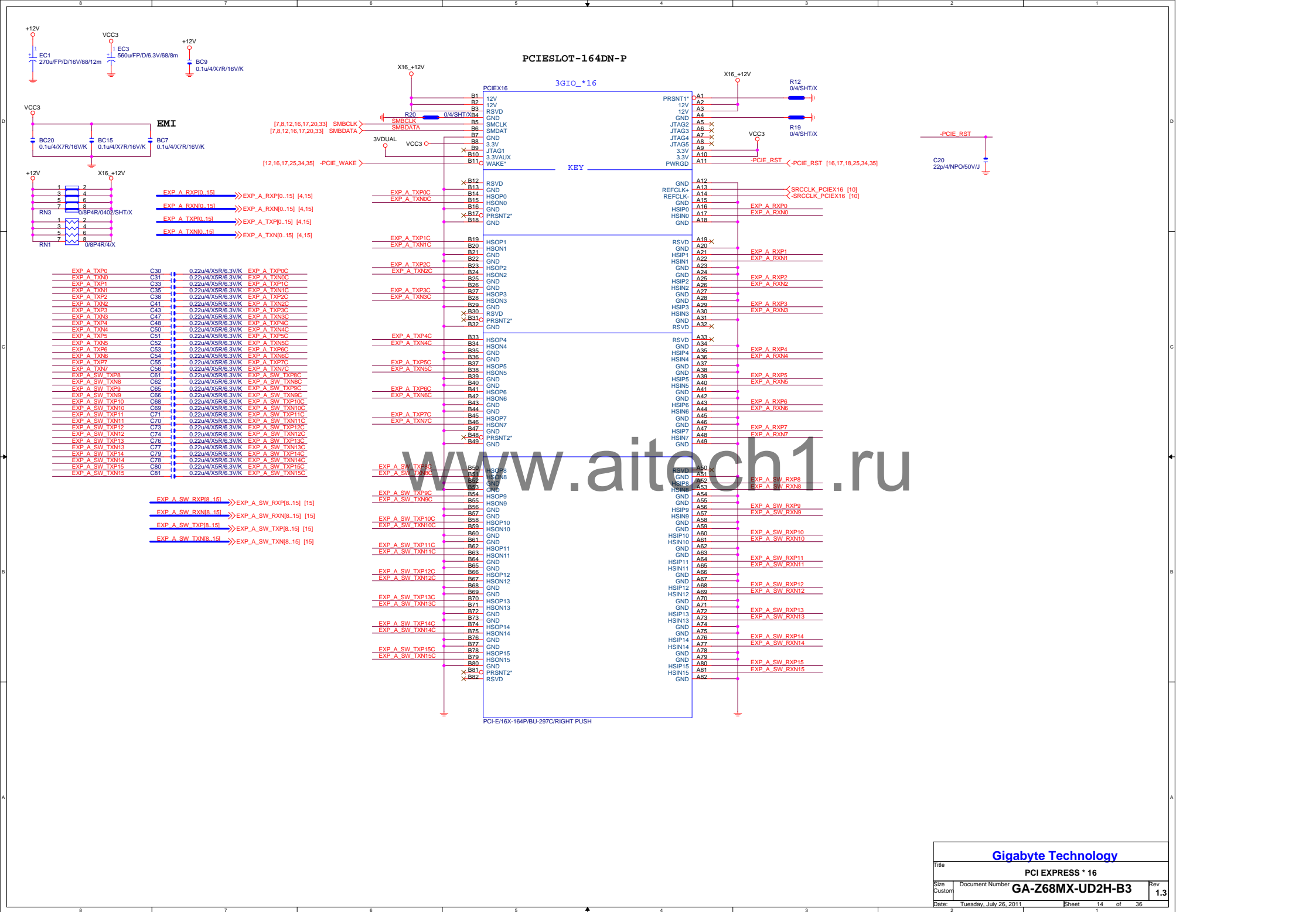
The schematic diagram illustrates the internal connections of the GA-Z68MX-UD2H-B3 motherboard, focusing on the PCH (Platform Controller Hub), SATA, and PCI interfaces. Key components and connections include:

- PCH (Platform Controller Hub):** Shows various pins and their connections to other components. Key pins include CL_CLK1, CL_DATA1, CL_RST1#, APWROK, PWM0, PWM1, PWM2, PWM3, BT17, BR19, BA22, BA22, BR16, BU16, BM18, BN17, BP15, BC43, BA53, BE54, BF55, AW53, NC_5, and AY20.
- SATA (Serial ATA):** Details connections for SATA0RXN, SATA0RXP, SATA0TXN, SATA0TXP, SATA1RXN, SATA1RXP, SATA1TXN, SATA1TXP, SATA2RXN, SATA2RXP, SATA2TXN, SATA2TXP, SATA3RXN, SATA3RXP, SATA3TXN, SATA3TXP, SATA4RXN, SATA4RXP, SATA4TXN, SATA4TXP, SATA5RXN, SATA5RXP, SATA5TXN, and SATA5TXP. It also shows connections for SATA0GP/GPIO21, SATA1GP/GPIO19, SATA2GP/GPIO36, SATA3GP/GPIO37, SATA4GP/GPIO16, and SATA5GP/GPIO49.
- PCI (Peripheral Component Interconnect):** Shows connections for various PCI pins, including PAR, DEVSEL#, CLKIN, PCIL0OPBACK, PCIRST#, IRDY#, PCIPME, AV14, SERR#, STOP#, PLOCK#, TRDY#, BC8, BC12, BC13, BC14, BC15, BC16, BC17, BC18, BC19, BC20, BC21, BC22, BC23, BC24, BC25, BC26, BC27, BC28, BC29, BC30, BC31, BC32, BC33, BC34, BC35, BC36, BC37, BC38, BC39, BC40, BC41, BC42, BC43, BC44, BC45, BC46, BC47, BC48, BC49, BC50, BC51, BC52, BC53, BC54, BC55, BC56, BC57, BC58, BC59, BC60, BC61, BC62, BC63, BC64, BC65, BC66, BC67, BC68, BC69, BC70, BC71, BC72, BC73, BC74, BC75, BC76, BC77, BC78, BC79, BC80, BC81, BC82, BC83, BC84, BC85, BC86, BC87, BC88, BC89, BC90, BC91, BC92, BC93, BC94, BC95, BC96, BC97, BC98, BC99, BC100, BC101, BC102, BC103, BC104, BC105, BC106, BC107, BC108, BC109, BC110, BC111, BC112, BC113, BC114, BC115, BC116, BC117, BC118, BC119, BC120, BC121, BC122, BC123, BC124, BC125, BC126, BC127, BC128, BC129, BC130, BC131, BC132, BC133, BC134, BC135, BC136, BC137, BC138, BC139, 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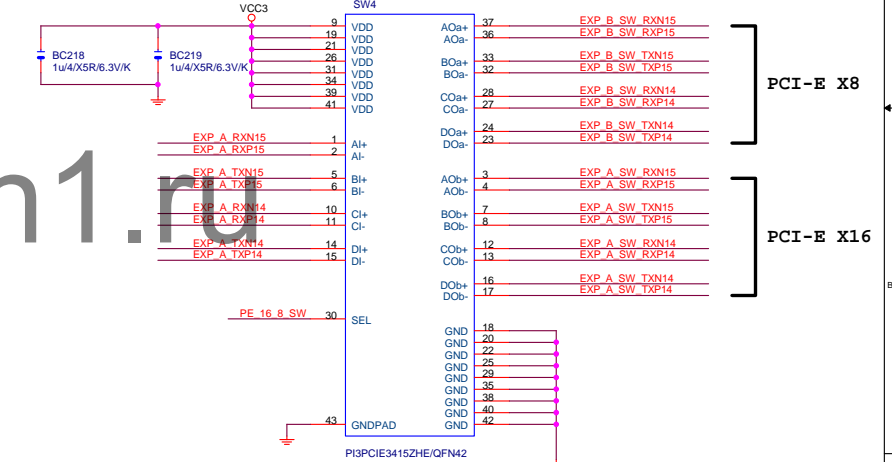
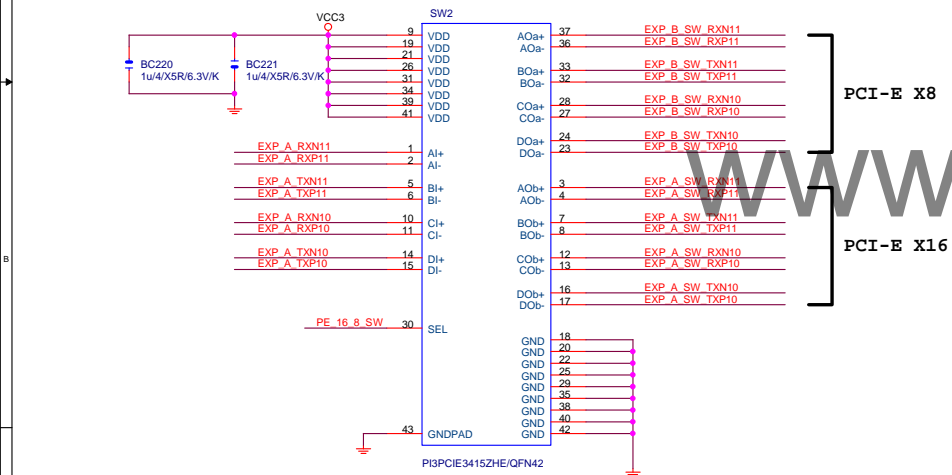
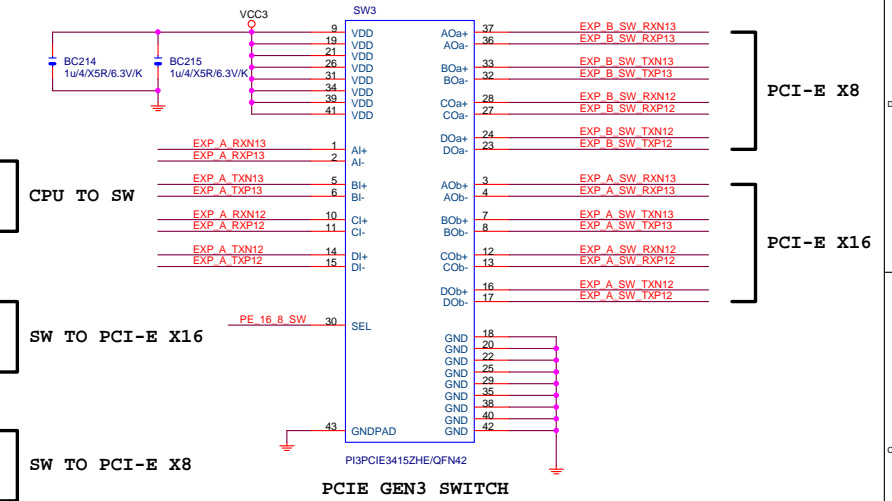
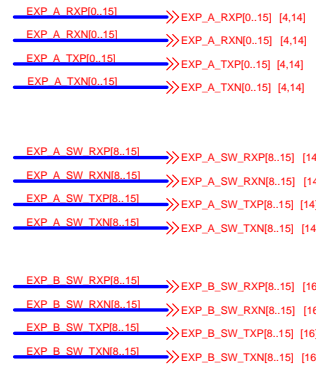
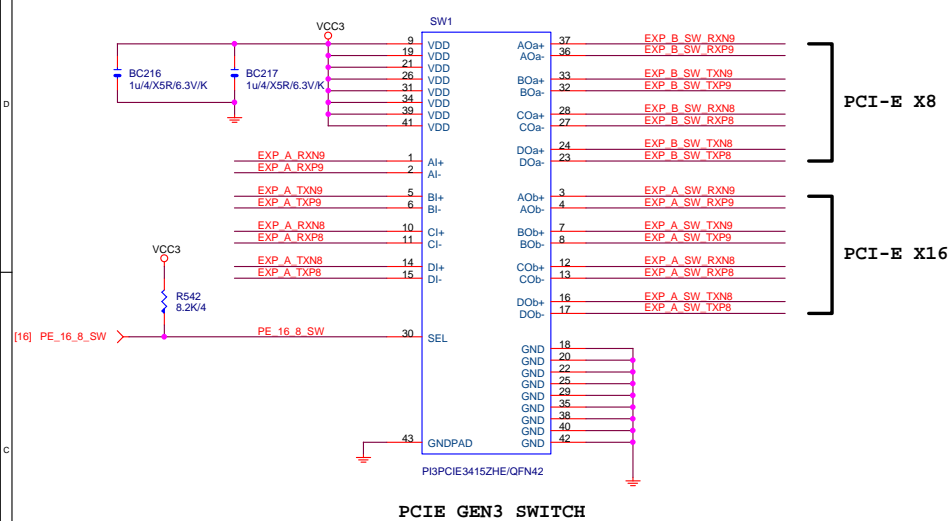
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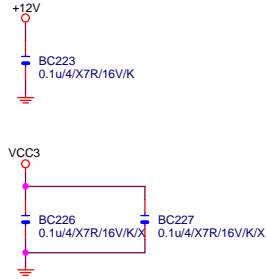
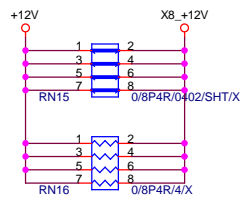






Function	SEL
xI--> xOa	L
xI--> xOb	H





[7,8,12,14,17,20,33] SMBCLK > SMBCLK R546 10/4
[7,8,12,14,17,20,33] SMBDATA > SMBDATA R547 10/4

[12,14,17,25,34,35] -PCIE_WAKE >

EXP B_SW_TXP9C
EXP B_SW_TXN9C

EXP B_SW_TXP10C
EXP B_SW_TXN10C

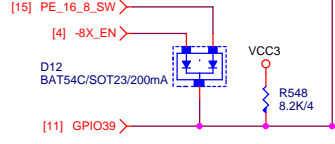
EXP B_SW_TXP11C
EXP B_SW_TXN11C

EXP B_SW_TXP12C
EXP B_SW_TXN12C

EXP B_SW_TXP13C
EXP B_SW_TXN13C

EXP B_SW_TXP14C
EXP B_SW_TXN14C

EXP B_SW_TXP15C
EXP B_SW_TXN15C



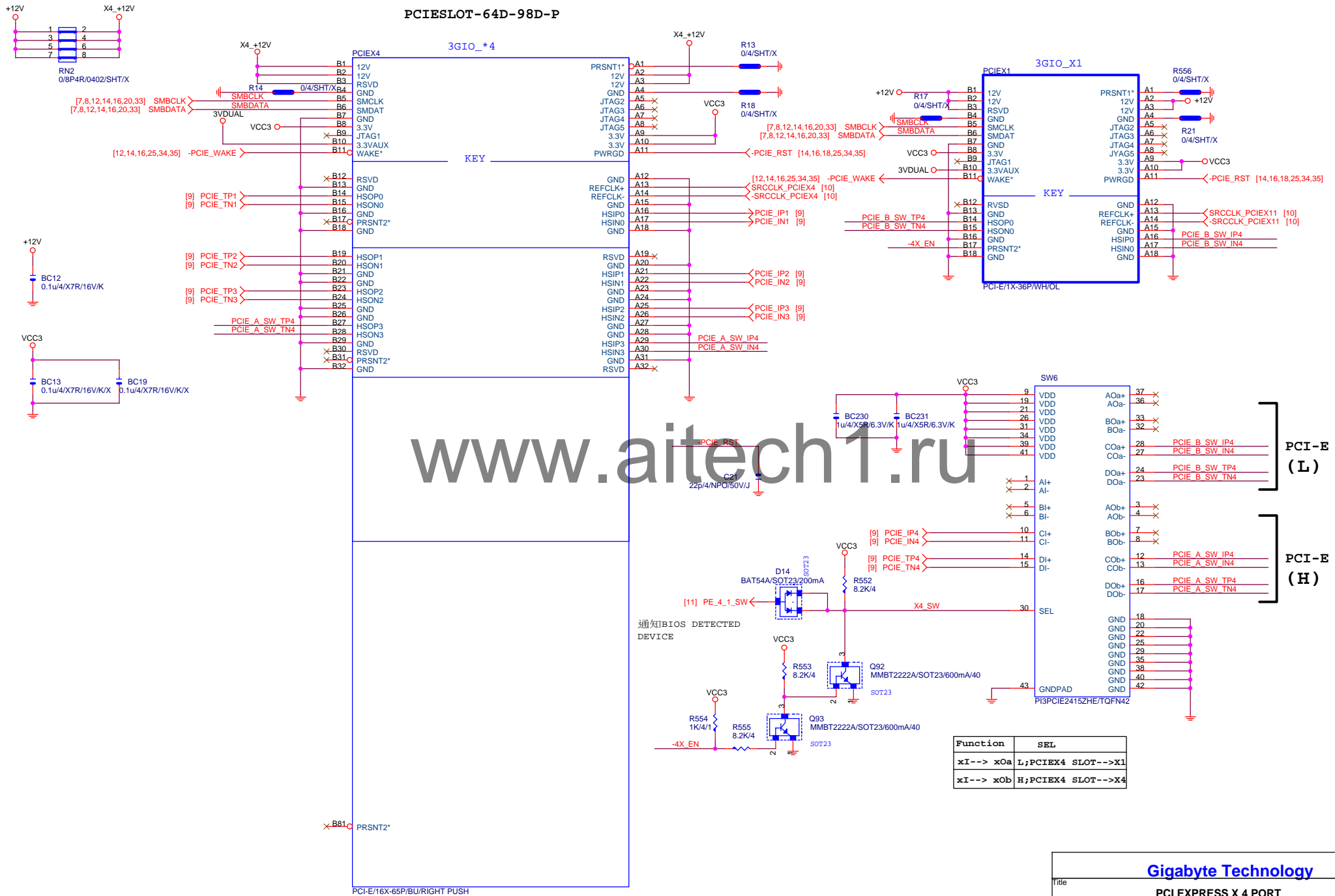
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PCI-E/16X-99P/BU/RIGHT PUSH

EXP B_SW_RXP8_15 >> EXP_B_SW_RXP[8..15] [15]
EXP B_SW_RXN8_15 >> EXP_B_SW_RXN[8..15] [15]
EXP B_SW_TXP8_15 >> EXP_B_SW_TXP[8..15] [15]
EXP B_SW_TXN8_15 >> EXP_B_SW_TXN[8..15] [15]

EXP B_SW_TXP8	C180	0.22u4/X5R/6.3V/K	EXP B_SW_TXP8C
EXP B_SW_TXN8	C181	0.22u4/X5R/6.3V/K	EXP B_SW_TXN8C
EXP B_SW_TXP9	C182	0.22u4/X5R/6.3V/K	EXP B_SW_TXP9C
EXP B_SW_TXN9	C183	0.22u4/X5R/6.3V/K	EXP B_SW_TXN9C
EXP B_SW_TXP10	C184	0.22u4/X5R/6.3V/K	EXP B_SW_TXP10C
EXP B_SW_TXN10	C185	0.22u4/X5R/6.3V/K	EXP B_SW_TXN10C
EXP B_SW_TXP11	C186	0.22u4/X5R/6.3V/K	EXP B_SW_TXP11C
EXP B_SW_TXN11	C187	0.22u4/X5R/6.3V/K	EXP B_SW_TXN11C
EXP B_SW_TXP12	C188	0.22u4/X5R/6.3V/K	EXP B_SW_TXP12C
EXP B_SW_TXN12	C189	0.22u4/X5R/6.3V/K	EXP B_SW_TXN12C
EXP B_SW_TXP13	C190	0.22u4/X5R/6.3V/K	EXP B_SW_TXP13C
EXP B_SW_TXN13	C191	0.22u4/X5R/6.3V/K	EXP B_SW_TXN13C
EXP B_SW_TXP14	C192	0.22u4/X5R/6.3V/K	EXP B_SW_TXP14C
EXP B_SW_TXN14	C193	0.22u4/X5R/6.3V/K	EXP B_SW_TXN14C
EXP B_SW_TXP15	C194	0.22u4/X5R/6.3V/K	EXP B_SW_TXP15C
EXP B_SW_TXN15	C195	0.22u4/X5R/6.3V/K	EXP B_SW_TXN15C

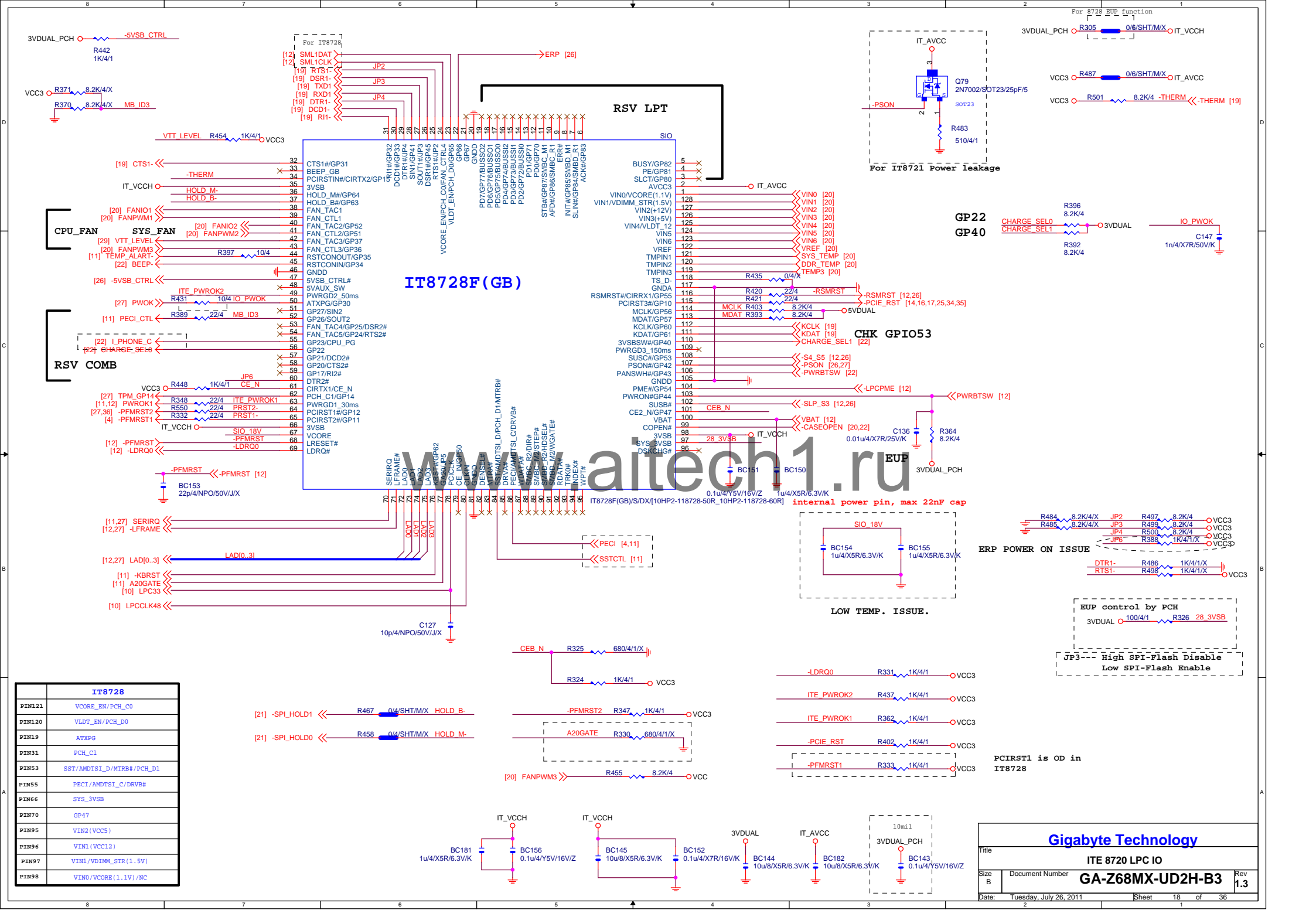
PCIESLOT-64D-98D-P



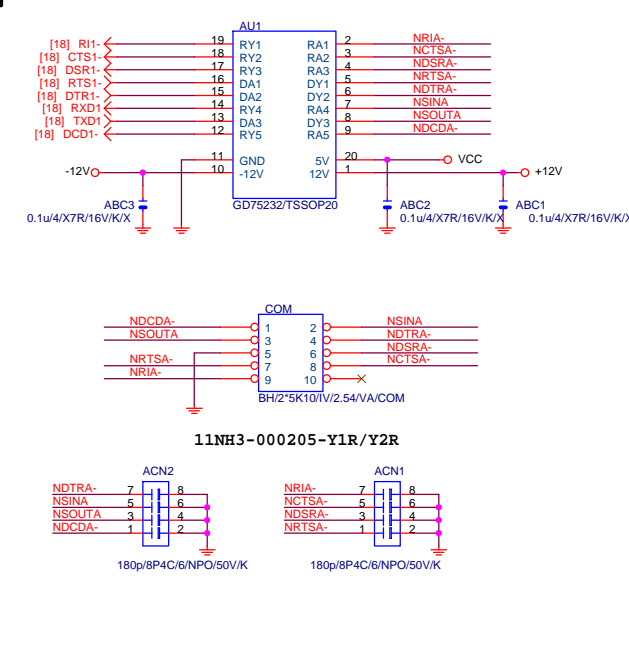
Function	SEL
xI--> x0a L;PCIEX4 SLOT-->x1	
xI--> x0b H;PCIEX4 SLOT-->x4	

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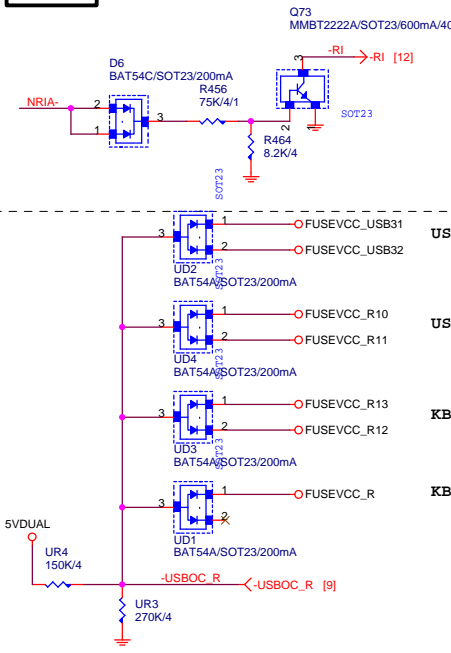
Title		
PCI EXPRESS X 4 PORT		
Size	Document Number	Rev
Custom	GA-Z68MX-UD2H-B3	1.3
Date:	Tuesday, July 26, 2011	Sheet 17 of 36



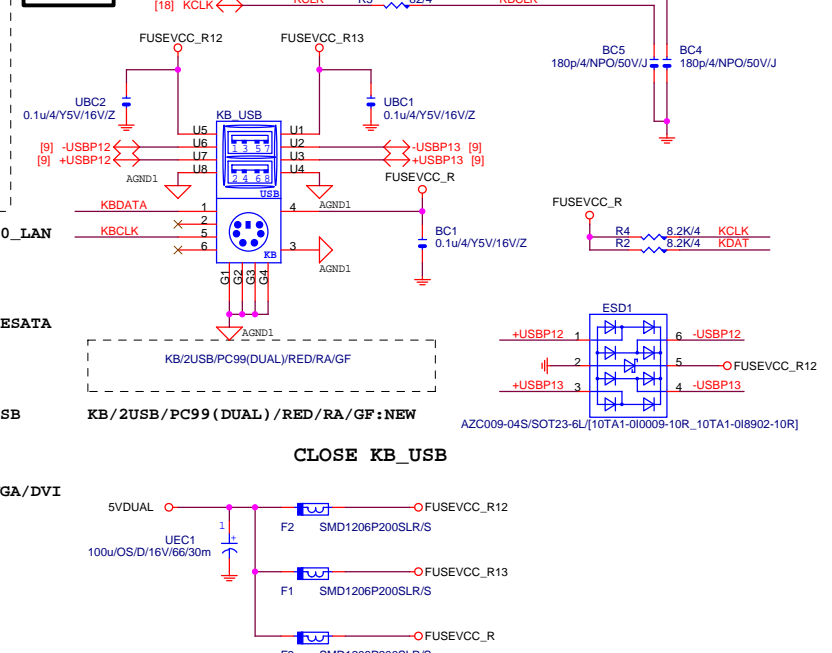
COM



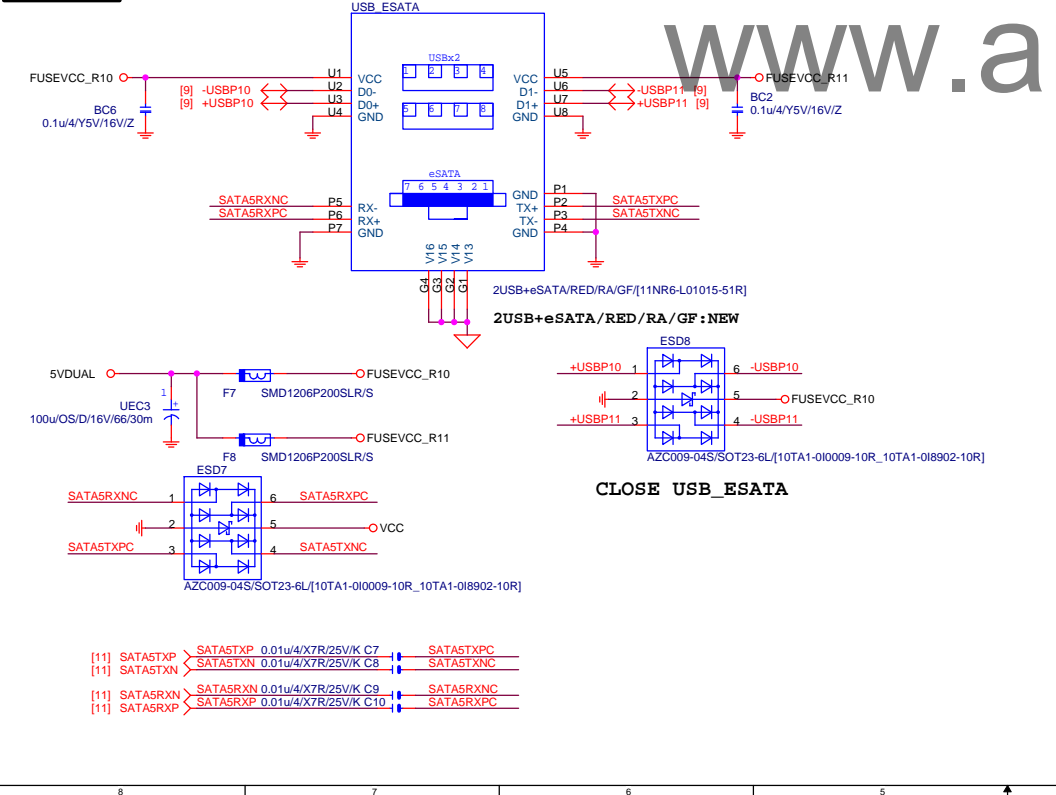
COM RI



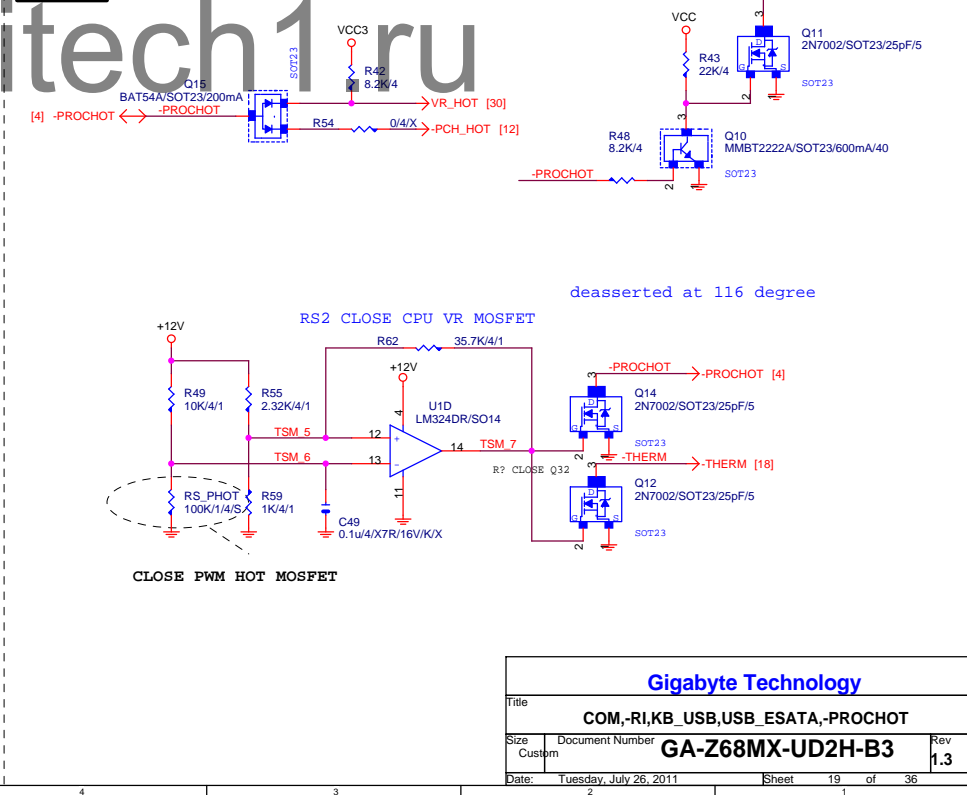
KB/USB



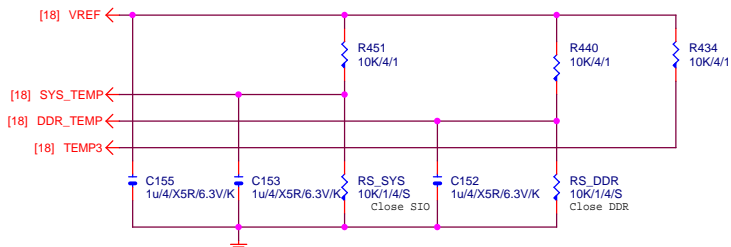
USB_ESATA



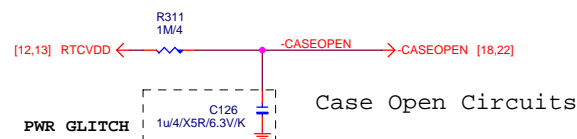
-PROHOT



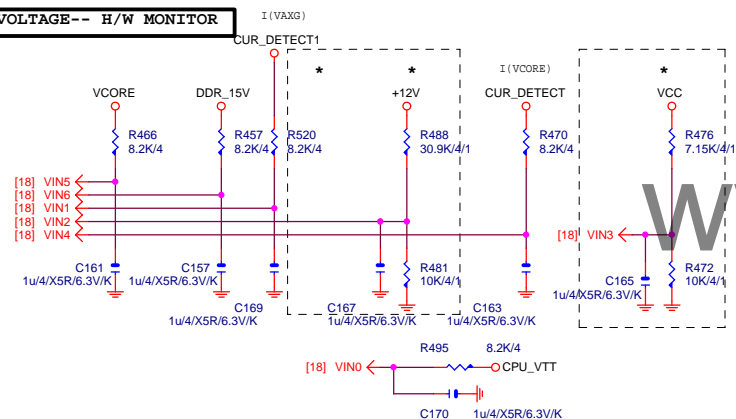
TEMP H/W MONITOR



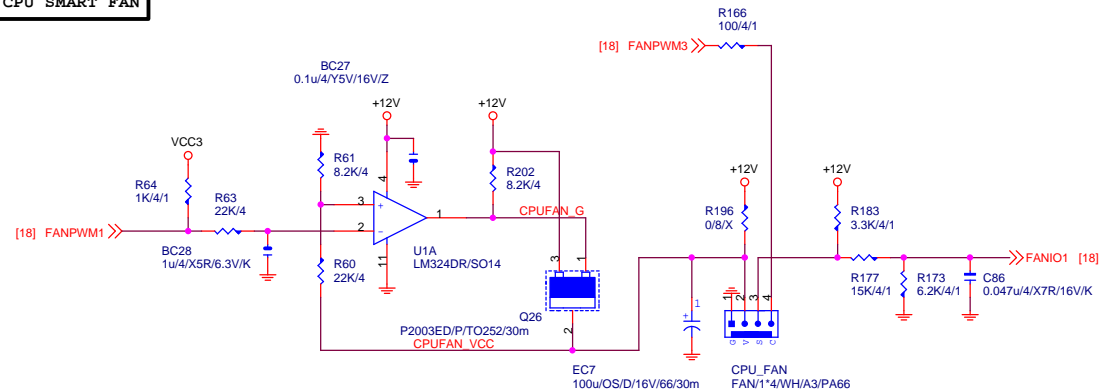
CASE OPEN



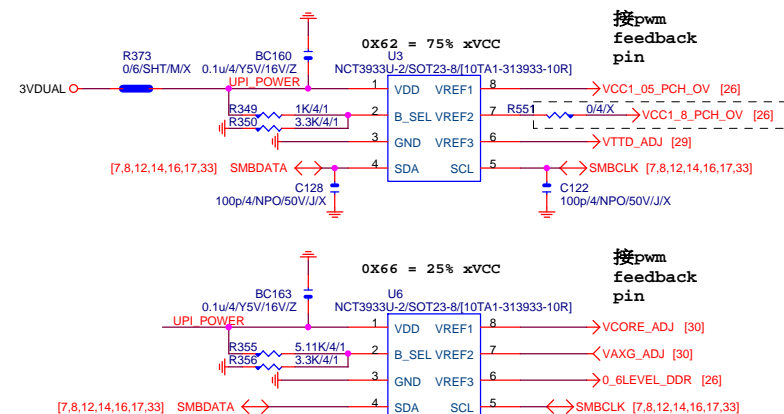
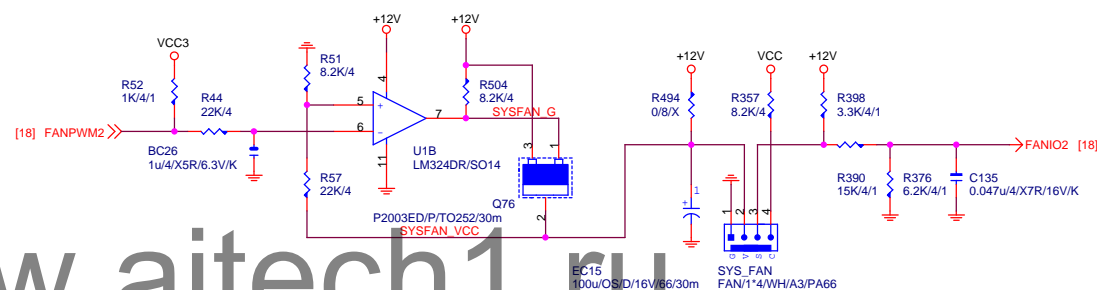
VOLTAGE-- H/W MONITOR



CPU SMART FAN



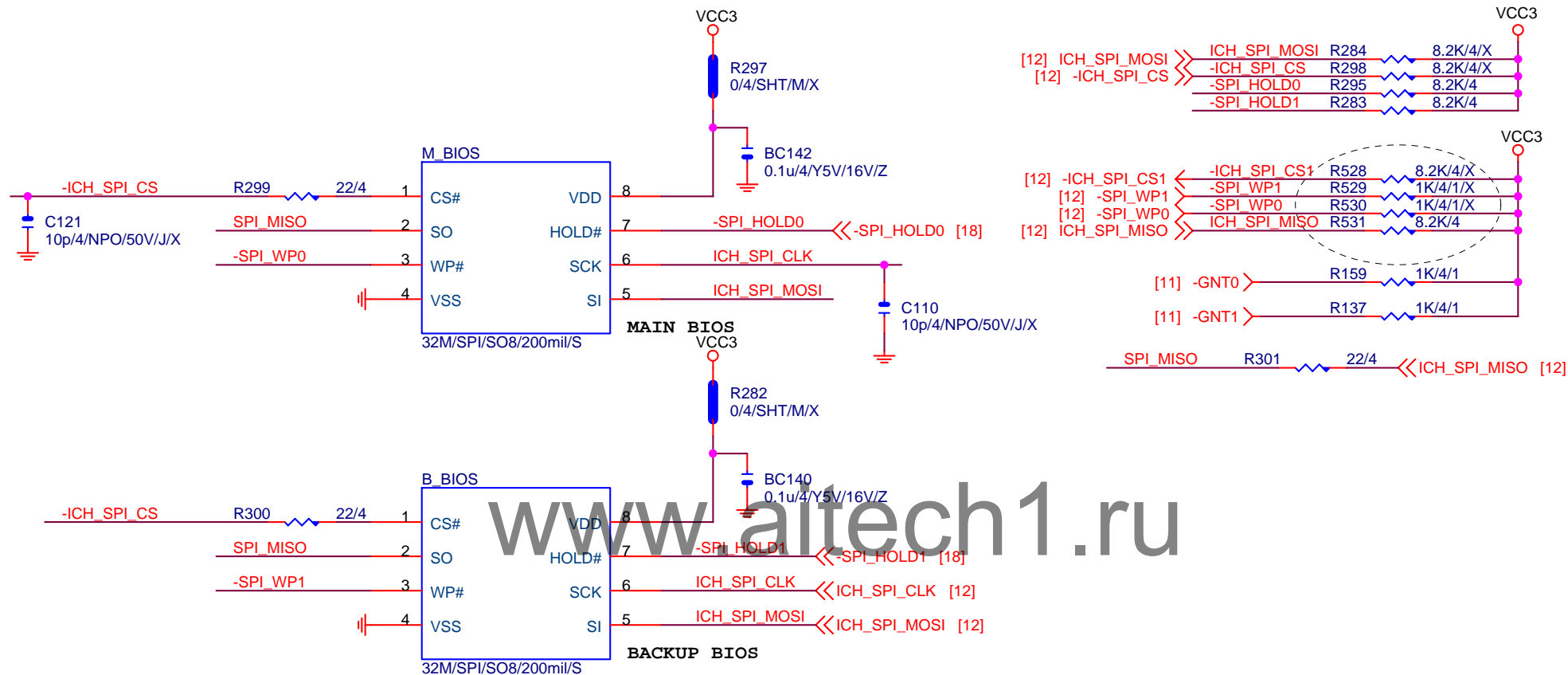
SYS SMART FAN



Gigabyte Technology

Title		
HWM,FAN CTRL,OV		
Size	Document Number	Rev
Custom	GA-Z68MX-UD2H-B3	1.3
Date:	Tuesday, July 26, 2011	Sheet 20 of 36

DUAL BIOS



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

1 means floating
0 means PD 1K

Gigabyte Technology

DUAL BIOS

Title

Size A

Document Number

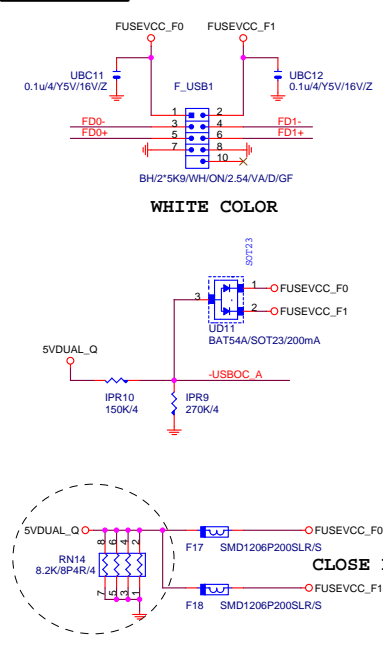
GA-Z68MX-UD2H-B3

Rev 1.3

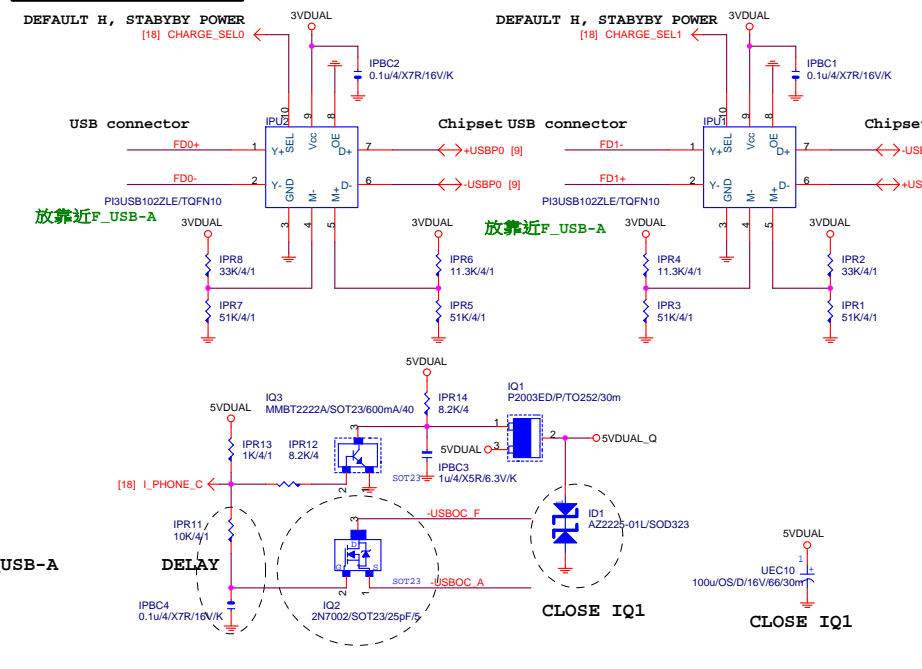
Date: Tuesday, July 26, 2011

Sheet 21 of 36

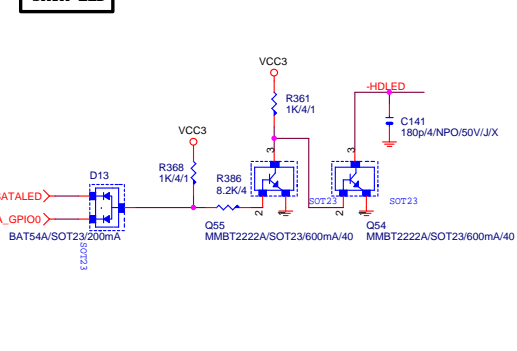
FRONT USB1



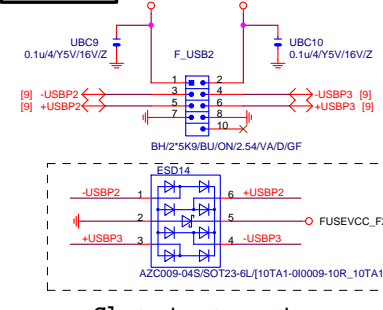
i_phone charger circuit



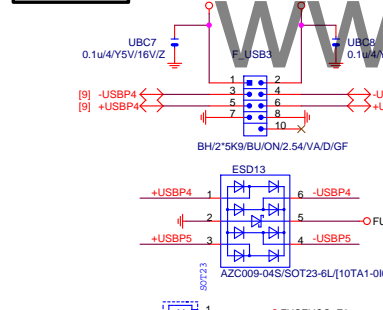
SATA LED



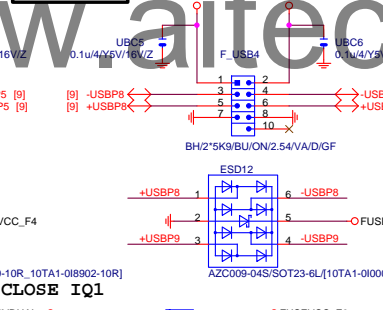
FRONT USB2



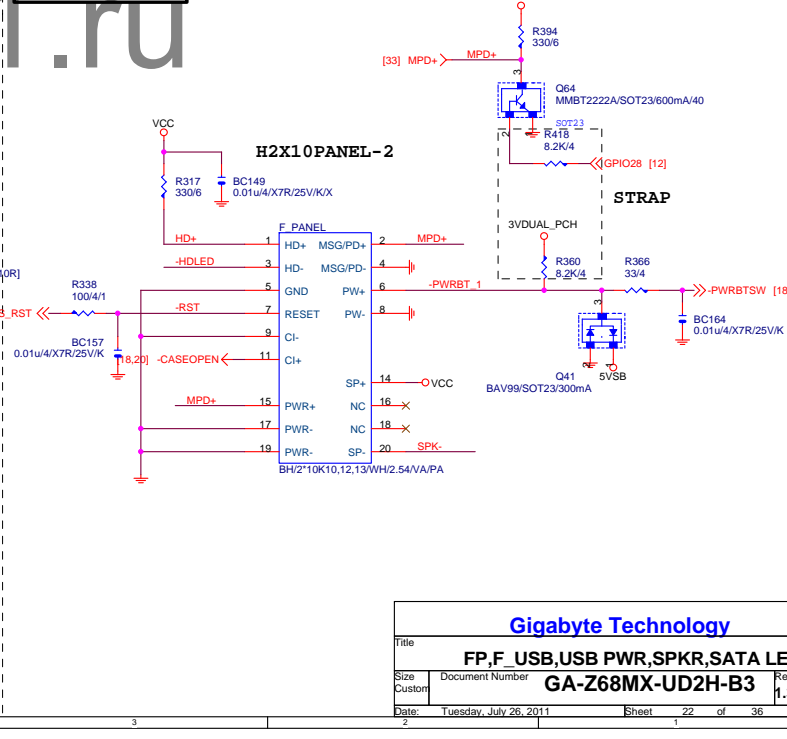
FRONT USB3



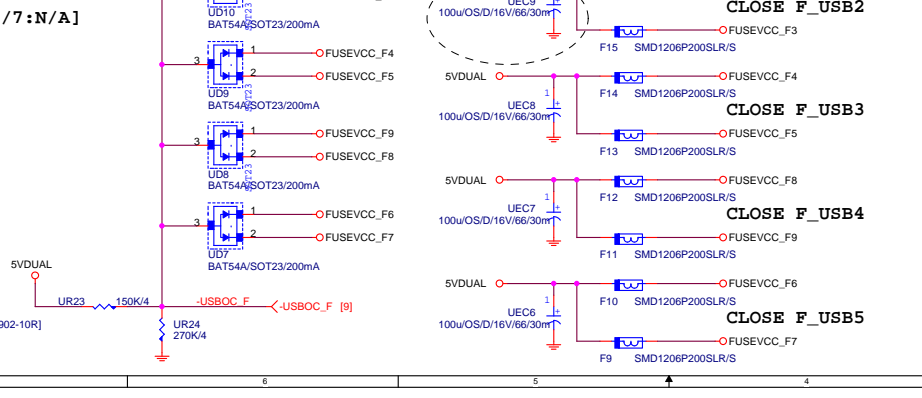
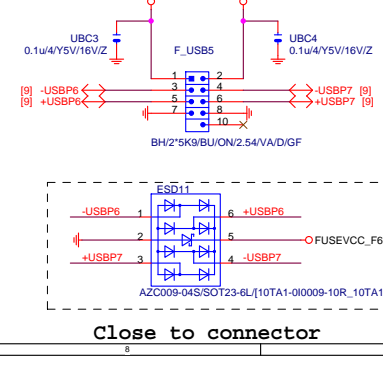
FRONT USB4



INTEL FRONT PANEL

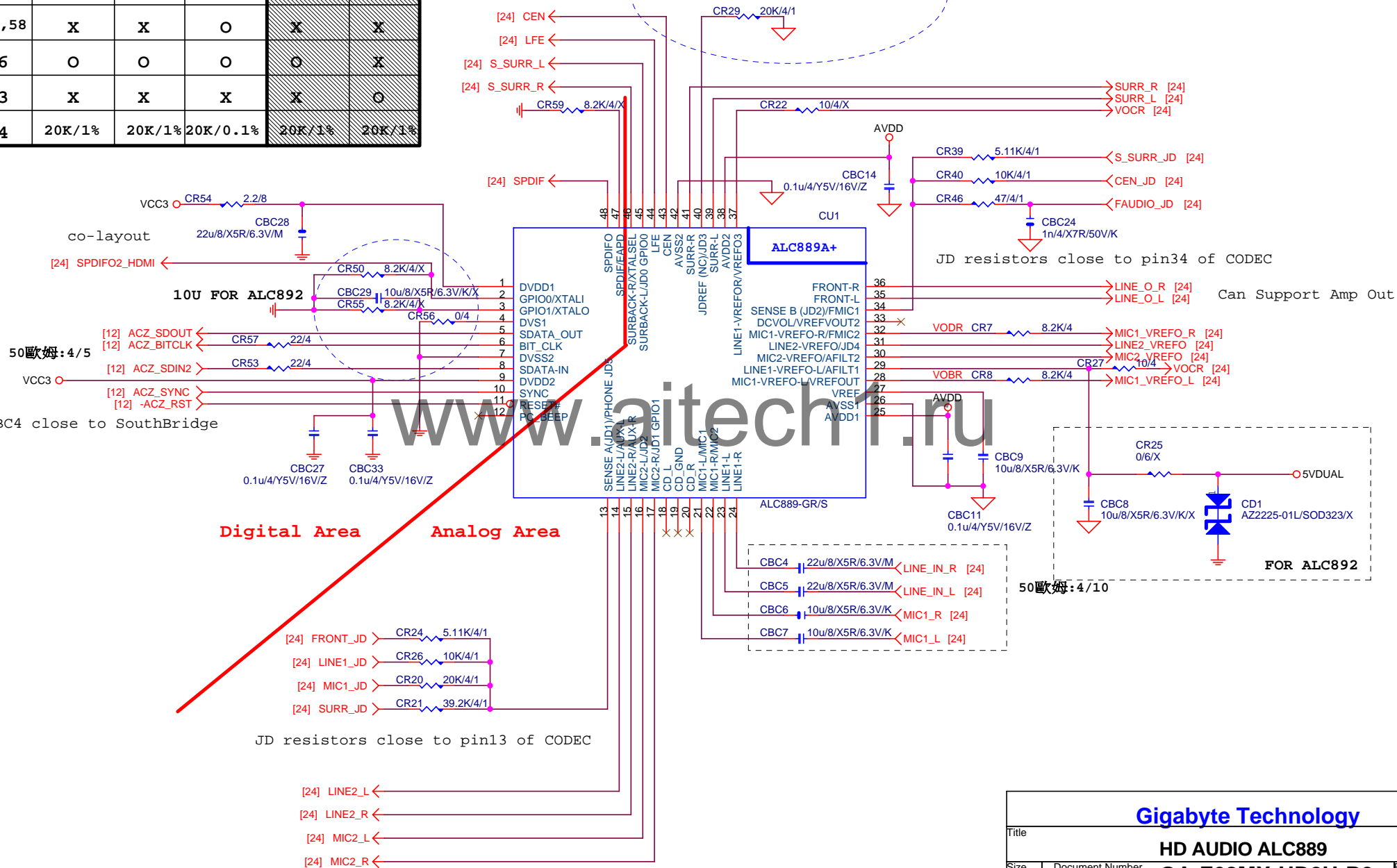


FRONT USB5



Gigabyte Technology			
Title	FP,F_USB,USB PWR,SPKR,SATA LED		
Size	Document Number	GA-Z68MX-UD2H-B3	Rev 1.3
Custom			
Date:	Tuesday, July 26, 2011	Sheet 22	of 36

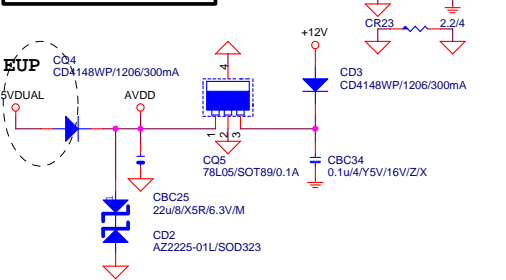
	ALC888B	ALC888 -VA	ALC889A	ALC888 -VD	ALC892
CR59	X	O	O	O	O
CR53,58	X	X	O	X	X
CR56	O	O	O	O	X
CR63	X	X	X	X	O
CR34	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%



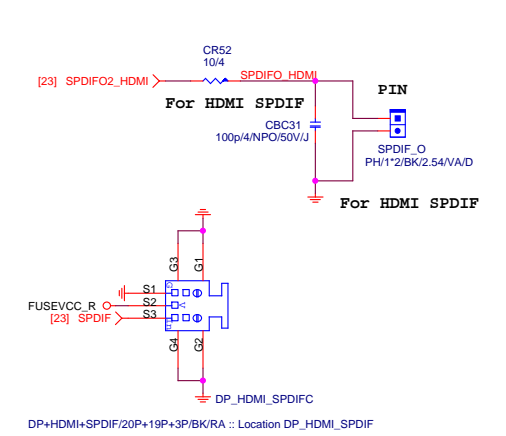
Gigabyte Technology

Title			HD AUDIO ALC889
Size	Document Number	GA-Z68MX-UD2H-B3	
Custom		Rev	1.3
Date:	Tuesday, July 26, 2011	Sheet	23 of 36

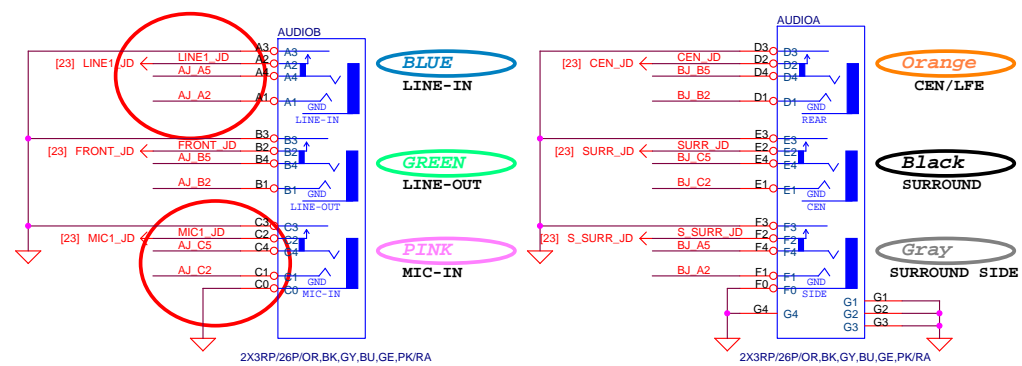
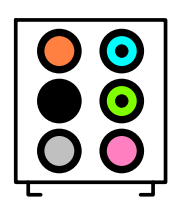
CODEC POWER/EMI PAD



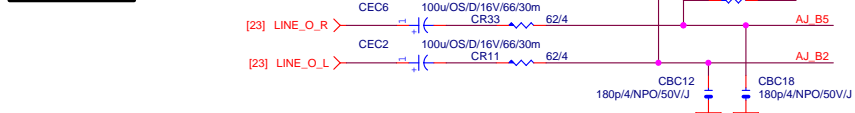
HDMI SPDIF



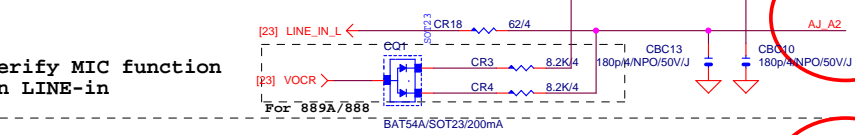
AZALIA JACK



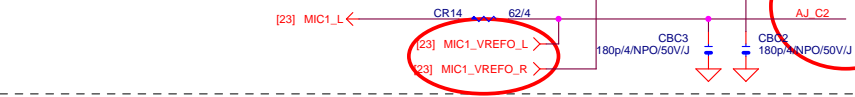
LINE-OUT



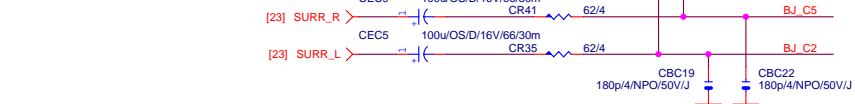
LINE-IN



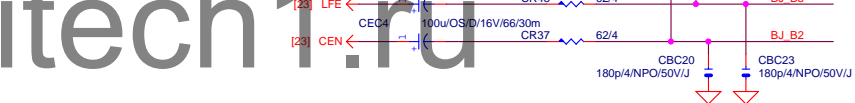
MIC-IN



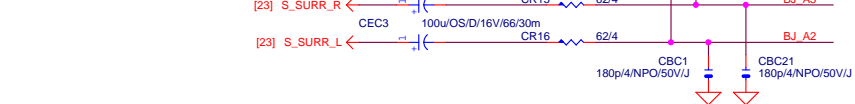
SURROUND



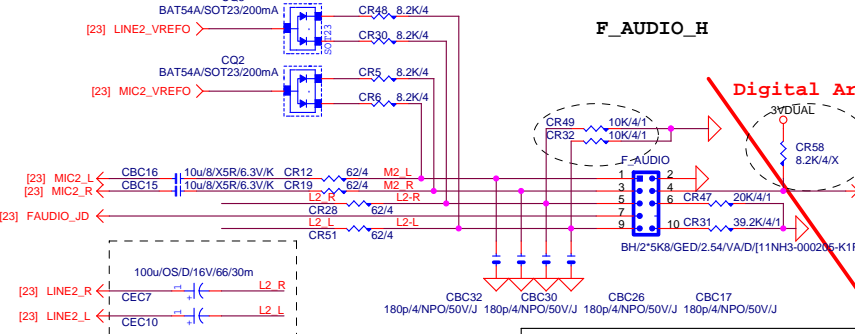
CEN/LFE



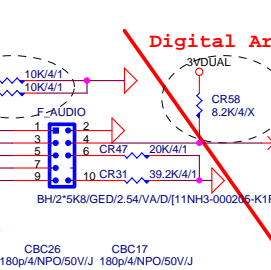
SURR BACK



AZALIA FRONT PANEL



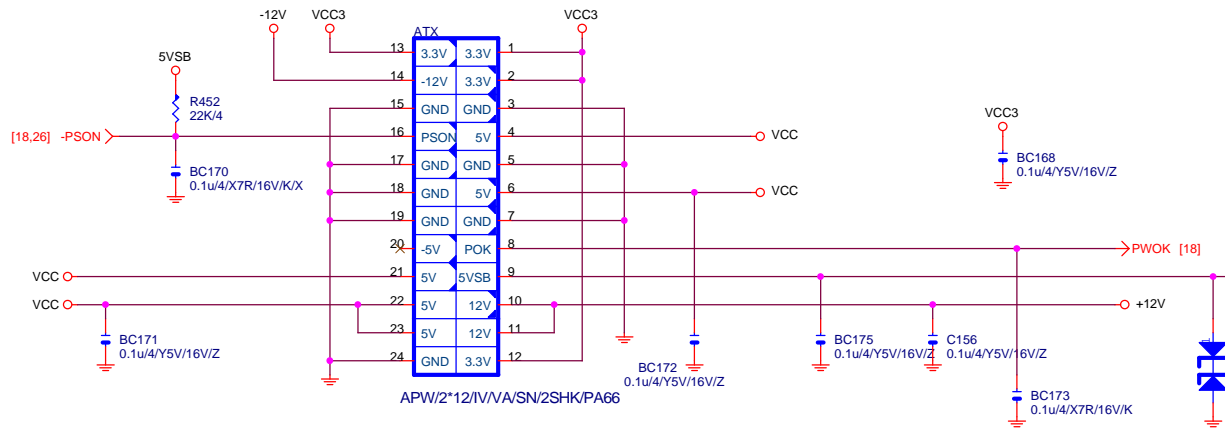
F_AUDIO_H



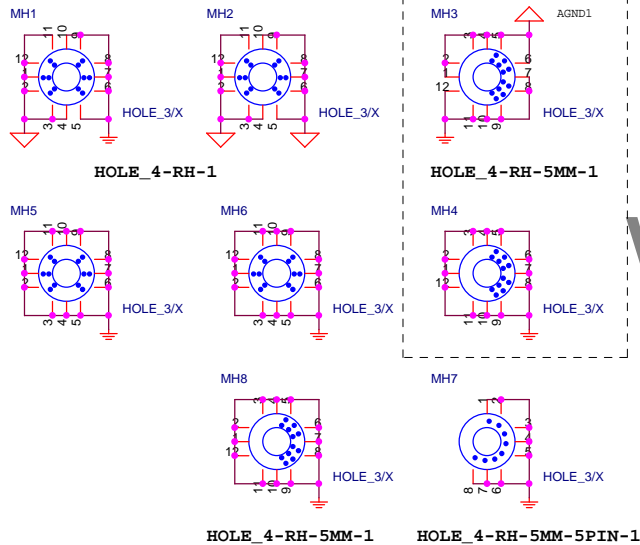
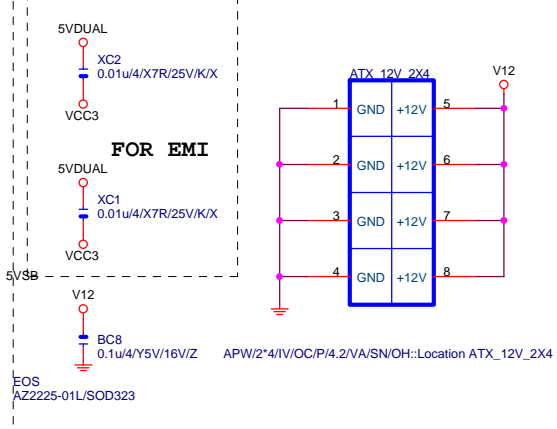
Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number	GA-Z68MX-UD2H-B3	
Custom		Rev 1.3	
Date:	Tuesday, July 26, 2011	Sheet	24 of 36

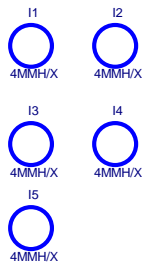
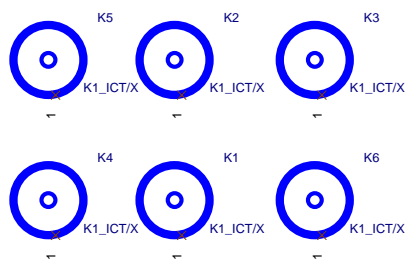
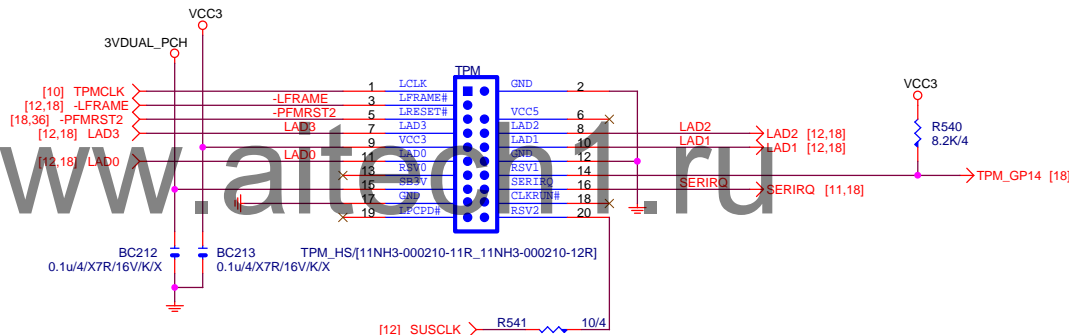
ATXX24 POWER CONNECTOR



ATXX4 POWER CONNECTOR

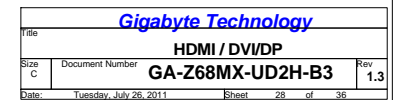
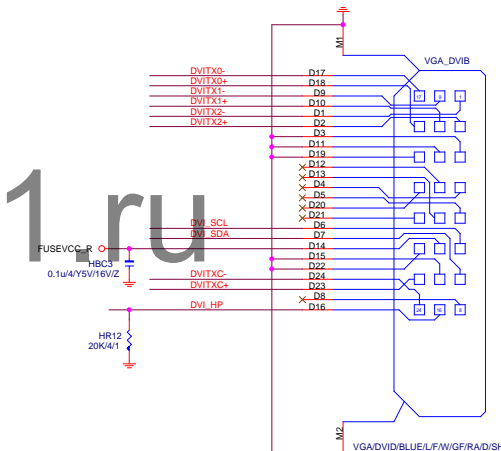
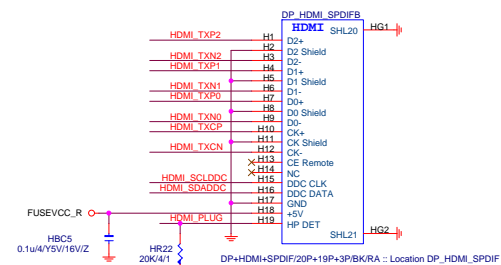


TPM



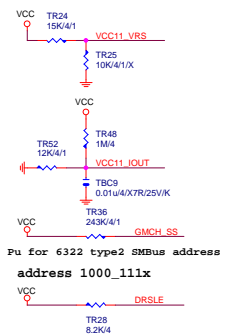
Gigabyte Technology

Title	ATX CONNECTOR		
Size	Document Number	GA-Z68MX-UD2H-B3	Rev 1.3
Date:	Tuesday, July 26, 2011	Sheet 27 of 36	

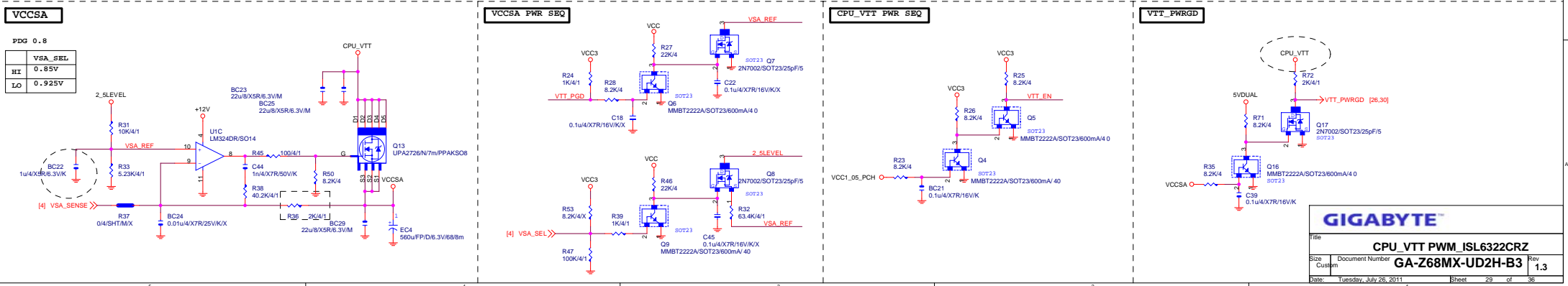
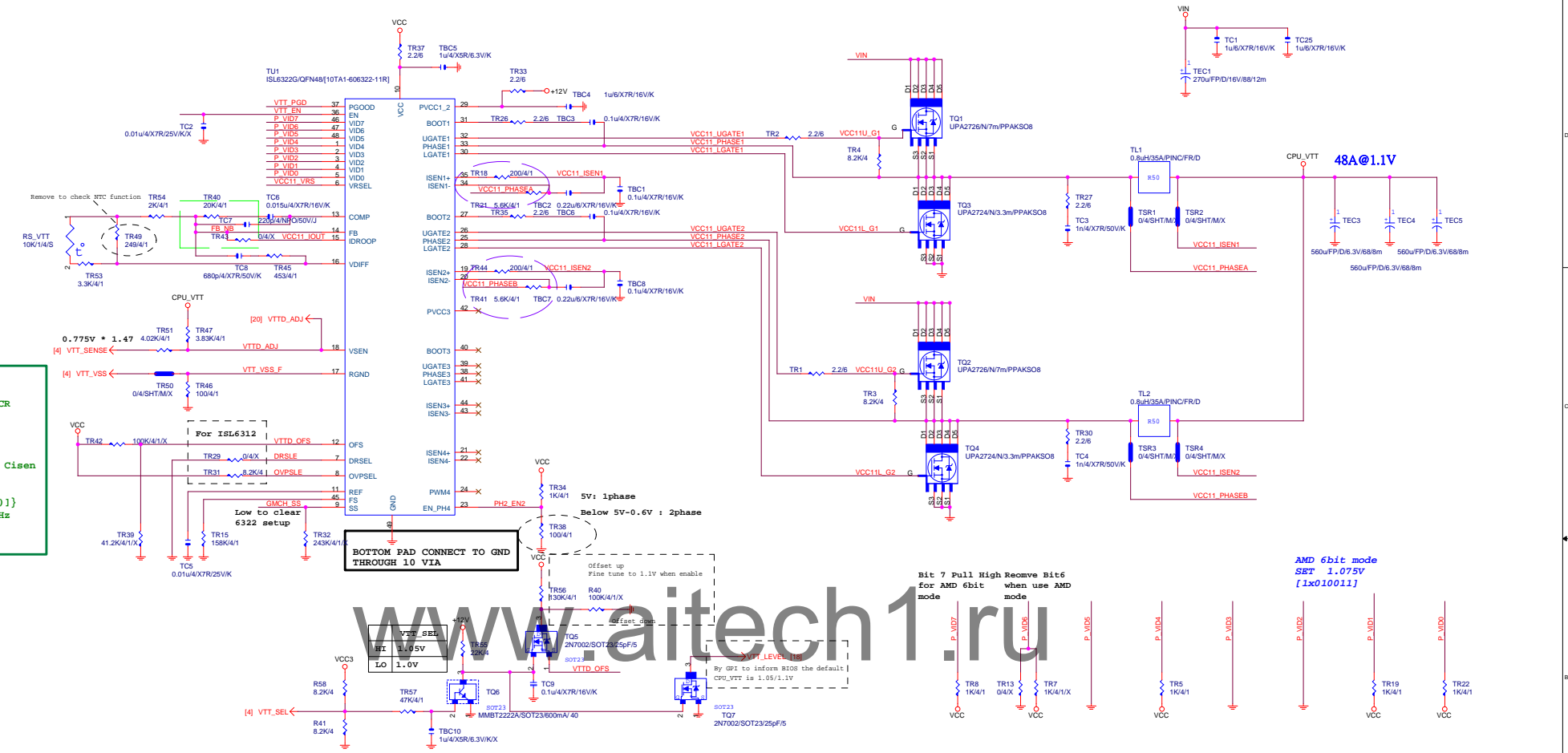


CPU_VTT

5V : AMD mode
0.6V~3V : VRD11 mode
0V : VRD10 mode



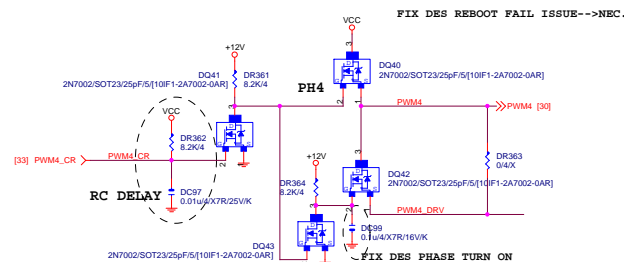
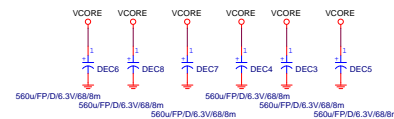
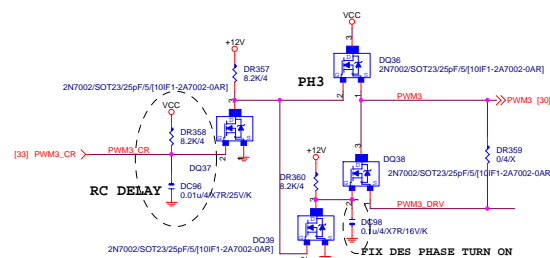
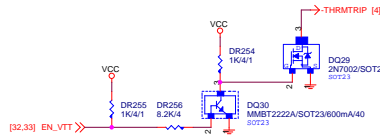
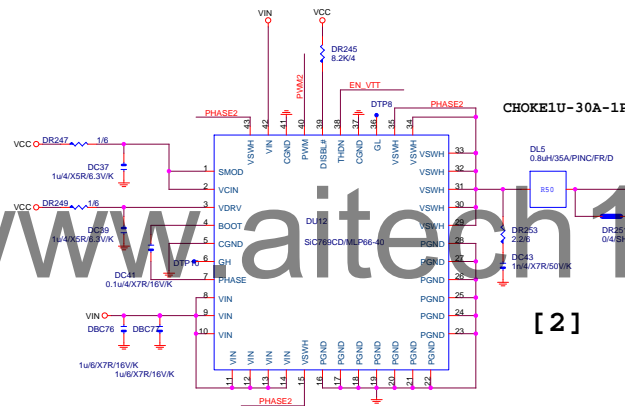
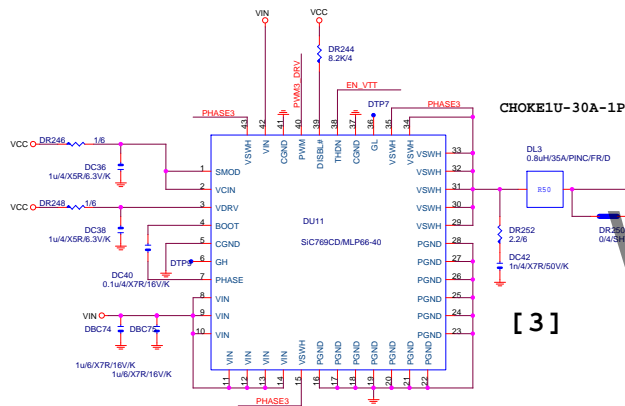
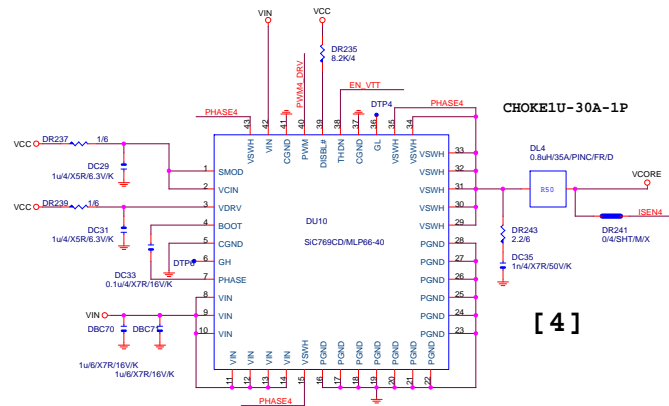
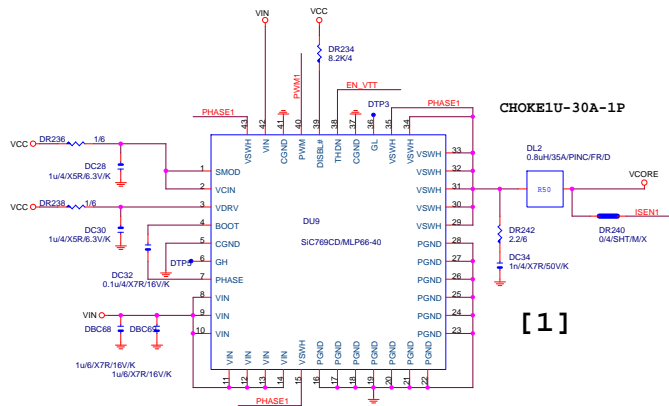
OCP點做在146A
Isens+ R270阻值設在590ohm
Iocp=(IsensxRisenxPhase)/DCR
=[(120uAX590X2)/0.97m=146A
L/DCR=RxC
L=1uH DCR=0.97 mohm ,
1uH/0.97mohm=4.7kX0.22uF
Risens R260 阻值=4.7k ohm, Cisen
BC75=0.22u
Rt=10^{0.61-[1.035xlog(FS)]}
Rt=R301=158 kohm , FS=170KHz
OVP=VDAC+225mV



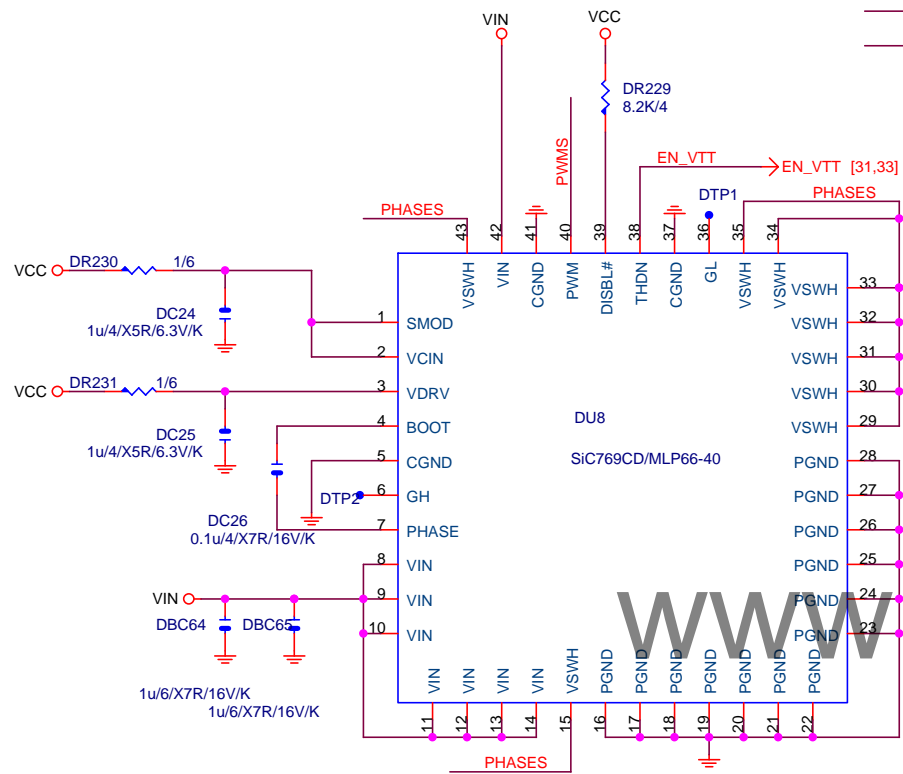
PWM1 → PWM1 [30]
 PWM2 → PWM2 [30]
 PWM3 → PWM3 [30]
 PWM4 → PWM4 [30]

ISEN1 → ISEN1 [30]
 ISEN2 → ISEN2 [30]
 ISEN3 → ISEN3 [30]
 ISEN4 → ISEN4 [30]

PHASE1 → PHASE1 [30]
 PHASE2 → PHASE2 [30]
 PHASE3 → PHASE3 [30]
 PHASE4 → PHASE4 [30]



VAXG

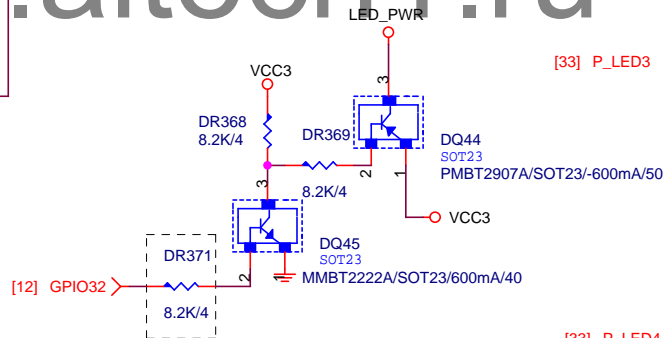


CHOK1U-30A-1P

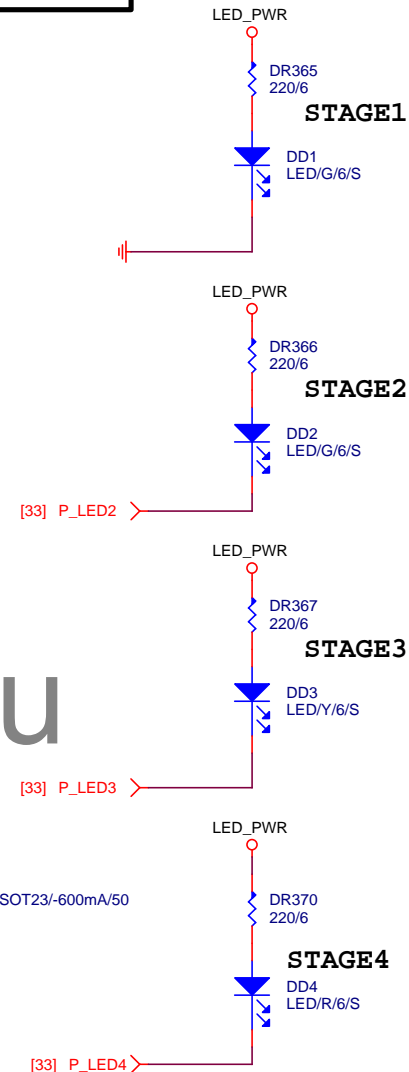
DL6
0.8uH/35A/PINC/FR/D

DC27
1n4/X7R/50V/K

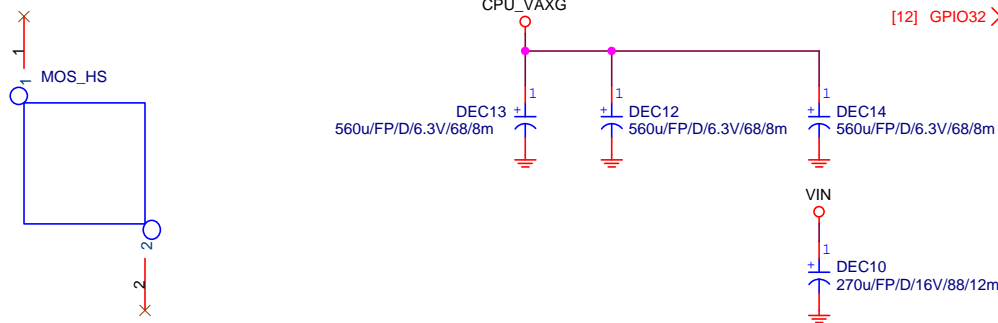
LED POWER



PHASE LED



MOS HEATSINK



MOS HS/[12SP2-S06928-01R_12SP2-S06928-02R_12SP2-S06928-03R_12SP2-S06928-11R_12SP2-S06928-13R]

Gigabyte Technology

CPU CORE VR-2

Size
Custom

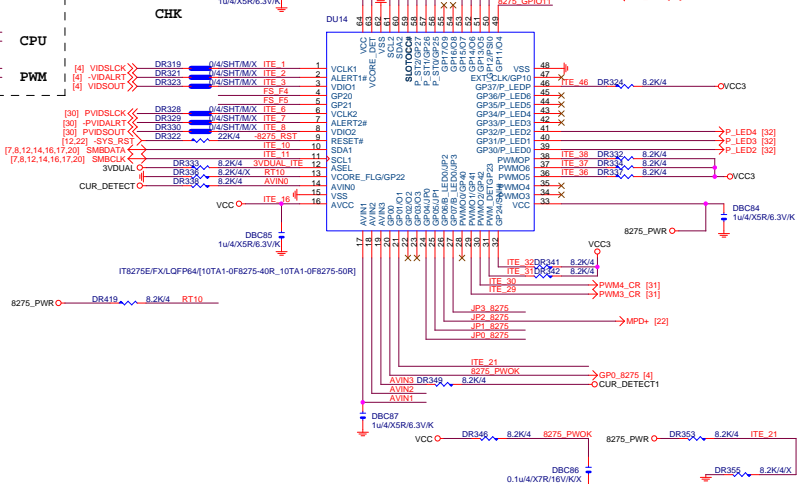
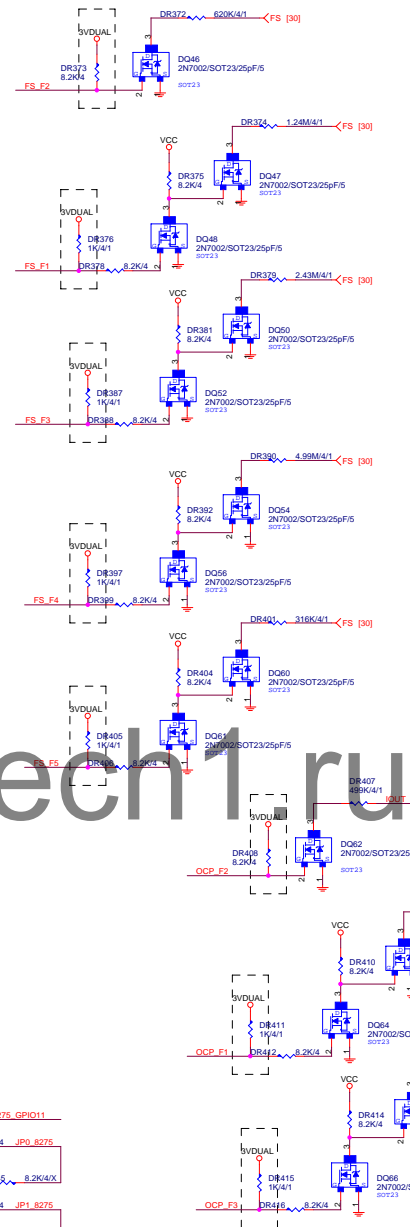
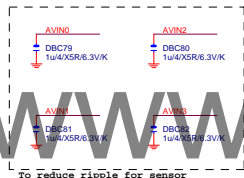
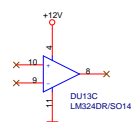
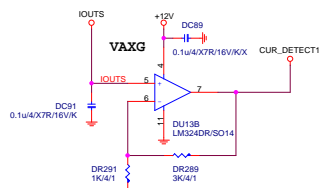
Document Number

GA-Z68MX-UD2H-B3

Rev
1.3

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```
Pin24: GPIO4/JP0, LO : Indirect
mode:HI;bypass mode
Pin25: GPIO5/JP1, HI: Intel SVID mode
Pin26: GPIO6/JP2/B_LED0, Vcore detect LO: Disable
Pin27: GPIO7/JP3/B_LED1, 目前使用LO: External
clock source:HI FOR INTERNAL
Pin31: GPIO23/JP4/PWM_DTT, HI: Capture
mode:LO:Normal (Bypass mode)
Pin12: ASEL, HI: 4Zh.
```