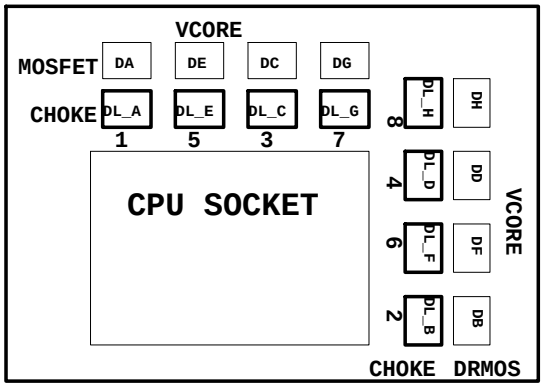
Model Name: GA-Z87X-D3H Rev 1.1

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
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 X8 SLOT
16	PCI EXPRESS X16 SWITCH
17	PCIEX1*3 , PCIEX4 SLOT
18	I/O ITE8728
19	COM, -PROHOT, R_USB
20	Dual BIOS , TPM SLB9635TT
21	ALC892 CODEC
22	REAR AUDIO JACK
23	ITE8892 PCI BRIDGE
24	PCI SLOT
25	FUSB 3.0
26	NCP3933 OVER VOLTAGE
27	DISCRETE POWER

SHEET	TITLE
28	F_PANEL , F_USB2.0
29	ATX POWER, CLOCK GEN
30	HWM , KB/MS , FAN CTRL
31	LAN INTEL i217
32	DVI
33	HDMI , R_USB30
34	TABLE LIST
35	IR3563B_PWM
36	IR3550-VCORE
37	IR3570_DDR PWM
38	IR 3598-DDR
39	D720210 4port_Hub
40	D720210 4port_Hub POWER
41	D720210 4port_Hub_B
42	D720210 4port_Hub_B POWER



Gigabyte Technology

Title	Cover Sheet	
Size: Custom	Document Number: GA-Z87X-D3H	Rev: 1.1
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GA-Z87X-D3H

Component value change history

Data	Change Item	Reason
2013/04/01 9MZ87XD3H-00-10B	*** 更換 *** 新舊線路中,元件值不同;共 6 個********** HU2,'PTN3360DBS/HVQFN48/[10TA1-053360-20R]變更為'ASM1442/QFN48/[10TA1-051442-20R] HCR43,HAR43,'316K/4/1變更為'100K/4/1 HAR41,HCR41,'100K/4/1變更為'169K/4/1 HR29,'10K/4/1變更為'3.3K/4/1 *** 增加 *** 只在新線路中,不在舊線路中;共 30 個********** HCC53,HAC53,HCC55,HAC55,C205,'1u/4/X5R/6.3V/K HR22,'4.7K/4 R670,'0/4 HAC46,C50,C51,C52,C53,C54,'0.1u/4/X7R/16V/K HR28,HR30,'10/4 HCU4,HAU4,'RT9018B-18GSP/SO8/3A HCR47,HAR47,'2.2/4 HCR46,HAR46,'100K/4/1 HCC54,HAC54,'10u/6/X5R/6.3V/M HCBC2,HABC2,'1u/6/X7R/16V/K R671,'22K/4 HCR54,HAR54,'8.2K/4/1 HAR48,HCR48,'316K/4/1 *** 刪除 *** 只在舊線路中,不在新線路中;共 6 個********** HAR59,HAR60,'0/4 NR110,'8.2K/4 HCR44,HAR44,'0/6 DAJP1,'PH/1*3/BK/2.54/VA/D	
2013/04/03 9MZ87XD3H-00-10C	1. Add 5 pcs 2.7K/8P4R for +12V loading	

Circuit or PCB layout change

DATE	Change Item	Reason
2012/11/23	1. Change from Z87-D3H-02.DSN	Rev 0.1
2013/01/11	1. Change from Z87X-D3H_R01_1224B.DSN 2. PCIEX4 clock change to PCIE_5 3. PCIEX1_1 clock change to PCIE_3 4. PCIEX8 clock change to PEG_B 5. N_PCIE_4_SW change to N_GPIO48 6. -PCIEX1_PR3 change to N_GPIO22 7. Update Note 33,TI H/W charger	Rev 0.2
2013/03/28	1.Add net N_-SLP_A 2.CLR_CMOS文字面修改 3.所有的FAN 加0.1u/4,要非常靠近FAN connect pin 2	Rev 1.01
2013/06/26	1.只修改文字面版本 Rev 1.1(For PCH C2 chip)	Rev 1.1

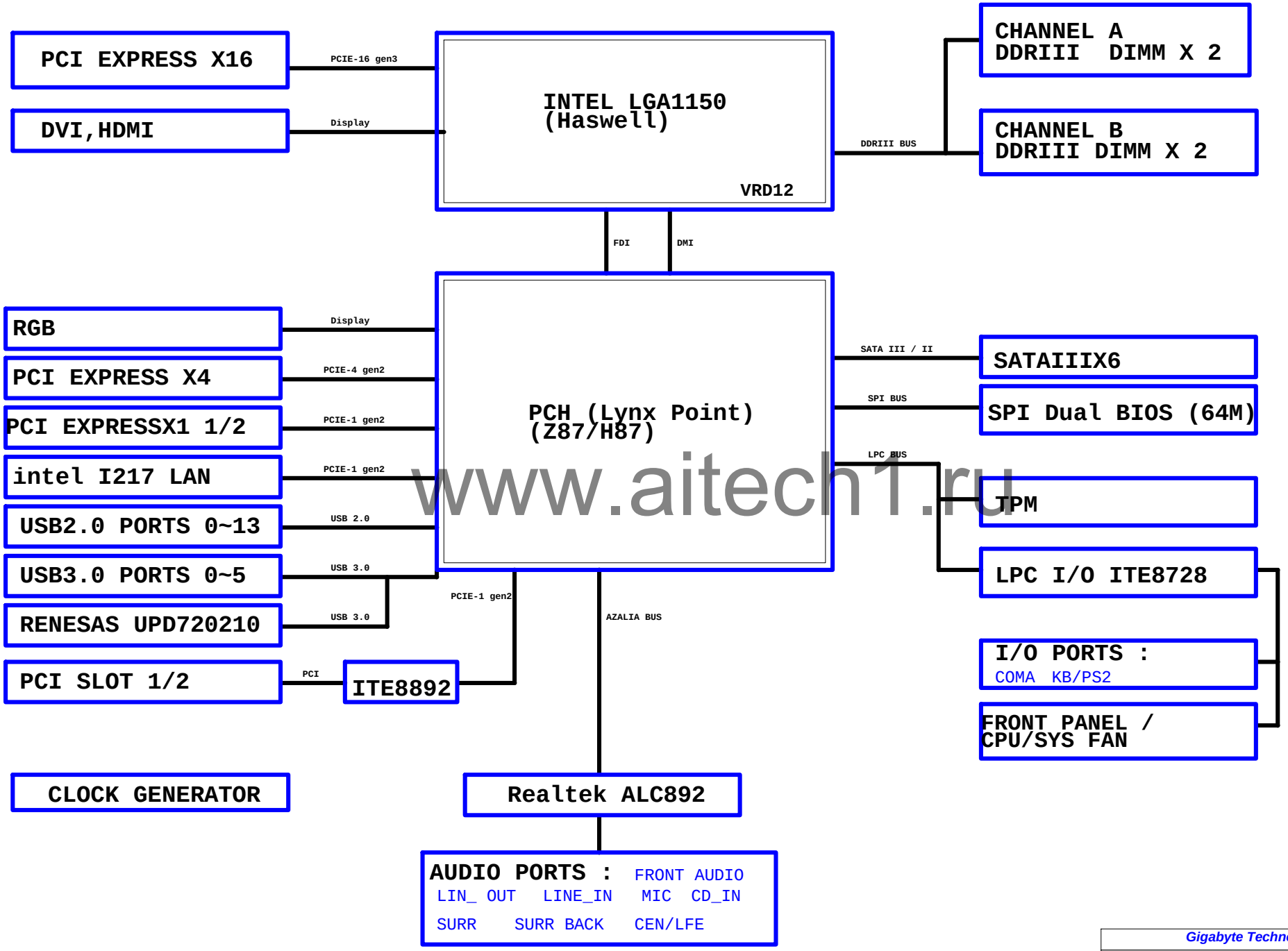
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

Date: Monday, July 22, 2013 | Sheet 2 of 43

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-Z87X-D3H	Rev: 1.1
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LGA1150 (E)

LGA1150E

CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	**Disable**	**Enable**	eDP Enable
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

HASWELL/[10SC1-F01150-01R]

LGA1150 (D)

LGA1150D

DVI:15/4/4/4/15
Impedance=85 +- 17.5%

HDMI:15/4/4/4/15
Impedance=85 +- 17.5%

HASWELL/[10SC1-F01150-01R]

FDI:12/4/4/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

LGA1155 (C)

PCIEX16:20/5/4/5/20(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%

LGA1150C

HASWELL/[10SC1-F01150-01R]

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

W=12 mil out of CPU
S=15 mil out of CPU

CPU SVID

CPU PU/PD

SM REF

-CPURST

1.1V分壓

THRMTRIP DISABLE

Gigabyte Technology

Title	CPU LGA1150-A	
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LGA1150 (A)

LGA1150A

HASWELL/[10SC1-F01150-01R]

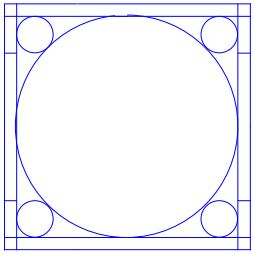
LGA1150 (B)

LGA1150B

HASWELL/[10SC1-F01150-01R]

LGA1150 (CR)

LGA1150
ILM_BP/1156/BKNI/[12KRC-0F0001-23R]



DDR BUS

(7) MODT_A[0..3] MODT_A[0..3]
(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]
(8) DQSB[0..7] DQSB[0..7]
(8) -DQSB[0..7] -DQSB[0..7]

Gigabyte Technology			
Title: CPU LGA1150-B			
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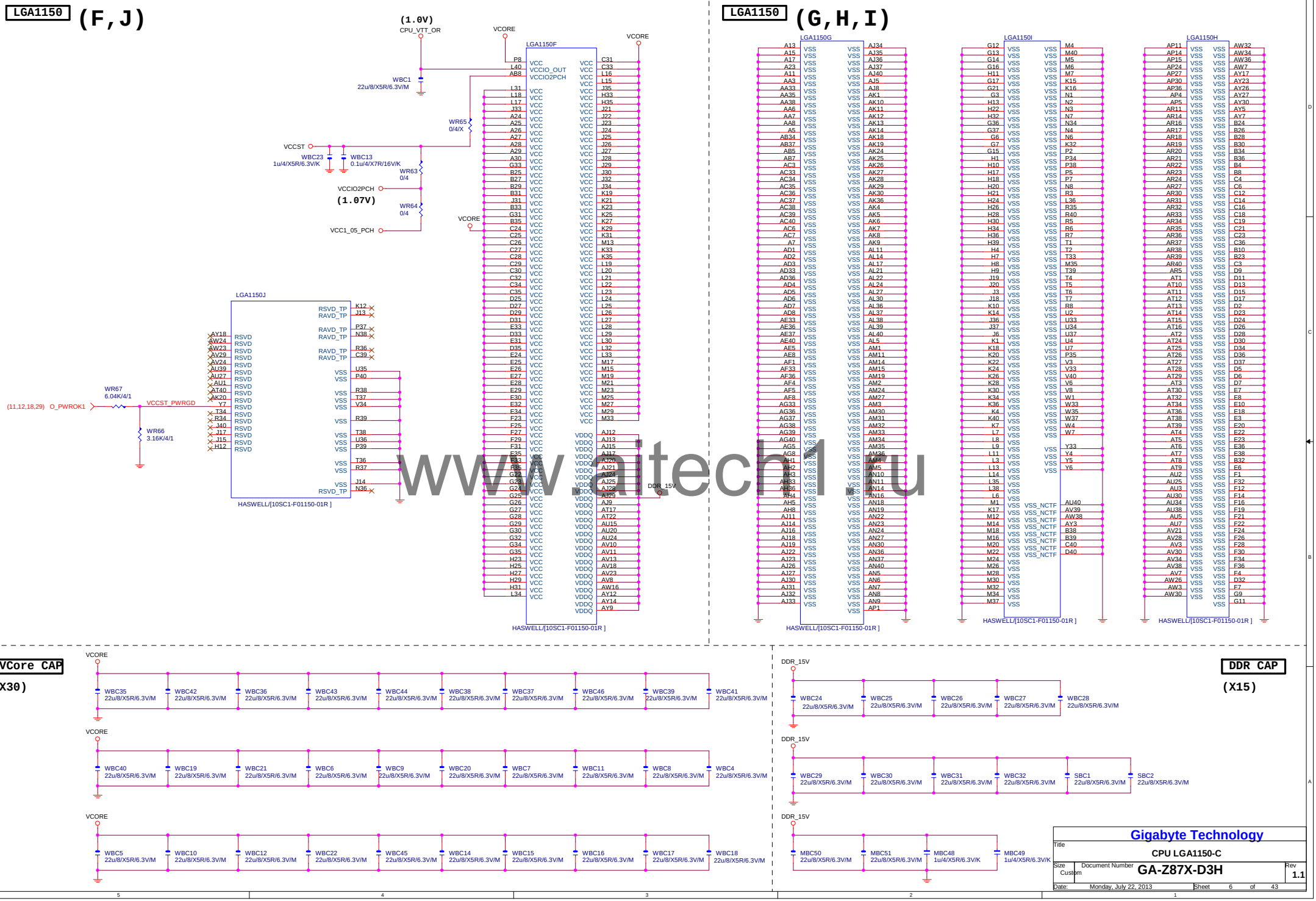
LGA1150 (F,J)
(1.0V)
CPU_VTT_OR
VCORE
LGA1150F
WBC1
22u/8/X5R/6.3V/M
WR65
0/4/X
VCCST
WBC23
1u/4/X5R/6.3V/K
WBC13
0.1u/4/X7R/16V/K
WR63
0/4
VCCIO2PCH
(1.07V)
WR64
0/4
VCC1_05_PCH
LGA1150J
WR67
6.04K/4/1
(11,12,18,29) O_PWROK1
VCCST_PWRGD
WR66
3.16K/4/1
HASWELL/[10SC1-F01150-01R]
DDR_15V
LGA1150 (G,H,I)
LGA1150G
LGA1150I
LGA1150H
VCore CAP
(X30)
DDR CAP
(X15)
WBC35 22u/8/X5R/6.3V/M
WBC42 22u/8/X5R/6.3V/M
WBC36 22u/8/X5R/6.3V/M
WBC43 22u/8/X5R/6.3V/M
WBC44 22u/8/X5R/6.3V/M
WBC38 22u/8/X5R/6.3V/M
WBC37 22u/8/X5R/6.3V/M
WBC46 22u/8/X5R/6.3V/M
WBC39 22u/8/X5R/6.3V/M
WBC41 22u/8/X5R/6.3V/M
WBC40 22u/8/X5R/6.3V/M
WBC19 22u/8/X5R/6.3V/M
WBC21 22u/8/X5R/6.3V/M
WBC6 22u/8/X5R/6.3V/M
WBC9 22u/8/X5R/6.3V/M
WBC20 22u/8/X5R/6.3V/M
WBC7 22u/8/X5R/6.3V/M
WBC11 22u/8/X5R/6.3V/M
WBC8 22u/8/X5R/6.3V/M
WBC4 22u/8/X5R/6.3V/M
WBC5 22u/8/X5R/6.3V/M
WBC10 22u/8/X5R/6.3V/M
WBC12 22u/8/X5R/6.3V/M
WBC22 22u/8/X5R/6.3V/M
WBC45 22u/8/X5R/6.3V/M
WBC14 22u/8/X5R/6.3V/M
WBC15 22u/8/X5R/6.3V/M
WBC16 22u/8/X5R/6.3V/M
WBC17 22u/8/X5R/6.3V/M
WBC18 22u/8/X5R/6.3V/M
WBC24 22u/8/X5R/6.3V/M
WBC25 22u/8/X5R/6.3V/M
WBC26 22u/8/X5R/6.3V/M
WBC27 22u/8/X5R/6.3V/M
WBC28 22u/8/X5R/6.3V/M
WBC29 22u/8/X5R/6.3V/M
WBC30 22u/8/X5R/6.3V/M
WBC31 22u/8/X5R/6.3V/M
WBC32 22u/8/X5R/6.3V/M
SBC1 22u/8/X5R/6.3V/M
SBC2 22u/8/X5R/6.3V/M
MBC50 22u/8/X5R/6.3V/M
MBC51 22u/8/X5R/6.3V/M
MBC48 1u/4/X5R/6.3V/K
MBC49 1u/4/X5R/6.3V/K
Gigabyte Technology
Title
CPU LGA1150-C
Size Custom
Document Number GA-Z87X-D3H
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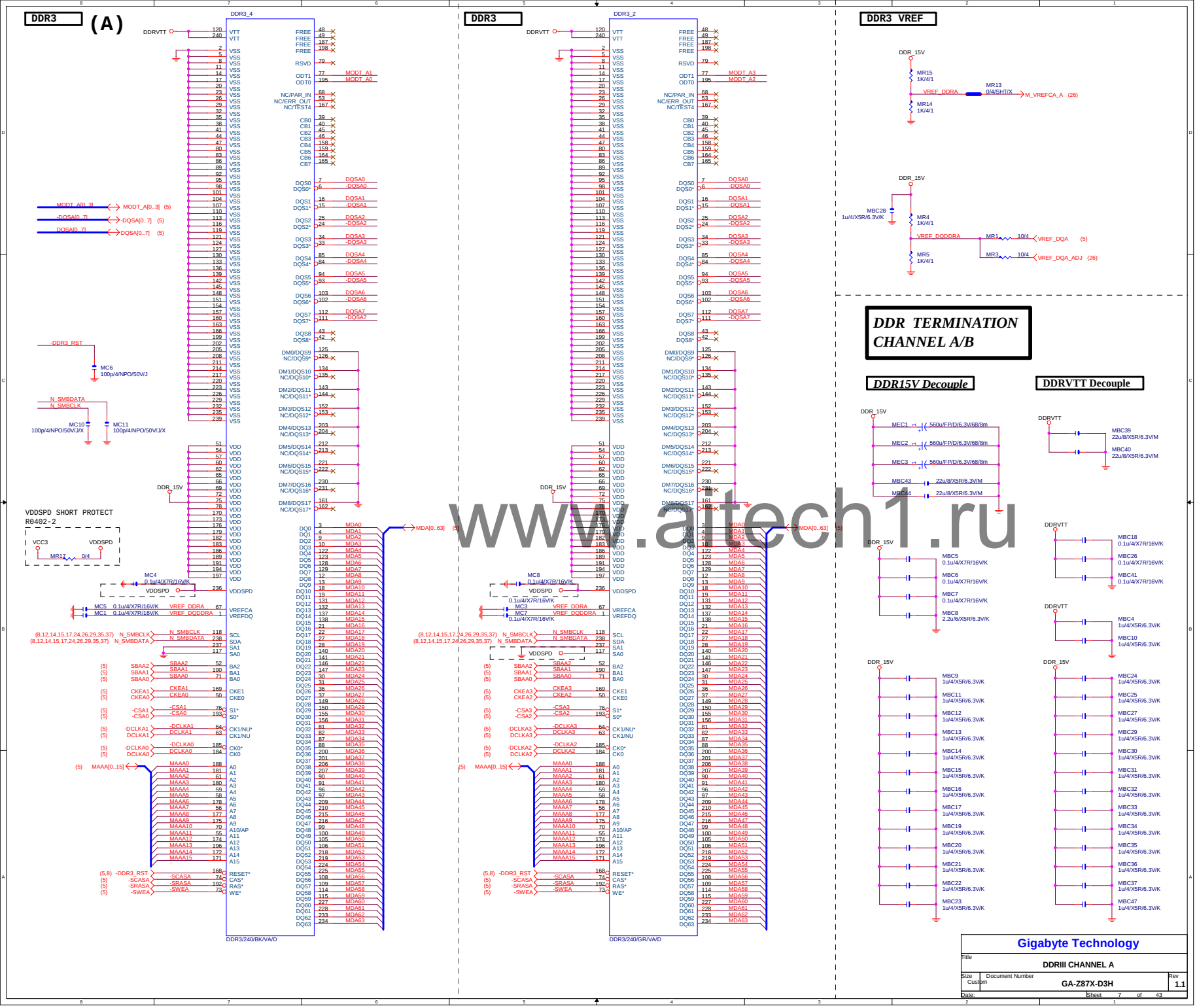

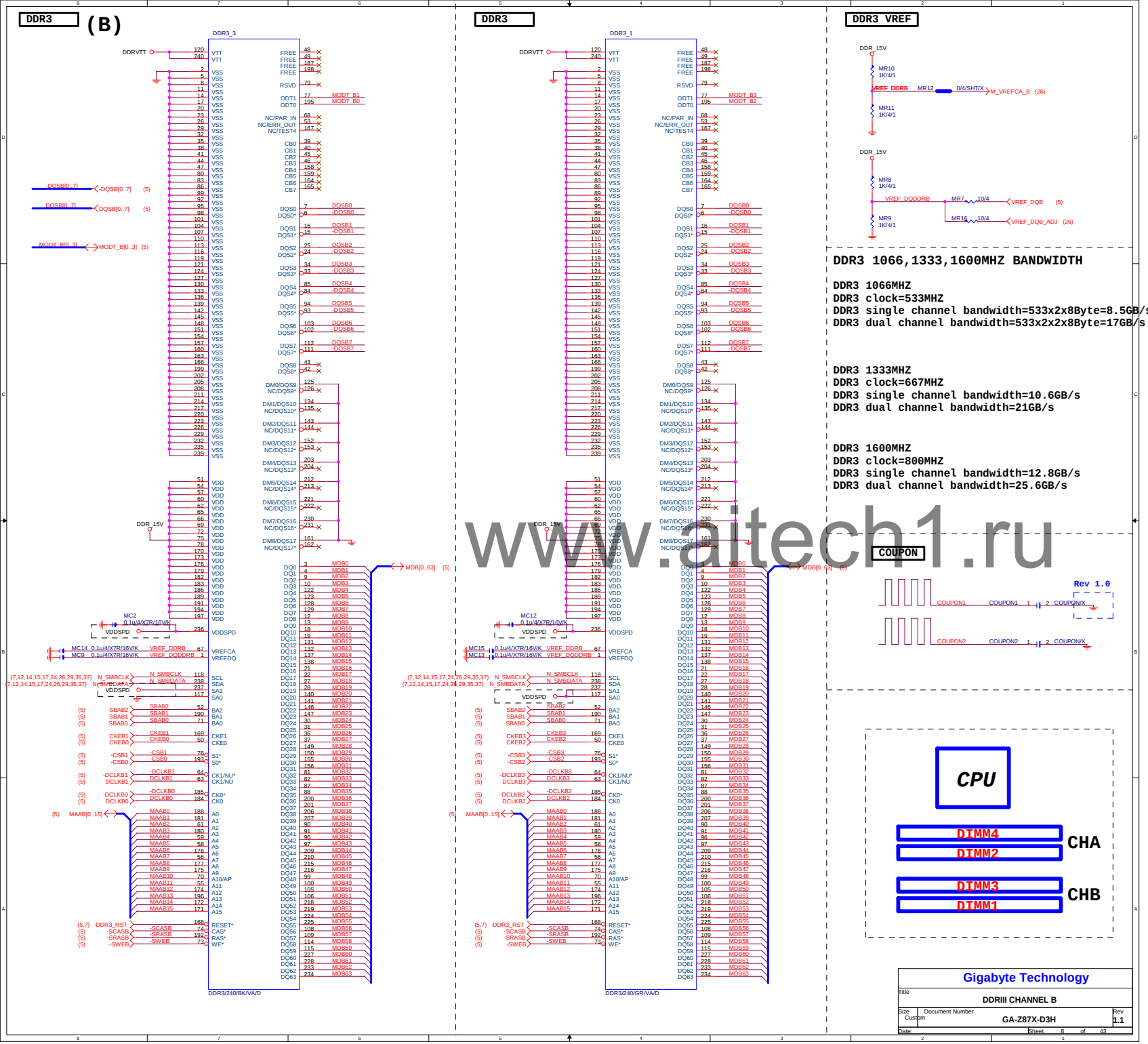

PCH (B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

USB2.0 : 12/5/7/5/12 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCHB

PCIEX1 slot1
PCIEX1 slot3
LAN AR8161
ITE8892 PCI Bridge
PCIEX4 port1
PCIEX4 port2 PCIEX1_1
PCIEX4 port3 PCIEX1_2
PCIEX4 port4 PCIEX1_3

電容放靠近 Device & PCI-E Slot

BD82Z87/S

PCIEX1:15/4/4/4/15 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCH (F)

USB3.0 : 20/5/7/5/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCHF

FDI:12/4/5/4/12
Impedance=85 +- 17.5%

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

Mount for integrated clock Generation Mode

NR92 short to GND in non graphic SKU

PCH (J)

PCHJ

BD82Z87/S

PCH H/S

PCH_HS

PCH_HS/[12SP2-S06012-21R_12SP2-S06012-22R_12SP2-S06012-23R]

USB TABLE

OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

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

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Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

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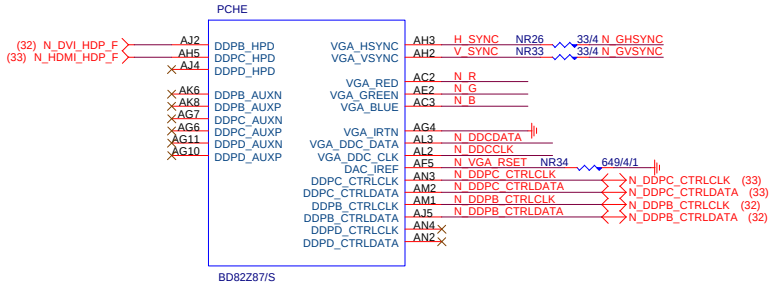
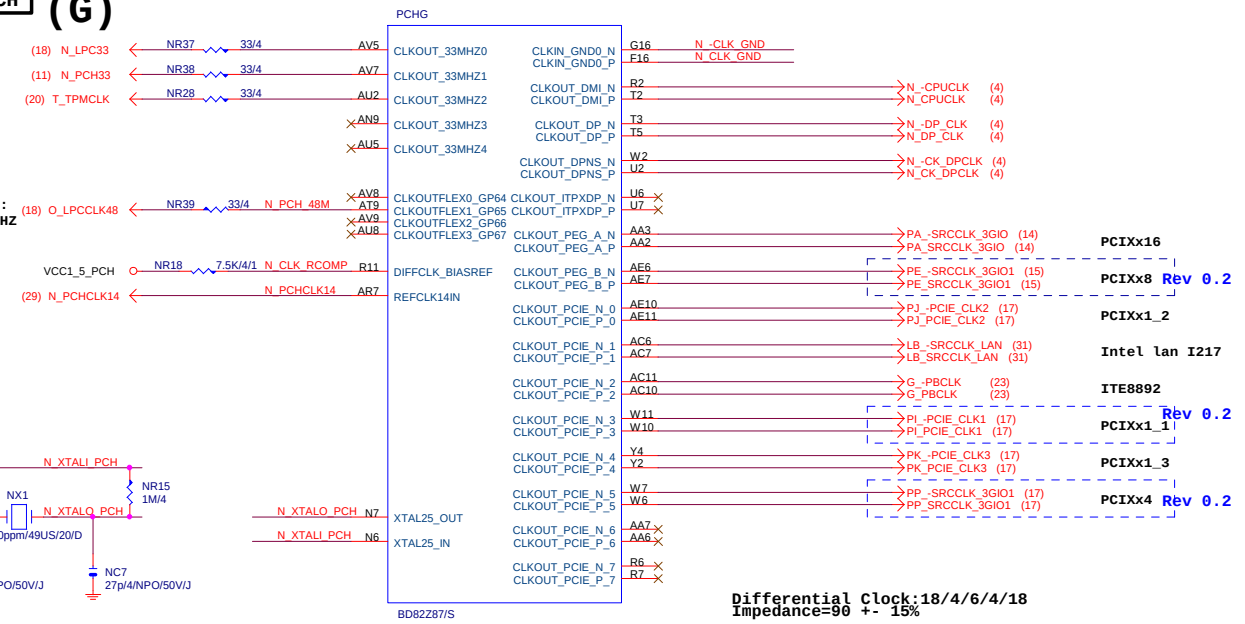
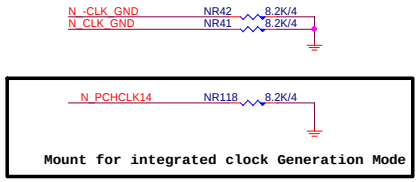
PCH (E)



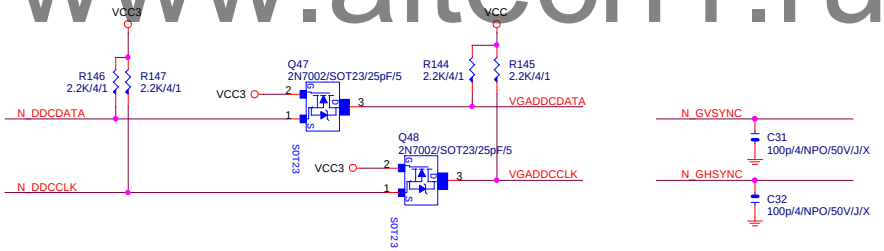
PCH (G)



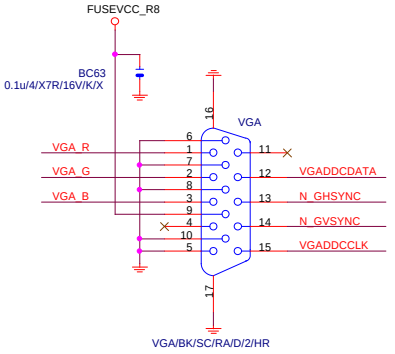
PCH CLK PD



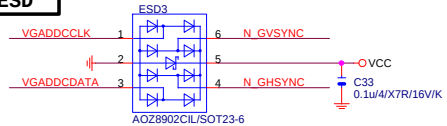
VGA DDC



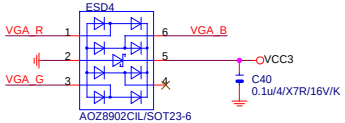
VGA CONNECTOR



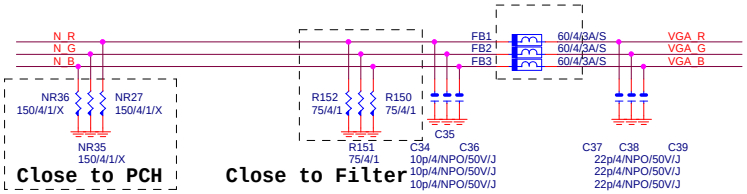
VGA ESD



SSOP6_ESD



VGA DDC



Gigabyte Technology

Title: PCH DISPLAY ,CLK BUFFER

Size: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

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PCH (C)

SATA3 : 20/5/4/5/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

PCHC

CL_CLK
CL_DATA
CL_RSTB
APWROK
PWM0
PWM1
PWM2
PWM3
TACH0_GP17
TACH1_GP1
TACH2_GP6
TACH3_GP7
TACH4_GP68
TACH5_GP69
SSTCTL
SCLOCK_GP22
SLOAD_GP38
SDATAOUT0_GP39
SDATAOUT1_GP48

CLINK
FAN
GPIO
HOST

SATA_RXN_0 B28 N_SATA0RXN
SATA_RXP_0 A28 N_SATA0RXP
SATA_TXN_0 F31 N_SATA0TXN
SATA_TXP_0 H31 N_SATA0TXP
SATA_RXN_1 D30 N_SATA1RXN
SATA_RXP_1 C30 N_SATA1RXP
SATA_TXN_1 B34 N_SATA1TXN
SATA_TXP_1 C34 N_SATA1TXP
SATA_RXN_2 A31 N_SATA2RXN
SATA_RXP_2 B31 N_SATA2RXP
SATA_TXN_2 B35 N_SATA2TXN
SATA_TXP_2 D35 N_SATA2TXP
SATA_RXN_3 B32 N_SATA3RXN
SATA_RXP_3 C32 N_SATA3RXP
SATA_TXN_3 G33 N_SATA3TXN
SATA_TXP_3 F33 N_SATA3TXP
SATA_RXN_4_PCIE_PERN_1 A26 N_SATA4RXN
SATA_RXP_4_PCIE_PERP_1 B26 N_SATA4RXP
SATA_TXN_4_PCIE_PETN_1 L28 N_SATA4TXN
SATA_TXP_4_PCIE_PETP_1 K28 N_SATA4TXP
SATA_RXN_5_PCIE_PERN_2 C27 N_SATA5RXN
SATA_RXP_5_PCIE_PERP_2 B27 N_SATA5RXP
SATA_TXN_5_PCIE_PETN_2 G28 N_SATA5TXN
SATA_TXP_5_PCIE_PETP_2 F28 N_SATA5TXP
CLKIN_SATA_N H35 CK_-SRCCLK_SATA
CLKIN_SATA_P H36 CK_SRCCLK_SATA
SATALEDB J39 N_-SATALED (28)
SATA_RCOMP D33 SATA3COMP
NR68 7.5K/4/1 VCC1_5_PCH
W=8 mil out of PCH
S=15 mil to other signals
M37 N_GPIO21
J40 N_GPIO19
H40 N_GPIO36
N41 N_GPIO37
M39 N_GPIO16
N40 N_GPIO49
AP2 AT2 AP1 EDP_BKLTCTL EDP_BKLTEN EDP_VDDEN
N30 RSVD N_A20GATE (18)
K36 RCINB N_-KBRST (18)
G39 SERIRQ N_SERIRQ (18,20)
C40 THRMTRIPB N_-THRMTRIP
G40 PECI SB_PECI NR85 0/4/X A_PECI
F40 PM_SYNCH A_PMSYNC (4)
F41 PLTRST_PROCB A_-CPURST (4)
BD82Z87/S

Rev 0.2
Rev 0.2
Rev_1.0
N_-THRMTRIP
NC62
100p/4/NPO/50V/J/X

PCH (A)

3VDUAL_PCH
NR124 8.2K/4/X N_-P_PME AA31
(10) N_PCH33 N_PCH33 AM22
PCHA
PMEB
CLKIN_33MHZLOOPBACK
TP16 A2
TP17 A3
TP18 B2
TP19 B1
TD_IREF C3
NR30 8.2K/4 TD_IREF
N_-PIRQA AU29 PIRQAB
N_-PIRQB AU27 PIRQBB
N_-PIRQC AW28 PIRQCB
N_-PIRQD AV27 PIRQDB
N_-PIRQE AR30 GPIO2
N_-PIRQF AV29 GPIO3
N_-PIRQG AV28 GPIO4
N_-PIRQH AT27 GPIO5
PLTRSTB AA37 N_-PFMRST (18)
GP35/NMIB M40 N_GPIO35
GP50 AH26 N_GPIO50
GP51 AU31 N_GPIO51
GP52 AJ26 N_GPIO52
GP53 AV31 N_GPIO53
GP54 AW33 N_GPIO54
GP55 R30 N_GPIO55
BD82Z87/S

BOOT DEVICE	GP51	GP19
LPC	0	0
SPI	1	1

Default int pull up on GP51,
Default SPI boot devices

PCH CLK PD

CK_SRCCLK_SATA NR174 8.2K/4
CK_-SRCCLK_SATA NR173 8.2K/4
Mount for integrated clock Generation Mode

PCH PU/PD

NRN2 8.2K/8P4R/4
N_-PIRQC N_-PIRQH N_-PIRQD N_-PIRQB
NRN3 8.2K/8P4R/4
N_-PIRQE N_-PIRQF N_-PIRQA N_-PIRQG
NRN7 8.2K/8P4R/4
(17) -PCIEX1_PR0 N_GPIO50 N_GPIO52
(17) -PCIEX1_PR1 N_GPIO17 N_GPIO6
N_GPIO55 NR160 1K/4/1/X
N_GPIO51 NR55 1K/4/1/X
N_GPIO53 NR53 1K/4/1/X
PCH CONFIG
N_A20GATE NR167 1K/4/1/X N_GPIO22
(12) N_-PCI_STOP N_-PCI_STOP
N_GPIO39 NR157 1K/4/1/X
MFG MODE
NRN11 8.2K/8P4R/4
N_SERIRQ N_GPIO19 N_GPIO48 N_GPIO21
(29) N_GPIO21
NRN12 8.2K/8P4R/4
N_GPIO35 N_GPIO16 N_GPIO49
NR80 1K/4/1/X
PCIE/MSATA MUX SELECT
GFX SELECT
NRN13 8.2K/8P4R/4
N_-KBRST NR161 1K/4/1
DMI RX TERMINATION
NR84 1K/4/1/X N_GPIO36 NR148 8.2K/4/X
SV DETECT
NR66 1K/4/1/X N_GPIO69 NR65 8.2K/4/X
N_GPIO55 NR244 8.2K/4
Rev 0.2
NRN4 8.2K/8P4R/4
N_GPIO7 N_GPIO54 N_GPIO1 N_GPIO68
(17) -PCIEX1_PR2
N_GPIO17 NR61 8.2K/4/X
N_GPIO19 NR113 8.2K/4/X

ME PWROK N_GPIO37 For H87/B85

TLS Setting
NR146 1K/4/1/X N_GPIO37 NR110 8.2K/4/X NR251 8.2K/4/X
VCC3 3VDUAL VCC3_ME
Rev 0.3
NR186 8.2K/4
N_ME_PWROK
ND2 BAT54A/SOT23/200mA
(12,43) N_-SLP_A NR187 0/4 VCC1_05_ME
3VDUAL
NR188 22K/4
NQ15 S0T23 MMBT2222A/SOT23/600mA/40
NC60 0.01u/4/X7R/25V/K
NQ16 MMBT2222A/SOT23/600mA/40 S0T23
VCC3_ME NR189 8.2K/4 NR190 8.2K/4/X
NC61 1u/4/X5R/6.3V/K

GPIO38 Ctrl

VCC3
N_GPIO38 NR114 8.2K/4
NQ13 MMBT2222A/SOT23/600mA/40 S0T23
(12) N_GPIO60 NR184 8.2K/4

SATA CONNECTOR

SATA3_0_1
N_SATA1TXP 0.01u/4/X7R/25V/K NC42 N_SATA1TXPC
N_SATA1TXN 0.01u/4/X7R/25V/K NC41 N_SATA1TXNC
N_SATA1RXP 0.01u/4/X7R/25V/K NC40 N_SATA1RXPC
N_SATA1RXN 0.01u/4/X7R/25V/K NC39 N_SATA1RXNC
GND TX1+ TX1- GND RX1- RX1+ GND
GND TX0+ TX0- GND RX0- RX0+ GND
N_SATA0TXPC NC44 0.01u/4/X7R/25V/K N_SATA0TXP
N_SATA0TXNC NC43 0.01u/4/X7R/25V/K N_SATA0TXN
N_SATA0RXNC NC38 0.01u/4/X7R/25V/K N_SATA0RXN
N_SATA0RXPC NC37 0.01u/4/X7R/25V/K N_SATA0RXP
SATA/14/BK/H/OP/RA/D/2

SATA3_2_3
N_SATA3TXP 0.01u/4/X7R/25V/K NC34 N_SATA3TXPC
N_SATA3TXN 0.01u/4/X7R/25V/K NC33 N_SATA3TXNC
N_SATA3RXP 0.01u/4/X7R/25V/K NC32 N_SATA3RXNC
N_SATA3RXN 0.01u/4/X7R/25V/K NC31 N_SATA3RXPC
N_SATA2TXPC NC36 0.01u/4/X7R/25V/K N_SATA2TXP
N_SATA2TXNC NC35 0.01u/4/X7R/25V/K N_SATA2TXN
N_SATA2RXNC NC30 0.01u/4/X7R/25V/K N_SATA2RXN
N_SATA2RXPC NC29 0.01u/4/X7R/25V/K N_SATA2RXP
SATA/14/BK/H/OP/RA/D/2

SATA3_4_5
N_SATA5TXP 0.01u/4/X7R/25V/K NC49 N_SATA5TXPC
N_SATA5TXN 0.01u/4/X7R/25V/K NC50 N_SATA5TXNC
N_SATA5RXP 0.01u/4/X7R/25V/K NC51 N_SATA5RXNC
N_SATA5RXN 0.01u/4/X7R/25V/K NC52 N_SATA5RXPC
N_SATA4TXPC NC45 0.01u/4/X7R/25V/K N_SATA4TXP
N_SATA4TXNC NC46 0.01u/4/X7R/25V/K N_SATA4TXN
N_SATA4RXNC NC47 0.01u/4/X7R/25V/K N_SATA4RXN
N_SATA4RXPC NC48 0.01u/4/X7R/25V/K N_SATA4RXP
SATA/14/BK/H/OP/RA/D/2

Gigabyte Technology

Title: PCH HOST , SATA, PCI

Size: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

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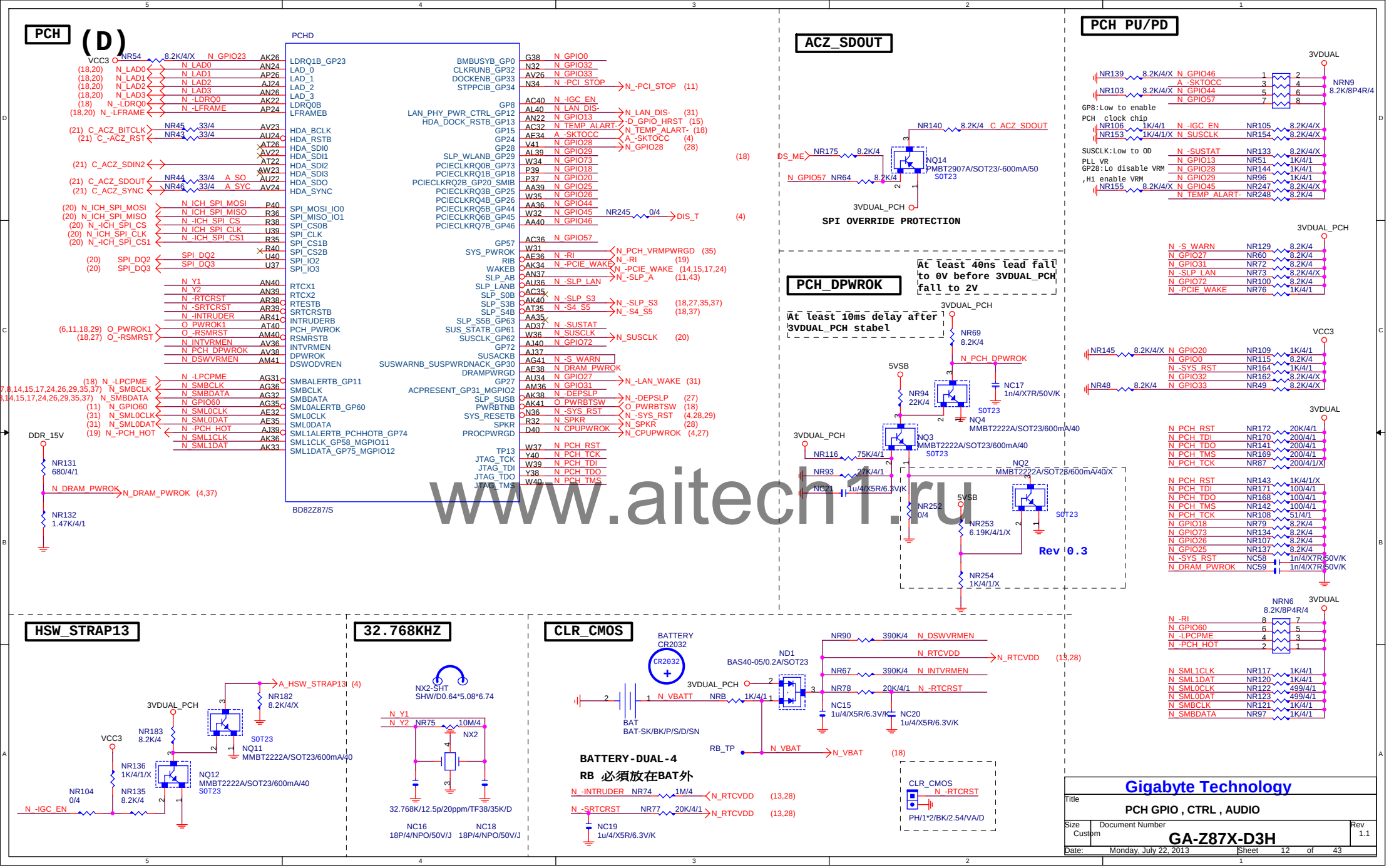

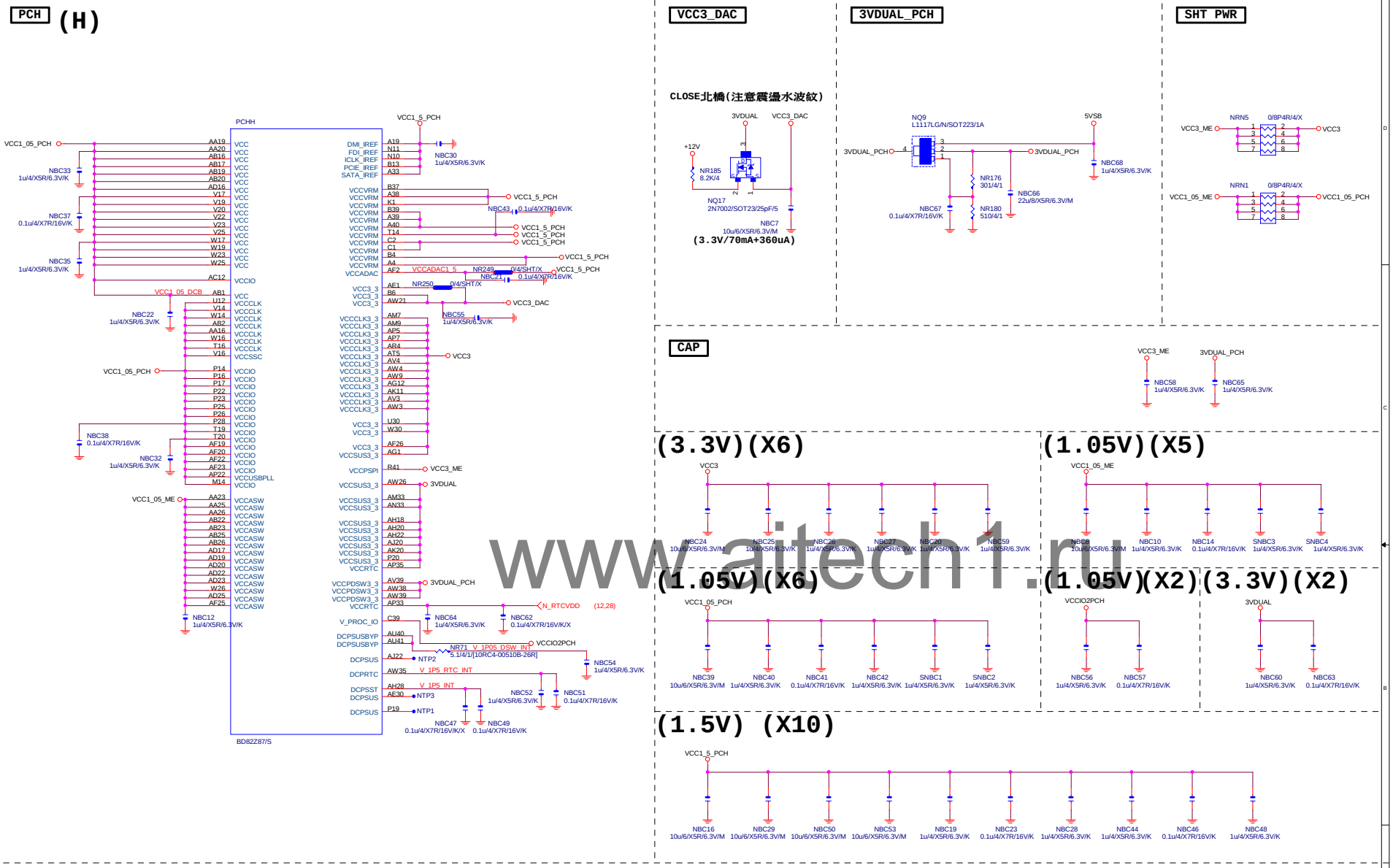

VCC3_DAC

CLOSE北橋(注意震盪水波紋)

(3.3V/70mA+360uA)

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)

Title	PCH PWR ,GND
Size / Custom	Document Number: GA-Z87X-D3H
Rev	1.1
Date:	Monday, July 22, 2013
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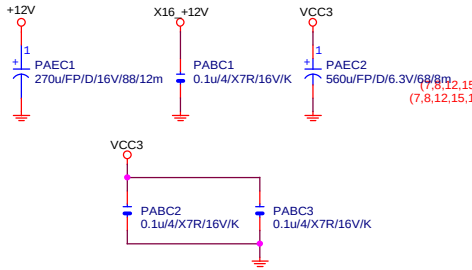
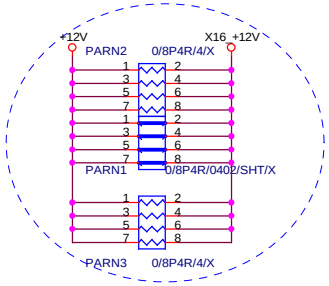
Gigabyte Technology

PCIEX16 CAP



PCIEX16 PROTECT SHT

+12 protect short-wire test



PCIEX16 AC CAP

PA_EXP_TXP0	PAC5	0.22u/4/X5R/6.3V/K	PA_EXP_TXP0_C
PA_EXP_TXN0	PAC4	0.22u/4/X5R/6.3V/K	PA_EXP_TXN0_C
PA_EXP_TXP1	PAC6	0.22u/4/X5R/6.3V/K	PA_EXP_TXP1_C
PA_EXP_TXN1	PAC7	0.22u/4/X5R/6.3V/K	PA_EXP_TXN1_C
PA_EXP_TXP2	PAC8	0.22u/4/X5R/6.3V/K	PA_EXP_TXP2_C
PA_EXP_TXN2	PAC9	0.22u/4/X5R/6.3V/K	PA_EXP_TXN2_C
PA_EXP_TXP3	PAC10	0.22u/4/X5R/6.3V/K	PA_EXP_TXP3_C
PA_EXP_TXN3	PAC11	0.22u/4/X5R/6.3V/K	PA_EXP_TXN3_C
PA_EXP_TXP4	PAC12	0.22u/4/X5R/6.3V/K	PA_EXP_TXP4_C
PA_EXP_TXN4	PAC13	0.22u/4/X5R/6.3V/K	PA_EXP_TXN4_C
PA_EXP_TXP5	PAC14	0.22u/4/X5R/6.3V/K	PA_EXP_TXP5_C
PA_EXP_TXN5	PAC15	0.22u/4/X5R/6.3V/K	PA_EXP_TXN5_C
PA_EXP_TXP6	PAC16	0.22u/4/X5R/6.3V/K	PA_EXP_TXP6_C
PA_EXP_TXN6	PAC17	0.22u/4/X5R/6.3V/K	PA_EXP_TXN6_C
PA_EXP_TXP7	PAC19	0.22u/4/X5R/6.3V/K	PA_EXP_TXP7_C
PA_EXP_TXN7	PAC18	0.22u/4/X5R/6.3V/K	PA_EXP_TXN7_C
PA_EXP_SW_TXP8	PAC20	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP8_C
PA_EXP_SW_TXN8	PAC21	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN8_C
PA_EXP_SW_TXP9	PAC22	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP9_C
PA_EXP_SW_TXN9	PAC23	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN9_C
PA_EXP_SW_TXP10	PAC24	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP10_C
PA_EXP_SW_TXN10	PAC25	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN10_C
PA_EXP_SW_TXP11	PAC26	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP11_C
PA_EXP_SW_TXN11	PAC27	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN11_C
PA_EXP_SW_TXP12	PAC28	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP12_C
PA_EXP_SW_TXN12	PAC29	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN12_C
PA_EXP_SW_TXP13	PAC30	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP13_C
PA_EXP_SW_TXN13	PAC31	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN13_C
PA_EXP_SW_TXP14	PAC32	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP14_C
PA_EXP_SW_TXN14	PAC33	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN14_C
PA_EXP_SW_TXP15	PAC34	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXP15_C
PA_EXP_SW_TXN15	PAC35	0.22u/4/X5R/6.3V/K	PA_EXP_SW_TXN15_C

PCI-E REV:1.1--> 2.5GHZ

PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s

PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

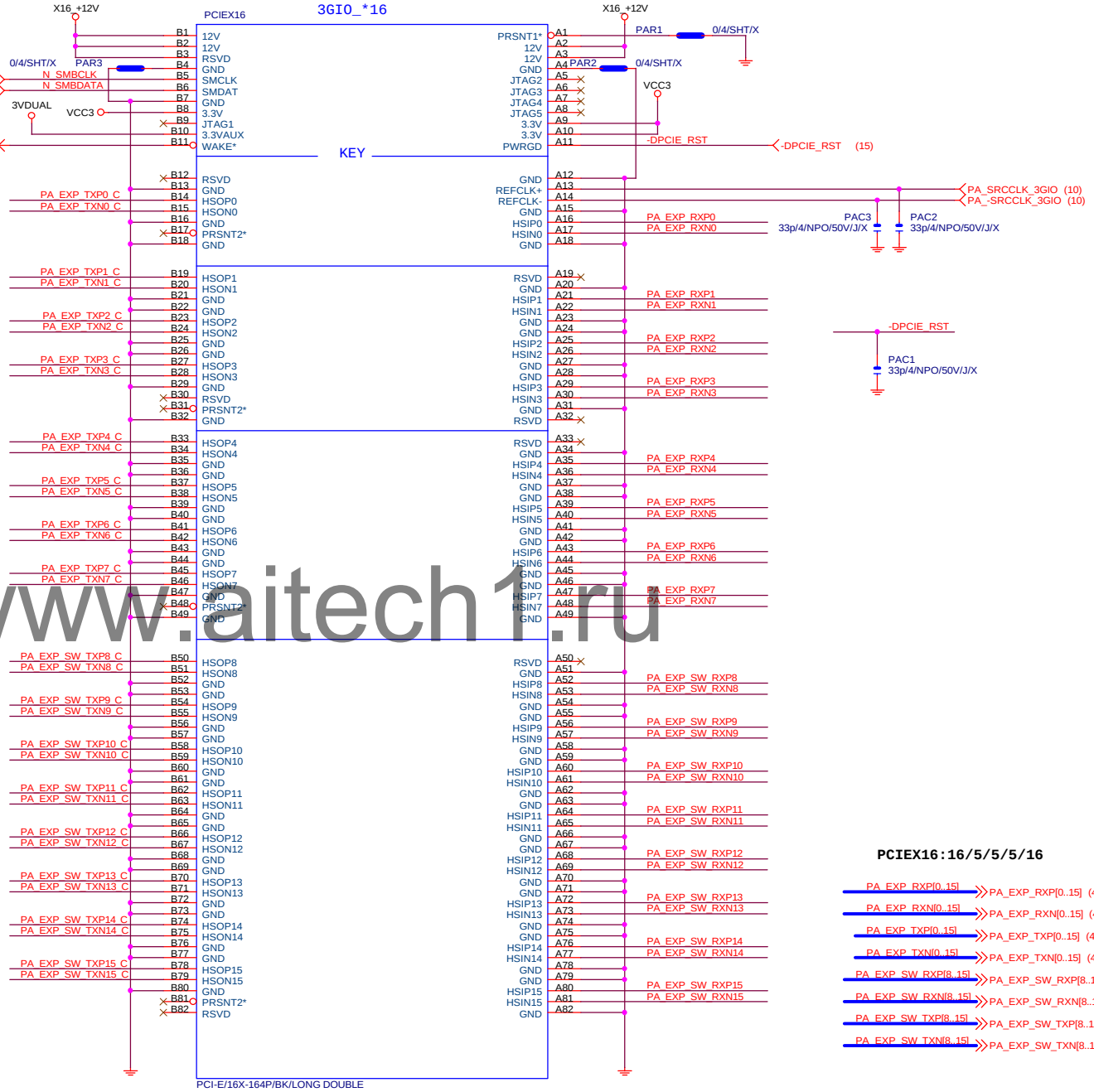
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

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

PCI-E REV:2.0--> 5GHZ

PCIEX16 SLOT

PCIESLOT-164DN-Q



PCIEX16:16/5/5/5/16

PA_EXP_RXP[0..15] » PA_EXP_RXP[0..15] (4,16)
PA_EXP_RXN[0..15] » PA_EXP_RXN[0..15] (4,16)
PA_EXP_TXP[0..15] » PA_EXP_TXP[0..15] (4,16)
PA_EXP_TXN[0..15] » PA_EXP_TXN[0..15] (4,16)
PA_EXP_SW_RXP[8..15] » PA_EXP_SW_RXP[8..15] (16)
PA_EXP_SW_RXN[8..15] » PA_EXP_SW_RXN[8..15] (16)
PA_EXP_SW_TXP[8..15] » PA_EXP_SW_TXP[8..15] (16)
PA_EXP_SW_TXN[8..15] » PA_EXP_SW_TXN[8..15] (16)

Gigabyte Technology			
Title: PCI EXPRESS * 16			
Size: Custom	Document Number: GA-Z87X-D3H		Rev: 1.1
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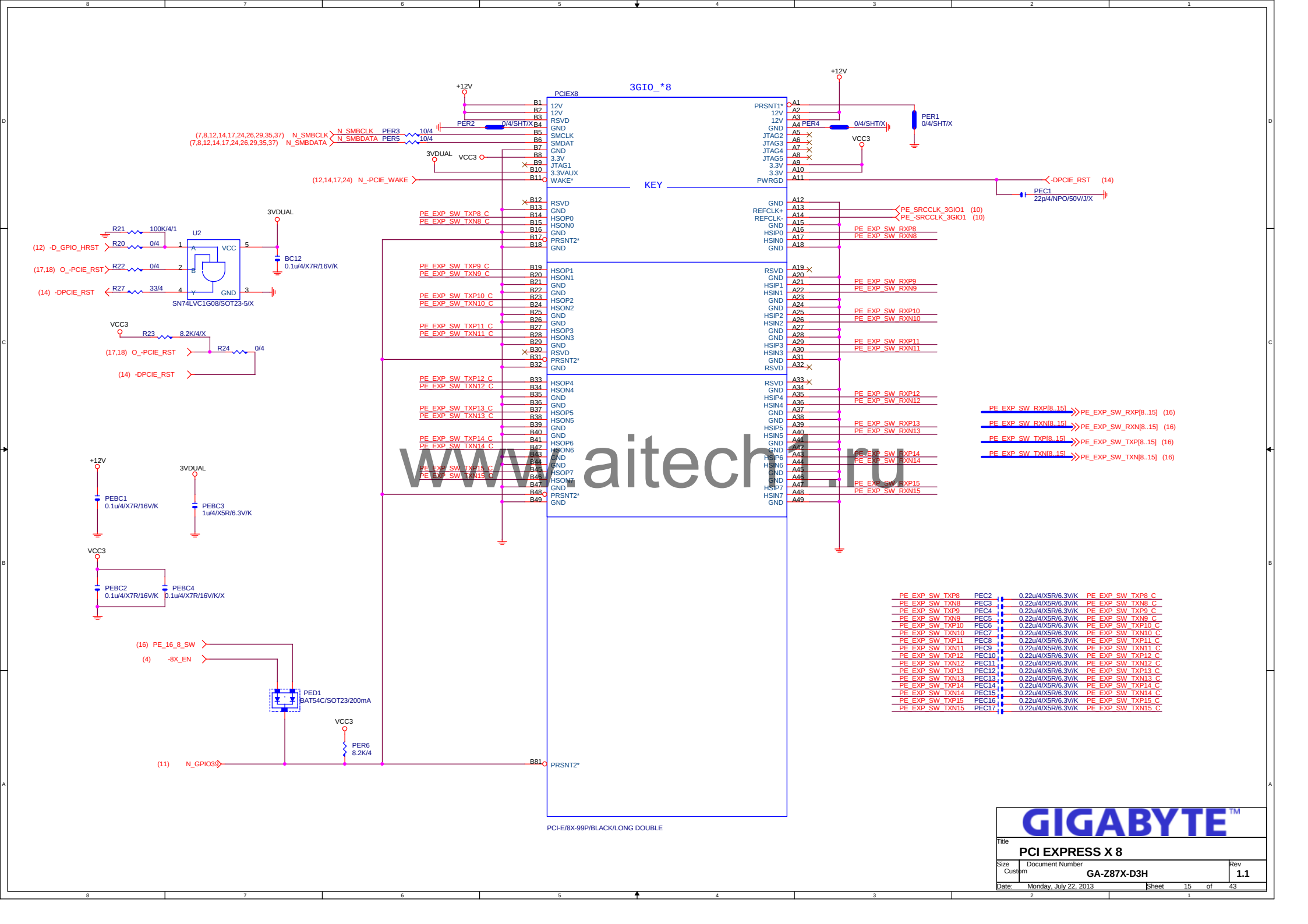

Title	PCI EXPRESS X 8
Size	Custom
Document Number	GA-Z87X-D3H
Rev	1.1
Date:	Monday, July 22, 2013
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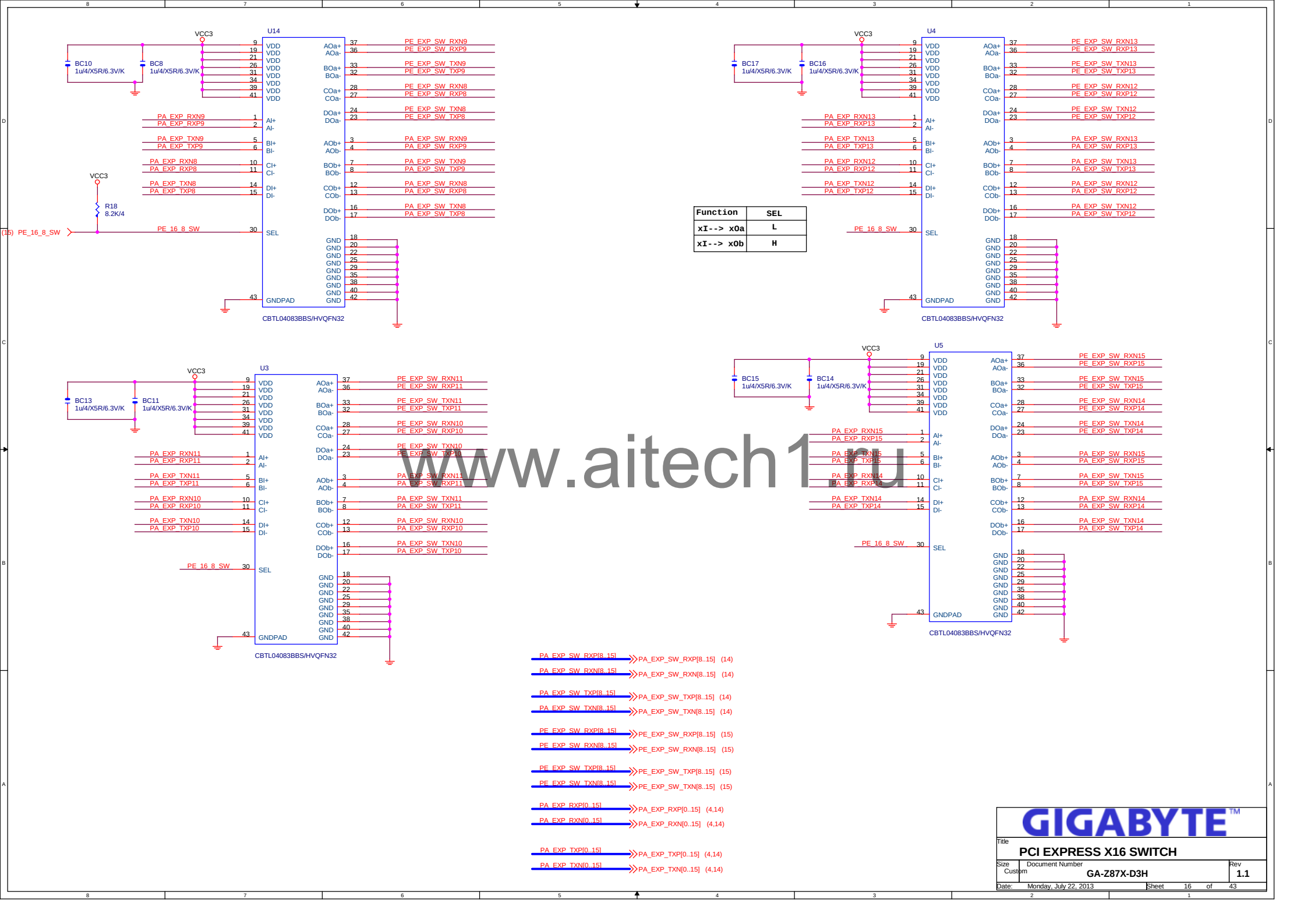

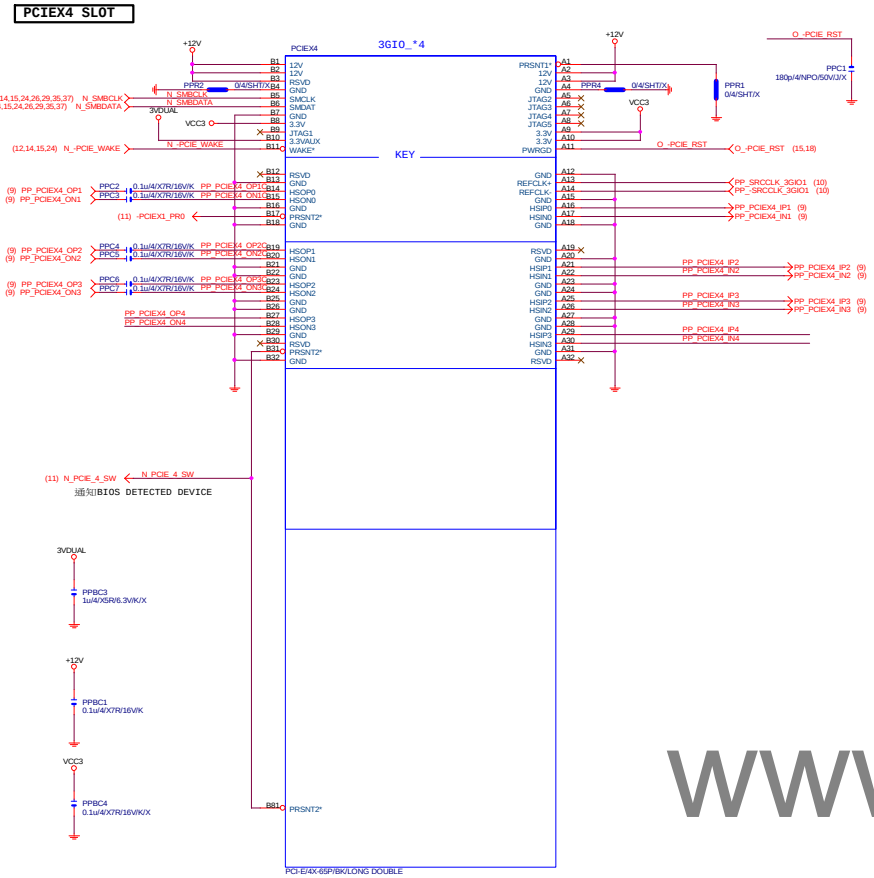

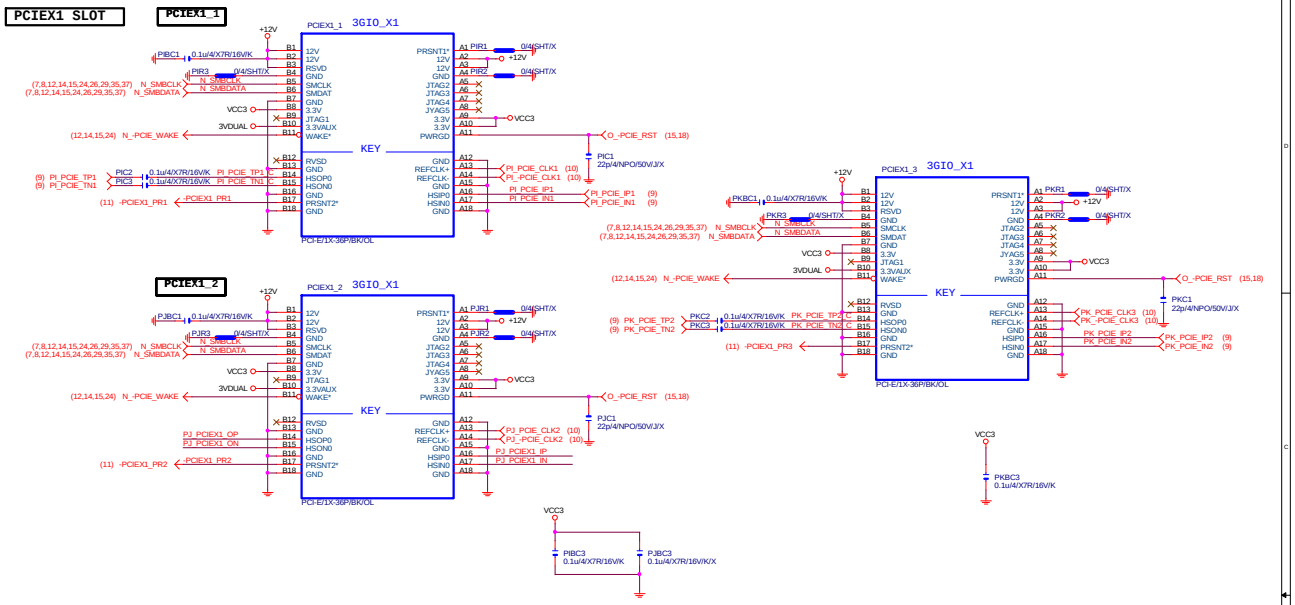

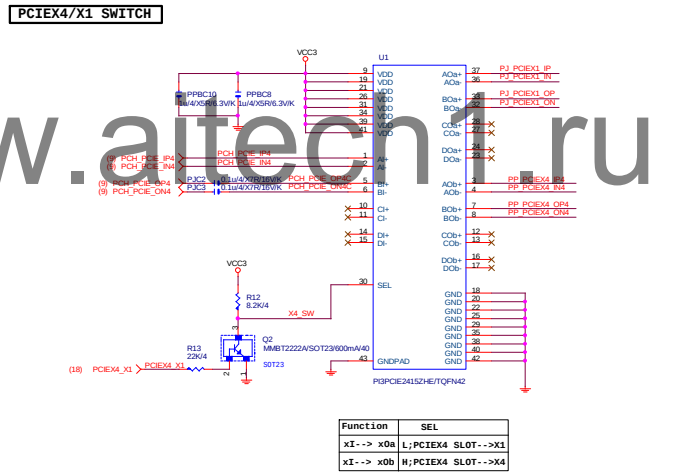

	N_PCIE_4_SW (PCH GPIO48)	PCIEX4_X1 (SIO_GPIO026)
PCIEX1 (Default)	H	H
PCIEX4 No devices PCIEX4 -> X1	H	H
PCIEX4 Have devices PCIEX4 -> X4 PCIEX1_1/2 --> N/A	L	L

PCIEX4 -->

Gigabyte Technology

Title: PCIE_X1 1,2

Size: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

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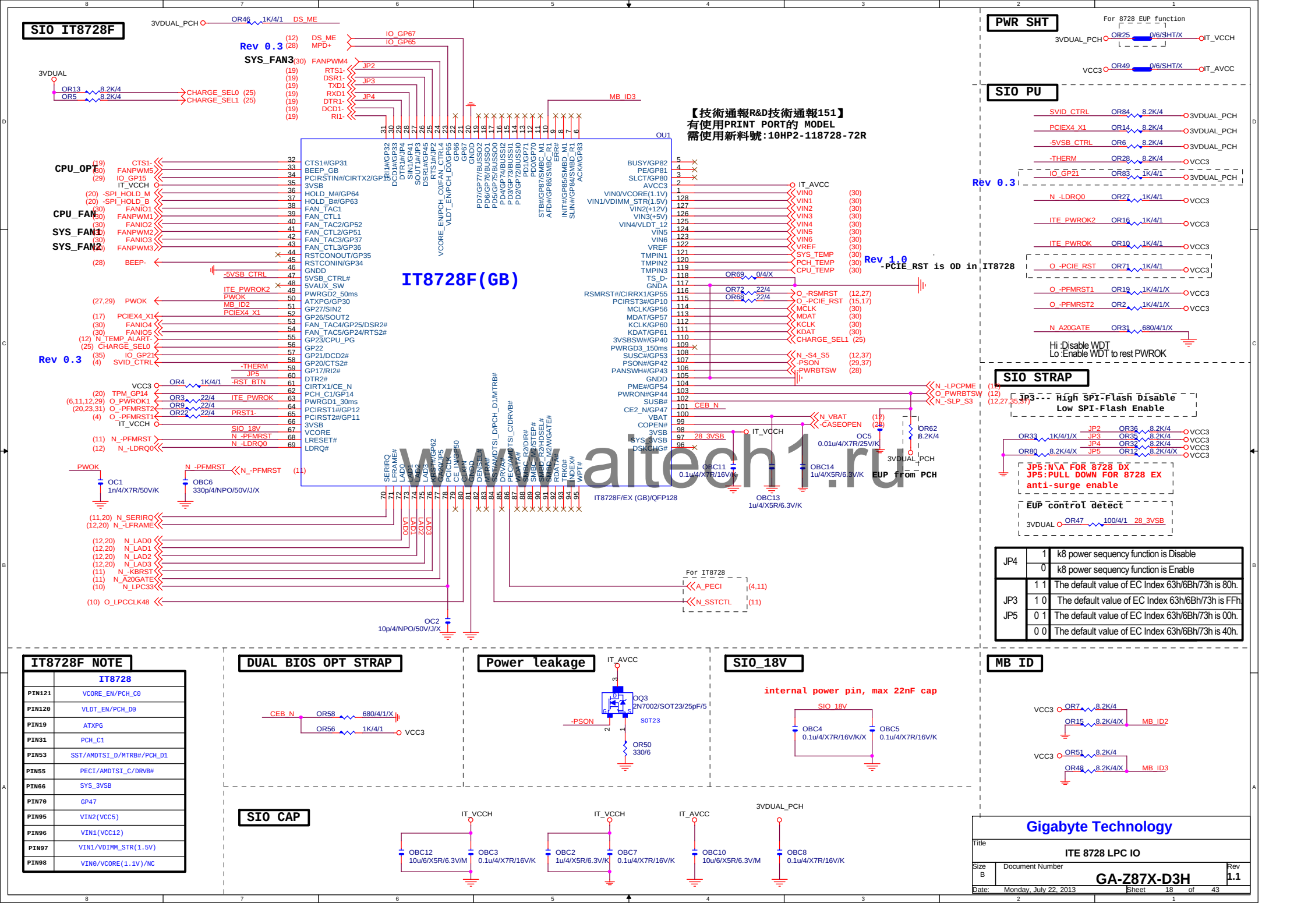
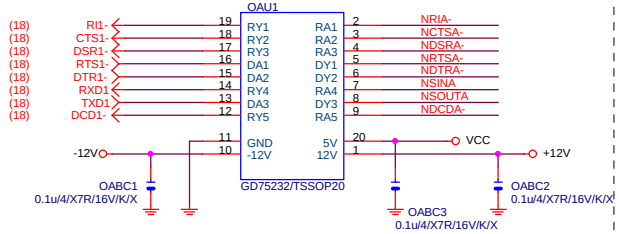


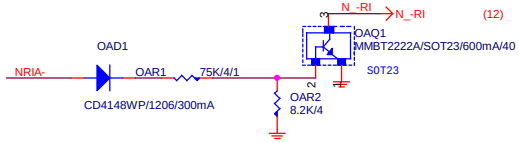
JP4		
	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

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

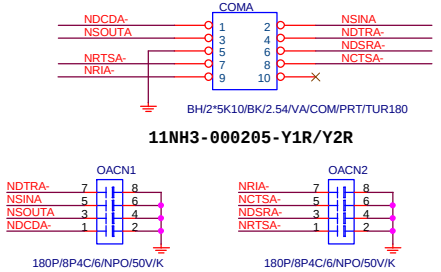
COMA



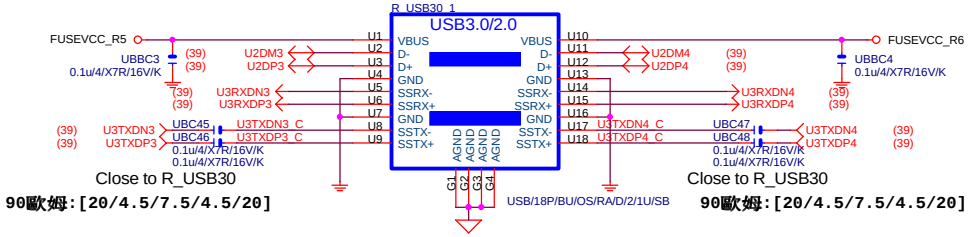
COM RI



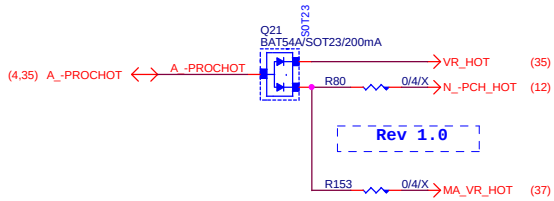
COM BUFFER



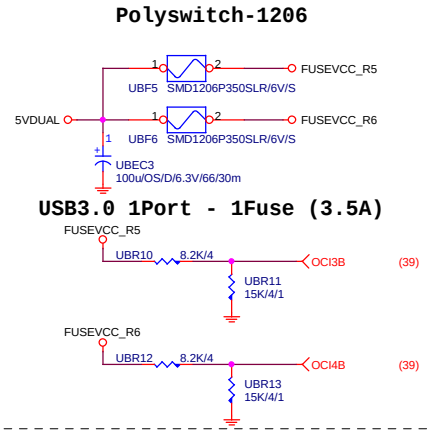
USB30_20 CONNECT



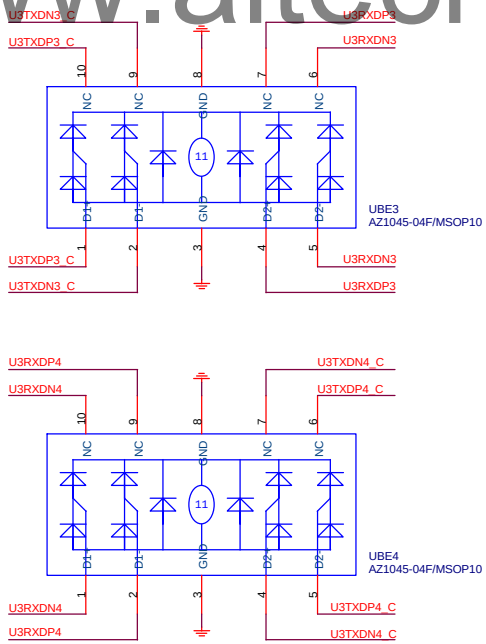
-PROHOT



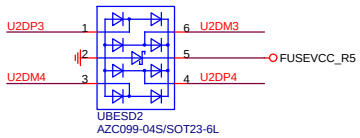
USB30 PWR



USB30 ESD PROCTECT



USB20 ESD PROCTECT



-PROHOT

Gigabyte Technology			
Title: COM & PROHOT/Dynamic O.C.			
Size: Custom	Document Number: GA-Z87X-D3H		Rev: 1.1
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DUAL BIOS

VCC3_ME
NR226 330/4/1
NQ20 MMBT2222A/SOT23/600mA/40
-SPI_CS_1
NR227 1K/4/1
NR228 0/4/X
SOT23
-SPI_HOLD_M NR233 1K/4/1/X
N_-ICH_SPI_CS
CS
PH/1*2/BK/2.54/VA/D
NQ21 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_B NR229 8.2K/4

VCC3_ME
NR230 330/4/1
-SPI_CS_2
NR231 1K/4/1
NQ22 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_B NR234 1K/4/1/X
N_-ICH_SPI_CS
NQ23 MMBT2222A/SOT23/600mA/40 SOT23
-SPI_HOLD_M NR232 8.2K/4

M_BIOS
-SPI_CS_1 NR7 22/4
NC1 10p/4/NPO/50V/J/X
SPI_MISO
(12) SPI_DQ2 NR220 0/4 N_-SPI_WP0
CS# VDD SO HOLD# WP# SCK VSS SI
VCC3_ME NR4 0/4/SHT/M/X
NBC2 1u/4/X5R/6.3V/K
NR221 0/4
NR222 8.2K/4/X -SPI_HOLD_M
-HOLD0
SPI_DQ3 (12)
(12) N_ICH_SPI_MISO
N_ICH_SPI_CLK
N_ICH_SPI_MOSI
NC2 10p/4/NPO/50V/J/X
MAIN BIOS
64M/Q/SPI/SO8/S

B_BIOS
-SPI_CS_2 NR8 22/4
SPI_MISO
(12) SPI_DQ2 NR223 0/4 N_-SPI_WP1
CS# VDD SO HOLD# WP# SCK VSS SI
VCC3_ME NR12 0/4/SHT/M/X
NBC3 1u/4/X5R/6.3V/K
NR224 0/4
NR225 8.2K/4/X -SPI_HOLD_B
-HOLD1
SPI_DQ3 (12)
N_ICH_SPI_CLK (12)
N_ICH_SPI_MOSI (12)
BACKUP BIOS
64M/Q/SPI/SO8/S

VCC3_ME
NBC4 0.1u/4/X7R/16V/K

MOSI For DMI RX Termination Voltage

VCC3_ME
(12) N_ICH_SPI_MOSI N_ICH_SPI_MOSI NR10 8.2K/4/X
(12) N_-ICH_SPI_CS N_-ICH_SPI_CS NR9 8.2K/4/X
(12) N_-ICH_SPI_CS1 N_-ICH_SPI_CS1 NR246 8.2K/4/X
(18) -SPI_HOLD_M -SPI_HOLD_M NR3 1K/4/1
(18) -SPI_HOLD_B -SPI_HOLD_B NR11 1K/4/1

VCC3_ME
N_-SPI_WP1 NR2 8.2K/4/X
N_-SPI_WP0 NR1 8.2K/4/X
N_ICH_SPI_MISO NR5 8.2K/4
-HOLD0 NR235 1K/4/1/X
-HOLD1 NR236 1K/4/1/X

5VDUAL
(18) -SPI_HOLD_M -SPI_HOLD_M NR237 1K/4/1/X
(18) -SPI_HOLD_B -SPI_HOLD_B NR238 1K/4/1/X

(12) N_ICH_SPI_MISO NR6 22/4 SPI_MISO

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

1 means floating
0 means PD 1K

TPM CONNECT

VCC3
3VDUAL_PCH
TPM
(10) T_TPMCLK LCLK 1
(12,18) N_-LFRAME N_-LFRAME LFRAME# 3
(18,23,31) O_-PFMRST2 O_-PFMRST2 LRESET# 5
(12,18) N_LAD3 N_LAD3 LAD3 7
N_LAD0 LAD0 11
VCC3 9
RSV0 13
SB3V 15
GND 17
LPCPD# 19
GND 2
VCC5 6
LAD2 8
LAD1 10
GND 12
RSV1 14
SERIRQ 16
CLKRUN# 18
RSV2 20
pin 4 防呆
N_LAD2 N_LAD2 (12,18)
N_LAD1 N_LAD1 (12,18)
N_SERIRQ N_SERIRQ (11,18)
VCC3 TR2 8.2K/4
TPM_GP14 (18)
TBC1 0.1u/4/X7R/16V/K/X
TBC2 0.1u/4/X7R/16V/K/X
BH/2*10K4/BK/2.54/VA/HA
(12) N_SUSCLK TR1 10/4

BIOS Debug port

M_BIOS
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/X

Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-Z87X-D3H	Rev: 1.1
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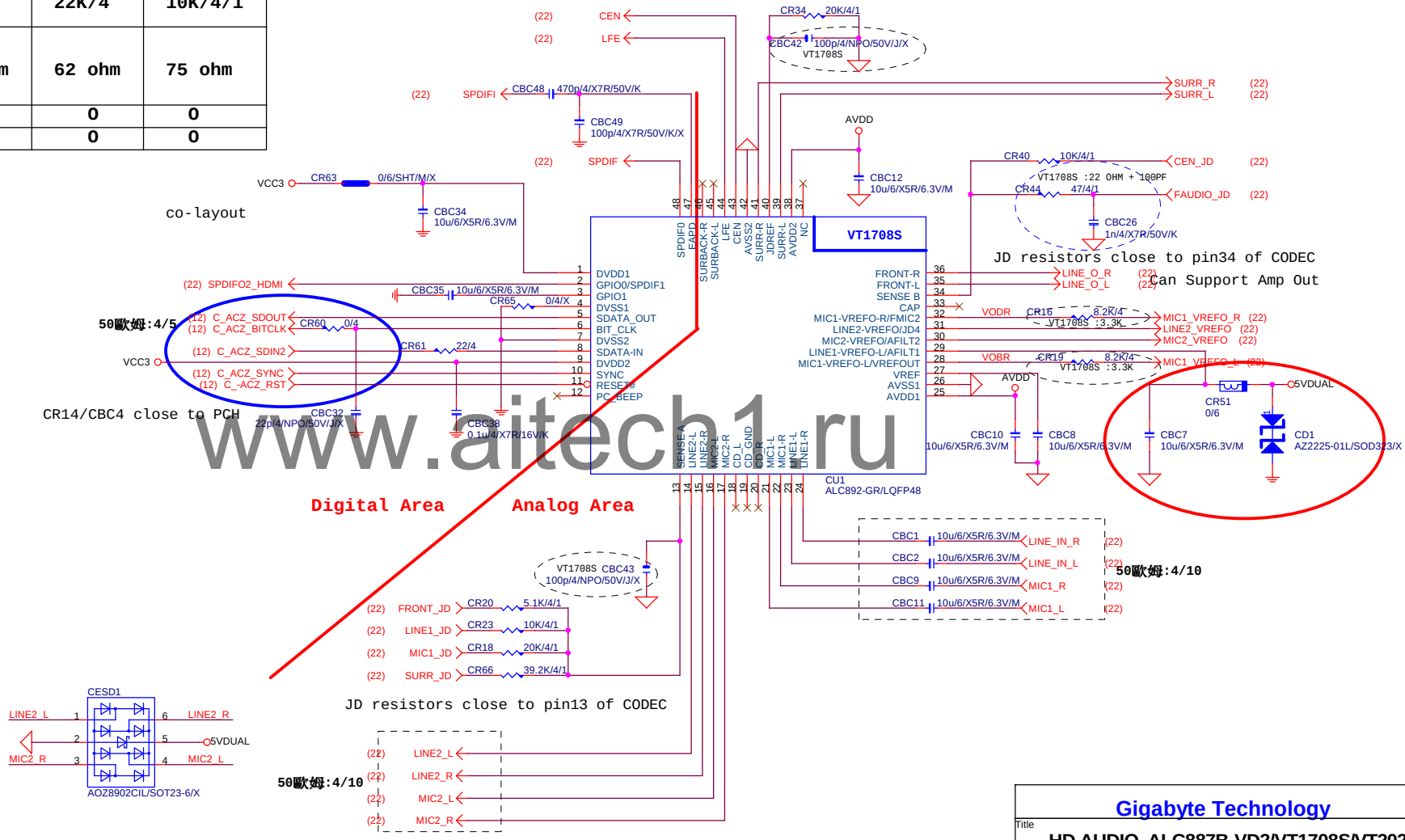
AZALIA CODEC **ALC892/ALC887-VD2/VT1708-CE Colay**

	ALC892	ALC887-VD2	VT1708S-CE
CR44/CBC26	47ohm+1nF	47ohm+1nF	22ohm+100P
CBC42/CBC43	X	X	100P/4
CR16/CR19 CR52/CR56/CR10/CR9	8.2K/4	8.2K/4	3.3K/4/1
CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70	22K/4	22K/4	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76	62 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	0	0	0
CESD1	X	0	0



Gigabyte Technology	
Title	HD AUDIO ALC887B-VD2/VT1708S/VT2021
Size: Custom	Document Number: GA-Z87X-D3H
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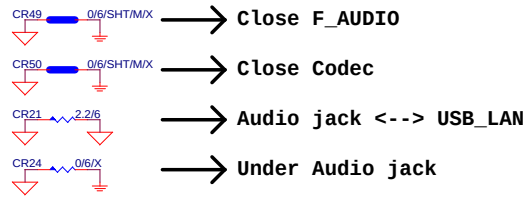
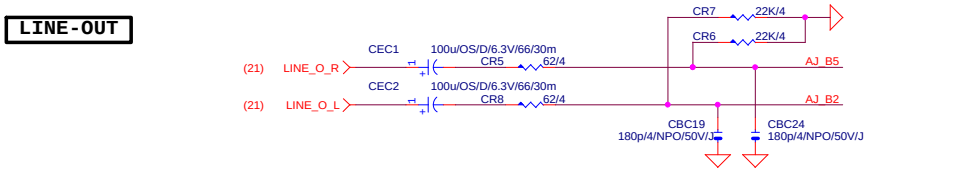
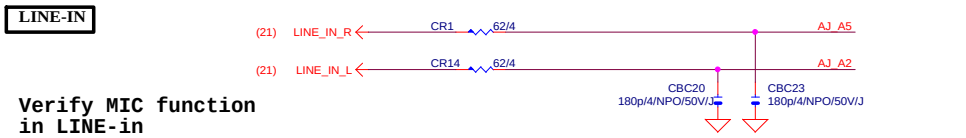


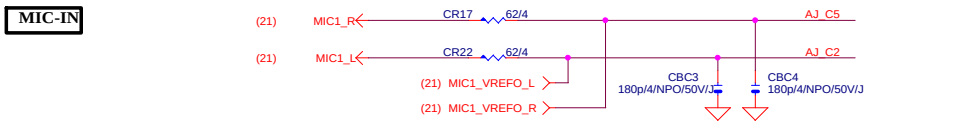


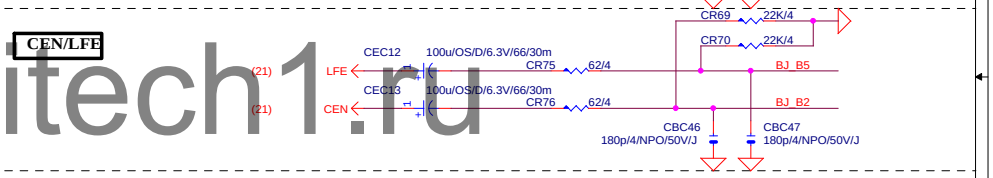
Only reserved for ALC888

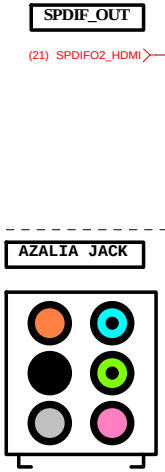


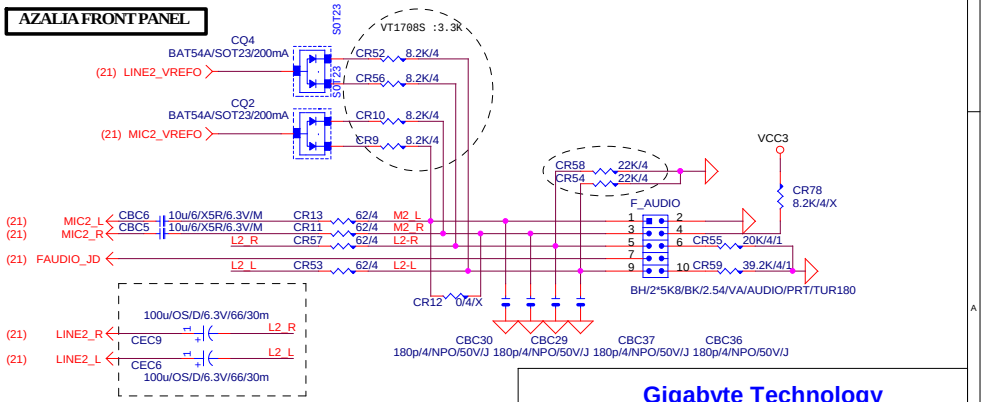
Verify MIC function in LINE-in

For 889A/888









SURR BACK

AZALIA JACK

SPDIF

Gigabyte Technology

Title: AUDIO JACK

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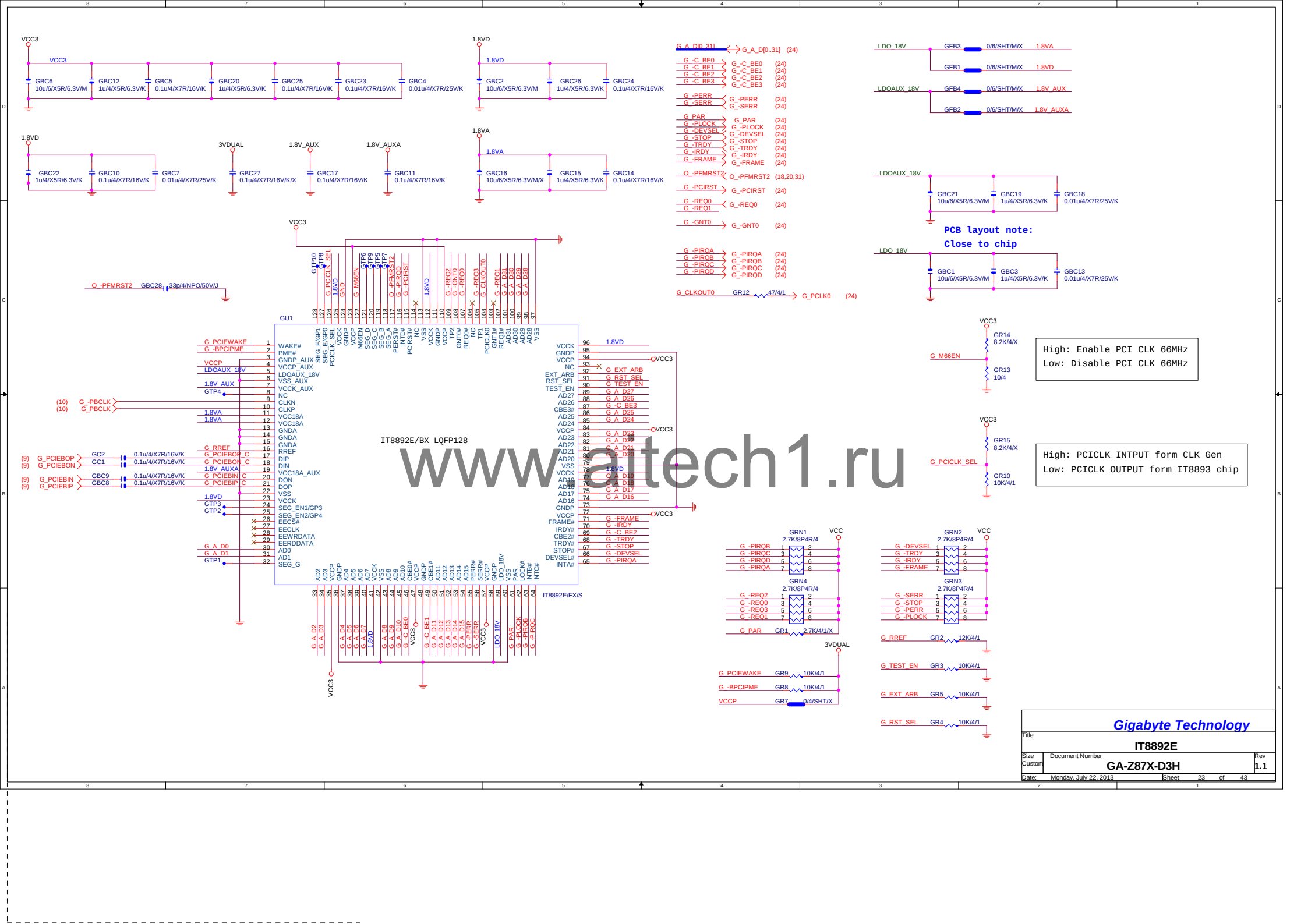

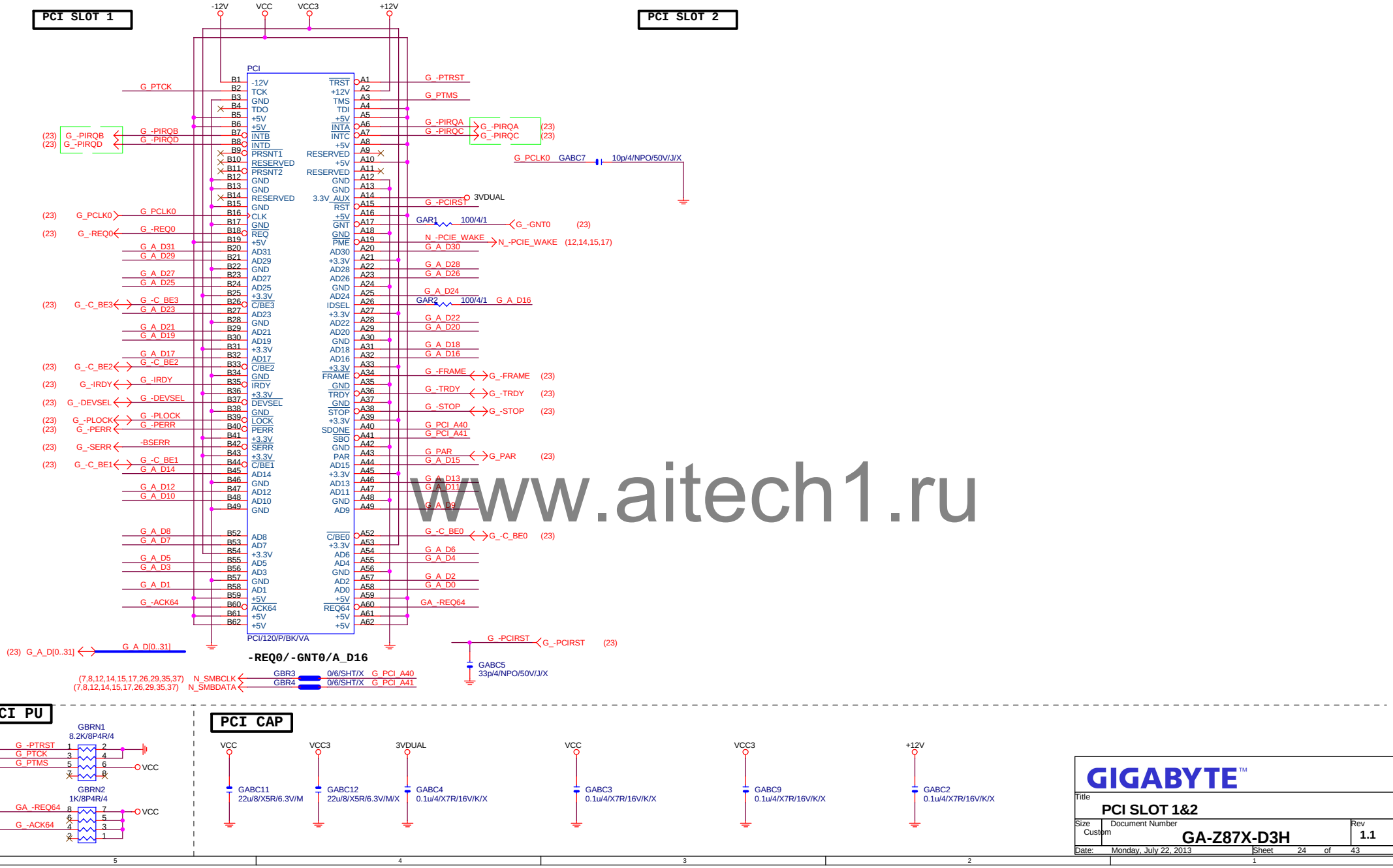
PCI SLOT 1
PCI SLOT 2
-12V
VCC
VCC3
+12V
PCI
PCI/120/P/BK/VA
-REQ0/-GNT0/A_D16
3VDUAL
www.aitech1.ru
PCI PU
GBRN1
8.2K/8P4R/4
GBRN2
1K/8P4R/4
PCI CAP
GABC11
22u/8/X5R/6.3V/M
GABC12
22u/8/X5R/6.3V/M/X
GABC4
0.1u/4/X7R/16V/K/X
GABC3
0.1u/4/X7R/16V/K/X
GABC9
0.1u/4/X7R/16V/K/X
GABC2
0.1u/4/X7R/16V/K/X
GABC5
33p/4/NPO/50V/J/X
GAR1
GAR2
100/4/1
GBR3
GBR4
0/6/SHT/X
GIGABYTE
Title
PCI SLOT 1&2
Size
Custom
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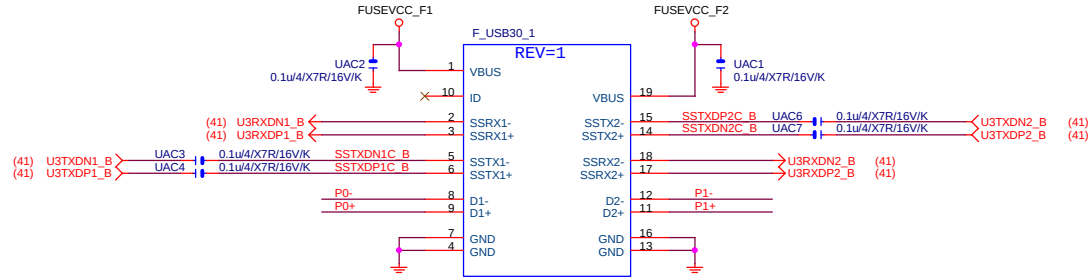
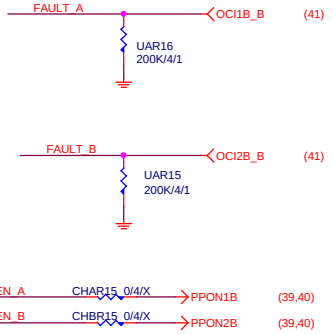
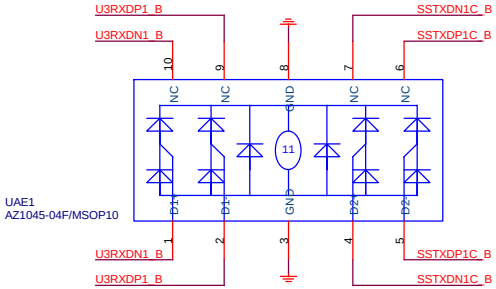
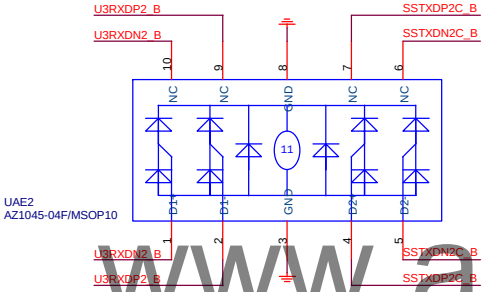
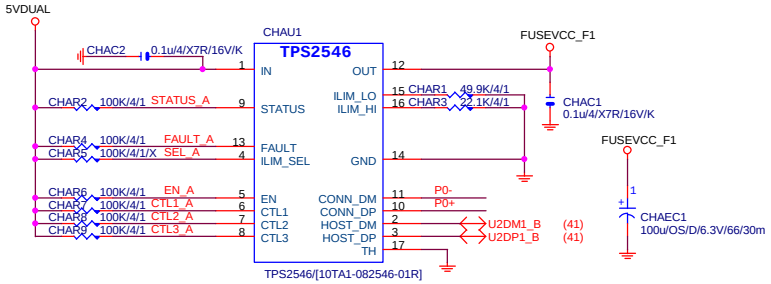


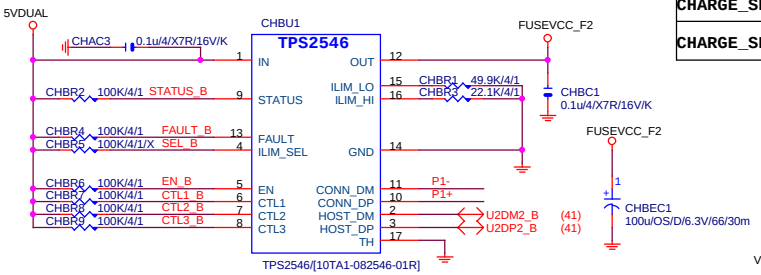


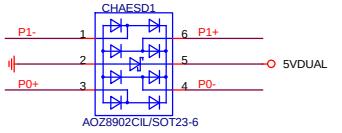


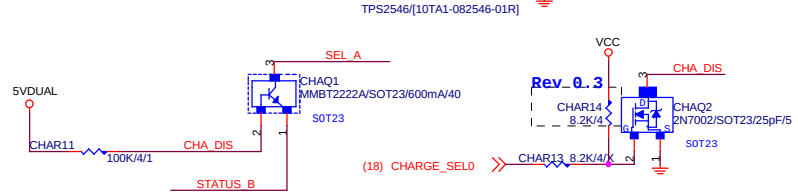


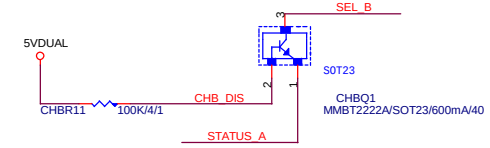
	S0	S3/S4/S5
CHARGE_SEL0	1	0
CHARGE_SEL1	1	0

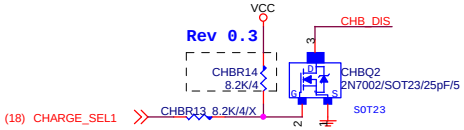


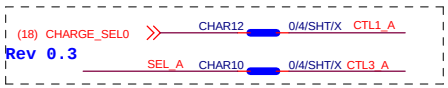


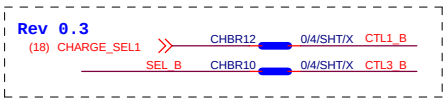












GIGABYTE™

Title	F USB3.0	
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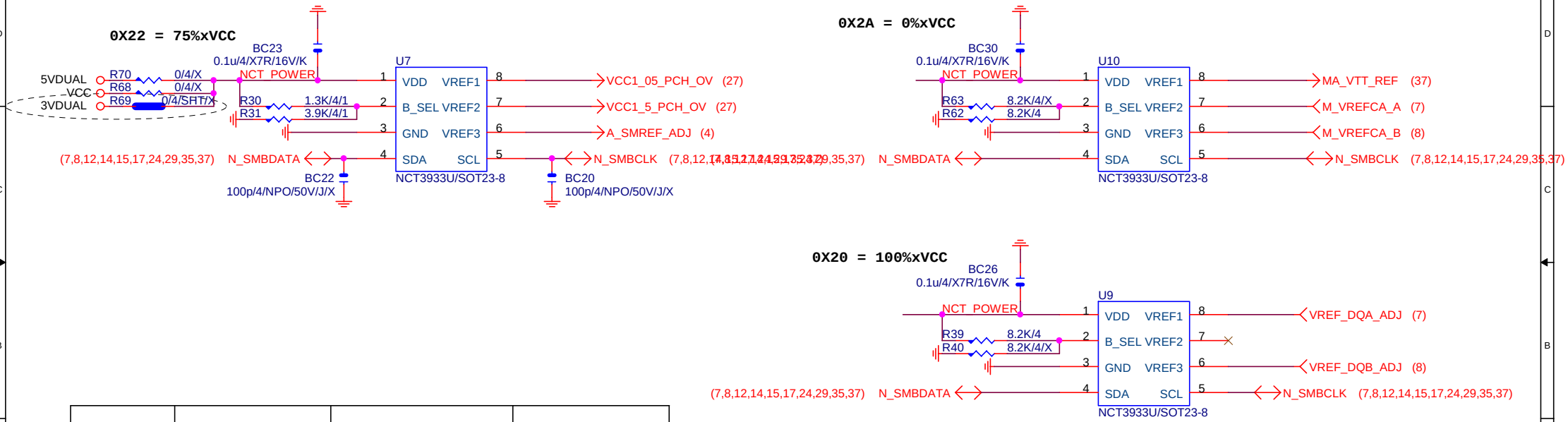
OVER VOLTAGE



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: Custom | Document Number: GA-Z87X-D3H | Rev: 1.1

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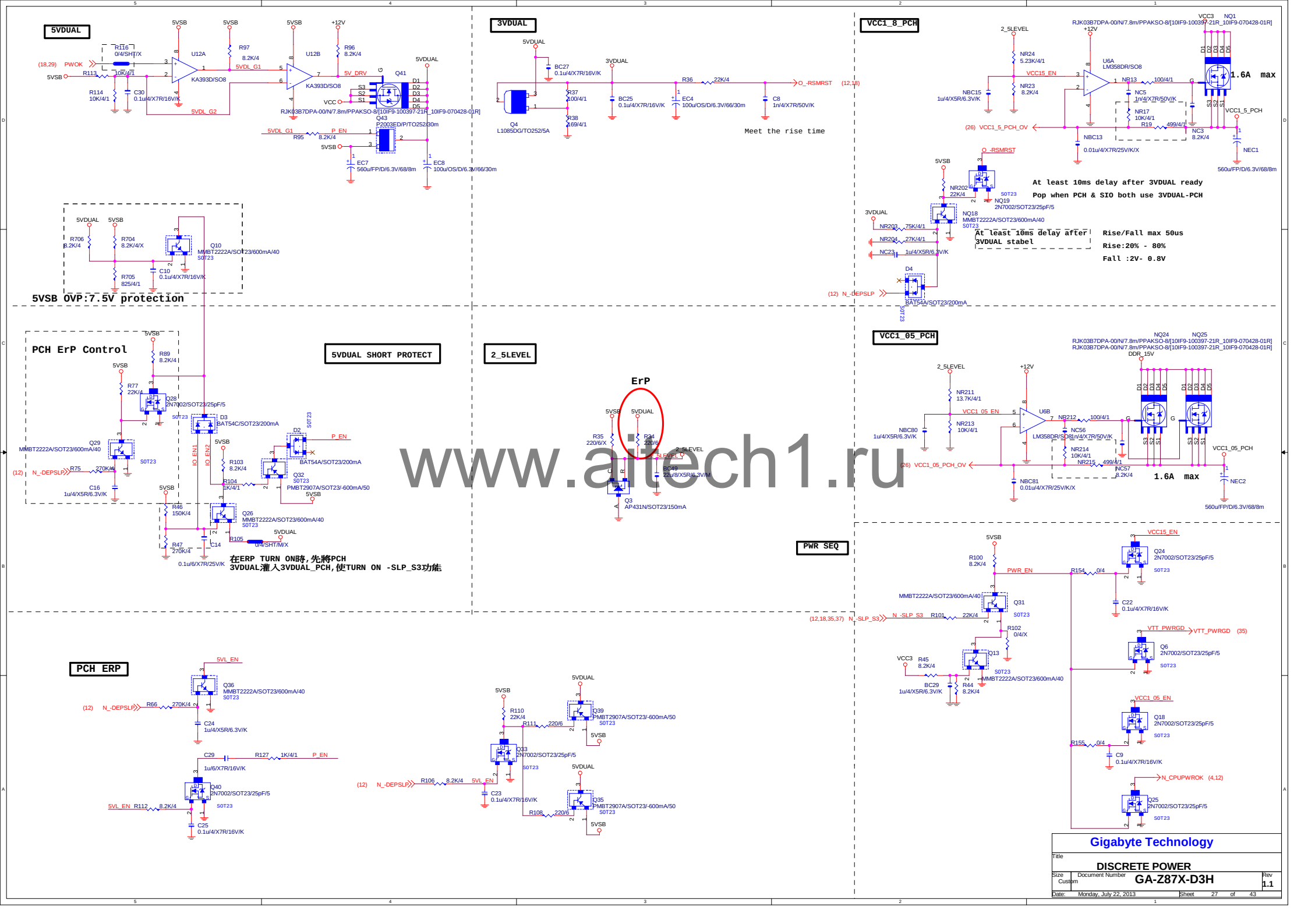
5VDUAL
3VDUAL
VCC1_8_PCH
5VSB OVP:7.5V protection
5VDUAL SHORT PROTECT
2_5LEVEL
ErP
PCH ErP Control
在ERP TURN ON時,先將PCH
3VDUAL灌入3VDUAL_PCH,使TURN ON -SLP_S3功能
Meet the rise time
At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH
At least 10ms delay after 3VDUAL stabel
Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V
1.6A max
VCC1_05_PCH
PWR SEQ
PCH ERP
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Gigabyte Technology
DISCRETE POWER
GA-Z87X-D3H
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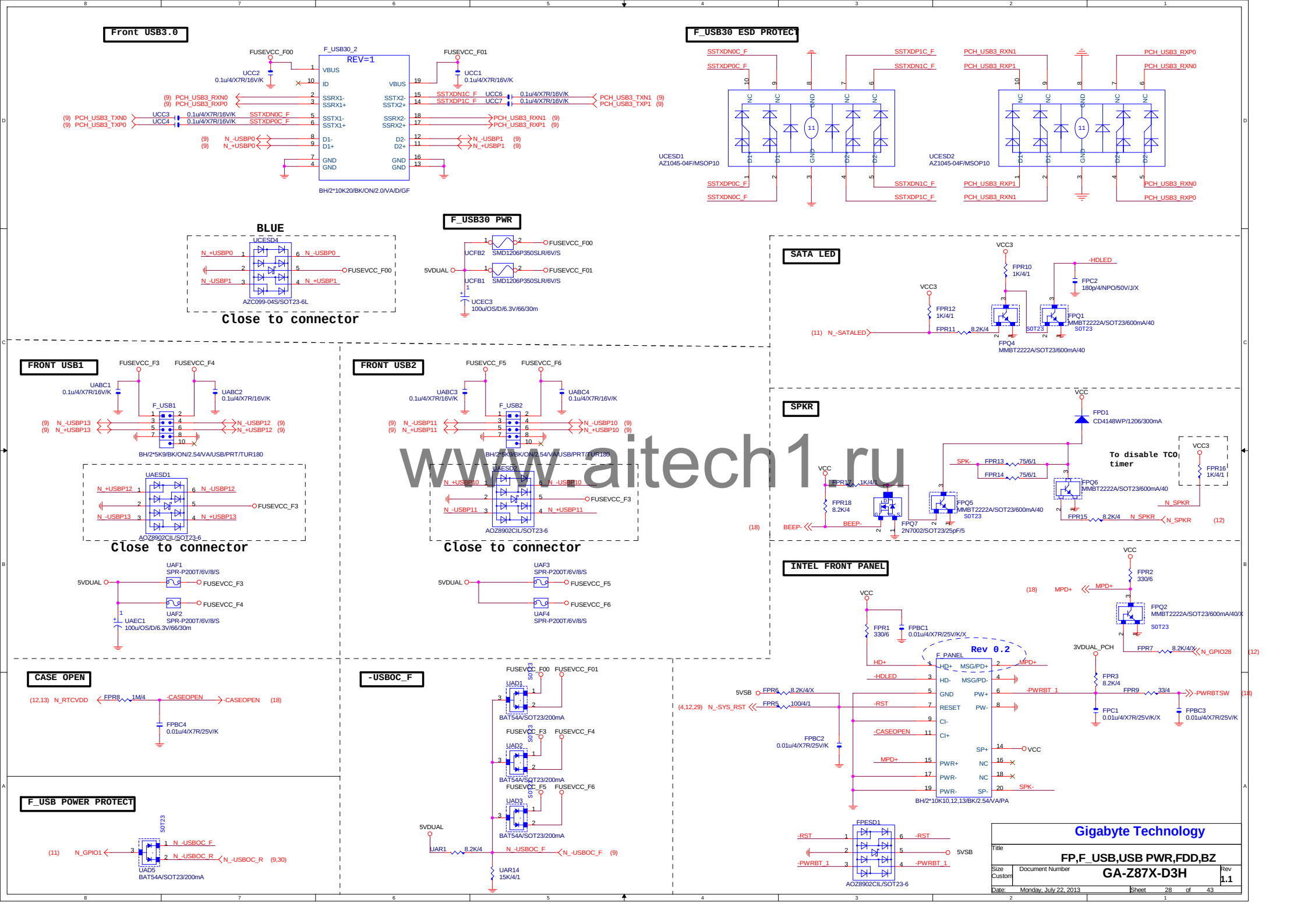
Front USB3.0
F_USB30_2
REV=1
FUSEVCC_F00
FUSEVCC_F01
BH/2*10K20/BK/ON/2.0/VA/D/GF
F_USB30 ESD PROTECT
UCESD1
AZ1045-04F/MSOP10
UCESD2
AZ1045-04F/MSOP10
BLUE
UCESD4
AZC099-04S/SOT23-6L
Close to connector
F_USB30 PWR
SMD1206P350SLR/6V/S
100u/OS/D/6.3V/66/30m
SATA LED
FPQ1
FPQ4
MMBT2222A/SOT23/600mA/40
SPKR
FPD1
CD4148WP/1206/300mA
FPQ5
FPQ6
FPQ7
2N7002/SOT23/25pF/5
To disable TCO timer
FRONT USB1
F_USB1
BH/2*5K9/BK/ON/2.54/VA/USB/PRT/TUR180
UAESD1
AOZ8902CIL/SOT23-6
Close to connector
UAF1
UAF2
SPR-P200T/6V/8/S
UAEC1
100u/OS/D/6.3V/66/30m
FRONT USB2
F_USB2
UAESD2
AOZ8902CIL/SOT23-6
Close to connector
UAF3
UAF4
INTEL FRONT PANEL
F_PANEL
Rev 0.2
BH/2*10K10,12,13/BK/2.54/VA/PA
FPESD1
AOZ8902CIL/SOT23-6
CASE OPEN
FPBC4
0.01u/4/X7R/25V/K
F_USB POWER PROTECT
UAD5
BAT54A/SOT23/200mA
-USBOC_F
UAD1
UAD2
UAD3
BAT54A/SOT23/200mA
UAR1
UAR14
15K/4/1
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Gigabyte Technology
FP,F_USB,USB PWR,FDD,BZ
GA-Z87X-D3H
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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR

5VSB R695 22K/4

(18,37) -PSON

BC37 0.1u/4/X7R/16V/K

-12V VCC3 VCC3

ATX

13	3.3V	3.3V	1
14	-12V	3.3V	2
15	GND	GND	3
16	PSON	5V	4
17	GND	GND	5
18	GND	5V	6
19	GND	GND	7
20	-5V	POK	8
21	5V	5VSB	9
22	5V	12V	10
23	5V	12V	11
24	GND	3.3V	12

VCC3 VCC3 VCC3 V12

BC35 22u/8/X5R/6.3V/M BC46 1u/4/X5R/6.3V/K BC48 1u/4/X5R/6.3V/K BC6 0.1u/4/X7R/16V/K

-5V VCC VCC

BC39 1u/4/X5R/6.3V/K BC40 0.1u/4/X7R/16V/K/X BC36 0.1u/4/X7R/16V/K/X

VCC VCC +12V 5VSB

R200 0/4 ATXPG

BC9 4.7u/6/X5R/6.3V/K

BC38 510/6/X BC42 510/6/X BC43 1u/4/X5R/6.3V/K BC44 0.1u/4/X7R/16V/K BC45 0.1u/4/X7R/16V/K BC41 0.1u/4/X7R/16V/K

AD1 AZ2225-01L/SOD323

APW/2*12/BK/VA/SN/2SHK/PA66

To prevent the 5VSB under loading when boot

ATXX4 POWER CONNECTOR

ATX_12V_2X4

1	GND	+12V	5
2	GND	+12V	6
3	GND	+12V	7
4	GND	+12V	8

V12

APW/2*4/BK/OC/P/4.2/VA/SN/OH::Location ATX_12V_2X4

BC7 0.1u/4/X7R/16V/K

MH1 MH2 MH3 MH9 HOLE_3/X AGND1

MH4 MH5 MH6 MH8 MH10 HOLE_3/X

HOLE_4-RH-1

K3 K6 K2 K5 K1 K4 K1_ICT/X

K1-ICT

I1 I2 I3 I4 I5 4MMH/X

4MMH

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue

+12V RN2 2.7K/8P4R/4 RN3 2.7K/8P4R/4 RN4 2.7K/8P4R/4 RN5 2.7K/8P4R/4 RN6 2.7K/8P4R/4

20 mils

+12V_LOAD

Q1 MMBT2222A/SOT23/600mA/40 S0T23

Rev 0.3

(11) N_GPIO21 R703 330/4/1

CLK GEN

CPU Frequency Selection

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

CKVDD CKR8 8.2K/4/X LPC_48 CKR1 8.2K/4/X CKR2 8.2K/4/X FS_133M CKR3 8.2K/4/X

CLK

31	DOC_0	VDD96	11
32	DOC_1	VDDSATA	25
		VDDPCIEX	7
5	CPUT_LR	VDDCPU	3
6	CPUC_LR	VDDREF	22
		VDD25	28
24	SATACLKT_LR		
23	SATACLKC_LR		
9	PCIEXT_LR	X1	20
10	PCIEXC_LR	X2	21
13	DOT96T_LR		
14	DOT96C_LR		
		SDATA	2
		SCLK	1
16	48M/FSLB	GNDPAD	33
		GNDCPU	4
15	24_12M	GNDPCIEX	8
29	25M	GND96	12
19	REF/FSLA	GNDREF	18
		GNDSATA	26
		GND25	27
30	RLATCH/RESET_IN#/RESET#		
17	VTTPWRGD/WOL_STOP#		

9LRS4105BKLFT/MLF32/X

(11) CK_SRCCLK_SATA (11) CK_-SRCCLK_SATA (9) CK_SRCCLK_PCH (9) CK_-SRCCLK_PCH (9) CK_DOTCLK (9) CK_-DOTCLK

LPC_48 (10) N_PCHCLK14 CKR4 33/4/X FS_133M

(4,12,28) N_-SYS_RST VCC3 CKR5 10/4/X CKR6 1K/4/1/X CPU_STP

(6,11,12,18) O_PWROK1 CKR7 8.2K/4/X

CKBC8 0.1u/4/X7R/16V/K/X

CKVDD CKBC1 1u/4/X5R/6.3V/K/X CKBC2 1u/4/X5R/6.3V/K/X

CKFB1 30/4/4A/S/XI

3VDUAL

CKBC3 1u/4/X5R/6.3V/K/X CKBC4 1u/4/X5R/6.3V/K/X CKBC5 1u/4/X5R/6.3V/K/X CKBC6 1u/4/X5R/6.3V/K/X CKBC7 0.1u/4/X7R/16V/K/X

CKC1 27p/4/NPO/50V/J/X CKX1 14.318M/16p/20ppm/49US/40/D/X CKC2 27p/4/NPO/50V/J/X

N_SMBDATA (7,8,12,14,15,17,24,26,35,37) N_SMBCLK (7,8,12,14,15,17,24,26,35,37)

CKC4 100p/4/NPO/50V/J/X CKC3 100p/4/NPO/50V/J/X

N_PCHCLK14 CKC5 10p/4/NPO/50V/J/X

PWOK PATCH

【技術通報R&D技術通報154】

VCC FPR19 8.2K/4 VCC FPR20 8.2K/4 PWOK (18,27) FPR21 0/4/X ATXPG

(18) IO_GP15 FPQ8 2N7002/SOT23/25pF/5

FPBC5 0.1u/4/X7R/16V/K/X

Gigabyte Technology

Title: ATX POWER CONNECTOR

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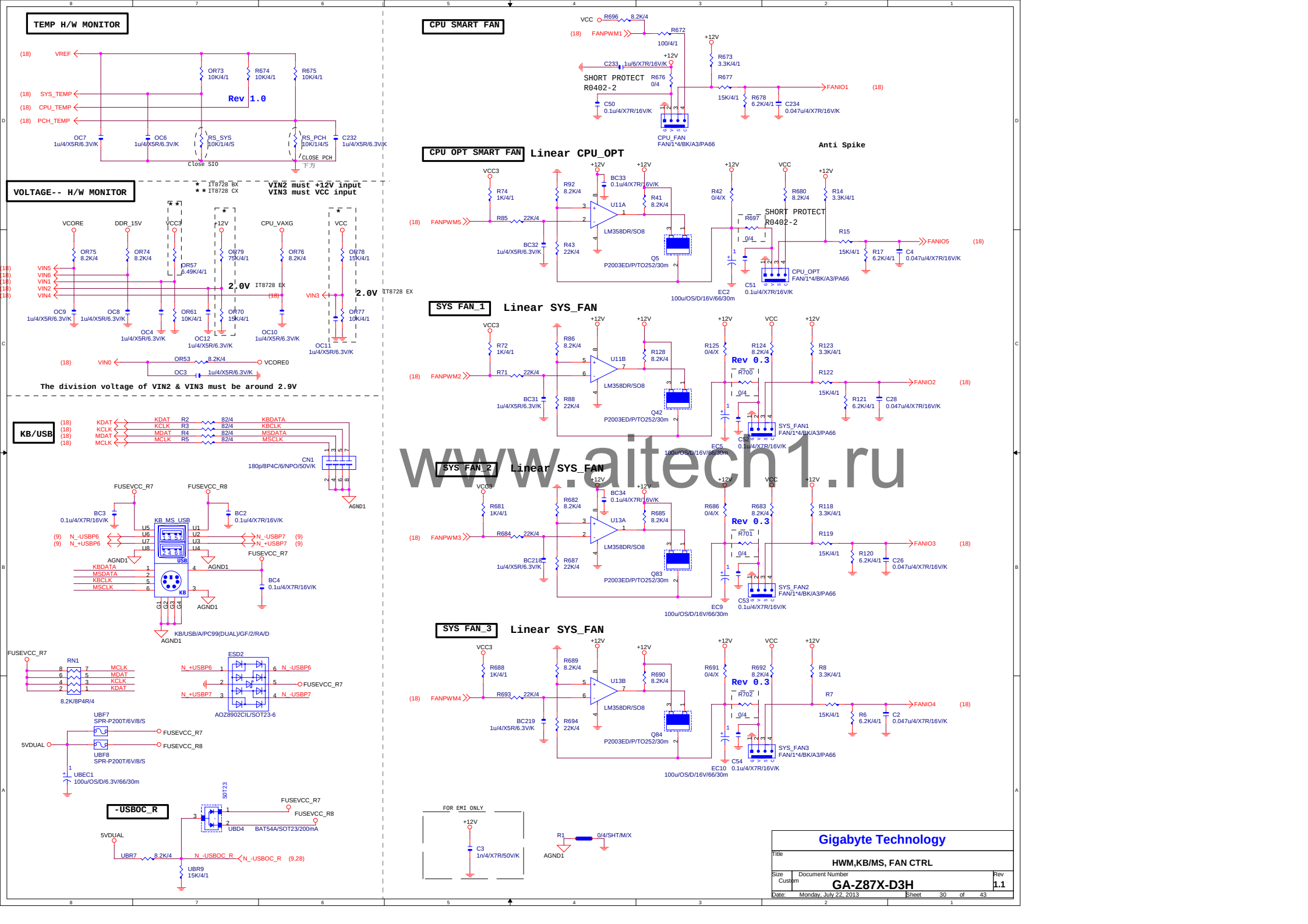
TEMP H/W MONITOR
VREF
SYS_TEMP
CPU_TEMP
PCH_TEMP
OR73 10K/4/1
R674 10K/4/1
R675 10K/4/1
Rev 1.0
OC7 1u/4/X5R/6.3V/K
OC6 1u/4/X5R/6.3V/K
RS_SYS 10K/1/4/S
RS_PCH 10K/1/4/S
C232 1u/4/X5R/6.3V/K
Close SIO
CLOSE_PCH
下方
VOLTAGE-- H/W MONITOR
* IT8728 BX
* * IT8728 CX
VIN2 must +12V input
VIN3 must VCC input
VCORE
DDR_15V
VCC3
+12V
CPU_VAXG
VCC
OR75 8.2K/4
OR74 8.2K/4
OR57 6.49K/4/1
OR79 75K/4/1
OR76 8.2K/4
OR78 15K/4/1
VIN5
VIN6
VIN1
VIN2
VIN4
2.0V IT8728 EX
VIN3
OC9 1u/4/X5R/6.3V/K
OC8 1u/4/X5R/6.3V/K
OR61 10K/4/1
OR70 15K/4/1
OR77 10K/4/1
OC4 1u/4/X5R/6.3V/K
OC12 1u/4/X5R/6.3V/K
OC10 1u/4/X5R/6.3V/K
OC11 1u/4/X5R/6.3V/K
VIN0
OR53 8.2K/4
VCORE0
OC3 1u/4/X5R/6.3V/K
The division voltage of VIN2 & VIN3 must be around 2.9V
KB/USB
KDAT
KCLK
MDAT
MCLK
R2 82/4
R3 82/4
R4 82/4
R5 82/4
KBDATA
KBCLK
MSDATA
MSCLK
CN1 180p/8P4C/6/NPO/50V/K
FUSEVCC_R7
FUSEVCC_R8
BC3 0.1u/4/X7R/16V/K
BC2 0.1u/4/X7R/16V/K
KB_MS_USB
N_-USBP6
N_+USBP6
N_-USBP7
N_+USBP7
AGND1
BC4 0.1u/4/X7R/16V/K
KB/USB/A/PC99(DUAL)/GF/2/RA/D
RN1
8.2K/8P4R/4
ESD2
AOZ8902CIL/SOT23-6
UBF7 SPR-P200T/6V/8/S
UBF8 SPR-P200T/6V/8/S
5VDUAL
UBEC1 100u/OS/D/6.3V/66/30m
-USBOC_R
SOT23
UBD4 BAT54A/SOT23/200mA
UBR7 8.2K/4
N_-USBOC_R
UBR9 15K/4/1
CPU SMART FAN
FANPWM1
R696 8.2K/4
R672 100/4/1
C233 1u/6/X7R/16V/K
SHORT PROTECT R0402-2
R676 0/4
R673 3.3K/4/1
R677 15K/4/1
R678 6.2K/4/1
C234 0.047u/4/X7R/16V/K
C50 0.1u/4/X7R/16V/K
FANIO1
CPU_FAN FAN/1*4/BK/A3/PA66
Anti Spike
CPU OPT SMART FAN
Linear CPU_OPT
FANPWM5
R74 1K/4/1
R92 8.2K/4
R85 22K/4
BC33 0.1u/4/X7R/16V/K
U11A
R41 8.2K/4
LM358DR/SO8
BC32 1u/4/X5R/6.3V/K
R43 22K/4
Q5 P2003ED/P/TO252/30m
R42 0/4/X
R680 8.2K/4
R14 3.3K/4/1
SHORT PROTECT R0402-2
R697
R15 15K/4/1
R17 6.2K/4/1
C4 0.047u/4/X7R/16V/K
FANIO5
CPU_OPT FAN/1*4/BK/A3/PA66
EC2 100u/OS/D/16V/66/30m
C51 0.1u/4/X7R/16V/K
SYS FAN_1
Linear SYS_FAN
FANPWM2
R72 1K/4/1
R86 8.2K/4
R71 22K/4
U11B
R128 8.2K/4
BC31 1u/4/X5R/6.3V/K
R88 22K/4
Q42 P2003ED/P/TO252/30m
R125 0/4/X
R124 8.2K/4
Rev 0.3
R123 3.3K/4/1
R700
R122 15K/4/1
R121 6.2K/4/1
C28 0.047u/4/X7R/16V/K
FANIO2
SYS_FAN1 FAN/1*4/BK/A3/PA66
C52 0.1u/4/X7R/16V/K
EC5 100u/OS/D/16V/66/30m
SYS FAN_2
Linear SYS_FAN
FANPWM3
R681 1K/4/1
R682 8.2K/4
R684 22K/4
U13A
R685 8.2K/4
BC218 1u/4/X5R/6.3V/K
R687 22K/4
Q83 P2003ED/P/TO252/30m
R686 0/4/X
R683 8.2K/4
Rev 0.3
R118 3.3K/4/1
R701
R119 15K/4/1
R120 6.2K/4/1
C26 0.047u/4/X7R/16V/K
FANIO3
SYS_FAN2 FAN/1*4/BK/A3/PA66
C53 0.1u/4/X7R/16V/K
EC9 100u/OS/D/16V/66/30m
SYS FAN_3
Linear SYS_FAN
FANPWM4
R688 1K/4/1
R689 8.2K/4
R693 22K/4
U13B
R690 8.2K/4
BC219 1u/4/X5R/6.3V/K
R694 22K/4
Q84 P2003ED/P/TO252/30m
R691 0/4/X
R692 8.2K/4
Rev 0.3
R8 3.3K/4/1
R702
R7 15K/4/1
R6 6.2K/4/1
C2 0.047u/4/X7R/16V/K
FANIO4
SYS_FAN3 FAN/1*4/BK/A3/PA66
C54 0.1u/4/X7R/16V/K
EC10 100u/OS/D/16V/66/30m
FOR EMI ONLY
C3 1n/4/X7R/50V/K
R1 0/4/SHT/M/X
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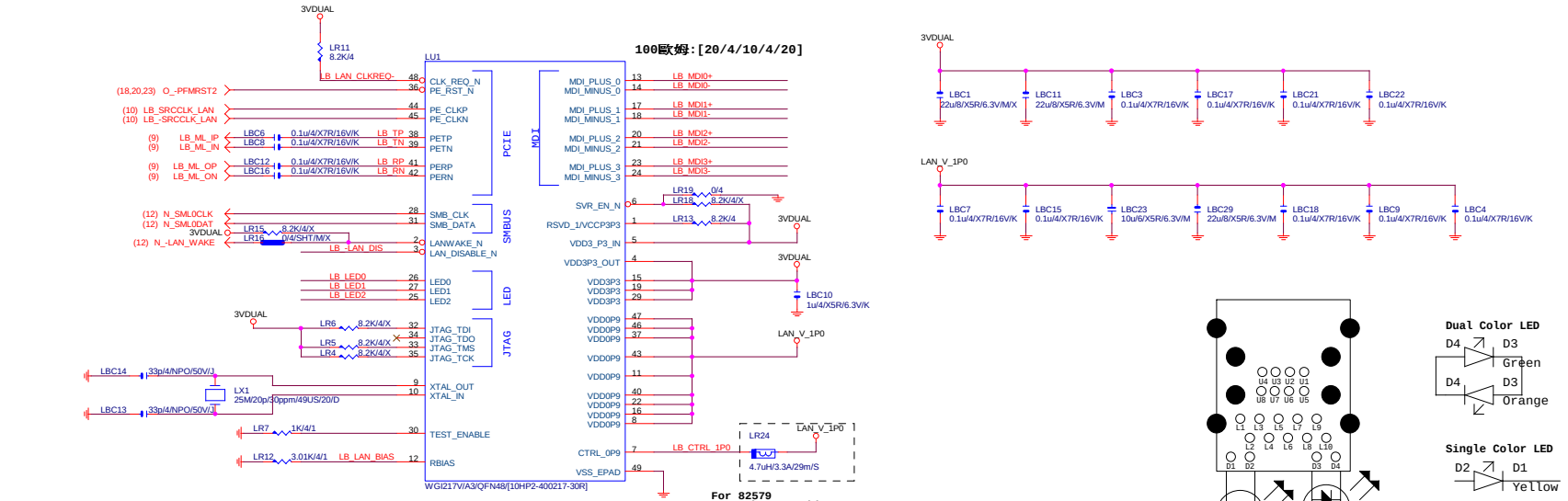
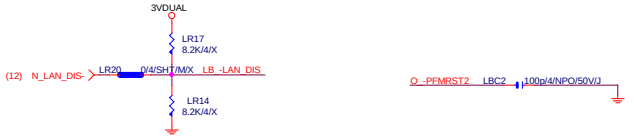
Gigabyte Technology
Title
HWM,KB/MS, FAN CTRL
Size Custom
Document Number
GA-Z87X-D3H
Rev 1.1
Date: Monday, July 22, 2013
Sheet 30 of 43

LAN:INTEL I217

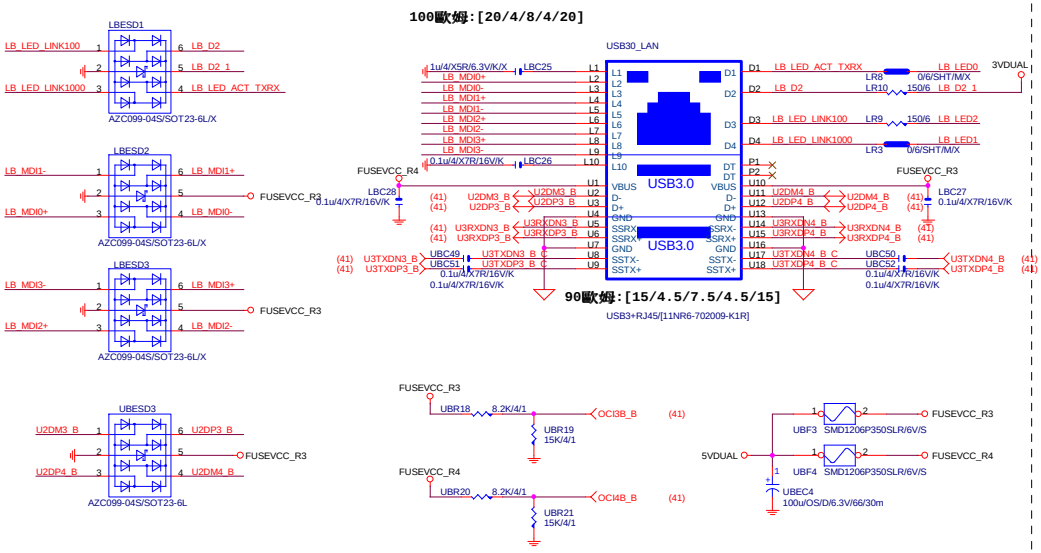


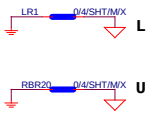


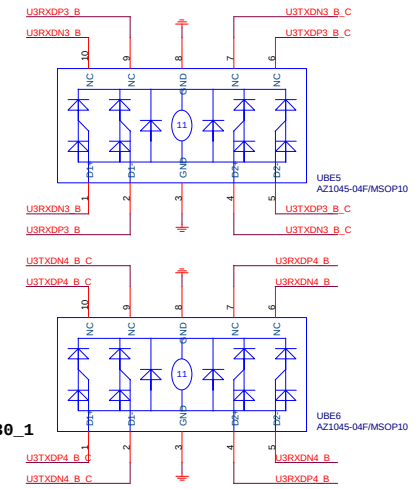
1Gb	Orange
100Mb	Green
10Mb	Off

Access	Blinking
Link	Yellow

USB30_LAN CONNECTOR







Title	Gigabyte Technology		
	INTEL LAN I217		
Size: Custom	Document Number: GA-Z87X-D3H		Rev: 1.1
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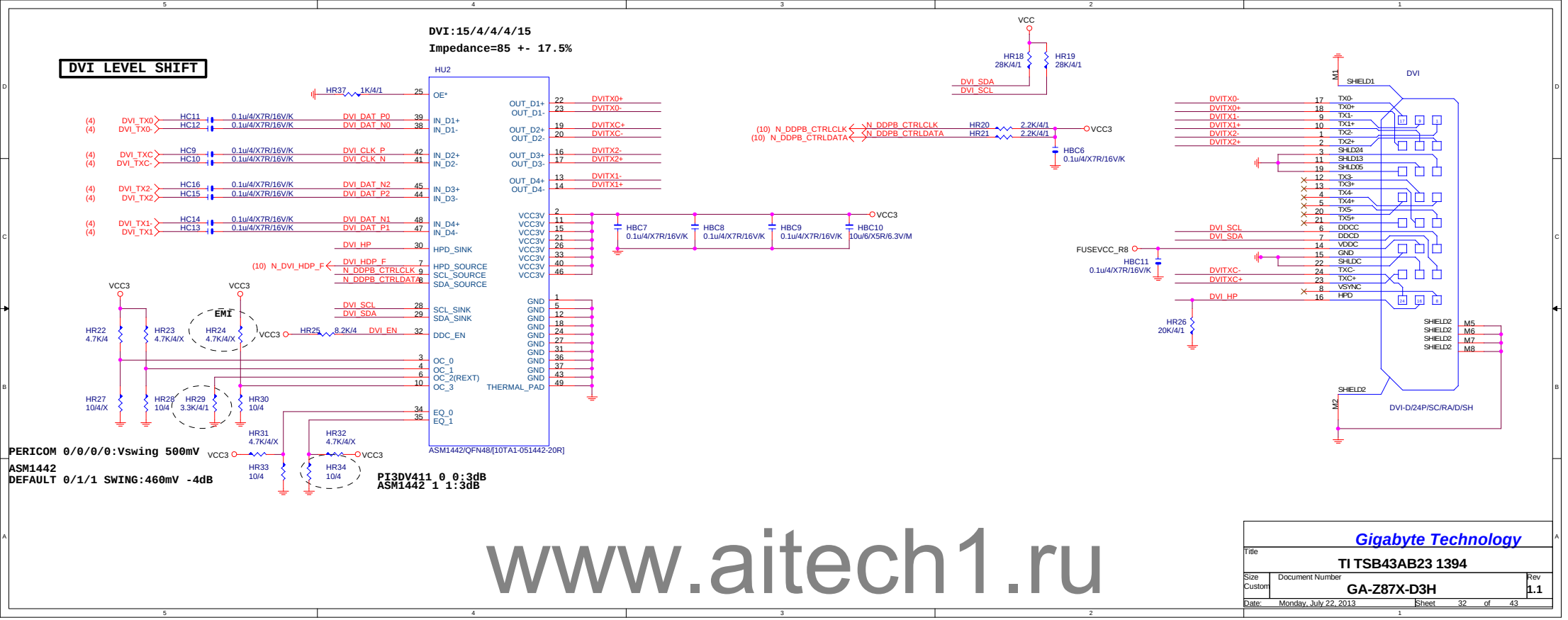
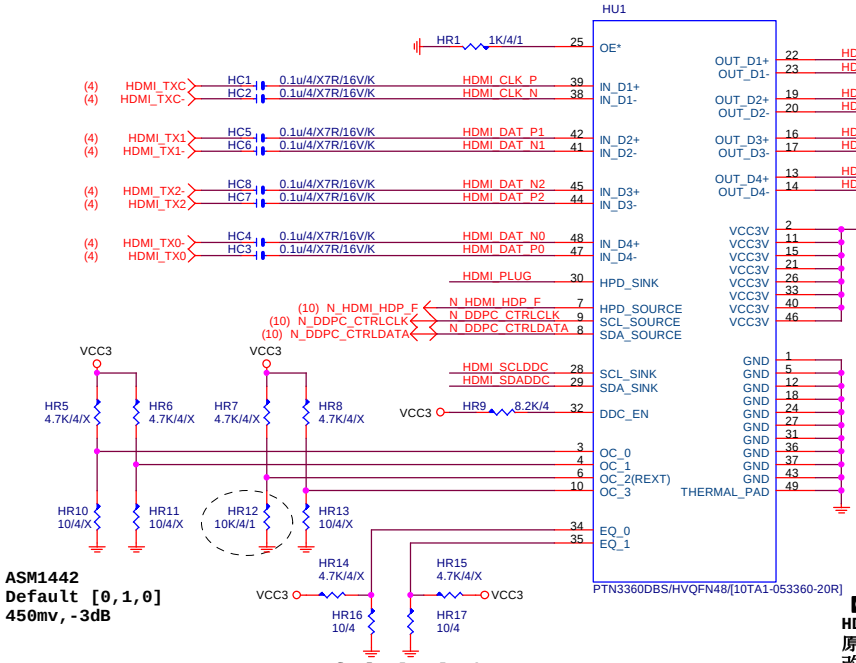
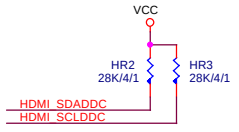


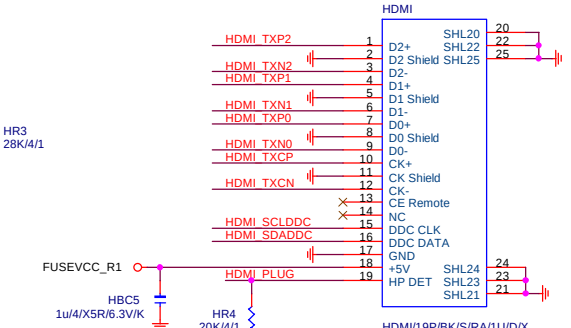
Gigabyte Technology		
Title	TI TSB43AB23 1394	
Size: Custom	Document Number: GA-Z87X-D3H	Rev: 1.1
Date: Monday, July 22, 2013	Sheet 32 of 43	

HDMI LEVEL SHIFT

HDMI:15/4/4/4/15
Impedance=85 +- 17.5%







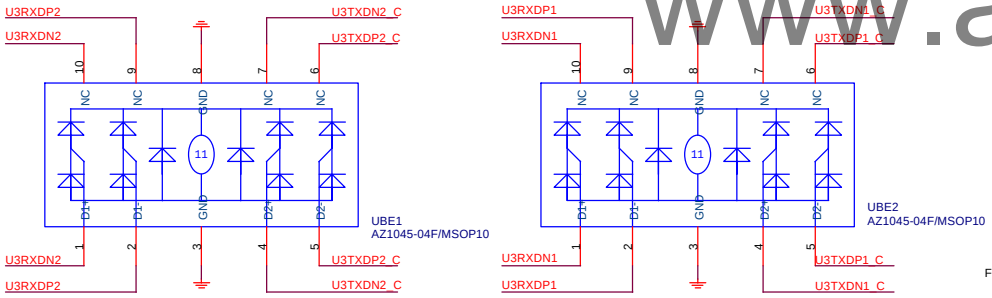
HDMI不上件
改成和R_USB30_2一體成型料號

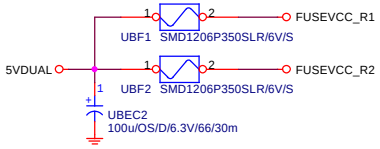
ASM1442
Default [0,1,0]
450mv,-3dB

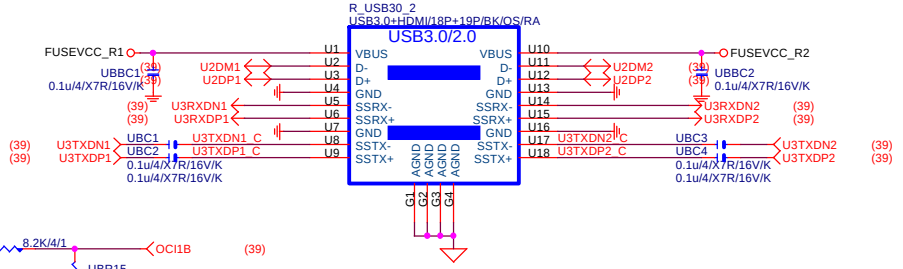
ASM1442 Default [0,0] 3dB
[0,1]6dB

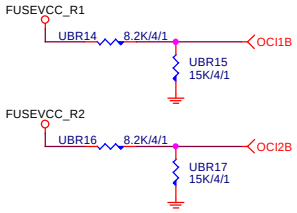
【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

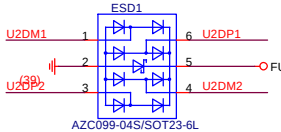
R_USB30











GIGABYTE™

Title: HDMI & USB		
Size: Custom	Document Number: GA-Z87X-D3H	Rev: 1.1
Date: Monday, July 22, 2013	Sheet 33 of 43	

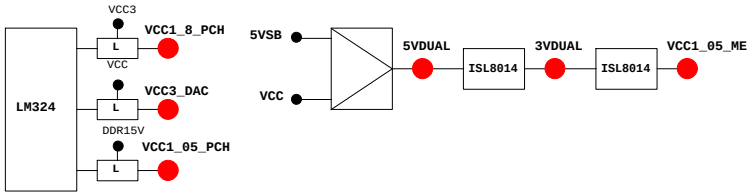
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQE#	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

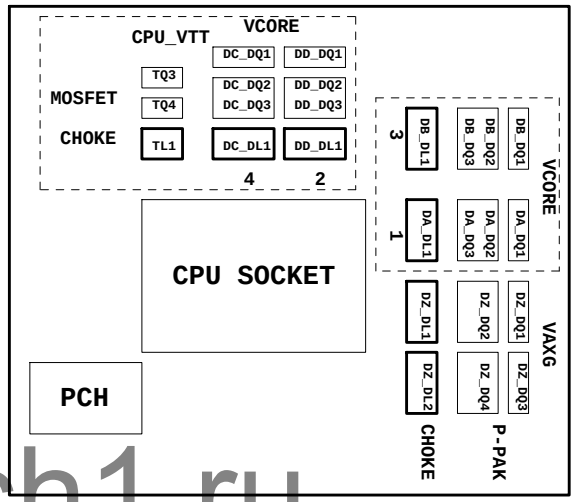
Super I/O ITE8720 GPIO Table

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#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	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	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PEMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/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/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

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

散熱模組料號：

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

Gigabyte Technology

Title: TABLE LIST

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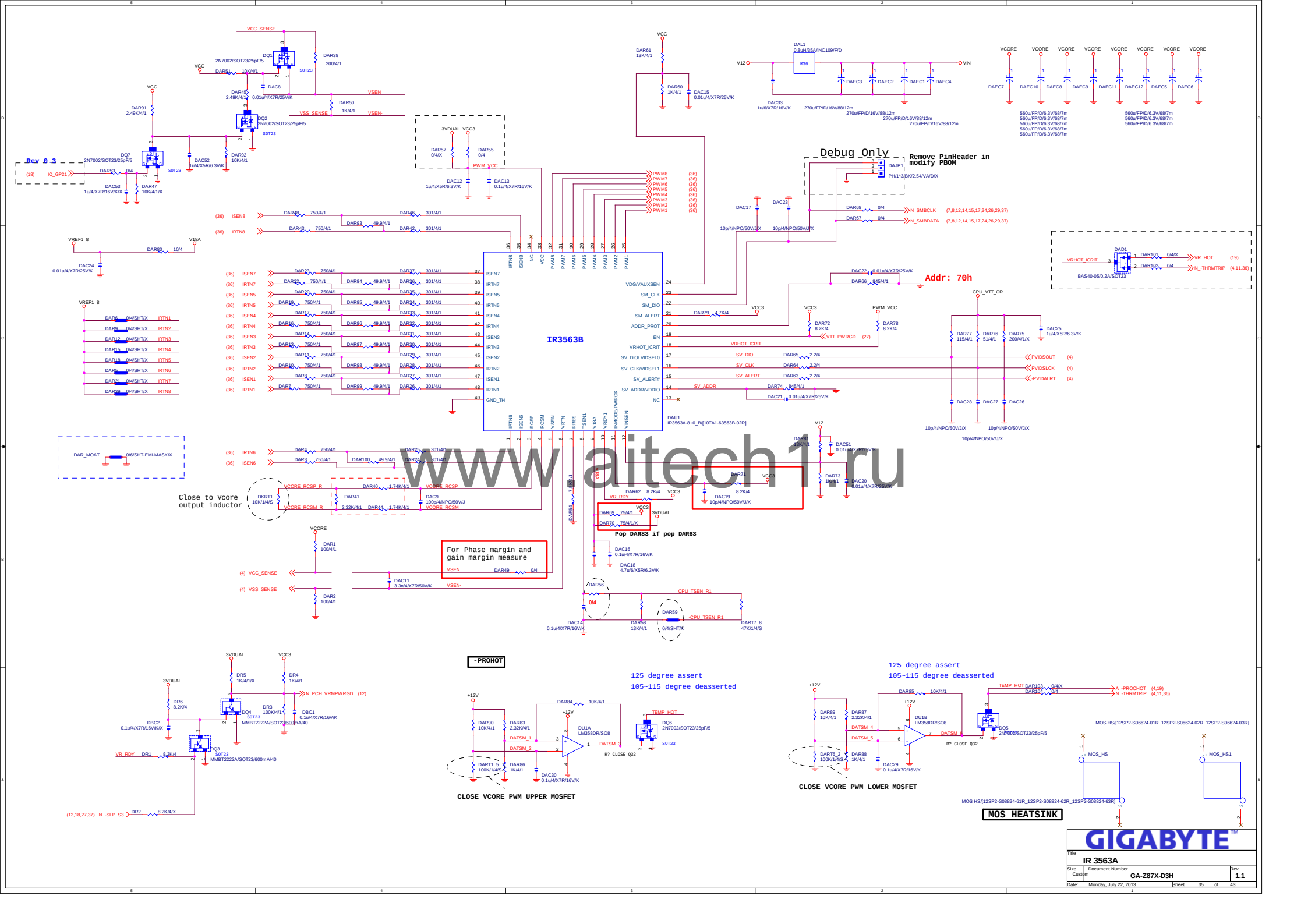
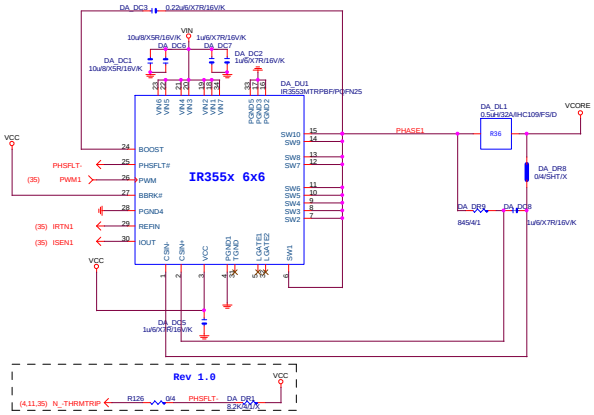


VCORE-PHASE1



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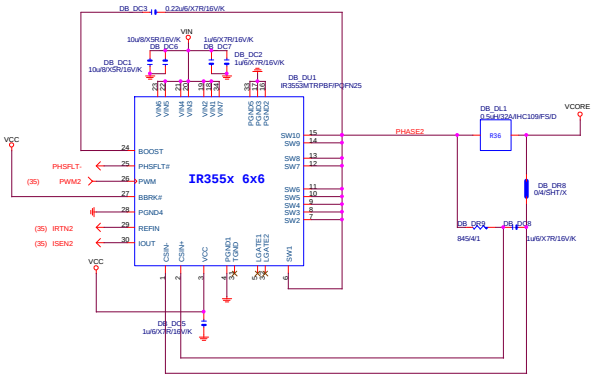
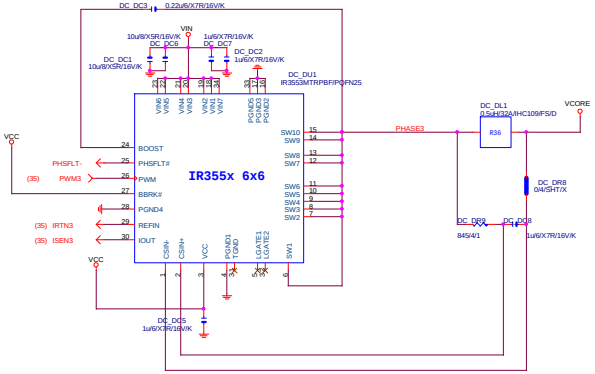


VCORE-PHASE3



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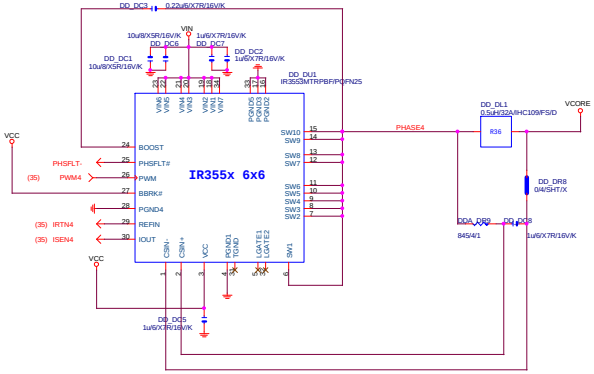
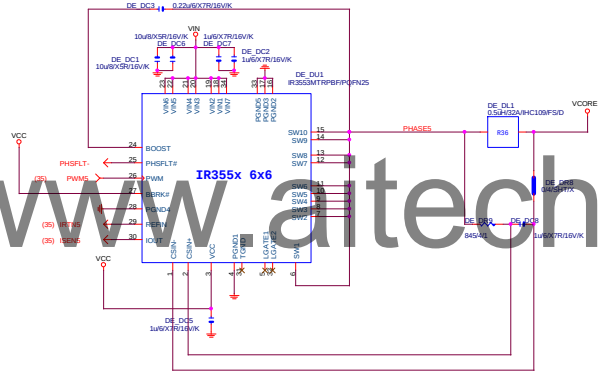
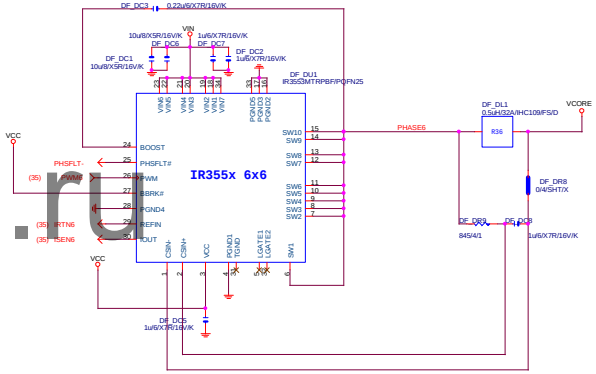


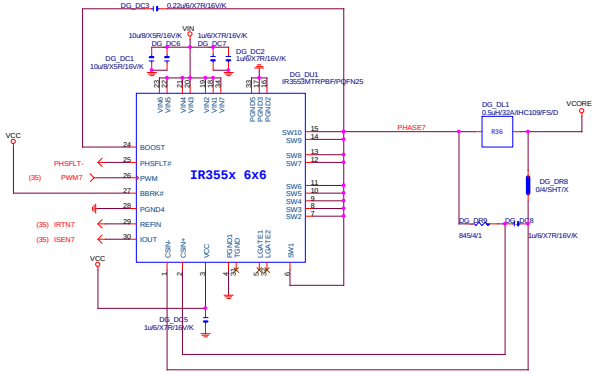
VCORE-PHASE5



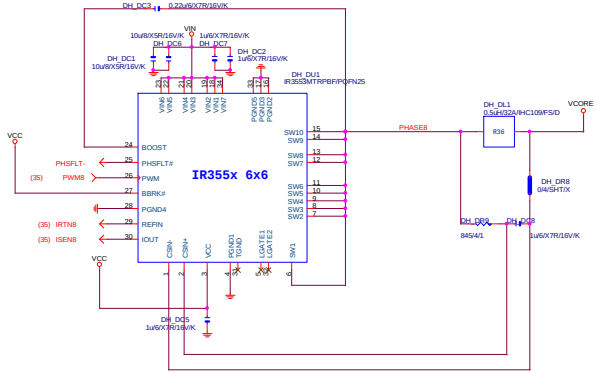
VCORE-PHASE6



VCORE-PHASE7



VCORE-PHASE8



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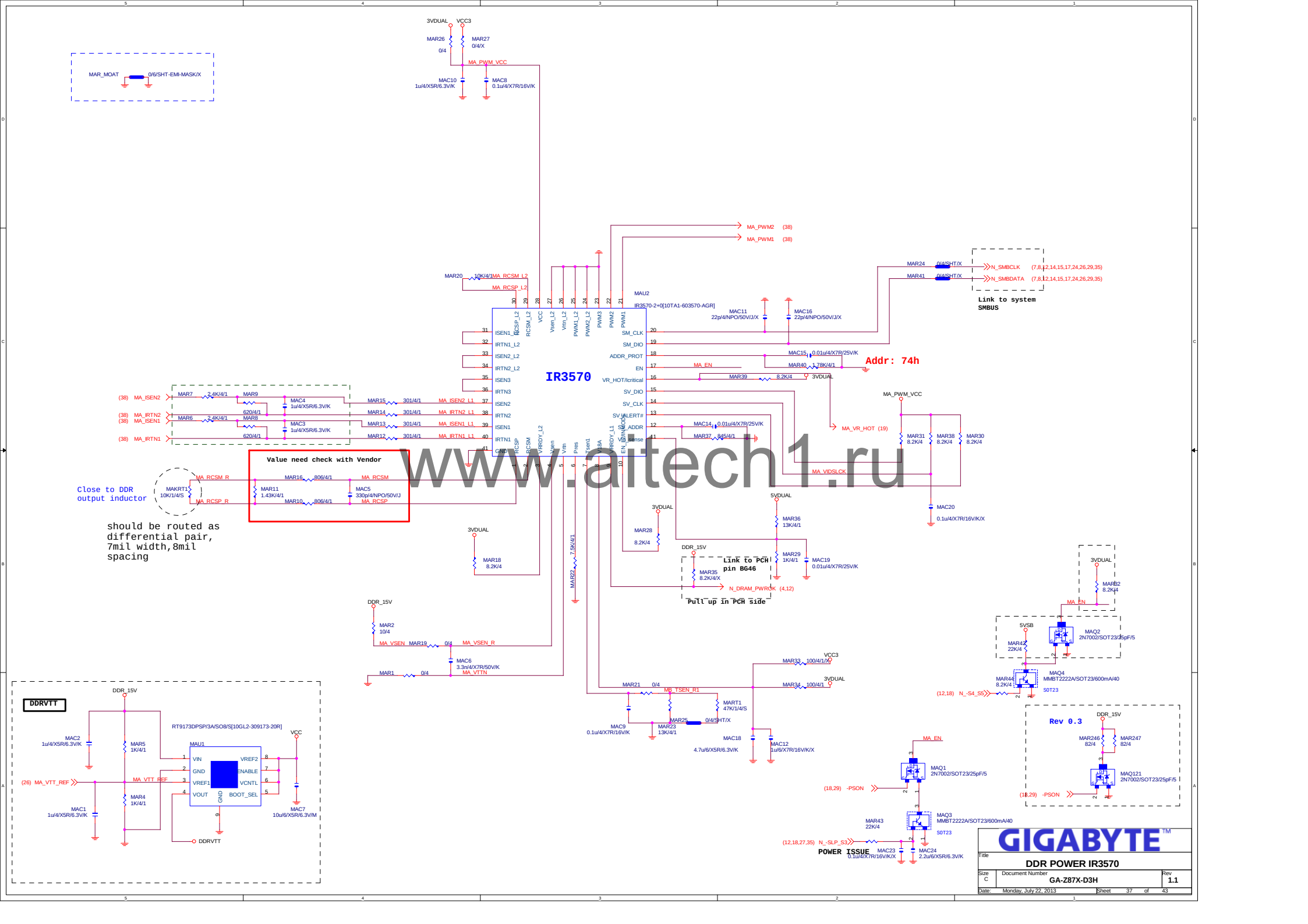
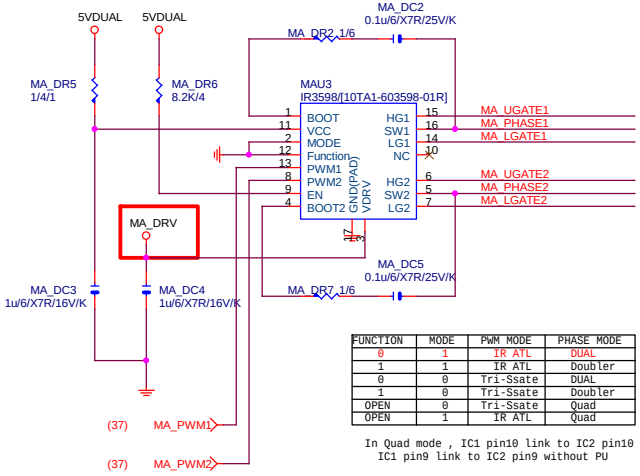
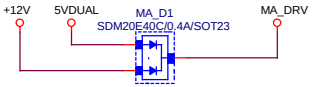


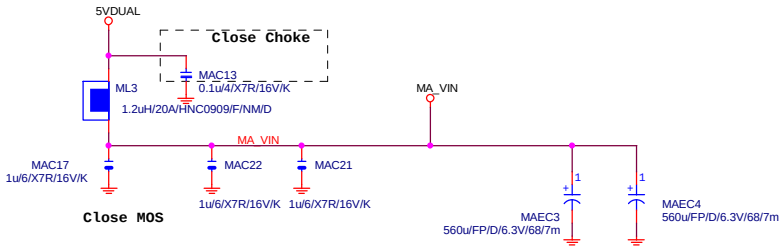
DDR_15V

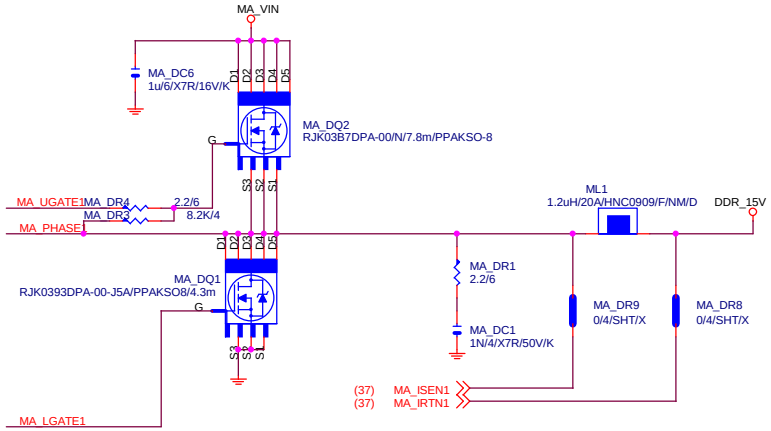


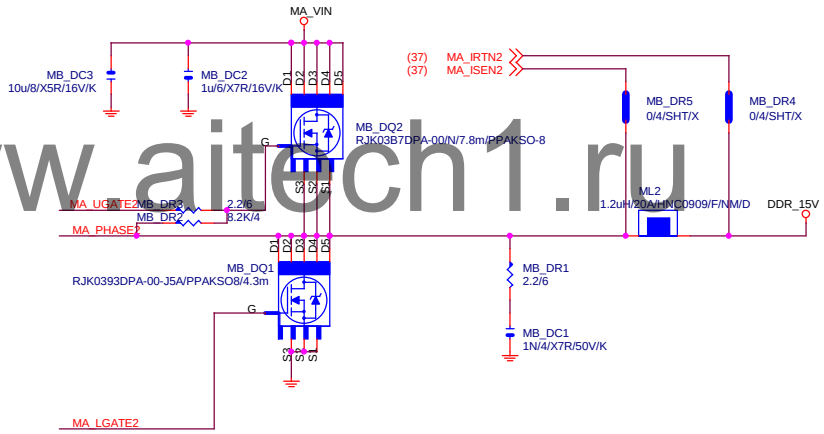
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Ssate	DUAL
1	0	Tri-Ssate	Doubler
OPEN	0	Tri-Ssate	Quad
OPEN	1	IR ATL	Quad

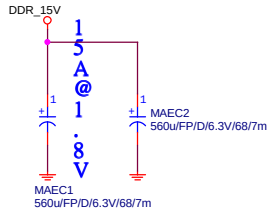
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU











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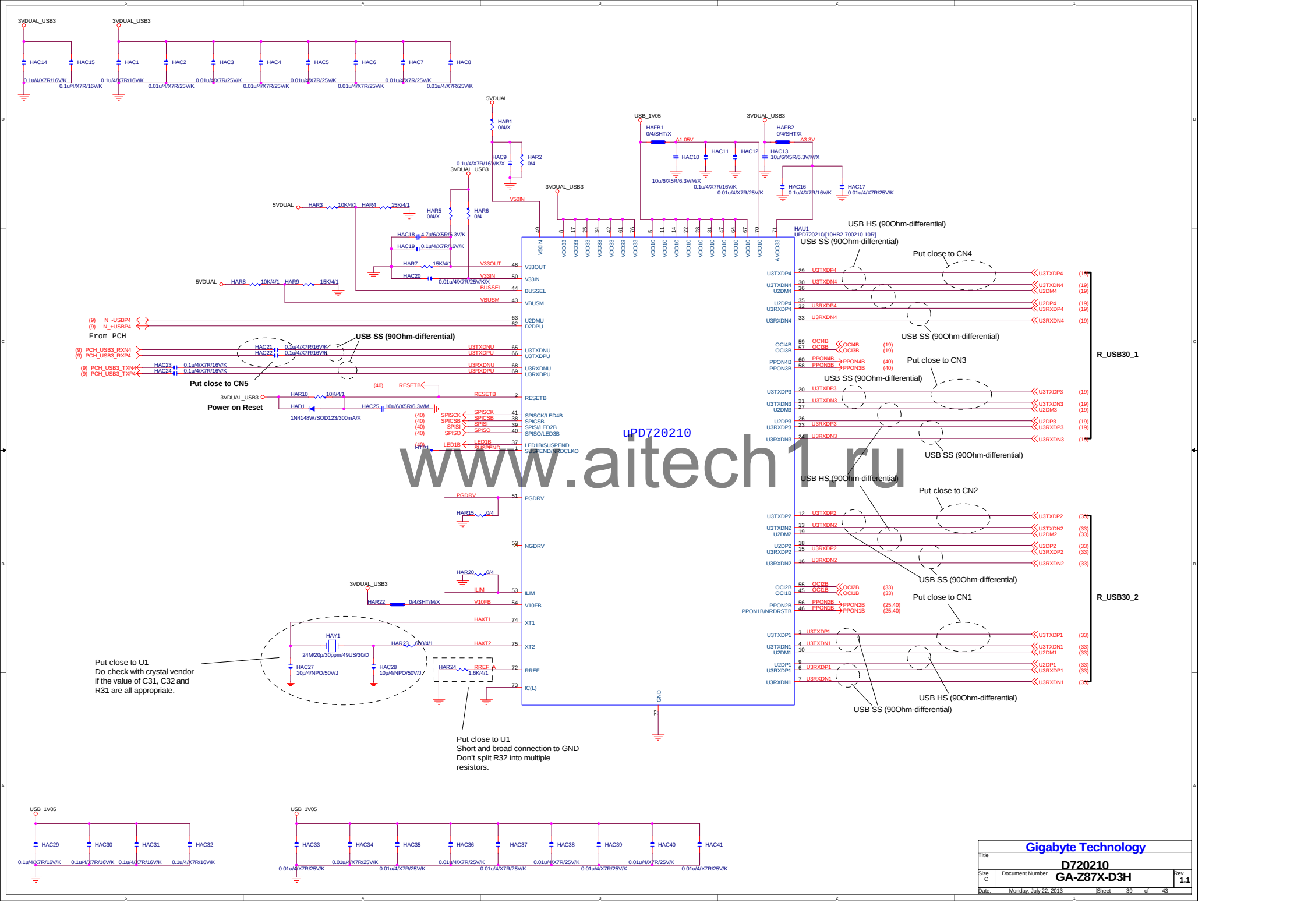

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Title	D720210	
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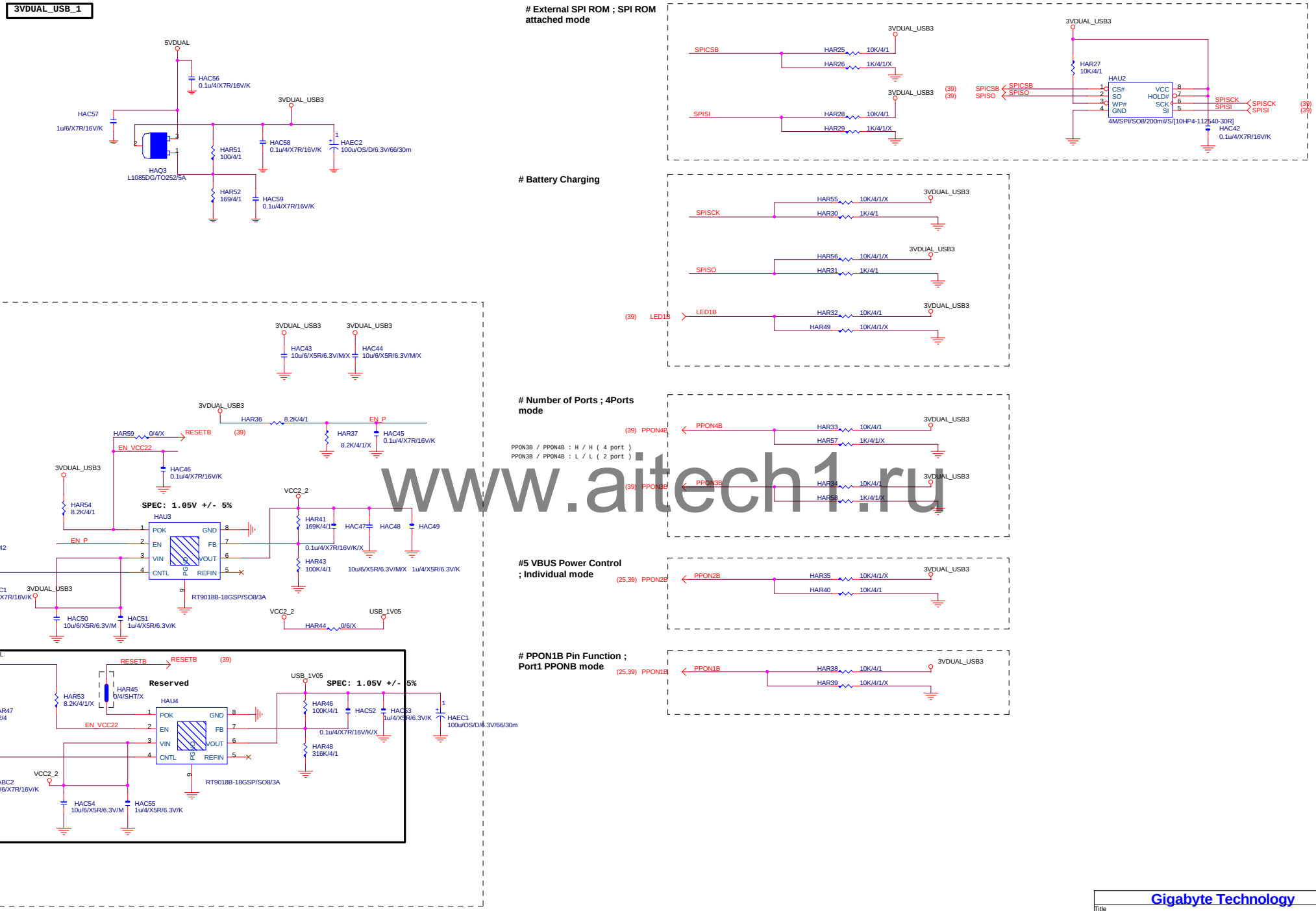

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Size: Custom	Document Number: GA-Z87X-D3H
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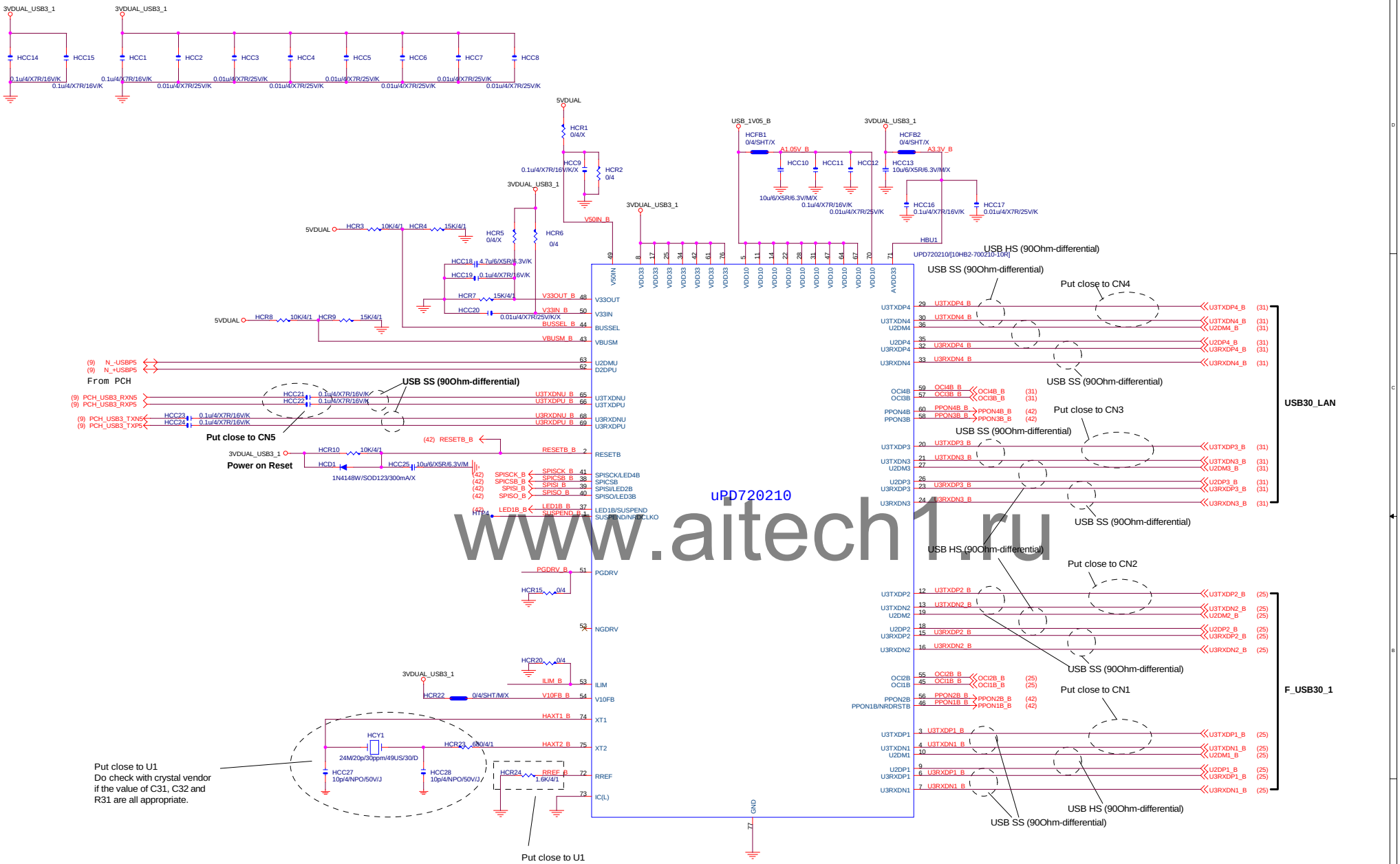
Date: Monday, July 22, 2013	Sheet 40 of 43



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Title	D720210	
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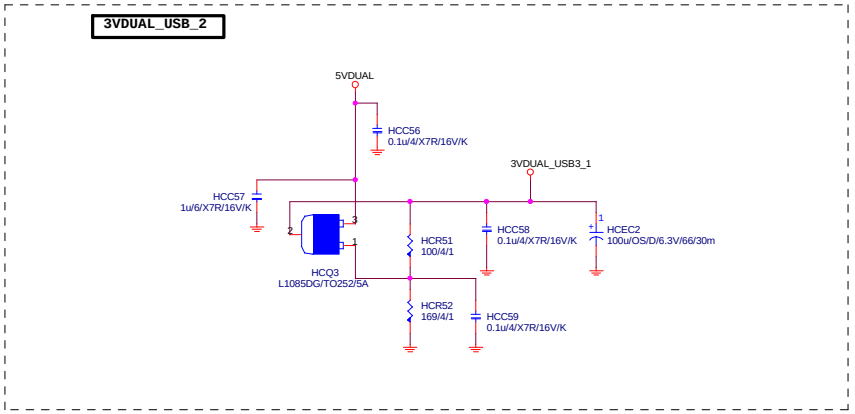
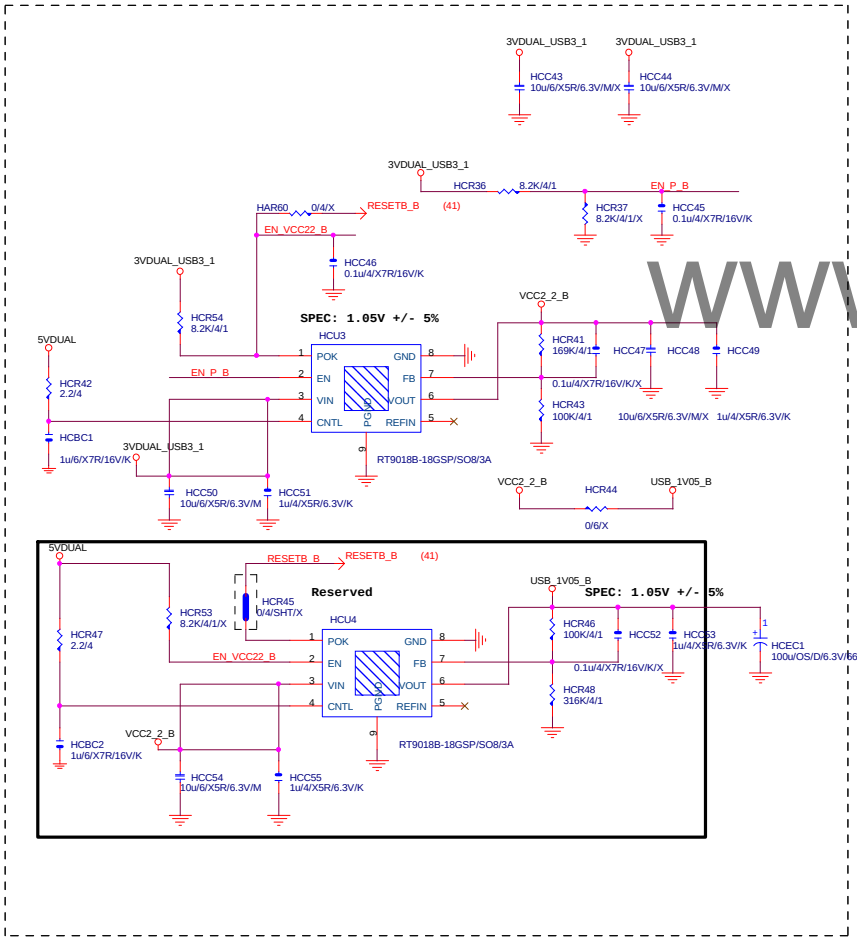
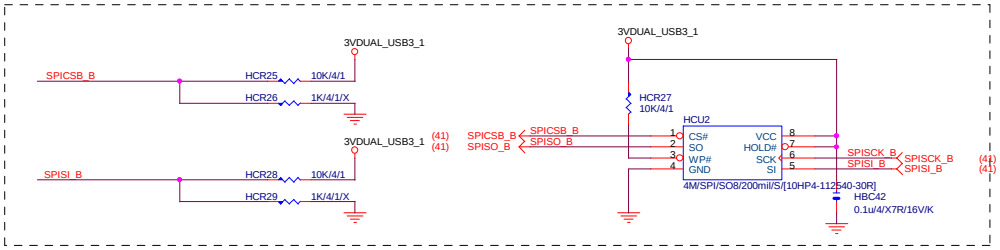
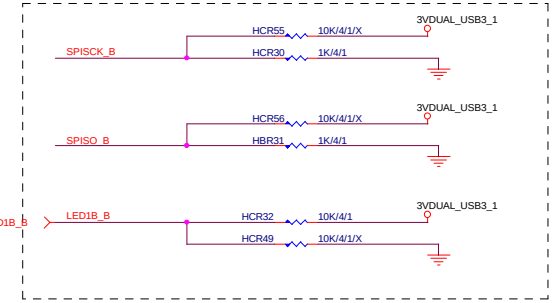




 # External SPI ROM ; SPI ROM attached mode

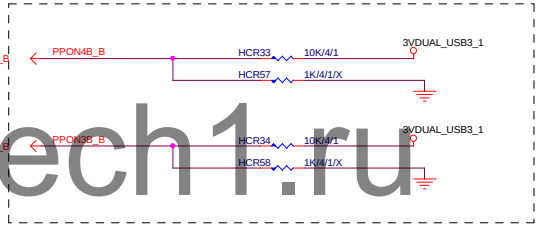


 # Battery Charging

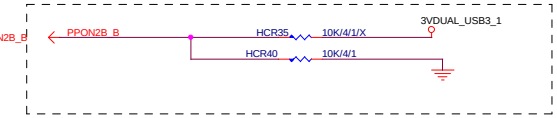


 # Number of Ports ; 4Ports mode

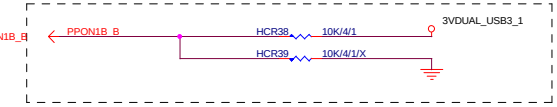
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



#5 VBUS Power Control ; Individual mode



 # PPON1B Pin Function ; Port1 PPONB mode



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