

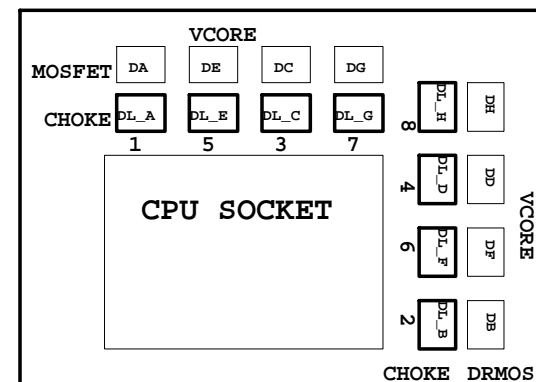
Model Name: GA-Z87X-D3H Rev 1.01

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

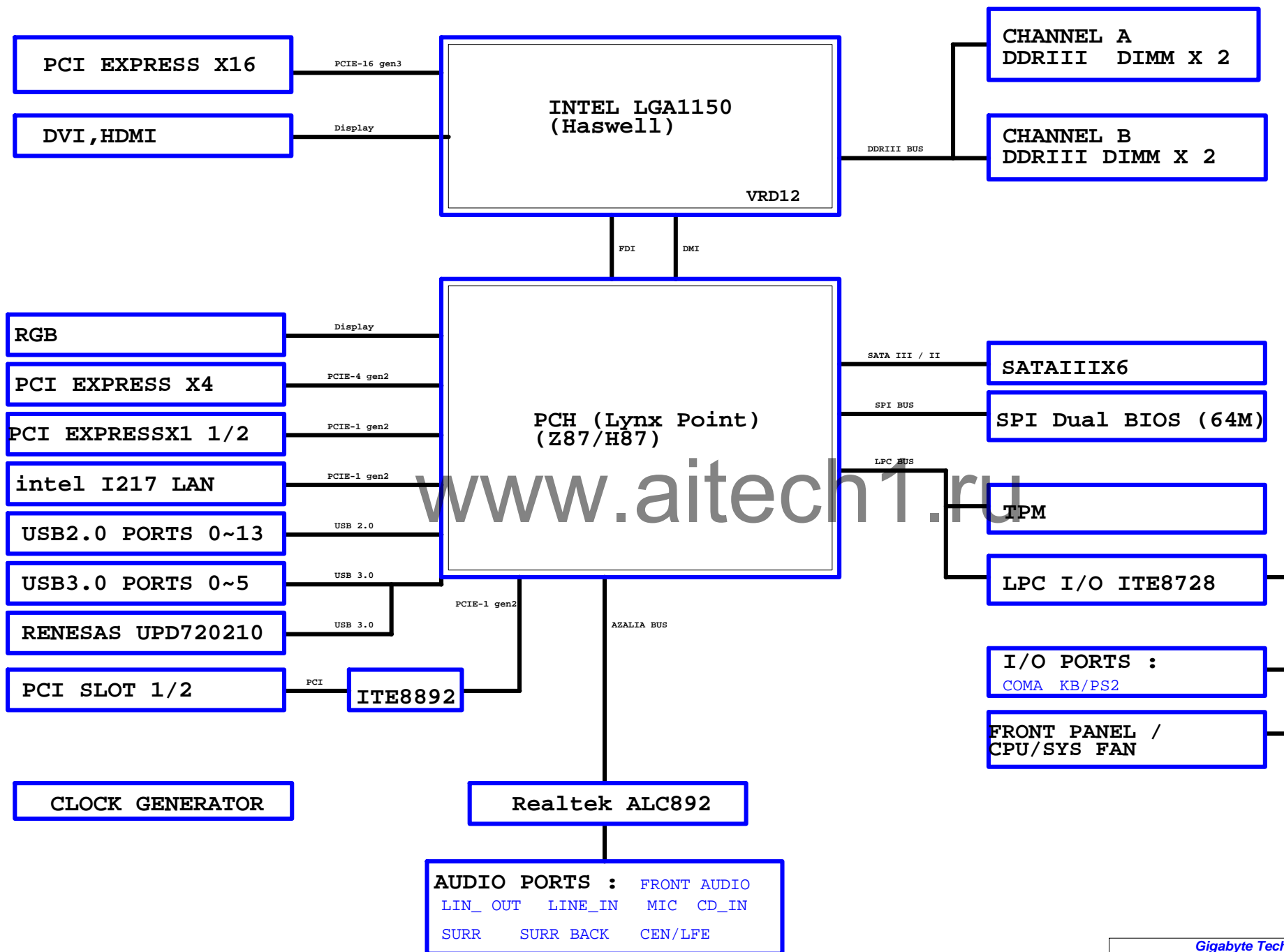


Component value change history

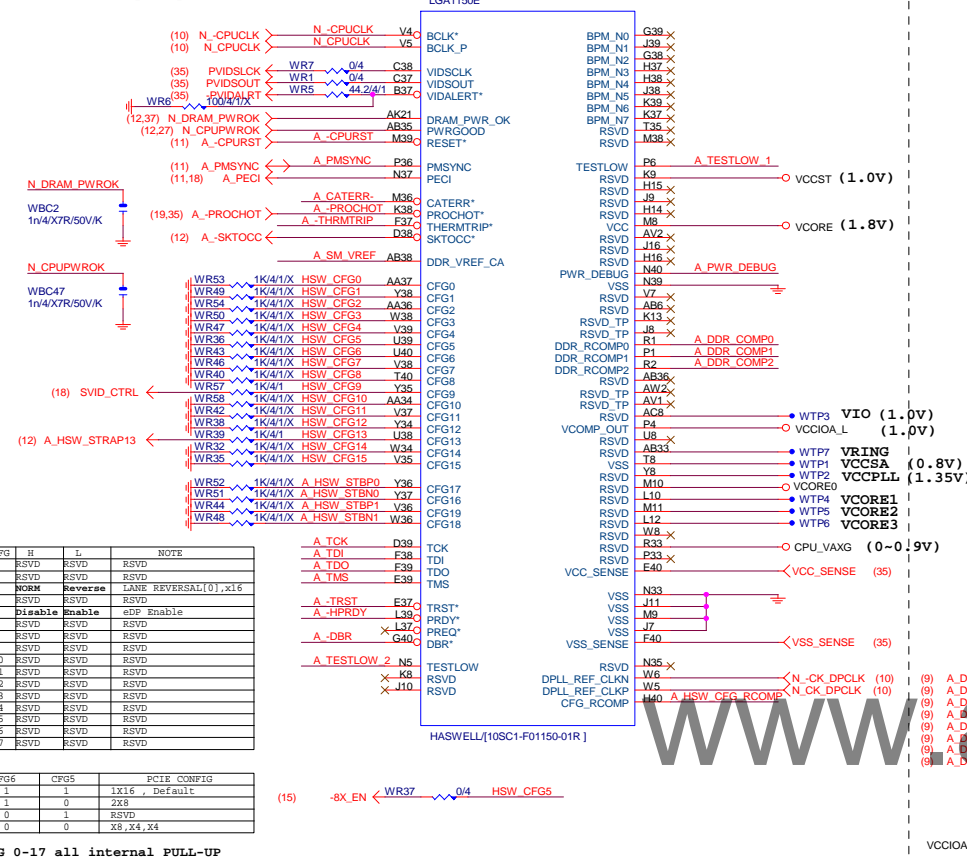
[illegible]

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. PCIE_X4 clock change to PCIE_5 3. PCIE_X1_1 clock change to PCIE_3 4. PCIE_X8 clock change to PEG_B 5. N_PCIE_4_SW change to N_GPIO48 6. -PCIE_X1_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

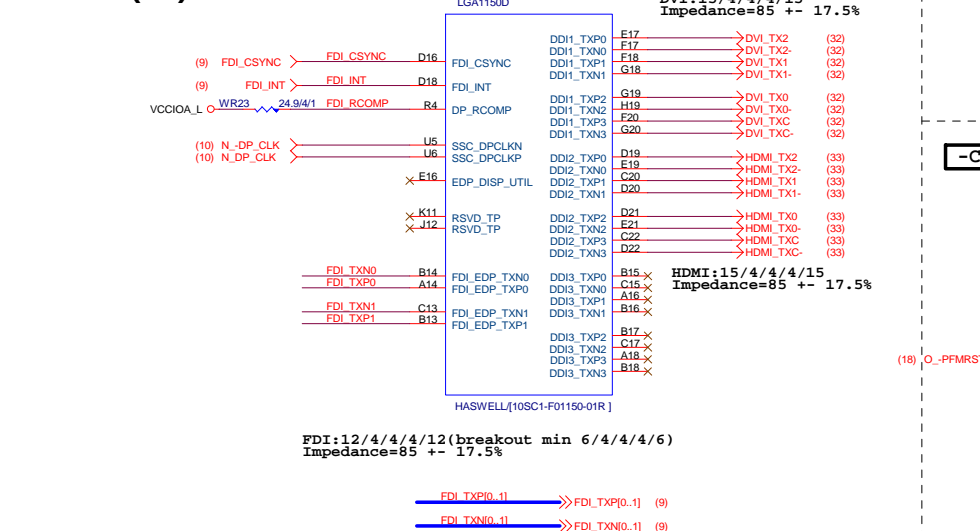
BLOCK DIAGRAM



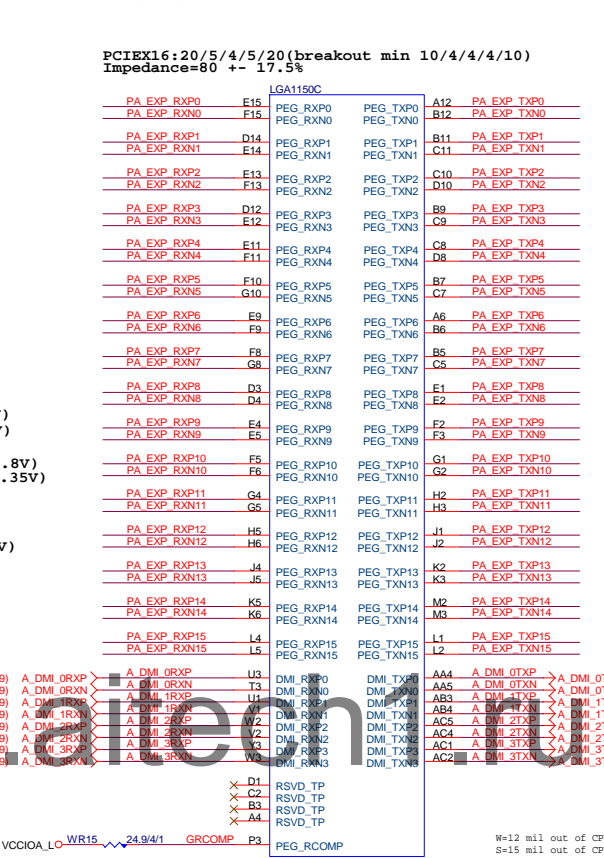
LGA1150 (E)



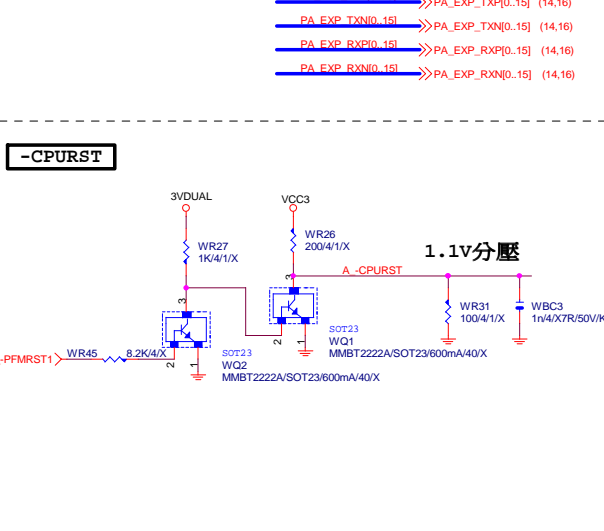
LGA1150 (D)



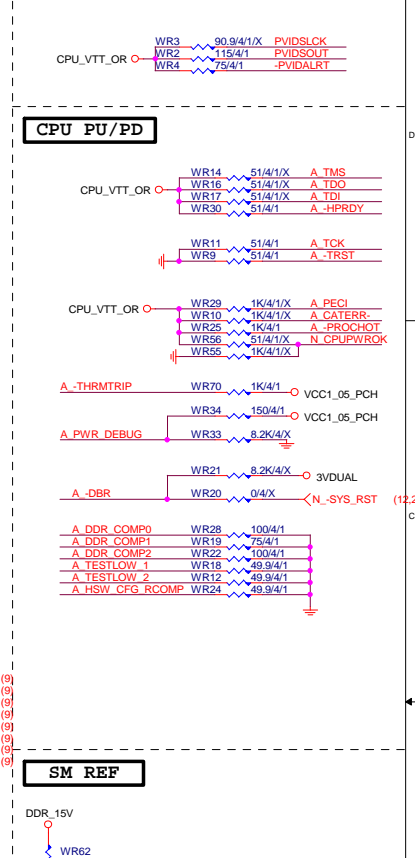
LGA1155 (C)



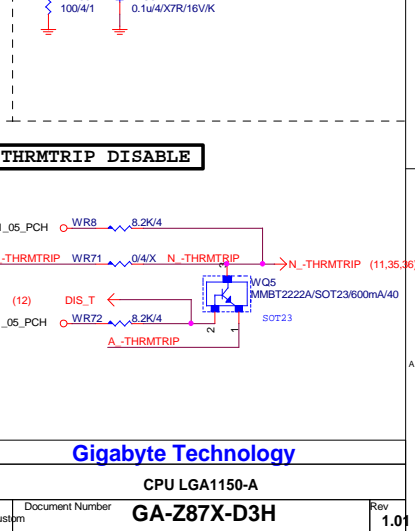
LGA1155 (B)



CPU SVID



SM REF



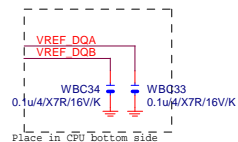
LGA1150 (A)

LGA1150A					
	MAAA0	AU13	DDR0_D00	AD38	MDA0
	MAAA1	AV16	DDR0_MA0	AD39	MDA1
	MAAA2	AU16	DDR0_M2	AF38	MDA2
	MAAA3	AU17	DDR0_M4	AF38	MDA3
	MAAA4	AU17	DDR0_M3	AD37	MDA4
	MAAA5	AW18	DDR0_M4	AD40	MDA5
	MAAA6	AV17	DDR0_M6	AF37	MDA6
	MAAA7	AT18	DDR0_M5	AF40	MDA7
	MAAA8	AU18	DDR0_M7	AD39	MDA8
	MAAA9	AT19	DDR0_M8	AH39	MDA13
	MAAA10	AW11	DDR0_M9	AH40	MDA14
	MAAA11	AV19	DDR0_M10	AK38	MDA10
	MAAA12	AU19	DDR0_M11	AK39	MDA11
	MAAA13	AU19	DDR0_M12	AH37	MDA12
	MAAA14	AY10	DDR0_M13	AK38	MDA8
	MAAA14	AT20	DDR0_M14	AK37	MDA14
	MAAA15	AU21	DDR0_M15	AK40	MDA15
			DDR0_D16	AM40	MDA17
	MODT_00	AW10	DDR0_D17	AM39	MDA21
	MODT_A1	AY8	DDR0_D19	AP38	MDA18
	MODT_A2	AW9	DDR0_D19	AP39	MDA19
	MODT_A3	AU8	DDR0_D20	AK37	MDA20
			DDR0_D21	AM38	MDA16
			DDR0_D22	AP37	MDA22
		AW33	DDR0_D22	AP40	MDA25
		AV33	DDR0_ECC0	AV37	MDA26
		AU31	DDR0_ECC1	AV37	MDA29
		AV31	DDR0_ECC2	AM35	MDA26
		AV31	DDR0_ECC3	AV35	MDA27
		AT33	DDR0_ECC4	AT37	MDA28
		AU33	DDR0_ECC5	AD38	MDA28
		AT31	DDR0_ECC6	AT35	MDA30
		AW31	DDR0_ECC7	AV35	MDA31
			DDR0_D31	AT36	MDA33
	SBAA0	AV12	DDR0_BA0	AU6	MDA37
(7)	SBAA1	SBAA1	DDR0_B01	AV4	MDA34
(7)	SBAA2	AT21	DDR0_BA2	AU4	MDA35
			DDR0_C35	AW6	MDA38
	CKE40	CKE40	DDR0_CKE0	AV4	MDA38
	CKE41	CKE41	DDR0_CKE1	AV4	MDA38
	CKE42	CKE42	DDR0_CKE2	AV4	MDA39
	CKE43	CKE43	DDR0_CKE3	AR1	MDA41
			DDR0_D40	AR4	MDA45
	-CSA0	-CSA0	DDR0_CS_N0	AN3	MDA42
	-CSA1	-CSA1	DDR0_CS_N1	AN4	MDA43
	-CSA2	-CSA2	DDR0_CS_N2	AR3	MDA40
	-CSA3	-CSA3	DDR0_CS_N3	AN2	MDA46
			DDR0_D45	AN1	MDA47
(7)	DCLKA0	DCLKA0	DDR0_CLK_P0	AL1	MDA49
(7)	DCLKA0	DCLKA0	DDR0_CLK_N0	AL2	MDA53
(7)	DCLKA1	DCLKA1	DDR0_CLK_P1	AL1	MDA49
(7)	DCLKA1	DCLKA1	DDR0_CLK_N1	AL2	MDA53
(7)	DCLKA2	DCLKA2	DDR0_CLK_P2	AL3	MDA50
(7)	DCLKA2	DCLKA2	DDR0_CLK_N2	AL4	MDA51
(7)	DCLKA3	DCLKA3	DDR0_CLK_P3	AL2	MDA52
(7)	DCLKA3	DCLKA3	DDR0_CLK_N3	AL3	MDA48
		AW12	RSVD	AL2	MDA54
			DDR0_D54	AG1	MDA55
			DDR0_D55	AG1	MDA57
			DDR0_D56	AG4	MDA61
			DDR0_D57	AE3	MDA58
			DDR0_D58	AE4	MDA59
			DDR0_D59	AE2	MDA60
			DDR0_D60	AE3	MDA56
			DDR0_D61	AE3	MDA62
(7)	-SRASA	-SRASA	DDR0_RAS*	AE1	MDA63
			DDR0_D62	AE39	DSQA0
(7)	-SWEA	-SWEA	DDR0_WE*	AN39	DSQA1
			DDR0_DGS_P0	AN39	DSQA2
		AV20	RSVD	AV36	DSQA3
		AW27	RSVD	AV5	DSQA4
			DDR0_DGS_P1	AP3	DSQA5
(7)	-SCASA	-SCASA	DDR0_DGS_P5	AF3	DSQA6
		AU9	DDR0_CAS*	AF3	DSQA7
(7,8)	-DDR3_RST	WR61 D4/SH/TMX W4 0.1u/4X7R/16V/KX	DDR_RESET*	AV32	DSQA0
			DDR0_DGS_P6	AE38	DSQA1
			DDR0_DGS_N0	AN38	DSQA2
			DDR0_DGS_N1	AN38	DSQA2
			DDR0_DGS_N2	AU36	DSQA3
			DDR0_DGS_N3	AW5	DSQA4
			DDR0_DGS_N4	AP2	DSQA5
			DDR0_DGS_N5	AK2	DSQA6
			DDR0_DGS_N6	AF2	DSQA7
			DDR0_DGS_N7	AU32	
			DDR0_DGS_N8		

HASWELL/[10SC1-F01150-01R]

LGA1150 (B)

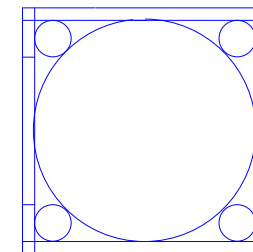
		LGA1150B				
MAA80	AL19	DDR1, MA0		DDR1, D00	AE34	MD80
MAA81	AK23	DDR1, MA1		DDR1, D01	AE35	MD81
MAA82	AM22	DDR1, MA2		DDR1, D02	AG35	MD82
MAA83	AM23	DDR1, MA3		DDR1, D03	AH35	MD83
MAA84	AP23	DDR1, MA4		DDR1, D04	AD34	MD84
MAA85	AL23	DDR1, MA4		DDR1, D04	AG36	MD85
MAA86	AY24	DDR1, MA5		DDR1, D05	AG34	MD86
MAA87	AZ24	DDR1, MA6		DDR1, D06	AH34	MD87
MAA88	AM24	DDR1, MA7		DDR1, D07	AL34	MD88
MAA89	AP28	DDR1, MA8		DDR1, D08	AL35	MD89
MAA90	AW25	DDR1, MA9		DDR1, D09	AK31	MD90
MAA91	AU26	DDR1, MA10		DDR1, D10	AL31	MD91
MAA92	AZ26	DDR1, MA11		DDR1, D11	AK34	MD92
MAA93	AR15	DDR1, MA12		DDR1, D12	AK35	MD93
MAA94	AV27	DDR1, MA13		DDR1, D13	AK32	MD94
MAA95	AW27	DDR1, MA14		DDR1, D14	AL32	MD95
		DDR1, MA15		DDR1, D15	AN34	MD96
MODT B0	AM16	DDR1, D00		DDR1, D16	AP34	MD97
MODT B1	AL17	DDR1, D01		DDR1, D17	AN31	MD98
MODT B2	AM17	DDR1, D02		DDR1, D18	AP31	MD99
MODT B3	AK15	DDR1, D03		DDR1, D19	AN35	MD100
				DDR1, D20	AP35	MD101
				DDR1, D21	AP32	MD102
	AM25	DDR1, ECC0		DDR1, D22	AM29	MD103
	AP25	DDR1, ECC1		DDR1, D23	AM28	MD104
	AP26	DDR1, ECC2		DDR1, D24	AR29	MD105
	AP26	DDR1, ECC3		DDR1, D25	AR28	MD106
	AR26	DDR1, ECC4		DDR1, D26	AL29	MD107
	AL25	DDR1, ECC5		DDR1, D27	AL28	MD108
	AR26	DDR1, ECC6		DDR1, D28	AP29	MD109
	AR25	DDR1, ECC7		DDR1, D29	AP28	MD110
				DDR1, D30	AR12	MD111
SBAB0	AK17	DDR1, BA0		DDR1, D31	AP12	MD112
SBAB1	AL18	DDR1, BA1		DDR1, D32	AL13	MD113
SBAB2	AW28	DDR1, BA2		DDR1, D33	AL12	MD114
				DDR1, D34	AR13	MD115
CKEB0	AW29	DDR1, CKE0		DDR1, D35	AM13	MD116
CKEB1	AN23	DDR1, CKE1		DDR1, D36	AM12	MD117
CKEB2	AU29	DDR1, CKE2		DDR1, D37	AR13	MD118
CKEB3		DDR1, CKE3		DDR1, D38	AM13	MD119
				DDR1, D39	AM12	MD120
CSB0	AP17	DDR1, CS, N0		DDR1, D40	AP9	MD121
CSB1	AN15	DDR1, CS, N1		DDR1, D41	AR6	MD122
CSB2	AN17	DDR1, CS, N2		DDR1, D42	AP6	MD123
CSB3	AL15	DDR1, CS, N3		DDR1, D43	AR10	MD124
				DDR1, D44	AP10	MD125
				DDR1, D45	AR7	MD126
				DDR1, D46	AP7	MD127
				DDR1, D47	AM9	MD128
DLCKB0	AM20	DDR1, CLK, P0		DDR1, D48	AL6	MD129
DLCKB1	AP21	DDR1, CLK, N0		DDR1, D49	AL7	MD130
DLCKB2	AP22	DDR1, CLK, N1		DDR1, D50	AM10	MD131
DLCKB3	AN20	DDR1, CLK, N2		DDR1, D51	AL6	MD132
DLCKB4	AN21	DDR1, CLK, P2		DDR1, D52	AM6	MD133
DLCKB5	AP20	DDR1, CLK, N2		DDR1, D53	AM7	MD134
DLCKB6	AP21	DDR1, CLK, P3		DDR1, D54	AH6	MD135
DLCKB7	AP22	DDR1, CLK, N3		DDR1, D55	AH7	MD136
				DDR1, D56	AE6	MD137
				DDR1, D57	AE7	MD138
				DDR1, D58	AJ6	MD139
				DDR1, D59	AJ7	MD140
				DDR1, D60	AF6	MD141
				DDR1, D61	AF7	MD142
				DDR1, D62	AF35	MD143
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				DDR1, D64		
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HASWELL/[10SC1-F01150-01R]

LGA1150 (CR)

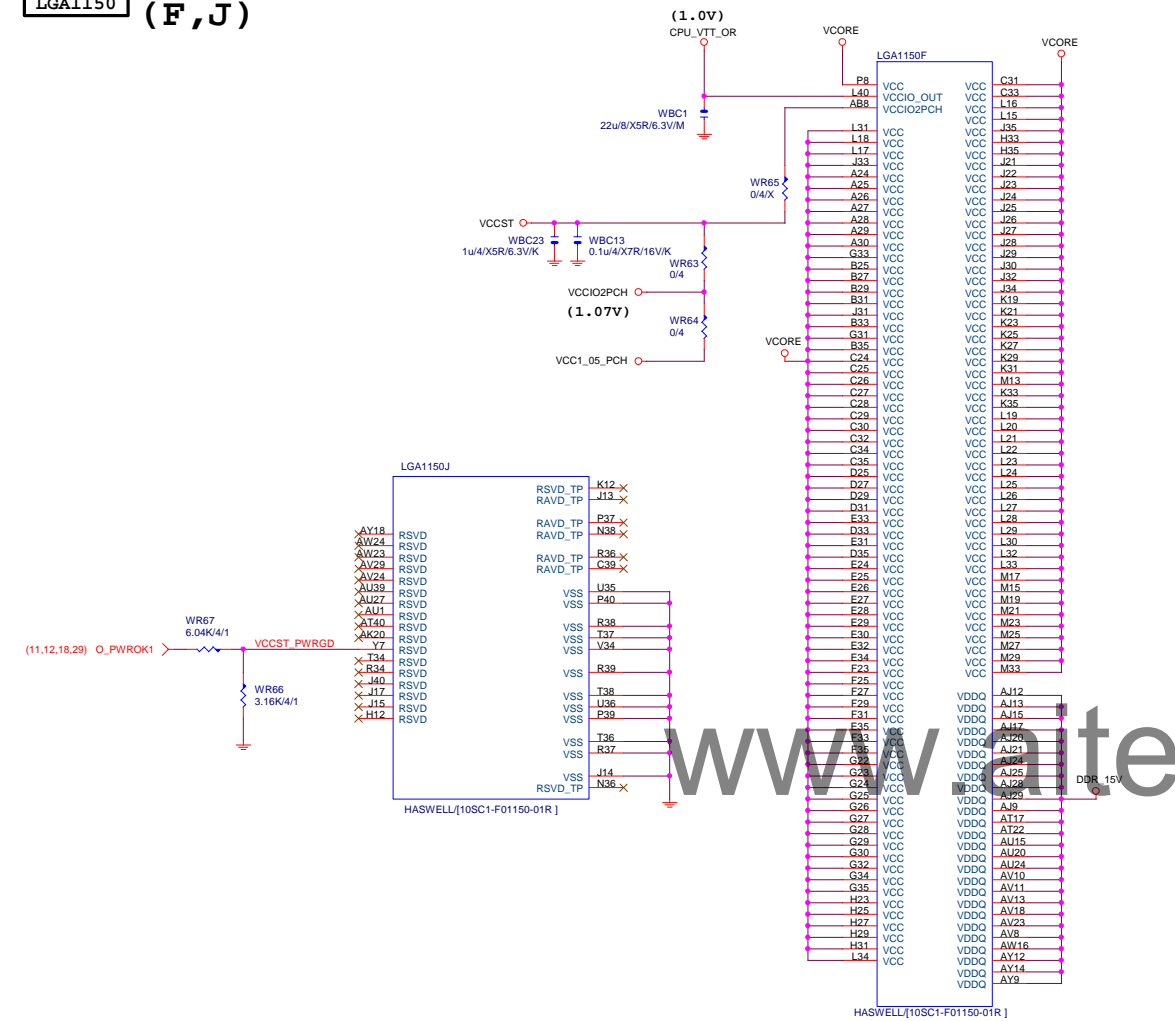
LGA1150
ILM_BP/1156/BKNI/112KRC-0F0001-23R



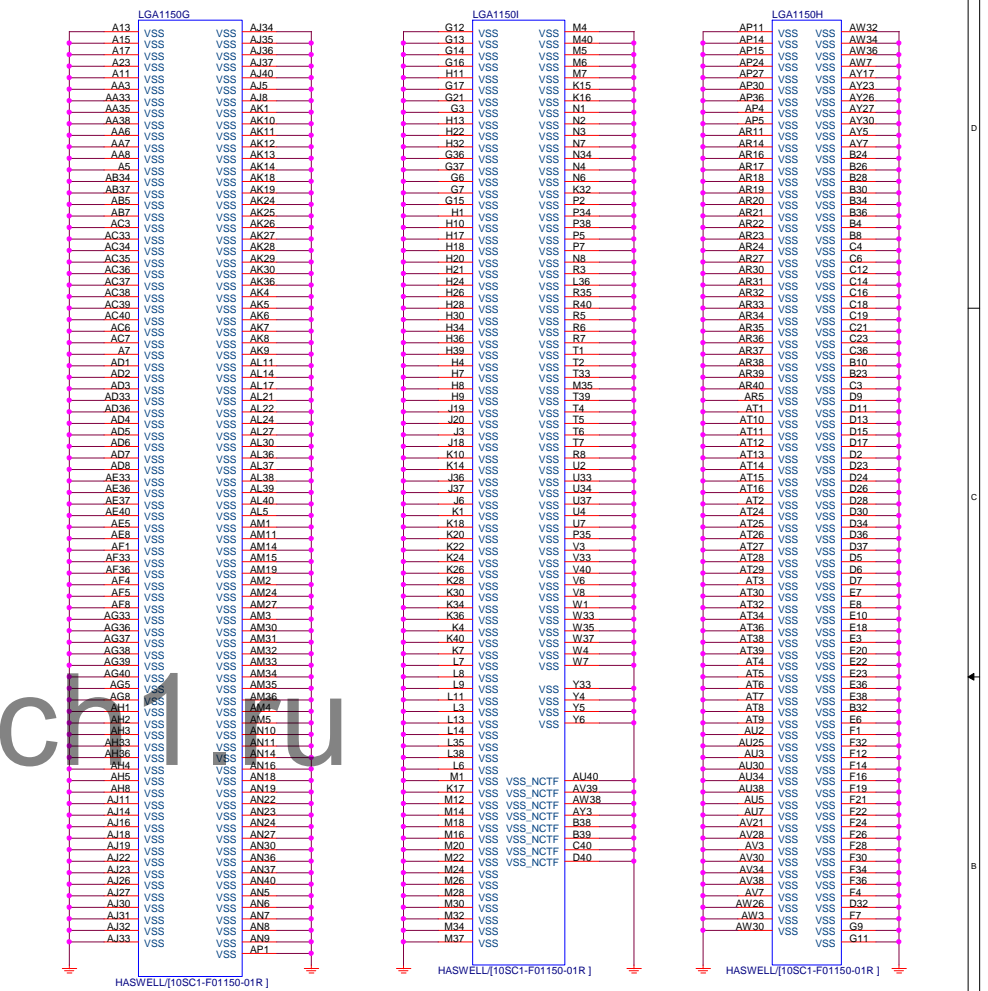
DDR BUS

(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]

LGA1150 (F,J)

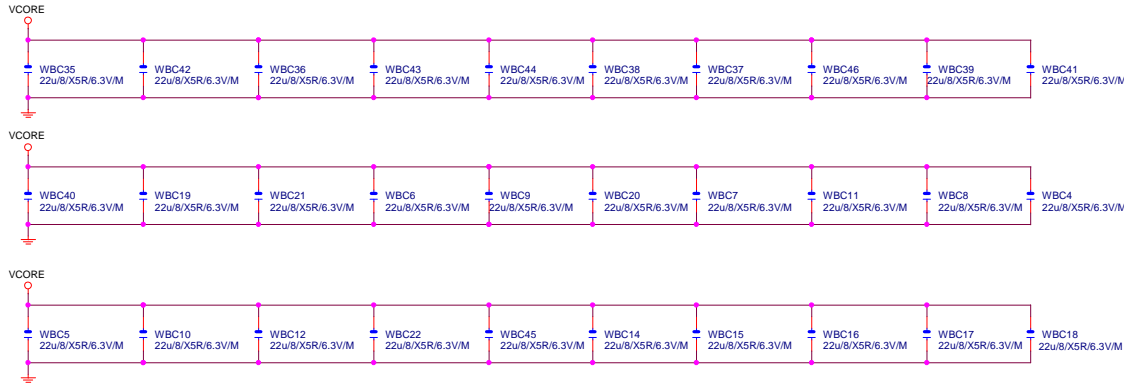


LGA1150 (G,H,I)



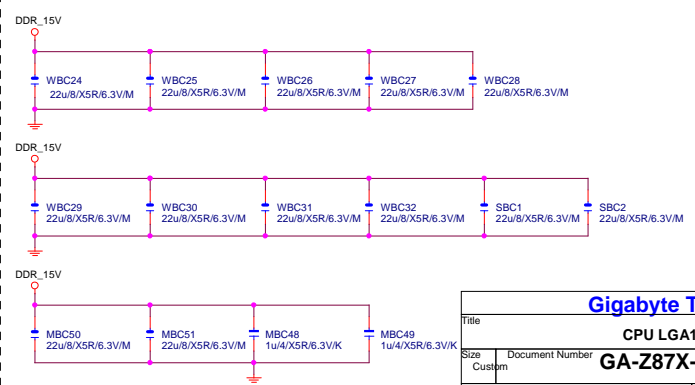
VCore CAP

(X30)



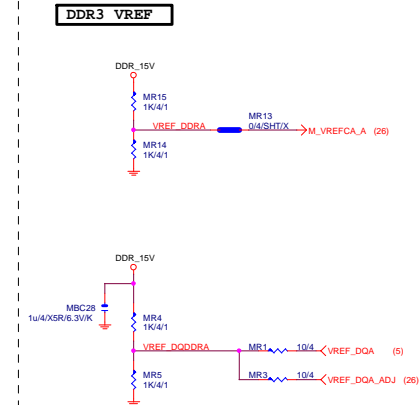
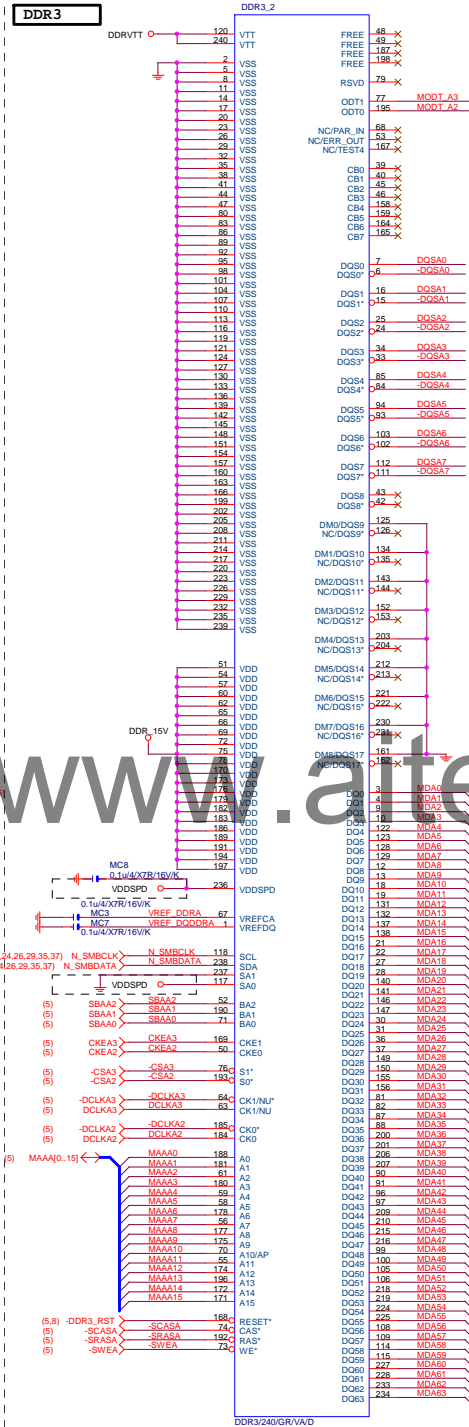
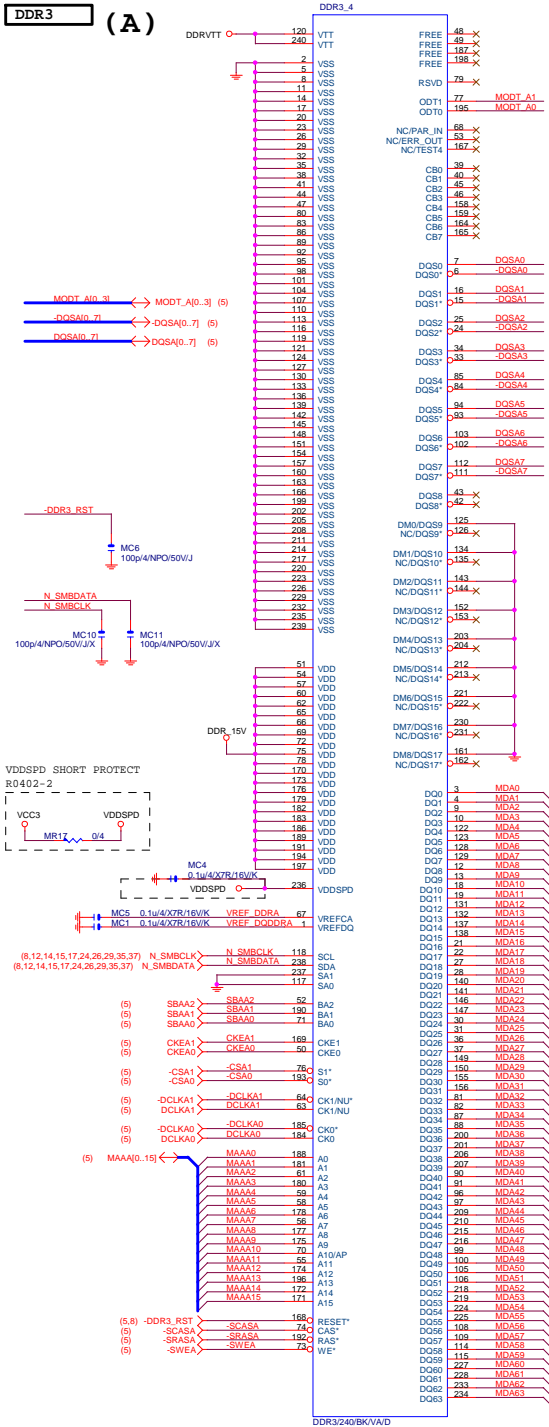
DDR CAP

(X15)



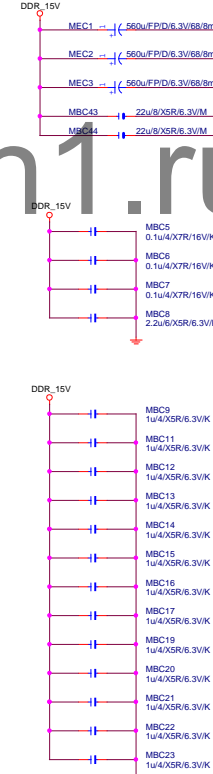
Gigabyte Technology

Title	CPU LGA1150-C			Rev
Size	Document Number	GA-Z87X-D3H		1.01
Date:	Friday, April 12, 2013	Sheet	6	of 43

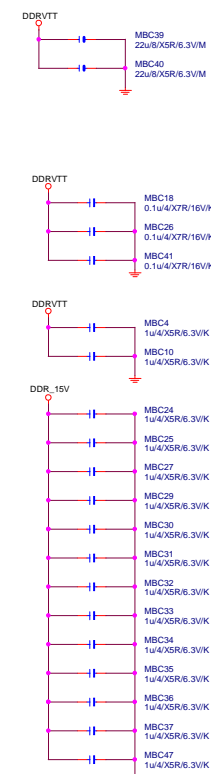


**DDR TERMINA
CHANNEL A/B**

DDR15V Decouple

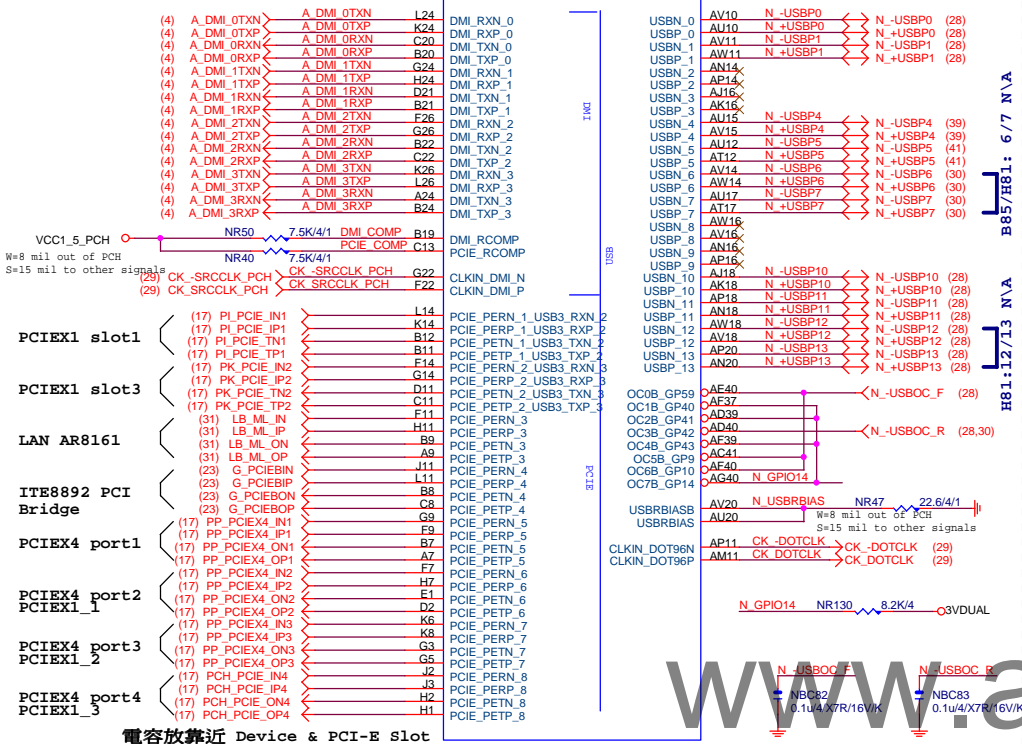


DDRVTT Decouple



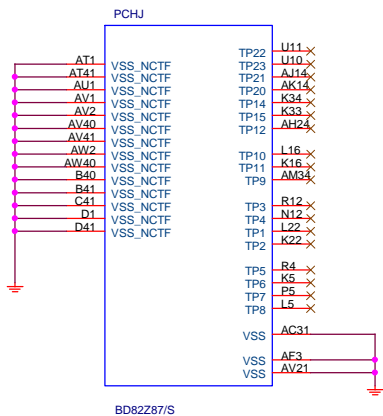
DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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



PCIEX1:15/4/4/4/15 (breakout min 8/4/4/4/8) BD82Z87/S
Impedance=85 +/- 17.5%

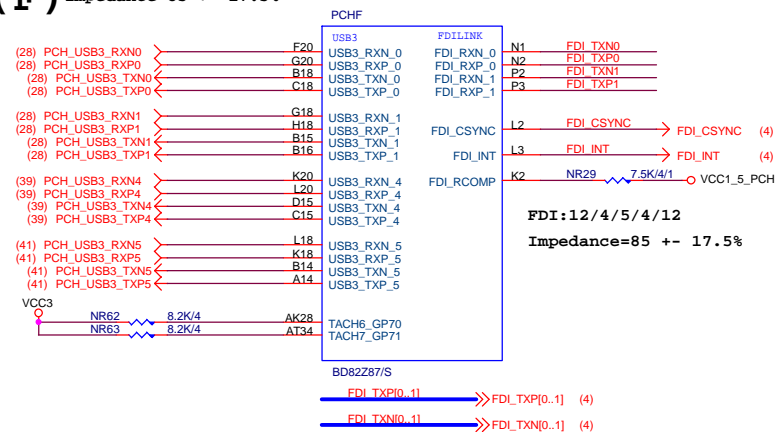
PCH (J)



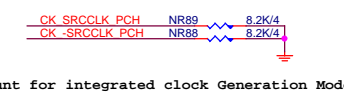
BD82Z87/S

PCH (F)

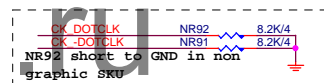
USB3.0 : 20/5/7/5/20 (breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%



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

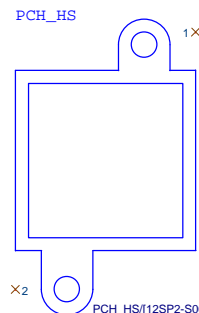


Mount for integrated clock Generation Mode



graphic SKU

PCH H/S



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)
```

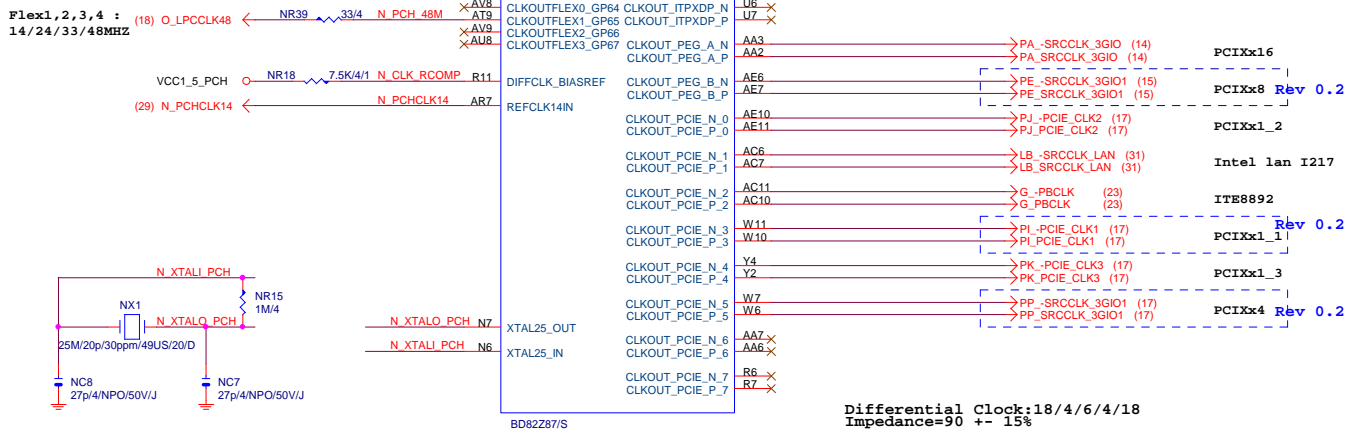
USB OC#	Configure
OC0#	USB0,1
OC1#	USB2,3
OC2#	USB4,5
OC3#	USB6,7
OC4#	USB8,9
OC5#	USB10,11
OC6#	USB12,13
OC7#	Not Use

Gigabyte Technology

Title			
PCH FDI,DMI,USB ,PCIE			
Size	Document Number	Rev	
Custom	GA-Z87X-D3H	1.0	
Date:	Friday, April 12, 2013	Sheet	9 of 43

Pin	Function
AJ2	DDPB_HPD
AH5	DDPC_HPD
AJ4	DDPD_HPD
AK6	DDPB_AUXN
AK8	DDPB_AUXP
AG7	DDPC_AUXN
AG6	DDPC_AUXP
AG11	DDPD_AUXN
AG10	DDPD_AUXP
AG3	VGA_DDC_CLK
AL1	VGA_DDC_DATA
AF5	VGA_RSET
AN3	DDPC_CTRLCLK
AM2	DDPC_CTRLDATA
AM1	DDPB_CTRLCLK
AJ5	DDPB_CTRLDATA
AN4	DDPD_CTRLCLK
AN2	DDPD_CTRLDATA

BD92287/S



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

Mount for integrated clock Generation Mode

SSOP6_ESD

The diagram shows two ESD protection diode arrays, AOZ8902CIL/SOT23-6, connected to the input pins of the SSOP6. The first array (top) is connected to pins 1 (VGADDCCLK), 2 (VGADDCDATA), and 3 (VGADDCDATA) to pins 6 (N_GVSYNC), 5 (N_GVSYNC), and 4 (N_GHSYNC) respectively. The second array (bottom) is connected to pins 1 (VGA_R), 2 (VGA_R), and 3 (VGA_G) to pins 6 (VGA_B), 5 (VGA_B), and 4 (VGA_B) respectively. Both arrays are connected to a common ground (GND) through a 0.1uH/47R/16V/K inductor and a capacitor C33 (0.1uH/47R/16V/K).

Close to PCH

Close to Filter

FB1
FB2
FB3

60/4/3A/S
60/4/3A/S
60/4/3A/S

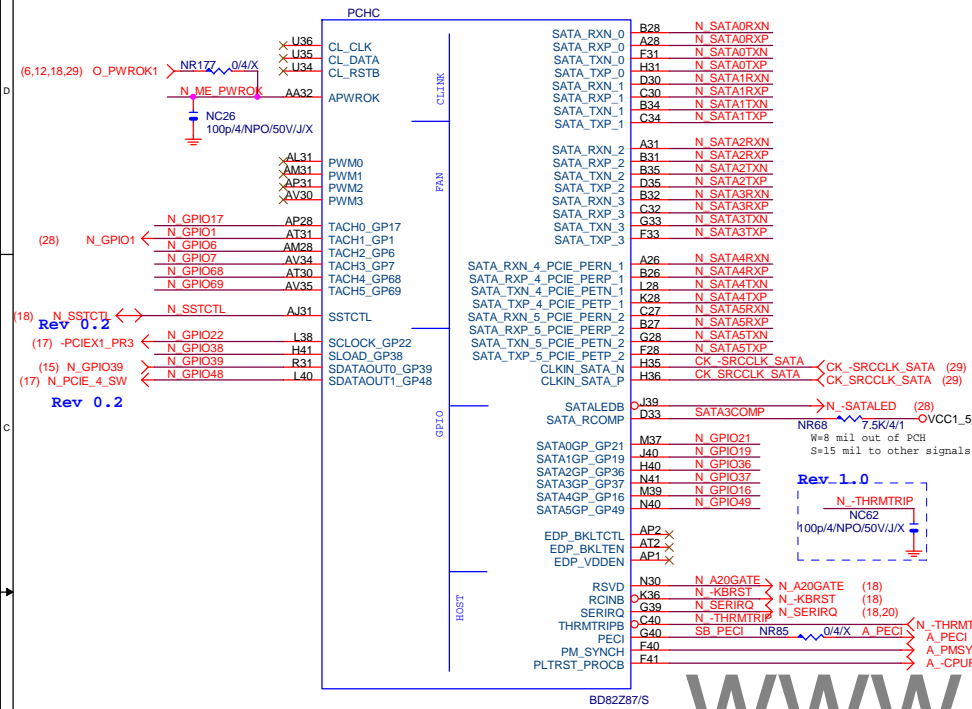
VGA R
VGA G
VGA B

NR36 150/41/X
NR27 150/41/X
NR35 150/41/X
R152 75/4/1
R150 75/4/1
R151 75/4/1
C34 10p/4NPO/50V/J
C36 10p/4NPO/50V/J
C37 22p/4NPO/50V/J
C38 22p/4NPO/50V/J
C39 22p/4NPO/50V/J

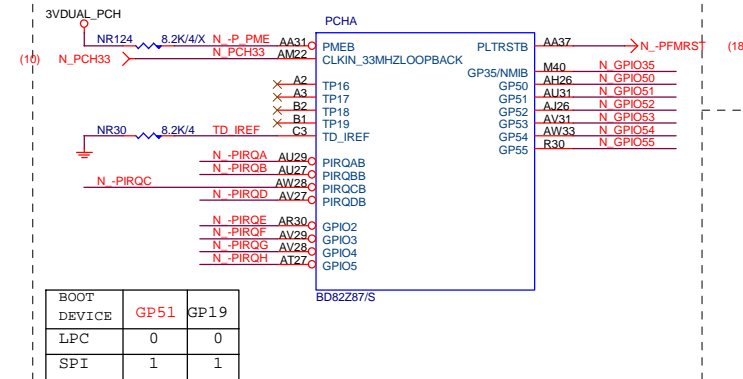
Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number	Rev	
Custom	GA-Z87X-D3H	1.01	
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(C)

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

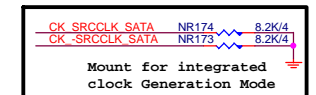


PCH (A)

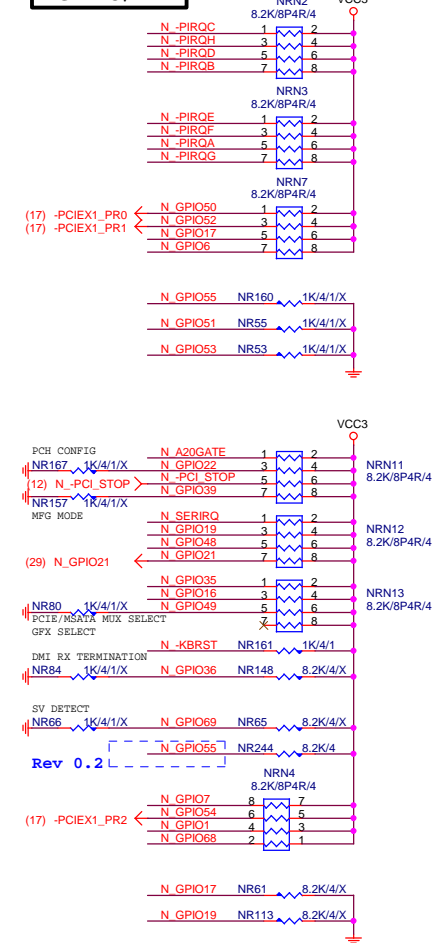


```
Default int pull up on GP51,  
Default SPI boot devices
```

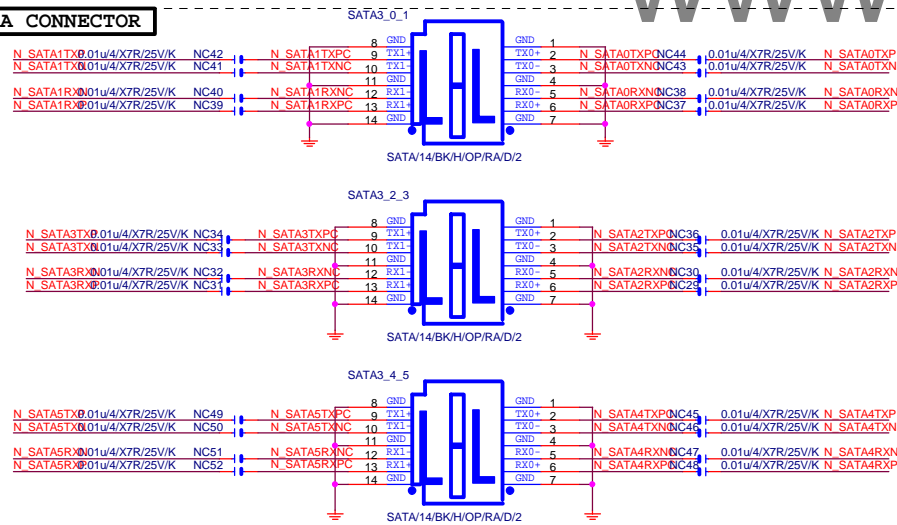
PCH CLK PD



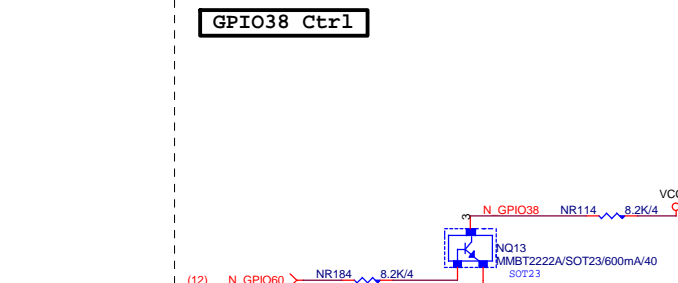
PCH PU/PD



SATA CONNECTOR



GPIO38 Ctrl



Gigabyte Technology

Title			
PCH HOST , SATA, PCI			
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(D)



MEYNER



```
|_At least 10ms delay after
|_3VDUAL_PCH stabel
```



```
GP8:Low to enable
BCH clock chip
```



GA-Z87X-D3H

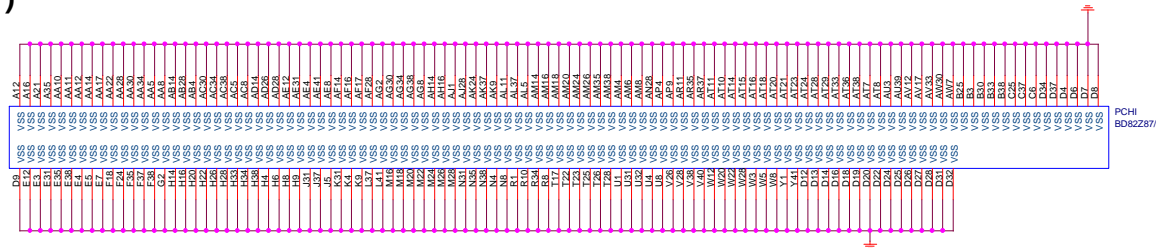
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32.768KHZ

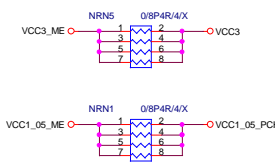


CLR_CMOS
N_-R'
PH/1*2/BK/2

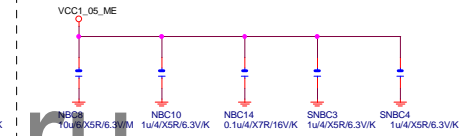
PCH (I)



SHT PWR



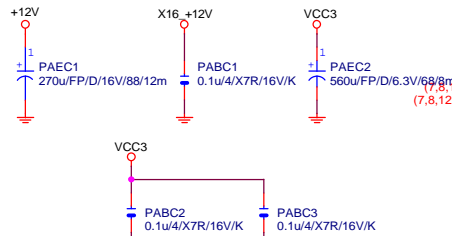
(1.05V) (x5)



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

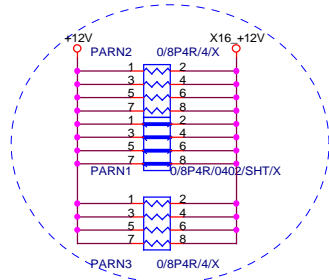


PCIEX16 CAP



PCIEX16 PROTECT SHT

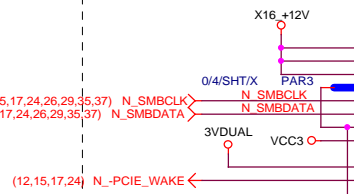
+12 protect
short-wire test



PCIEX16 AC CAP

PA EXP TXP0	PAC5	0.22u/4X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u/4X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u/4X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u/4X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u/4X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u/4X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u/4X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u/4X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u/4X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u/4X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u/4X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u/4X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u/4X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u/4X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u/4X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u/4X5R/6.3V/K	PA EXP TXN7 C
PA EXP SW TXP8	PAC20	0.22u/4X5R/6.3V/K	PA EXP SW TXP8 C
PA EXP SW TXN8	PAC21	0.22u/4X5R/6.3V/K	PA EXP SW TXN8 C
PA EXP SW TXP9	PAC22	0.22u/4X5R/6.3V/K	PA EXP SW TXP9 C
PA EXP SW TXN9	PAC23	0.22u/4X5R/6.3V/K	PA EXP SW TXN9 C
PA EXP SW TXP10	PAC24	0.22u/4X5R/6.3V/K	PA EXP SW TXP10 C
PA EXP SW TXN10	PAC25	0.22u/4X5R/6.3V/K	PA EXP SW TXN10 C
PA EXP SW TXP11	PAC26	0.22u/4X5R/6.3V/K	PA EXP SW TXP11 C
PA EXP SW TXN11	PAC27	0.22u/4X5R/6.3V/K	PA EXP SW TXN11 C
PA EXP SW TXP12	PAC28	0.22u/4X5R/6.3V/K	PA EXP SW TXP12 C
PA EXP SW TXN12	PAC29	0.22u/4X5R/6.3V/K	PA EXP SW TXN12 C
PA EXP SW TXP13	PAC30	0.22u/4X5R/6.3V/K	PA EXP SW TXP13 C
PA EXP SW TXN13	PAC31	0.22u/4X5R/6.3V/K	PA EXP SW TXN13 C
PA EXP SW TXP14	PAC32	0.22u/4X5R/6.3V/K	PA EXP SW TXP14 C
PA EXP SW TXN14	PAC33	0.22u/4X5R/6.3V/K	PA EXP SW TXN14 C
PA EXP SW TXP15	PAC34	0.22u/4X5R/6.3V/K	PA EXP SW TXP15 C
PA EXP SW TXN15	PAC35	0.22u/4X5R/6.3V/K	PA EXP SW TXN15 C

PCIEX16 SLOT



PA EXP TXP0 C
PA EXP TXN0 C

PA EXP TXP1 C
PA EXP TXN1 C

PA EXP TXP2 C
PA EXP TXN2 C

PA EXP TXP3 C
PA EXP TXN3 C

PA EXP TXP4 C
PA EXP TXN4 C

PA EXP TXP5 C
PA EXP TXN5 C

PA EXP TXP6 C
PA EXP TXN6 C

PA EXP TXP7 C
PA EXP TXN7 C

PA EXP SW TXP8 C
PA EXP SW TXN8 C

PA EXP SW TXP9 C
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PA EXP SW TXP10 C
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PA EXP SW TXP11 C
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PA EXP SW TXN15 C

PCIESLOT-164DN-Q

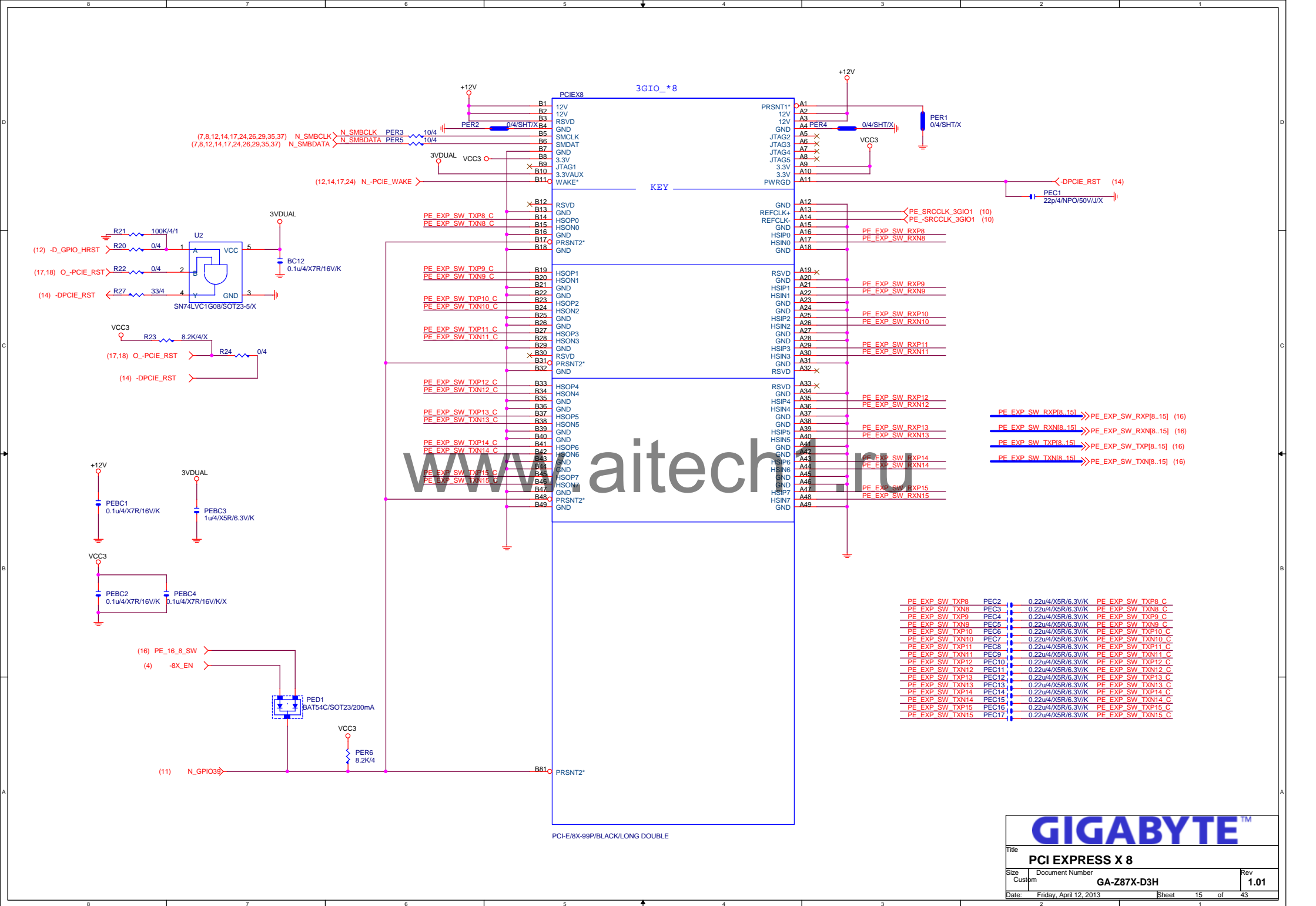
PCIEX16 3GIO_*16

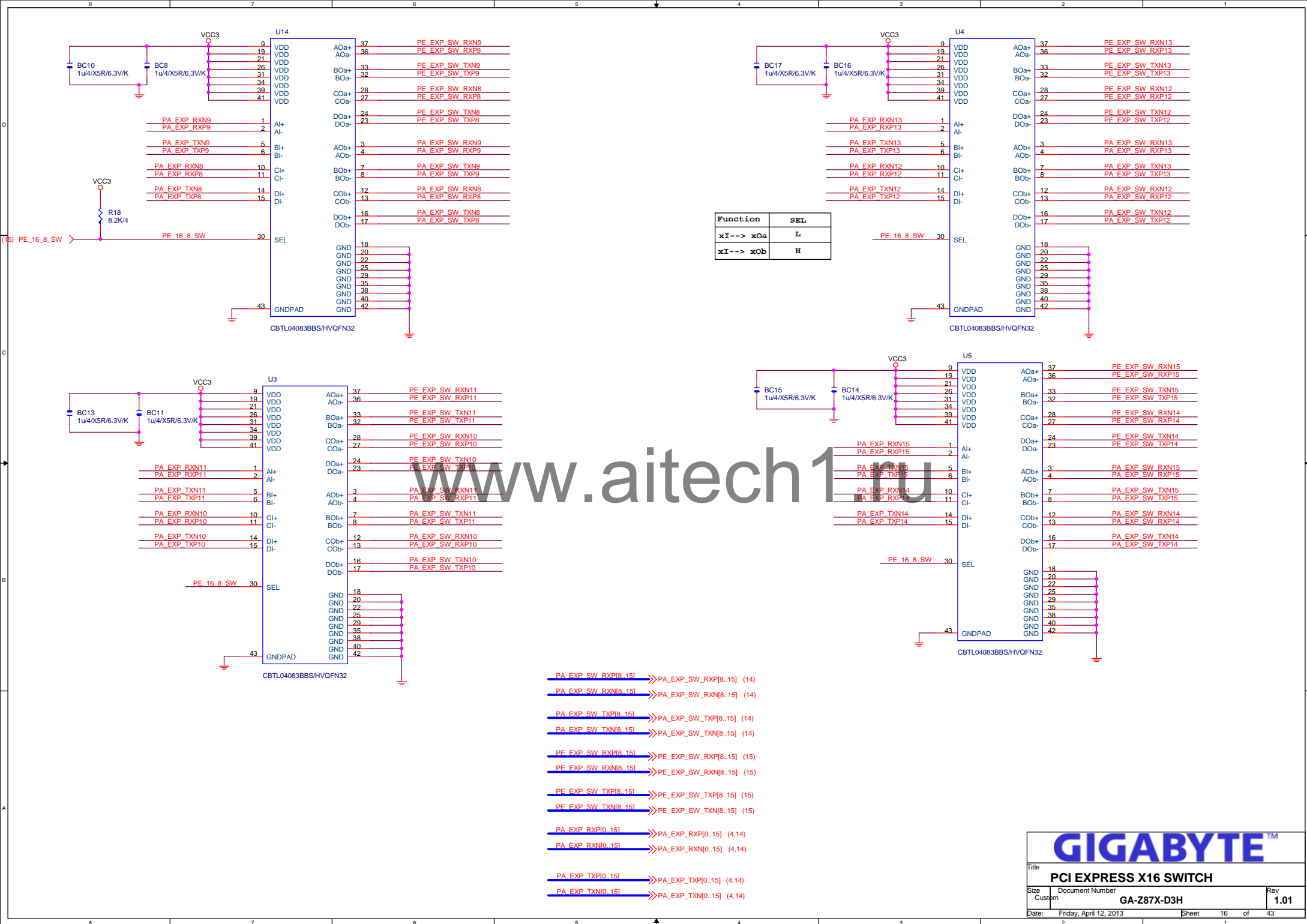


PCI-E/16X-164P/BK/LONG DOUBLE

Gigabyte Technology

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PCI EXPRESS * 16			
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Date:			
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1.01			





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

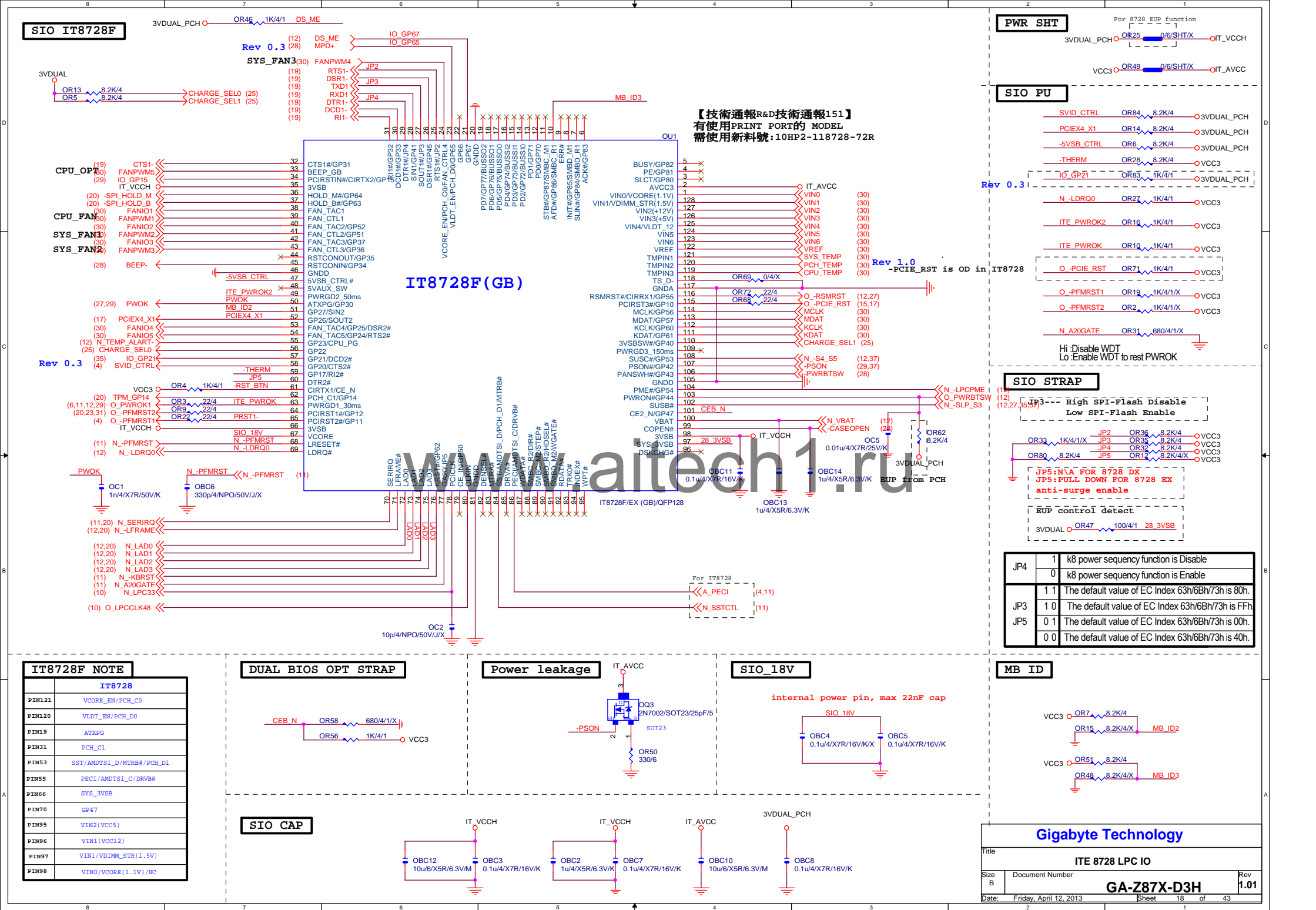
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- PA EXP SW RXN8.15] >>> PA_EXP_SW_RXN[8.15] (14)
- PA EXP SW TXP8.15] >>> PA_EXP_SW_TXP[8.15] (14)
- PA EXP SW TXN8.15] >>> PA_EXP_SW_TXN[8.15] (14)
- PE EXP SW RXP8.15] >>> PE_EXP_SW_RXP[8.15] (15)
- PE EXP SW RXN8.15] >>> PE_EXP_SW_RXN[8.15] (15)
- PE EXP SW TXP8.15] >>> PE_EXP_SW_TXP[8.15] (15)
- PE EXP SW TXN8.15] >>> PE_EXP_SW_TXN[8.15] (15)
- PA EXP RXP0.15] >>> PA_EXP_RXP[0.15] (4,14)
- PA EXP RXN0.15] >>> PA_EXP_RXN[0.15] (4,14)
- PA EXP TXP0.15] >>> PA_EXP_TXP[0.15] (4,14)
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GIGABYTE™

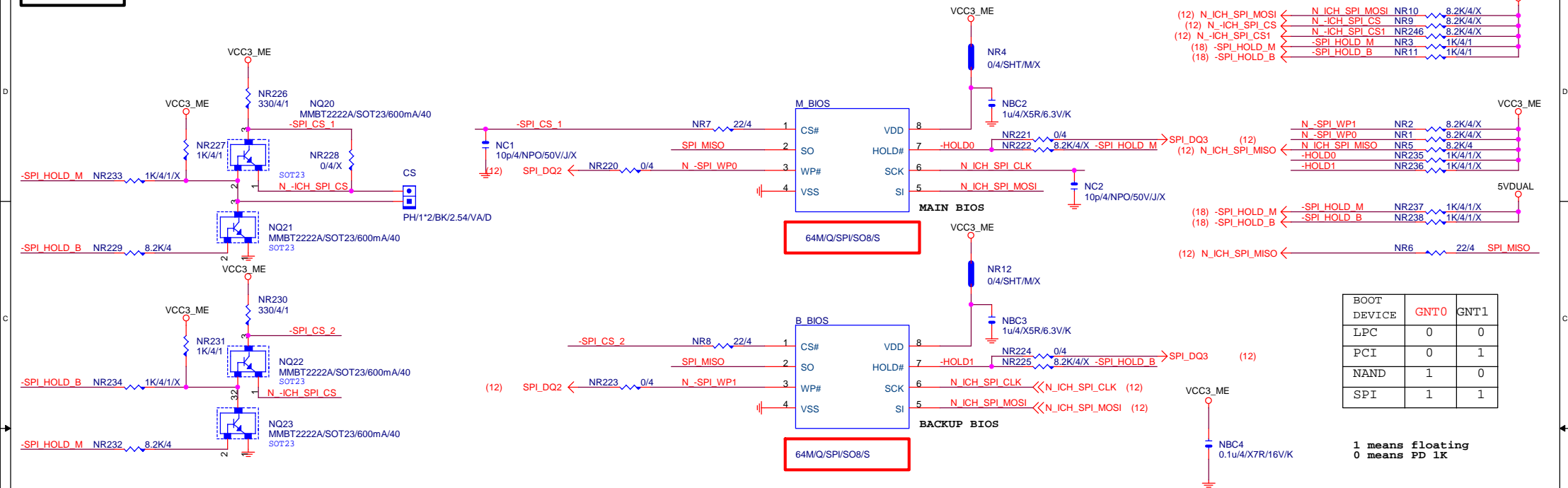
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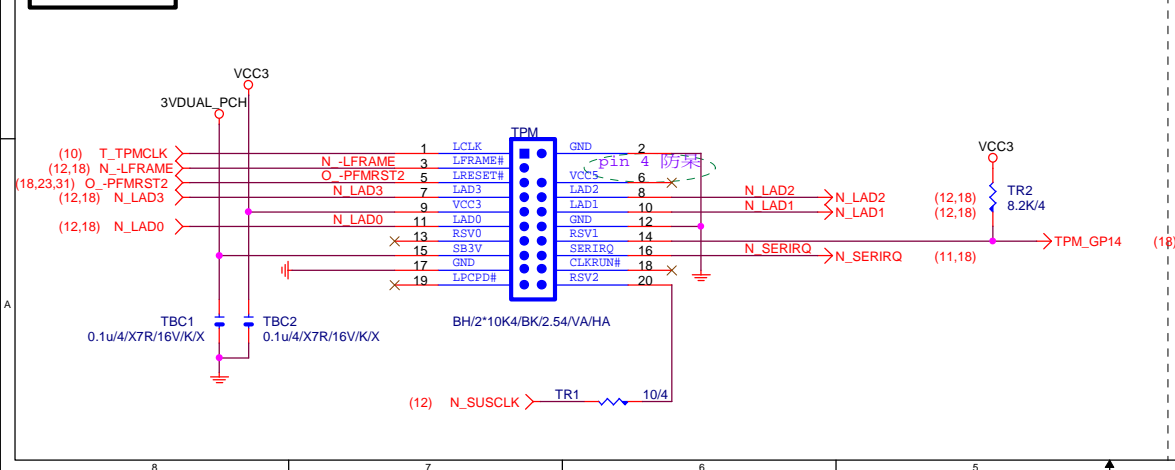
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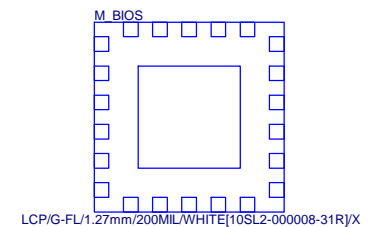
DUAL BIOS



TPM CONNECT



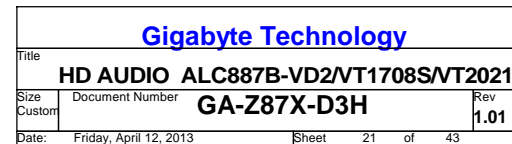
BIOS Debug port

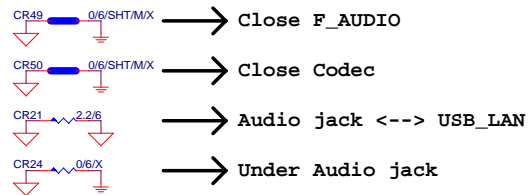


Gigabyte Technology

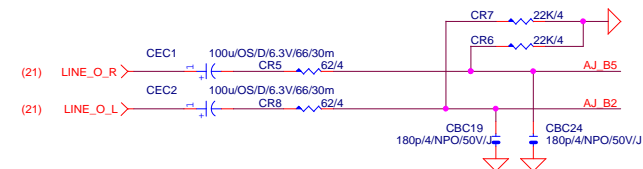
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Size	Document Number						Rev
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2				1			

CR14/CBC4 close to PCH



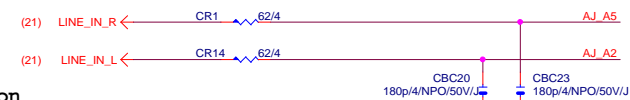


LINE-OUT



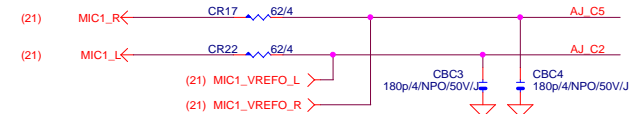
LINE-IN

Verify MIC function in LINE-in

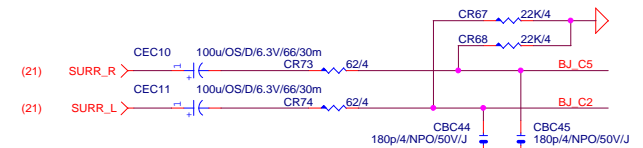


For 889A/888

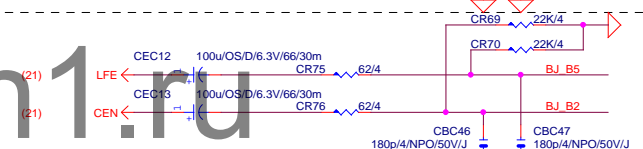
MIC-IN



SURROUND

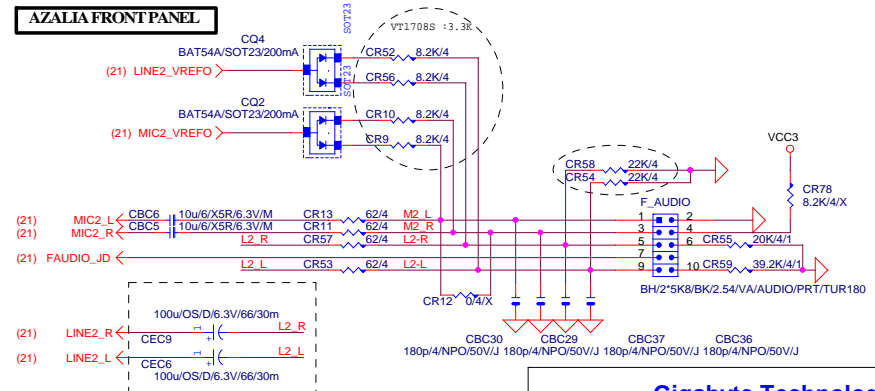


CEN/LFE



SURRBACK

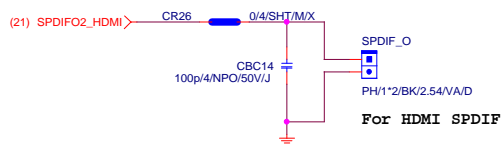
AZALIA FRONT PANEL



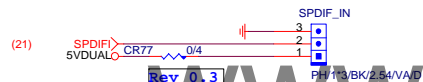
Gigabyte Technology

Title			
AUDIO JACK			
Size	Document Number	Rev	
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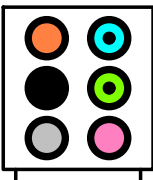
SPDIF_OUT



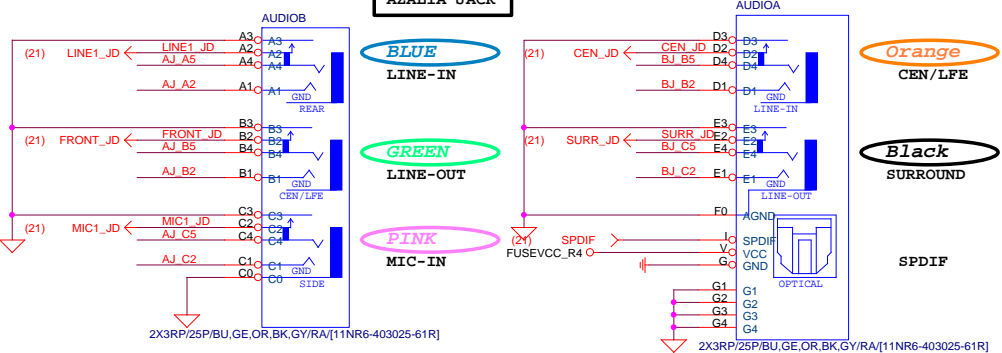
SPDIF_IN

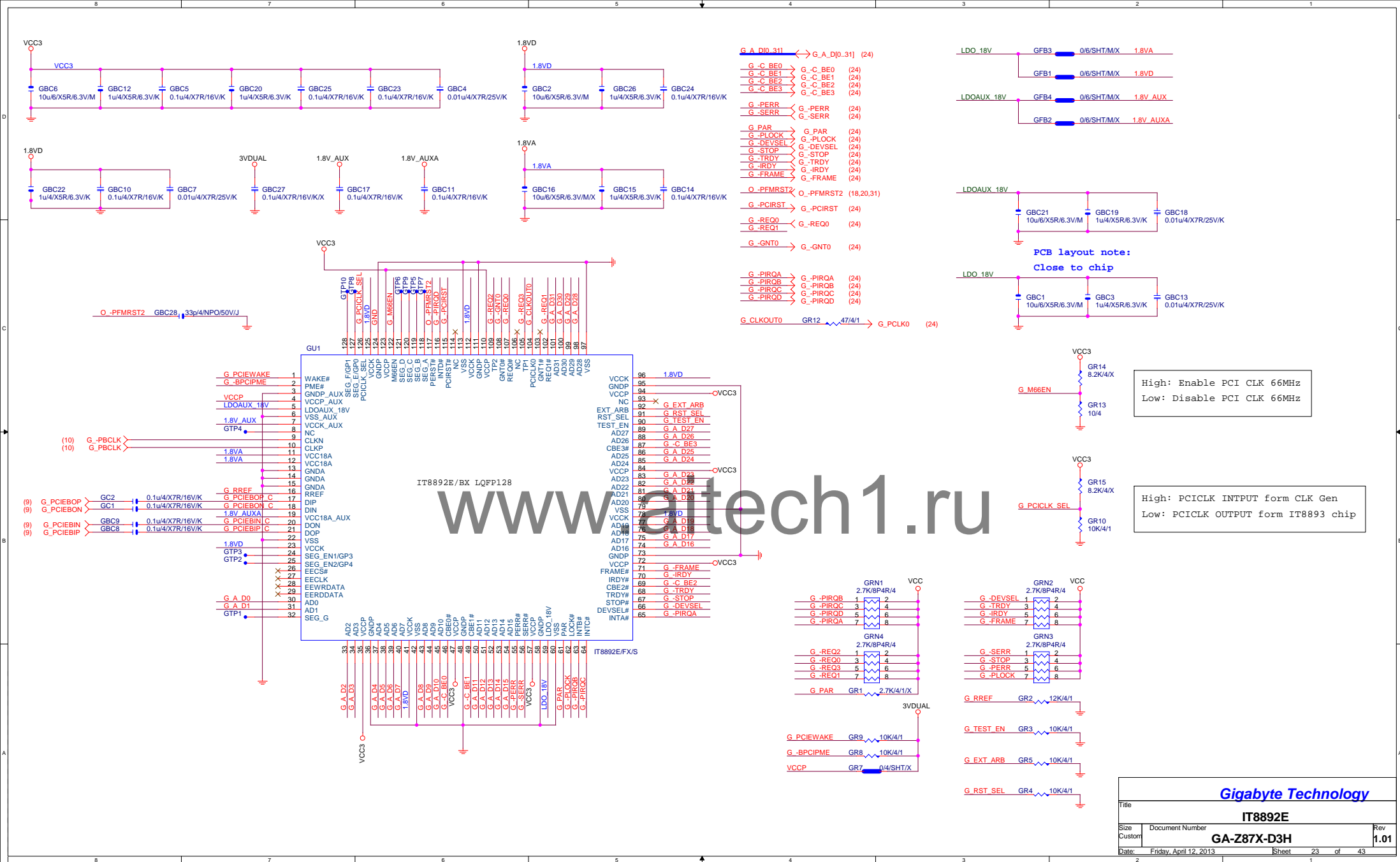


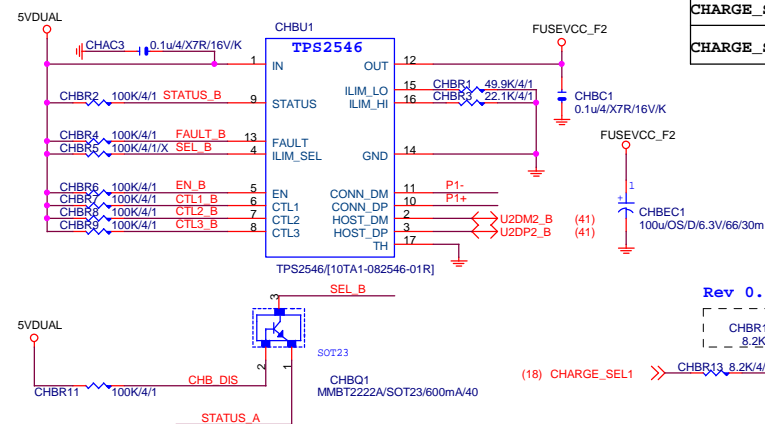
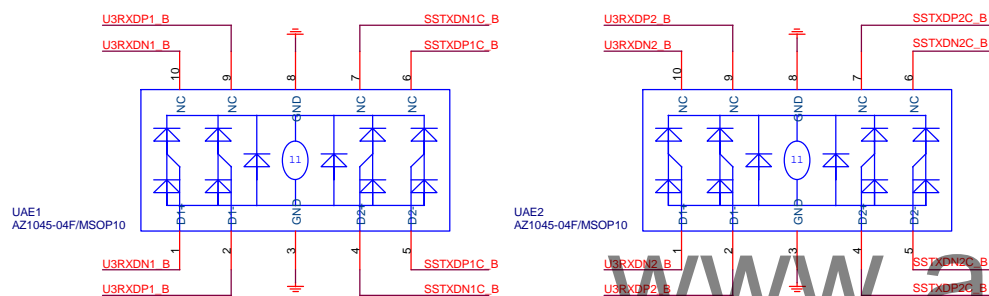
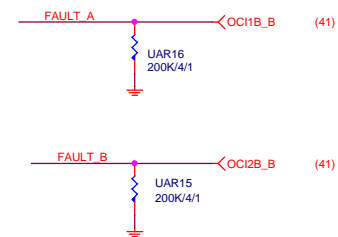
AZALIA JACK



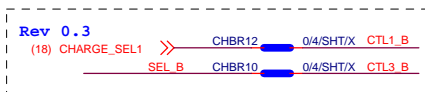
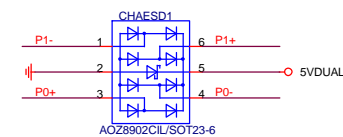
AZALIA JACK



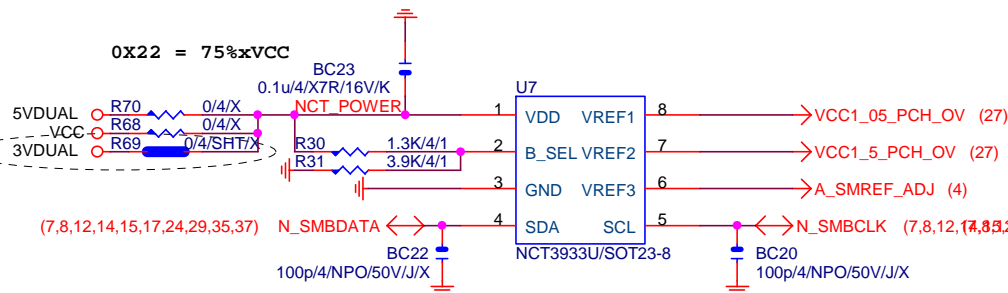




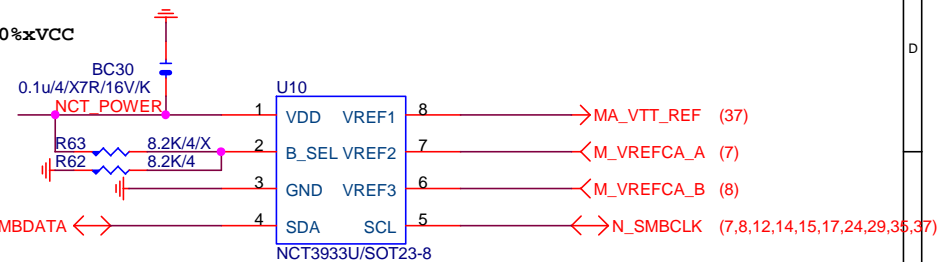
	S0	S3/S4/S5
CHARGE_SEL0	1	0
CHARGE_SEL1	1	0



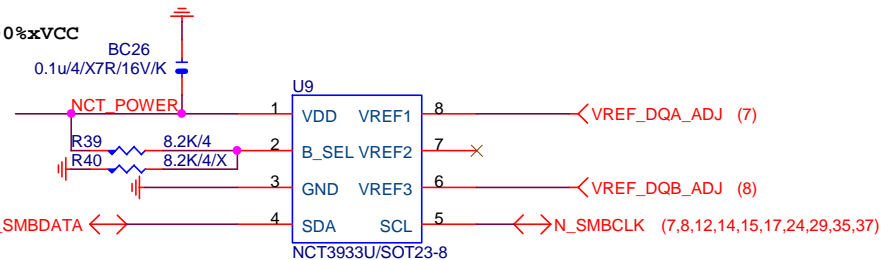
OVER VOLTAGE



0X2A = 0%xVCC



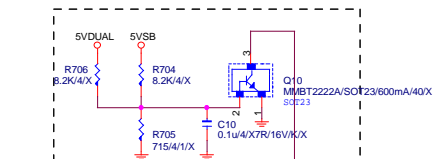
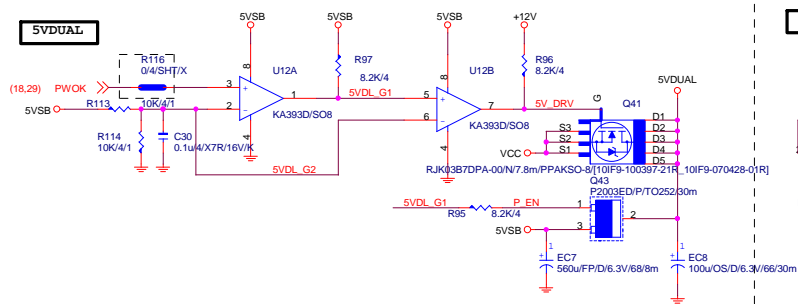
0X20 = 100%xVCC



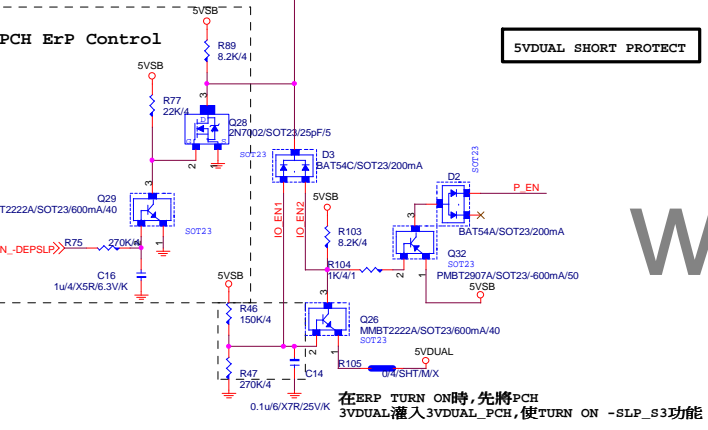
NCT3933	0X2A	0X20	0X22
VREF1	DDRVTT	VREF_DDRA_DQ	PCH Core
VREF2	VREF_DDRA_CA	N/A	VCC1_5_PCH
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	SMREF

Gigabyte Technology

Title		
CPU CORE VR-2		
Size	Document Number	Rev
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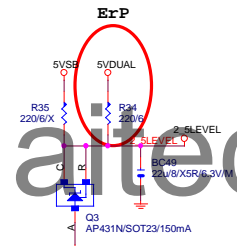
5VSB OVP: 7.5V protection



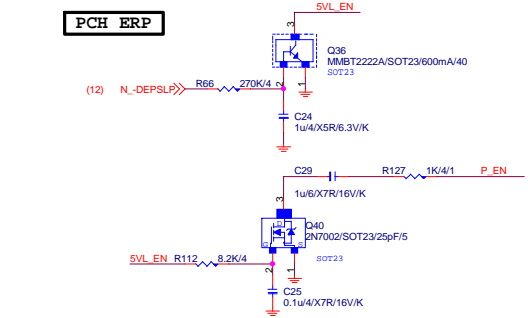
PCH ErP Control

5VDUAL SHORT PROTECT

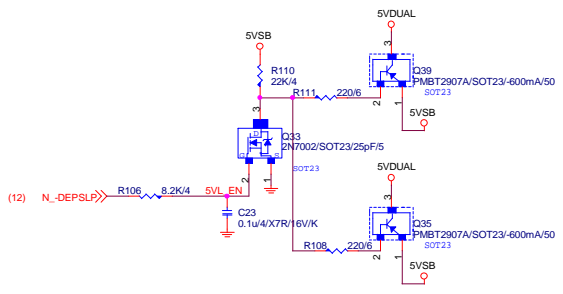
2_5LEVEL



ErP



PCH ERP



5VSB

5VSB

5VSB

5VSB

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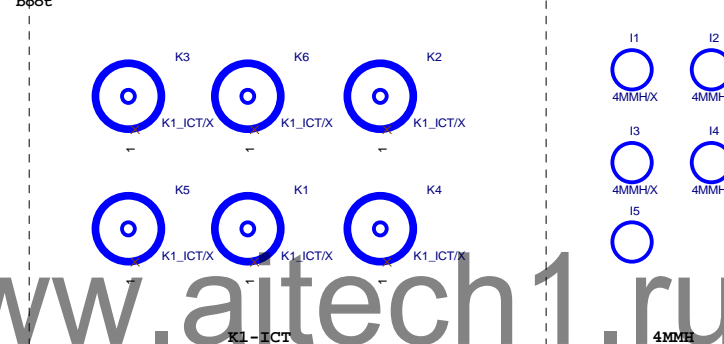
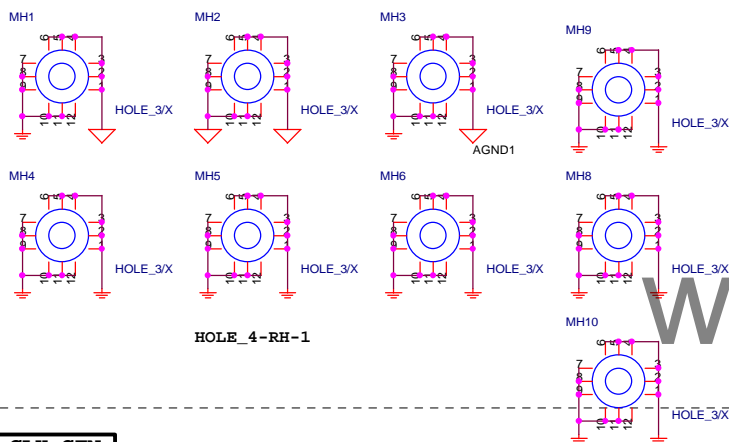
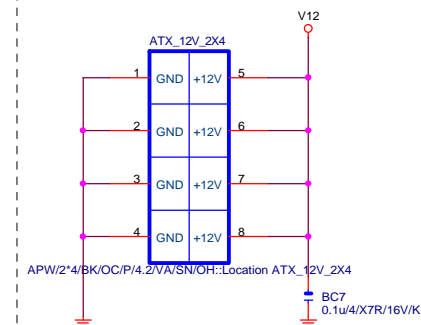
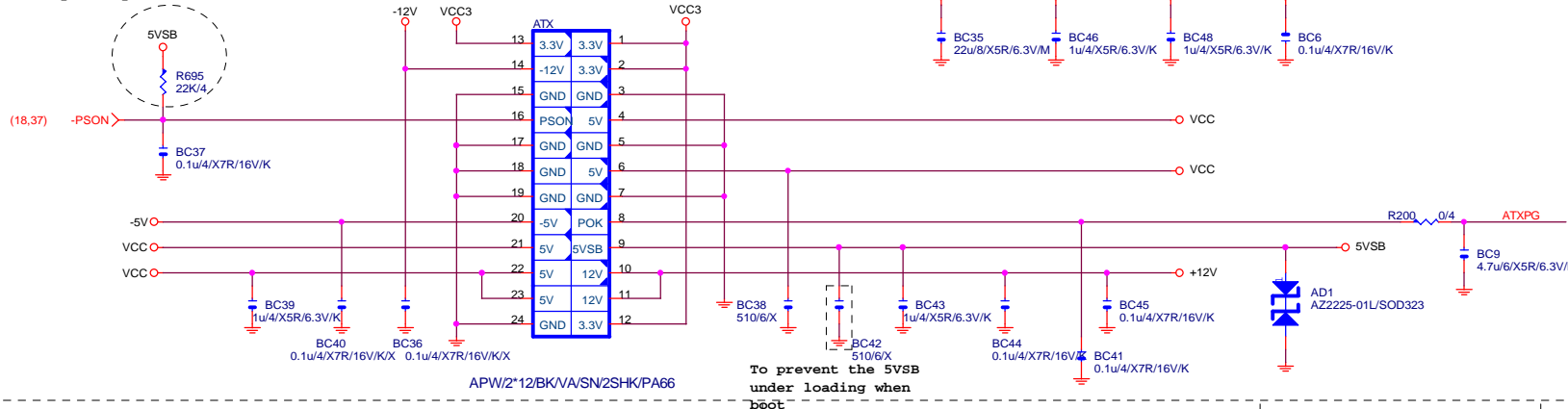
5VSB

5VSB

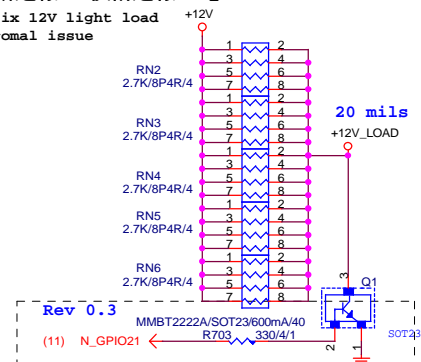
5VSB

5VSB

5VSB



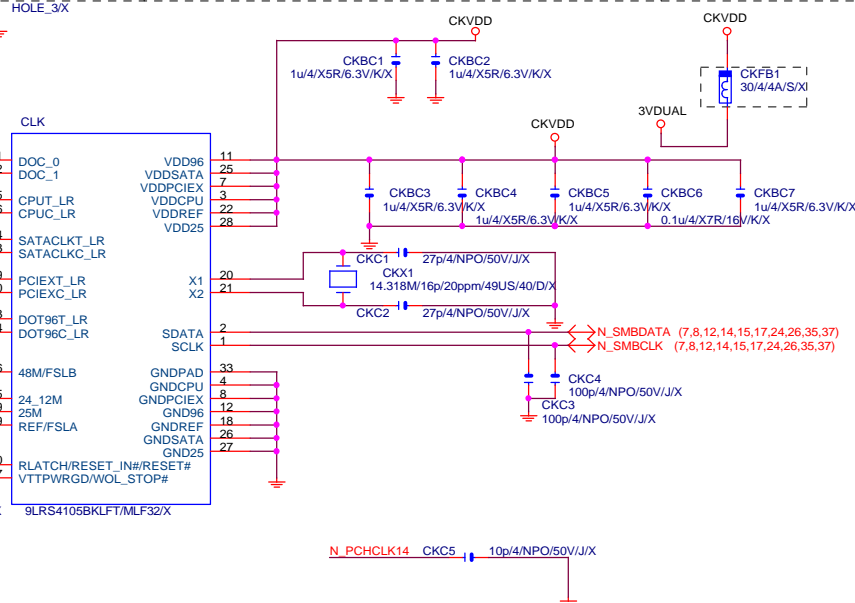
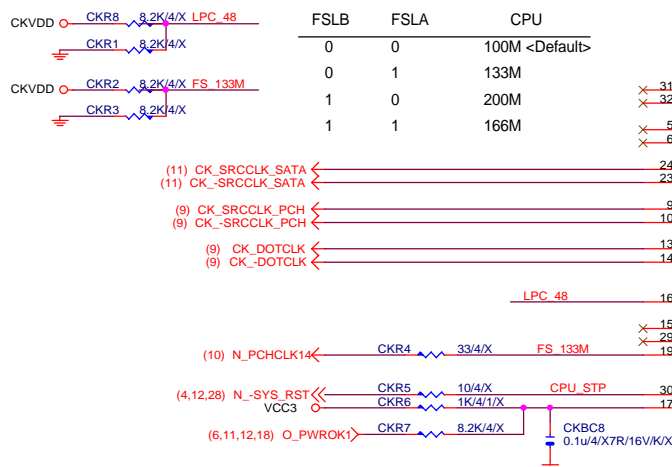
To fix 12V light load
abnromal issue



CLK GEN

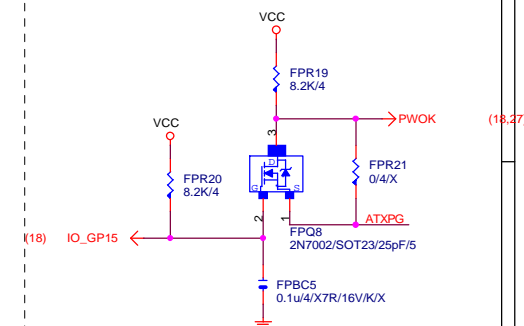
CPU Frequency Selection

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



PWOK PATCH

【技術通報R&D技術通報154】



Gigabyte Technology

Title		ATX POWER CONNECTOR	
Size	Document Number	GA-Z87X-D3H	
Custom			

Rev
1.01

Figure 10 is a schematic diagram showing the power supply and temperature sensor connections for the ADXL345. The diagram includes the following components and connections:

- Power Supply:**
 - VREF:** Connected to a 1u4/XSR/6.3V/K capacitor (OC7) and a 1u4/XSR/6.3V/K capacitor (OC6).
 - RESISTORS:** OR73 (10K/4/1), R674 (10K/4/1), and R675 (10K/4/1) are connected in series between VREF and the temperature sensor.
- Temperature Sensor:**
 - RS_Sys:** A temperature sensor connected to the VREF line.
 - RS_PCH:** A temperature sensor connected to the VREF line.
 - C232:** A 1u4/XSR/6.3V/K capacitor connected to the RS_PCH line.
- Labels:**
 - Rev 1.0:** Revision label.
 - Close SIO:** Label for the RS_Sys connection.
 - CLOSE PCB:** Label for the RS_PCH connection.

[illegible]

The schematic diagram illustrates the USB interface circuit for the KB/USB module. It shows the connection of the KB/USB module to the KB/MS_USB module and the KB/USB/PC99(DUAL)/GF2/R/AD module. The circuit includes various components such as capacitors (BC1, BC2, BC3, BC4), resistors (RN1, UBEF1, UBEF2, UBEF3, UBEF4, UBEF5, UBEF6, UBEF7, UBEF8, UBEF9, UBEF10, UBEF11, UBEF12, UBEF13, UBEF14, UBEF15, UBEF16, UBEF17, UBEF18, UBEF19, UBEF20, UBEF21, UBEF22, UBEF23, UBEF24, UBEF25, UBEF26, UBEF27, UBEF28, UBEF29, UBEF30, UBEF31, UBEF32, UBEF33, UBEF34, UBEF35, UBEF36, UBEF37, UBEF38, UBEF39, UBEF40, UBEF41, UBEF42, UBEF43, UBEF44, UBEF45, UBEF46, UBEF47, UBEF48, UBEF49, UBEF50, UBEF51, UBEF52, UBEF53, UBEF54, UBEF55, UBEF56, UBEF57, UBEF58, UBEF59, UBEF60, UBEF61, UBEF62, UBEF63, UBEF64, UBEF65, UBEF66, UBEF67, UBEF68, UBEF69, UBEF70, UBEF71, UBEF72, UBEF73, UBEF74, UBEF75, UBEF76, UBEF77, UBEF78, UBEF79, UBEF80, UBEF81, UBEF82, UBEF83, UBEF84, UBEF85, UBEF86, UBEF87, UBEF88, UBEF89, UBEF90, UBEF91, UBEF92, UBEF93, UBEF94, UBEF95, UBEF96, UBEF97, UBEF98, UBEF99, UBEF100), and various USB modules (KB/MS_USB, KB/USB/PC99(DUAL)/GF2/R/AD, ESD2, UBF7, UBF8, UBF9, UBF10, UBF11, UBF12, UBF13, UBF14, UBF15, UBF16, UBF17, UBF18, UBF19, UBF20, UBF21, UBF22, UBF23, UBF24, UBF25, UBF26, UBF27, UBF28, UBF29, UBF30, UBF31, UBF32, UBF33, UBF34, UBF35, UBF36, UBF37, UBF38, UBF39, UBF40, UBF41, UBF42, UBF43, UBF44, UBF45, UBF46, UBF47, UBF48, UBF49, UBF50, UBF51, UBF52, UBF53, UBF54, UBF55, UBF56, UBF57, UBF58, UBF59, UBF60, UBF61, UBF62, UBF63, UBF64, UBF65, UBF66, UBF67, UBF68, UBF69, UBF70, UBF71, UBF72, UBF73, UBF74, UBF75, UBF76, UBF77, UBF78, UBF79, UBF80, UBF81, UBF82, UBF83, UBF84, UBF85, UBF86, UBF87, UBF88, UBF89, UBF90, UBF91, UBF92, UBF93, UBF94, UBF95, UBF96, UBF97, UBF98, UBF99, UBF100).

CPU SMART FAN

VCC 5V

(18) FANPWM1

+12V

C233 1u6/X7R/16V/K

SHORT PROTECT R0402-2

C50 0.1u4/X7R/16V/K

R696 2K/4

R672 100k/4/1

R673 3.3K/4/1

R677 15K/4/1

R678 6.2K/4/1

C234 0.047u4/X7R/16V/K

FANIO1 (18)

CPU_FAN FAN1*4/BK/A3/PA66

Anti Spike

[illegible]

(18) FANPWM2

VCC3

R72 1K/4/1

R71 22K/4

BC31 1u4/X5R/6.3V/K

R86 8.2K/4

U11B LM358DR/SO8

R128 8.2K/4

R88 22K/4

Q42 P2003ED/P/TO252/30m

Q43 74VHC14

R123 3.3K/4/1

R122 15K/4/1

R121 6.2K/4/1

C28 0.047u4/X7R/16V/K

FANIO2

(18)

Rev 0.3

SYS_FAN1 FAN1*14/K8A3/PA66

C52 0.1u4/X7R/16V/K

ECS 100uOS/16V/63Cm

[illegible]

(18) FANPWM4

VCC3

R688 1K/4/1

R689 8.2K/4

R690 8.2K/4

R691 0/4/X

R692 8.2K/4

R693 22K/4

R694 22K/4

R7 15K/4/1

R8 3.3K/4/1

R6 6.2K/4/1

BC219 1u4/X5R/6.3V/K

LM358DR/SO8

Q84 P2003EDIP/TO252/30m

EC10 100uOS/D/16V/66/30m

C54 0.1u4/X7R/16V/K

C2 0.047u4/X7R/16V/K

Rev 0.3

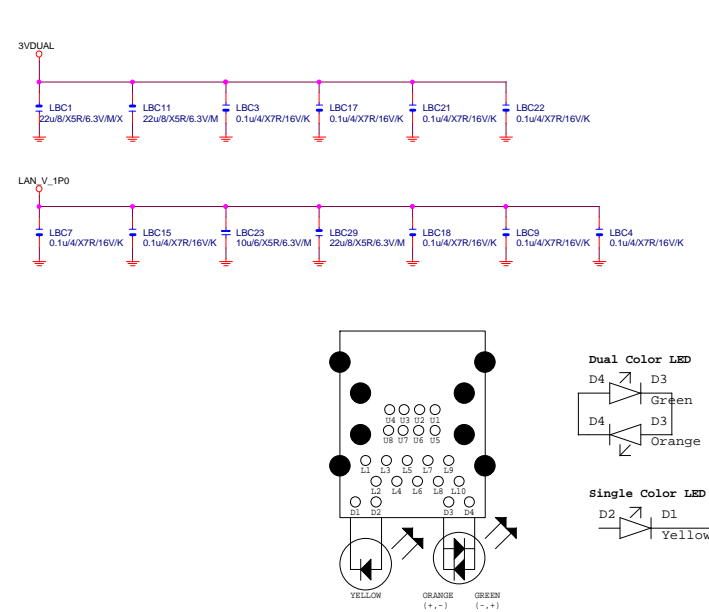
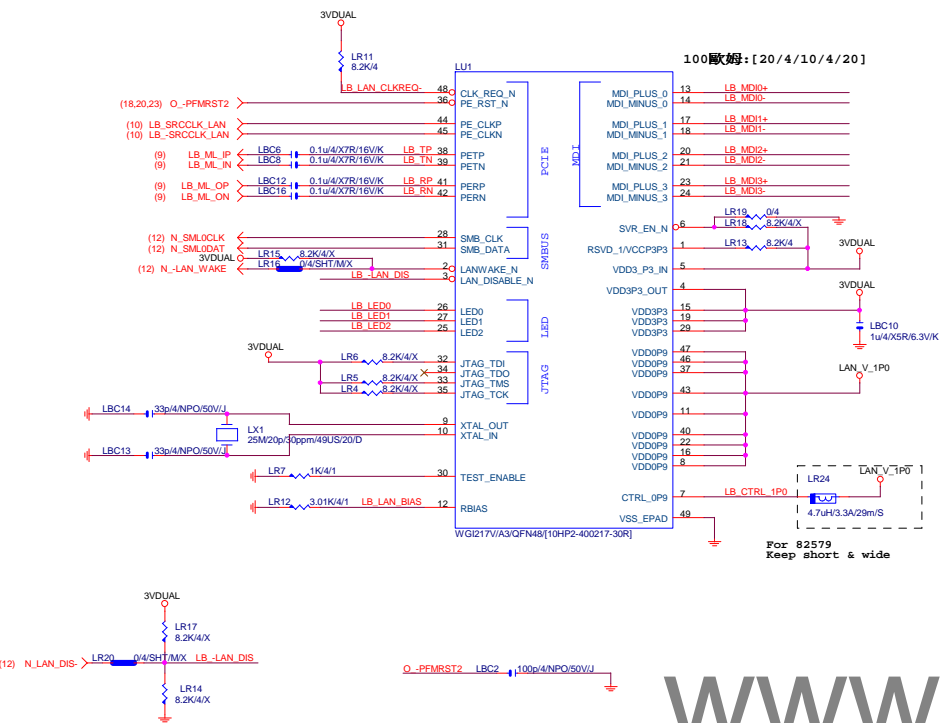
FANIO4

(18)

The schematic shows a +12V supply connected to a capacitor C3 (1n4/X7R/50V/K) which is then connected to the AGND1 pin. A resistor R1 (0/4/SHT/M/X) is also connected between the +12V supply and the AGND1 pin.

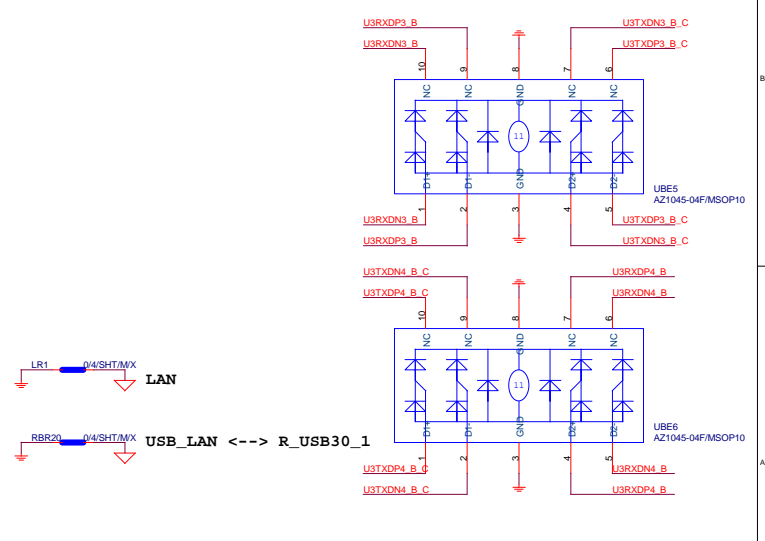
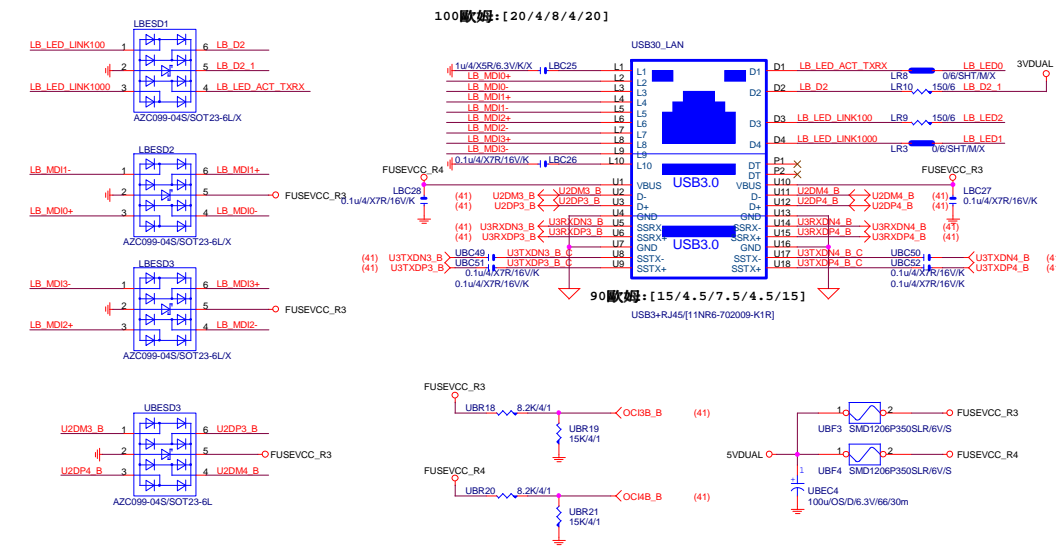
Gigabyte Technology			
Title			
HWM,KB/MS, FAN CTRL			
Size	Document Number		Rev
Custom	GA-Z87X-D3H		1.0
Date:	Friday, April 12, 2013	Sheet	30 of 43

LAN: INTEL I217

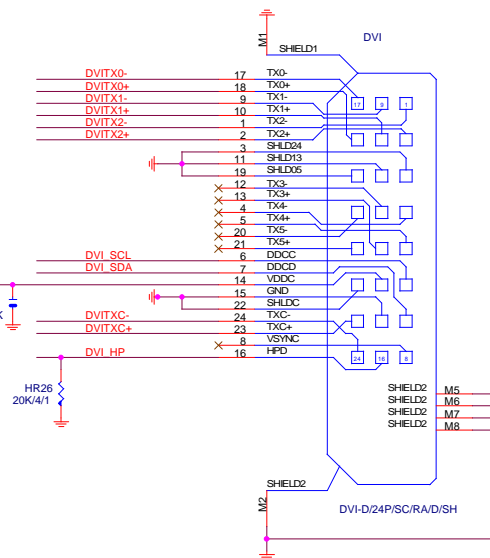
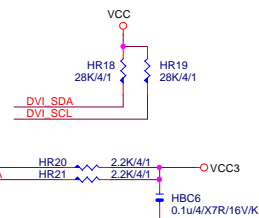


www.aitech1.ru

USB30 LAN CONNECTOR



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



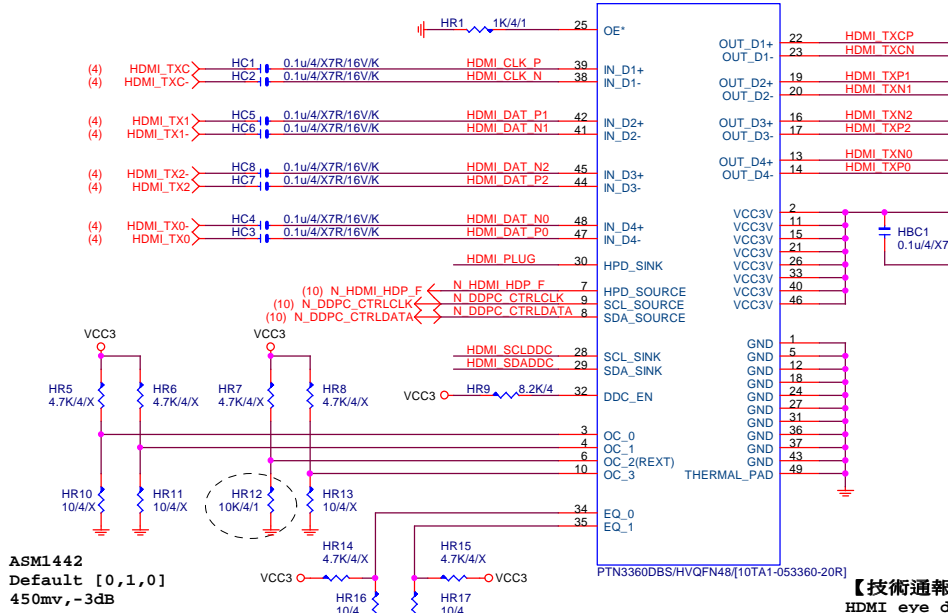
www.aitech1.ru

HDMI LEVEL SHIFT

HDMI:15/4/4/15

Impedance=85 +- 17.5%

HU1



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】

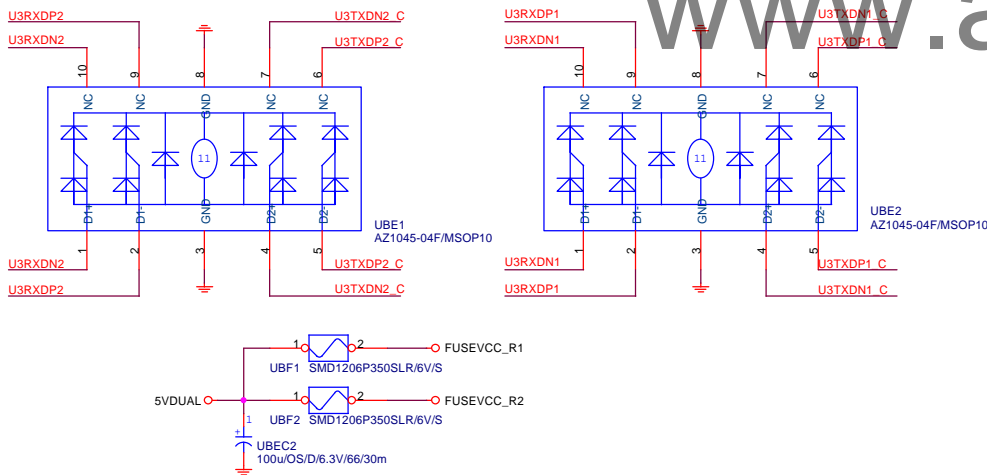
HDMI eye diagram1.4版(deep color)會fail

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)

www.aitech1.ru

R_USB30

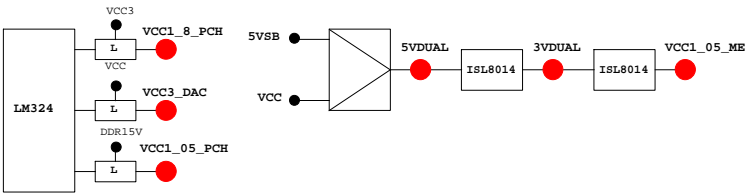


PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI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

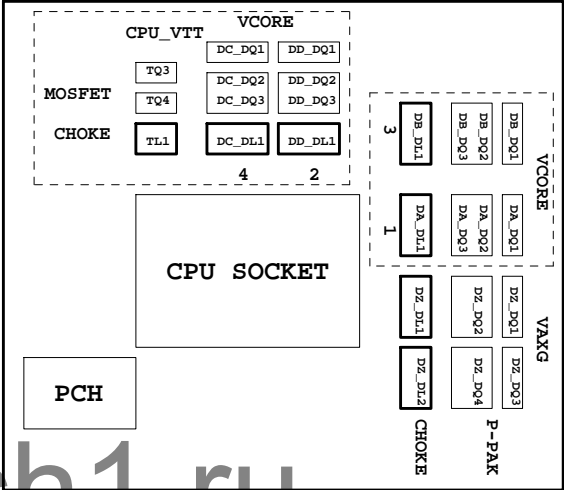
Super I/O ITE8720 GPIO Table

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

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VID05/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PWRST1	
PCIRST1#/GP12	-PWRST2	
3VBSBW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSS01	MB_ID3	
PD7/GP77/BUSS02	MB_ID4	
AFD#/GP86/SMBC_R	SEC_PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VID01/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#/GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRXL2/GP16	-THERM	
VID04/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VID07/JP6/DTR2#	JP6	
PD5/GP75/BUSS00	SB_LED3_C	



PWM各相位的擺法如下：



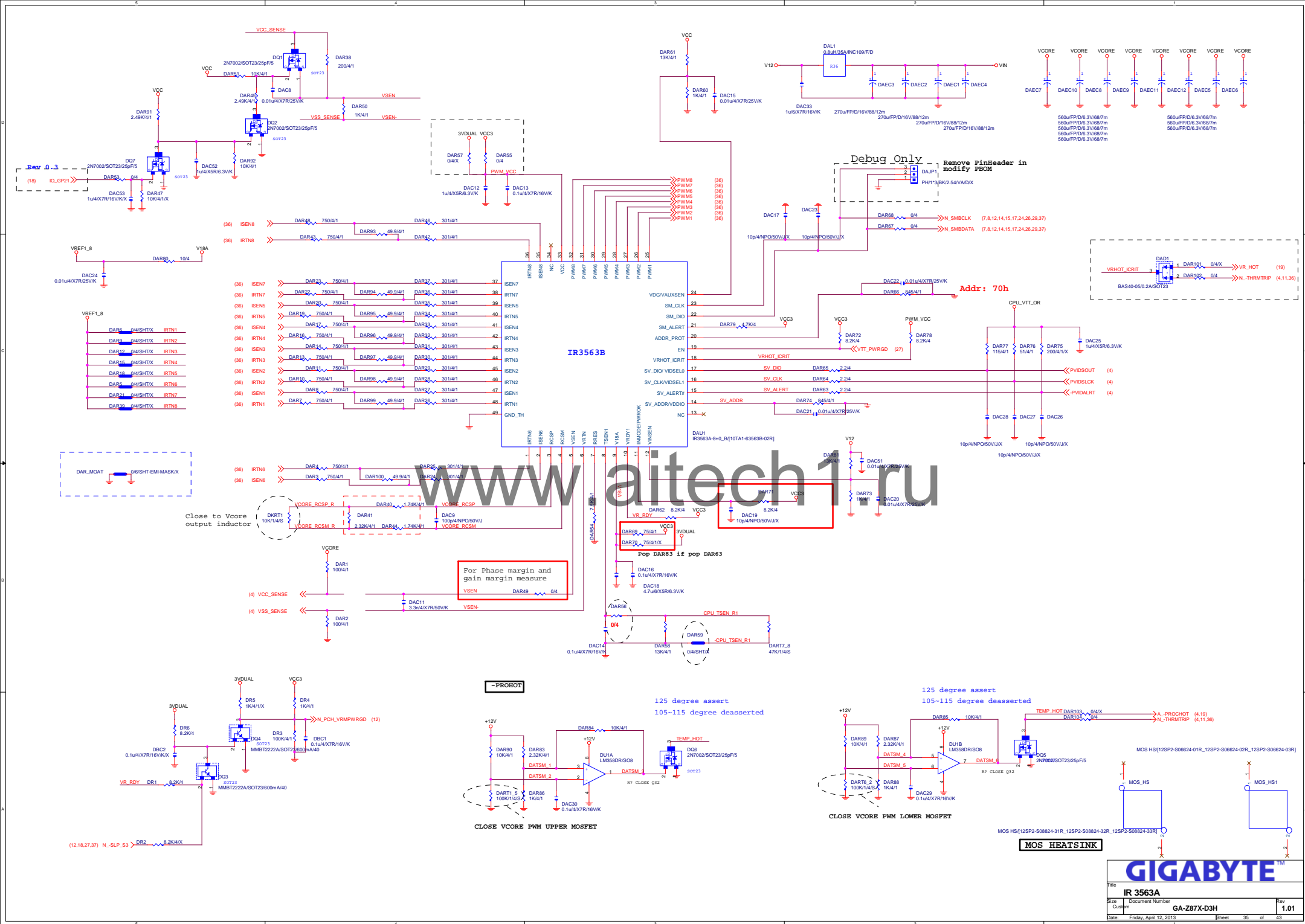
BIOS超電壓對應表：

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

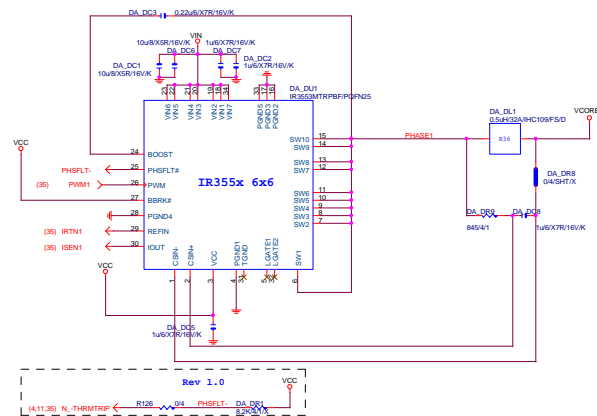
散熱模組料號：

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

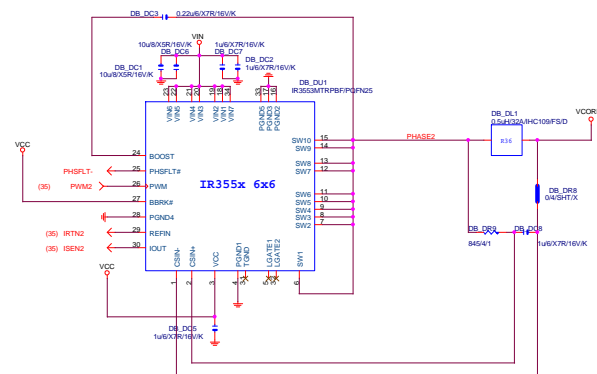
	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH



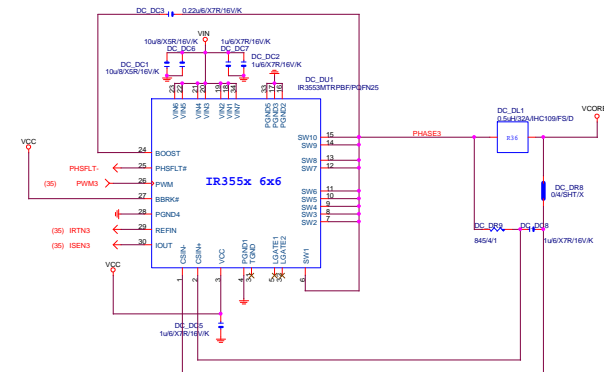
VCORE-PHASE1



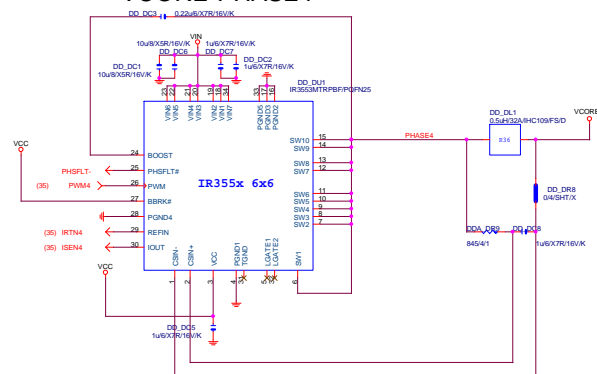
VCORE-PHASE2



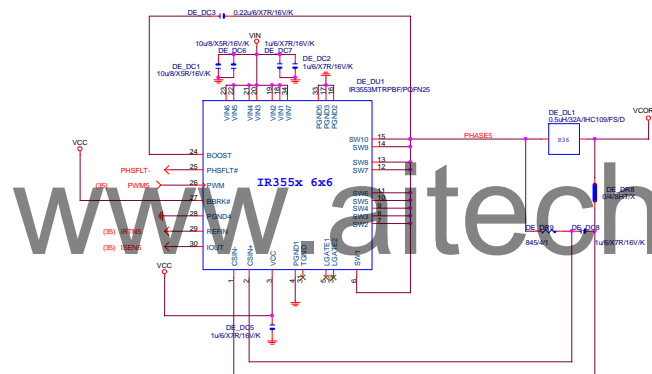
VCORE-PHASE3



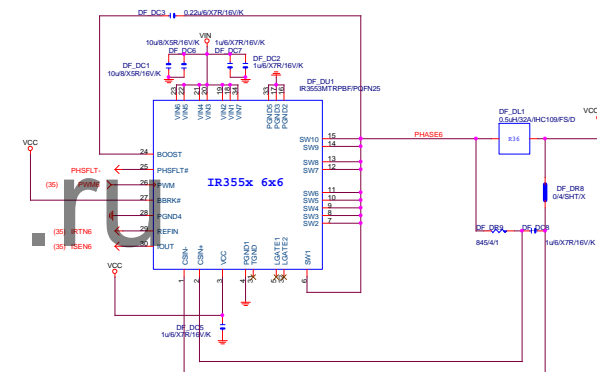
VCORE-PHASE4



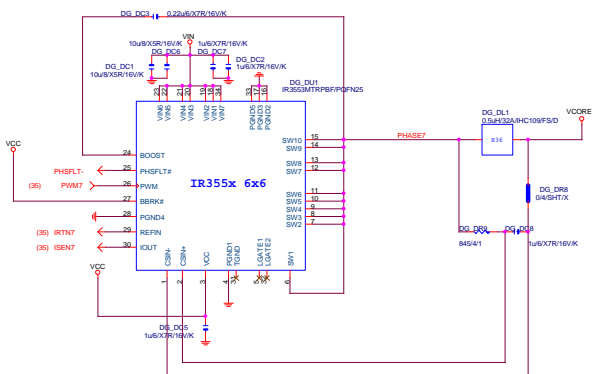
VCORE-PHASE5



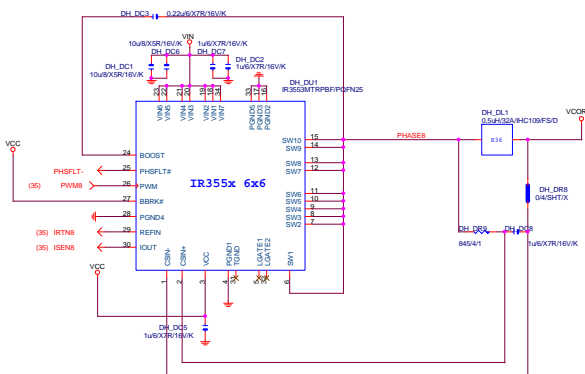
VCORE-PHASE6

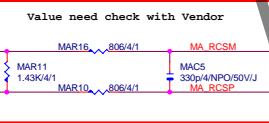
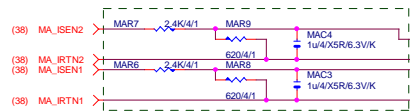
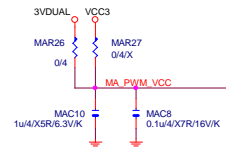
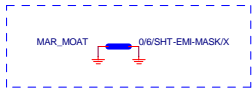


VCORE-PHASE7



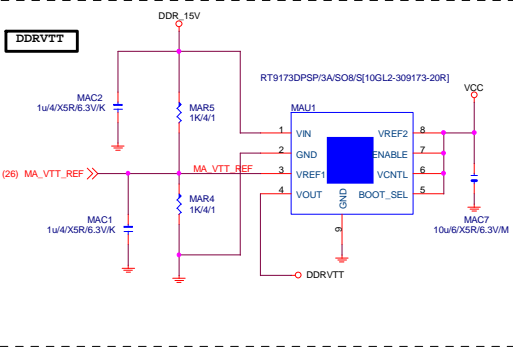
VCORE-PHASE8





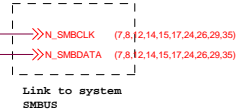
Close to DDR output inductor

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



IR3570

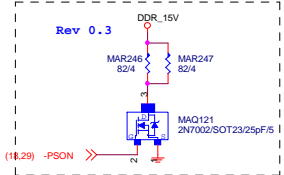
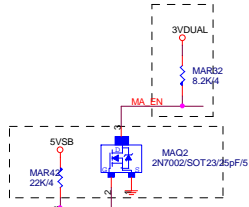
MA_PWM2 (38)
MA_PWM1 (38)



Addr: 74h

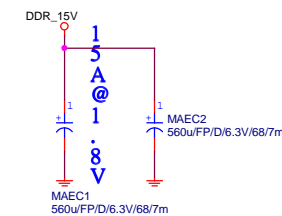
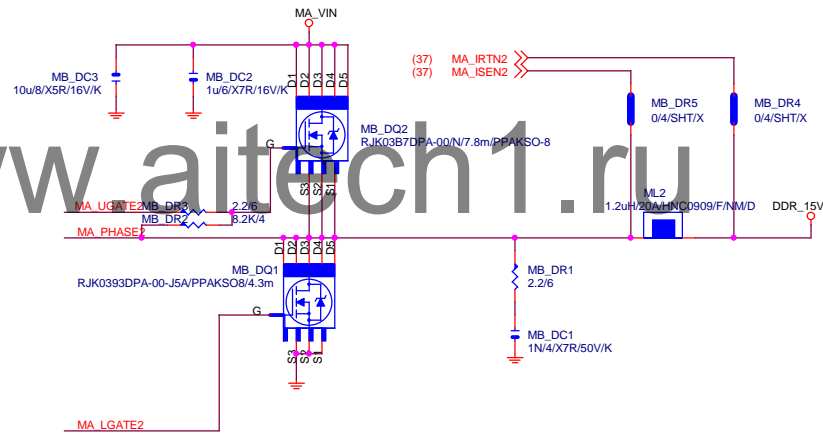
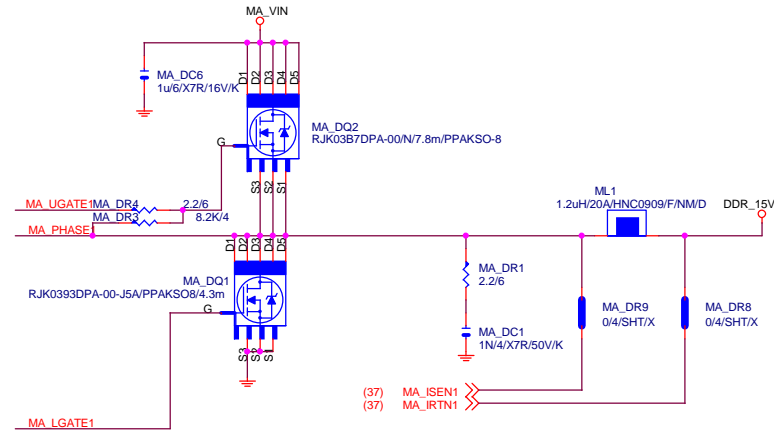
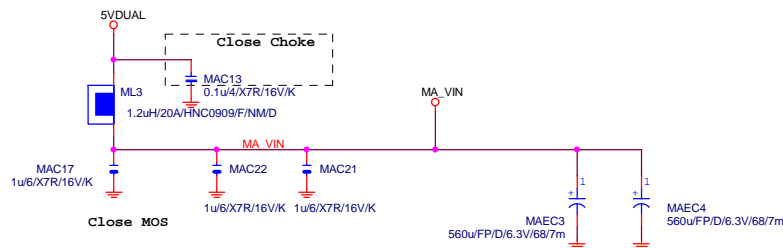
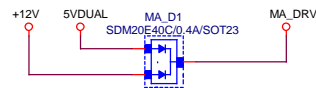
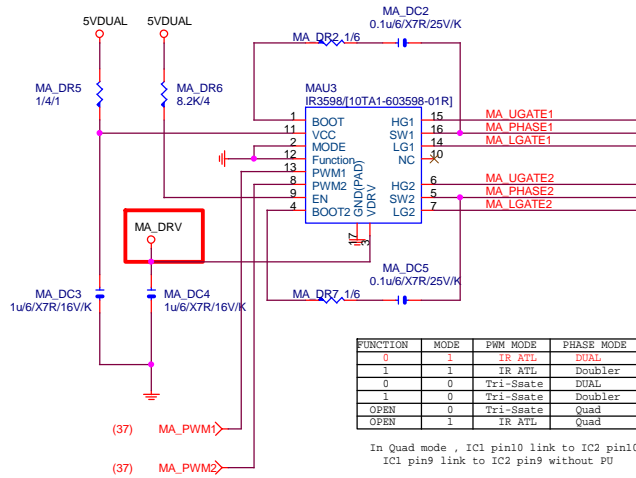
Link to PCH pin B046

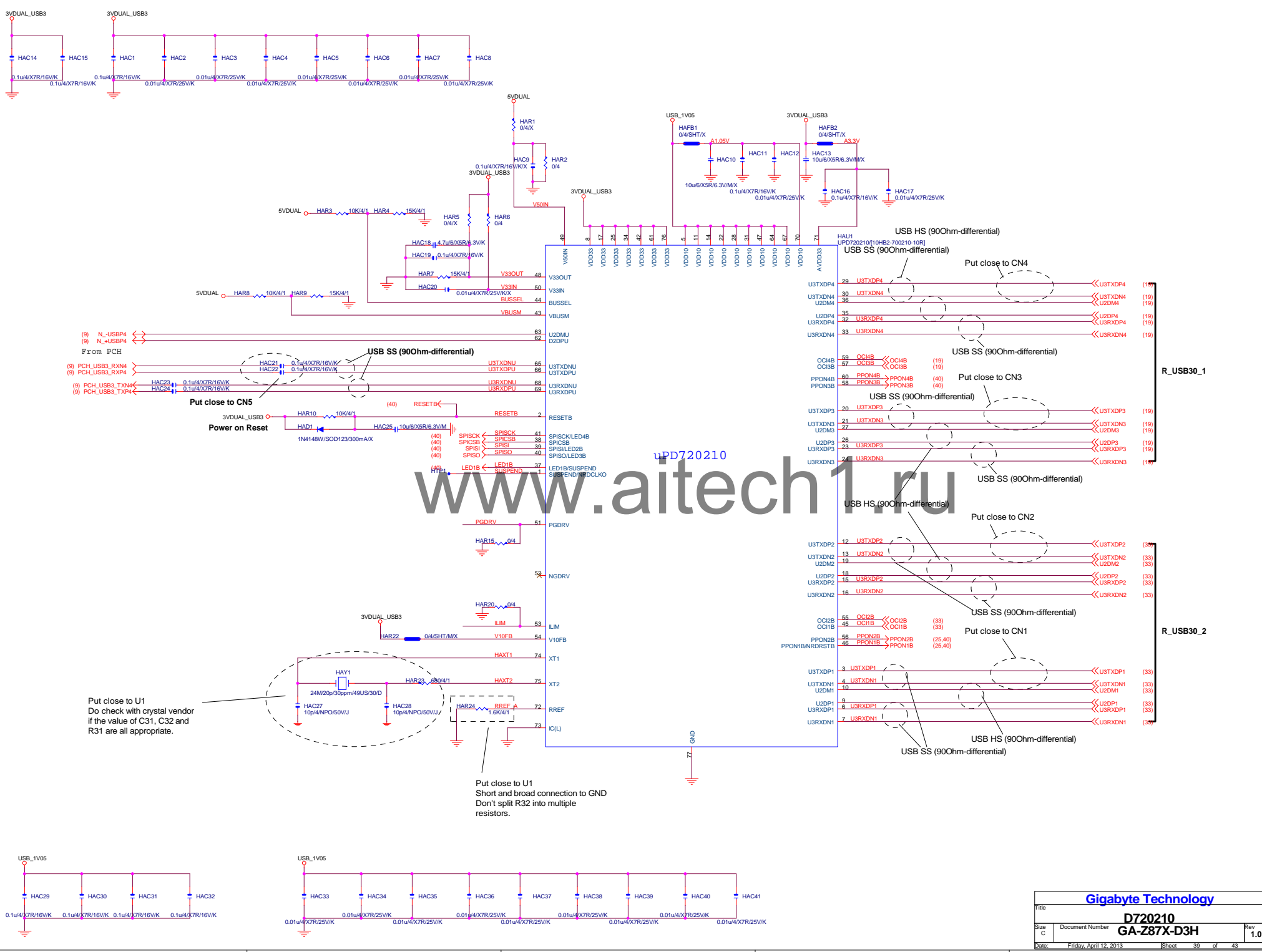
Full up in PCH side



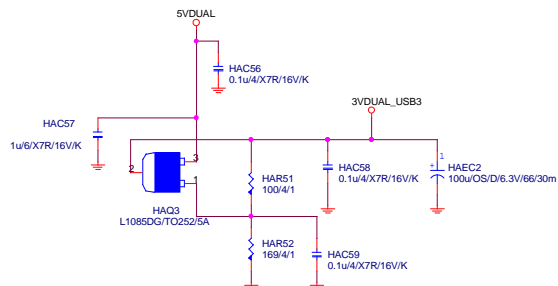
GIGABYTE™			
Title DDR POWER IR3570			
Size C	Document Number GA-Z87X-D3H	Rev 1.01	
Date Friday, April 12, 2013	Sheet 37	of 43	

DDR_15V

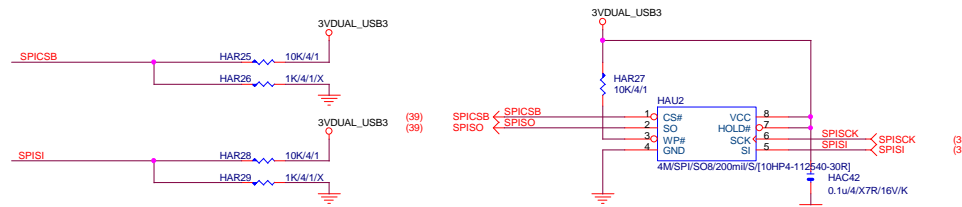




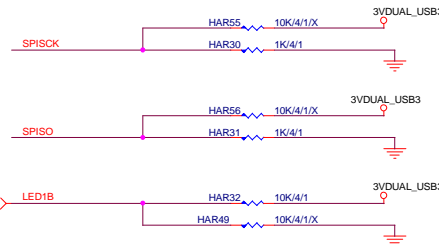
3VDUAL_USB_1



External SPI ROM ; SPI ROM attached mode

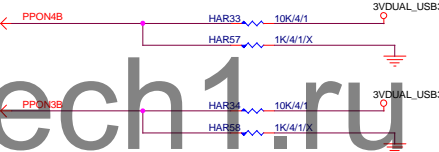


Battery Charging



Number of Ports ; 4Ports mode

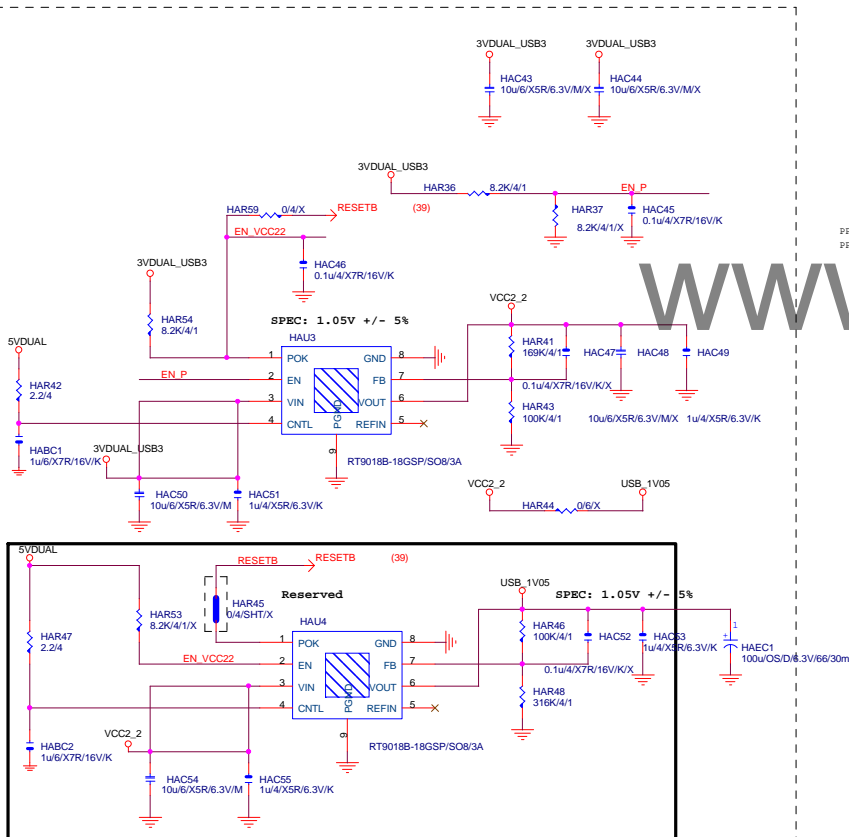
PPON3B / PPON4B : H / H (4 port)
PPON3B / PPON4B : L / L (2 port)



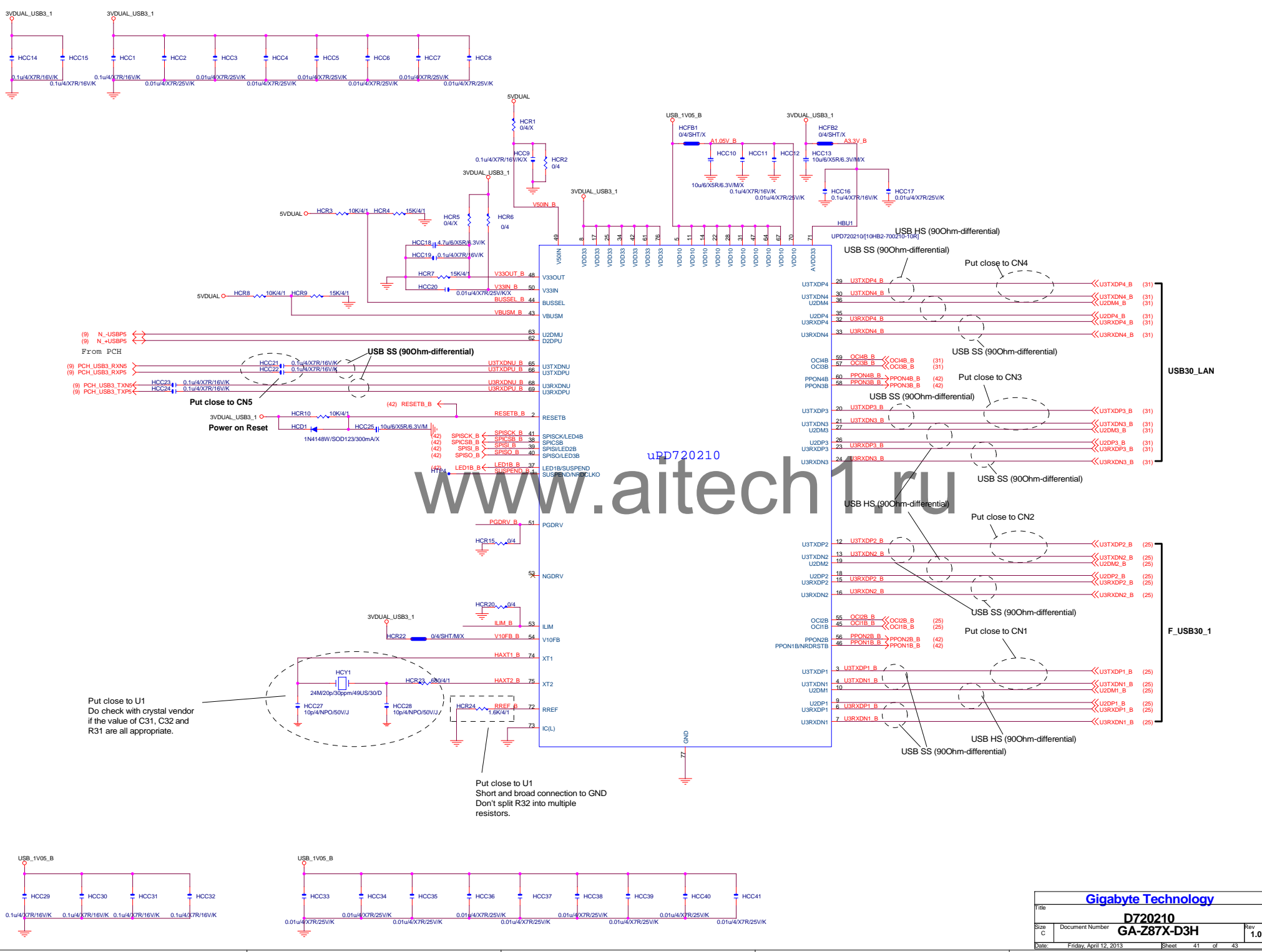
#5 VBUS Power Control ; Individual mode



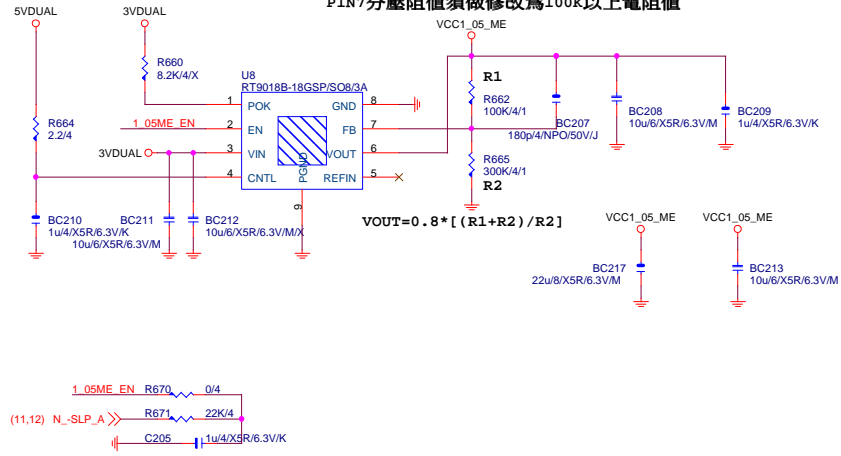
PPON1B Pin Function ; Port1 PPONB mode



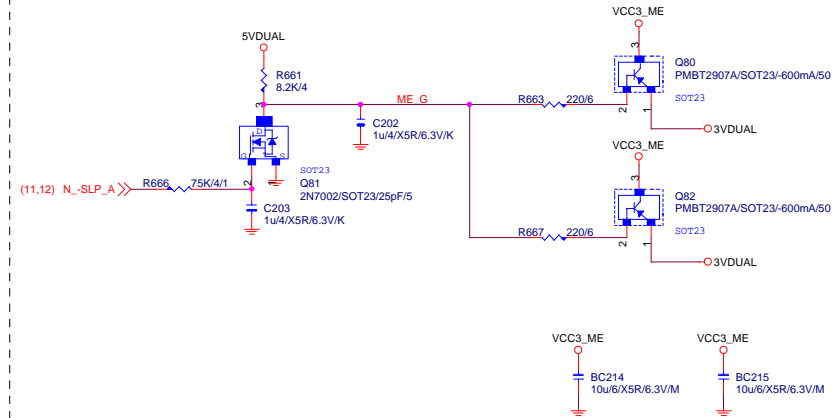
www.aitech1.ru



【技術通報R&D技術通報156】
 (RICHTEK), (NUVOTON), (EMC) 做共用
 PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME



GIGABYTE™

Title		
RT8120_DDR_15V		
Size	Document Number	Rev
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