

SHEET

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08	DDR III CHANNEL B
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13	PCH_PWR,GND
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44	RST, PWR, CLR_CMOS Button
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PH7 PH8 PH1 PH2 PH9 PH10 PH3

PH4

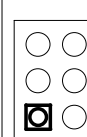
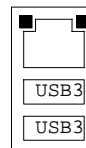
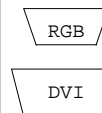
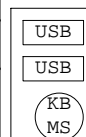
PH11

PH12

PH5

PH6

CPU SOCKET



2 oz PCB

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Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-Z97X-UD5H BK	1.0
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[illegible]

5					3					2					1														
GA-Z97X-UD5H-BK																													
Component value change history										Circuit or PCB layout change																			
Data					Change Item					DATE					Change Item														
2014-03-26					Build 10A Bom ,modify from UD5H 10E BOM , change the HEatsink S/N to black editinl2SP2-PTZ975-11R					2014-03-2x					Build 1.0 ,modify from Z97X-UD5H 1.0														
2014-03-31					1. 100u/6.3V cap remove Nichicon part 11CO2-C51000-02R for the bad ESR to apply in AUDIO																								

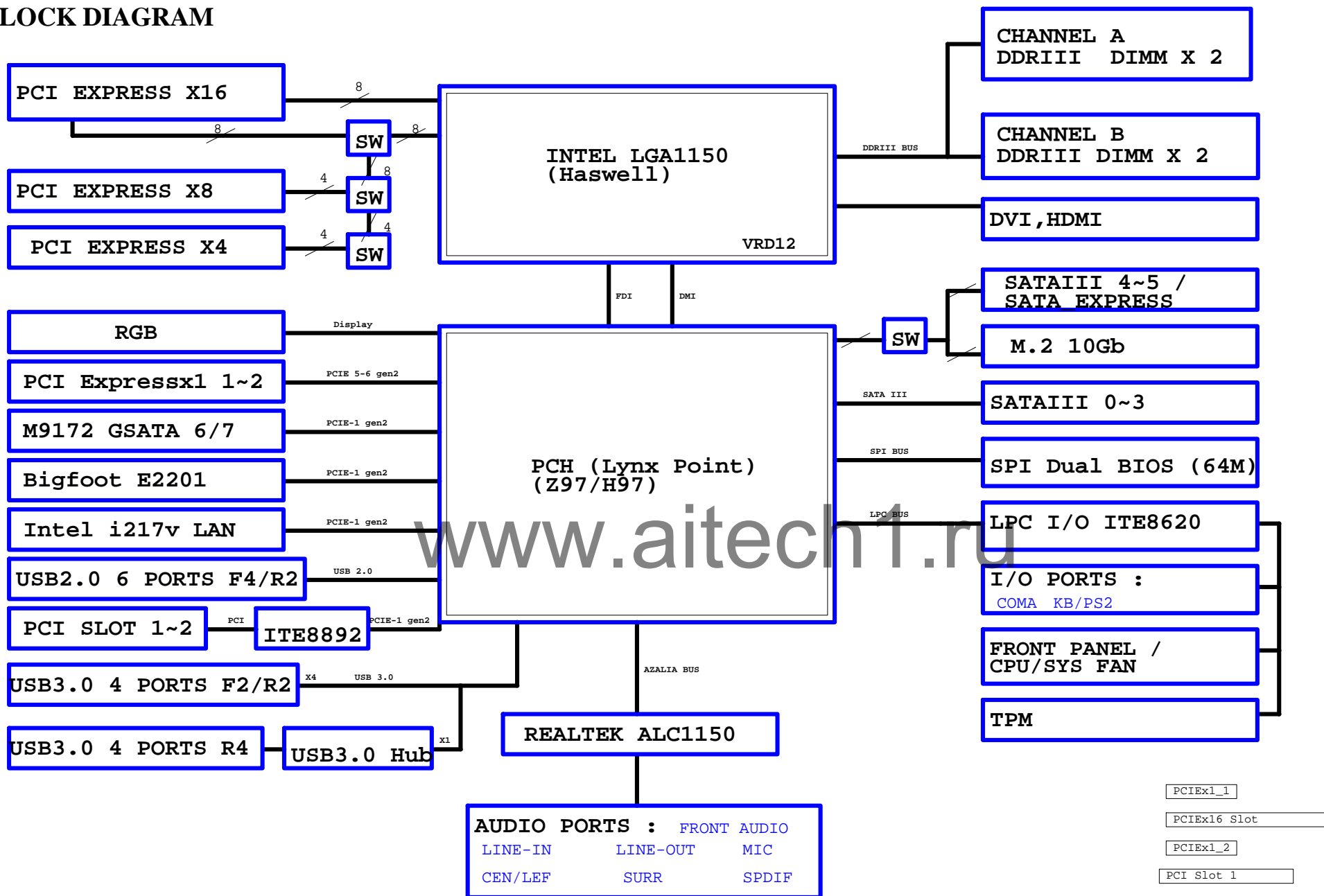
GA-Z97X-UD5H-BK

Component value change history

Data	Change Item	Reason
2014-03-26	Build 10A Bom ,modify from UD5H 10E BOM , change the HEatsink S/N to black editinl2SP2-PTZ975-11R	For Black edition MP ,包材有所不同
2014-03-31	1. 100u/6.3V cap remove Nichicon part 11CO2-C51000-02R for the bad ESR to apply in AUDIO	Build 10B Bom

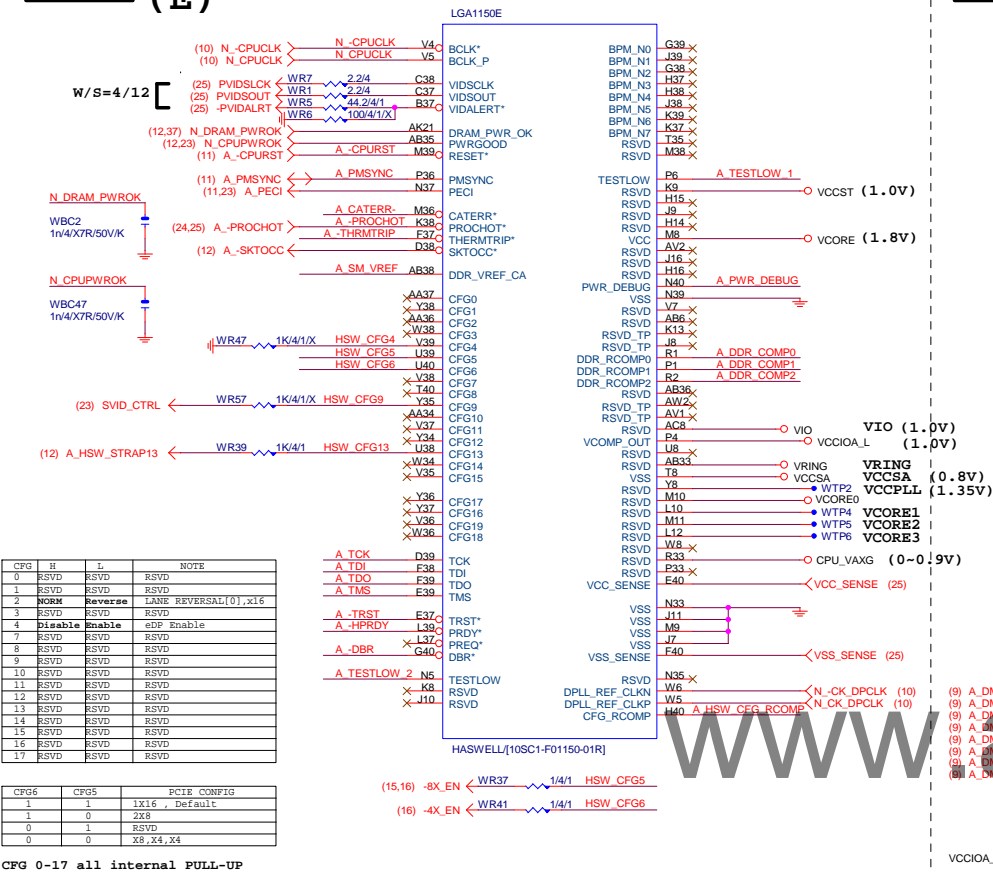
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BLOCK DIAGRAM

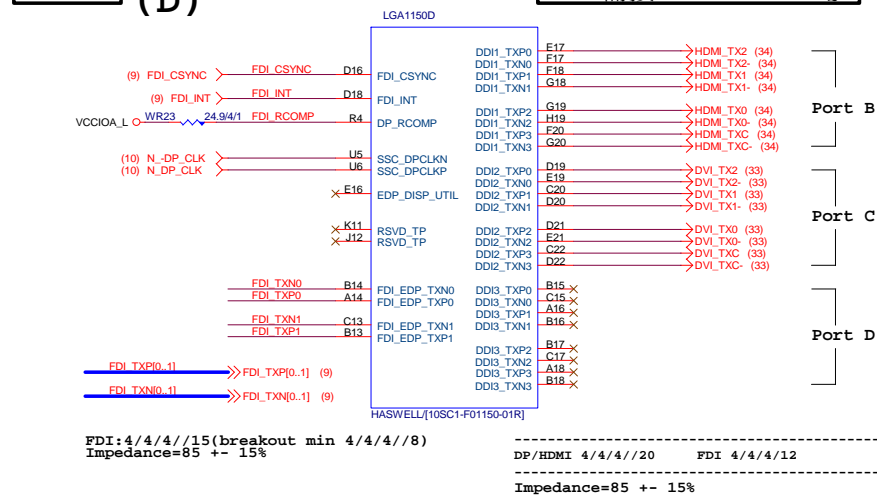


- PCIEx1_1
- PCIEx16 Slot
- PCIEx1_2
- PCI Slot 1
- PCIEx8
- PCI Slot 2
- PCIEx4

LGA1150 (E)



LGA1150 (D)



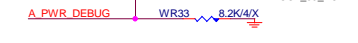
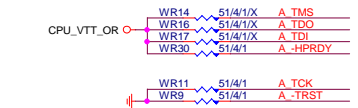
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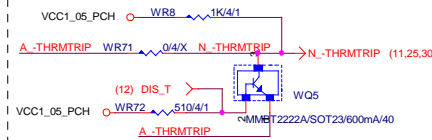
CPU SVID



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100	100



THRMTRIP DISABLE FOR Z87 OVERCLOCK



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CPU LGA1150-A

GA-Z97X-UD5H BK

Rev	1.0
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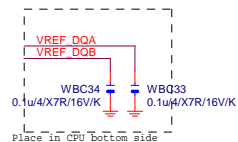
LGA1150 (A)

LGA1500A					
	MAAA0	AU13	DDR0_M00	AD38	MDA0
	MAAA1	AV16	DDR0_M01	AD39	MDA1
	MAAA2	AU16	DDR0_M02	AF38	MDA2
	MAAA3	AU17	DDR0_M01	AD39	MDA3
	MAAA4	AU17	DDR0_M03	DD37	MDA4
	MAAA5	AW18	DDR0_M44	DD38	MDA5
	MAAA6	AV17	DDR0_M05	AD39	MDA6
	MAAA7	AT18	DDR0_M06	AF40	MDA7
	MAAA8	AU18	DDR0_M07	AH40	MDA9
	MAAA9	AT19	DDR0_M08	AH39	MDA13
	MAAA10	AW11	DDR0_M09	AK38	MDA10
	MAAA11	AV19	DDR0_M10	AK39	MDA11
	MAAA12	AU19	DDR0_M11	AK37	MDA12
	MAAA13	AY10	DDR0_M12	AK38	MDA8
	MAAA14	AT20	DDR0_M13	AK37	MDA14
	MAAA15	AU21	DDR0_M14	AK40	MDA15
			DDR0_M15	MDA17	
	MODT_A0	AW10	DDR0_D00	AM39	MDA21
	MODT_A1	AY8	DDR0_D01	AK38	MDA18
	MODT_A2	AU9	DDR0_D02	AP39	MDA19
	MODT_A3	AW8	DDR0_D03	AP38	MDA20
			DDR0_D04	AP37	MDA22
		AW33	DDR0_D05	AP40	MDA23
		AV33	DDR0_D06	AV43	MDA25
		AU31	DDR0_ECC0	AW37	MDA29
		AV31	DDR0_ECC2	AW35	MDA26
		AT33	DDR0_ECC3	AV35	MDA27
		AT33	DDR0_ECC4	AT37	MDA28
		AT31	DDR0_ECC5	AU37	MDA24
		AW31	DDR0_ECC6	MDA25	MDA30
			DDR0_ECC7	AW35	MDA31
(7)	SBA00	AV12	DDR0_BA0	AY6	MDA33
(7)	SBA01	SBA01	DDR0_BA1	AY6	MDA37
(7)	SBA02	SBA02	DDR0_BA2	AV4	MDA34
			DDR0_BA3	AV4	MDA35
(7)	CKE0A	CKE0A	DDR0_CK0	AW6	MDA36
(7)	CKE01	CKE01	DDR0_CK1	AW4	MDA38
(7)	CKE02	CKE02	DDR0_CK2	AW4	MDA39
(7)	CKE03	CKE03	DDR0_CK3	AR1	MDA41
			DDR0_CK4	AN1	MDA45
(7)	-CSA0	-CSA0	DDR0_CS_N0	AN3	MDA42
(7)	-CSA1	-CSA1	DDR0_CS_N1	AN4	MDA43
(7)	-CSA2	-CSA2	DDR0_CS_N2	AR2	MDA44
(7)	-CSA3	-CSA3	DDR0_CS_N3	AN3	MDA40
			DDR0_CS_N4	AN2	MDA46
(7)	DCLKA0	DCLKA0	DDR0_CLK_P0	AN1	MDA47
(7)	DCLKA1	DCLKA1	DDR0_CLK_P1	AL1	MDA53
(7)	DCLKA2	DCLKA2	DDR0_CLK_P2	AL3	MDA50
(7)	DCLKA2	DCLKA2	DDR0_CLK_P3	AL4	MDA51
(7)	DCLKA3	DCLKA3	DDR0_CLK_P4	AL2	MDA52
(7)	DCLKA3	DCLKA3	DDR0_CLK_P5	AL2	MDA54
		AW12	RSVD	AL1	MDA55
			DDR0_D05	AG1	MDA57
			DDR0_D06	MDA61	
			DDR0_D07	AE3	MDA58
			DDR0_D08	AE4	MDA59
			DDR0_D09	AG2	MDA60
			DDR0_D10	AE2	MDA56
			DDR0_D11	AG3	MDA62
(7)	-SRASA	-SRASA	DDR0_RAS*	AE1	MDA63
			DDR0_D02	AE39	DO5A0
(7)	-SWEA	-SWEA	DDR0_WE*	AN39	DO5A2
		AV20	RSVD	AV36	DO5A3
		AW27	RSVD	AV5	DO5A4
			DDR0_D05	AP3	DO5A5
(7)	-SCASA	-SCASA	DDR0_CAS*	AK2	DO5A6
			DDR0_D06	AK2	DO5A7
(7,8)	-DDR3_RST	WR61 D/A/SH/TM/X WC4 0.1uA/XT/16V/K/X	DDR_RESET*	AV38	-DO5A0
			DDR0_D07	AK2	-DO5A1
			DDR0_D08	AN38	-DO5A2
			DDR0_D09	AN39	-DO5A3
			DDR0_D10	AW5	-DO5A4
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			DDR0_D217	AK2	-DO5A7
			DDR0_D218	AK2	-DO5A7
			DDR0_D219		

HASWELL/[10SC1-F01150-01R]

LGA1150 (B)

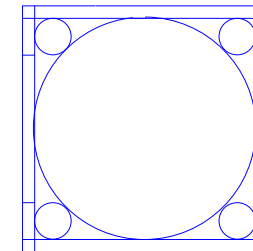
LGA150B						
	MAA0	AL19	DDR1_MAO	DDR1_D00	AE34	MOB0
	MAA1	AK23	DDR1_MA0	DDR1_D01	AE35	MOB1
	MAA2	AM22	DDR1_MA2	DDR1_D02	AG35	MOB2
	MAA3	AM23	DDR1_MA3	DDR1_D03	AH35	MOB3
	MAA4	AP23	DDR1_MA4	DDR1_D04	AD34	MOB4
	MAA5	AL23	DDR1_MA5	DDR1_D05	AD35	MOB5
	MAA6	AY24	DDR1_MA6	DDR1_D06	AG34	MOB6
	MAA7	AV25	DDR1_MA7	DDR1_D07	AH34	MOB7
	MAA8	AU26	DDR1_MA8	DDR1_D08	AL34	MOB8
	MAA9	AW26	DDR1_MA9	DDR1_D09	AL35	MOB9
	MAA10	AP18	DDR1_MA10	DDR1_D10	AK31	MOB10
	MAA11	AY25	DDR1_MA11	DDR1_D11	AL31	MOB11
	MAA12	AV26	DDR1_MA12	DDR1_D12	AK34	MOB12
	MAA13	AW27	DDR1_MA13	DDR1_D13	AK35	MOB13
	MAA14	AV27	DDR1_MA14	DDR1_D14	AK32	MOB14
	MAA15	AY28	DDR1_MA15	DDR1_D15	AK32	MOB15
	MODT_B0	AM17	DDR1_ODT0	DDR1_D16	AN34	MOB17
	MODT_B1	AL16	DDR1_ODT1	DDR1_D17	AE34	MOB21
	MODT_B2	AM16	DDR1_ODT2	DDR1_D18	AN31	MOB19
	MODT_B3	AK15	DDR1_ODT3	DDR1_D19	AP31	MOB23
			DDR1_ODT4	DDR1_D20	AN35	MOB20
			DDR1_ODT5	DDR1_D21	AP35	MOB16
		AM26	DDR1_ECC0	DDR1_D22	AN32	MOB18
		AM25	DDR1_ECC1	DDR1_D22	AP32	MOB22
		AP25	DDR1_ECC2	DDR1_D23	AM29	MOB25
		AP26	DDR1_ECC3	DDR1_D24	AM29	MOB28
		AL26	DDR1_ECC4	DDR1_D25	AR29	MOB27
		AL25	DDR1_ECC5	DDR1_D26	AR28	MOB30
		AR26	DDR1_ECC6	DDR1_D27	AL29	MOB24
		AR25	DDR1_ECC7	DDR1_D28	AL28	MOB29
			DDR1_ECC8	DDR1_D29	AP29	MOB26
			DDR1_ECC9	DDR1_D30	AP28	MOB31
			DDR1_BA0	DDR1_D31	AR12	MOB32
			DDR1_BA1	DDR1_D32	AP12	MOB33
			DDR1_BA2	DDR1_D33	AL13	MOB34
			DDR1_KA0	DDR1_D34	AL12	MOB35
			DDR1_KA1	DDR1_D35	AM12	MOB38
			DDR1_KA2	DDR1_D36	AM13	MOB37
			DDR1_KA3	DDR1_D37	AR3	MOB40
			DDR1_CS_N0	DDR1_D38	AP9	MOB41
			DDR1_CS_N1	DDR1_D39	AR6	MOB47
			DDR1_CS_N2	DDR1_D40	AP6	MOB43
			DDR1_CS_N3	DDR1_D41	AP10	MOB44
			DDR1_CS_N4	DDR1_D42	AR7	MOB46
			DDR1_CLK_P0	DDR1_D43	AR7	MOB42
			DDR1_CLK_P1	DDR1_D44	AM9	MOB39
			DDR1_CLK_P2	DDR1_D45	AL6	MOB50
			DDR1_CLK_P3	DDR1_D46	AL7	MOB55
			DDR1_CLK_P4	DDR1_D47	AM10	MOB48
			DDR1_CLK_P5	DDR1_D48	AL10	MOB49
			DDR1_CLK_P6	DDR1_D49	AM6	MOB54
			DDR1_CLK_P7	DDR1_D50	AM7	MOB51
			DDR1_CLK_P8	DDR1_D51	AH6	MOB61
			DDR1_CLK_P9	DDR1_D52	AH7	MOB60
			DDR1_CLK_P10	DDR1_D53	AE6	MOB59
			DDR1_CLK_P11	DDR1_D54	AE7	MOB63
			DDR1_CLK_P12	DDR1_D55	AJ6	MOB56
			DDR1_CLK_P13	DDR1_D56	AJ7	MOB57
			DDR1_CLK_P14	DDR1_D57	AE6	MOB62
			DDR1_CLK_P15	DDR1_D58	AE7	MOB64
			DDR1_CLK_P16	DDR1_D59	AF35	DOGB0
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			DDR1_CLK_P18	DDR1_D61		
			DDR1_CLK_P19	DDR1_D62		
			DDR1_CLK_P20	DDR1_D63		
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			DDR1_CLK_P22	DDR1_D65		
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			DDR1_CLK_P24	DDR1_D67		
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			DDR1_CLK_P40	DDR1_D83		
			DDR1_CLK_P41	DDR1_D84		
			DDR1_CLK_P42	DDR1_D85		
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			DDR1_CLK_P79	DDR1_D122		
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			DDR1_CLK_P194	DDR1_D237		
			DDR1_CLK_P195	DDR1_D238		
			DDR1_CLK_P196	DDR1_D239		
			DDR1_CLK_P197			



HASWELL/[10SC1-F01150-01R]

LGA1150 (CR)

LGA1150
ILM_BP_CR/115X/BKNI/[12KRC-0F0001-61R]



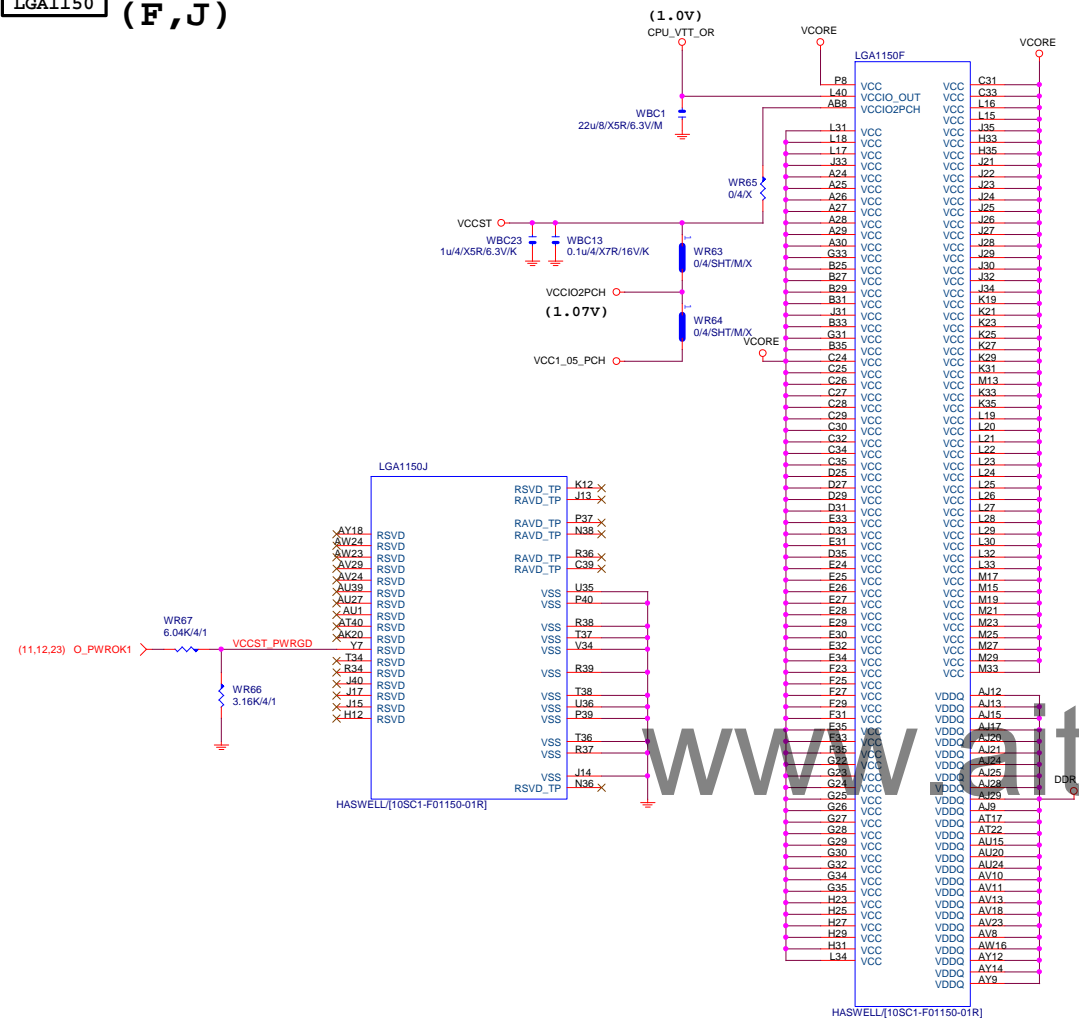
DDR BUS

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(8) MODT_B[0..3] \leftrightarrow MODT_B[0..3]
(7) MDA[0..63] \leftrightarrow MDA[0..63]
(8) MDB[0..63] \leftrightarrow MDB[0..63]
(7) DQSA[0..7] \leftrightarrow DQSA[0..7]
(7) -DQSA[0..7] \leftrightarrow -DQSA[0..7]
(7) MAAA[0..15] \leftrightarrow MAAA[0..15]
(8) MAAB[0..15] \leftrightarrow MAAB[0..15]
(8) DQSB[0..7] \leftrightarrow DQSB[0..7]
(8) -DQSB[0..7] \leftrightarrow -DQSB[0..7]

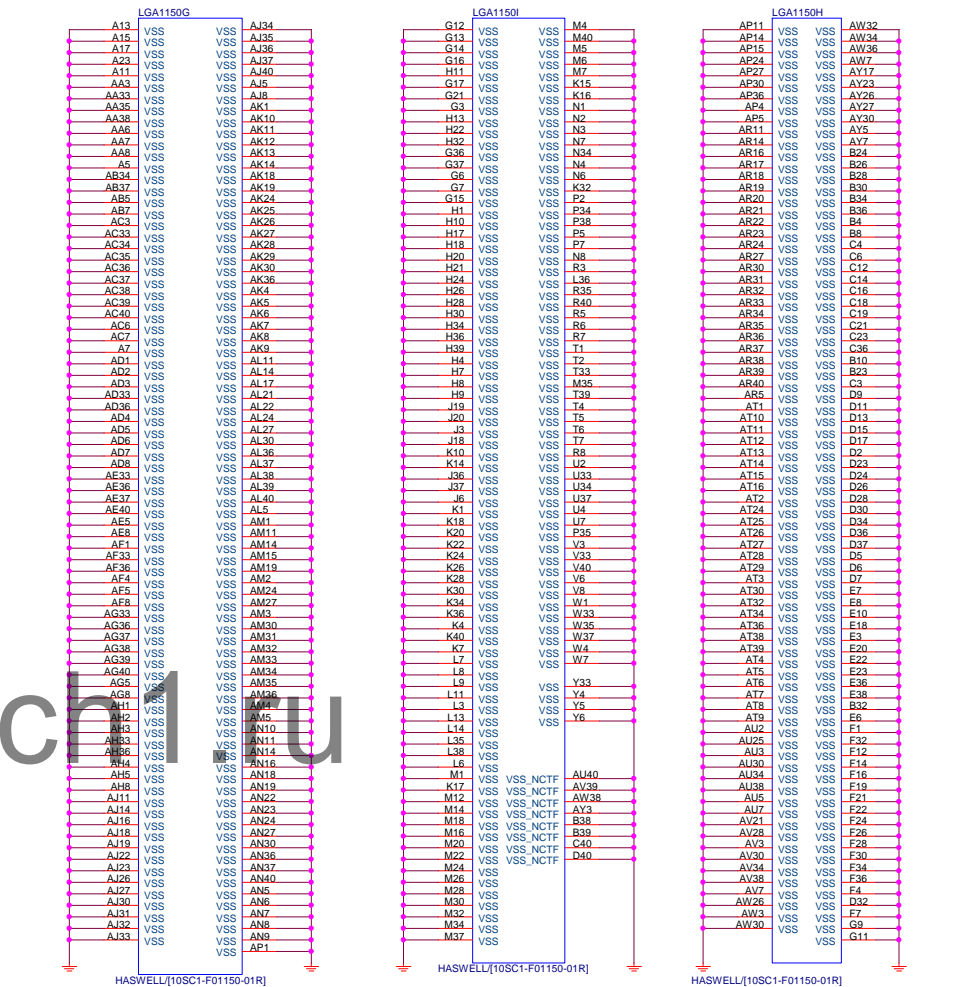
Gigabyte Technology

Title			
CPU LGA1150-B			
Size	Document Number		Rev
Custom	GA-Z97X-UD5H BK		1.0
Date:	Monday, April 07, 2014	Sheet	5 of 45

LGA1150 (F,J)

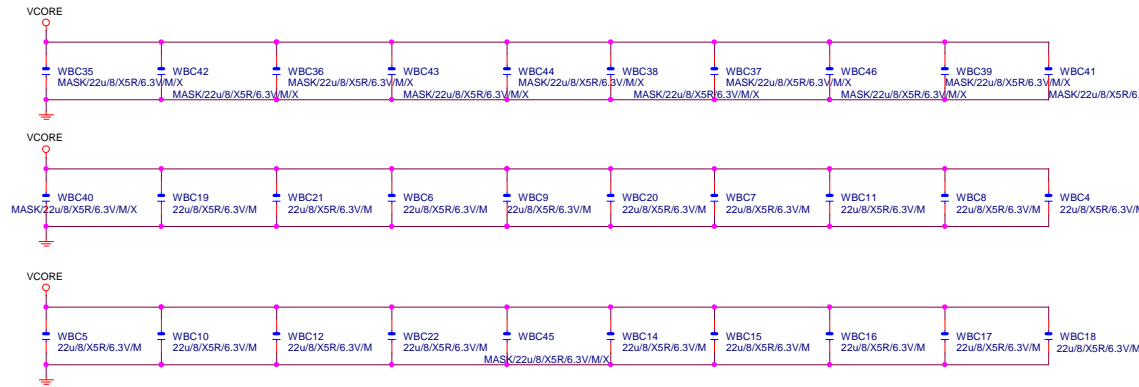


LGA1150 (G,H,I)



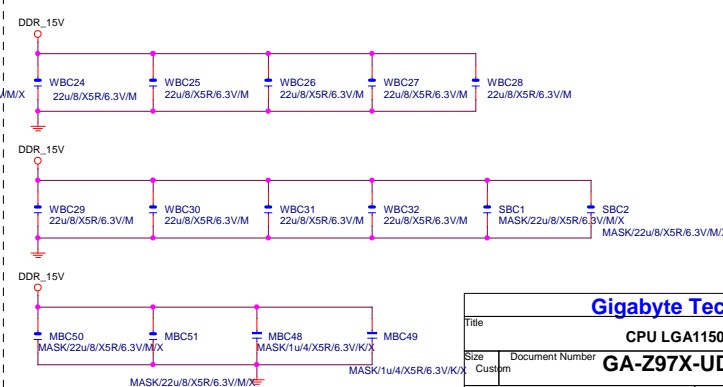
VCore CAP

(X30)



DDR CAP

(X15)

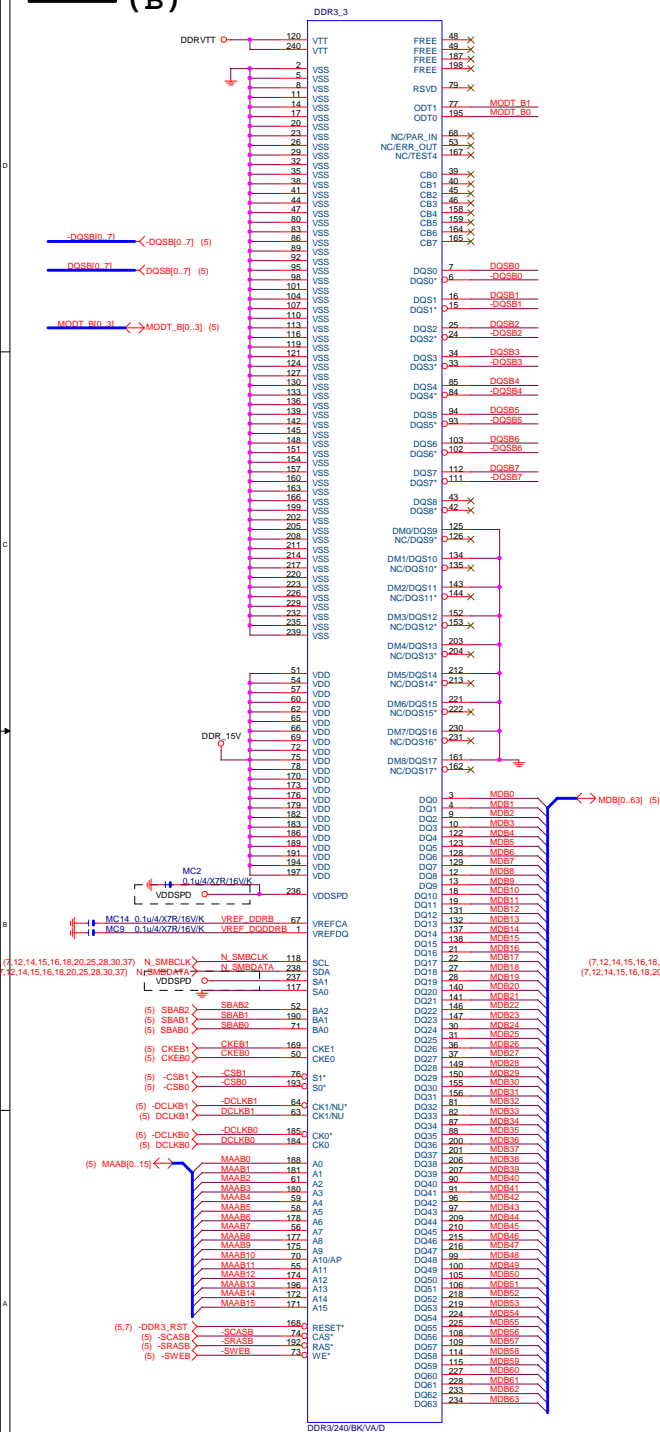


Gigabyte Technology

Title				
CPU LGA1150-C				
Size	Document Number	GA-Z97X-UD5H BK		Rev
Custom				1.0
Date: Monday, April 07, 2014		Sheet 6 of 45		

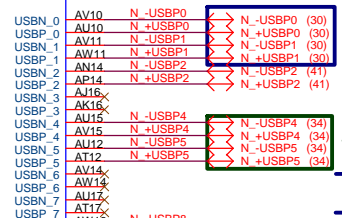
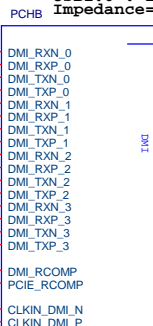
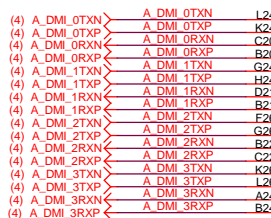
DDR3

(B)

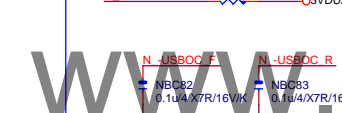
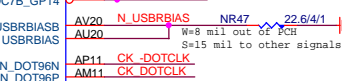
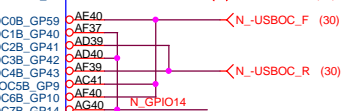
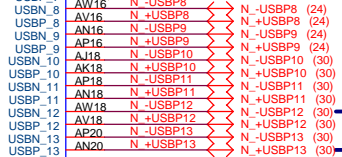


DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

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



H81:12/13 N\A B85/H81: 6/7 N\A



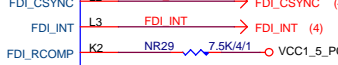
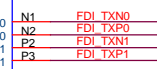
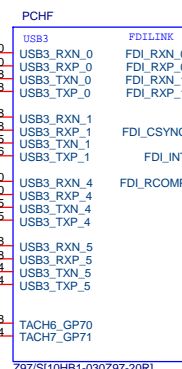
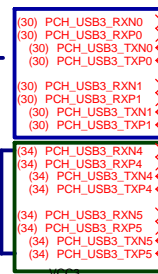
電容放靠近 Device & PCI-E Slot

Z97/S[10HB1-030Z97-20R]

PCH PCIE ,DMI 4/4/4//15 Impedance=85 +- 15%

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

PCH (F)



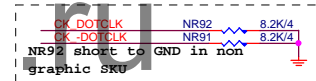
FDI:12/4/5/4/12
Impedance=85 +- 17.5%



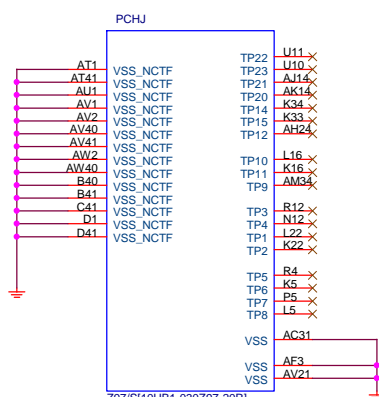
USB3.0:20/5/7/5/20 (breakout mix
8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS



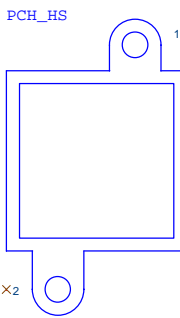
Mount for integrated clock Generation Mode



PCH (J)



PCH H/S



MOS heatsink + PCH heatsink
,Black editon

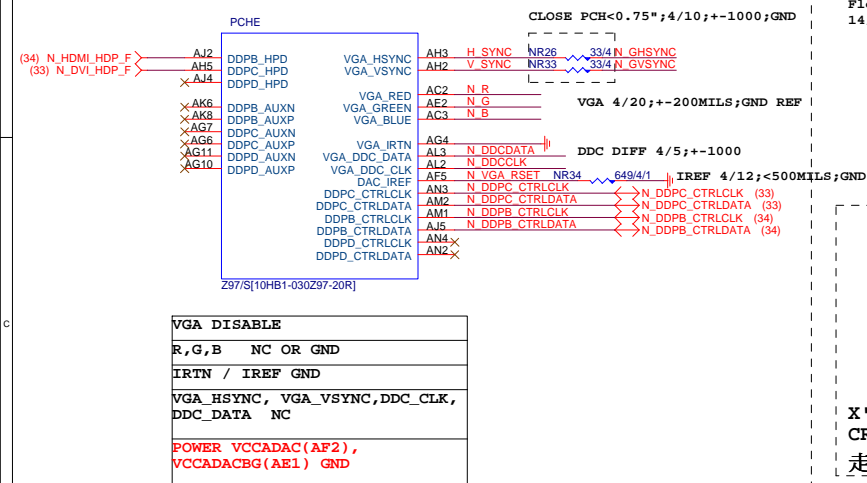
USB TABLE

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OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)
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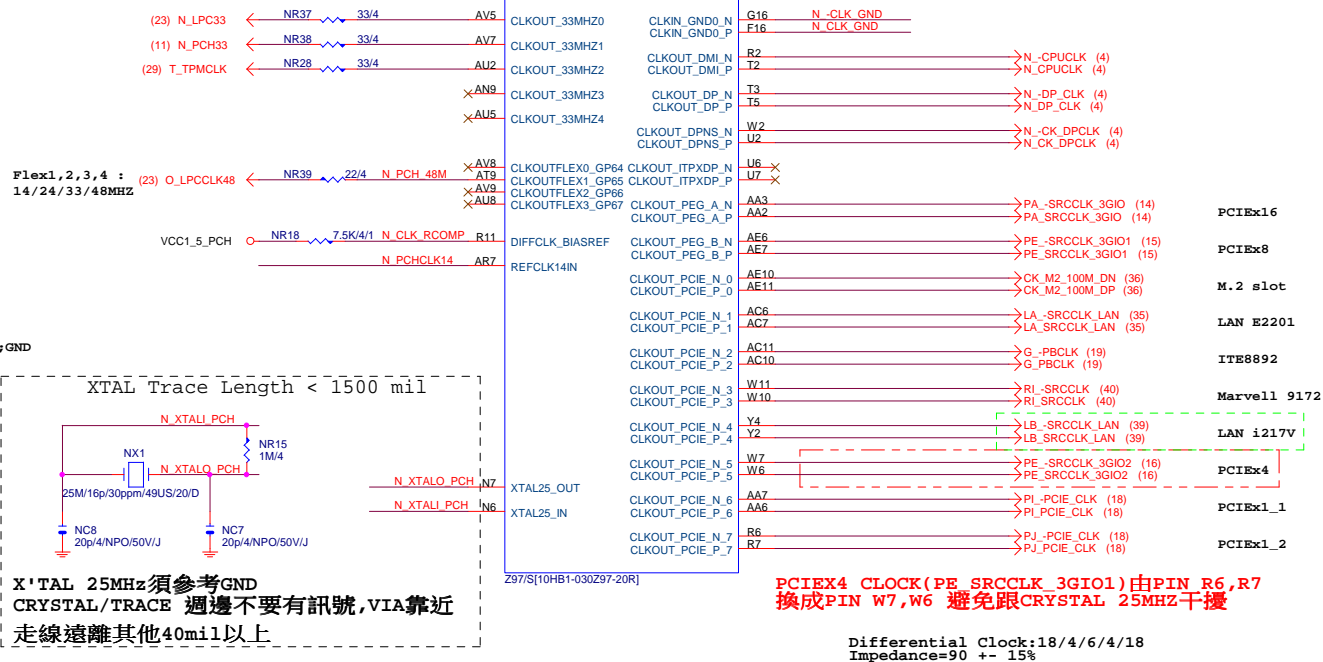
USB Usage & OC# Configure			
OC0#	USB0,1	F_USB30	FUSEVCC_F1_F2
OC1#	USB2 (U3 Hub)	USB3_LAN1	UC_FUSEVCC34
		USB3_LAN2	UC_FUSEVCC12
		N/A	
OC2#	USB4,5	HDMI & R_USB3	FUSEVCC_R1_R2
OC3#	USB6,7	N/A	
OC4#	USB8,9	KB_MS_USB	FUSEVCC_R3_R4
OC5#	USB10,11	F_USB2	FUSEVCC_F5_F6
OC6#	USB12,13	F_USB1	FUSEVCC_F3_F4
OC7#	Not Use		

Gigabyte Technology			
Title PCH FDI,DMI,USB ,PCIE			
Size Custom	Document Number GA-Z97X-UD5H BK		Rev 1.0
Date:	Monday, April 07, 2014	Sheet	9 of 45

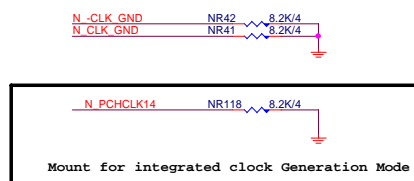
PCH (E)



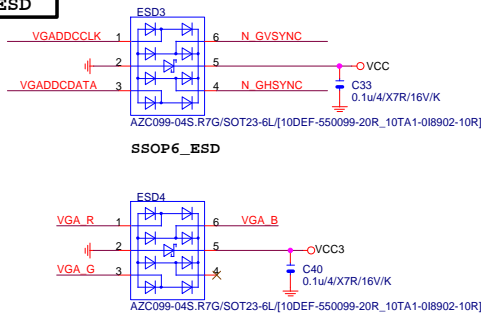
PCH (G)



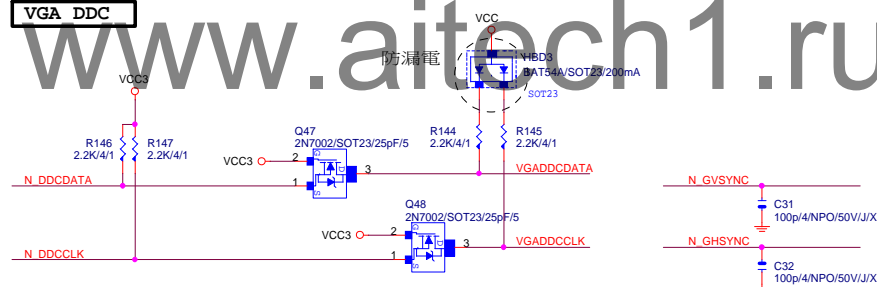
PCH CLK PD



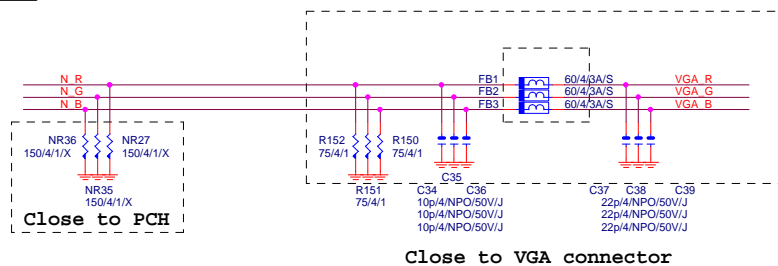
VGA ESD



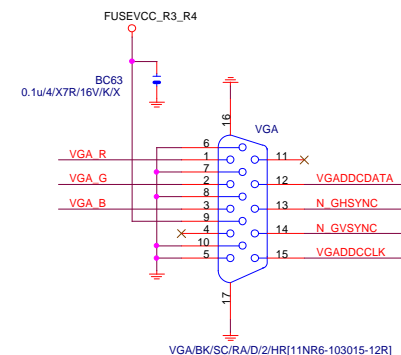
VGA DDC



VGA DDC



VGA CONNECTOR



Gigabyte Technology

Title			
PCH DISPLAY ,CLK BUFFER			
Size	Document Number		Rev
Custom		GA-Z97X-UD5H BK	1.0
Date:	Monday, April 07, 2014	Sheet	10 of 45

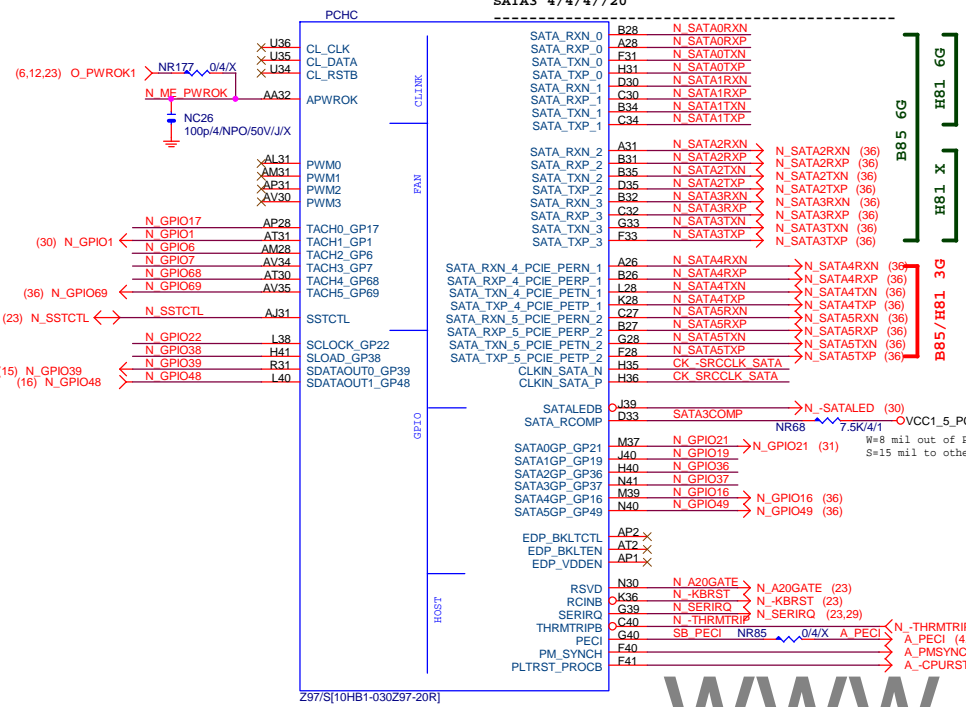
PCH (C)

SATA3 : 20/4/4/20 (breakout min 8/4/4/4/8)

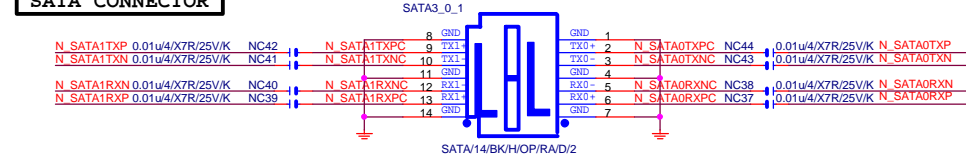
Impedance=85 +- 17.5%

SATA2 4/4/4//15

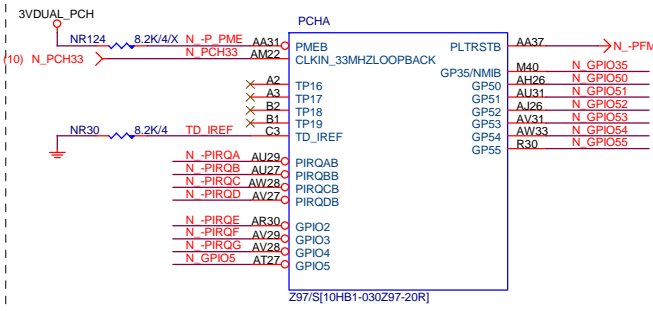
SATA3 4/4/4//20



SATA CONNECTOR

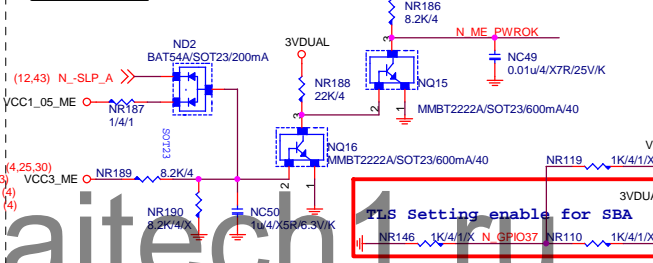


PCH (A)

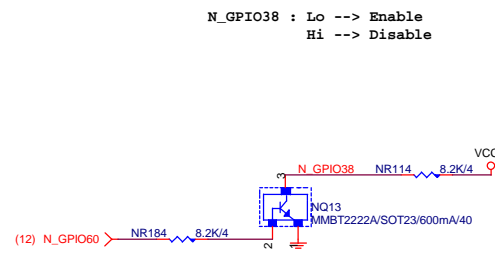


Default int pull up on GP51, Default SPI boot devices

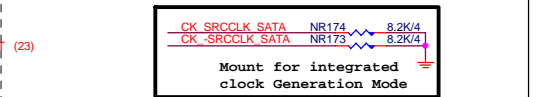
ME PWROK



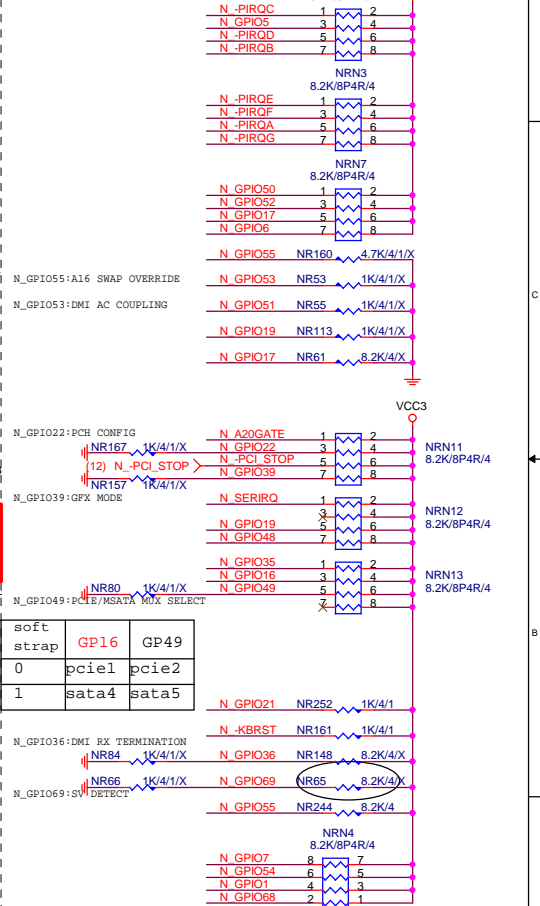
GPIO38 Ctrl



PCH CLK PD



PCH PU/PD



Gigabyte Technology

Title

PCH HOST , SATA, PCI

Size

Document Number

Custom

Date

Monday, April 07, 2014

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45

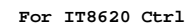
Rev

1.0

(D)



```
C_ACZ_SDOUT : HI --> ME Enable
              Lo --> ME Disable
HI:disable ME and override SPI Flash Access
Permissions
```



3VDUAL

GP44:DPK test Mode

NR139 8.2K/4/X N_GPIO46 1 2

NR103 8.2K/4/X N_GPIO44 3 4

N_GPIO57 5 6

7 8

NRN9 8.2K/8P4/R/4

N_IGC_EN:Low to over clock validation strap

NR106 1K/4/1 N_IGC_EN NR105 1K/4/1/X

NR153 1K/4/1/X N_SUSCLK NR154 8.2K/4/X

SUSCLK OD PDL VR Disable

N_SUSTAT NR133 8.2K/4/X

N_GPIO13 NR101 1K/4/1

N_GPIO28 NR144 1K/4/1/X

N_GPIO29 NR96 1K/4/1

NR155 8.2K/4/X N_GPIO45 NR147 8.2K/4/X

N_TEMP_ALARM NR246 8.2K/4

close NR51

3VDUAL

NC60 1u4/X5R/6.3V/K

3VDUAL_PCH

DS_ME NR81 1K/4/1

VCC3

NR145 8.2K/4/X N_GPIO20 NR109 8.2K/4

N_GPIO0 NR115 8.2K/4

N_SYS_RST NR164 8.2K/4

NR48 8.2K/4 N_GPIO33 NR162 8.2K/4/X

NR49 8.2K/4/X

3VDUAL

NR134 8.2K/4/X N_GPIO73 NR253 8.2K/4

N_PCH_RST NR172 20K/4/1

N_PCH_TDI NR170 200/4/1

N_PCH_TDO NR141 200/4/1

N_PCH_TMS NR169 200/4/1

N_PCH_TCK NR87 200/4/1/X

N_PCH_RST NR143 1K/4/1/X

N_PCH_TDI NR171 100/4/1

N_PCH_TDO NR168 100/4/1

N_PCH_TMS NR142 100/4/1

N_PCH_TCK NR108 51/4/1

N_GPIO18 NR79 8.2K/4

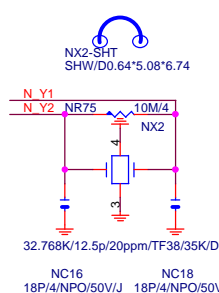
N_GPIO26 NR107 8.2K/4

N_GPIO25 NR137 8.2K/4

N_SYS_RST NC58 1n4/X7R/50V/K

N_DRAM_PWROK NC59 1n4/X7R/50V/K

32.768KHZ



BATTERY - DUAL - 4

BATTERY CR2032

CR2032

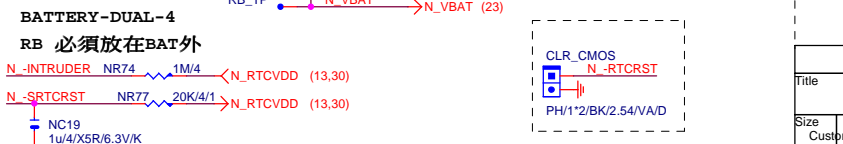
+

3V

N_VBATT

BAT

BAT-SK/BK/P/S/D/S



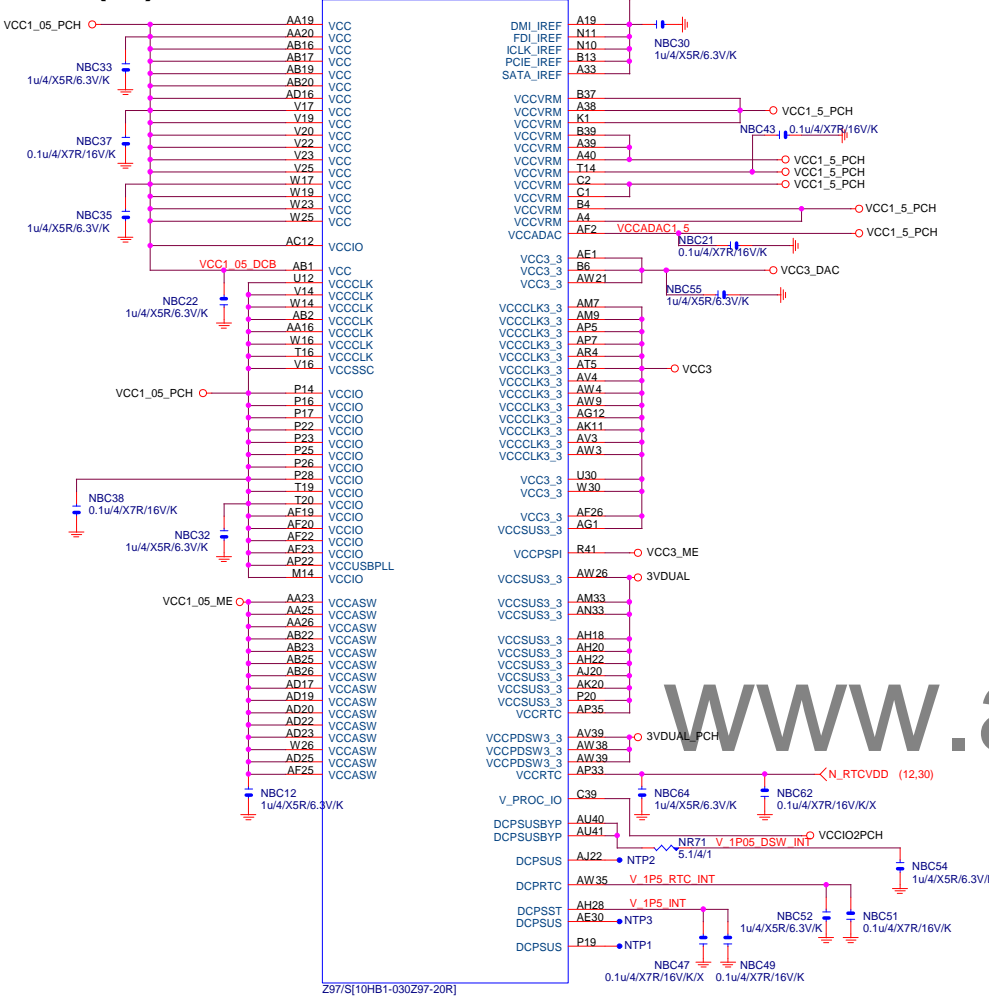
Gigabyte Technology

PCH GPIO , CTRL , AUDIO

Document Number	Rev
GA-Z97X-UD5H BK	1.0

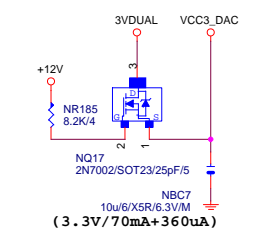
Date: Monday, April 07, 2014 Sheet 12 of 45

PCH (H)

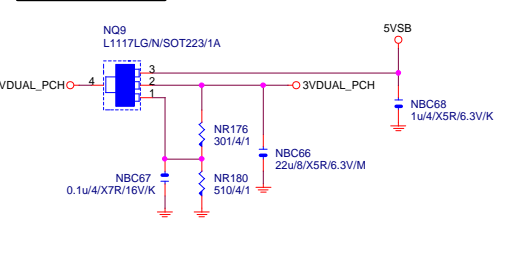


VCC3_DAC

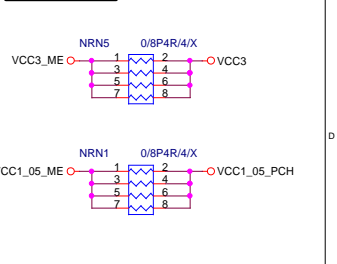
CLOSE北橋(注意震盪水波紋)



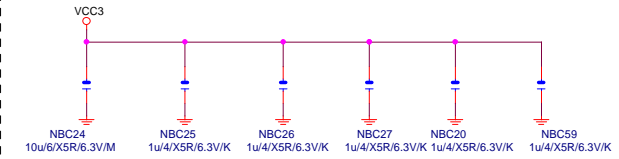
3VDUAL_PCH



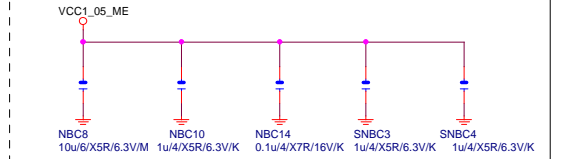
SHT_PWR



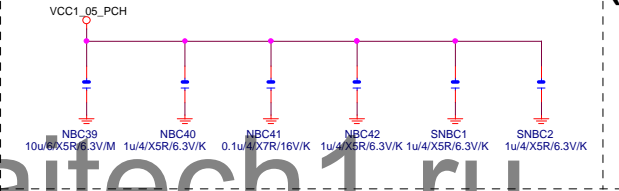
(3.3V)(X6)



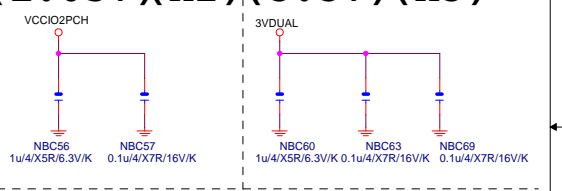
(1.05V)(X5)



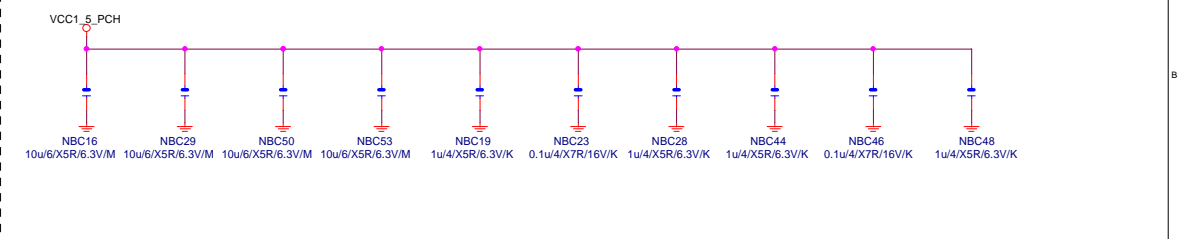
(1.05V)(X6)



(1.05V)(X2)(3.3V)(X3)



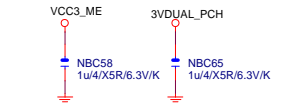
(1.5V)(X10)



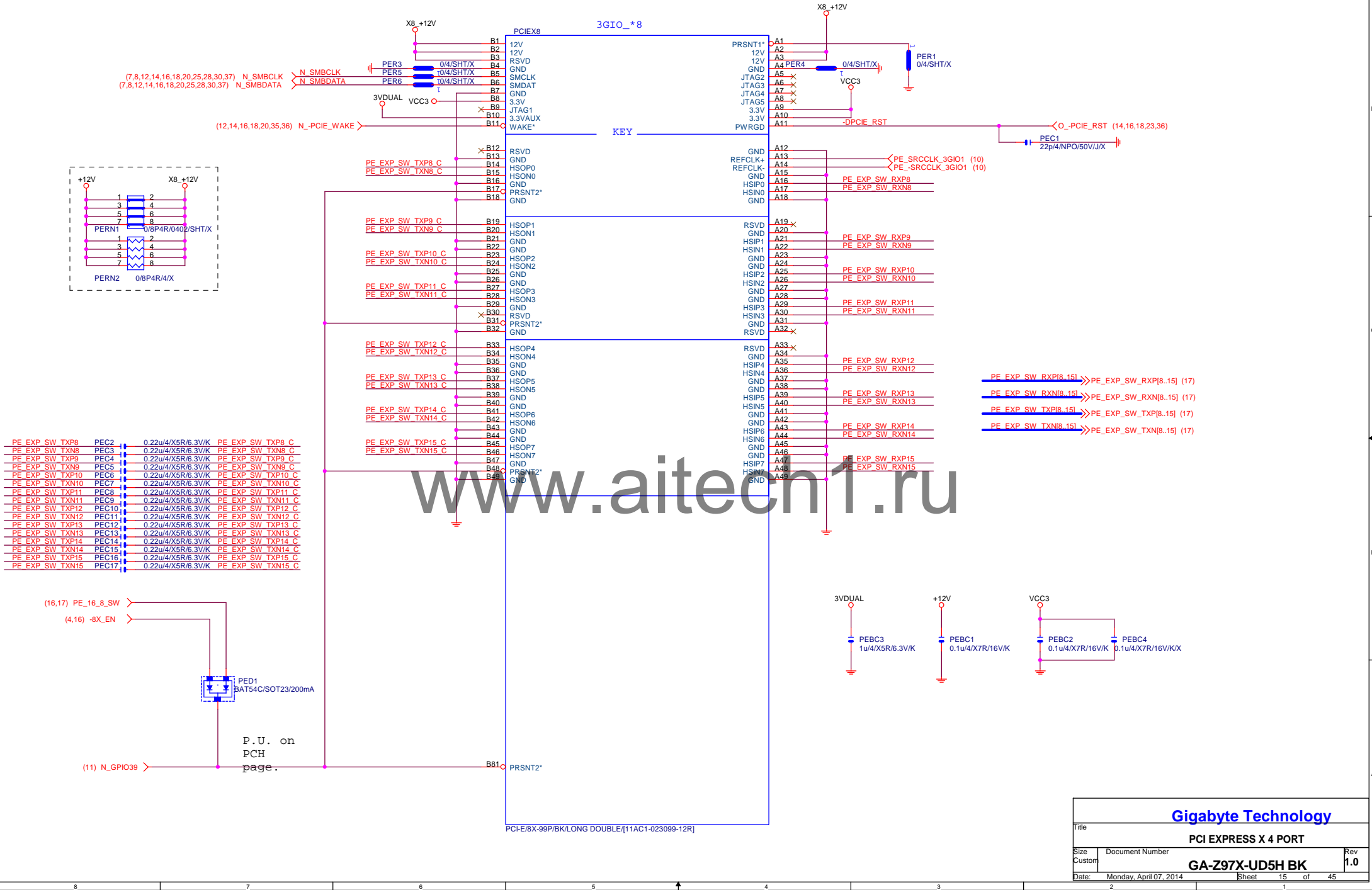
PCH (I)



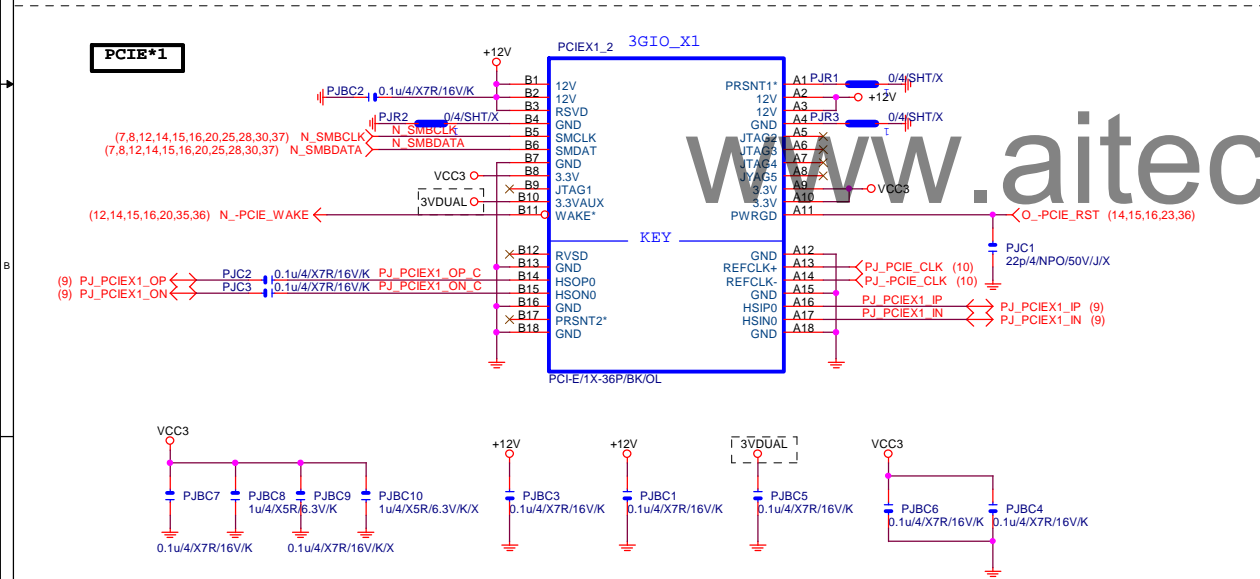
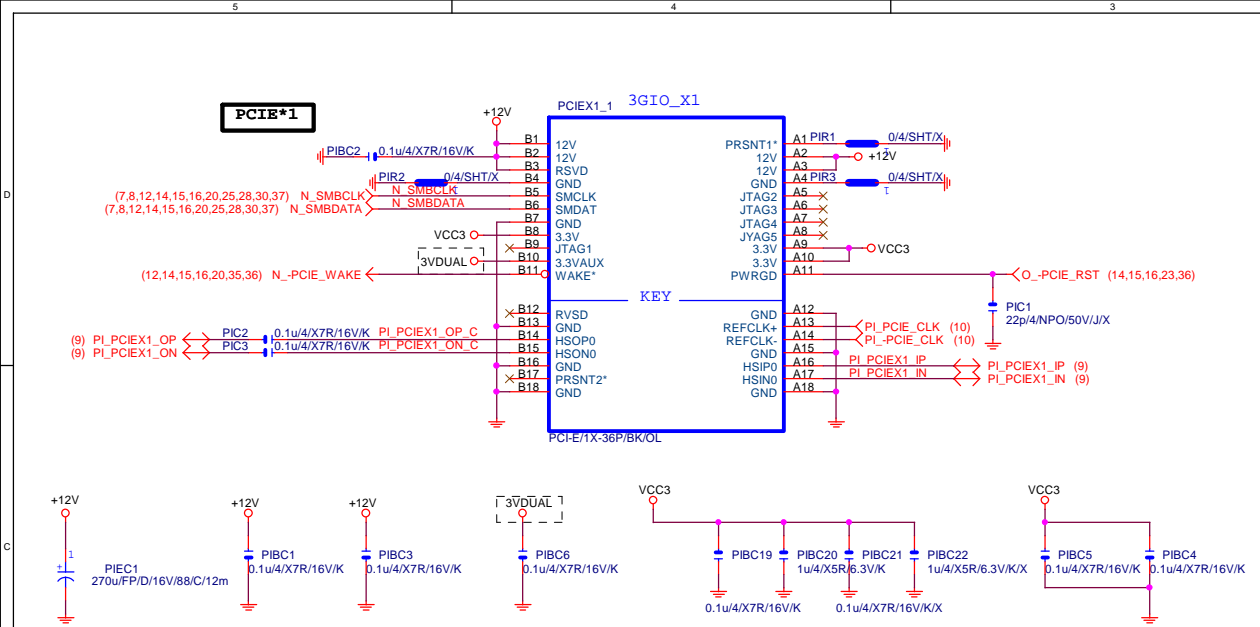
CAP



Gigabyte Technology			
Title PCH PWR ,GND			
Size Custom GA-Z97X-UD5H BK			
Rev	1.0		
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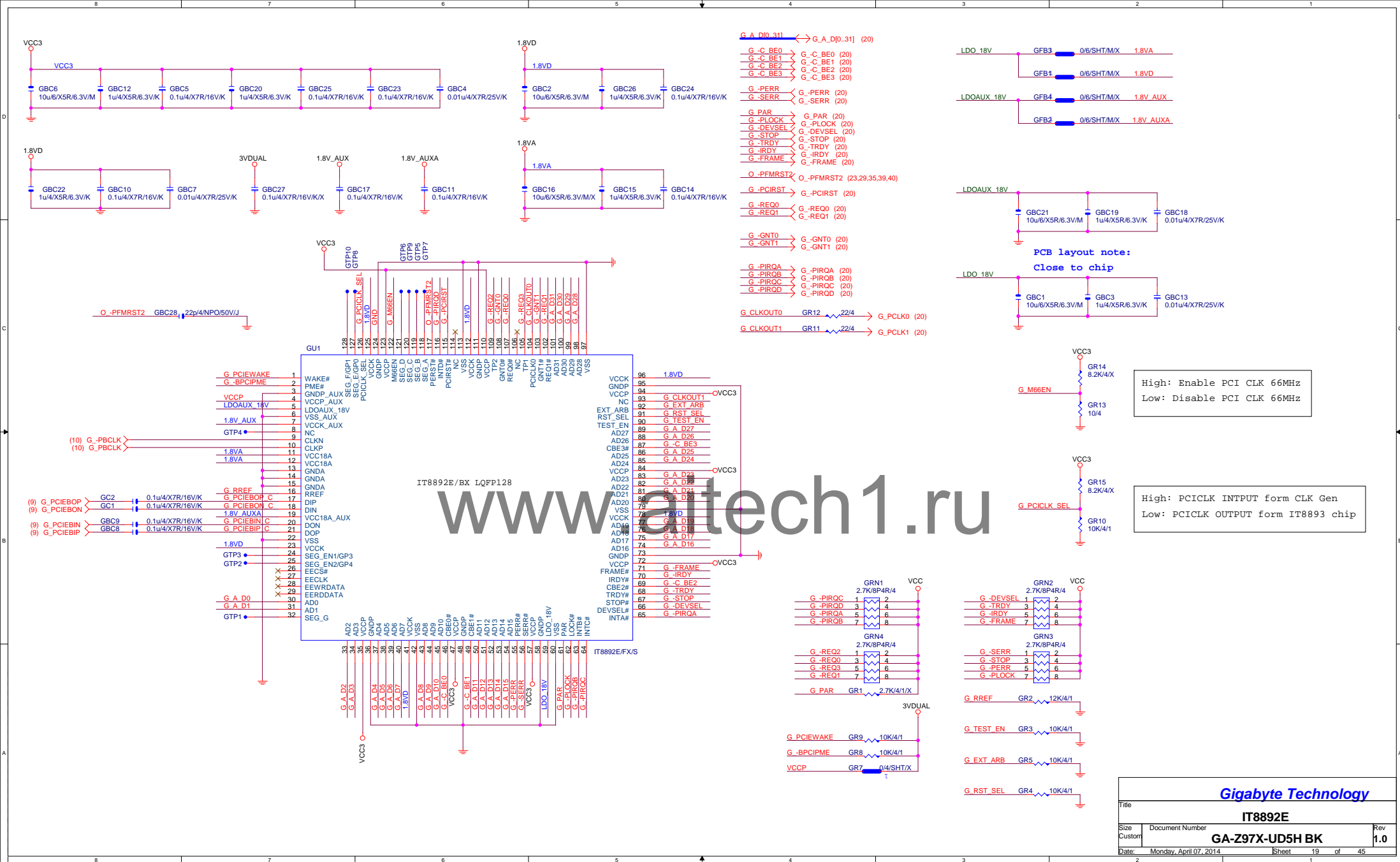


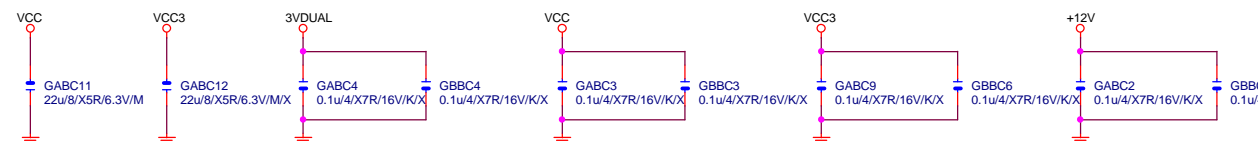
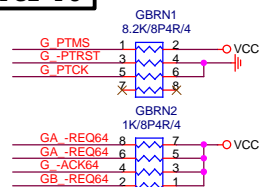
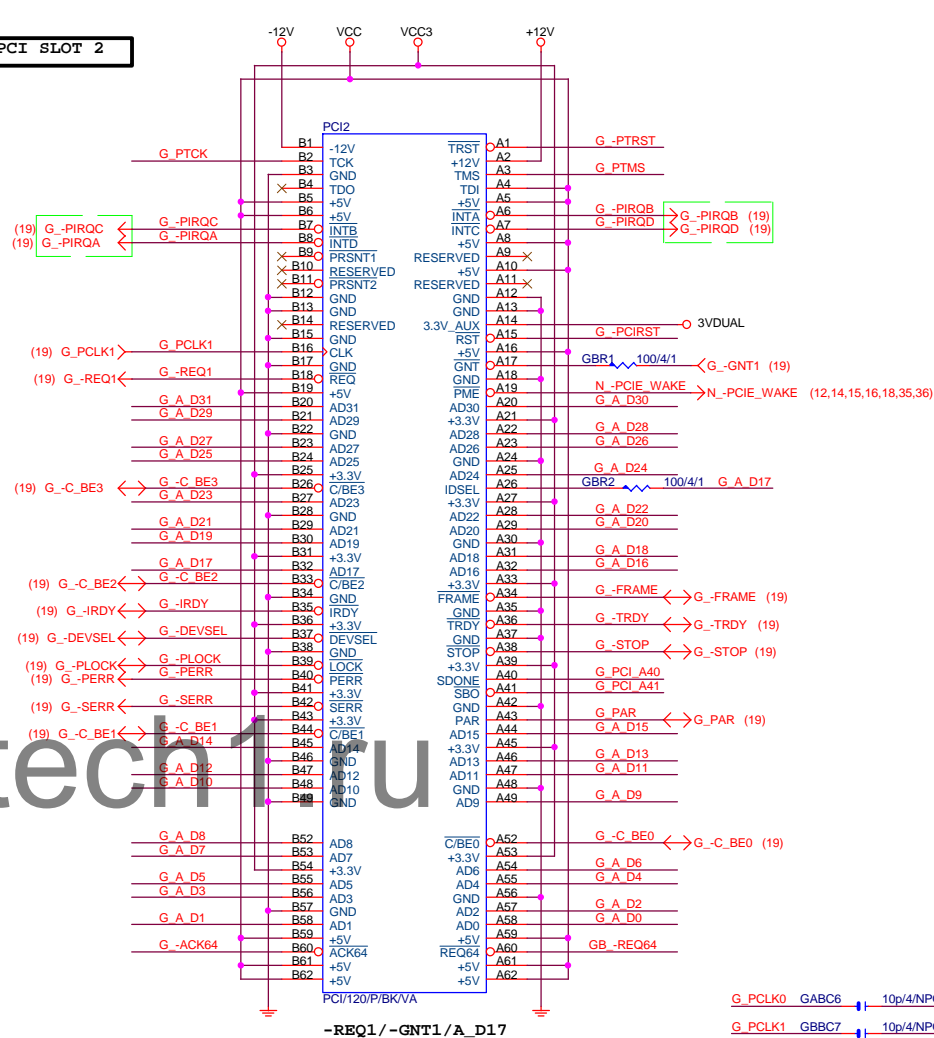
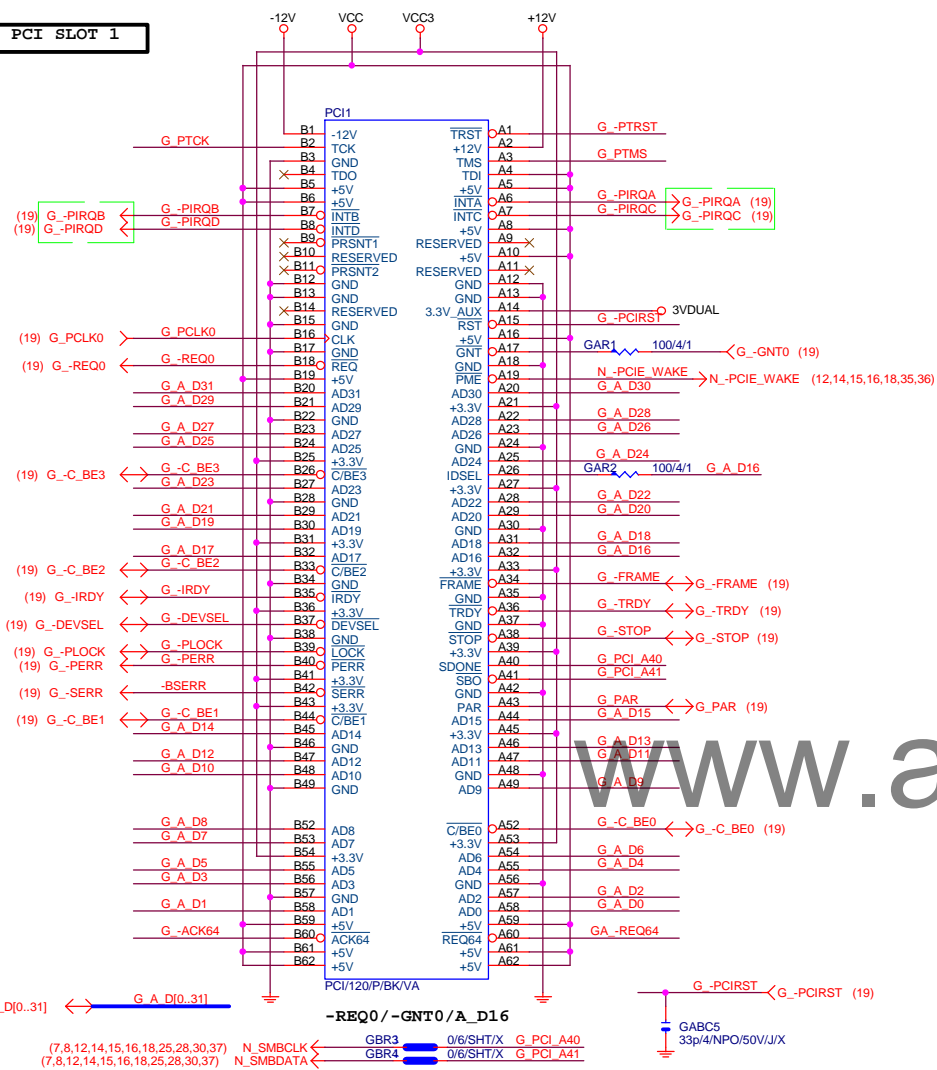
Gigabyte Technology			
Title			
PCI EXPRESS X 4 PORT			
Size	Document Number	Rev	
Custom	GA-Z97X-UD5H BK	1.0	
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2		1	



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Gigabyte Technology			
PCI EXPRESS X1 SLOT			
Size	Document Number	GA-Z97X-UD5H BK	Rev 1.0
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AZALIA CODEC

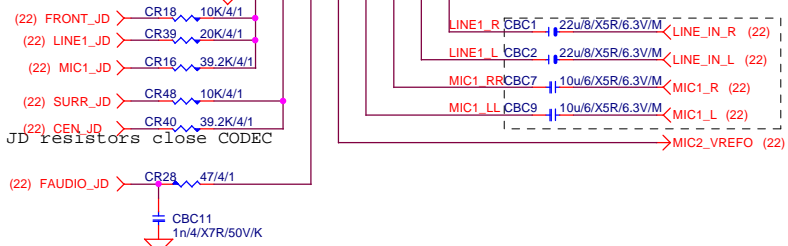
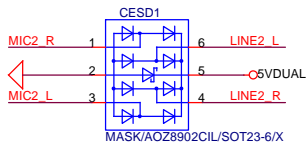
Thermal pad is DGND

Thermal pad is DGND

Digital Area

Analog Area

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

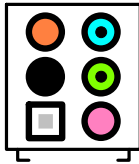


Close to ALC1150

UD5H不上金屬罩&LED

Gigabyte Technology			
Title	HD AUDIO ALC887B-VD2/VT1708SVT2021		
Size	Document Number	GA-Z97X-UD5H BK	
Custom		Rev 1.0	
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AZALIA JACK



LINE-OUT

LINE-IN

MIC-IN

SURROUND

CEN/LFE

Anti Pop

AZALIA FRONT PANEL

Digital Area

Gigabyte Technology

AUDIO JACK

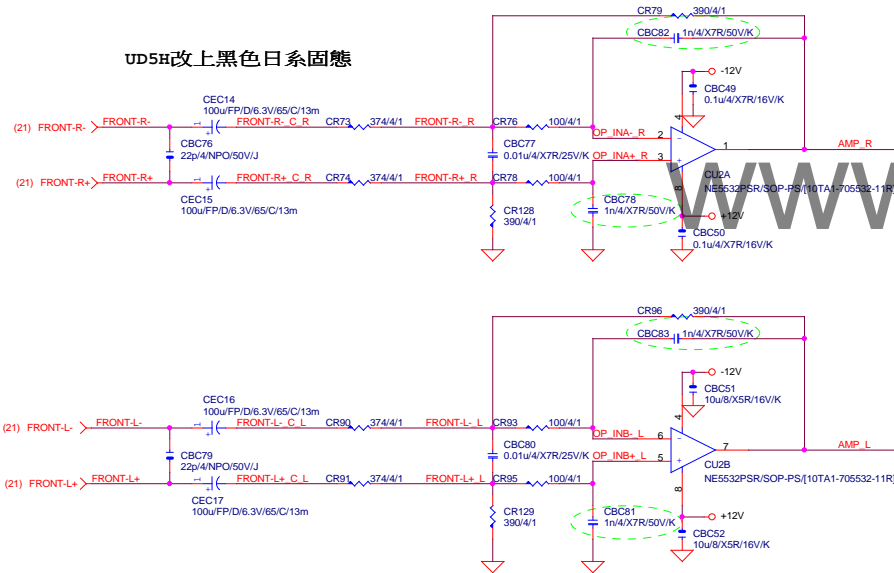
GA-Z97X-UD5H BK

Rev 1.0

File	Document Number	GA-Z97X-UD5H BK	Rev
Size	Custom		1.0
Date	Monday, April 07, 2014	Sheet	22 of 45

Differential to Single-End AMPLIFIED

UD5H改上黑色日系固态



AZALIA JACK

BLUE
LINE-IN

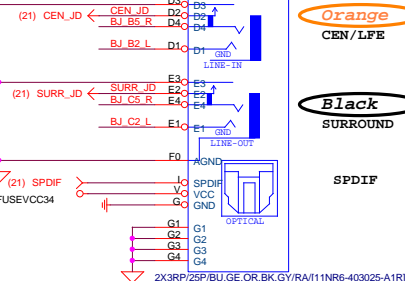
GREEN
LINE-OUT

PINK
MIC-IN

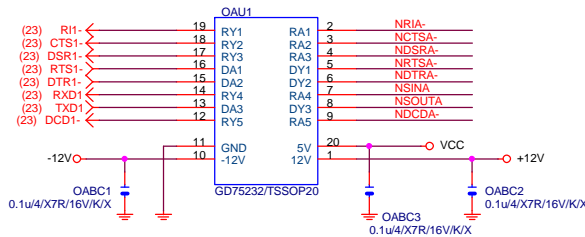
Orange
CEN/LFE

Black
SURROUND

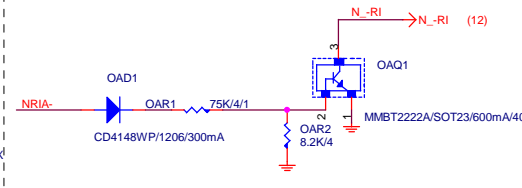
SPDIF



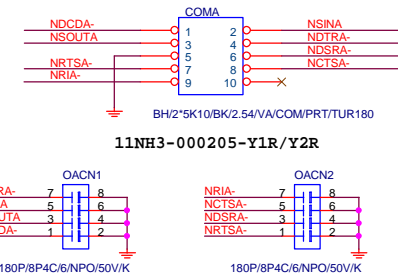
COMA



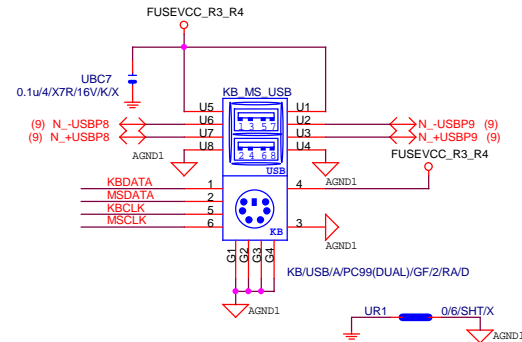
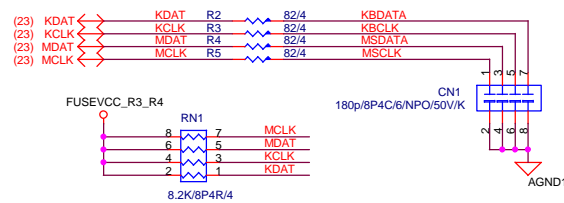
COM RI



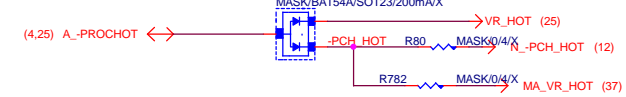
COM BUFFER



KB/MS/USB



-PROHOT

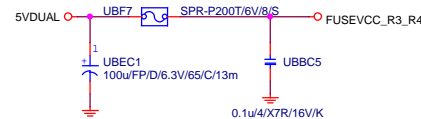


Thunderbolt pin header

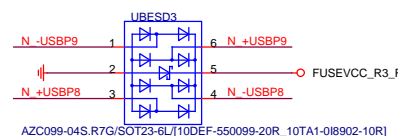
Removed

R_USB

USB20 FUSE

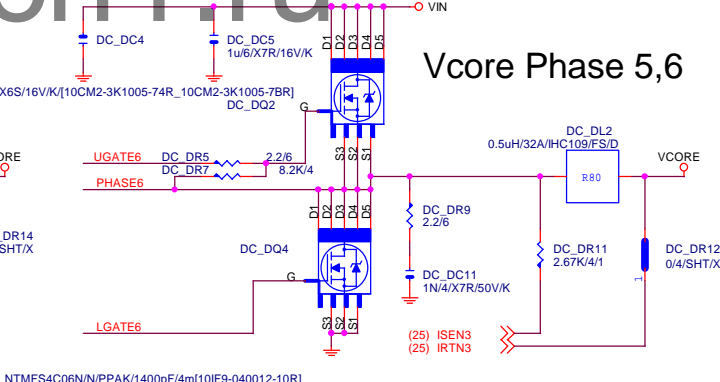
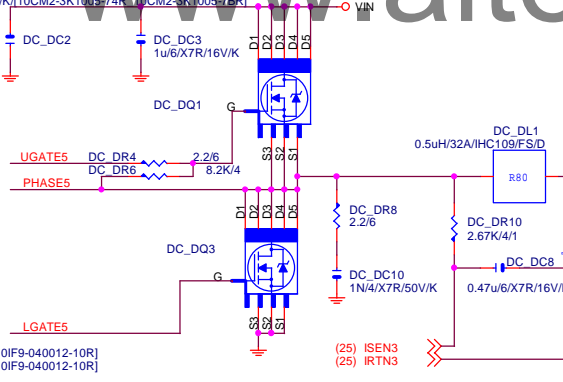
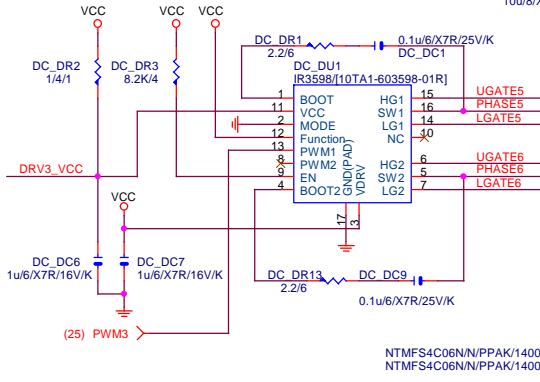
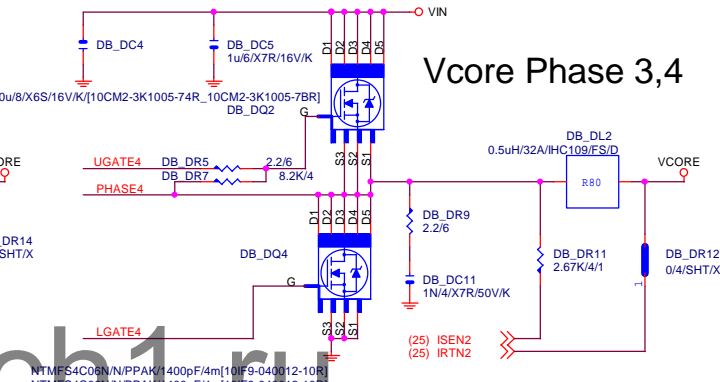
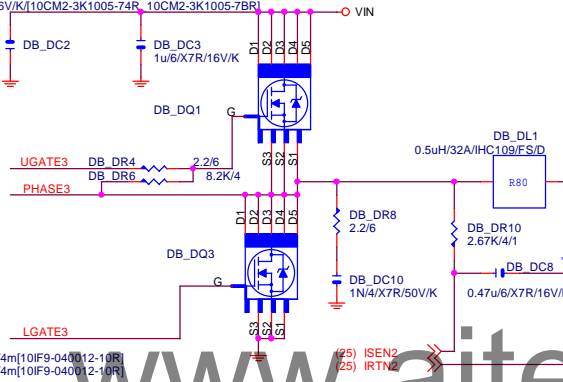
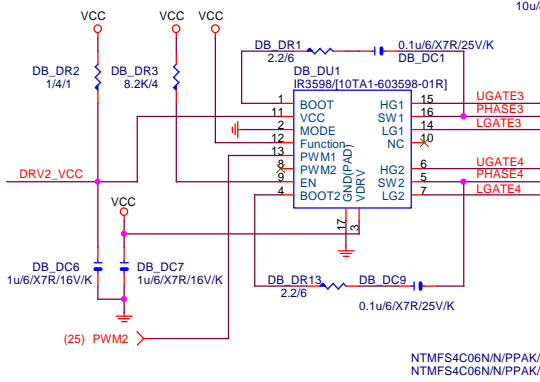
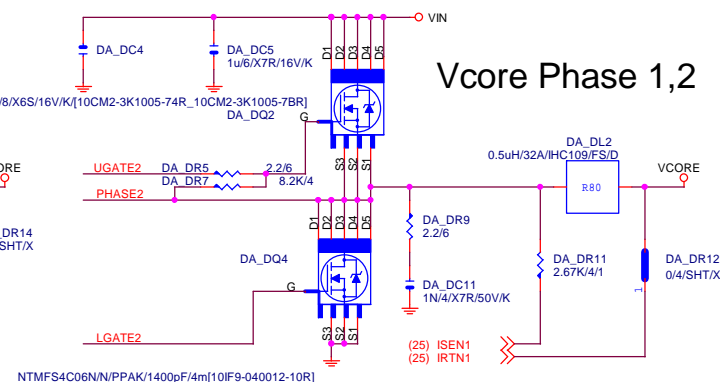
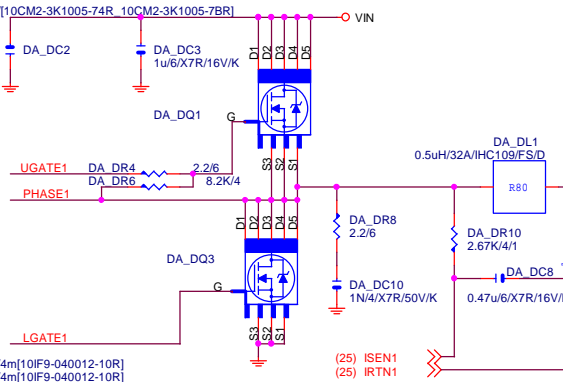
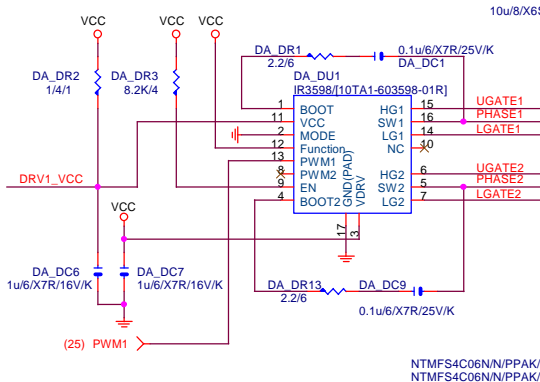


USB20 ESD PROTECT



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Gigabyte Technology			
Title			
COM/ PROHOT/ R_USB			
Size	Document Number	Rev	
Custom		GA-Z97X-UD5H BK1.0	
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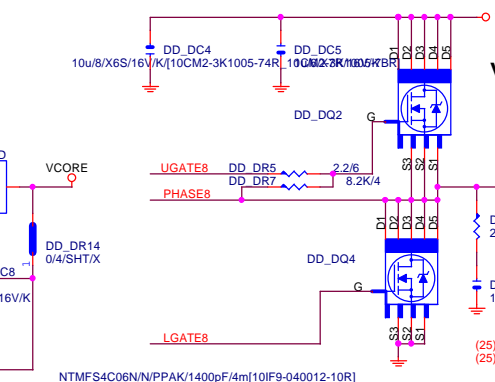
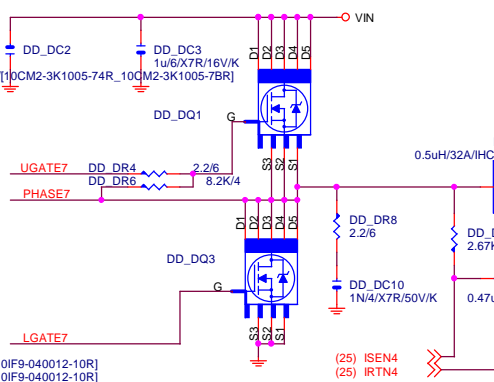
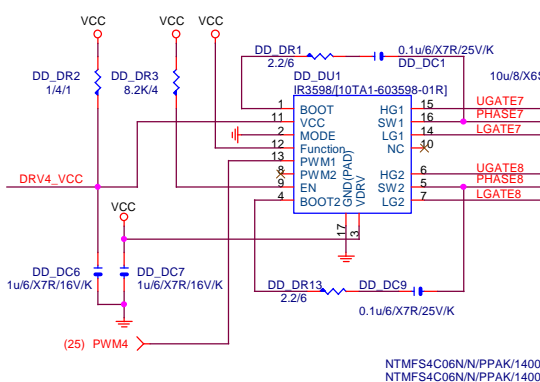


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Sate	DUAL
1	0	Tri-Sate	Doubler
OPEN	0	Tri-Sate	Quad
OPEN	1	IR ATL	Quad

function = 0 --> Quad mode
function = 1 --> Doubled mode

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

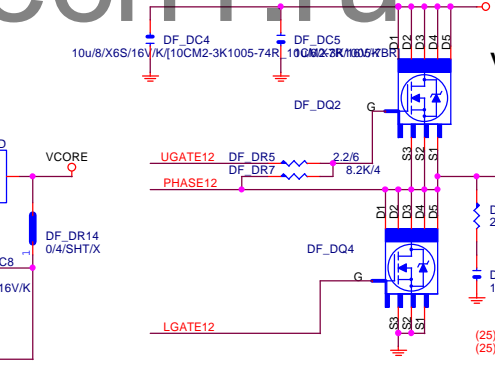
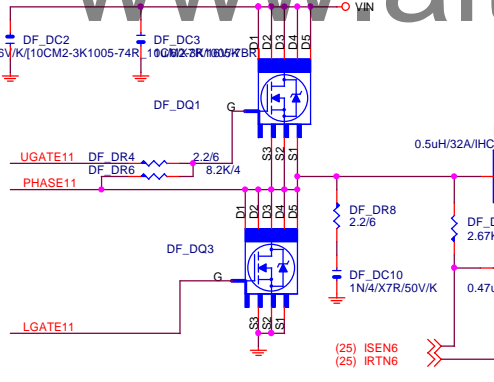
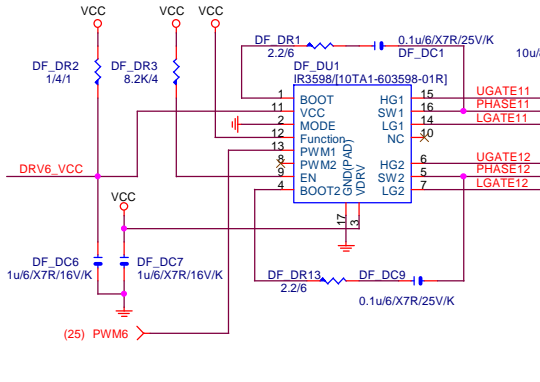
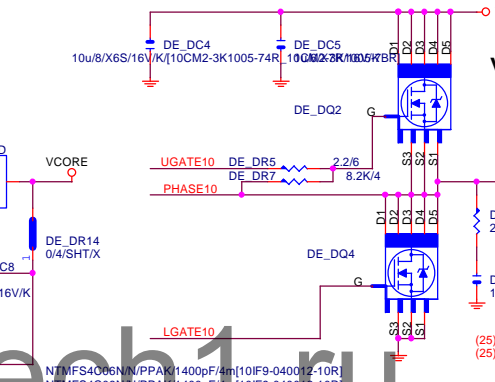
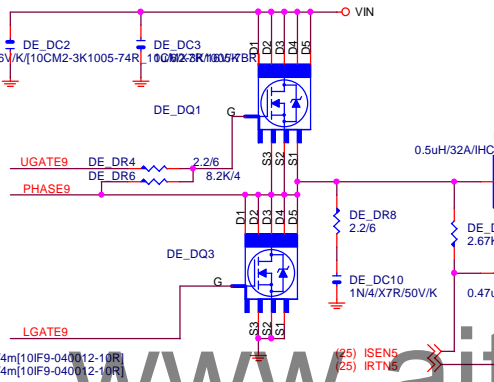
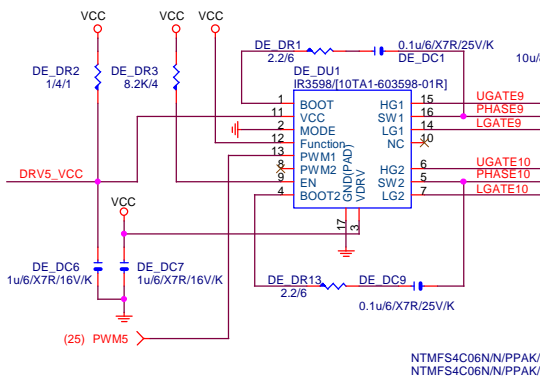
GIGABYTE TECHNOLOGY			
Title			
CPU CORE_IR3563B			
Size	Document Number	Rev	
Custom	GA-Z97X-UD5H BK	1.0	
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Vcore Phase 7,8

Vcore Phase 9,10

Vcore Phase 11,12



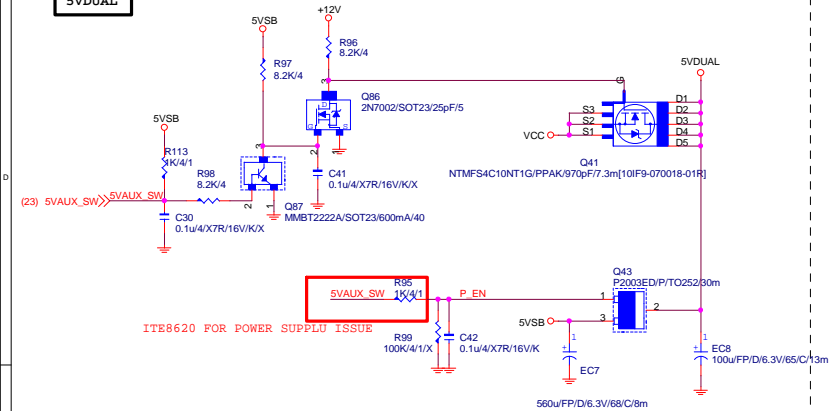
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Sate	DUAL
1	0	Tri-Sate	Doubler
OPEN	0	Tri-Sate	Quad
OPEN	1	IR ATL	Quad

function = 0 --> Quad mode
function = 1 --> Doubled mode

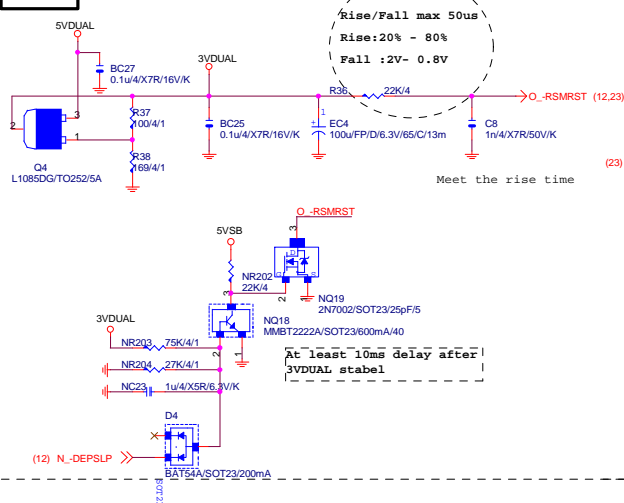
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU

GIGABYTE TECHNOLOGY			
Title	CPU CORE_IR3563B		
Size	Document Number	Rev	
Custom	GA-Z97X-UD5H BK	1.0	
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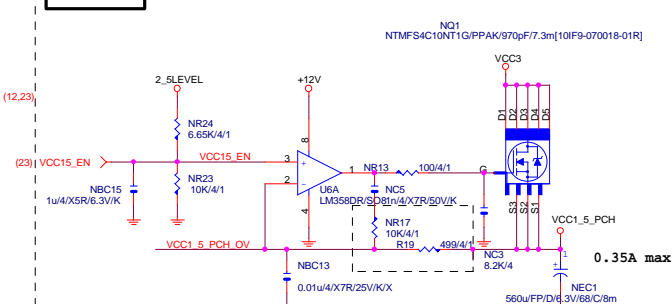
5VDUAL



3VDUAL

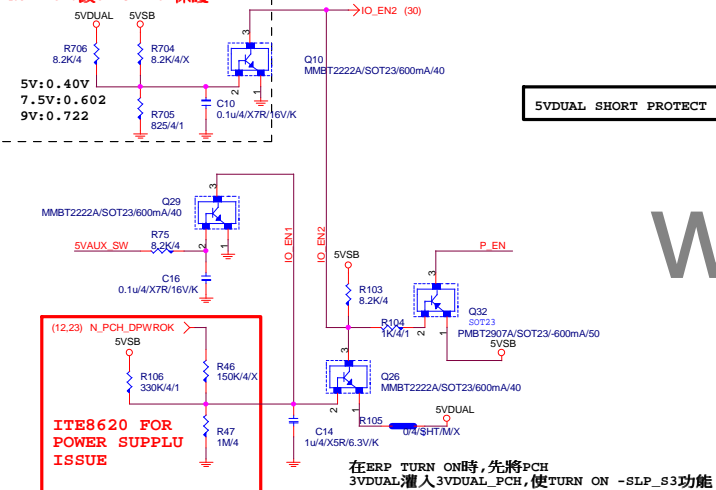


VCC1_5_PCH

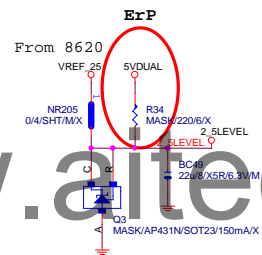


5VSB OVP:7.5V protection

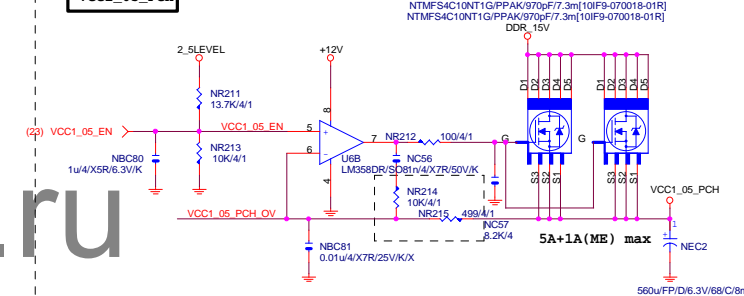
NOTE 82:改5VDUAL 6v保護



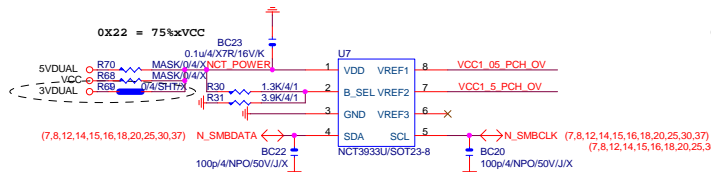
2 5LEVEL



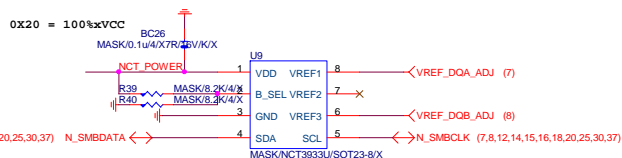
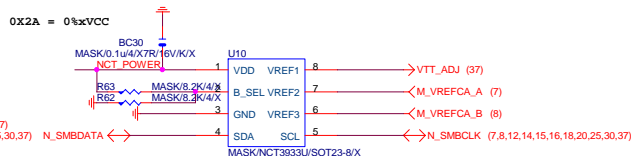
VCC1_05_PCH



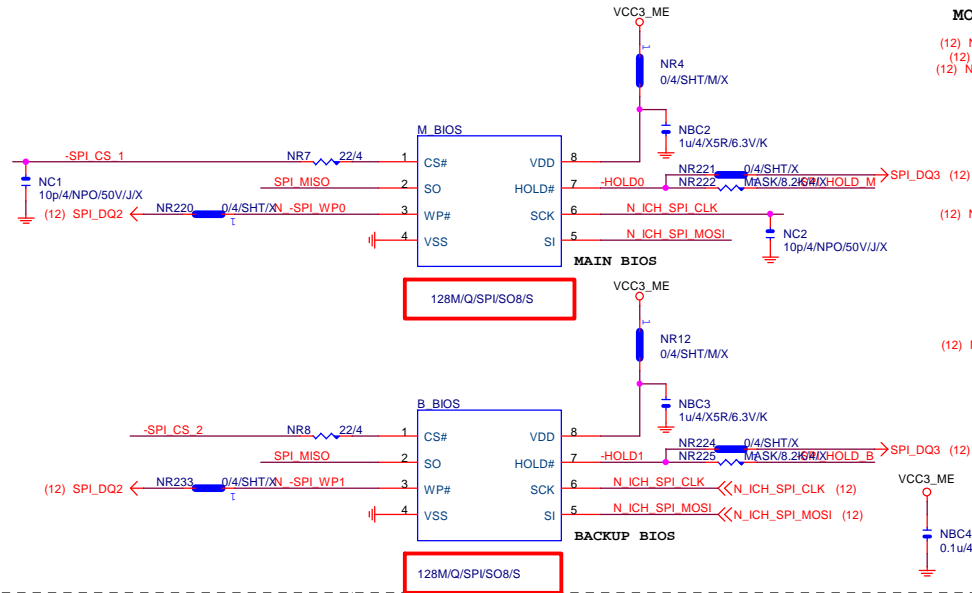
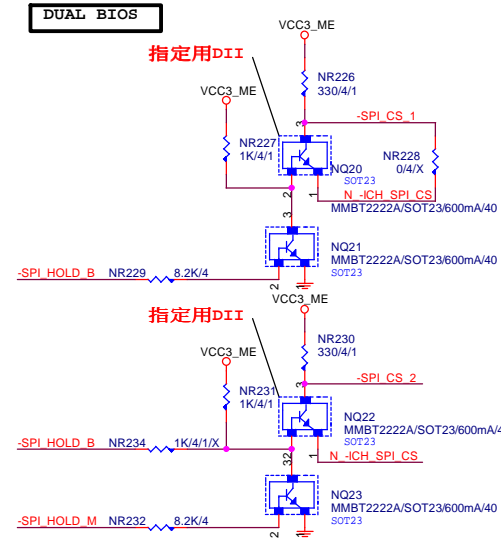
OVER VOLTAGE



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



DUAL BIOS

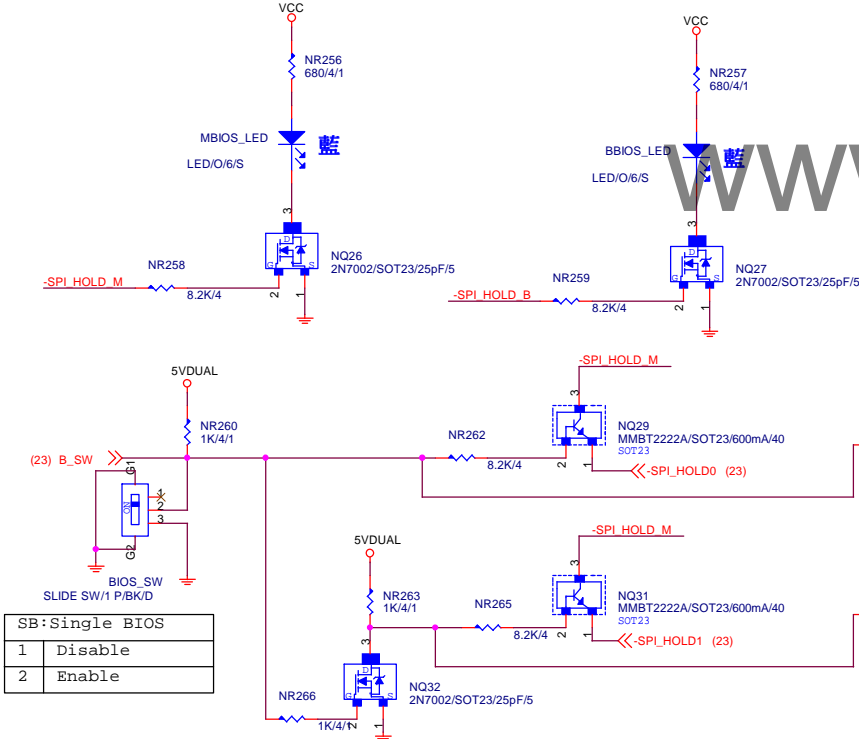


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

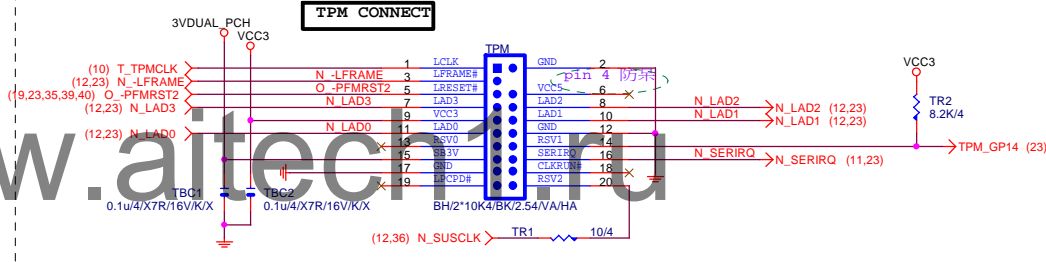
```

1 means floating
0 means PD 1K

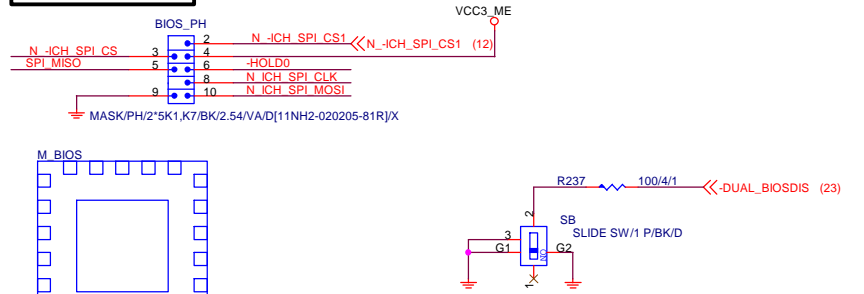
```



TPM CONNECT



BIOS Debug port



SB:Single BIOS	
1	Disable
2	Enable

M BIOS

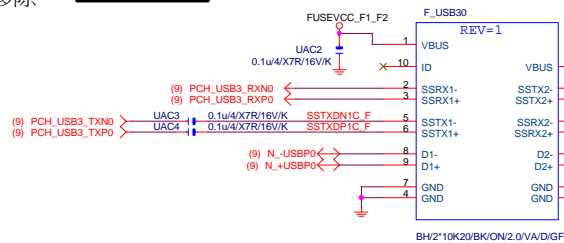
LCP/G-FL/1.27mm/200MIL/WHITE[10SL2-000008-31R]/

Gigabyte Technology

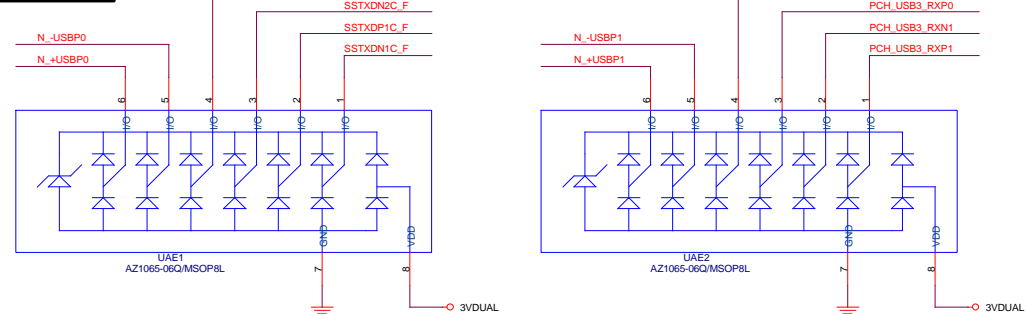
Title		DUAL BIOS, TPM	
Size Custom	Document Number	GA-Z97X-UD5H BK	Rev 1.0
Date:	Monday, April 07, 2014	Sheet 29	of 45

0.2 移除

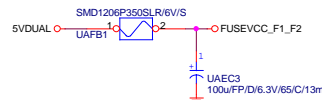
Front USB3.0



F_USB30 ESD PROTECT

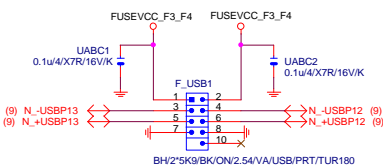


F_USB30 PWR

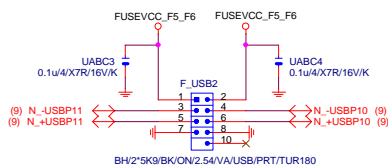


Close to connector

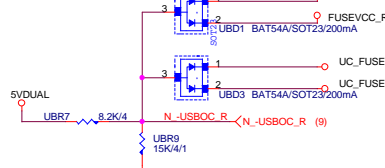
FRONT USB1



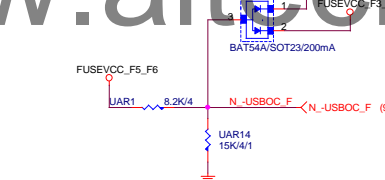
FRONT USB2



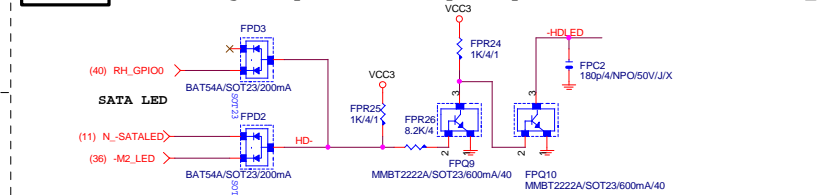
-USBOC_R



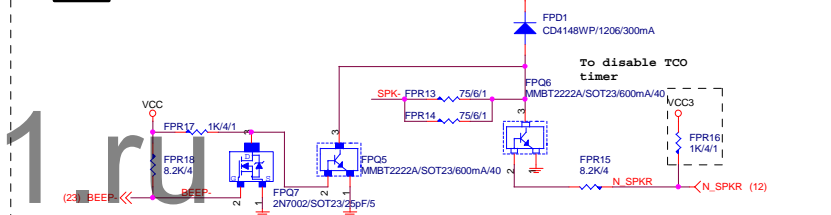
-USBOC_F



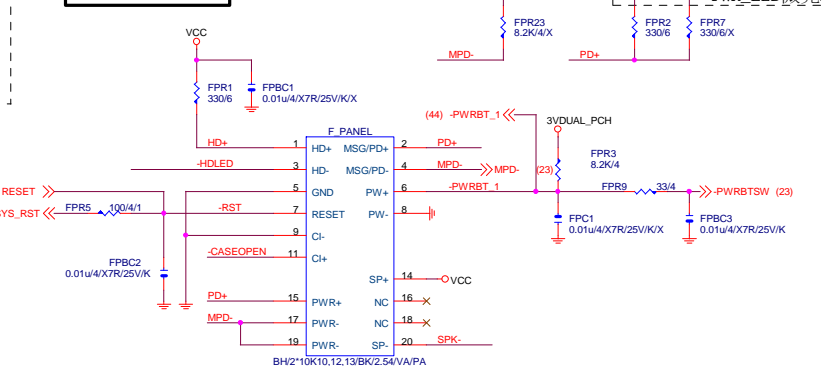
SATA LED SATALED# signal open-collector, pull-up (8.2 kΩ to 10 kΩ) to Vcc3_3



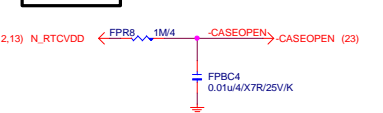
SPKR



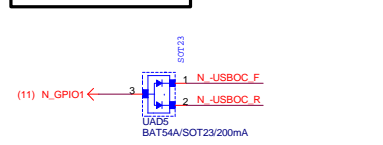
INTEL FRONT PANEL



CASE OPEN

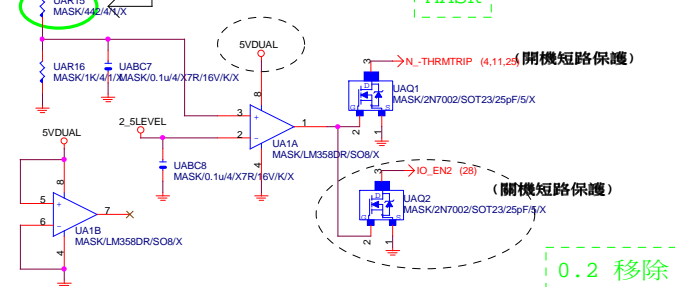


F_USB POWER PROTECT



USB2.0 Signal & power short protection

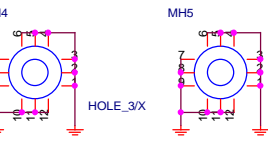
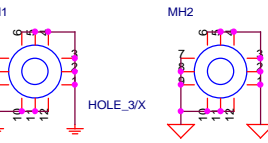
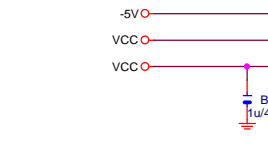
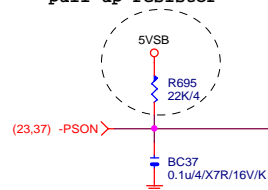
USB2.0 Signal > 4.85V Enable --> 3VDUAL=3.6V



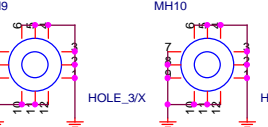
Gigabyte Technology	
Title	FP,F_USB,USB PWR,FDD,BZ
Size	Custom
Document Number	GA-Z97X-UD5H BK
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Patch some PSU no internal pull up resistor

ATXX24 POWER CONNECTOR



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

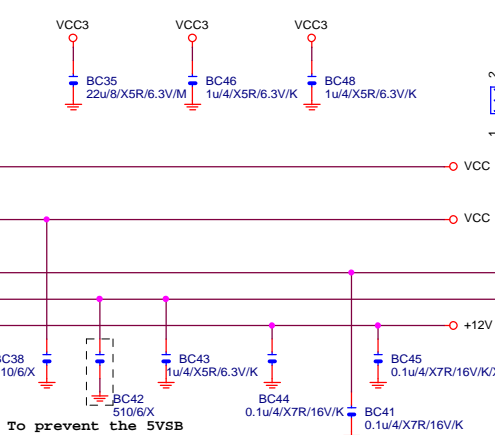
HOLE_3-X

HOLE_3-X

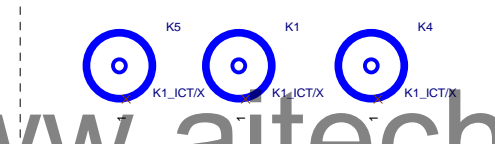
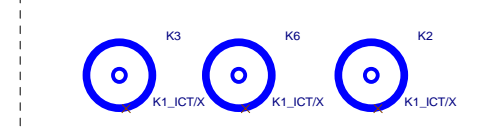
HOLE_3-X

HOLE_3-X

HOLE_3-X



To prevent the 5VSB under loading when boot



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

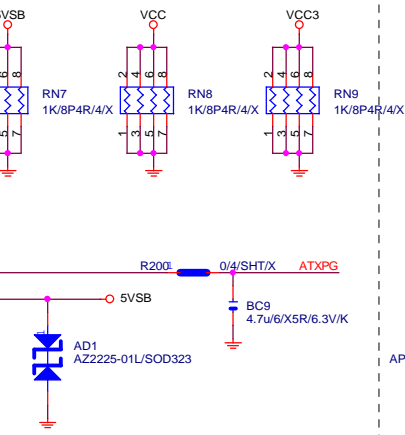
HOLE_3-X

HOLE_3-X

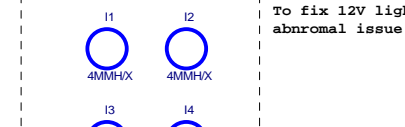
HOLE_3-X

HOLE_3-X

HOLE_3-X



To prevent the 5VSB under loading when boot



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

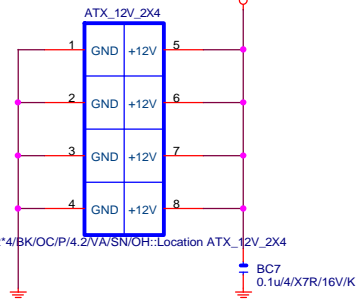
HOLE_3-X

HOLE_3-X

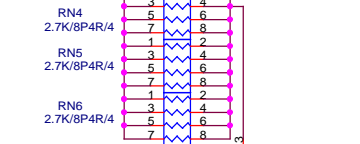
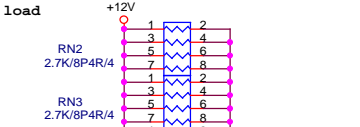
HOLE_3-X

HOLE_3-X

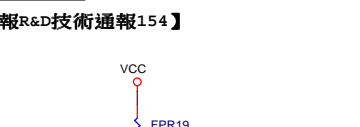
ATXX4 POWER CONNECTOR



To prevent the 5VSB under loading when boot



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

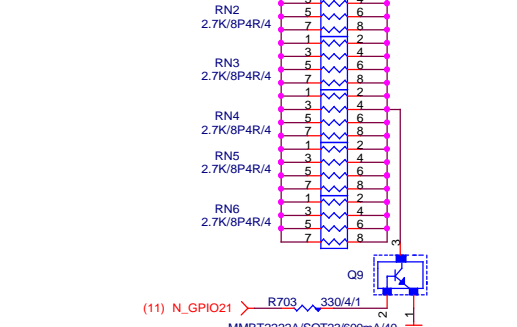
HOLE_3-X

HOLE_3-X

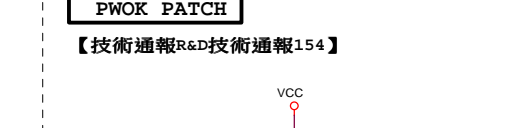
HOLE_3-X

【技術通報R&D技術通報153】

To fix 12V light load abnormal issue



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

HOLE_3-X

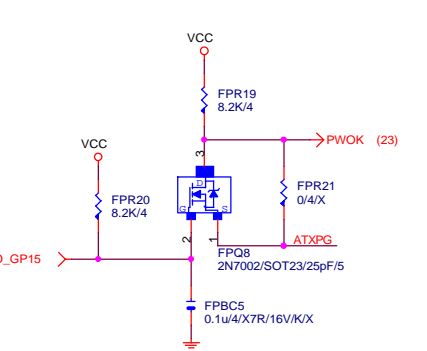
HOLE_3-X

HOLE_3-X

HOLE_3-X

PWOK PATCH

【技術通報R&D技術通報154】



HOLE_4-RH-1



HOLE_3-X

HOLE_3-X

HOLE_3-X

Gigabyte Technology

Title		
ATX POWER CONNECTOR		
Size	Document Number	Rev
Custom	GA-Z97X-UD5H BK	1.0
Date:	Monday, April 07, 2014	Sheet 31 of 45

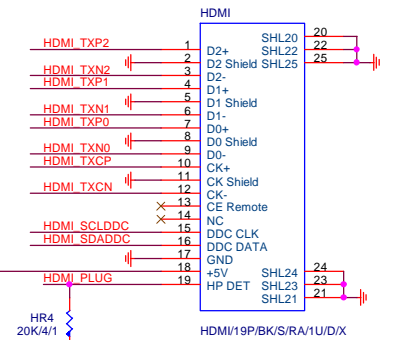
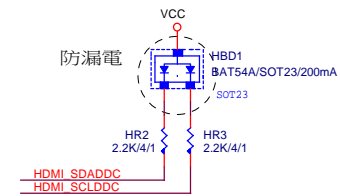
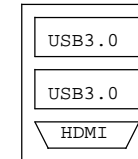
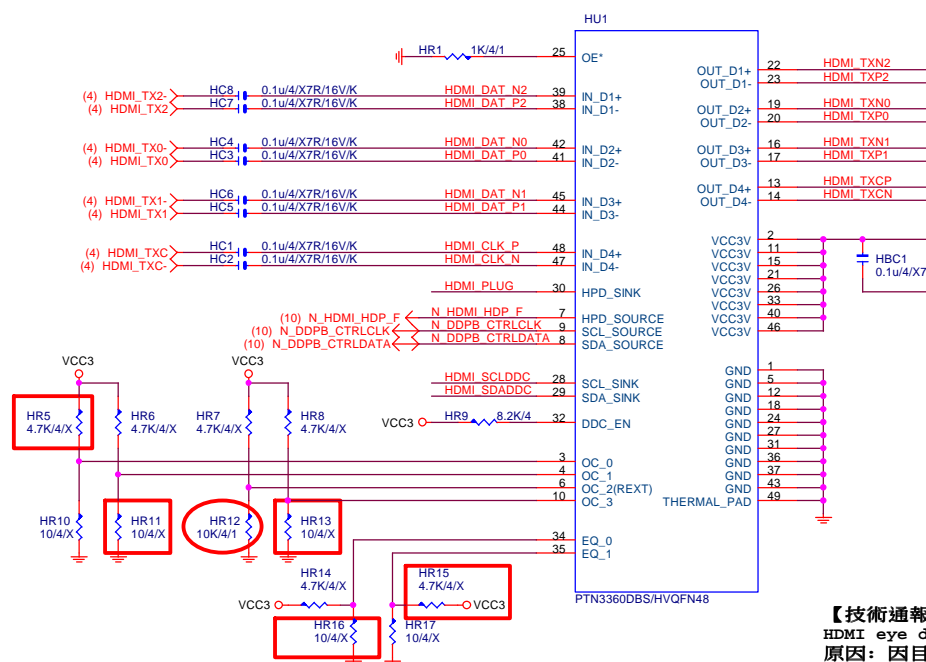
DVI:15/4/4/4/15
Impedance=85 +- 17.5%



HDMI LEVEL SHIFT

HDMI: 20/4/6/4/20

Impedance=85 +- 17.5%



HDMI與R_USB共用一個料件

PTN3360:PIN 4/10/34/35 NC PIN,都不上值;只上HR12:10K
ASM1442:紅色框要上,HR12:3.16K

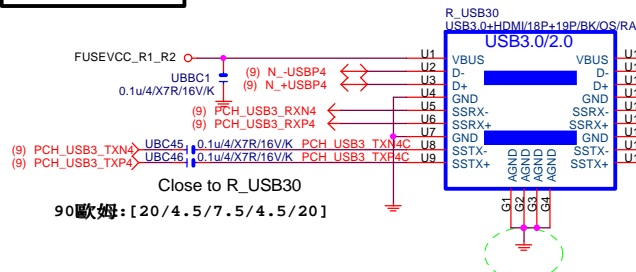
【技術通報R&D技術通報150】

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

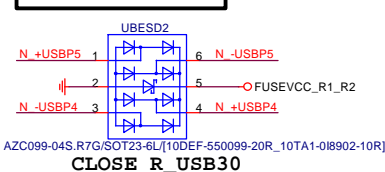
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

USB30_20 CONNECT



Close to R_USB30
90歐姆:[20/4.5/7.5/4.5/20]

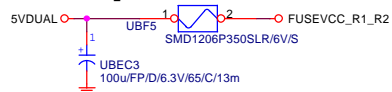
USB20 ESD PROTECT



CLOSE R_USB30

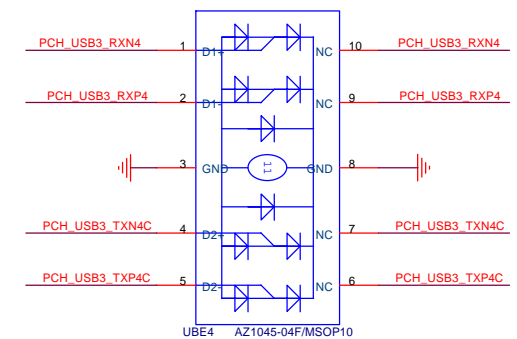
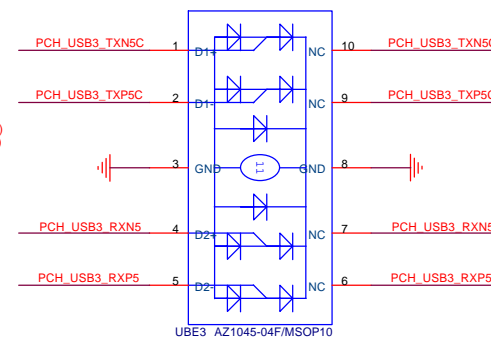
USB30 PWR

Polyswitch-1206

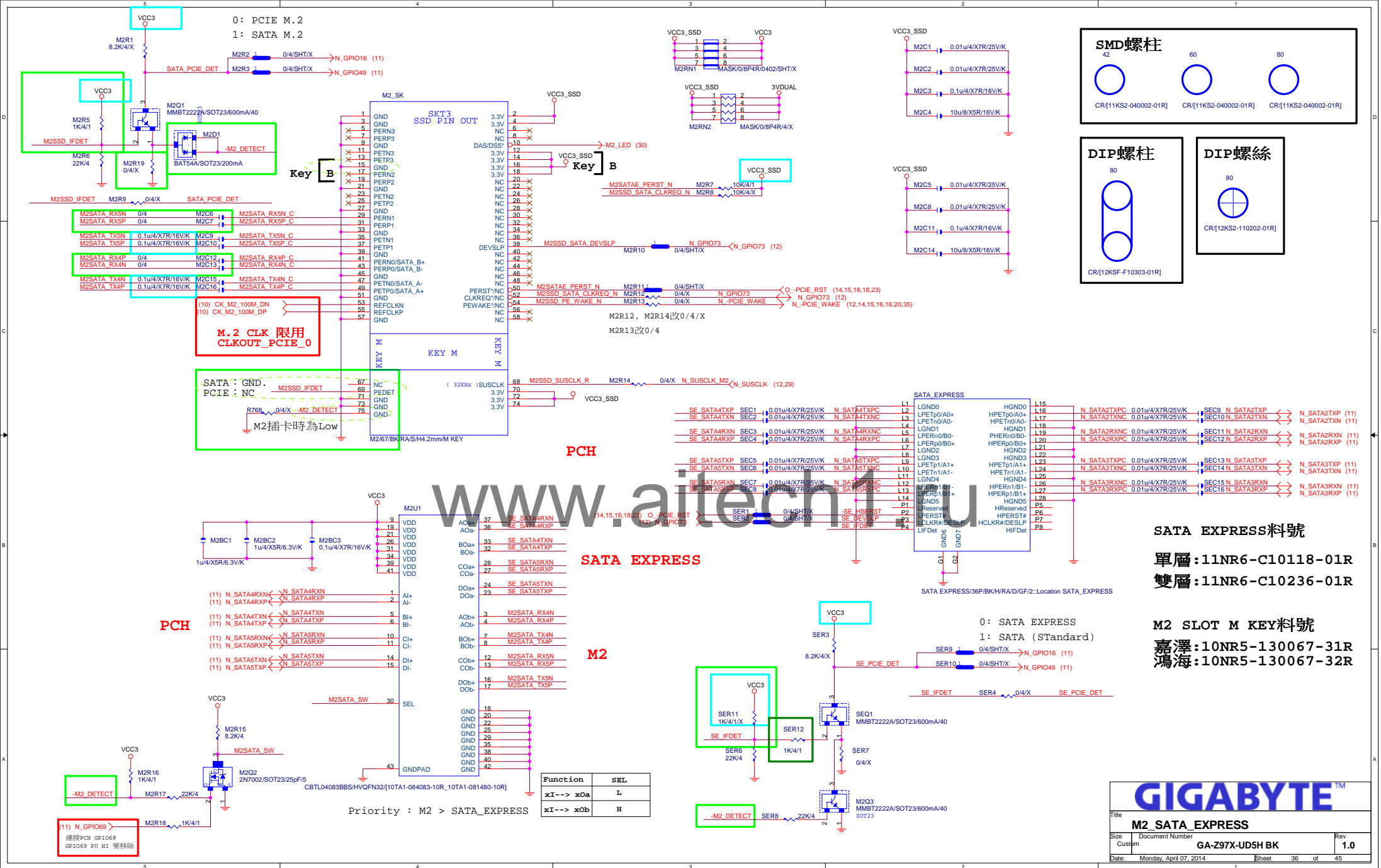


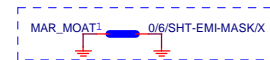
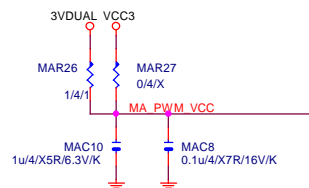
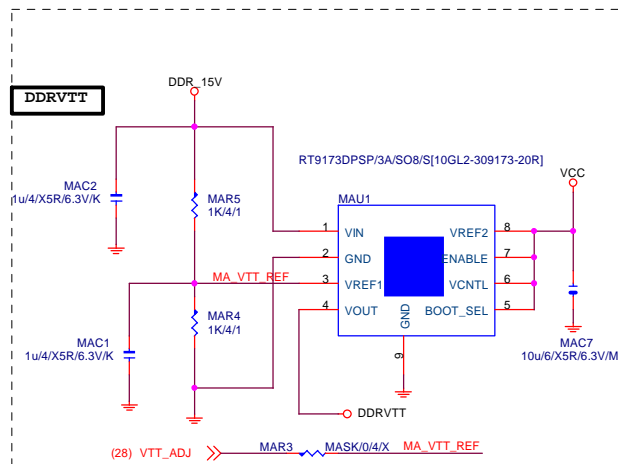
USB3.0 1Port - 1Fuse (3.5A)

USB30 ESD PROTECT

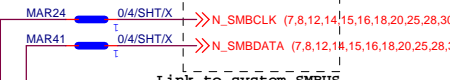
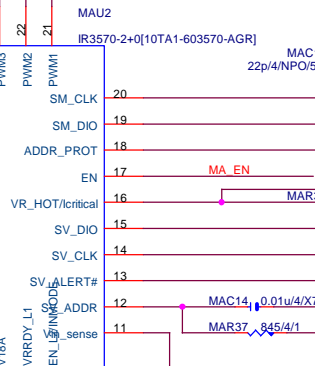
**GIGABYTE™**

Title			
HDMI			
Size	Document Number	Rev	
Custom	GA-Z97X-UD5H BK	1.0	
Date:	Monday, April 07, 2014	Sheet	34 of 45

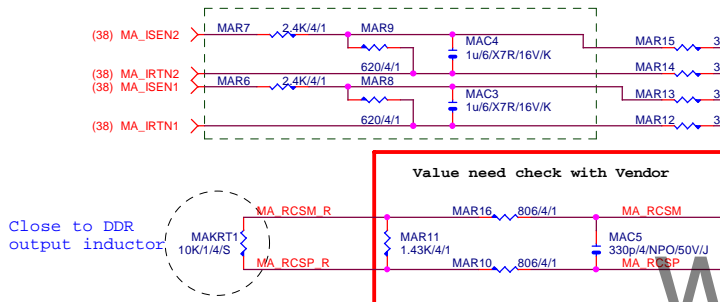




IR3570

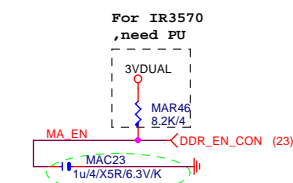
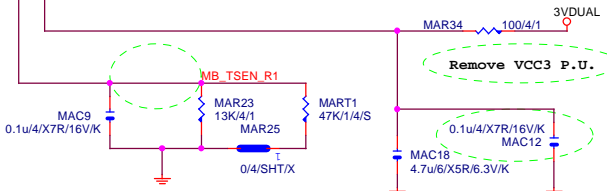
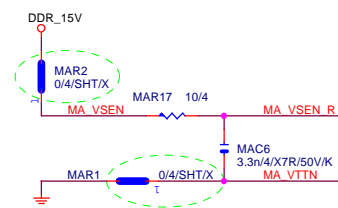
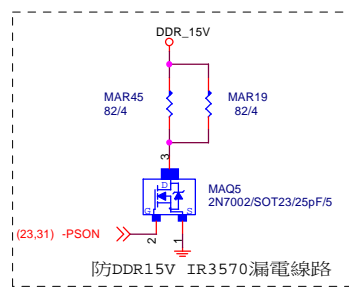


Addr: 72h



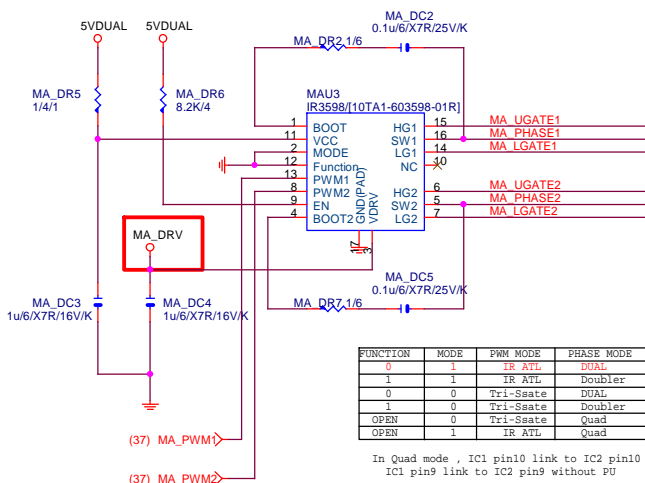
Close to DDR output inductor

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



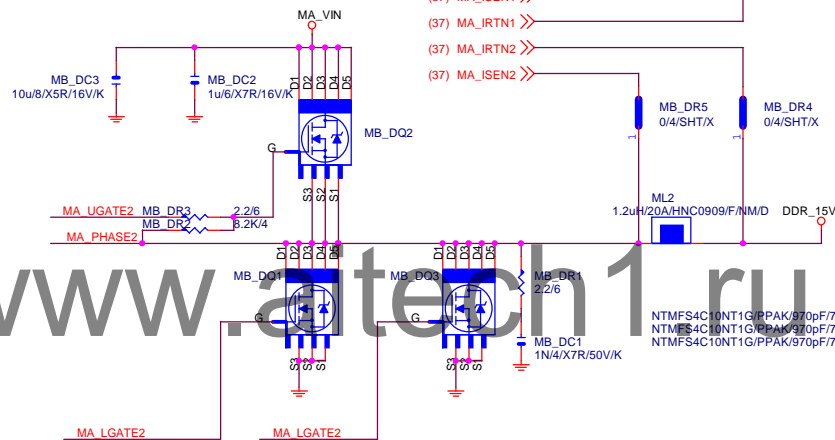
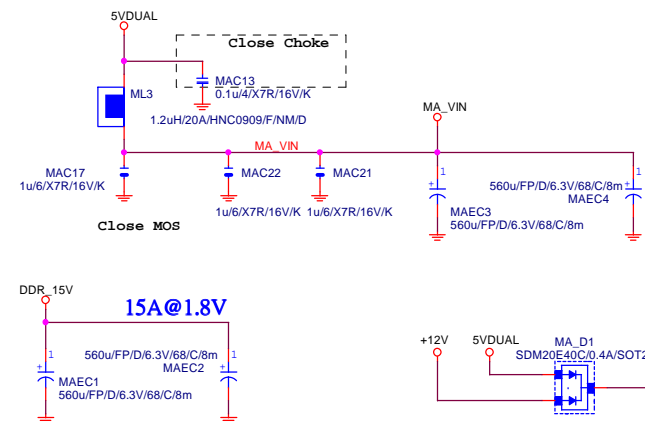
GIGABYTE™			
Title			
DDR POWER IR3570			
Size	Document Number	Rev	
Custpm	GA-Z97X-UD5H BK	1.0	
Date:	Monday, April 07, 2014	Sheet	37 of 45

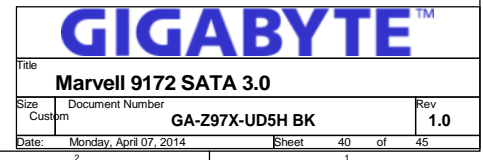
DDR_15V

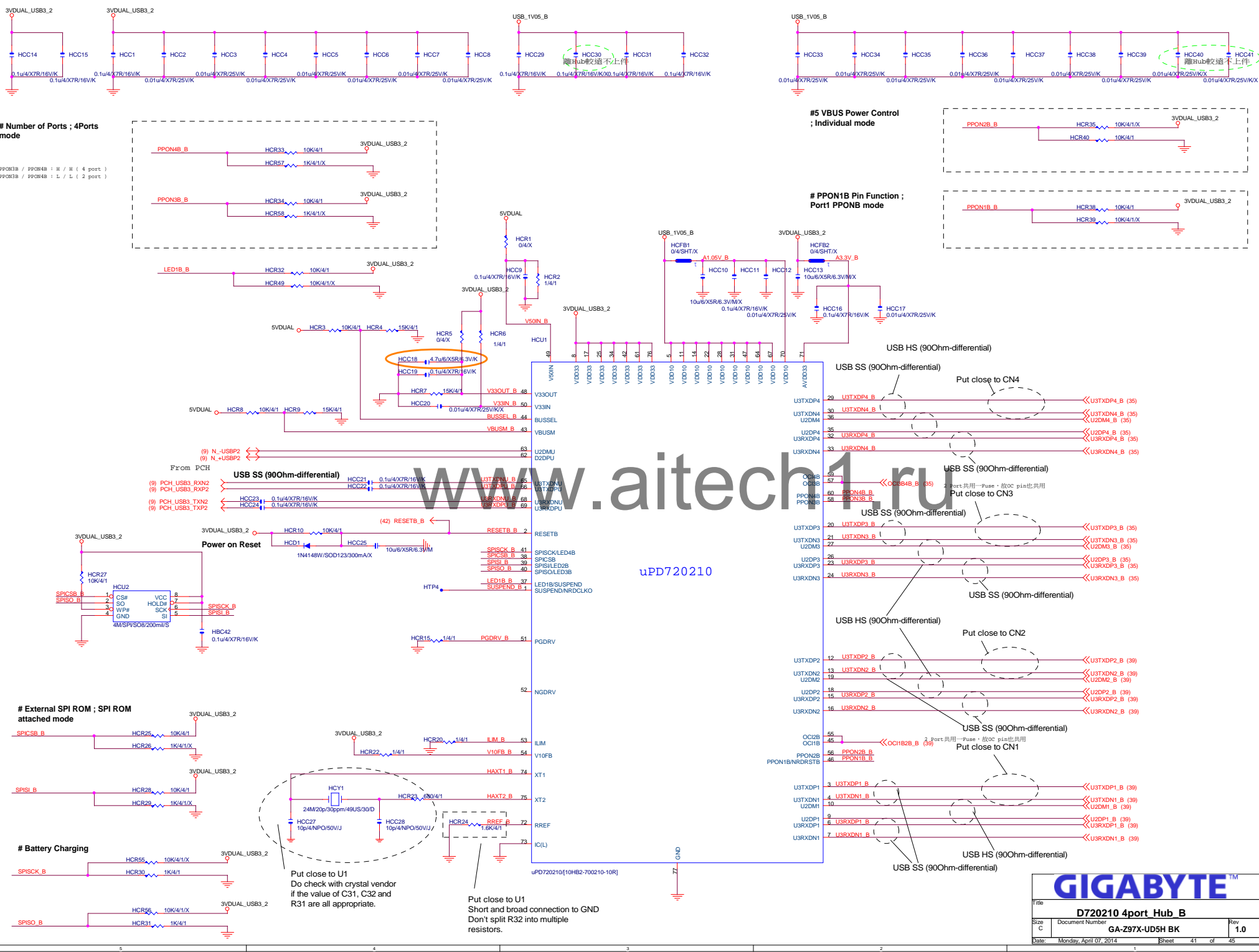


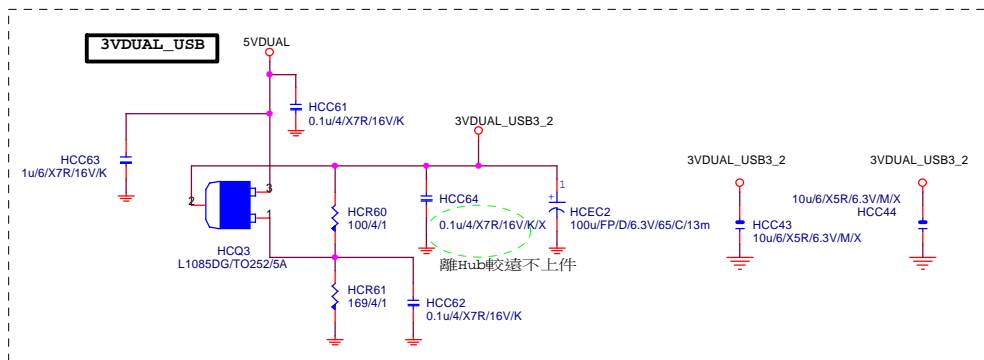
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Sate	DUAL
1	0	Tri-Sate	Doubler
OPEN	0	Tri-Sate	Quad
OPEN	1	IR ATL	Quad

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

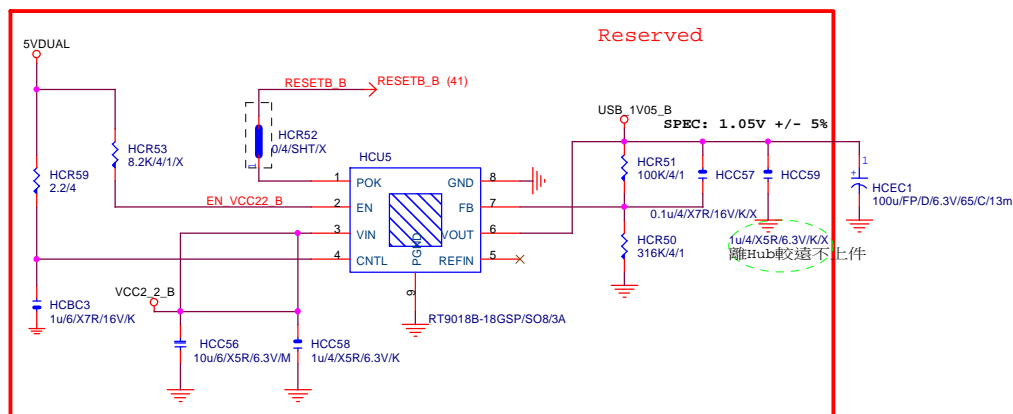
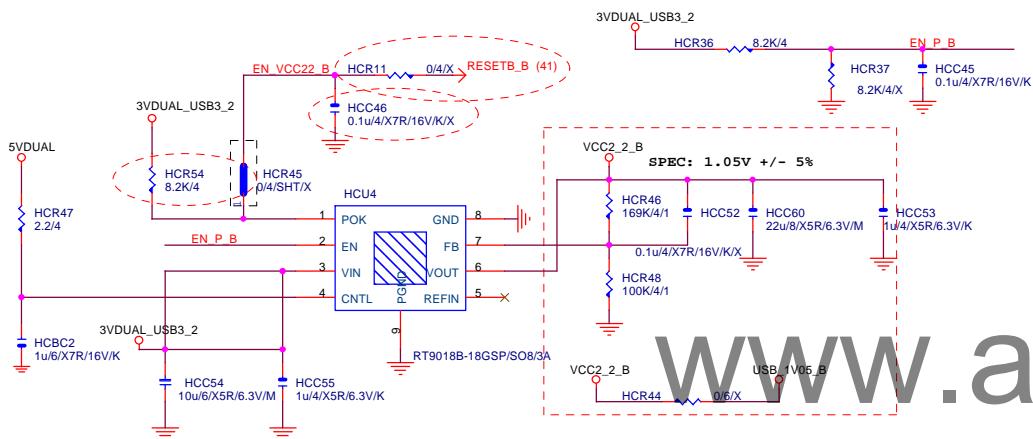






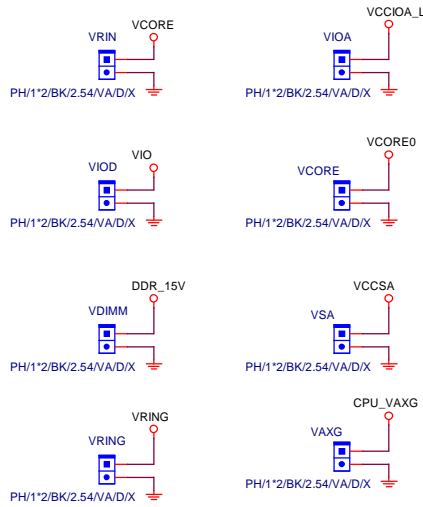
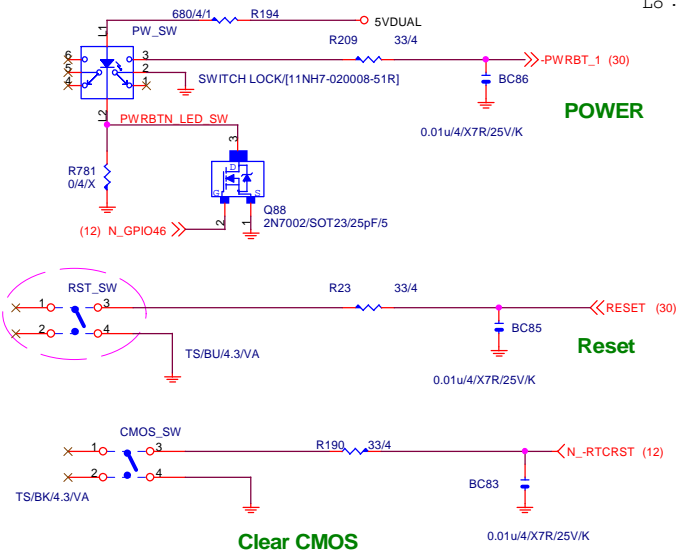


USB1_05V power consumption is 0.7A (w/o onchip regulators)

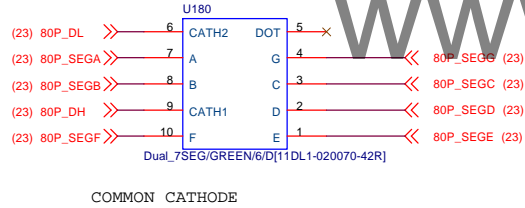
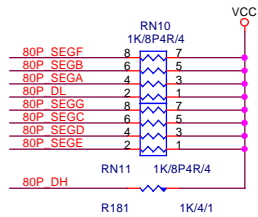


GIGABYTE™			
Title			
D720210 4port Hub B			
Size	Document Number	Rev	
Custom	GA-Z97X-UD5H BK	1.0	
Date:	Monday, April 07, 2014	Sheet	42 of 45

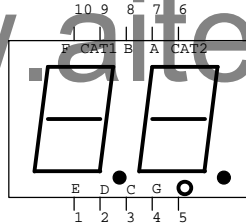
Hi : Button's LED ON
Lo : Button's LED OFF



80 PORT



Physical Package
(TOP VIEW)



GIGABYTE™

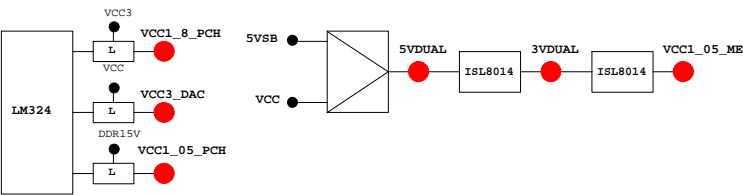
Title RST, PWR, CLR_CMOS, OV		
Size Custom	Document Number GA-Z97X-UD5H BK	Rev 1.0
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PCH GPIO LIST TABLE					
PIN NAME	PWR	Default	USAGE	NOTE	
GP0	MAIN	H-Z	GPI	GPIO0	N/A
GP1/TACH1	MAIN		GPI	GPIO1	N/A
GP2/PIRQ#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	PCIEX1 Detect	P/U 8.2K VCC3
GP7/TACH3	MAIN		GPI	GPIO7	P/U 8.2K VCC3
GP8	STBY	H	GPI	GPIO8	N/A
GP9/OC5#	STBY		NATIVE	USB OC5#	N/A
GP10/OC6#	STBY		NATIVE	USB OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	USB PWR protect	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	GPIO12	N/A
GP13	STBY	L	GPI	LPCPME#	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	USB OC7#	N/A
GP15	STBY	L	GPI	GPIO15(TLS Enable)	P/U 8.2K 3VDUAL
GP16	MAIN		GPI	GPIO16	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	GPIO17	P/U 8.2K VCC3
GP18	MAIN		GPI	Mobile Only	N/A
GP19	MAIN		GPI	GPIO19	P/U 8.2K VCC3
GP20	MAIN		GPI	GPIO20	P/U 8.2K VCC3
GP21	MAIN		GPI	GPIO21	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	GPIO22	P/U 8.2K VCC3
GP23	MAIN		GPI	GPIO23	N/A
GP24	STBY	L	GPI	SKTOCC#	N/A
GP25	STBY			Mobile Only	N/A
GP26	STBY			Mobile Only	N/A
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	PWR LED	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	Mobile Only	N/A
GP31	STBY	H-Z	GPI	Mobile Only	N/A
GP32	MAIN	H	GPO	N/A	N/A
GP33	MAIN	H	GPO	N/A	N/A
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	-ACZ_DET	P/U 8.2K VCC3
GP36	MAIN		GPI	N/A	N/A
GP37	MAIN		GPI	N/A	N/A
GP38	MAIN	H-Z	GPI	PCIEX4 Detect	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	GPIO39	P/U 8.2K VCC3
GP40	STBY		NATIVE	USB OC1#	N/A
GP41	STBY		NATIVE	USB OC2#	N/A
GP42	STBY		NATIVE	USB OC3#	N/A
GP43	STBY		NATIVE	USB OC4#	N/A
GP44	STBY	L	NATIVE	GPIO44	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	GPIO45	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	GPIO46	P/U 8.2K 3VDUAL
GP47	STBY			Mobile Only	N/A
GP48	MAIN	H-Z	IN	GPIO48	P/U 8.2K 3VDUAL
GP49	MAIN	H-Z	IN	GPIO49	P/U 8.2K 3VDUAL
GP50	MAIN		NATIVE	-REQ1	P/U 2.2K VCC
GP51	MAIN	H	NATIVE	-GNT1	N/A
GP52	MAIN		NATIVE	-REQ2	P/U 2.2K VCC
GP53	MAIN	H	NATIVE	-GNT2	N/A
GP54	MAIN		NATIVE	-REQ3	P/U 2.2K VCC
GP55	MAIN	H	NATIVE	-GNT3	N/A
GP56	STBY		NATIVE	Mobile Only	N/A
GP57	STBY	H-Z	IN	VCORE_OV1	P/U 8.2K 3VDUAL
GP58	STBY	H-Z	NATIVE	F_USB_OC	P/U 8.2K 3VDUAL
GP59	STBY		NATIVE	USB_OC0#	N/A
GP60	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL
GP61	STBY	L	NATIVE	-SUSTAT	N/A
GP62	STBY	L	NATIVE	SUSCLK	N/A
GP63	STBY	L	NATIVE	GPIO63	N/A
GP64	MAIN	L	NATIVE	CLKOUTFLEX0	N/A
GP65	MAIN	L	NATIVE	CLKOUTFLEX1	N/A
GP66	MAIN	L	NATIVE	CLKOUTFLEX2	N/A
GP67	MAIN	L	NATIVE	CLKOUTFLEX3	N/A
GP72	STBY	H-Z	NATIVE	VCORE_OV4	P/U 8.2K 3VDUAL
GP73	STBY			Mobile Only	N/A
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

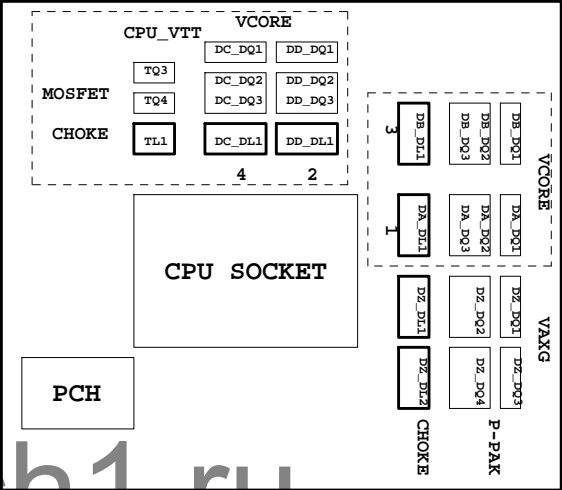
Super I/O ITE8720 GPIO Table

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

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



PWM各相位的擺法如下：



BIOS超電壓對應表：

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