

Model Name: Z77MX-QUO-AOS QU

SHEET TITLE Revision 1.0

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1155-A
05	CPU_LGA1155-B
06	CPU_LGA1155-C
07	DDR III CHANNEL A 1,2
08	DDR III CHANNEL B 1,2
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 Switch
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*1 SLOT
18	ITE 8728 LPC IO
19	KB_USB,R_USB
20	HWM,FAN CTRL,OV,-PROCHOT
21	DUAL BIOS
22	FP,FUSB,SPK,SATALED
23	ALC892
24	REAR AUDIO JACK
25	INTEL 82574L PCIe GbE LAN
26	DISCRETE POWER
27	ATX, CLK GEN

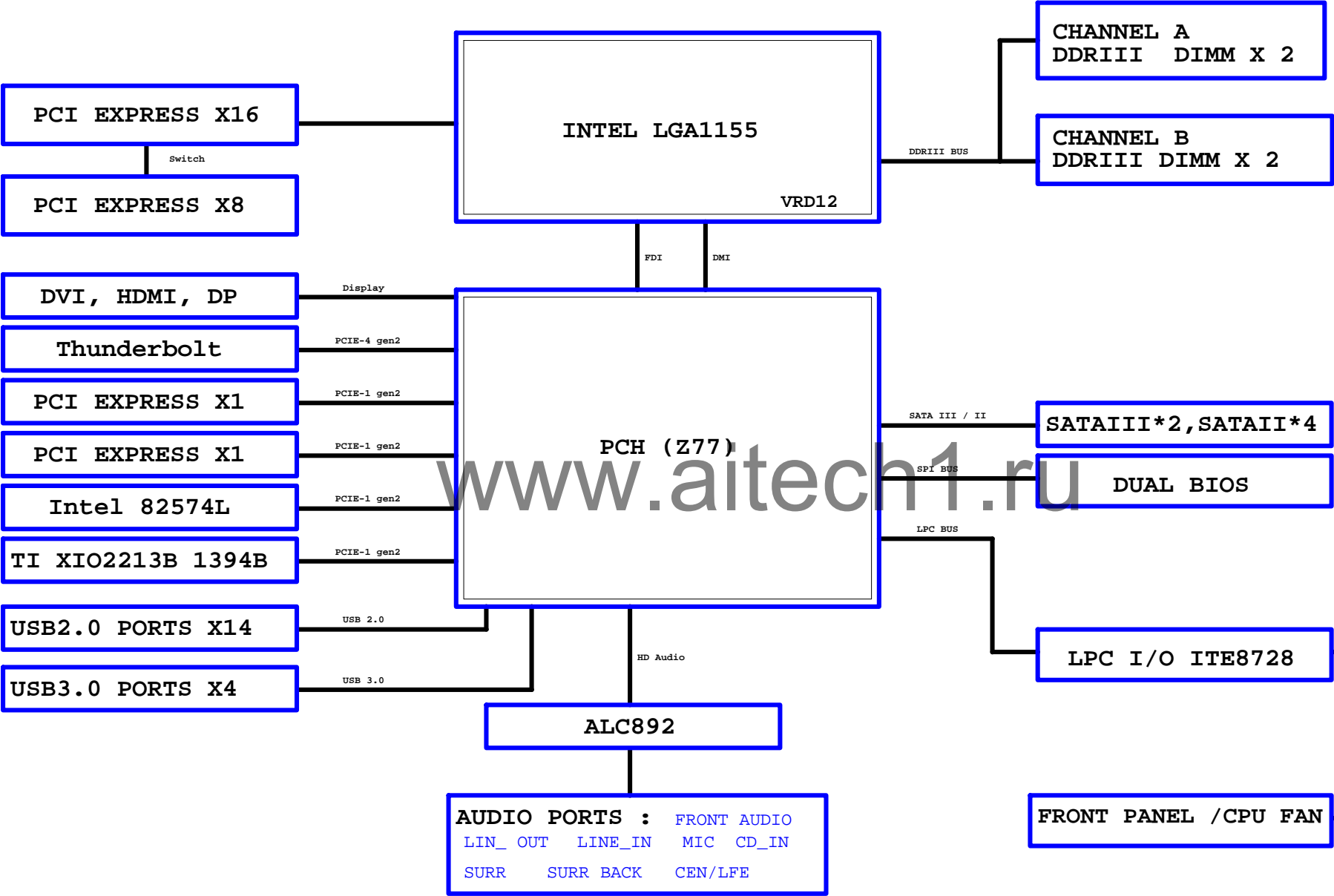
SHEET TITLE

28	RT8120_CPU_VTT
29	RT8120_DDR POWER
30	VCORE CHIL CHL3564_1
31	VCORE CHIL CHL3564_2
32	TPM
33	HDMI/DVI,R_USB30
34	DP & DVI Switch
35	Thunderbolt-1
36	Thunderbolt-2
37	TI 1394B XIO2213BZAY

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Cover Sheet			
Size Custom	Document Number	Z77MX-QUO-AOS QU	Rev 1.0
Date:	Tuesday, June 18, 2013	Sheet 1	of 37

BLOCK DIAGRAM



LGA1155A			
MAAA0	AV27	SA_MA[0]	SA_DQS[0]
MAAA1	AY24	SA_MA[1]	SA_DQS[0]
MAAA2	AW24	SA_MA[2]	
MAAA3	AW23	SA_MA[3]	
MAAA4	AV23	SA_MA[4]	
MAAA5	AT24	SA_MA[5]	
MAAA6	AT23	SA_MA[6]	
MAAA7	AU22	SA_MA[7]	
MAAA8	AV22	SA_MA[8]	
MAAA9	AT22	SA_MA[9]	
MAAA10	AV28	SA_MA[10]	
MAAA11	AU21	SA_MA[11]	
MAAA12	AT21	SA_MA[12]	
MAAA13	AW32	SA_MA[13]	
MAAA14	AU20	SA_MA[14]	
MAAA15	AT20	SA_MA[15]	
-SWEA	AW29	SA_WE#	SA_DQ[8]
-SCASA	AV30	SA_CAS#	SA_DQ[9]
-SRASA	AU28	SA_RAS#	SA_DQ[10]
SBA0	AY29	SA_BS[0]	SA_DQ[11]
SBA1	AW28	SA_BS[1]	SA_DQ[12]
SBA2	AV20	SA_BS[2]	SA_DQ[13]
-CSA0	AU29	SA_CS#	SA_DQ[14]
-CSA1	AV32	SA_CS#	SA_DQ[15]
-CSA2	AW30	SA_CS#	
-CSA3	AU33	SA_CS#	
CKEA0	AV19	SA_CKE[0]	SA_DQ[16]
CKEA1	AT19	SA_CKE[1]	SA_DQ[17]
CKEA2	AU18	SA_CKE[2]	SA_DQ[18]
CKEA3	AV18	SA_CKE[3]	SA_DQ[19]
MODT_A0	AV31	SA_ODT[0]	SA_DQ[20]
MODT_A1	AU32	SA_ODT[1]	SA_DQ[21]
MODT_A2	AU30	SA_ODT[2]	SA_DQ[22]
MODT_A3	AW33	SA_ODT[3]	SA_DQ[23]
DCLKA0	AY25	SA_CK[0]	SA_DQ[24]
-DCLKA0	AW25	SA_CK[0]	SA_DQ[25]
DCLKA1	AU24	SA_CK[1]	SA_DQ[26]
-DCLKA1	AU25	SA_CK[1]	SA_DQ[27]
DCLKA2	AW27	SA_CK[2]	SA_DQ[28]
-DCLKA2	AY27	SA_CK[2]	SA_DQ[29]
DCLKA3	AV26	SA_CK[3]	SA_DQ[30]
-DCLKA3	AW26	SA_CK[3]	SA_DQ[31]
-DDR3_RST	AW18	SM_DRAMRST#	
AV13	SA_DQS[8]		
AV12	SA_DQS[8]		
AU12	SA_ECC_CB[0]		
AU14	SA_ECC_CB[1]		
AW13	SA_ECC_CB[2]		
AY13	SA_ECC_CB[3]		
AU13	SA_ECC_CB[4]		
AY12	SA_ECC_CB[5]		
AW12	SA_ECC_CB[6]		
AW12	SA_ECC_CB[7]		
AR40	MDA40		
AR37	MDA41		
AN38	MDA42		
AN37	MDA43		
AR39	MDA44		
AR38	MDA45		
AN39	MDA46		
AN40	MDA47		
AK38	DQSA6		
AK39	-DQSA6		
AL40	MDA48		
AL37	MDA49		
AJ38	MDA50		
AJ37	MDA51		
AL39	MDA52		
AL38	MDA53		
AJ39	MDA54		
AJ40	MDA55		
AF38	DQSA7		
AF39	-DQSA7		
AG40	MDA56		
AG37	MDA57		
AE38	MDA58		
AE37	MDA59		
AG39	MDA60		
AG38	MDA61		
AE39	MDA62		
AE40	MDA63		

DDR_0

1 OF 10

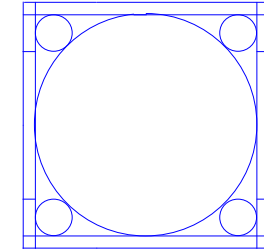
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MAAB3	AK18	SB_MA[3]	
MAAB4	AP19	SB_MA[4]	
MAAB5	AP18	SB_MA[5]	
MAAB6	AM18	SB_MA[6]	
MAAB7	AL18	SB_MA[7]	
MAAB8	AL17	SB_MA[8]	
MAAB9	AY17	SB_MA[9]	
MAAB10	AN23	SB_MA[10]	
MAAB11	AU17	SB_MA[11]	
MAAB12	AT18	SB_MA[12]	
MAAB13	AR26	SB_MA[13]	
MAAB14	AY16	SB_MA[14]	
MAAB15	AV16	SB_MA[15]	
-SWEB	AR25	SB_WE#	SB_DQ[8]
-SCASB	AK25	SB_CAS#	SB_DQ[9]
-SRASB	AP24	SB_RAS#	SB_DQ[10]
SBAB0	AP23	SB_BS[0]	SB_DQ[11]
SBAB1	AM24	SB_BS[1]	SB_DQ[12]
SBAB2	AW17	SB_BS[2]	SB_DQ[13]
-CSB0	AN25	SB_CS#	SB_DQ[14]
-CSB1	AN26	SB_CS#	SB_DQ[15]
-CSB2	AL26	SB_CS#	
-CSB3	AT26	SB_CS#	
CKEB0	AU16	SB_CKE[0]	SB_DQ[16]
CKEB1	AY15	SB_CKE[1]	SB_DQ[17]
CKEB2	AW15	SB_CKE[2]	SB_DQ[18]
CKEB3	AV15	SB_CKE[3]	SB_DQ[19]
MODT_B0	AL26	SB_ODT[0]	SB_DQ[20]
MODT_B1	AP26	SB_ODT[1]	SB_DQ[21]
MODT_B2	AM26	SB_ODT[2]	SB_DQ[22]
MODT_B3	AK26	SB_ODT[3]	SB_DQ[23]
DCLKB0	AL21	SB_CK[0]	SB_DQ[24]
-DCLKB0	AL22	SB_CK[0]	SB_DQ[25]
DCLKB1	AK20	SB_CK[1]	SB_DQ[26]
-DCLKB1	AK20	SB_CK[1]	SB_DQ[27]
DCLKB2	AL23	SB_CK[2]	SB_DQ[28]
-DCLKB2	AM22	SB_CK[2]	SB_DQ[29]
DCLKB3	AP21	SB_CK[3]	SB_DQ[30]
-DCLKB3	AN21	SB_CK[3]	SB_DQ[31]
VREF_D0B	AH1	FC_AH1	SB_DQ[32]
VREF_D0A	AH4	FC_AH4	SB_DQ[33]
AN16	SB_DQS[8]		
AN15	SB_DQS[8]		
AL16	SB_ECC_CB[0]		
AM16	SB_ECC_CB[1]		
AP16	SB_ECC_CB[2]		
AR16	SB_ECC_CB[3]		
AL15	SB_ECC_CB[4]		
AR15	SB_ECC_CB[5]		
AP15	SB_ECC_CB[6]		
AP15	SB_ECC_CB[7]		
AP32	MDB40		
AP21	MDB41		
AP35	MDB42		
AP34	MDB43		
AR32	MDB44		
AR31	MDB45		
AR35	MDB46		
AR34	MDB47		
AL33	DQSB6		
AM33	-DQSB6		
AM32	MDB48		
AM31	MDB49		
AL35	MDB50		
AL32	MDB51		
AM34	MDB52		
AL31	MDB53		
AM35	MDB54		
AL34	MDB55		
AG35	DQSB7		
AG34	-DQSB7		
AH35	MDB56		
AH34	MDB57		
AE34	MDB58		
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AJ34	MDB61		
AF33	MDB62		
AF35	MDB63		

DDR_1

2 OF 10

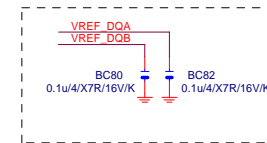
LGA1155[10SC1-F01155-01R]

CR
CPU RETAINTION/X

LGA1155



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

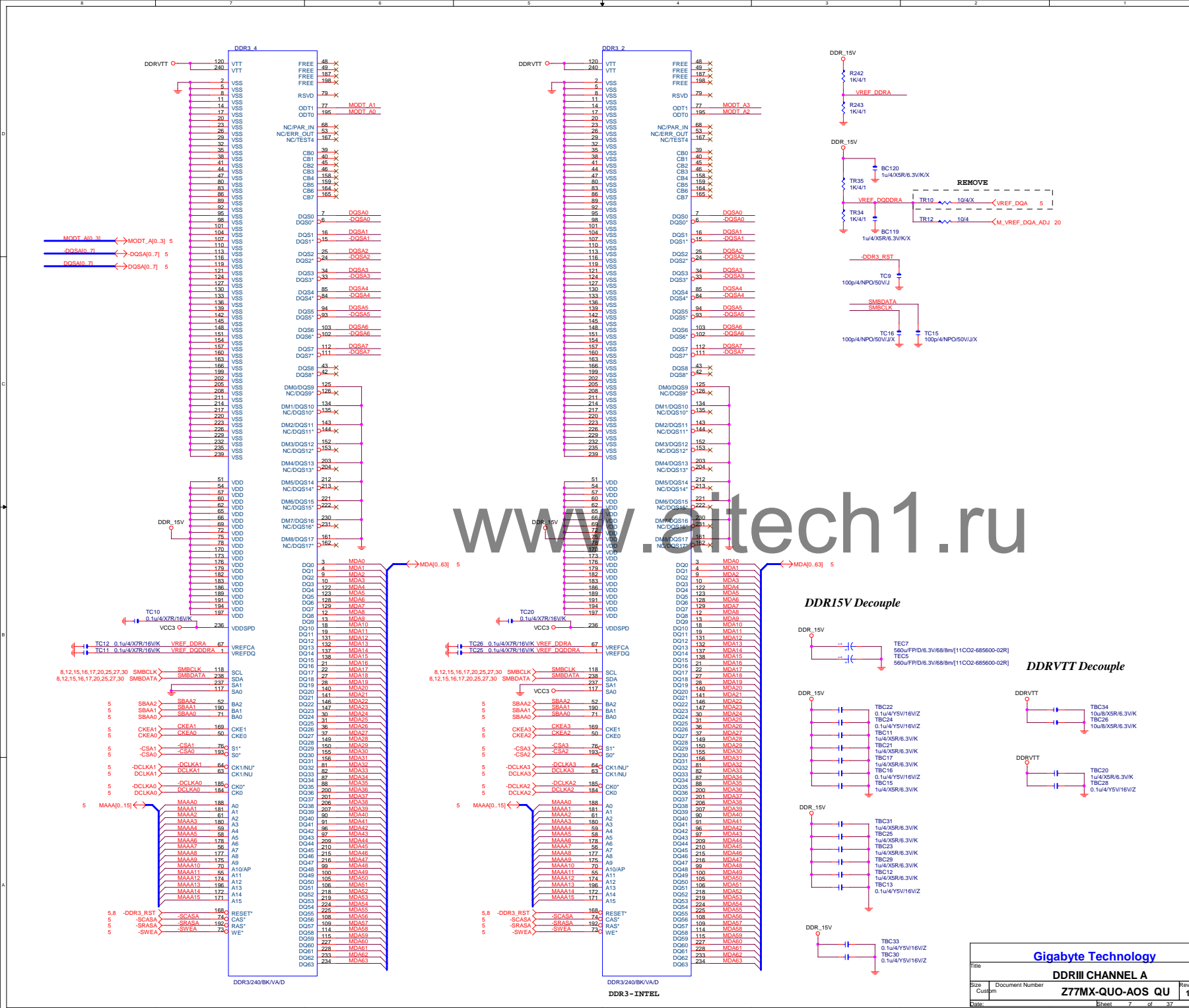


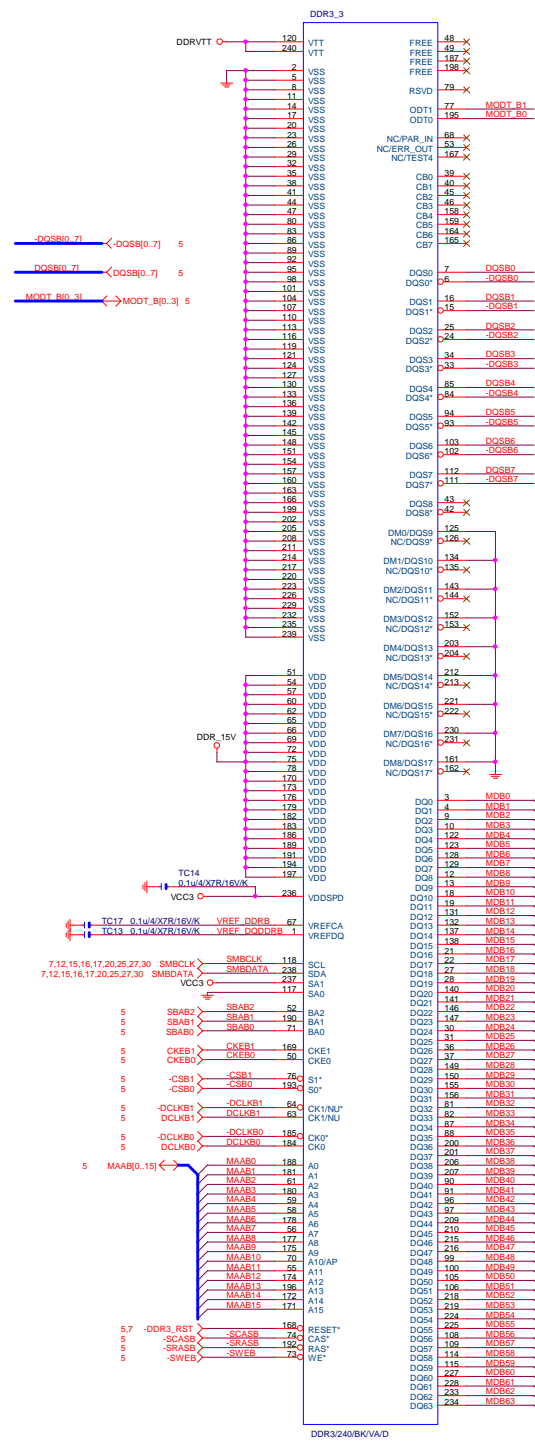
Gigabyte Technology

CPU LGA1156-B

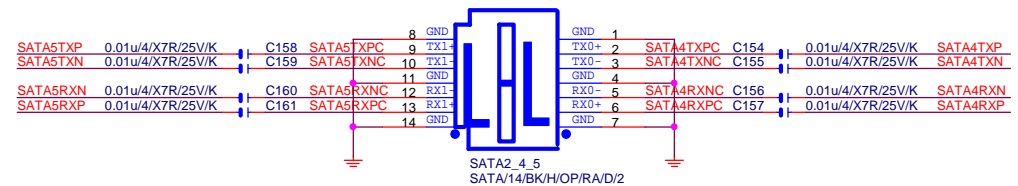
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Size		Z77MX-QUO-AOS	
Date:		Tuesday, June 18, 2013	
Sheet		5 of 37	

Rev
1.0





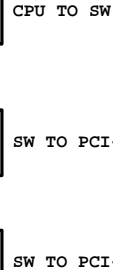
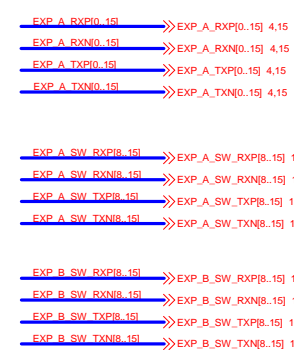
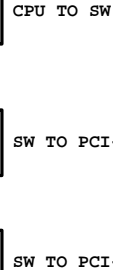
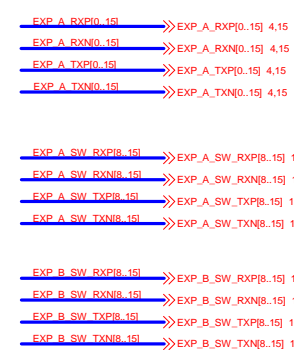
B75 Not Support RAID



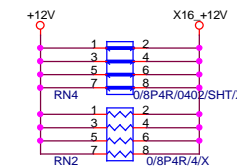
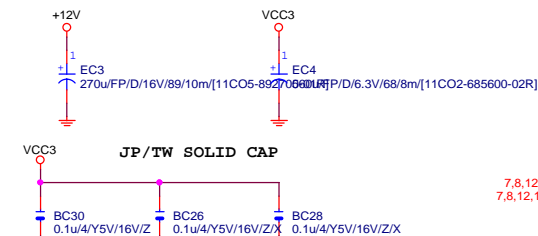
PCI-E x8

P SW RXN10
P SW RXP10
P SW TXN10
P SW TAP10
P A SW RXN11
P A SW RXP11
P A SW TXN11

EXP A RXN15
EXP A RXP15
EXP A TXN15
EXP A TAP15
EXP A RXN14
EXP A RXP14
EXP A TXN14



EC6D_8D10MM-RH



EXP A RXP0[0..15] >> EXP_A_RXP[0..15] 4,14
 EXP A RXN0[0..15] >> EXP_A_RXN[0..15] 4,14
 EXP A TXP0[0..15] >> EXP_A_TXP[0..15] 4,14
 EXP A TXN0[0..15] >> EXP_A_TXN[0..15] 4,14

EXP A TXP0	C32	0.22u4/X5R/6.3V/K	EXP A TXP0C
EXP A TXN0	C30	0.22u4/X5R/6.3V/K	EXP A TXN0C
EXP A TXP1	C35	0.22u4/X5R/6.3V/K	EXP A TXP1C
EXP A TXN1	C37	0.22u4/X5R/6.3V/K	EXP A TXN1C
EXP A TXP2	C39	0.22u4/X5R/6.3V/K	EXP A TXP2C
EXP A TXN2	C41	0.22u4/X5R/6.3V/K	EXP A TXN2C
EXP A TXP3	C43	0.22u4/X5R/6.3V/K	EXP A TXP3C
EXP A TXN3	C45	0.22u4/X5R/6.3V/K	EXP A TXN3C
EXP A TXP4	C46	0.22u4/X5R/6.3V/K	EXP A TXP4C
EXP A TXN4	C49	0.22u4/X5R/6.3V/K	EXP A TXN4C
EXP A TXP5	C50	0.22u4/X5R/6.3V/K	EXP A TXP5C
EXP A TXN5	C51	0.22u4/X5R/6.3V/K	EXP A TXN5C
EXP A TXP6	C52	0.22u4/X5R/6.3V/K	EXP A TXP6C
EXP A TXN6	C54	0.22u4/X5R/6.3V/K	EXP A TXN6C
EXP A TXP7	C57	0.22u4/X5R/6.3V/K	EXP A TXP7C
EXP A TXN7	C58	0.22u4/X5R/6.3V/K	EXP A TXN7C
EXP A SW TXP8	C60	0.22u4/X5R/6.3V/K	EXP A SW TXP8C
EXP A SW TXN8	C61	0.22u4/X5R/6.3V/K	EXP A SW TXN8C
EXP A SW TXP9	C62	0.22u4/X5R/6.3V/K	EXP A SW TXP9C
EXP A SW TXN9	C63	0.22u4/X5R/6.3V/K	EXP A SW TXN9C
EXP A SW TXP10	C64	0.22u4/X5R/6.3V/K	EXP A SW TXP10C
EXP A SW TXN10	C65	0.22u4/X5R/6.3V/K	EXP A SW TXN10C
EXP A SW TXP11	C66	0.22u4/X5R/6.3V/K	EXP A SW TXP11C
EXP A SW TXN11	C67	0.22u4/X5R/6.3V/K	EXP A SW TXN11C
EXP A SW TXP12	C68	0.22u4/X5R/6.3V/K	EXP A SW TXP12C
EXP A SW TXN12	C70	0.22u4/X5R/6.3V/K	EXP A SW TXN12C
EXP A SW TXP13	C72	0.22u4/X5R/6.3V/K	EXP A SW TXP13C
EXP A SW TXN13	C73	0.22u4/X5R/6.3V/K	EXP A SW TXN13C
EXP A SW TXP14	C74	0.22u4/X5R/6.3V/K	EXP A SW TXP14C
EXP A SW TXN14	C75	0.22u4/X5R/6.3V/K	EXP A SW TXN14C
EXP A SW TXP15	C77	0.22u4/X5R/6.3V/K	EXP A SW TXP15C
EXP A SW TXN15	C78	0.22u4/X5R/6.3V/K	EXP A SW TXN15C

EXP A SW RXP8[0..15] >> EXP_A_SW_RXP[8..15] 14
 EXP A SW RXN8[0..15] >> EXP_A_SW_RXN[8..15] 14
 EXP A SW TXP8[0..15] >> EXP_A_SW_TXP[8..15] 14
 EXP A SW TXN8[0..15] >> EXP_A_SW_TXN[8..15] 14

PCI-E REV:1.1--> 2.5GHZ

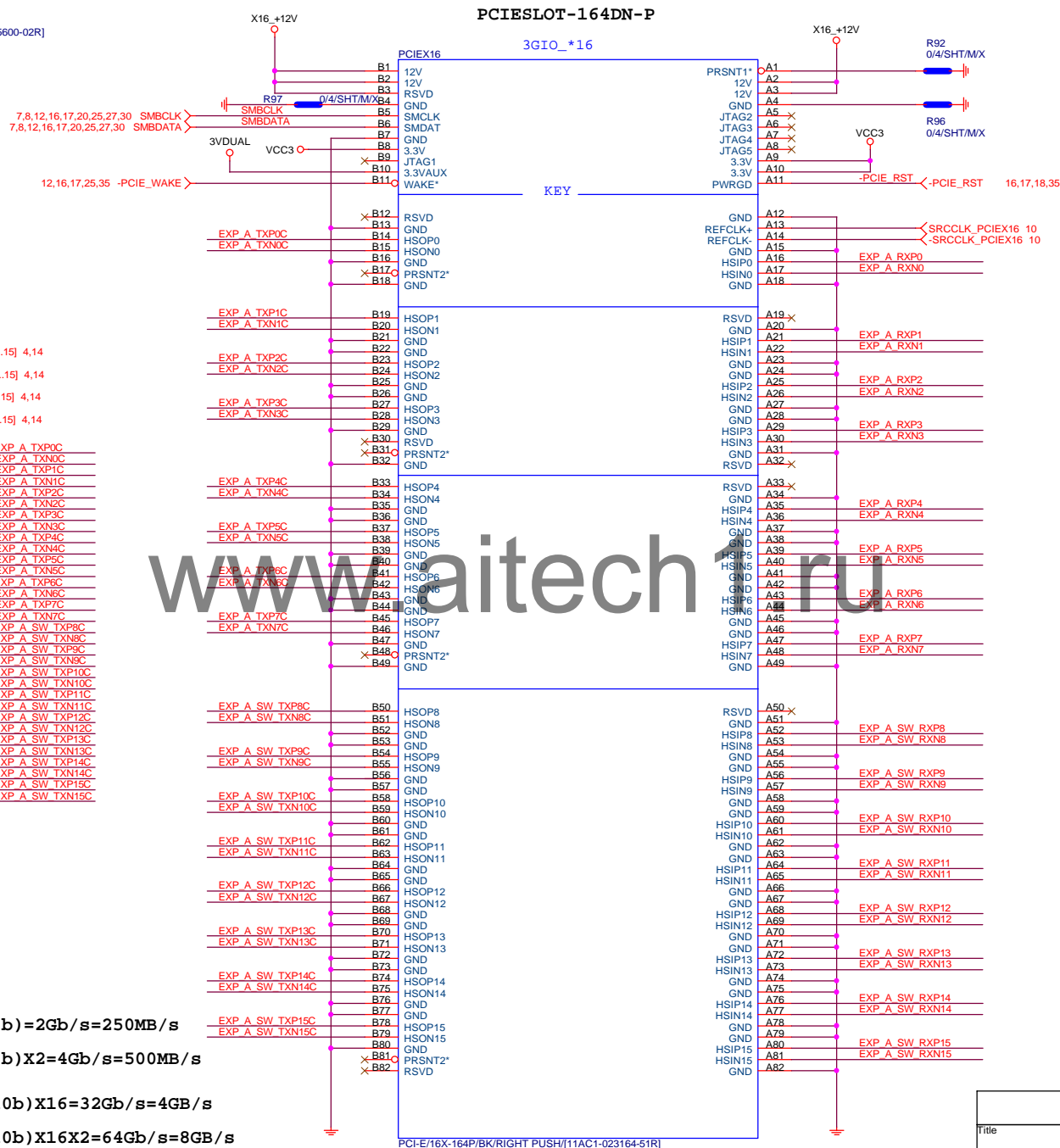
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PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s

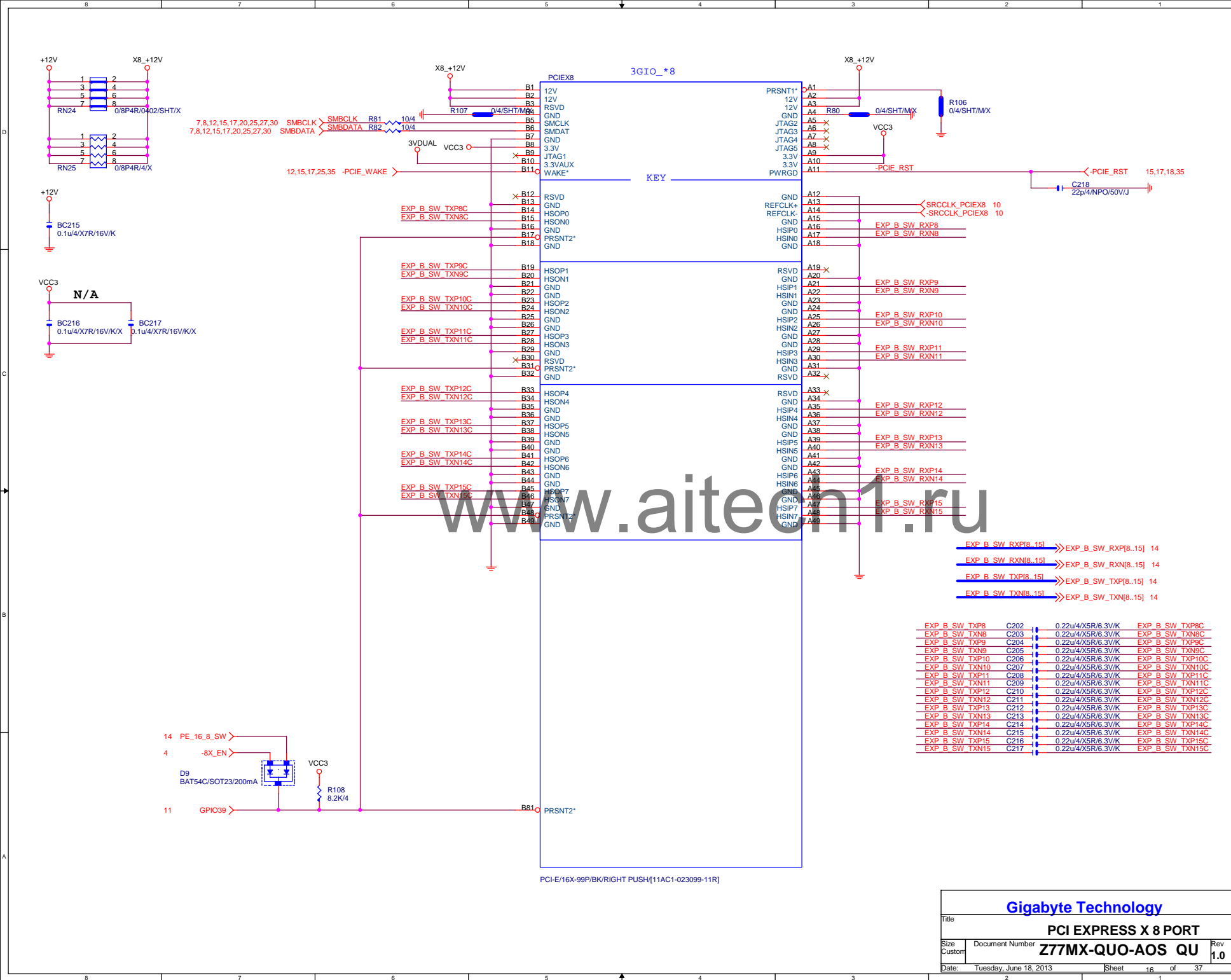
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s

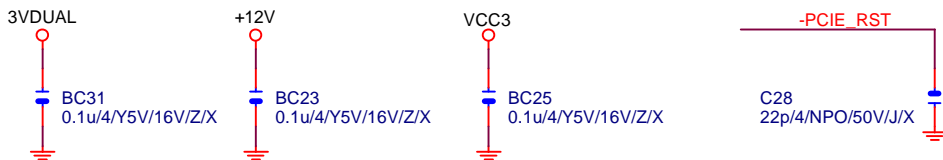
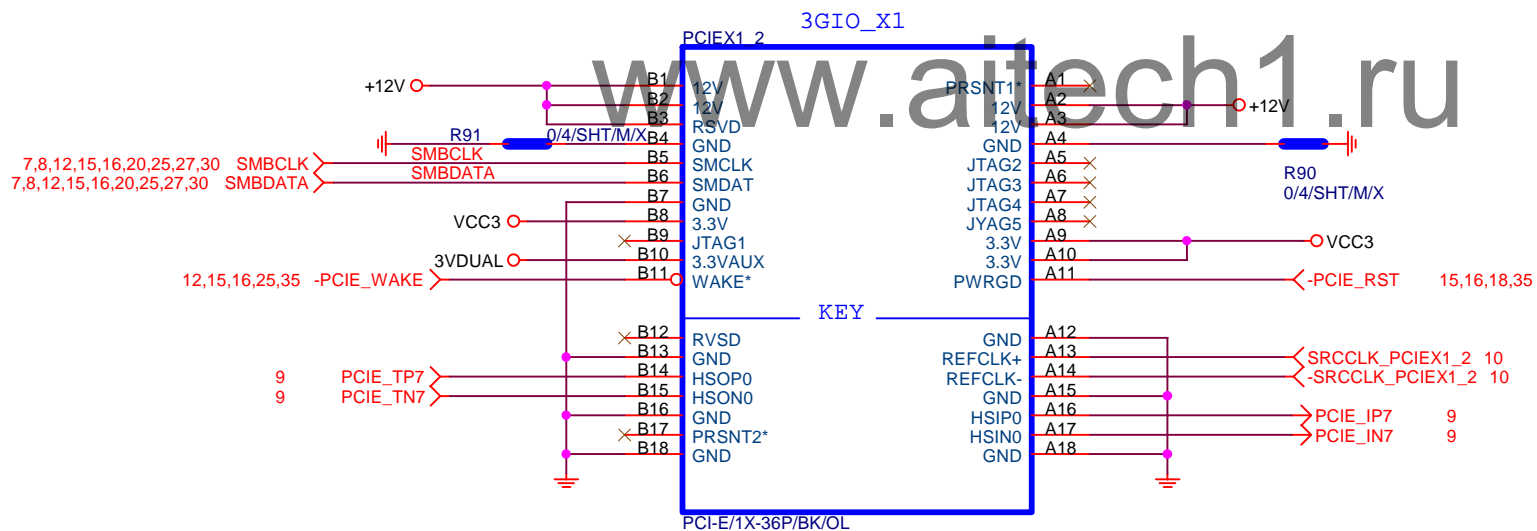
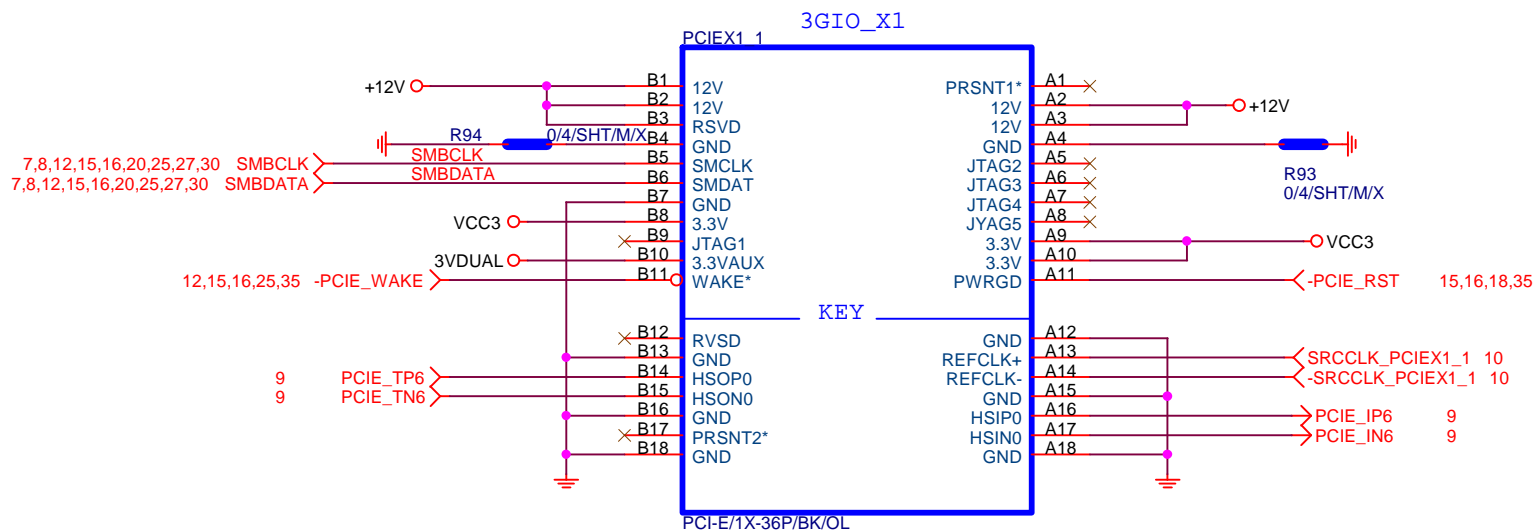
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s

PCI-E REV:2.0--> 5GHZ



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PCI EXPRESS X 16 PORT			
Title	Document Number	Rev	
	Z77MX-QUO-AOS QU	1.0	
Date:	Tuesday, June 18, 2013	Sheet	15 of 37



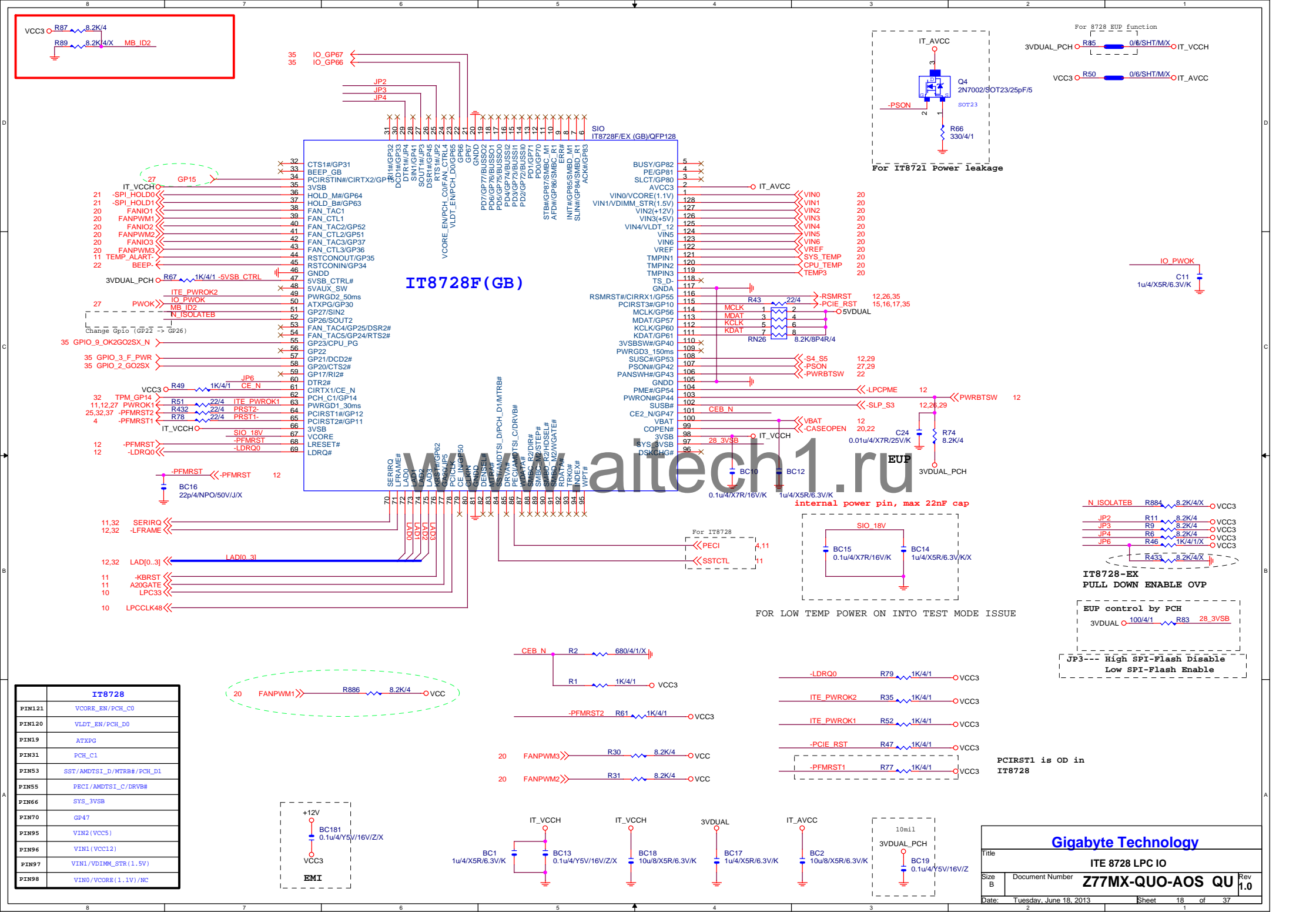


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Title
PCI EXPRESS X 1 PORT

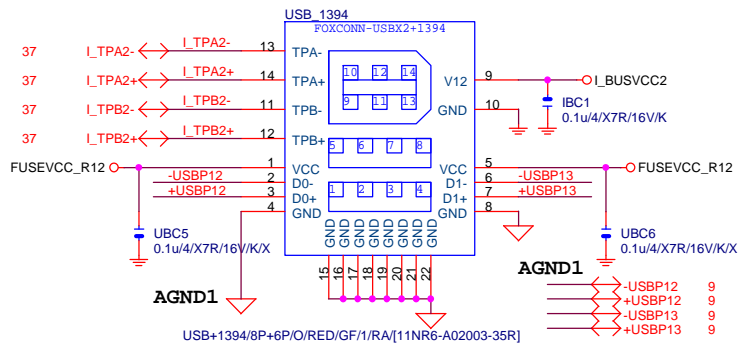
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Date: Tuesday, June 18, 2013 Sheet 17 of 37

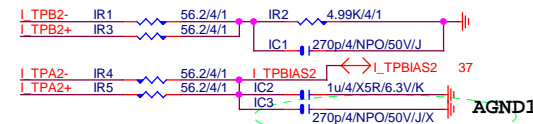


1394A

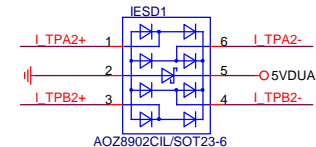
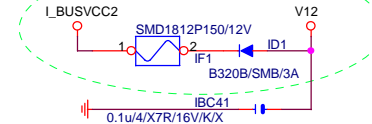
1394阻抗為110歐姆:[15/4/8/4/15]



1394A port termination network as close to device as possible (Chip =>termination < 700MIL)



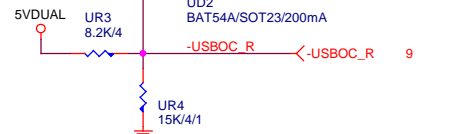
1394 Bus Power改由ATX_12V來



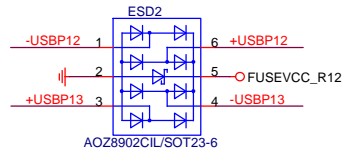
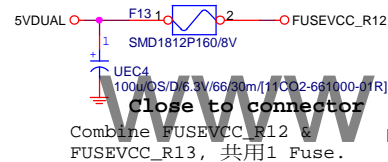
USB_LAN

R_USB30

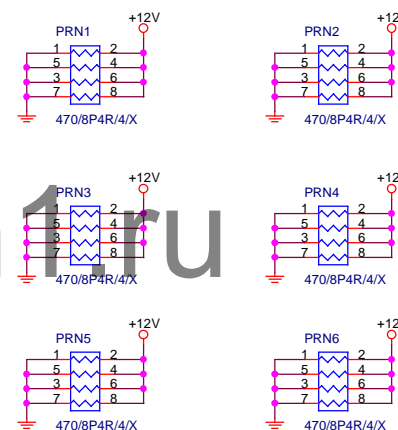
USB_1394



USB2.0 PWR



H/W Power Supply

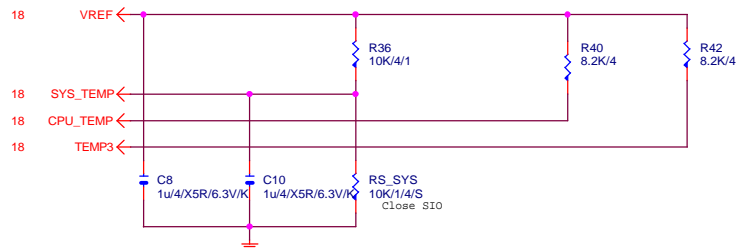


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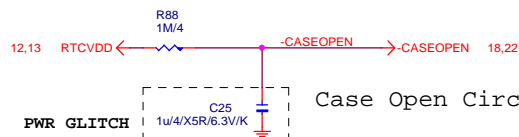
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Size B	Document Number	Z77MX-QUO-AOS QU	
Date:	Tuesday, June 18, 2013	Sheet	19 of 37

Rev 1.0

TEMP H/W MONITOR

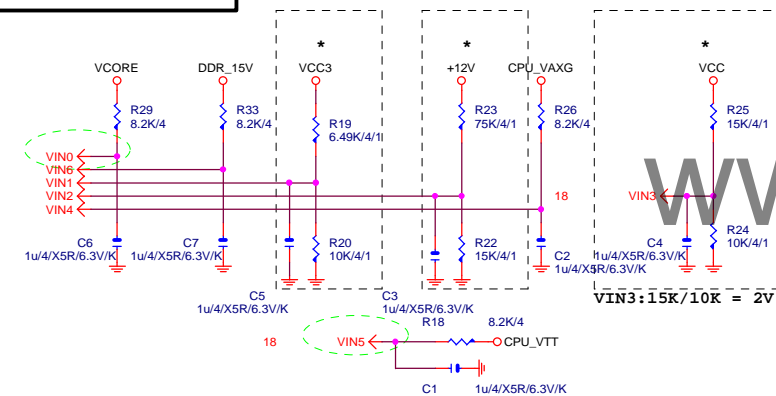


CASE OPEN

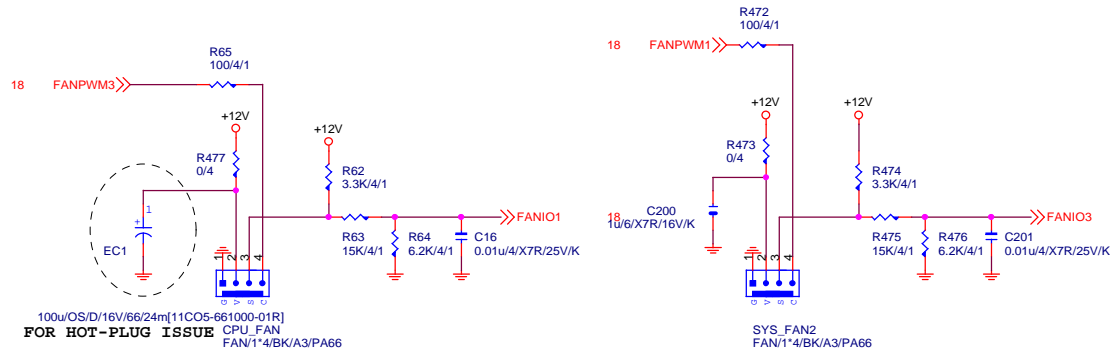


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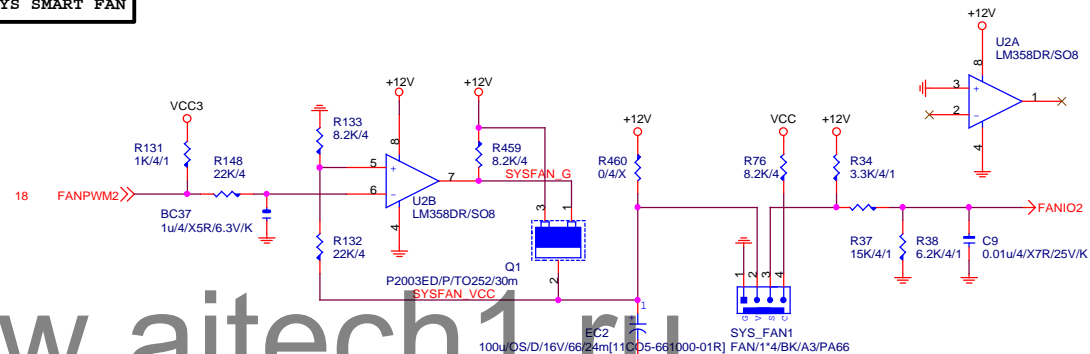
VOLTAGE-- H/W MONITOR



CPU SMART FAN

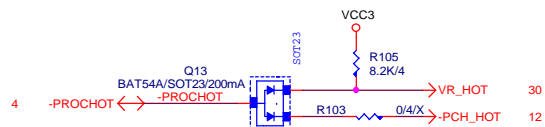


SYS SMART FAN

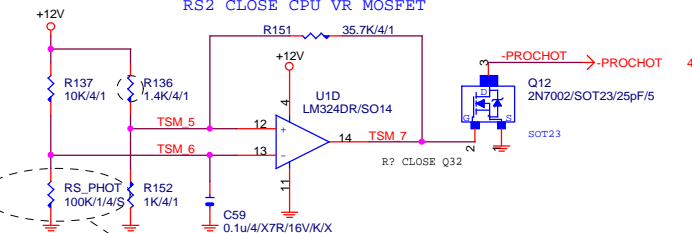


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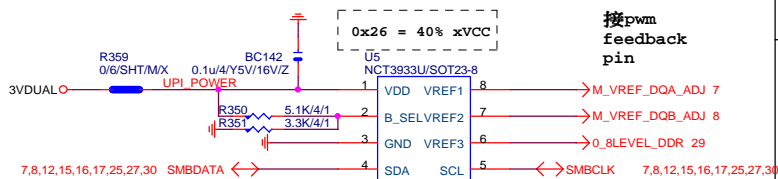
-PROHOT



deasserted at 116 degree
RS2 CLOSE CPU VR MOSFET

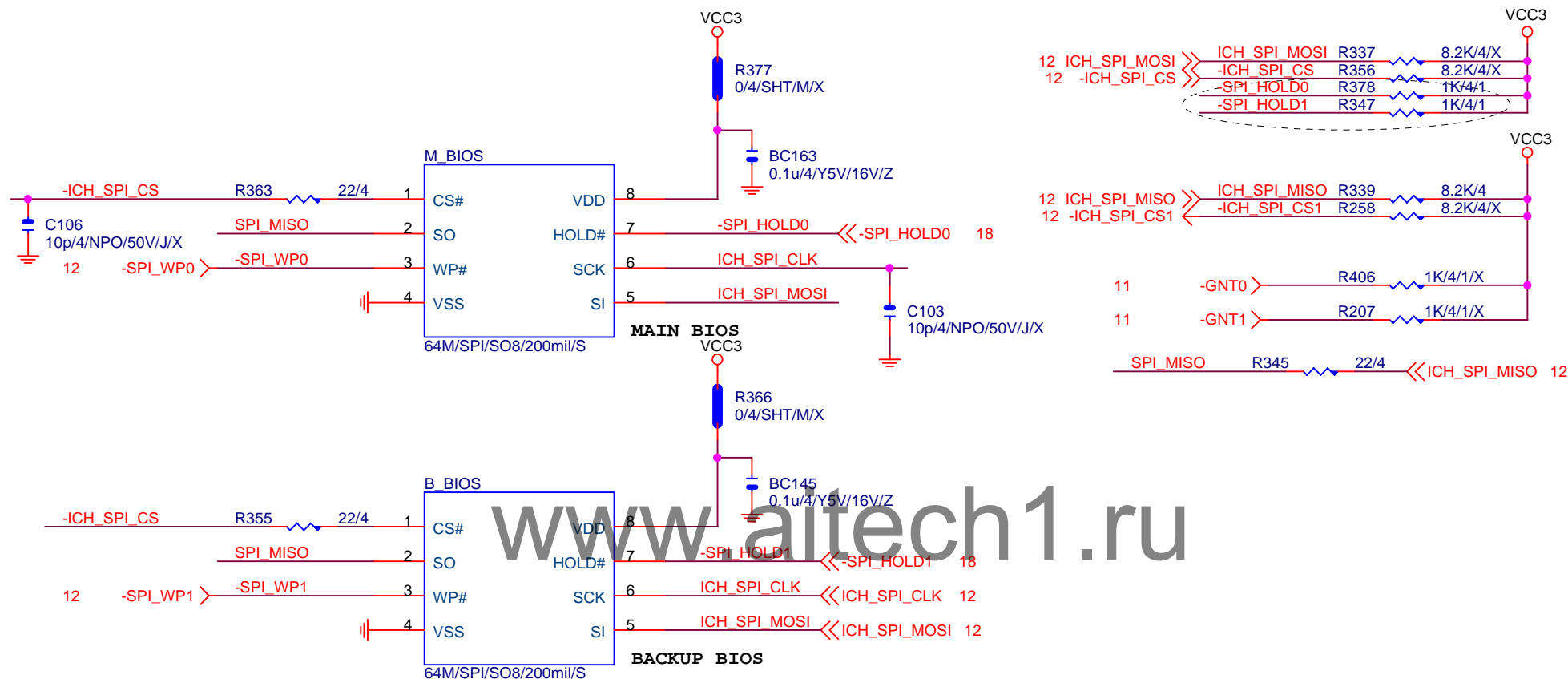


CLOSE PWM HOT MOSFET



Gigabyte Technology			
Title			
HWM,FAN CTRL,OV			
Size	Document Number	Z77MX-QUO-AOS Q1.0	
Custom			
Date:	Tuesday, June 18, 2013	Sheet	20 of 37

DUAL BIOS



B65使用64M BIOS

使用H67暫用32M

H61使用32M BIOS

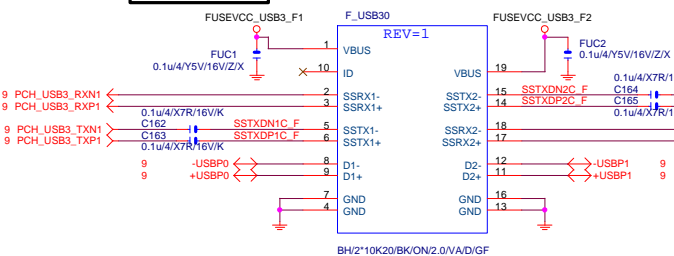
BOOT DEVICE	GNT1	GNT0
LPC	0	0
PCI	0	1
SPI	1	1

1 means floating
0 means PD 1K

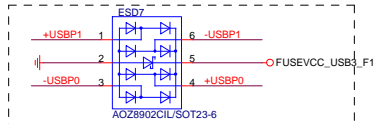
Gigabyte Technology

Title		
DUAL BIOS		
Size A	Document Number	Rev
	Z77MX-QUO-AOS QU	1.0
Date:	Tuesday, June 18, 2013	Sheet 21 of 37

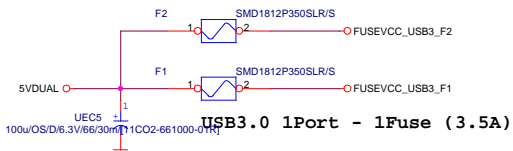
Front USB3.0



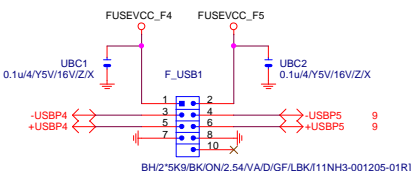
BLUE



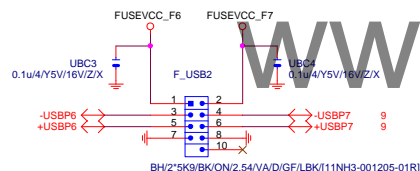
Close to connector



FRONT USB1



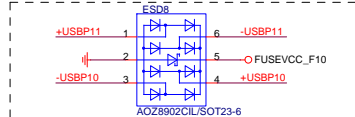
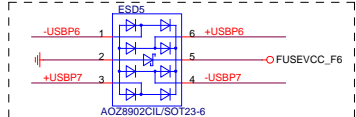
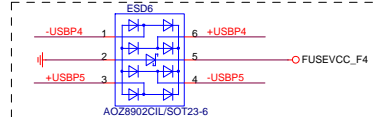
FRONT USB2



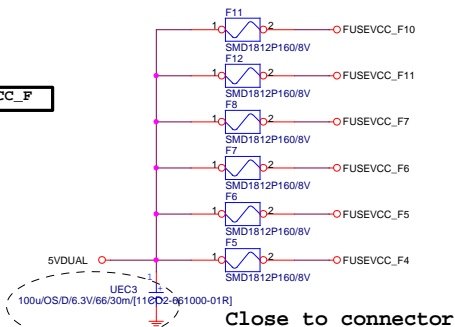
Close to connector

Close to connector

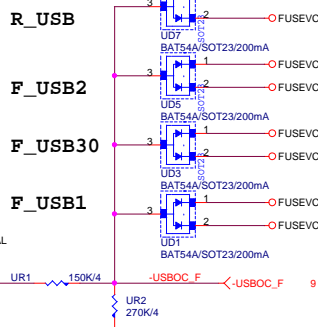
Close to connector



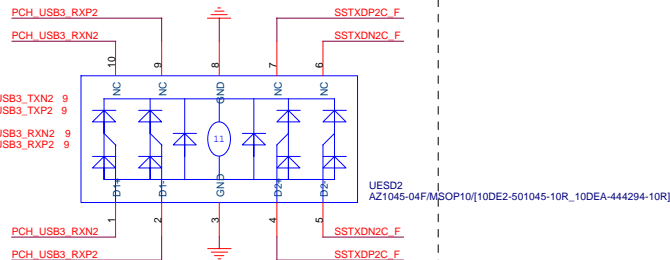
FUSEVCC_F



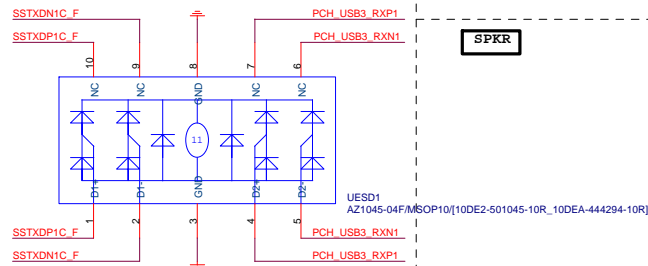
Close to connector



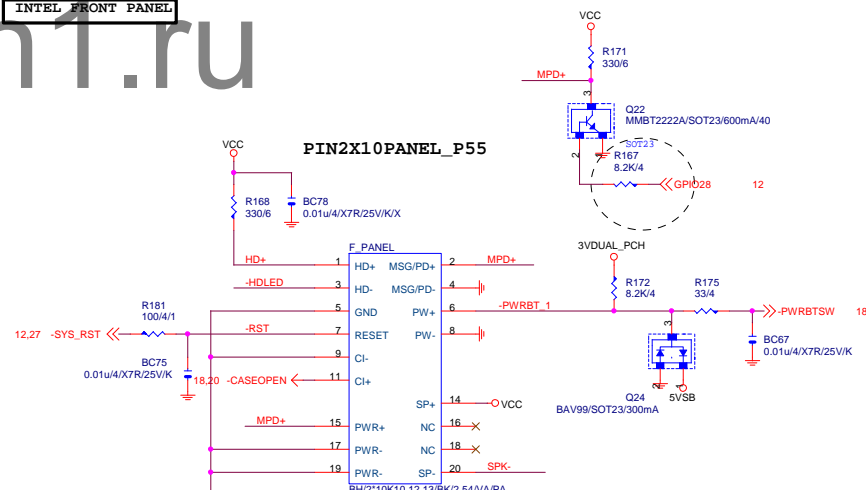
SATA LED



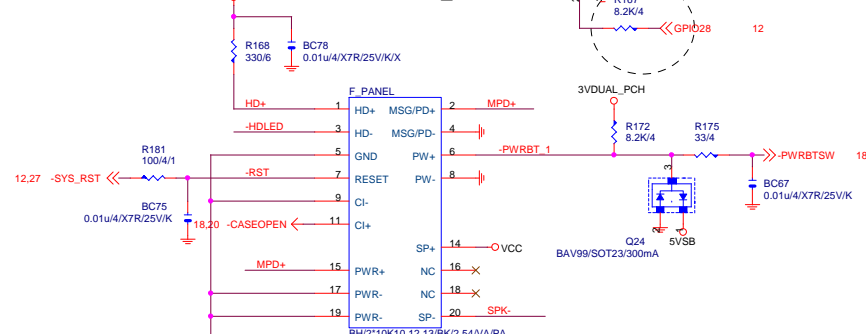
SPKR



INTEL FRONT PANEL



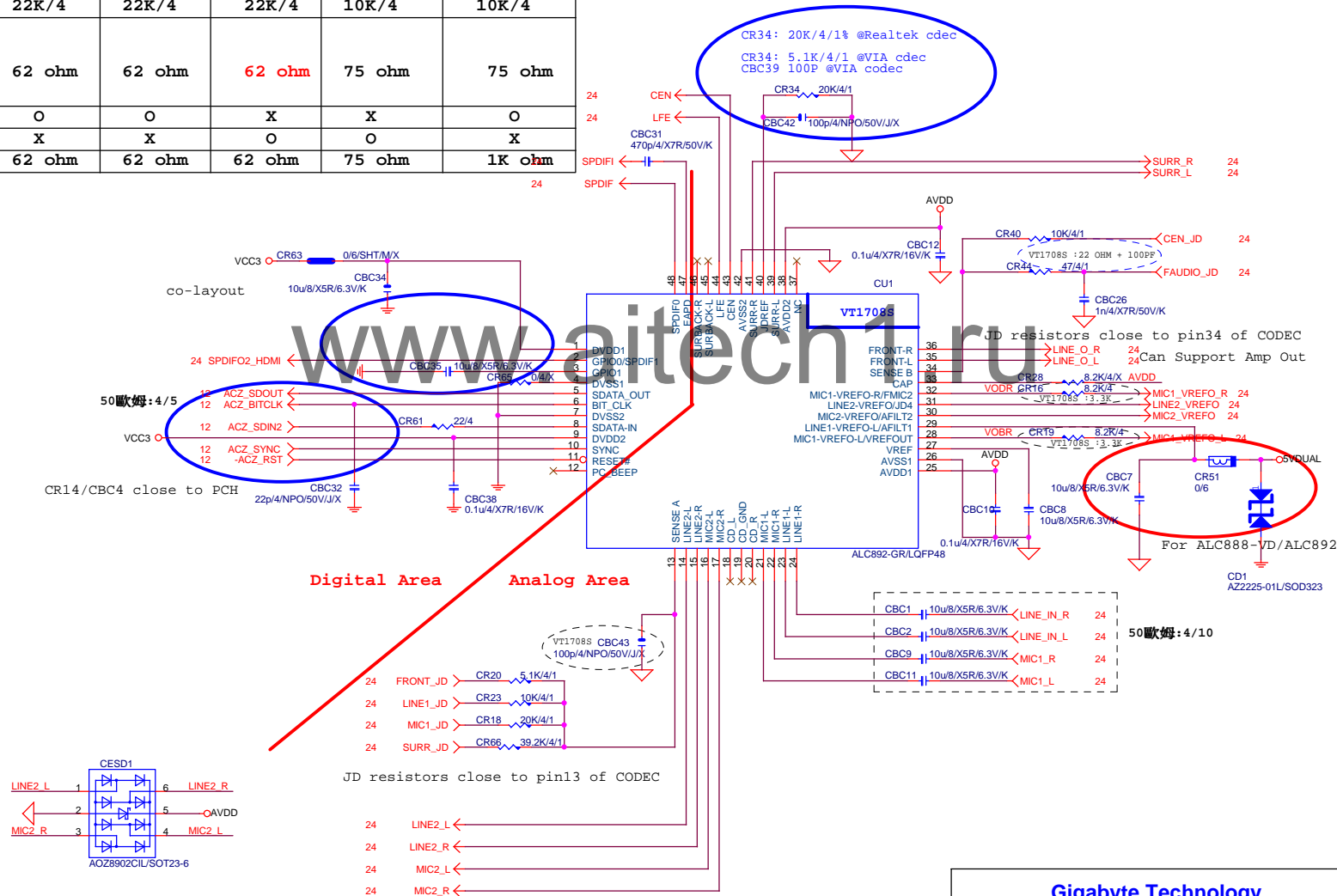
PIN2X10PANEL_P55

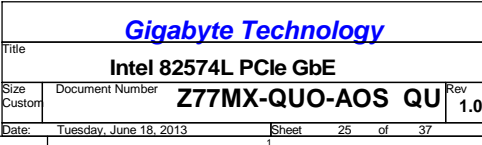


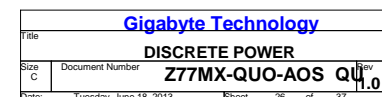
Gigabyte Technology

Title	FP,F_USB,USB PWR,SPKR,SATA LED
Size	Document Number
Custom	Z77MX-QUO-AOS QU
Date:	Tuesday, June 18, 2013
Sheet	22 of 37
Rev	1.0

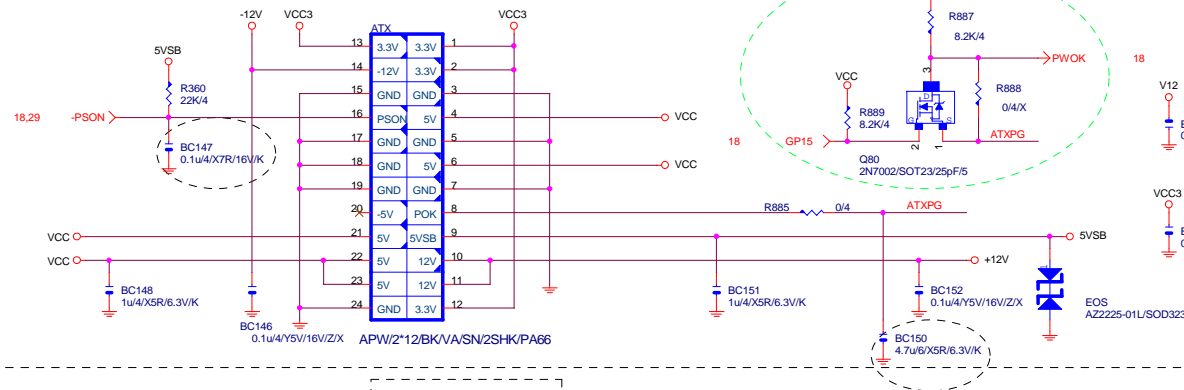
	ALC662	ALC887-VD2	ALC889	VT1708S	VT1708SCE
CR65	X	X	O	O	X
CR64	X	X	X	X	0.1u/4
CBC35	O	O	X	X	O
CR44/CBC6	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P
CR31	X	O	O	O	O
CR30	O	X	X	X	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R	22uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1
CR34	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1
CBC39/CBC40	N/A	N/A	N/A	100P/4	100P/4
CR6/CR7/CR54/CR58	22K/4	22K/4	22K/4	10K/4	10K/4
CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	O	O	X	X	O
CD2/CD3/CQ3/CQ5	X	X	O	O	X
CR1/CR14/CR17/CR22	62 ohm	62 ohm	62 ohm	75 ohm	1K ohm



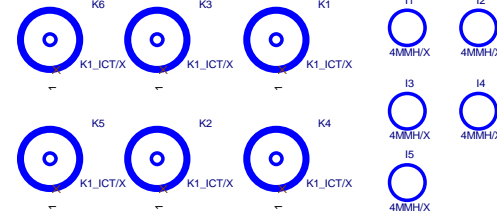
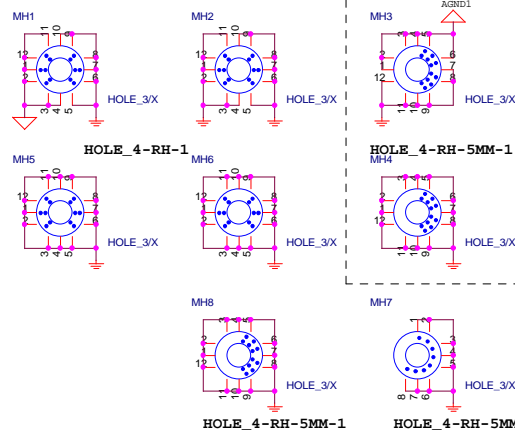
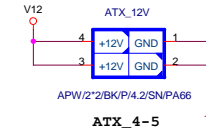




ATXX24 POWER CONNECTOR

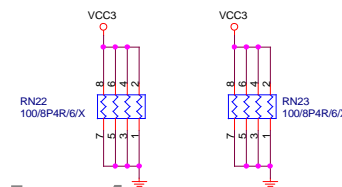


ATXX4 POWER CONNECTOR



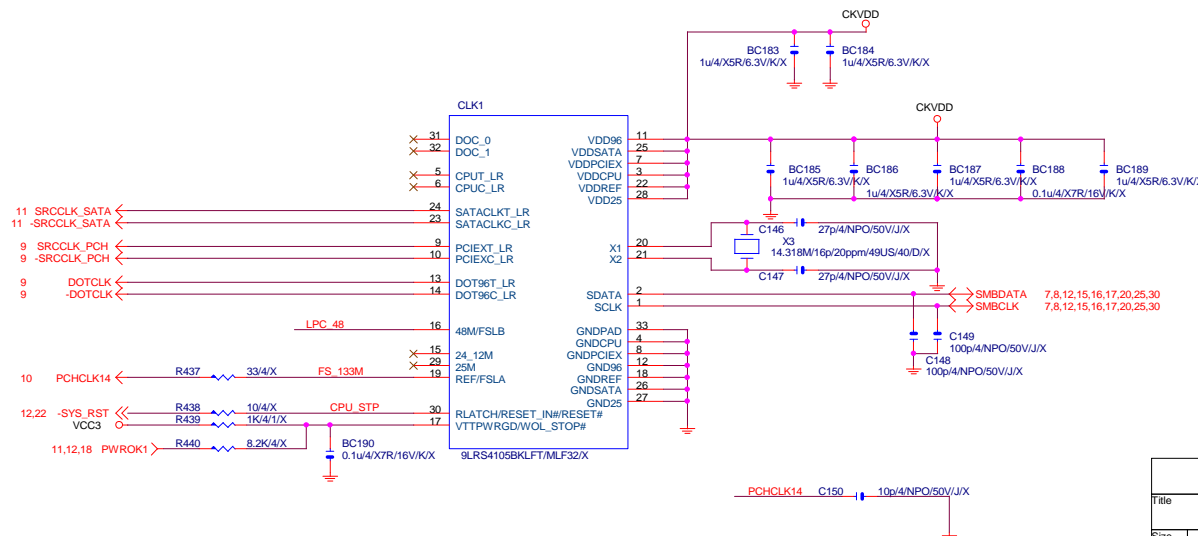
To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



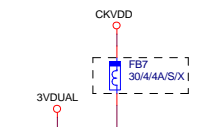
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CLK GEN



CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M



Gigabyte Technology

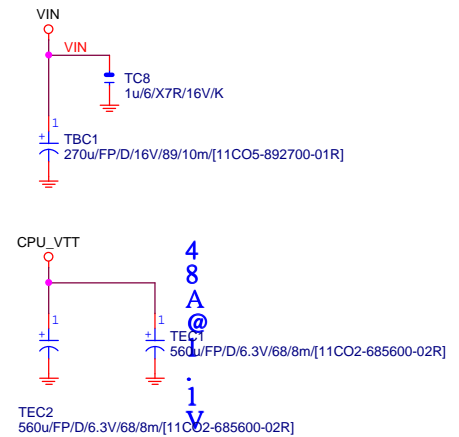
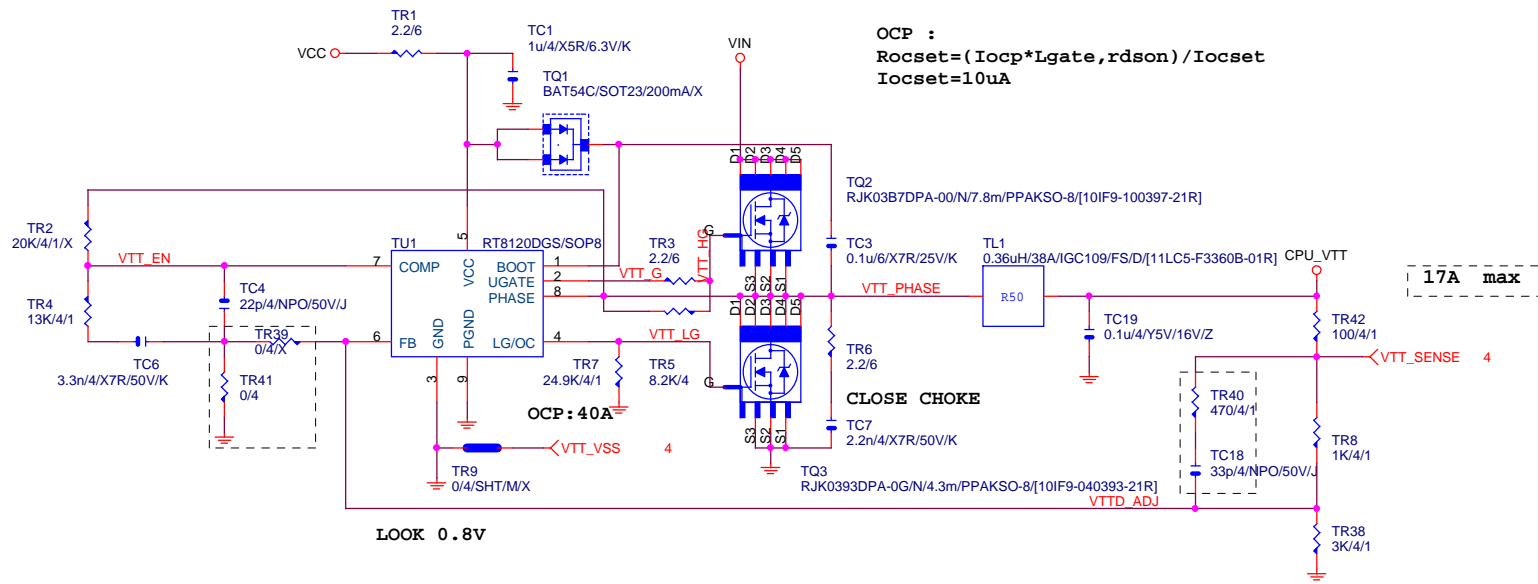
ATX CONNECTOR

Z77MX-QUO-AOS QU

Rev 1.0

Title	Document Number	Rev
Size	Custom	1.0
Date:	Tuesday, June 18, 2013	Sheet 27 of 37

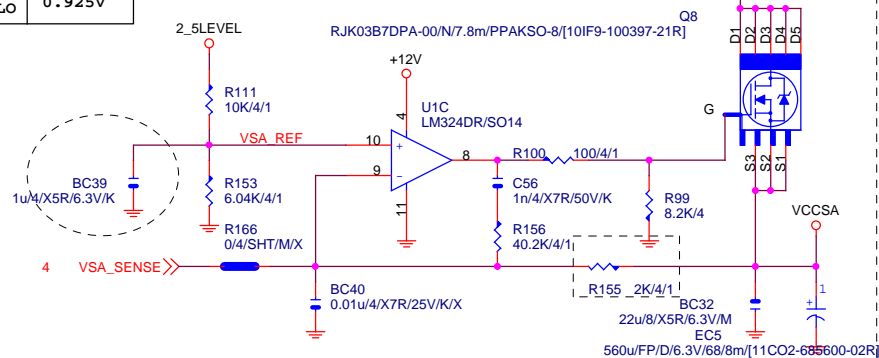
CPU_VTT



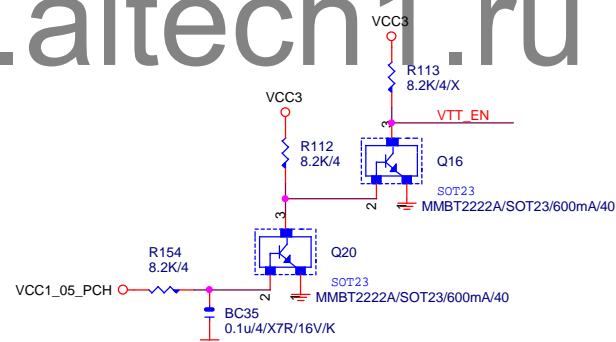
VCCSA

PDG 0.8

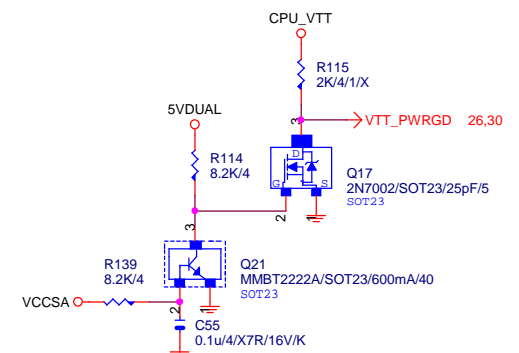
	VSA_SEL
HI	0.85V
LO	0.925V



CPU_VTT	PWR	SEQ
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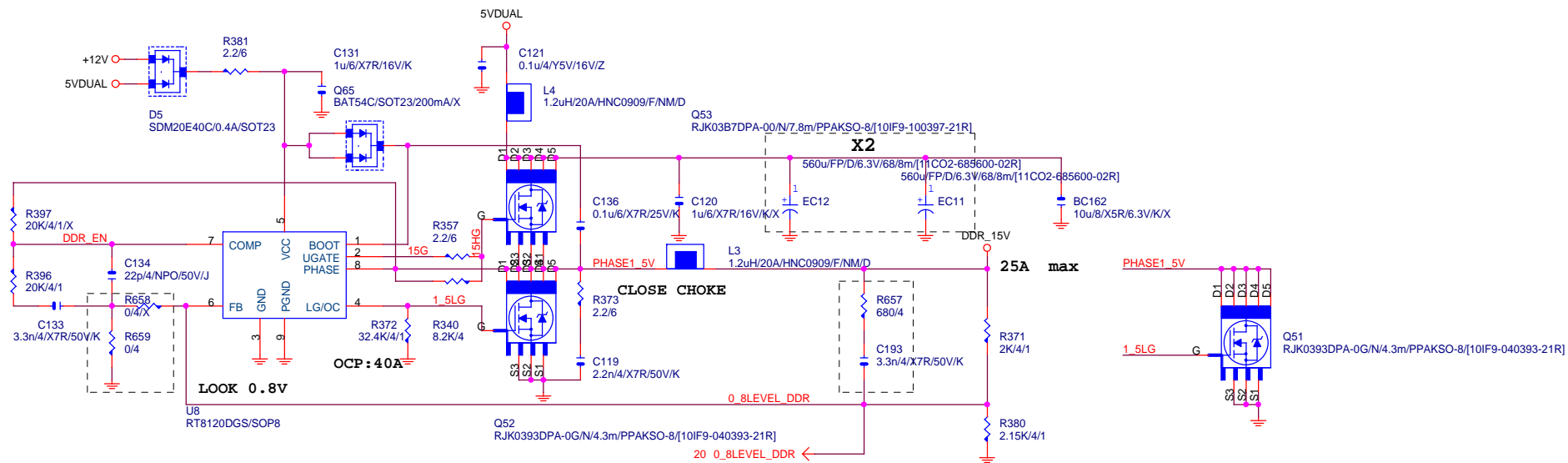
VTT_PWRGD



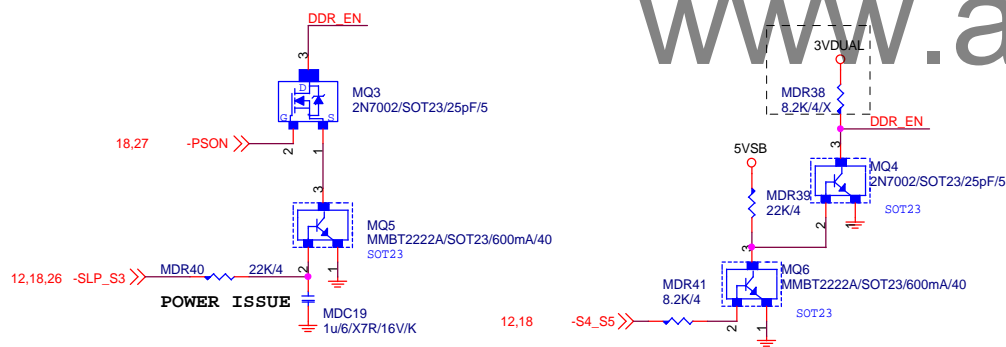
GIGABYTE™

Title				IR3570_CPU_VTT & DDR_1			
Size	Document Number	Z77MX-QUO-AOS QU				Rev	1.0
Custom							
Date: Tuesday, June 18, 2013				Sheet 28 of 37			

DDR15V



PWR SEQ



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A
560uF/P/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85°C),1(105°C)

VIN Ripple current=4.7X1.7=7.99A(85°C)
-->故固態電容須2X7.99=15.98>11.45A

OCP : $I_{peak} = (2 \times I_{ocset} \times R_{ocset}) / R_{dson}$
 typ $I_{ocset} = 20\mu A$, $R_{ocset} = 4.7k$
 OCP : $53.71A = (2 \times 20\mu A \times 4.7k) / (7m / 7m)$

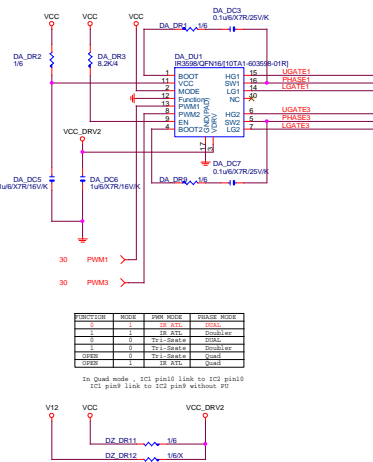
Gigabyte Technology

IR3570_CPU_VTT & DDR_1

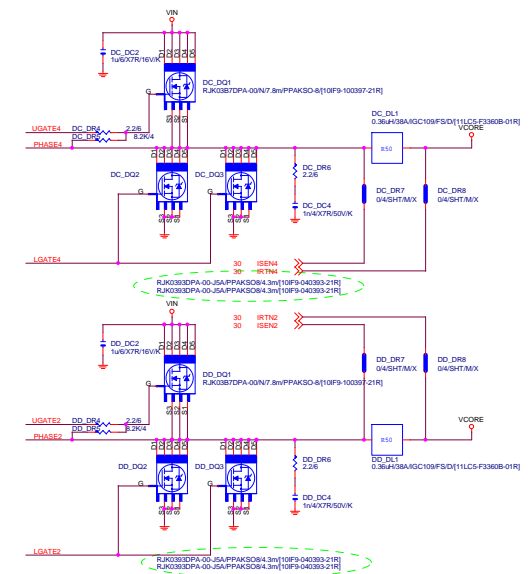
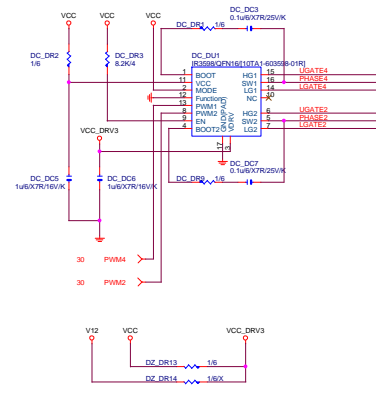
Size Custom	Document Number Z77MX-QUO-AOS QU	Rev 1.0
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Date: Tuesday, June 18, 2013 Sheet 29 of 37

VCORE Phase 1,3

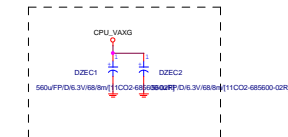
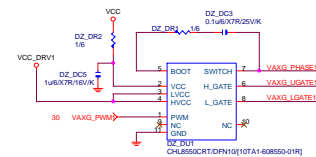


VCORE Phase 4,2

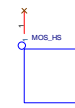


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VAXG Phase

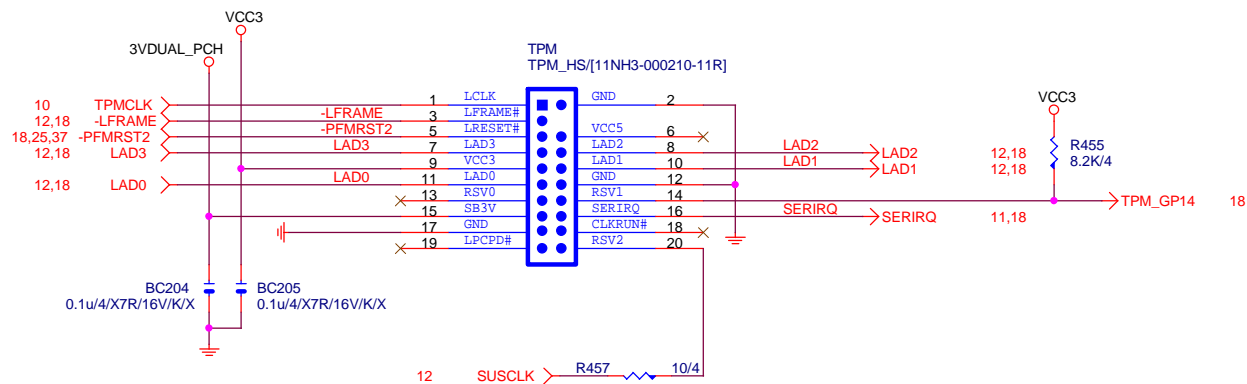


MOS HEATSINK



MOSHSINK-DRMOS-QUO

TPM



LPT PORT

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Gigabyte Technology

Title

LPT, TPM

Size
Custom

Document Number

Z77MX-QUO-AOS QU

Rev
1.0

Date:

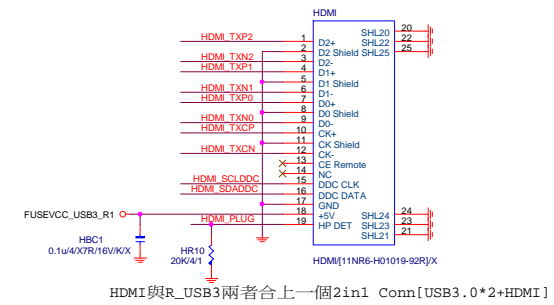
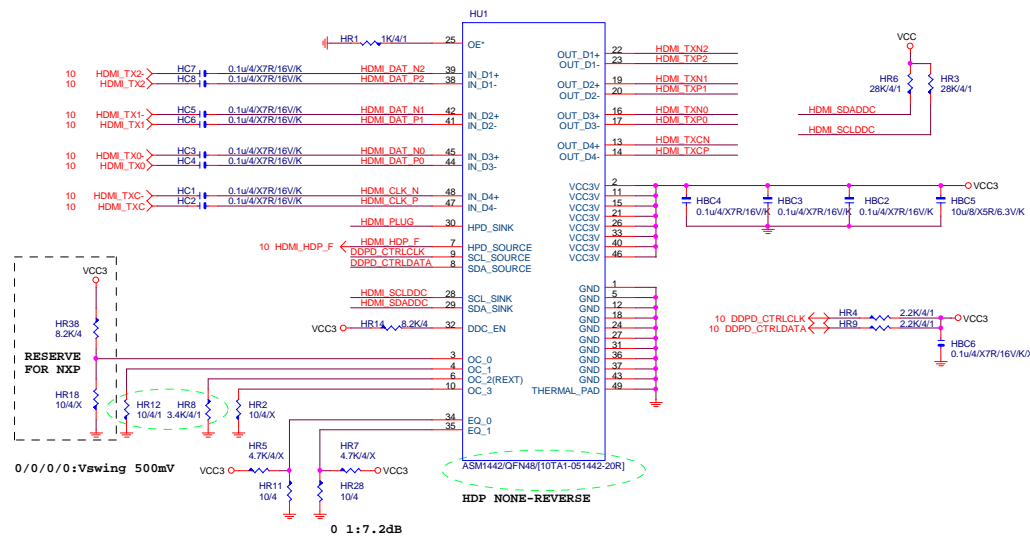
Tuesday, June 18, 2013

Sheet

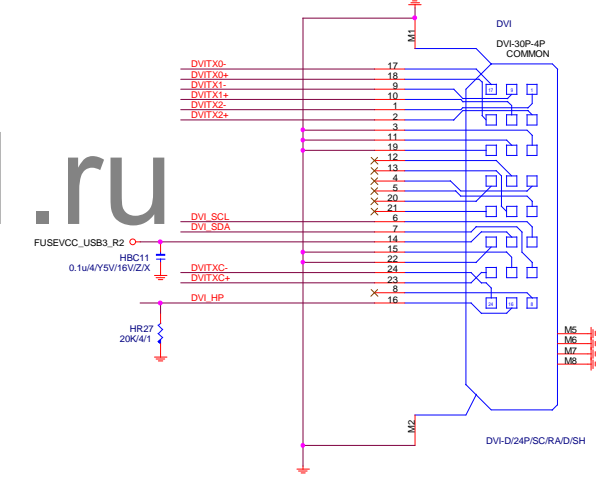
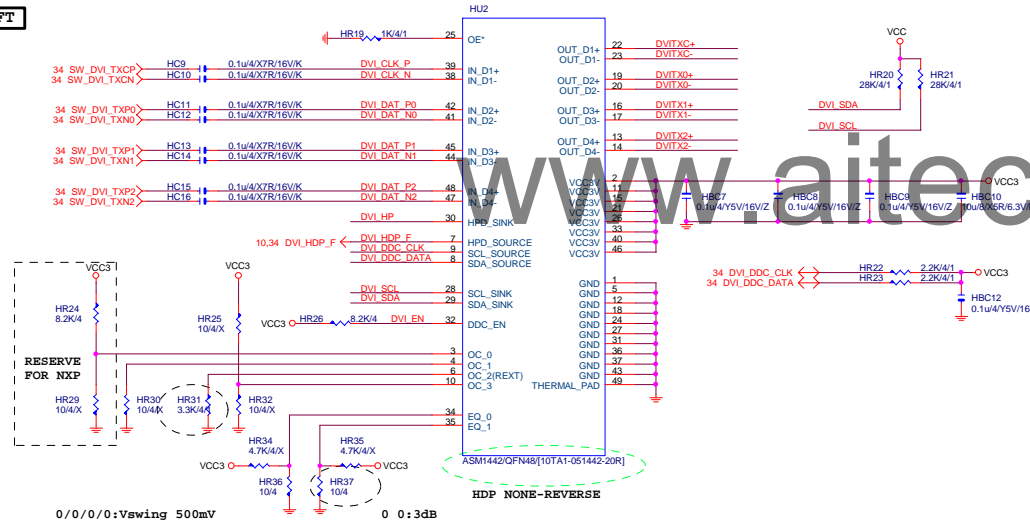
32

of

37

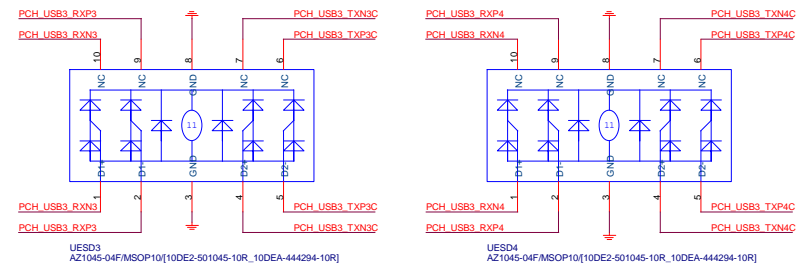
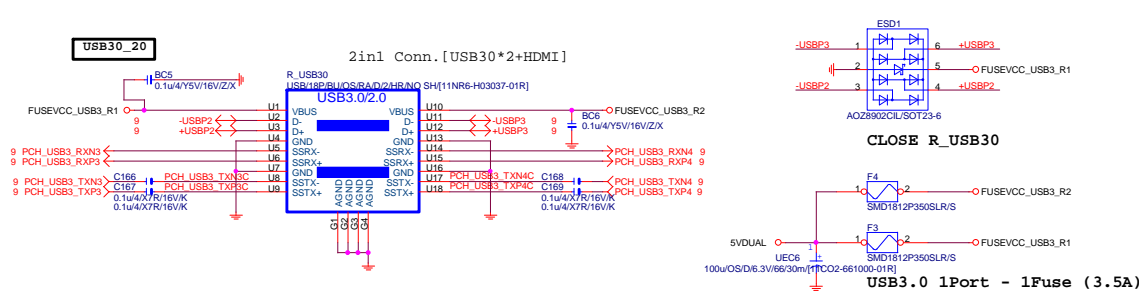


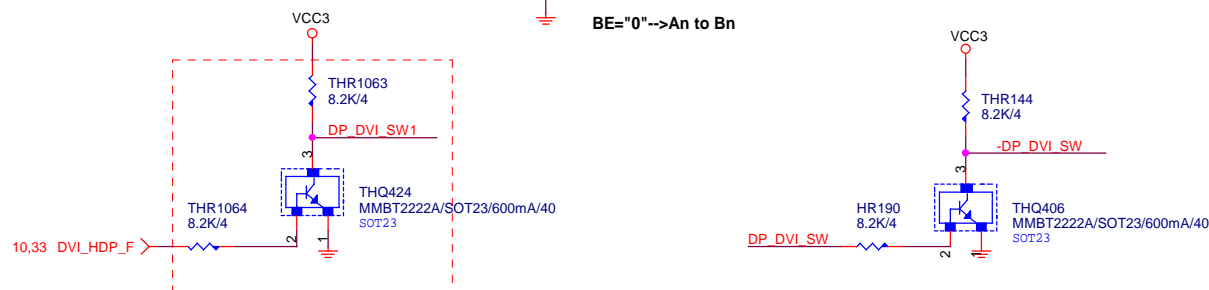
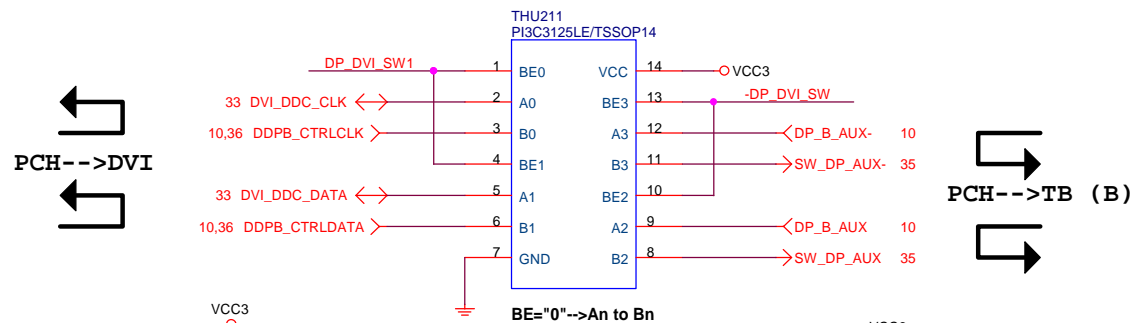
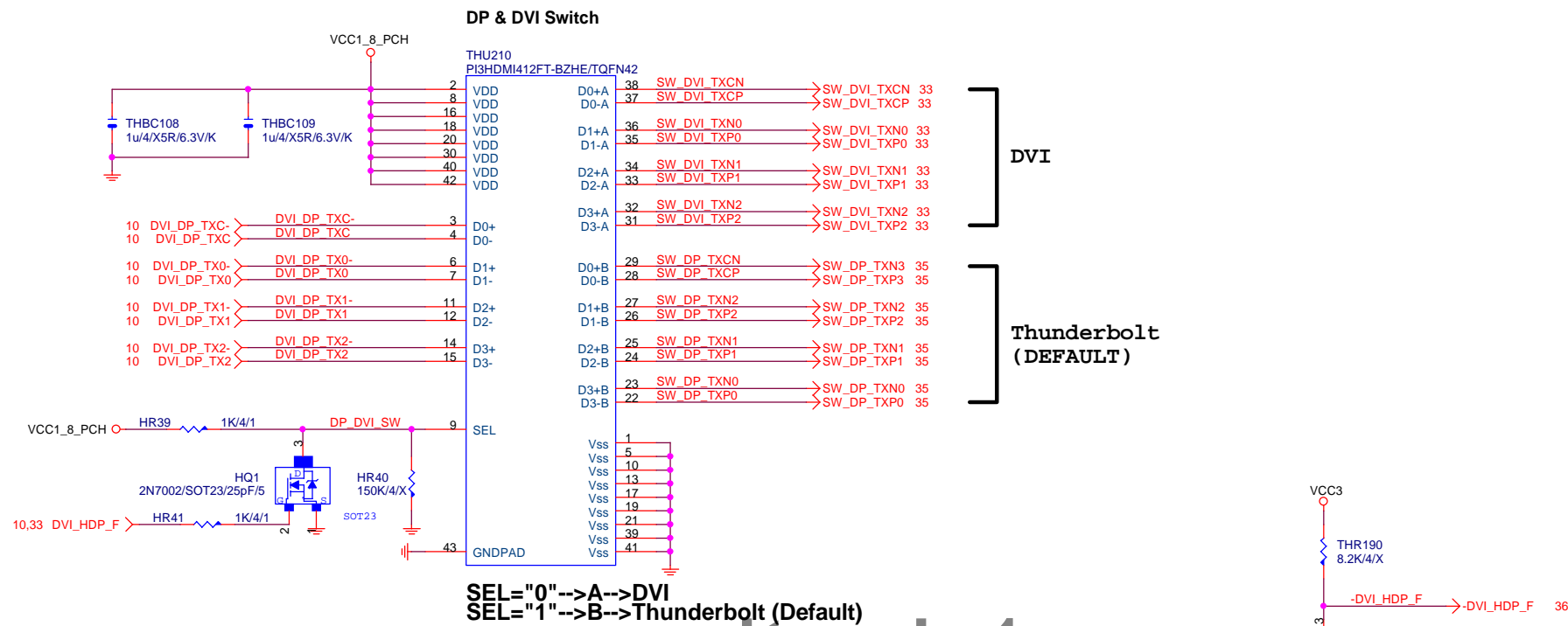
DVI LEVEL SHIFT



USB30_20

2in1 Conn.[USB3.0*2+HDMI]





[illegible]