

## Model Name: GA-Z87X-UD4H

Rev 1.02

www.xinxunwei.com 400-800-9990

SHEET

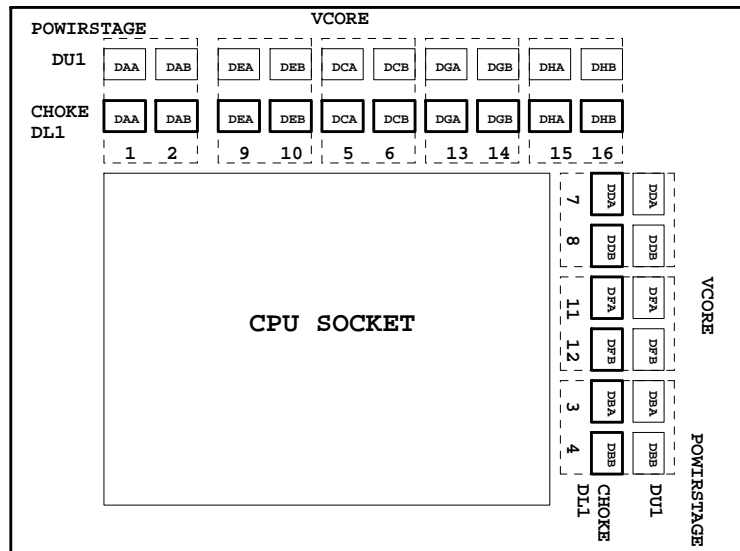
TITLE

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_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	DP / DVI / HDMI
15	PCI EXPRESS*16/*8 SWITCH
16	PCI EXPRESS*16 SLOT
17	PCI EXPRESS*8 SLOT
18	PCI EXPRESS*4 SLOT
19	PCI EXPRESS*1 SLOTS X3
20	ITE 8892
21	PCI SLOT 1
22	SATA3 SWITCH
23	USB3_eSATA, KB_USB3
24	Marvell 9172
25	ALC898
26	REAR AUDIO JACK
27	Headphone Audio Amplifier
28	IR3563B PWM Controller
29	IR3553 Power Stage PH_01-04
30	IR3553 Power Stage PH_05-08
31	IR3553 Power Stage PH_09-12
32	IR3553 Power Stage PH_13-16
33	IR3570_DDR PWM Controller
34	IR3598-DDR Driver

SHEET

TITLE


35	DISCRETE POWER I
36	DISCRETE POWER II
37	INTEL LAN I217
38	uPD720210 USB3 4Ports Hub-1A
39	uPD720210 USB3 4Ports Hub-1B
40	F_USB 3.0 from PCH
41	F_USB 2.0
42	Dual BIOS
43	ITE8728 LPC I/O
44	FAN CTRL, H/W Monitor
45	F_PANEL , COM, PROCHOT#
46	Port80, O.V., Voltage Measure
47	ATX POWER, CLOCK GEN
48	TABLE LIST
49	uPD720210 USB3 4Ports Hub-2A
50	uPD720210 USB3 4Ports Hub-2b
51	VCC1_05_ME, VCC3_ME



Gigabyte Technology

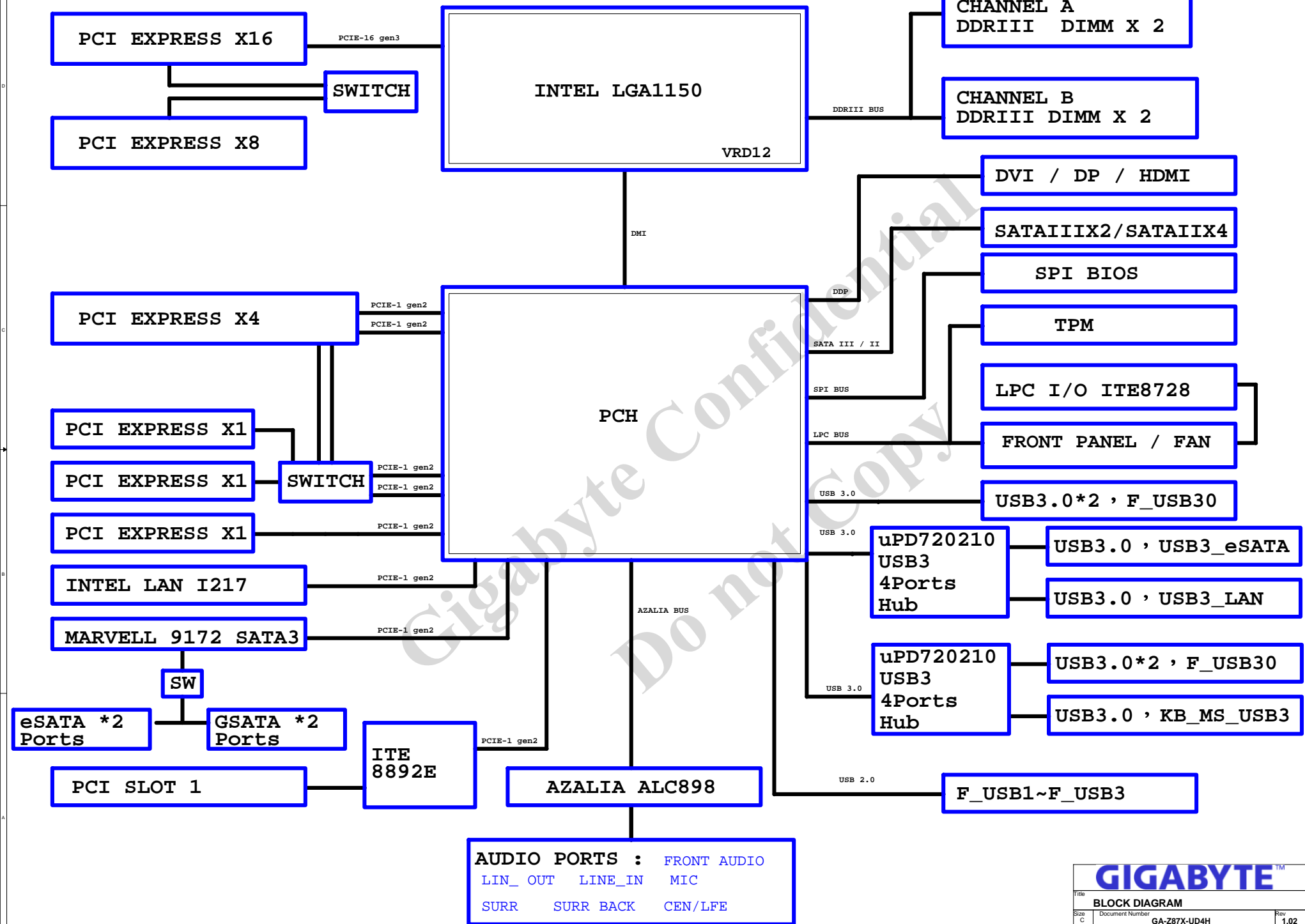
Title		
Cover Sheet		
Size	Document Number	Rev
Custom	GA-Z87X-UD4H	1.02
Date	Monday, April 22, 2013	Sheet 1 of 51

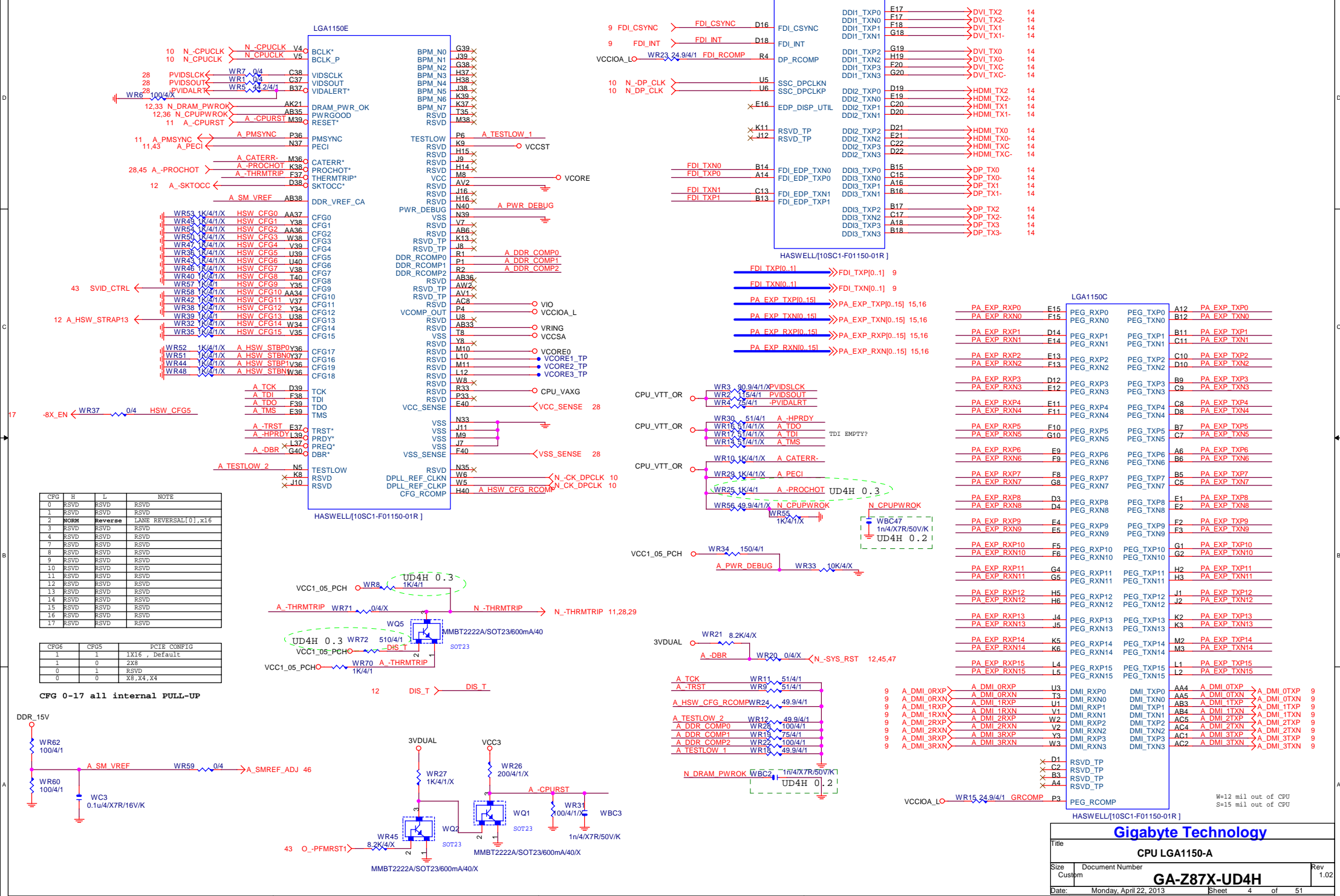
## Circuit or PCB layout change

<div style="text-align: center;">    <b>Gigabyte Technology</b> </div>			
<div style="text-align: center;"> <b>BOM &amp; PCB MODIFY HISTORY</b> </div>			
Size Custom	Document Number	GA-Z87X-UD4H	Rev 1.02
Date:	Monday, April 22, 2013	Sheet 2 of 51	

# BLOCK DIAGRAM

www.xinxunwei.com 400-800-9990

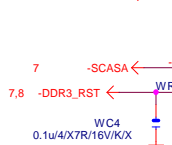




LGA1150A

MAAA0	AU13	DDR0_MA0	DDR0_DQ0	AD38	MDA0
MAAA1	AV16	DDR0_MA1	DDR0_DQ1	AD39	MDA1
MAAA2	AU16	DDR0_MA2	DDR0_DQ2	AF38	MDA2
MAAA3	AW17	DDR0_MA3	DDR0_DQ3	AF39	MDA3
MAAA4	AU17	DDR0_MA3	DDR0_DQ3	AD37	MDA4
MAAA5	AW18	DDR0_MA4	DDR0_DQ4	AD40	MDA5
MAAA6	AV17	DDR0_MA5	DDR0_DQ5	AF40	MDA7
MAAA7	AT18	DDR0_MA6	DDR0_DQ6	AF40	MDA7
MAAA8	AU18	DDR0_MA7	DDR0_DQ7	AF40	MDA9
MAAA9	AT19	DDR0_MA8	DDR0_DQ8	AH39	MDA13
MAAA10	AW11	DDR0_MA9	DDR0_DQ9	AK38	MDA10
MAAA11	AV19	DDR0_MA10	DDR0_DQ10	AK39	MDA11
MAAA12	AU19	DDR0_MA11	DDR0_DQ11	AH37	MDA12
MAAA13	AY10	DDR0_MA12	DDR0_DQ12	AH38	MDA8
MAAA14	AT20	DDR0_MA13	DDR0_DQ13	AK37	MDA14
MAAA15	AU21	DDR0_MA14	DDR0_DQ14	AK40	MDA15
		DDR0_MA15	DDR0_DQ15	AK40	MDA17
MODT_A0	AW10	DDR0_ODT0	DDR0_DQ16	AM40	MDA17
MODT_A1	AY8	DDR0_ODT1	DDR0_DQ17	AM39	MDA21
MODT_A2	AW9	DDR0_ODT2	DDR0_DQ18	AP38	MDA18
MODT_A3	AU8	DDR0_ODT3	DDR0_DQ19	AP39	MDA19
			DDR0_DQ20	AM37	MDA20
			DDR0_DQ21	AM38	MDA16
			DDR0_DQ22	AP37	MDA22
			DDR0_DQ23	AP40	MDA23
			DDR0_DQ24	AV37	MDA25
			DDR0_DQ25	AV37	MDA29
			DDR0_DQ26	AU35	MDA26
			DDR0_DQ27	AV35	MDA27
			DDR0_DQ28	AT37	MDA28
			DDR0_DQ29	AU37	MDA24
			DDR0_DQ30	AT36	MDA30
			DDR0_DQ31	AW35	MDA31
			DDR0_DQ32	AY6	MDA33
			DDR0_DQ33	AU6	MDA37
			DDR0_DQ34	AV4	MDA34
			DDR0_DQ35	AU4	MDA35
			DDR0_DQ36	AW6	MDA36
			DDR0_DQ37	AV6	MDA32
			DDR0_DQ38	AW4	MDA38
			DDR0_DQ39	AY4	MDA39
			DDR0_DQ40	AR1	MDA41
			DDR0_DQ41	AR4	MDA45
			DDR0_DQ42	AN3	MDA42
			DDR0_DQ43	AN4	MDA43
			DDR0_DQ44	AR2	MDA44
			DDR0_DQ45	AR3	MDA40
			DDR0_DQ46	AN2	MDA46
			DDR0_DQ47	AN1	MDA47
			DDR0_DQ48	AL1	MDA49
			DDR0_DQ49	AL4	MDA53
			DDR0_DQ50	AJ3	MDA50
			DDR0_DQ51	AJ4	MDA51
			DDR0_DQ52	AL3	MDA48
			DDR0_DQ53	AJ2	MDA54
			DDR0_DQ54	AJ1	MDA55
			DDR0_DQ55	AG1	MDA57
			DDR0_DQ56	AG4	MDA61
			DDR0_DQ57	AE3	MDA58
			DDR0_DQ58	AE4	MDA59
			DDR0_DQ59	AG2	MDA60
			DDR0_DQ60	AG3	MDA56
			DDR0_DQ61	AE2	MDA62
			DDR0_DQ62	AE1	MDA63
			DDR0_DQ63	AE39	DQSA0
			DDR0_DQ64	AJ39	DQSA1
			DDR0_DQ65	AN39	DQSA2
			DDR0_DQ66	AV36	DQSA3
			DDR0_DQ67	AV5	DQSA4
			DDR0_DQ68	AP3	DQSA5
			DDR0_DQ69	AK3	DQSA6
			DDR0_DQ70	AF3	DQSA7
			DDR0_DQ71	AV32	DQSA0
			DDR0_DQ72	AE38	DQSA1
			DDR0_DQ73	AJ38	DQSA2
			DDR0_DQ74	AN38	DQSA3
			DDR0_DQ75	AU36	DQSA4
			DDR0_DQ76	AW5	DQSA5
			DDR0_DQ77	AP2	DQSA6
			DDR0_DQ78	AK2	DQSA7
			DDR0_DQ79	AF2	DQSA7
			DDR0_DQ80	AU32	

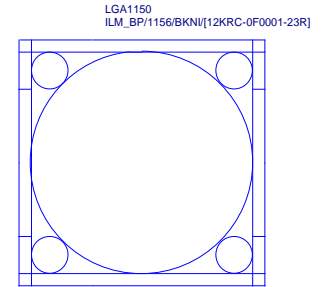
HASWELL[10SC1-F01150-01R]



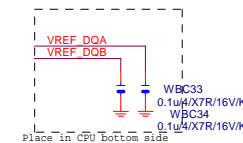
LGA1150B

MAAB0	AL19	DDR1_MA0	DDR1_DQ0	AE34	MDB0
MAAB1	AK23	DDR1_MA1	DDR1_DQ1	AE35	MDB1
MAAB2	AM22	DDR1_MA2	DDR1_DQ2	AG35	MDB2
MAAB3	AM23	DDR1_MA3	DDR1_DQ3	AH35	MDB3
MAAB4	AP23	DDR1_MA4	DDR1_DQ4	AD34	MDB4
MAAB5	AL23	DDR1_MA5	DDR1_DQ5	AD35	MDB5
MAAB6	AY24	DDR1_MA6	DDR1_DQ6	AG34	MDB6
MAAB7	AV25	DDR1_MA7	DDR1_DQ7	AH34	MDB7
MAAB8	AU25	DDR1_MA8	DDR1_DQ8	AL34	MDB8
MAAB9	AW25	DDR1_MA9	DDR1_DQ9	AL35	MDB9
MAAB10	AP18	DDR1_MA10	DDR1_DQ10	AK31	MDB10
MAAB11	AY25	DDR1_MA11	DDR1_DQ11	AL31	MDB11
MAAB12	AV26	DDR1_MA12	DDR1_DQ12	AK34	MDB12
MAAB13	AR15	DDR1_MA13	DDR1_DQ13	AK35	MDB13
MAAB14	AV27	DDR1_MA14	DDR1_DQ14	AK32	MDB14
MAAB15	AY28	DDR1_MA15	DDR1_DQ15	AL32	MDB15
			DDR1_DQ16	AN34	MDB17
			DDR1_DQ17	AP34	MDB21
			DDR1_DQ18	AN31	MDB19
			DDR1_DQ19	AP31	MDB23
			DDR1_DQ20	AN35	MDB20
			DDR1_DQ21	AP35	MDB18
			DDR1_DQ22	AN32	MDB19
			DDR1_DQ23	AP32	MDB22
			DDR1_DQ24	AM29	MDB25
			DDR1_DQ25	AM28	MDB28
			DDR1_DQ26	AR29	MDB27
			DDR1_DQ27	AR28	MDB30
			DDR1_DQ28	AL29	MDB24
			DDR1_DQ29	AL28	MDB29
			DDR1_DQ30	AP29	MDB26
			DDR1_DQ31	AP28	MDB31
			DDR1_DQ32	AR12	MDB32
			DDR1_DQ33	AP12	MDB33
			DDR1_DQ34	AL13	MDB34
			DDR1_DQ35	AL12	MDB35
			DDR1_DQ36	AR13	MDB36
			DDR1_DQ37	AP13	MDB37
			DDR1_DQ38	AM13	MDB38
			DDR1_DQ39	AM12	MDB39
			DDR1_DQ40	AR9	MDB45
			DDR1_DQ41	AP9	MDB41
			DDR1_DQ42	AR6	MDB47
			DDR1_DQ43	AP6	MDB43
			DDR1_DQ44	AR10	MDB44
			DDR1_DQ45	AP10	MDB40
			DDR1_DQ46	AR7	MDB46
			DDR1_DQ47	AP7	MDB42
			DDR1_DQ48	AM9	MDB52
			DDR1_DQ49	AL9	MDB53
			DDR1_DQ50	AL6	MDB50
			DDR1_DQ51	AL7	MDB55
			DDR1_DQ52	AM10	MDB48
			DDR1_DQ53	AL10	MDB49
			DDR1_DQ54	AM6	MDB54
			DDR1_DQ55	AM7	MDB51
			DDR1_DQ56	AH6	MDB61
			DDR1_DQ57	AH7	MDB60
			DDR1_DQ58	AE5	MDB59
			DDR1_DQ59	AE7	MDB63
			DDR1_DQ60	AJ6	MDB56
			DDR1_DQ61	AJ7	MDB57
			DDR1_DQ62	AF6	MDB58
			DDR1_DQ63	AF7	MDB62
			DDR1_DQ64	AF35	DQSB0
			DDR1_DQ65	AL33	DQSB1
			DDR1_DQ66	AP33	DQSB2
			DDR1_DQ67	AN28	DQSB3
			DDR1_DQ68	AN12	DQSB4
			DDR1_DQ69	AP8	DQSB5
			DDR1_DQ70	AL8	DQSB6
			DDR1_DQ71	AG7	DQSB7
			DDR1_DQ72	AN25	
			DDR1_DQ73	AF34	DQSB0
			DDR1_DQ74	AK33	DQSB1
			DDR1_DQ75	AN33	DQSB2
			DDR1_DQ76	AN29	DQSB3
			DDR1_DQ77	AN13	DQSB4
			DDR1_DQ78	AR8	DQSB5
			DDR1_DQ79	AM8	DQSB6
			DDR1_DQ80	AG6	DQSB7
			DDR1_DQ81	AN26	

HASWELL[10SC1-F01150-01R]

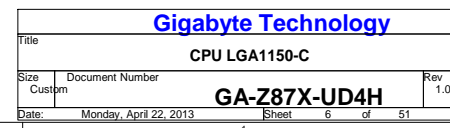


Need check the new CPU ME

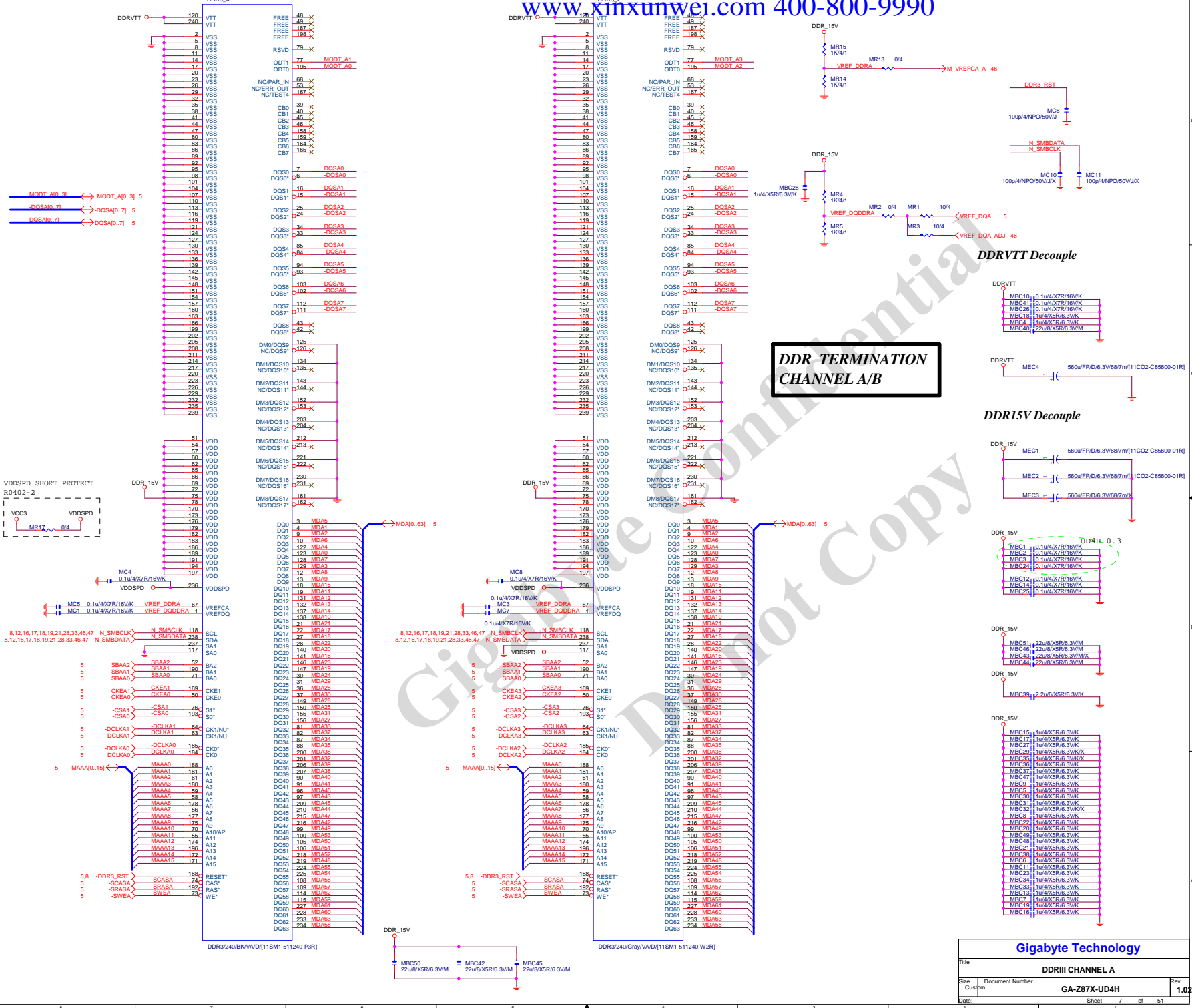


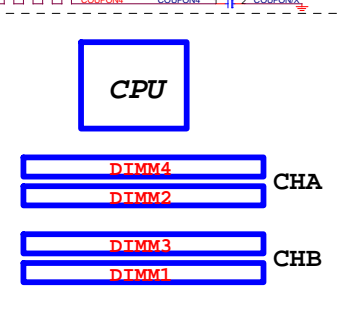
## Gigabyte Technology

Title			CPU LGA1150-B		
Size			Document Number		
Custom			GA-Z87X-UD4H		
Date:			Monday, April 22, 2013		
Sheet			5 of 51		
Rev			1.02		

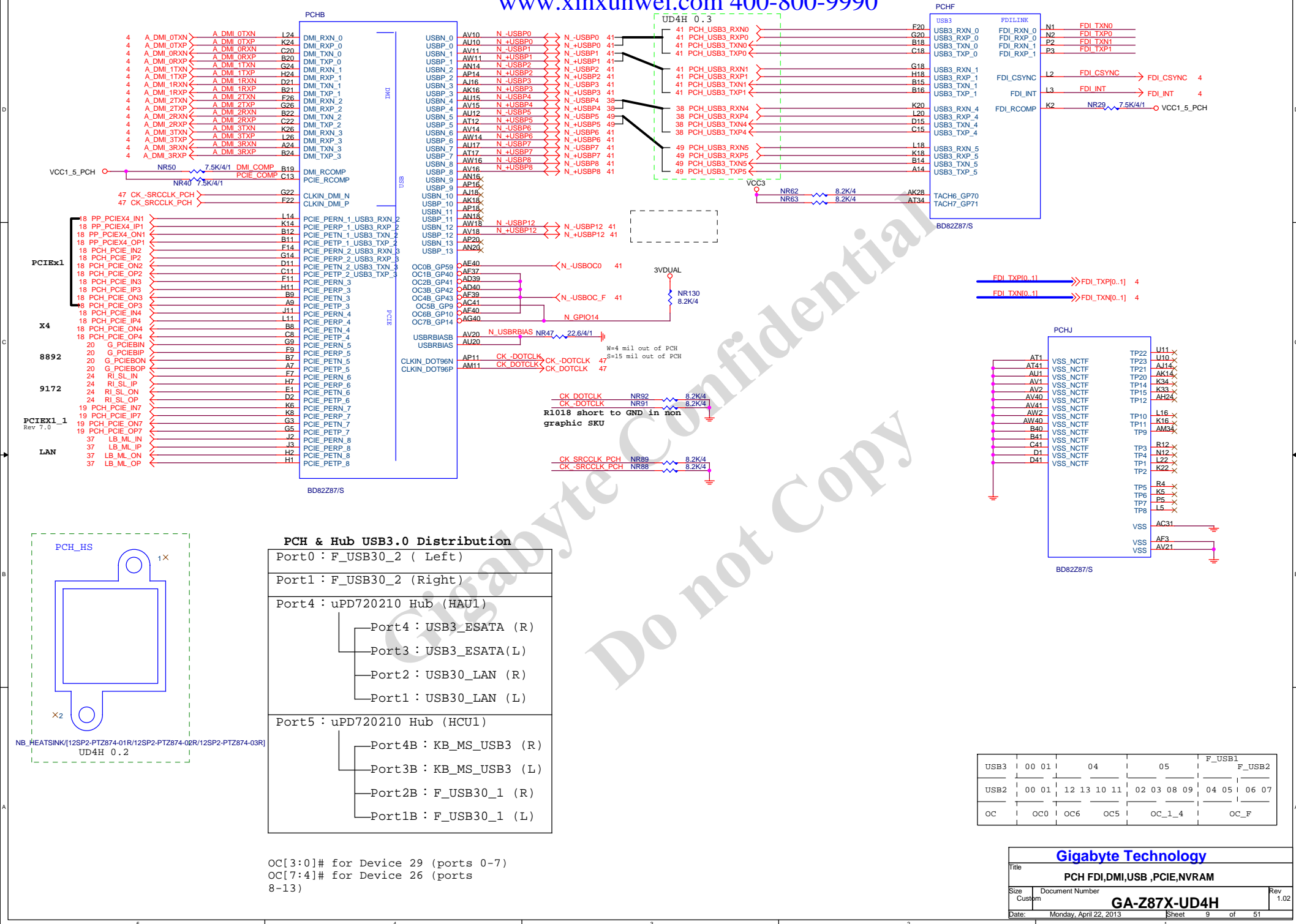


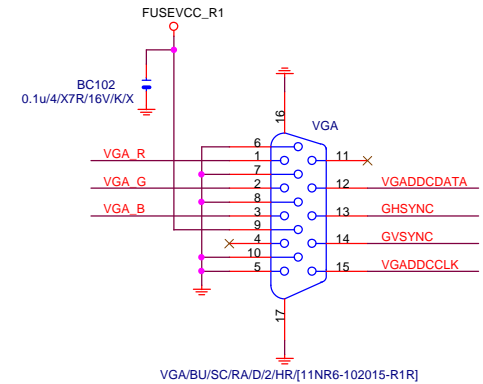
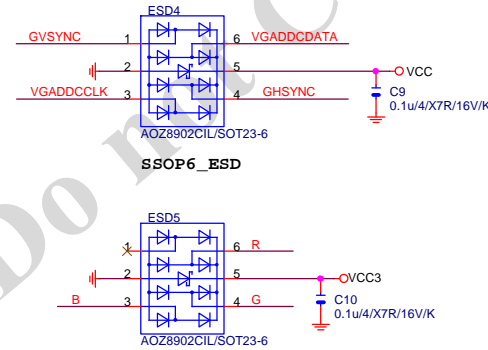
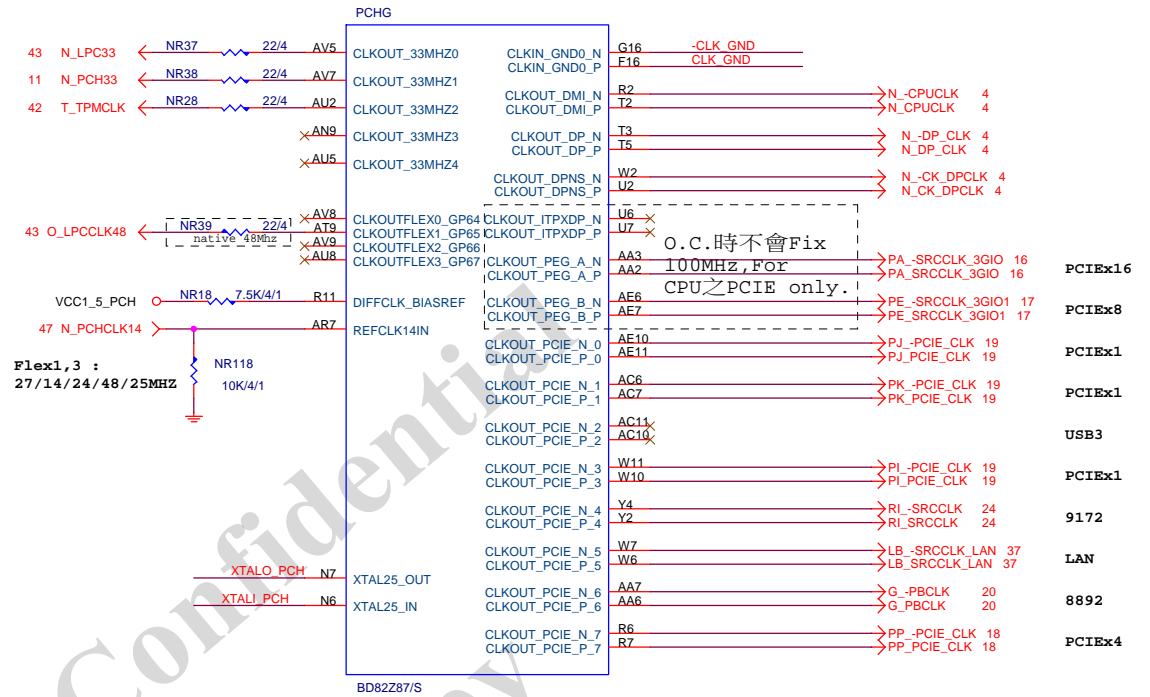
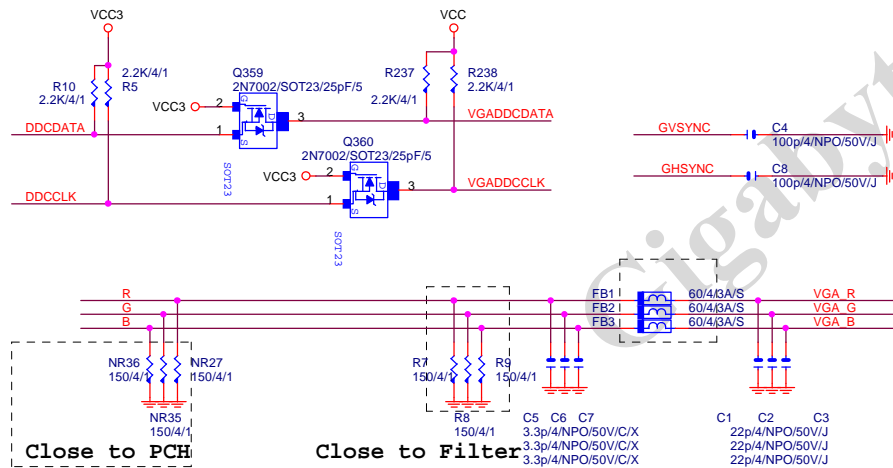
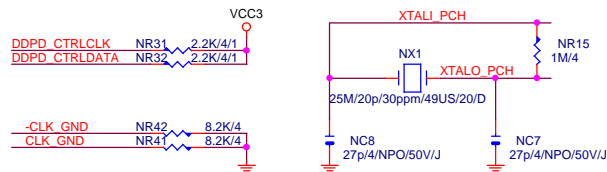
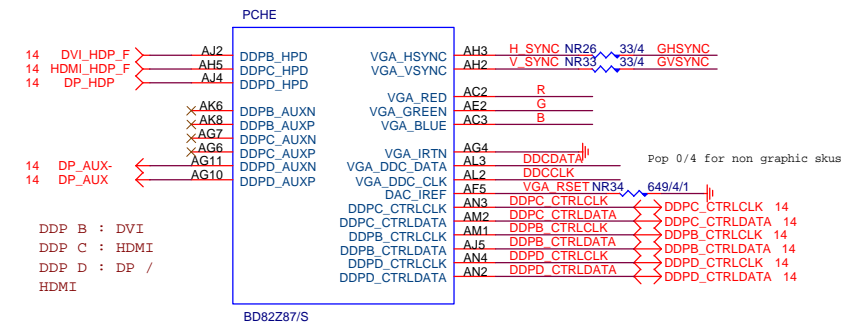










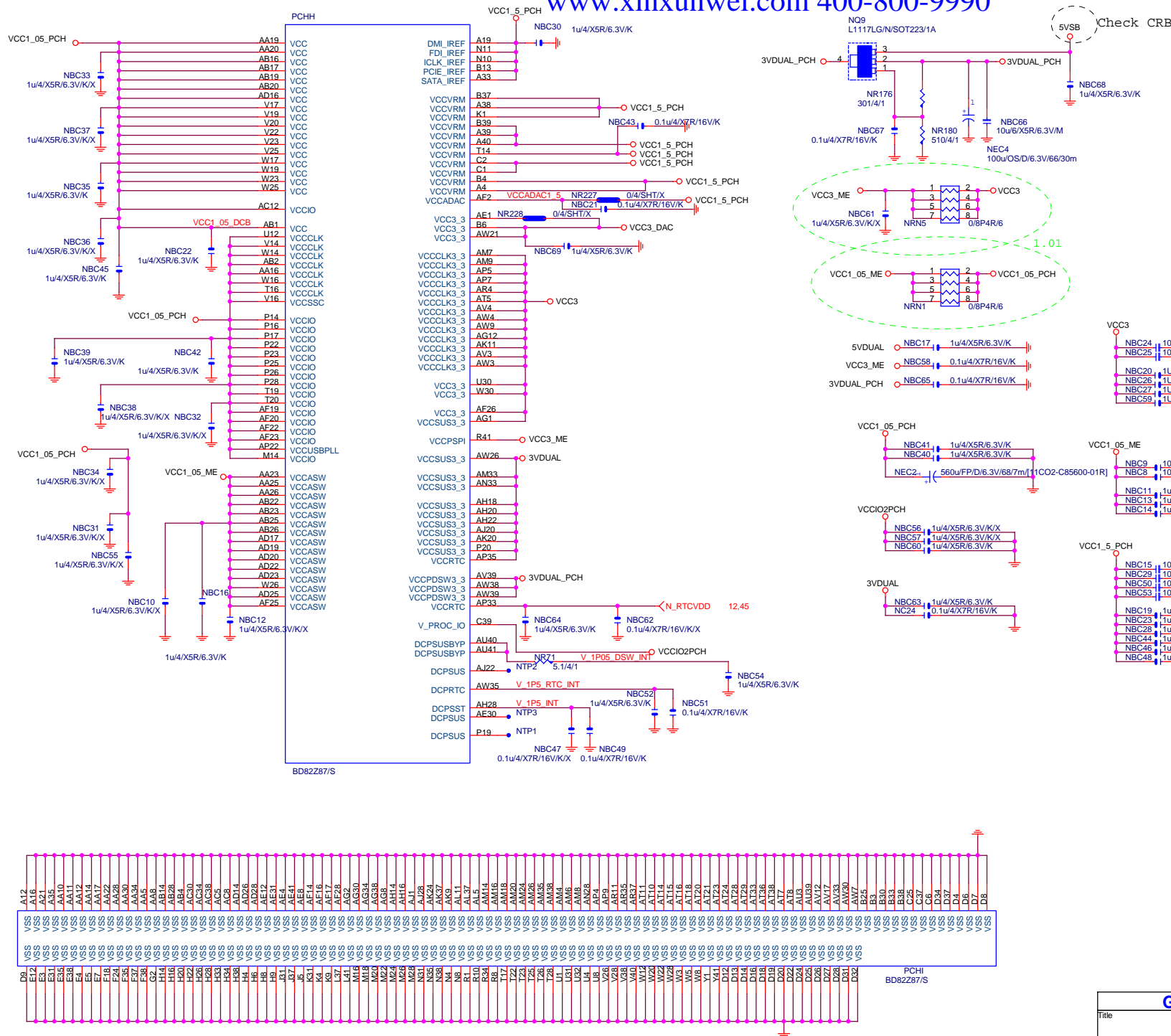


Gigabyte Technology

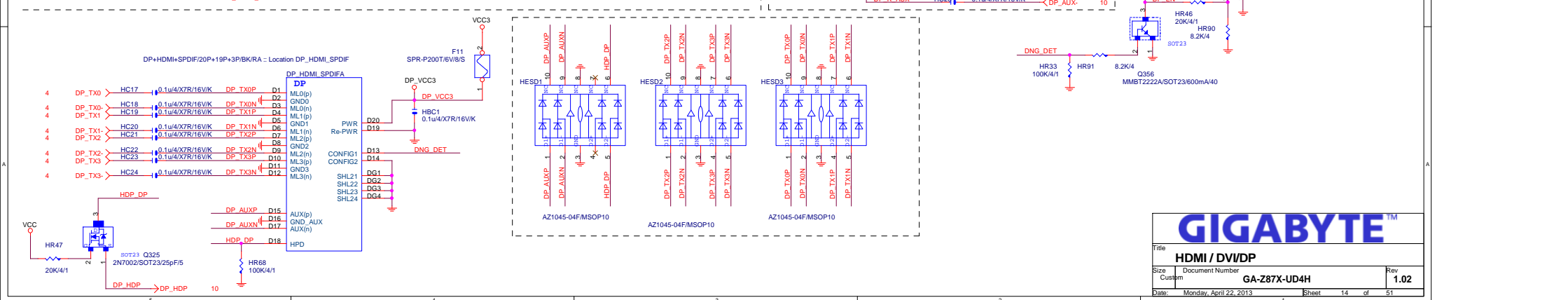
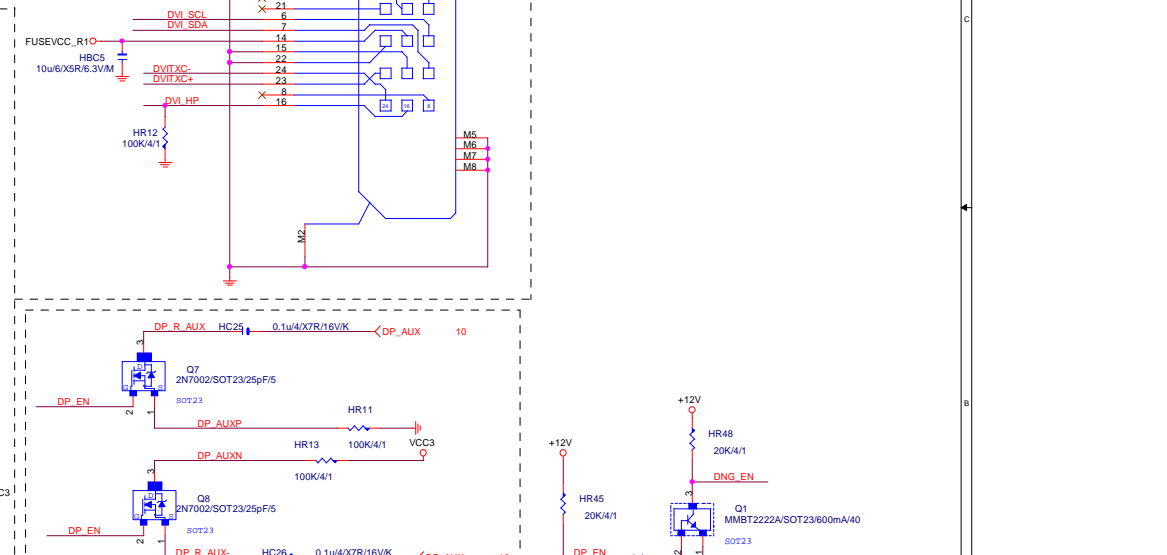
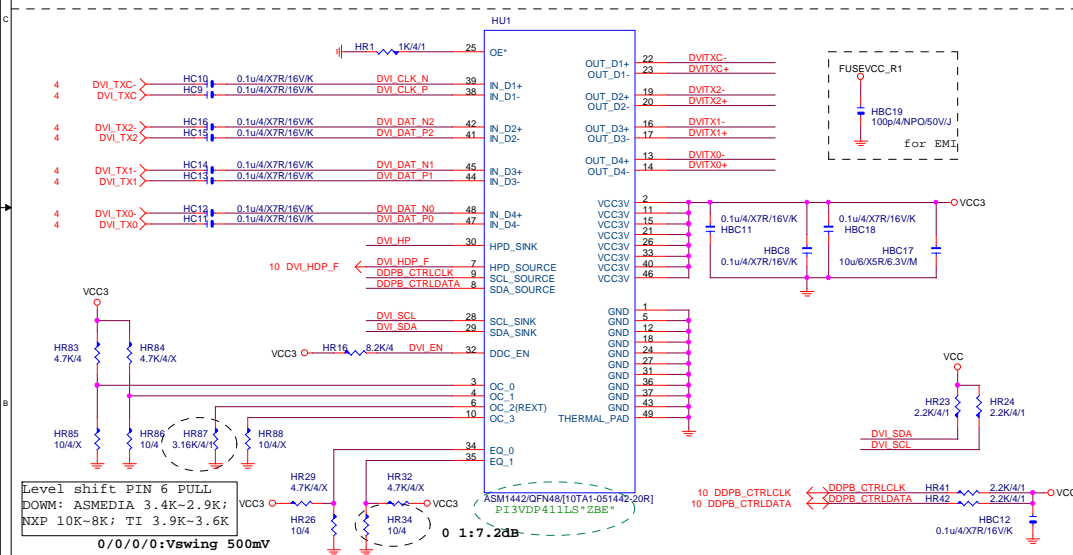
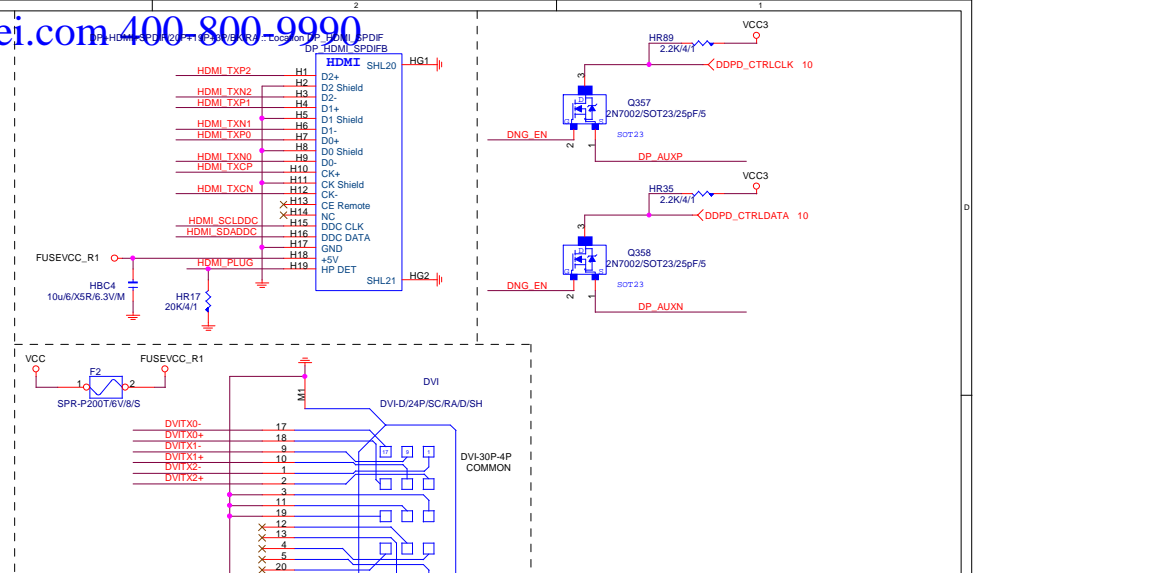
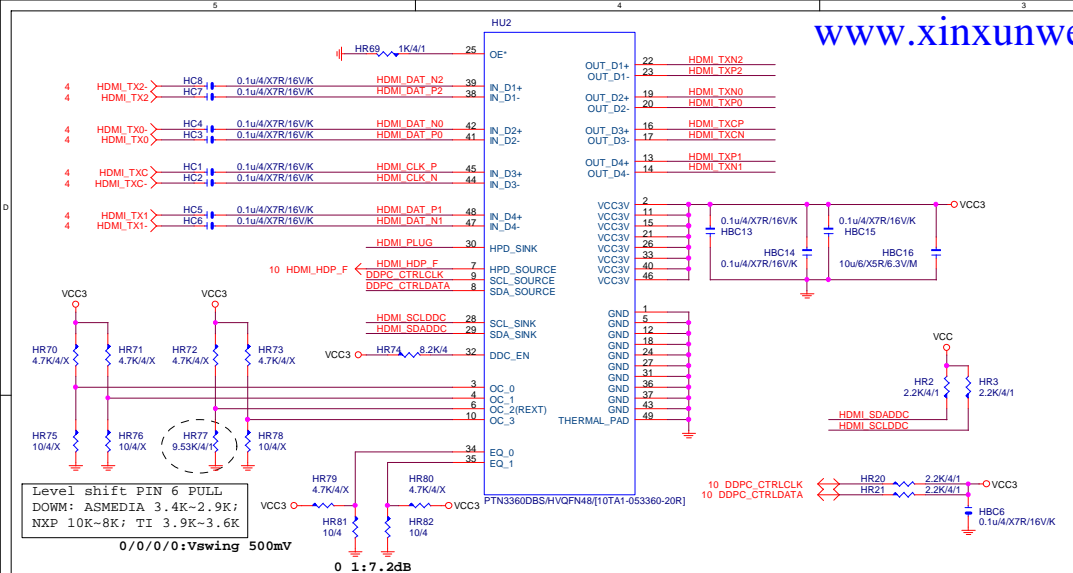
Title				
PCH DISPLAY ,CLK BUFFER				
Size	Document Number			Rev
Custom	GA-Z87X-UD4H			1.02
Date:	Monday, April 22, 2013	Sheet	10	of 51



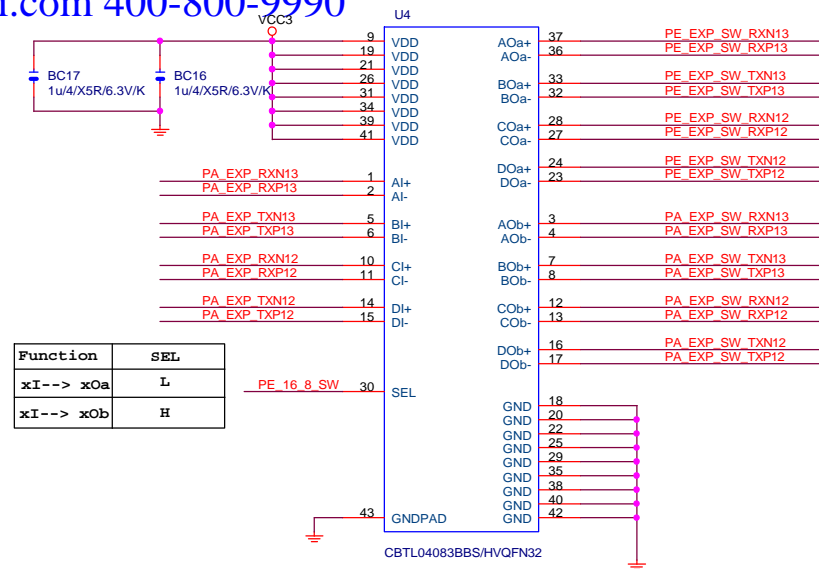
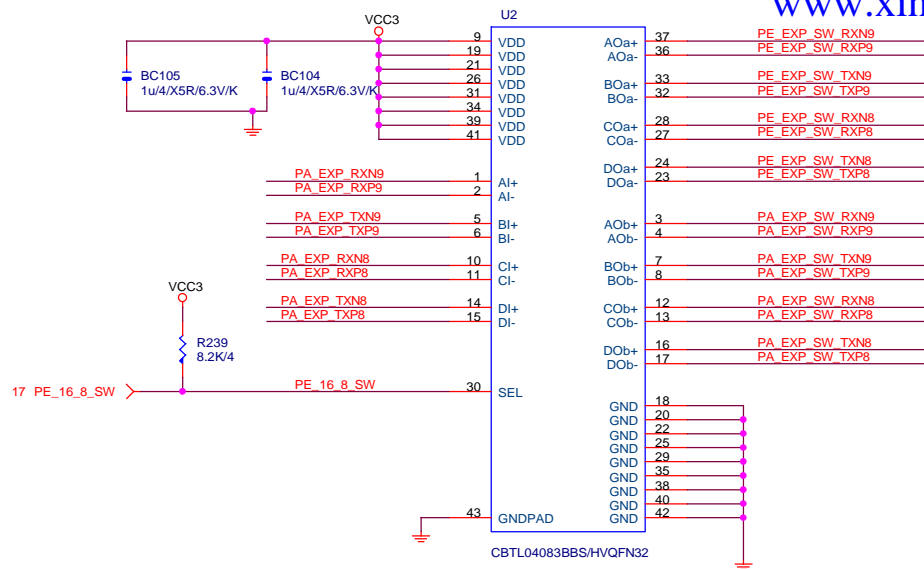




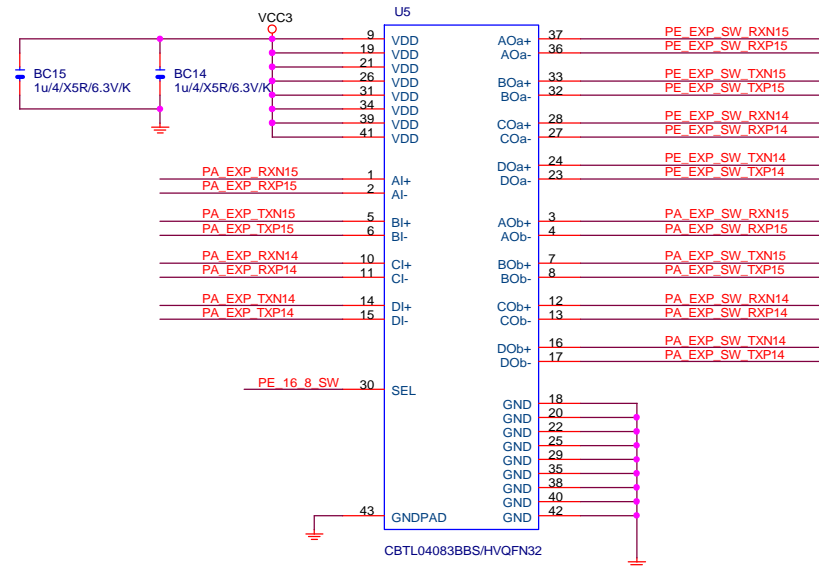
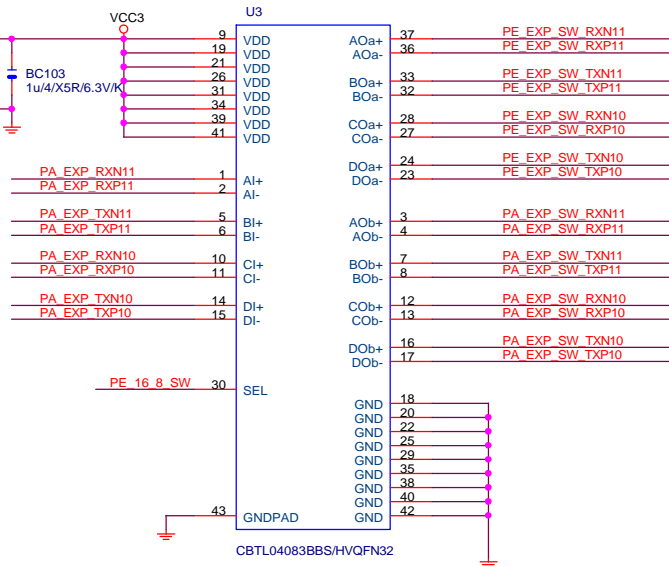








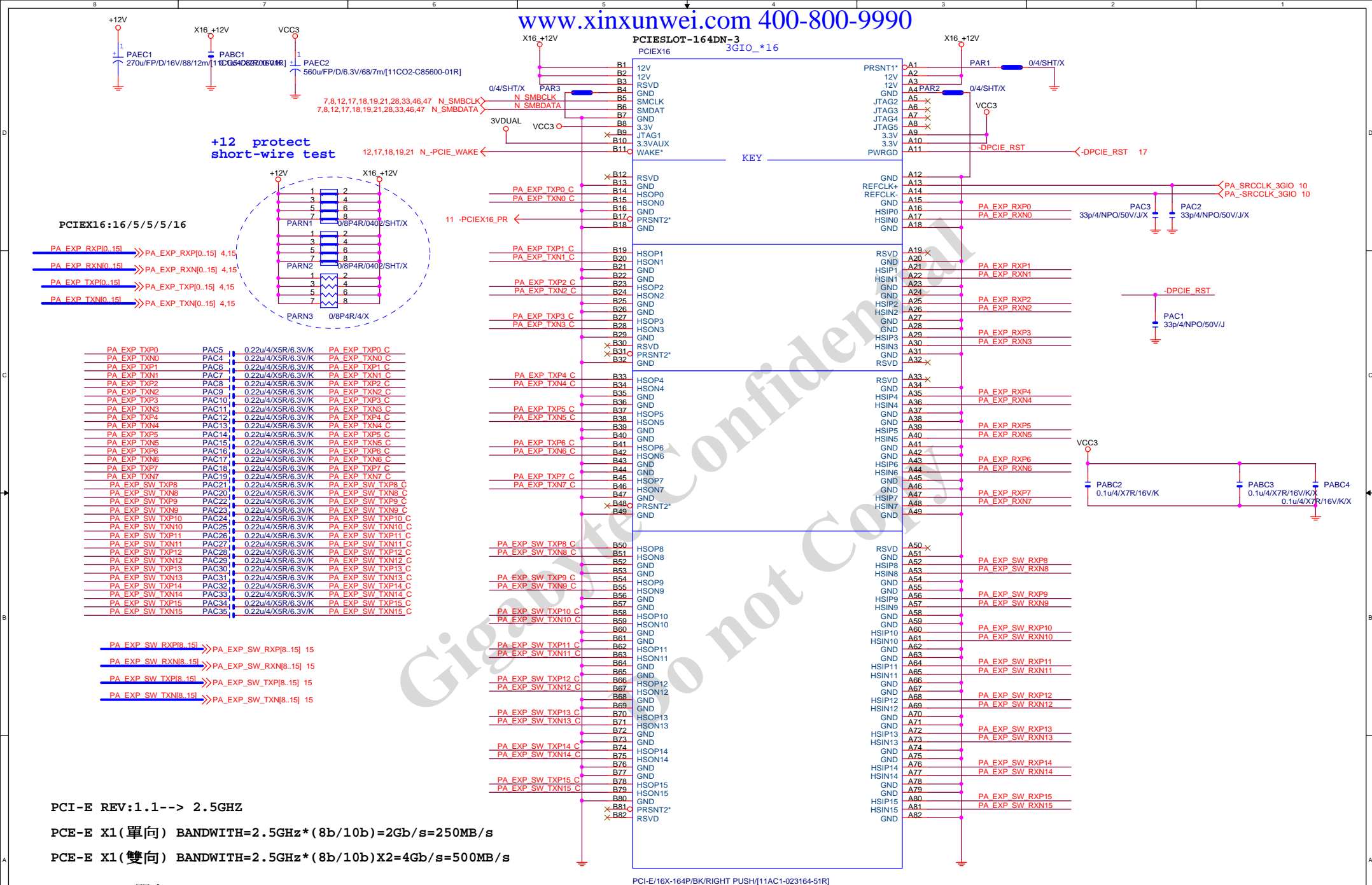
Function	SEL
xI--> xOa	L
xI--> xOb	H



PA\_EXP\_SW\_RXP[8..15] >> PA\_EXP\_SW\_RXP[8..15] 16  
 PA\_EXP\_SW\_RXN[8..15] >> PA\_EXP\_SW\_RXN[8..15] 16  
 PA\_EXP\_SW\_TXP[8..15] >> PA\_EXP\_SW\_TXP[8..15] 16  
 PA\_EXP\_SW\_TXN[8..15] >> PA\_EXP\_SW\_TXN[8..15] 16

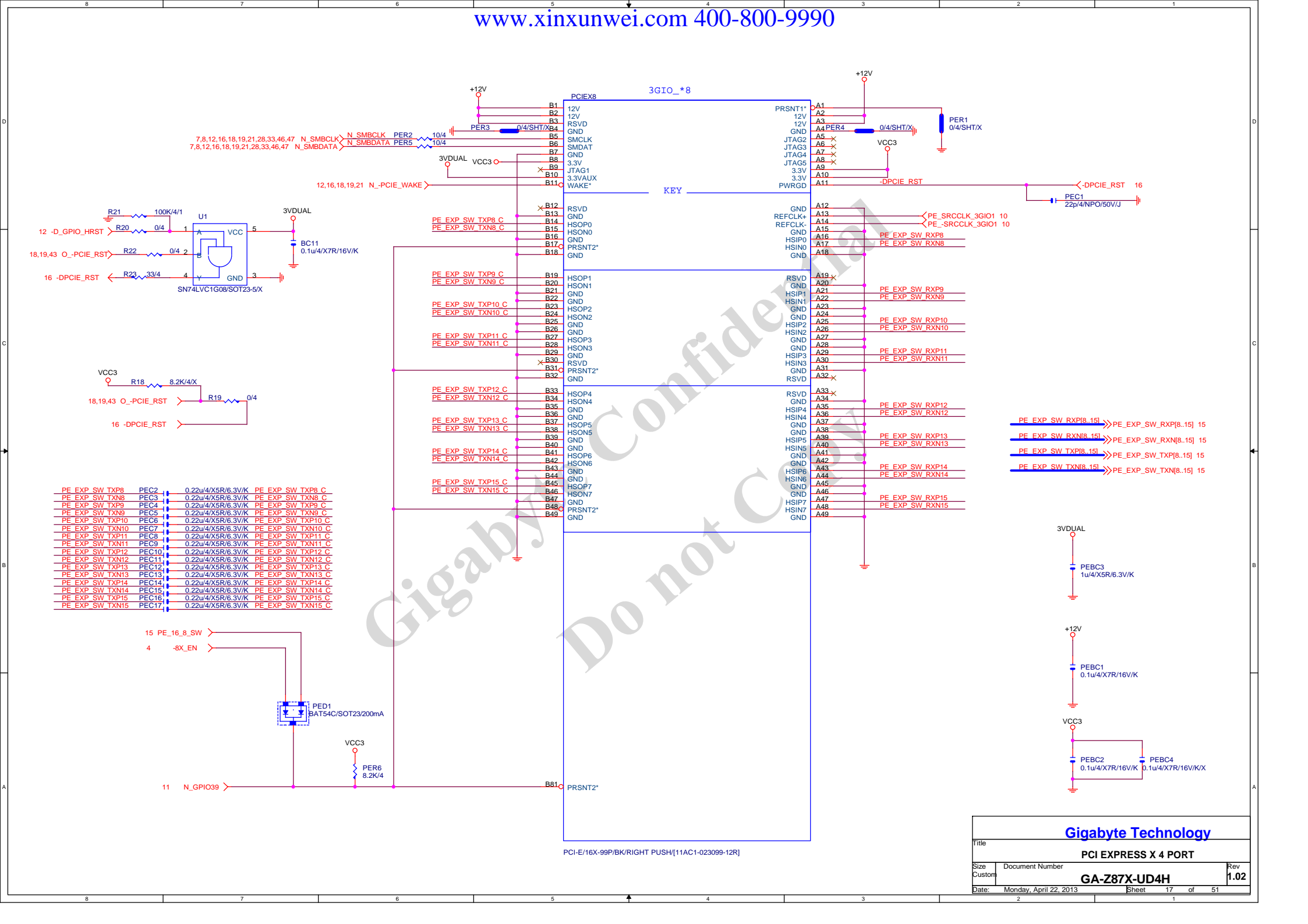
PE\_EXP\_SW\_RXP[8..15] >> PE\_EXP\_SW\_RXP[8..15] 17  
 PE\_EXP\_SW\_RXN[8..15] >> PE\_EXP\_SW\_RXN[8..15] 17  
 PE\_EXP\_SW\_TXP[8..15] >> PE\_EXP\_SW\_TXP[8..15] 17  
 PE\_EXP\_SW\_TXN[8..15] >> PE\_EXP\_SW\_TXN[8..15] 17

PA\_EXP\_RXP[0..15] >> PA\_EXP\_RXP[0..15] 4,16  
 PA\_EXP\_RXN[0..15] >> PA\_EXP\_RXN[0..15] 4,16  
 PA\_EXP\_TXP[0..15] >> PA\_EXP\_TXP[0..15] 4,16  
 PA\_EXP\_TXN[0..15] >> PA\_EXP\_TXN[0..15] 4,16

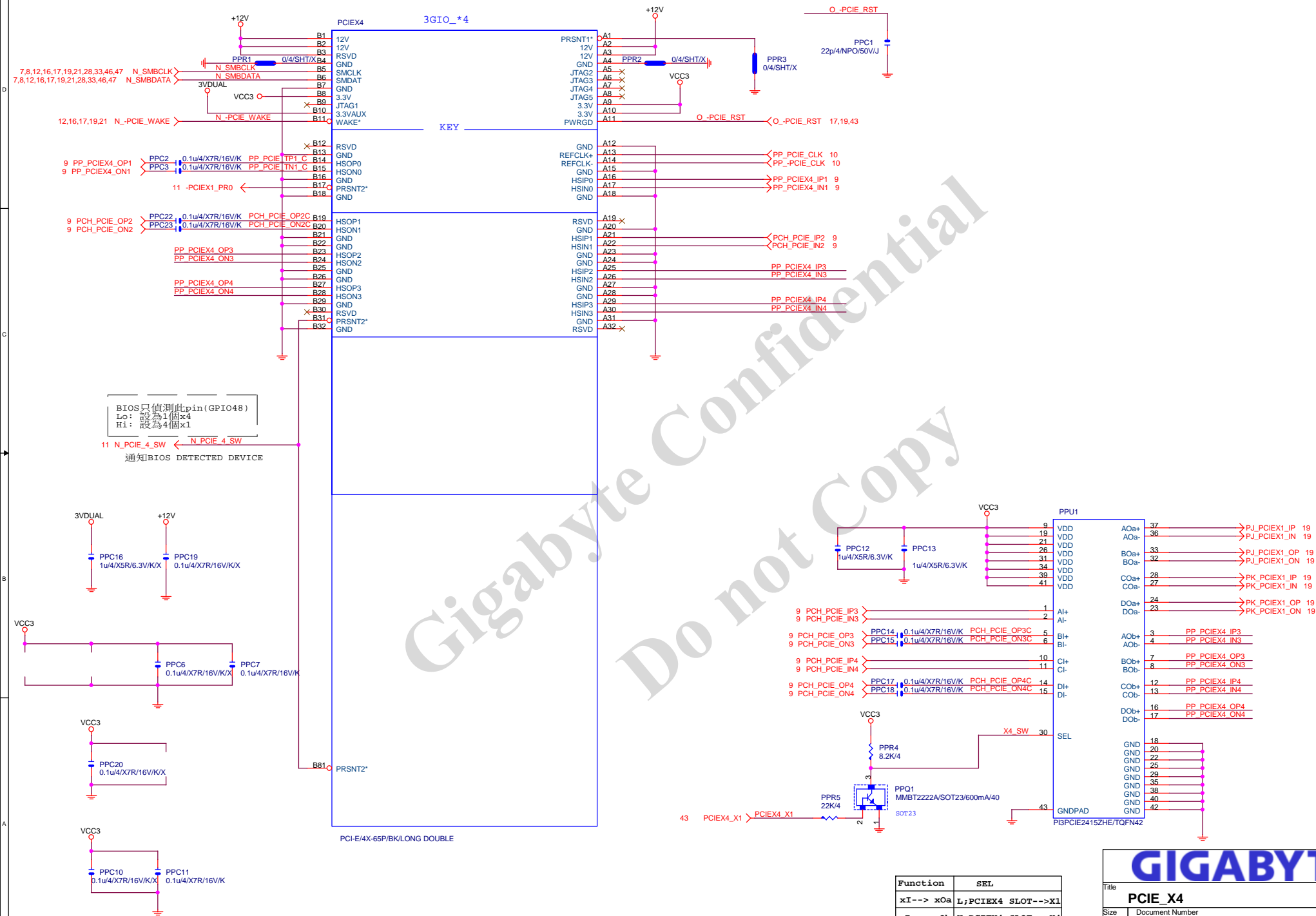


Gigabyte Technology

Title			
PCI EXPRESS * 16			
Size	Document Number	Rev	
Custom	GA-Z87X-UD4H	1.02	
Date:	Monday, April 22, 2013	Sheet	16 of 51

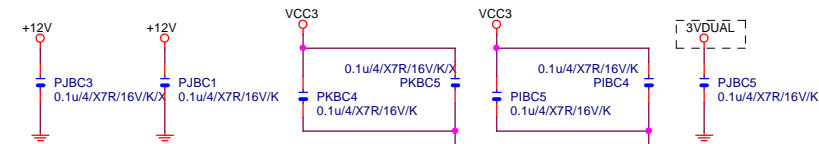
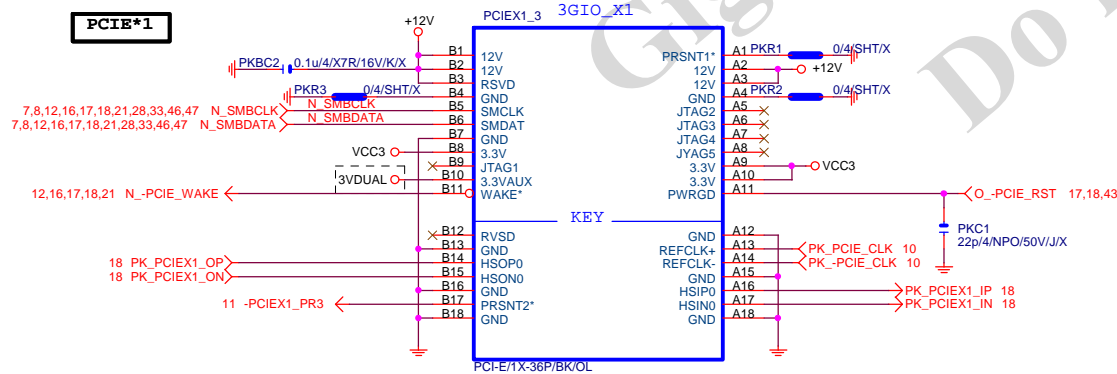
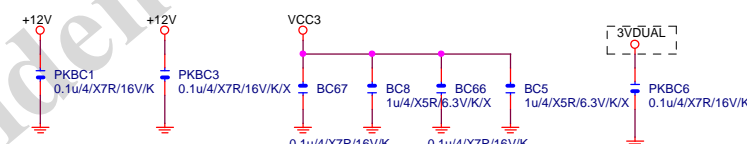
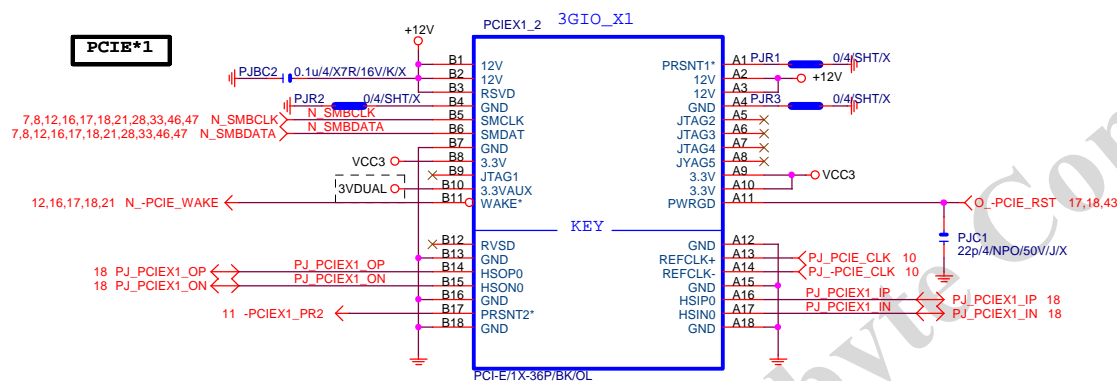
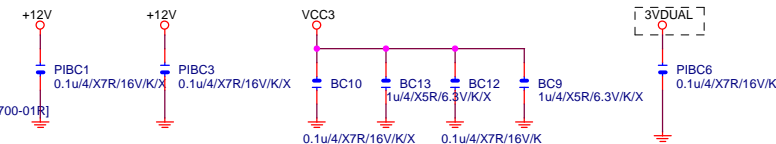
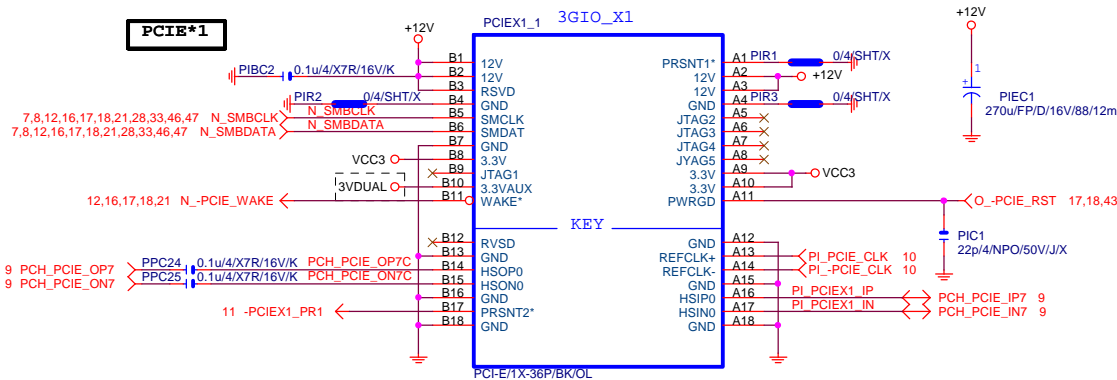


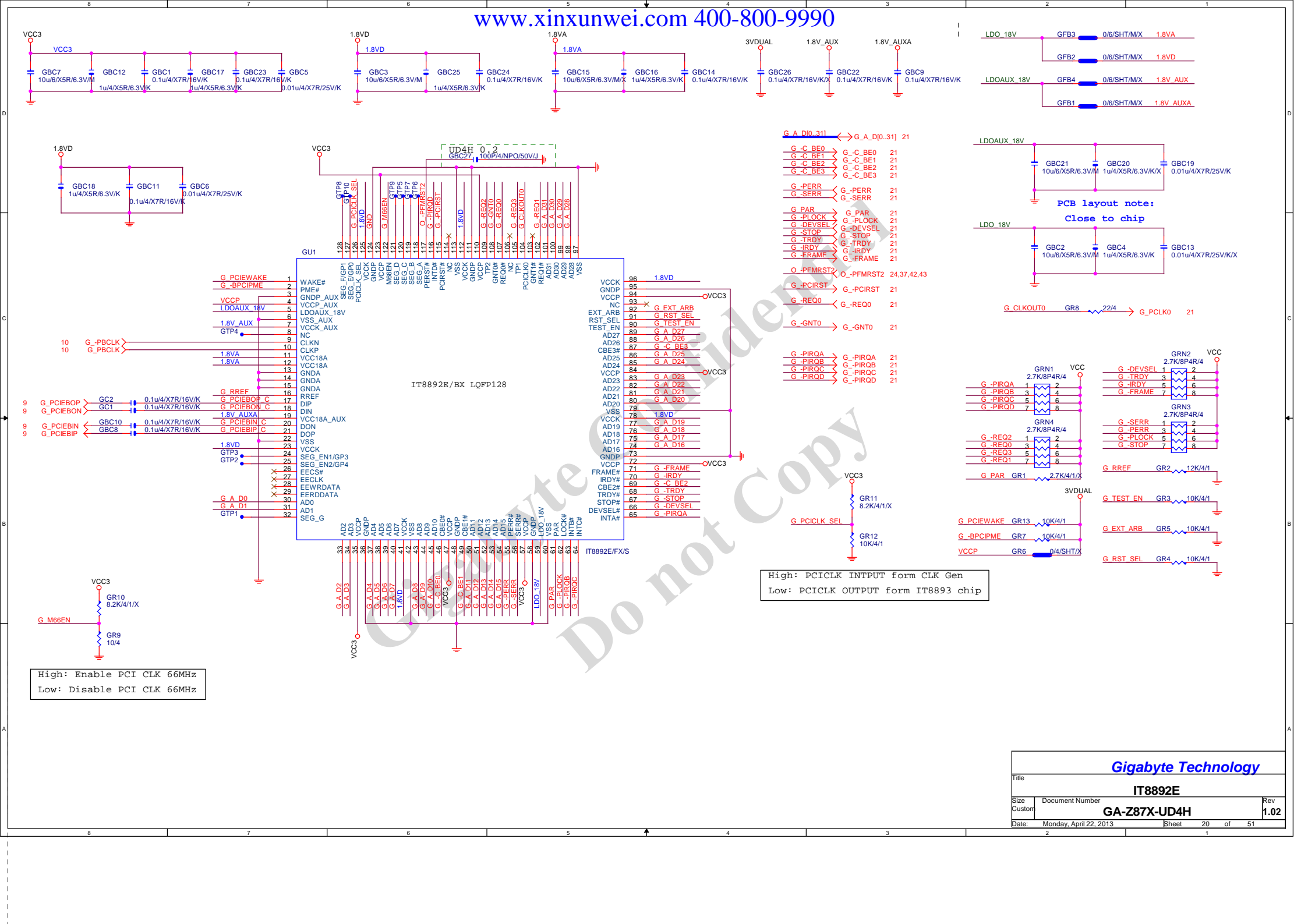
PCIE\*4



Function	SEL
xI--> xOa	L;PCIE*4 SLOT-->X1
xI--> xOb	H;PCIE*4 SLOT-->X4

<b>GIGABYTE</b>		
Title <b>PCIE_X4</b>		
Size Custom	Document Number <b>GA-Z87X-UD4H</b>	Rev <b>1.02</b>
Date: Monday, April 22, 2013	Sheet 18	of 51





www.xinxunwei.com 400-800-9990

**High: Enable PCI CLK 66MHz**  
**Low: Disable PCI CLK 66MHz**

**High: PCICLK INPUT form CLK Gen**  
**Low: PCICLK OUTPUT form IT8893 chip**

**PCB layout note:**  
**Close to chip**

**Gigabyte Technology**  
**IT8892E**  
**GA-Z87X-UD4H**  
Rev 1.02  
Date: Monday, April 22, 2013 Sheet 20 of 51

www.xinxunwei.com 400-800-9990

PCB layout note:  
Close to chip

High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen  
Low: PCICLK OUTPUT form IT8893 chip

Gigabyte Technology  
IT8892E  
GA-Z87X-UD4H  
Rev 1.02  
Date: Monday, April 22, 2013 Sheet 20 of 51

www.xinxunwei.com 400-800-9990

PCB layout note:  
Close to chip

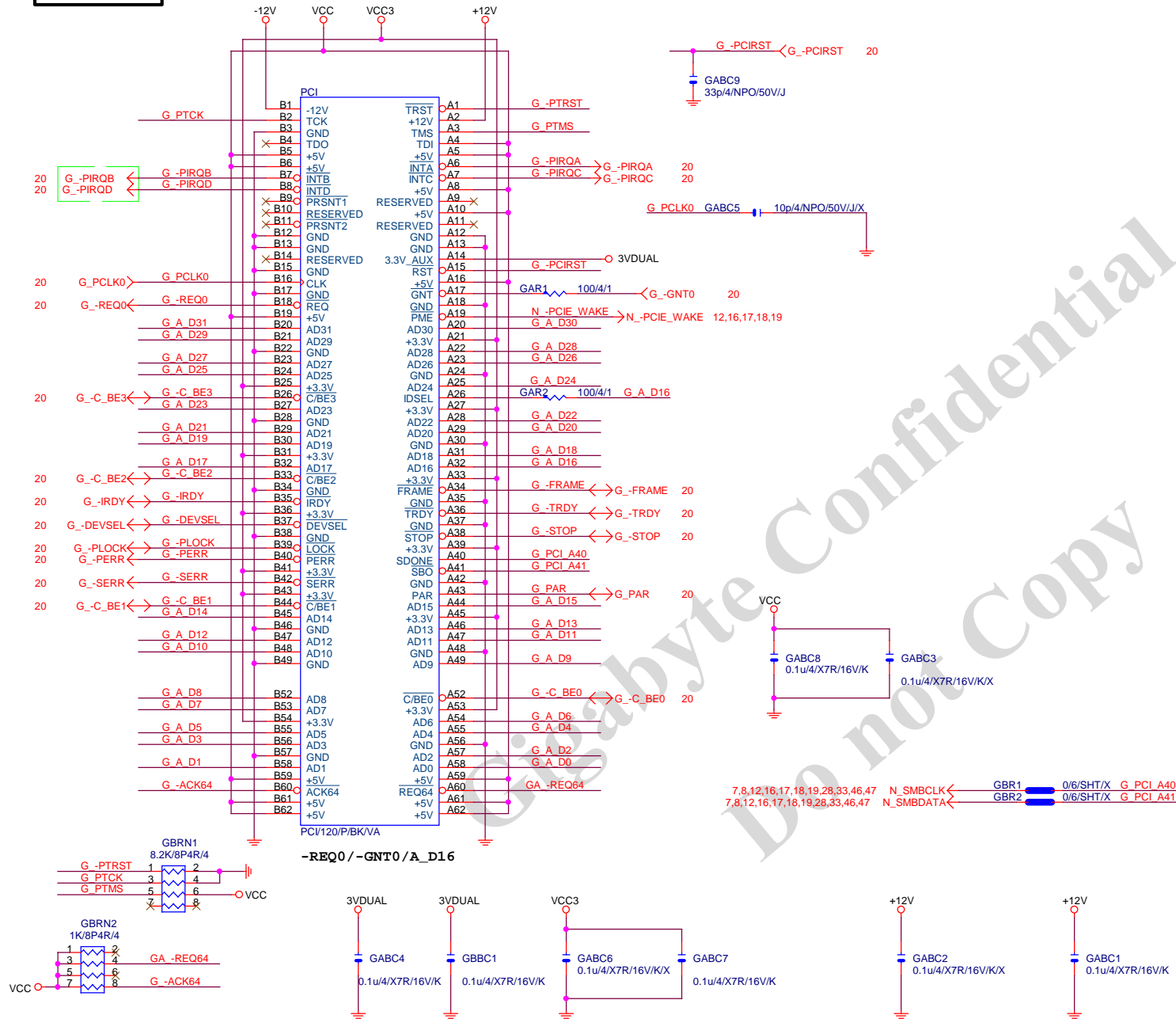
High: Enable PCI CLK 66MHz  
Low: Disable PCI CLK 66MHz

High: PCICLK INPUT form CLK Gen  
Low: PCICLK OUTPUT form IT8893 chip

Gigabyte Technology  
IT8892E  
GA-Z87X-UD4H  
Rev 1.02  
Date: Monday, April 22, 2013 Sheet 20 of 51



## PCI SLOT 1



GIGABYTE™

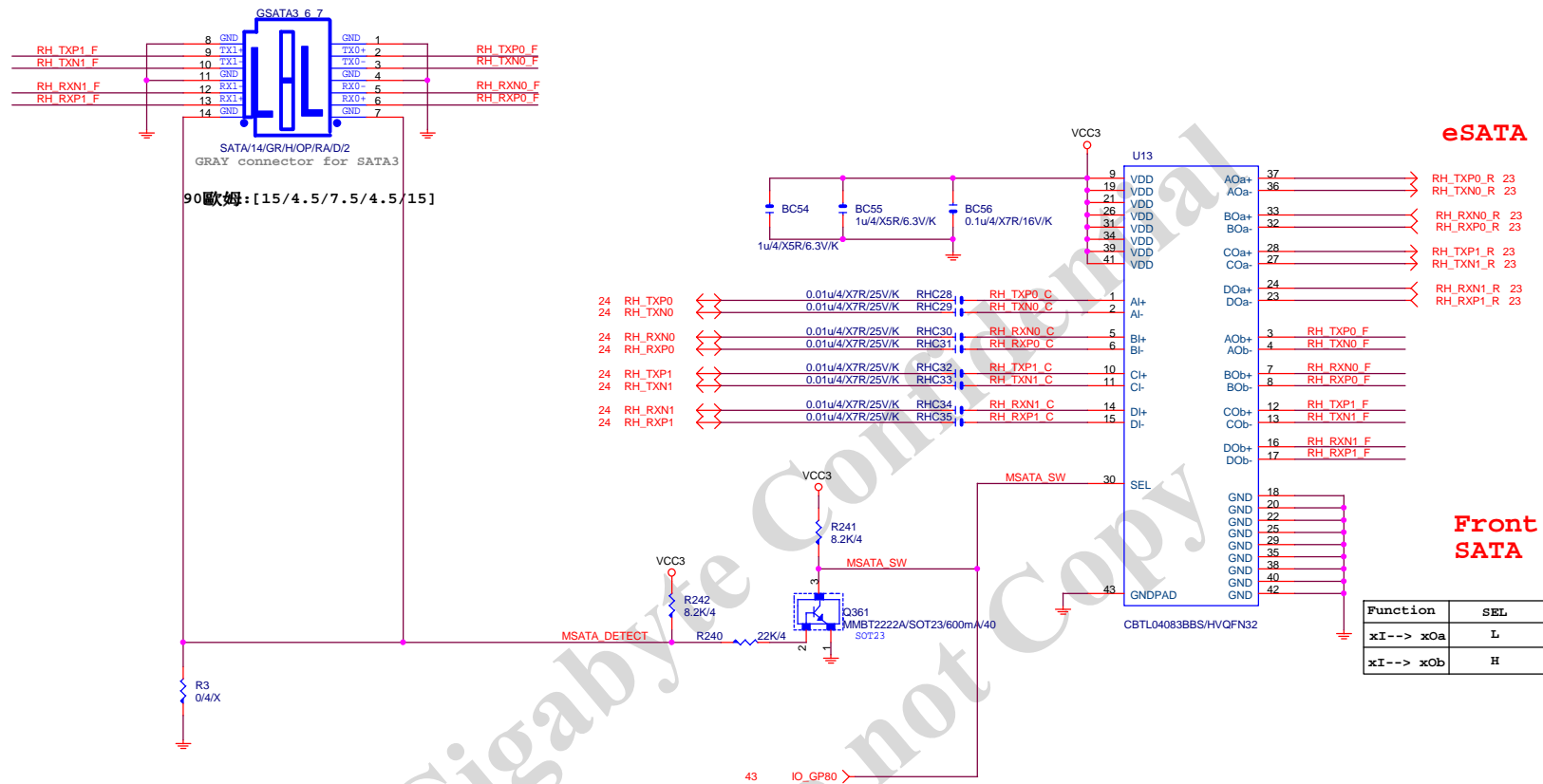
Title  
PCI SLOT 1&2Size  
B Document Number

GA-Z87X-UD4H

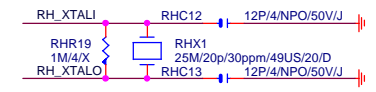
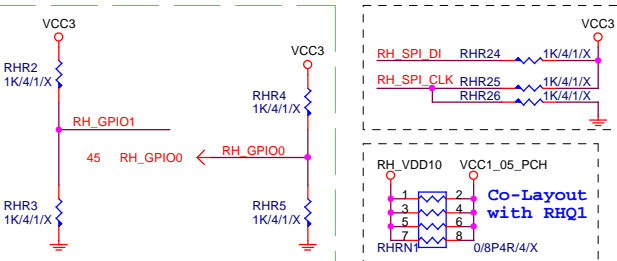
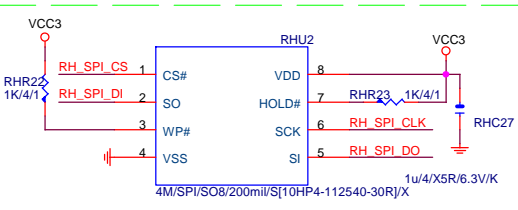
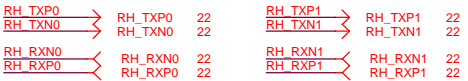
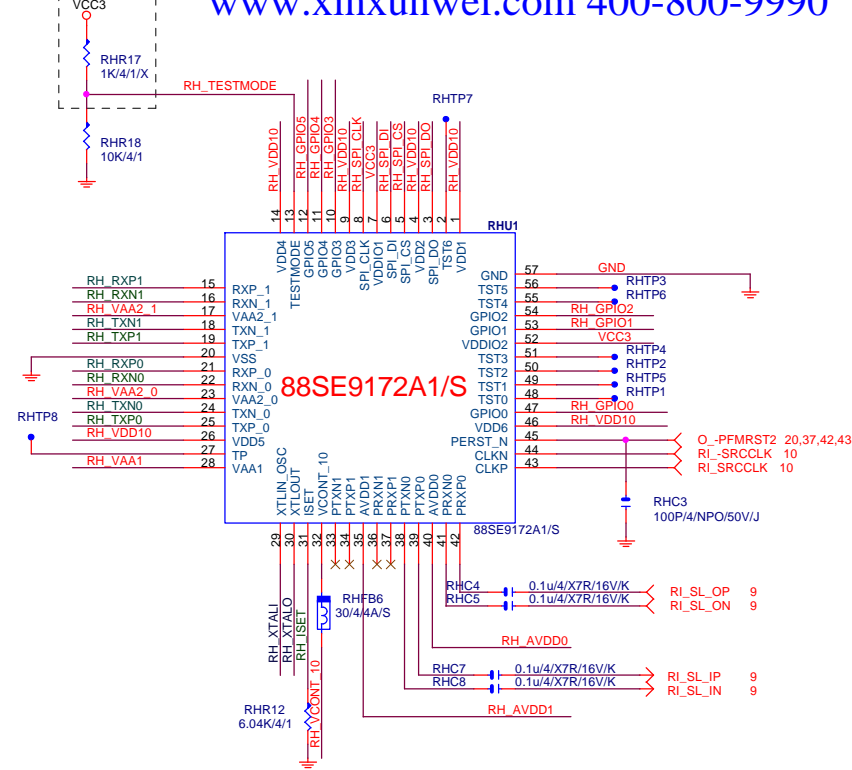
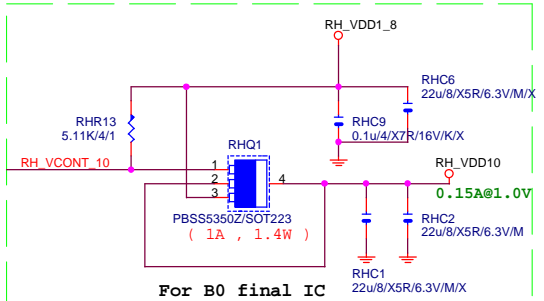
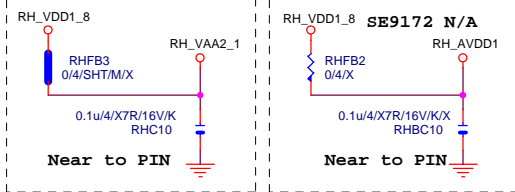
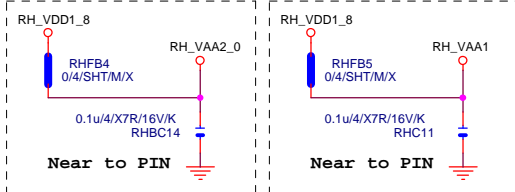
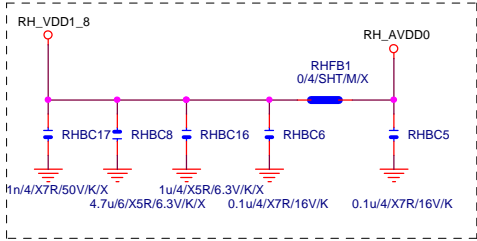
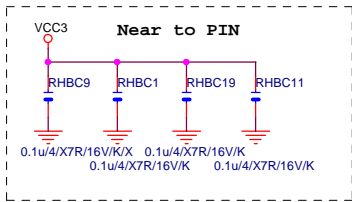
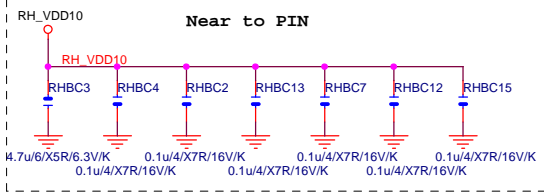
Rev  
1.02

Date: Monday, April 22, 2013

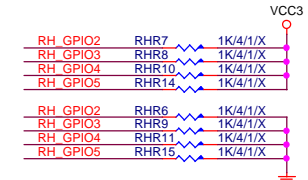
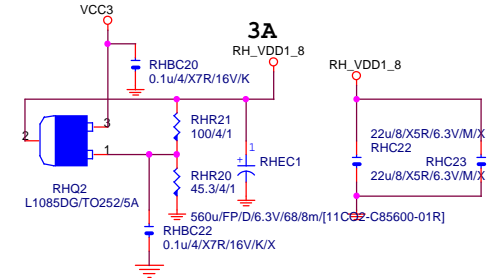
Sheet 21 of 51



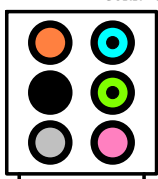
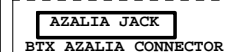
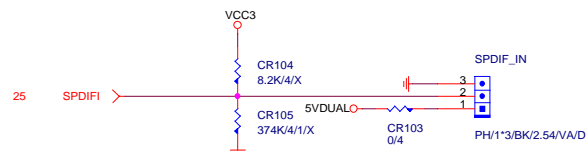
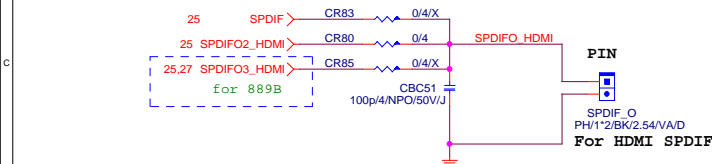
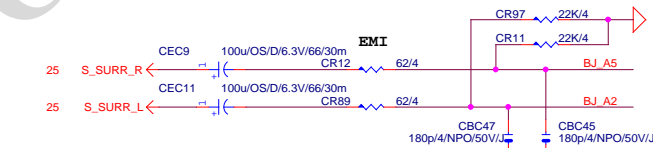
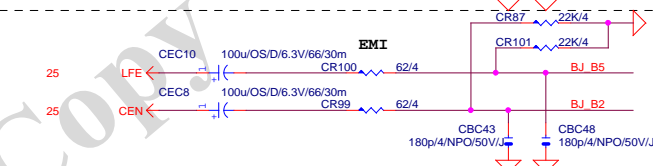
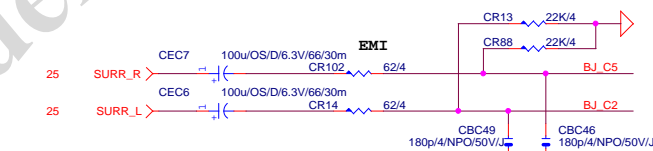
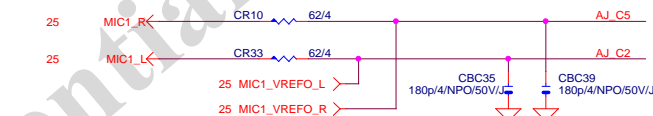
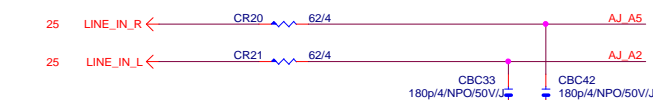




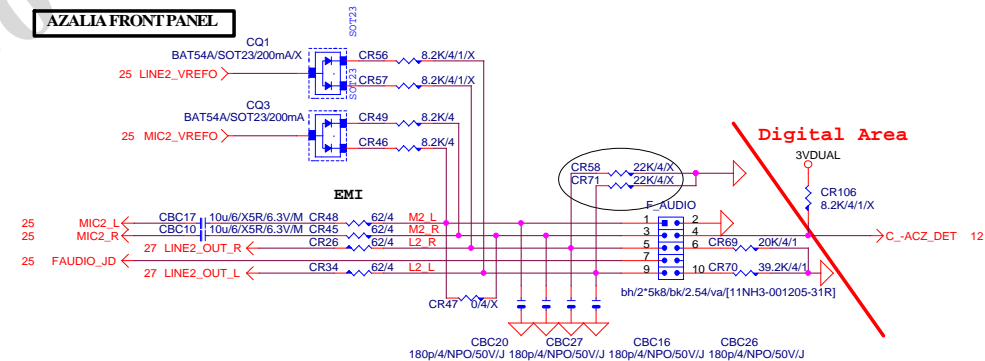
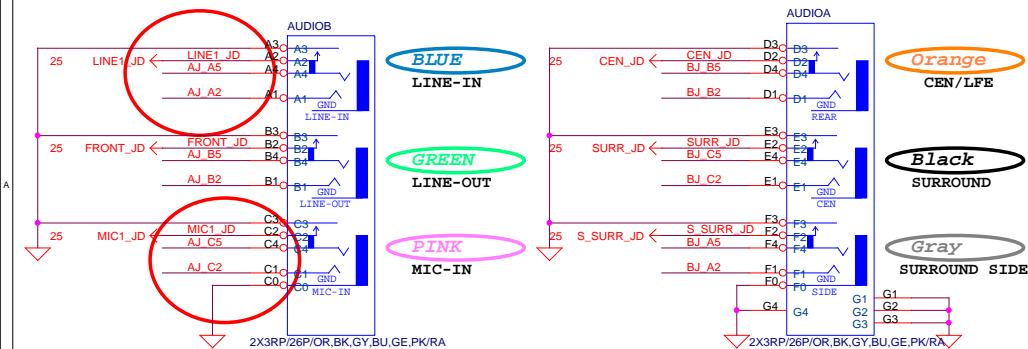
Marvell 9172 Power Requirements  
Analog 1.8V 230mA  
Core 1.0V 900mA  
I/O 3.3V 50mA



CFB1



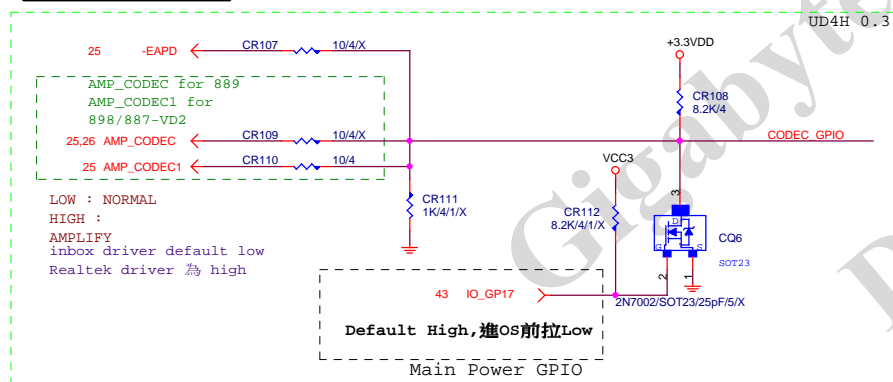
11NR6-403007-21R



## Gigabyte Technology

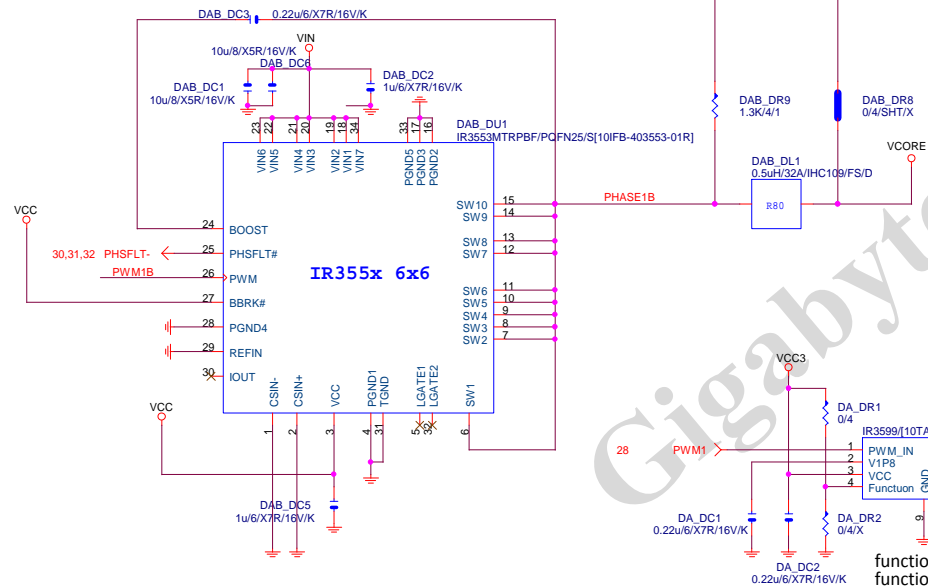
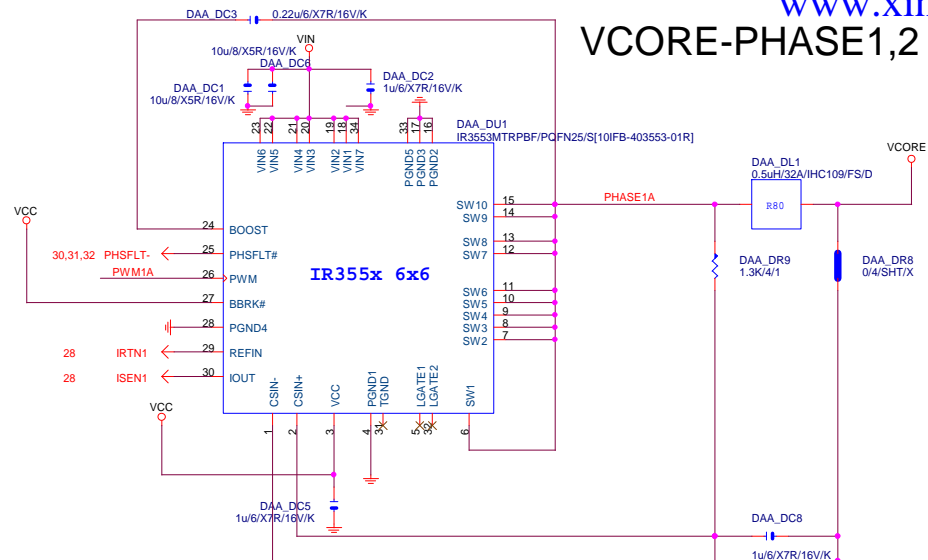
Title				<b>AUDIO JACK</b>			
Size Custom		Document Number				<b>GA-287X-UD4H</b>	
						Rev 1.02	
Date: Monday, April 22, 2013				Sheet 26 of 51			





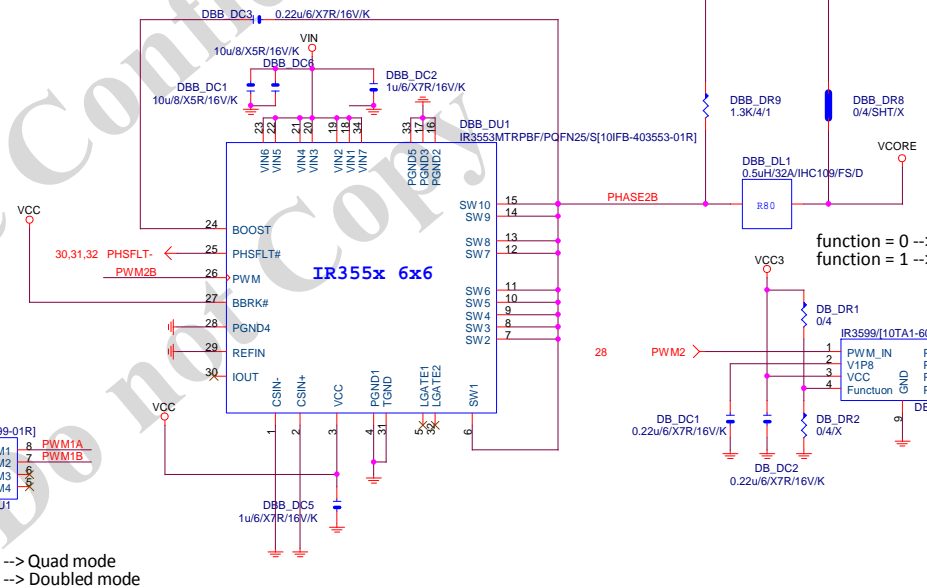
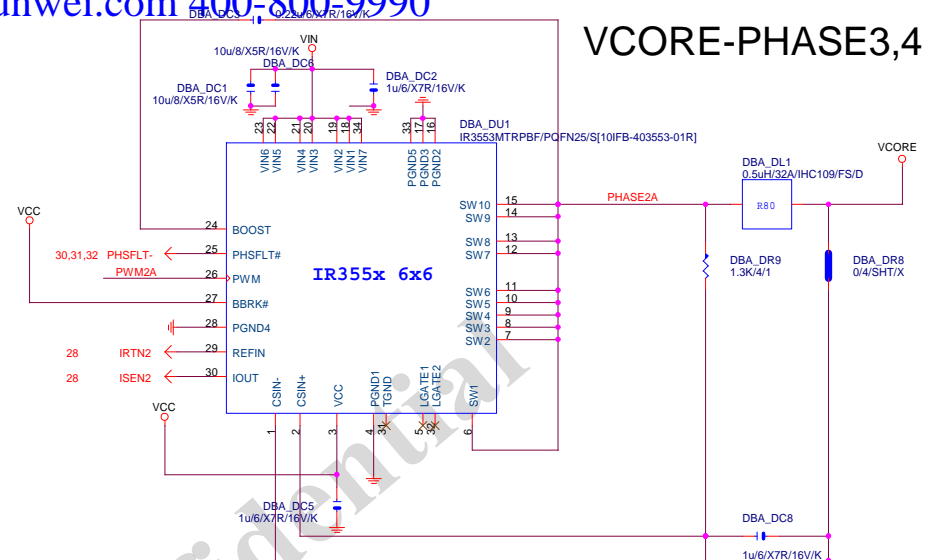


## VCORE-PHASE1,2

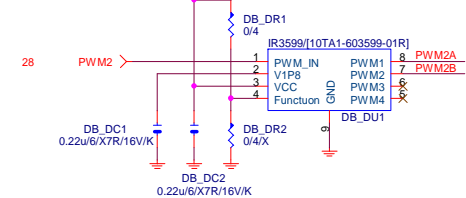


Add MOSFET Anti-Burn  
4.11.28 N\_THRMTRIP ← DAR109 0/4 PHSFLT- UD4H 0.3 VCC  
6.2K/4/X

## VCORE-PHASE3,4



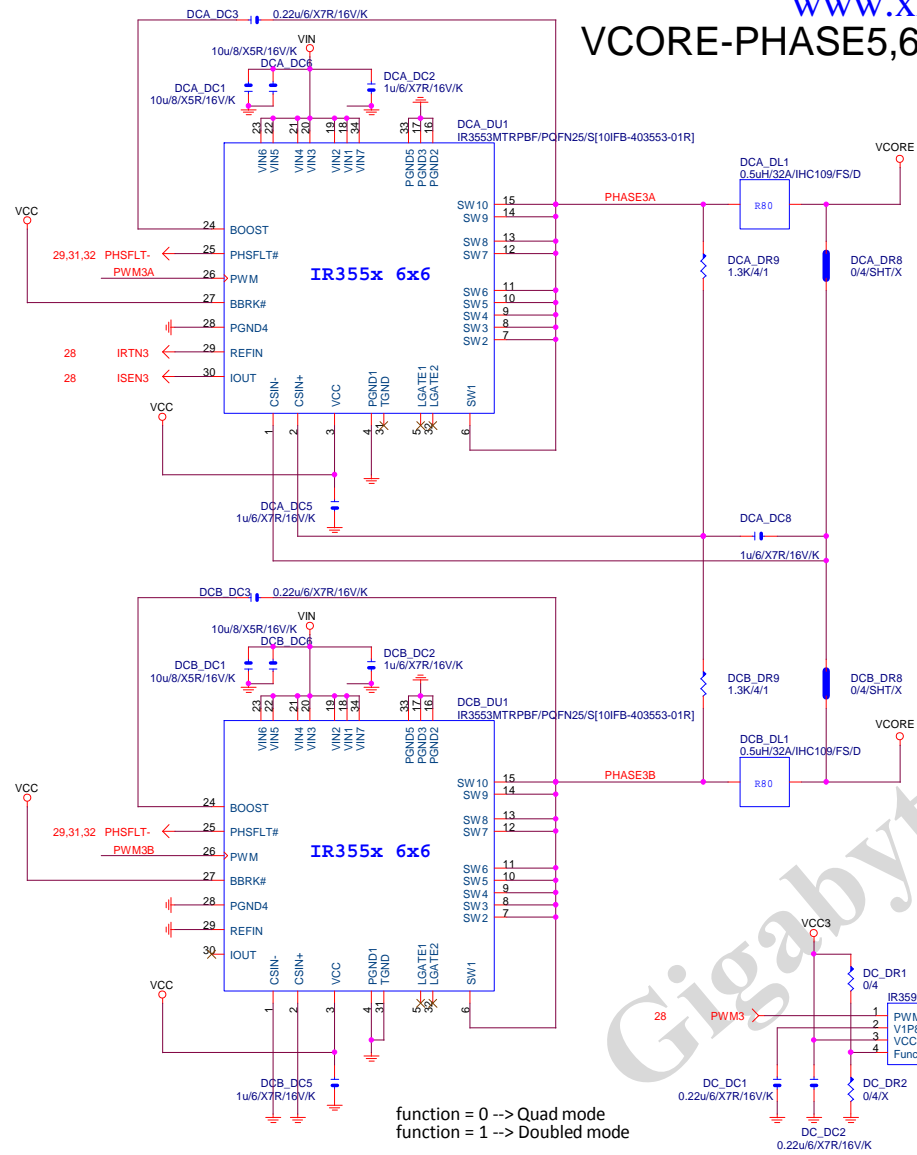
function = 0 --> Quad mode  
function = 1 --> Doubled mode



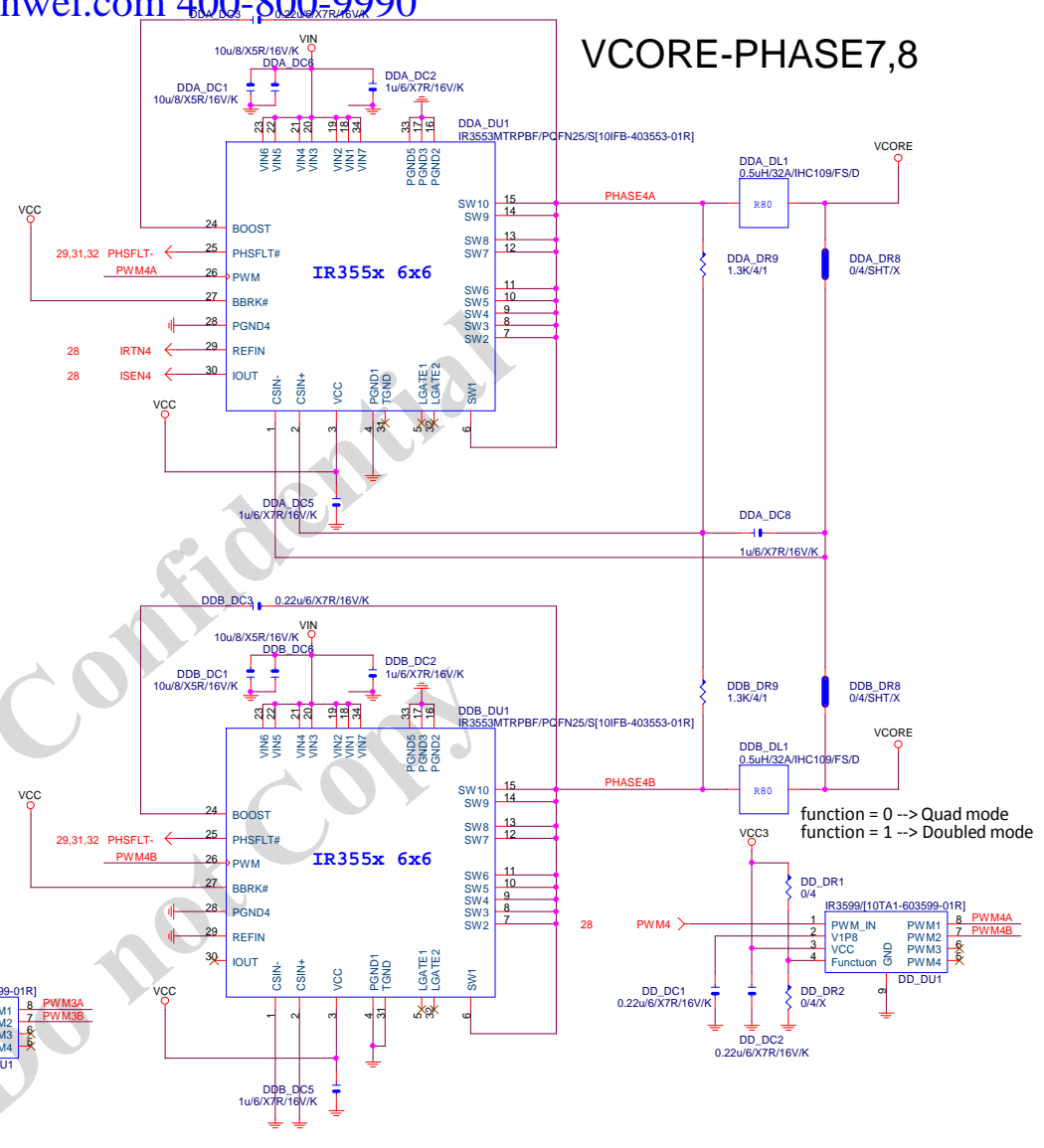
Gigabyte Technology

Title			
CPU CORE VR			
Size	Document Number	Rev	
Custom	GA-Z87X-UD4H	1.02	
Date:	Monday, April 22, 2013	Sheet	29 of 51

## VCORE-PHASE5,6



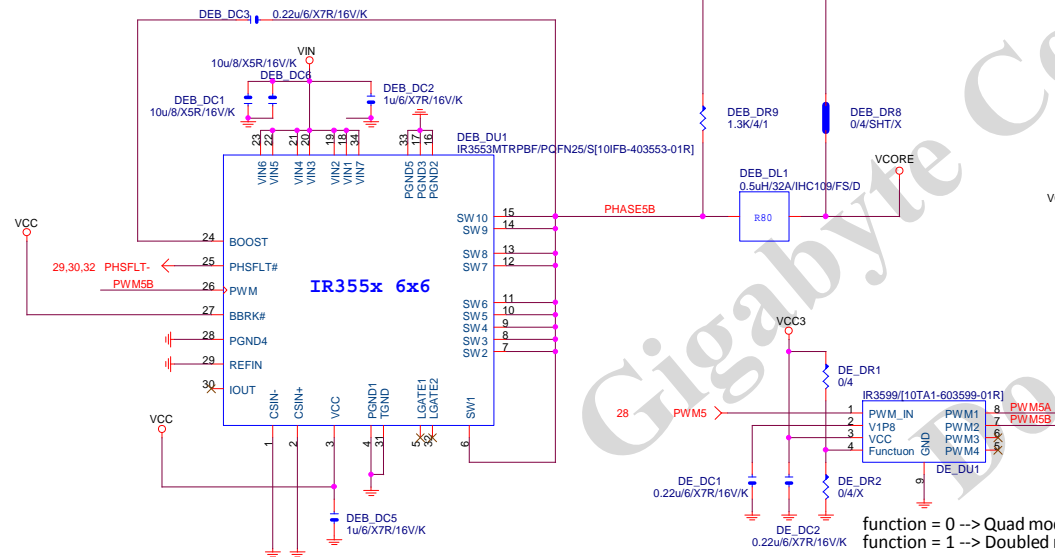
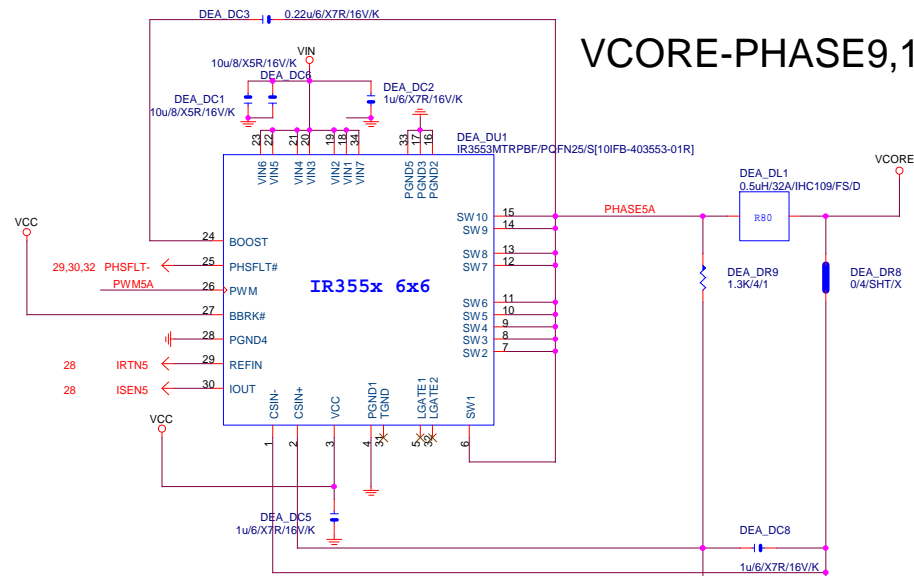
## VCORE-PHASE7,8



Gigabyte Technology

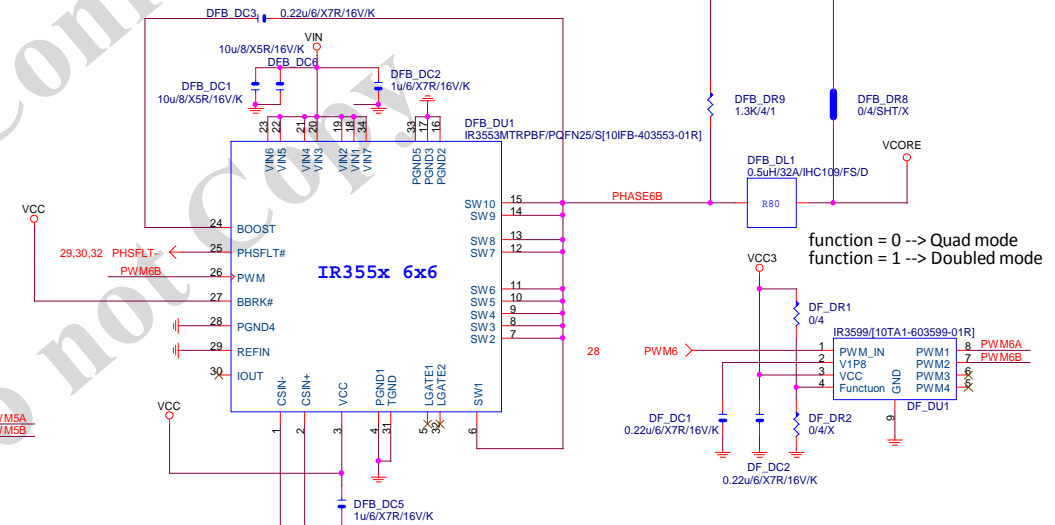
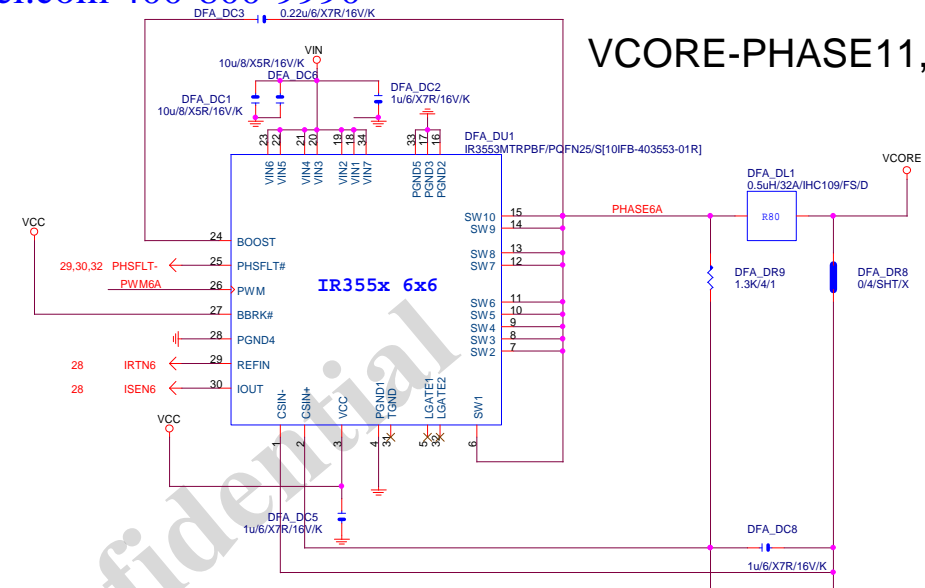
Title			
CPU CORE VR			
Size	Document Number	GA-Z87X-UD4H	
Custom		Rev	1.02
Date:	Monday, April 22, 2013	Sheet	30 of 51

## VCORE-PHASE9,10

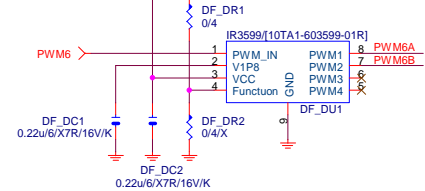


function = 0 --> Quad mode  
function = 1 --> Doubled mode

## VCORE-PHASE11,12



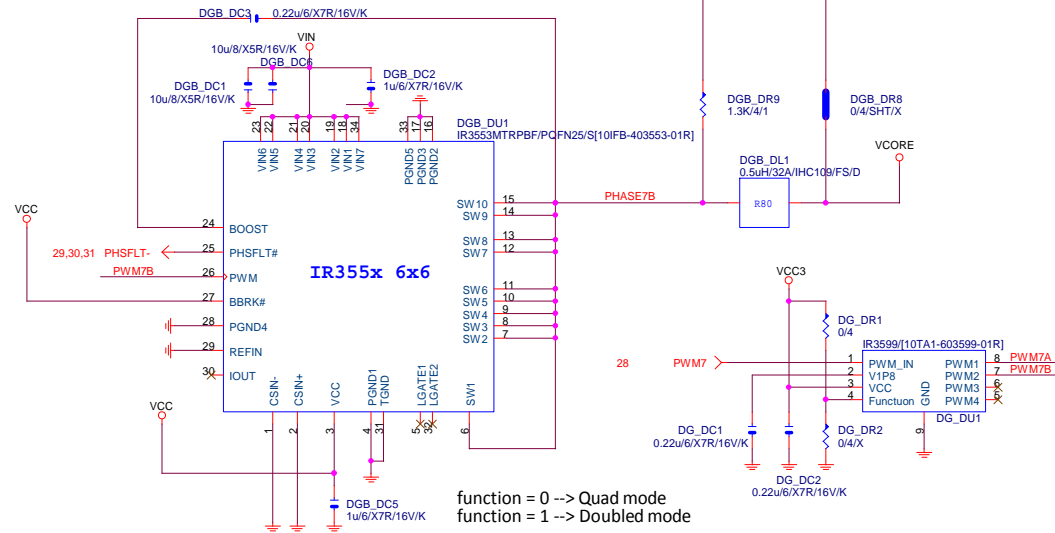
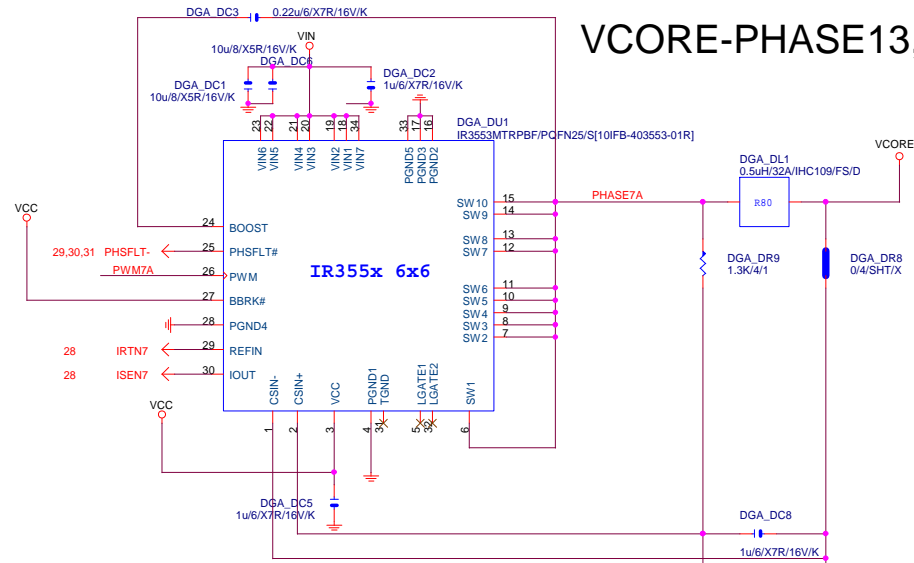
function = 0 --> Quad mode  
function = 1 --> Doubled mode



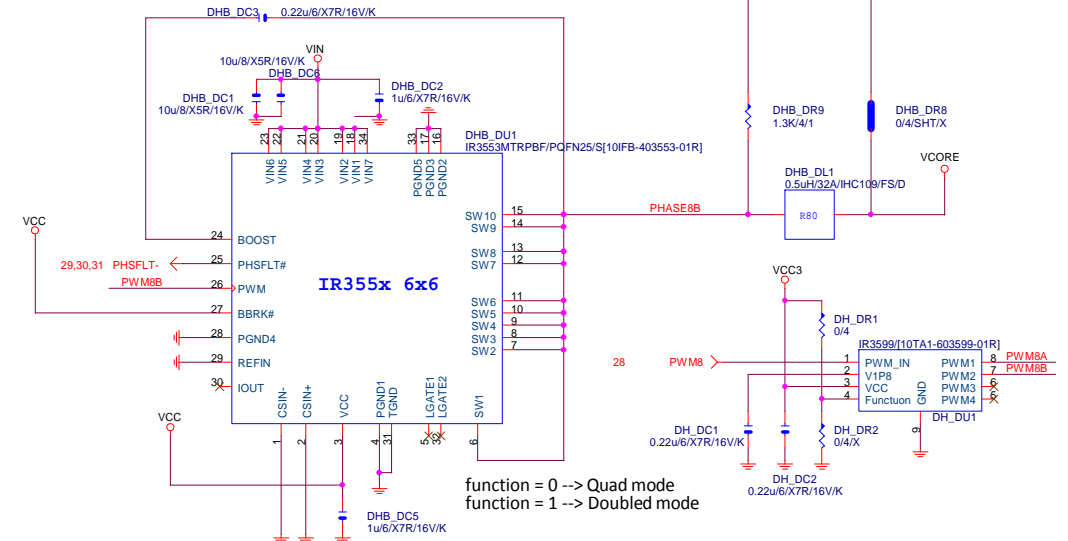
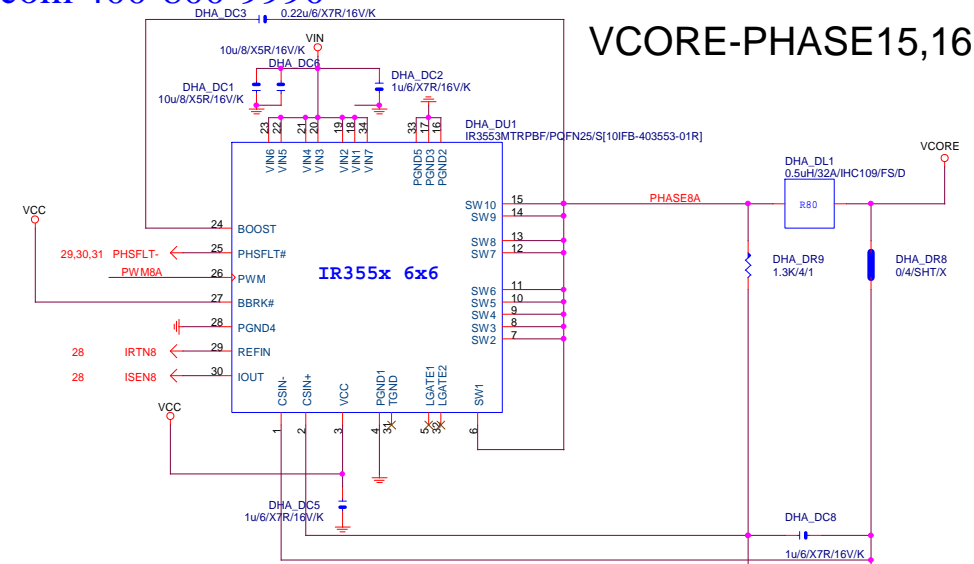
Gigabyte Technology

Title		IR3553-VCORE	
Size	Document Number	GA-Z87X-UD4H	
Custom		Rev 1.02	
Date:	Monday, April 22, 2013	Sheet	31 of 51

## VCORE-PHASE13,14



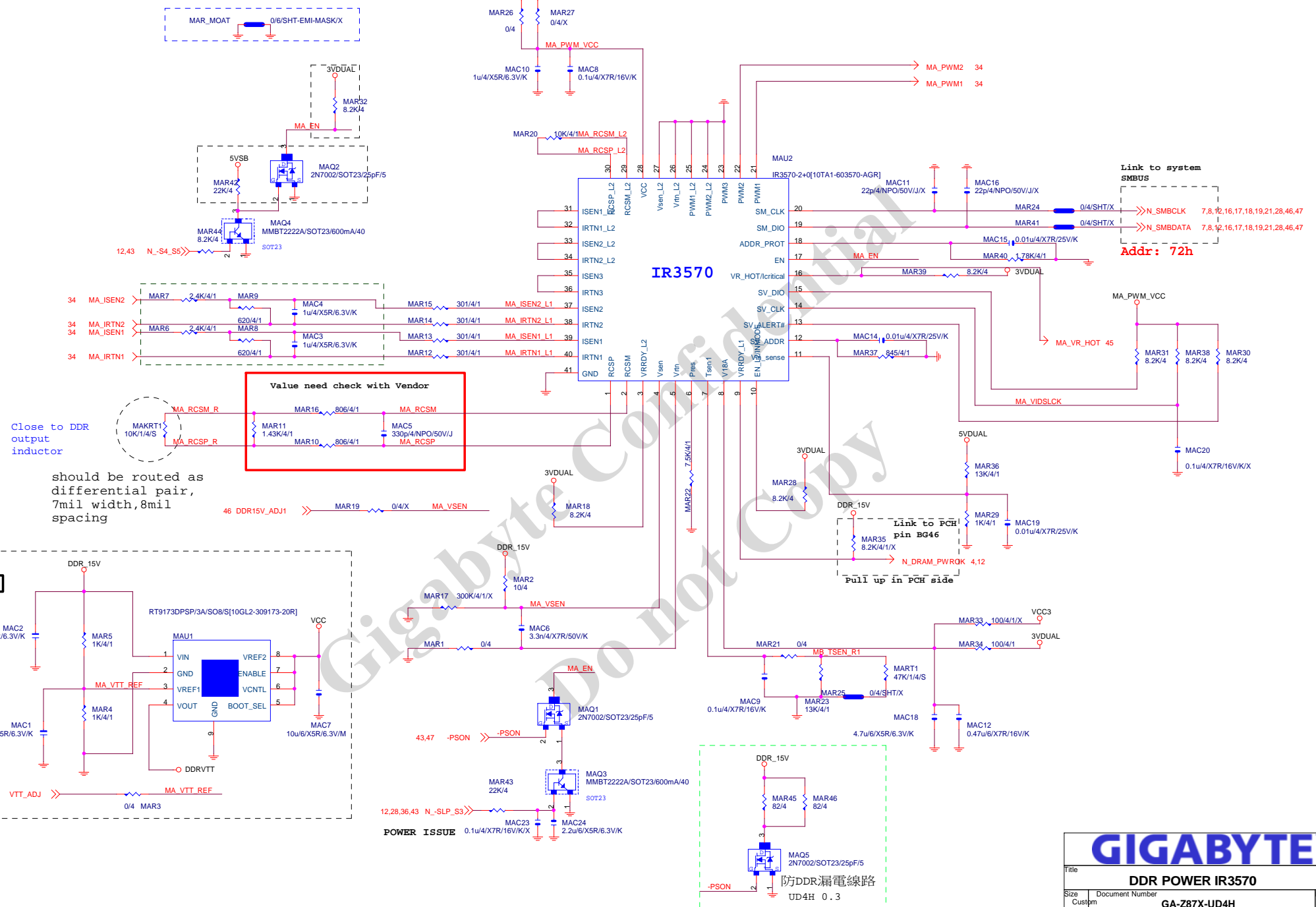
## VCORE-PHASE15,16



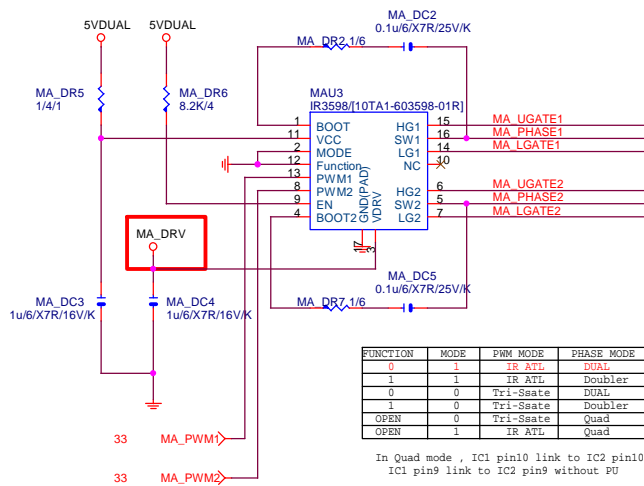
Gigabyte Technology

Title			IR3553-VCORE
Size	Document Number	GA-Z87X-UD4H	
Custom		Rev	1.02
Date:	Monday, April 22, 2013	Sheet	32 of 51



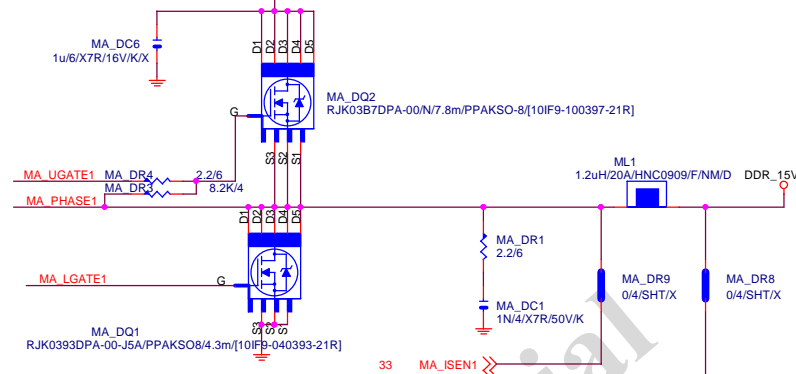
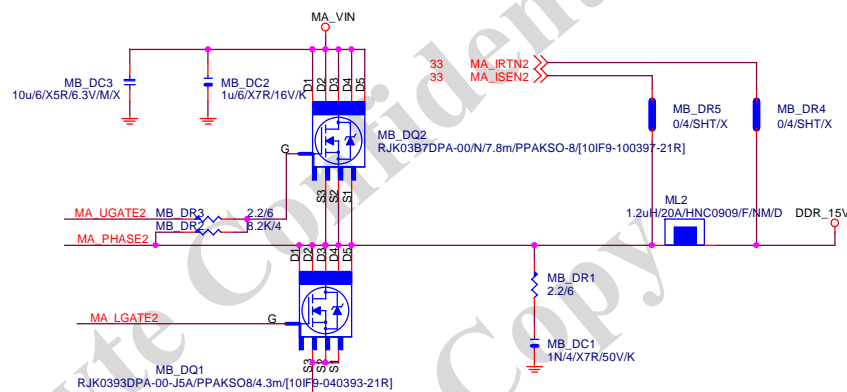
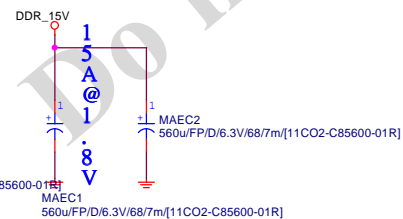
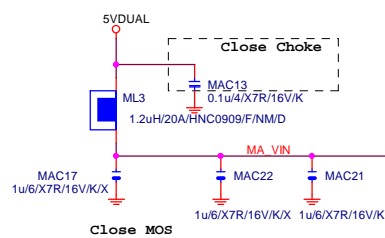
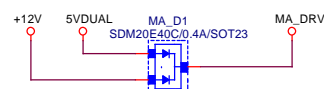


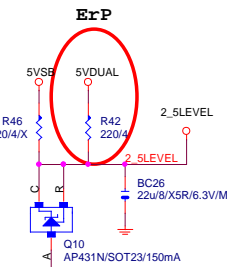
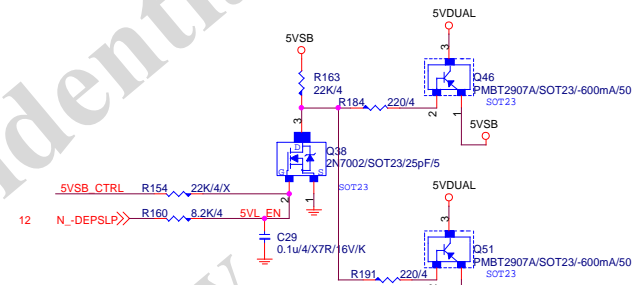
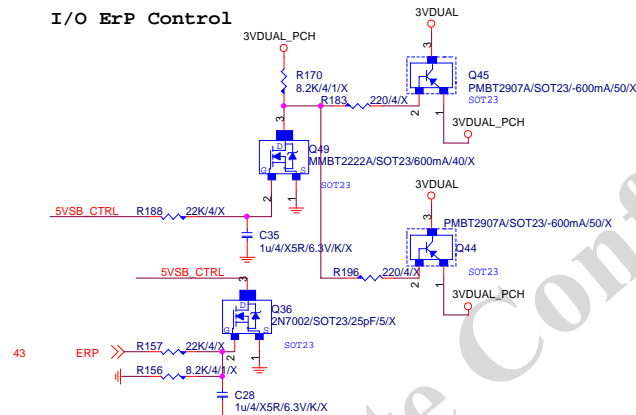
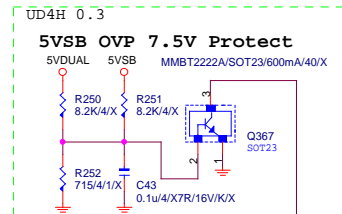
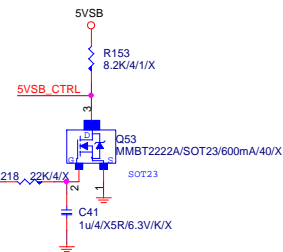
DDR\_15V



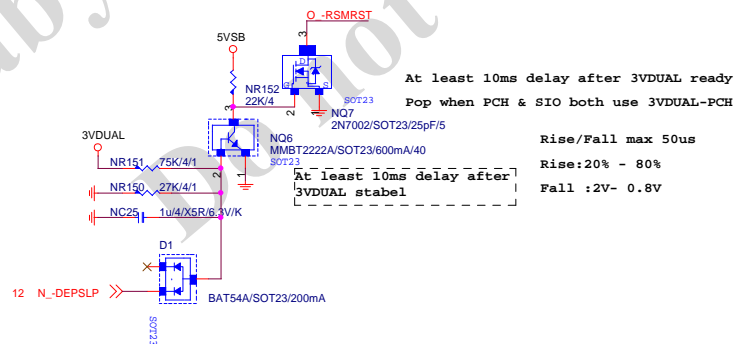
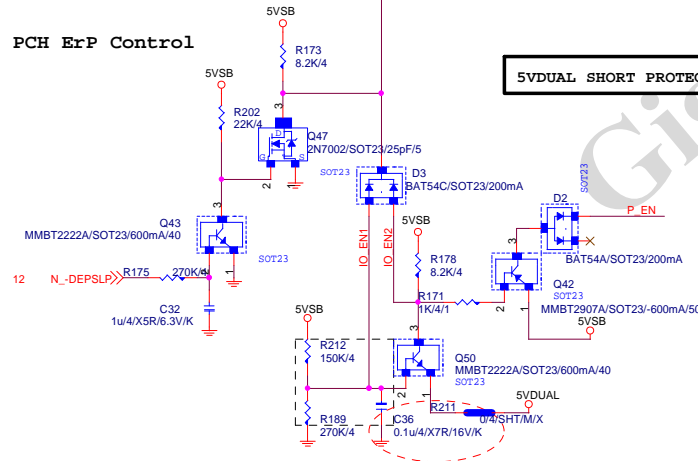
FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-Ssate	DUAL
1	0	Tri-Ssate	Doubler
OPEN	0	Tri-Ssate	Quad
OPEN	1	IR ATL	Quad

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





## 5VDUAL SHORT PROTECT

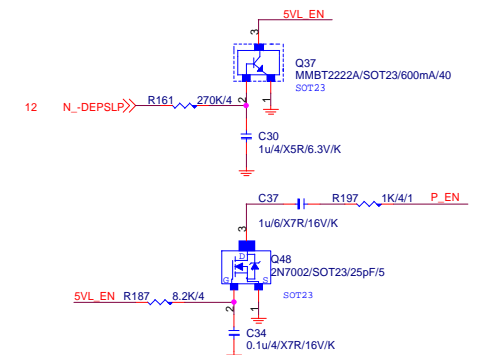


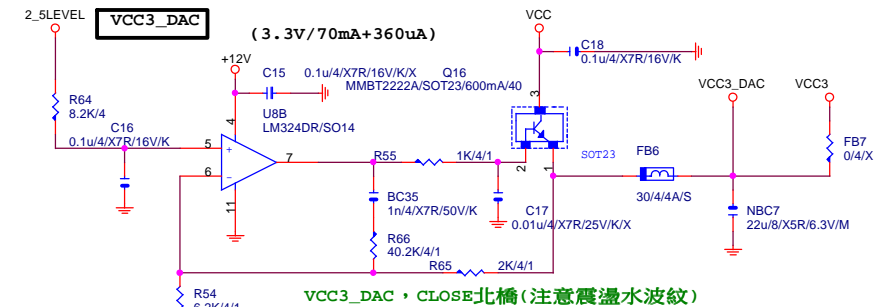
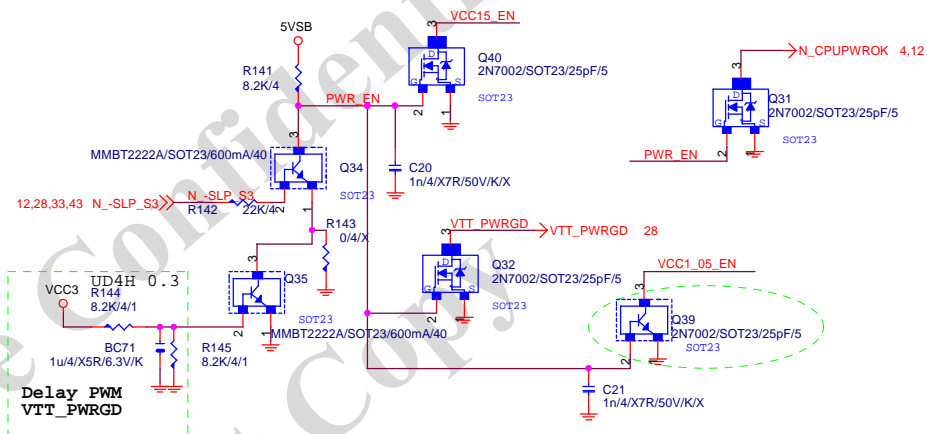
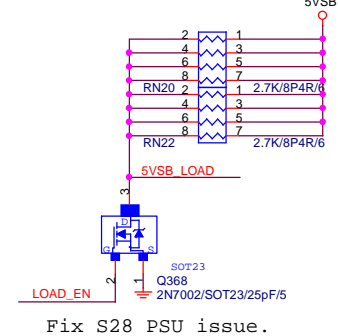
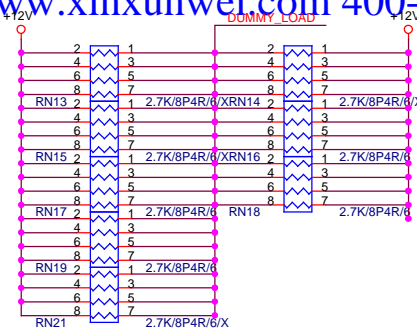
At least 10ms delay after 3VDUAL ready  
Pop when PCH & SIO both use 3VDUAL-PCH

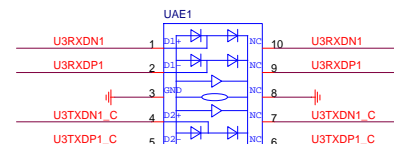
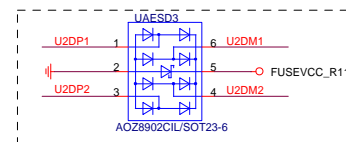
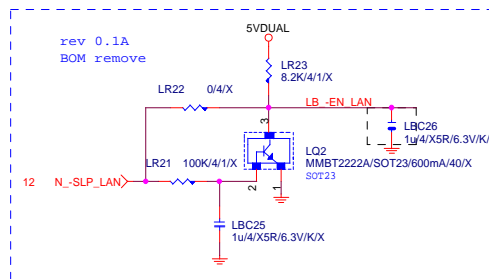
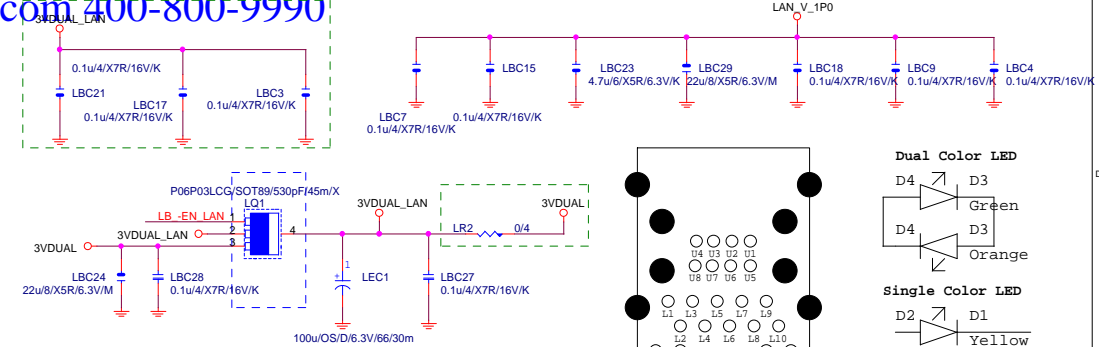
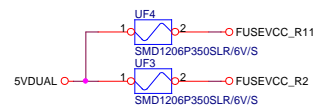
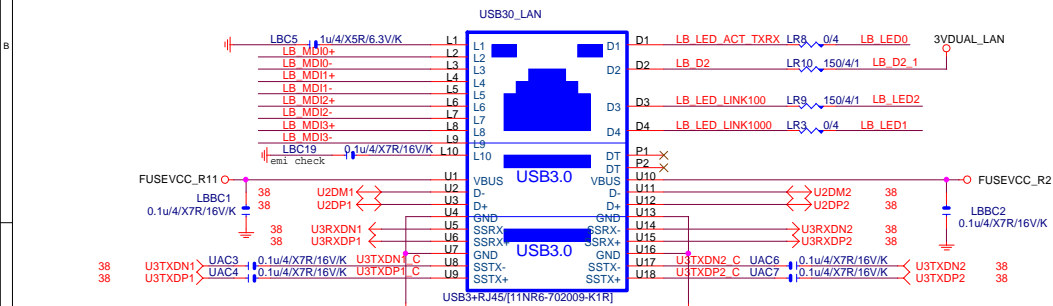
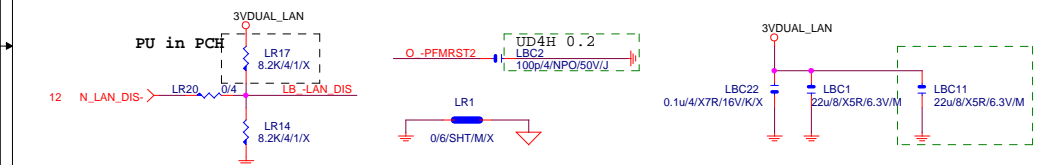
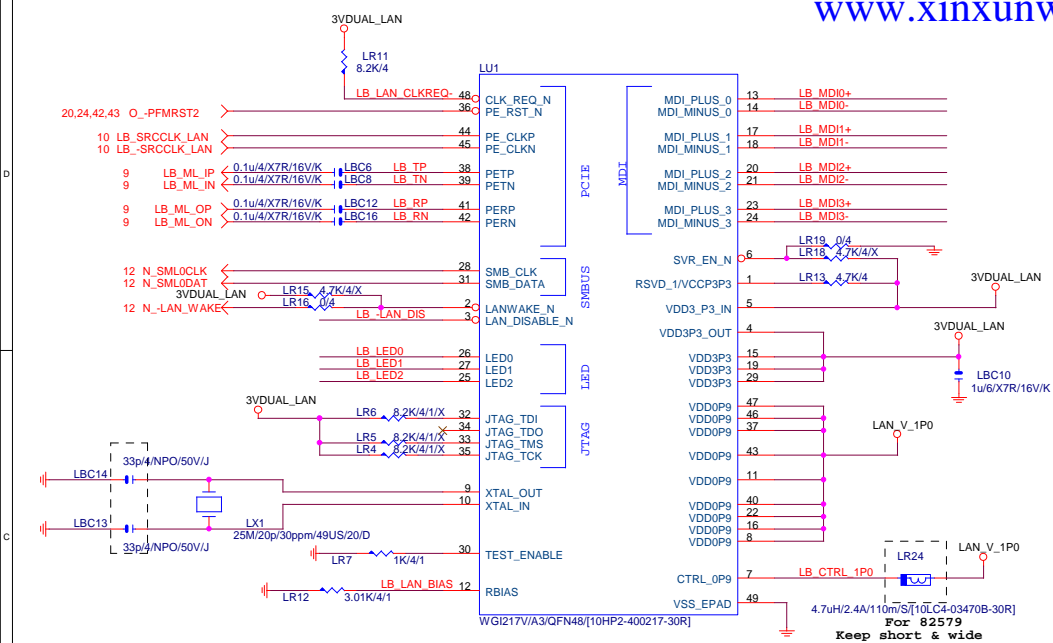
Rise/Fall max 50us

Rise: 20% - 80%

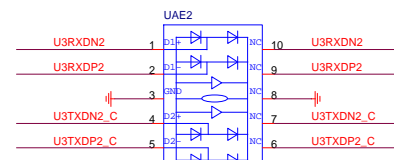
Fall : 2V- 0.8V



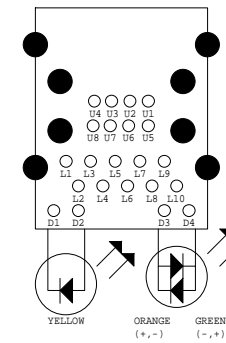




Close to connector



Close to connector




**Dual Color LED**

D4 D3 Green

D4 D3 Orange

Single Color LED



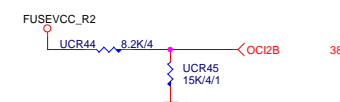
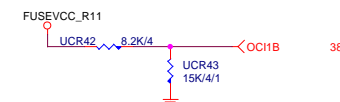
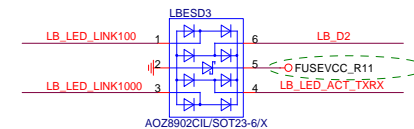
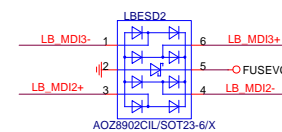
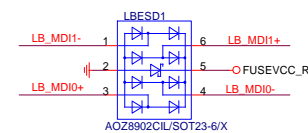
D2

D1

Yellow

1Gb	Orange
100Mb	Green
10Mb	Off
Access	Blinking
Link	Yellow

RMA ESD PROTECT

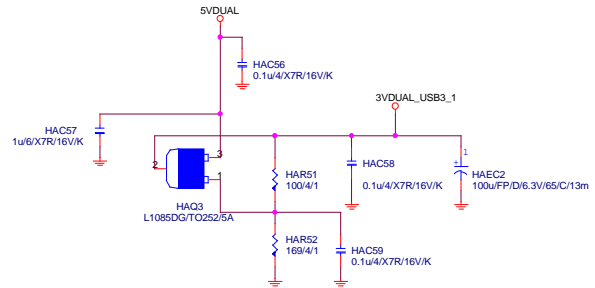


Title			
INTEL LAN i217V			
Size	Document Number	Rev	
Custom	GA-Z87X-UD4H	1.02	
Date:	Monday, April 22, 2013	Sheet	37 of 51

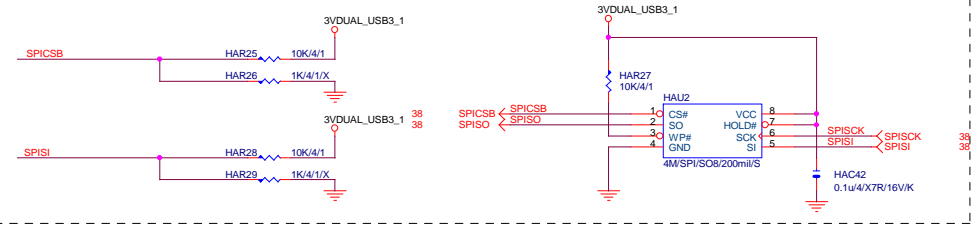




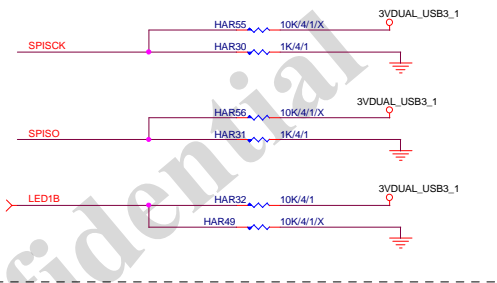
## 3VDUAL\_USB



# External SPI ROM ; SPI ROM  
attached mode

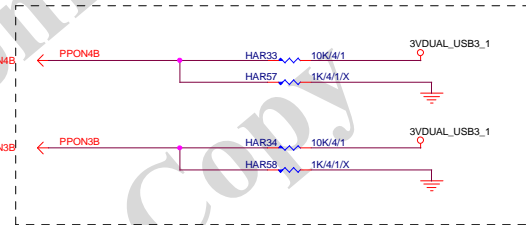


# Battery Charging

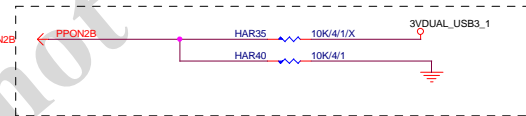


# Number of Ports ; 4Ports  
mode

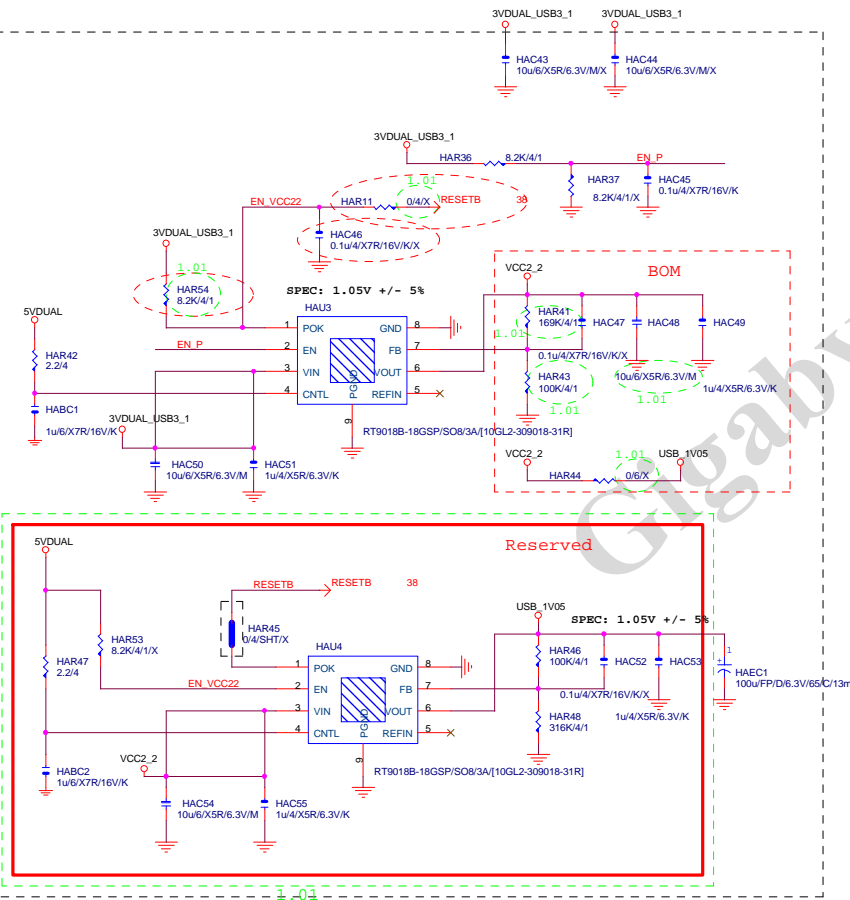
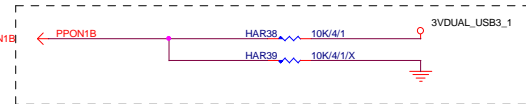
PPON3B / PPON4B : H / H ( 4 port )  
PPON3B / PPON4B : L / L ( 2 port )



#5 VBUS Power Control  
Individual mode

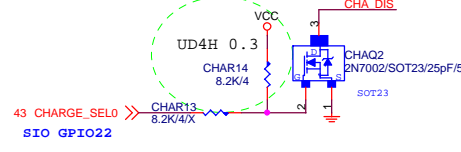
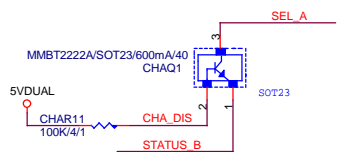
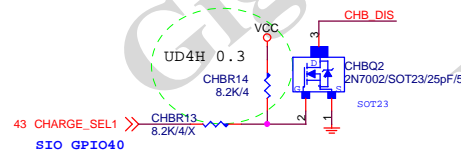
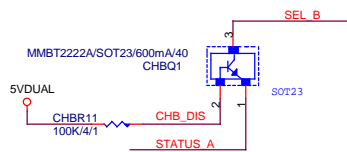
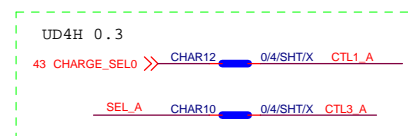
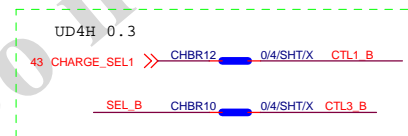
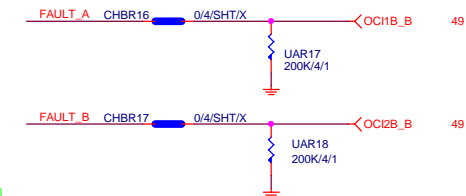
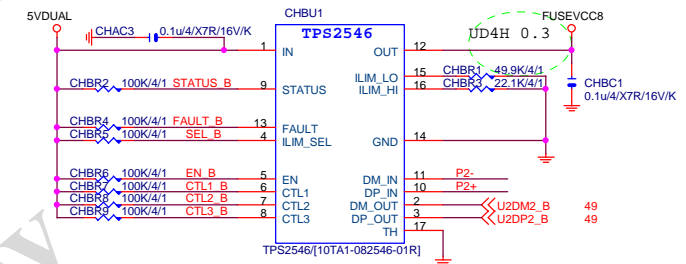
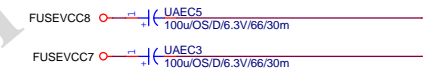
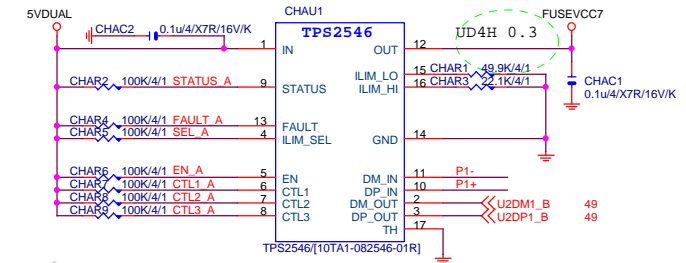
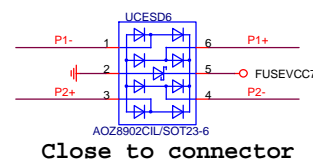
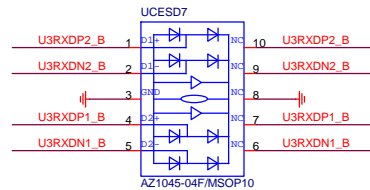
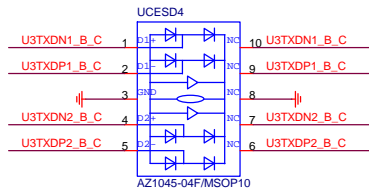
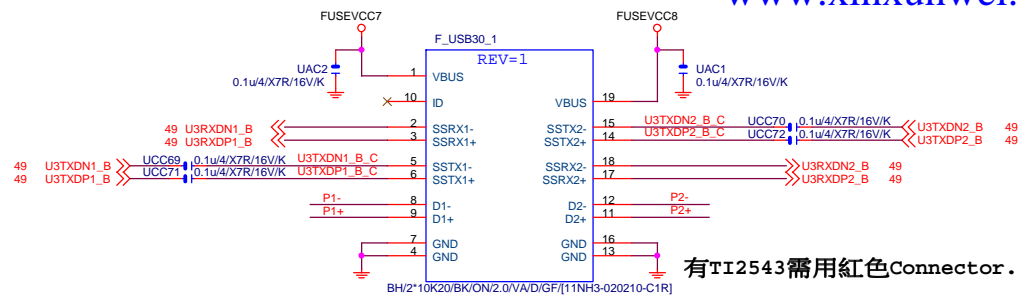


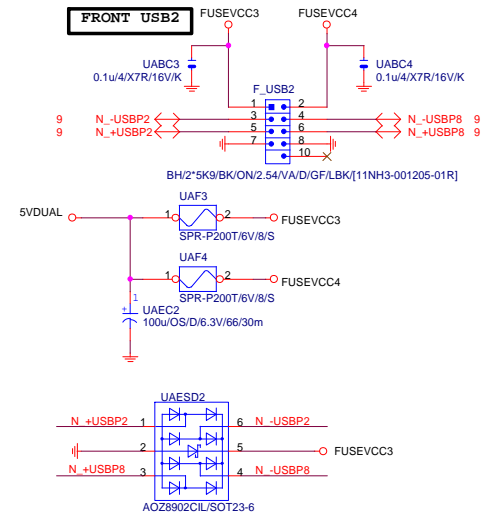
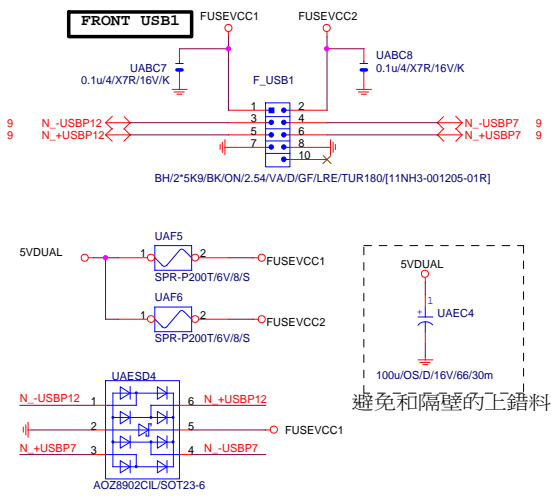
# PPON1B Pin Function ;  
Port1 PPONB mode



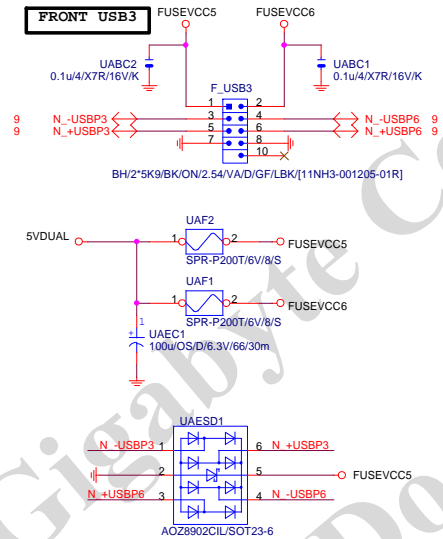
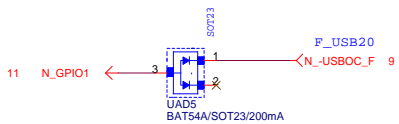
**GIGABYTE**™

Title					D720210 4port Hub					
Size		Document Number						Rev		
Custom		GA-Z87X-UD5H						1.02		
Date:		Monday, April 22, 2013			Sheet		39 of		51	

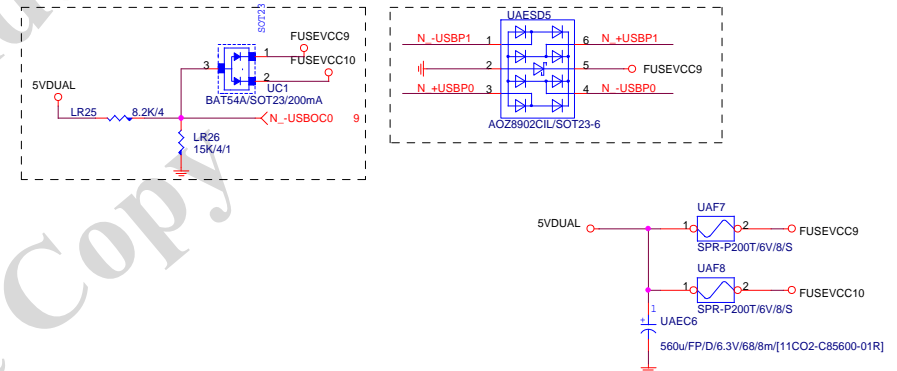
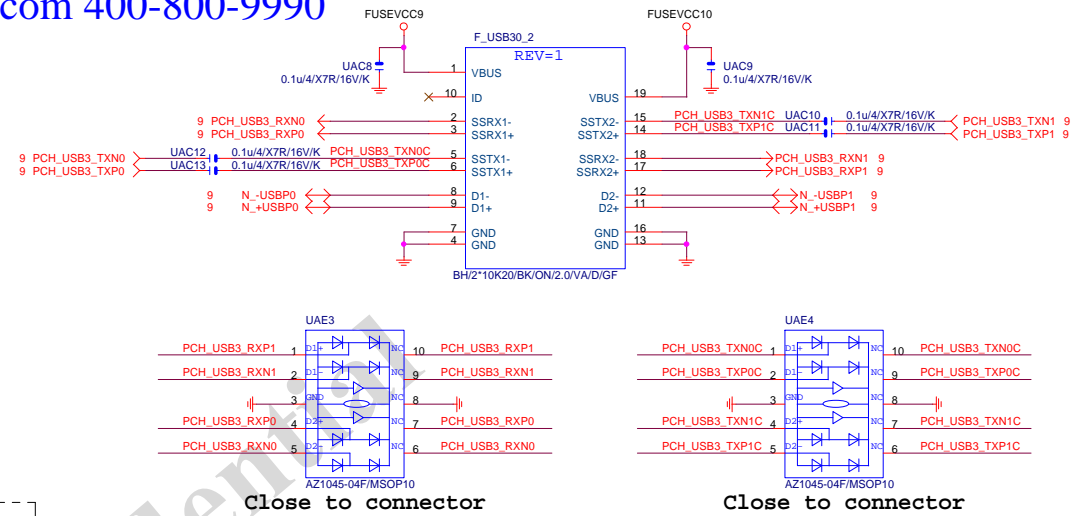
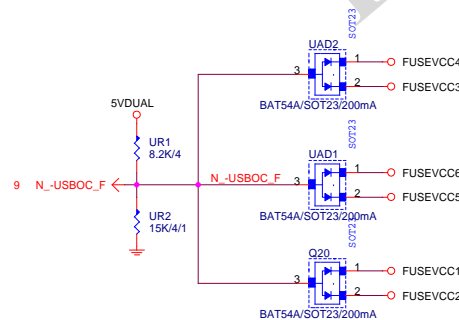




Close to connector



Close to connector



GIGABYTE™

Title		
FRONT USB 2.0, F_USB30_2		
Size	Document Number	Rev
Custom	GA-Z87X-UD4H	1.02
Date:	Monday, April 22, 2013	Sheet 41 of 51

## MOSI For DMI RX Termination Voltage



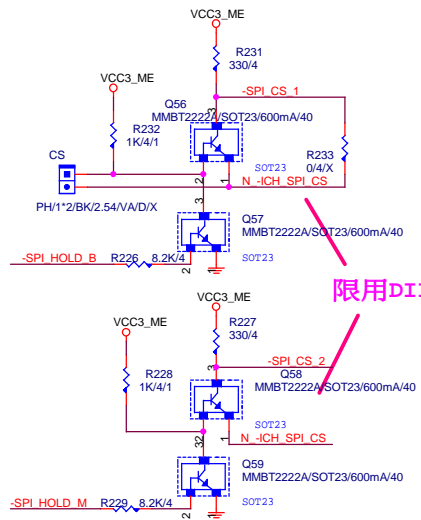
1 means floating  
0 means PD 1K



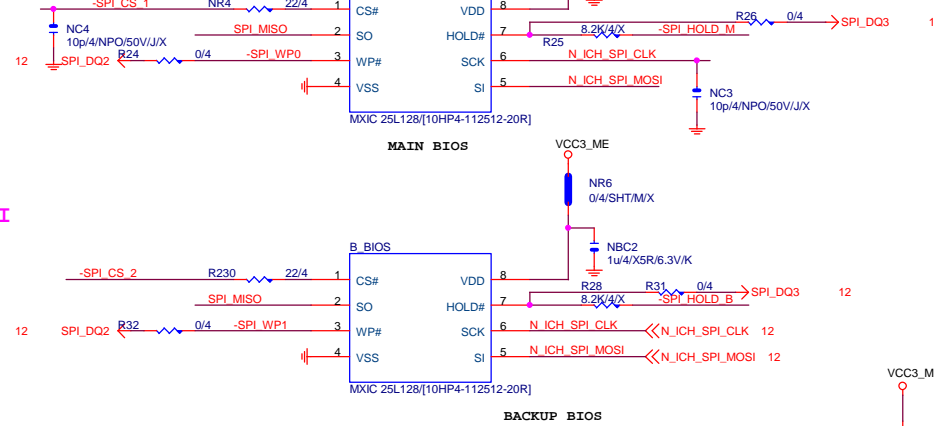
BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

## SPI ROM

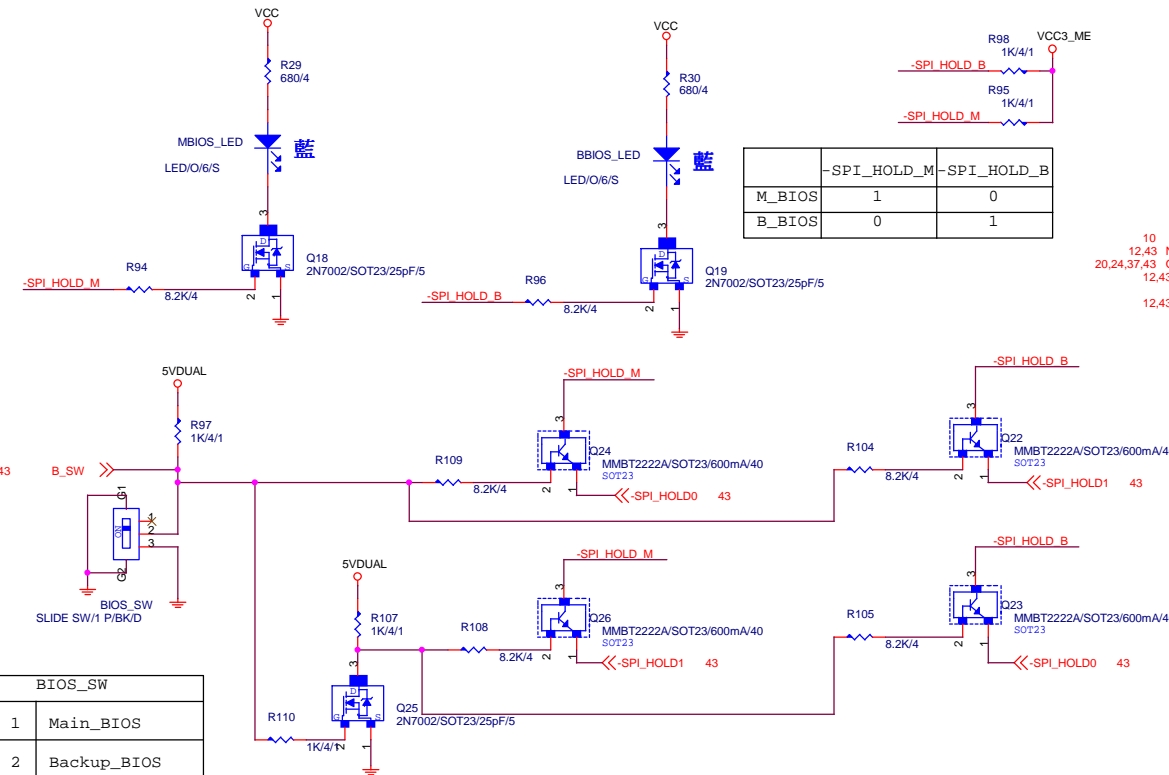
	Quad I/O	Traditional
Pin 2	SIO 1	S0
Pin 3	SIO 2	WP#
Pin 5	SIO 0	SI
Pin 7	SIO 3	HOLD#



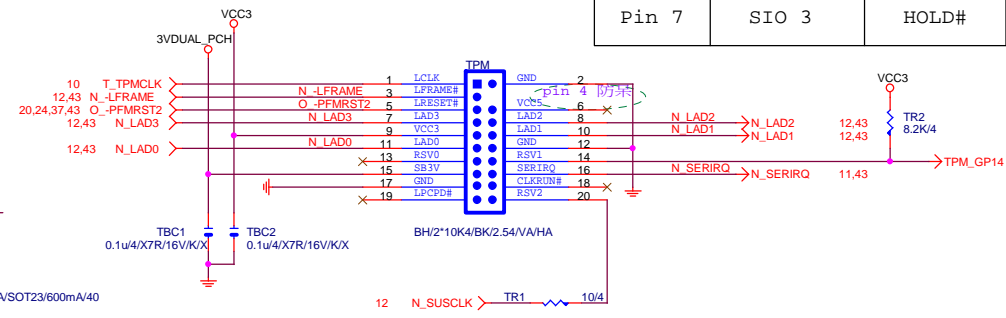
限用DII



	-SPI_HOLD_M	-SPI_HOLD_B
M_BIOS	1	0
B_BIOS	0	1

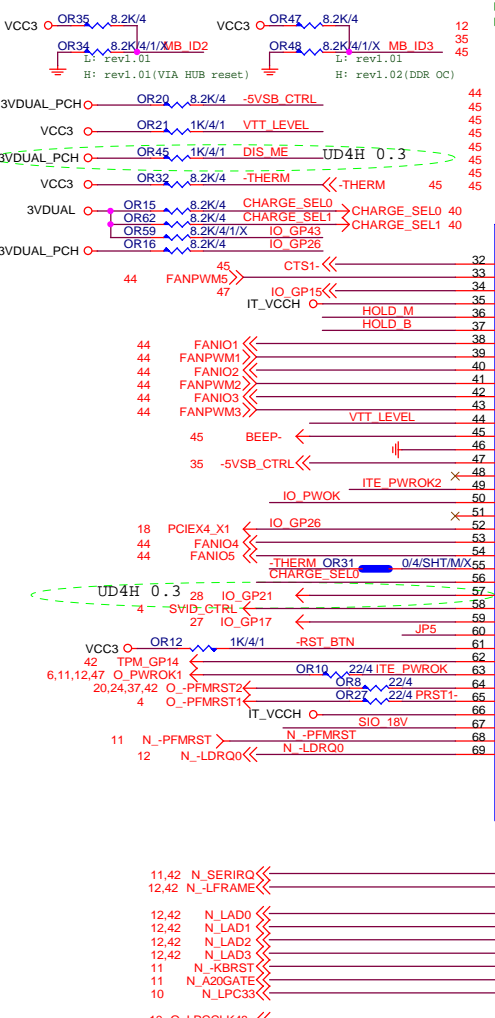


BIOS_SW	
1	Main_BIOS
2	Backup_BIOS

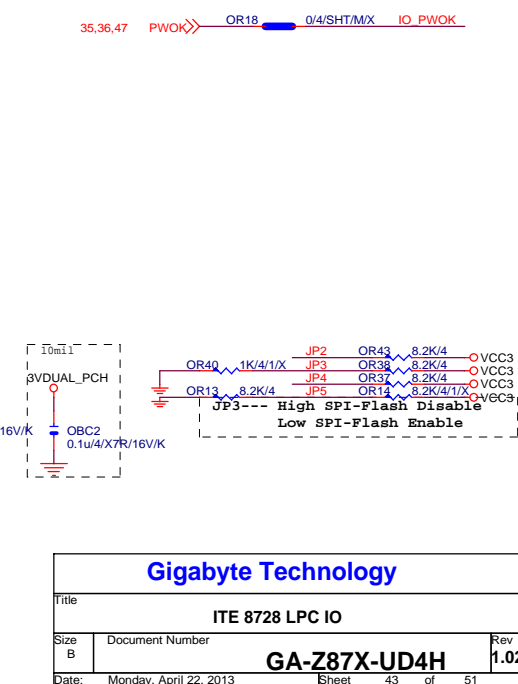
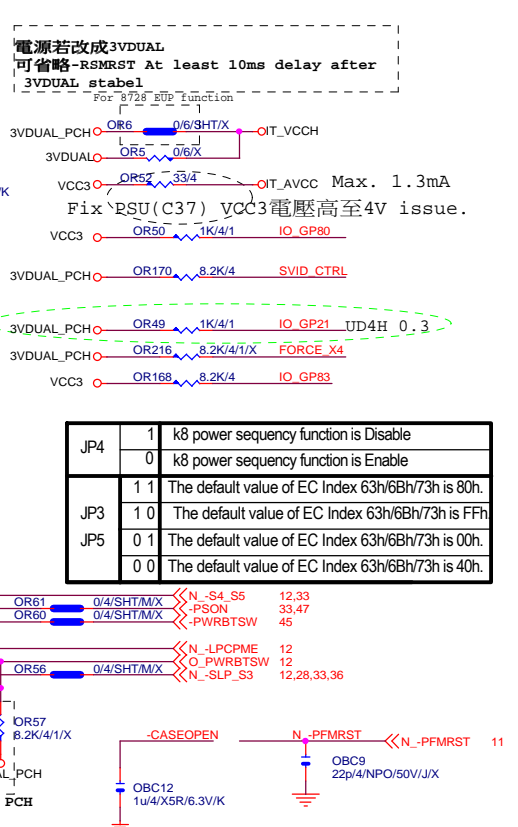
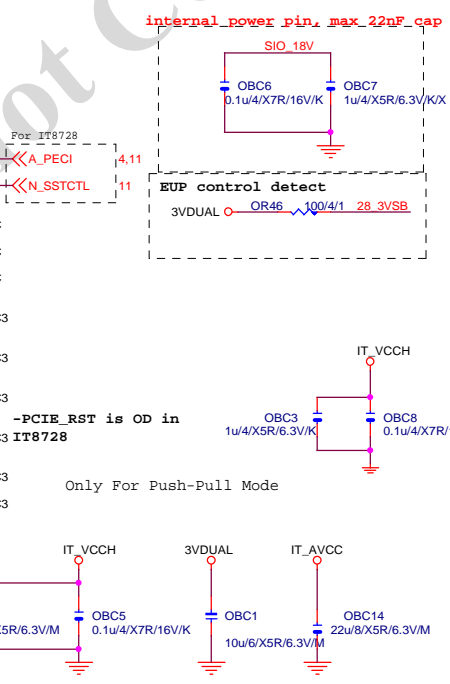
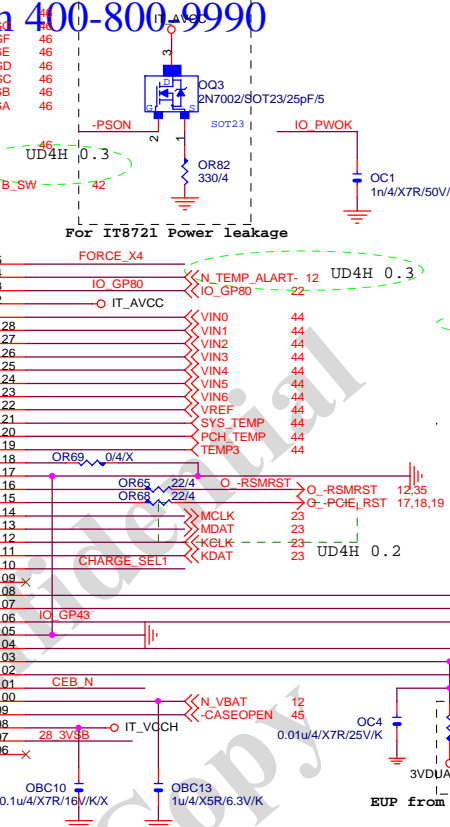
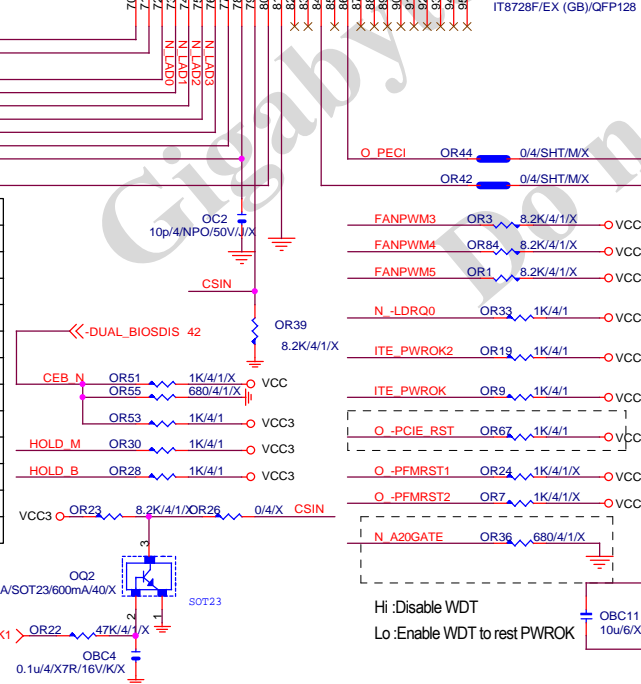
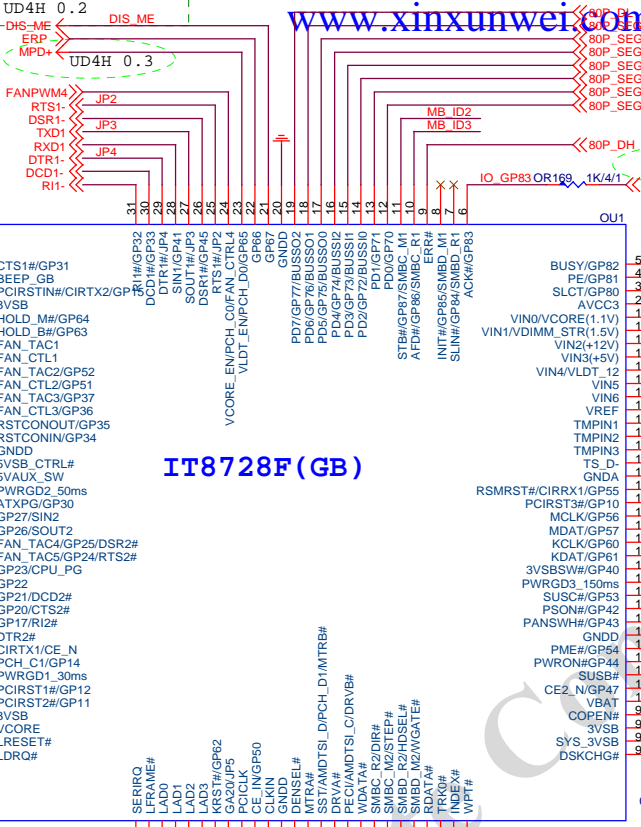
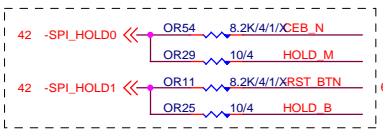


SB	
1	Disable
2	Enable

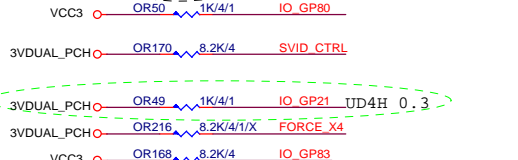
Gigabyte Technology		
Title Dual BIOS		
Size Custom	Document Number GA-Z87X-UD4H	Rev 1.02
Date: Monday, April 22, 2013	Sheet 42 of 51	



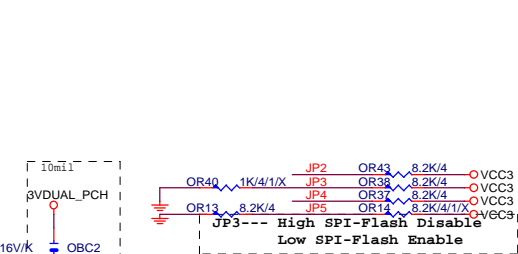
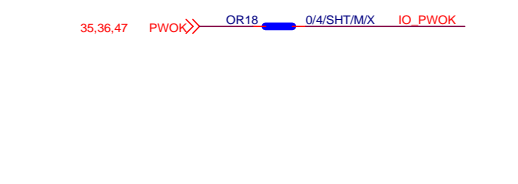
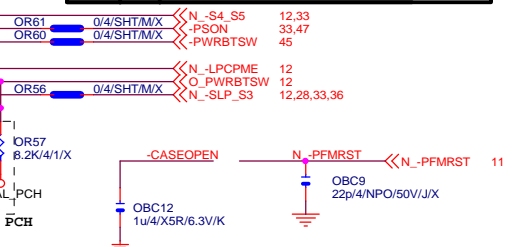
	IT8721	IT8728
PIN121	FAN_CTL4/VID_TURBO	VCORE_EN/PCH_C0
PIN120	VDDA_EN	VLDI_EN/PCH_D0
PIN19	GP30	ATXP_G
PIN31	GP14	PCH_C1
PIN53	SST/AMDTSI_D/PECI_AVA/MTRB#/PCH_D	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#/PCH_C	PECI/AMDTSI_C/DRVB#
PIN66	GP47	SYS_3VSB
PIN70	SYS_3VSB	GP47
PIN95	VIN3/ATXP_G	VIN2(VCC5)
PIN96	VIN2	VIN1(VCC12)
PIN97	VIN1(VCC5)	VIN1/VDIMM_STR(1.5V)
PIN98	VIN0(VCC12)	VIN0/VCORE(1.1V)



電源若改成3VDUAL  
可省略-RSMRST At least 10ms delay after  
3VDUAL stabl  
For 8728 EUP Function  
3VDUAL\_PCH OR6 0.6/9HT/X OIT\_VCC  
3VDUAL OR5 0.6/X OIT\_AVCC Max. 1.3mA  
VCC3 OR5 33/4 VCC3電壓高至4V issue.  
Fix PSU(C37) VCC3電壓高至4V issue.  
VCC3 OR50 1K/4/1 IO GP80



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



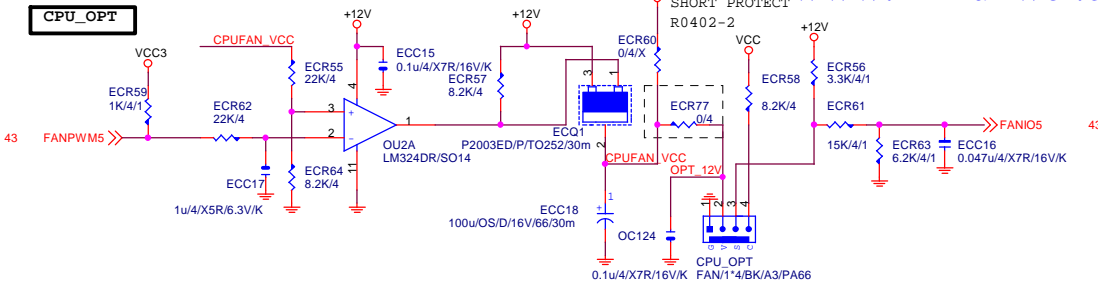
Gigabyte Technology

TitleITE 8728 LPC IO

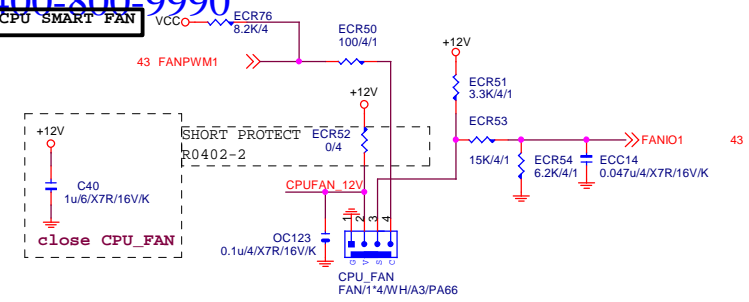
Size BDocument NumberGA-Z87X-UD4HRev 1.02

Date: Monday, April 22, 2013Sheet 43 of 51

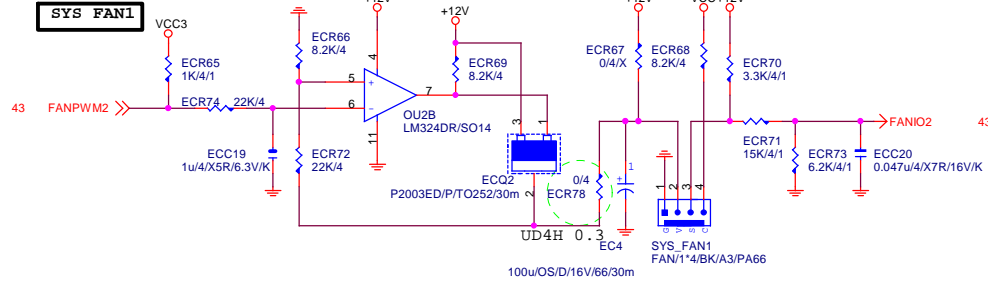
### CPU\_OPT



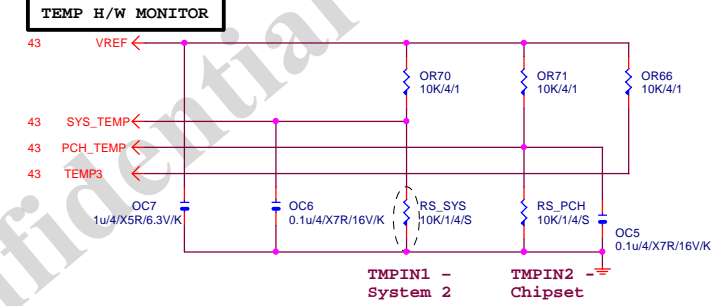
### CPU SMART\_FAN



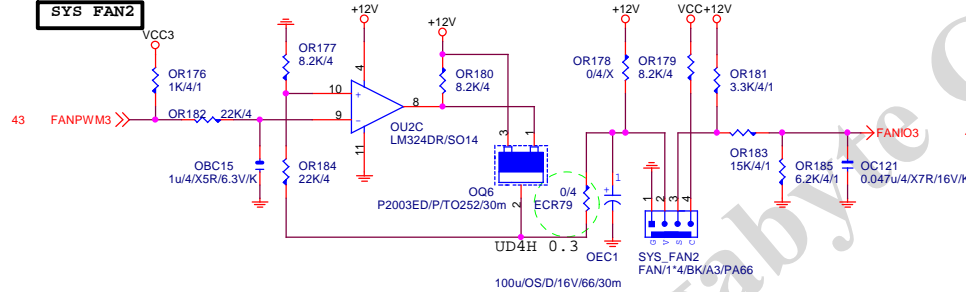
### SYS\_FAN1



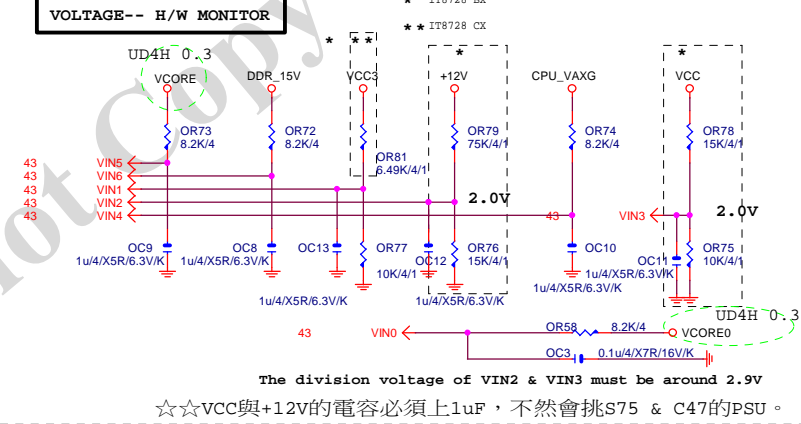
### TEMP H/W MONITOR



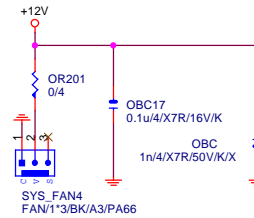
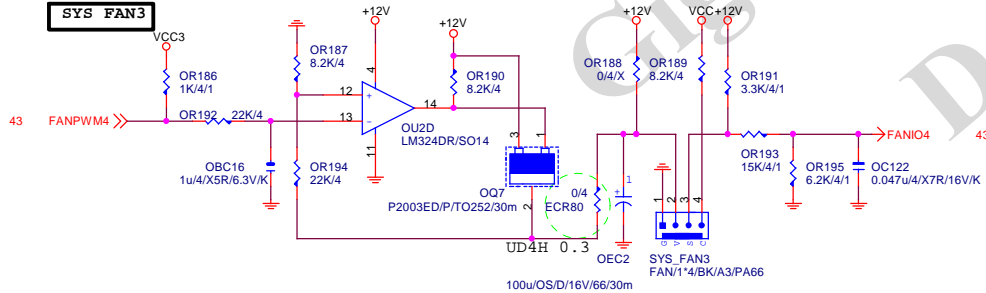
### SYS\_FAN2



### VOLTAGE-- H/W MONITOR



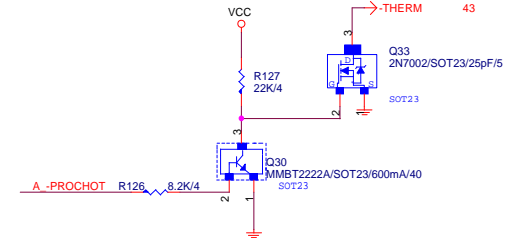
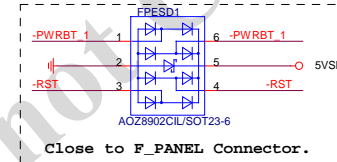
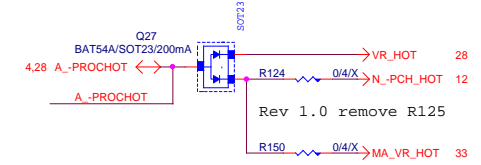
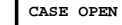
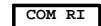
### SYS\_FAN3

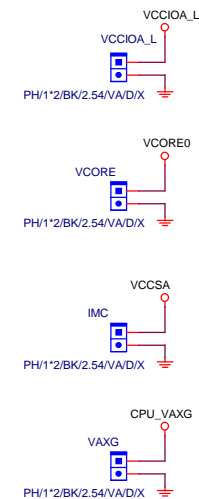
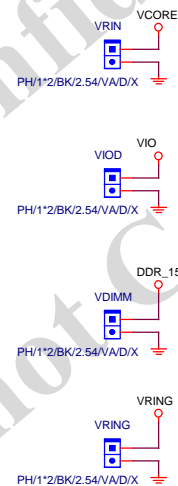
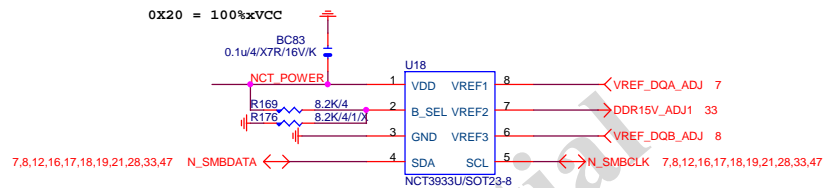
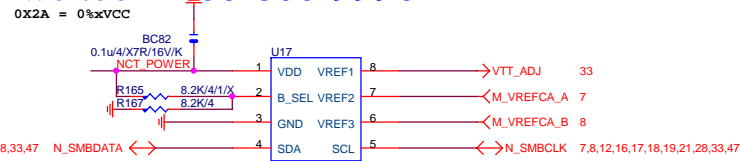


### Gigabyte Technology

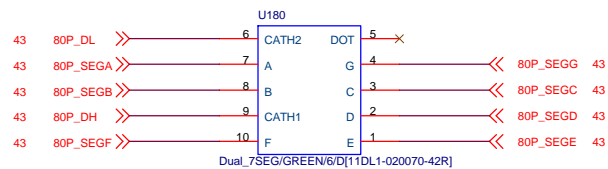
Title			HWM,KB/MS, FAN CTRL
Size	Document Number	Rev	
Custpm	GA-Z87X-UD4H	1.02	
Date:	Monday, April 22, 2013	Sheet	44 of 51



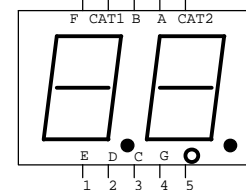




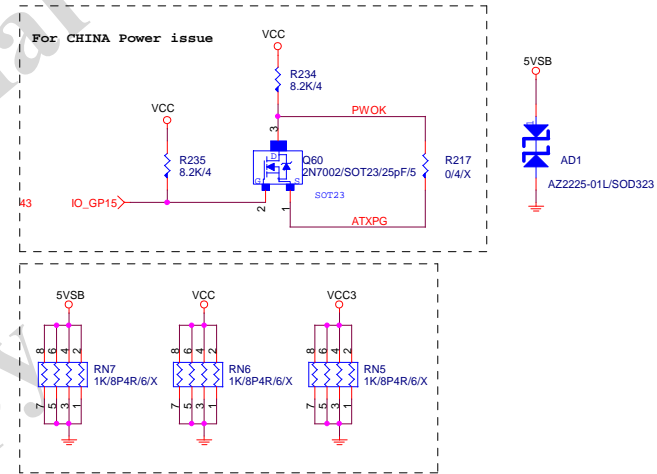
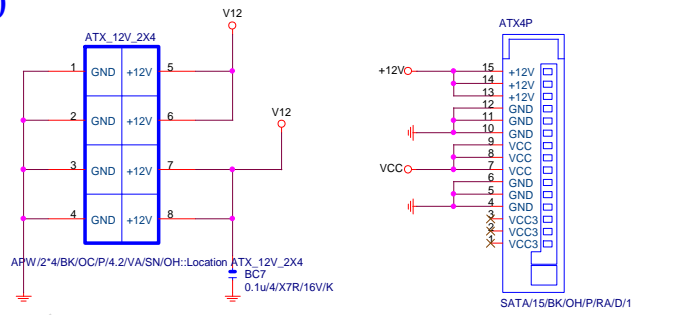
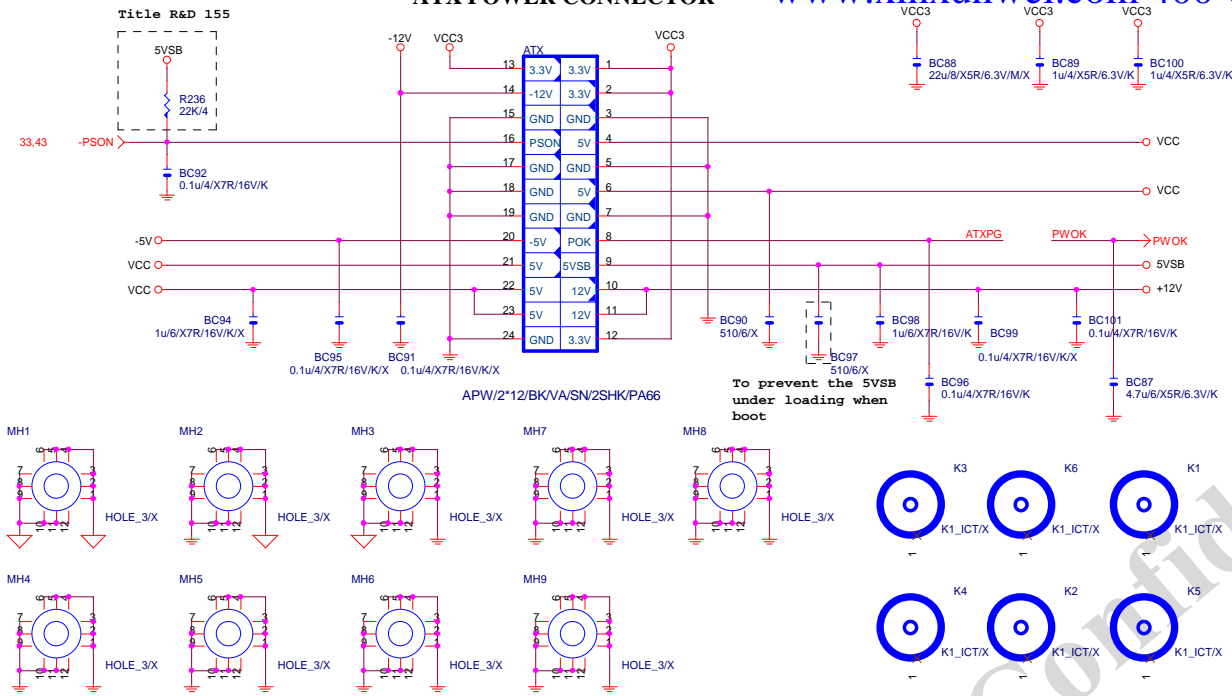
Physical Package  
(TOP VIEW)



COMMON CATHODE

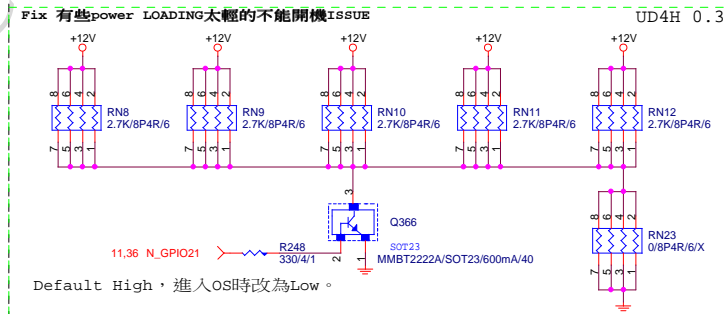
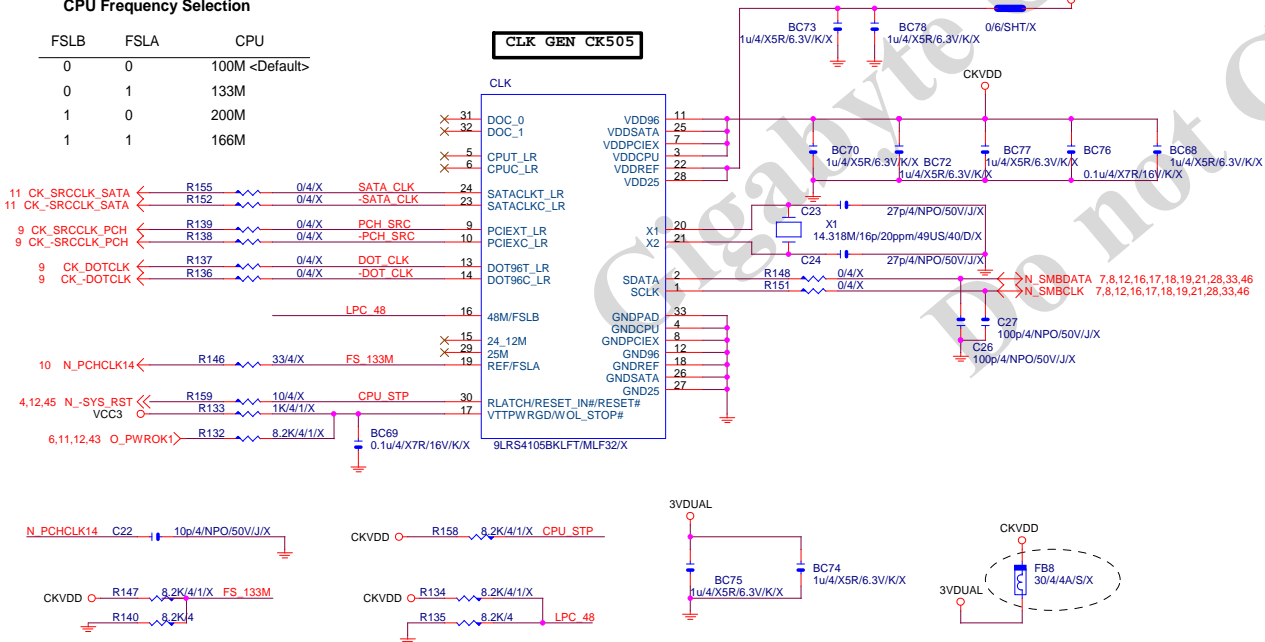


## ATX POWER CONNECTOR



### CPU Frequency Selection

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



www.xinxunwei.com 400-800-9990

The diagram illustrates a 2D mesh network topology. A central CPU is connected to a PCH (Platform Controller Hub), which is connected to a 2x2 grid of nodes. The nodes are labeled with PH and DL identifiers. The VTT and VCore are also indicated.

PH1	PH2
DL2	DL4

PH8	PH7
DL9	DL7

PH5	PH6
DL3	DL5

**VTT** **VCore**

PH1	PH2
L4	L3

PH4	PH3
DL8	DL6

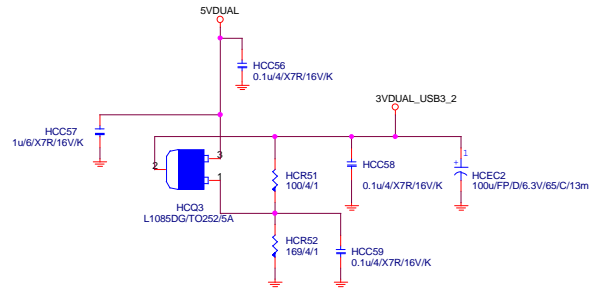
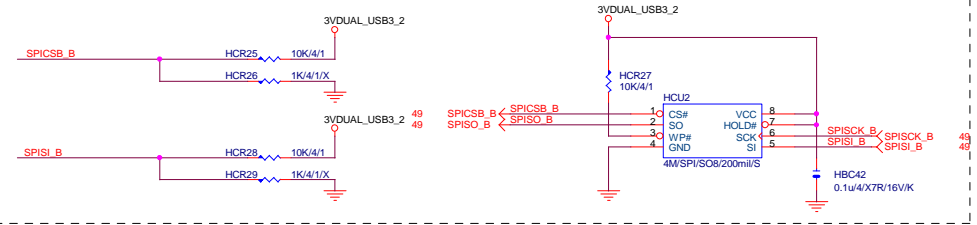
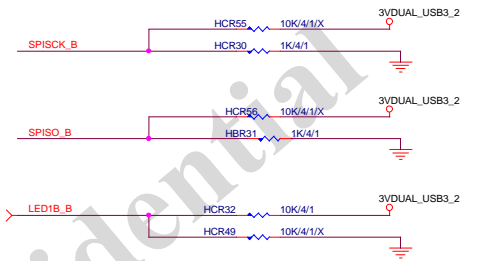
**散熱模組料號:**

8IBP:  
1.12SP2-01A001-Y1R/Y2R  
2.12SP2-01A001-Z1R/Z2R  
(HIBRID模組)包材階

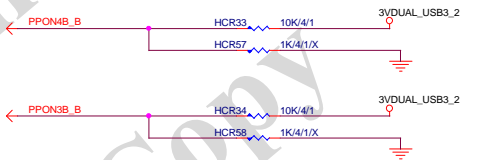
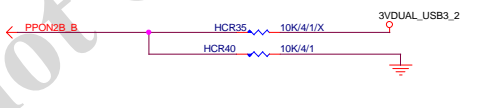
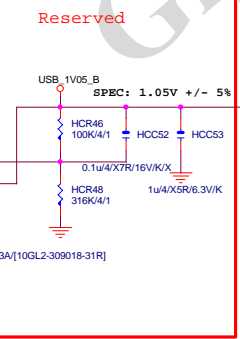
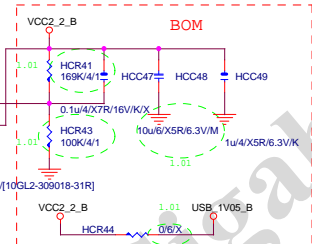
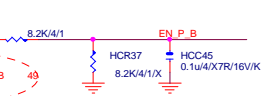
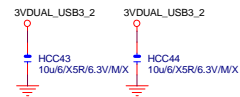
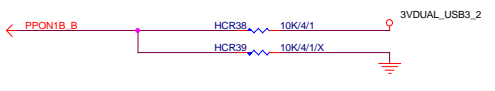
	3 pin FAN control	4 pin FAN control	FAN speed	Controller
CPU FAN	FANPWM1	FANPWM3	FANIO1	IT8720
	ICH_FAN_PWM2	ICH_FAN_PWM0	ICH_FAN_TACH0	PCH
SYS FAN	FANPWM2	N/A	FANIO2	IT8720
	ICH_FAN_PWM1	N/A	ICH_FAN_TACH1	PCH
PWR FAN	N/A	N/A	FANIO3	IT8720
			ICH_FAN_TACH2	PCH

<b><i>Gigabyte Technology</i></b>			
Title			
<b>TABLE LIST</b>			
Size C	Document Number		Rev
	<b>GA-Z87X-UD4H</b>		<b>1.02</b>
Date:	Monday, April 22 2013	Sheet 48 of 51	



**3VDUAL\_USB****# 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 )

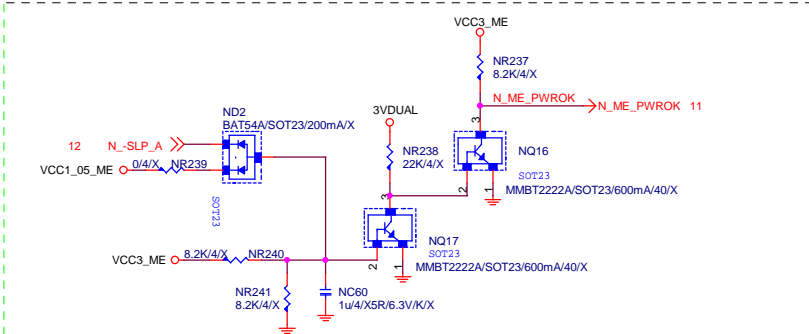
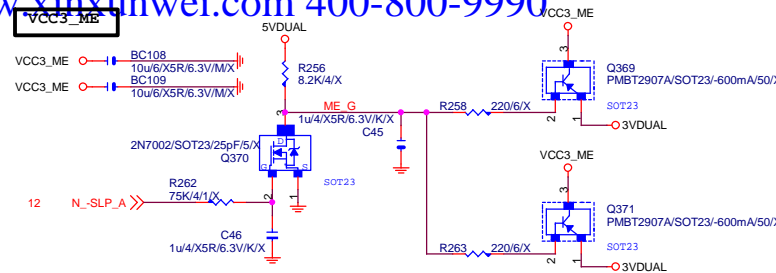
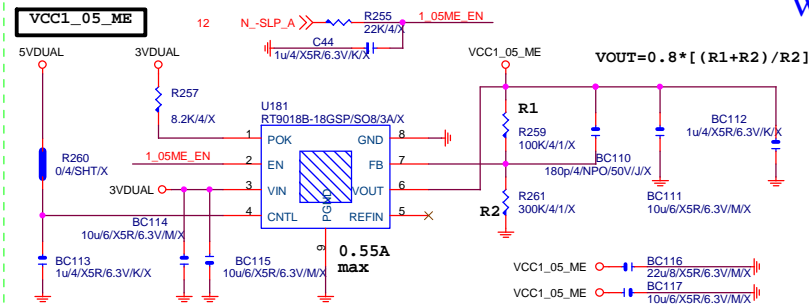
**#5 VBUS Power Control ; Individual mode****# PPON1B Pin Function ; Port1 PPONB mode**

1.01

**GIGABYTE**

Title			D720210 4port Hub B		
Size			Document Number		
Custom			GA-Z87X-UD4H		
Date			Monday, April 22, 2013		
Sheet			50 of 51		
Rev			1.02		





1.01 remove