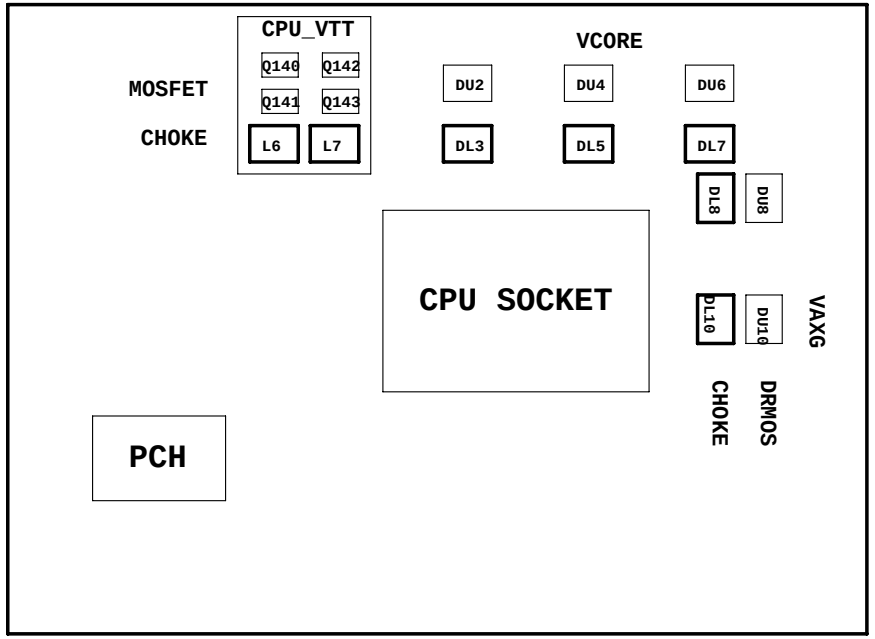
Model Name: GA-Z68X-UD3H-B3 Rev 1.0

SHEET	TITLE
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
08	DDR III CHANNEL B
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	HDMI,DVI,DP
15	PCI EXPRESS*16 SLOT
16	PCI EXPRESS*8 SLOT
17	PCI EXPRESS*16/*8 SWITCH
18	PCI EXPRESS*1 SLOTs X3
19	IT8892E
20	Marvell 9172 SATA 3.0
21	PCI SLOT 1&2
22	I/O ITE8728
23	COM , -PROHOT
24	Dual BIOS , TPM
25	HD AUDIO ALC889A
26	REAR AUDIO JACK
27-30	VCORE ISL6364

SHEET	TITLE
31	DISCRETE POWER I
32	PCH POWER
33	CPU_VTT PWM_ISL6322G
34	VCC_SA POWER
35	F_PANEL,F_USB,USB PWR,CI
36	ATX POWER CONNECTOR
37	HWM,KB/MS,FAN CTRL
38	REALTEK RTL8111E_VL
39	VT3608 1394
40	REAR NEC USB3.0
41	FRONT NEC USB3.0
42	TABLE LIST



Gigabyte Technology

Title	Cover Sheet	
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 1 of 42	

GA-Z68X-UD3H-B3

Component value change history

Data	Change Item	Reason
2011/02/18	9MZ68XD4B-00-01.txt	first release BOM
	LGA1155 12KRC-0F0001-01R change to 12KRC-0F0001-22R	Modify 鍍黑鎳
	DEL LR15 0 ohm & R683 33 ohm.	Modify LAN
	ADD LX1,LAR14 LC4,LC3	Modify LAN
2011/03/10	9MZ68XD4B-00-02.txt	DVT release BOM
	R535 2K ohm change to 499 ohm	VCC1_05_PCH 電阻值調整
	R524 2.55K ohm change to 649 ohm	VCC1_05_PCH 電阻值調整
	remove R128 10 ohm & R138 , R139 1K ohm	CPU_VTT power 電阻值調整
	ADD R140 1K ohm & R126 , R127 10 ohm	CPU_VTT power 電阻值調整
	DR26 10K ohm change to 8.2K ohm & DR28 1.1K ohm	Load-line 電阻值調整
	~~change to 499 ohm,DR17 27K ohm change to 20K~~ ohm.	Load-line 電阻值調整
	remove DR23 249 ohm.	Chock noise issue
	11NH3-000205-P1R change to 11NH2-000205-B3R	Modify F_audio
	ADD R543 1K ohm	VCCSA power 電阻值調整
	ADD REC1 560U	8172 SPEC
2011/03/18	9MZ68XU3H-00-02	Modify model name release BOM
2011/04/8	9MZ68XU3H-00-10A.txt	PVT release BOM
2011/04/13	9MZ68XU3H-00-10B.txt	modify PCH_HS 料號.
2011/04/17	9MZ68XU3H-00-10C.txt	DR69 205K ohm change to 200K ohm.
2011/04/27	9MZ68XU3H-00-10D.txt	modify MOS_HS1 料號.

Circuit or PCB layout change

DATE	Change Item	Reason
2011/02/16	Z68X-UD4H-B3 0.1 gerber out	rev:0.1
	Modify cpu_vaxg power	
2011/03/17	Z68X-UD3H-B3 0.2 gerber out	rev:0.2
	Modify model name	
2011/04/8	Z68X-UD3H-B3 1.0 gerber out	rev:1.0
	Modify AGND	

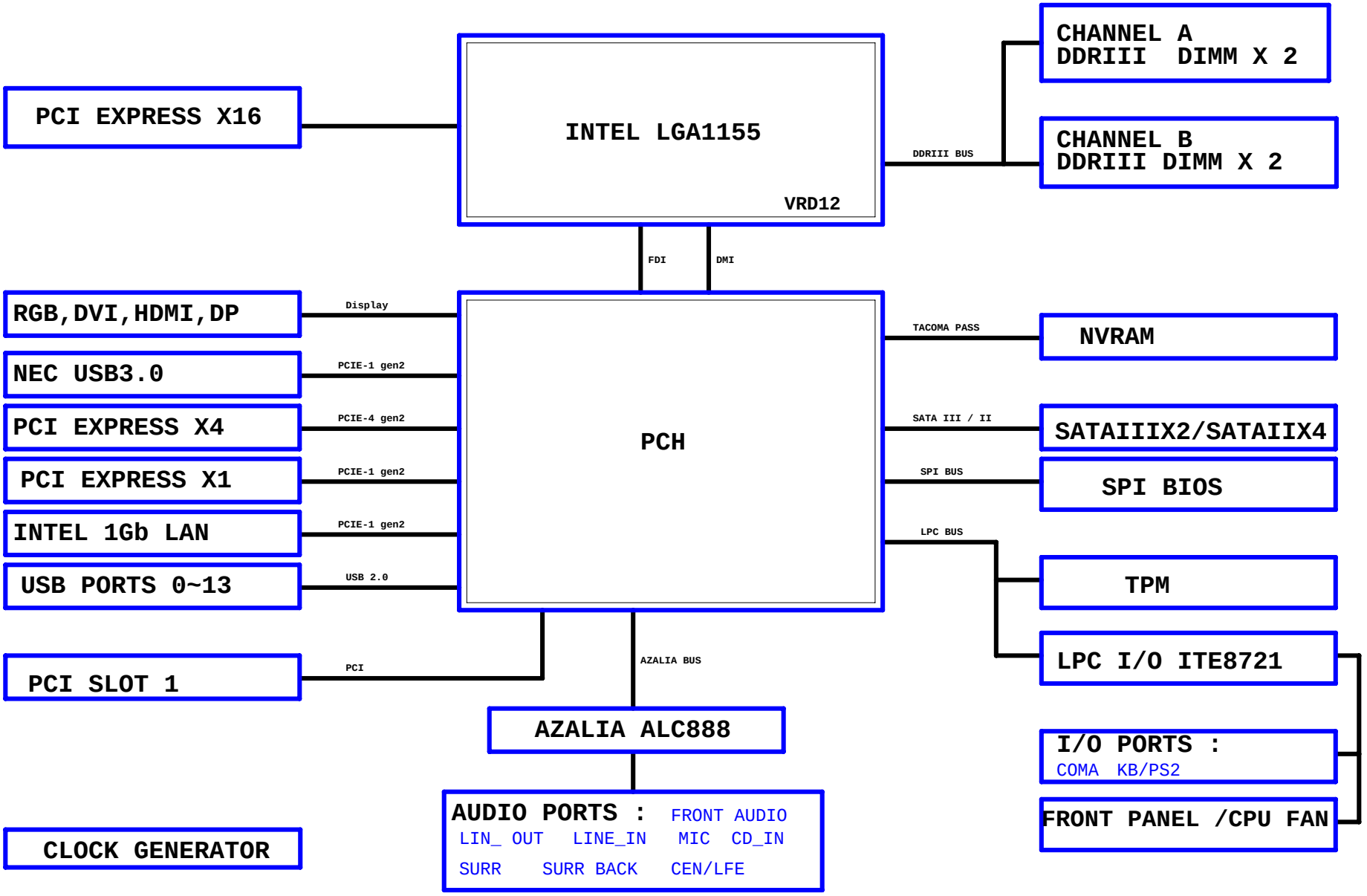
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

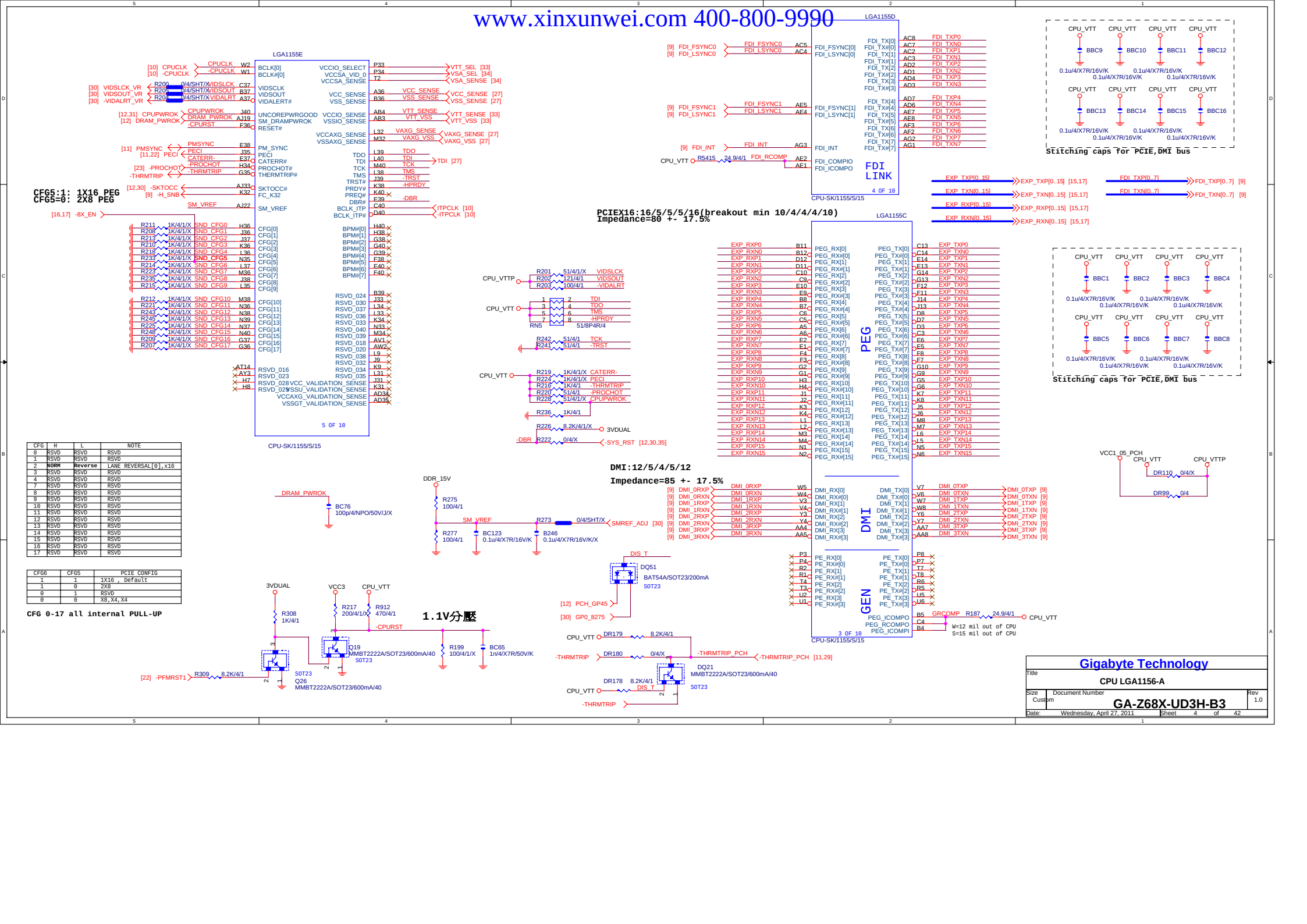
Size: Custom | Document Number: GA-Z68X-UD3H-B3 | Rev: 1.0

Date: Wednesday, April 27, 2011 | Sheet 2 of 42

BLOCK DIAGRAM



Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-Z68X-UD3H-B3		Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 3 of 42		



CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD
17	RSVD	RSVD	RSVD

CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

Title	CPU LGA1156-A
Size	Custom
Document Number	GA-Z68X-UD3H-B3
Rev	1.0
Date:	Wednesday, April 27, 2011
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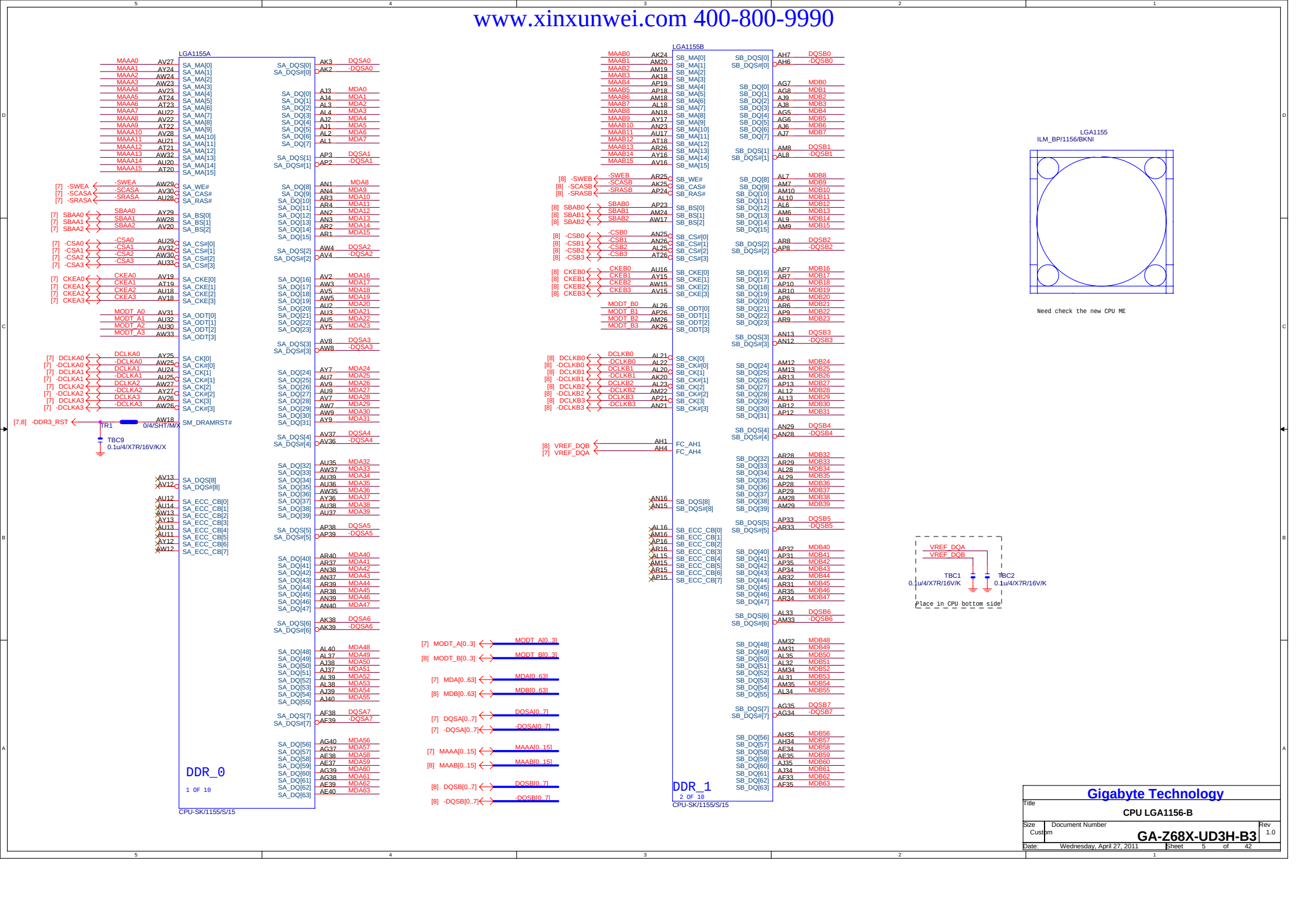
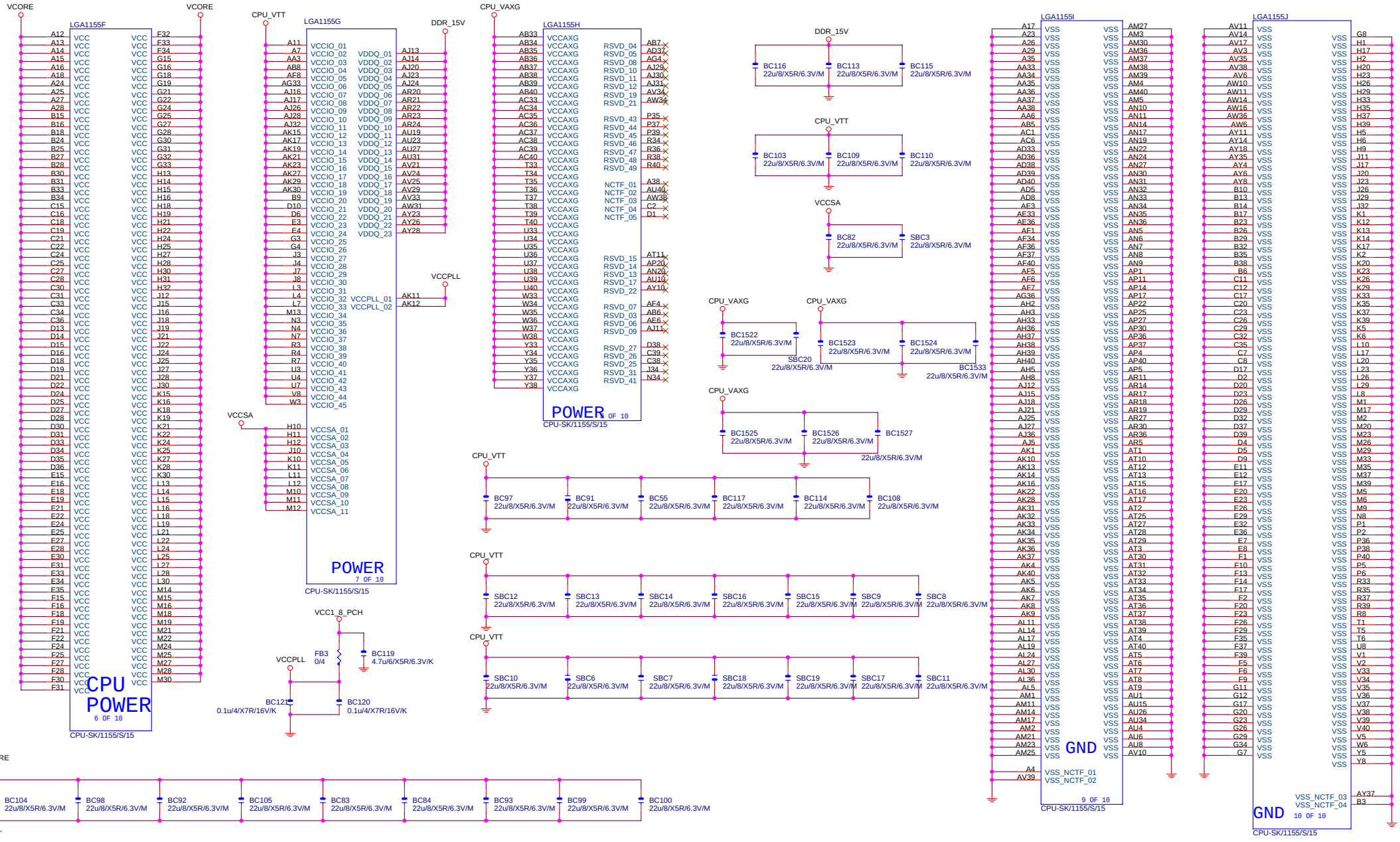
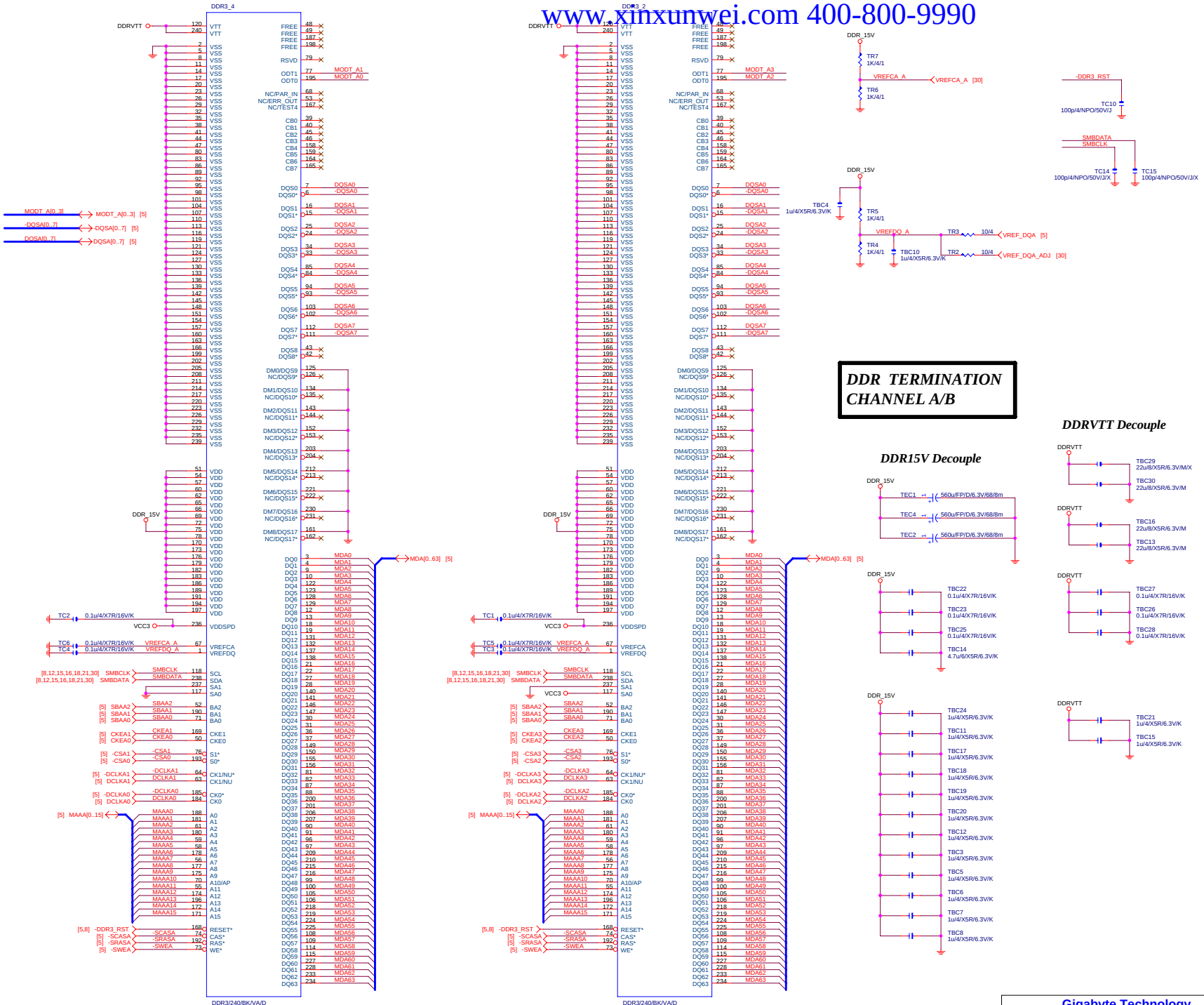


Title	Gigabyte Technology
	CPU LGA1156-B
Size: Custom	Document Number: GA-Z68X-UD3H-B3
Rev	1.0
Date: Wednesday, April 27, 2011	Sheet 5 of 42

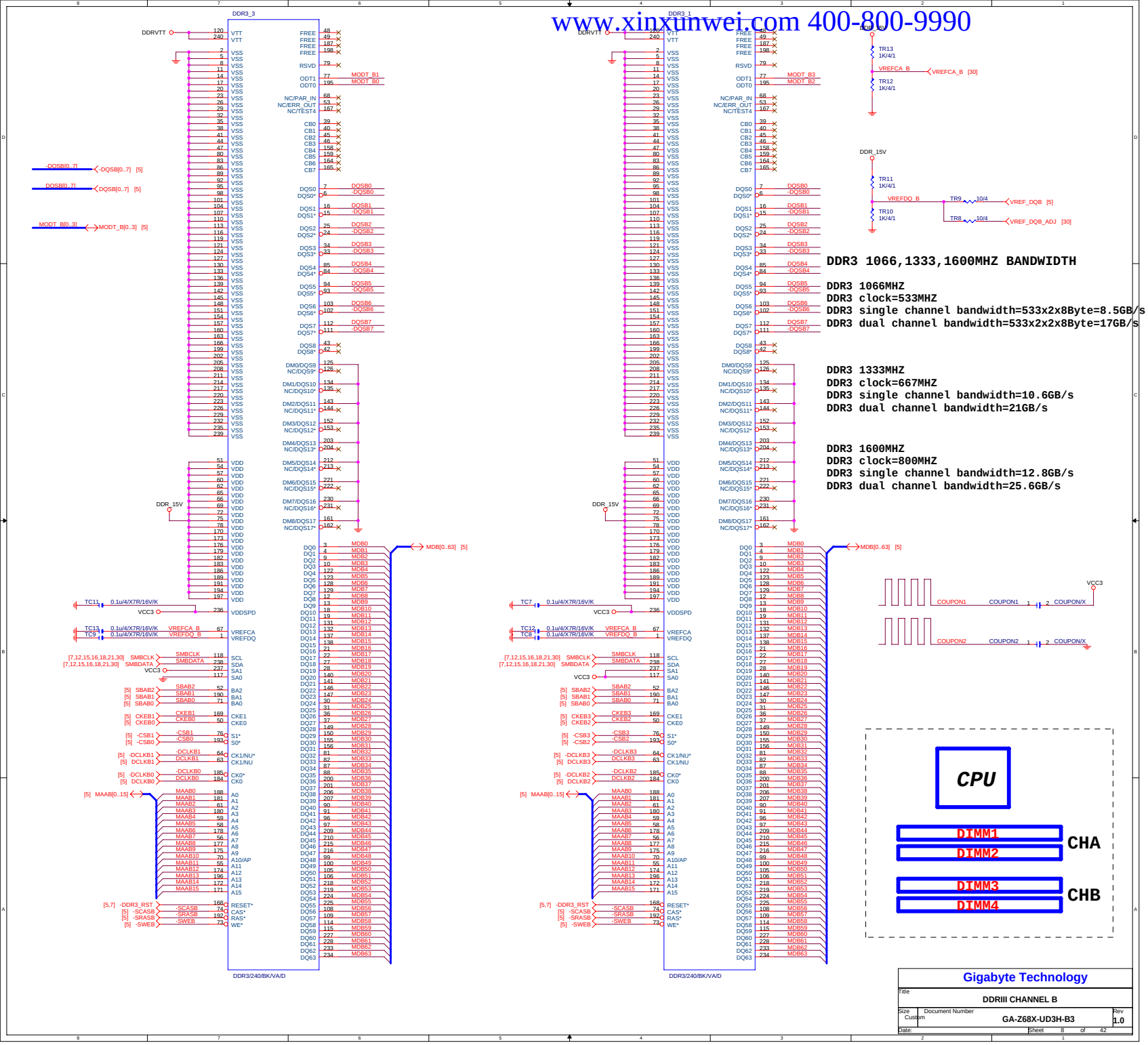


Gigabyte Technology	
Title	CPU LGA1156-C
Size: Custom	Document Number: GA-Z68X-UD3H-B3
Rev	1.0
Date: Wednesday, April 27, 2011	Sheet 6 of 42



DDR TERMINATION CHANNEL A/B

Gigabyte Technology	
Title	DDRIII CHANNEL A
Size: Custom	Document Number: GA-Z68X-UD3H-B3
Rev	1.0
Date:	Sheet 7 of 42



DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s

Gigabyte Technology	
Title	DDRIII CHANNEL B
Size: Custom	Document Number: GA-Z68X-UD3H-B3
Rev	1.0
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USB:12/7.5/4.5/7.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHB

DMI0RXN DMI0RXP DMI0TXN DMI0TXP DMI1RXN DMI1RXP DMI1TXN DMI1TXP DMI2RXN DMI2RXP DMI2TXN DMI2TXP DMI3RXN DMI3RXP DMI3TXN DMI3TXP DMI_IRCOMP DMI_ZCOMP

DMI

[4] DMI_0TXN — DMI_0TXN — D33
[4] DMI_0TXP — DMI_0TXP — B33
[4] DMI_0RXN — DMI_0RXN — J36
[4] DMI_0RXP — DMI_0RXP — H36
[4] DMI_1TXN — DMI_1TXN — A36
[4] DMI_1TXP — DMI_1TXP — B35
[4] DMI_1RXN — DMI_1RXN — P38
[4] DMI_1RXP — DMI_1RXP — R38
[4] DMI_2TXN — DMI_2TXN — B37
[4] DMI_2TXP — DMI_2TXP — C36
[4] DMI_2RXN — DMI_2RXN — H38
[4] DMI_2RXP — DMI_2RXP — J38
[4] DMI_3TXN — DMI_3TXN — E37
[4] DMI_3TXP — DMI_3TXP — E38
[4] DMI_3RXN — DMI_3RXN — M41
[4] DMI_3RXP — DMI_3RXP — P41
DMI_COMP — B31
VCC1_05_PCH — R350 49.9/4/1 — E31

W=4 mil out of PCH
S=15 mil out of PCH

-SRCCLK_PCH — -SRCCLK_PCH — P33
SRCCLK_PCH — SRCCLK_PCH — R33
CLKIN_DMI_N
CLKIN_DMI_P

USB

USBP0N BF36 -USBP0 → -USBP0 [35]
USBP0P BD36 +USBP0 → +USBP0 [35]
USBP1N BC33 -USBP1 → -USBP1 [35]
USBP1P BA33 +USBP1 → +USBP1 [35]
USBP2N BM33 -USBP2 → -USBP2 [35]
USBP2P BM35 +USBP2 → +USBP2 [35]
USBP3N BT33 -USBP3 → -USBP3 [35]
USBP3P BU32 +USBP3 → +USBP3 [35]
USBP4N BR32 -USBP4 → -USBP4 [35]
USBP4P BT31 +USBP4 → +USBP4 [35]
USBP5N BN29 -USBP5 → -USBP5 [35]
USBP5P BM30 +USBP5 → +USBP5 [35]
USBP6N BK33 -USBP6 → -USBP6 [35]
USBP6P BJ33 +USBP6 → +USBP6 [35]
USBP7N BF31 -USBP7 → -USBP7 [35]
USBP7P BD31 +USBP7 → +USBP7 [35]
USBP8N BN27
USBP8P BR29
USBP9N BR26
USBP9P BT27
USBP10N BK25 -USBP10 → -USBP10 [39]
USBP10P BJ25 +USBP10 → +USBP10 [39]
USBP11N BJ31 -USBP11 → -USBP11 [39]
USBP11P BK31 +USBP11 → +USBP11 [39]
USBP12N BF27 -USBP12 → -USBP12 [37]
USBP12P BD27 +USBP12 → +USBP12 [37]
USBP13N BJ27 -USBP13 → -USBP13 [37]
USBP13P BK27 +USBP13 → +USBP13 [37]

OC0#/GPIO59 BM43
OC1#/GPIO40 BD41 -USBOC_F → -USBOC_F [35]
OC2#/GPIO41 BG41
OC3#/GPIO42 BK43
OC4#/GPIO43 BP43
OC5#/GPIO9 BJ41 -USBOC_R → -USBOC_R [35,38]
OC6#/GPIO10 BT45
OC7#/GPIO14 BM45 GPIO14

USBRBIAS# BP25 USBRBIAS R341 22.6/4/1
USBRBIAS BM25
W=4 mil out of PCH
S=15 mil out of PCH

CLKIN_DOT_96N BD38 -DOTCLK → -DOTCLK
CLKIN_DOT_96P BF38 DOTCLK → DOTCLK

DMI2RBIAS A32 R351 750/4/1
W=4 mil out of PCH
S=15 mil out of PCH

PCI-E

PERN1 PERP1 PETN1 PETP1 PERN2 PERP2 PETN2 PETP2 PERN3 PERP3 PETN3 PETP3 PERN4 PERP4 PETN4 PETP4 PERN5 PERP5 PETN5 PETP5 PERN6 PERP6 PETN6 PETP6 PERN7 PERP7 PETN7 PETP7 PERN8 PERP8 PETN8 PETP8

PCIEX1
[18] PCIE_IN1 — J20
[18] PCIE_IP1 — L20
[18] PCIE_TN1 — C37 0.1u/4/X7R/16V/K — PET_N1 — F25
[18] PCIE_TP1 — C31 0.1u/4/X7R/16V/K — PET_P1 — F23
[18] PCIE_IN2 — P20
[18] PCIE_IP2 — R20
[18] PCIE_TN2 — C42 0.1u/4/X7R/16V/K — PET_N2 — C22
[18] PCIE_TP2 — C35 0.1u/4/X7R/16V/K — PET_P2 — A22
[18] PCIE_IN3 — H17
[18] PCIE_IP3 — J17
[18] PCIE_TN3 — C41 0.1u/4/X7R/16V/K — PET_N3 — E21
[18] PCIE_TP3 — C33 0.1u/4/X7R/16V/K — PET_P3 — B21

8892
[19] PCIEBIN — P17
[19] PCIEBIP — M17
[19] PCIEBON — C103 0.1u/4/X7R/16V/K — PET_N4 — F18
[19] PCIEBOP — C101 0.1u/4/X7R/16V/K — PET_P4 — E17

USB3.0
[41] USB3_IN_F — N15
[41] USB3_IP_F — M15
[41] USB3_ON_F — C120 0.1u/4/X7R/16V/K — PET_N5 — B17
[41] USB3_OP_F — C119 0.1u/4/X7R/16V/K — PET_P5 — C16

LAN
[17] PCIE_IN6 — J15
[17] PCIE_IP6 — L15
[17] PCIE_TN6 — A16
[17] PCIE_TP6 — B15

9172
[38] ML_IN — H12
[38] ML_IP — J12
[38] ML_ON — C2 0.1u/4/X7R/16V/K — PET_N7 — F15
[38] ML_OP — C3 0.1u/4/X7R/16V/K — PET_P7 — F13
[20] SL_IN — H10
[20] SL_IP — J10
[20] SL_ON — C15 0.1u/4/X7R/16V/K — PET_N8 — B13
[20] SL_OP — C16 0.1u/4/X7R/16V/K — PET_P8 — D13

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BD82Z68/B3/S

放靠近 Device & PCI-E Slot

PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)
Impedance=80 +- 17.5%

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

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

PCHG

FDILINK

FDI_RXN0 FDI_RXP0 FDI_RXN1 FDI_RXP1 FDI_RXN2 FDI_RXP2 FDI_RXN3 FDI_RXP3 FDI_RXN4 FDI_RXP4 FDI_RXN5 FDI_RXP5 FDI_RXN6 FDI_RXP6 FDI_RXN7 FDI_RXP7

H31 J31 C29 E29 — TP21 TP25 TP29 TP33
J27 L27 F28 E27 — TP22 TP26 TP30 TP34
J25 L25 C26 B27 — TP23 TP27 TP31 TP35
L22 J22 B25 D25 — TP24 TP28 TP32 TP36

C42 FDI_TXN0
B43 FDI_TXP0
F45 FDI_TXN1
F43 FDI_TXP1
H41 FDI_TXN2
J41 FDI_TXP2
C46 FDI_TXN3
D47 FDI_TXP3
B45 FDI_TXN4
A46 FDI_TXP4
B47 FDI_TXN5
C49 FDI_TXP5
J43 FDI_TXN6
H43 FDI_TXP6
M43 FDI_TXN7
P43 FDI_TXP7

FDI_FSYNC0 B51 FDI_FSYNC0 → FDI_FSYNC0 [4]
FDI_LSYNC0 F49 FDI_LSYNC0 → FDI_LSYNC0 [4]
FDI_FSYNC1 C52 FDI_FSYNC1 → FDI_FSYNC1 [4]
FDI_LSYNC1 D51 FDI_LSYNC1 → FDI_LSYNC1 [4]
FDI_INT H46 FDI_INT → FDI_INT [4]

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BD82Z68/B3/S

FDI_TXP[0..7] → FDI_TXP[0..7] [4]
FDI_TXN[0..7] → FDI_TXN[0..7] [4]

PCHE

NV_CLE — R47
M48 NV_ALE
R47 NV_CLE
Y41 NV_RB#
M50 NV_RE#_WRB0
M49 NV_RE#_WRB1
U43 NV_WE#_CK0
J57 NV_WE#_CK1

NV_DQ0/NV_IO0 AB50
NV_DQ1/NV_IO1 Y50
NV_DQ2/NV_IO2 AB49
NV_DQ3/NV_IO3 AB44
NV_DQ4/NV_IO4 U49
NV_DQ5/NV_IO5 R44
NV_DQ6/NV_IO6 U50
NV_DQ7/NV_IO7 U46
NV_DQ8/NV_IO8 U44
NV_DQ9/NV_IO9 H50
NV_DQ10/NV_IO10 K46
NV_DQ11/NV_IO11 L56
NV_DQ12/NV_IO12 J55
NV_DQ13/NV_IO13 F53
NV_DQ14/NV_IO14 H52
NV_DQ15/NV_IO15 E52

NV_CE#0 K50
NV_CE#1 K49
NV_CE#2 AB46
NV_CE#3 G56

NV_DQS0 Y44
NV_DQS1 L53

NV_RCOMP R50 NV_RCOMP — R422 33/4

NVRAM

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BD82Z68/B3/S

VCC3 — BC178 1u/4/X5R/6.3V/K

-USBOC_F — BC168 0.1u/4/X7R/16V/K
-USBOC_R — BC170 0.1u/4/X7R/16V/K

3VDUAL — R371 8.2K/4/1 — GPIO14

PCH_HS

1
2
PCH_HS/[12SP2-S06510-11R_12SP2-S06510-12R_12SP2-S06510-13R]

VCC1_8_PCH — R407 1K/4/1
R408 8.2K/4/1 NV_CLE
-H_SNB [4]
BC186 0.1u/4/X7R/16V/K

DMI /FDI termination voltage

DOTCLK — R246 8.2K/4/1
-DOTCLK — R251 8.2K/4/1

VCC1_05_PCH — R244 8.2K/4/1/X — DOTCLK

Mount for non-graphics skus

SRCCLK_PCH — R267 8.2K/4/1
-SRCCLK_PCH — R268 8.2K/4/1

Gigabyte Technology			
Title: PCH FDI,DMI,USB ,PCIE			
Size: Custom	Document Number: GA-Z68X-UD3H-B3		Rev: 1.0
Date: Wednesday, April 27, 2011		Sheet 9 of 42	

PCHF

[14] DVI_HDP_F
[14] DP_HDP
[14] HDMI_HDP_F
[14] DP_AUX
[14] DP_AUX-
[14] DVI_TX2
[14] DVI_TX2-
[14] DVI_TX1
[14] DVI_TX1-
[14] DVI_TX0
[14] DVI_TX0-
[14] DVI_TXC
[14] DVI_TXC-
[14] DP_TX0
[14] DP_TX0-
[14] DP_TX1
[14] DP_TX1-
[14] DP_TX2
[14] DP_TX2-
[14] DP_TX3
[14] DP_TX3-
[14] HDMI_TX2
[14] HDMI_TX2-
[14] HDMI_TX1
[14] HDMI_TX1-
[14] HDMI_TX0
[14] HDMI_TX0-
[14] HDMI_TXC
[14] HDMI_TXC-

T1 N2 M1 R8 R9 U14 U12 N6 R6 R14 R12 M11 M12 H8 K8 L5 M3 L2 J3 G2 G4 F3 F5 F4 E2 D5 B5 C6 D7 B7 C9 E11 B11

DDPB_HPD DDPC_HPD DDPD_HPD DDPB_AUXP DDPB_AUXN DDPC_AUXP DDPC_AUXN DDPD_AUXP DDPD_AUXN DDPB_0P DDPB_0N DDPB_1P DDPB_1N DDPB_2P DDPB_2N DDPB_3P DDPB_3N DDPC_0P DDPC_0N DDPC_1P DDPC_1N DDPC_2P DDPC_2N DDPC_3P DDPC_3N DDPD_0P DDPD_0N DDPD_1P DDPD_1N DDPD_2P DDPD_2N DDPD_3P DDPD_3N

CRT_HSYNC CRT_VSYNC CRT_RED CRT_GREEN CRT_BLUE CRT_IRTN CRT_DDC_DATA CRT_DDC_CLK DAC_IREF

AR4 H_SYNC R5416 33/4 GHSYNC
AR2 V_SYNC R541? 33/4 GVSYNC
AN6 R
AN2 G
AM1 B
AM6
AW1 DDCDATA
AW3 DDCCLK
AT3 VGA_RSET R315 1K/4/1

Pop 0/4 for non graphic skus

TP6 TP7 TP8 TP9 Y18 Y17 AB18 AB17

U2 T3 W3 U5 U8 U9

SDVO_INTP SDVO_INTN SDVO_STALLP SDVO_STALLN SDVO_TVCLKINP SDVO_TVCLKINN

DDPC_CTRLCLK DDPC_CTRLDATA DDPD_CTRLCLK DDPD_CTRLDATA SDVO_CTRLCLK SDVO_CTRLDATA

AL12 DDPC_CTRLCLK
AL14 DDPC_CTRLDATA
AL9 DDPD_CTRLCLK [14]
AL8 DDPD_CTRLDATA [14]
AL15 DDPB_CTRLCLK [14]
AL17 DDPB_CTRLDATA [14]

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BD82Z68/B3/S

Flex0,2 : 33MHZ

Flex1,3 : 27/14/24/48/25MHZ

[22] LPC33 R286 33/4
[11] PCH33 R313 33/4
[24] TPMCLK R292 33/4
[22] LPCCLK48 R262 33/4 PCH_48M
VCC1_05_PCH R316 90.9/4/1 CLK_RCOMP
PCHCLK14 PCHCLK14

AT11 AN14 AT12 AT17 AT14 TP12 TP13 TP91 AT9 BA5 AW5 BA2 AL2 AN8

CLKOUT_PCI0 CLKOUT_PCI1 CLKOUT_PCI2 CLKOUT_PCI3 CLKOUT_PCI4 CLKOUTFLEX0/GPIO64 CLKOUTFLEX1/GPIO65 CLKOUTFLEX2/GPIO66 CLKOUTFLEX3/GPIO67 XCLK_RCOMP REFCLK14IN

XTALO_PCH XTALI_PCH AJ5 AJ3

XTAL25_OUT XTAL25_IN

XTALI_PCH R282 1M/4
X2 XTALO_PCH
25M/20p/30ppm/49US/20/D
C107 27p/4/NPO/50V/J
C106 27p/4/NPO/50V/J

PCHCLK14 R231 8.2K/4/1

PCHF

CLKIN_GND1_N CLKIN_GND1_P CLKIN_GND0_N CLKIN_GND0_P CLKOUT_ITPXDP_N CLKOUT_ITPXDP_P CLKOUT_PCIE7N CLKOUT_PCIE7P CLKOUT_DMI_N CLKOUT_DMI_P CLKOUT_DP_N CLKOUT_DP_P CLKOUT_PCIE0N CLKOUT_PCIE0P CLKOUT_PCIE1N CLKOUT_PCIE1P CLKOUT_PCIE2N CLKOUT_PCIE2P CLKOUT_PCIE3N CLKOUT_PCIE3P CLKOUT_PCIE4N CLKOUT_PCIE4P CLKOUT_PCIE5N CLKOUT_PCIE5P CLKOUT_PCIE6N CLKOUT_PCIE6P CLKOUT_PEG_A_N CLKOUT_PEG_A_P CLKOUT_PEG_B_N CLKOUT_PEG_B_P

R27 P27 -PCHCLK PCHCLK -PCHCLK PCHCLK
W53 V52 -CLK_GND CLK_GND
R52 N52 -CLK_ITP CLK_ITP R961 R962 0/4/SHT/X 0/4/SHT/X -ITPCLK [4] ITPCLK [4]
AE2 AE1 R393 R394 0/4/SHT/M/X 0/4/SHT/M/X -PCIE_CLK1 [18] PCIE_CLK1 [18]
P31 R31 -CLK_CPU R347 R346 CLK_CPU 0/4/SHT/M/X 0/4/SHT/M/X -CPUCLK [4] CPUCLK [4]
N56 M55 **120Mhz for DP**
AF6 AC6 R302 R303 0/4/SHT/M/X 0/4/SHT/M/X -PCIE_CLK2 [18] PCIE_CLK2 [18]
AA5 W5 R323 R324 0/4/SHT/M/X 0/4/SHT/M/X -PCIE_CLK3 [18] PCIE_CLK3 [18]
AB12 AB14 R310 R325 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_LAN [38] SRCCLK_LAN [38]
AB9 AB8 R305 R304 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_MS1 [20] SRCCLK_MS1 [20]
Y9 Y8 R307 R306 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_USB3_F [41] SRCCLK_USB3_F [41]
AF3 AG2 R318 R317 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_USB3 [40] SRCCLK_USB3 [40]
AB3 AA2 R321 R322 0/4/SHT/M/X 0/4/SHT/M/X -PBCLK [19] PBCLK [19]
AG8 AG9 -SRCCLK1 SRCCLK1 R300 R301 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_3GIO [15] SRCCLK_3GIO [15]
AE12 AE11 -SRCCLK5 SRCCLK5 R320 R319 0/4/SHT/M/X 0/4/SHT/M/X -SRCCLK_3GIO1 [16] SRCCLK_3GIO1 [16]

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BD82Z68/B3/S

-CLK_GND R402 8.2K/4/1
CLK_GND R403 8.2K/4/1
-PCHCLK R254 8.2K/4/1
PCHCLK R250 8.2K/4/1

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

5VDUAL F19 FUSEVCC_R1
SMD1812P160/8V

VCC3 R880 2.2K/4/1 R881 2.2K/4/1
DDPC_CTRLCLK
DDPC_CTRLDATA

GVSYNC C210 100p/4/NPO/50V/J/X
GHSYNC C211 100p/4/NPO/50V/J/X

VCC3 R902 2.2K/4/1 R903 2.2K/4/1
DDCDATA
VCC R5404 1K/4/1
Q350 2N7002/SOT23/25pF/5
VCC R900 2.2K/4/1 R901 2.2K/4/1
VGADDCDATA
DDCCLK
VCC R5406 1K/4/1
Q351 2N7002/SOT23/25pF/5
VGADDCCLK
SOT23

FUSEVCC_R1
BC330 0.1u/4/X7R/16V/K/X
VGA_DVIA
VGA_R VGA_G VGA_B
V16 V6 V1 V7 V2 V8 V3 V9 V4 V10 V5 V17 V11 V12 V13 V14 V15
GND GND
VGADDCDATA GHSYNC GVSYNC VGADDCCLK

VGA/DVID/BLUE/L/F/W/GF/RA/D/SH/[11NR6-501039-31R_11NR6-501039-32R]

ESD24
GVSYNC VGADDCCLK VGADDCDATA GHSYNC VCC
C219 0.1u/4/X7R/16V/K
AOZ8902CIL/SOT23-6

SSOP6_ESD

ESD12
R G B VCC3
C220 0.1u/4/X7R/16V/K
AOZ8902CIL/SOT23-6

R5409 150/4/1/X R5411 150/4/1/X R5410 150/4/1/X
Close to PCH

FB10 FB11 FB12 60/6/3A/S
R5412 75/4/1 R5414 75/4/1 C2082
R5413 75/4/1 C2081 10p/4/NPO/50V/J C2083 10p/4/NPO/50V/J 10p/4/NPO/50V/J
C2084 22p/4/NPO/50V/J C2085 22p/4/NPO/50V/J C2086 22p/4/NPO/50V/J
Close to Filter

Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 10 of 42	

SATA:20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHC

BD82Z68/B3/S

PCHA

BD82Z68/B3/S

SATA3_0_1

SATA/14/WH/H/OP/RA/D/2

SATA2_4

SATA2/7/BK/H/OP/VA/D/1/B

connector color (SATA2)

SATA2_2_3

SATA/14/BK/H/OP/RA/D/2

Gigabyte Technology	
Title	PCH HOST , SATA, PCI
Size B	Document Number GA-Z68X-UD3H-B3
Rev	1.0
Date:	Wednesday, April 27, 2011
Sheet	11 of 42

ACZ_SDOUT : Hi --> Disable ME

GPIO15 : Hi --> Enable TLS
GPIO15 : Lo --> Disable TLS

At least 10ms delay after 3VDUAL_PCH stabel

At least 40ns lead fall to 0V before 3VDUAL_PCH fall to 2V

RB 必須放在BAT外

Boot/EUP from SIO

Boot/EUP from PCH

BATTERY-DUAL-4

Gigabyte Technology	
Title	PCH GPIO , CTRL , AUDIO
Size B	Document Number GA-Z68X-UD3H-B3 Rev 1.0
Date: Wednesday, April 27, 2011	Sheet 12 of 42

PCHI

BD82Z68/B3/S

9 OF 11

PCHJ

10 OF 11

PCHK

11 OF 11

Need isolation

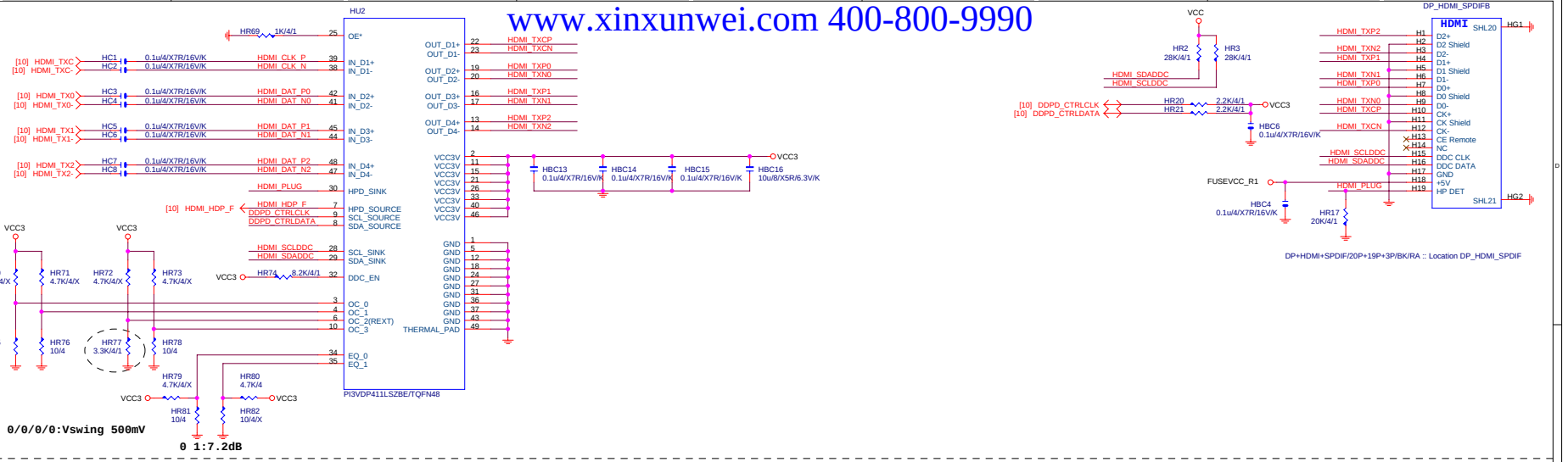
Need isolation

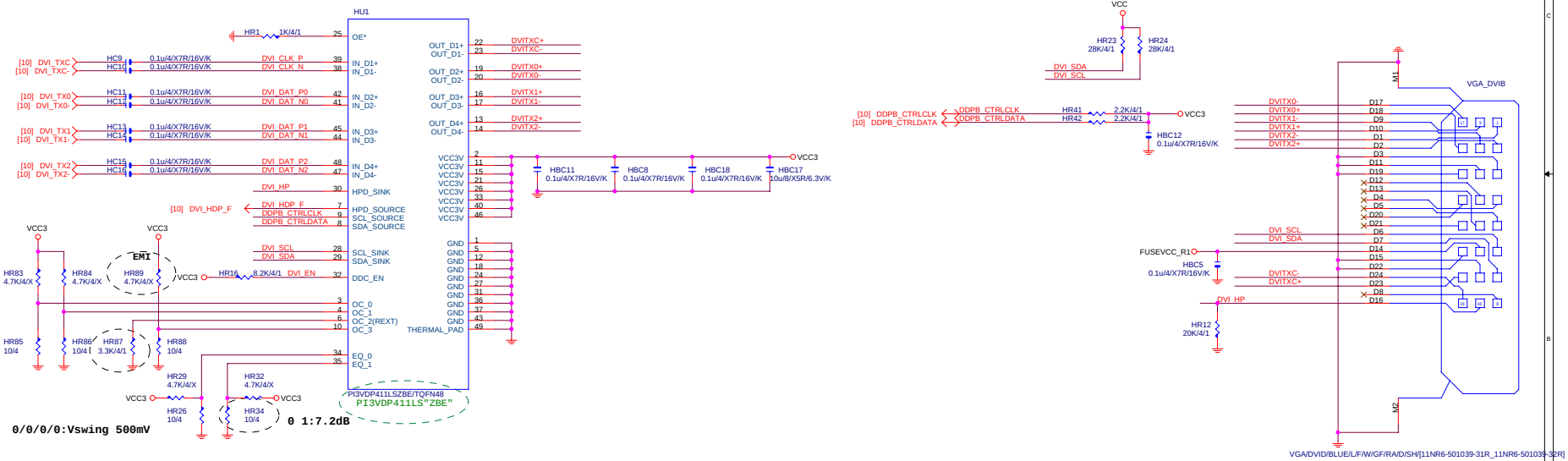
Need isolation

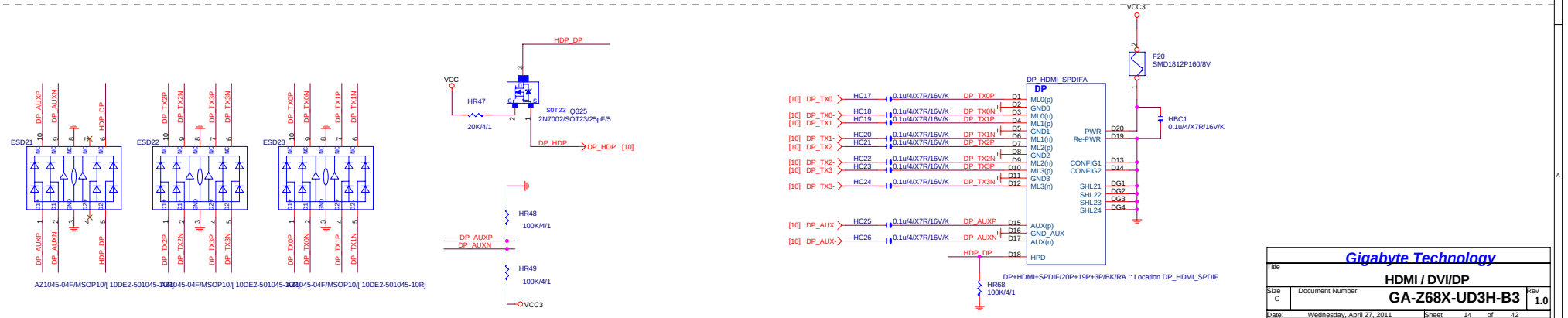
CLOSE北橋(注意圓邊水波紋)

(3.3V/70mA+360uA)

Gigabyte Technology	
Title	PCH PWR ,GND
Size: Custom	Document Number: GA-Z68X-UD3H-B3
Rev	1.0
Date: Wednesday, April 27, 2011	Sheet 13 of 42







Gigabyte Technology			
Title: HDMI / DVI/DP			
Size: C	Document Number: GA-Z68X-UD3H-B3		Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 14 of 42		

+12V
X16_+12V
EC8 270u/FP/D/16V/88/12m
BC30 0.1u/4/X7R/16V/K

+12 protect short-wire test

PCIEX16:16/5/5/5/16

EXP_RXP[0..15] EXP_RXP[0..15] [4,17]
EXP_RXN[0..15] EXP_RXN[0..15] [4,17]
EXP_TXP[0..15] EXP_TXP[0..15] [4,17]
EXP_TXN[0..15] EXP_TXN[0..15] [4,17]

RN3 0/8P4R/0402/SHT/X
RN2 0/8P4R/0402/SHT/X
RN4 0/8P4R/4/X

EXP_TXP0	C43	0.22u/4/X5R/6.3V/K EXP_TXP0C
EXP_TXN0	C36	0.22u/4/X5R/6.3V/K EXP_TXN0C
EXP_TXP1	C47	0.22u/4/X5R/6.3V/K EXP_TXP1C
EXP_TXN1	C49	0.22u/4/X5R/6.3V/K EXP_TXN1C
EXP_TXP2	C52	0.22u/4/X5R/6.3V/K EXP_TXP2C
EXP_TXN2	C54	0.22u/4/X5R/6.3V/K EXP_TXN2C
EXP_TXP3	C57	0.22u/4/X5R/6.3V/K EXP_TXP3C
EXP_TXN3	C59	0.22u/4/X5R/6.3V/K EXP_TXN3C
EXP_TXP4	C62	0.22u/4/X5R/6.3V/K EXP_TXP4C
EXP_TXN4	C64	0.22u/4/X5R/6.3V/K EXP_TXN4C
EXP_TXP5	C65	0.22u/4/X5R/6.3V/K EXP_TXP5C
EXP_TXN5	C67	0.22u/4/X5R/6.3V/K EXP_TXN5C
EXP_TXP6	C69	0.22u/4/X5R/6.3V/K EXP_TXP6C
EXP_TXN6	C71	0.22u/4/X5R/6.3V/K EXP_TXN6C
EXP_TXP7	C76	0.22u/4/X5R/6.3V/K EXP_TXP7C
EXP_TXN7	C75	0.22u/4/X5R/6.3V/K EXP_TXN7C
EXP_A_SW_TXP8	C79	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP8C
EXP_A_SW_TXN8	C80	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN8C
EXP_A_SW_TXP9	C81	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP9C
EXP_A_SW_TXN9	C82	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN9C
EXP_A_SW_TXP10	C86	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP10C
EXP_A_SW_TXN10	C87	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN10C
EXP_A_SW_TXP11	C90	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP11C
EXP_A_SW_TXN11	C91	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN11C
EXP_A_SW_TXP12	C92	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP12C
EXP_A_SW_TXN12	C93	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN12C
EXP_A_SW_TXP13	C95	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP13C
EXP_A_SW_TXN13	C96	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN13C
EXP_A_SW_TXP14	C97	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP14C
EXP_A_SW_TXN14	C98	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN14C
EXP_A_SW_TXP15	C99	0.22u/4/X5R/6.3V/K EXP_A_SW_TXP15C
EXP_A_SW_TXN15	C100	0.22u/4/X5R/6.3V/K EXP_A_SW_TXN15C

EXP_A_SW_RXP[8..15] EXP_A_SW_RXP[8..15] [17]
EXP_A_SW_RXN[8..15] EXP_A_SW_RXN[8..15] [17]
EXP_A_SW_TXP[8..15] EXP_A_SW_TXP[8..15] [17]
EXP_A_SW_TXN[8..15] EXP_A_SW_TXN[8..15] [17]

PCI-E REV:1.1--> 2.5GHZ

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

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

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

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

PCI-E REV:2.0--> 5GHZ

PCIESLOT-164DN-3 3GIO_*16

PCIEX16

X16_+12V
0/4/SHT/X R115
SMBCLK [7,8,12,16,18,21,30] SMBCLK
SMBDATA [7,8,12,16,18,21,30] SMBDATA
3VDUAL
VCC3
-PCIE_WAKE [12,16,18,19,38,40,41]

KEY

X16_+12V
R104 0/4/SHT/X
R113 0/4/SHT/X
VCC3
-PCIE_RST -PCIE_RST [16,18,19,22,40,41]

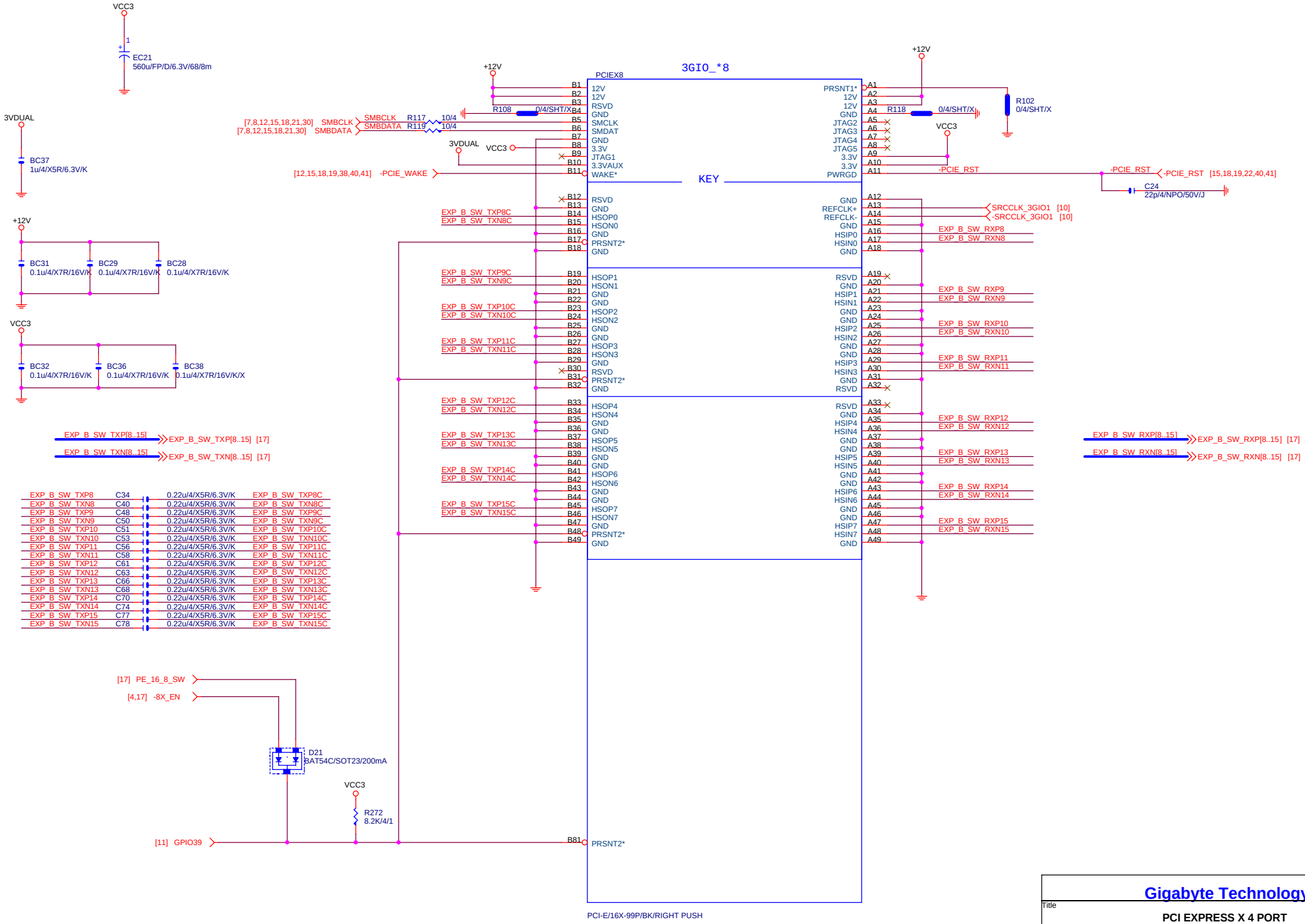
	B1	12V	PRSNT1*	A1	
	B2	12V	12V	A2	
	B3	RSVD	12V	A3	
	B4	GND	GND	A4	
SMBCLK	B5	SMCLK	JTAG2	A5	
SMBDATA	B6	SMDAT	JTAG3	A6	
	B7	GND	JTAG4	A7	
	B8	3.3V	JTAG5	A8	
	B9	JTAG1	3.3V	A9	
	B10	3.3VAUX	3.3V	A10	
-PCIE_WAKE	B11	WAKE*	PWRGD	A11	-PCIE_RST
	B12	RSVD	GND	A12	
	B13	GND	REFCLK+	A13	SRCCLK_3GIO [10]
EXP_TXP0C	B14	HSOP0	REFCLK-	A14	-SRCCLK_3GIO [10]
EXP_TXN0C	B15	HSON0	GND	A15	
	B16	GND	HSIP0	A16	EXP_RXP0
	B17	PRSNT2*	HSIN0	A17	EXP_RXN0
	B18	GND	GND	A18	
EXP_TXP1C	B19	HSOP1	RSVD	A19	
EXP_TXN1C	B20	HSON1	GND	A20	
	B21	GND	HSIP1	A21	EXP_RXP1
	B22	GND	HSIN1	A22	EXP_RXN1
EXP_TXP2C	B23	HSOP2	GND	A23	
EXP_TXN2C	B24	HSON2	GND	A24	
	B25	GND	HSIP2	A25	EXP_RXP2
	B26	GND	HSIN2	A26	EXP_RXN2
EXP_TXP3C	B27	HSOP3	GND	A27	
EXP_TXN3C	B28	HSON3	GND	A28	
	B29	GND	HSIP3	A29	EXP_RXP3
	B30	RSVD	HSIN3	A30	EXP_RXN3
	B31	PRSNT2*	GND	A31	
	B32	GND	RSVD	A32	
EXP_TXP4C	B33	HSOP4	RSVD	A33	
EXP_TXN4C	B34	HSON4	GND	A34	
	B35	GND	HSIP4	A35	EXP_RXP4
	B36	GND	HSIN4	A36	EXP_RXN4
EXP_TXP5C	B37	HSOP5	GND	A37	
EXP_TXN5C	B38	HSON5	GND	A38	
	B39	GND	HSIP5	A39	EXP_RXP5
	B40	GND	HSIN5	A40	EXP_RXN5
EXP_TXP6C	B41	HSOP6	GND	A41	
EXP_TXN6C	B42	HSON6	GND	A42	
	B43	GND	HSIP6	A43	EXP_RXP6
	B44	GND	HSIN6	A44	EXP_RXN6
EXP_TXP7C	B45	HSOP7	GND	A45	
EXP_TXN7C	B46	HSON7	GND	A46	
	B47	GND	HSIP7	A47	EXP_RXP7
	B48	PRSNT2*	HSIN7	A48	EXP_RXN7
	B49	GND	GND	A49	
EXP_A_SW_TXP8C	B50	HSOP8	RSVD	A50	
EXP_A_SW_TXN8C	B51	HSON8	GND	A51	
	B52	GND	HSIP8	A52	EXP_A_SW_RXP8
	B53	GND	HSIN8	A53	EXP_A_SW_RXN8
EXP_A_SW_TXP9C	B54	HSOP9	GND	A54	
EXP_A_SW_TXN9C	B55	HSON9	GND	A55	
	B56	GND	HSIP9	A56	EXP_A_SW_RXP9
	B57	GND	HSIN9	A57	EXP_A_SW_RXN9
EXP_A_SW_TXP10C	B58	HSOP10	GND	A58	
EXP_A_SW_TXN10C	B59	HSON10	GND	A59	
	B60	GND	HSIP10	A60	EXP_A_SW_RXP10
	B61	GND	HSIN10	A61	EXP_A_SW_RXN10
EXP_A_SW_TXP11C	B62	HSOP11	GND	A62	
EXP_A_SW_TXN11C	B63	HSON11	GND	A63	
	B64	GND	HSIP11	A64	EXP_A_SW_RXP11
	B65	GND	HSIN11	A65	EXP_A_SW_RXN11
EXP_A_SW_TXP12C	B66	HSOP12	GND	A66	
EXP_A_SW_TXN12C	B67	HSON12	GND	A67	
	B68	GND	HSIP12	A68	EXP_A_SW_RXP12
	B69	GND	HSIN12	A69	EXP_A_SW_RXN12
EXP_A_SW_TXP13C	B70	HSOP13	GND	A70	
EXP_A_SW_TXN13C	B71	HSON13	GND	A71	
	B72	GND	HSIP13	A72	EXP_A_SW_RXP13
	B73	GND	HSIN13	A73	EXP_A_SW_RXN13
EXP_A_SW_TXP14C	B74	HSOP14	GND	A74	
EXP_A_SW_TXN14C	B75	HSON14	GND	A75	
	B76	GND	HSIP14	A76	EXP_A_SW_RXP14
	B77	GND	HSIN14	A77	EXP_A_SW_RXN14
EXP_A_SW_TXP15C	B78	HSOP15	GND	A78	
EXP_A_SW_TXN15C	B79	HSON15	GND	A79	
	B80	GND	HSIP15	A80	EXP_A_SW_RXP15
	B81	PRSNT2*	HSIN15	A81	EXP_A_SW_RXN15
	B82	RSVD	GND	A82	

PCI-E/16X-164P/BK/RIGHT PUSH

C32 33p/4/NPO/50V/J/X
C29 33p/4/NPO/50V/J/X
-PCIE_RST
C27 33p/4/NPO/50V/J
VCC3
BC34 0.1u/4/X7R/16V/K
BC39 0.1u/4/X7R/16V/K
BC42 0.1u/4/X7R/16V/K
BC41 0.1u/4/X7R/16V/K/X

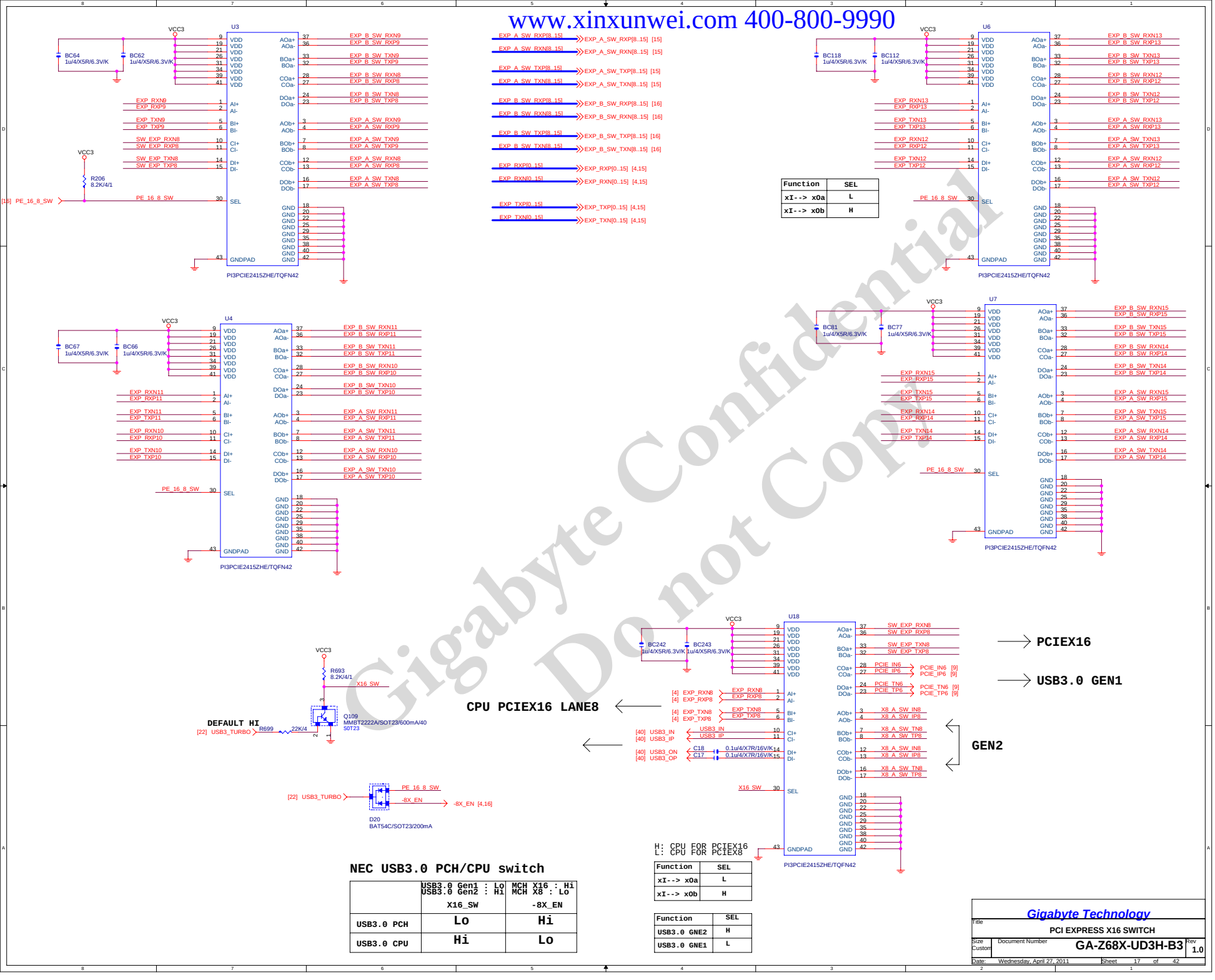
Gigabyte Technology

Title	PCI EXPRESS * 16		
Size Custom	Document Number GA-Z68X-UD3H-B3		Rev 1.0
Date: Wednesday, April 27, 2011	Sheet 15 of 42		



Gigabyte Technology

Title	PCI EXPRESS X 4 PORT	
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 16 of 42	



NEC USB3.0 PCH/CPU switch

	USB3.0 Gen1 : Lo USB3.0 Gen2 : Hi X16_SW	MCH X16 : Hi MCH X8 : Lo -8X_EN
USB3.0 PCH	Lo	Hi
USB3.0 CPU	Hi	Lo

Gigabyte Technology

Title: PCI EXPRESS X16 SWITCH

Size: Custom | Document Number: GA-Z68X-UD3H-B3 | Rev: 1.0

Date: Wednesday, April 27, 2011 | Sheet 17 of 42

PCIE*1

PCIEX1_1 3GIO_X1

+12V	B1	12V	PRSNT1*	A1	R99 0/4/SHT/X
	B2	12V	12V	A2	+12V
	B3	RSVD	12V	A3	
R116 0/4/SHT/X	B4	GND	GND	A4	R100 0/4/SHT/X
[7,8,12,15,16,21,30] SMBCLK	B5	SMCLK	JTAG2	A5	
[7,8,12,15,16,21,30] SMBDATA	B6	SMDAT	JTAG3	A6	
	B7	GND	JTAG4	A7	
VCC3	B8	3.3V	JYAG5	A8	
	B9	JTAG1	3.3V	A9	VCC3
3VDUAL	B10	3.3VAUX	3.3V	A10	
[12,15,16,19,38,40,41] -PCIE_WAKE	B11	WAKE*	PWRGD	A11	-PCIE_RST [15,16,19,22,40,41]
		KEY			C28 22p/4/NPO/50V/J/X
	B12	RVSD	GND	A12	
	B13	GND	REFCLK+	A13	PCIE_CLK1 [10]
[9] PCIE_TP1 PCIE_TP1	B14	HSOP0	REFCLK-	A14	-PCIE_CLK1 [10]
[9] PCIE_TN1 PCIE_TN1	B15	HSON0	GND	A15	
	B16	GND	HSIP0	A16	PCIE_IP1 PCIE_IP1 [9]
	B17	PRSNT2*	HSIN0	A17	PCIE_IN1 PCIE_IN1 [9]
	B18	GND	GND	A18	

PCI-E/1X-36P/BK/OL

PCIE*1

PCIEX1_2 3GIO_X1

+12V	B1	12V	PRSNT1*	A1	R106 0/4/SHT/X
	B2	12V	12V	A2	+12V
	B3	RSVD	12V	A3	
R112 0/4/SHT/X	B4	GND	GND	A4	R109 0/4/SHT/X
[7,8,12,15,16,21,30] SMBCLK	B5	SMCLK	JTAG2	A5	
[7,8,12,15,16,21,30] SMBDATA	B6	SMDAT	JTAG3	A6	
	B7	GND	JTAG4	A7	
VCC3	B8	3.3V	JYAG5	A8	
	B9	JTAG1	3.3V	A9	VCC3
3VDUAL	B10	3.3VAUX	3.3V	A10	
[12,15,16,19,38,40,41] -PCIE_WAKE	B11	WAKE*	PWRGD	A11	-PCIE_RST [15,16,19,22,40,41]
		KEY			C26 22p/4/NPO/50V/J/X
	B12	RVSD	GND	A12	
	B13	GND	REFCLK+	A13	PCIE_CLK2 [10]
[9] PCIE_TP2 PCIE_TP2	B14	HSOP0	REFCLK-	A14	-PCIE_CLK2 [10]
[9] PCIE_TN2 PCIE_TN2	B15	HSON0	GND	A15	
	B16	GND	HSIP0	A16	PCIE_IP2 PCIE_IP2 [9]
	B17	PRSNT2*	HSIN0	A17	PCIE_IN2 PCIE_IN2 [9]
	B18	GND	GND	A18	

PCI-E/1X-36P/BK/OL

PCIE*1

PCIEX1_3 3GIO_X1

+12V	B1	12V	PRSNT1*	A1	R105 0/4/SHT/X
	B2	12V	12V	A2	+12V
	B3	RSVD	12V	A3	
R110 0/4/SHT/X	B4	GND	GND	A4	R111 0/4/SHT/X
[7,8,12,15,16,21,30] SMBCLK	B5	SMCLK	JTAG2	A5	
[7,8,12,15,16,21,30] SMBDATA	B6	SMDAT	JTAG3	A6	
	B7	GND	JTAG4	A7	
VCC3	B8	3.3V	JYAG5	A8	
	B9	JTAG1	3.3V	A9	VCC3
3VDUAL	B10	3.3VAUX	3.3V	A10	
[12,15,16,19,38,40,41] -PCIE_WAKE	B11	WAKE*	PWRGD	A11	-PCIE_RST [15,16,19,22,40,41]
		KEY			C25 22p/4/NPO/50V/J/X
	B12	RVSD	GND	A12	
	B13	GND	REFCLK+	A13	PCIE_CLK3 [10]
[9] PCIE_TP3 PCIE_TP3	B14	HSOP0	REFCLK-	A14	-PCIE_CLK3 [10]
[9] PCIE_TN3 PCIE_TN3	B15	HSON0	GND	A15	
	B16	GND	HSIP0	A16	PCIE_IP3 PCIE_IP3 [9]
	B17	PRSNT2*	HSIN0	A17	PCIE_IN3 PCIE_IN3 [9]
	B18	GND	GND	A18	

PCI-E/1X-36P/BK/OL

VCC3

BC35 0.1u/4/X7R/16V/K

BC33 0.1u/4/X7R/16V/K

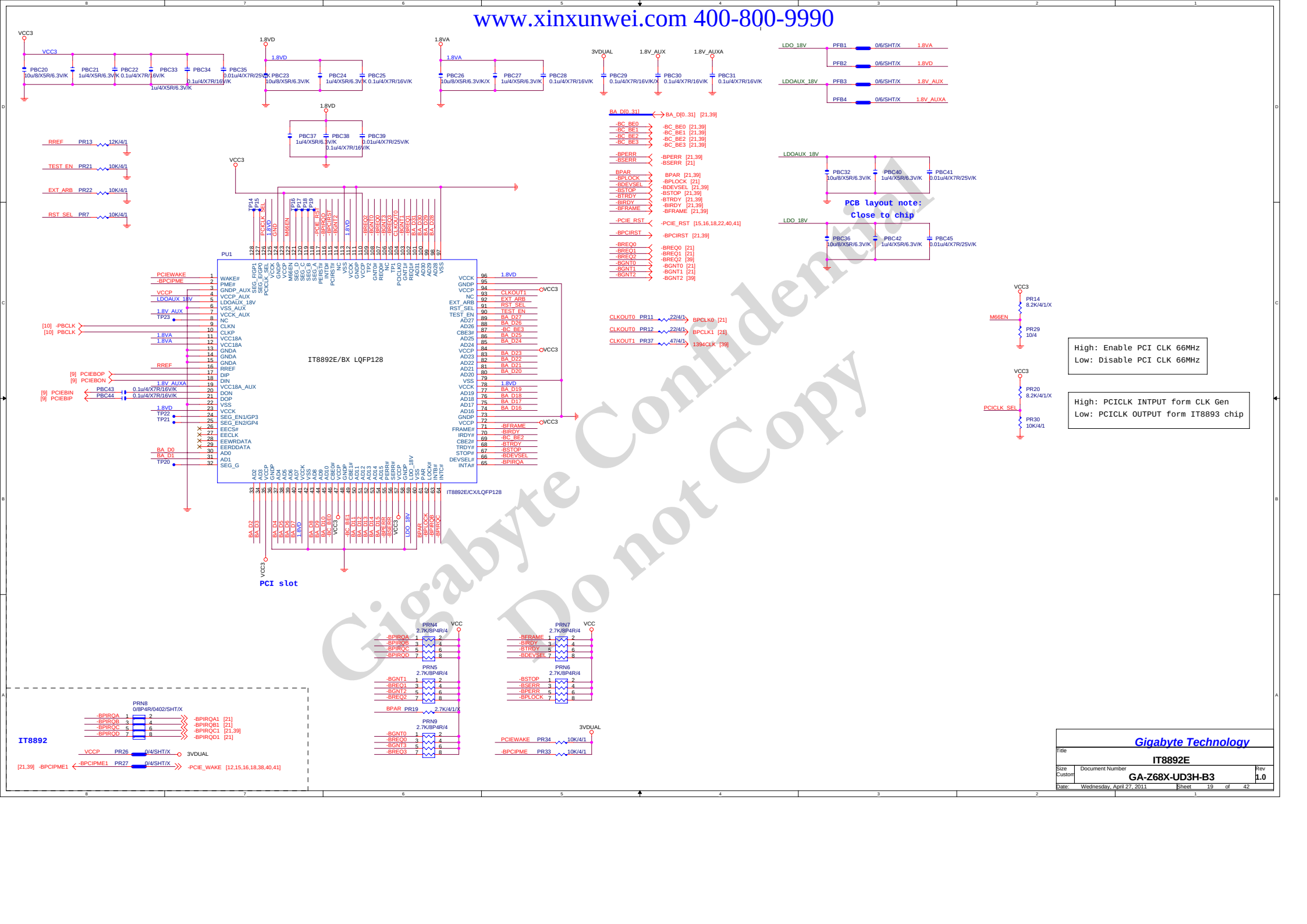
BC40 0.1u/4/X7R/16V/K

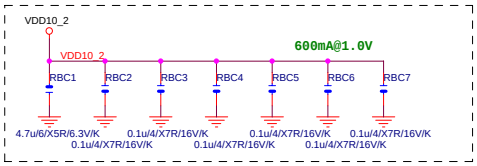
EC10 560u/FP/D/6.3V/68/8m

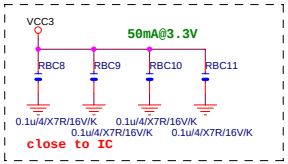
+12V

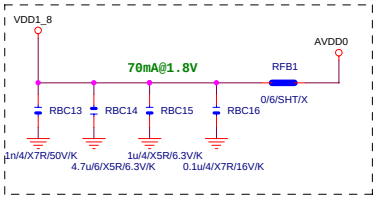
BC27 0.1u/4/X7R/16V/K

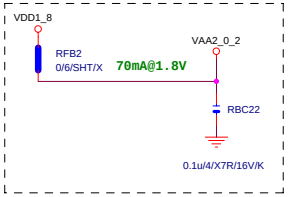
Gigabyte Technology		
Title: PCIE_X1 1,2		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 18 of 42	

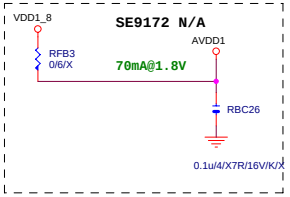


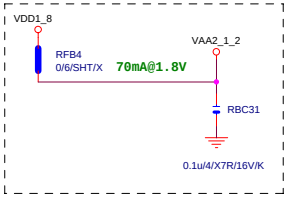


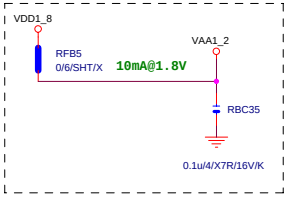


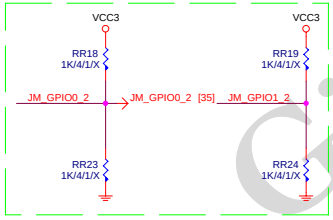


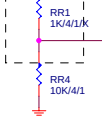


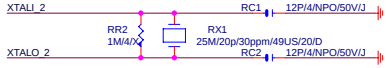


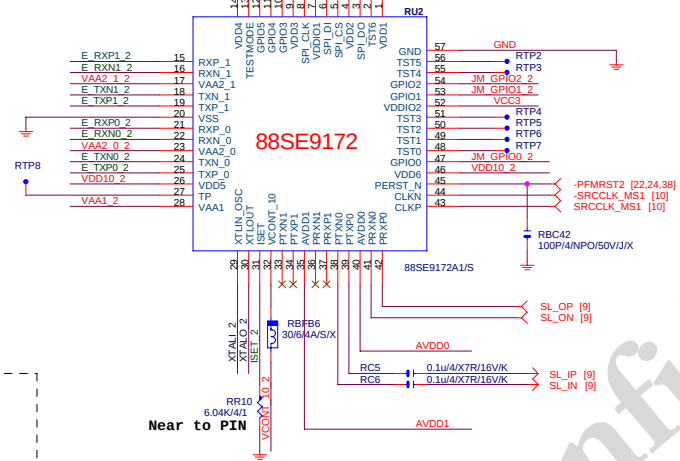


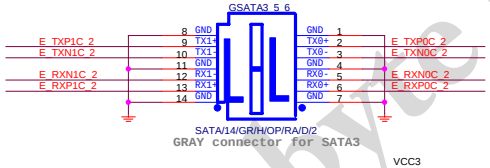


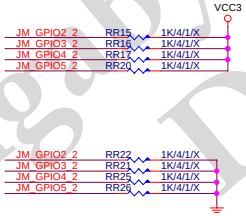


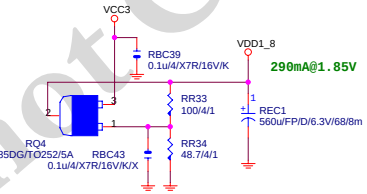


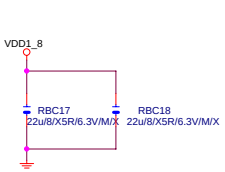


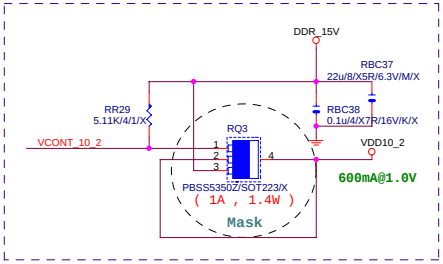


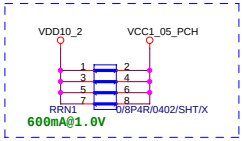


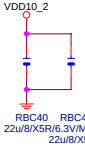


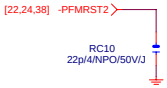


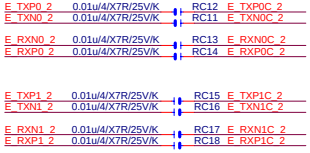












GIGABYTE™

Title	Marvell 9172 SATA 3.0	
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
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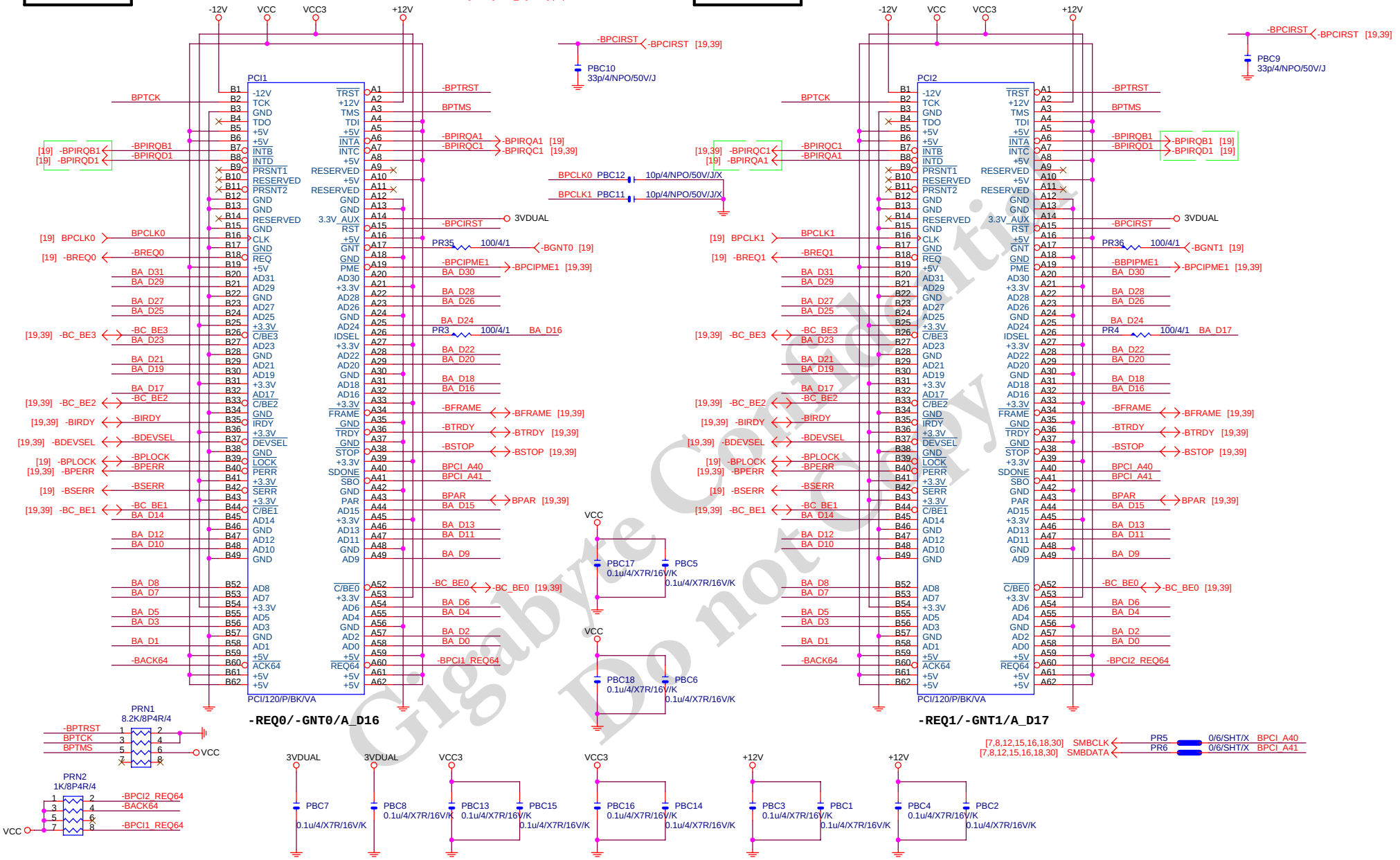
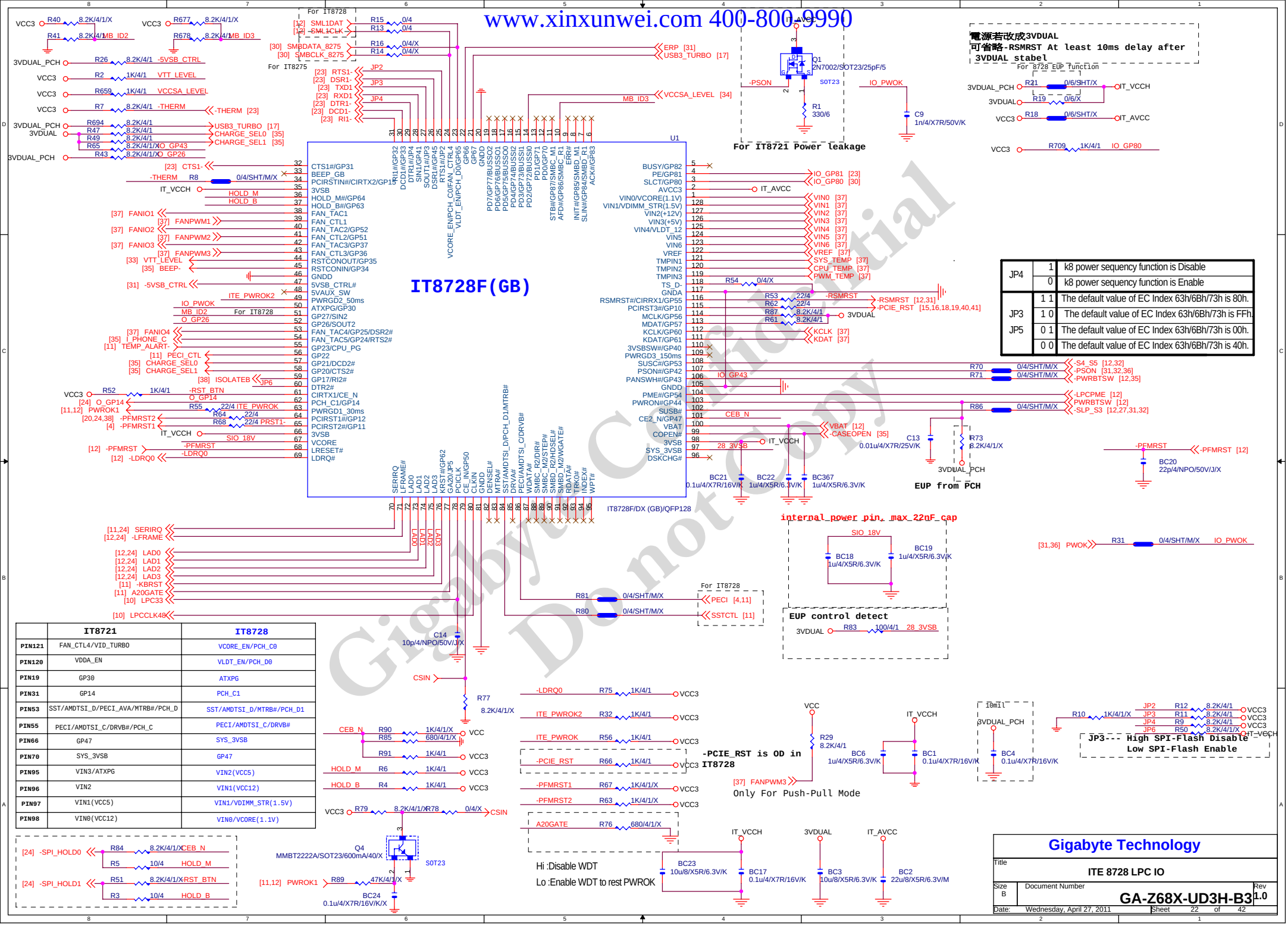
PCI SLOT 1

PCI SLOT 2



GIGABYTE™

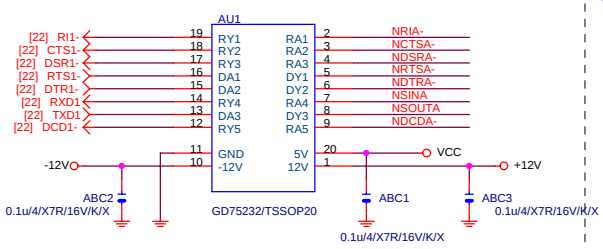
Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 21 of 42	



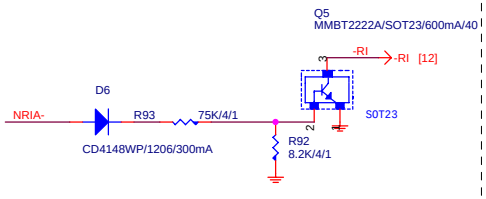
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

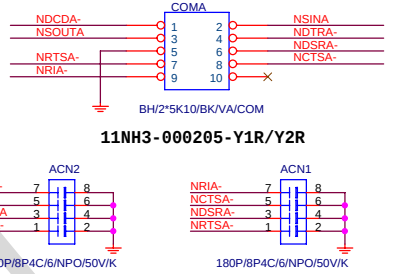
	IT8721	IT8728
PIN121	FAN_CTL4/VID_TURBO	VCORE_EN/PCH_C0
PIN120	VDDA_EN	VLDT_EN/PCH_D0
PIN19	GP30	ATXPG
PIN31	GP14	PCH_C1
PIN53	SST/AMDTSI_D/PECI_AVA/MTRB#/PCH_D	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#/PCH_C	PECI/AMDTSI_C/DRVB#
PIN66	GP47	SYS_3VSB
PIN70	SYS_3VSB	GP47
PIN95	VIN3/ATXPG	VIN2(VCC5)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

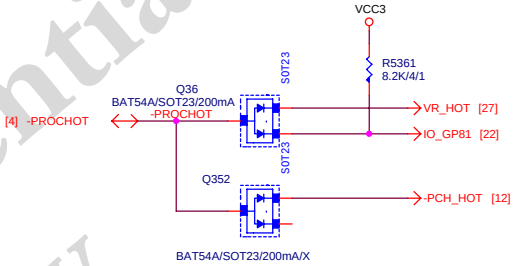
COMA

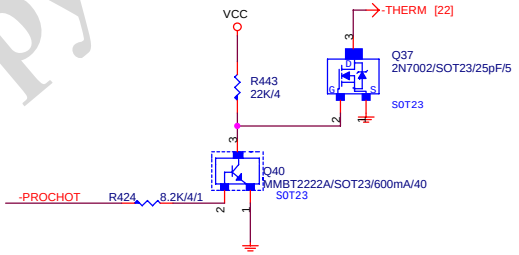


COM RI





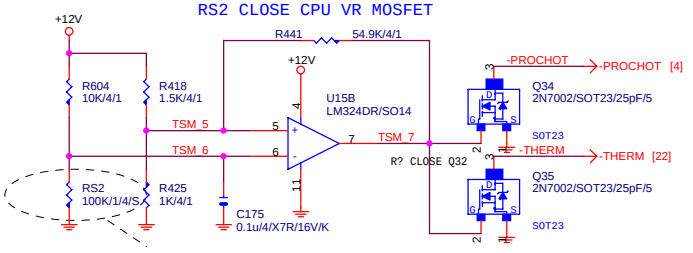




-PROHOT

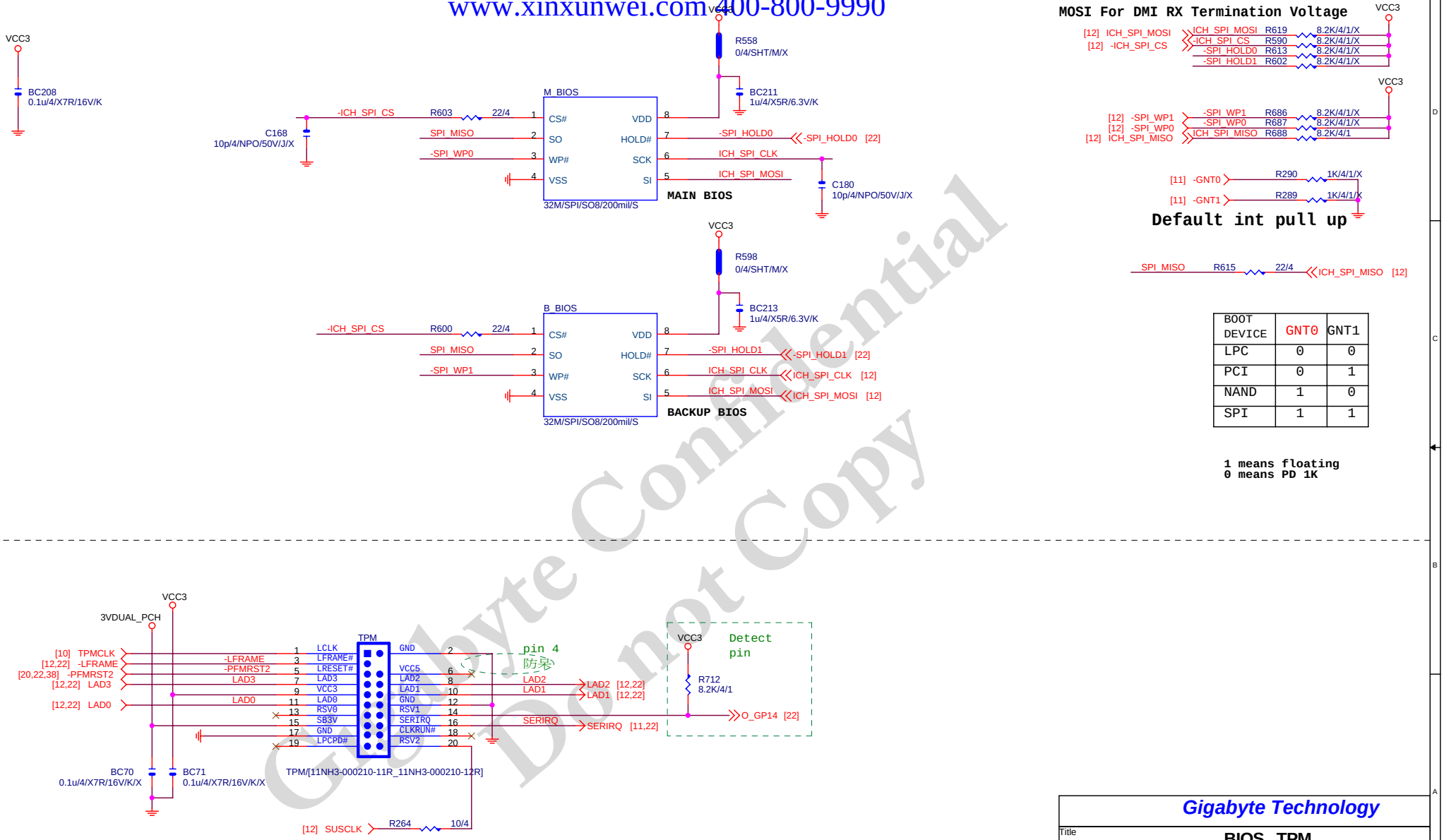
deasserted at 116 degree

RS2 CLOSE CPU VR MOSFET



CLOSE PWM HOT MOSFET

Gigabyte Technology		
Title: COM & PROHOT		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 23 of 42	



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

Gigabyte Technology

Title: BIOS , TPM

Size: Custom | Document Number: GA-Z68X-UD3H-B3 | Rev: 1.0

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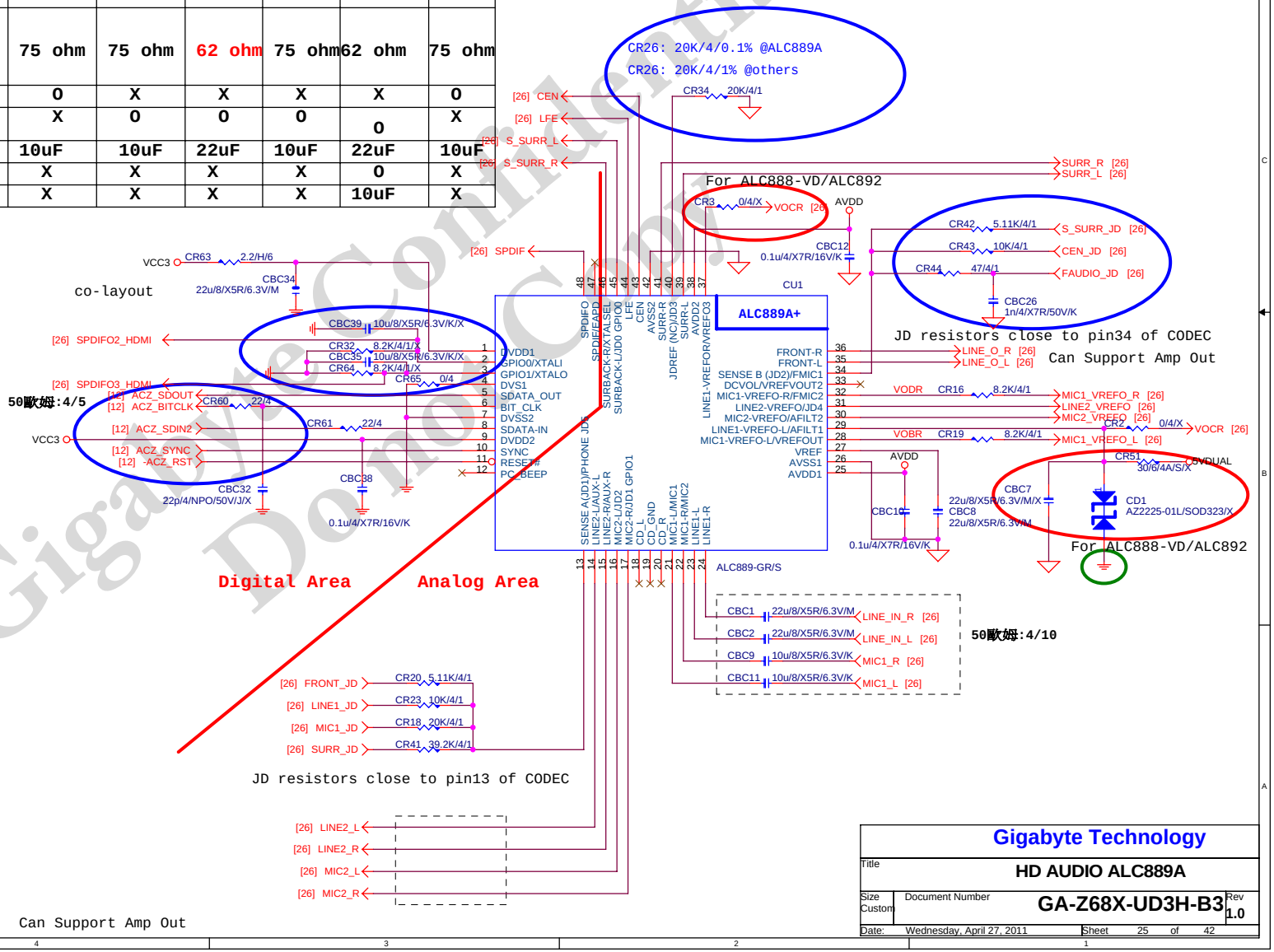
AZALIA CODEC *ALC888-A/ALC888B/ALC888-VD/ALC892R/ALC889/ALC889A/ALC889B Colay*

	ALC888-VA	ALC888B	ALC888-VD	ALC892R	ALC889	ALC889A	ALC889B	ALC898 ALC892
CR32	X	X	X	X	X	0	X	X
CR64	X	X	X	X	X	0	X	X
CR65	0	X	X	X	0	0	0	X
CBC35	X	X	10uF/X5R	10uF/X5R	X	X	X	10uF/X5R
CR28	X	X	X	X	X	X	X	X
CR34	20K/1%	20K/1%	20K/1%	20K/1%	20K/1%	20K/0.1%	20K/1%	20K/1%
CR31	X	0	X	0	0	X	X	0
CR30	0	X	0	X	X	0	X	X
CBC5/CBC6/CBC9/CBC11	4.7uF /X5R	4.7uF /X5R	4.7uF /X5R	4.7uF /X5R	10uF /X5R	4.7uF /X5R	10uF /X5R	4.7uF /X5R
CR5/CR8/CR11/CR4/ CR17/CR22/CR45/CR33/ CR47/CR40/CR26/CR37/ CR13/CR11/CR57/CR53	75 ohm	75 ohm	75 ohm	75 ohm	62 ohm	75 ohm	62 ohm	75 ohm
CR51/CD1/CBC7	X	X	0	X	X	X	X	0
CD2/CD3/CQ3/CQ5	0	0	X	0	0	0	0	X
CBC1/CBC2	10uF	10uF	10uF	10uF	22uF	10uF	22uF	10uF
CR66	X	X	X	X	X	X	0	X
CBC39	X	X	X	X	X	X	10uF	X



Gigabyte Technology	
Title	HD AUDIO ALC889A
Size: Custom	Document Number: GA-Z68X-UD3H-B3 Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 25 of 42

CODEC POWER/EMI PAD

EUP

ADD CD2 For ESD PROTECT DIODE

上ALC892時,此顆電容要保留

LINE-OUT

LINE-IN

Only reserved for ALC888

Verify MIC function in LINE-in

For 889A/888

MIC-IN

SURROUND

EMI

CEN/LFE

EMI

SURR BACK

EMI

AZALIA FRONT PANEL

Digital Area

DP_HDMI_SPDIFC

DP+HDMI+SPDIF/20P+19P+3P/BK/RA :: Location DP_HDMI_SPDIF

PIN

889B

For HDMI SPDIF

AZALIA_JACK

BTX AZALIA CONNECTOR

11NR6-403007-21R

BLUE LINE-IN

GREEN LINE-OUT

PINK MIC-IN

Orange CEN/LFE

Black SURROUND

Gray SURROUND SIDE

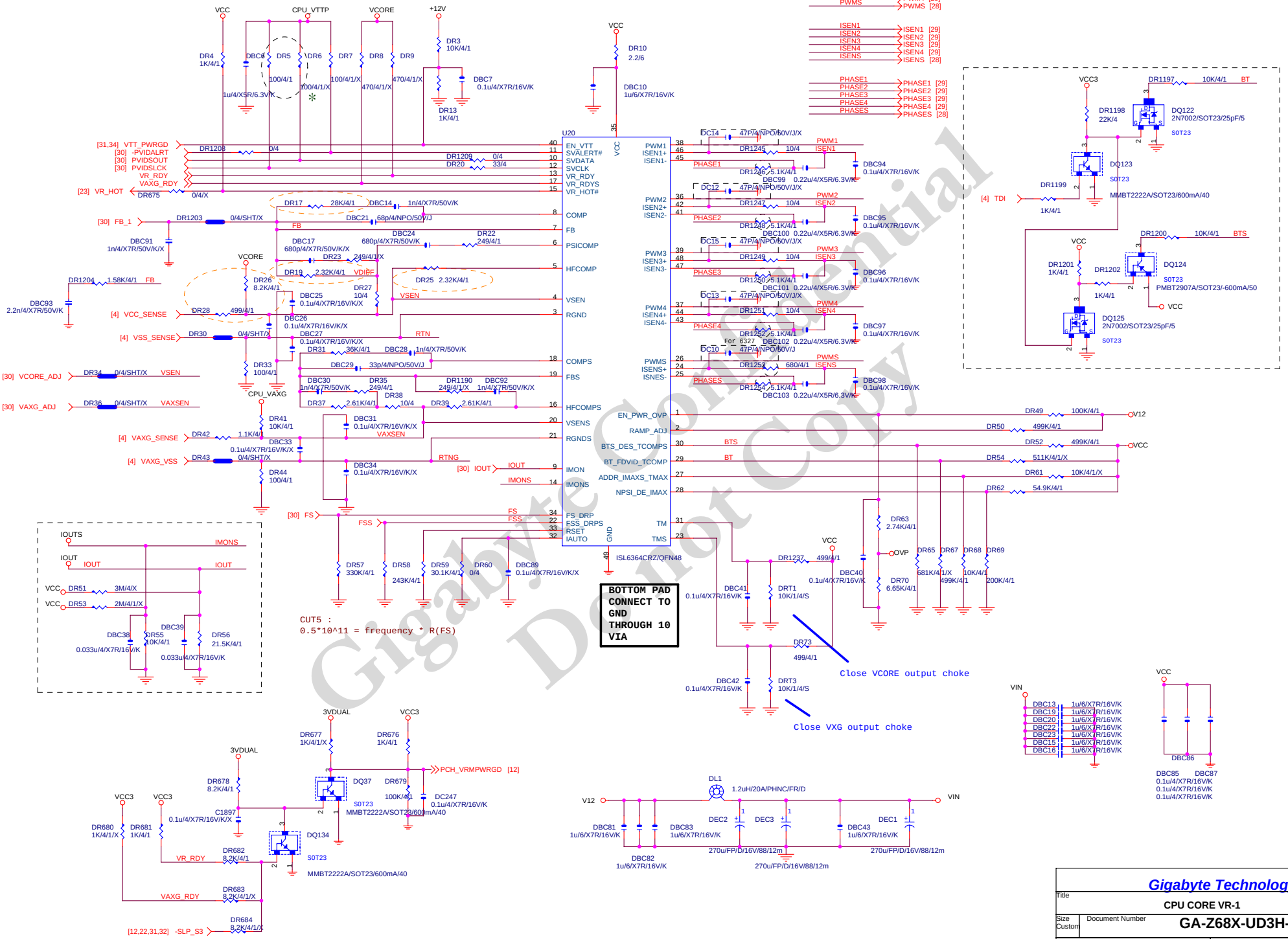
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA

Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-Z68X-UD3H-B3 | Rev: 1.0

Date: Wednesday, April 27, 2011 | Sheet 26 of 42



Gigabyte Technology			
Title: CPU CORE VR-1			
Size: Custom	Document Number: GA-Z68X-UD3H-B3		Rev: 1.0
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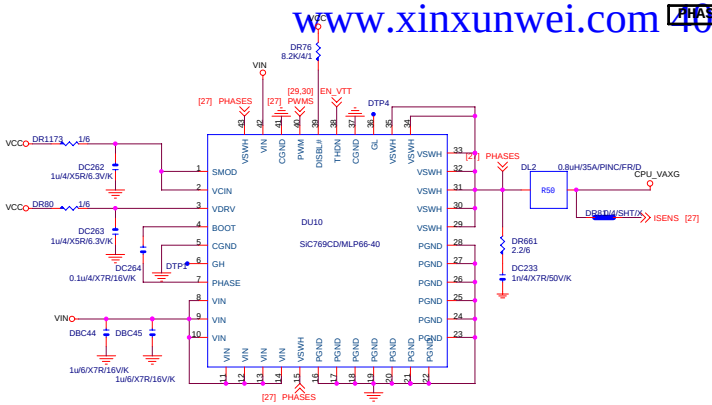
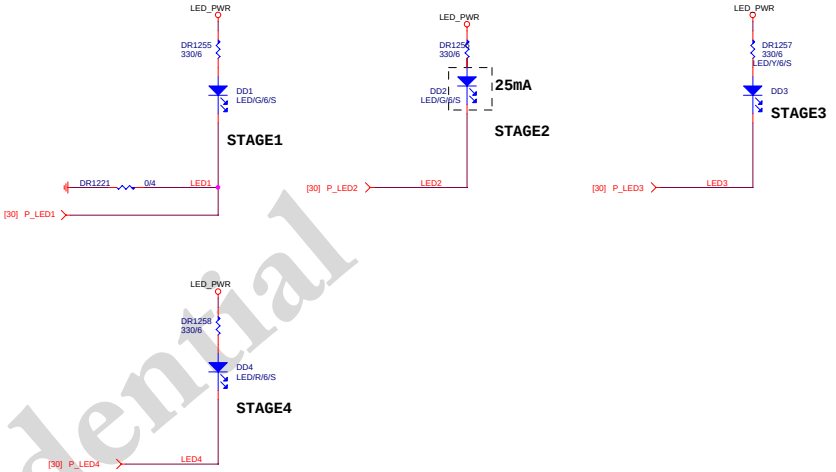
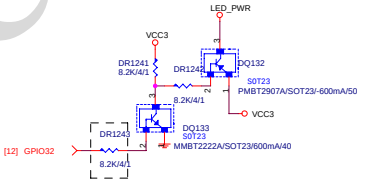
PHASE LED

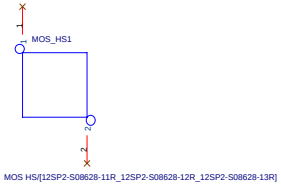


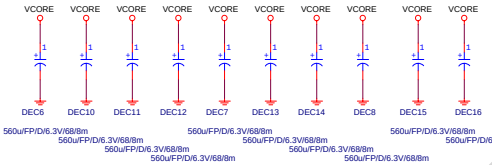


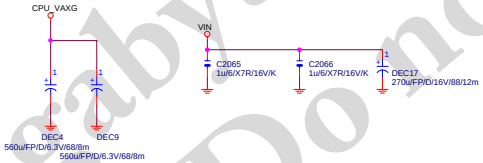
LED POWER



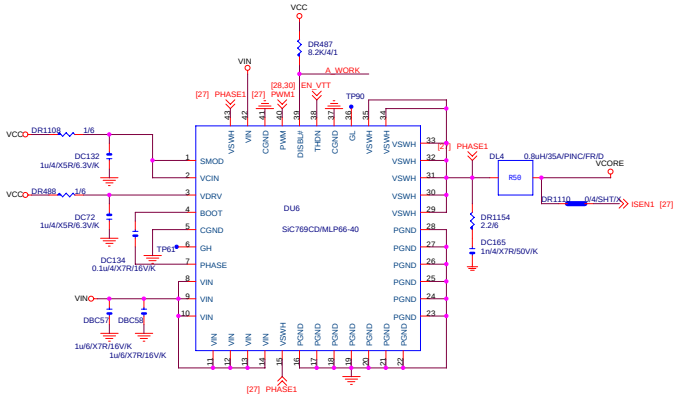
MOS HEATSINK

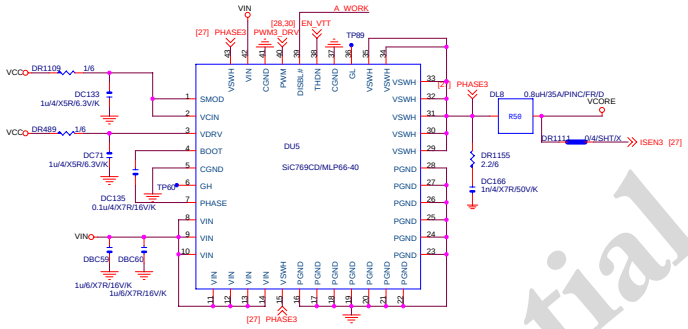


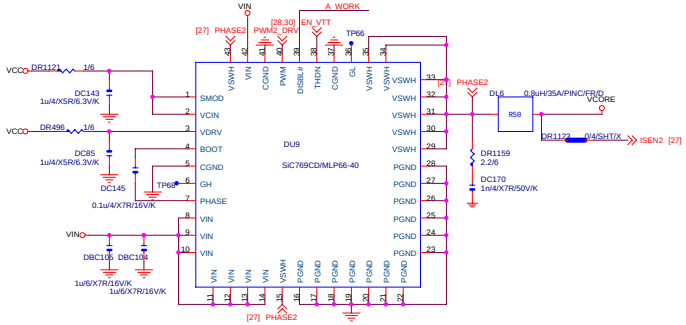


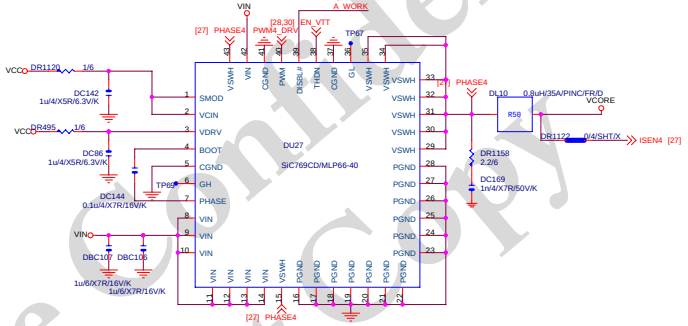


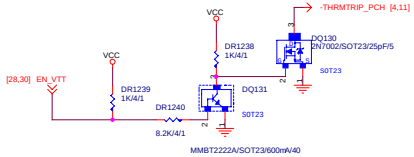
Gigabyte Technology			
Title: CPU CORE VR-2			
Size: Custom	Document Number: GA-Z68X-UD3H-B3		Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 28 of 42		

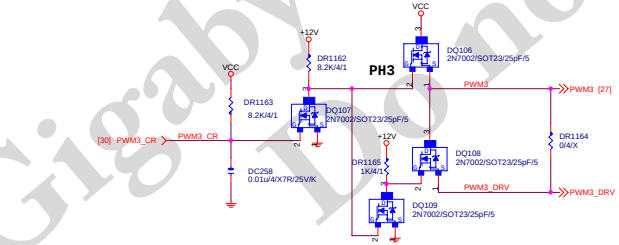


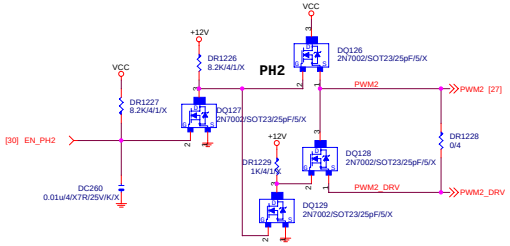


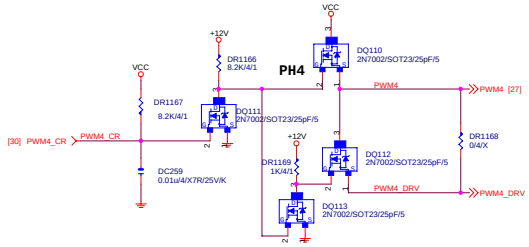




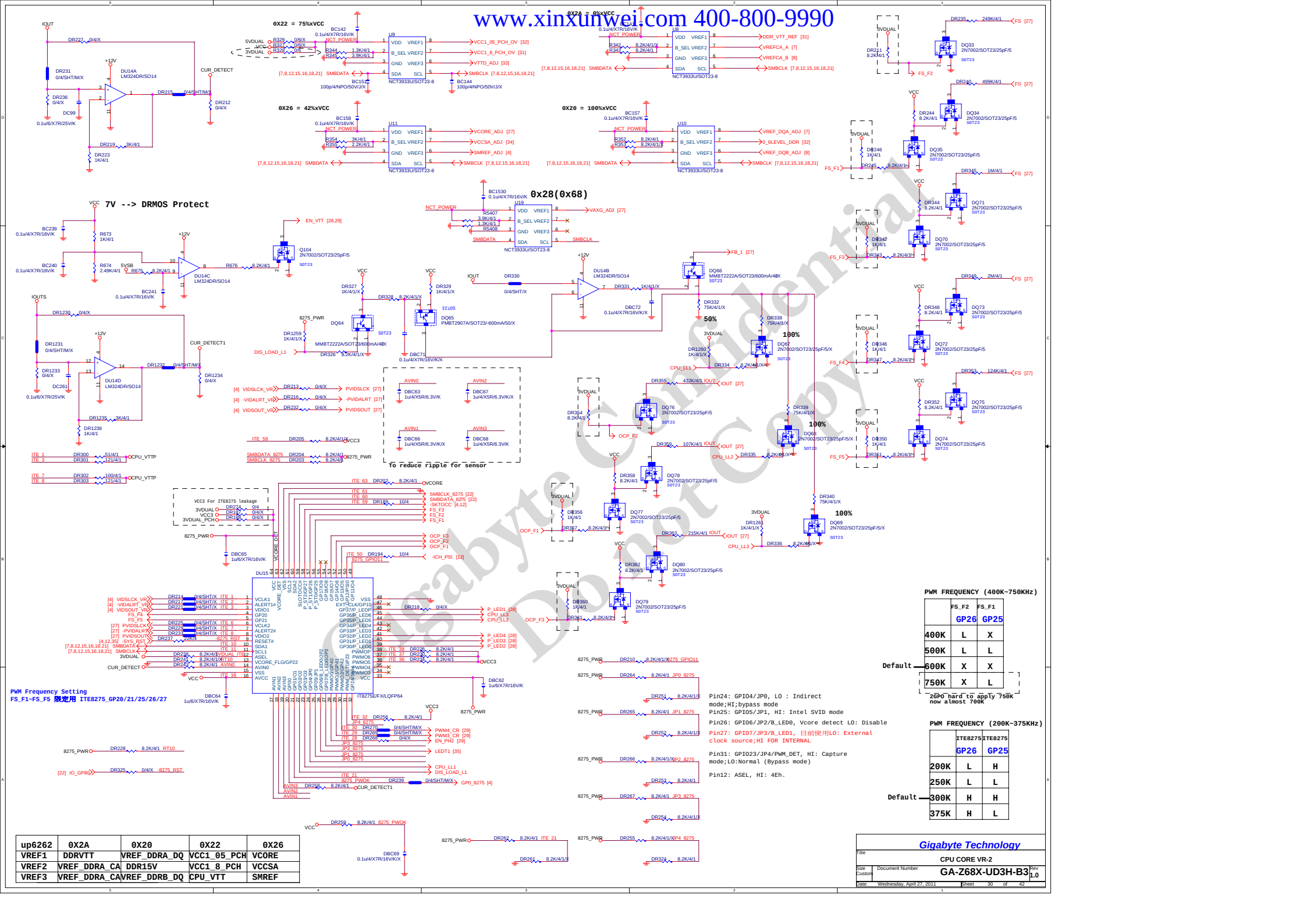








Gigabyte Technology		
Title: CPU CORE VR-3		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 29 of 42	



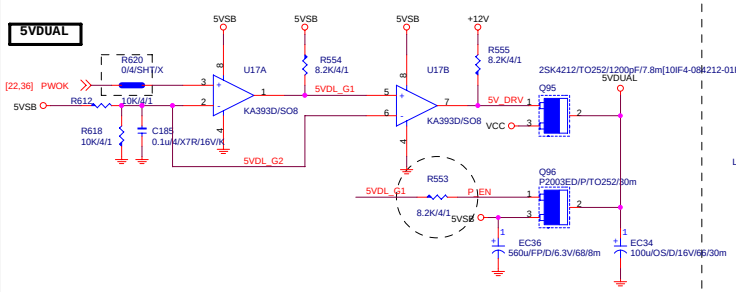
up6262	0X2A	0X20	0X22	0X26
VREF1	DDRVTT	VREF_DDRA_DQ	VCC1_05_PCH	VCORE
VREF2	VREF_DDRA_CA	DDR15V	VCC1_8_PCH	VCCSA
VREF3	VREF_DDRA_CA	VREF_DDRB_DQ	CPU_VTT	SMREF

	FS_F2	FS_F1
	GP26	GP25
400K	L	X
500K	L	L
600K	X	X
750K	X	L

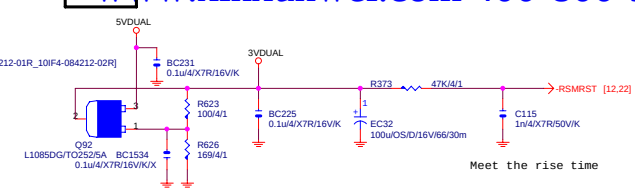
	ITE8275	ITE8275
	GP26	GP25
200K	L	H
250K	L	L
300K	H	H
375K	H	L

Gigabyte Technology				
Title	CPU CORE VR-2			
Size: Custom	Document Number: GA-Z68X-UD3H-B3			Rev: 1.0
Date: Wednesday, April 27, 2011		Sheet 30 of 42		

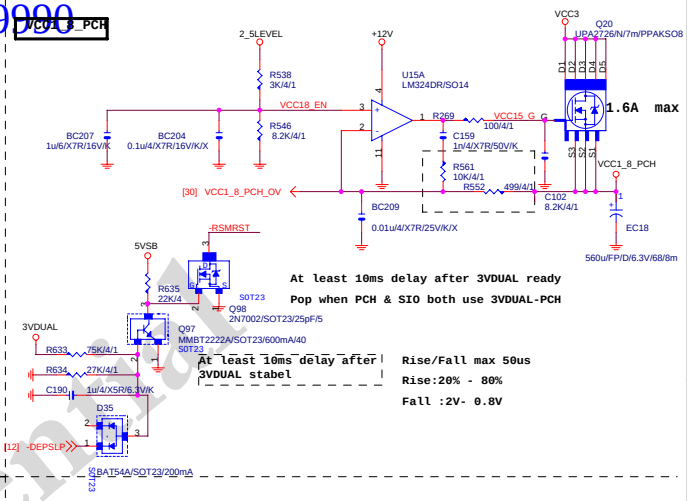
5VDUAL



3VDUAL

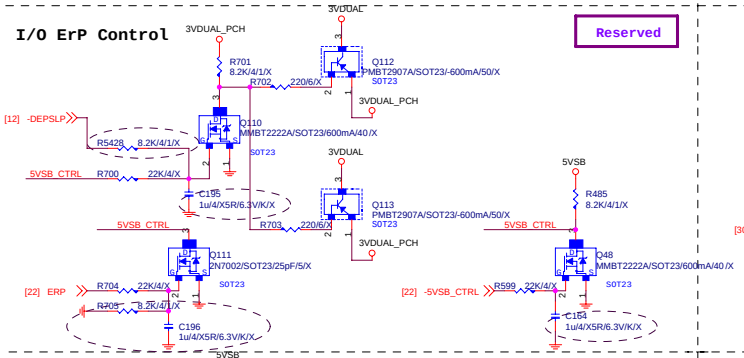


VCC1_8_PCH

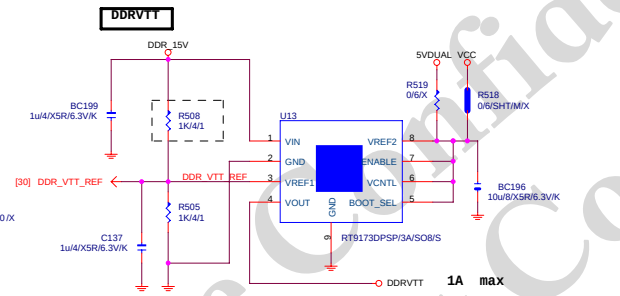


I/O ErP Control

Reserved

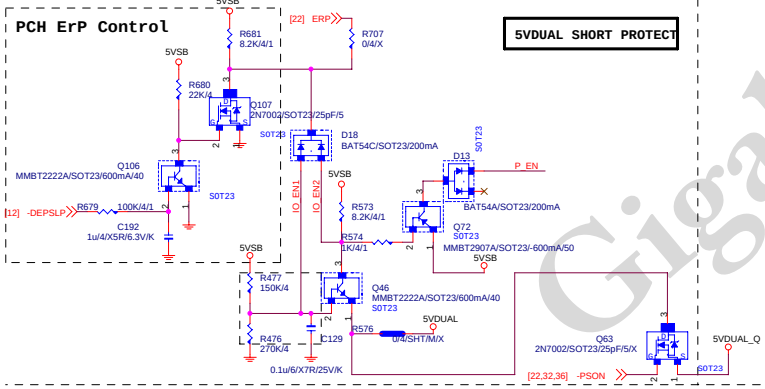


DDRVTT

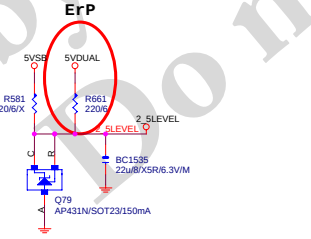


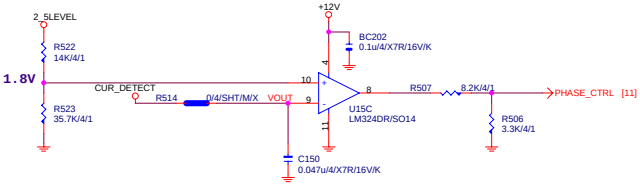
PCH ErP Control

5VDUAL SHORT PROTECT

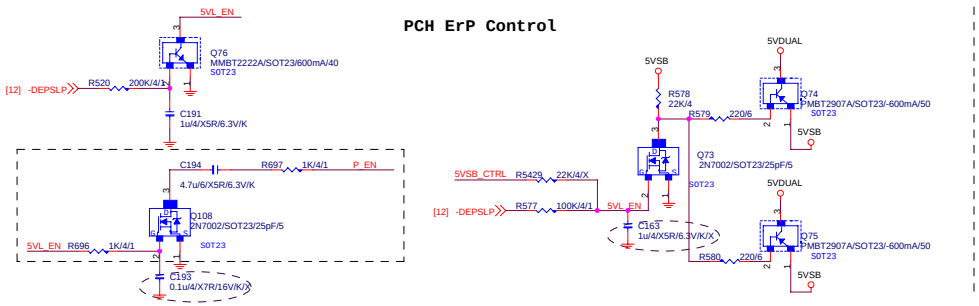


ErP

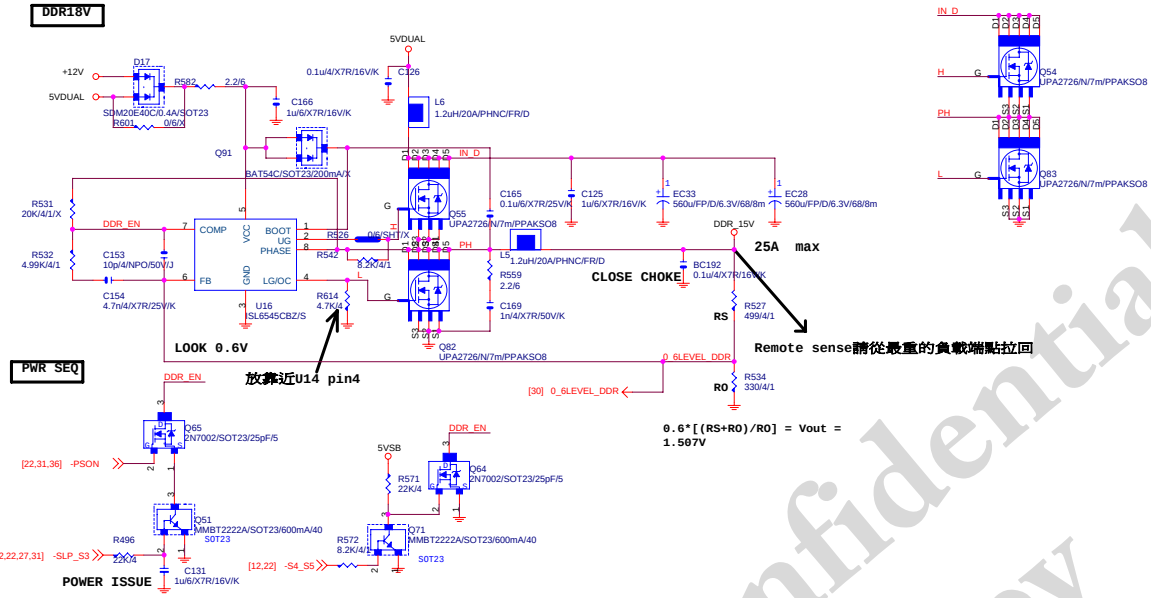




PCH ErP Control



Gigabyte Technology		
Title: DISCRETE POWER		
Size: C	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 31 of 42	

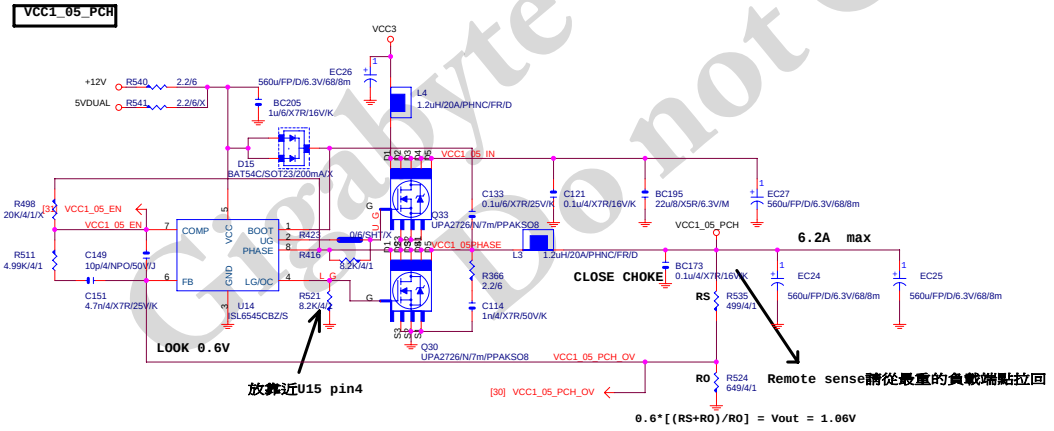


PWR SEQ

OCP : Ipeak=(2xIocsetxRocset)/Rdson
Iocset=21.5uA , Rocset=4.7k

OCP : Ipeak=(2xIocsetxRocset)/Rdson
=(2x21.5ux4.7k)/(7m/2)
=57.74A

注意 : Rocset的阻值要依據Lo side Rdson改變
一般Ipeak設定在50~60A即可

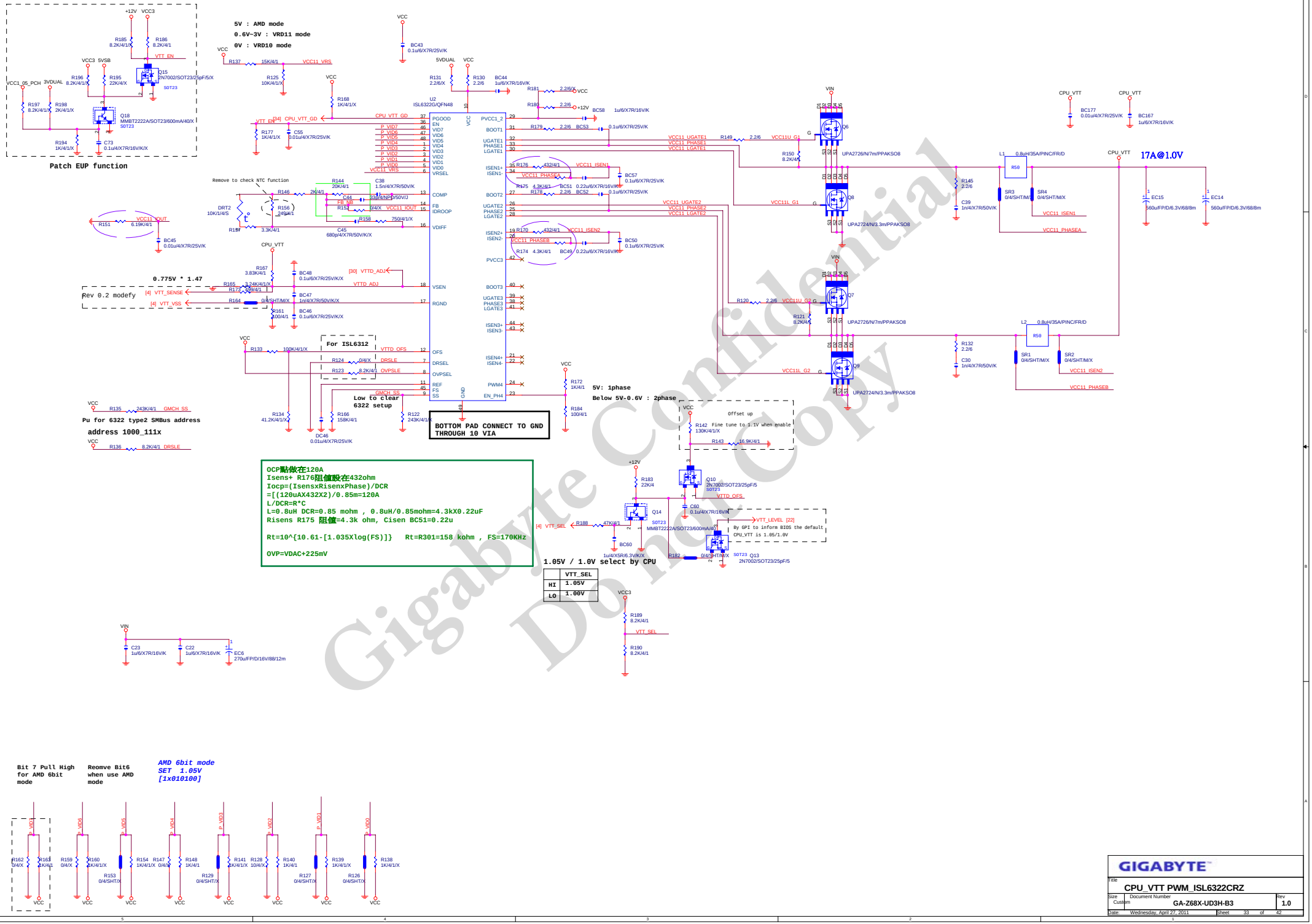


OCP : Ipeak=(2xIocsetxRocset)/Rdson
Iocset=21.5uA , Rocset=8.2k

OCP : Ipeak=(2xIocsetxRocset)/Rdson
=(2x21.5ux8.2k)/7m
=50.37A

注意 : Rocset的阻值要依據Lo side Rdson改變
一般Ipeak設定在50~60A即可

Gigabyte Technology		
Title: DDR_15V		
Size: C	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 32 of 42	



Title	CPU_VTT PWM_ISL6322CRZ
Size	Custom
Document Number	GA-Z68X-UD3H-B3
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Date	Wednesday, April 27, 2011
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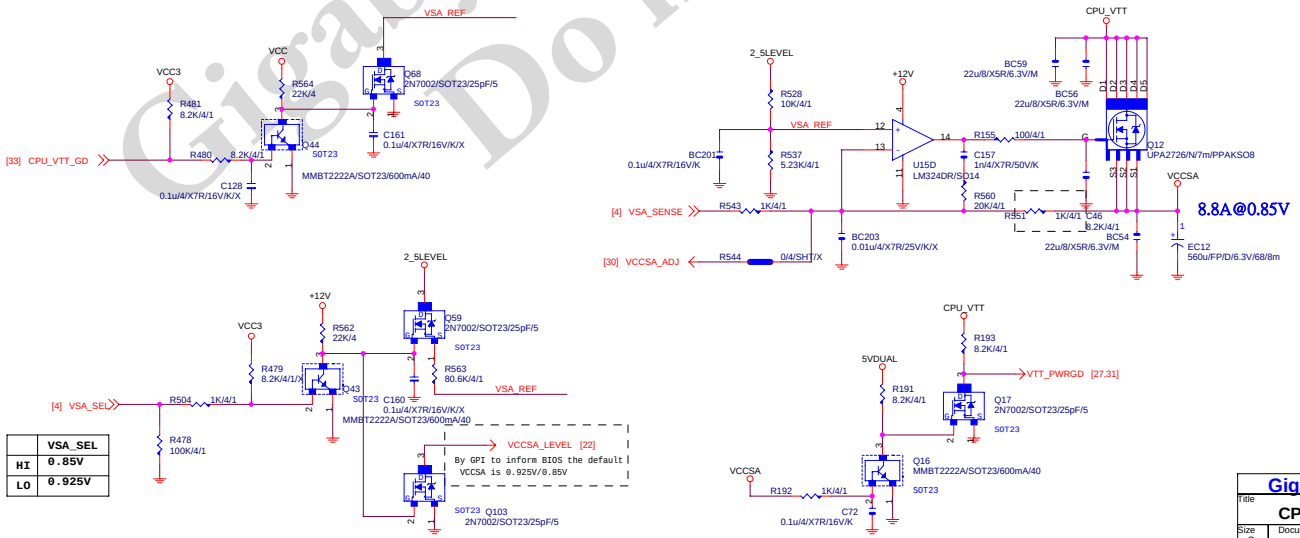
VCC_SA



Title	CPU VTT PWM_ISL6312
Size	C
Document Number	GA-Z68X-UD3H-B3
Rev	1.0
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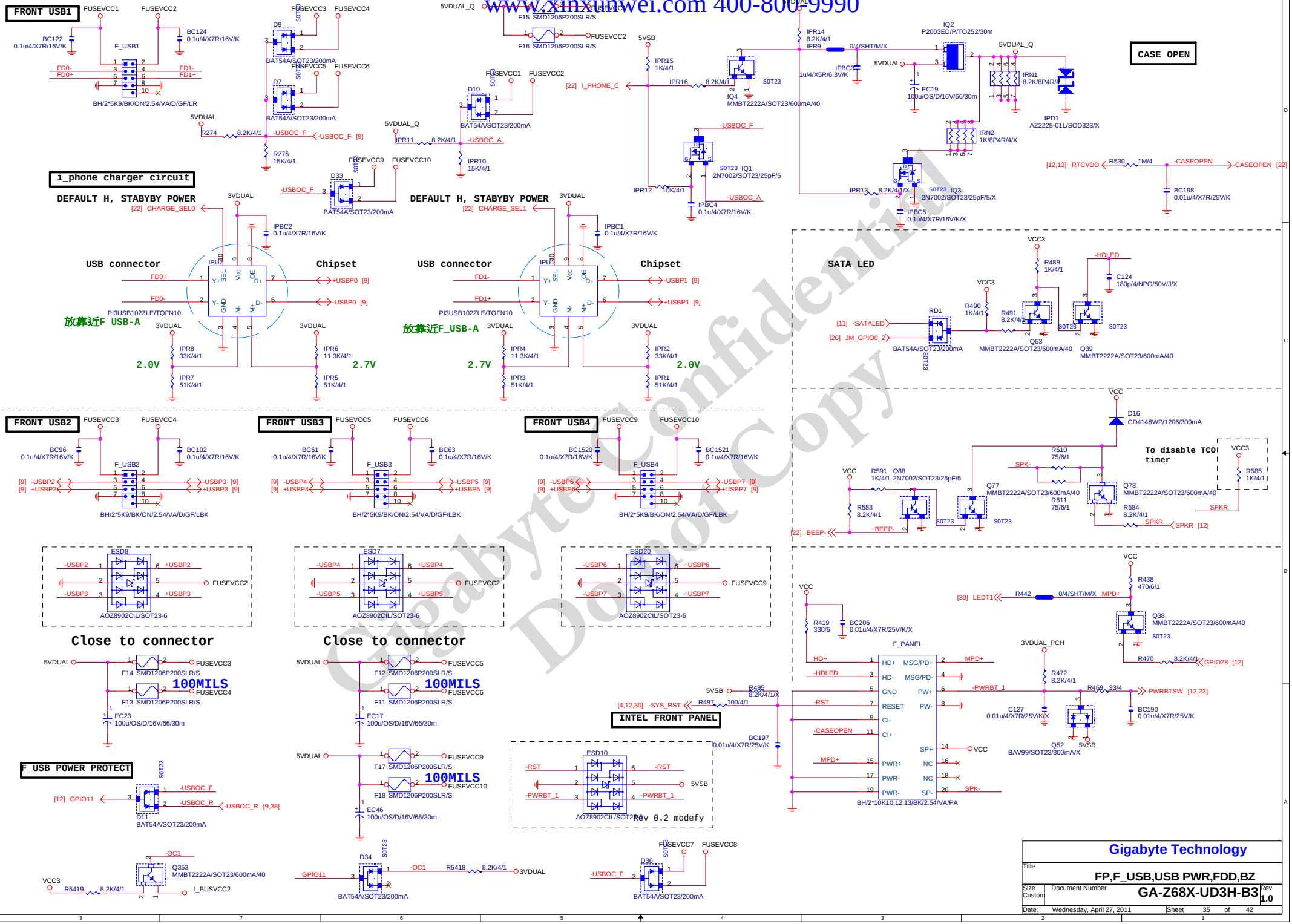
Gigabyte Technology



Gigabyte Technology	
Title	FP,F_USB,USB PWR,FDD,BZ
Size: Custom	Document Number: GA-Z68X-UD3H-B3 Rev: 1.0
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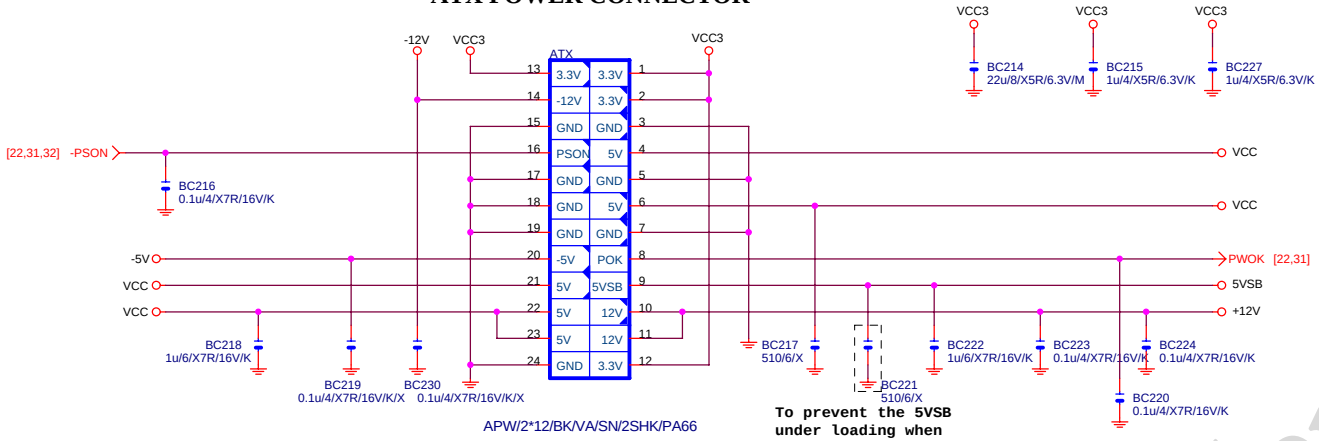
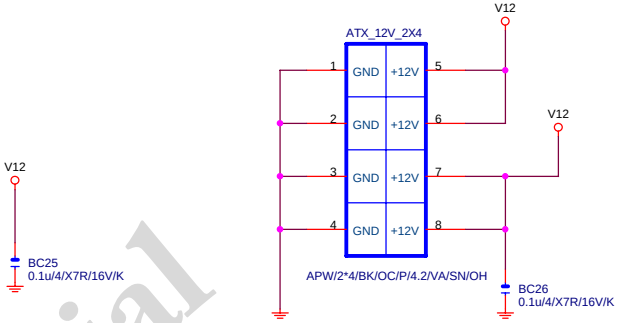
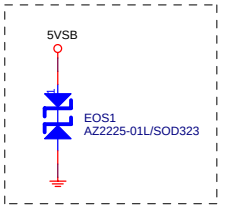
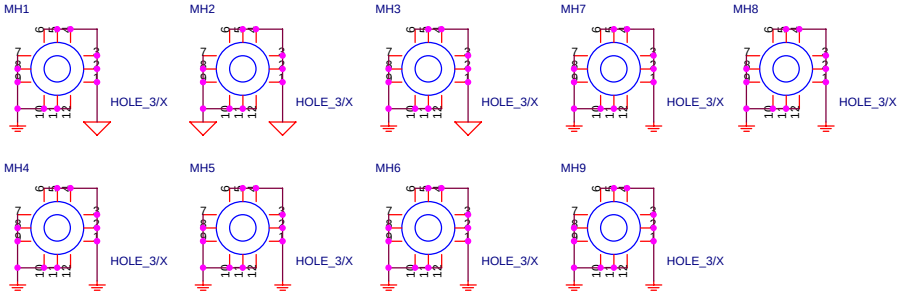
ATX POWER CONNECTOR

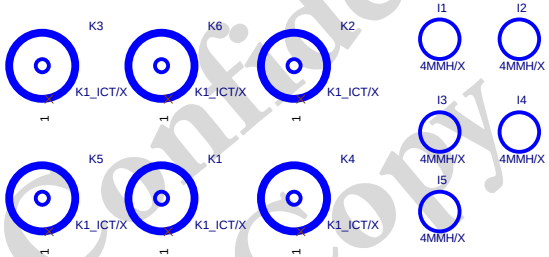


To prevent the 5VSB under loading when boot



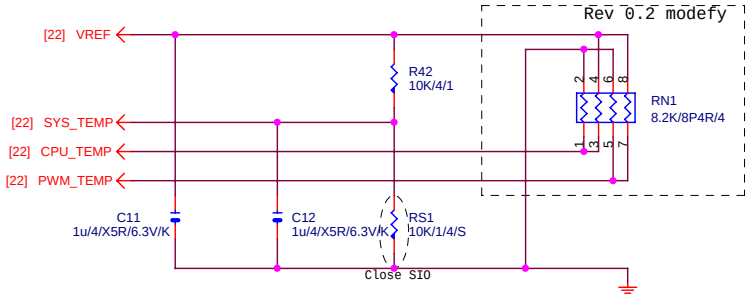




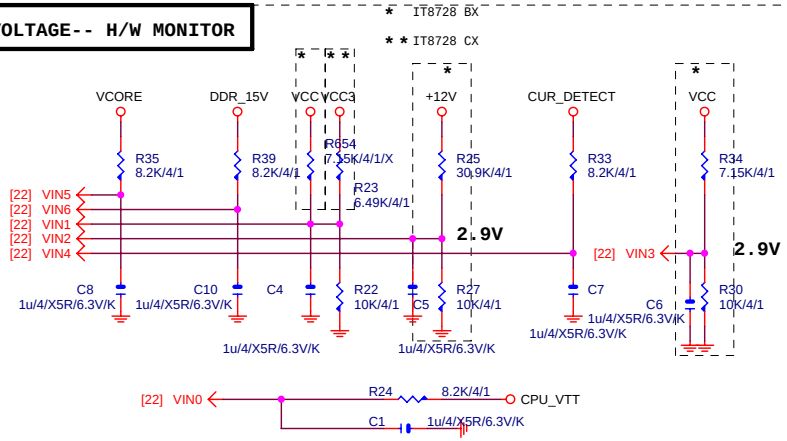


Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 36 of 42	

TEMP H/W MONITOR

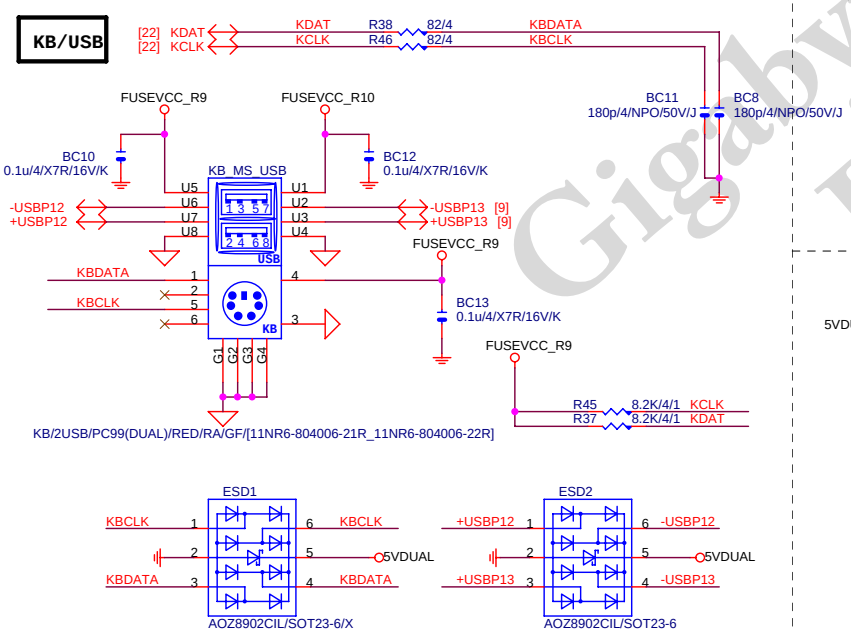


VOLTAGE-- H/W MONITOR

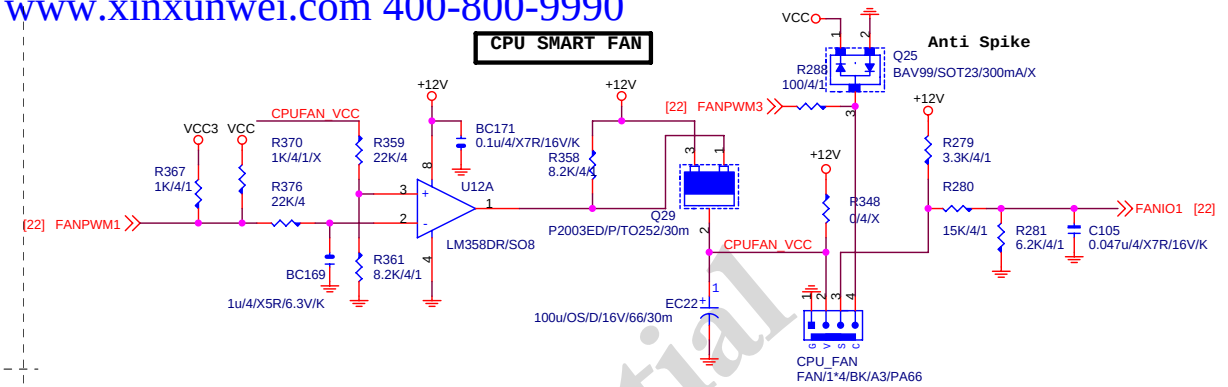


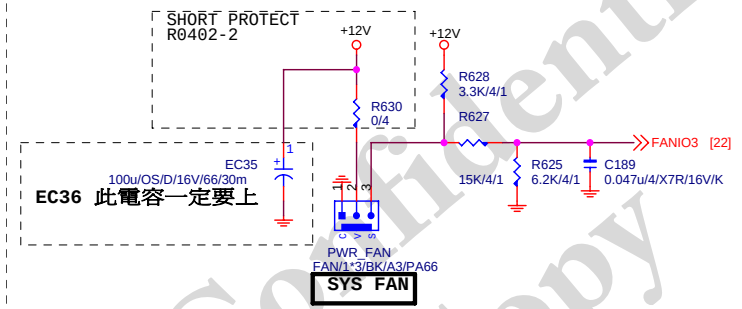
The division voltage of VIN2 & VIN3 must be around 2.9V

KB/USB

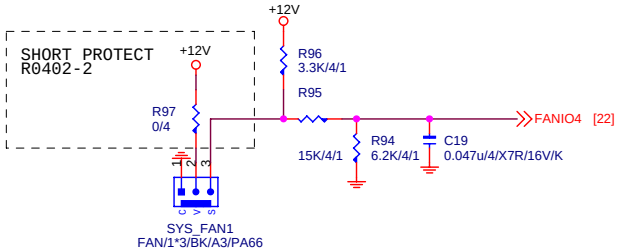


CPU SMART FAN

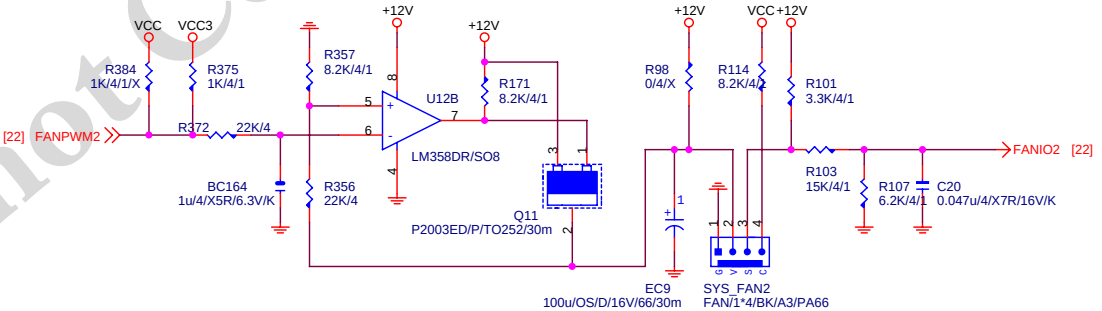


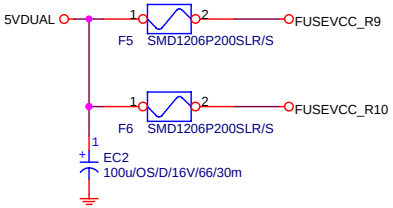


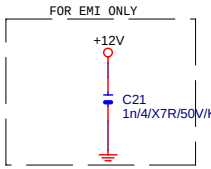
SYS FAN



Linear SYS_FAN







Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
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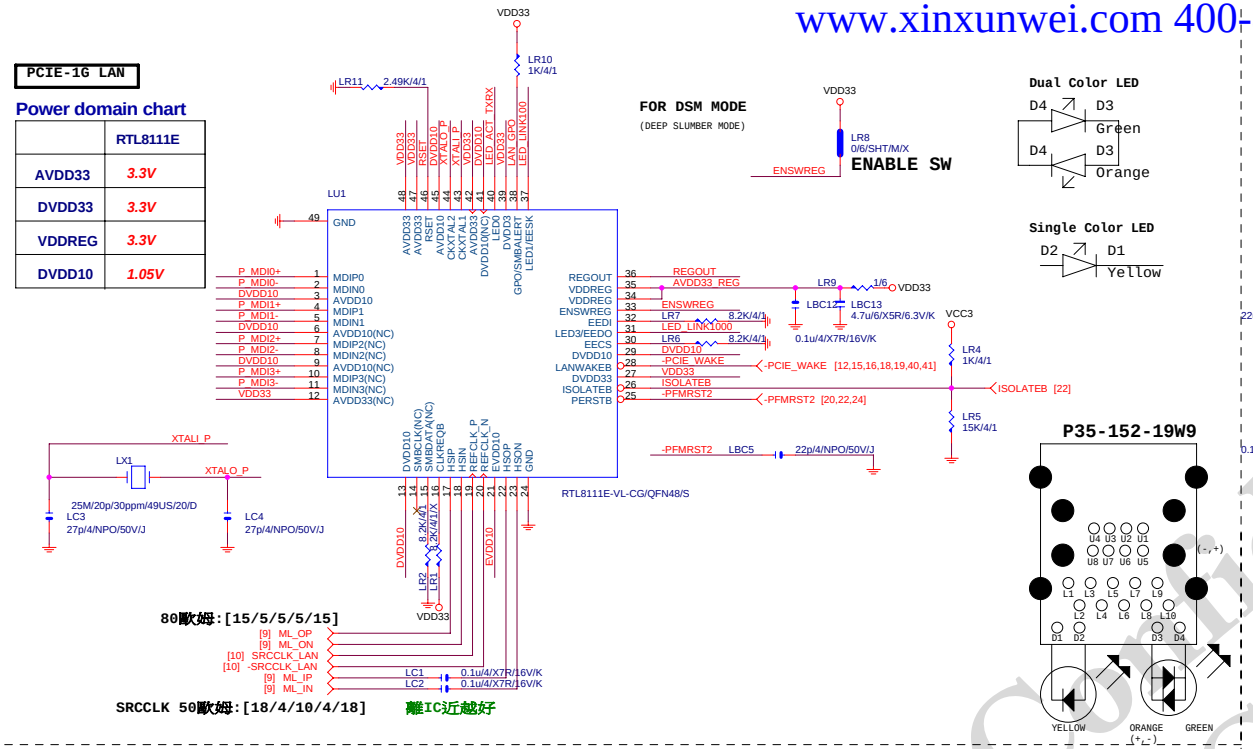
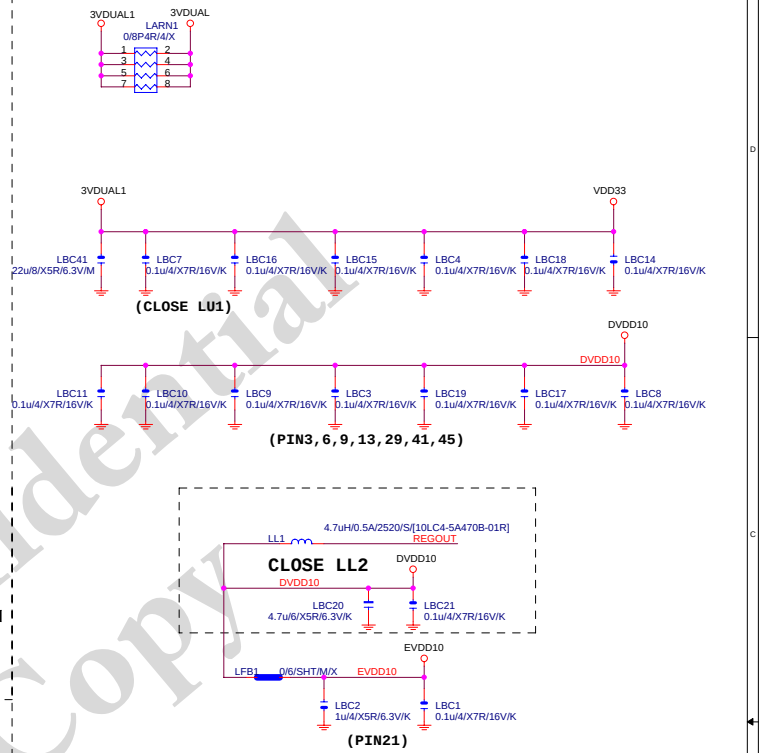
PCIE-1G LAN

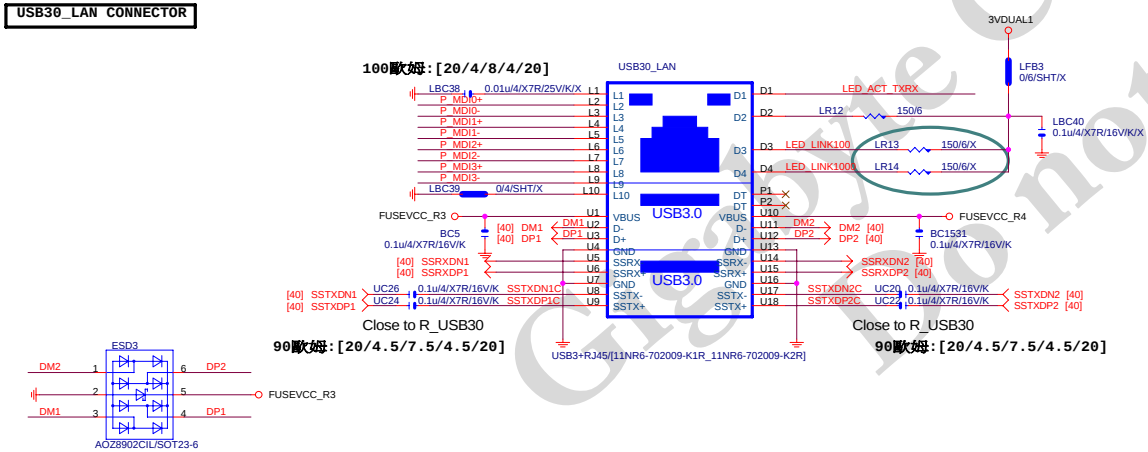
Power domain chart

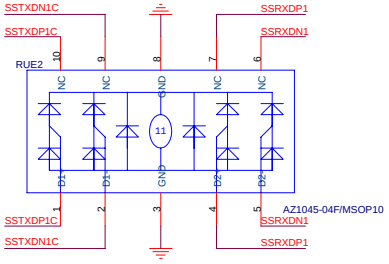
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V

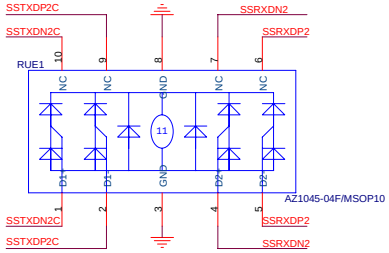


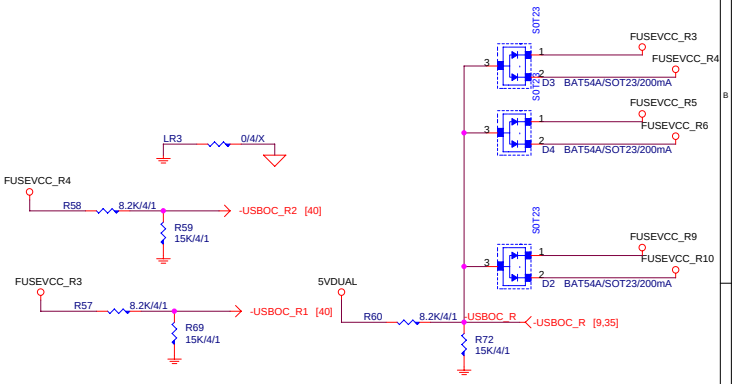


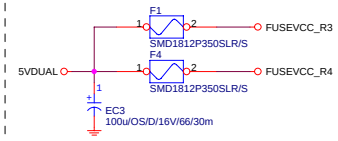
USB30_LAN CONNECTOR











Gigabyte Technology		
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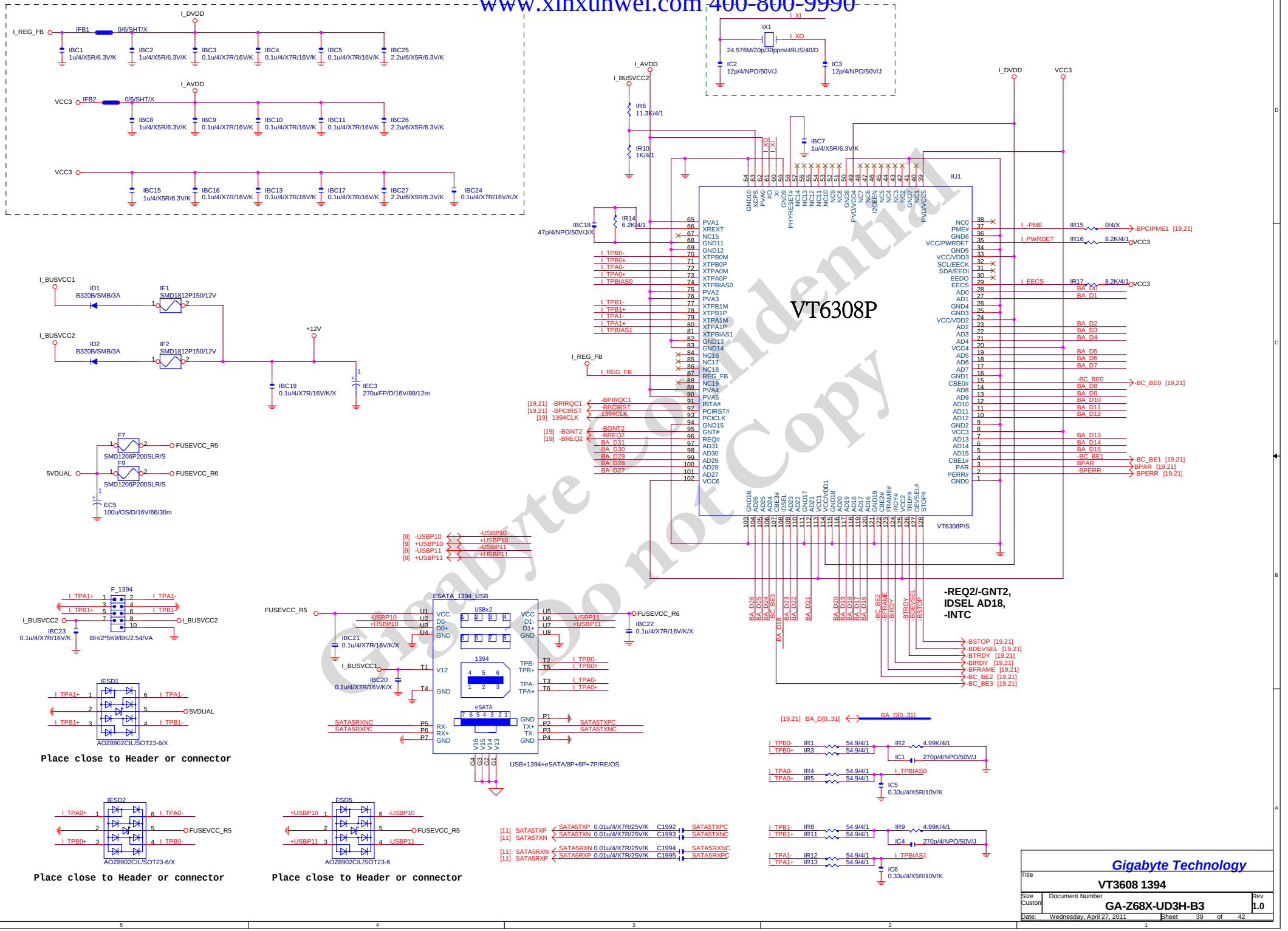
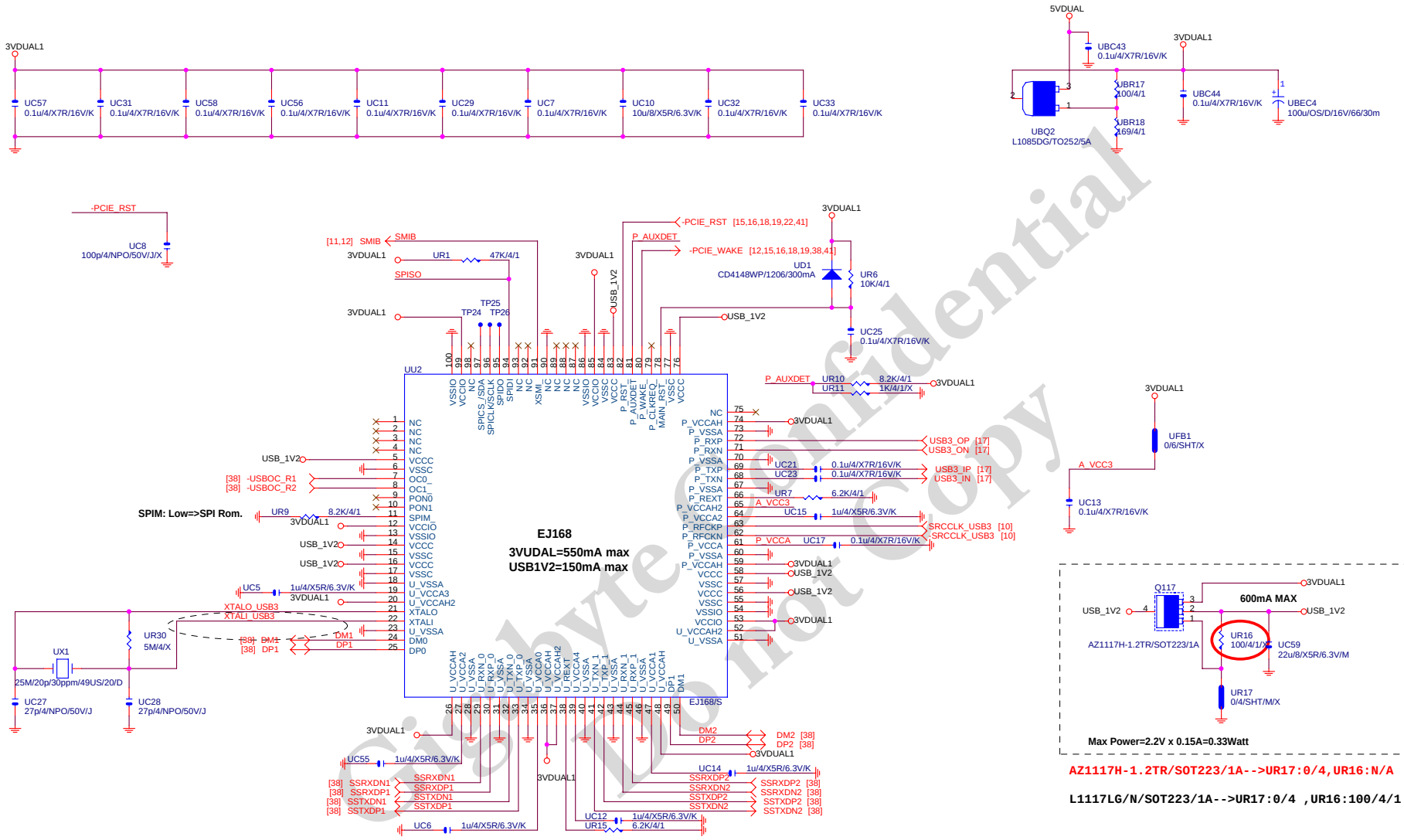
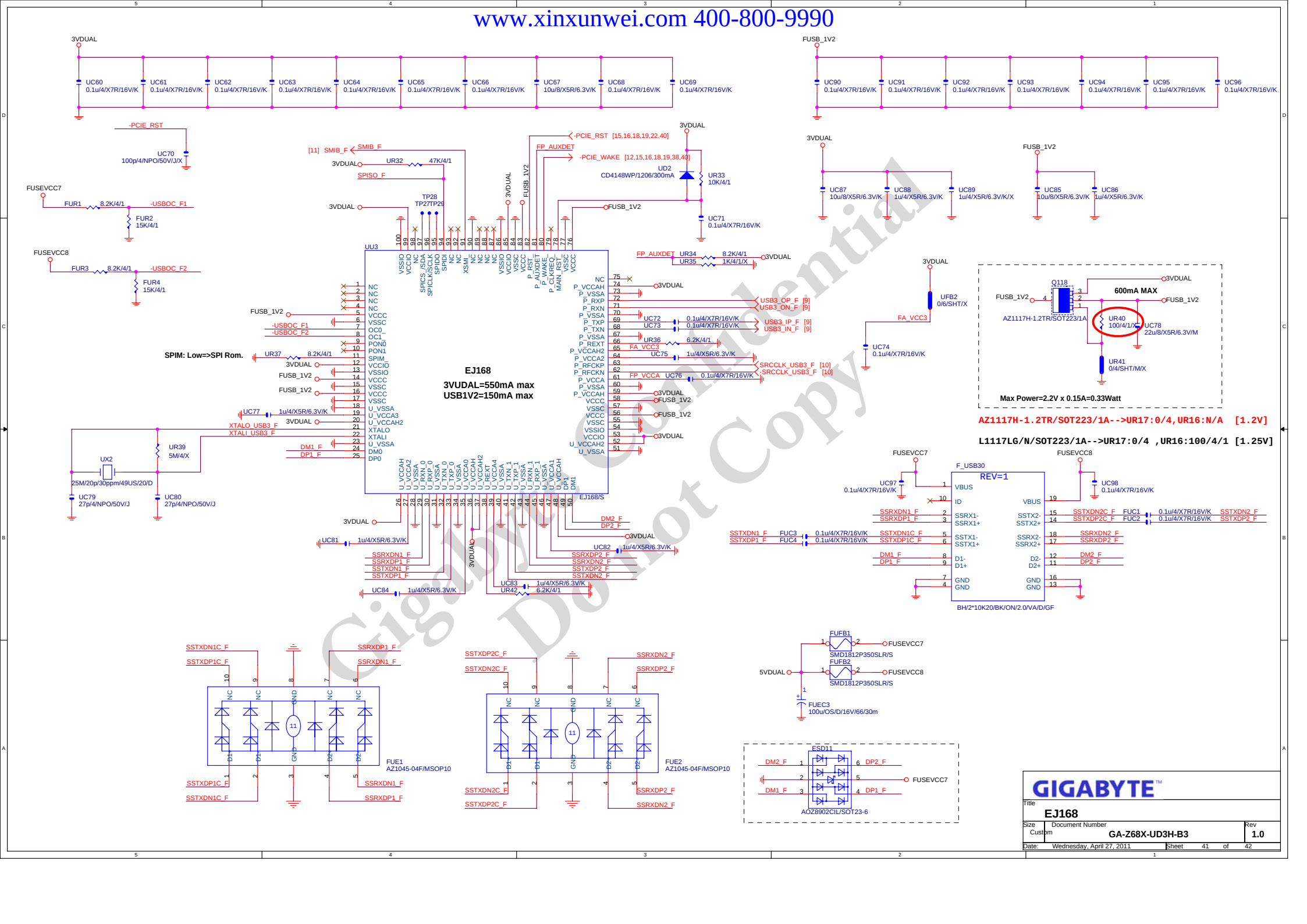
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 38 of 42	





GIGABYTE™

Title: uP720200		
Size: Custom	Document Number: GA-Z68X-UD3H-B3	Rev: 1.0
Date: Wednesday, April 27, 2011	Sheet 40 of 42	



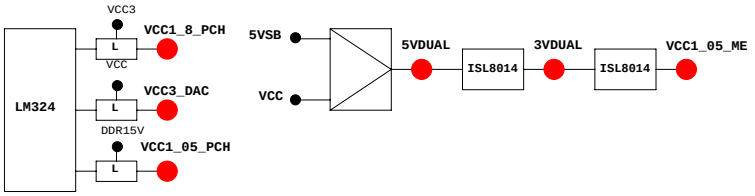
PCH GPIO LIST TABLE

PIN NAME	PWR	AFTER/PLTRST	Default	USAGE	NOTE
GP0	MAIN	H-Z	GPI	-PECI_REQ	N/A
GP1/TACH1	MAIN		GPI	ICH_FAN_TACH1	N/A
GP2/PIRQE#	MAIN		GPI	-PIRQE	P/U 8.2K VCC3
GP3/PIRQF#	MAIN		GPI	-PIRQF	P/U 8.2K VCC3
GP4/PIRQG#	MAIN		GPI	-PIRQG	P/U 8.2K VCC3
GP5/PIRQH#	MAIN		GPI	-PIRQH	P/U 8.2K VCC3
GP6/TACH2	MAIN		GPI	ICH_FAN_TACH2	N/A
GP7/TACH3	MAIN		GPI	ICH_FAN_TACH3	N/A
GP8	STBY	H	GPO	GPIO8	P/U 8.2K 3VDUAL
GP9/OC5#	STBY		NATIVE	OC5#	N/A
GP10/OC6#	STBY		NATIVE	OC6#	N/A
GP11/SMBALERT#	STBY		NATIVE	-SMBALERT	P/U 8.2K 3VDUAL
GP12	STBY	L	GPI	LAN_PHY_PWR_CTRL	P/U 8.2K 3VDUAL
GP13	STBY	L	GPI	GPIO13	P/U 8.2K 3VDUAL
GP14/OC7#	STBY		NATIVE	OC7#	N/A
GP15	STBY	L	GPO	GPIO15	N/A
GP16	MAIN		GPI	-SKTOCC	P/U 8.2K VCC3
GP17/TACH0	MAIN		GPI	ICH_FAN_TACH0	N/A
GP18	MAIN		NATIVE	MB_ID0	P/D 8.2K GND
GP19	MAIN		GPI	-LAN1_ISO	P/U 8.2K VCC3
GP20	MAIN		NATIVE	LED_CTL	P/U 1K VCC3
GP21	MAIN		GPI	VCC18_PCH_OV2	P/U 8.2K VCC3
GP22	MAIN	H-Z	GPI	VCORE_OV3	P/U 8.2K VCC3
GP23	MAIN		NATIVE	-LDRQ1	P/U 8.2K VCC3
GP24	STBY	L	GPO	TLS	P/U 8.2K 3VDUAL
GP25	STBY		NATIVE	-CPU_STOP	P/U 8.2K 3VDUAL
GP26	STBY		NATIVE	-ACZ_DET	P/U 8.2K 3VDUAL
GP27	STBY	H	GPO	GPIO27	P/U 8.2K 3VDUAL
GP28	STBY	H	GPO	GPIO28	P/U 8.2K 3VDUAL
GP29	STBY	L	GPI	GPIO29	N/A
GP30	STBY	H-Z	GPI	S_PWR_ACK	P/U 100K 3VDUAL
GP31	STBY	H-Z	GPI	N/A(Reverse)	P/U 8.2K VCC3
GP32	MAIN	H	GPO	MB_ID1	P/D 8.2K GND
GP33	MAIN	H	GPO	LOAD-LINE	P/U 1K VCC3
GP34	MAIN	H-Z	GPI	-PCI_STOP	P/U 8.2K VCC3
GP35	MAIN	L	GPO	GPIO35	P/U 8.2K VCC3
GP36	MAIN		GPI	-LAN1_DSM	P/U 8.2K VCC3
GP37	MAIN		GPI	N/A	P/U 8.2K VCC3
GP38	MAIN	H-Z	GPI	VCORE_OV2	P/U 8.2K VCC3
GP39	MAIN	H-Z	GPI	-LAN_DSM	P/U 8.2K VCC3
GP40	STBY		NATIVE	OC1#	N/A
GP41	STBY		NATIVE	OC2#	N/A
GP42	STBY		NATIVE	OC3#	N/A
GP43	STBY		NATIVE	OC4#	N/A
GP44	STBY	L	NATIVE	N/A	P/U 8.2K 3VDUAL
GP45	STBY		NATIVE	-LPCPME	P/U 8.2K 3VDUAL
GP46	STBY	L	NATIVE	PWR_LED	P/U 8.2K 3VDUAL
GP47	STBY		NATIVE	PSI LED	P/U 8.2K 3VDUAL
GP48	MAIN	H-Z	IN	EN_PWM	P/U 8.2K VCC3
GP49	MAIN	H-Z	IN	VCC18_OV1	P/U 8.2K VCC3
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	N/A(Reverse)	P/U 8.2K 3VDUAL
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		NATIVE	1_05V_OV1	P/U 8.2K 3VDUAL
GP74	STBY	H-Z	NATIVE	1_05V_OV2	P/U 8.2K 3VDUAL
GP75	STBY	H-Z	NATIVE	N/A(Reverse)	P/U 8.2K 3VDUAL

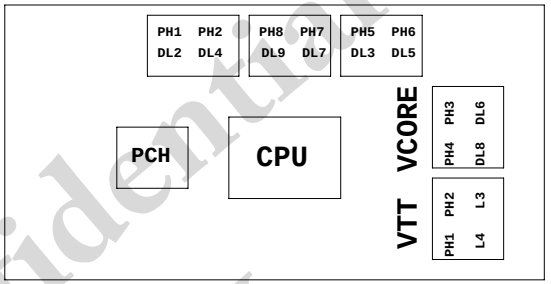
Super I/O ITE8720 GPIO Table

PIN NAME	USAGE	NOTE
SVC/PECI_RQT/GP14	-PECI_REQ	
PWROK1/GP13	PWROK1/ITE_PWROK	
KRST#/GP62	-KBRST	
SO/GP50	-ICH_SPI_CS	
IRTX/GP47/CE2_N/JP7	CEB_N	
GP46/IRRX	-LAN2_DSM	
PSION#/GP42	-PSON	
PWROK2#/GP41	PECI_CTL	
PCIRST3#/GP10/VDIMM_STR_EN	-PCIE_RST	
RSMRST#CIRRX1/GP55	-RSMRST	
PME#/GP54	-LPCPME	
PD5/GP75/BUSSO0	N/A	

PIN NAME	USAGE	NOTE
FAN_TAC2/GP52	FANIO2	
FAN_TAC3/GP37	FANIO3	
VIDO3/FAN_TAC4/GP25/DSR2#	FANIO4	
FAN_CTL2/GP51	FANPWM2	
FAN_CTL3/GP36	FANPWM3	
VID4/GP34	BEEP-	
VID3/GP33	TURBO1	
VID2/GP32	TURBO0	
VCORE_GOOD/VID6/GP63	CPUT_LED1_C	
VID5/GP35	CPUT_LED2_C	
VID1/GP31	CPUT_LED3_C	
VID0/GP30	-LAN1_DSM	NBT_LED1_C
SLCT/GP80	CPU_LED1_C	
PE/GP81	CPU_LED2_C	
BUSY/GP82	CPU_LED3_C	
PD3/GP73/BUSSI1	SB_LED1_C	
PD4/GP74/BUSSI2	SB_LED2_C	
VCORE_EN/VID7/GP64	IT_GP64	SB_LED3_C
PD0/GP70	NB_LED1_C	
PD1/GP71	NB_LED2_C	
PD2/GP72/BUSSI0	NB_LED3_C	
GP22/SCK	LOW_PWR_1	
VIDO5/GP27/SIN2	LOW_PWR_2	
PCIRST2#/GP11	-PFMRST1	
PCIRST1#/GP12	-PFMRST2	
3VSBSW#/GP40	CSI_F0	BSEL166_1
SUSC#/GP53	CSI_F1	BSEL166_2
GP23/SI	BSEL166_3/CSISBSL	
VIDO0/GP20/CTS2#	CPUT_LED1_C	BSEL166_4
GP65/VDDA_EN/GB_01	MB_ID2	
PD6/GP76/BUSSO1	MB_ID3	
PD7/GP77/BUSSO2	MB_ID4	
AFD#/GP86/SMBC_R	空 PIN	FST_2X8
INIT#/GP85/SMBD_M	SEC_2x8	GTLREF_AD2
ACK#/GP83	DDR_LED1_C	
VIDO1/GP21/DCD2#	DDR_LED2_C	
STB#/GP87/SMBC_M	DDR_LED3_C	
PWRON#GP44	VCORE_OV1	
PANSWH#/GP43	PWRBTSW	
KDAT/GP61	-PWRBTSW	
KCLK/GP60	KDAT	
MDAT/GP57	KCLK	
MACL/GP56	MDAT	
GP66/VLDT_EN/GB_02	NBT_LED1_C	MCLK
SVD/PCIRSTIN#/CIRTX/GP15	PWM2_CR	
KDAT/GP61	PWM2_CR	
GP67/CPU_PG/GB_03	EN_LOADLINE	IT_GP67/-EN_PWM2
SLIN#/GP84/SMBD_R	-EN_PWM2	
PSI_L/FAN_CLT5/CIRRX2/GP16	-THERM	
VIDO4/GP26/SOUT2	DDR18V_PH2_EN	
VIDO2/FAN_TAC5/GP24/DSR2#	DDR18V_LED	
VIDO6/GP17/RI2#	1_1V_PH_EN	
VIDO7/JP6/DTR2#	JP6	
PD5/GP75/BUSSO0	SB_LED3_C	



PWM各相位的擺法如下：



BIOS超電壓對應表：

線路圖名稱	BIOS選項
Vcore	CPU Vcore
CPU_VTT	CPU Termination
CPU_VAXG	CPU Graphic Core
VCC1_8_PCH	CPU PLL
VCC1_05_PCH	PCH core
3VDUAL	3VDUAL
DDR15V	DRAM voltage
DDRVTT	DRAM Terminatio
VREF_CA_A/VREF_CA_B	DRAM Address Ref
VREF_DQ_A/VREF_DQ_B	DRAM Data Ref

散熱模組料號：

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

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