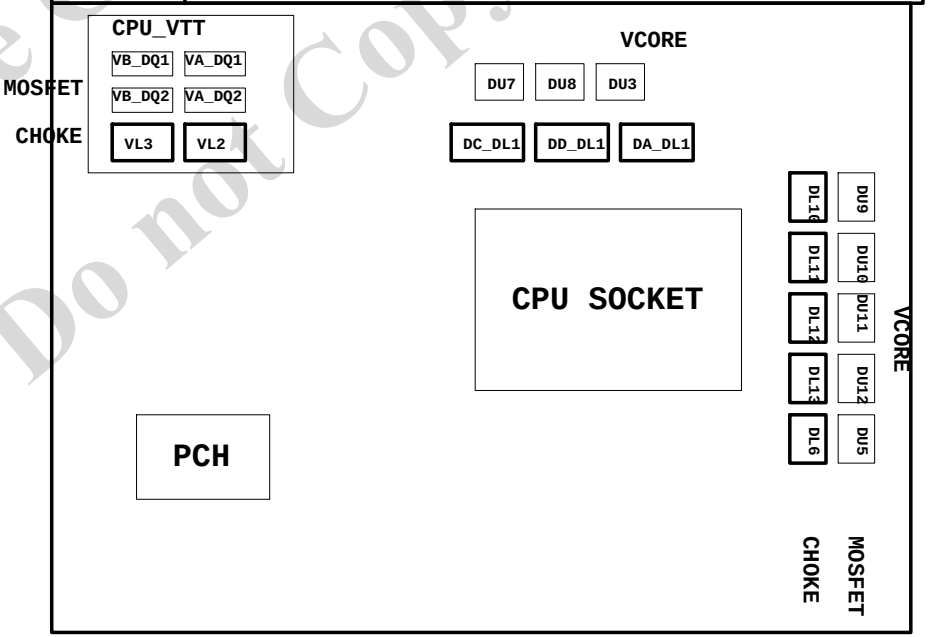
Model Name: GA-Z77X-D3H Rev 1.02

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	PCI EXPRESS*16 SLOT
15	PCI EXPRESS*8 SLOT
16	PCI EXPRESS*16/*8 SWITCH
17	PCI EXPRESS*1 SLOTs X3
18	PCI EXPRESS*4 SLOT
19	IT8892
20	PCI SLOT 1
21	HDMI/DVI/USB3.0
22	MSATA
23	Dual BIOS / TPM CONNECT
24	ALC889
25	REAR AUDIO JACK
26	VCORE PWM_IR3567
27	VCORE PWM_IR3567

SHEET	TITLE
28	VCORE PWM_IR3570
29	DDR / CPU_VTT MOS
30	DISCRETE POWER
31	VCCSA POWER
32	I/O ITE8728
33	COM,-PHOT,RUSB
34	FP,FUSB
35	ATX POWER, CLOCK GEN
36	HWM,KB/MS , FAN CTRL
37	ARTHEROS AR8161/AR8151
38	MARVELL 9172
39	NCT3933U
40	VIA VL800 USB3.0
41	TABLE LIST



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.02

Date: Thursday, April 12, 2012 | Sheet 1 of 41

GA-Z77X-D3H

Component value change history

Data	Change Item	Reason
2011/12/02	1.First BOM. (GA-Z77X-D3H-01_20111125_1000-BOM.DSN)	
2012/01/03 9MZ77XD3H-00-02	1.PCH==>10HB1-030Z77-10R 2.PCH_HS==>12SP2-S05511-01R 3.ADD NR100 4.EMI ADD BC330 5.ADD PI3PCIE2415 FOR PCIEX4 SW TO X1 6.REMOVE DUAL BIOS SW 7.AUDIO CONNECT CHANGE TO 11NR6-403025-61R 8.REMOVE SURR BACK 9.DRAT2,DART3,MART3==>47K/1/4/S 10.DAR44,DAR15,MAR185==>0 OHM 11.ADD VA_DR2 FOR漏電 12.REMOVE DA_Q2,DB_DQ2==>DA_DQ3,DB_DQ3 13.後窗USB/USB_LAN CONNECT CHANGE TO USB3.0	
2012/01/13 9MZ77XD3H-00-10A	Modify 1.MAR149,DAR51,DAR1,24.9/4/1變更爲'100/4/1 2.DART2,DART3,MART3,47K/1/4/S變更爲47K/1/4/S/[10RH3-004702-21R] 3.MAC361,DAC24,DAC1,1N/4/X7R/50V/K變更爲3.3n/4/X7R/50V/K 4.MAR151,DAR54,DAR2,24.9/4/1變更爲0/4 Add 5..R5409,R5413,10K/4/1 6.R5412,R5408,45.3K/4/1 7.DAR82,0/4 8.C2068,C2069,0.1u/4/X7R/16V/K 9.Q668,Q670,2N7002/SOT23/25pF/5 10.U219,LM358DR/SO8 11.R5414,R5410,1.65K/4/1 12.RS1,RS2,100K/1/4/S 13.R_USB30_1,USB/18P/BU/OS/RA/D/2/HR 14.DB_DQ2,DA_DQ2,DF_DQ3,DE_DQ3,DD_DQ3,DC_DQ3,RJK0393DPA-0G/N/4.3m/PPAKSO-8 15.R5411,R5415,1K/4/1 16.RHC3,GBC28,LAC33,47p/4/NPO/50V/J Delete 1.UCR29,'8.2K/4 2.UCR25,'6.04K/4/1 3.UCQ2,'2N7002/SOT23/25pF/5 4.R_USB30,'USB/18P/BU/OS/RA/D/2/HR 5.U8,'NCT3931U-2/SOT23-8	
2012/01/13 9MZ77XD3H-00-10B	1.DA_DR11,DC_DR11,DE_DR11,DZ_DR11,1/4 change to 0/4 2.FAN1/2/3 change to SYS_FAN1/2/3,V-A AMP WF 1*4P PINREX	
2012/01/31 9MZ77XD3H-00-10C	1.R5410,R5414,1.65K change to 3.65K	
2012/02/03 9MZ77XD3H-00-10D	Modify 1.R5410,'3.65K/4/1變更爲'1.65K/4/1 2.DAR6,'5.36K/4/1變更爲'5.1K/4/1 3.DY_DL1,DZ_DL1,VL2,DA_DL1,DB_DL1,DC_DL1,DD_DL1,DE_DL1,DF_DL1, '0.8uH/35A/INC109/F/D變更爲'0.36uH/38A/IGC109/FS/D 4.DAR45,DAR40,'1.54K/4/1變更爲'1.74K/4/1 5.DAR5,DAR8,'4.12K/4/1變更爲'4.75K/4/1 6.R5414,'3.65K/4/1變更爲'2.49K/4/1 7.DAR13,DAR36,DAR25,DAR59,DAR29,DAR62,DAR75,DAR21,2K/4/1變更爲1.2K/4/1 8.DAR42,'2.05K/4/1變更爲2.37K/4/1 Add 1.DZ_DR10,DE_DR10,DC_DR10,DA_DR10,'0/4 Delete 1.DE_DR11,DC_DR11,DA_DR11,DZ_DR11,'0/4	
2012/02/07 9MZ77XD3H-00-10E	Modify 1.DAR6,5.1K/4/1 change to 5.49K/4/1	
2012/03/13 9MZ77XD3H-00-10K	1.Add MR34,MR35==>0 ohm 2.Remove UCU1 VIA USB30 EEPROM 3.Delete OR48,Add OR51 for MB_ID3	2012/03/21 9MZ77XD3H-00-10L 1.Add UCU1 EEPROM

Circuit or PCB layout change

DATE	Change Item	Reason
2011/11/30	1.First SCH. (GA-Z77X-D3H-01_20111125_1000.DSN)	REV 0.1
	(Change from Z77X-UD3H-01A_1124_EBOM.DSN)	
2012/01/02	1.PARN2 change to 0/8P4R/4/X 2.ADD PI3PCIE2415 FOR PCIEX4 SW TO X1 3.REMOVE DUAL BIOS SW 4.AUDIO CONNECT CHANGE TO 11NR6-403025-61R(WITH SPDIF) 5.REMOVE SURR BACK 6.CPU_VTT ADD DUAL POWER 防漏電 7.VL2轉方向 8.ADD VIA VL800 USB3.0 9.後窗USB/USB_LAN CONNECT CHANGE TO USB3.0 10.ADD ATX POWER LOAD RESISTOR 11.SYS_FAN1/2/3 RENAME TO FAN1/2/3	REV 0.2
2012/01/13	1.Add PWM 3VDUAl input 2.Add GBC28 3.Add 2組 VR_HOT control線路 4.DAR53,DAR55,MAR148 CHANGE TO R0402-2 5.R_USB30 rename to R_USB30_1	REV 1.0
2012/01/19	1.FAN1/2/3 rename to SYS_FAN1/2/3	Rev 1.01
2012/02/22	1.DDR T型走線 2.Add MR34,MR35	Rev 1.02

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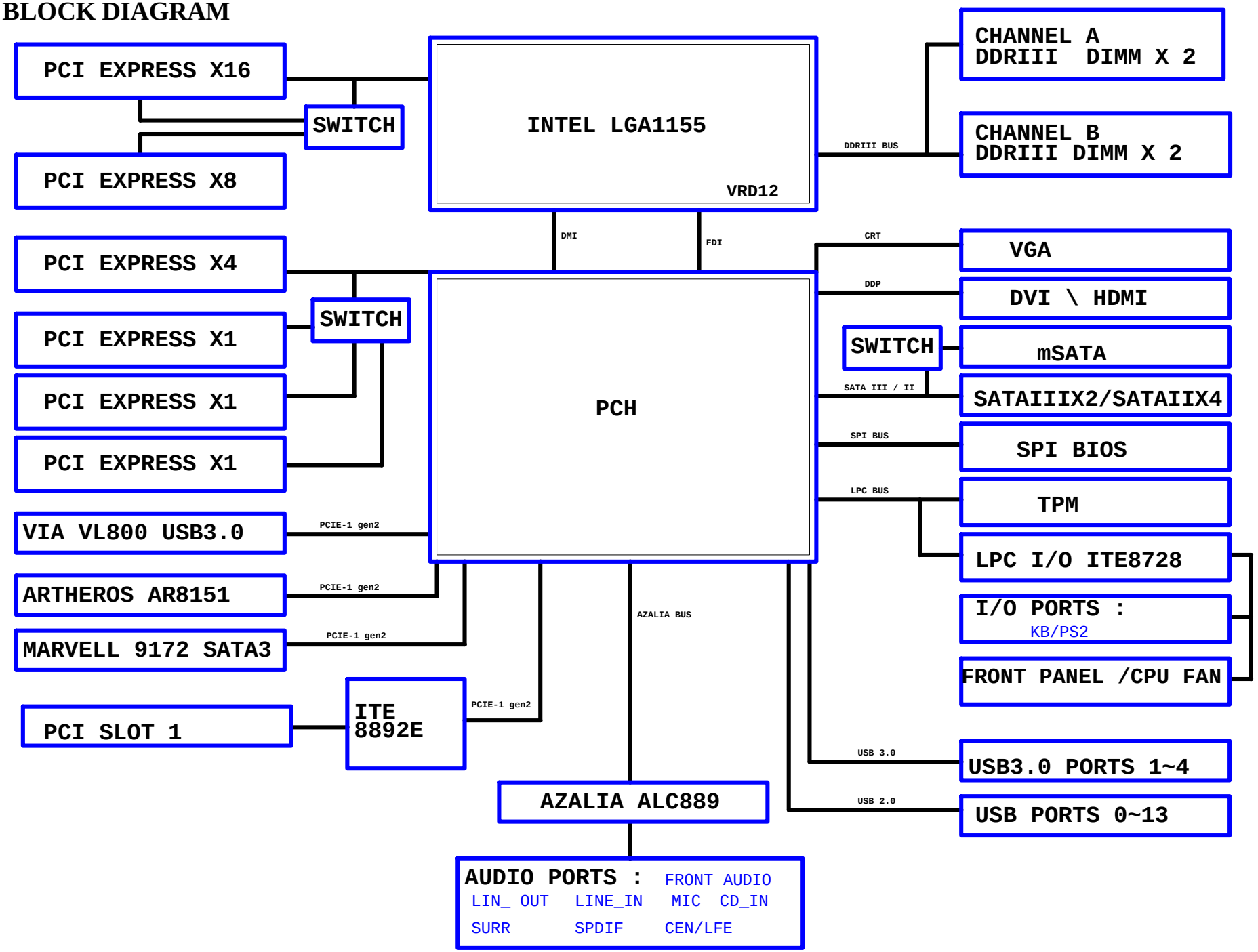
Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.02

Date: Thursday, April 12, 2012 | Sheet 2 of 41

BLOCK DIAGRAM



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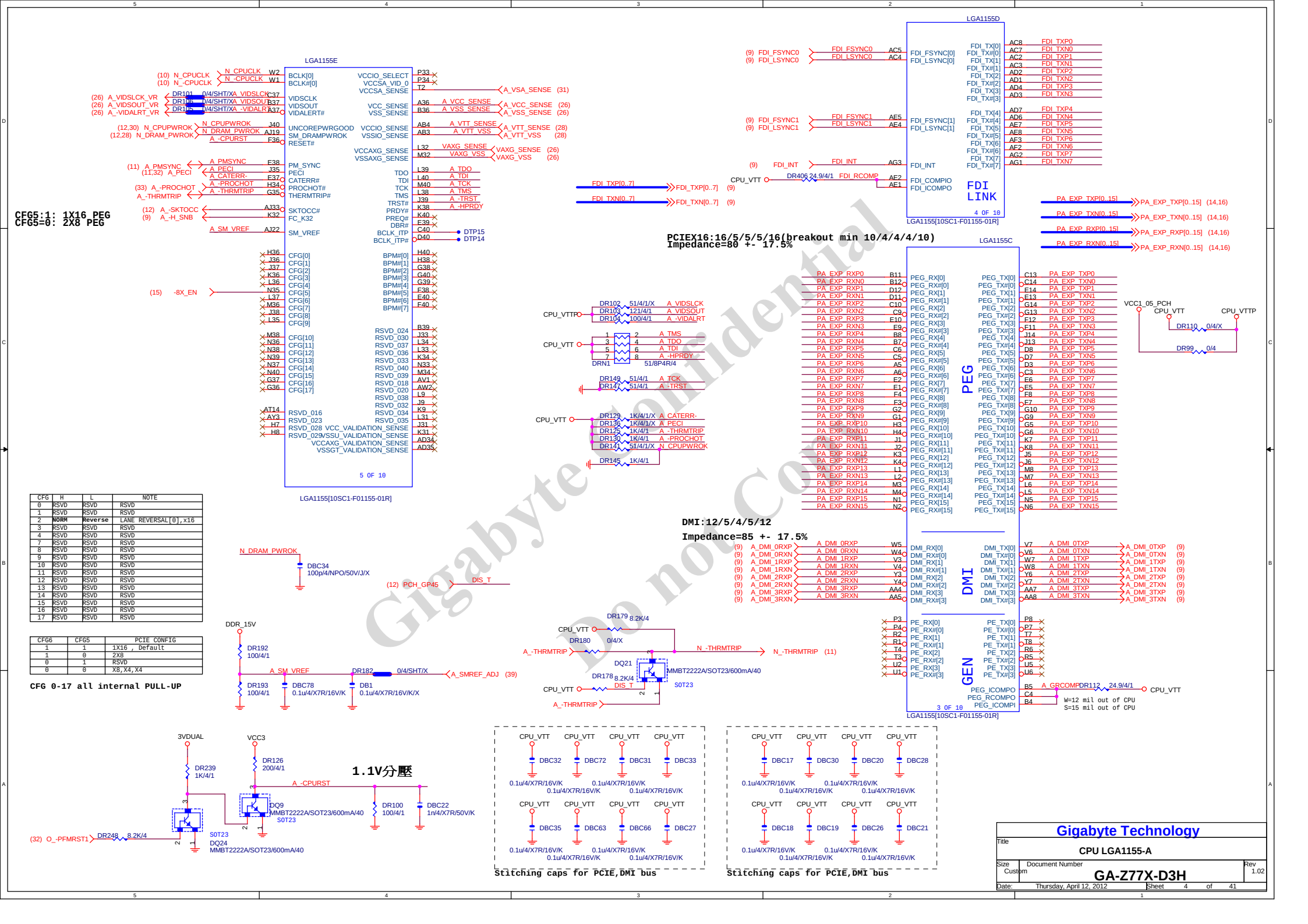
Title	BLOCK DIAGRAM	
Size C	Document Number GA-Z77X-D3H	Rev 1.02
Date: Thursday, April 12, 2012	Sheet 3 of 41	

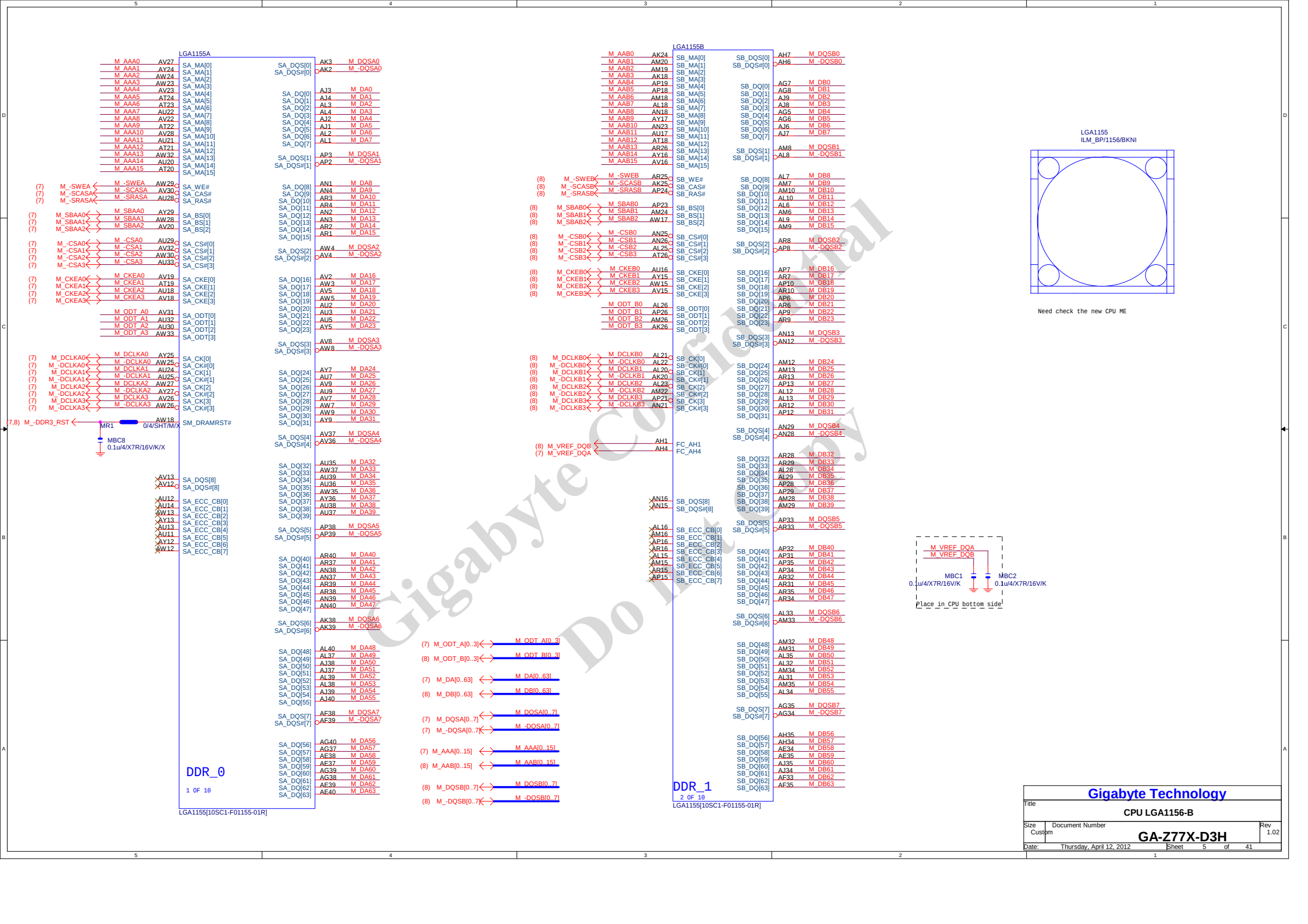


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

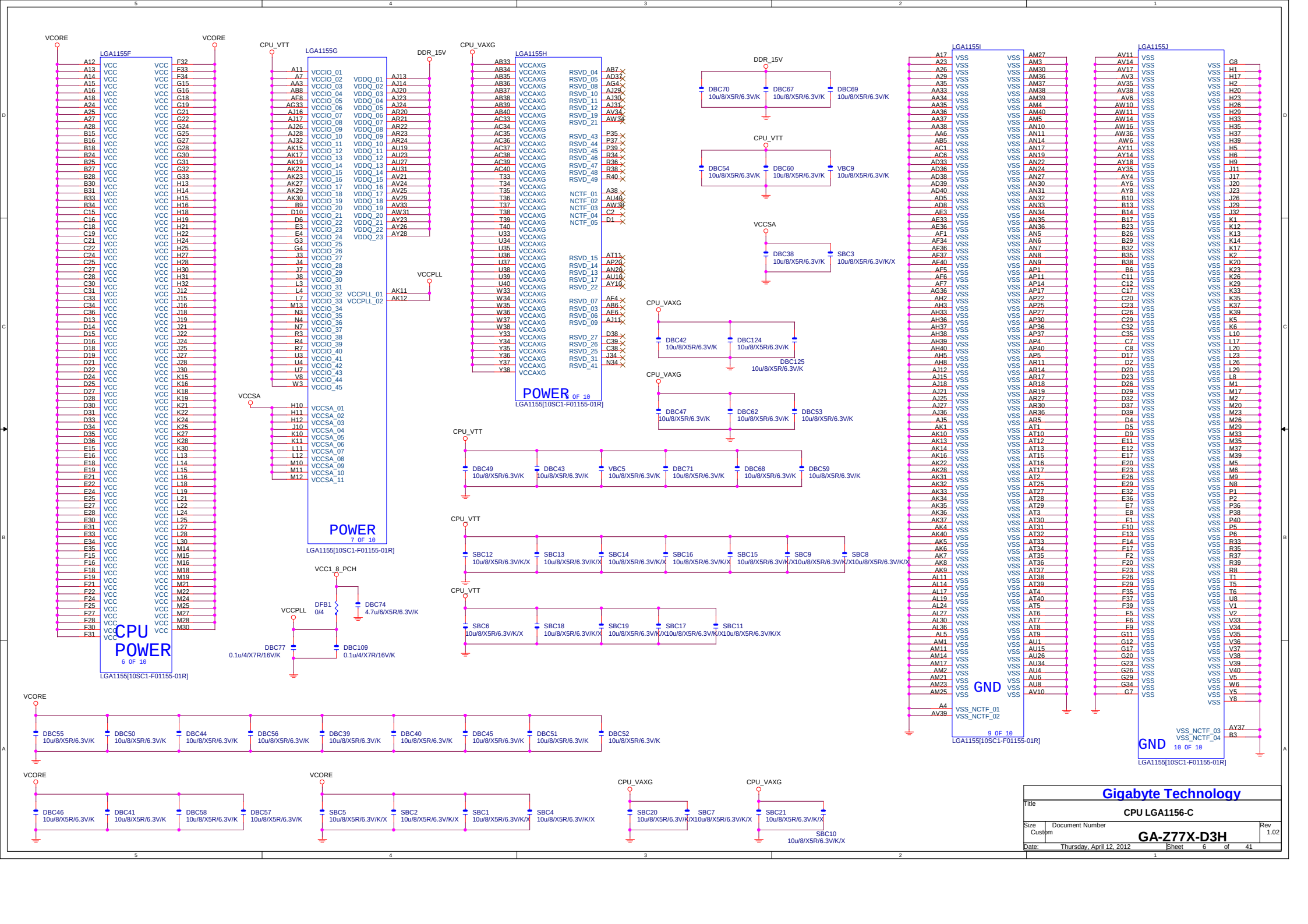
CFG6	CFG5	PCIE CONFIG
1	1	1X16 , Default
1	0	2X8
0	1	RSVD
0	0	X8,X4,X4

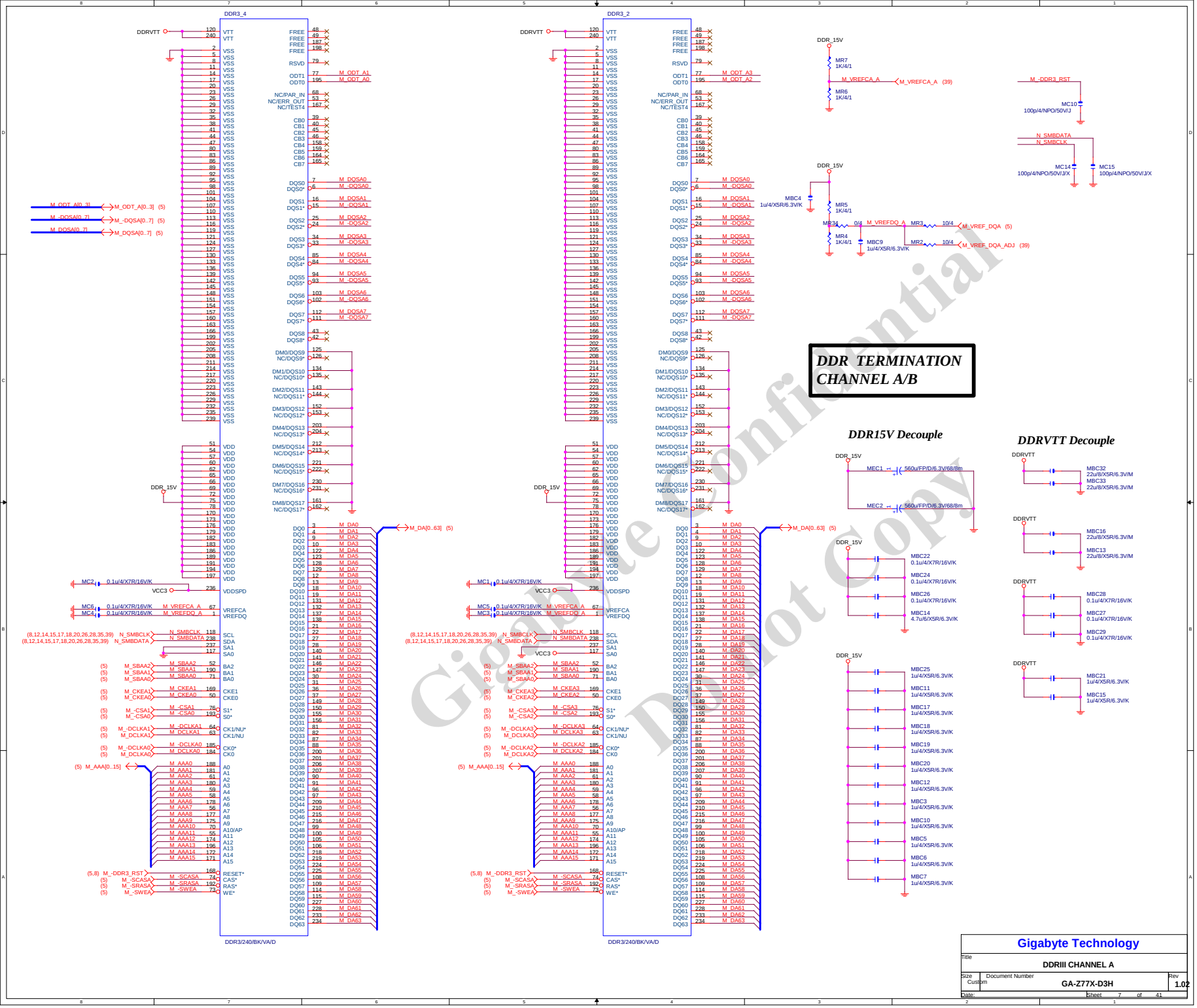
CFG 0-17 all internal PULL-UP

Gigabyte Technology	
Title	CPU LGA1155-A
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date: Thursday, April 12, 2012	Sheet 4 of 41

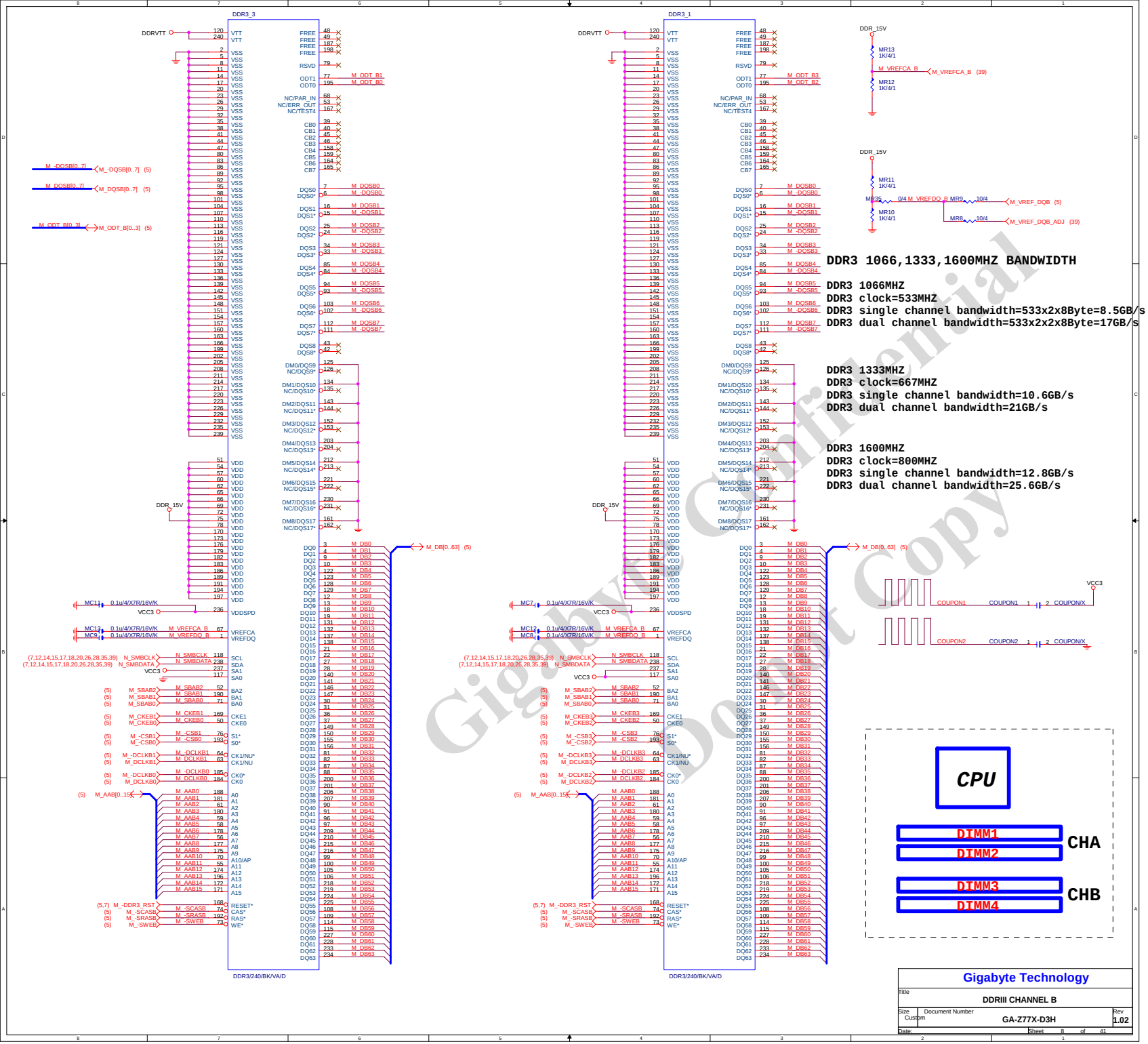


Gigabyte Technology		
Title	CPU LGA1156-B	
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 5 of 41	


LGA1155F
LGA1155[10SC1-F01155-01R]
CPU POWER
6 OF 10
LGA1155G
LGA1155[10SC1-F01155-01R]
POWER
7 OF 10
LGA1155H
LGA1155[10SC1-F01155-01R]
POWER
8 OF 10
LGA1155I
LGA1155[10SC1-F01155-01R]
GND
9 OF 10
LGA1155J
LGA1155[10SC1-F01155-01R]
GND
10 OF 10
VCORE
CPU_VTT
DDR_15V
CPU_VAXG
VCCPLL
VCCSA
VCC1_8_PCH
DFB1
0/4
DBC74
4.7u/6/X5R/6.3V/K
DBC77
0.1u/4/X7R/16V/K
DBC109
0.1u/4/X7R/16V/K
DBC70
DBC67
DBC69
DBC54
DBC60
VBC9
DBC38
SBC3
DBC42
DBC124
DBC125
DBC47
DBC62
DBC53
DBC49
DBC43
VBC5
DBC71
DBC68
DBC59
SBC12
SBC13
SBC14
SBC16
SBC15
SBC9
SBC8
SBC6
SBC18
SBC19
SBC17
SBC11
DBC55
DBC50
DBC44
DBC56
DBC39
DBC40
DBC45
DBC51
DBC52
DBC46
DBC41
DBC58
DBC57
SBC5
SBC2
SBC1
SBC4
SBC20
SBC7
SBC21
SBC10
10u/8/X5R/6.3V/K
Gigabyte Technology
CPU LGA1156-C
GA-Z77X-D3H
Size
Custom
Document Number
Rev
1.02
Date:
Thursday, April 12, 2012
Sheet
6
of
41



Gigabyte Technology	
Title	DDRIII CHANNEL A
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date:	Sheet 7 of 41



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-Z77X-D3H
Rev	1.02
Date:	Sheet 8 of 41

USB:12/7.5/4.5/7.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHB

DMI

USB

PCI-E

2 OF 11

BD82Z77/S

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

VCC1_05_PCH — NR82 49.9/4/1

OC[3:0]# for Device 29 (ports 0-7)

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

Rev 0.2

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

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

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

PCHG

FDILINK

7 OF 11

BD82Z77/S

FDI_TXP[0..7] — FDI_TXP[0..7] (4)
FDI_TXN[0..7] — FDI_TXN[0..7] (4)

PCHE

NVRAM

5 OF 11

BD82Z77/S

VCC3 — NBC51 1u/4/X5R/6.3V/K

N_-USBOC_F — NBC45 0.1u/4/X7R/16V/K

N_-USBOC_R — NBC46 0.1u/4/X7R/16V/K

3VDUAL — NR98 8.2K/4 — N_GPIO14

3VDUAL — NR100 8.2K/4 — N_GPIO40

Rev 0.2

PCH_HS

PCH_HS/[12SP2-S05511-01R_12SP2-S05511-02R_12SP2-S05511-03R]

VCC1_8_PCH — NR118 2.2K/4/1 — NR117 4.7K/4 — N_NV_CLE

A_-H_SNB (4)

NBC57 0.1u/4/X7R/16V/K

DMI /FDI termination voltage

CK_SRCCLK_PCH — NR87 8.2K/4
CK_-SRCCLK_PCH — NR86 8.2K/4

Mount for integrated clock Generation Mode

CK_DOTCLK — NR84 8.2K/4
CK_-DOTCLK — NR88 8.2K/4

R102 short to GND in non graphic SKU

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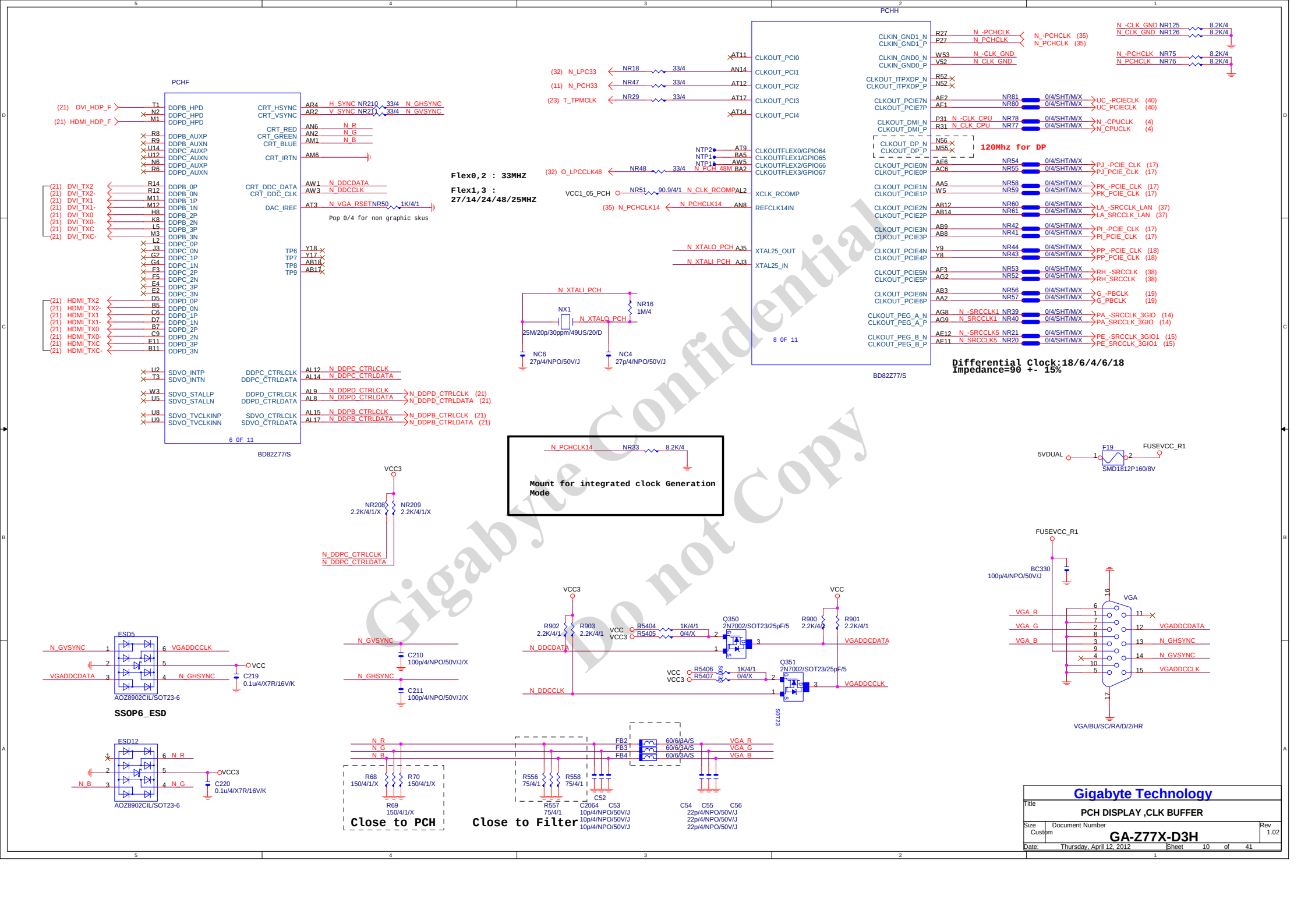
Title: PCH FDI,DMI,USB ,PCIE			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 9 of 41		


PCHF
PCHH
BD82Z77/S
6 0F 11
8 0F 11
Flex0,2 : 33MHZ
Flex1,3 : 27/14/24/48/25MHZ
Pop 0/4 for non graphic skus
120Mhz for DP
Differential Clock:18/6/4/6/18
Impedance=90 +- 15%
Mount for integrated clock Generation Mode
SSOP6_ESD
Close to PCH
Close to Filter
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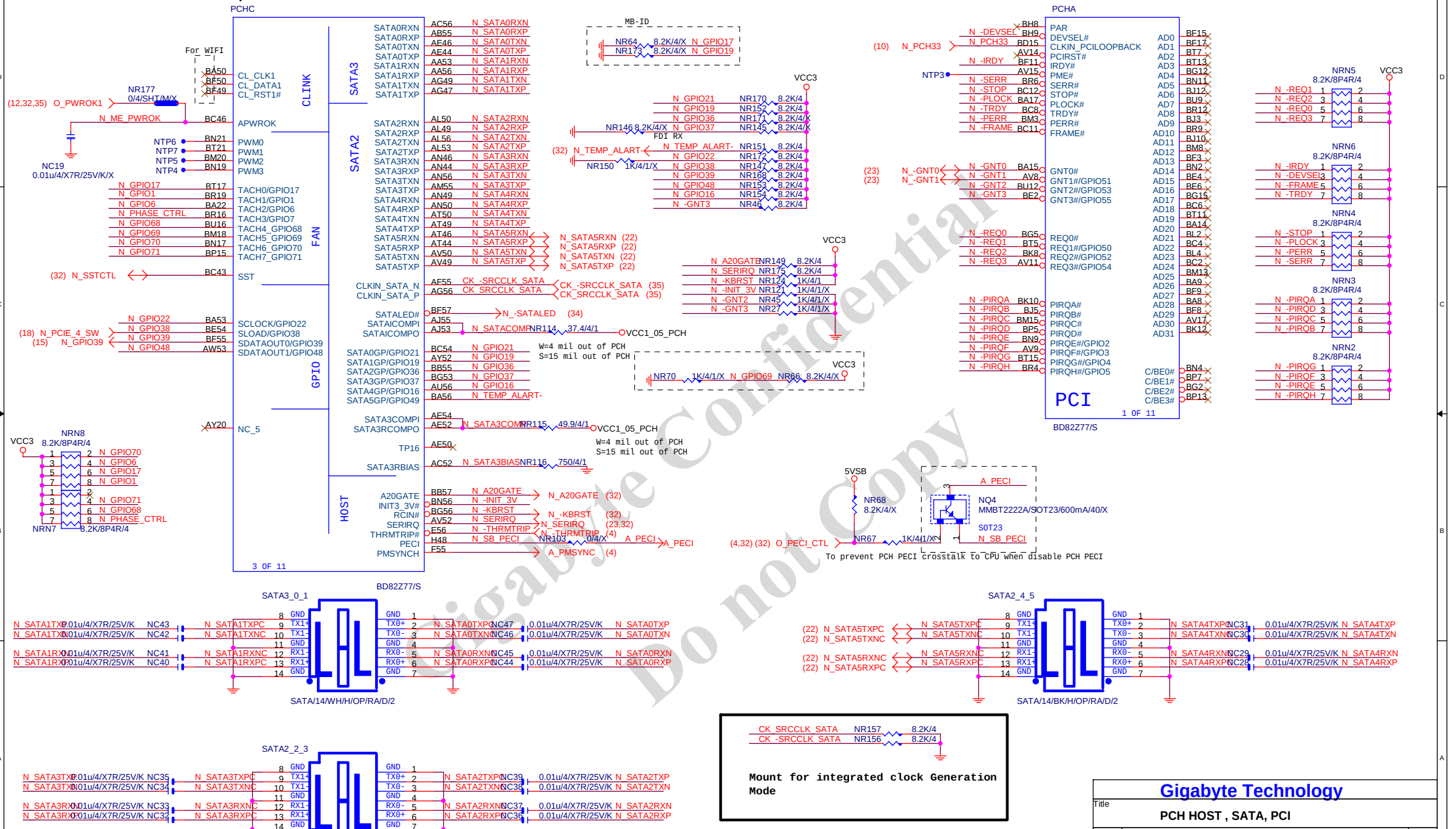
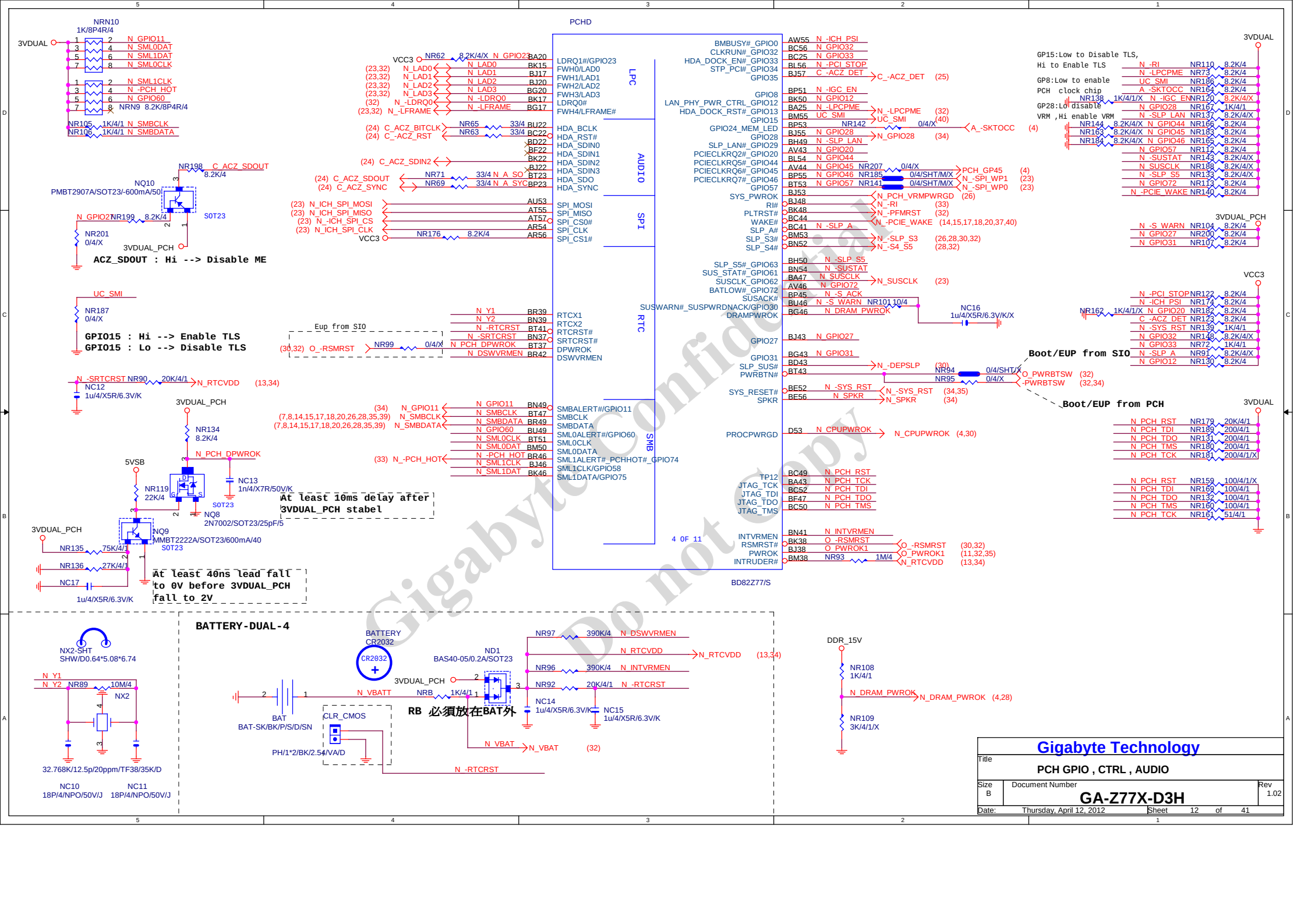
PCH DISPLAY ,CLK BUFFER
GA-Z77X-D3H
Date: Thursday, April 12, 2012
Sheet 10 of 41

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



Gigabyte Technology		
Title: PCH HOST , SATA, PCI		
Size: B	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 11 of 41	


PCHD
LPC
AUDIO
SPI
RTC
SMB
BD82Z77/S
4 OF 11
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
Boot/EUP from SIO
Boot/EUP from PCH
BATTERY-DUAL-4
RB 必須放在BAT外
GP15:Low to Disable TLS, Hi to Enable TLS
GP8:Low to enable PCH clock chip
GP28:Lo disable VRM ,Hi enable VRM
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PCH GPIO , CTRL , AUDIO
GA-Z77X-D3H
Rev 1.02
Thursday, April 12, 2012
Sheet 12 of 41
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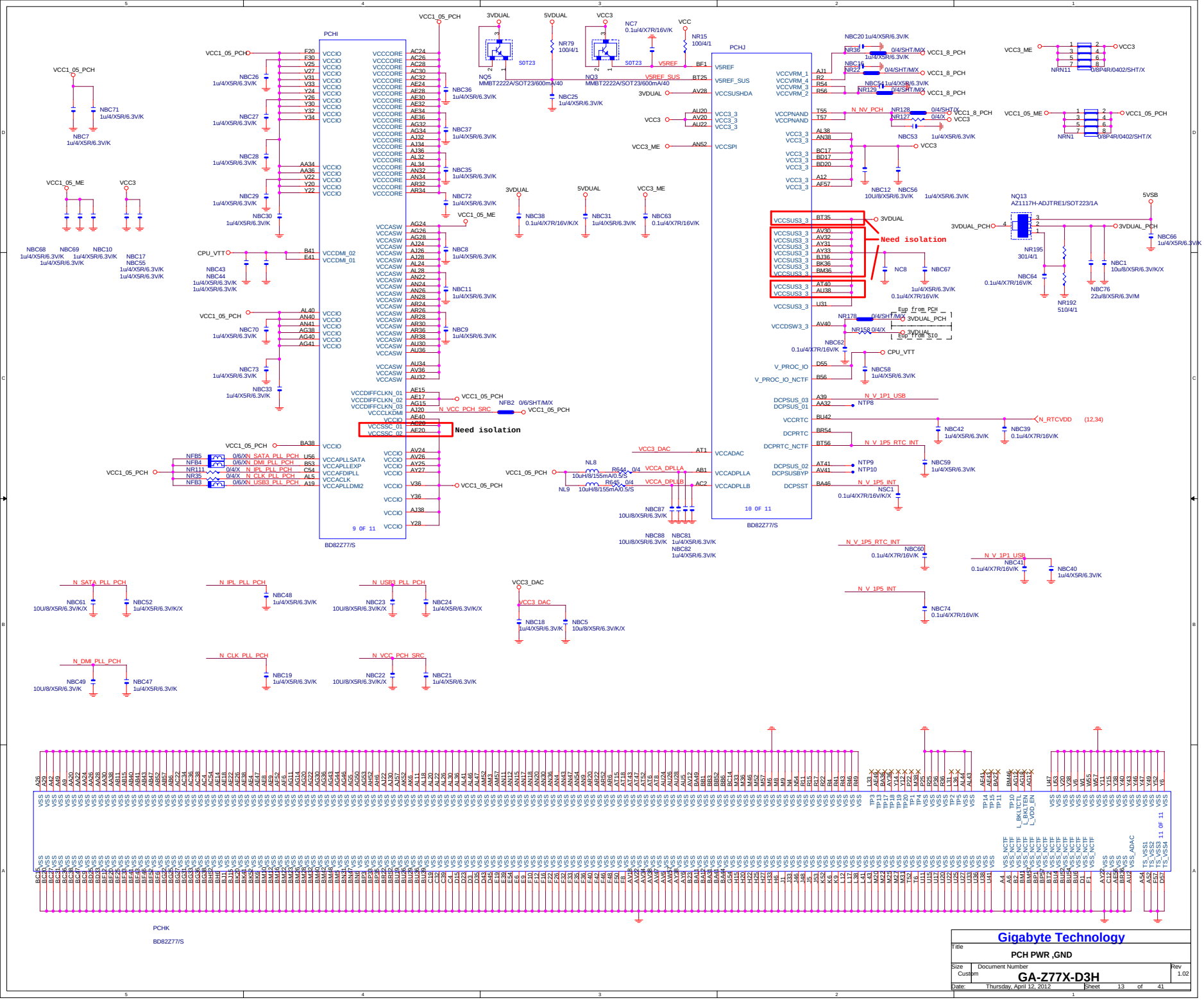
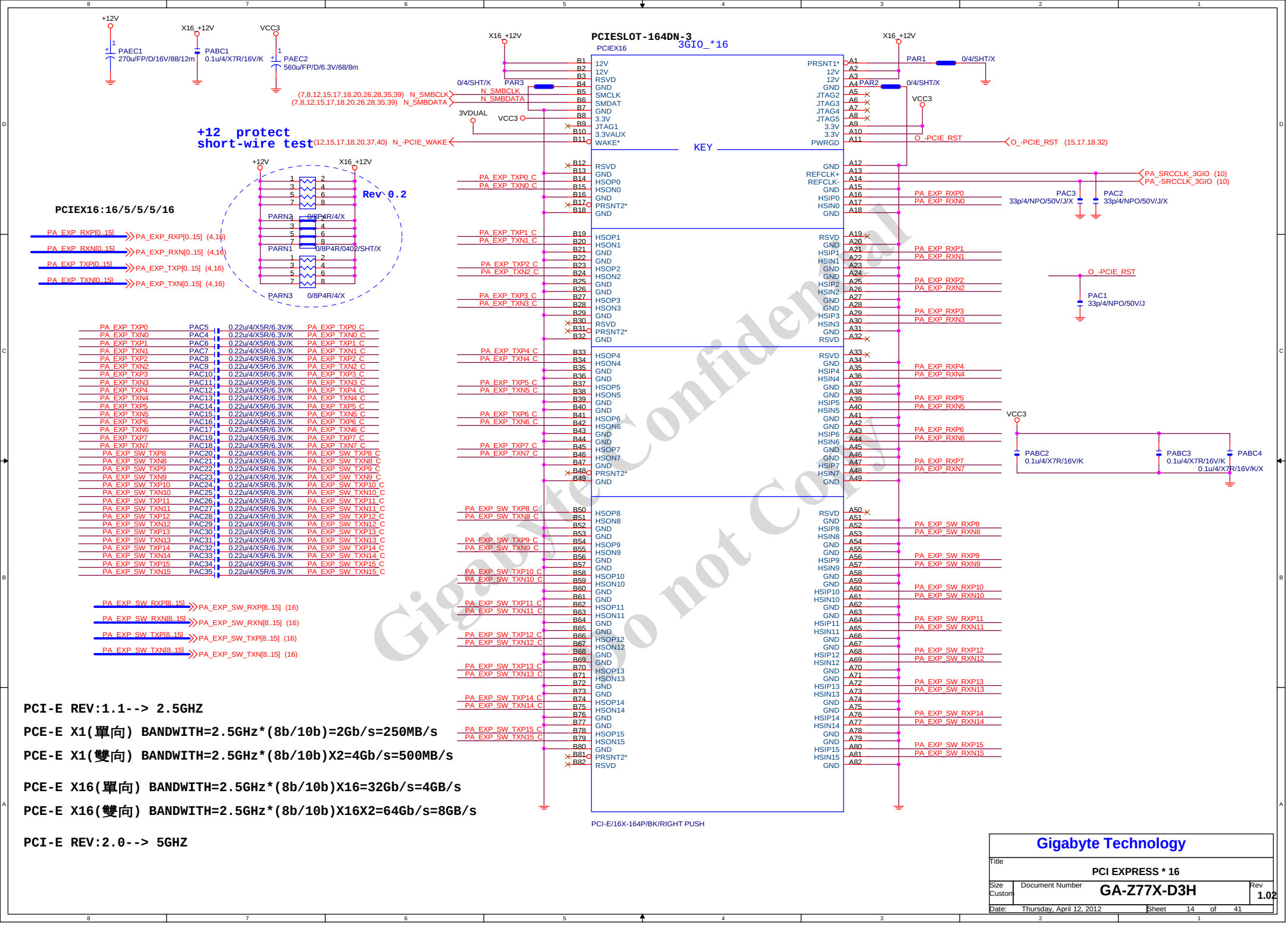
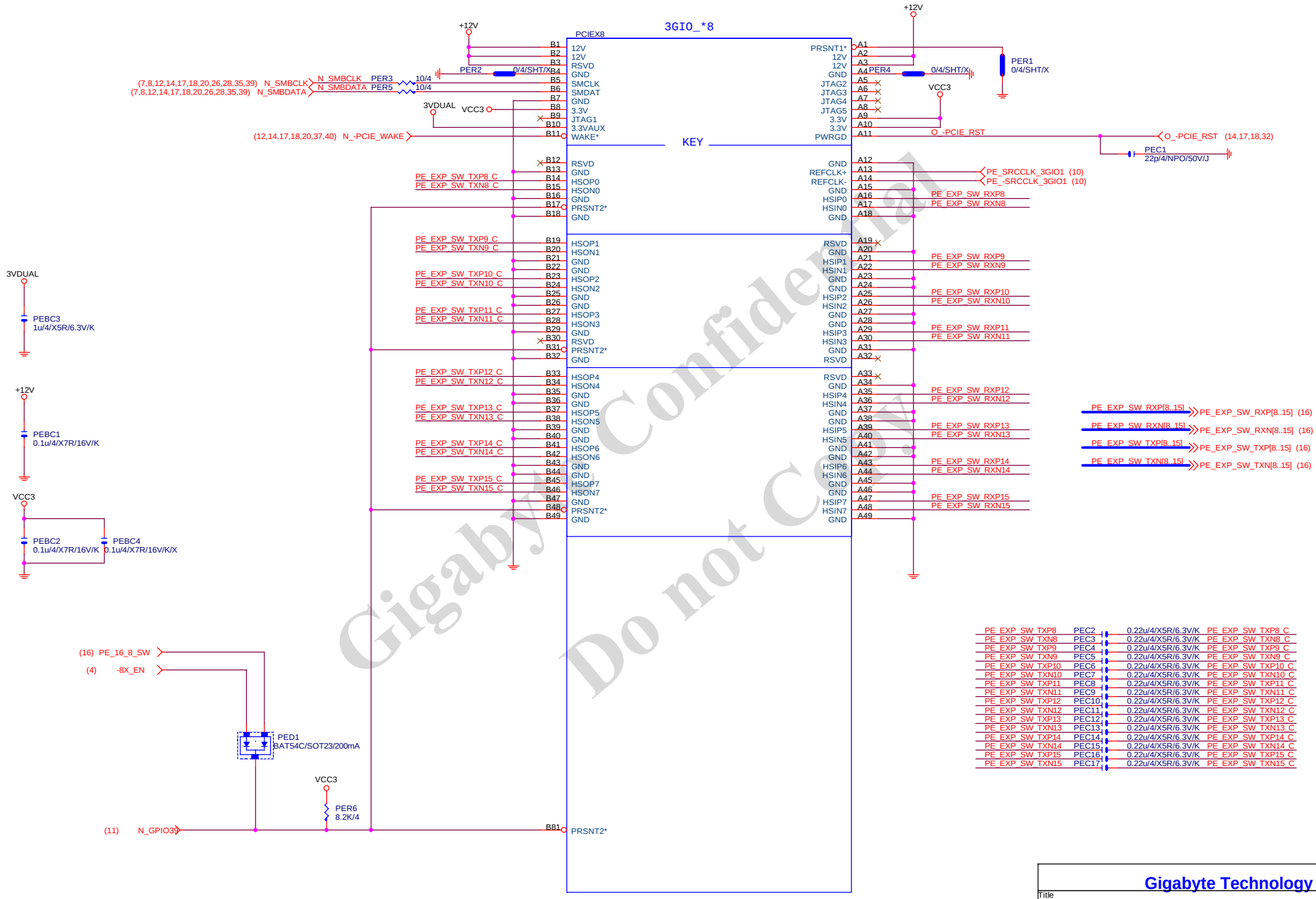

PCHI
PCHJ
PCHK
BD82Z77/S
9 OF 11
10 OF 11
Need isolation
Need isolation
Gigabyte Technology
PCH PWR ,GND
GA-Z77X-D3H
Size Custom
Document Number
Rev 1.02
Date: Thursday, April 12, 2012
Sheet 13 of 41

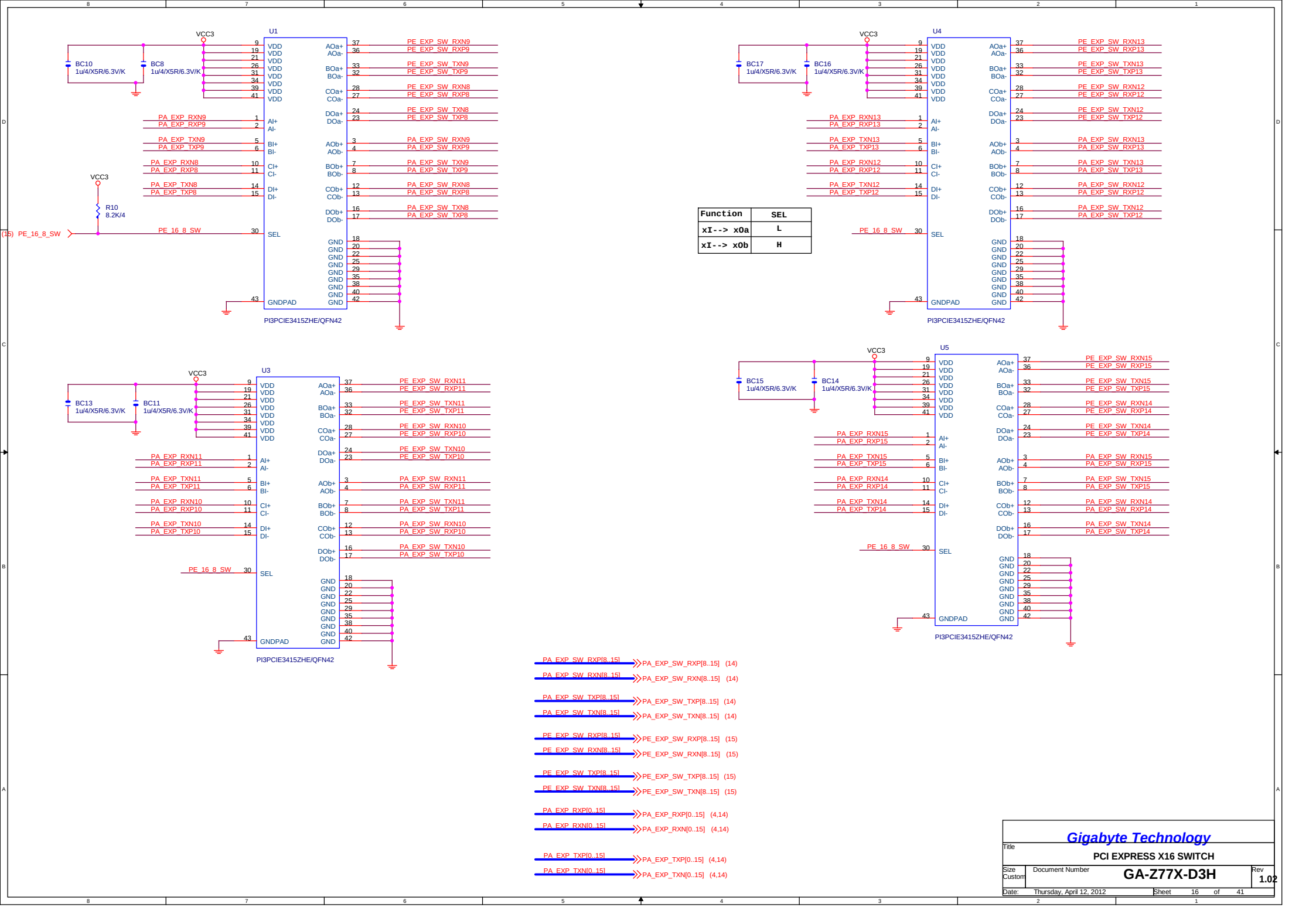


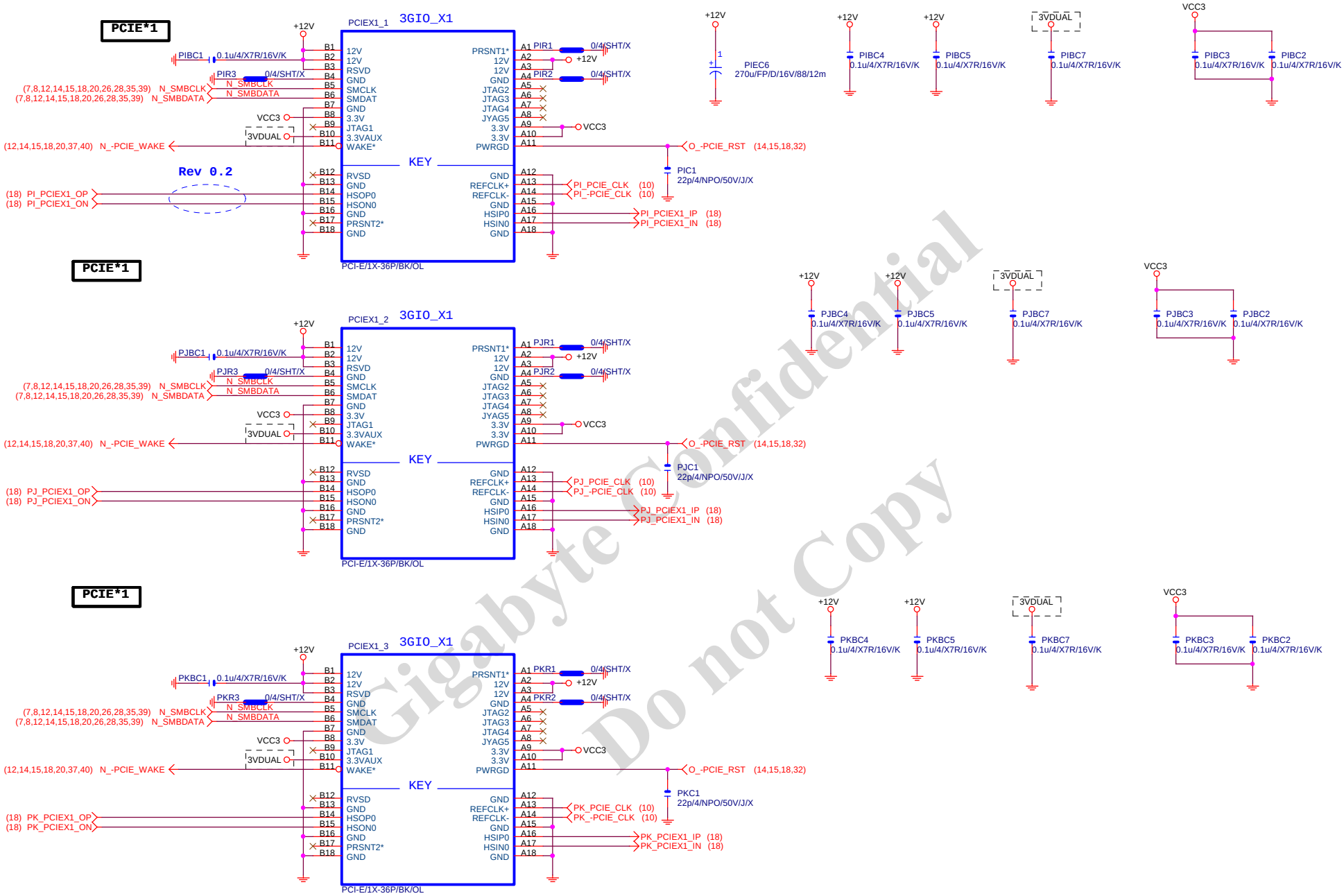
Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date: Thursday, April 12, 2012	Sheet 14 of 41



Title	PCI EXPRESS X 4 PORT
Size	Custom
Document Number	GA-Z77X-D3H
Rev	1.02
Date:	Thursday, April 12, 2012
Sheet	15 of 41

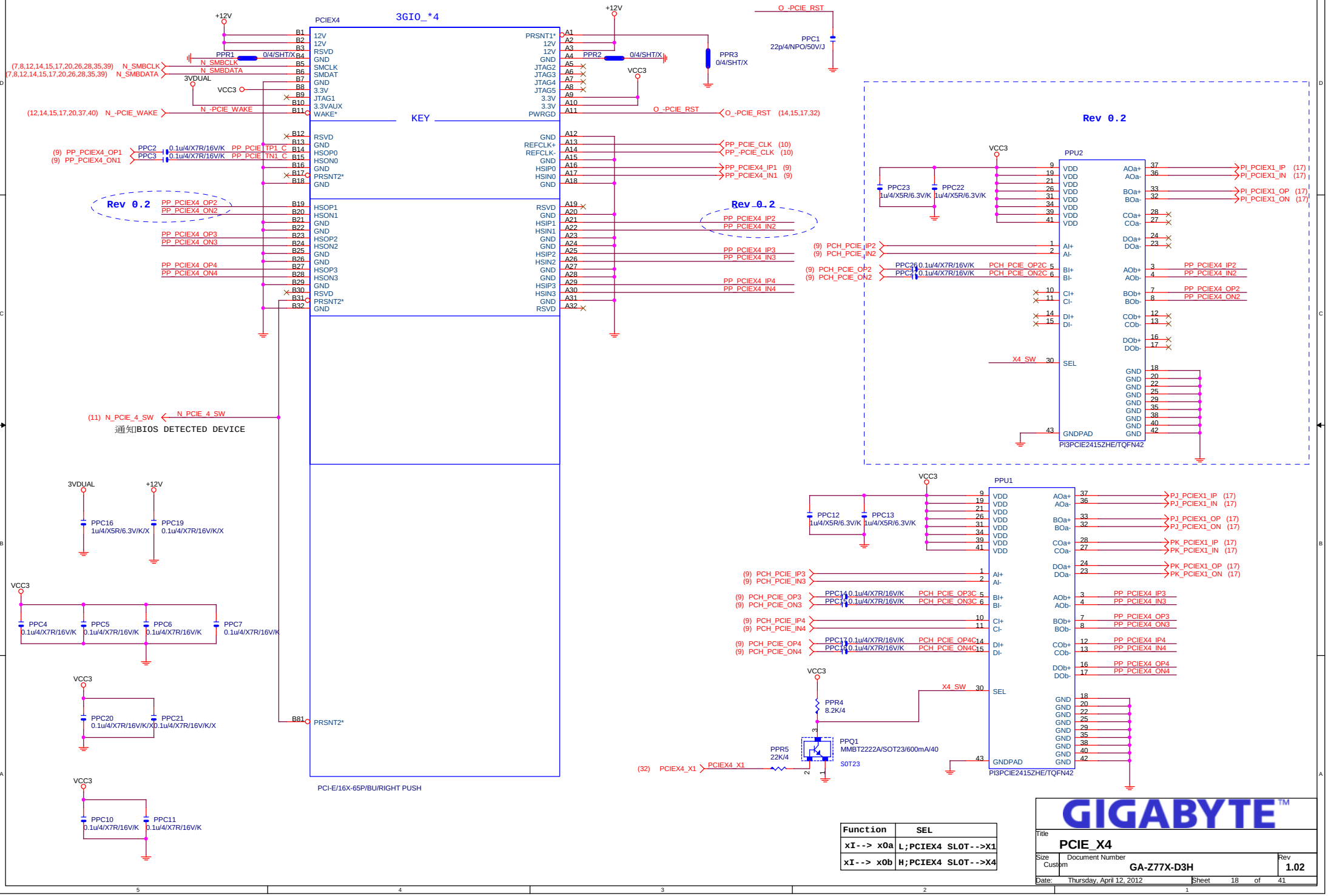
Gigabyte Technology


U1
VCC3
BC10 1u/4/X5R/6.3V/K
BC8 1u/4/X5R/6.3V/K
R10 8.2K/4
(15) PE_16_8_SW
PA_EXP_RXN9
PA_EXP_RXP9
PA_EXP_TXN9
PA_EXP_TXP9
PA_EXP_RXN8
PA_EXP_RXP8
PA_EXP_TXN8
PA_EXP_TXP8
PE_16_8_SW
PE_EXP_SW_RXN9
PE_EXP_SW_RXP9
PE_EXP_SW_TXN9
PE_EXP_SW_TXP9
PE_EXP_SW_RXN8
PE_EXP_SW_RXP8
PE_EXP_SW_TXN8
PE_EXP_SW_TXP8
PI3PCIE3415ZHE/QFN42
U4
BC17 1u/4/X5R/6.3V/K
BC16 1u/4/X5R/6.3V/K
PA_EXP_RXN13
PA_EXP_RXP13
PA_EXP_TXN13
PA_EXP_TXP13
PA_EXP_RXN12
PA_EXP_RXP12
PA_EXP_TXN12
PA_EXP_TXP12
PE_16_8_SW
PE_EXP_SW_RXN13
PE_EXP_SW_RXP13
PE_EXP_SW_TXN13
PE_EXP_SW_TXP13
PE_EXP_SW_RXN12
PE_EXP_SW_RXP12
PE_EXP_SW_TXN12
PE_EXP_SW_TXP12
PI3PCIE3415ZHE/QFN42
Function | SEL
xI--> xOa | L
xI--> xOb | H
U3
BC13 1u/4/X5R/6.3V/K
BC11 1u/4/X5R/6.3V/K
PA_EXP_RXN11
PA_EXP_RXP11
PA_EXP_TXN11
PA_EXP_TXP11
PA_EXP_RXN10
PA_EXP_RXP10
PA_EXP_TXN10
PA_EXP_TXP10
PE_16_8_SW
PE_EXP_SW_RXN11
PE_EXP_SW_RXP11
PE_EXP_SW_TXN11
PE_EXP_SW_TXP11
PE_EXP_SW_RXN10
PE_EXP_SW_RXP10
PE_EXP_SW_TXN10
PE_EXP_SW_TXP10
PI3PCIE3415ZHE/QFN42
U5
BC15 1u/4/X5R/6.3V/K
BC14 1u/4/X5R/6.3V/K
PA_EXP_RXN15
PA_EXP_RXP15
PA_EXP_TXN15
PA_EXP_TXP15
PA_EXP_RXN14
PA_EXP_RXP14
PA_EXP_TXN14
PA_EXP_TXP14
PE_16_8_SW
PE_EXP_SW_RXN15
PE_EXP_SW_RXP15
PE_EXP_SW_TXN15
PE_EXP_SW_TXP15
PE_EXP_SW_RXN14
PE_EXP_SW_RXP14
PE_EXP_SW_TXN14
PE_EXP_SW_TXP14
PI3PCIE3415ZHE/QFN42
PA_EXP_SW_RXP[8..15] PA_EXP_SW_RXP[8..15] (14)
PA_EXP_SW_RXN[8..15] PA_EXP_SW_RXN[8..15] (14)
PA_EXP_SW_TXP[8..15] PA_EXP_SW_TXP[8..15] (14)
PA_EXP_SW_TXN[8..15] PA_EXP_SW_TXN[8..15] (14)
PE_EXP_SW_RXP[8..15] PE_EXP_SW_RXP[8..15] (15)
PE_EXP_SW_RXN[8..15] PE_EXP_SW_RXN[8..15] (15)
PE_EXP_SW_TXP[8..15] PE_EXP_SW_TXP[8..15] (15)
PE_EXP_SW_TXN[8..15] PE_EXP_SW_TXN[8..15] (15)
PA_EXP_RXP[0..15] PA_EXP_RXP[0..15] (4,14)
PA_EXP_RXN[0..15] PA_EXP_RXN[0..15] (4,14)
PA_EXP_TXP[0..15] PA_EXP_TXP[0..15] (4,14)
PA_EXP_TXN[0..15] PA_EXP_TXN[0..15] (4,14)
Gigabyte Technology
Title
PCI EXPRESS X16 SWITCH
Size Custom
Document Number
GA-Z77X-D3H
Rev 1.02
Date: Thursday, April 12, 2012
Sheet 16 of 41



Gigabyte Technology		
Title: PCIE_X1 1,2,3		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 17 of 41	

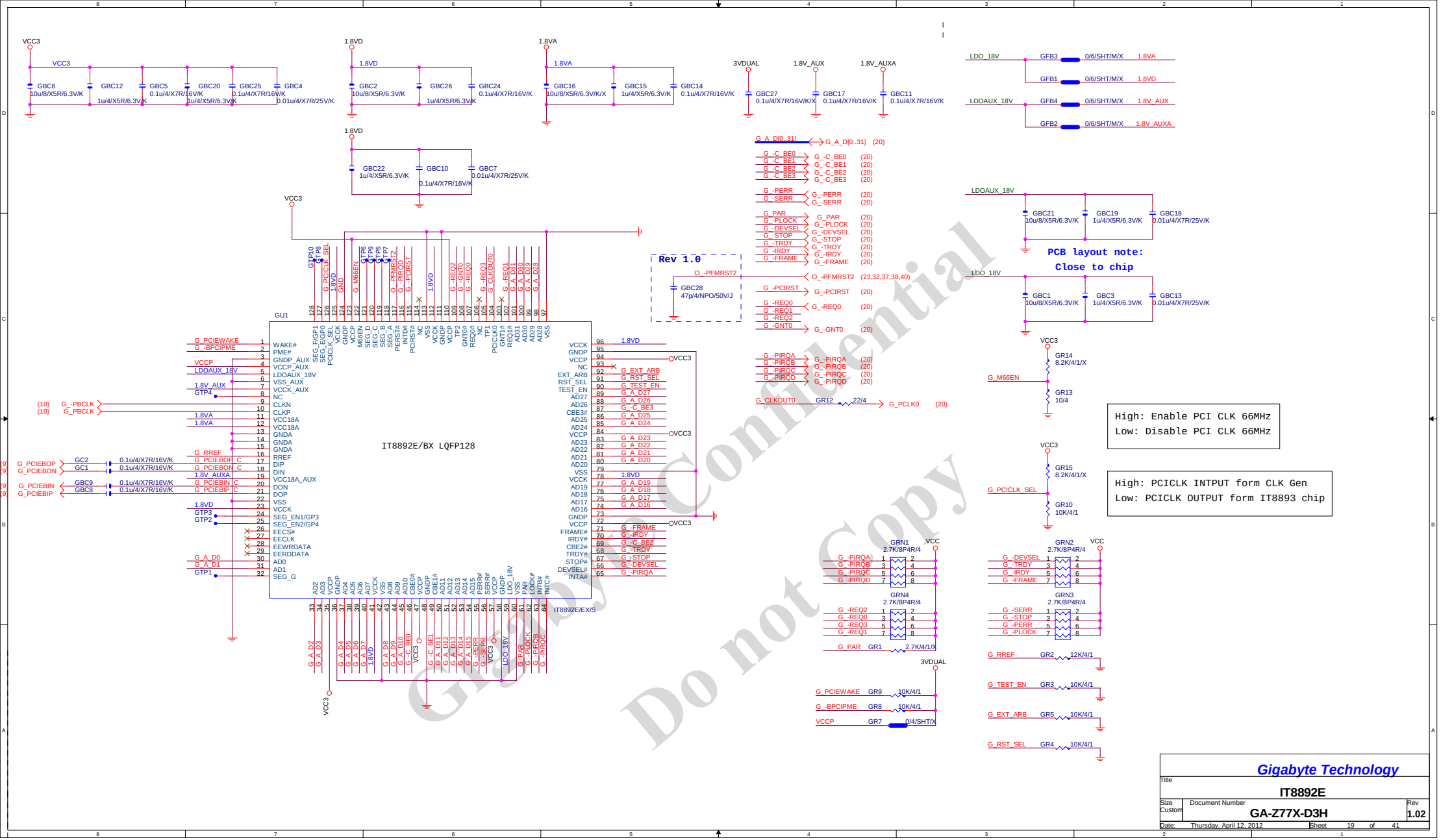
PCIE*4



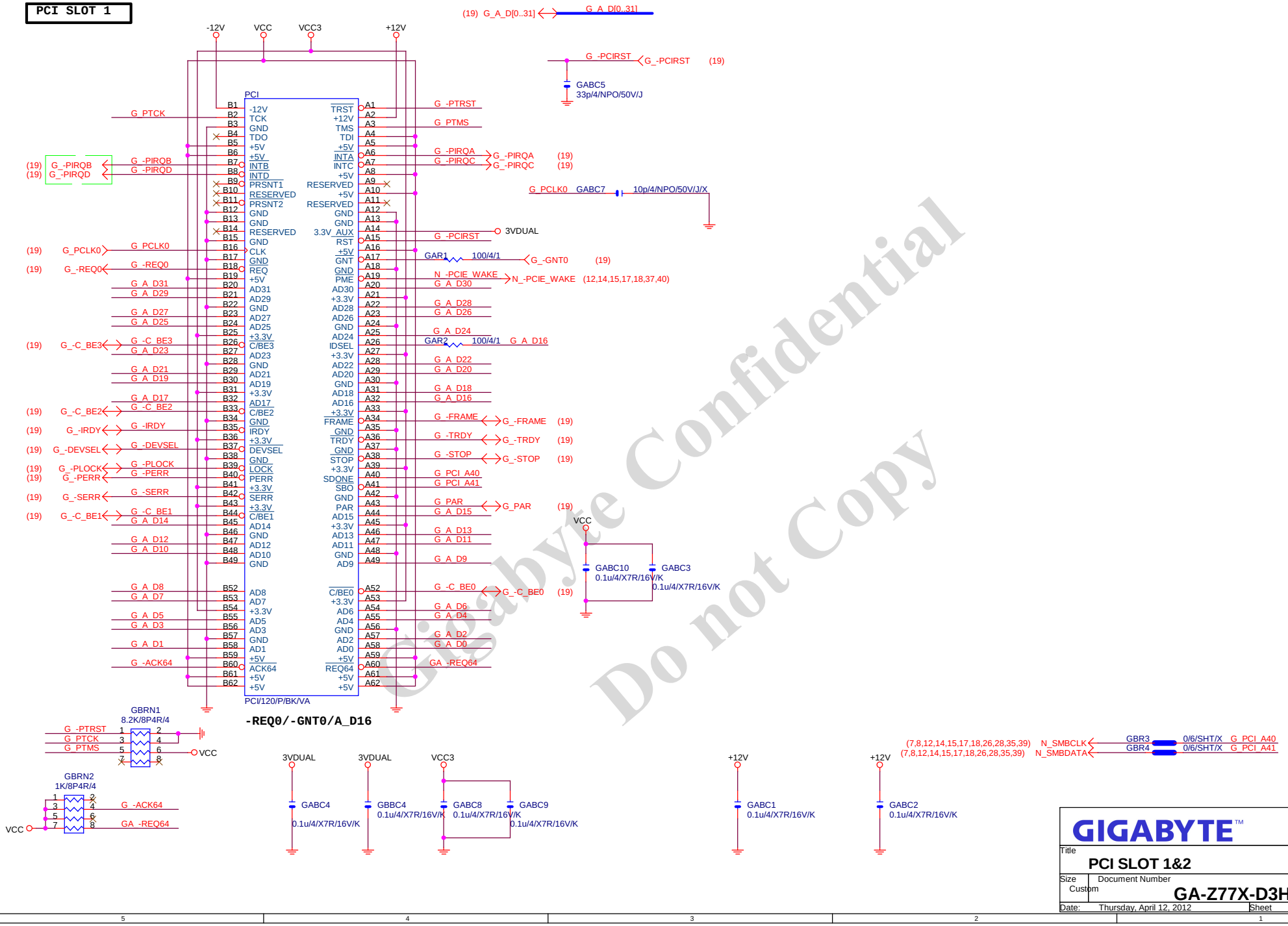
Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

GIGABYTE™

Title: PCIE_X4		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 18 of 41	

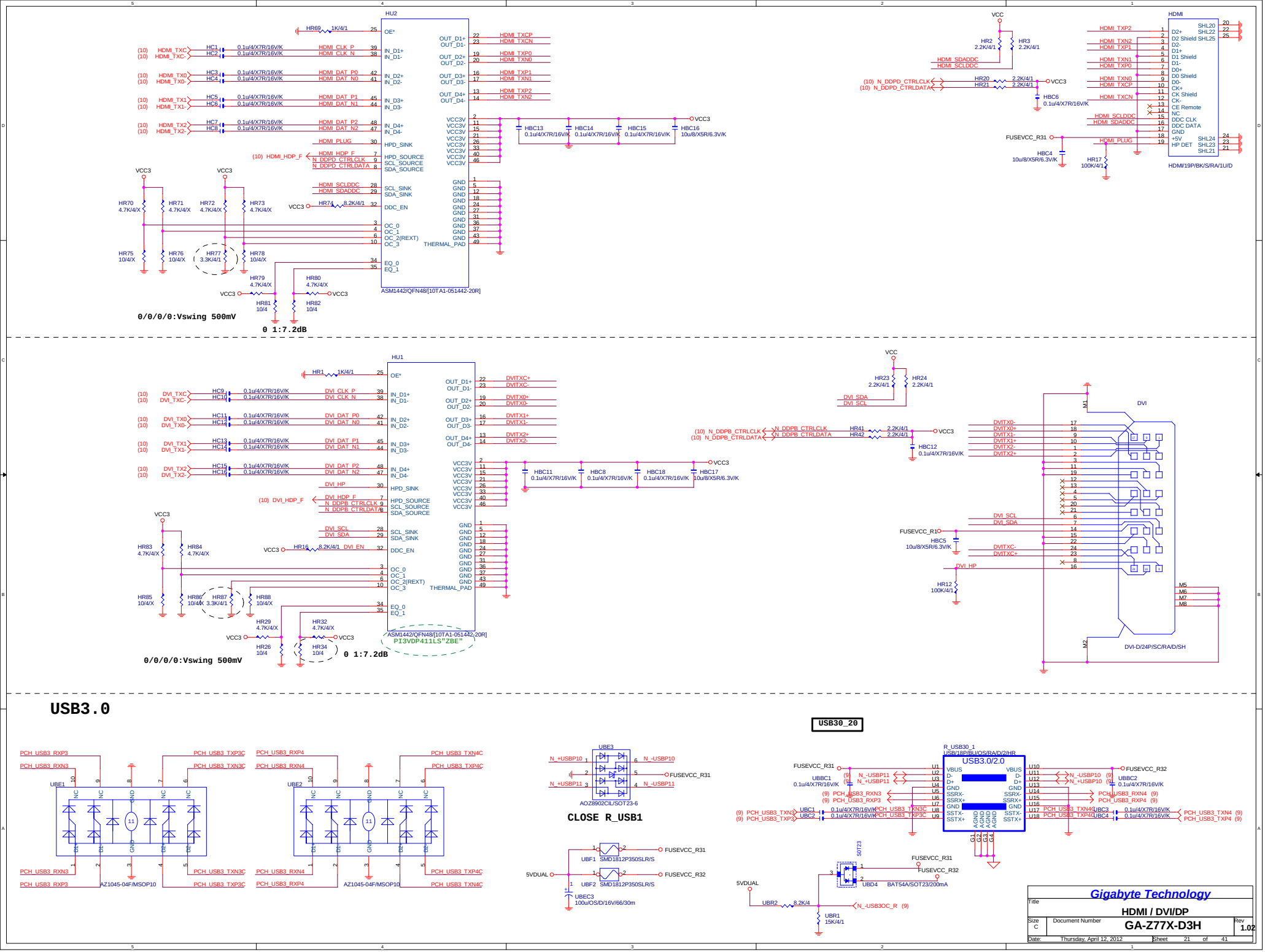


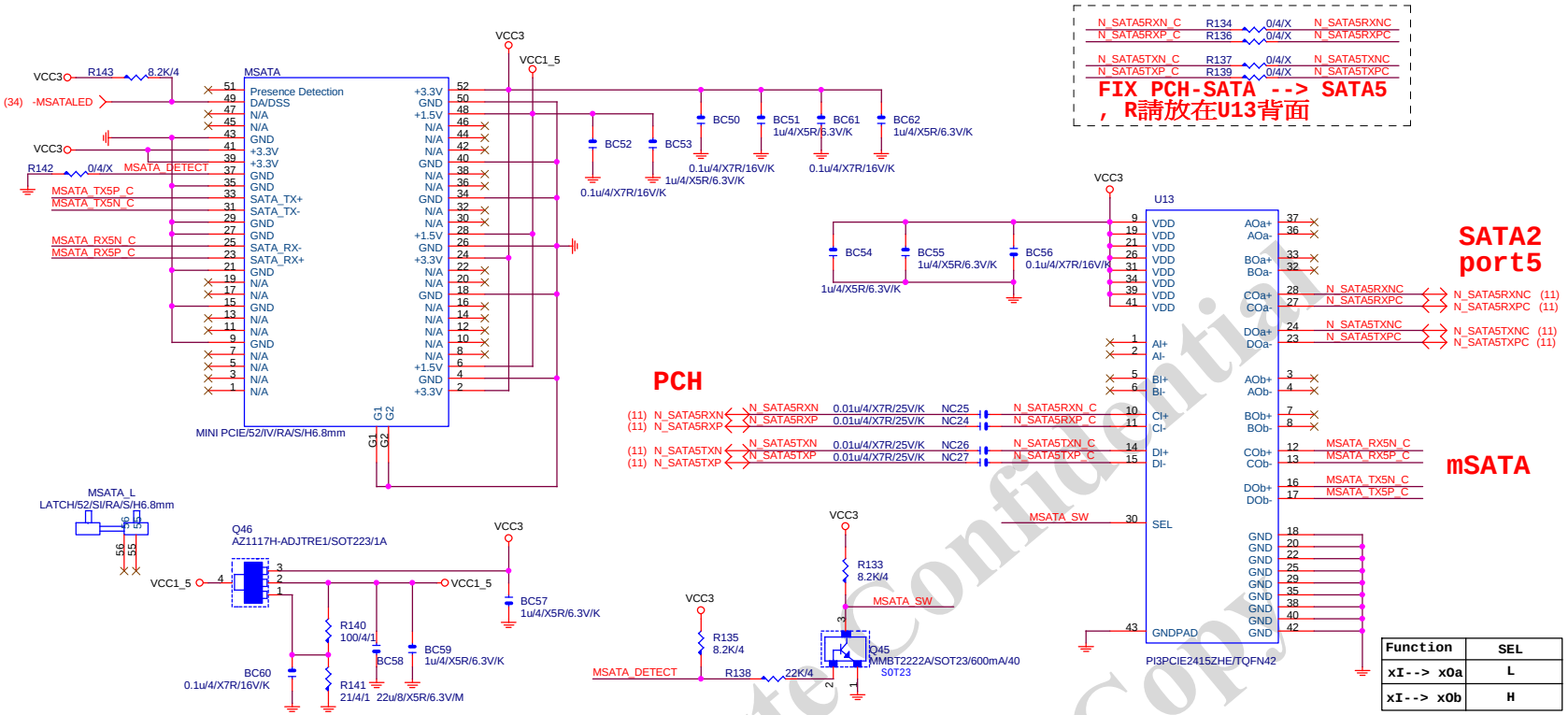
PCI SLOT 1



GIGABYTE™

Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 20 of 41	


HU2
ASM1442/QFN48/[10TA1-051442-20R]
0/0/0/0:Vswing 500mV
0 1:7.2dB
HDMI
HDMI/19P/BK/S/RA/1U/D
HU1
ASM1442/QFN48/[10TA1-051442-20R]
PI3VDP411LS"ZBE"
0/0/0/0:Vswing 500mV
0 1:7.2dB
DVI
DVI-D/24P/SC/RA/D/SH
USB3.0
UBE1
AZ1045-04F/MSOP10
UBE2
AZ1045-04F/MSOP10
UBE3
AOZ8902CIL/SOT23-6
CLOSE R_USB1
USB30_20
USB3.0/2.0
R_USB30_1
USB/18P/BU/OS/RA/D/2/HR
UBF1 SMD1812P350SLR/S
UBF2 SMD1812P350SLR/S
UBEC3 100u/OS/D/16V/66/30m
UBD4 BAT54A/SOT23/200mA
Gigabyte Technology
HDMI / DVI/DP
GA-Z77X-D3H
1.02
Thursday, April 12, 2012
21 of 41



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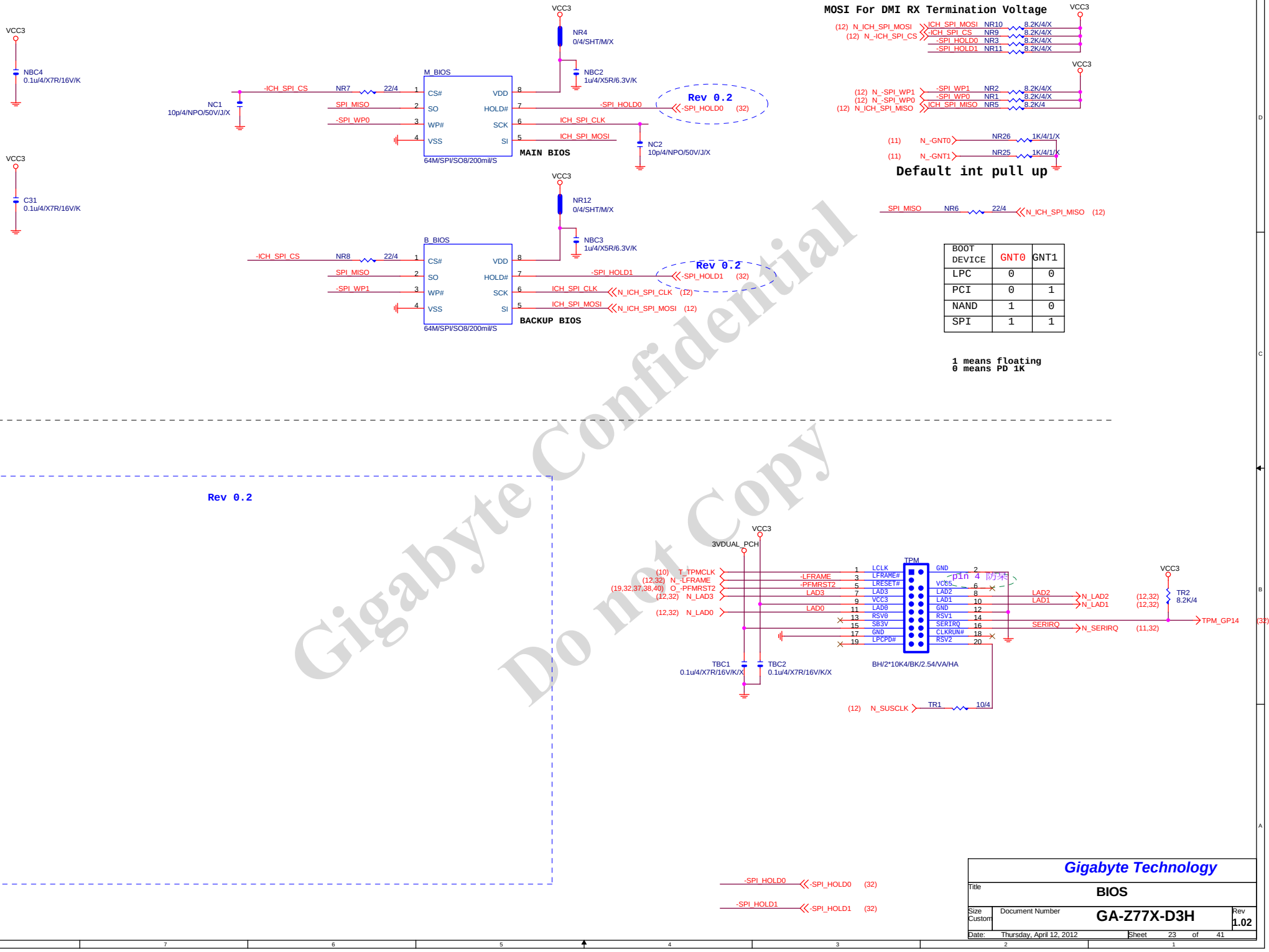
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 22 of 41	

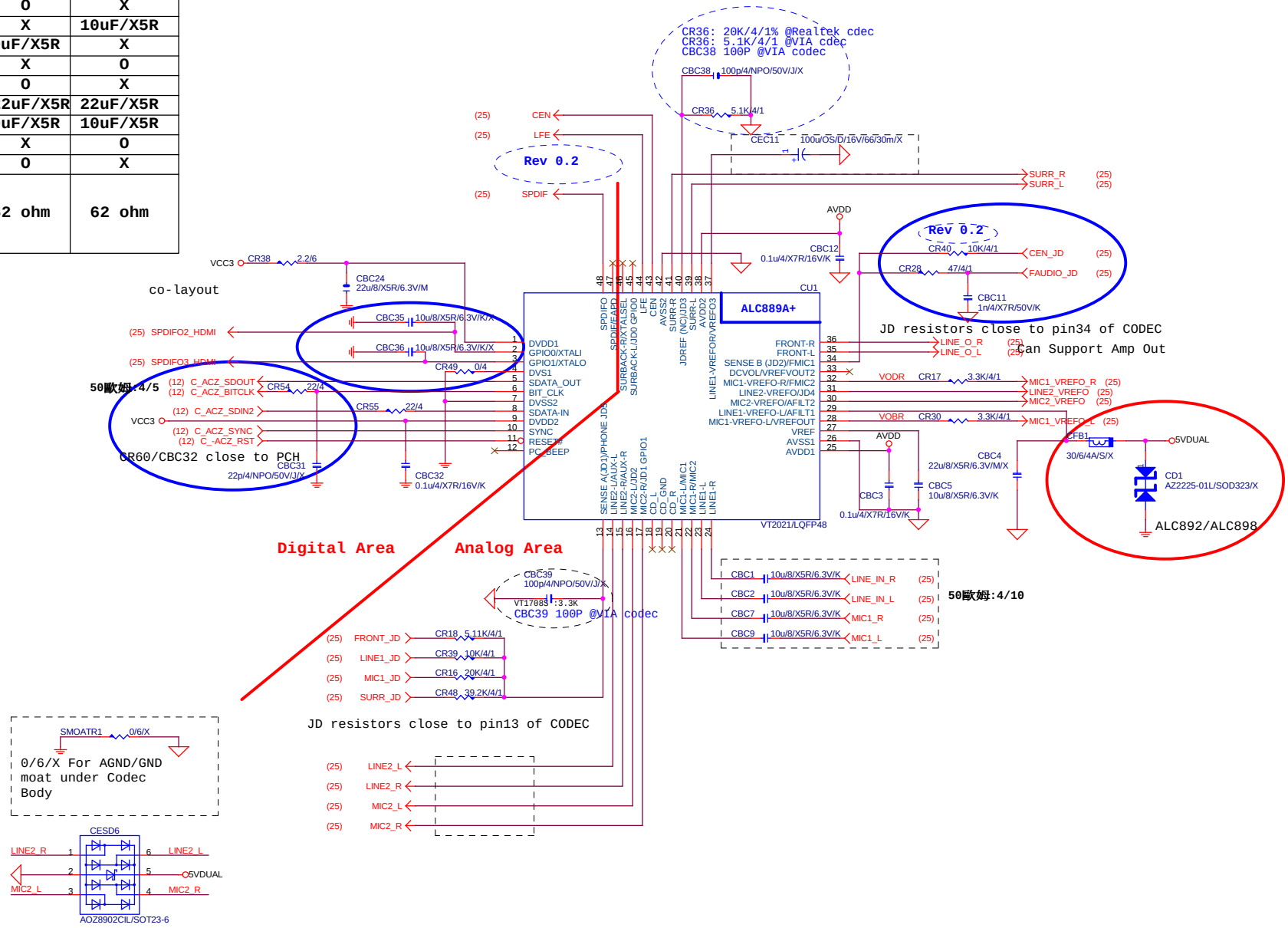


Gigabyte Technology	
Title	BIOS
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date: Thursday, April 12, 2012	Sheet 23 of 41

AZALIA CODEC

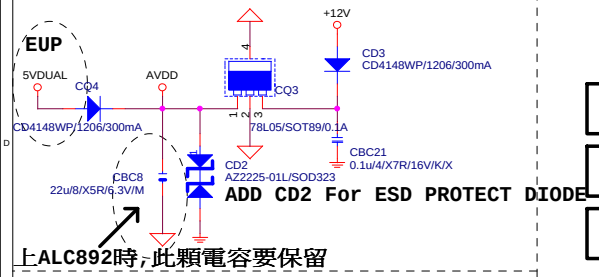
ALC889/ALC889B/ALC892/ALC898 Colay

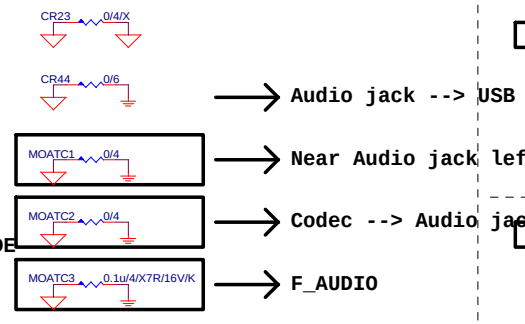
	ALC889	ALC889B	ALC898/ALC892
CR49	0	0	X
CBC36	X	X	10uF/X5R
CBC35	X	10uF/X5R	X
CR52	0	X	0
CR53	X	0	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R
CBC7/CBC9/CBC20/CBC15	10uF/X5R	10uF/X5R	10uF/X5R
CFB1/CD1/CBC4	X	X	0
CD2/CD3/CQ3/CQ4	0	0	X
CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR21/CR47/ CR2/CR11/CR14/CR24	62 ohm	62 ohm	62 ohm

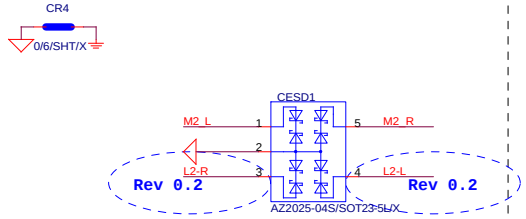


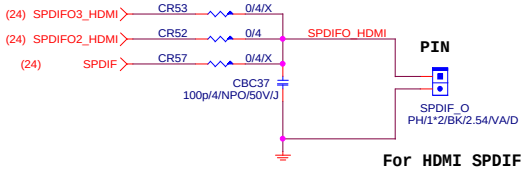
Gigabyte Technology	
Title	HD AUDIO ALC889A
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date: Thursday, April 12, 2012	Sheet 24 of 41

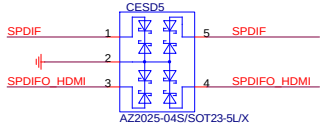
CODEC POWER/EMI PAD





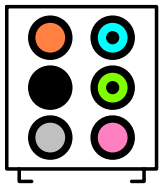




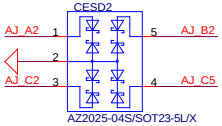


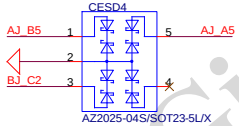
AZALIA JACK

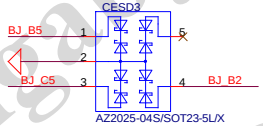
BTX AZALIA CONNECTOR

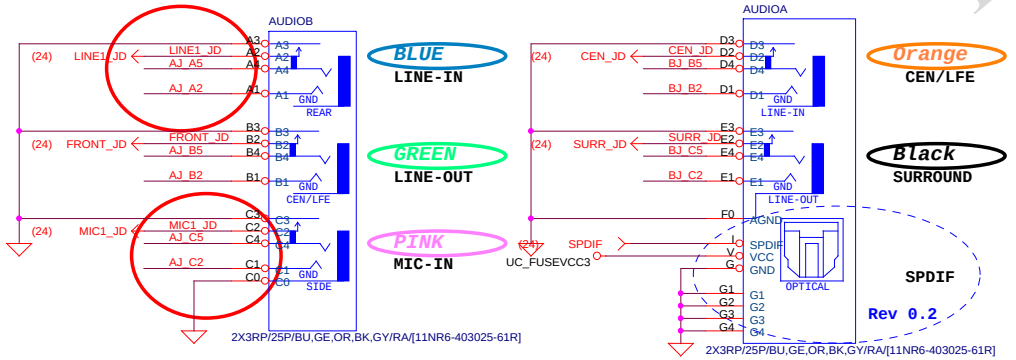


11NR6-403007-21R

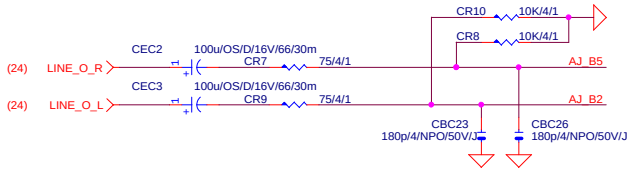




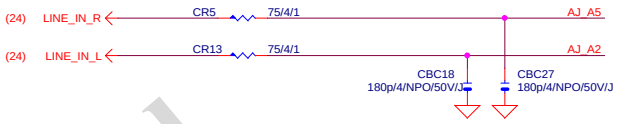




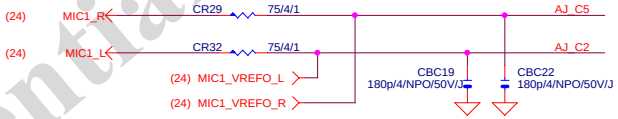
LINE-OUT



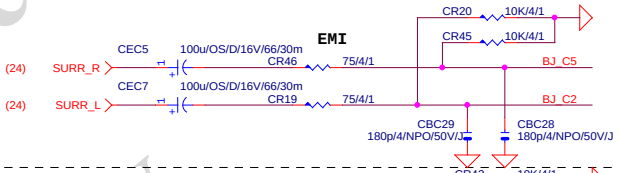
LINE-IN



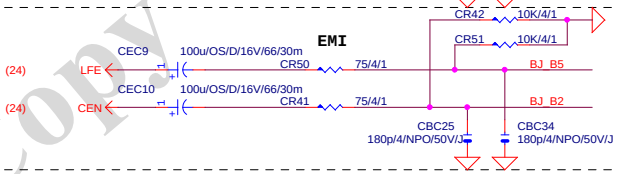
MIC-IN



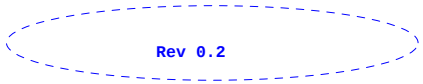
SURROUND



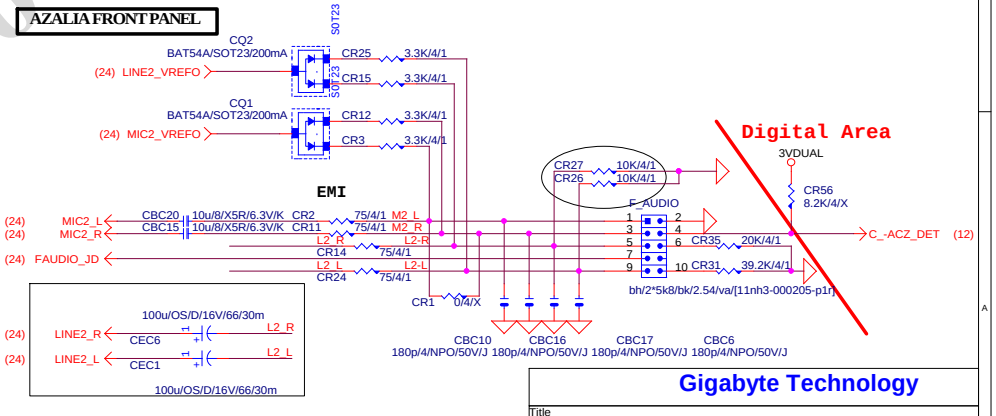
CEN/LFE



SURR BACK



AZALIA FRONT PANEL

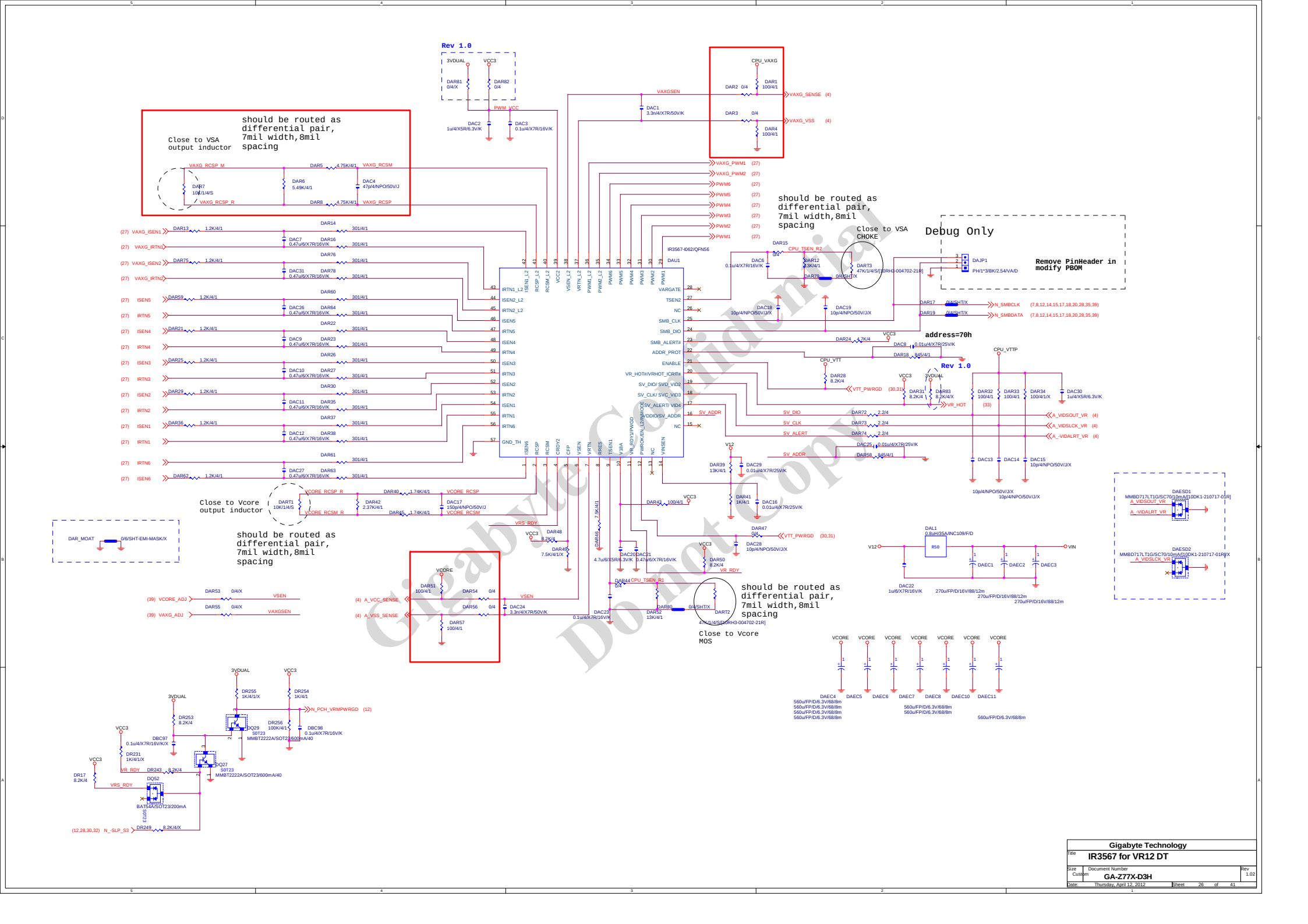


Gigabyte Technology

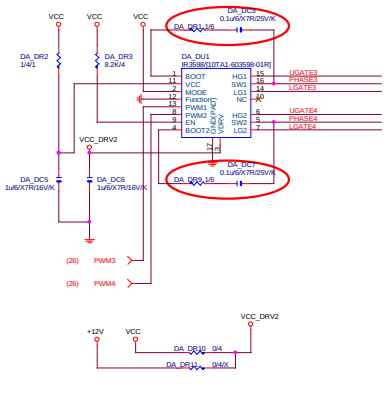
Title: AUDIO JACK

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.02

Date: Thursday, April 12, 2012 | Sheet 25 of 41

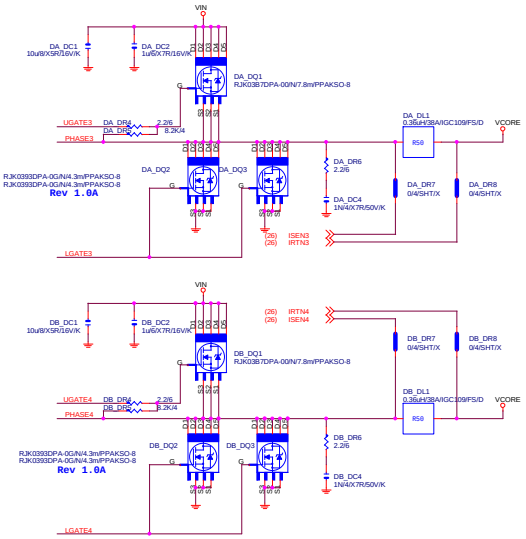


VCORE Phase 3,6

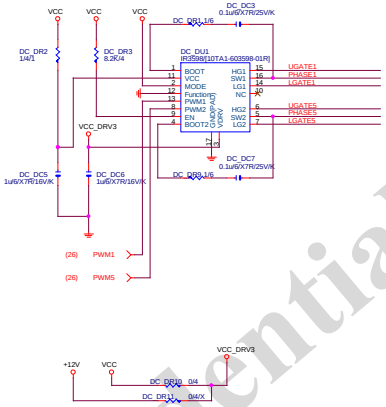


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	Dual
1	1	1R ATL	Doubler
0	0	Tri-State	Dual
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

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

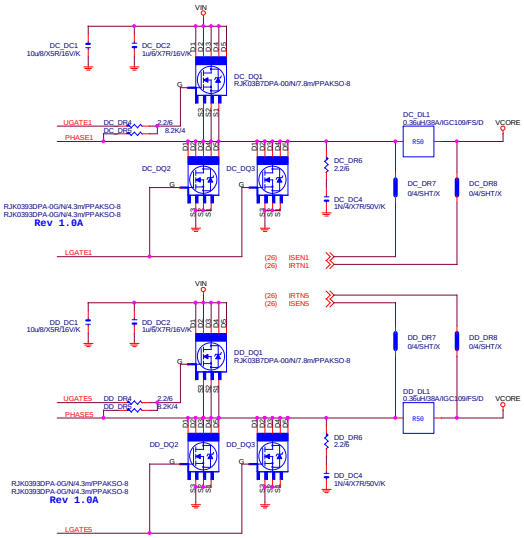


VCORE Phase 1,4

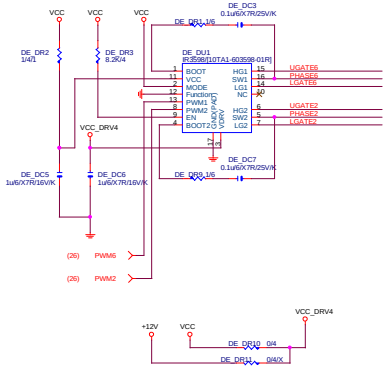


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	Dual
1	1	1R ATL	Doubler
0	0	Tri-State	Dual
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

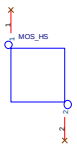
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without Pu



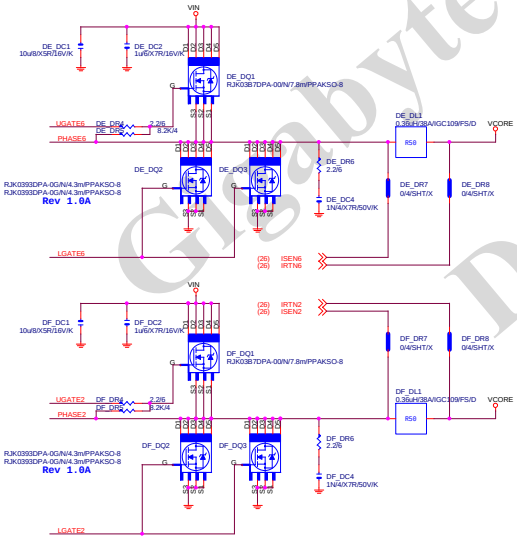
VCORE Phase 5,2



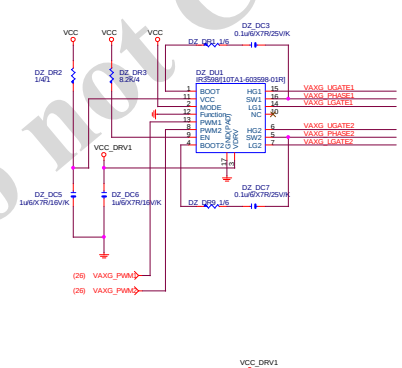
MOS HEATSINK

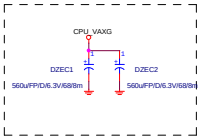


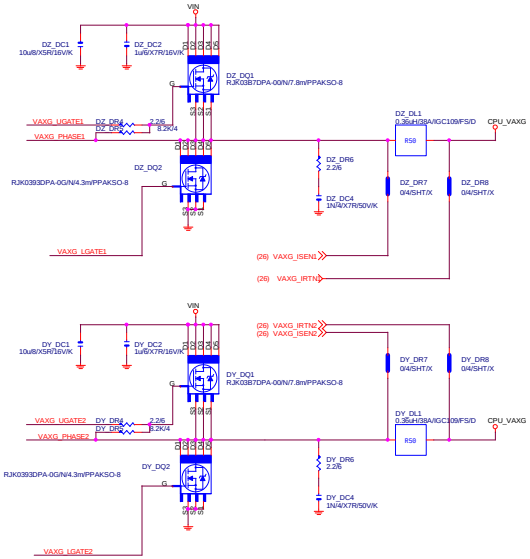
MOS HS/[12SP2-S08924-01R_12SP2-S08924-02R]_12SP2-S08924-03R]



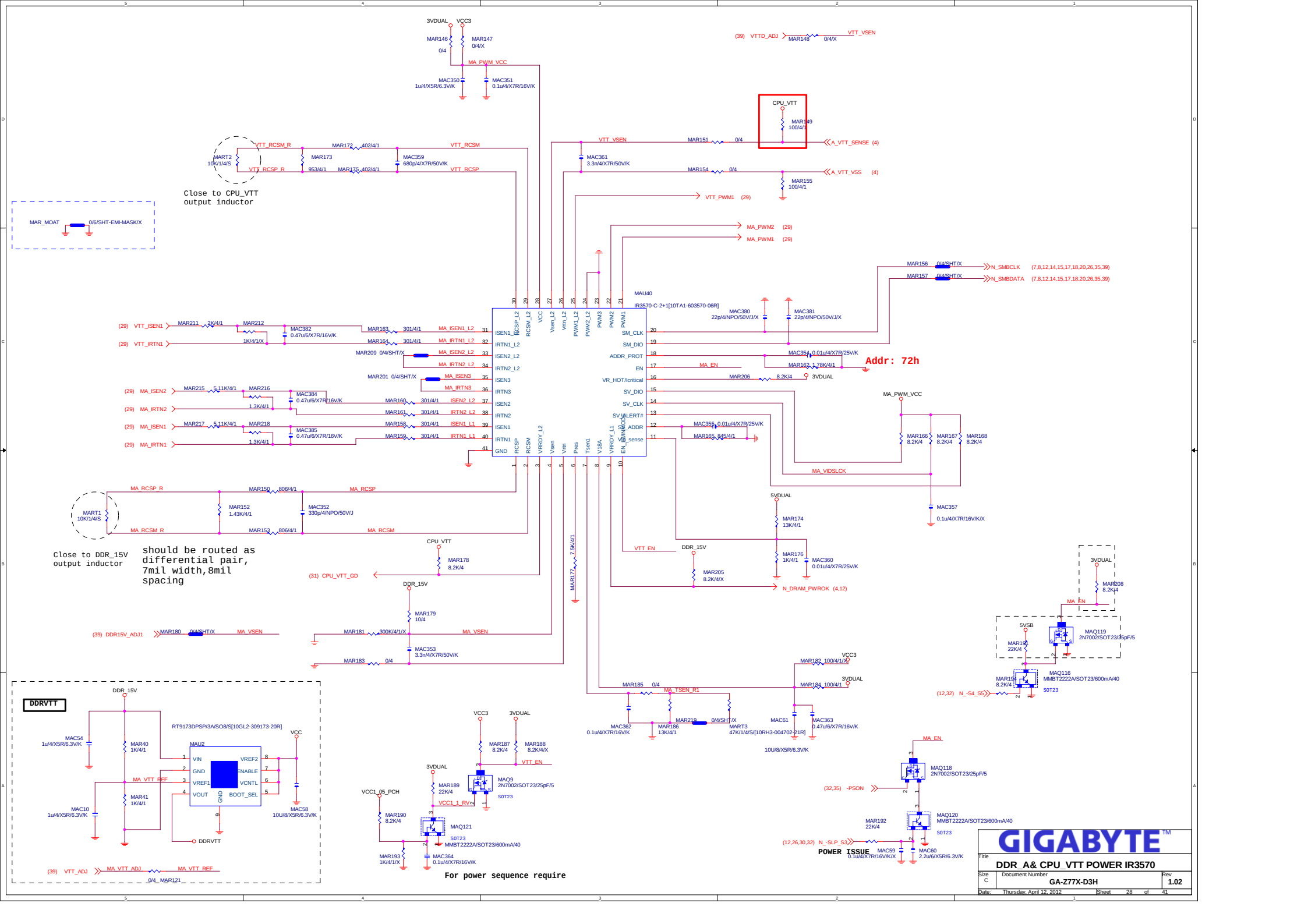
VAXG Phase



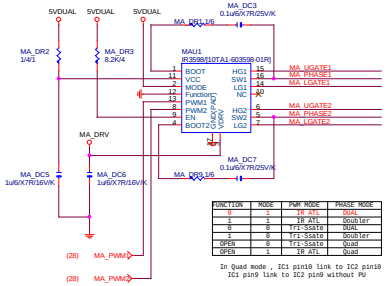




Gigabyte Technology			
Title: CPU CORE VR			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.02
Date: Thursday, April 12, 2012		Sheet 27 of 41	

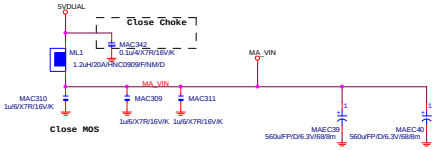

3VDUAL
VCC3
MAR146
0/4
MAR147
0/4/X
MA_PWM_VCC
MAC350
1u/4/X5R/6.3V/K
MAC351
0.1u/4/X7R/16V/K
(39) VTTD_ADJ
MAR148
0/4/X
VTT_VSEN
CPU_VTT
MAR149
100/4/1
MAR151
0/4
A_VTT_SENSE (4)
MAR154
0/4
A_VTT_VSS (4)
MAR155
100/4/1
MAC361
3.3n/4/X7R/50V/K
VTT_PWM1 (29)
MA_PWM2 (29)
MA_PWM1 (29)
MART2
10K/1/4/S
VTT_RCSM_R
MAR172
402/4/1
VTT_RCSM
MAR173
MAC359
680p/4/X7R/50V/K
VTT_RCSP_R
953/4/1
MAR175
402/4/1
VTT_RCSP
Close to CPU_VTT
output inductor
MAR_MOAT
0/6/SHT-EMI-MASK/X
MAU40
IR3570-C-2+1[10TA1-603570-06R]
MAC380
22p/4/NPO/50V/J/X
MAC381
22p/4/NPO/50V/J/X
MAR156
0/4/SHT/X
MAR157
0/4/SHT/X
N_SMBCLK (7,8,12,14,15,17,18,20,26,35,39)
N_SMBDATA (7,8,12,14,15,17,18,20,26,35,39)
(29) VTT_ISEN1
MAR211
2K/4/1
MAR212
1K/4/1/X
MAC382
0.47u/6/X7R/16V/K
MAR163
301/4/1
MA_ISEN1_L2
(29) VTT_IRTN1
MAR164
301/4/1
MA_IRTN1_L2
MAR209
0/4/SHT/X
MA_ISEN2_L2
MA_IRTN2_L2
MAR201
0/4/SHT/X
MA_ISEN3
MA_IRTN3
ISEN1_L2
IRTN1_L2
ISEN2_L2
IRTN2_L2
ISEN3
IRTN3
ISEN2
IRTN2
ISEN1
IRTN1
GND
RCSP_L2
RCSM_L2
VCC
Vsen_L2
Vrtn_L2
PWM1_L2
PWM2_L2
PWM3
PWM2
PWM1
SM_CLK
SM_DIO
ADDR_PROT
EN
VR_HOT/Icritical
SV_DIO
SV_CLK
SVALERT#
ADDR
EN_Isense
RCSP
RCSM
VRRDY_L1
Vsen
Vrtn
Pres
Tsen1
V18A
VRRDY_L2
MAC354
0.01u/4/X7R/25V/K
MAR162
1.78K/4/1
Addr: 72h
MA_EN
MAR206
8.2K/4
3VDUAL
(29) MA_ISEN2
MAR215
5.11K/4/1
MAR216
1.3K/4/1
MAC384
0.47u/6/X7R/16V/K
MAR160
301/4/1
ISEN2_L2
(29) MA_IRTN2
MAR161
301/4/1
IRTN2_L2
(29) MA_ISEN1
MAR217
5.11K/4/1
MAR218
1.3K/4/1
MAC385
0.47u/6/X7R/16V/K
MAR158
301/4/1
ISEN1_L1
(29) MA_IRTN1
MAR159
301/4/1
IRTN1_L1
MAC355
0.01u/4/X7R/25V/K
MAR165
845/4/1
MA_PWM_VCC
MAR166
8.2K/4
MAR167
8.2K/4
MAR168
8.2K/4
MA_VIDSLCK
MAC357
0.1u/4/X7R/16V/K/X
MART1
10K/1/4/S
MA_RCSP_R
MAR150
806/4/1
MA_RCSP
MAR152
1.43K/4/1
MAC352
330p/4/NPO/50V/J
MA_RCSM_R
MAR152
806/4/1
MA_RCSM
Close to DDR_15V
output inductor
should be routed as
differential pair,
7mil width,8mil
spacing
5VDUAL
MAR174
13K/4/1
VTT_EN
DDR_15V
MAR205
8.2K/4/X
MAR176
1K/4/1
MAC360
0.01u/4/X7R/25V/K
N_DRAM_PWROK (4,12)
CPU_VTT
MAR178
8.2K/4
(31) CPU_VTT_GD
MAR177
7.5K/4/1
DDR_15V
MAR179
10/4
(39) DDR15V_ADJ1
MAR180
0/4/SHT/X
MA_VSEN
MAR181
300K/4/1/X
MAC353
3.3n/4/X7R/50V/K
MAR183
0/4
3VDUAL
MAR208
8.2K/4
MA_EN
5VSB
MAR191
22K/4
MAQ119
2N7002/SOT23/25pF/5
MAR194
8.2K/4
MAQ116
MMBT2222A/SOT23/600mA/40
SOT23
(12,32) N_-S4_S5
VCC3
MAR182
100/4/1/X
3VDUAL
MAR184
100/4/1
MAR185
0/4
MA_TSEN_R1
MAC362
0.1u/4/X7R/16V/K
MAR186
13K/4/1
MAR219
0/4/SHT/X
MART3
47K/1/4/S/[10RH3-004702-21R]
MAC61
MAC363
0.47u/6/X7R/16V/K
10U/8/X5R/6.3V/K
DDRVTT
DDR_15V
RT9173DPSP/3A/SO8/S[10GL2-309173-20R]
MAU2
VIN
GND
VREF1
VOUT
VREF2
ENABLE
VCNTL
BOOT_SEL
VCC
MAC54
1u/4/X5R/6.3V/K
MAR40
1K/4/1
MA_VTT_REF
MAR41
1K/4/1
MAC10
1u/4/X5R/6.3V/K
MAC58
10U/8/X5R/6.3V/K
DDRVTT
(39) VTT_ADJ
MA_VTT_ADJ
MA_VTT_REF
0/4
MAR121
VCC3
3VDUAL
MAR187
8.2K/4
MAR188
8.2K/4/X
VTT_EN
MAQ9
2N7002/SOT23/25pF/5
SOT23
VCC1_05_PCH
MAR189
22K/4
VCC1_1_RV
MAR190
8.2K/4
MAQ121
SOT23
MMBT2222A/SOT23/600mA/40
MAR193
1K/4/1/X
MAC364
0.1u/4/X7R/16V/K
For power sequence require
MA_EN
MAQ118
2N7002/SOT23/25pF/5
(32,35) -PSON
MAR192
22K/4
MAQ120
MMBT2222A/SOT23/600mA/40
SOT23
(12,26,30,32) N_-SLP_S3
MAC59
0.1u/4/X7R/16V/K/X
MAC60
2.2u/6/X5R/6.3V/K
POWER ISSUE
GIGABYTE
Title
DDR_A& CPU_VTT POWER IR3570
Size
C
Document Number
GA-Z77X-D3H
Rev
1.02
Date:
Thursday, April 12, 2012
Sheet
28
of
41

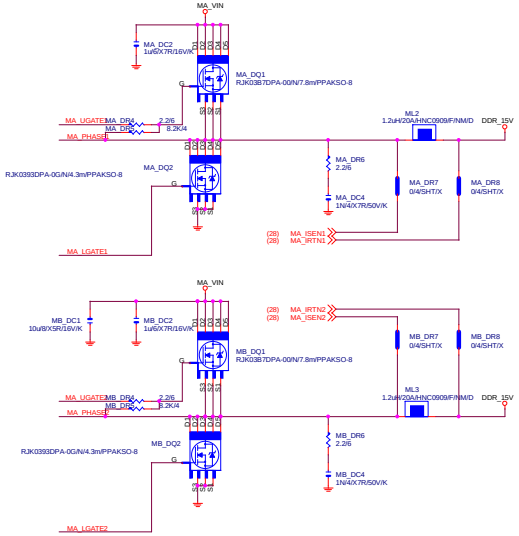
DDR_15V

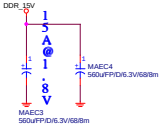


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	IR ATL	DUAL
1	1	IR ATL	Doubler
0	0	Tri-State	DUAL
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	IR ATL	Quad

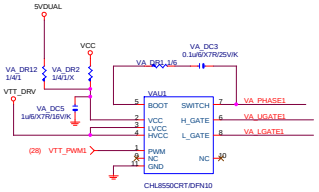
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU

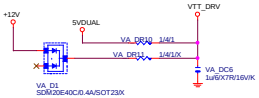


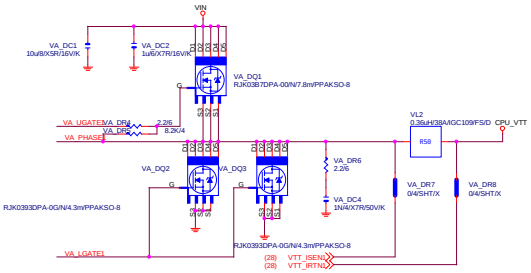


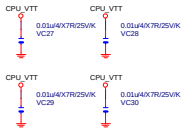


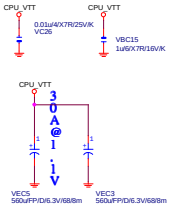
CPU_VTT



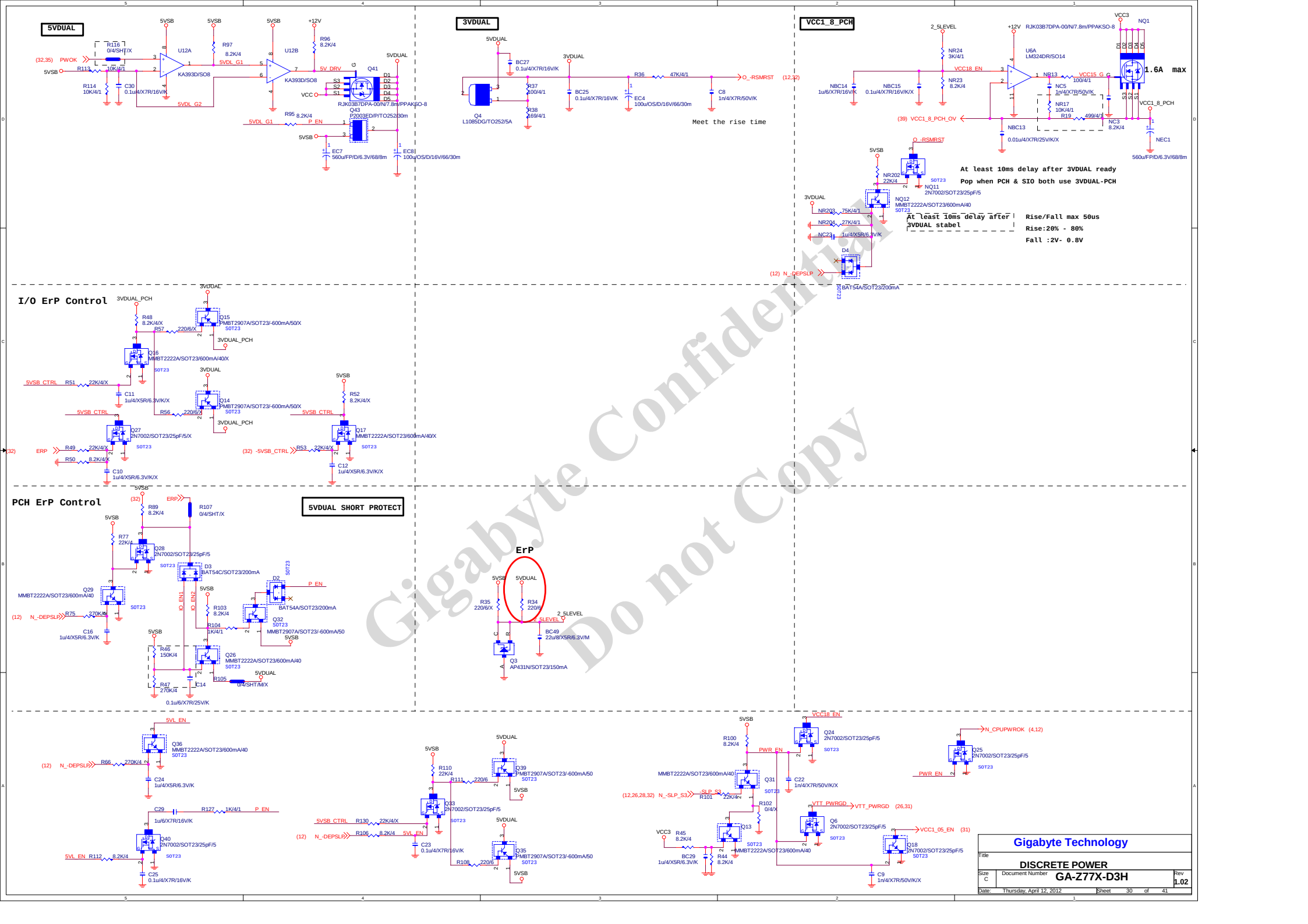




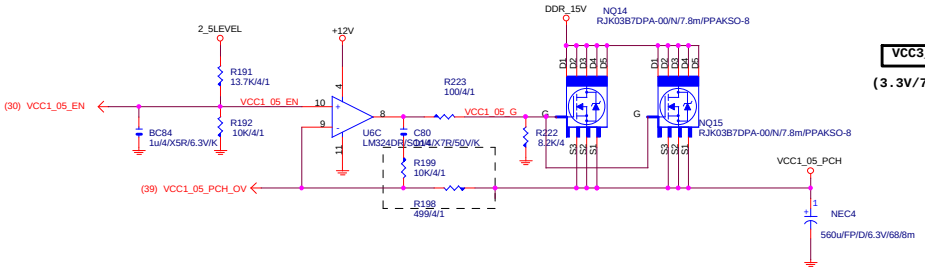




Gigabyte Technology			
Title: CPU CORE VR			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.02
Date: Thursday, April 12, 2012		Sheet 29 of 41	

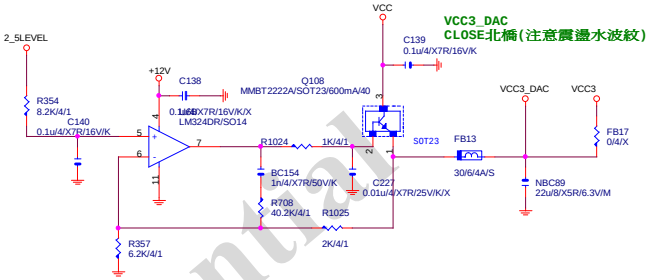


VCC1_05_PCH

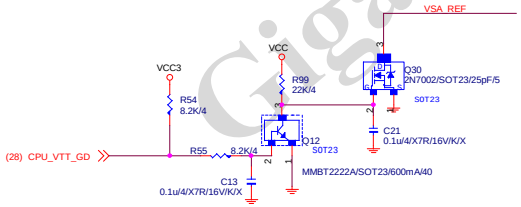


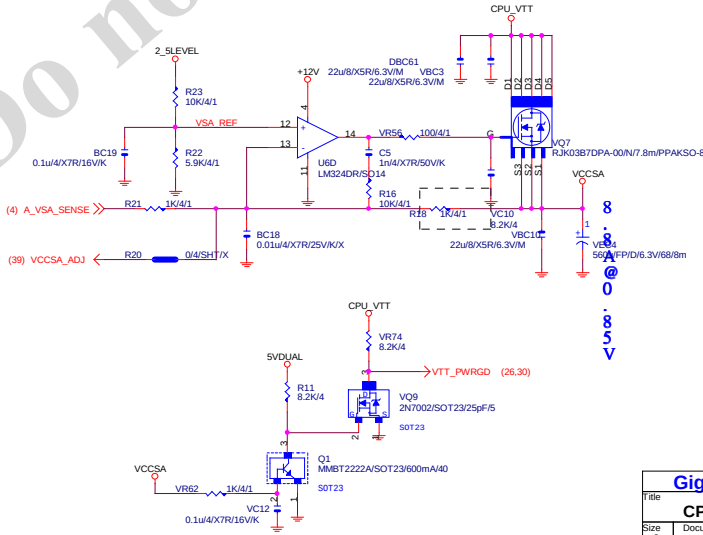
VCC3_DAC

(3.3V/70mA+360uA)

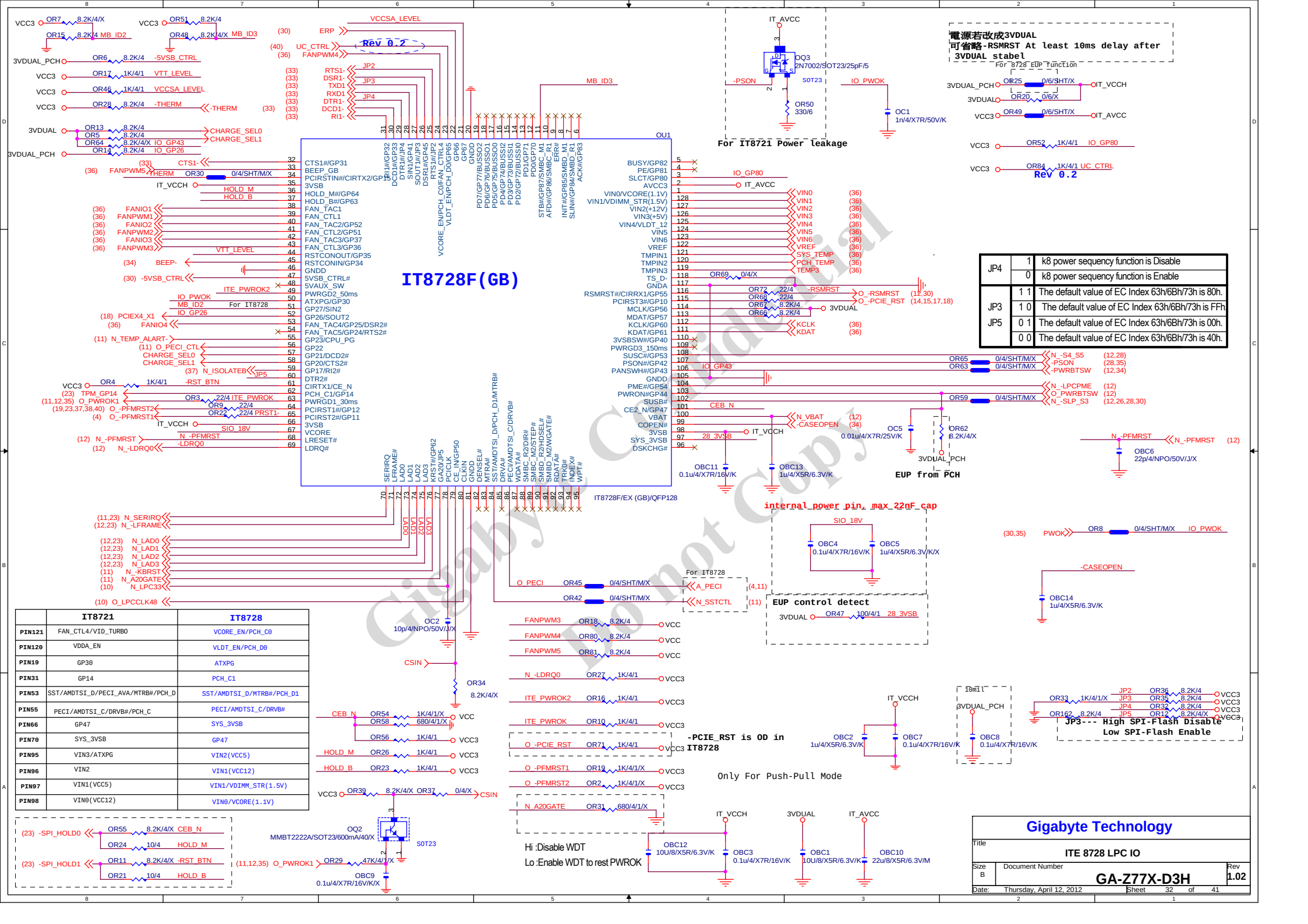


VCC_SA

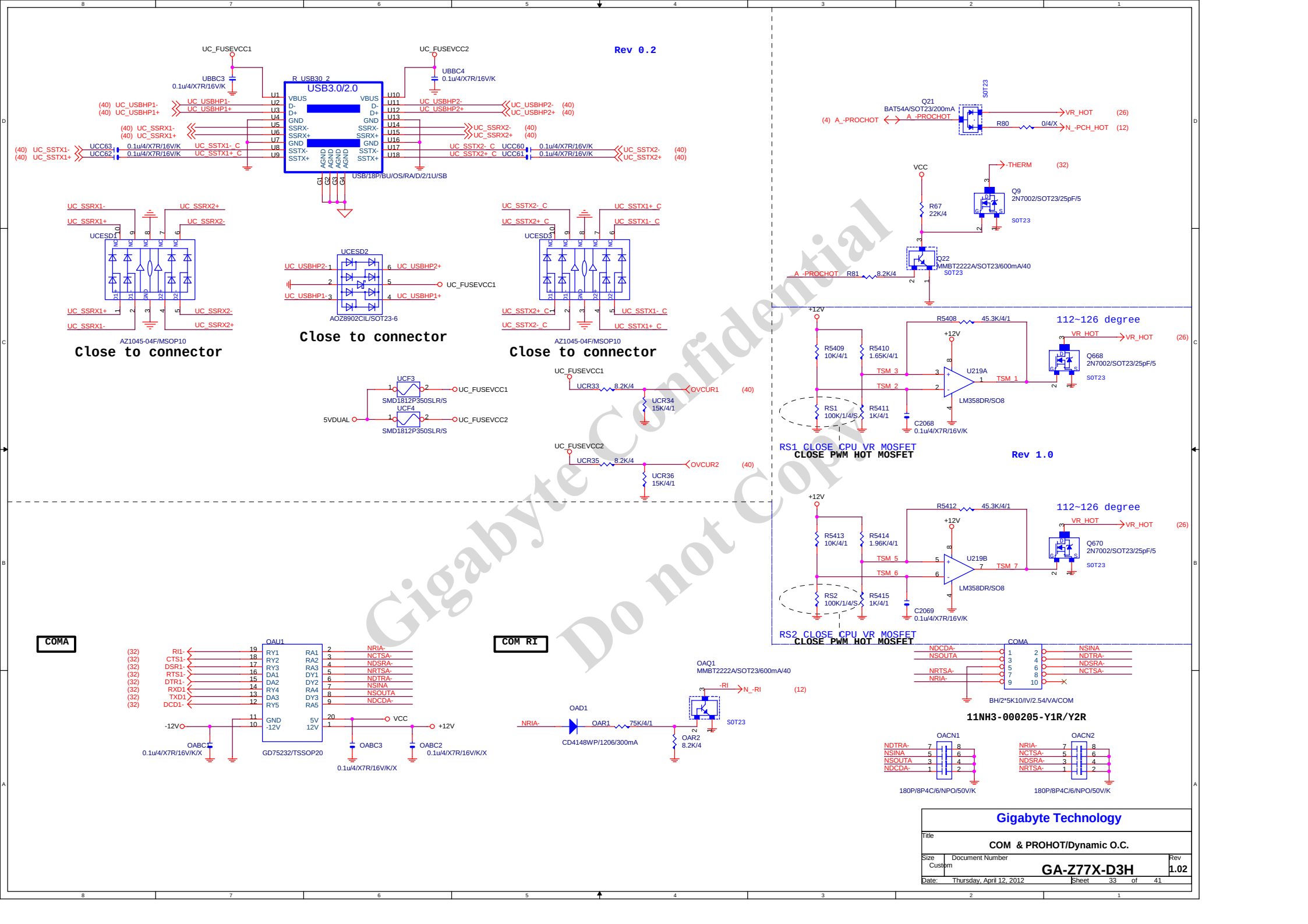


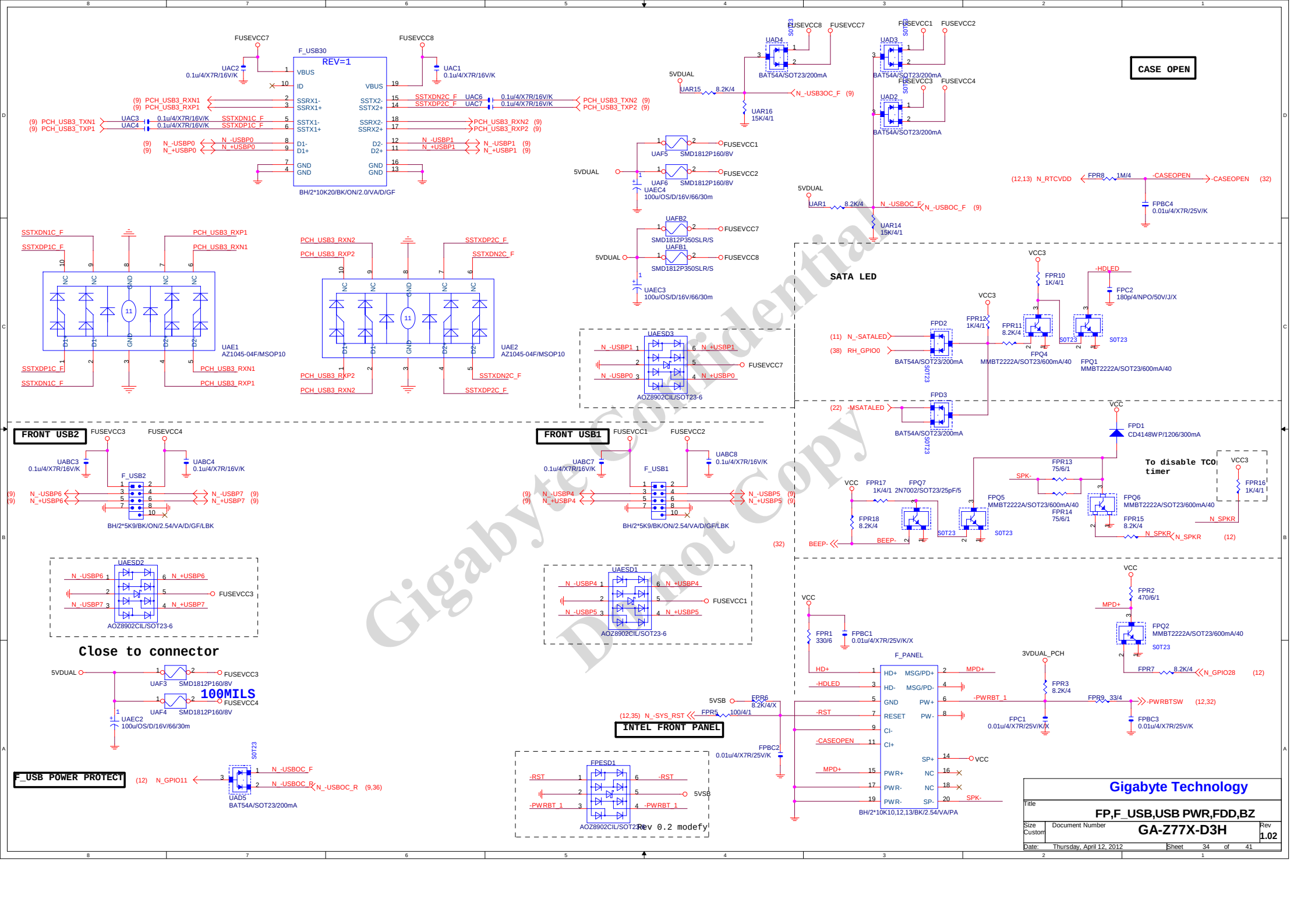


Gigabyte Technology		
Title: CPU VTT PWM_ISL6312		
Size: C	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 31 of 41	

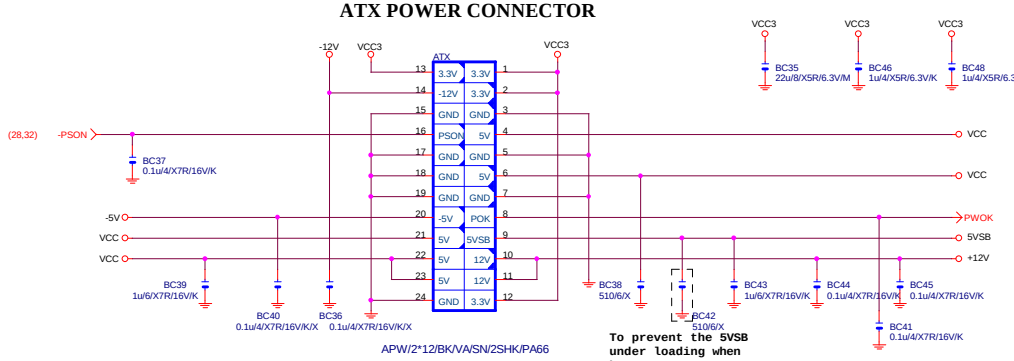


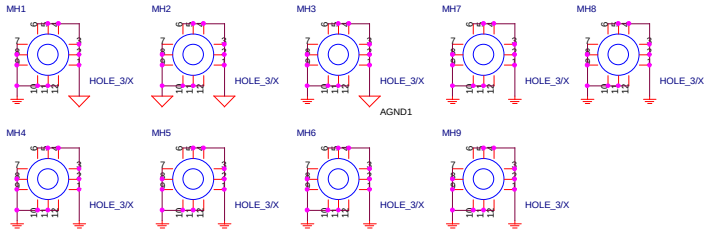
	IT8721	IT8728
PIN121	FAN_CTL4/VID_TURBO	VCORE_EN/PCH_C0
PIN120	VDDA_EN	VLDT_EN/PCH_D0
PIN19	GP30	ATXPG
PIN31	GP14	PCH_C1
PIN53	SST/AMDTSI_D/PECI_AVA/MTRB#/PCH_D	SST/AMDTSI_D/MTRB#/PCH_D1
PIN55	PECI/AMDTSI_C/DRVB#/PCH_C	PECI/AMDTSI_C/DRVB#
PIN66	GP47	SYS_3VSB
PIN70	SYS_3VSB	GP47
PIN95	VIN3/ATXPG	VIN2(VCC5)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

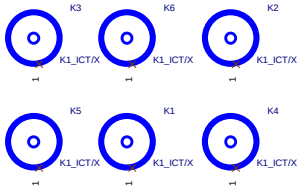


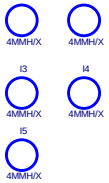


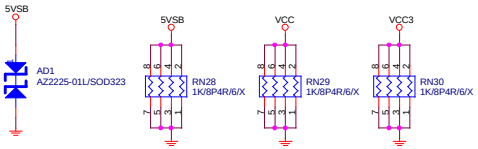
ATX POWER CONNECTOR







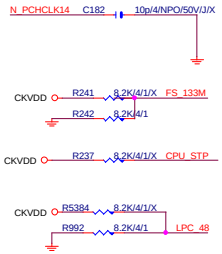


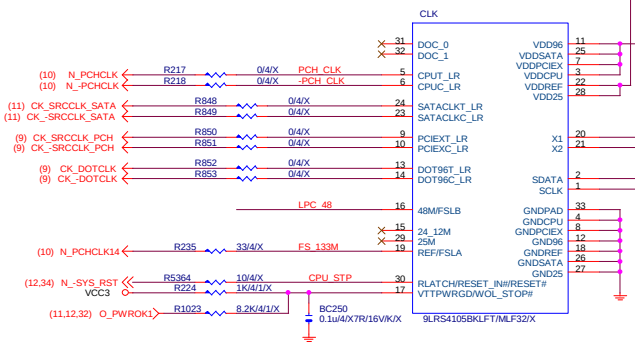


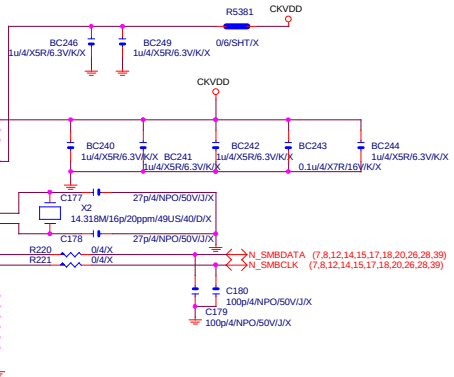
CLK GEN CK505

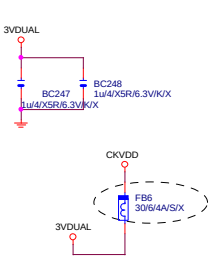
CPU Frequency Selection

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









Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.02
Date: Thursday, April 12, 2012	Sheet 35 of 41	

TEMP H/W MONITOR

(32) VREF
(32) SYS_TEMP
(32) PCH_TEMP
(32) TEMP3

OR73 10K/4/1
OR151 10K/4/1
OR152 10K/4/1
OC7 1u/4/X5R/6.3V/K
OC6 1u/4/X5R/6.3V/K
ORS1 10K/1/4/S
Close SIO
RS_PCH 10K/1/4/S
Close DDR
OC120 1u/4/X5R/6.3V/K/X

VOLTAGE-- H/W MONITOR

* IT8728 BX
* * IT8728 CX

VCORE
DDR_15V
VCC VCC3
+12V
CPU_VAXG
VCC

OR75 8.2K/4
OR74 8.2K/4
OR60 7.15K/4/1/X
OR57 6.49K/4/1
OR79 75K/4/1
OR76 8.2K/4
OR78 15K/4/1

(32) VIN5
(32) VIN6
(32) VIN1
(32) VIN2
(32) VIN4

2V
(32) VIN3
2V

OC9 1u/4/X5R/6.3V/K
OC8 1u/4/X5R/6.3V/K
OC4 1u/4/X5R/6.3V/K
OR61 10K/4/1
OC12 1u/4/X5R/6.3V/K
OR70 15K/4/1
OC10 1u/4/X5R/6.3V/K
OC11 1u/4/X5R/6.3V/K
OR77 10K/4/1

(32) VIN0
OR53 8.2K/4
CPU_VTT
OC3 1u/4/X5R/6.3V/K

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

KB/USB

(32) KDAT
(32) KCLK
KDAT R2 82/4 KBDATA
KCLK R5 82/4 KBCLK

FUSEVCC_R9
FUSEVCC_R10
BC5 180p/4/NPO/50V/J
BC1 180p/4/NPO/50V/J
BC3 0.1u/4/X7R/16V/K
BC2 0.1u/4/X7R/16V/K

KB_MS_USB
U5 U6 U7 U8
U1 U2 U3 U4
(9) N_-USBP12
(9) N_+USBP12
N_-USBP13 (9)
N_+USBP13 (9)

KBDATA
KBCLK
AGND1
FUSEVCC_R10
BC4 0.1u/4/X7R/16V/K
G1 G2 G3 G4
KB/USB/A/PC99(DUAL)/GF/2/RA/D

R4 8.2K/4 KCLK
R3 8.2K/4 KDAT

ESD1
KBCLK
KBDATA
FUSEVCC_R10
AOZ8902CIL/SOT23-6/X

ESD2
N_+USBP12
N_+USBP13
N_-USBP12
N_-USBP13
FUSEVCC_R9
AOZ8902CIL/SOT23-6

CPU SMART FAN

VCC
Anti Spike
OQ1 BAV99/SOT23/300mA/X
OR1 100/4/1

VCC3 VCC
CPUFAN_VCC
R76 1K/4/1/X
R43 22K/4
R74 1K/4/1
R85 22K/4
BC32 1u/4/X5R/6.3V/K
R92 8.2K/4
U11A LM358DR/SO8
(32) FANPWM1

+12V
BC33 0.1u/4/X7R/16V/K
R41 8.2K/4
(32) FANPWM3
Q5 P2003ED/P/TO252/30m
EC2 100u/OS/D/16V/66/30m
R42 0/4/X
R14 3.3K/4/1
R15 15K/4/1
R17 6.2K/4/1
C4 0.047u/4/X7R/16V/K
FANIO1 (32)
CPU_FAN FAN/1*4/BK/A3/PA66

SYS FAN

OR82 100/4/1
(32) FANPWM4
SHORT PROTECT R0402-2
C2066 1u/6/X7R/16V/K
R117 0/4
R118 3.3K/4/1
R119
R120 15K/4/1
C26 0.047u/4/X7R/16V/K
FANIO3
SYS_FAN2 FAN/1*4/BK/A3/PA66

Rev 0.2==>Rev 1.01

OR83 100/4/1
(32) FANPWM5
SHORT PROTECT R0402-2
C2067 1u/6/X7R/16V/K
R9 0/4
R8 3.3K/4/1
R7
R6 15K/4/1
C2 6.2K/4/1 0.047u/4/X7R/16V/K
FANIO4 (32)
SYS_FAN3 FAN/1*4/BK/A3/PA66

Rev 0.2==>Rev 1.01

Linear SYS_FAN

R1 0/4/SHT/M/X
AGND1

VCC VCC3
R73 1K/4/1/X
R72 1K/4/1
(32) FANPWM2
R71 22K/4
BC31 1u/4/X5R/6.3V/K
R86 8.2K/4
R88 22K/4
U11B LM358DR/SO8
R128 8.2K/4
Q42 P2003ED/P/TO252/30m
EC5 100u/OS/D/16V/66/30m

R125 0/4/X
R124 8.2K/4
R123 3.3K/4/1
R122 15K/4/1
R121 6.2K/4/1
C28 0.047u/4/X7R/16V/K
FANIO2 (32)
SYS_FAN1 FAN/1*4/BK/A3/PA66

Rev 0.2==>Rev 1.01

5VDUAL
F1 SMD1812P160/8V
F2 SMD1812P160/8V
FUSEVCC_R9
FUSEVCC_R10
EC1 100u/OS/D/16V/66/30m

5VDUAL
UBR7 8.2K/4
N_-USBOC_R
N_-USBOC_R (9,34)
UBR9 15K/4/1
SOT23
UBD2 BAT54A/SOT23/200mA

Gigabyte Technology	
Title	HWM,KB/MS, FAN CTRL
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date: Thursday, April 12, 2012	Sheet 36 of 41

LAN:AR8151/AR8161

離IC近越好

LAC1 0.1u/4/X7R/16V/K
LAC2 0.1u/4/X7R/16V/K

(10) LA_SRCCLK_LAN
(10) LA_SRCCLK_LAN

(9) LA_ML_OP
(9) LA_ML_ON

LA_ML_OP_C
LA_ML_ON_C

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LABC5 0.1u/4/X7R/16V/K
LABC4 1u/4/X5R/6.3V/K
LABC3 0.1u/4/X7R/16V/K
LABC6 0.1u/4/X7R/16V/K
AR8161-->N/A (LABC6)

LA_AVDDVCO
LABC7 0.1u/4/X7R/16V/K/X
LABC8 4.7u/6/X5R/6.3V/K/X
AR8161-->(0)

3VDUAL
LABC9 10u/8/X5R/6.3V/K
LABC10 1u/4/X5R/6.3V/K
LABC11 0.1u/4/X7R/16V/K

LA_LX
LA_LED_LINK100
LA_LED_ACT_TXRX
LA_DVDDL
LA_AVDDVCO
LA_AVDDL

LAU1

Rev 1.0A

3VDUAL
LAC33 47p/4/NPO/50V/J
LAR6 8.2K/4

LA_VDD33
(19,23,32,38,40) O_-PFMRST2
(12,14,15,17,18,20,40) N_PCIE_WAKE

AR8161-->N/A (LABC12)

LA_-CLKREQ
LABC12 1u/4/X5R/6.3V/K
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH

LABC15 1u/4/X5R/6.3V/K
LABC16 0.1u/4/X7R/16V/K
LABC18 1u/4/X5R/6.3V/K
LABC19 0.1u/4/X7R/16V/K
LA_RBIAS
LAR10 2.37K/4/1

EGND
VDD3V
PERST#
WAKE#
CLKREQ#
VDDCT/ISOLAT
AVDDL_REG
XTLO
XTLI
AVDDH_REG
RBIAS

Atheros
AR8151/AR8161
AR8151-BL1A-R/S

TX_P
TX_N
NC
TESTMODE
SMDATA
SMCLK
DVDDL/PPS
LED2
AVDDH
TRXN3

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-

LA_ ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LA_ML_IP_C
LA_ML_IN_C
LAC12 0.1u/4/X7R/16V/K
LAC13 0.1u/4/X7R/16V/K
LA_ML_IP
LA_ML_IN
(9)
(9)

LAR9 0/4
LABC14 0.1u/4/X7R/16V/K
LA_DVDDL
AR8161-->N/A (LAR9,LAC18)

LABC17 0.1u/4/X7R/16V/K

LA_MDI0+
LA_MDI0-
LA_AVDDL
LA_MDI1+
LA_MDI1-
LA_AVDD33
LA_MDI2+
LA_MDI2-
LA_AVDDL
LA_MDI3+
LA_MDI3-

LAX1 25M/20p/30ppm/49US/20/D
LA_XTALI
LA_XTALO
LAC31 27p/4/NPO/50V/J
LAC32 27p/4/NPO/50V/J

LABC20 0.1u/4/X7R/16V/K
AR8161-->N/A (LABC20)

LABC21 0.1u/4/X7R/16V/K

LAR19 0/4/X
LAR20 0/4
3VDUAL
LA_AVDDH
AR8151:LA_AVDDH(LAR20)
AR8161:3VDUAL(LAR19)

LABC22 1u/4/X5R/6.3V/K

SCH BOM OPT:(二擇一使用)
-->(LAC30):M/B有CLK GEN 25M
-->(LAX1,LAC31,LAC32):M/B無CLK GEN 25M

LAN POWER

NEW DESIGN ONLY FOR INTERNAL SWR
AR8151:LAR3(O),LAR5(X)
AR8161:LAR5(O),LAR3/LAR4(X)

LAL1 4.7uH/0.8A/3225/S/[10LC4-5A470B-01R]
LA_LX_OUT
LA_LX
CLOSE
LA_LX 200mil
LABC1 10u/8/X5R/6.3V/K
LABC2 0.1u/4/X7R/16V/K

LA_VDDCT
LAR3 0/4
AR8161-->N/A (LAR3,LAR4)
LA_AVDD_CEN
LAR4 0/4

AR8151 POWER

LA_DVDDL
LA_AVDDL
LA_AVDDVCO
LAR5 0/6/X
AR8161-->(0)
LAFB2 0/6/X
AR8161-->BEAD
AR8151-->N/A
LAFB3 0/6
AR8161-->BEAD
AR8151-->0/6

AR8161 POWER

AR8161-->(0)
LA_AVDDH
LA_LED_ACT_TXRX
LAR7 8.2K/4/X
LA_LED_LINK100
LAR8 8.2K/4/X

AR8161-->(0)
VCC3
LAR1 30K/4/X
LAR2 0/4/X
LA_VDDCT
N_ISOLATEB (32)

Power domain chart

	AR8151	AR8161
AVDD33	N/A	3.3V
VDD33	3.3V	3.3V
AVDDH	2.7V	2.7V
AVDDL/DVDDL	1.1V	1.1V
VDDCT	1.7V	

MDI : AR8161-->N/A

LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-

LAR11 49.9/4/1
LAR12 49.9/4/1
LAR13 49.9/4/1
LAR14 49.9/4/1
LAR15 49.9/4/1
LAR16 49.9/4/1
LAR17 49.9/4/1
LAR18 49.9/4/1

LA_MDI_RC0
LA_MDI_RC1
LA_MDI_RC2
LA_MDI_RC3

LAC26 0.1u/4/X7R/16V/K
LAC27 0.1u/4/X7R/16V/K
LAC28 0.1u/4/X7R/16V/K
LAC29 0.1u/4/X7R/16V/K

CLOSE LAN CHIP

USB_LAN CONNECTOR

RMA ESD PROTECT

UCESD6
UC_USBHP3-
UC_USBHP3+
UC_USBHP4-
UC_USBHP4+
UC_FUSEVCC3
AOZ8902CIL/SOT23-6

LAESD1
LA_LED_LINK100
LA_LED_ACT_TXRX
LA_LED_LINK1000
LAN_3VDUAL_LED
LA_LED_D2
AOZ8902CIL/SOT23-6

UC_FUSEVCC3
UCR42 8.2K/4
OVCUR3 (40)
UCR43 15K/4/1

UC_FUSEVCC4
UCR44 8.2K/4
OVCUR4 (40)
UCR45 15K/4/1

USB X3 POWER

5VDUAL
UEC4 100u/OS/D/16V/66/30m
UCF5
UCF6
SMD1812P350SLR/S
100MILS
UC_FUSEVCC3
UC_FUSEVCC4

Close to connector

Rev 0.2

EMI SHORT PAD

PS:視EMI需求

LAR24
0/6/SHT/M/X

LA_MDI-->100歐姆:[20/4/8/4/20]

USB30_LAN
LABC23 0.1u/4/X7R/16V/K
LA_AVDD_CEN
LA_MDI0+
LA_MDI0-
LA_MDI1+
LA_MDI1-
LA_MDI2+
LA_MDI2-
LA_MDI3+
LA_MDI3-
LABC25 GND_L10 0/4/SHT/M/X

D1 LA_LED_ACT_TXRX
D2 LA_LED_D2
D3 LA_LED_LINK100 LAR22 150/6
D4 LA_LED_LINK1000 LAR23 150/6
LAR21 150/6 LAN_3VDUAL_LED

3VDUAL
LAFB1 0/6/SHT/M/X
LABC24 0.1u/4/Y5V/16V/Z/X

USB3.0
USB3.0
USB3+LAN/1G/GO,Y/OS/RA/D/G30

UC_FUSEVCC3
UCC82 0.1u/4/X7R/16V/K
UC_FUSEVCC4
UCC83 0.1u/4/X7R/16V/K

(40) UC_USBHP3-
(40) UC_USBHP3+
(40) UC_SSRX3-
(40) UC_SSRX3+
(40) UC_SSTX3-
(40) UC_SSTX3+
UCC69 0.1u/4/X7R/16V/K
UCC71 0.1u/4/X7R/16V/K
UC_SSTX3-_C
UC_SSTX3+_C

UC_USBHP4- (40)
UC_USBHP4+ (40)
UC_SSRX4- (40)
UC_SSRX4+ (40)
UC_SSTX4- (40)
UC_SSTX4+ (40)
UC_SSTX4-_C
UC_SSTX4+_C
UCC70 0.1u/4/X7R/16V/K
UCC72 0.1u/4/X7R/16V/K

UC_SSTX3+_C
UC_SSTX3-_C
UC_SSRX3-
UC_SSRX3+
UCESD4
UC_SSTX3-_C
UC_SSTX3+_C
UC_SSRX3+
UC_SSRX3-
AZ1045-04F/MSOP10

Close to connector

UC_SSTX4+_C
UC_SSTX4-_C
UC_SSRX4-
UC_SSRX4+
UCESD7
UC_SSTX4-_C
UC_SSTX4+_C
UC_SSRX4+
UC_SSRX4-
AZ1045-04F/MSOP10

Close to connector

Gigabyte Technology	
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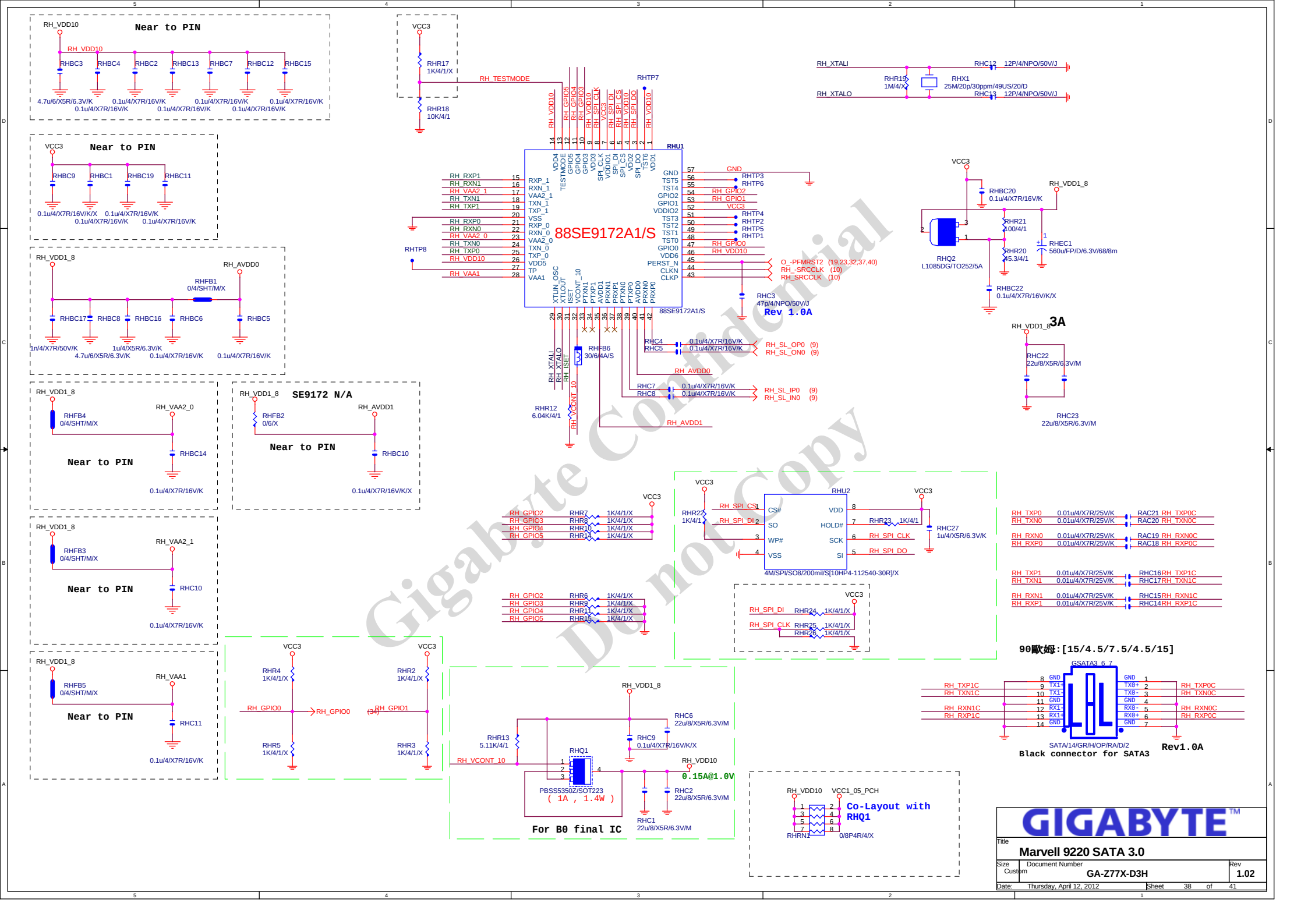
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.02
Date:	Thursday, April 12, 2012
Sheet	37 of 41


Near to PIN
RH_VDD10
RHBC3
RHBC4
RHBC2
RHBC13
RHBC7
RHBC12
RHBC15
4.7u/6/X5R/6.3V/K
0.1u/4/X7R/16V/K
VCC3
RHR17
1K/4/1/X
RHR18
10K/4/1
RH_TESTMODE
RHTP7
RHU1
88SE9172A1/S
Rev 1.0A
RH_RXP1
RH_RXN1
RH_VAA2_1
RH_TXN1
RH_TXP1
RH_RXP0
RH_RXN0
RH_VAA2_0
RH_TXN0
RH_TXP0
RH_VDD10
RH_VAA1
RHTP8
GND
RHTP3
RHTP6
RH_GPIO2
RH_GPIO1
VCC3
RHTP4
RHTP2
RHTP5
RHTP1
RH_GPIO0
RHC3
47p/4/NPO/50V/J
O_-PFMRST2 (19,23,32,37,40)
RH_-SRCCLK (10)
RH_SRCCLK (10)
RH_XTALI
RH_XTALO
RHR19
1M/4/X
RHX1
25M/20p/30ppm/49US/20/D
RHC12
12P/4/NPO/50V/J
RHC13
12P/4/NPO/50V/J
RHBC9
RHBC1
RHBC19
RHBC11
0.1u/4/X7R/16V/K/X
RH_VDD1_8
RH_AVDD0
RHFB1
0/4/SHT/M/X
RHBC17
RHBC8
RHBC16
RHBC6
RHBC5
1n/4/X7R/50V/K
1u/4/X5R/6.3V/K
4.7u/6/X5R/6.3V/K
RHBC20
0.1u/4/X7R/16V/K
RHR21
100/4/1
RHR20
45.3/4/1
RHEC1
560u/FP/D/6.3V/68/8m
RHQ2
L1085DG/TO252/5A
RHBC22
0.1u/4/X7R/16V/K/X
3A
RHC22
22u/8/X5R/6.3V/M
RHC23
22u/8/X5R/6.3V/M
RHFB6
30/6/4A/S
RHC4
RHC5
RH_SL_OP0 (9)
RH_SL_ON0 (9)
RHC7
RHC8
RH_SL_IP0 (9)
RH_SL_IN0 (9)
RHR12
6.04K/4/1
RH_VCONT_10
RHFB4
0/4/SHT/M/X
RH_VAA2_0
RHBC14
0.1u/4/X7R/16V/K
SE9172 N/A
RHFB2
0/6/X
RH_AVDD1
RHBC10
0.1u/4/X7R/16V/K/X
RHFB3
0/4/SHT/M/X
RH_VAA2_1
RHC10
RHFB5
0/4/SHT/M/X
RH_VAA1
RHC11
RHU2
4M/SPI/SO8/200mil/S[10HP4-112540-30R]/X
RH_SPI_CS1
RH_SPI_DI
RH_SPI_CLK
RH_SPI_DO
RHR22
1K/4/1
RHR23
1K/4/1
RHC27
1u/4/X5R/6.3V/K
RHR7
RHR8
RHR10
RHR14
RHR6
RHR9
RHR11
RHR15
RHR24
RHR25
RHR26
RH_TXP0
RH_TXN0
RH_RXN0
RH_RXP0
RH_TXP1
RH_TXN1
RH_RXN1
RH_RXP1
RAC21 RH_TXP0C
RAC20 RH_TXN0C
RAC19 RH_RXN0C
RAC18 RH_RXP0C
RHC16 RH_TXP1C
RHC17 RH_TXN1C
RHC15 RH_RXN1C
RHC14 RH_RXP1C
90歐姆:[15/4.5/7.5/4.5/15]
GSATA3_6_7
SATA/14/GR/H/OP/RA/D/2
Black connector for SATA3
Rev1.0A
RHR4
RHR2
RHR5
RHR3
RH_GPIO0
RH_GPIO1
(3d)
RHR13
5.11K/4/1
RHQ1
PBSS5350Z/SOT223
(1A , 1.4W)
RHC6
22u/8/X5R/6.3V/M
RHC9
0.1u/4/X7R/16V/K/X
RHC2
22u/8/X5R/6.3V/M
RHC1
22u/8/X5R/6.3V/M
0.15A@1.0V
For B0 final IC
RH_VCC1_05_PCH
RHRN1
0/8P4R/4/X
Co-Layout with RHQ1
GIGABYTE
Title
Marvell 9220 SATA 3.0
Size
Custom
Document Number
GA-Z77X-D3H
Rev
1.02
Date:
Thursday, April 12, 2012
Sheet
38
of
41
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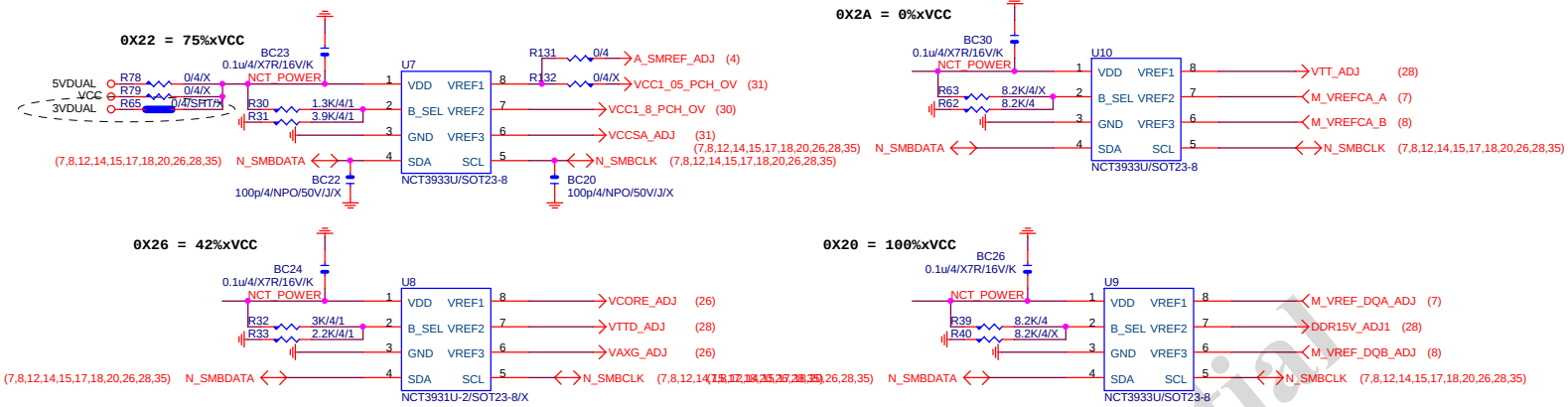

GIGABYTE™

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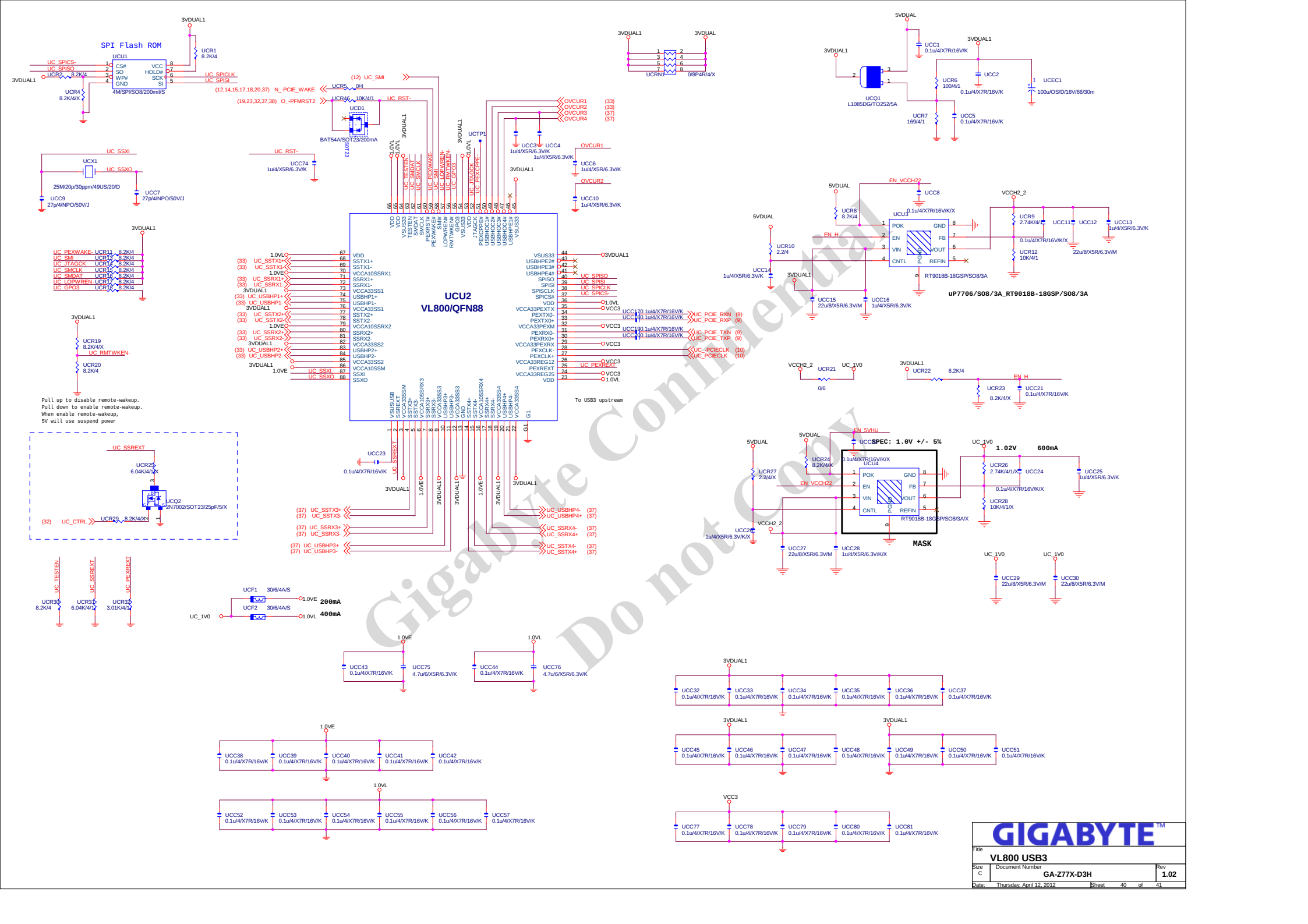
Date: Thursday, April 12, 2012	Sheet 39 of 41	



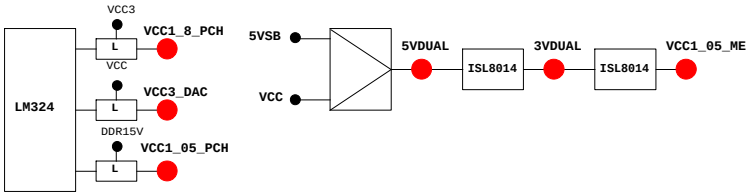
PCH GPIO LIST TABLE

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

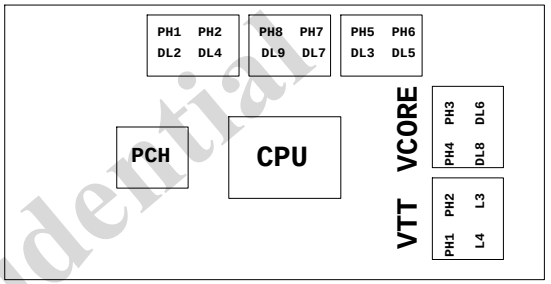
Super I/O ITE8720 GPIO Table

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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Size: C | Document Number: GA-Z77X-D3H | Rev: 1.02
Date: Thursday, April 12, 2012 | Sheet 41 of 41