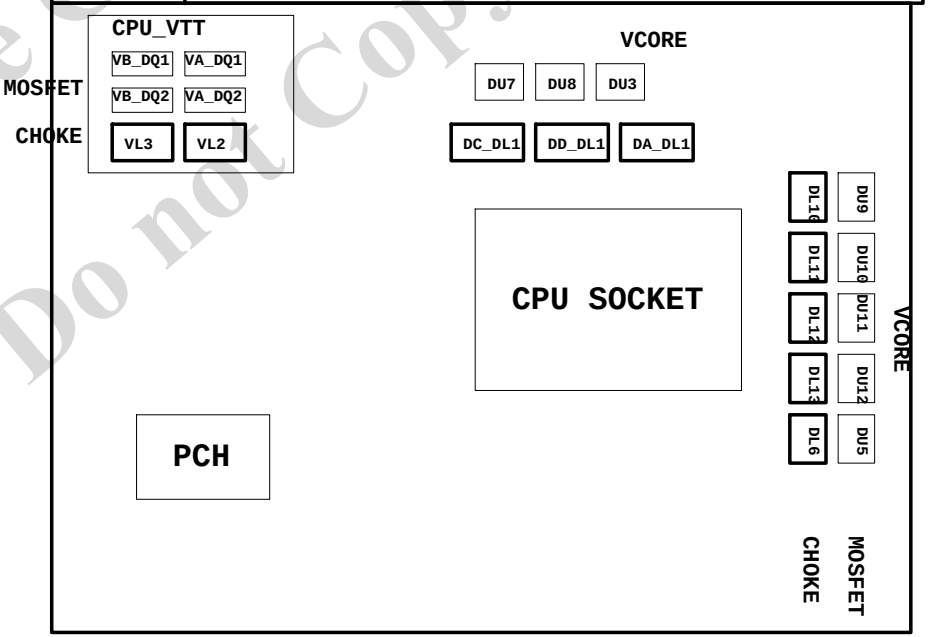
Model Name: GA-Z77X-D3H Rev 1.1

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: 1.1

Date: Tuesday, July 10, 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	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	9MZ77XD3H-00-02
2012/01/13	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	9MZ77XD3H-00-10A
2012/01/13	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	9MZ77XD3H-00-10B
2012/01/31	1.R5410,R5414,1.65K change to 3.65K	9MZ77XD3H-00-10C
2012/02/03	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	9MZ77XD3H-00-10D
2012/02/07	Modify 1.DAR6,5.1K/4/1 change to 5.49K/4/1	9MZ77XD3H-00-10E
2012/03/13	1.Add MR34,MR35==>0 ohm 2.Remove UCU1 VIA USB30_EEPROM 3.Delete OR48,Add OR51 for MB_ID3	9MZ77XD3H-00-10K
2012/03/22	1.Add UCU1 EEPROM	9MZ77XD3H-00-10L
2012/03/23	1.PCB change to 1.03	9MZ77XD3H-00-10Q

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
2012/03/21	1.縮短DDR slot 間距 for O.C. 2.Add DBC1 for EMI ESD improve	Rev 1.03
2012/05/28	1.版本改爲 Rev 1.1 2.FB2,FB3,FB4, FB0603-RH change to FB0402-RH 3.mSATA MINI_PCIE52P-A-1 change to MINI_PCIE52P-B-1-COLAY 4.ATX_12V change to ATX_12V_2X4 5.CFB1,FB6,NFB3,NFB4,NFB5,NFB6,LAFB2,LAFB3,RHFB2,change to 0402 6.Add R854,BC36	

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Title: BOM & PCB MODIFY HISTORY

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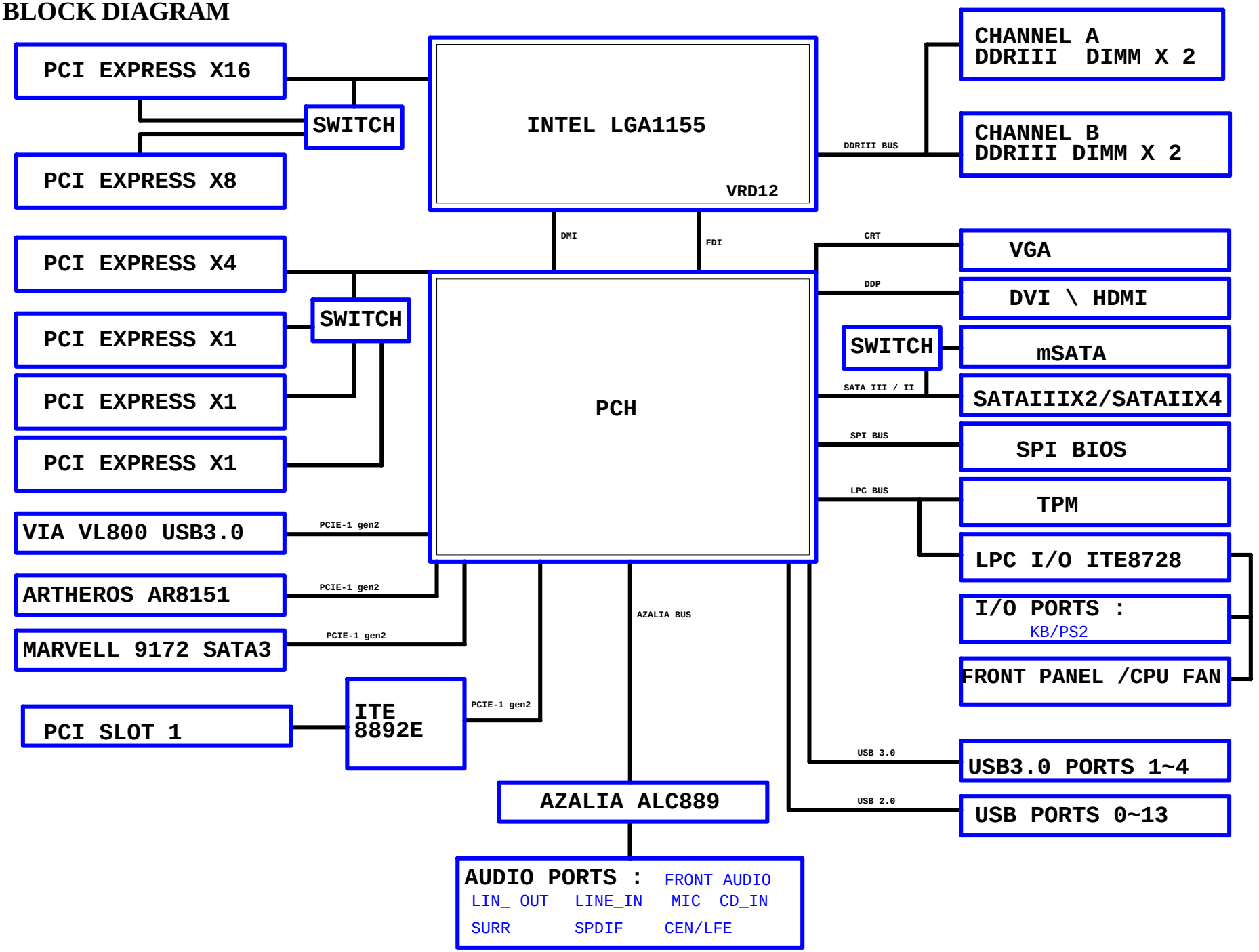
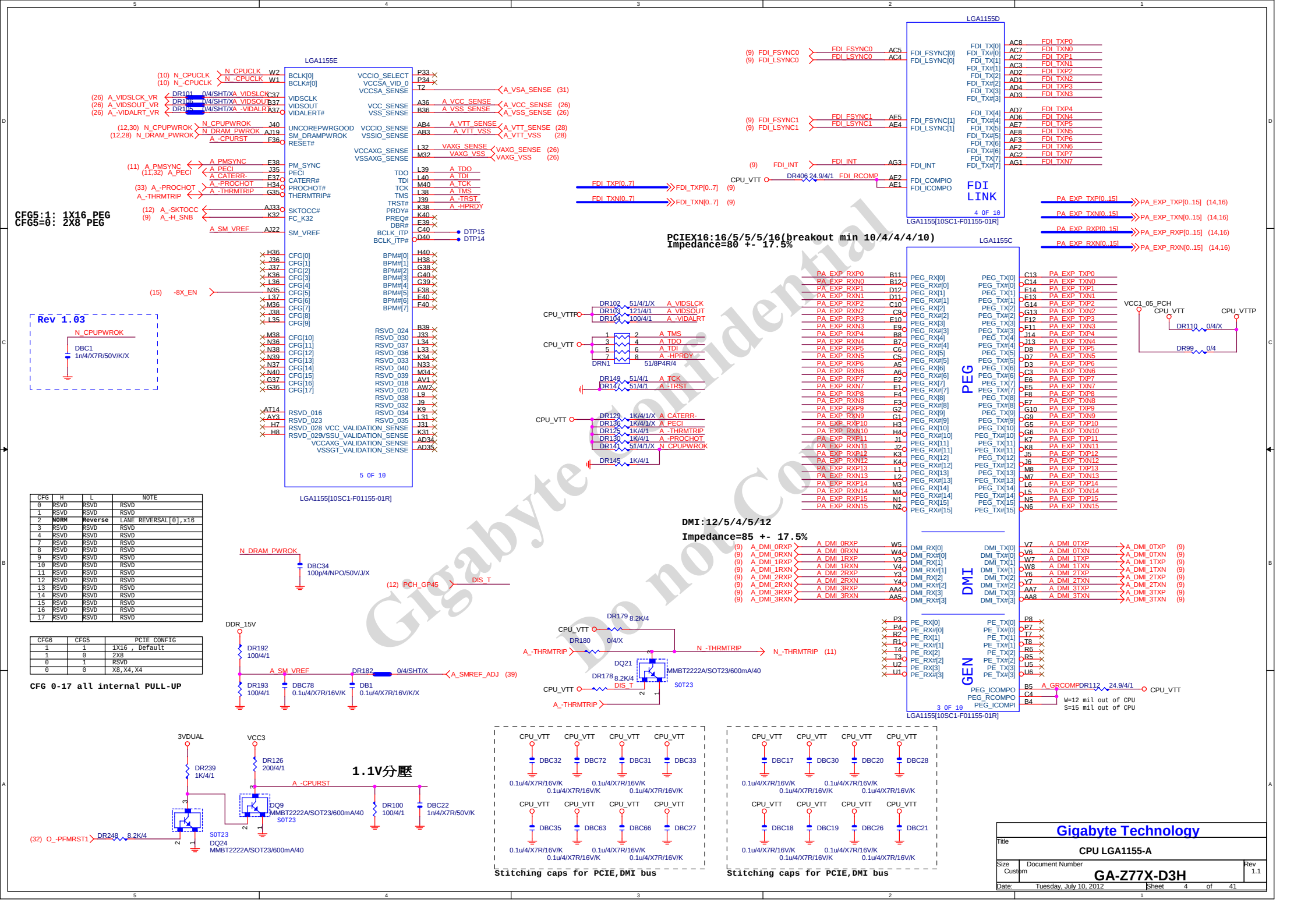
BLOCK DIAGRAM



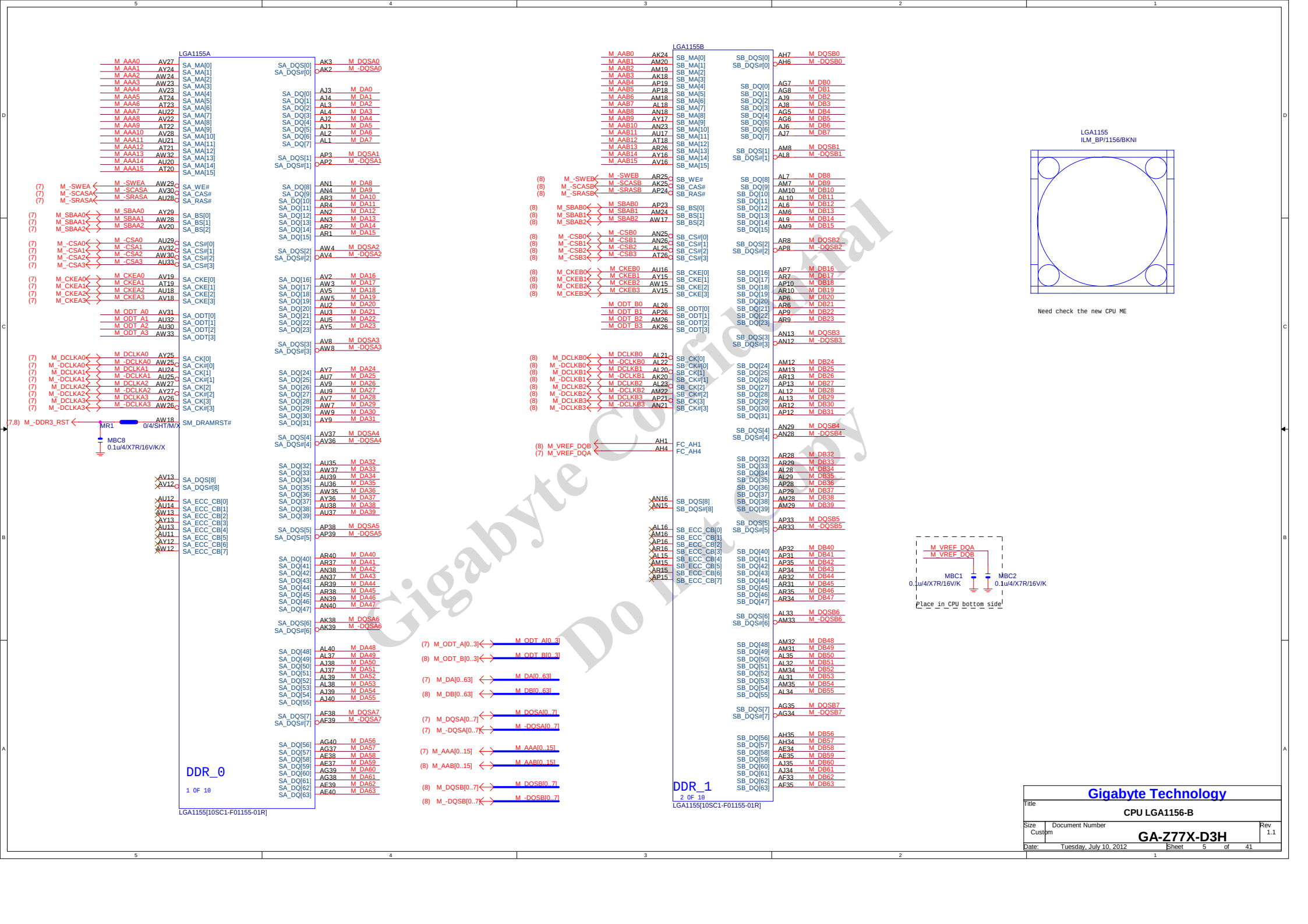
Gigabyte Technology

Title	BLOCK DIAGRAM	
Size: C	Document Number: GA-Z77X-D3H	Rev: 1.1
Date: Tuesday, July 10, 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


LGA1155A
DDR_0
1 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155B
DDR_1
2 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155
ILM_BP/1156/BKNI
Need check the new CPU ME
MBC8
0.1u/4/X7R/16V/K/X
MBC1
0.1u/4/X7R/16V/K
MBC2
0.1u/4/X7R/16V/K
Place in CPU bottom side
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CPU LGA1156-B
GA-Z77X-D3H
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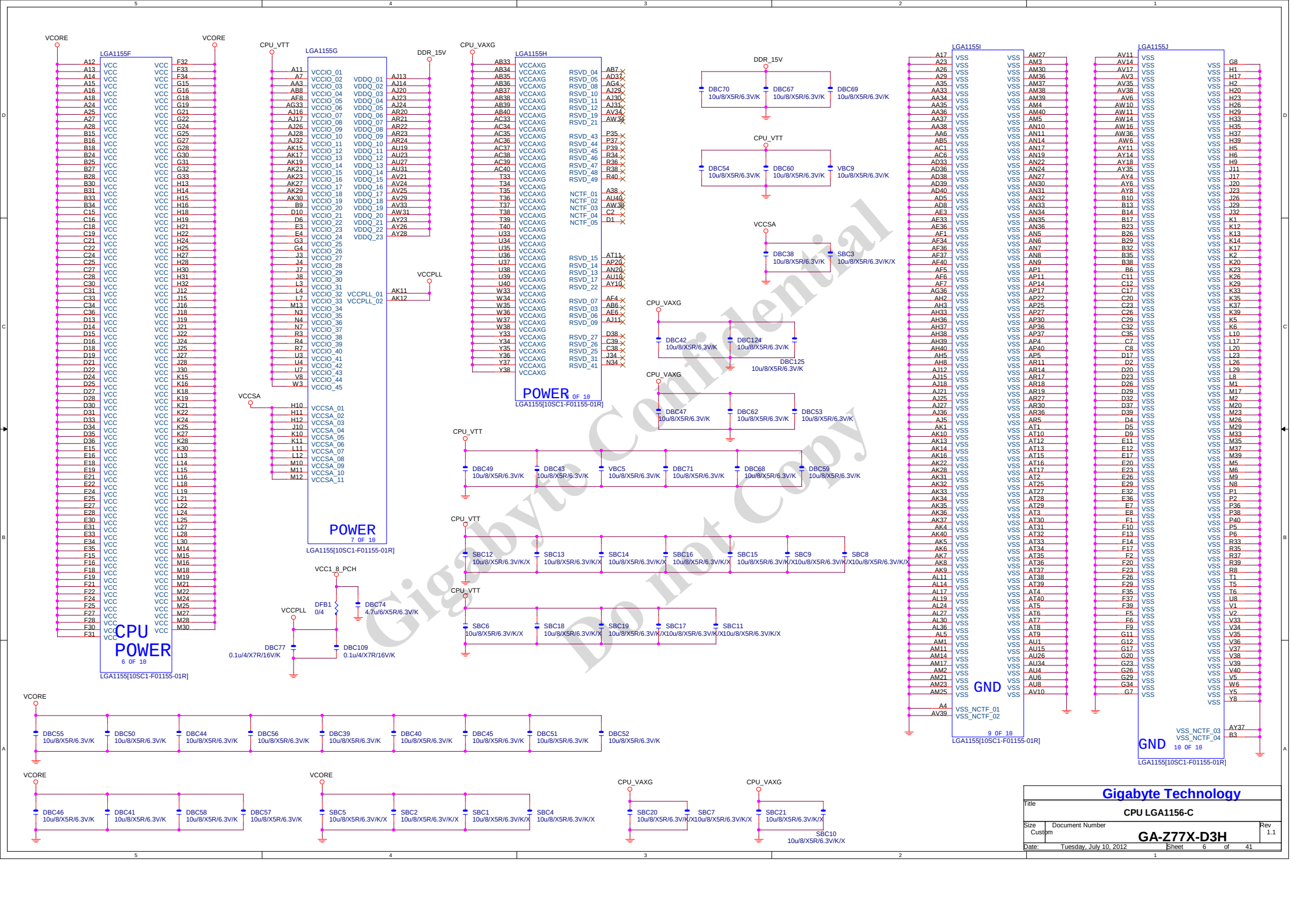
LGA1155F
LGA1155[10SC1-F01155-01R]
CPU POWER
6 OF 10
LGA1155G
LGA1155[10SC1-F01155-01R]
POWER
7 OF 10
LGA1155H
LGA1155[10SC1-F01155-01R]
POWER
8 OF 10
LGA1155I
LGA1155[10SC1-F01155-01R]
GND
9 OF 10
LGA1155J
LGA1155[10SC1-F01155-01R]
GND
10 OF 10
VCORE
CPU_VTT
DDR_15V
CPU_VAXG
VCCPLL
VCCSA
VCC1_8_PCH
DBC70 10u/8/X5R/6.3V/K
DBC67 10u/8/X5R/6.3V/K
DBC69 10u/8/X5R/6.3V/K
DBC54 10u/8/X5R/6.3V/K
DBC60 10u/8/X5R/6.3V/K
VBC9 10u/8/X5R/6.3V/K
DBC38 10u/8/X5R/6.3V/K
SBC3 10u/8/X5R/6.3V/K/X
DBC42 10u/8/X5R/6.3V/K
DBC124 10u/8/X5R/6.3V/K
DBC125 10u/8/X5R/6.3V/K
DBC47 10u/8/X5R/6.3V/K
DBC62 10u/8/X5R/6.3V/K
DBC53 10u/8/X5R/6.3V/K
DBC49 10u/8/X5R/6.3V/K
DBC43 10u/8/X5R/6.3V/K
VBC5 10u/8/X5R/6.3V/K
DBC71 10u/8/X5R/6.3V/K
DBC68 10u/8/X5R/6.3V/K
DBC59 10u/8/X5R/6.3V/K
SBC12 10u/8/X5R/6.3V/K/X
SBC13 10u/8/X5R/6.3V/K/X
SBC14 10u/8/X5R/6.3V/K/X
SBC16 10u/8/X5R/6.3V/K/X
SBC15 10u/8/X5R/6.3V/K/X
SBC9 10u/8/X5R/6.3V/K/X
SBC8 10u/8/X5R/6.3V/K/X
SBC6 10u/8/X5R/6.3V/K/X
SBC18 10u/8/X5R/6.3V/K/X
SBC19 10u/8/X5R/6.3V/K/X
SBC17 10u/8/X5R/6.3V/K/X
SBC11 10u/8/X5R/6.3V/K/X
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
DBC55 10u/8/X5R/6.3V/K
DBC50 10u/8/X5R/6.3V/K
DBC44 10u/8/X5R/6.3V/K
DBC56 10u/8/X5R/6.3V/K
DBC39 10u/8/X5R/6.3V/K
DBC40 10u/8/X5R/6.3V/K
DBC45 10u/8/X5R/6.3V/K
DBC51 10u/8/X5R/6.3V/K
DBC52 10u/8/X5R/6.3V/K
DBC46 10u/8/X5R/6.3V/K
DBC41 10u/8/X5R/6.3V/K
DBC58 10u/8/X5R/6.3V/K
DBC57 10u/8/X5R/6.3V/K
SBC5 10u/8/X5R/6.3V/K/X
SBC2 10u/8/X5R/6.3V/K/X
SBC1 10u/8/X5R/6.3V/K/X
SBC4 10u/8/X5R/6.3V/K/X
SBC20 10u/8/X5R/6.3V/K/X
SBC7 10u/8/X5R/6.3V/K/X
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CPU LGA1156-C
Size
Custom
Document Number
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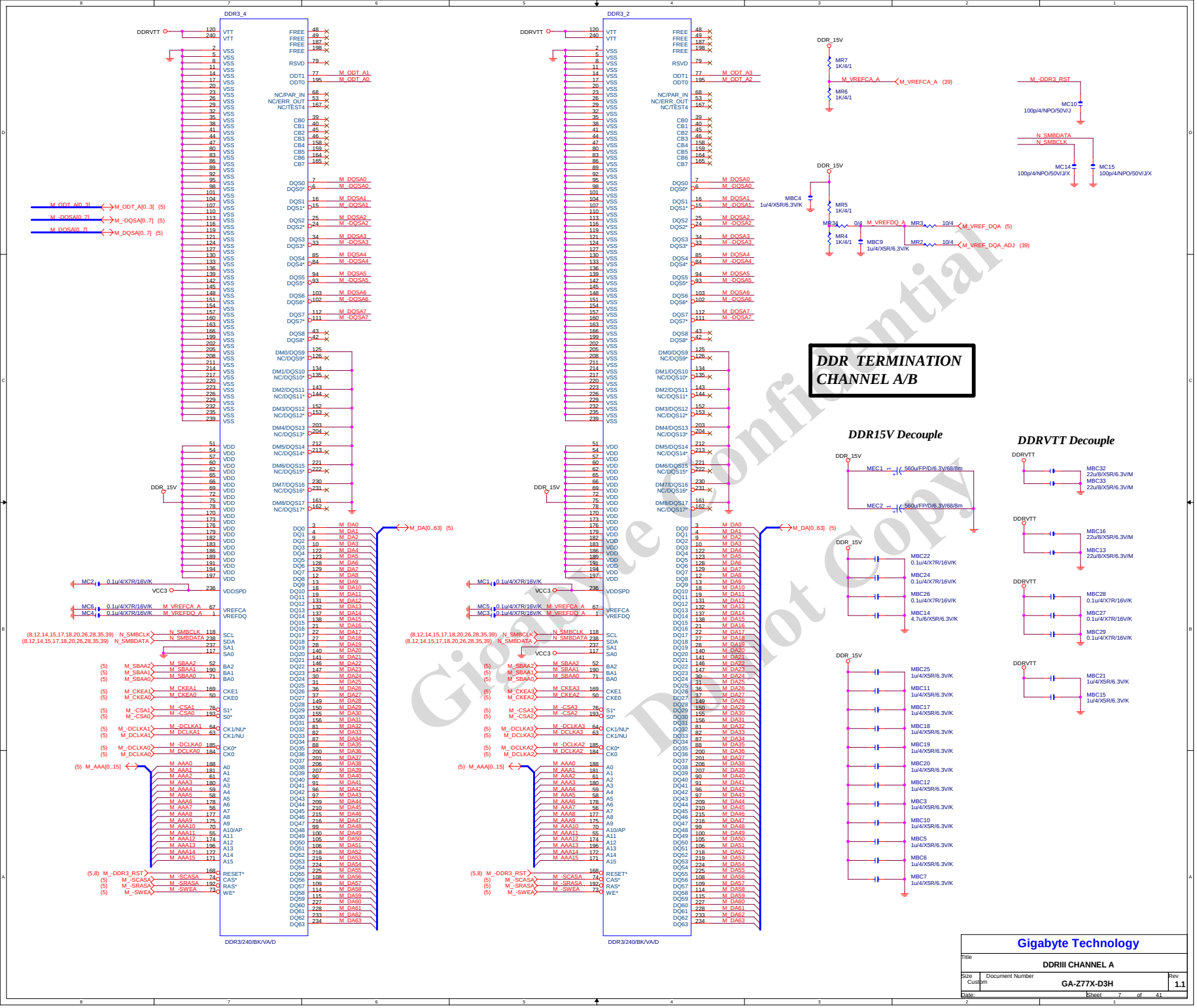
DDR3_4
DDR3_2
DDR3/240/BK/VA/D
DDR3/240/BK/VA/D
DDR_TERMINATION CHANNEL A/B
DDR15V Decouple
DDRVTT Decouple
DDR_15V
DDRVTT
VCC3
M_DA[0..63]
M_ODT_A[0..3]
M_-DQSA[0..7]
M_DQSA[0..7]
M_VREFCA_A
M_VREFDQ_A
M_VREFDQ_A_ADJ
M_-DDR3_RST
N_SMBDATA
N_SMBCLK
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DDRIII CHANNEL A
GA-Z77X-D3H
1.1
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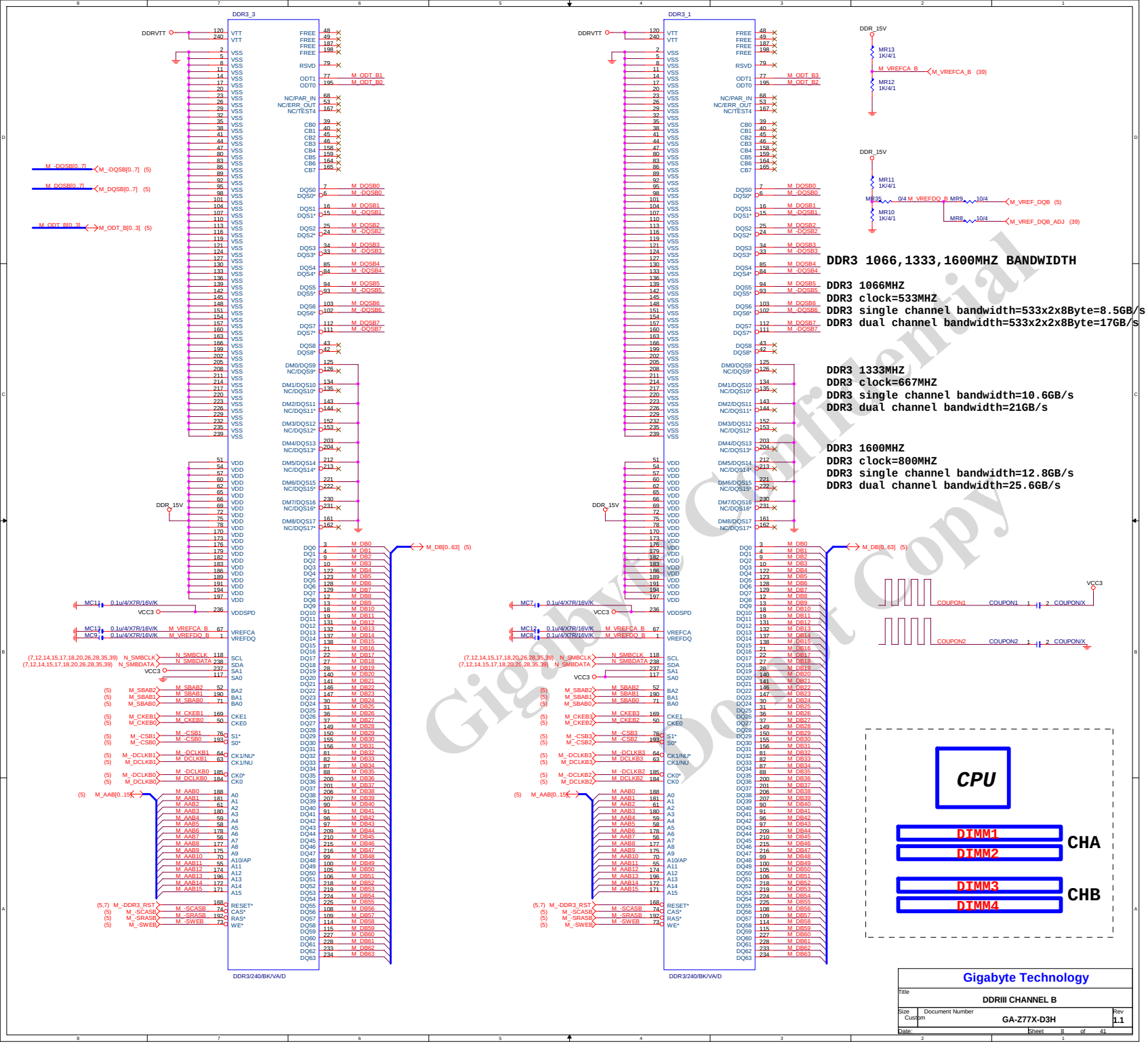

Gigabyte Technology			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.1
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USB:12/7.5/4.5/7.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

PCHB

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

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

PCHE

NVRAM

5 OF 11

BD82Z77/S

PCH_HS

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

DMI /FDI termination voltage

Mount for integrated clock Generation Mode

R102 short to GND in non graphic SKU

Gigabyte Technology			
Title: PCH FDI,DMI,USB ,PCIE			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.1
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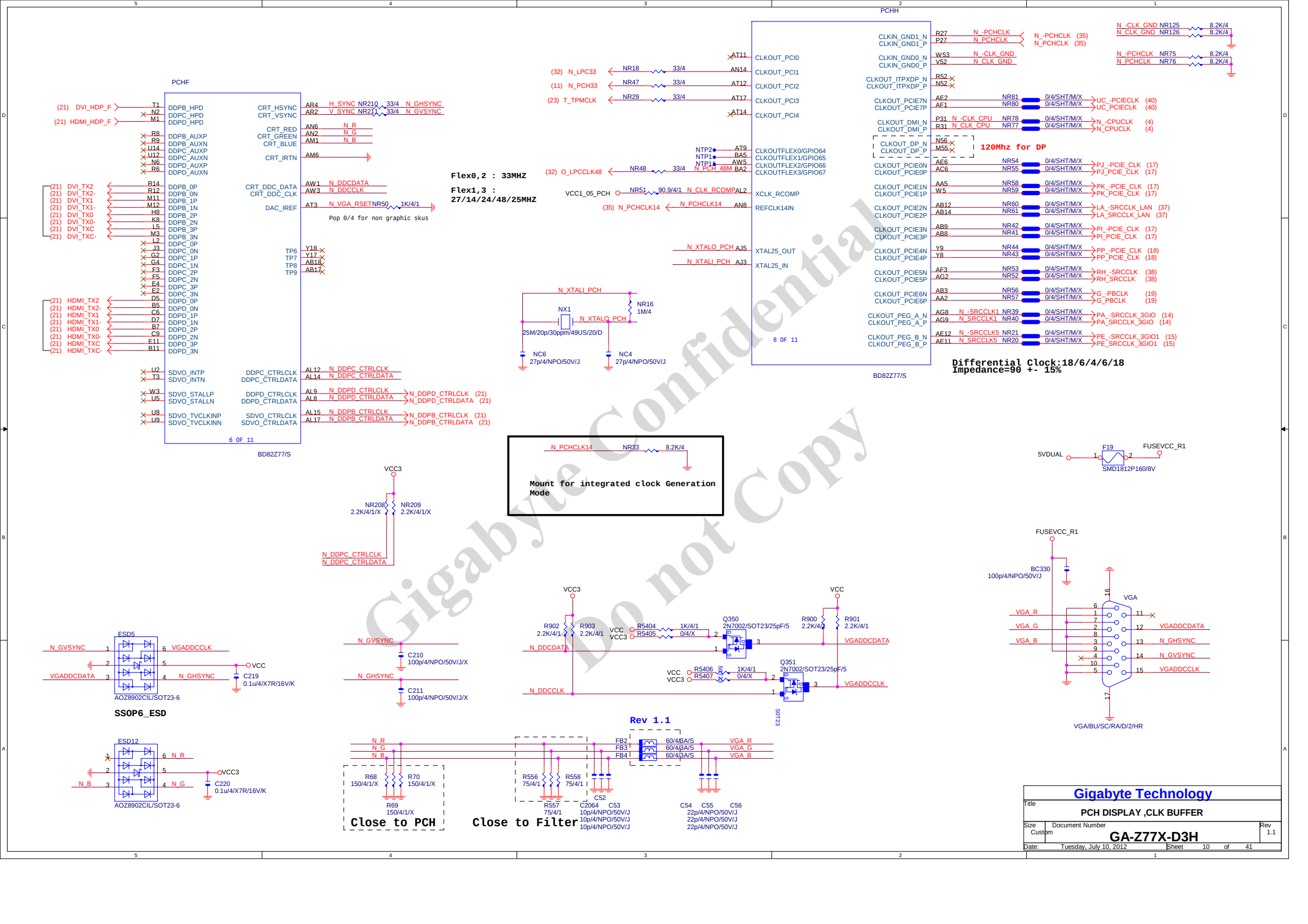
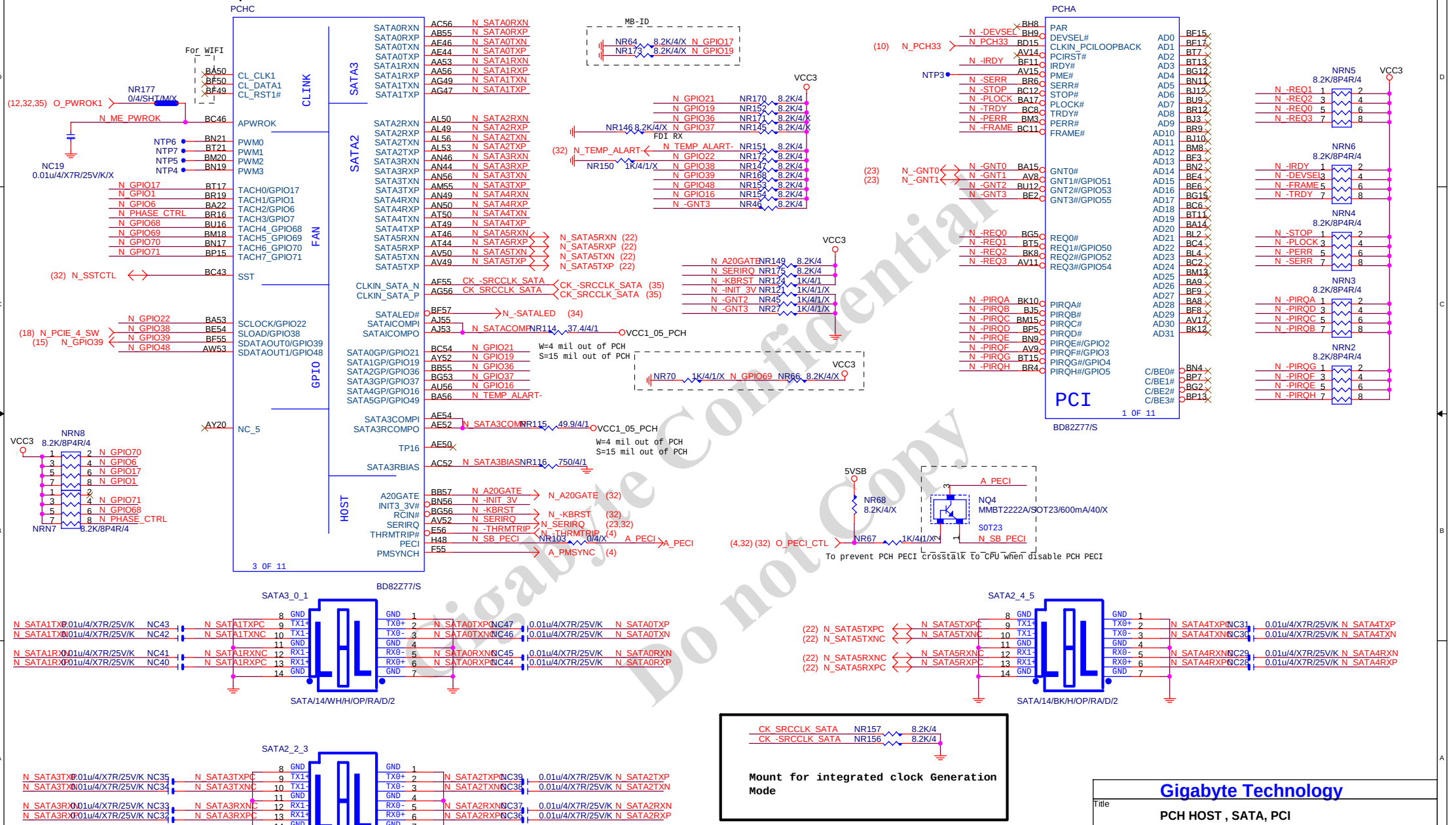
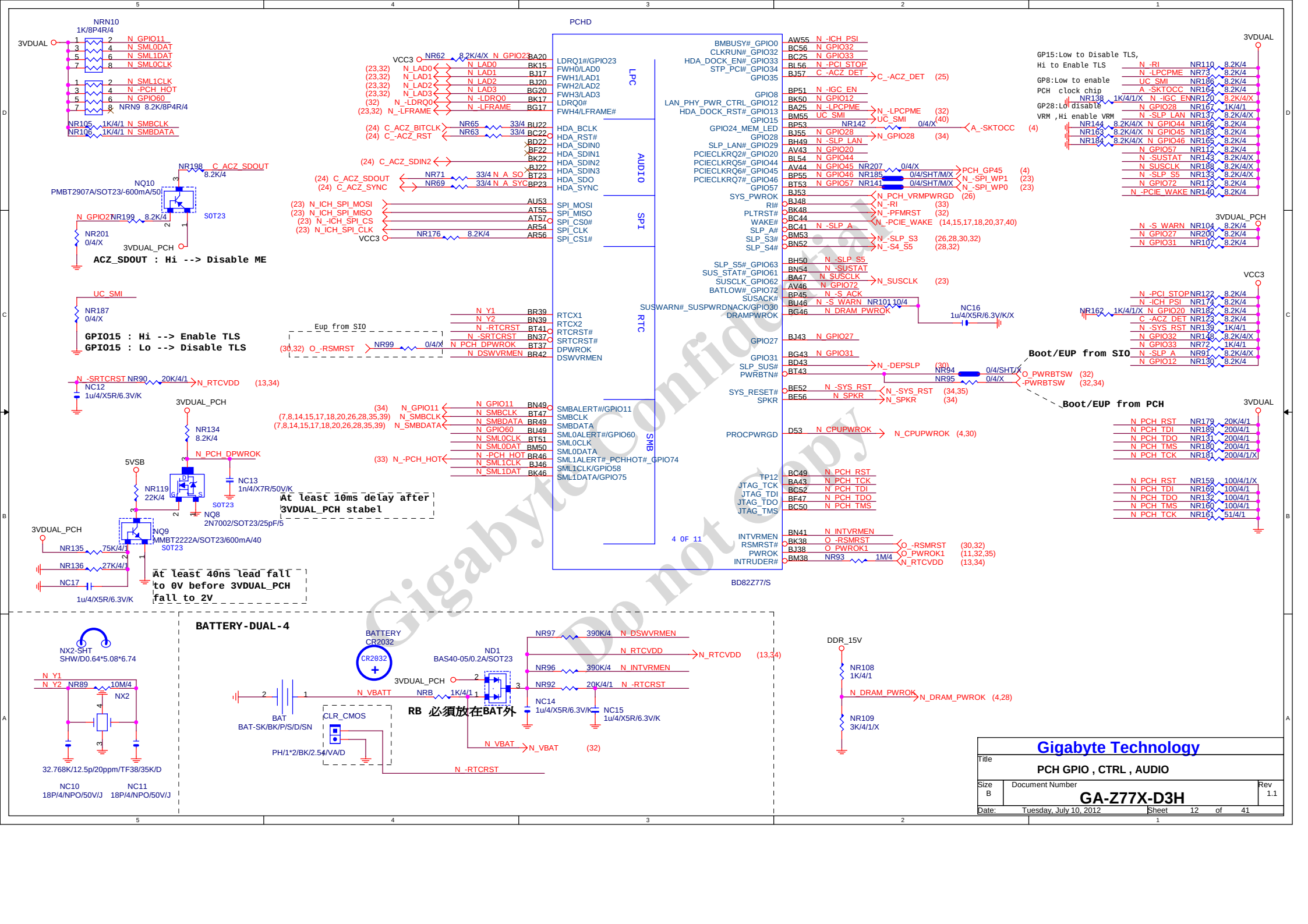


SATA:20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%




PCHD
LPC
AUDIO
SPI
RTC
SMB
BD82Z77/S
4 OF 11
NRN10
1K/8P4R/4
NRN9 8.2K/8P4R/4
NQ10
PMBT2907A/SOT23/-600mA/50
NQ9
MMBT2222A/SOT23/600mA/40
NQ8
2N7002/SOT23/25pF/5
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
GP15:Low to Disable TLS, Hi to Enable TLS
GP8:Low to enable PCH clock chip
GP28:Lo disable VRM ,Hi enable VRM
BATTERY-DUAL-4
RB 必須放在BAT外
NX2-SHT
SHW/D0.64*5.08*6.74
32.768K/12.5p/20ppm/TF38/35K/D
BAT
BAT-SK/BK/P/S/D/SN
PH/1*2/BK/2.54/VA/D
ND1
BAS40-05/0.2A/SOT23
DDR_15V
Gigabyte Technology
PCH GPIO , CTRL , AUDIO
GA-Z77X-D3H
Rev 1.1
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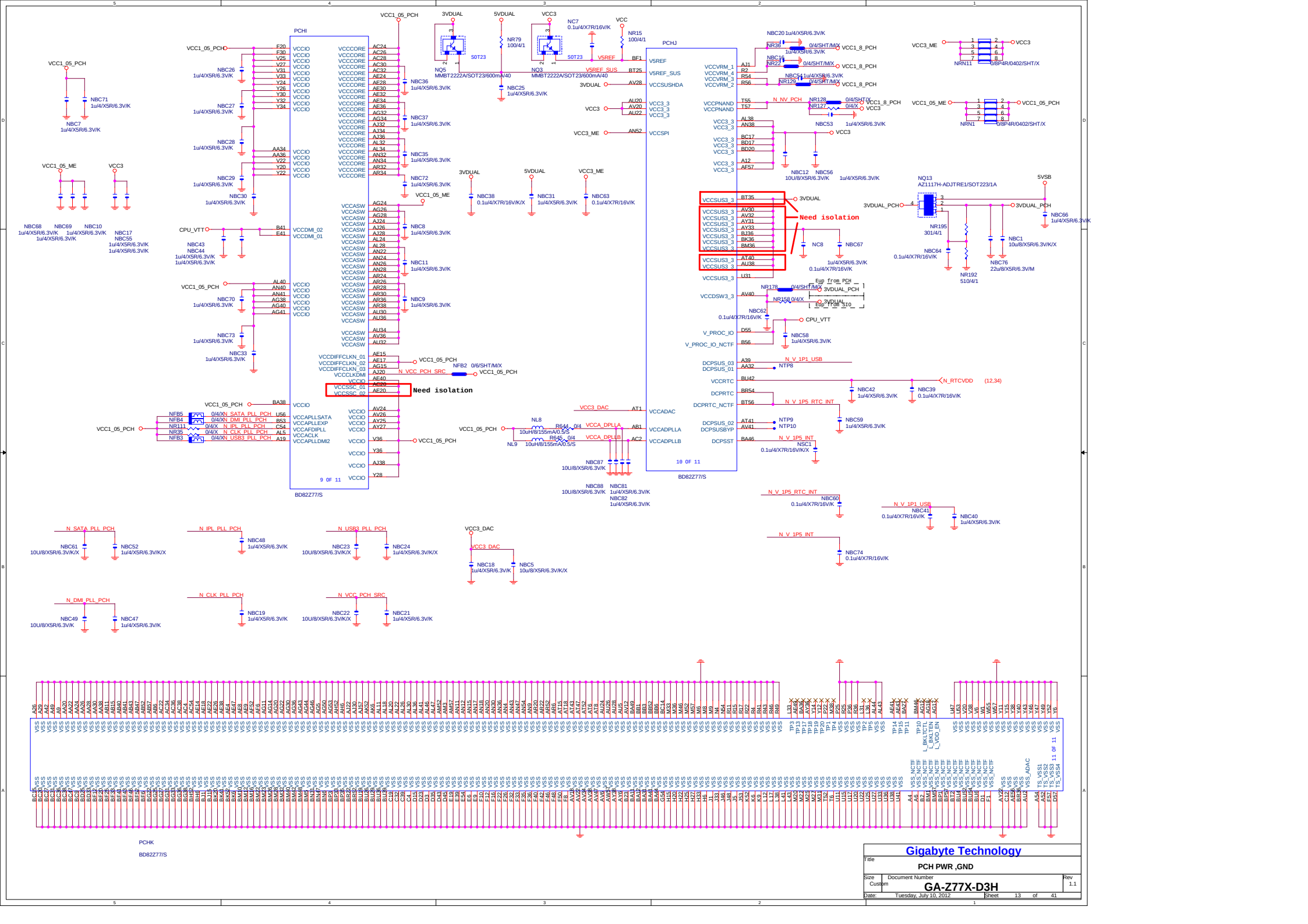
PCHI
PCHJ
PCHK
BD82Z77/S
9 OF 11
10 OF 11
Need isolation
Need isolation
Gigabyte Technology
PCH PWR ,GND
GA-Z77X-D3H
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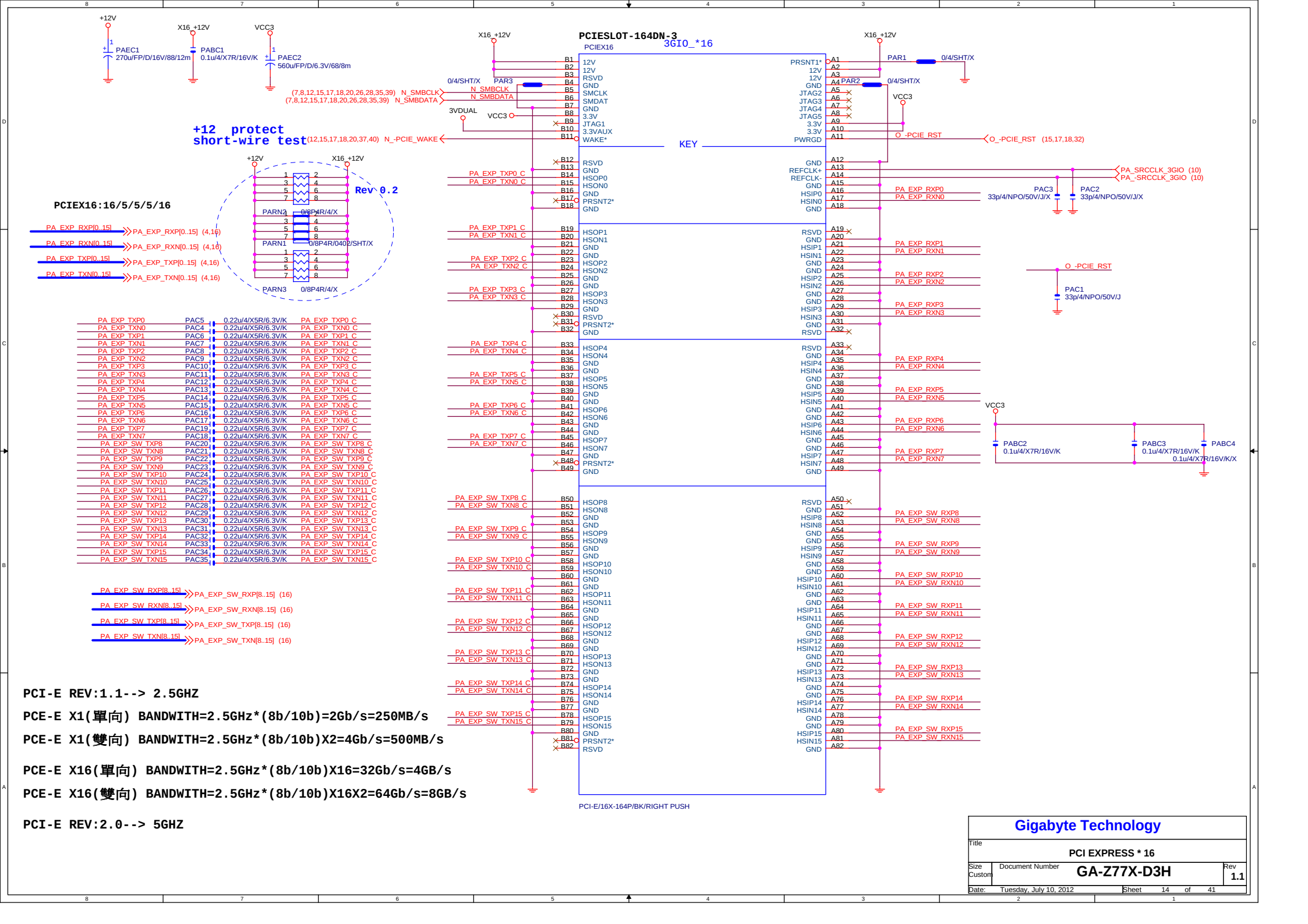
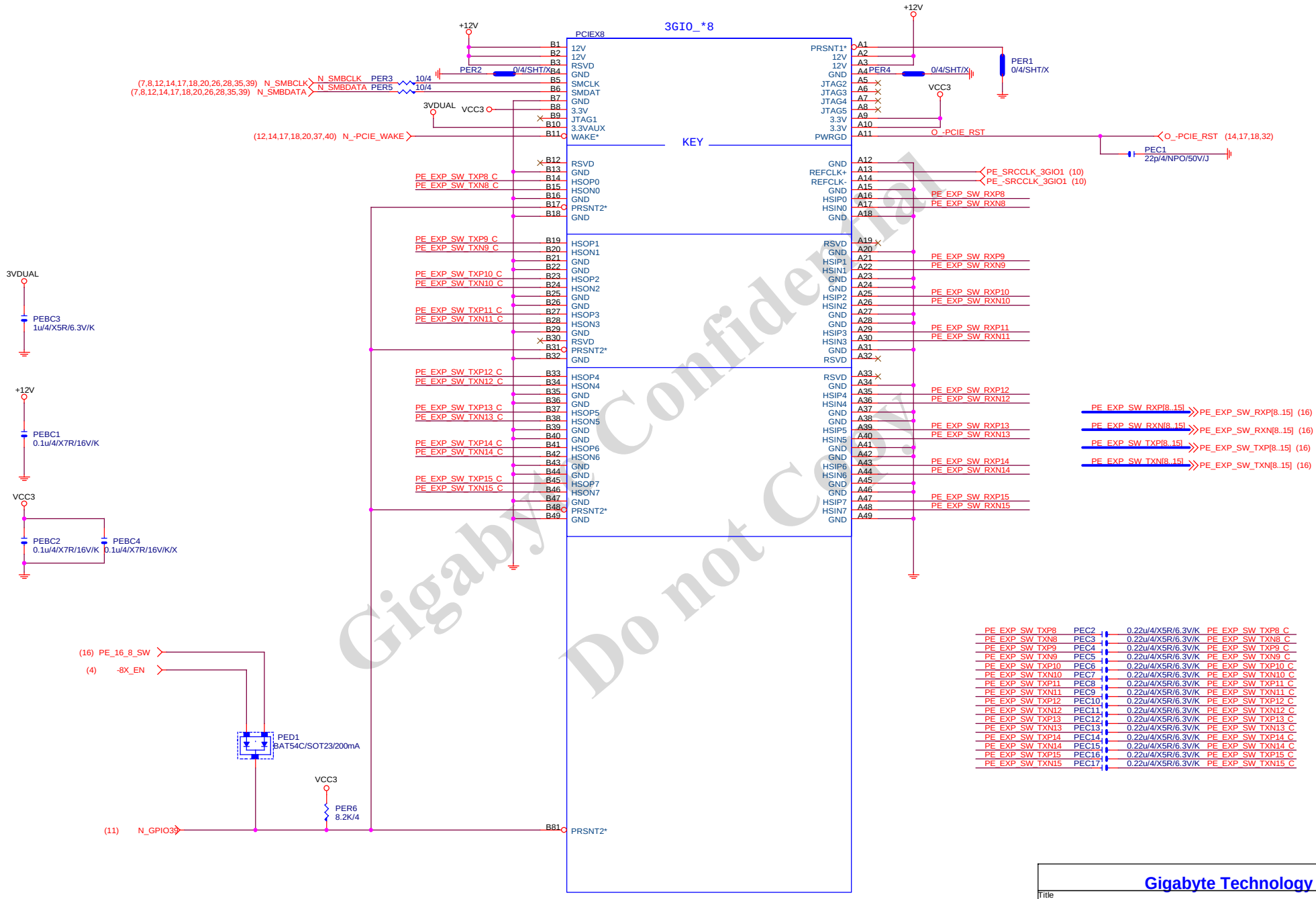
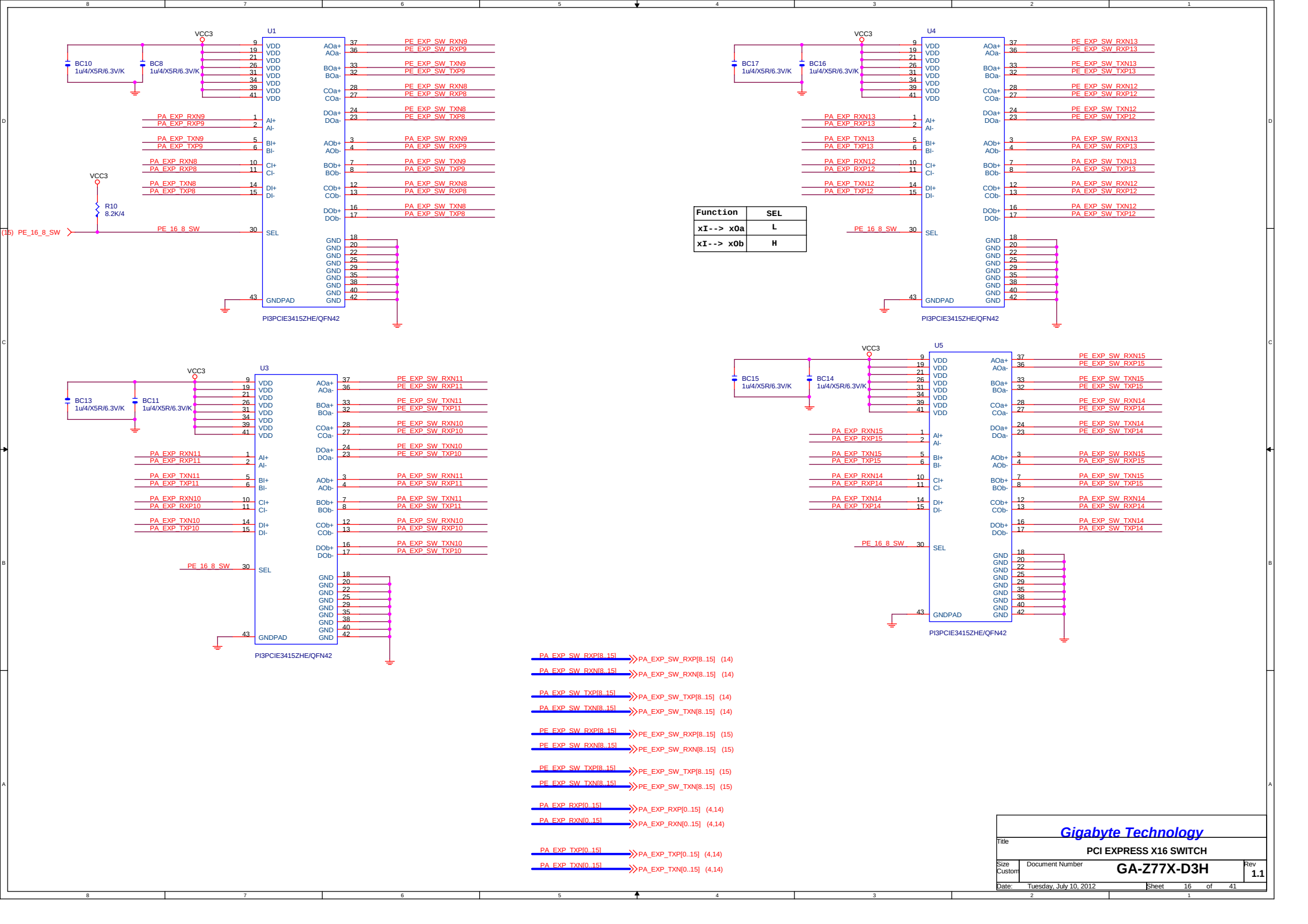

+12V
X16_+12V
VCC3
PAEC1
270u/FP/D/16V/88/12m
PABC1
0.1u/4/X7R/16V/K
PAEC2
560u/FP/D/6.3V/68/8m
PCIESLOT-164DN-3
PCIEX16
3GIO_*16
+12 protect
short-wire test
Rev 0.2
PCIEX16:16/5/5/5/16
PARN2
PARN1
PARN3
0/8P4R/4/X
0/8P4R/0402/SHT/X
PA_EXP_RXP[0..15]
PA_EXP_RXN[0..15]
PA_EXP_TXP[0..15]
PA_EXP_TXN[0..15]
PA_EXP_SW_RXP[8..15]
PA_EXP_SW_RXN[8..15]
PA_EXP_SW_TXP[8..15]
PA_EXP_SW_TXN[8..15]
N_SMBCLK
N_SMBDATA
N_-PCIE_WAKE
O_-PCIE_RST
PAR1
PAR2
PAR3
0/4/SHT/X
3VDUAL
KEY
PAC3
PAC2
PAC1
33p/4/NPO/50V/J/X
33p/4/NPO/50V/J
PABC2
PABC3
PABC4
0.1u/4/X7R/16V/K
0.1u/4/X7R/16V/K/X
PA_SRCCLK_3GIO (10)
PA_-SRCCLK_3GIO (10)
PCI-E/16X-164P/BK/RIGHT PUSH
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
Gigabyte Technology
PCI EXPRESS * 16
GA-Z77X-D3H
Rev 1.1
Tuesday, July 10, 2012
Sheet 14 of 41



Gigabyte Technology		
Title	PCI EXPRESS X 4 PORT	
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.1
Date: Tuesday, July 10, 2012	Sheet 15 of 41	


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 1.1
Date: Tuesday, July 10, 2012
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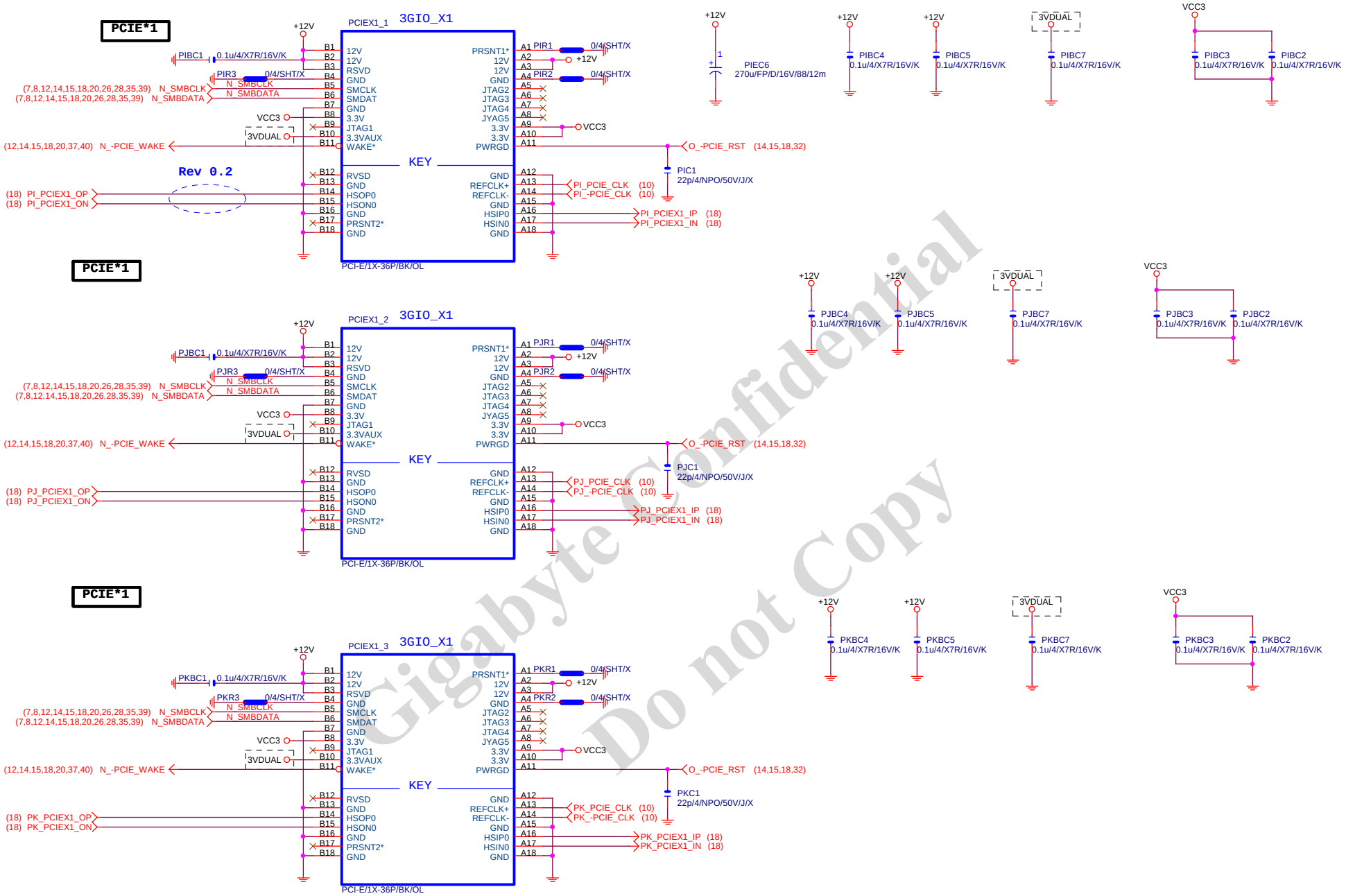
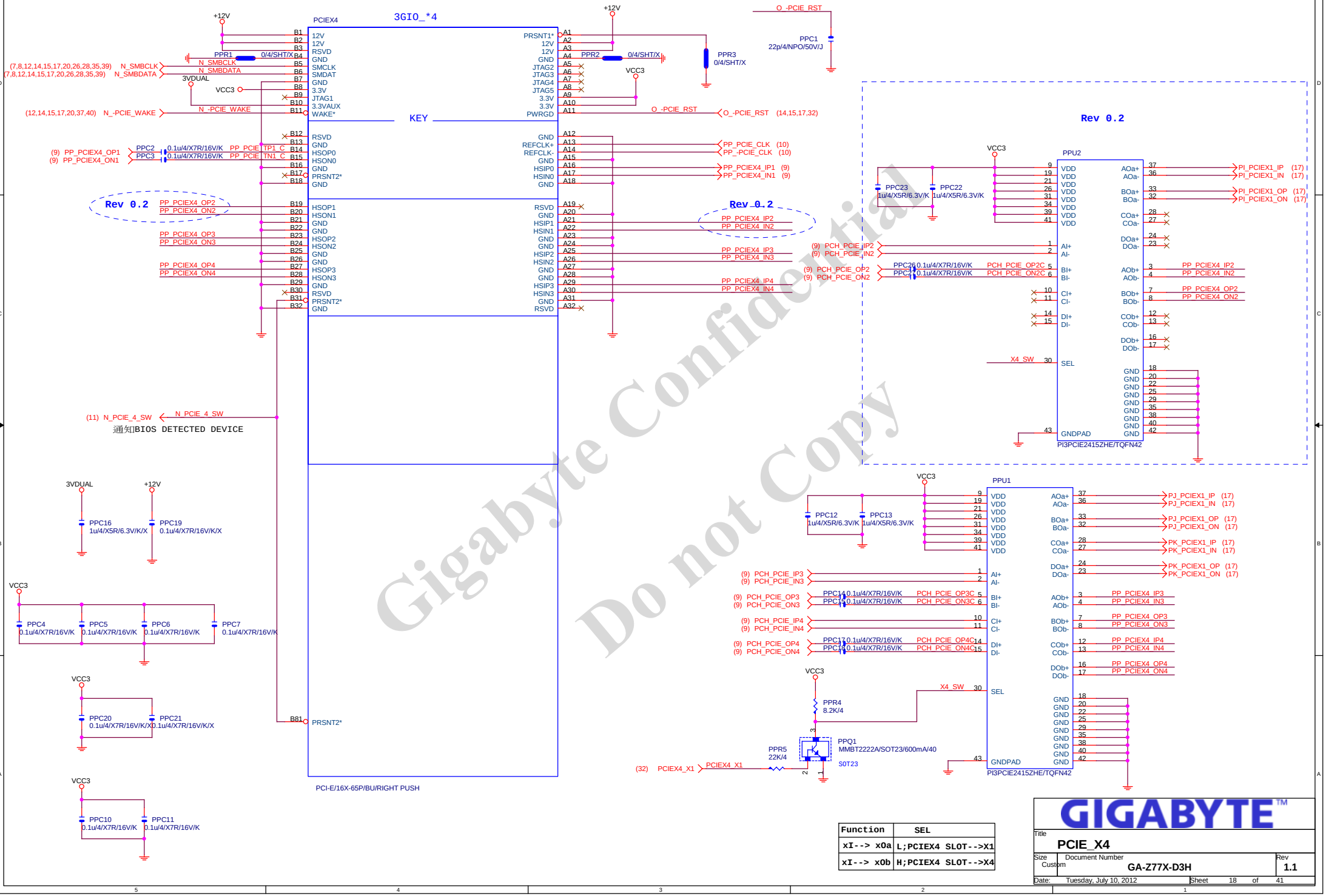


Gigabyte Technology		
Title: PCIE_X1 1,2,3		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.1
Date: Tuesday, July 10, 2012	Sheet 17 of 41	

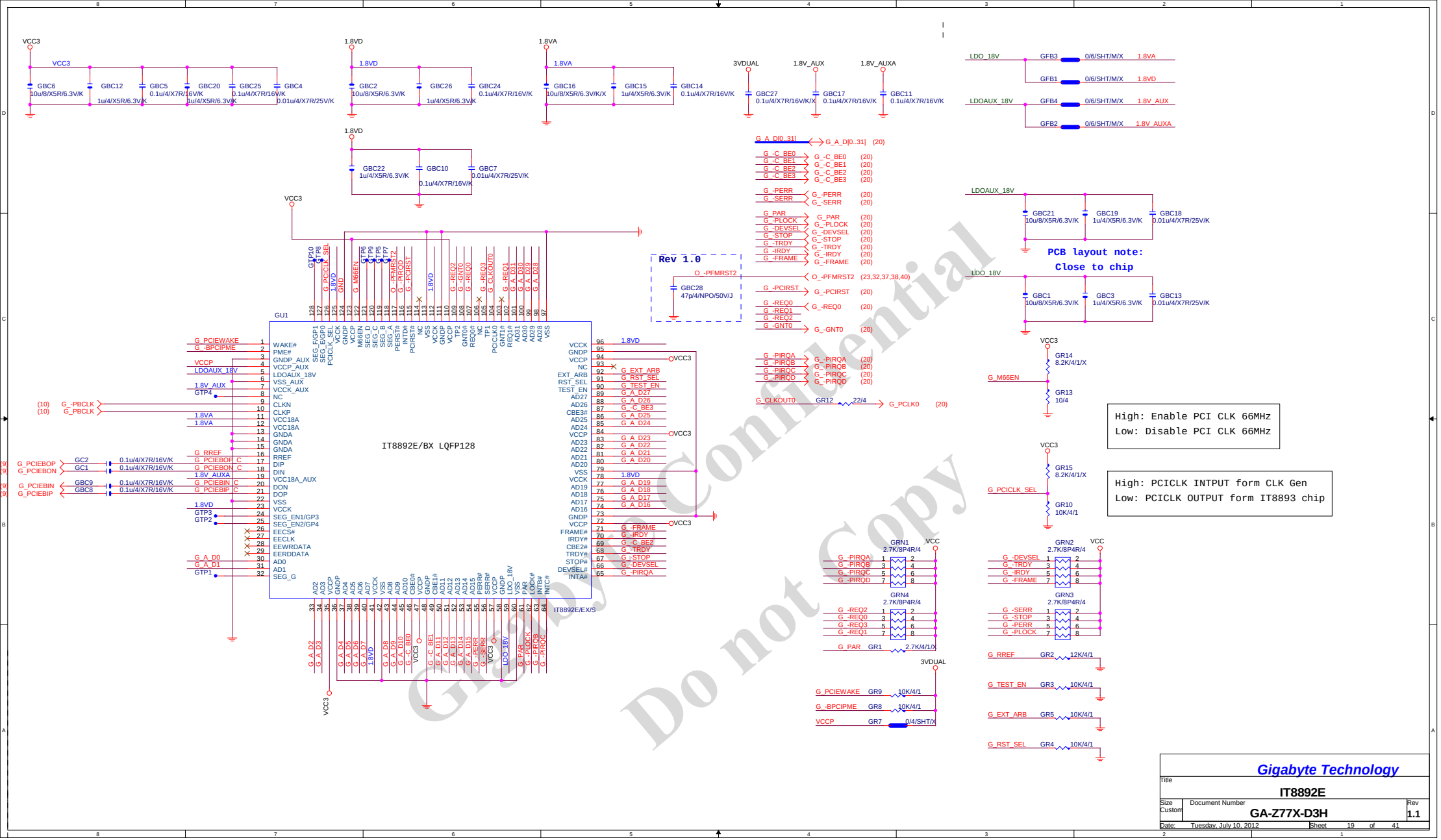
PCIE*4

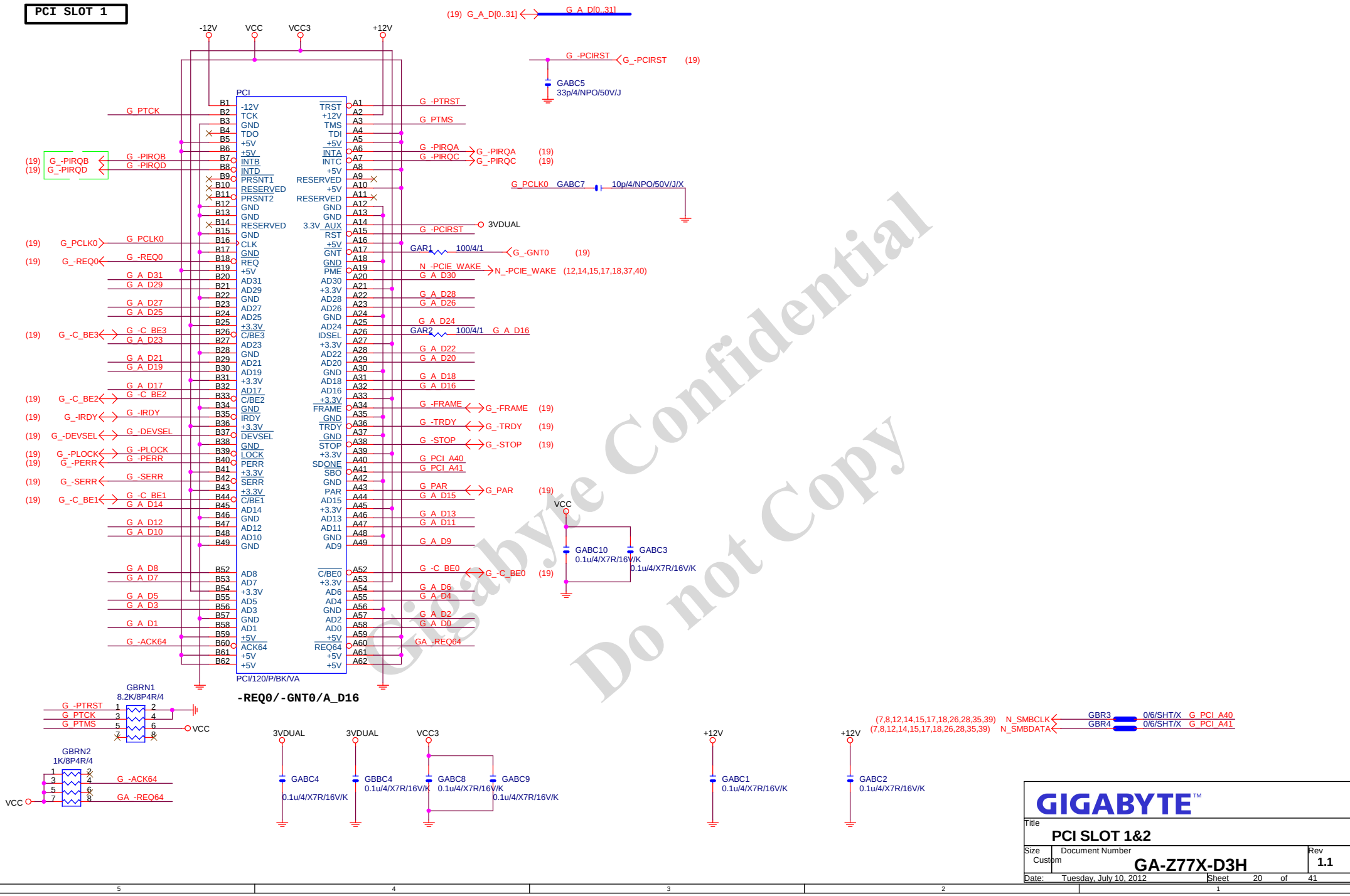


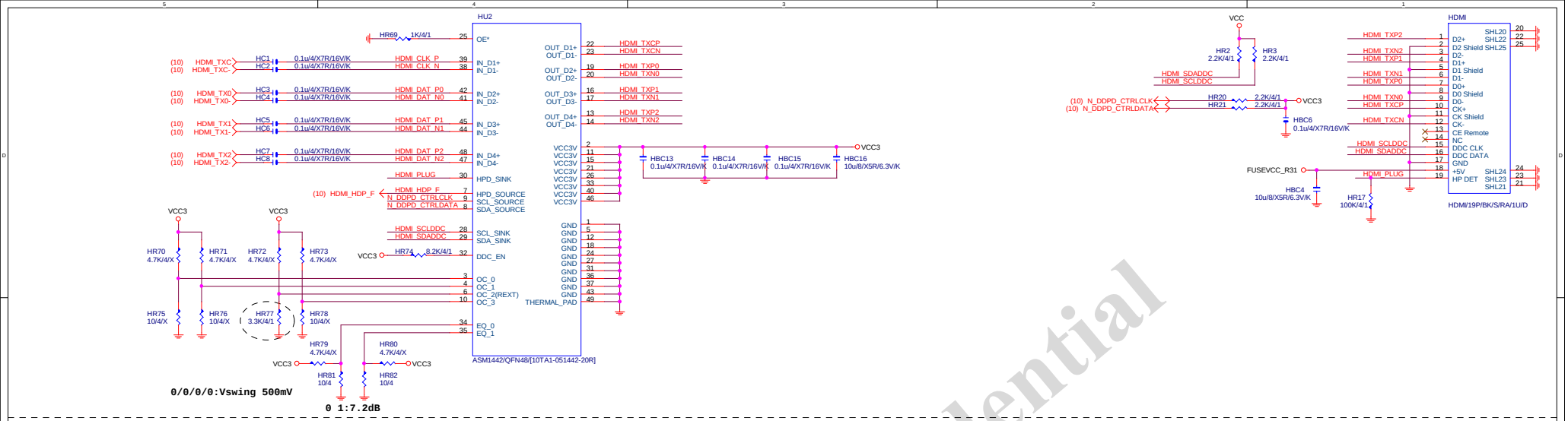
Function	SEL
xI--> xOa	L;PCIEX4 SLOT-->X1
xI--> xOb	H;PCIEX4 SLOT-->X4

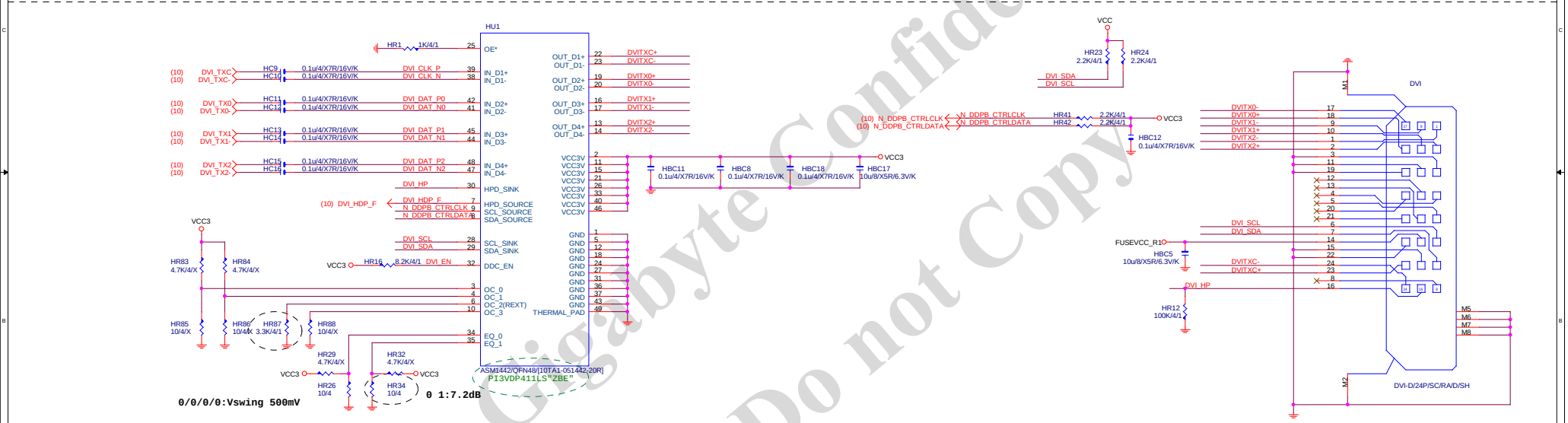
GIGABYTE™

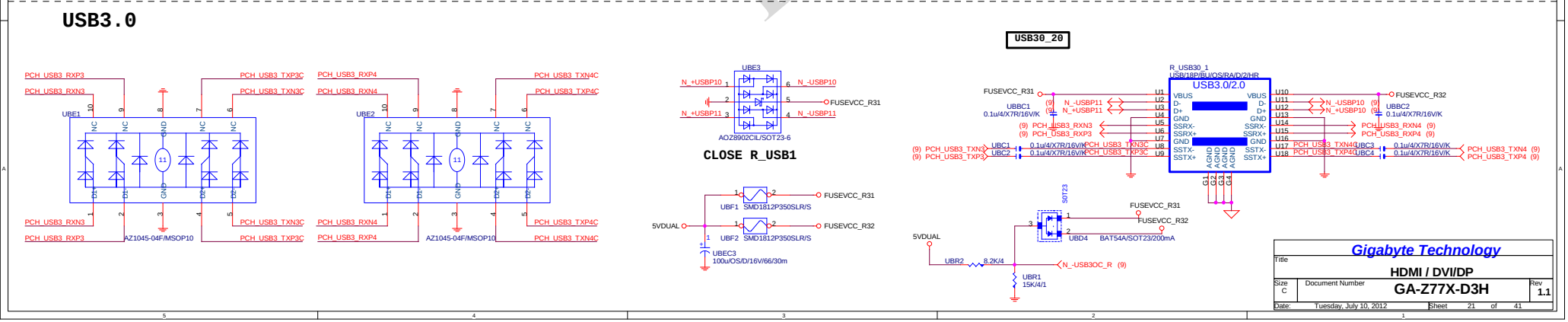
Title	PCIE_X4	
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.1
Date: Tuesday, July 10, 2012	Sheet 18 of 41	


VCC3
GBC6 10u/8/X5R/6.3V/K
GBC12 1u/4/X5R/6.3V/K
GBC5 0.1u/4/X7R/16V/K
GBC20 0.1u/4/X7R/16V/K
GBC25 0.1u/4/X7R/16V/K
GBC4 0.01u/4/X7R/25V/K
1.8VD
GBC2 10u/8/X5R/6.3V/K
GBC26 1u/4/X5R/6.3V/K
GBC24 0.1u/4/X7R/16V/K
1.8VA
GBC16 10u/8/X5R/6.3V/K/X
GBC15 1u/4/X5R/6.3V/K
GBC14 0.1u/4/X7R/16V/K
3VDUAL
1.8V_AUX
1.8V_AUXA
GBC27 0.1u/4/X7R/16V/K/X
GBC17 0.1u/4/X7R/16V/K
GBC11 0.1u/4/X7R/16V/K
GBC22 1u/4/X5R/6.3V/K
GBC10 0.1u/4/X7R/16V/K
GBC7 0.01u/4/X7R/25V/K
LDO_18V
GFB3 0/6/SHT/M/X 1.8VA
GFB1 0/6/SHT/M/X 1.8VD
LDOAUX_18V
GFB4 0/6/SHT/M/X 1.8V_AUX
GFB2 0/6/SHT/M/X 1.8V_AUXA
GBC21 10u/8/X5R/6.3V/K
GBC19 1u/4/X5R/6.3V/K
GBC18 0.01u/4/X7R/25V/K
PCB layout note:
Close to chip
GBC1 10u/8/X5R/6.3V/K
GBC3 1u/4/X5R/6.3V/K
GBC13 0.01u/4/X7R/25V/K
Rev 1.0
GBC28 47p/4/NPO/50V/J
GU1
IT8892E/BX LQFP128
IT8892E/EX/S
G_A_D[0..31]
G_-C_BE0
G_-C_BE1
G_-C_BE2
G_-C_BE3
G_-PERR
G_-SERR
G_PAR
G_-PLOCK
G_-DEVSEL
G_-STOP
G_-TRDY
G_-IRDY
G_-FRAME
O_-PFMRST2
G_-PCIRST
G_-REQ0
G_-REQ1
G_-REQ2
G_-GNT0
G_-PIRQA
G_-PIRQB
G_-PIRQC
G_-PIRQD
G_CLKOUT0
GR12 22/4
G_PCLK0
G_PCIEWAKE
G_-BPCIPME
VCCP
LDOAUX_18V
1.8V_AUX
GTP4
(10) G_-PBCLK
(10) G_PBCLK
1.8VA
G_RREF
G_PCIEBOP
G_PCIEBON
GC2
GC1
0.1u/4/X7R/16V/K
G_PCIEBOP_C
G_PCIEBON_C
1.8V_AUXA
G_PCIEBIN
G_PCIEBIP
GBC9
GBC8
G_PCIEBIN_C
G_PCIEBIP_C
1.8VD
GTP3
GTP2
G_A_D0
G_A_D1
GTP1
EECS#
EECLK
EEWRDATA
EERDDATA
AD0
AD1
SEG_G
G_EXT_ARB
G_RST_SEL
G_TEST_EN
G_A_D27
G_A_D26
G_-C_BE3
G_A_D25
G_A_D24
G_A_D23
G_A_D22
G_A_D21
G_A_D20
G_A_D19
G_A_D18
G_A_D17
G_A_D16
G_-FRAME
G_-IRDY
G_-C_BE2
G_-TRDY
G_-STOP
G_-DEVSEL
G_-PIRQA
GRN1 2.7K/8P4R/4
GRN4 2.7K/8P4R/4
G_PAR GR1 2.7K/4/1/X
GRN2 2.7K/8P4R/4
GRN3 2.7K/8P4R/4
G_-DEVSEL
G_-TRDY
G_-IRDY
G_-FRAME
G_-SERR
G_-STOP
G_-PERR
G_-PLOCK
G_RREF GR2 12K/4/1
G_TEST_EN GR3 10K/4/1
G_EXT_ARB GR5 10K/4/1
G_RST_SEL GR4 10K/4/1
G_PCIEWAKE GR9 10K/4/1
G_-BPCIPME GR8 10K/4/1
VCCP GR7 0/4/SHT/X
G_M66EN
GR14 8.2K/4/1/X
GR13 10/4
G_PCICLK_SEL
GR15 8.2K/4/1/X
GR10 10K/4/1
High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz
High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip
Gigabyte Confidential
Do not Copy
Gigabyte Technology
Title
IT8892E
Size Custom
Document Number
GA-Z77X-D3H
Rev 1.1
Date: Tuesday, July 10, 2012
Sheet 19 of 41

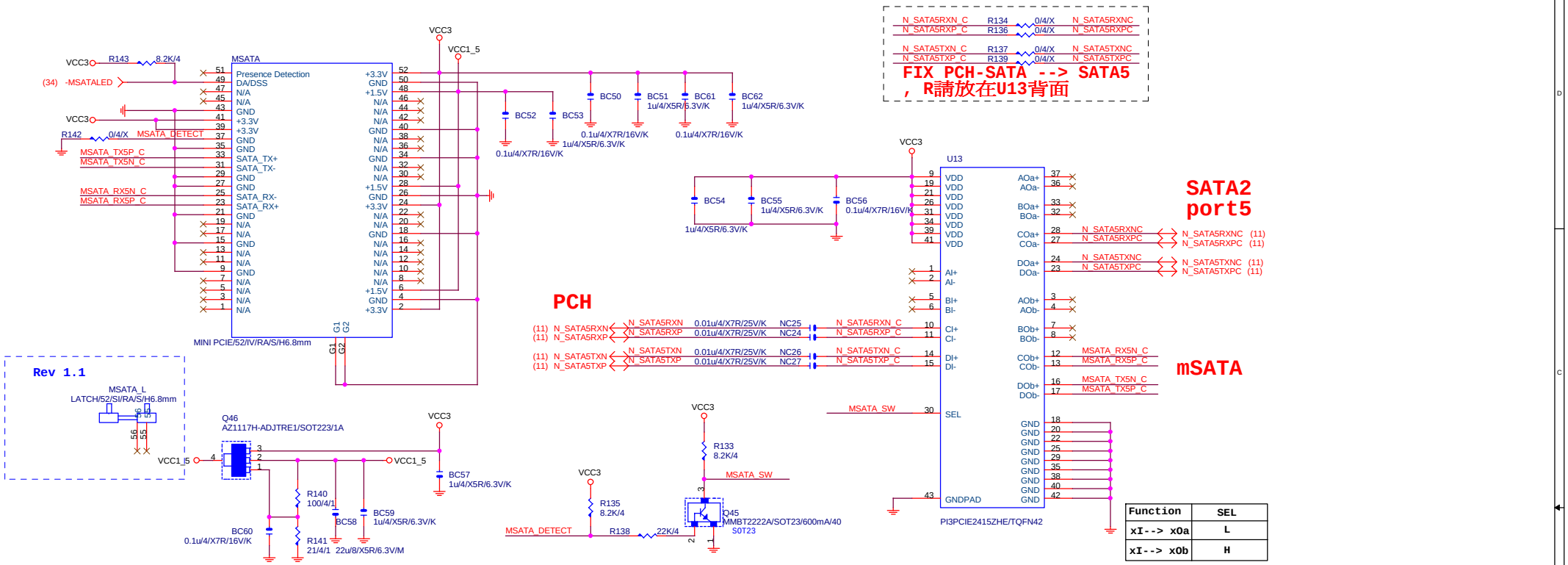


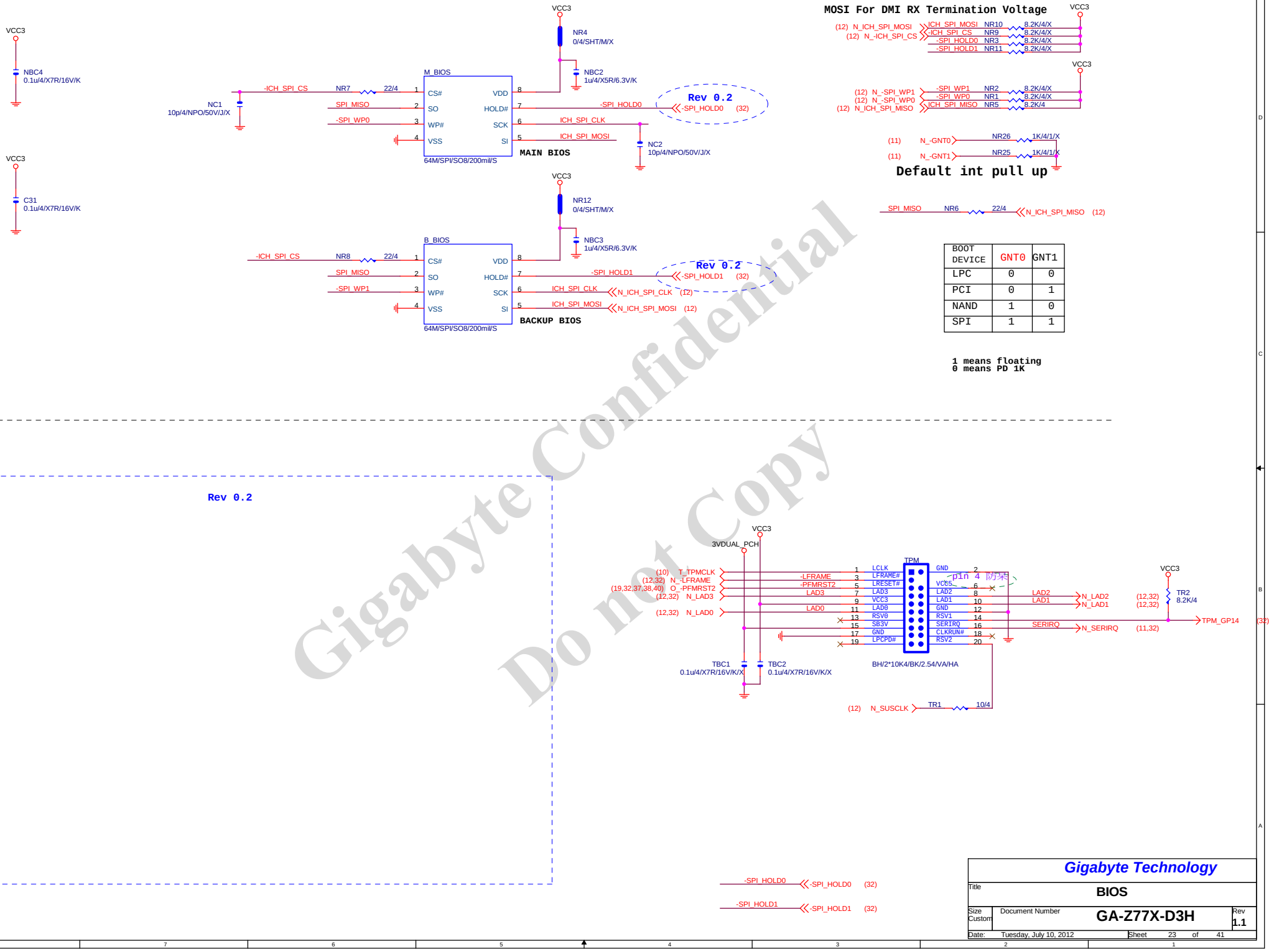






Gigabyte Technology		
Title	HDMI / DVI/DP	
Size C	Document Number GA-Z77X-D3H	Rev 1.1
Date: Tuesday, July 10, 2012	Sheet 21 of 41	

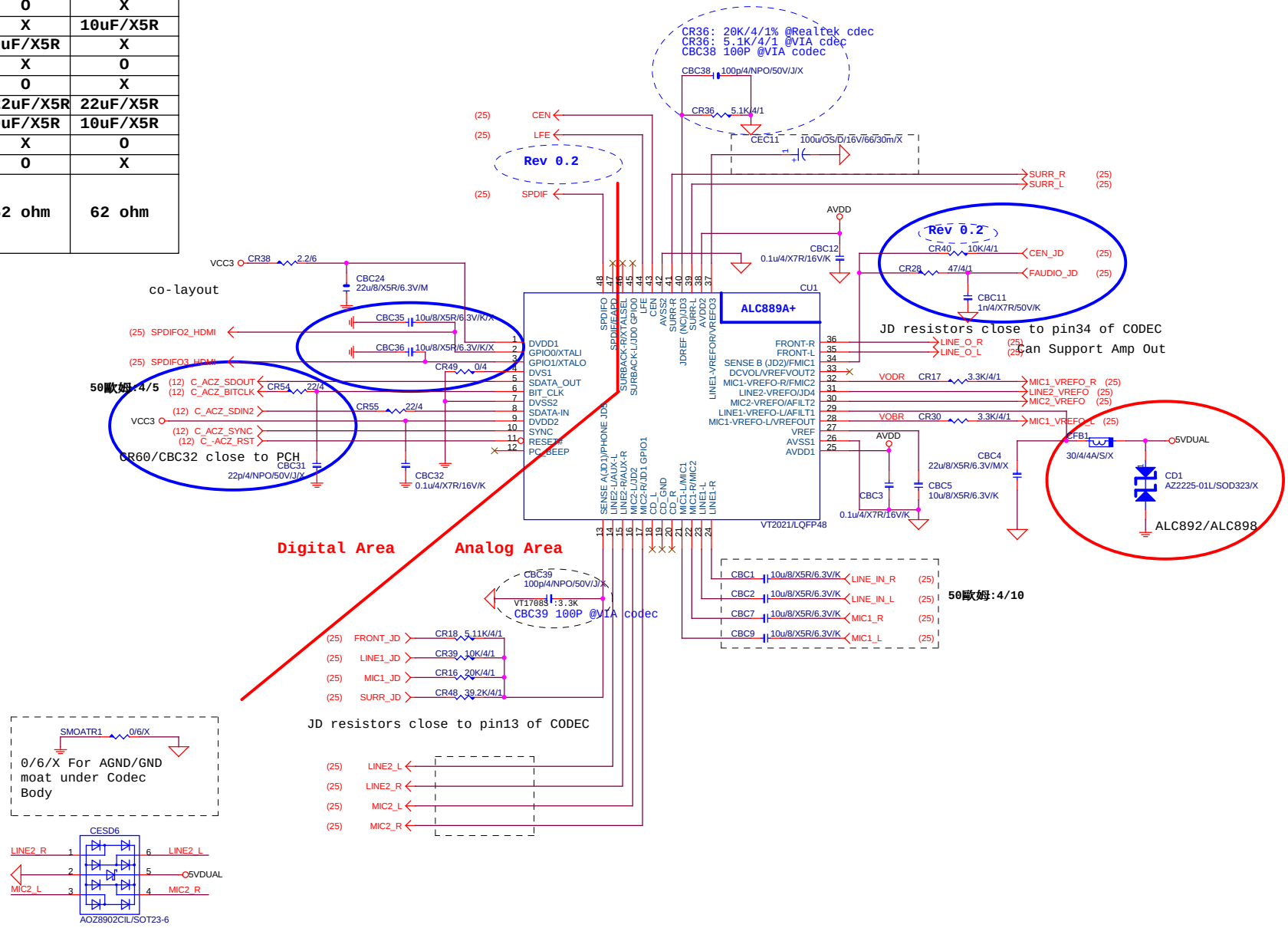

FIX PCH-SATA --> SATA5
, R請放在U13背面
SATA2
port5
mSATA
PCH
Rev 1.1
MSATA_L
LATCH/52/SI/RA/S/H6.8mm
MINI PCIE/52/IV/RA/S/H6.8mm
PI3PCIE2415ZHE/TQFN42
Q46
AZ1117H-ADJTRE1/SOT223/1A
Q45
MMBT2222A/SOT23/600mA/40
SOT23
Function
SEL
xI--> xOa
L
xI--> xOb
H



AZALIA CODEC

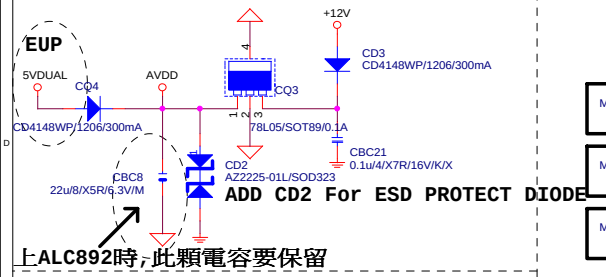
ALC889/ALC889B/ALC892/ALC898 Colay

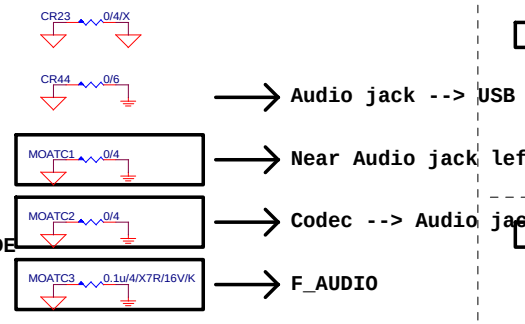
	ALC889	ALC889B	ALC898/ALC892
CR49	0	0	X
CBC36	X	X	10uF/X5R
CBC35	X	10uF/X5R	X
CR52	0	X	0
CR53	X	0	X
CBC1/CBC2	22uF/X5R	22uF/X5R	22uF/X5R
CBC7/CBC9/CBC20/CBC15	10uF/X5R	10uF/X5R	10uF/X5R
CFB1/CD1/CBC4	X	X	0
CD2/CD3/CQ3/CQ4	0	0	X
CR7/CR9/CR5/CR13/ CR29/CR32/CR46/CR19/ CR50/CR41/CR21/CR47/ CR2/CR11/CR14/CR24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

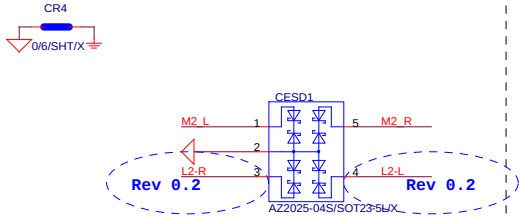


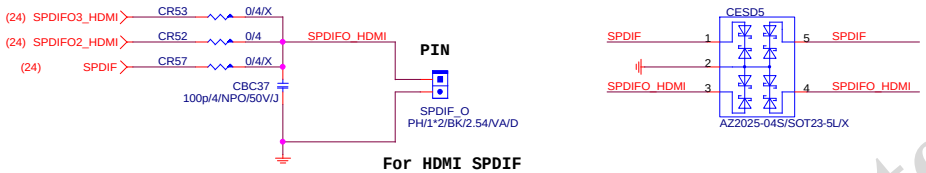
Gigabyte Technology			
Title	HD AUDIO ALC889A		
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.1
Date: Tuesday, July 10, 2012	Sheet 24 of 41		

CODEC POWER/EMI PAD



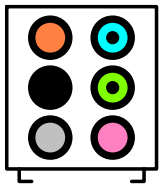






AZALIA JACK

BTX AZALIA CONNECTOR



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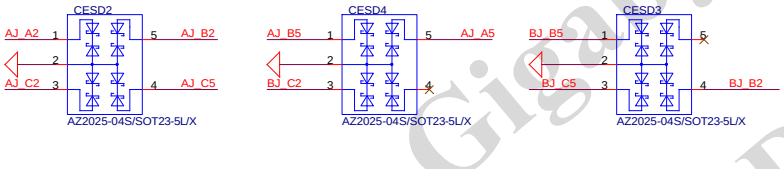
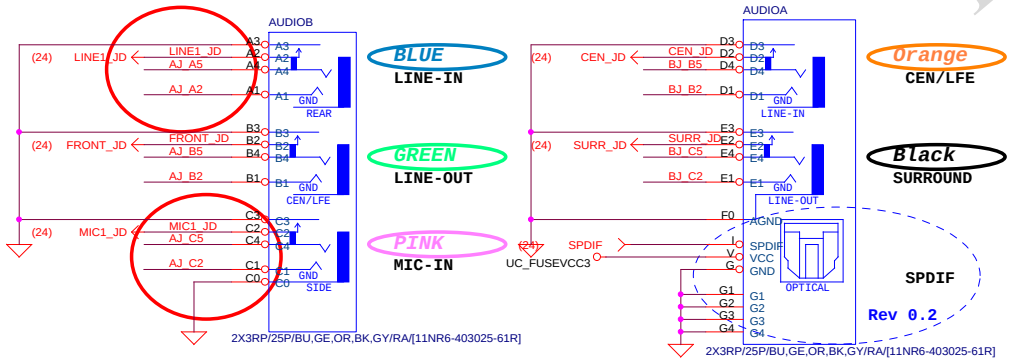
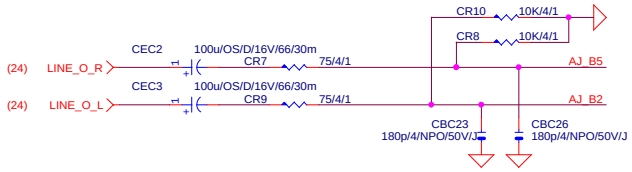
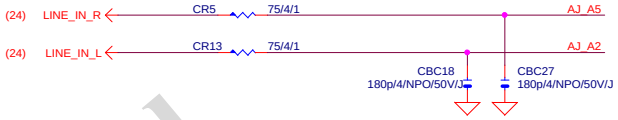




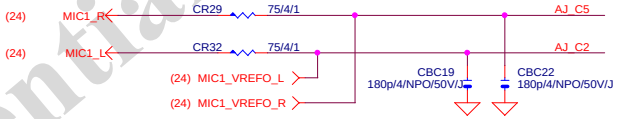
LINE-OUT



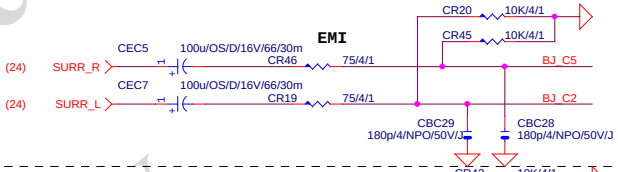
LINE-IN



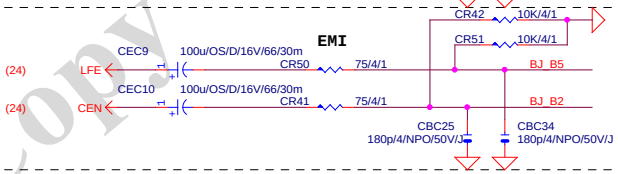
MIC-IN



SURROUND



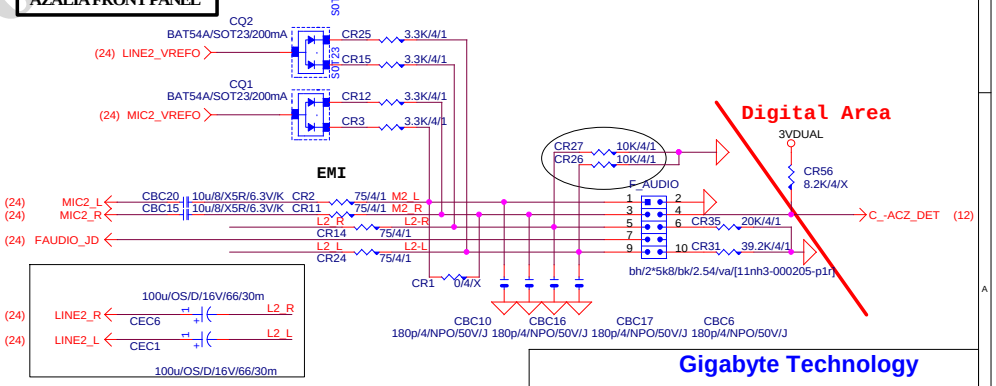
CEN/LFE



SURR BACK

Rev 0.2

AZALIA FRONT PANEL

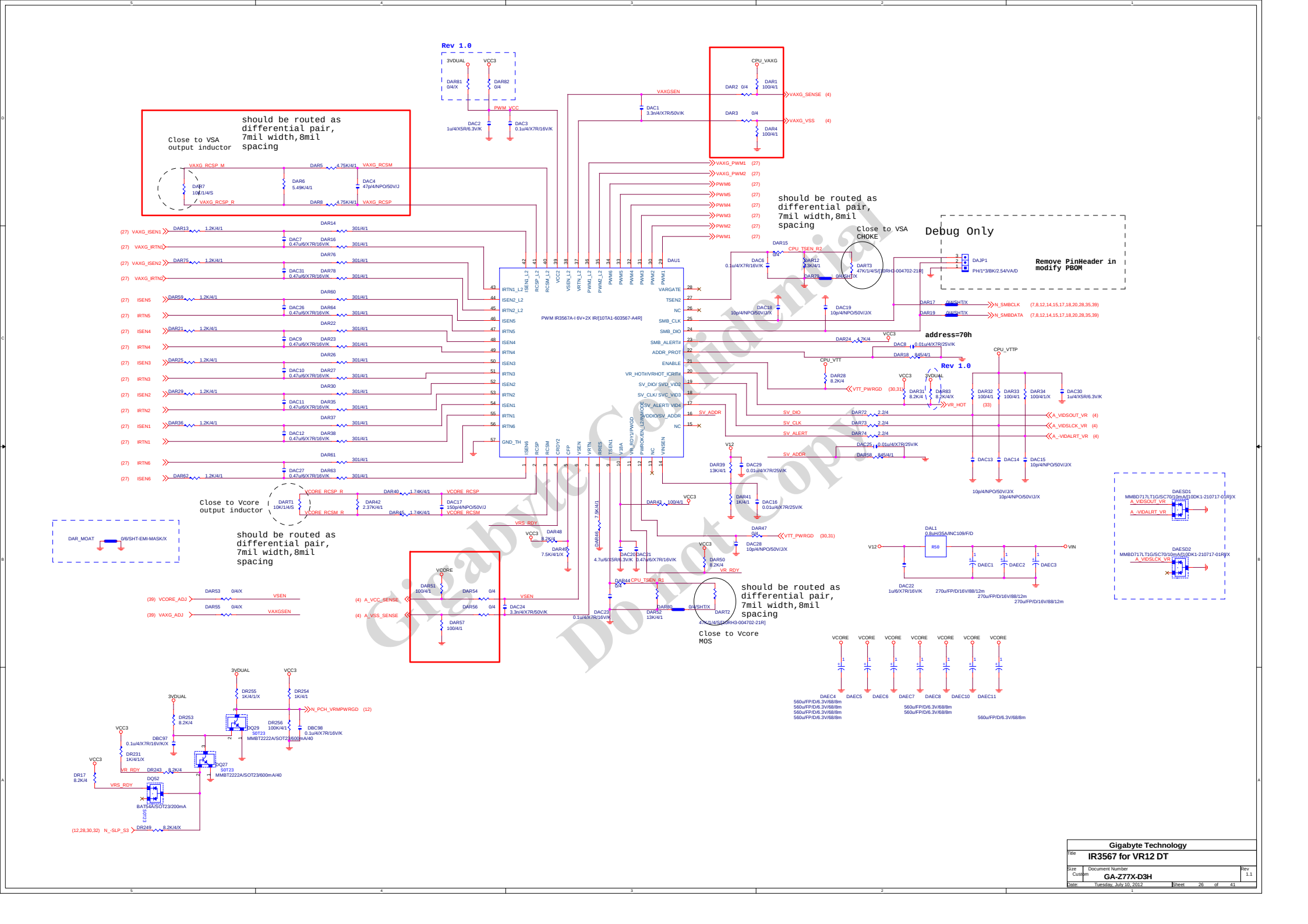


Gigabyte Technology

Title: AUDIO JACK

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.1

Date: Tuesday, July 10, 2012 | Sheet 25 of 41



Gigabyte Technology	
Title	IR3567 for VR12 DT
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.1
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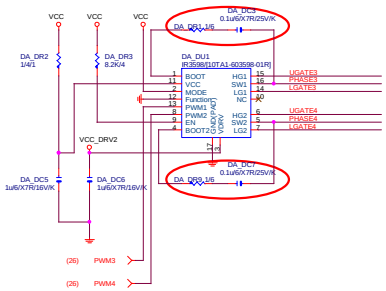
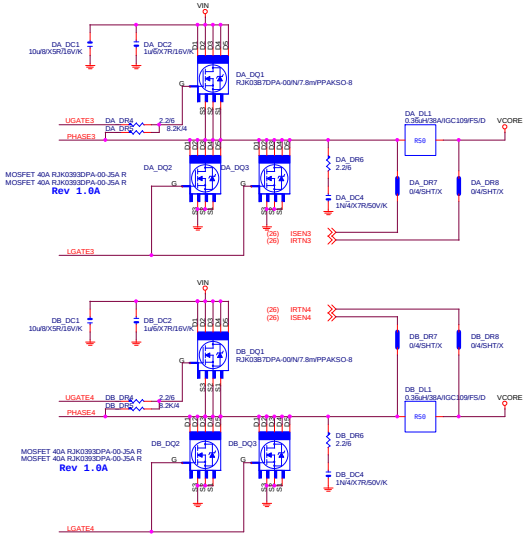
VCORE Phase 3,6

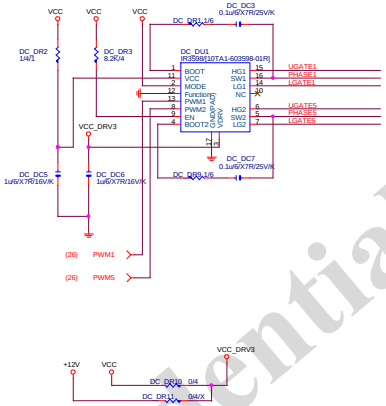


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	Dual
1	1	1R ATL	Doubler
0	0	Tri-State	Dual
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

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

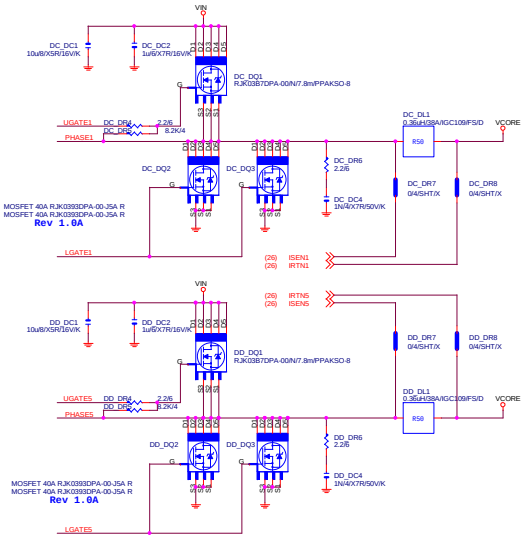


VCORE Phase 1,4

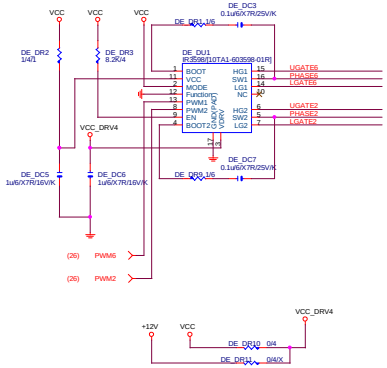


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	Dual
1	1	1R ATL	Doubler
0	0	Tri-State	Dual
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

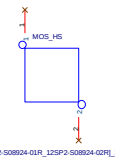
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU



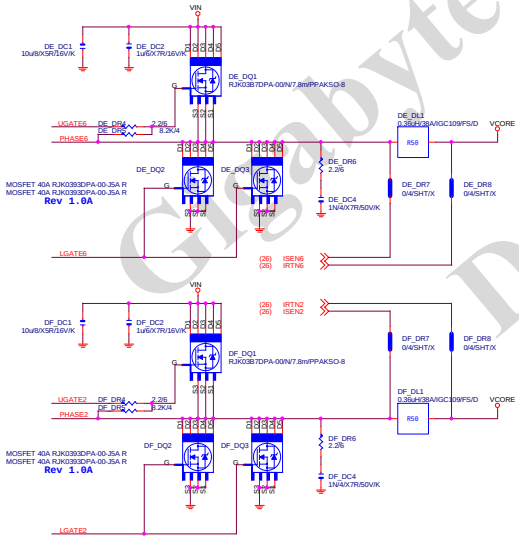
VCORE Phase 5,2



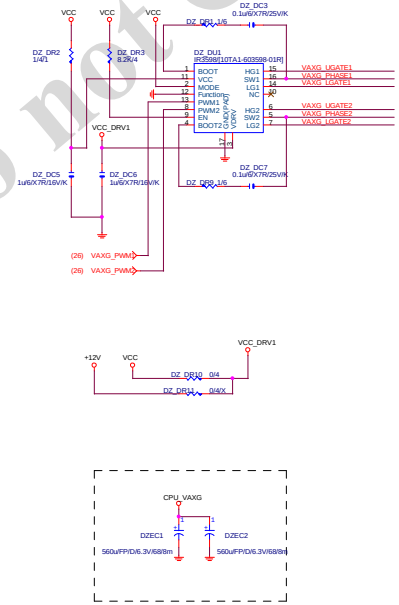
MOS HEATSINK

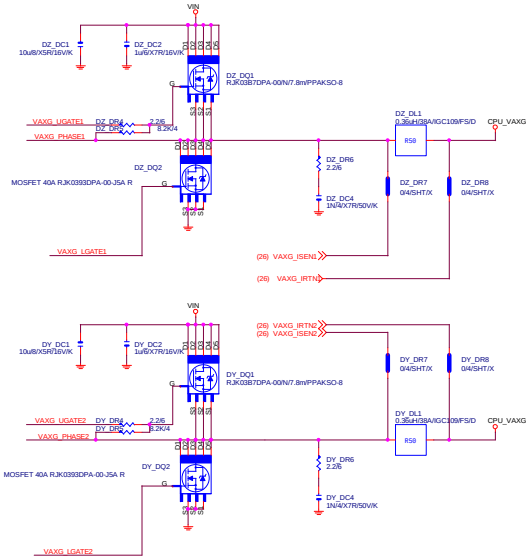


MOS HS/[12SP2-S08924-01R_12SP2-S08924-02R]_12SP2-S08924-03R]

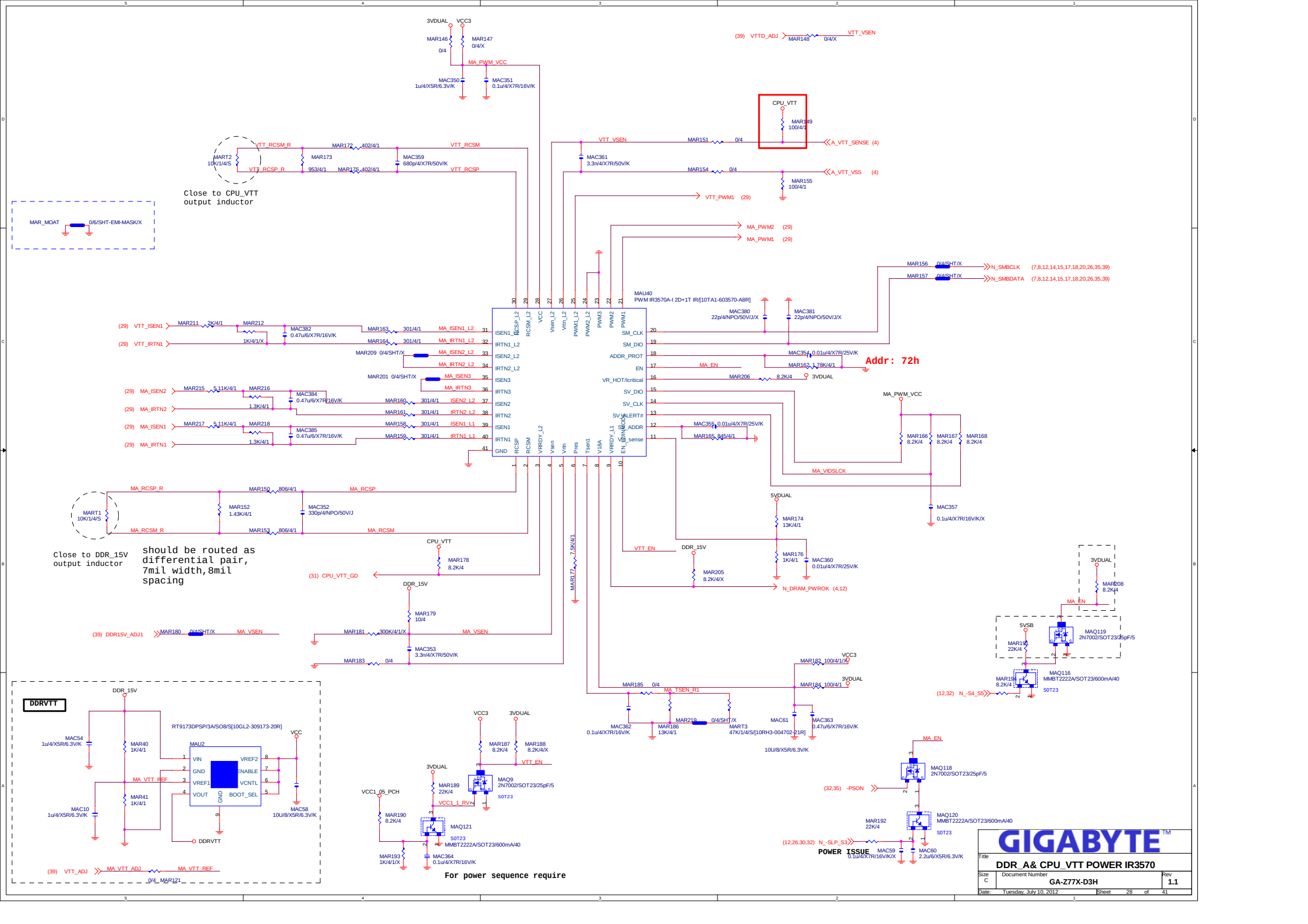


VAXG Phase





Gigabyte Technology		
Title: CPU CORE VR		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.1
Date: Tuesday, July 10, 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
VTT_RCSM_R
MART2 10K/1/4/S
MAR172 402/4/1
VTT_RCSM
MAR173 953/4/1
VTT_RCSP_R
MAR175 402/4/1
VTT_RCSP
MAC359 680p/4/X7R/50V/K
Close to CPU_VTT output inductor
MAC361 3.3n/4/X7R/50V/K
MAR151 0/4
A_VTT_SENSE (4)
MAR154 0/4
A_VTT_VSS (4)
MAR155 100/4/1
VTT_PWM1 (29)
MAR_MOAT
0/6/SHT-EMI-MASK/X
MA_PWM2 (29)
MA_PWM1 (29)
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)
MAU40
PWM IR3570A-I 2D+1T IR/[10TA1-603570-A8R]
MAC380 22p/4/NPO/50V/J/X
MAC381 22p/4/NPO/50V/J/X
(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
(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
SM_CLK
SM_DIO
ADDR_PROT
EN
VR_HOT/Icritical
SV_DIO
SV_CLK
SV_ALERT#
SVID_ADDR
EN_Isense
MAC354 0.01u/4/X7R/25V/K
MA_EN
MAR162 1.78K/4/1
Addr: 72h
MAR206 8.2K/4
3VDUAL
MA_PWM_VCC
MAR166 8.2K/4
MAR167 8.2K/4
MAR168 8.2K/4
MA_VIDSLCK
MAC355 0.01u/4/X7R/25V/K
MAR165 845/4/1
MAC357 0.1u/4/X7R/16V/K/X
MA_RCSP_R
MAR150 806/4/1
MA_RCSP
MART1 10K/1/4/S
MAR152 1.43K/4/1
MAC352 330p/4/NPO/50V/J
MA_RCSM_R
MAR153 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
MAR176 1K/4/1
MAC360 0.01u/4/X7R/25V/K
VTT_EN
DDR_15V
MAR205 8.2K/4/X
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]
MAC54 1u/4/X5R/6.3V/K
MAR40 1K/4/1
MAU2
VIN
GND
VREF1
VOUT
VREF2
ENABLE
VCNTL
BOOT_SEL
VCC
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
VCC1_05_PCH
MAR189 22K/4
MAQ9 2N7002/SOT23/25pF/5
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
POWER ISSUE
MAC59 0.1u/4/X7R/16V/K/X
MAC60 2.2u/6/X5R/6.3V/K
GIGABYTE
Title
DDR_A& CPU_VTT POWER IR3570
Size C
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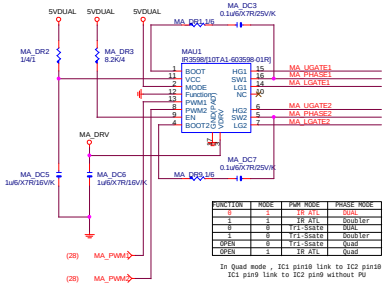
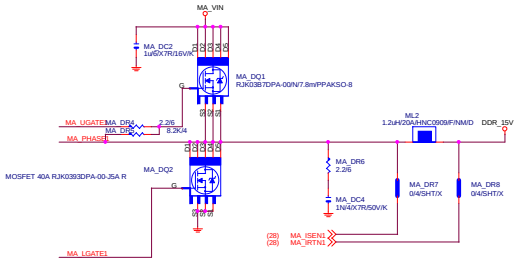
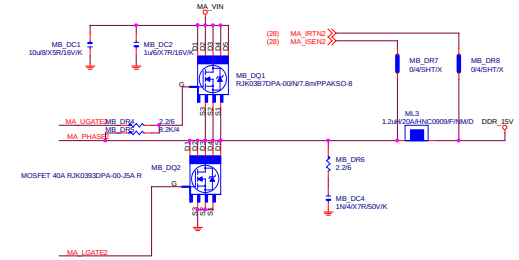
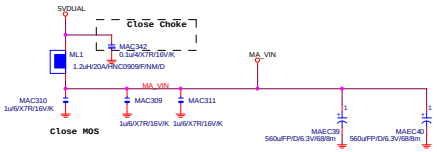
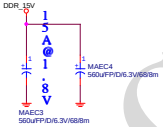
DDR_15V



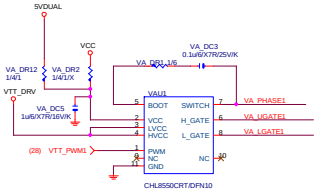


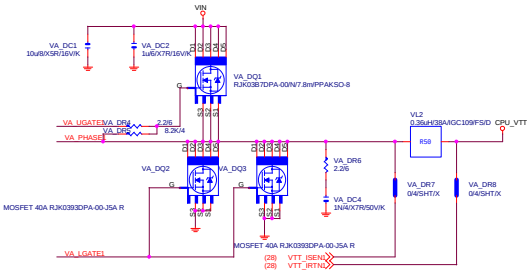


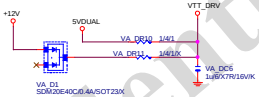


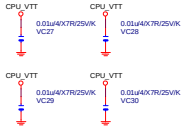


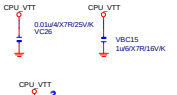
CPU_VTT

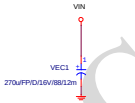


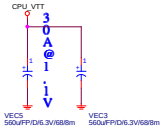












Gigabyte Technology		
Title: CPU CORE VR		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.1
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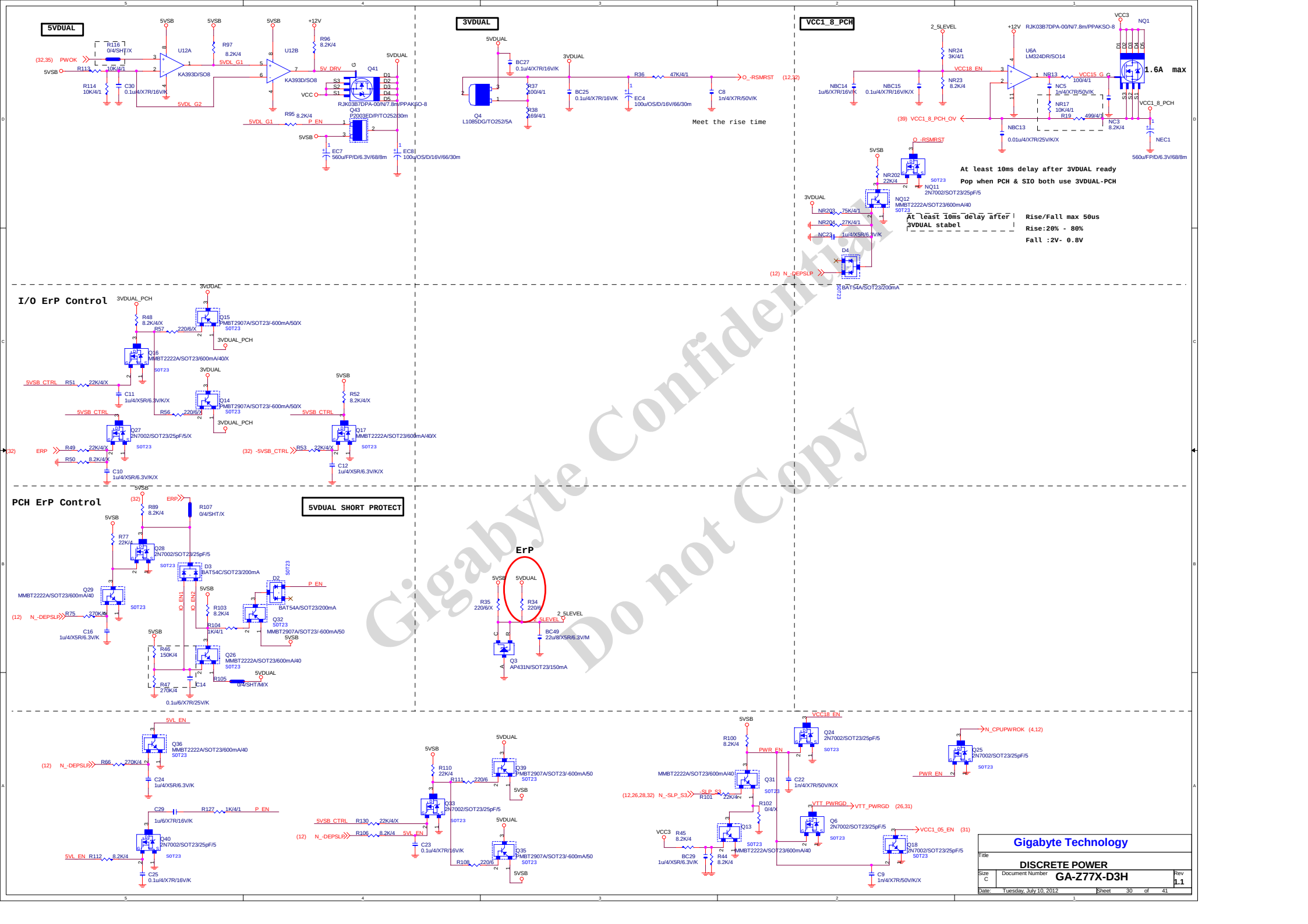
5VDUAL
3VDUAL
VCC1_8_PCH
I/O ErP Control
PCH ErP Control
5VDUAL SHORT PROTECT
ErP
Meet the rise time
1.6A max
At least 10ms delay after 3VDUAL ready
Pop when PCH & SIO both use 3VDUAL-PCH
At least 10ms delay after 3VDUAL stabel
Rise/Fall max 50us
Rise:20% - 80%
Fall :2V- 0.8V
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DISCRETE POWER
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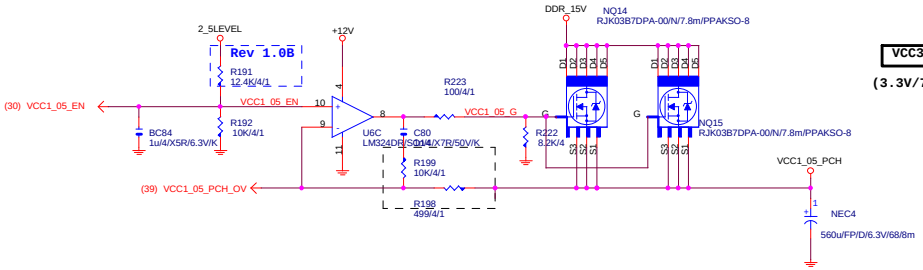
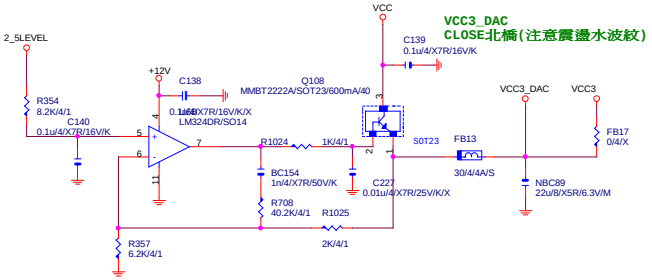
Gigabyte Confidential
Do not Copy

VCC1_05_PCH

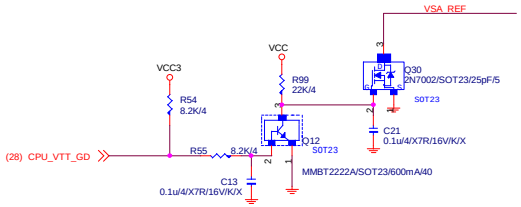


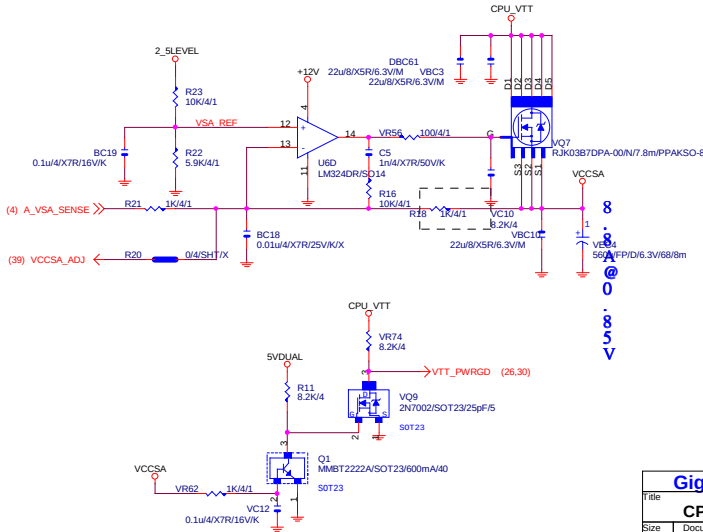
VCC3_DAC

(3.3V/70mA+360uA)



VCC_SA





Gigabyte Technology		
Title: CPU VTT PWM_ISL6312		
Size: C	Document Number: GA-Z77X-D3H	Rev: 1.1
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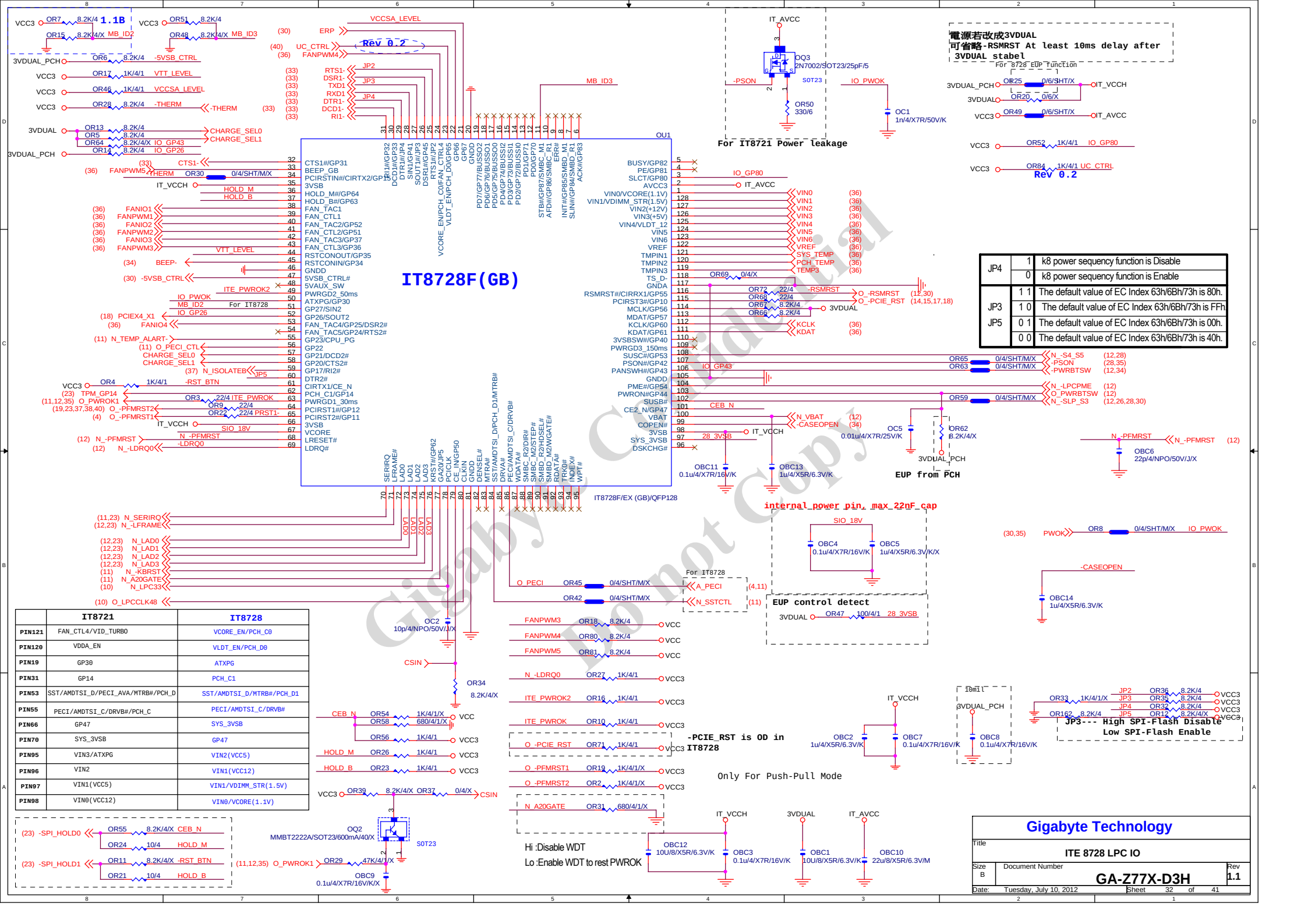
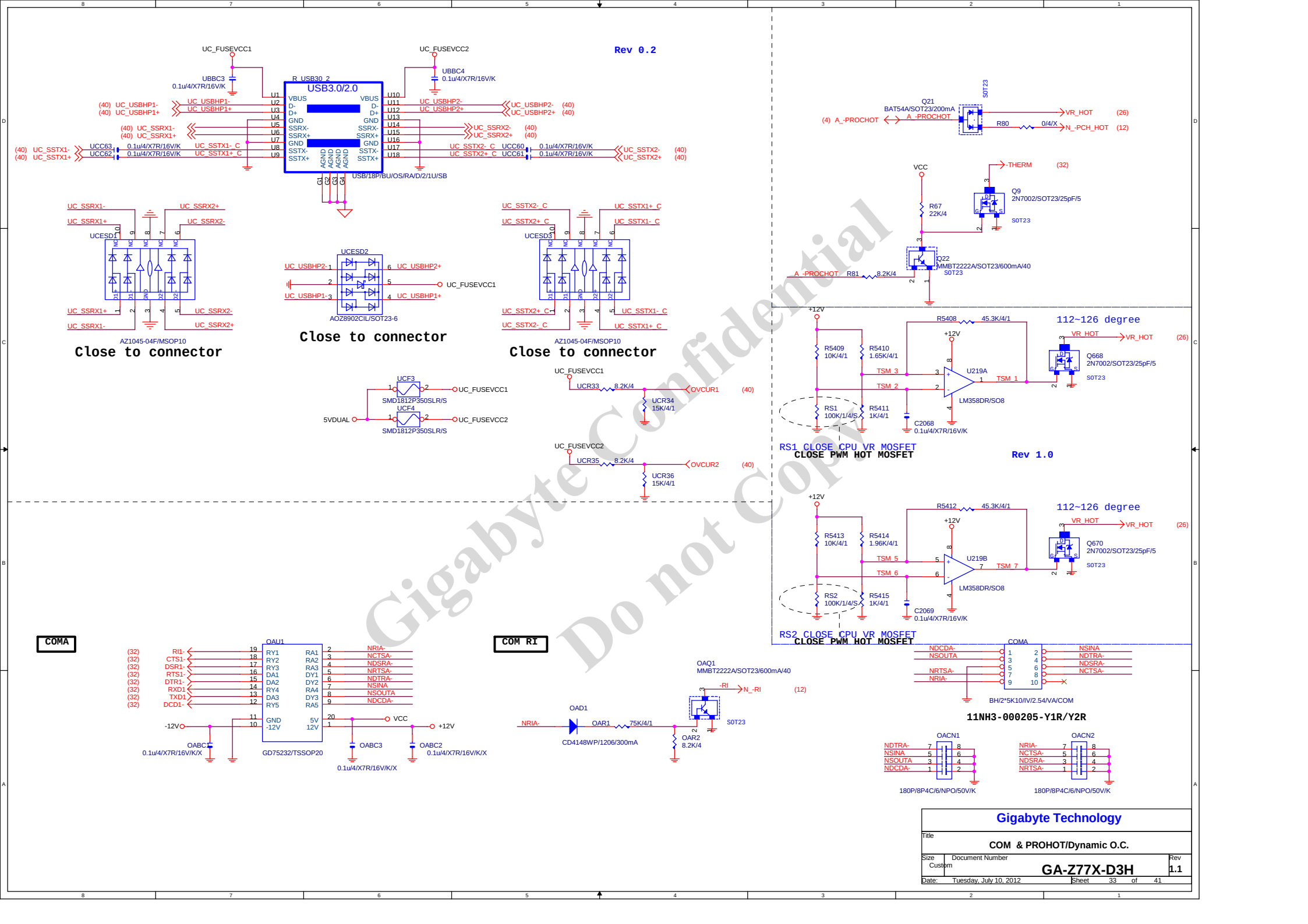
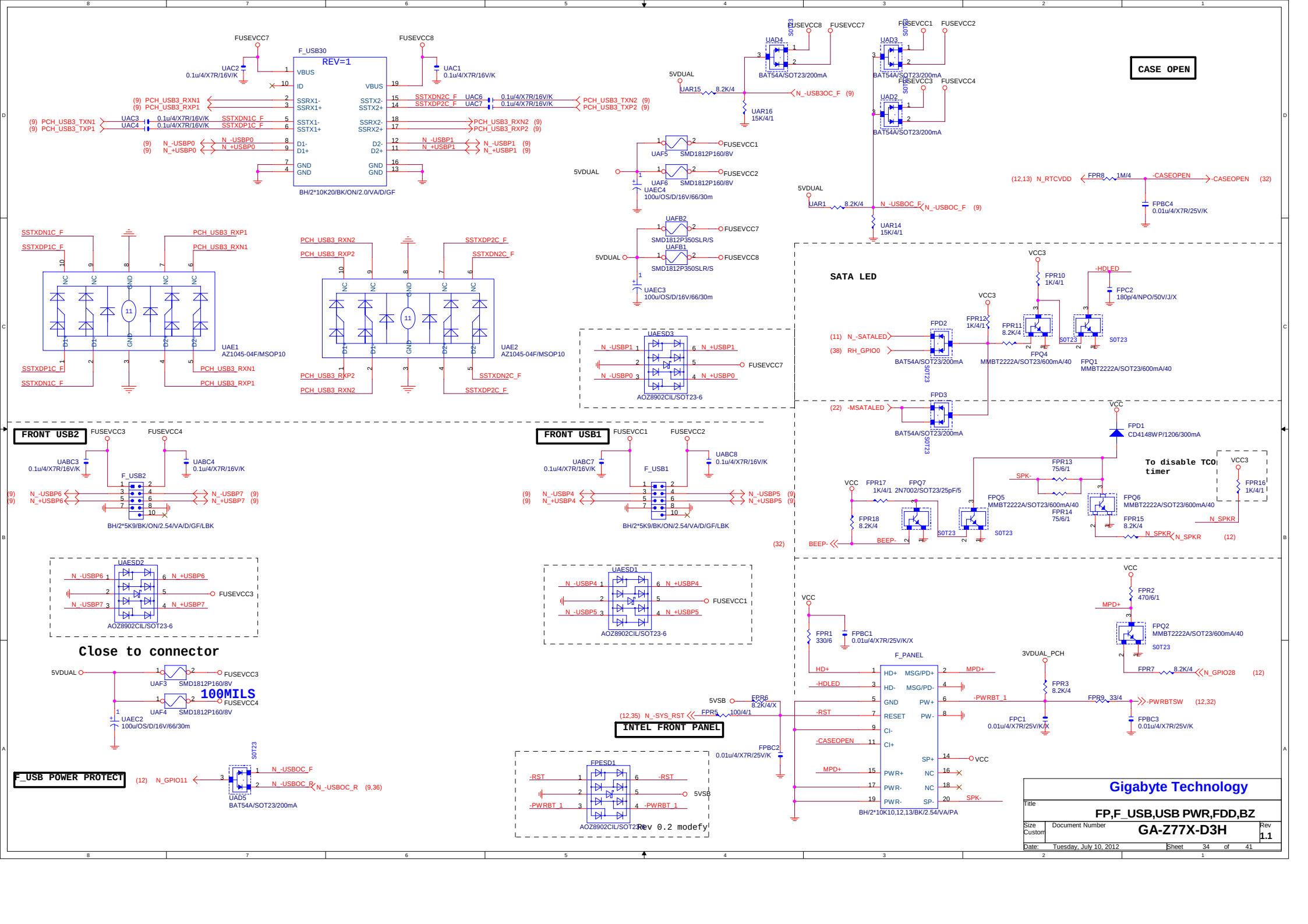


JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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




F_USB30
REV=1
BH/2*10K20/BK/ON/2.0/VA/D/GF
UAE1
AZ1045-04F/MSOP10
UAE2
AZ1045-04F/MSOP10
CASE OPEN
SATA LED
FRONT USB2
FRONT USB1
F_USB2
F_USB1
BH/2*5K9/BK/ON/2.54/VA/D/GF/LBK
Close to connector
100MILS
F_USB POWER PROTECT
INTEL FRONT PANEL
F_PANEL
BH/2*10K10,12,13/BK/2.54/VA/PA
To disable TCO timer
Rev 0.2 modefy
Gigabyte Technology
FP,F_USB,USB PWR,FDD,BZ
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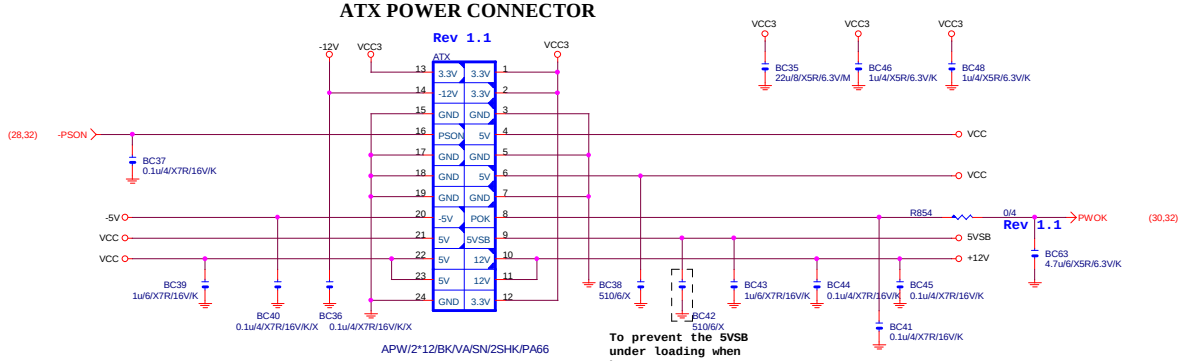
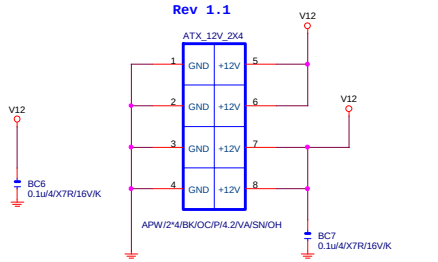
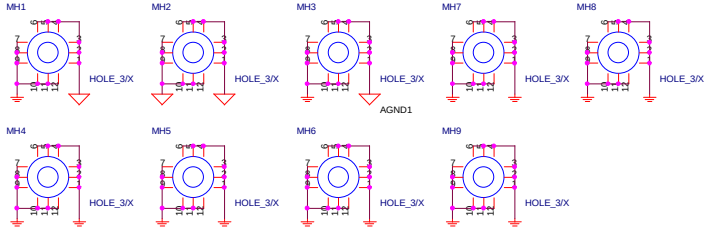
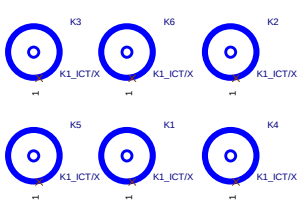
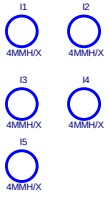
ATX POWER CONNECTOR

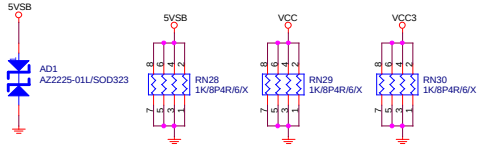








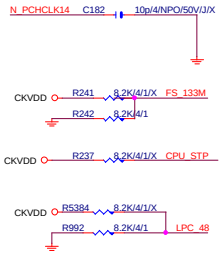


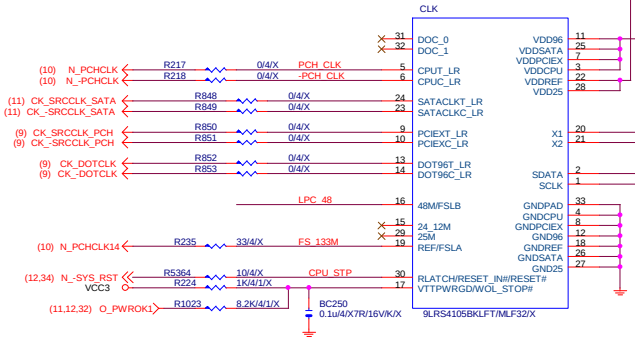


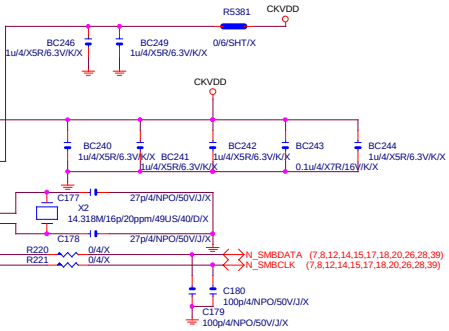
CLK GEN CK505

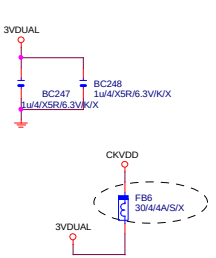
CPU Frequency Selection

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









Gigabyte Technology			
Title: ATX POWER CONNECTOR			
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TEMP H/W MONITOR

(32) VREF — OR73 10K/4/1 — OR151 10K/4/1 — OR152 10K/4/1
(32) SYS_TEMP
(32) PCH_TEMP
(32) TEMP3
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 — OR75 8.2K/4 — VIN5 (32)
DDR_15V — OR74 8.2K/4 — VIN6 (32)
VCC VCC3 — OR60 7.15K/4/1/X — OR57 6.49K/4/1 — VIN1 (32)
+12V — OR79 75K/4/1 — VIN2 (32)
CPU_VAXG — OR76 8.2K/4 — VIN4 (32)
VCC — OR78 15K/4/1 — VIN3 (32)

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

2V — 2V

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

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

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

KBDATA — KBCLK — AGND1 — FUSEVCC_R10 — BC4 0.1u/4/X7R/16V/K
G1 G2 G3 G4 — AGND1
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 — OQ1 BAV99/SOT23/300mA/X — Anti Spike
OR1 100/4/1
+12V — R14 3.3K/4/1 — R15 15K/4/1 — FANIO1 (32)
R17 6.2K/4/1 — C4 0.047u/4/X7R/16V/K
R42 0/4/X
CPU_FAN FAN/1*4/BK/A3/PA66

(32) FANPWM3
VCC3 VCC — CPUFAN_VCC — R76 1K/4/1/X — R43 22K/4 — R74 1K/4/1 — R85 22K/4
BC33 0.1u/4/X7R/16V/K — R41 8.2K/4
U11A — LM358DR/SO8
(32) FANPWM1
BC32 1u/4/X5R/6.3V/K — R92 8.2K/4
Q5 P2003ED/P/TO252/30m
EC2 100u/OS/D/16V/66/30m

SYS FAN

OR82 100/4/1
(32) FANPWM4
SHORT PROTECT R0402-2
+12V — 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
+12V — C2067 1u/6/X7R/16V/K — R9 0/4 — R8 3.3K/4/1 — R7
R6 15K/4/1 — C2 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

VCC VCC3 — R73 1K/4/1/X — R72 1K/4/1
(32) FANPWM2 — R71 22K/4
R86 8.2K/4 — R88 22K/4 — BC31 1u/4/X5R/6.3V/K
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

R1 — 0/4/SHT/M/X — AGND1

5VDUAL — F1 SMD1812P160/8V — FUSEVCC_R9
F2 SMD1812P160/8V — 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 — FUSEVCC_R9 — FUSEVCC_R10

Gigabyte Technology	
Title	HWM,KB/MS, FAN CTRL
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LAN:AR8151/AR8161

離IC近越好

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

AR8161-->N/A (LABC6)

AR8161-->(0)

Rev 1.0A

AR8161-->N/A (LABC12)

AR8161-->N/A (LAR9,LAC18)

AR8161-->N/A (LABC20)

AR8151:LA_AVDDH(LAR20)
AR8161:3VDUAL(LAR19)

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)

CLOSE
LA_LX 200mil

AR8161-->N/A (LAR3,LAR4)

AR8151 POWER

AR8161 POWER

AR8161-->(0)

AR8161-->(0)

MDI : AR8161-->N/A

CLOSE LAN CHIP

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	

USB_LAN CONNECTOR

RMA ESD PROTECT

Close to connector

USB X3 POWER

100MILS

Close to connector

Rev 0.2

EMI SHORT PAD

PS:視EMI需求

LA_MDI-->100歐姆:[20/4/8/4/20]

AZ1045-04F/MSOP10

Close to connector

AZ1045-04F/MSOP10

Close to connector

Gigabyte Technology

Title: ARTHEROS AR8151/AR8161

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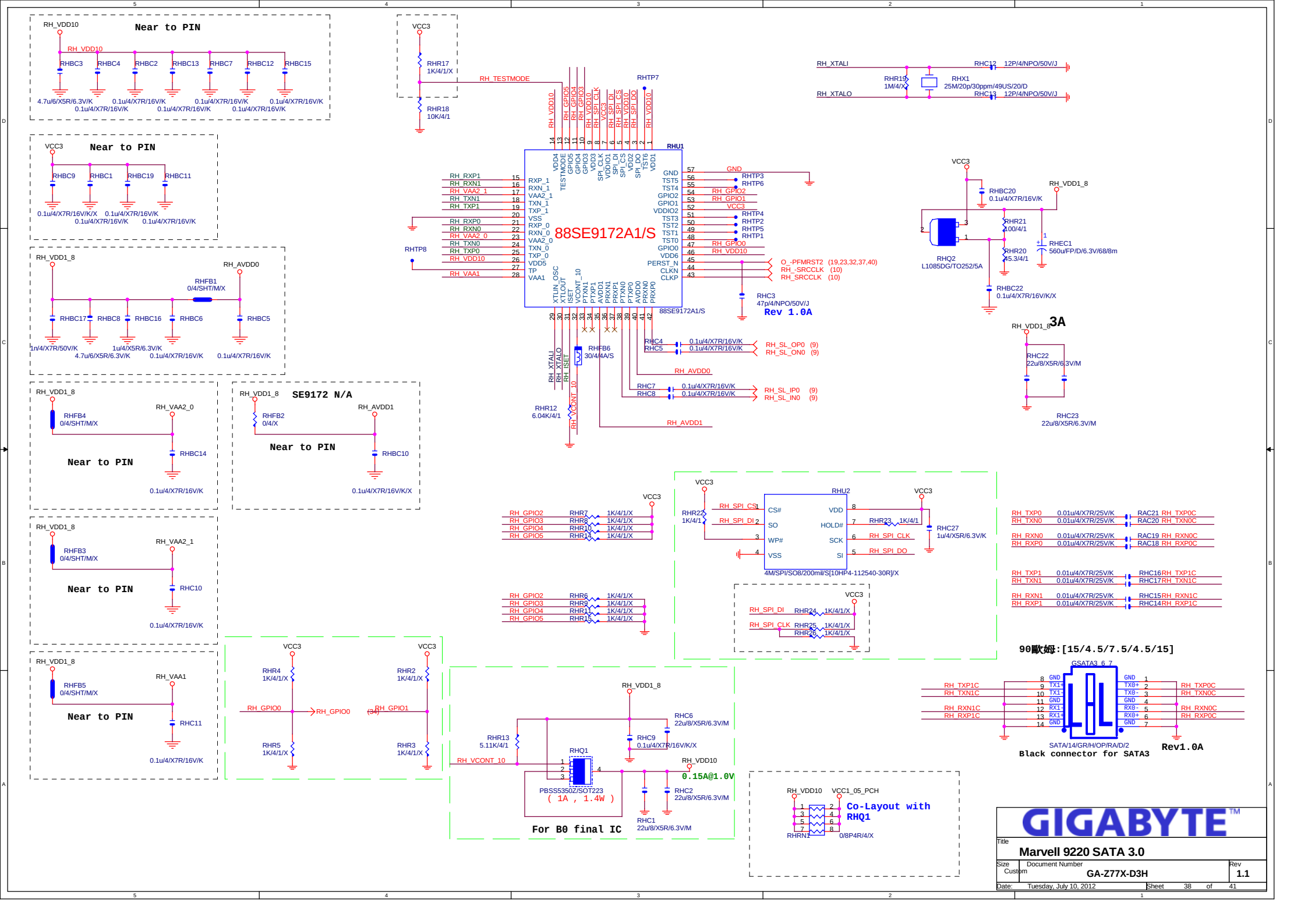
Near to PIN
RH_VDD10
RHBC3
RHBC4
RHBC2
RHBC13
RHBC7
RHBC12
RHBC15
4.7u/6/X5R/6.3V/K
0.1u/4/X7R/16V/K
VCC3
RHR17
1K/4/1/X
RHR18
10K/4/1
RH_TESTMODE
RHTP7
RHU1
88SE9172A1/S
RH_RXP1
RH_RXN1
RH_VAA2_1
RH_TXN1
RH_TXP1
RH_RXP0
RH_RXN0
RH_VAA2_0
RH_TXN0
RH_TXP0
RH_VDD10
RH_VAA1
RHTP8
GND
RHTP3
RHTP6
RH_GPIO2
RH_GPIO1
VCC3
RHTP4
RHTP2
RHTP5
RHTP1
RH_GPIO0
RH_VDD10
O_-PFMRST2 (19,23,32,37,40)
RH_-SRCCLK (10)
RH_SRCCLK (10)
RHC3
47p/4/NPO/50V/J
Rev 1.0A
RH_XTALI
RH_XTALO
RH_ISET
RHFB6
30/4/4A/S
RHC4
RHC5
0.1u/4/X7R/16V/K
RH_SL_OP0 (9)
RH_SL_ON0 (9)
RH_AVDD0
RHC7
RHC8
RH_SL_IP0 (9)
RH_SL_IN0 (9)
RHR12
6.04K/4/1
RH_VCONT_10
RH_AVDD1
RH_XTALI
RHR19
1M/4/X
RHX1
25M/20p/30ppm/49US/20/D
RH_XTALO
RHC12
RHC13
12P/4/NPO/50V/J
VCC3
RHBC20
0.1u/4/X7R/16V/K
RH_VDD1_8
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
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
RHFB4
RH_VAA2_0
RHBC14
SE9172 N/A
RHFB2
RH_AVDD1
RHBC10
RHFB3
RH_VAA2_1
RHC10
RHFB5
RH_VAA1
RHC11
RH_GPIO2
RH_GPIO3
RH_GPIO4
RH_GPIO5
RHR7
RHR8
RHR10
RHR14
RHR6
RHR9
RHR11
RHR15
1K/4/1/X
RHU2
4M/SPI/SO8/200mil/S[10HP4-112540-30R]/X
RH_SPI_CS
RH_SPI_DI
RH_SPI_CLK
RH_SPI_DO
RHR22
RHR23
RHR24
RHR25
RHR26
RHC27
1u/4/X5R/6.3V/K
RH_TXP0
RH_TXN0
RH_RXN0
RH_RXP0
RH_TXP1
RH_TXN1
RH_RXN1
RH_RXP1
0.01u/4/X7R/25V/K
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
RH_TXP1C
RH_TXN1C
RH_RXN1C
RH_RXP1C
RH_TXP0C
RH_TXN0C
RH_RXN0C
RH_RXP0C
SATA/14/GR/H/OP/RA/D/2
Black connector for SATA3
Rev1.0A
RHR4
RHR5
RHR2
RHR3
RH_GPIO0
RH_GPIO1
(34)
RH_VDD1_8
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
VCC1_05_PCH
RHRN1
0/8P4R/4/X
Co-Layout with RHQ1
GIGABYTE
Title
Marvell 9220 SATA 3.0
Size
Custom
Document Number
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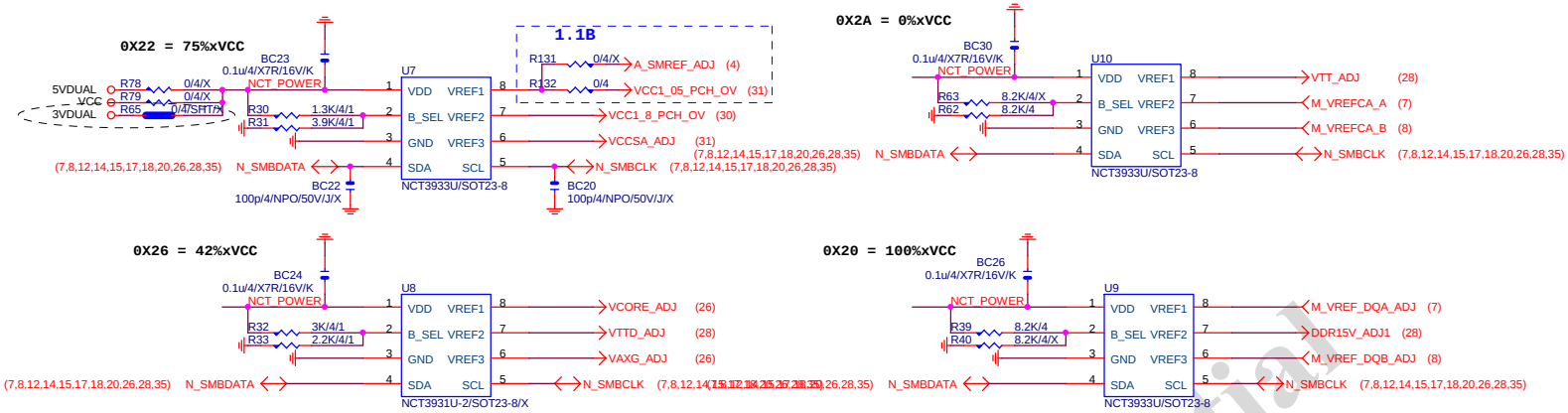

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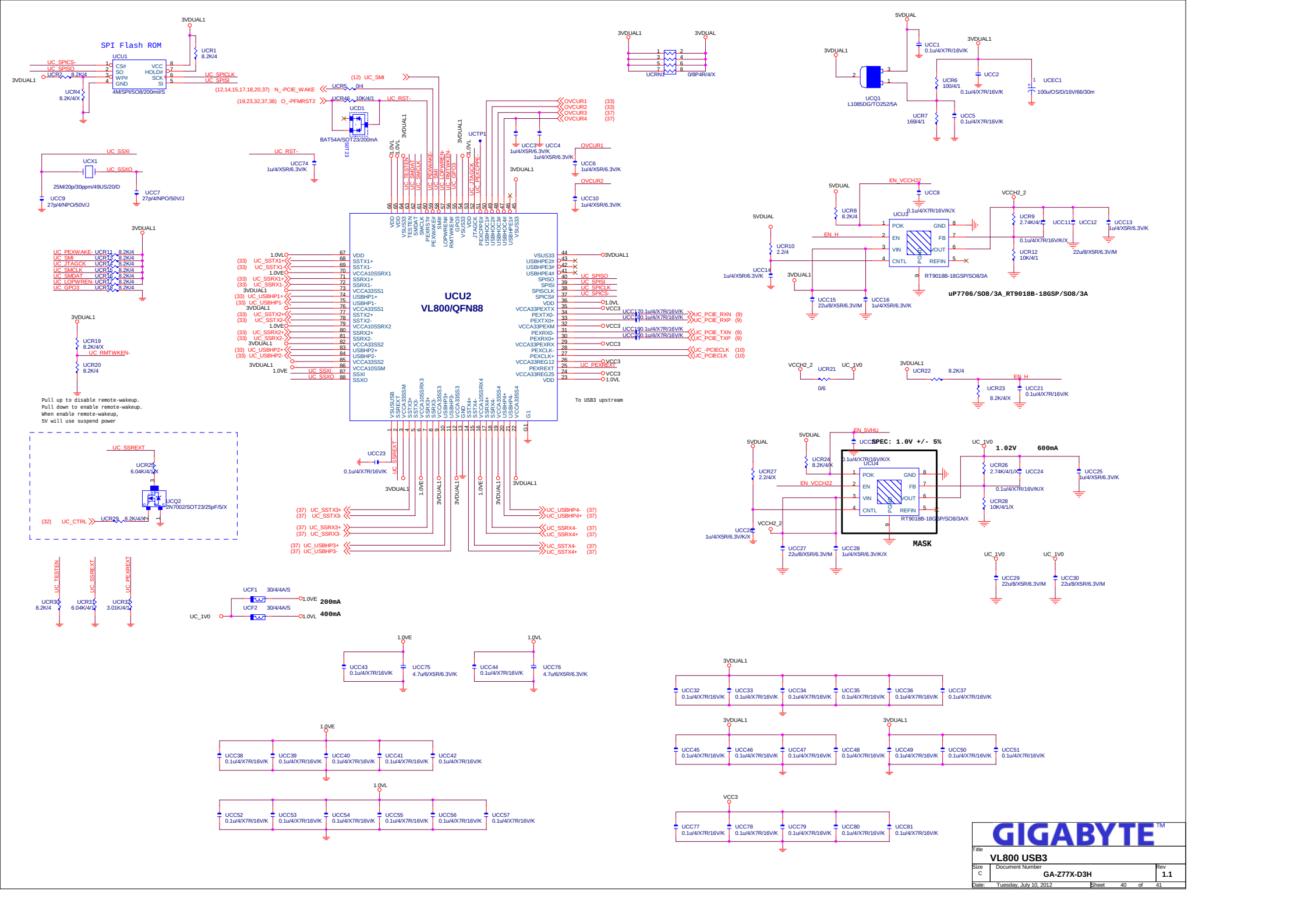
SPI Flash ROM
UCU1
4M/SPI/SO8/200mil/S
UCU2
VL800/QFN88
UCU3
UCU4
RT9018B-18GSP/SO8/3A
uP7706/SO8/3A_RT9018B-18GSP/SO8/3A
SPEC: 1.0V +/- 5%
1.02V
600mA
MASK
To USB3 upstream
Pull up to disable remote-wakeup.
Pull down to enable remote-wakeup.
When enable remote-wakeup,
5V will use suspend power
BAT54A/SOT23/200mA
2N7002/SOT23/25pF/5/X
UCQ1
L1085DG/TO252/5A
UCRN1
0/8P4R/4/X
UCX1
25M/20p/30ppm/49US/20/D
GIGABYTE
Title
VL800 USB3
Size C
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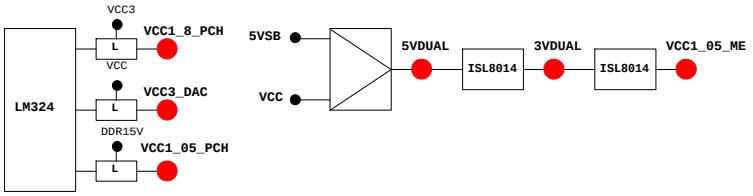
PCH GPIO LIST TABLE

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

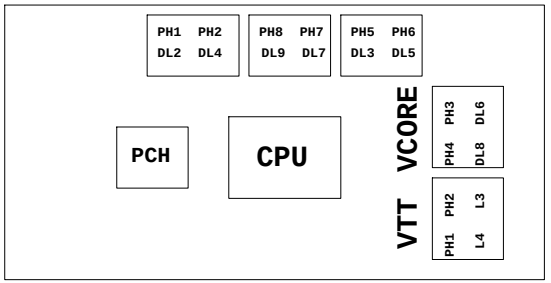
Super I/O ITE8720 GPIO Table

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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Title: TABLE LIST

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