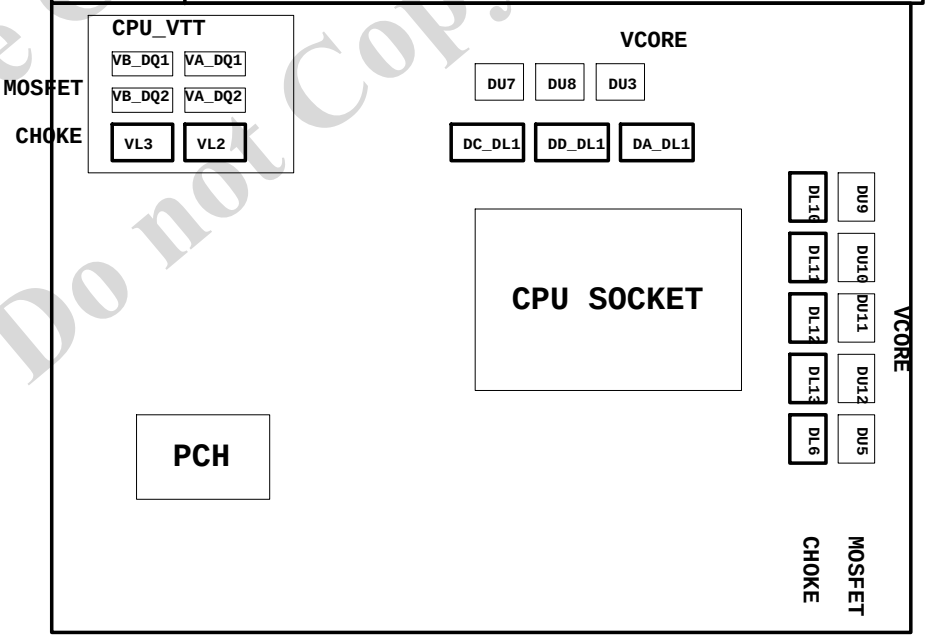
Model Name: GA-Z77X-D3H Rev 1.2

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: 1.2

Date: Wednesday, July 24, 2013 | 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變更為'100/4/1 2.DART2,DART3,MART3,47K/1/4/S變更為47K/1/4/S/[10RH3-004702-21R] 3.MAC361,DAC24,DAC1,1N/4/X7R/50V/K變更為3.3n/4/X7R/50V/K 4.MAR151,DAR54,DAR2,24.9/4/1變更為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變更為'1.65K/4/1 2.DAR6,'5.36K/4/1變更為'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變更為'0.36uH/38A/IGC109/FS/D 4.DAR45,DAR40,'1.54K/4/1變更為'1.74K/4/1 5.DAR5,DAR8,'4.12K/4/1變更為'4.75K/4/1 6.R5414,'3.65K/4/1變更為'2.49K/4/1 7.DAR13,DAR36,DAR25,DAR59,DAR29,DAR62,DAR75,DAR21,2K/4/1變更為1.2K/4/1 8.DAR42,'2.05K/4/1變更為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.版本改為 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	
2012/07/23	1. Rev 1.2 for remove Virtu MVP	Rev 1.2

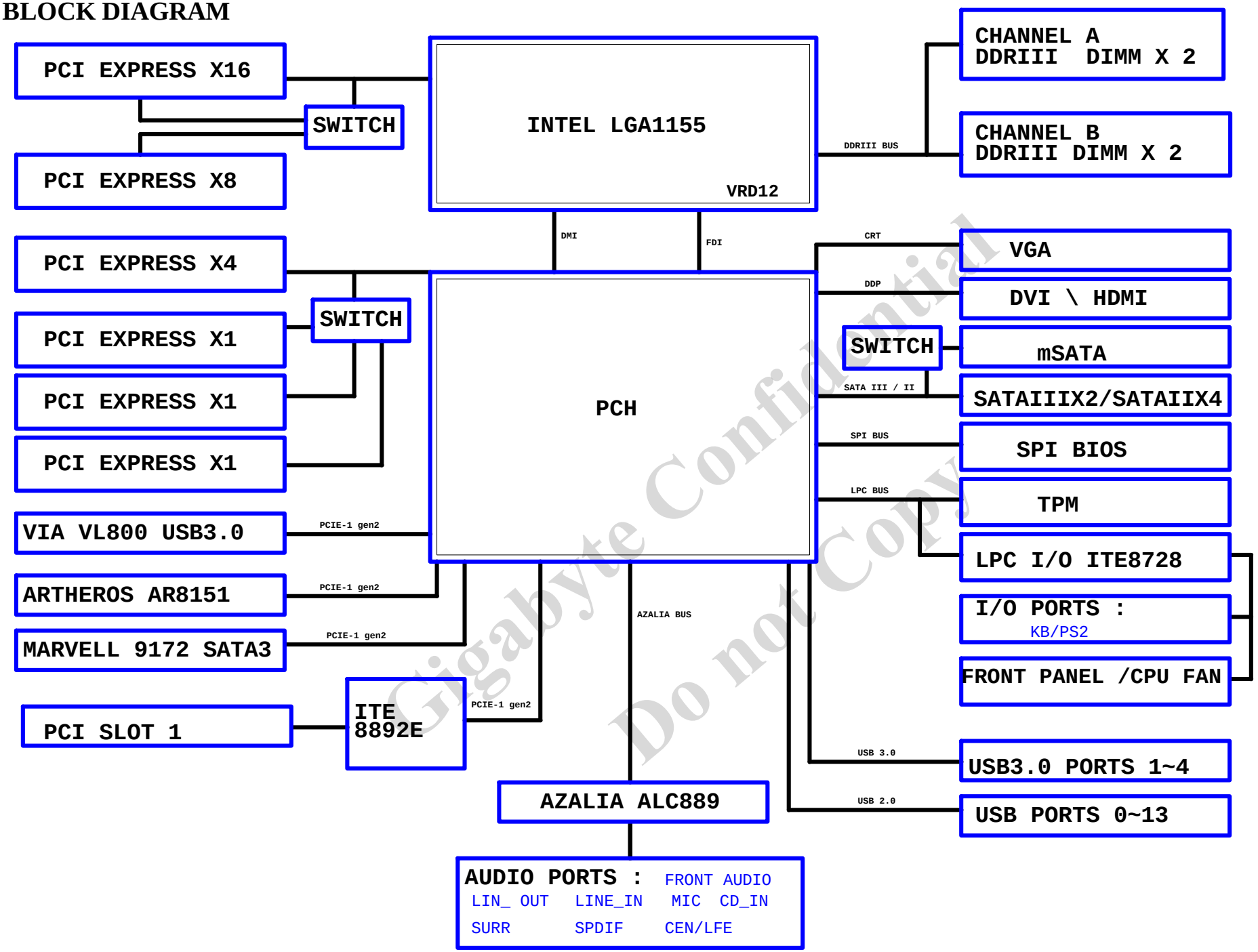
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.2

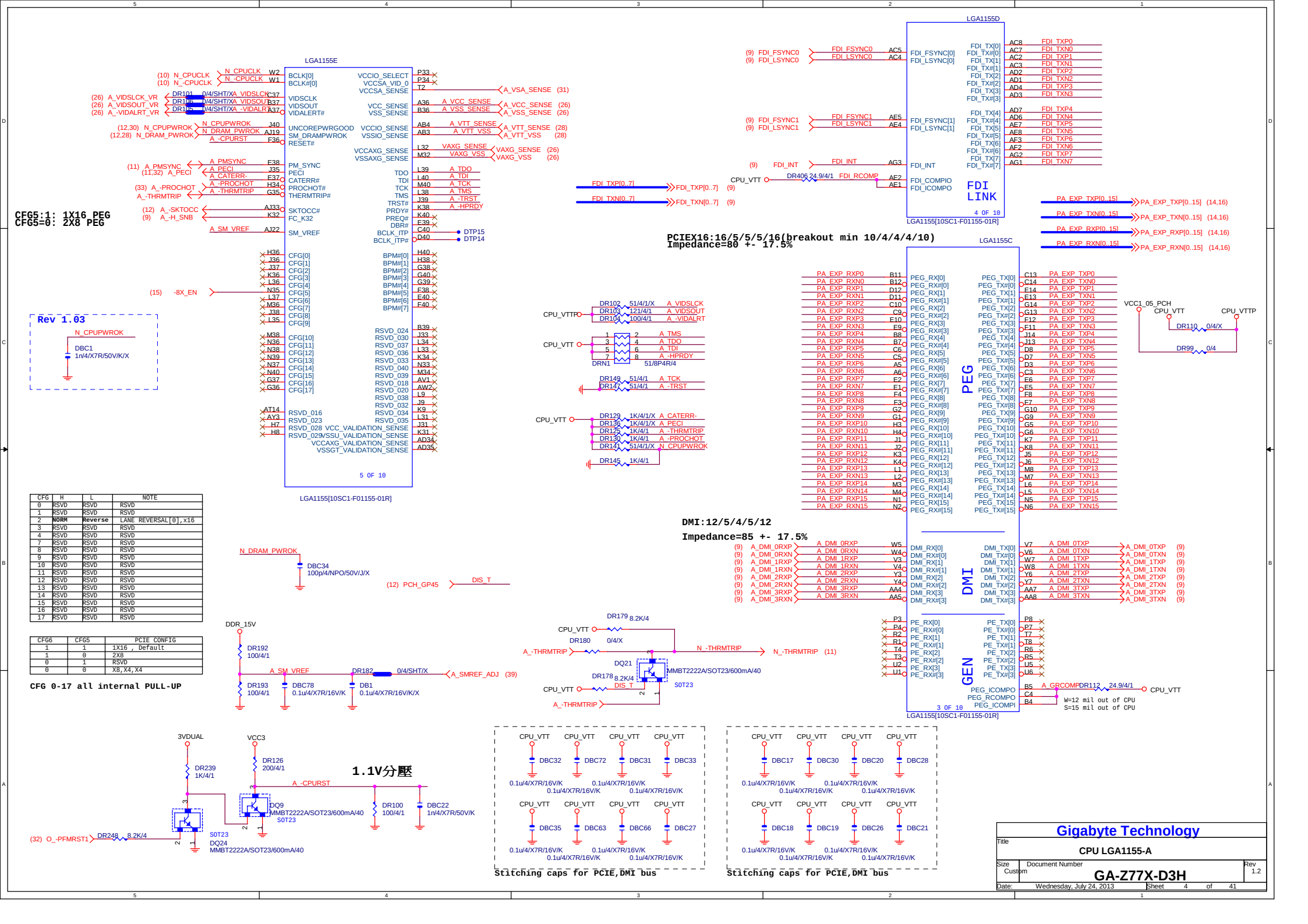
Date: Wednesday, July 24, 2013 | Sheet 2 of 41

BLOCK DIAGRAM



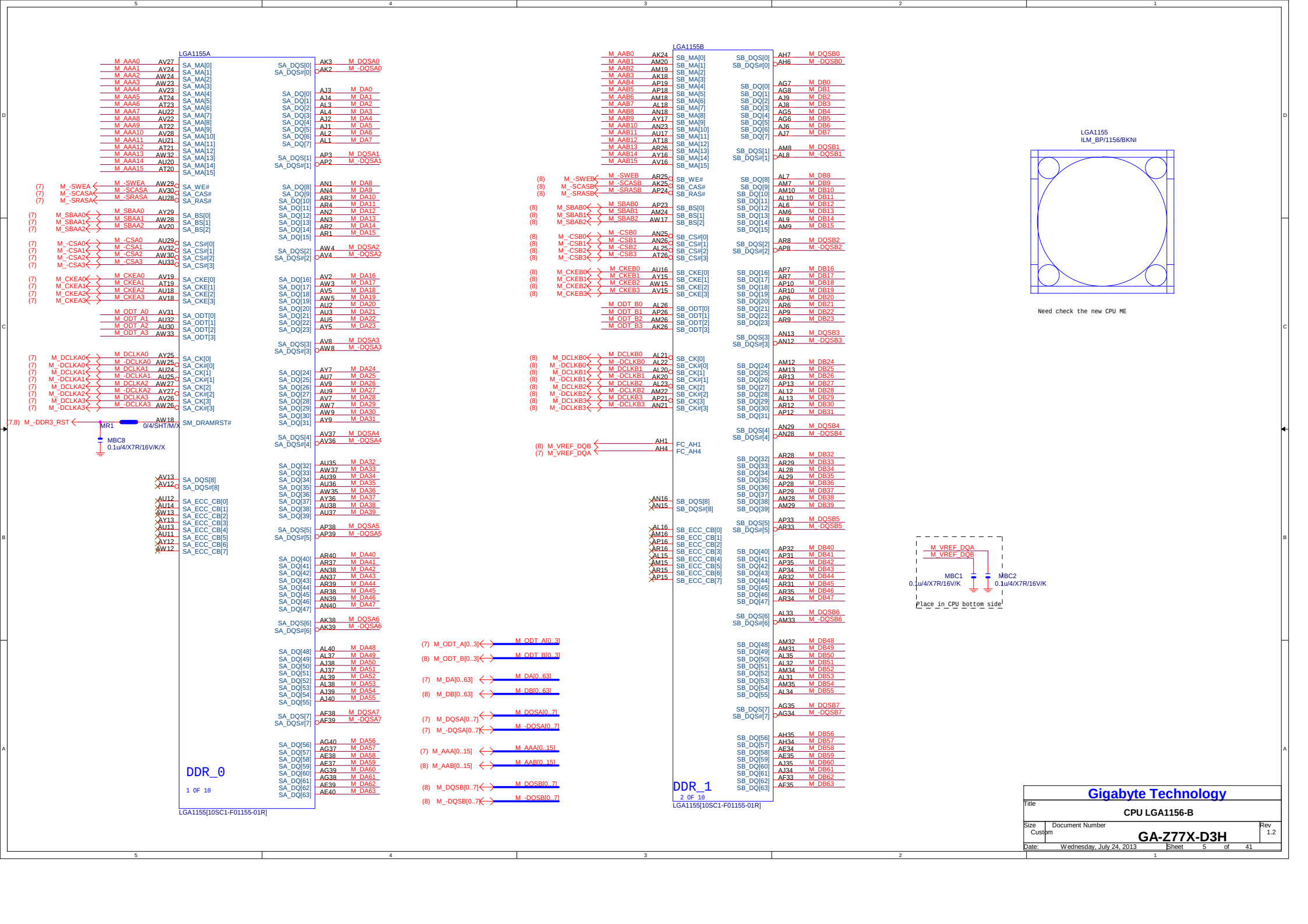
Gigabyte Technology

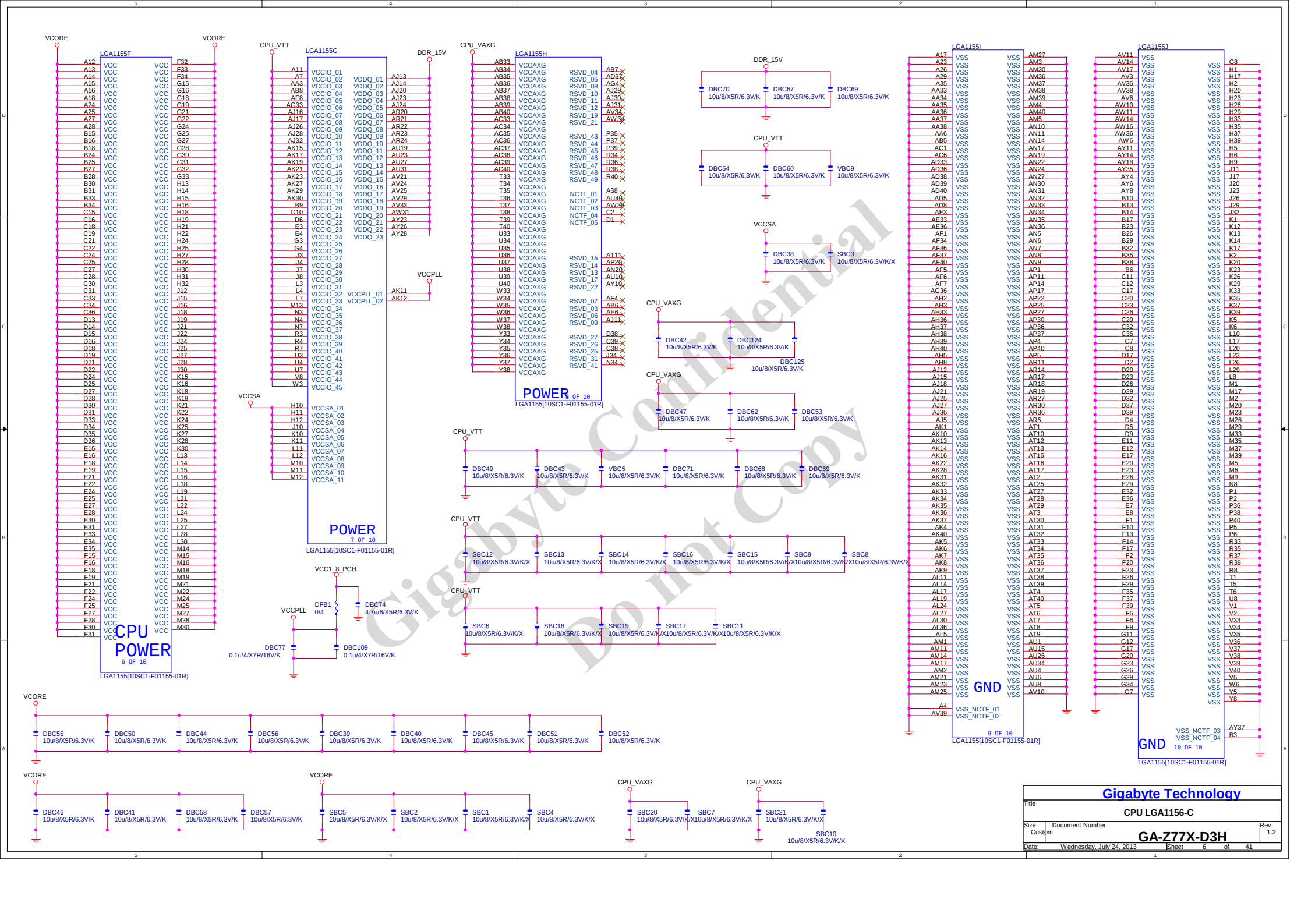
Title	BLOCK DIAGRAM	
Size C	Document Number GA-Z77X-D3H	Rev 1.2
Date: Wednesday, July 24, 2013	Sheet 3 of 41	



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
Gigabyte Technology
CPU LGA1156-B
GA-Z77X-D3H
Wednesday, July 24, 2013


LGA1155F
CPU POWER
6 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155G
POWER
7 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155H
POWER
8 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155I
GND
9 OF 10
LGA1155[10SC1-F01155-01R]
LGA1155J
GND
10 OF 10
LGA1155[10SC1-F01155-01R]
VCORE
CPU_VTT
CPU_VAXG
DDR_15V
VCCSA
VCCPLL
VCC1_8_PCH
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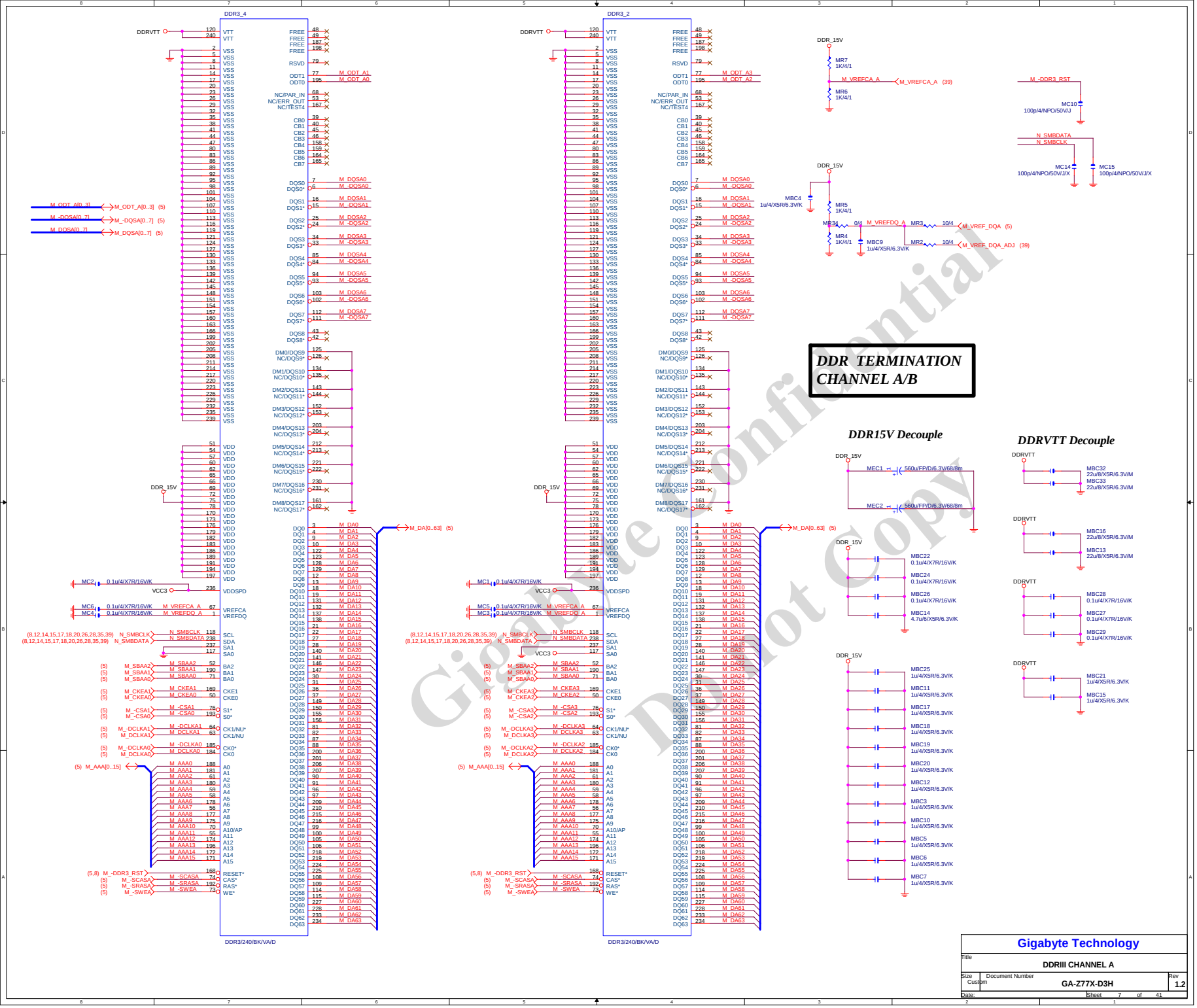
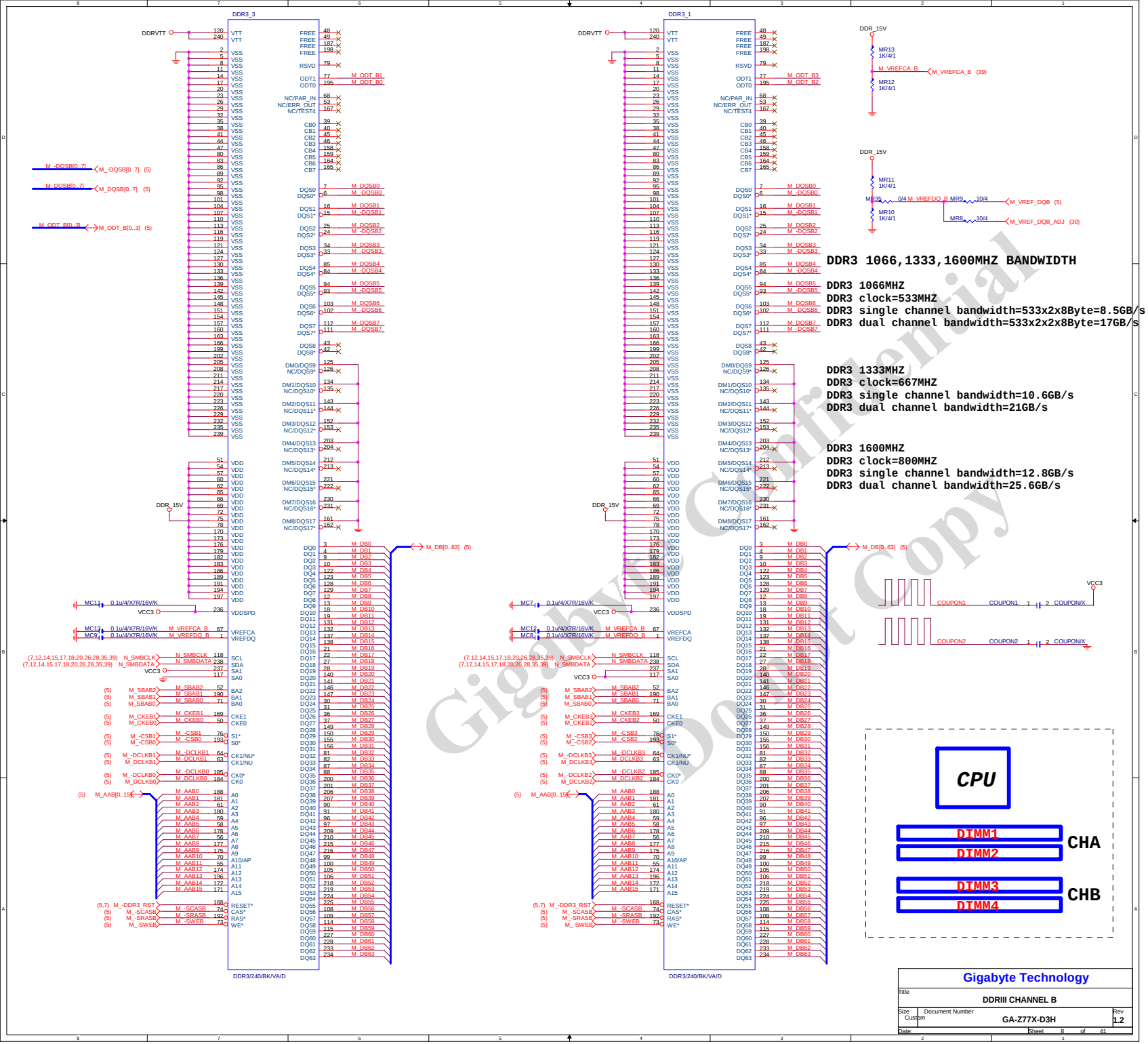
CPU LGA1156-C
GA-Z77X-D3H
Wednesday, July 24, 2013



Gigabyte Technology		
Title: DDRIII CHANNEL A		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.2
Date:	Sheet 7 of 41	



Gigabyte Technology			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.2
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

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

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

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

Gigabyte Technology			
Title: PCH FDI,DMI,USB ,PCIE			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.2
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PCHF

PCHH

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

Rev 1.1

Close to PCH

Close to Filter

VGA/BU/SC/RA/D/2/HR

Gigabyte Technology	
Title	PCH DISPLAY ,CLK BUFFER
Size: Custom	Document Number: GA-Z77X-D3H
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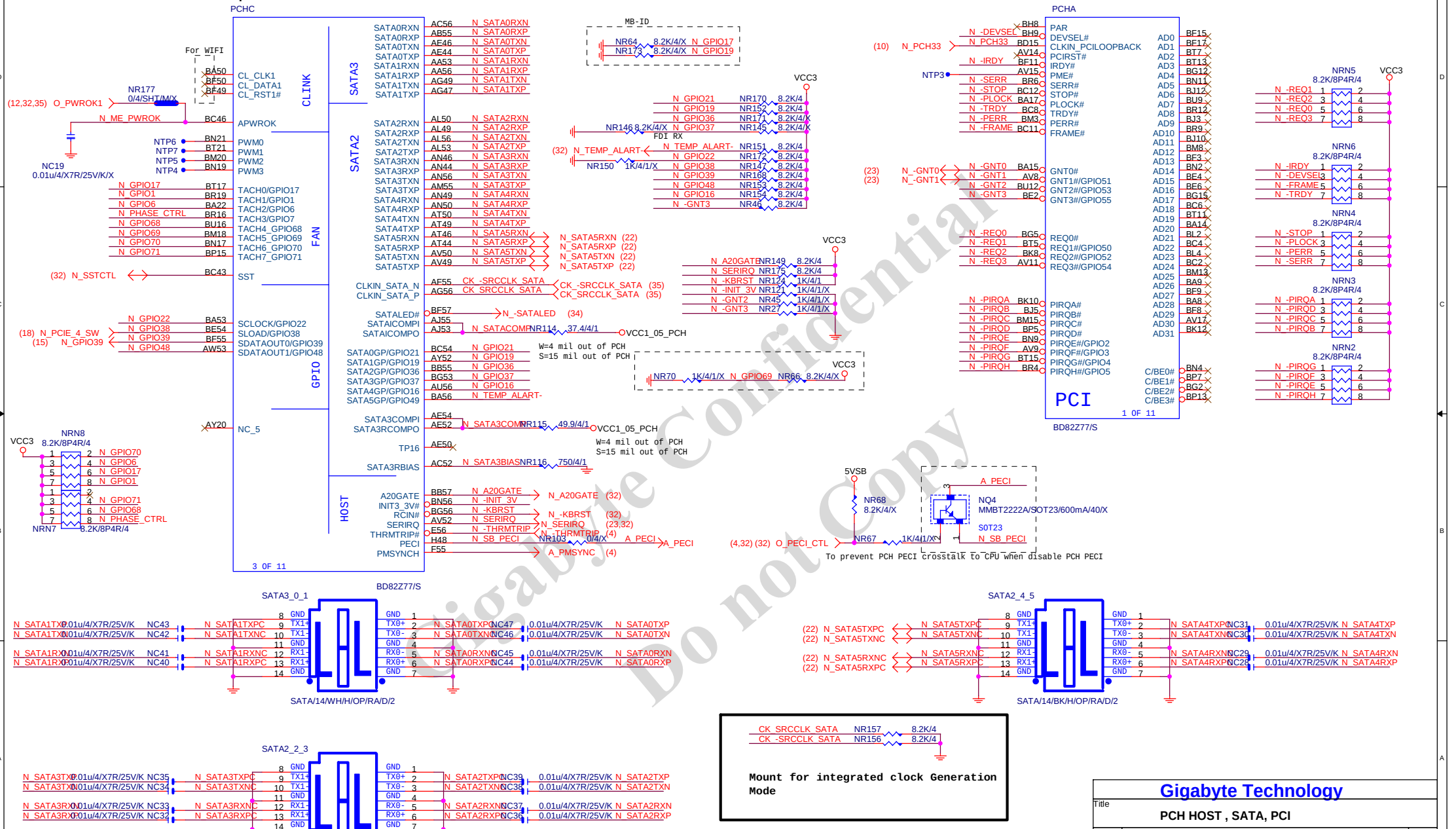
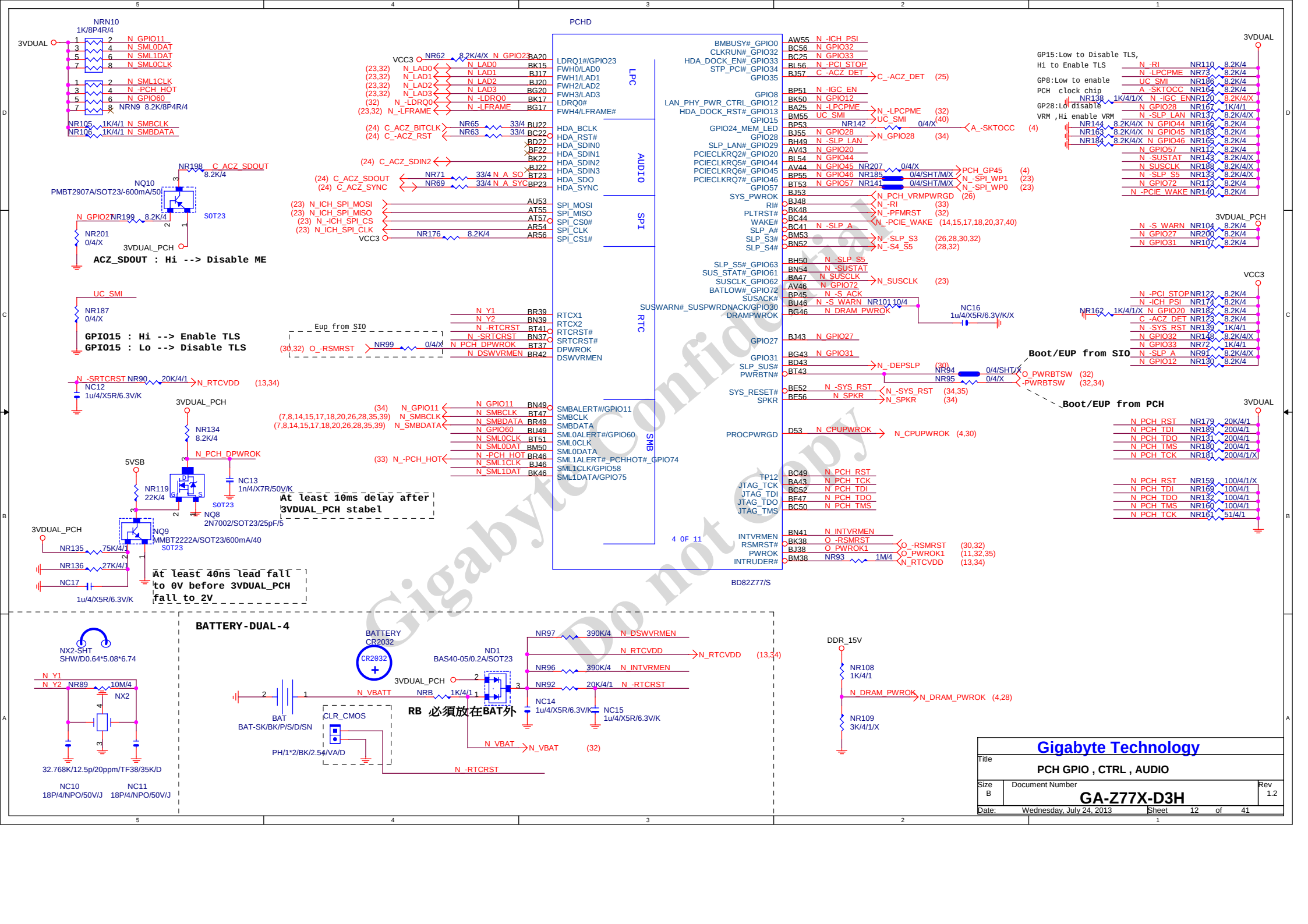
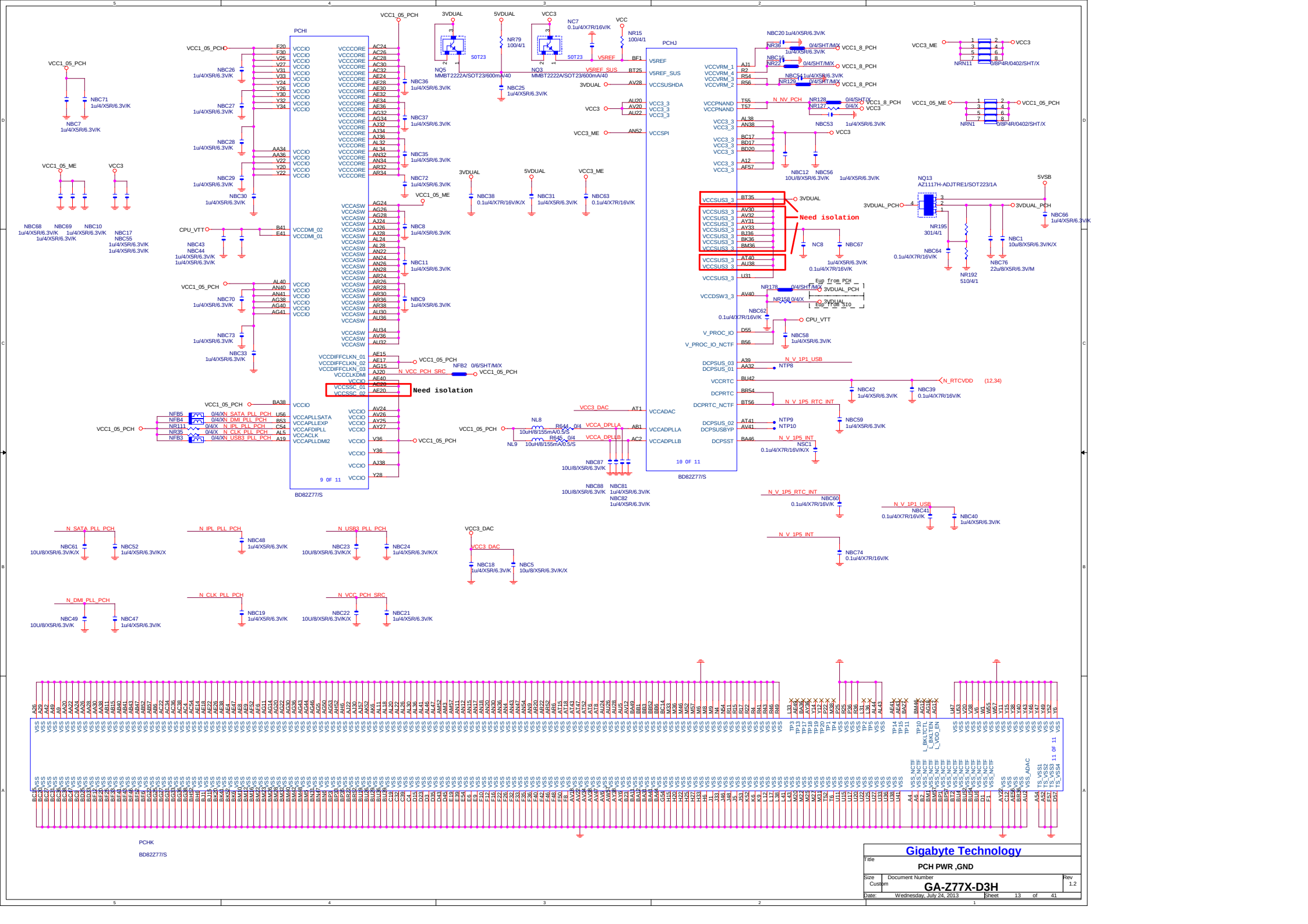
Date: Wednesday, July 24, 2013	Sheet 10 of 41

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






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
Rev: 1.2
Date: Wednesday, July 24, 2013
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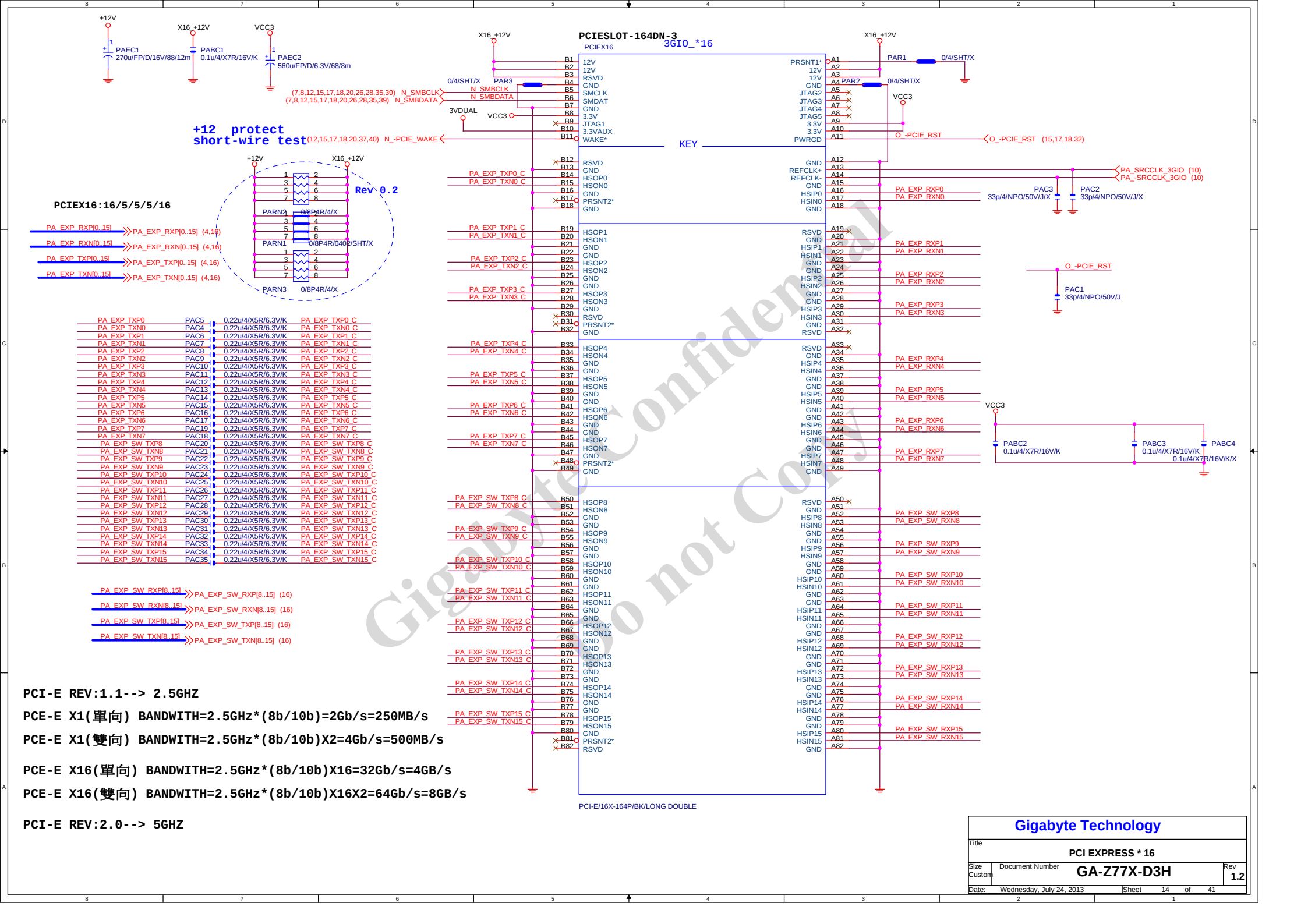
PCIESLOT-164DN-3
PCIEX16
3GIO_*16
PCIEX16:16/5/5/5/16
+12 protect
short-wire test
Rev 0.2
KEY
PCI-E/16X-164P/BK/LONG DOUBLE
PAEC1 270u/FP/D/16V/88/12m
PABC1 0.1u/4/X7R/16V/K
PAEC2 560u/FP/D/6.3V/68/8m
PAR1 0/4/SHT/X
PAR2 0/4/SHT/X
PAR3 0/4/SHT/X
PARN1 0/8P4R/0402/SHT/X
PARN2 0/8P4R/4/X
PARN3 0/8P4R/4/X
PAC3 33p/4/NPO/50V/J/X
PAC2 33p/4/NPO/50V/J/X
PAC1 33p/4/NPO/50V/J
PABC2 0.1u/4/X7R/16V/K
PABC3 0.1u/4/X7R/16V/K
PABC4 0.1u/4/X7R/16V/K/X
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
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PCI EXPRESS * 16
GA-Z77X-D3H
Rev 1.2
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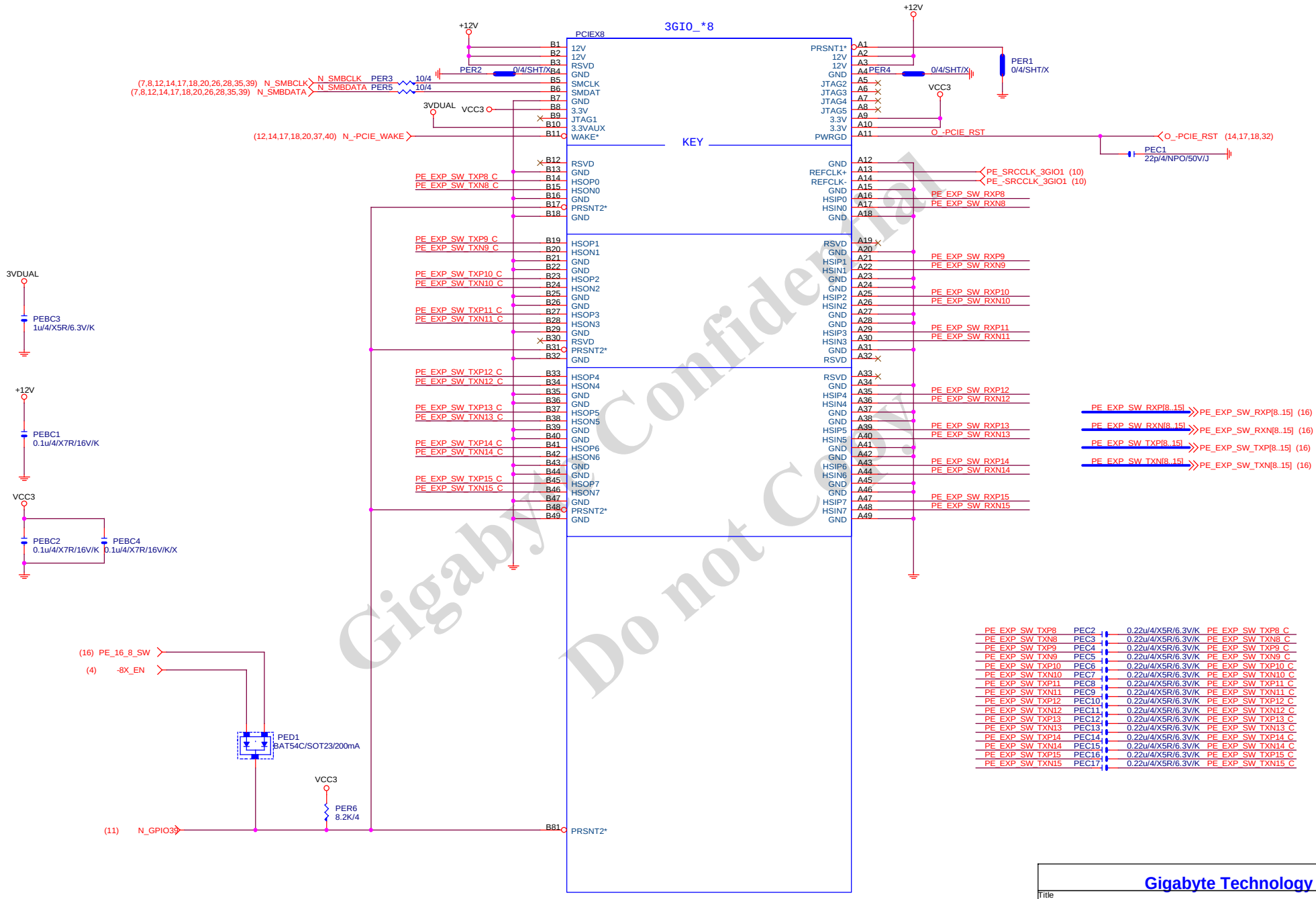
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3GIO_*8
KEY
PCI-E/8X-99P/BK/LONG DOUBLE
+12V
3VDUAL
VCC3
PEBC3 1u/4/X5R/6.3V/K
PEBC1 0.1u/4/X7R/16V/K
PEBC2 0.1u/4/X7R/16V/K
PEBC4 0.1u/4/X7R/16V/K/X
PER1 0/4/SHT/X
PER2 0/4/SHT/X
PER3 10/4
PER4 0/4/SHT/X
PER5 10/4
PER6 8.2K/4
PEC1 22p/4/NPO/50V/J
PED1 BAT54C/SOT23/200mA
N_SMBCLK
N_SMBDATA
N_-PCIE_WAKE
-PCIE_RST
PRSNT2*
N_GPIO33
-8X_EN
PE_16_8_SW
PE_SRCCLK_3GIO1 (10)
PE_-SRCCLK_3GIO1 (10)
PE_EXP_SW_RXP[8..15] (16)
PE_EXP_SW_RXN[8..15] (16)
PE_EXP_SW_TXP[8..15] (16)
PE_EXP_SW_TXN[8..15] (16)
PEC2 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP8_C
PEC3 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN8_C
PEC4 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP9_C
PEC5 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN9_C
PEC6 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP10_C
PEC7 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN10_C
PEC8 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP11_C
PEC9 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN11_C
PEC10 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP12_C
PEC11 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN12_C
PEC12 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP13_C
PEC13 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN13_C
PEC14 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP14_C
PEC15 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN14_C
PEC16 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXP15_C
PEC17 0.22u/4/X5R/6.3V/K PE_EXP_SW_TXN15_C
Gigabyte Technology
PCI EXPRESS X 4 PORT
GA-Z77X-D3H
Rev 1.2
Wednesday, July 24, 2013
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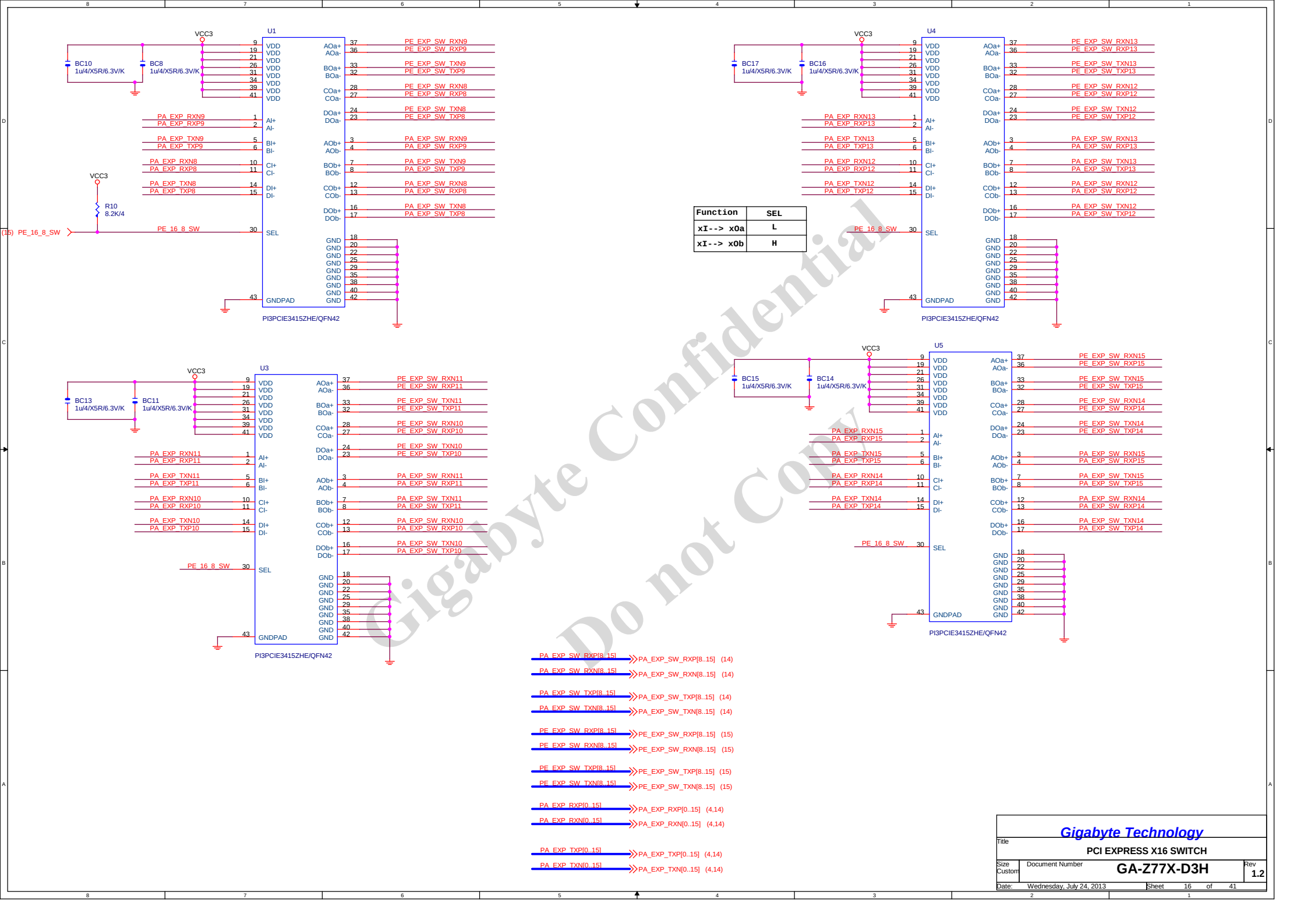
U1
VCC3
BC10
1u/4/X5R/6.3V/K
BC8
1u/4/X5R/6.3V/K
R10
8.2K/4
(15) PE_16_8_SW
PA_EXP_RXN9
PA_EXP_RXP9
PA_EXP_TXN9
PA_EXP_TXP9
PA_EXP_RXN8
PA_EXP_RXP8
PA_EXP_TXN8
PA_EXP_TXP8
PE_16_8_SW
VDD
AI+
AI-
BI+
BI-
CI+
CI-
DI+
DI-
SEL
GNDPAD
AOa+
AOa-
BOa+
BOa-
COa+
COa-
DOa+
DOa-
AOb+
AOb-
BOb+
BOb-
COb+
COb-
DOb+
DOb-
GND
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
VCC3
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
VCC3
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
VCC3
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 Confidential
Do not Copy
Gigabyte Technology
Title
PCI EXPRESS X16 SWITCH
Size
Custom
Document Number
GA-Z77X-D3H
Rev
1.2
Date:
Wednesday, July 24, 2013
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16
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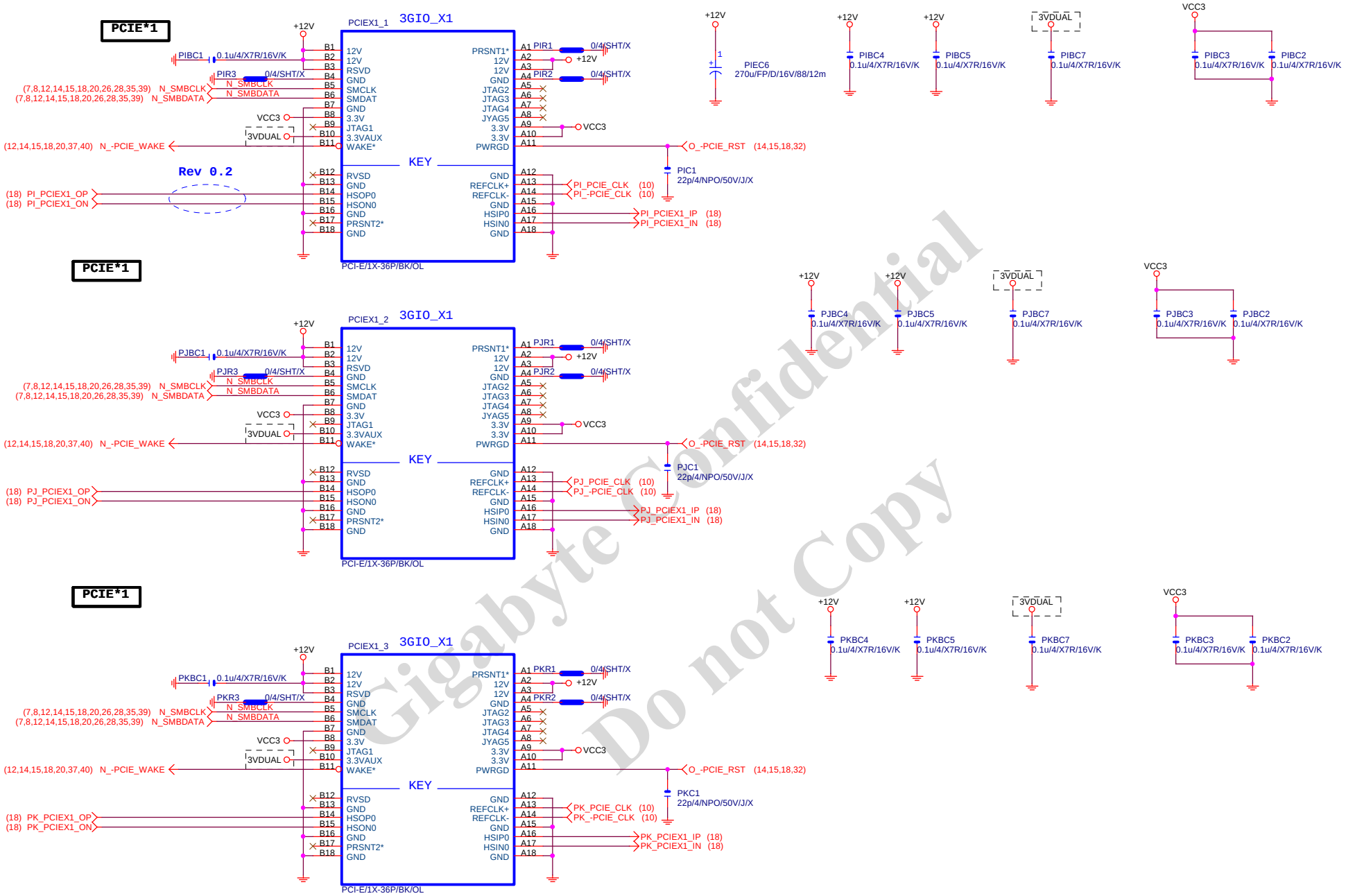
41



Gigabyte Technology		
Title: PCIE_X1 1,2,3		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.2
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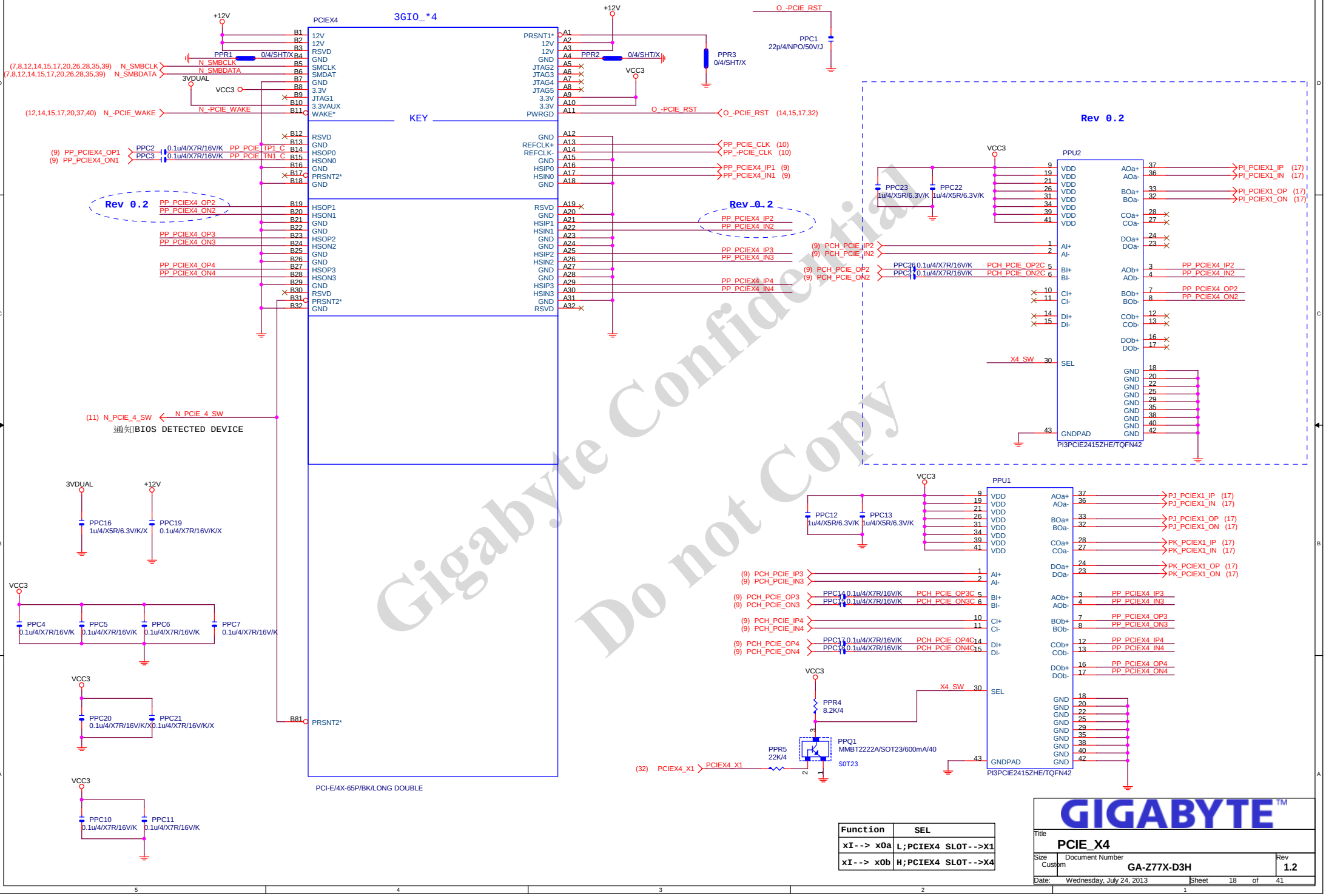
PCIE*4



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

GIGABYTE™

Title: PCIE_X4

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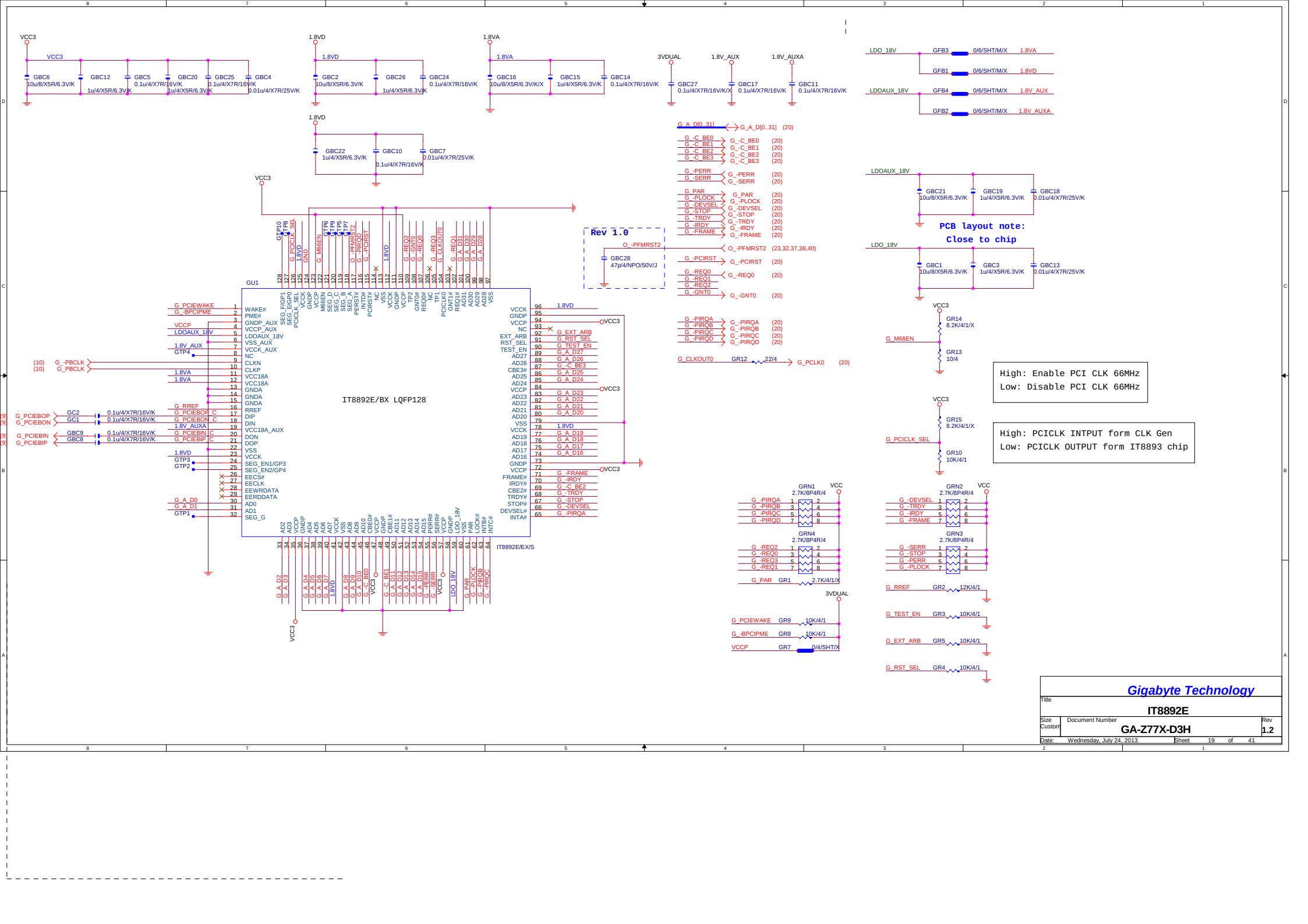
IT8892E/BX LQFP128
IT8892E/EX/S
GU1
Rev 1.0
PCB layout note:
Close to chip
High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz
High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip
Gigabyte Technology
IT8892E
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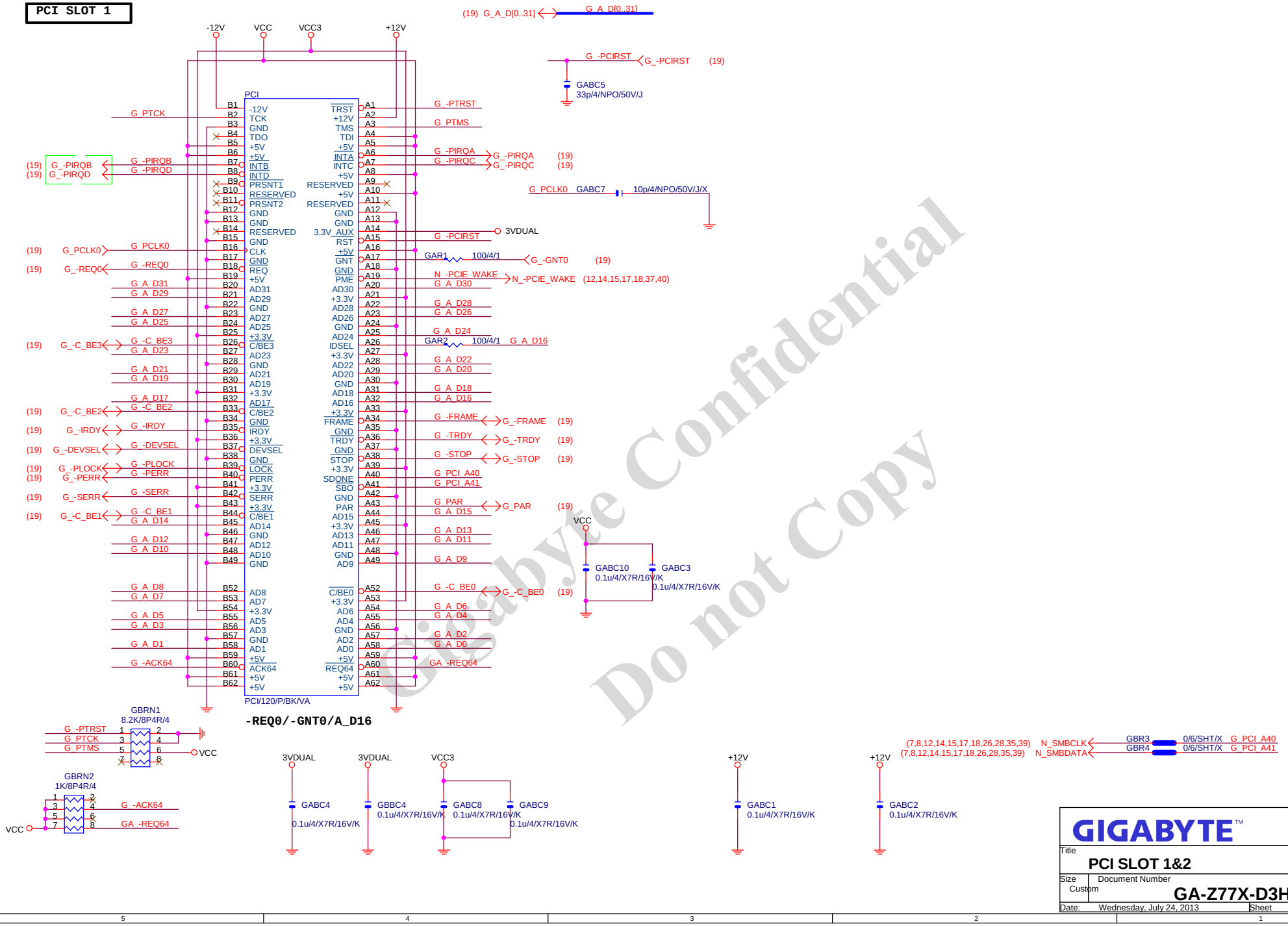
PCI SLOT 1



GIGABYTE™

Title	PCI SLOT 1&2	
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.2
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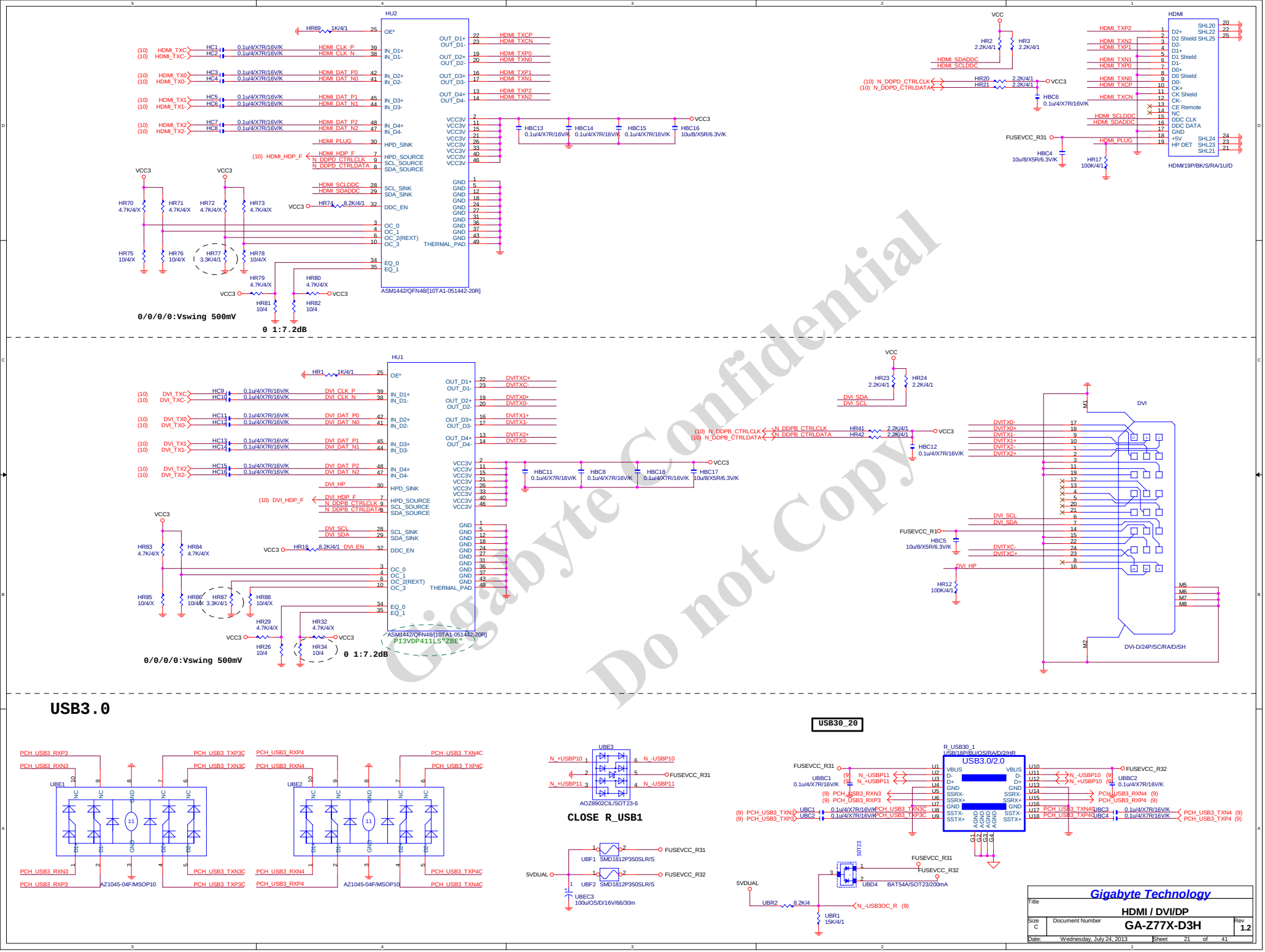

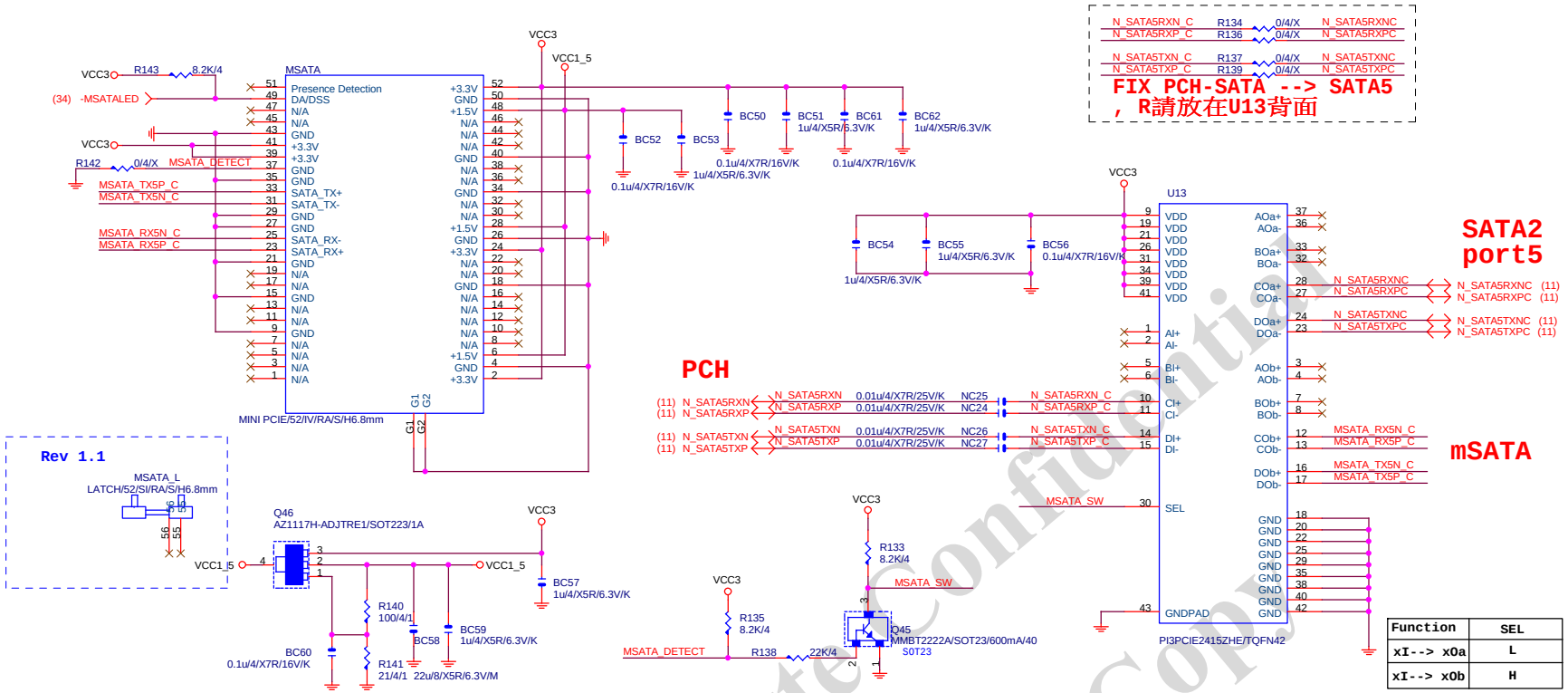

Title	<Title>
Size	Custom
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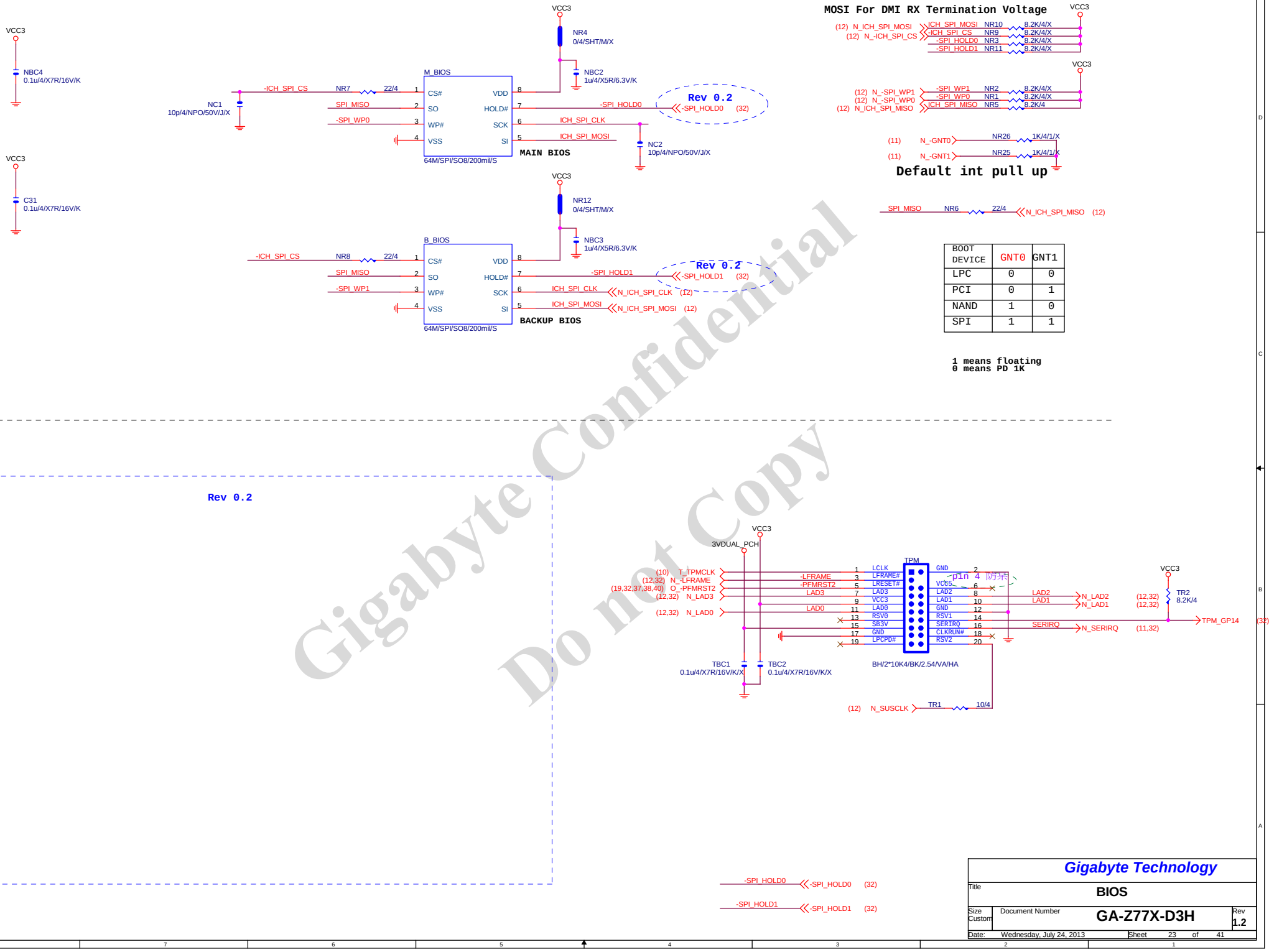
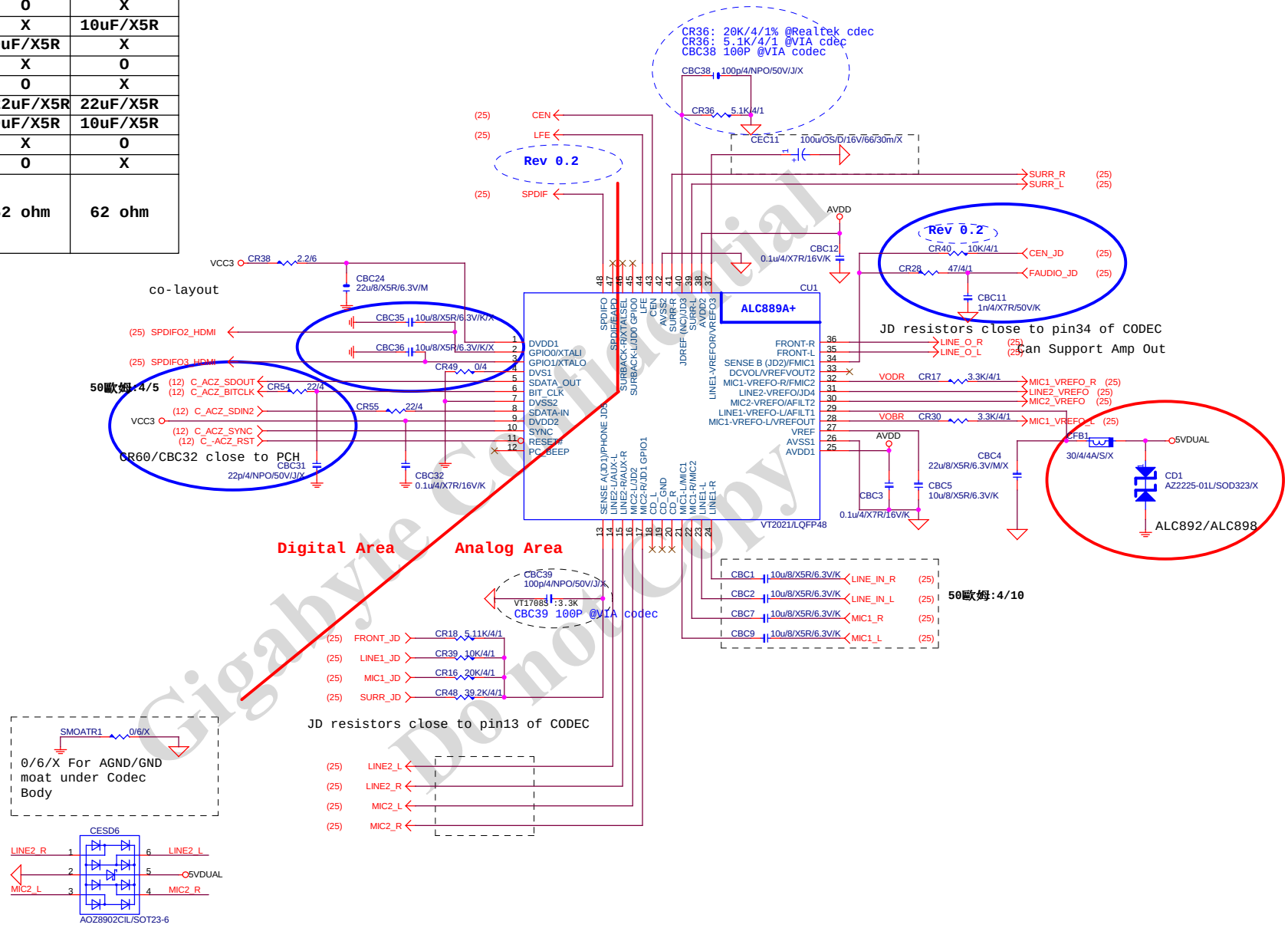


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

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
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CODEC POWER/EMI PAD

EUP

+12V

5VDUAL — CD4 — AVDD — CQ3

CD3 CD4148WP/1206/300mA

CD4148WP/1206/300mA

78L05/SOT89/0.1A

CBC21 0.1u/4/X7R/16V/K/X

CBC8 22u/8/X5R/6.3V/M

CD2 AZ2225-01L/SOD323

ADD CD2 For ESD PROTECT DIODE

上ALC892時,此顆電容要保留

CR4 0/6/SHT/X

CESD1 AZ2025-04S/SOT23-5L/X

M2_L — M2_R — L2-R — L2-L

Rev 0.2 Rev 0.2

CR23 0/4/X → Audio jack --> USB

CR44 0/6

MOATC1 0/4 → Near Audio jack left

MOATC2 0/4 → Codec --> Audio jack

MOATC3 0.1u/4/X7R/16V/K → F_AUDIO

(24) SPDIFO3_HDMI — CR53 0/4/X

(24) SPDIFO2_HDMI — CR52 0/4 — SPDIFO_HDMI

(24) SPDIF — CR57 0/4/X

CBC37 100p/4/NPO/50V/J

PIN SPDIF_O PH1*2/BK/2.54/VA/D

For HDMI SPDIF

CESD5 AZ2025-04S/SOT23-5L/X

SPDIF — SPDIFO_HDMI

AZALIA JACK

BTX AZALIA CONNECTOR

11NR6-403007-21R

CESD2 AZ2025-04S/SOT23-5L/X — AJ_A2 — AJ_C2 — AJ_B2

CESD4 AZ2025-04S/SOT23-5L/X — AJ_B5 — BJ_C2 — AJ_A5

CESD3 AZ2025-04S/SOT23-5L/X — BJ_B5 — BJ_C5 — BJ_B2

AUDIOB

(24) LINE1_JD — LINE1_JD — AJ_A5 — AJ_A2 — GND REAR

BLUE LINE-IN

(24) FRONT_JD — FRONT_JD — AJ_B5 — AJ_B2 — GND CEN/LFE

GREEN LINE-OUT

(24) MIC1_JD — MIC1_JD — AJ_C5 — AJ_C2 — GND SIDE

PINK MIC-IN

2X3RP/25P/BU,GE,OR,BK,GY/RA/[11NR6-403025-61R]

AUDIOA

(24) CEN_JD — CEN_JD — BJ_B5 — BJ_B2 — GND LINE-IN

Orange CEN/LFE

(24) SURR_JD — SURR_JD — BJ_C5 — BJ_C2 — GND LINE-OUT

Black SURROUND

(23) UC_FUSEVCC3 — SPDIF — SPDIFO VCC GND — OPTICAL

SPDIF

Rev 0.2

2X3RP/25P/BU,GE,OR,BK,GY/RA/[11NR6-403025-61R]

LINE-OUT

(24) LINE_O_R — CEC2 100u/OS/D/16V/66/30m — CR7 75/4/1

(24) LINE_O_L — CEC3 100u/OS/D/16V/66/30m — CR9 75/4/1

CR10 10K/4/1 — CR8 10K/4/1 — AJ_B5 — AJ_B2

CBC23 180p/4/NPO/50V/J — CBC26 180p/4/NPO/50V/J

LINE-IN

(24) LINE_IN_R — CR5 75/4/1 — AJ_A5

(24) LINE_IN_L — CR13 75/4/1 — AJ_A2

CBC18 180p/4/NPO/50V/J — CBC27 180p/4/NPO/50V/J

MIC-IN

(24) MIC1_R — CR29 75/4/1 — AJ_C5

(24) MIC1_L — CR32 75/4/1 — AJ_C2

(24) MIC1_VREFO_L

(24) MIC1_VREFO_R

CBC19 180p/4/NPO/50V/J — CBC22 180p/4/NPO/50V/J

SURROUND

EMI

(24) SURR_R — CEC5 100u/OS/D/16V/66/30m — CR46 75/4/1

(24) SURR_L — CEC7 100u/OS/D/16V/66/30m — CR19 75/4/1

CR20 10K/4/1 — CR45 10K/4/1 — BJ_C5 — BJ_C2

CBC29 180p/4/NPO/50V/J — CBC28 180p/4/NPO/50V/J

CEN/LFE

EMI

(24) LFE — CEC9 100u/OS/D/16V/66/30m — CR50 75/4/1

(24) CEN — CEC10 100u/OS/D/16V/66/30m — CR41 75/4/1

CR42 10K/4/1 — CR51 10K/4/1 — BJ_B5 — BJ_B2

CBC25 180p/4/NPO/50V/J — CBC34 180p/4/NPO/50V/J

SURR BACK

Rev 0.2

AZALIA FRONT PANEL

CQ2 BAT54A/SOT23/200mA — (24) LINE2_VREFO — CR25 3.3K/4/1 — CR15 3.3K/4/1

CQ1 BAT54A/SOT23/200mA — (24) MIC2_VREFO — CR12 3.3K/4/1 — CR3 3.3K/4/1

EMI

(24) MIC2_L — CBC20 10u/8/X5R/6.3V/K — CR2 75/4/1 M2_L

(24) MIC2_R — CBC15 10u/8/X5R/6.3V/K — CR11 75/4/1 M2_R

(24) FAUDIO_JD — L2_R — CR14 75/4/1 — L2_L — CR24 75/4/1

CR1 0/4/X

(24) LINE2_R — CEC6 100u/OS/D/16V/66/30m — L2_R

(24) LINE2_L — CEC1 100u/OS/D/16V/66/30m — L2_L

CR27 10K/4/1 — CR26 10K/4/1 — F_AUDIO

Digital Area

3VDUAL — CR56 8.2K/4/X

CR35 20K/4/1 — CR31 39.2K/4/1

C_-ACZ_DET (12)

bh/2*5k8/bk/2.54/va/[11nh3-000205-p1r]

CBC10 CBC16 CBC17 CBC6 180p/4/NPO/50V/J

Gigabyte Technology

Title: AUDIO JACK

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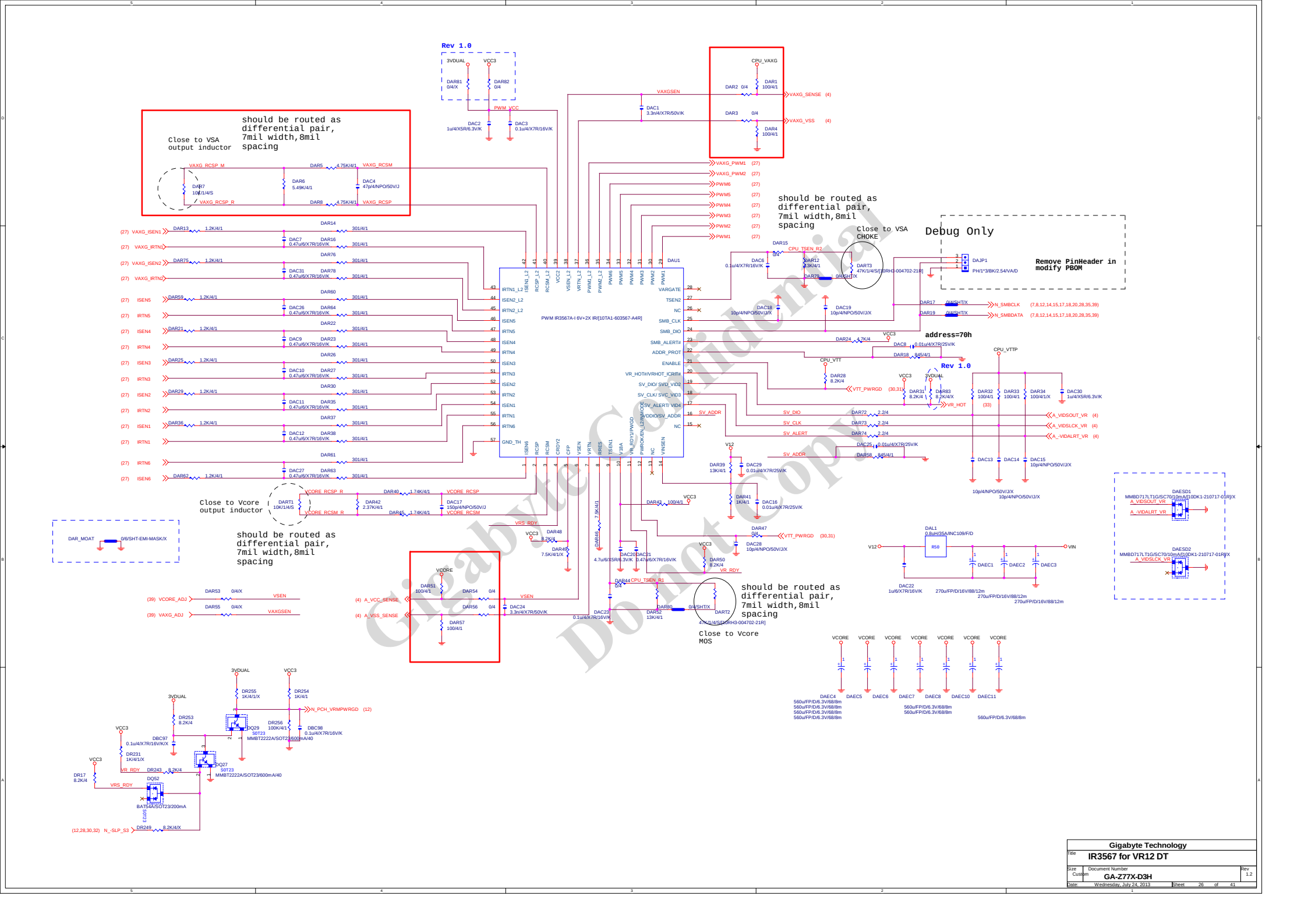
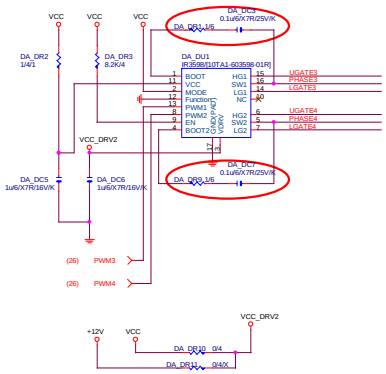
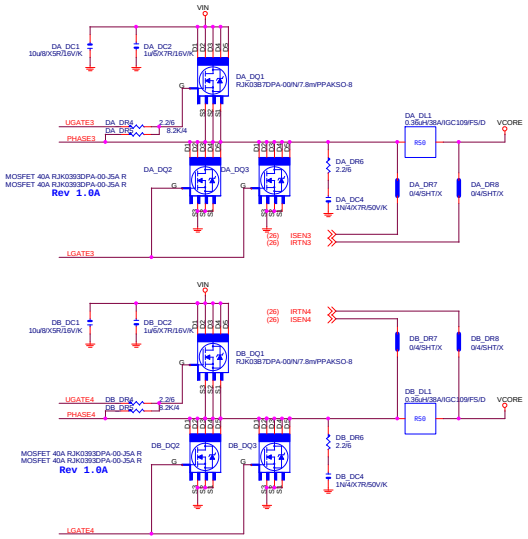


VCORE Phase 3,6

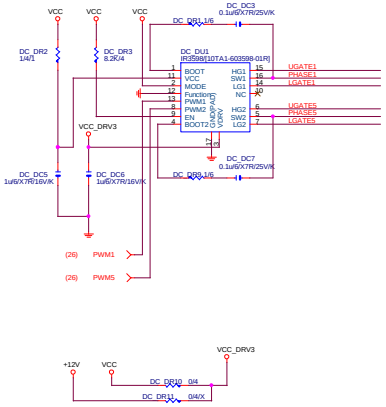


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	DUAL
1	1	1R ATL	Doubler
0	0	Tri-State	DUAL
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

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

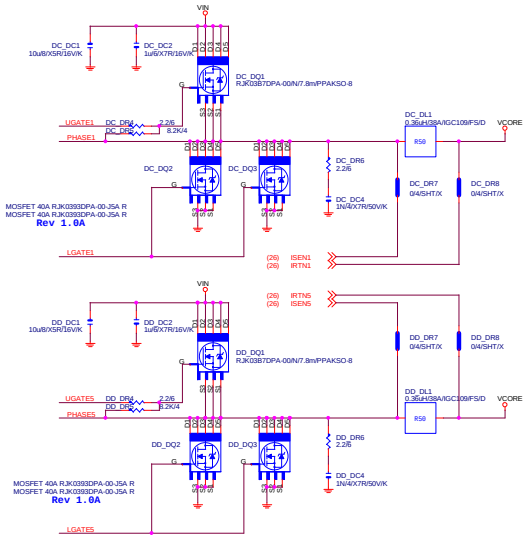


VCORE Phase 1,4

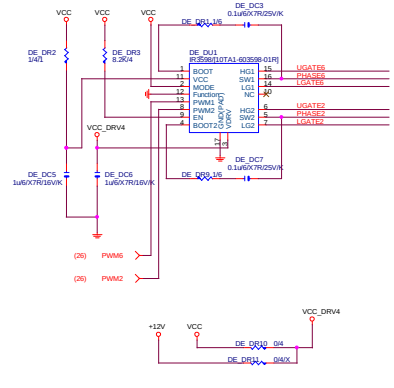


FUNCTION	MODE	PWM MODE	PHASE MODE
0	1	1R ATL	DUAL
1	1	1R ATL	Doubler
0	0	Tri-State	DUAL
1	0	Tri-State	Doubler
OPEN	0	Tri-State	Quad
OPEN	1	1R ATL	Quad

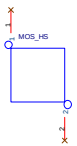
In Quad mode , IC1 pin10 link to IC2 pin10
IC1 pin9 link to IC2 pin9 without PU



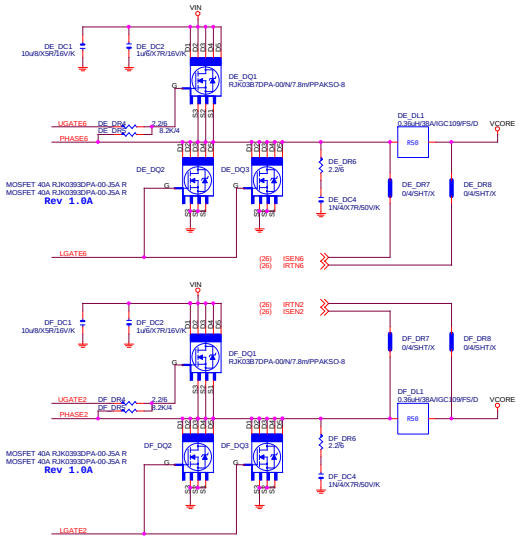
VCORE Phase 5,2



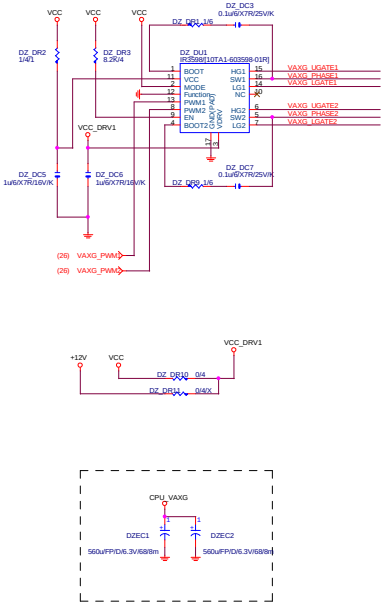
MOS HEATSINK

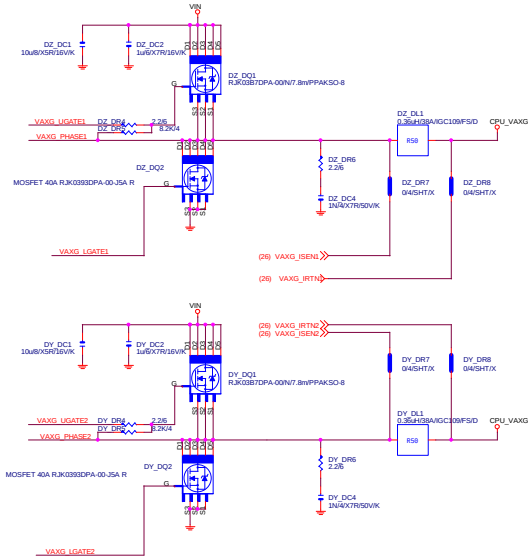


MOS HS/[12SP2-S08924-01R_12SP2-S08924-02R]_12SP2-S08924-03R]



VAXG Phase





Title	CPU CORE VR
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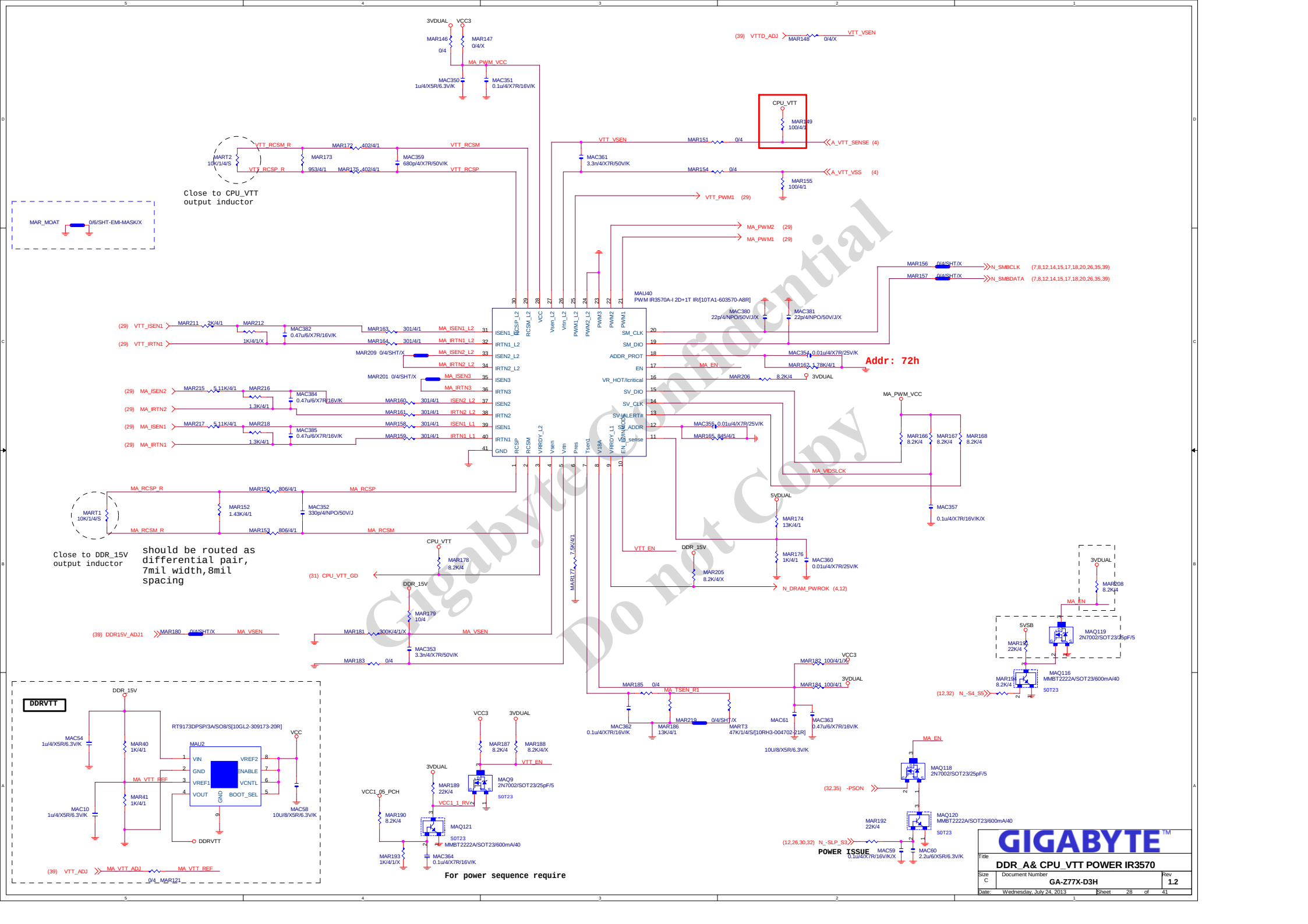
3VDUAL
VCC3
MAR146 0/4
MAR147 0/4/X
MA_PWM_VCC
MAC350 1u/4/X5R/6.3V/K
MAC351 0.1u/4/X7R/16V/K
(39) VTTD_ADJ
MAR148 0/4/X
VTT_VSEN
CPU_VTT
MAR149 100/4/1
MAR151 0/4
A_VTT_SENSE (4)
MAR154 0/4
MAR155 100/4/1
A_VTT_VSS (4)
MAC361 3.3n/4/X7R/50V/K
VTT_PWM1 (29)
MA_PWM2 (29)
MA_PWM1 (29)
MART2 10K/1/4/S
VTT_RCSM_R
MAR172 402/4/1
MAR173 953/4/1
MAR175 402/4/1
MAC359 680p/4/X7R/50V/K
VTT_RCSM
VTT_RCSP_R
VTT_RCSP
Close to CPU_VTT output inductor
MAR_MOAT
0/6/SHT-EMI-MASK/X
MAU40
PWM IR3570A-I 2D+1T IR/[10TA1-603570-A8R]
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
MAR164 301/4/1
MA_ISEN1_L2
MA_IRTN1_L2
(29) VTT_IRTN1
MAR209 0/4/SHT/X
MA_ISEN2_L2
MA_IRTN2_L2
MAR201 0/4/SHT/X
MA_ISEN3
MA_IRTN3
MAC354 0.01u/4/X7R/25V/K
MAR162 1.78K/4/1
MA_EN
Addr: 72h
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
MAR152 1.43K/4/1
MAC352 330p/4/NPO/50V/J
MA_RCSP
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
VTT_EN
DDR_15V
MAR176 1K/4/1
MAC360 0.01u/4/X7R/25V/K
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]
MAU2
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
VCC
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
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
(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
Document Number
GA-Z77X-D3H
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Date: Wednesday, July 24, 2013
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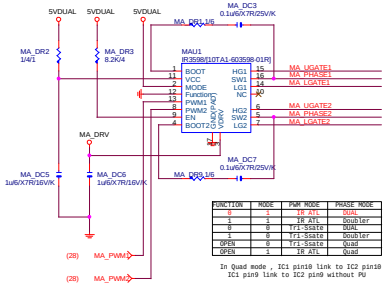
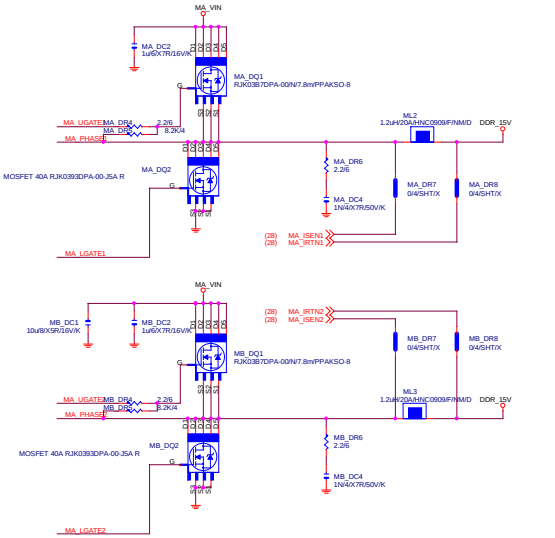
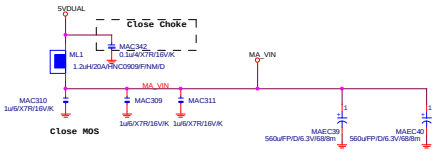
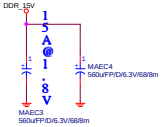
Gigabyte Confidential
Do not Copy

DDR_15V

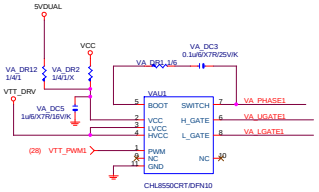


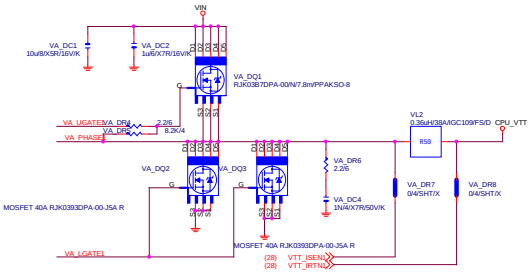


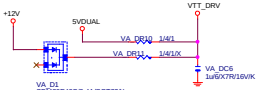


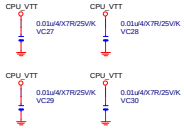


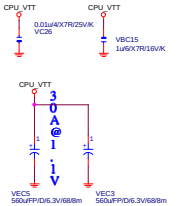
CPU_VTT



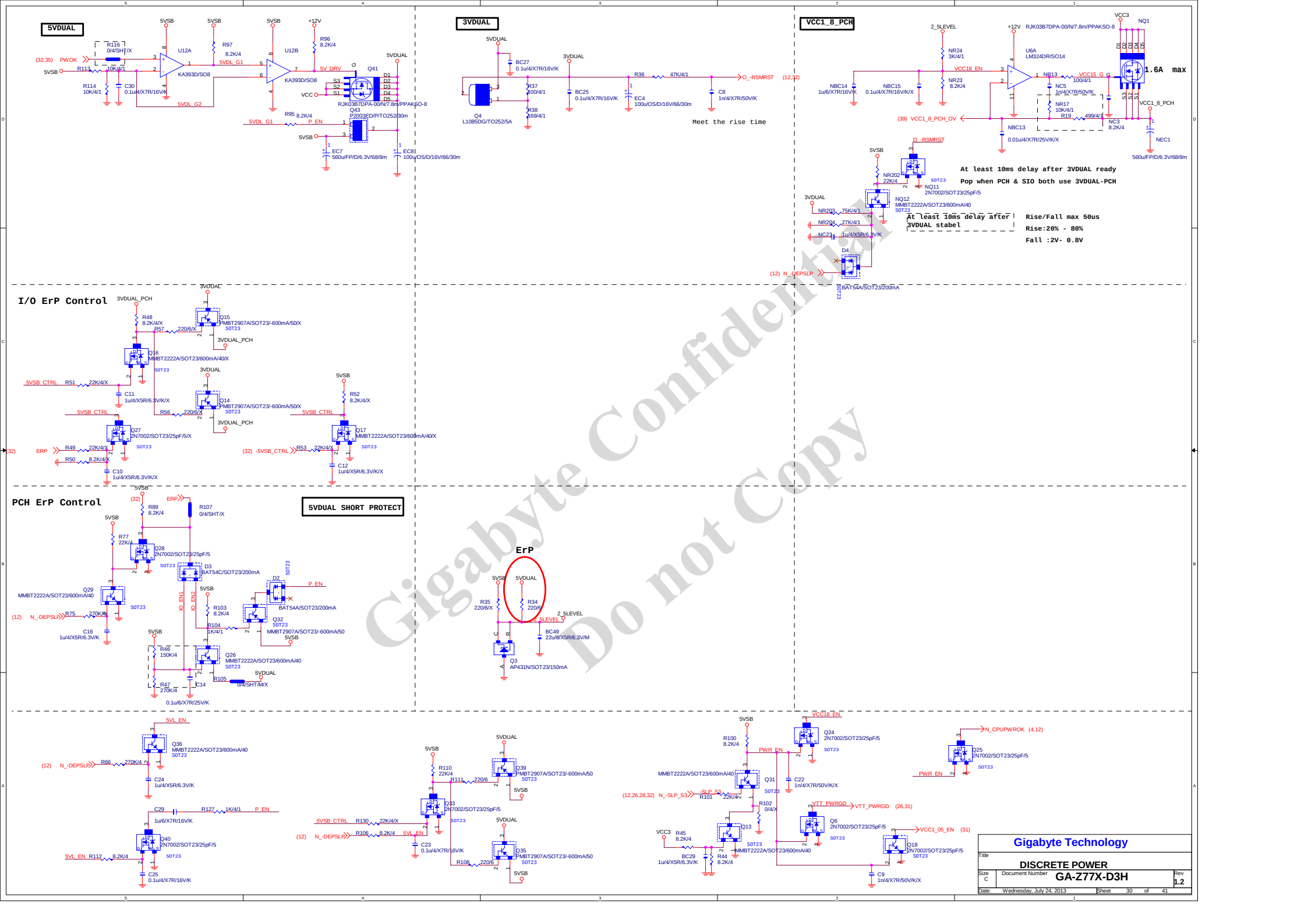




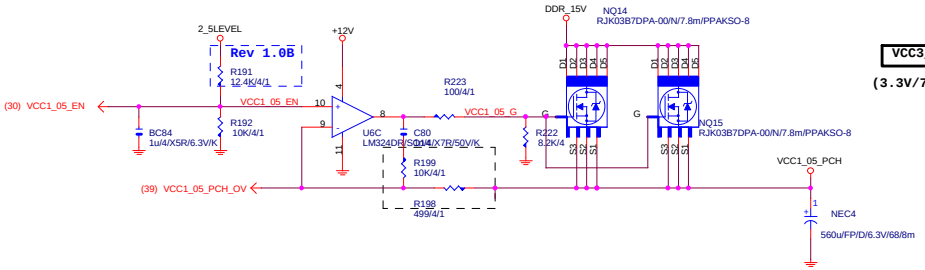




Gigabyte Technology		
Title: CPU CORE VR		
Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.2
Date: Wednesday, July 24, 2013	Sheet 29 of 41	

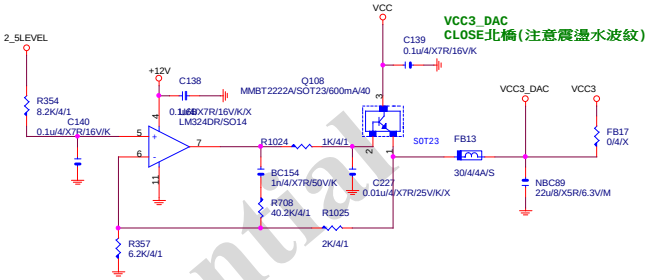


VCC1_05_PCH

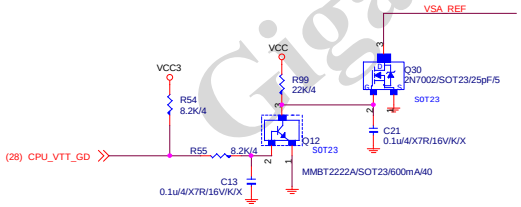


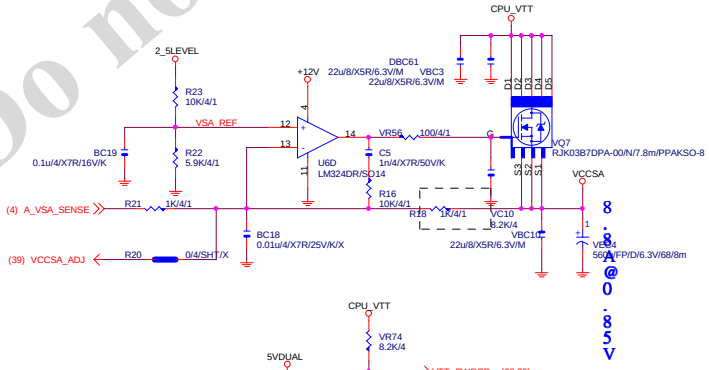
VCC3_DAC

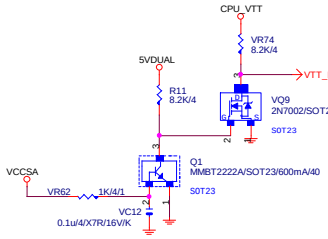
(3.3V/70mA+360uA)



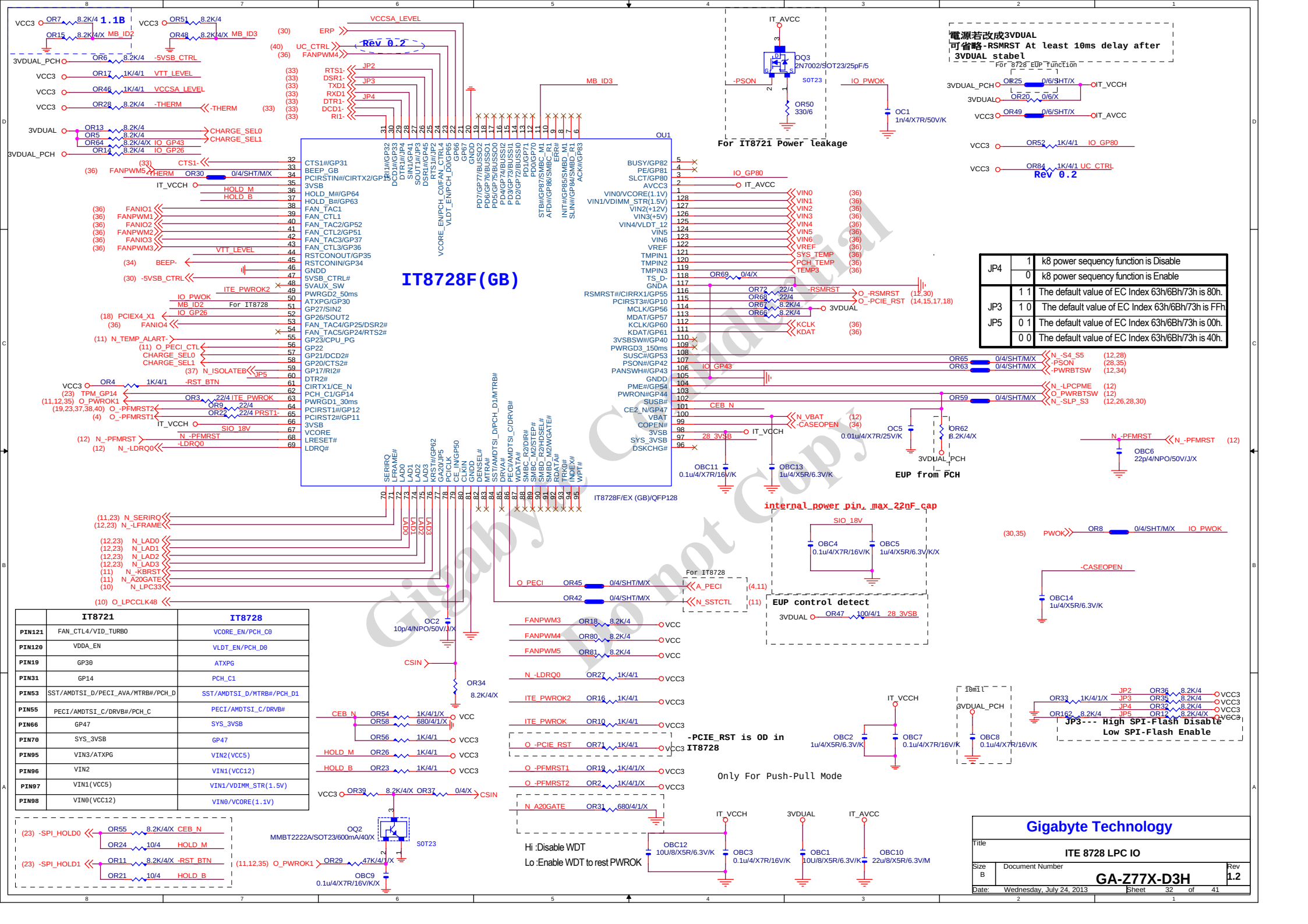
VCC_SA





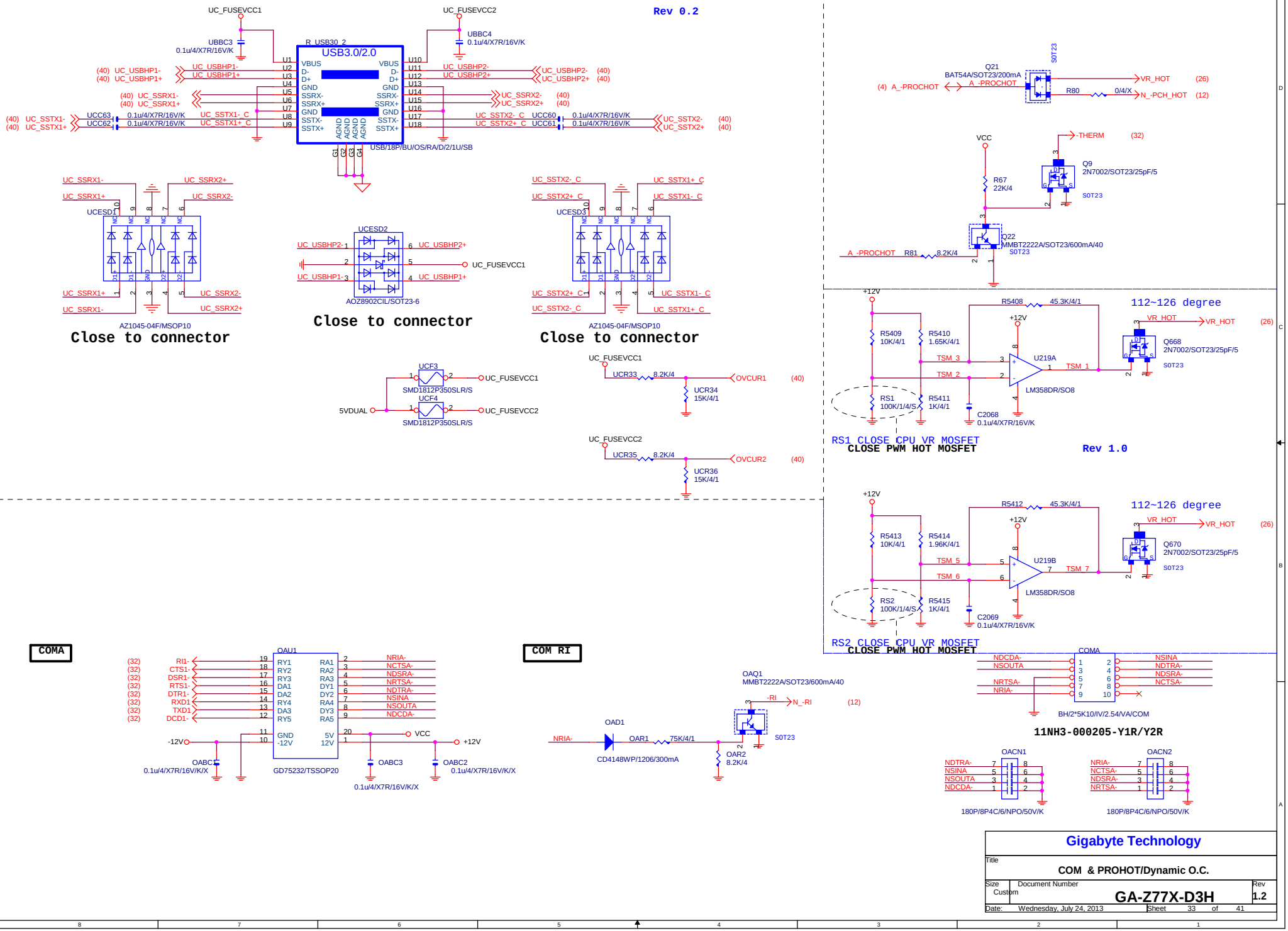


Gigabyte Technology		
Title: CPU VTT PWM_ISL6312		
Size: C	Document Number: GA-Z77X-D3H	Rev: 1.2
Date: Wednesday, July 24, 2013	Sheet 31 of 41	

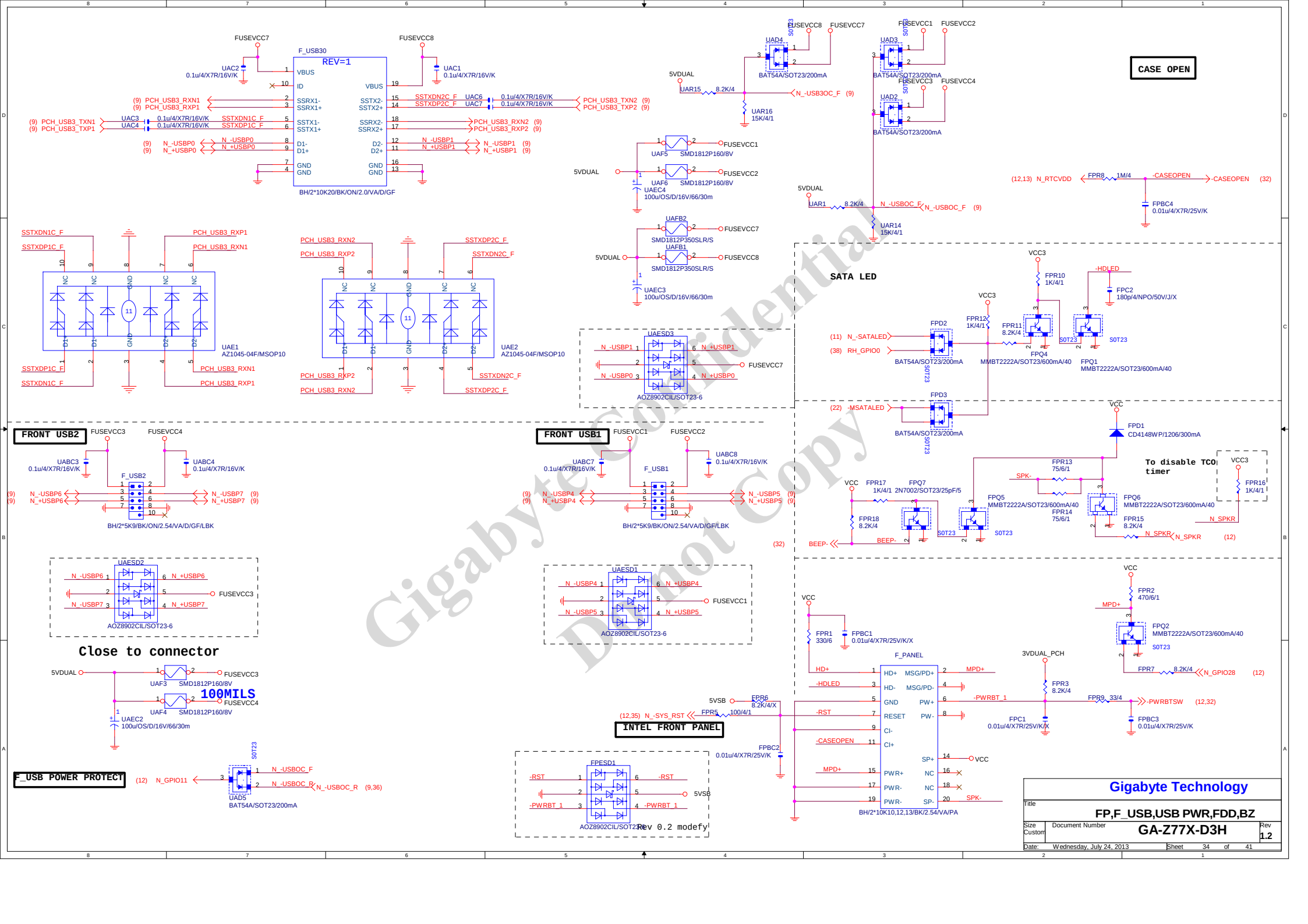


JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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



Gigabyte Technology	
Title	COM & PROHOT/Dynamic O.C.
Size: Custom	Document Number: GA-Z77X-D3H
Rev	1.2
Date: Wednesday, July 24, 2013	Sheet 33 of 41


F_USB30
REV=1
BH/2*10K20/BK/ON/2.0/VA/D/GF
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
GA-Z77X-D3H
Rev 1.2
Wednesday, July 24, 2013
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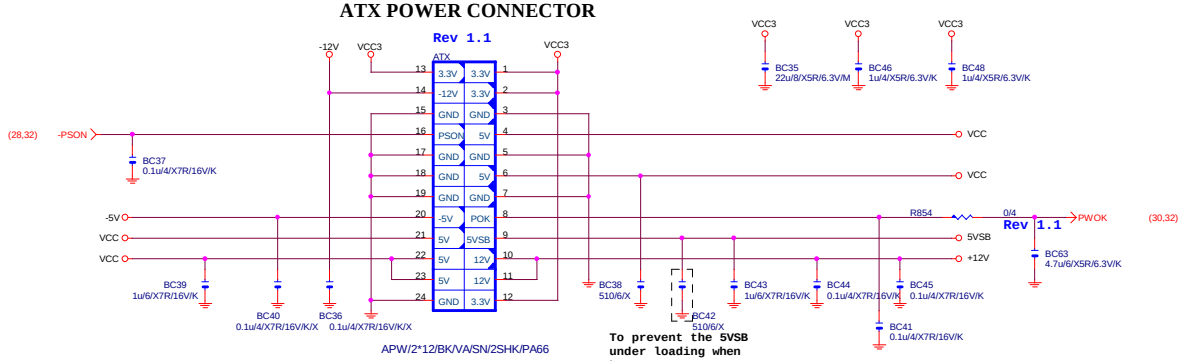
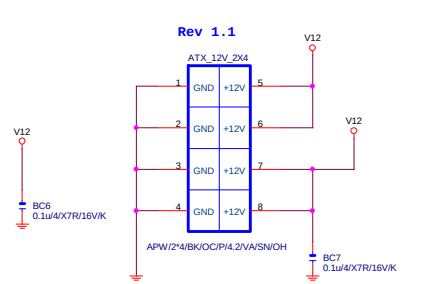
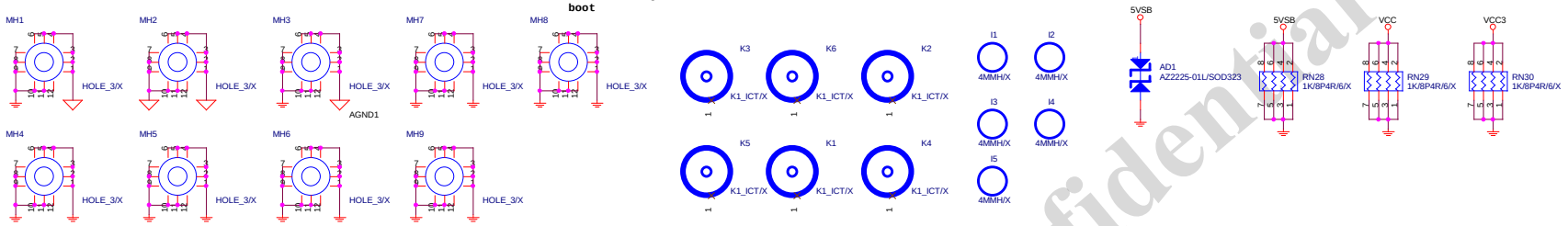
ATX POWER CONNECTOR



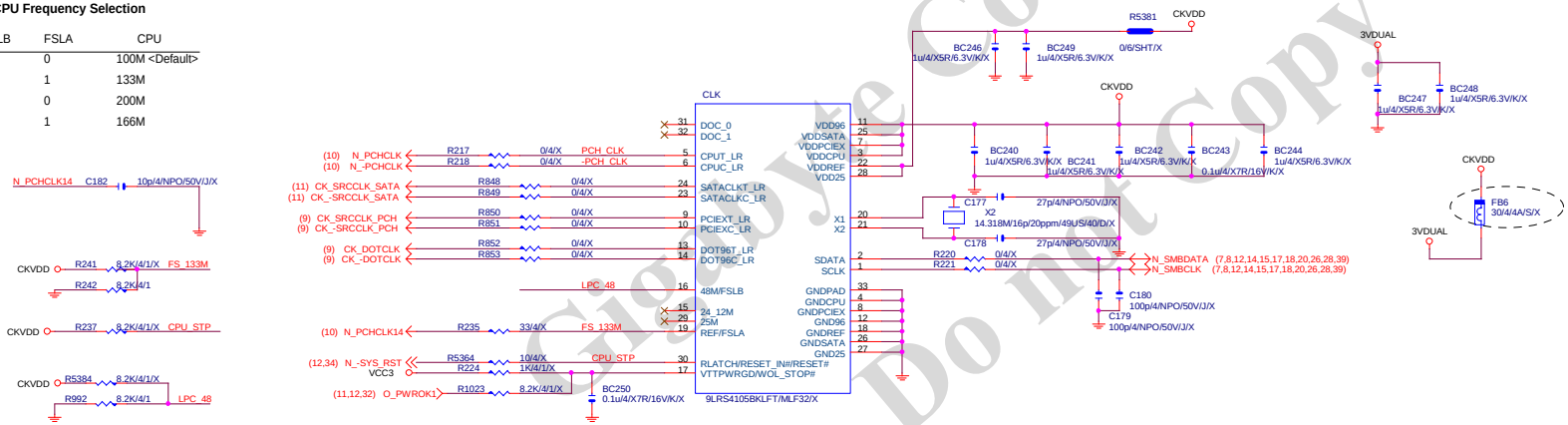




CLK GEN CK505

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			
Size: Custom	Document Number: GA-Z77X-D3H		Rev: 1.2
Date: Wednesday, July 24, 2013	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
BC5 180p/4/NPO/50V/J
BC1 180p/4/NPO/50V/J
FUSEVCC_R9
FUSEVCC_R10
BC3 0.1u/4/X7R/16V/K
BC2 0.1u/4/X7R/16V/K
KB_MS_USB
(9) N_-USBP12
(9) N_+USBP12
N_-USBP13 (9)
N_+USBP13 (9)
KBDATA
KBCLK
AGND1
BC4 0.1u/4/X7R/16V/K
R4 8.2K/4 KCLK
R3 8.2K/4 KDAT
KB/USB/A/PC99(DUAL)/GF/2/RA/D

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
(32) FANPWM3
+12V
R14 3.3K/4/1
R15 15K/4/1
R17 6.2K/4/1
C4 0.047u/4/X7R/16V/K
FANIO1 (32)
R42 0/4/X
CPUFAN_VCC
CPU_FAN FAN/1*4/BK/A3/PA66

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

OR82 100/4/1
(32) FANPWM4
SHORT PROTECT R0402-2
C2066 1u/6/X7R/16V/K
R118 3.3K/4/1
R117 0/4
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
R8 3.3K/4/1
R7
R9 0/4
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

SYS FAN

Linear SYS_FAN

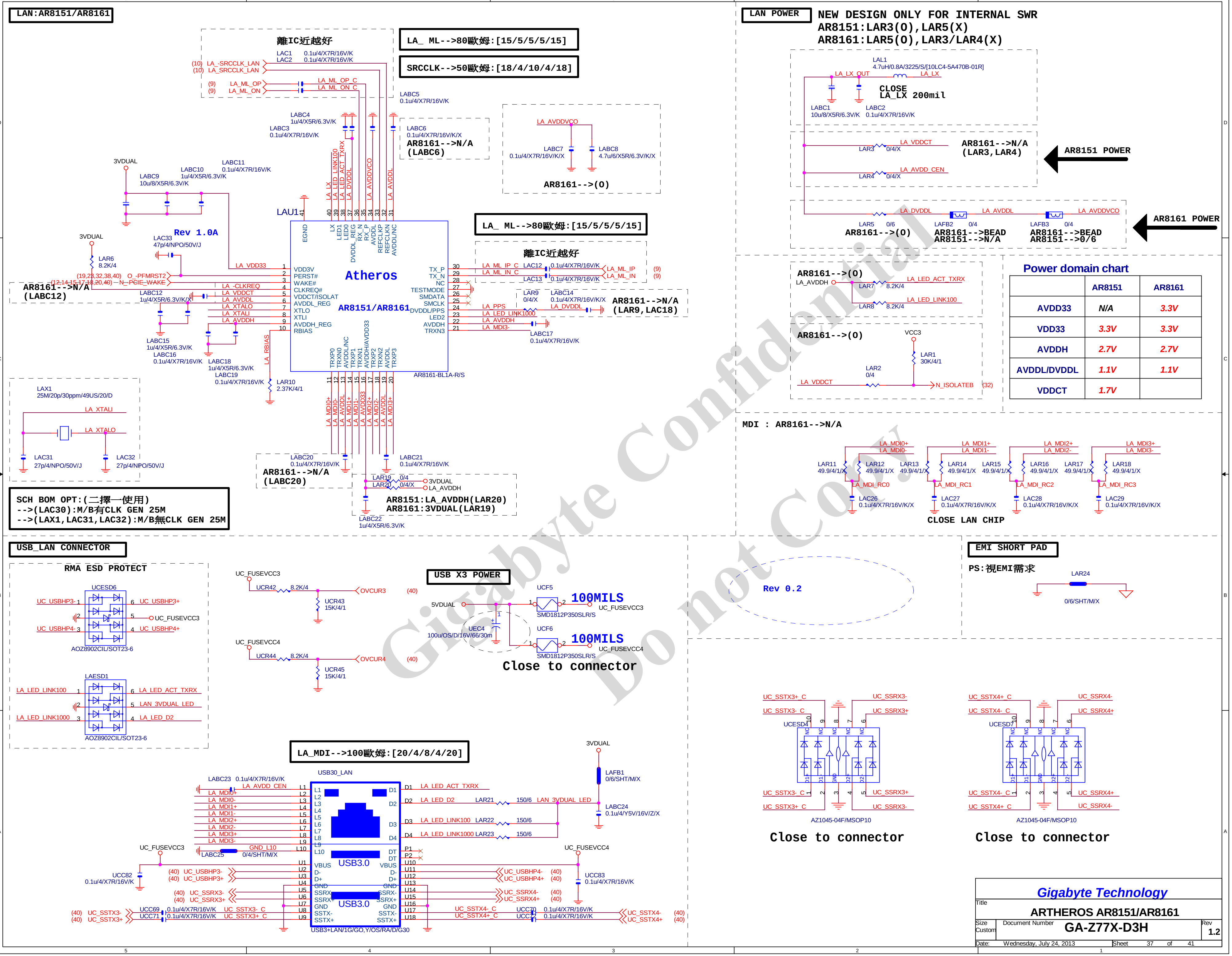
VCC VCC3
R73 1K/4/1/X
R72 1K/4/1
R86 8.2K/4
(32) FANPWM2
R71 22K/4
U11B
LM358DR/SO8
R128 8.2K/4
BC31 1u/4/X5R/6.3V/K
R88 22K/4
Q42 P2003ED/P/TO252/30m
R1
AGND1
0/4/SHT/M/X
EC5 100u/OS/D/16V/66/30m

R125 0/4/X
R124 8.2K/4
R123 3.3K/4/1
FANIO2 (32)
R122 15K/4/1
R121 6.2K/4/1
C28 0.047u/4/X7R/16V/K
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: 1.2
Date: Wednesday, July 24, 2013	Sheet 36 of 41	



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
Atheros
AR8151/AR8161
AR8161-->N/A
(LABC12)
LA_ ML-->80歐姆:[15/5/5/5/15]
離IC近越好
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-->(0)
AR8161-->BEAD
AR8151-->N/A
AR8161-->BEAD
AR8151-->0/6
AR8161 POWER
AR8161-->(0)
AR8161-->(0)
Power domain chart
MDI : AR8161-->N/A
CLOSE LAN CHIP
USB_LAN CONNECTOR
RMA ESD PROTECT
USB X3 POWER
100MILS
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]
USB3.0
USB3.0
Close to connector
Close to connector
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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	

Gigabyte Technology

Title: ARTHEROS AR8151/AR8161

Size: Custom | Document Number: GA-Z77X-D3H | Rev: 1.2

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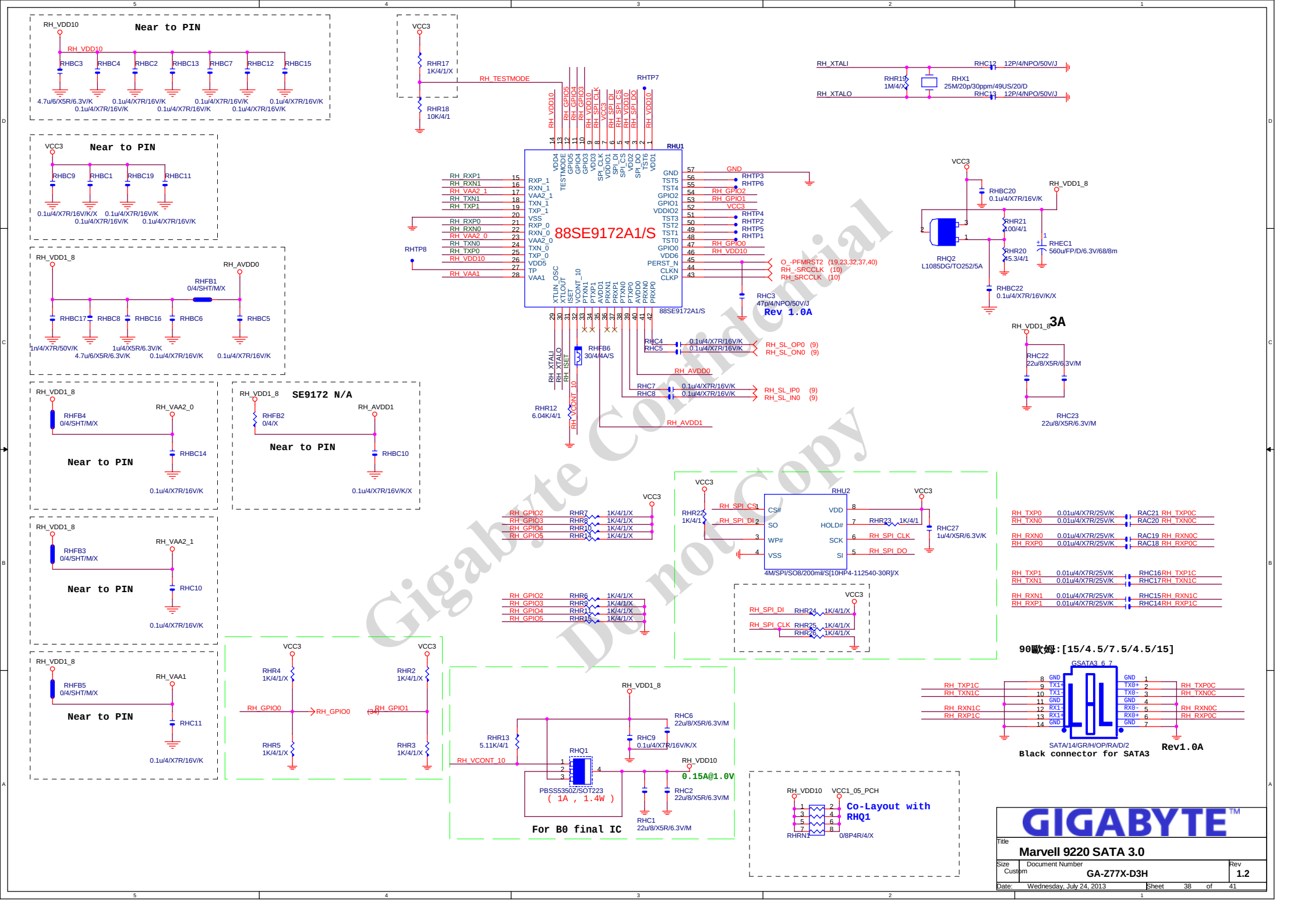
Near to PIN
RH_VDD10
RHBC3
RHBC4
RHBC2
RHBC13
RHBC7
RHBC12
RHBC15
4.7u/6/X5R/6.3V/K
0.1u/4/X7R/16V/K
Near to PIN
VCC3
RHBC9
RHBC1
RHBC19
RHBC11
0.1u/4/X7R/16V/K
Near to PIN
RH_VDD1_8
RH_AVDD0
RHFB1
0/4/SHT/M/X
RHBC17
RHBC8
RHBC16
RHBC6
RHBC5
1n/4/X7R/50V/K
1u/4/X5R/6.3V/K
4.7u/6/X5R/6.3V/K
Near to PIN
RH_VDD1_8
RH_VAA2_0
RHFB4
0/4/SHT/M/X
RHBC14
0.1u/4/X7R/16V/K
SE9172 N/A
RH_VDD1_8
RHFB2
0/4/X
RH_AVDD1
RHBC10
0.1u/4/X7R/16V/K/X
Near to PIN
RH_VDD1_8
RH_VAA2_1
RHFB3
0/4/SHT/M/X
RHC10
0.1u/4/X7R/16V/K
Near to PIN
RH_VDD1_8
RH_VAA1
RHFB5
0/4/SHT/M/X
RHC11
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
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_AVDD1
RH_XTALI
RHR19
1M/4/X
RHX1
25M/20p/30ppm/49US/20/D
RHC12
RHC13
12P/4/NPO/50V/J
RH_XTALO
VCC3
RHBC20
0.1u/4/X7R/16V/K
RH_VDD1_8
RHR21
100/4/1
RHR20
45.3/4/1
RHQ2
L1085DG/TO252/5A
RHEC1
560u/FP/D/6.3V/68/8m
RHBC22
0.1u/4/X7R/16V/K/X
3A
RH_VDD1_8
RHC22
22u/8/X5R/6.3V/M
RHC23
22u/8/X5R/6.3V/M
VCC3
RHR7
RHR8
RHR10
RHR14
1K/4/1/X
RH_GPIO2
RH_GPIO3
RH_GPIO4
RH_GPIO5
VCC3
RHR22
1K/4/1
RH_SPI_CS1
RH_SPI_DI
RHU2
CS#
SO
WP#
VSS
VDD
HOLD#
SCK
SI
RHR23
1K/4/1
RH_SPI_CLK
RH_SPI_DO
VCC3
RHC27
1u/4/X5R/6.3V/K
4M/SPI/SO8/200mil/S[10HP4-112540-30R]/X
RHR6
RHR9
RHR11
RHR15
1K/4/1/X
RH_GPIO2
RH_GPIO3
RH_GPIO4
RH_GPIO5
VCC3
RH_SPI_DI
RHR24
1K/4/1/X
RH_SPI_CLK
RHR25
1K/4/1/X
RHR26
1K/4/1/X
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
VCC3
RHR4
RHR5
RH_GPIO0
RH_GPIO0
VCC3
RHR2
RHR3
RH_GPIO1
(3d)
RH_VDD1_8
RHR13
5.11K/4/1
RH_VCONT_10
RHQ1
PBSS5350Z/SOT223
(1A , 1.4W)
RHC6
22u/8/X5R/6.3V/M
RHC9
0.1u/4/X7R/16V/K/X
RH_VDD10
0.15A@1.0V
RHC2
22u/8/X5R/6.3V/M
RHC1
22u/8/X5R/6.3V/M
For B0 final IC
RH_VDD10
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
1.2
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41
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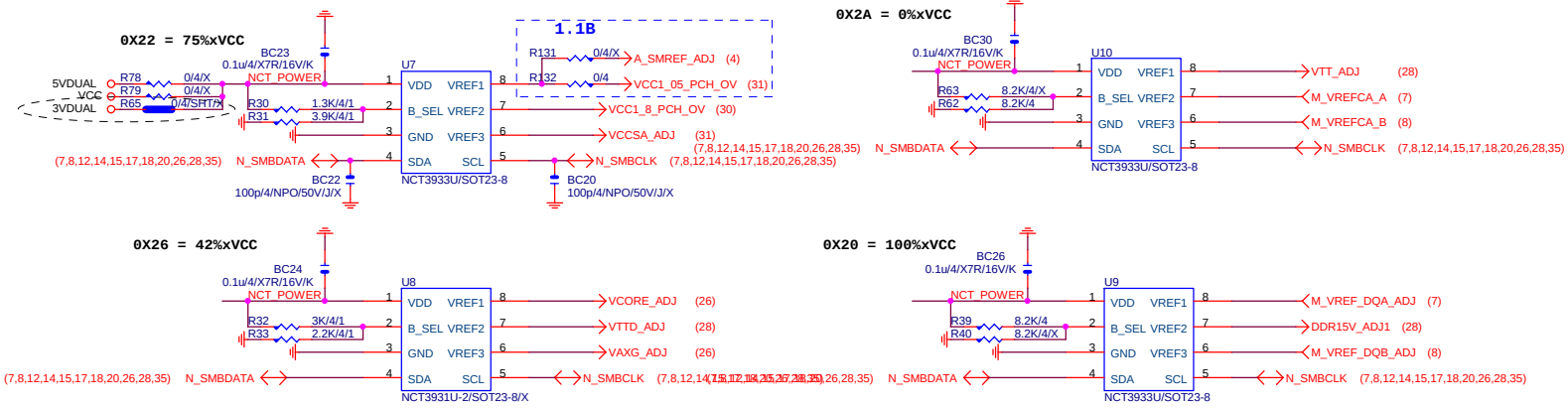

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Size: Custom	Document Number: GA-Z77X-D3H	Rev: 1.2
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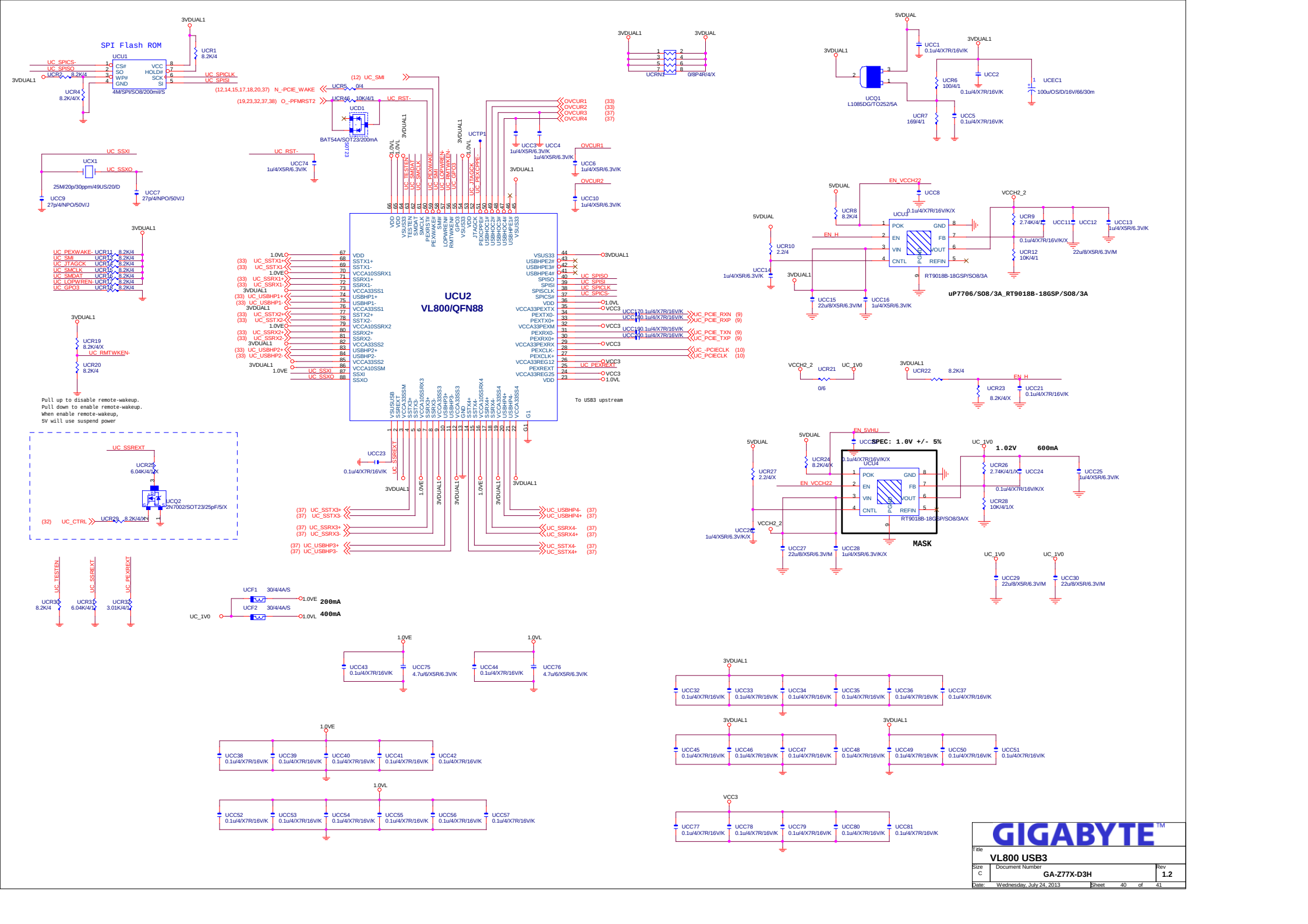

Title	VL800 USB3
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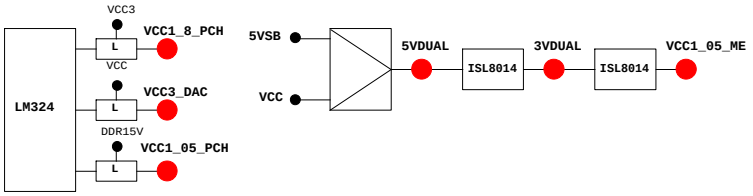
PCH GPIO LIST TABLE

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

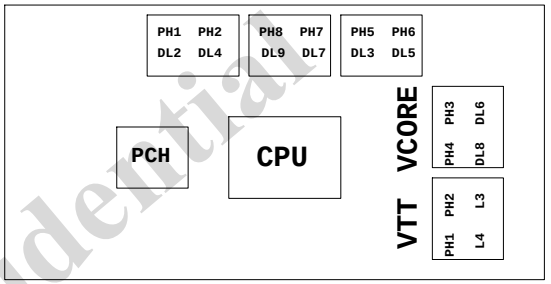
Super I/O ITE8720 GPIO Table

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

Gigabyte Technology
Title: TABLE LIST
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