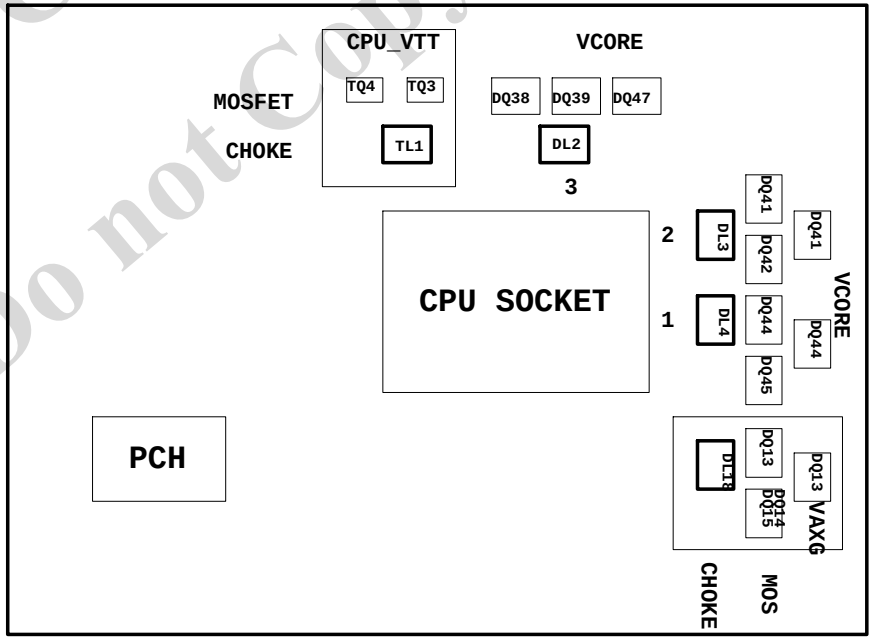
Model Name: GA-Z77P-D3

1.12

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
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 EXPRESSX4 SLOT / PCIE X1 SLOT
16	PCI SLOT 1~2
17	I/O ITE8728
18	COM,TPM
19	Dual BIOS
20	ALC887-VD2
21	REAR AUDIO JACK
22	ISL95836_VCORE_1
23	ISL95836_VCORE_2
24	DISCRETE POWER
25	PCH CORE / VOLTAGE CONSOLE
26	RT8120_CPU_VTT
27	VCCSA POWER

SHEET	TITLE
28	F_PANEL , F_USB
29	ATX POWER, CLOCK GEN
30	HWM,KB/MS , FAN CTRL
31	RTL8111F-VL
32	mSATA
33	RT8120_DDR POWER
34	R_USB/HDMI
35	ITE8892
36	
37	
38	
39	
40	



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-Z77P-D3 | Rev: 1.12

Date: Wednesday, April 25, 2012 | Sheet 1 of 35

GA-Z77P-D3
Component value change history

Data	Change Item	Reason
2012/01/11 EBOM:0.1	1.FOR Z77P-D3	
2012/01/18 EBOM:0.2	1.FOR Z77P-D3 FOR THERMAL SOLUTION	
2012/02/13 PBOM:10A	1.FOR Z77P-D3 MP	
2012/02/24 EBOM:11A	1.PCB 1.1 FOR RTL8111F-VL	
2012/03/08 EBOM:11B	1.MB_ID3 R44:LO ---->R43:HI FOR DDR OC 1.11 版本	
	2.add BC275 1nf TO IMPROVE ESD 3KV ---->5KV	
	3.R418 442 OHM -----> 1.4K OHM FOR PROCHOT調整	
2012/03/19 PBOM:11C	1.PCB 1.11 FOR DDR OC 版本	2.DEL BC275 1nf
2012/03/29 EBOM:11D	1.MB_ID2 R40:HI ---->R41:LO FOR DDR OC 1.12 版本	
	2.DEL OC10,C1,OR76,R24	
2012/04/23 PBOM:11D	1.改成P-BOM ,增加ITE 8892/FX	

Circuit or PCB layout change

DATE	Change Item	Reason
2011/12/14 PCB:0.1	1.由P75-D3-0.1 修改 成B75-D3V	
2011/12/14 PCB:0.1	1.由B75-D3V-0.1 修改成Z77-DS3H	
1.0	1. DDR DIP 560uF電容移除? (或者BOM要上回去) 2. PCH1_05 MOSFET?	
2011/12/30 PCB:0.1	1.由Z77-DS3H 修改成Z77P-D3	
2012/01/18 PCB:0.2	1.修改CPU VCORE /VAXG POWER PLANE/環溫 SOLUTION 以改善THERMAL	
2012/02/09 PCB:1.0	1.Z77P-D3 for MP	
2012/02/23 PCB:1.1	1.Z77P-D3-1.0 修改lan chip,換成8111F-VL	
2012/03/06 PCB:1.11	1.由1.1---->1.11 改DDR OC	
2012/03/21 PCB:1.12	1.由1.11---->1.12 FINE TUNE DDR OC	

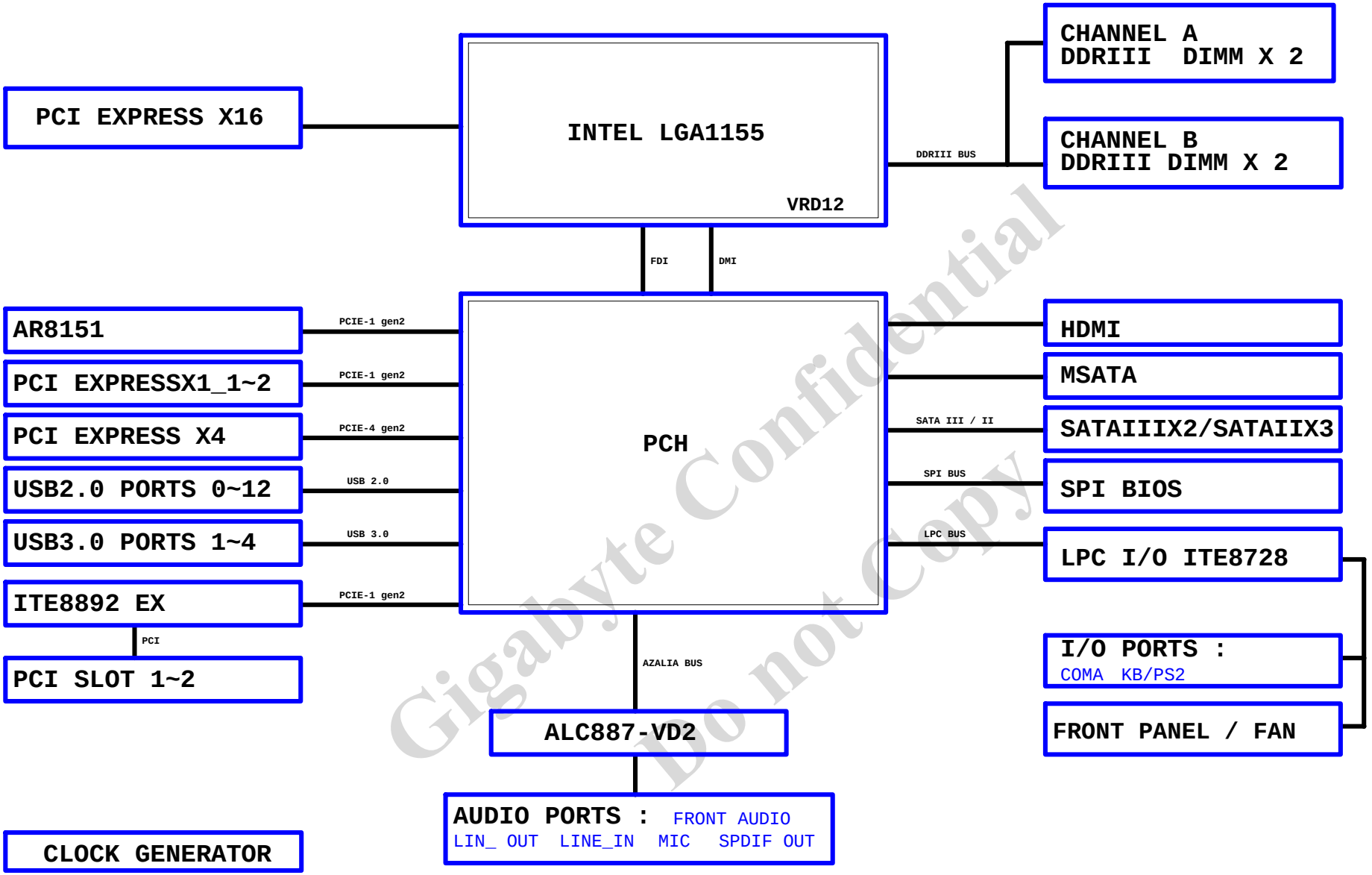
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

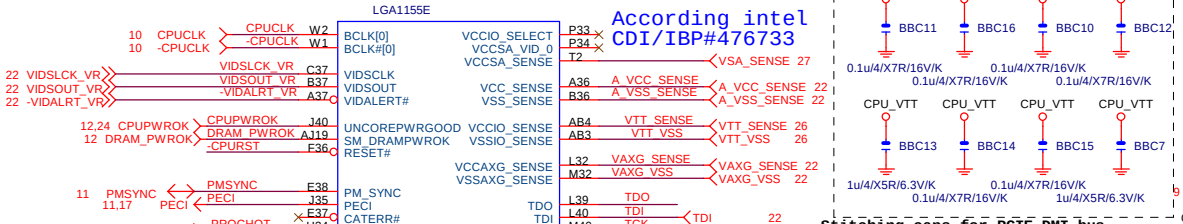
Size: Custom | Document Number: GA-Z77P-D3 | Rev: 1.12

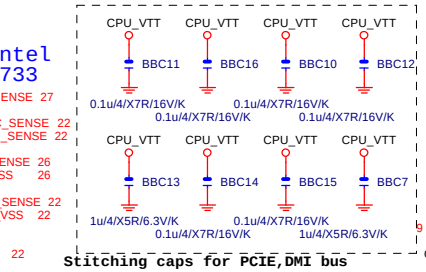
Date: Wednesday, April 25, 2012 | Sheet 2 of 35

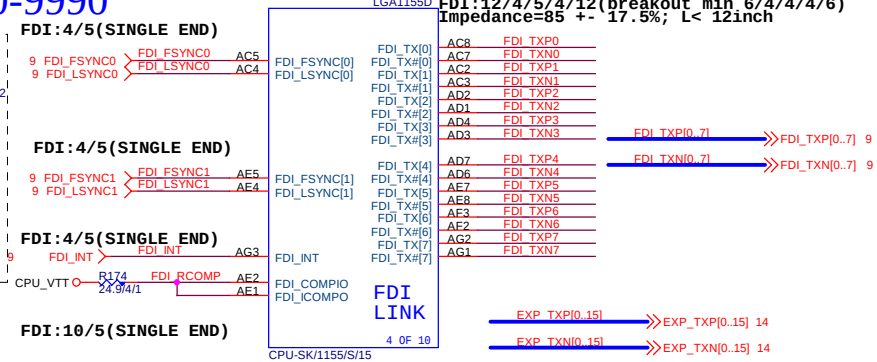
BLOCK DIAGRAM

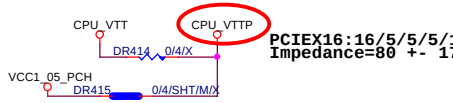


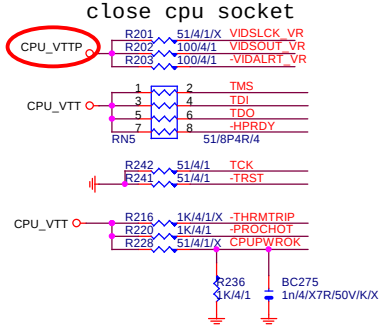
Gigabyte Technology			
Title: BLOCK DIAGRAM			
Size: C	Document Number: GA-Z77P-D3		Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 3 of 35		

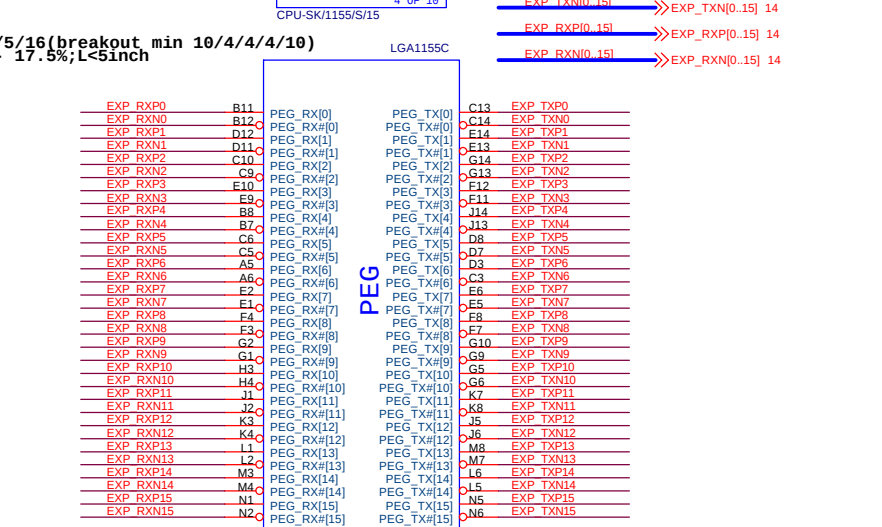


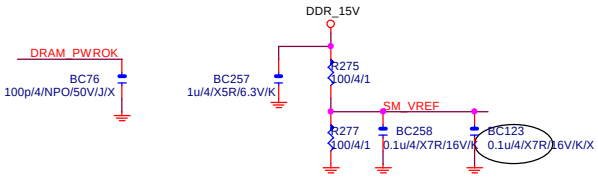


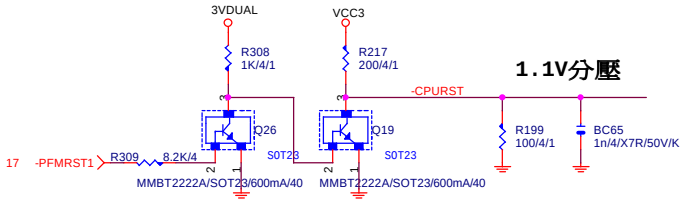


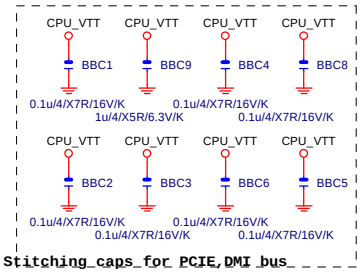












CFG5:1: 1X16 PEG
CFG5=0: 2X8 PEG

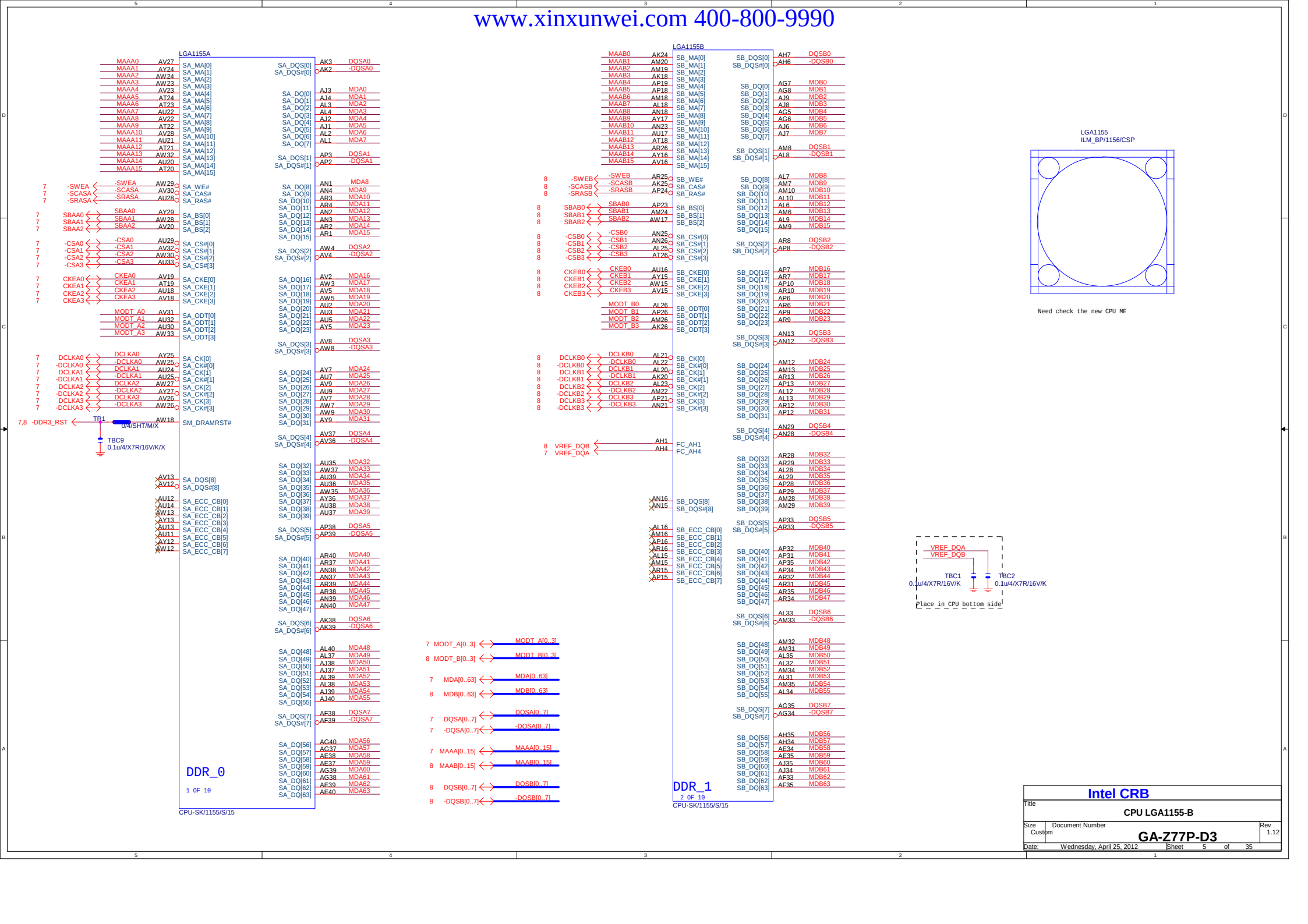
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

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

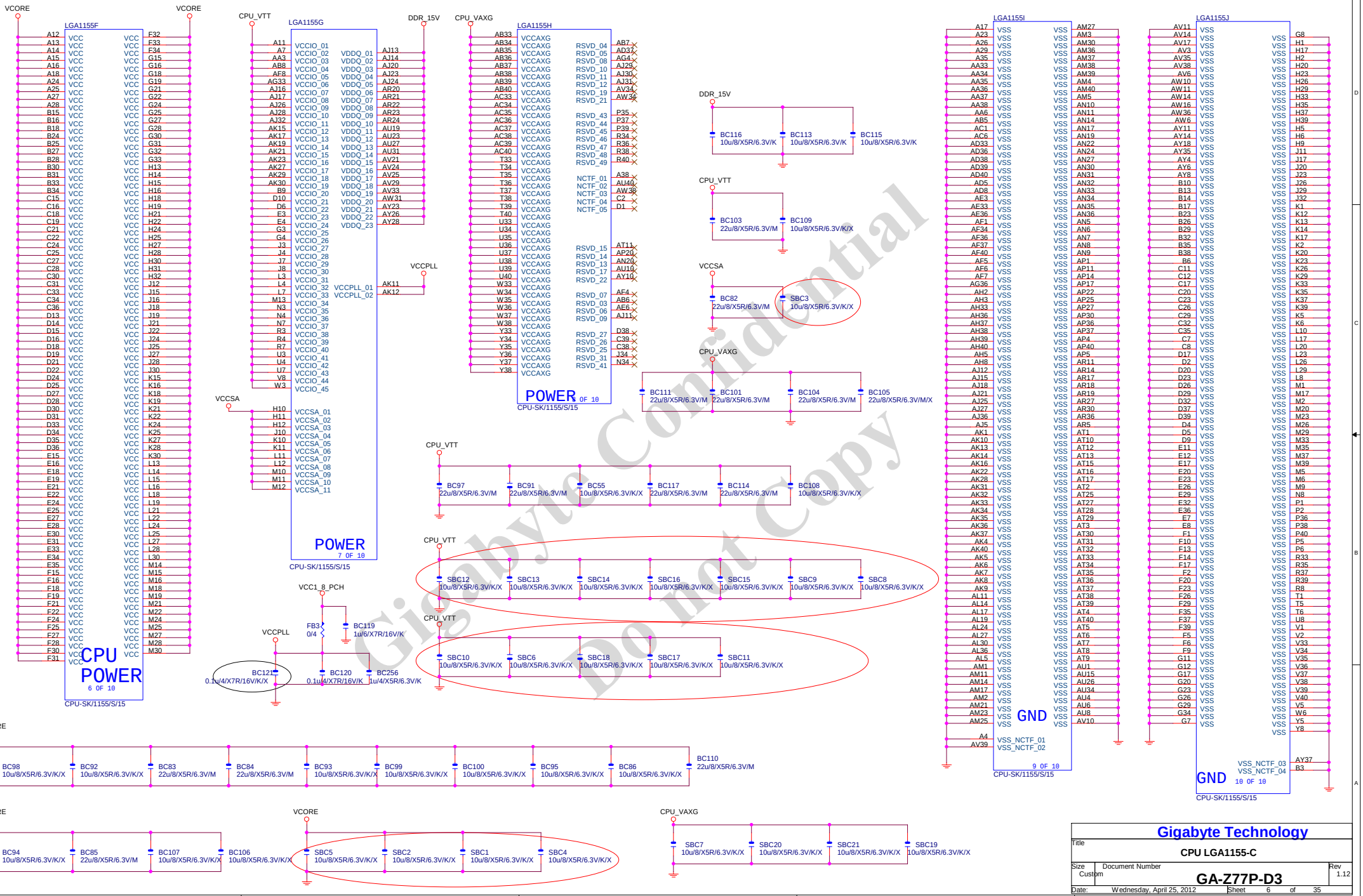
CFG 0-17 all internal PULL-UP

Title	CPU LGA1155-A
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 4 of 35

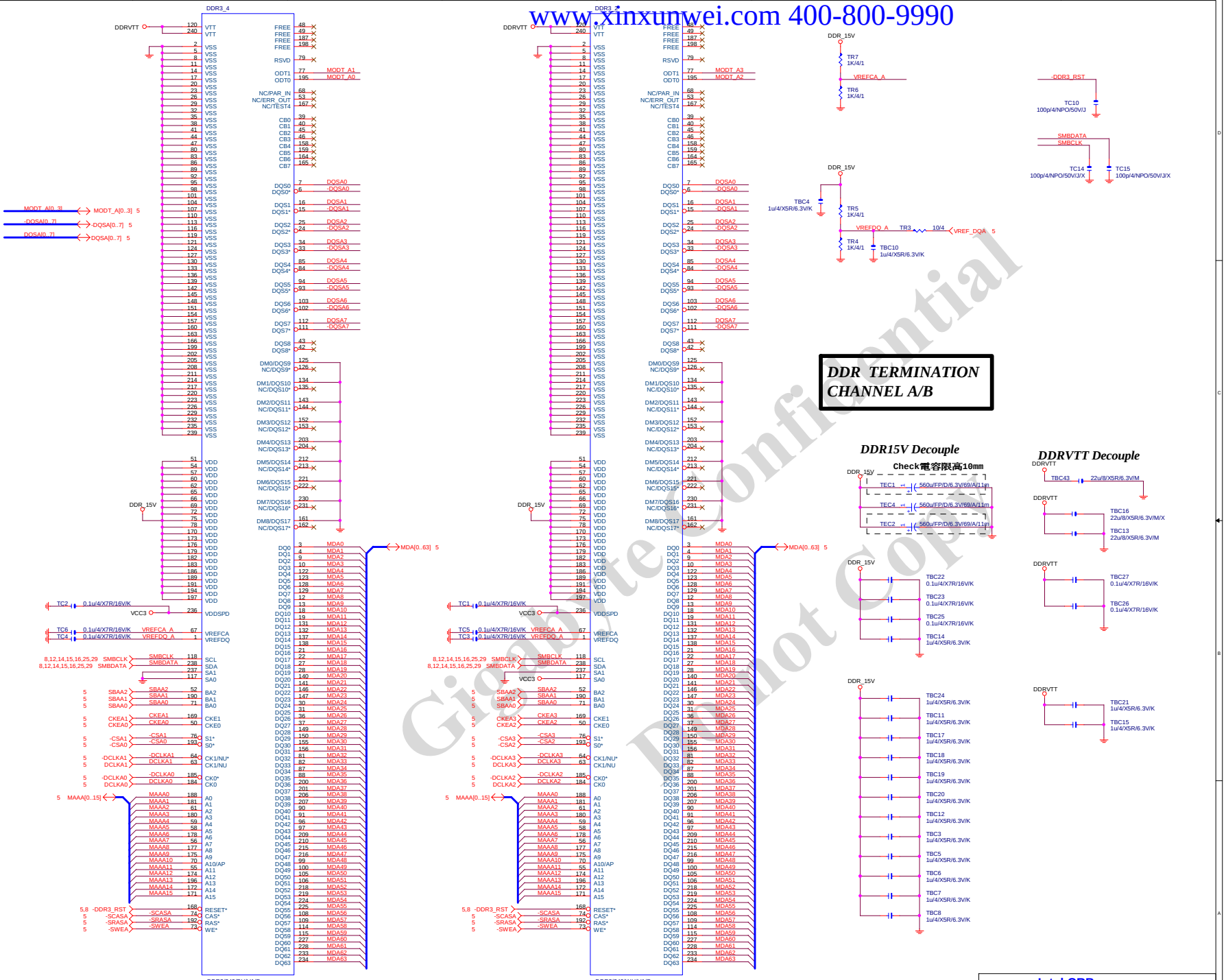
Gigabyte Technology



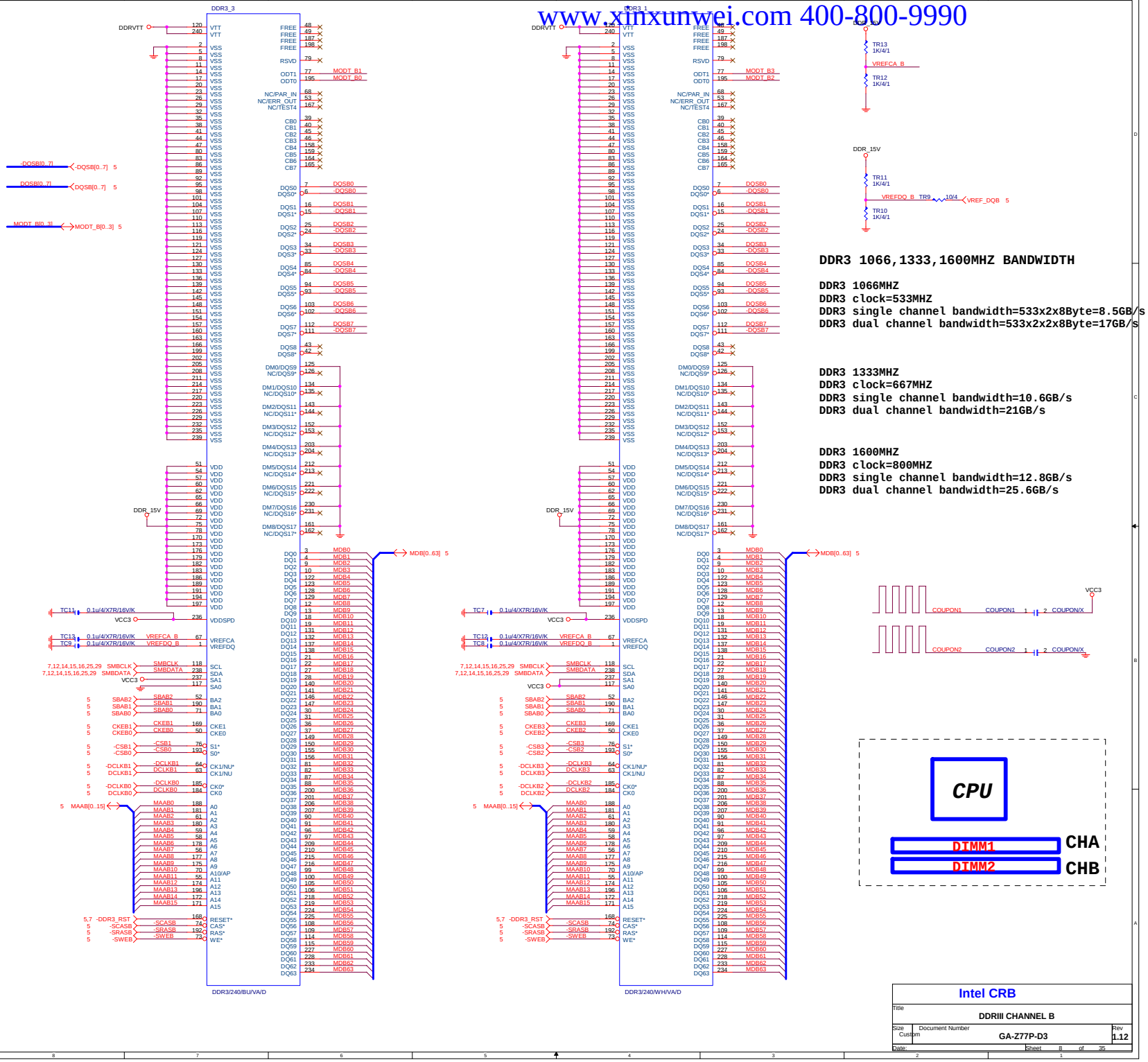
Intel CRB		
Title: CPU LGA1155-B		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 5 of 35	



Gigabyte Technology		
Title	CPU LGA1155-C	
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 6 of 35	



Intel CRB			
Title: DDRIII CHANNEL A			
Size: Custom	Document Number: GA-Z77P-D3		Rev: 1.12
Date:	Sheet 7 of 35		



Intel CRB			
Title: DDRIII CHANNEL B			
Size: Custom	Document Number: GA-Z77P-D3		Rev: 1.12
Date:	Sheet 8 of 35		

USB2.0:12/4.5/7.5/4.5/12
(breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

B75 CHIP USB PORT 6/7 are Disable

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

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

放靠近 Device & PCI-E Slot

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

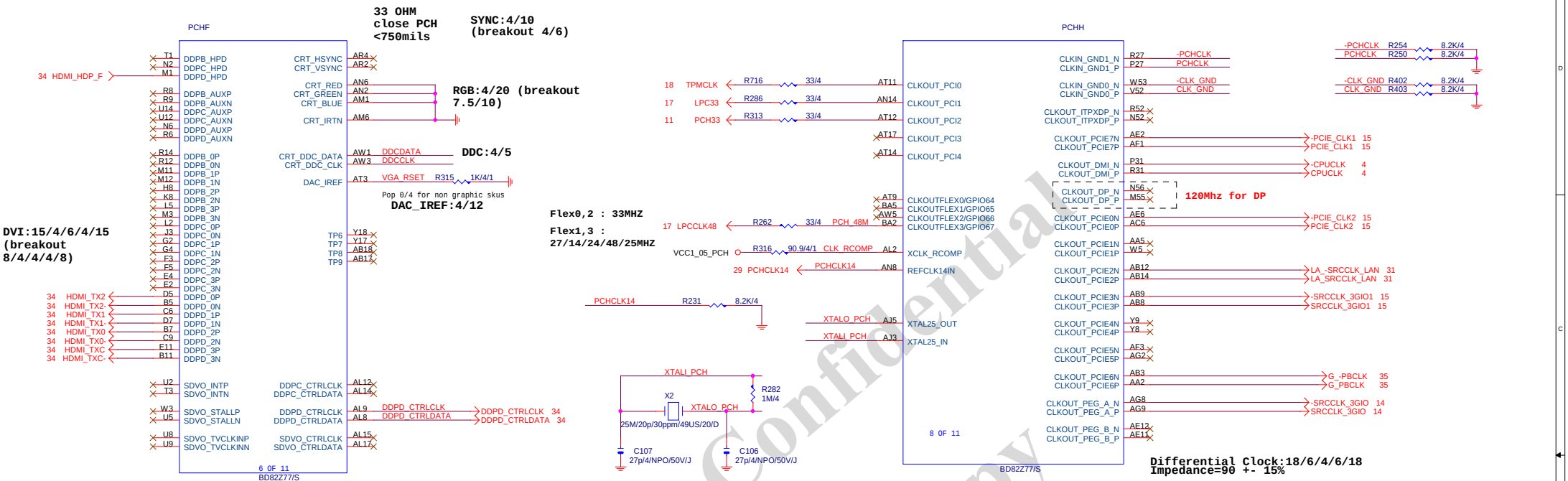
R102 short to GND in non graphic SKU

NEW 7 MODEL
Footprint: BGAHSINK-75;
3mm孔徑

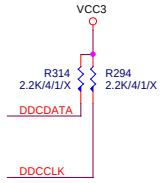
HEAT SINK/N-BG/GBT MK/Z77/KWOG/[12SP2-S04208-01R_12SP2-S04208-02R_12SP2-S04208-03R]

DMI /FDI termination voltage

Gigabyte Technology	
Title	PCH FDI,DMI,USB ,PCIE
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 9 of 35



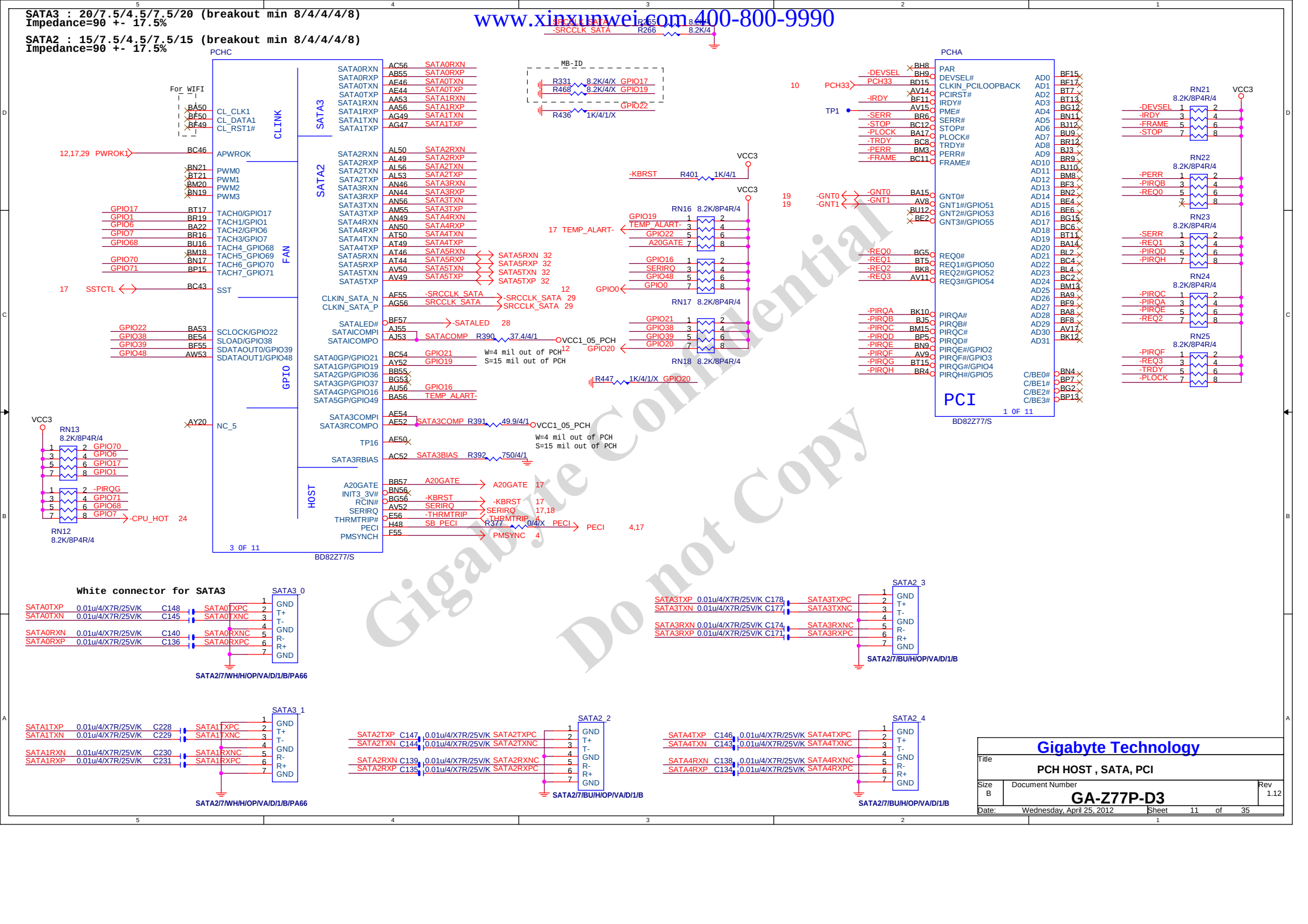
VGA DDC



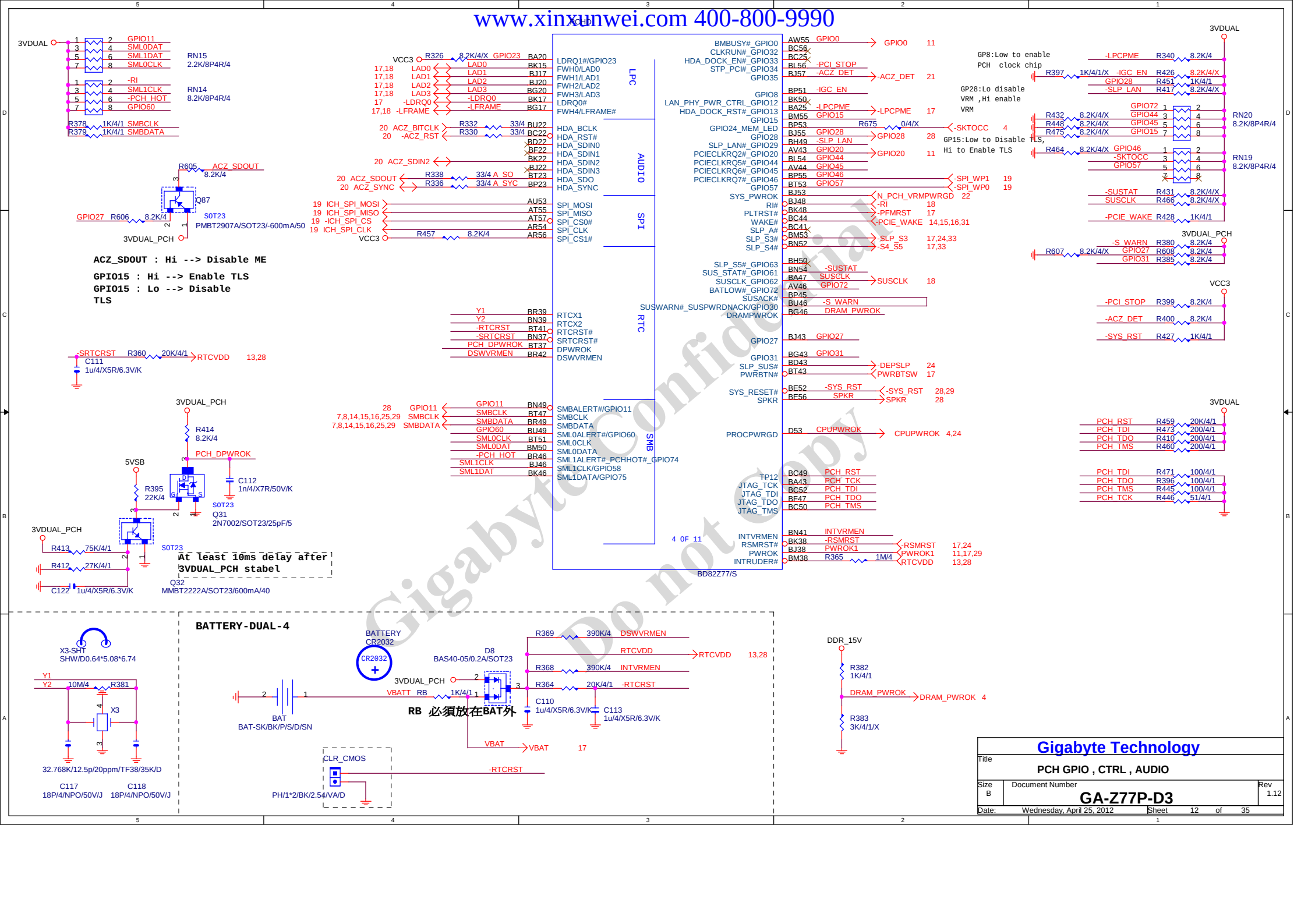
Gigabyte Technology		
Title: PCH DISPLAY ,CLK BUFFER		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 10 of 35	

SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

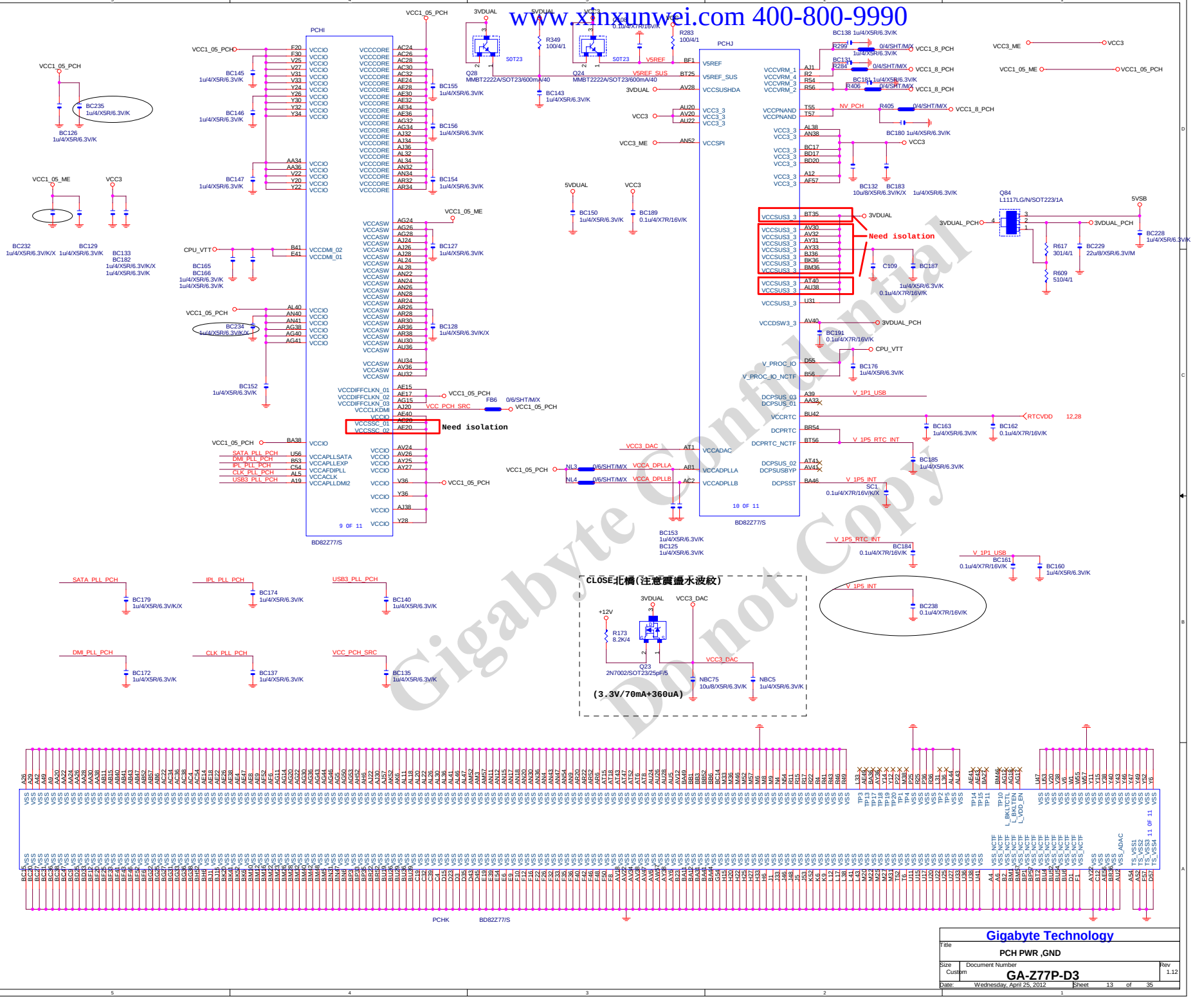
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

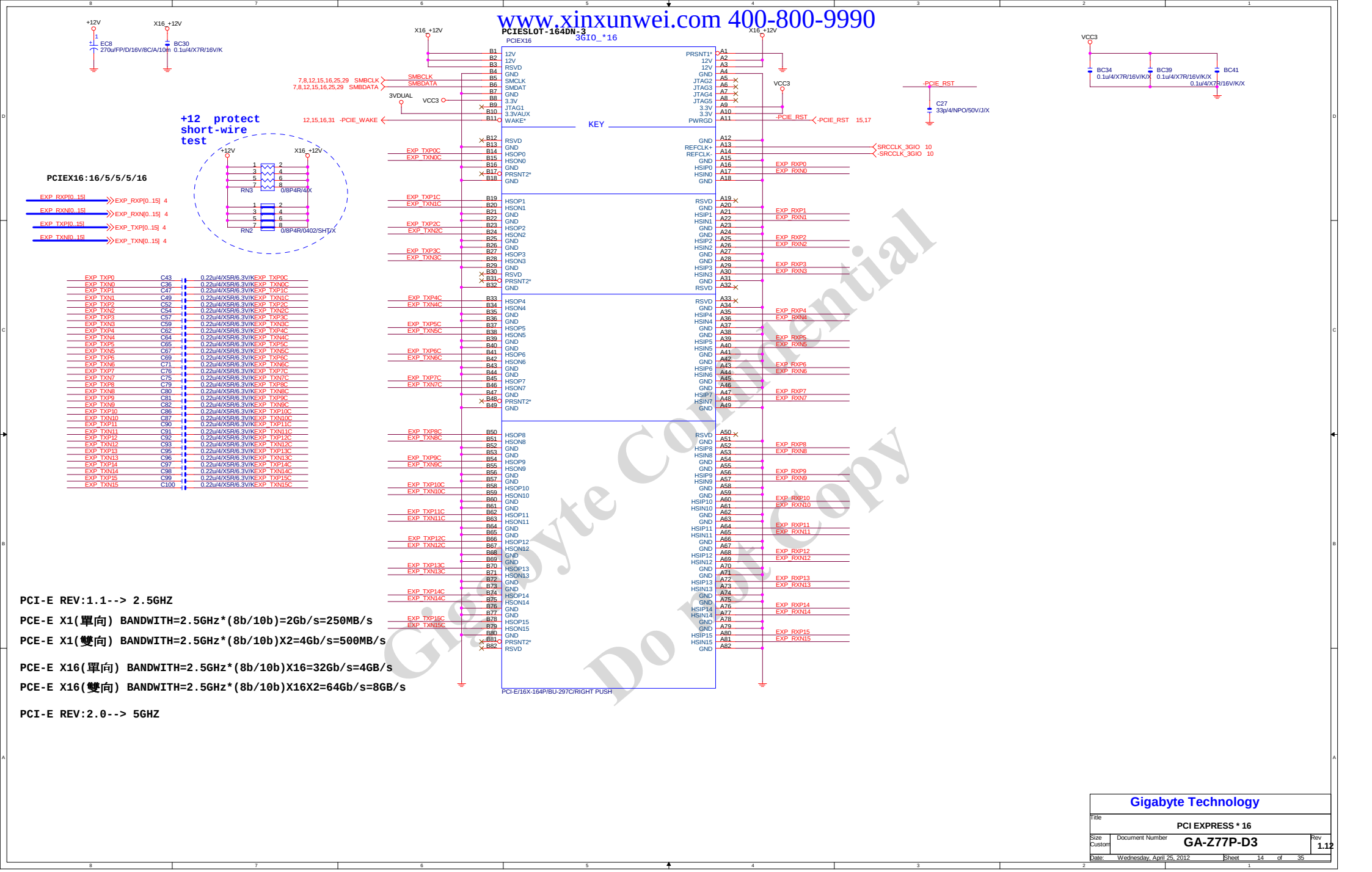


Gigabyte Technology			
Title: PCH HOST , SATA, PCI			
Size: B	Document Number: GA-Z77P-D3		Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 11 of 35		



Gigabyte Technology		
Title: PCH GPIO , CTRL , AUDIO		
Size: B	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 12 of 35	





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	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 14 of 35

PCIE*4

PCIEX4 3GIO_*4

PCI-E/16X-65P/BU/RIGHT PUSH

PCIE*1

PCIEX1_1 3GIO_X1

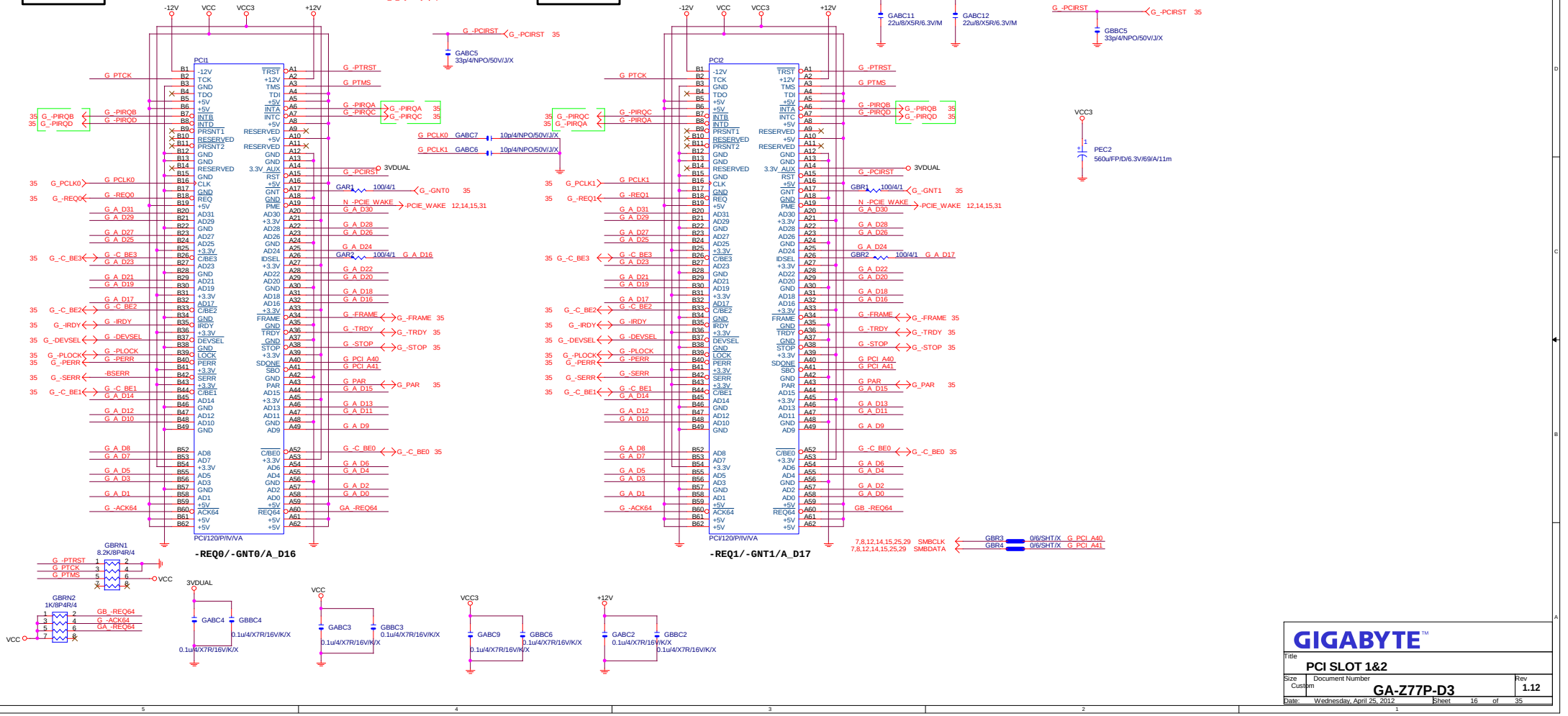
PCIEX1_2 3GIO_X1

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

Title	Gigabyte Technology
	PCI EXPRESS X 4 PORT
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 15 of 35

PCI SLOT 1

PCI SLOT 2



Title	PCI SLOT 1&2
Size	Custom
Document Number	GA-Z77P-D3
Rev	1.12
Date:	Wednesday, April 25, 2012
Sheet	16 of 35

FOR DDR OC :PULL LO PCB1.12

FOR DDR OC :PULL HI PCB1.11

IT8728F(GB)

IT8728F/EX (GB)/QFP128

VIN2/3:UNUSE:PULL HI

For IT8721 Power leakage

EUP FROM PCH

internal power pin, max 22nF cap---->2uf for 8728 低溫相容性

EUP control detect

Only For Push-Pull Mode

JP3--- High SPI-Flash Disable
Low SPI-Flash Enable

JP6:N\A FOR 8728 DX
JP6:PULL DOWN FOR 8728 EX
anti-surge enable

	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)

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.

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

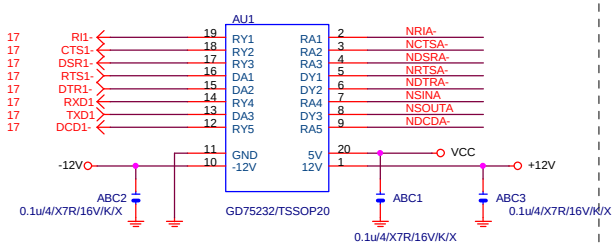
Gigabyte Technology

Title: ITE 8728 LPC IO

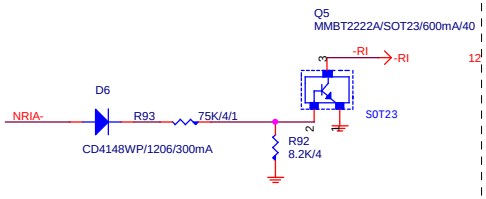
Size: Custom | Document Number: GA-Z77P-D3 | Rev: 1.12

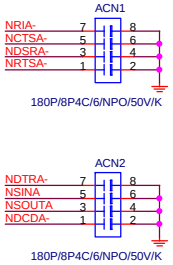
Date: Wednesday, April 25, 2012 | Sheet 17 of 35

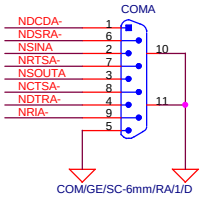
COMA



COM RI

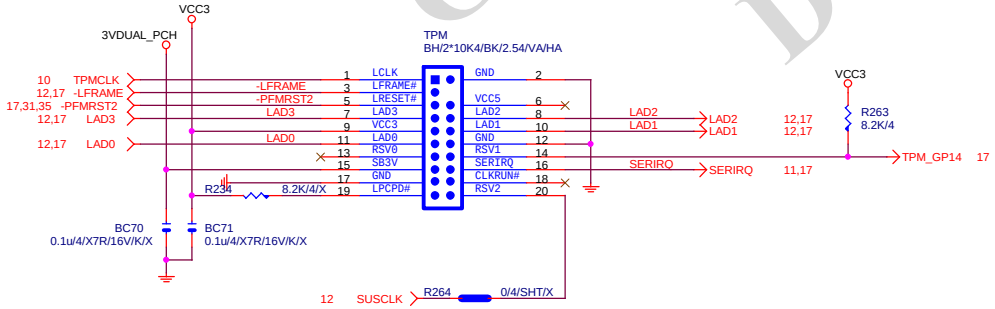




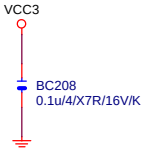


LPT PORT

TPM



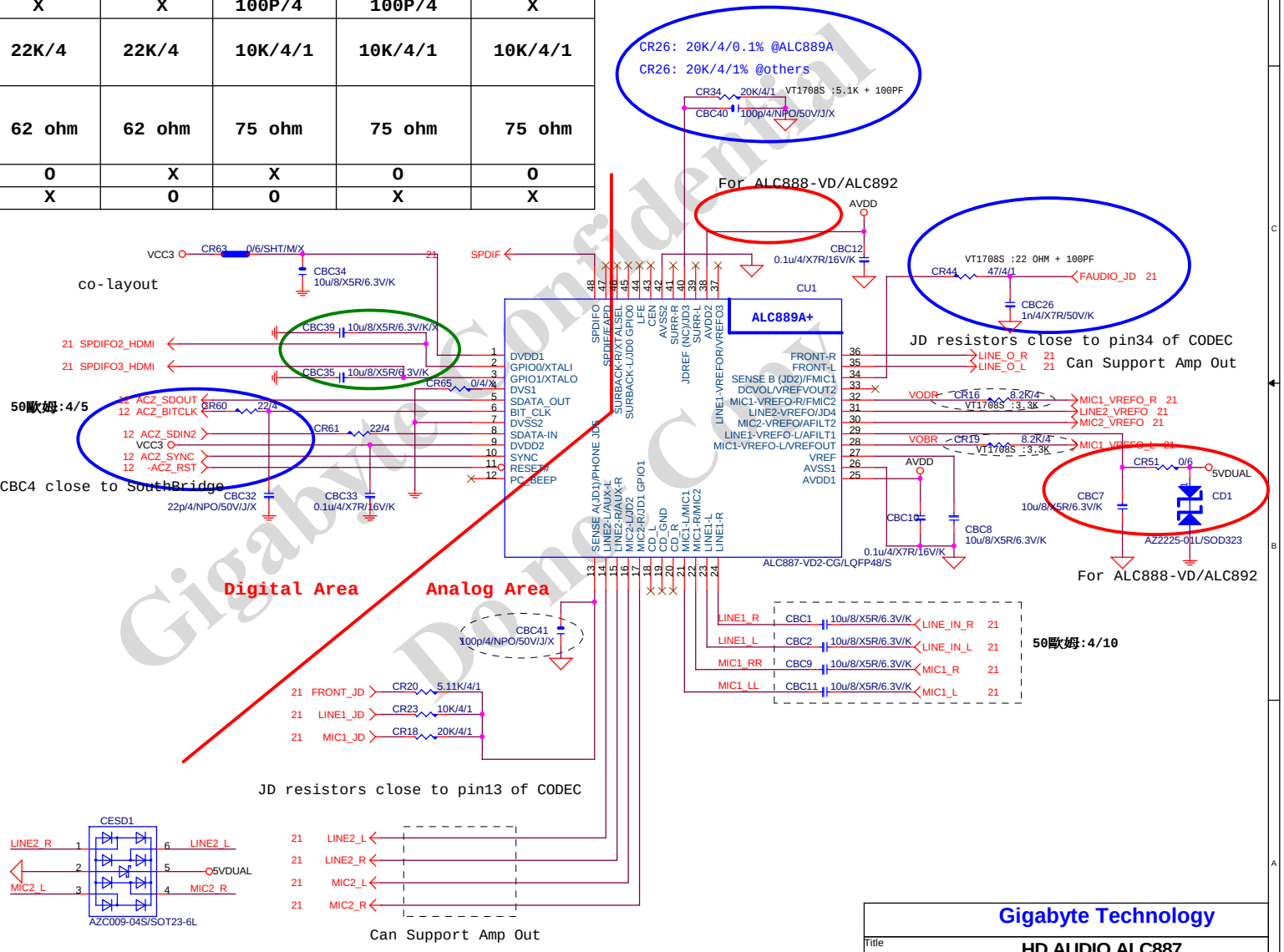
Gigabyte Technology		
Title: COM & Print		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 18 of 35	



Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 19 of 35	

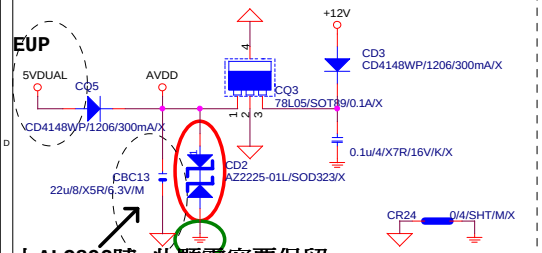
AZALIA CODEC *ALC887-VD2/ALC889/VT1708S/VT1708SCE/VT2021 Codec*

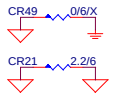
	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021
CR65	X	X	0	0	X	0
CBC35	0	0	X	X	0	X
CR44/CBC26	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF
CR31	X	0	0	0	0	0
CR30	0	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	5.1K/4/1	5.1K/4/1
CR34	20K/4/1	20K/4/1	20K/4/1	5.1K/4/1	20K/4/1	5.1K/4/1
CBC40/CBC41	X	X	X	100P/4	100P/4	X
CR6/CR7/CR58/CR54	22K/4	22K/4	22K/4	10K/4/1	10K/4/1	10K/4/1
CR5/CR8/CR1/CR14/ CR17/CR22/CR13/CR11/ CR57/CR53	62 ohm	62 ohm	62 ohm	75 ohm	75 ohm	75 ohm
CR51/CD1/CBC7	0	0	X	X	0	0
CD2/CD3/CQ5/CQ5	X	X	0	0	X	X



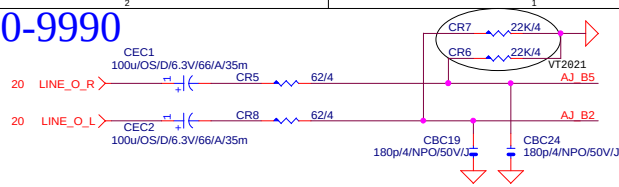
Gigabyte Technology		
Title	HD AUDIO ALC887	
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 20 of 35	

CODEC POWER/EMI PAD



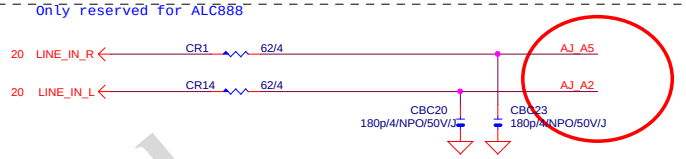


LINE-OUT



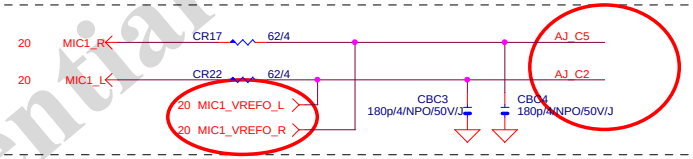
Only reserved for ALC888

LINE-IN

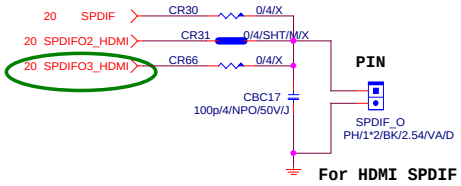


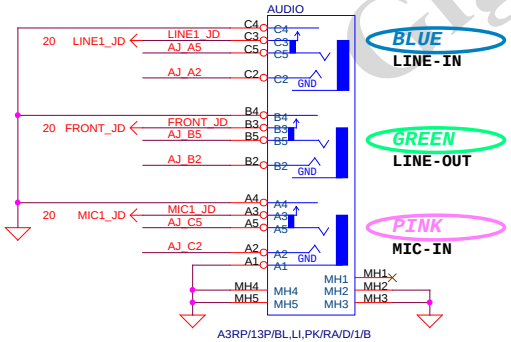
Verify MIC function in LINE-in

MIC-IN

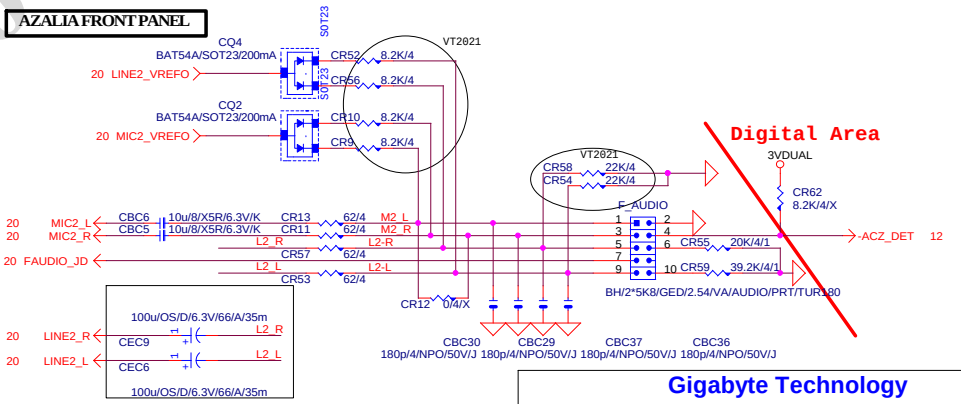


SPDIF_OUT

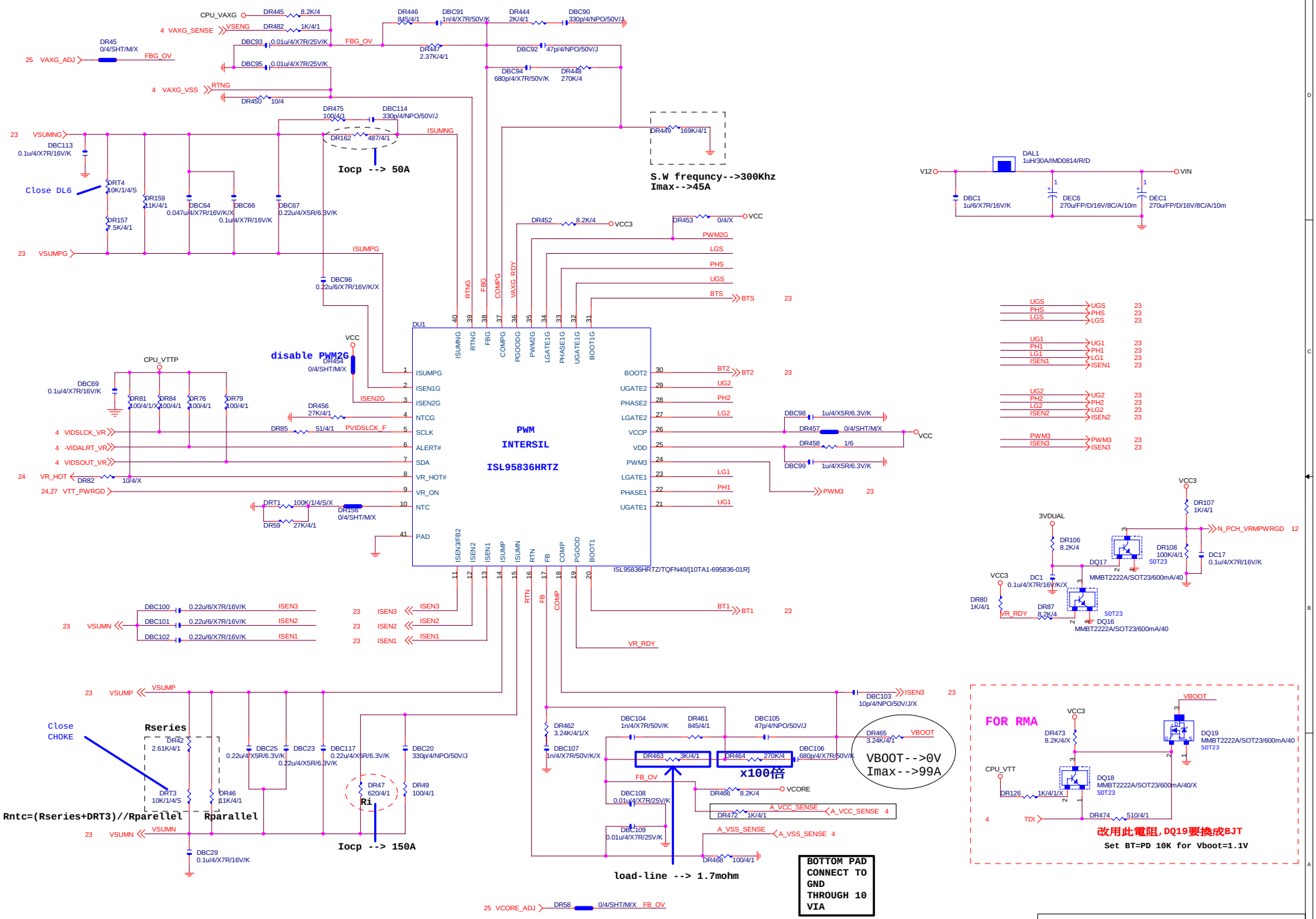




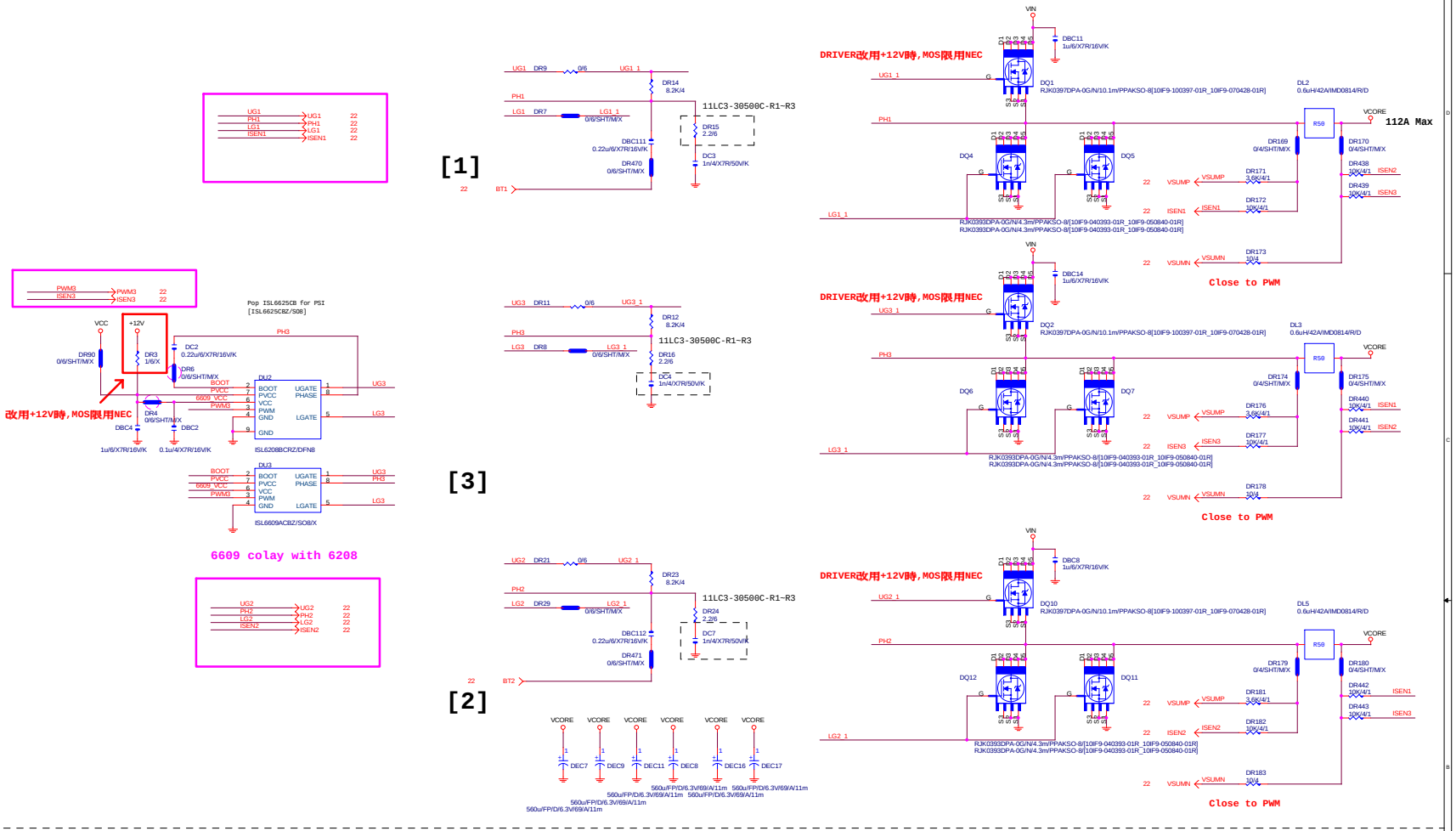
AZALIA FRONT PANEL

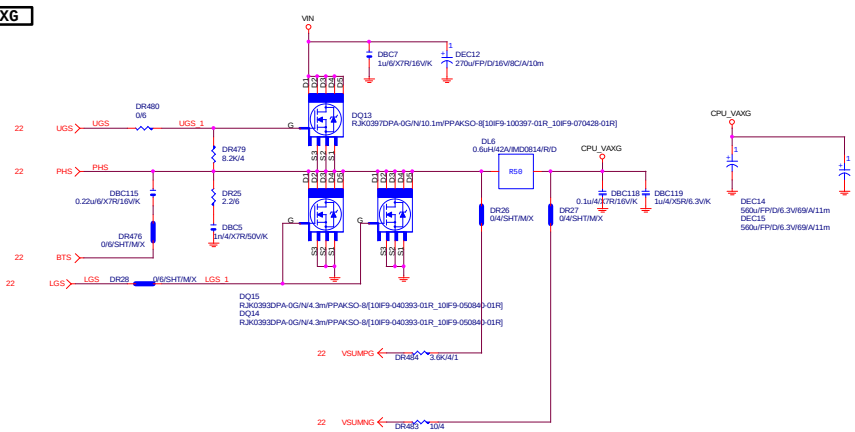


Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 21 of 35	

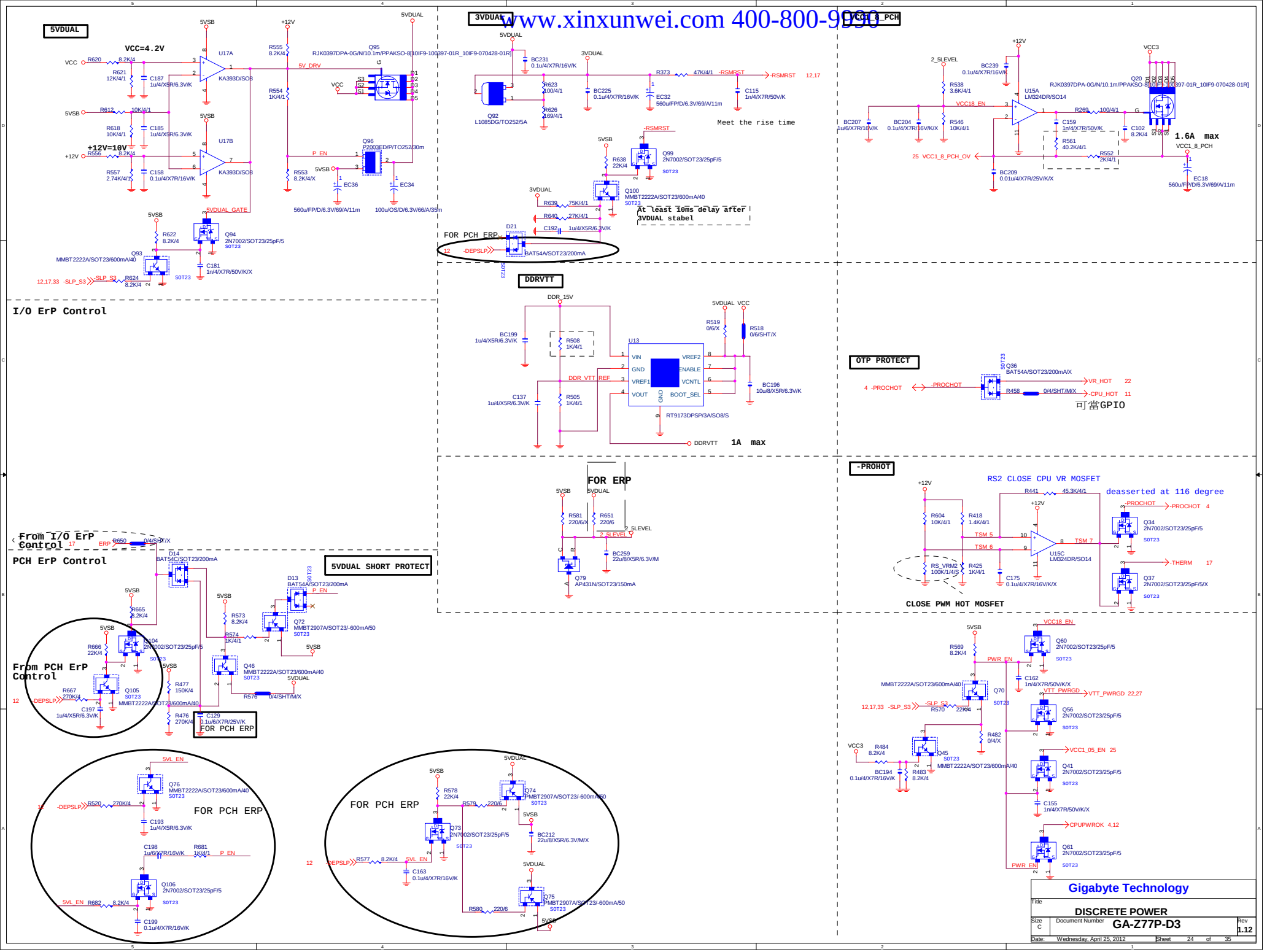


Gigabyte Technology	
Title	CPU CORE VR-1
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 22 of 35

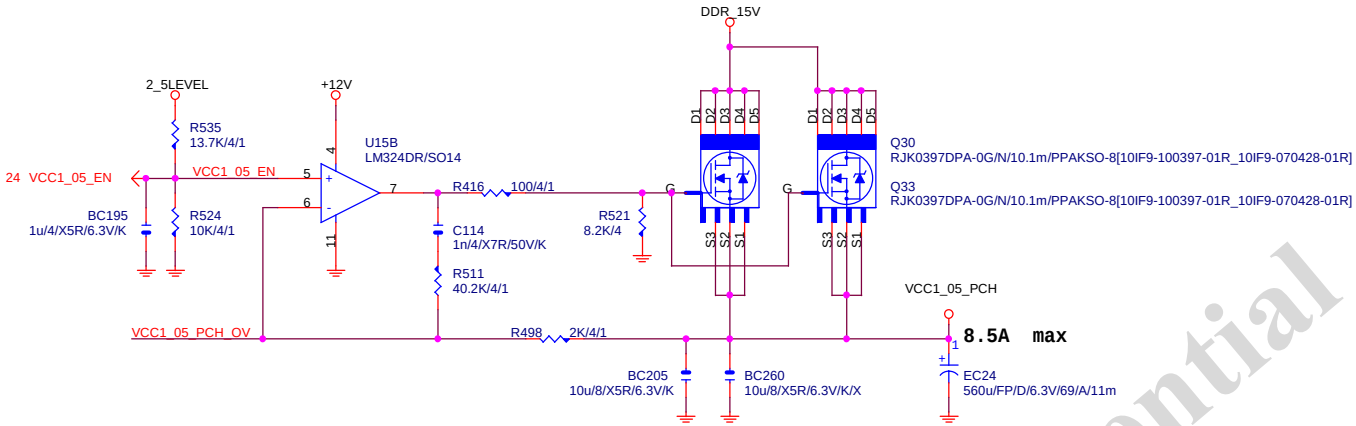




Gigabyte Technology			
Title: CPU CORE VR-3			
Size: Custom	Document Number: GA-Z77P-D3		Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 23 of		



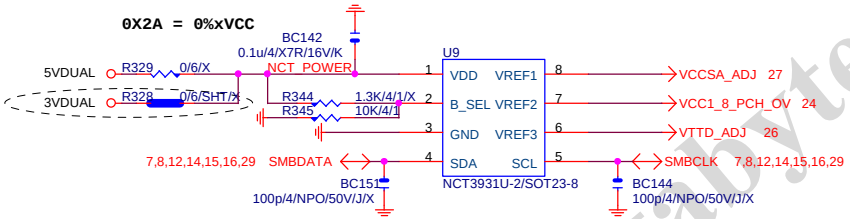
VCC1_05_PCH



Voltage console

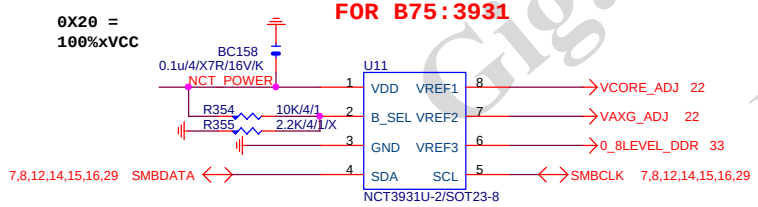
ADDRESS	0X2A	0X20	0X22	0X26
R1(K)	OPEN	10	1.3	3
R2(K)	10	OPEN	3.9	2.2
%VCC	0	100	75	42

0X2A = 0%xVCC



FOR B75:3931

0X20 = 100%xVCC



up6262	0X2A	0X20
VREF1	VCC1_05_PCH	VCORE
VREF2	VCC1_8_PCH	VCCSA
VREF3	CPU_VTT	DDR

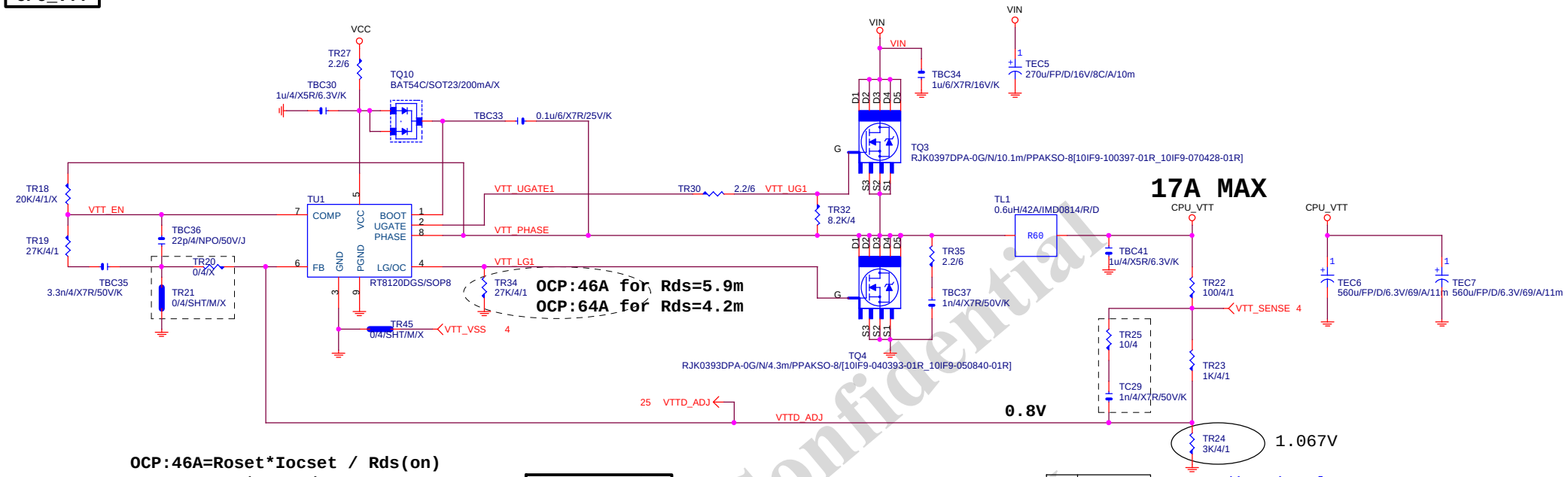
Gigabyte Technology

Title: PCH CORE / VOLTAGE CONSOLE

Size: B | Document Number: GA-Z77P-D3 | Rev: 1.12

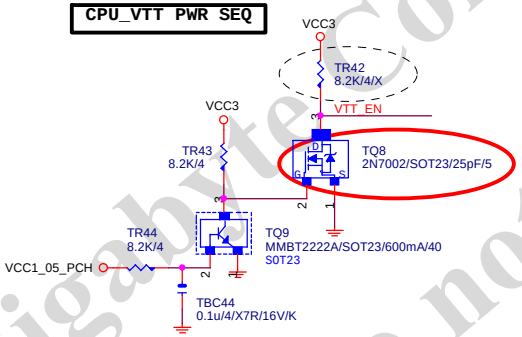
Date: Wednesday, April 25, 2012 | Sheet 25 of 35

CPU_VTT



OCP:46A=Roset*Iocset / Rds(on)
=27K*10uA / 5.9m

CPU_VTT PWR SEQ



	VTT_SEL
HI	1.05V
LO	1.0V

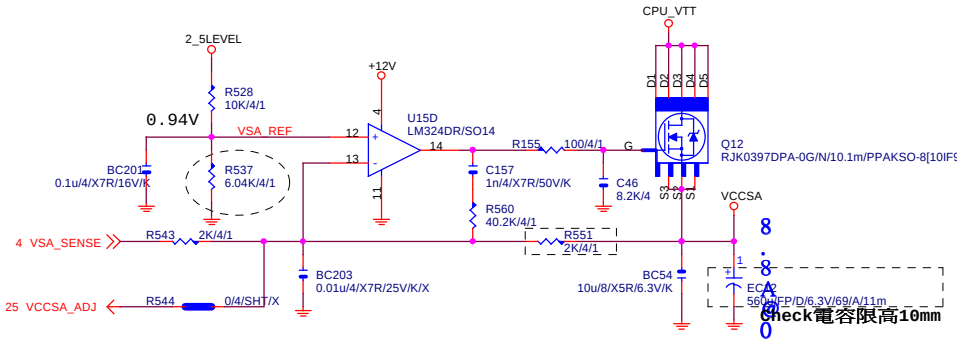
According intel
CDI/IBP#476733,固定1.05V

GIGABYTE™

Title: RT8120_CPU_VTT		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 26 of 35	

VCC_SA

Check電容限高10mm



8.800/0.925V

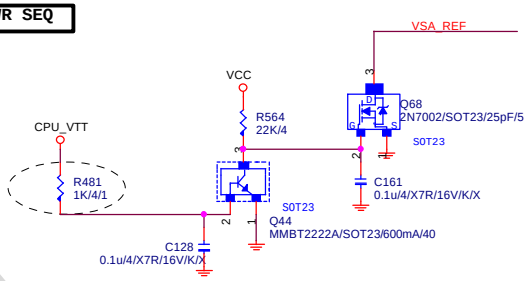
Check電容限高10mm

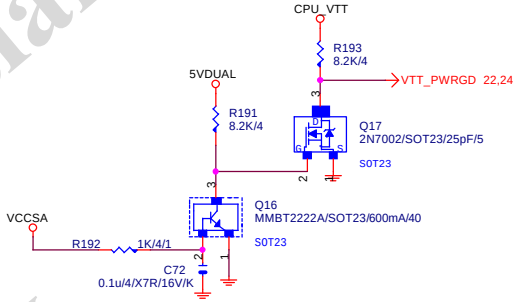
PDG 1.01

	VSA_SEL
HI	0.85V
LO	0.925V

According intel
CDI/IBP#476733,固定0.925V

VCCSA PWR SEQ





Gigabyte Technology

Title: VCCSA POWER

Size: Custom | Document Number: GA-Z77P-D3 | Rev: 1.12

Date: Wednesday, April 25, 2012 | Sheet 27 of 35

FRONT USB1

FUSEVCC_F1
BC122 0.1u/4/X7R/16V/K
F_USB30 REV=1
VBUS ID SSRX1- SSRX1+ SSTX1- SSTX1+ D1- D1+ GND GND
FUSEVCC_F2
BC124 0.1u/4/X7R/16V/K
VBUS SSTX2- SSTX2+ SSRX2- SSRX2+ D2- D2+ GND GND
9 PCH_USB3_RXN1
9 PCH_USB3_RXP1
9 PCH_USB3_TXN1
9 PCH_USB3_TXP1
C215 0.1u/4/X7R/16V/K
C216 0.1u/4/X7R/16V/K
USB3_TXN1
USB3_TXP1
C213 0.1u/4/X7R/16V/K
C214 0.1u/4/X7R/16V/K
USB3_TXN2
USB3_TXP2
PCH_USB3_TXN2 9
PCH_USB3_TXP2 9
PCH_USB3_RXN2 9
PCH_USB3_RXP2 9
9 -USBP0
9 +USBP0
-USBP1 9
+USBP1 9
BH/2*10K20/BU/ON/2.0/VA/D/GF/[11NH3-020210-21R]

F_USB POWER PROTECT

D11 SOT23
12 GPIO11
-USBOC_F
-USBOC_R
-USBOC_R 9,31
BAT54A/SOT23/200mA

CASE OPEN

12,13 RTCVDD
R530 1M/4
-CASEOPEN
-CASEOPEN 17
BC198 0.01u/4/X7R/25V/K

USB3_TXP1
USB3_TXN1
USB3_TXN2
USB3_TXP2
RUE3
AZ1045-04F/MSOP10
ESD Close to connector

PCH_USB3_RXP1
PCH_USB3_RXN1
PCH_USB3_RXN2
PCH_USB3_RXP2
RUE4
AZ1045-04F/MSOP10
ESD Close to connector

ESD12
-USBP1
+USBP0
+USBP1
5VDUAL
-USBP0
AZC009-04S/SOT23-6L

5VDUAL
F17 SMD1812P350SLR/S/[10FP1-06350B-20R]
FUSEVCC_F1
F18 SMD1812P350SLR/S/[10FP1-06350B-20R]
FUSEVCC_F2
EC23 100u/OS/D/6.3V/66/A/35m

SATA LED

VCC3
R489 1K/4/1
-HDLED
C124 180p/4/NPO/50V/J/X
VCC3
R490 1K/4/1
R491 8.2K/4
FPD3
32 -MSATALED
11 -SATALED
BAT54A/SOT23/200mA
Q53 MMBT2222A/SOT23/600mA/40
Q39 MMBT2222A/SOT23/600mA/40

FRONT USB1

FUSEVCC_F4
FUSEVCC_F5
BC267 0.1u/4/X7R/16V/K
BC269 0.1u/4/X7R/16V/K
F_USB1
9 -USBP4
9 +USBP4
-USBP5 9
+USBP5 9
BH/2*5K9/BU/ON/2.54/VA/D/GF/[11NH3-001205-41R_11NH3-001205-42R]
ESD11
-USBP4
-USBP5
+USBP4
+USBP5
FUSEVCC_F4
AZC009-04S/SOT23-6L
ESD Close to connector

FRONT USB2

FUSEVCC_F8
FUSEVCC_F9
BC250 0.1u/4/X7R/16V/K
BC270 0.1u/4/X7R/16V/K
F_USB2
9 -USBP8
9 +USBP8
-USBP9 9
+USBP9 9
BH/2*5K9/BU/ON/2.54/VA/D/GF/[11NH3-001205-41R_11NH3-001205-42R]
ESD13
-USBP8
-USBP9
+USBP8
+USBP9
FUSEVCC_F8
AZC009-04S/SOT23-6L
ESD Close to connector

VCC
D16 CD4148WP/1206/300mA
R591 1K/4/1
R583 8.2K/4
BEEP-
Q88 2N7002/SOT23/25pF/5
Q77 MMBT2222A/SOT23/600mA/40
R610 75/6/1
SPK-
R611 75/6/1
Q78 MMBT2222A/SOT23/600mA/40
To disable TCO timer
VCC3
R585 1K/4/1
R0.2 修正
SPKR
R584 8.2K/4
SPKR 12
for ITE8728 rstconin issue

5VDUAL
F15 SMD1812P160/8V FUSEVCC_F4
F20 SMD1812P160/8V FUSEVCC_F5
F21 SMD1812P160/8V FUSEVCC_F8
F22 SMD1812P160/8V FUSEVCC_F9
EC19 100u/OS/D/6.3V/66/A/35m

FUSEVCC_F1
FUSEVCC_F2
D23 BAT54A/SOT23/200mA
FUSEVCC_F4
FUSEVCC_F5
D25 BAT54A/SOT23/200mA
FUSEVCC_F8
FUSEVCC_F9
D26 BAT54A/SOT23/200mA
5VDUAL
R274 8.2K/4
-USBOC_F
-USBOC_F 9
R276 15K/4/1

INTEL FRONT PANEL

5VSB
R495 8.2K/4/X
12,29 -SYS_RST
R497 100/4/1
BC197 0.01u/4/X7R/25V/K
ESD10
-RST
-PWRBT_1
5VSB
AZC009-04S/SOT23-6L Rev 0.2 modefy

VCC
R419 330/6
BC206 0.01u/4/X7R/25V/K/X
F_PANEL
HD+
-HDLED
-RST
-CASEOPEN
MPD+
HD+ MSG/PD+
HD- MSG/PD-
GND PW+
RESET PW-
CI-
CI+
SP+
PWR+ NC
PWR- NC
PWR- SP-
VCC
MPD+
-PWRBT_1
SPK-
BH/2*10K10,12,13/WH/2.54/VA/PA

VCC
R438 330/6
MPD+
Q38 MMBT2222A/SOT23/600mA/40
R470 8.2K/4
GPIO28 12
3VDUAL_PCH
R472 8.2K/4
R469 33/4
-PWRBTSW 17
C127 0.01u/4/X7R/25V/K/X
BC190 0.01u/4/X7R/25V/K

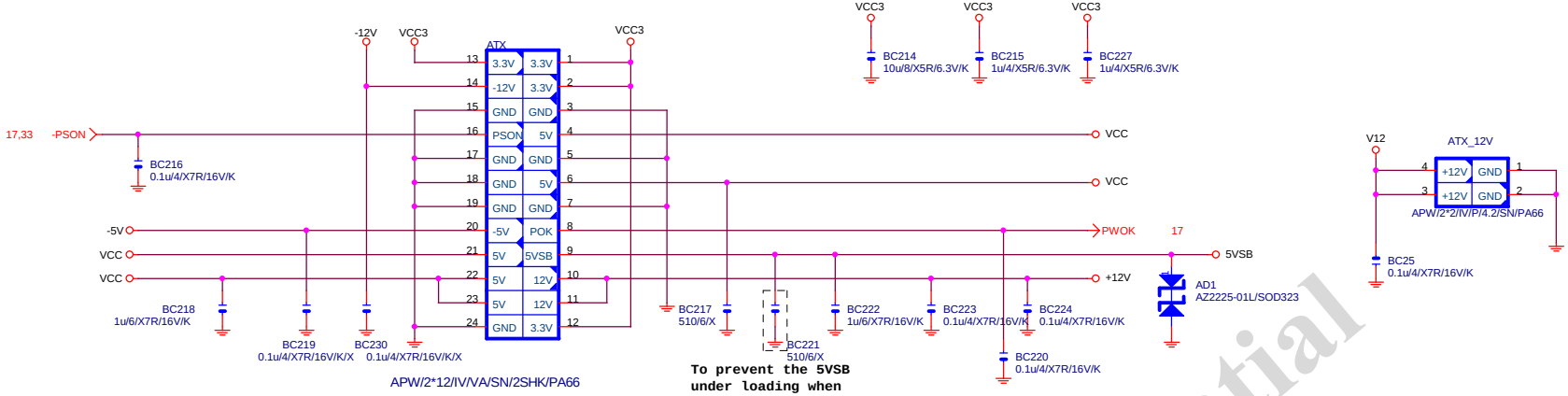
Gigabyte Technology

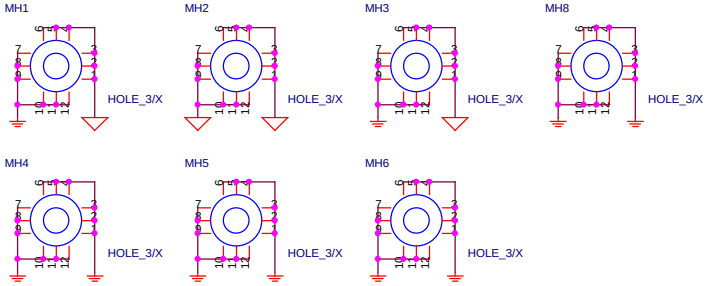
Title: FP,F_USB,USB PWR,FDD,BZ

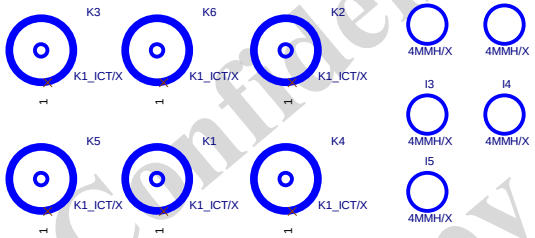
Size: Custom | Document Number: GA-Z77P-D3 | Rev: 1.12

Date: Wednesday, April 25, 2012 | Sheet 28 of 35

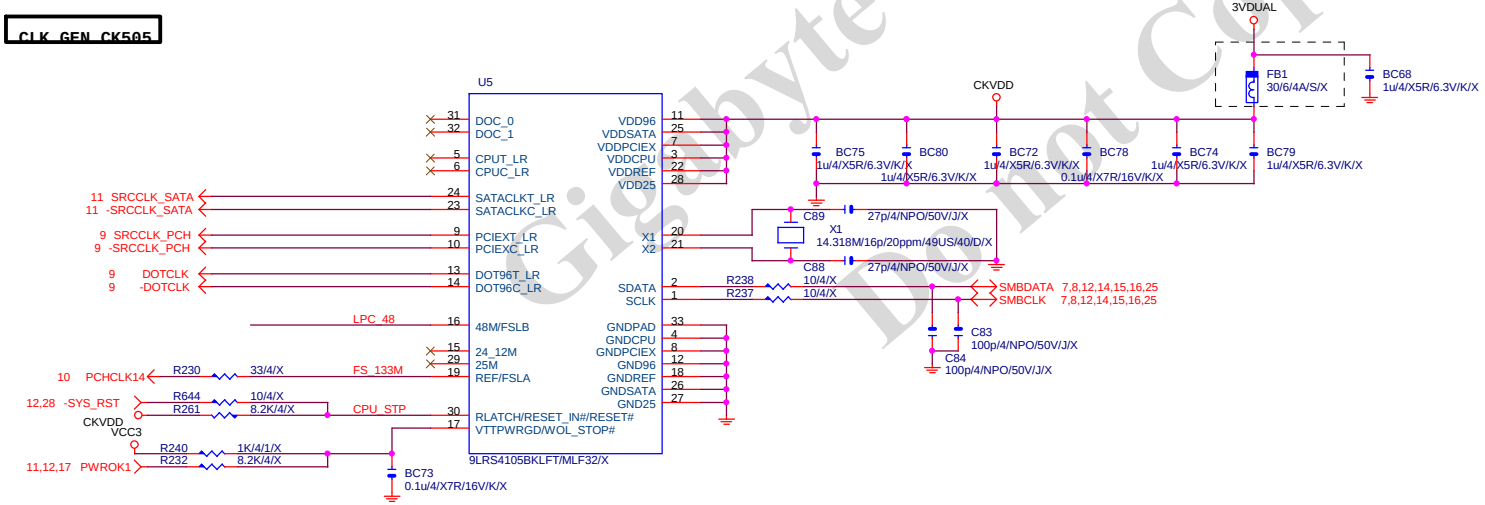
ATX POWER CONNECTOR







CLK_GEN_CK505

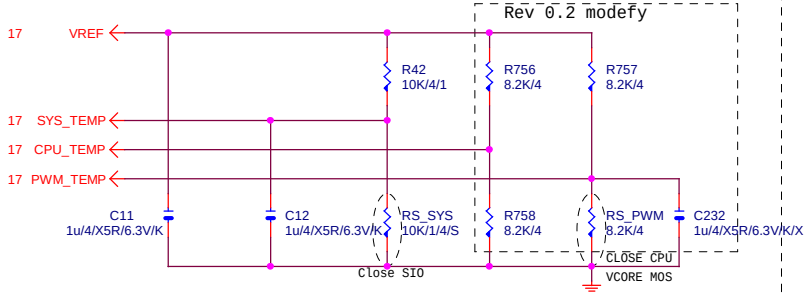


CPU Frequency Selection

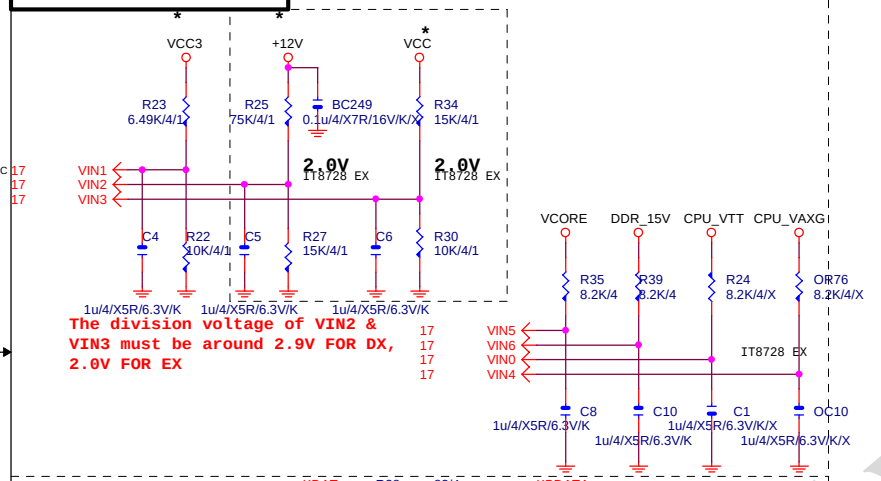
FS	CPU
0	100M <Default>
1	133M

Gigabyte Technology	
Title	ATX POWER CONNECTOR
Size: Custom	Document Number: GA-Z77P-D3
Rev	1.12
Date: Wednesday, April 25, 2012	Sheet 29 of 35

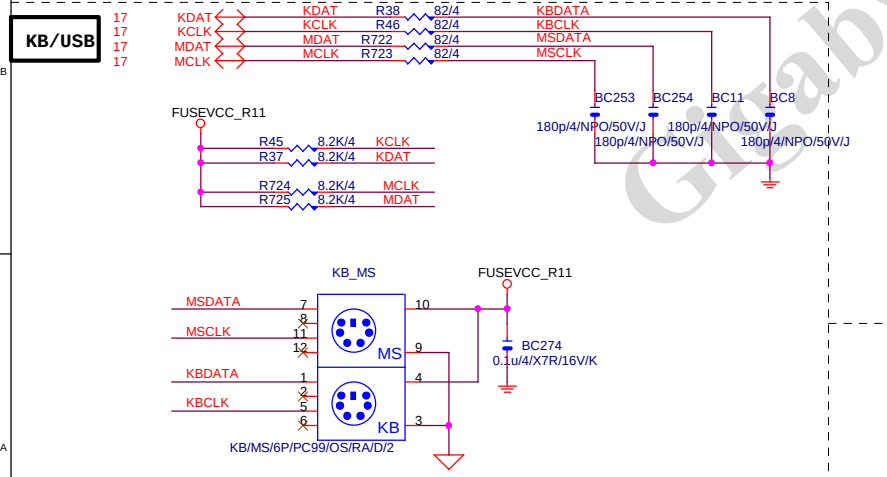
TEMP H/W MONITOR



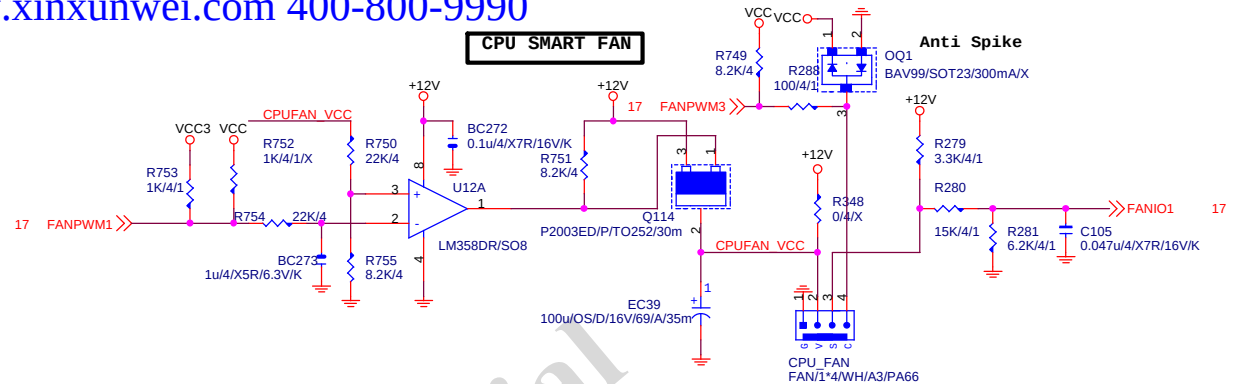
VOLTAGE-- H/W MONITOR

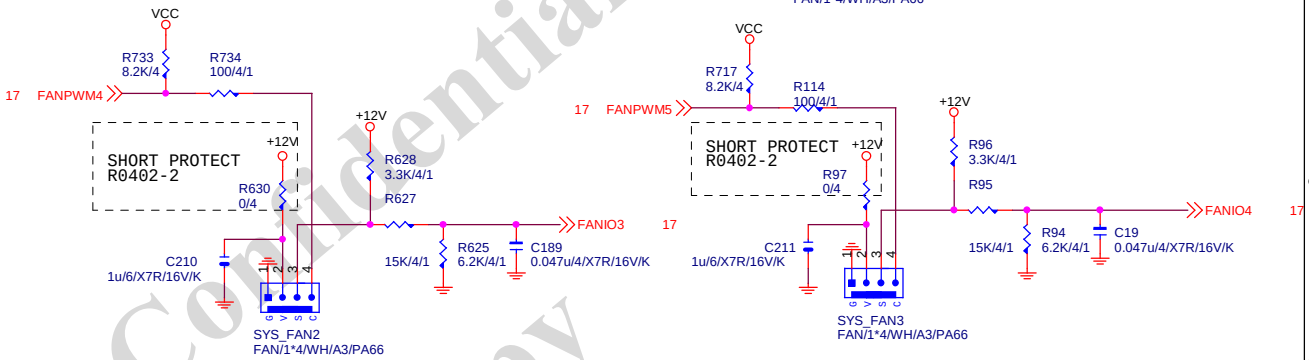


KB/USB



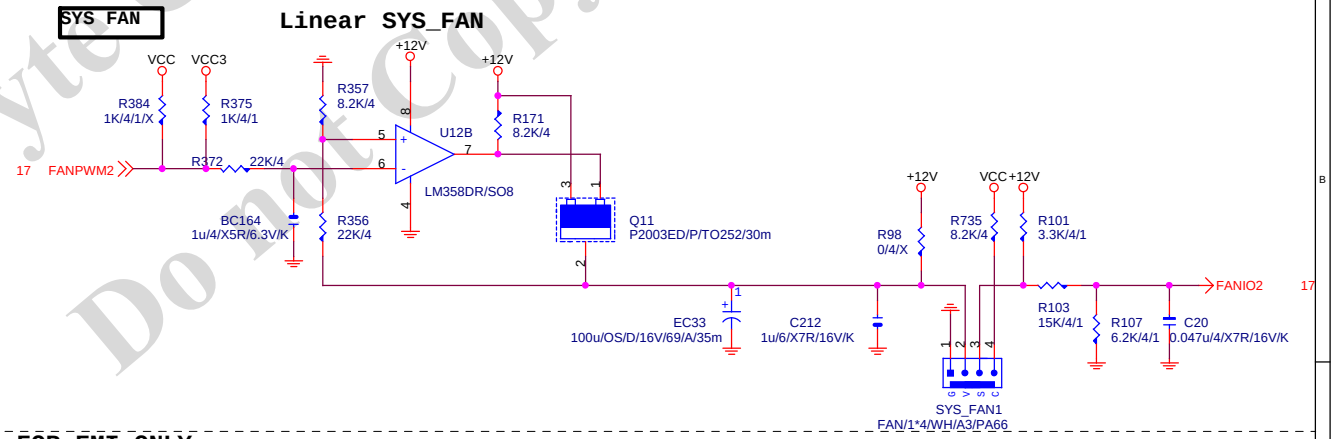
CPU SMART FAN



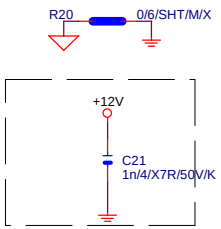


SYS FAN

Linear SYS_FAN



FOR EMI ONLY



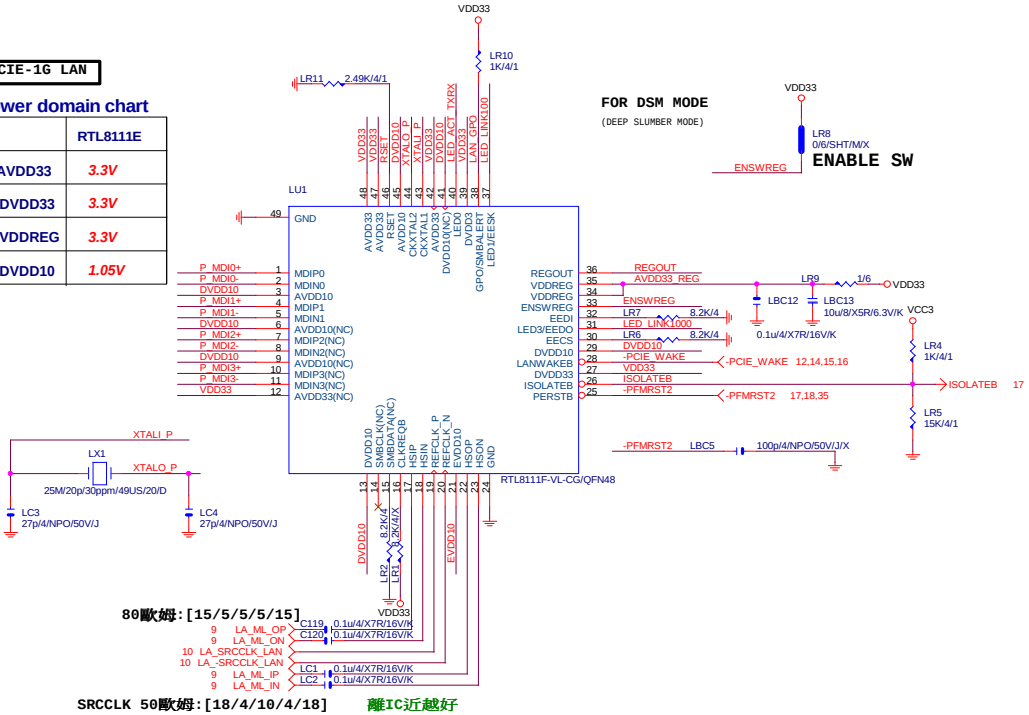
Gigabyte Technology		
Title: HWM,KB/MS, FAN CTRL		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 30 of 35	

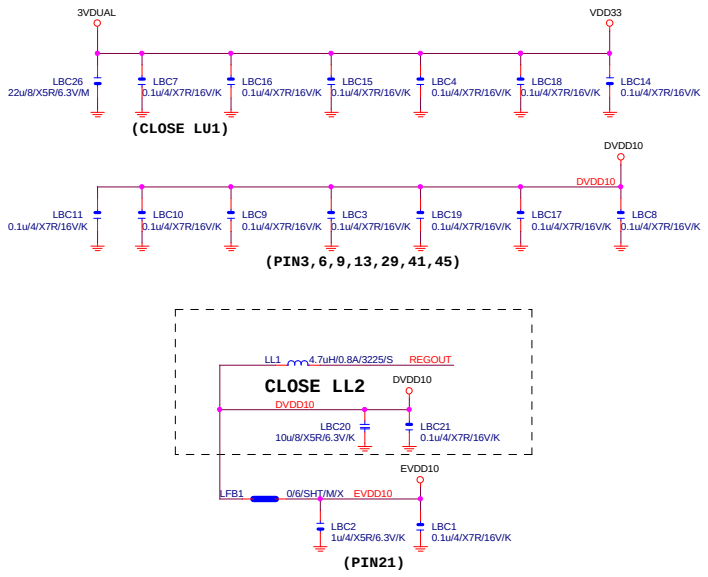
PCIE-1G LAN

PCIE-1G LAN

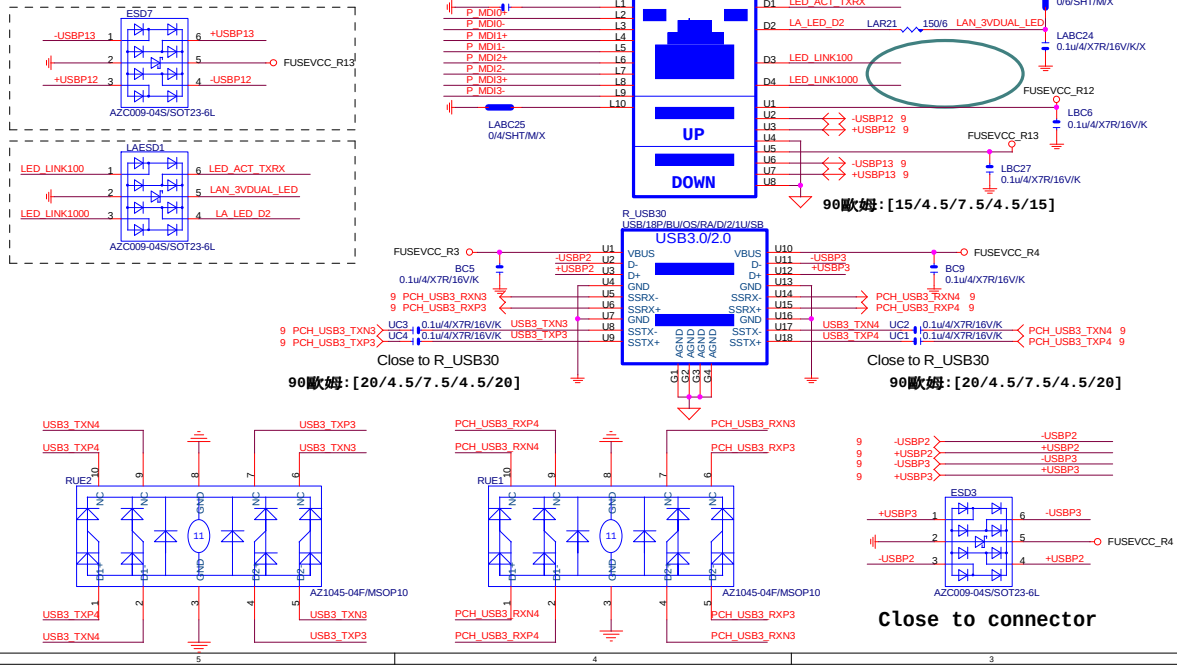
Power domain chart

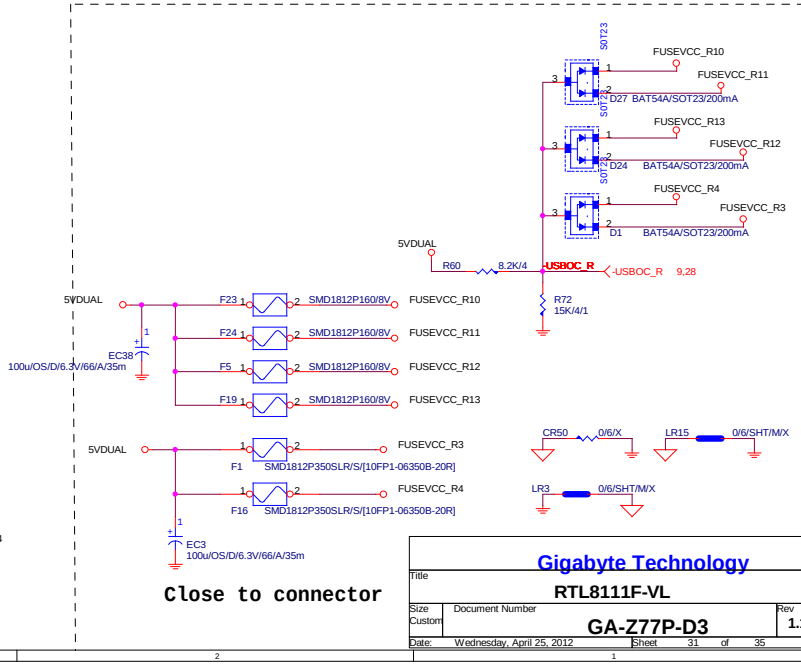
	RTL8111E
AVDD33	3.3V
DVDD33	3.3V
VDDREG	3.3V
DVDD10	1.05V





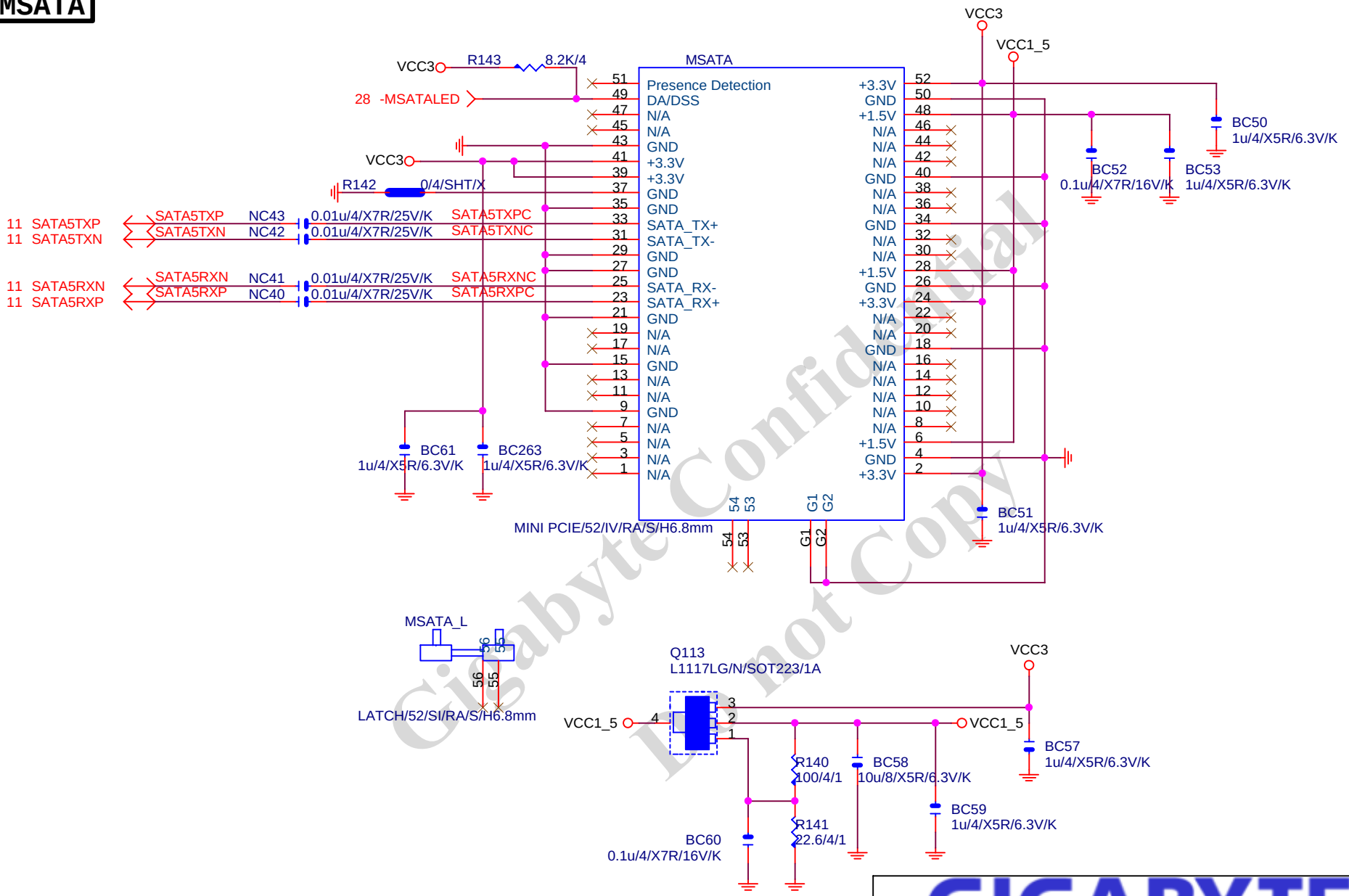
USB30_LAN CONNECTOR





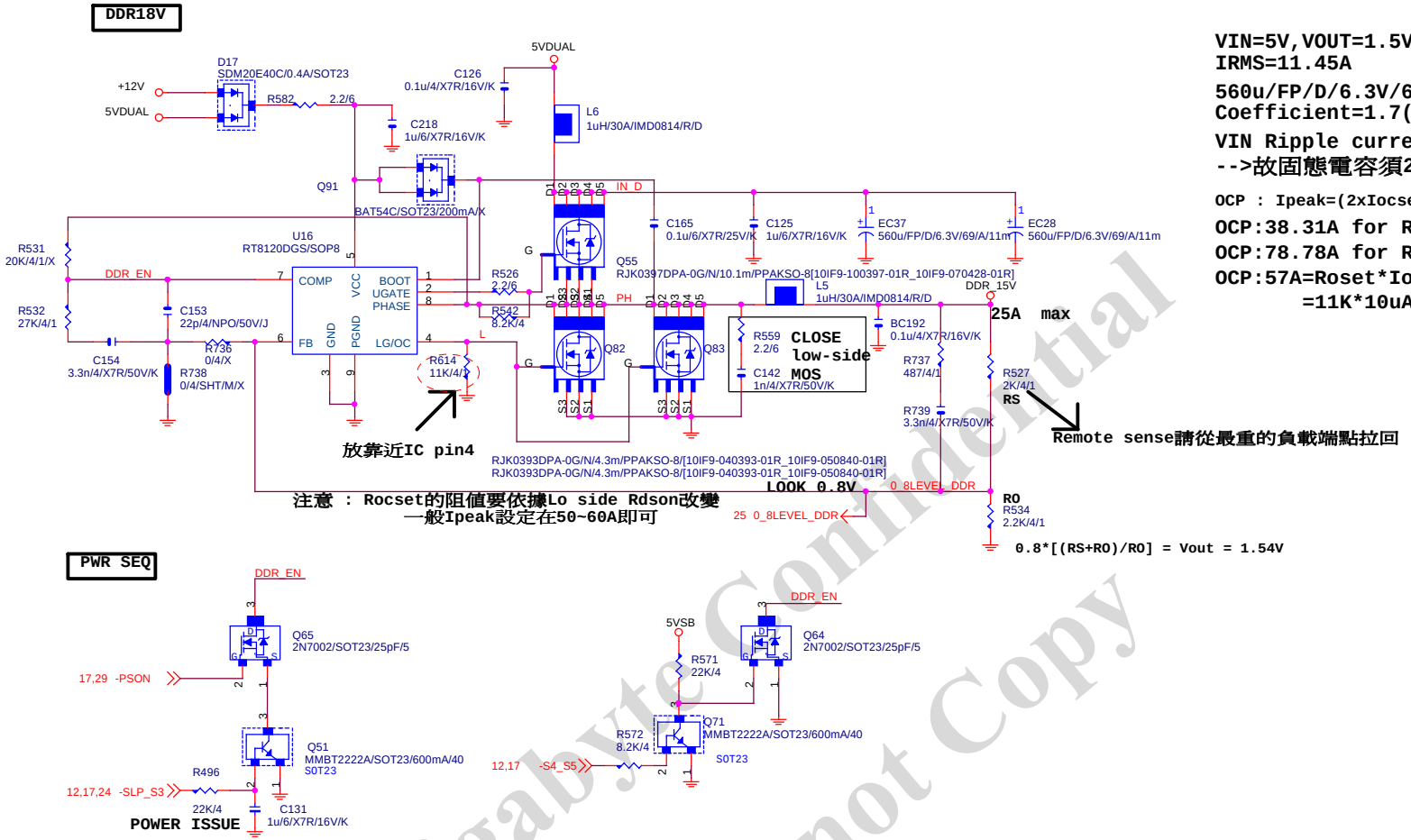
Gigabyte Technology		
Title	RTL8111F-VL	
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 31 of 35	

MSATA



GIGABYTE™

Title: MSATA		
Size: A	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 32 of 35	



VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

560u/FP/D/6.3V/68/8m RIPPLE CURRENT=4.7A
Coefficient=1.7(85℃),1(105℃)

VIN Ripple current=4.7X1.7=7.99A(85℃)
-->故固態電容須2X7.99=15.98>11.45A

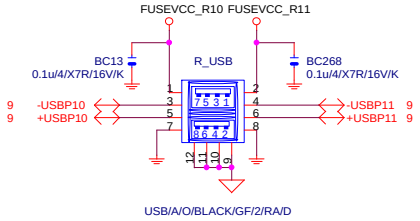
OCP : Ipeak=(2xIocsetxRocset)/Rdson

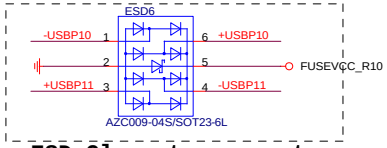
OCP:38.31A for Rds=6.7m for vishay@4.5V
OCP:78.78A for Rds=3.3m for renesas@10V
OCP:57A=Roset*Iocset / Rds(on)
=11K*10uA / [5//5]

GIGABYTE™

Title: RT8120		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 33 of 35	

R_USB

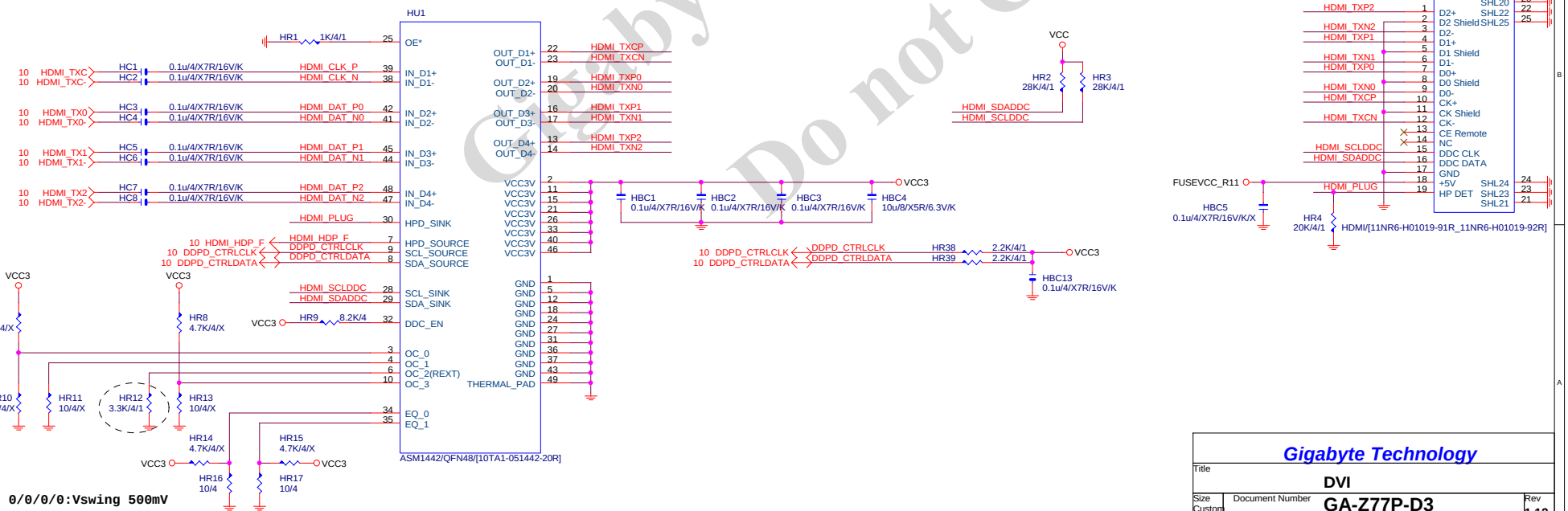




ESD Close to connector

HDMI LEVEL SHIFT

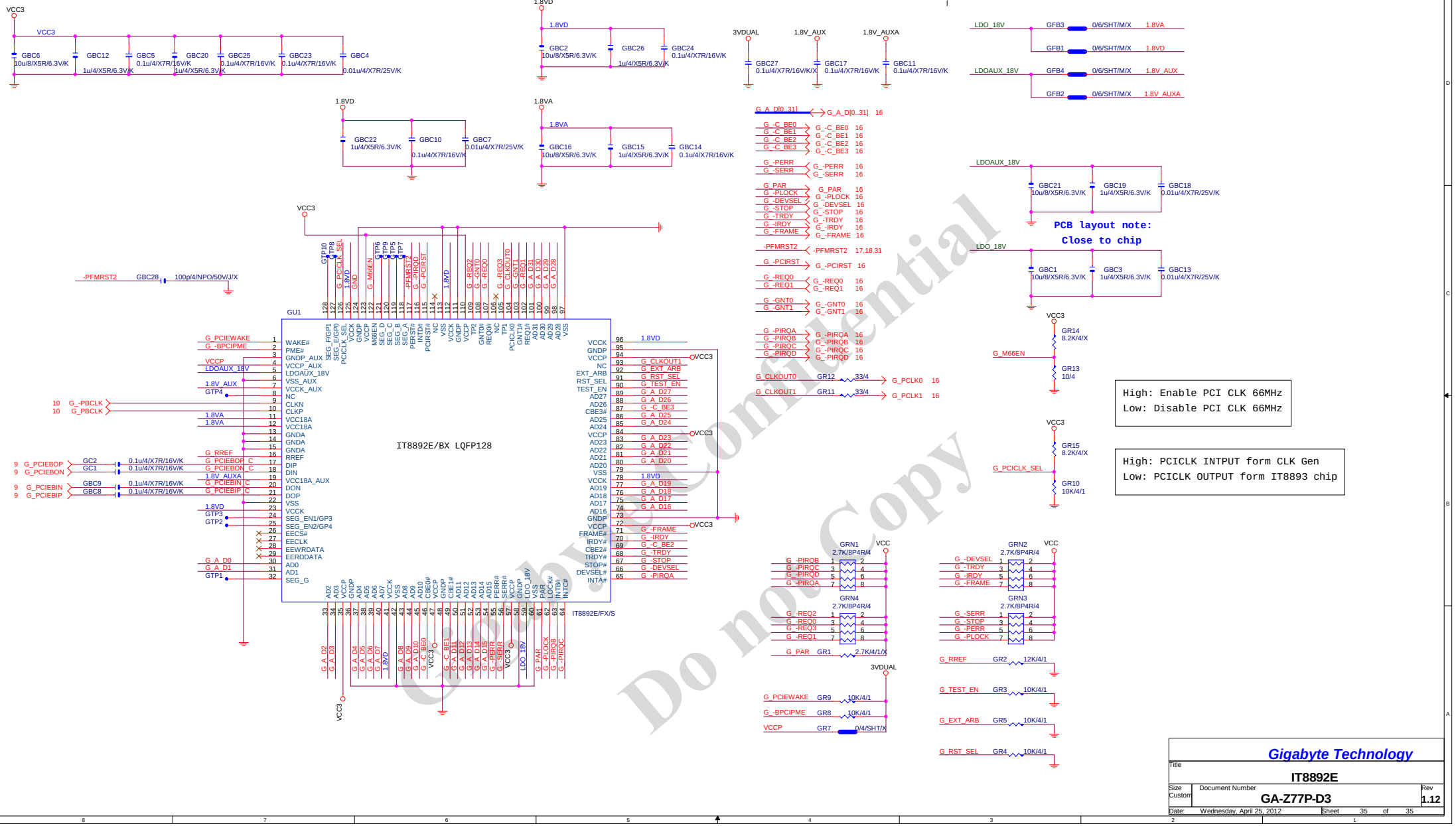
HDMI:20/4/6/4/20
Impedance=85 +- 17.5%



0/0/0/0:Vswing 500mV

0 1:7.2dB

Gigabyte Technology			
Title: DVI			
Size: Custom	Document Number: GA-Z77P-D3		Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 34 of 35		



Gigabyte Technology		
Title: IT8892E		
Size: Custom	Document Number: GA-Z77P-D3	Rev: 1.12
Date: Wednesday, April 25, 2012	Sheet 35 of 35	