Model Name: GA-H77-DS3H 1.01

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, LPT, TPM
19	Dual BIOS
20	VIA2021
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	ARTHEROS AR8161/AR8151
32	mSATA
33	RT8120_DDR POWER
34	DVI
35	
36	
37	
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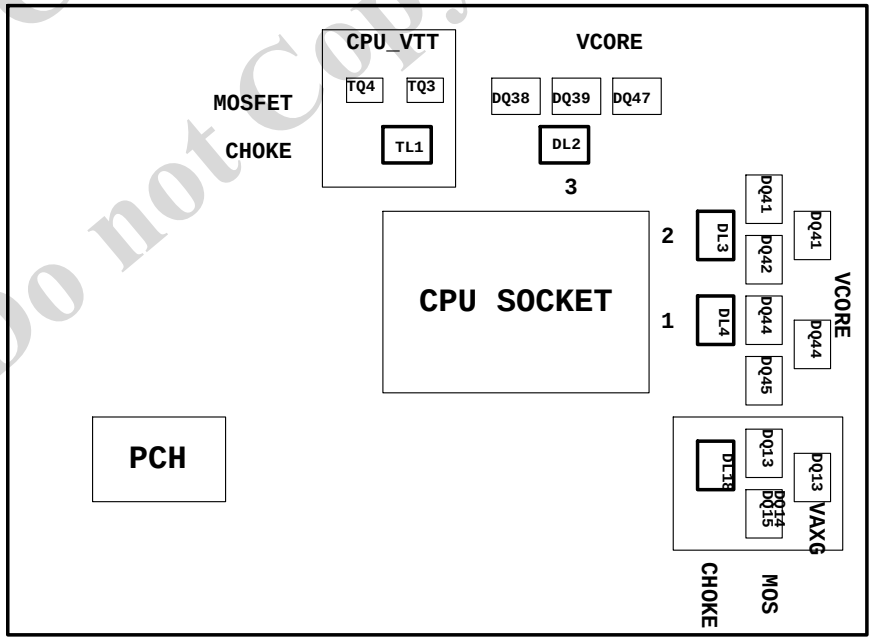
40	



Gigabyte Technology

Title: Cover Sheet

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GA-H77-DS3H
Component value change history

Data	Change Item	Reason
2011/12/15 EBOM:01	1.FOR B75-D3V	
2011/12/15 EBOM:01	1.FOR Z77-DS3H	
02-0125	1.ADD R756,R757,R758,C232,RS_PWM. RS_PWM請放到DQ12附近.	
	2. DRT1,DR59請放到DRT3右邊	
H77-DS3H-10A	1. Z77 --> H77	
	2. Add IDT4105	
	3. Remove U9 NCT3931	
	4. Add M/B ID for DDR3 OC	
H77-DS3H-10B	0. PCB Rev1.0 --> Rev1.01	
	1. DDR3 OC 2400MHz LAYOUT	
	2. CHOKE 0.6UH指定用:11LC5-R4600C-01R	
	3. Add M/B ID for DDR3 OC	
10B1-0427	1. Patch PWM ISL95836 vcc_sense issue	

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	
0.2	1. DDR DIP 560uF電容移除 2. SATA0RXP第二層REF挖空位置 3. DDR3_1~4文字面對齊 4. 修改CPU_VAXG 包含PHASE部份,以及VIN Bottom增加鋪銅散熱 5.ADD R756,R757,R758,C232,RS_PWM. RS_PWM請放到DQ12附近.	
1.0	1. 0 ohm ahort pad (audio , lan , rt8120)	

Gigabyte Technology

Title	BOM & PCB MODIFY HISTORY	
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
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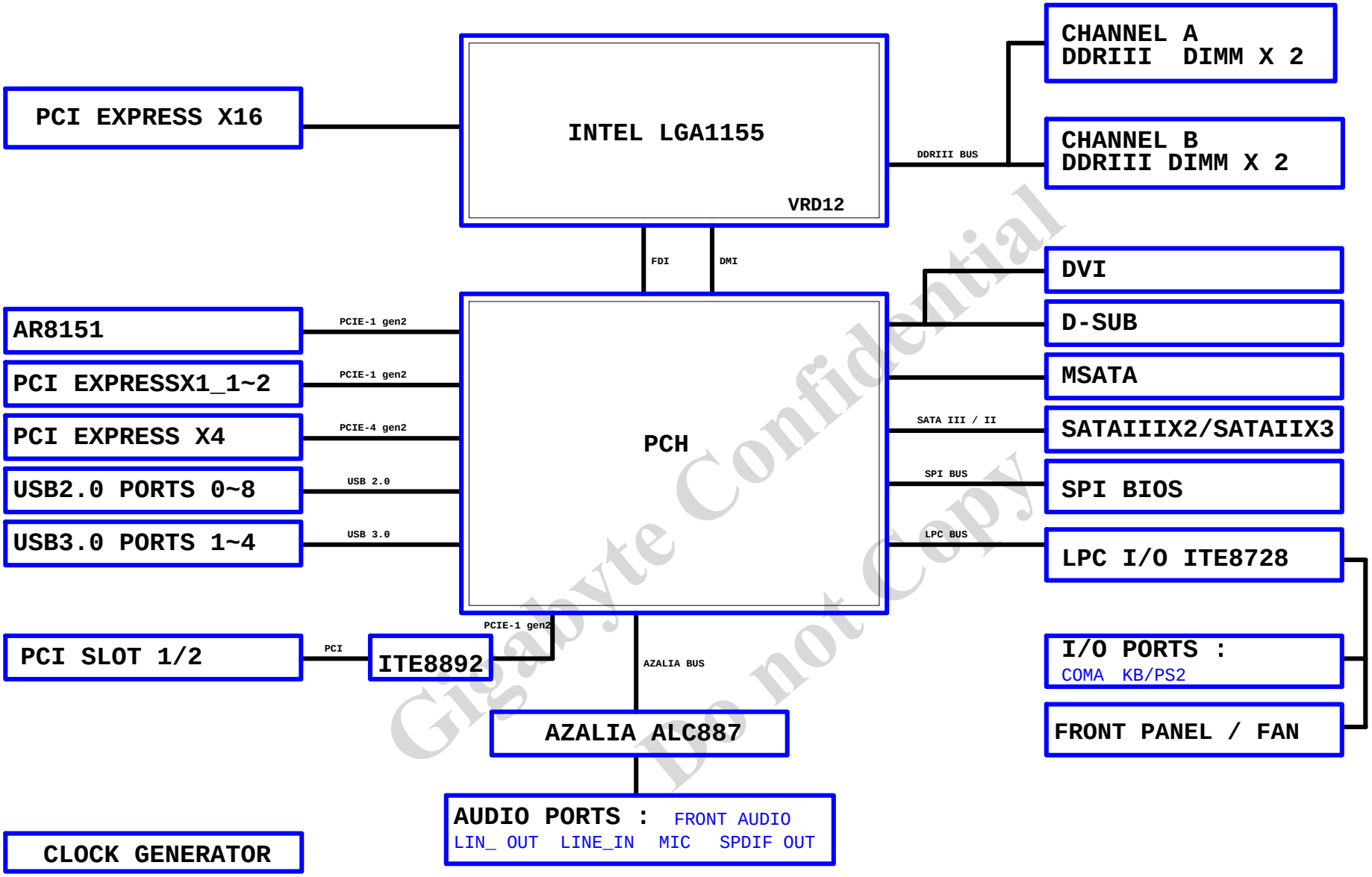
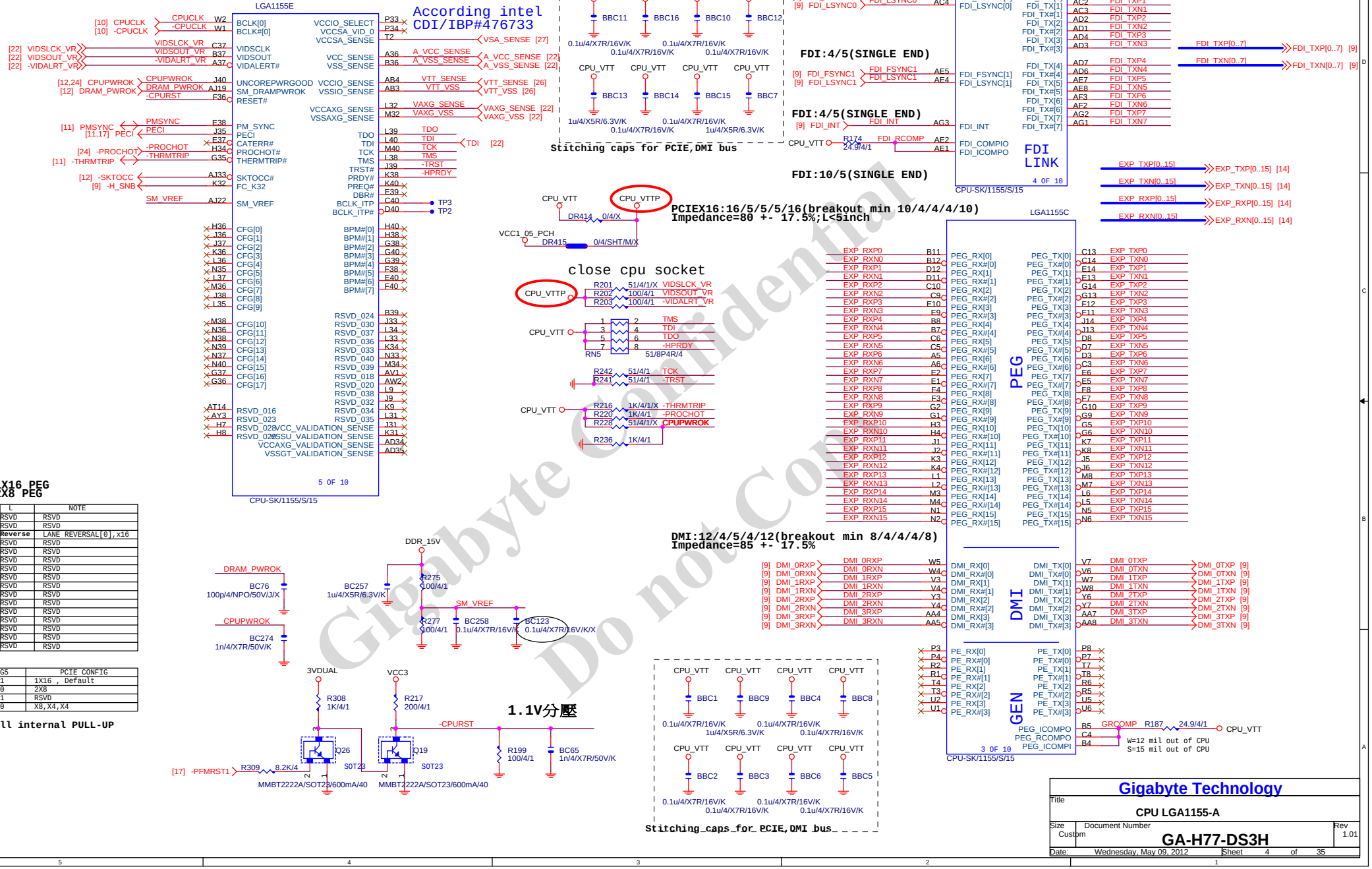
BLOCK DIAGRAM



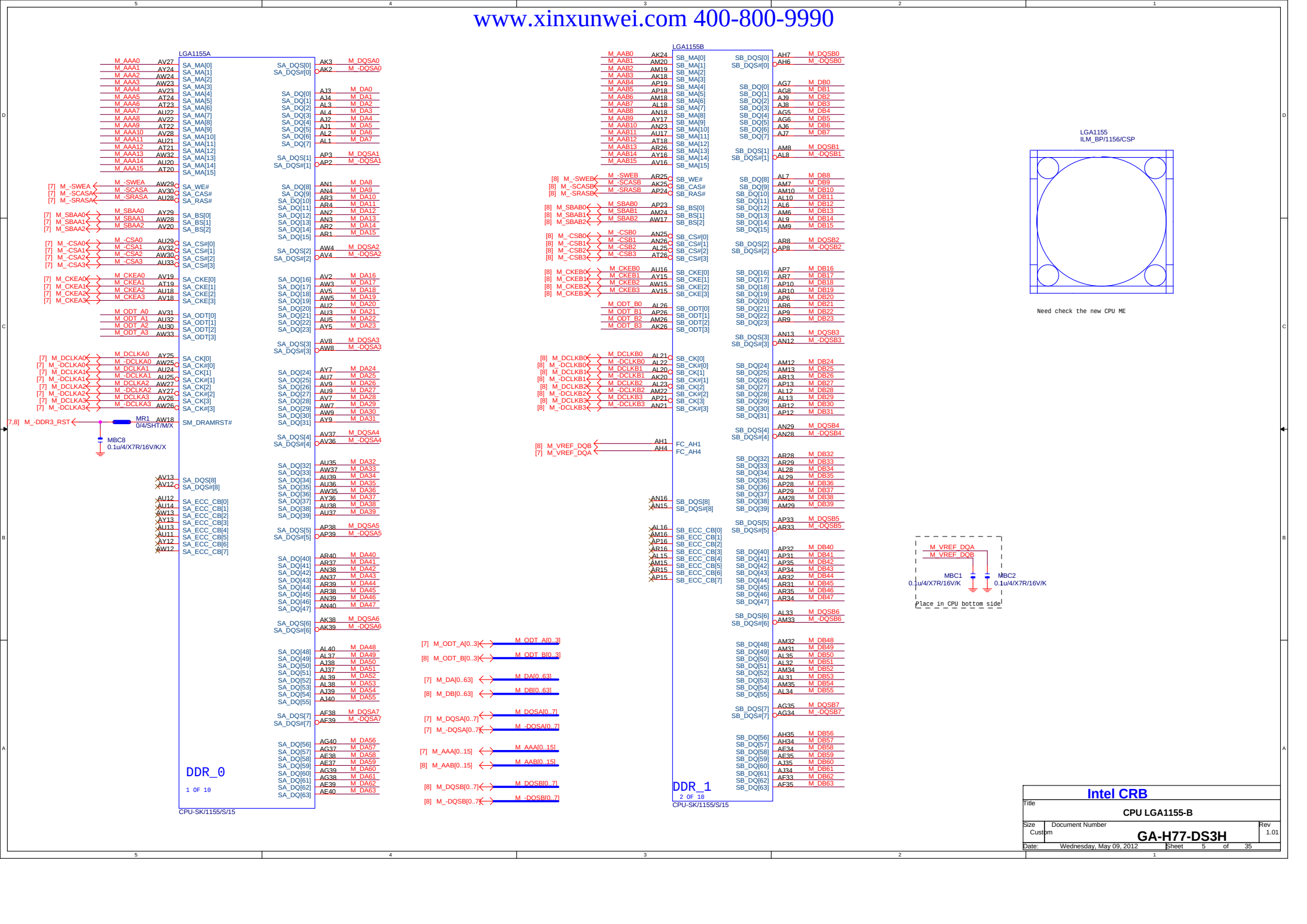
Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 3 of 35	



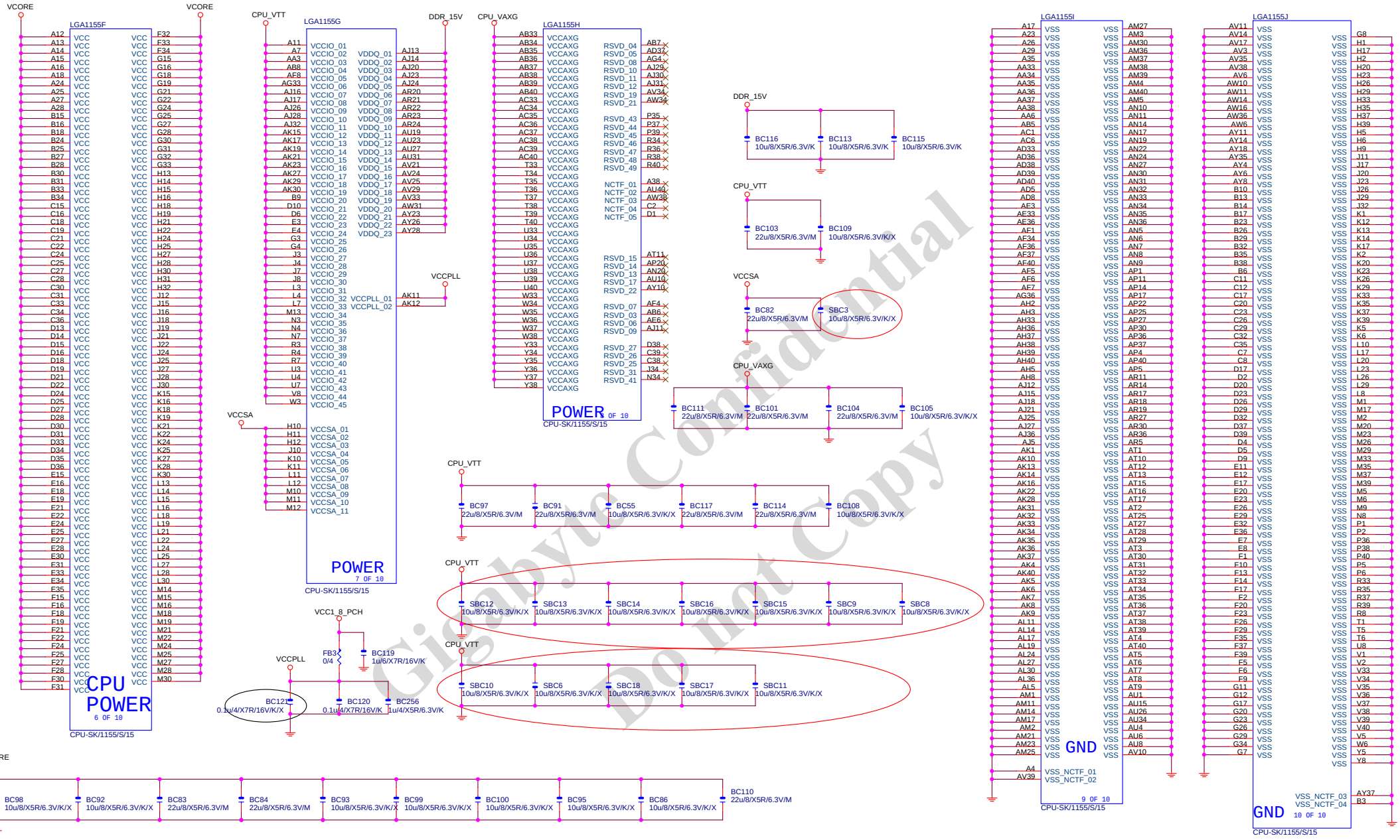
CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

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

Gigabyte Technology	
Title	CPU LGA1155-A
Size: Custom	Document Number: GA-H77-DS3H
Rev	1.01
Date: Wednesday, May 09, 2012	Sheet 4 of 35



Intel CRB		
Title	CPU LGA1155-B	
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 5 of 35	



Intel CRB			
Title: CPU LGA1155-C			
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01	
Date: Wednesday, May 09, 2012	Sheet 6 of 35		

DDR TERMINATION CHANNEL A/B

DDR15V Decouple

DDRVTT Decouple

Gigabyte Technology	
Title	DDRIII CHANNEL A
Size: Custom	Document Number: GA-H77-DS3H
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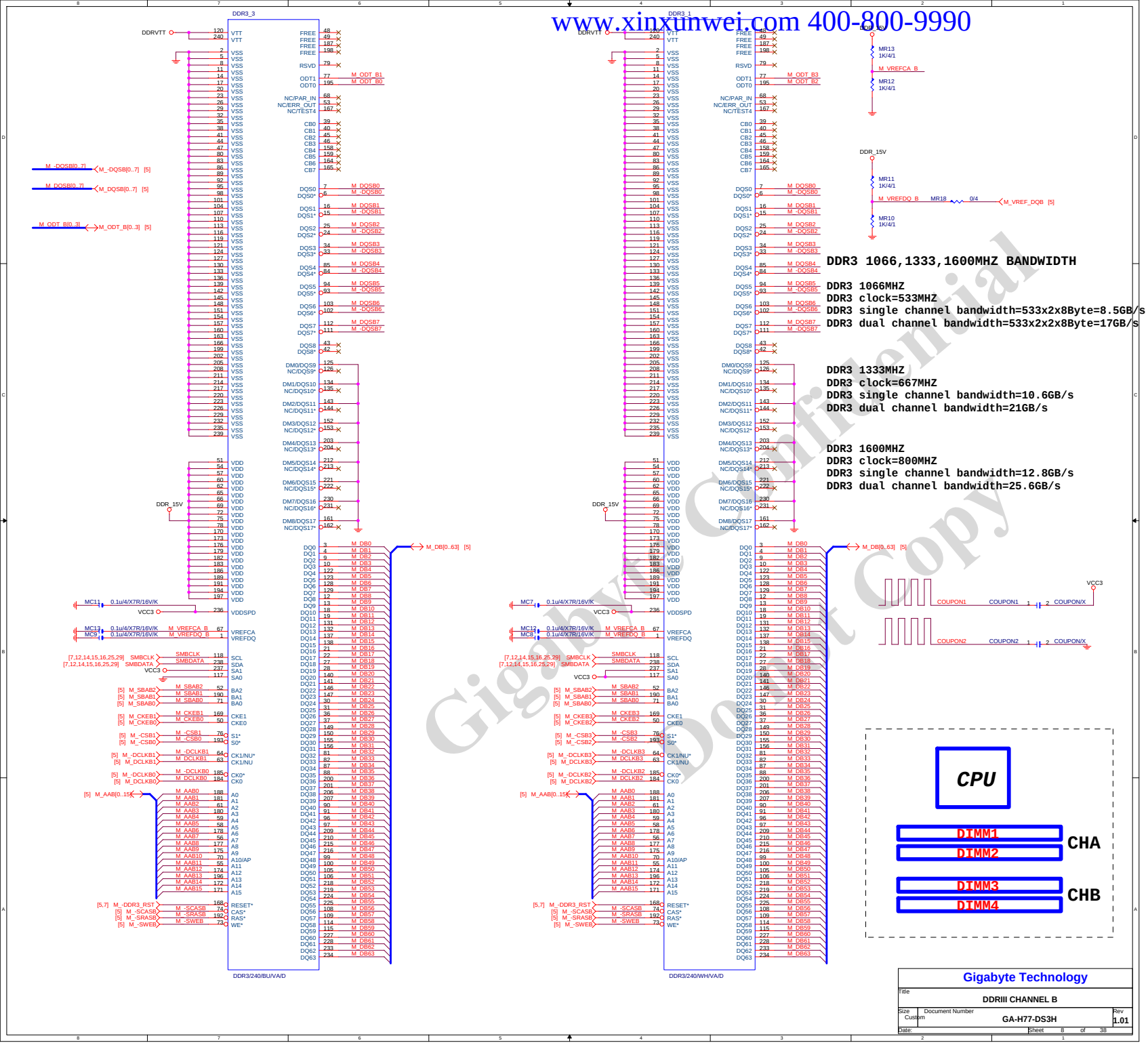
Date:	Sheet 7 of 38



Gigabyte Technology		
Title: DDRIII CHANNEL B		
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date:	Sheet 8 of 38	

PCHB

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

PCHG

B75 CHIP USB PORT 6/7 are Disable

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

VCC1_05_PCH R350 49.9/4/1

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

DMI

CLKIN_DMI_N CLKIN_DMI_P

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

PCI-E

USB

USBP0N USBP0P USBP1N USBP1P USBP2N USBP2P USBP3N USBP3P USBP4N USBP4P USBP5N USBP5P USBP6N USBP6P USBP7N USBP7P USBP8N USBP8P USBP9N USBP9P USBP10N USBP10P USBP11N USBP11P USBP12N USBP12P USBP13N USBP13P

OC0#/GPIO59 OC1#/GPIO40 OC2#/GPIO41 OC3#/GPIO42 OC4#/GPIO43 OC5#/GPIO9 OC6#/GPIO10 OC7#/GPIO14

USBRBIAS# USBRBIAS R341 22.6/4/1

CLKIN_DOT_96N CLKIN_DOT_96P

DMI2RBIAS A32 R351 750/4/1

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BD82H77/S

FDILINK

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

FDI_TXN0 FDI_TXP0 FDI_TXN1 FDI_TXP1 FDI_TXN2 FDI_TXP2 FDI_TXN3 FDI_TXP3 FDI_TXN4 FDI_TXP4 FDI_TXN5 FDI_TXP5 FDI_TXN6 FDI_TXP6 FDI_TXN7 FDI_TXP7

FDI_FSYNC0 FDI_LSYNC0 FDI_FSYNC1 FDI_LSYNC1 FDI_INT

7 OF 11

BD82H77/S

FDI_TXP[0..7] FDI_TXN[0..7]

PCHE

NVRAM

5 OF 11

BD82H77/S

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%

3VDUAL R732 8.2K/4 R371 8.2K/4 GPIO42 GPIO14

VCC3 BC178 1u/4/X5R/6.3V/K

-USBOC_F BC168 0.1u/4/X7R/16V/K

-USBOC_R BC170 0.1u/4/X7R/16V/K

SRCCLK_PCH R267 8.2K/4/X -SRCCLK_PCH R268 8.2K/4/X

DOTCLK R246 8.2K/4/X -DOTCLK R251 8.2K/4/X

R102 short to GND in non graphic SKU

PCH_HS

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]

VCC1_8_PCH R407 2.2K/4/1 R408 4.7K/4 NV_CLE -H_SNB BC186 0.1u/4/X7R/16V/K

DMI /FDI termination voltage

Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE

Size: Custom | Document Number: GA-H77-DS3H | Rev: 1.01

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PCHF

33 OHM close PCH <750mils

SYNC:4/10 (breakout 4/6)

RGB:4/20 (breakout 7.5/10)

DDC:4/5

DAC_IREF:4/12

DVI:15/4/6/4/15 (breakout 8/4/4/4/8)

6 OF 11

BD82H77/S

Flex0,2 : 33MHZ

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

PCHH

8 OF 11

BD82H77/S

120Mhz for DP

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

VGA DDC

VGA CONNECTOR

VGA ESD

VGA DDC

Close to Filter

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

SS0P6_ESD

Gigabyte Technology			
Title: PCH DISPLAY ,CLK BUFFER			
Size: Custom	Document Number: GA-H77-DS3H		Rev: 1.01
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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%

PCHC

For WIFI

CL_CLK1 BA50
CL_DATA1 BF50
CL_RST1# BF49
CLINK

[12,17,29] PWROK1 BC46 APWROK

PWM0 BN21
PWM1 BT21
PWM2 BM20
PWM3 BN19

GPIO17 BT17 TACH0/GPIO17
GPIO1 BR19 TACH1/GPIO1
GPIO6 BA22 TACH2/GPIO6
-CPU_HOT BR16 TACH3/GPIO7
GPIO68 BU16 TACH4_GPIO68
BM18 TACH5_GPIO69
GPIO70 BN17 TACH6_GPIO70
GPIO71 BP15 TACH7_GPIO71
FAN

[17] SSTCTL BC43 SST

GPIO22 BA53 SCLOCK/GPIO22
GPIO38 BE54 SLOAD/GPIO38
GPIO39 BF55 SDATAOUT0/GPIO39
GPIO48 AW53 SDATAOUT1/GPIO48
GPIO

AY20 NC_5

SATA3

SATA0RXN AC56 SATA0RXN
SATA0RXP AB55 SATA0RXP
SATA0TXN AE46 SATA0TXN
SATA0TXP AE44 SATA0TXP
SATA1RXN AA53 SATA1RXN
SATA1RXP AA56 SATA1RXP
SATA1TXN AG49 SATA1TXN
SATA1TXP AG47 SATA1TXP

SATA2

SATA2RXN AL50 SATA2RXN
SATA2RXP AL49 SATA2RXP
SATA2TXN AL56 SATA2TXN
SATA2TXP AL53 SATA2TXP
SATA3RXN AN46 SATA3RXN
SATA3RXP AN44 SATA3RXP
SATA3TXN AN56 SATA3TXN
SATA3TXP AM55 SATA3TXP
SATA4RXN AN49 SATA4RXN
SATA4RXP AN50 SATA4RXP
SATA4TXN AT50 SATA4TXN
SATA4TXP AT49 SATA4TXP
SATA5RXN AT46 SATA5RXN
SATA5RXP AT44 SATA5RXP
SATA5TXN AV50 SATA5TXN
SATA5TXP AV49 SATA5TXP

SATA5RXN [32]
SATA5RXP [32]
SATA5TXN [32]
SATA5TXP [32]

CLKIN_SATA_N AF55 -SRCCLK_SATA -SRCCLK_SATA [29]
CLKIN_SATA_P AG56 SRCCLK_SATA SRCCLK_SATA [29]

SATALED# BF57 -SATALED [28]
SATAICOMPI AJ55
SATAICOMPO AJ53 SATACOMP R390 37.4/4/1 VCC1_05_PCH

SATA0GP/GPIO21 BC54 GPIO21
SATA1GP/GPIO19 AY52 GPIO19
SATA2GP/GPIO36 BB55
SATA3GP/GPIO37 BG53
SATA4GP/GPIO16 AU56 GPIO16
SATA5GP/GPIO49 BA56 TEMP_ALART-

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

SATA3COMPI AE54
SATA3RCOMPO AE52 SATA3COMP R391 49.9/4/1 VCC1_05_PCH

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

TP16 AE50

SATA3RBIAS AC52 SATA3BIAS R392 750/4/1

HOST

A20GATE BB57 A20GATE A20GATE [17]
INIT3_3V# BN56
RCIN# BG56 -KBRST -KBRST [17]
SERIRQ AV52 SERIRQ SERIRQ [17,18]
THRMTRIP# E56 -THRMTRIP -THRMTRIP [4]
PECI H48 SB_PECI R377 0/4/X PECI PECI [4,17]
PMSYNCH F55 PMSYNC [4]

3 0F 11

BD82H77/S

MB-ID

-SRCCLK_SATA R265 8.2K/4/X
R266 8.2K/4/X

R331 8.2K/4/X GPIO17
R468 8.2K/4/X GPIO19
GPIO22
R436 1K/4/1/X

VCC3

-KBRST R401 1K/4/1

RN16 8.2K/8P4R/4
GPIO19 1 2
TEMP_ALART- 3 4
GPIO22 5 6
A20GATE 7 8

[17] TEMP_ALART-

RN17 8.2K/8P4R/4
GPIO16 1 2
SERIRQ 3 4
GPIO48 5 6
GPIO0 7 8

[12] GPIO0

RN18 8.2K/8P4R/4
GPIO21 1 2
GPIO38 3 4
GPIO39 5 6
GPIO20 7 8

[12] GPIO20

R447 1K/4/1/X GPIO20

PCHA

PAR BH8
-DEVSEL BH9 DEVSEL#
PCH33 BD15 CLKIN_PCILOOPBACK
[10] PCH33 AV14 PCIRST#
-IRDY BF11 IRDY#
TP1 AV15 PME#
-SERR BR6 SERR#
-STOP BC12 STOP#
-PLOCK BA17 PLOCK#
-TRDY BC8 TRDY#
-PERR BM3 PERR#
-FRAME BC11 FRAME#

AD0 BF15
AD1 BF17
AD2 BT7
AD3 BT13
AD4 BG12
AD5 BN11
AD6 BJ12
AD7 BU9
AD8 BR12
AD9 BJ3
AD10 BR9
AD11 BJ10
AD12 BM8
AD13 BF3
AD14 BN2
AD15 BE4
AD16 BE6
AD17 BG15
AD18 BC6
AD19 BT11
AD20 BA14
AD21 BL2
AD22 BC4
AD23 BL4
AD24 BC2
AD25 BM13
AD26 BA9
AD27 BF9
AD28 BA8
AD29 BF8
AD30 AV17
AD31 BK12

-GNT0 BA15 GNT0#
-GNT1 AV8 GNT1#/GPIO51
BU12 GNT2#/GPIO53
BE2 GNT3#/GPIO55

[19] -GNT0
[19] -GNT1

-REQ0 BG5 REQ0#
-REQ1 BT5 REQ1#/GPIO50
-REQ2 BK8 REQ2#/GPIO52
-REQ3 AV11 REQ3#/GPIO54

-PIRQA BK10 PIRQA#
-PIRQB BJ5 PIRQB#
-PIRQC BM15 PIRQC#
-PIRQD BP5 PIRQD#
-PIRQE BN9 PIRQE#/GPIO2
-PIRQF AV9 PIRQF#/GPIO3
-PIRQG BT15 PIRQG#/GPIO4
-PIRQH BR4 PIRQH#/GPIO5

C/BE0# BN4
C/BE1# BP7
C/BE2# BG2
C/BE3# BP13

PCI

1 0F 11

BD82H77/S

RN21 8.2K/8P4R/4
-DEVSEL 1 2
-IRDY 3 4
-FRAME 5 6
-STOP 7 8

RN22 8.2K/8P4R/4
-PERR 1 2
-PIRQB 3 4
-REQ0 5 6
7 8

RN23 8.2K/8P4R/4
-SERR 1 2
-REQ1 3 4
-PIRQD 5 6
-PIRQH 7 8

RN24 8.2K/8P4R/4
-PIRQC 1 2
-PIRQA 3 4
-PIRQE 5 6
-REQ2 7 8

RN25 8.2K/8P4R/4
-PIRQF 1 2
-REQ3 3 4
-TRDY 5 6
-PLOCK 7 8

VCC3

RN13 8.2K/8P4R/4
1 2 GPIO70
3 4 GPIO6
5 6 GPIO17
7 8 GPIO1

RN12 8.2K/8P4R/4
1 2 -PIRQG
3 4 GPIO71
5 6 GPIO68
7 8 -CPU_HOT

-CPU_HOT [24]

White connector for SATA3

SATA3_0

SATA0TXP 0.01u/4/X7R/25V/K C148 SATA0TXPC
SATA0TXN 0.01u/4/X7R/25V/K C145 SATA0TXNC
SATA0RXN 0.01u/4/X7R/25V/K C140 SATA0RXNC
SATA0RXP 0.01u/4/X7R/25V/K C136 SATA0RXPC

1 GND
2 T+
3 T-
4 GND
5 R-
6 R+
7 GND

SATA2/7/WH/H/OP/VA/D/1/B/PA66

SATA2_3

SATA3TXP 0.01u/4/X7R/25V/K C178 SATA3TXPC
SATA3TXN 0.01u/4/X7R/25V/K C177 SATA3TXNC
SATA3RXN 0.01u/4/X7R/25V/K C174 SATA3RXNC
SATA3RXP 0.01u/4/X7R/25V/K C171 SATA3RXPC

1 GND
2 T+
3 T-
4 GND
5 R-
6 R+
7 GND

SATA2/7/BU/H/OP/VA/D/1/B/PA66

SATA3_1

SATA1TXP 0.01u/4/X7R/25V/K C228 SATA1TXPC
SATA1TXN 0.01u/4/X7R/25V/K C229 SATA1TXNC
SATA1RXN 0.01u/4/X7R/25V/K C230 SATA1RXNC
SATA1RXP 0.01u/4/X7R/25V/K C231 SATA1RXPC

1 GND
2 T+
3 T-
4 GND
5 R-
6 R+
7 GND

SATA2/7/WH/H/OP/VA/D/1/B/PA66

SATA2_2

SATA2TXP C147 0.01u/4/X7R/25V/K SATA2TXPC
SATA2TXN C144 0.01u/4/X7R/25V/K SATA2TXNC
SATA2RXN C139 0.01u/4/X7R/25V/K SATA2RXNC
SATA2RXP C135 0.01u/4/X7R/25V/K SATA2RXPC

1 GND
2 T+
3 T-
4 GND
5 R-
6 R+
7 GND

SATA2/7/BU/H/OP/VA/D/1/B/PA66

SATA2_4

SATA4TXP C146 0.01u/4/X7R/25V/K SATA4TXPC
SATA4TXN C143 0.01u/4/X7R/25V/K SATA4TXNC
SATA4RXN C138 0.01u/4/X7R/25V/K SATA4RXNC
SATA4RXP C134 0.01u/4/X7R/25V/K SATA4RXPC

1 GND
2 T+
3 T-
4 GND
5 R-
6 R+
7 GND

SATA2/7/BU/H/OP/VA/D/1/B/PA66

Gigabyte Technology		
Title: PCH HOST , SATA, PCI		
Size: B	Document Number: GA-H77-DS3H	Rev: 1.01
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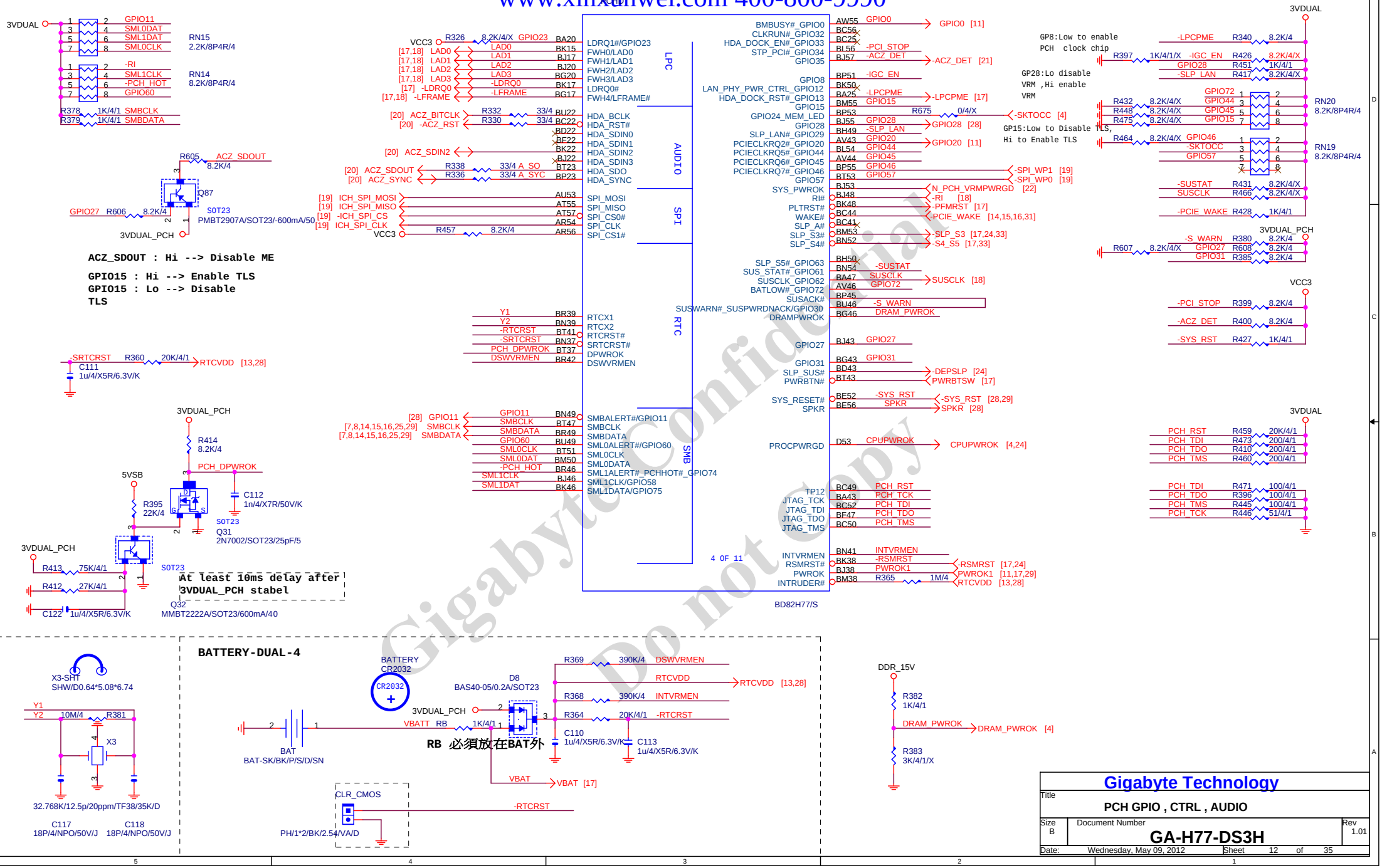
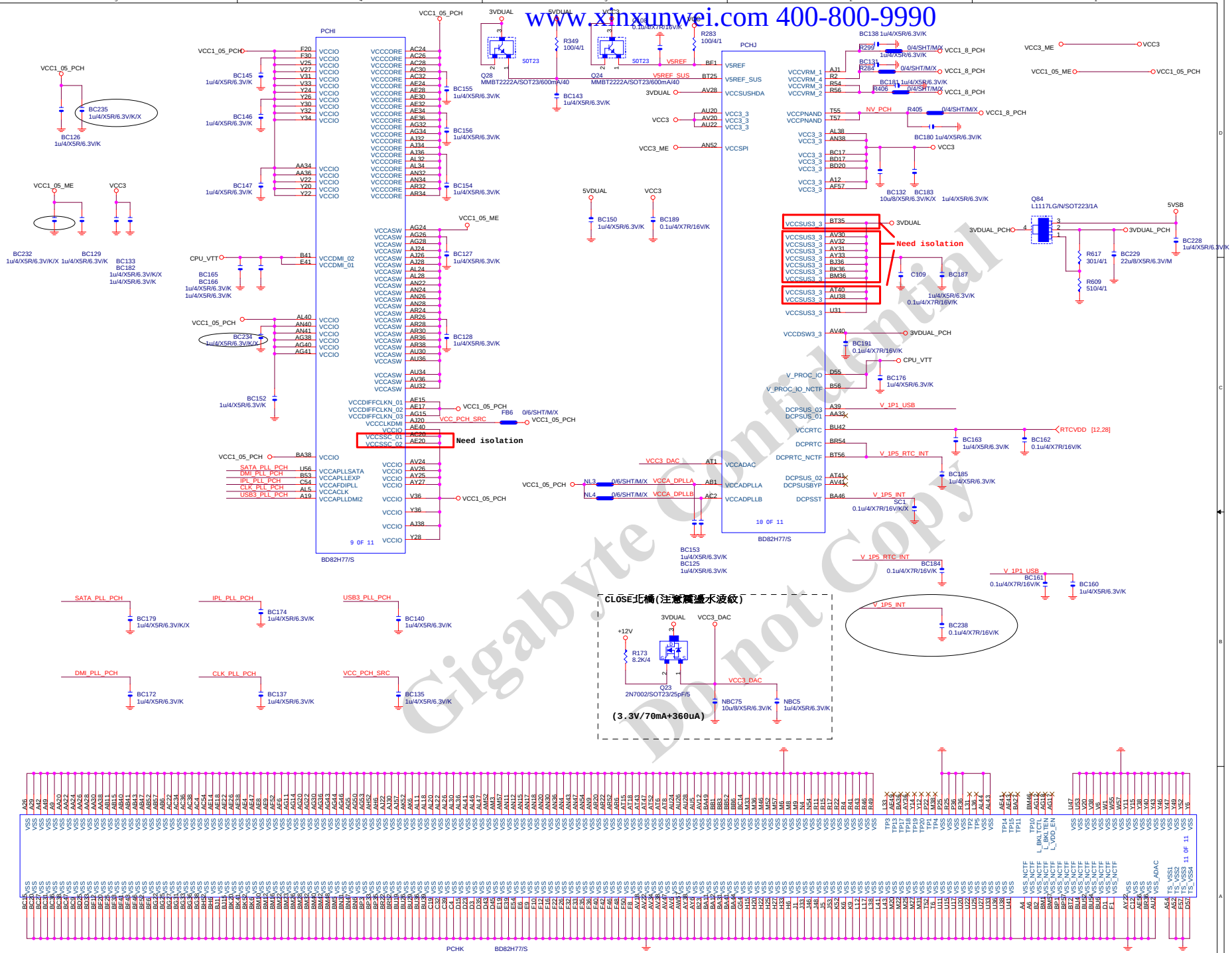
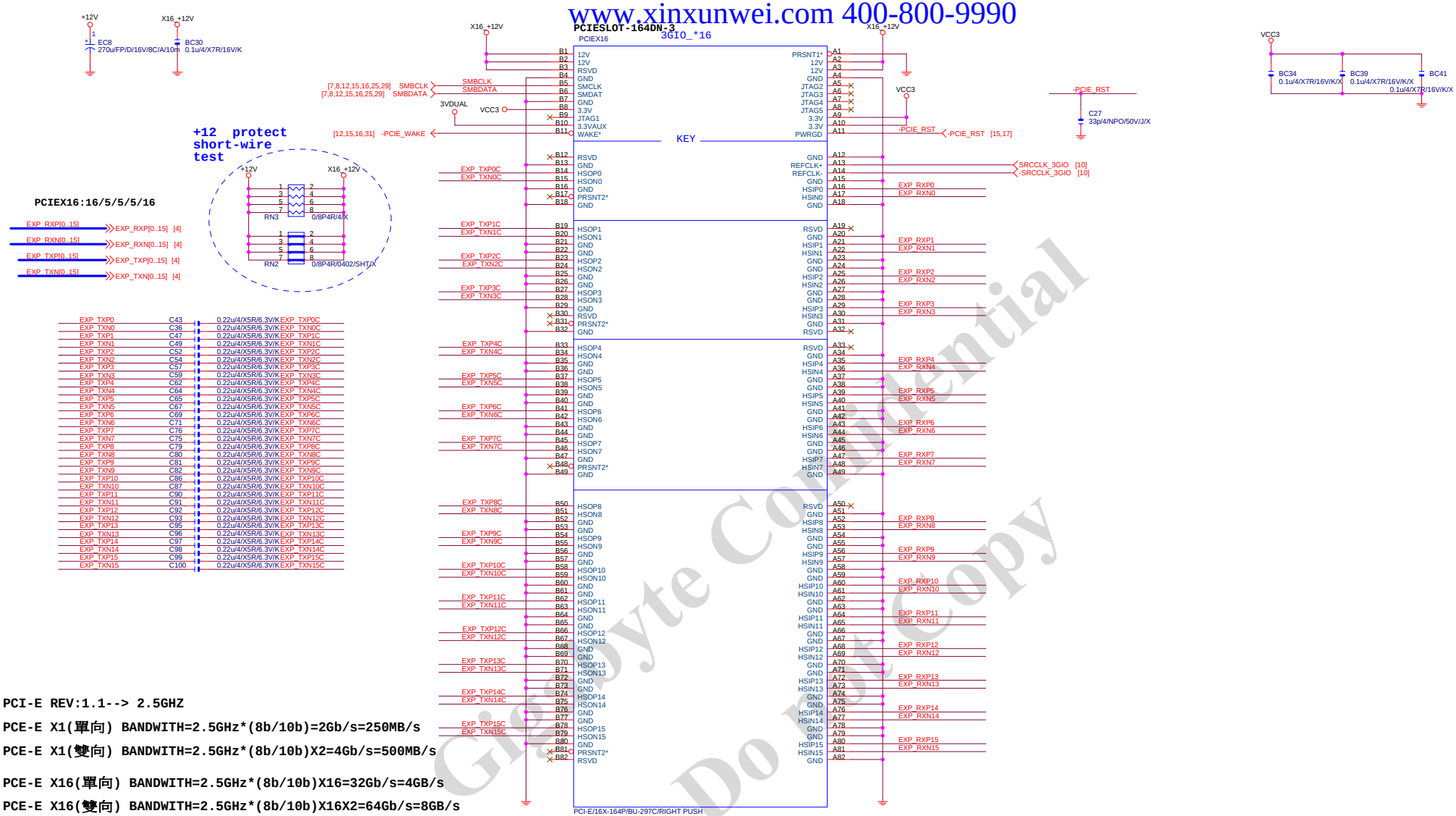


Gigabyte Technology		
Title	PCH GPIO , CTRL , AUDIO	
Size B	Document Number GA-H77-DS3H	Rev 1.01
Date: Wednesday, May 09, 2012	Sheet 12 of 35	



Gigabyte Technology	
Title	PCH PWR ,GND
Size: Custom	Document Number: GA-H77-DS3H
Rev	1.01
Date: Wednesday, May 09, 2012	Sheet 13 of 35



Gigabyte Technology	
Title	PCI EXPRESS * 16
Size: Custom	Document Number: GA-H77-DS3H
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PCIE*4

PCIEX4 3GIO_*4

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

PCIE*1

PCIEX1_1 3GIO_X1

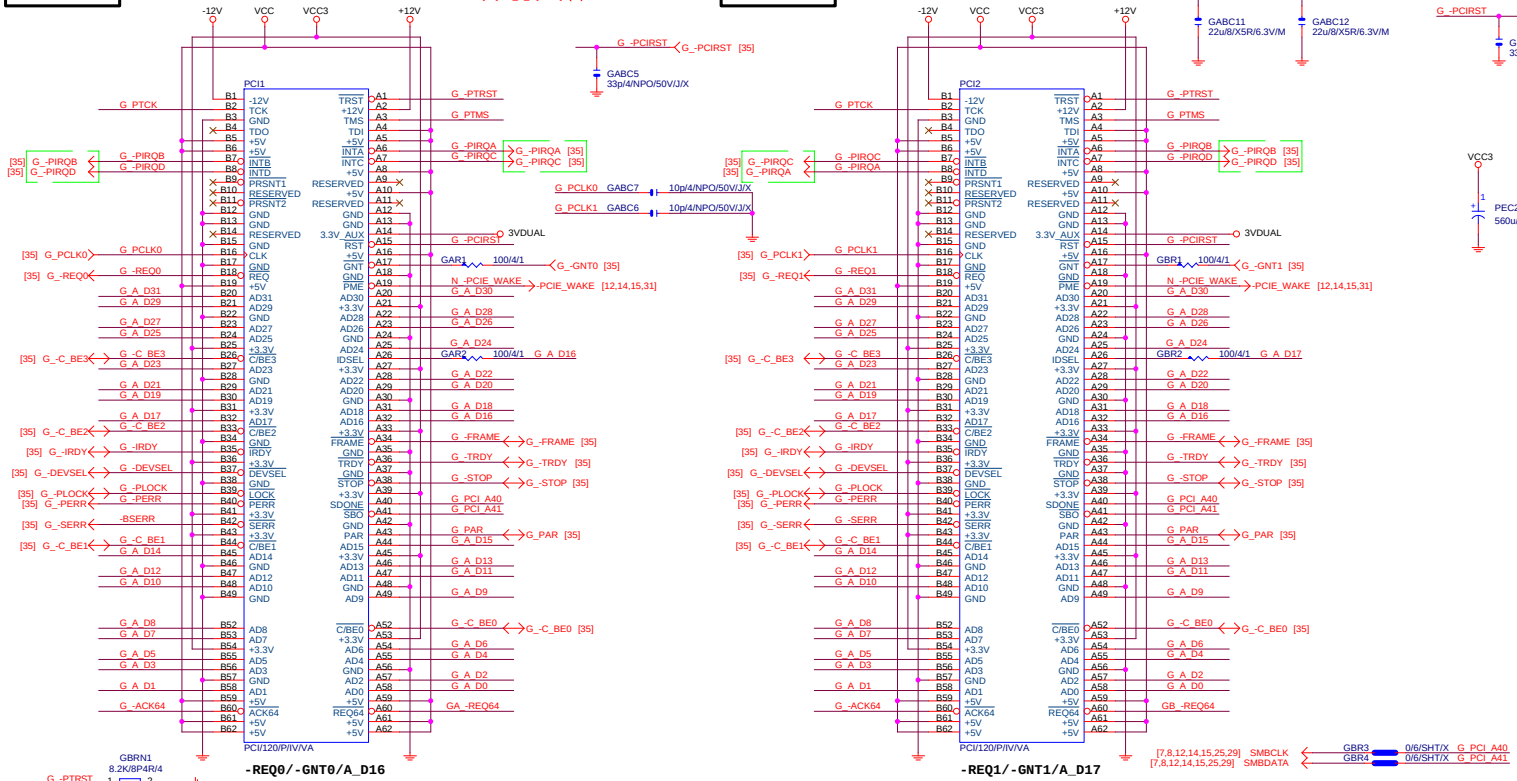
PCIEX1_2 3GIO_X1

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

Gigabyte Technology			
Title: PCI EXPRESS X 4 PORT			
Size: Custom	Document Number: GA-H77-DS3H		Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 15 of 35		

PCI SLOT 1

PCI SLOT 2



Title	PCI SLOT 1&2
Size	Custom
Document Number	GA-H77-DS3H
Rev	1.01
Date:	Wednesday, May 09, 2012
Sheet	16 of 35

HI FOR PCH ERP
LO FOR IO ERP

IT8728F(GB)

IT8728F/EX (GB)/QFP128

For IT8275

For IT8728

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

DUAL BIOS OPT STRAP

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

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

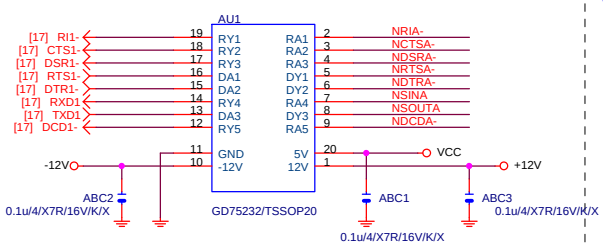
JP5:N\A FOR 8728 DX
JP5:PULL DOWN FOR 8728 EX
anti-surge enable

	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)

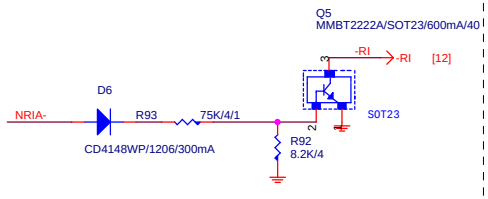
JP4	1	k8 power sequency function is Disable
	0	k8 power sequency function is Enable
JP3 JP5	1 1	The default value of EC Index 63h/6Bh/73h is 80h.
	1 0	The default value of EC Index 63h/6Bh/73h is FFh.
	0 1	The default value of EC Index 63h/6Bh/73h is 00h.
	0 0	The default value of EC Index 63h/6Bh/73h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

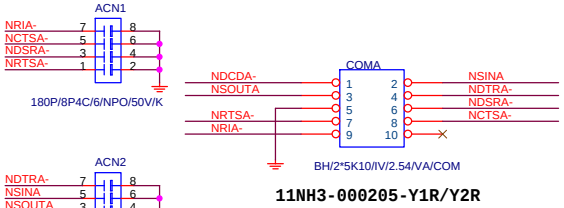
Gigabyte Technology		
Title	ITE 8728 LPC IO	
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 17 of 35	

COMA



COM RI

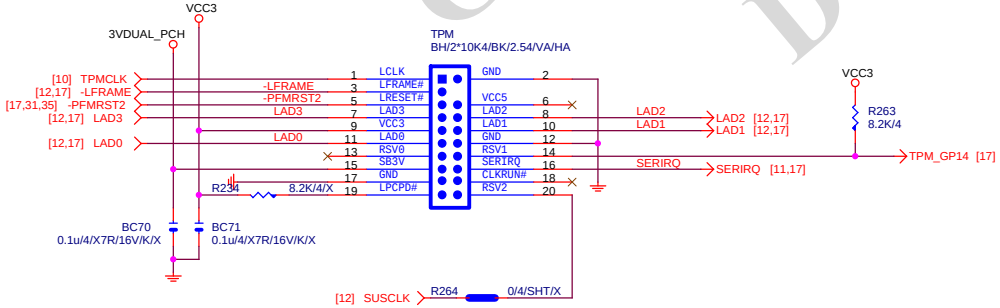




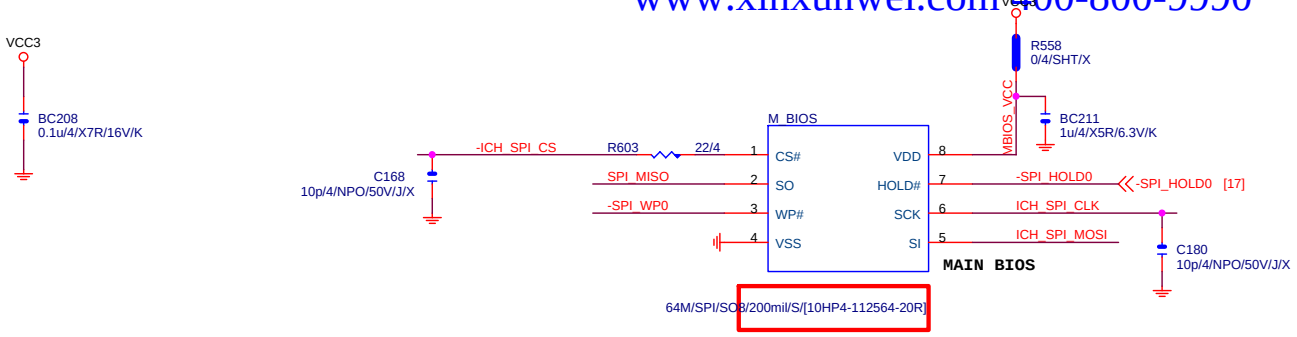
11NH3-000205-Y1R/Y2R

LPT PORT

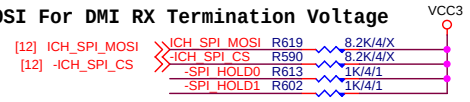
TPM

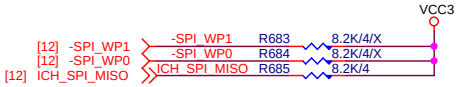


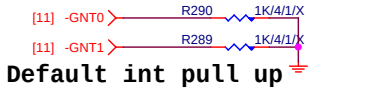
Gigabyte Technology		
Title: COM & Print		
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 18 of 35	



MOSI For DMI RX Termination Voltage







Default int pull up

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

1 means floating
0 means PD 1K

Gigabyte Technology		
Title: BIOS		
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
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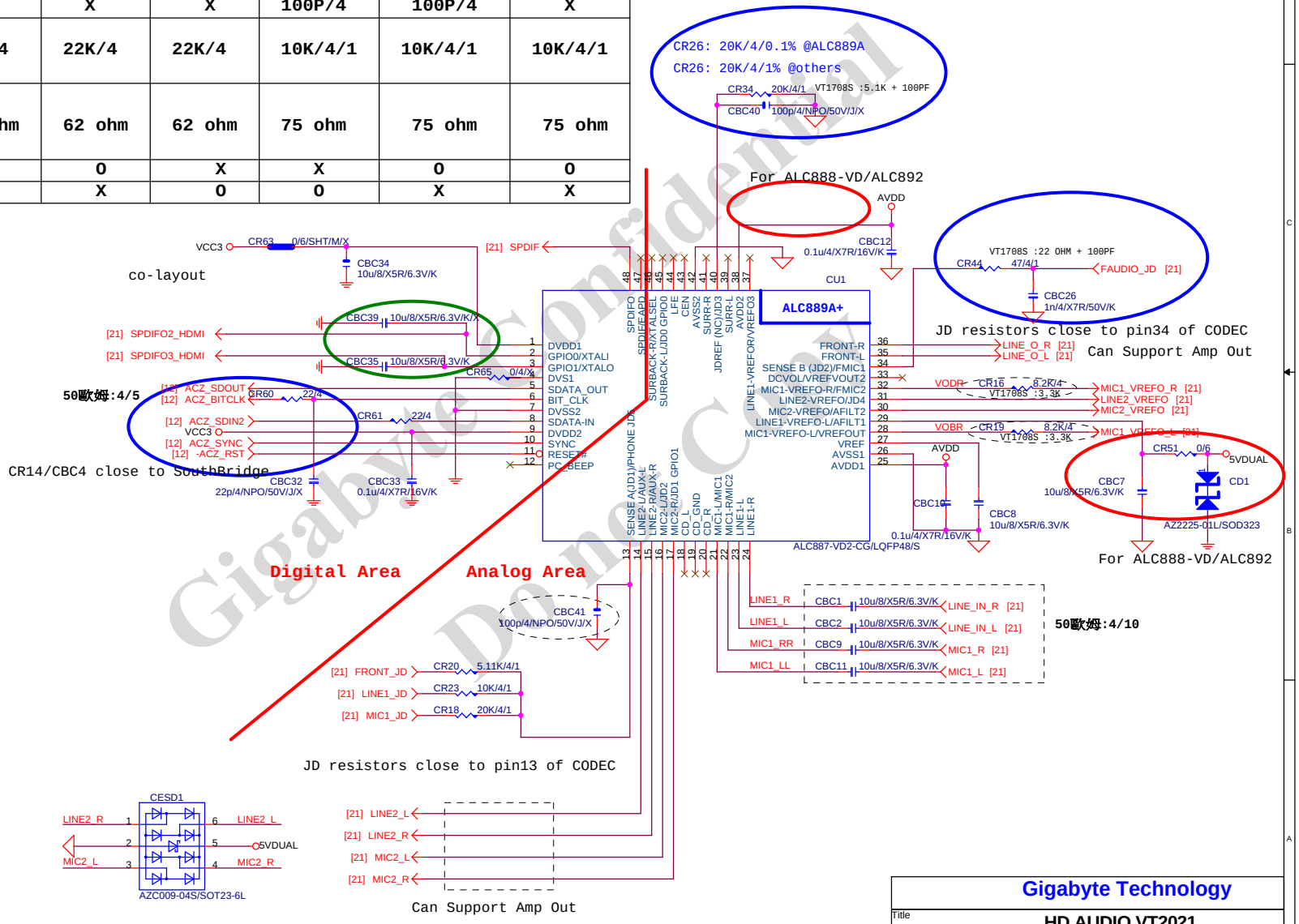
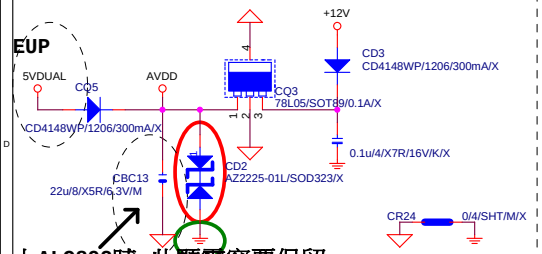
AZALIA CODEC *ALC887-VD2/ALC889/VT1708S/VT1708SCE/VT2021 Codec*

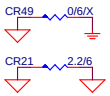
	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021
CR65	X	X	0	0	X	0
CBC35	0	0	X	X	0	X
CR44/CBC26	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF
CR31	X	0	0	0	0	0
CR30	0	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1	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



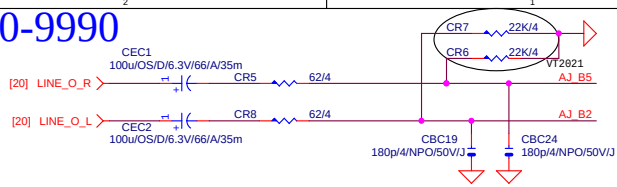
Gigabyte Technology		
Title	HD AUDIO VT2021	
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 20 of 35	

CODEC POWER/EMI PAD



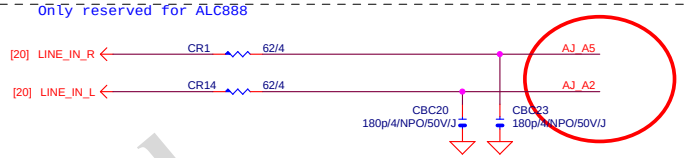


LINE-OUT



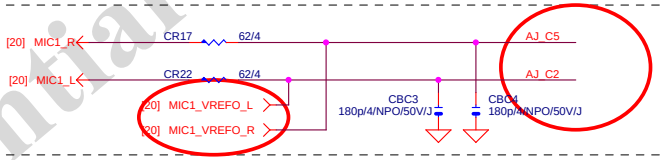
Only reserved for ALC888

LINE-IN

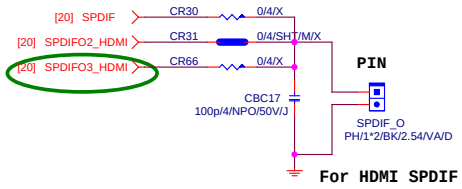


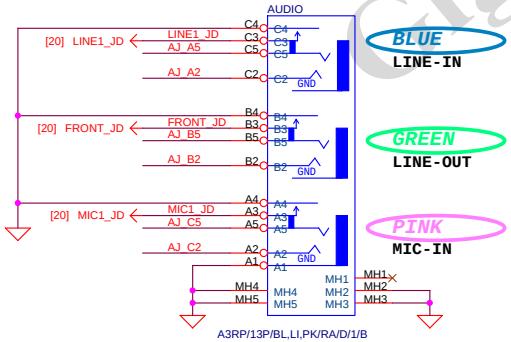
Verify MIC function in LINE-in

MIC-IN

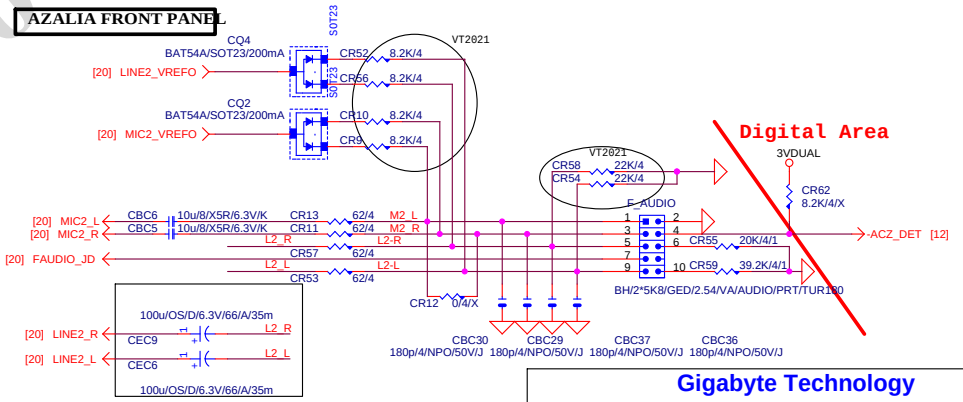


SPDIF_OUT

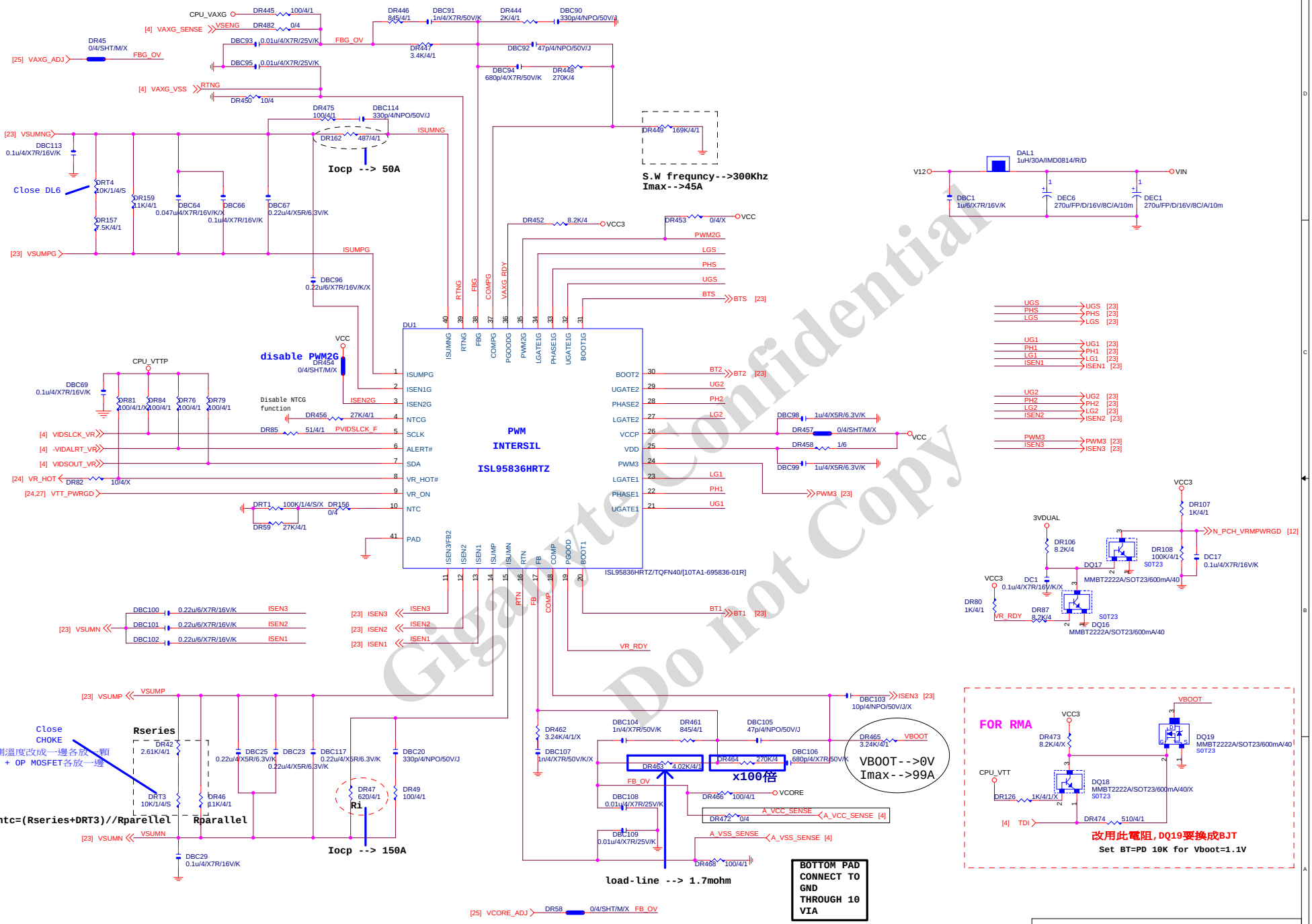




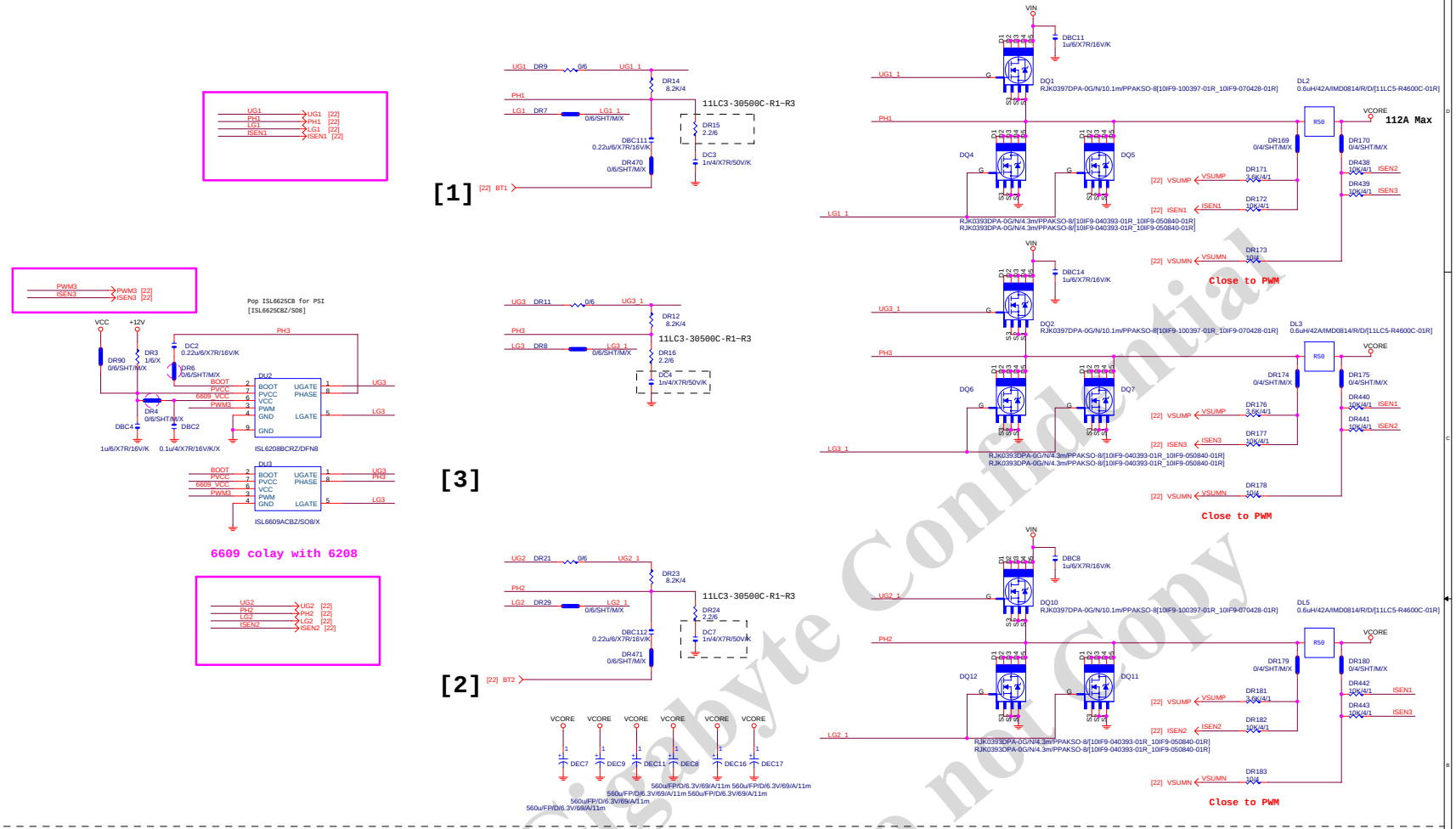
AZALIA FRONT PANEL



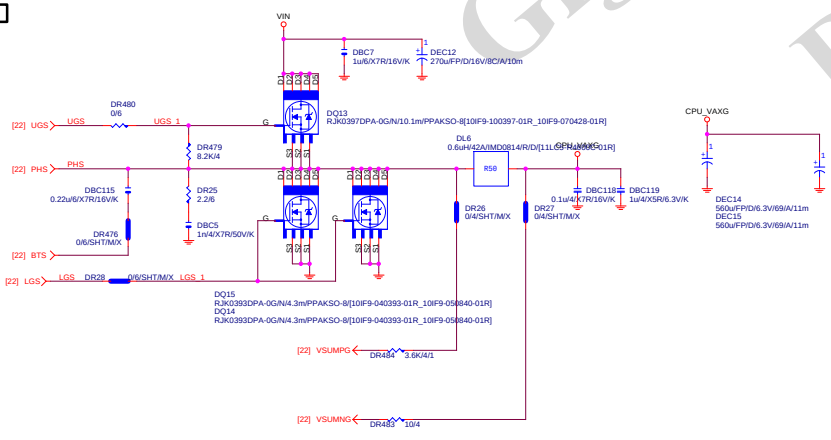
Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 21 of 35	



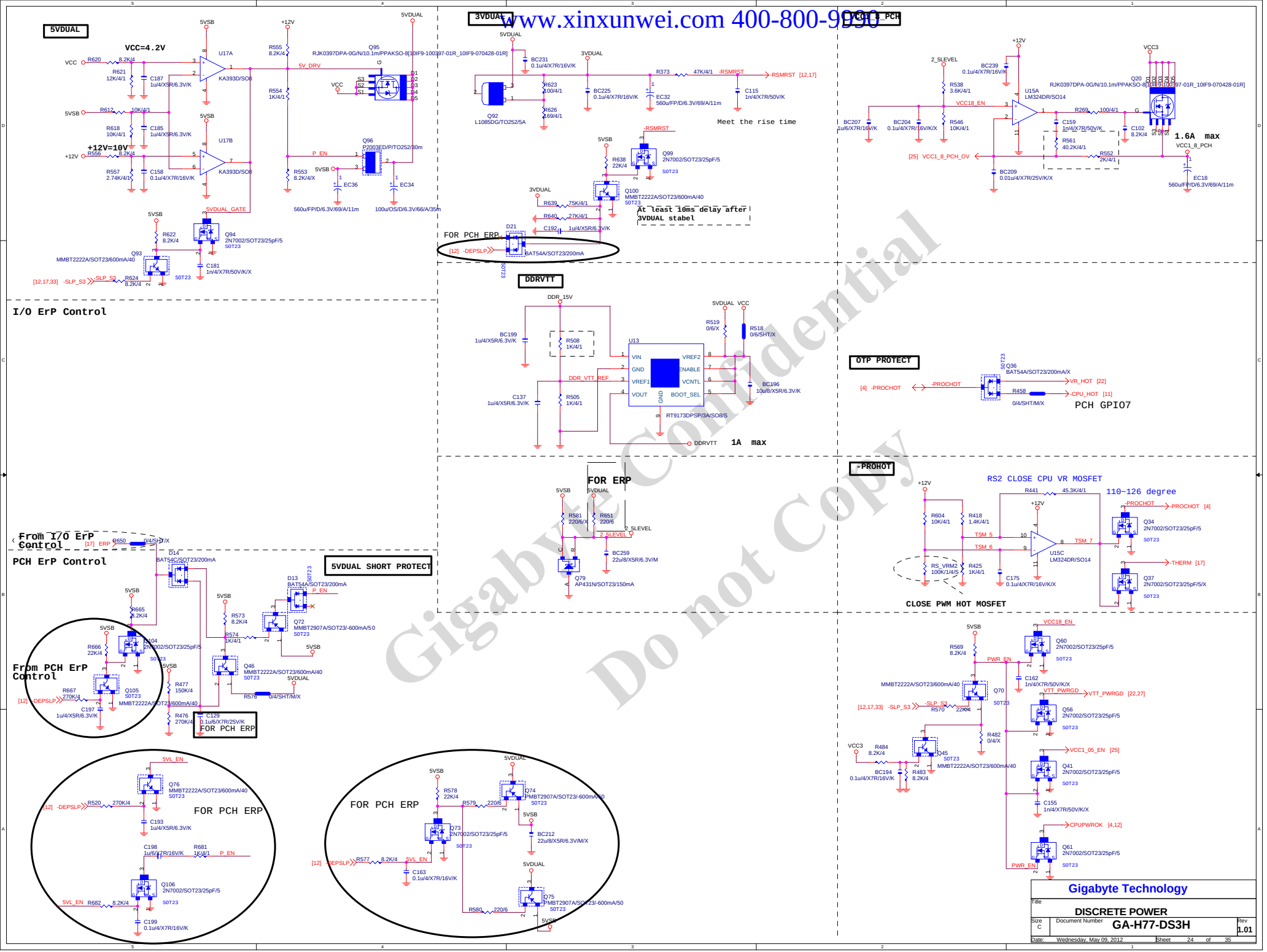
Gigabyte Technology			
Title	CPU CORE VR-1		
Size: Custom	Document Number: GA-H77-DS3H		Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 22 of 35		



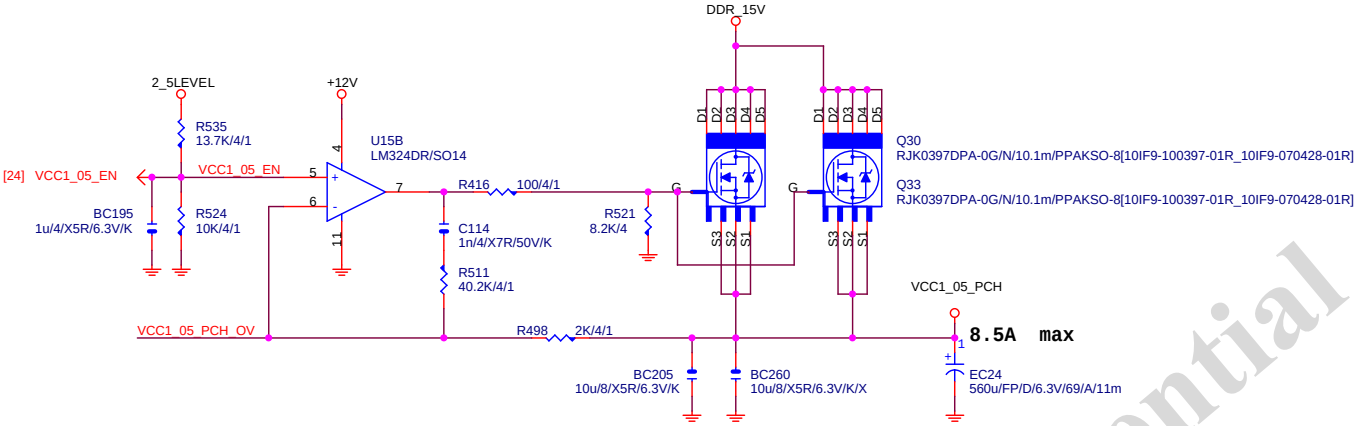
VAXG



Gigabyte Technology			
Title: CPU CORE VR-3			
Size: Custom	Document Number: GA-H77-DS3H		Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 23 of		

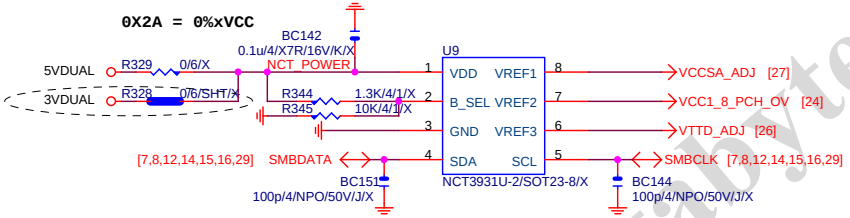


VCC1_05_PCH

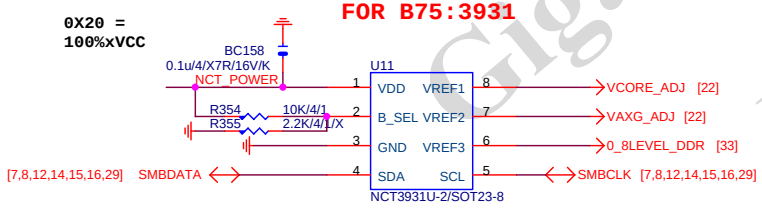


Voltage console

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



FOR B75:3931



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

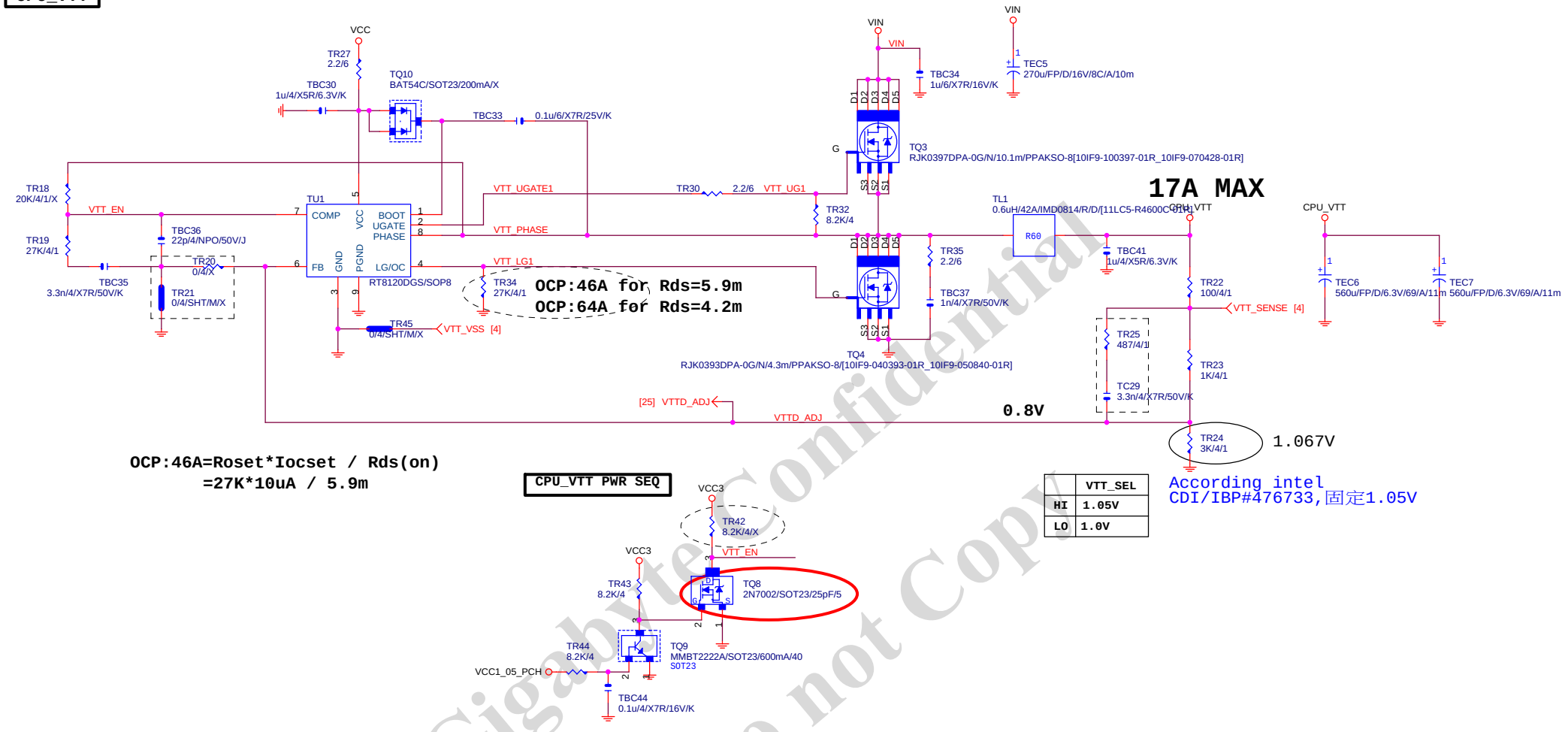
Gigabyte Technology

Title: PCH CORE / VOLTAGE CONSOLE

Size: B | Document Number: GA-H77-DS3H | Rev: 1.01

Date: Wednesday, May 09, 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

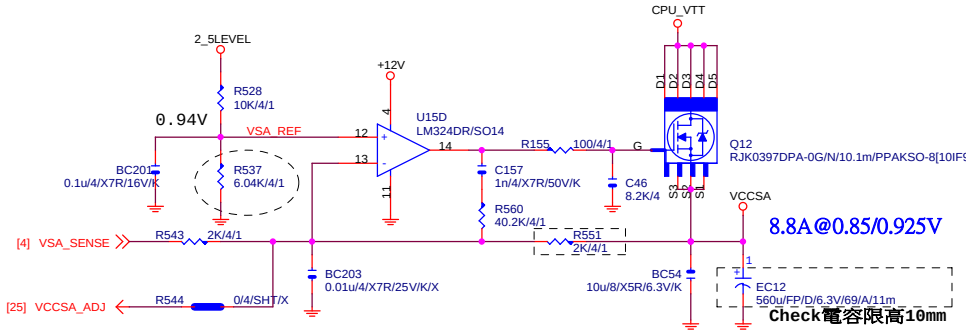
According intel CDI/IBP#476733,固定1.05V

GIGABYTE

Title: RT8120_CPU_VTT		
Size: Custom	Document Number: GA-H77-DS3H	Rev: 1.01
Date: Wednesday, May 09, 2012	Sheet 26 of 35	

VCC_SA

Check電容限高10mm

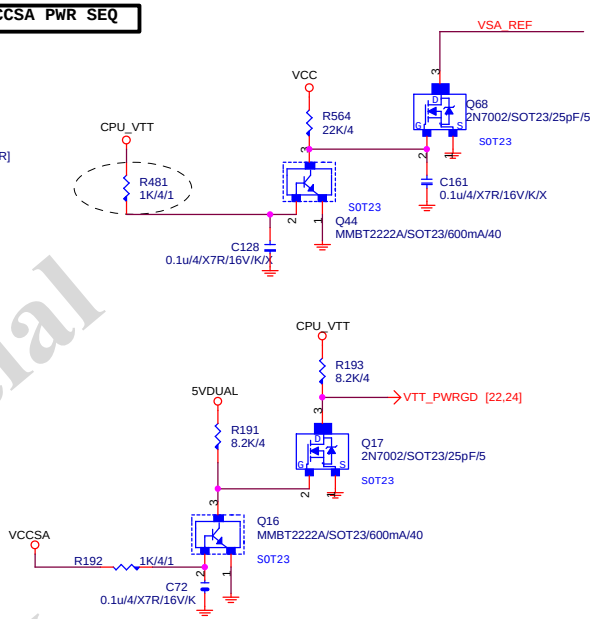


PDG 1.01

	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-H77-DS3H | Rev: 1.01

Date: Wednesday, May 09, 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

[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

[9] -USBP0 [9] +USBP0

FUSEVCC_F2, BC124 0.1u/4/X7R/16V/K

VBUS, SSTX2-, SSTX2+, SSRX2-, SSRX2+, D2-, D2+, GND, GND

USB3_TXN2, USB3_TXP2, C213 0.1u/4/X7R/16V/K, C214 0.1u/4/X7R/16V/K

PCH_USB3_TXN2 [9] PCH_USB3_TXP2 [9] PCH_USB3_RXN2 [9] PCH_USB3_RXP2 [9]

-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

PCH_USB3_RXP1, PCH_USB3_RXN1, PCH_USB3_RXN2, PCH_USB3_RXP2

RUE4 AZ1045-04F/MSOP10

ESD Close to connector

ESD Close to connector

ESD12 AZC009-04S/SOT23-6L

-USBP1, +USBP1, +USBP0, -USBP0, 5VDUAL

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 [9] -USBP5 [9] +USBP5 [9]

BH/2*5K9/BU/ON/2.54/VA/D/GF/[11NH3-001205-41R_11NH3-001205-42R]

ESD11 AZC009-04S/SOT23-6L

-USBP4, +USBP4, -USBP5, +USBP5, FUSEVCC_F4

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 [9] -USBP9 [9] +USBP9 [9]

BH/2*5K9/BU/ON/2.54/VA/D/GF/[11NH3-001205-41R_11NH3-001205-42R]

ESD13 AZC009-04S/SOT23-6L

-USBP8, +USBP8, -USBP9, +USBP9, FUSEVCC_F8

ESD Close to connector

5VDUAL, F15 SMD1812P160/8V, F20 SMD1812P160/8V, F21 SMD1812P160/8V, F22 SMD1812P160/8V

FUSEVCC_F4, FUSEVCC_F5, FUSEVCC_F8, FUSEVCC_F9

EC19 100u/OS/D/6.3V/66/A/35m

FUSEVCC_F1, FUSEVCC_F2, FUSEVCC_F4, FUSEVCC_F5, FUSEVCC_F8, FUSEVCC_F9

SOT23 D23 BAT54A/SOT23/200mA, SOT23 D25 BAT54A/SOT23/200mA, SOT23 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 AZC009-04S/SOT23-6L Rev 0.2 modefy

-RST, -PWRBT_1, 5VSB

F_PANEL

HD+, HD-, GND, RESET, CI-, CI+, PWR+, PWR-, PWR-, MSG/PD+, MSG/PD-, PW+, PW-, SP+, NC, NC, SP-

-HDLED, -RST, -CASEOPEN, MPD+, MPD+, -PWRBT_1, SPK-, VCC

BH/2*10K10,12,13/WH/2.54/VA/PA

VCC, D16 CD4148WP/1206/300mA

VCC, R591 1K/4/1, R583 8.2K/4, [17] BEEP-, Q88 2N7002/SOT23/25pF/5, Q77 MMBT2222A/SOT23/600mA/40

for ITE8728 rstconin issue

R610 75/6/1, R611 75/6/1, Q78 MMBT2222A/SOT23/600mA/40

To disable TCO timer

VCC3, R585 1K/4/1, R0.2 修正, SPKR, SPKR [12], R584 8.2K/4, R0.2 修正

VCC, R438 330/6, MPD+, Q38 MMBT2222A/SOT23/600mA/40, R470 8.2K/4, GPIO28 [12]

VCC, R419 330/6, BC206 0.01u/4/X7R/25V/K/X

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-H77-DS3H
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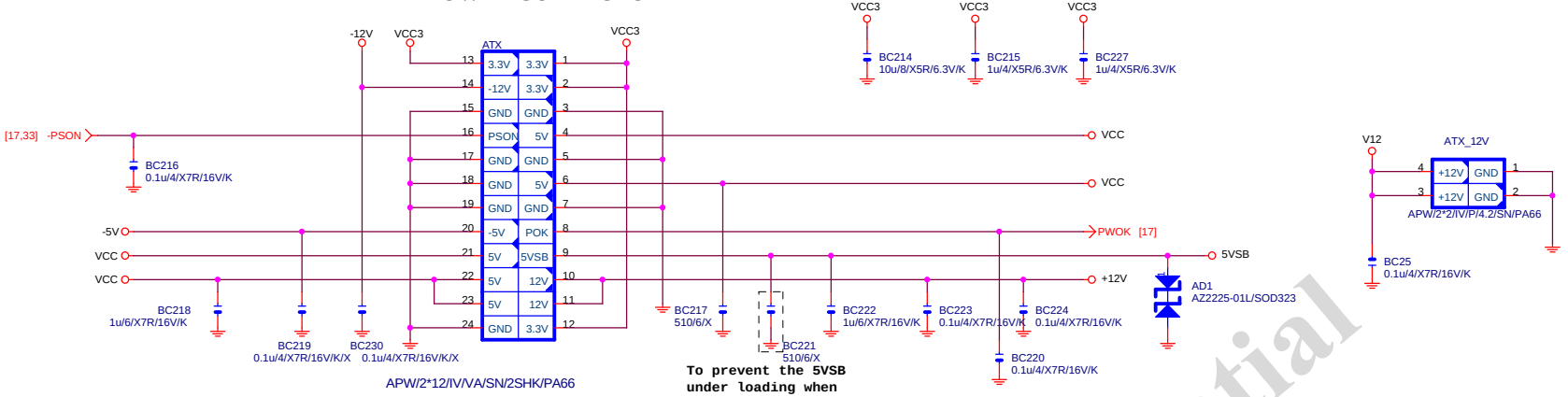
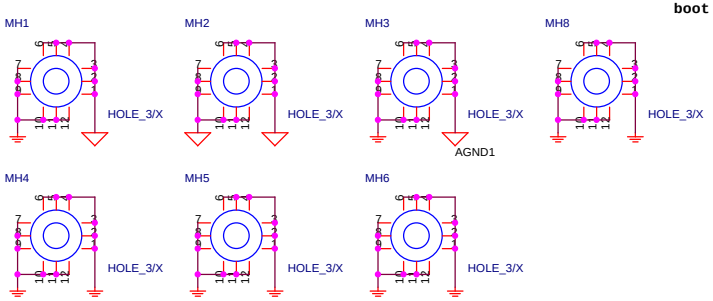
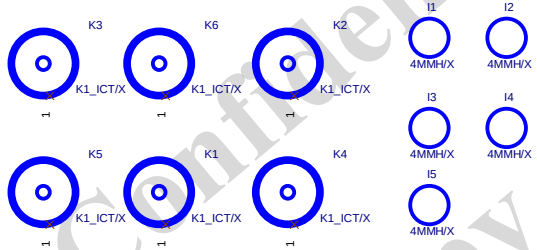
ATX POWER CONNECTOR

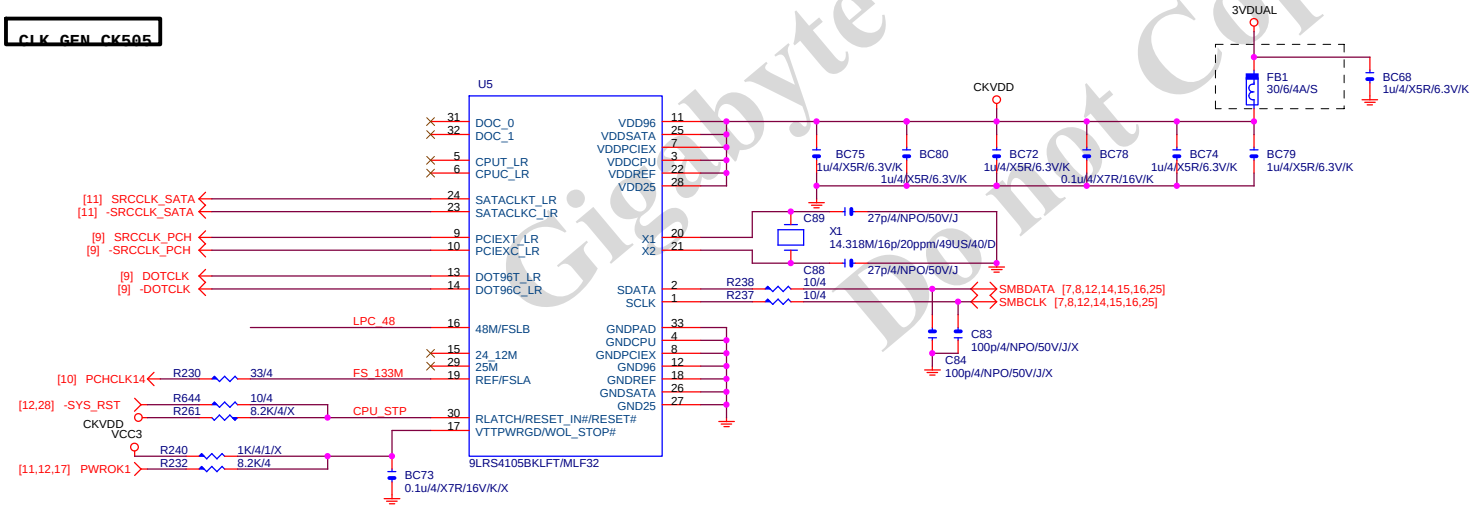


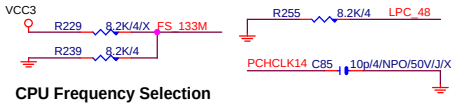
To prevent the 5VSB under loading when boot





CLK_GEN_CK505





CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M

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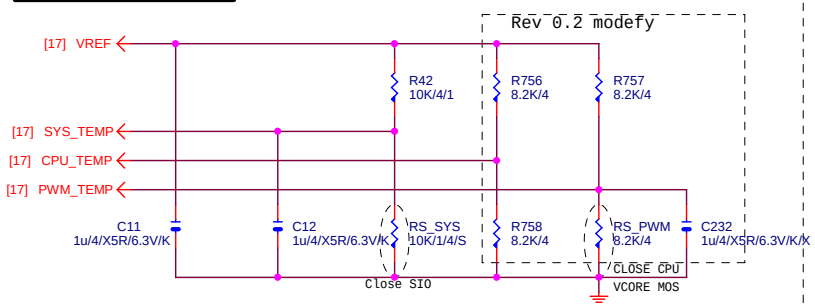
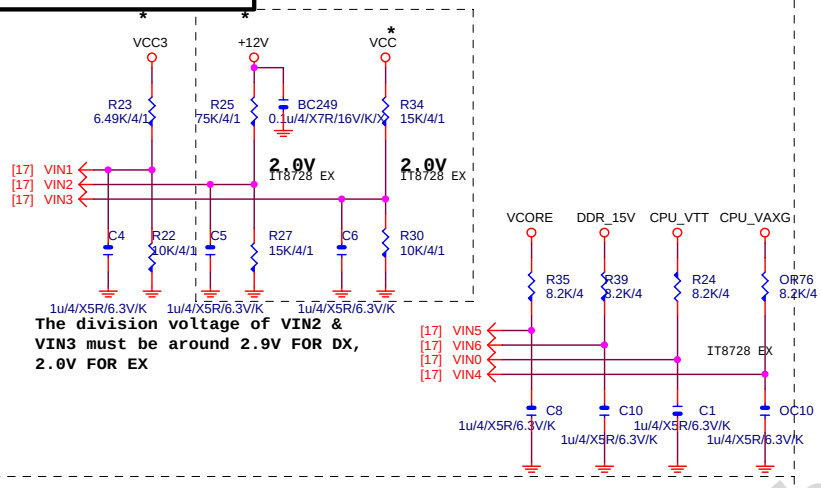
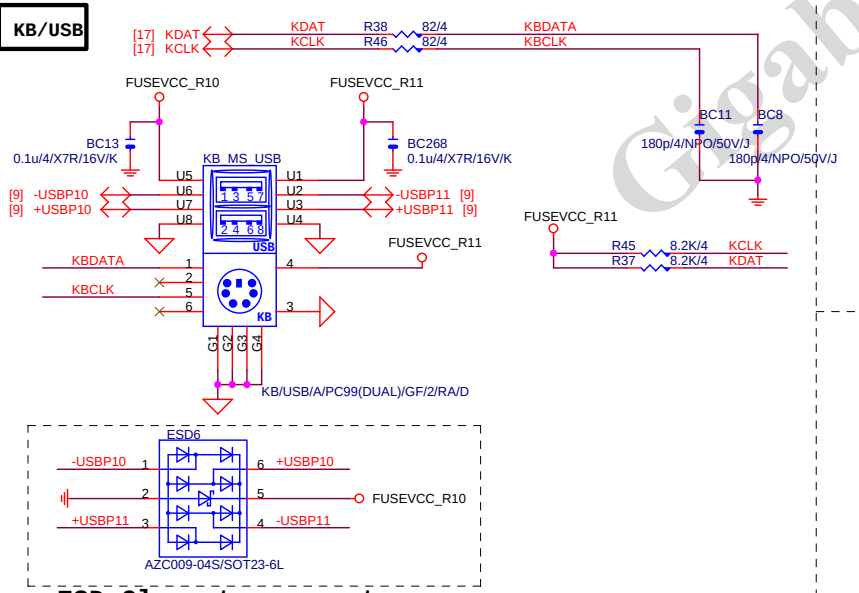
TEMP H/W MONITOR



VOLTAGE-- H/W MONITOR

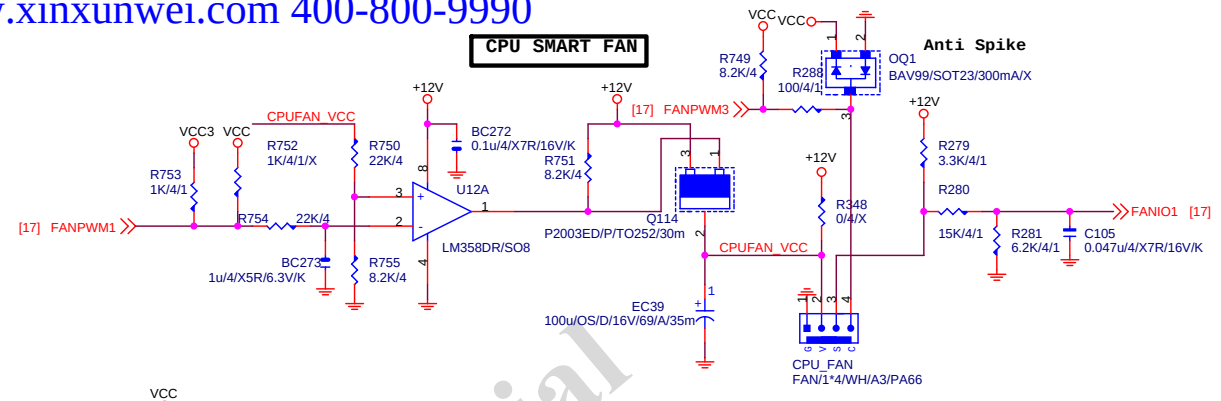


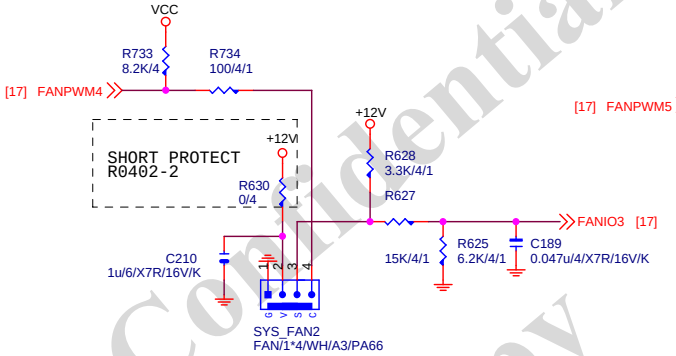
KB/USB

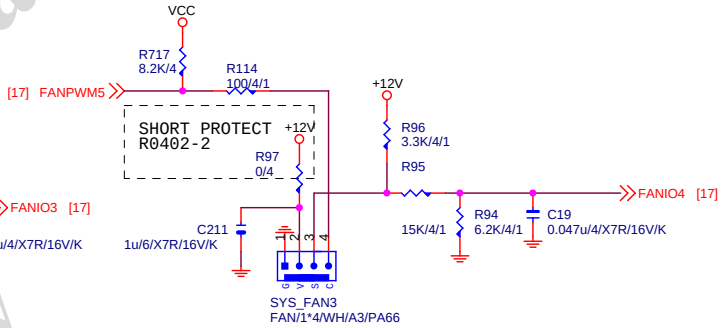


ESD Close to connector

CPU SMART FAN

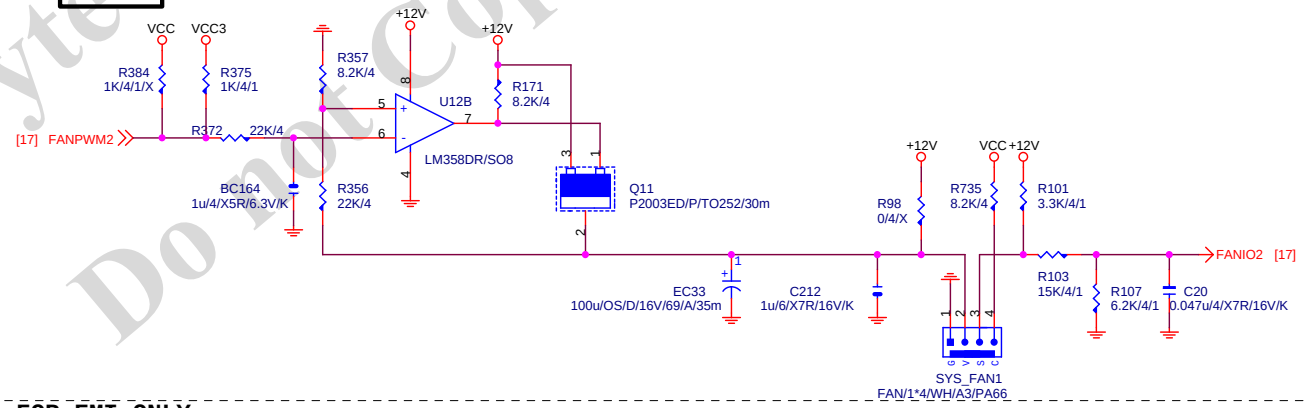




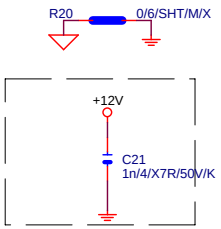


SYS FAN

Linear SYS_FAN



FOR EMI ONLY



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PCIE-1G LAN

離IC近越好

LA_ ML-->80歐姆:[15/5/5/5/15]

SRCCLK-->50歐姆:[18/4/10/4/18]

LAN_POWER

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

LAU1

Atheros

AR8151/AR8161

AR8151-BL1A-R/S/[10HP2-408151-20R]

AR8161-->N/A
(LABC12)

AR8161-->N/A
(LABC6)

AR8161-->(O)

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

AR8161-->N/A
(LABC20)

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

CLOSE
LA_LX 200mil

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

AR8151 POWER

AR8161 POWER

AR8161-->(O)

AR8161-->BEAD
AR8151-->N/A

AR8161-->BEAD
AR8151-->0/6

AR8161-->(O)

AR8161-->(O)

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	

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

MDI : AR8161-->N/A

CLOSE LAN CHIP

USB30_LAN CONNECTOR

100歐姆:[20/4/8/4/20]

USB_LAN
USB+LAN/1G/GO,Y/OS/RA/D/1

UP

DOWN

90歐姆:[15/4.5/7.5/4.5/15]

R_USB30
USB/18P/BU/OS/RA/D/2/1U/SB

USB3.0/2.0

Close to R_USB30

90歐姆:[20/4.5/7.5/4.5/20]

Close to R_USB30

90歐姆:[20/4.5/7.5/4.5/20]

Close to connector

Close to connector

Gigabyte Technology

Title: ARTHEROS AR8161/AR8151

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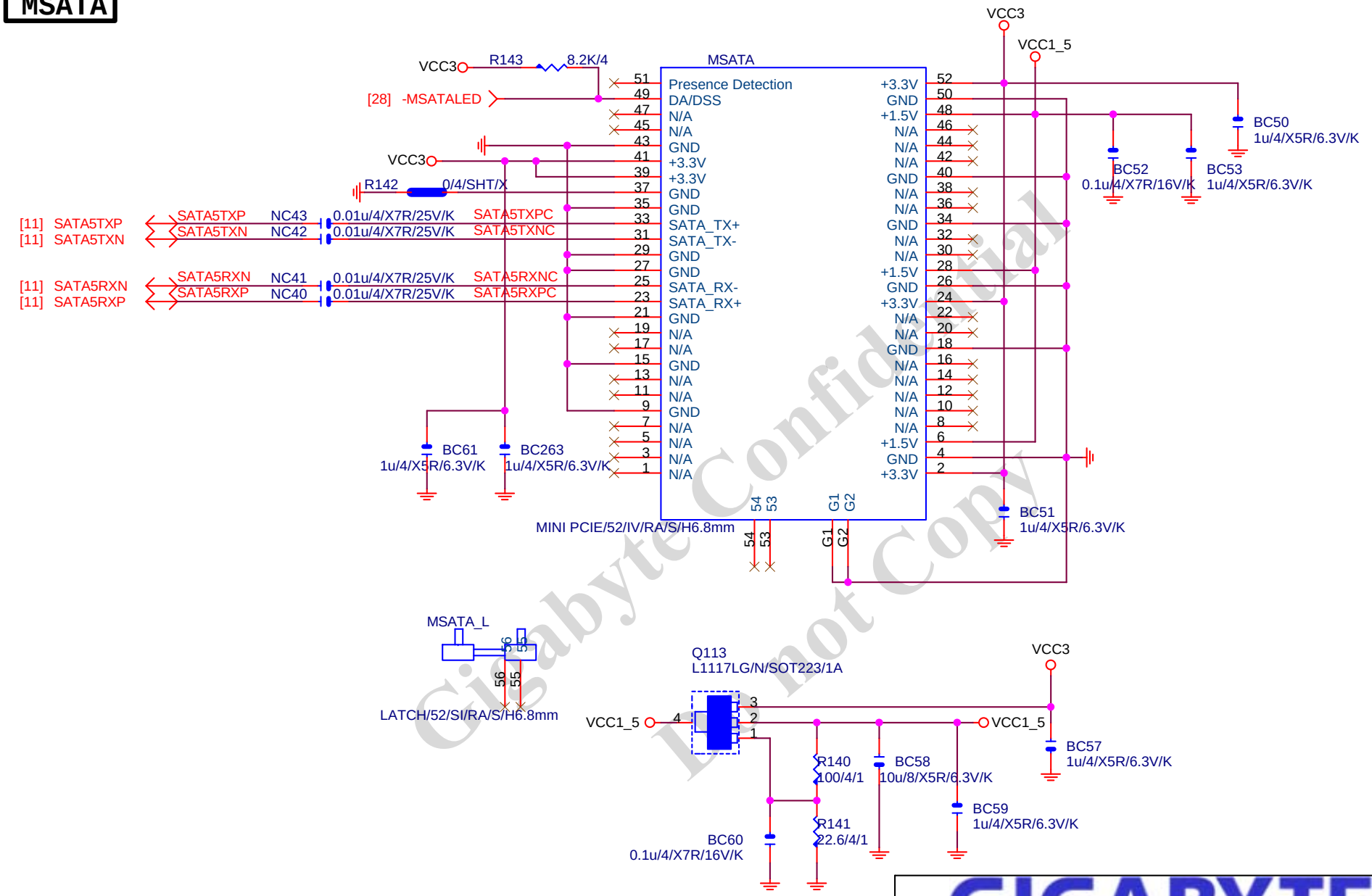
MSATA



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Title: MSATA		
Size: A	Document Number: GA-H77-DS3H	Rev: 1.01
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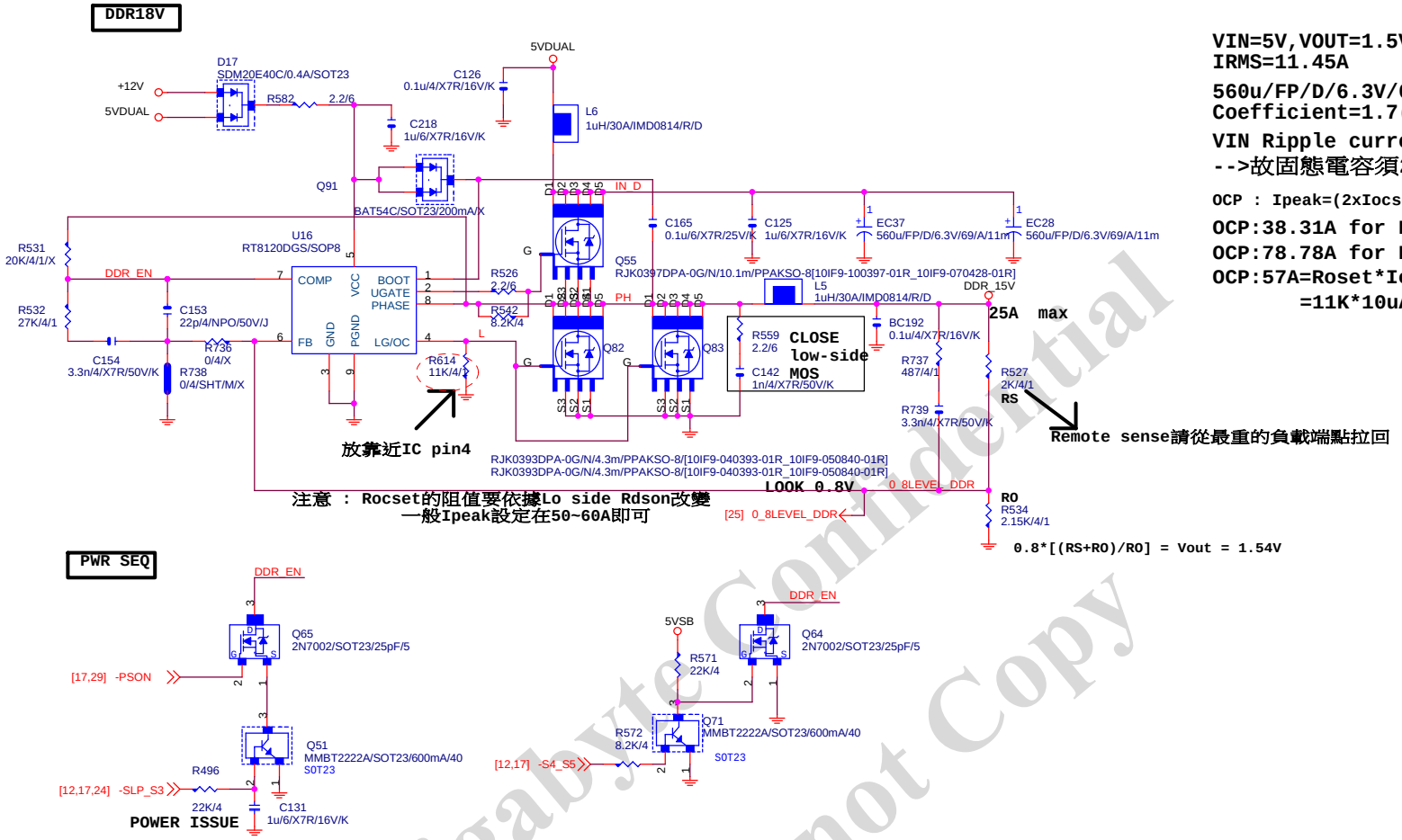

VIN=5V,VOUT=1.5V,IOUT=25A,PHASE=1
IRMS=11.45A

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™

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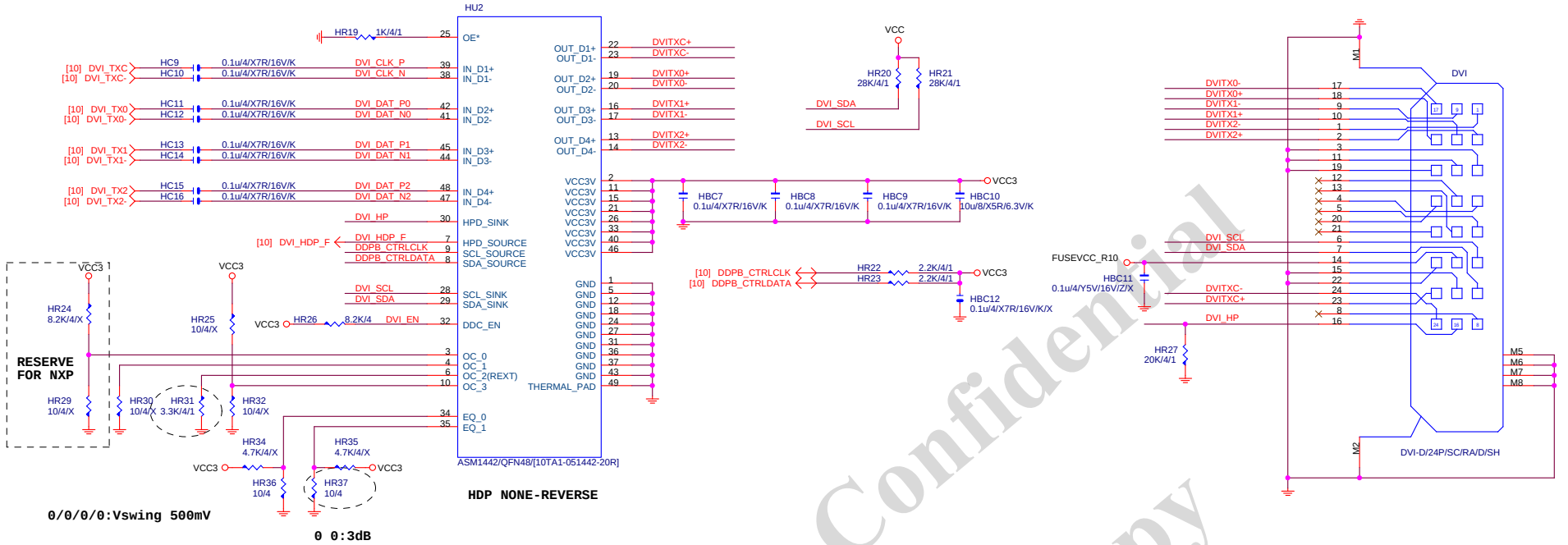
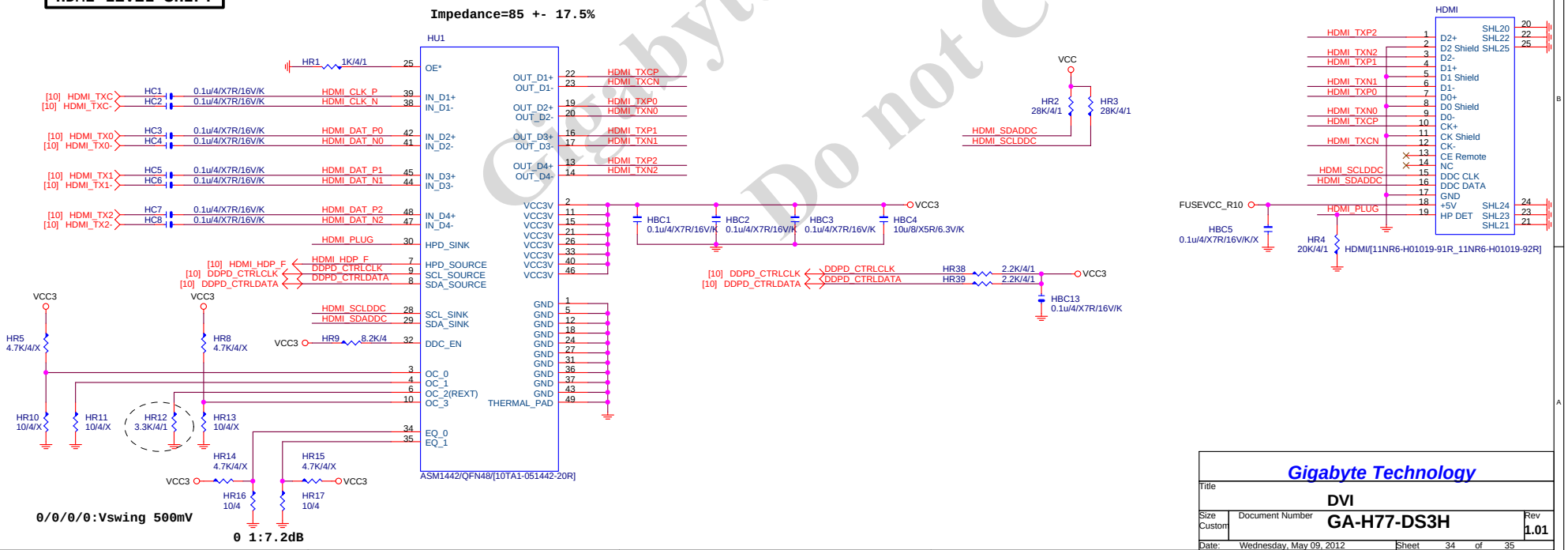
DVI LEVEL SHIFT



HDMI LEVEL SHIFT

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



Gigabyte Technology			
Title: DVI			
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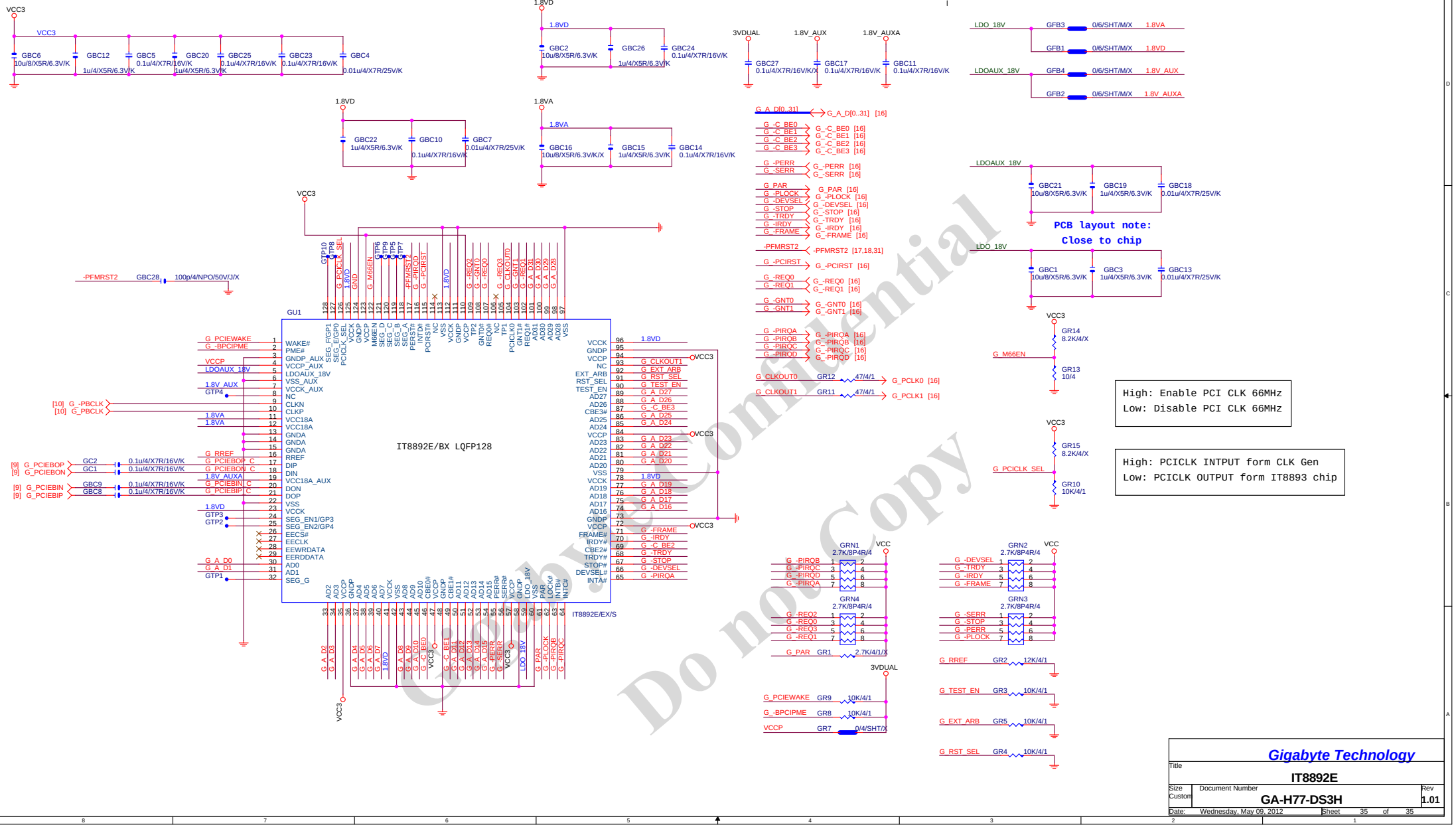

Gigabyte Technology		
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