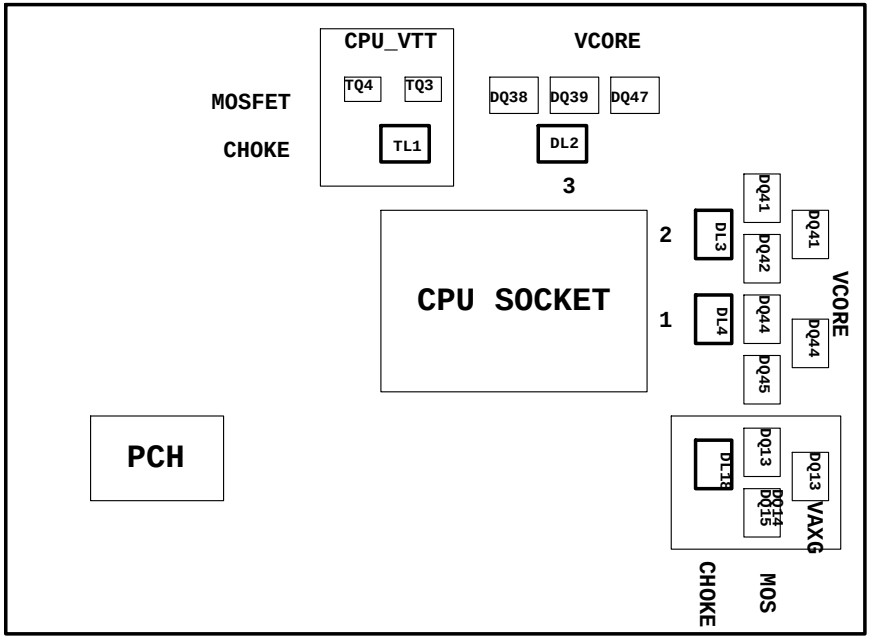
Model Name: GA-Z77-DS3H 1.0

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	
38	
39	
40	



Gigabyte Technology

Title	Cover Sheet	
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 1 of 35	

GA-Z77-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	
Z77-DS3H-10A	1. P-BOM	
Z77-DS3H-10B	4. RS_PWM相關線路移除 (若有上prochot pull up改100 ohm)	

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)	

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Title: BOM & PCB MODIFY HISTORY

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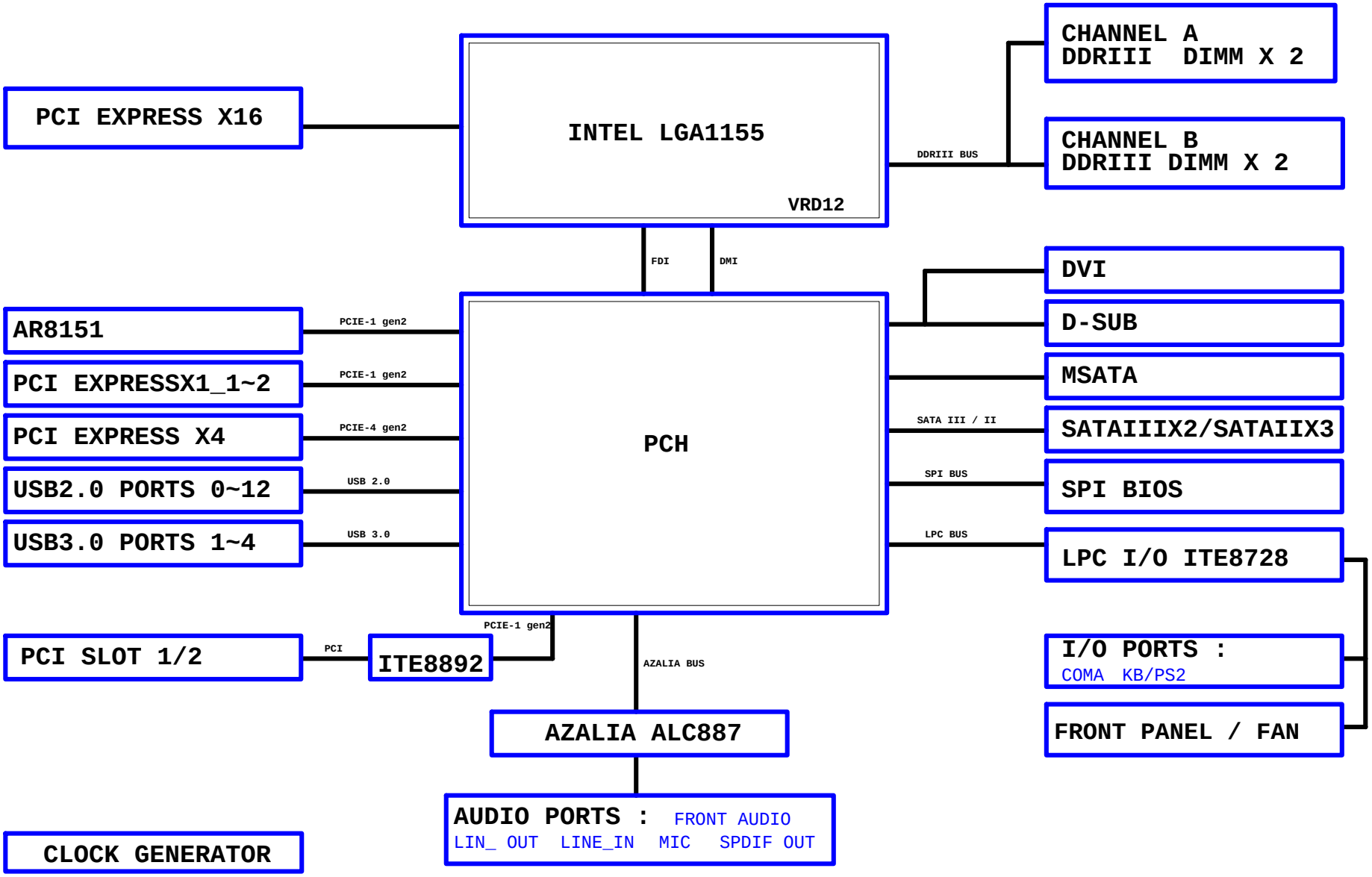
BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: C	Document Number: GA-Z77-DS3H	Rev: 1.0
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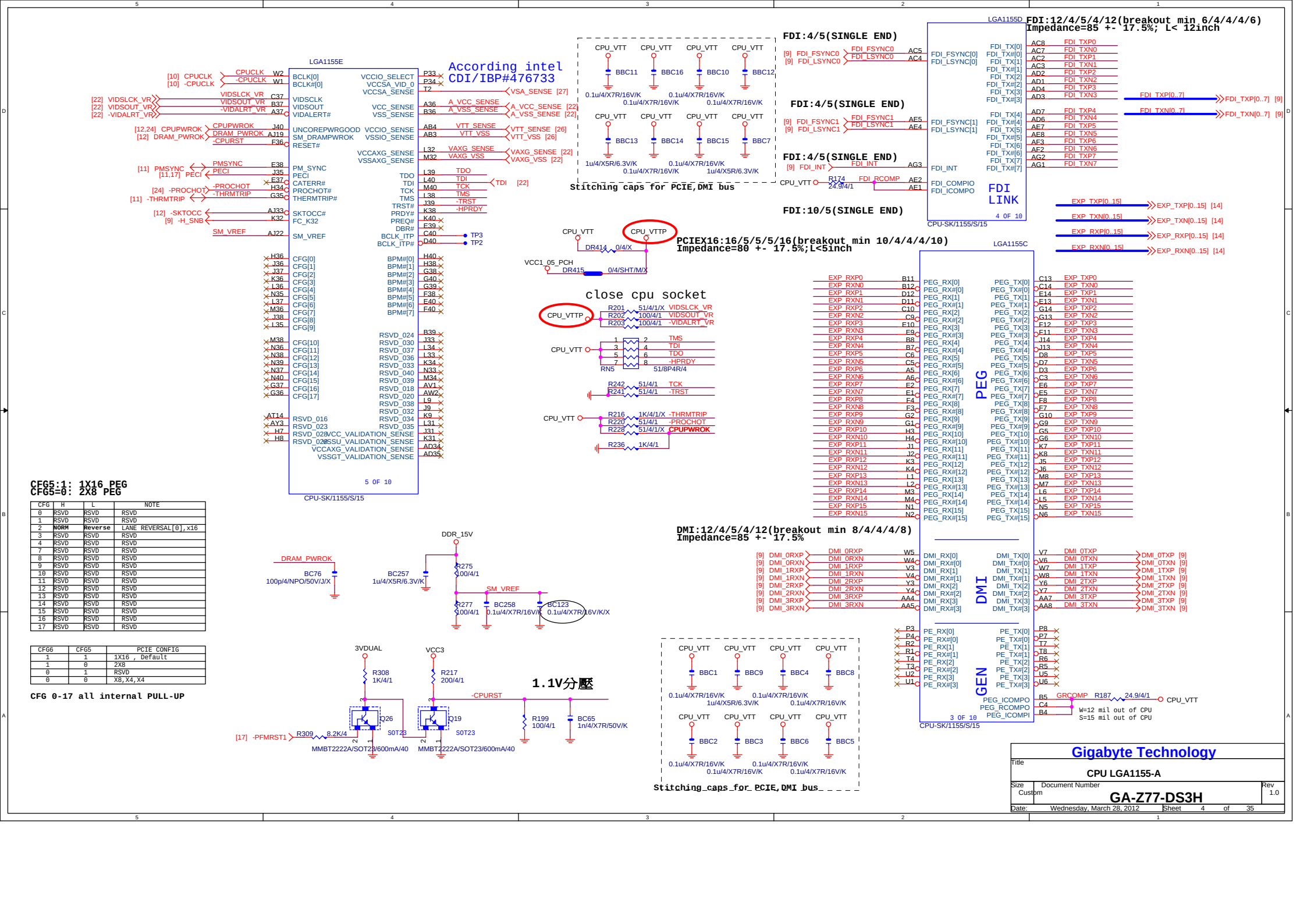
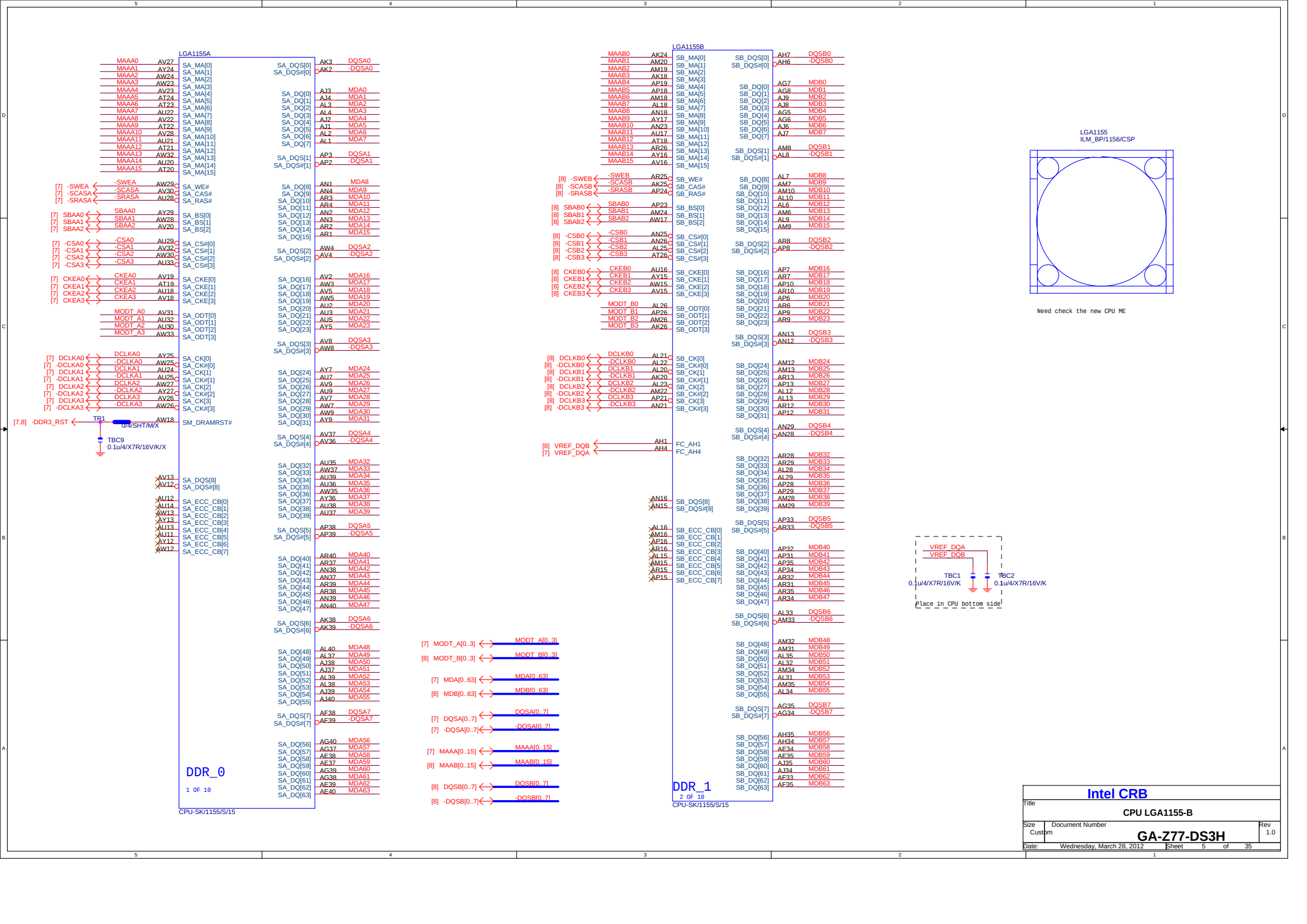


CFG	H	L	NOTE
0	RSVD	RSVD	RSVD
1	RSVD	RSVD	RSVD
2	**NORM**	**Reverse**	LANE REVERSAL[0],x16
3	RSVD	RSVD	RSVD
4	RSVD	RSVD	RSVD
7	RSVD	RSVD	RSVD
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD
16	RSVD	RSVD	RSVD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

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



Title	CPU LGA1155-B
Size	Custom
Document Number	GA-Z77-DS3H
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Date:	Wednesday, March 28, 2012
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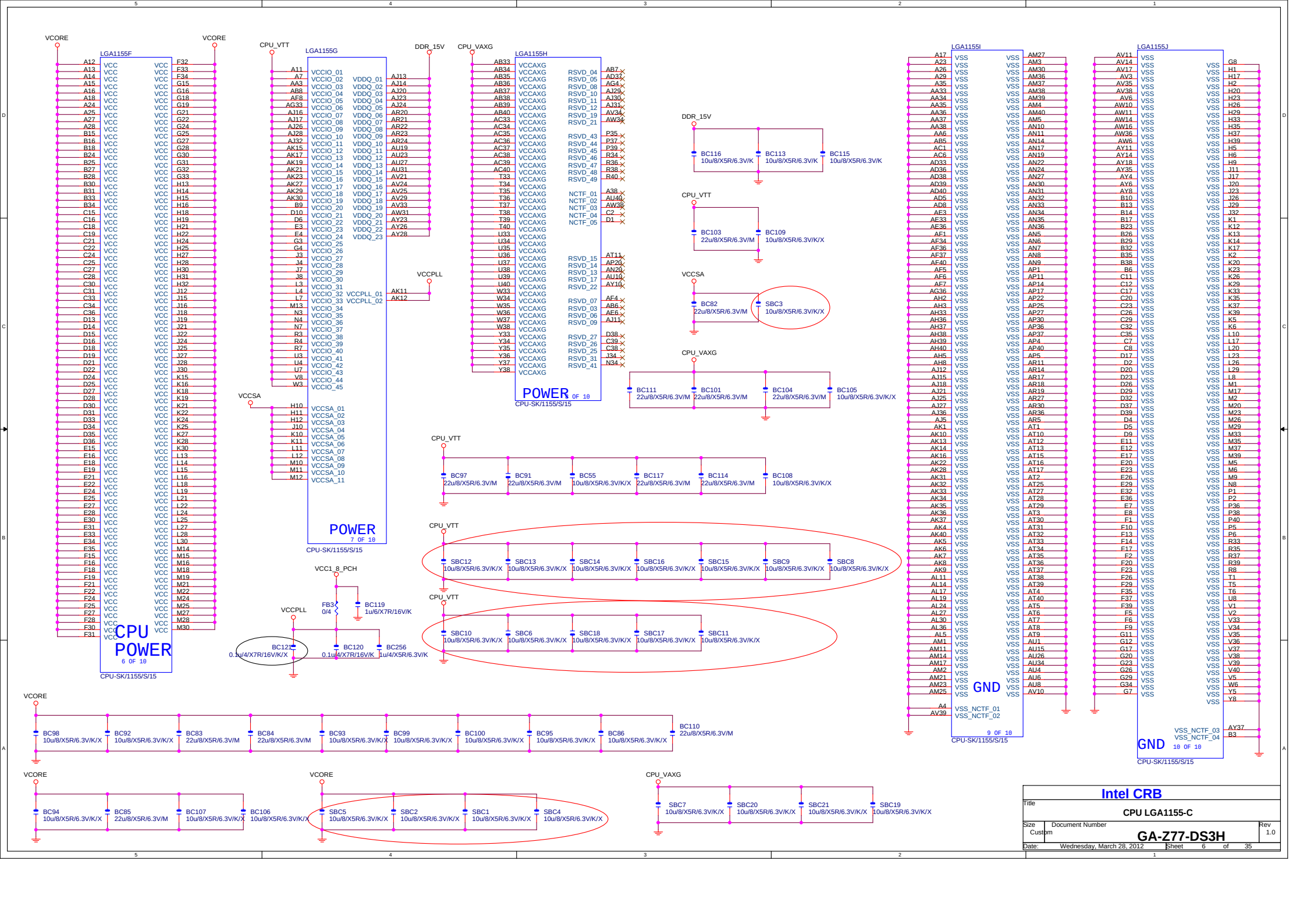
Intel CRB


LGA1155F
CPU POWER
6 OF 10
CPU-SK/1155/S/15
LGA1155G
POWER
7 OF 10
CPU-SK/1155/S/15
LGA1155H
POWER
8 OF 10
CPU-SK/1155/S/15
LGA1155I
GND
9 OF 10
CPU-SK/1155/S/15
LGA1155J
GND
10 OF 10
CPU-SK/1155/S/15
VCORE
CPU_VTT
DDR_15V
CPU_VAXG
VCCPLL
VCCSA
VCC1_8_PCH
BC116 10u/8/X5R/6.3V/K
BC113 10u/8/X5R/6.3V/K
BC115 10u/8/X5R/6.3V/K
BC103 22u/8/X5R/6.3V/M
BC109 10u/8/X5R/6.3V/K/X
BC82 22u/8/X5R/6.3V/M
SBC3 10u/8/X5R/6.3V/K/X
BC111 22u/8/X5R/6.3V/M
BC101 22u/8/X5R/6.3V/M
BC104 22u/8/X5R/6.3V/M
BC105 10u/8/X5R/6.3V/K/X
BC97 22u/8/X5R/6.3V/M
BC91 22u/8/X5R/6.3V/M
BC55 10u/8/X5R/6.3V/K/X
BC117 22u/8/X5R/6.3V/M
BC114 22u/8/X5R/6.3V/M
BC108 10u/8/X5R/6.3V/K/X
SBC12 10u/8/X5R/6.3V/K/X
SBC13 10u/8/X5R/6.3V/K/X
SBC14 10u/8/X5R/6.3V/K/X
SBC16 10u/8/X5R/6.3V/K/X
SBC15 10u/8/X5R/6.3V/K/X
SBC9 10u/8/X5R/6.3V/K/X
SBC8 10u/8/X5R/6.3V/K/X
SBC10 10u/8/X5R/6.3V/K/X
SBC6 10u/8/X5R/6.3V/K/X
SBC18 10u/8/X5R/6.3V/K/X
SBC17 10u/8/X5R/6.3V/K/X
SBC11 10u/8/X5R/6.3V/K/X
FB3 0/4
BC119 1u/6/X7R/16V/K
BC121 0.1u/4/X7R/16V/K/X
BC120 0.1u/4/X7R/16V/K
BC256 1u/4/X5R/6.3V/K
BC98 10u/8/X5R/6.3V/K/X
BC92 10u/8/X5R/6.3V/K/X
BC83 22u/8/X5R/6.3V/M
BC84 22u/8/X5R/6.3V/M
BC93 10u/8/X5R/6.3V/K/X
BC99 10u/8/X5R/6.3V/K/X
BC100 10u/8/X5R/6.3V/K/X
BC95 10u/8/X5R/6.3V/K/X
BC86 10u/8/X5R/6.3V/K/X
BC110 22u/8/X5R/6.3V/M
BC94 10u/8/X5R/6.3V/K/X
BC85 22u/8/X5R/6.3V/M
BC107 10u/8/X5R/6.3V/K/X
BC106 10u/8/X5R/6.3V/K/X
SBC5 10u/8/X5R/6.3V/K/X
SBC2 10u/8/X5R/6.3V/K/X
SBC1 10u/8/X5R/6.3V/K/X
SBC4 10u/8/X5R/6.3V/K/X
SBC7 10u/8/X5R/6.3V/K/X
SBC20 10u/8/X5R/6.3V/K/X
SBC21 10u/8/X5R/6.3V/K/X
SBC19 10u/8/X5R/6.3V/K/X
Intel CRB
CPU LGA1155-C
GA-Z77-DS3H
Custom
1.0
Wednesday, March 28, 2012
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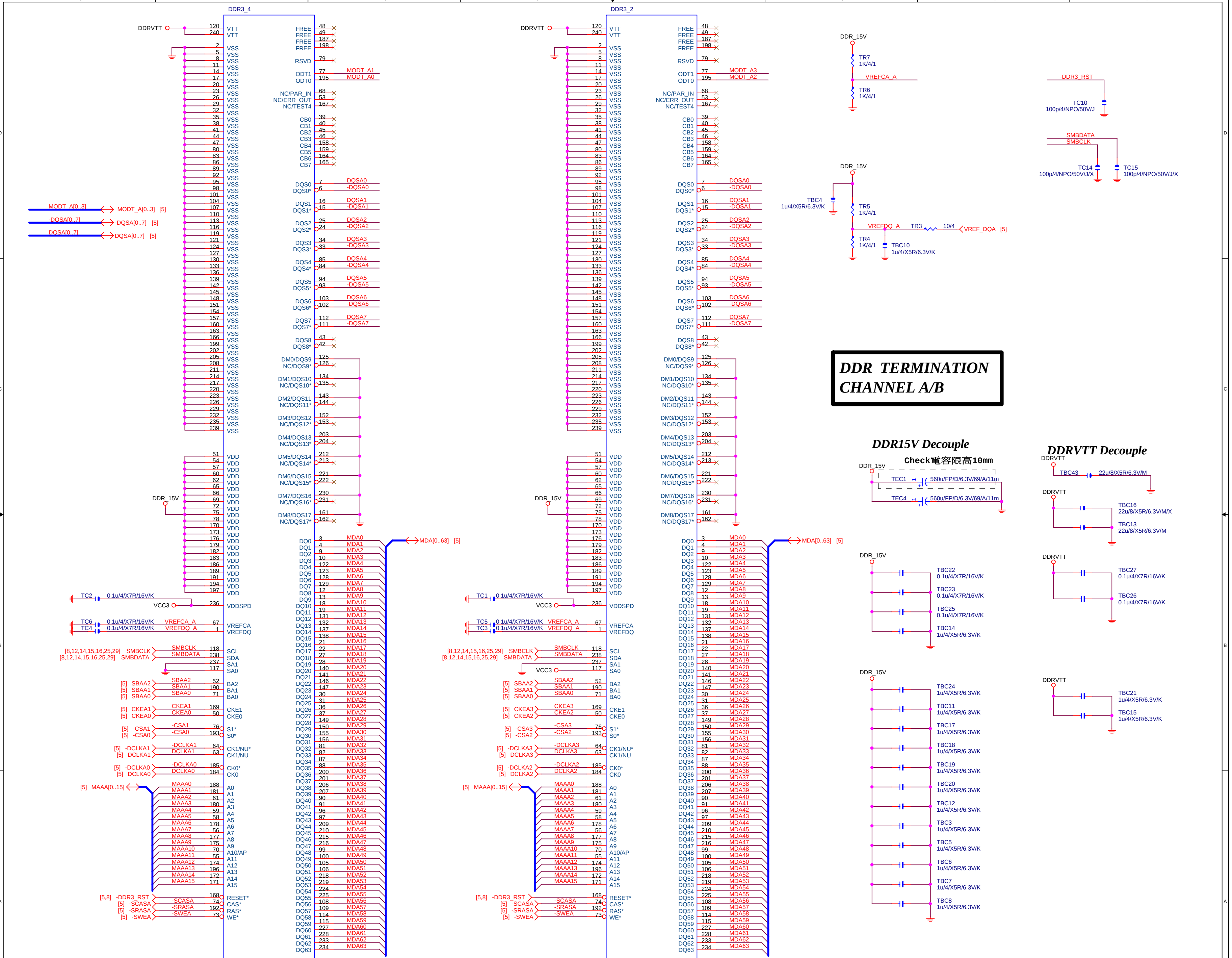
DDR3_4
DDR3_2
DDR TERMINATION
CHANNEL A/B
DDR15V Decouple
Check電容限高10mm
DDRVTT Decouple
DDR3/240/BU/VA/D
DDR3/240/WH/VA/D
DDRVTT
DDR_15V
VCC3
MODT_A[0..3]
-DQSA[0..7]
DQSA[0..7]
MDA[0..63]
MAAA[0..15]
VREFCA_A
VREFDQ_A
-DDR3_RST
SMBDATA
SMBCLK
TR7 1K/4/1
TR6 1K/4/1
TR5 1K/4/1
TR4 1K/4/1
TR3 10/4
TC10 100p/4/NPO/50V/J
TC14 100p/4/NPO/50V/J/X
TC15 100p/4/NPO/50V/J/X
TBC4 1u/4/X5R/6.3V/K
TBC10 1u/4/X5R/6.3V/K
TEC1 560u/FP/D/6.3V/69/A/11m
TEC4 560u/FP/D/6.3V/69/A/11m
TBC43 22u/8/X5R/6.3V/M
TBC16 22u/8/X5R/6.3V/M/X
TBC13 22u/8/X5R/6.3V/M
TBC22 0.1u/4/X7R/16V/K
TBC23 0.1u/4/X7R/16V/K
TBC25 0.1u/4/X7R/16V/K
TBC14 1u/4/X5R/6.3V/K
TBC27 0.1u/4/X7R/16V/K
TBC26 0.1u/4/X7R/16V/K
TBC21 1u/4/X5R/6.3V/K
TBC15 1u/4/X5R/6.3V/K
TC1 0.1u/4/X7R/16V/K
TC2 0.1u/4/X7R/16V/K
TC3 0.1u/4/X7R/16V/K
TC4 0.1u/4/X7R/16V/K
TC5 0.1u/4/X7R/16V/K
TC6 0.1u/4/X7R/16V/K

Intel CRB

Title: DDRIII CHANNEL A

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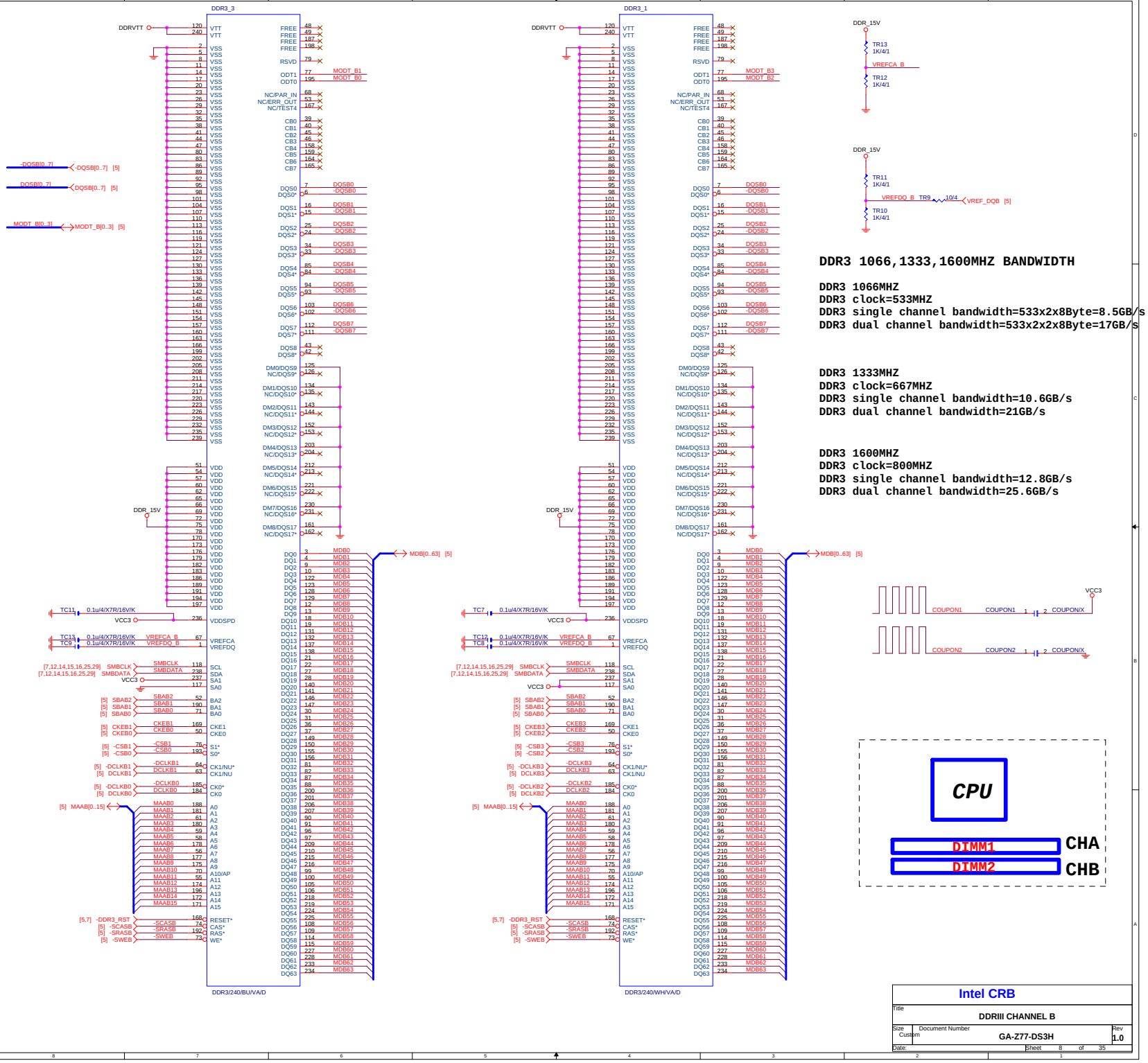

DDR3 1066,1333,1600MHZ BANDWIDTH

DDR3 1066MHZ
DDR3 clock=533MHZ
DDR3 single channel bandwidth=533x2x8Byte=8.5GB/s
DDR3 dual channel bandwidth=533x2x2x8Byte=17GB/s

DDR3 1333MHZ
DDR3 clock=667MHZ
DDR3 single channel bandwidth=10.6GB/s
DDR3 dual channel bandwidth=21GB/s

DDR3 1600MHZ
DDR3 clock=800MHZ
DDR3 single channel bandwidth=12.8GB/s
DDR3 dual channel bandwidth=25.6GB/s

Intel CRB		
Title	DDRIII CHANNEL B	
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
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-Z77-DS3H		Rev: 1.0
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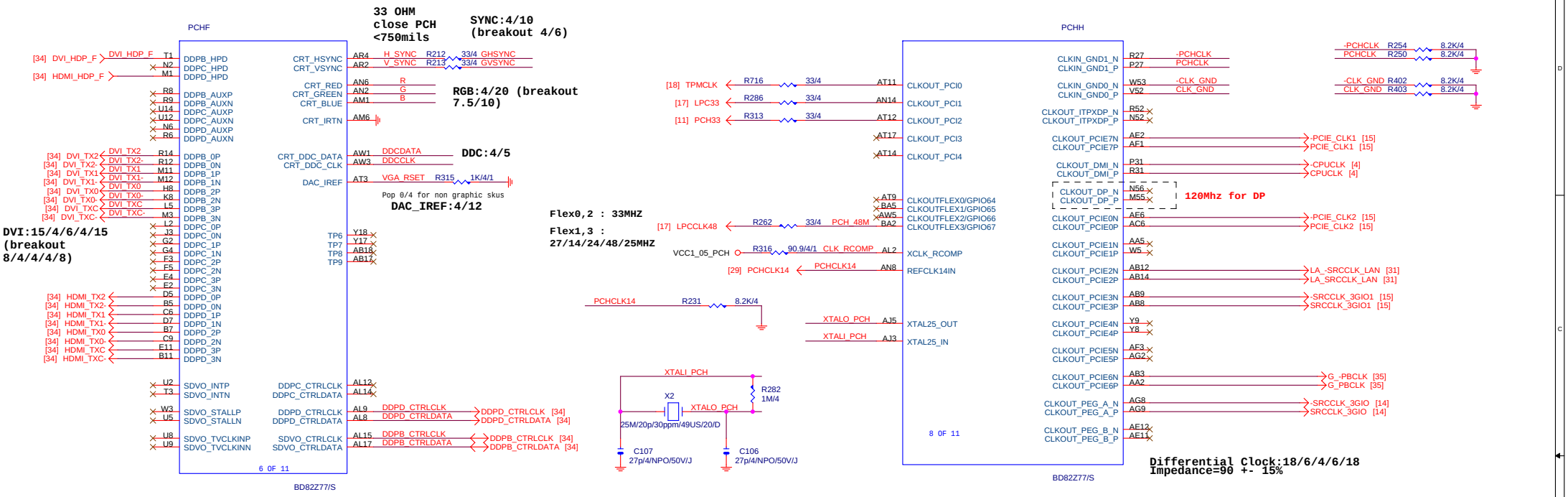
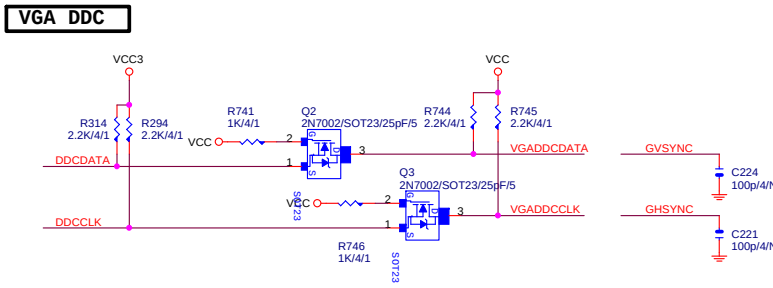
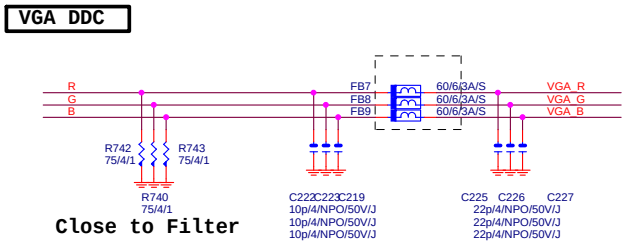
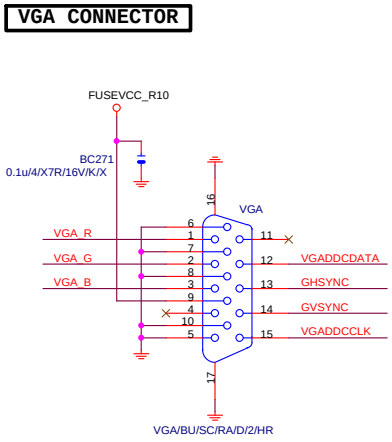
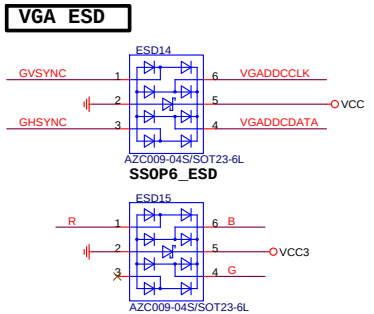










Gigabyte Technology			
Title: PCH DISPLAY ,CLK BUFFER			
Size: Custom	Document Number: GA-Z77-DS3H		Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 10 of 35		

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%

PCHC

For WIFI
BA50 CL_CLK1
BF50 CL_DATA1
BF49 CL_RST1#
CLINK

[12,17,29] PWROK1 — BC46 APWROK

BN21 PWM0
BT21 PWM1
BM20 PWM2
BN19 PWM3

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

TP16 — AE50

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

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 [4,17]
PMSYNCH	F55	PMSYNC [4]

3 0F 11

BD82Z77/S

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

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

-KBRST — R401 1K/4/1 — VCC3

VCC3

RN16 8.2K/8P4R/4
GPIO19 — 1
TEMP_ALART- — 3
GPIO22 — 5
A20GATE — 7
[17] TEMP_ALART-

RN17 8.2K/8P4R/4
GPIO16 — 1
SERIRQ — 3
GPIO48 — 5
GPIO0 — 7
[12] GPIO0

RN18 8.2K/8P4R/4
GPIO21 — 1
GPIO38 — 3
GPIO39 — 5
GPIO20 — 7
[12] GPIO20

R447 1K/4/1/X GPIO20

VCC3
RN13 8.2K/8P4R/4
1 GPIO70
3 GPIO6
5 GPIO17
7 GPIO1

RN12 8.2K/8P4R/4
1 -PIRQG
3 GPIO71
5 GPIO68
7 -CPU_HOT
-CPU_HOT [24]

PCHA

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

-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

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	

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

PCI

1 0F 11

BD82Z77/S

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

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

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

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

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

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

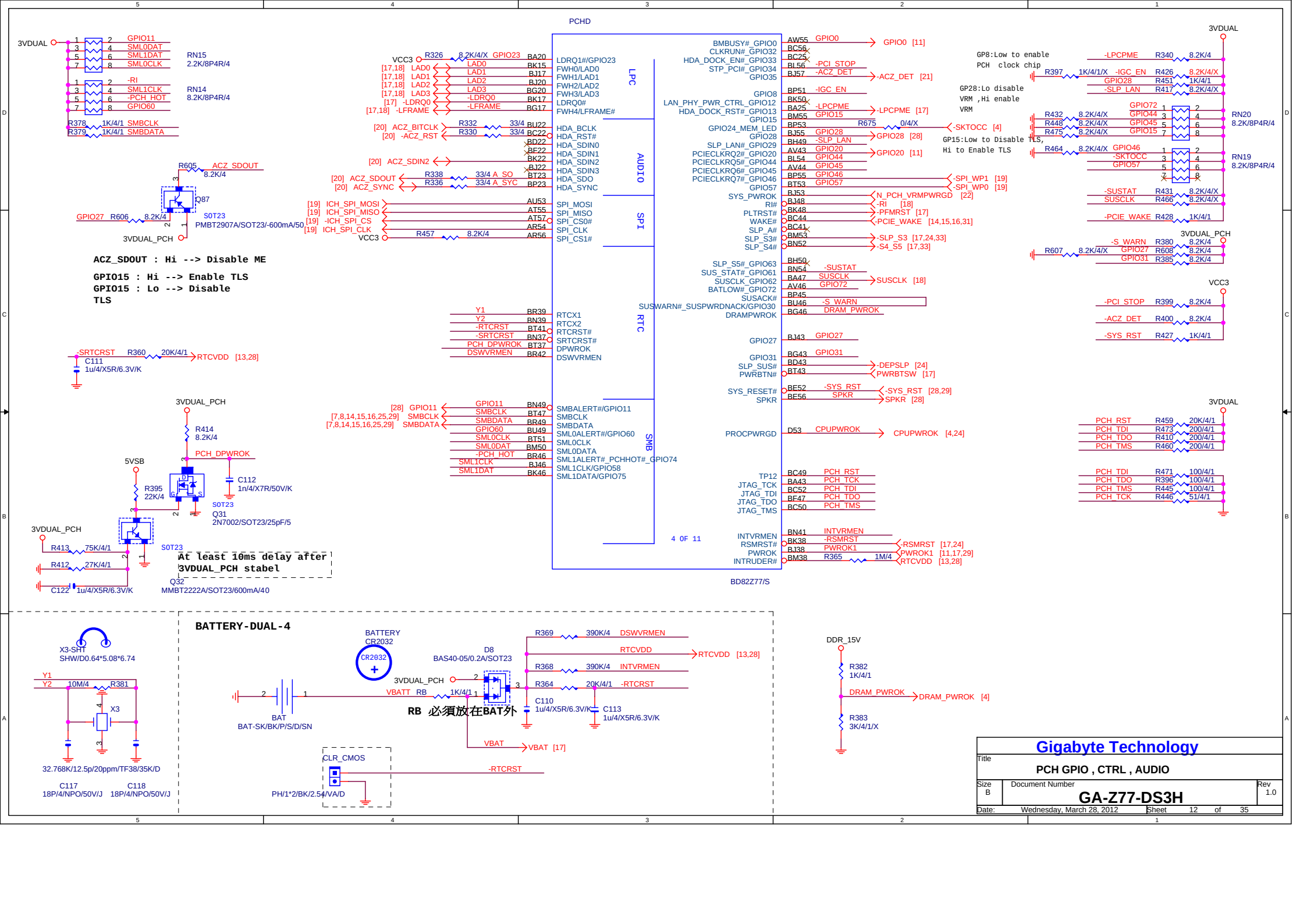
SATA2/7/BU/H/OP/VA/D/1/B/PA66

Gigabyte Technology

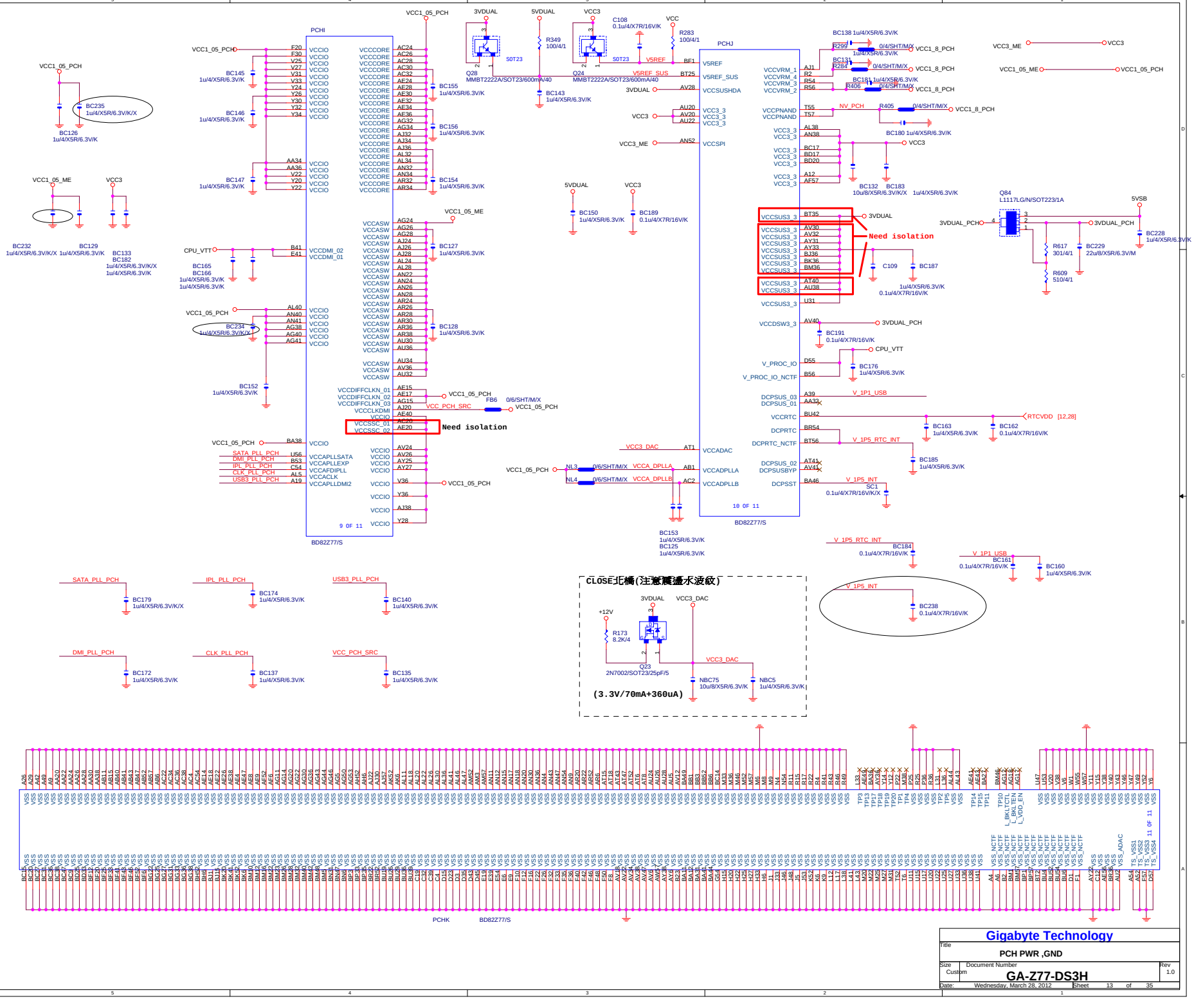
Title: **PCH HOST , SATA, PCI**

Size	Document Number	Rev
B	**GA-Z77-DS3H**	1.0

Date: Wednesday, March 28, 2012 Sheet 11 of 35



Gigabyte Technology		
Title	PCH GPIO , CTRL , AUDIO	
Size B	Document Number GA-Z77-DS3H	Rev 1.0
Date: Wednesday, March 28, 2012	Sheet 12 of 35	


PCHI
PCHJ
PCHK
BD82Z77/S
9 OF 11
10 OF 11
Need isolation
Need isolation
CLOSE北橋(注意麵燙水波紋)
(3.3V/70mA+360uA)
Gigabyte Technology
PCH PWR ,GND
GA-Z77-DS3H
Size Custom
Document Number
Rev 1.0
Date: Wednesday, March 28, 2012
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PCIESLOT-164DN-3
PCIEX16
3GIO_*16
KEY
+12 protect short-wire test
PCIEX16:16/5/5/5/16
PCI-E/16X-164P/BU-297C/RIGHT PUSH
PCI-E REV:1.1--> 2.5GHZ
PCE-E X1(單向) BANDWITH=2.5GHz*(8b/10b)=2Gb/s=250MB/s
PCE-E X1(雙向) BANDWITH=2.5GHz*(8b/10b)X2=4Gb/s=500MB/s
PCE-E X16(單向) BANDWITH=2.5GHz*(8b/10b)X16=32Gb/s=4GB/s
PCE-E X16(雙向) BANDWITH=2.5GHz*(8b/10b)X16X2=64Gb/s=8GB/s
PCI-E REV:2.0--> 5GHZ
Gigabyte Technology
PCI EXPRESS * 16
GA-Z77-DS3H
1.0
Wednesday, March 28, 2012
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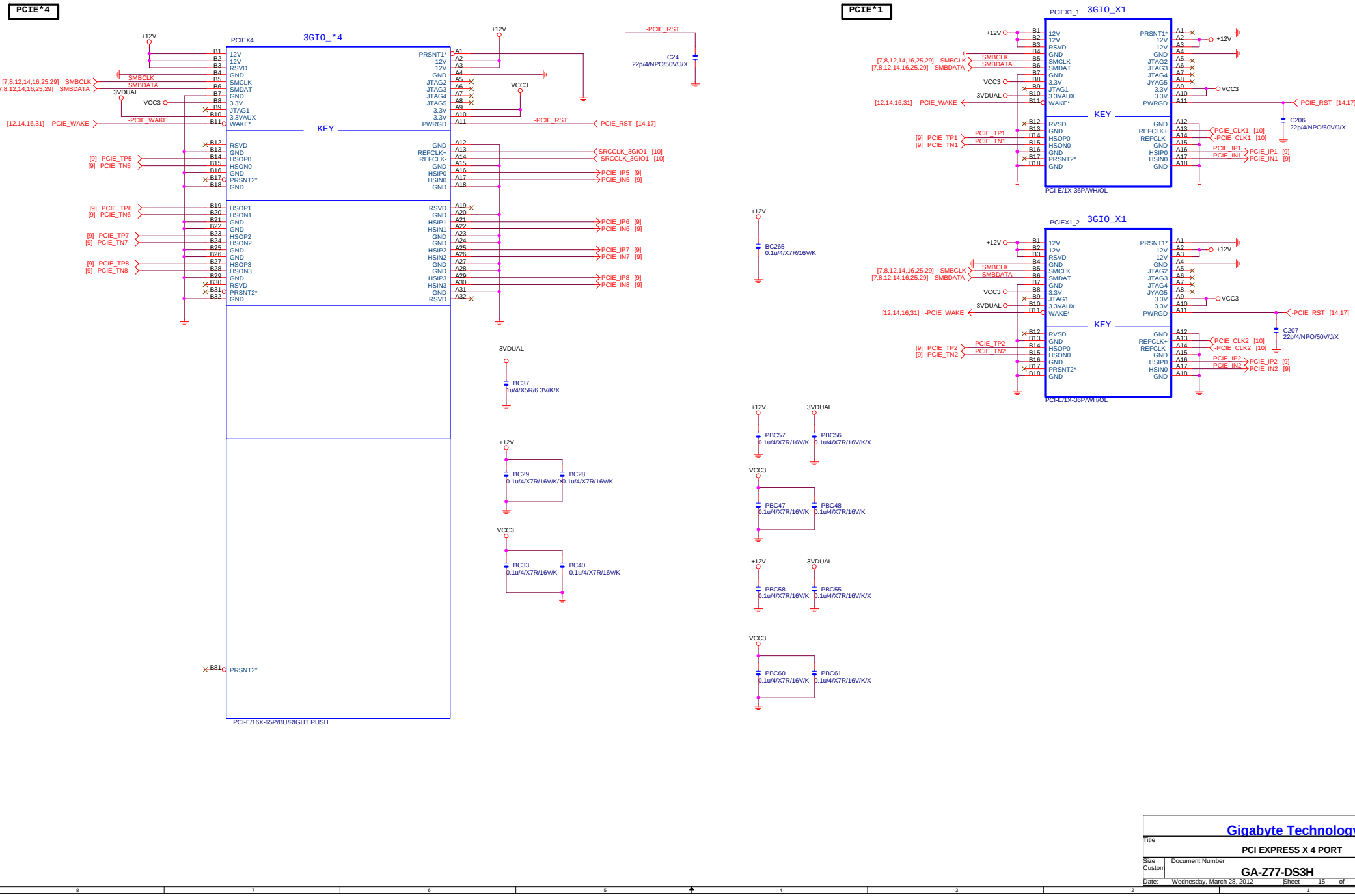
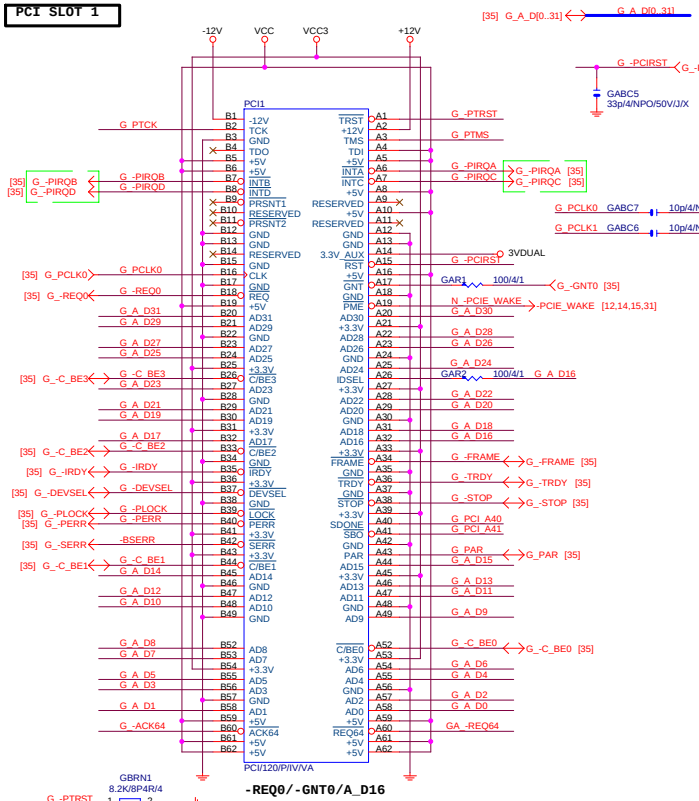
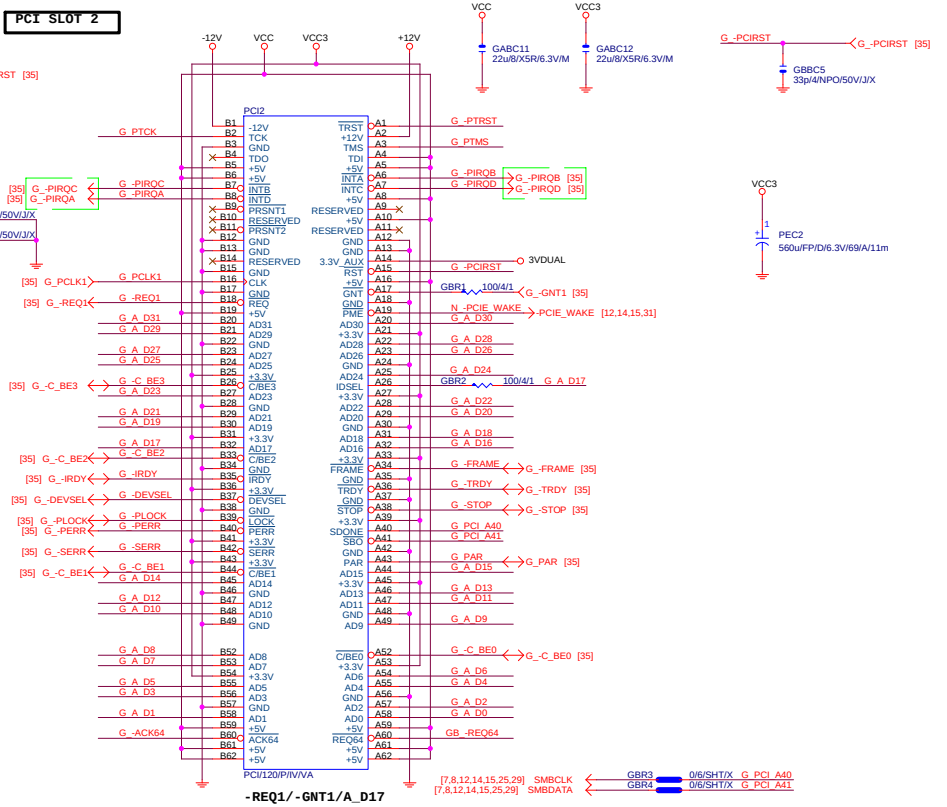

PCIE*4
PCIEX4
3GIO_*4
KEY
PCI-E/16X-65P/BU/RIGHT PUSH
PCIE*1
PCIEX1_1
3GIO_X1
PCIEX1_2
PCI-E/1X-36P/WH/OL
+12V
3VDUAL
VCC3
-PCIE_RST
C24
22p/4/NPO/50V/J/X
C206
C207
BC265
0.1u/4/X7R/16V/K
BC37
1u/4/X5R/6.3V/K/X
BC29
BC28
BC33
BC40
PBC57
PBC56
PBC47
PBC48
PBC58
PBC55
PBC60
PBC61
Gigabyte Technology
PCI EXPRESS X 4 PORT
GA-Z77-DS3H
1.0
Wednesday, March 28, 2012

PCI SLOT 1



PCI SLOT 2



Title	PCI SLOT 1&2		
Size: Custom	Document Number: GA-Z77-DS3H		Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 16 of 35		

HI FOR PCH ERP
LO FOR IO ERP

IT8728F(GB)

U1

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

	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.

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

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

Hi :Disable WDT
Lo :Enable WDT to rest PWROK

Title	ITE 8728 LPC IO
Size	Custom
Document Number	GA-Z77-DS3H
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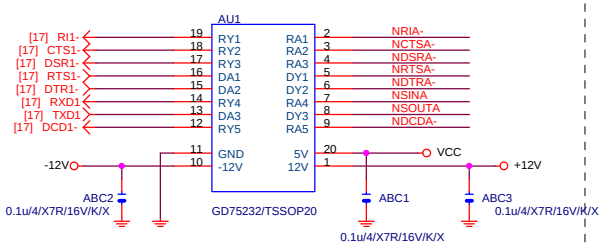
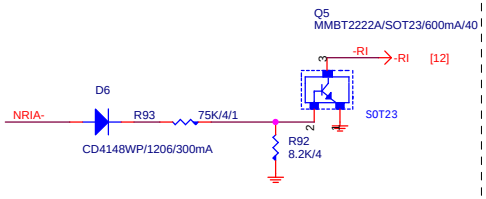
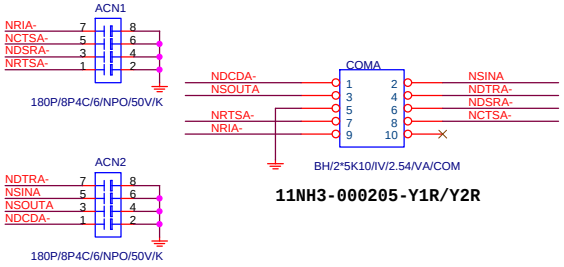
Gigabyte Technology

COMA



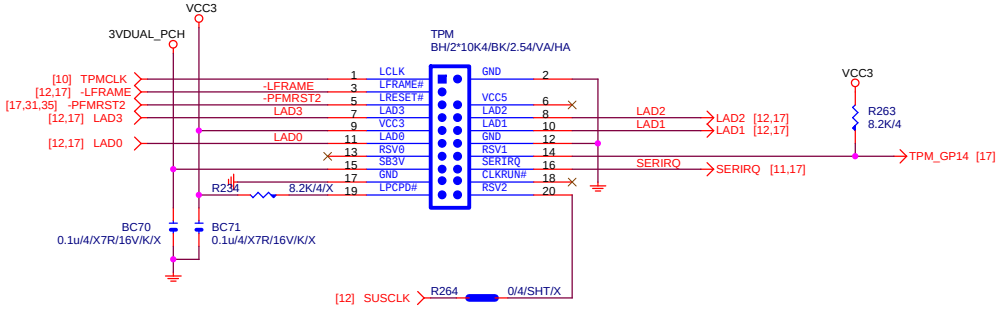
COM RI



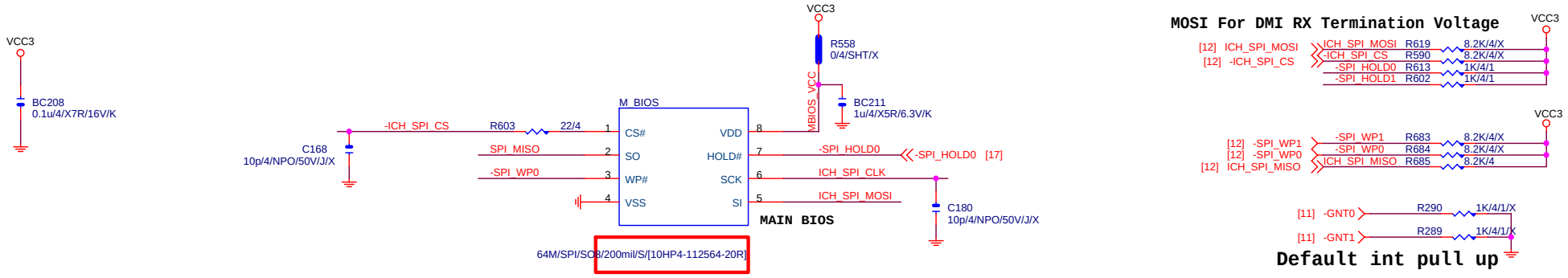


LPT PORT

TPM



Gigabyte Technology		
Title: COM & Print		
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 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-Z77-DS3H	Rev: 1.0
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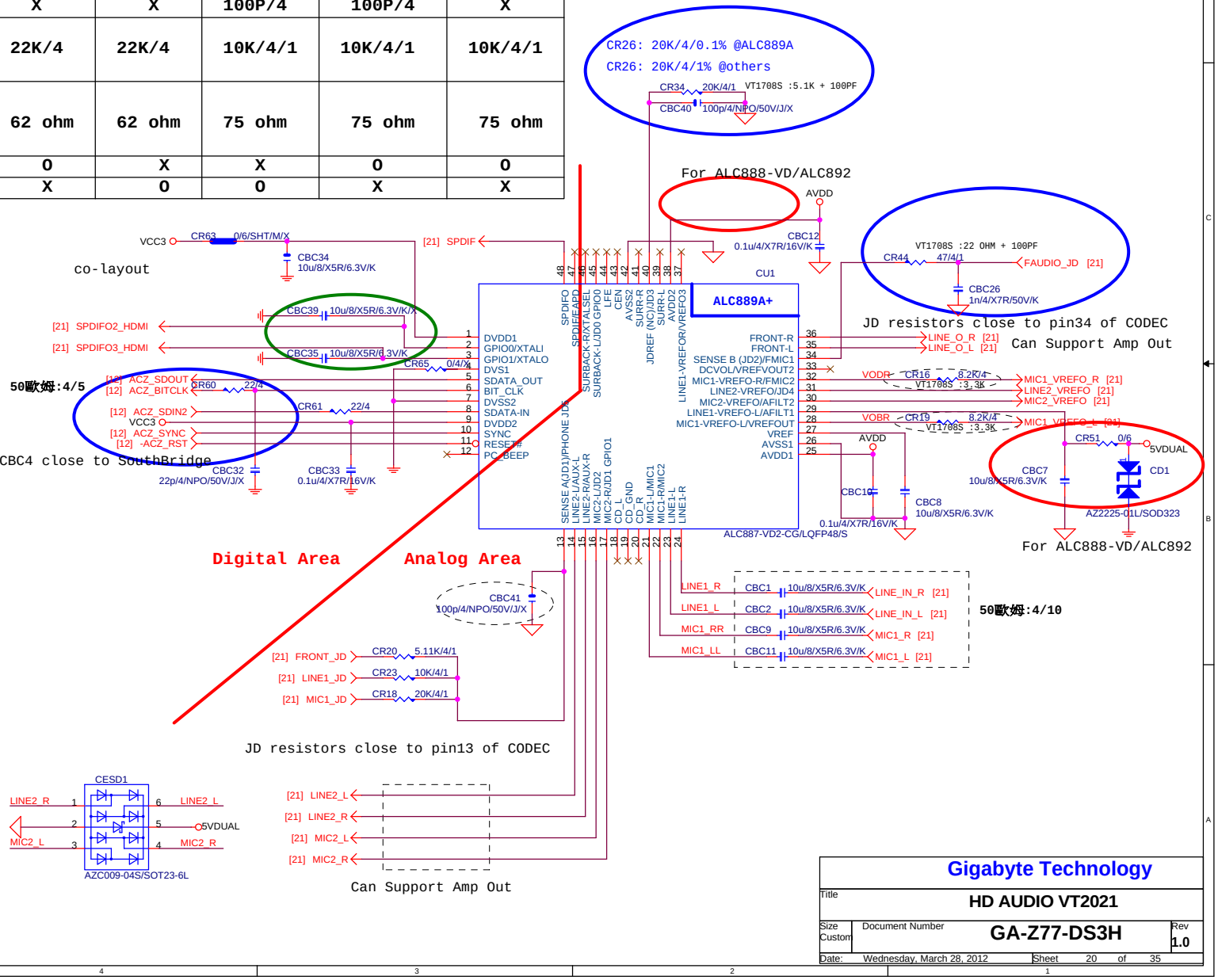
AZALIA CODEC

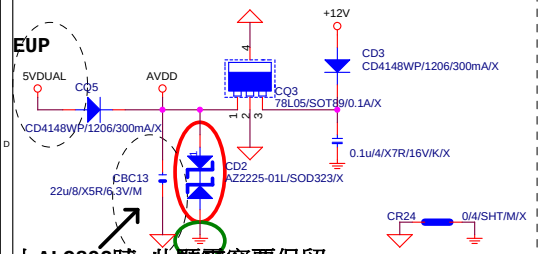
ALC887-VD2/ALC889/VT1708S/VT1708SCE/VT2021 Colay

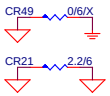
	ALC662	ALC887-VD2	ALC889	VT1708S-CD	VT1708S-CE	VT2021
CR65	X	X	0	0	X	0
CBC35	0	0	X	X	0	X
CR44/CBC26	47ohm+1nF	47ohm+1nF	47ohm+1nF	22ohm+100P	22ohm+100P	47ohm+1nF
CR31	X	0	0	0	0	0
CR30	0	X	X	X	X	X
CBC1/CBC2	10uF/X5R	10uF/X5R	22uF/X5R	10uF/X5R	10uF/X5R	10uF/X5R
CR20	5.11K/4/1	5.11K/4/1	5.11K/4/1	5.1K/4/1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



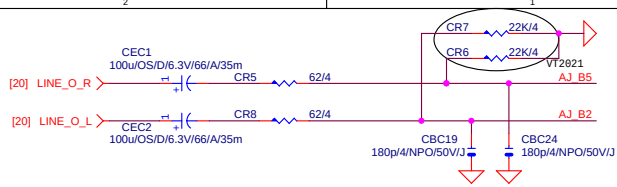
Gigabyte Technology		
Title	HD AUDIO VT2021	
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 20 of 35	

CODEC POWER/EMI PAD



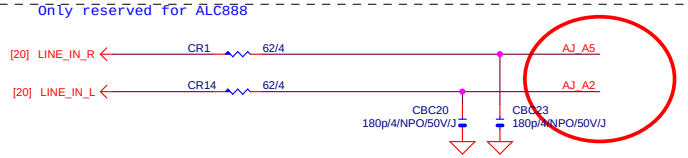


LINE-OUT



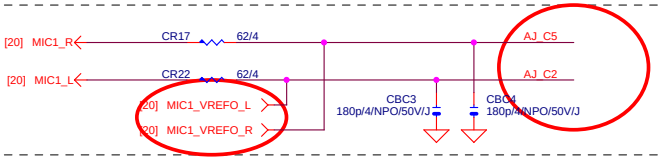
Only reserved for ALC888

LINE-IN

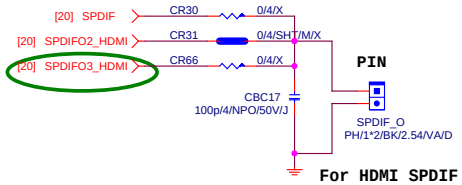


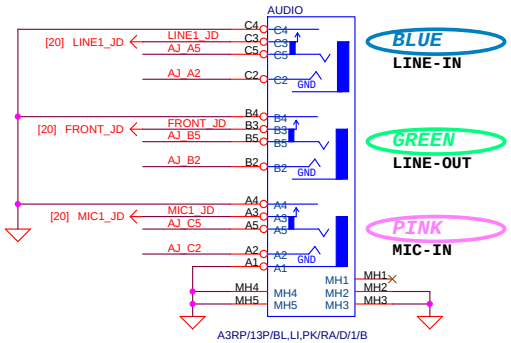
Verify MIC function in LINE-in

MIC-IN

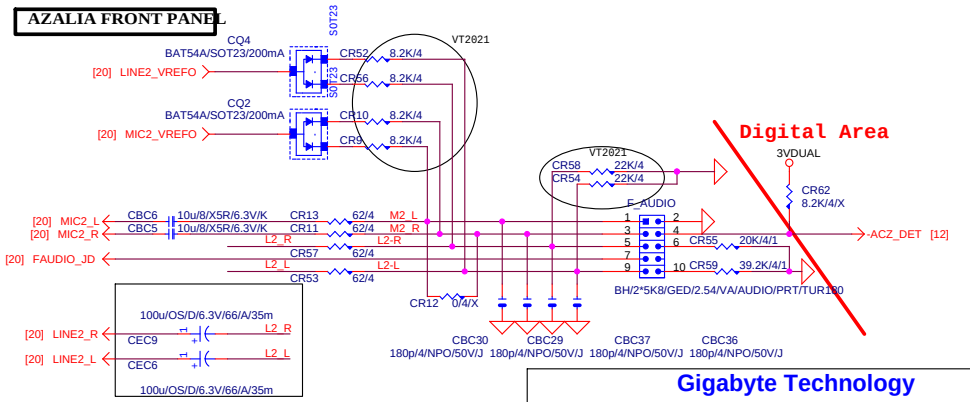


SPDIF_OUT

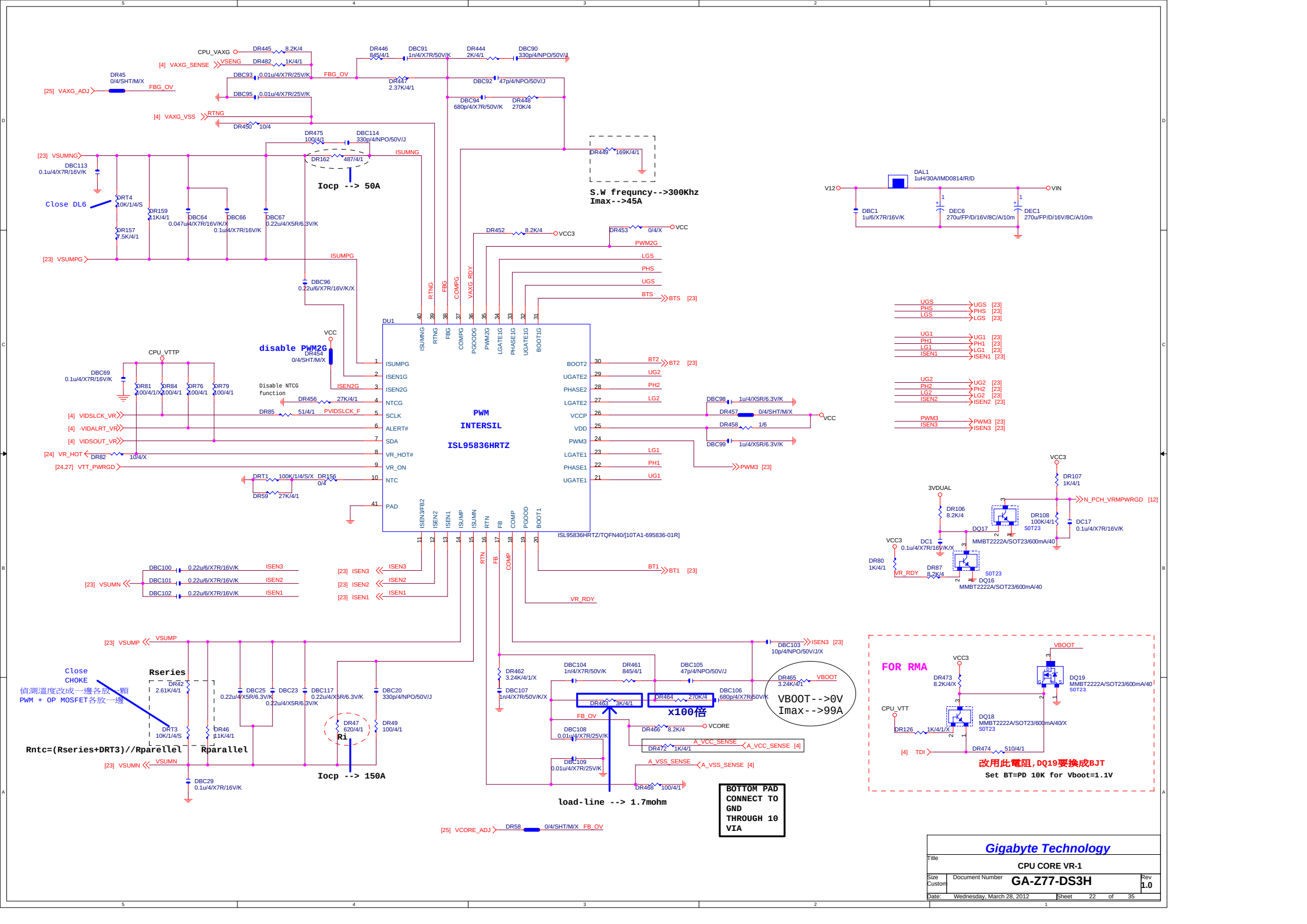




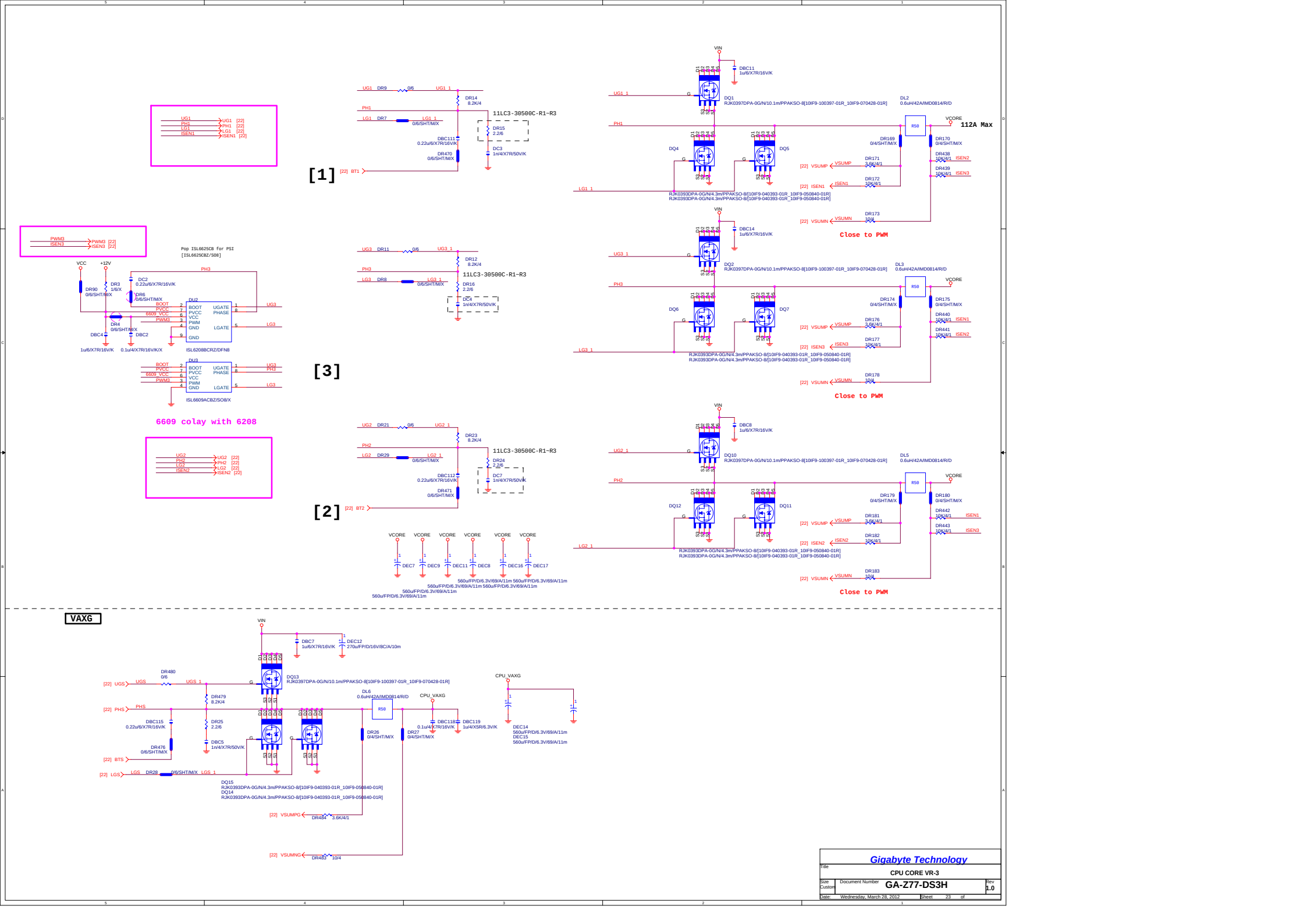
AZALIA FRONT PANEL



Gigabyte Technology		
Title: AUDIO JACK		
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 21 of 35	



Gigabyte Technology			
Title	CPU CORE VR-1		
Size: Custom	Document Number: GA-Z77-DS3H		Rev: 1.0
Date: Wednesday, March 28, 2012		Sheet 22 of 35	


UG1 [22]
PH1 [22]
LG1 [22]
ISEN1 [22]
[1]
11LC3-30500C-R1-R3
DR14 8.2K/4
DR15 2.2/6
DR3 1/6/X
DR6 0/6/SHT/M/X
DR4 0/6/SHT/M/X
DC2 0.22u/6/X7R/16V/K
DBC4 1u/6/X7R/16V/K
DBC2 0.1u/4/X7R/16V/K/X
ISL6208BCRZ/DFN8
[3]
ISL6609ACBZ/SO8/X
6609 colay with 6208
[2]
DBC11 1u/6/X7R/16V/K
DBC14 1u/6/X7R/16V/K
DBC8 1u/6/X7R/16V/K
DBC7 1u/6/X7R/16V/K
DEC12 270u/FP/D/16V/8C/A/10m
DQ1 RJK0397DPA-0G/N/10.1m/PPAKSO-8[10IF9-100397-01R_10IF9-070428-01R]
DQ2 RJK0397DPA-0G/N/10.1m/PPAKSO-8[10IF9-100397-01R_10IF9-070428-01R]
DQ10 RJK0397DPA-0G/N/10.1m/PPAKSO-8[10IF9-100397-01R_10IF9-070428-01R]
DQ13 RJK0397DPA-0G/N/10.1m/PPAKSO-8[10IF9-100397-01R_10IF9-070428-01R]
DL2 0.6uH/42A/IMD0814/R/D
DL3 0.6uH/42A/IMD0814/R/D
DL5 0.6uH/42A/IMD0814/R/D
DL6 0.6uH/42A/IMD0814/R/D
DQ4
DQ5
DQ6
DQ7
DQ12
DQ11
RJK0393DPA-0G/N/4.3m/PPAKSO-8[10IF9-040393-01R_10IF9-050840-01R]
RJK0393DPA-0G/N/4.3m/PPAKSO-8[10IF9-040393-01R_10IF9-050840-01R]
DR169 0/4/SHT/M/X
DR170 0/4/SHT/M/X
DR171 3.6K/4/1
DR172 10K/4/1
DR438 10K/4/1
DR439 10K/4/1
DR173 10/4
DR174 0/4/SHT/M/X
DR175 0/4/SHT/M/X
DR176 3.6K/4/1
DR177 10K/4/1
DR440 10K/4/1
DR441 10K/4/1
DR178 10/4
DR179 0/4/SHT/M/X
DR180 0/4/SHT/M/X
DR181 3.6K/4/1
DR182 10K/4/1
DR442 10K/4/1
DR443 10K/4/1
DR183 10/4
R50
VCORE
112A Max
Close to PWM
Close to PWM
Close to PWM
VAX6
DR480 0/6
DR479 8.2K/4
DR25 2.2/6
DR476 0/6/SHT/M/X
DR28 0/6/SHT/M/X
DBC115 0.22u/6/X7R/16V/K
DBC5 1n/4/X7R/50V/K
DR26 0/4/SHT/M/X
DR27 0/4/SHT/M/X
DBC118 0.1u/4/X7R/16V/K
DBC119 1u/4/X5R/6.3V/K
DEC14 560u/FP/D/6.3V/69/A/11m
DEC15 560u/FP/D/6.3V/69/A/11m
DR484 3.6K/4/1
DR483 10/4
DQ14 RJK0393DPA-0G/N/4.3m/PPAKSO-8[10IF9-040393-01R_10IF9-050840-01R]
DQ15 RJK0393DPA-0G/N/4.3m/PPAKSO-8[10IF9-040393-01R_10IF9-050840-01R]
CPU_VAXG
Gigabyte Technology
CPU CORE VR-3
GA-Z77-DS3H
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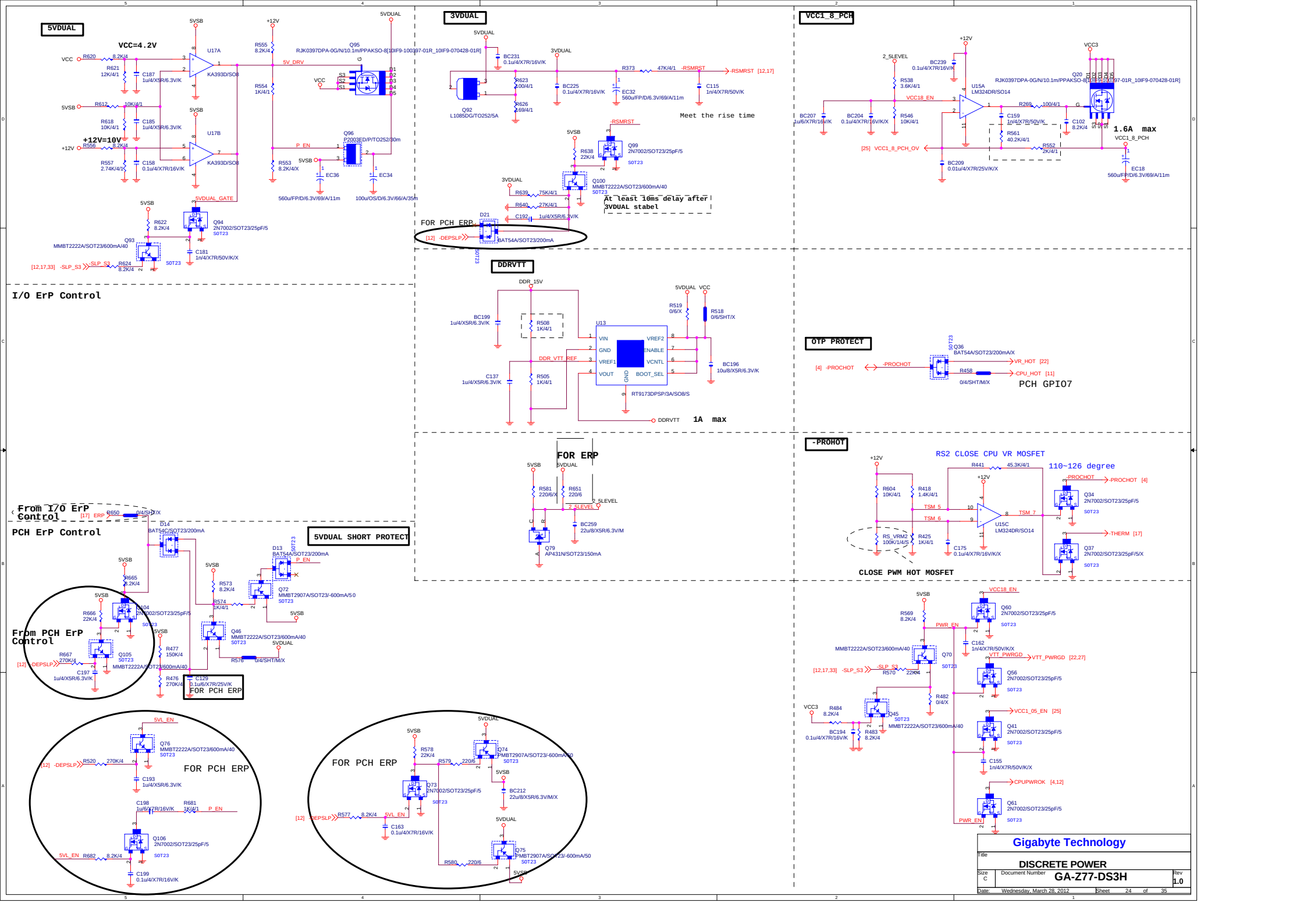
5VDUAL
VCC=4.2V
+12V=10V
5VDUAL_GATE
I/O ErP Control
3VDUAL
Meet the rise time
At least 10ms delay after 3VDUAL stabel
FOR PCH ERP
VCC1_8_PCH
1.6A max
DDRVTT
1A max
OTP PROTECT
PCH GPIO7
FOR ERP
-PROHOT
RS2 CLOSE CPU VR MOSFET
110~126 degree
CLOSE PWM HOT MOSFET
From I/O ErP Control
PCH ErP Control
5VDUAL SHORT PROTECT
From PCH ErP Control
Gigabyte Technology
DISCRETE POWER
GA-Z77-DS3H
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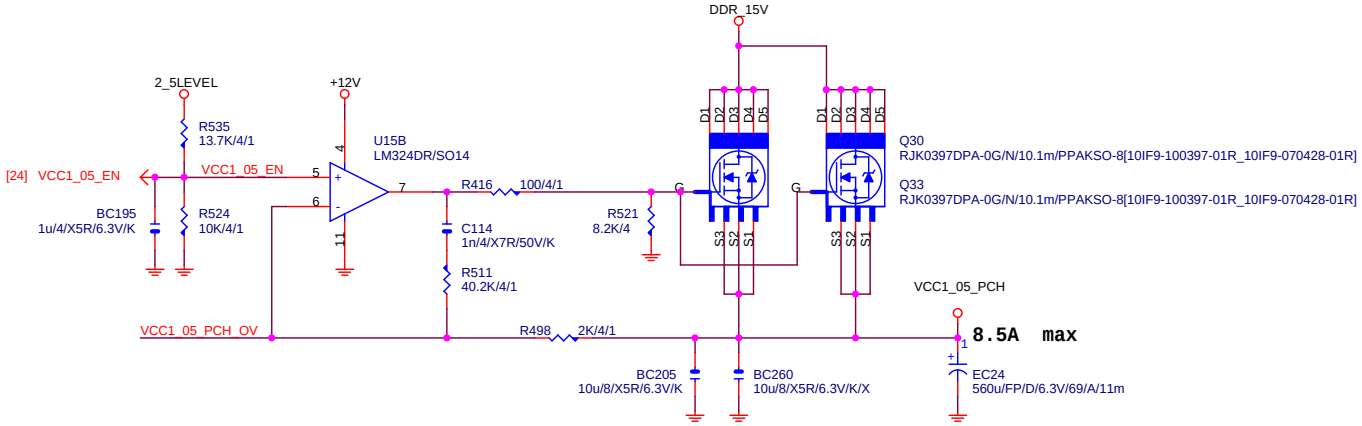
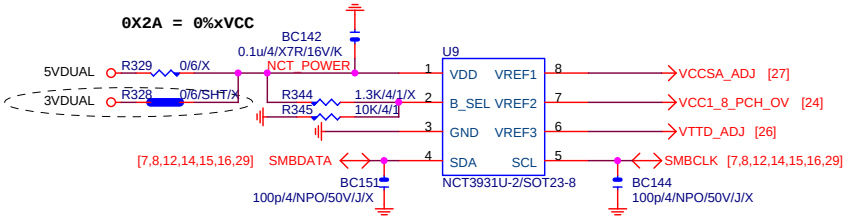
VCC1_05_PCH

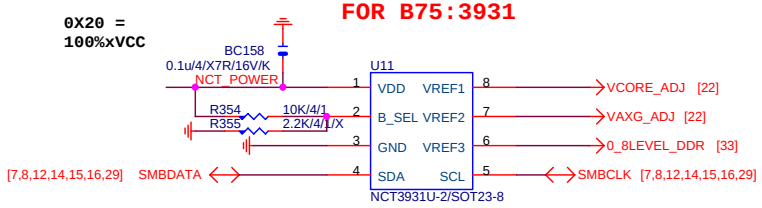


Voltage console

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-Z77-DS3H | Rev: 1.0

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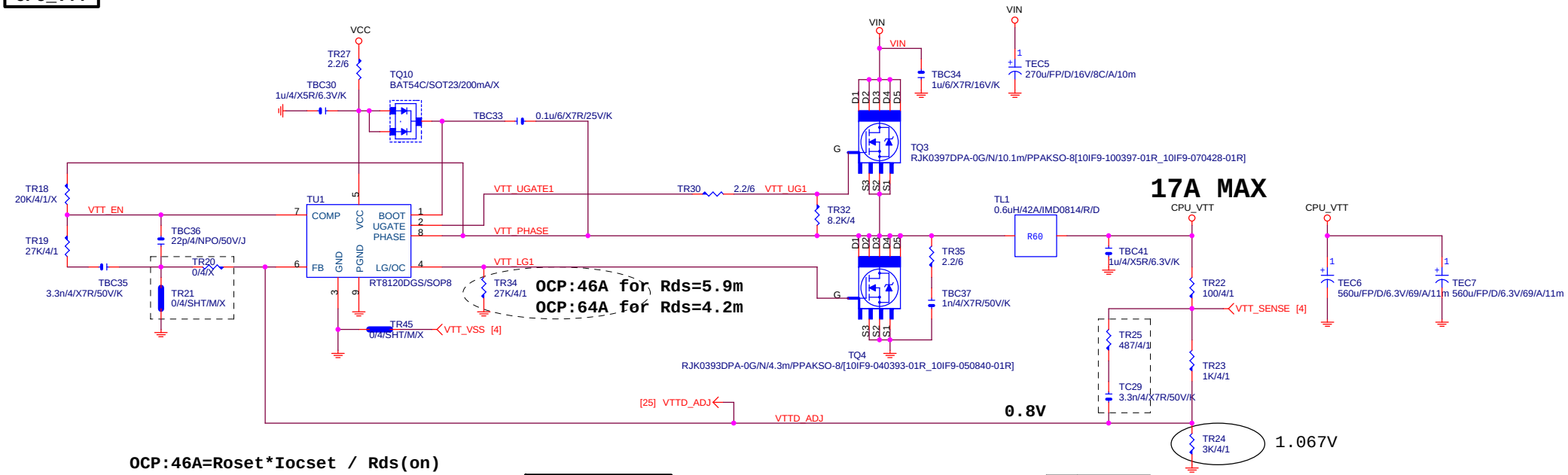
CPU_VTT

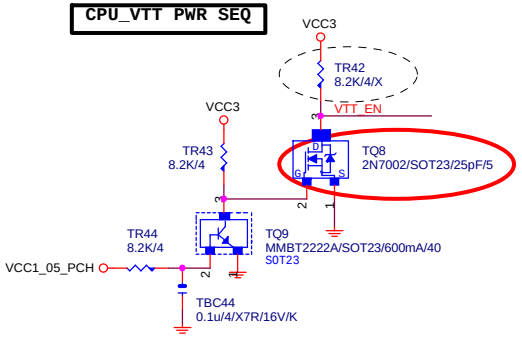


OCP:46A=Roset*Iocset / Rds(on)
=27K*10uA / 5.9m

	VTT_SEL
HI	1.05V
LO	1.0V

According intel CDI/IBP#476733,固定1.05V

CPU_VTT PWR SEQ



GIGABYTE

Title: RT8120_CPU_VTT		
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
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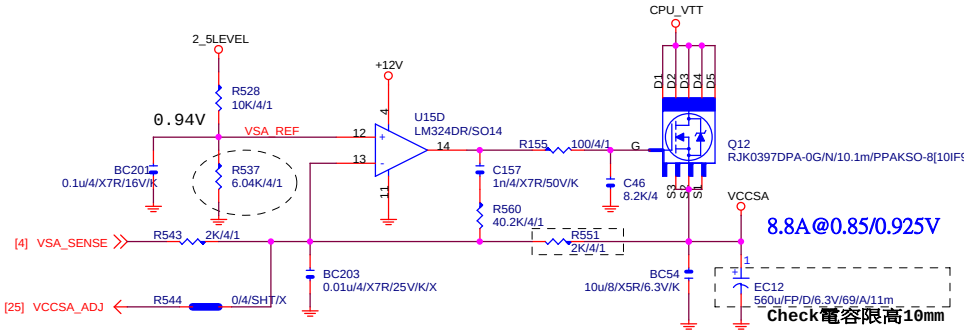
VCC_SA

Check電容限高10mm

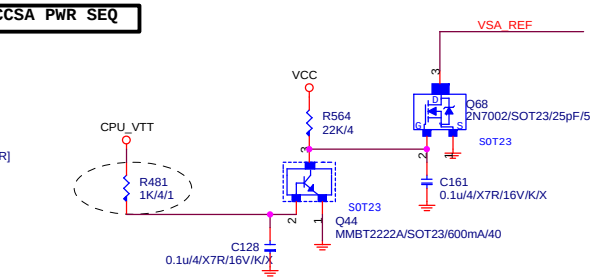


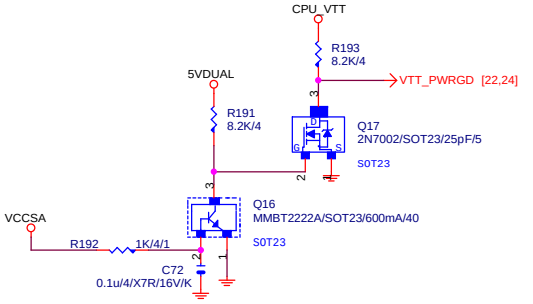
PDG 1.01

	VSA_SEL
HI	0.85V
LO	0.925V

According intel
CDI/IBP#476733,固定0.925V

VCCSA PWR SEQ

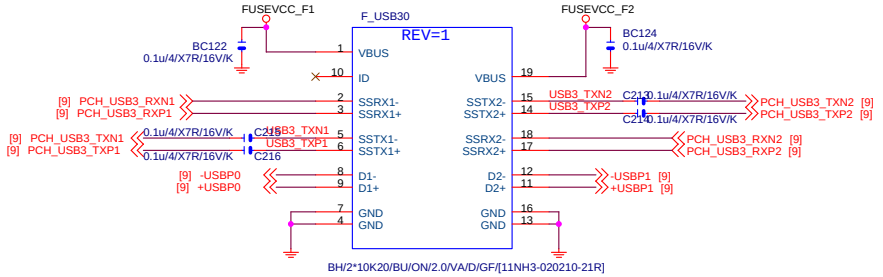




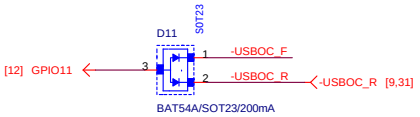
Gigabyte Technology

Title	VCCSA POWER	
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 27 of 35	

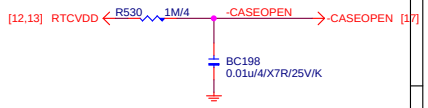
FRONT USB1

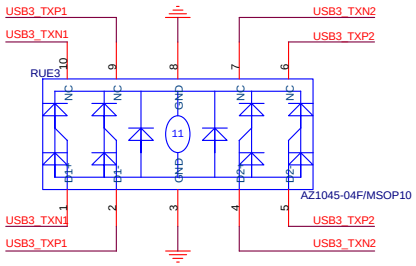


F_USB POWER PROTECT

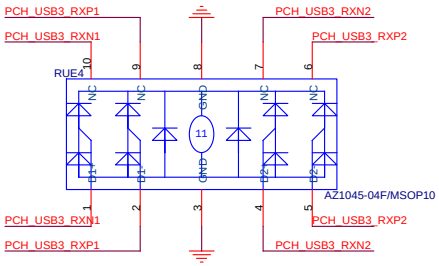


CASE OPEN

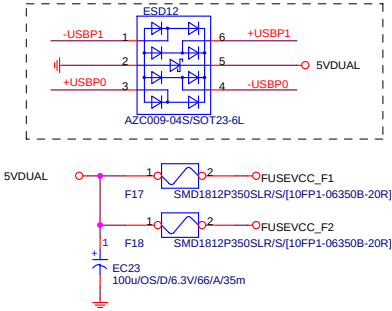




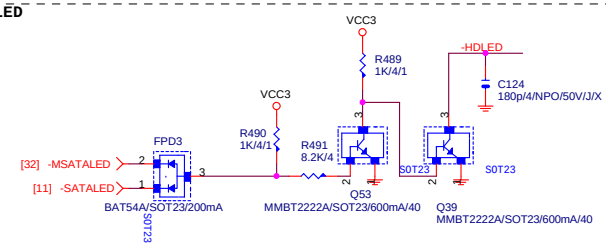
ESD Close to connector



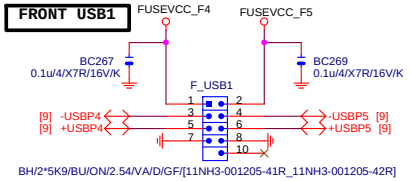
ESD Close to connector



SATA LED

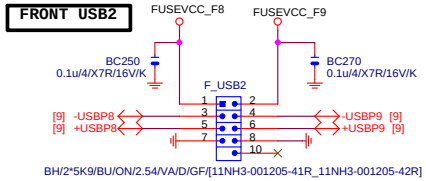


FRONT USB1

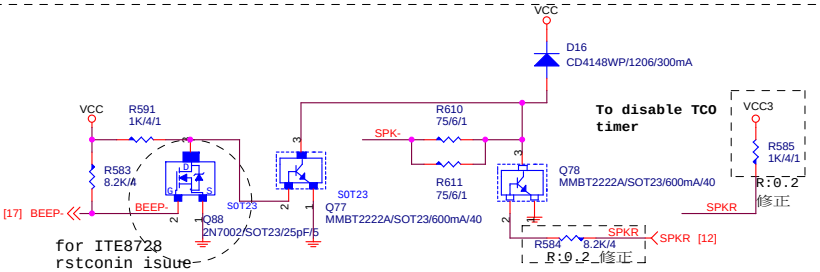


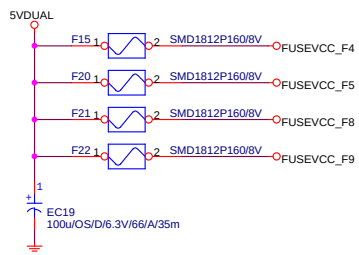
ESD Close to connector

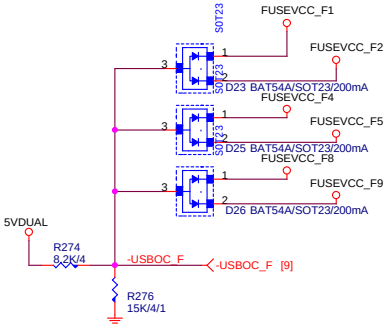
FRONT USB2



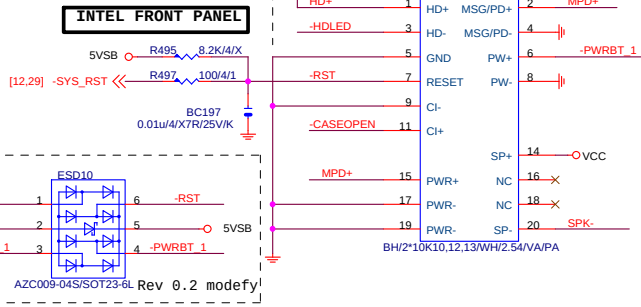
ESD Close to connector

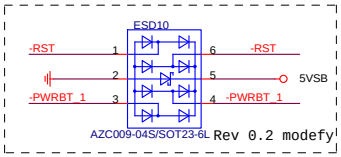


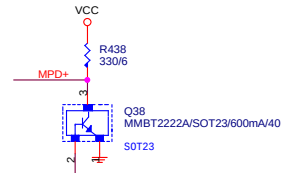




INTEL FRONT PANEL







Gigabyte Technology			
Title: FP,F_USB,USB PWR,FDD,BZ			
Size: Custom	Document Number: GA-Z77-DS3H		Rev: 1.0
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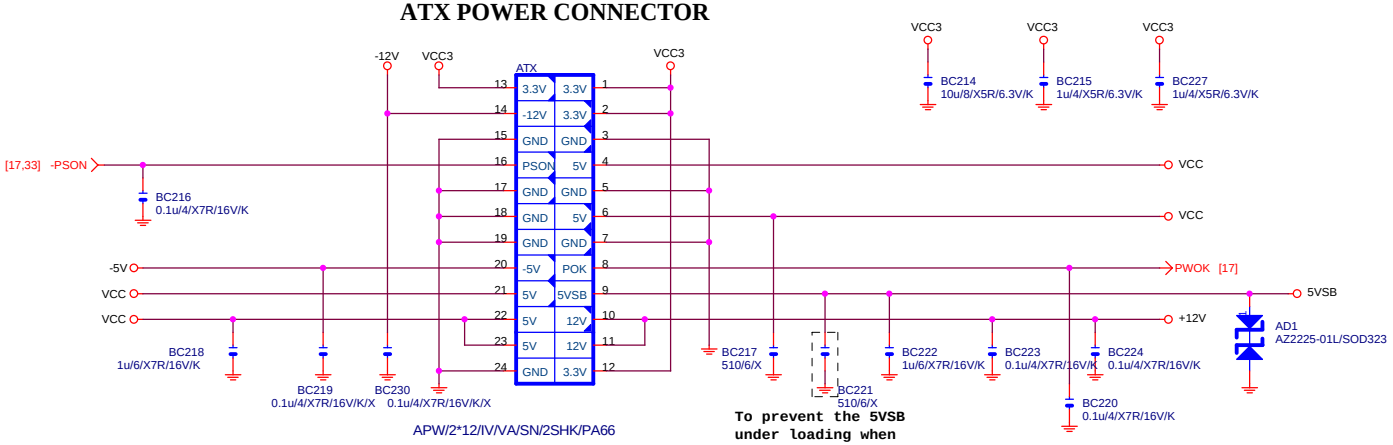
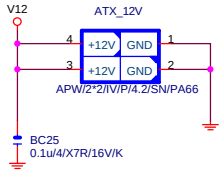
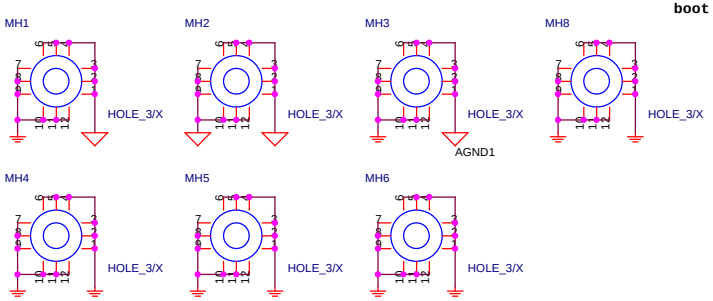
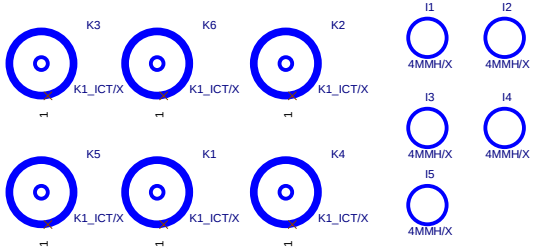
ATX POWER CONNECTOR

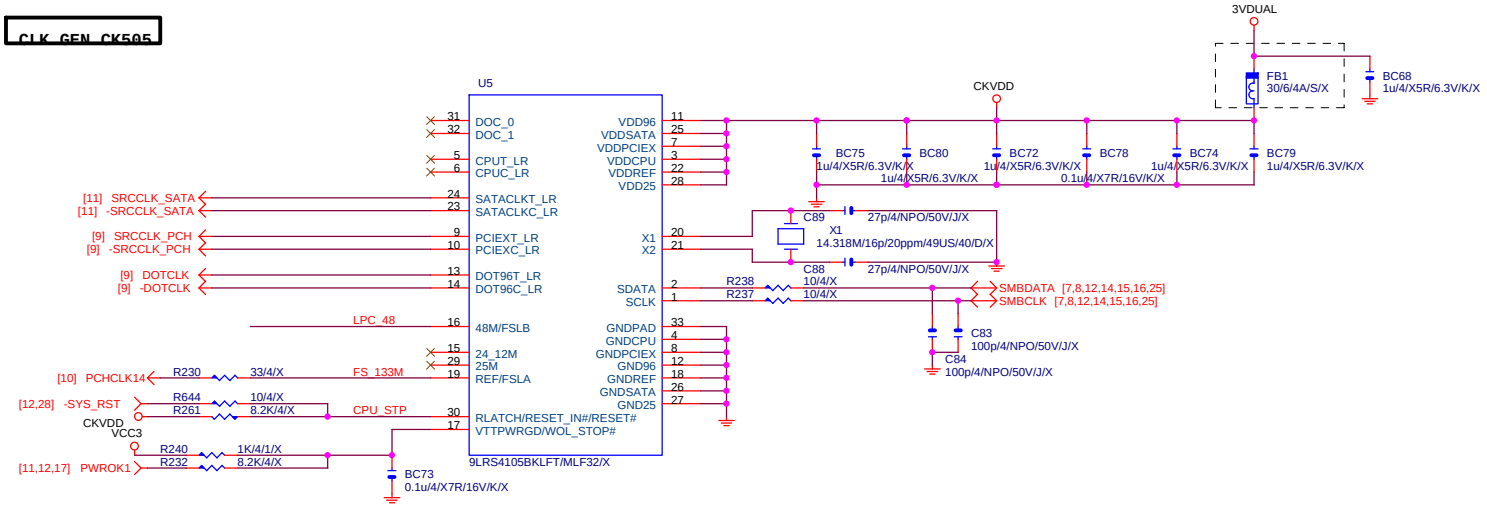


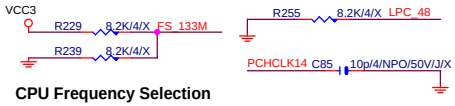






CLK_GEN_CK505





CPU Frequency Selection

FS	CPU
0	100M <Default>
1	133M

Gigabyte Technology

Title: ATX POWER CONNECTOR

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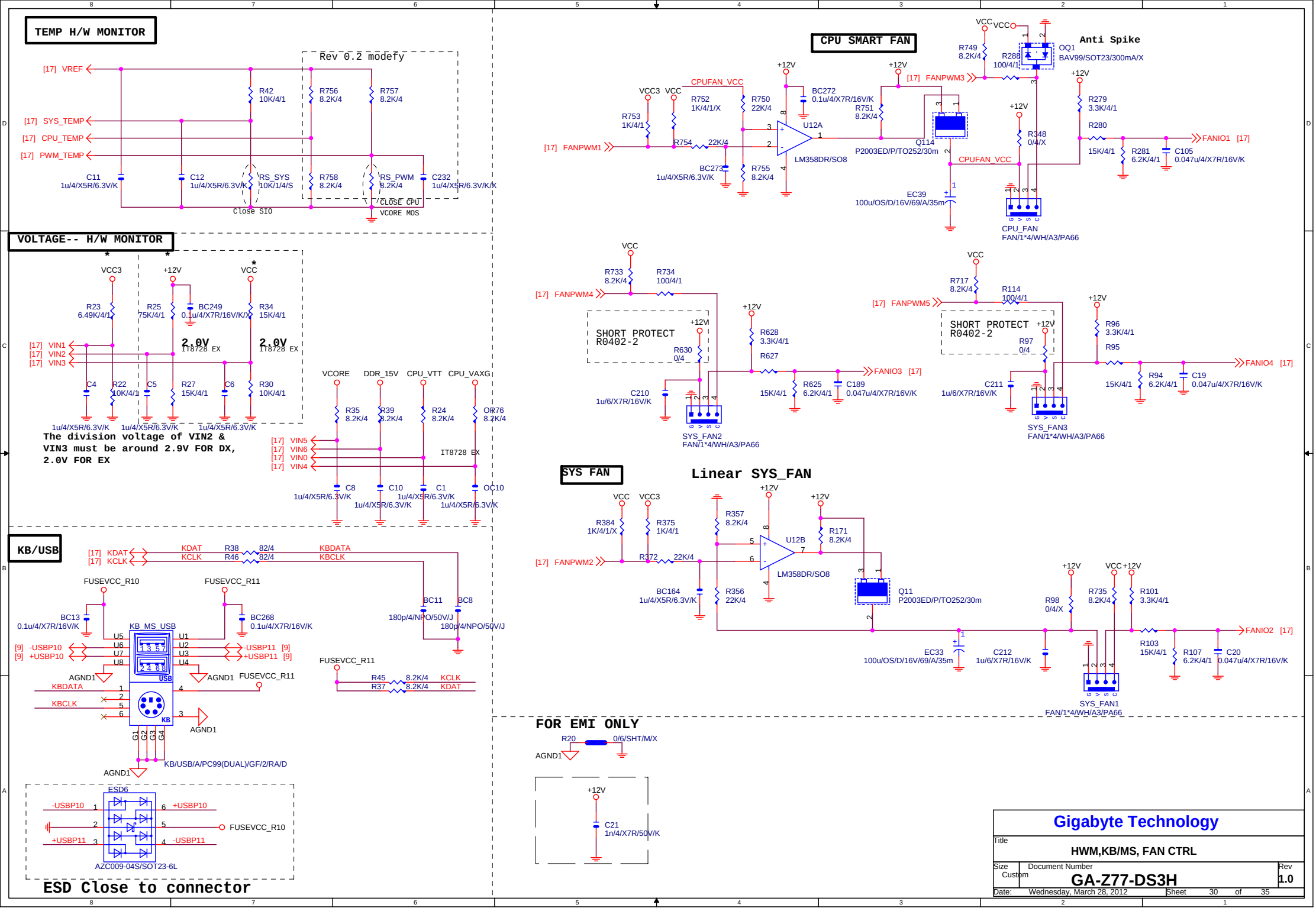
TEMP H/W MONITOR
Rev 0.2 modefy
[17] VREF
[17] SYS_TEMP
[17] CPU_TEMP
[17] PWM_TEMP
R42 10K/4/1
R756 8.2K/4
R757 8.2K/4
C11 1u/4/X5R/6.3V/K
C12 1u/4/X5R/6.3V/K
RS_SYS 10K/1/4/S
R758 8.2K/4
RS_PWM 8.2K/4
C232 1u/4/X5R/6.3V/K/K
Close SIO
CLOSE CPU VCORE MOS
VOLTAGE-- H/W MONITOR
VCC3
+12V
VCC
R23 6.49K/4/1
R25 75K/4/1
BC249 0.1u/4/X7R/16V/K/X
R34 15K/4/1
[17] VIN1
[17] VIN2
[17] VIN3
2.0V
IT8728 EX
2.0V
IT8728 EX
C4
R22 10K/4/1
C5
R27 15K/4/1
C6
R30 10K/4/1
1u/4/X5R/6.3V/K
1u/4/X5R/6.3V/K
1u/4/X5R/6.3V/K
The division voltage of VIN2 & VIN3 must be around 2.9V FOR DX, 2.0V FOR EX
VCORE
DDR_15V
CPU_VTT
CPU_VAXG
R35 8.2K/4
R39 8.2K/4
R24 8.2K/4
OR76 8.2K/4
[17] VIN5
[17] VIN6
[17] VIN0
[17] VIN4
IT8728 EX
C8 1u/4/X5R/6.3V/K
C10 1u/4/X5R/6.3V/K
C1 1u/4/X5R/6.3V/K
OC10 1u/4/X5R/6.3V/K
KB/USB
[17] KDAT
[17] KCLK
KDAT
KCLK
R38 82/4
R46 82/4
KBDATA
KBCLK
FUSEVCC_R10
FUSEVCC_R11
BC13 0.1u/4/X7R/16V/K
BC268 0.1u/4/X7R/16V/K
BC11 180p/4/NPO/50V/J
BC8 180p/4/NPO/50V/J
KB_MS_USB
[9] -USBP10
[9] +USBP10
-USBP11 [9]
+USBP11 [9]
AGND1
R45 8.2K/4 KCLK
R37 8.2K/4 KDAT
KB/USB/A/PC99(DUAL)/GF/2/RA/D
ESD6
-USBP10
+USBP10
+USBP11
-USBP11
AZC009-04S/SOT23-6L
ESD Close to connector
CPU SMART FAN
Anti Spike
OQ1 BAV99/SOT23/300mA/X
R749 8.2K/4
R288 100/4/1
[17] FANPWM3
CPUFAN_VCC
R752 1K/4/1/X
R750 22K/4
R753 1K/4/1
R754 22K/4
[17] FANPWM1
BC272 0.1u/4/X7R/16V/K
R751 8.2K/4
U12A
LM358DR/SO8
Q114 P2003ED/P/TO252/30m
BC273 1u/4/X5R/6.3V/K
R755 8.2K/4
EC39 100u/OS/D/16V/69/A/35m
R348 0/4/X
R279 3.3K/4/1
R280 15K/4/1
R281 6.2K/4/1
C105 0.047u/4/X7R/16V/K
FANIO1 [17]
CPU_FAN
FAN/1*4/WH/A3/PA66
[17] FANPWM4
R733 8.2K/4
R734 100/4/1
SHORT PROTECT R0402-2
R630 0/4
R628 3.3K/4/1
R627
C210 1u/6/X7R/16V/K
R625 15K/4/1
C189 0.047u/4/X7R/16V/K
FANIO3 [17]
SYS_FAN2
FAN/1*4/WH/A3/PA66
[17] FANPWM5
R717 8.2K/4
R114 100/4/1
SHORT PROTECT R0402-2
R97 0/4
R96 3.3K/4/1
R95
C211 1u/6/X7R/16V/K
R94 15K/4/1
C19 0.047u/4/X7R/16V/K
FANIO4 [17]
SYS_FAN3
FAN/1*4/WH/A3/PA66
SYS FAN
Linear SYS_FAN
[17] FANPWM2
R384 1K/4/1/X
R375 1K/4/1
R372 22K/4
R357 8.2K/4
U12B
LM358DR/SO8
R171 8.2K/4
BC164 1u/4/X5R/6.3V/K
R356 22K/4
Q11 P2003ED/P/TO252/30m
EC33 100u/OS/D/16V/69/A/35m
C212 1u/6/X7R/16V/K
R98 0/4/X
R735 8.2K/4
R101 3.3K/4/1
R103 15K/4/1
R107 6.2K/4/1
C20 0.047u/4/X7R/16V/K
FANIO2 [17]
SYS_FAN1
FAN/1*4/WH/A3/PA66
FOR EMI ONLY
R20 0/6/SHT/M/X
AGND1
C21 1n/4/X7R/50V/K
Gigabyte Technology
Title
HWM,KB/MS, FAN CTRL
Size Custom
Document Number
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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]

LA_SRCCLK_LAN
LA_SRCCLK_LAN
LA_ML_OP
LA_ML_ON
LAC1
LAC2
LA_ML_OP_C
LA_ML_ON_C
0.1u/4/X7R/16V/K

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

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

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

LAU1
EGND
LX
LED1
LED0
DVDDL_REG
RX_N
RX_P
AVDDL
REFCLKP
REFCLKN
AVDDLAC
LA_LX
LA_LED_LINK100
LA_LED_ACT_TXRX
LA_DVDDL
LA_AVDDVCO
LA_AVDDL

LA_ML-->80歐姆:[15/5/5/5/15]

離IC近越好

LA_ML_IP_C LAC12 0.1u/4/X7R/16V/K LA_ML_IP [9]
LA_ML_IN_C LAC13 0.1u/4/X7R/16V/K LA_ML_IN [9]

3VDUAL
LAR6 8.2K/4
LABC12 1u/4/X5R/6.3V/K
LAC33 100p/4/NPO/50V/J/X
[17,18,35] -PFMRST2
[12,14,15,16] -PCIE_WAKE
AR8161-->N/A (LABC12)

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

Atheros
AR8151/AR8161

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

LA_PPS
LA_LED_LINK1000
LA_AVDDH
LA_MDI3-

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

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

LA_CLKREQ
LA_VDDCT
LA_AVDDL
LA_XTALO
LA_XTALI
LA_AVDDH

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

TRXP0
TRXN0
AVDDL/NC
TRXP1
TRXN1
AVDDH/AVDD33
TRXP2
TRXN2
AVDDL
TRXP3

LA_MDI0+
LA_MDI0-
LA_AVDDL
LA_MDI1+
LA_MDI1-
LA_AVDDH
LA_MDI2+
LA_MDI2-
LA_AVDDL
LA_MDI3+
LA_MDI3-

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

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

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

LABC20 0.1u/4/X7R/16V/K
AR8161-->N/A (LABC20)
LABC21 0.1u/4/X7R/16V/K
LAR19 0/4/X
LAR20 0/4/SHT/M/X
3VDUAL
LA_AVDDH
AR8151:LA_AVDDH(LAR20)
AR8161:3VDUAL(LAR19)
LABC22 1u/4/X5R/6.3V/K

LAN POWER

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

LAL1 4.7uH/1A/[10LC4-5A470B-01R]
LA_LX_OUT
LA_LX
CLOSE LA_LX 200mil
LABC1 10u/8/X5R/6.3V/K
LABC2 0.1u/4/X7R/16V/K

LAR3 LA_VDDCT 0/4/SHT/M/X
LAR4 LA_AVDD_CEN 0/4/SHT/M/X
AR8161-->N/A (LAR3,LAR4)
AR8151 POWER

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

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

AR8161-->(0)
VCC3
LAR1 30K/4/X
LAR2 0/4/X
LA_VDDCT
ISOLATEB [17]

Power domain chart

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

MDI : AR8161-->N/A

LA_MDI0+ LA_MDI0- LAR11 49.9/4/1 LA_MDI_RC0 LAC26 0.1u/4/X7R/16V/K
LA_MDI1+ LA_MDI1- LAR12 LAR13 49.9/4/1 LA_MDI_RC1 LAC27 0.1u/4/X7R/16V/K
LA_MDI2+ LA_MDI2- LAR14 LAR15 49.9/4/1 LA_MDI_RC2 LAC28 0.1u/4/X7R/16V/K
LA_MDI3+ LA_MDI3- LAR16 LAR17 LAR18 49.9/4/1 LA_MDI_RC3 LAC29 0.1u/4/X7R/16V/K

CLOSE LAN CHIP

USB30_LAN CONNECTOR

100歐姆:[20/4/8/4/20]

ESD7
-USBP13
+USBP12
+USBP13
-USBP12
FUSEVCC_R13
AZC009-04S/SOT23-6L

LAESD1
LA_LED_LINK100
LA_LED_ACT_TXRX
LAN_3VDUAL_LED
LA_LED_LINK1000
LA_LED_D2
AZC009-04S/SOT23-6L

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

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

UP
DOWN

LA_LED_ACT_TXRX
LA_LED_D2
LAR21 150/6
LAN_3VDUAL_LED
LA_LED_LINK100
LAR22 150/6
LA_LED_LINK1000
LAR23 150/6

3VDUAL
LAFB1 0/6/SHT/M/X
LABC24 0.1u/4/X7R/16V/K/X
FUSEVCC_R12
LBC6 0.1u/4/X7R/16V/K
-USBP12 [9]
+USBP12 [9]
FUSEVCC_R13
LBC27 0.1u/4/X7R/16V/K
-USBP13 [9]
+USBP13 [9]

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

FUSEVCC_R3
BC5 0.1u/4/X7R/16V/K
-USBP2
+USBP2
-USBP3
+USBP3
FUSEVCC_R4
BC9 0.1u/4/X7R/16V/K

[9] PCH_USB3_RXN3
[9] PCH_USB3_RXP3
[9] PCH_USB3_TXN3
[9] PCH_USB3_TXP3
UC3 0.1u/4/X7R/16V/K USB3_TXN3
UC4 0.1u/4/X7R/16V/K USB3_TXP3
PCH_USB3_RXN4 [9]
PCH_USB3_RXP4 [9]
USB3_TXN4 UC2 0.1u/4/X7R/16V/K PCH_USB3_TXN4 [9]
USB3_TXP4 UC1 0.1u/4/X7R/16V/K PCH_USB3_TXP4 [9]

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]

USB3_TXN4
USB3_TXP4
USB3_TXP3
USB3_TXN3
RUE2
AZ1045-04F/MSOP10

PCH_USB3_RXP4
PCH_USB3_RXN4
PCH_USB3_RXN3
PCH_USB3_RXP3
RUE1
AZ1045-04F/MSOP10

[9] -USBP2
[9] +USBP2
[9] -USBP3
[9] +USBP3
ESD3
+USBP3
-USBP2
-USBP3
+USBP2
FUSEVCC_R4
AZC009-04S/SOT23-6L

Close to connector

SOT23
FUSEVCC_R10
FUSEVCC_R11
D27 BAT54A/SOT23/200mA
FUSEVCC_R13
FUSEVCC_R12
D24 BAT54A/SOT23/200mA
FUSEVCC_R4
FUSEVCC_R3
D1 BAT54A/SOT23/200mA

5VDUAL
R60 8.2K/4
USBOC_R
-USBOC_R [9,28]
R72 15K/4/1

5VDUAL
EC38 100u/OS/D/6.3V/66/A/35m
F23 SMD1812P160/8V FUSEVCC_R10
F24 SMD1812P160/8V FUSEVCC_R11
F5 SMD1812P160/8V FUSEVCC_R12
F19 SMD1812P160/8V FUSEVCC_R13

5VDUAL
F1 SMD1812P350SLR/S/[10FP1-06350B-20R] FUSEVCC_R3
F16 SMD1812P350SLR/S/[10FP1-06350B-20R] FUSEVCC_R4
EC3 100u/OS/D/6.3V/66/A/35m

CR50 0/6/X
LR15 0/6/SHT/M/X
LR3 0/6/SHT/M/X

Close to connector

Gigabyte Technology

Title: ARTHEROS AR8161/AR8151

Size: Custom | Document Number: GA-Z77-DS3H | Rev: 1.0

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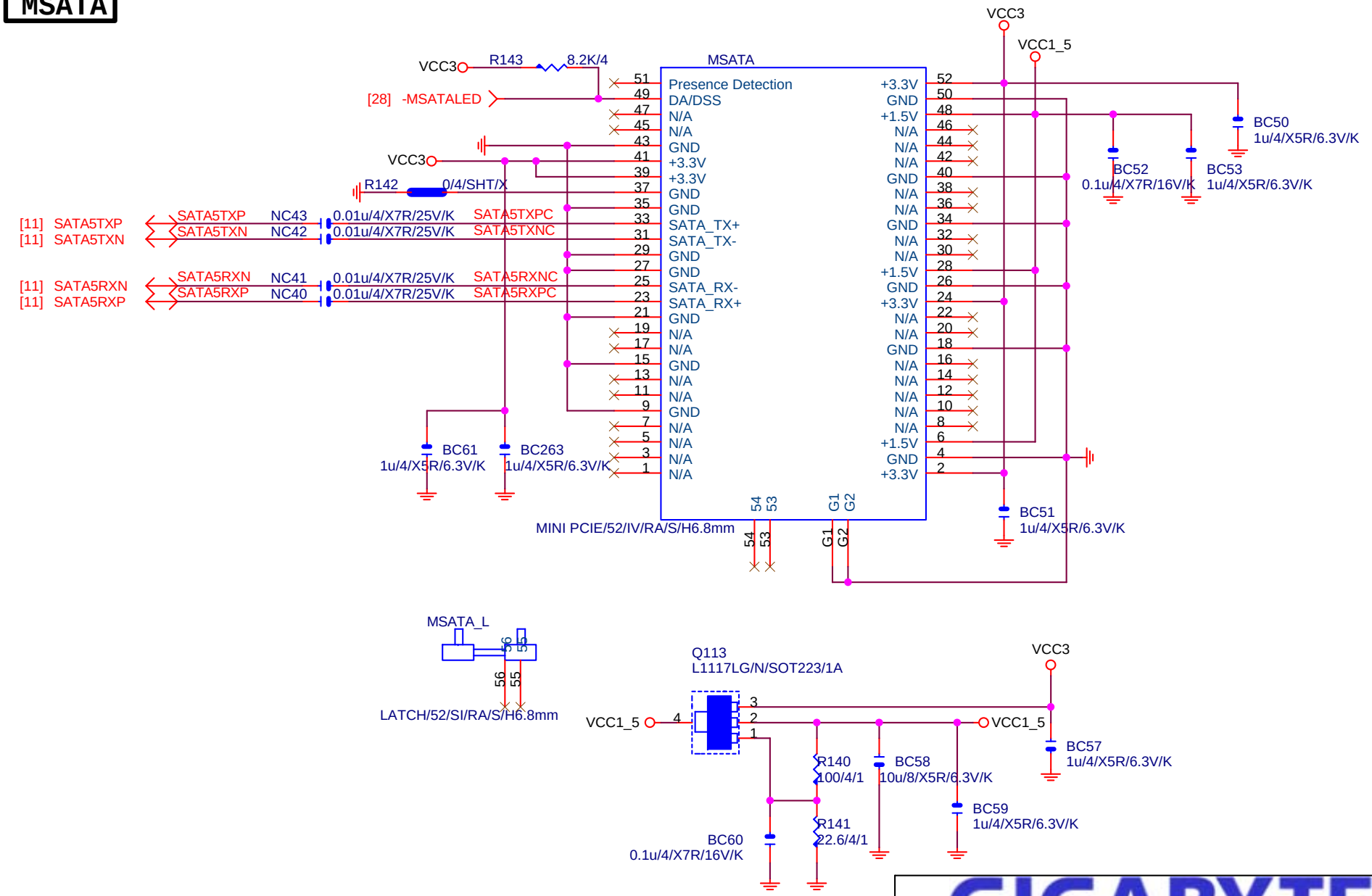
MSATA



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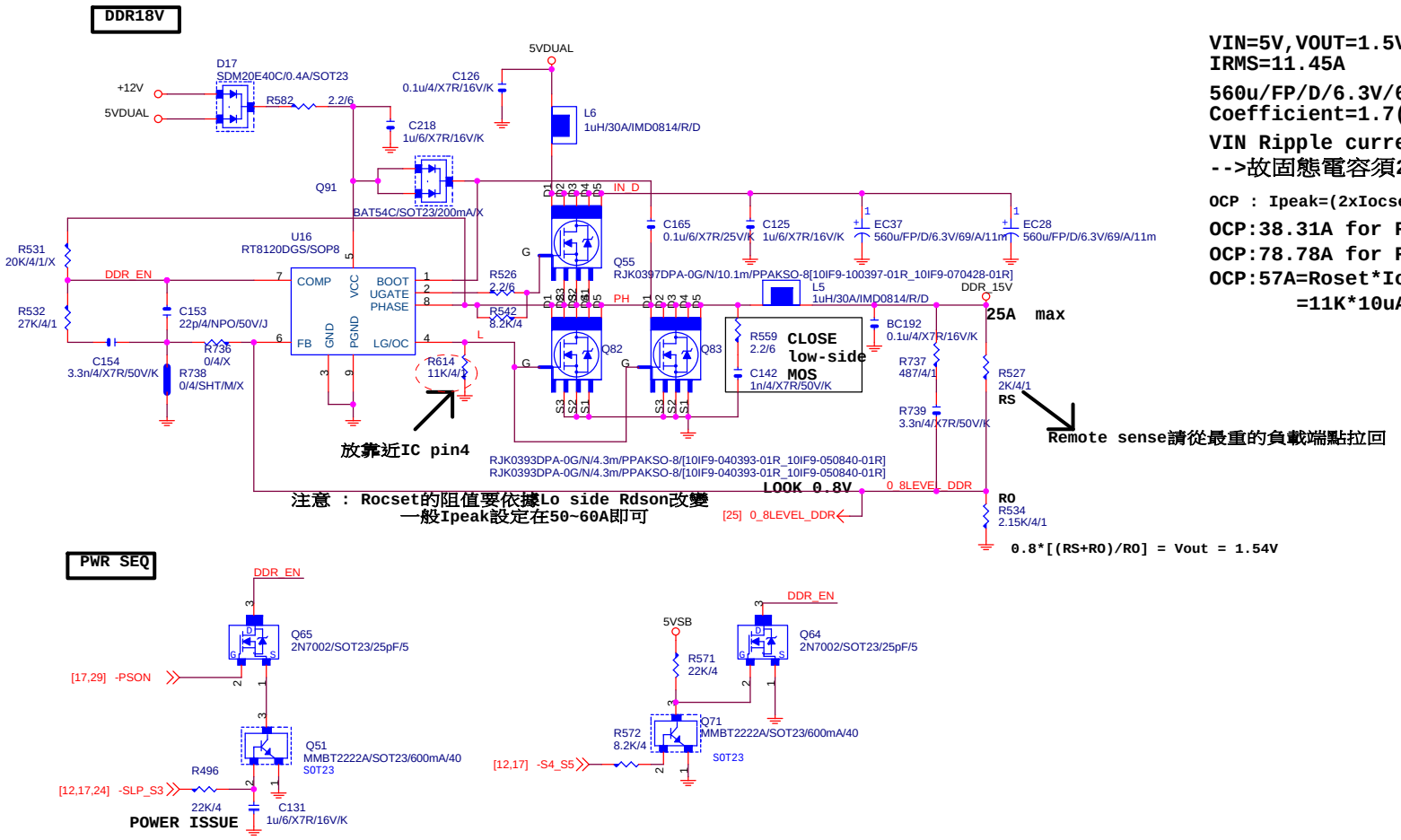
Title	MSATA	
Size A	Document Number GA-Z77-DS3H	Rev 1.0
Date: Wednesday, March 28, 2012	Sheet 32 of 35	



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]

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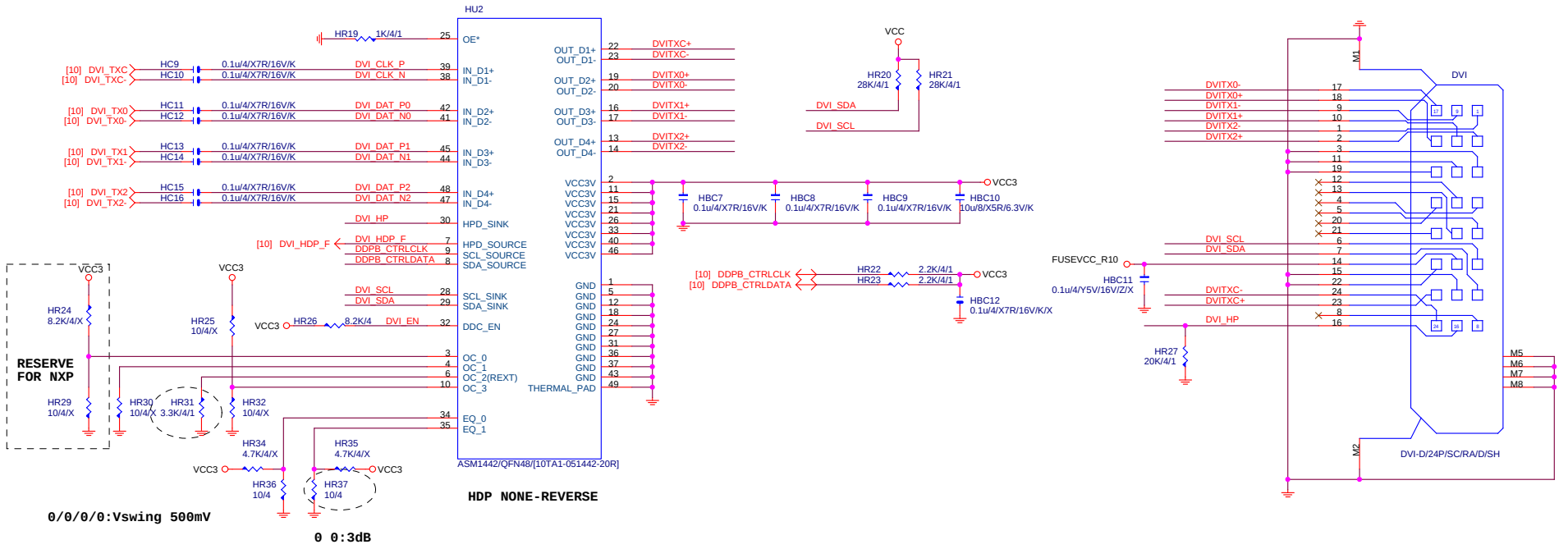
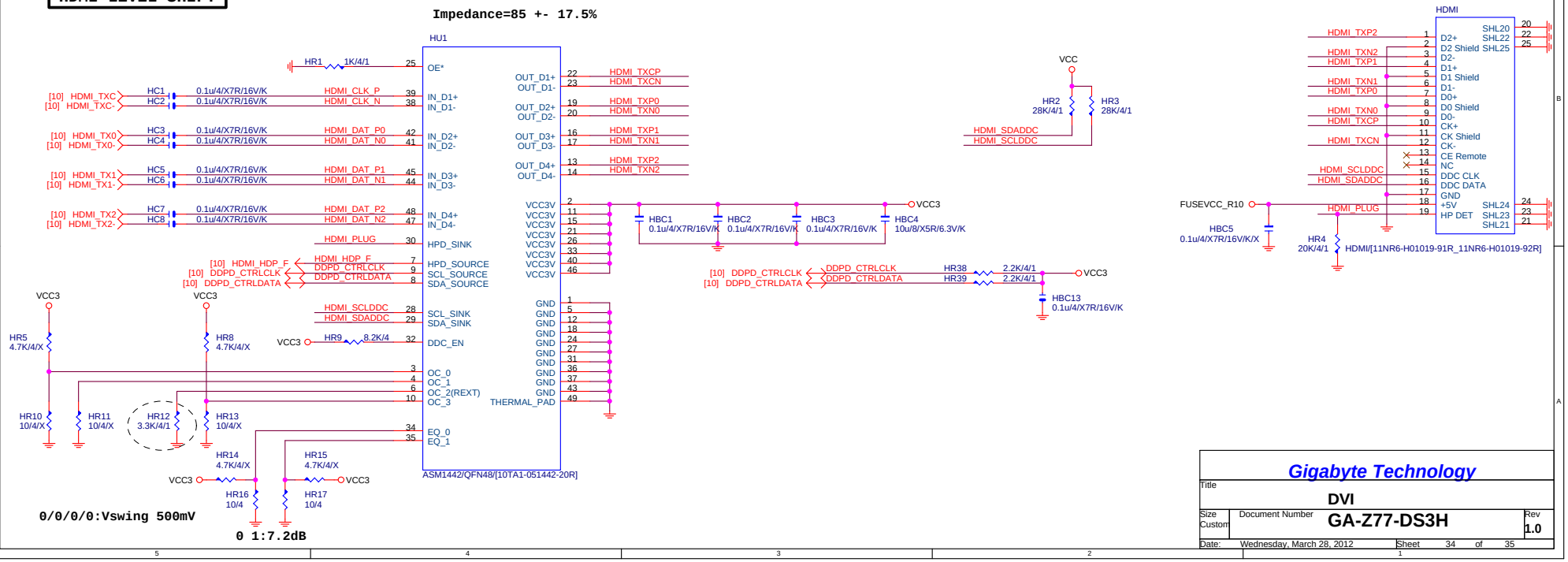
Title: RT8120		
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 33 of 35	

DVI LEVEL SHIFT

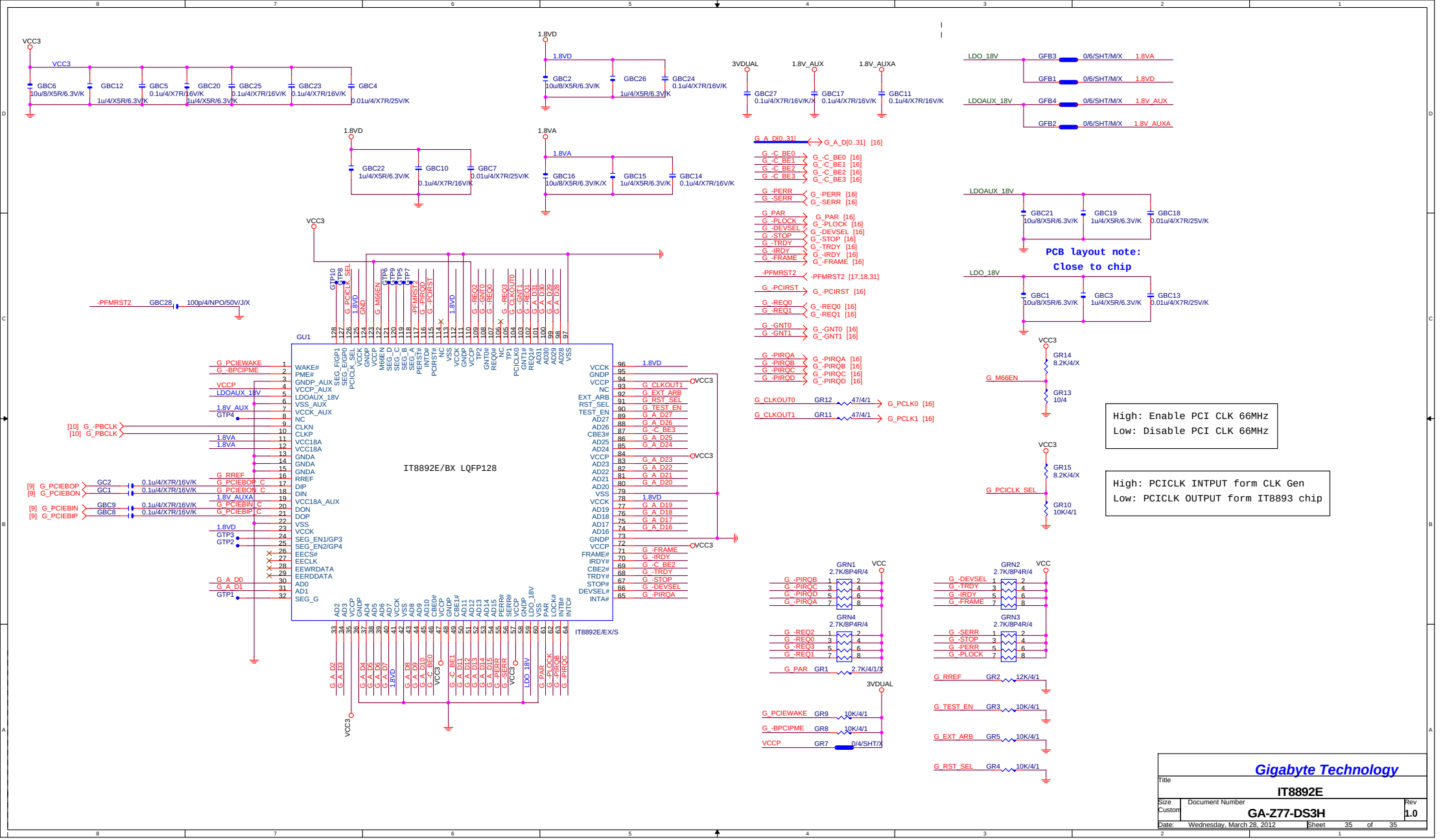


HDMI LEVEL SHIFT

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



Gigabyte Technology		
Title: DVI		
Size: Custom	Document Number: GA-Z77-DS3H	Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 34 of 35	



Gigabyte Technology			
Title	IT8892E		
Size: Custom	Document Number: GA-Z77-DS3H		Rev: 1.0
Date: Wednesday, March 28, 2012	Sheet 35 of 35		